CERTIFICATION TEST REPORT

Report Number : R12902541-E1

Applicant	:	Dynetics 1002 Explorer Boulevard Huntsville, AL 35806
Model	:	GA1360-L
FCC ID	:	QFS001-10037200L
EUT Description	:	Ground Radar
Test Standard(s)	:	FCC CFR47 PART 90.103

Date of Issue:
2019-08-29

Prepared by:
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NVLAP TESTING

NVLAP Lab code: 200246-0

Revision History

Ver.	Issue Date	Revisions	Revised By
1	2019-07-31	Initial Release.	Brian T. Kiewra
2	2019-08-12	Editorial change and corrected EUT's maximum antenna gain.	Richard Jankovics
3	2019-08-29	Updated emission mask description and added notes for radiated enclosure port plots.	Richard Jankovics

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Dynetics
1002 Explorer Boulevard
Huntsville, AL 35806-2806

EUT DESCRIPTION: Ground Radar

MODEL: GA1360-L

SERIAL NUMBER: 001647

DATE TESTED: 2019-06-19 through 2019-06-26

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
47 CFR Part 90.103	Compliant

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL LLC based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. government.

Approved & Released
For UL LLC by:

Jeffrey Moser
Operations Leader
UL – Consumer Technology Division

Prepared By:

Brian T. Kiewra
Project Engineer
UL – Consumer Technology Division

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, 47 CFR Part 90 and ANSI C63.26-2015.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Dr., Research Triangle Park, NC 27709, USA and 2800 Perimeter Park Drive, Suite B, Morrisville, NC 27560.

12 Laboratory Dr.	2800 Perimeter Park Dr., Suite B
☐ Chamber A	☐ Chamber North)
☐ Chamber C	☒ Chamber South

UL LLC (RTP) is accredited by NVLAP, Laboratory Code 200246-0. The full scope of accreditation can be viewed at http://www.nist.gov/nvlap/.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radio Frequency (Spectrum Analyzer)	141.2 Hz
Occupied Channel Bandwidth	2.00%
RF output power, conducted	1.3 dB (PK) 0.45 dB (AV)
Power Spectral Density, conducted	2.47 dB
Unwanted Emissions, conducted	3.05 dB
All emissions, radiated	4.88 dB
Temperature	2.26°C
Humidity	6.79%
DC Supply voltages	1.70%
Time	3.39%

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a wide-band ground radar used to monitor a specific area.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output powers as follows:

Mode 1, Mode2, and Mode 3

Channel	Mode 1 Peak power (dBm)	Mode 2 Peak Power (dBm)	Mode 3 Peak Power (dBm)
Low Channel	26.33	25.84	25.52
Middle Channel	26.80	26.75	26.71
High Channel	26.33	25.83	25.66

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna type is a custom wheel antenna. The maximum antenna gain is 3.0 dBi. The antenna connector type is SMA.

5.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was version 5.0.

The EUT software installed during testing was 1360L Release 1.0.

5.5. WORST-CASE CONFIGURATION AND MODE

The EUT operates in three specific modes as follows: Mode 1 (High Res), Mode 2 (Low Bit), and Mode 3 (High Dop). All modes and three channels (low, middle, high) were tested during antenna-port measurements except for frequency stability where the middle channel of Mode 1 was evaluated.

All modes were tested during radiated spurious emissions testing. The low, middle, and high channels were evaluated in the 1-18GHz range, while the highest-power channel was evaluated in the other ranges of interest.

The device is intended to operate in only one orientation and was thus testing in the device's intended orientation.

The operating frequencies of the EUT are as follows:

Center Frequencies (MHz)	Mode	Channel
3023.4375	3	Low
3031.2500	2	Low
3039.0625	1	Low
3046.8750	1, 2, 3	Mid
3054.6875	1	High
3062.5000	2	High
3070.3125	3	High

5.6. DESCRIPTION OF TEST SETUP

CONDUCTED and RADIATED TESTS SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Dell	M4600	26825968441	DoC
Laptop AC/DC adapter	Dell	D846D	K00W06R02MU	DoC
PoE Injector	L-Com	BT-CAT5-P1	Non-serialized	N/A
Power Supply	TDK-Lamda	DPP-240-48-1	140269-9601111400138	N/A

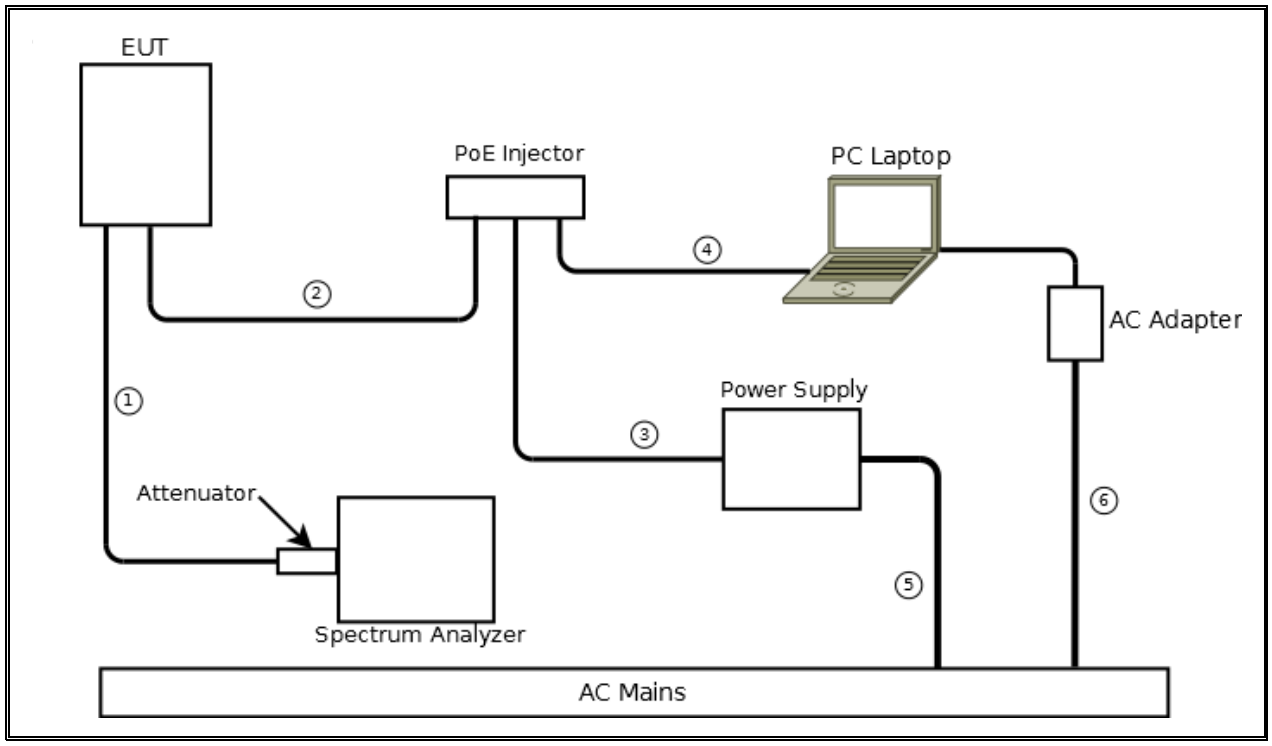
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Transmit Antenna	1	SMA	Shielded	-	Connected to spectrum analyzer via coaxial cable and attenuator during conducted testing. Otherwise, terminated with a 50-ohm load.
2	PoE (Ethernet/DC)	1	RJ45	Shielded	15.2	Connection between EUT and PoE injector. (1.5m length used during frequency-stability testing.)
3	DC	1	-	Un-shielded	1.8	2-wire connection between power supply and PoE injector.
4	Ethernet	1	RJ45	Shielded	1.5	Connection between laptop PC and PoE.
5	AC	1	3-prong	Un-shielded	1.8	L/N/PE power connection to power supply.
6	AC	1	3-prong	Un-shielded	1.8	L/N/PE power connection to AC adaper.

TEST SETUP- CONDUCTED PORT

The EUT was connected to a laptop PC and power supply via a PoE injector and its transmit antenna port was connected to a spectrum analyzer via a coaxial cable and attenuator.

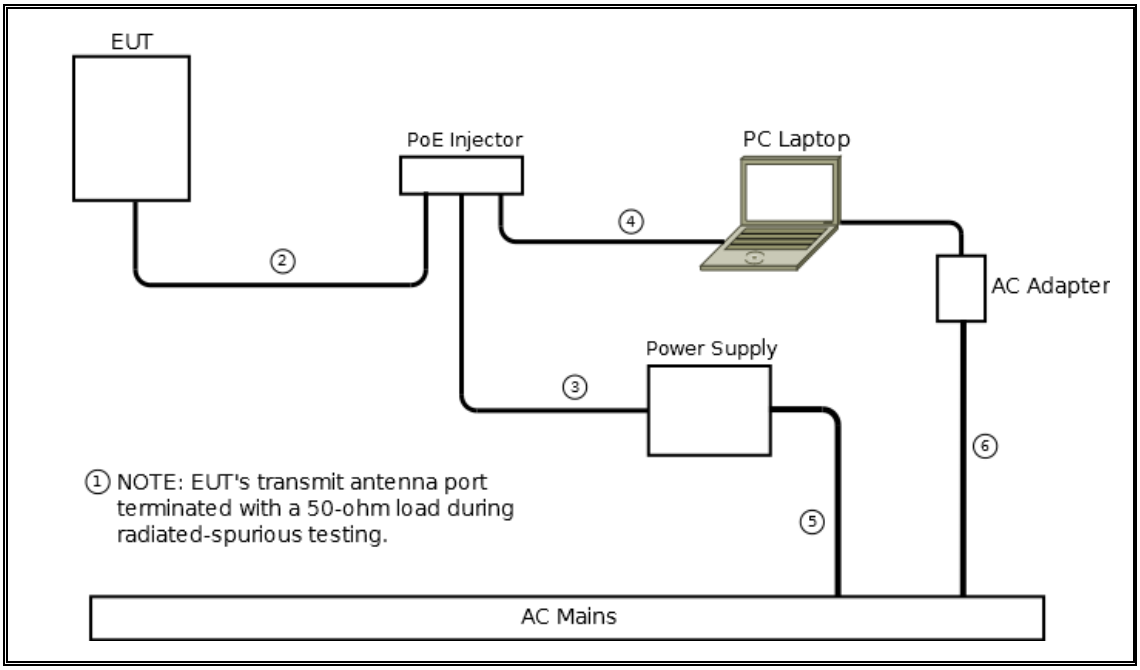
SETUP DIAGRAM



TEST SETUP- RADIATED SPURIOUS

The EUT was connected to a laptop PC and power supply via a PoE injector and its transmit antenna port was terminated with a 50-ohm load.

SETUP DIAGRAM



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment were utilized for the tests documented in this report:

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville - North Chamber)

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2019-01-24	2020-01-31
AT0073	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2018-08-06	2019-08-06
AT0067	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2019-03-22	2020-03-22
AT0076	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2018-11-08	2019-11-08
AT0077	Horn Antenna, 26-40GHz	ARA	MWH-2640/B	2018-11-08	2019-11-08
N-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2019-05-02	2020-05-02
N-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2019-05-02	2020-05-02
N-SAC03	Gain-loss string: 1-18GHz	Various	Various	2019-03-15	2020-03-15
N-SAC04	Gain-loss string: 18-40GHz	Various	Various	2018-09-30	2019-09-30
SA0026	Spectrum Analyzer	Agilent	N9030A	2019-03-19	2020-03-19
SA0027 (18-40GHz cart)	Spectrum Analyzer	Agilent	N9030A	2019-05-15	2020-05-05
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
181474341	Environmental Meter	Fisher Scientific	15-077-963	2018-07-27	2020-07-27

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Conducted Room 1				
SA0027	Spectrum Analyzer	Agilent	N9030A	2019-05-15	2020-05-15
CBL269426-002	Cable, coaxial, DC-40GHz	Huber + Suhner	SUCOFLEX 102EA	2019-06-17	2020-06-17
ATTEN009	10dB, DC-40GHz, 5W	Fairview Microwave	SA4017-10	2019-03-08	2020-03-08
HPF016	18GHz high-pass filter, 2W, F_{high} =40GHz	Micro-Tronics	HPS19367	2019-03-08	2020-03-08
76023 (EC0225)	Temp/Humid Chamber	Cincinnati Sub-Zero	ZPH-8-3.5-SCT/AC	2019-06-14	2020-06-14
HI0091 (s/n 161024885)	Environmental Meter	Fisher Scientific	15-077-963	2019-06-17	2020-06-17
MM0169	Multimeter	Keysight	U1232A	2019-03-15	2020-03-15
s/n 17151057405110457	Power supply, DC, 60V/2A	BK Precision	1715A	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA

7. RF POWER OUTPUT

REQUIREMENT

§2.1046 Measurements required: RF power output.

(a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in §2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

§90.205 Output Power.
(r) All other frequency bands. Requested transmitter power will be considered and authorized on a case by case basis.

TEST PROCEDURE

The transmitter output was connected to the input of Spectrum Analyzer via calibrated coaxial cable and attenuator.

The output power was measured with the spectrum analyzer at the low, middle and high channel for each mode.

- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with VBW ≥ RBW. The RBW was set to largest available (8MHz). It is less then overall bandwidth of individual channel but is larger than bandwidth of individual pulse within a channel.
- Set a marker to point the corresponding peak value.

TABULAR RESULTS

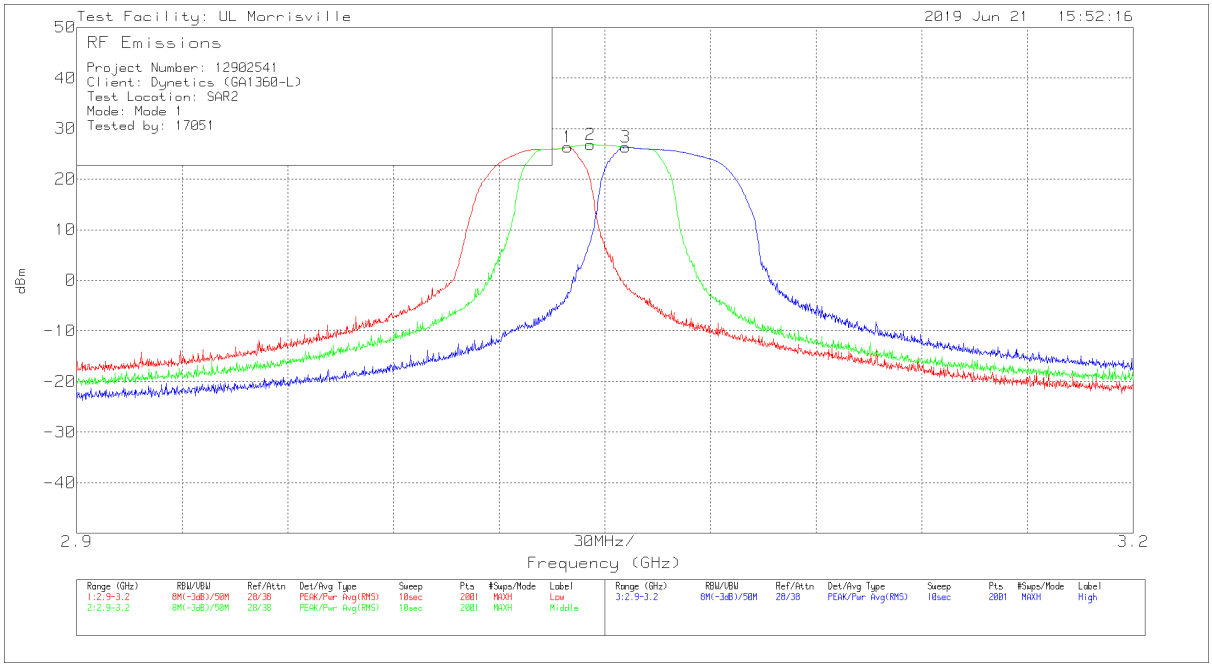
Channel	Mode 1 Peak power (dBm)	Mode 2 Peak Power (dBm)	Mode 3 Peak Power (dBm)
Low Channel	26.33	25.84	25.52
Middle Channel	26.80	26.75	26.71
High Channel	26.33	25.83	25.66

***** The maximum power was derived from exported numeric trace data.

Note: 8MHz RBW is adequate for a pulse width of 2048ns (1/T=488.3kHz)

GRAPHICAL RESULTS

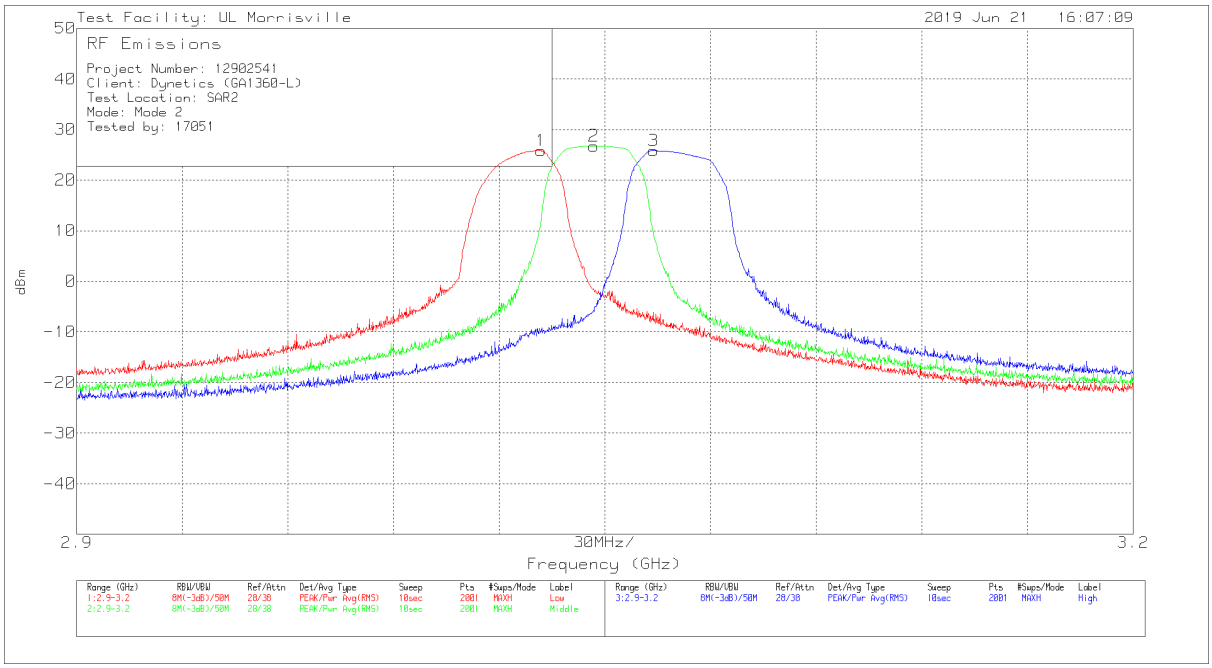
Mode1



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm
1	3.0395	15.73	Pk	.9	9.7	26.33
2	3.0458	16.2	Pk	.9	9.7	26.80
3	3.05585	15.73	Pk	.9	9.7	26.33

Pk - Peak detector

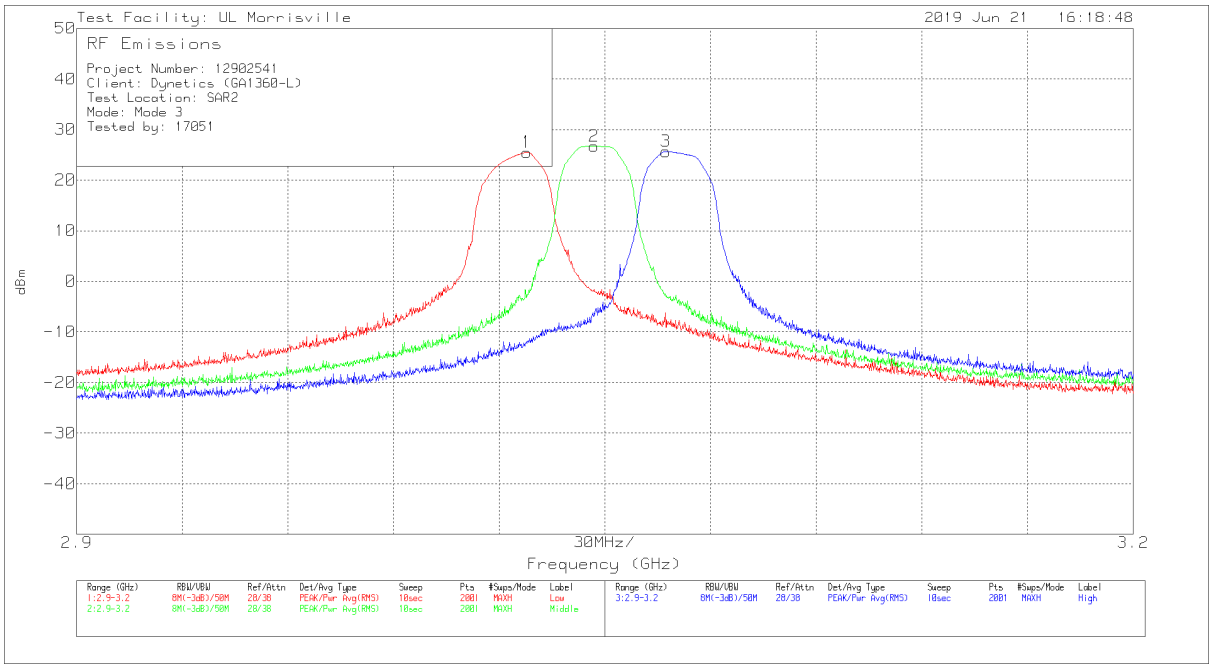
Mode 2



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm
1	3.03185	15.24	Pk	.9	9.7	25.84
2	3.04685	16.15	Pk	.9	9.7	26.75
3	3.0638	15.23	Pk	.9	9.7	25.83

Pk - Peak detector

Mode 3



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm
1	3.0278	14.92	Pk	.9	9.7	25.52
2	3.047	16.11	Pk	.9	9.7	26.71
3	3.06733	15.06	Pk	.9	9.7	25.66

Pk - Peak detector

8. EMISSIONS TEST RESULTS

8.1. OCCUPIED BANDWIDTH

RULE PART(S)

§2.105 Measurements required: Occupied bandwidth.

§90.207 Types of emissions.
(k) For radiolocation operations as may be authorized in accordance with subpart F, unless otherwise provided for any type of emission may be authorized upon a satisfactory showing of need.

§90.209 Bandwidth Limitation.
Above 2500 MHz:
[2]Bandwidths for radiolocation stations in the 420-450 MHz band and for stations operating in bands subject to this footnote will be reviewed and authorized on a case-by-case basis.

LIMITS

For reporting purposes only.

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band.

MODES TESTED

TABULAR RESULTS

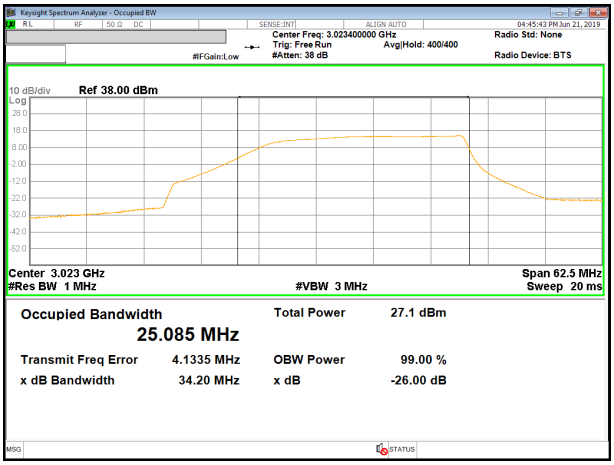
Channel	Mode 1 99% Bandwidth MHz	Mode 2 99% Bandwidth MHz	Mode 3 99% Bandwidth MHz
Low Channel	25.085	15.696	8.4854
Middle Channel	32.184	16.142	8.4796
High Channel	31.695	16.149	8.4812

Note: Post-transmitter filtering affects the lowest and highest channels of Mode 1 and the lowest channel of Mode 2.

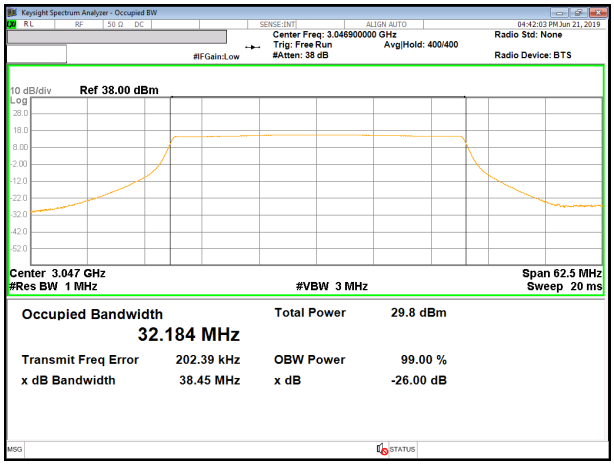
GRAPHICAL RESULTS

Mode 1

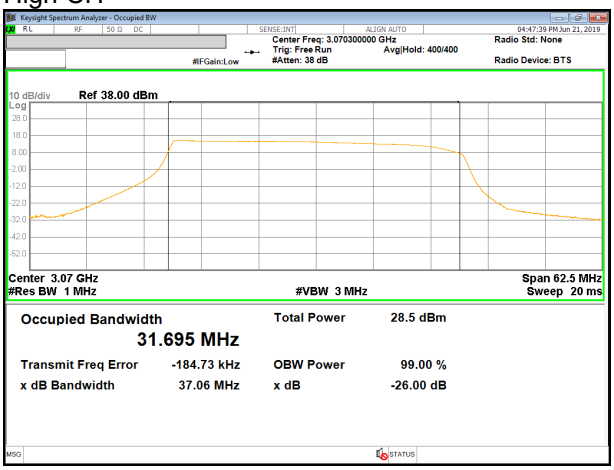
Low CH



Middle CH



High CH

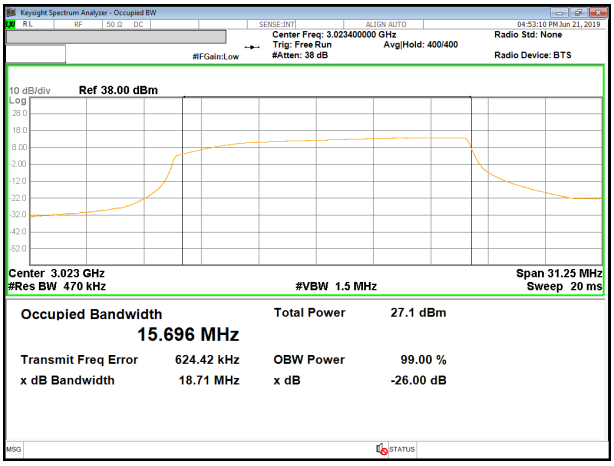


Date: 2019-06-21
Project No: 11967622
Location: SAR2
Tested by: 17051

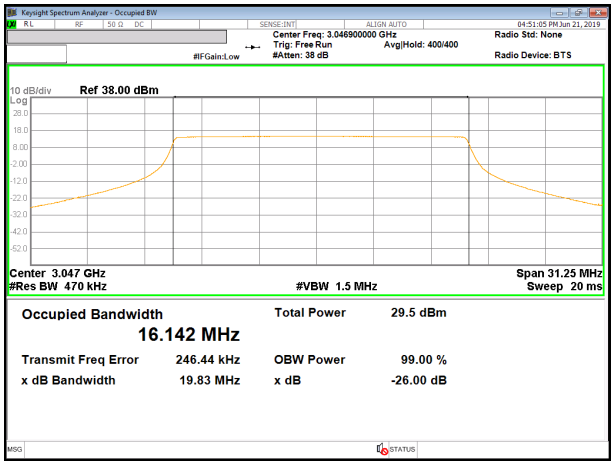
Detector: Peak
Mode: Max Hold

Mode 2

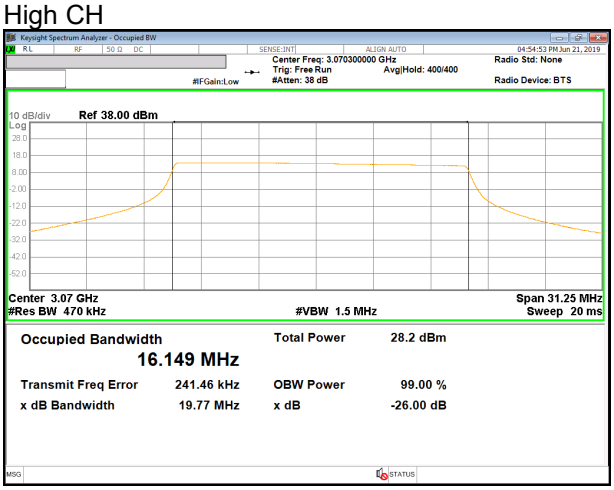
Low CH



Middle CH



High CH

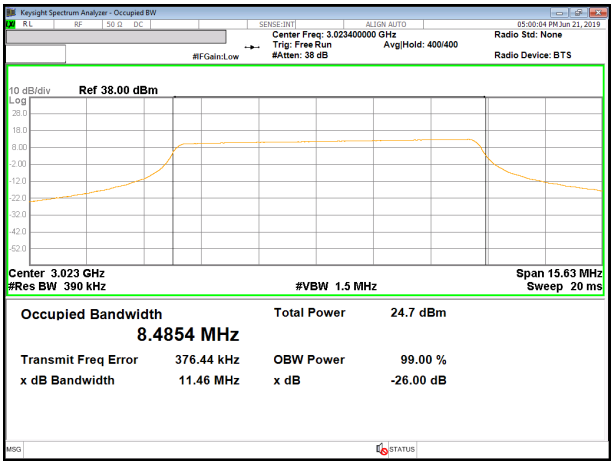


Date: 2019-06-21
Project No: 11967622
Location: SAR2
Tested by: 17051

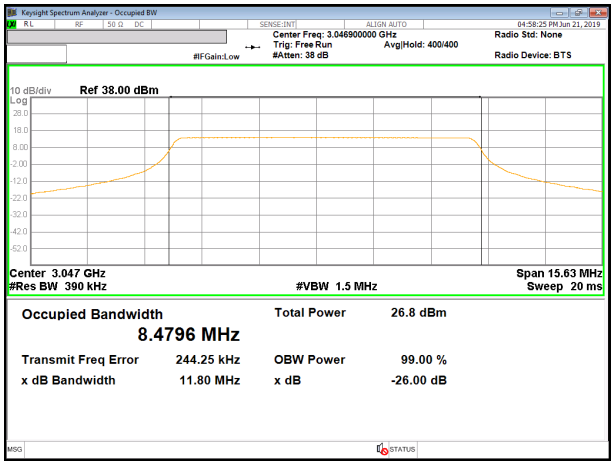
Detector: Peak
Mode: Max Hold

Mode 3

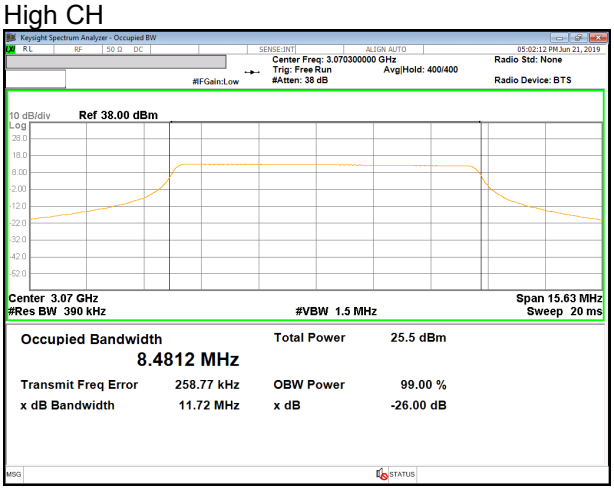
Low CH



Middle CH



High CH



Date: 2019-06-21
Project No: 11967622
Tested by: 17051

Detector: Peak
Mode: Max Hold

8.2. BAND EDGE

RULE PART(S)

§2.1051 Measurements required: Spurious emissions at antenna terminals. (At the band edges.)

