

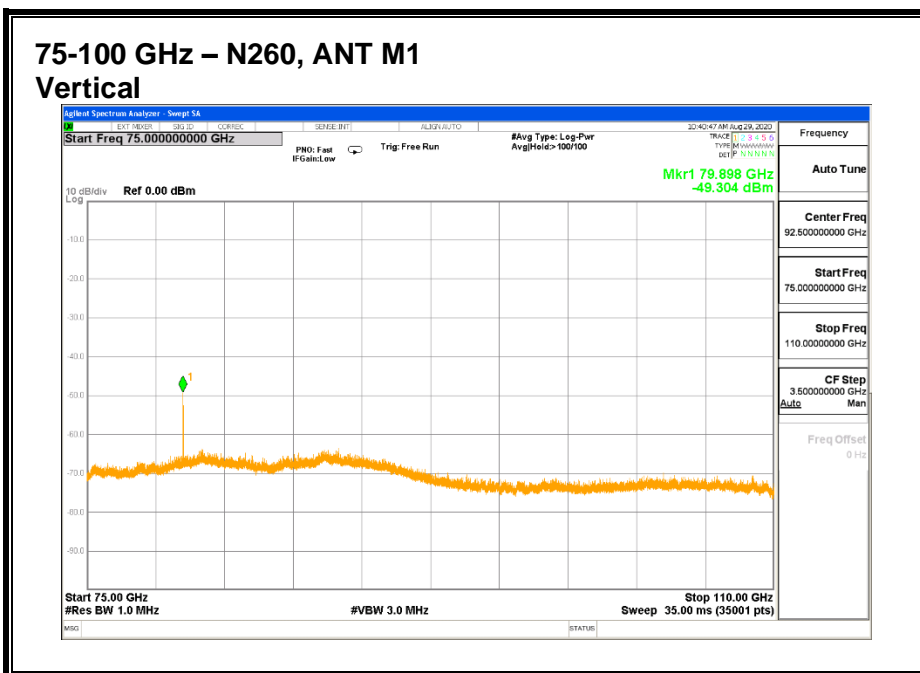
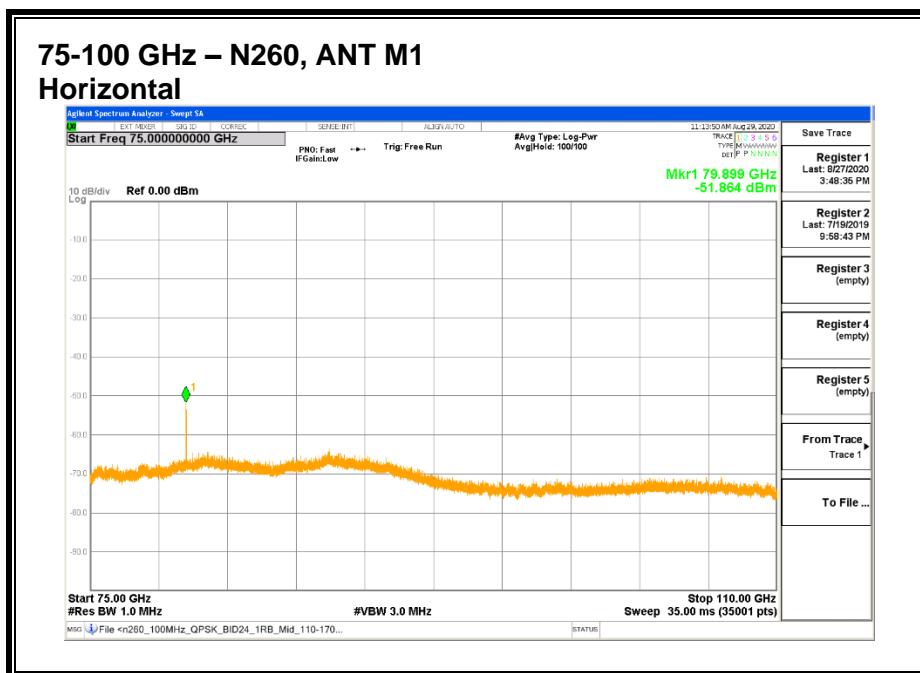
No Emission using Peak Detection.

50-75 GHz n260

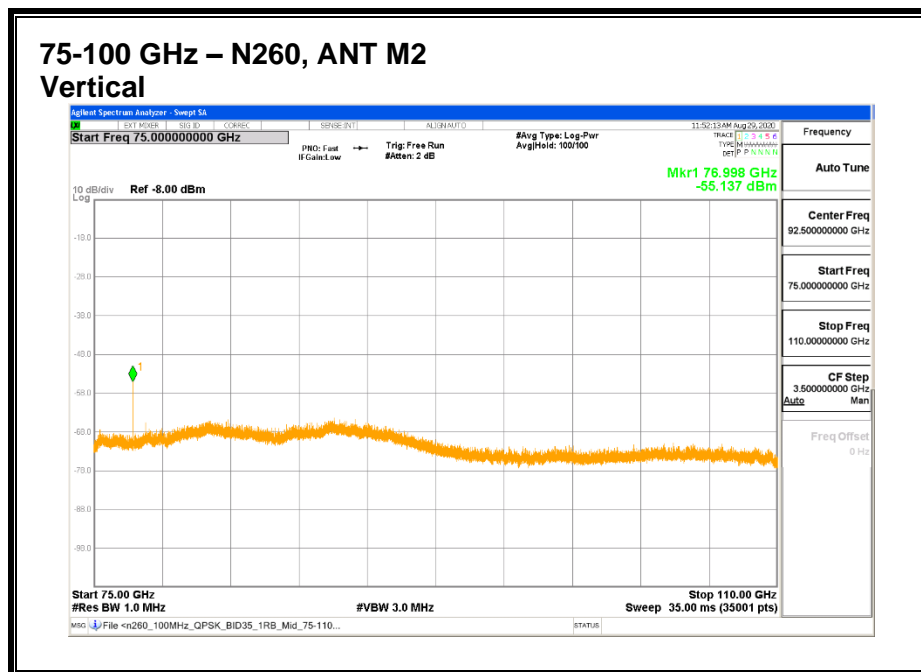
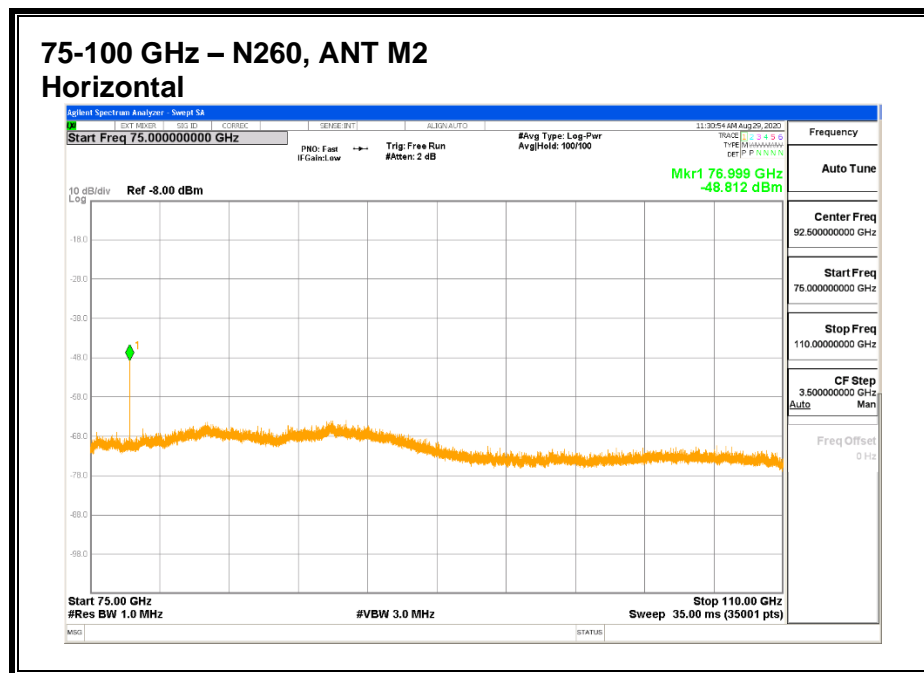
EIRP Results

Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Meas. Power	Corrected Avg ERIP	TRP Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dBm)	(dB)
M1	53.1575	1.5	H	-87.62	-39.99	-13	-26.99
M1	53.3725	1.5	H	-65.32	-17.67	-13	-4.67
M1	53.1575	1.5	V	-77.46	-29.83	-13	-16.83
M1	53.3725	1.5	V	-88.63	-40.97	-13	-27.97

8.4.7. RADIATED EMISSIONS 75-110 GHz n260



Emissions detected using Peak Detection. Avg EIRP was measured.



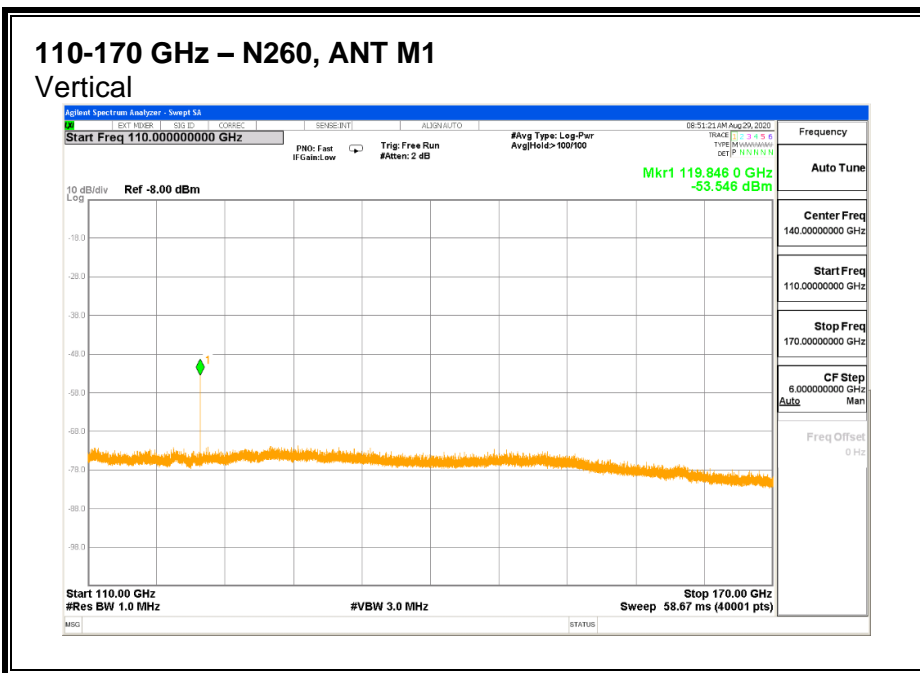
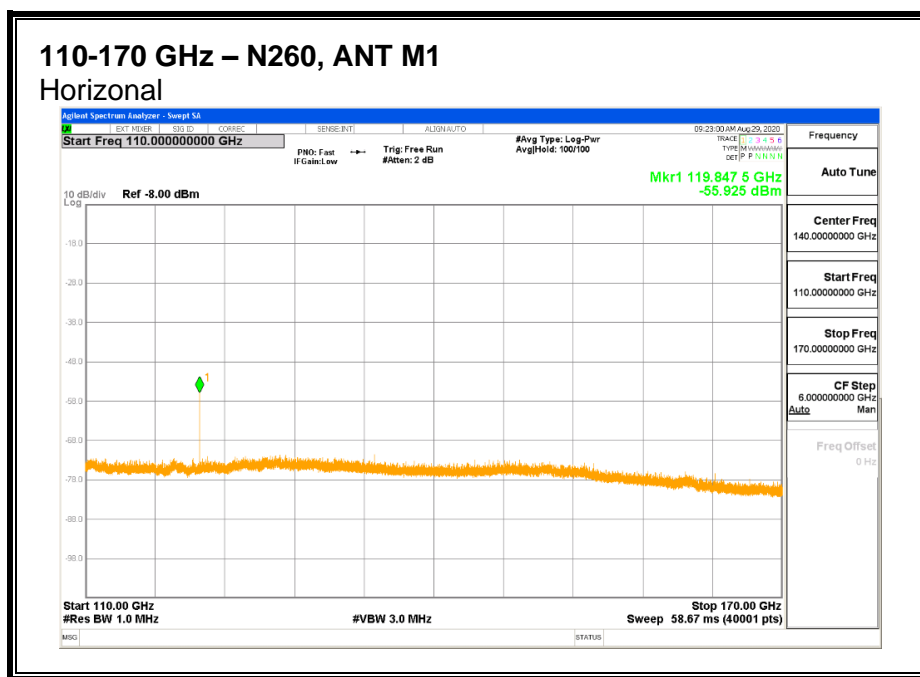
Emissions detected using Peak Detection. Avg EIRP was measured.

