



FCC CFR47 PART 90.103
CERTIFICATION TEST REPORT
FOR
GROUND RADAR

MODEL NUMBER: GroundAware 360
PART NUMBER: 10037200

FCC ID: QFS001-10037200

REPORT NUMBER: R11522801-E1

ISSUE DATE: 2017-01-23

Prepared for
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NVLAP LAB CODE 200246-0

Revision History

<u>Ver.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
<u>1</u>	<u>2017-01-23</u>	<u>Initial Release.</u>	<u>Mark Nolting</u>

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1. DATA REUSE

1.1. INTRODUCTION

The Part 90.213 Frequency Stability results for GroundAware 360 are represented by Dynetics, Inc. Part Number 10024640, test report 10965797A (FCC ID: QFS001-10024640). This report for GroundAware 360 contains RF Output power, Occupied Bandwidth, Band Edge, Out of Band Emissions, and AC Line Conducted measurements.

Dynetics, Inc. takes full responsibility that the data as referenced in report 10965797A (FCC ID: QFS001-10024640) represent compliance for this model.

1.2. DIFFERENCES

All clocks that are a part of the system were tested for frequency stability under the previous grant for FCC ID: QFS001-10024640. The exact same PCB that supplies all clocks and waveforms for that product is employed to supply clocks and waveforms for GroundAware 360 without revision; therefore the test data for FCC ID QFS001-10024640 is useable for this report.

1.3. TESTING PERFORMED

Testing performed under this Report (R11522801-E1) are RF Output power, Occupied Bandwidth, Band Edge, Out of Band Emissions, and AC Line Conducted measurements. All other data is referenced to R10965797A (FCC ID: QFS001-10024640).

1.4. REFERENCE DETAIL SECTION

Equipment Class	Reference FCC ID	Type Grant	Grant Date	Report Title
Ground Radar	FCC ID: QFS001-10024640	New	2016-01-31	R10965797A

2. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: Ground Radar

MODEL: GroundAware 360, p/n 10037200

SERIAL NUMBER: Non-serialized

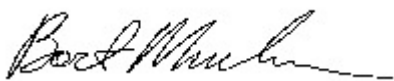
DATE TESTED: 2016-12-01 to 2016-12-02 and 2016-12-28

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
47 CFR Part 90.103	Pass

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.

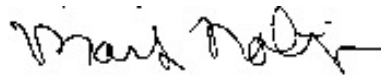
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this 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, and any agency of the U.S. Government.

Approved & Released
For UL LLC By:



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EMC Staff Engineer
UL – Consumer Technology Division

Prepared By:



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3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, 47 CFR Part 90.

4. 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 Suite B, Perimeter Park Drive, Morrisville, NC 27560.

12 Laboratory Dr., RTP, NC 27709	
☐	Chamber A
☐	Chamber C

2800 Suite B Perimeter Park Dr., Morrisville, NC 27560	
☐	Chamber NORTH
☒	Chamber SOUTH

The onsite chambers are covered under Industry Canada company address code 2180C with site numbers 2180C -1 through 2180C-4, respectively.

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/>.

5. CALIBRATION AND UNCERTAINTY

5.1. 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.

5.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Total RF power, conducted	± 0.45
RF power density, conducted	± 1.50
Spurious emissions, conducted	± 2.94
All emissions, radiated up to 26 GHz	± 5.36
Temperature	± 0.07
Humidity	± 2.26
DC and low frequency voltages	± 1.27
Conducted Emissions (0.150-30MHz)	± 3.65

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

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

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

6.2. 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	24.99	24.56	24.55
Middle Channel	25.64	25.34	25.33
High Channel	25.60	25.11	25.12

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna type is a custom wheel antenna. The maximum antenna gain is 7.07 dBi. The antenna connector type is SMA.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was Revision 327.

The EUT software installed during testing was Revision 309.

6.5. WORST-CASE CONFIGURATION AND MODE

The EUT operates in three specific modes. Except for radiated spurious emissions all tests were conducted in all three modes. Radiated-spurious-emissions testing was conducted in two modes (Mode 1 and Mode 2).

Center Frequencies (GHz)
3.1484375
3.15625
3.1640625
3.171875
3.1796875
3.1875
3.1953125
3.203125
3.2109375
3.21875
3.2265625

* Frequencies in bold are frequencies that were tested.

6.6. 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-CAT6-P1	Non-serialized	N/A
Power Supply	National Instruments	NI PS-17	Non-serialized	N/A

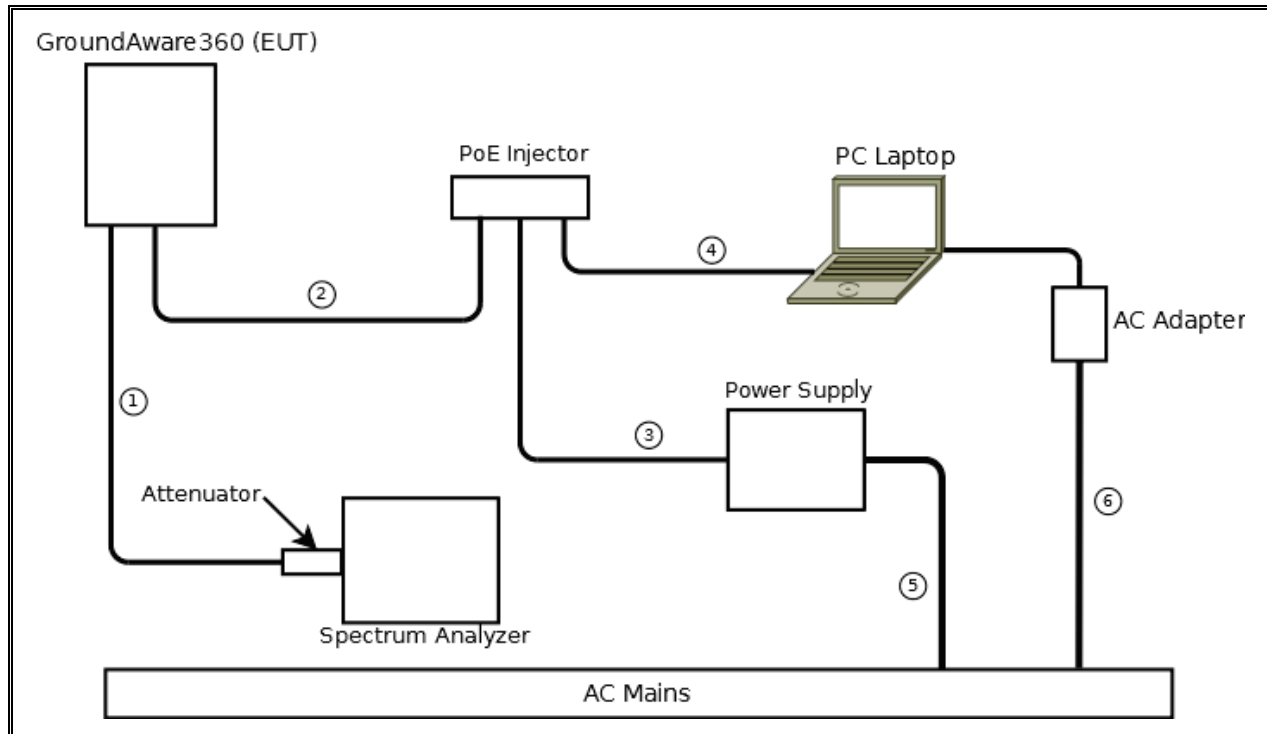
I/O CABLES

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 50-ohm load.
2	PoE (Ethernet/DC)	1	RJ45	Un-shielded	Various	Connection between power supply and PoE injector. 15.2m during radiated spurious testing. Otherwise, 0.6m.
3	DC	1	-	Un-shielded	0.3	2-wire connection between power supply and PoE injector.
4	Ethernet	1	RJ45	Un-shielded	3.1	Connection between laptop PC and PoE.
5	AC	1	3-prong	Un-shielded	3.1	L/N/PE power connection to power supply.
6	AC	1	3-prong	Un-shielded	1.8	L/N/PE power connection to AC adapter.

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.

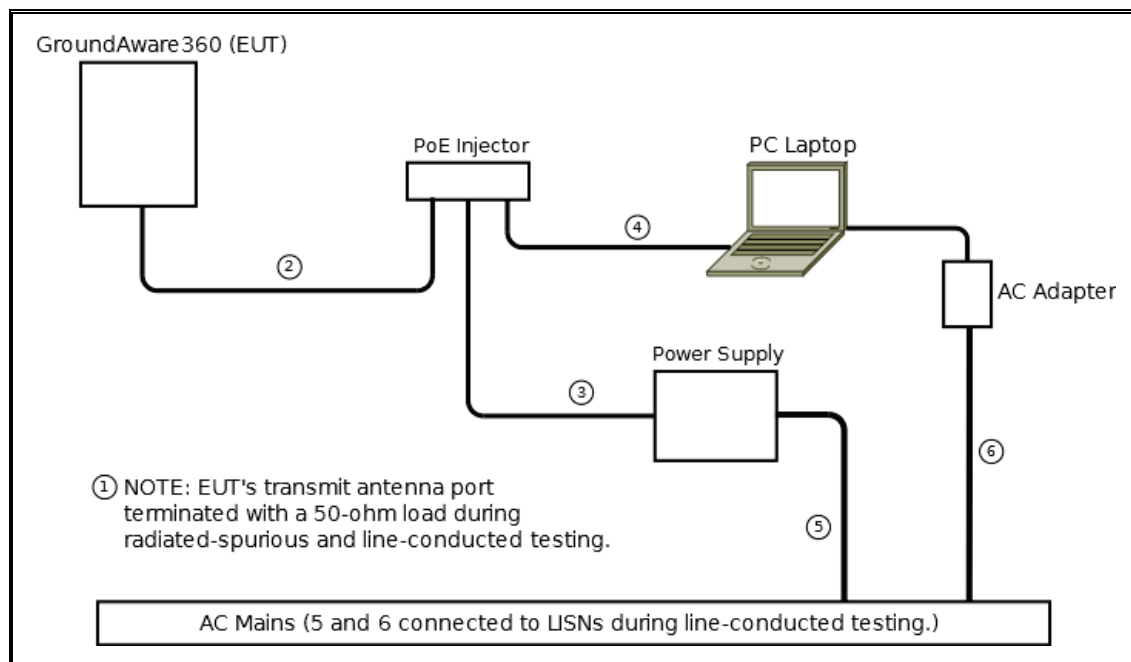
SETUP DIAGRAM



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



7. TEST AND MEASUREMENT EQUIPMENT

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

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

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
AT0074	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2016-06-07	2017-06-30
AT0069	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2016-03-07	2017-03-31
AT0076	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2016-09-06	2017-09-06
AT0077	Horn Antenna, 26-40GHz	ARA	MWH-2640/B	2016-09-06	2017-09-06
S-SAC02	Gain-loss string: 30-1000MHz	Various	Various	2016-06-26	2017-06-30
S-SAC03	Gain-loss string: 1-18GHz	Various	Various	2016-08-28	2017-08-28
S-SAC04	Gain-loss string: 18-40GHz	Various	Various	2016-02-29	2017-02-28
SA0025	Spectrum Analyzer	Agilent	N9030A	2016-03-17	2017-03-31
SA0026 (18-40GHz RSE)	Spectrum Analyzer	Agilent	N9030A	2016-02-24	2017-02-28
139843	Temp/Humid/Pressure Meter	Control Co./Fisher	14-650-118	2016-02-19	2017-02-19
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Conducted Room 1				
SA0026	Spectrum Analyzer	Agilent	N9030A	2016-02-24	2017-02-28
139843	Temp/Humid/Pressure Meter	Control Co./Fisher	14-650-118	2016-02-19	2017-02-19
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA

8. RF POWER OUTPUT

REQUIREMENT

§2.1046 Measurements required: RF power output.

§90.205 Output Power.

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

(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.

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.

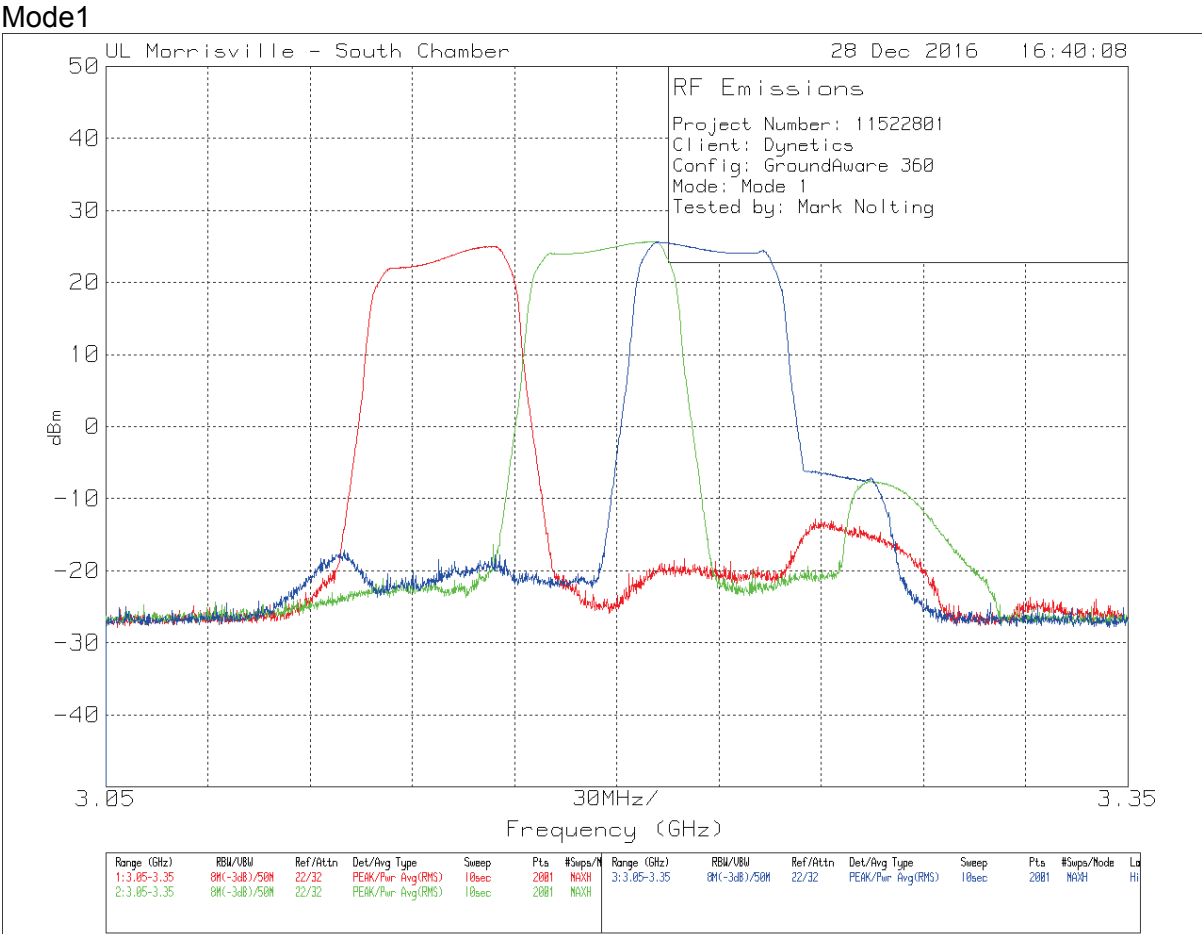
- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with VBW $\geq$ RBW. The RBW was set to largest available (8MHz). It is less then overall bandwidth of individual channel but is larger then bandwidth of individual pulse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

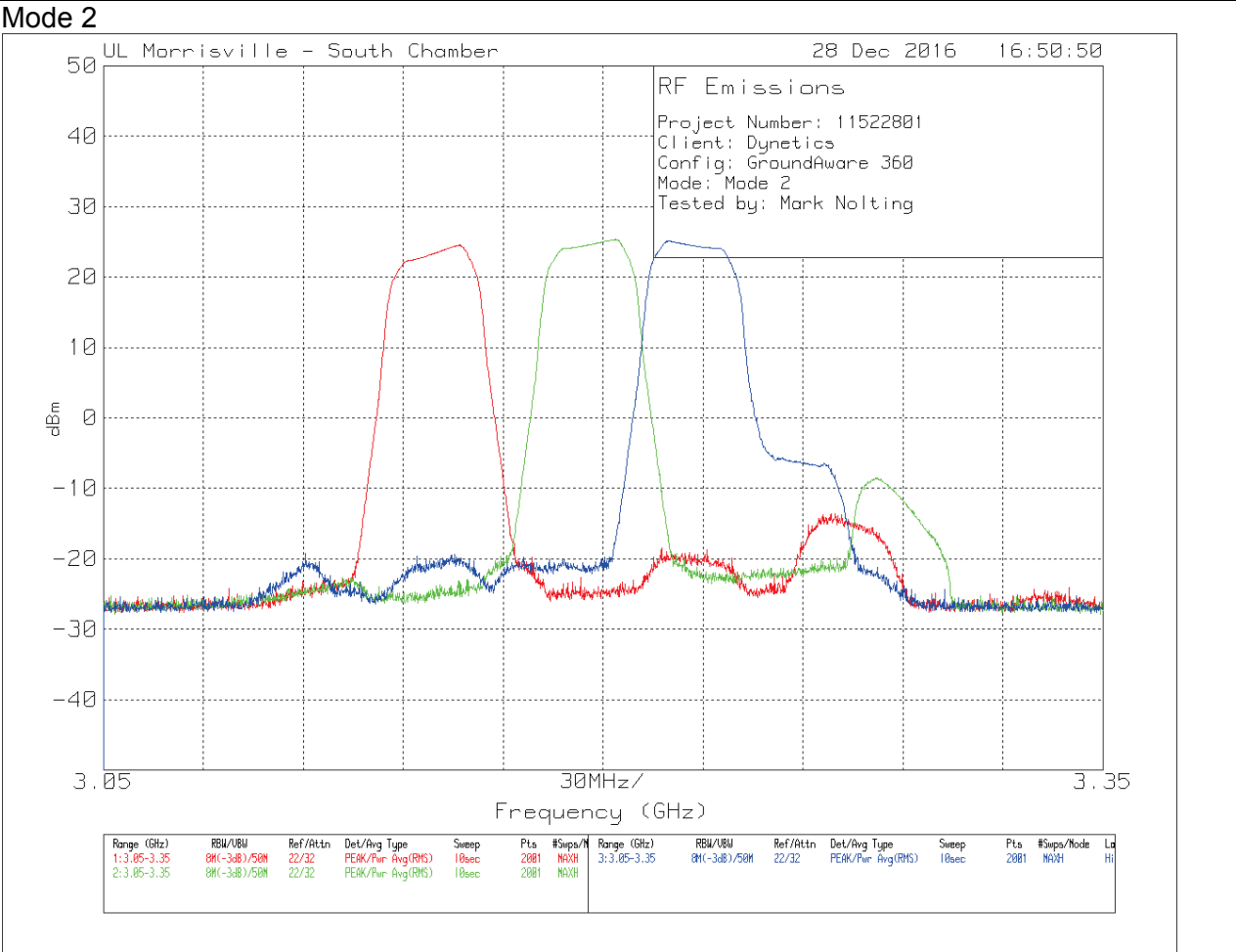
TABULAR RESULTS

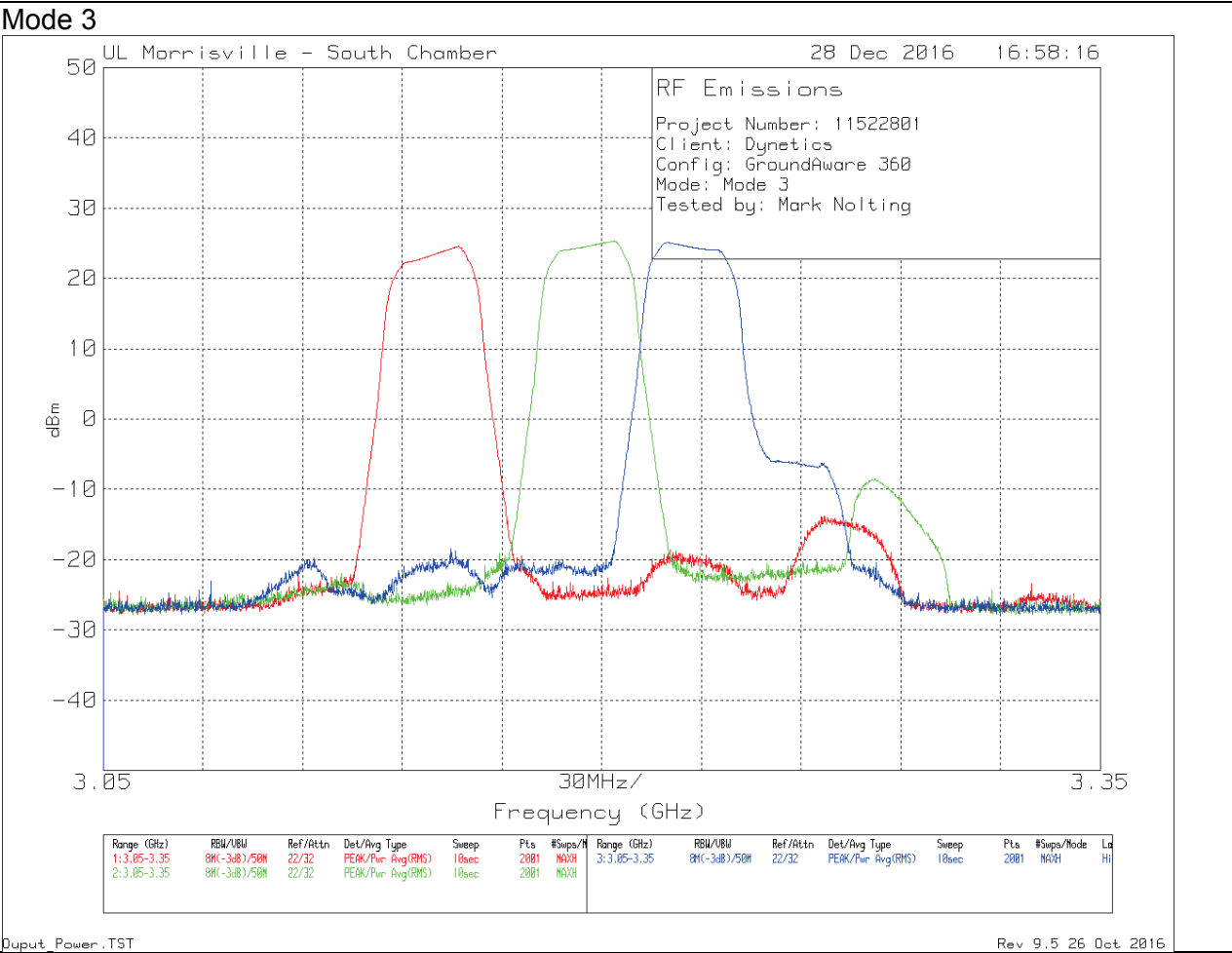
Channel	Mode 1 Peak power (dBm)	Mode 2 Peak Power (dBm)	Mode 3 Peak Power (dBm)
Low Channel	24.99	24.56	24.55
Middle Channel	25.64	25.34	25.33
High Channel	25.60	25.11	25.12

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

GRAPHICAL RESULTS







9. CONDUCTED TEST RESULTS

9.1. OCCUPIED BANDWIDTH

RULE PART(S)

§2.1049 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:

²Bandwidths 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. So no bandwidth limitation for certification of device, but could be a factor when licensing the device.

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable.

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

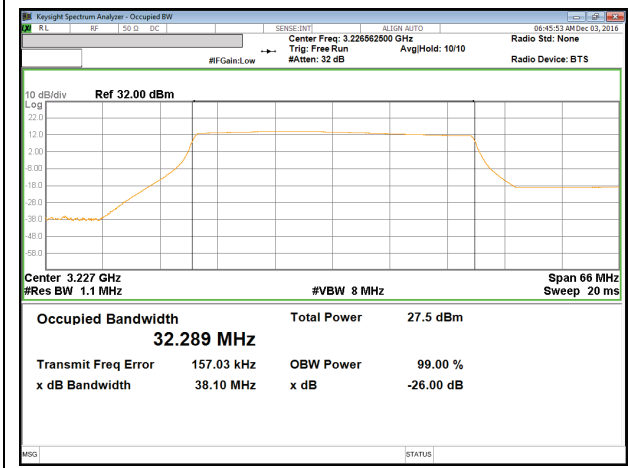
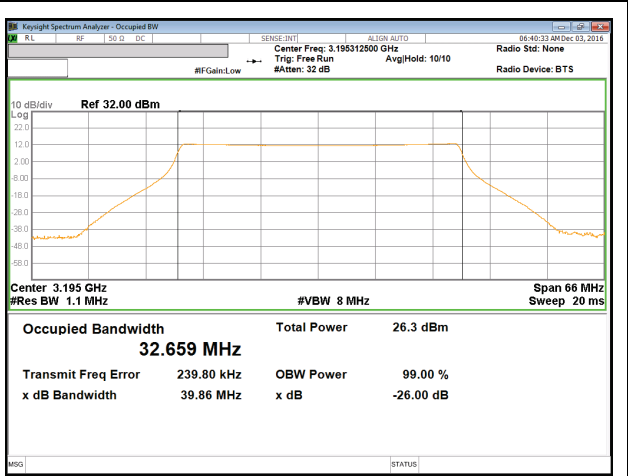
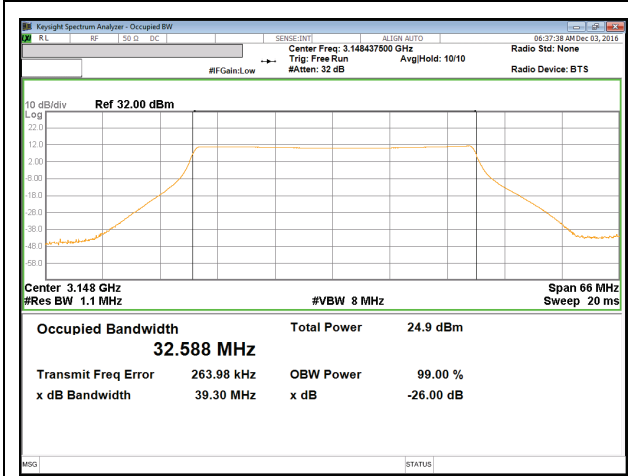
Channel	Mode 1 99% Bandwidth MHz	Mode 2 99% Bandwidth MHz	Mode 3 99% Bandwidth MHz
Low Channel	32.588	16.938	16.849
Middle Channel	32.659	16.949	16.852
High Channel	32.289	16.814	16.721

GRAPHICAL RESULTS

Mode 1

Test Operator: Mark Nolting

Date: 2016-12-02



Detector: Peak
Mode: Max Hold

Mode 2

Test Operator: Mark Nolting

Date: 2016-12-02



Detector: Peak
Mode: Max Hold

Mode 3

Test Operator: Mark Nolting

Date: 2016-12-02



9.2. BAND EDGE

RULE PART(S)

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

§90.210 Emission Mask

Since there is no specific mask/bandwidth limitation we apply the standard -13dBm limit outside the allocated band.

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.

