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Retlif Testing Laboratories Report No. R-3578P-2A, Rev. C

For

Siemens Mobility, Inc.

Carborne Control Signal Transmitter (VCC) and Wayside Transponder (TCC)

VCC FCC ID: 2A8HRS25441-M3-A3
TCC FCC ID: 2A8HRS25442-MX-A1

Requirement: 1.1310(d)(2), Radiofrequency Radiation Exposure Limits

Table of Contents

Requirements and Test Results

Requirement: 1.1310(d)(2), Radiofrequency Radiation Exposure Limits
For operations within the frequency range of 300 kHz and 6 GHz (inclusive), the limits for maximum permissible exposure (MPE), derived from whole-body SAR limits and listed in Table 1 in paragraph (e)(1) of this section, may be used instead of whole-body SAR limits as set forth in paragraphs (a) through (c) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in § 1.1307(b) of this part, except for portable devices as defined in § 2.1093 of this chapter as these evaluations shall be performed according to the SAR provisions in § 2.1093.

Table 1 FCC § 1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*($900/f^2$)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*($180/f^2$)	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

Requirement: KDB 680106
For frequencies below 100 kHz the limits for frequencies below 100 kHz are 90 A/m for magnetic field strength and 83 V/m for electric field strength.

Conclusion
During all measurements the height of the measurement probe was varied in order to produce the maximum emissions levels. The data presented is the worst case.

The results of all measured configurations and locations yield a minimum separation distance of 40 cm from any system component in order to comply with FCC RF exposure requirements.

VCC Orientations and Probe Positions Tested

The test sample mounts to the underside of a light rail transportation vehicle. The device is always installed such that the radiating element is facing downwards, towards the railroad track, under the train. The top of the VCC enclosure is mounted to the steel understructure of the rail vehicle.

Based on the installation of the VCC in use, evaluation of magnetic and electric field strengths was limited to each of the four sides of the Vehicle Coupling Coil. Measurements were taken on the main lobe of the transmitter (the area facing downwards towards the track underneath the train) for reference only.

When evaluating the maximum levels of radiated magnetic and electric fields, the following steps were taken to ensure that the maximum values were recorded:

1) The measurement probe was moved along each surface of the VCC to determine the particular position which provided the highest measured field strength.
2) The height of the measurement probe relative to the VCC was varied to determine the height which produced maximum emissions.
3) At this height, measurements were taken at 10 cm intervals along each surface as shown below:

Figure 1 - Test Positions in Normal Orientation

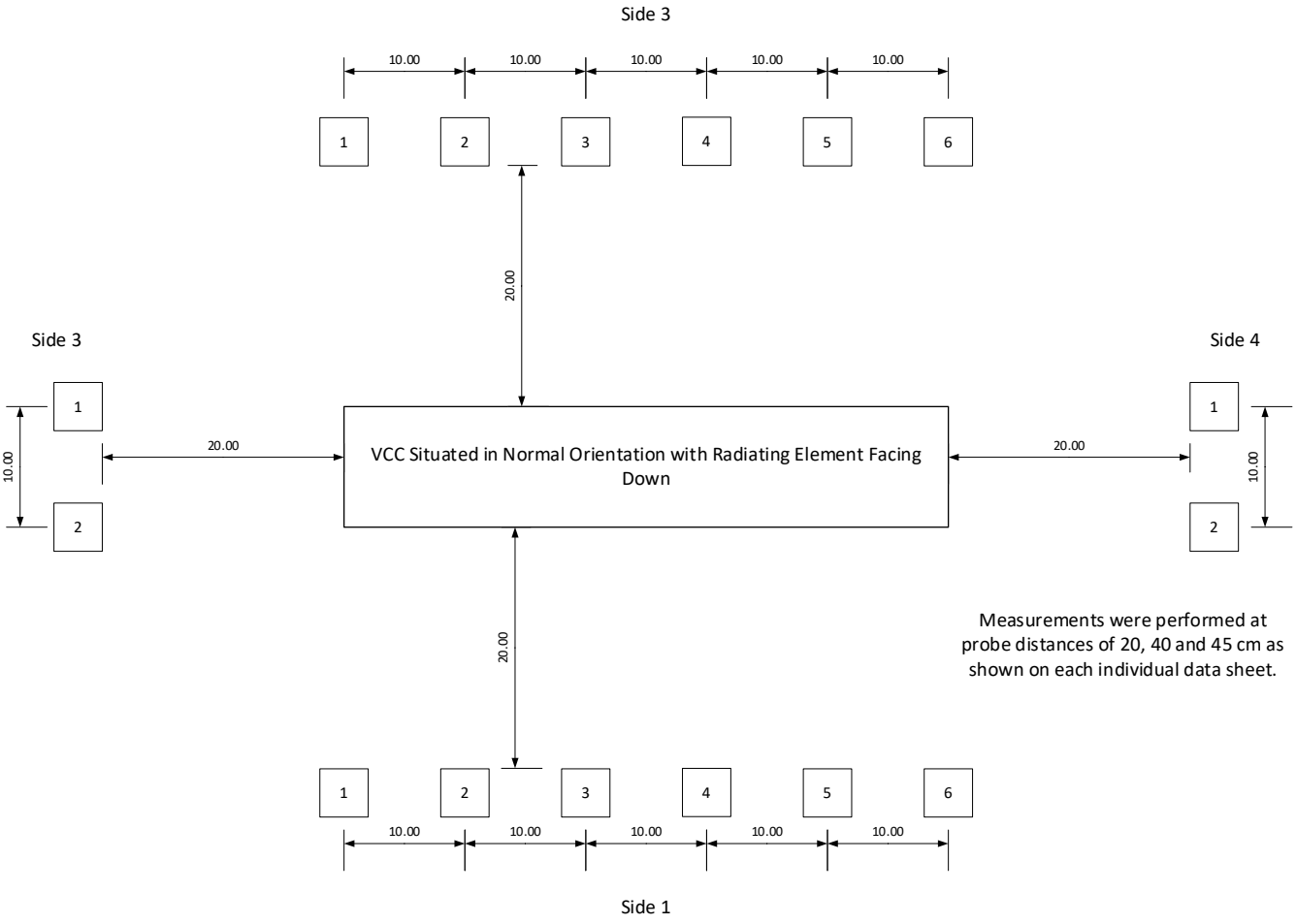
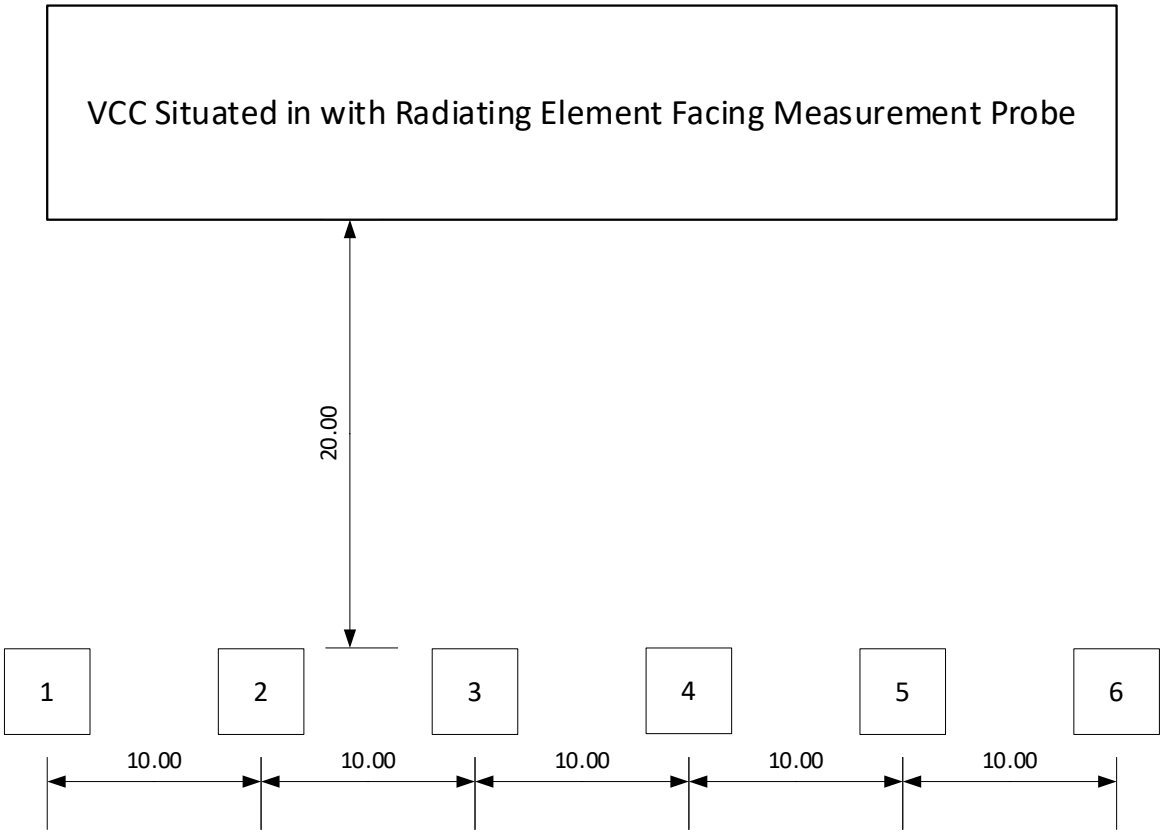


Figure 2 - Test Position 5, Measuring Main Lobe-



Side 5

Note: Position 5 data is provided as informative only as it is not an accessible location during normal usage.

VCC Test Results
The frequencies of interest in this device include 50 kHz, 100 kHz and 850 kHz.

50 kHz:
This frequency is outside of the frequency range for which limit levels are specified for electric and magnetic field strength.

Applying the limits from the 0.3 to 1.34 MHz range yields a minimum required separation distance of 20 cm for all positions tested with the exception of position 5. This position complied at a distance of 40 cm. Again, this position would be directly below a transit vehicle and is not considered an accessible location.

Applying the limits of KDB 680106 yields a minimum separation distance of 20 cm for all test locations.

100 kHz:
This frequency is outside of the frequency range for which limit levels are specified for electric and magnetic field strength.

Applying the limit for the 0.3 to 1.34 MHz range yields a minimum required separation distance of 20 cm for all positions tested with the exception of position 5. This position complied at a distance of 45 cm. Again, this position would be directly below a transit vehicle and is not considered an accessible location.

850 kHz:
This frequency is within the range for which limit levels are specified for electric and magnetic field strength.

Applying the limit for the 0.3 to 1.34 MHz range yields a minimum required separation distance of 20 cm for all positions tested, including position 5.

VCC Equipment List

FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)

EN	Manufacturer	Model No.	Description	Serial No.	Due Date
8322	ETS / EMCO	6512	ANTENNA, LOOP, 10 KHz - 30 MHz	00060485	4/30/2024
8619	OMEGA	OM-73	HYGROMETER, -20 to 70 deg. C, 0-99% RH	051442102C	4/30/2024
8749	RIGOL	DSA832E	ANALYZER, SPECTRUM, 9 kHz - 3.2 GHz	DSA8G201800133	5/31/2024
R849	NARDA	EHP-200A	ANALYZER, FIELD STRENGTH, 9 kHz - 30 MHz	180ZX00616	11/25/2023

FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)
VCC Test Data

MPE CALCULATION DATA SHEET	
Test Specification:	FCC Part 1.1310, Radiofrequency radiation exposure limits
Method:	FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)
Limit:	FCC Part 1.1310 (e)(1), Table 1, Section(ii), Limits for General Population / Uncontrolled Exposure
Job Number/Customer:	R-3578P-2 / Siemens Mobility
Test Sample:	Vehicle Coupling Coil
Model Number:	S25441-M3-A3-01.H (VCC); S25451-C401-B242 (Card File)
Serial Number:	6101125087-001 (VCC); A2V00002744893 (Card File)
Operating Mode:	Vehicle Coupling Coil Transmitting at 50 kHz
Technician:	M. Nowak
Date(s):	10/23/23

EUT Orientation	**Magnetic Field Strength**		**Magnetic Limit from 300 kHz**	**Magnetic Limit Per KDB 680106**	**Electric Field Strength**		**Electric Limit**	**Electric Limit Per KDB 680106**
	A/m		**A/m**	**A/m**	**V/m**		**V/m**	**V/m**
Measured At	**20 cm**	**40 cm**			**20 cm**	**40 cm**		
Side 1, Position 1	0.64	0.21	1.63	90	17.8	9.5	614	83
Side 1, Position 2	0.72	0.23	|	|	20.8	10.7	|	|
Side 1, Position 3	0.85	0.24	|	|	22.1	11.2	|	|
Side 1, Position 4	0.92	0.22	|	|	21.7	11.3	|	|
Side 1, Position 5	0.75	0.21	|	|	19.6	10.5	|	|
Side 1, Position 6	0.61	0.19	|	|	16.8	9.6	|	|
Side 2, Position 1	0.49	0.16	|	|	15.1	8.2	|	|
Side 2, Position 2	0.58	0.19	|	|	15.3	7.9	|	|
Side 3, Position 1	0.55	0.18	|	|	21.7	12.4	|	|
Side 3, Position 2	0.68	0.22	|	|	27.9	13.8	|	|
Side 3, Position 3	0.73	0.22	|	|	29.8	13.7	|	|
Side 3, Position 4	0.80	0.25	|	|	29.3	14.0	|	|
Side 3, Position 5	0.67	0.20	|	|	25.5	12.7	|	|
Side 3, Position 6	0.58	0.16	|	|	22.2	11.1	|	|
Side 4, Position 1	0.52	0.17	|	|	15.3	9.1	|	|
Side 4, Position 2	0.49	0.19	|	|	12.9	8.3	|	|
			|	|		|	|
*Side 5, Position 1	1.04	0.30	|	|	20.4	10.6	|	|
*Side 5, Position 2	1.40	0.36	|	|	25.2	11.8	|	|
*Side 5, Position 3	1.76	0.39	|	|	28.5	12.6	|	|
*Side 5, Position 4	1.71	0.37	|	|	29.3	12.8	|	|
*Side 5, Position 5	1.41	0.34	|	|	25.7	11.8	|	|
*Side 5, Position 6	1.19	0.25	1.63	90	20.8	10.8	614	83

*Note: Position 5 data is provided as informative only as it is not an accessible location during normal usage.

MPE CALCULATION DATA SHEET	
Test Specification:	FCC Part 1.1310, Radiofrequency radiation exposure limits
Method:	FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)
Limit:	FCC Part 1.1310 (e)(1), Table 1, Section(ii), Limits for General Population / Uncontrolled Exposure
Job Number/Customer:	R-3578P-2 / Siemens Mobility
Test Sample:	Vehicle Coupling Coil
Model Number:	S25441-M3-A3-01.H (VCC); S25451-C401-B242 (Card File)
Serial Number:	6101125087-001 (VCC); A2V00002744893 (Card File)
Operating Mode:	Vehicle Coupling Coil Transmitting at 100 kHz
Technician:	M. Nowak
Date(s):	10/23/23

EUT Orientation	**Magnetic Field Strength**			**Magnetic Limit**	**Electric Field Strength**		**Electric Limit**
	A/m			**A/m**	**V/m**		**V/m**
Measured At	**20 cm**	**40 cm**	**45 cm**		**20 cm**	**40 cm**	
Side 1, Position 1	2.61	0.90	0.71	1.63	132.3	68.2	614
Side 1, Position 2	3.56	1.03	0.81	|	147.8	72.0	|
Side 1, Position 3	4.03	1.10	0.89	|	158.4	75.8	|
Side 1, Position 4	3.79	1.06	0.80	|	157.4	74.7	|
Side 1, Position 5	2.87	0.86	0.76	|	144.5	70.3	|
Side 1, Position 6	2.64	0.73	0.61	|	123.4	65.6	|
Side 2, Position 1	2.11	0.76	0.61	|	124.1	64.1	|
Side 2, Position 2	2.33	0.79	0.71	|	114.5	62.6	|
Side 3, Position 1	2.69	0.94	0.67	|	192.9	93.6	|
Side 3, Position 2	3.23	1.04	0.84	|	228.6	107.5	|
Side 3, Position 3	3.48	1.18	0.91	|	256.8	114.2	|
Side 3, Position 4	3.42	1.03	0.84	|	264.5	116.1	|
Side 3, Position 5	2.75	0.88	0.64	|	225.9	103.9	|
Side 3, Position 6	2.33	0.71	0.59	|	187.1	95.7	|
Side 4, Position 1	2.10	0.75	0.61	|	80.8	29.3	|
Side 4, Position 2	2.44	0.82	0.66	|	56.1	32.2	|
				|			|
*Side 5, Position 1	4.44	1.38	1.12	|	150.8	69.4	|
*Side 5, Position 2	6.37	1.67	1.27	|	187.3	80.3	|
*Side 5, Position 3	6.61	1.75	1.36	|	198.0	85.2	|
*Side 5, Position 4	6.30	1.77	1.29	|	192.6	84.8	|
*Side 5, Position 5	6.02	1.40	1.06	|	172.7	82.3	|
*Side 5, Position 6	5.01	1.14	0.93	1.63	146.4	74.8	614

*Note: Position 5 data is provided as informative only as it is not an accessible location during normal usage.

MPE CALCULATION DATA SHEET	
Test Specification:	FCC Part 1.1310, Radiofrequency radiation exposure limits
Method:	FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)
Limit:	FCC Part 1.1310 (e)(1), Table 1, Section(ii), Limits for General Population / Uncontrolled Exposure
Job Number/Customer:	R-3578P-2 / Siemens Mobility
Test Sample:	Vehicle Coupling Coil
Model Number:	S25441-M3-A3-01.H (VCC); S25451-C401-B242 (Card File)
Serial Number:	6101125087-001 (VCC); A2V00002744893 (Card File)
Operating Mode:	Vehicle Coupling Coil Transmitting at 850 kHz
Technician:	M. Nowak
Date(s):	10/23/23

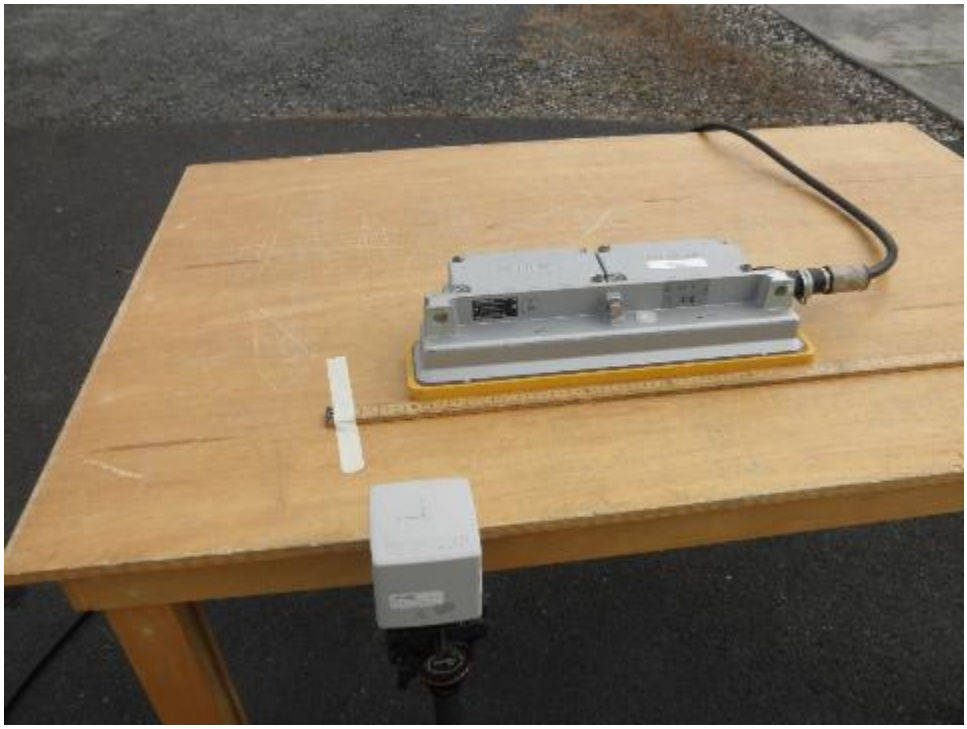
EUT Orientation	**Magnetic Field Strength**		**Magnetic Limit**	**Electric Field Strength**		**Electric Limit**
	A/m		**A/m**	**V/m**		**V/m**
Measured At	**20 cm**	**40 cm**		**20 cm**	**40 cm**	
Side 1, Position 1	0.1	0.1	1.63	3.1	1.6	614
Side 1, Position 2	0.1	0.1	|	3.4	1.7	|
Side 1, Position 3	0.1	0.1	|	3.5	1.9	|
Side 1, Position 4	0.1	0.1	|	3.6	1.8	|
Side 1, Position 5	0.1	0.1	|	3.3	1.6	|
Side 1, Position 6	0.1	0.1	|	2.6	1.5	|
Side 2, Position 1	0.1	0.1	|	2.7	1.3	|
Side 2, Position 2	0.1	0.1	|	2.8	1.5	|
Side 3, Position 1	0.1	0.1	|	2.5	1.4	|
Side 3, Position 2	0.1	0.1	|	3.8	1.7	|
Side 3, Position 3	0.1	0.1	|	3.4	1.8	|
Side 3, Position 4	0.1	0.1	|	3.5	1.7	|
Side 3, Position 5	0.1	0.1	|	3.4	1.8	|
Side 3, Position 6	0.1	0.1	|	3.0	1.7	|
Side 4, Position 1	0.1	0.1	|	1.6	0.6	|
Side 4, Position 2	0.1	0.1	|	1.7	0.8	|
			|			|
*Side 5, Position 1	0.1	0.1	|	3.5	1.7	|
*Side 5, Position 2	0.1	0.1	|	4.6	1.8	|
*Side 5, Position 3	0.1	0.1	|	4.7	2.0	|
*Side 5, Position 4	0.1	0.1	|	4.8	2.0	|
*Side 5, Position 5	0.1	0.1	|	4.6	1.9	|
*Side 5, Position 6	0.1	0.1	1.63	4.0	1.7	614

*Note: Position 5 data is provided as informative only as it is not an accessible location during normal usage.

