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**RADAR BACKSCATTERING DATA FOR
AGRICULTURAL SURFACES**

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The data presented here were generated under two separate studies, but are combined in a single report for greater convenience to users of the results. Those measurements made prior to the summer of 1967 were supported by the National Aeronautics and Space Administration under Contract NSR-36-008-027, while the subsequent measurements were supported by the United States Air Force Avionics Laboratory, Wright Patterson Air Force Base, under Contract F 33615-67-C-1663.

National Aeronautics and Space Administration
Office of Grants and Research Contracts
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REPORT
by
THE OHIO STATE UNIVERSITY
ELECTROSCIENCE LABORATORY
(Formerly Antenna Laboratory)
COLUMBUS, OHIO 43212

Sponsor National Aeronautics and Space Administration
 Office of Grants and Research Contracts
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Contract Number NSR-36-008-027

Investigation of Radar and Microwave Radiometric Techniques
 for Geoscience Experiments

Subject of Report Radar Backscattering Data for
 Agricultural Surfaces

Submitted by T. L. Oliver and W. H. Peake
 ElectroScience Laboratory
 Department of Electrical Engineering

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ABSTRACT

Measurements of the normalized backscattering cross sections of a number of agricultural surfaces are reported for microwave frequencies of 1.8, 10, 15, and 35 GHz. The surfaces include wheat, oats, soybeans, sudan grass, corn, alfalfa, and sorghum. Ground truth data including, for instance, surface location, crop variety and moisture, soil moisture, etc. are provided for most surfaces.

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TABLE I

List of Figure Numbers with corresponding Group Numbers,
Ground Truth Page Numbers, and Table Page Numbers

Figure No.	Surface	Frequency	Group No.	Figure Page No.	Ground Truth Page No.	Table Page No.
1	Wheat	10.0 GHz	63	B-1	C-1	D-1
2	Wheat	15.4 "	64	B-1	C-2	D-1
3	Bulk Wheat	10.0 "	65	B-2	C-3	D-2
4	Bulk Wheat	15.4 "	66	B-2	C-4	D-3
5	Wheat Stubble	10.0 "	101	B-3	C-13	D-11, 12
6	Wheat Stubble	15.0 "	103	B-3	C-15	D-14
7	Wheat Stubble	35.0 "	102	B-4	C-14	D-13
8	Oats	1.8 "	74	B-4	C-12	D-10
9	Oats	10.0 "	67	B-5	C-5	D-4
10	Oats	15.4 "	68	B-5	C-6	D-5
11	Oats	10.0 "	72	B-6	C-10	D-9
12	Oats	15.4 "	73	B-6	C-11	D-10
13	Oats	10.0 "	200	B-7	C-48	D-60, 61
14	Oats	1.8 "	202	B-7	C-50	D-64
15	Oats	10.0 "	201	B-8	C-49	D-62, 63
16	Oats	1.8 "	204	B-8	C-52	D-67
17	Oats	10.0 "	203	B-9	C-51	D-65, 66
18	Oats	10.0 "	205	B-9	C-53	D-68, 69
19	Oats	1.8 "	208	B-10	C-56	D-73
20	Oats	10.0 "	207	B-10	C-55	D-71, 72
21	Oats	35.0 "	206	B-11	C-54	D-70
22	Oats	1.8 "	211	B-11	C-59	D-77
23	Oats	10.0 "	210	B-12	C-58	D-75, 76
24	Oats	35.0 "	209	B-12	C-57	D-74
25	Oats	1.8 "	213	B-13	C-61	D-80
26	Oats	10.0 "	212	B-13	C-60	D-78, 79
27	Soybeans	1.8 "	216	B-14	C-64	D-84
28	Soybeans	10.0 "	215	B-14	C-63	D-82, 83
29	Soybeans	35.0 "	214	B-15	C-62	D-81
30	Soybeans	1.8 "	219	B-15	C-67	D-88
31	Soybeans	10.0 "	218	B-16	C-66	D-86, 87
32	Soybeans	35.0 "	217	B-16	C-65	D-85
33	Soybeans	1.8 "	222	B-17	C-70	D-92
34	Soybeans	10.0 "	221	B-17	C-69	D-90, 91
35	Soybeans	35.0 "	220	B-18	C-68	D-89
36	Soybeans	1.8 "	225	B-18	C-73	D-96
37	Soybeans	10.0 "	224	B-19	C-72	D-94, 95
38	Soybeans	35.0 "	223	B-19	C-71	D-93
39	Soybeans	1.8 "	228	B-20	C-76	D-100
40	Soybeans	10.0 "	227	B-20	C-75	D-98, 99
41	Soybeans	35.0 "	226	B-21	C-74	D-97
42	Soybeans	1.8 "	112	B-22	C-23	D-24
43	Soybeans	10.0 "	109	B-22	C-20	D-20, 21
44	Soybeans	15.0 "	111	B-23	C-22	D-23
45	Soybeans	35.0 "	110	B-23	C-21	D-22
46	Soybeans, irrigated	10.0 "	123	B-24	C-34	D-37
47	Soybeans, non-irrigated	10.0 "	125	B-24	C-36	D-39
48	Soybeans, irrigated	35.0 "	124	B-25	C-35	D-38
49	Soybeans, non-irrigated	35.0 "	126	B-25	C-37	D-40
50	Sorghum, irrigated	10.0 "	119	B-26	C-30	D-31, 32
51	Sorghum, non-irrigated	10.0 "	121	B-26	C-32	D-34, 35
52	Sorghum, irrigated	35.0 "	120	B-27	C-31	D-33
53	Sorghum, non-irrigated	35.0 "	122	B-27	C-33	D-36
54	Bare soil, irrigated	10.0 "	127	B-28	C-38	D-41
55	Bare soil, non-irrigated	10.0 "	129	B-28	C-40	D-43

TABLE I continued

Figure No.	Surface	Frequency	Group No.	Figure Page No.	Ground Truth Page No.	Table Page No.
56	Bare soil, irrigated	35.0 GHz	128	B-29	C-39	D-42
57	Bare soil, non-irrigated	35.0 "	130	B-29	C-41	D-44
58	Sudan grass, irrigated	10.0 "	115	B-30	C-76	D-27
59	Sudan grass, non-irrigated	10.0 "	117	B-30	C-28	D-29
60	Sudan grass, irrigated	35.0 "	116	B-31	C-27	D-28
61	Sudan grass, non-irrigated	35.0 "	118	B-31	C-29	D-30
62	Sudan grass	10.0 "	133	B-32	C-42	D-45
63	Sudan grass	10.0 "	134	B-32	C-42	D-46, 47
64	Sudan grass	35.0 "	135	B-33	C-43	D-48
65	Sudan grass	10.0 "	136	B-33	C-43	D-49, 50
66	Sudan grass	10.0 "	137	B-34	C-44	D-52
67	Sudan grass	35.0 "	138	B-34	C-44	D-51
68	Corn	1.8 "	108	B-35	C-19	D-19
69	Corn	10.0 "	105	B-35	C-16	D-15, 16
70	Corn	15.0 "	107	B-36	C-18	D-18
71	Corn	35.0 "	106	B-36	C-17	D-17
72	Corn	1.8 "	114	B-37	C-25	D-26
73	Corn	15.0 "	113	B-37	C-24	D-25
74	Alfalfa	1.8 "	71	B-38	C-9	D-8
75	Alfalfa	10.0 "	69	B-38	C-7	D-6
76	Alfalfa	15.4 "	70	B-39	C-8	D-7
77	Grass	10.0 "	153	B-40	C-45	D-53
78	Grass	10.0 "	154	B-40	C-45	D-54, 55
79	Grass	15.0 "	156	B-41	C-46	D-57
80	Grass	35.0 "	155	B-41	C-46	D-56
81	Grass	1.8 "	157	B-42	C-47	D-58
82	Grass	15.0 "	158	B-42	C-47	D-59
83	Wheat	1.8 "	308	B-43	C-85	D-111
84	Wheat	10.0 "	309	B-43	C-86	D-112, 113
85	Wheat	15.0 "	310	B-44	C-87	D-114
86	Wheat	35.0 "	311	B-44	C-88	D-115
87	Oats	1.8 "	300	B-45	C-77	D-101
88	Oats	10.0 "	301	B-45	C-78	D-102, 103
89	Oats	15.0 "	302	B-46	C-79	D-104
90	Oats	35.0 "	303	B-46	C-80	D-105
91	Oats	1.8 "	304	B-47	C-81	D-106
92	Oats	10.0 "	305	B-47	C-82	D-107, 108
93	Oats	15.0 "	306	B-48	C-83	D-109
94	Oats	35.0 "	307	B-48	C-84	D-110
95	Oats	1.8 "	312	B-49	C-89	D-116
96	Oats	10.0 "	313	B-49	C-90	D-117, 118
97	Oats	35.0 "	314	B-50	C-91	D-119
98	Sorghum	10.0 "	325	B-50	C-102	D-138, 139
99	Bare soil, plowed	10.0 "	319	B-51	C-96	D-126, 127
100	Bare soil, disced	10.0 "	320	B-51	C-97	D-128, 129
101	Soybeans, irrigated	10.0 "	315	B-52	C-92	D-120, 121
102	Soybeans, non-irrigated	1.8 "	316	B-52	C-93	D-122
103	Soybeans, non-irrigated	10.0 "	317	B-53	C-94	D-123, 124
104	Soybeans, non-irrigated	35.0 "	318	B-53	C-95	D-125
105	Soybeans, irrigated	10.0 "	321	B-54	C-98	D-130, 131
106	Soybeans, non-irrigated	10.0 "	322	B-54	C-99	D-132, 133
107	Soybeans, irrigated	10.0 "	323	B-55	C-100	D-134, 135
108	Soybeans, non-irrigated	10.0 "	324	B-55	C-101	D-136, 137
109	Soybeans, irrigated	10.0 "	326	B-56	C-103	D-140, 141
110	Soybeans, non-irrigated	10.0 "	327	B-56	C-104	D-142, 143

TABLE II
List of Group Numbers and corresponding Figure,
Ground Truth, and Table Page Numbers

Group No.	Figure Page No.	Ground Truth Page No.	Table Page No.
63	B-1	C-1	D-1
64	B-1	C-2	D-1
65	B-2	C-3	D-2
66	B-2	C-4	D-3
67	B-5	C-5	D-4
68	B-5	C-6	D-5
69	B-38	C-7	D-6
70	B-39	C-8	D-7
71	B-38	C-9	D-8
72	B-6	C-10	D-9
73	B-6	C-11	D-9
74	B-4	C-12	D-10
101	B-3	C-13	D-11, 12
102	B-4	C-14	D-13
103	B-3	C-15	D-14
105	B-35	C-16	D-15, 16
106	B-36	C-17	D-17
107	B-36	C-18	D-18
108	B-35	C-19	D-18
109	B-22	C-20	D-20, 21
110	B-23	C-21	D-22
111	B-23	C-22	D-23
112	B-22	C-23	D-24
113	B-37	C-24	D-25
114	B-37	C-25	D-26
115	B-30	C-26	D-27
116	B-31	C-27	D-28
117	B-30	C-28	D-29
118	B-31	C-29	D-30
119	B-26	C-30	D-31, 32
120	B-27	C-31	D-33
121	B-26	C-32	D-34, 35
122	B-27	C-33	D-36
123	B-24	C-34	D-37
124	B-25	C-35	D-38
125	B-24	C-36	D-39
126	B-25	C-37	D-40
127	B-28	C-38	D-41
128	B-29	C-39	D-42
129	B-28	C-40	D-43
130	B-29	C-41	D-44
133	B-32	C-42	D-45
134	B-32	C-42	D-46, 47
135	B-33	C-43	D-48
136	B-33	C-43	D-49, 50
137	B-34	C-44	D-51
138	B-34	C-44	D-52
153	B-40	C-45	D-53
154	B-40	C-45	D-54, 55
155	B-41	C-46	D-56
156	B-41	C-46	D-57
157	B-42	C-47	D-58
158	B-42	C-47	D-59
200	B-7	C-48	D-60, 61

TABLE II continued

Group No.	Figure Page No.	Ground Truth Page No.	Table Page No.
201	B-8	C-49	D-62, 63
202	B-7	C-50	D-64
203	B-9	C-51	D-65, 66
204	B-8	C-52	D-67
205	B-9	C-53	D-68, 69
206	B-11	C-54	D-70
207	B-10	C-55	D-71, 72
208	B-10	C-56	D-73
209	B-12	C-57	D-74
210	B-12	C-58	D-75, 76
211	B-11	C-59	D-77
212	B-13	C-60	D-78, 79
213	B-13	C-61	D-80
214	B-15	C-62	D-81
215	B-14	C-63	D-82, 83
216	B-14	C-64	D-84
217	B-16	C-65	D-85
218	B-16	C-66	D-86, 87
219	B-15	C-67	D-88
220	B-18	C-68	D-89
221	B-17	C-69	D-90, 91
222	B-17	C-70	D-92
223	B-19	C-71	D-93
224	B-19	C-72	D-94, 95
225	B-18	C-73	D-96
226	B-21	C-74	D-97
227	B-20	C-75	D-98, 99
228	B-20	C-76	D-100
300	B-45	C-77	D-101
301	B-45	C-78	D-102, 103
302	B-46	C-79	D-104
303	B-46	C-80	D-105
304	B-47	C-81	D-106
305	B-47	C-82	D-107, 108
306	B-48	C-83	D-109
307	B-48	C-84	D-110
308	B-43	C-85	D-111
309	B-43	C-86	D-112, 113
310	B-44	C-87	D-114
311	B-44	C-88	D-115
312	B-49	C-89	D-116
131	B-49	C-90	D-117, 118
314	B-50	C-91	D-119
315	B-52	C-92	D-120, 121
316	B-52	C-93	D-122
317	B-53	C-94	D-123, 124
318	B-53	C-95	D-125
319	B-51	C-96	D-126, 127
320	B-51	C-97	D-128, 129
321	B-54	C-98	D-130, 131
322	B-54	C-99	D-132, 133
323	B-55	C-100	D-134, 135
324	B-55	C-101	D-136, 137
325	B-50	C-102	D-138, 139
326	B-56	C-103	D-140, 141
327	B-56	C-104	D-142, 143

RADAR BACKSCATTERING DATA FOR AGRICULTURAL SURFACES

A. BACKGROUND

1. Introduction

Future use of microwave radar for remote sensing over areas of agricultural and geological interest (for example, see Ref. 1) requires basic information about the return characteristics of such surfaces. This report presents measurements of the normalized backscattering cross section (per unit "projected" area), $\gamma(\theta_i)$, which have been made over the past few years on a number of agricultural surfaces. Corresponding data for geological surfaces are given in Ref. 2.

The significance of these ground-based radar measurements is twofold: first, they serve as a calibration for airborne radars and provide estimates of radar return for system designers; secondly, they provide measurements over well-defined, homogeneous surfaces which are accompanied by rather detailed surface descriptions. Thus they can serve as basic data for the interpretation of surface response in terms of surface parameters. However, no specific interpretations are offered in this report, although a number of interesting conclusions have already been drawn from the data presented here.

In many cases, brightness temperature data were taken for the same surface or site, on the same day or (occasionally) within one or two days, as the radar measurements. These data may be found in Ref. 4, and may be identified on the basis of the date and surface descriptions.

2. Definition of the Radar Cross Section Parameters

The objective of the radar measurements is to determine the normalized backscattering parameters of the terrain, $\sigma_{jk}^0(\theta_i)$ or $\gamma_{jk}(\theta_i)$, where θ_i is the angle with respect to the surface normal. The governing parameter at microwave frequencies is actually the normalized bistatic scattering cross section (per unit surface area), $\sigma_{jk}^0(i, s)$, where (see Fig. A-1) the subscript j refers to the polarization of the incident radiation on the surface of area A , and the subscript k designates that polarization component of the scattered signal which is accepted by the receiving antenna; i, s refer to the angles (θ_i, ϕ_i) and (θ_s, ϕ_s) defining the propagation directions of the incident and scattered radiation.

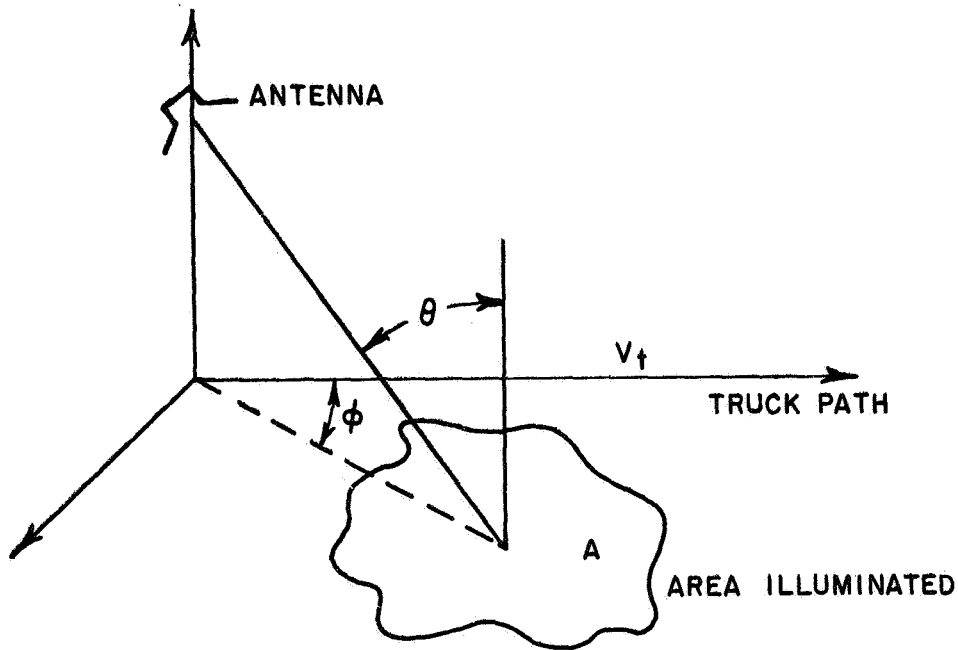


Fig. A-1. Geometry of the scattering problem.

Operationally, the bistatic cross section is defined by considering an area A which is illuminated by a plane wave of power density I_0 (watts/m²), and which produces a scattered intensity I_s at a distance R . The normalized bistatic scattering cross section $\sigma_{jk}^0(i, s)$ is then defined by the equation⁵

$$(1) \quad \sigma_{jk}^0(i, s) = \frac{4\pi R^2 I_s}{A I_0} = \sigma_{kj}^0(s, i) \quad (\text{reciprocity theorem}),$$

where this normalized bistatic cross section, σ^0 , is related to the conventional radar cross section, σ , by $\sigma^0 = \sigma/A$. In terms of this parameter, the normalized radar backscattering cross section is $\sigma_{jk}^0(i, i)$ or just $\sigma_{jk}^0(\theta_i)$; the particular polarization states used in this report are designated by the following notation:

	<u>Transmitted wave</u>	<u>Received scattered wave</u>
σ_{VV}^0	vertically polarized	vertically polarized
σ_{VH}^0	vertically polarized	horizontally polarized
σ_{HH}^0	horizontally polarized	horizontally polarized
σ_{HV}^0	horizontally polarized	vertically polarized

The words "vertical polarized" refer to a wave with its electric vector in the plane of the incidence; the words "horizontal polarized" refer to a wave with its electric vector in the plane of the surface.

To work with a parameter which is independent of the illuminated area of the terrain, the bistatic radar return parameter per unit "projected" area, γ , is introduced by the relation

$$(2) \quad \gamma_{jk}(i, s) = \frac{\sigma_{jk}^o(i, s)}{\cos\theta_i} = \frac{4\pi R^2 I_s}{I_o(A \cos\theta_i)} .$$

Once again, the parameter of concern here is the backscattering component $\gamma_{jk}(i, i)$ or $\gamma_{jk}(\theta_i) = \sigma^o(\theta_i)/\cos\theta_i$. The reciprocity condition satisfied by the γ 's is³ $\gamma_{jk}(i, s) \cos\theta_i = \gamma_{kj}(s, i) \cos\theta_i$. It is this parameter $\gamma(\theta_i)$ which is plotted in Section B; however, the tables give both $\gamma(\theta_i)$ and the conventional normalized radar backscattering cross section per unit area $\sigma^o(\theta_i)$.

3. Instrumentation

The Ohio State University multi-frequency terrain-return facility has been described in detail elsewhere⁶. Briefly, however, it consists of four truck mounted radar systems of the high-gain, narrow beam, c-w doppler type, operated at 1.8, 10, 15, and 35 GHz. The block diagram of a typical system is shown in Fig. A-2. The microwave systems are attached at the end of a hydraulic boom which is located at the center of the truck (see Fig. A-3). The doppler signal is generated by driving the truck alongside the surface to be measured. The angle of incidence, θ_i , is controlled from within a van mounted on the rear of the truck, by rotating the enclosure containing the microwave system. Any linear polarization may be obtained by rotating the antenna.

Since two signal processing channels are available, any two of the four radars may be operated simultaneously. The instantaneous return power is integrated over a strip of terrain, typically 100 feet long, in order to reduce statistical fluctuations in the return parameters. The instantaneous return power is monitored on an analog strip-chart recorder, while the integrated power is recorded in digital form, at a rate of one sample per second.

A summary of the radar system specifications, such as the antenna beamwidths, the l. o. levels, and the smallest measured levels of the radar backscattering parameter, $\gamma(\theta_i)$, is given in Table III. The minimum detectable level of the radar backscatter, which is a more realistic index of system performance than system sensitivity, is less than the smallest measured values of γ for each radar system.

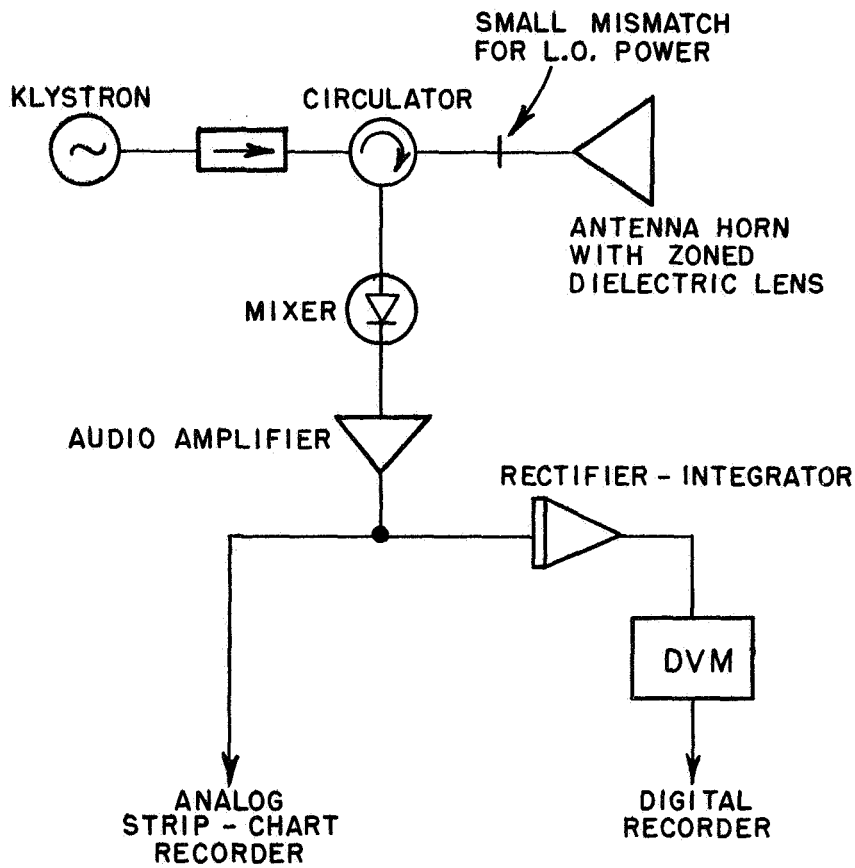


Fig. A-2. Block diagram of a typical c-w doppler radar system.

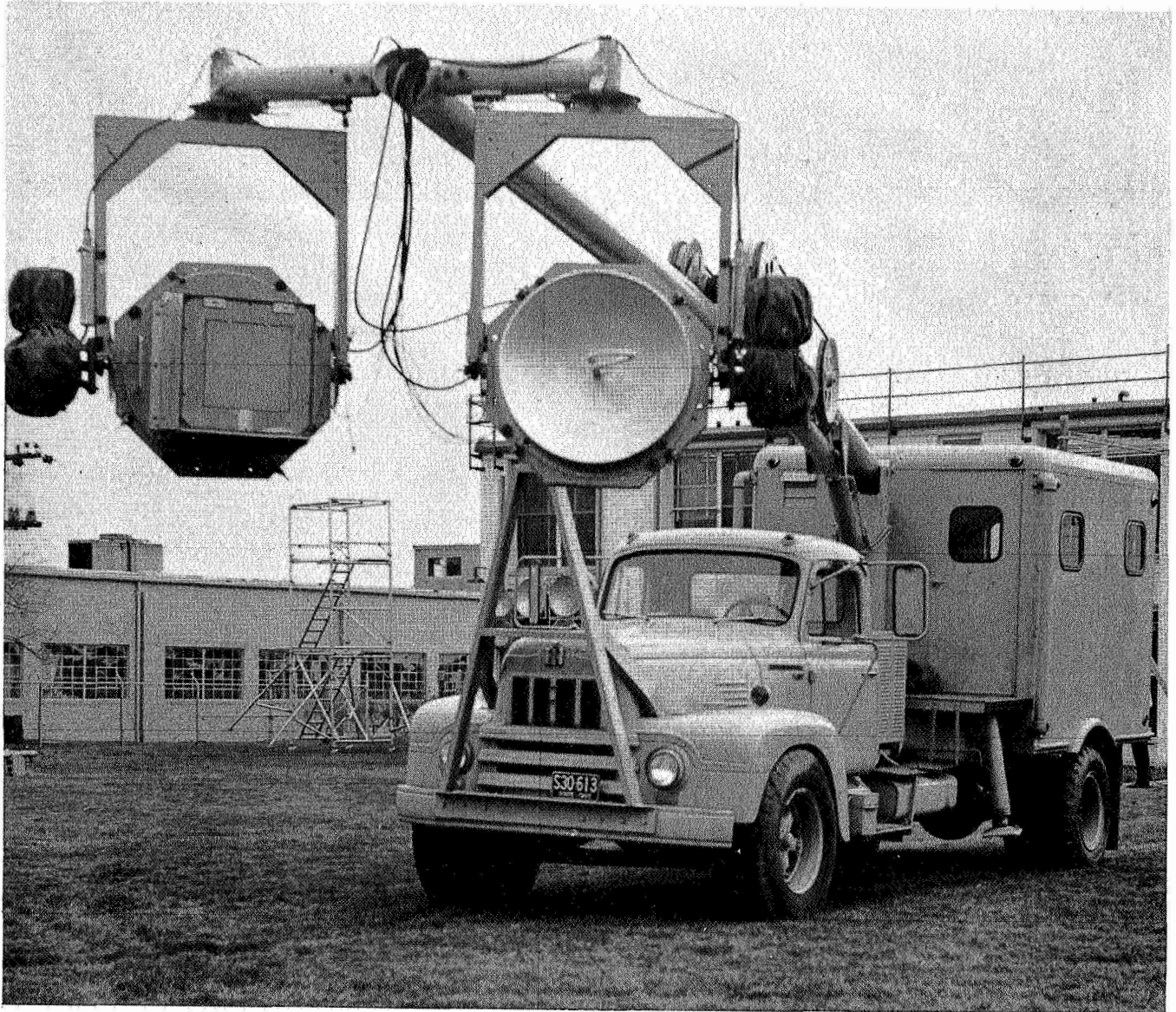


Fig. A-3. The Ohio State University Mobile Radar - Radiometer Facility.

TABLE III
Radar System Specifications

	<u>1.8 GHz</u>	<u>10 GHz</u>	<u>15 GHz</u>	<u>35 GHz</u>
<u>Frequency</u>				
Wavelength	1.2 cm	3 cm	2 cm	8.6 mm
Antenna Half-power Beamwidths	12°	5.2°	3.76°	2.00°
Antenna Type	3' parabolic	14" x 14" horn with lens	12" x 12" horn with lens	10" x 10" horn with lens
Polarization	any linear	any linear and 90° crossed linear	any linear	any linear
Transmitted Power	398 mw	75 mw	97 mw	28.9 mw
L. O. Level	1.5 mw	0.28 mw-direct 0.22 mw-crossed	1.0 mw	0.28 mw
Audio Amplifier Passband	0.8 / 250 Hz	8 / 250 Hz	8 / 250 Hz	8 / 250 Hz
Backscattering Cross Section, γ (dB) (Smallest measured values)	-35 dB	-30 dB-direct -45 dB-crossed	-20 dB	-18 dB

The radar systems are calibrated on an absolute basis by comparing the return from the terrain with the return from an 8" metal sphere, which is oscillated by a shaker (to provide the doppler shift) at the standard antenna-surface distance of 20 feet. All four radar systems are essentially similar to that shown in Fig. A-2, except that 1.8 GHz system uses a parabola instead of a horn, and the 10 GHz system receives both the direct and cross-polarized linear components of the return signal. The cross-polarized channel is calibrated relative to the direct channel by rotating an array of dipoles as a target. The rotation of the target modulates the reflected signal amplitude, and the sidebands provide the required frequency shifts for system operation.

The reduction of the radar data entails transformation of the integrated audio signal powers from the terrain and from the standard target to a normalized radar backscattering cross section per unit area, $\sigma^o(\theta)$, using the relationship

$$(3) \quad \sigma^o(\theta) = \frac{P_{rec}(\theta)}{P_{st}} \frac{\sigma_T}{R_o^2} \frac{1}{I_B(\theta)} \frac{B}{1100}$$

where P_{rec} = received power from terrain,
 P_{st} = received power from standard target,
 σ_T = radar cross section of standard target,
 R_o = distance from antenna to target,
 B = constant in exponent of one-way antenna power pattern,
 I_B = value of integral tabulated by Barrick⁷.

Details of the signal processing and data reduction are given in Ref. 6.

4. Description of the Data

The agricultural backscattering data are presented in this report as follows: graphs of $\gamma(\theta_i)$, the normalized backscattering cross section per unit "projected" area vs. angle of incidence (with respect to the surface normal), are given in Section B (pp. B-1 to B-56); descriptions ("ground truth") of these measured surfaces are provided in Section C (pp. C-1 to C-104); and both $\gamma(\theta_i)$ and $\sigma^o(\theta_i)$, the normalized radar backscattering cross section, are presented in tabular form in Section D (pp. D-1 to D-143).

In Section B, the graphs of $\gamma(\theta_i)$ are presented according to their

respective crop designations. Each measurement is assigned a "group number" (groups 1-99 correspond to data obtained in 1965, groups 100-199 in 1966, and so forth), which was introduced to provide a convenient cross reference between the figures, the surface identification ("ground truth"), and the tables of γ and σ^0 . The date on the figures (and the tabular output) gives the day, month, and last digit of the year of the measurement; for example, 16 Aug 6 corresponds to 16 August 1966. The figure numbers are listed in Table I with their corresponding group numbers, ground truth page numbers, and table page numbers; the group numbers are listed in Table II with corresponding figure, ground truth, and table page numbers.

The "surface identification" section contains descriptions, location, date of measurement, etc., of the surfaces measured. Some of the surface descriptors are crop variety, crop height, crop moisture content given by (fresh weight - dried weight)/fresh weight, direction of antenna path relative to the crop rows, and the height above the ground to which the standard antenna-surface distance of 20 feet was measured. The descriptors specified for a given surface were controlled by conditions existing at the measurement site. For instance, some plots could not be disturbed to measure the crop moisture content and fresh weight.

The values of γ vs. θ_i are also given in tabular form in Section D. These tables, identified by group number, give both γ (in the "gamma" column) and σ^0 (in the "cross section" column) in digital form, plus a brief description of the surface, date, frequency, and the standard target calibration level⁶. The values of γ are those plotted in Figs. 1-110 of Section B.

The errors which arise in the backscattering measurements are due to the following sources: (1) statistical fluctuations, which are insignificant here since the return is averaged over many independent samples; (2) calibration errors due to alignment inaccuracies of the calibration target (especially at K_a -band) and ground effects (in the case of S-band), drift between pre- and post-calibration, and sporadic errors in the recording amplifier gains, etc. (Error in the absolute calibration will affect only the absolute level of the cross sections, but not the relative values for a given measurement. Measurements whose absolute calibrations are in doubt have been indicated by "absolute calibrations in doubt."); (3) system geometry - since the truck is driven along the terrain, the look angle and antenna height can vary - errors also arise in the height of the antenna above the surface, especially near grazing; (4) choice of the surface reference plane - in the case of tall vegetation such as corn, there is a significant difference in range between the return from the top and from the bottom of the crop - also the geometry is that of a

thin cylinder of radiation penetrating a deep layer instead of the normal plane wave - shallow surface layer geometry typical of aircraft measurements. In most cases where the choice is significant, the reference height has been indicated in Section C.

It should be pointed out that the absolute level of the 1966-67 X-band cross-polarized data is in doubt since a suitable calibration was not available. An indication of the consistency of the data is provided by the reciprocity condition for the cross-polarized returns; that is, $\sigma_{VH}^0(\theta_i) = \sigma_{HV}^0(\theta_i)$. Particularly in the earlier measurements, apparently systematic differences between these two parameters are due to a small difference in gain between the two data processing channels.

In practice, care has been taken to minimize the sources of error, and it is felt that the reported measurements are accurate to within ± 1.5 dB although there may be occasional bad data points. For the case of tall crops such as corn or sudan grass, the limitations between the system geometry of the experiment and that assumed in defining σ^0 or γ (see Fig. A-1) should be born in mind when using the measurements.

REFERENCES

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2. Peake, W. H., "Radar Backscattering Data from Geological Surfaces at Microwave Frequencies," Report 1903-7, in process, ElectroScience Laboratory, The Ohio State University Research Foundation; prepared under Contract NSR-36-008-027, National Aeronautics and Space Administration, Washington, D. C.
3. Peake, W. H., C. H. Shultz, R. L. Riegler, "The Mutual Interpretation of Active and Passive Microwave Sensor Outputs," Report 1903-3, 15 July 1966. Antenna Laboratory, The Ohio State University Research Foundation; prepared under Contract NSR-36-008-027, National Aeronautics and Space Administration, Washington, D. C.
4. Oliver, T. L. and W. H. Peake, "Brightness Temperature of Terrain," Report 2440-4, in process, The Ohio State University ElectroScience Laboratory, Department of Electrical Engineering, prepared under Contract F 33615-67-C-1633, Air Force Avionics Laboratory, Wright-Patterson Air Force Base, Ohio.
5. Cosgriff, R. L., W. H. Peake, R. C. Taylor, "Terrain Scattering Properties for Sensor System Design," Engineering Experiment Station Bulletin 181, May 1960, prepared in part by contracts from the Air Research and Development Command of the United States Air Force and the United States Army Signal Corps with The Ohio State University Research Foundation.
6. Oliver, T. L., "A Mobile Facility for Measuring the Backscattering and Brightness Temperature of Terrain at Microwave Frequencies," Report 1903-6, 4 October 1968. ElectroScience Laboratory, The Ohio State University Research Foundation; prepared under Contract NSR-36-008-027.
7. Barrick, D., "Normalization of Bistatic Radar Return," Report 1388-13, ElectroScience Laboratory, Department of Electrical Engineering, The Ohio State University, 15 January 1964; prepared under Grant No. NsG-213-61, National Aeronautics and Space Administration.

B. FIGURES OF THE NORMALIZED BACKSCATTERING CROSS SECTIONS PER UNIT "PROJECTED" AREA

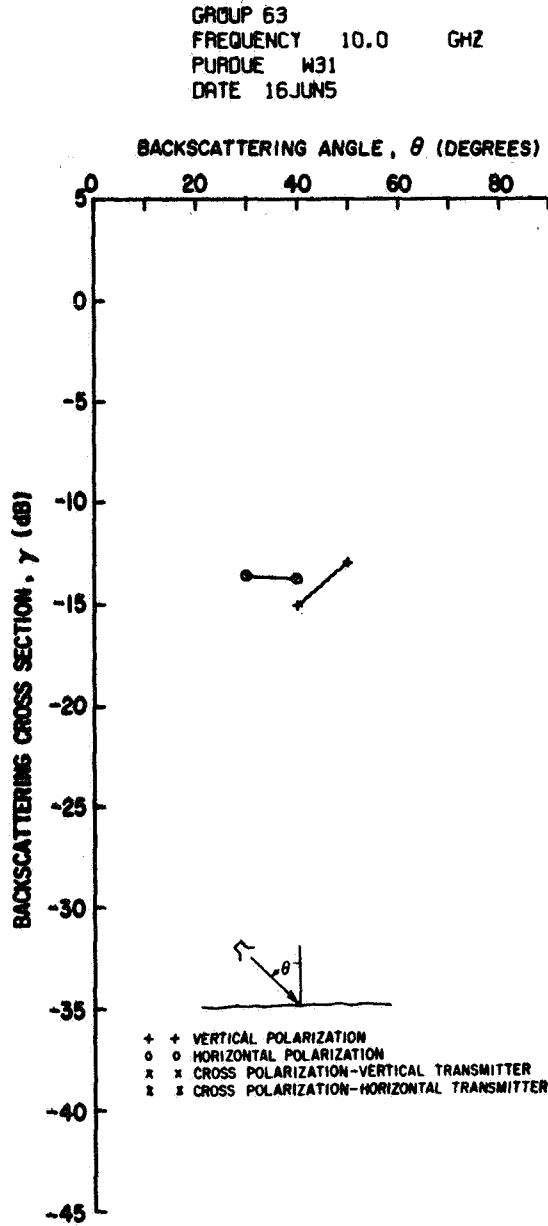


Fig. 1. Wheat

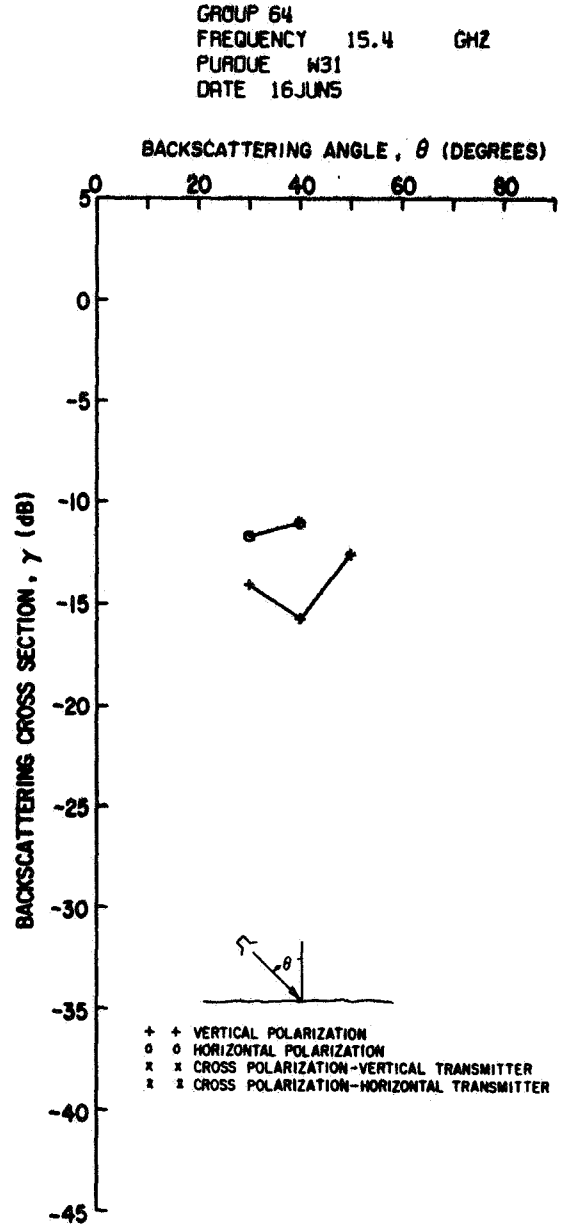


Fig. 2. Wheat

GROUP 65
 FREQUENCY 10.0 GHZ
 PURDUE BW23
 DATE 16JUN5

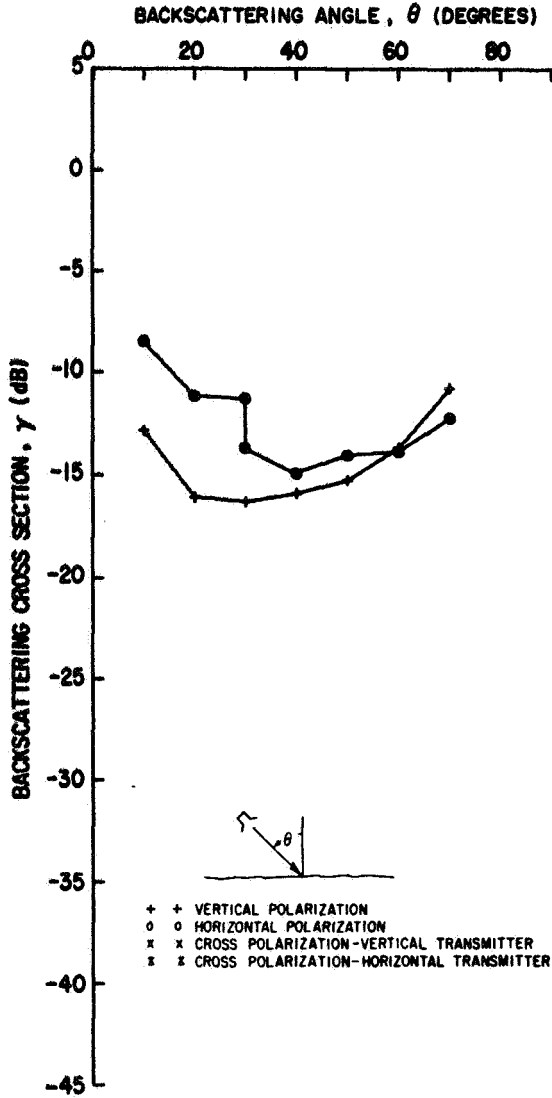


Fig. 3. Bulk wheat

GROUP 66
 FREQUENCY 15.4 GHZ
 PURDUE BW23
 DATE 16JUN5

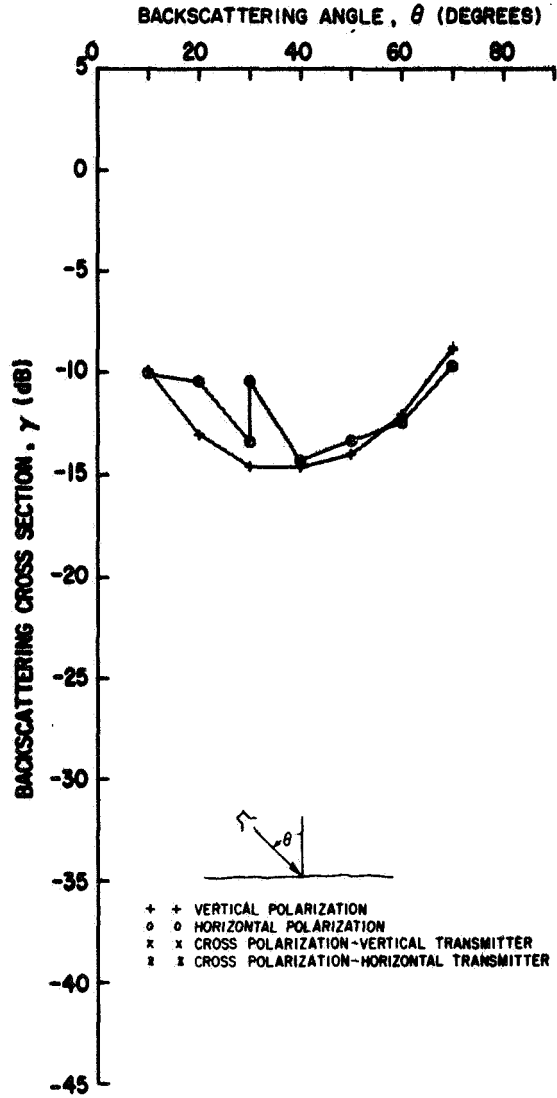


Fig. 4. Bulk wheat

GROUP 101
 FREQUENCY 10.0 GHz
 PURDUE WS 33
 DATE 03AUG6

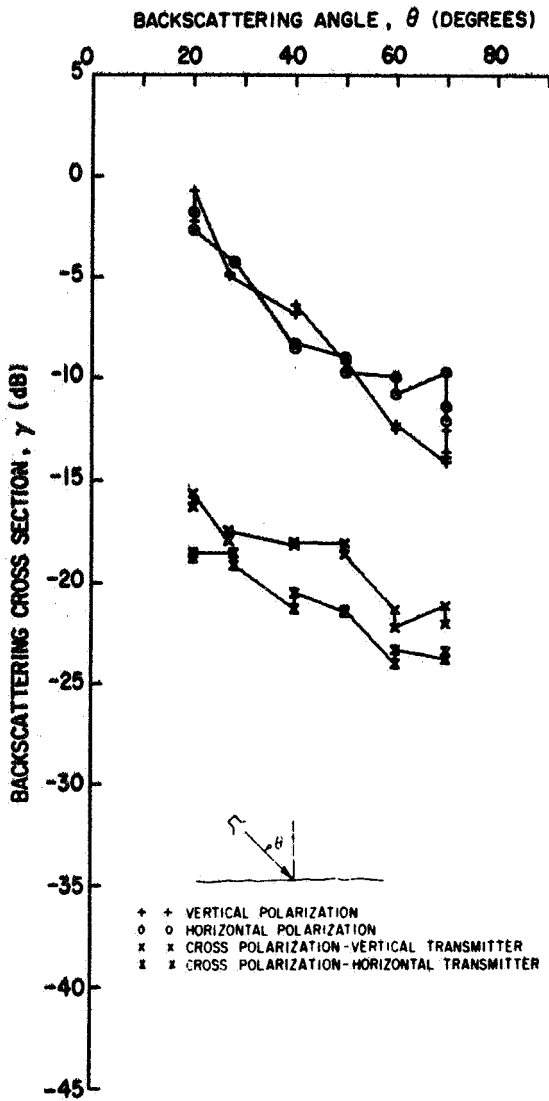


Fig. 5. Wheat stubble

GROUP 103
 FREQUENCY 15.0 GHz
 PURDUE WS 33
 DATE 06AUG6

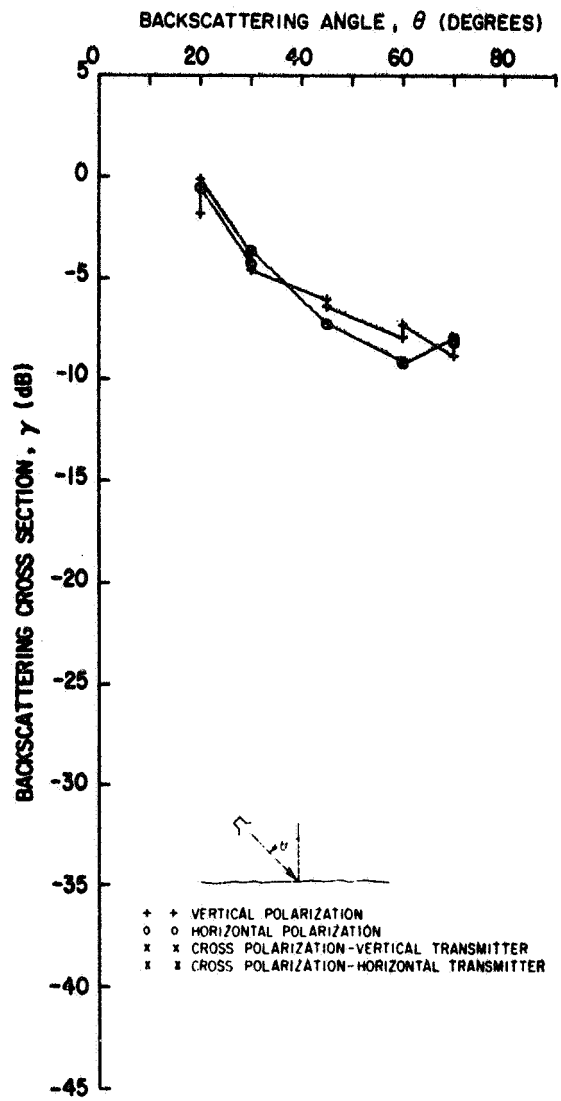


Fig. 6. Wheat stubble

GROUP 102
 FREQUENCY 35.0 GHZ
 PURDUE WS 33
 DATE 03AUG6

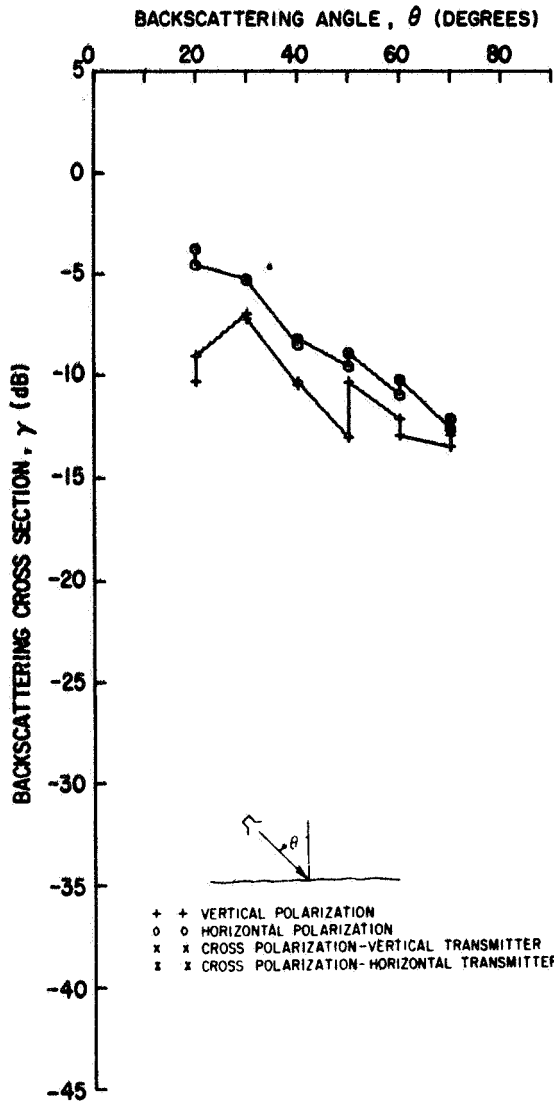


Fig. 7. Wheat stubble

GROUP 74
 FREQUENCY 1.8 GHZ
 PURDUE 031
 DATE 17JUN5

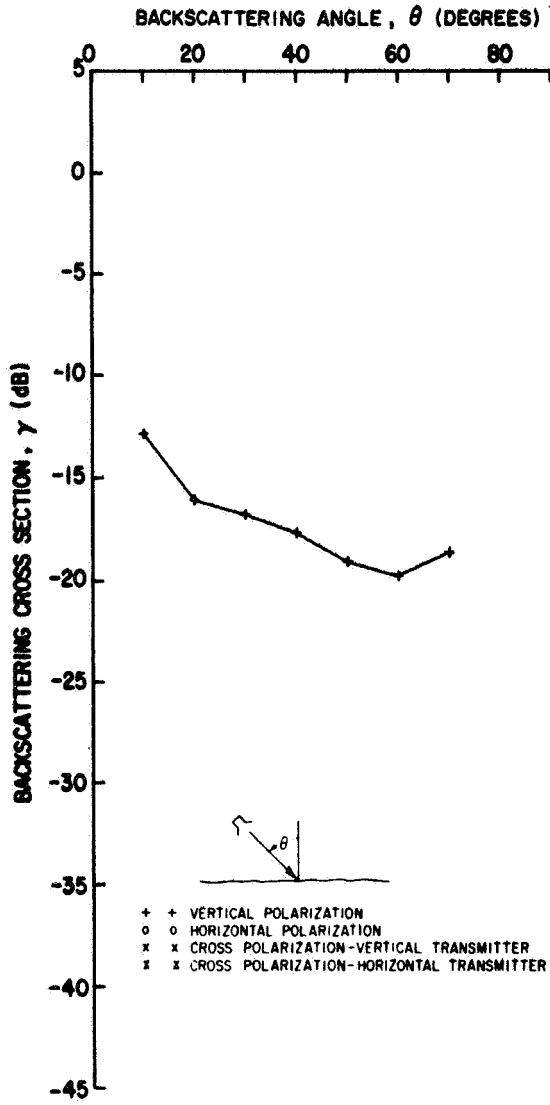


Fig. 8. Oats

GROUP 67
 FREQUENCY 10.0 GHZ
 PURDUE 031
 DATE 16JUN5

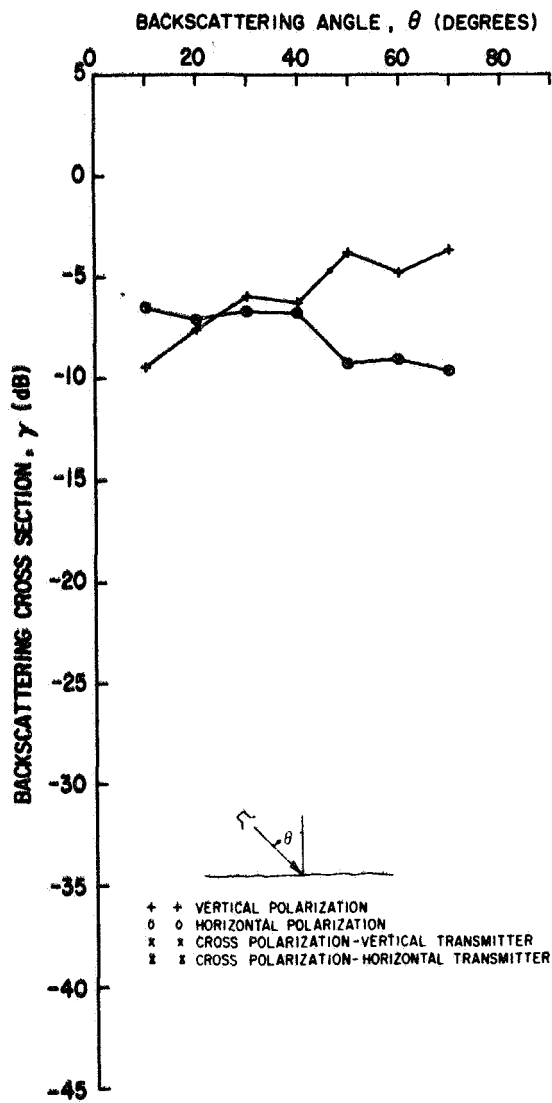


Fig. 9. Oats

GROUP 68
 FREQUENCY 15.4 GHZ
 PURDUE 031
 DATE 16JUN5

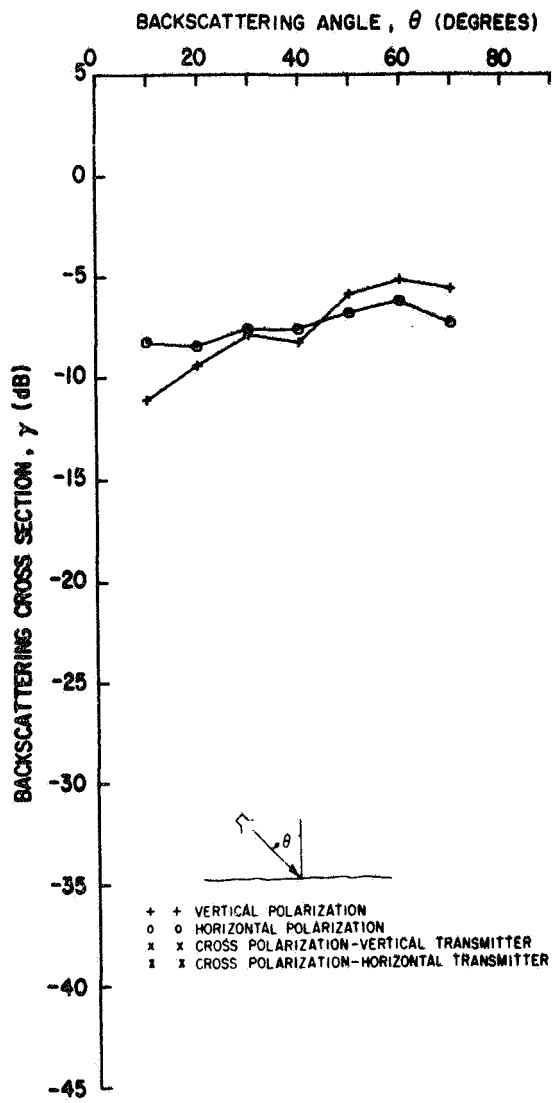


Fig. 10. Oats

GROUP 72
 FREQUENCY 10.0 GHZ
 PURDUE 031
 DATE 17JUN5

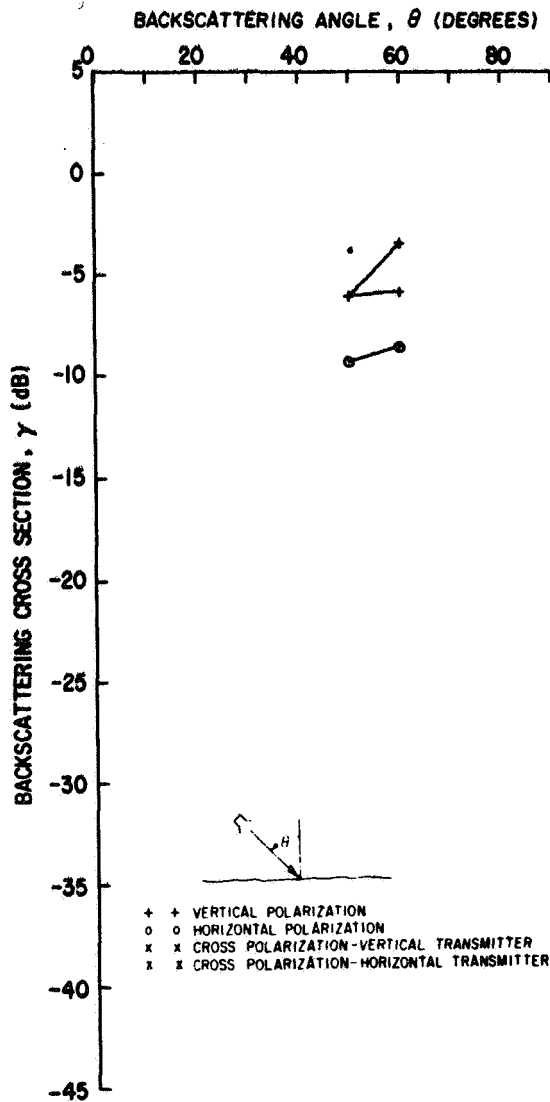


Fig. 11. Oats

GROUP 73
 FREQUENCY 15.4 GHZ
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 DATE 17JUN5