§90.210 Emission Mask

Mask of 90.210(b) is met as all emissions are below -13dBc as worst case limit.

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB. (-13dBm)

TEST PROCEDURE

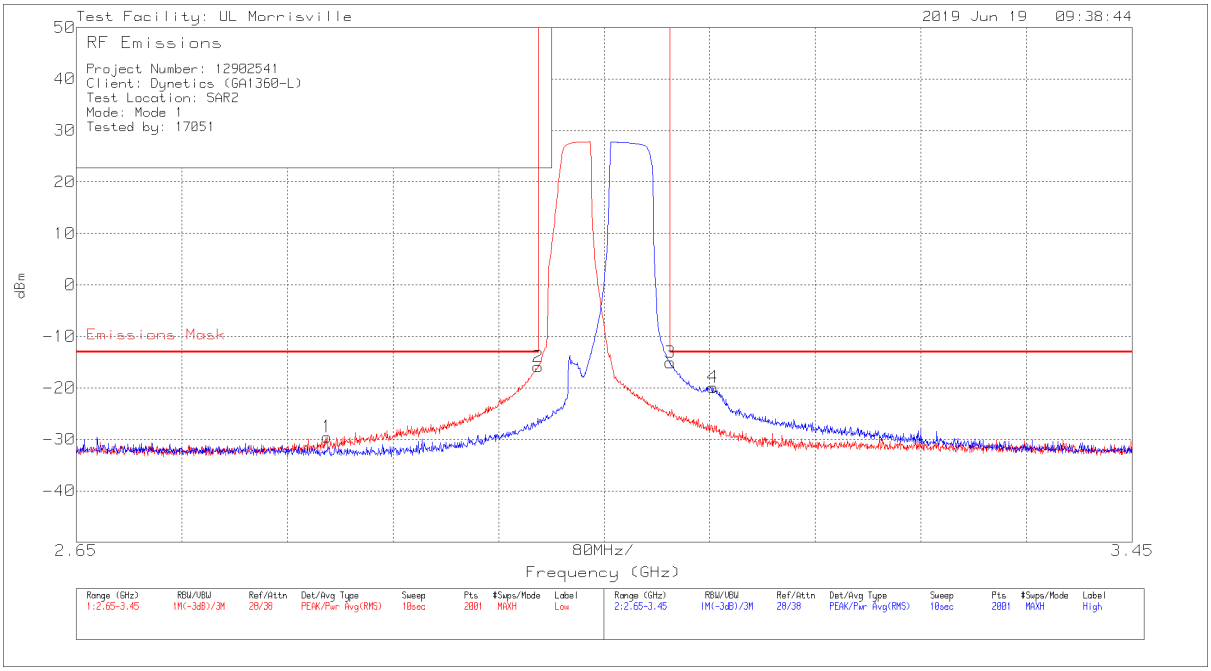
The transmitter output was connected to the input of Spectrum Analyzer via calibrated coaxial cable and attenuator.

The output power was measured with the spectrum analyzer at the low and high channel for each mode.

RESULTS

RESULTS

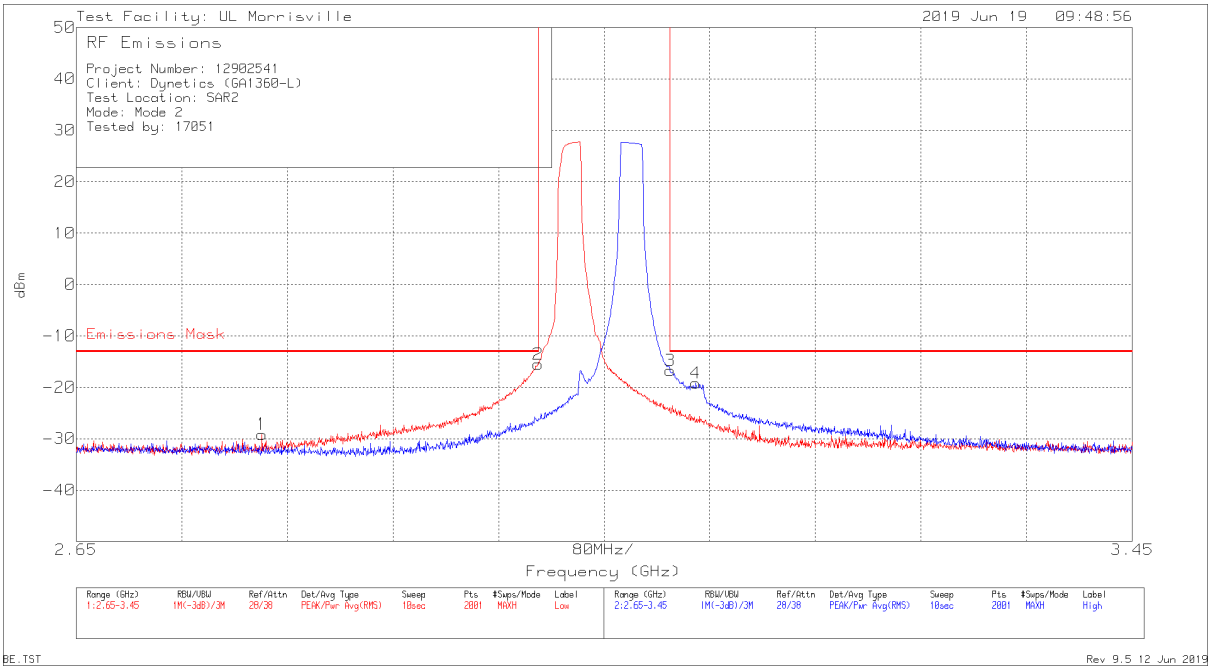
MODE 1



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	Emissions Mask	PK Margin (dB)
1	2.84	-40.12	Pk	.9	9.7	-29.52	-13	-16.52
2	3	-26.5	Pk	.9	9.7	-15.9	-13	-2.9
3	3.1	-25.66	Pk	.9	9.7	-15.06	-13	-2.06
4	3.1324	-30.46	Pk	.9	9.7	-19.86	-13	-6.86

Pk - Peak detector

MODE 2

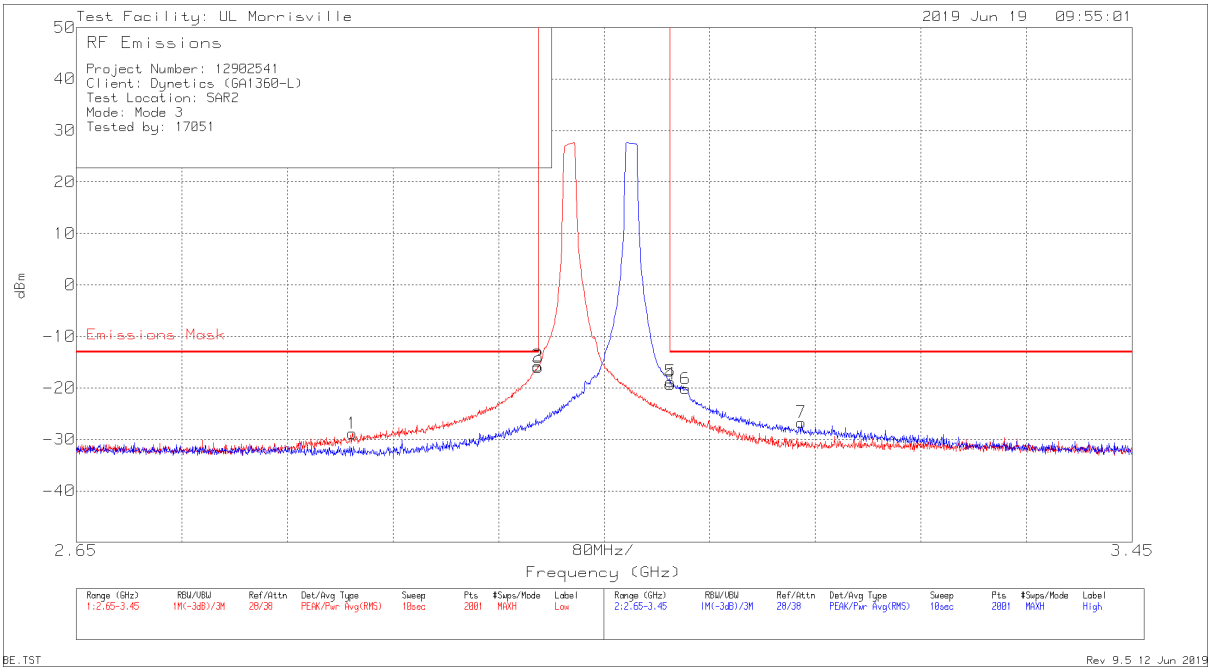


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	Emissions Mask	PK Margin (dB)
1	2.7908	-39.77	Pk	.9	9.7	-29.17	-13	-16.17
2	3	-26.12	Pk	.9	9.7	-15.52	-13	-2.52
3	3.1	-27.36	Pk	.9	9.7	-16.76	-13	-3.76
4	3.1192	-29.8	Pk	.9	9.7	-19.2	-13	-6.2

Pk - Peak detector

MODE 3

Graphical Data



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	Emissions Mask	PK Margin (dB)
1	2.8592	-39.44	Pk	.9	9.7	-28.84	-13	-15.84
2	2.9996	-26.33	Pk	.9	9.7	-15.73	-13	-2.73
3	3	-26.55	Pk	.9	9.7	-15.95	-13	-2.95
4	3.1	-29.85	Pk	.9	9.7	-19.25	-13	-6.25
5	3.1004	-29.35	Pk	.9	9.7	-18.75	-13	-5.75
6	3.1116	-30.75	Pk	.9	9.7	-20.15	-13	-7.15
7	3.1992	-37.33	Pk	.9	9.7	-26.73	-13	-13.73

Pk - Peak detector

8.3. OUT OF BAND EMISSIONS (Antenna Port and Radiated)

RULE PART(S)

§2.1051 Measurements required: Spurious emissions at antenna terminals.
§2.1053 Measurements required: Field strength of spurious radiation.

§90.210 Emission Masks

Mask of 90.210(b) is met as all emissions are below -13dBc as worst case limit.

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

TEST PROCEDURE

For antenna port the RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For radiated emissions the radio output was terminated with artificial antenna (50Ohm Load). The measured electric field was converted to an EIRP value using the theoretical relationships given in section 5.2.7 of ANSI C63.26-2015 and is outlined below.

Know

(1) EIRP = E -95.2 (At a measurement distance of 3m.)

Where

EIRP = equivalent isotropically radiated power in dBm
E = electric field in dBuV/m

(2) E = AF + V + G/L

Where

AF = antenna factor of receive antenna in dB/m.
V = receiver measured voltage in dBuV
G/L = gain-loss string between receive antenna and receiver

(3) V (dBuV) = W (dBm) + 107dB

Combine all the above and get the following:

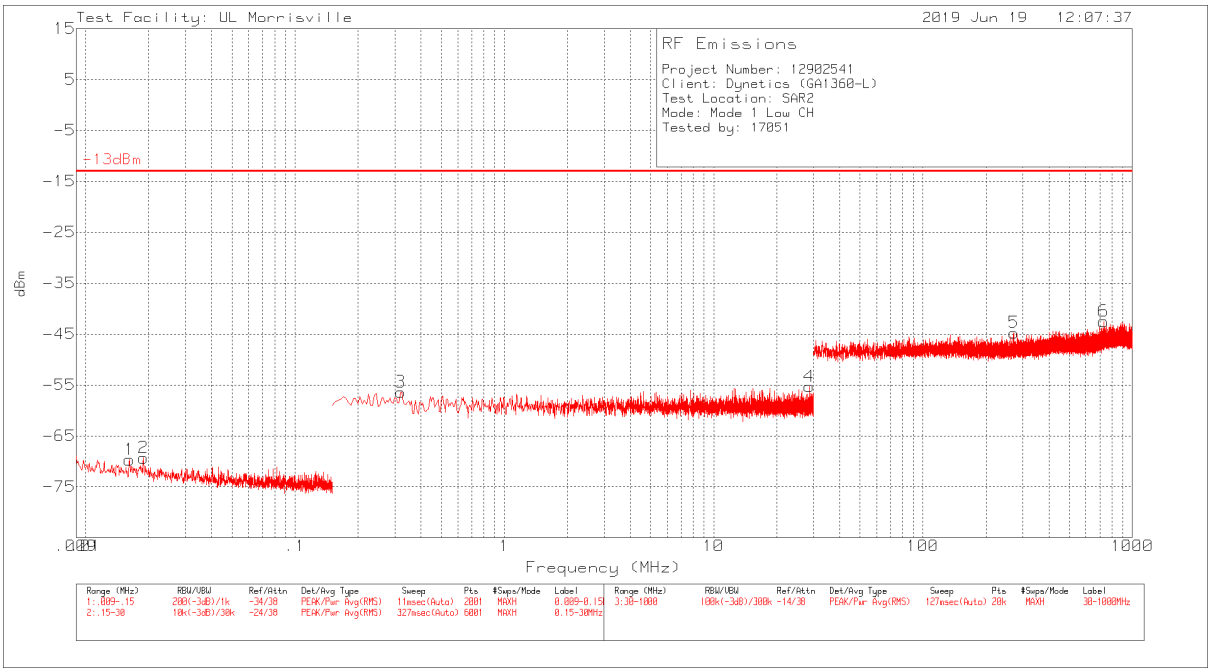
EIRP = (AF + V + G/L) - 95.2 = (AF + (W + 107) +G/L) - 95.2
EIRP = AF + V + G/L + 11.8

This EIRP value was then compared to the emissions limit of -13dBm.

RESULTS

8.3.1. **Antenna Port Out of Band Emissions**

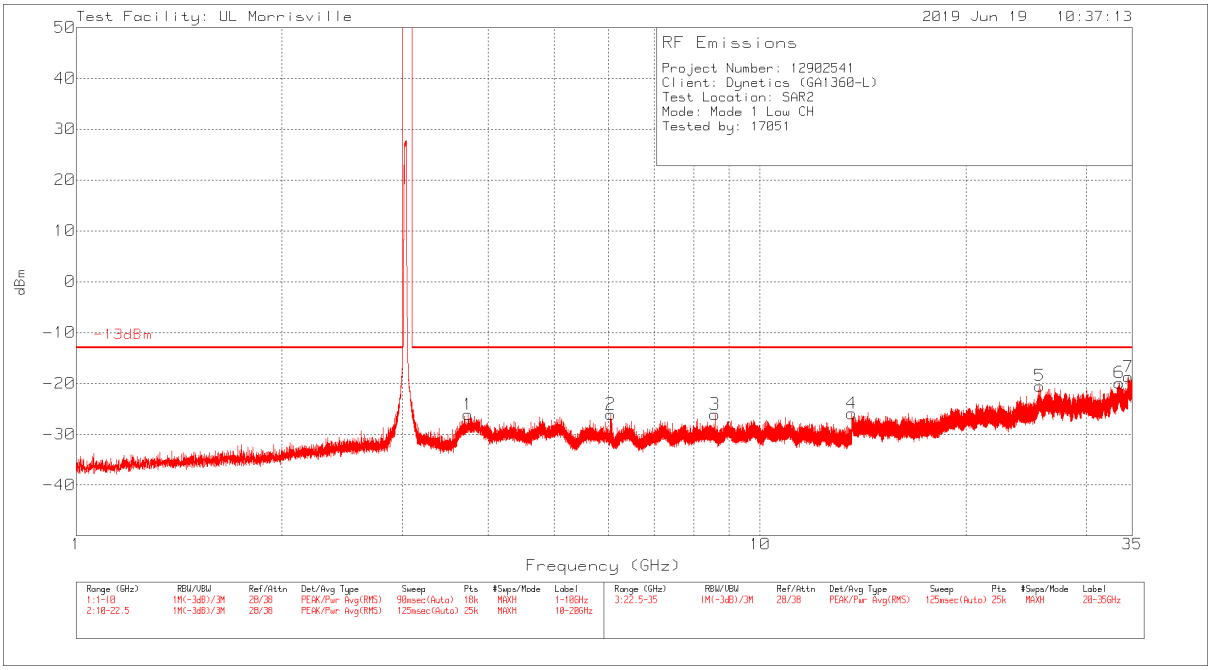
Mode 1, Low Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	.01617	-79.28	Pk	0	9.6	-69.68	-13	-56.68
2	.01887	-78.91	Pk	0	9.6	-69.31	-13	-56.31
3	.31915	-65.99	Pk	0	9.6	-56.39	-13	-43.39
4	28.6468	-65	Pk	.1	9.6	-55.3	-13	-42.3
5	272.2575	-54.65	Pk	.3	9.6	-44.75	-13	-31.75
6	729.4185	-52.62	Pk	.4	9.7	-42.52	-13	-29.52

Pk - Peak detector

Mode 1, Low Channel, Above 1GHz – Data

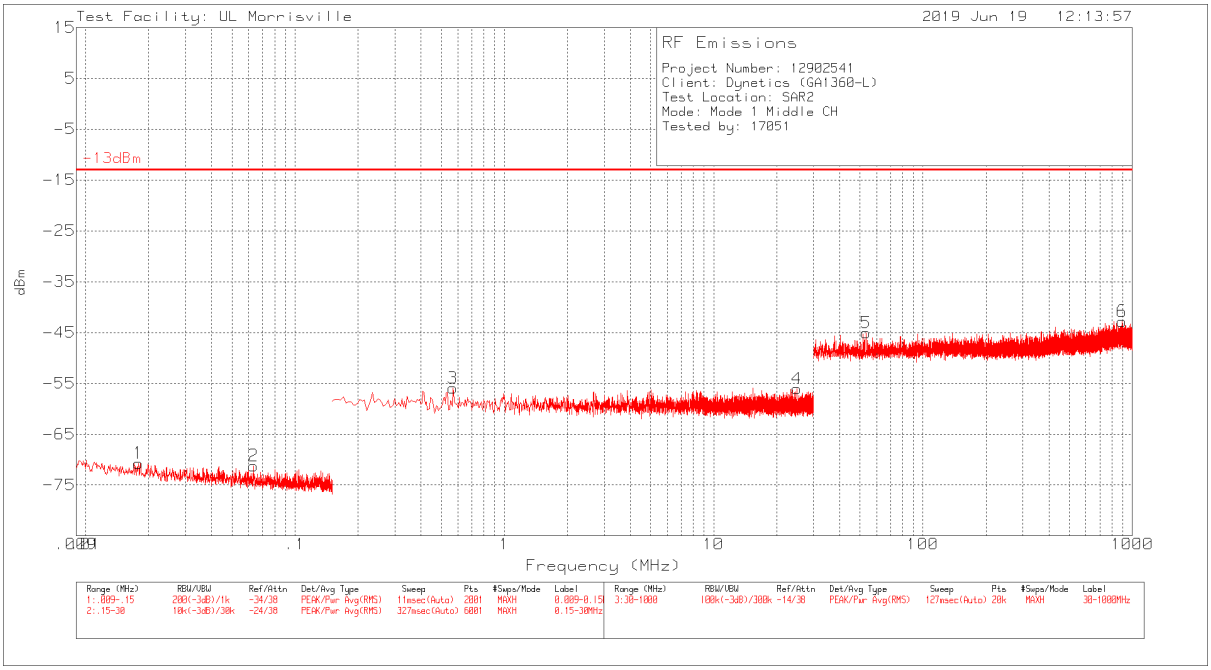


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	3.738	-36.81	Pk	1	9.7	-26.11	-13	-13.11
2	6.0465	-37.17	Pk	1.3	9.8	-26.07	-13	-13.07
3	8.589	-37.4	Pk	1.5	9.8	-26.1	-13	-13.1
4	13.613	-37.72	Pk	2	9.8	-25.92	-13	-12.92
5	25.623	-32.9	Pk	2.7	9.7	-20.5	-13	-7.5
6	33.5115	-32.58	Pk	3.2	9.5	-19.88	-13	-6.88
7	34.562	-31.33	Pk	3.2	9.4	-18.73	-13	-5.73

Pk - Peak detector

Note: Follow-up measurements with an 18GHz high-pass filter that allowed for a reduction in internal attenuation yielded a 17dB margin to the limit in the 20-35GHz range.

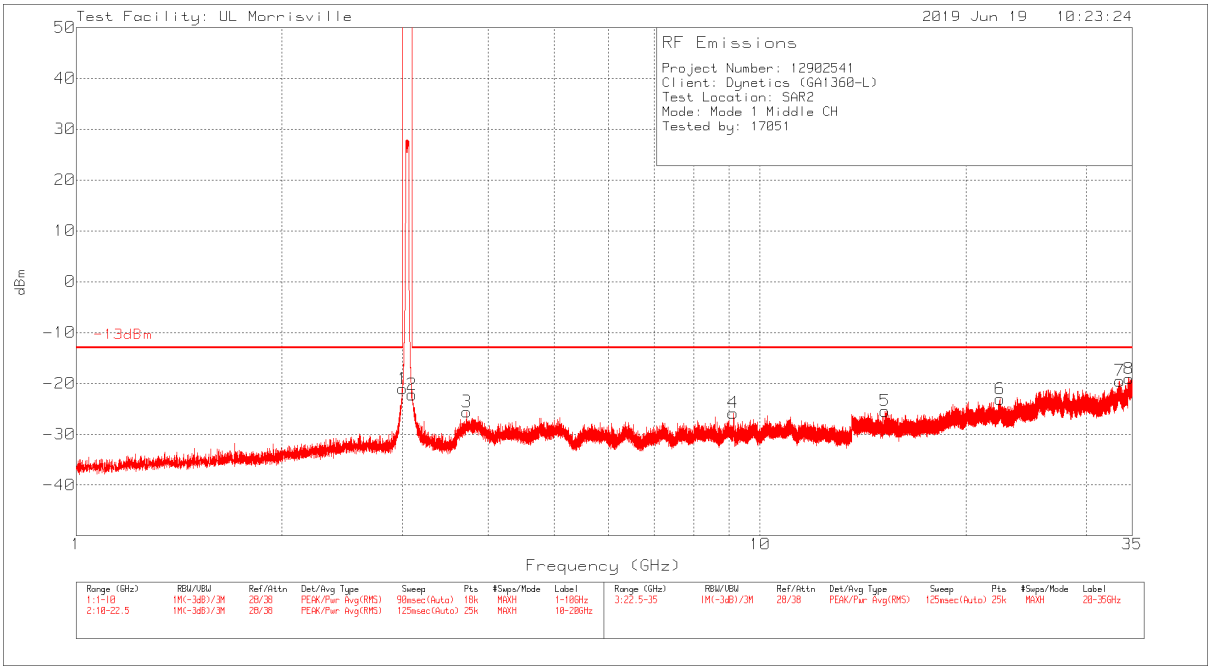
Mode 1, Middle Channel, Below 1GHz - Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	.01788	-80.31	Pk	0	9.6	-70.71	-13	-57.71
2	.06332	-80.82	Pk	0	9.6	-71.22	-13	-58.22
3	.5679	-65.53	Pk	0	9.6	-55.93	-13	-42.93
4	24.95038	-65.74	Pk	.1	9.6	-56.04	-13	-43.04
5	53.4255	-54.79	Pk	.1	9.6	-45.09	-13	-32.09
6	896.404	-53.02	Pk	.5	9.7	-42.82	-13	-29.82

Pk - Peak detector

Mode 1, Middle Channel, Above 1GHz – Data

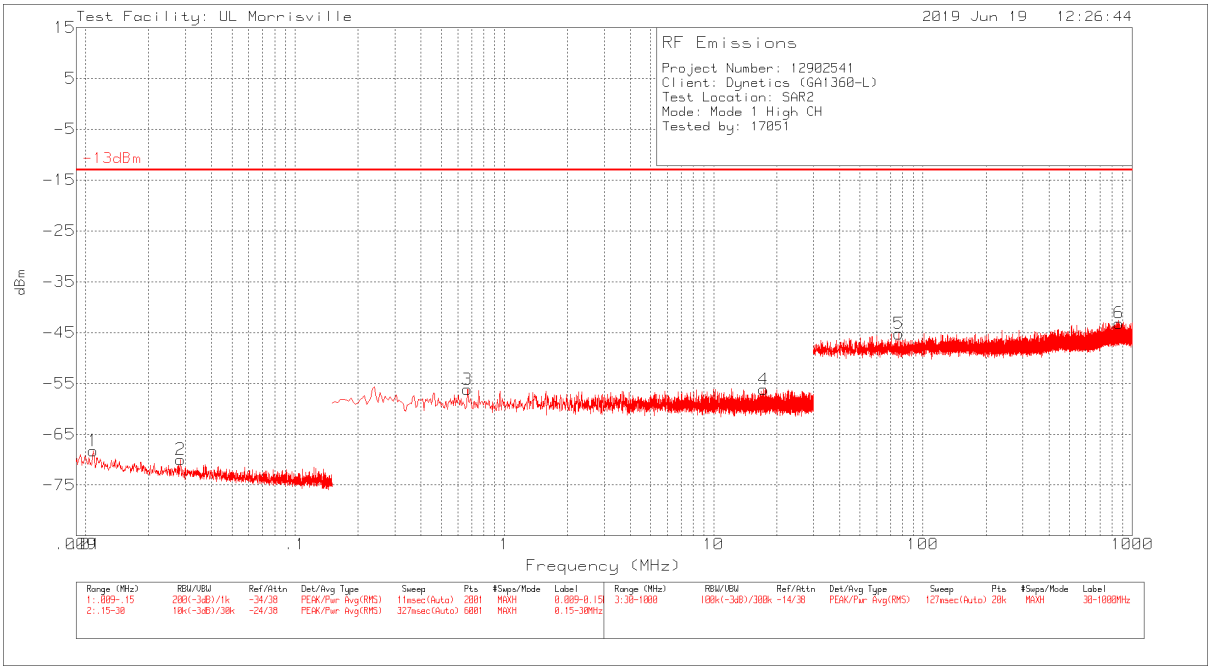


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	3	-31.65	Pk	.9	9.7	-21.05	-13	-8.05
2	3.1	-32.81	Pk	.9	9.7	-22.21	-13	-9.21
3	3.7275	-36.3	Pk	1	9.7	-25.6	-13	-12.6
4	9.133	-37.21	Pk	1.6	9.8	-25.81	-13	-12.81
5	15.2385	-37.33	Pk	2.1	9.8	-25.43	-13	-12.43
6	22.441	-35.27	Pk	2.5	9.7	-23.07	-13	-10.07
7	33.5695	-32.2	Pk	3.2	9.5	-19.5	-13	-6.5
8	34.628	-31.87	Pk	3.3	9.5	-19.07	-13	-6.07

Pk - Peak detector

Note: Follow-up measurements with an 18GHz high-pass filter that allowed for a reduction in internal attenuation yielded a 17dB margin to the limit in the 20-35GHz range.