VCC Test Photographs
RF Exposure

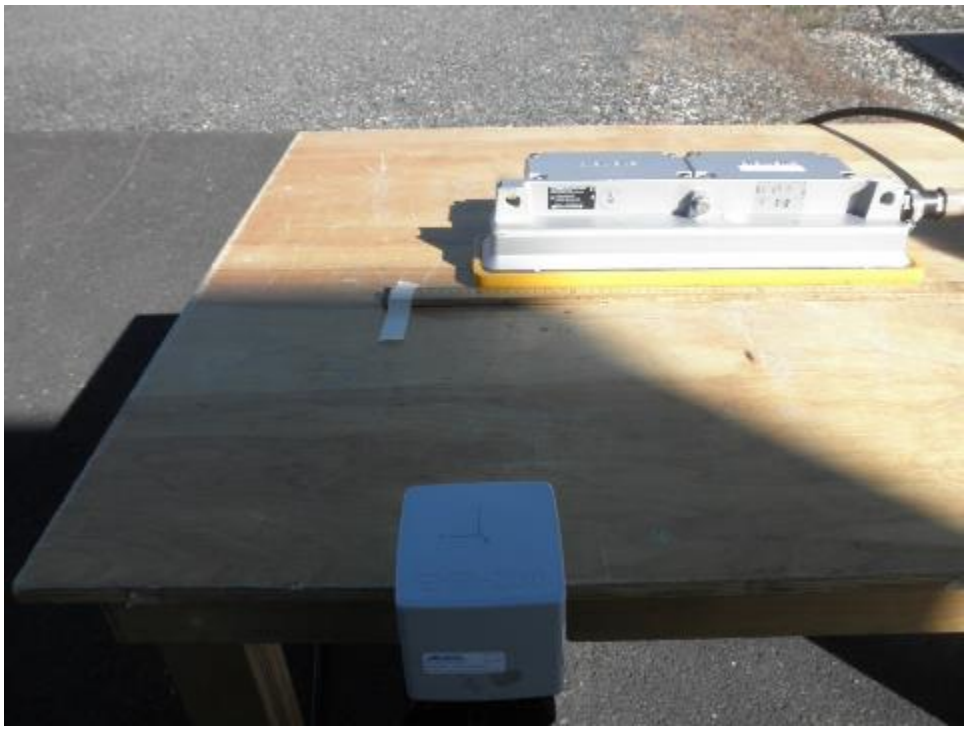
Test Photographs
RF Exposure

Test Setup

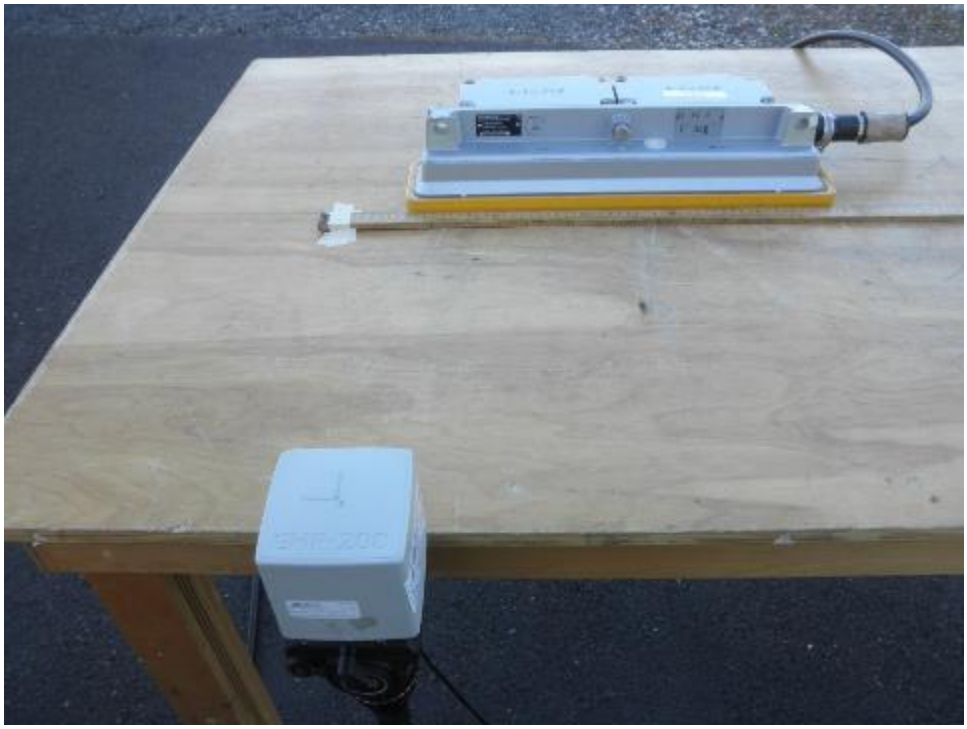


Side 1, Position 1, 20 cm

Test Photographs
RF Exposure

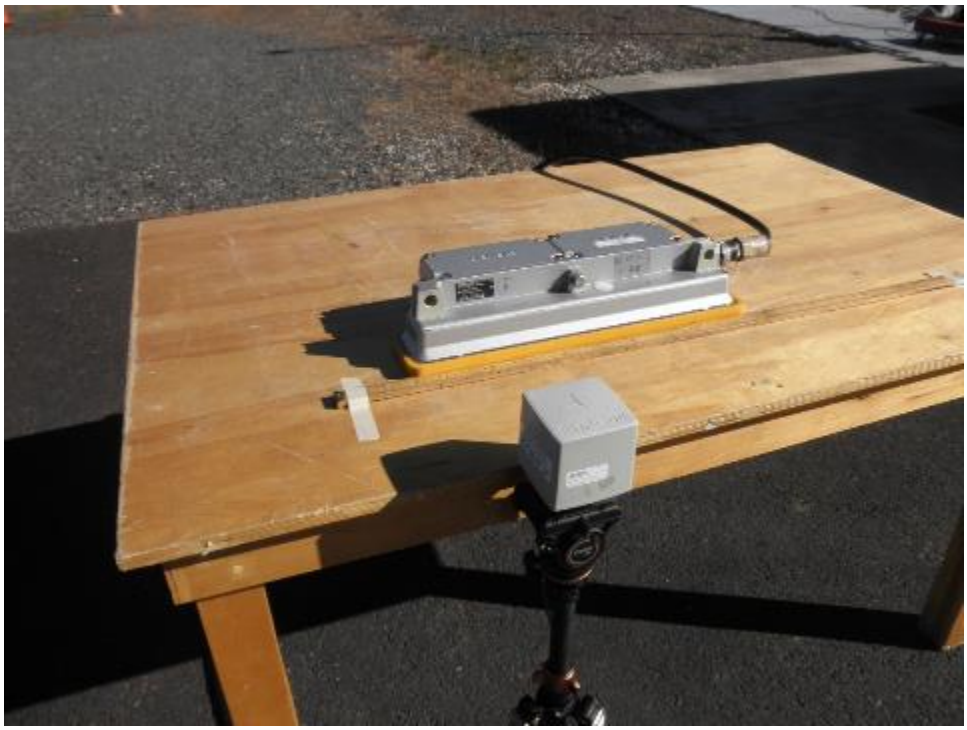


Side 1, Position 1, 40 cm



Side 1, Position 1, 45 cm

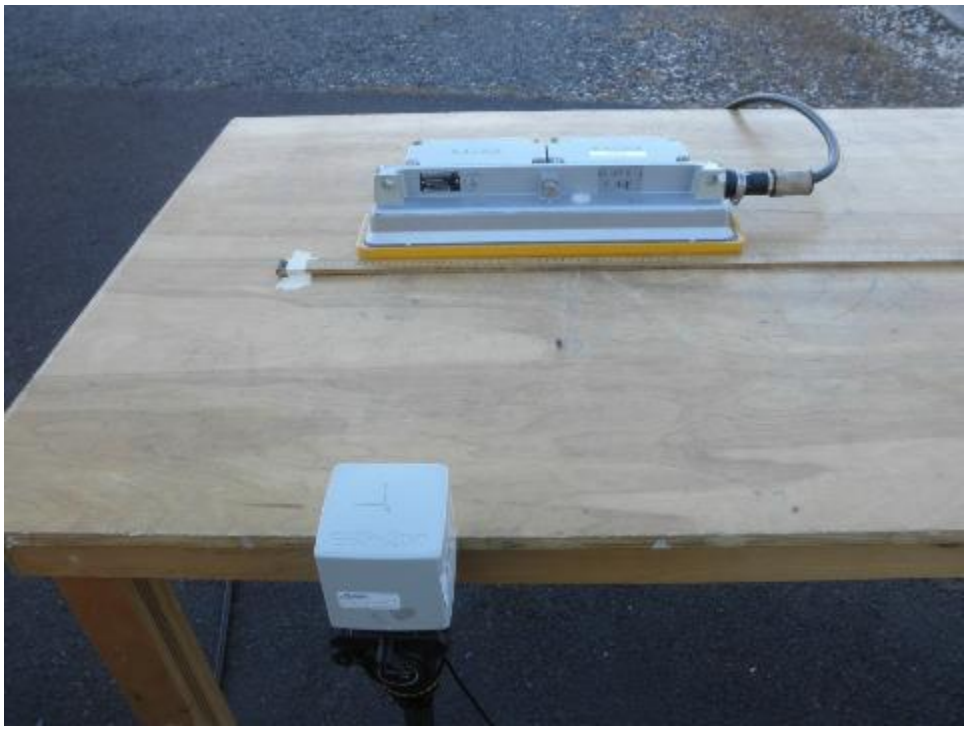
Test Photographs
RF Exposure



Side 1, Position 2, 20 cm

Side 1, Position 2, 40 cm

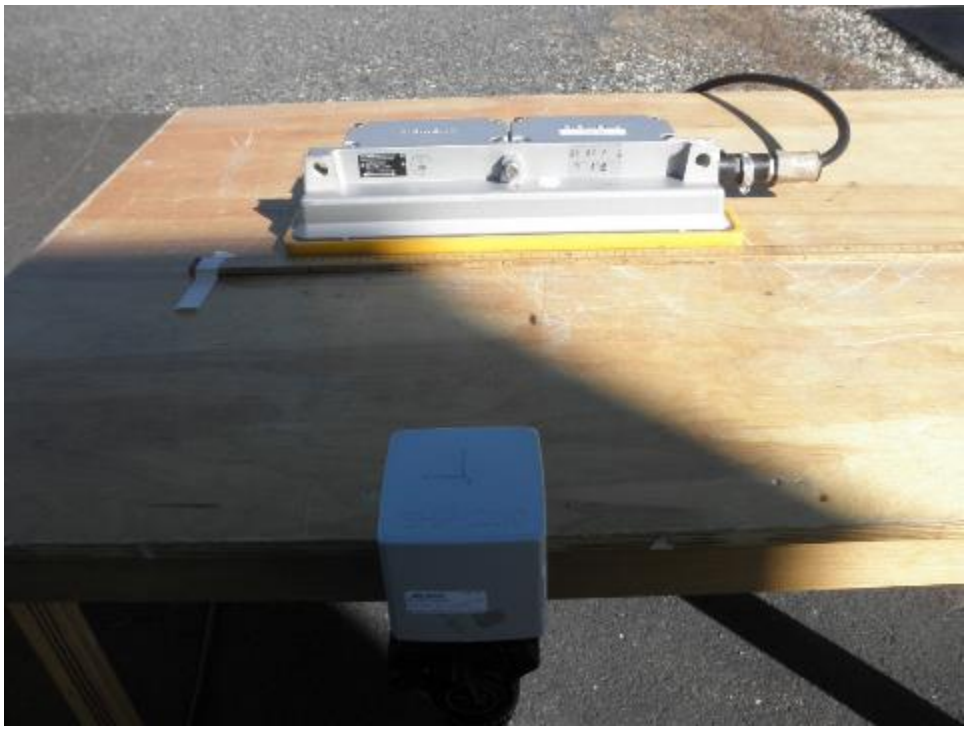
Test Photographs
RF Exposure



Side 1, Position 2, 45 cm

Side 1, Position 3, 20 cm

Test Photographs
RF Exposure

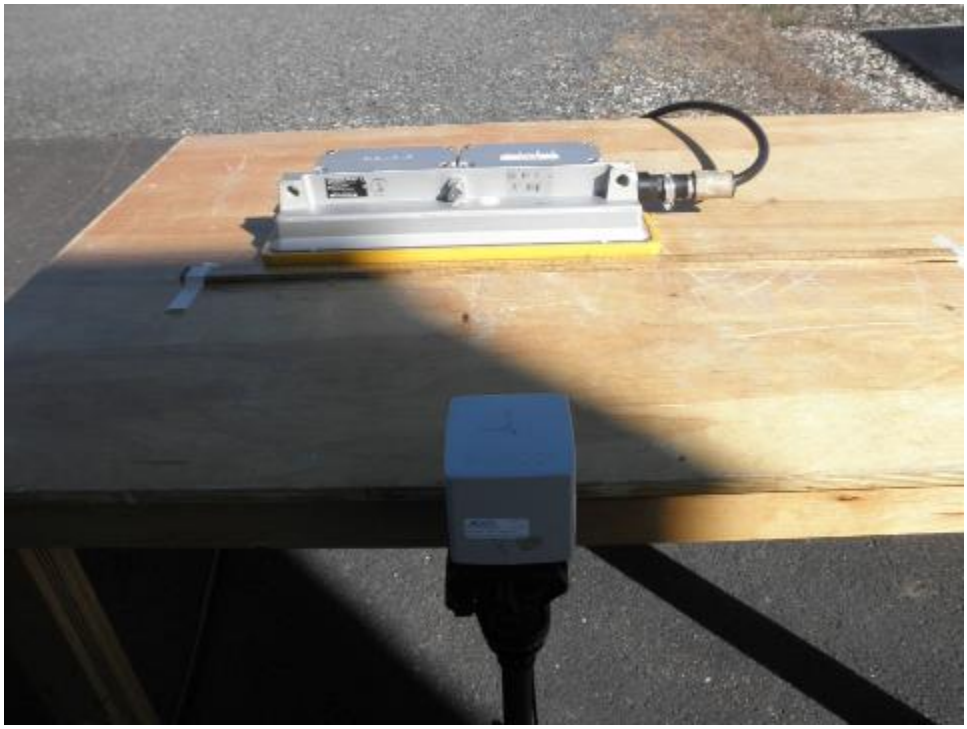


Side 1, Position 3, 40 cm

Side 1, Position 3, 45 cm

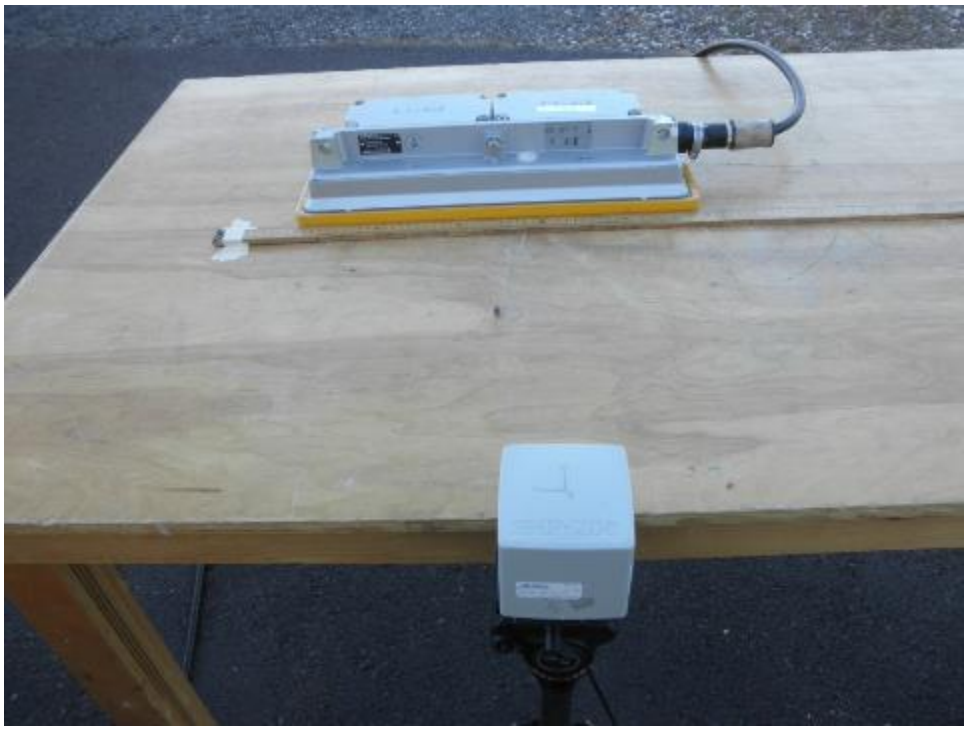
Test Photographs
RF Exposure

Side 1, Position 4, 20 cm

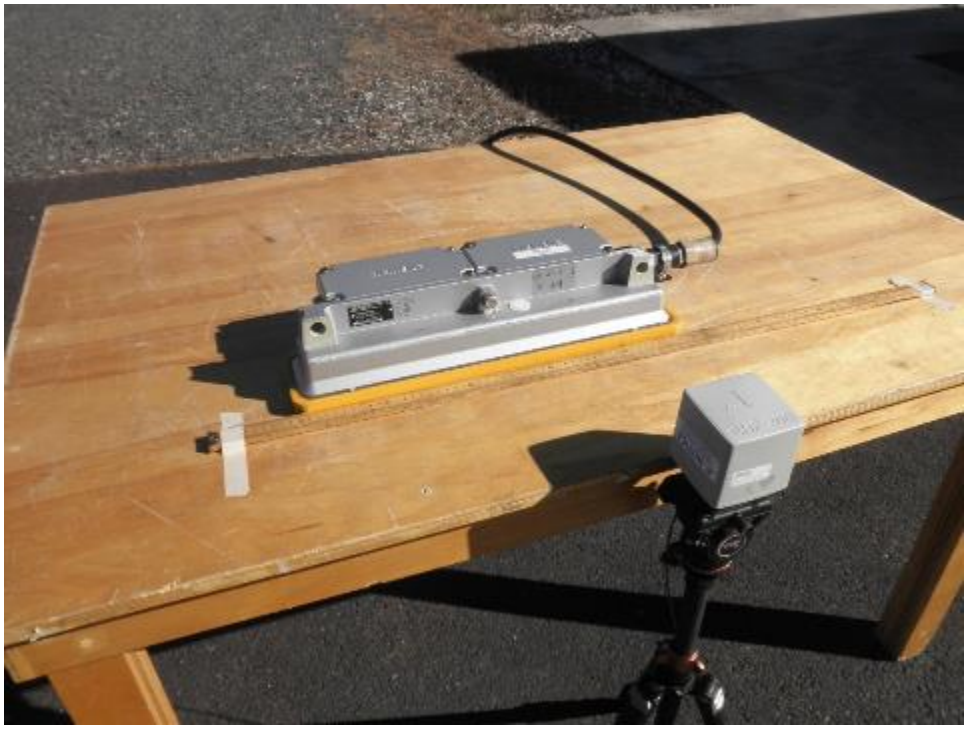


Side 1, Position 4, 40 cm

Test Photographs
RF Exposure

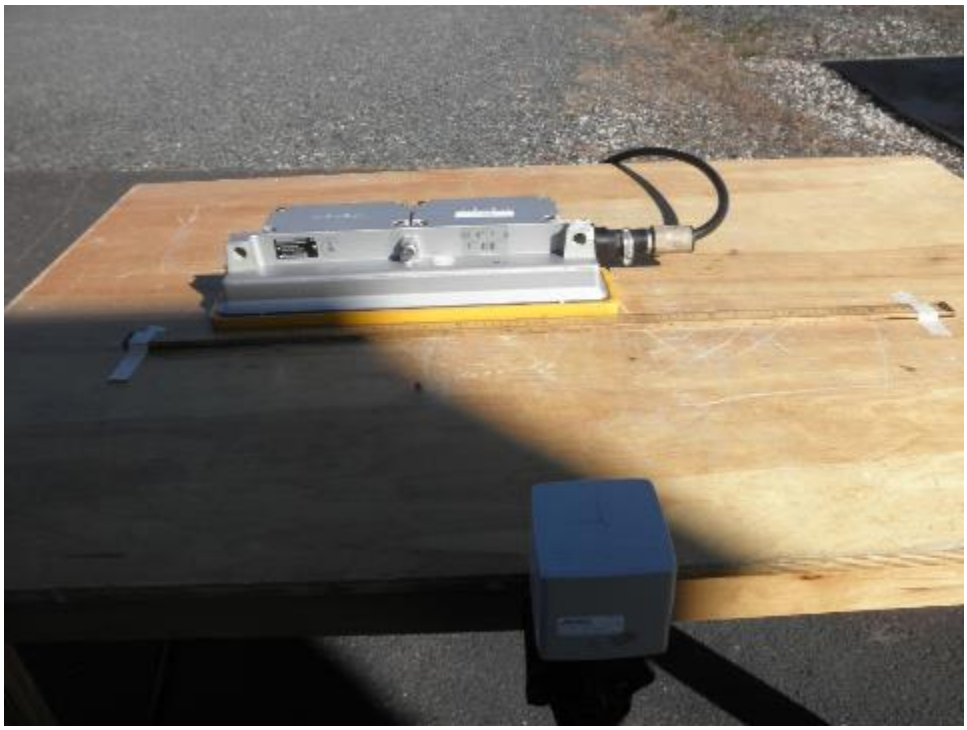


Side 1, Position 4, 45 cm

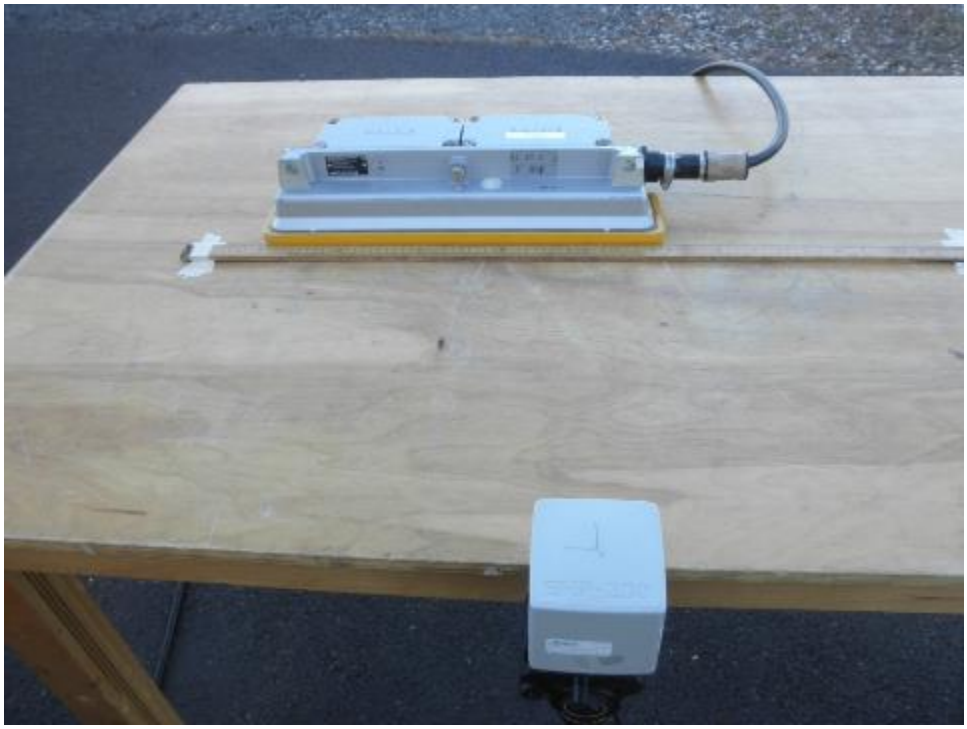


Side 1, Position 5, 20 cm

Test Photographs
RF Exposure

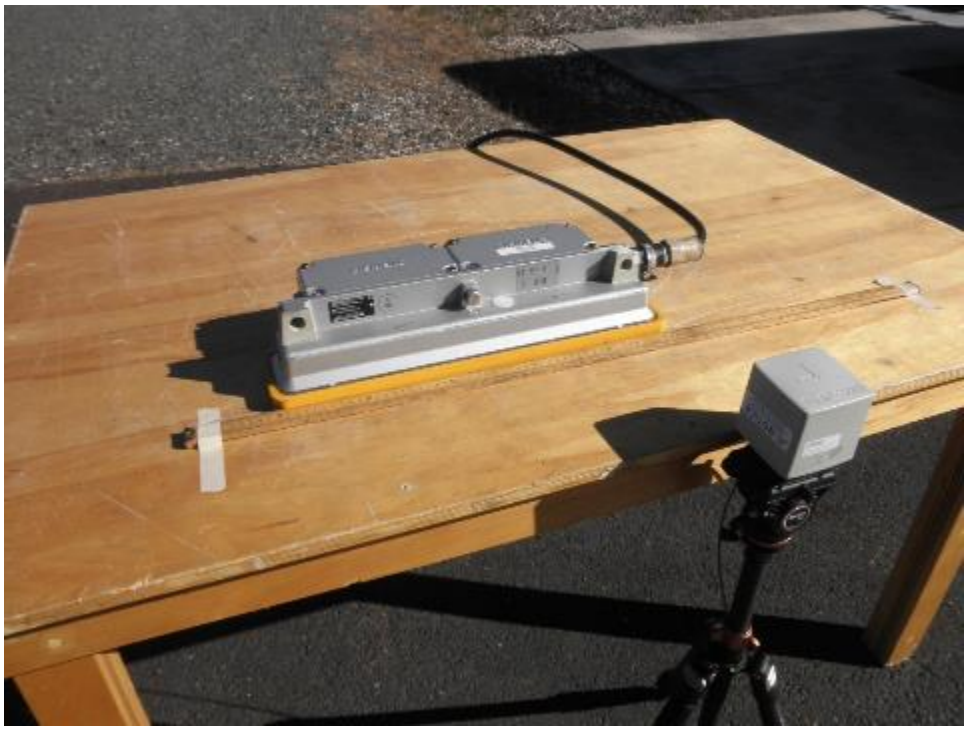


Side 1, Position 5, 40 cm

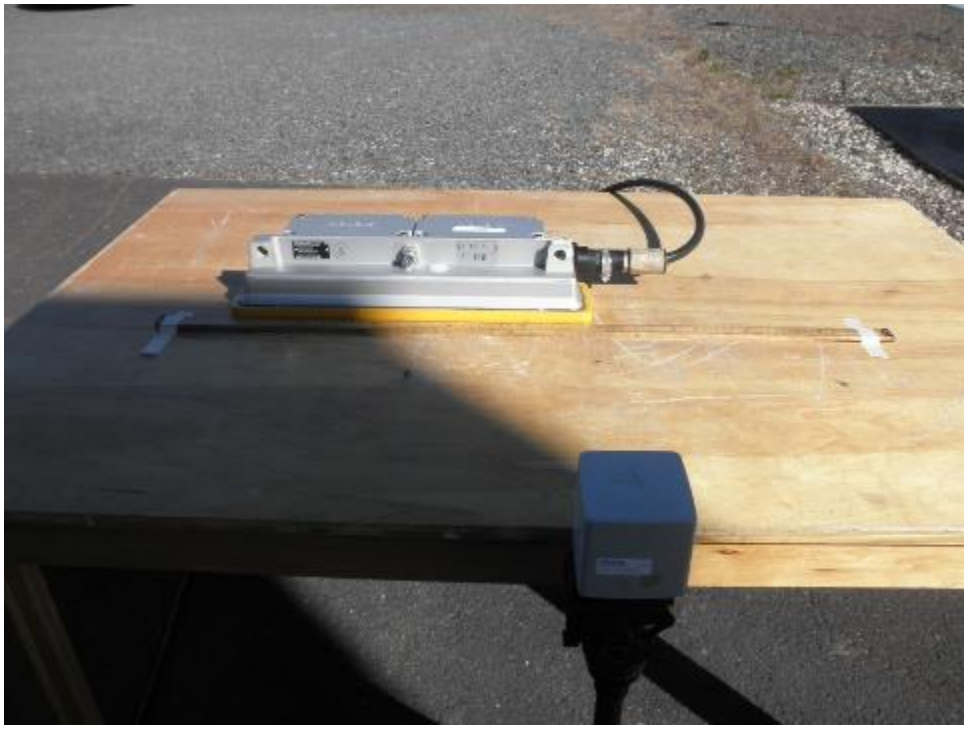


Side 1, Position 5, 45 cm

Test Photographs
RF Exposure



Side 1, Position 6, 20 cm



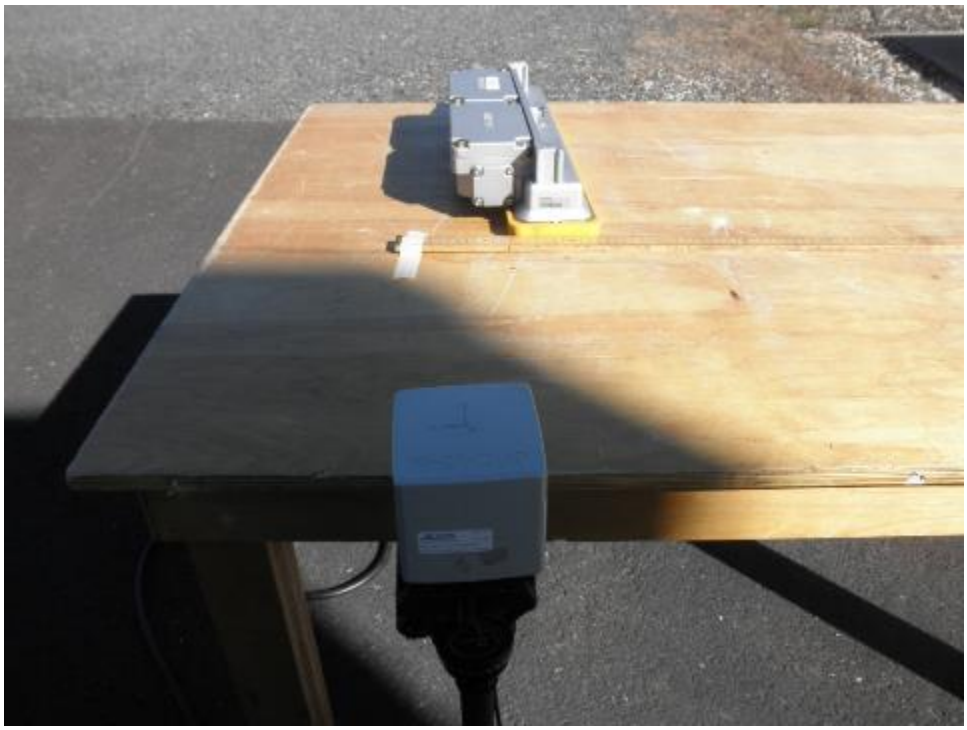
Side 1, Position 6, 40 cm

Test Photographs
RF Exposure

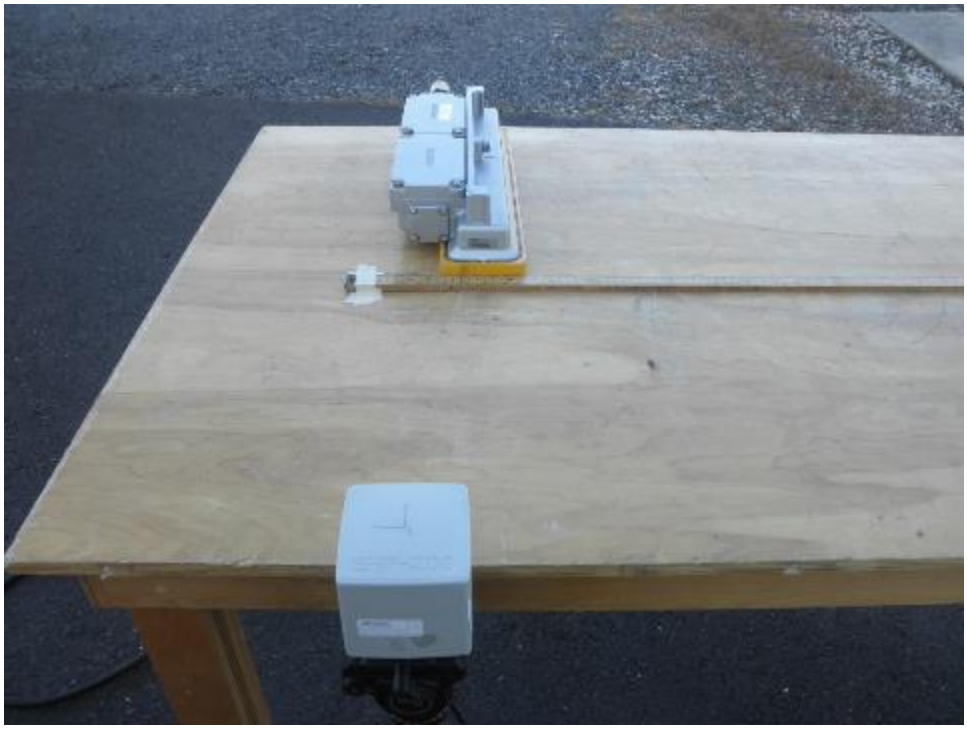
Side 1, Position 6, 45 cm

Side 2, Position 1, 20 cm

Test Photographs
RF Exposure



Side 2, Position 1, 40 cm



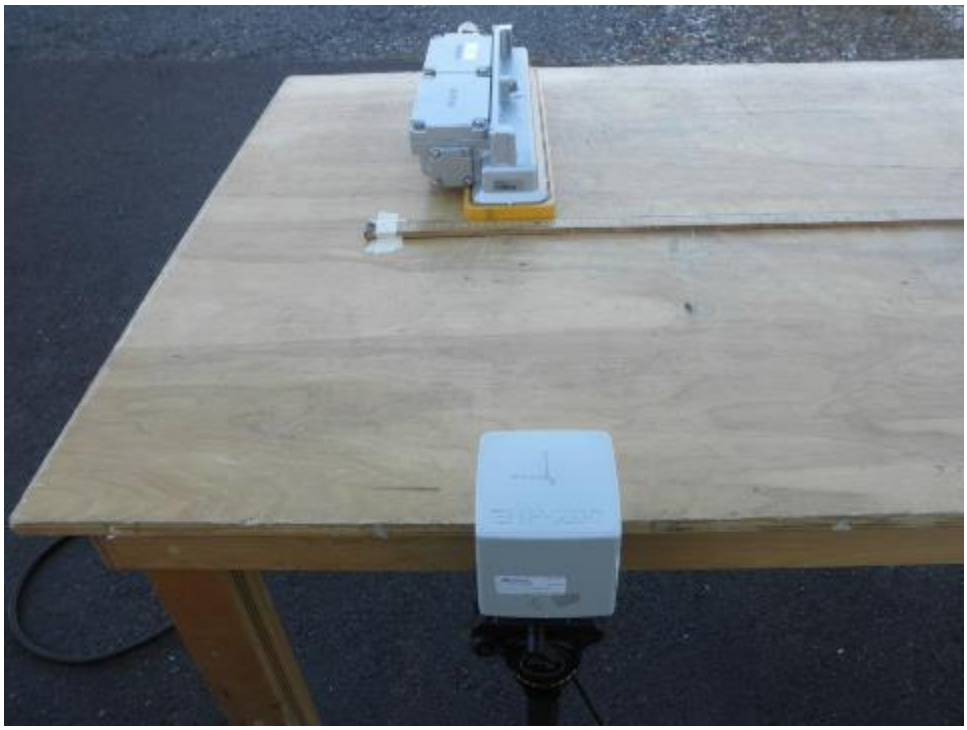
Side 2, Position 1, 45 cm

Test Photographs
RF Exposure

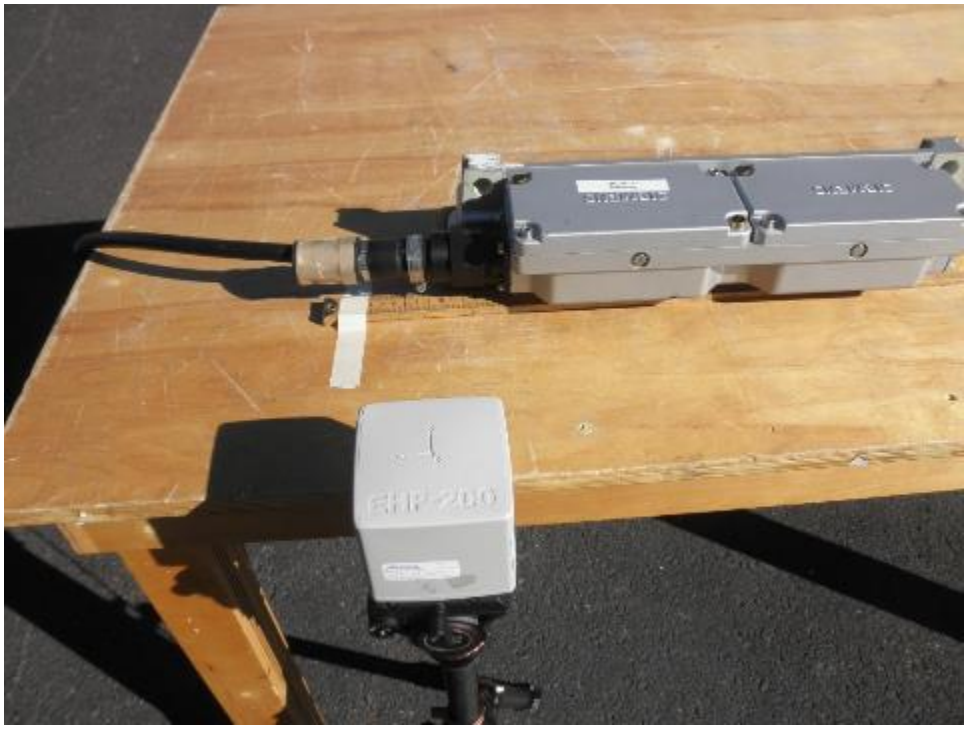
Side 2, Position 2, 20 cm

Side 2, Position 2, 40 cm

Test Photographs
RF Exposure



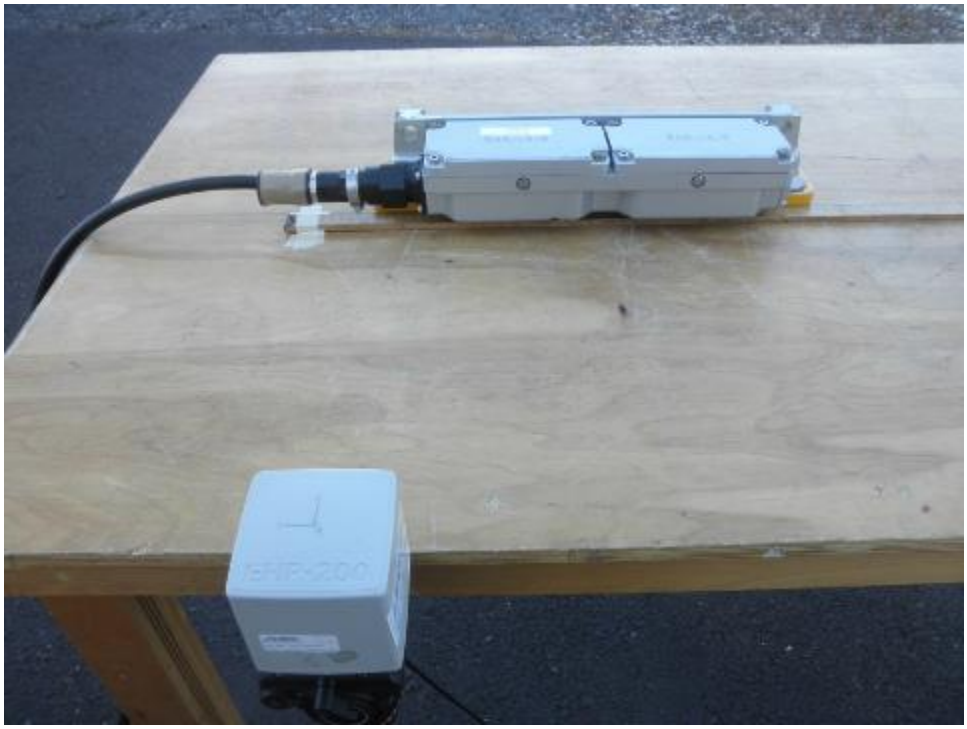
Side 2, Position 2, 45 cm



Side 3, Position 1, 20 cm

Test Photographs
RF Exposure

Side 3, Position 1, 40 cm



Side 3, Position 1, 45 cm

Test Photographs
RF Exposure

Side 3, Position 2, 20 cm

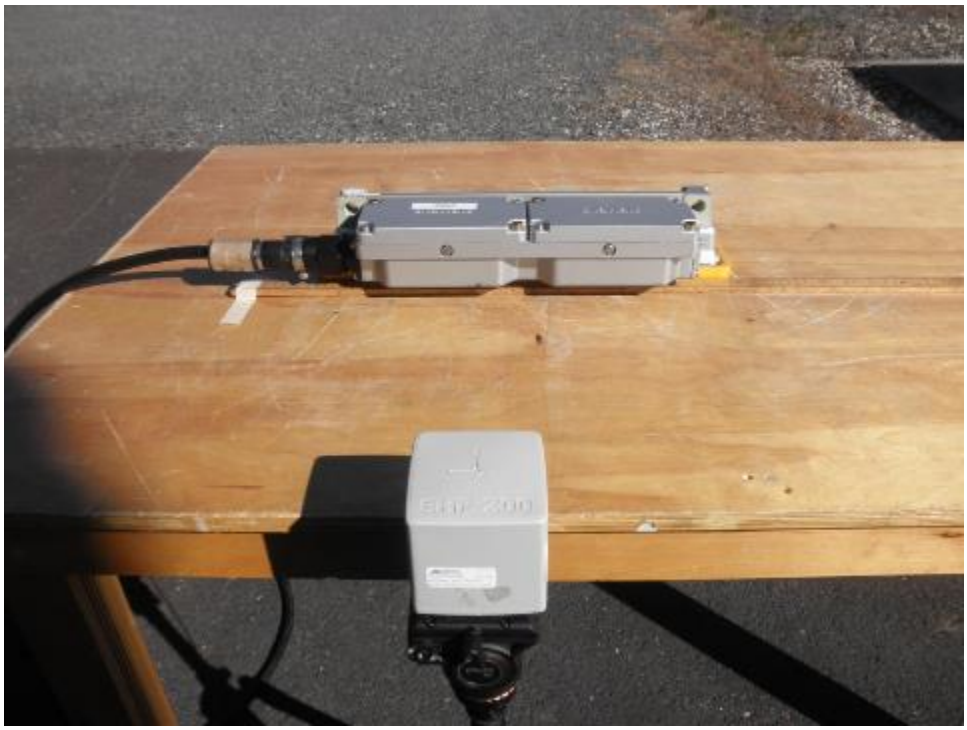
Side 3, Position 2, 40 cm

Test Photographs
RF Exposure

Side 3, Position 2, 45 cm

Side 3, Position 3, 20 cm

Test Photographs
RF Exposure



Side 3, Position 3, 40 cm

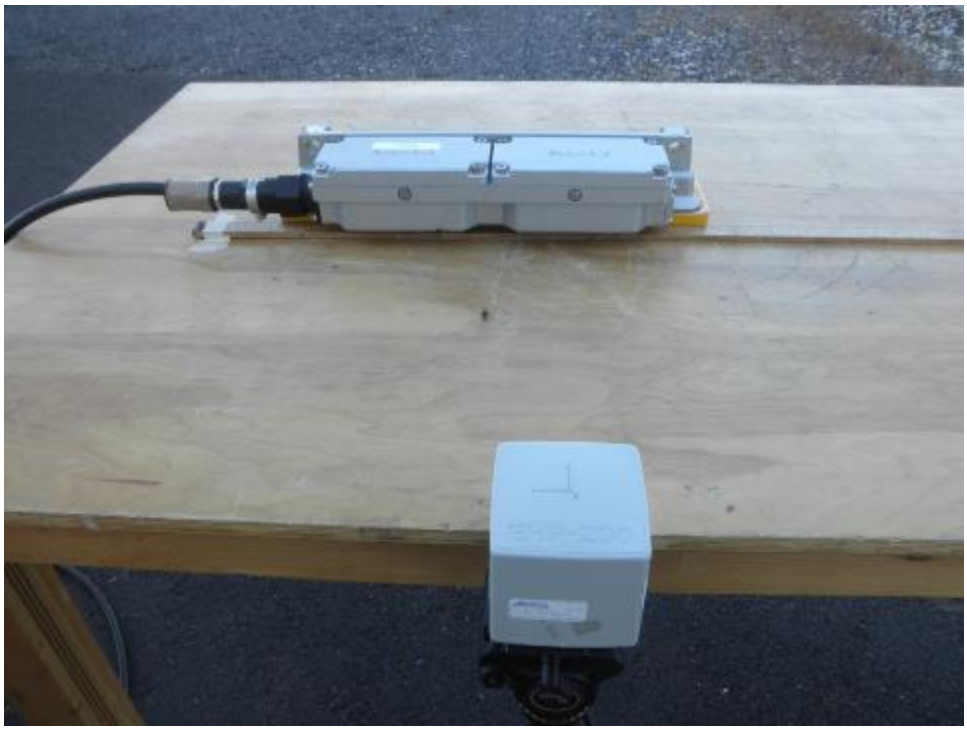
Side 3, Position 3, 45 cm

Test Photographs
RF Exposure

Side 3, Position 4, 20 cm

Side 3, Position 4, 40 cm

Test Photographs
RF Exposure

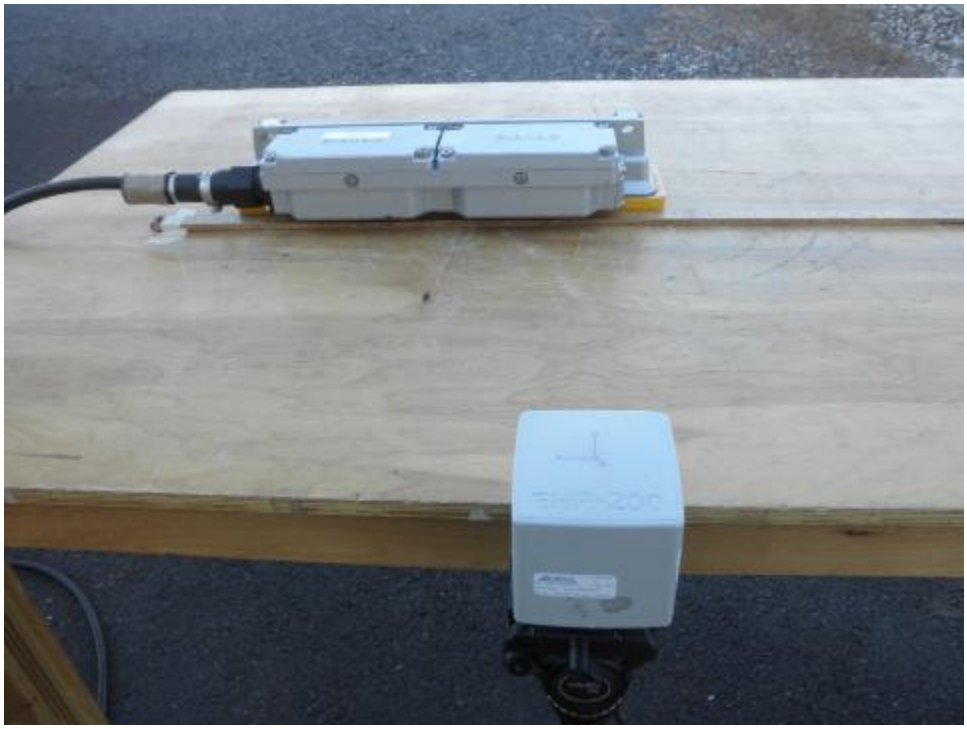


Side 3, Position 4, 45 cm

Side 3, Position 5, 20 cm

Test Photographs
RF Exposure

Side 3, Position 5, 40 cm



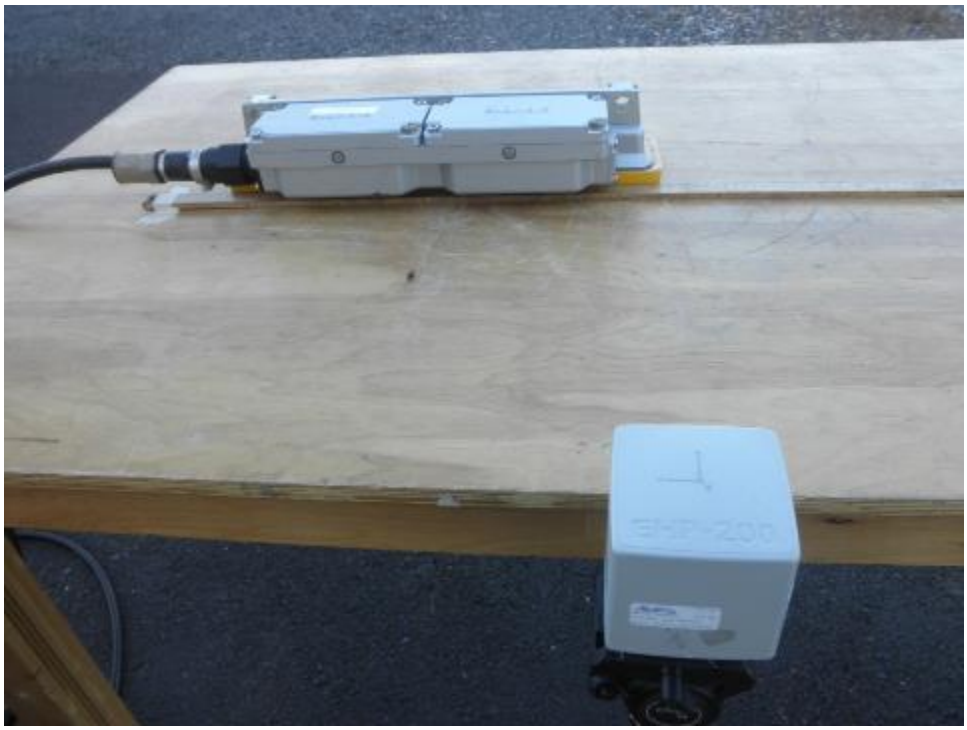
Side 3, Position 5, 45 cm

Test Photographs
RF Exposure

Side 3, Position 6, 20 cm

Side 3, Position 6, 40 cm

Test Photographs
RF Exposure

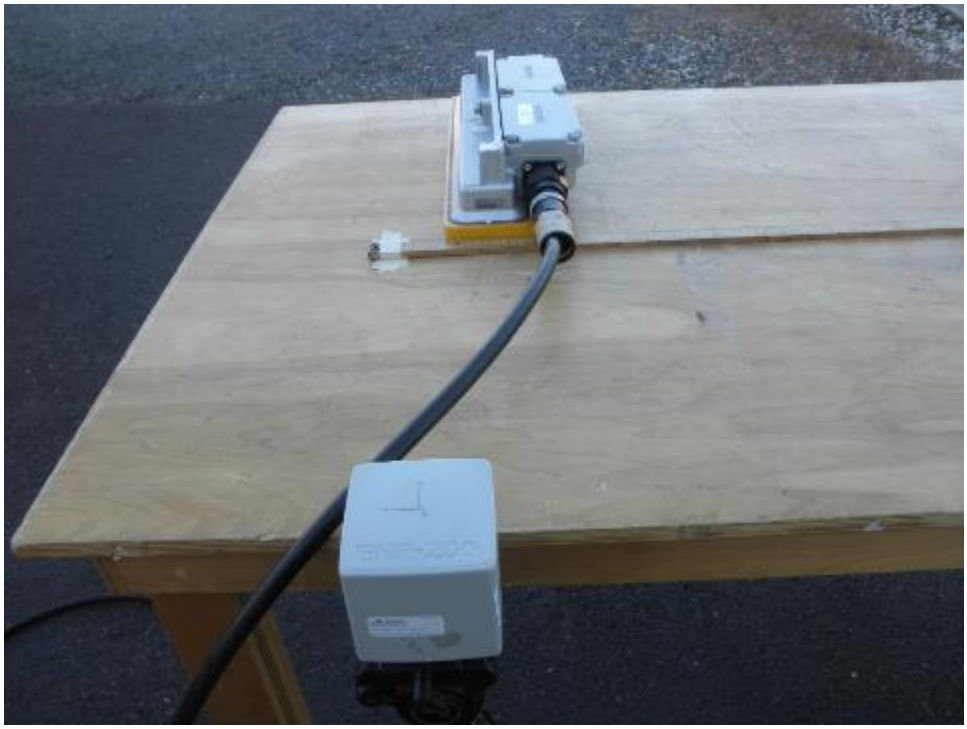


Side 3, Position 6, 45 cm

Side 4, Position 1, 20 cm

Test Photographs
RF Exposure

Side 4, Position 1, 40 cm



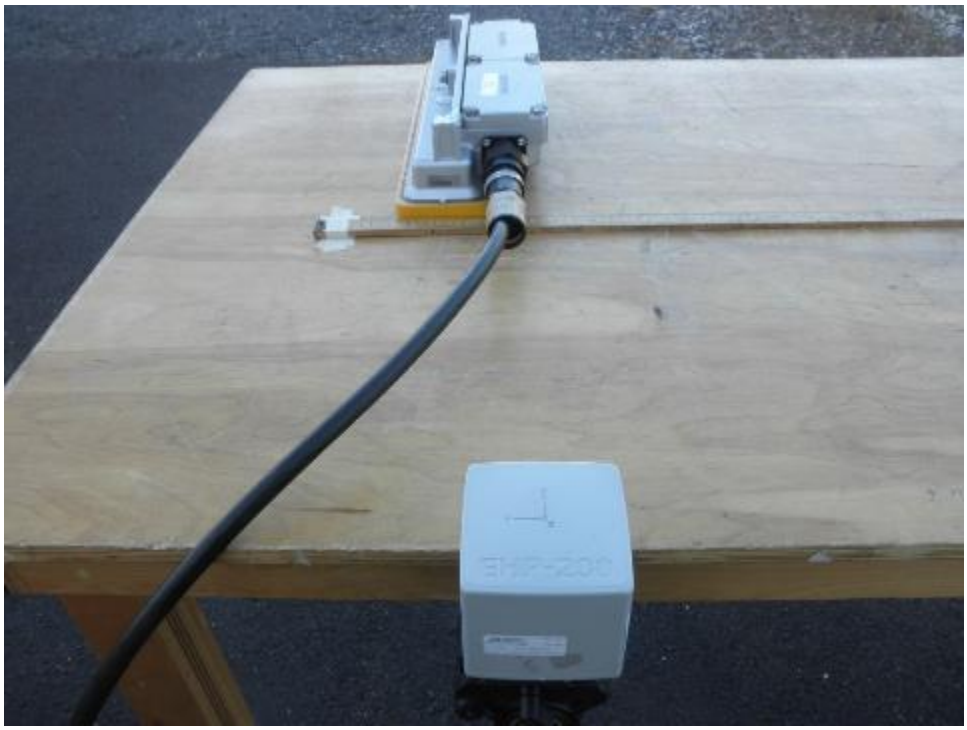
Side 4, Position 1, 45 cm

Test Photographs