75-110 GHz n260

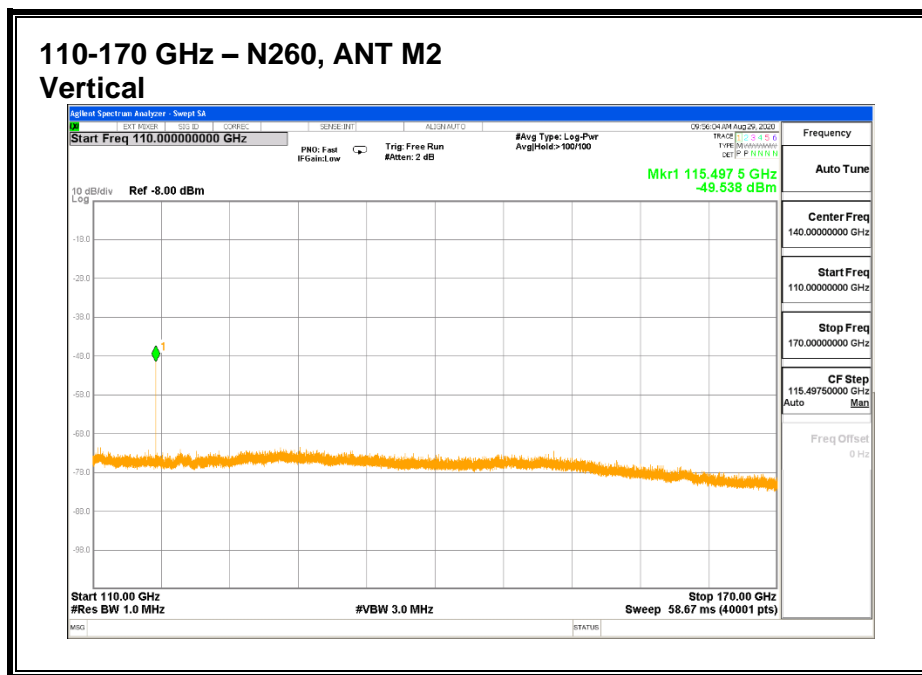
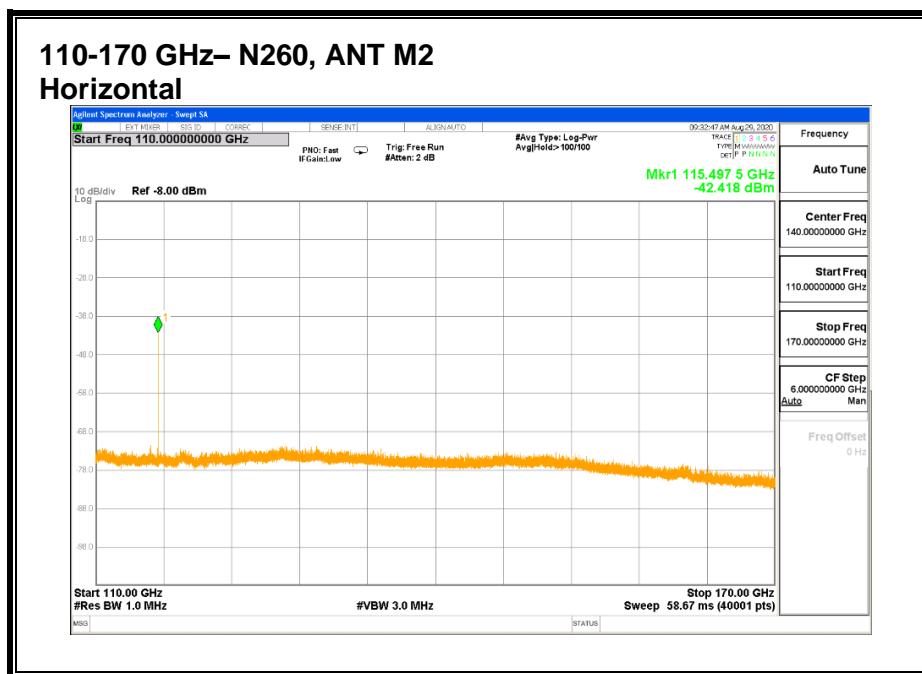
EIRP Results

Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Meas. Power	Corrected ERIP	Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dBm)	(dB)
M1	79.898	1	H	-58.69	-43.84	-13	-30.84
M1	79.898	1	V	-50.02	-35.17	-13	-22.17
M2	76.998	1	H	-46.55	-29.13	-13	-16.13
M2	76.998	1	V	-64.63	-47.21	-13	-34.21

8.4.8. RADIATED EMISSIONS 110-170 GHz n260



Emissions detected using Peak Detection. Avg EIRP was measured.



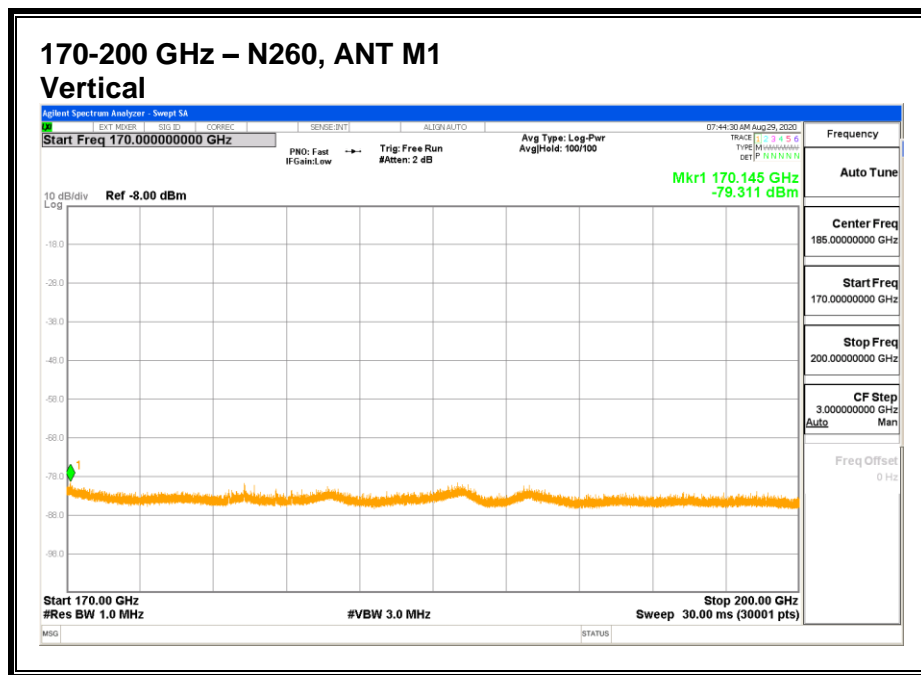
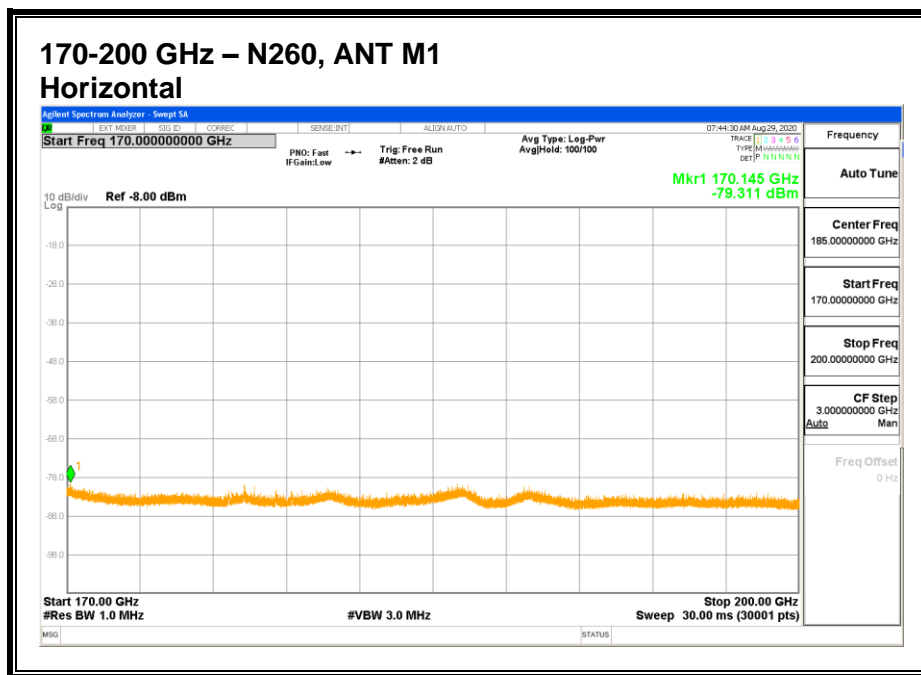
Emissions detected using Peak Detection. Avg EIRP was measured.

110-170 GHz n260

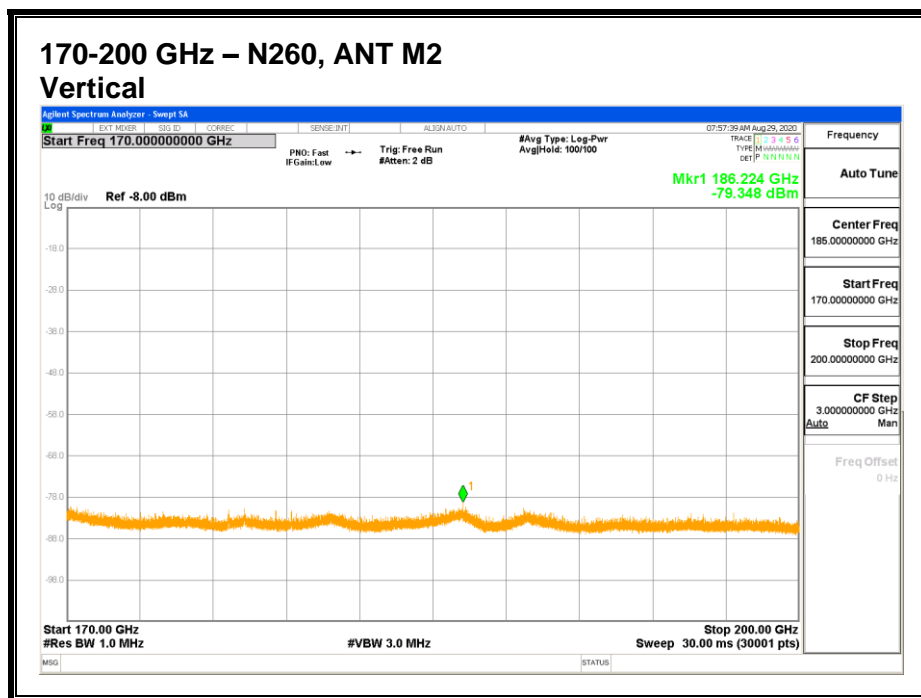
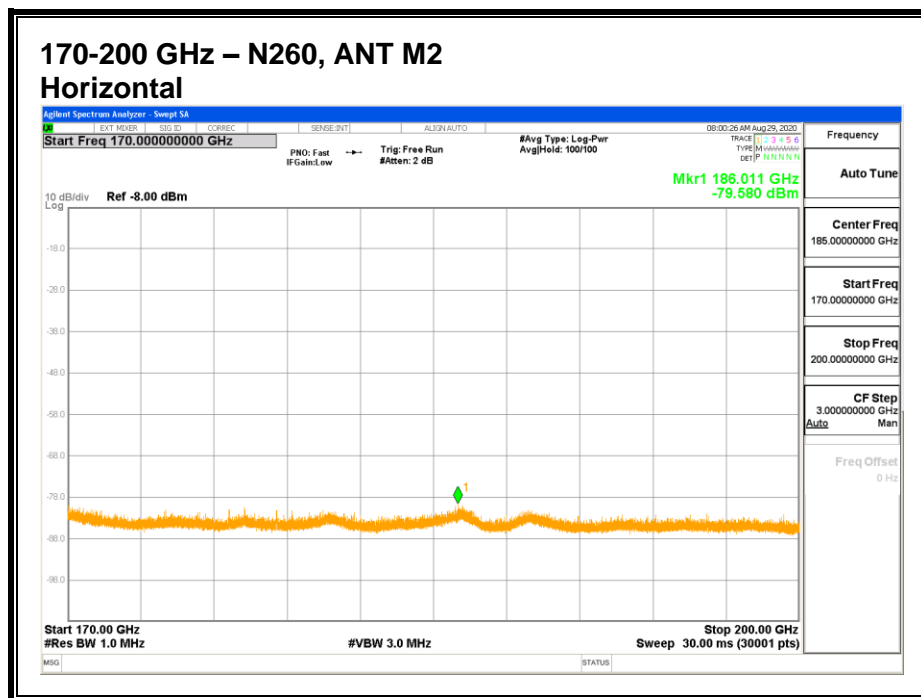
EIRP Results

Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Meas. Power	Corrected Avg EIRP	TRP Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dBm)	(dB)
M1	119.847	1	H	-69.50	-41.40	-13	-28.40
M1	119.847	1	V	-57.31	-29.21	-13	-16.21
M2	115.497	1	H	-50.42	-21.93	-13	-8.93
M2	115.497	1	V	-54.99	-26.50	-13	-13.50

8.4.9. RADIATED EMISSIONS 170-200 GHz n260

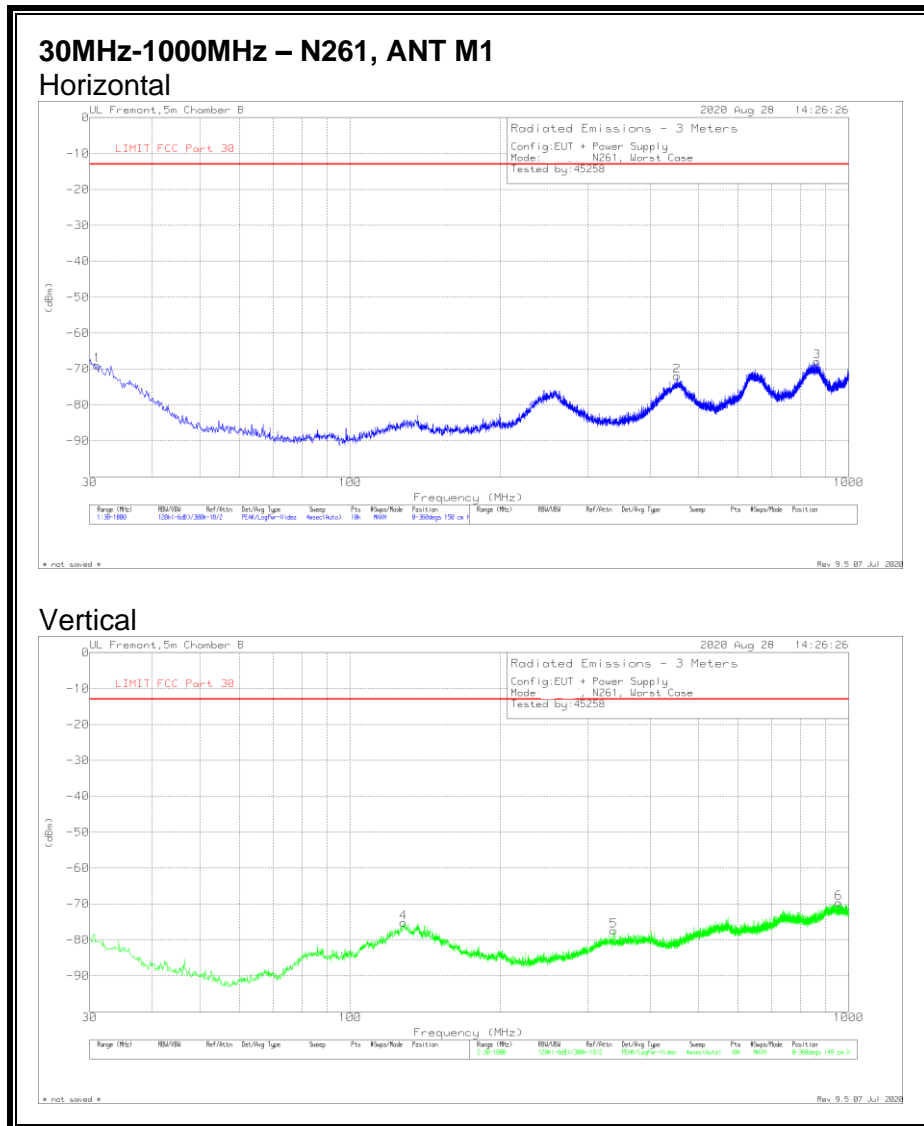


No Emission using Peak Detection.