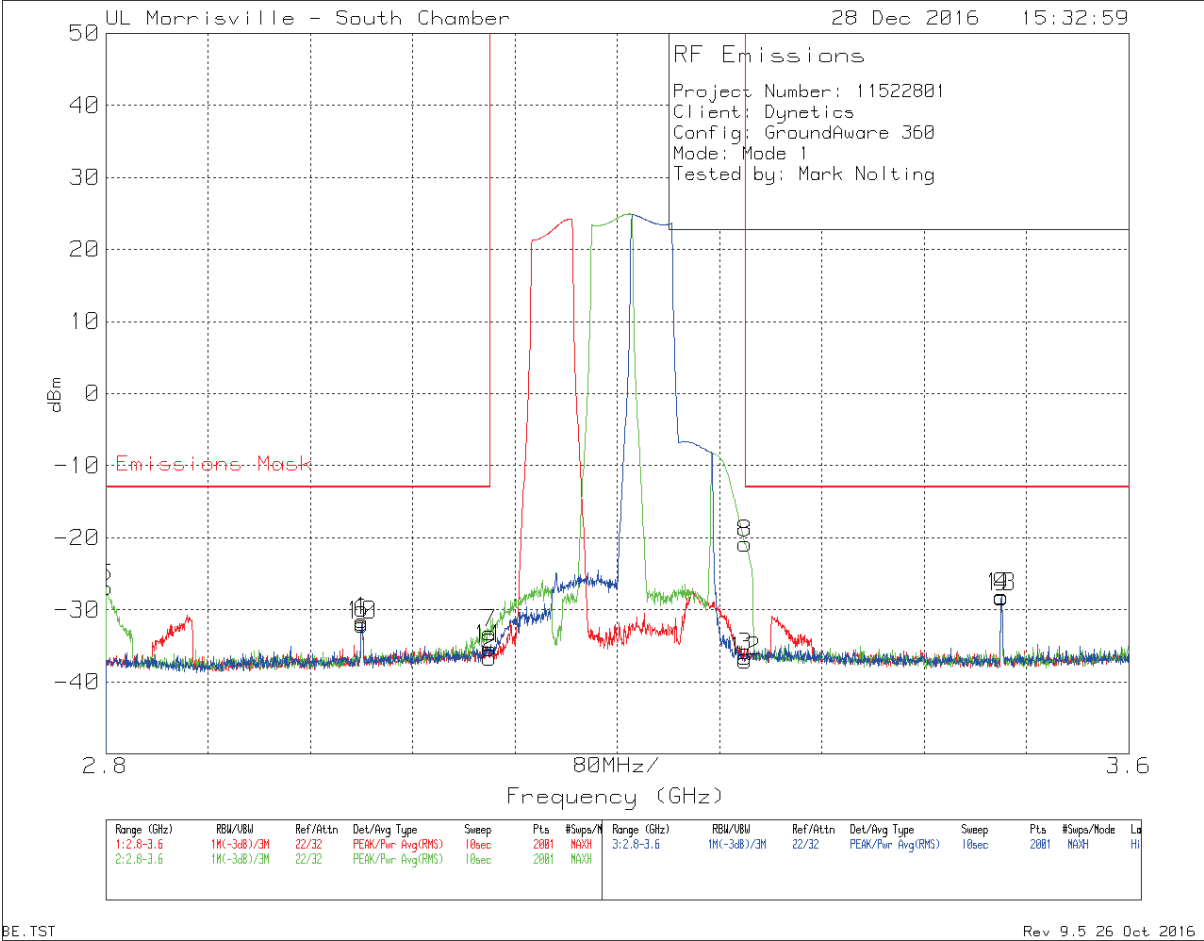
The output power was measured with the spectrum analyzer at the low, middle and high channel for each mode.

RESULTS

RESULTS

MODE 1

Graphical Data



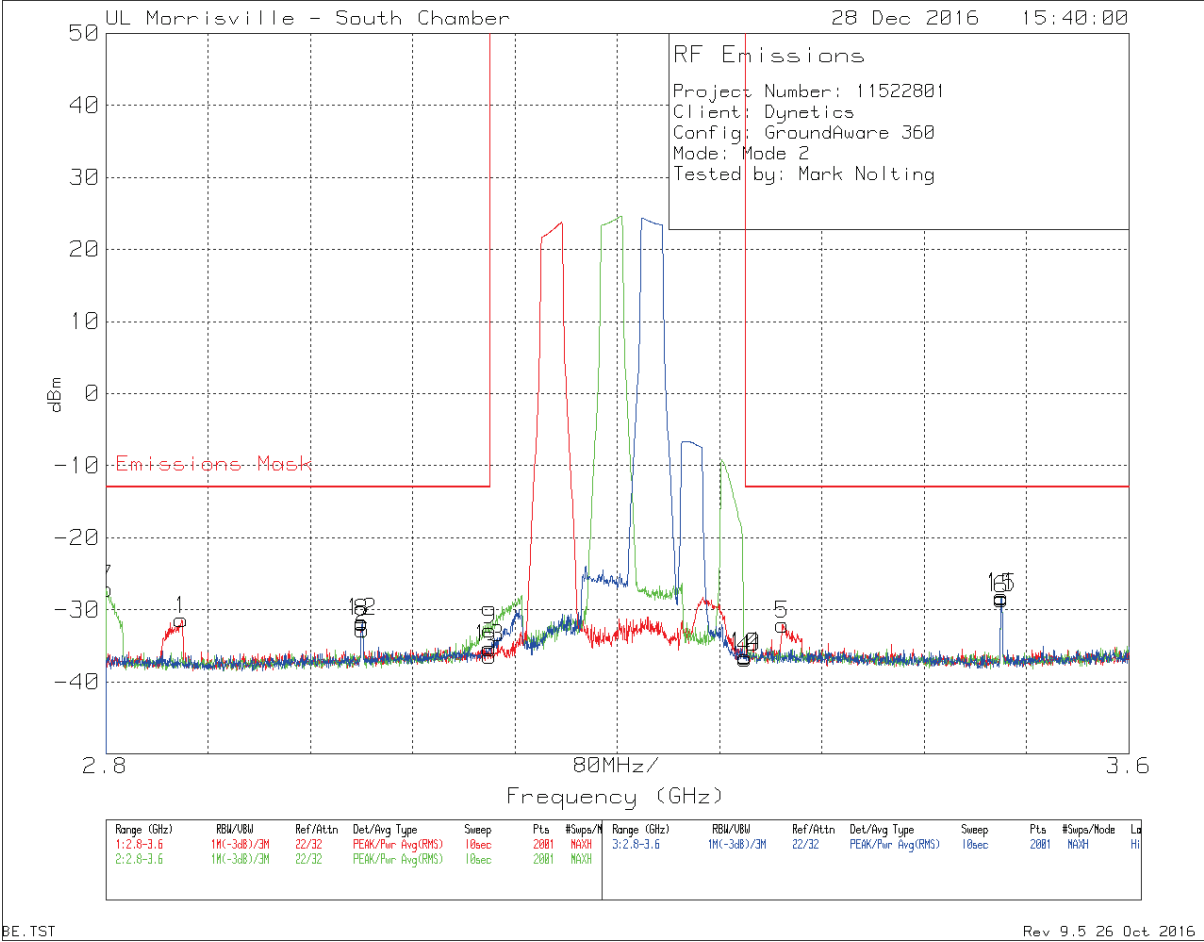
Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	Emissions Mask	PK Margin (dB)
Low-channel Markers							
1	3	-42.38	Pk	10.9	-31.48	-13	-18.48
2	3.1	-47.51	Pk	10.9	-36.61	-13	-23.61
3	3.3	-47.39	Pk	10.9	-36.49	-13	-23.49
4	3.5	-39.27	Pk	11	-28.27	-13	-15.27
Middle-channel Markers							
5	2.8	-37.8	Pk	10.9	-26.9	-13	-13.9
6	3	-42.74	Pk	10.9	-31.84	-13	-18.84
7	3.1	-44.08	Pk	10.9	-33.18	-13	-20.18
8	3.3	-31.69	Pk	10.9	-20.79	-13	-7.79
9	3.5	-39.2	Pk	11	-28.2	-13	-15.2
High-channel Markers							
10	3	-43	Pk	10.9	-32.1	-13	-19.1
11	3.1	-46.29	Pk	10.9	-35.39	-13	-22.39
12	3.3	-47.98	Pk	10.9	-37.08	-13	-24.08
13	3.5	-39.17	Pk	11	-28.17	-13	-15.17

Pk - Peak detector

MODE 2

Graphical Data



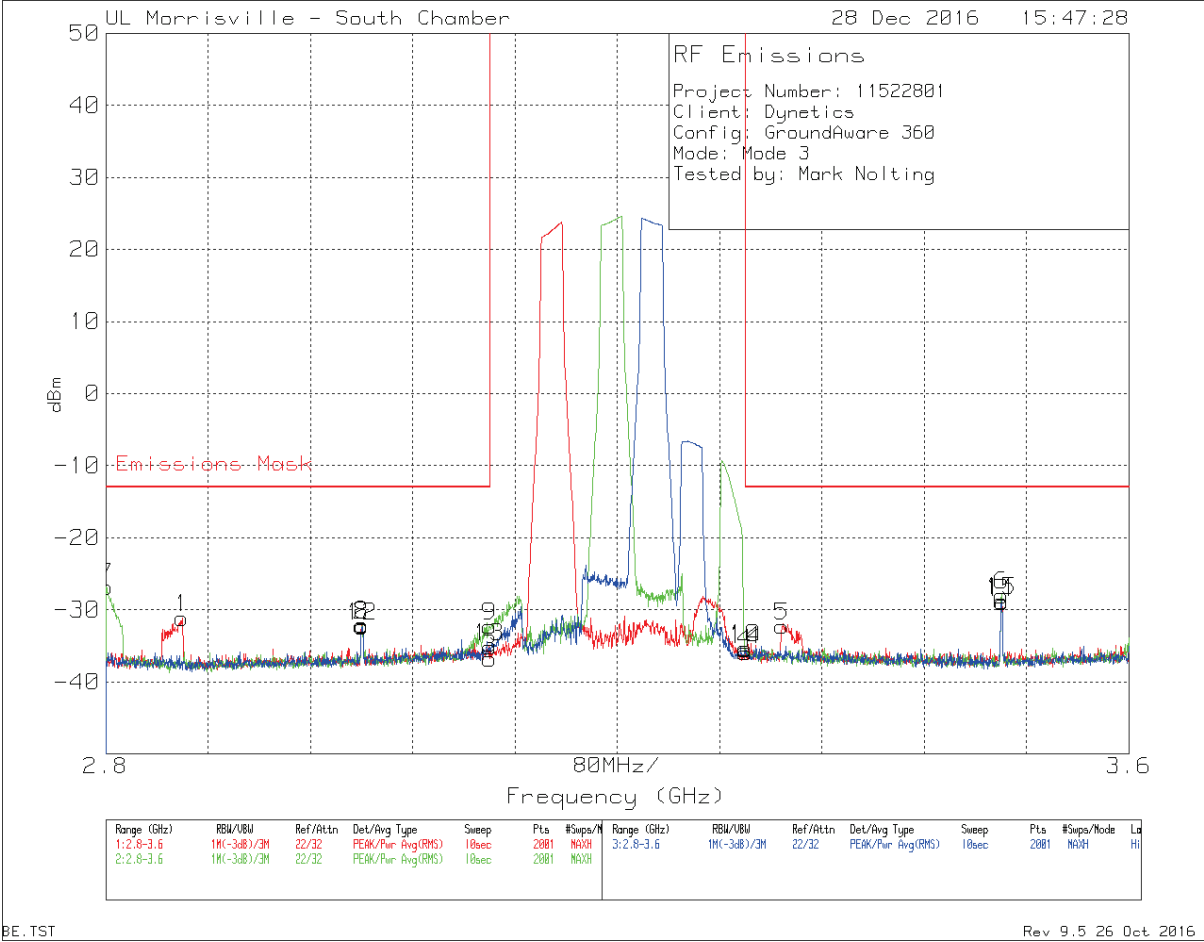
Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	Emissions Mask	PK Margin (dB)
Low-channel Markers							
1	2.859	-42.27	Pk	10.9	-31.37	-13	-18.37
2	3.001	-43.65	Pk	10.9	-32.75	-13	-19.75
3	3.1	-47.3	Pk	10.9	-36.4	-13	-23.4
4	3.3	-47.72	Pk	10.9	-36.82	-13	-23.82
5	3.329	-42.97	Pk	10.9	-32.07	-13	-19.07
6	3.5	-39.54	Pk	11	-28.54	-13	-15.54
Middle-channel Markers							
7	2.8	-37.98	Pk	10.9	-27.08	-13	-14.08
8	3	-42.71	Pk	10.9	-31.81	-13	-18.81
9	3.1	-43.69	Pk	10.9	-32.79	-13	-19.79
10	3.3	-47.44	Pk	10.9	-36.54	-13	-23.54
11	3.5	-39.13	Pk	11	-28.13	-13	-15.13
High-channel Markers							
12	3	-42.55	Pk	10.9	-31.65	-13	-18.65
13	3.1	-46.22	Pk	10.9	-35.32	-13	-22.32
14	3.3	-47.34	Pk	10.9	-36.44	-13	-23.44
15	3.5	-39.33	Pk	11	-28.33	-13	-15.33

Pk - Peak detector

MODE 3

Graphical Data



Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	Emissions Mask	PK Margin (dB)
Low-channel Markers							
1	2.86	-42.02	Pk	10.9	-31.12	-13	-18.12
2	3	-43.06	Pk	10.9	-32.16	-13	-19.16
3	3.1	-47.67	Pk	10.9	-36.77	-13	-23.77
4	3.3	-46.85	Pk	10.9	-35.95	-13	-22.95
5	3.329	-43.16	Pk	10.9	-32.26	-13	-19.26
6	3.5	-38.98	Pk	11	-27.98	-13	-14.98
Middle-channel Markers							
7	2.8	-37.75	Pk	10.9	-26.85	-13	-13.85
8	3	-43	Pk	10.9	-32.1	-13	-19.1
9	3.1	-43.19	Pk	10.9	-32.29	-13	-19.29
10	3.3	-46.25	Pk	10.9	-35.35	-13	-22.35
11	3.501	-39.96	Pk	11	-28.96	-13	-15.96
High-channel Markers							
12	3	-43.2	Pk	10.9	-32.3	-13	-19.3
13	3.1	-46.06	Pk	10.9	-35.16	-13	-22.16
14	3.3	-46.45	Pk	10.9	-35.55	-13	-22.55
15	3.5	-39.78	Pk	11	-28.78	-13	-15.78

Pk - Peak detector

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

RULE PART(S)

§2.1051

§90.210 Emission Masks

Since there is no specific mask/bandwidth limitation we apply the standard -13dBm limit outside the allocated band.

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 limit of -13dBm was converted to field strength limit using equation from FCC KDB publication "971168 D01 Power Meas License Digital System V02r02".

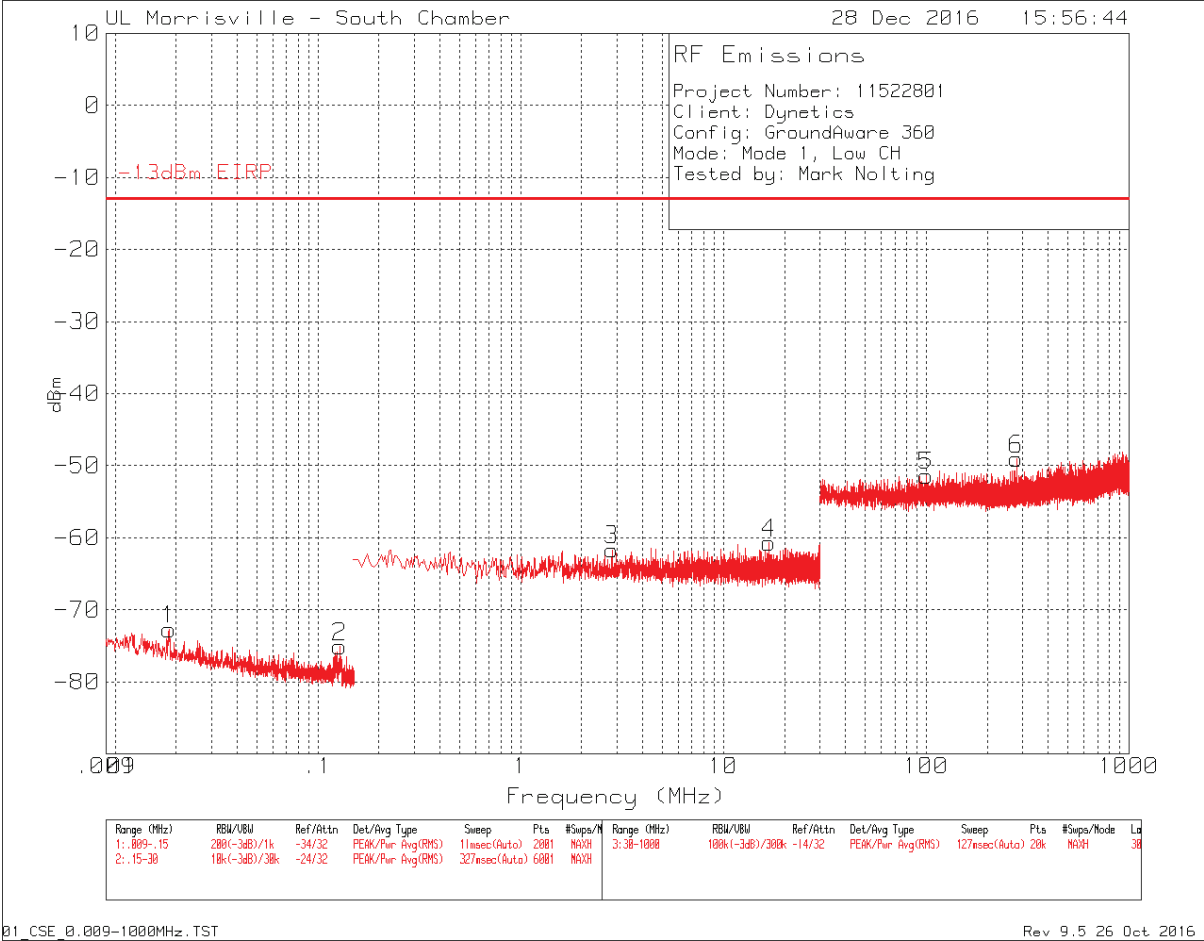
$E(\text{dBuV/m}) = \text{EIRP}(\text{dBm}) - 20\log(D) + 104.8$, where D is the measurement distance in meters.

D = 3m for the data presented in this section.

RESULTS

9.3.1. Antenna Port Out of Band Emissions

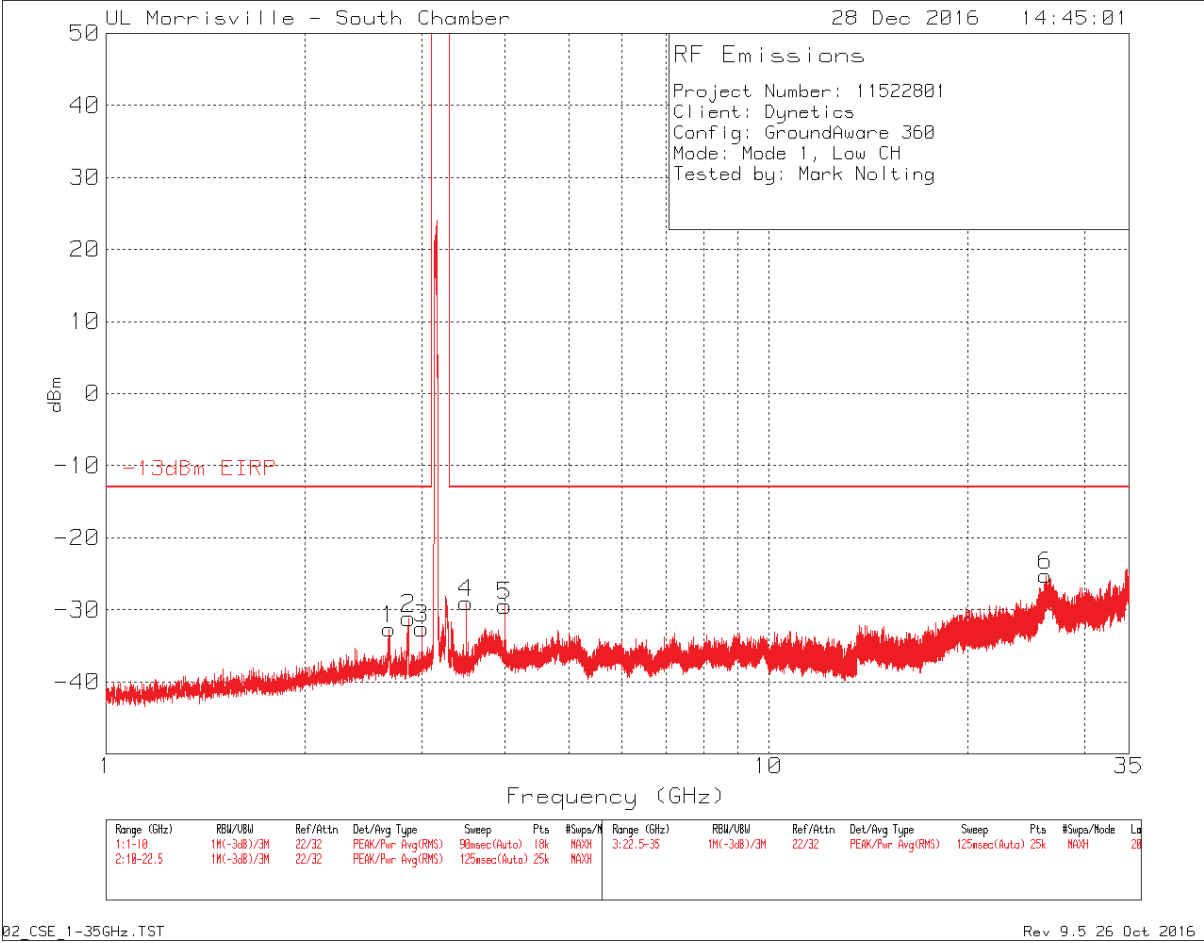
Mode 1, Low Channel, Below 1GHz - Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	.01844	-82.82	Pk	10.1	-72.72	-13	-59.72
2	.12814	-85.2	Pk	10.1	-75.1	-13	-62.1
3	2.82158	-71.76	Pk	10.1	-61.66	-13	-48.66
4	16.80133	-70.81	Pk	10.1	-60.71	-13	-47.71
5	99.8885	-61.57	Pk	10.2	-51.37	-13	-38.37
6	278.708	-59.37	Pk	10.3	-49.07	-13	-36.07

Pk - Peak detector

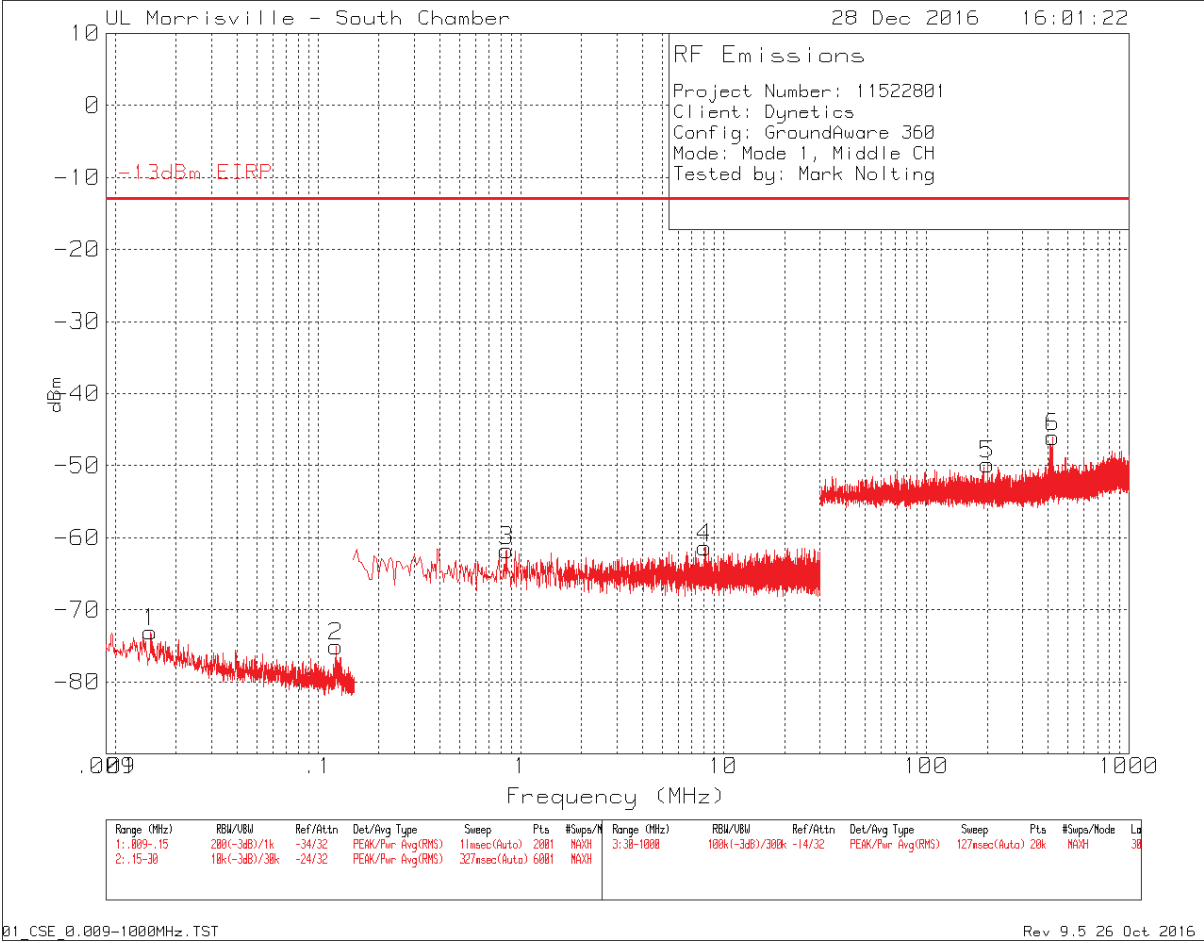
Mode 1, Low Channel, Above 1GHz - Data



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	2.678	-43.56	Pk	10.9	-32.66	-13	-19.66
2	2.866	-42.08	Pk	10.9	-31.18	-13	-18.18
3	3.001	-43.47	Pk	10.9	-32.57	-13	-19.57
4	3.501	-40	Pk	11	-29	-13	-16
5	4.001	-40.45	Pk	11	-29.45	-13	-16.45
6	26.2	-39.82	Pk	14.6	-25.22	-13	-12.22

Pk - Peak detector

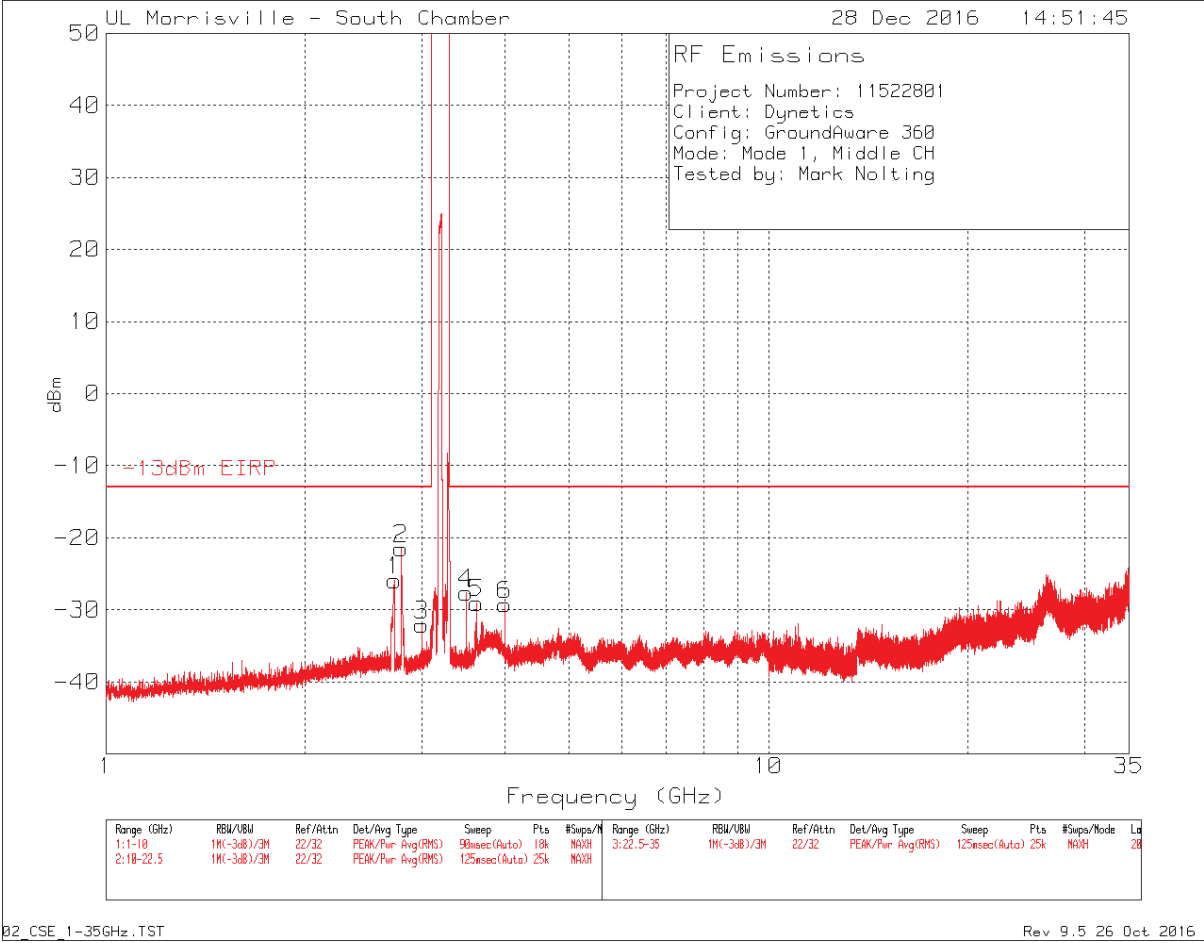
Mode 1, Middle Channel, Below 1GHz - Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	.01496	-83.17	Pk	10.1	-73.07	-13	-60.07
2	.12303	-85.18	Pk	10.1	-75.08	-13	-62.08
3	.85148	-71.85	Pk	10.1	-61.75	-13	-48.75
4	8.0901	-71.46	Pk	10.1	-61.36	-13	-48.36
5	200.72	-60.13	Pk	10.3	-49.83	-13	-36.83
6	421.395	-56.41	Pk	10.4	-46.01	-13	-33.01