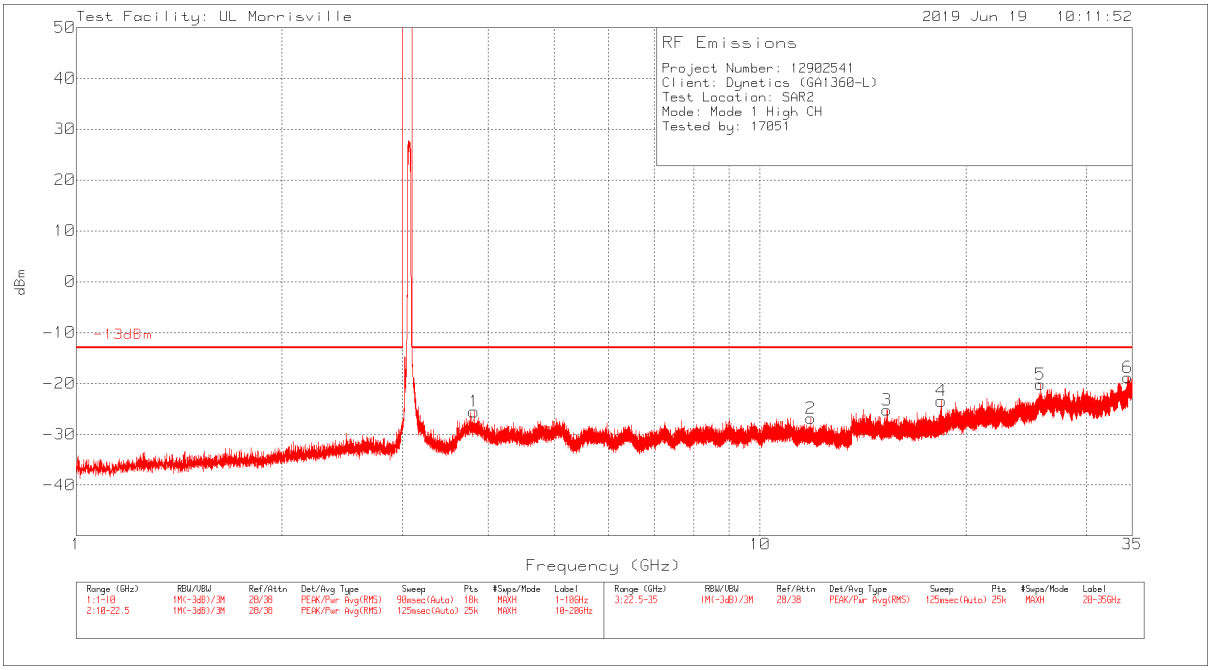
Mode 1, High Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	.01085	-77.83	Pk	0	9.6	-68.23	-13	-55.23
2	.02838	-79.59	Pk	0	9.6	-69.99	-13	-56.99
3	.6674	-65.77	Pk	0	9.6	-56.17	-13	-43.17
4	17.33863	-65.89	Pk	.1	9.6	-56.19	-13	-43.19
5	76.6085	-54.92	Pk	.1	9.6	-45.22	-13	-32.22
6	864.6365	-53.34	Pk	.5	9.7	-43.14	-13	-30.14

Pk - Peak detector

Mode 1, High Channel, Above 1GHz – Data

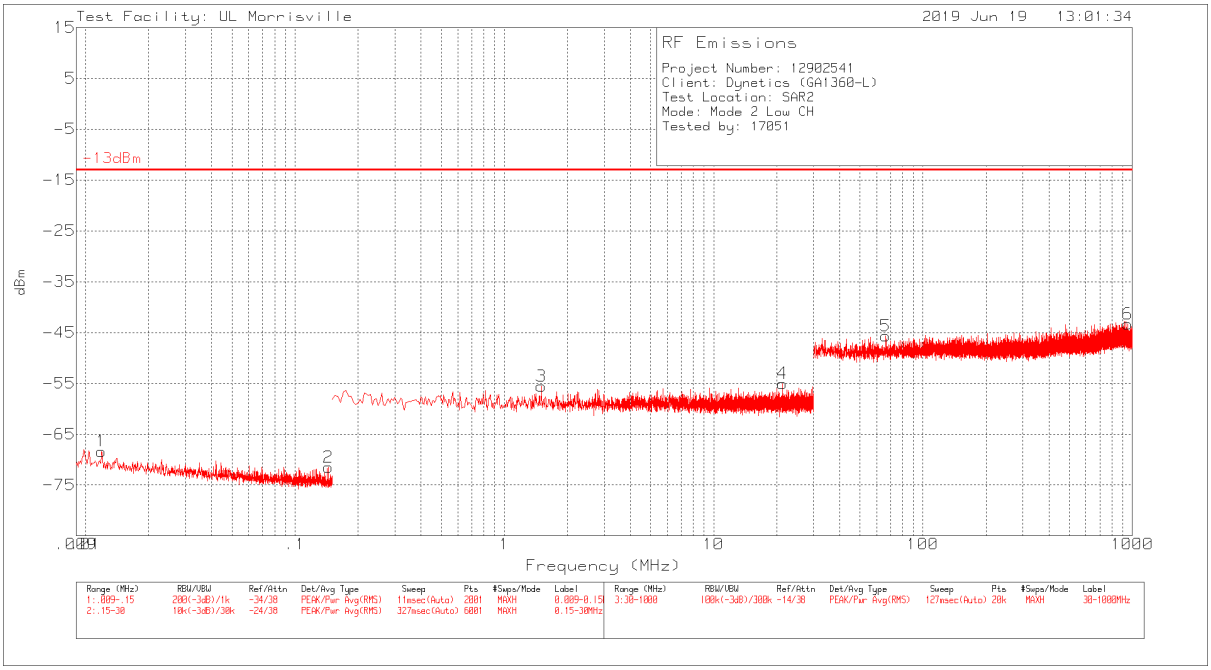


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	3.8175	-36.24	Pk	1	9.7	-25.54	-13	-12.54
2	11.852	-38.56	Pk	1.9	9.8	-26.86	-13	-13.86
3	15.328	-37.15	Pk	2.1	9.8	-25.25	-13	-12.25
4	18.405	-35.65	Pk	2.3	9.9	-23.45	-13	-10.45
5	25.674	-32.6	Pk	2.7	9.7	-20.2	-13	-7.2
6	34.504	-31.64	Pk	3.3	9.5	-18.84	-13	-5.84

Pk - Peak detector

Note: Follow-up measurements with an 18GHz high-pass filter that allowed for a reduction in internal attenuation yielded a 17dB margin to the limit in the 20-35GHz range.

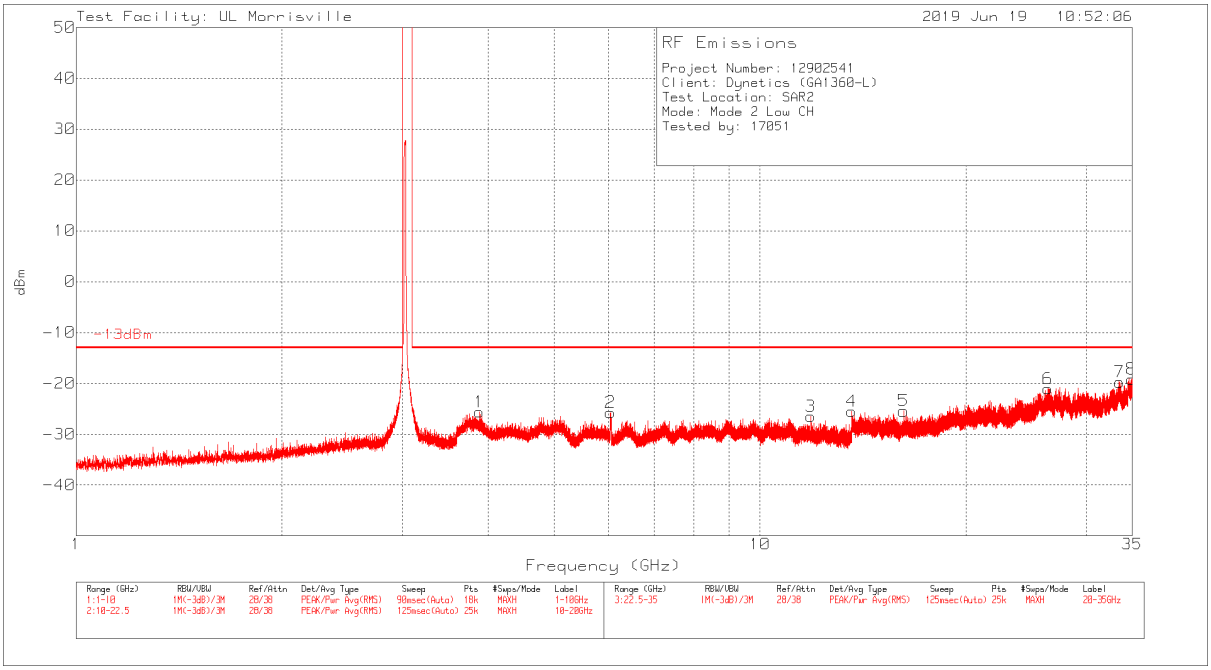
Mode 2, Low Channel, Below 1GHz Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	.01191	-77.95	Pk	0	9.6	-68.35	-13	-55.35
2	.14404	-81.09	Pk	0	9.6	-71.49	-13	-58.49
3	1.5032	-65.19	Pk	0	9.6	-55.59	-13	-42.59
4	21.29375	-64.74	Pk	.1	9.6	-55.04	-13	-42.04
5	66.278	-55.38	Pk	.1	9.6	-45.68	-13	-32.68
6	953.0035	-53.54	Pk	.5	9.7	-43.34	-13	-30.34

Pk - Peak detector

Mode 2, Low Channel, Above 1GHz – Data

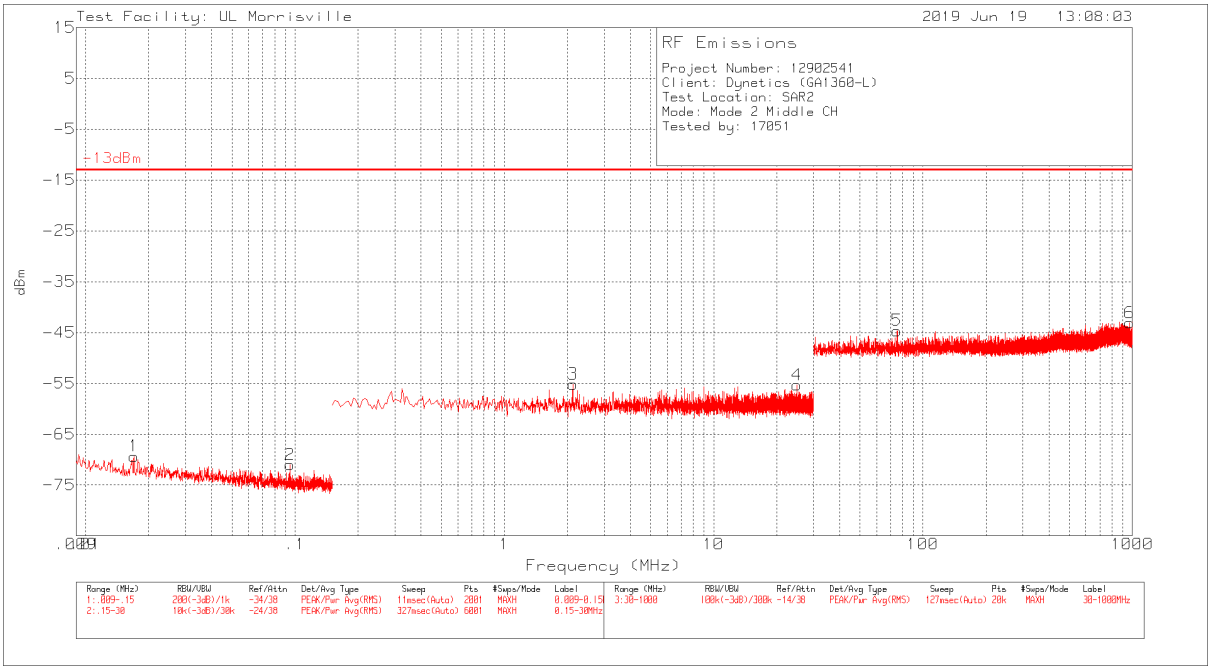


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	3.8845	-36.33	Pk	1	9.7	-25.63	-13	-12.63
2	6.0435	-36.83	Pk	1.3	9.8	-25.73	-13	-12.73
3	11.863	-38.08	Pk	1.8	9.8	-26.48	-13	-13.48
4	13.6105	-37.32	Pk	2	9.8	-25.52	-13	-12.52
5	16.209	-37.32	Pk	2.1	9.8	-25.42	-13	-12.42
6	26.3525	-33.56	Pk	2.8	9.7	-21.06	-13	-8.06
7	33.5265	-32.45	Pk	3.2	9.5	-19.75	-13	-6.75
8	34.8975	-31.98	Pk	3.3	9.5	-19.18	-13	-6.18

Pk - Peak detector

Note: Follow-up measurements with an 18GHz high-pass filter that allowed for a reduction in internal attenuation yielded a 17dB margin to the limit in the 20-35GHz range.

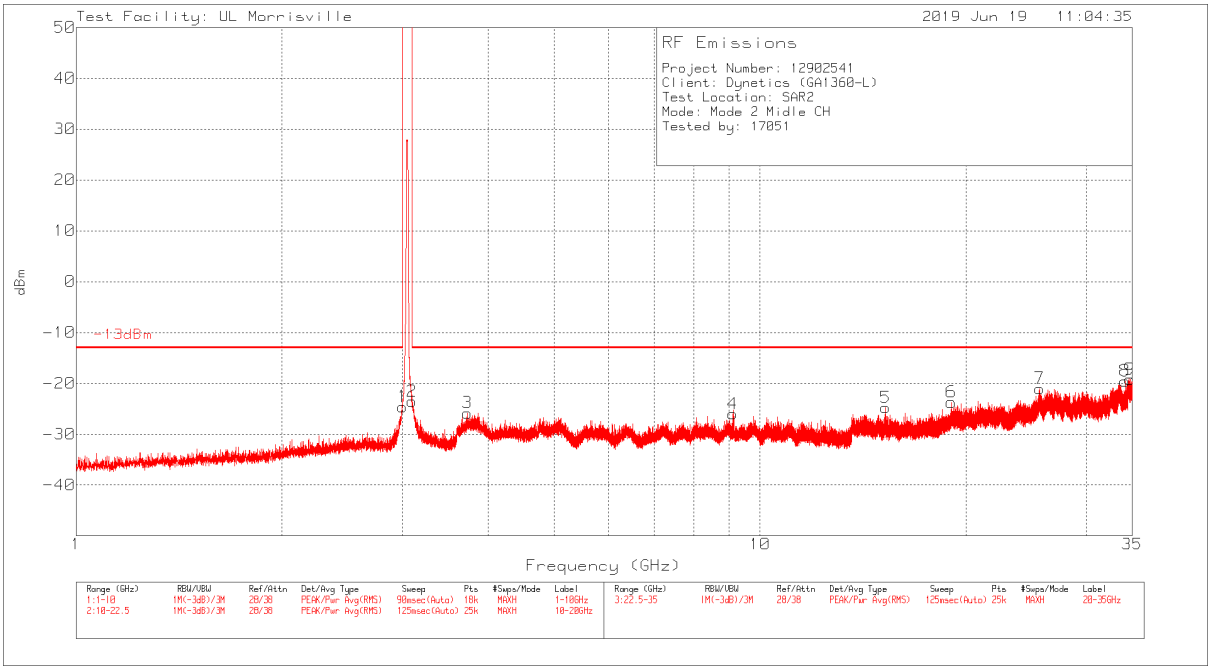
Mode 2, Middle Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	.01702	-78.93	Pk	0	9.6	-69.33	-13	-56.33
2	.09448	-80.62	Pk	0	9.6	-71.02	-13	-58.02
3	2.12508	-64.74	Pk	0	9.6	-55.14	-13	-42.14
4	25.05485	-65.04	Pk	.1	9.6	-55.34	-13	-42.34
5	75.3475	-54.33	Pk	.1	9.6	-44.63	-13	-31.63
6	970.0755	-53.29	Pk	.5	9.7	-43.09	-13	-30.09

Pk - Peak detector

Mode 2, Middle Channel, Above 1GHz – Data

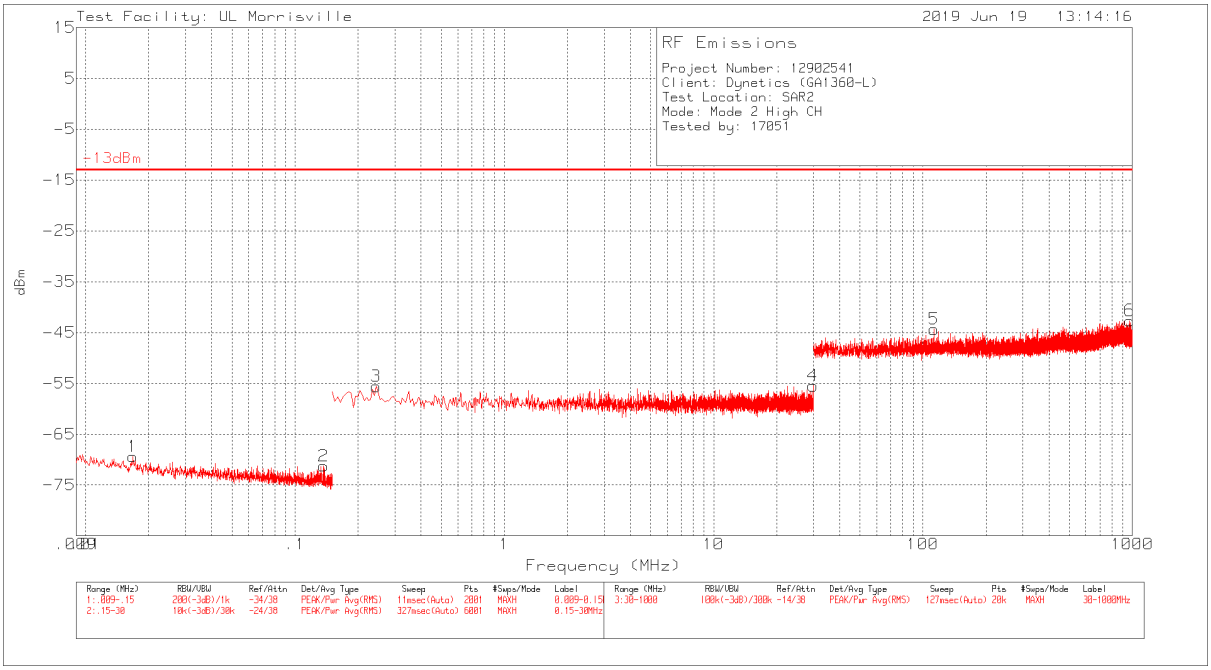


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	3	-35.19	Pk	.9	9.7	-24.59	-13	-11.59
2	3.1	-34.13	Pk	.9	9.7	-23.53	-13	-10.53
3	3.733	-36.51	Pk	1	9.7	-25.81	-13	-12.81
4	9.1275	-37.4	Pk	1.6	9.8	-26	-13	-13
5	15.256	-36.66	Pk	2.1	9.8	-24.76	-13	-11.76
6	19.04	-36	Pk	2.4	9.9	-23.7	-13	-10.7
7	25.6195	-33.43	Pk	2.7	9.7	-21.03	-13	-8.03
8	34.1585	-32.12	Pk	3.2	9.4	-19.52	-13	-6.52
9	34.735	-31.91	Pk	3.3	9.4	-19.21	-13	-6.21

Pk - Peak detector

Note: Follow-up measurements with an 18GHz high-pass filter that allowed for a reduction in internal attenuation yielded a 17dB margin to the limit in the 20-35GHz range.

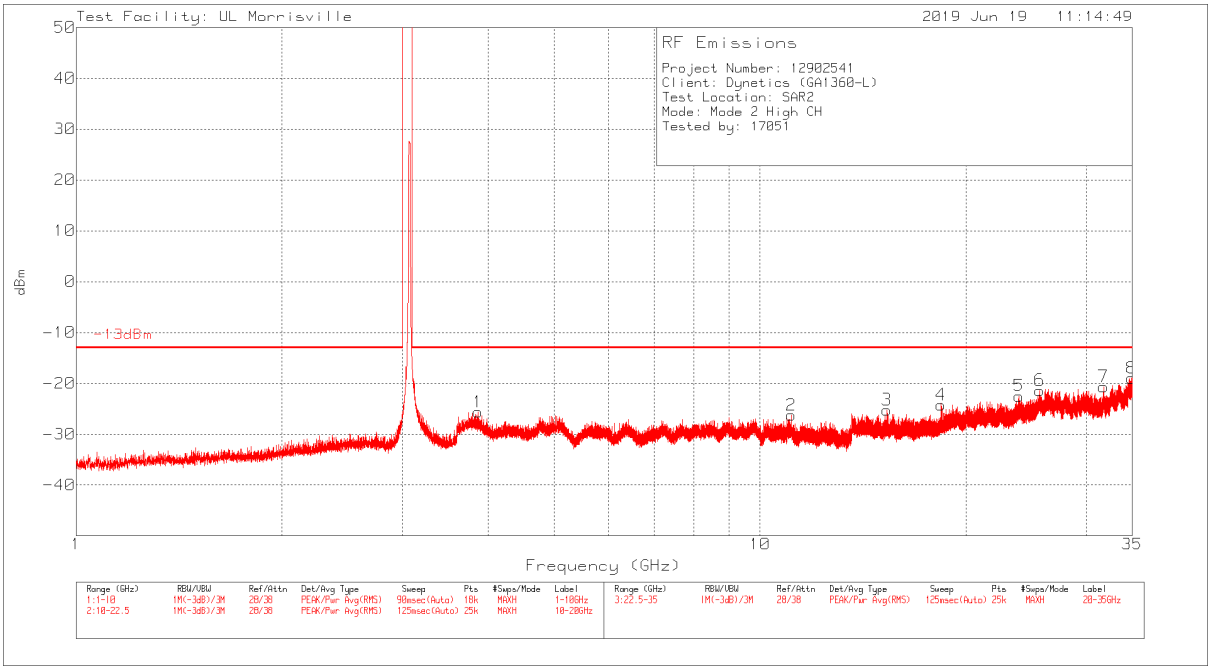
Mode 2, High Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	.01681	-79.02	Pk	0	9.6	-69.42	-13	-56.42
2	.13701	-80.86	Pk	0	9.6	-71.26	-13	-58.26
3	.24453	-65.2	Pk	0	9.6	-55.6	-13	-42.6
4	29.8607	-65.17	Pk	.1	9.6	-55.47	-13	-42.47
5	112.741	-54.16	Pk	.2	9.6	-44.36	-13	-31.36
6	972.4035	-52.86	Pk	.5	9.7	-42.66	-13	-29.66

Pk - Peak detector

Mode 2, High Channel, Above 1GHz – Data

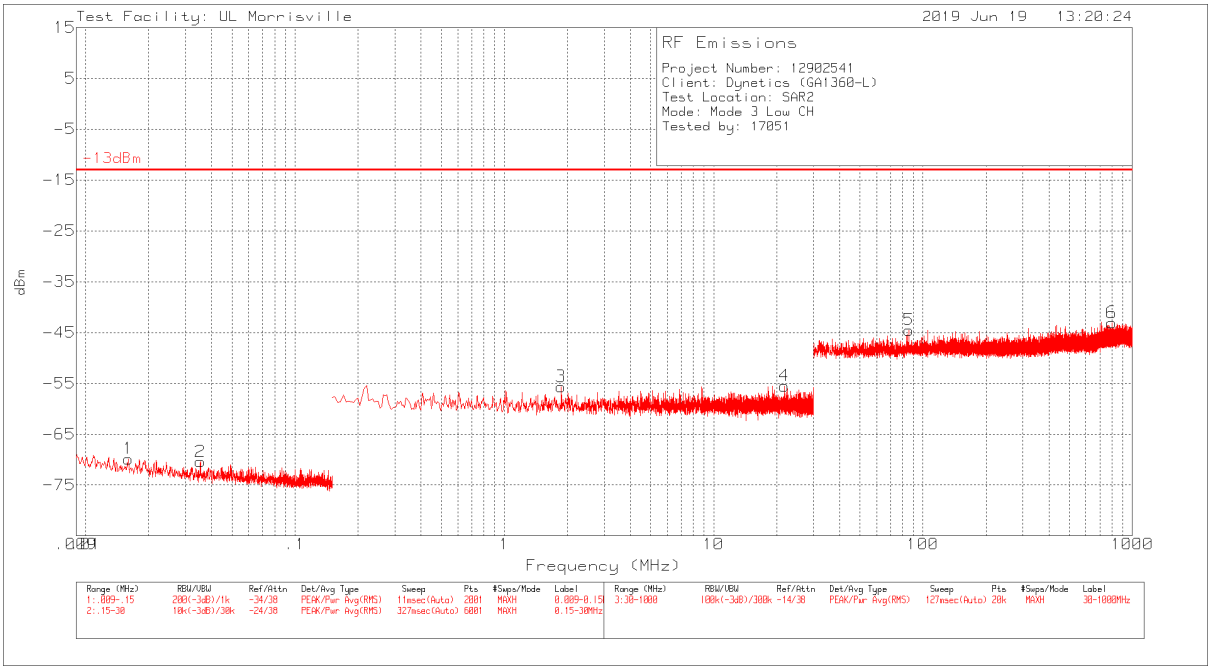


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	3.872	-36.33	Pk	1	9.7	-25.63	-13	-12.63
2	11.113	-37.87	Pk	1.8	9.8	-26.27	-13	-13.27
3	15.321	-37.03	Pk	2	9.8	-25.23	-13	-12.23
4	18.386	-36.33	Pk	2.2	9.9	-24.23	-13	-11.23
5	23.909	-34.67	Pk	2.5	9.7	-22.47	-13	-9.47
6	25.6415	-33.78	Pk	2.7	9.7	-21.38	-13	-8.38
7	31.7835	-33.16	Pk	3	9.5	-20.66	-13	-7.66
8	34.9415	-31.79	Pk	3.3	9.5	-18.99	-13	-5.99

Pk - Peak detector

Note: Follow-up measurements with an 18GHz high-pass filter that allowed for a reduction in internal attenuation yielded a 17dB margin to the limit in the 20-35GHz range.

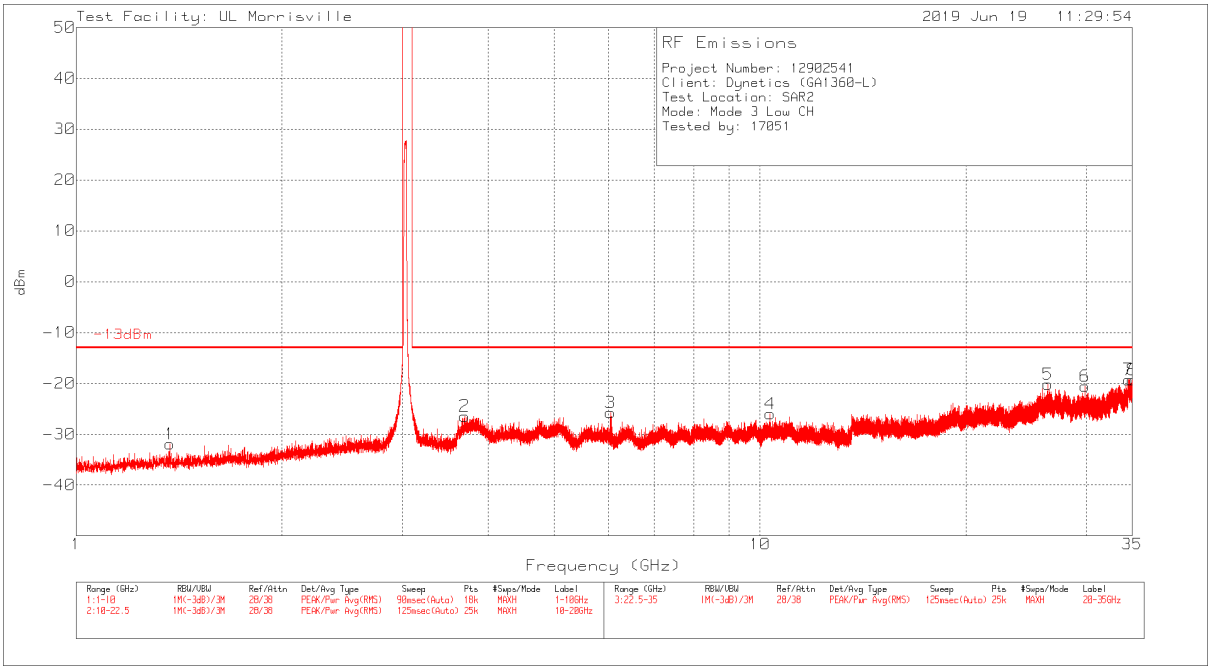
Mode 3, Low Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	.01603	-79.43	Pk	0	9.6	-69.83	-13	-56.83
2	.03534	-79.99	Pk	0	9.6	-70.39	-13	-57.39
3	1.87135	-65.24	Pk	0	9.6	-55.64	-13	-42.64
4	21.7614	-65.19	Pk	.1	9.6	-55.49	-13	-42.49
5	85.7508	-54.31	Pk	.2	9.6	-44.51	-13	-31.51
6	798.628	-53.26	Pk	.5	9.7	-43.06	-13	-30.06

Pk - Peak detector

Mode 3, Low Channel, Above 1GHz – Data

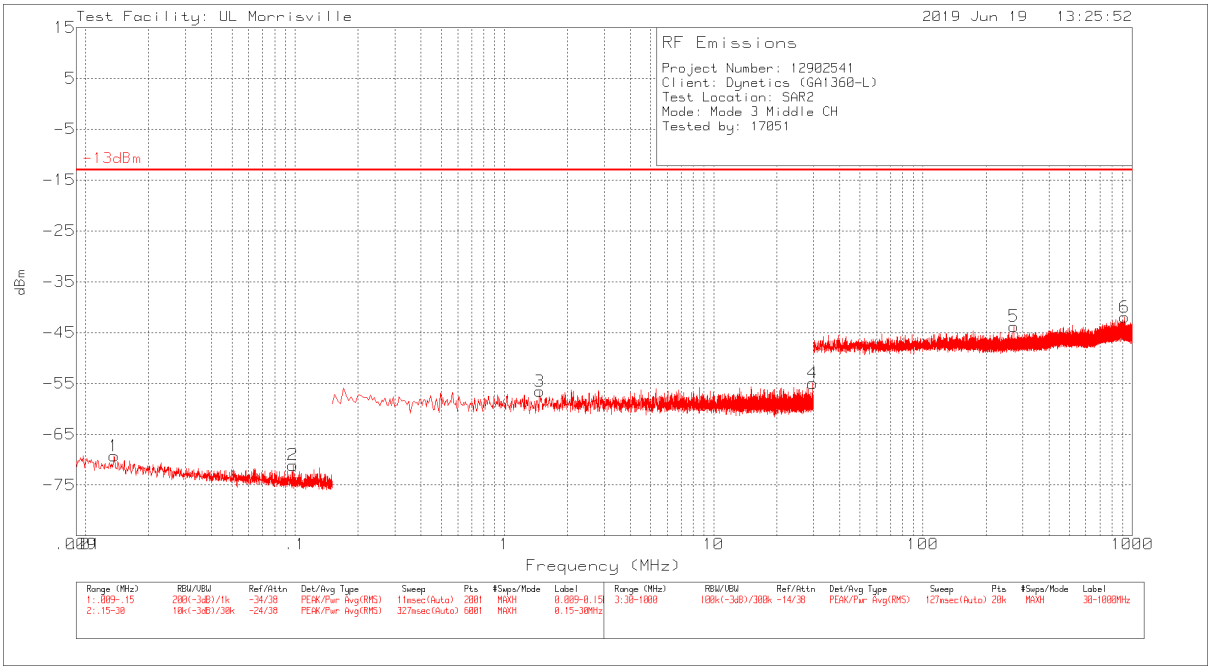


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	1.3705	-42.24	Pk	.6	9.7	-31.94	-13	-18.94
2	3.6985	-37.15	Pk	1	9.7	-26.45	-13	-13.45
3	6.0435	-36.86	Pk	1.3	9.8	-25.76	-13	-12.76
4	10.3455	-37.49	Pk	1.7	9.8	-25.99	-13	-12.99
5	26.3625	-32.7	Pk	2.8	9.7	-20.2	-13	-7.2
6	29.878	-33.06	Pk	2.9	9.6	-20.56	-13	-7.56
7	34.5395	-31.87	Pk	3.2	9.4	-19.27	-13	-6.27
8	34.9655	-32.05	Pk	3.3	9.4	-19.35	-13	-6.35

Pk - Peak detector

Note: Follow-up measurements with an 18GHz high-pass filter that allowed for a reduction in internal attenuation yielded a 17dB margin to the limit in the 20-35GHz range.