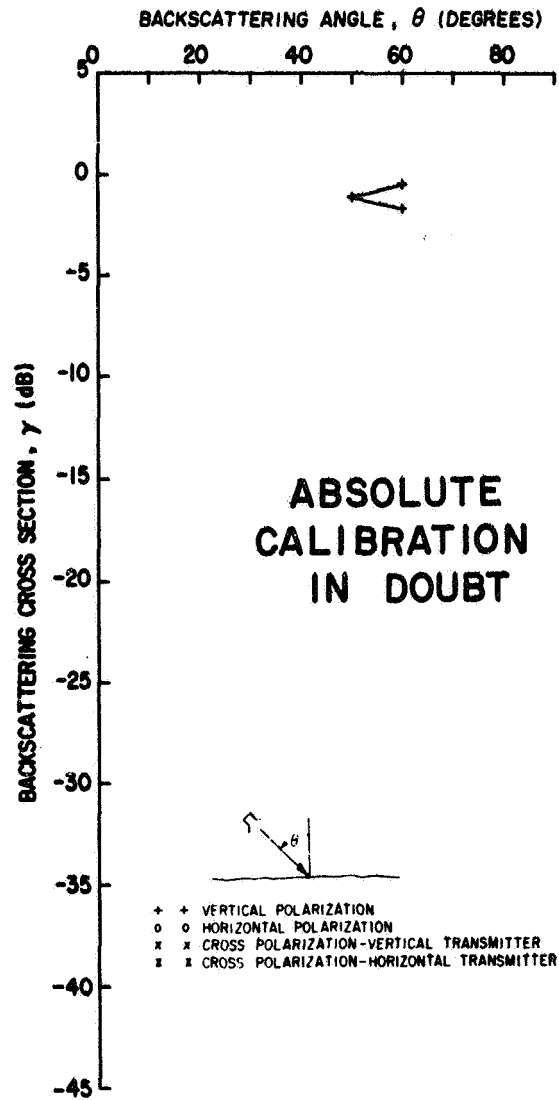


Fig. 12. Oats

GROUP 200
 FREQUENCY 10.0 GHZ
 OSU OATS
 DATE 20APR7

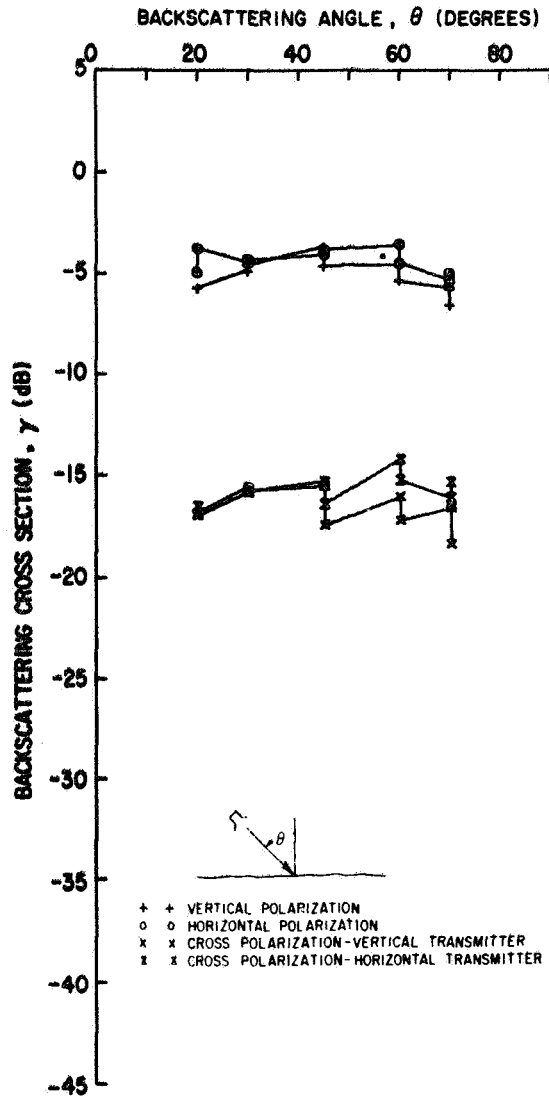


Fig. 13. Oats

GROUP 202
 FREQUENCY 1.8 GHZ
 OSU OATS
 DATE 27APR7

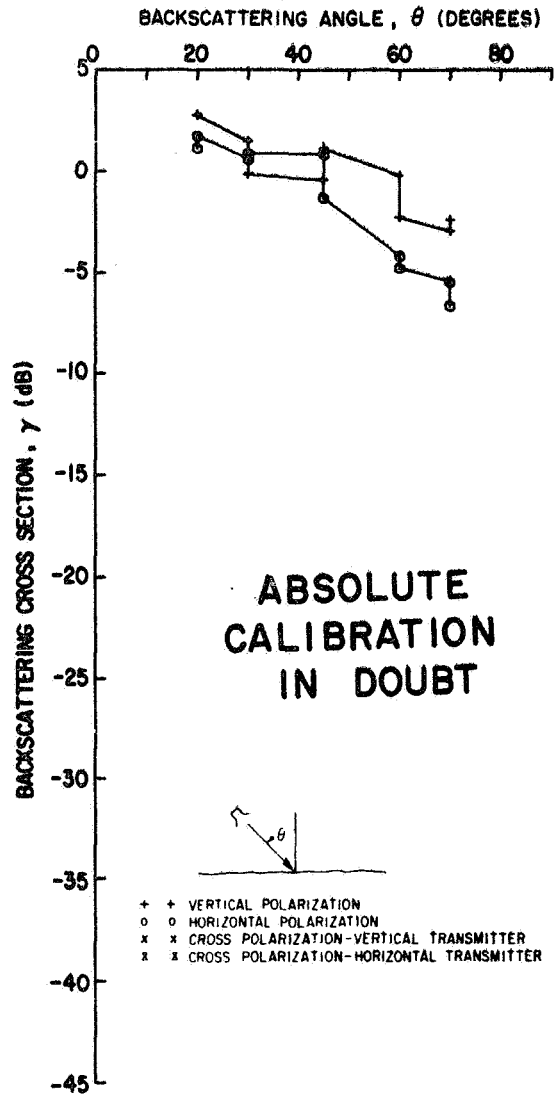


Fig. 14. Oats

GROUP 201
 FREQUENCY 10.0 GHZ
 OSU OATS
 DATE 27APR7

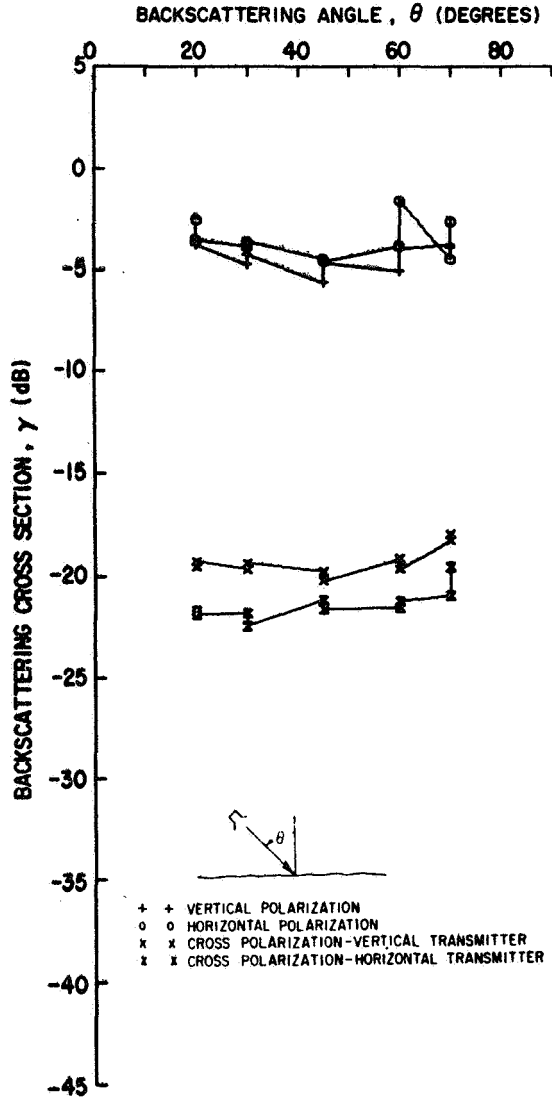


Fig. 15. Oats

GROUP 204
 FREQUENCY 1.8 GHZ
 OSU OATS
 DATE 4MAY7

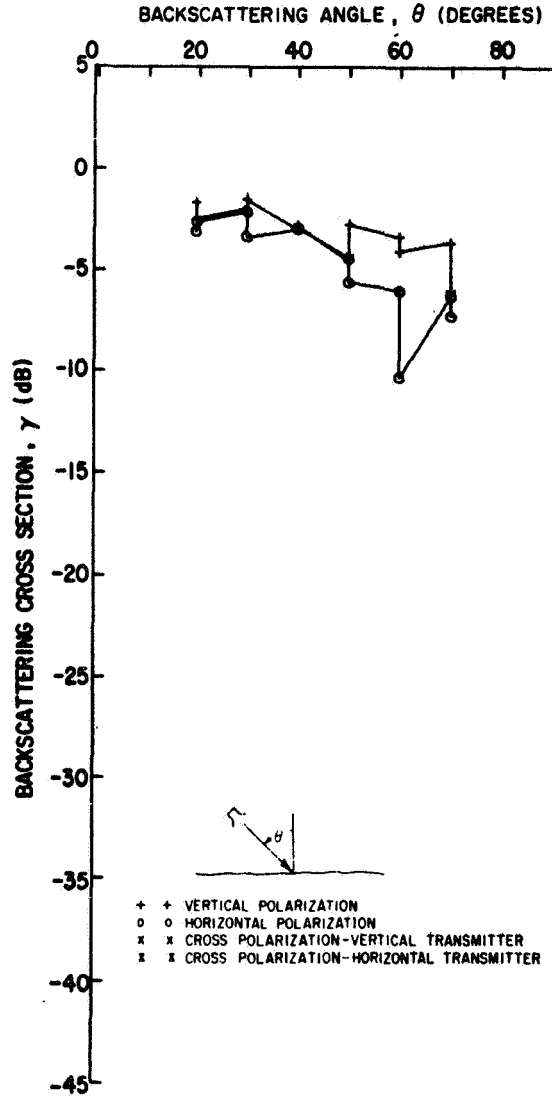


Fig. 16. Oats

GROUP 203
 FREQUENCY 10.0 GHZ
 OSU OATS
 DATE 4MAY7

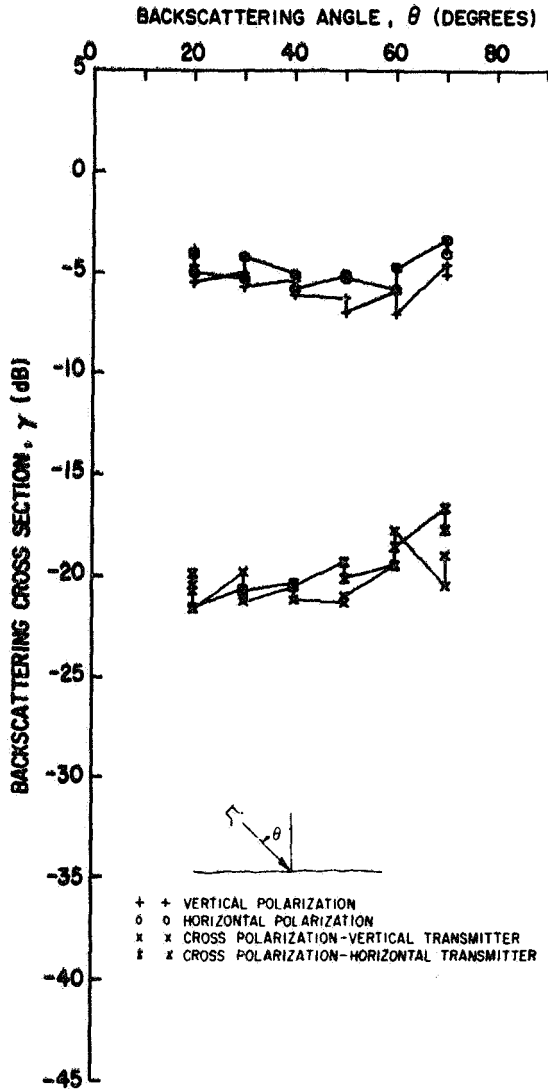


Fig. 17. Oats

GROUP 205
 FREQUENCY 10.0 GHZ
 OSU OATS
 DATE 18MAY7

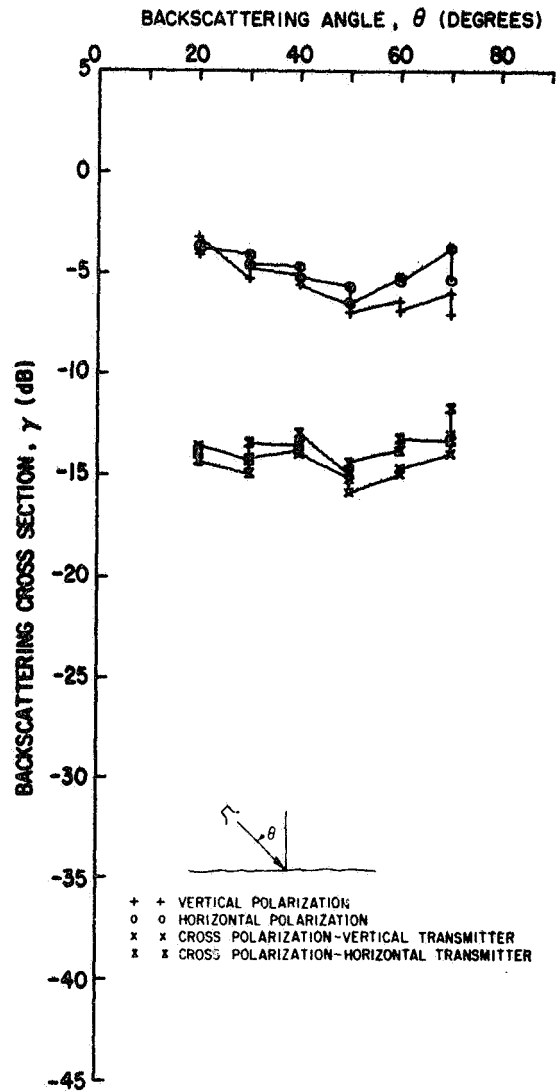


Fig. 18. Oats

GROUP 208
 FREQUENCY 1.8 GHZ
 OSU OATS
 DATE 23MAY7

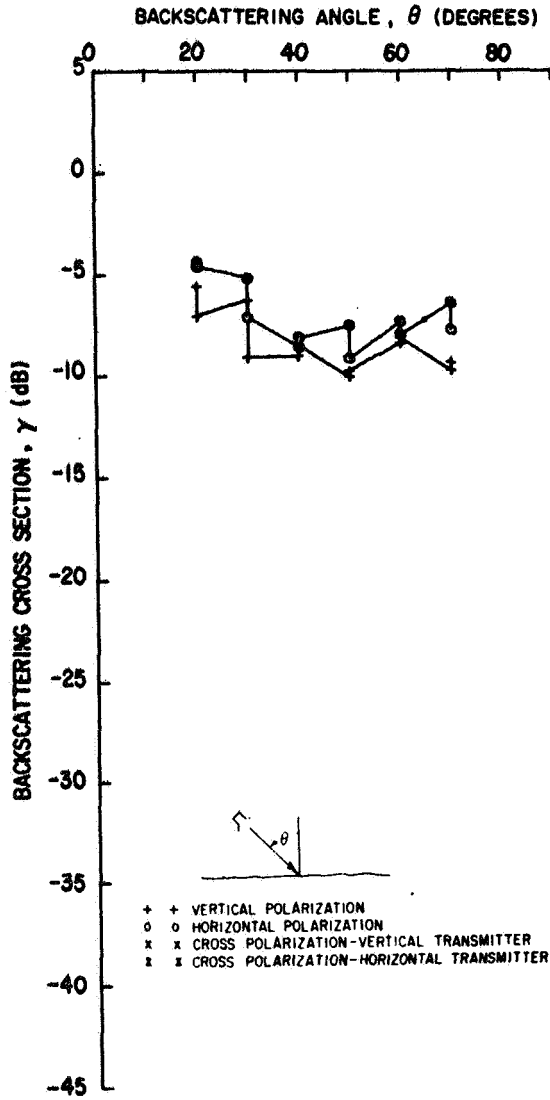


Fig. 19. Oats

GROUP 207
 FREQUENCY 10.0 GHZ
 OSU OATS
 DATE 23MAY7

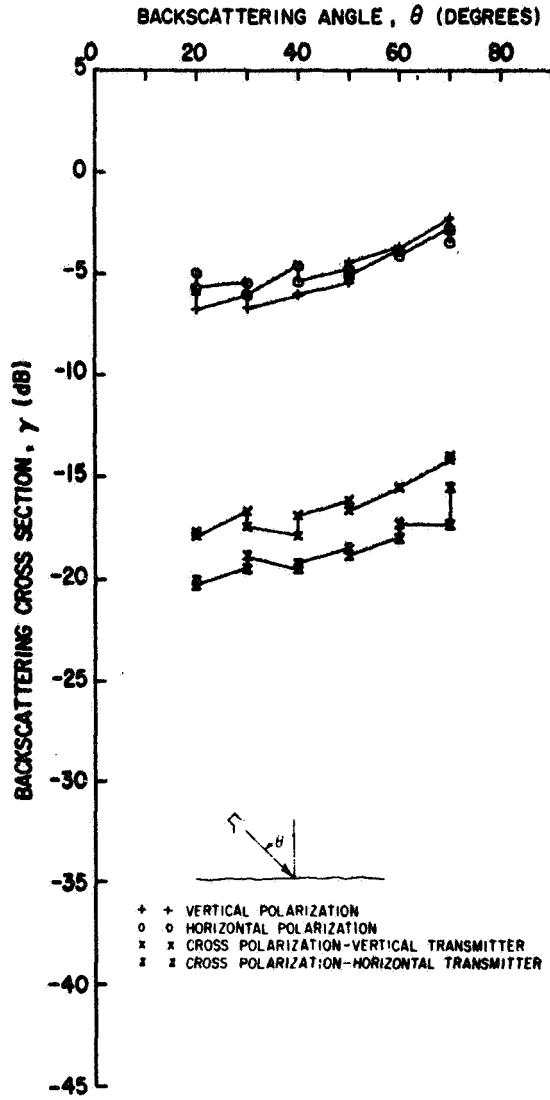


Fig. 20. Oats

GROUP 206
 FREQUENCY 35.0 GHZ
 OSU OATS
 DATE 23MAY7

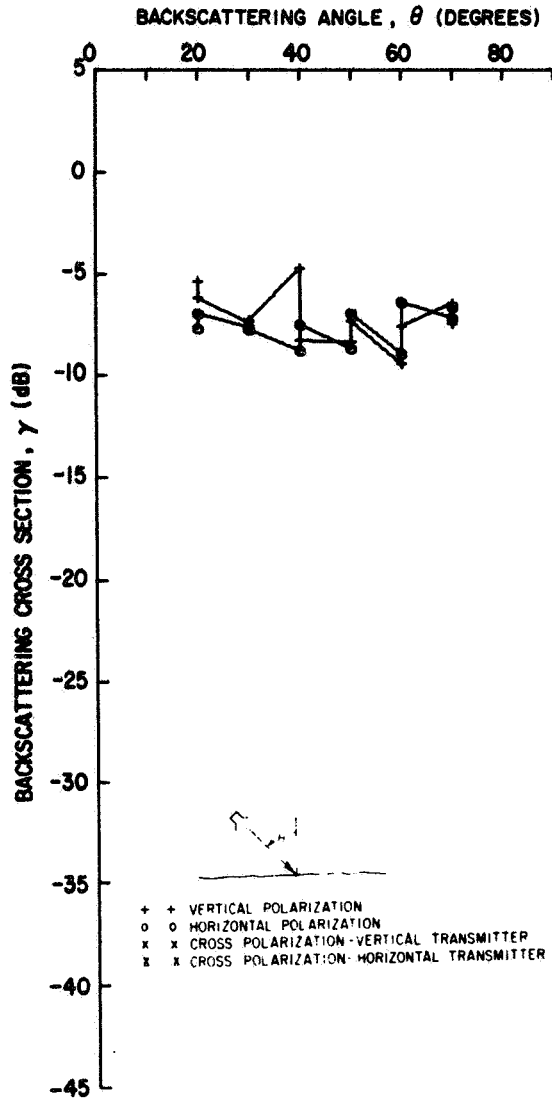


Fig. 21. Oats

GROUP 211
 FREQUENCY 1.8 GHZ
 OSU OATS
 DATE 14JUN7

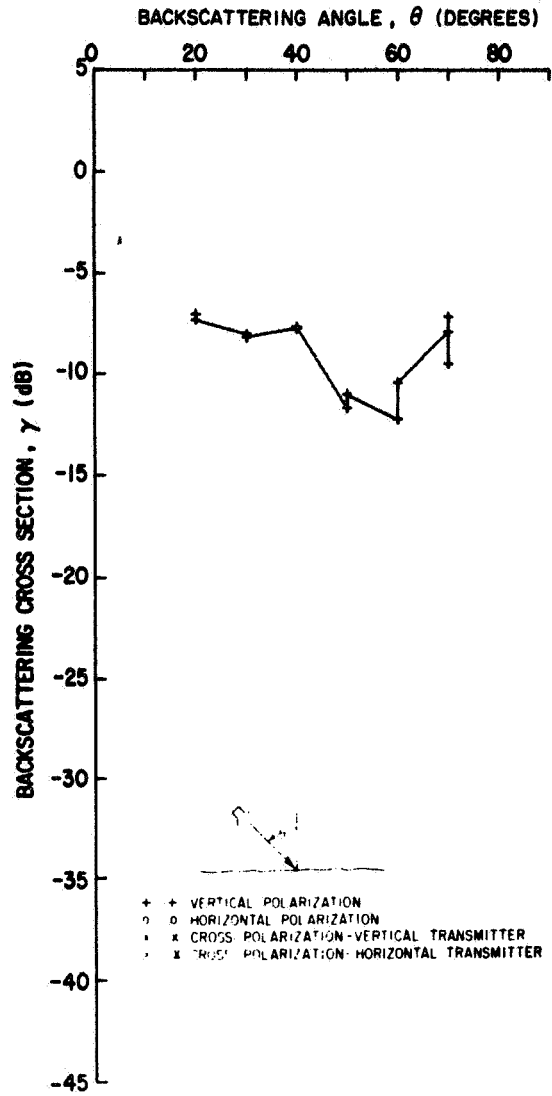


Fig. 22. Oats

GROUP 210
 FREQUENCY 10.0 GHZ
 OSU OATS
 DATE 14JUN7

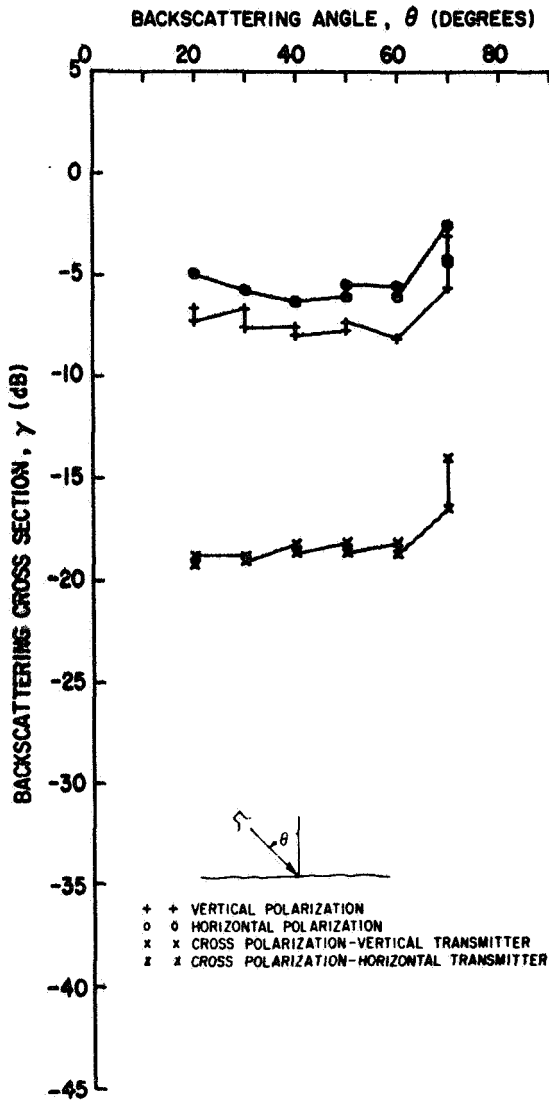


Fig. 23. Oats

GROUP 209
 FREQUENCY 35.0 GHZ
 OSU OATS
 DATE 14JUN7

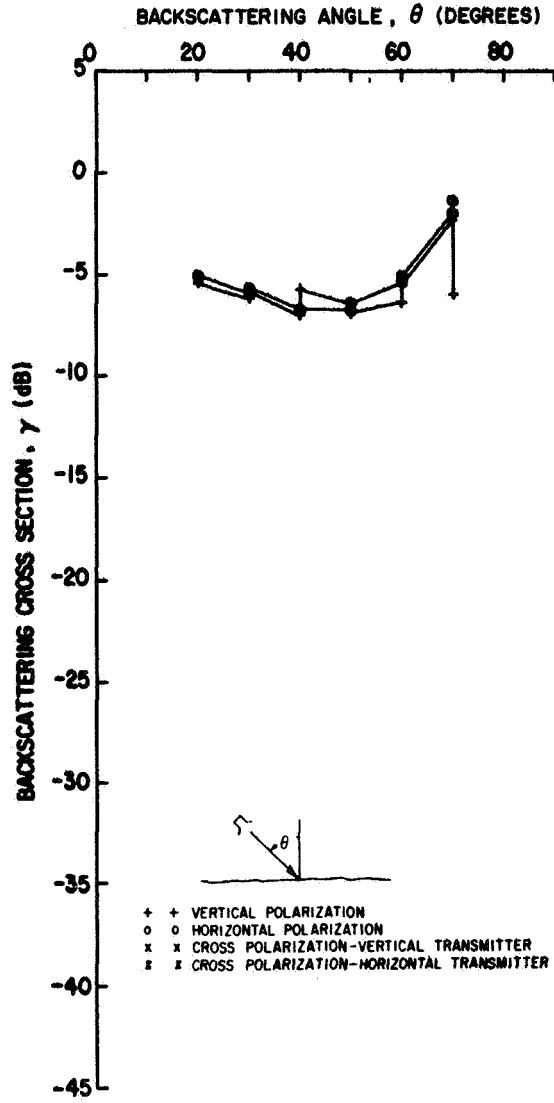


Fig. 24. Oats

GROUP 213
 FREQUENCY 1.8 GHZ
 OSU OATS
 DATE 15JUN7

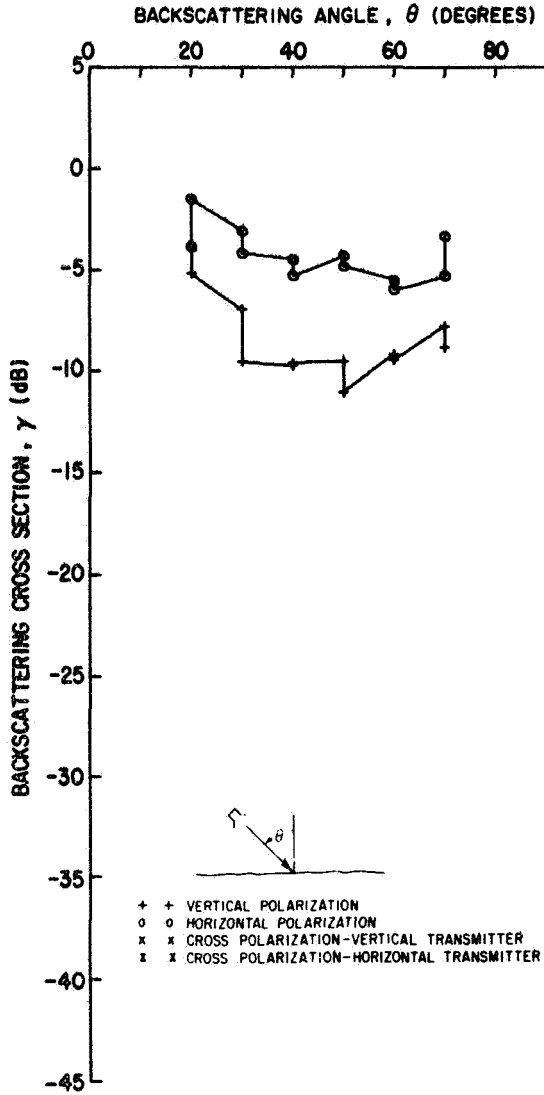


Fig. 25. Oats

GROUP 212
 FREQUENCY 10.0 GHZ
 OSU OATS
 DATE 15JUN7

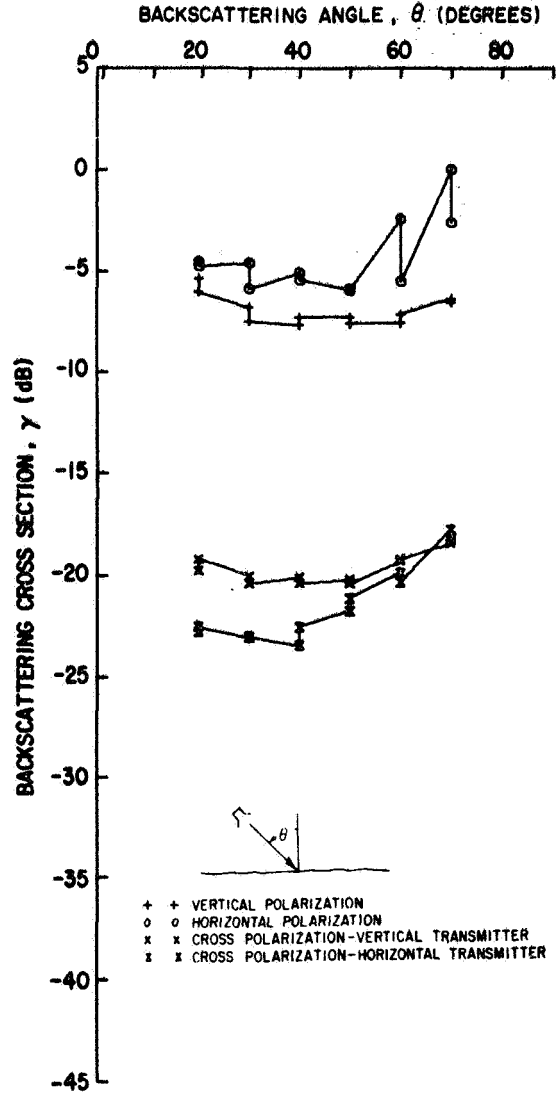


Fig. 26. Oats

GROUP 216
 FREQUENCY 1.8 GHZ
 OSU SOYBEANS
 DATE 26JUN7

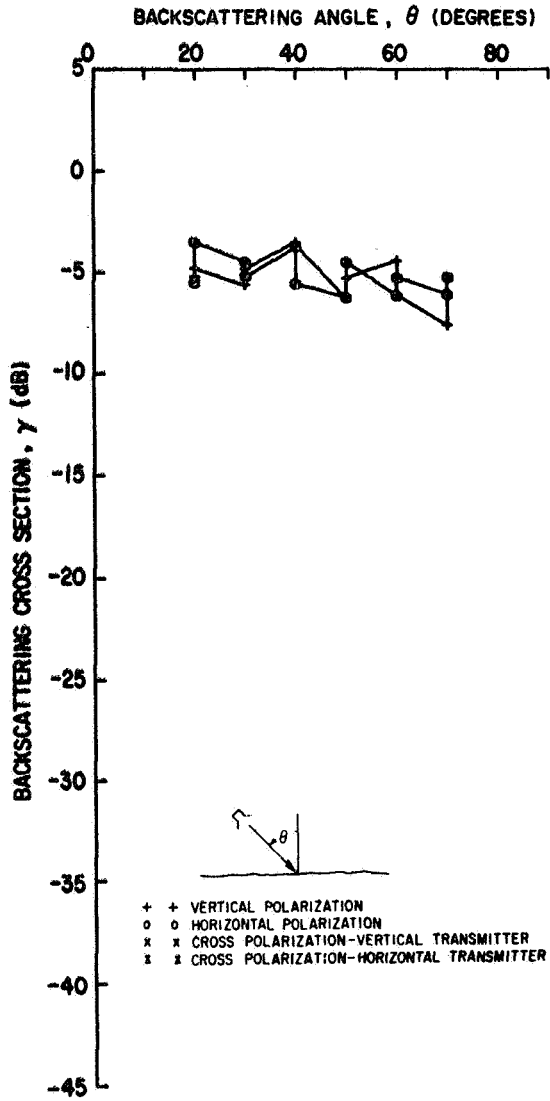


Fig. 27. Soybeans

GROUP 215
 FREQUENCY 10.0 GHZ
 OSU SOYBEANS
 DATE 26JUN7

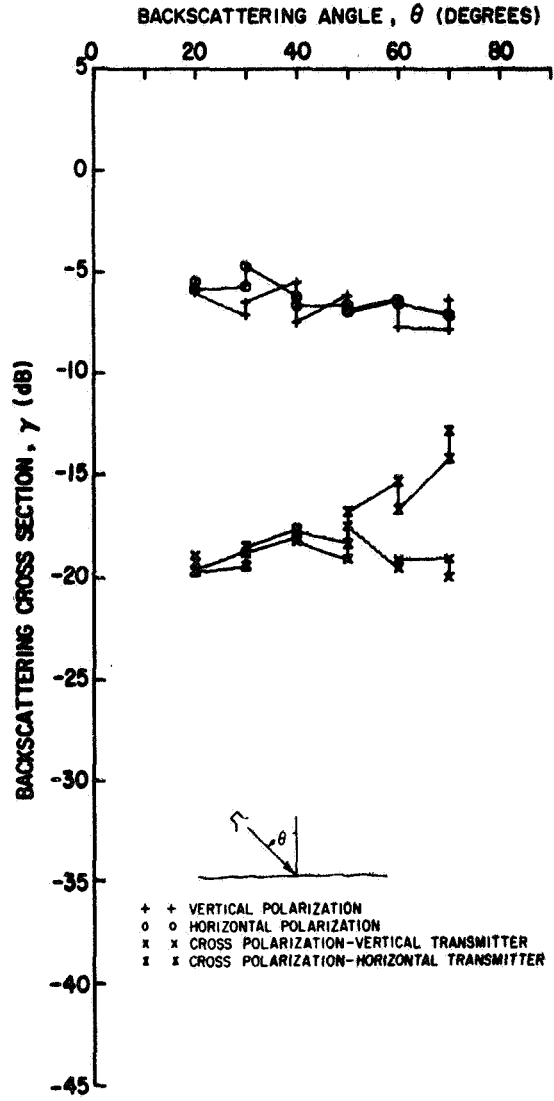


Fig. 28. Soybeans

GROUP 214
 FREQUENCY 35.0 GHZ
 OSU SOYBEANS
 DATE 26JUN7

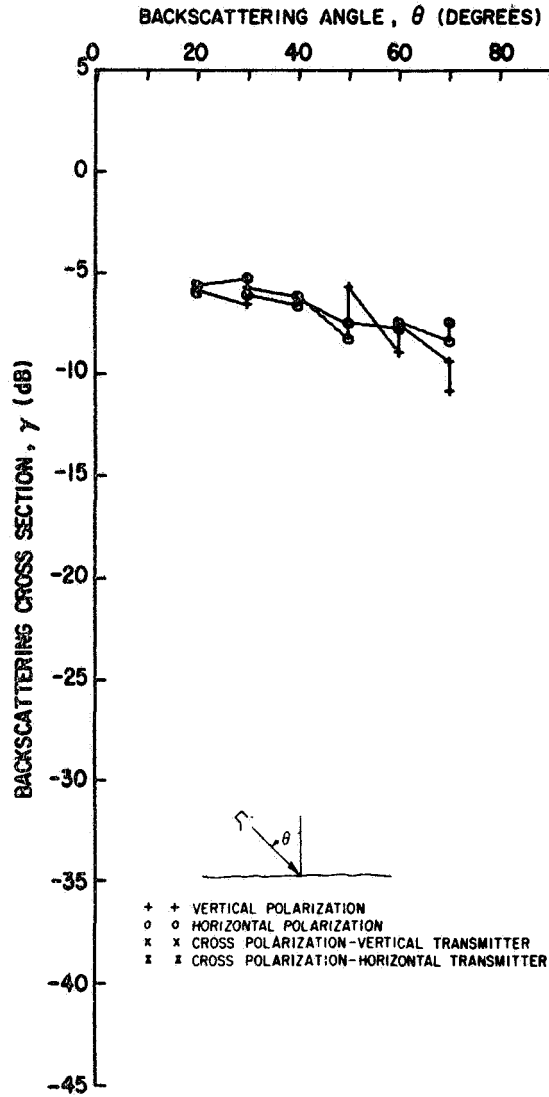


Fig. 29. Soybeans

GROUP 219
 FREQUENCY 1.8 GHZ
 OSU SOYBEANS
 DATE 27JUL7

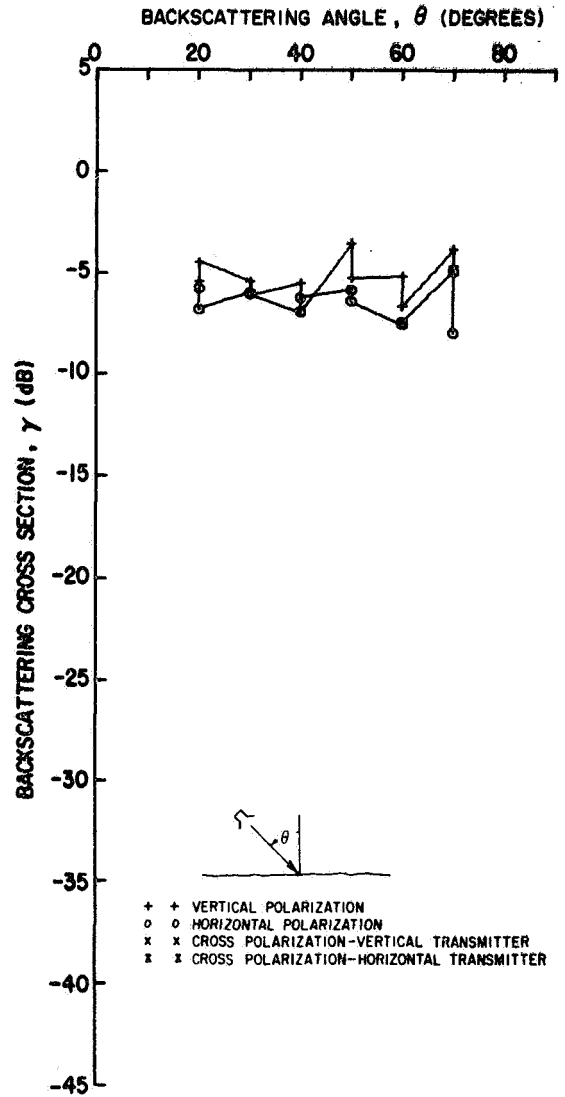


Fig. 30. Soybeans

GROUP 218
 FREQUENCY 10.0 GHZ
 OSU SOYBEANS
 DATE 27JUL7

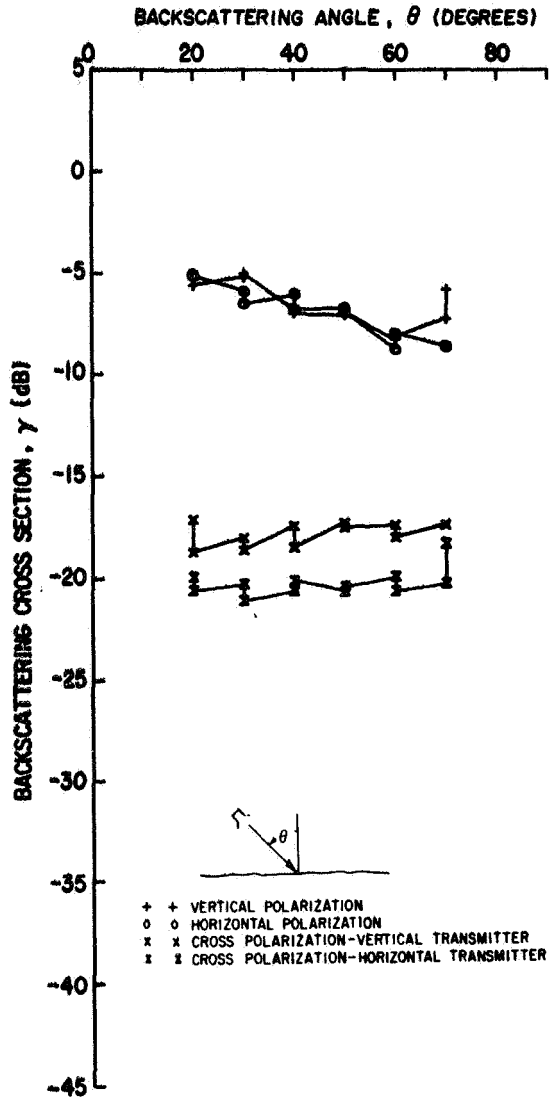


Fig. 31. Soybeans

GROUP 217
 FREQUENCY 35.0 GHZ
 OSU SOYBEANS
 DATE 27JUL7

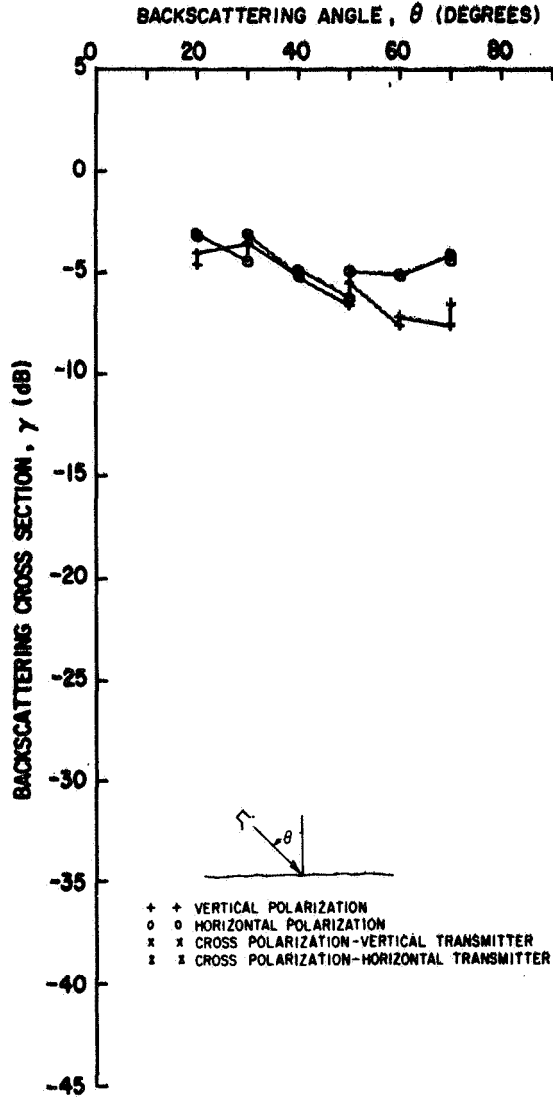


Fig. 32. Soybeans

GROUP 222
 FREQUENCY 1.8 GHZ
 OSU SOYBEANS
 DATE 11AUG7

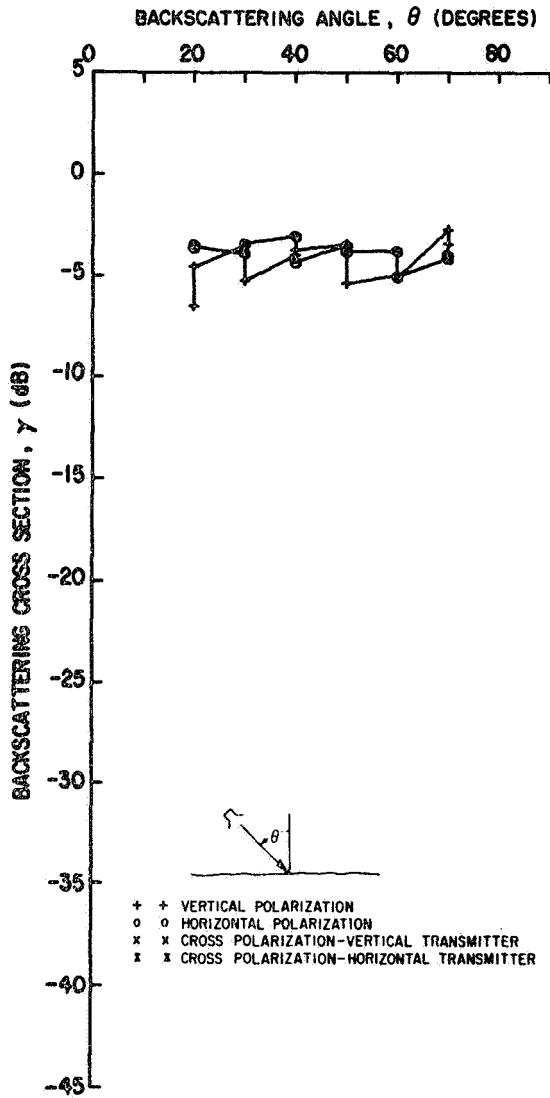


Fig. 33. Soybeans

GROUP 221
 FREQUENCY 10.0 GHZ
 OSU SOYBEANS
 DATE 11AUG7

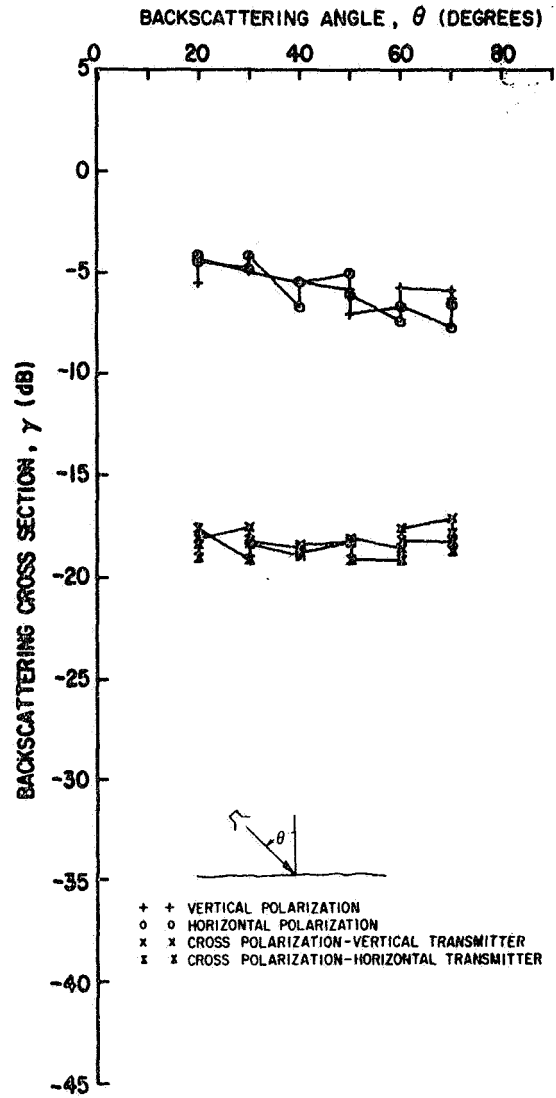


Fig. 34. Soybeans

GROUP 220
 FREQUENCY 35.0 GHZ
 OSU SOYBEANS
 DATE 11AUG7

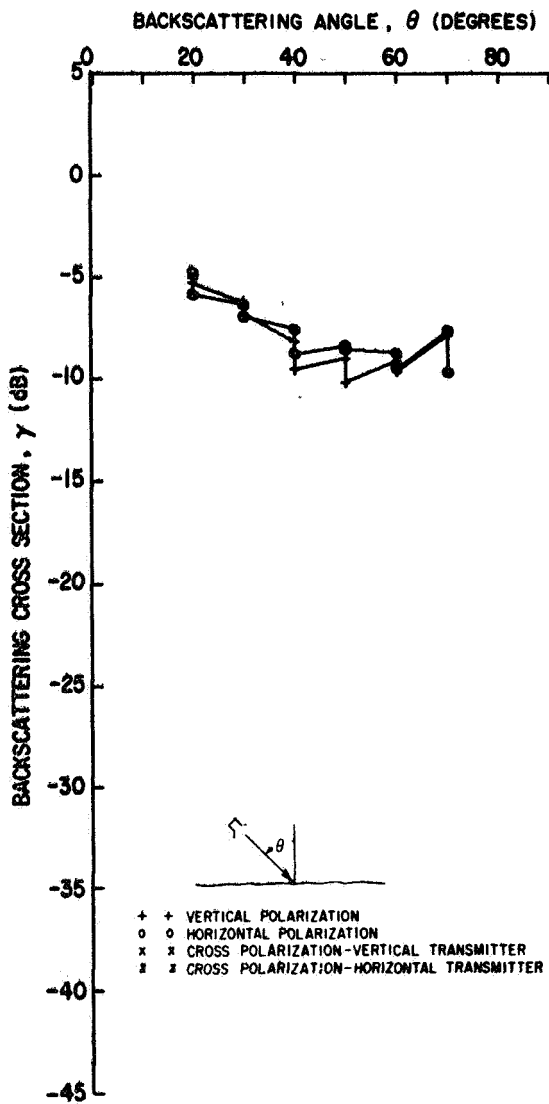


Fig. 35. Soybeans

GROUP 225
 FREQUENCY 1.8 GHZ
 OSU SOYBEANS
 DATE 1SEP7

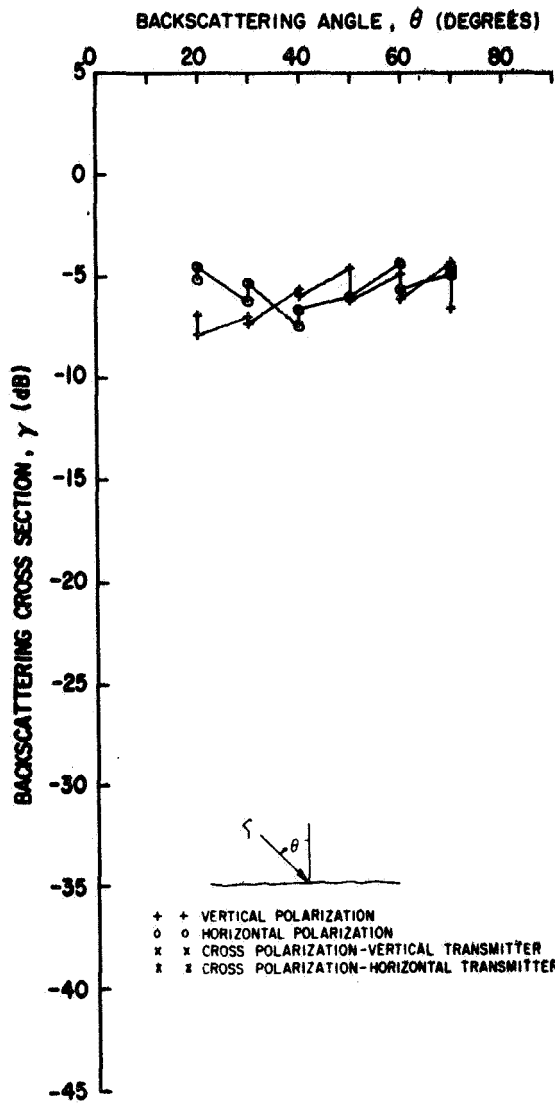


Fig. 36. Soybeans

GROUP 224
 FREQUENCY 10.0 GHZ
 OSU SOYBEANS
 DATE 1SEP7

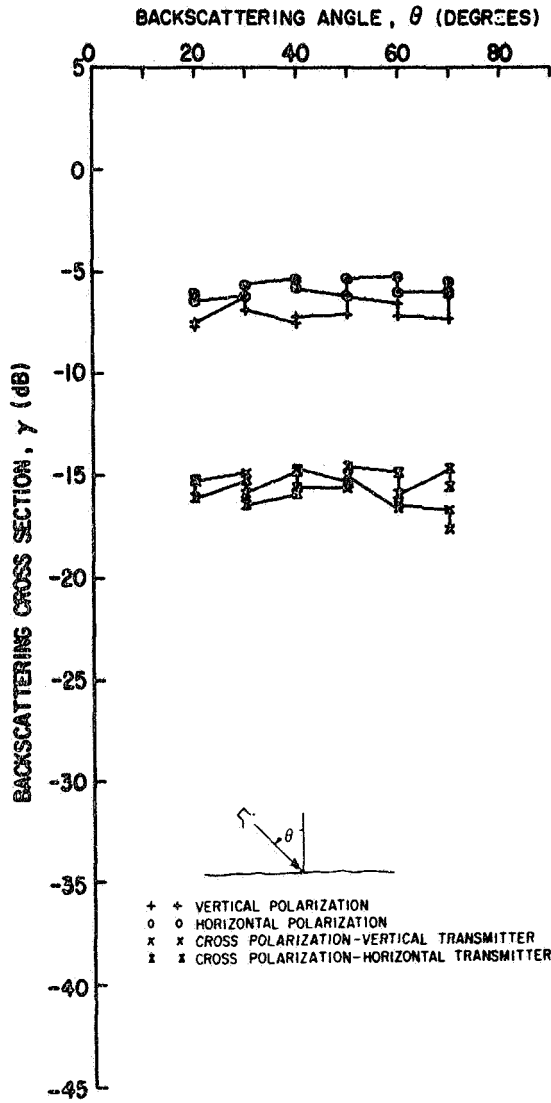


Fig. 37. Soybeans

GROUP 223
 FREQUENCY 35.0 GHZ
 OSU SOYBEANS
 DATE 1SEP7

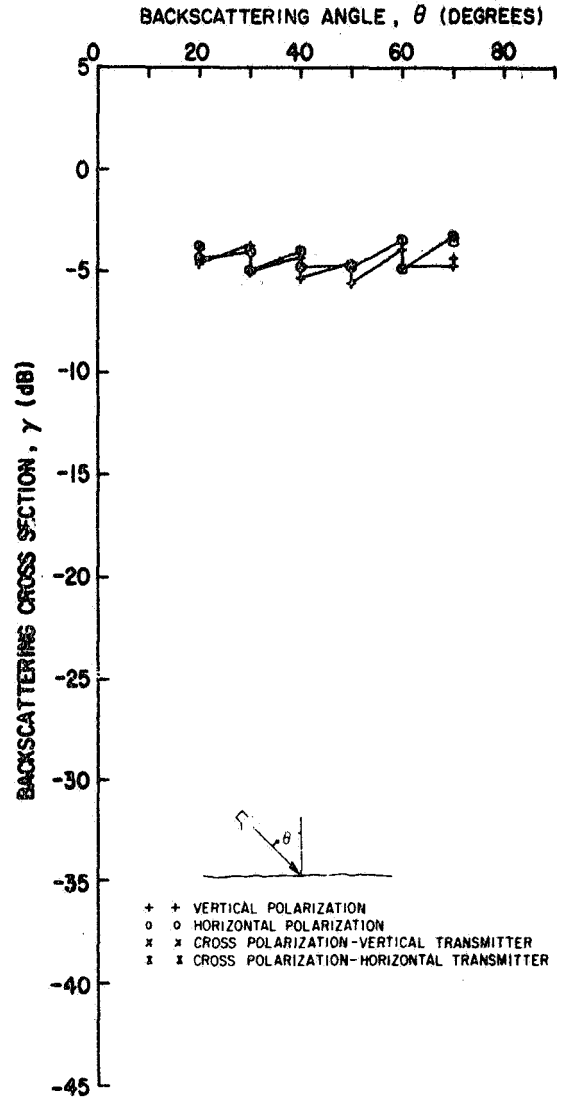


Fig. 38. Soybeans

GROUP 228
 FREQUENCY 1.8 GHZ
 OSU SOYBEANS
 DATE 15SEP7

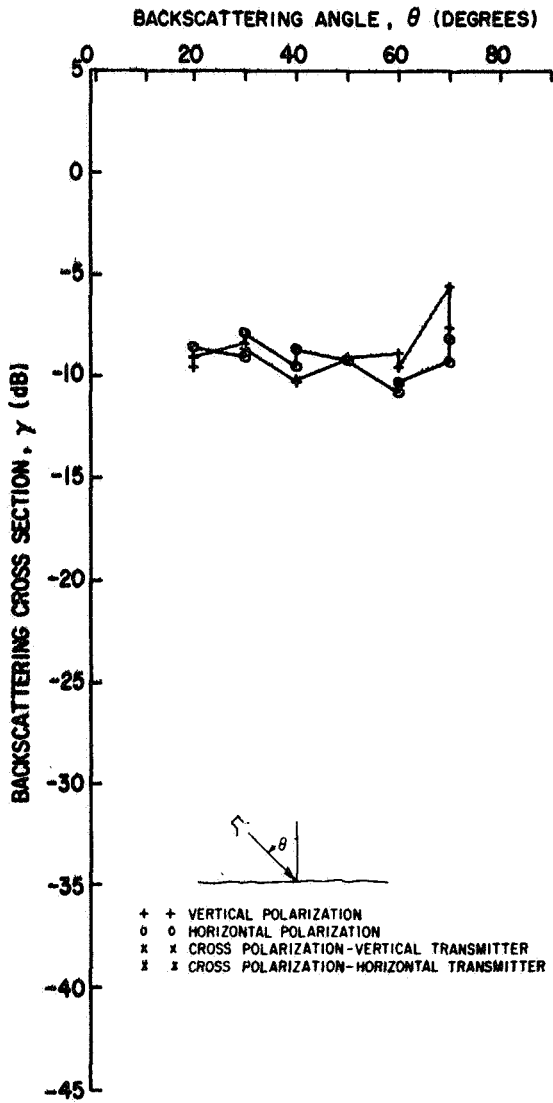


Fig. 39. Soybeans

GROUP 227
 FREQUENCY 10.0 GHZ
 OSU SOYBEANS
 DATE 15SEP7

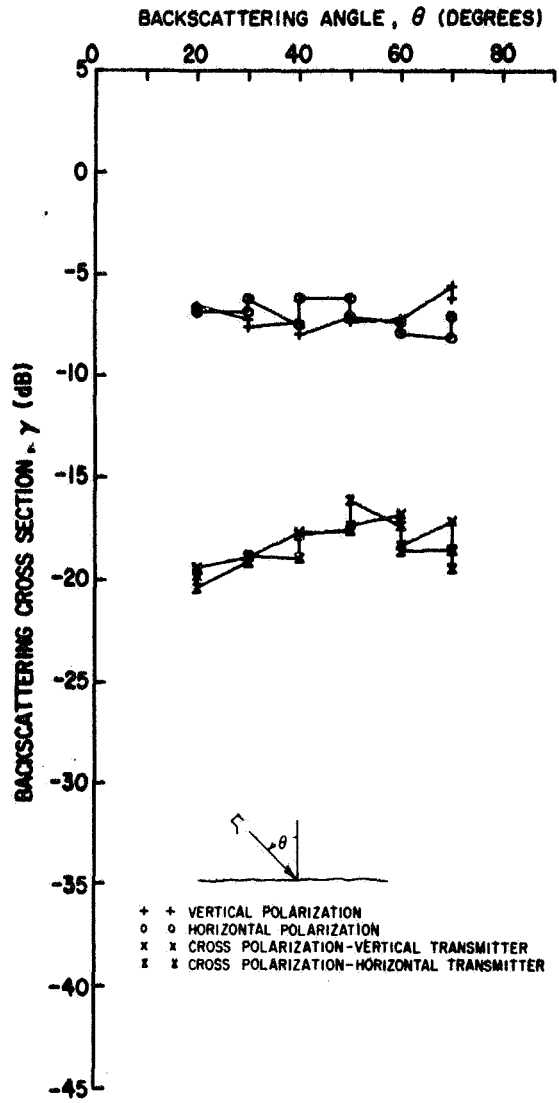


Fig. 40. Soybeans

GROUP 226
 FREQUENCY 35.0 GHz
 OSU SOYBEANS
 DATE 15SEP7

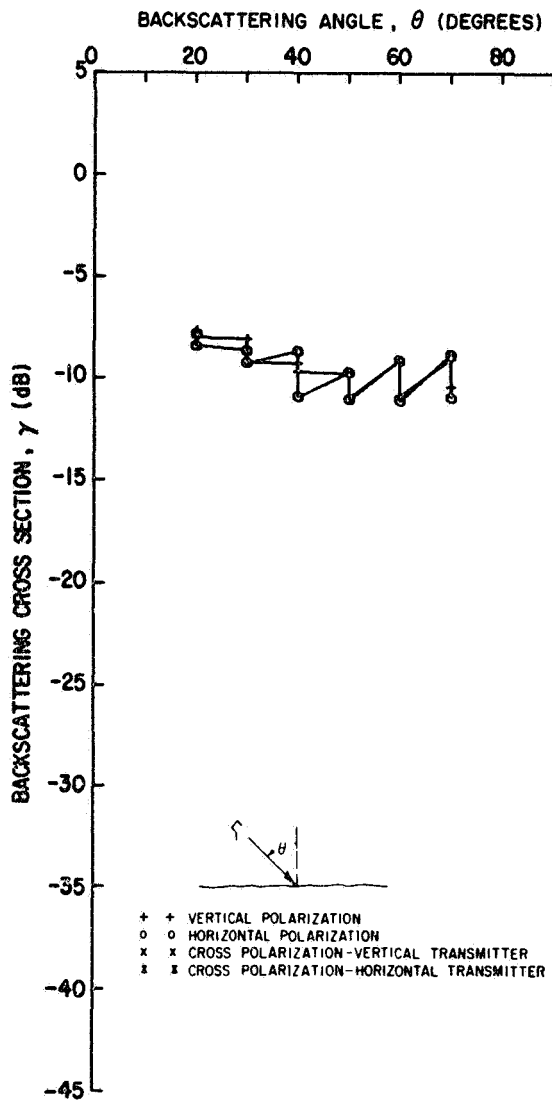


Fig. 41. Soybeans

GROUP 112
 FREQUENCY 1.8 GHZ
 PURDUE SB 16
 DATE 06AUG6

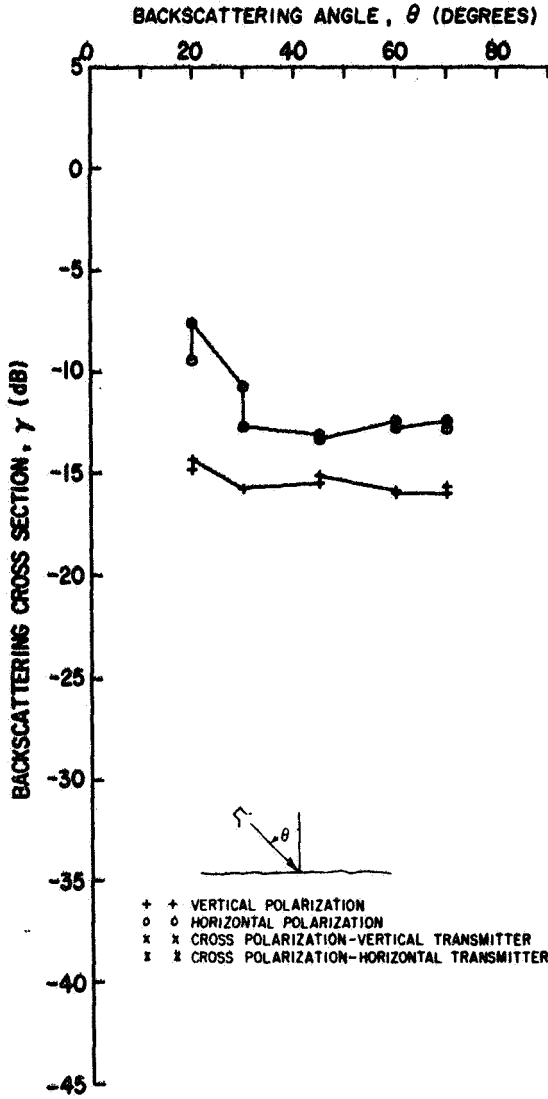


Fig. 42. Soybeans

GROUP 109
 FREQUENCY 10.0 GHZ
 PURDUE SB 16
 DATE 03AUG6

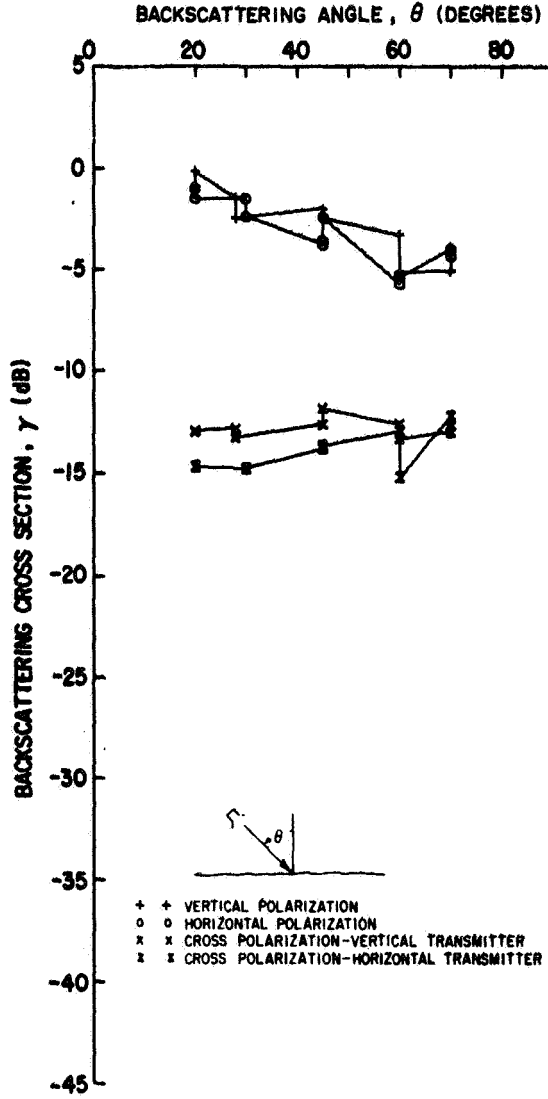


Fig. 43. Soybeans

GROUP 111
 FREQUENCY 15.0 GHZ
 PURDUE SB 16
 DATE 06AUG6

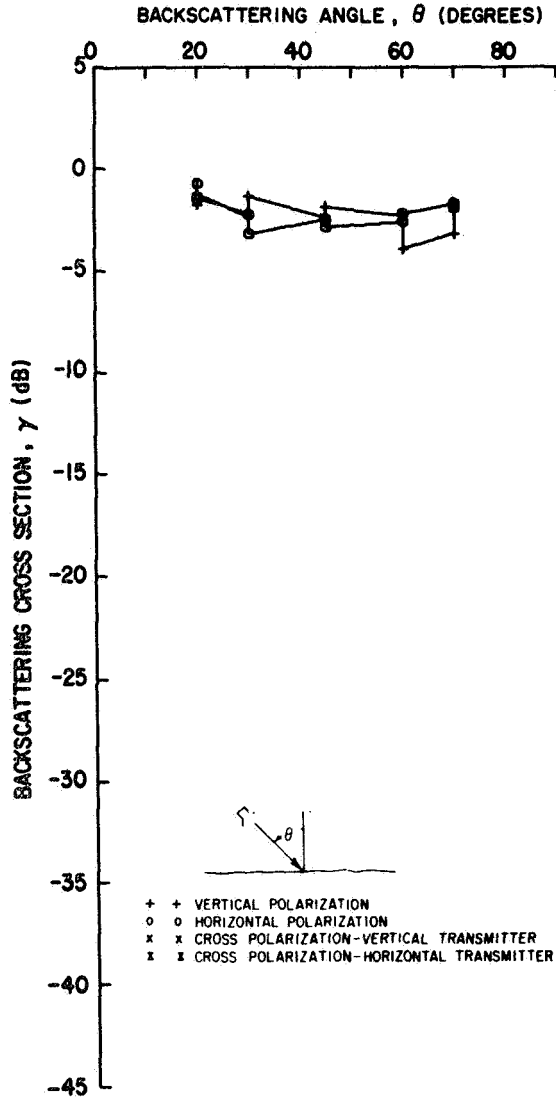


Fig. 44. Soybeans

GROUP 110
 FREQUENCY 35.0 GHZ
 PURDUE SB 16
 DATE 03AUG6

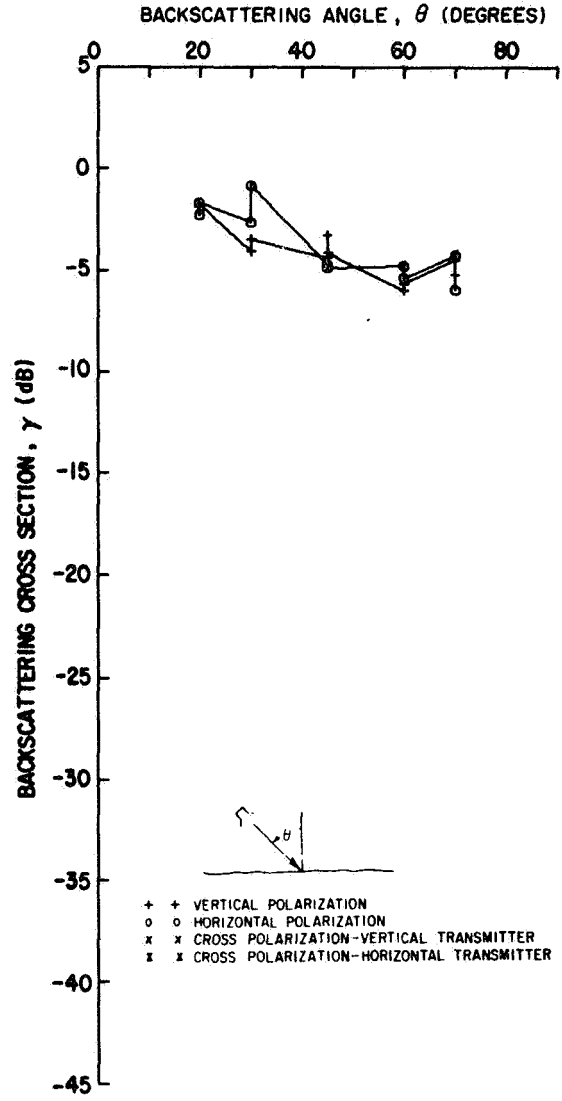


Fig. 45. Soybeans

GROUP 123
 FREQUENCY 10.0 GHZ
 SNDFM SB 1
 DATE 05AUG6

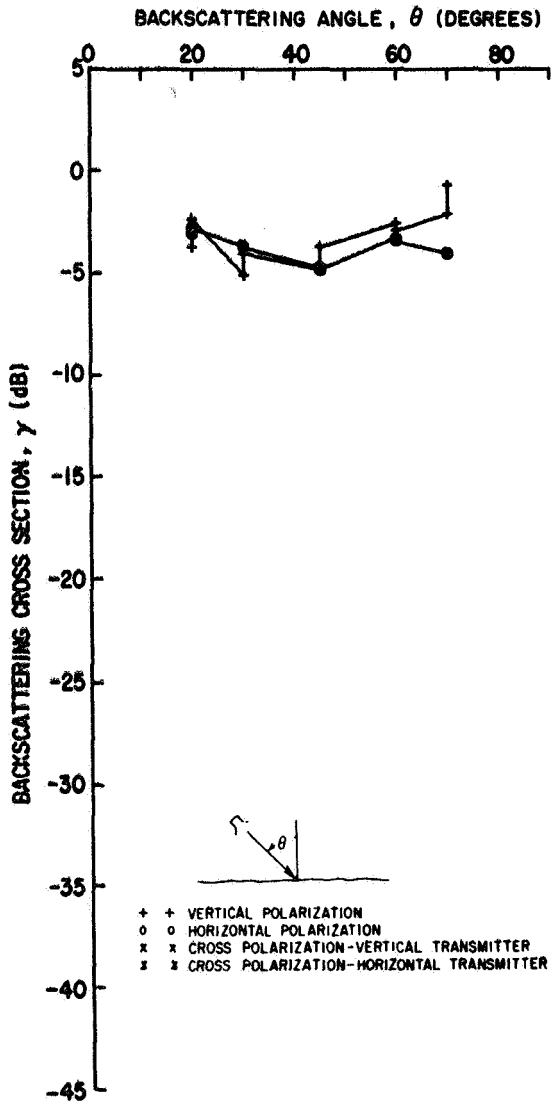


Fig. 46. Soybeans, irrigated

GROUP 125
 FREQUENCY 10.0 GHZ
 SNDFM SB N1
 DATE 05AUG6

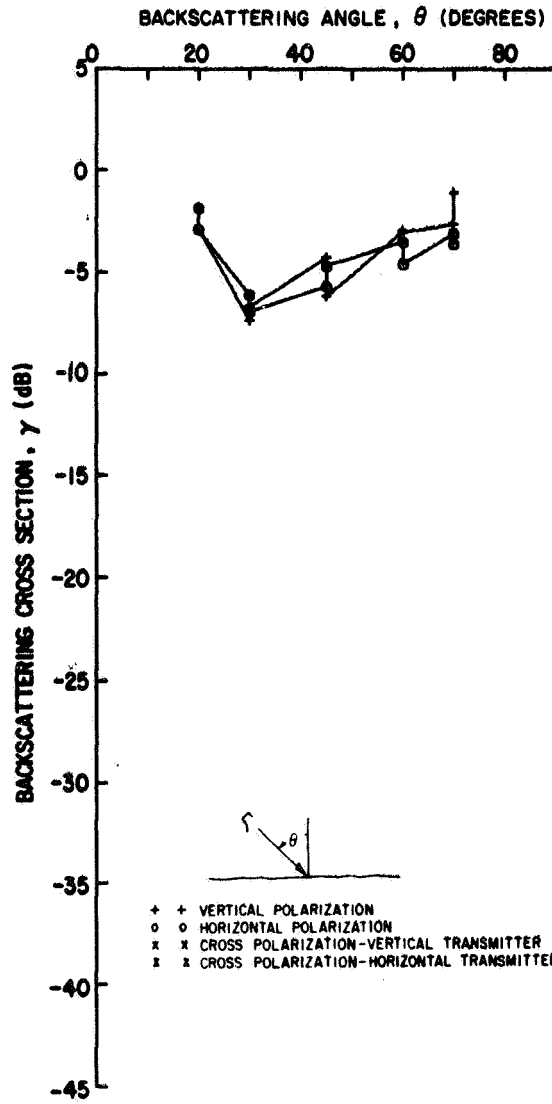


Fig. 47. Soybeans, non-irrigated

GROUP 124
 FREQUENCY 35.0 GHZ
 SNDFM SB I
 DATE 05AUG6

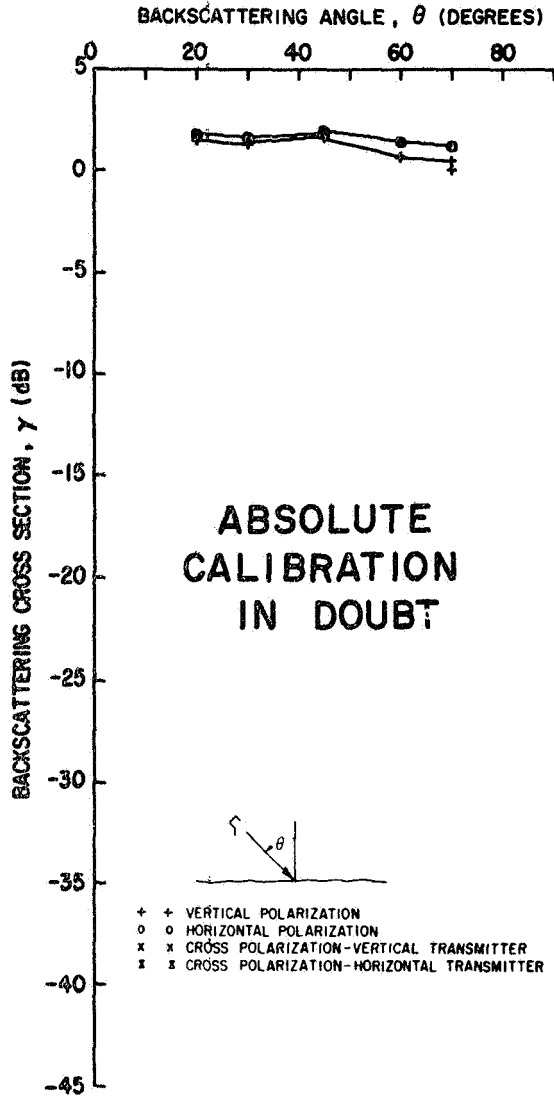


Fig. 48. Soybeans, irrigated

GROUP 126
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 DATE 05AUG6

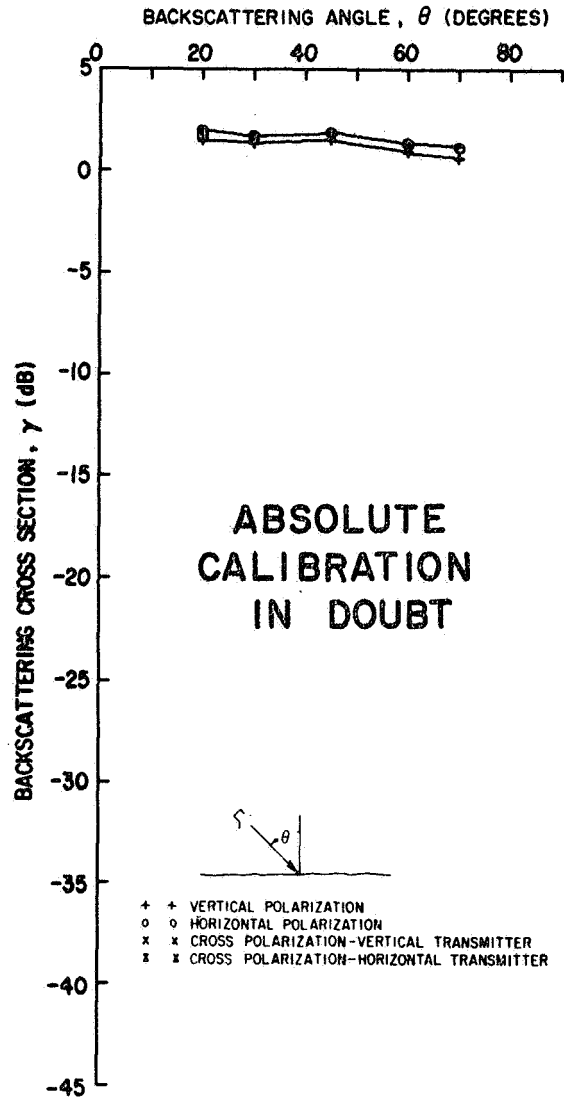


Fig. 49. Soybeans, non-irrigated

GROUP 119
 FREQUENCY 10.0 GHZ
 SNDFM SQR 1
 DATE 04AUG6

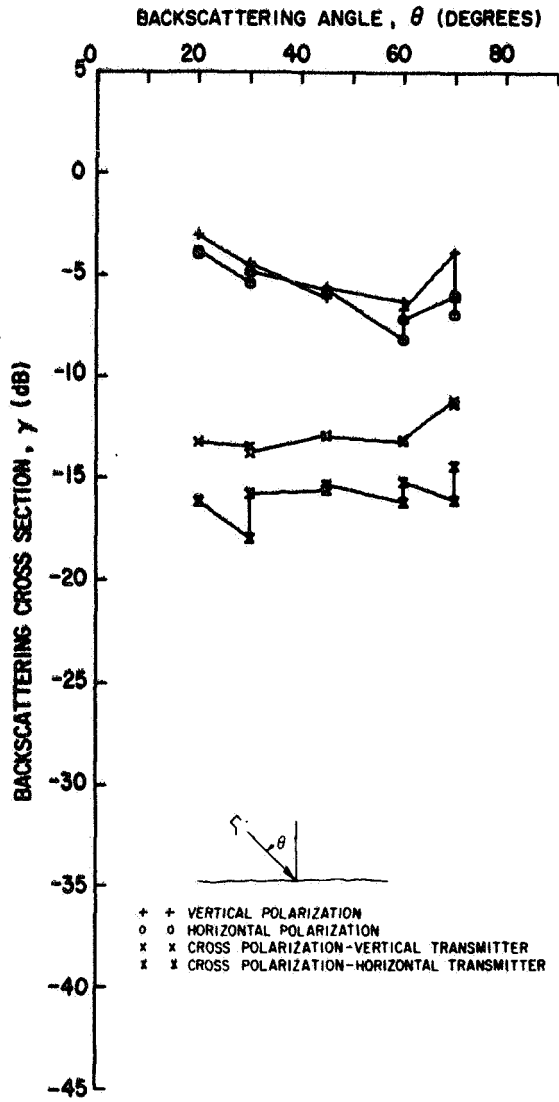


Fig. 50. Sorghum, irrigated

GROUP 121
 FREQUENCY 10.0 GHZ
 SNDFM SOG N1
 DATE 04AUG6

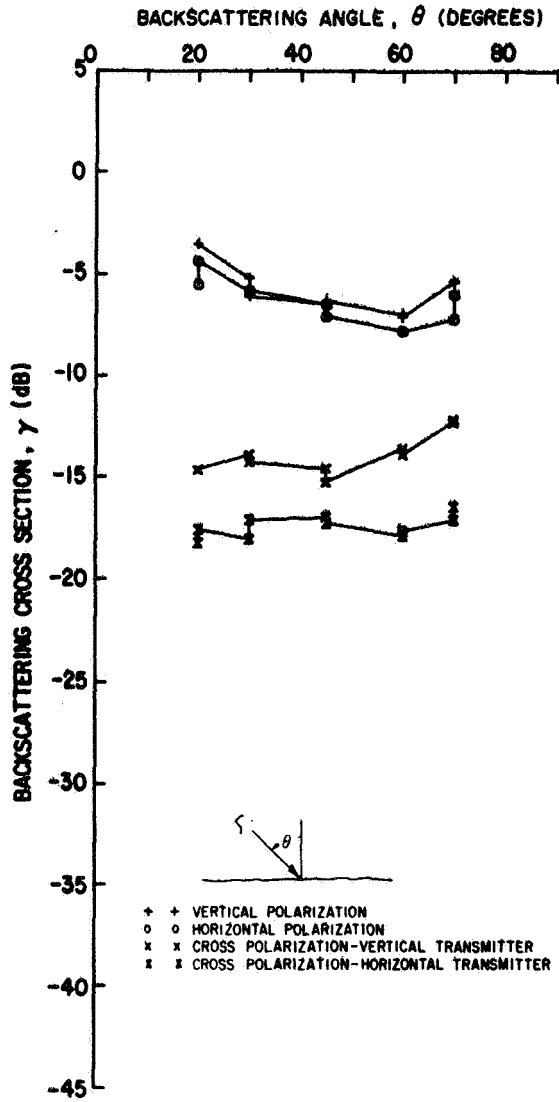


Fig. 51. Sorghum, non-irrigated

GROUP 120
 FREQUENCY 35.0 GHZ
 SNDFM SOR I
 DATE 04AUG6

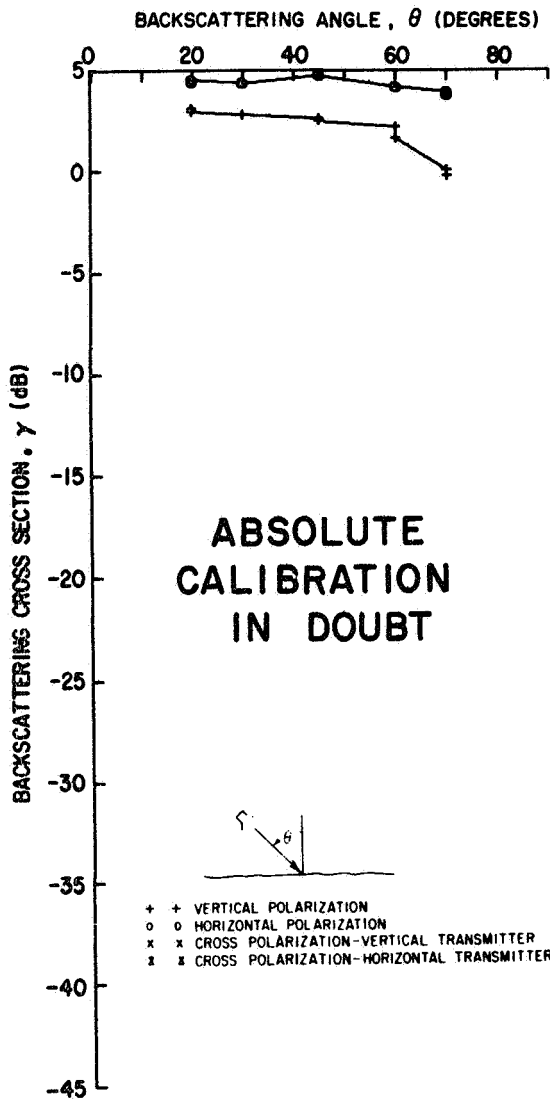


Fig. 52. Sorghum, irrigated

GROUP 122
 FREQUENCY 35.0 GHZ
 SNDFM SOR NI
 DATE 04AUG6

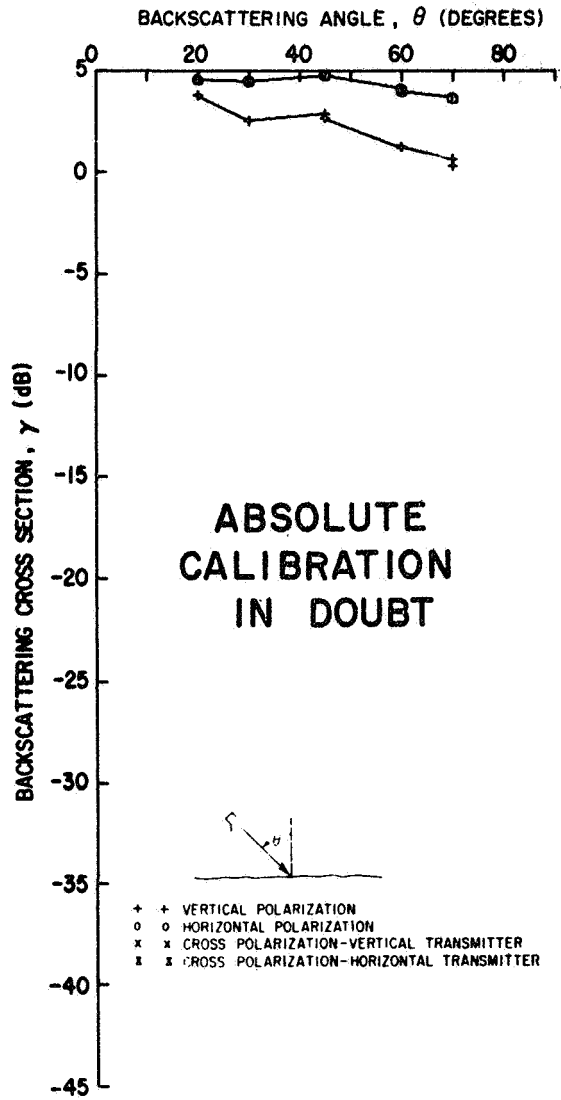


Fig. 53. Sorghum, non-irrigated

GROUP 127
 FREQUENCY 10.0 GHZ
 SNDFM SL I
 DATE 05RUG6

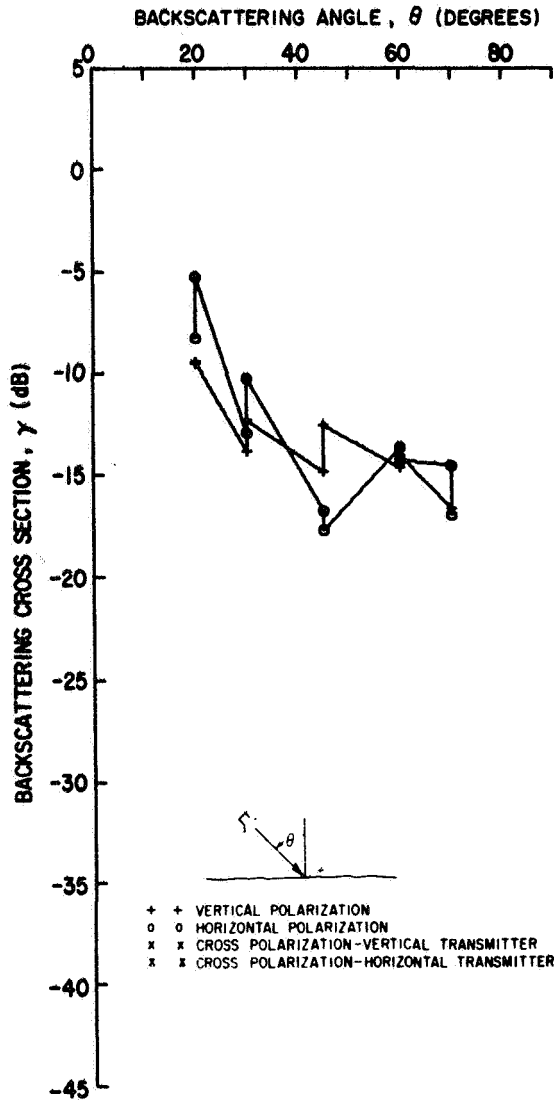


Fig. 54. Bare soil, irrigated

GROUP 129
 FREQUENCY 10.0 GHZ
 SNDFM SL N1
 DATE 05RUG6

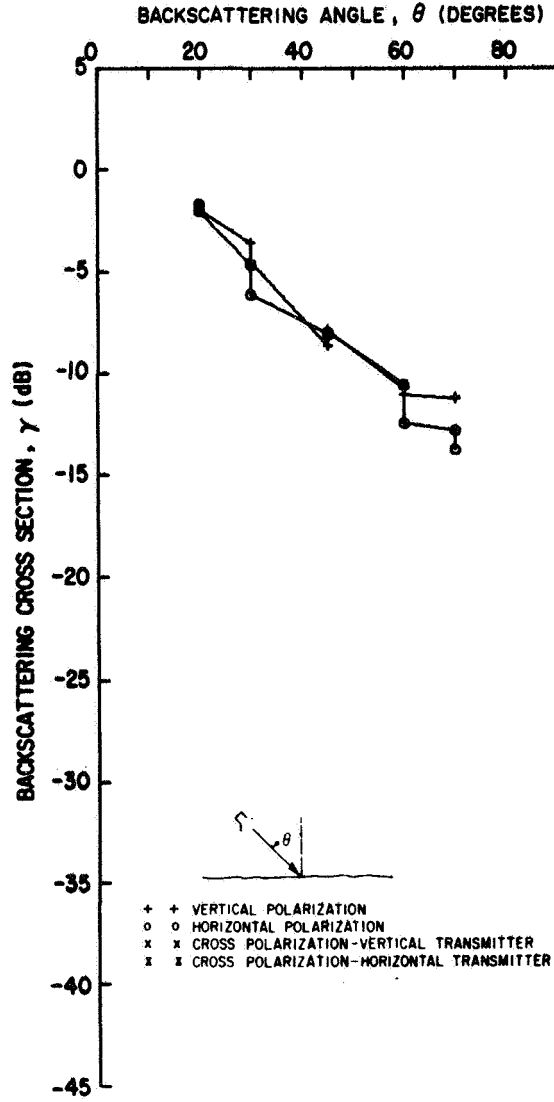


Fig. 55. Bare soil, non-irrigated

GROUP 128
 FREQUENCY 35.0 GHZ
 SNDFM SL I
 DATE 05RUG6

GROUP 130
 FREQUENCY 35.0 GHZ
 SNDFM SL NI
 DATE 05RUG6

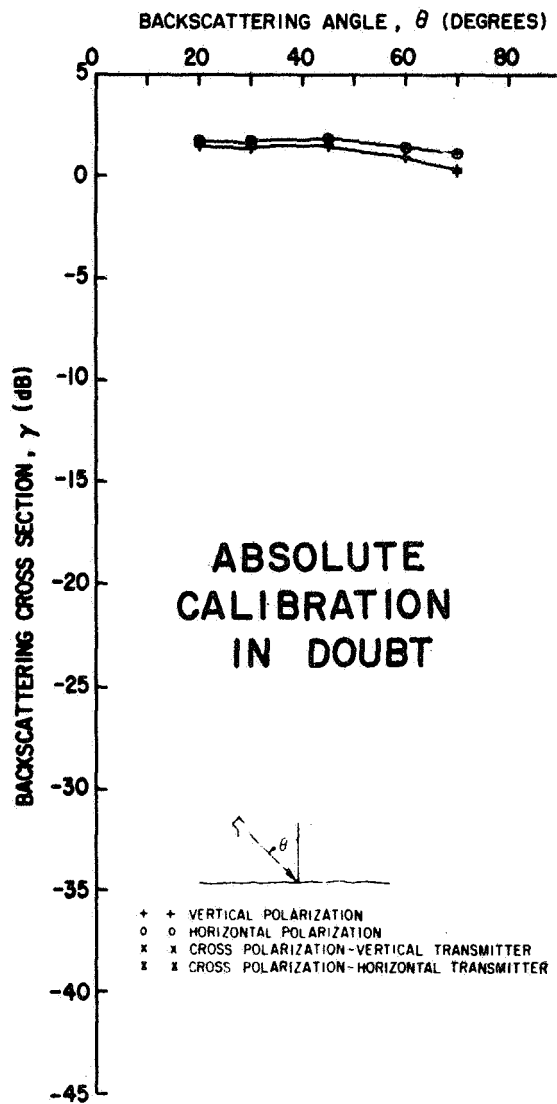
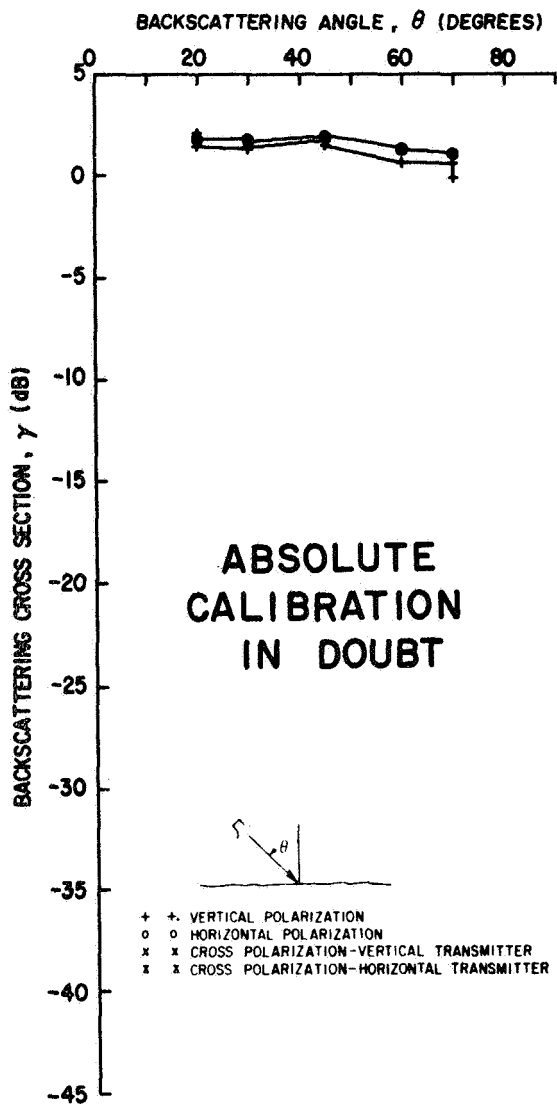