Pk - Peak detector

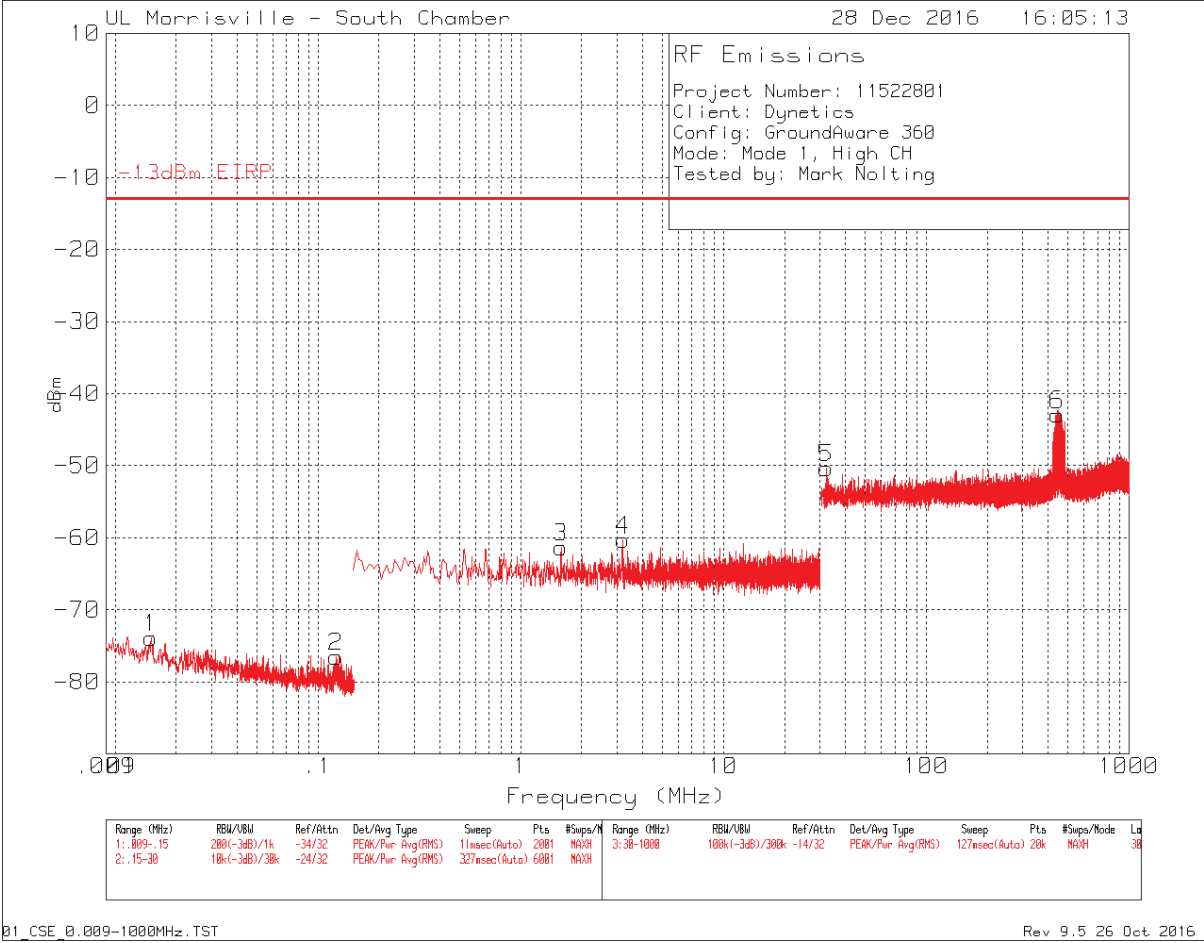
Mode 1, Middle Channel, Above 1GHz - Data



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	2.726	-36.81	Pk	10.9	-25.91	-13	-12.91
2	2.791	-32.42	Pk	10.9	-21.52	-13	-8.52
3	3	-43.02	Pk	10.9	-32.12	-13	-19.12
4	3.501	-38.66	Pk	11	-27.66	-13	-14.66
5	3.63	-40.04	Pk	11	-29.04	-13	-16.04
6	4.001	-40.26	Pk	11	-29.26	-13	-16.26

Pk - Peak detector

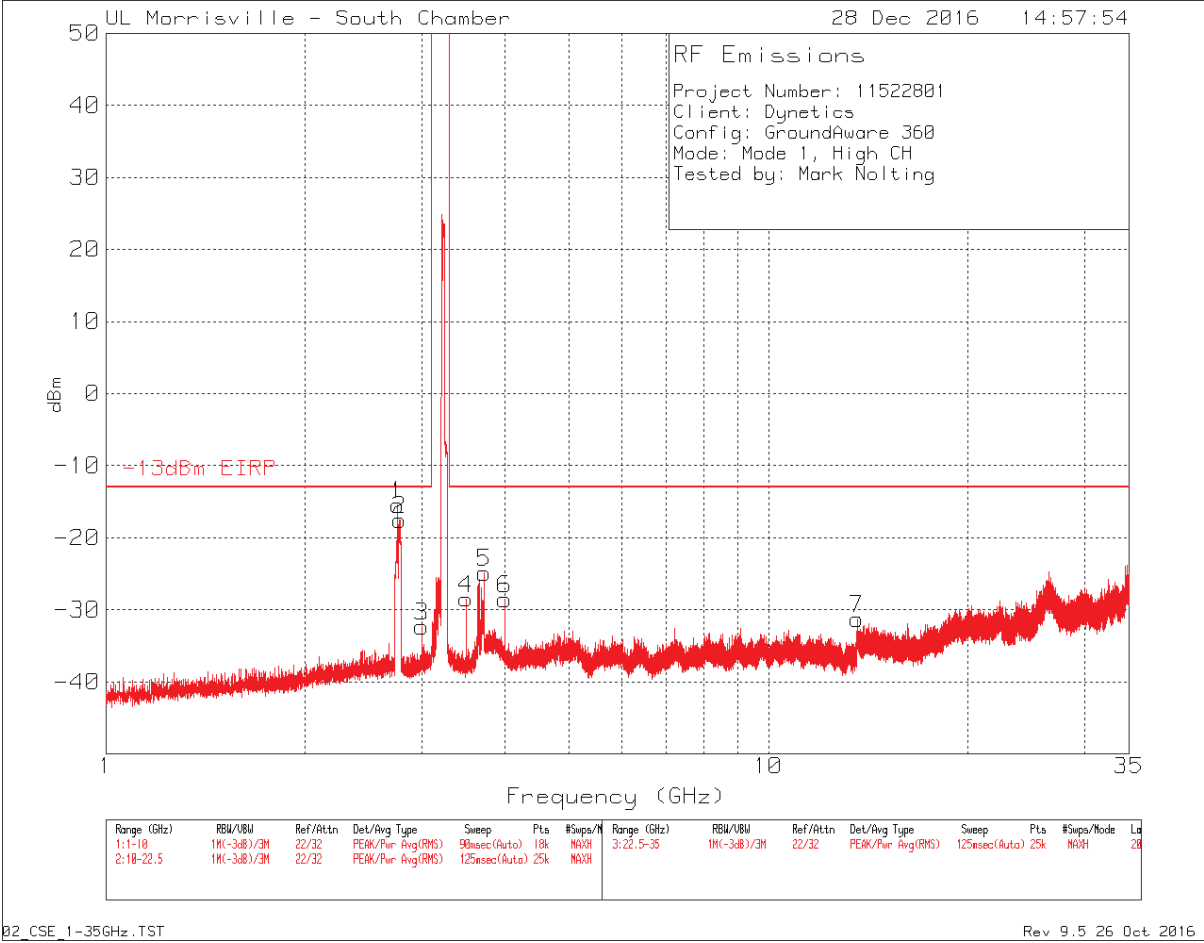
Mode 1, High Channel, Below 1GHz - Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	.01504	-83.99	Pk	10.1	-73.89	-13	-60.89
2	.12296	-86.59	Pk	10.1	-76.49	-13	-63.49
3	1.5828	-71.44	Pk	10.1	-61.34	-13	-48.34
4	3.20465	-70.42	Pk	10.1	-60.32	-13	-47.32
5	32.0855	-60.46	Pk	10.1	-50.36	-13	-37.36
6	443.414	-53.34	Pk	10.4	-42.94	-13	-29.94

Pk - Peak detector

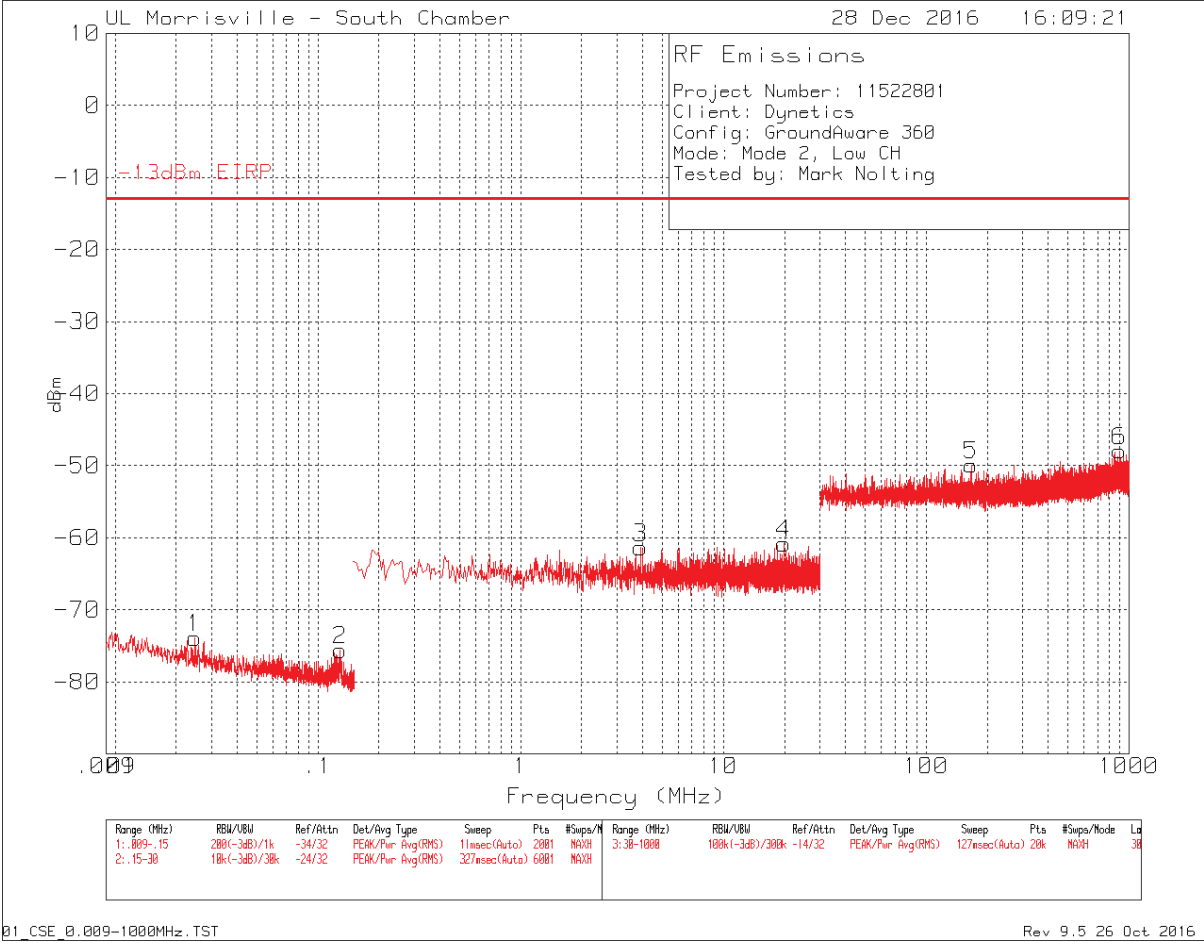
Mode 1, High Channel, Above 1GHz - Data



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	2.758	-25.39	Pk	10.9	-14.49	-13	-1.49
2	2.778	-28.02	Pk	10.9	-17.12	-13	-4.12
3	3.001	-43.24	Pk	10.9	-32.34	-13	-19.34
4	3.501	-39.48	Pk	11	-28.48	-13	-15.48
5	3.727	-35.87	Pk	11	-24.87	-13	-11.87
6	4.001	-39.54	Pk	11	-28.54	-13	-15.54
7	13.608	-43.19	Pk	11.9	-31.29	-13	-18.29

Pk - Peak detector

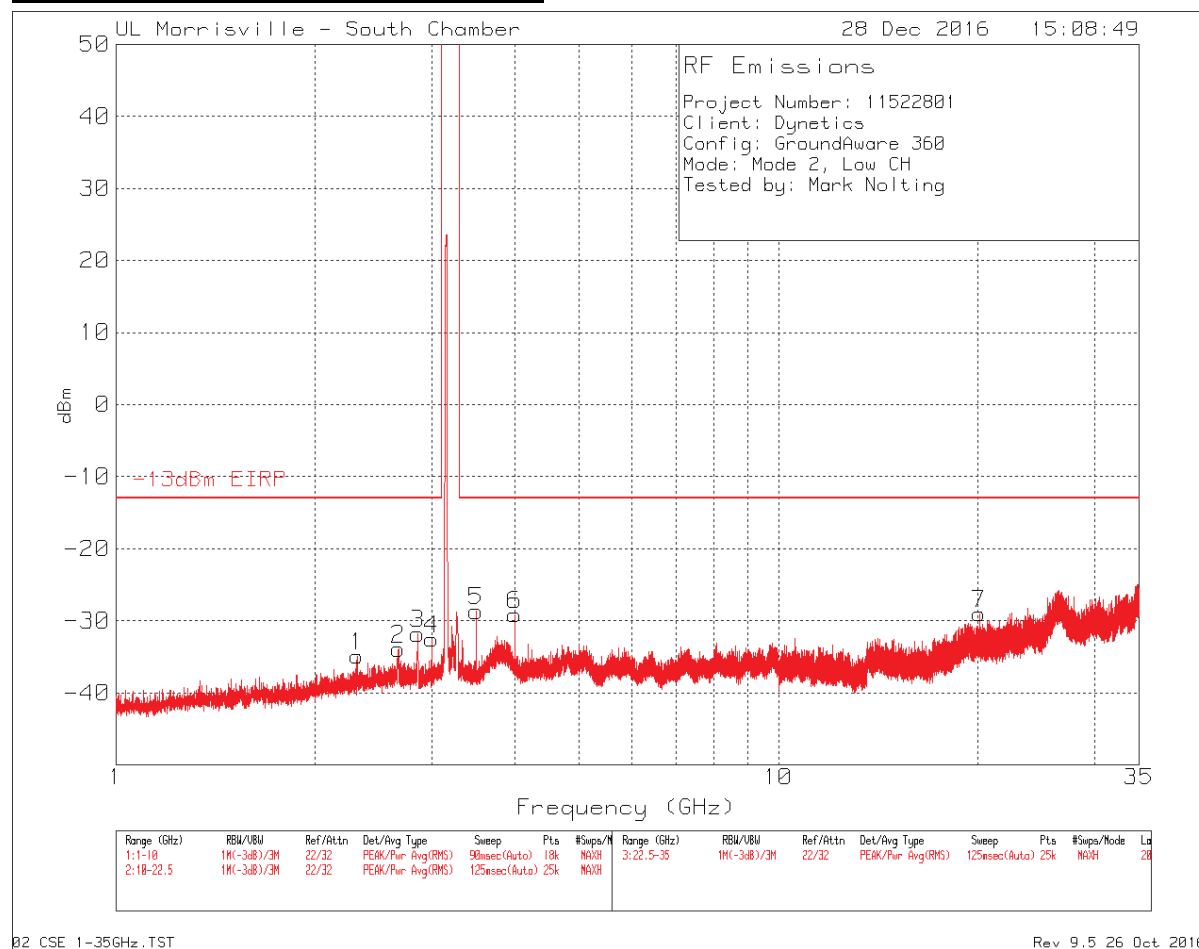
Mode 2, Low Channel, Below 1GHz Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	.02476	-83.98	Pk	10.1	-73.88	-13	-60.88
2	.12885	-85.71	Pk	10.1	-75.61	-13	-62.61
3	3.89618	-71.46	Pk	10.1	-61.36	-13	-48.36
4	19.81618	-70.93	Pk	10.1	-60.83	-13	-47.83
5	166.77	-60.21	Pk	10.3	-49.91	-13	-36.91
6	900.381	-58.54	Pk	10.6	-47.94	-13	-34.94

Pk - Peak detector

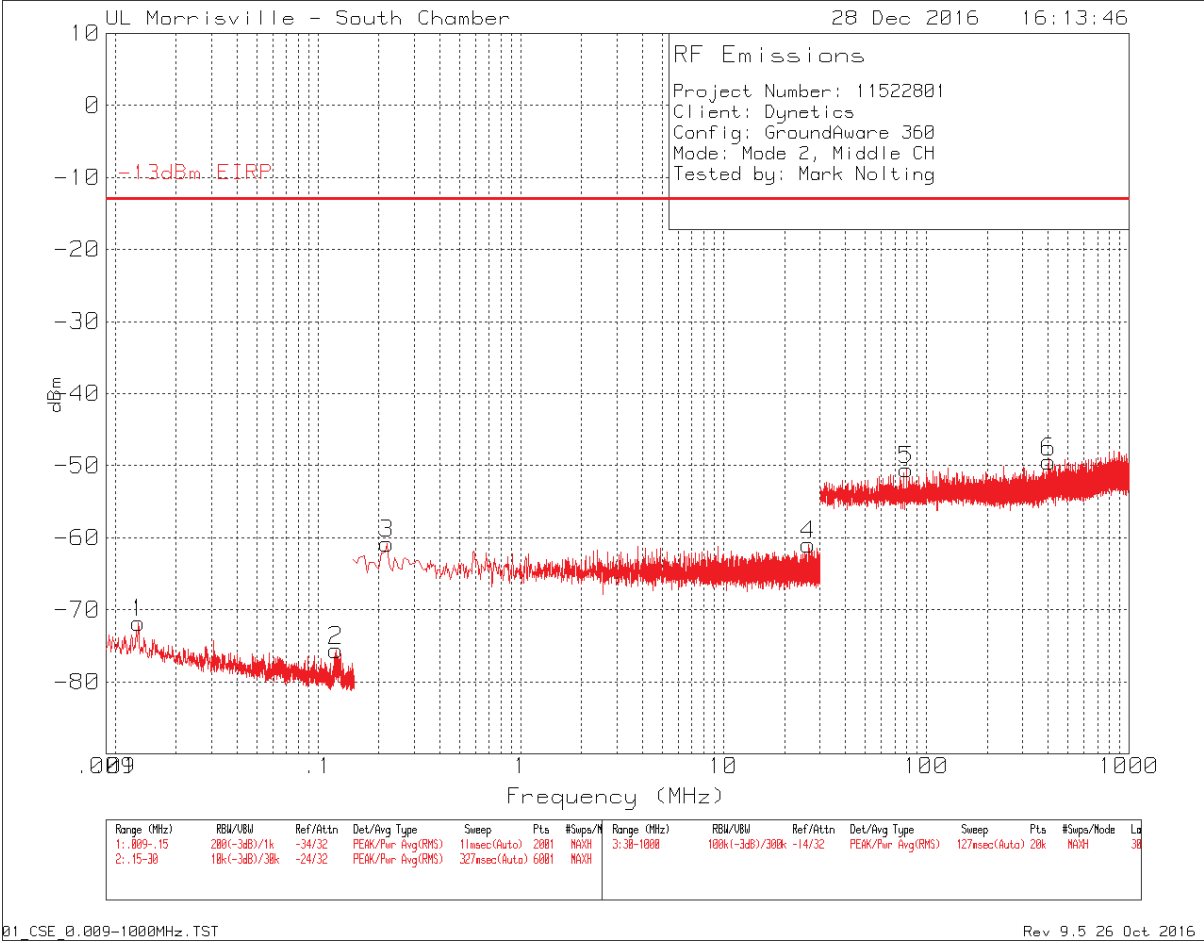
Mode 2, Low Channel, Above 1GHz – Data



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	2.313	-45.68	Pk	10.8	-34.88	-13	-21.88
2	2.671	-44.84	Pk	10.9	-33.94	-13	-20.94
3	2.856	-42.69	Pk	10.9	-31.79	-13	-18.79
4	3.001	-43.43	Pk	10.9	-32.53	-13	-19.53
5	3.5	-39.64	Pk	11	-28.64	-13	-15.64
6	4.001	-40.12	Pk	11	-29.12	-13	-16.12
7	20.097	-41.7	Pk	12.7	-29	-13	-16

Pk - Peak detector

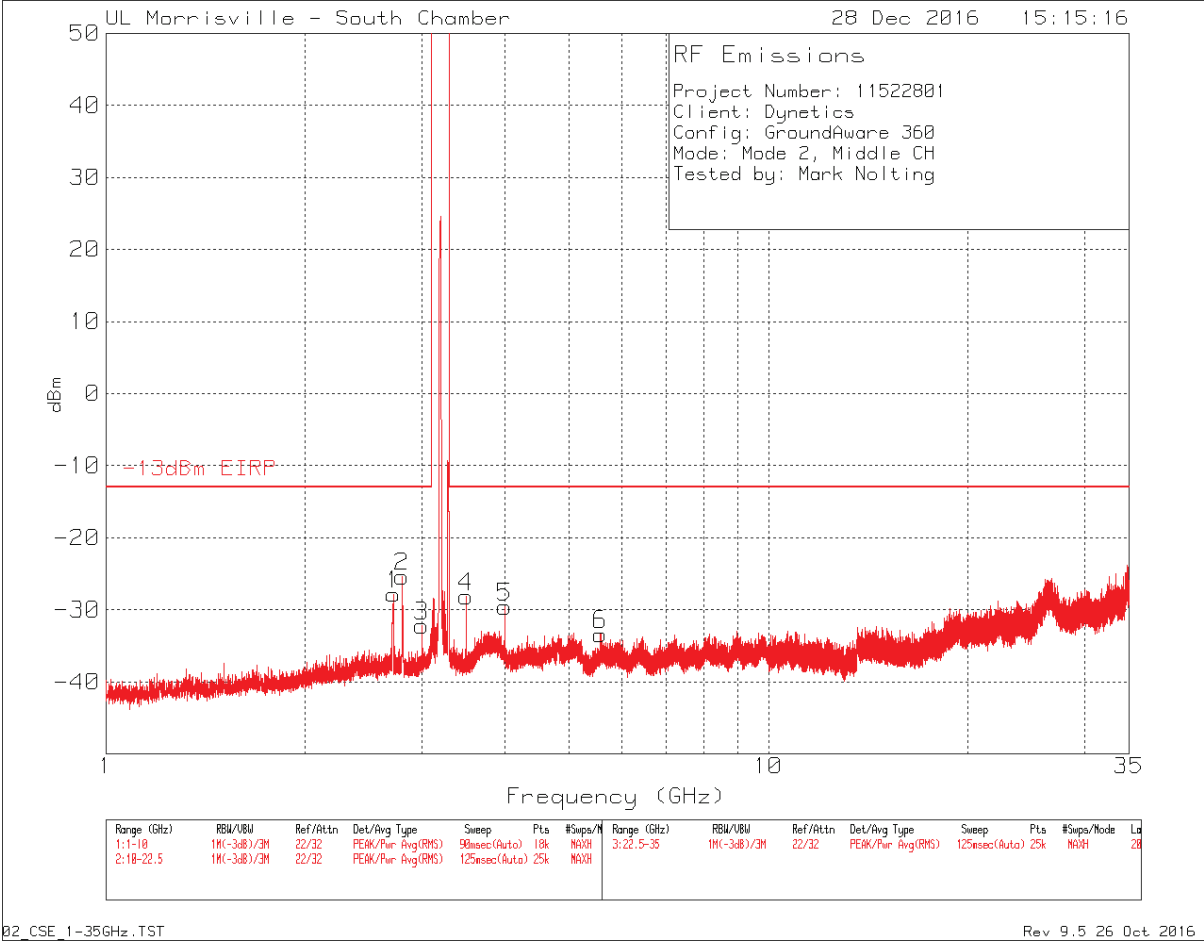
Mode 2, Middle Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	.01305	-81.92	Pk	10.1	-71.82	-13	-58.82
2	.12296	-85.73	Pk	10.1	-75.63	-13	-62.63
3	.21965	-70.91	Pk	10.1	-60.81	-13	-47.81
4	26.30855	-71.04	Pk	10.1	-60.94	-13	-47.94
5	79.7125	-60.75	Pk	10.2	-50.55	-13	-37.55
6	403.547	-59.85	Pk	10.4	-49.45	-13	-36.45

Pk - Peak detector

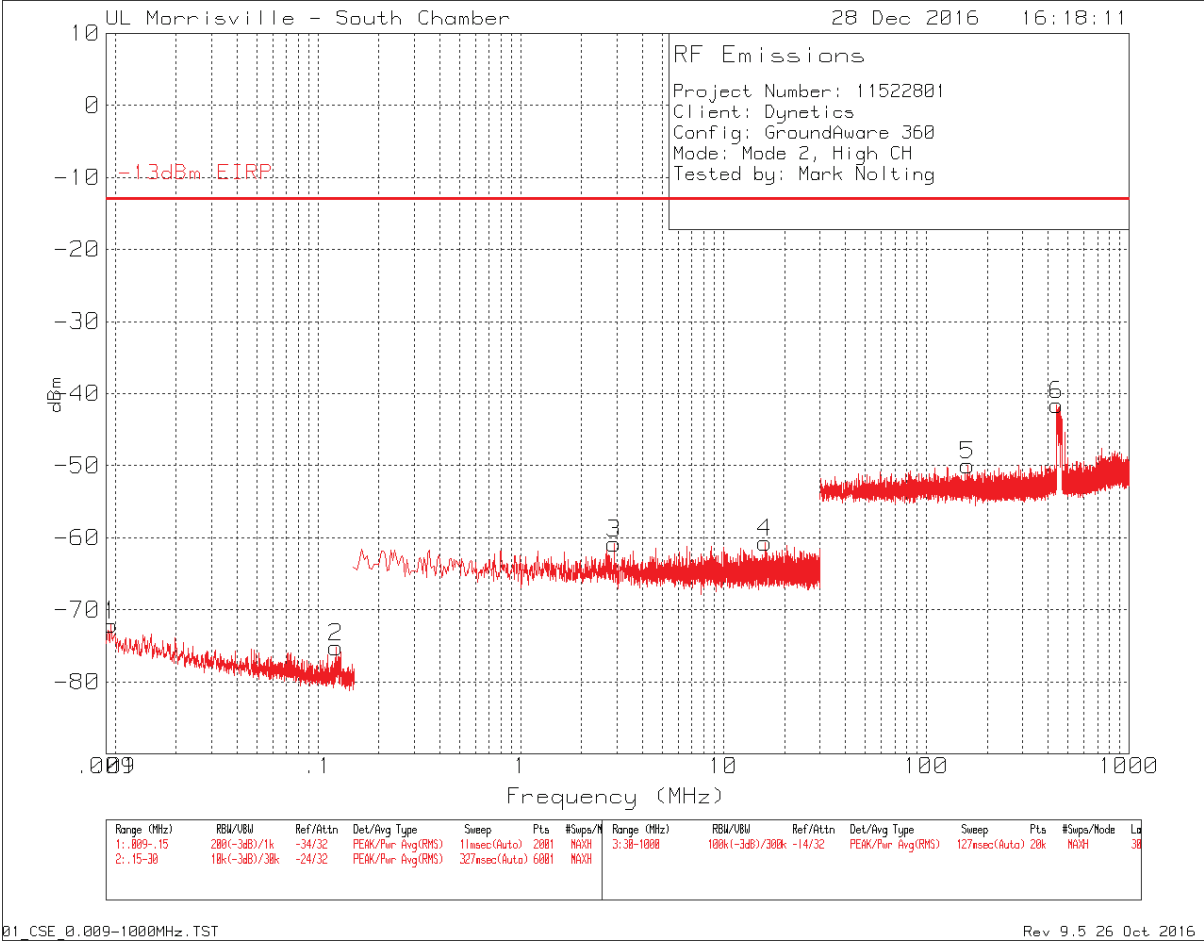
Mode 2, Middle Channel, Above 1GHz – Data