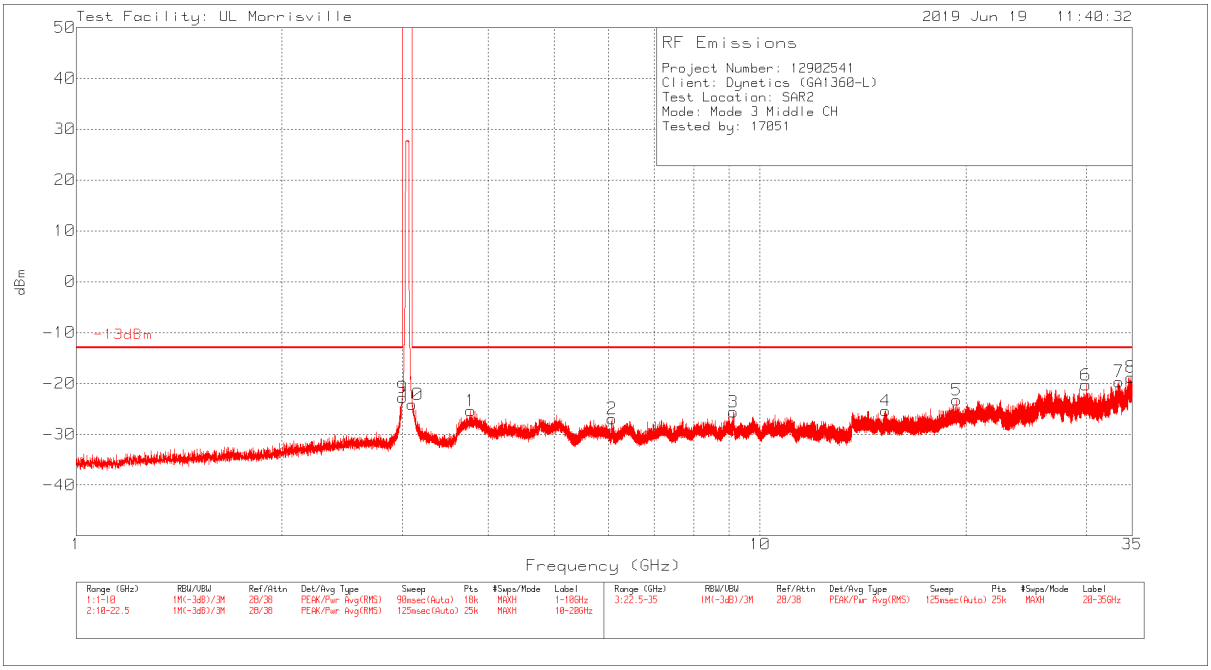
Mode 3, Middle Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	.01369	-78.89	Pk	0	9.6	-69.29	-13	-56.29
2	.09771	-80.66	Pk	0	9.6	-71.06	-13	-58.06
3	1.47335	-66.15	Pk	0	9.6	-56.55	-13	-43.55
4	29.70648	-64.69	Pk	.1	9.6	-54.99	-13	-41.99
5	272.597	-53.71	Pk	.3	9.6	-43.81	-13	-30.81
6	920.266	-52.19	Pk	.5	9.7	-41.99	-13	-28.99

Pk - Peak detector

Mode 3, Middle Channel, Above 1GHz – Data

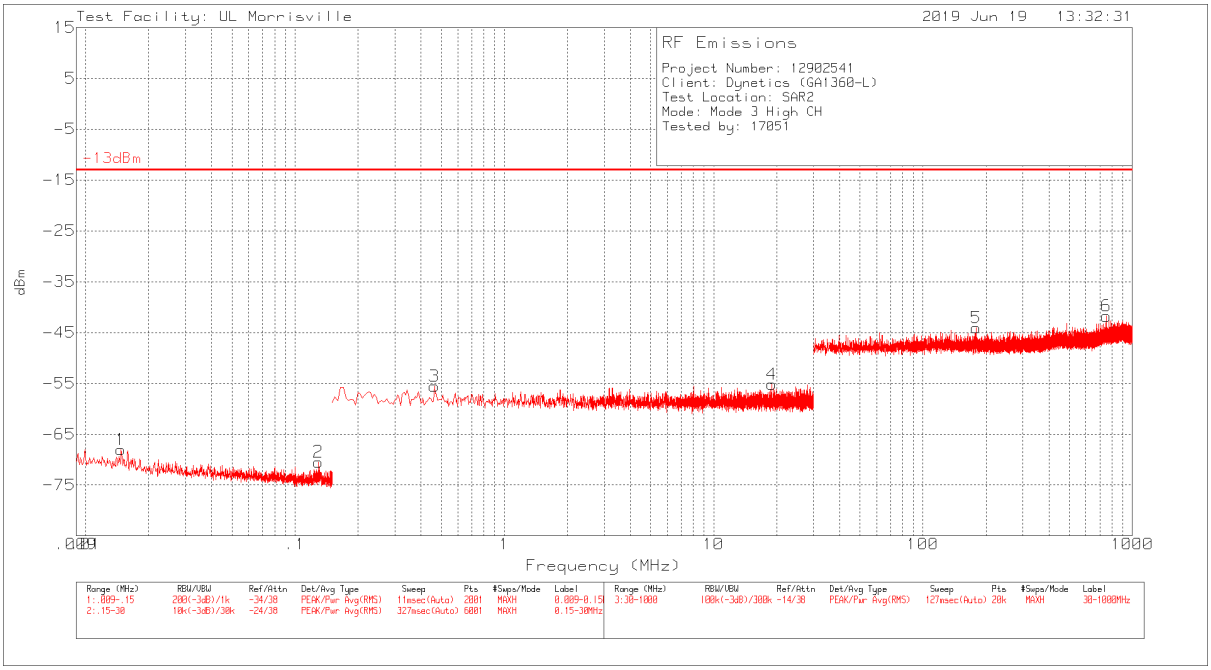


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	3.7765	-36.07	Pk	1	9.7	-25.37	-13	-12.37
2	6.079	-38.06	Pk	1.3	9.8	-26.96	-13	-13.96
3	9.141	-37.04	Pk	1.6	9.8	-25.64	-13	-12.64
9	3	-33.37	Pk	.9	9.7	-22.77	-13	-9.77
10	3.1	-34.77	Pk	.9	9.7	-24.17	-13	-11.17
4	15.2515	-37.28	Pk	2.1	9.8	-25.38	-13	-12.38
5	19.3945	-35.6	Pk	2.4	9.9	-23.3	-13	-10.3
6	29.953	-33.02	Pk	3	9.7	-20.32	-13	-7.32
7	33.448	-32.18	Pk	3.1	9.4	-19.68	-13	-6.68
8	34.8665	-31.61	Pk	3.3	9.5	-18.81	-13	-5.81

Pk - Peak detector

Note: Follow-up measurements with an 18GHz high-pass filter that allowed for a reduction in internal attenuation yielded a 17dB margin to the limit in the 20-35GHz range.

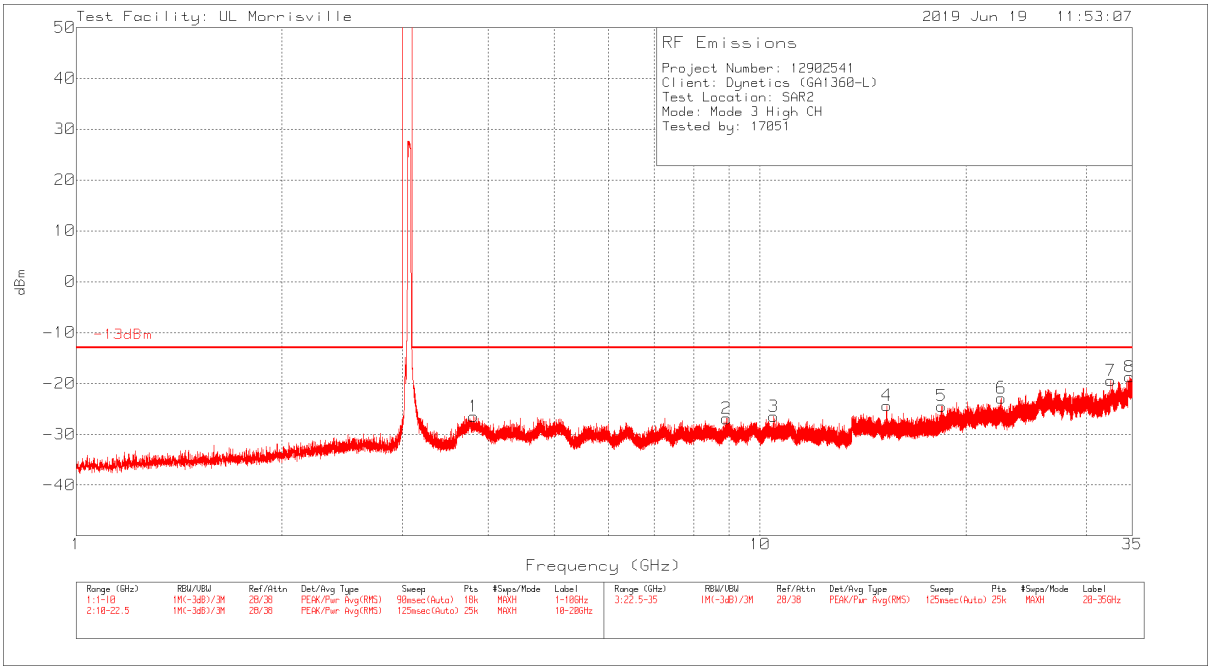
Mode 3, High Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	.01475	-77.65	Pk	0	9.6	-68.05	-13	-55.05
2	.1292	-80.08	Pk	0	9.6	-70.48	-13	-57.48
3	.46343	-65.15	Pk	0	9.6	-55.55	-13	-42.55
4	18.96048	-64.9	Pk	.1	9.6	-55.2	-13	-42.2
5	179.2345	-53.9	Pk	.2	9.6	-44.1	-13	-31.1
6	751.3405	-51.97	Pk	.5	9.7	-41.77	-13	-28.77

Pk - Peak detector

Mode 3, High Channel, Above 1GHz – Data



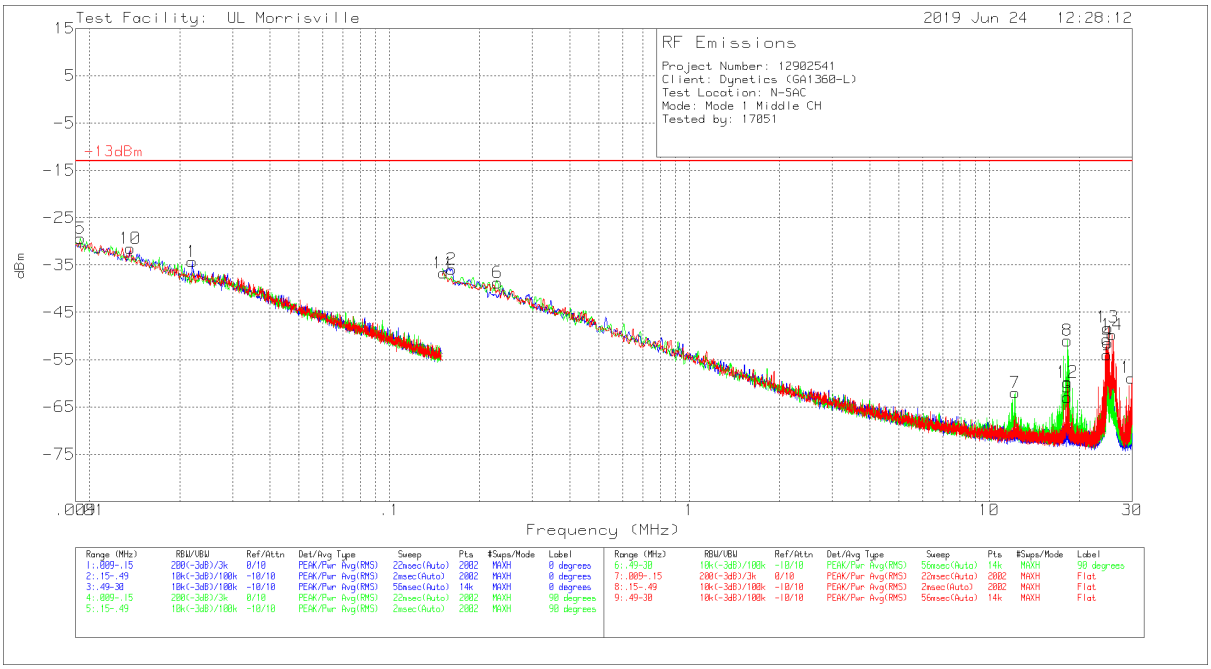
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Cbl (dB)	Pad (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)
1	3.816	-37.19	Pk	1	9.7	-26.49	-13	-13.49
2	8.9315	-38.2	Pk	1.5	9.8	-26.9	-13	-13.9
3	10.468	-37.99	Pk	1.7	9.8	-26.49	-13	-13.49
4	15.3315	-36.25	Pk	2.1	9.8	-24.35	-13	-11.35
5	18.418	-36.65	Pk	2.3	9.9	-24.45	-13	-11.45
6	22.5135	-35.29	Pk	2.6	9.8	-22.89	-13	-9.89
7	32.5795	-31.96	Pk	3.1	9.4	-19.46	-13	-6.46
8	34.7155	-31.43	Pk	3.3	9.4	-18.73	-13	-5.73

Pk - Peak detector

Note: Follow-up measurements with an 18GHz high-pass filter that allowed for a reduction in internal attenuation yielded a 17dB margin to the limit in the 20-35GHz range.

8.3.2. **Radiated Enclosure Port Out of Band Emissions**

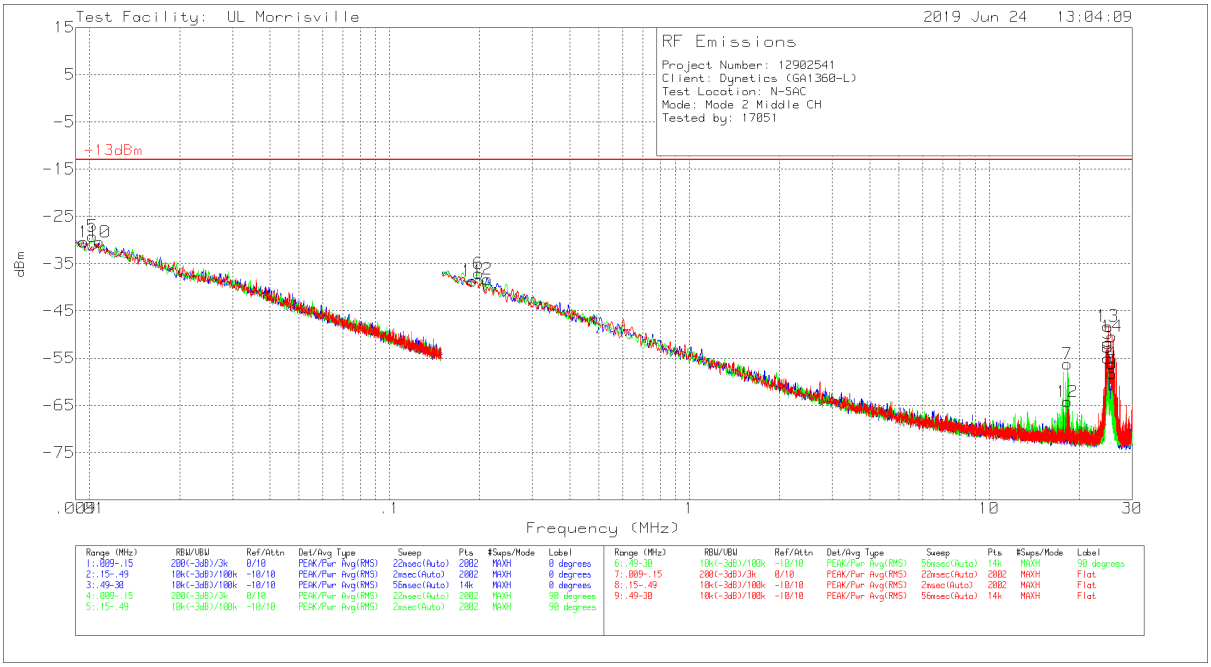
Mode 1, Middle Channel, Below 30MHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AT0079 AF (dB/m)	Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)
Loop antenna @ 0 degrees.										
1	.02202	-60.13	Pk	13.9	.1	11.8	-34.33	-13	-21.33	0-360
2	.16114	-58.5	Pk	10.7	.1	11.8	-35.9	-13	-22.9	0-360
3	18.24568	-85.58	Pk	10.1	.7	11.8	-62.98	-13	-49.98	0-360
4	24.90275	-73.13	Pk	9.1	.8	11.8	-51.43	-13	-38.43	0-360
Loop antenna @ 90 degrees.										
5	.00935	-60.31	Pk	19	.1	11.8	-29.41	-13	-16.41	0-360
6	.2299	-61.35	Pk	10.7	.1	11.8	-38.75	-13	-25.75	0-360
7	12.19783	-84.9	Pk	10.5	.6	11.8	-62	-13	-49	0-360
8	18.24568	-73.59	Pk	10.1	.7	11.8	-50.99	-13	-37.99	0-360
9	24.72041	-75.66	Pk	9.1	.8	11.8	-53.96	-13	-40.96	0-360
Loop antenna flat.										
10	.01369	-60.11	Pk	16.7	.1	11.8	-31.51	-13	-18.51	0-360
11	.15162	-59.27	Pk	10.7	.1	11.8	-36.67	-13	-23.67	0-360
12	18.24568	-82.42	Pk	10.1	.7	11.8	-59.82	-13	-46.82	0-360
13	24.90275	-69.91	Pk	9.1	.8	11.8	-48.21	-13	-35.21	0-360
14	25.69746	-71.37	Pk	8.9	.9	11.8	-49.77	-13	-36.77	0-360
15	29.91136	-79.46	Pk	7.9	.9	11.8	-58.86	-13	-45.86	0-360

Pk - Peak detector

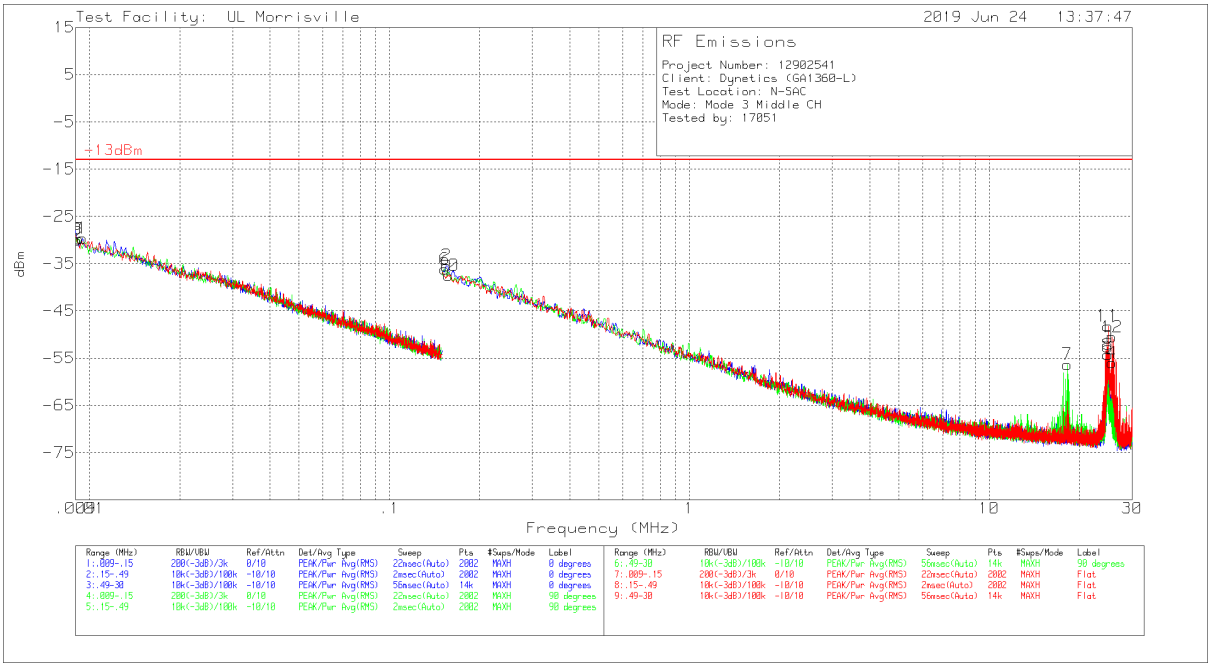
Mode 2, Middle Channel, Below 30MHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AT0079 AF (dB/m)	Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)
Loop antenna @ 0 degrees.										
1	.00956	-61.18	Pk	18.8	.1	11.8	-30.48	-13	-17.48	0-360
2	.2129	-60.95	Pk	10.7	.1	11.8	-38.35	-13	-25.35	0-360
3	24.90275	-73.6	Pk	9.1	.8	11.8	-51.9	-13	-38.9	0-360
4	25.69746	-77.78	Pk	8.9	.9	11.8	-56.18	-13	-43.18	0-360
Loop antenna @ 0 degrees.										
5	.01026	-59.3	Pk	18.2	.1	11.8	-29.2	-13	-16.2	0-360
6	.19879	-59.73	Pk	10.7	.1	11.8	-37.13	-13	-24.13	0-360
7	18.24568	-78.86	Pk	10.1	.7	11.8	-56.26	-13	-43.26	0-360
8	24.90275	-76.7	Pk	9.1	.8	11.8	-55	-13	-42	0-360
9	25.69641	-79.84	Pk	8.9	.9	11.8	-58.24	-13	-45.24	0-360
Loop antenna flat.										
10	.01082	-60.26	Pk	17.9	.1	11.8	-30.46	-13	-17.46	0-360
11	.18936	-61.26	Pk	10.7	.1	11.8	-38.66	-13	-25.66	0-360
12	18.24568	-86.88	Pk	10.1	.7	11.8	-64.28	-13	-51.28	0-360
13	24.90275	-69.94	Pk	9.1	.8	11.8	-48.24	-13	-35.24	0-360
14	25.69641	-72.04	Pk	8.9	.9	11.8	-50.44	-13	-37.44	0-360

Pk - Peak detector

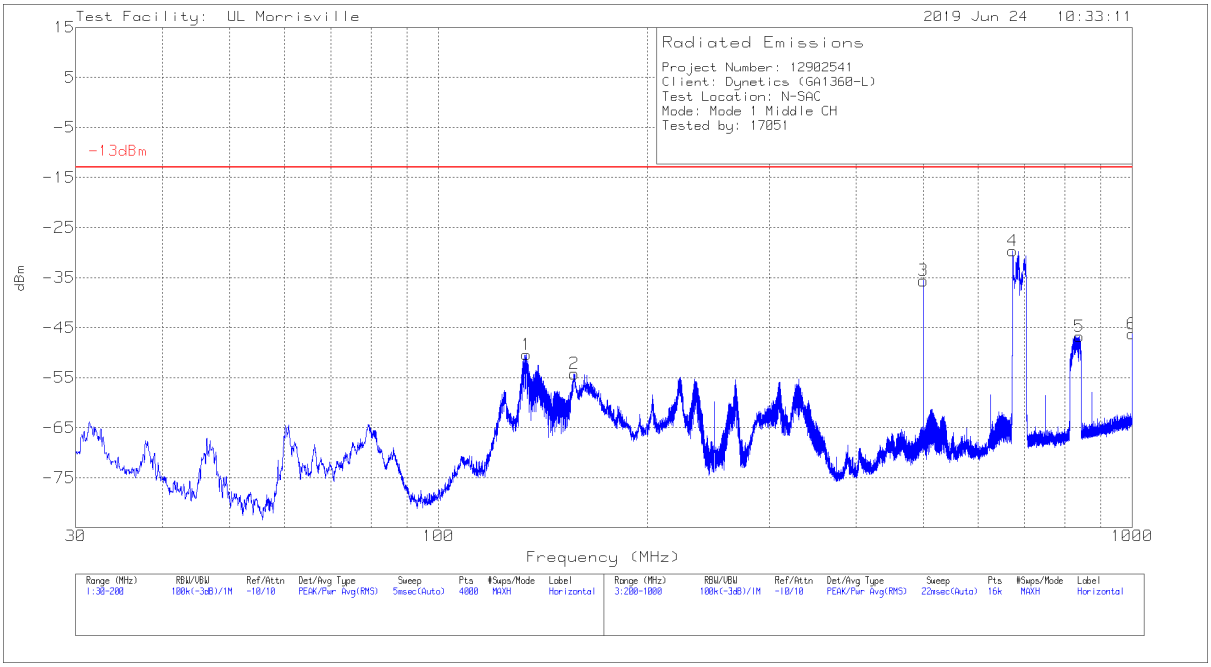
Mode 3, Middle Channel, Below 30MHz – Data

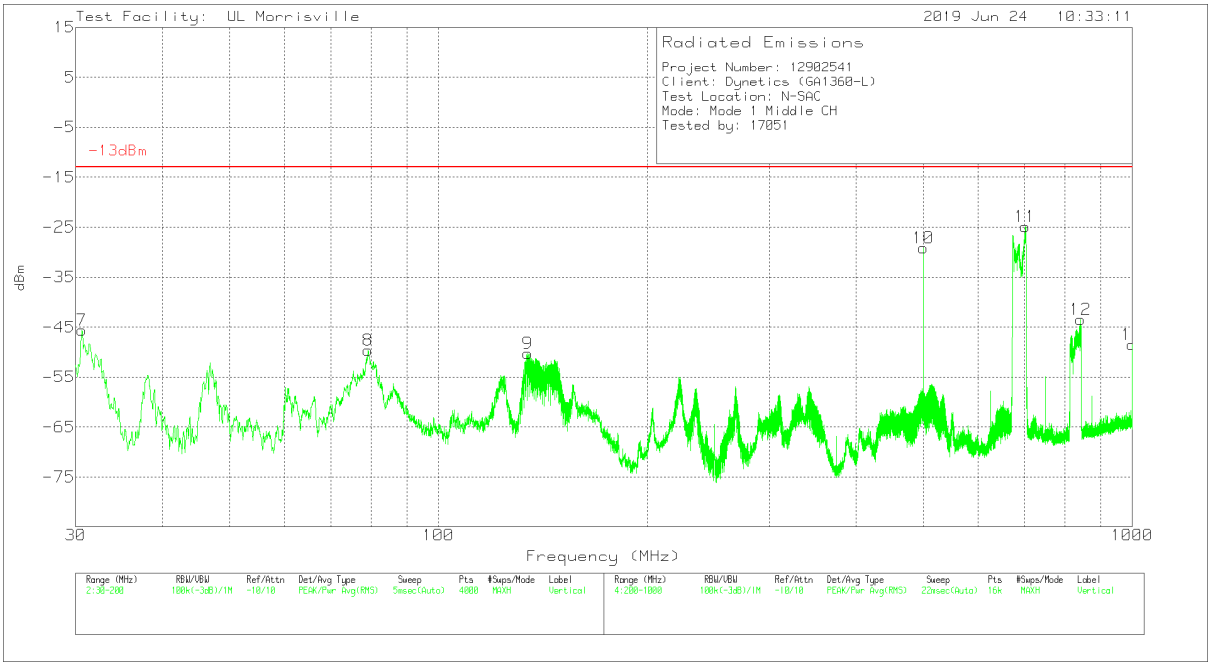


Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AT0079 AF (dB/m)	Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)
Loop antenna @ 0 degrees.										
1	.00949	-60.43	Pk	18.9	.1	11.8	-29.63	-13	-16.63	0-360
2	.15553	-58.03	Pk	10.7	.1	11.8	-35.43	-13	-22.43	0-360
3	24.90275	-74.35	Pk	9.1	.8	11.8	-52.65	-13	-39.65	0-360
4	25.69746	-77.62	Pk	8.9	.9	11.8	-56.02	-13	-43.02	0-360
Loop antenna @ 90 degrees.										
5	.00921	-60.91	Pk	19.2	.1	11.8	-29.81	-13	-16.81	0-360
6	.15281	-58.76	Pk	10.7	.1	11.8	-36.16	-13	-23.16	0-360
7	18.24568	-78.95	Pk	10.1	.7	11.8	-56.35	-13	-43.35	0-360
8	24.90275	-75.97	Pk	9.1	.8	11.8	-54.27	-13	-41.27	0-360
Loop antenna flat.										
9	.00907	-61.19	Pk	19.3	.1	11.8	-29.99	-13	-16.99	0-360
10	.1574	-60.12	Pk	10.7	.1	11.8	-37.52	-13	-24.52	0-360
11	24.90275	-69.92	Pk	9.1	.8	11.8	-48.22	-13	-35.22	0-360
12	25.69746	-72.15	Pk	8.9	.9	11.8	-50.55	-13	-37.55	0-360