RF Exposure

Side 4, Position 2, 20 cm

Side 4, Position 2, 40 cm

Test Photographs
RF Exposure

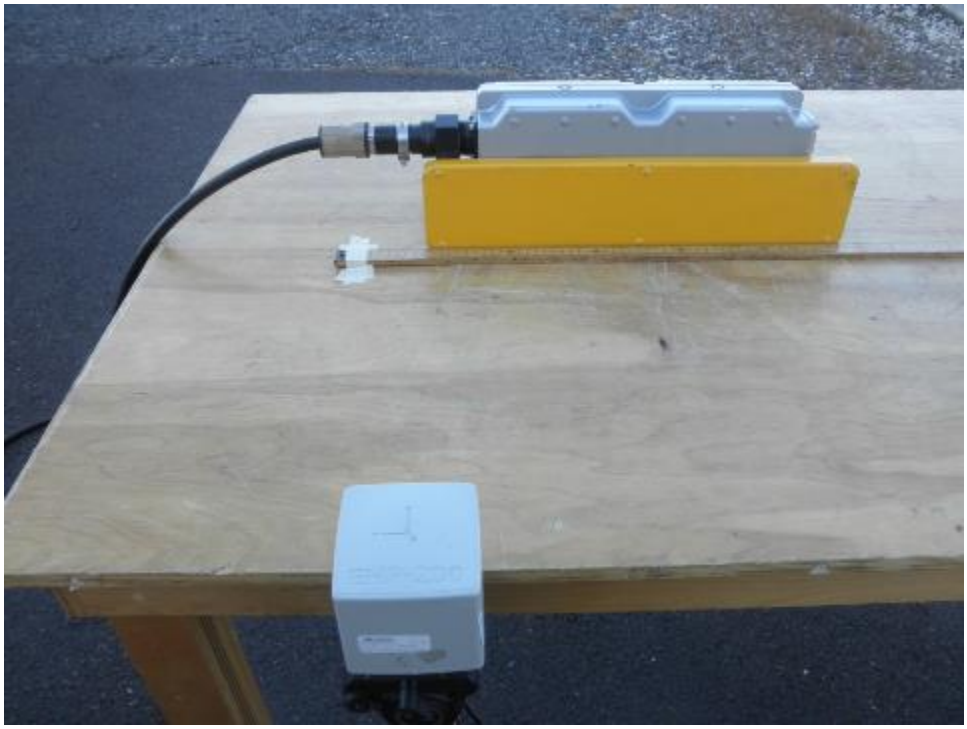


Side 4, Position 2, 45 cm

Side 5, Position 1, 20 cm

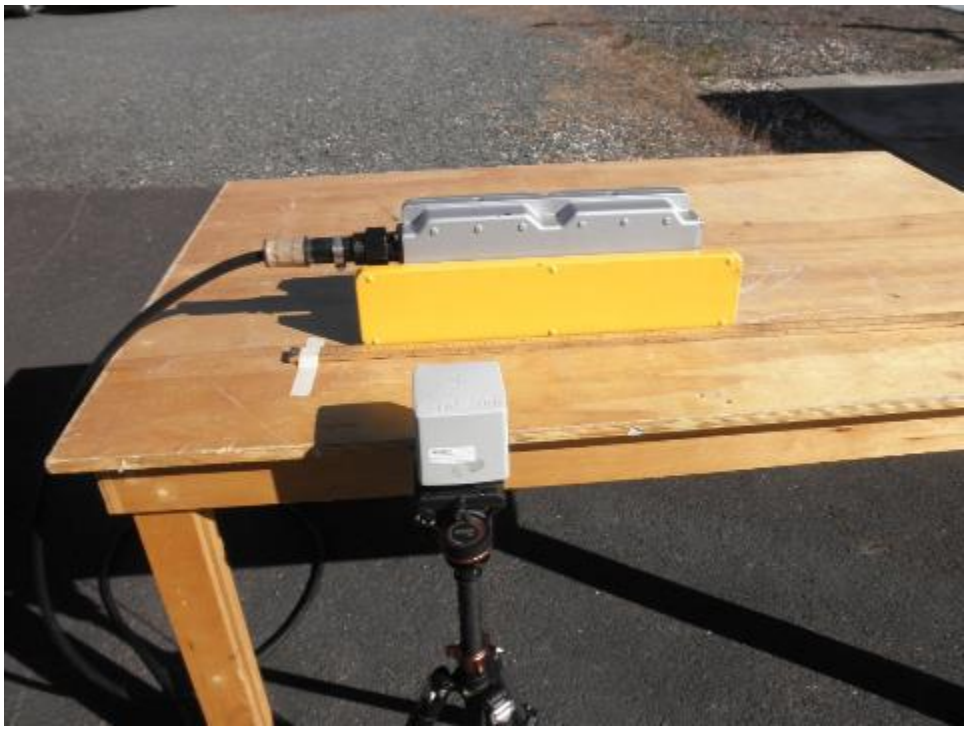
Test Photographs
RF Exposure

Side 5, Position 1, 40 cm



Side 5, Position 1, 45 cm

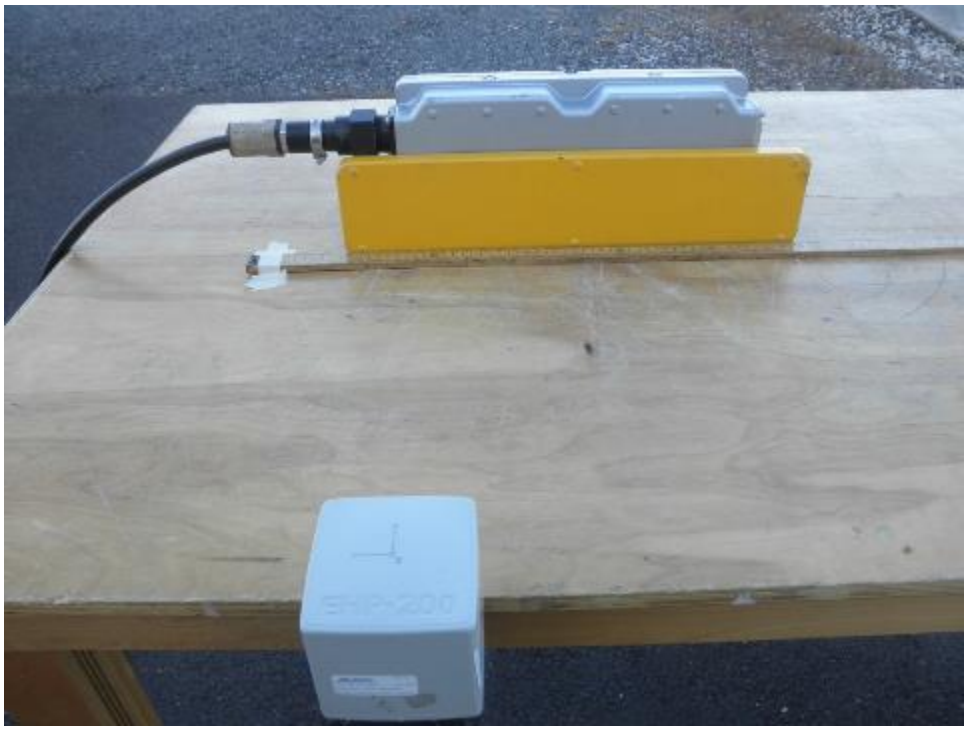
Test Photographs
RF Exposure



Side 5, Position 2, 20 cm

Side 5, Position 2, 40 cm

Test Photographs
RF Exposure

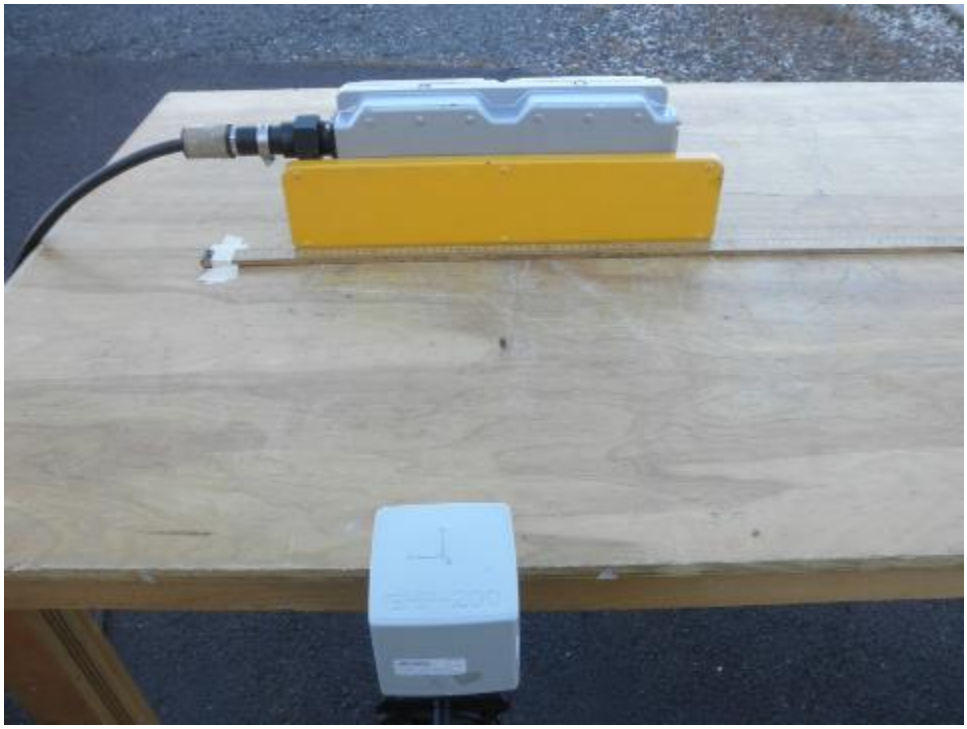


Side 5, Position 2, 45 cm

Side 5, Position 3, 20 cm

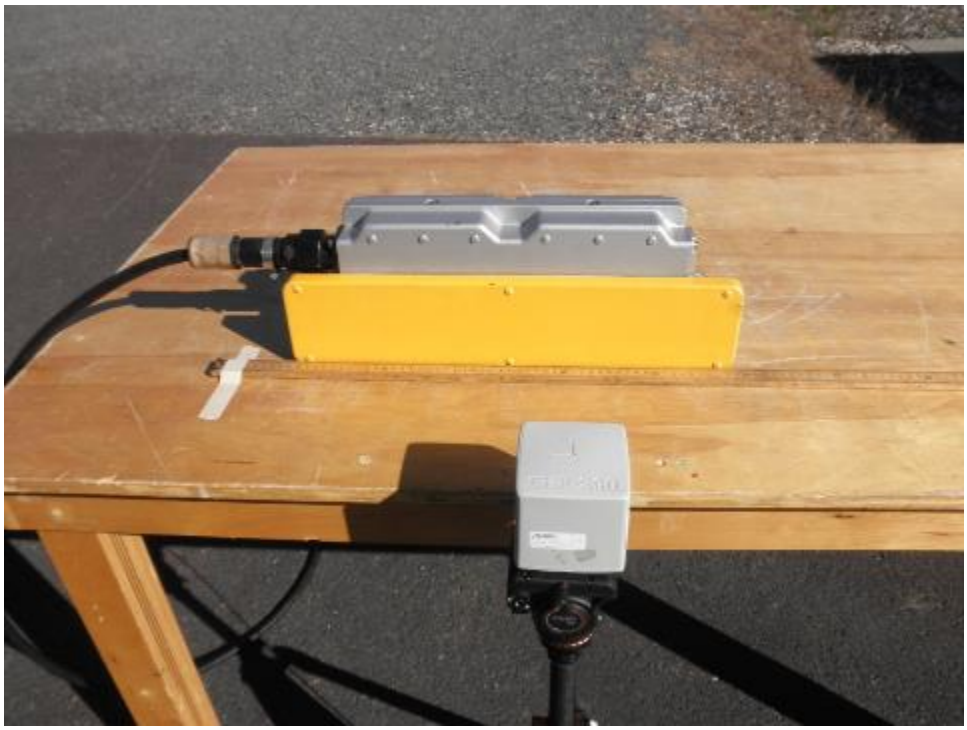
Test Photographs
RF Exposure

Side 5, Position 3, 40 cm



Side 5, Position 3, 45 cm

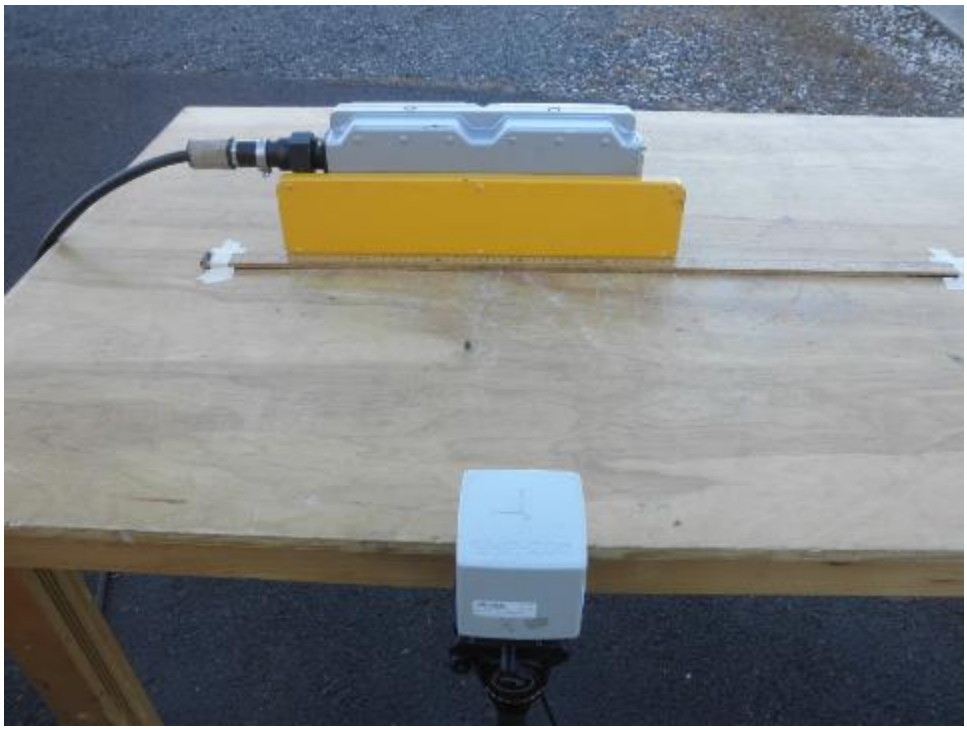
Test Photographs
RF Exposure



Side 5, Position 4, 20 cm

Side 5, Position 4, 40 cm

Test Photographs
RF Exposure

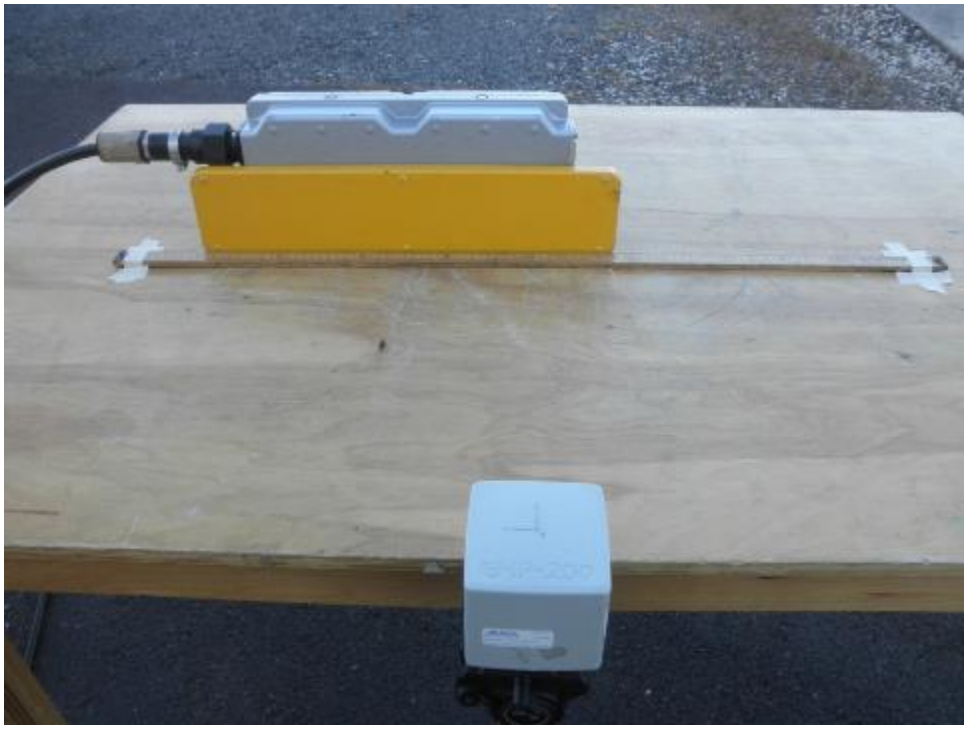


Side 5, Position 4, 45 cm

Side 5, Position 5, 20 cm

Test Photographs
RF Exposure

Side 5, Position 5, 40 cm



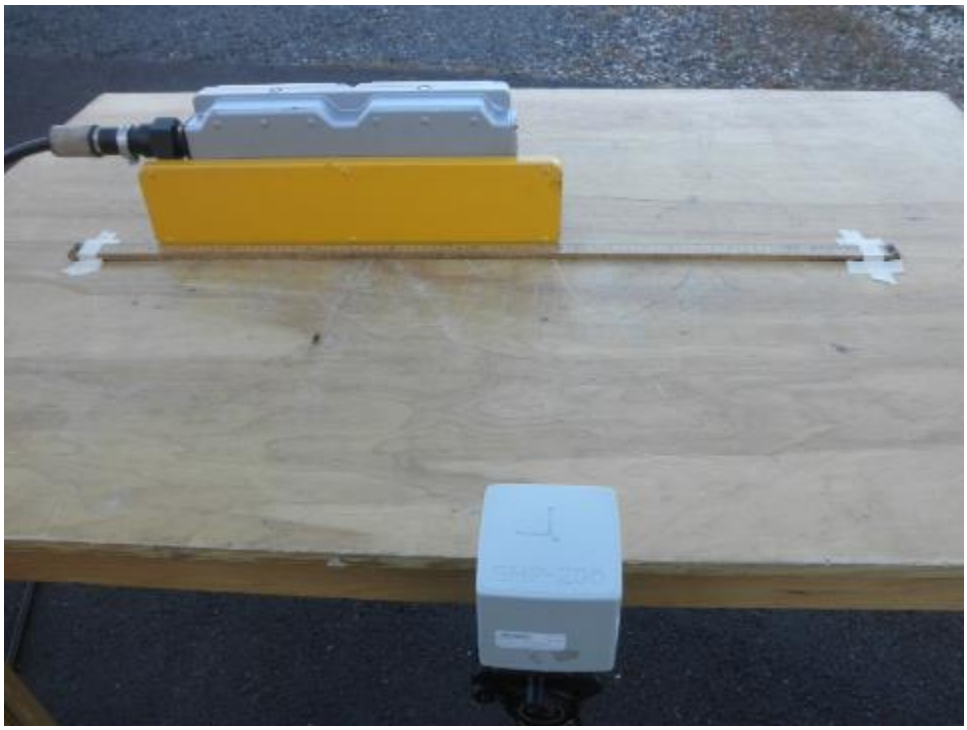
Side 5, Position 5, 45 cm

Test Photographs
RF Exposure

Side 5, Position 6, 20 cm

Side 5, Position 6, 40 cm

Test Photographs
RF Exposure



Side 5, Position 6, 45 cm

TCC with VCC, EUT Orientations and Probe Positions Tested

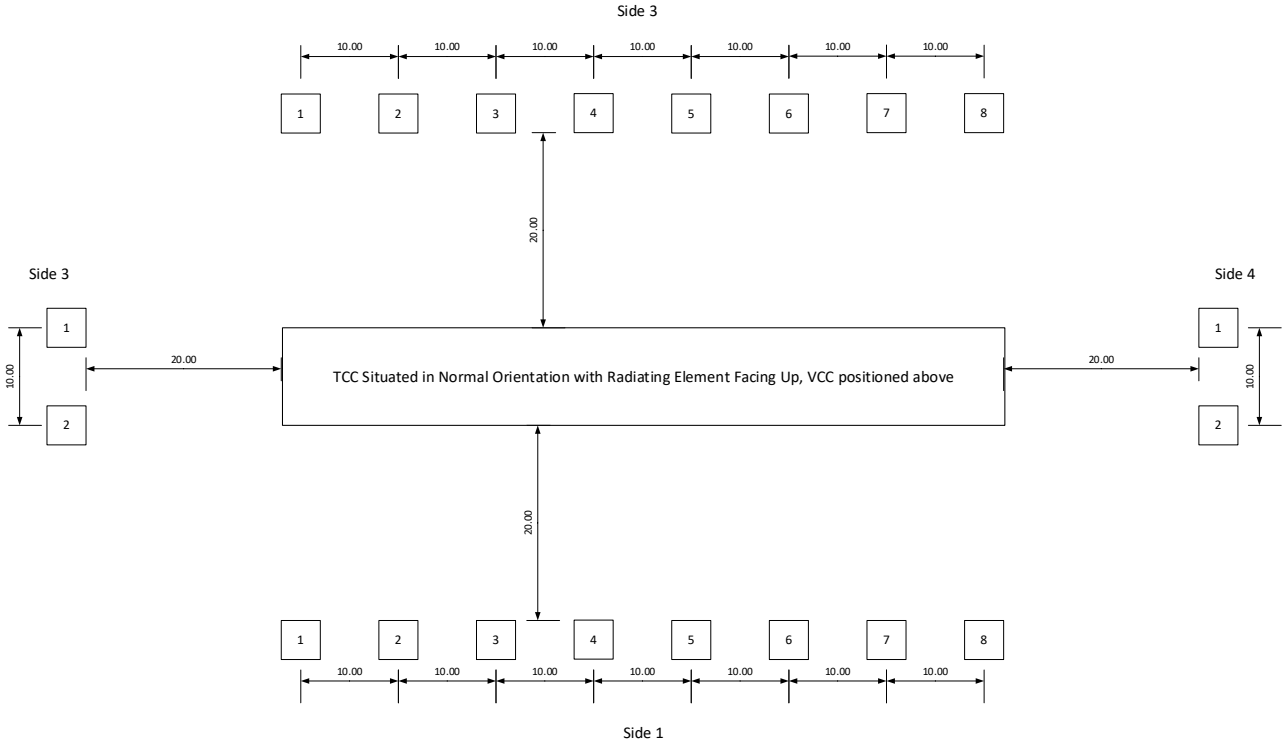
The test sample mounts to the railroad tracks. The Track Coupling Coil (TCC) device is always installed such that the radiating element is facing upwards, towards the train. The TCC is inductively powered from the VCC and is only operational when a train with an installed and operating VCC is present.

Based on the installation of the TCC in use, evaluation of magnetic and electric field strengths was limited to each of the four sides of the Track Coupling Coil.

When evaluating the maximum levels of radiated magnetic and electric fields, the following steps were taken to ensure that the maximum values were recorded:

1) The measurement probe was moved along each surface of the TCC to determine the particular position which provided the highest measured field strength.
2) The height of the measurement probe relative to the TCC was varied to determine the height which produced maximum emissions.
3) At this height, measurements were taken at 10 cm intervals along each surface as shown below:

Figure 3 - Test Positions in Normal Orientation



Test Results Track Coupling Coil with Vehicle Coupling Coil
The frequencies of interest in this device include 50 kHz, 100 kHz and 850 kHz.

50 kHz:
This frequency is outside of the frequency range for which limit levels are specified for electric and magnetic field strength.

Applying the limit for the 0.3 to 1.34 MHz range yields a minimum required separation distance of 20 cm for all positions tested.

Applying the limits of KDB 680106 yields a minimum separation distance of 20 cm for all test locations.

100 kHz:
The Track Coupling Coil does not transmit 100 kHz, but this frequency was evaluated to determine the impact of the TCC on the field levels produced by the VCC. This frequency is outside of the frequency range for which limit levels are specified for electric and magnetic field strength.

Applying the limit for the 0.3 to 1.34 MHz range yields a minimum required separation distance of 30 cm for all positions tested.

850 kHz:
This frequency is within the range for which limit levels are specified for electric and magnetic field strength.

Applying the limit for the 0.3 to 1.34 MHz range yields a minimum required separation distance of 20 cm for all positions tested.

TCC with VCC Equipment List

FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)

EN	Manufacturer	Model No.	Description	Serial No.	Due Date
8322	ETS / EMCO	6512	ANTENNA, LOOP, 10 KHz - 30 MHz	00060485	4/30/2024
8619	OMEGA	OM-73	HYGROMETER, -20 to 70 deg. C, 0-99% RH	051442102C	4/30/2024
8749	RIGOL	DSA832E	ANALYZER, SPECTRUM, 9 kHz - 3.2 GHz	DSA8G201800133	5/31/2024
R849	NARDA	EHP-200A	ANALYZER, FIELD STRENGTH, 9 kHz - 30 MHz	180ZX00616	11/25/2023

FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)
TCC with VCC Test Data

MPE CALCULATION DATA SHEET	
Test Specification:	FCC Part 1.1310, Radiofrequency radiation exposure limits
Method:	FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)
Limit:	FCC Part 1.1310 (e)(1), Table 1, Section(ii), Limits for General Population / Uncontrolled Exposure
Job Number/Customer:	R-3578P-2 / Siemens Mobility
Test Sample:	Track Coupling Coil
Model Number:	S25451-C401-B242 (Card File); S25442-M1-A1-15.K (TCC); S25441-M3-A3-01.H (VCC)
Serial Number:	A2V00002744893 (Card File); 6101020657-007 (TCC); 6101125087-001 (VCC)
Operating Mode:	Track Coupling Coil with Vehicle Coupling Coil Transmitting at 50 kHz
Technician:	M. Nowak
Date(s):	10/31/2023

EUT Orientation	Magnetic Field Strength	Magnetic Limit from 300 kHz	Magnetic Limit from KDB 680106	Electric Field Strength	Electric Limit from 300 kHz	Electric Limit from KDB 680106
	A/m	A/m	A/m	V/m	V/m	V/m
Measured At	**20 cm**			**20 cm**		
Side 1, Position 1	0.48	1.63	90	3.64	614	83
Side 1, Position 2	0.56	|	|	4.39	|	|
Side 1, Position 3	0.58	|	|	4.04	|	|
Side 1, Position 4	0.69	|	|	5.68	|	|
Side 1, Position 5	0.66	|	|	5.53	|	|
Side 1, Position 6	0.73	|	|	4.91	|	|
Side 1, Position 7	0.53	|	|	3.96	|	|
Side 1, Position 8	0.52	|	|	3.15	|	|
		|	|		|	|
Side 2, Position 1	0.37	|	|	2.35	|	|
Side 2, Position 2	0.36	|	|	2.41	|	|
		|	|		|	|
Side 3, Position 1	0.33	|	|	3.47	|	|
Side 3, Position 2	0.42	|	|	4.22	|	|
Side 3, Position 3	0.52	|	|	4.65	|	|
Side 3, Position 4	0.51	|	|	5.14	|	|
Side 3, Position 5	0.49	|	|	4.67	|	|
Side 3, Position 6	0.42	|	|	4.77	|	|
Side 3, Position 7	0.35	|	|	3.45	|	|
Side 3, Position 8	0.36	|	|	2.90	|	|
		|	|		|	|
Side 4, Position 1	0.35	|	|	2.31	|	|
Side 4, Position 2	0.32	1.63	90	2.59	614	83

MPE CALCULATION DATA SHEET	
Test Specification:	FCC Part 1.1310, Radiofrequency radiation exposure limits