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	2.717	-38.74	Pk	10.9	-27.84	-13	-14.84
2	2.797	-36.26	Pk	10.9	-25.36	-13	-12.36
3	3.001	-43.14	Pk	10.9	-32.24	-13	-19.24
4	3.5	-39.18	Pk	11	-28.18	-13	-15.18
5	4.001	-40.6	Pk	11	-29.6	-13	-16.6
6	5.576	-44.53	Pk	11.1	-33.43	-13	-20.43

Pk - Peak detector

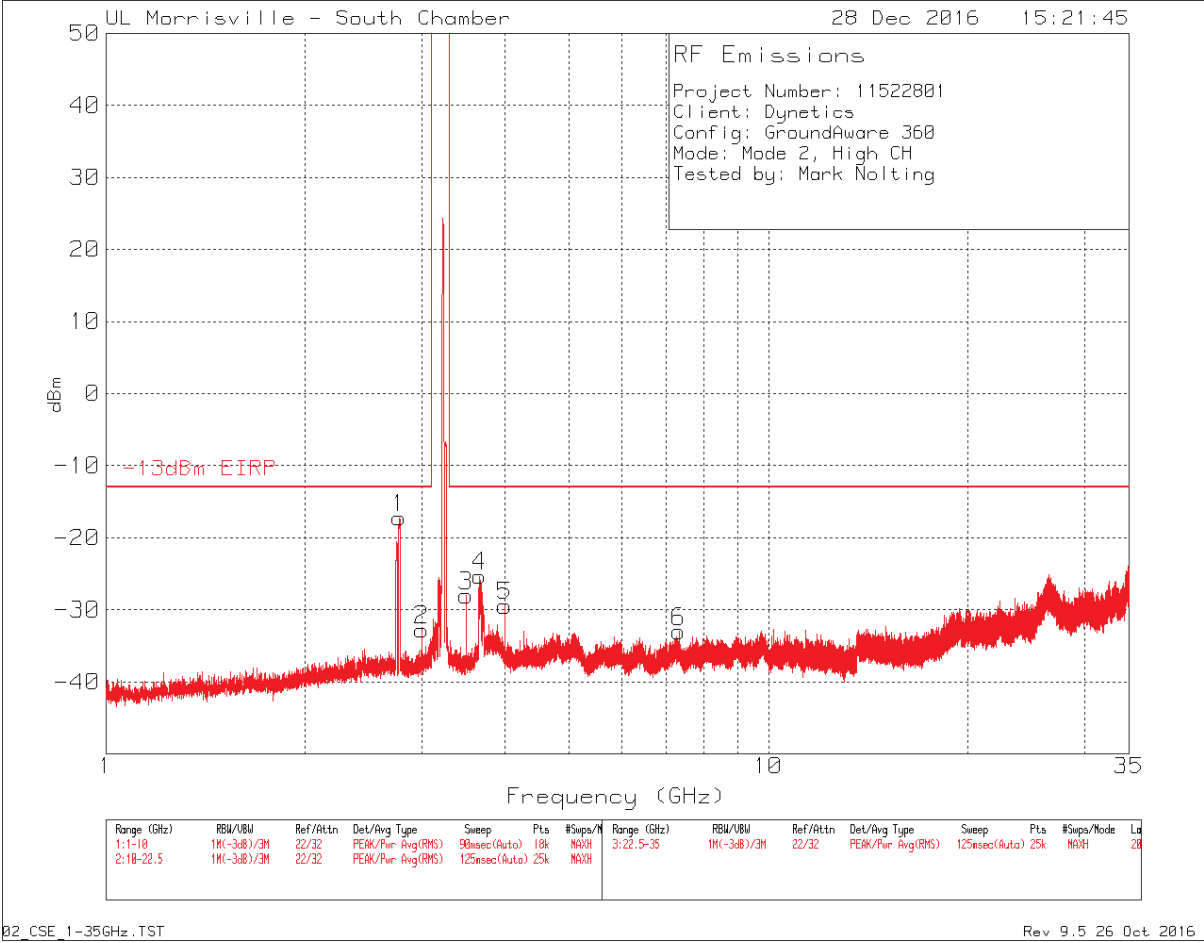
Mode 2, High Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	.00957	-82.22	Pk	10.1	-72.12	-13	-59.12
2	.12296	-85.3	Pk	10.1	-75.2	-13	-62.2
3	2.88625	-70.89	Pk	10.1	-60.79	-13	-47.79
4	16.04015	-70.77	Pk	10.1	-60.67	-13	-47.67
5	160.368	-60.23	Pk	10.3	-49.93	-13	-36.93
6	440.2615	-51.96	Pk	10.4	-41.56	-13	-28.56

Pk - Peak detector

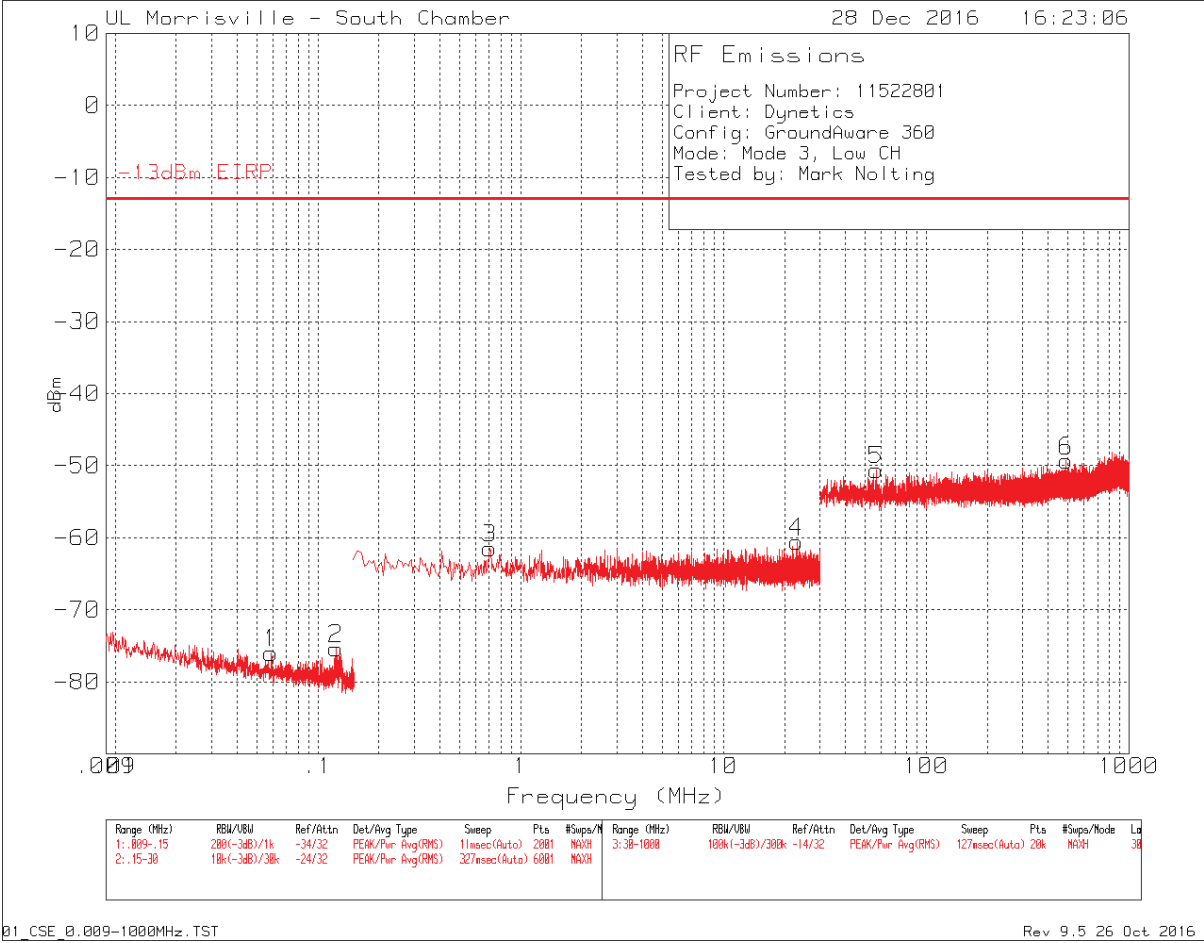
Mode 2, High Channel, Above 1GHz – Data



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	2.773	-27.86	Pk	10.9	-16.96	-13	-3.96
2	3.001	-43.68	Pk	10.9	-32.78	-13	-19.78
3	3.501	-39.04	Pk	11	-28.04	-13	-15.04
4	3.667	-36.32	Pk	11	-25.32	-13	-12.32
5	4	-40.42	Pk	11	-29.42	-13	-16.42
6	7.325	-44.42	Pk	11.4	-33.02	-13	-20.02

Pk - Peak detector

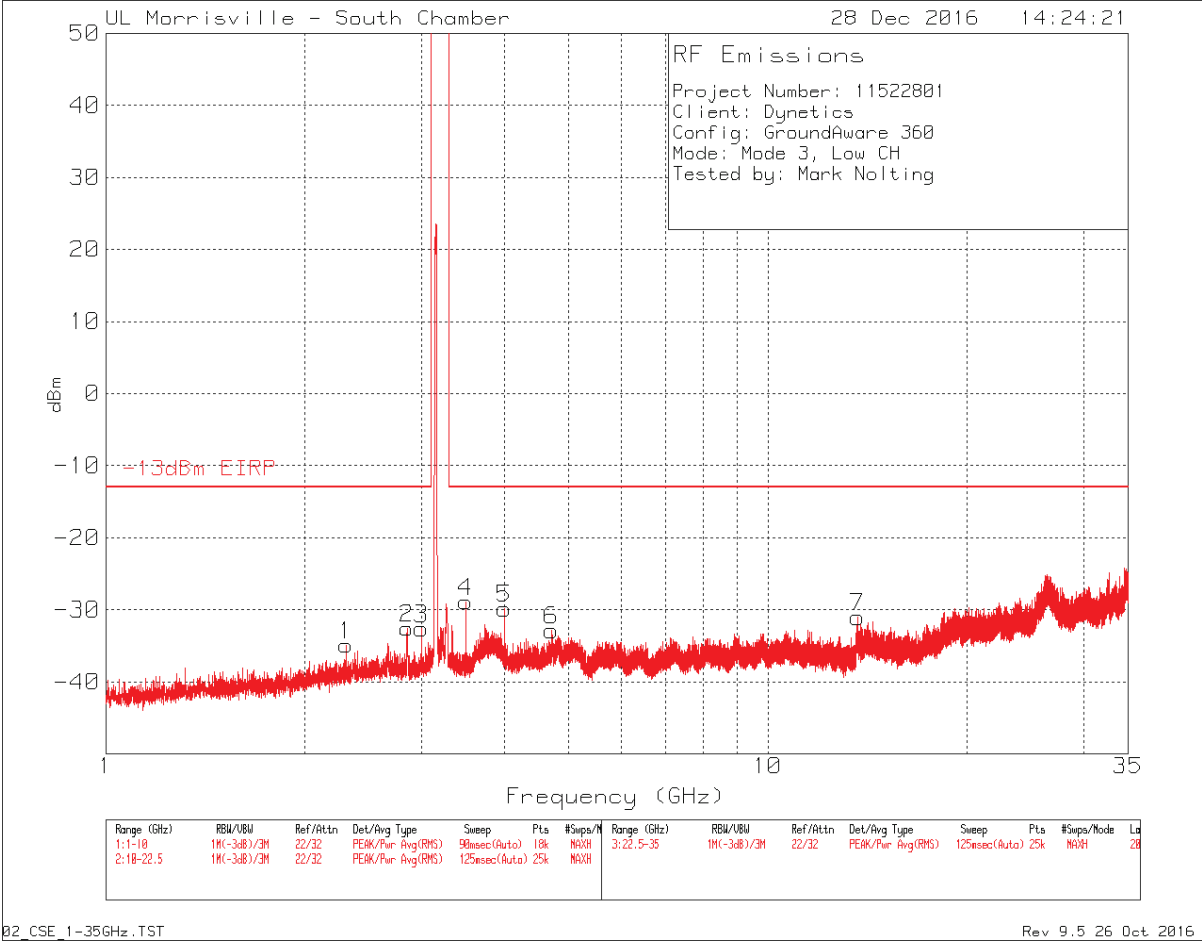
Mode 3, Low Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	.05884	-86.06	Pk	10.1	-75.96	-13	-62.96
2	.1231	-85.49	Pk	10.1	-75.39	-13	-62.39
3	.70223	-71.54	Pk	10.1	-61.44	-13	-48.44
4	22.99023	-70.67	Pk	10.1	-60.57	-13	-47.57
5	56.6265	-60.79	Pk	10.2	-50.59	-13	-37.59
6	490.3135	-59.73	Pk	10.4	-49.33	-13	-36.33

Pk - Peak detector

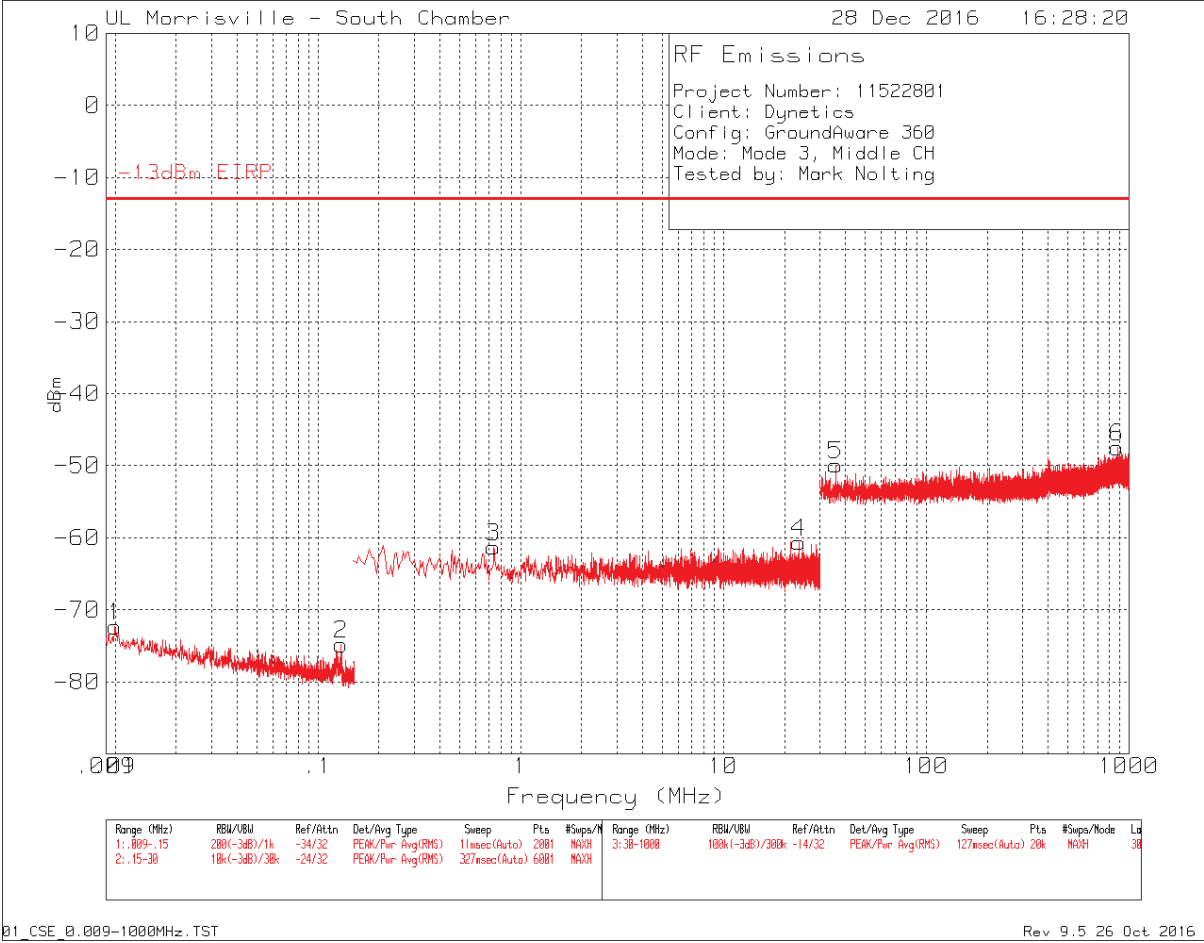
Mode 3, Low Channel, Above 1GHz – Data



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	2.307	-45.69	Pk	10.8	-34.89	-13	-21.89
2	2.852	-43.45	Pk	10.9	-32.55	-13	-19.55
3	3	-43.53	Pk	10.9	-32.63	-13	-19.63
4	3.501	-39.87	Pk	11	-28.87	-13	-15.87
5	4.001	-40.83	Pk	11	-29.83	-13	-16.83
6	4.716	-43.95	Pk	11.1	-32.85	-13	-19.85
7	13.663	-43.02	Pk	12	-31.02	-13	-18.02

Pk - Peak detector

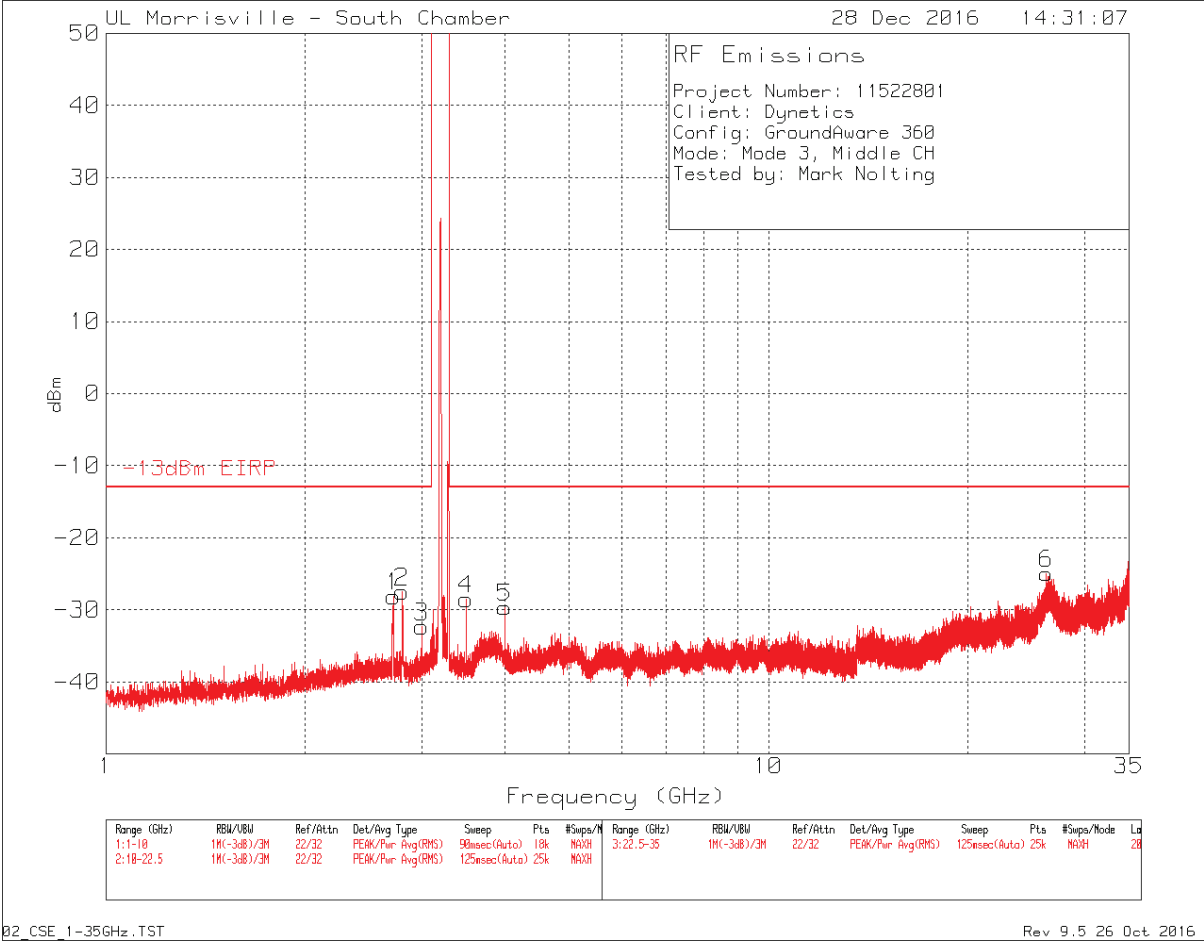
Mode 3, Middle Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	.00999	-82.43	Pk	10.1	-72.33	-13	-59.33
2	.13041	-84.91	Pk	10.1	-74.81	-13	-61.81
3	.73705	-71.39	Pk	10.1	-61.29	-13	-48.29
4	23.51758	-70.74	Pk	10.1	-60.64	-13	-47.64
5	35.7715	-60.01	Pk	10.1	-49.91	-13	-36.91
6	875.743	-57.97	Pk	10.5	-47.47	-13	-34.47

Pk - Peak detector

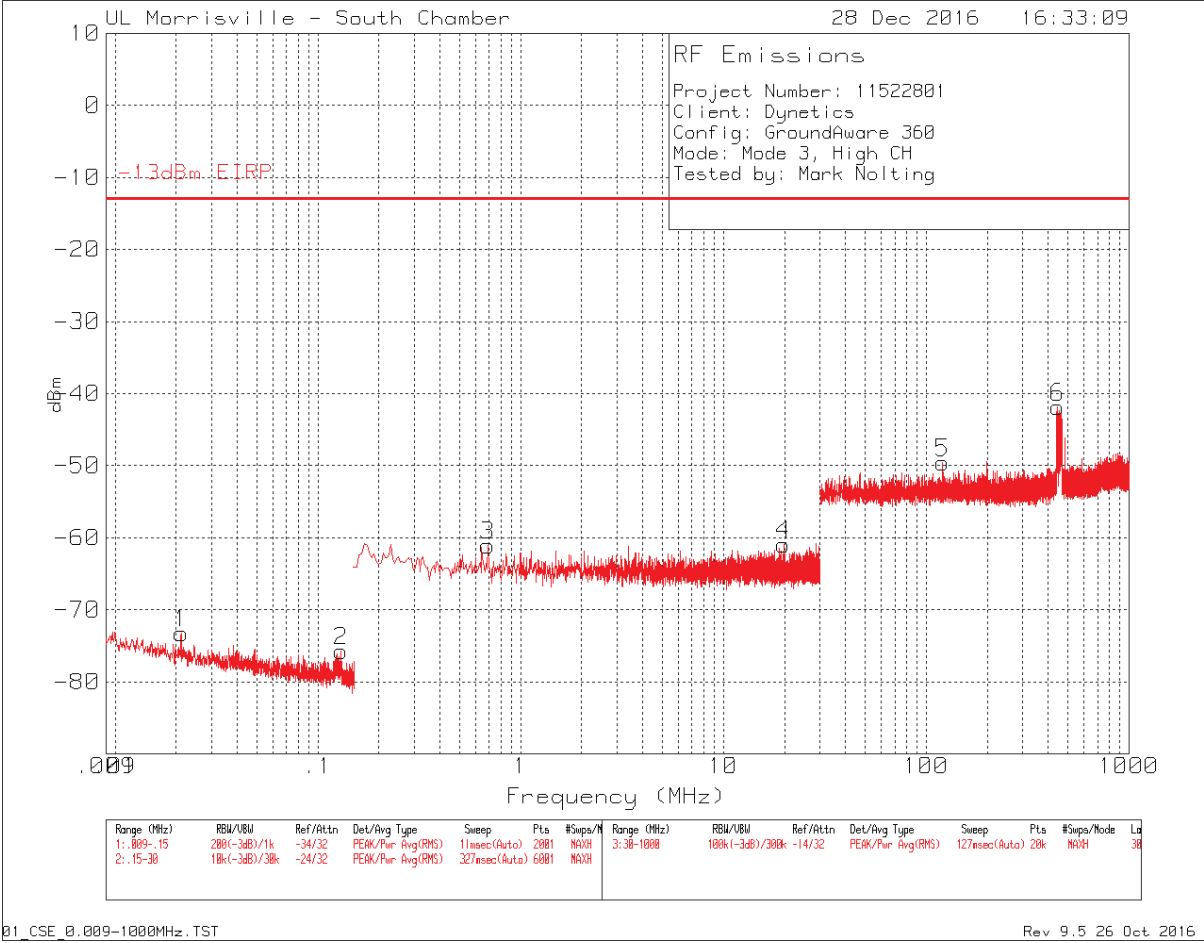
Mode 3, Middle Channel, Above 1GHz – Data



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	2.719	-39.02	Pk	10.9	-28.12	-13	-15.12
2	2.798	-38.42	Pk	10.9	-27.52	-13	-14.52
3	3	-43.26	Pk	10.9	-32.36	-13	-19.36
4	3.501	-39.51	Pk	11	-28.51	-13	-15.51
5	4.001	-40.67	Pk	11	-29.67	-13	-16.67
6	26.273	-39.76	Pk	14.8	-24.96	-13	-11.96

Pk - Peak detector

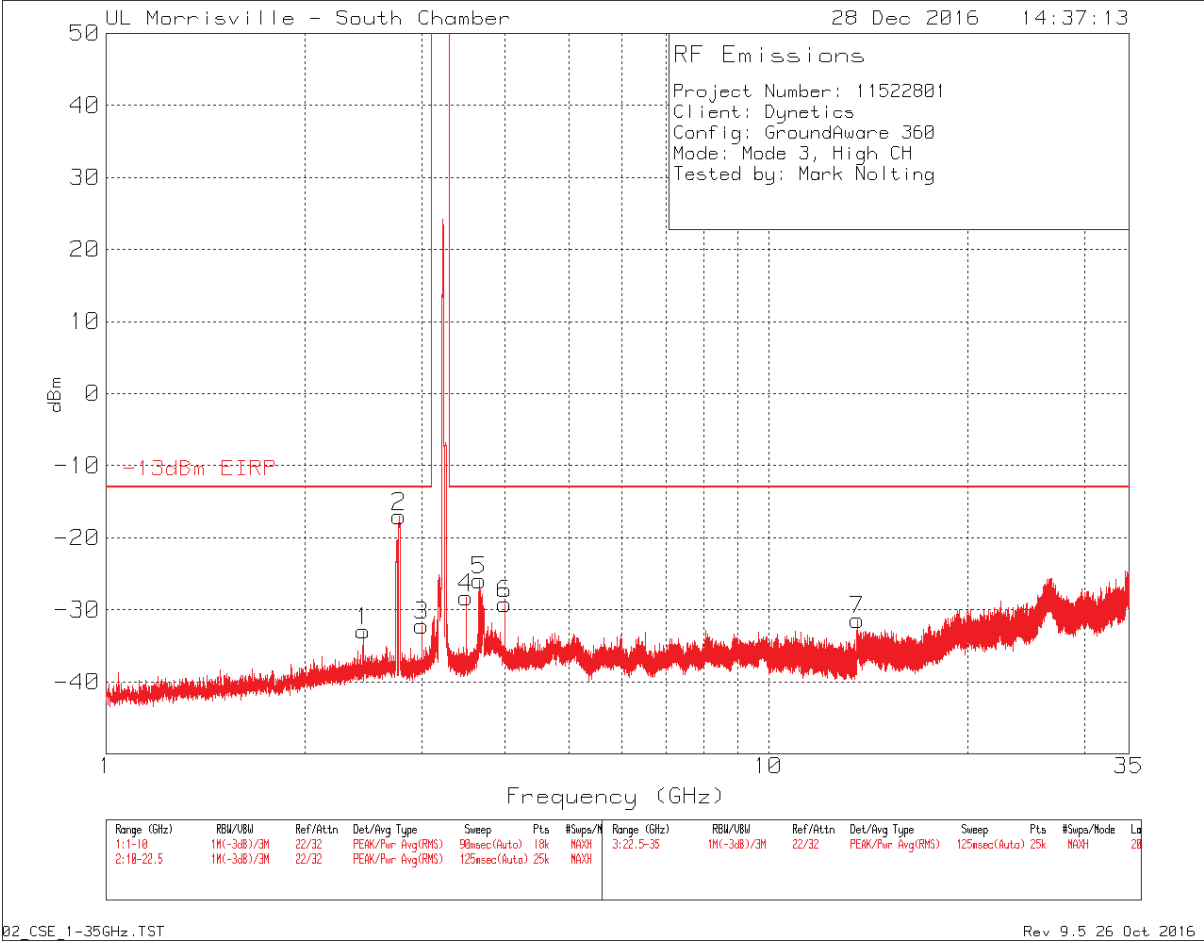
Mode 3, High Channel, Below 1GHz – Data



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	.02121	-83.31	Pk	10.1	-73.21	-13	-60.21
2	.13034	-85.84	Pk	10.1	-75.74	-13	-62.74
3	.6873	-71.16	Pk	10.1	-61.06	-13	-48.06
4	19.80623	-71.02	Pk	10.1	-60.92	-13	-47.92
5	120.5495	-59.8	Pk	10.2	-49.6	-13	-36.6
6	445.451	-52.26	Pk	10.4	-41.86	-13	-28.86