Fig. 56. Bare soil, irrigated

Fig. 57. Bare soil, non-irrigated

GROUP 115
 FREQUENCY 10.0 GHz
 SNDFM SG I
 DATE 04AUG6

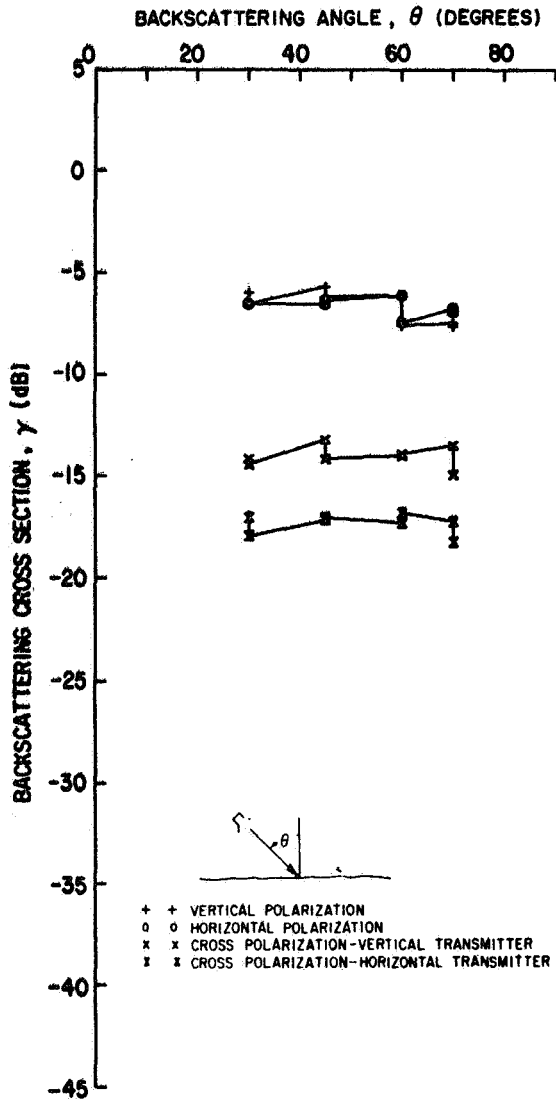


Fig. 58. Sudan grass, irrigated

GROUP 117
 FREQUENCY 10.0 GHz
 SNDFM SG N1
 DATE 04AUG6

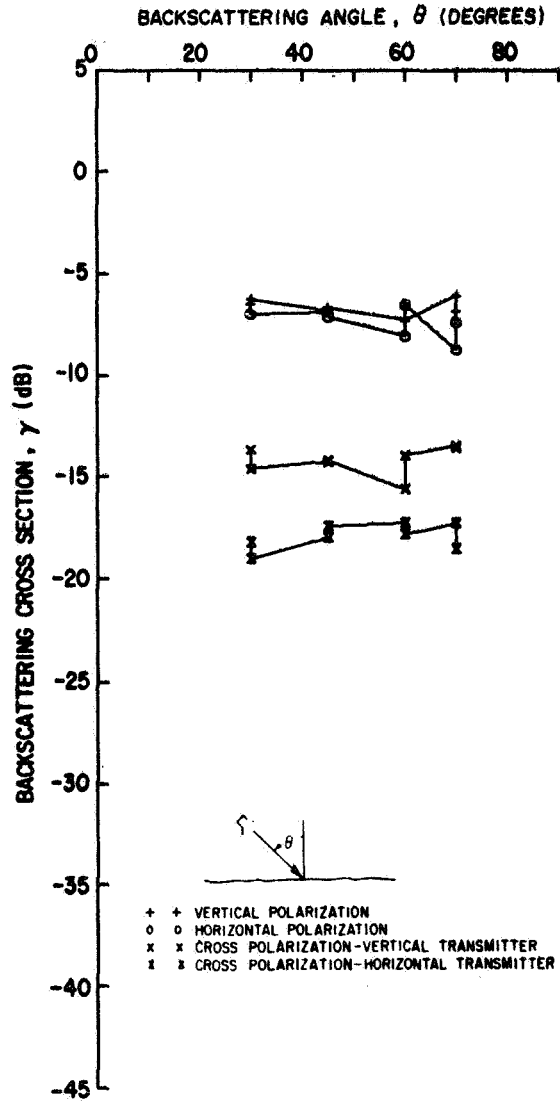


Fig. 59. Sudan grass, non-irrigated

GROUP 116
 FREQUENCY 35.0 GHZ
 SNDFM SG 1
 DATE 04AUG6

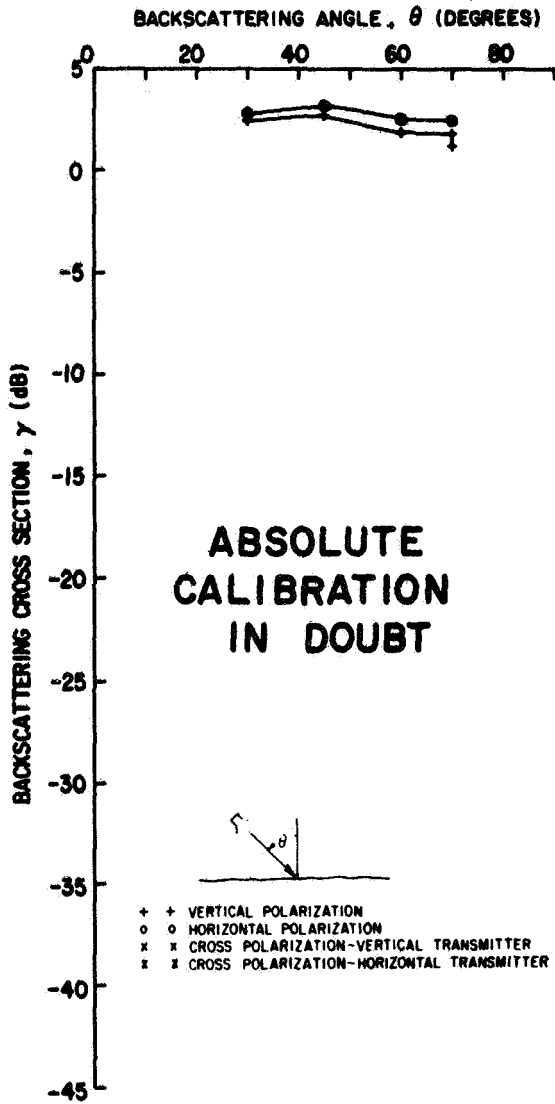


Fig. 60. Sudan grass, irrigated

GROUP 118
 FREQUENCY 35.0 GHZ
 SNDFM SG N1
 DATE 04AUG6

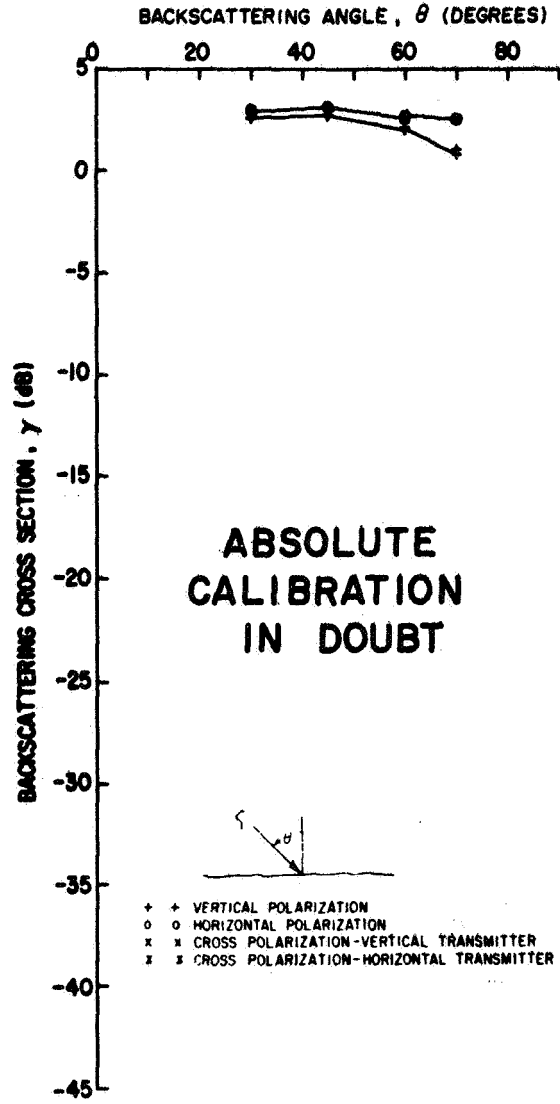


Fig. 61. Sudan grass, non-irrigated

GROUP 133
 FREQUENCY 10.0 GHZ
 OSU SCANTL
 DATE 30AUG6

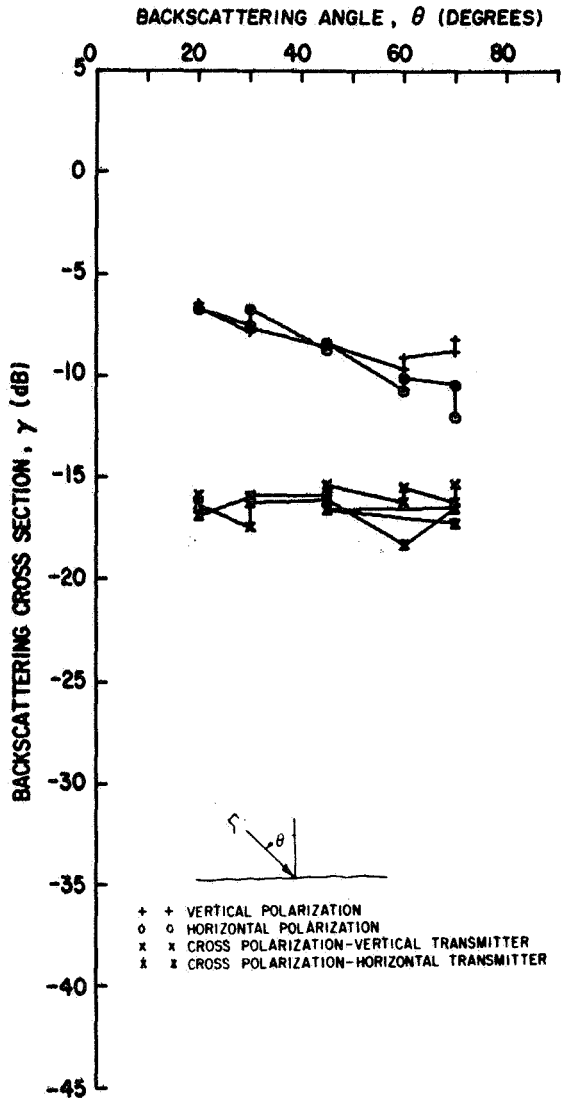


Fig. 62. Sudan grass

GROUP 134
 FREQUENCY 10.0 GHZ
 OSU SG 2
 DATE 06SEP6

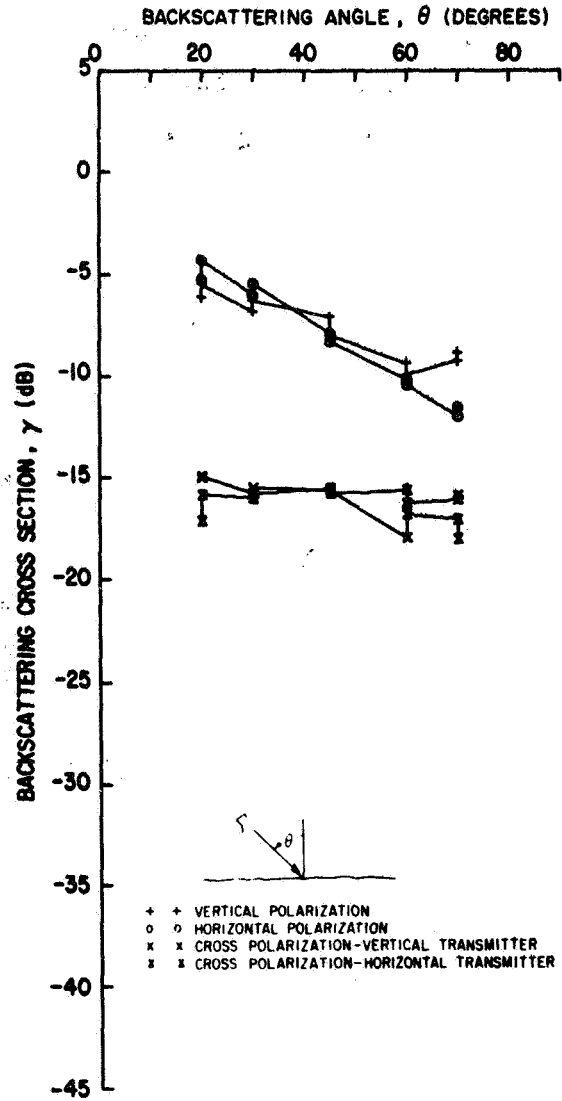


Fig. 63. Sudan grass

GROUP 135
 FREQUENCY 35.0 GHZ
 OSU SG 2
 DATE 06SEP6

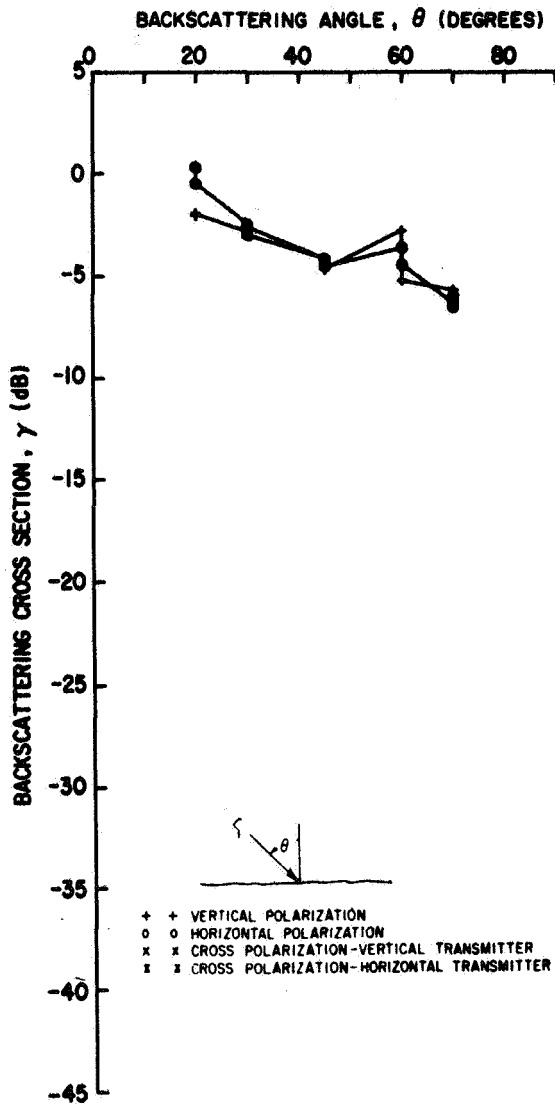


Fig. 64. Sudan grass

GROUP 136
 FREQUENCY 10.0 GHZ
 OSU SG 3
 DATE 12SEP6

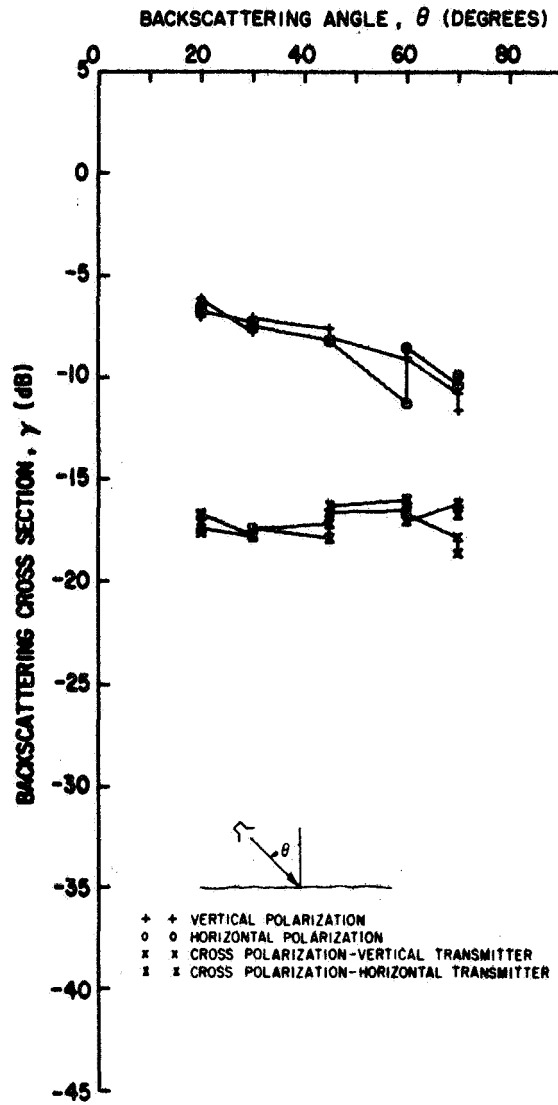


Fig. 65. Sudan grass

GROUP 138
 FREQUENCY 10.0 GHZ
 OSU SG 3
 DATE 12SEP6

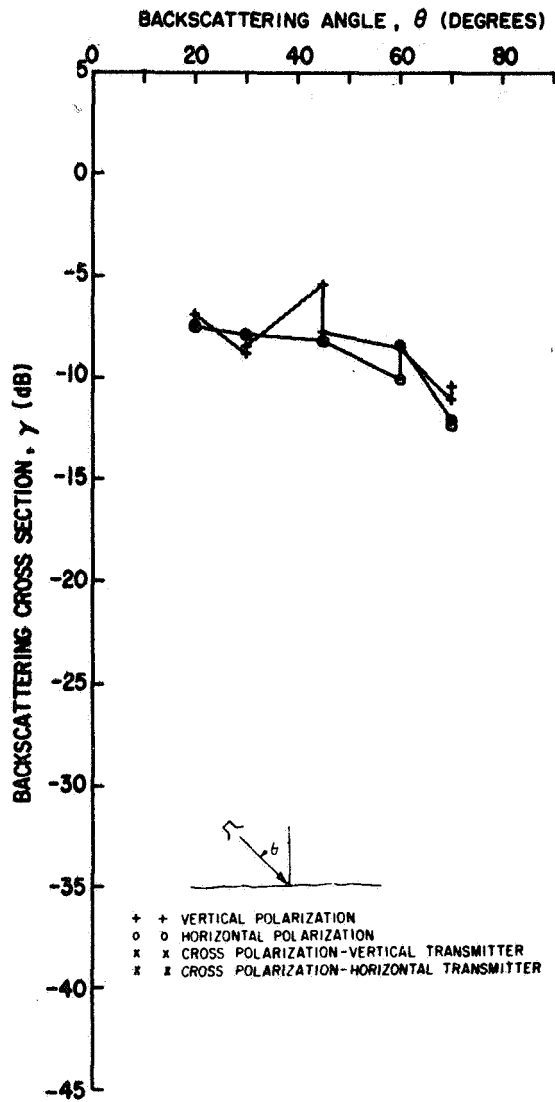


Fig. 66. Sudan grass

GROUP 137
 FREQUENCY 35.0 GHZ
 OSU SG 3
 DATE 12SEP6

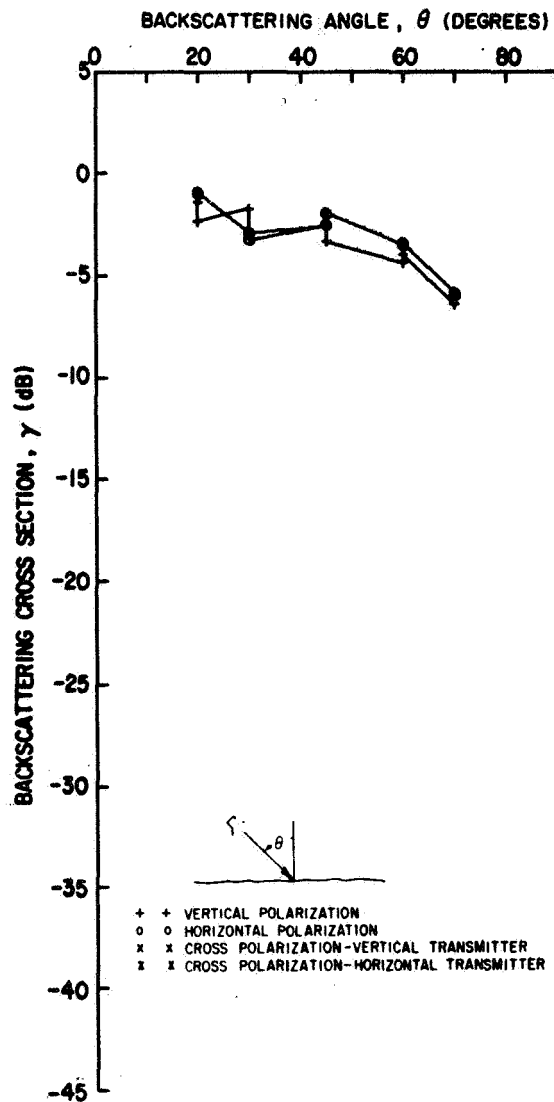


Fig. 67. Sudan grass

GROUP 108
 FREQUENCY 1.8 GHz
 PURDUE C30
 DATE 06AUG6

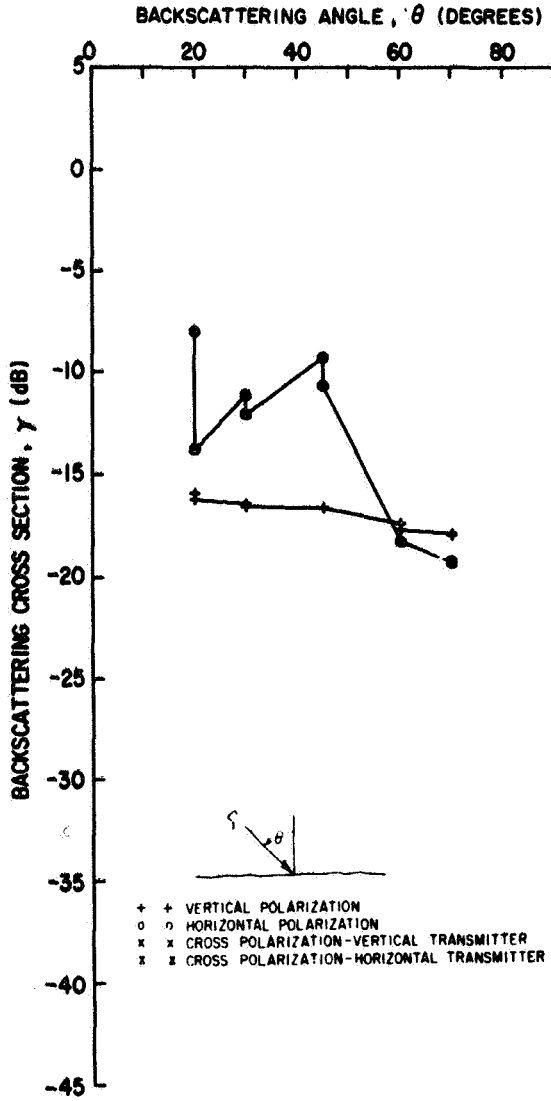


Fig. 68. Corn

GROUP 105
 FREQUENCY 10.0 GHz
 PURDUE C 3D
 DATE 03AUG6

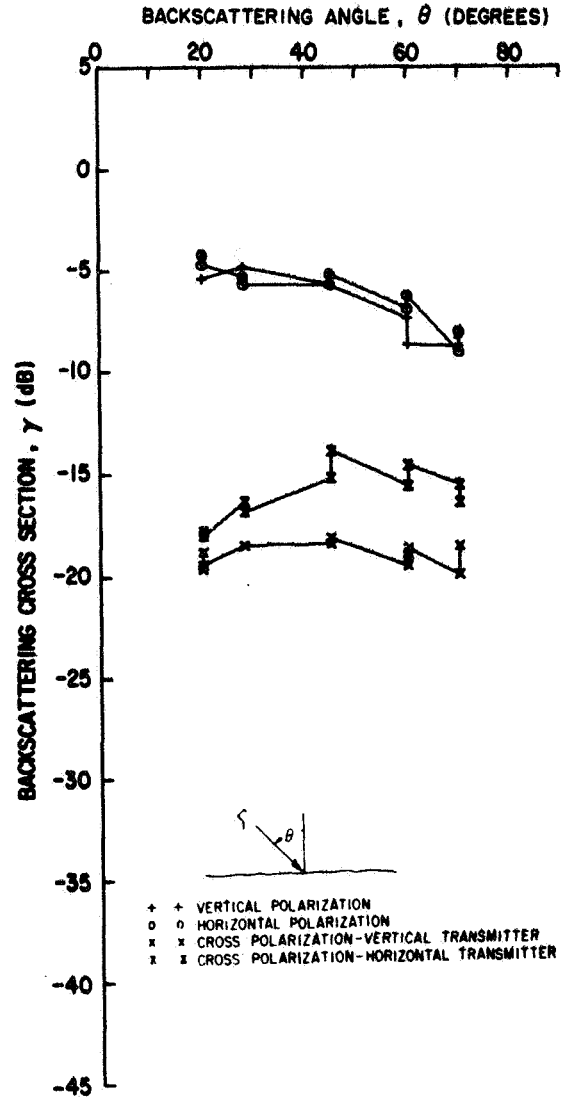


Fig. 69. Corn

GROUP 107
 FREQUENCY 15.0 GHZ
 PURDUE C30
 DATE 06AUG6

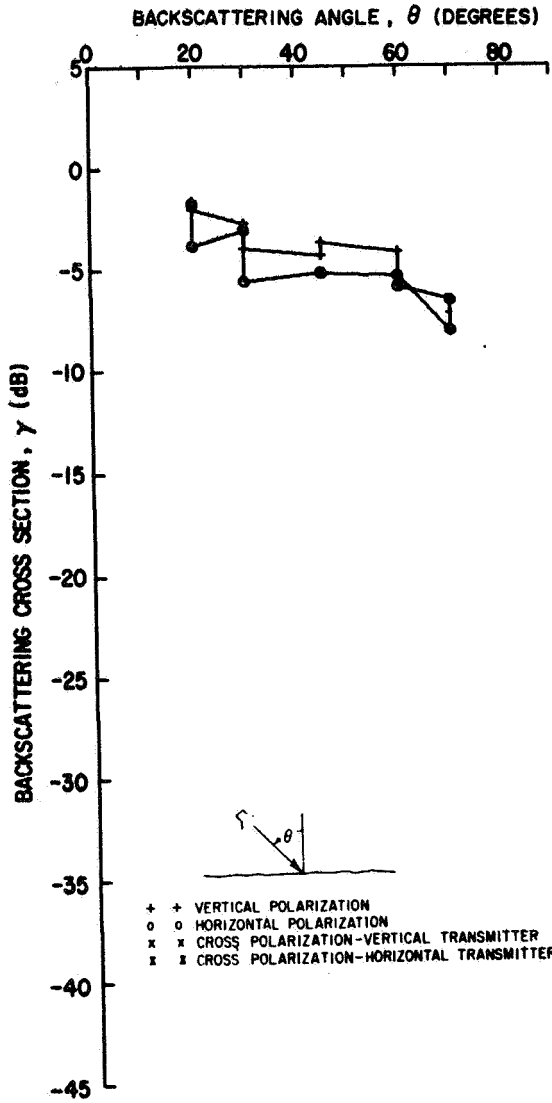


Fig. 70. Corn

GROUP 106
 FREQUENCY 35.0 GHZ
 PURDUE C 30
 DATE 06AUG6

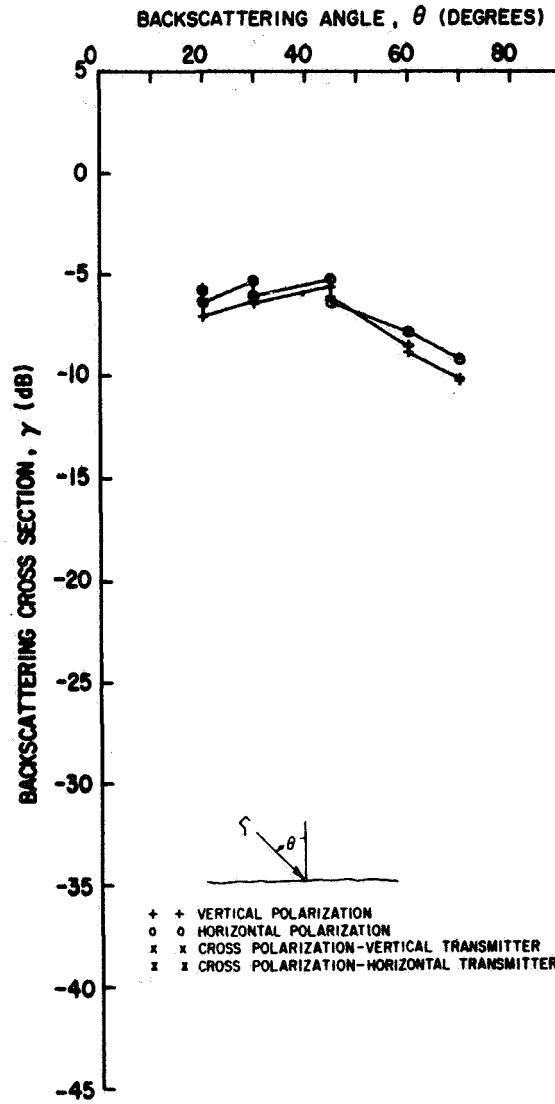


Fig. 71. Corn

GROUP 114
 FREQUENCY 1.8 GHZ
 PURDUE CT 1C
 DATE 06AUG6

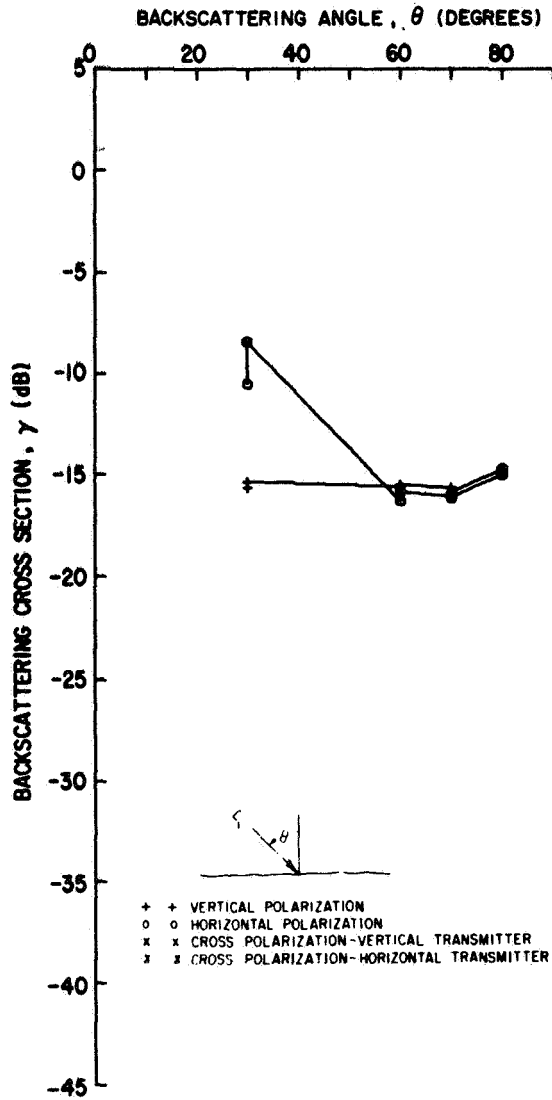


Fig. 72. Corn

GROUP 113
 FREQUENCY 15.0 GHZ
 PURDUE CT 1C
 DATE 06AUG6

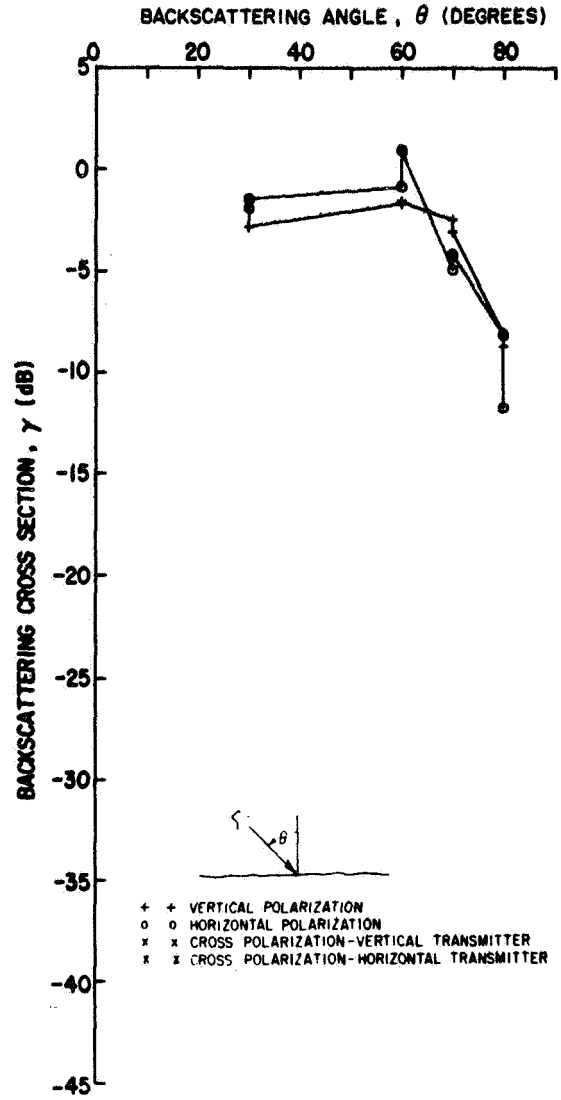


Fig. 73. Corn

GROUP 71
 FREQUENCY 1.8 GHZ
 PURDUE A6
 DATE 17JUN5

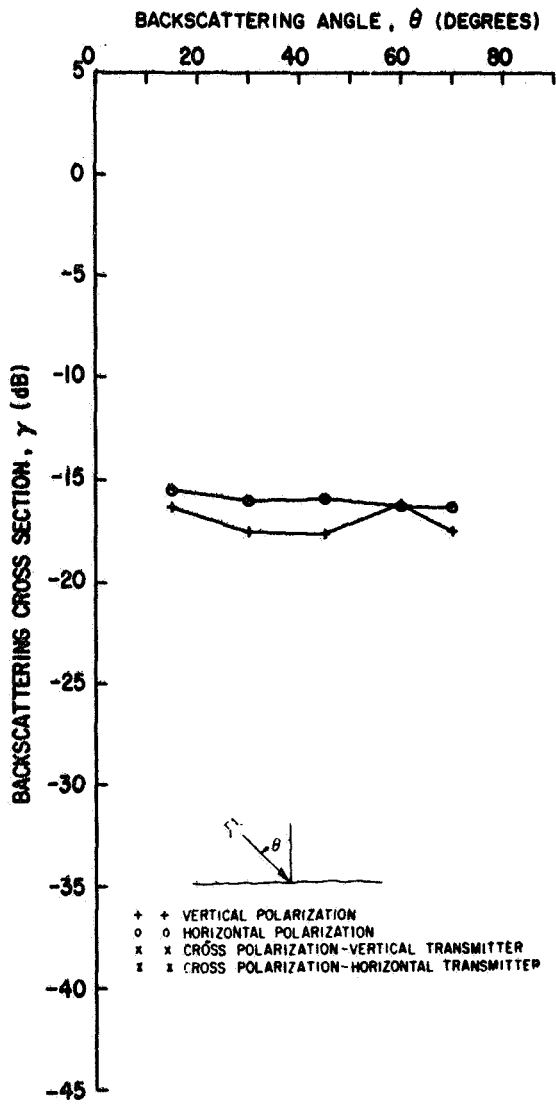


Fig. 74. Alfalfa

GROUP 69
 FREQUENCY 10.0 GHZ
 PURDUE A6
 DATE 17JUN5

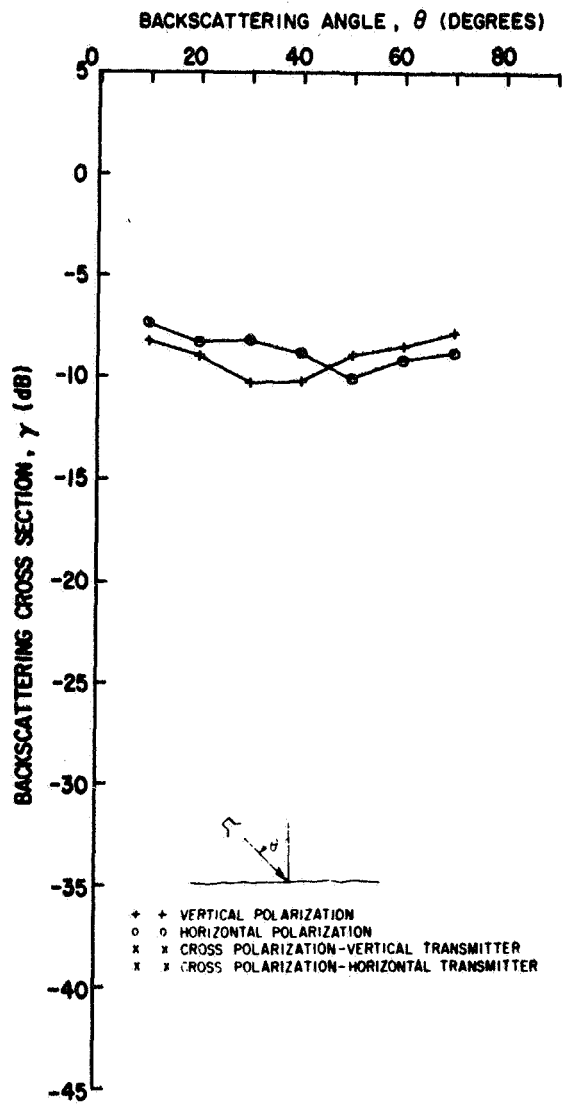


Fig. 75. Alfalfa

GROUP 70
FREQUENCY 15.4 GHz
PURDUE R6
DATE 17JUN5

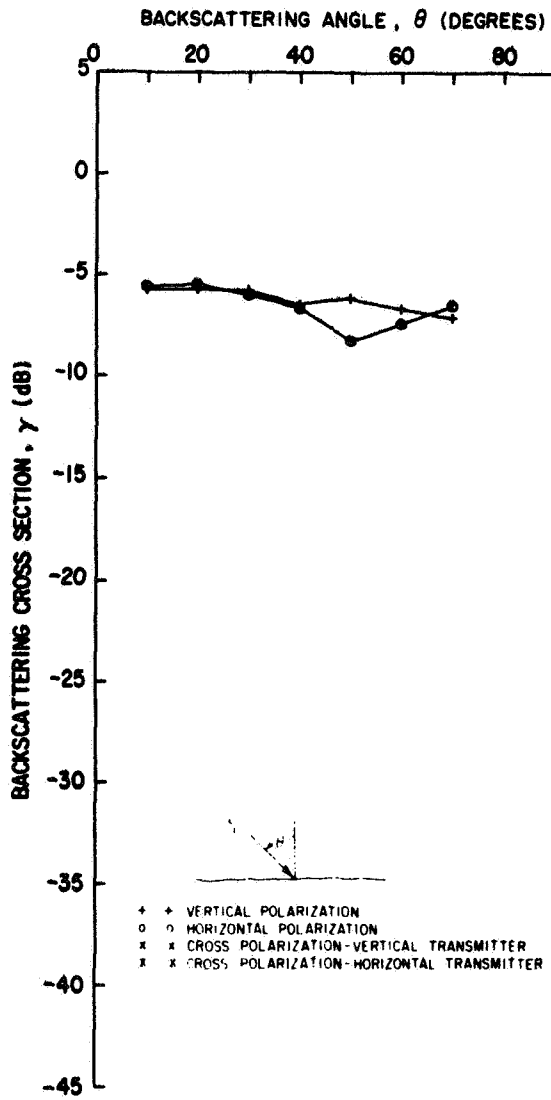


Fig. 76. Alfalfa

GROUP 153
 FREQUENCY 10.0 GHZ
 OSU GRASS
 DATE 13OCT6

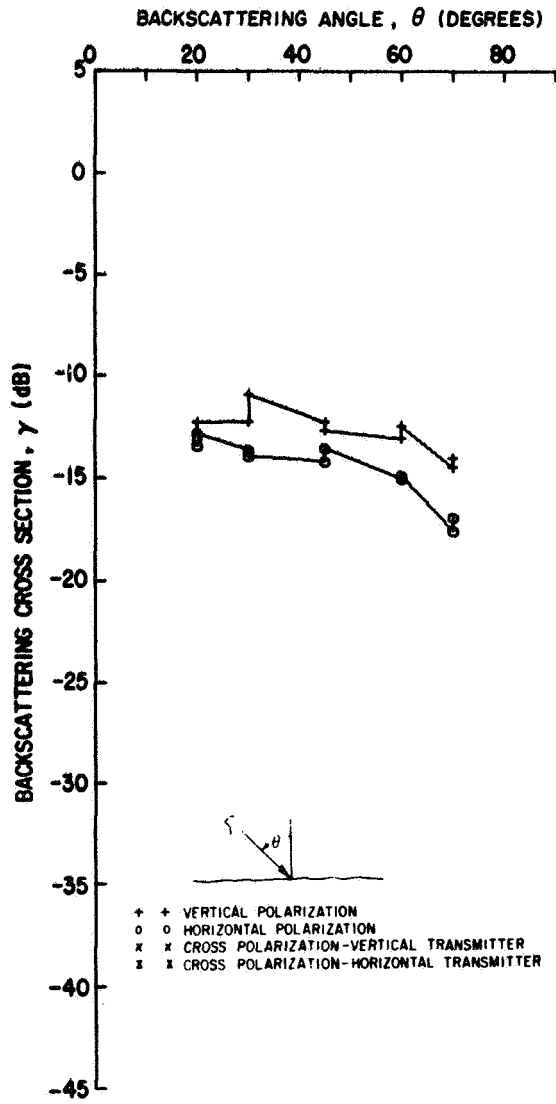


Fig. 77. Grass

GROUP 154
 FREQUENCY 10.0 GHZ
 OSU GRASS
 DATE 13OCT6

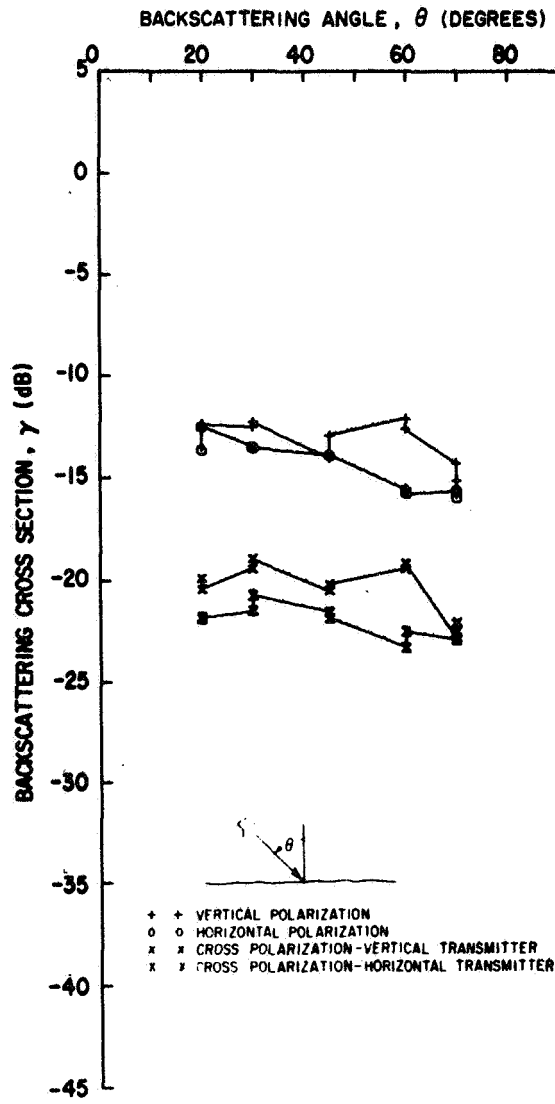


Fig. 78. Grass

GROUP 156
 FREQUENCY 15.0 GHZ
 OSU GRASS
 DATE 13OCT6

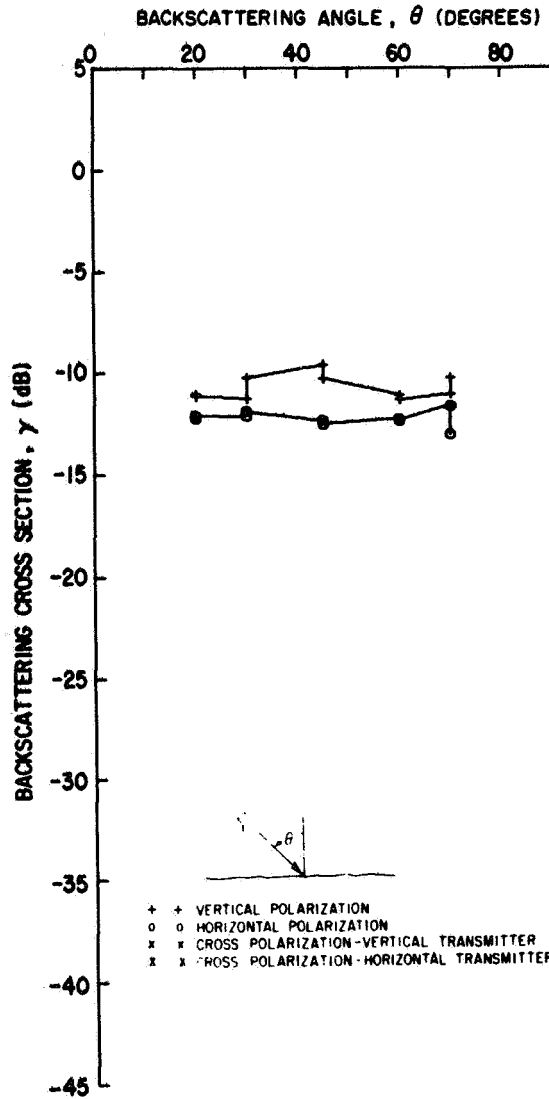


Fig. 79. Grass

GROUP 155
 FREQUENCY 35.0 GHZ
 OSU GRASS
 DATE 13OCT6

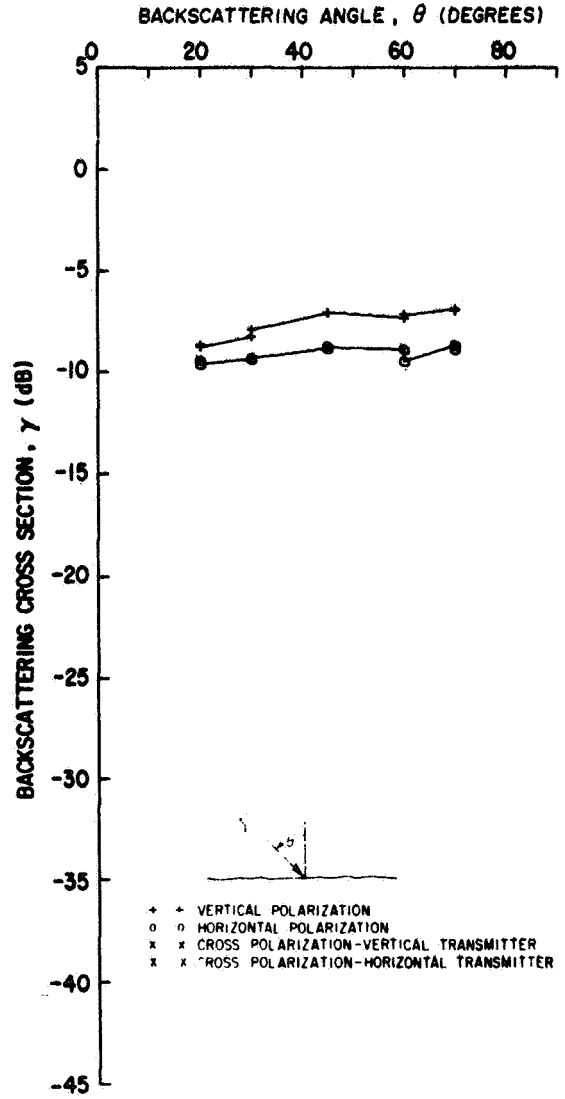


Fig. 80. Grass

GROUP 157
 FREQUENCY 1.8 GHZ
 OSU GRASS
 DATE 24OCT6

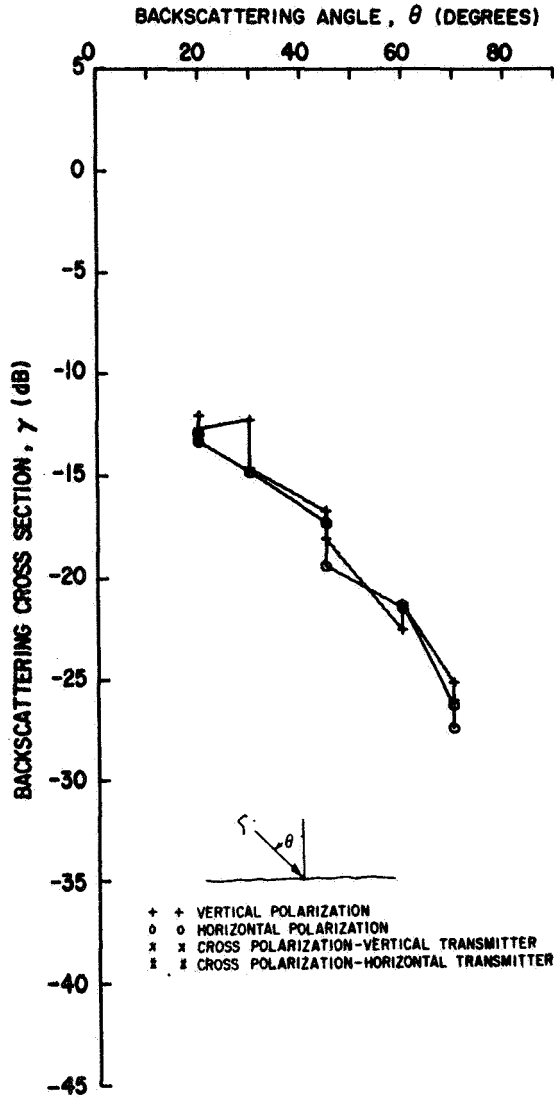


Fig. 81. Grass

GROUP 158
 FREQUENCY 15.0 GHZ
 OSU GRASS
 DATE 24OCT6

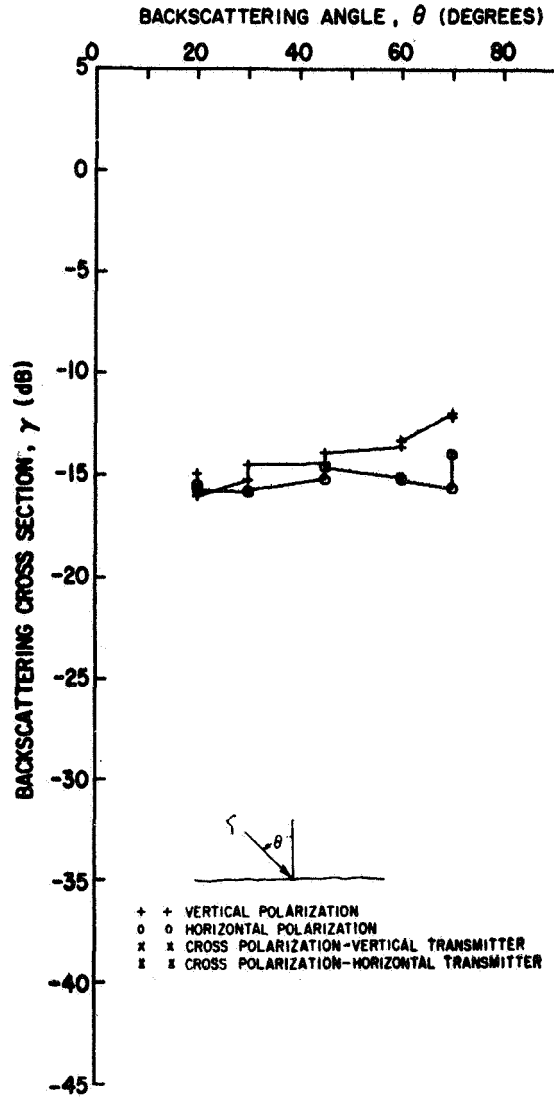