Pk - Peak detector

Mode 1, Middle Channel, Below 1GHz – Data

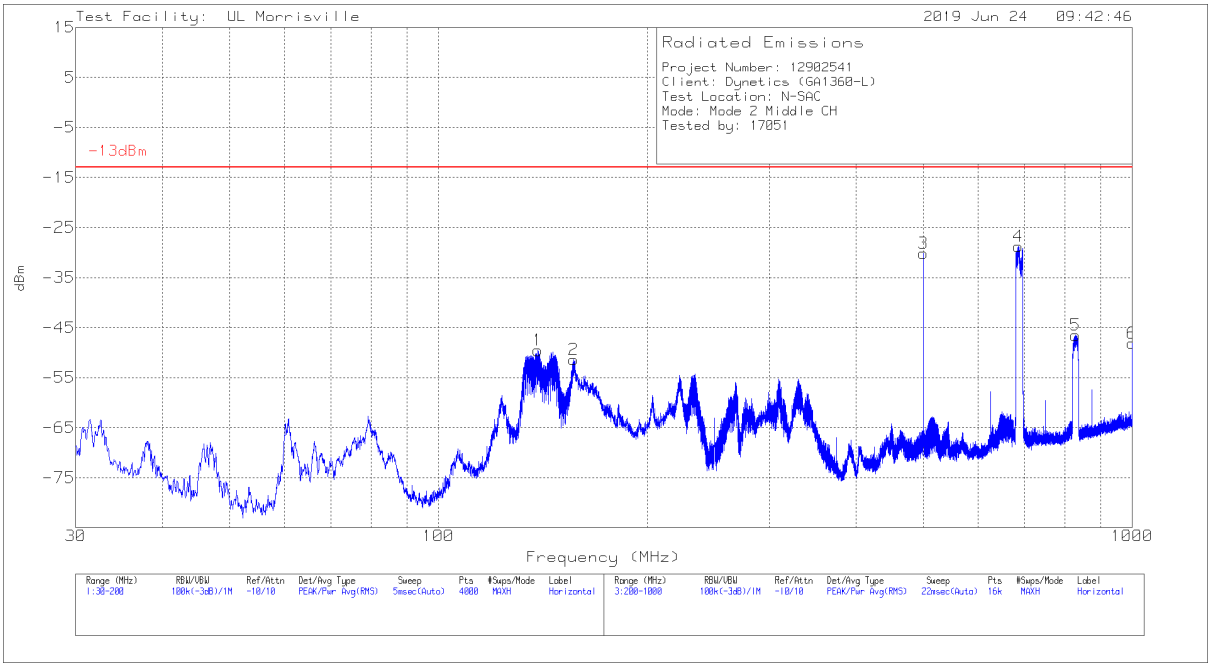


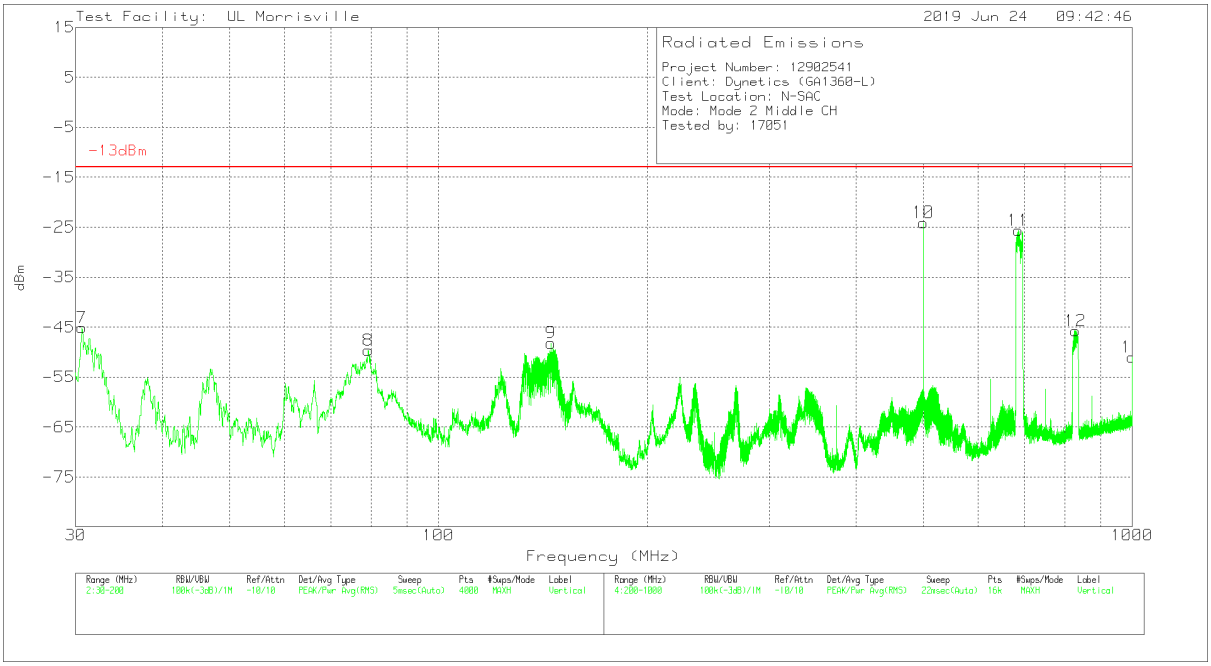


Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AT0073 ACF (dB/m)	Amp/Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	133.9394	-51.52	Pk	19.9	-30.6	11.8	-50.42	-13	-37.42	0-360	199	H
2	156.9804	-54.42	Pk	18.8	-30.4	11.8	-54.22	-13	-41.22	0-360	199	H
3	500.05	-43.12	Pk	24.1	-28.4	11.8	-35.62	-13	-22.62	0-360	299	H
4	703.1805	-38.47	Pk	26.7	-27.9	11.8	-27.87	-13	-14.87	139	229	H
5	839.15	-59.79	Pk	28.2	-27	11.8	-46.79	-13	-33.79	0-360	399	H
6	1000	-62.86	Pk	29.9	-25.1	11.8	-46.26	-13	-33.26	0-360	199	H
7	30.6377	-53.26	Pk	27.5	-31.7	11.8	-45.66	-13	-32.66	0-360	102	V
8	79.1852	-44.35	Pk	14.1	-31.2	11.8	-49.65	-13	-36.65	0-360	102	V
9	134.407	-51.38	Pk	19.9	-30.6	11.8	-50.28	-13	-37.28	0-360	102	V
10	500.0525	-36.25	Pk	24.1	-28.4	11.8	-28.75	-13	-15.75	134	171	V
11	703.1486	-33.34	Pk	26.7	-27.9	11.8	-22.74	-13	-9.74	238	118	V
12	842.3	-56.59	Pk	28.2	-26.9	11.8	-43.49	-13	-30.49	0-360	102	V
13	1000	-65.14	Pk	29.9	-25.1	11.8	-48.54	-13	-35.54	0-360	199	V

Pk - Peak detector

Mode 2, Middle Channel, Below 1GHz – Data

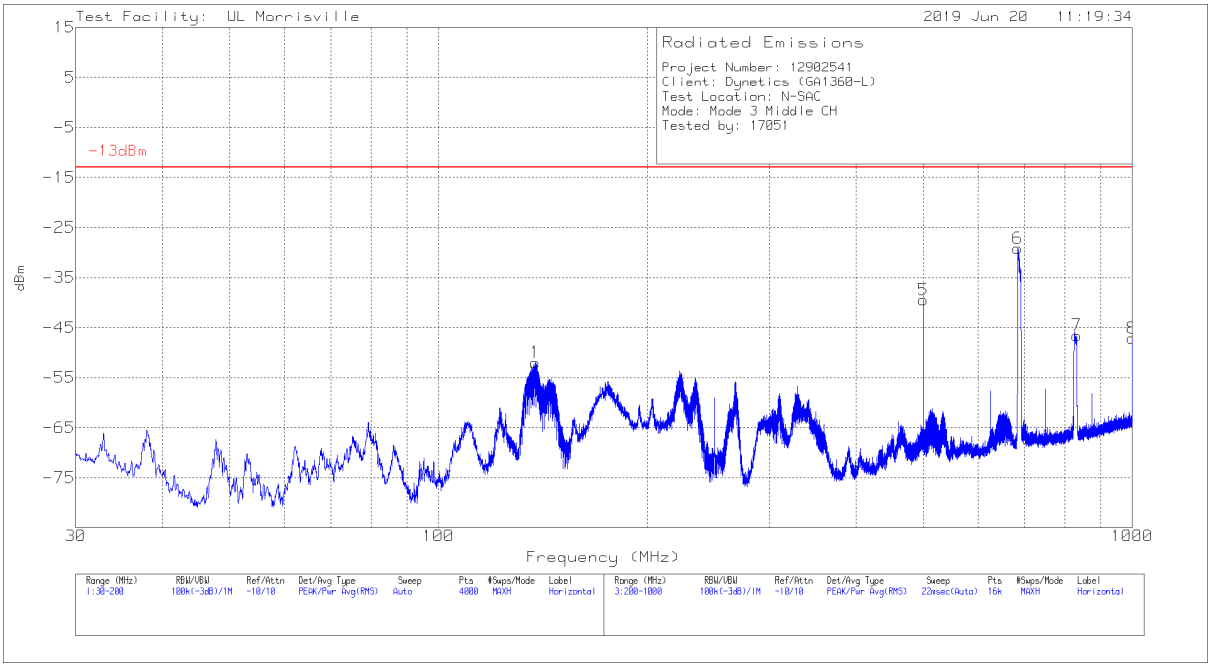


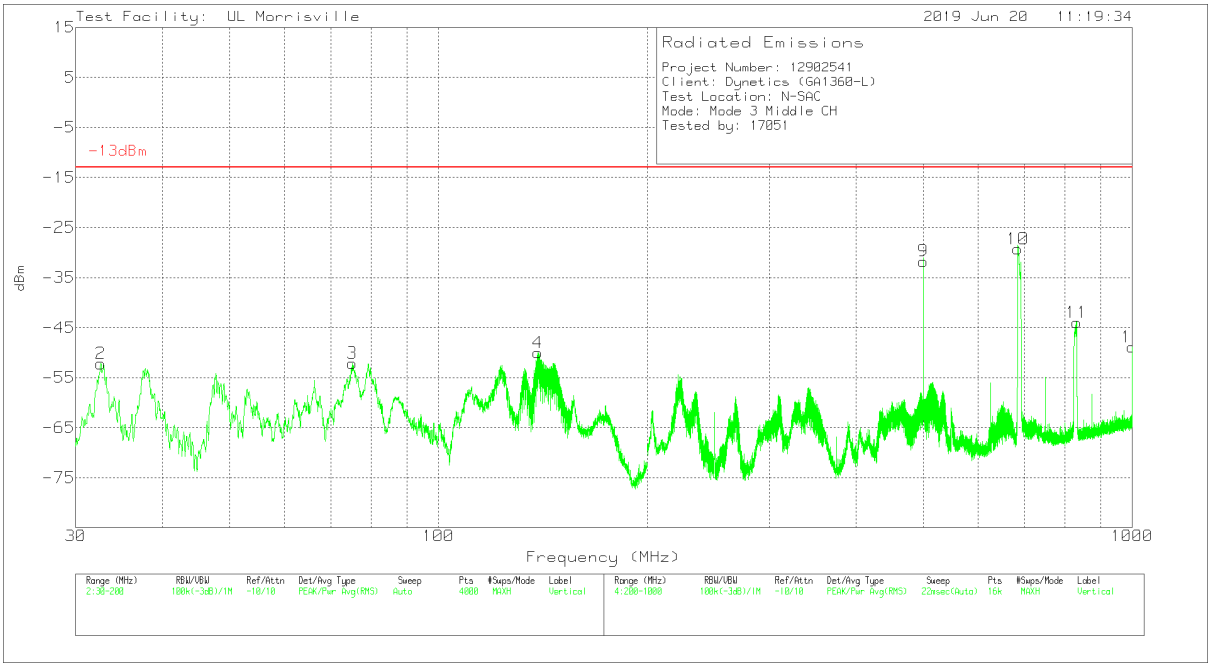


Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AT0073 ACF (dB/m)	Amp/Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	139.1682	-50.36	Pk	19.6	-30.6	11.8	-49.56	-13	-36.56	0-360	199	H
2	156.6403	-51.59	Pk	18.8	-30.4	11.8	-51.39	-13	-38.39	0-360	98	H
3	500.05	-37.69	Pk	24.1	-28.4	11.8	-30.19	-13	-17.19	0-360	102	H
4	684.7583	-36.55	Pk	26.4	-27.8	11.8	-26.15	-13	-13.15	142	239	H
5	829.05	-59.45	Pk	28.2	-27.1	11.8	-46.55	-13	-33.55	0-360	199	H
6	1000	-64.75	Pk	29.9	-25.1	11.8	-48.15	-13	-35.15	0-360	199	H
7	30.6377	-52.71	Pk	27.5	-31.7	11.8	-45.11	-13	-32.11	0-360	102	V
8	79.2277	-44.33	Pk	14.1	-31.2	11.8	-49.63	-13	-36.63	0-360	102	V
9	145.2473	-48.59	Pk	19.2	-30.6	11.8	-48.19	-13	-35.19	0-360	102	V
10	500.0525	-34.26	Pk	24.1	-28.4	11.8	-26.76	-13	-13.76	100	175	V
11	685.6981	-31.84	Pk	26.4	-27.7	11.8	-21.34	-13	-8.34	283	121	V
12	828.45	-58.63	Pk	28.2	-27.1	11.8	-45.73	-13	-32.73	0-360	102	V
13	1000	-67.63	Pk	29.9	-25.1	11.8	-51.03	-13	-38.03	0-360	199	V

Pk - Peak detector

Mode 3, Middle Channel, Below 1GHz – Data

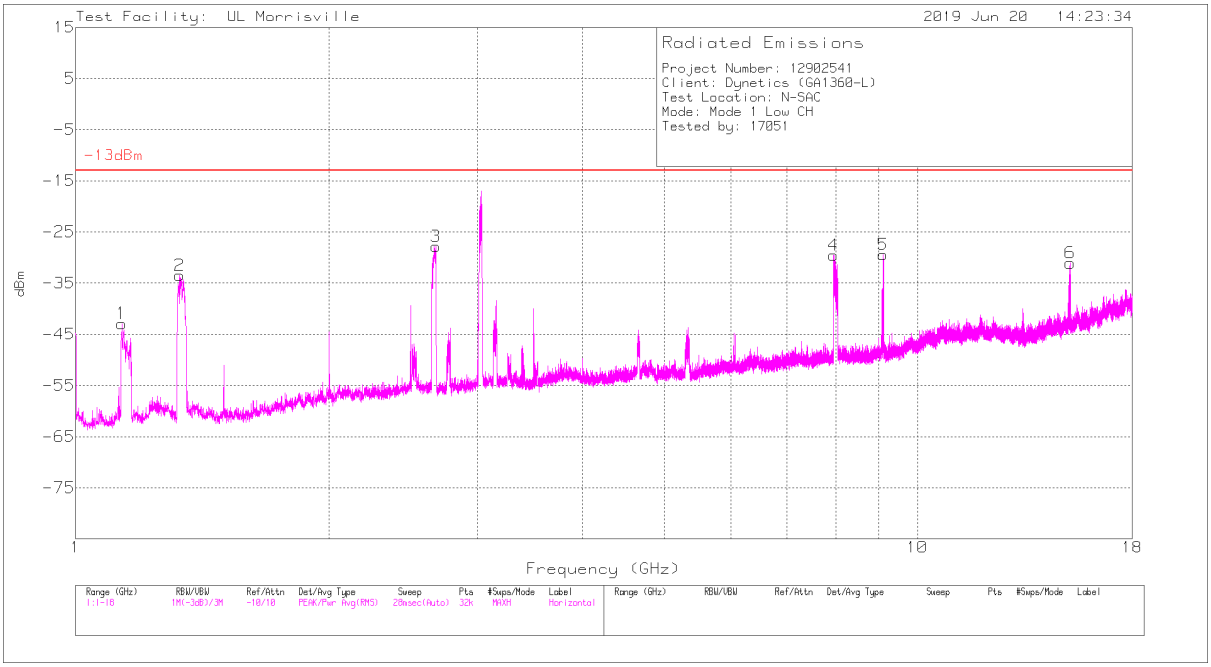


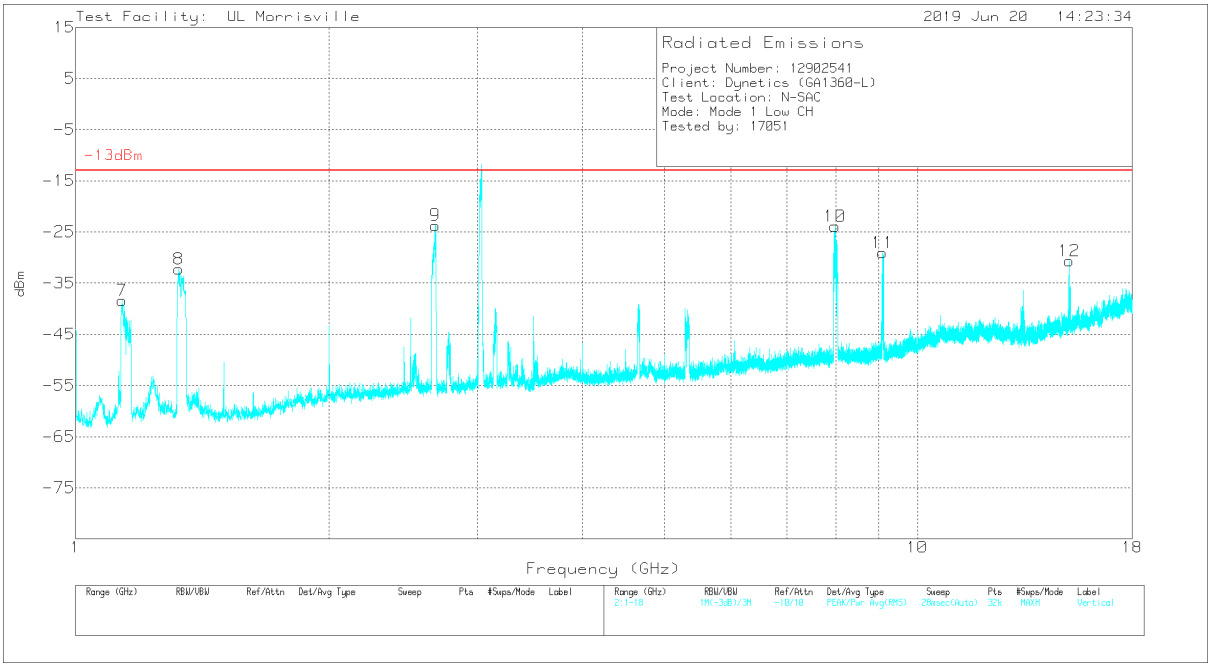


Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AT0073 ACF (dB/m)	Amp/Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	137.8504	-52.87	Pk	19.7	-30.6	11.8	-51.97	-13	-38.97	0-360	199	H
5	500.05	-46.94	Pk	24.1	-28.4	11.8	-39.44	-13	-26.44	0-360	101	H
6	683.7937	-38.35	Pk	26.4	-27.8	11.8	-27.95	-13	-14.95	149	240	H
7	831.55	-59.57	Pk	28.2	-27	11.8	-46.57	-13	-33.57	0-360	399	H
8	1000	-63.73	Pk	29.9	-25.1	11.8	-47.13	-13	-34.13	0-360	199	H
2	32.5932	-58.3	Pk	26	-31.7	11.8	-52.2	-13	-39.2	0-360	101	V
3	75.1467	-47.02	Pk	14.3	-31.2	11.8	-52.12	-13	-39.12	0-360	101	V
4	139.1682	-50.83	Pk	19.6	-30.6	11.8	-50.03	-13	-37.03	0-360	101	V
9	500	-39.23	Pk	24.1	-28.4	11.8	-31.73	-13	-18.73	0-360	102	V
10	684.35	-39.66	Pk	26.4	-27.8	11.8	-29.26	-13	-16.26	0-360	199	V
11	831.9	-56.97	Pk	28.2	-27	11.8	-43.97	-13	-30.97	0-360	102	V
12	1000	-65.48	Pk	29.9	-25.1	11.8	-48.88	-13	-35.88	0-360	199	V

Pk - Peak detector

Mode 1, Low Channel, 1-18GHz – Data



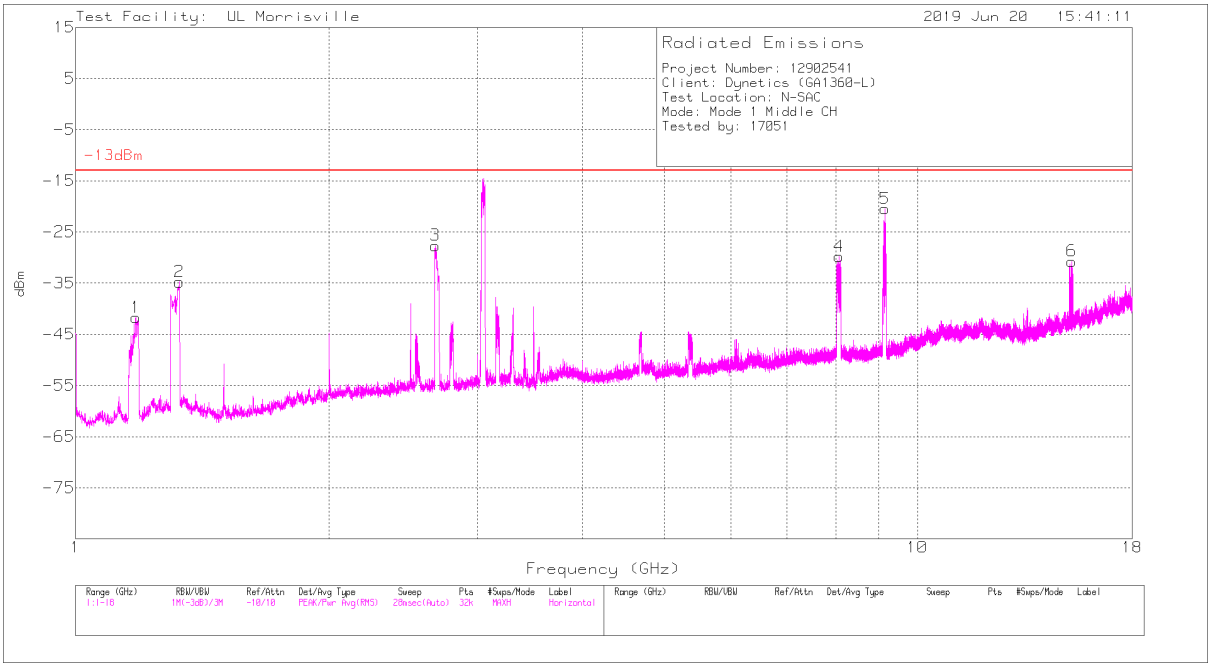


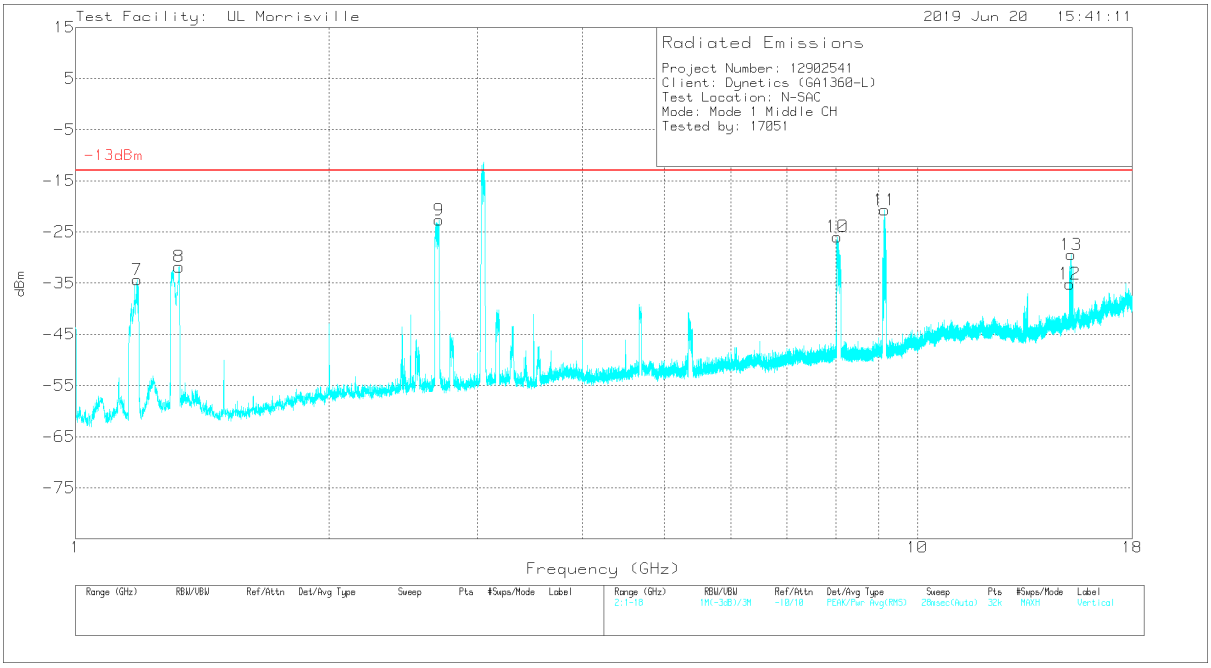
Note: The fundamental frequency of the transmitter is not marked as it is not applicable to the limit.

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Fltr/ Pad (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.13441	-45.1	Pk	27.6	-37.2	11.8	-42.9	-13	-29.9	0-360	199	H
2	1.32885	-37.6	Pk	29.1	-36.8	11.8	-33.5	-13	-20.5	0-360	299	H
3	2.67934	-37.45	Pk	32	-34.2	11.8	-27.85	-13	-14.85	0-360	299	H
4	7.94818	-47.85	Pk	35.9	-29.4	11.8	-29.55	-13	-16.55	0-360	299	H
5	9.11739	-40.29	Pk	36.1	-28.8	11.8	-21.19	-13	-8.19	303	100	H
6	15.1912	-55.17	Pk	39.9	-27.6	11.8	-31.07	-13	-18.07	0-360	101	H
7	1.136	-40.6	Pk	27.6	-37.2	11.8	-38.4	-13	-25.4	0-360	299	V
8	1.32567	-36.23	Pk	29	-36.8	11.8	-32.23	-13	-19.23	0-360	299	V
9	2.67993	-36.04	Pk	32	-34.2	11.8	-26.44	-13	-13.44	269	337	V
10	7.98361	-40.19	Pk	35.9	-29.3	11.8	-21.79	-13	-8.79	255	101	V
11	9.11747	-40.68	Pk	36.1	-28.8	11.8	-21.58	-13	-8.58	340	164	V
12	15.19579	-52.98	Pk	39.9	-27.7	11.8	-28.98	-13	-15.98	85	100	V

Pk - Peak detector

Mode 1, Middle Channel, 1-18GHz – Data



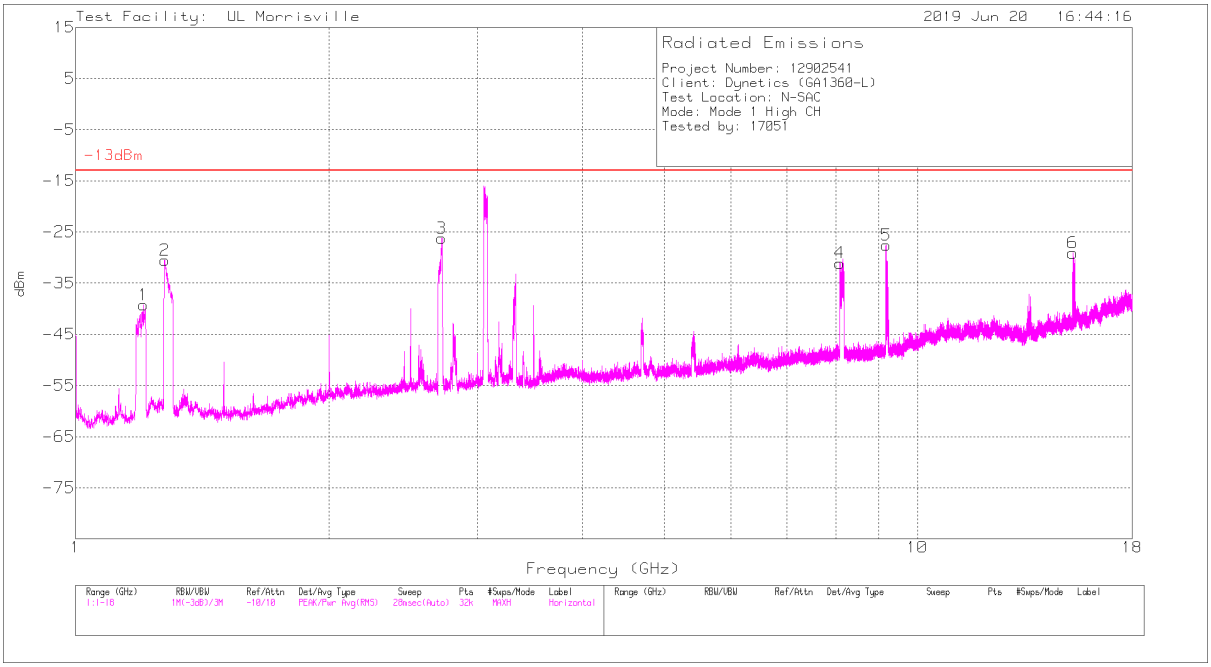


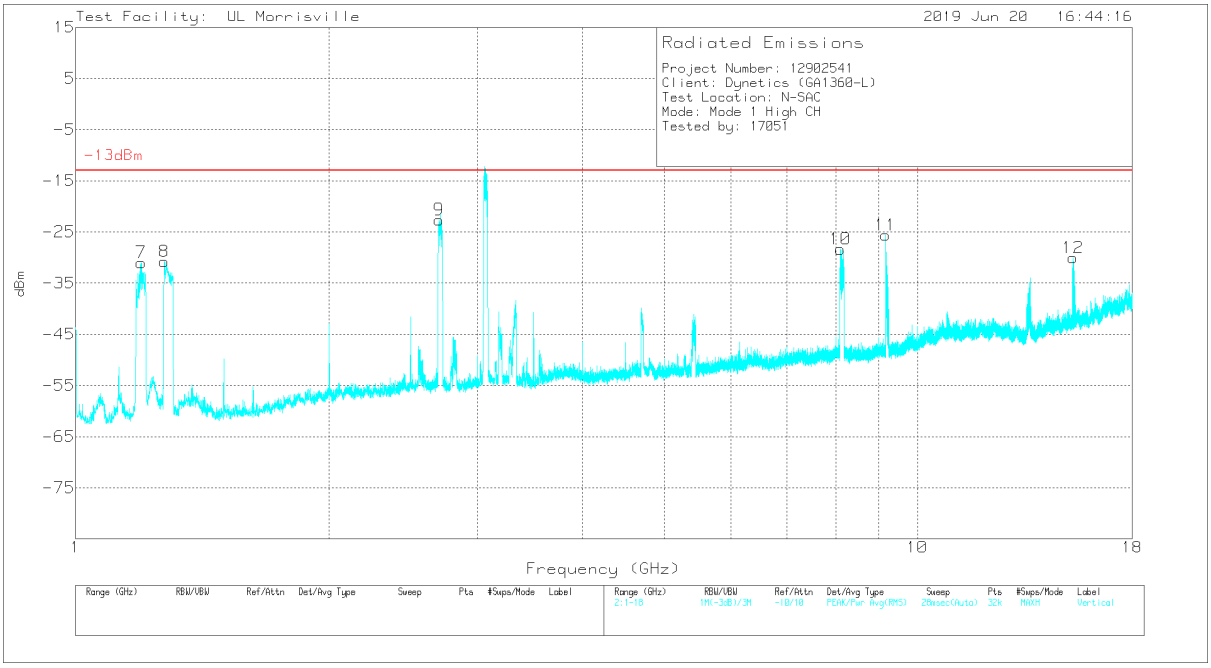
Note: The fundamental frequency of the transmitter is not marked as it is not applicable to the limit.