Method:	FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)
Limit:	FCC Part 1.1310 (e)(1), Table 1, Section(ii), Limits for General Population / Uncontrolled Exposure
Job Number/Customer:	R-3578P-2 / Siemens Mobility
Test Sample:	Track Coupling Coil
Model Number:	S25451-C401-B242 (Card File); S25442-M1-A1-15.K (TCC); S25441-M3-A3-01.H (VCC)
Serial Number:	A2V00002744893 (Card File); 6101020657-007 (TCC); 6101125087-001 (VCC)
Operating Mode:	Track Coupling Coil with Vehicle Coupling Coil Transmitting at 100 kHz
Technician:	M. Nowak
Date(s):	10/31/2023

EUT Orientation	**Magnetic Field Strength**		**Magnetic Limit**	**Electric Field Strength**	**Electric Limit**
	A/m		**A/m**	**V/m**	**V/m**
Measured At	**20 cm**	**30 cm**		**20 cm**	
Side 1, Position 1	1.68	0.91	1.63	37.54	614
Side 1, Position 2	2.03	1.06		49.28	
Side 1, Position 3	2.30	1.18		49.74	
Side 1, Position 4	2.36	1.32		48.21	
Side 1, Position 5	2.37	1.30		47.67	
Side 1, Position 6	1.91	1.10		43.24	
Side 1, Position 7	1.56	0.94		36.52	
Side 1, Position 8	1.52	0.85		28.03	
Side 2, Position 1	1.10	0.64		28.96	
Side 2, Position 2	1.25	0.76		26.20	
Side 3, Position 1	1.13	0.69		33.45	
Side 3, Position 2	1.26	0.83		48.32	
Side 3, Position 3	1.71	0.97		57.36	
Side 3, Position 4	1.82	0.99		57.32	
Side 3, Position 5	1.76	0.92		57.71	
Side 3, Position 6	1.35	0.88		51.74	
Side 3, Position 7	1.12	0.69		42.39	
Side 3, Position 8	1.02	0.56		34.65	
Side 4, Position 1	1.08	0.72		11.71	
Side 4, Position 2	1.20	0.74	1.63	14.08	614

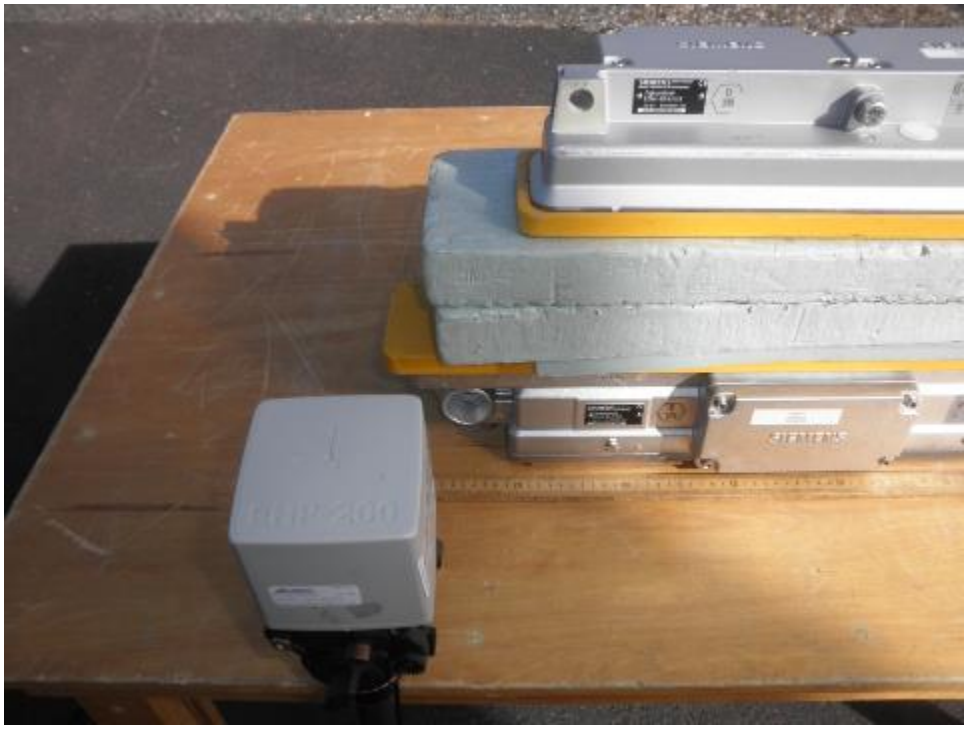
MPE CALCULATION DATA SHEET	
Test Specification:	FCC Part 1.1310, Radiofrequency radiation exposure limits
Method:	FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)
Limit:	FCC Part 1.1310 (e)(1), Table 1, Section(ii), Limits for General Population / Uncontrolled Exposure
Job Number/Customer:	R-3578P-2 / Siemens Mobility
Test Sample:	Track Coupling Coil
Model Number:	S25451-C401-B242 (Card File); S25442-M1-A1-15.K (TCC); S25441-M3-A3-01.H (VCC)
Serial Number:	A2V00002744893 (Card File); 6101020657-007 (TCC); 6101125087-001 (VCC)
Operating Mode:	Track Coupling Coil with Vehicle Coupling Coil Transmitting at 850 kHz
Technician:	M. Nowak
Date(s):	10/31/2023

EUT Orientation	Magnetic Field Strength	Magnetic Limit	Electric Field Strength	Electric Limit
	A/m	A/m	V/m	V/m
Measured At	**20 cm**		**20 cm**	
Side 1, Position 1	0.1	1.63	2.62	614
Side 1, Position 2	0.1		2.99	
Side 1, Position 3	0.1		3.17	
Side 1, Position 4	0.1		3.30	
Side 1, Position 5	0.1		3.26	
Side 1, Position 6	0.1		2.88	
Side 1, Position 7	0.1		2.43	
Side 1, Position 8	0.1		2.04	
Side 2, Position 1	0.1		1.56	
Side 2, Position 2	0.1		1.77	
Side 3, Position 1	0.1		1.59	
Side 3, Position 2	0.1		2.07	
Side 3, Position 3	0.1		2.73	
Side 3, Position 4	0.1		2.63	
Side 3, Position 5	0.1		2.58	
Side 3, Position 6	0.1		2.42	
Side 3, Position 7	0.1		2.28	
Side 3, Position 8	0.1		1.83	
Side 4, Position 1	0.1		1.02	
Side 4, Position 2	0.1	1.63	1.01	614