Pk - Peak detector

Mode 3, High Channel, Above 1GHz – Data

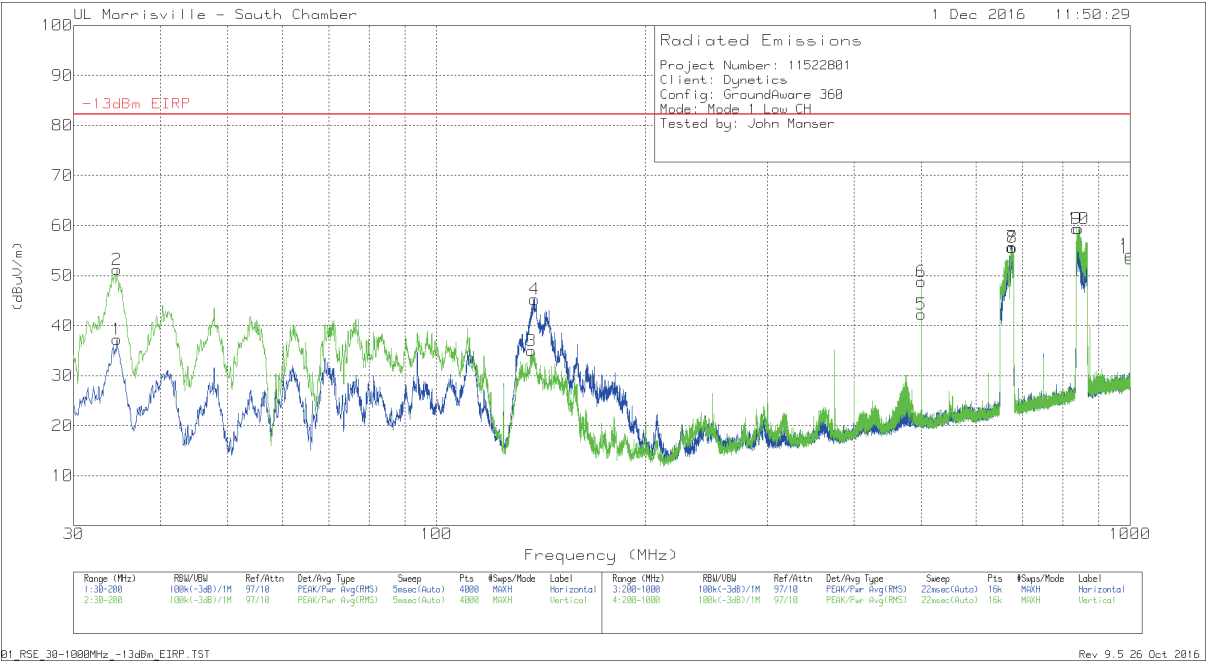


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Path Factor (dB)	Corrected Reading dBm	-13dBm EIRP	PK Margin (dB)
1	2.446	-43.74	Pk	10.8	-32.94	-13	-19.94
2	2.772	-27.89	Pk	10.9	-16.99	-13	-3.99
3	3	-43.08	Pk	10.9	-32.18	-13	-19.18
4	3.501	-39.31	Pk	11	-28.31	-13	-15.31
5	3.662	-36.92	Pk	11	-25.92	-13	-12.92
6	4.001	-40.2	Pk	11	-29.2	-13	-16.2
7	13.625	-43.42	Pk	12	-31.42	-13	-18.42

Pk - Peak detector

9.3.2. Radiated Enclosure Port Out of Band Emissions

Mode 1, Low Channel, Below 1GHz – Plot



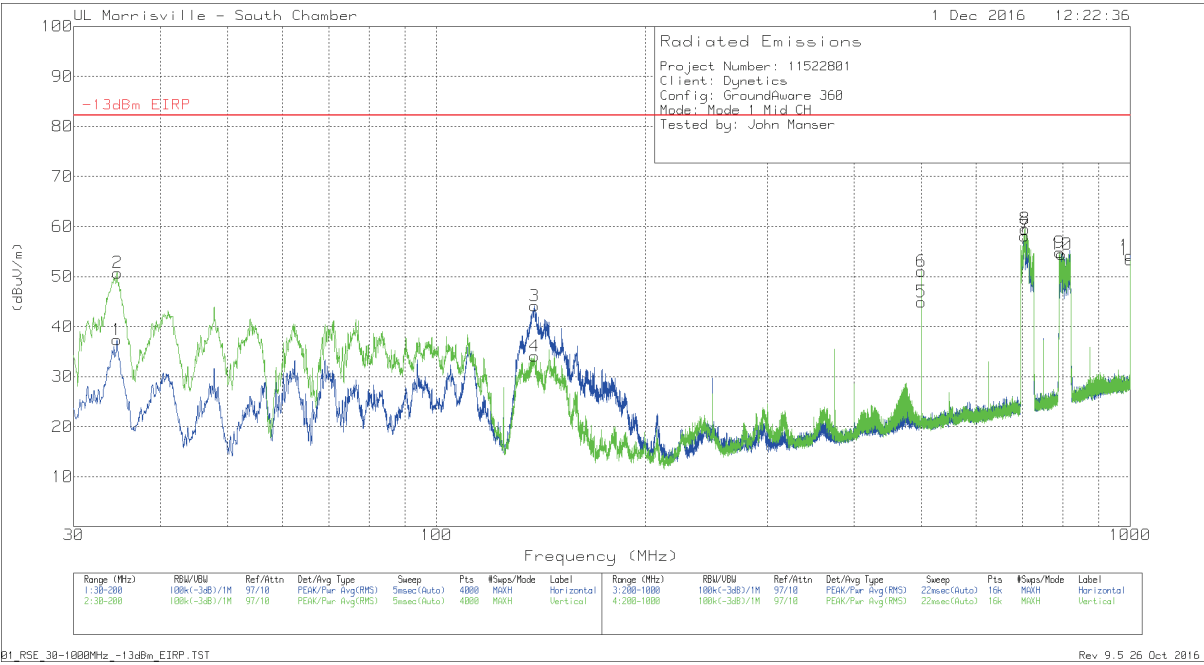
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 1, Low Channel, Below 1GHz– Tabular Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0074 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	34.6337	46.41	Pk	22.5	-31.7	37.21	82.2	-44.99	0-360	299	H
2	34.6337	60.39	Pk	22.5	-31.7	51.19	82.2	-31.01	0-360	101	V
3	137.1702	48	Pk	17.7	-30.7	35	82.2	-47.2	0-360	101	V
4	138.4881	58.24	Pk	17.6	-30.6	45.24	82.2	-36.96	0-360	199	H
5	500.05	48.95	Pk	22.1	-28.8	42.25	82.2	-39.95	0-360	102	H
6	500.05	55.48	Pk	22.1	-28.8	48.78	82.2	-33.42	0-360	102	V
7	675.5	59.67	Pk	24.4	-28.4	55.67	82.2	-26.53	0-360	102	H
8	676.45	59.6	Pk	24.4	-28.4	55.6	82.2	-26.6	0-360	102	V
9	838	60.63	Pk	26.4	-27.7	59.33	82.2	-22.87	0-360	102	H
10	842.55	60.67	Pk	26.3	-27.6	59.37	82.2	-22.83	0-360	102	V
12	1000	51.96	Pk	27.9	-25.7	54.16	82.2	-28.04	0-360	198	H
11	1000	51.21	Pk	27.9	-25.7	53.41	82.2	-28.79	0-360	102	V

Pk - Peak detector

Mode 1, Middle Channel, Below 1GHz – Plot



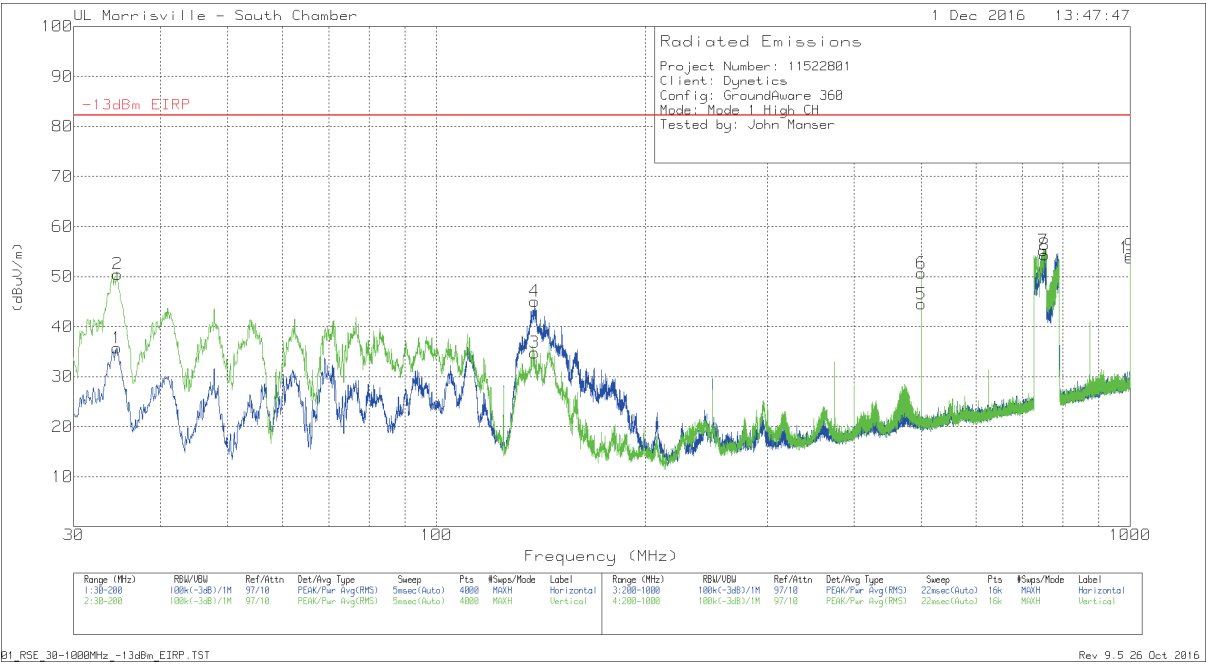
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 1, Middle Channel, Below 1GHz– Tabular Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0074 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	34.6337	46.57	Pk	22.5	-31.7	37.37	82.2	-44.83	0-360	398	H
2	34.6762	59.95	Pk	22.5	-31.7	50.75	82.2	-31.45	0-360	101	V
3	138.4456	57.16	Pk	17.6	-30.6	44.16	82.2	-38.04	0-360	198	H
4	138.4456	47.07	Pk	17.6	-30.6	34.07	82.2	-48.13	0-360	101	V
5	500.05	51.66	Pk	22.1	-28.8	44.96	82.2	-37.24	0-360	102	H
6	500.05	57.78	Pk	22.1	-28.8	51.08	82.2	-31.12	0-360	102	V
7	703.6	61.79	Pk	24.7	-28.4	58.09	82.2	-24.11	0-360	102	H
8	705	63.14	Pk	24.7	-28.3	59.54	82.2	-22.66	0-360	102	V
9	790.85	56.94	Pk	25.8	-27.9	54.84	82.2	-27.36	0-360	102	V
10	796	56.62	Pk	25.8	-28	54.42	82.2	-27.78	0-360	102	H
11	1000	51.97	Pk	27.9	-25.7	54.17	82.2	-28.03	0-360	199	H
12	1000	51.17	Pk	27.9	-25.7	53.37	82.2	-28.83	0-360	102	V

Pk - Peak detector

Mode 1, High Channel, Below 1GHz – Plot

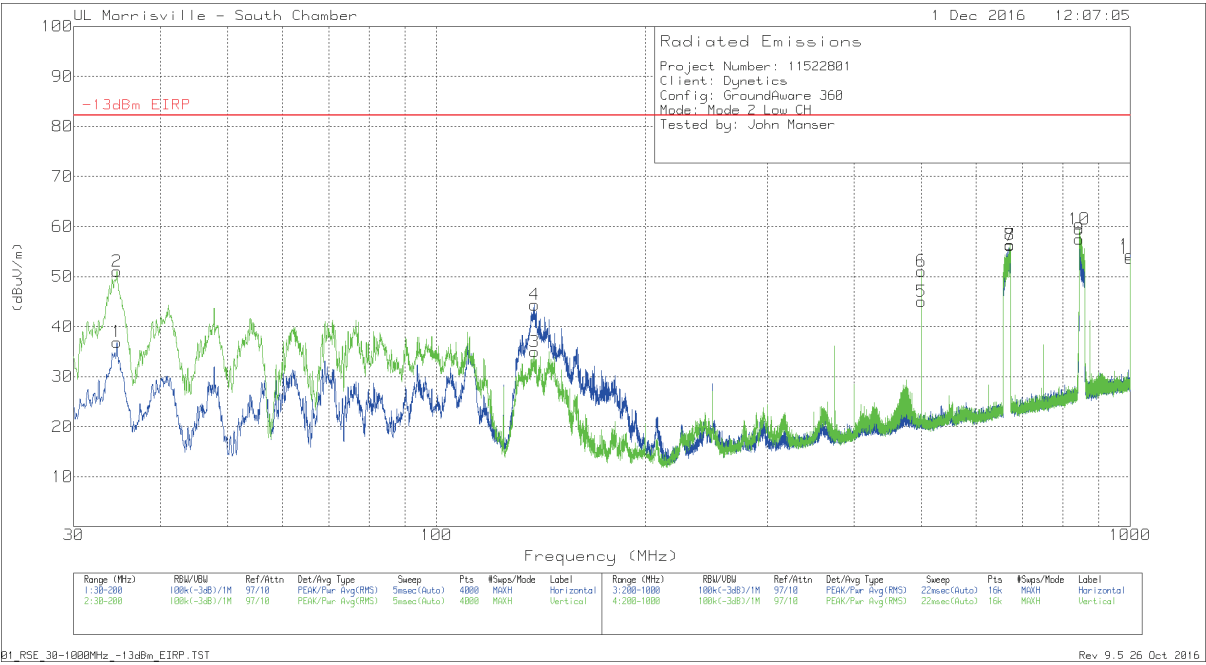


Mode 1, High Channel, Below 1GHz-- Tabular Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0074 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	34.6337	44.93	Pk	22.5	-31.7	35.73	82.2	-46.47	0-360	398	H
2	34.6762	59.7	Pk	22.5	-31.7	50.5	82.2	-31.7	0-360	101	V
4	138.4456	58.07	Pk	17.6	-30.6	45.07	82.2	-37.13	0-360	198	H
3	138.4456	47.8	Pk	17.6	-30.6	34.8	82.2	-47.4	0-360	101	V
5	500.05	51.25	Pk	22.1	-28.8	44.55	82.2	-37.65	0-360	102	H
6	500.05	57.36	Pk	22.1	-28.8	50.66	82.2	-31.54	0-360	102	V
7	749.1	58.19	Pk	25.2	-28.2	55.19	82.2	-27.01	0-360	102	V
8	752.35	57.37	Pk	25.2	-28.2	54.37	82.2	-27.83	0-360	102	H
9	1000	52.15	Pk	27.9	-25.7	54.35	82.2	-27.85	0-360	198	H
10	1000	51.54	Pk	27.9	-25.7	53.74	82.2	-28.46	0-360	102	V

Pk - Peak detector

Mode 2, Low Channel, Below 1GHz – Plot



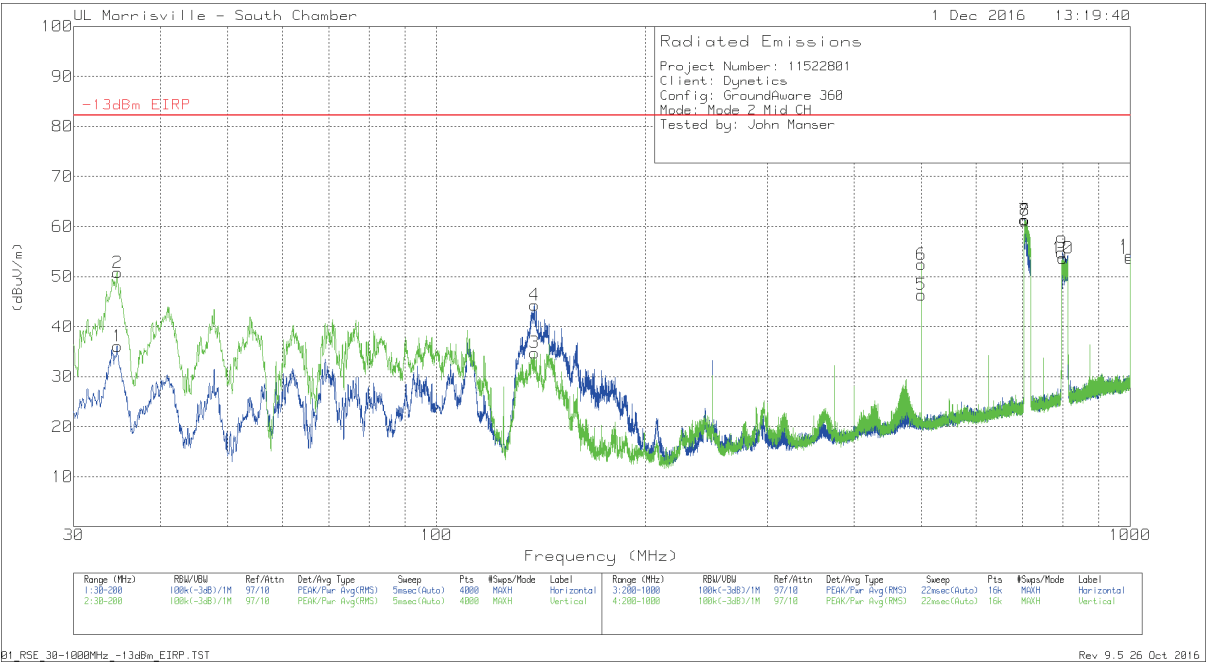
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 2, Low Channel, Below 1GHz– Tabular Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0074 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	34.6337	46.13	Pk	22.5	-31.7	36.93	82.2	-45.27	0-360	298	H
2	34.6337	60.27	Pk	22.5	-31.7	51.07	82.2	-31.13	0-360	102	V
3	138.4031	47.99	Pk	17.6	-30.6	34.99	82.2	-47.21	0-360	102	V
4	138.4456	57.36	Pk	17.6	-30.6	44.36	82.2	-37.84	0-360	198	H
5	500.05	51.74	Pk	22.1	-28.8	45.04	82.2	-37.16	0-360	102	H
6	500.05	57.81	Pk	22.1	-28.8	51.11	82.2	-31.09	0-360	102	V
7	670.75	60.35	Pk	24.4	-28.5	56.25	82.2	-25.95	0-360	102	V
8	671.05	60.46	Pk	24.4	-28.5	56.36	82.2	-25.84	0-360	102	H
9	843.9	58.75	Pk	26.3	-27.6	57.45	82.2	-24.75	0-360	102	H
10	844.1	60.78	Pk	26.3	-27.6	59.48	82.2	-22.72	0-360	102	V
12	1000	52.11	Pk	27.9	-25.7	54.31	82.2	-27.89	0-360	198	H
11	1000	51.42	Pk	27.9	-25.7	53.62	82.2	-28.58	0-360	102	V

Pk - Peak detector

Mode 2, Middle Channel, Below 1GHz – Plot



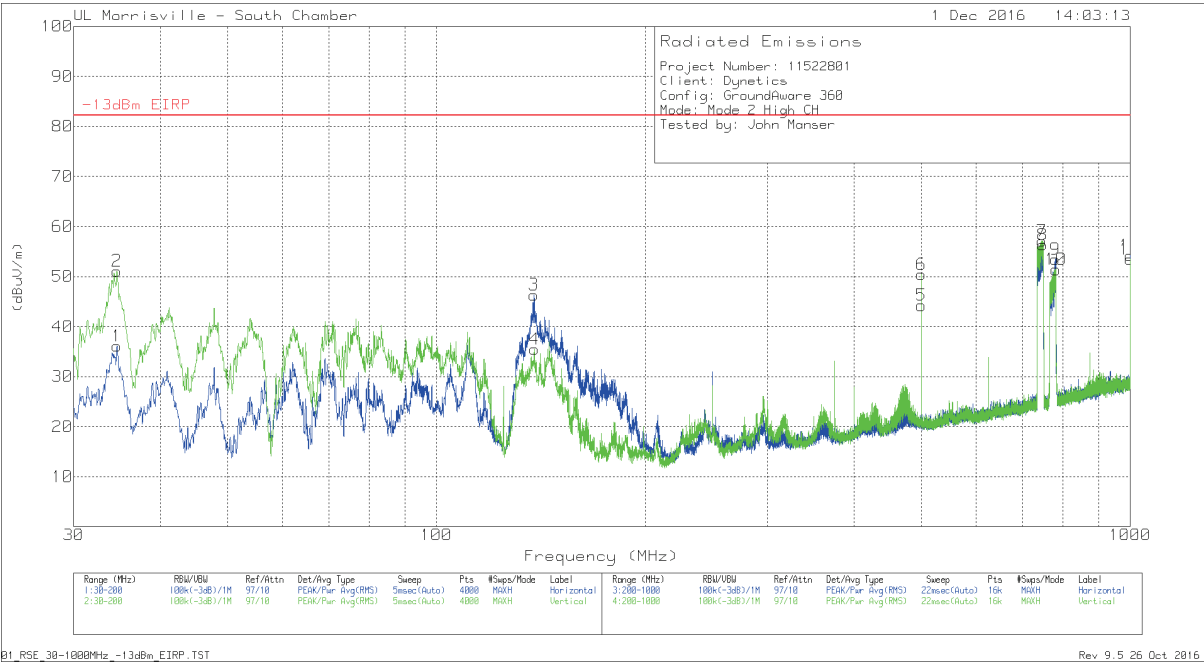
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 2, Middle Channel, Below 1GHz– Tabular Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0074 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	34.6762	45.27	Pk	22.5	-31.7	36.07	82.2	-46.13	0-360	399	H
2	34.6762	60	Pk	22.5	-31.7	50.8	82.2	-31.4	0-360	101	V
4	138.4456	57.33	Pk	17.6	-30.6	44.33	82.2	-37.87	0-360	198	H
3	138.4456	47.79	Pk	17.6	-30.6	34.79	82.2	-47.41	0-360	101	V
5	500.05	53.06	Pk	22.1	-28.8	46.36	82.2	-35.84	0-360	102	H
6	500.05	59.17	Pk	22.1	-28.8	52.47	82.2	-29.73	0-360	102	V
7	704.6	65	Pk	24.7	-28.3	61.4	82.2	-20.8	0-360	102	H
8	704.95	64.8	Pk	24.7	-28.3	61.2	82.2	-21	0-360	102	V
9	797.2	56.99	Pk	25.8	-28	54.79	82.2	-27.41	0-360	102	H
10	799.1	55.66	Pk	25.9	-27.9	53.66	82.2	-28.54	0-360	102	V
12	1000	52	Pk	27.9	-25.7	54.2	82.2	-28	0-360	198	H
11	1000	51.38	Pk	27.9	-25.7	53.58	82.2	-28.62	0-360	102	V

Pk - Peak detector

Mode 2, High Channel, Below 1GHz – Plot



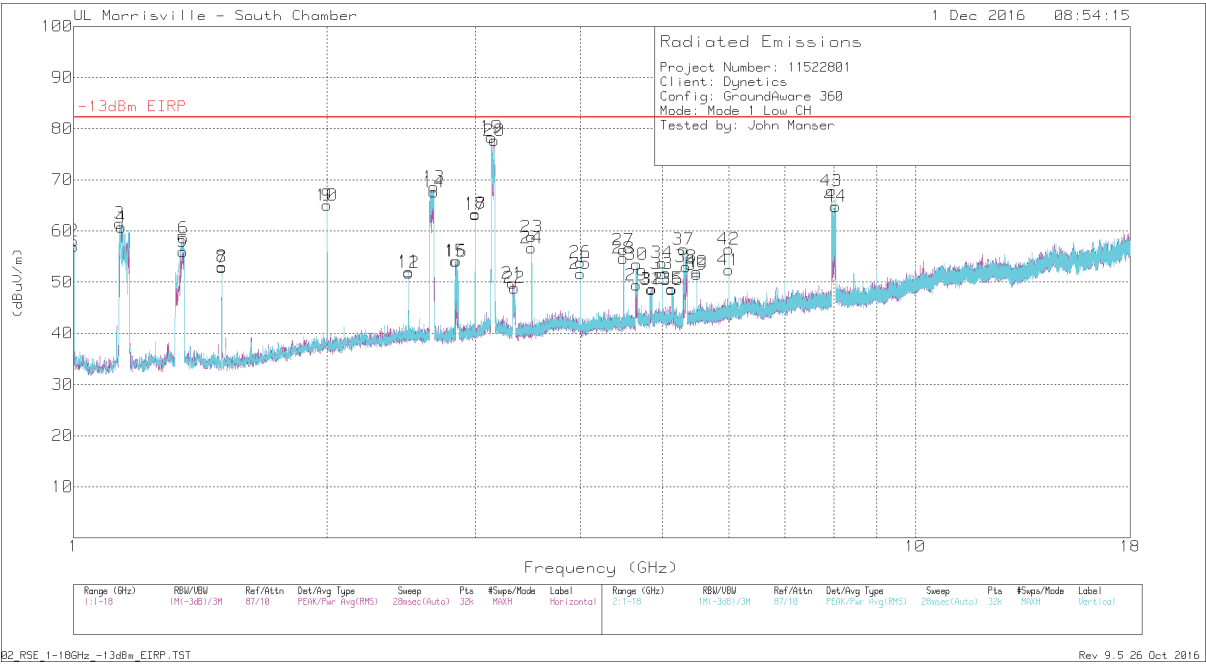
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 2, High Channel, Below 1GHz-- Tabular Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0074 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	34.6337	45.31	Pk	22.5	-31.7	36.11	82.2	-46.09	0-360	399	H
2	34.6337	60.31	Pk	22.5	-31.7	51.11	82.2	-31.09	0-360	101	V
3	138.318	59.35	Pk	17.6	-30.6	46.35	82.2	-35.85	0-360	198	H
4	138.4031	48.51	Pk	17.6	-30.6	35.51	82.2	-46.69	0-360	101	V
5	500.05	50.93	Pk	22.1	-28.8	44.23	82.2	-37.97	0-360	101	H
6	500.05	57.16	Pk	22.1	-28.8	50.46	82.2	-31.74	0-360	102	V
7	746.8	60.09	Pk	25.2	-28.2	57.09	82.2	-25.11	0-360	102	V
8	747.65	59.35	Pk	25.2	-28.2	56.35	82.2	-25.85	0-360	101	H
9	779.9	55.67	Pk	25.9	-28.1	53.47	82.2	-28.73	0-360	101	H
10	781.05	53.59	Pk	25.9	-28.1	51.39	82.2	-30.81	0-360	102	V
12	1000	52.01	Pk	27.9	-25.7	54.21	82.2	-27.99	0-360	199	H
11	1000	51.26	Pk	27.9	-25.7	53.46	82.2	-28.74	0-360	102	V

Pk - Peak detector

Mode 1, Low Channel, 1-18GHz – Plot



Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

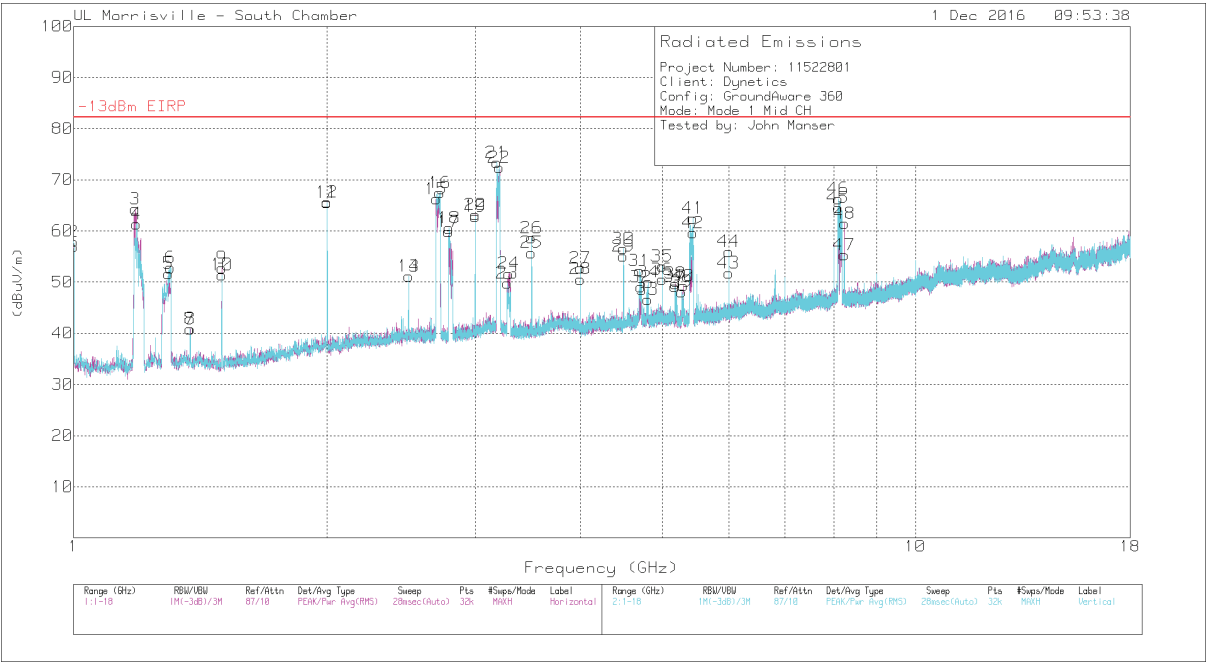
NOTE: Markers 19 & 20 are associated with the EUT's fundamental frequency.