Fig. 82. Grass

GROUP 308
 FREQUENCY 1.8 GHZ
 OSU WHERT
 DATE 1 JUL 8

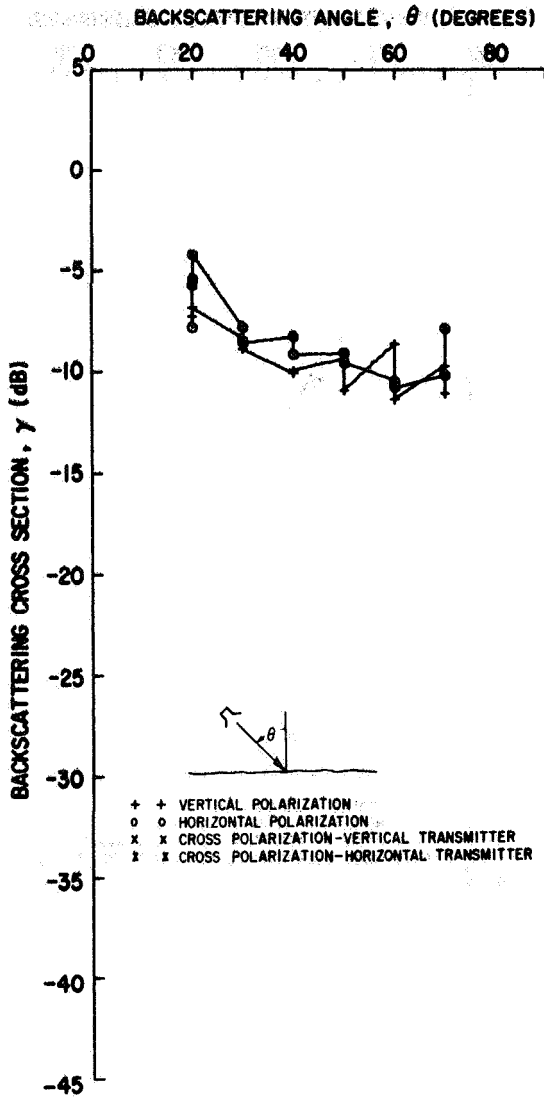


Fig. 83. Wheat

GROUP 309
 FREQUENCY 10.0 GHZ
 OSU WHERT
 DATE 1 JUL 8

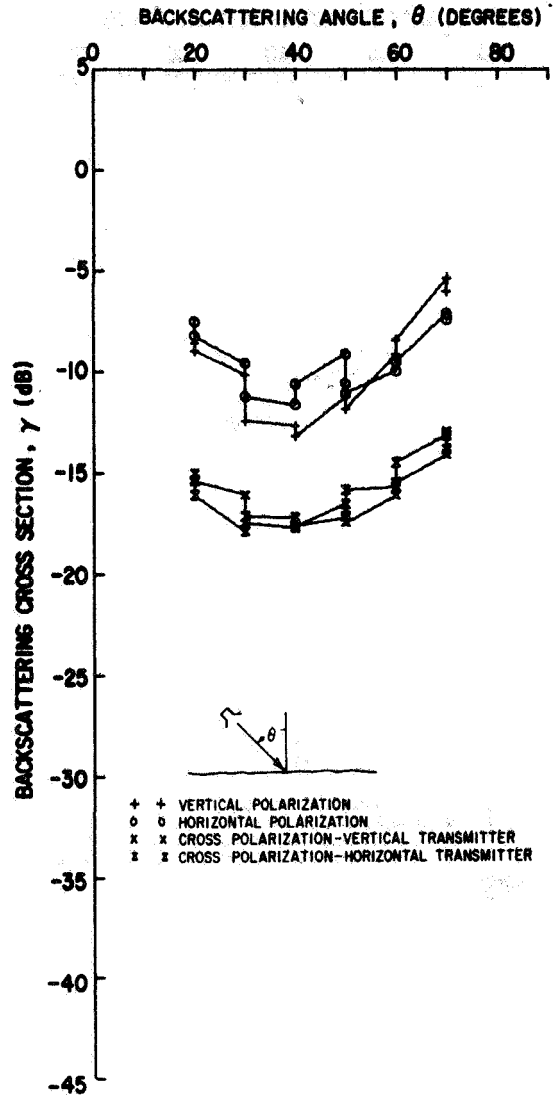


Fig. 84. Wheat

GROUP 310
 FREQUENCY 15.0 GHz
 OSU WHEAT
 DATE 1JUL8

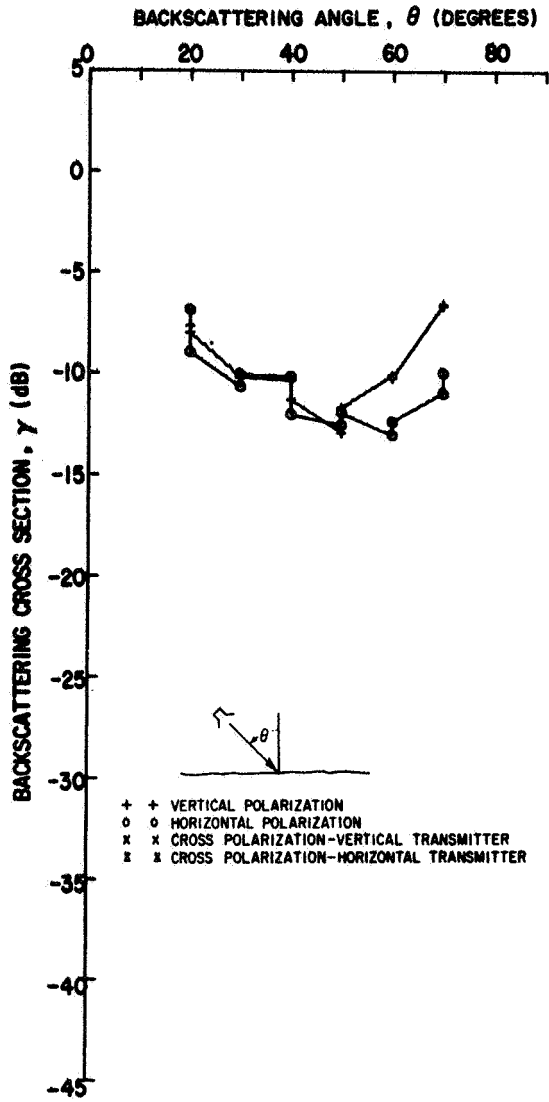


Fig. 85. Wheat

GROUP 311
 FREQUENCY 35.0 GHz
 OSU WHEAT
 DATE 1JUL8

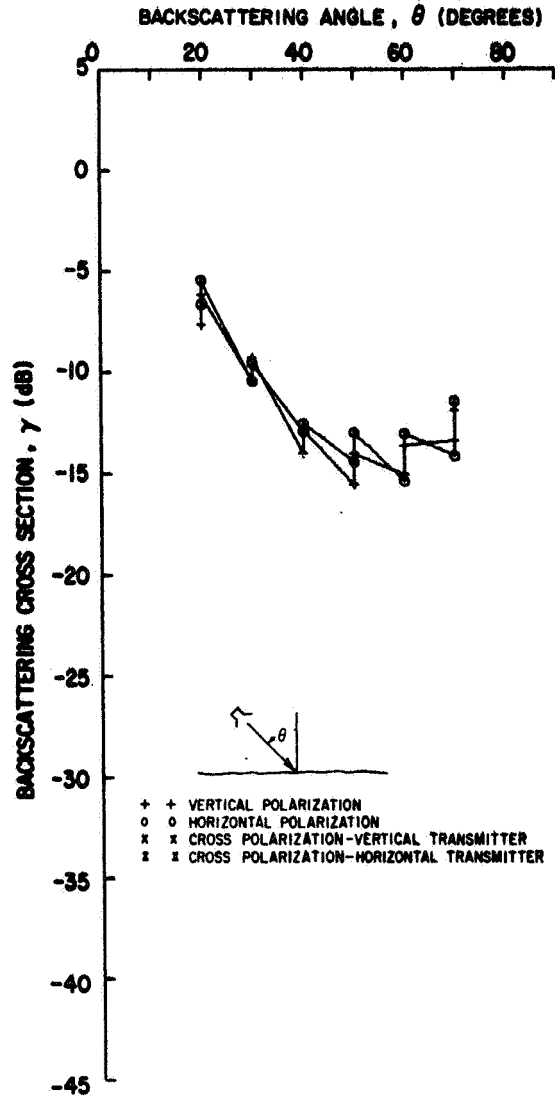


Fig. 86. Wheat

GROUP 300
 FREQUENCY 1.8 GHZ
 OSU OATS
 DATE 7MAY68

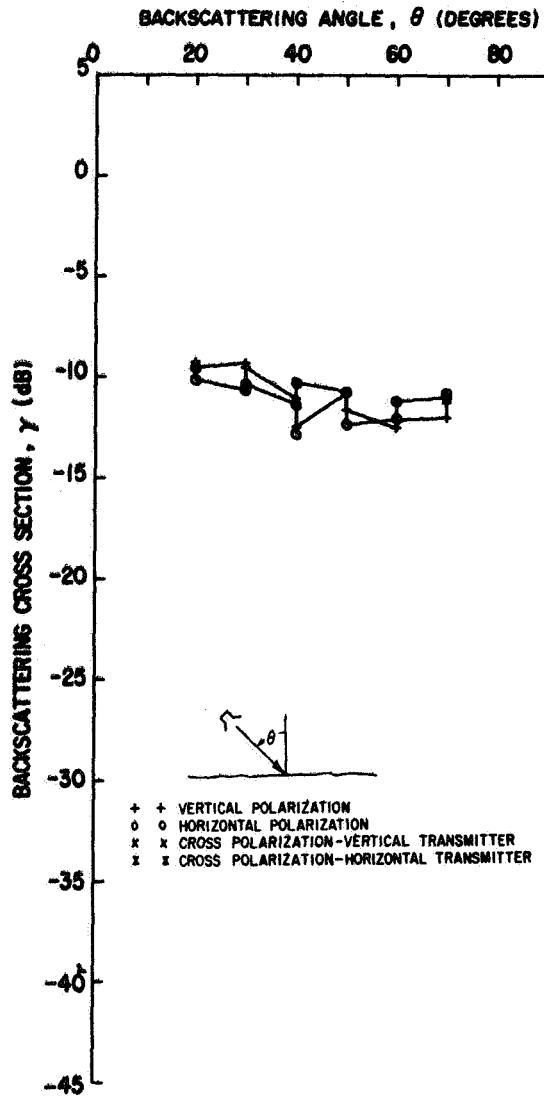


Fig. 87. Oats

GROUP 301
 FREQUENCY 10.0 GHZ
 OSU OATS
 DATE 7MAY68

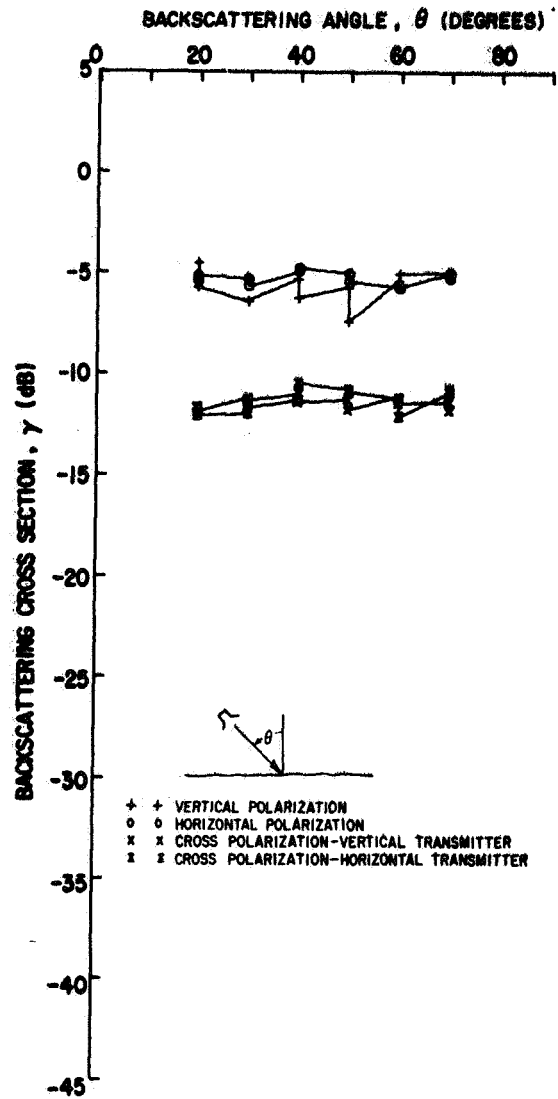


Fig. 88. Oats

GROUP 302
 FREQUENCY 15.0 GHZ
 OSU OATS
 DATE 8MAY8

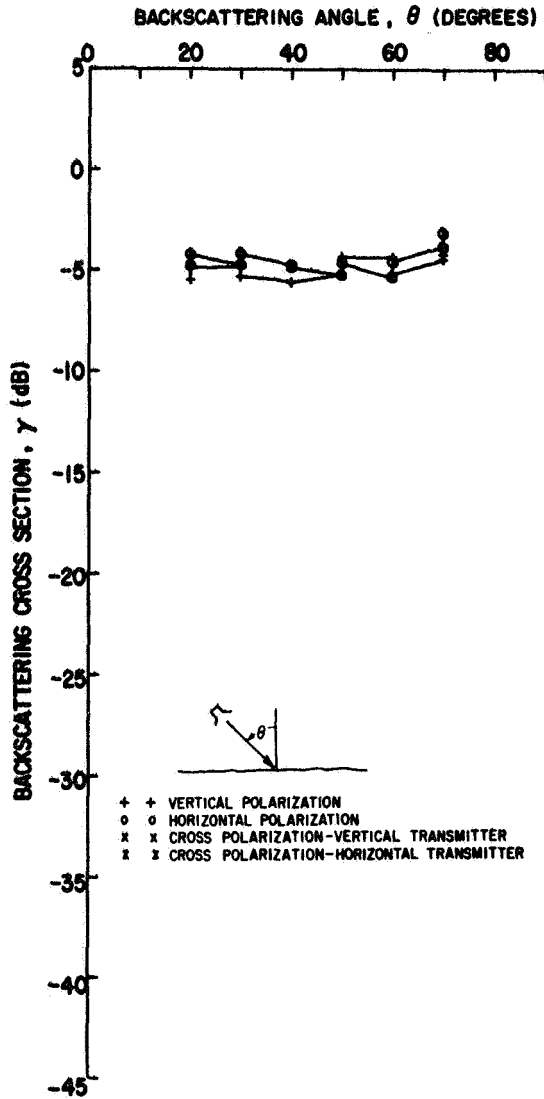


Fig. 89. Oats

GROUP 303
 FREQUENCY 35.0 GHZ
 OSU OATS
 DATE 8MAY8

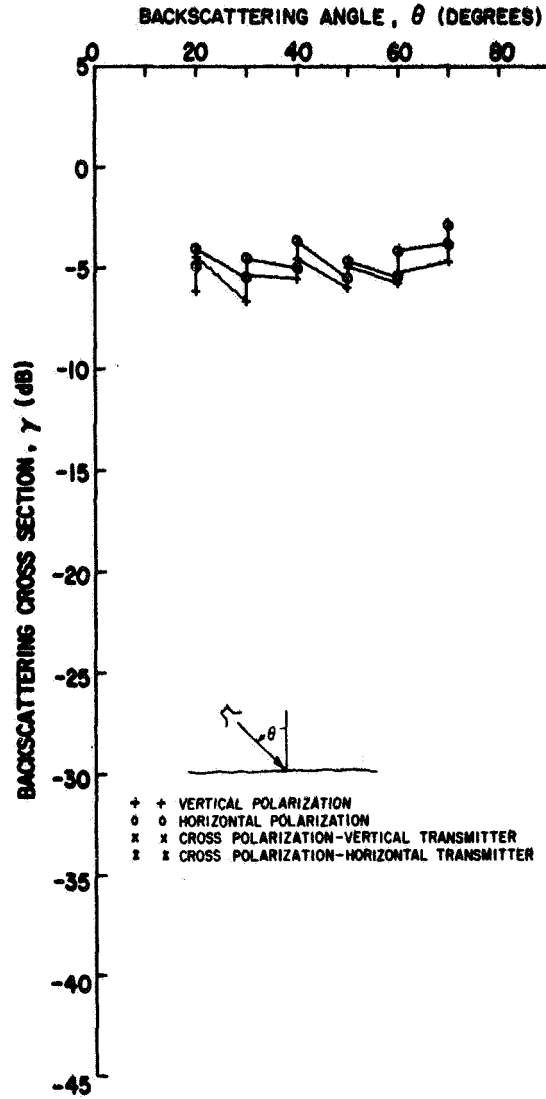


Fig. 90. Oats

GROUP 304
 FREQUENCY 1.8 GHZ
 OSU OATS
 DATE 7JUN8

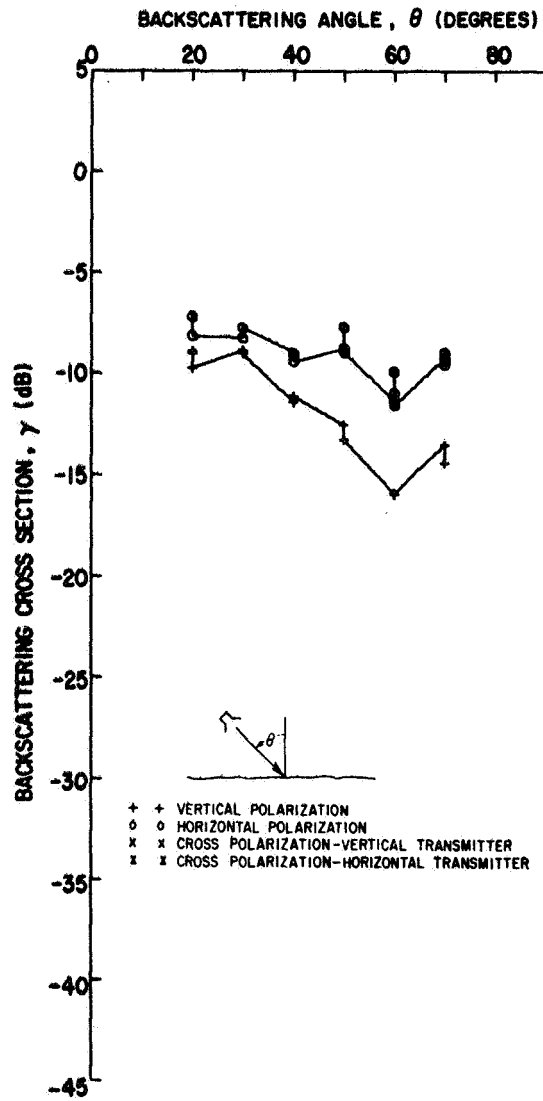


Fig. 91. Oats

GROUP 305
 FREQUENCY 10.0 GHZ
 OSU OATS
 DATE 7JUN8

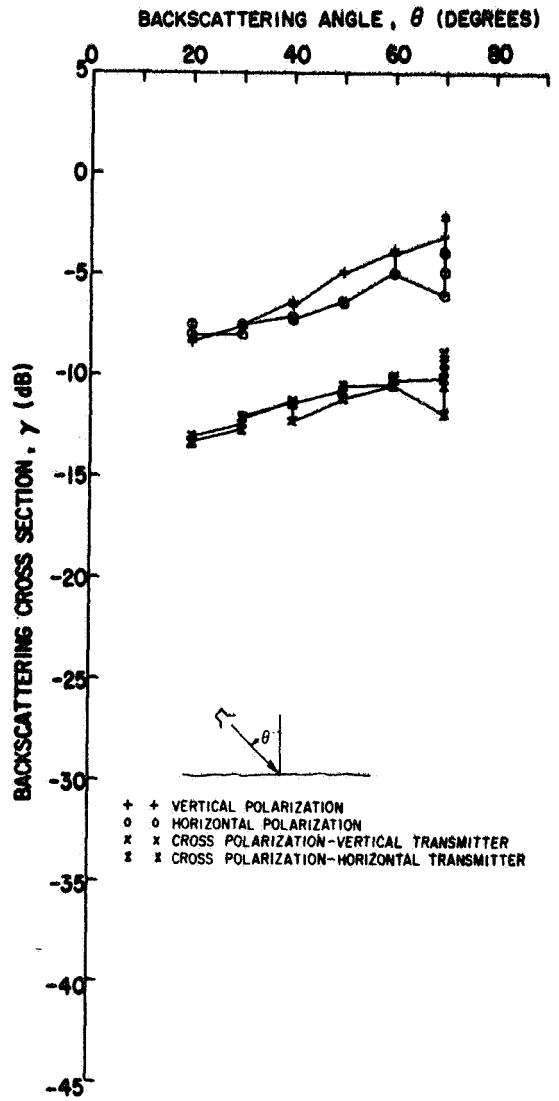


Fig. 92. Oats

GROUP 306
 FREQUENCY 15.0 GHZ
 OSU OATS
 DATE 7JUN8

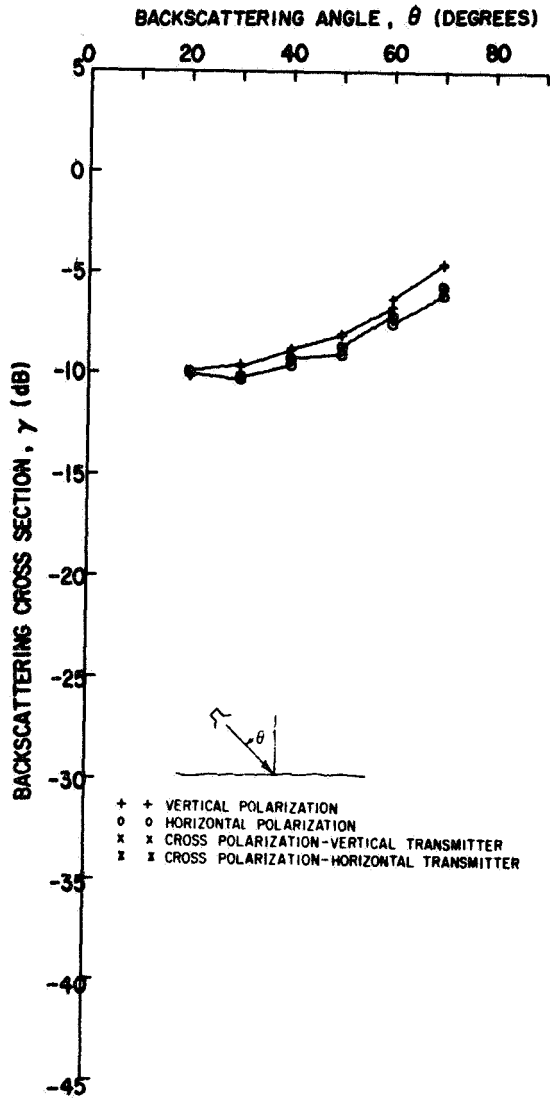


Fig. 93. Oats

GROUP 307
 FREQUENCY 35.0 GHZ
 OSU OATS
 DATE 7JUN8

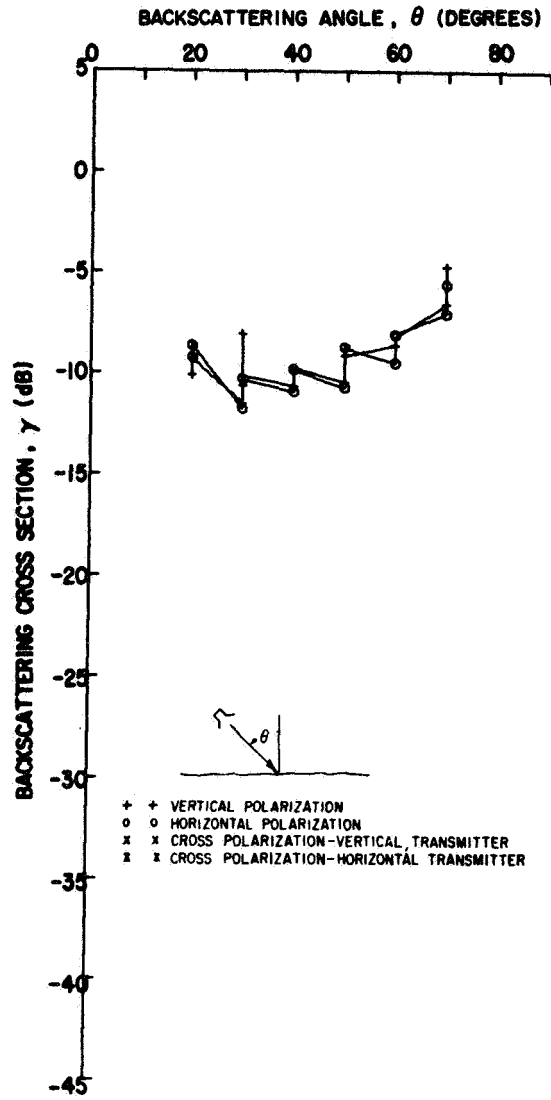


Fig. 94. Oats

GROUP 312
 FREQUENCY 1.8 GHz
 OSU OATS
 DATE 31JUL8

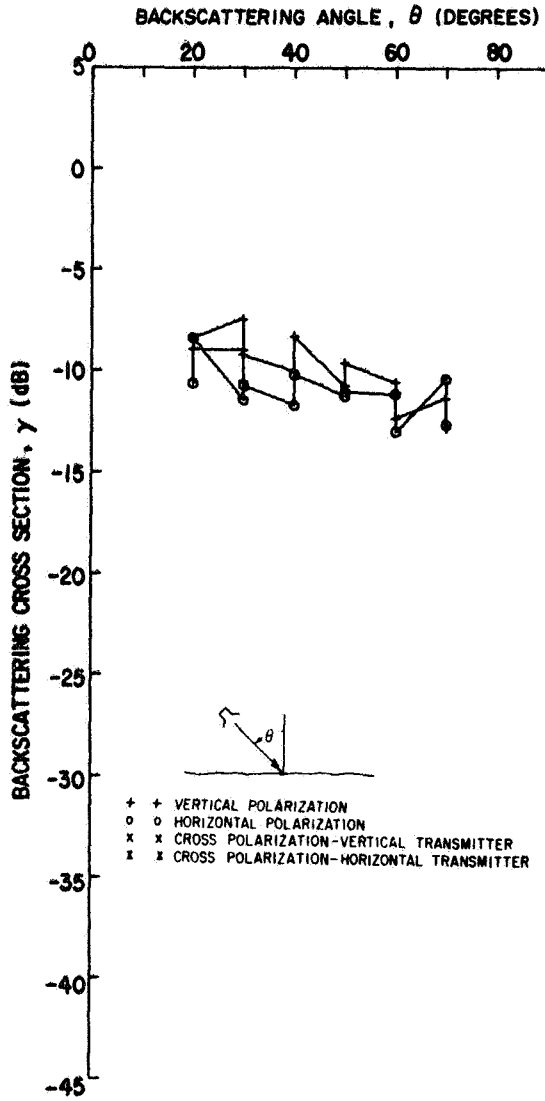


Fig. 95. Oats

GROUP 313
 FREQUENCY 10.0 GHz
 OSU OATS
 DATE 30JUL8

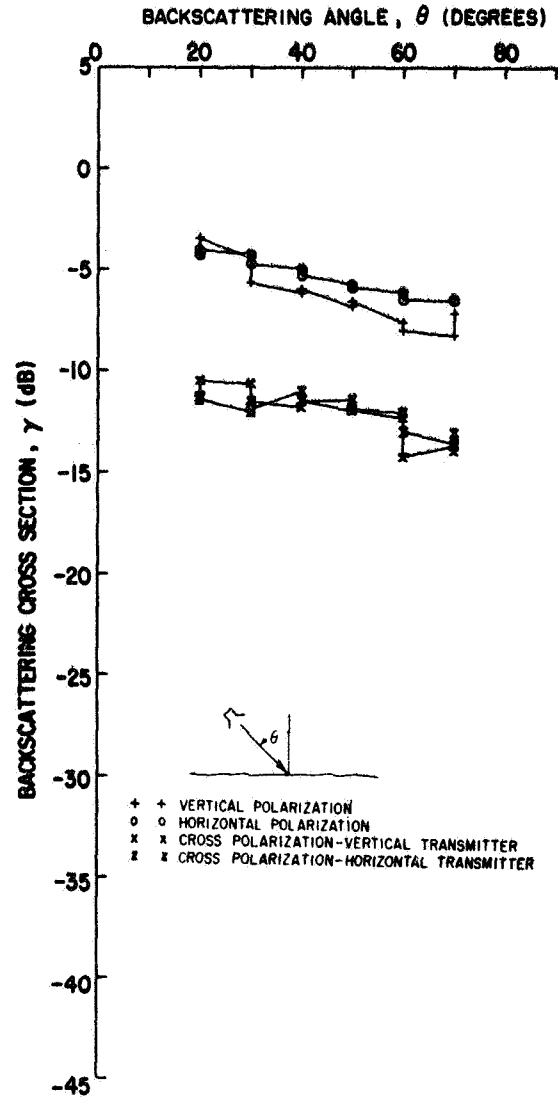


Fig. 96. Oats

GROUP 314
 FREQUENCY 35.0 GHZ
 OSU OATS
 DATE 31JUL8

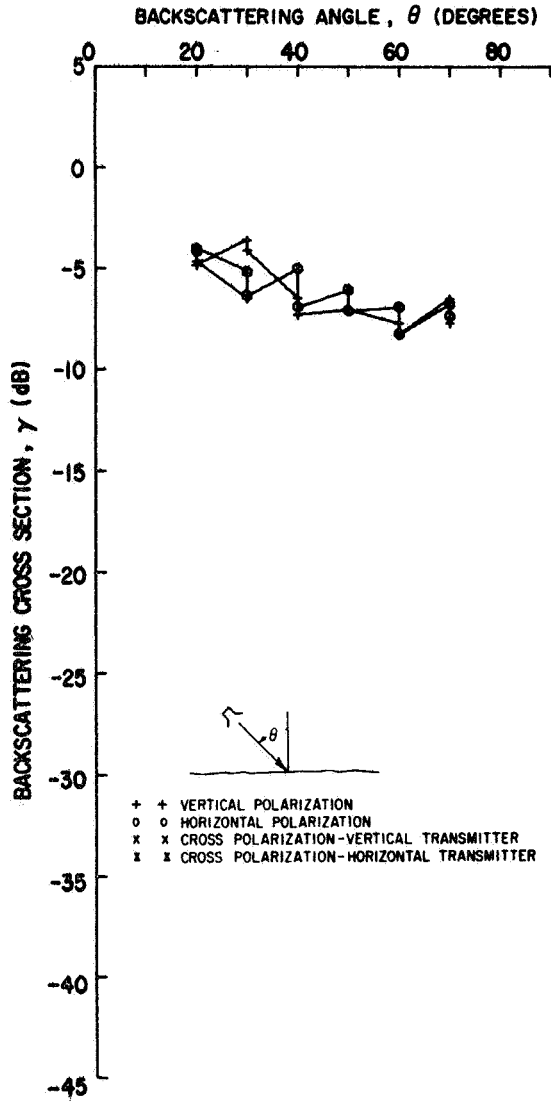


Fig. 97. Oats

GROUP 325
 FREQUENCY 10.0 GHZ
 SORGHUM
 DATE 27SEP8

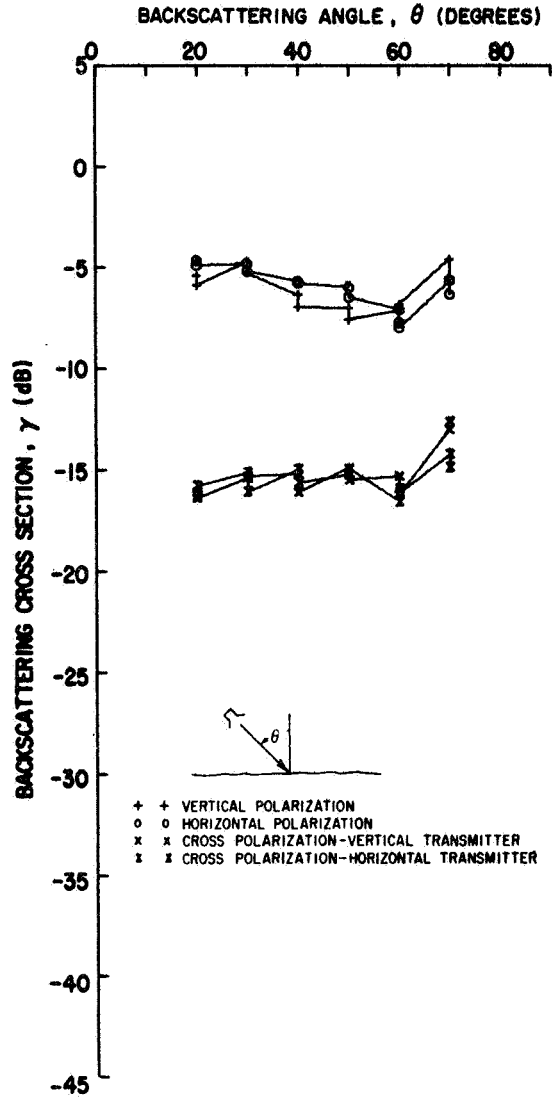


Fig. 98. Sorghum

GROUP 319
 FREQUENCY 10.0 GHZ
 BARE SOIL.1
 DATE 27AUG8

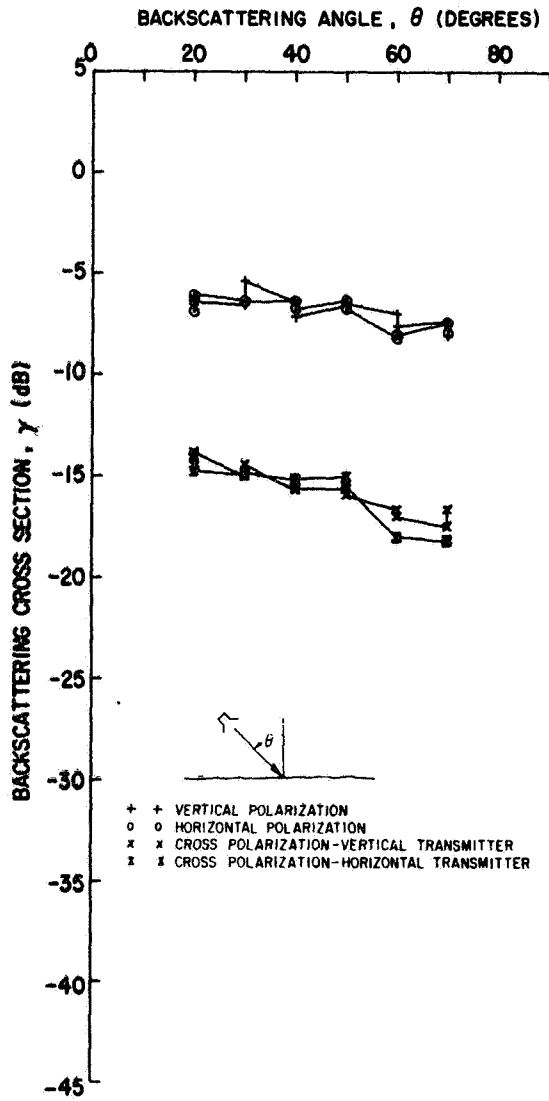


Fig. 99. Bare soil, plowed

GROUP 320
 FREQUENCY 10.0 GHZ
 BARE SOIL.2
 DATE 28AUG8

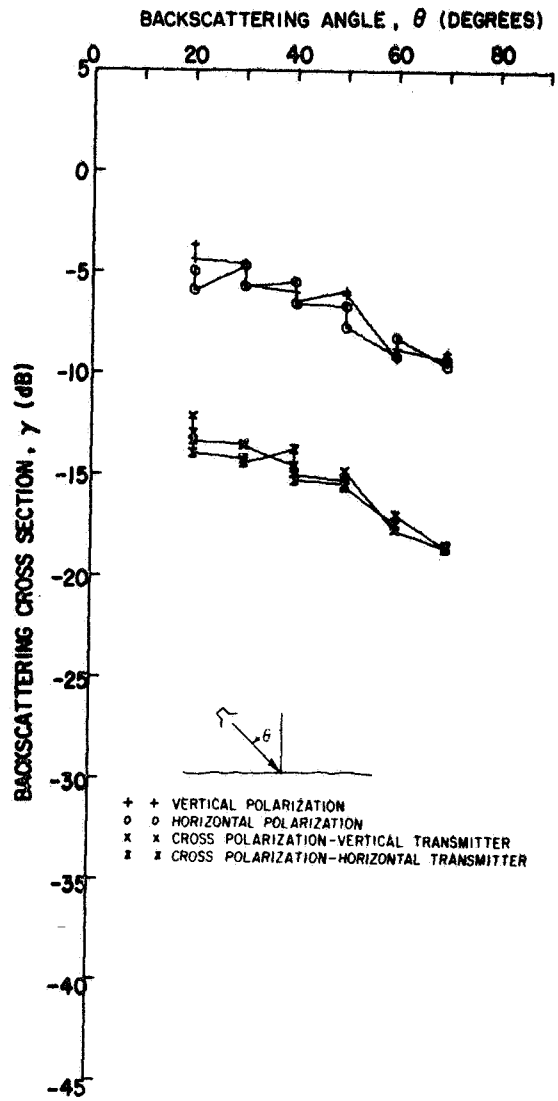


Fig. 100. Bare soil, disced

GROUP 315
 FREQUENCY 10.0 GHZ
 SOYBEANS.I
 DATE 7AUG8

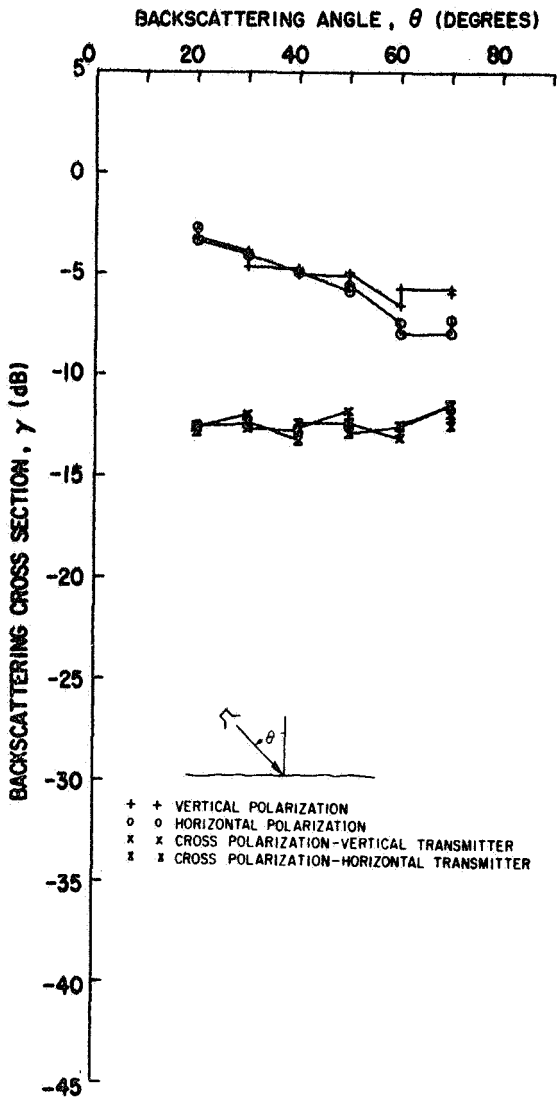


Fig. 101. Soybeans, irrigated

GROUP 316
 FREQUENCY 1.8 GHZ
 SOYBEANS.N1
 DATE 14AUG8

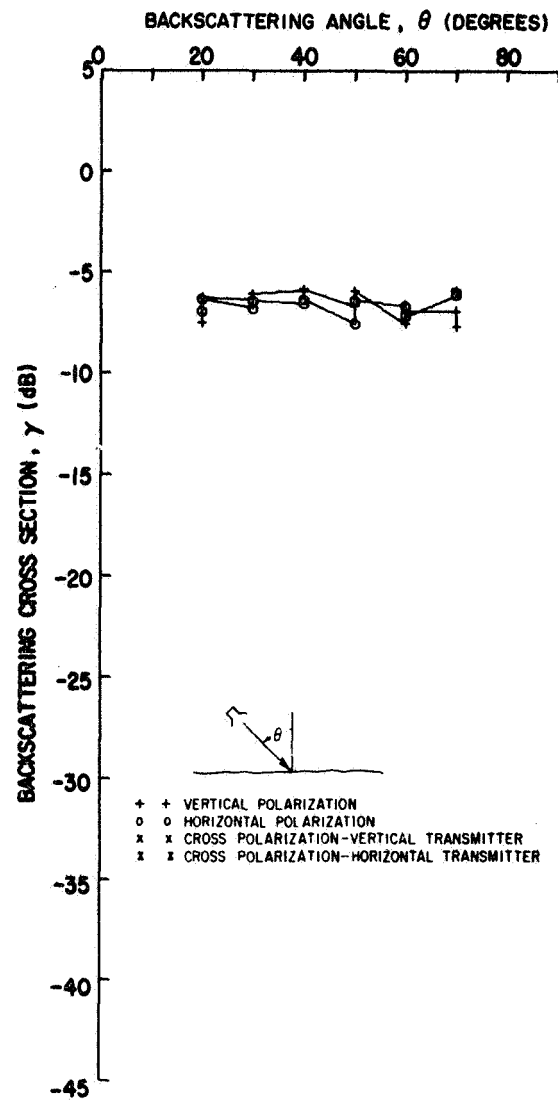


Fig. 102. Soybeans, non-irrigated

GROUP 317
 FREQUENCY 10.0 GHZ
 SOYBEANS, NI
 DATE 14AUG8

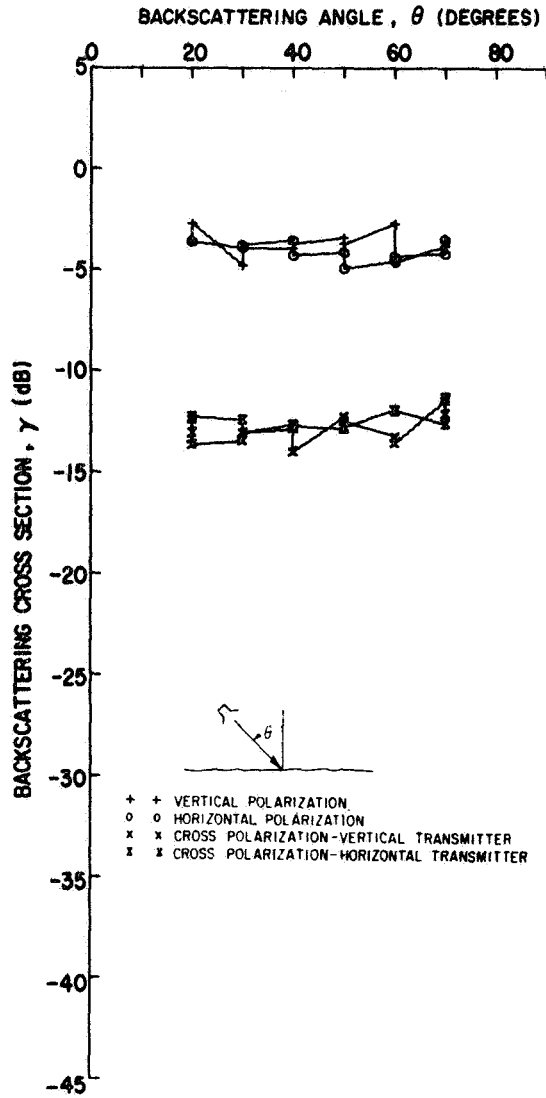


Fig. 103. Soybeans, non-irrigated

GROUP 318
 FREQUENCY 35.0 GHZ
 SOYBEANS, NI
 DATE 14AUG8

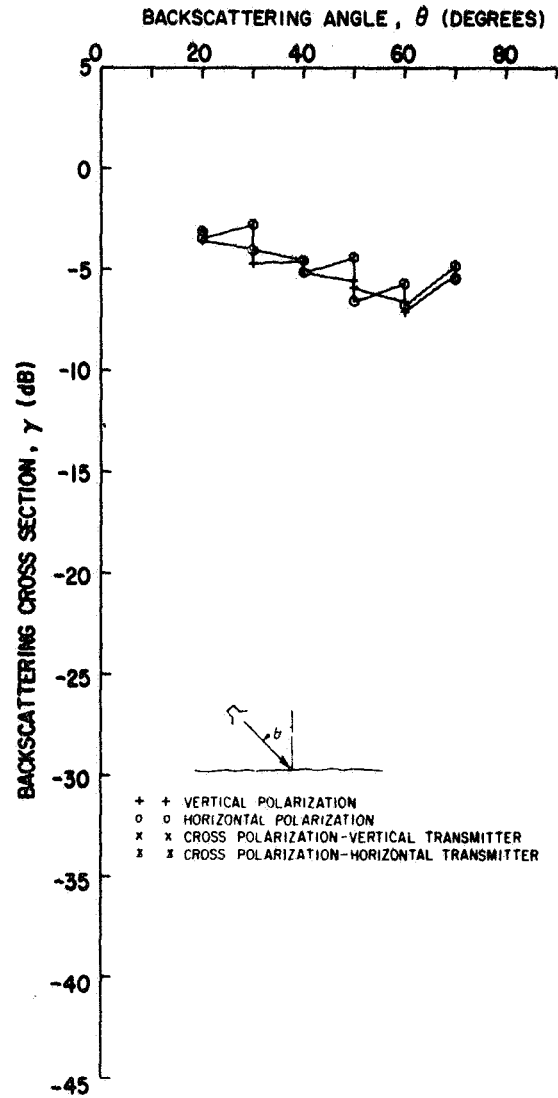


Fig. 104. Soybeans, non-irrigated

GROUP 321
 FREQUENCY 10.0 GHZ
 SOYBEANS.I
 DATE 3SEP8

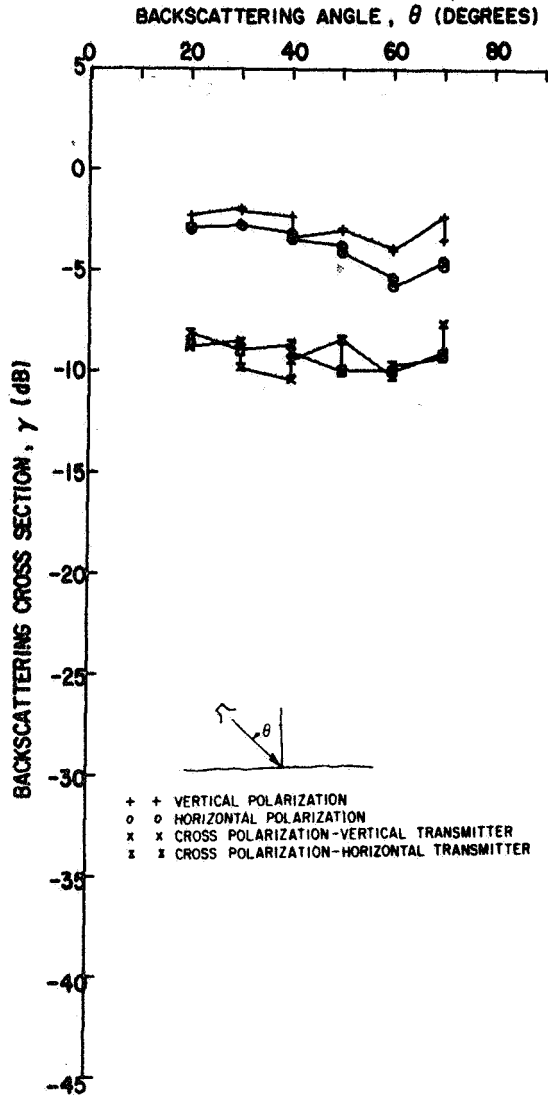


Fig. 105. Soybeans, irrigated

GROUP 322
 FREQUENCY 10.0 GHZ
 SOYBEANS.NI
 DATE 3SEP8

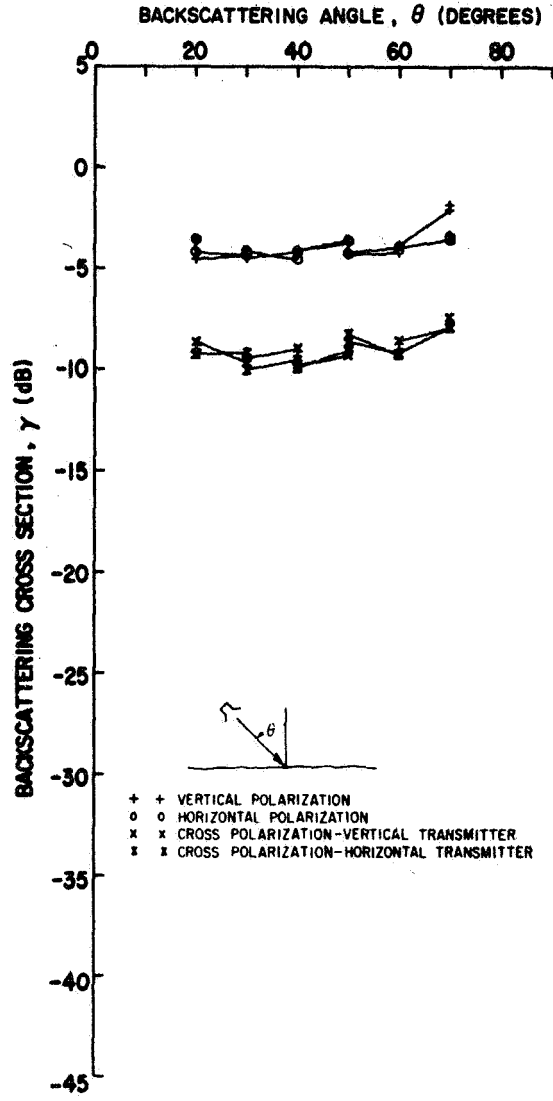


Fig. 106. Soybeans, non-irrigated

GROUP 323
 FREQUENCY 10.0 GHZ
 SOYBEANS. I
 DATE 12SEP8

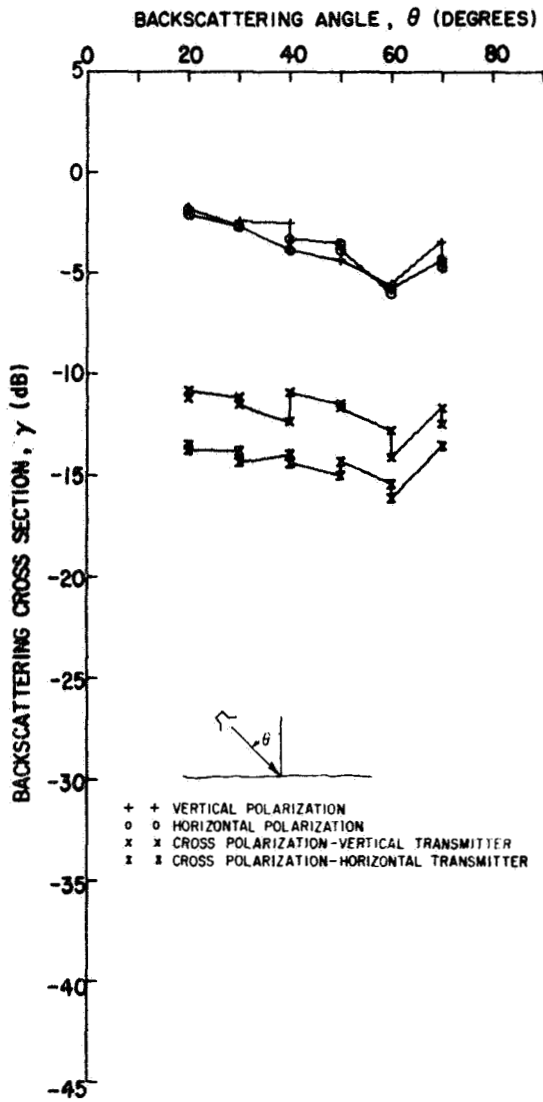


Fig. 107. Soybeans, irrigated.