TCC with VCC Test Photographs
RF Exposure

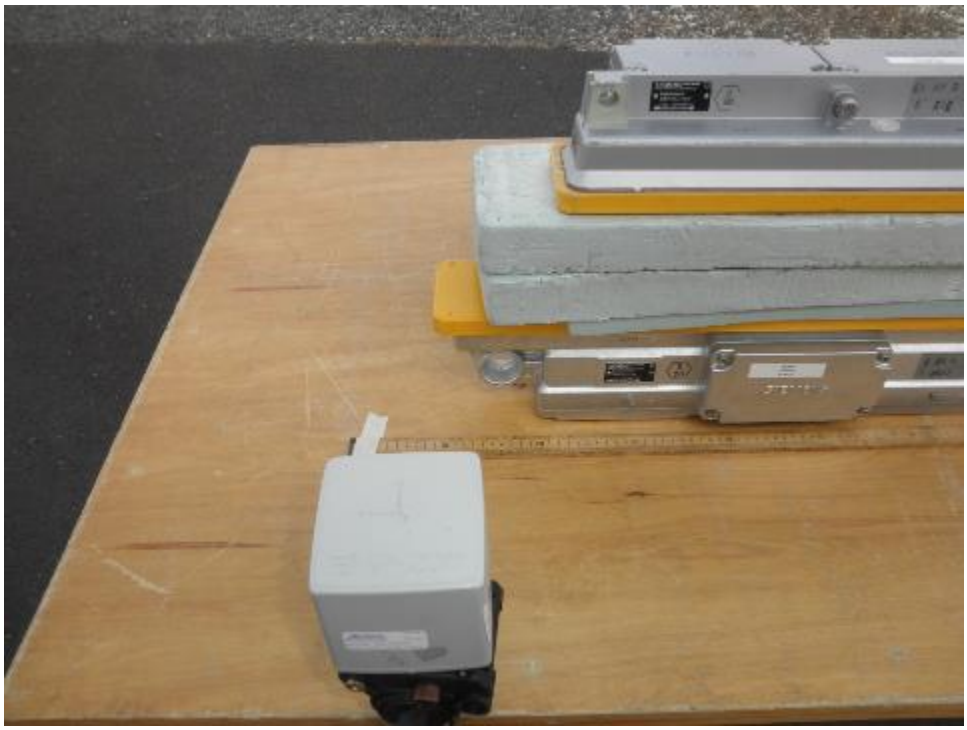
Test Photographs
RF Exposure

Test Setup

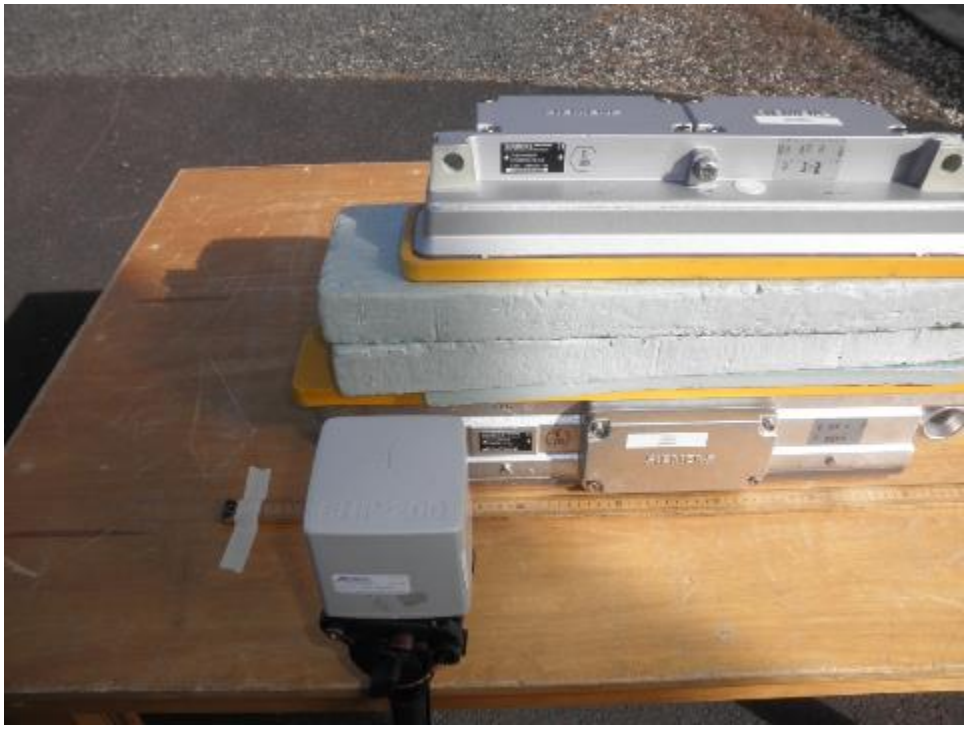


Side 1, Position 1, 20 cm

Test Photographs
RF Exposure

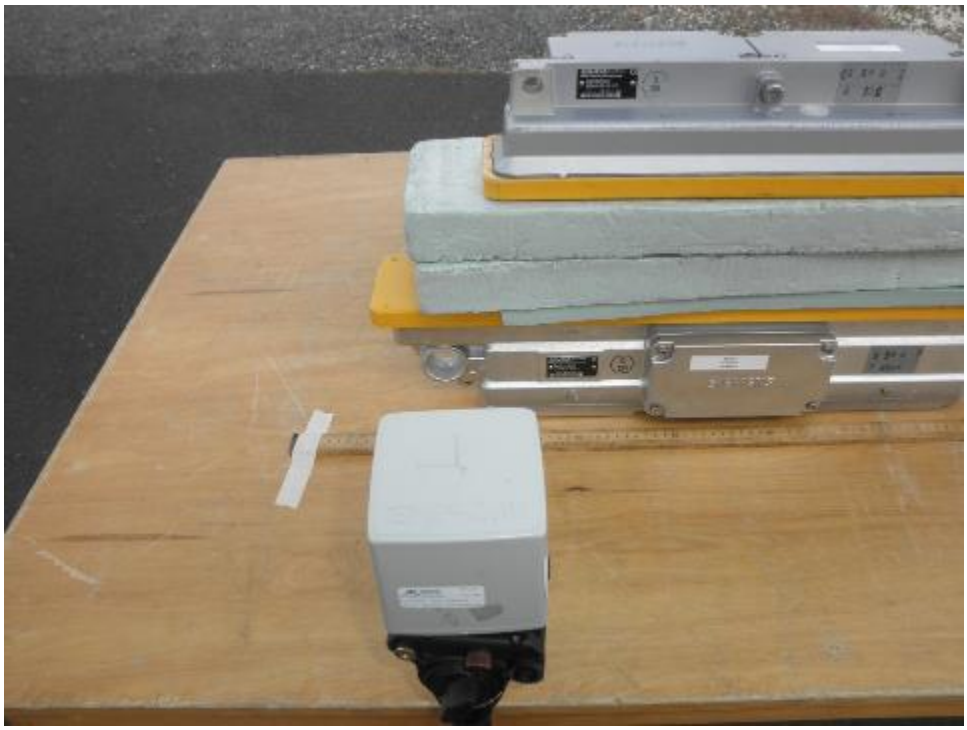


Side 1, Position 1, 30 cm

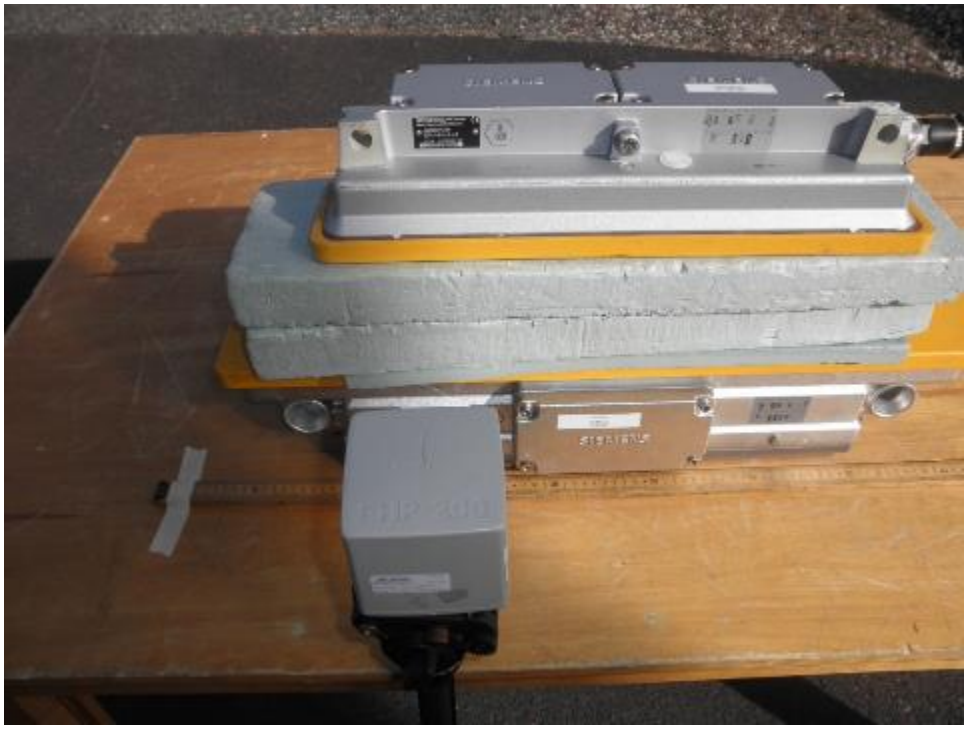


Side 1, Position 2, 20 cm

Test Photographs
RF Exposure



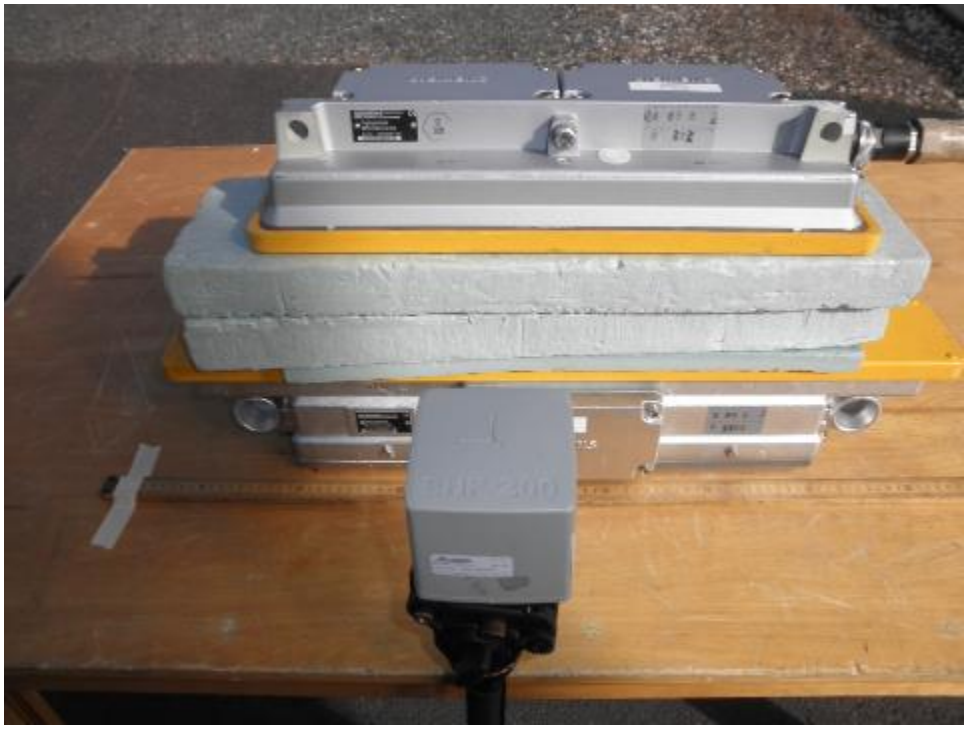
Side 1, Position 2, 30 cm



Side 1, Position 3, 20 cm

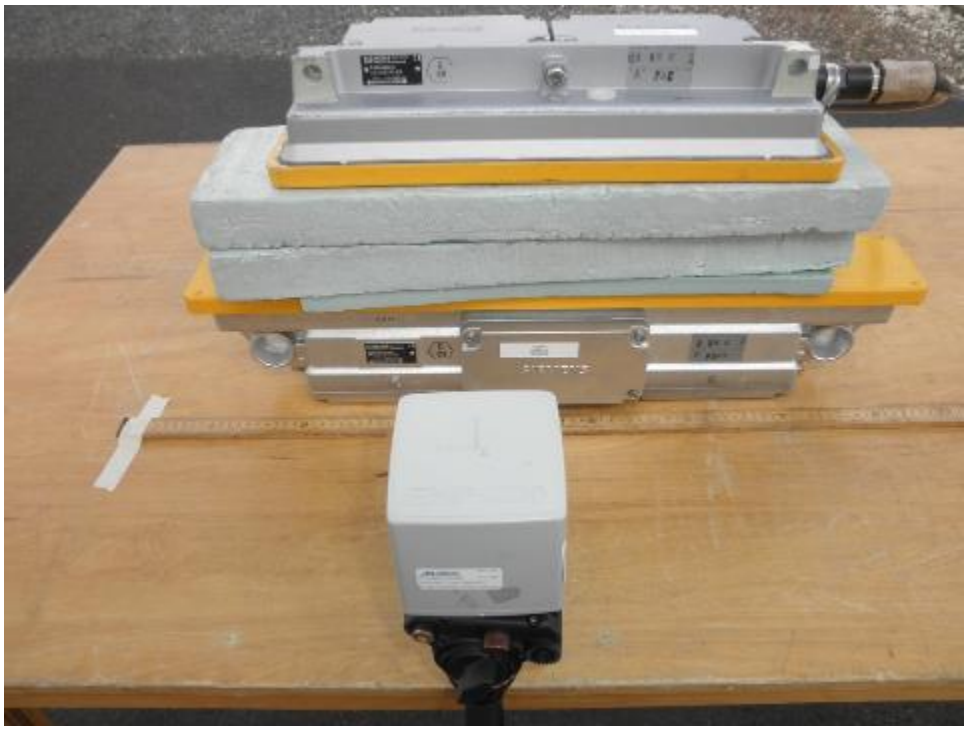
Test Photographs
RF Exposure

Side 1, Position 3, 30 cm

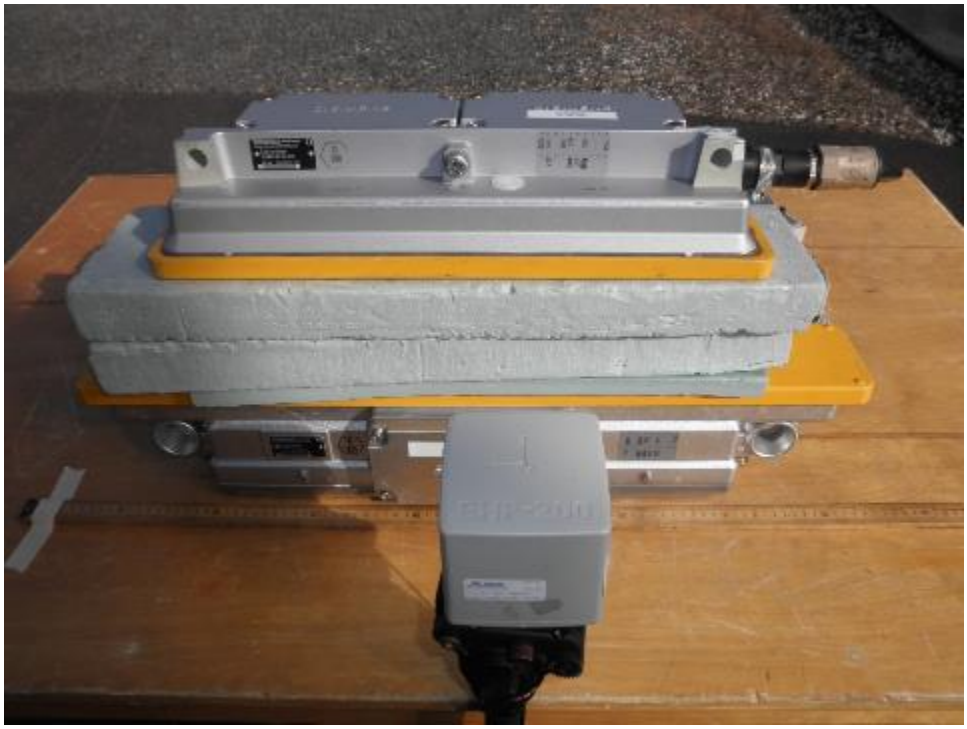


Side 1, Position 4, 20 cm

Test Photographs
RF Exposure

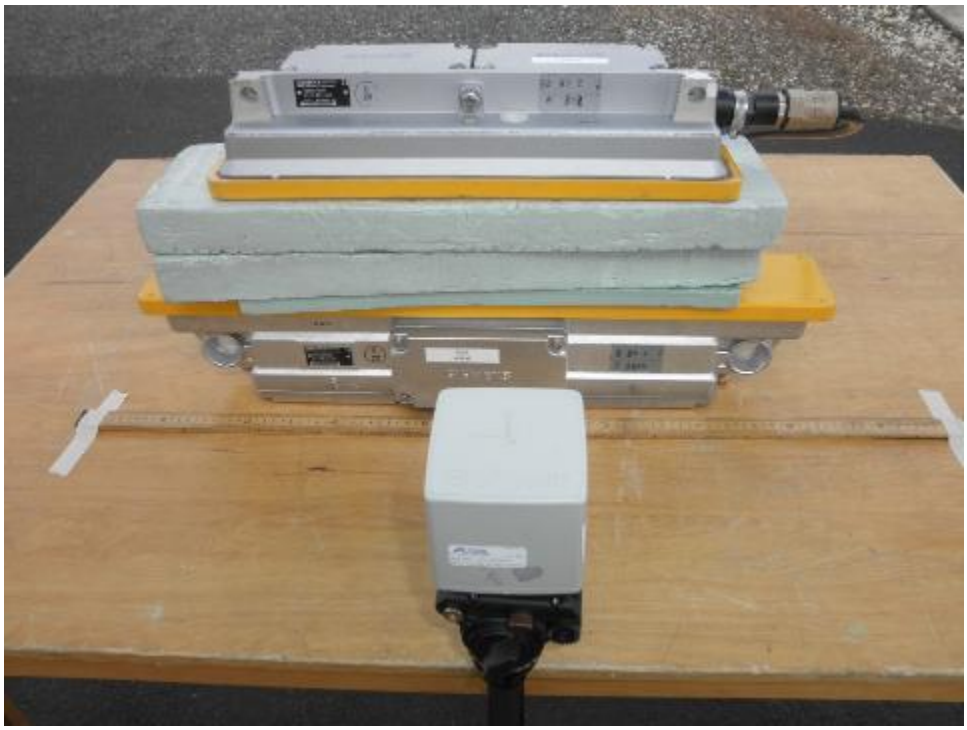


Side 1, Position 4, 30 cm

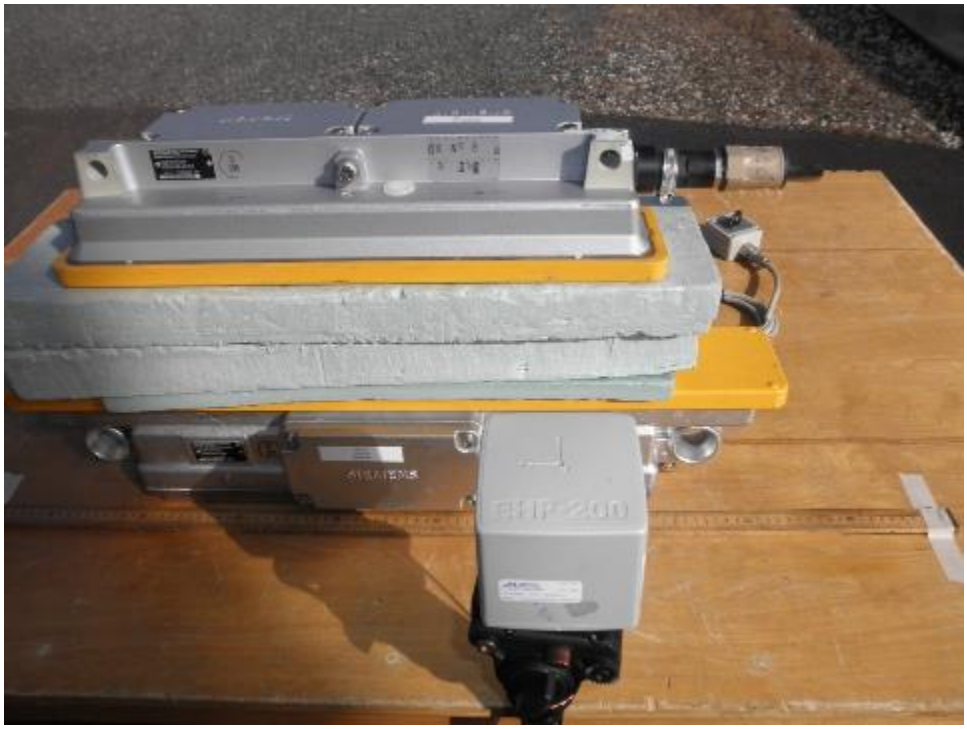


Side 1, Position 5, 20 cm

Test Photographs
RF Exposure

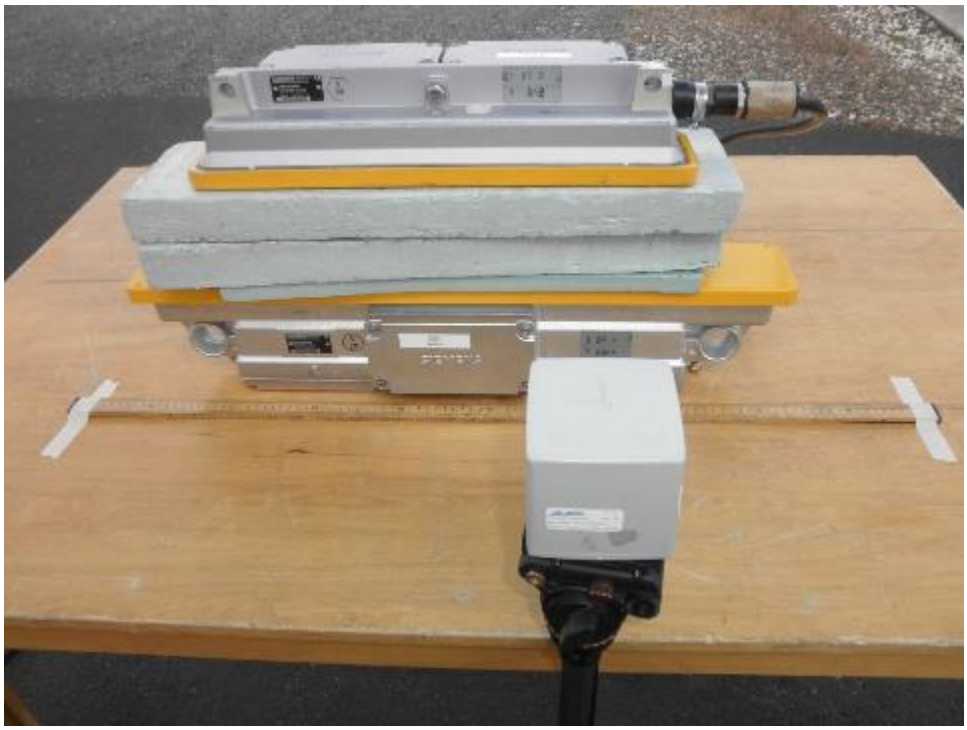


Side 1, Position 5, 30 cm

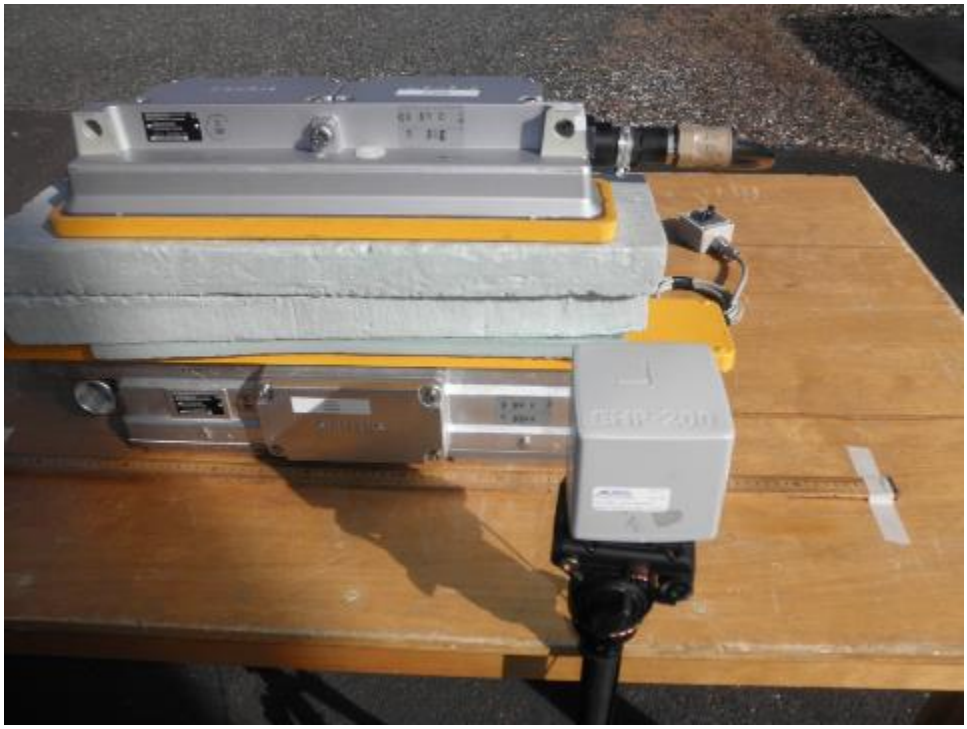


Side 1, Position 6, 20 cm

Test Photographs
RF Exposure