Mode 1, Low Channel, 1-18GHz– Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0069 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1	65.08	Pk	27.5	-35.6	56.98	82.2	-25.22	0-360	299	H
2	1	66.17	Pk	27.5	-35.6	58.07	82.2	-24.13	0-360	201	V
3	1.133	69.42	Pk	27.5	-35.4	61.52	82.2	-20.68	0-360	300	V
4	1.139	68.61	Pk	27.5	-35.4	60.71	82.2	-21.49	0-360	299	H
5	1.348	62.4	Pk	28.8	-35.2	56	82.2	-26.2	0-360	299	H
6	1.352	65.07	Pk	28.8	-35.2	58.67	82.2	-23.53	0-360	300	V
8	1.5	60.24	Pk	27.9	-35.1	53.04	82.2	-29.16	0-360	299	H
7	1.5	60.07	Pk	27.9	-35.1	52.87	82.2	-29.33	0-360	201	V
9	2	68.54	Pk	31.2	-34.7	65.04	82.2	-17.16	0-360	299	H
10	2	68.56	Pk	31.2	-34.7	65.06	82.2	-17.14	0-360	300	V
11	2.5	53.87	Pk	32.5	-34.3	52.07	82.2	-30.13	0-360	299	H
12	2.5	53.63	Pk	32.5	-34.3	51.83	82.2	-30.37	0-360	201	V
14	2.678	69.51	Pk	32.4	-34.3	67.61	82.2	-14.59	0-360	299	H
13	2.678	70.52	Pk	32.4	-34.3	68.62	82.2	-13.58	0-360	201	V
15	2.84	55.34	Pk	32.8	-34	54.14	82.2	-28.06	0-360	299	H
16	2.849	55.32	Pk	32.8	-34	54.12	82.2	-28.08	0-360	300	V
18	3	64.58	Pk	32.8	-34	63.38	82.2	-18.82	0-360	299	H
17	3	64.45	Pk	32.8	-34	63.25	82.2	-18.95	0-360	201	V
19	3.136	78.46	Pk	33.7	-33.8	78.36	82.2	-3.84	0-360	201	V
20	3.161	78.07	Pk	33.5	-33.9	77.67	82.2	-4.53	0-360	299	H
21	3.324	50.9	Pk	32.6	-33.7	49.8	82.2	-32.4	0-360	299	H
22	3.34	49.89	Pk	32.6	-33.6	48.89	82.2	-33.31	0-360	300	V
24	3.5	57.22	Pk	32.9	-33.4	56.72	82.2	-25.48	0-360	299	H
23	3.5	59.37	Pk	32.9	-33.4	58.87	82.2	-23.33	0-360	300	V
25	4	51.25	Pk	33.3	-32.9	51.65	82.2	-30.55	0-360	299	H
26	4	53.49	Pk	33.3	-32.9	53.89	82.2	-28.31	0-360	300	V
28	4.5	53.37	Pk	33.9	-32.6	54.67	82.2	-27.53	0-360	199	H
27	4.5	55	Pk	33.9	-32.6	56.3	82.2	-25.9	0-360	300	V
29	4.664	47.56	Pk	34	-32.1	49.46	82.2	-32.74	0-360	299	H
30	4.666	51.48	Pk	34	-32	53.48	82.2	-28.72	0-360	300	V
31	4.86	46.16	Pk	34.1	-31.7	48.56	82.2	-33.64	0-360	300	V
32	4.865	46.28	Pk	34.1	-31.7	48.68	82.2	-33.52	0-360	299	H
33	5	49.32	Pk	34.1	-31.8	51.62	82.2	-30.58	0-360	299	H
34	5	51.5	Pk	34.1	-31.8	53.8	82.2	-28.4	0-360	300	V
35	5.137	46.04	Pk	34.2	-31.5	48.74	82.2	-33.46	0-360	300	V
36	5.138	45.87	Pk	34.2	-31.5	48.57	82.2	-33.63	0-360	299	H
37	5.302	53.36	Pk	34.4	-31.3	56.46	82.2	-25.74	0-360	300	V
38	5.342	49.44	Pk	34.4	-30.8	53.04	82.2	-29.16	0-360	101	H
39	5.501	48.1	Pk	34.6	-31.2	51.5	82.2	-30.7	0-360	199	H
40	5.501	48.63	Pk	34.6	-31.2	52.03	82.2	-30.17	0-360	101	V
41	6	47.98	Pk	35	-30.6	52.38	82.2	-29.82	0-360	299	H
42	6.001	52.07	Pk	35	-30.6	56.47	82.2	-25.73	0-360	300	V
43	7.951	60.04	Pk	35.8	-28	67.84	82.2	-14.36	0-360	300	V
44	8.038	57.24	Pk	35.7	-28.1	64.84	82.2	-17.36	0-360	299	H

Pk - Peak detector

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



Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

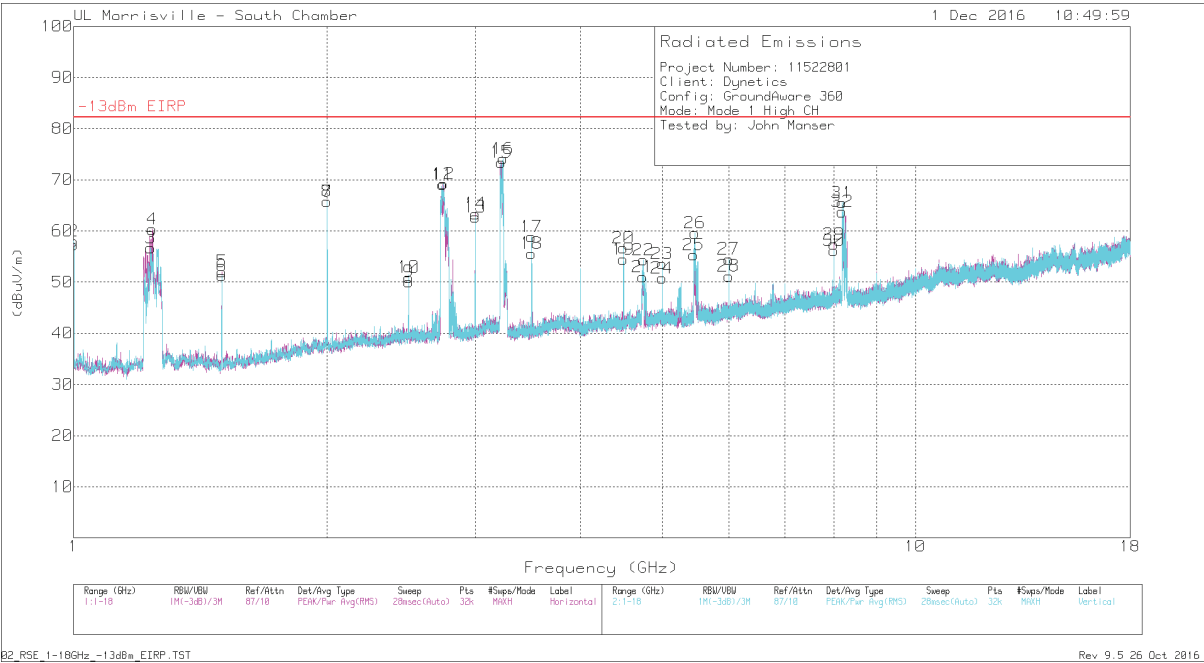
NOTE: Markers 21 & 22 are associated with the EUT’s fundamental frequency.

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

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0069 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1	65.09	Pk	27.5	-35.6	56.99	82.2	-25.21	0-360	299	H
2	1	66.04	Pk	27.5	-35.6	57.94	82.2	-24.26	0-360	201	V
3	1.184	71.81	Pk	28	-35.5	64.31	82.2	-17.89	0-360	299	H
4	1.188	68.79	Pk	28.1	-35.5	61.39	82.2	-20.81	0-360	201	V
5	1.295	58.08	Pk	28.8	-35.2	51.68	82.2	-30.52	0-360	299	H
6	1.304	59.23	Pk	28.8	-35.2	52.83	82.2	-29.37	0-360	300	V
7	1.375	47.21	Pk	28.8	-35.2	40.81	82.2	-41.39	0-360	300	V
8	1.376	47.28	Pk	28.8	-35.2	40.88	82.2	-41.32	0-360	299	H
9	1.5	59.99	Pk	27.9	-35.1	52.79	82.2	-29.41	0-360	299	H
10	1.5	58.65	Pk	27.9	-35.1	51.45	82.2	-30.75	0-360	201	V
12	2	69.14	Pk	31.2	-34.7	65.64	82.2	-16.56	0-360	299	H
11	2	69.08	Pk	31.2	-34.7	65.58	82.2	-16.62	0-360	300	V
13	2.5	52.96	Pk	32.5	-34.3	51.16	82.2	-31.04	0-360	299	H
14	2.5	52.99	Pk	32.5	-34.3	51.19	82.2	-31.01	0-360	201	V
15	2.696	68.15	Pk	32.3	-34.2	66.25	82.2	-15.95	0-360	299	H
16	2.723	69.3	Pk	32.3	-34.1	67.5	82.2	-14.7	0-360	300	V
17	2.79	61.5	Pk	32.4	-34	59.9	82.2	-22.3	0-360	199	H
18	2.794	62.07	Pk	32.5	-34	60.57	82.2	-21.63	0-360	300	V
20	3	64.36	Pk	32.8	-34	63.16	82.2	-19.04	0-360	299	H
19	3	64.07	Pk	32.8	-34	62.87	82.2	-19.33	0-360	201	V
21	3.18	73.69	Pk	33.5	-33.8	73.39	82.2	-8.81	0-360	300	V
22	3.202	72.7	Pk	33.4	-33.7	72.4	82.2	-9.8	0-360	299	H
23	3.275	50.64	Pk	32.9	-33.7	49.84	82.2	-32.36	0-360	201	V
24	3.29	52.61	Pk	32.8	-33.7	51.71	82.2	-30.49	0-360	299	H
25	3.5	56.26	Pk	32.9	-33.4	55.76	82.2	-26.44	0-360	299	H
26	3.5	59.16	Pk	32.9	-33.4	58.66	82.2	-23.54	0-360	300	V
28	4	50.2	Pk	33.3	-32.9	50.6	82.2	-31.6	0-360	299	H
27	4	52.31	Pk	33.3	-32.9	52.71	82.2	-29.49	0-360	300	V
29	4.5	53.79	Pk	33.9	-32.6	55.09	82.2	-27.11	0-360	199	H
30	4.5	55.25	Pk	33.9	-32.6	56.55	82.2	-25.65	0-360	300	V
31	4.705	50.16	Pk	34.1	-32	52.26	82.2	-29.94	0-360	201	V
32	4.717	46.96	Pk	34.1	-32	49.06	82.2	-33.14	0-360	299	H
33	4.811	44.56	Pk	34	-31.9	46.66	82.2	-35.54	0-360	299	H
34	4.82	47.9	Pk	34	-31.9	50	82.2	-32.2	0-360	300	V
36	5	48.26	Pk	34.1	-31.8	50.56	82.2	-31.64	0-360	299	H
35	5	50.83	Pk	34.1	-31.8	53.13	82.2	-29.07	0-360	300	V
37	5.182	46.47	Pk	34.3	-31.6	49.17	82.2	-33.03	0-360	201	V
38	5.19	47.14	Pk	34.3	-31.7	49.74	82.2	-32.46	0-360	299	H
39	5.277	45.15	Pk	34.4	-31.4	48.15	82.2	-34.05	0-360	300	V
40	5.303	46.2	Pk	34.4	-31.3	49.3	82.2	-32.9	0-360	299	H
41	5.441	59.3	Pk	34.6	-31.4	62.5	82.2	-19.7	0-360	300	V
42	5.444	56.31	Pk	34.6	-31.3	59.61	82.2	-22.59	0-360	199	H
43	6.001	47.41	Pk	35	-30.6	51.81	82.2	-30.39	0-360	299	H
44	6.001	51.6	Pk	35	-30.6	56	82.2	-26.2	0-360	300	V
45	8.095	56.83	Pk	35.7	-28	64.53	82.2	-17.67	0-360	299	H
46	8.103	58.71	Pk	35.7	-28.1	66.31	82.2	-15.89	0-360	201	V
47	8.232	47.6	Pk	35.7	-28	55.3	82.2	-26.9	0-360	300	V
48	8.238	53.78	Pk	35.7	-28	61.48	82.2	-20.72	0-360	299	H

Pk - Peak detector

Mode 1, High Channel, 1-18GHz – Plot



Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

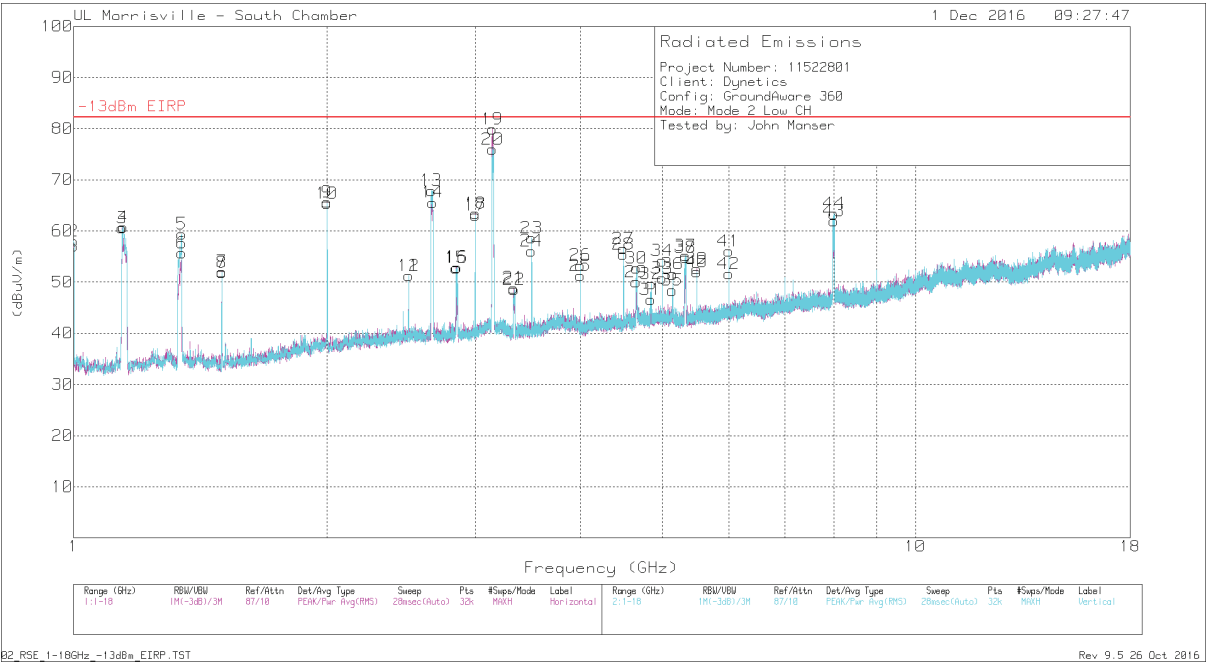
NOTE: Markers 15 & 16 are associated with the EUT’s fundamental frequency.

Mode 1, High Channel, 1-18GHz-- Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0069 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1	65.37	Pk	27.5	-35.6	57.27	82.2	-24.93	0-360	299	H
2	1	66.16	Pk	27.5	-35.6	58.06	82.2	-24.14	0-360	201	V
3	1.234	63.45	Pk	28.6	-35.4	56.65	82.2	-25.55	0-360	201	V
4	1.24	67.13	Pk	28.6	-35.4	60.33	82.2	-21.87	0-360	299	H
5	1.5	59.26	Pk	27.9	-35.1	52.06	82.2	-30.14	0-360	299	H
6	1.5	58.44	Pk	27.9	-35.1	51.24	82.2	-30.96	0-360	201	V
8	2	69.29	Pk	31.2	-34.7	65.79	82.2	-16.41	0-360	299	H
7	2	69.31	Pk	31.2	-34.7	65.81	82.2	-16.39	0-360	300	V
9	2.5	51.88	Pk	32.5	-34.3	50.08	82.2	-32.12	0-360	299	H
10	2.5	52.76	Pk	32.5	-34.3	50.96	82.2	-31.24	0-360	201	V
11	2.746	70.96	Pk	32.2	-34.1	69.06	82.2	-13.14	0-360	199	H
12	2.751	71.24	Pk	32.2	-34.2	69.24	82.2	-12.96	0-360	101	V
14	3	64.56	Pk	32.8	-34	63.36	82.2	-18.84	0-360	299	H
13	3	63.96	Pk	32.8	-34	62.76	82.2	-19.44	0-360	201	V
15	3.223	73.95	Pk	33.3	-33.8	73.45	82.2	-8.75	0-360	299	H
16	3.236	74.66	Pk	33.2	-33.7	74.16	82.2	-8.04	0-360	300	V
18	3.5	56.12	Pk	32.9	-33.4	55.62	82.2	-26.58	0-360	299	H
17	3.5	59.36	Pk	32.9	-33.4	58.86	82.2	-23.34	0-360	300	V
19	4.5	53.17	Pk	33.9	-32.6	54.47	82.2	-27.73	0-360	199	H
20	4.5	55.39	Pk	33.9	-32.6	56.69	82.2	-25.51	0-360	300	V
21	4.742	49.13	Pk	34	-32.1	51.03	82.2	-31.17	0-360	299	H
22	4.75	52.46	Pk	34	-32.1	54.36	82.2	-27.84	0-360	300	V
24	5	48.51	Pk	34.1	-31.8	50.81	82.2	-31.39	0-360	299	H
23	5	51.28	Pk	34.1	-31.8	53.58	82.2	-28.62	0-360	300	V
25	5.454	52.06	Pk	34.6	-31.3	55.36	82.2	-26.84	0-360	299	H
26	5.471	56.39	Pk	34.6	-31.4	59.59	82.2	-22.61	0-360	300	V
28	6.001	46.8	Pk	35	-30.6	51.2	82.2	-31	0-360	299	H
27	6.001	50.12	Pk	35	-30.6	54.52	82.2	-27.68	0-360	300	V
29	8.001	49.59	Pk	35.8	-28	57.39	82.2	-24.81	0-360	299	H
30	8.001	48.4	Pk	35.8	-28	56.2	82.2	-26	0-360	300	V
31	8.181	57.9	Pk	35.7	-28.1	65.5	82.2	-16.7	0-360	300	V
32	8.189	56.17	Pk	35.7	-28.1	63.77	82.2	-18.43	0-360	299	H

Pk - Peak detector

Mode 2, Low Channel, 1-18GHz – Plot



Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

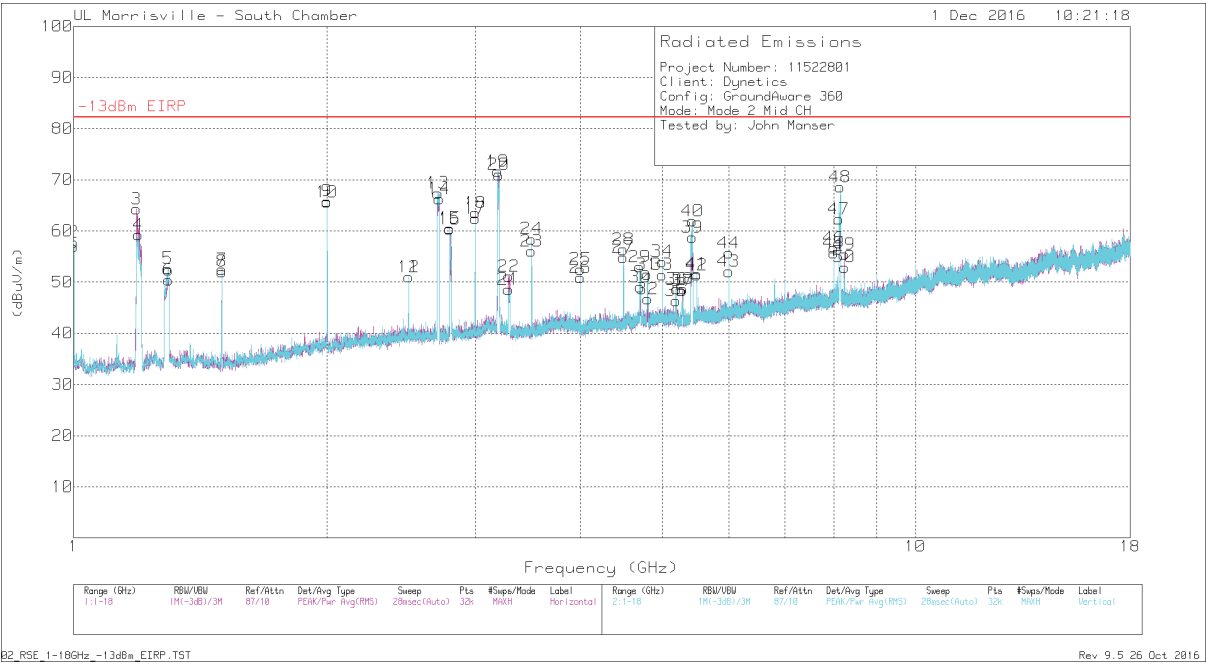
NOTE: Markers 19 & 20 are associated with the EUT’s fundamental frequency.

Mode 2, Low Channel, 1-18GHz– Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0069 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1	65.19	Pk	27.5	-35.6	57.09	82.2	-25.11	0-360	299	H
2	1	66.16	Pk	27.5	-35.6	58.06	82.2	-24.14	0-360	201	V
3	1.142	68.52	Pk	27.5	-35.4	60.62	82.2	-21.58	0-360	299	H
4	1.145	68.75	Pk	27.4	-35.4	60.75	82.2	-21.45	0-360	201	V
6	1.343	62.06	Pk	28.8	-35.2	55.66	82.2	-26.54	0-360	299	H
5	1.343	65.82	Pk	28.8	-35.2	59.42	82.2	-22.78	0-360	300	V
7	1.5	59.25	Pk	27.9	-35.1	52.05	82.2	-30.15	0-360	299	H
8	1.5	59.11	Pk	27.9	-35.1	51.91	82.2	-30.29	0-360	201	V
9	2	69.14	Pk	31.2	-34.7	65.64	82.2	-16.56	0-360	299	H
10	2	68.9	Pk	31.2	-34.7	65.4	82.2	-16.8	0-360	300	V
11	2.5	53.08	Pk	32.5	-34.3	51.28	82.2	-30.92	0-360	299	H
12	2.5	53.09	Pk	32.5	-34.3	51.29	82.2	-30.91	0-360	201	V
13	2.659	69.71	Pk	32.5	-34.3	67.91	82.2	-14.29	0-360	300	V
14	2.671	67.5	Pk	32.4	-34.3	65.6	82.2	-16.6	0-360	299	H
15	2.848	54.01	Pk	32.8	-34	52.81	82.2	-29.39	0-360	299	H
16	2.853	54.13	Pk	32.8	-34	52.93	82.2	-29.27	0-360	300	V
18	3	64.66	Pk	32.8	-34	63.46	82.2	-18.74	0-360	299	H
17	3	64.25	Pk	32.8	-34	63.05	82.2	-19.15	0-360	201	V
19	3.144	80.12	Pk	33.6	-33.8	79.92	82.2	-2.28	0-360	299	H
20	3.146	76.08	Pk	33.6	-33.7	75.98	82.2	-6.22	0-360	201	V
21	3.334	49.87	Pk	32.6	-33.6	48.87	82.2	-33.33	0-360	299	H
22	3.337	49.58	Pk	32.6	-33.6	48.58	82.2	-33.62	0-360	300	V
24	3.5	56.62	Pk	32.9	-33.4	56.12	82.2	-26.08	0-360	299	H
23	3.5	59.16	Pk	32.9	-33.4	58.66	82.2	-23.54	0-360	300	V
25	4	50.86	Pk	33.3	-32.9	51.26	82.2	-30.94	0-360	299	H
26	4	52.9	Pk	33.3	-32.9	53.3	82.2	-28.9	0-360	300	V
28	4.5	54.18	Pk	33.9	-32.6	55.48	82.2	-26.72	0-360	199	H
27	4.5	55.24	Pk	33.9	-32.6	56.54	82.2	-25.66	0-360	300	V
29	4.658	48.13	Pk	34	-32.1	50.03	82.2	-32.17	0-360	299	H
30	4.661	50.81	Pk	34	-32.1	52.71	82.2	-29.49	0-360	300	V
31	4.848	44.23	Pk	34.2	-31.8	46.63	82.2	-35.57	0-360	299	H
32	4.855	47.19	Pk	34.2	-31.7	49.69	82.2	-32.51	0-360	201	V
33	5	48.46	Pk	34.1	-31.8	50.76	82.2	-31.44	0-360	299	H
34	5	51.88	Pk	34.1	-31.8	54.18	82.2	-28.02	0-360	300	V
35	5.142	45.7	Pk	34.2	-31.5	48.4	82.2	-33.8	0-360	299	H
36	5.153	48.9	Pk	34.2	-31.5	51.6	82.2	-30.6	0-360	300	V
38	5.334	51.24	Pk	34.4	-30.8	54.84	82.2	-27.36	0-360	299	H
37	5.334	51.62	Pk	34.4	-30.8	55.22	82.2	-26.98	0-360	300	V
39	5.501	49.23	Pk	34.6	-31.2	52.63	82.2	-29.57	0-360	199	H
40	5.501	48.62	Pk	34.6	-31.2	52.02	82.2	-30.18	0-360	201	V
42	6.001	47.21	Pk	35	-30.6	51.61	82.2	-30.59	0-360	299	H
41	6.001	51.66	Pk	35	-30.6	56.06	82.2	-26.14	0-360	300	V
43	7.999	54.13	Pk	35.8	-28	61.93	82.2	-20.27	0-360	299	H
44	8.008	55.59	Pk	35.8	-28	63.39	82.2	-18.81	0-360	300	V

Pk - Peak detector

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



Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

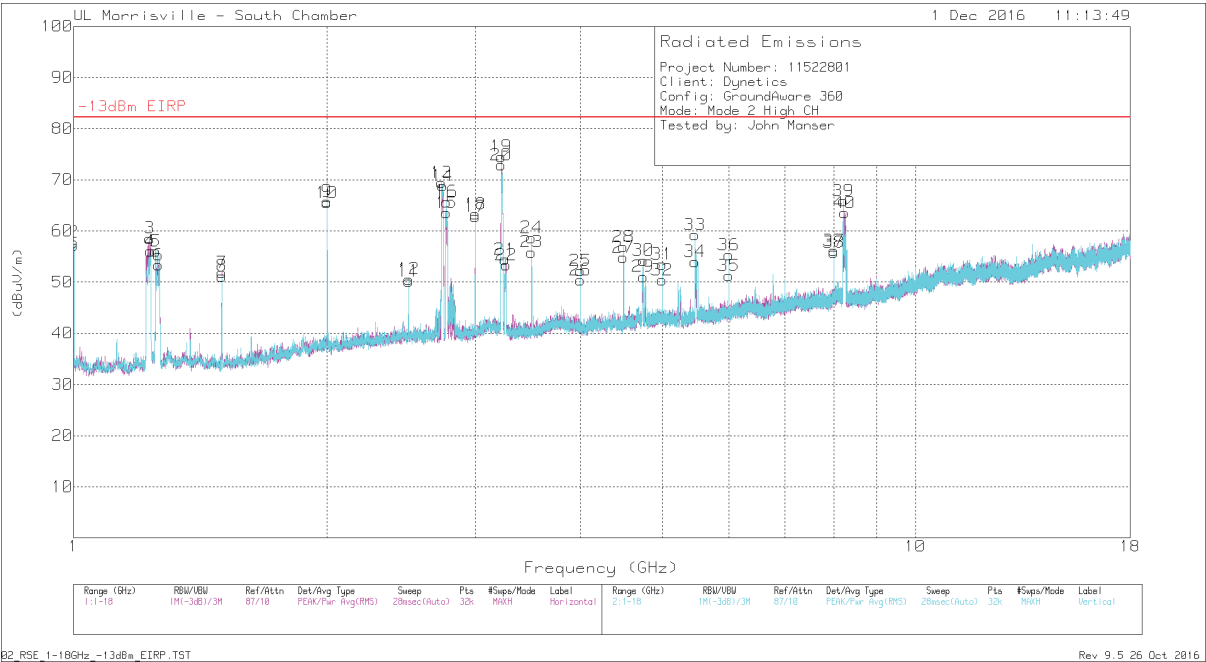
NOTE: Markers 19 & 20 are associated with the EUT's fundamental frequency.