GROUP 324
 FREQUENCY 10.0 GHZ
 SOYBEANS. NI
 DATE 12SEP8

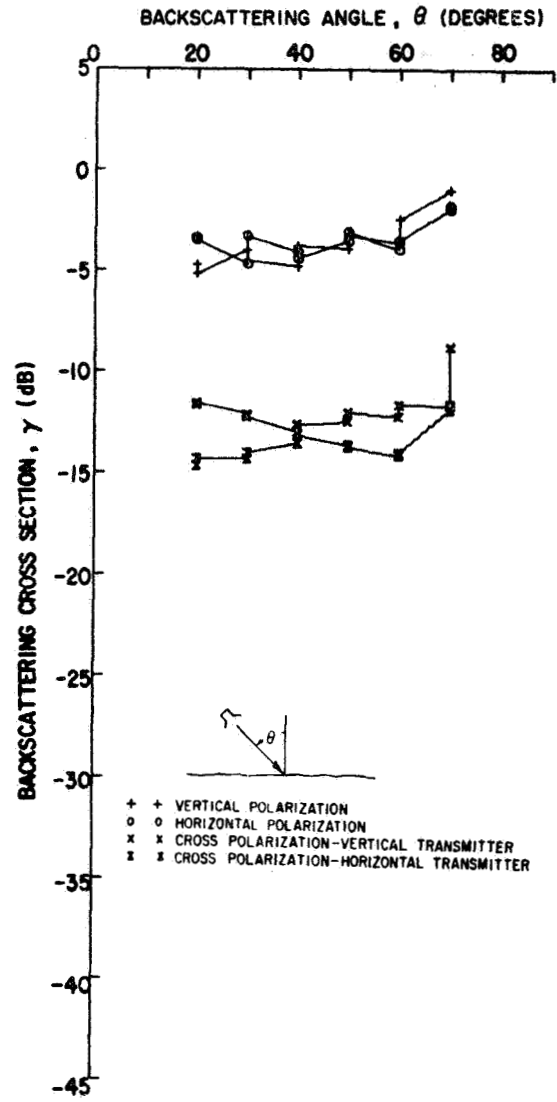


Fig. 108. Soybeans, non-irrigated

GROUP 326
 FREQUENCY 10.0 GHZ
 SOYBEANS.1
 DATE 27SEP8

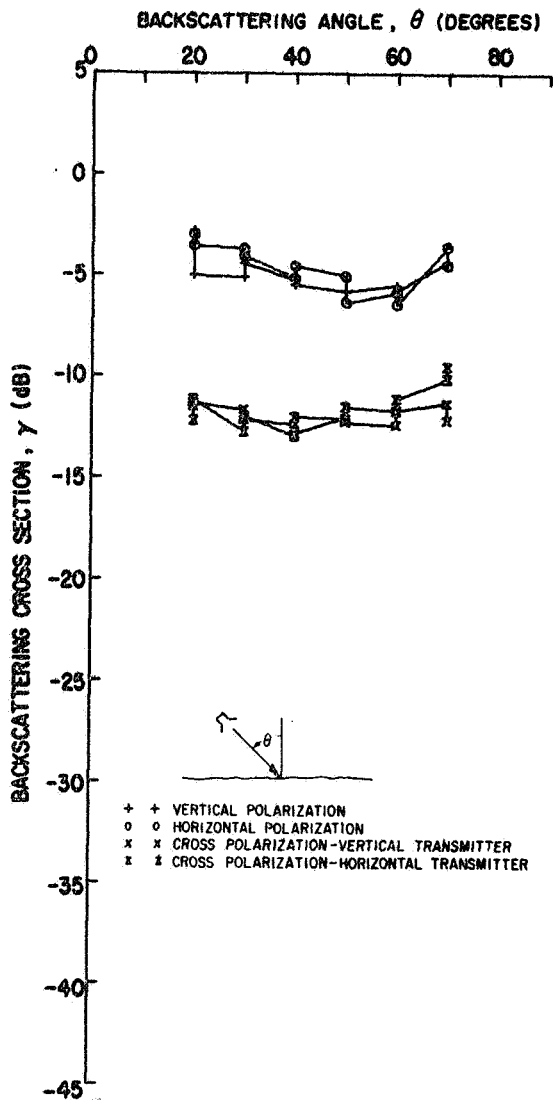


Fig. 109. Soybeans, irrigated

GROUP 327
 FREQUENCY 10.0 GHZ
 SOYBEANS.N1
 DATE 27SEP8

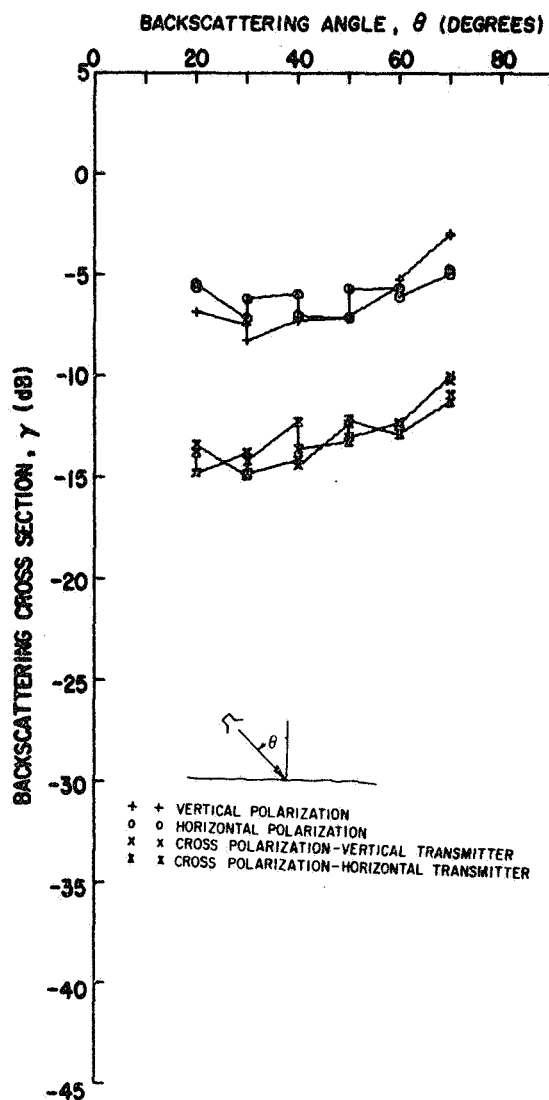


Fig. 110. Soybeans, non-irrigated

C. IDENTIFICATION OF THE SURFACES

Group No. 63 Surface. Wheat

Frequency. 10.0 GHz.

Location. Purdue Agronomy Farm -- Field W31-3A

Date. 16 June 65 Time.

Temperature. 21^oC Humidity. 65%

Wind. 4-5 mph

Description. North edge of plot W31-3A
Variety. Wheat, in head

Crop height. 36"

Row spacing. 6"

Ground cover.

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Heads /sq. ft. \approx 80

Antenna path.

Antenna reference height. Top of crop

Group No. 64 Surface. Wheat

Frequency. 15.4 GHz.

Location. Purdue Agronomy Farm -- Field W31-3A

Date. 16 June 65 Time.

Temperature. 21°C Humidity. 65%

Wind. 4-5 mph

Description. North edge of plot W31-3A

Variety. Wheat, in head

Crop height. 36"

Row spacing. 6"

Ground cover.

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Heads/sq. ft. ≈80

Antenna path.

Antenna reference height. Top of crop

Group No. 65 Surface. Bulk Wheat

Frequency. 10.0 GHz.

Location. Purdue Agronomy Farm -- Field BW - 23

Date. 16 June 65 Time. 16:00

Temperature. 22^oC Humidity. 60%

Wind.

Description. North edge of plot 23-C
 Variety. Monon

 Crop height. 32"

 Row spacing. 9"

 Heads per sq. ft. ≈40

 Ground cover. 60% on Chalmers silty clay loam

 Soil moisture.

 Crop moisture. 60%

 Total fresh weight of crop. 364 gm/sq. ft.

 Antenna path.

 Antenna reference height. Top of crop

Group No. 66 Surface. Bulk wheat

Frequency. 15.4 GHz.

Location. Purdue Agronomy Farm -- Field BW - 23

Date. 16 June 65 Time. 16:00

Temperature. 22°C Humidity. 60%

Wind.

Description. North edge of plot 23-C
Variety. Monon

Crop height. 32"

Row spacing. 9"

Heads per sq. ft. ≈40

Ground cover. 60% on Chalmers silty clay loam

Soil moisture.

Crop moisture. 60%

Total fresh weight of crop. 364 gm/sq. ft.

Antenna path.

Antenna reference height. Top of crop

Group No. 67 Surface. Oats

Frequency. 10.0 GHz.

Location. Purdue Agronomy Farm -- Field 31-A4

Date. 16 June 65 Time.

Temperature. 21° C Humidity. 65%

Wind.

Description. South edge of plot 31-A-4
Variety. Tippecanoe

Crop height. 26"

Row spacing. 7"

Heads per sq. ft. ≈30

Ground cover. 80% on Chalmers silty clay loam and
Raub silt loam

Soil moisture.

Crop moisture. 76%

Total fresh weight of crop. 275 gm/sq. ft.

Antenna path.

Antenna reference height. Top of crop

Group No. 68 Surface, Oats

Frequency. 15.4 GHz.

Location. Purdue Agronomy Farm -- Field 31-A4

Date. 16 June 65 Time.

Temperature. 21^oC Humidity. 65%

Wind.

Description. South edge of plot 31-A-4

Variety. Tippecanoe

Crop height. 26"

Row spacing. 7"

Heads per sq. ft. ≈30

Ground cover. 80% on Chalmers silty clay loam and
Raub silt loam

Soil moisture.

Crop moisture. 76%

Total fresh weight of crop. 275 gm/sq. ft.

Antenna path.

Antenna reference height. Top of crop

Group No. 69 Surface. Alfalfa

Frequency. 10.0 GHz.

Location. Purdue Agronomy Farm -- Field A-6

Date. 17 June 65 Time. 11:00

Temperature. 24^oC Humidity. 50%

Wind.

Description. South edge of plot 6-A

Variety. Culver

Crop height. 12"-18"

Row spacing.

Ground cover. . 95% on Xenia silt loam

Soil moisture.

Crop moisture. 79%

Total fresh weight of crop. 245 gm/sq. ft.

Antenna path.

Antenna reference height.

Group No. 70 Surface. Alfalfa

Frequency. 15.4 GHz.

Location. Purdue Agronomy Farm -- Field A-6

Date. 17 June 65 Time. 11:00

Temperature. 24^oC Humidity. 50%

Wind.

Description. South edge of plot 6-A
Variety. Culver

Crop height. 12"-18"

Row spacing.

Ground cover. 95% on Xenia silt loam

Soil moisture.

Crop moisture. 79%

Total fresh weight of crop. 245 gm/sq. ft.

Antenna path.

Antenna reference height.

Group No. 71 Surface. Alfalfa

Frequency. 1.8 GHz.

Location. Purdue Agronomy Farm -- Field A-6

Date. 17 June 65 Time. 13:00

Temperature. Humidity.

Wind.

Description. South edge of plot 6-A

Variety. Culver

Crop height. 12"-18"

Row spacing.

Ground cover. 95% on Xenia silt loam

Soil moisture.

Crop moisture. 79%

Total fresh weight of crop. 245 gm/sq. ft.

Antenna path.

Antenna reference height.

Group No. 72 Surface. Oats

Frequency. 10.0 GHz.

Location. Purdue Agronomy Farm -- Field 31-A4

Date. 17 June 65 Time. 9:00

Temperature. Humidity.

Wind.

Description. South edge of plot 31-A-4
Variety. Tippecanoe

Crop height. 26"

Row spacing. 7"

Heads per sq. ft. \approx 30

Ground cover. 80% on Chalmers silty clay loam and
Raub silt loam

Soil moisture.

Crop moisture. 76%

Total fresh weight of crop. 275 gm/sq. ft.

Antenna path.

Antenna reference height. Top of crop

Group No. 73 Surface. Oats

Frequency. 15.4 GHz.

Location. Purdue Agronomy Farm -- Field 31-A4

Date. 17 June 65 Time. 9:00

Temperature. Humidity.

Wind.

Description. South edge of plot 31-A-4

Variety. Tippecanoe

Crop height. 26"

Row spacing. 7"

Heads per sq. ft. \approx 30

Ground cover. 80% on Chalmers silty clay loam and
Raub silt loam

Soil moisture.

Crop moisture. 76%

Total fresh weight of crop. 275 gm/sq. ft.

Antenna path.

Antenna reference height. Top of crop

Group No. 74 Surface. Oats

Frequency. 1.8 GHz.

Location. Purdue Agronomy Farm -- Field 31-A4

Date. 17 June 65 Time. 10:00

Temperature. Humidity.

Wind.

Description. South edge of plot 31-A-4

Variety. Tippecanoe

Crop height. 26"

Row spacing. 7"

Heads per sq. ft. \approx 30

Ground cover. 80% on Chalmers silty clay loam and
Raub silt loam

Soil moisture.

Crop moisture. 76%

Total fresh weight of crop. 275 gm/sq. ft.

Antenna path.

Antenna reference height. Top of crop

Group No. 101 Surface, Wheat Stubble

Frequency. 10.0 GHz.

Location, Purdue Agronomy Farm -- Field 33

Date, 3 Aug. 66 Time, 13:00

Temperature, Humidity.

Wind.

Description, South edge of plot 33

Variety.

Crop height.

Row spacing.

Ground cover.

Soil moisture. 17%

Crop moisture. 7%

Total fresh weight of crop.

Antenna path.

Antenna reference height.

Group No. 102 Surface, Wheat Stubble

Frequency. 35.0 GHz.

Location. Purdue Agronomy Farm -- Field 33

Date. 3 Aug. 66 Time. 13:30

Temperature. Humidity.

Wind.

Description. South edge of plot 33
Variety.

Crop height.

Row spacing.

Ground cover.

Soil moisture. 17%

Crop moisture. 7%

Total fresh weight of crop.

Antenna path.

Antenna reference height.

Group No. 103 Surface, Wheat Stubble

Frequency. 15.0 GHz.

Location. Purdue Agronomy Farm -- Field 33

Date, 6 Aug. 66 Time.

Temperature. Humidity.

Wind.

Description. South edge of plot 33
Variety.

Crop height.

Row spacing.

Ground cover.

Soil moisture. 17%

Crop moisture. 7%

Total fresh weight of crop.

Antenna path.

Antenna reference height.

Group No. 105 Surface, Corn

Frequency. 10.0 GHz.

Location. Purdue Agronomy Farm -- Field 31- 3D

Date. 3 Aug. 66 Time. 16:00

Temperature. Humidity.

Wind.

Description. North edge of plot 31-3D

Variety. Corn, just in tassel

Crop height. 7'

Row spacing.

Ground cover.

Soil moisture. 7%

Crop moisture. 82% (tops), 76% (bottom 100 cm
of crop)

Total fresh weight of crop. 894 gm/100 cm of row
(tops), 144 gm/100 cm of row (bottom
100 cm of crop)

Antenna path.

Antenna reference height. 6' above ground

Group No. 106 Surface. Corn

Frequency. 35.0 GHz.

Location. Purdue Agronomy Farm -- Field 31-D-3

Date. 3 Aug. 66 Time.

Temperature. Humidity.

Wind.

Description. North edge of plot 31-3D
Variety. Corn, just in tassel

Crop height. 7'

Row spacing.

Ground cover.

Soil moisture. 7%

Crop moisture. 82% (tops), 76% (bottom 100 cm
of crop)

Total fresh weight of crop. 894 gm/100 cm of row
(tops), 144 gm/100 cm of row (bottom
100 cm of crop)

Antenna path.

Antenna reference height. 6' above ground

Group No. 107 Surface, Corn

Frequency. 15.0 GHz.

Location. Purdue Agronomy Farm -- Field 31-D-3

Date. 6 Aug. 66 Time. 13:00

Temperature. Humidity.

Wind.

Description. North edge of plot 31-D3

Variety. Corn, not in tassel

Crop height. 7'

Row spacing.

Ground cover.

Soil moisture. 7%

Crop moisture. 82% (tops, ~70 cm),
88% (bottom 100 cm of crop)

Total fresh weight of crop. 585 gm/100 cm of row
(tops), 1630 gm/100 cm of row (bottoms)

Antenna path.

Antenna reference height. 6' above ground

Group No. 108 Surface, Corn

Frequency. 1.8 GHz.

Location. Purdue Agronomy Farm -- Field 31-D-3

Date. 6 Aug. 66 Time. 13:00

Temperature. Humidity.

Wind.

Description. North edge of plot 31-D3

Variety. Corn, not in tassel

Crop height. 7'

Row spacing.

Ground cover.

Soil moisture. 7%

Crop moisture. 82% (tops, ≈70 cm),
88% (bottom 100 cm of crop)

Total fresh weight of crop. 585 gm/100 cm of row
(tops), 1630 gm/100 cm of row (bottoms)

Antenna path.

Antenna reference height. 6' above ground

Group No. 109 Surface. Soybeans

Frequency. 10.0 GHz.

Location. Purdue Agronomy Farm -- Field 16

Date. 3 Aug. 66 Time. 17:30

Temperature. Humidity.

Wind.

Description. West edge of plot 16

Variety.

Crop height. 36"

Row spacing.

Ground cover.

Soil moisture. 9%

Crop moisture. 85% (tops), 81% (bottoms)

Total fresh weight of crop. 187 gm/100 cm of row
(tops), 1015 gm/100 cm of row (bottoms)

Antenna path. Across rows

Antenna reference height. 18" above ground

Group No. 110 Surface. Soybeans

Frequency. 35.0 GHz.

Location. Purdue Agronomy Farm -- Field 16

Date. 3 Aug. 66 Time.

Temperature. Humidity.

Wind.

Description. West edge of plot 16
Variety.

Crop height. "36"

Row spacing.

Ground cover.

Soil moisture. 9%

Crop moisture. 85% (tops), 81% (bottoms)

Total fresh weight of crop. 187 gm/100 cm of row
(tops), 1015 gm/100 cm of row (bottoms)

Antenna path. Across rows

Antenna reference height. 18" above ground

Group No. 111 Surface, Soybeans

Frequency, 15.0 GHz.

Location, Purdue Agronomy Farm -- Field 16

Date, 6 Aug. 66 Time, 14:00

Temperature, Humidity.

Wind.

Description, West edge of plot 16

Variety.

Crop height. $\approx 36''$

Row spacing.

Ground cover.

Soil moisture. 9%

Crop moisture. 85% (tops), 81% (bottoms)

Total fresh weight of crop. 187 gm/100 cm of row
(tops), 1015 gm/100 cm of row (bottoms)

Antenna path. Across rows

Antenna reference height. 18'' above ground

Group No. 112 Surface. Soybeans

Frequency. 1.8 GHz.

Location. Purdue Agronomy Farm -- Field 16

Date. 6 Aug. 66 Time. 14:00

Temperature. Humidity.

Wind.

Description. West edge of plot 16
Variety.

Crop height. 36"

Row spacing.

Ground cover.

Soil moisture. 9%

Crop moisture. 85% (tops), 81% (bottoms)

Total fresh weight of crop. 187 gm/100 cm of row
(tops), 1015 gm/100 cm of row (bottoms)

Antenna path. Across rows

Antenna reference height. 18" above ground

Group No. 113 Surface, Corn

Frequency. 15.0 GHz.

Location. Purdue Agronomy Farm -- Field 31-1-C

Date. 6 Aug. 66 Time. 15:00

Temperature. Humidity.

Wind.

Description. South edge of plot 31-1-C
Variety. Corn, in tassel

Crop height. 6'

Row spacing.

Ground cover.

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path.

Antenna reference height. 5 1/2'

(80° measurements unreliable.)

Group No. 114 Surface. Corn

Frequency. 1.8 GHz.

Location. Purdue Agronomy Farm -- Field 31-1-C

Date. 6 Aug. 66 Time. 15:00

Temperature. Humidity.

Wind.

Description. South edge of plot 31-1-C

Variety. Corn, in tassel

Crop height. 6'

Row spacing.

Ground cover.

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path.

Antenna reference height. 5 1/2'

(80° measurements unreliable.)

Group No. 115 Surface. Sudan Grass, Irrigated

Frequency. 10.0 GHz.

Location. Purdue Sandfarm -- Field 4A

Date. 4 Aug. 66 Time. 11:00

Temperature. 23.5°C Humidity.

Wind. 0-3 mph Clear sky

Description. Irrigated plot
Variety.

Crop height. ≈90"

Row spacing.

Ground cover. 100%

Soil moisture. 7% at surface, 7% at 6" depth, 17% at
9", 20% at 15", 13% at 21", 8% at 27", 7% at 33"

Crop moisture. 76% (tops),, 77.5% (middle 100
cm), 81% (bottom 100 cm)

Total fresh weight of crop. 78 gm/50 cm of row
(tops), 414 gm/50 cm of row (middle
100 cm), 934 gm/50 cm of row (bottom
100 cm)

Antenna path.

Antenna reference height. 7' above ground

Group No. 116 Surface, Sudan Grass, Irrigated

Frequency. 35.0 GHz.

Location. Purdue Sandfarm -- Field 4A

Date. 4 Aug. 66 Time. 13:30

Temperature. Humidity.

Wind.

Description. Irrigated plot

Variety.

Crop height. $\approx 90''$

Row spacing.

Ground cover. 100%

Soil moisture. 7% at surface, 7% at 6" depth, 17% at
9", 20% at 15", 13% at 21", 8% at 27", 7% at 33"

Crop moisture. 76% (tops), 77.5% (middle 100 cm),
81% (bottom 100 cm)

Total fresh weight of crop. 78 gm/50 cm of row (tops)
414 gm/50 cm of row (middle 100 cm)
934 gm/50 cm of row (bottom 100 cm)

Antenna path.

Antenna reference height. 7' above ground

Group No. 117 Surface. Sudan Grass, Non-irrigated

Frequency. 10.0 GHz.

Location. Purdue Sandfarm -- Field 4B

Date. 4 Aug. 66 Time. 11:00

Temperature. 23.5°C Humidity.

Wind. 0-3 mph Clear sky

Description. Non-irrigated plot

Variety.

Crop height. ≈88"

Row spacing.

Ground cover. 90%

Soil moisture. <2% at surface, <1% at 6" depth, 2%
at 9", 6% at 15", 4% at 21", 8% at 27", 9% at 33"

Crop moisture. 69% (tops), 70% (middle 100 cm),
73% (bottom 100 cm)

Total fresh weight of crop. 93 gm/50 cm of row (tops)
590 gm/50 cm of row (middle 100 cm),
1022 gm/50 cm of row (bottom 100 cm)

Antenna path.

Antenna reference height. 7' above ground

Group No. 118 Surface, Sudan Grass, Non-irrigated

Frequency. 35.0 GHz.

Location. Purdue Sandfarm -- Field 4B

Date. 4 Aug. 66 Time. 13:30

Temperature. Humidity.

Wind.

Description. Non-irrigated plot

Variety.

Crop height. ≈88"

Row spacing.

Ground cover. 90%

Soil moisture. <2% at surface, <1% at 6" depth, 2%
at 9", 6% at 15", 4% at 21", 8% at 27", 9% at 33"

Crop moisture. 69% (tops), 70% (middle 100 cm),
73% (bottom 100 cm)

Total fresh weight of crop. 93 gm/50 cm of row (tops)
590 gm/50 cm of row (middle 100 cm)
1022 gm/50 cm of row (bottom 100 cm)

Antenna path.

Antenna reference height. 7' above ground

Group No. 119 Surface. Sorghum, Irrigated

Frequency. 10.0 GHz.

Location. Purdue Sandfarm -- Field 3 A

Date. 4 Aug 66 Time. 15:00

Temperature. Humidity.

Wind.

Description. Irrigated plot
Variety.

Crop height. 51"

Row spacing.

Ground cover. 60%

Soil moisture. 8% at surface, 9% at 6", 11% at 9",
12% at 15", 12% at 21", 13% at 27", 14% at 33"

Crop moisture. 63% (tops), 77% (bottoms)

Total fresh weight of crop. 328 gm/50 cm of row (tops),
1390 gm/50 cm of row (bottoms)

Antenna path.

Antenna reference height. 1 1/2' above ground

Group No. 120 Surface. Sorghum, Irrigated
Frequency. 35.0 GHz.
Location. Purdue Sandfarm -- Field 3A
Date. 4 Aug 66 Time.
Temperature. Humidity.
Wind.
Description. Irrigated plot
 Variety.
 Crop height. 51"
 Row spacing.
 Ground cover. 60%
 Soil moisture. 8% at surface, 9% at 6", 11% at 9",
 12% at 15", 12% at 21", 13% at 27", 14% at 33"
 Crop moisture. 63% (tops), 77% (bottoms)

 Total fresh weight of crop. 328 gm/50 cm of row
 (tops), 1390 gm/50 cm of row (bottoms)

 Antenna path.

 Antenna reference height. 1 1/2' above ground

Group No. 121 Surface. Sorghum, Non-irrigated

Frequency. 10.0 GHz.

Location. Purdue Sandfarm -- Field 3B

Date. 4 Aug 66 Time. 15:00

Temperature. Humidity.

Wind.

Description. Non-irrigated plot
Variety.

Crop height. 47"

Row spacing.

Ground cover. 50%

Soil moisture. < 1.5% (surface), < 1% at 6",
3% at 9", 7% at 15", 6% at 21", 6% at 27",
6% at 33"

Crop moisture. 70% (tops), 80% (bottoms)

Total fresh weight of crop. 225 gm/50 cm of row
(tops), 1080 gm/50 cm of row (bottoms)

Antenna path.

Antenna reference height. 1 1/2' above ground

Group No. 122 Surface. Sorghum, Non-irrigated

Frequency. 35.0 GHz.

Location. Purdue Sandfarm -- Field 3B

Date. 4 Aug 66 Time. 16:00

Temperature. Humidity.

Wind.

Description. Non-irrigated plot

Variety.

Crop height. 47"

Row spacing.

Ground cover. 50%

Soil moisture. <1.5% at surface, <1% at 6", 3% at 9", 7% at 15", 6% at 21", 6% at 27", 6% at 33"

Crop moisture. 70% (tops), 80% (bottoms)

Total fresh weight of crop. 225 gm/50 cm of row (tops), 1081 gm/50 cm of row (bottoms)

Antenna path.

Antenna reference height. 1 1/2' above ground

Group No. 123 Surface, Soybeans, Irrigated

Frequency. 10.0 GHz.

Location. Purdue Sandfarm -- Field 2A

Date. 5 Aug 66 Time. 15:30

Temperature. 25.5°C Humidity. Wet bulb 71.5°F

Wind. None

Description. Irrigated plot
Variety.

Crop height. 47"

Row spacing.

Ground cover. 95%

Soil moisture. 8% at surface, 9% at 6", 14% at 9",
13% at 15", 10% at 21", 10% at 27", 9% at 33"

Crop moisture. 82%

Total fresh weight of crop. 1150 gm/50 cm of row

Antenna path.

Antenna reference height. 1' above ground

Group No. 124 Surface. Soybeans, Irrigated

Frequency. 35.0 GHz.

Location. Purdue Sandfarm -- Field 2A

Date. 5 Aug 66 Time. 15:30

Temperature. 25.5°C Humidity.

Wind.

Description. Irrigated plot
Variety.

Crop height. 47"

Row spacing.

Ground cover. 95%

Soil moisture. 8% at surface, 9% at 6", 14% at 9",
13% at 15", 10% at 21", 10% at 27", 9% at 33"

Crop moisture. 82%

Total fresh weight of crop. 1150 gm/50 cm of row

Antenna path.

Antenna reference height. 1' above ground

Group No. 125 Surface, Soybeans, Non-irrigated

Frequency. 10.0 GHz.

Location. Purdue Sandfarm -- Field 2B

Date. 5 Aug 66 Time. 13:30

Temperature. Humidity.

Wind.

Description. Non-irrigated plot
Variety.

Crop height. 39"

Row spacing.

Ground cover. 75%

Soil moisture. <1.5% at surface, <1% at 6", 2% at 9",
5% at 15", 5% at 21", 5% at 27", 7% at 33"

Crop moisture. 79%

Total fresh weight of crop. 740 gm/50 cm of row

Antenna path.

Antenna reference height. 1' above ground

Group No. 126 Surface. Soybeans, Non-irrigation

Frequency. 35.0 GHz.

Location. Purdue Sandfarm -- Field 2B

Date. 5 Aug 66 Time. 15:30

Temperature. Humidity.

Wind.

Description. Non-irrigated plot

Variety.

Crop height. 39"

Row spacing.

Ground cover. 75%

Soil moisture. <1.5% at surface, <1% at 6", 2%
at 9", 5% at 15", 5% at 21", 5% at 27", 7% at 33"

Crop moisture. 79%

Total fresh weight of crop. 740 gm/50 cm of row

Antenna path.

Antenna reference height. 1' above ground

Group No. 127 Surface. Bare Soil, Irrigated

Frequency. 10.0 GHz.

Location. Purdue Sandfarm

Date. 5 Aug 66 Time. 13:30

Temperature. Humidity.

Wind.

Description. Bare Soil, Irrigated, 6" furrows every 6 feet, soil
Variety. surface washed to smooth crust

Crop height.

Row spacing.

Ground cover.

Soil moisture. 5% on surface, 4% at 6", 25% at 9",
28% at 15", 18% at 21", 15% at 27", 16% at 33"

Crop moisture.

Total fresh weight of crop.

Antenna path.

Antenna reference height. 1' above ground

Group No. 128 Surface. Bare Soil, Irrigated

Frequency. 35.0 GHz.

Location. Purdue Sandfarm

Date. 5 Aug 66 Time. 13:30

Temperature. Humidity.

Wind.

Description. Bare soil, irrigated, 6" furrows every 6 feet, soil .
Variety. surface washed to smooth crust

Crop height.

Row spacing.

Ground cover.

Soil moisture: 5% at surface, 4% at 6", 25% at 9",
28% at 15", 18% at 21", 15% at 27", 16% at 33"

Crop moisture.

Total fresh weight of crop.

Antenna path.

Antenna reference height. 1' above ground

Group No. 129 Surface. Bare Soil, Non-irrigated

Frequency. 10.0 GHz.

Location. Purdue Sandfarm

Date. 5 Aug 66 Time. 13:30

Temperature. Humidity.

Wind.

Description. Bare soil, Non-irrigated, some tractor tracks,
Variety. surface with 1" lumps

Crop height.

Row spacing.

Ground cover.

Soil moisture. (2% at surface, 3% at 6", 10% at 9",
16% at 15", 16% at 21", 17% at 27", 18% at 33")

Crop moisture.

Total fresh weight of crop.

Antenna path.

Antenna reference height. 1' above ground

Group No. 130 Surface. Bare soil, Non-irrigated

Frequency. 35.0 GHz.

Location. Purdue Sandfarm

Date. 5 Aug 66 Time.

Temperature. Humidity.

Wind.

Description. Bare soil, non-irrigated, some tractor tracks,
Variety. surface with 1" lumps

Crop height.

Row spacing.

Ground cover.

Soil moisture. <2% at surface, 3% at 6", 10% at 9",
16% at 15", 16% at 21", 17% at 27", 18% at 33"

Crop moisture.

Total fresh weight of crop.

Antenna path.

Antenna reference height. 1' above ground

Group No. 133 Surface. Sudan Grass
Frequency. 10.0 GHz.
Location. OSU Farm -- NW of ElectroScience Laboratory
Date. 30 Aug 66 Time. 14:17
Temperature. 33^oC Humidity.
Wind. 2 mph
Description.
 Crop height. 42"
 Antenna path. Parallel to rows

Group No. 134 Surface. Sudan Grass
Frequency. 10.0 GHz.
Location. OSU Farm -- NW of ElectroScience Laboratory
Date. 6 Sept 66 Time. 14:00
Temperature. 24^oC Humidity.
Wind. 2-4 mph
Description.
 Crop height. 60"
 Soil temperature. 18^oC at 4" depth
 Antenna path. Parallel to rows

Group No. 135 Surface. Sudan Grass
Frequency. 35.0 GHz.
Location. OSU Farm -- NW of ElectroScience Laboratory
Date. 6 Sept 66 Time. 15:00
Temperature. 24^oC Humidity.
Wind. 2-4 mph
Description.
 Crop height. 60"
 Soil temperature. 18^oC at 4" depth
 Antenna path. Parallel to rows

Group No. 136 Surface. Sudan Grass
Frequency. 10.0 GHz.
Location. OSU Farm -- NW of ElectroScience Laboratory
Date. 12 Sept 66 Time. 14:45
Temperature. 28^oC Humidity.
Wind. 2-6 mph
Description.
 Crop height. 70"
 Antenna path. Parallel to rows

Group No. 137 Surface. Sudan Grass

Frequency. 35.0 GHz.

Location. OSU Farm +- NW of ElectroScience Laboratory

Date. 12 Sept 66 Time. 15:15

Temperature. 28° C Humidity.

Wind. 2-6 mph

Description.

 Crop height. 70"

 Antenna path. Parallel to rows

Group No. 138 Surface. Sudan Grass

Frequency. 10.0 GHz.

Location. OSU Farm -- NW of ElectroScience Laboratory

Date. 12 Sept 66 Time. 15:15

Temperature. 28° C Humidity.

Wind. 2-6 mph

Description.

 Crop height. 70"

 Antenna path. Parallel to rows

Group No. 153

Surface. Grass

Frequency. 10.0 GHz.

Location. North of Ohio State University ElectroScience Laboratory

Date. 13 Oct 66

Time. 10:47

Temperature.

Humidity.

Wind.

Description.

Crop height. 2"

Group No. 154

Surface. Grass

Frequency. 10.0 GHz.

Location. North of OSU ElectroScience Laboratory

Date. 13 Oct 66

Time. 14:27

Temperature.

Humidity.

Wind.

Description.

Crop height. 2"

Group No. 155

Surface. Grass

Frequency. 35.0 GHz.

Location. North of OSU ElectroScience Laboratory

Date. 13 Oct 66

Time. 10:47

Temperature.

Humidity.

Wind.

Description.

Crop height. 2"

Group No. 156

Surface. Grass

Frequency. 15.0 GHz.

Location. North of OSU ElectroScience Laboratory

Date. 13 Oct 66

Time. 14:44

Temperature.

Humidity.

Wind.

Description.

Crop height. 2"

Group No. 157 Surface. Grass
Frequency. 1.8 GHz.
Location. North of ElectroScience Laboratory
Date. 24 Oct. 66 Time. 13:44
Temperature. Humidity.
Wind.
Description.
 Crop height. 2 1/2"

Group No. 158 Surface. Grass
Frequency. 15.0 GHz.
Location. North of ElectroScience Laboratory
Date. 24 Oct 66 Time. 13:44
Temperature. Humidity.
Wind.
Description.
 Crop height. 2 1/2"

Group No. 200 Surface. Oats

Frequency. 10.0 GHz.

Location. OSU Farm -- South of Lane Avenue and West of Kenny Road

Date. 20 Apr. 67 Time. 15:44

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 3"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 201 Surface Oats

Frequency. 10.0 GHz.

Location. OSU Farm -- Kenny Road

Date. 27 Apr 67 Time. 14:57

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 4 1/2"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 4.4 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 202 Surface, Oats

Frequency. 1.8 GHz.

Location. OSU Farm -- Kenny Road

Date. 27 Apr 67 Time. 15:17

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 4 1/2"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 4.4 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 203 Surface, Oats

Frequency. 10.0 GHz.

Location. OSU Farm -- Kenny Road

Date. 4 May 67 Time. 14:12

Temperature. Humidity.

Wind.

Description. North edge of field
Variety. Ohio Certified -- Rodney

Crop height. 6 1/2"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 87%

Total fresh weight of crop. 5.3 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 204 Surface. Oats

Frequency. 1.8 GHz.

Location. OSU Farm -- Kenny Road

Date. 4 May 67 Time. 15:30

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 6 1/2"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture.

Total fresh weight of crop. 5.3 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No.205 Surface. Oats

Frequency. 10.0 GHz.

Location. OSU Farm -- Kenny Road

Date. 18 May 67 Time. 15:00

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 10"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 86%

Total fresh weight of crop. 19.4 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 206 Surface, Oats

Frequency. 35.0 GHz.

Location. OSU Farm -- Kenny Road

Date. 23 May 67 Time. 13:55

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 11"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 85%

Total fresh weight of crop. 53.8 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 207 Surface, Oats

Frequency. 10.0 GHz.

Location. OSU Farm -- Kenny Road

Date. 23 May 67 Time. 10:18

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 11"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 85%

Total fresh weight of crop. 53.8 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 208 Surface, Oats

Frequency. 1.8 GHz.

Location. OSU Farm -- Kenny Road

Date. 23 May 67 Time. 10:37

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 11"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 85%

Total fresh weight of crop. 53.8 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 209 Surface. Oats

Frequency. 35.0 GHz.

Location. OSU Farm -- Kenny Road

Date. 14 June 67 Time. 10:59

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 28"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 237 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 210 Surface. Oats

Frequency. 10.0 GHz.

Location. OSU Farm -- Kenny Road

Date. 14 June 67 Time. 13:54

Temperature. Humidity.

Wind.

Description. North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 28"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 237 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 211 Surface, Oats

Frequency. 1.8 GHz.

Location, OSU Farm -- Kenny Road

Date. 14 June 67 Time. 14:17

Temperature. Humidity.

Wind.

Description, North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 28"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 237 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 212 Surface. Oats

Frequency. 10.0 GHz.

Location. OSU Farm -- Kenny Road

Date. 15 June 67 Time. 10:45

Temperature. Humidity.

Wind.

Description. North edge of field
Variety. Ohio Certified -- Rodney

Crop height. 28"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 237 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No.213 Surface, Oats

Frequency. 1.8 GHz.

Location. OSU Farm -- Kenny Road

Date. 15 June 67 Time. 11:10

Temperature. Humidity.

Wind.

Description, North edge of field

Variety. Ohio Certified -- Rodney

Crop height. 28"

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 237 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 214 Surface, Soybeans

Frequency. 35.0 GHz.

Location. OSU Farm -- West of the University Airport (Don Scott Field)

Date. 26 June 67 Time. 11:25

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 9"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 80%

Total fresh weight of crop. 9.3 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 215 Surface, Soybeans

Frequency. 10.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 26 June 67 Time. 09:13

Temperature. Humidity.

Wind.

Description. South edge of field
 Variety. Chippewa 64

Crop height. 9"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 80%

Total fresh weight of crop 9.3 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 216 Surface, Soybeans

Frequency. 1.8 GHz.

Location. OSU Farm -- Don Scott Field

Date. 26 June 67 Time. 09:29

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 9"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 80%

Total fresh weight of crop. 9.3 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 217 Surface, Soybeans

Frequency. 35.0 GHz.

Location, OSU Farm -- Don Scott Field

Date. 27 July 67 Time. 10:00

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 24"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 94.4 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 218 Surface, Soybeans

Frequency. 10.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 27 July 67 Time. 13:57

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 24"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 94.4 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 219 Surface. Soybeans

Frequency. 1.8 GHz.

Location. OSU Farm -- Don Scott Field

Date. 27 July 67 Time. 14:15

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 24"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 81%

Total fresh weight of crop. 94.4 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No.220 Surface, Soybeans

Frequency. 35.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 11 Aug 67 Time. 10:27

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 30"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 82%

Total fresh weight of crop. 86.3 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 221 Surface, Soybeans

Frequency. 10.0 GHz.

Location, OSU Farm -- Don Scott Field

Date. 11 Aug 67 Time. 13:12

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 30"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 82%

Total fresh weight of crop. 86.3 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 222 Surface. Soybeans

Frequency. 1.8 GHz.

Location. OSU Farm -- Don Scott Field

Date. 11 Aug 67 Time. 10:27

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 30"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 82%

Total fresh weight of crop. 86.3 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 223 Surface, Soybeans

Frequency. 35.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 1 Sept 67 Time. 14:01

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 32"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 67%

Total fresh weight of crop. 112 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 224 Surface, Soybeans

Frequency. 10.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 1 Sept 67 Time. 10:11

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 32"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 67%

Total fresh weight of crop. 112 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 225 Surface. Soybeans

Frequency. 1.8 GHz.

Location. OSU Farm -- Don Scott Field

Date. 1 Sept 67 Time. 14:01

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 32"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 67%

Total fresh weight of crop. 112 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 226 Surface, Soybeans

Frequency, 35.0 GHz.

Location, OSU Farm -- Don Scott Field

Date, 15 Sept 67 Time, 10:40

Temperature, Humidity.

Wind.

Description, South edge of field
Variety, Chippewa 64

Crop height, 28"

Row spacing, 30"

Ground cover.

Soil moisture.

Crop moisture, 2%

Total fresh weight of crop, 38 gm/sq. ft.

Antenna path, Parallel to rows

Antenna reference height, Top of crop

Group No. 227 Surface. Soybeans

Frequency. 10.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 15 Sept 67 Time. 13:25

Temperature. Humidity.

Wind.

Description. South edge of field

Variety. Chippewa 64

Crop height. 28"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 2%

Total fresh weight of crop. 38 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 228 Surface. Soybeans

Frequency. 1.8 GHz.

Location. OSU Farm -- Don Scott Field

Date. 15 Sept 67 Time. 10:40

Temperature. Humidity.

Wind.

Description. South edge of field
Variety. Chippewa 64

Crop height. 28"

Row spacing. 30"

Ground cover.

Soil moisture.

Crop moisture. 2%

Total fresh weight of crop. 38 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 300 Surface. Oats

Frequency. 1.8 GHz.

Location. OSU Farm -- West of ElectroScience Laboratory

Date. 7 May 68 Time. 14:20

Temperature. 20°C Humidity. 50%

Wind. 6 - 10 mph

Description. Oats, green

Variety. Ohio Certified - Rodney

Crop height. 10"

Row spacing. 7"

Ground cover. 75%

Soil moisture. 9%

Crop moisture. 84%

Total fresh weight of crop. 123 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 301 Surface. Oats

Frequency. 10.0 GHz.

Location. OSU Farm - West of ElectroScience Laboratory

Date. 7 May 68 Time. 13:30

Temperature. 16°C Humidity. 40%

Wind. 6 - 10 mph

Description. Oats, green

Variety. Ohio Certified - Rodney

Crop height. 10"

Row spacing. 7"

Ground cover. 75%

Soil moisture. 9%

Crop moisture. 84%

Total fresh weight of crop. 123 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 302 Surface. Oats

Frequency. 15.0 GHz.

Location. OSU Farm - West of ElectroScience Laboratory

Date. 8 May 68 Time. 10:00

Temperature. Humidity.

Wind. 6 - 10 mph

Description. Oats, green

Variety. Ohio Certified - Rodney

Crop height. 10"

Row spacing. 7"

Ground cover. 75%

Soil moisture. 9%

Crop moisture. 84%

Total fresh weight of crop. 123 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 303 Surface. Oats

Frequency, 35.0 GHz.

Location. OSU Farm - West of ElectroScience Laboratory

Date. 8 May 68 Time. 10:00

Temperature. Humidity.

Wind. 6-10 mph

Description. Oats, green
Variety. Ohio Certified - Rodney

Crop height. 10"

Row spacing. 7"

Ground cover. 75%

Soil moisture. 9%

Crop moisture. 84%

Total fresh weight of crop. 123 gm/sq.ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 304 Surface. Oats

Frequency. 1.8 GHz.

Location. OSU Farm - West of ElectroScience Laboratory

Date. 7 June 68 Time. 11:15

Temperature. 31°C Humidity.

Wind.

Description. Oats, green, in head
Variety. Ohio Certified - Rodney

Crop height. 36"

Row spacing. 7"

Ground cover. 100%

Soil moisture.

Crop moisture. 83.3%

Total fresh weight of crop. 380 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 305 Surface. Oats
Frequency. 10.0 GHz.
Location. OSU Farm - West of ElectroScience Laboratory
Date. 7 June 68 Time. 10:30
Temperature. Humidity.
Wind.
Description. Oats, green in head
 Variety. Ohio Certified - Rodney
 Crop height. 36"
 Row spacing. 7"
 Ground cover. 100%
 Soil moisture.
 Crop moisture. 83.3%
 Total fresh weight of crop. 380 gm/sq. ft.
 Antenna path. Parallel to rows
 Antenna reference height. Top of crop

Group No. 306 Surface. Oats
Frequency. 15.0 GHz.
Location. OSU Farm - West of ElectroScience Laboratory
Date. 7 June 68 Time. 14:20
Temperature. Humidity.
Wind.
Description. Oats, green, in head
Variety. Ohio Certified - Rodney
Crop height. 36"
Row spacing. 7"
Ground cover. 100%
Soil moisture.
Crop moisture. 83.3%
Total fresh weight of crop. 380 gm/sq. ft.
Antenna path. Parallel to rows
Antenna reference height. Top of crop

Group No. 307 Surface. Oats

Frequency. 35.0 GHz.

Location. OSU Farm - West of ElectroScience Laboratory

Date. 7 June 68 Time. 14:20

Temperature. Humidity.

Wind.

Description. Oats, green, in head
Variety. Ohio Certified - Rodney

Crop height. 36"

Row spacing. 7"

Ground cover. 100%

Soil moisture.

Crop moisture. 83.3%

Total fresh weight of crop. 380 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 308 Surface. Wheat

Frequency, 1.8 GHz.

Location, OSU Farm

Date, 1 July 68 Time, 11:30

Temperature. Humidity.

Wind.

Description. Wheat, in head
Variety.

Crop height. 48"

Row spacing. 7"

Ground cover. 100%

Soil moisture.

Crop moisture. 67%

Total fresh weight of crop. 240 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 309 Surface. Wheat

Frequency. 10.0 GHz.

Location. OSU Farm

Date. 1 July 68 Time. 11:00

Temperature. Humidity.

Wind.

Description. Wheat, in head
Variety.

Crop height. 48"

Row spacing. 7"

Ground cover. 100%

Soil moisture.

Crop moisture. 67%

Total fresh weight of crop. 240 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 310 Surface, Wheat

Frequency. 15.0 GHz.

Location. OSU Farm

Date. 1 July 68 Time. 14:30

Temperature. 32^oC Humidity.

Wind.

Description. Wheat, in head
Variety.

Crop height. 48"

Row spacing. 7"

Ground cover. 100%

Soil moisture.

Crop moisture. 67%

Total fresh weight of crop. 240 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 311 Surface. Wheat

Frequency. 35.0 GHz.

Location. OSU Farm

Date. 1 July 68 Time. 14:30

Temperature. 32^oC Humidity.

Wind.

Description. Wheat, in head
Variety.

Crop height. 48"

Row spacing. 7"

Ground cover. 100%

Soil moisture.

Crop moisture. 67%

Total fresh weight of crop. 240 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 312 Surface. Oats

Frequency. 1.8 GHz.

Location. OSU Farm - West of ElectroScience Laboratory

Date. 31 July 68 Time. 10:00

Temperature. Humidity.

Wind.

Description. Oats, ripe, partially flattened

Variety. Ohio Certified - Rodney

Crop height. 36" (standing), 20" (flattened)

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 36%

Total fresh weight of crop. 130 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 313 Surface. Oats

Frequency. 10.0 GHz.

Location. OSU Farm - West of ElectroScience Laboratory

Date. 30 July 68 Time. 15:30

Temperature. Humidity.

Wind.

Description. Oats, ripe, partially flattened

Variety. Ohio Certified - Rodney

Crop height. 36" (standing), 20" (flattened)

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 36%

Total fresh weight of crop. 130 gm/sq. ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 314 Surface. Oats

Frequency. 35.0 GHz.

Location. OSU Farm - West of ElectroScience Laboratory

Date. 31 July '68 Time. 10:00

Temperature. Humidity.

Wind.

Description. Oats, ripe, partially flattened

Variety. Ohio Certified - Rodney

Crop height. 36" (standing), 20" (flattened)

Row spacing. 7"

Ground cover.

Soil moisture.

Crop moisture. 36%

Total fresh weight of crop. 130 gm/sq.ft.

Antenna path. Parallel to rows

Antenna reference height. Top of crop

Group No. 315 Surface. Soybeans, Irrigated

Frequency. 10.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 7 Aug. '68 Time. 10:20

Temperature. Humidity.

Wind.

Description. Soybeans, irrigated, green
Variety.

Crop height. 40" - 44"

Row spacing. 18"

Ground cover. 100%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

Group No. 316 Surface. Soybeans, non-irrigated

Frequency. 1.8 GHz.

Location. OSU Farm -- Don Scott Field

Date. 14 Aug. '68 Time. 15:40

Temperature. Humidity.

Wind.

Description. Soybeans, non-irrigated, green
Variety.

Crop height. 30" - 38"

Row spacing. 18"

Ground cover. 80%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

Group No. 317 Surface. Soybeans, Non-irrigated

Frequency. 10.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 14 Aug. '68 Time. 10:25

Temperature. Humidity.

Wind.

Description. Soybeans, non-irrigated, green
Variety.

Crop height. 30" - 38"

Row spacing. 18"

Ground cover. 80%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

Group No. 318 Surface. Soybeans, Non-irrigated

Frequency. 35.0GHz.

Location. OSU Farm -- Don Scott Field

Date. 14 Aug. '68 Time. 15:40

Temperature. Humidity.

Wind.

Description. Soybeans, non-irrigated, green
Variety.

Crop height. 30" - 38"

Row spacing. 18"

Ground cover. 80%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

Group No. 319 Surface. Bare Soil

Frequency. 10.0 GHz.

Location. OSU Farm -- West of ElectroScience Laboratory

Date. 27 Aug. '68 Time. 14:50

Temperature. 23.5°C Humidity. 75%

Wind. 8 mph

Description. Bare soil, freshly plowed, 8"-12" dia. clods
Variety.

Crop height.

Row spacing.

Ground cover.

Soil temperature. 23.5°C (surface), 21°C (3"), 18.5°C (9")

Crop moisture.

Total fresh weight of crop.

Antenna path.

Antenna reference height.

Group No. 320 Surface. Bare Soil

Frequency. 10.0 GHz.

Location. OSU Farm - West of ElectroScience Laboratory

Date. 28 Aug. '68 Time. 10:30

Temperature. 20.5°C Humidity. 50%

Wind. 3 mph

Description. Bare soil, freshly disced, 4" dia. clods, 2"-3" high ridges
Variety.

Crop height.

Row spacing.

Ground cover.

Soil temperature. 26°C (surface), 25.5°C (1"), 20.5°C (3"),
18.5°C (9")

Crop moisture.

Total fresh weight of crop.

Antenna path.

Antenna reference height.

Group No. 321 Surface. Soybeans, Irrigated

Frequency. 10.0GHz.

Location. OSU Farm - Don Scott Field

Date. 3 Sept. '68 Time. 14:20

Temperature. Humidity.

Wind.

Description. Soybeans, irrigated, green
Variety.

Crop height. 36" - 40"

Row spacing. 18"

Ground cover. 100%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

Group No. 322 Surface, Soybeans, Non-irrigated

Frequency. 10.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 3 Sept. '68 Time. 15:00

Temperature. Humidity.

Wind.

Description. Soybeans, non-irrigated, green
Variety.

Crop height. 32" - 36"

Row spacing. 18"

Ground cover. 75%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

Group No. 323 Surface. Soybeans, Irrigated

Frequency. 10.0 GHz,

Location. OSU Farm -- Don Scott Field

Date. 12 Sept. '68 Time. 15:50

Temperature. Humidity.

Wind,

Description. Soybeans, irrigated
Variety.

Crop height. 36"

Row spacing. 18"

Ground cover. 100%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

Group No. 324 Surface. Soybeans, Non-irrigated

Frequency. 10.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 12 Sept. '68 Time. 16:05

Temperature. Humidity.

Wind.

Description. Soybeans, non-irrigated
Variety.

Crop height. 30"

Row spacing. 18"

Ground cover. 75%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

Group No. 325 Surface. Sorghum

Frequency. 10.0 GHz.

Location. OSU Farm -- Don Scott Field

Date. 27 Sept. '68 Time. 11:00

Temperature. Humidity.

Wind.

Description. Sorghum, green, tasseled
Variety.

Crop height. 48" (top of leaves), 68" (top of tassels)

Row spacing.

Ground cover. 100%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 48" above ground

Group No. 326 Surface. Soybeans, Irrigated

Frequency. 10.0 GHz.

Location. OSU Farm - Don Scott Field

Date. 27 Sept. '68 Time. 14:00

Temperature. Humidity.

Wind.

Description. Soybeans, irrigated, ripe
Variety.

Crop height. 40"

Row spacing. 18"

Ground cover.

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

Group No. 327 Surface. Soybeans, Non-irrigated

Frequency. 10.0 GHz.

Location. OSU Farm - Don Scott Field

Date. 27 Sept. '68 Time. 14:30

Temperature. Humidity.

Wind.

Description. Soybeans, non-irrigated, ripe
Variety.

Crop height. 32"

Row spacing. 18"

Ground cover. 10%

Soil moisture.

Crop moisture.

Total fresh weight of crop.

Antenna path. Across rows

Antenna reference height. 24" above ground

D. TABLES OF 0° , THE NORMALIZED RADAR BACKSCATTERING CROSS SECTION, AND γ ,
 THE NORMALIZED BACKSCATTERING CROSS SECTION PER UNIT "PROJECTED" AREA
 MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 16JUN5 DATA GROUP NUMBER = 63 TERRAIN PURDUE W31 FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 10.000 SECONDS VOLTAGE 2.083 VOLTS MULTIPLIER 1.0
 TIME/VOLT 4.80077 INPUT 0.57417 IN DB -4.81919 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
8	50.0	0.03277394	-14.845	-12.925
12	40.0	0.02393315	-16.210	-15.053

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
40	40.0	0.03228445	-14.910	-13.753
41	30.0	0.03797597	-14.295	-13.580

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 16JUN5 DATA GROUP NUMBER = 64 TERRAIN PURDUE W31 FREQUENCY = 15.400 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 1.000 SECONDS VOLTAGE 1.905 VOLTS MULTIPLIER 1.0
 TIME/VOLT 0.52493 INPUT 4.24256 IN DB 12.55256 FREQUENCY 15.4

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
9	50.0	0.03591204	-14.448	-12.528
13	40.0	0.02069638	-16.841	-15.684
22	30.0	0.03397633	-14.688	-14.064

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
40	40.0	0.03022965	-12.202	-11.044
42	30.0	0.05848548	-12.330	-11.705

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 65 TERRAIN PURDUE BW23 FREQUENCY = 10.000 GIGAHERTZ
 DATE 16JUN5

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 10.000 SECONDS VOLTAGE 2.083 VOLTS MULTIPLIER 1.0
 TIME/VOLT 4.80077 INPUT 0.57417 IN DR -4.81919 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
69	70.0	0.02886658	-15.396	-10.737
71	60.0	0.02160250	-16.655	-13.645
73	50.0	0.01934579	-17.134	-15.215
75	40.0	0.01593711	-17.693	-15.846
77	30.0	0.02051200	-16.880	-16.255
79	20.0	0.02343069	-16.302	-16.032
81	10.0	0.05165654	-12.869	-12.862

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
67	70.0	0.02153126	-16.876	-12.216
65	60.0	0.02065464	-16.850	-13.840
63	50.0	0.02562875	-15.913	-13.993
58	40.0	0.02476716	-16.061	-14.904
61	30.0	0.03755051	-14.254	-13.629
55	30.0	0.06524853	-11.854	-11.230
53	20.0	0.07189906	-11.433	-11.163
50	10.0	0.14438200	-8.527	-8.460

MEASURED BACKSCATTERING CROSS SECTION PFR UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 16JUN5 DATA GROUP NUMBER = 66 TERRAIN PURDUE BW23 FREQUENCY = 15.400 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 1.00 SECONDS VOLTAGE 2.041 VOLTS MULTIPLIER 1.0
 TIME/VOLT 0.48996 INPUT IN DR 13.12157 FREQUENCY 15.4

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
70	70.0	0.04460985	-13.506	-8.846
72	60.0	0.03197773	-15.076	-12.065
74	50.0	0.02546885	-15.940	-14.021
76	40.0	0.02644521	-15.777	-14.619
78	30.0	0.03010749	-15.213	-14.589
80	20.0	0.04652344	-13.323	-13.053
82	10.0	0.10114925	-9.950	-9.884

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
68	70.0	0.03648550	-14.379	-9.719
66	60.0	0.02834847	-15.475	-12.464
64	50.0	0.02980150	-15.258	-13.338
60	40.0	0.02845226	-15.459	-14.301
56	30.0	0.07802382	-11.078	-10.453
62	30.0	0.03968921	-14.013	-13.389
54	20.0	0.08426969	-10.743	-10.473
51	10.0	0.09754721	-10.108	-10.041

MEASURED BACKSCATTERING CROSS SECTION PFR UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 67 TERRAIN PURDUE 031 FREQUENCY = 10.000 GIGAHERTZ
 DATE 16JUN5

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 10.000 SECONDS VOLTAGE 2.083 VOLTS MULTIPLIER 1.0
 TIME/VOLT 4.80077 INPUT 0.57417 IN DB -4.81919 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
28	70.0	0.14776554	-8.304	-3.645
4	60.0	0.16493699	-7.827	-4.817
6	50.0	0.26881355	-5.705	-3.786
16	40.0	0.17920605	-7.466	-6.309
18	30.0	0.21989719	-6.578	-5.953
24	20.0	0.16328862	-7.870	-7.600
26	10.0	0.11238654	-9.493	-9.426

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
31	70.0	0.13715124	-14.330	-9.641
34	60.0	0.06176237	-12.093	-9.082
36	50.0	0.07570401	-11.209	-9.289
38	40.0	0.15984523	-7.963	-6.806
44	30.0	0.18415081	-7.348	-6.724
46	20.0	0.18223049	-7.394	-7.124
48	10.0	0.21944227	-6.587	-6.520

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 16JUN5 DATA GROUP NUMBER = 68 TERRAIN PURDUE 031 FREQUENCY = 15.400 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 1.000 SECONDS VOLTAGE 1.905 VOLTS MULTIPLIER 1.0
 TIME/VOLT 0.52493 INPUT 4.24256 IN DB 12.55256 FREQUENCY 15.4

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
29	70.0	0.09427026	-10.256	-5.597
5	60.0	0.15256484	-8.165	-5.155
7	50.0	0.16746876	-7.761	-5.841
17	40.0	0.11457781	-9.409	-8.252
19	30.0	0.14001234	-8.538	-7.914
25	20.0	0.10821537	-9.657	-9.387
27	10.0	0.07672470	-11.151	-11.084

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
32	70.0	0.06357686	-11.967	-7.308
35	60.0	0.11938378	-9.231	-6.220
37	50.0	0.13449302	-8.713	-6.794
39	40.0	0.13301195	-8.761	-7.604
45	30.0	0.15055553	-8.223	-7.598
47	20.0	0.13421565	-8.722	-8.452
49	10.0	0.14764425	-8.308	-8.241

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 69
 DATE 17JUN5

TERRAIN PURDUE A6

FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 10.000 SECONDS
 INPUT 4.34972

VOLTAGE 2.299 VOLTS
 IN DB -4.06110

MULTIPLIER 1.0
 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
125	70.0	0.05703732	-12.438	-7.779
123	60.0	0.07126472	-11.471	-8.461
121	50.0	0.08273521	-10.823	-8.904
119	40.0	0.07342449	-11.342	-10.184
117	30.0	0.08127711	-10.900	-10.276
115	20.0	0.11775758	-9.290	-9.020
113	10.0	0.14658571	-8.339	-8.272

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
98	70.0	0.04494383	-13.473	-8.814
100	60.0	0.06111635	-12.138	-9.128
102	50.0	0.06357834	-11.967	-10.048
104	40.0	0.10077247	-9.967	-8.809
107	30.0	0.13046140	-8.845	-8.220
109	20.0	0.13956585	-8.552	-8.282
111	10.0	0.18062238	-7.432	-7.366

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 70 TERRAIN PURDUE A6 FREQUENCY = 15.400 GIGAHERTZ
 DATE 17JUN5

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 1.000 SECONDS VOLTAGE 1.136 VOLTS MULTIPLIER 1.0
 TIME/VOLT 0.88028 INPUT 2.59619 IN DB 8.28674 FREQUENCY 15.4

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
126	70.0	0.06684297	-11.749	-7.090
124	60.0	0.10834925	-9.652	-6.641
122	50.0	0.15626898	-8.061	-6.142
120	40.0	0.17377508	-7.600	-6.443
118	30.0	0.22943720	-6.393	-5.769
116	20.0	0.25433234	-5.946	-5.676
114	10.0	0.26481490	-5.771	-5.704

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
99	70.0	0.07621651	-11.180	-6.520
101	60.0	0.09062347	-10.428	-7.417
103	50.0	0.09649959	-10.155	-8.235
105	40.0	0.16657610	-7.784	-6.626
108	30.0	0.21806534	-6.614	-5.989
110	20.0	0.26842409	-5.712	-5.442
112	10.0	0.27420247	-5.619	-5.553

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 71 TERRAIN PURDUE A6 FREQUENCY = 1.800 GIGAHERTZ
 DATE 17JUN5

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 1.000 SECONDS VOLTAGE 2.778 VOLTS MULTIPLIER 1.0
 TIME/VOLT 0.35997 INPUT 6.07118 IN DB 15.66547 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
155	70.0	0.00615725	-22.106	-17.447
157	60.0	0.01211723	-19.166	-16.156
159	45.0	0.01228328	-19.107	-17.602
161	30.0	0.01539883	-18.125	-17.500
163	15.0	0.02271899	-16.436	-16.286

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
173	70.0	0.00800129	-20.968	-16.309
171	60.0	0.01183334	-19.269	-16.259
169	45.0	0.01825379	-17.386	-15.881
167	30.0	0.02178031	-16.619	-15.995
165	15.0	0.02712856	-15.666	-15.515

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 72 TERRAIN PURDUE 031 FREQUENCY = 10.000 GIGAHERTZ
 DATE 17JUN5

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 10.000 SECONDS VOLTAGE 2.299 VOLTS MULTIPLIER 1.0
 TIME/VOLT 4.34972 INPUT 0.62653 IN DB -4.06110 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
83	60.0	0.12964674	-8.872	-5.862
85	50.0	0.15850581	-8.000	-6.080
89	60.0	0.22512576	-6.476	-3.465

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
95	50.0	0.07446875	-11.280	-9.361
93	60.0	0.06878710	-11.625	-8.615

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 73 TERRAIN PURDUE 031 FREQUENCY = 15.400 GIGAHERTZ
 DATE 17JUN5

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 1.000 SECONDS VOLTAGE 1.136 VOLTS MULTIPLIER 1.0
 TIME/VOLT 0.88028 INPUT 2.59619 IN DB 8.28674 FREQUENCY 15.4

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
88	60.0	0.44942832	-3.473	-0.463
86	50.0	0.50067844	-3.004	-1.085
91	60.0	0.34386966	-4.636	-1.626

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
95	60.0	0.11736512	-9.305	-6.294

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 17JUN5 DATA GROUP NUMBER = 74 TERRAIN PURDUE 031 FREQUENCY = 1.800 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 1.000 SECONDS VOLTAGE 2.151 VOLTS MULTIPLIER 1.0
 TIME/VOLT 0.46490 INPUT 4.76142 IN DB 13.55472 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
127	70.0	0.00472579	-23.255	-18.596
129	60.0	0.00527863	-22.775	-19.764
131	50.0	0.00801281	-20.962	-19.043
133	40.0	0.01311660	-18.822	-17.664
135	30.0	0.01837392	-17.358	-16.733
137	20.0	0.02343524	-16.301	-16.031
139	10.0	0.05084119	-12.938	-12.871

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 101 TERRAIN PURDUE WS 33 FREQUENCY = 10.000 GIGAHERTZ

DATE 03AUG66

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.39719 INPUT 5.52948 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
12	70.0	0.01918888	-17.170	-12.510
13	70.0	0.01504139	-18.227	-13.568
14	70.0	0.01340203	-18.728	-14.069
15	70.0	0.01421262	-18.473	-13.814
16	70.0	0.01344078	-18.716	-14.056
17	60.0	0.02997134	-15.233	-12.223
18	60.0	0.02840472	-15.466	-12.456
19	50.0	0.07799078	-11.080	-9.160
20	50.0	0.07740579	-11.112	-9.193
21	40.0	0.17718266	-7.516	-6.358
22	40.0	0.16011045	-7.956	-6.798
23	27.0	0.28686731	-5.423	-4.922
24	27.0	0.29515623	-5.299	-4.798
25	20.0	0.79944846	-0.972	-0.702
26	20.0	0.56655774	-2.468	-2.197

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
27	70.0	0.02140539	-16.695	-12.035
28	70.0	0.02506341	-16.010	-11.350
29	70.0	0.03697889	-14.320	-9.661
30	60.0	0.04200172	-13.767	-10.757
31	60.0	0.05120777	-12.907	-9.896
32	50.0	0.06918476	-11.600	-9.681
33	50.0	0.08227287	-10.847	-8.928
34	40.0	0.11464859	-9.406	-8.249
35	40.0	0.10810364	-9.662	-8.504
36	28.0	0.33433015	-4.758	-4.218
37	28.0	0.33210844	-4.787	-4.247
38	20.0	0.50768732	-2.944	-2.674
39	20.0	0.62960393	-2.009	-1.739

DATA	GROUP	NUMBER	CONTINUED			
			CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS		
15	70.0	0.00219417	-26.587	-21.928		
16	70.0	0.00269119	-25.701	-21.041		
17	60.0	0.00305265	-25.153	-22.143		
18	60.0	0.00375241	-24.257	-21.247		
19	50.0	0.00898175	-20.466	-18.547		
20	50.0	0.01023734	-19.898	-17.979		
21	40.0	0.01229231	-19.104	-17.946		
22	40.0	0.01199087	-19.244	-18.087		
23	27.0	0.01612206	-17.926	-17.425		
24	27.0	0.01442558	-18.409	-17.907		
25	20.0	0.02611545	-15.848	-15.578		
26	20.0	0.02735032	-16.507	-16.237		

DATA	GROUP	NUMBER	CONTINUED			
			CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS		
40	70.0	0.00160770	-27.938	-23.278		
41	70.0	0.00146035	-28.355	-23.696		
42	60.0	0.00236850	-26.255	-23.245		
43	60.0	0.00201053	-26.967	-23.957		
44	50.0	0.00473791	-23.244	-21.325		
45	50.0	0.00467469	-23.302	-21.383		
46	40.0	0.00691117	-21.604	-20.447		
47	40.0	0.00575145	-22.402	-21.245		
48	28.0	0.01087253	-19.637	-19.096		
49	28.0	0.01243232	-19.054	-18.514		
50	20.0	0.01324448	-18.780	-18.510		
51	20.0	0.01251518	-19.026	-18.755		