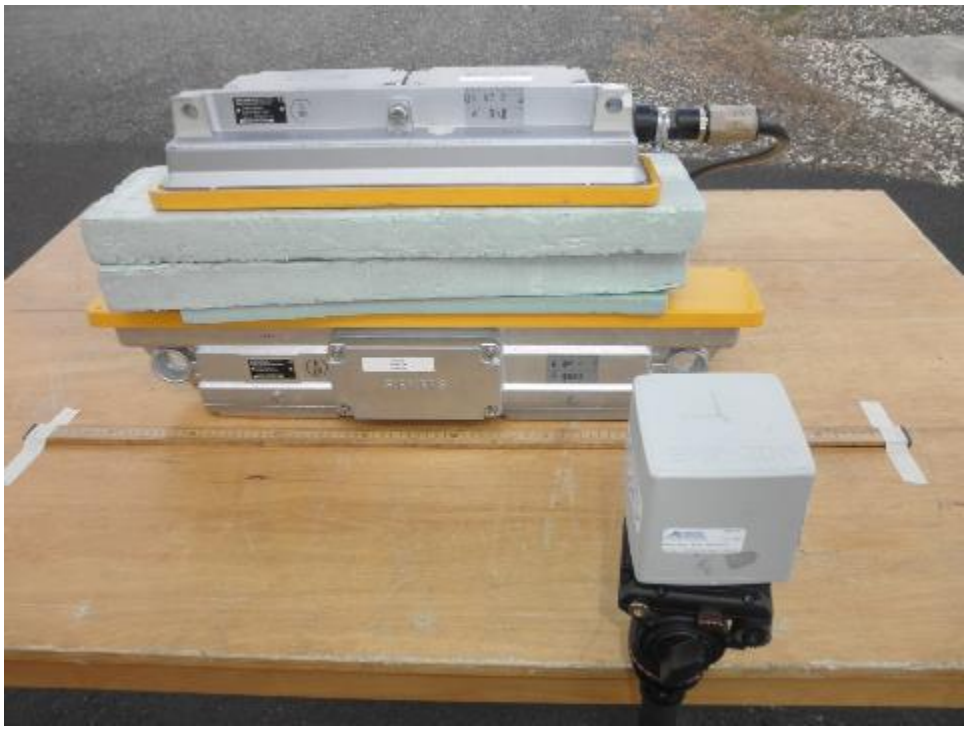


Side 1, Position 6, 30 cm

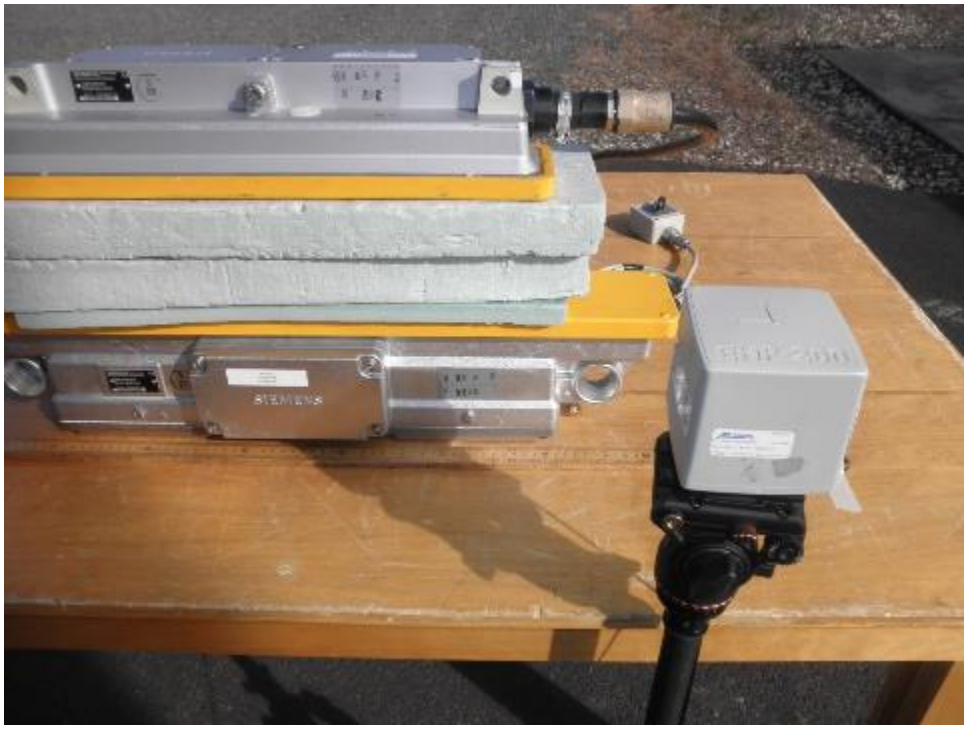


Side 1, Position 7, 20 cm

Test Photographs
RF Exposure

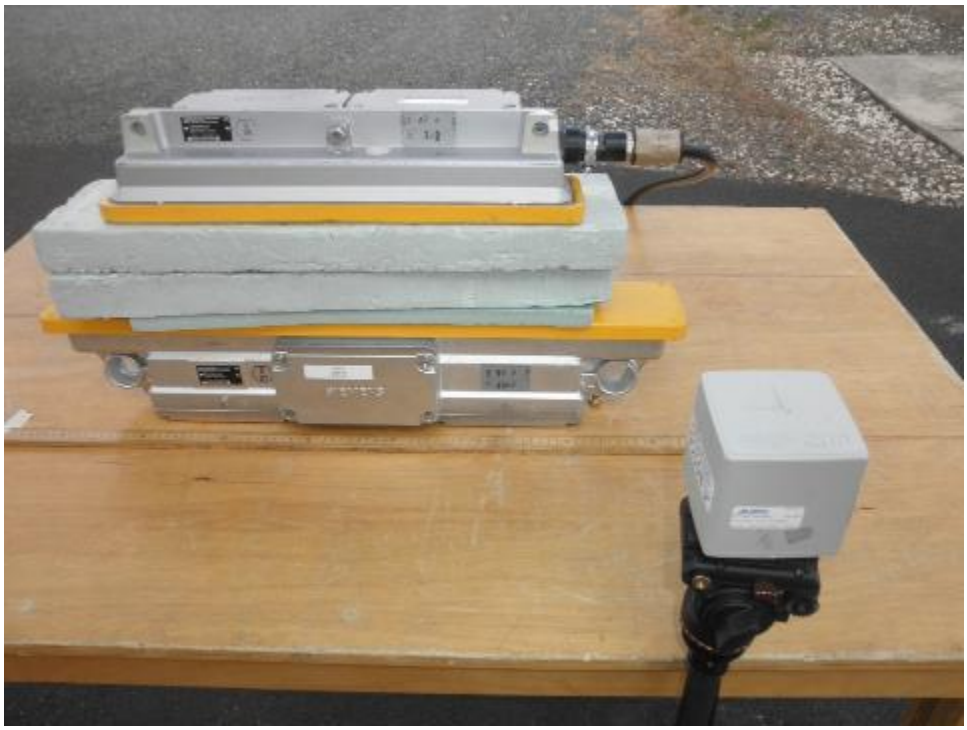


Side 1, Position 7, 30 cm



Side 1, Position 8, 20 cm

Test Photographs
RF Exposure



Side 1, Position 8, 30 cm

Side 2, Position 1, 20 cm

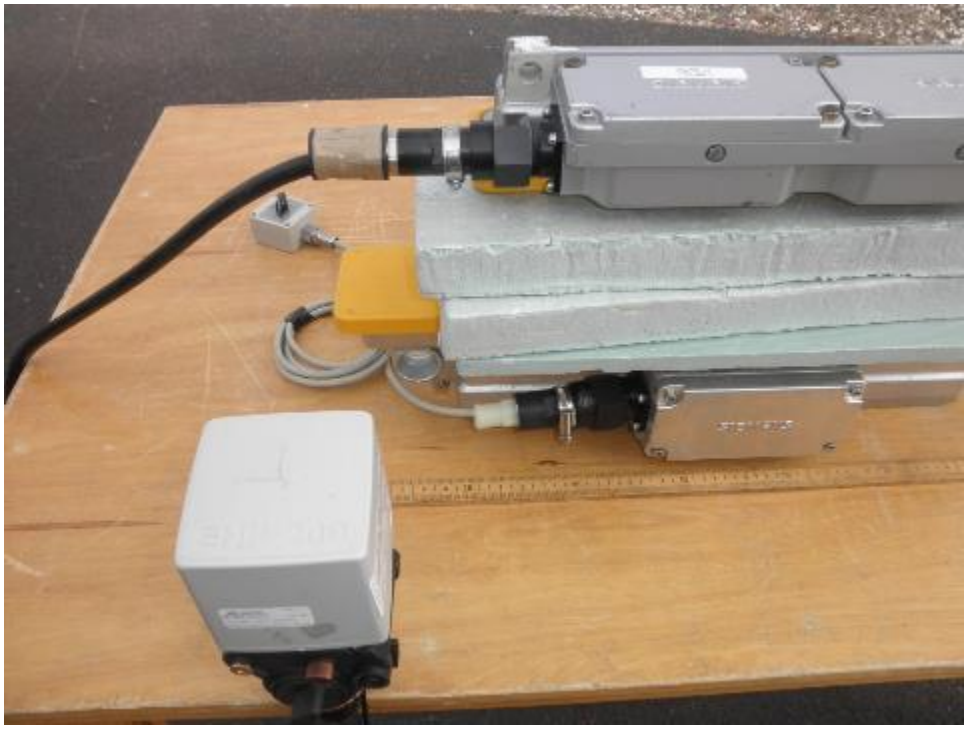
Test Photographs
RF Exposure

Side 2, Position 1, 30 cm

Side 2, Position 2, 20 cm

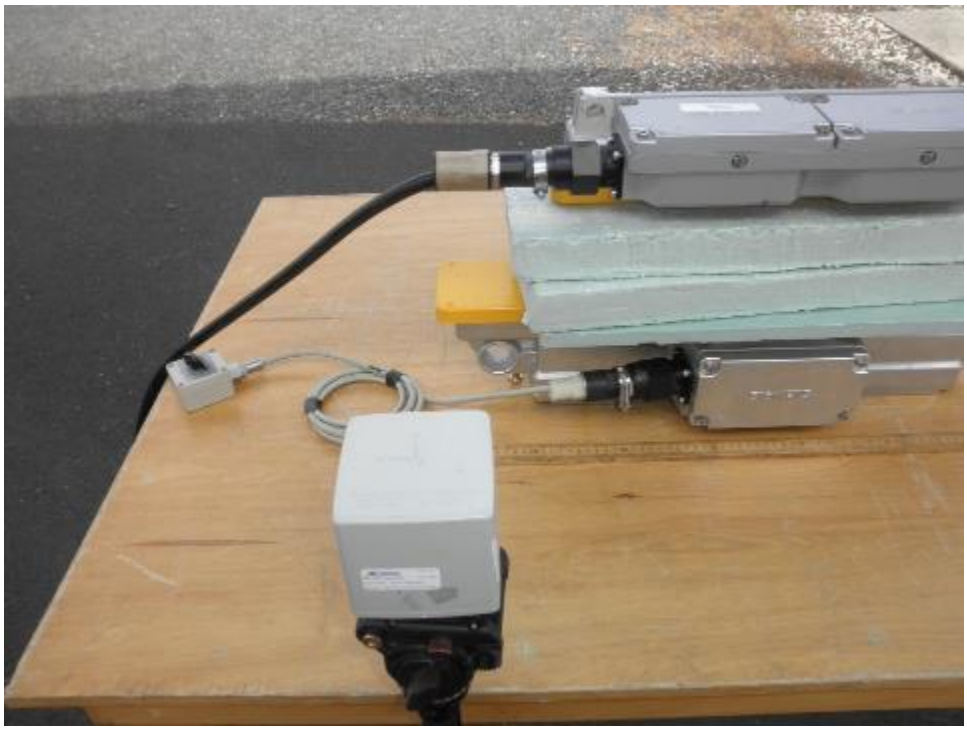
Test Photographs
RF Exposure

Side 2, Position 2, 30 cm

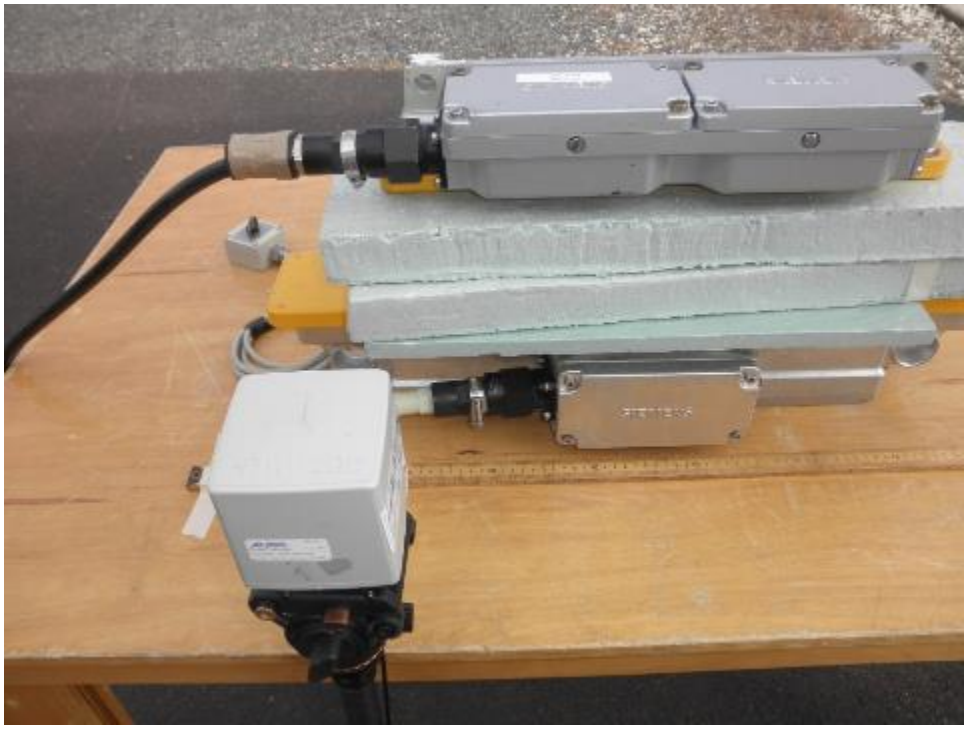


Side 3, Position 1, 20 cm

Test Photographs
RF Exposure

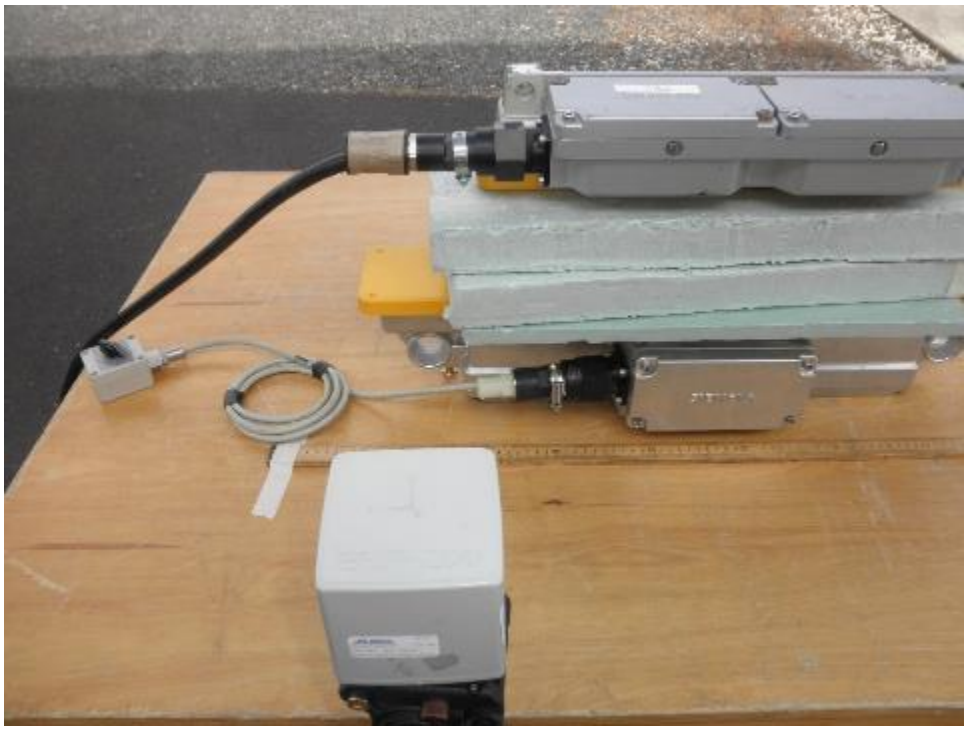


Side 3, Position 1, 30 cm

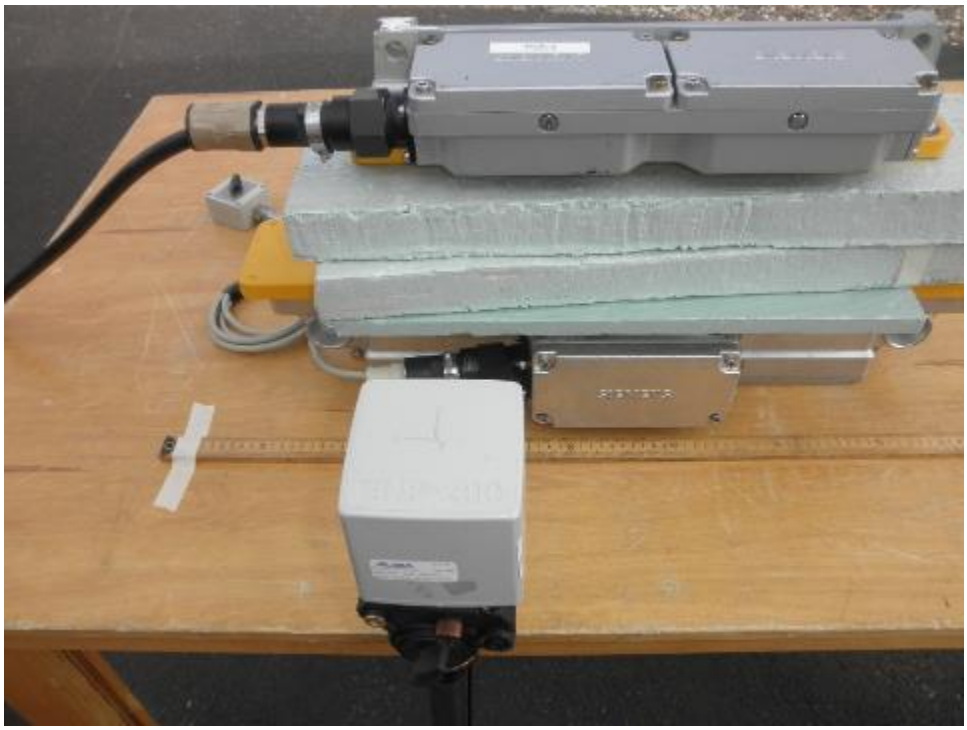


Side 3, Position 2, 20 cm

Test Photographs
RF Exposure

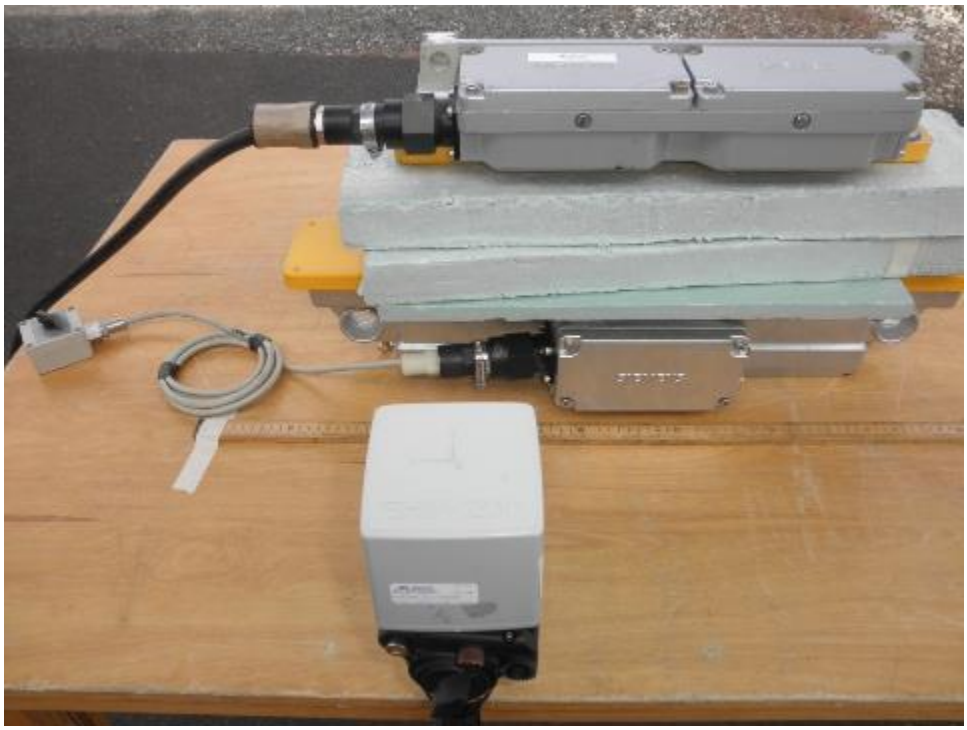


Side 3, Position 2, 30 cm

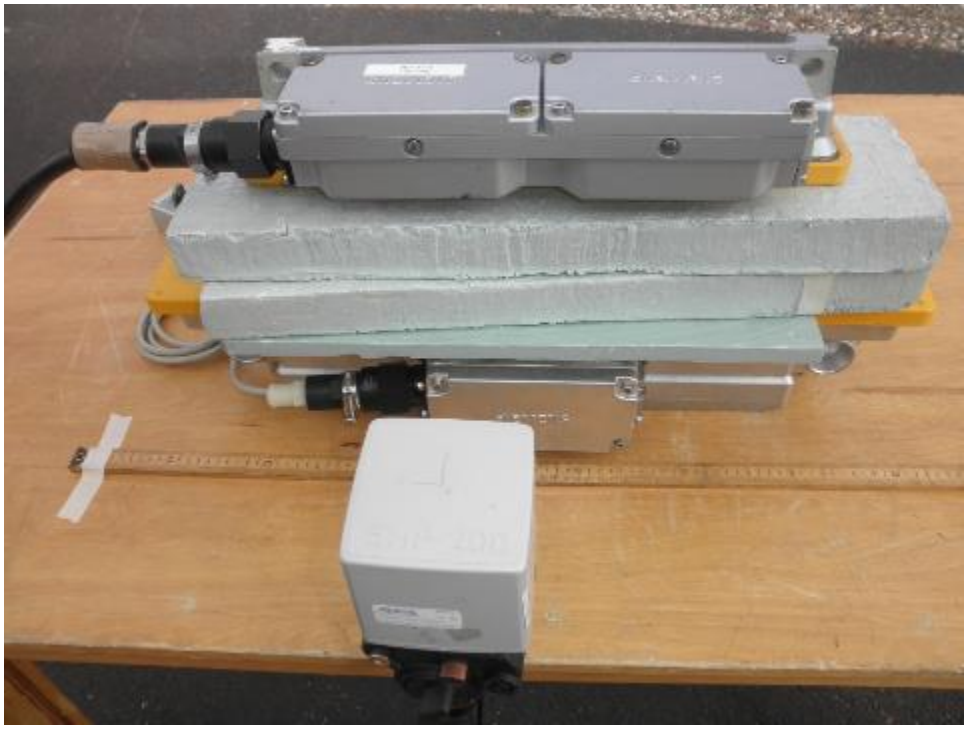


Side 3, Position 3, 20 cm

Test Photographs
RF Exposure

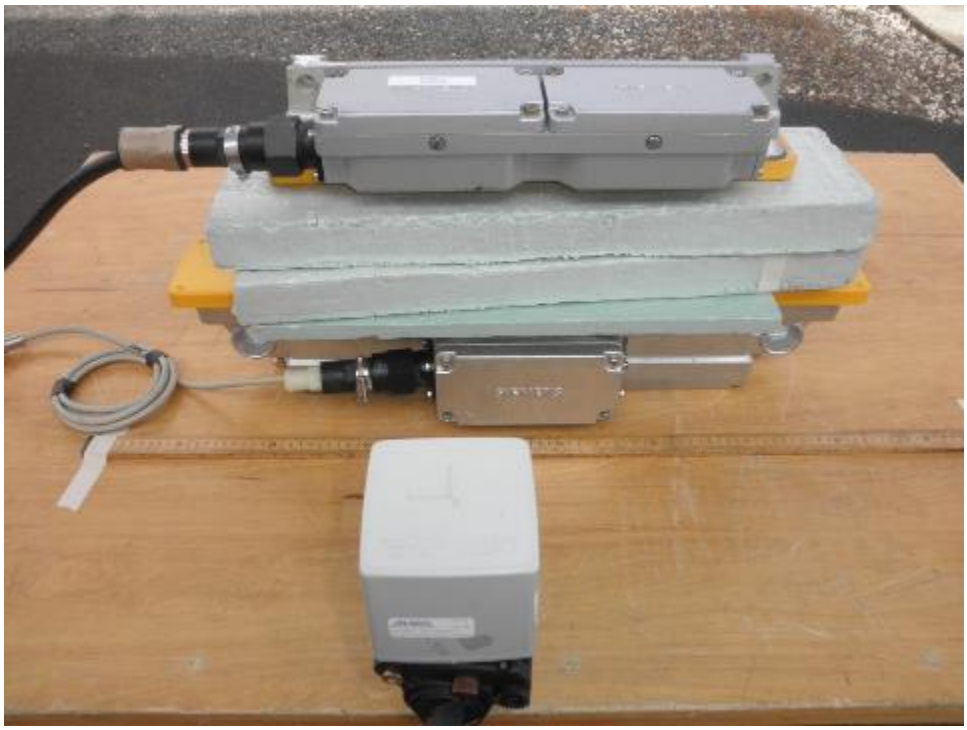