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Fltr/ Pad (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.17851	-44.44	Pk	28	-37.1	11.8	-41.74	-13	-28.74	0-360	199	H
2	1.32726	-38.86	Pk	29.1	-36.8	11.8	-34.76	-13	-21.76	0-360	299	H
3	2.67296	-37.34	Pk	32.1	-34.2	11.8	-27.64	-13	-14.64	0-360	299	H
4	8.07276	-48.03	Pk	35.8	-29.4	11.8	-29.83	-13	-16.83	0-360	299	H
5	9.14167	-35.79	Pk	36.1	-28.7	11.8	-16.59	-13	-3.59	303	100	H
6	15.26558	-54.71	Pk	40	-27.8	11.8	-30.71	-13	-17.71	0-360	100	H
7	1.18329	-37.26	Pk	28.1	-37	11.8	-34.36	-13	-21.36	0-360	102	V
8	1.32673	-35.91	Pk	29.1	-36.8	11.8	-31.81	-13	-18.81	0-360	299	V
9	2.68295	-32.1	Pk	32	-34.2	11.8	-22.5	-13	-9.5	245	306	V
10	8.0361	-44.32	Pk	35.8	-29.2	11.8	-25.92	-13	-12.92	0-360	299	V
11	9.14237	-36.11	Pk	36.1	-28.7	11.8	-16.91	-13	-3.91	331	164	V
12	15.17261	-59.55	Pk	39.9	-27.3	11.8	-35.15	-13	-22.15	0-360	102	V
13	15.23742	-53.21	Pk	40	-28	11.8	-29.41	-13	-16.41	0-360	102	V

Pk - Peak detector

Mode 1, High Channel, 1-18GHz – Data



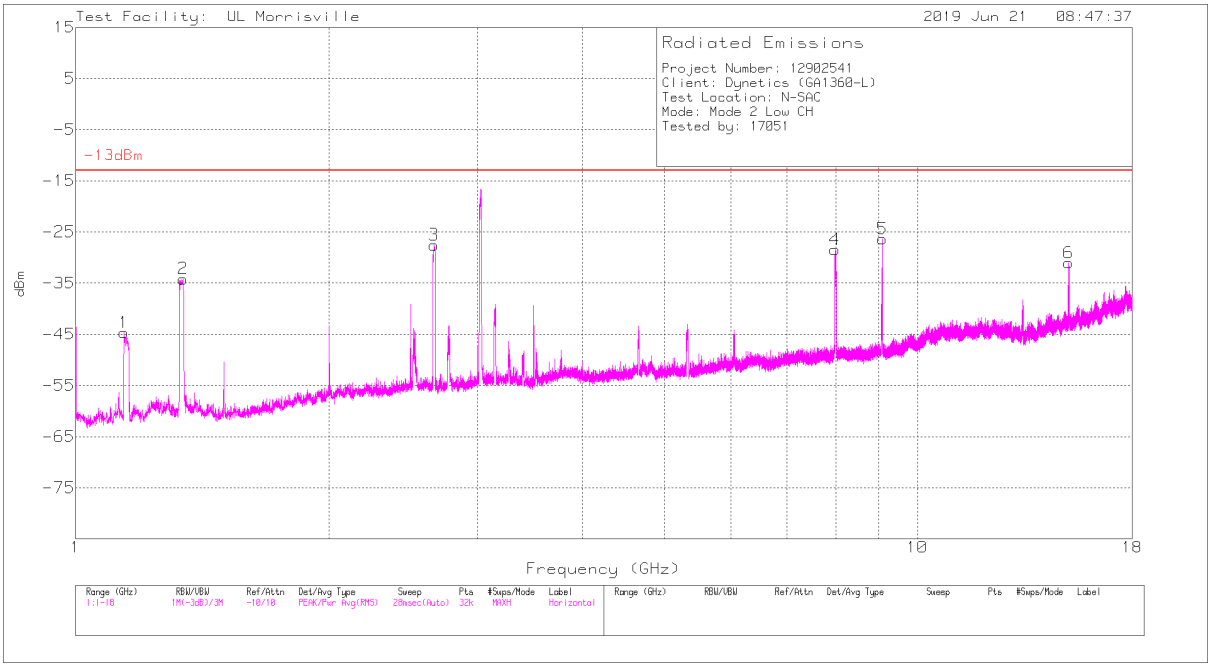


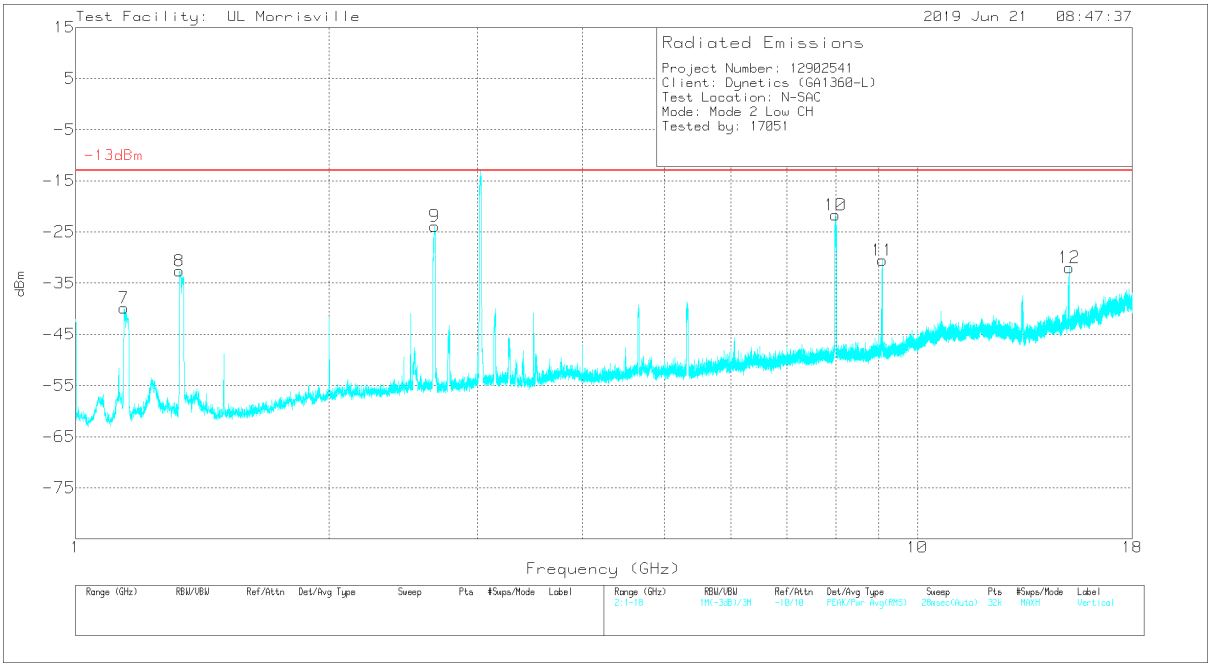
Note: The fundamental frequency of the transmitter is not marked as it is not applicable to the limit.

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Fltr/ Pad (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.20454	-42.56	Pk	28.5	-37	11.8	-39.26	-13	-26.26	0-360	102	H
2	1.27573	-34.71	Pk	29.3	-36.9	11.8	-30.51	-13	-17.51	0-360	302	H
3	2.72681	-33.76	Pk	32.1	-34.2	11.8	-24.06	-13	-11.06	144	321	H
4	8.15759	-46.92	Pk	35.8	-29.3	11.8	-28.62	-13	-15.62	86	314	H
5	9.16506	-38.64	Pk	36.1	-28.9	11.8	-19.64	-13	-6.64	302	100	H
6	15.27751	-49.74	Pk	40	-27.7	11.8	-25.64	-13	-12.64	105	129	H
7	1.19657	-34.18	Pk	28.4	-37	11.8	-30.98	-13	-17.98	0-360	102	V
8	1.2744	-35.07	Pk	29.3	-36.8	11.8	-30.77	-13	-17.77	0-360	102	V
9	2.7126	-30.79	Pk	32.1	-34.2	11.8	-21.09	-13	-8.09	244	308	V
10	8.17998	-46.15	Pk	35.8	-29.2	11.8	-27.75	-13	-14.75	39	307	V
11	9.16505	-39.19	Pk	36.1	-28.9	11.8	-20.19	-13	-7.19	331	163	V
12	15.3435	-52.26	Pk	40	-27.5	11.8	-27.96	-13	-14.96	108	100	V

Pk - Peak detector

Mode 2, Low Channel, 1-18GHz – Data



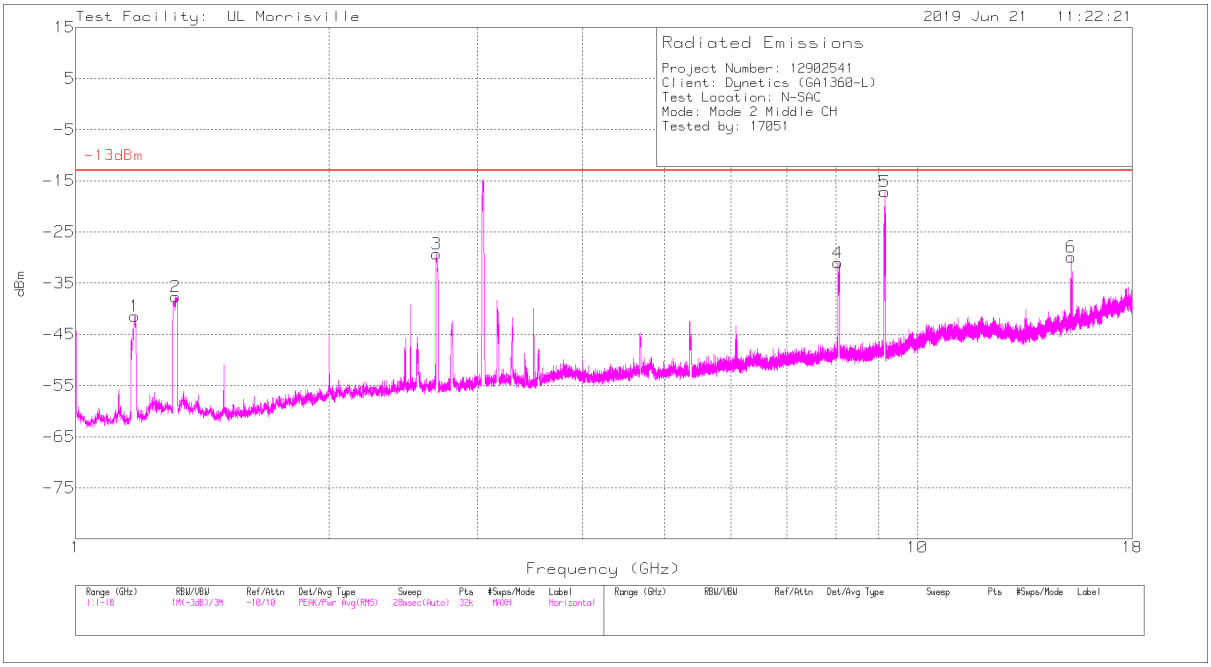


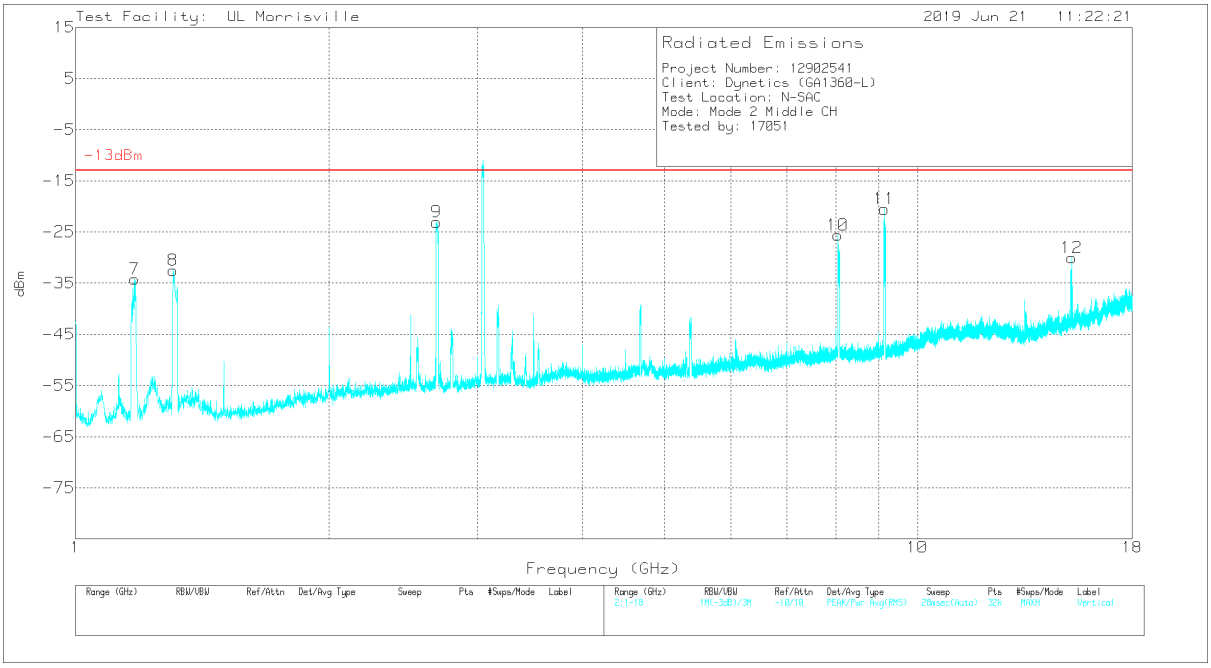
Note: The fundamental frequency of the transmitter is not marked as it is not applicable to the limit.

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Fltr/ Pad (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.14132	-46.86	Pk	27.6	-37.2	11.8	-44.66	-13	-31.66	0-360	199	H
2	1.34107	-38.65	Pk	29.4	-36.7	11.8	-34.15	-13	-21.15	0-360	299	H
3	2.66924	-37.3	Pk	32.1	-34.2	11.8	-27.6	-13	-14.6	219	297	H
4	7.99339	-46.17	Pk	35.8	-29.3	11.8	-27.87	-13	-14.87	132	103	H
5	9.09445	-44.51	Pk	36.1	-28.6	11.8	-25.21	-13	-12.21	302	100	H
6	15.13383	-55.72	Pk	39.9	-27	11.8	-31.02	-13	-18.02	0-360	98	H
7	1.14079	-42.05	Pk	27.6	-37.2	11.8	-39.85	-13	-26.85	0-360	102	V
8	1.32832	-36.73	Pk	29.1	-36.8	11.8	-32.63	-13	-19.63	0-360	299	V
9	2.672	-32.77	Pk	32.1	-34.2	11.8	-23.07	-13	-10.07	242	282	V
10	7.98951	-40.47	Pk	35.8	-29.3	11.8	-22.17	-13	-9.17	327	112	V
11	9.09403	-44.46	Pk	36.1	-28.6	11.8	-25.16	-13	-12.16	340	169	V
12	15.14605	-56.67	Pk	39.9	-27	11.8	-31.97	-13	-18.97	0-360	102	V

Pk - Peak detector

Mode 2, Middle Channel, 1-18GHz – Data



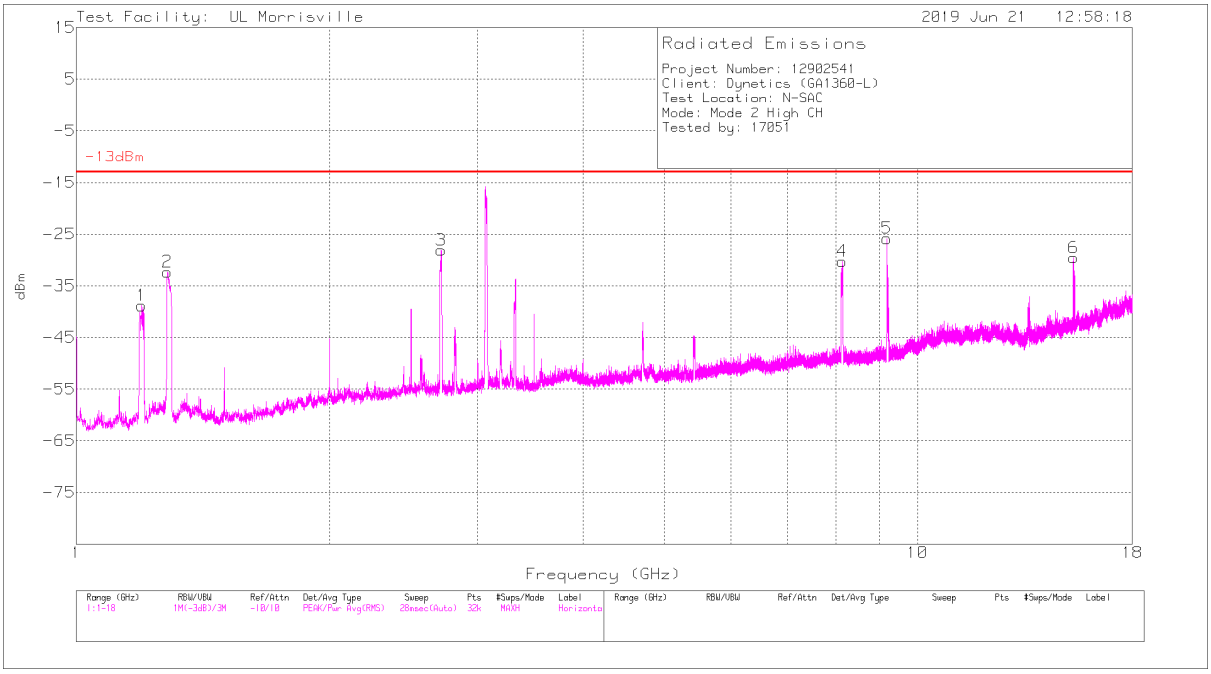


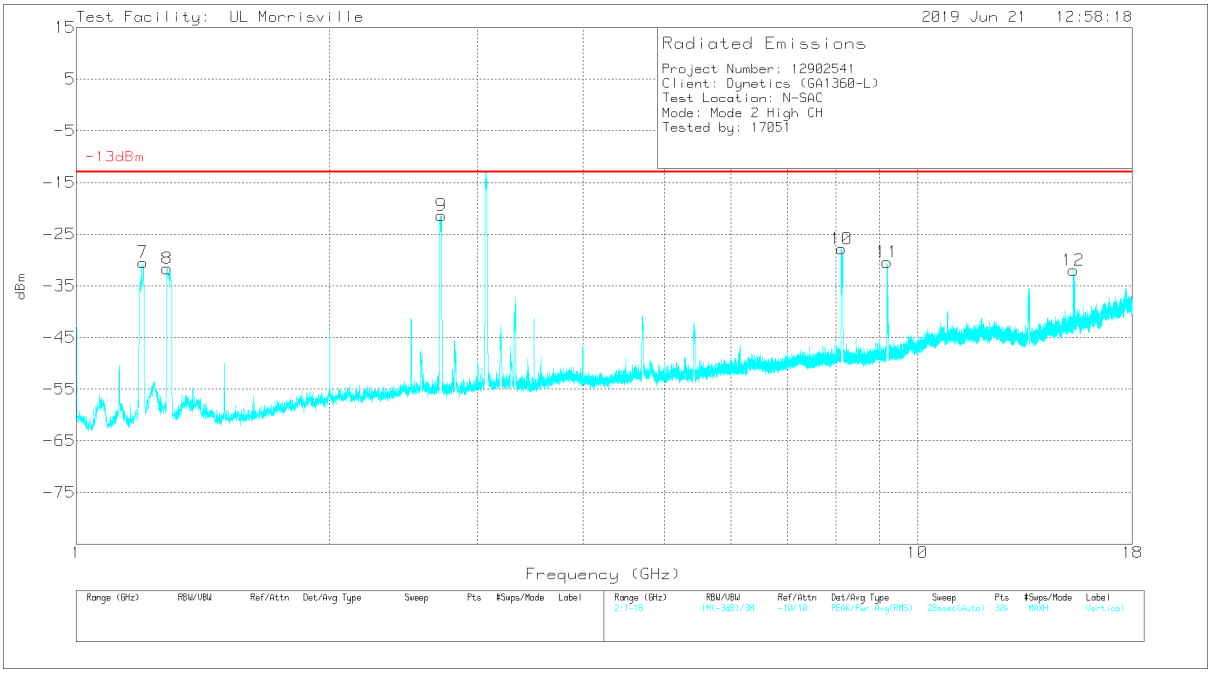
Note: The fundamental frequency of the transmitter is not marked as it is not applicable to the limit.

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Fltr/ Pad (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.17585	-44.15	Pk	28	-37.1	11.8	-41.45	-13	-28.45	0-360	98	H
2	1.31451	-41.53	Pk	28.9	-36.8	11.8	-37.63	-13	-24.63	0-360	199	H
3	2.68199	-38.94	Pk	32	-34.2	11.8	-29.34	-13	-16.34	0-360	299	H
4	8.06207	-46.71	Pk	35.8	-29.4	11.8	-28.51	-13	-15.51	49	319	H
5	9.14161	-35.74	Pk	36.1	-28.7	11.8	-16.54	-13	-3.54	302	100	H
6	15.24516	-48.87	Pk	40	-27.9	11.8	-24.97	-13	-11.97	104	123	H
7	1.17585	-36.94	Pk	28	-37.1	11.8	-34.24	-13	-21.24	0-360	102	V
8	1.30601	-36.41	Pk	28.9	-36.8	11.8	-32.51	-13	-19.51	0-360	202	V
9	2.68358	-32.09	Pk	32	-34.2	11.8	-22.49	-13	-9.49	246	306	V
10	8.0446	-43.13	Pk	35.8	-29.3	11.8	-24.83	-13	-11.83	48	294	V
11	9.14228	-36.12	Pk	36.1	-28.7	11.8	-16.92	-13	-3.92	331	165	V
12	15.21578	-52.34	Pk	40	-27.9	11.8	-28.44	-13	-15.44	113	100	V

Pk - Peak detector

Mode 2, High Channel, 1-18GHz – Data



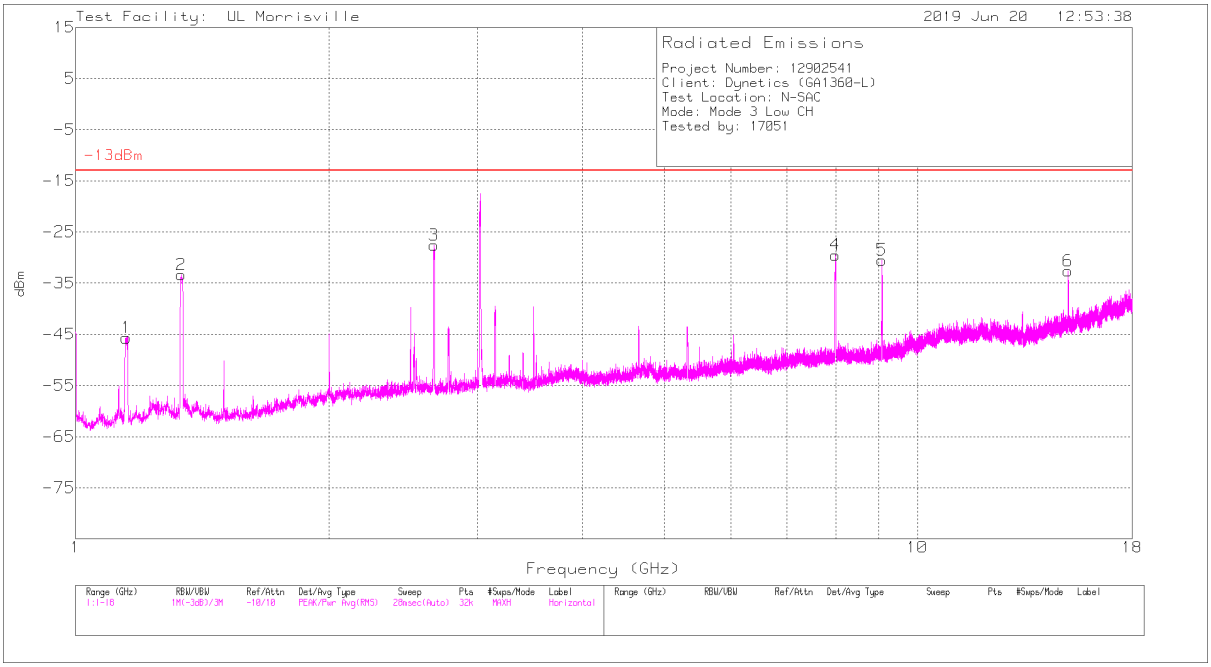


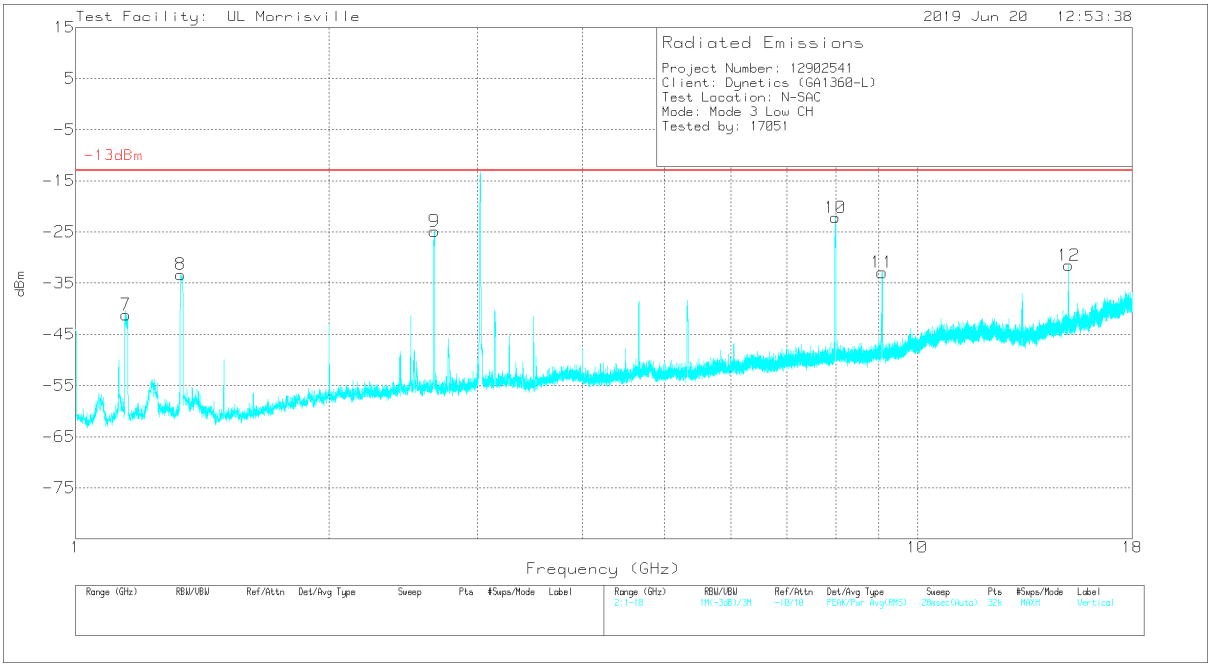
Note: The fundamental frequency of the transmitter is not marked as it is not applicable to the limit.

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Fltr/ Pad (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.19551	-42.03	Pk	28.4	-37	11.8	-38.83	-13	-25.83	0-360	199	H
2	1.28317	-36.61	Pk	29.3	-36.8	11.8	-32.31	-13	-19.31	0-360	299	H
3	2.71899	-35.84	Pk	32.1	-34.2	11.8	-26.14	-13	-13.14	142	319	H
4	8.15588	-46.6	Pk	35.8	-29.3	11.8	-28.3	-13	-15.3	86	310	H
5	9.18849	-42.69	Pk	36.1	-29	11.8	-23.79	-13	-10.79	302	101	H
6	15.33199	-53.87	Pk	40	-27.5	11.8	-29.57	-13	-16.57	0-360	100	H
7	1.19923	-33.7	Pk	28.4	-37	11.8	-30.5	-13	-17.5	0-360	102	V
8	1.2821	-35.96	Pk	29.3	-36.8	11.8	-31.66	-13	-18.66	0-360	201	V
9	2.71287	-30.73	Pk	32.1	-34.2	11.8	-21.03	-13	-8.03	243	308	V
10	8.11813	-45.16	Pk	35.8	-29.5	11.8	-27.06	-13	-14.06	343	100	V
11	9.18838	-42.95	Pk	36.1	-29	11.8	-24.05	-13	-11.05	331	160	V
12	15.32137	-56.29	Pk	40	-27.5	11.8	-31.99	-13	-18.99	0-360	102	V

Pk - Peak detector

Mode 3, Low Channel, 1-18GHz – Data



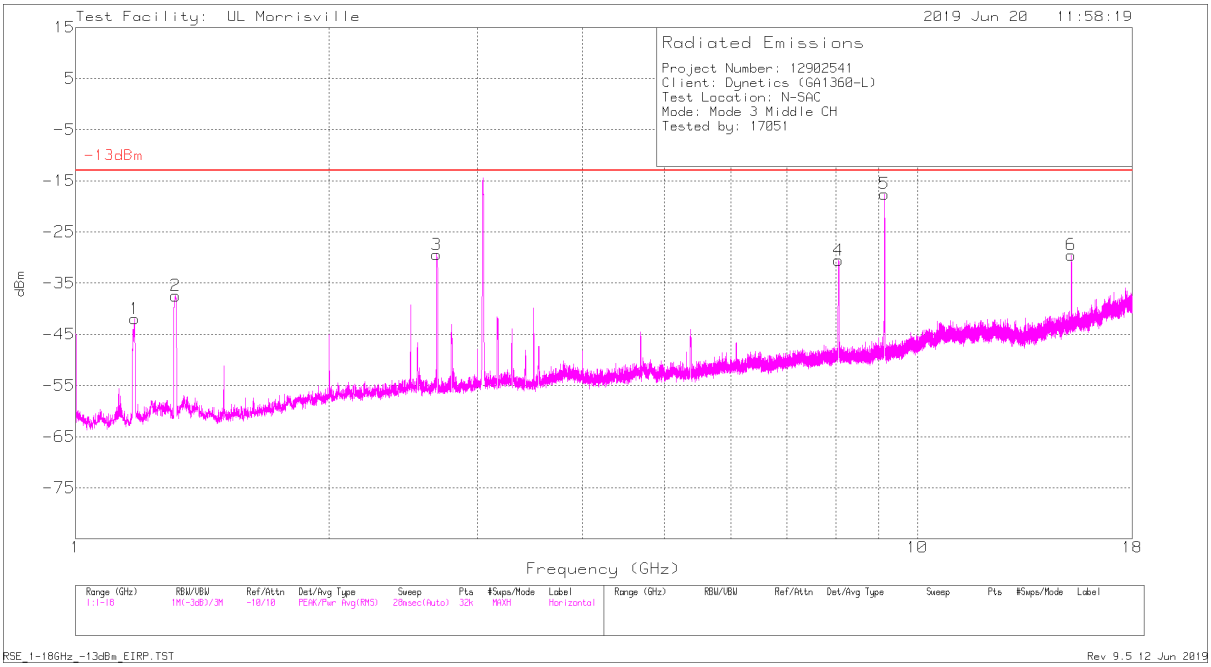


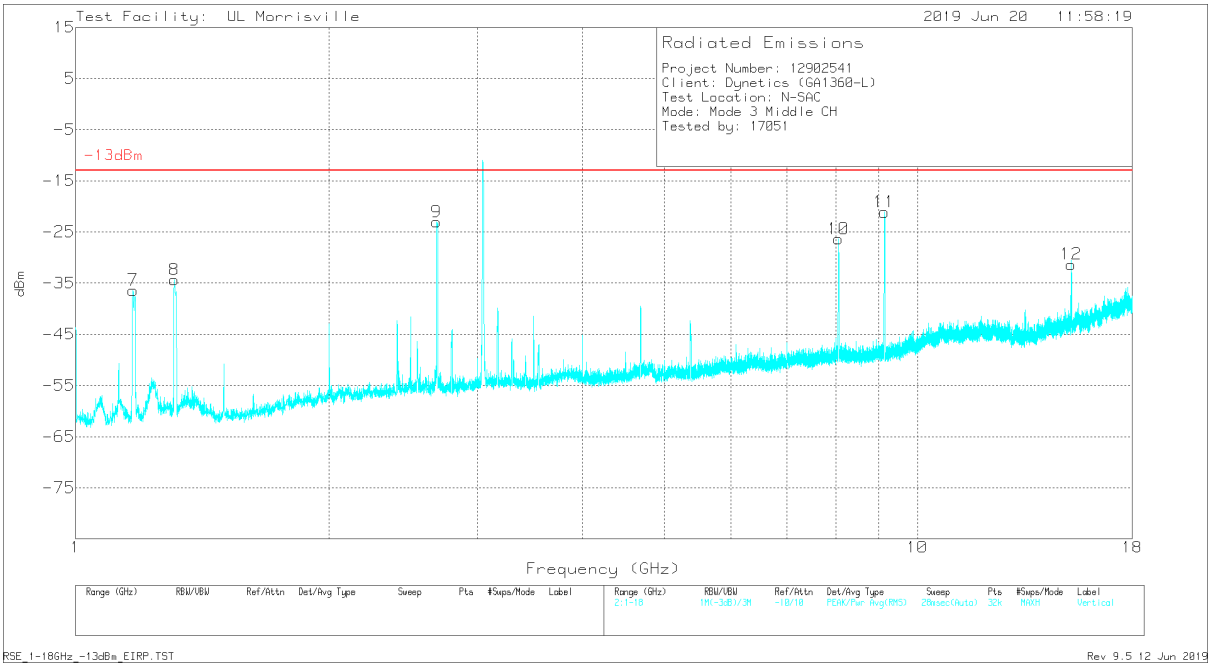
Note: The fundamental frequency of the transmitter is not marked as it is not applicable to the limit.