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 03AUG66 DATA GROUP NUMBER = 102 TERRAIN PURDUE WS 33 FREQUENCY = 35.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 63.000 SECONDS VOLTAGE 1.401 VOLTS MULTIPLIER 0.1
 TIME/VOLT 4.49679 INPUT 0.60837 IN DB -4.31659 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
28	70.0	0.01763026	-17.537	-12.878
29	70.0	0.01539171	-18.127	-13.468
30	60.0	0.02561167	-15.916	-12.905
31	60.0	0.03098552	-15.088	-12.078
32	50.0	0.06026429	-12.199	-10.280
33	50.0	0.03215445	-14.928	-13.008
34	40.0	0.07180301	-11.439	-10.281
35	40.0	0.06912771	-11.603	-10.446
36	30.0	0.16465123	-7.834	-7.210
37	30.0	0.17462638	-7.579	-6.954
38	20.0	0.11751986	-9.299	-9.029
39	20.0	0.08799284	-10.556	-10.285

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
40	70.0	0.02101151	-16.775	-12.116
41	70.0	0.01874204	-17.272	-12.612
42	60.0	0.04781457	-13.204	-10.194
43	60.0	0.04013371	-13.965	-10.955
44	50.0	0.08317827	-10.800	-8.881
45	50.0	0.07123125	-11.473	-9.554
46	40.0	0.11532616	-9.381	-8.223
47	40.0	0.10771951	-9.677	-8.520
48	30.0	0.25414755	-5.949	-5.324
49	30.0	0.25905968	-5.866	-5.241
50	20.0	0.32835424	-4.837	-4.566
51	20.0	0.39931171	-4.031	-3.760

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 1A3 TERRAIN PURDUE WS 33 FREQUENCY = 15.000 GIGAHERTZ

DATE 06AUG6

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 38.700 SECONDS VOLTAGE 8.500 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.4470% INPUT 4.94376 IN DB 13.87763 FREQUENCY 15.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
319	70.0	0.05131375	-12.898	-8.238
320	70.0	0.04499589	-13.468	-8.809
321	60.0	0.09440314	-10.250	-7.240
322	60.0	0.08154069	-10.886	-7.876
323	45.0	0.16477114	-7.831	-6.326
324	45.0	0.17604121	-7.495	-5.990
325	30.0	0.30549374	-5.150	-4.525
326	30.0	0.37083003	-4.308	-3.684
327	20.0	0.91457841	-0.388	-0.118
328	20.0	0.62138957	-2.066	-1.796

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
329	70.0	0.05212970	-12.829	-8.170
330	70.0	0.05535211	-12.569	-7.909
331	60.0	0.05988099	-12.227	-9.217
332	60.0	0.06174337	-12.094	-9.084
333	45.0	0.13261725	-8.774	-7.269
334	45.0	0.13370257	-8.739	-7.233
335	30.0	0.37768726	-4.229	-3.604
336	30.0	0.32365038	-4.899	-4.275
337	20.0	0.82643168	-0.828	-0.558
338	20.0	0.82709034	-0.824	-0.554

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 105 TERRAIN PURDUE C 3D FREQUENCY = 10.000 GIGAHERTZ
 DATE 03AUG66

NO PLCTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.29719 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
62	70.0	0.04983185	-13.025	-8.365
63	70.0	0.04566679	-13.494	-8.745
64	60.0	0.06833860	-11.653	-8.643
65	60.0	0.09213236	-10.356	-7.346
66	45.0	0.19135902	-7.182	-5.676
67	45.0	0.19246103	-7.157	-5.651
68	28.0	0.29137807	-5.355	-4.815
69	28.0	0.29054970	-5.368	-4.827
70	20.0	0.27159832	-5.661	-5.391
71	20.0	0.27008804	-5.685	-5.415

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
52	70.0	0.05331792	-12.731	-8.072
53	70.0	0.04262041	-13.704	-9.044
54	60.0	0.11794367	-9.283	-6.273
55	60.0	0.10173171	-9.925	-6.915
56	45.0	0.21454019	-6.685	-5.180
57	45.0	0.19099184	-7.190	-5.685
58	28.0	0.23774996	-6.239	-5.698
59	28.0	0.25984801	-5.853	-5.312
60	20.0	0.31958434	-4.954	-4.684
61	20.0	0.35733362	-4.469	-4.199

DATA GROUP NUMBER 105 CONTINUED

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION VERTICAL TRANSMITTER		GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	
72	70.0	0.009486822	-23.126	-18.467
73	70.0	0.00355524	-24.491	-19.832
74	60.0	0.00695564	-21.577	-18.566
75	60.0	0.00643070	-21.917	-18.907
76	60.0	0.00656325	-21.829	-18.819
77	60.0	0.00576316	-22.393	-19.383
78	45.0	0.01107063	-19.558	-18.053
79	45.0	0.01038554	-19.836	-18.331
80	28.0	0.01257004	-19.007	-18.466
81	28.0	0.01263194	-18.985	-18.445
82	20.0	0.01084086	-19.649	-19.379
83	20.0	0.01031030	-19.867	-19.597
84	20.0	0.01248880	-19.035	-18.765

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	CROSS SECTION IN DECIBELS		GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	
52	70.0	0.00788886	-21.030	-16.370
53	70.0	0.00964276	-20.158	-15.499
54	60.0	0.01755721	-17.555	-14.545
55	60.0	0.01390985	-18.567	-15.556
56	45.0	0.02917545	-15.350	-13.845
57	45.0	0.02148661	-16.678	-15.173
58	28.0	0.01840228	-17.351	-16.811
59	28.0	0.02065304	-16.850	-16.310
60	20.0	0.01502100	-18.233	-17.963
61	20.0	0.01582402	-18.007	-17.737

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 106 TERRAIN PURDUE C 3D FREQUENCY = 35.000 GIGAHERTZ
 DATE 06AUG66

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 63.000 SECONDS VOLTAGE 1.401 VOLTS MULTIPLIER 0.1
 TIME/VOLT 4.49679 INPUT 0.60837 IN DB -4.31659 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
72	70.0	0.03237220	-14.898	-10.239
73	70.0	0.03306197	-14.807	-10.147
74	60.0	0.06480615	-11.884	-8.874
75	60.0	0.07063407	-11.510	-8.500
76	60.0	0.07095960	-11.490	-8.480
77	60.0	0.06960084	-11.574	-8.564
78	45.0	0.17405134	-7.593	-6.088
79	45.0	0.19471254	-7.106	-5.601
80	30.0	0.19648705	-7.067	-6.442
81	30.0	0.19958711	-6.999	-6.374
82	20.0	0.18359221	-7.361	-7.091
83	20.0	0.25564563	-5.924	-5.653
84	20.0	0.22400867	-6.497	-6.227

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
62	70.0	0.04106694	-13.865	-9.206
63	70.0	0.04117089	-13.854	-9.195
64	60.0	0.08194962	-10.865	-7.854
65	60.0	0.08224261	-10.849	-7.839
66	45.0	0.16226469	-7.898	-6.393
67	45.0	0.21378945	-6.700	-5.195
68	30.0	0.21382293	-6.699	-6.075
69	30.0	0.25474442	-5.939	-5.314
70	20.0	0.21576335	-6.660	-6.390
71	20.0	0.24747420	-6.065	-5.795

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 107 TERRAIN PURDUE C3D FREQUENCY = 15.000 GIGAHERTZ

DATE 06AUG66

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 38.000 SECONDS VOLTAGE 8.500 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.44706 INPUT 4.94176 IN DB 13.87763 FREQUENCY 15.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
355	70.0	0.06517167	-11.859	-7.200
356	70.0	0.05305273	-12.753	-8.093
357	60.0	0.14838757	-8.286	-5.276
358	60.0	0.19161544	-7.176	-4.165
359	45.0	0.30509709	-5.156	-3.650
360	45.0	0.26297411	-5.801	-4.296
361	30.0	0.34698431	-4.597	-3.972
362	30.0	0.46394450	-3.335	-2.711
363	20.0	0.59565073	-2.250	-1.980
364	20.0	0.64121219	-1.930	-1.660

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
345	70.0	0.05327894	-12.734	-8.075
346	70.0	0.07592709	-11.196	-6.537
347	60.0	0.12811518	-8.924	-5.914
348	60.0	0.14587896	-8.360	-5.350
349	45.0	0.21317033	-6.713	-5.208
350	45.0	0.21723545	-6.631	-5.126
351	30.0	0.23842362	-6.227	-5.602
352	30.0	0.43142236	-3.651	-3.026
353	20.0	0.38602400	-4.134	-3.864
354	20.0	0.62534373	-2.039	-1.769

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 108 TERRAIN PURDUE C3D FREQUENCY = 1.800 GIGAHERTZ

NO PLOTS REQUESTED

DATE 06AUG6

INTEGRATION TIME FROM REFERENCE SPHERE = 30.000 SECONDS VOLTAGE 1.000 VOLTS MULTIPLIER 0.1

TIME/VOLT 3.00000 INPUT 0.87029 IN DB -1.20667 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
355	70.0	0.03547134	-22.619	-17.960
356	70.0	0.03560504	-22.514	-17.855
357	60.0	0.00860115	-20.654	-17.644
358	60.0	0.00920865	-20.358	-17.348
359	45.0	0.01538550	-18.129	-16.624
360	45.0	0.01541207	-18.121	-16.616
361	30.0	0.01912752	-17.183	-16.559
362	30.0	0.01987623	-17.017	-16.392
363	20.0	0.02247927	-16.482	-16.212
364	20.0	0.02419336	-16.163	-15.893

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
345	70.0	0.00413482	-23.835	-19.176
346	70.0	0.00403007	-23.947	-19.287
347	60.0	0.00747057	-21.266	-18.256
348	60.0	0.00747016	-21.267	-18.256
349	45.0	0.06047243	-12.184	-10.679
350	45.0	0.03354580	-10.781	-9.276
351	30.0	0.05334846	-12.729	-12.104
352	30.0	0.06615215	-11.795	-11.170
353	20.0	0.03898574	-14.091	-13.821
354	20.0	0.14951614	-8.253	-7.983

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 03AUG66 DATA GROUP NUMBER = 109 TERRAIN PURDUE SB 16 FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.39719 INPUT 5.52948 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
85	70.0	0.13998620	-8.539	-3.880
86	70.0	0.10704792	-9.704	-5.045
87	60.0	0.15377943	-8.131	-5.121
88	60.0	0.23602126	-6.270	-3.260
89	45.0	0.40522095	-3.923	-2.418
90	45.0	0.44935896	-3.474	-1.969
91	28.0	0.50244349	-2.989	-2.448
92	28.0	0.64165012	-1.927	-1.386
93	20.0	0.92067631	-0.359	-0.089
94	20.0	0.74870707	-1.257	-0.987

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
95	70.0	0.12672285	-8.971	-4.312
96	70.0	0.13772643	-8.610	-3.950
97	60.0	0.14726639	-8.319	-5.309
98	60.0	0.13435672	-8.717	-5.707
99	45.0	0.40883121	-3.885	-2.379
101	45.0	0.31240736	-5.053	-3.548
102	45.0	0.29679526	-5.275	-3.770
103	30.0	0.50218564	-2.091	-2.367
104	30.0	0.62171400	-2.064	-1.439
105	20.0	0.67451607	-1.710	-1.440
106	20.0	0.75668037	-1.211	-0.941

DATA GROUP NUMBER 109 CONTINUED

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION VERTICAL TRANSMITTER			GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS		
85	70.0	0.01861933	-17.300		-12.641
86	70.0	0.01734238	-17.609		-12.949
87	60.0	0.02351949	-16.286		-13.275
88	60.0	0.02765533	-15.582		-12.572
89	45.0	0.04660219	-13.316		-11.811
90	45.0	0.03906221	-14.082		-12.577
91	28.0	0.04194686	-13.773		-13.232
92	28.0	0.04607617	-13.365		-12.825
93	20.0	0.04821897	-13.168		-12.898
94	20.0	0.04789887	-13.197		-12.927

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION HORIZONTAL TRANSMITTER			GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS		
107	70.0	0.01730272	-17.619		-12.959
108	70.0	0.02091975	-16.794		-12.135
109	60.0	0.01529390	-18.155		-15.145
110	60.0	0.02576811	-15.889		-12.879
111	45.0	0.03090817	-15.099		-13.594
112	45.0	0.02973913	-15.267		-13.762
113	30.0	0.02929182	-15.333		-14.708
114	30.0	0.02903936	-15.370		-14.745
115	20.0	0.03202816	-14.945		-14.675
116	20.0	0.03256993	-14.872		-14.602

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 03AUG66

DATA GROUP NUMBER = 110

TERRAIN PURDUE SB 16

FREQUENCY = 35.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 63.000 SECONDS VOLTAGE 1.401 VOLTS MULTIPLIER 0.1
 TIME/VOLT 4.49679 INPUT 0.60837 IN DB -4.31659 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
95	70.0	0.10363767	-9.845	-5.185
96	70.0	0.12077704	-9.180	-4.521
97	60.0	0.13612014	-8.661	-5.650
98	60.0	0.12710942	-8.958	-5.948
99	45.0	0.27590247	-5.592	-4.087
101	45.0	0.33516044	-4.747	-3.242
102	45.0	0.26083453	-5.836	-4.331
103	30.0	0.39083138	-4.080	-3.455
104	30.0	0.34145111	-4.667	-4.042
105	20.0	0.62631843	-2.032	-1.762
106	20.0	0.60691077	-2.169	-1.899

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
107	70.0	0.08735277	-10.587	-5.928
108	70.0	0.12829667	-8.918	-4.258
109	60.0	0.14569259	-8.366	-5.355
110	60.0	0.16674071	-7.780	-4.769
111	45.0	0.23059306	-6.372	-4.866
112	45.0	0.23901263	-6.216	-4.711
113	30.0	0.71090372	-1.482	-0.857
114	30.0	0.47043778	-3.275	-2.650
115	20.0	0.63399836	-1.979	-1.709
116	20.0	0.55348140	-2.569	-2.299

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 06AUG66 DATA GROUP NUMBER = 111

TERRAIN PURDUE SB 16 FREQUENCY = 15.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 38.000 SECONDS VOLTAGE 8.500 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.44706 INPUT 4.94176 IN DB 13.87763 FREQUENCY 15.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
365	70.0	0.21041077	-6.769	-2.110
366	70.0	0.16391009	-7.854	-3.194
367	60.0	0.20243509	-6.937	-3.927
368	60.0	0.29560294	-5.293	-2.283
369	45.0	0.46205425	-3.353	-1.848
370	45.0	0.40941470	-3.878	-2.373
371	30.0	0.63871441	-1.947	-1.322
372	30.0	0.51001354	-2.924	-2.299
373	20.0	0.70962776	-1.490	-1.220
374	20.0	0.62925677	-2.012	-1.742

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
375	70.0	0.22243148	-6.528	-1.869
376	70.0	0.23049423	-6.373	-1.714
377	60.0	0.30261455	-5.191	-2.181
378	60.0	0.27396318	-5.623	-2.613
379	45.0	0.36642892	-4.360	-2.855
380	45.0	0.40392434	-3.937	-2.432
381	30.0	0.41712895	-3.797	-3.173
382	30.0	0.51974201	-2.842	-2.217
383	20.0	0.66909404	-1.745	-1.475
384	20.0	0.80400002	-0.947	-0.677

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 112
 DATE 06AUG66

TERRAIN PURDUE SB 16 FREQUENCY = 1.800 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 30.000 SECONDS VOLTAGE 1.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 3.00000 INPUT 0.87029 IN DB -1.20667 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
365	70.0	0.00936468	-20.285	-15.626
366	70.0	0.00863763	-20.636	-15.977
367	60.0	0.01258253	-19.002	-15.992
368	60.0	0.01294691	-18.878	-15.868
369	45.0	0.02190639	-16.594	-15.089
370	45.0	0.01985233	-17.022	-15.517
371	30.0	0.02307214	-16.369	-15.744
372	30.0	0.02301864	-16.379	-15.755
373	20.0	0.03496255	-14.564	-14.294
374	20.0	0.03113145	-15.068	-14.798

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
375	70.0	0.01799122	-17.449	-12.790
376	70.0	0.01963864	-17.069	-12.409
377	60.0	0.02651126	-15.766	-12.755
378	60.0	0.02864568	-15.429	-12.419
379	45.0	0.03289936	-14.828	-13.323
380	45.0	0.03477858	-14.587	-13.082
381	30.0	0.04634249	-13.340	-12.716
382	30.0	0.07340245	-11.343	-10.718
383	20.0	0.16580681	-7.804	-7.534
384	20.0	0.10847894	-9.647	-9.376

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 113
 DATE 06AUG66

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 38.000 SECONDS
 INPUT 4.94176
 VOLTAGE 8.500 VOLTS
 IN DB 13.87763
 MULTIPLIER 0.1
 FREQUENCY 15.0

TERRAIN PURDUE CT IC
 FREQUENCY = 15.000 GIGAHERTZ

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
393	80.0	0.02368681	-16.255	-8.652	-8.652
394	80.0	0.02740015	-15.622	-8.019	-8.019
395	70.0	0.16861661	-7.731	-3.072	-3.072
396	70.0	0.19430692	-7.115	-2.456	-2.456
397	60.0	0.34986863	-4.561	-1.551	-1.551
398	60.0	0.33864612	-4.703	-1.692	-1.692
399	30.0	0.45144136	-3.454	-2.829	-2.829
400	30.0	0.61121975	-2.138	-1.513	-1.513

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
391	80.0	0.01168249	-19.325	-11.721	-11.721
392	80.0	0.02689764	-15.703	-8.100	-8.100
385	70.0	0.13214072	-8.790	-4.130	-4.130
386	70.0	0.11111788	-9.542	-4.883	-4.883
387	60.0	0.61395592	-2.119	0.892	0.892
388	60.0	0.40931607	-3.879	-0.869	-0.869
389	30.0	0.61962585	-2.079	-1.454	-1.454
390	30.0	0.55931374	-2.523	-1.899	-1.899

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 114 TERRAIN PURDUE CT 1C FREQUENCY = 1.800 GIGAHERTZ
 DATE 06AUG6

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 30.000 SECONDS VOLTAGE 1.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 3.00000 INPUT 0.87029 IN DB -1.20667 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
393	80.0	0.00558713	-22.528	-14.925
394	80.0	0.00587660	-22.309	-14.705
395	70.0	0.00891129	-20.501	-15.841
396	70.0	0.00934748	-20.293	-15.634
397	60.0	0.01401917	-18.533	-15.522
398	60.0	0.01374721	-18.618	-15.608
399	30.0	0.02518004	-15.989	-15.365
400	30.0	0.02362813	-16.266	-15.641

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
391	80.0	0.00586162	-22.320	-14.717
392	80.0	0.00548523	-22.608	-15.005
385	70.0	0.00829496	-20.812	-16.152
386	70.0	0.00851934	-20.696	-16.036
387	60.0	0.01298576	-18.865	-15.855
388	60.0	0.01174191	-19.303	-16.292
389	30.0	0.12534145	-9.019	-8.394
390	30.0	0.07743070	-11.111	-10.486

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 115 TERRAIN SNDFM SG I FREQUENCY = 10.000 GIGAHERTZ
 DATE 04AUG66 NO PLOTS REQUESTED
 INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.39719 INPUT 5.52948 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
137	70.0	0.05929549	-12.270	-7.610
138	70.0	0.06144179	-12.115	-7.456
143	60.0	0.08753111	-10.578	-7.568
144	60.0	0.12255928	-9.117	-6.106
145	45.0	0.17134466	-7.661	-6.156
146	45.0	0.19194075	-7.168	-5.663
151	30.0	0.19056149	-7.200	-6.575
152	30.0	0.21979198	-6.580	-5.955

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
155	70.0	0.07002219	-11.548	-6.888
156	70.0	0.07301438	-11.366	-6.706
157	60.0	0.09064744	-10.426	-7.416
158	60.0	0.12400300	-9.066	-6.055
163	45.0	0.16625818	-7.792	-6.287
164	45.0	0.15750931	-8.027	-6.522
165	30.0	0.19445438	-7.112	-6.487
166	30.0	0.19440856	-7.113	-6.488

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CROSS POLARIZATION VERTICAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
137	70.0	0.01099319	-19.589	-14.929
138	70.0	0.01519705	-18.182	-13.523
143	60.0	0.02037881	-16.908	-13.898
144	60.0	0.01982122	-17.029	-14.018
145	45.0	0.02727786	-15.642	-14.137
146	45.0	0.03365745	-14.729	-13.224
151	30.0	0.03092259	-15.097	-14.473
152	30.0	0.03332022	-14.773	-14.148

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
171	70.0	0.00510129	-22.923	-18.264
172	70.0	0.00643366	-21.915	-17.256
173	60.0	0.01047918	-19.797	-16.786
174	60.0	0.00929814	-20.316	-17.306
179	45.0	0.01389081	-18.573	-17.068
180	45.0	0.01363354	-18.654	-17.149
181	30.0	0.01389389	-18.572	-17.947
182	30.0	0.01711762	-17.666	-17.041

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 04AUG66 DATA GROUP NUMBER = 116 TERRAIN SNDFM SG I

FREQUENCY = 35.000 GIGAHERTZ

NQ PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 60.000 SECONDS VOLTAGE 2.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 3.00000 INPUT 0.87029 IN DB -1.20667 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
155	70.0	0.45032205	-3.465	1.195
156	70.0	0.51565831	-2.876	1.783
157	60.0	0.77814090	-1.089	1.921
158	60.0	0.76711188	-1.151	1.859
163	45.0	1.31851146	1.201	2.706
164	45.0	1.32189728	1.212	2.717
165	30.0	1.49847928	1.757	2.381
166	30.0	1.51733626	1.811	2.436

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
171	70.0	0.59785210	-2.234	2.425
172	70.0	0.60346837	-2.193	2.466
173	60.0	0.89025029	-0.505	2.505
174	60.0	0.89652650	-0.474	2.536
179	45.0	1.46970525	1.672	3.177
180	45.0	1.47776498	1.696	3.201
181	30.0	1.64880852	2.172	2.796
182	30.0	1.64597160	2.164	2.789

ABSOLUTE
 CALIBRATION
 IN DOUBT

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 04AUG66 DATA GROUP NUMBER = 117 TERRAIN SINDFM SG NI FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.39719 INPUT 5.52948 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
139	70.0	0.07165432	-11.448	-6.788
140	70.0	0.08537713	-10.687	-6.027
141	60.0	0.09347948	-10.293	-7.283
142	60.0	0.09574316	-10.189	-7.179
147	45.0	0.15507919	-8.094	-6.589
148	45.0	0.14875324	-8.275	-6.770
149	30.0	0.20676139	-6.845	-6.221
150	30.0	0.19642797	-7.068	-6.443

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
153	70.0	0.06323940	-11.990	-7.331
154	70.0	0.04615407	-13.358	-8.698
159	60.0	0.11172361	-9.519	-6.508
160	60.0	0.07826235	-11.064	-8.054
161	45.0	0.13751205	-8.617	-7.111
162	45.0	0.14558084	-8.369	-6.864
167	30.0	0.17544275	-7.559	-6.934
168	30.0	0.17525480	-7.563	-6.939

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CROSS POLARIZATION VERTICAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
139	70.0	0.01505616	-18.223	-13.563
140	70.0	0.01545263	-18.110	-13.450
141	60.0	0.02008981	-16.970	-13.960
142	60.0	0.01382869	-18.592	-15.582
147	45.0	0.02721321	-15.652	-14.147
148	45.0	0.02650130	-15.767	-14.262
149	30.0	0.02993043	-15.239	-14.614
150	30.0	0.03746907	-14.263	-13.639

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
169	70.0	0.00485245	-23.140	-18.481
170	70.0	0.00646704	-21.893	-17.233
175	60.0	0.00829800	-20.810	-17.800
176	60.0	0.00936444	-20.285	-17.275
177	45.0	0.01281503	-18.923	-17.418
178	45.0	0.01130297	-19.468	-17.963
183	30.0	0.01092998	-19.614	-18.989
184	30.0	0.01315486	-18.809	-18.184

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 04AUG66 DATA GROUP NUMBER = 118 TERRAIN SNDFM SG NI FREQUENCY = 35.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 60.000 SECONDS VOLTAGE 2.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 3.00000 INPUT 0.87029 IN DB -1.20667 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
153	70.0	0.43770748	-3.588	1.071
154	70.0	0.4104312	-3.872	0.788
159	60.0	0.81171210	-0.906	2.104
160	60.0	0.79505316	-0.996	2.014
161	45.0	1.32496682	1.222	2.727
162	45.0	1.32022847	1.206	2.712
167	30.0	1.56084618	1.934	2.558
168	30.0	1.58051838	1.988	2.613

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
169	70.0	0.61512524	-2.110	2.549
170	70.0	0.61157825	-2.135	2.525
175	60.0	0.92678103	-0.330	2.680
176	60.0	0.9353059	-0.441	2.570
177	45.0	1.44792549	1.607	3.113
178	45.0	1.45516969	1.629	3.134
183	30.0	1.68396920	2.263	2.888
184	30.0	1.73087877	2.383	3.007

ABSOLUTE CALIBRATION IN DOUBT

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 119 TERRAIN SLOPE SOR I FREQUENCY = 10.000 GIGAHERTZ
 DATE 04AUG6

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.35719 INPUT 5.52948 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
193	70.0	0.08310832	-10.804	-6.144
194	70.0	0.14228945	-8.468	-3.809
195	60.0	0.11996590	-9.587	-6.577
196	60.0	0.11936381	-9.231	-6.221
201	45.0	0.19742629	-7.046	-5.541
202	45.0	0.17538527	-7.560	-6.055
203	30.0	0.31956384	-4.954	-4.330
204	30.0	0.31031588	-5.082	-4.457
208	20.0	0.47006267	-3.278	-3.008

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
209	70.0	0.07104099	-11.485	-6.825
210	70.0	0.08798786	-10.556	-5.896
215	60.0	0.09733866	-10.117	-7.107
216	60.0	0.07710338	-11.129	-8.119
217	45.0	0.19114571	-7.186	-5.681
218	45.0	0.18938497	-7.227	-5.721
223	30.0	0.28527805	-5.447	-4.823
224	30.0	0.25270885	-5.974	-5.349
225	20.0	0.39264681	-4.060	-3.790
226	20.0	0.37977015	-4.205	-3.935

DATA	GROUP	NUMBER	119	CONTINUED		CROSS POLARIZATION		VERTICAL TRANSMITTER		GAMMA IN DECIBELS	
				BACKSCATTERING	ANGLE	ABSOLUTE	CROSS SECTION	CROSS SECTION	IN DECIBELS	CROSS SECTION	IN DECIBELS
RUN	NUMBER										
193		70.0		0.02533646		-15.963		-11.303			
194		70.0		0.02668800		-15.737		-11.077			
195		60.0		0.02468625		-16.075		-13.065			
196		60.0		0.02423520		-16.156		-13.145			
201		45.0		0.03607557		-14.428		-12.923			
202		45.0		0.03651340		-14.375		-12.870			
203		30.0		0.03663837		-14.361		-13.736			
204		30.0		0.03937406		-14.048		-13.423			
208		20.0		0.04498898		-13.469		-13.199			

DATA	GROUP	NUMBER	119	CONTINUED		CROSS POLARIZATION		HORIZONTAL TRANSMITTER		GAMMA IN DECIBELS	
				BACKSCATTERING	ANGLE	ABSOLUTE	CROSS SECTION	CROSS SECTION	IN DECIBELS	CROSS SECTION	IN DECIBELS
RUN	NUMBER										
231		70.0		0.01253014		-19.020		-14.361			
232		70.0		0.01853384		-20.689		-16.029			
233		60.0		0.01519064		-18.184		-15.174			
234		60.0		0.01213796		-19.159		-16.148			
239		45.0		0.02083227		-16.813		-15.307			
240		45.0		0.01969634		-17.056		-15.551			
241		30.0		0.02310404		-16.363		-15.738			
242		30.0		0.01384779		-18.586		-17.962			
247		20.0		0.02279904		-16.421		-16.151			
248		20.0		0.02286758		-16.408		-16.138			

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 04AUG66 DATA GROUP NUMBER = 120 TERRAIN SNDFM SDR I FREQUENCY = 35.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 60.000 SECONDS VOLTAGE 2.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 3.00000 INPUT 0.87629 IN DB -1.20667 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
209	70.0	0.32603598	-4.867	-0.208
210	70.0	0.34898535	-4.572	0.088
215	60.0	0.73146188	-1.358	1.652
216	60.0	0.82769470	-0.821	2.189
217	45.0	1.25667623	0.992	2.497
218	45.0	1.28924505	1.103	2.609
223	30.0	1.64669810	2.166	2.791
224	30.0	1.64893663	2.172	2.797
225	20.0	1.86123268	2.698	2.968
226	20.0	1.91905162	2.831	3.101

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
231	70.0	0.81181935	-0.905	3.754
232	70.0	0.84271749	-0.743	3.916
233	60.0	1.30684283	1.162	4.173
234	60.0	1.30497597	1.156	4.166
239	45.0	2.08423692	3.189	4.695
240	45.0	2.11736652	3.258	4.763
241	30.0	2.36142018	3.732	4.356
242	30.0	2.36735499	3.743	4.367
247	20.0	2.64460379	4.224	4.494
248	20.0	2.59327608	4.138	4.409

ABSOLUTE CALIBRATION IN DOUBT

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 121
 DATE 04AUG66

TERRAIN SNDFM 506 NI FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS
 TIME/VOLT 0.39719 INPUT 5.52948

VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
191	70.0	0.10266264	-9.886	-5.226
192	70.0	0.10015488	-9.993	-5.334
197	60.0	0.09812611	-10.082	-7.072
198	60.0	0.10183348	-9.921	-6.911
199	45.0	0.16812729	-7.744	-6.238
200	45.0	0.16113200	-7.928	-6.423
205	30.0	0.21477706	-6.680	-6.055
206	30.0	0.26390955	-5.785	-5.161
207	20.0	0.41849206	-3.783	-3.513

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
211	70.0	0.08696173	-10.607	-5.947
212	70.0	0.06581697	-11.817	-7.157
216	60.0	0.08409367	-10.752	-7.742
214	60.0	0.08350943	-10.783	-7.772
219	45.0	0.13873872	-8.578	-7.073
220	45.0	0.15953732	-7.971	-6.466
221	30.0	0.22691260	-6.441	-5.817
222	30.0	0.22615072	-6.456	-5.831
227	20.0	0.34550835	-4.615	-4.345
228	20.0	0.26527775	-5.763	-5.493

DATA GROUP NUMBER 121 CONTINUED

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION VERTICAL TRANSMITTER			GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS		
191	70.0	0.02104838	-16.768	-12.108	
192	70.0	0.02039681	-16.904	-12.245	
197	60.0	0.02064051	-16.853	-13.842	
198	60.0	0.02218480	-16.539	-13.529	
199	45.0	0.02116499	-16.744	-15.239	
200	45.0	0.02468567	-16.076	-14.570	
205	30.0	0.03252551	-14.878	-14.253	
206	30.0	0.03508065	-14.549	-13.925	
207	20.0	0.03208581	-14.937	-14.667	

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION HORIZONTAL TRANSMITTER			GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS		
229	70.0	0.00779505	-21.082	-16.422	
230	70.0	0.00672975	-21.720	-17.061	
235	60.0	0.00868526	-20.612	-17.602	
236	60.0	0.00822902	-20.847	-17.836	
237	45.0	0.01336159	-18.741	-17.236	
238	45.0	0.01431439	-18.442	-16.937	
243	30.0	0.01689293	-17.723	-17.098	
244	30.0	0.01352377	-18.689	-18.064	
245	20.0	0.01632076	-17.873	-17.602	
246	20.0	0.01403094	-18.529	-18.259	

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 122
 DATE 04AUG6

TERRAIN SNDFM SOG NI FREQUENCY = 35.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 60.000 SECONDS VOLTAGE 2.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 3.00000 INPUT 0.87029 IN DB -1.20667 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
211	70.0	0.36637084	-4.361	0.299
212	70.0	0.396777847	-4.015	0.645
216	60.0	0.67021704	-1.738	1.272
214	60.0	0.66116457	-1.797	1.213
219	45.0	1.29978111	1.139	2.644
220	45.0	1.36222436	1.342	2.848
221	30.0	1.54093835	1.878	2.503
222	30.0	1.54991025	1.903	2.528
227	20.0	2.25277531	3.527	3.797
228	20.0	2.24975047	3.521	3.791

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
229	70.0	0.78658273	-1.043	3.617
230	70.0	0.79472154	-0.998	3.662
235	60.0	1.24606331	0.955	3.966
236	60.0	1.28392959	1.085	4.096
237	45.0	2.12054673	3.264	4.770
238	45.0	2.12396467	3.271	4.777
243	30.0	2.44293037	3.879	4.504
244	30.0	2.41957650	3.837	4.462
245	20.0	2.68379718	4.287	4.558
246	20.0	2.66542423	4.258	4.528

ABSOLUTE
 CALIBRATION
 IN DOUBT

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 123 TERRAIN SNDFM SB I FREQUENCY = 10.000 GIGAHERTZ

DATE 05AUG6

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.39719 INPUT 5.52948 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
270	70.0	0.29265067	-5.337	-0.677
271	70.0	0.21063541	-6.765	-2.105
272	60.0	0.25760723	-5.890	-2.880
273	60.0	0.27741257	-5.569	-2.558
278	45.0	0.30121987	-5.211	-3.706
279	45.0	0.23120485	-6.360	-4.855
280	30.0	0.34051968	-4.679	-4.054
281	30.0	0.26698937	-5.735	-5.110
286	20.0	0.54537749	-2.633	-2.363
287	20.0	0.40266243	-3.951	-3.680

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
290	70.0	0.13453638	-8.712	-4.052
291	70.0	0.13667247	-8.643	-3.984
292	60.0	0.22873966	-6.407	-3.396
293	60.0	0.23419072	-6.304	-3.294
298	45.0	0.23041070	-6.375	-4.870
299	45.0	0.23859838	-6.223	-4.718
300	30.0	0.37036489	-4.314	-3.689
301	30.0	0.37499553	-4.260	-3.635
306	20.0	0.49912200	-3.018	-2.748
307	20.0	0.46362339	-3.338	-3.068

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 124 TERRAIN SNOFDM SB I FREQUENCY = 35.000 GIGAHERTZ
 DATE 05AUG66

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 22.000 SECONDS VOLTAGE 1.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 2.20000 INPUT 1.14504 IN DB 1.17641 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
270	70.0	0.34649451	-4.603	0.056
271	70.0	0.38388735	-4.158	0.502
272	60.0	0.58333916	-2.341	0.670
273	60.0	0.58449926	-2.332	0.678
278	45.0	1.02281505	0.098	1.603
279	45.0	1.03229609	0.138	1.643
280	30.0	1.18158782	0.725	1.349
281	30.0	1.16790521	0.674	1.299
286	20.0	1.33932719	1.269	1.539
287	20.0	1.32510398	1.222	1.493

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
290	70.0	0.45009501	-3.467	1.193
291	70.0	0.44880368	-3.479	1.180
292	60.0	0.68698128	-1.631	1.380
293	60.0	0.68698128	-1.631	1.380
298	45.0	1.10823746	0.446	1.951
299	45.0	1.07901140	0.330	1.835
300	30.0	1.26795603	1.031	1.656
301	30.0	1.27155984	1.043	1.668
306	20.0	1.42238818	1.530	1.800
307	20.0	1.40900499	1.489	1.759

ABSOLUTE CALIBRATION IN DOUBT

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 125
 DATE 05AUG66

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS
 INPUT 0.39719
 TERRAIN SNDFM SB NI
 FREQUENCY = 10.000 GIGAHERTZ
 VOLTAGE 8.812 VOLTS
 MULTIPLIER 0.1
 IN DB 14.85368
 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
268	70.0	0.26535216	-5.762	-1.102
269	70.0	0.18833356	-7.251	-2.591
274	60.0	0.25128856	-5.998	-2.988
275	60.0	0.25332593	-5.963	-3.959
276	45.0	0.17083596	-7.674	-6.169
277	45.0	0.26540199	-5.761	-4.256
282	30.0	0.18790061	-7.261	-6.636
283	30.0	0.15955662	-7.971	-7.346
284	20.0	0.48576315	-3.136	-2.866
285	20.0	0.61846733	-2.087	-1.817

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
288	70.0	0.14864078	-8.279	-3.619
289	70.0	0.16817240	-7.742	-3.083
294	60.0	0.17256975	-7.630	-4.620
295	60.0	0.22352996	-6.507	-3.496
296	45.0	0.24052272	-6.188	-4.683
297	45.0	0.19122779	-7.184	-5.679
302	30.0	0.17400667	-7.594	-6.970
303	30.0	0.21333531	-6.709	-6.085
304	20.0	0.48109686	-3.178	-2.908
305	20.0	0.61486487	-2.112	-1.842

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 126 TERRAIN SNDFM SB N1 FREQUENCY = 35.000 GIGAHERTZ

DATE 05AUG66

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 22.000 SECONDS VOLTAGE 1.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 2.20000 INPUT 1.14504 IN DB 1.17641 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
268	70.0	0.39345384	-4.051	0.608
269	70.0	0.39815507	-3.999	0.660
274	60.0	0.61738794	-2.094	0.916
275	60.0	0.62311582	-2.054	0.956
276	45.0	1.07098719	0.004	1.509
277	45.0	0.99548252	-0.020	1.485
282	30.0	1.16997914	0.682	1.306
283	30.0	1.19166791	0.762	1.386
284	20.0	1.30620575	1.160	1.430
285	20.0	1.32498699	1.222	1.492

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
289	70.0	0.44569415	-3.510	1.150
294	60.0	0.68177256	-1.664	1.347
295	60.0	0.67704156	-1.694	1.316
296	45.0	1.38001737	0.334	1.839
297	45.0	1.08424698	0.351	1.856
302	30.0	1.27757612	1.064	1.689
303	30.0	1.26355939	1.016	1.641
304	20.0	1.47273079	1.681	1.951
305	20.0	1.37928854	1.397	1.667

ABSOLUTE
 CALIBRATION
 IN DOUBT

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 127 TERRAIN SNDFM SL I FREQUENCY = 10.000 GIGAHERTZ
 DATE 05AUG66

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 INPUT 5.52948 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
271	70.0	0.00737308	-21.324	-16.664
272	60.0	0.01971794	-17.051	-14.041
273	60.0	0.01723233	-17.637	-14.626
278	45.0	0.03941111	-14.044	-12.539
279	45.0	0.02301837	-16.379	-14.874
280	30.0	0.05105476	-12.920	-12.295
281	30.0	0.03578725	-14.463	-13.838
286	20.0	0.10756174	-9.683	-9.413
287	20.0	0.10594253	-9.749	-9.479

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
290	70.0	0.00681824	-21.663	-17.004
291	70.0	0.01201018	-19.205	-14.545
292	60.0	0.01848566	-17.332	-14.321
293	60.0	0.02160856	-16.654	-13.643
298	45.0	0.01190738	-19.242	-17.737
299	45.0	0.01480174	-18.297	-16.792
300	30.0	0.08147706	-10.890	-10.265
301	30.0	0.04368619	-13.597	-12.972
306	20.0	0.28099985	-5.513	-5.243
307	20.0	0.13979880	-8.545	-8.275

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 128
 DATE 05AUG66

TERRAIN SNDFM SL I

FREQUENCY = 35.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 22.000 SECONDS
 INPUT 1.14504

VOLTAGE 1.000 VOLTS
 IN DB 1.17641

MULTIPLIER 0.1
 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
270	70.0	0.33445209	-4.757	-0.097
271	70.0	0.39100953	-4.078	0.581
272	60.0	0.57870881	-2.375	0.635
273	60.0	0.57739770	-2.385	0.625
278	45.0	1.00180383	0.008	1.513
279	45.0	1.04815218	0.204	1.709
280	30.0	1.17513396	0.701	1.326
281	30.0	1.17243961	0.691	1.316
286	20.0	1.31585008	1.192	1.462
287	20.0	1.52112436	1.822	2.092

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
290	70.0	0.43763103	-3.589	1.071
291	70.0	0.44151473	-3.551	1.109
292	60.0	0.66457494	-1.775	1.236
293	60.0	0.68057483	-1.671	1.339
298	45.0	1.10199845	0.422	1.927
299	45.0	1.10529953	0.435	1.940
300	30.0	1.28405295	1.086	1.711
301	30.0	1.30744337	1.164	1.789
306	20.0	1.42479952	1.538	1.808
307	20.0	1.40403308	1.474	1.744

ABSOLUTE
 CALIBRATION
 IN DOUBT

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 129 TERRAIN SNDFM SL NI FREQUENCY = 10.000 GIGAHERTZ
 DATE 05AUG66

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 8.812 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.39719 INPUT 5.52948 IN DB 14.85368 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
268	70.0	0.02629993	-15.800	-11.141
269	70.0	0.02585452	-15.975	-11.215
274	60.0	0.03993588	-13.986	-10.976
275	60.0	0.04254968	-13.711	-10.701
276	45.0	0.11637465	-9.341	-7.836
277	45.0	0.09783510	-10.095	-8.590
282	30.0	0.31151597	-5.065	-4.441
283	30.0	0.38342843	-4.163	-3.538
284	20.0	0.59839576	-2.230	-1.960
285	20.0	0.62528233	-2.039	-1.769

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
288	70.0	0.01439096	-18.419	-13.760
289	70.0	0.01788174	-17.476	-12.816
294	60.0	0.02846715	-15.457	-12.446
295	60.0	0.04410517	-13.555	-10.545
296	45.0	0.11349140	-9.450	-7.945
297	45.0	0.11051503	-9.566	-8.061
302	30.0	0.21318608	-6.712	-6.088
303	30.0	0.29746633	-5.266	-4.641
304	20.0	0.58482583	-2.330	-2.060
305	20.0	0.63270660	-1.988	-1.718

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 05AUG66 DATA GROUP NUMBER = 130 TERRAIN SNDFM SL NI FREQUENCY = 35.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 22.000 SECONDS INPUT 1.14504 VOLTAGE 1.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 2.20000 IN DB 1.17641 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
268	70.0	0.35750995	-4.467	0.192
269	70.0	0.36952138	-4.324	0.336
274	60.0	0.61329993	-2.123	0.887
275	60.0	0.62520095	-2.040	0.970
276	45.0	0.98603326	-0.061	1.444
277	45.0	0.99490874	-0.022	1.483
282	30.0	1.19440889	0.772	1.396
283	30.0	1.17681921	0.707	1.332
284	20.0	1.31263197	1.181	1.452
285	20.0	1.32431421	1.220	1.490

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
289	70.0	0.44210310	-3.545	1.115
294	60.0	0.68674412	-1.632	1.378
295	60.0	0.69077116	-1.607	1.404
296	45.0	1.08649419	0.360	1.865
297	45.0	1.08686899	0.362	1.867
302	30.0	1.28860901	1.101	1.726
303	30.0	1.25742762	0.995	1.620
304	20.0	1.39473145	1.445	1.715
305	20.0	1.40679425	1.482	1.752

ABSOLUTE
 CALIBRATION
 IN DOUBT

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 30AUG66 DATA GROUP NUMBER = 133 TERRAIN OSU SGANTL FREQUENCY = 10.000 GIGAHERTZ
 NO PLOTS REQUESTED
 INTEGRATION TIME FROM REFERENCE SPHERE = 31.700 SECONDS VOLTAGE 7.670 VOLTS MULTIPLIER 0.1
 INPUT 0.41417 IN DB 14.70980 FREQUENCY 10.0

VERTICAL POLARIZATION	CROSS SECTION IN DECIBELS		GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	
5	70.0	0.05236153	-12.810
6	70.0	0.04564146	-13.406
7	60.0	0.06204376	-12.073
8	50.0	0.05493818	-12.604
9	45.0	0.07255411	-9.848
10	45.0	0.07071746	-10.000
11	30.0	0.14571934	-8.247
12	30.0	0.14297733	-8.447
13	20.0	0.20668562	-6.847
14	20.0	0.21597514	-6.558

HORIZONTAL POLARIZATION	CROSS SECTION IN DECIBELS		GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	
15	70.0	0.09146888	-16.682
16	70.0	0.03102305	-15.083
17	60.0	0.04953761	-13.051
18	60.0	0.04249269	-13.717
19	45.0	0.13223340	-9.862
20	45.0	0.09615887	-10.216
21	30.0	0.18512659	-7.325
22	30.0	0.15390254	-8.129
23	20.0	0.20870302	-6.971

CROSS POLARIZATION VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS		GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	
5	70.0	0.01013276	-19.043
6	70.0	0.00821422	-20.854
7	60.0	0.01437642	-18.445
8	60.0	0.01701160	-19.204
9	45.0	0.02065817	-16.849
10	45.0	0.01818208	-17.404
11	30.0	0.02231970	-16.513
12	30.0	0.01560895	-18.066
13	20.0	0.02182254	-16.611
14	20.0	0.02429628	-16.145

CROSS POLARIZATION HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS		GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	
15	70.0	0.00643314	-21.916
20	45.0	0.01548908	-18.100
16	70.0	0.00764422	-21.167
17	60.0	0.00741864	-21.297
19	45.0	0.01740546	-17.593
21	30.0	0.02060316	-16.861
22	30.0	0.02205633	-16.565
23	20.0	0.01926845	-17.152

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 134 TERRAIN OSU SG 2 FREQUENCY = 10.000 GIGAHERTZ
 DATE 06SEP6
 INTEGRATION TIME FROM REFERENCE SPHERE = 25.000 SECONDS VOLTAGE 5.853 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.42713 INPUT 5.16053 IN DB 14.25389 FREQUENCY 10.0

NO PLOTS REQUESTED

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
5	70.0	0.04435081	-13.531	-8.872
6	70.0	0.04067595	-13.907	-9.247
7	60.0	0.05062809	-12.956	-9.946
8	60.0	0.05897302	-12.360	-9.350
9	45.0	0.11332441	-9.457	-7.952
10	45.0	0.13993042	-8.541	-7.036
11	30.0	0.20647406	-6.851	-6.227
12	30.0	0.18084836	-7.427	-6.802
13	20.0	0.26751015	-5.727	-5.456
14	20.0	0.23073102	-6.369	-6.099

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
15	70.0	0.02393637	-16.209	-11.550
16	70.0	0.02149759	-16.676	-12.017
17	60.0	0.04491110	-13.476	-10.466
18	60.0	0.04769197	-13.216	-10.205
19	45.0	0.10417072	-9.823	-8.317
20	45.0	0.11425009	-9.421	-7.916
21	30.0	0.24807818	-6.054	-5.429
22	30.0	0.21674172	-6.641	-6.016
23	20.0	0.35080704	-4.549	-4.279
24	20.0	0.27916230	-5.541	-5.271

DATA GROUP NUMBER 134 CONTINUED

CROSS POLARIZATION VERTICAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
5	70.0	0.00878896	-20.561	-15.901
6	70.0	0.00833958	-20.789	-16.129
7	60.0	0.01174200	-19.303	-16.292
8	60.0	0.00794703	-20.998	-17.988
9	45.0	0.01929378	-17.146	-15.641
10	45.0	0.01922083	-17.162	-15.657
11	30.0	0.02449763	-16.109	-15.484
12	30.0	0.0270336	-16.439	-15.814
13	20.0	0.03048057	-15.160	-14.890
14	20.0	0.02981215	-15.256	-14.986

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
15	70.0	0.00537184	-22.699	-18.039
16	70.0	0.00667073	-21.758	-17.099
17	60.0	0.01027735	-19.881	-16.871
18	60.0	0.01354731	-18.681	-15.671
19	45.0	0.01868290	-17.286	-15.780
20	45.0	0.01977886	-17.038	-15.533
21	30.0	0.02276144	-16.428	-15.803
22	30.0	0.02155541	-16.664	-16.040
23	20.0	0.02446881	-16.114	-15.844
24	20.0	0.01804740	-17.436	-17.166

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 135 TERRAIN OSU SG 2 FREQUENCY = 35.000 GIGAHERTZ

DATE 06SEP6

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 27.000 SECONDS VOLTAGE 3.998 VOLTS MULTIPLIER 1.0
 TIME/VOLT 6.75338 INPUT 0.42455 IN DB -7.44133 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
43	70.0	0.08911419	-10.501	-5.841
44	70.0	0.09390232	-10.315	-5.656
45	60.0	0.15096951	-8.211	-5.201
46	60.0	0.26378731	-5.787	-2.777
47	45.0	0.24156057	-6.170	-4.665
48	45.0	0.27513915	-5.604	-4.099
49	30.0	0.48177184	-3.172	-2.547
50	30.0	0.45411791	-3.428	-2.804
51	20.0	0.59706071	-2.240	-1.970
52	20.0	0.58806126	-2.306	-2.036

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
32	70.0	0.07638004	-11.170	-6.511
33	70.0	0.08616248	-10.647	-5.987
34	70.0	0.07940325	-11.002	-6.342
35	60.0	0.17854324	-7.483	-4.472
36	60.0	0.21858936	-6.604	-3.593
37	45.0	0.25095605	-6.004	-4.499
38	45.0	0.27310693	-5.637	-4.132
39	30.0	0.43196689	-3.645	-3.021
40	30.0	0.49475818	-3.056	-2.431
41	20.0	0.83349004	-0.791	-0.521
42	20.0	1.01234981	0.053	0.323

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 12SEP6 DATA GROUP NUMBER = 136 TERRAIN OSU SG 3 FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 30.000 SECONDS VOLTAGE 6.463 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.46418 INPUT 4.76843 IN DB 13.56750 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
8	70.0	0.02355578	-16.279	-11.620
9	70.0	0.02889519	-15.392	-10.732
10	60.0	0.06284844	-12.017	-9.007
11	60.0	0.06245742	-12.044	-9.034
12	45.0	0.11388116	-9.435	-7.930
13	45.0	0.12501462	-9.030	-7.525
14	30.0	0.17070627	-7.678	-7.053
15	30.0	0.14576553	-8.363	-7.739
16	20.0	0.22957082	-6.391	-6.121
17	20.0	0.18848185	-7.247	-6.977

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
18	70.0	0.03551291	-14.496	-9.837
19	70.0	0.03137819	-15.034	-10.374
20	60.0	0.07048842	-11.519	-8.509
21	60.0	0.03736610	-14.275	-11.265
22	45.0	0.10756884	-9.683	-8.178
23	45.0	0.10837320	-9.651	-8.146
24	30.0	0.15458486	-8.108	-7.484
25	30.0	0.16212032	-7.902	-7.277
26	20.0	0.19869506	-7.018	-6.748
27	20.0	0.21026870	-6.772	-6.502

DATA	GROUP	NUMBER	136	CONTINUED	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
					ABSOLUTE	CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
8		70.0			0.00467841		-23.299	-18.640
9		70.0			0.00563686		-22.490	-17.830
10		60.0			0.01070640		-19.704	-16.693
11		60.0			0.01107076		-19.558	-16.548
12		45.0			0.01527422		-18.160	-16.655
13		45.0			0.01352064		-18.690	-17.185
14		30.0			0.01547546		-18.104	-17.479
15		30.0			0.01452798		-18.378	-17.753
16		20.0			0.02199999		-16.968	-16.698
17		20.0			0.01619543		-17.906	-17.636

					CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
					ABSOLUTE	CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
18		70.0			0.00721678		-21.417	-16.757
19		70.0			0.00824300		-20.839	-16.180
20		60.0			0.00980894		-20.084	-17.073
21		60.0			0.01258674		-19.001	-15.991
22		45.0			0.01666380		-17.782	-16.277
23		45.0			0.01146741		-19.405	-17.900
24		30.0			0.01562671		-18.061	-17.437
25		30.0			0.01412673		-18.500	-17.875
26		20.0			0.01690663		-17.698	-17.428
27		20.0			0.01961797		-17.073	-16.803

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 137 TERRAIN OSU SG 3 FREQUENCY = 35.000 GIGAHERTZ
 DATE 12SEP6

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 27.000 SECONDS VOLTAGE 4.965 VOLTS MULTIPLIER 1.0
 TIME/VOLT 5.43807 INPUT 0.51423 IN DB -5.77693 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
28	70.0	0.08447952	-10.732	-6.073
29	70.0	0.07856470	-11.048	-6.388
30	60.0	0.21213334	-6.944	-3.933
31	60.0	0.18452486	-7.339	-4.329
32	45.0	0.32907687	-4.827	-3.322
33	45.0	0.38997110	-4.090	-2.585
34	30.0	0.43943123	-3.571	-2.946
35	30.0	0.57644953	-2.392	-1.768
36	20.0	0.54677925	-2.622	-2.352
37	20.0	0.67714383	-1.693	-1.423

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
38	70.0	0.08641243	-10.634	-5.975
39	70.0	0.08876004	-10.518	-5.858
40	60.0	0.22887938	-6.404	-3.394
41	60.0	0.22378624	-6.502	-3.491
42	45.0	0.45168466	-3.452	-1.946
43	45.0	0.39772842	-4.004	-2.499
44	30.0	0.40958792	-3.877	-3.252
45	30.0	0.44624836	-3.504	-2.880
46	20.0	0.75481037	-1.222	-0.951
47	20.0	0.74807055	-1.261	-0.990

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 138 TERRAIN OSU SG 3 FREQUENCY = 10.000 GIGAHERTZ

DATE 12SEP6

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 30.000 SECONDS VOLTAGE 6.463 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.46418 INPUT 4.76843 IN DB 13.56750 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
28	70.0	0.03101417	-15.084	-10.425
29	70.0	0.02697008	-15.691	-11.032
30	60.0	0.07085880	-11.496	-8.486
31	60.0	0.07147585	-11.458	-8.448
32	45.0	0.12016221	-9.202	-7.697
33	45.0	0.2296375	-6.926	-5.421
34	30.0	0.12321568	-9.093	-8.469
35	30.0	0.11411103	-9.427	-8.802
36	20.0	0.19428671	-7.116	-6.845
37	20.0	0.16685322	-7.777	-7.507

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
38	70.0	0.01989631	-17.012	-12.353
39	70.0	0.02132222	-16.712	-12.052
40	60.0	0.07338666	-11.344	-8.334
41	60.0	0.04947161	-13.062	-10.051
42	45.0	0.13678427	-9.715	-8.210
43	45.0	0.10826123	-9.655	-8.150
44	30.0	0.14244197	-8.464	-7.839
45	30.0	0.14004411	-8.537	-7.913
46	20.0	0.16618467	-7.794	-7.524
47	20.0	0.17127530	-7.663	-7.393

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 153 TERRAIN OSU GRASS FREQUENCY = 10.000 GIGAHERTZ
 DATE 130CT6

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 26.000 SECONDS VOLTAGE 6.630 VOLTS MULTIPLIER 0.1
 INPUT 5.59682 IN DB 14.95882 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
7	70.0	0.01359753	-18.665	-14.006
8	70.0	0.01229712	-19.102	-14.442
9	60.0	0.02828678	-15.484	-12.474
10	60.0	0.02471285	-16.071	-13.060
11	45.0	0.03824124	-14.175	-12.670
12	45.0	0.04205623	-13.762	-12.257
13	30.0	0.07009640	-11.543	-10.918
14	30.0	0.05143691	-12.887	-12.263
15	20.0	0.05527772	-12.574	-12.304
16	20.0	0.04549997	-13.420	-13.150

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
17	70.0	0.00701573	-21.539	-16.880
18	70.0	0.00603822	-22.191	-17.531
19	60.0	0.01611218	-17.928	-14.918
20	60.0	0.01571736	-18.036	-15.026
21	45.0	0.03120086	-15.058	-13.553
22	45.0	0.02687458	-15.707	-14.201
23	30.0	0.03498170	-14.562	-13.937
24	30.0	0.03753442	-14.256	-13.631
25	20.0	0.04890558	-13.106	-12.836
26	20.0	0.04241439	-13.725	-13.455

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 130CT6 DATA GROUP NUMBER = 154 TERRAIN OSU GRASS FREQUENCY = 10.000 GIGAHERTZ
 NO PLOTS REQUESTED
 INTEGRATION TIME FROM REFERENCE SPHERE = 26.000 SECONDS VOLTAGE 6.630 VOLTS MULTIPLIER 0.1
 INPUT 5.59682 IN DB 14.95882 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
41	70.0	0.01051426	-19.782	-15.123
42	70.0	0.01281055	-18.924	-14.265
43	60.0	0.02752958	-15.602	-12.592
44	60.0	0.03072262	-15.125	-12.115
45	45.0	0.03583916	-14.456	-12.951
46	45.0	0.02819972	-15.498	-13.992
47	30.0	0.05133796	-12.896	-12.271
48	30.0	0.04848040	-13.144	-12.520
49	20.0	0.05499385	-12.597	-12.327
50	20.0	0.05105572	-12.920	-12.649

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
51	70.0	0.00866540	-20.622	-15.963
52	70.0	0.00939548	-20.271	-15.611
53	60.0	0.01326441	-18.773	-15.763
54	60.0	0.01375649	-18.615	-15.605
55	45.0	0.02867691	-15.425	-13.920
56	45.0	0.02890625	-15.390	-13.885
57	30.0	0.03845569	-14.150	-13.526
58	30.0	0.03882184	-14.109	-13.485
59	20.0	0.05286785	-12.768	-12.498
60	20.0	0.04058338	-13.917	-13.646

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION VERTICAL TRANSMITTER			GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS		
41	70.0	0.00215384	-26.668	-22.008	
42	70.0	0.00182279	-27.393	-22.753	
43	60.0	0.00613361	-22.123	-19.113	
44	60.0	0.00573045	-22.418	-19.408	
45	45.0	0.00686010	-21.637	-20.132	
46	45.0	0.00635856	-21.966	-20.461	
47	30.0	0.01117887	-19.516	-18.891	
48	30.0	0.00992330	-20.033	-19.409	
49	20.0	0.00855110	-20.680	-20.410	
50	20.0	0.00971180	-20.127	-19.857	

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION HORIZONTAL TRANSMITTER			GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS		
61	70.0	0.00194778	-27.105	-22.445	
62	70.0	0.00176560	-27.531	-22.872	
63	60.0	0.00284346	-25.462	-22.451	
64	60.0	0.00237762	-26.239	-23.228	
65	45.0	0.00469555	-23.283	-21.778	
66	45.0	0.00500855	-23.003	-21.498	
67	30.0	0.00735727	-21.333	-20.708	
68	30.0	0.00623636	-22.051	-21.426	
69	20.0	0.00625206	-22.040	-21.770	
70	20.0	0.00614773	-22.113	-21.843	

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 155 TERRAIN OSU GRASS FREQUENCY = 35.000 GIGAHERTZ
 DATE 13OCT6

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 32.000 SECONDS VOLTAGE 7.467 VOLTS MULTIPLIER 1.0
 TIME/VOLT 4.28552 INPUT 0.63483 IN DB -3.94685 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
7	70.0	0.06999380	-11.606	-6.946
8	70.0	0.07092515	-11.492	-6.833
9	60.0	0.09653428	-10.153	-7.143
10	60.0	0.09253677	-10.337	-7.327
11	45.0	0.1407112	-8.537	-7.031
12	45.0	0.13887583	-8.574	-7.069
13	30.0	0.13089196	-8.542	-7.917
14	30.0	0.12937787	-8.881	-8.257
15	20.0	0.12517729	-9.025	-8.755
16	20.0	0.12882463	-8.900	-8.630

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
17	70.0	0.04431452	-13.535	-8.875
18	70.0	0.04630205	-13.353	-8.694
19	60.0	0.05632750	-12.493	-9.482
20	60.0	0.06437646	-11.913	-8.902
21	45.0	0.09393214	-10.272	-8.767
22	45.0	0.09210291	-10.357	-8.852
23	30.0	0.19100035	-9.957	-9.332
24	30.0	0.09971682	-10.012	-9.388
25	20.0	0.10168987	-9.927	-9.657
26	20.0	0.10642675	-9.729	-9.459

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 156
 DATE 13OCT6

TERRAIN OSU GRASS FREQUENCY = 15.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 27.000 SECONDS
 TIME/VOLT 0.53635 INPUT 4.15671

VOLTAGE 5.034 VOLTS MULTIPLIER 0.1
 IN DB 12.37500 FREQUENCY 15.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
51	70.0	0.03211472	-14.933	-10.273
52	70.0	0.02680443	-15.718	-11.058
53	60.0	0.03667684	-14.356	-11.346
54	60.0	0.03818708	-14.181	-11.171
55	45.0	0.06600466	-11.804	-10.299
56	45.0	0.07747204	-11.109	-9.603
57	30.0	0.08209336	-10.857	-10.232
58	30.0	0.06391950	-11.944	-11.319
59	20.0	0.07248931	-11.397	-11.127
60	20.0	0.07411056	-11.301	-11.031

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	GAMMA IN DECIBELS
61	70.0	0.01697204	-17.703	-13.043
62	70.0	0.02329640	-16.327	-11.668
63	60.0	0.02880535	-15.405	-12.395
64	60.0	0.02930806	-15.330	-12.320
65	45.0	0.03927790	-14.059	-12.553
66	45.0	0.04118643	-13.852	-12.347
67	30.0	0.05610054	-12.510	-11.886
68	30.0	0.05255285	-12.794	-12.169
69	20.0	0.05775272	-12.384	-12.114
70	20.0	0.05580809	-12.533	-12.263

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 24OCT6 DATA GROUP NUMBER = 157 TERRAIN OSU GRASS FREQUENCY = 1.800 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 20.000 SECONDS VOLTAGE 8.356 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.23935 INPUT 8.94639 IN DB 19.03296 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
17	70.0	0.00086155	-30.647	-25.988
18	70.0	0.00105636	-29.762	-25.102
19	60.0	0.00376054	-24.247	-21.237
20	60.0	0.00281128	-25.511	-22.501
21	45.0	0.01112882	-19.536	-18.030
22	45.0	0.01511904	-18.205	-16.700
23	30.0	0.02982282	-15.255	-14.630
24	30.0	0.05072710	-12.948	-12.323
25	20.0	0.04979354	-13.028	-12.758
26	20.0	0.05889667	-12.299	-12.029

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
7	70.0	0.00062144	-32.066	-27.407
8	70.0	0.00081209	-30.904	-26.244
9	60.0	0.00371816	-24.297	-21.286
10	60.0	0.00356285	-24.482	-21.472
11	45.0	0.00814915	-20.889	-19.384
12	45.0	0.01320151	-18.794	-17.289
13	30.0	0.02841862	-15.464	-14.839
15	20.0	0.04351604	-13.614	-13.343
16	20.0	0.04754274	-13.729	-12.959

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE F. ANGLE FROM NORMAL

DATE 24OCT6 DATA GROUP NUMBER = 158 TERRAIN OSU CROSS FREQUENCY = 15.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 22.000 SECONDS VOLTAGE 5.646 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.38966 INPUT 5.63193 IN DB 15.01160 FREQUENCY 15.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
7	70.0	0.02098080	-16.782	-12.122
8	70.0	0.02220547	-16.535	-11.876
9	60.0	0.02369653	-16.253	-13.243
10	60.0	0.02200661	-16.574	-13.564
11	45.0	0.02906441	-15.366	-13.861
12	45.0	0.02584529	-15.876	-14.371
13	30.0	0.03098182	-15.089	-14.464
14	30.0	0.02604943	-15.842	-15.217
15	20.0	0.02355341	-16.279	-16.009
16	20.0	0.03057540	-15.146	-14.876

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
17	70.0	0.01389155	-18.572	-13.913
18	70.0	0.00957775	-20.187	-15.528
19	60.0	0.01520054	-18.181	-15.171
20	60.0	0.01568002	-18.047	-15.036
21	45.0	0.02494325	-16.030	-14.525
22	45.0	0.02161958	-16.652	-15.146
23	30.0	0.02291165	-16.399	-15.775
24	30.0	0.02278257	-16.424	-15.799
25	20.0	0.02522521	-15.982	-15.712
26	20.0	0.02676788	-15.724	-15.454

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

TERRAIN OSU OATS FREQUENCY = 10.000 GIGAHERTZ

DATA GROUP NUMBER = 200
DATE 20APR7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 44.400 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
TIME/VOLT 0.44400 INPUT 4.97409 IN DB 13.93428 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
12	70.0	0.09044337	-10.436	-5.777
13	70.0	0.07465801	-11.269	-6.610
14	70.0	0.09203506	-10.360	-5.701
15	60.0	0.14597970	-8.357	-5.347
16	60.0	0.17569998	-7.552	-4.542
17	45.0	0.24119901	-6.176	-4.671
18	45.0	0.29991295	-5.230	-3.725
19	30.0	0.30676125	-5.218	-4.593
20	30.0	0.27882529	-5.547	-4.922
21	20.0	0.24927087	-6.033	-5.763

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
22	70.0	0.10797427	-9.667	-5.007
23	70.0	0.10023066	-9.990	-5.331
24	60.0	0.17743884	-7.510	-4.499
25	60.0	0.22143279	-6.548	-3.537
26	45.0	0.29324538	-5.328	-3.823
27	45.0	0.27812638	-5.558	-4.052
28	30.0	0.32089926	-4.936	-4.312
29	30.0	0.30684261	-5.131	-4.506
30	20.0	0.39632917	-4.019	-3.749
31	20.0	0.30020670	-5.226	-4.956