Side 3, Position 3, 30 cm

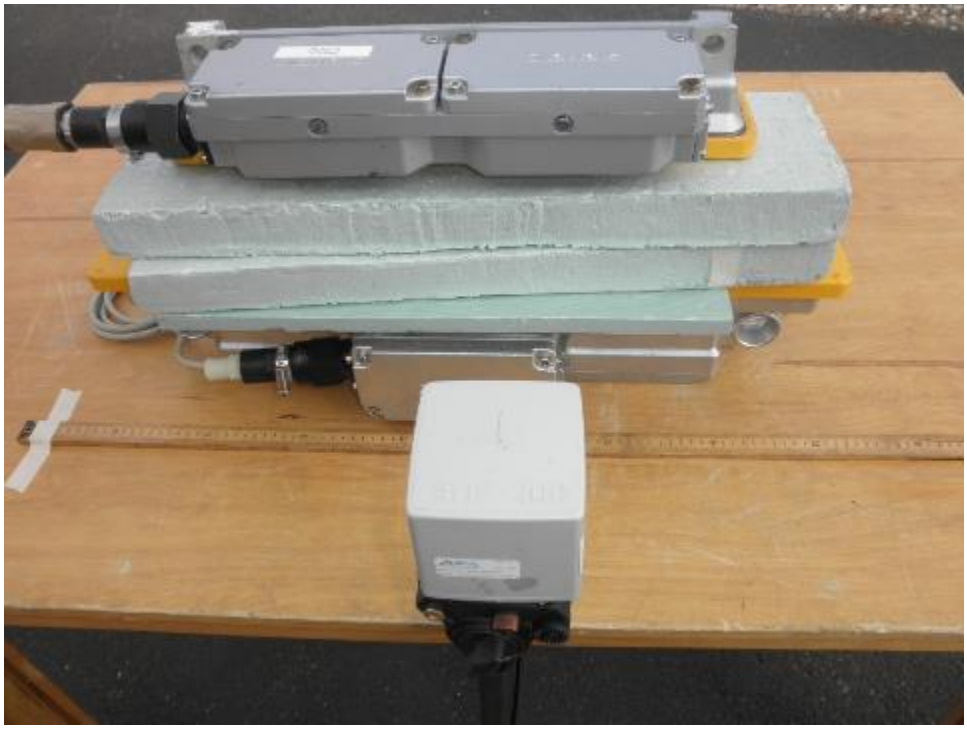


Side 3, Position 4, 20 cm

Test Photographs
RF Exposure

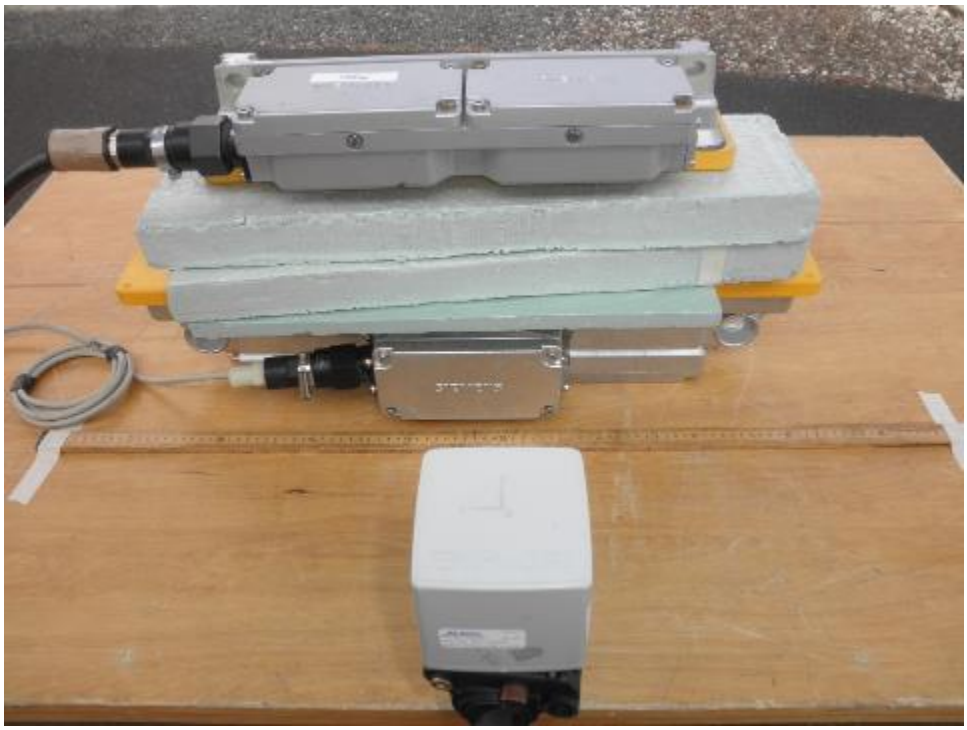


Side 3, Position 4, 30 cm

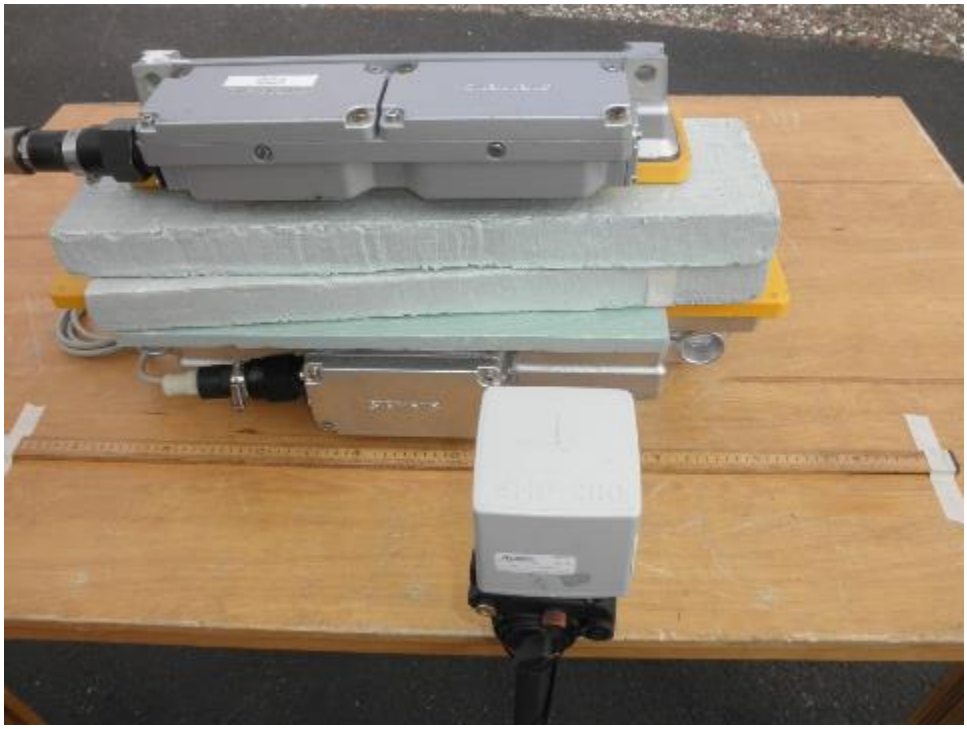


Side 3, Position 5, 20 cm

Test Photographs
RF Exposure



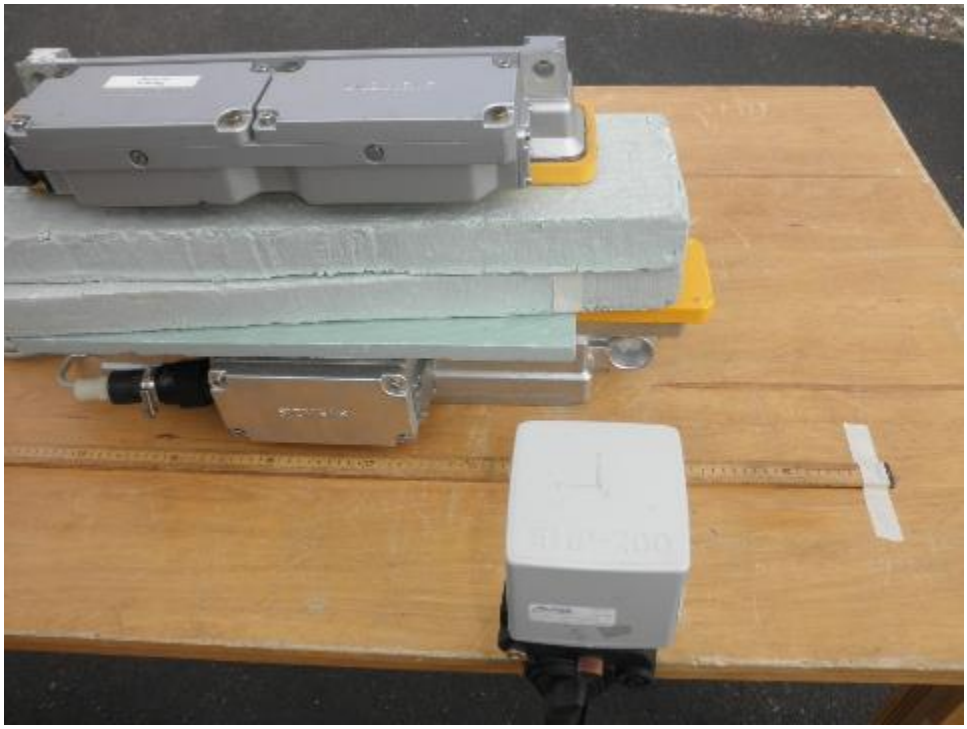
Side 3, Position 5, 30 cm



Side 3, Position 6, 20 cm

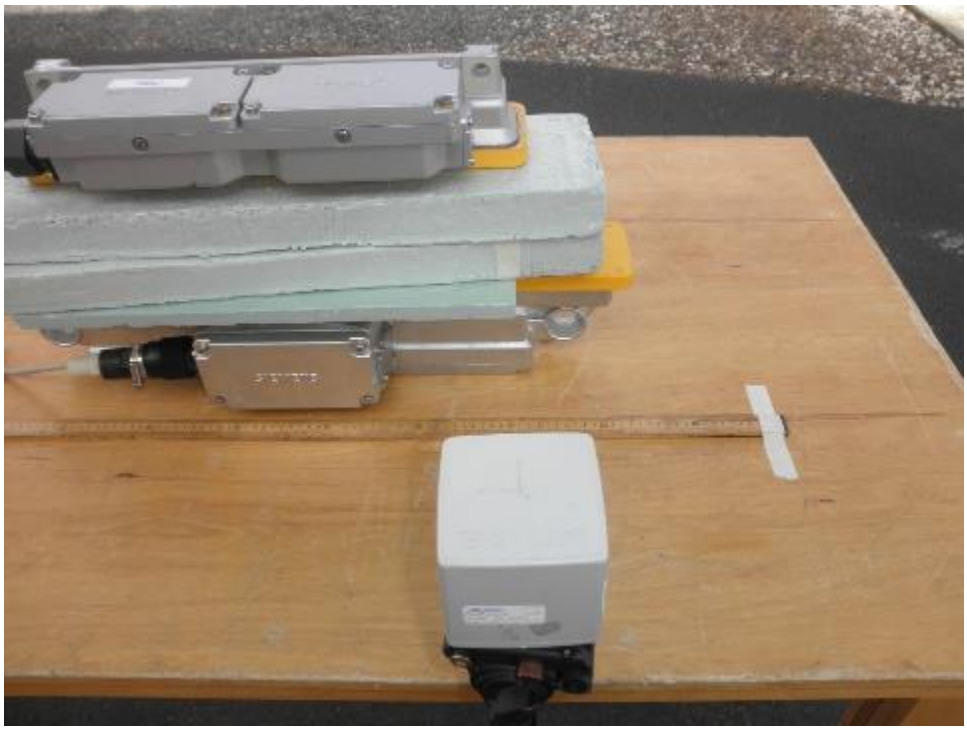
Test Photographs
RF Exposure

Side 3, Position 6, 30 cm

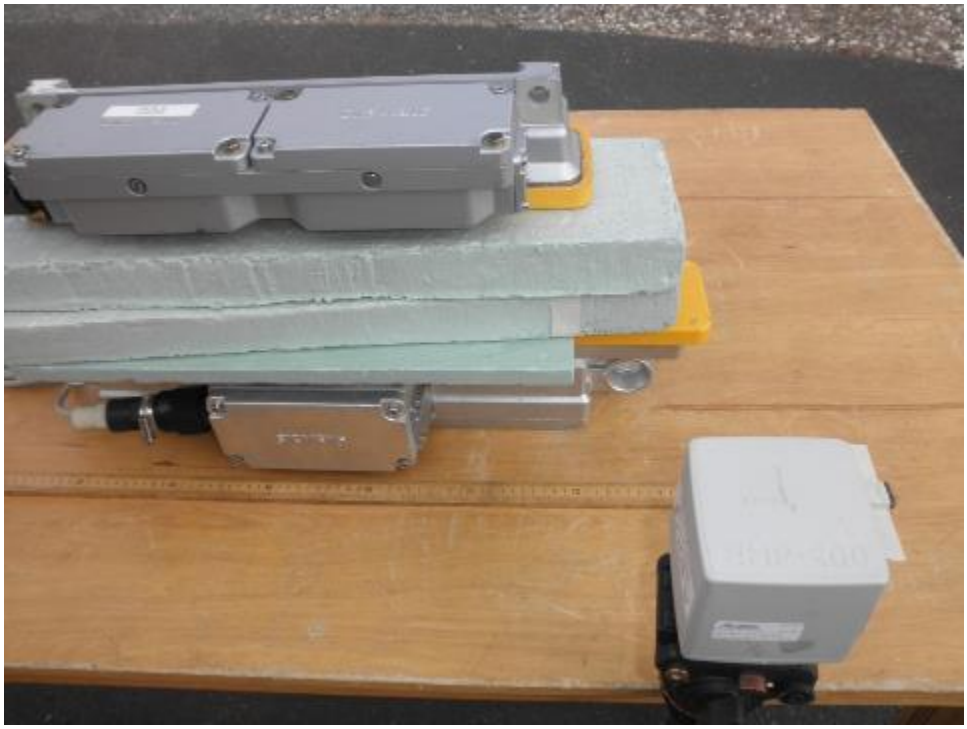


Side 3, Position 7, 20 cm

Test Photographs
RF Exposure



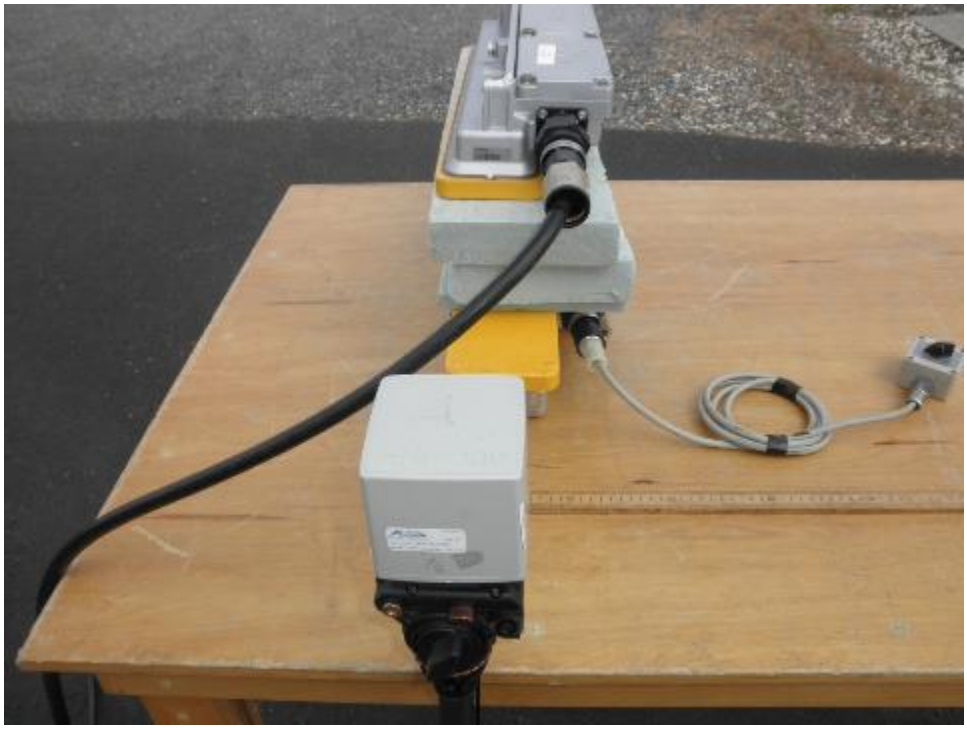
Side 3, Position 7, 30 cm



Side 3, Position 8, 20 cm

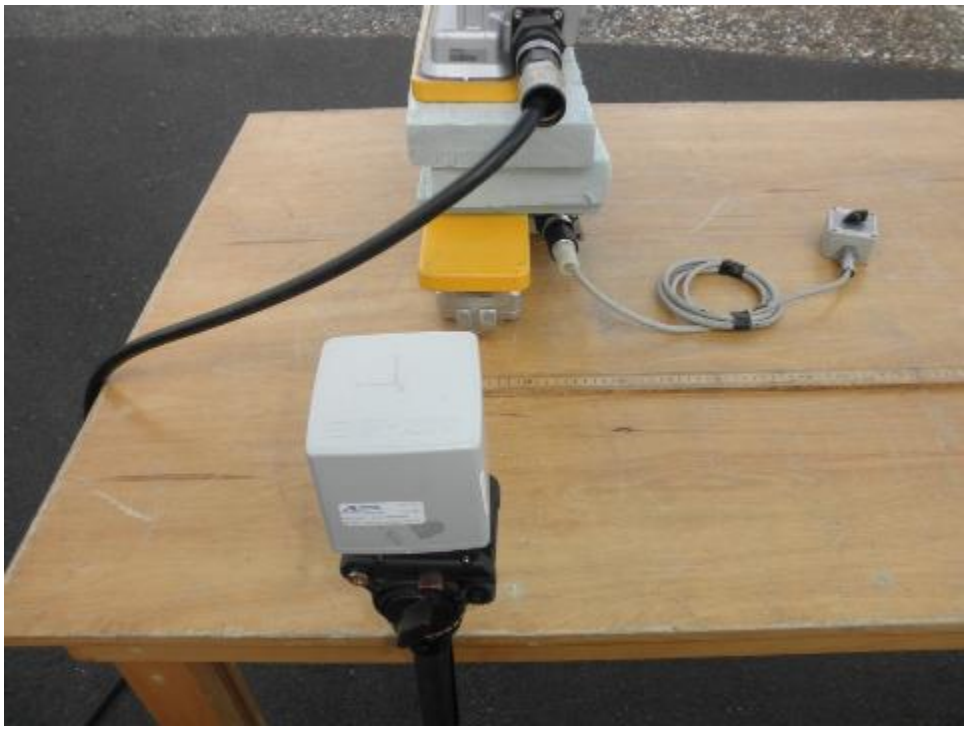
Test Photographs
RF Exposure

Side 3, Position 8, 30 cm

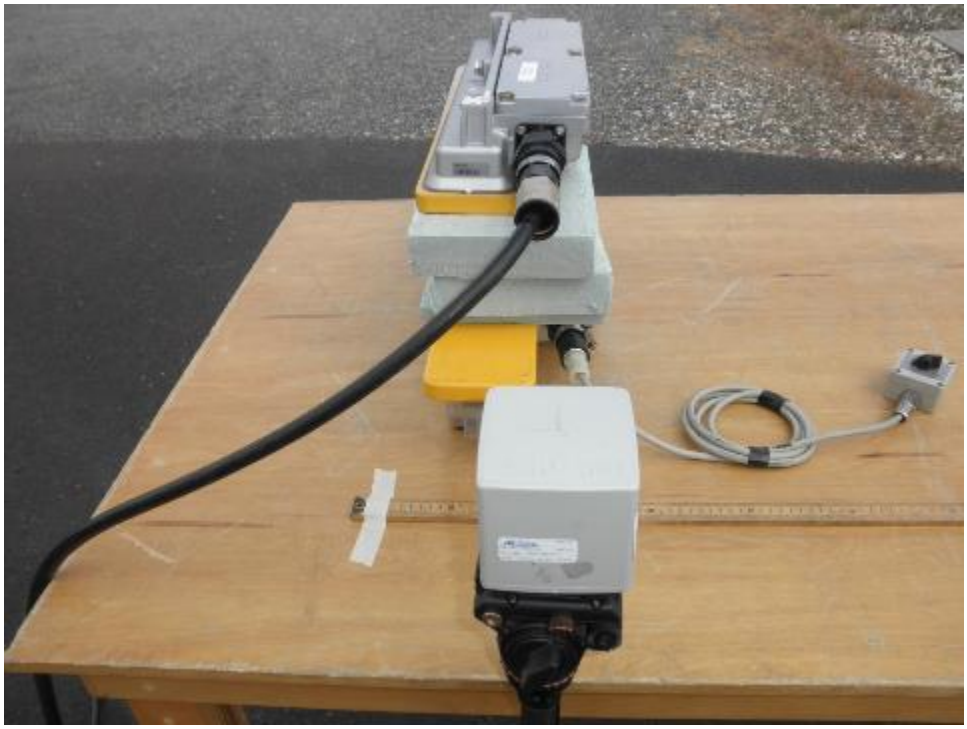


Side 4, Position 1, 20 cm

Test Photographs
RF Exposure

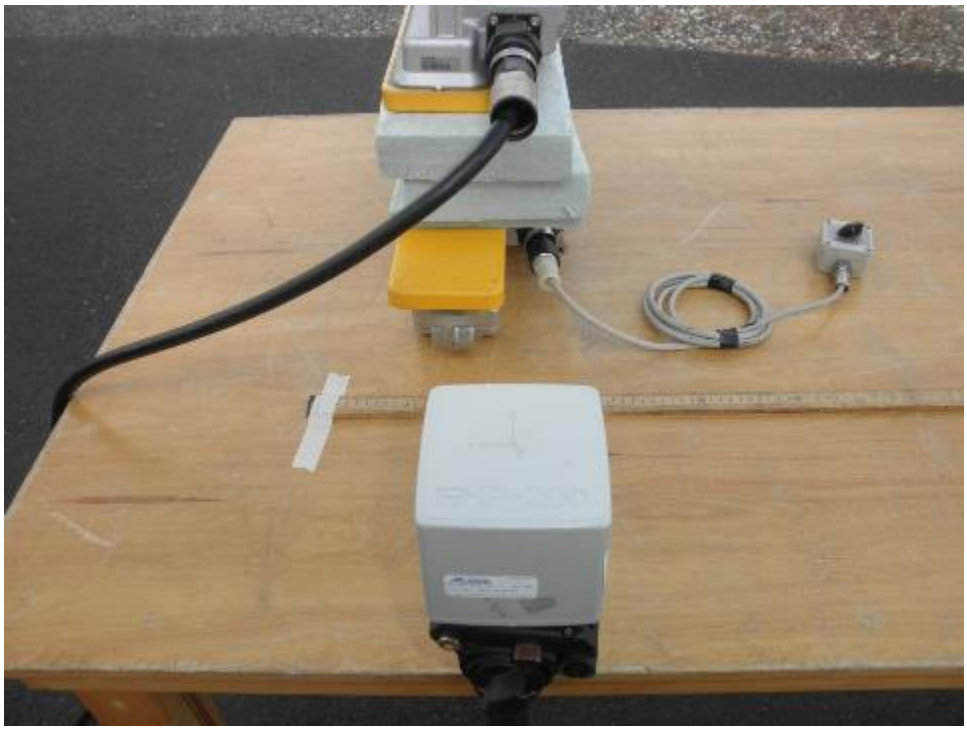


Side 4, Position 1, 30 cm



Side 4, Position 2, 20 cm

Test Photographs
RF Exposure



Side 4, Position 2, 30 cm