No Emission using Peak Detection.

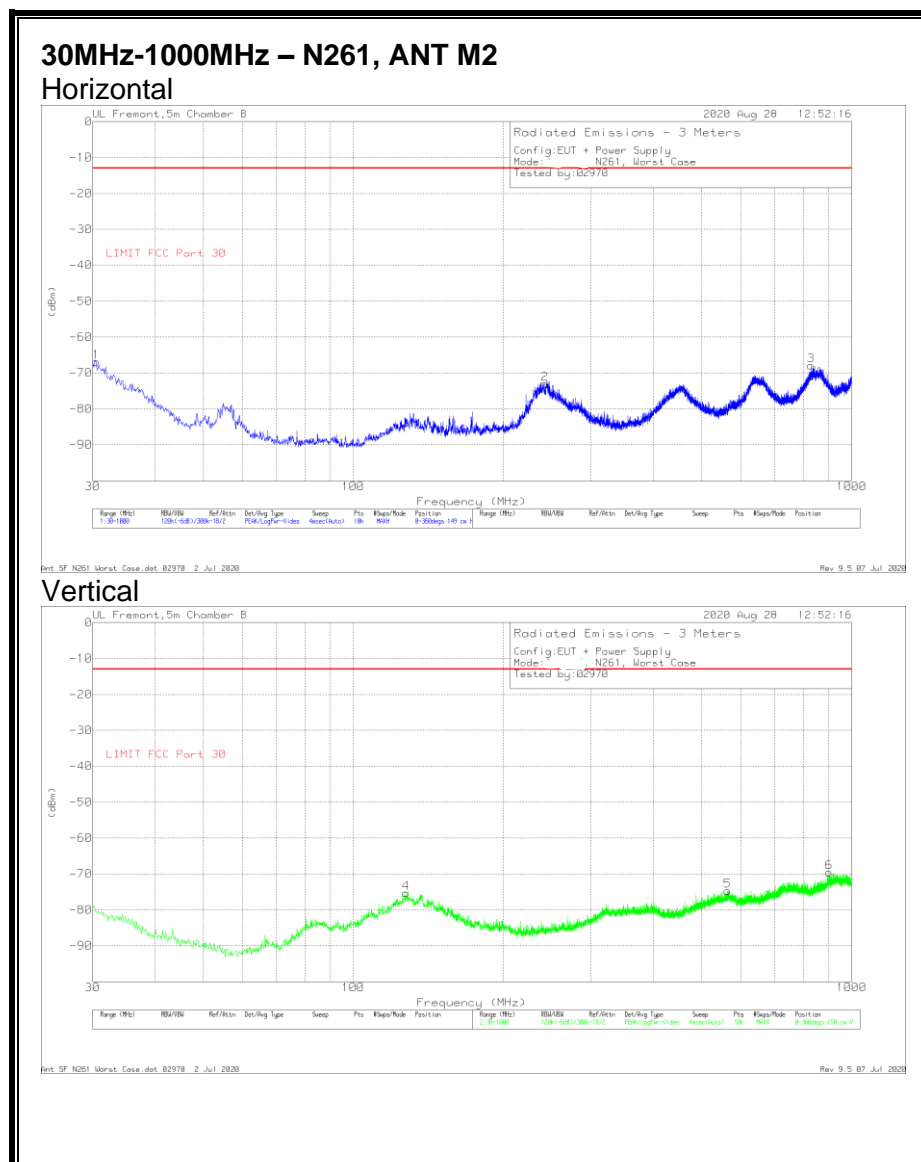
8.4.10. RADIATED EMISSIONS 30 MHz - 1 GHz n261



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T407 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT FCC Part 30 (dBm/MHz)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	31.067	-80.58	Pk	26.3	-31.4	16.7	-68.98	-13	-55.98	0-360	150	H
4	127.97	-79.39	Pk	19.6	-30.4	15	-75.19	-13	-62.19	0-360	149	V
5	337.975	-78.17	Pk	19.8	-29.4	10.3	-77.47	-13	-64.47	0-360	149	V
2	452.532	-78.75	Pk	22.7	-29.1	13.2	-71.95	-13	-58.95	0-360	150	H
3	864.588	-79.49	Pk	27.8	-27.2	11	-67.89	-13	-54.89	0-360	150	H
6	956.059	-80.43	Pk	28.7	-26.1	8.2	-69.63	-13	-56.63	0-360	149	V

Pk - Peak detector
Rev 9.5 07 Jul 2020

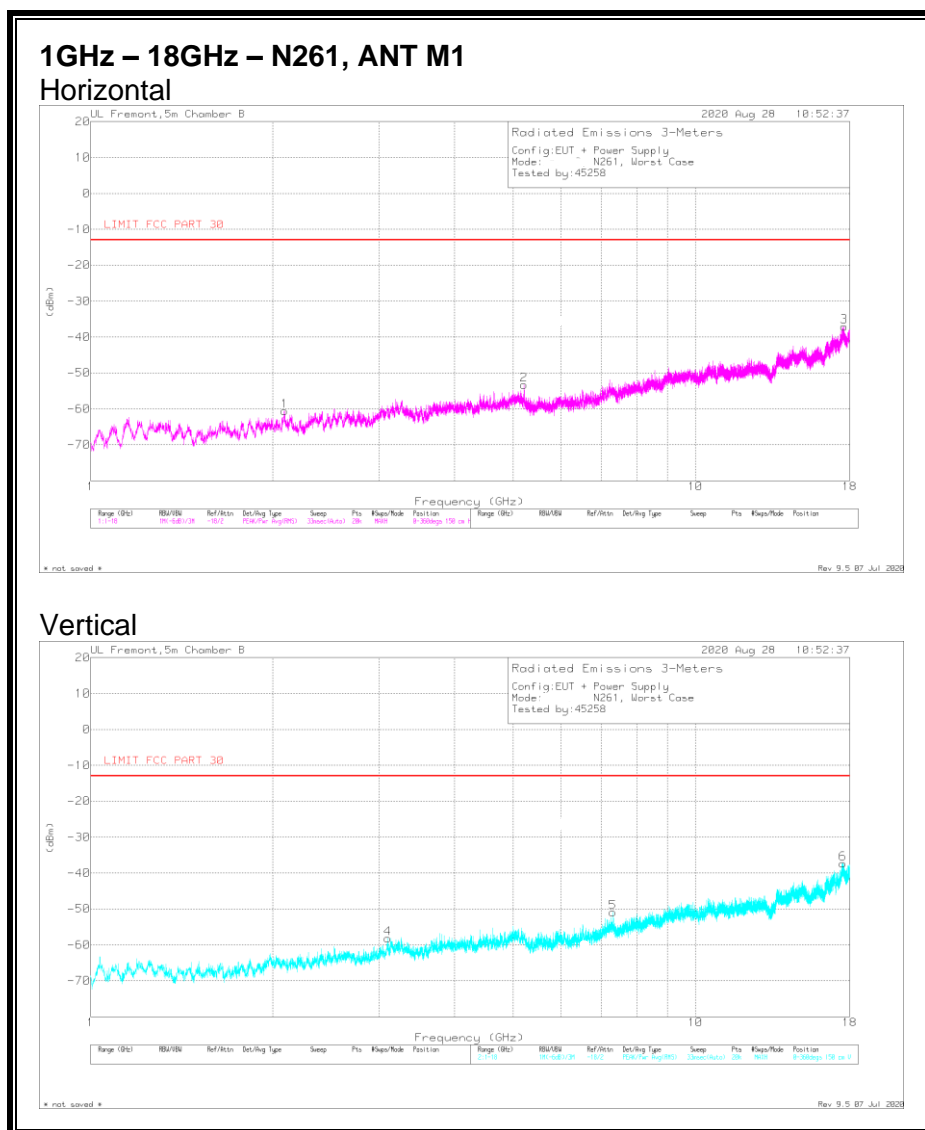


Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T407 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT FCC Part 30 (dBm/MHz)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.485	-79.13	Pk	26.7	-31.4	16.9	-66.93	-13	-53.93	0-360	149	H
4	127.582	-79.42	Pk	19.6	-30.4	14.9	-75.32	-13	-62.32	0-360	150	V
2	242.624	-76.01	Pk	17.5	-29.8	15.2	-73.11	-13	-60.11	0-360	149	H
5	563.985	-79.47	Pk	24.3	-28.7	9.2	-74.67	-13	-61.67	0-360	150	V
3	829.474	-78.92	Pk	27.7	-27.5	10.8	-67.92	-13	-54.92	0-360	149	H
6	901.836	-79.42	Pk	28.2	-26.8	8.5	-69.52	-13	-56.52	0-360	150	V

Pk - Peak detector
Rev 9.5 07 Jul 2020

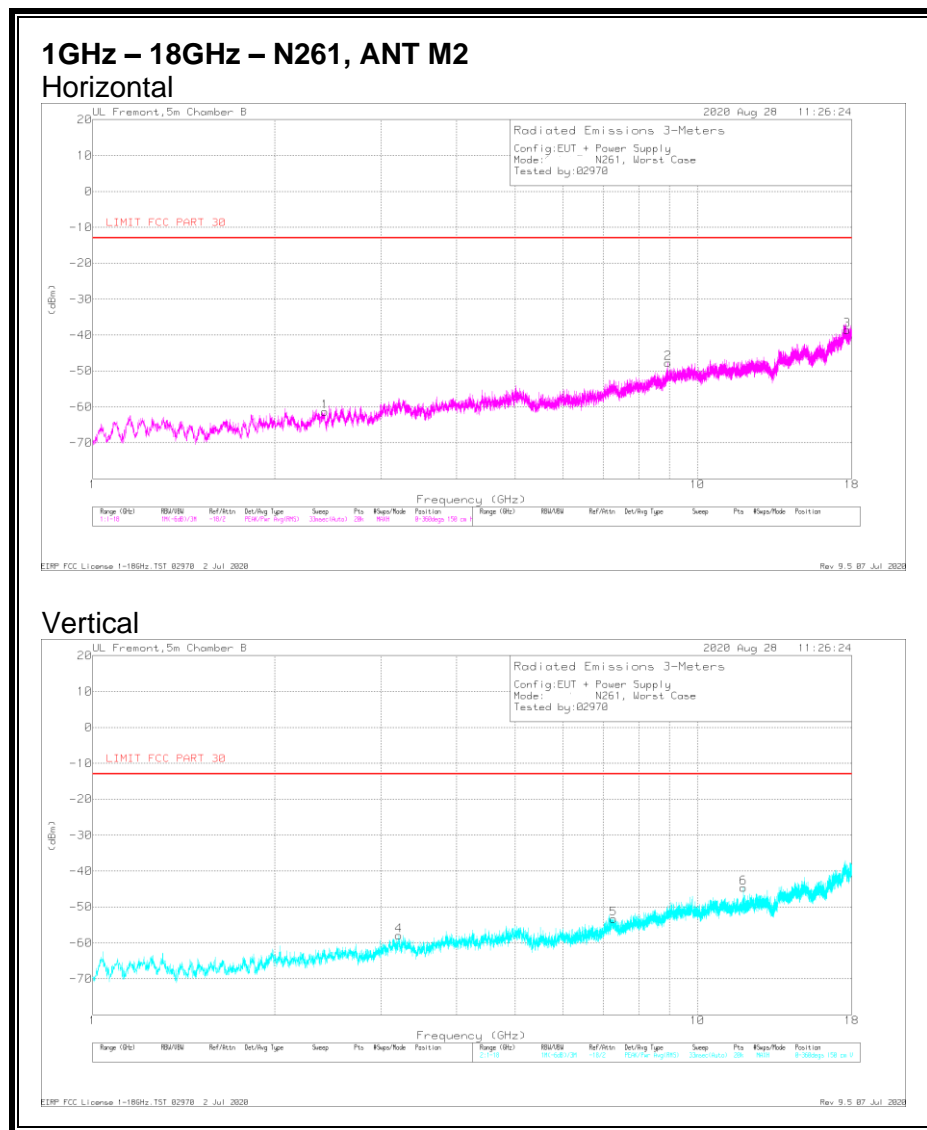
8.4.11. RADIATED EMISSIONS 1-18 GHz n261



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT FCC Part 30 (dBm/MHz)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.09401	-69.21	Pk	27	-29.5	11.1	-60.61	-13	-47.61	0-360	150	H
4	3.10216	-70.97	Pk	30.5	-28.4	10.7	-58.17	-13	-45.17	0-360	150	V
2	5.21281	-69.85	Pk	33.6	-26.3	9.2	-53.35	-13	-40.35	0-360	150	H
5	7.30307	-72.22	Pk	37.1	-23.3	7.5	-50.92	-13	-37.92	0-360	150	V
6	17.53929	-75.43	Pk	42.9	-16.5	11.7	-37.33	-13	-24.33	0-360	150	V
3	17.63704	-74.45	Pk	42.9	-16.9	11.4	-37.05	-13	-24.05	0-360	150	H