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 20APR7 DATA GROUP NUMBER = 200

TERRAIN OSU OATS

FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 27.900 SECONDS

VOLTAGE 10.000 VOLTS

MULTIPLIER 0.1

FREQUENCY 10.0

INPUT 7.73399

IN DB 17.76808

CROSS POLARIZATION VERTICAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
12	70.0	0.00784003	-21.057	-16.397
13	70.0	0.00507378	-22.947	-18.287
14	70.0	0.00755814	-21.216	-16.556
15	60.0	0.00964437	-20.157	-17.147
16	60.0	0.01256061	-19.010	-16.000
17	45.0	0.01291628	-18.889	-17.383
18	45.0	0.01990791	-17.010	-15.505
19	30.0	0.02338561	-16.311	-15.686
20	30.0	0.02290402	-16.401	-15.776
21	20.0	0.01885907	-17.245	-16.975

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
22	70.0	0.01010212	-19.956	-15.296
23	70.0	0.00845938	-20.727	-16.067
24	60.0	0.01510168	-18.210	-15.199
25	60.0	0.01891613	-17.232	-14.221
26	45.0	0.01624482	-17.893	-16.388
27	45.0	0.02082364	-16.814	-15.309
28	30.0	0.02279029	-16.423	-15.798
29	30.0	0.02371929	-16.249	-15.624
30	20.0	0.01946041	-17.108	-16.838
31	20.0	0.02105543	-16.766	-16.496

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 201 TERRAIN OSU OATS FREQUENCY = 10.000 GIGAHERTZ

DATE 27APR7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 48.100 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1

TIME/VOLT 0.48100 INPUT 4.60988 IN DB 13.27380 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
16	70.0	0.14114669	-8.503	-3.844
17	70.0	0.14395510	-8.418	-3.758
18	60.0	0.19949681	-7.001	-3.990
19	60.0	0.15656667	-8.053	-5.043
20	45.0	0.24573750	-6.095	-4.590
21	45.0	0.19558684	-7.087	-5.581
22	30.0	0.32905817	-4.827	-4.203
23	30.0	0.29360224	-5.322	-4.698
24	20.0	0.4131951	-3.965	-3.695
25	20.0	0.42486974	-3.718	-3.447

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
26	70.0	0.18769746	-7.265	-2.606
27	70.0	0.12252771	-9.119	-4.458
28	60.0	0.34641388	-4.604	-1.594
29	60.0	0.20880459	-6.803	-3.792
30	45.0	0.24796717	-6.056	-4.551
31	45.0	0.25524003	-5.931	-4.425
32	30.0	0.37961698	-4.207	-3.582
33	30.0	0.35521497	-4.495	-3.870
34	20.0	0.42127348	-3.755	-3.485
35	20.0	0.53099252	-2.749	-2.479

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 27APR7
 DATA GROUP NUMBER = 201

TERRAIN OSU OATS

FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 22.100 SECONDS
 INPUT 9.65062

VOLTAGE 10.000 VOLTS
 IN DB 19.69110

MULTIPLIER 0.1
 FREQUENCY 10.0

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS POLARIZATION VERTICAL TRANSMITTER		GAMMA IN DECIBELS
			CROSS SECTION	CROSS SECTION IN DECIBELS	
16	70.0	0.00551230	-22.587	-17.927	
17	70.0	0.00513503	-22.895	-18.235	
18	60.0	0.00541192	-22.666	-19.656	
19	60.0	0.00611011	-22.140	-19.129	
20	45.0	0.00677850	-21.689	-20.184	
21	45.0	0.00747066	-21.266	-19.761	
22	30.0	0.01004867	-19.979	-19.354	
23	30.0	0.00941291	-20.263	-19.638	
24	20.0	0.01112668	-19.536	-19.266	
25	20.0	0.01055007	-19.767	-19.497	

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS POLARIZATION HORIZONTAL TRANSMITTER		GAMMA IN DECIBELS
			CROSS SECTION	CROSS SECTION IN DECIBELS	
36	70.0	0.00377960	-24.226	-19.566	
37	70.0	0.00273306	-25.634	-20.974	
38	60.0	0.00374066	-24.271	-21.260	
39	60.0	0.00348416	-24.579	-21.569	
40	45.0	0.00488467	-23.112	-21.606	
41	45.0	0.00540006	-22.676	-21.171	
42	30.0	0.00492838	-23.073	-22.448	
43	30.0	0.00569458	-22.445	-21.821	
44	20.0	0.00617253	-22.095	-21.825	
45	20.0	0.00645583	-21.900	-21.630	

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 202 TERRAIN OSU DATS FREQUENCY = 1.800 GIGAHERTZ

DATE 27APR7 NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 69.500 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.69500 INPUT 3.24969 IN DB 10.23684 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
36	70.0	0.19927988	-7.005	-2.346
37	70.0	0.17569831	-7.552	-2.893
38	60.0	0.29987264	-5.231	-2.220
39	60.0	0.48476287	-3.145	-0.134
40	45.0	0.92344867	-0.346	1.159
41	45.0	0.64614635	-1.897	-0.392
42	30.0	0.84453684	-0.734	-0.109
43	30.0	1.22251252	0.873	1.497
44	20.0	1.78978394	2.528	2.798
45	20.0	1.79982175	2.552	2.822

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
26	70.0	0.07388171	-11.315	-6.655
27	70.0	0.09786494	-10.094	-5.434
28	60.0	0.16716575	-7.769	-4.758
29	60.0	0.19183853	-7.171	-4.160
30	45.0	0.52498443	-2.799	-1.293
31	45.0	0.85980181	-0.656	0.849
32	30.0	1.05462412	0.272	0.897
33	30.0	0.99326566	-0.029	0.595
34	20.0	1.41094528	1.495	1.765
35	20.0	1.22787304	0.892	1.162

ABSOLUTE
 CALIBRATION
 IN DOUBT

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 203 TERRAIN OSU DATS FREQUENCY = 10.000 GIGAHERTZ
 DATE 4MAY7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 46.801 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.44807 INPUT 4.73145 IN DB 13.49988 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
11	75.0	0.10637665	-9.732	-5.072
12	70.0	0.11942350	-9.229	-4.570
13	65.0	0.0951772	-10.017	-7.006
14	60.0	0.1284212	-8.914	-5.904
15	55.0	0.13018497	-8.854	-6.935
16	50.0	0.15354254	-9.135	-6.216
17	40.0	0.13974123	-7.218	-6.061
18	40.0	0.22262490	-6.524	-5.367
19	35.0	0.23376034	-6.312	-5.688
20	30.0	0.27494910	-5.607	-4.983
21	20.0	0.26500076	-5.768	-5.497
22	20.0	0.35918154	-4.447	-4.177
23	20.0	0.32060906	-4.940	-4.670
24	20.0	0.38614680	-4.133	-3.862

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
25	75.0	0.13605434	-8.663	-4.003
26	70.0	0.15983125	-7.963	-3.304
27	60.0	0.16901010	-7.721	-4.711
28	60.0	0.13206846	-8.792	-5.782
29	50.0	0.19206043	-7.166	-5.246
30	50.0	0.20132645	-6.961	-5.042
31	40.0	0.20323914	-6.924	-5.767
32	40.0	0.23880519	-6.220	-5.062
33	30.0	0.32794505	-4.842	-4.217
34	30.0	0.25445150	-5.944	-5.319
35	20.0	0.29859845	-5.249	-4.979
36	20.0	0.36845952	-4.336	-4.066

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 4MAY7 DATA GROUP NUMBER = 203 TERRAIN OSU OATS FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 19.000 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.19000 INPUT 11.14068 IN DB 20.93824 FREQUENCY 10.0

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
11	70.0	0.00442363	-23.542	-18.883
12	70.0	0.00310572	-25.078	-20.419
13	60.0	0.00851225	-20.700	-17.689
14	60.0	0.00582616	-22.346	-19.336
15	50.0	0.00524735	-22.801	-20.881
16	50.0	0.00481820	-23.171	-21.252
17	40.0	0.00591899	-22.278	-21.120
18	40.0	0.00694330	-21.584	-20.427
19	30.0	0.00655667	-21.833	-21.208
20	30.0	0.00919777	-20.363	-19.738
21	20.0	0.00647185	-21.890	-21.620
22	20.0	0.00853139	-20.690	-20.420
23	20.0	0.00803202	-20.952	-20.682
24	20.0	0.00977356	-20.099	-19.829

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
25	70.0	0.00585708	-22.323	-17.664
26	70.0	0.00751783	-21.239	-16.580
27	60.0	0.00706202	-21.511	-18.500
28	60.0	0.00572854	-22.420	-19.409
29	50.0	0.00634469	-21.976	-20.057
30	50.0	0.00759771	-21.193	-19.274
31	40.0	0.00692388	-21.597	-20.439
32	40.0	0.00713360	-21.467	-20.309
33	30.0	0.00740948	-21.302	-20.677
34	30.0	0.00756342	-21.213	-20.588
35	20.0	0.00656931	-21.825	-21.555
36	20.0	0.00967649	-20.143	-19.873

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 4MAY7 DATA GROUP NUMBER = 204 TERRAIN OSU OATS FREQUENCY = 1.800 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 38.800 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1

INPUT 0.38800 IN DB 15.04675 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
66	70.0	0.08544112	-10.683	-6.024
67	70.0	0.14988046	-8.243	-3.583
68	60.0	0.19680395	-7.060	-4.049
69	60.0	0.23492185	-6.291	-3.280
70	50.0	0.34402868	-4.634	-2.715
71	50.0	0.22734365	-6.433	-4.514
72	40.0	0.40594434	-3.915	-2.758
73	40.0	0.38921954	-4.098	-2.941
74	30.0	0.61138644	-2.137	-1.512
75	30.0	0.54925770	-2.602	-1.978
76	20.0	0.52742995	-2.778	-2.508
77	20.0	0.64170225	-1.927	-1.657

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
54	70.0	0.06467628	-11.893	-7.233
55	70.0	0.08098079	-10.916	-6.257
56	60.0	0.04651966	-13.324	-10.313
57	60.0	0.12631117	-8.986	-5.975
58	50.0	0.17752700	-7.507	-5.588
59	50.0	0.23224124	-6.341	-4.421
60	40.0	0.39503529	-4.034	-2.876
61	40.0	0.38669309	-4.126	-2.969
62	30.0	0.39983349	-3.981	-3.357
63	30.0	0.53129271	-2.747	-2.122
64	20.0	0.51624981	-2.871	-2.601
65	20.0	0.46089369	-3.364	-3.094

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 18MAY7 DATA GROUP NUMBER = 205 TERRAIN OSU OATS FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 40.500 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.40500 INPUT 5.42807 IN DB 14.69291 FRQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
12	70.0	0.06840068	-11.649	-6.990
13	70.0	0.08686572	-10.612	-5.952
14	60.0	0.10314079	-9.866	-6.855
15	60.0	0.11537105	-9.379	-6.369
16	50.0	0.13026139	-8.852	-6.933
17	50.0	0.14443757	-8.403	-6.484
18	40.0	0.21296483	-6.697	-5.539
19	40.0	0.23842834	-6.226	-5.069
20	30.0	0.29476611	-5.305	-4.681
21	30.0	0.25863404	-5.873	-5.248
22	20.0	0.45130057	-3.455	-3.185
23	20.0	0.37036532	-4.314	-4.044

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
24	70.0	0.10094346	-9.959	-5.300
25	70.0	0.14582561	-8.362	-3.702
26	60.0	0.14540990	-8.374	-5.364
27	60.0	0.15219590	-8.176	-5.166
28	50.0	0.14532768	-8.377	-6.457
29	50.0	0.17431117	-7.587	-5.667
30	40.0	0.23111459	-6.362	-5.204
31	40.0	0.26172789	-5.821	-4.664
32	30.0	0.30515863	-5.155	-4.530
33	30.0	0.34068431	-4.676	-4.052
34	20.0	0.39806319	-4.000	-3.730
35	20.0	0.40438949	-3.932	-3.662

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 205 TERRAIN OSU DATS FREQUENCY = 10.000 GIGAHERTZ

DATE 18MAY7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 32.000 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 INPUT 6.78946 IN DB 16.63671 FREQUENCY 10.0

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
12	70.0	0.01734397	-17.609	-12.949
13	70.0	0.01388795	-18.574	-13.914
14	60.0	0.01729919	-17.620	-14.609
15	60.0	0.01614040	-17.921	-14.911
16	50.0	0.01691360	-17.718	-15.798
17	50.0	0.01966683	-17.063	-15.143
18	40.0	0.03068327	-15.131	-13.974
19	40.0	0.03248613	-14.883	-13.726
20	30.0	0.03313040	-14.798	-14.173
21	30.0	0.03234947	-14.901	-14.277
22	20.0	0.04127772	-13.843	-13.573
23	20.0	0.03744772	-14.266	-13.996

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RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
24	70.0	0.02333690	-16.320	-11.660
25	70.0	0.01625151	-17.891	-13.232
26	60.0	0.02408472	-16.183	-13.172
27	60.0	0.02107215	-16.763	-13.753
28	50.0	0.02359542	-16.272	-14.352
29	50.0	0.02072137	-16.836	-14.916
30	40.0	0.03951419	-14.032	-12.875
31	40.0	0.03430812	-14.646	-13.489
32	30.0	0.03969703	-14.012	-13.388
33	30.0	0.02789707	-15.544	-14.920
34	20.0	0.03494843	-14.566	-14.296
35	20.0	0.03898583	-14.091	-13.821

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 206 TERRAIN OSU DATS FREQUENCY = 35.000 GIGAHERTZ
 DATE 23MAY77 NO PLOTS REQUESTED
 INTEGRATION TIME FROM REFERENCE SPHERE = 76.700 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 1.0
 TIME/VOLT 7.67000 INPUT 0.37935 IN DB -8.41924 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
77	70.0	0.06184769	-12.087	-7.427
78	70.0	0.07786615	-11.087	-6.427
79	60.0	0.08729277	-10.590	-7.580
80	60.0	0.05682544	-12.455	-9.444
81	50.0	0.11983857	-9.214	-7.295
82	50.0	0.09346555	-10.293	-8.374
83	40.0	0.11457698	-9.409	-8.252
84	40.0	0.26065071	-5.839	-4.682
85	30.0	0.16317540	-7.873	-7.249
86	30.0	0.15853391	-7.999	-7.374
87	20.0	0.22727013	-6.435	-6.164
88	20.0	0.27447724	-5.615	-5.345

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
89	70.0	0.07420112	-11.291	-6.631
90	70.0	0.06549865	-11.838	-7.178
91	60.0	0.11475196	-9.402	-6.392
92	60.0	0.06378603	-11.053	-8.942
93	50.0	0.12927552	-8.885	-6.966
94	50.0	0.08670153	-10.620	-8.700
95	40.0	0.13641596	-8.651	-7.494
96	40.0	0.10042205	-9.982	-8.824
97	30.0	0.14545275	-8.373	-7.748
98	30.0	0.14868151	-8.277	-7.653
99	20.0	0.18986916	-7.215	-6.945
100	20.0	0.15938267	-7.976	-7.705

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 207 TERRAIN OSU OATS FREQUENCY = 10.000 GIGAHERTZ
 DATE 23MAY7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 42.100 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.42100 INPUT 5.23190 IN DB 14.37320 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
17	70.0	0.17135481	-7.661	-3.002
18	70.0	0.20348176	-6.915	-2.255
19	60.0	0.21320725	-6.712	-3.702
20	60.0	0.21559992	-6.664	-3.653
21	50.0	0.23318958	-6.323	-4.404
22	50.0	0.18477191	-7.334	-5.414
23	40.0	0.19166368	-7.175	-6.017
24	40.0	0.18934938	-7.227	-6.070
25	30.0	0.18535203	-7.320	-6.695
26	30.0	0.21576878	-6.660	-6.035
27	20.0	0.19930524	-7.005	-6.735
28	20.0	0.23725000	-6.248	-5.978

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
29	70.0	0.15406125	-8.123	-3.464
30	70.0	0.18138851	-7.414	-2.754
31	60.0	0.19414741	-7.119	-4.108
32	60.0	0.20530835	-6.876	-3.866
33	50.0	0.19952789	-7.000	-5.081
34	50.0	0.21511232	-6.673	-4.754
35	40.0	0.22094758	-6.557	-5.400
36	40.0	0.26481678	-5.771	-4.613
37	30.0	0.21462713	-6.683	-6.058
38	30.0	0.24732530	-6.067	-5.443
39	20.0	0.25339273	-5.962	-5.692
40	20.0	0.30045492	-5.222	-4.952

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 207

TERRAIN DSU DATA

FREQUENCY = 10.000 GIGAHERTZ

DATE 23MAY7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 27.700 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.27700 INPUT 7.78703 IN DB 17.82744 FREQUENCY 10.0

CROSS POLARIZATION VERTICAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
17	70.0	0.01355576	-18.679	-14.019
18	70.0	0.01306216	-18.840	-14.180
19	60.0	0.01408436	-18.513	-15.502
20	60.0	0.01399454	-18.540	-15.530
21	50.0	0.01387721	-18.577	-16.658
22	50.0	0.01561662	-18.064	-16.145
23	40.0	0.01566742	-18.050	-16.893
24	40.0	0.01244213	-19.051	-17.894
25	30.0	0.01561378	-18.065	-17.440
26	30.0	0.01858555	-17.308	-16.684
27	20.0	0.01520539	-18.180	-17.910
28	20.0	0.01596379	-17.969	-17.698

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
41	70.0	0.00951662	-20.215	-15.556
42	70.0	0.00628380	-22.018	-17.358
43	60.0	0.00930753	-20.315	-17.305
44	60.0	0.00790153	-21.023	-18.013
45	50.0	0.00835817	-20.779	-18.860
46	50.0	0.00911163	-20.404	-18.485
47	40.0	0.00915127	-20.385	-19.228
48	40.0	0.00861457	-20.648	-19.490
49	30.0	0.01133584	-19.455	-18.831
50	30.0	0.00976182	-20.105	-19.480
51	20.0	0.00879864	-20.556	-20.286
52	20.0	0.00923950	-20.344	-20.073

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 208 TERRAIN DSU DATS FREQUENCY = 1.800 GIGAHERTZ
 DATE 23MAY7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 32.500 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 INPUT 6.69019 IN DB 16.50877 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
29	70.0	0.03992959	-14.031	-9.371
30	70.0	0.03621276	-14.411	-9.752
31	60.0	0.07768462	-11.097	-8.086
32	60.0	0.07186619	-11.435	-8.424
33	50.0	0.06714645	-11.730	-9.810
34	50.0	0.06366287	-11.961	-10.042
35	40.0	0.10943877	-9.608	-8.451
36	40.0	0.09558658	-10.196	-9.039
37	30.0	0.10638815	-9.731	-9.106
38	30.0	0.20498713	-6.883	-6.258
39	20.0	0.18619162	-7.300	-7.030
40	20.0	0.26297578	-5.801	-5.531

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
41	70.0	0.05713802	-12.431	-7.771
42	70.0	0.07820253	-11.068	-6.408
43	60.0	0.08031150	-10.952	-7.942
44	60.0	0.09311418	-10.310	-7.300
45	50.0	0.07844226	-11.054	-9.135
46	50.0	0.11413513	-9.426	-7.506
47	40.0	0.11839454	-9.267	-8.109
48	40.0	0.10516538	-9.781	-8.524
49	30.0	0.16865696	-7.730	-7.105
50	30.0	0.26548430	-5.760	-5.133
51	20.0	0.32688384	-4.856	-4.586
52	20.0	0.34422907	-4.632	-4.361

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 209 TERRAIN DSU PLOTS FREQUENCY = 35.000 GIGAHERTZ

DATE 14JUN7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SP+FRE = 76.760 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 1.0
 TIME/VOLT 7.67000 INPUT 0.37935 IN DB -8.41924 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
4	70.0	0.03647559	-10.631	-5.972
5	70.0	0.20063638	-6.976	-2.316
6	60.0	0.14442567	-8.526	-5.515
7	60.0	0.11555675	-9.372	-6.362
8	50.0	0.13090340	-8.834	-6.914
9	50.0	0.14701803	-8.326	-6.407
10	40.0	0.21609106	-6.861	-5.704
11	40.0	0.15759811	-8.165	-7.007
12	30.0	0.22939806	-6.400	-5.775
13	30.0	0.23960048	-6.786	-6.161
14	20.0	0.27050886	-5.678	-5.408
15	20.0	0.2717850	-5.683	-5.413

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
16	70.0	0.25157061	-5.993	-1.334
17	70.0	0.21712806	-6.633	-1.973
18	60.0	0.15582430	-8.074	-5.063
19	60.0	0.14627064	-8.748	-5.338
20	50.0	0.14932246	-8.259	-6.339
21	50.0	0.13633440	-8.654	-6.735
22	40.0	0.16349650	-7.865	-6.707
23	40.0	0.16174961	-7.912	-6.754
24	30.0	0.23555755	-6.279	-5.654
25	30.0	0.22132399	-6.550	-5.925
26	20.0	0.29455388	-5.308	-5.038
27	20.0	0.29004150	-5.375	-5.105

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 14JUN7 DATA GROUP NUMBER = 210 TERRAIN OSU DATS FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 50.000 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.50000 INPUT 4.44331 IN DB 12.95413 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
47	70.0	0.16990007	-7.698	-3.039
48	70.0	0.09405936	-10.266	-5.606
49	60.0	0.07723789	-11.122	-8.111
50	60.0	0.07777357	-11.092	-8.081
51	50.0	0.12000084	-9.208	-7.289
52	50.0	0.10887198	-9.631	-7.712
53	40.0	0.12225295	-9.127	-7.970
54	40.0	0.13656727	-8.647	-7.489
55	30.0	0.15225858	-8.174	-7.549
56	30.0	0.18856159	-7.245	-6.621
57	20.0	0.17769757	-7.503	-7.233
58	20.0	0.20633652	-6.854	-6.584

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
59	70.0	0.12623279	-8.988	-4.329
59	70.0	0.13067228	-8.838	-4.179
60	70.0	0.19254794	-7.155	-2.495
61	60.0	0.12426067	-9.057	-6.046
62	60.0	0.14153112	-8.491	-5.481
63	50.0	0.18236929	-7.390	-5.471
64	50.0	0.16029825	-7.951	-6.031
65	40.0	0.18039914	-7.438	-6.280
66	40.0	0.18253067	-7.387	-6.229
67	30.0	0.23303715	-6.326	-5.701
68	30.0	0.23198576	-6.345	-5.721
69	20.0	0.30391172	-5.173	-4.902
70	20.0	0.30498292	-5.157	-4.887

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 210 TERRAIN OSU DATS FREQUENCY = 10.000 GIGAHERTZ

DATE 14JUN7 NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 34.000 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1

TIME/VOLT 0.34000 INPUT 6.40948 IN DB 16.13646 FREQUENCY 10.0

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
47	70.0	0.01358899	-18.668	-14.009
48	70.0	0.00775877	-21.102	-16.443
49	60.0	0.00685127	-21.642	-18.632
50	60.0	0.00770324	-21.133	-18.123
51	50.0	0.00892084	-20.496	-18.577
52	50.0	0.01000418	-19.998	-18.079
53	40.0	0.01052508	-19.778	-18.620
54	40.0	0.01166346	-19.332	-18.174
55	30.0	0.01194038	-19.610	-18.985
56	30.0	0.01156444	-19.369	-18.744
57	20.0	0.01251370	-19.076	-18.756
58	20.0	0.01135345	-19.449	-19.179

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 211 TERRAIN OSU OATS FREQUENCY = 1.800 GIGAHERTZ

DATE 14JUN7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 43.300 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.43300 INPUT 5.09406 IN DB 14.14129 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
59	70.0	0.06561700	-11.830	-7.170
59	70.0	0.03847704	-14.148	-9.489
60	70.0	0.05536452	-12.568	-7.908
61	60.0	0.04512037	-13.456	-10.446
62	60.0	0.02984963	-15.251	-12.240
63	50.0	0.05120920	-12.907	-10.987
64	50.0	0.04330875	-13.634	-11.715
65	40.0	0.13204436	-8.793	-7.635
65	40.0	0.13204436	-8.793	-7.635
66	40.0	0.12830645	-8.918	-7.760
67	30.0	0.13161219	-8.807	-8.182
68	30.0	0.13768170	-8.611	-7.987
69	20.0	0.17445085	-7.583	-7.313
70	20.0	0.18669863	-7.289	-7.018

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 15JUN7 DATA GROUP NUMBER = 212 TERRAIN OSU OATS FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
17	70.0	0.07683219	-11.145	-6.485
18	70.0	0.07911985	-11.017	-6.358
19	60.0	0.09670624	-10.145	-7.135
20	60.0	0.08780090	-10.565	-7.555
21	50.0	0.11161545	-9.523	-7.603
22	50.0	0.12058829	-9.187	-7.268
23	40.0	0.14245709	-8.463	-7.306
24	40.0	0.13180830	-8.801	-7.643
25	30.0	0.15526730	-8.089	-7.465
26	30.0	0.18232302	-7.392	-6.767
27	20.0	0.23570922	-6.276	-6.006
28	20.0	0.27389141	-5.624	-5.354

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
29	70.0	0.19045599	-7.203	-2.543
30	70.0	0.34432349	-4.630	0.029
31	60.0	0.14154473	-8.491	-5.481
32	60.0	0.28619277	-5.433	-2.423
33	50.0	0.16629281	-7.791	-5.872
34	50.0	0.16248326	-7.892	-5.973
35	40.0	0.21730094	-6.629	-5.472
36	40.0	0.23854520	-6.224	-5.067
37	30.0	0.22424585	-6.493	-5.868
38	30.0	0.30354622	-5.178	-4.553
39	20.0	0.31462283	-5.022	-4.752
40	20.0	0.33169660	-4.793	-4.522

HORIZONTAL POLARIZATION

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 212 TERRAIN DSU DATS FREQUENCY = 10.000 GIGAHERTZ

DATE 15JUN7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 27.400 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.27400 INPUT 7.86801 IN DB 17.91729 FREQUENCY 10.0

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS POLARIZATION VERTICAL TRANSMITTER		GAMMA IN DECIBELS
			CROSS SECTION	CROSS SECTION IN DECIBELS	
17	70.0	0.00535709	-22.711	-18.051	
18	70.0	0.00501354	-22.999	-18.339	
19	60.0	0.00608527	-22.157	-19.147	
20	60.0	0.00596349	-22.245	-19.235	
21	50.0	0.00590845	-22.285	-20.366	
22	50.0	0.00622189	-22.061	-20.141	
23	40.0	0.00706878	-21.507	-20.349	
24	40.0	0.00760752	-21.188	-20.030	
25	30.0	0.00797363	-20.983	-20.359	
26	30.0	0.00864793	-20.631	-20.006	
27	20.0	0.01132305	-19.460	-19.190	
28	20.0	0.00995786	-20.018	-19.748	

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS POLARIZATION HORIZONTAL TRANSMITTER		GAMMA IN DECIBELS
			CROSS SECTION	CROSS SECTION IN DECIBELS	
41	70.0	0.00515106	-22.881	-18.222	
42	70.0	0.00581658	-22.353	-17.694	
43	60.0	0.00465057	-23.325	-20.315	
44	60.0	0.00517902	-22.858	-19.847	
45	50.0	0.00498581	-23.023	-21.103	
46	50.0	0.00432246	-23.643	-21.723	
47	40.0	0.00430783	-23.657	-22.500	
48	40.0	0.00351908	-24.536	-23.378	
49	30.0	0.00437275	-23.592	-22.968	
50	30.0	0.00433531	-23.630	-23.005	
51	20.0	0.00528722	-22.768	-22.498	
52	20.0	0.00496215	-23.043	-22.773	

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 213 TERRAIN OSU DATS FREQUENCY = 1.800 GIGAHERTZ
 DATE 15JUN7
 NO PLOTS REQUESTED
 INTEGRATION TIME FROM REFERENCE SPHERE = 38.800 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.38800 INPUT 5.65376 IN DB 15.04675 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
29	70.0	0.04505926	-13.462	-8.803
30	70.0	0.05743005	-12.409	-7.749
31	60.0	0.05673041	-12.462	-9.452
32	60.0	0.06103467	-12.144	-9.134
33	50.0	0.05049760	-12.967	-11.048
34	50.0	0.07238690	-11.403	-9.484
35	40.0	0.08416868	-10.748	-9.591
36	40.0	0.08216673	-10.853	-9.696
37	30.0	0.09671596	-10.145	-9.520
38	30.0	0.17770689	-7.503	-6.878
39	20.0	0.28855020	-5.398	-5.128
40	20.0	0.38519203	-4.143	-3.873

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
41	70.0	0.16049998	-7.946	-3.286
42	70.0	0.10188567	-9.919	-5.259
43	60.0	0.12720289	-8.955	-5.945
44	60.0	0.14172168	-8.486	-5.475
45	50.0	0.21257251	-6.725	-4.806
46	50.0	0.24117726	-6.177	-4.257
47	40.0	0.22816955	-6.417	-5.260
48	40.0	0.27595770	-5.592	-4.434
49	30.0	0.33411670	-4.761	-4.136
50	30.0	0.43020140	-3.663	-3.039
51	20.0	0.66278460	-1.786	-1.516
52	20.0	0.38660846	-4.127	-3.857

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

TERRAIN OSU SOYBEANS FREQUENCY = 35.000 GIGAHERTZ

DATA GROUP NUMBER = 214
DATE 26JUN7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERF = 76.700 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 1.0
TIME/VOLT 7.67000 IN DB -8.41924 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
71	70.0	0.02860527	-15.436	-10.776
72	70.0	0.03960318	-14.023	-9.363
73	60.0	0.08949225	-10.482	-7.472
74	60.0	0.06457852	-11.899	-8.889
75	50.0	0.17452433	-7.581	-5.662
76	50.0	0.11451290	-9.411	-7.492
77	40.0	0.18415206	-7.348	-6.191
78	40.0	0.18722020	-7.276	-6.119
79	30.0	0.23555755	-6.279	-5.654
80	30.0	0.19350703	-7.133	-6.508
81	20.0	0.24896658	-6.039	-5.768
82	20.0	0.24212097	-6.160	-5.890

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HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
83	70.0	0.06212141	-12.068	-7.408
84	70.0	0.05018206	-12.995	-8.335
85	60.0	0.09952771	-10.432	-7.422
86	60.0	0.08413466	-10.750	-7.740
87	50.0	0.11583536	-9.362	-7.442
88	50.0	0.09639632	-10.159	-8.240
89	40.0	0.18899317	-7.236	-6.078
90	40.0	0.16718951	-7.768	-6.610
91	30.0	0.21577843	-6.660	-6.035
92	30.0	0.26040705	-5.843	-5.219
93	20.0	0.26051986	-5.842	-5.571
94	20.0	0.23978783	-6.202	-5.932

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 215 TERRAIN OSU SOYBEANS FREQUENCY = 10.000 GIGAHERTZ

DATE 26JUN7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 37.600 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.37600 INPUT IN DB 15.30599 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
17	70.0	0.07936821	-11.004	-6.344
18	70.0	0.05680947	-12.456	-7.796
19	60.0	0.08467675	-10.722	-7.712
20	60.0	0.11542970	-9.377	-6.367
21	50.0	0.13160298	-8.807	-6.888
22	50.0	0.15553390	-8.082	-6.162
23	40.0	0.13584404	-8.670	-7.512
24	40.0	0.21633366	-6.649	-5.491
25	30.0	0.19336523	-7.136	-6.512
26	30.0	0.16865367	-7.730	-7.105
27	20.0	0.23641020	-6.263	-5.993
28	20.0	0.24688632	-6.075	-5.805

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HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
29	70.0	0.06725633	-11.723	-7.063
30	70.0	0.06642505	-11.777	-7.117
31	60.0	0.11050345	-9.566	-6.556
32	60.0	0.11656284	-9.353	-6.343
33	50.0	0.13008909	-8.858	-6.938
34	50.0	0.14058064	-8.521	-6.601
35	40.0	0.16564478	-7.808	-6.651
36	40.0	0.18364524	-7.360	-6.203
37	30.0	0.29185720	-5.348	-4.724
38	30.0	0.23359001	-6.315	-5.691
39	30.0	0.23359001	-6.315	-5.691
38	20.0	0.24309698	-6.142	-5.872
40	20.0	0.26908544	-5.701	-5.431

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 26JUN7 DATA GROUP NUMBER = 215 TERRAIN OSU SOYBEANS FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 29.500 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.29500 INPUT 7.33495 IN DB 17.30794 FREQUENCY 10.0

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION VERTICAL TRANSMITTER			GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS	
17	70.0	0.00349164	-24.570	-19.910	
18	70.0	0.00428887	-23.677	-19.017	
19	60.0	0.00612858	-22.126	-19.116	
20	60.0	0.00557863	-22.535	-19.524	
21	50.0	0.01155690	-19.372	-17.452	
22	50.0	0.00798258	-20.979	-19.059	
23	40.0	0.01162331	-19.347	-18.189	
24	40.0	0.01198235	-19.215	-18.057	
25	30.0	0.01142012	-19.423	-18.799	
26	30.0	0.01167246	-19.328	-18.704	
27	20.0	0.01023637	-19.899	-19.628	
28	20.0	0.01212356	-19.164	-18.894	

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RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION HORIZONTAL TRANSMITTER			GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS	
41	70.0	0.01790419	-17.470	-12.811	
42	70.0	0.01320460	-18.793	-14.133	
43	60.0	0.01077965	-19.674	-16.664	
44	60.0	0.01473959	-18.315	-15.305	
45	50.0	0.01362737	-18.656	-16.737	
46	50.0	0.00955929	-20.196	-18.276	
47	40.0	0.01279985	-18.928	-17.770	
48	40.0	0.01327905	-18.768	-17.611	
49	30.0	0.01230727	-19.098	-18.474	
50	30.0	0.00993589	-20.028	-19.403	
51	20.0	0.01011605	-19.950	-19.680	
52	20.0	0.01114418	-19.530	-19.259	

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 216

TFERRAIN OSU SOYBEANS

FREQUENCY = 1.800 GIGAHERTZ

DATE 26JUN7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 38.800 SECONDS
 INPUT 5.65376 IN DB 15.04675 VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.38800 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
29	70.0	0.08615884	-10.647	-5.988
30	70.0	0.05971539	-12.239	-7.580
31	60.0	0.12484975	-9.036	-6.026
32	60.0	0.18188241	-7.402	-4.392
33	50.0	0.19010789	-7.210	-5.291
34	50.0	0.15295860	-8.154	-6.235
35	40.0	0.33223956	-4.772	-3.615
36	40.0	0.34148848	-4.666	-3.509
37	30.0	0.28334358	-5.477	-4.852
38	30.0	0.23808652	-6.233	-5.608
39	20.0	0.31494258	-5.018	-4.748
40	20.0	0.28446701	-5.460	-5.190

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
41	70.0	0.10219597	-9.906	-5.246
42	70.0	0.08368375	-10.774	-6.114
43	60.0	0.14937413	-8.257	-5.247
44	60.0	0.12143527	-9.157	-6.146
45	50.0	0.22775671	-6.425	-4.506
46	50.0	0.15283189	-8.158	-6.239
47	40.0	0.21423099	-6.691	-5.534
48	40.0	0.32802634	-4.841	-3.683
49	30.0	0.26266166	-5.806	-5.181
50	30.0	0.33632497	-5.138	-4.513
51	20.0	0.42034677	-3.764	-3.494
52	20.0	0.26458688	-5.774	-5.504

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 217 TERRAIN OSU SOYBEANS FREQUENCY = 35.000 GIGAHERTZ

DATE 27JUL7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 79.400 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 1.0
 TIME/VOLT 7.94000 INPUT 0.36791 IN DB -8.68507 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
7	70.0	0.07610614	-11.186	-6.526
8	70.0	0.05952337	-12.253	-7.594
9	60.0	0.09603270	-10.176	-7.166
10	60.0	0.08679978	-10.615	-7.605
11	50.0	0.18073459	-7.430	-5.510
12	50.0	0.13986783	-8.543	-6.623
13	40.0	0.23001670	-6.382	-5.225
14	40.0	0.23532713	-6.283	-5.126
15	30.0	0.38868330	-4.104	-3.479
16	30.0	0.37823252	-4.222	-3.598
17	20.0	0.37175889	-4.297	-4.027
18	20.0	0.32421174	-4.892	-4.622

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
19	70.0	0.12352698	-9.082	-4.423
20	70.0	0.13249897	-8.778	-4.118
21	60.0	0.15435216	-8.115	-5.105
22	60.0	0.15292384	-8.155	-5.145
23	50.0	0.20485908	-6.885	-4.966
24	50.0	0.15173402	-8.189	-6.270
25	40.0	0.24995807	-6.021	-4.864
26	40.0	0.23007440	-6.381	-5.224
27	30.0	0.42587983	-3.707	-3.082
28	30.0	0.30940471	-5.095	-4.470
29	20.0	0.46125018	-3.361	-3.090
30	20.0	0.44940958	-3.474	-3.209

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 27JUL7 DATA GROUP NUMBER = 218 TERRAIN OSU SOYBEANS FREQUENCY = 10.000 GIGAHERTZ
 NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 37.500 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.37500 INPUT 5.83980 IN DB 15.32796 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
55	70.0	0.0002525	-10.456	-5.797
56	70.0	0.06461705	-11.897	-7.237
57	60.0	0.07682917	-11.145	-8.134
58	60.0	0.07479859	-11.267	-8.251
59	50.0	0.13153679	-8.870	-6.890
60	50.0	0.12734514	-8.950	-7.031
61	40.0	0.15538543	-8.786	-6.928
62	40.0	0.16250166	-7.891	-6.734
63	30.0	0.27362603	-5.628	-5.004
64	30.0	0.26101355	-5.833	-5.209
65	20.0	0.25804017	-5.883	-5.613
66	20.0	0.29751045	-5.265	-4.995

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
67	70.0	0.006702523	-13.277	-8.617
68	70.0	0.04687809	-13.290	-8.631
69	60.0	0.08040135	-10.947	-7.937
70	60.0	0.06688323	-11.747	-8.737
71	50.0	0.12977631	-8.868	-6.949
72	50.0	0.13821011	-8.595	-6.675
73	40.0	0.16164265	-7.914	-6.757
74	40.0	0.19196620	-7.168	-6.010
75	30.0	0.19469776	-7.106	-6.482
76	30.0	0.22388522	-6.500	-5.875
77	20.0	0.28576260	-5.440	-5.170
78	20.0	0.29425648	-5.313	-5.043

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 218 TERRAIN DSU SOYBEANS FREQUENCY = 10.000 GIGAHERTZ

DATE 27JUL7

NO. PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 31.000 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.31000 INPUT 6.99736 IN DB 16.89868 FREQUENCY 10.0

CROSS POLARIZATION VERTICAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
55	70.0	0.01626479	-22.731	-17.371
56	70.0	0.01630587	-22.703	-17.343
57	60.0	0.00799312	-20.973	-17.963
58	60.0	0.00921709	-20.357	-17.347
59	50.0	0.01146620	-19.406	-17.486
60	50.0	0.01210949	-19.169	-17.249
61	40.0	0.01094839	-19.606	-18.449
62	40.0	0.01394515	-18.556	-17.398
63	30.0	0.01190791	-19.244	-18.620
64	30.0	0.01370737	-18.630	-18.006
65	20.0	0.01261319	-18.992	-18.722
66	20.0	0.01826207	-17.384	-17.114

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
79	70.0	0.00514111	-22.889	-18.230
80	70.0	0.00325107	-24.880	-20.220
81	60.0	0.00440978	-23.556	-20.546
82	60.0	0.003515011	-22.882	-19.872
83	50.0	0.003595625	-22.250	-20.331
84	50.0	0.003558088	-22.533	-20.614
85	40.0	0.00758699	-21.199	-20.042
86	40.0	0.00674832	-21.708	-20.551
87	30.0	0.00682261	-21.673	-21.049
88	30.0	0.00813126	-20.898	-20.274
89	20.0	0.00826387	-20.828	-20.558
90	20.0	0.00961145	-20.172	-19.902

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 219 TERRAIN DSU SOYBEANS FREQUENCY = 1.800 GIGAHERTZ

DATE 27JUL7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 43.966 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.43900 INPUT 5.02790 IN DB 14.02773 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
67	70.0	0.11881180	-9.251	-4.592
68	70.0	0.14385577	-8.421	-3.761
69	60.0	0.17881781	-9.633	-6.623
70	60.0	0.15423535	-8.118	-5.108
71	50.0	0.19456137	-7.109	-5.190
72	50.0	0.28640903	-5.430	-3.511
73	40.0	0.15669897	-8.049	-6.892
74	40.0	0.21878652	-6.600	-5.442
75	30.0	0.21457673	-6.684	-6.059
76	30.0	0.24936037	-6.032	-5.407
77	20.0	0.33798302	-4.711	-4.441
78	20.0	0.27230466	-5.649	-5.379

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
79	70.0	0.05533210	-12.570	-7.911
80	70.0	0.11216419	-9.501	-4.842
81	60.0	0.09084545	-10.417	-7.407
82	60.0	0.08941190	-10.486	-7.476
83	50.0	0.14916451	-8.263	-6.344
84	50.0	0.16985286	-7.699	-5.780
85	40.0	0.18455238	-7.339	-6.181
86	40.0	0.15724727	-8.034	-6.877
87	30.0	0.21755529	-6.624	-6.000
88	30.0	0.22120355	-6.552	-5.927
89	20.0	0.19633977	-7.070	-6.800
90	20.0	0.24962837	-6.027	-5.757

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 220 TERRAIN OSU SOYBEANS FREQUENCY = 35.000 GIGAHERTZ

DATE 11AUG7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 82.300 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 1.0
 TIME/VOLT 8.23000 INPUT 0.35642 IN DB -8.96070 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
13	70.0	0.03694812	-14.324	-9.665
14	70.0	0.05579324	-12.534	-7.875
15	60.0	0.05404464	-12.672	-9.662
16	60.0	0.06086367	-12.156	-9.146
17	50.0	0.06147510	-12.113	-10.194
18	50.0	0.09096849	-10.917	-8.998
19	40.0	0.08452848	-10.730	-9.573
20	40.0	0.11791313	-9.284	-8.127
21	30.0	0.18401300	-7.352	-6.727
22	30.0	0.20818941	-6.815	-6.191
23	20.0	0.27949350	-5.536	-5.266
24	20.0	0.29884738	-5.246	-4.975

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
25	70.0	0.03678298	-14.344	-9.684
26	70.0	0.05969250	-12.241	-7.581
27	60.0	0.05627438	-12.497	-9.487
28	60.0	0.06652612	-11.770	-8.760
29	50.0	0.08937812	-10.488	-8.568
30	50.0	0.09368099	-10.283	-8.364
31	40.0	0.10166486	-9.928	-8.771
32	40.0	0.13485745	-8.701	-7.544
33	30.0	0.17571365	-7.552	-6.927
34	30.0	0.20157185	-6.956	-6.331
35	20.0	0.24529414	-6.103	-5.833
36	20.0	0.31494980	-5.018	-4.747

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

TERRAIN OSU SOYBEANS FREQUENCY = 10.000 GIGAHERTZ

DATA GROUP NUMBER = 221

DATE 11AUG7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 36.600 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.36600 INPUT 5.97614 IN DR 15.52842 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
61	70.0	0.08068281	-10.932	-6.273
62	70.0	0.08925271	-10.494	-5.834
63	60.0	0.13448756	-8.713	-5.703
64	60.0	0.10726473	-9.695	-6.685
65	50.0	0.12713022	-8.958	-7.038
66	50.0	0.16900075	-7.721	-5.802
67	40.0	0.22205815	-6.535	-5.378
68	40.0	0.21926932	-6.590	-5.433
69	30.0	0.28047879	-5.521	-4.896
70	30.0	0.28126147	-5.524	-4.900
71	20.0	0.35358711	-4.515	-4.245
72	20.0	0.25578839	-5.755	-5.484

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
73	70.0	0.07553437	-11.219	-6.559
74	70.0	0.05816251	-12.354	-7.694
75	60.0	0.10756563	-9.683	-6.673
76	60.0	0.09137012	-10.392	-7.382
77	50.0	0.15752091	-8.027	-6.107
78	50.0	0.20342297	-6.916	-4.997
79	40.0	0.21949255	-6.586	-5.428
80	40.0	0.16411993	-7.848	-6.691
81	30.0	0.33438807	-4.757	-4.133
82	30.0	0.28532288	-5.447	-4.822
83	20.0	0.33769652	-4.715	-4.445
84	20.0	0.36531180	-4.373	-4.103

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 11AUG7 DATA GROUP NUMBER = 221 TERRAIN OSU SOYBEANS FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 26.000 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.26000 INPUT 8.26995 IN DB 18.35006 FREQUENCY 10.0

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
61	70.0	C.00574281	-22.409	-17.749
62	70.0	C.00677253	-21.692	-17.033
63	60.0	C.00876967	-20.570	-17.560
64	60.0	C.00695155	-21.580	-18.570
65	50.0	C.01004751	-19.979	-18.060
66	50.0	C.00971632	-20.125	-18.206
67	40.0	C.01114127	-19.531	-18.373
68	40.0	C.00975506	-20.108	-18.950
69	30.0	C.01261781	-18.990	-18.365
70	30.0	C.01540891	-18.122	-17.498
71	20.0	C.01477518	-18.305	-18.035
72	20.0	C.01374765	-18.618	-18.348

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
73	70.0	C.00465045	-23.317	-18.657
74	70.0	C.00517622	-22.858	-18.199
75	60.0	C.00764067	-21.169	-18.158
76	60.0	C.00611958	-22.133	-19.122
77	50.0	C.00877099	-21.138	-19.119
78	50.0	C.00956311	-20.194	-18.275
79	40.0	C.01008118	-19.965	-18.807
80	40.0	C.01086505	-19.640	-18.482
81	30.0	C.01327336	-18.770	-18.145
82	30.0	C.01066065	-19.722	-19.097
83	20.0	C.01655633	-17.808	-17.538
84	20.0	C.011179893	-19.282	-19.011

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 222 TERRAIN OSU SOYBEANS FREQUENCY = 1.800 GIGAHERTZ

DATE 11AUG7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 36.100 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.36100 INPUT 6.05475 IN DB 15.64192 FRQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
13	70.0	0.15627859	-8.061	-3.402
14	70.0	0.1845080	-7.340	-2.681
15	60.0	0.15664352	-8.051	-5.041
16	60.0	0.16133270	-7.923	-4.912
17	50.0	0.18723717	-7.276	-5.357
18	50.0	0.29303235	-5.331	-3.412
19	40.0	0.32508164	-4.880	-3.723
20	40.0	0.31908420	-5.099	-3.942
21	30.0	0.25850847	-5.875	-5.251
22	30.0	0.38583198	-4.136	-3.511
23	20.0	0.33331332	-4.811	-4.541
24	20.0	0.21011375	-6.775	-6.505

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
25	70.0	0.13767007	-8.612	-3.952
26	70.0	0.13181017	-8.801	-4.141
27	60.0	0.15570249	-8.077	-5.067
28	60.0	0.21097855	-6.758	-3.747
29	50.0	0.26701585	-5.735	-3.815
30	50.0	0.28642086	-5.430	-3.511
31	40.0	0.28190586	-5.499	-4.341
32	40.0	0.37783567	-4.227	-3.070
33	30.0	0.39233559	-4.063	-3.439
34	30.0	0.35188792	-4.536	-3.911
35	20.0	0.41820995	-3.786	-3.516
36	20.0	0.40523119	-3.923	-3.653

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 223 TERRAIN OSU SOYBEANS FREQUENCY = 35.000 GIGAHERTZ
 DATE 1SEPT

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 55.300 SECONDS VOLTAGE 5.000 VOLTS MULTIPLIER 1.0
 TIME/VOLT 11.06000 INPUT 0.28100 IN DB -11.02600 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
53	70.0	0.12760259	-8.941	-4.282
54	70.0	0.11647572	-9.338	-4.678
55	60.0	0.16697863	-7.773	-4.763
56	60.0	0.20356029	-6.913	-3.903
57	50.0	0.17617393	-7.541	-5.621
58	50.0	0.22381053	-6.501	-4.582
59	40.0	0.22440858	-6.490	-5.332
60	40.0	0.28569591	-5.441	-4.283
61	30.0	0.27016529	-5.684	-5.059
62	30.0	0.26799357	-4.342	-3.717
63	20.0	0.32123279	-4.932	-4.662
64	20.0	0.39410686	-4.044	-3.774

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
65	70.0	0.15354364	-8.138	-3.478
66	70.0	0.16358974	-7.862	-3.203
67	60.0	0.16391482	-7.854	-4.844
68	60.0	0.22880251	-6.405	-3.395
69	50.0	0.21573733	-6.661	-4.741
70	50.0	0.22085488	-6.559	-4.640
71	40.0	0.25771334	-5.889	-4.731
72	40.0	0.30792291	-5.116	-3.958
73	30.0	0.27857578	-5.551	-4.926
74	30.0	0.34637711	-4.605	-3.980
75	20.0	0.34336536	-4.642	-4.372
76	20.0	0.39608152	-4.022	-3.752

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 224 TERRAIN OSU SOYBEANS FREQUENCY = 10.000 GIGAHERTZ
 DATE 1SEP7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 36.600 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.36600 INPUT 5.97614 IN DB 15.52842 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
11	70.0	0.08080831	-10.925	-6.266
12	70.0	0.06263909	-12.032	-7.372
13	60.0	0.09507500	-10.219	-7.209
14	60.0	0.10988465	-9.591	-6.580
15	50.0	0.15164365	-8.192	-6.272
16	50.0	0.12484852	-9.036	-7.117
17	40.0	0.14571899	-8.365	-7.207
18	40.0	0.13427247	-8.720	-7.563
19	30.0	0.17708474	-7.518	-6.893
20	30.0	0.20822910	-6.815	-6.190
21	20.0	0.16874928	-7.728	-7.457
22	20.0	0.15892662	-7.988	-7.718

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
23	70.0	0.09655420	-10.152	-5.493
24	70.0	0.08586432	-10.662	-6.002
25	60.0	0.12396384	-9.067	-6.057
26	60.0	0.14964216	-8.249	-5.239
27	50.0	0.18726732	-7.275	-5.356
28	50.0	0.15352477	-8.138	-6.219
29	40.0	0.20078716	-6.973	-5.815
30	40.0	0.22291554	-6.519	-5.361
31	30.0	0.23692654	-6.254	-5.629
32	30.0	0.20867352	-6.805	-6.181
33	20.0	0.21353047	-6.705	-6.435
34	20.0	0.23239862	-6.338	-6.068

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 224 TERRAIN DSU SOYBEANS FREQUENCY = 10.000 GIGAHERTZ
 DATE 1SEPT

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 28.500 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.28500 INPUT 7.57923 IN DB 17.59250 FREQUENCY 10.0

CROSS POLARIZATION VERTICAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
11	70.0	0.00585326	-22.326	-17.667
12	70.0	0.00734439	-21.340	-16.681
13	60.0	0.01128078	-19.477	-16.466
14	60.0	0.01086821	-19.638	-16.628
15	50.0	0.01998414	-16.993	-15.074
16	50.0	0.01749069	-17.572	-15.653
17	40.0	0.02111370	-16.754	-15.597
18	40.0	0.02503689	-16.014	-14.857
19	30.0	0.02237287	-16.503	-15.878
20	30.0	0.02815318	-15.505	-14.880
21	20.0	0.02771925	-15.572	-15.302
22	20.0	0.02833757	-15.476	-15.206

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
23	70.0	0.00938639	-20.275	-15.616
24	70.0	0.01155764	-19.371	-14.712
25	60.0	0.01270998	-18.959	-15.948
26	60.0	0.01618634	-17.909	-14.898
27	50.0	0.02221990	-16.533	-14.613
28	50.0	0.01853814	-17.319	-15.400
29	40.0	0.02605635	-15.841	-14.683
30	40.0	0.01965104	-17.066	-15.909
31	30.0	0.01950085	-17.099	-16.475
32	30.0	0.02572159	-15.897	-15.272
33	20.0	0.02309814	-16.364	-16.094
34	20.0	0.02801432	-15.526	-15.256

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 225 TERRAIN OSU SOYBFANS FREQUENCY = 1.800 GIGAHERTZ

DATE 1SEP7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 36.100 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.36100 INPUT 6.05475 IN DB 15.64192 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
65	70.0	0.07598659	-11.193	-6.533
66	70.0	0.12817576	-8.922	-4.262
67	60.0	0.12307144	-9.098	-6.088
68	60.0	0.16291031	-7.881	-4.870
69	50.0	0.15562295	-8.079	-6.160
70	50.0	0.22587214	-6.461	-4.542
71	40.0	0.19446342	-7.112	-5.954
72	40.0	0.21216783	-6.733	-5.576
73	30.0	0.16106078	-7.930	-7.305
74	30.0	0.17502080	-7.569	-6.944
75	20.0	0.15413596	-8.121	-7.851
76	20.0	0.19240022	-7.158	-6.888

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
53	70.0	0.13997567	-9.209	-4.550
54	70.0	0.11082640	-9.554	-4.894
55	60.0	0.13562929	-8.676	-5.666
56	60.0	0.18378048	-7.357	-4.347
57	50.0	0.16137927	-7.922	-6.002
58	50.0	0.16117774	-7.927	-6.008
59	40.0	0.16484925	-7.829	-6.672
60	40.0	0.13728142	-8.624	-7.466
61	30.0	0.25564916	-5.924	-5.299
62	30.0	0.20813260	-6.817	-6.192
63	20.0	0.33234504	-4.784	-4.514
64	20.0	0.28585295	-5.439	-5.168

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 226 TERRAIN OSU SOYBEANS FREQUENCY = 35.000 GIGAHERTZ
 DATE 15SEPT

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 82.300 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 1.0
 TIME/VOLT 8.23000 INPUT 0.35642 IN DB -8.96070 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
9	70.0	0.03105351	-15.079	-10.419
10	70.0	0.04257841	-13.708	-9.049
11	60.0	0.04072120	-13.902	-10.891
12	60.0	0.06106154	-12.142	-9.132
13	50.0	0.05077342	-12.944	-11.024
14	50.0	0.06798943	-11.676	-9.756
15	40.0	0.08324740	-10.796	-9.639
16	40.0	0.09134929	-10.393	-9.235
17	30.0	0.13565973	-9.848	-9.223
18	30.0	0.13514591	-8.692	-8.067
19	20.0	0.15077082	-8.217	-7.947
20	20.0	0.16189808	-7.908	-7.637

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
21	70.0	0.02743567	-15.617	-10.957
22	70.0	0.04494656	-13.473	-8.814
23	60.0	0.03866229	-14.127	-11.117
24	60.0	0.06129400	-12.126	-9.116
25	50.0	0.05043701	-12.973	-11.053
26	50.0	0.06874125	-11.628	-9.709
27	40.0	0.06229930	-12.055	-10.898
28	40.0	0.10406323	-9.827	-8.670
29	30.0	0.1340510	-9.855	-9.230
30	30.0	0.11797832	-9.282	-8.657
31	20.0	0.13580875	-8.671	-8.401
32	20.0	0.15652020	-8.054	-7.784

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 227 TERRAIN OSU SOYBEANS FREQUENCY = 10.000 GIGAHERTZ

DATE 15SEP7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 43.500 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.43500 INPUT 5.07181 IN DB 14.10326 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
49	70.0	0.08252426	-10.834	-6.1757
50	70.0	0.09560888	-10.195	-5.536
51	60.0	0.09687940	-10.138	-7.127
52	60.0	0.09621811	-10.167	-7.157
53	50.0	0.12016258	-9.272	-7.283
54	50.0	0.12628686	-8.986	-7.067
55	40.0	0.12279932	-9.108	-7.951
56	40.0	0.14212350	-8.473	-7.316
57	30.0	0.15022691	-8.233	-7.608
58	30.0	0.16248999	-7.892	-7.267
59	20.0	0.20853084	-6.808	-6.538
60	20.0	0.19113755	-7.187	-6.916

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
61	70.0	0.06773730	-11.692	-7.032
62	70.0	0.05285540	-12.769	-8.110
63	60.0	0.08208470	-10.857	-7.847
64	60.0	0.09264114	-10.332	-7.322
65	50.0	0.12676876	-8.970	-7.051
66	50.0	0.15597652	-8.069	-6.150
67	40.0	0.19508779	-7.326	-6.169
68	40.0	0.13810000	-8.598	-7.441
69	30.0	0.20889287	-6.801	-6.176
70	30.0	0.17982734	-7.452	-6.827
71	20.0	0.19370027	-7.129	-6.859
72	20.0	0.20379033	-6.908	-6.638

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 227 TERRAIN DSU SOYBEANS FREQUENCY = 10.000 GIGAMERTZ
 DATE 15SEPT7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 32.000 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.32000 INPUT IN DB 16.63671 FREQUENCY 10.0

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
49	70.0	0.00476077			-23.223	-18.564
50	70.0	0.00665049			-21.771	-17.112
51	60.0	0.00745836			-21.274	-18.263
52	60.0	0.01058382			-19.754	-16.743
53	50.0	0.01203835			-19.194	-17.275
54	50.0	0.01118532			-19.514	-17.594
55	40.0	0.01316601			-18.805	-17.648
56	40.0	0.01313379			-18.816	-17.659
57	30.0	0.01126700			-19.482	-18.857
58	30.0	0.01134863			-19.451	-18.826
59	20.0	0.01090604			-19.623	-19.353
60	20.0	0.00983773			-20.071	-19.801

0199

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
61	70.0	0.003933897			-24.046	-19.387
62	70.0	0.00481918			-23.170	-18.511
63	60.0	0.00697412			-21.565	-18.555
64	60.0	0.00934901			-20.292	-17.282
65	50.0	0.01579634			-18.014	-16.095
66	50.0	0.01127622			-19.478	-17.559
67	40.0	0.01266602			-18.974	-17.816
68	40.0	0.00984856			-20.066	-18.909
69	30.0	0.01139605			-19.432	-18.808
70	30.0	0.01052646			-19.777	-19.152
71	20.0	0.00859676			-20.657	-20.387
72	20.0	0.01049295			-19.791	-19.521

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 228 TERRAIN OSU SOYBEANS FREQUENCY = 1.800 GIGAHERTZ

DATE 15SEP7

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 36.100 SECONDS VOLTAGE 10.000 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.36100 INPUT 6.05475 IN DB 15.64192 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
9	70.0	0.05942099	-12.261	-7.601
10	70.0	0.09527887	-10.210	-5.551
11	60.0	0.05571218	-12.540	-9.530
12	60.0	0.06483639	-11.882	-8.872
13	50.0	0.08006558	-10.966	-9.046
14	50.0	0.07831737	-11.061	-9.142
15	40.0	0.07407776	-11.303	-10.146
16	40.0	0.07186324	-11.435	-10.277
17	30.0	0.11864089	-9.258	-8.633
18	30.0	0.12719857	-8.955	-8.330
19	20.0	0.11761405	-9.295	-9.025
20	20.0	0.10418334	-9.822	-9.552

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
21	70.0	0.05214862	-12.828	-8.168
22	70.0	0.04029871	-13.947	-9.288
23	60.0	0.04672496	-13.305	-10.294
24	60.0	0.04156910	-13.812	-10.802
26	50.0	0.07727402	-11.120	-9.200
27	40.0	0.10454907	-9.807	-8.649
28	40.0	0.08612629	-10.649	-9.491
29	30.0	0.14276860	-8.454	-7.829
30	30.0	0.10797601	-9.667	-9.042
31	20.0	0.13128427	-8.818	-8.548

ATTEMPT TO READ BEYOND INPUT DATA

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 300 TERRAIN OSU OATS FREQUENCY = 1.800 GIGAHERTZ

DATE 7MAY8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 33.000 SECONDS VOLTAGE 8.630 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.38239 INPUT 5.73258 IN DB 15.16700 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
36	70.0	0.02592272	-15.863	-11.204
37	70.0	0.02173140	-16.629	-11.970
38	60.0	0.03073631	-15.123	-12.113
39	60.0	0.02850090	-15.451	-12.441
40	50.0	0.04488686	-13.479	-11.559
41	50.0	0.05345156	-12.720	-10.801
42	40.0	0.04365635	-13.600	-12.442
43	40.0	0.06083556	-12.158	-11.001
44	30.0	0.09725830	-10.121	-9.496
44	30.0	0.07682199	-11.145	-10.520
45	30.0	0.10176617	-9.924	-9.299
46	20.0	0.10454105	-9.807	-9.537
47	20.0	0.11132129	-9.534	-9.264

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
48	70.0	0.02880199	-15.406	-10.746
49	70.0	0.02764202	-15.584	-10.925
50	60.0	0.03819222	-14.180	-11.170
51	60.0	0.03143568	-15.026	-12.015
52	50.0	0.03799207	-14.203	-12.284
53	50.0	0.05440991	-12.643	-10.724
54	40.0	0.07258210	-11.392	-10.234
54	40.0	0.04016794	-13.961	-12.804
55	40.0	0.05608383	-12.512	-11.354
56	30.0	0.08027622	-10.954	-10.329
57	30.0	0.07463270	-11.271	-10.646
58	20.0	0.09078350	-10.420	-10.150
59	20.0	0.10393917	-9.832	-9.562

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 301 TERRAIN DSU GATS FREQUENCY = 10.000 GIGAHERTZ

DATE 7MAY8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 33.000 SECONDS VOLTAGE 7.756 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.42548 INPUT 5.17959 IN DB 14.28591 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
12	70.0	0.10487857	-9.793	-5.134
13	70.0	0.10926828	-9.615	-4.956
14	60.0	0.15730114	-8.033	-5.022
15	60.0	0.14525885	-8.379	-5.368
16	50.0	0.11645160	-9.339	-7.419
17	50.0	0.17367300	-7.603	-5.683
18	40.0	0.18208815	-7.397	-6.240
19	40.0	0.22601471	-6.459	-5.301
20	30.0	0.19870119	-7.018	-6.393
21	30.0	0.19944874	-7.002	-6.377
22	20.0	0.25156448	-5.994	-5.723
23	20.0	0.33515014	-4.748	-4.477

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
24	70.0	0.10350129	-9.851	-5.191
25	70.0	0.10969294	-9.598	-4.939
26	60.0	0.13679499	-8.639	-5.629
27	60.0	0.13453229	-8.712	-5.701
28	50.0	0.18553989	-7.316	-5.396
29	50.0	0.20414947	-6.901	-4.981
30	40.0	0.25748927	-5.892	-4.735
31	40.0	0.24819614	-6.052	-4.895
32	30.0	0.23709447	-6.251	-5.626
33	30.0	0.25605753	-5.917	-5.292
34	20.0	0.28763812	-5.412	-5.141
35	20.0	0.26997619	-5.687	-5.417

DATA	GROUP	NUMBER	301	CONTINUED	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
12	70.0	0.02281694	-16.417	-11.758				
13	70.0	0.02511463	-16.001	-11.341				
14	60.0	0.03630791	-14.400	-11.390				
15	60.0	0.03880686	-14.111	-11.101				
16	50.0	0.04302502	-13.663	-11.743				
17	50.0	0.04812519	-13.176	-11.257				
18	40.0	0.05537561	-12.567	-11.409				
19	40.0	0.05703056	-12.439	-11.281				
20	30.0	0.05850796	-12.328	-11.703				
21	30.0	0.06593700	-11.809	-11.184				
22	20.0	0.06047211	-12.184	-11.914				
23	20.0	0.06496642	-11.873	-11.603				

DATA	GROUP	NUMBER	301	CONTINUED	CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
24	70.0	0.02923385	-15.341	-10.682				
25	70.0	0.02819245	-15.499	-10.839				
26	60.0	0.03128899	-15.046	-12.036				
27	60.0	0.03796055	-14.207	-11.196				
28	50.0	0.05270270	-12.782	-10.862				
29	50.0	0.05416212	-12.663	-10.744				
30	40.0	0.06874019	-11.628	-10.470				
31	40.0	0.06171925	-12.096	-10.938				
32	30.0	0.06406578	-11.934	-11.309				
33	30.0	0.05537405	-12.567	-11.942				
34	20.0	0.05887596	-12.301	-12.030				
35	20.0	0.06367647	-11.960	-11.690				

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 302 TERRAIN OSU DATS FREQUENCY = 15.000 GIGAHERTZ
DATE 8MAY8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 50.000 SECONDS VOLTAGE 7.650 VOLTS MULTIPLIER 0.1
TIME/VOLT 0.65359 INPUT 3.44496 IN DB 10.74369 FREQUENCY 15.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
7	70.0	0.13212043	-8.790	-4.131
8	70.0	0.12462085	-9.044	-4.385
9	60.0	0.15331227	-8.144	-5.134
10	60.0	0.18575882	-7.311	-4.300
11	50.0	0.23865936	-6.222	-4.303
12	50.0	0.19603805	-7.077	-5.157
13	40.0	0.21303078	-6.716	-5.558
14	40.0	0.21464085	-6.683	-5.525
15	30.0	0.25418483	-5.949	-5.324
16	30.0	0.28696920	-5.422	-4.797
17	20.0	0.30903485	-5.100	-4.830
18	20.0	0.26638049	-5.745	-5.475