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

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0069 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1	65.09	Pk	27.5	-35.6	56.99	82.2	-25.21	0-360	299	H
2	1	65.93	Pk	27.5	-35.6	57.83	82.2	-24.37	0-360	201	V
3	1.188	71.72	Pk	28.1	-35.5	64.32	82.2	-17.88	0-360	299	H
4	1.193	66.67	Pk	28.1	-35.5	59.27	82.2	-22.93	0-360	201	V
5	1.295	59.06	Pk	28.8	-35.2	52.66	82.2	-29.54	0-360	101	V
6	1.296	56.8	Pk	28.8	-35.2	50.4	82.2	-31.8	0-360	199	H
7	1.5	59.72	Pk	27.9	-35.1	52.52	82.2	-29.68	0-360	299	H
8	1.5	59.28	Pk	27.9	-35.1	52.08	82.2	-30.12	0-360	201	V
10	2	69.13	Pk	31.2	-34.7	65.63	82.2	-16.57	0-360	299	H
9	2	69.34	Pk	31.2	-34.7	65.84	82.2	-16.36	0-360	299	V
11	2.5	52.8	Pk	32.5	-34.3	51	82.2	-31.2	0-360	299	H
12	2.5	52.86	Pk	32.5	-34.3	51.06	82.2	-31.14	0-360	201	V
13	2.709	69.33	Pk	32.3	-34.2	67.43	82.2	-14.77	0-360	201	V
14	2.719	68.11	Pk	32.3	-34.1	66.31	82.2	-15.89	0-360	299	H
15	2.798	62.05	Pk	32.5	-34	60.55	82.2	-21.65	0-360	299	H
16	2.798	61.85	Pk	32.5	-34	60.35	82.2	-21.85	0-360	299	V
18	3	64.76	Pk	32.8	-34	63.56	82.2	-18.64	0-360	299	H
17	3	63.71	Pk	32.8	-34	62.51	82.2	-19.69	0-360	201	V
19	3.19	72.04	Pk	33.4	-33.8	71.64	82.2	-10.56	0-360	201	V
20	3.2	71.31	Pk	33.4	-33.7	71.01	82.2	-11.19	0-360	299	H
21	3.286	49.51	Pk	32.8	-33.7	48.61	82.2	-33.59	0-360	299	V
22	3.287	52.08	Pk	32.8	-33.7	51.18	82.2	-31.02	0-360	299	H
23	3.5	56.57	Pk	32.9	-33.4	56.07	82.2	-26.13	0-360	299	H
24	3.5	58.97	Pk	32.9	-33.4	58.47	82.2	-23.73	0-360	299	V
26	4	50.53	Pk	33.3	-32.9	50.93	82.2	-31.27	0-360	299	H
25	4	52.16	Pk	33.3	-32.9	52.56	82.2	-29.64	0-360	299	V
27	4.5	53.59	Pk	33.9	-32.6	54.89	82.2	-27.31	0-360	199	H
28	4.5	55.09	Pk	33.9	-32.6	56.39	82.2	-25.81	0-360	299	V
29	4.706	50.88	Pk	34.1	-32	52.98	82.2	-29.22	0-360	201	V
30	4.709	46.93	Pk	34.1	-32	49.03	82.2	-33.17	0-360	299	H
31	4.797	49.5	Pk	34	-32	51.5	82.2	-30.7	0-360	299	V
32	4.808	44.6	Pk	34	-31.9	46.7	82.2	-35.5	0-360	299	H
33	5	49.16	Pk	34.1	-31.8	51.46	82.2	-30.74	0-360	199	H
34	5	51.73	Pk	34.1	-31.8	54.03	82.2	-28.17	0-360	299	V
35	5.196	43.87	Pk	34.3	-31.8	46.37	82.2	-35.83	0-360	299	H
36	5.202	46.17	Pk	34.3	-31.8	48.67	82.2	-33.53	0-360	101	V
37	5.288	45.1	Pk	34.4	-31.2	48.3	82.2	-33.9	0-360	299	V
38	5.292	45.5	Pk	34.4	-31.2	48.7	82.2	-33.5	0-360	299	H
39	5.433	55.44	Pk	34.6	-31.3	58.74	82.2	-23.46	0-360	299	H
40	5.437	58.66	Pk	34.6	-31.3	61.96	82.2	-20.24	0-360	299	V
42	5.501	48.02	Pk	34.6	-31.2	51.42	82.2	-30.78	0-360	199	H
41	5.501	48.21	Pk	34.6	-31.2	51.61	82.2	-30.59	0-360	299	V
43	6	47.69	Pk	35	-30.6	52.09	82.2	-30.11	0-360	299	H
44	6.001	51.3	Pk	35	-30.6	55.7	82.2	-26.5	0-360	299	V
46	8.001	48.9	Pk	35.8	-28	56.7	82.2	-25.5	0-360	299	H
45	8.001	47.92	Pk	35.8	-28	55.72	82.2	-26.48	0-360	299	V
47	8.112	54.72	Pk	35.7	-28.1	62.32	82.2	-19.88	0-360	199	H
48	8.138	61.02	Pk	35.7	-28.1	68.62	82.2	-13.58	0-360	299	V
49	8.233	47.72	Pk	35.7	-28	55.42	82.2	-26.78	0-360	299	H
50	8.235	45.24	Pk	35.7	-28	52.94	82.2	-29.26	0-360	299	V

Pk - Peak detector

Mode 2, High Channel, 1-18GHz – Plot



Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

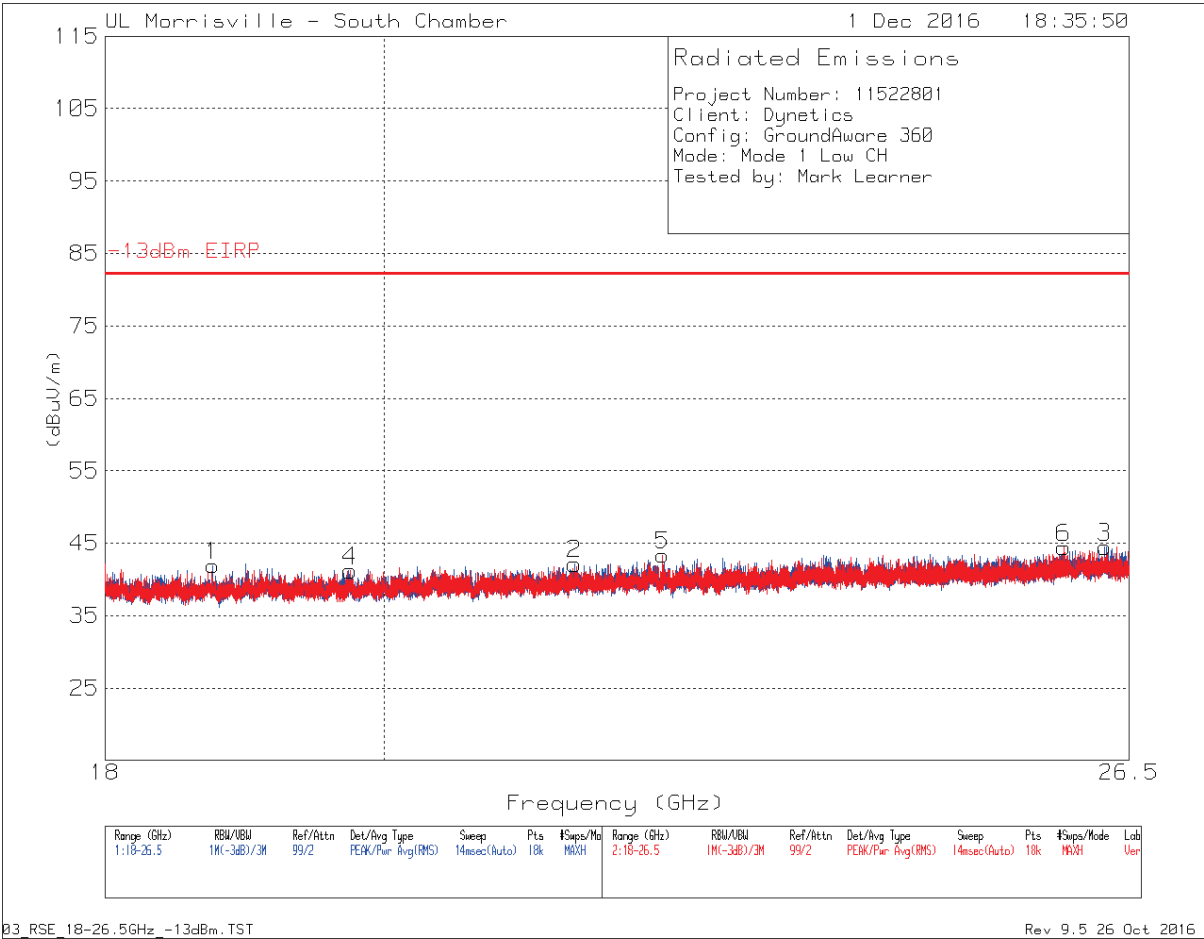
NOTE: Markers 19 & 20 are associated with the EUT’s fundamental frequency.

Mode 2, High Channel, 1-18GHz-- Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0069 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1	65.34	Pk	27.5	-35.6	57.24	82.2	-24.96	0-360	299	H
2	1	65.93	Pk	27.5	-35.6	57.83	82.2	-24.37	0-360	201	V
3	1.231	65.39	Pk	28.6	-35.4	58.59	82.2	-23.61	0-360	299	H
4	1.234	62.85	Pk	28.6	-35.4	56.05	82.2	-26.15	0-360	299	V
5	1.251	62.77	Pk	28.7	-35.4	56.07	82.2	-26.13	0-360	299	V
6	1.261	59.94	Pk	28.7	-35.3	53.34	82.2	-28.86	0-360	100	H
7	1.5	59.1	Pk	27.9	-35.1	51.9	82.2	-30.3	0-360	299	H
8	1.5	58.41	Pk	27.9	-35.1	51.21	82.2	-30.99	0-360	201	V
10	2	69.04	Pk	31.2	-34.7	65.54	82.2	-16.66	0-360	299	H
9	2	69.32	Pk	31.2	-34.7	65.82	82.2	-16.38	0-360	299	V
11	2.5	52.01	Pk	32.5	-34.3	50.21	82.2	-31.99	0-360	299	H
12	2.5	52.4	Pk	32.5	-34.3	50.6	82.2	-31.6	0-360	201	V
13	2.736	71.34	Pk	32.2	-34.1	69.44	82.2	-12.76	0-360	299	V
14	2.746	70.76	Pk	32.2	-34.1	68.86	82.2	-13.34	0-360	199	H
15	2.773	65.27	Pk	32.3	-34	63.57	82.2	-18.63	0-360	199	H
16	2.775	67.31	Pk	32.4	-34	65.71	82.2	-16.49	0-360	299	V
18	3	64.54	Pk	32.8	-34	63.34	82.2	-18.86	0-360	299	H
17	3	64	Pk	32.8	-34	62.8	82.2	-19.4	0-360	201	V
19	3.222	75.07	Pk	33.3	-33.8	74.57	82.2	-7.63	0-360	299	H
20	3.222	73.41	Pk	33.3	-33.8	72.91	82.2	-9.29	0-360	299	V
21	3.254	54.94	Pk	33.1	-33.6	54.44	82.2	-27.76	0-360	201	V
22	3.264	53.97	Pk	33.1	-33.7	53.37	82.2	-28.83	0-360	299	H
23	3.5	56.39	Pk	32.9	-33.4	55.89	82.2	-26.31	0-360	299	H
24	3.5	59.19	Pk	32.9	-33.4	58.69	82.2	-23.51	0-360	299	V
26	4	50.05	Pk	33.3	-32.9	50.45	82.2	-31.75	0-360	299	H
25	4	51.82	Pk	33.3	-32.9	52.22	82.2	-29.98	0-360	299	V
27	4.5	53.51	Pk	33.9	-32.6	54.81	82.2	-27.39	0-360	199	H
28	4.5	55.59	Pk	33.9	-32.6	56.89	82.2	-25.31	0-360	299	V
29	4.749	49.19	Pk	34	-32.1	51.09	82.2	-31.11	0-360	299	H
30	4.75	52.38	Pk	34	-32.1	54.28	82.2	-27.92	0-360	299	V
32	5	48.13	Pk	34.1	-31.8	50.43	82.2	-31.77	0-360	199	H
31	5	51.22	Pk	34.1	-31.8	53.52	82.2	-28.68	0-360	299	V
34	5.474	50.82	Pk	34.6	-31.4	54.02	82.2	-28.18	0-360	199	H
33	5.474	56.05	Pk	34.6	-31.4	59.25	82.2	-22.95	0-360	299	V
35	6.001	46.85	Pk	35	-30.6	51.25	82.2	-30.95	0-360	299	H
36	6.001	50.9	Pk	35	-30.6	55.3	82.2	-26.9	0-360	299	V
38	8.001	48	Pk	35.8	-28	55.8	82.2	-26.4	0-360	299	H
37	8.001	48.38	Pk	35.8	-28	56.18	82.2	-26.02	0-360	299	V
39	8.216	58.32	Pk	35.7	-28.1	65.92	82.2	-16.28	0-360	299	V
40	8.237	55.86	Pk	35.7	-28	63.56	82.2	-18.64	0-360	299	H

Pk - Peak detector

Mode 1, Low Channel, 18-26.5GHz – Plot



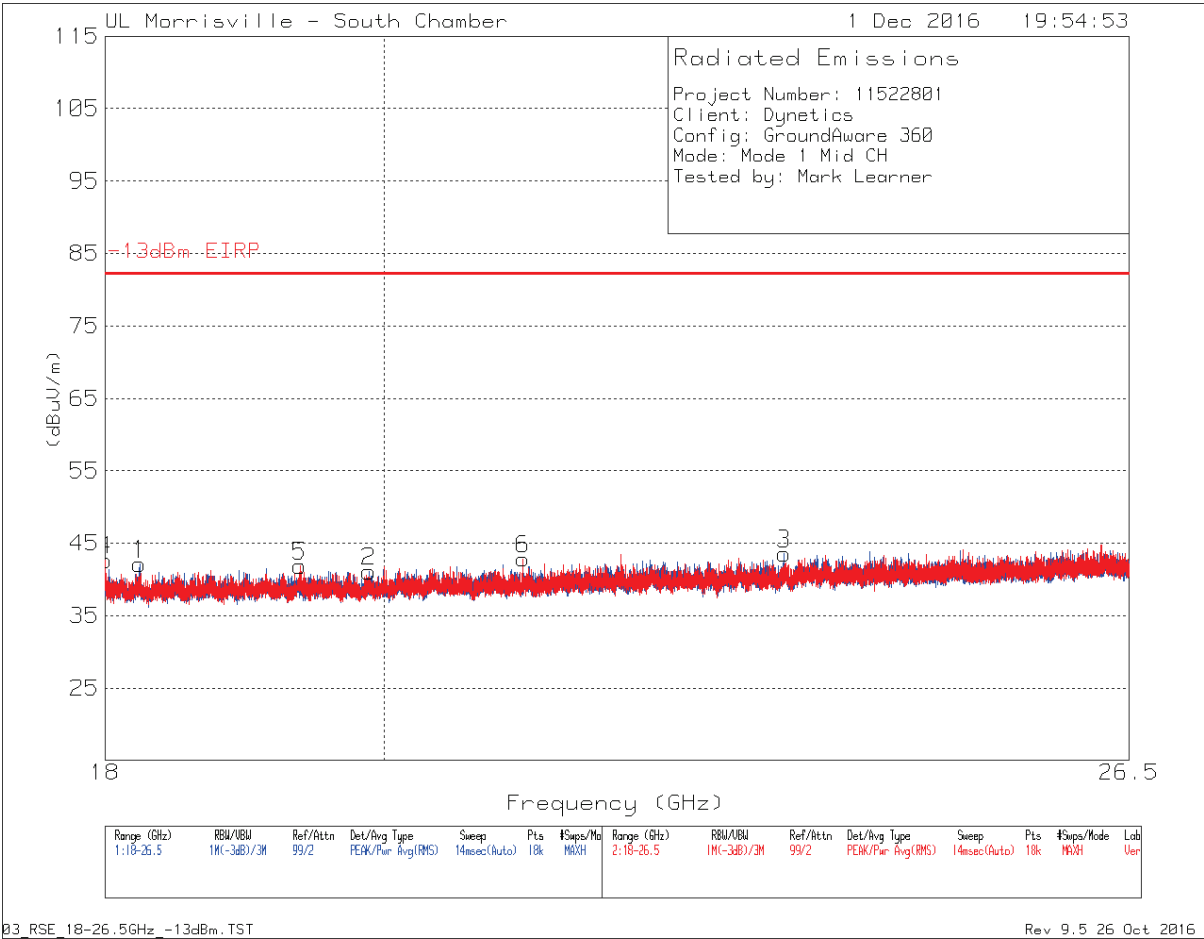
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 1, Low Channel, 18-26.5GHz-- Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0076 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.748	50.04	Pk	32.7	-40.8	41.94	82.2	-40.26	0-360	249	H
4	19.746	48.9	Pk	32.8	-40.5	41.2	82.2	-41	0-360	101	V
2	21.492	49.06	Pk	33.2	-40.1	42.16	82.2	-40.04	0-360	199	H
5	22.219	49.49	Pk	33.4	-39.5	43.39	82.2	-38.81	0-360	101	V
6	25.858	47.64	Pk	34.5	-37.7	44.44	82.2	-37.76	0-360	201	V
3	26.259	47.06	Pk	34.8	-37.4	44.46	82.2	-37.74	0-360	299	H

Pk - Peak detector

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



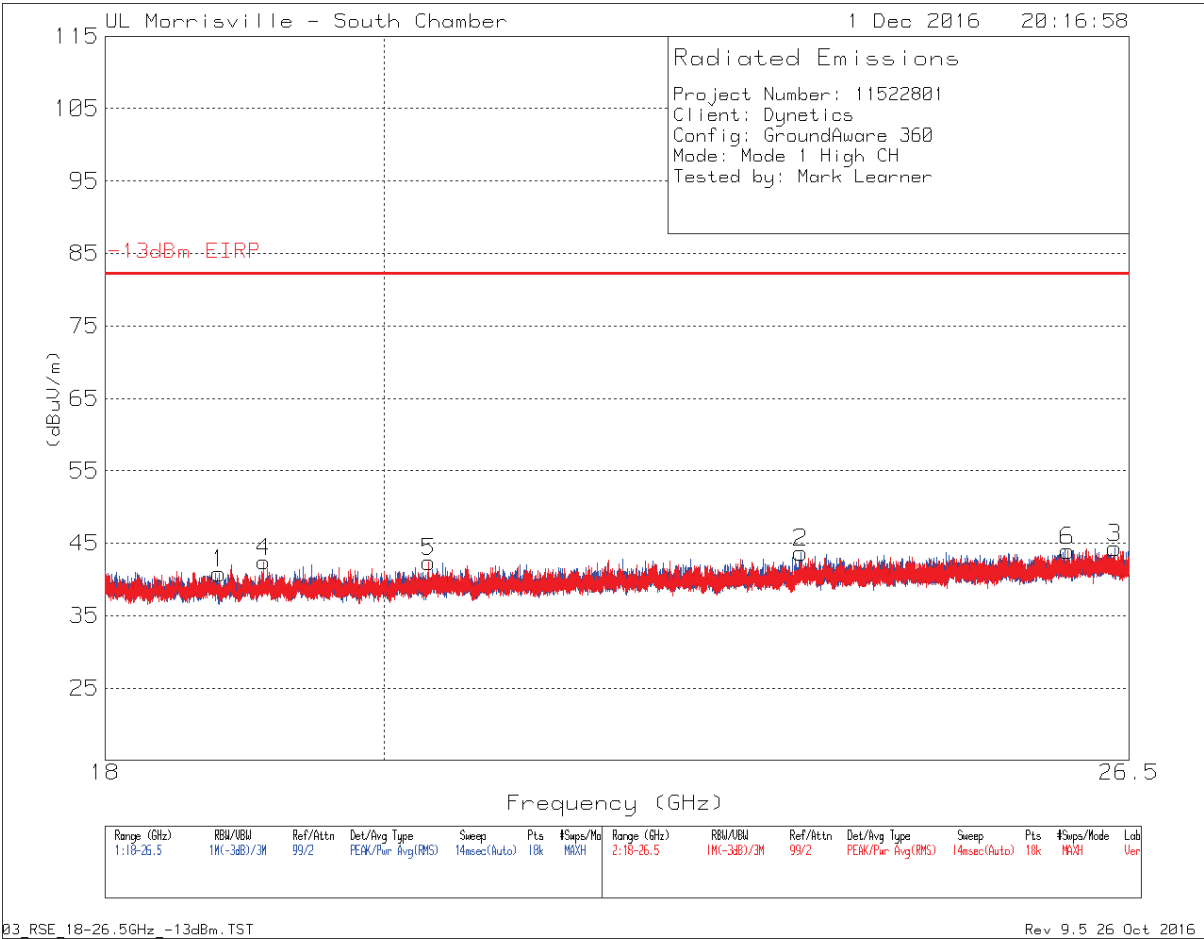
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

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

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0076 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	18.001	50.89	Pk	33	-41.2	42.69	82.2	-39.51	0-360	299	V
1	18.236	50.42	Pk	32.6	-40.9	42.12	82.2	-40.08	0-360	101	H
5	19.374	49.67	Pk	32.9	-40.7	41.87	82.2	-40.33	0-360	151	V
2	19.885	48.53	Pk	33.1	-40.5	41.13	82.2	-41.07	0-360	299	H
6	21.078	49.67	Pk	33.2	-40	42.87	82.2	-39.33	0-360	251	V
3	23.266	48.94	Pk	33.8	-39.2	43.54	82.2	-38.66	0-360	101	H

Pk - Peak detector

Mode 1, High Channel, 18-26.5GHz – Plot



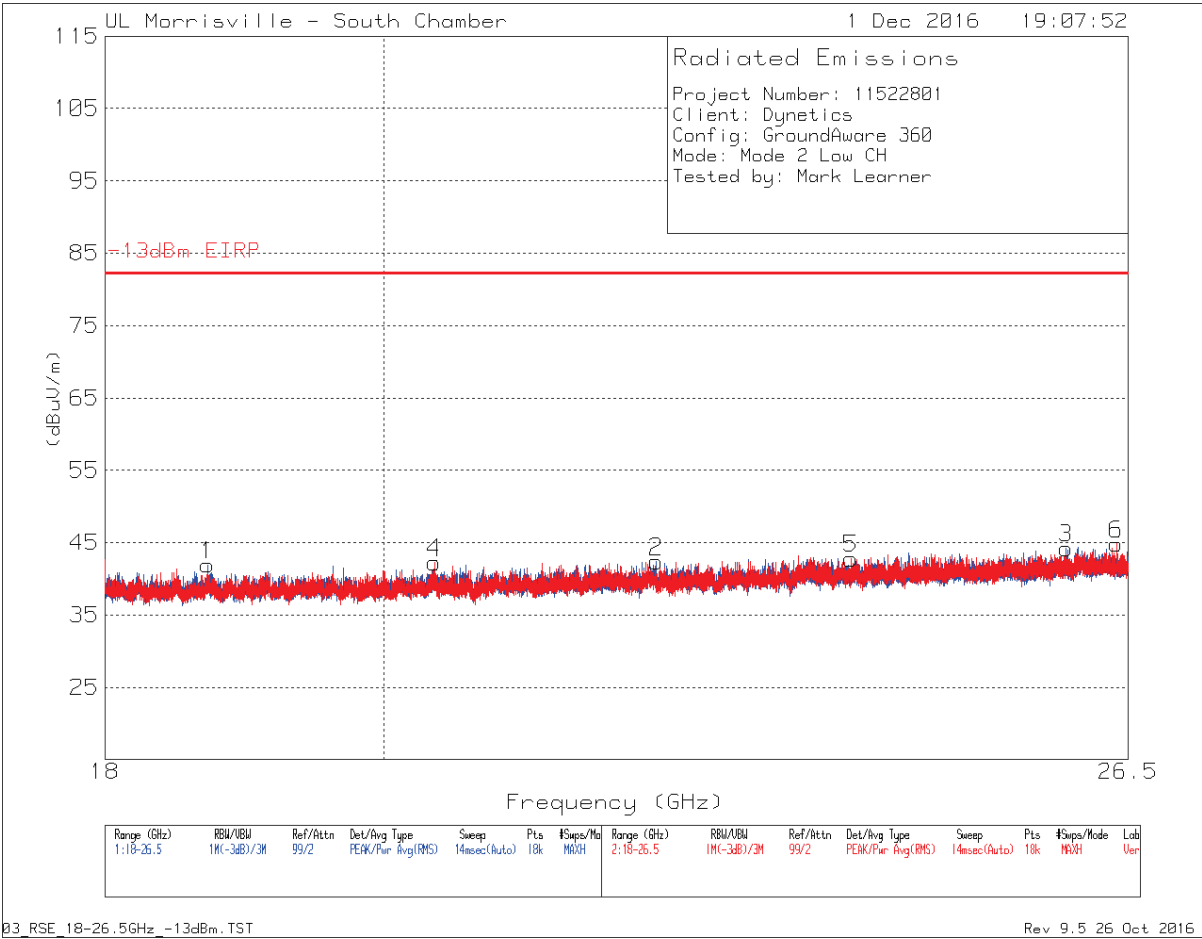
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 1, High Channel, 18-26.5GHz– Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0076 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.791	49.06	Pk	32.6	-40.8	40.86	82.2	-41.34	0-360	149	H
4	19.112	50.45	Pk	32.8	-40.8	42.45	82.2	-39.75	0-360	299	V
5	20.342	49.33	Pk	33.2	-40.1	42.43	82.2	-39.77	0-360	201	V
2	23.411	48.82	Pk	34.1	-39.2	43.72	82.2	-38.48	0-360	149	H
6	25.892	47.16	Pk	34.3	-37.5	43.96	82.2	-38.24	0-360	151	V
3	26.358	47.16	Pk	34.6	-37.4	44.36	82.2	-37.84	0-360	102	H