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Fltr/ Pad (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.14822	-47.89	Pk	27.6	-37.2	11.8	-45.69	-13	-32.69	0-360	102	H
2	1.33417	-37.56	Pk	29.2	-36.8	11.8	-33.36	-13	-20.36	0-360	299	H
3	2.66659	-37.29	Pk	32.1	-34.2	11.8	-27.59	-13	-14.59	0-360	299	H
4	7.98148	-46.72	Pk	35.9	-29.3	11.8	-28.32	-13	-15.32	130	303	H
5	9.08259	-46.37	Pk	36.1	-28.8	11.8	-27.27	-13	-14.27	303	102	H
6	15.10726	-57.44	Pk	39.9	-26.9	11.8	-32.64	-13	-19.64	0-360	102	H
7	1.14716	-43.39	Pk	27.6	-37.2	11.8	-41.19	-13	-28.19	0-360	299	V
8	1.33204	-37.5	Pk	29.2	-36.8	11.8	-33.3	-13	-20.3	0-360	299	V
9	2.668	-33.17	Pk	32.1	-34.2	11.8	-23.47	-13	-10.47	244	282	V
10	7.98381	-40.19	Pk	35.9	-29.3	11.8	-21.79	-13	-8.79	256	100	V
11	9.08257	-46.87	Pk	36.1	-28.8	11.8	-27.77	-13	-14.77	330	164	V
12	15.13489	-56.25	Pk	39.9	-27	11.8	-31.55	-13	-18.55	0-360	102	V

Pk - Peak detector

Mode 3, Middle Channel, 1-18GHz – Data



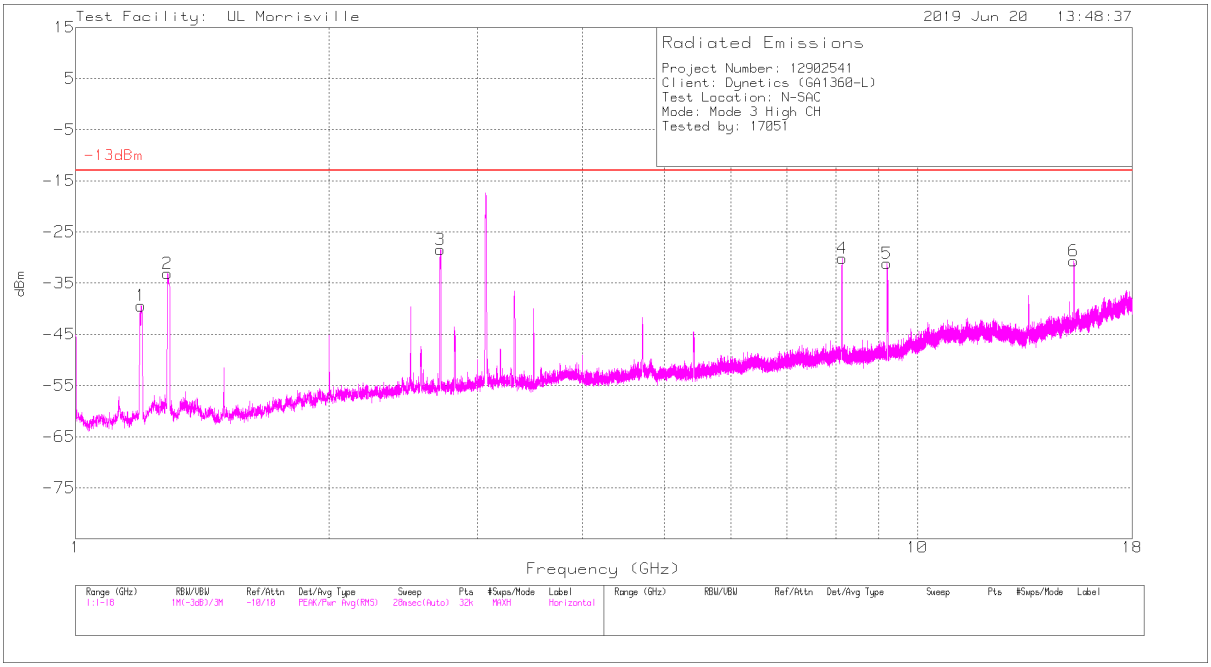


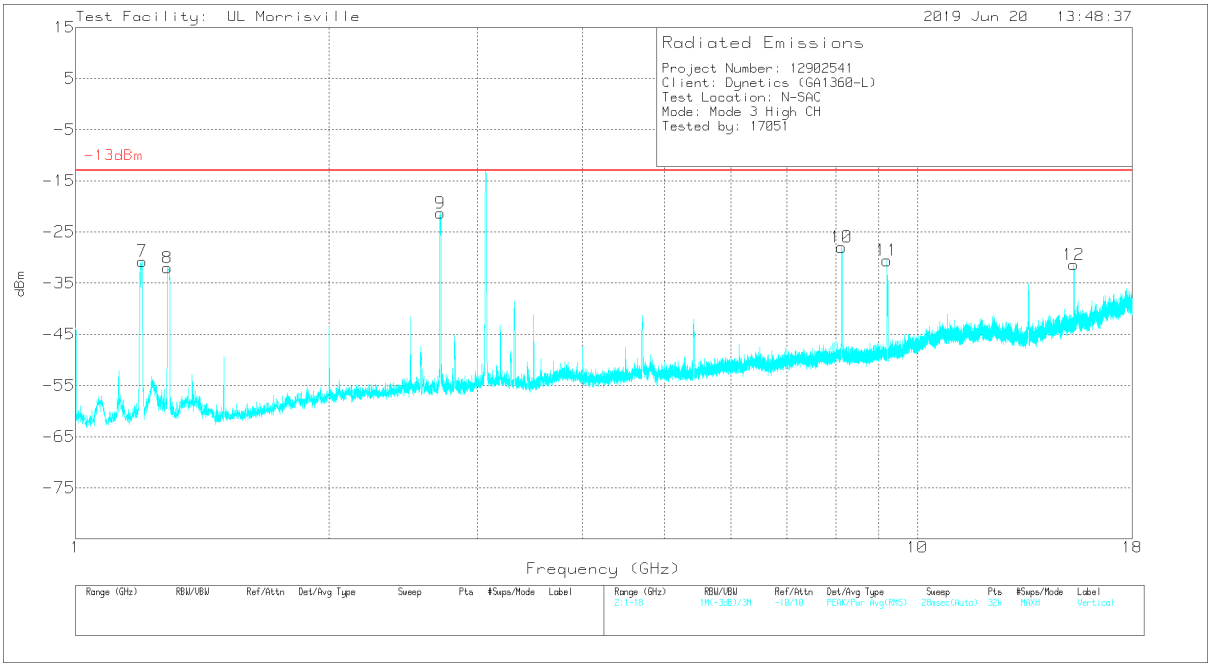
Note: The fundamental frequency of the transmitter is not marked as it is not applicable to the limit.

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Fltr/ Pad (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.17532	-44.64	Pk	28	-37.1	11.8	-41.94	-13	-28.94	0-360	101	H
2	1.31451	-41.36	Pk	28.9	-36.8	11.8	-37.46	-13	-24.46	0-360	199	H
3	2.68359	-39.04	Pk	32	-34.2	11.8	-29.44	-13	-16.44	0-360	299	H
4	8.05469	-48.83	Pk	35.8	-29.3	11.8	-30.53	-13	-17.53	0-360	299	H
5	9.14016	-35.71	Pk	36.1	-28.7	11.8	-16.51	-13	-3.51	302	100	H
6	15.22255	-53.28	Pk	40	-28	11.8	-29.48	-13	-16.48	0-360	101	H
7	1.17001	-38.98	Pk	27.9	-37.1	11.8	-36.38	-13	-23.38	0-360	102	V
8	1.3092	-38.25	Pk	28.9	-36.8	11.8	-34.35	-13	-21.35	0-360	202	V
9	2.68405	-32.03	Pk	32	-34.2	11.8	-22.43	-13	-9.43	246	307	V
10	8.05416	-44.66	Pk	35.8	-29.3	11.8	-26.36	-13	-13.36	0-360	299	V
11	9.1405	-36.2	Pk	36.1	-28.7	11.8	-17	-13	-4	331	168	V
12	15.22467	-55.13	Pk	40	-28	11.8	-31.33	-13	-18.33	0-360	102	V

Pk - Peak detector

Mode 3, High Channel, 1-18GHz – Data



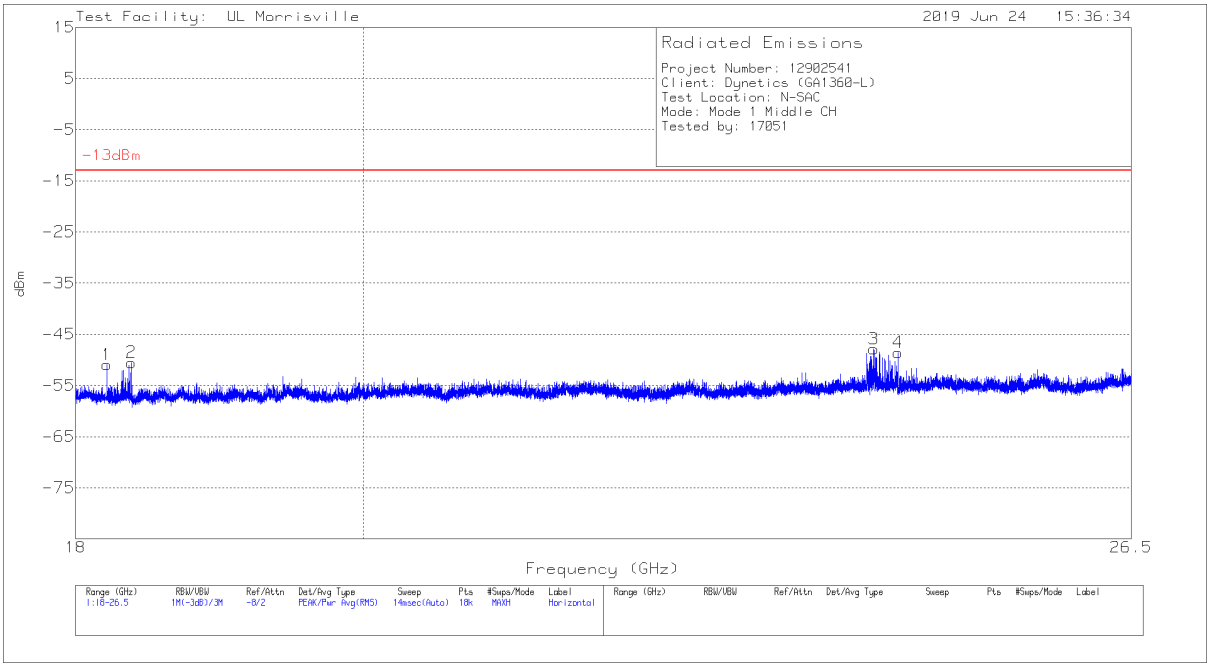


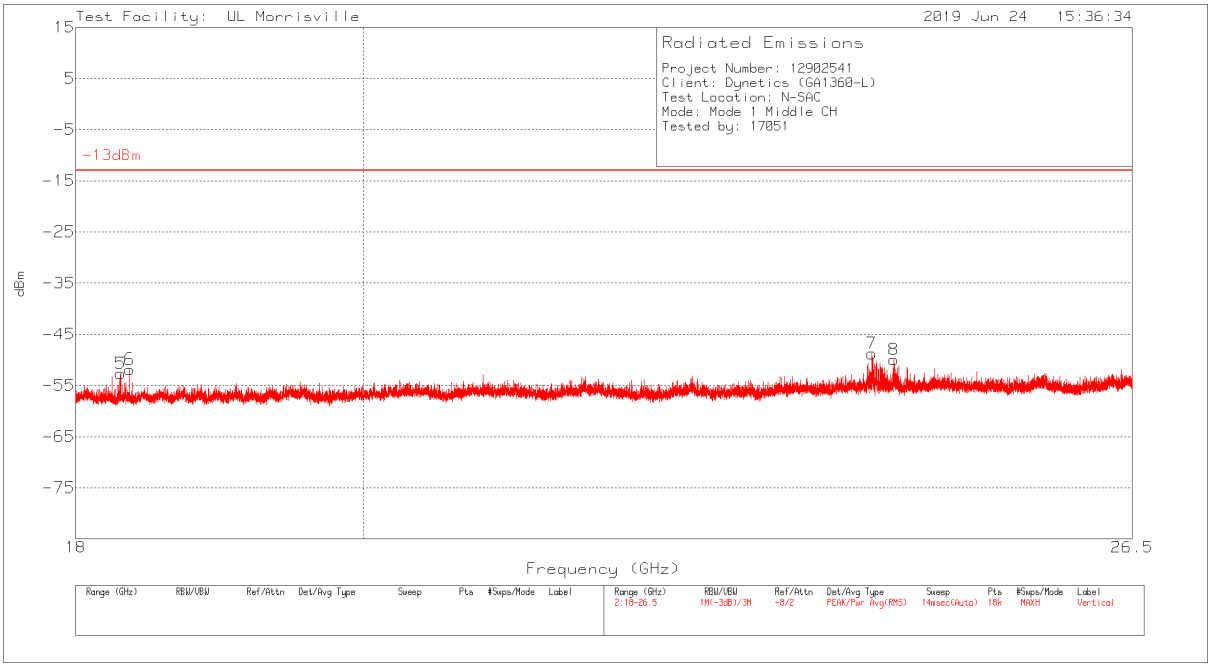
Note: The fundamental frequency of the transmitter is not marked as it is not applicable to the limit.

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 AF (dBuV/m)	Amp/Cbl/Fltr/ Pad (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.19604	-42.62	Pk	28.4	-37	11.8	-39.42	-13	-26.42	0-360	199	H
2	1.28529	-37.31	Pk	29.2	-36.8	11.8	-33.11	-13	-20.11	0-360	299	H
3	2.71334	-38.12	Pk	32.1	-34.2	11.8	-28.42	-13	-15.42	0-360	299	H
4	8.1346	-47.08	Pk	35.8	-29.4	11.8	-28.88	-13	-15.88	86	201	H
5	9.20025	-44.05	Pk	36.1	-28.9	11.8	-25.05	-13	-12.05	302	100	H
6	15.33624	-54.93	Pk	40	-27.5	11.8	-30.63	-13	-17.63	0-360	100	H
7	1.19896	-33.93	Pk	28.4	-37	11.8	-30.73	-13	-17.73	0-360	102	V
8	1.28582	-36.22	Pk	29.2	-36.8	11.8	-32.02	-13	-19.02	0-360	202	V
9	2.71223	-30.62	Pk	32.1	-34.2	11.8	-20.92	-13	-7.92	245	317	V
10	8.12261	-45.04	Pk	35.8	-29.5	11.8	-26.94	-13	-13.94	344	100	V
11	9.20021	-44.51	Pk	36.1	-28.9	11.8	-25.51	-13	-12.51	331	167	V
12	15.34102	-55.72	Pk	40	-27.5	11.8	-31.42	-13	-18.42	0-360	102	V

Pk - Peak detector

Mode 1, Middle Channel, 18-26.5GHz – Data

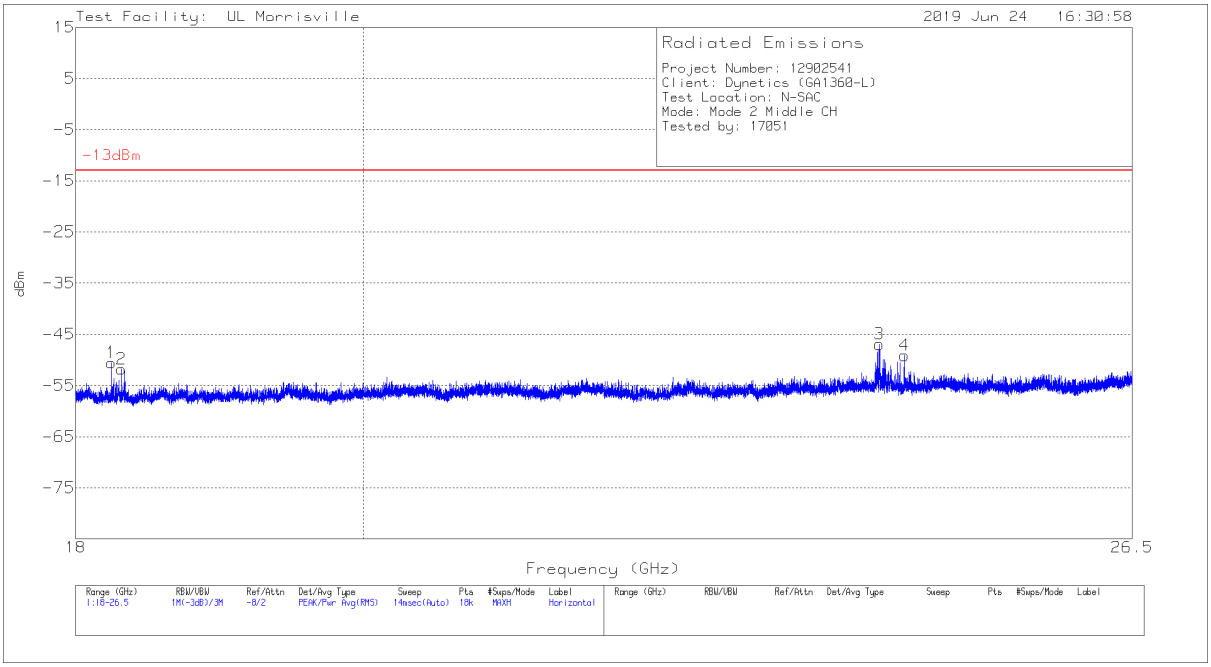


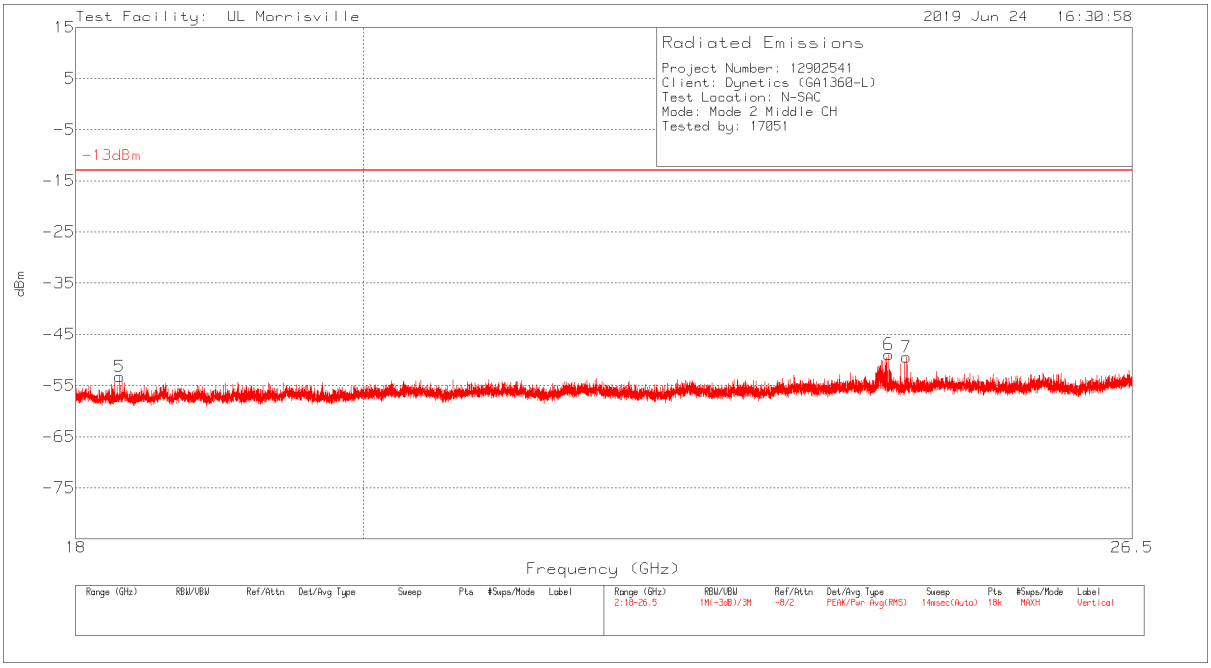


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0076 AF (dB/m)	Amp/Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.20732	-55.77	Pk	32.2	-39.2	11.8	-50.97	-13	-37.97	0-360	149	H
2	18.3726	-55.21	Pk	32.3	-39.4	11.8	-50.51	-13	-37.51	0-360	149	H
3	24.15412	-52.62	Pk	34	-38.8	11.8	-45.62	-13	-32.62	42	148	H
4	24.33048	-55.75	Pk	34.1	-38.7	11.8	-48.55	-13	-35.55	0-360	102	H
5	18.29799	-57.75	Pk	32.3	-39	11.8	-52.65	-13	-39.65	0-360	152	V
6	18.35796	-56.58	Pk	32.3	-39.4	11.8	-51.88	-13	-38.88	0-360	152	V
7	24.092	-55.57	Pk	33.9	-38.9	11.8	-48.77	-13	-35.77	0-360	102	V
8	24.28279	-57.16	Pk	34.1	-38.7	11.8	-49.96	-13	-36.96	0-360	252	V

Pk - Peak detector

Mode 2, Middle Channel, 18-26.5GHz – Data

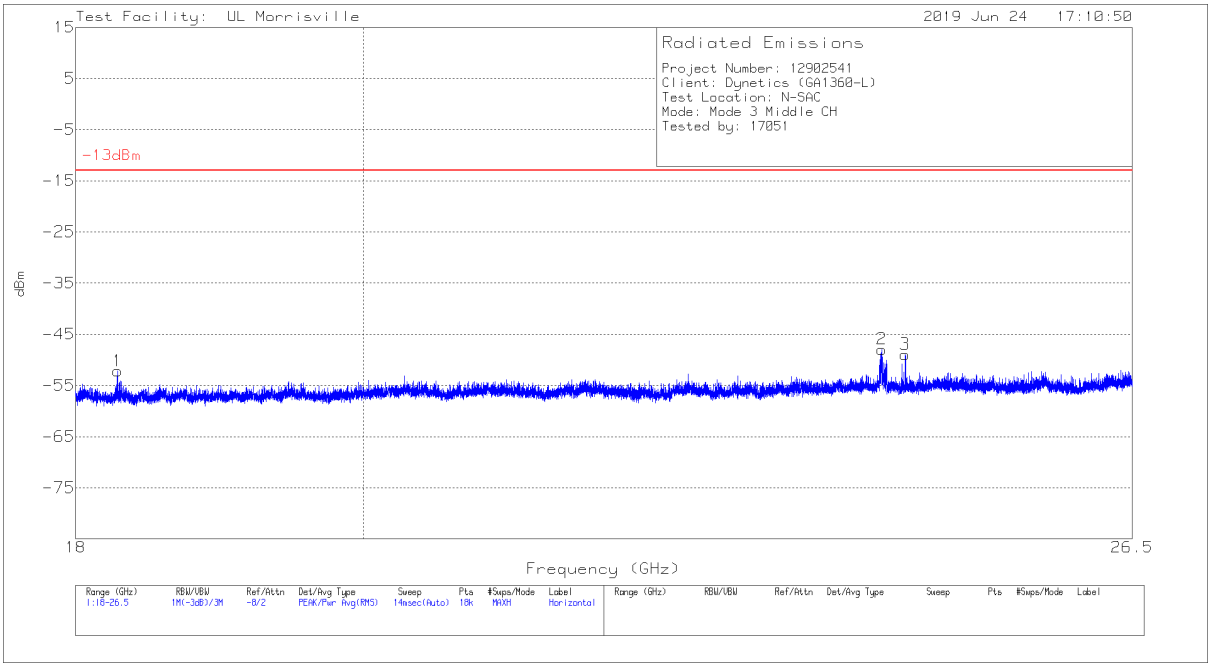


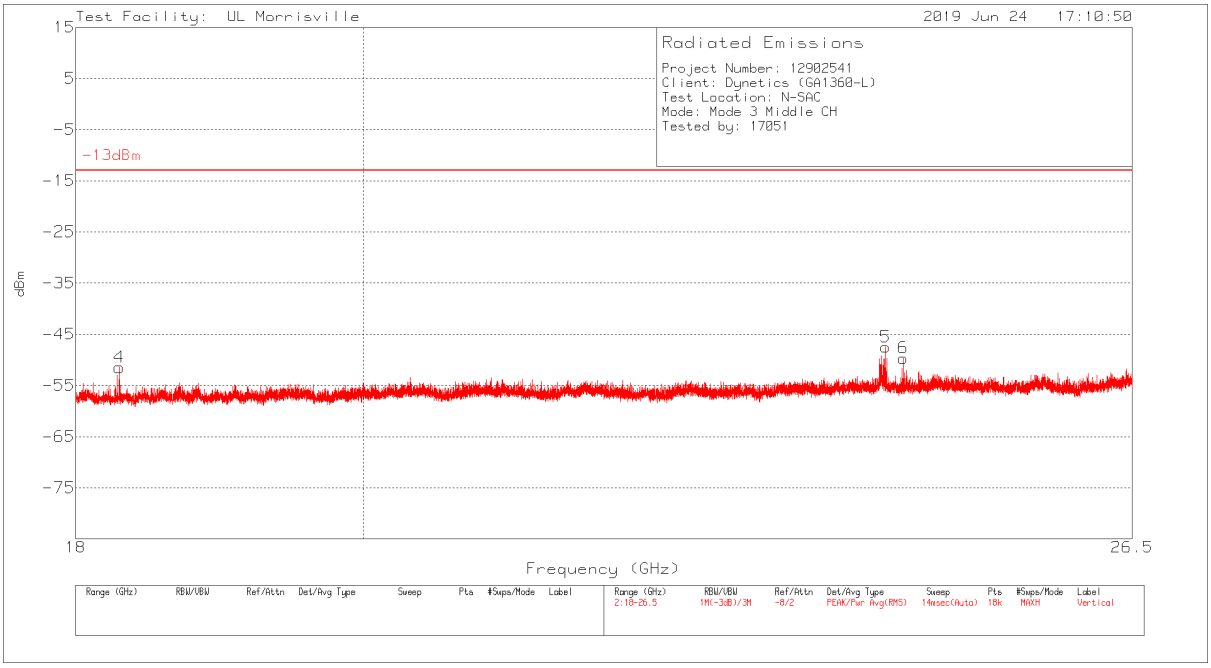


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0076 AF (dB/m)	Amp/Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.2366	-55.13	Pk	32.2	-39.4	11.8	-50.53	-13	-37.53	0-360	149	H
2	18.3046	-56.91	Pk	32.3	-39	11.8	-51.81	-13	-38.81	0-360	149	H
3	24.15906	-53.93	Pk	34	-38.8	11.8	-46.93	-13	-33.93	0-360	101	H
4	24.38149	-56.33	Pk	34.2	-38.8	11.8	-49.13	-13	-36.13	0-360	149	H
5	18.29232	-58.24	Pk	32.3	-39.1	11.8	-53.24	-13	-40.24	0-360	202	V
6	24.2384	-55.93	Pk	34	-38.8	11.8	-48.93	-13	-35.93	0-360	202	V
7	24.39518	-56.77	Pk	34.2	-38.7	11.8	-49.47	-13	-36.47	0-360	102	V