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
19	70.0	0.16844416	-7.735	-3.076
20	70.0	0.14178098	-8.484	-3.824
21	60.0	0.17605090	-7.544	-4.533
22	60.0	0.14834402	-8.287	-5.277
23	50.0	0.22400160	-6.497	-4.578
24	50.0	0.19507691	-7.098	-5.179
25	40.0	0.25469292	-5.940	-4.782
26	40.0	0.25971510	-5.855	-4.698
27	30.0	0.33179526	-4.791	-4.167
28	30.0	0.29337830	-5.326	-4.701
29	20.0	0.35741637	-4.468	-4.198
30	20.0	0.31326741	-5.041	-4.771

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 303 TERRAIN OSU DATS FREQUENCY = 35.000 GIGAHERTZ
 DATE 8MAY8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 41.000 SECONDS VOLTAGE 7.080 VOLTS MULTIPLIER 1.0
 TIME/VOLT 5.79096 INPUT 0.48641 IN DB -6.26003 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
7	70.0	0.14215675	-8.472	-3.813
8	70.0	0.11737789	-9.304	-4.645
9	60.0	0.15115939	-8.206	-5.195
10	60.0	0.13312977	-8.757	-5.747
11	50.0	0.20598617	-6.862	-4.942
12	50.0	0.16148038	-7.919	-5.999
13	40.0	0.26889975	-5.704	-4.547
14	40.0	0.21426814	-6.690	-5.533
15	30.0	0.25183561	-5.989	-5.364
16	30.0	0.18638916	-7.296	-6.671
17	20.0	0.33867471	-4.702	-4.432
18	20.0	0.22769280	-6.427	-6.156

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
19	70.0	0.17769614	-7.503	-2.844
20	70.0	0.14208583	-8.474	-3.815
21	60.0	0.19189847	-7.169	-4.159
22	60.0	0.14351498	-8.431	-5.421
23	50.0	0.21937285	-6.588	-4.669
24	50.0	0.18098736	-7.424	-5.504
25	40.0	0.33138996	-4.797	-3.639
26	40.0	0.24228386	-6.157	-4.999
27	30.0	0.30796228	-5.115	-4.490
28	30.0	0.24678670	-6.077	-5.452
29	20.0	0.37190344	-4.296	-4.026
30	20.0	0.30406792	-5.170	-4.900

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 7JUN8 DATA GROUP NUMBER = 304 TERRAIN OSU DATS FREQUENCY = 1.800 GIGAHERTZ

NO PLOTS REQUESTED

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
47	70.0	0.01236977	-19.076	-14.417
48	70.0	0.01522309	-18.175	-13.515
49	60.0	0.01266524	-18.974	-15.964
50	60.0	0.01283459	-18.916	-15.906
51	50.0	0.03049826	-15.157	-13.238
52	50.0	0.03621318	-14.411	-12.492
53	40.0	0.05933774	-12.267	-11.109
54	40.0	0.05554269	-12.554	-11.396
55	30.0	0.10914053	-9.620	-8.995
56	30.0	0.11326888	-9.459	-8.834
57	20.0	0.11161840	-9.523	-8.898
57	20.0	0.09913946	-10.038	-9.767
57	20.0	0.11785835	-9.286	-9.016
58	20.0	0.12165463	-9.149	-8.879

VERTICAL POLARIZATION

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
35	70.0	0.04339156	-13.626	-8.966
35	70.0	0.03782683	-14.222	-9.563
36	70.0	0.03985801	-13.995	-9.335
37	60.0	0.04070024	-13.904	-9.245
37	60.0	0.03489530	-14.572	-11.562
37	60.0	0.05133048	-12.896	-9.886
38	60.0	0.04015760	-13.962	-10.952
38	60.0	0.03636504	-14.393	-11.383
39	50.0	0.08164384	-10.881	-8.961
39	50.0	0.10902398	-9.625	-7.705
40	50.0	0.08558208	-10.676	-8.757
41	40.0	0.08797430	-10.556	-9.399
41	40.0	0.09435490	-10.252	-9.095
42	40.0	0.09676034	-10.143	-8.986
43	30.0	0.14475424	-8.394	-7.769
44	30.0	0.12962803	-8.873	-8.248
45	20.0	0.14344964	-8.433	-8.163
46	20.0	0.17899138	-7.472	-7.202

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 305

TERRAIN OSU GATS

DATE 7JUN8

FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 37.000 SECONDS VOLTAGE 8.520 VOLTS MULTIPLIER 0.1
 INPUT 5.07988 IN DB 14.11708 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
11	70.0	0.14490426	-8.389	-3.730
11	70.0	0.20549319	-6.872	-2.213
12	70.0	0.21467760	-6.682	-2.023
12	70.0	0.16907163	-7.719	-3.060
13	60.0	0.20131035	-6.961	-3.951
13	60.0	0.21422868	-6.691	-3.681
14	60.0	0.16073454	-7.939	-4.929
14	60.0	0.20878227	-6.803	-3.793
15	50.0	0.20687532	-6.843	-4.924
16	50.0	0.21377278	-6.700	-4.781
17	40.0	0.16960440	-7.706	-6.548
18	40.0	0.17900427	-7.471	-6.314
19	30.0	0.15639010	-8.058	-7.433
20	30.0	0.15208524	-8.179	-7.554
21	20.0	0.13942491	-8.557	-8.286
22	20.0	0.13534830	-8.685	-8.415

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
23	70.0	0.14087918	-8.512	-3.852
24	70.0	0.11237958	-9.493	-4.834
25	70.0	0.08552268	-10.679	-6.020
26	60.0	0.16252122	-7.891	-4.881
27	50.0	0.14788835	-8.301	-6.381
28	50.0	0.14858710	-8.280	-6.361
29	40.0	0.14450952	-8.401	-7.244
30	40.0	0.14901277	-8.268	-7.110
31	30.0	0.15395365	-8.126	-7.501
32	30.0	0.13676820	-8.640	-8.015
33	20.0	0.14975426	-8.246	-7.976
34	20.0	0.16673689	-7.780	-7.510

DATA GROUP NUMBER 305 CONTINUED

CROSS POLARIZATION VERTICAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
11	70.0	0.04489796	-13.478	-8.818
11	70.0	0.03669404	-14.354	-9.695
12	70.0	0.04033788	-13.943	-9.283
12	70.0	0.03324625	-14.783	-10.123
13	60.0	0.04782404	-13.204	-10.193
13	60.0	0.04996207	-13.014	-10.003
14	60.0	0.04898718	-13.099	-10.089
14	60.0	0.04501217	-13.467	-10.456
15	50.0	0.04990851	-13.018	-11.099
16	50.0	0.04943476	-13.060	-11.140
17	40.0	0.04579504	-13.392	-12.234
18	40.0	0.05763945	-12.393	-11.235
19	30.0	0.05357470	-12.710	-12.086
20	30.0	0.04965738	-13.040	-12.415
21	20.0	0.04696616	-13.282	-13.012
22	20.0	0.04354904	-13.610	-13.340

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
23	70.0	0.03354433	-14.744	-10.084
24	70.0	0.03095910	-15.092	-10.433
25	70.0	0.02230271	-16.516	-11.857
26	60.0	0.04485984	-13.481	-10.471
27	50.0	0.05700673	-12.441	-10.521
28	50.0	0.05426915	-12.654	-10.735
29	40.0	0.05532839	-12.571	-11.413
30	40.0	0.05587644	-12.528	-11.370
31	30.0	0.05380675	-12.692	-12.067
32	30.0	0.04624343	-13.349	-12.725
33	20.0	0.04397603	-13.568	-13.298
34	20.0	0.04313630	-13.652	-13.381

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 306 TERRAIN OSU OATS FREQUENCY = 15.000 GIGAHERTZ

DATE 7JUNE

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 46.000 SECONDS VOLTAGE 6.578 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.69930 INPUT 3.23070 IN DB 10.18594 FREQUENCY 15.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
75	70.0	0.11878705	-9.252	-4.593
76	70.0	0.12195002	-9.138	-4.479
77	60.0	0.11898220	-9.245	-6.235
78	60.0	0.10859688	-9.642	-6.632
79	50.0	0.10214022	-9.908	-7.989
80	50.0	0.10067255	-9.971	-8.052
81	40.0	0.10175977	-9.924	-8.767
82	40.0	0.10134795	-9.942	-8.784
83	30.0	0.09361619	-10.286	-9.662
84	30.0	0.08153031	-10.887	-10.262
85	30.0	0.08705343	-10.602	-9.977
86	30.0	0.09606617	-10.174	-9.550
87	20.0	0.09777335	-10.098	-9.828
88	20.0	0.09041325	-10.438	-10.168

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
89	70.0	0.09323314	-10.304	-5.645
90	70.0	0.08358289	-10.779	-6.119
91	60.0	0.08882895	-10.514	-7.504
92	60.0	0.09712741	-10.127	-7.116
93	50.0	0.08768161	-10.571	-8.652
94	50.0	0.08045526	-10.944	-9.025
95	40.0	0.09080911	-10.419	-9.261
96	40.0	0.08407076	-10.754	-9.596
97	30.0	0.08141885	-10.893	-10.268
98	30.0	0.08083662	-10.924	-10.299
99	20.0	0.09445020	-10.248	-9.978
100	20.0	0.09574223	-10.189	-9.919

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 307 TERRAIN OSU DATS FREQUENCY = 35.000 GIGAHERTZ

DATE 7JUN8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 60.000 SECONDS VOLTAGE 8.859 VOLTS MULTIPLIER 1.0
 INPUT 0.42348 IN DB -7.46336 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
75	70.0	0.11755894	-9.297	-4.638
76	70.0	0.07695911	-11.137	-6.478
77	60.0	0.07684976	-11.144	-8.133
78	60.0	0.06986852	-11.557	-8.547
79	50.0	0.07917139	-11.014	-9.095
80	50.0	0.05786123	-12.376	-10.457
81	40.0	0.08145428	-10.891	-9.733
82	40.0	0.06611476	-11.797	-10.640
83	30.0	0.08405123	-10.755	-10.130
84	30.0	0.13570200	-8.674	-8.049
85	30.0	0.07514105	-11.241	-10.617
86	30.0	0.06133247	-12.123	-11.498
87	20.0	0.11095077	-9.549	-9.279
88	20.0	0.09163109	-10.380	-10.109

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
89	70.0	0.09572393	-10.190	-5.530
90	70.0	0.06828880	-11.657	-6.997
91	60.0	0.07870453	-11.040	-8.030
92	60.0	0.05680129	-12.456	-9.446
93	50.0	0.08694434	-10.608	-8.688
94	50.0	0.05474500	-12.617	-10.697
95	40.0	0.08035637	-10.950	-9.792
96	40.0	0.06241874	-12.047	-10.889
97	30.0	0.08086134	-10.923	-10.298
98	30.0	0.05816452	-12.353	-11.729
99	20.0	0.12807740	-8.925	-8.655
100	20.0	0.11203624	-9.506	-9.236

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 308 TERRAIN OSU WHEAT FREQUENCY = 1.800 GIGAHERTZ

DATE 1JUL8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 28.000 SECONDS VOLTAGE 9.119 VOLTS MULTIPLIER 0.1
 INPUT 7.06118 IN DB 16.97755 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
35	70.0	0.02676015	-15.725	-11.066
36	70.0	0.03652177	-14.374	-9.715
37	60.0	0.03682702	-14.338	-11.328
38	60.0	0.06939150	-11.587	-8.577
39	50.0	0.05234966	-12.811	-10.892
40	50.0	0.07444199	-11.282	-9.362
41	40.0	0.07759749	-11.102	-9.944
42	40.0	0.07545423	-11.223	-10.066
43	30.0	0.11347841	-9.451	-8.826
44	30.0	0.12866970	-8.905	-8.281
45	20.0	0.19687098	-7.058	-6.788
46	20.0	0.17744094	-7.509	-7.239

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
47	70.0	0.05597931	-12.520	-7.860
48	70.0	0.03293151	-14.824	-10.164
49	60.0	0.04216142	-13.751	-10.741
50	60.0	0.04486593	-13.481	-10.471
51	50.0	0.07160700	-11.450	-9.531
52	50.0	0.07962858	-10.989	-9.070
53	40.0	0.09286661	-10.321	-9.164
54	40.0	0.11490867	-9.396	-8.239
55	30.0	0.12161139	-9.150	-8.526
56	30.0	0.14292230	-8.449	-7.824
57	20.0	0.35654123	-4.479	-4.209
58	20.0	0.25183963	-5.989	-5.719
59	20.0	0.15564088	-8.079	-7.809
60	20.0	0.27215029	-5.652	-5.382

2000

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 309 TERRAIN OSU WHEAT FREQUENCY = 10.000 GIGAHERTZ

DATE 1JUL8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 7.633 VOLTS MULTIPLIER 0.1
TIME/VOLT 0.45854 INPUT 4.82418 IN DB 13.66847 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
11	70.0	0.08588162	-10.661	-6.002
12	70.0	0.10009045	-9.996	-5.337
13	60.0	0.07188486	-11.434	-8.423
14	60.0	0.06124748	-12.129	-9.119
15	50.0	0.04256481	-13.709	-11.790
16	50.0	0.04848408	-13.144	-11.225
17	40.0	0.03715639	-14.300	-13.142
18	40.0	0.04173463	-13.795	-12.638
19	30.0	0.04978295	-13.029	-12.404
20	30.0	0.08389702	-10.763	-10.138
21	20.0	0.12006213	-9.206	-8.936
22	20.0	0.13124828	-8.819	-8.549

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
23	70.0	0.06243364	-12.046	-7.386
24	70.0	0.06645096	-11.775	-7.116
25	60.0	0.05600907	-12.517	-9.507
26	60.0	0.05039976	-12.976	-9.965
27	50.0	0.05065370	-12.954	-11.035
28	50.0	0.05632430	-12.493	-10.574
29	40.0	0.07912181	-11.017	-9.098
30	40.0	0.06672426	-11.757	-10.600
31	30.0	0.05293168	-12.763	-11.605
32	30.0	0.06558727	-11.832	-11.207
33	20.0	0.09579478	-10.187	-9.562
34	20.0	0.14201365	-8.477	-8.207
		0.16737269	-7.763	-7.493

309 CONTINUED

DATA	GROUP	NUMBER	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
11	BACKSCATTERING ANGLE	70.0	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	-17.583	-12.923
12		70.0	0.01744706		-18.707	-14.048
13		60.0	0.01346721		-18.414	-15.403
14		60.0	0.01440944		-19.061	-16.051
15		50.0	0.01241354		-19.305	-17.386
16		50.0	0.01173472		-19.054	-17.134
17		40.0	0.01243473		-18.711	-17.554
18		40.0	0.01303724		-18.848	-17.691
19		30.0	0.01562506		-18.062	-17.437
20		30.0	0.02162649		-16.650	-16.025
21		20.0	0.02715751		-15.661	-15.391
22		20.0	0.02760125		-15.591	-15.321

CROSS POLARIZATION HORIZONTAL TRANSMITTER

DATA	GROUP	NUMBER	CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
23	BACKSCATTERING ANGLE	70.0	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	-18.484	-13.825
24		70.0	0.01417674		-17.773	-13.114
25		60.0	0.01796470		-17.456	-14.446
26		60.0	0.01353770		-18.685	-15.674
27		50.0	0.01695928		-17.706	-15.787
27		50.0	0.01254539		-19.015	-17.096
28		50.0	0.01446449		-18.397	-16.478
29		40.0	0.01313895		-18.814	-17.657
30		40.0	0.01480118		-18.297	-17.140
31		30.0	0.01695507		-17.707	-17.082
32		30.0	0.01423125		-18.468	-17.843
33		20.0	0.02333713		-16.320	-16.049
34		20.0	0.02977461		-15.262	-14.991

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 310 TERRAIN OSU WHEAT FREQUENCY = 15.000 GIGAHERTZ

DATE 1JUL8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 41.000 SECONDS VOLTAGE 5.272 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.77769 INPUT 2.92052 IN DB 9.30920 FREQUENCY 15.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
83	70.0	0.07498602	-11.250	-6.591
84	70.0	0.07539174	-11.227	-6.567
85	60.0	0.04760704	-13.223	-10.213
86	60.0	0.04954073	-13.050	-10.040
87	50.0	0.04376730	-13.589	-11.669
88	50.0	0.03311577	-14.800	-12.880
89	40.0	0.05709649	-12.434	-11.276
90	40.0	0.07050929	-11.518	-10.360
91	30.0	0.08237891	-10.842	-10.217
92	30.0	0.08301917	-10.808	-10.184
93	20.0	0.14949268	-8.254	-7.984
94	20.0	0.16095367	-7.933	-7.663

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
95	70.0	0.03455953	-14.614	-9.955
96	70.0	0.02759514	-15.592	-10.932
97	60.0	0.02926744	-15.336	-12.326
98	60.0	0.02509089	-16.005	-12.995
99	50.0	0.04166254	-13.803	-11.883
100	50.0	0.03607605	-14.428	-12.508
101	40.0	0.04810842	-13.178	-12.020
102	40.0	0.07363094	-11.329	-10.172
103	30.0	0.08517203	-10.697	-10.072
104	30.0	0.07418564	-11.297	-10.672
105	20.0	0.11995230	-9.210	-8.940
106	20.0	0.19324587	-7.139	-6.869

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 311 TERRAIN OSU WHEAT FREQUENCY = 35,000 GIGAHERTZ
 DATE 1JUL8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 36.000 SECONDS VOLTAGE 5.249 VOLTS MULTIPLIER 1.0
 INPUT 0.41880 IN DB -7.55995 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
83	70.0	0.02211110	-16.554	-11.894
84	70.0	0.01556823	-18.078	-13.418
85	60.0	0.02160871	-16.654	-13.643
86	60.0	0.01556037	-18.080	-15.070
87	50.0	0.02547590	-15.939	-14.019
88	50.0	0.01798539	-17.451	-15.531
89	40.0	0.03958851	-14.024	-12.867
90	40.0	0.03046310	-15.162	-14.005
91	30.0	0.10134139	-9.942	-9.317
92	30.0	0.07858817	-11.046	-10.422
93	20.0	0.22757856	-6.429	-6.159
94	20.0	0.16182156	-7.910	-7.639

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
95	70.0	0.02448617	-16.111	-11.451
96	70.0	0.01314731	-18.812	-14.152
97	60.0	0.02488142	-16.041	-13.031
98	60.0	0.01449997	-18.386	-15.376
99	50.0	0.03212213	-14.932	-13.013
100	50.0	0.02294788	-16.393	-14.473
101	40.0	0.04274158	-13.691	-12.534
102	40.0	0.03879811	-14.112	-12.954
103	30.0	0.09464028	-10.239	-9.615
104	30.0	0.07824010	-11.066	-10.441
105	20.0	0.26908270	-5.701	-5.431
106	20.0	0.20379308	-6.908	-6.638

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 312 TERRAIN OSU OATS FREQUENCY = 1.800 GIGAHERTZ

DATE 31JUL8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 33.000 SECONDS VOLTAGE 9.815 VOLTS MULTIPLIER 0.1
 INPUT 6.47792 IN DB 16.22871 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
8	70.0	0.01784805	-17.484	-12.825
9	70.0	0.02503678	-16.014	-11.355
10	60.0	0.02915273	-15.353	-12.343
11	60.0	0.04394965	-13.570	-10.560
12	50.0	0.07013159	-11.541	-9.622
13	50.0	0.05422889	-12.658	-10.738
14	40.0	0.11289611	-9.473	-8.316
15	40.0	0.07668438	-11.153	-9.995
16	30.0	0.10400619	-9.829	-9.205
17	30.0	0.15557145	-8.081	-7.456
18	20.0	0.13598594	-8.665	-8.395
19	20.0	0.11975196	-9.217	-8.947
20	30.0	0.10883521	-9.632	-9.008
21	30.0	0.07603618	-11.190	-10.565

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
22	70.0	0.01856697	-17.313	-12.653
23	70.0	0.03104307	-15.080	-10.421
24	60.0	0.02504020	-16.014	-13.003
25	60.0	0.03835936	-14.161	-11.151
26	50.0	0.05046186	-12.970	-11.051
27	50.0	0.04835011	-13.156	-11.237
28	40.0	0.07293060	-11.371	-10.213
29	40.0	0.05156541	-12.876	-11.719
30	30.0	0.07327671	-11.350	-10.726
31	30.0	0.06236246	-12.051	-11.426
32	20.0	0.13589708	-8.668	-8.398
33	20.0	0.08049327	-10.942	-10.672

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 313 TERRAIN OSU OATS FREQUENCY = 10.000 GIGAHERTZ

DATE 30JUL8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 39.000 SECONDS VOLTAGE 9.552 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.40829 INPUT 5.38649 IN DB 14.62612 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
8	70.0	0.06606090	-11.801	-7.141
9	70.0	0.05096177	-12.928	-8.268
10	60.0	0.07959629	-10.991	-7.981
11	60.0	0.08660376	-10.625	-7.614
12	50.0	0.14193919	-8.479	-6.560
13	50.0	0.13502080	-8.696	-6.777
14	40.0	0.19560827	-7.086	-5.929
15	40.0	0.18637998	-7.296	-6.139
16	30.0	0.23637581	-6.264	-5.639
17	30.0	0.31383539	-5.033	-4.408
18	20.0	0.42702499	-3.695	-3.425
19	20.0	0.35365512	-4.514	-4.244

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
20	70.0	0.07688023	-11.142	-6.482
21	70.0	0.07604679	-11.189	-6.530
22	60.0	0.11180398	-9.515	-6.505
23	60.0	0.12148906	-9.155	-6.144
24	50.0	0.16584699	-7.803	-5.884
25	50.0	0.17097254	-7.671	-5.751
26	40.0	0.22674623	-6.445	-5.287
27	40.0	0.24122778	-6.176	-5.018
28	30.0	0.29174686	-5.350	-4.725
29	30.0	0.32239239	-4.916	-4.291
30	20.0	0.36913747	-4.328	-4.058
31	20.0	0.35085856	-4.549	-4.279

313 CONTINUED

CROSS POLARIZATION VERTICAL TRANSMITTER

DATA	GROUP	NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
			70.0	0.01379543	-18.603	-13.943
8			70.0	0.01453529	-18.376	-13.716
9			60.0	0.01874585	-17.271	-14.261
10			60.0	0.029332872	-15.327	-12.317
11			50.0	0.04155773	-13.813	-11.894
12			50.0	0.04111133	-13.860	-11.941
13			40.0	0.05506737	-12.591	-11.434
14			40.0	0.05042203	-12.974	-11.816
15			30.0	0.06128448	-12.126	-11.502
16			30.0	0.07441584	-11.283	-10.659
17			20.0	0.08355066	-10.781	-10.510
18			20.0	0.06990223	-11.555	-11.285
19			20.0			

CROSS POLARIZATION HORIZONTAL TRANSMITTER

DATA	GROUP	NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
			70.0	0.01690009	-17.721	-13.062
20			70.0	0.01491284	-18.264	-13.605
21			60.0	0.02512341	-15.999	-12.989
22			60.0	0.03104425	-15.080	-12.070
23			50.0	0.04170124	-13.799	-11.879
24			50.0	0.04669862	-13.307	-11.388
25			50.0	0.05445455	-12.640	-11.482
26			40.0	0.06057106	-12.177	-11.020
27			40.0	0.05634674	-12.491	-11.867
28			30.0	0.05406195	-12.671	-12.046
29			30.0	0.06724480	-11.723	-11.453
30			20.0	0.06937749	-11.588	-11.318
31			20.0			

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 314 TERRAIN OSU OATS FREQUENCY = 35.000 GIGAHERTZ
 DATE 31JUL8
 NC PLOTS REQUESTED
 INTEGRATION TIME FROM REFERENCE SPHERE = 61.000 SECONDS VOLTAGE 9.535 VOLTS MULTIPLIER 1.0
 TIME/VOLT 6.39748 INPUT 0.44538 IN DB -7.02536 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
8	70.C	0.05835141	-12.339	-7.680
9	70.C	0.07647260	-11.165	-6.505
10	60.0	0.07376355	-11.322	-8.311
11	60.0	0.08521311	-10.695	-7.685
12	50.0	0.12786583	-8.932	-7.013
13	50.0	0.12690318	-8.965	-7.046
14	40.C	0.14295511	-8.448	-7.291
15	40.C	0.17427564	-7.588	-6.430
16	30.C	0.33737556	-4.719	-4.094
17	30.0	0.38002184	-4.202	-3.577
18	20.0	0.30758601	-5.120	-4.850
19	20.0	0.32124058	-4.932	-4.662
20	30.C	0.19330094	-7.138	-6.513
21	30.0	0.25606135	-5.917	-5.292

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
22	70.0	0.06272768	-12.025	-7.366
23	70.0	0.07191896	-11.432	-6.772
24	60.0	0.07456276	-11.275	-8.264
25	60.0	0.10224176	-9.904	-6.893
26	50.0	0.12482743	-9.037	-7.118
27	50.0	0.15990879	-7.961	-6.042
28	40.C	0.15668418	-8.050	-6.892
29	40.0	0.24159779	-6.169	-5.012
30	30.C	0.20056257	-6.978	-6.353
31	30.0	0.26380121	-5.787	-5.163
32	20.C	0.37238049	-4.290	-4.020
33	20.0	0.36310263	-4.400	-4.130

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 315 TERRAIN SOYBEANS, I FREQUENCY = 10.000 GIGAHERTZ

DATE 7AUG8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 9.588 VOLTS MULTIPLIER 0.1
 INPUT 5.99108 IN DB 15.55010 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
8	70.0	0.08820080	-10.545	-5.886
9	70.0	0.09165977	-10.378	-5.719
10	60.0	0.13482090	-8.702	-5.692
11	60.0	0.11082599	-9.554	-6.543
12	50.0	0.20844971	-6.810	-4.891
13	50.0	0.20172163	-6.952	-5.033
14	40.0	0.24152996	-6.170	-5.013
15	40.0	0.25964034	-5.856	-4.699
16	30.0	0.29548015	-5.295	-4.670
17	30.0	0.35766378	-4.465	-3.841
18	20.0	0.45436801	-3.426	-3.156
19	20.0	0.45128068	-3.456	-3.185

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
20	70.0	0.06435107	-11.914	-7.255
21	70.0	0.05528001	-12.574	-7.915
22	60.0	0.07999530	-10.969	-7.959
23	60.0	0.09099099	-10.410	-7.400
24	50.0	0.17932380	-7.464	-5.544
25	50.0	0.16795959	-7.748	-5.829
26	40.0	0.24661131	-6.080	-4.922
27	40.0	0.24872688	-6.043	-4.885
28	30.0	0.33773657	-4.714	-4.090
29	30.0	0.34278916	-4.650	-4.025
30	20.0	0.43401346	-3.625	-3.355
31	20.0	0.50721963	-2.948	-2.678

DATA	GROUP	NUMBER	315	CONTINUED		GAMMA IN DECIBELS
				CROSS POLARIZATION	VERTICAL TRANSMITTER	
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
8	70.0	0.02207630	-16.561	0.02207630	-16.561	-11.901
9	70.0	0.02444168	-16.119	0.02444168	-16.119	-11.459
10	60.0	0.02854287	-15.445	0.02854287	-15.445	-12.435
11	60.0	0.02444737	-16.118	0.02444737	-16.118	-13.107
12	50.0	0.03791159	-14.212	0.03791159	-14.212	-12.293
13	50.0	0.04274100	-13.692	0.04274100	-13.692	-11.772
14	40.0	0.04214871	-13.752	0.04214871	-13.752	-12.595
15	40.0	0.04133084	-13.837	0.04133084	-13.837	-12.680
16	30.0	0.04683031	-13.295	0.04683031	-13.295	-12.670
17	30.0	0.05539549	-12.565	0.05539549	-12.565	-11.941
18	20.0	0.05163691	-12.870	0.05163691	-12.870	-12.600
19	20.0	0.05183514	-12.854	0.05183514	-12.854	-12.584

DATA	GROUP	NUMBER	315	CONTINUED		GAMMA IN DECIBELS
				CROSS POLARIZATION	HORIZONTAL TRANSMITTER	
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
20	70.0	0.01954349	-17.090	0.01954349	-17.090	-12.430
21	70.0	0.02490045	-16.038	0.02490045	-16.038	-11.378
22	60.0	0.02827655	-15.486	0.02827655	-15.486	-12.475
23	60.0	0.02827862	-15.485	0.02827862	-15.485	-12.475
24	50.0	0.03318498	-14.791	0.03318498	-14.791	-12.871
25	50.0	0.03759970	-14.253	0.03759970	-14.253	-12.333
26	40.0	0.04434411	-13.532	0.04434411	-13.532	-12.374
27	40.0	0.03665263	-14.359	0.03665263	-14.359	-13.201
28	30.0	0.05012992	-12.999	0.05012992	-12.999	-12.374
29	30.0	0.04971165	-13.035	0.04971165	-13.035	-12.411
30	20.0	0.05295256	-12.761	0.05295256	-12.761	-12.491
31	20.0	0.04934348	-13.068	0.04934348	-13.068	-12.798

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 316 TERRAIN SOYBEANS,NI FREQUENCY = 1.800 GIGAHERTZ

DATE 14AUG8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 42.000 SECONDS VOLTAGE 9.812 VOLTS MULTIPLIER 0.1
 INPUT 5.15004 IN DB 14.23621 FREQUENCY 1.8

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
48	70.0	0.05900973	-12.291	-7.631
49	70.0	0.06944659	-11.583	-6.924
50	60.0	0.10247568	-9.894	-6.883
51	60.0	0.08926985	-10.493	-7.483
52	50.0	0.16455927	-7.837	-5.917
53	50.0	0.13962735	-8.550	-6.631
54	40.0	0.20161857	-6.955	-5.797
55	40.0	0.19770051	-7.040	-5.882
56	30.0	0.21520568	-6.671	-6.047
57	30.0	0.20108066	-6.966	-6.342
58	20.0	0.22199854	-6.536	-6.266
59	20.0	0.16795918	-7.748	-7.478

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
60	70.0	0.08650398	-10.630	-5.970
61	70.0	0.08389636	-10.763	-6.103
62	60.0	0.09585667	-10.184	-7.173
63	60.0	0.10848625	-9.646	-6.636
64	50.0	0.14653599	-8.341	-6.421
65	50.0	0.11264961	-9.483	-7.563
66	40.0	0.17711697	-7.517	-6.360
67	40.0	0.17027040	-7.689	-6.531
68	30.0	0.19919113	-7.007	-6.383
69	30.0	0.18175118	-7.405	-6.781
70	20.0	0.21768927	-6.622	-6.351
71	20.0	0.19006236	-7.211	-6.941

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 14AUG8 DATA GROUP NUMBER = 317 TERRAIN SOYBEANS,NI FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 37.000 SECONDS VOLTAGE 9.074 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.40776 INPUT 5.39318 IN DB 14.63690 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
9	70.0	0.14978220	-8.245	-3.586
10	70.0	0.14183773	-8.482	-3.823
11	60.0	0.17240400	-7.635	-4.624
12	60.0	0.26787454	-5.721	-2.710
13	50.0	0.27381678	-5.625	-3.706
14	50.0	0.29278617	-5.334	-3.415
15	40.0	0.32631578	-4.864	-3.706
16	40.0	0.31004212	-5.086	-3.928
17	30.0	0.34784649	-4.586	-3.961
18	30.0	0.28712187	-5.419	-4.795
19	20.0	0.50527033	-2.965	-2.695
20	20.0	0.41076336	-3.864	-3.594

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
21	70.0	0.15237497	-8.171	-3.511
22	70.0	0.13053989	-8.843	-4.183
23	60.0	0.18466566	-7.336	-4.326
24	60.0	0.17308066	-7.618	-4.607
25	50.0	0.20501125	-6.882	-4.963
26	50.0	0.24847785	-6.047	-4.128
27	40.0	0.28422312	-5.463	-4.306
28	40.0	0.33950232	-4.692	-3.534
29	30.0	0.36250310	-4.407	-3.782
30	30.0	0.35208548	-4.534	-3.909
31	20.0	0.41108887	-3.861	-3.591
32	20.0	0.40955402	-3.877	-3.607

DATA	GROUP	NUMBER	317	CONTINUED		GAMMA IN DECIBELS
				CROSS POLARIZATION	VERTICAL TRANSMITTER	
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
9	70.0	0.02110552	-16.756	0.02110552	-16.756	-12.097
10	70.0	0.02443740	-16.119	0.02443740	-16.119	-11.460
11	60.0	0.02211147	-16.554	0.02211147	-16.554	-13.544
12	60.0	0.02369149	-16.254	0.02369149	-16.254	-13.244
13	50.0	0.03616476	-14.417	0.03616476	-14.417	-12.498
14	50.0	0.03845378	-14.151	0.03845378	-14.151	-12.231
15	40.0	0.03056803	-15.147	0.03056803	-15.147	-13.990
16	40.0	0.03965604	-14.017	0.03965604	-14.017	-12.859
17	30.0	0.04299215	-13.666	0.04299215	-13.666	-13.041
18	30.0	0.03909051	-14.079	0.03909051	-14.079	-13.455
19	20.0	0.04064205	-13.910	0.04064205	-13.910	-13.640
20	20.0	0.05430043	-12.652	0.05430043	-12.652	-12.382

DATA	GROUP	NUMBER	317	CONTINUED		GAMMA IN DECIBELS
				CROSS POLARIZATION	HORIZONTAL TRANSMITTER	
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
21	70.0	0.02545213	-15.943	0.02545213	-15.943	-11.283
22	70.0	0.01872370	-17.276	0.01872370	-17.276	-12.617
23	60.0	0.03224535	-14.915	0.03224535	-14.915	-11.905
24	60.0	0.03208936	-14.936	0.03208936	-14.936	-11.926
25	50.0	0.03391233	-14.696	0.03391233	-14.696	-12.777
26	50.0	0.03316091	-14.794	0.03316091	-14.794	-12.874
27	40.0	0.04096439	-13.876	0.04096439	-13.876	-12.718
28	40.0	0.04142825	-13.827	0.04142825	-13.827	-12.670
29	30.0	0.04258234	-13.708	0.04258234	-13.708	-13.083
30	30.0	0.04963621	-13.042	0.04963621	-13.042	-12.417
31	20.0	0.05612417	-12.509	0.05612417	-12.509	-12.238
32	20.0	0.04647315	-13.328	0.04647315	-13.328	-13.058

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 318 TERRAIN SOYBEANS,NI FREQUENCY = 35.000 GIGAHERTZ

DATE 14AUG8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 50.000 SECONDS VOLTAGE 8.031 VOLTS MULTIPLIER 1.0
 TIME/VCLT 6.22587 INPUT 0.45622 IN DB -6.81644 FREQUENCY 35.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
48	70.0	0.09635345	-10.161	-5.502
49	70.0	0.10079593	-9.966	-5.306
50	60.0	0.09773835	-10.099	-7.089
51	60.0	0.10893229	-9.628	-6.618
52	50.0	0.16582235	-7.804	-5.884
53	50.0	0.17889858	-7.474	-5.555
54	40.0	0.23535516	-6.283	-5.125
55	40.0	0.26506612	-5.766	-4.609
56	30.0	0.29396518	-5.317	-4.692
57	30.0	0.35030921	-4.555	-3.931
58	20.0	0.41431246	-3.827	-3.557
59	20.0	0.46436972	-3.331	-3.061

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
60	70.0	0.09724669	-10.121	-5.462
61	70.0	0.11328232	-9.458	-4.799
62	60.0	0.10415369	-9.823	-6.813
63	60.0	0.13387974	-8.733	-5.723
64	50.0	0.14085851	-8.512	-6.593
65	50.0	0.23290454	-6.328	-4.409
66	40.0	0.23486195	-6.292	-5.134
67	40.0	0.26786423	-5.721	-4.563
68	30.0	0.34237328	-4.655	-4.030
69	30.0	0.45742837	-3.397	-2.772
70	20.0	0.42343447	-3.732	-3.462
71	20.0	0.46107104	-3.362	-3.092

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

TERRAIN BARE SOIL,1 FREQUENCY = 10.000 GIGAHERTZ

DATA GROUP NUMBER = 319
DATE 27AUG8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 46.000 SECONDS VOLTAGE 9.622 VOLTS MULTIPLIER 0.1
TIME/VOLT 0.47807 INPUT 4.63671 IN DB 13.32420 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
9	70.0	0.05348709	-12.718	-8.058
10	70.0	0.06288999	-12.014	-7.355
11	60.0	0.08724827	-10.592	-7.582
12	60.0	0.10058264	-9.975	-6.964
13	50.0	0.14562895	-8.368	-6.448
14	50.0	0.14074902	-8.516	-6.596
15	40.0	0.14737218	-8.316	-7.158
16	40.0	0.17588865	-7.548	-6.390
17	30.0	0.25290199	-5.970	-5.346
18	30.0	0.19265317	-7.152	-6.528
19	20.0	0.21426631	-6.690	-6.420
20	20.0	0.22651579	-6.449	-6.179
21	20.0	0.22028750	-6.570	-6.300
22	20.0	0.20893587	-6.800	-6.530

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
23	70.0	0.05533319	-12.570	-7.911
24	70.0	0.06193026	-12.081	-7.421
25	60.0	0.07952162	-10.995	-7.985
26	60.0	0.07575167	-11.206	-8.196
27	50.0	0.13521876	-8.690	-6.770
28	50.0	0.14992365	-8.241	-6.322
29	40.0	0.16167966	-7.913	-6.756
30	40.0	0.17765864	-7.504	-6.347
31	30.0	0.19727345	-7.049	-6.425
32	30.0	0.20060330	-6.977	-6.352
33	20.0	0.23287303	-6.329	-6.059
34	20.0	0.19282530	-7.148	-6.878

DATA	GROUP	NUMBER	319	CONTINUED	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
9	70.0	0.00749013	-21.255	-16.596				
10	70.0	0.00618490	-22.087	-17.427				
11	60.0	0.01009347	-19.960	-16.949				
12	60.0	0.01093422	-19.612	-16.602				
13	50.0	0.01661148	-17.796	-15.877				
14	50.0	0.01776645	-17.504	-15.585				
15	40.0	0.02118428	-16.740	-15.582				
16	40.0	0.02096027	-16.786	-15.629				
17	30.0	0.03139359	-15.032	-14.407				
18	30.0	0.02753633	-15.601	-14.976				
19	20.0	0.03918522	-14.069	-13.799				
20	20.0	0.03637208	-14.392	-14.122				
21	20.0	0.03656648	-14.369	-14.099				
22	20.0	0.03736218	-14.276	-14.006				

DATA	GROUP	NUMBER	319	CONTINUED	CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
23	70.0	0.00532710	-22.735	-18.076				
24	70.0	0.00517630	-22.860	-18.200				
25	60.0	0.00804187	-20.946	-17.936				
26	60.0	0.00789805	-21.025	-18.015				
27	50.0	0.01817052	-17.406	-15.487				
28	50.0	0.02032285	-16.920	-15.001				
29	40.0	0.02365503	-16.261	-15.103				
30	40.0	0.02318795	-16.347	-15.190				
31	30.0	0.02834611	-15.475	-14.850				
32	30.0	0.02782156	-15.556	-14.931				
33	20.0	0.03139284	-15.032	-14.762				
34	20.0	0.03327310	-14.779	-14.509				

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 320 TERRAIN BARE SOIL,2 FREQUENCY = 10.000 GIGAHERTZ
 DATE 28AUG8

NC PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 44.000 SECONDS VOLTAGE 9.587 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.45895 INPUT 4.81999 IN DB 13.66093 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
9	70.0	0.04412075	-13.554	-8.894
10	70.0	0.04061469	-13.913	-9.254
11	60.0	0.06755635	-11.703	-8.693
12	60.0	0.06035270	-12.193	-9.183
13	50.0	0.15984566	-7.963	-6.044
14	50.0	0.16571995	-7.806	-5.887
15	40.0	0.17382821	-7.599	-6.441
16	40.0	0.19542522	-7.090	-5.933
17	30.0	0.23982636	-6.201	-5.576
18	30.0	0.30482617	-5.159	-4.535
19	20.0	0.34363133	-4.639	-4.369
20	20.0	0.40701667	-3.904	-3.634

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
21	70.0	0.04067157	-13.907	-9.248
22	70.0	0.03758996	-14.249	-9.590
23	60.0	0.07563097	-11.213	-8.203
24	60.0	0.06122442	-12.131	-9.120
25	50.0	0.10966201	-9.599	-7.680
26	50.0	0.13954426	-8.553	-6.634
27	40.0	0.16951354	-7.708	-6.550
28	40.0	0.21867038	-6.602	-5.445
29	30.0	0.23276314	-6.331	-5.706
30	30.0	0.29598210	-5.287	-4.663
31	20.0	0.24195124	-6.163	-5.893
32	20.0	0.29894150	-5.244	-4.974

DATA	GROUP	NUMBER	320	CONTINUED	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
9	70.0	0.00494529	-23.058	-18.399				
10	70.0	0.00483154	-23.159	-18.500				
11	60.0	0.00857024	-20.670	-17.660				
12	60.0	0.00858571	-20.662	-17.652				
13	50.0	0.02148823	-16.678	-14.759				
14	50.0	0.01949967	-17.100	-15.180				
15	40.0	0.02453894	-16.101	-14.944				
16	40.0	0.02703650	-15.680	-14.523				
17	30.0	0.03803612	-14.198	-13.573				
18	30.0	0.03932628	-14.053	-13.428				
19	20.0	0.04350299	-13.615	-13.345				
20	20.0	0.05761005	-12.395	-12.125				

DATA	GROUP	NUMBER	320	CONTINUED	CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
21	70.0	0.00494529	-23.058	-18.399				
22	70.0	0.00475995	-23.224	-18.564				
23	60.0	0.01015783	-19.932	-16.922				
24	60.0	0.00911981	-20.400	-17.390				
25	50.0	0.01787909	-17.477	-15.557				
26	50.0	0.01852357	-17.323	-15.403				
27	40.0	0.02277988	-16.424	-15.267				
28	40.0	0.03262998	-14.864	-13.706				
29	30.0	0.03128611	-15.046	-14.422				
30	30.0	0.03290591	-14.827	-14.203				
31	20.0	0.03766645	-14.240	-13.970				
32	20.0	0.04744897	-13.238	-12.968				

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 321 TERRAIN SOYBEANS, I FREQUENCY = 10.000 GIGAHERTZ
 DATE 3SEPB

NC PLCTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 6.583 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.53167 INPUT 4.19146 IN DB 12.44732 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
7	70.0	0.15415724	-8.120	-3.461
8	70.0	0.20221020	-6.942	-2.282
9	60.0	0.19861176	-7.020	-4.010
10	60.0	0.20576737	-6.866	-3.856
11	50.0	0.33065615	-4.806	-2.887
12	50.0	0.32212495	-4.920	-3.000
13	40.0	0.35335316	-4.518	-3.360
14	40.0	0.44941345	-3.474	-2.316
15	30.0	0.54440358	-2.641	-2.016
16	30.0	0.56168011	-2.505	-1.880
17	20.0	0.56037386	-2.515	-2.245
18	20.0	0.50488482	-2.968	-2.698

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
19	70.0	0.11465864	-9.406	-4.746
20	70.0	0.12097184	-9.173	-4.514
21	60.0	0.13228868	-8.785	-5.774
22	60.0	0.14567406	-8.366	-5.356
23	50.0	0.25086265	-6.006	-4.086
24	50.0	0.27194110	-5.655	-3.736
25	40.0	0.34587551	-4.611	-3.453
26	40.0	0.37153004	-4.300	-3.143
27	30.0	0.45929854	-3.379	-2.754
28	30.0	0.45761328	-3.395	-2.770
29	20.0	0.48872910	-3.109	-2.839
30	20.0	0.47544643	-3.229	-2.959

321 CONTINUED

DATA	GROUP	NUMBER	CROSS POLARIZATION VERTICAL TRANSMITTER			GAMMA IN DECIBELS
			BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	
7		70.0	0.05957059	-12.250	-7.590	
8		70.0	0.04232749	-13.734	-9.074	
9		60.0	0.05004526	-13.006	-9.996	
10		60.0	0.05130045	-12.899	-9.888	
11		50.0	0.06572068	-11.823	-9.904	
12		50.0	0.09314743	-10.308	-8.389	
13		40.0	0.08719232	-10.595	-9.438	
14		40.0	0.06967974	-11.569	-10.411	
15		30.0	0.09095323	-10.412	-9.787	
16		30.0	0.12179498	-9.144	-8.519	
17		20.0	0.12433869	-9.054	-8.784	
18		20.0	0.12344335	-9.085	-8.815	

CROSS POLARIZATION HORIZONTAL TRANSMITTER

DATA	GROUP	NUMBER	CROSS POLARIZATION HORIZONTAL TRANSMITTER			GAMMA IN DECIBELS
			BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	
19		70.0	0.04145075	-13.825	-9.165	
20		70.0	0.04059935	-13.915	-9.255	
21		60.0	0.05402982	-12.674	-9.663	
22		60.0	0.04780413	-13.205	-10.195	
23		50.0	0.09273550	-10.328	-8.408	
24		50.0	0.06431482	-11.917	-9.998	
25		40.0	0.09507198	-10.219	-9.062	
26		40.0	0.10432044	-9.816	-8.659	
27		30.0	0.11177914	-9.516	-8.892	
28		30.0	0.10908822	-9.622	-8.998	
29		20.0	0.14503364	-8.385	-8.115	
30		20.0	0.12885632	-8.899	-8.629	

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 3SEP8 DATA GROUP NUMBER = 322 TERRAIN SOYBEANS,NI FREQUENCY = 10.000 GIGAHERTZ
 NO PLOTS REQUESTED INTEGRATION TIME FROM REFERENCE SPHERE = 35.000 SECONDS VOLTAGE 6.583 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.53167 INPUT 4.19146 IN DB 12.44732 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
43	70.0	0.22655843	-6.448	-1.789
44	70.0	0.21436399	-6.688	-2.029
45	60.0	0.20854389	-6.808	-3.798
46	60.0	0.19062718	-7.198	-4.188
47	50.0	0.23753534	-6.243	-4.323
48	50.0	0.27293227	-5.639	-3.720
49	40.0	0.29762476	-5.263	-4.106
50	40.0	0.29551687	-5.294	-4.137
51	30.0	0.30796267	-5.115	-4.490
52	30.0	0.31962901	-4.954	-4.329
53	20.0	0.33033451	-4.810	-4.540
54	20.0	0.41720826	-3.796	-3.526

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
31	20.0	0.41334609	-3.837	-3.567
32	20.0	0.35853963	-4.455	-4.184
33	30.0	0.31663447	-4.994	-4.370
34	30.0	0.33254632	-4.781	-4.157
35	40.0	0.26814360	-5.716	-4.559
36	40.0	0.29293875	-5.332	-4.175
37	50.0	0.28094949	-5.514	-3.594
38	50.0	0.24290006	-6.146	-4.226
39	60.0	0.20210917	-6.944	-3.934
40	60.0	0.20009440	-6.988	-3.977
41	70.0	0.15151027	-8.196	-3.536
42	70.0	0.15691886	-8.043	-3.384

DATA GROUP NUMBER 322 CONTINUED

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION VERTICAL TRANSMITTER		GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	
43	70.0	0.06237659	-12.050	-7.390
44	70.0	0.05518658	-12.582	-7.922
45	60.0	0.06978406	-11.562	-8.552
46	60.0	0.06009410	-12.212	-9.201
47	50.0	0.08787006	-10.562	-8.642
48	50.0	0.07548808	-11.221	-9.302
49	40.0	0.08048222	-10.943	-9.786
50	40.0	0.09781346	-10.096	-8.939
51	30.0	0.09846487	-10.067	-9.442
52	30.0	0.09257702	-10.335	-9.710
53	20.0	0.12819100	-8.921	-8.651
54	20.0	0.11100438	-9.547	-9.276

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	CROSS SECTION IN DECIBELS		GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	
31	20.0	0.11159149	-9.524	-9.254
32	20.0	0.11143951	-9.530	-9.259
33	30.0	0.10463804	-9.803	-9.178
34	30.0	0.08583631	-10.663	-10.039
35	40.0	0.08468786	-10.722	-9.564
36	40.0	0.07736152	-11.115	-9.957
37	50.0	0.07907199	-11.020	-9.100
38	50.0	0.09656703	-10.152	-8.232
39	60.0	0.05963770	-12.245	-9.234
40	60.0	0.06016965	-12.206	-9.196
41	70.0	0.05546296	-12.560	-7.900
42	70.0	0.05565245	-12.545	-7.886

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

TERRAIN SOYBEANS, I FREQUENCY = 10.000 GIGAHERTZ

DATA GROUP NUMBER = 323
DATE 12SEP8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 43.000 SECONDS VOLTAGE 9.351 VOLTS MULTIPLIER 0.1
TIME/VOLT 0.45984 INPUT 4.81114 IN DB 13.64496 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
5	70.0	0.11971561	-9.218	-9.218	-4.559
6	70.0	0.15714981	-8.037	-8.037	-3.377
7	60.0	0.14075007	-8.516	-8.516	-5.505
8	60.0	0.13727995	-8.624	-8.624	-5.614
9	50.0	0.23750791	-6.243	-6.243	-4.324
10	50.0	0.23520308	-6.286	-6.286	-4.366
11	40.0	0.32004241	-4.948	-4.948	-3.790
12	40.0	0.43271708	-3.638	-3.638	-2.480
13	30.0	0.50077840	-3.004	-3.004	-2.379
14	30.0	0.47222856	-3.258	-3.258	-2.634
15	20.0	0.63005496	-2.006	-2.006	-1.736
16	20.0	0.61215892	-2.131	-2.131	-1.861

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DB	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
41	20.0	0.61678525	-2.099	-2.099	-1.829
42	20.0	0.57997959	-2.366	-2.366	-2.096
43	30.0	0.46349191	-3.340	-3.340	-2.715
44	30.0	0.46345117	-3.340	-3.340	-2.715
45	40.0	0.31717963	-4.987	-4.987	-3.829
46	40.0	0.35959748	-4.442	-4.442	-3.284
47	50.0	0.28667496	-5.426	-5.426	-3.507
48	50.0	0.26505567	-5.767	-5.767	-3.847
49	60.0	0.12545296	-9.015	-9.015	-6.005
50	60.0	0.13481296	-8.703	-8.703	-5.692
51	70.0	0.12778037	-8.935	-8.935	-4.276
52	70.0	0.11557769	-9.371	-9.371	-4.712

DATA	GROUP	NUMBER	323	CONTINUED	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE	CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS			
5	70.0	0.01937448	-17.128	-12.468				
6	70.0	0.02336309	-16.315	-11.655				
7	60.0	0.01935549	-17.132	-14.122				
8	60.0	0.02646203	-15.774	-12.763				
9	50.0	0.04411429	-13.554	-11.635				
10	50.0	0.04627816	-13.346	-11.427				
11	40.0	0.06258897	-12.035	-10.878				
12	40.0	0.04484026	-13.483	-12.326				
13	30.0	0.06161154	-12.103	-11.479				
14	30.0	0.06678934	-11.753	-11.128				
15	20.0	0.07844309	-11.054	-10.784				
16	20.0	0.07154310	-11.454	-11.184				

DATA	GROUP	NUMBER	323	CONTINUED	CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE	CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS			
41	20.0	0.04191630	-13.776	-13.506				
42	20.0	0.03968491	-14.014	-13.744				
43	30.0	0.03612009	-14.423	-13.798				
44	30.0	0.03190056	-14.962	-14.337				
45	40.0	0.03095591	-15.093	-13.935				
46	40.0	0.02791716	-15.541	-14.384				
47	50.0	0.02026737	-16.932	-15.013				
48	50.0	0.02378614	-16.237	-14.317				
49	60.0	0.01445767	-18.399	-15.389				
50	60.0	0.01233159	-19.090	-16.080				
51	70.0	0.01518986	-18.184	-13.525				
52	70.0	0.01533359	-18.144	-13.484				

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GRCLP NUMBER = 324 TERRAIN SOYBEANS,NI FREQUENCY = 10.000 GIGAHERTZ
 DATE 12SEP8

NC PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 43.000 SECONDS VOLTAGE 9.351 VOLTS MULTIPLIER 0.1
 TIME/VCLT 0.45984 INPUT 4.81114 IN DB 13.64496 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
17	20.0	0.31794855	-4.976	-4.706
18	20.0	0.28779869	-5.409	-5.139
19	30.0	0.34810136	-4.583	-3.958
20	30.0	0.30588379	-5.144	-4.520
21	40.0	0.25242948	-5.979	-4.821
22	40.0	0.32482484	-4.884	-3.726
23	50.0	0.26197103	-5.817	-3.898
24	50.0	0.30339411	-5.180	-3.261
25	60.0	0.21715849	-6.632	-3.622
26	60.0	0.28808953	-5.405	-2.394
27	70.0	0.27424659	-5.619	-0.959
28	70.0	0.27592657	-5.592	-0.933

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
29	70.0	0.22924721	-6.397	-1.737
30	70.0	0.22148321	-6.547	-1.887
31	60.0	0.22270691	-6.523	-3.512
32	60.0	0.20465066	-6.890	-3.880
33	50.0	0.31680072	-4.992	-3.073
34	50.0	0.28775952	-5.410	-3.490
35	40.0	0.27756139	-5.566	-4.409
36	40.0	0.30002035	-5.228	-4.071
37	30.0	0.41112439	-3.860	-3.236
38	30.0	0.29841520	-5.252	-4.627
39	20.0	0.42350721	-3.731	-3.461
40	20.0	0.43200565	-3.645	-3.375

DATA	GROUP	NUMBER	324	CONTINUED	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
17	20.0	0.06406332	-11.934	-11.664				
18	20.0	0.06550461	-11.837	-11.567				
19	30.0	0.05335983	-12.728	-12.103				
20	30.0	0.05168856	-12.866	-12.241				
21	40.0	0.03853803	-14.141	-12.984				
22	40.0	0.04199203	-13.768	-12.611				
23	50.0	0.03665435	-14.359	-12.439				
24	50.0	0.04054483	-13.921	-12.001				
25	60.0	0.03022612	-15.196	-12.186				
26	60.0	0.03461700	-14.607	-11.597				
27	70.0	0.02337869	-16.312	-11.652				
28	70.0	0.04584749	-13.387	-8.727				

DATA	GROUP	NUMBER	324	CONTINUED	CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
29	70.0	0.02368871	-16.255	-11.595				
30	70.0	0.02235010	-16.507	-11.848				
31	60.0	0.01985003	-17.022	-14.012				
32	60.0	0.01954602	-17.089	-14.079				
33	50.0	0.02732750	-15.634	-13.715				
34	50.0	0.02806371	-15.519	-13.599				
35	40.0	0.03732048	-14.281	-13.123				
36	40.0	0.03365658	-14.729	-13.572				
37	30.0	0.03447002	-14.626	-14.001				
38	30.0	0.03226295	-14.913	-14.288				
39	20.0	0.03502582	-14.556	-14.286				
40	20.0	0.03224677	-14.915	-14.645				

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

TERRAIN SORGHUM FREQUENCY = 10.000 GIGAHERTZ

DATE 27SEP8 DATA GROUP NUMBER = 325

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 38.000 SECONDS VOLTAGE 9.764 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.38918 INPUT 5.63741 IN DB 15.02160 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
7	70.0	0.09687596	-10.138	-5.478
8	70.0	0.11835950	-9.268	-4.608
9	60.0	0.10300393	-9.871	-6.861
10	60.0	0.09684139	-10.139	-7.129
11	50.0	0.11111193	-9.542	-7.623
12	50.0	0.12790688	-8.931	-7.012
13	40.0	0.15503575	-8.096	-6.938
14	40.0	0.17816988	-7.492	-6.334
15	30.0	0.25997745	-5.851	-5.226
16	30.0	0.28862507	-5.397	-4.772
17	20.0	0.24179533	-6.166	-5.895
18	20.0	0.27090013	-5.672	-5.402

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
19	70.0	0.07969783	-10.986	-6.326
20	70.0	0.09350843	-10.291	-5.632
21	60.0	0.07884155	-11.032	-8.022
22	60.0	0.08428912	-10.742	-7.732
23	60.0	0.09755460	-10.108	-7.097
24	50.0	0.14334322	-8.436	-6.517
25	50.0	0.16176536	-7.911	-5.992
26	40.0	0.20239153	-6.938	-5.781
27	40.0	0.20655016	-6.850	-5.692
28	30.0	0.26287876	-5.802	-5.178
29	30.0	0.28837755	-5.400	-4.776
30	20.0	0.30446484	-5.165	-4.894
	20.0	0.32050417	-4.942	-4.672

DATA	GROUP	NUMBER	325	CONTINUED	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
7	70.0	0.01883428	-17.251	-12.591				
8	70.0	0.01715545	-17.656	-12.996				
9	60.0	0.01195685	-19.224	-16.214				
10	60.0	0.01471958	-18.321	-15.311				
11	50.0	0.01812457	-17.417	-15.498				
12	50.0	0.02091790	-16.795	-14.875				
13	40.0	0.01891210	-17.233	-16.075				
14	40.0	0.02306408	-16.371	-15.213				
15	30.0	0.02558165	-15.921	-15.296				
16	30.0	0.02500940	-16.019	-15.394				
17	20.0	0.02159905	-16.656	-16.386				
18	20.0	0.02334244	-16.319	-16.048				

DATA	GROUP	NUMBER	325	CONTINUED	CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
19	70.0	0.01119728	-19.509	-14.849				
20	70.0	0.01297914	-18.868	-14.208				
21	60.0	0.01232235	-19.093	-16.083				
22	60.0	0.01288257	-18.900	-15.890				
23	60.0	0.01110311	-19.546	-16.535				
24	50.0	0.02048502	-16.886	-14.966				
25	50.0	0.01945309	-17.110	-15.191				
26	40.0	0.02103517	-16.771	-15.613				
27	40.0	0.02440293	-16.126	-14.968				
28	30.0	0.02153703	-16.668	-16.043				
29	30.0	0.02666430	-15.741	-15.116				
30	20.0	0.02498174	-16.024	-15.754				
30	20.0	0.02240250	-16.497	-16.227				

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATA GROUP NUMBER = 326 TERRAIN SOYBEANS, I FREQUENCY = 10.000 GIGAHERTZ
 DATE 27SEP8

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 45.000 SECONDS VOLTAGE 9.396 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.47893 INPUT 4.62884 IN DB 13.30944 FREQUENCY 10.0

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
37	70.0	0.12711449	-8.958	-4.299
38	70.0	0.12601122	-8.996	-4.336
39	60.0	0.13124151	-8.819	-5.809
40	60.0	0.14132061	-8.498	-5.488
41	50.0	0.16843890	-7.736	-5.816
42	50.0	0.16953105	-7.708	-5.788
43	40.0	0.21930218	-6.590	-5.432
44	40.0	0.23215000	-6.342	-5.185
45	30.0	0.31471925	-5.021	-4.396
46	30.0	0.26819545	-5.715	-5.091
47	20.0	0.29551880	-5.294	-5.024
48	20.0	0.49033830	-3.095	-2.825

VERTICAL POLARIZATION

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
73	20.0	0.46890272	-3.289	-3.019
74	20.0	0.41407658	-3.829	-3.559
75	30.0	0.36964978	-4.322	-3.697
76	30.0	0.33856889	-4.704	-4.079
77	40.0	0.23427046	-6.303	-5.145
78	40.0	0.26913756	-5.700	-4.543
79	50.0	0.20104832	-6.967	-5.048
80	50.0	0.14947811	-8.254	-6.335
81	60.0	0.13039961	-8.847	-5.837
82	60.0	0.11372087	-9.442	-6.431
83	70.0	0.15107706	-8.208	-3.549
84	70.0	0.12165707	-9.149	-4.489

DATA	GROUP	NUMBER	326	CONTINUED	CROSS POLARIZATION	VERTICAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
37	70.0	0.02089371	-16.800	-12.140				
38	70.0	0.02527468	-15.973	-11.314				
39	60.0	0.03361938	-14.734	-11.724				
40	60.0	0.02875301	-15.413	-12.403				
41	50.0	0.03844645	-14.151	-12.232				
42	50.0	0.04004441	-13.975	-12.055				
43	40.0	0.03957423	-14.026	-12.868				
44	40.0	0.04483229	-13.484	-12.327				
45	30.0	0.05278583	-12.775	-12.150				
46	30.0	0.05896492	-12.294	-11.669				
47	20.0	0.07005827	-11.545	-11.275				
48	20.0	0.06619723	-11.792	-11.521				

DATA	GROUP	NUMBER	326	CONTINUED	CROSS POLARIZATION	HORIZONTAL TRANSMITTER	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS				
73	20.0	0.05654091	-12.476	-12.206				
74	20.0	0.07201516	-11.426	-11.156				
75	30.0	0.04575189	-13.396	-12.771				
76	30.0	0.05485332	-12.608	-11.983				
77	40.0	0.03880338	-14.111	-12.954				
78	40.0	0.04854795	-13.138	-11.981				
79	50.0	0.03973061	-14.009	-12.089				
80	50.0	0.04554114	-13.416	-11.497				
81	60.0	0.03388273	-14.700	-11.690				
82	60.0	0.03868331	-14.125	-11.114				
83	70.0	0.03344036	-14.757	-10.098				
84	70.0	0.03817193	-14.183	-9.523				

MEASURED BACKSCATTERING CROSS SECTION PER UNIT AREA VS. INCIDENCE ANGLE FROM NORMAL

DATE 27SEP8 DATA GROUP NUMBER = 327 TERRAIN SOYBEANS,NI FREQUENCY = 10.000 GIGAHERTZ

NO PLOTS REQUESTED

INTEGRATION TIME FROM REFERENCE SPHERE = 45.000 SECONDS VOLTAGE 9.396 VOLTS MULTIPLIER 0.1
 TIME/VOLT 0.47893 INPUT 4.62884 IN DB 13.30944 FREQUENCY 10.0

VERTICAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
49	20.0	0.19309365	-7.142	-6.872
50	20.0	0.19507158	-7.098	-6.828
51	30.0	0.15486026	-8.101	-7.476
52	30.0	0.12888834	-8.898	-8.273
53	40.0	0.14583862	-8.361	-7.204
54	40.0	0.14371721	-8.425	-7.267
55	50.0	0.12465698	-9.043	-7.124
56	50.0	0.12852232	-8.910	-6.991
57	60.0	0.14035543	-8.528	-5.517
58	60.0	0.15122468	-8.204	-5.193
59	70.0	0.17552229	-7.557	-2.897
60	70.0	0.17157798	-7.655	-2.996

HORIZONTAL POLARIZATION

RUN NUMBER	BACKSCATTERING ANGLE	ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	GAMMA IN DECIBELS
61	70.0	0.11572561	-9.366	-4.706
62	70.0	0.10905525	-9.624	-4.964
63	60.0	0.12319544	-9.094	-6.084
64	60.0	0.13684001	-8.638	-5.628
65	50.0	0.17292401	-7.621	-5.702
66	50.0	0.12461007	-9.044	-7.125
67	40.0	0.15327562	-8.145	-6.988
68	40.0	0.19536791	-7.091	-5.934
69	30.0	0.20759115	-6.828	-6.203
70	30.0	0.16654092	-7.785	-7.160
71	20.0	0.26846362	-5.711	-5.441
72	20.0	0.25575121	-5.922	-5.652

DATA GROUP NUMBER NUMBER 327 CONTINUED

RUN NUMBER	BACKSCATTERING ANGLE	CROSS POLARIZATION VERTICAL TRANSMITTER		GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	
49	20.0	0.03982435	-13.999	-13.728
50	20.0	0.03107956	-15.075	-14.805
51	30.0	0.03631142	-14.400	-13.775
52	30.0	0.02861741	-15.434	-14.809
53	40.0	0.02971409	-15.270	-14.113
54	40.0	0.02775869	-15.566	-14.409
55	50.0	0.03743243	-14.268	-12.348
56	50.0	0.03222733	-14.918	-12.998
57	60.0	0.02993010	-15.239	-12.229
58	60.0	0.02901762	-15.373	-12.363
59	70.0	0.03476742	-14.588	-9.929
60	70.0	0.03280596	-14.840	-10.181

CROSS POLARIZATION HORIZONTAL TRANSMITTER

RUN NUMBER	BACKSCATTERING ANGLE	CROSS SECTION IN DECIBELS		GAMMA IN DECIBELS
		ABSOLUTE CROSS SECTION	CROSS SECTION IN DECIBELS	
61	70.0	0.02774274	-15.569	-10.909
62	70.0	0.02570256	-15.900	-11.241
63	60.0	0.02595332	-15.858	-12.848
64	60.0	0.02595652	-15.858	-12.847
65	50.0	0.03934351	-14.051	-12.132
66	50.0	0.03029755	-15.186	-13.267
67	40.0	0.03340886	-14.761	-13.604
68	40.0	0.04578739	-13.393	-12.235
69	30.0	0.03285809	-14.834	-14.209
70	30.0	0.02793566	-15.538	-14.914
71	20.0	0.04309706	-13.656	-13.385
72	20.0	0.03931866	-14.054	-13.784