Pk - Peak detector
Rev 9.5 07 Jul 2020



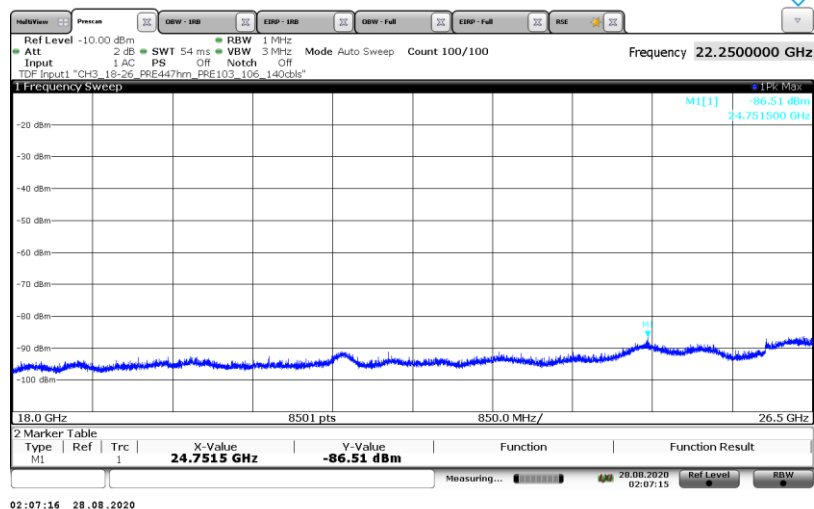
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT FCC Part 30 (dBm/MHz)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.41957	-70.09	Pk	28.6	-29.4	9.6	-61.29	-13	-48.29	0-360	150	H
4	3.20841	-70.6	Pk	31.3	-28.4	9.8	-57.9	-13	-44.9	0-360	150	V
5	7.27247	-74.59	Pk	37.2	-23.3	7.4	-53.29	-13	-40.29	0-360	150	V
2	8.9462	-72.82	Pk	38.2	-21.4	8.2	-47.82	-13	-34.82	0-360	150	H
6	11.9103	-72.7	Pk	39.4	-19.9	8.6	-44.6	-13	-31.6	0-360	150	V
3	17.69739	-74.87	Pk	42.8	-17.2	10.6	-38.67	-13	-25.67	0-360	150	H

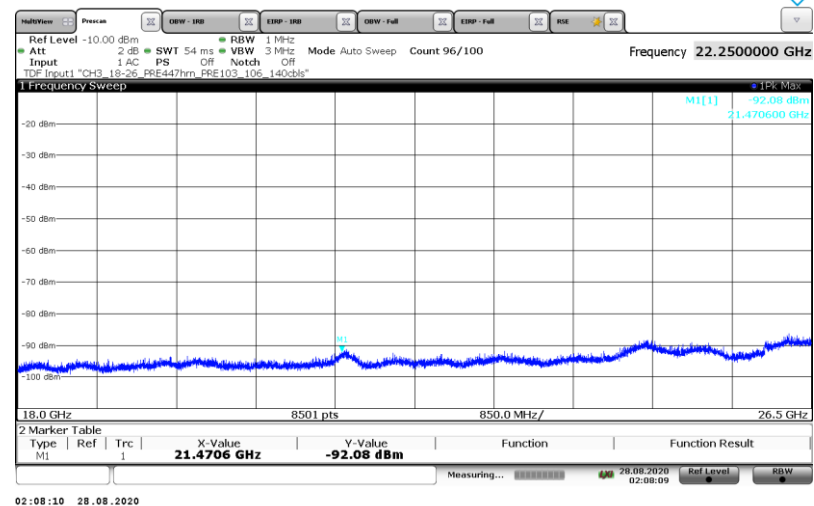
Pk - Peak detector
Rev 9.5 07 Jul 2020

8.4.12. RADIATED EMISSIONS 18-26.5 GHz n261

18-26.5 GHz – N261, ANT M1 Horizontal



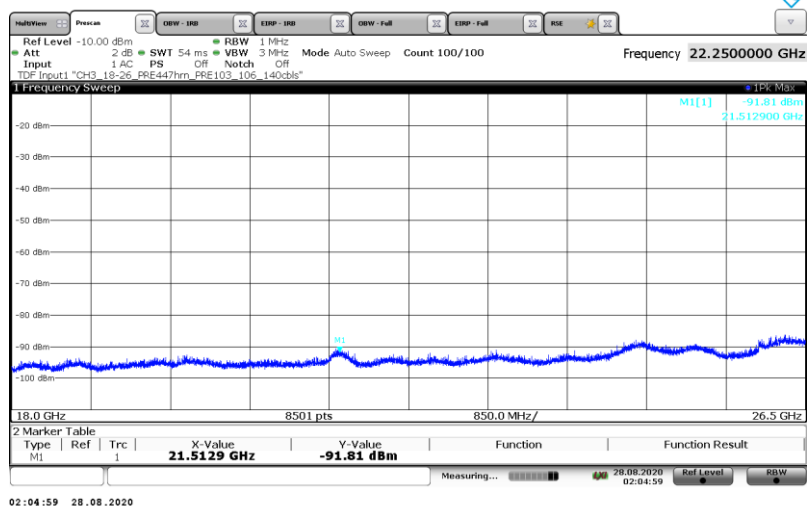
18-26.5 GHz – N261, ANT M1 Vertical



No Emission using Peak Detection.

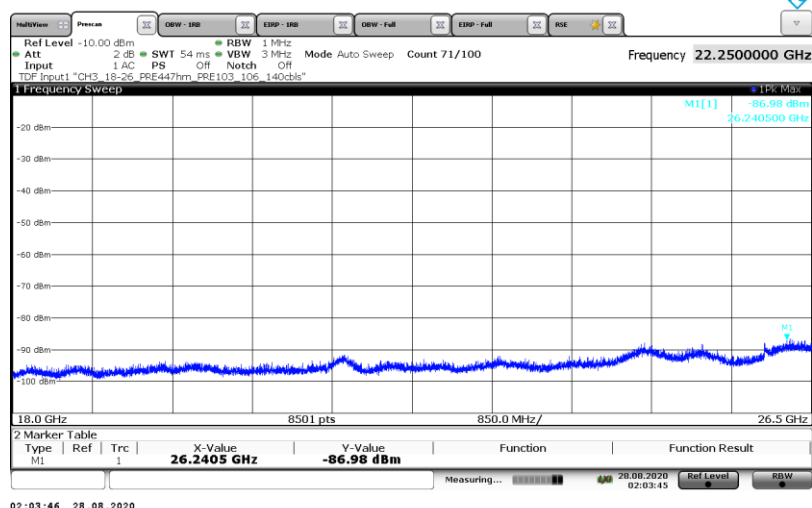
18-26.5 GHz – N261, ANT M2

Horizontal



18-26.5 GHz – N261, ANT M2

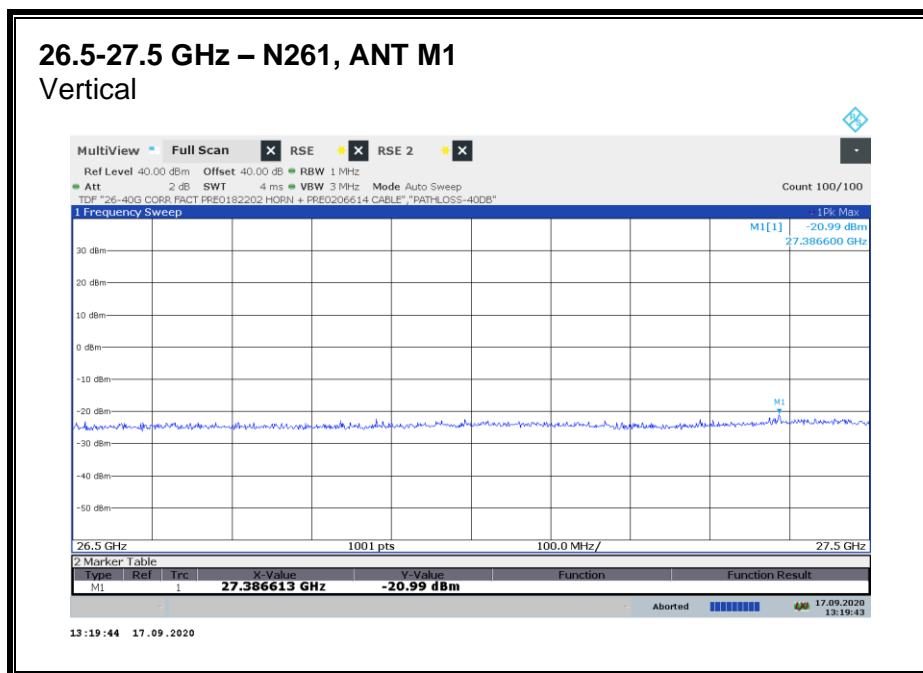
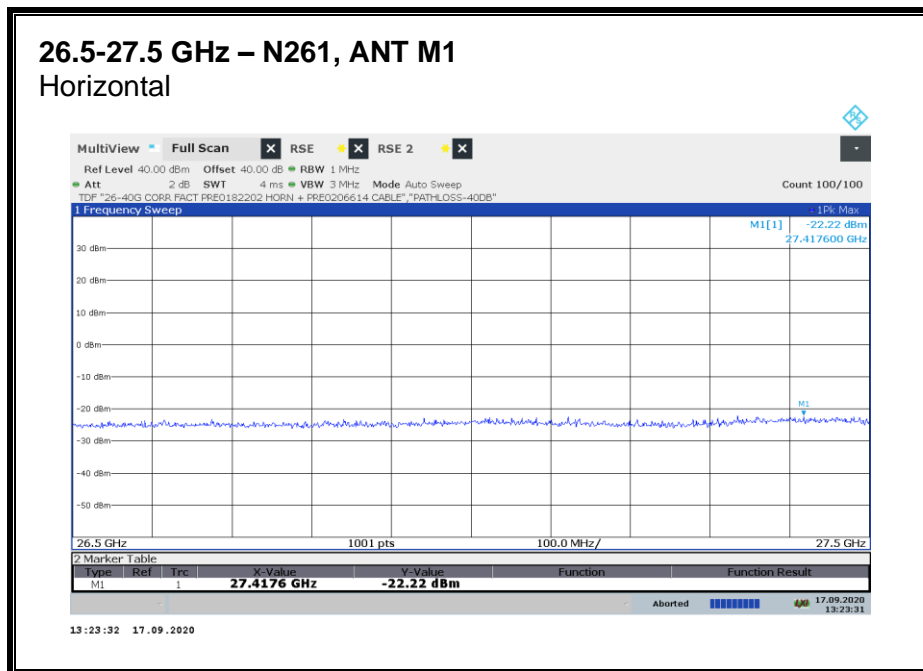
Vertical



No Emission using Peak Detection.

8.4.13. RADIATED EMISSIONS 26.5-27.5 GHz n261

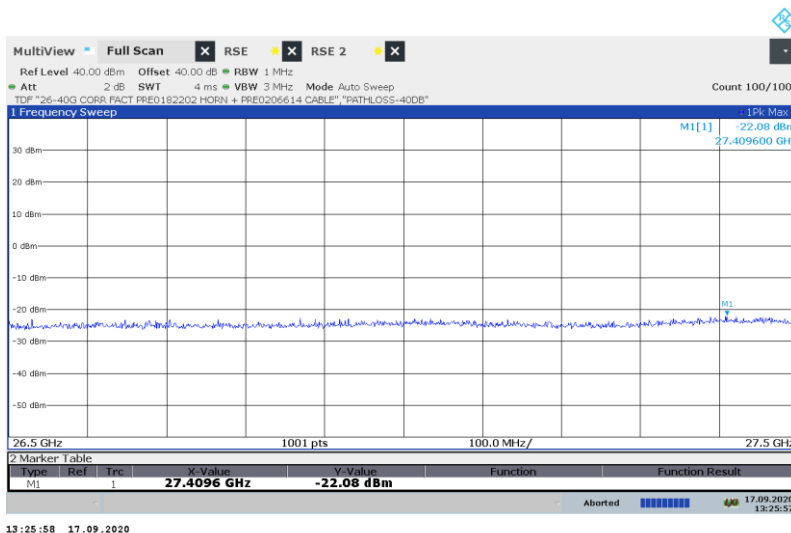
Note: 27.5-28.35 GHz covered by Fundamental and BE measurements.



No Emission using Peak Detection.

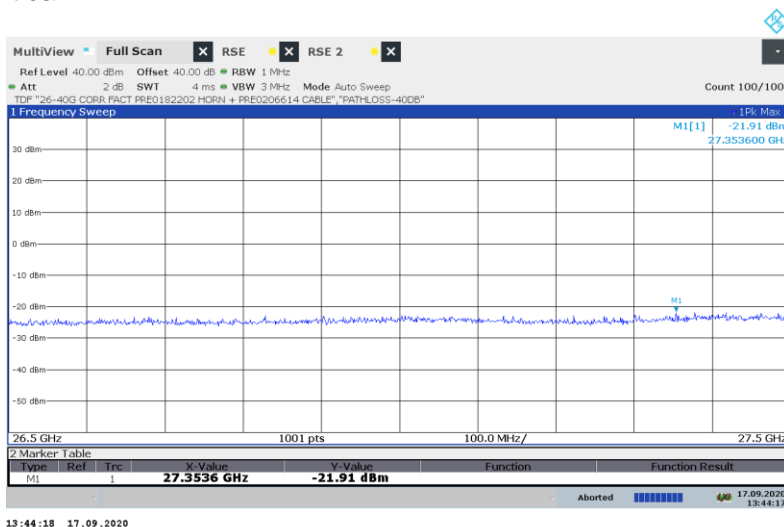
26.5-27.5 GHz – N261, ANT M2

Horizontal

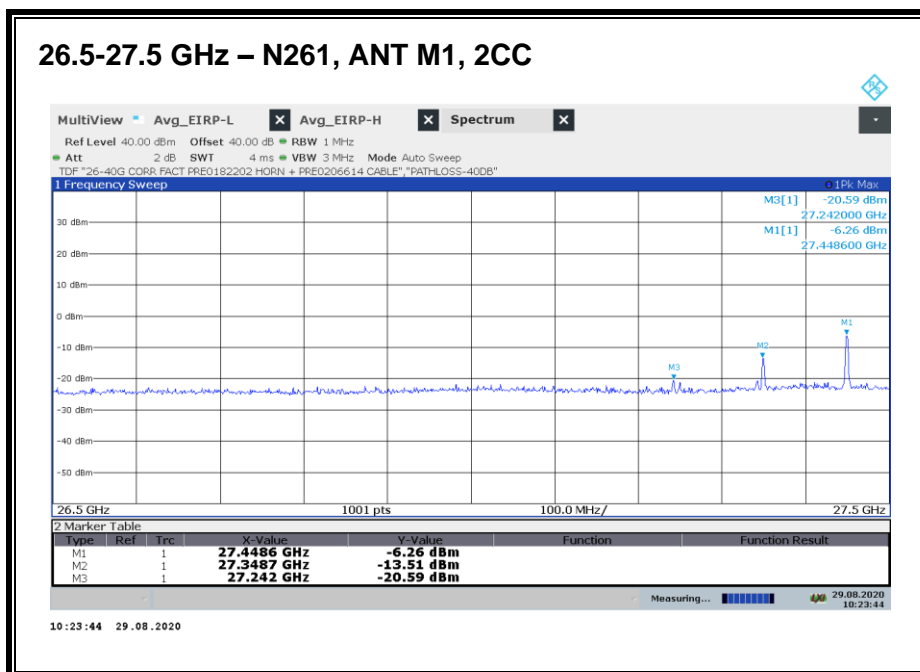


26.5-27.5 GHz – N261, ANT M2

Vertical



No Emission using Peak Detection.