Pk - Peak detector

Mode 3, Middle Channel, 18-26.5GHz – Data

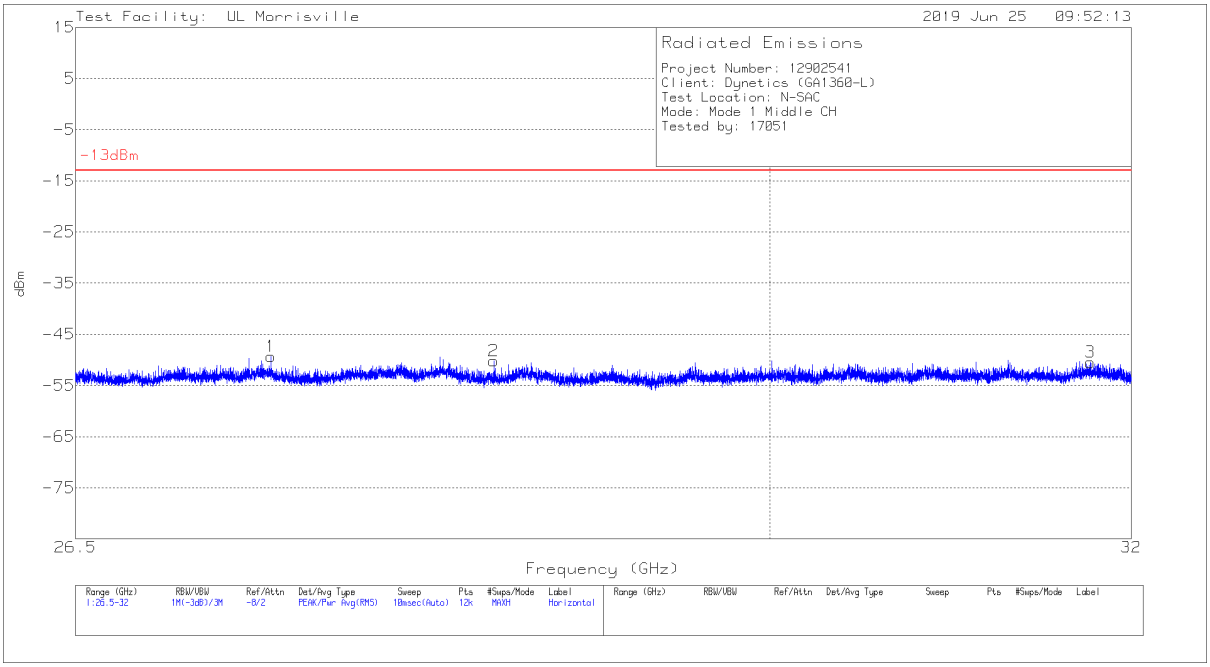


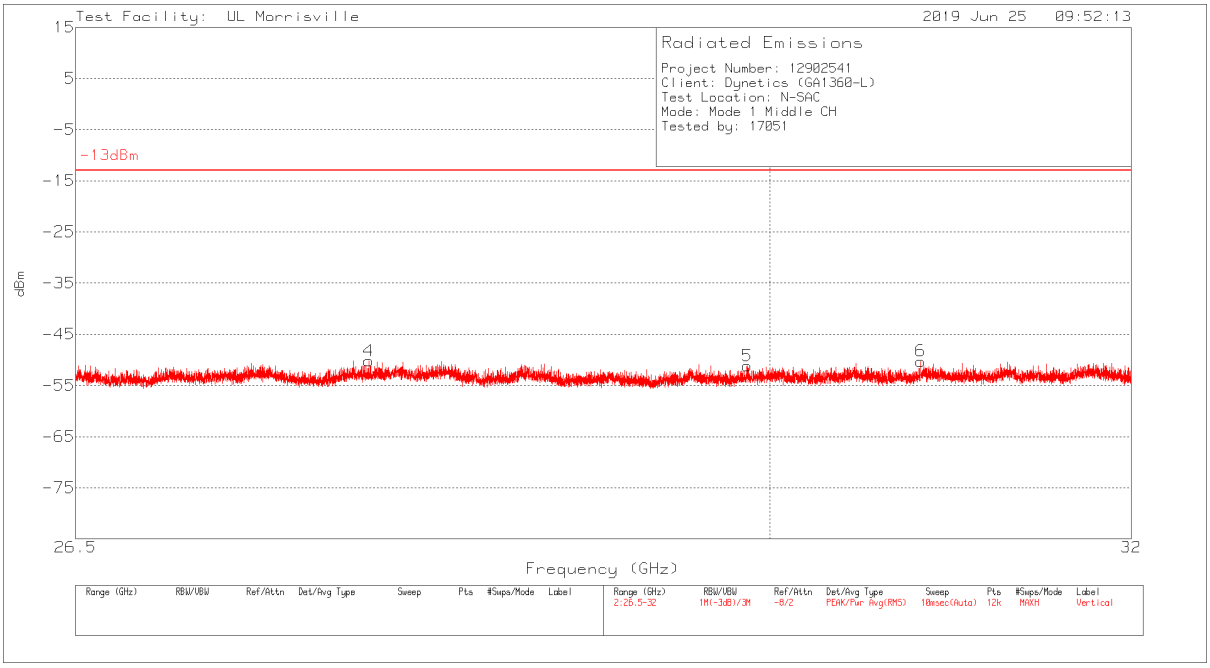


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0076 AF (dB/m)	Amp/Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.27721	-57.04	Pk	32.3	-39.2	11.8	-52.14	-13	-39.14	0-360	149	H
2	24.17842	-54.92	Pk	34	-38.8	11.8	-47.92	-13	-34.92	0-360	102	H
3	24.3881	-56.21	Pk	34.2	-38.7	11.8	-48.91	-13	-35.91	0-360	149	H
4	18.28949	-56.47	Pk	32.3	-39.1	11.8	-51.47	-13	-38.47	0-360	102	V
5	24.21384	-54.51	Pk	34	-38.8	11.8	-47.51	-13	-34.51	0-360	202	V
6	24.36968	-56.74	Pk	34.1	-38.8	11.8	-49.64	-13	-36.64	0-360	102	V

Pk - Peak detector

Mode 1, Middle Channel, Above 26.5GHz – Data

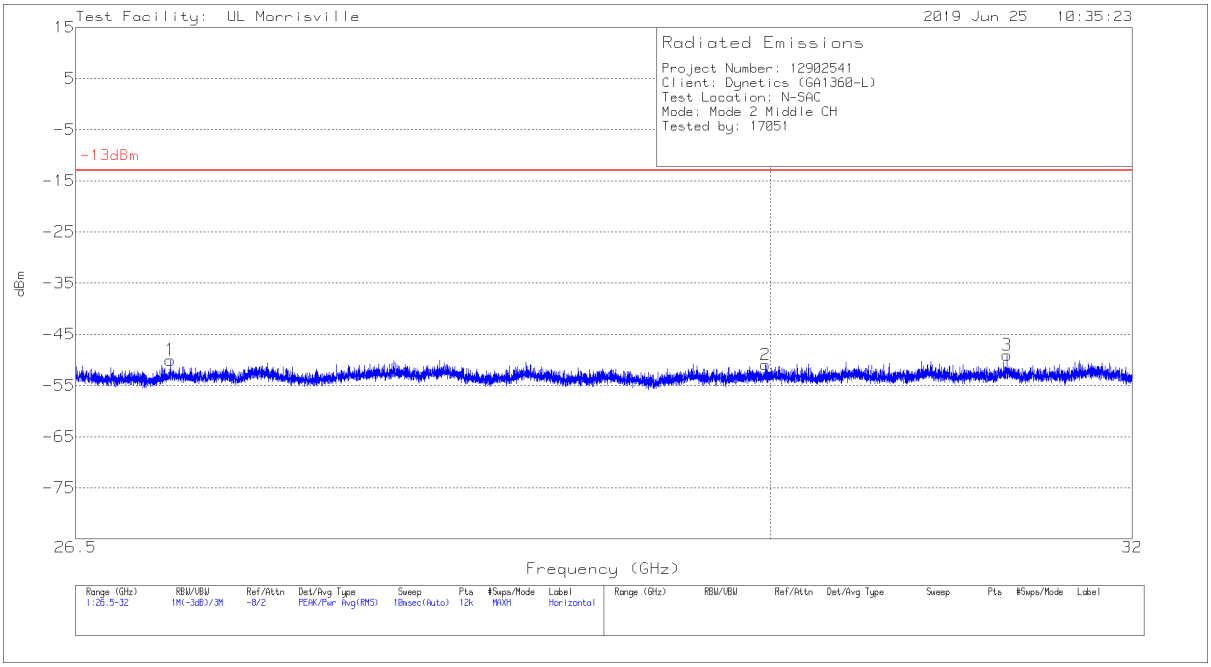


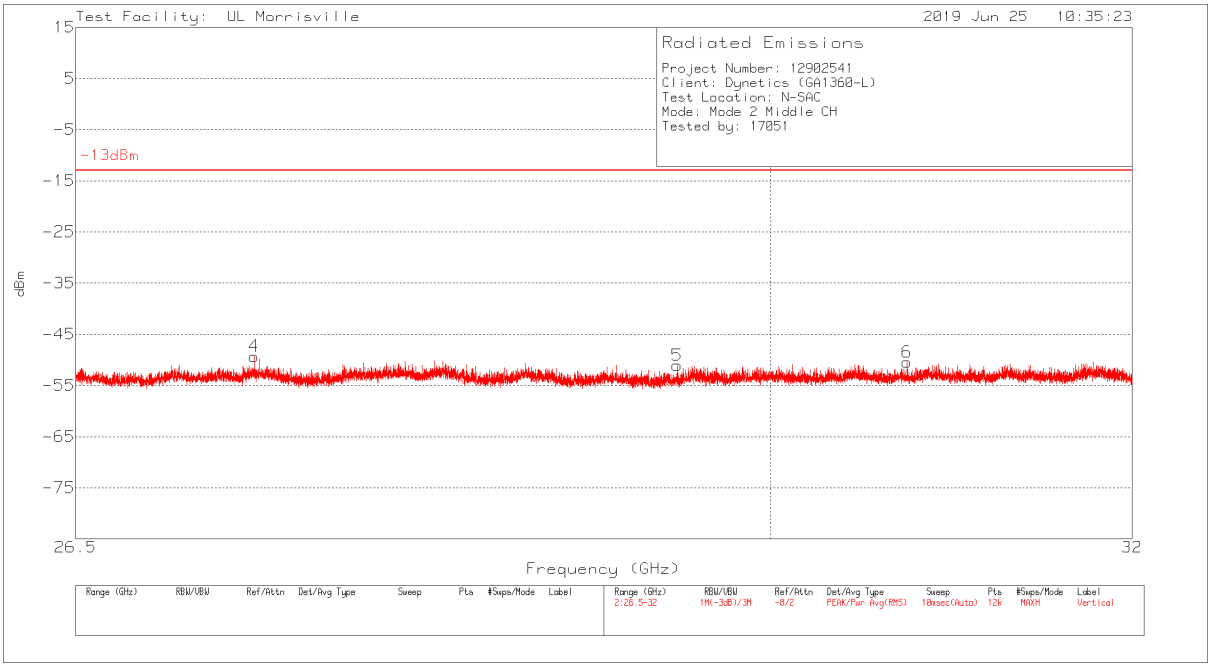


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0077 AF (dB/m)	Amp/Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	27.4418	-59.84	Pk	35.8	-37.1	11.8	-49.34	-13	-36.34	0-360	249	H
2	28.555	-61.59	Pk	36.3	-36.7	11.8	-50.19	-13	-37.19	0-360	149	H
3	31.76627	-63.19	Pk	36.7	-35.8	11.8	-50.49	-13	-37.49	0-360	249	H
4	27.92438	-60.92	Pk	35.8	-36.9	11.8	-50.22	-13	-37.22	0-360	252	V
5	29.87947	-63.05	Pk	36.3	-36.2	11.8	-51.15	-13	-38.15	0-360	102	V
6	30.81714	-62.25	Pk	36.3	-36.1	11.8	-50.25	-13	-37.25	0-360	202	V

Pk - Peak detector

Mode 2, Middle Channel, Above 26.5GHz – Data

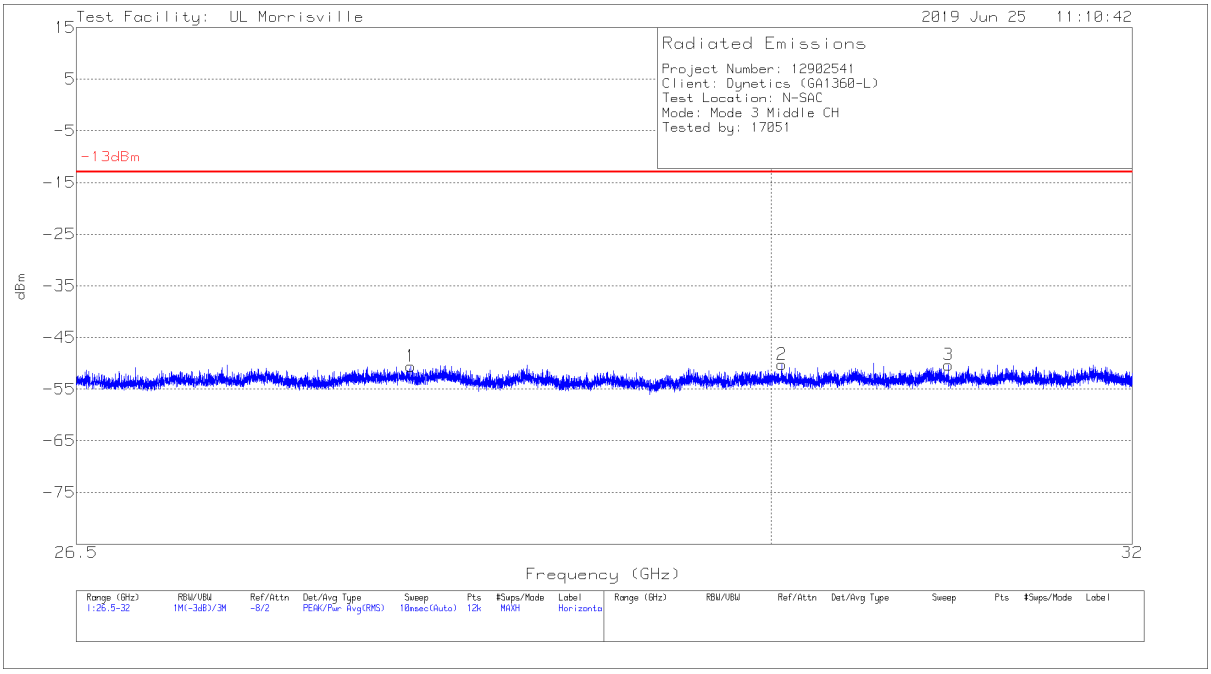


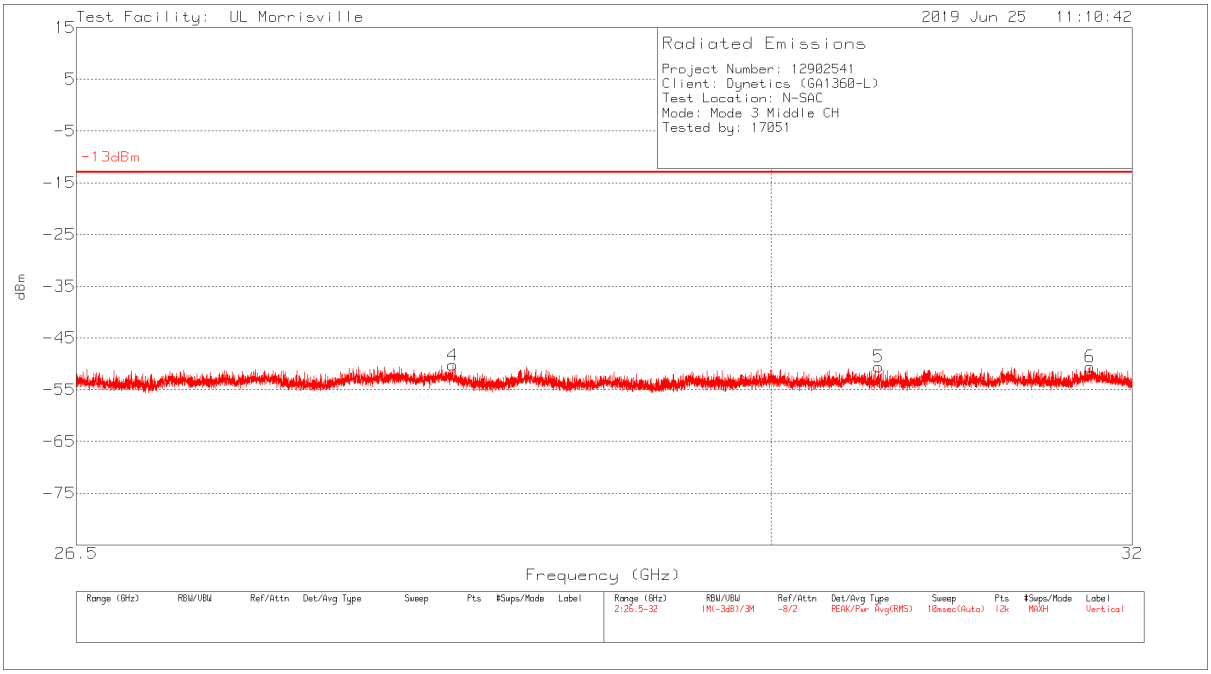


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0077 AF (dB/m)	Amp/Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	26.95096	-60.52	Pk	35.8	-37.1	11.8	-50.02	-13	-37.02	0-360	249	H
2	29.97342	-62.66	Pk	36.4	-36.5	11.8	-50.96	-13	-37.96	0-360	199	H
3	31.29239	-61.75	Pk	36.8	-35.9	11.8	-49.05	-13	-36.05	0-360	199	H
4	27.35701	-59.89	Pk	35.8	-37	11.8	-49.29	-13	-36.29	0-360	102	V
5	29.50321	-62.53	Pk	36.3	-36.6	11.8	-51.03	-13	-38.03	0-360	251	V
6	30.74015	-62.71	Pk	36.4	-35.9	11.8	-50.41	-13	-37.41	0-360	102	V

Pk - Peak detector

Mode 3, Middle Channel, Above 26.5GHz – Data





Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0077 AF (dB/m)	Amp/Cbl (dB)	Conversion Factor (dB)	Corrected Reading dBm	-13dBm	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	28.13107	-61.57	Pk	36	-36.8	11.8	-50.57	-13	-37.57	0-360	102	H
2	30.05866	-62.03	Pk	36.4	-36.4	11.8	-50.23	-13	-37.23	0-360	249	H
3	30.967	-62.4	Pk	36.4	-36.1	11.8	-50.3	-13	-37.3	0-360	198	H
4	28.34235	-61.54	Pk	36.3	-36.8	11.8	-50.24	-13	-37.24	0-360	152	V
5	30.58341	-62.68	Pk	36.4	-36.1	11.8	-50.58	-13	-37.58	0-360	152	V
6	31.75894	-63.19	Pk	36.7	-35.9	11.8	-50.59	-13	-37.59	0-360	299	V

Pk - Peak detector

9. FREQUENCY STABILITY

RULE PART(S)

§2.1055 Measurements required: Frequency stability.

§90.213 Frequency stability

Above 2450 MHz [10]

[10]Except for DSRCS equipment in the 5850-5925 MHz band, frequency stability is to be specified in the station authorization. Frequency stability for DSRCS equipment in the 5850-5925 MHz band is specified in subpart M of this part.

LIMITS

Device must remain operating in between 3000MHz to 3100MHz.

TEST PROCEDURE

Use spectrum analyzer to measure -6dBc points

- Temp. = −30° to +50°C
- Voltage = Nominal & Nominal +/-15%

Frequency Stability vs Temperature:
Frequency stability is tested at 10 °C intervals of temperatures between −30 °C and +50 °C at the manufacturer's rated supply voltage per **section 5.6.4 of ANSI C63.26-2015**.

Frequency Stability vs Voltage:
Frequency stability is tested at +20 °C temperature and ±15% supply voltage variations per **section 5.6.5 of ANSI C63.26-2015**.

The peak frequency error is recorded (worst-case).

RESULTS

Based on the band edge measurements and the frequency error data the device will operate in between the frequency range of 3000MHz - 3100MHz under the temperature and voltage variations described in the preceding test-procedure section.

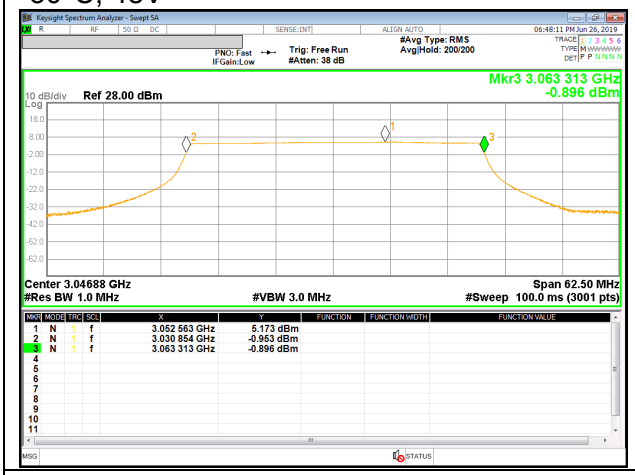
Tabular Data

Programmed Freq (MHz):		3046.875				
Limit		3000	3100			
Condition		F low @ -6dBc	F high @ -6dBc	Freq (MHz) Center	Delta (MHz)	Frequency Stability (ppm)
Temperature	Voltage (DC)	(MHz)	(MHz)			
Extreme (-30C)	48	3030.854	3063.313	3047.084	0.208	68.431
Extreme (-20C)		3030.917	3063.375	3047.146	0.271	88.944
Extreme (-10C)		3030.958	3063.417	3047.188	0.313	102.564
Extreme (0C)		3030.979	3063.417	3047.198	0.323	106.010
Extreme (10C)		3030.979	3063.417	3047.198	0.323	106.010
Nominal (20C)		***3030.938***	***3063.396***	***3047.167***	***0.292***	**95.836**
Extreme (30C)		3030.896	3063.354	3047.125	0.250	82.051
Extreme (40C)		3030.833	3063.271	3047.052	0.177	58.092
Extreme (50C)		3030.750	3063.188	3046.969	0.094	30.851
20C	40.8	3030.938	3063.396	3047.167	0.292	95.836
	48.0	3030.938	3063.396	3047.167	0.292	95.836
	55.2	3030.958	3063.396	3047.177	0.302	99.118

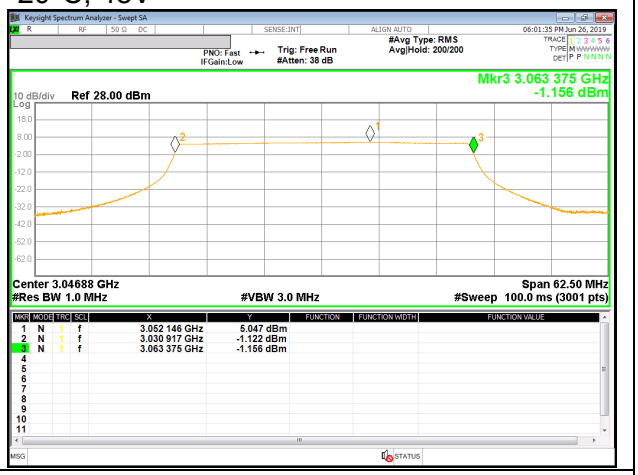
Date: 2019-06-26
Project No: 11967622
Location: COND2
Tested by: 17051

Graphical Data

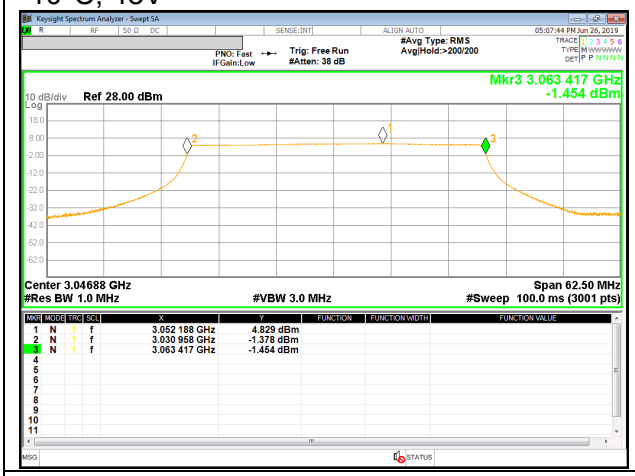
-30°C, 48V



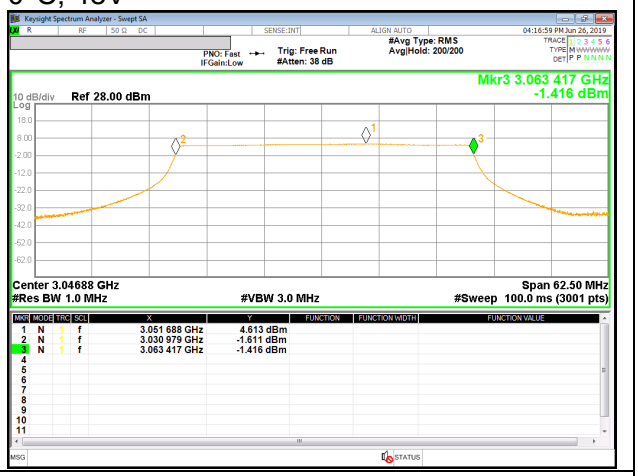
-20°C, 48V



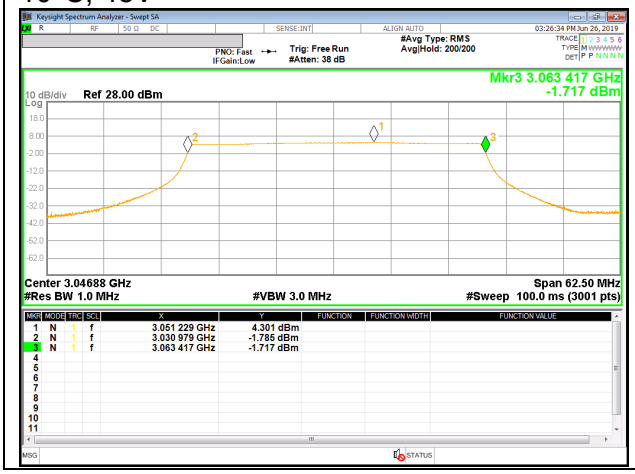
-10°C, 48V



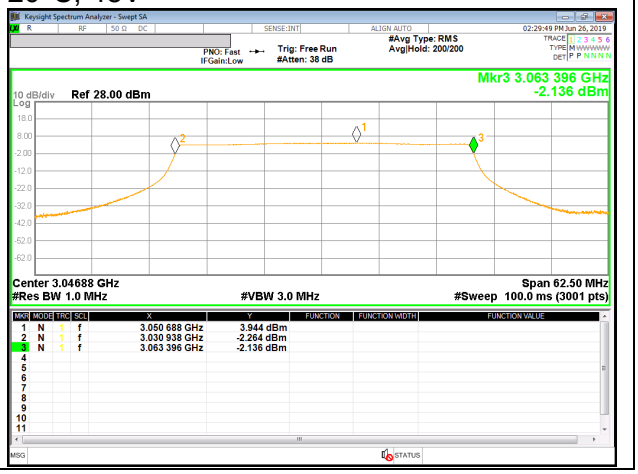
0°C, 48V



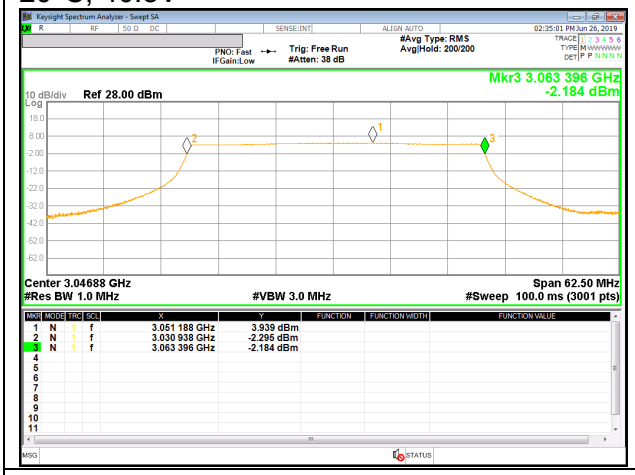
10°C, 48V



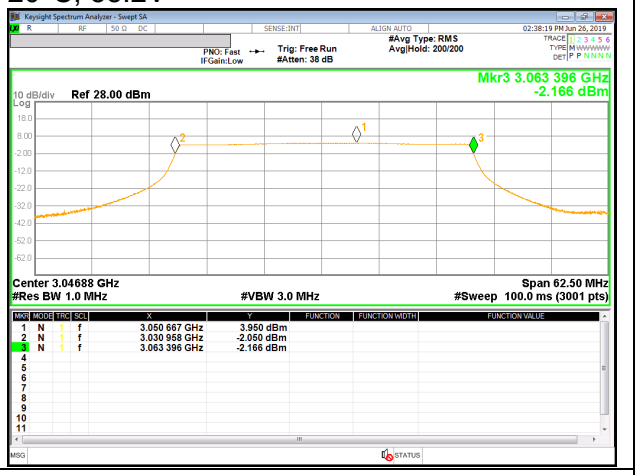
20°C, 48V



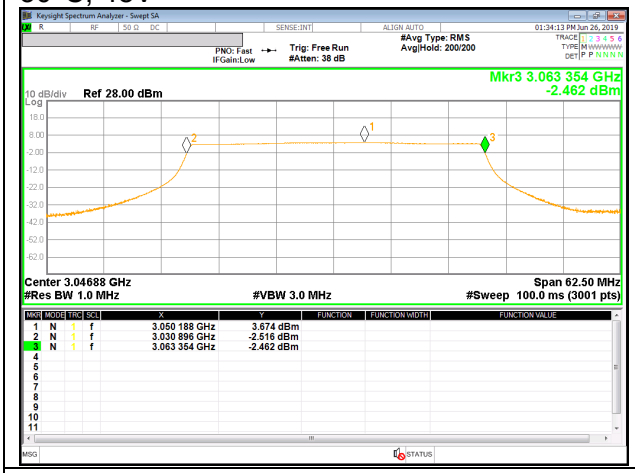
20°C, 40.8V



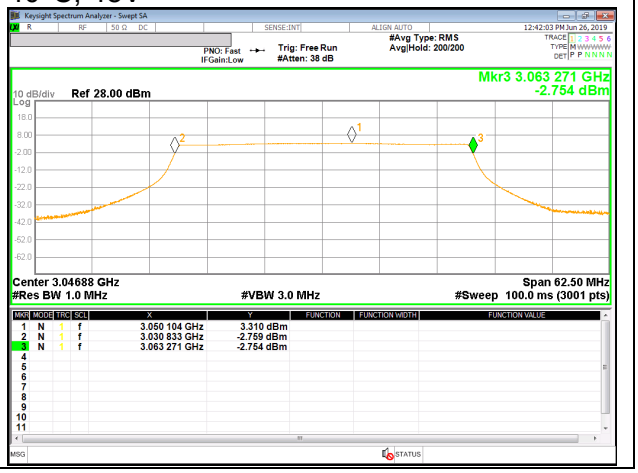
20°C, 55.2V



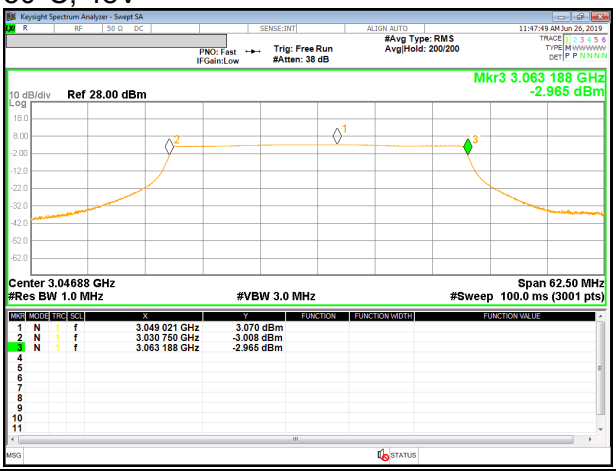
30°C, 48V



40°C, 48V



50°C, 48V



Date: 2019-06-26
Project No: 11967622
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Tested by: 17051