Emissions detected using Peak Detection. Avg EIRP and TRP were measured on highest emission.

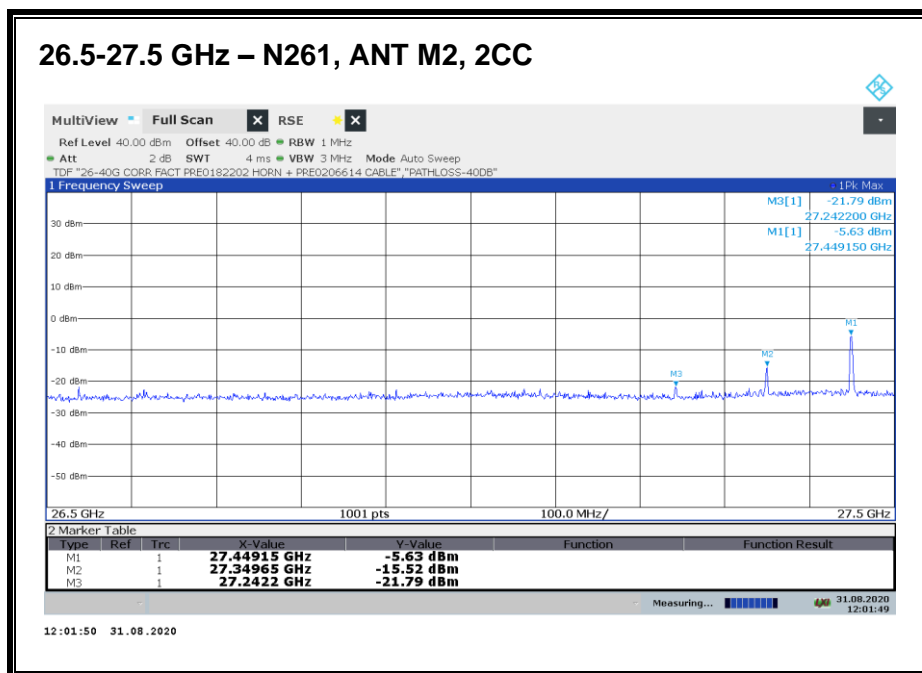
EIRP RESULTS, 2CC

Worst case configuration:

SISO-DUAL_QPSK_(100 MHz + 100 MHz)_High CH_RB Offset 1/32 (1RB-M)

Highest emission in this band was investigated.

Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	Meas. TRP	TRP Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dBm)	(dB)
M1	27.4491	3	V	-13.22	-	-13	-0.22
M1	27.4491	3	-	-	-21.64	-13	-8.64



Emission detected using Peak Detection. Avg EIRP and TRP were measured on highest emission.

EIRP RESULTS, 2CC

Worst case configuration:

SISO-DUAL_QPSK_(100 MHz + 100 MHz)_High CH_RB Offset 1/32 (1RB-M)

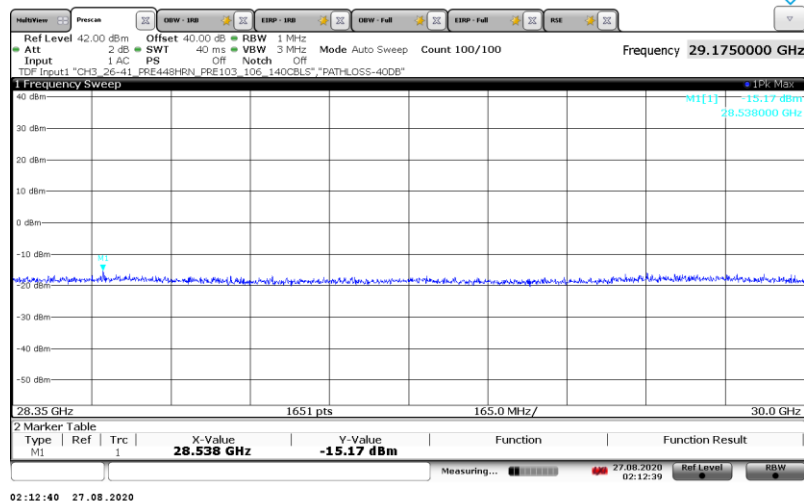
Highest emission in this band was investigated.

Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	Meas. TRP	TRP Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dBm)	(dB)
M2	27.4491	3	V	-10.68	-	-13	2.32
M2	27.4491	3	-	-	-20.05	-13	-7.05

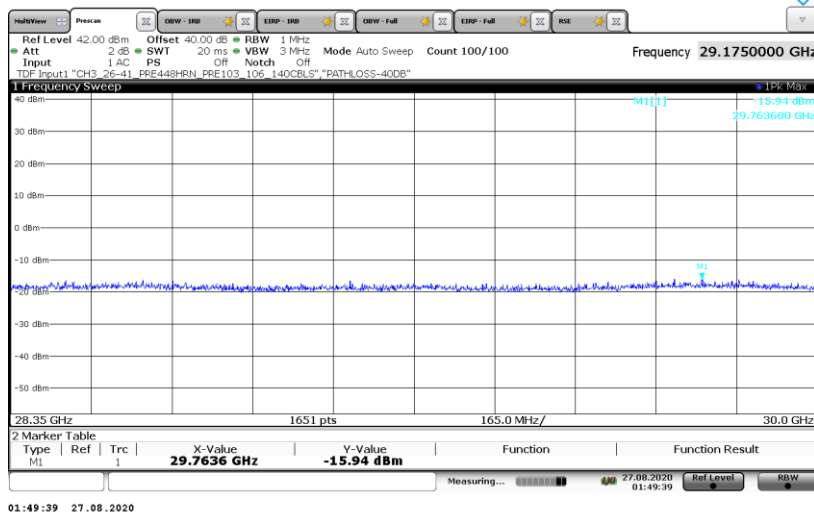
8.4.14. RADIATED EMISSIONS 28.35-30 GHz n261

Note: 27.5-28.35 GHz covered by Fundamental and BE measurements.

28.35-30 GHz – N261, ANT M1 Horizontal



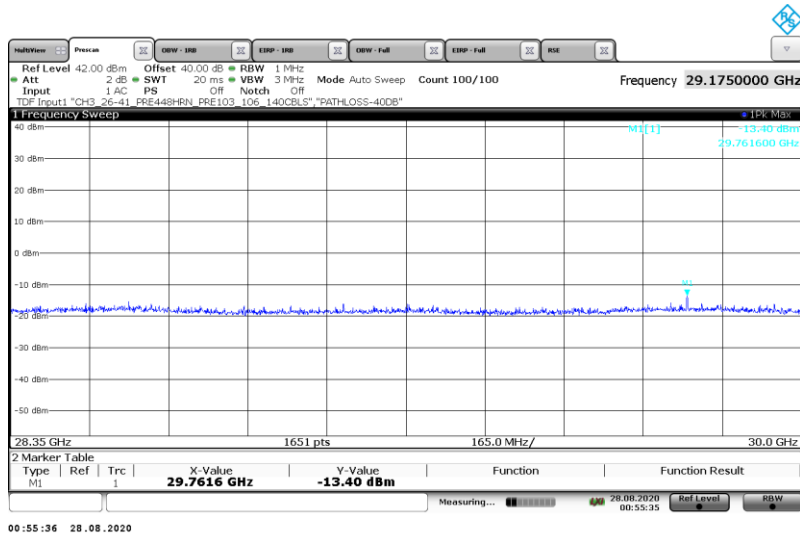
28.35-30 GHz – N261, ANT M1 Vertical



Emission detected using Peak Detection at H-pol. Avg EIRP was measured.

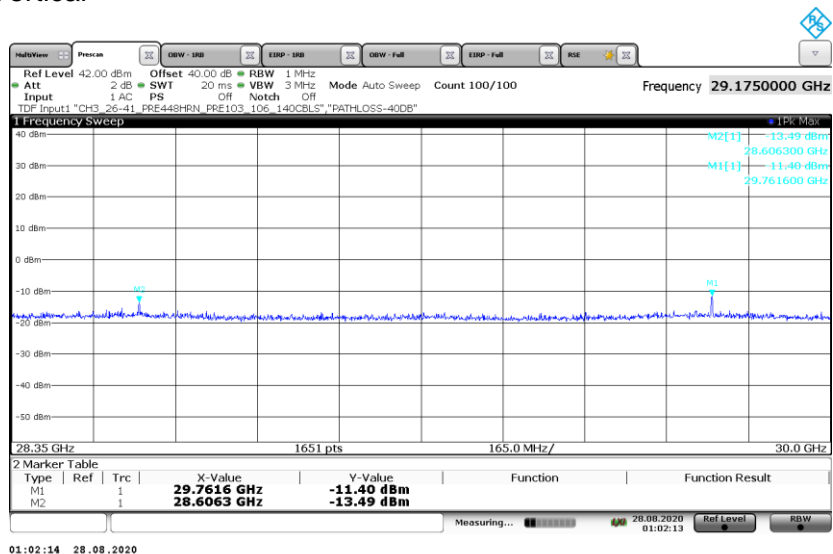
28.35-30 GHz – N261, ANT M2

Horizontal



28.35-30 GHz – N261, ANT M2

Vertical

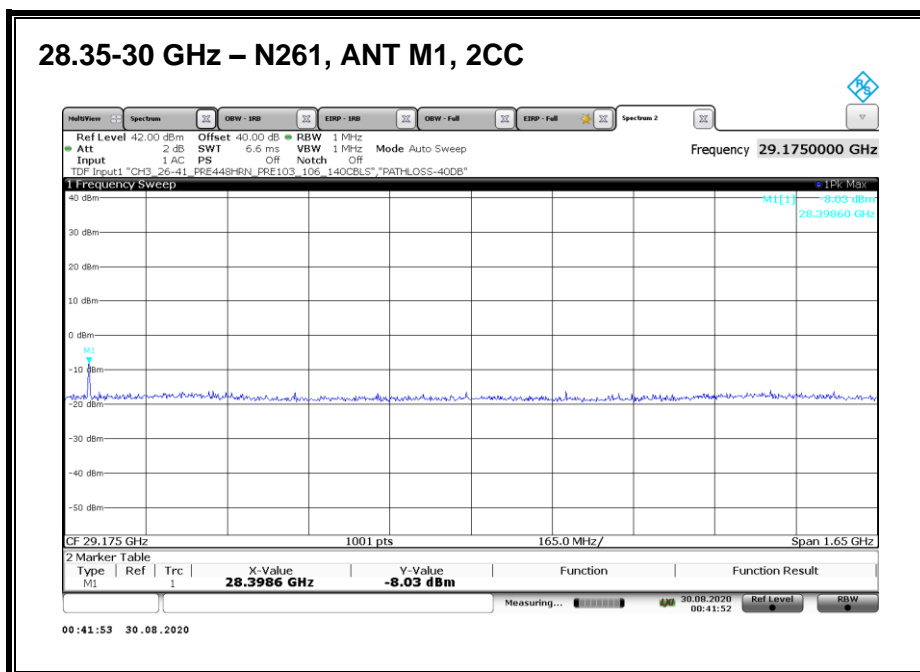


Emissions detected using Peak Detection. Avg EIRP was measured.

28.35-30 GHz n261

EIRP Results

Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
M1	28.5384	3	H	-27.49	-13	-14.49
M2	29.7614	3	H	-21.06	-13	-8.06
M2	29.7614	3	V	-25.60	-13	-12.60
M2	28.6063	3	V	-30.40	-13	-17.40



Emissions detected using Peak Detection. Avg EIRP was measured.

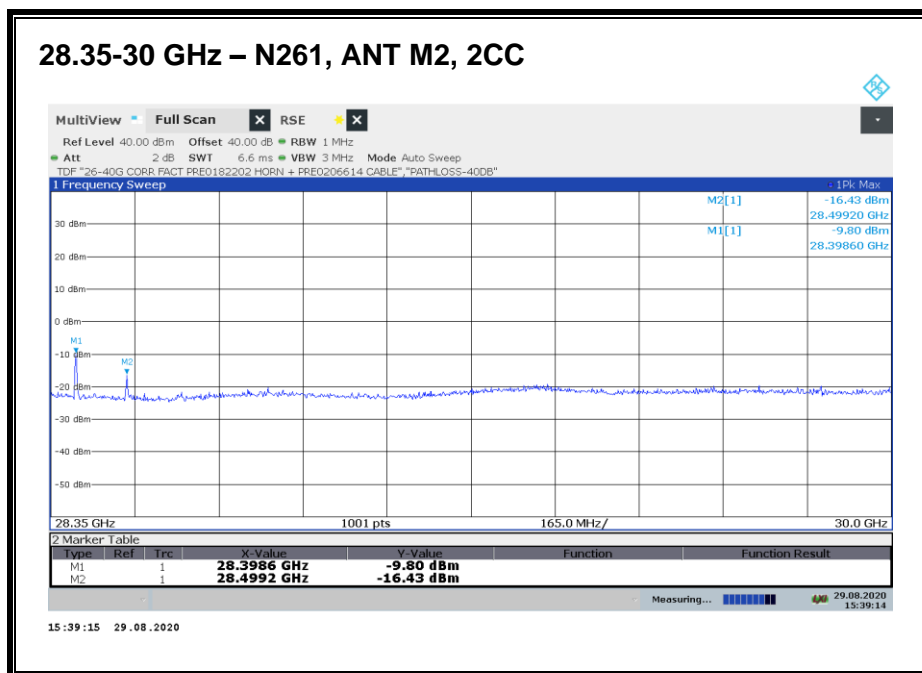
EIRP RESULTS, 2CC

Worst case configuration:

SISO-DUAL_QPSK_(100 MHz + 100 MHz)_High CH_RB Offset 1/32 (1RB-M)

Highest emission in this band was investigated.

Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
M1	28.3990	3	V	-19.94	-13	-6.94



Emission detected using Peak Detection. Avg EIRP was measured on highest emission.

EIRP RESULTS, 2CC

Worst case configuration:

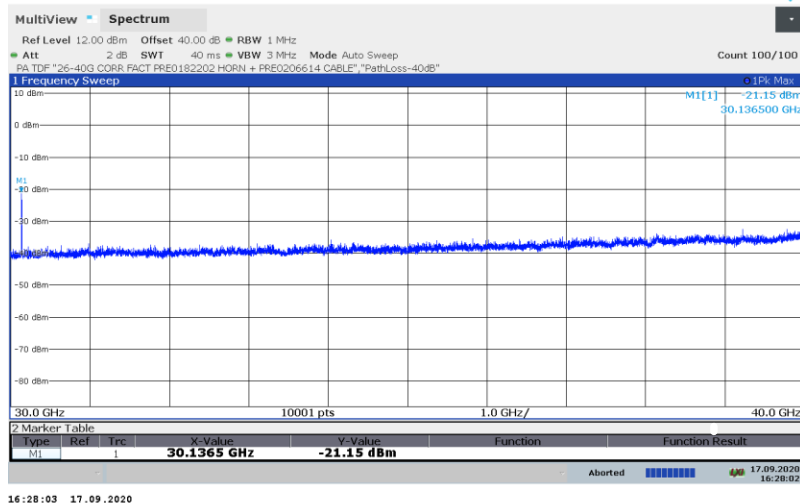
SISO-DUAL_QPSK_(100 MHz + 100 MHz)_High CH_RB Offset 1/32 (1RB-M)

Highest emission in this band was investigated.

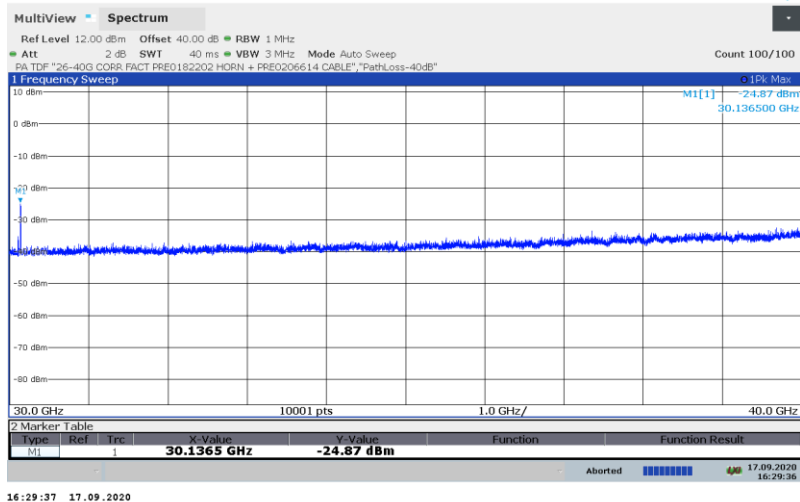
Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
M2	28.3990	3	H	-16.95	-13	-3.95

8.4.15. RADIATED EMISSIONS 30-40 GHz n261

30-40 GHz – N261, ANT M1 Horizontal

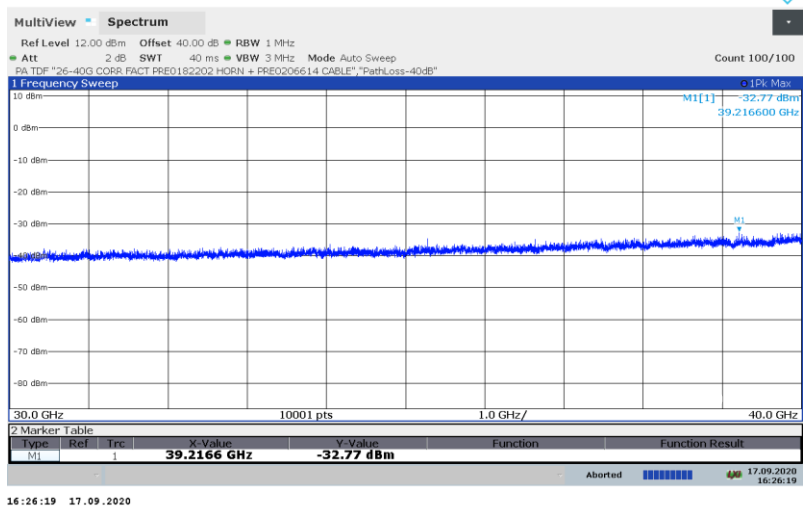


30-40 GHz – N261, ANT M1 Vertical

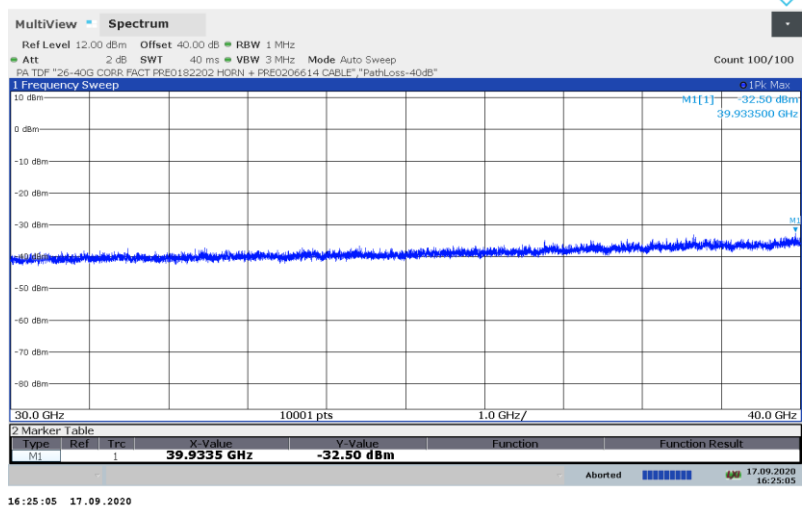


Emissions detected using Peak Detection. Avg EIRP was measured.

30-40 GHz – N261, ANT M2 Horizontal



30-40 GHz – N261, ANT M2 Vertical Full



No Emission using Peak Detection.

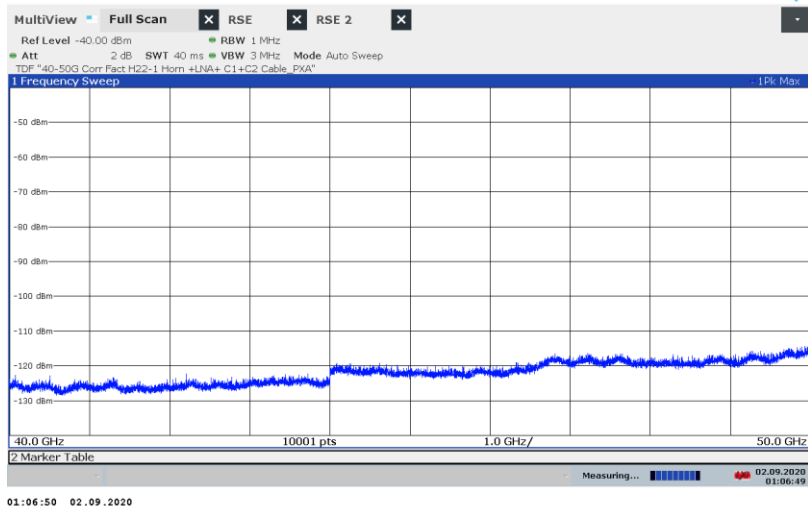
30-40 GHz n261

EIRP Results

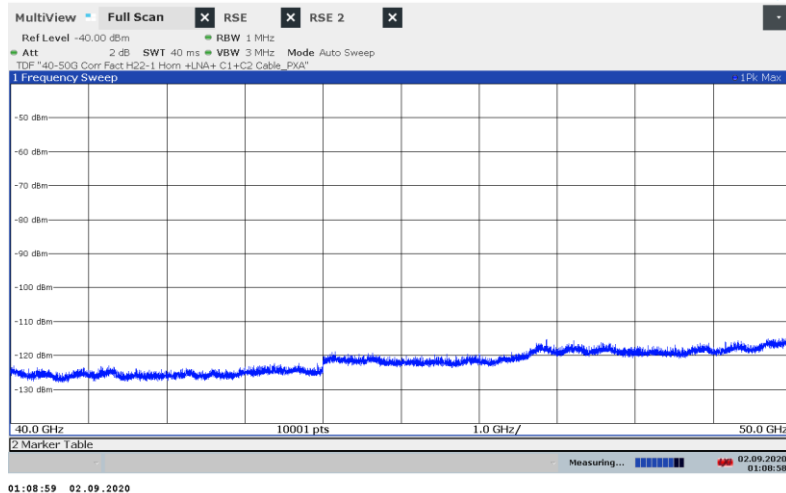
Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
M1	30.1365	3	H	-26.08	-13	-13.08
M1	30.1365	3	V	-23.56	-13	-10.56

8.4.16. RADIATED EMISSIONS 40-50 GHz n261

40-50 GHz – n261, ANT M1 Horizontal



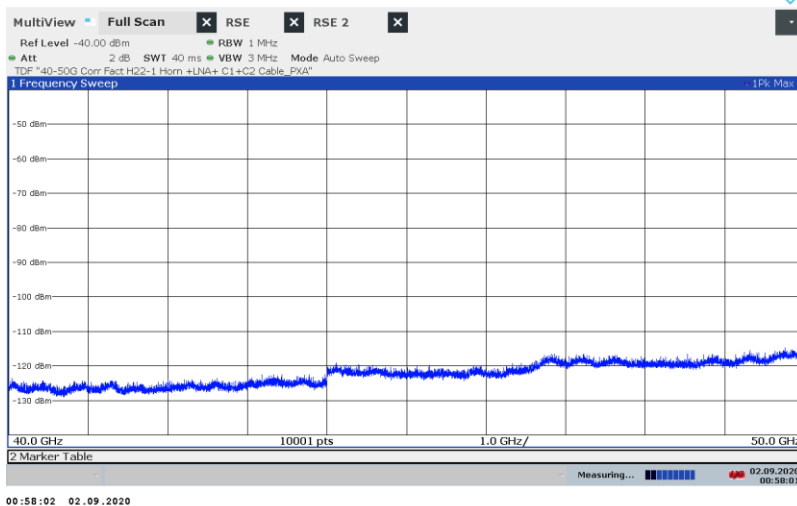
40-50 GHz – n261, ANT M1 Vertical



No Emission using Peak Detection.

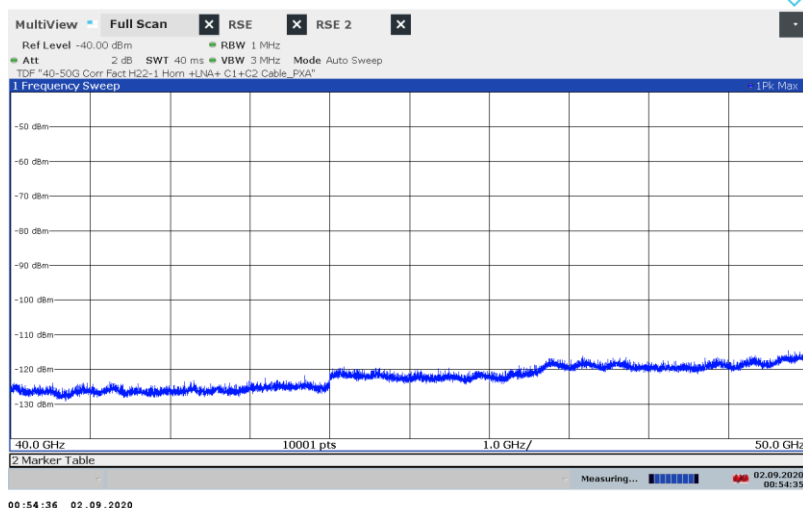
40-50 GHz – n261, ANT M2

Horizontal



40-50 GHz – n261, ANT M2

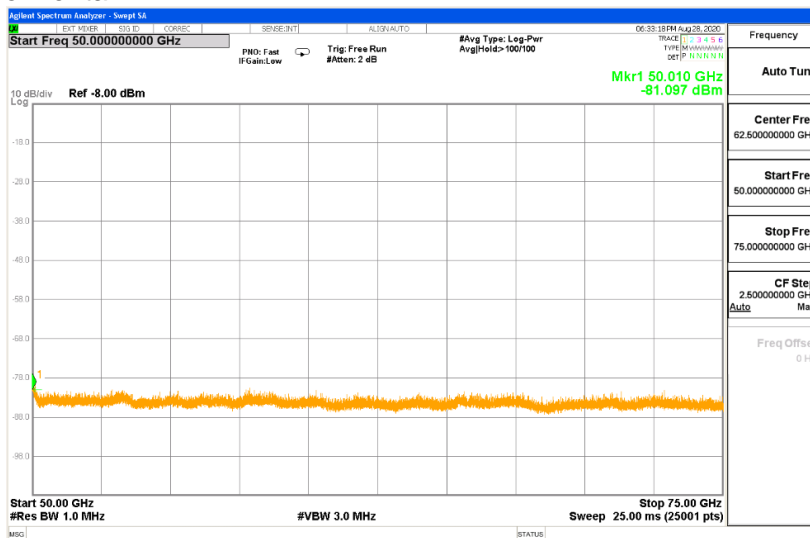
Vertical



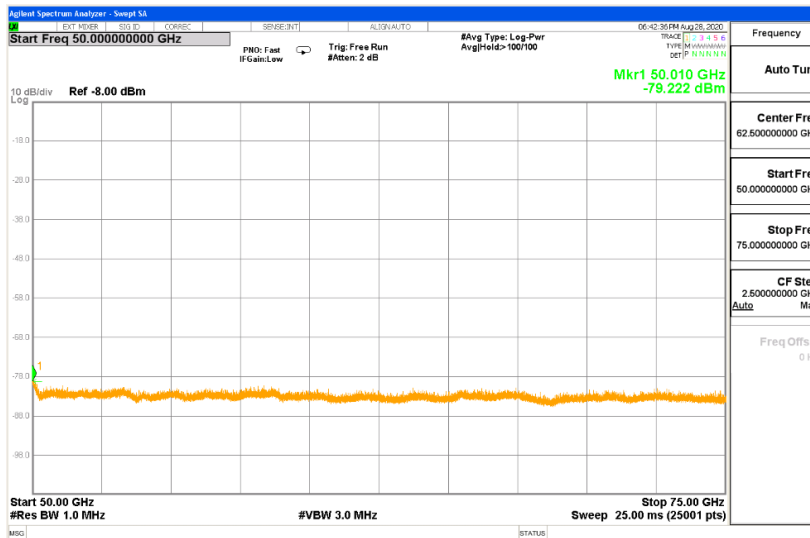
No Emission using Peak Detection.

8.4.17. RADIATED EMISSIONS 50-75 GHz n261

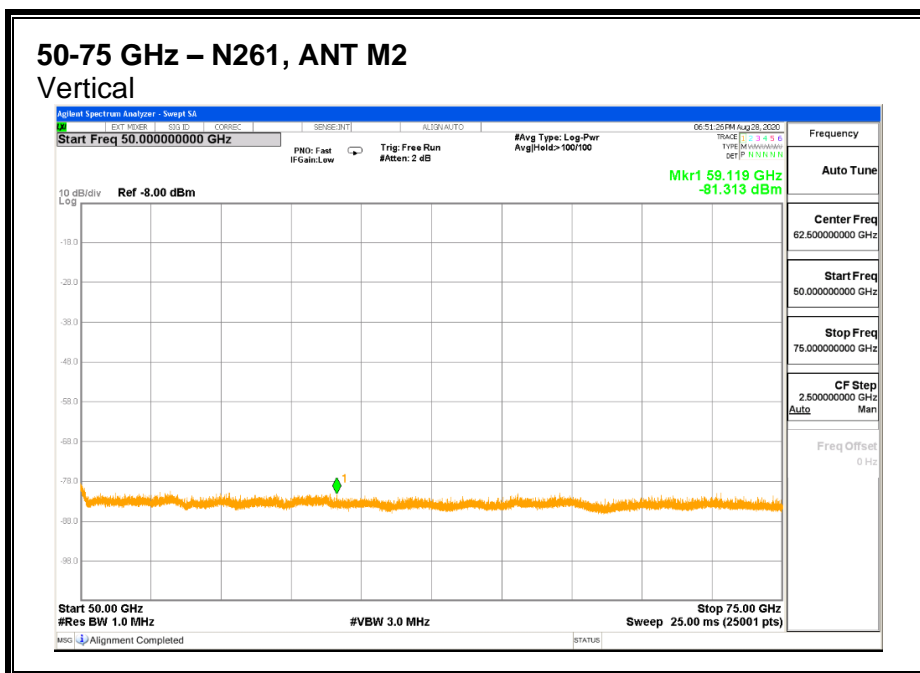
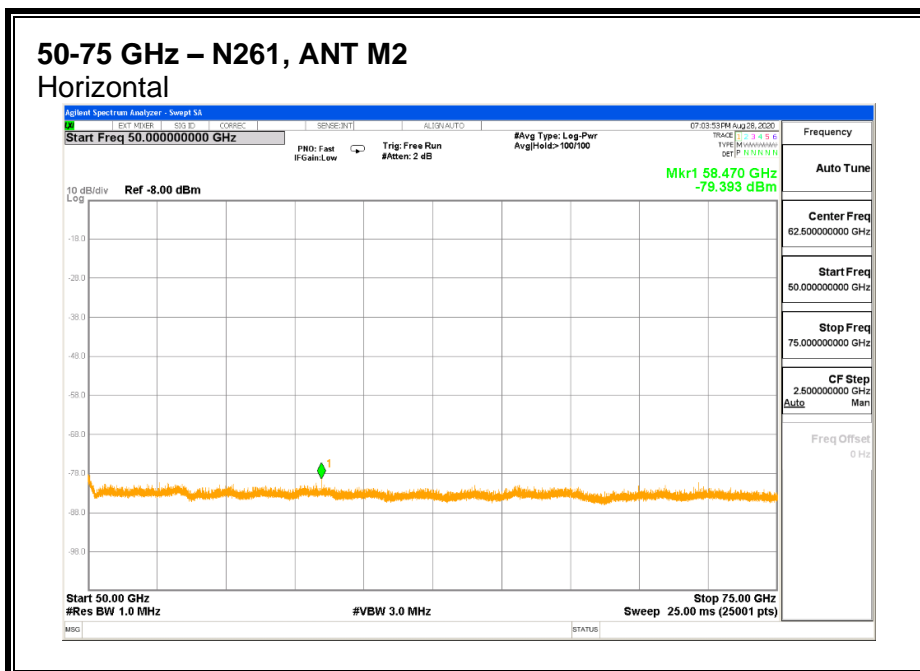
50-75 GHz – N261, ANT M1 Horizontal



50-75 GHz – N261, ANT M1 Vertical

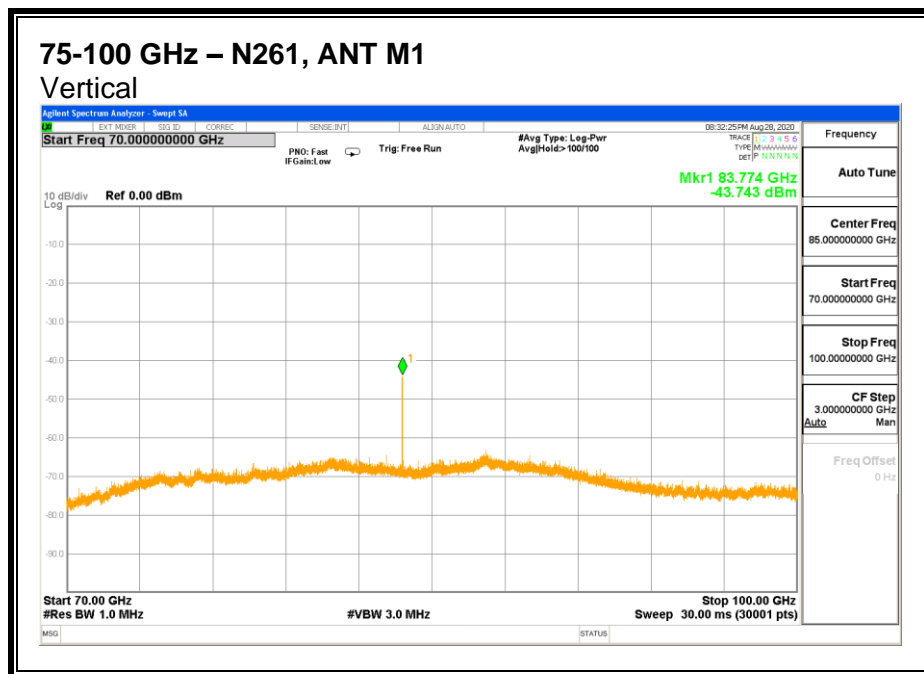
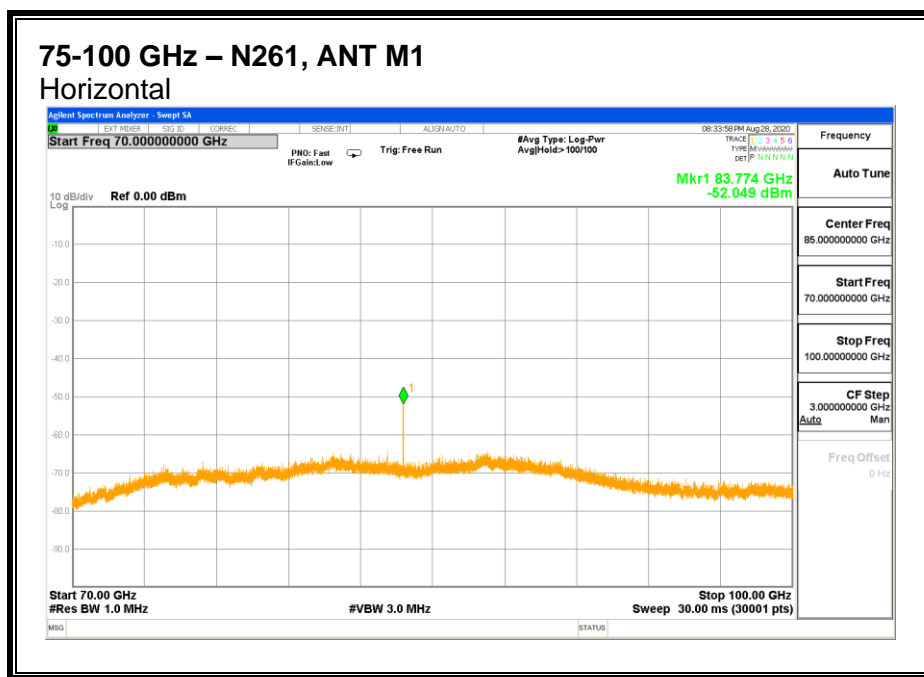


No Emission using Peak Detection.

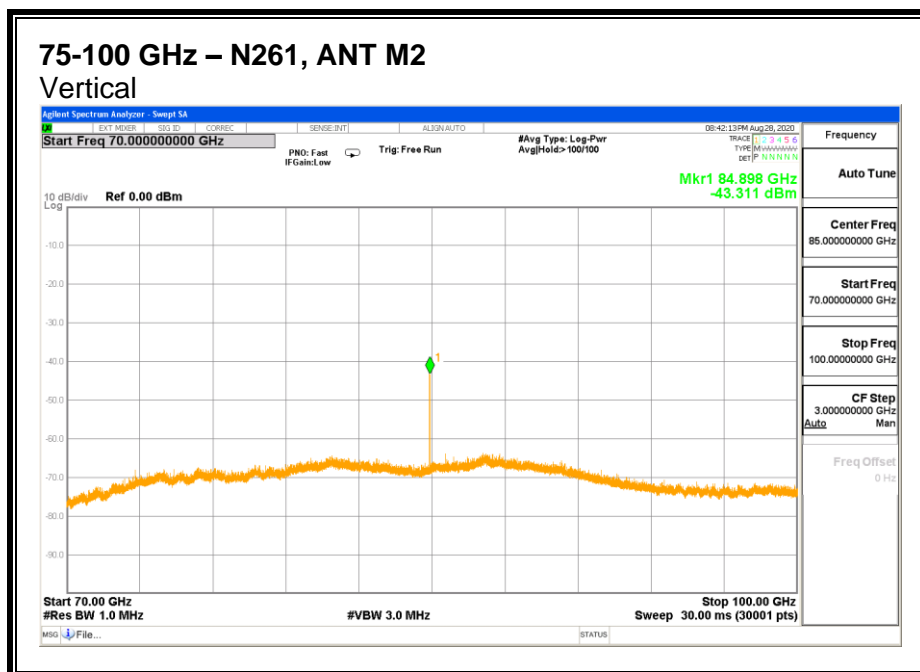
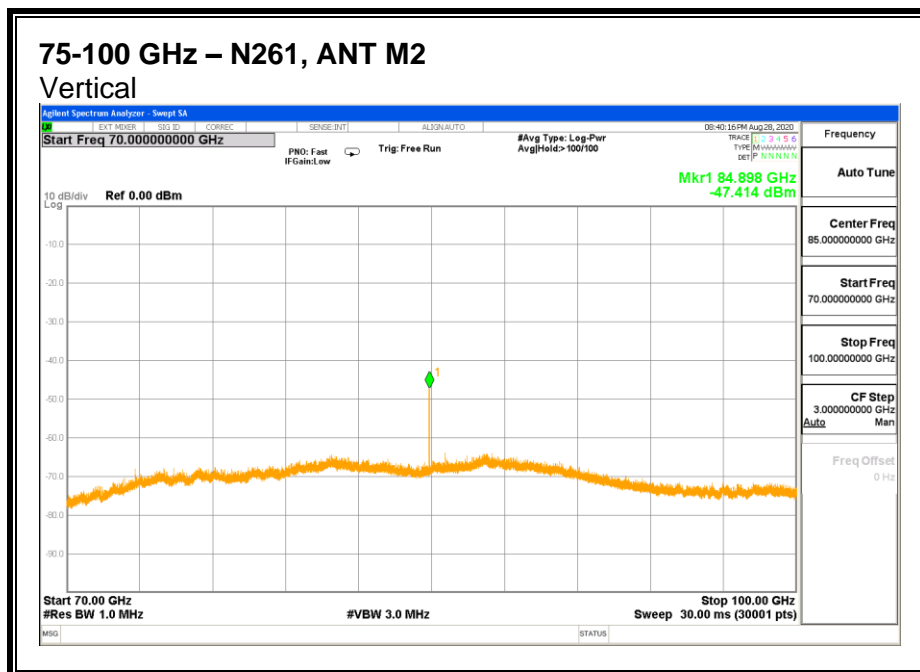


No Emission using Peak Detection.

8.4.18. RADIATED EMISSIONS 75-100 GHz n261



Emissions detected using Peak Detection. Avg EIRP was measured



Emissions detected using Peak Detection. Avg EIRP was measured

75-100 GHz n261

EIRP Results

Antenna	Freq.	Meas. Distance	Rx Ant. Polarity	Meas. Power	Corrected Avg EIRP	TRP Limit	Margin
	(GHz)	(m)	H/V	(dBm)	(dBm)	(dBm)	(dB)
M1	83.772	1	H	-62.96	-46.46	-13	-33.46
M1	83.772	1	V	-60.85	-44.35	-13	-31.35
M2	84.897	1	H	-65.18	-49.21	-13	-36.21
M2	84.897	1	V	-57.32	-41.34	-13	-28.34

8.5. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055

LIMIT

For reporting purposes only

TEST PROCEDURES

KDB 842590 D01 Upper Microwave Flexible Use Service v01 Section 4.5
ANSI C63.26-2015 Section 5.6

Test procedures for temperature variation:

- a. Position the EUT in temperature/humidity chamber with power off.
 - b. Set chamber temperature to -30°C and stabilize the EUT for at least 30 minutes.
 - c. Record maximum change in frequency within one minute after powering the EUT.
 - d. Increase chamber temperature at 10°C intervals from -30°C to 50°C. Record maximum change in frequency at each temperature.
 - e. A period of at least 30 minutes is provided to allow stabilization of the equipment at each temperature level.
- Temp. = -30°C to +50°C

Test procedures for voltage variation:

- a. Position the EUT in temperature/humidity chamber with power off.
 - b. Set chamber temperature to 20°C.
 - c. Record maximum frequency change within one minute after powering the EUT.
 - d. The primary supply voltage is varied from 85% to 115% of the nominal value for hand-carried, battery-powered equipment. primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.
- Voltage = (85% - 115%)
Nominal: 3.8 VDC; Low: 3.23 VDC; High: 4.37 VDC.

The measurements were performed with the CW signal of the center frequency of n260 on antenna M1 and n261 bands on antenna M2, to represent Chipset 2 and Chipset 1 respectively.

RESULTS

See the following page.

TESTED BY:

Employee IDs: 19459 & 19437

RESULTS

			Antenna M1 _n260	
Input Voltage	Environment	Frequency	Frequency	Delta
	Temperature (°C)	(Hz)	(MHz)	(kHz)
Normal	50	38505136579	38505.1365794	303.056
Normal	40	38504850831	38504.8508312	17.308
Normal	30	38504798779	38504.7987790	-34.744
Normal	20	38504833523	38504.8335229	Reference
Normal	10	38504940610	38504.9406102	107.087
Normal	0	38505021223	38505.0212233	187.700
Normal	-10	38505131062	38505.1310622	297.539
Normal	-20	38505161261	38505.1612615	327.739
Normal	-30	38505159096	38505.1590960	325.573
115%	20	38504852514	38504.8525144	18.991
85%	20	38504826010	38504.8260099	-7.513

			Antenna M2 _n261	
Input Voltage	Environment	Frequency	Frequency	Delta
	Temperature (°C)	(Hz)	(MHz)	(kHz)
Normal	50	27929905354	27929.9053535	9.472
Normal	40	27929841532	27929.8415318	-54.350
Normal	30	27929859658	27929.8596579	-36.223
Normal	20	27929895881	27929.8958813	Reference
Normal	10	27929978862	27929.9788624	82.981
Normal	0	27930045547	27930.0455467	149.665
Normal	-10	27930098802	27930.0988024	202.921
Normal	-20	27930113815	27930.1138155	217.934
Normal	-30	27930083765	27930.0837646	187.883
115%	20	27929896039	27929.8960387	0.157
85%	20	27929896421	27929.8964209	0.540

9. SETUP PHOTOS

Please refer to 13335182-EP20V1for setup photos

END OF REPORT

APPENDIX A

1. 50-75 GHz VDI WR15.0SAX



Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: UL LLC
47173 Benicia Street
Fremont, CA 94538
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Packing List No: 201834
Shipping Date: 06/02/20

Today's Date: 06/02/20
PO Number: 7862016682

Quantity			Order-Job
Shipped	Unit	Description	Number
1	EA	VDIWR15.0SAX WR15SAX / SN: SAX 620	20141A-01

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature
Virginia Diodes, Inc

A handwritten signature in black ink, appearing to be "HSD", is written over a horizontal line.

Page 1 of 1

2. 75-110 GHz VDI WR10.0SAX



Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Packing List No: 201833
Shipping Date: 06/02/20

Today's Date: 06/03/20
PO Number: 7862016682

Quantity	Shipped	Unit	Description	Order-Job Number
1		EA	VDIWR10.0SAX WR10SAX - Spectrum Analyzer Extension Module; SN: SAX 649.	20141C-01

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).


Authorized Signature
Virginia Diodes, Inc

Page 1 of 1

3. 110-170 GHz VDI WR6.5SAX



Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: UL LLC
47173 Benicia Street
Fremont, CA 94538
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Packing List No: 201155
Shipping Date: 04/07/20

Today's Date: 04/07/20
PO Number: 7862016203

Quantity			<u>Order-Job</u>
<u>Shipped</u>	<u>Unit</u>	<u>Description</u>	<u>Number</u>
1	EA	VDIWR6.5SAX WR6.5SAX / SN: SAX 624	20075D-01

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

A handwritten signature in black ink, appearing to be "OSM", is written over a horizontal line.

Authorized Signature
Virginia Diodes, Inc

Page 1 of 1

4. 170-260 GHz VDI WR4.3SAX



Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: UL LLC
47173 Benicia Street
Fremont, CA 94538
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Packing List No: 201728
Shipping Date: 05/22/20

Today's Date: 05/28/20
PO Number: 7862016682

<u>Quantity</u>	<u>Shipped</u>	<u>Unit</u>	<u>Description</u>	<u>Order-Job</u> <u>Number</u>
1	EA	VDIWR4.3SAX WR15SAX / SN: SAX 651	20141E-01	

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

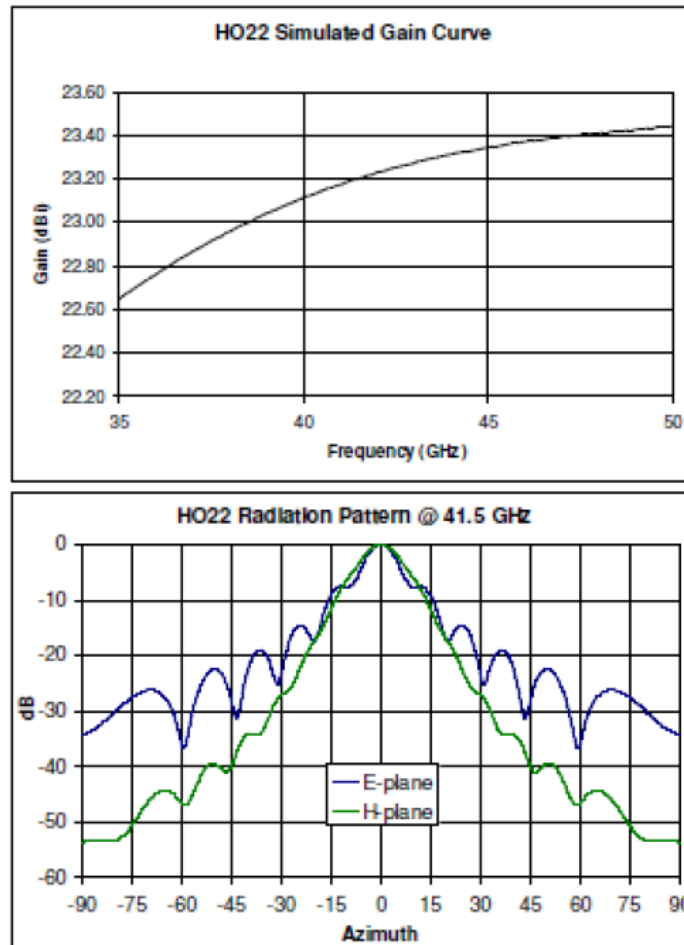

Authorized Signature
Virginia Diodes, Inc

Page 1 of 1

5. 35-50 GHz CMI HO22R HORN ANTENNA



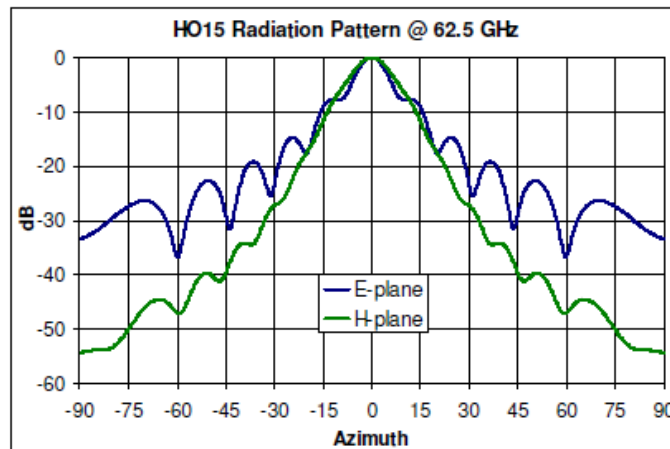
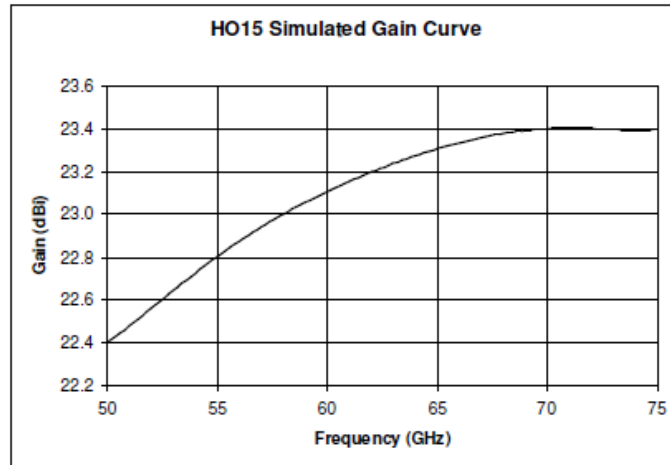
24 Boston Court
Longmont, CO 80501
303 651-0707 (P)
303 651-0706 (F)
www.custommicrowave.com



6. 50-75 GHz CMI HO15R HORN ANTENNA



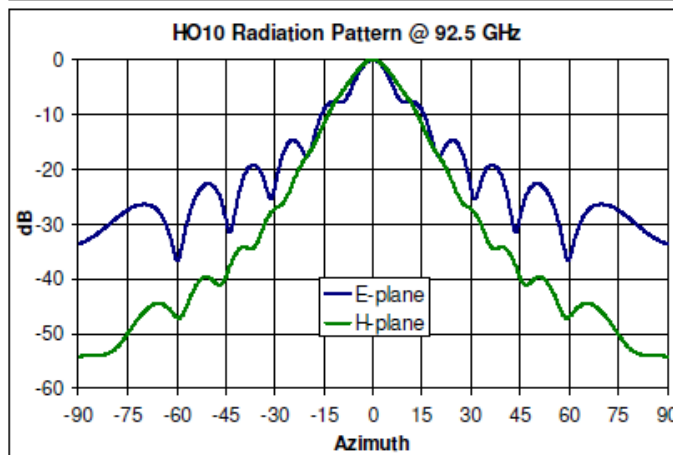
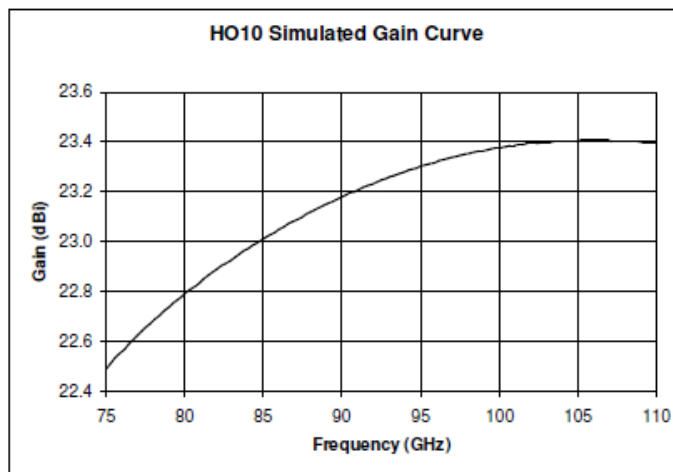
24 Boston Court
Longmont, CO 80501
303 651-0707(P)
303 651-0706(F)
www.custommicrowave.com



7. 75-110 GHz CMI HO10R HORN ANTENNA



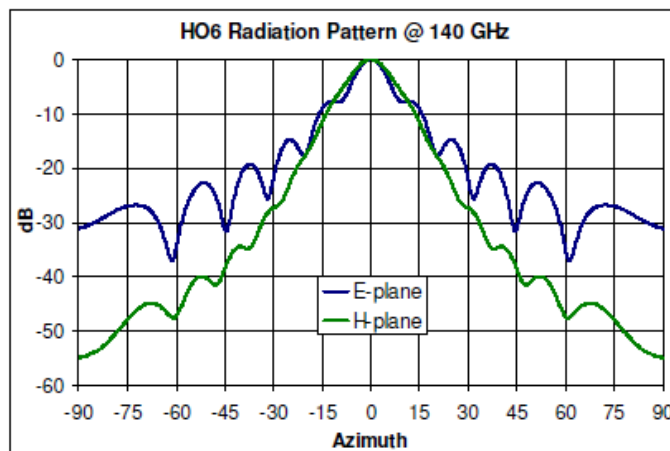
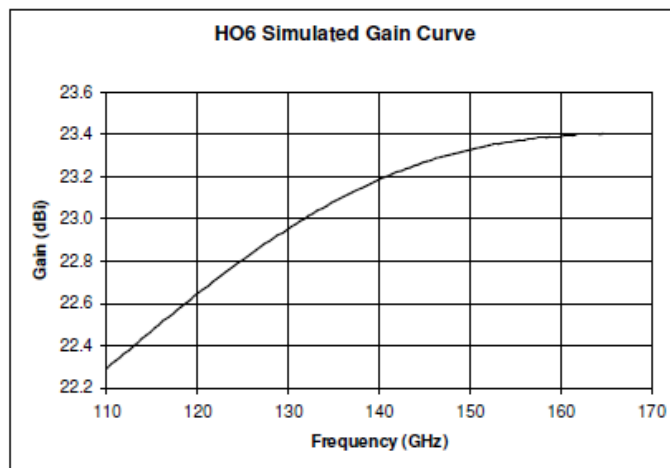
24 Boston Court
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8. 110-170 GHz CMI HO6R HORN ANTENNA



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9. 170-260 GHz CMI HO4R HORN ANTENNA



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