Pk - Peak detector

Mode 2, Low Channel, 18-26.5GHz – Plot



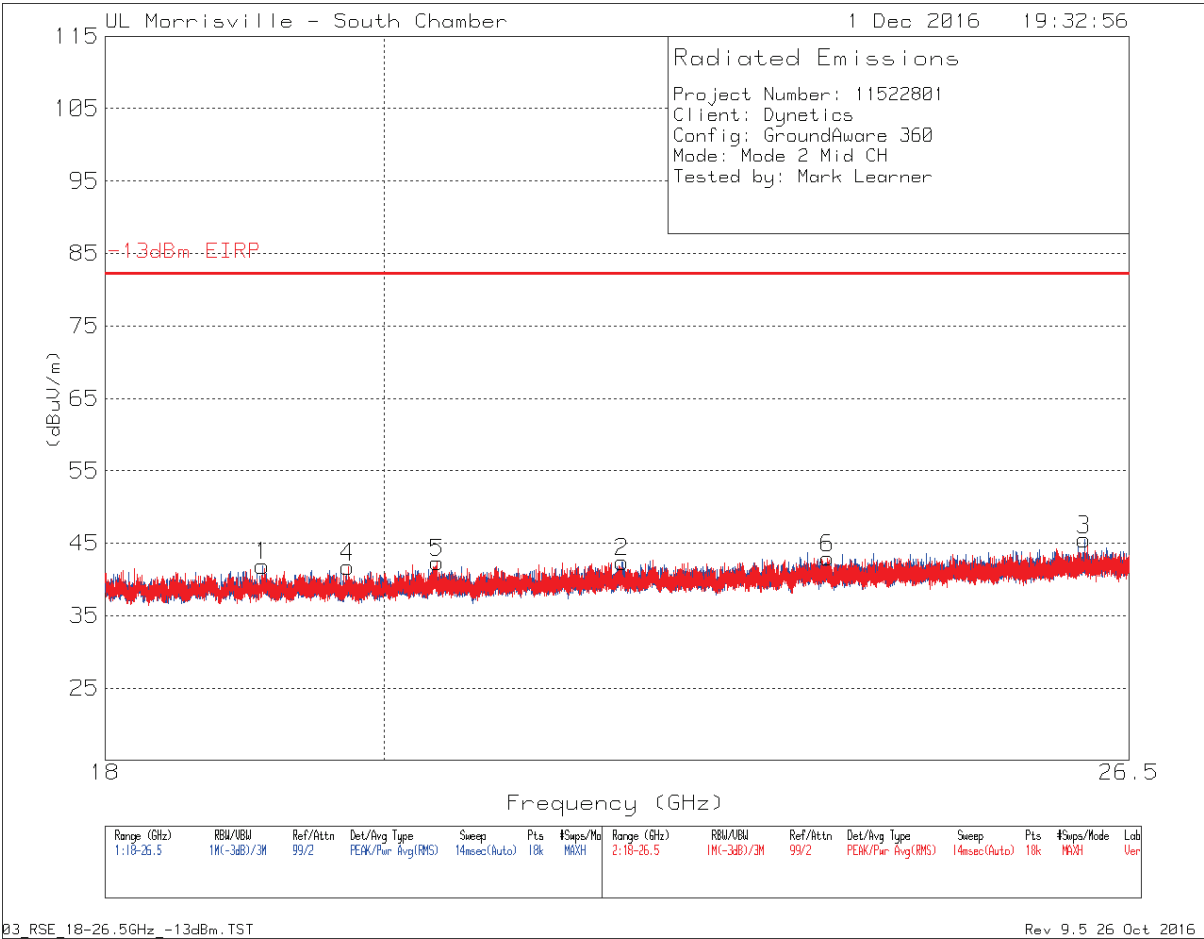
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 2, Low Channel, 18-26.5GHz-- Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0076 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.711	49.73	Pk	32.7	-40.5	41.93	82.2	-40.27	0-360	149	H
4	20.387	48.94	Pk	33.3	-40	42.24	82.2	-39.96	0-360	251	V
2	22.171	48.77	Pk	33.4	-39.8	42.37	82.2	-39.83	0-360	102	H
5	23.866	47.91	Pk	34	-39.1	42.81	82.2	-39.39	0-360	101	V
3	25.888	47.45	Pk	34.4	-37.6	44.25	82.2	-37.95	0-360	299	H
6	26.384	47.53	Pk	34.6	-37.3	44.83	82.2	-37.37	0-360	251	V

Pk - Peak detector

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



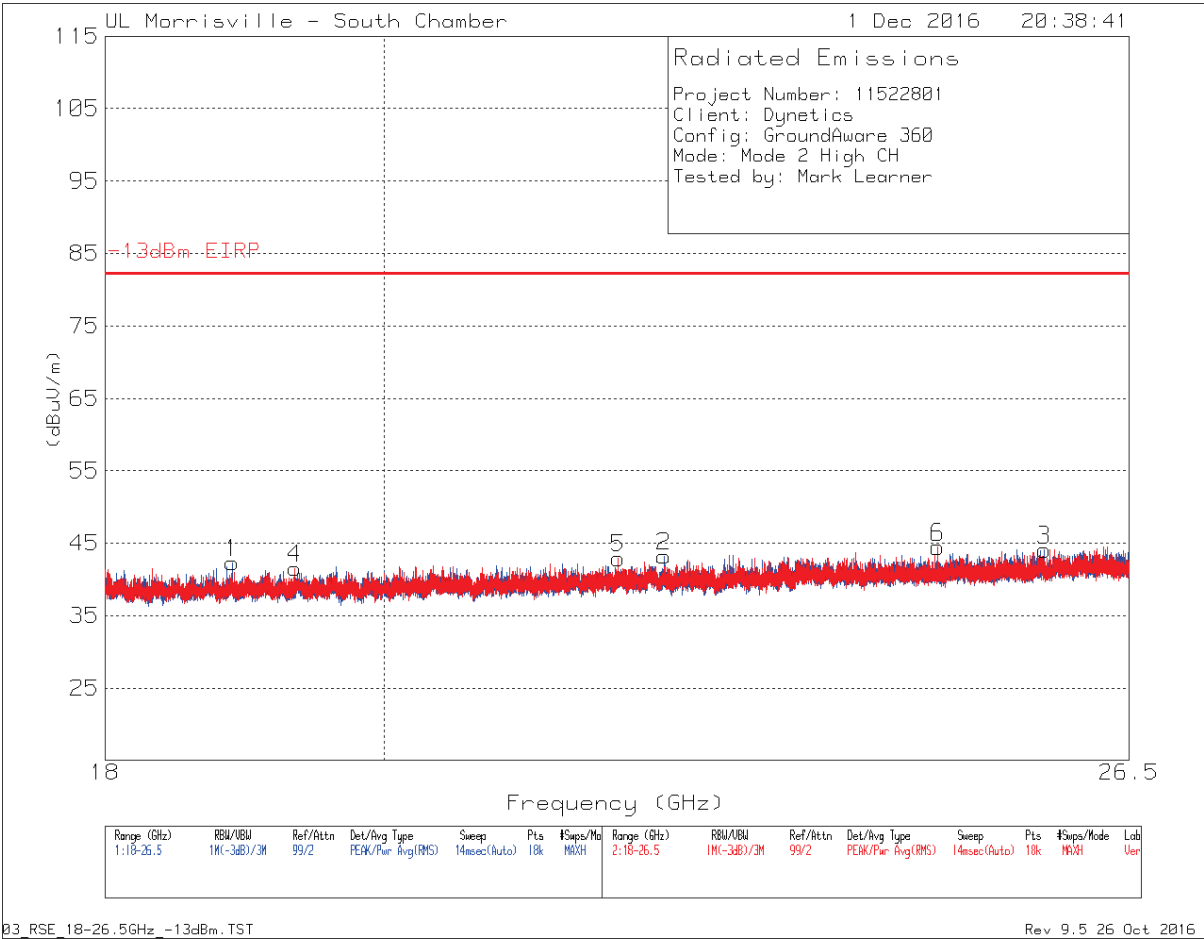
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

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

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0076 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	19.101	49.9	Pk	32.7	-40.7	41.9	82.2	-40.3	0-360	199	H
4	19.729	49.32	Pk	32.8	-40.4	41.72	82.2	-40.48	0-360	201	V
5	20.406	49.36	Pk	33.3	-40.3	42.36	82.2	-39.84	0-360	201	V
2	21.883	48.92	Pk	33.4	-39.9	42.42	82.2	-39.78	0-360	149	H
6	23.649	48.18	Pk	33.9	-39.1	42.98	82.2	-39.22	0-360	300	V
3	26.057	48.51	Pk	34.6	-37.6	45.51	82.2	-36.69	0-360	249	H

Pk - Peak detector

Mode 2, High Channel, 18-26.5GHz – Plot



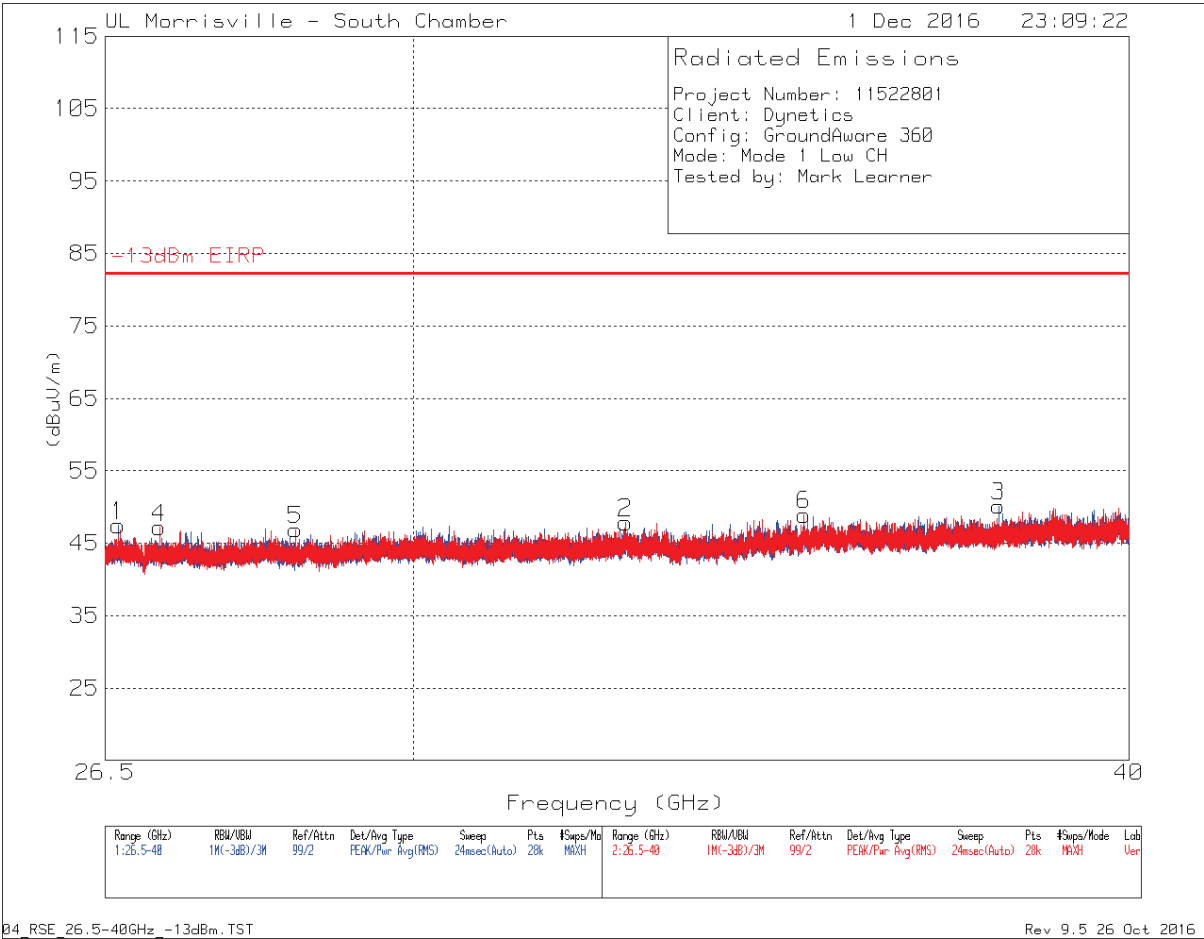
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 2, High Channel, 18-26.5GHz– Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0076 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	18.885	50.23	Pk	32.8	-40.7	42.33	82.2	-39.87	0-360	149	H
4	19.337	49.36	Pk	32.8	-40.6	41.56	82.2	-40.64	0-360	201	V
5	21.85	49.24	Pk	33.4	-39.7	42.94	82.2	-39.26	0-360	251	V
2	22.233	49.42	Pk	33.4	-39.6	43.22	82.2	-38.98	0-360	102	H
6	24.654	48.75	Pk	34.2	-38.5	44.45	82.2	-37.75	0-360	151	V
3	25.667	47.67	Pk	34.3	-37.9	44.07	82.2	-38.13	0-360	102	H

Pk - Peak detector

Mode 1, Low Channel, Above 26.5GHz – Plot



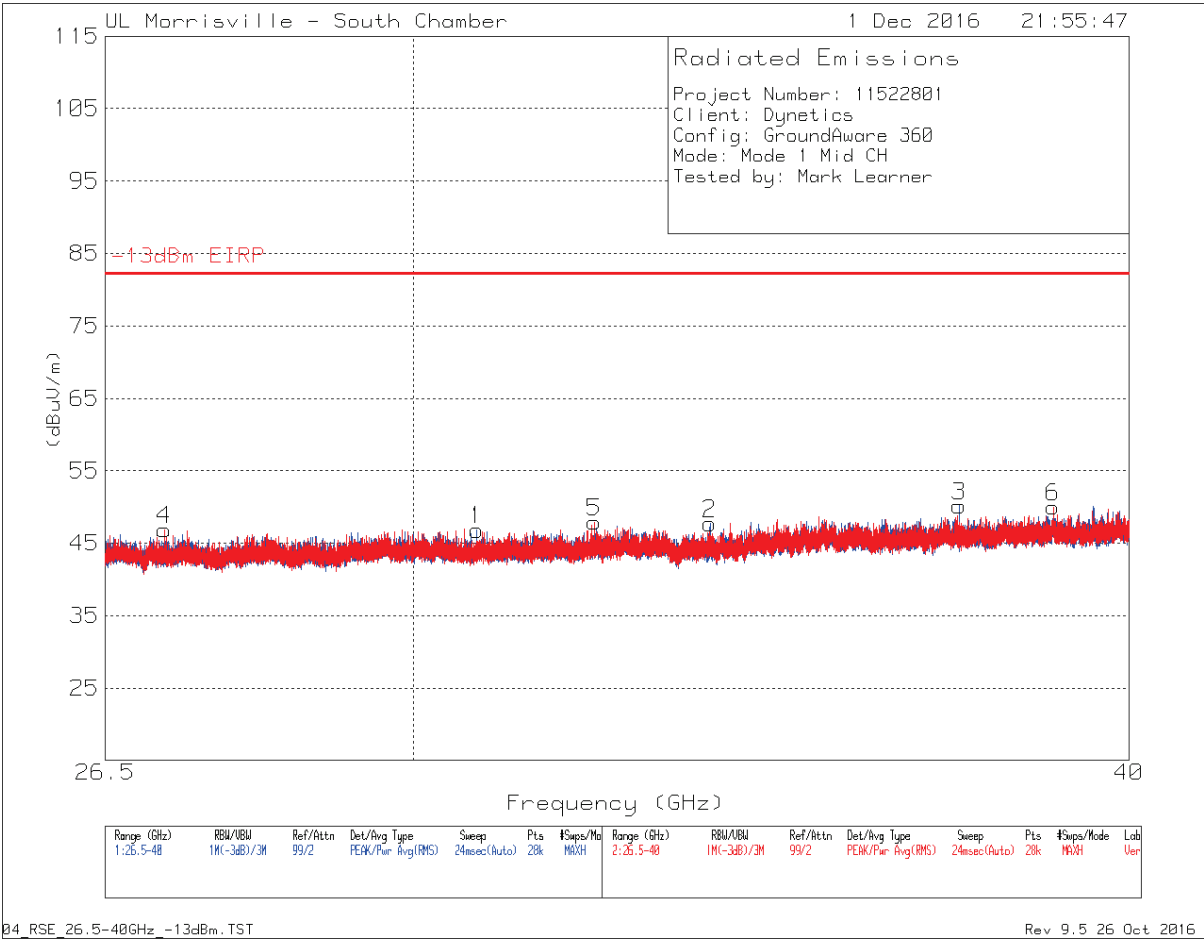
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 1, Low Channel, Above 26.5GHz– Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBUV)	Det	AF AT0077 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBUV/m)	-13dBm EIRP equivalent E-field (dBUV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	26.641	48.56	Pk	36	-37.1	47.46	82.2	-34.74	0-360	199	H
4	27.084	48.08	Pk	36	-36.9	47.18	82.2	-35.02	0-360	201	V
5	28.609	46.58	Pk	36.5	-36.2	46.88	82.2	-35.32	0-360	151	V
2	32.67	46.34	Pk	37.2	-35.7	47.84	82.2	-34.36	0-360	249	H
6	35.1	47.72	Pk	37.8	-36.6	48.92	82.2	-33.28	0-360	201	V
3	37.956	48.84	Pk	38.2	-36.9	50.14	82.2	-32.06	0-360	299	H

Pk - Peak detector

Mode 1, Middle Channel, Above 26.5GHz – Plot



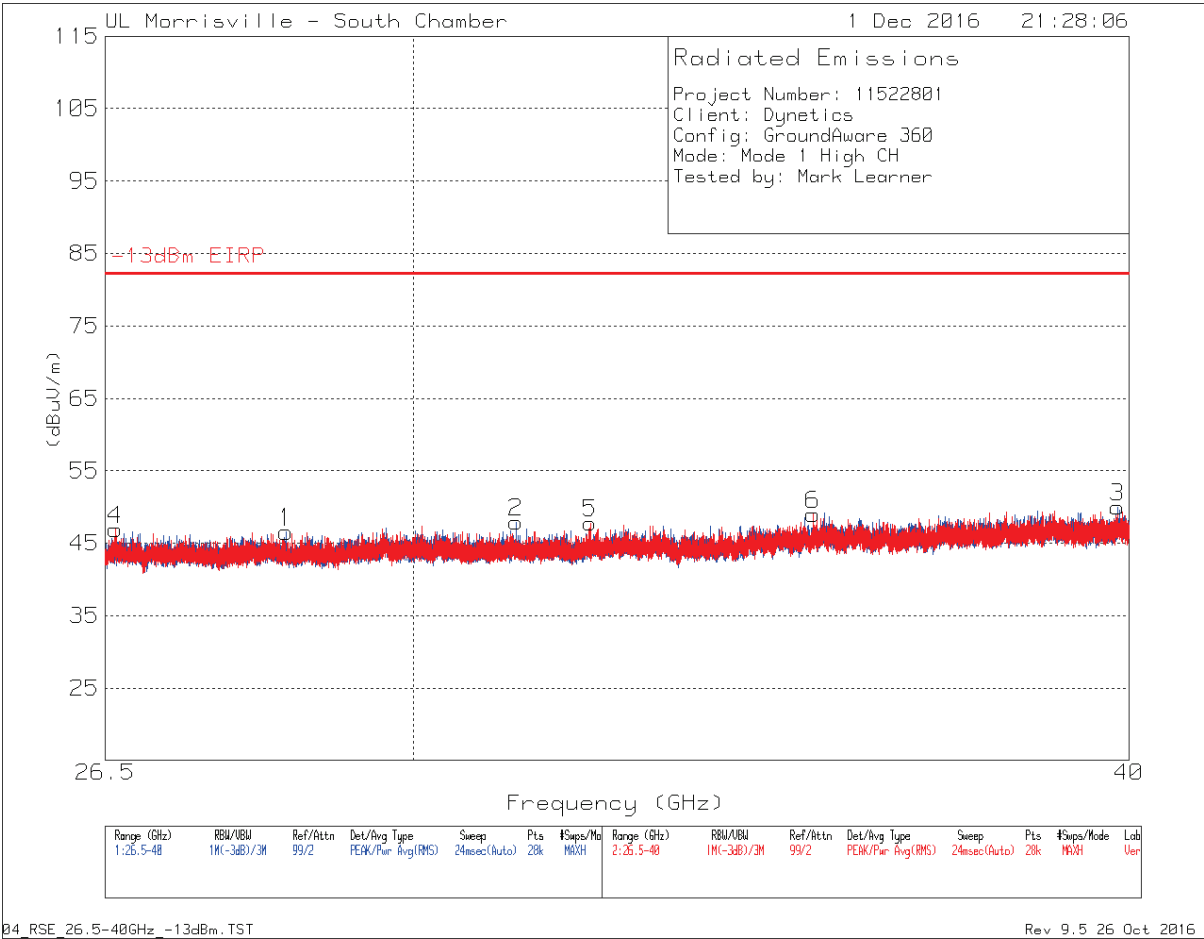
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 1, Middle Channel, Above 26.5GHz-- Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0077 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	27.138	47.77	Pk	36	-36.9	46.87	82.2	-35.33	0-360	151	V
1	30.773	45.66	Pk	36.7	-35.5	46.86	82.2	-35.34	0-360	149	H
5	32.259	46.32	Pk	36.9	-35.3	47.92	82.2	-34.28	0-360	101	V
2	33.797	46.63	Pk	37.4	-36.3	47.73	82.2	-34.47	0-360	149	H
3	37.36	49.27	Pk	38.3	-37.4	50.17	82.2	-32.03	0-360	149	H
6	38.799	47.41	Pk	38.9	-36.3	50.01	82.2	-32.19	0-360	251	V

Pk - Peak detector

Mode 1, High Channel, Above 26.5GHz – Plot



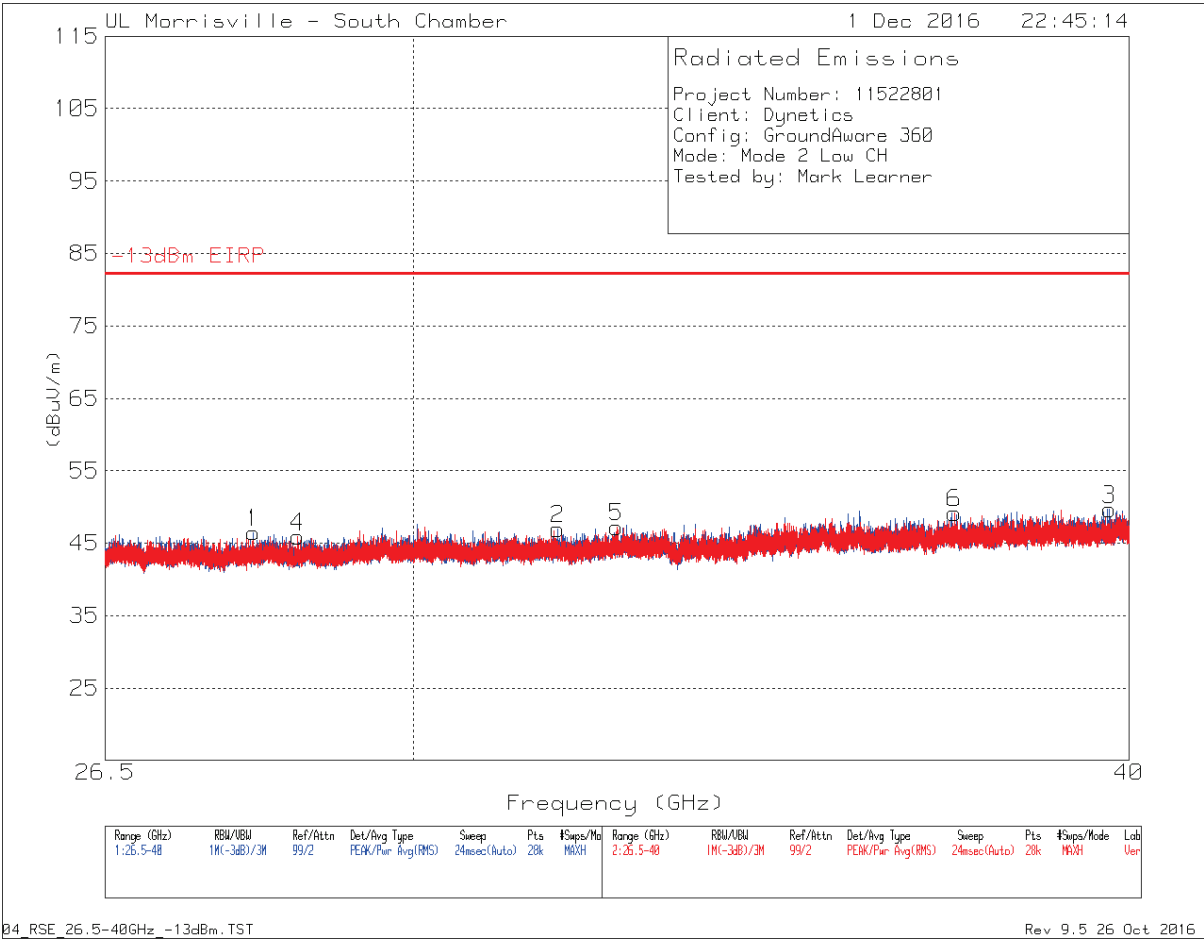
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 1, High Channel, Above 26.5GHz– Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBUV)	Det	AF AT0077 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBUV/m)	-13dBm EIRP equivalent E-field (dBUV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	26.608	48.11	Pk	36	-37.2	46.91	82.2	-35.29	0-360	151	V
1	28.501	46.13	Pk	36.5	-36.1	46.53	82.2	-35.67	0-360	299	H
2	31.263	46.34	Pk	36.9	-35.3	47.94	82.2	-34.26	0-360	299	H
5	32.208	46.41	Pk	36.8	-35.4	47.81	82.2	-34.39	0-360	151	V
6	35.228	47.9	Pk	37.8	-36.7	49	82.2	-33.2	0-360	101	V
3	39.814	46.39	Pk	39	-35.4	49.99	82.2	-32.21	0-360	249	H

Pk - Peak detector

Mode 2, Low Channel, Above 26.5GHz – Plot



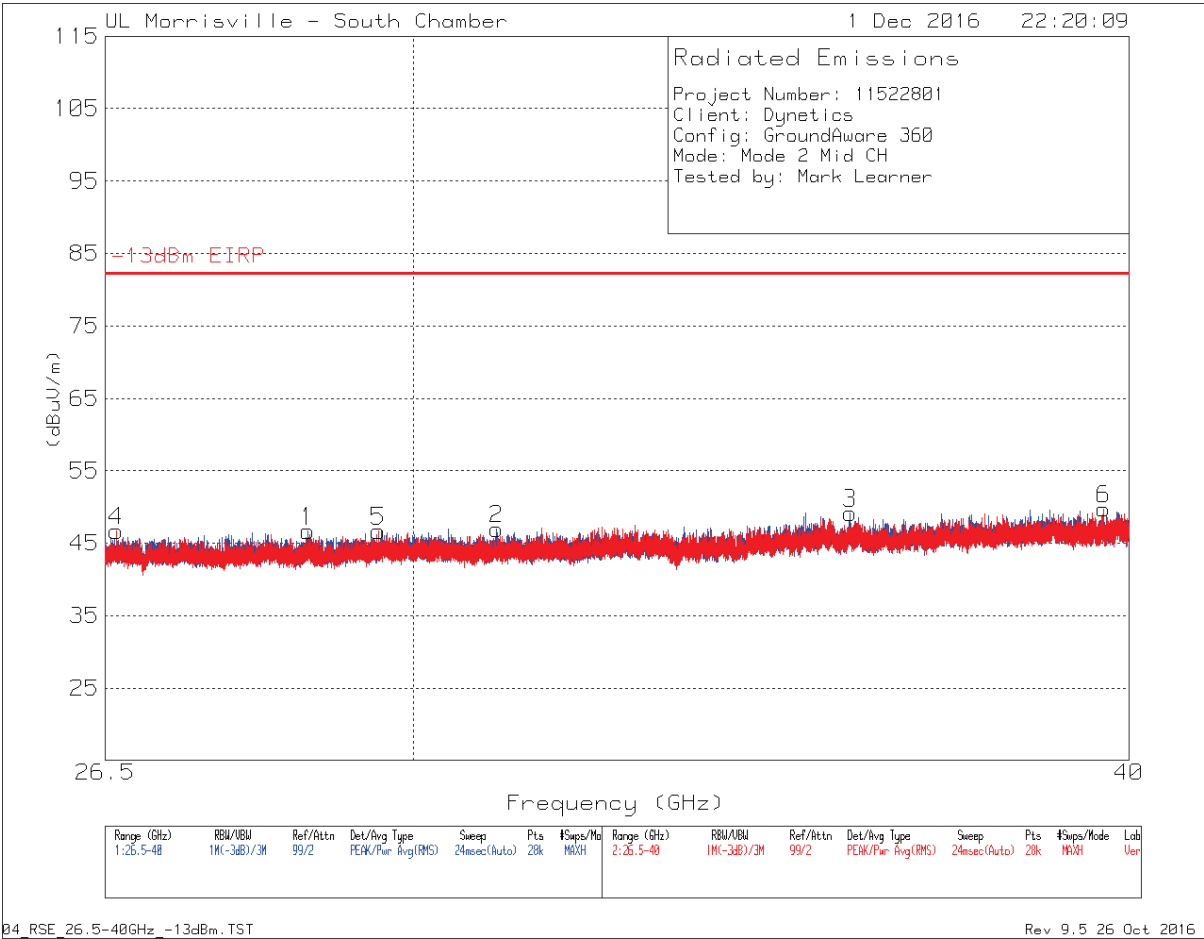
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 2, Low Channel, Above 26.5GHz– Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0077 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	28.129	46.58	Pk	36.3	-36.4	46.48	82.2	-35.72	0-360	101	H
4	28.634	45.7	Pk	36.4	-36.2	45.9	82.2	-36.3	0-360	201	V
2	31.791	45.17	Pk	36.9	-35.1	46.97	82.2	-35.23	0-360	249	H
5	32.552	45.93	Pk	37.1	-35.8	47.23	82.2	-34.97	0-360	101	V
6	37.293	48.17	Pk	38.2	-37.2	49.17	82.2	-33.03	0-360	251	V
3	39.688	46.66	Pk	38.9	-35.9	49.66	82.2	-32.54	0-360	101	H

Pk - Peak detector

Mode 2, Middle Channel, Above 26.5GHz – Plot



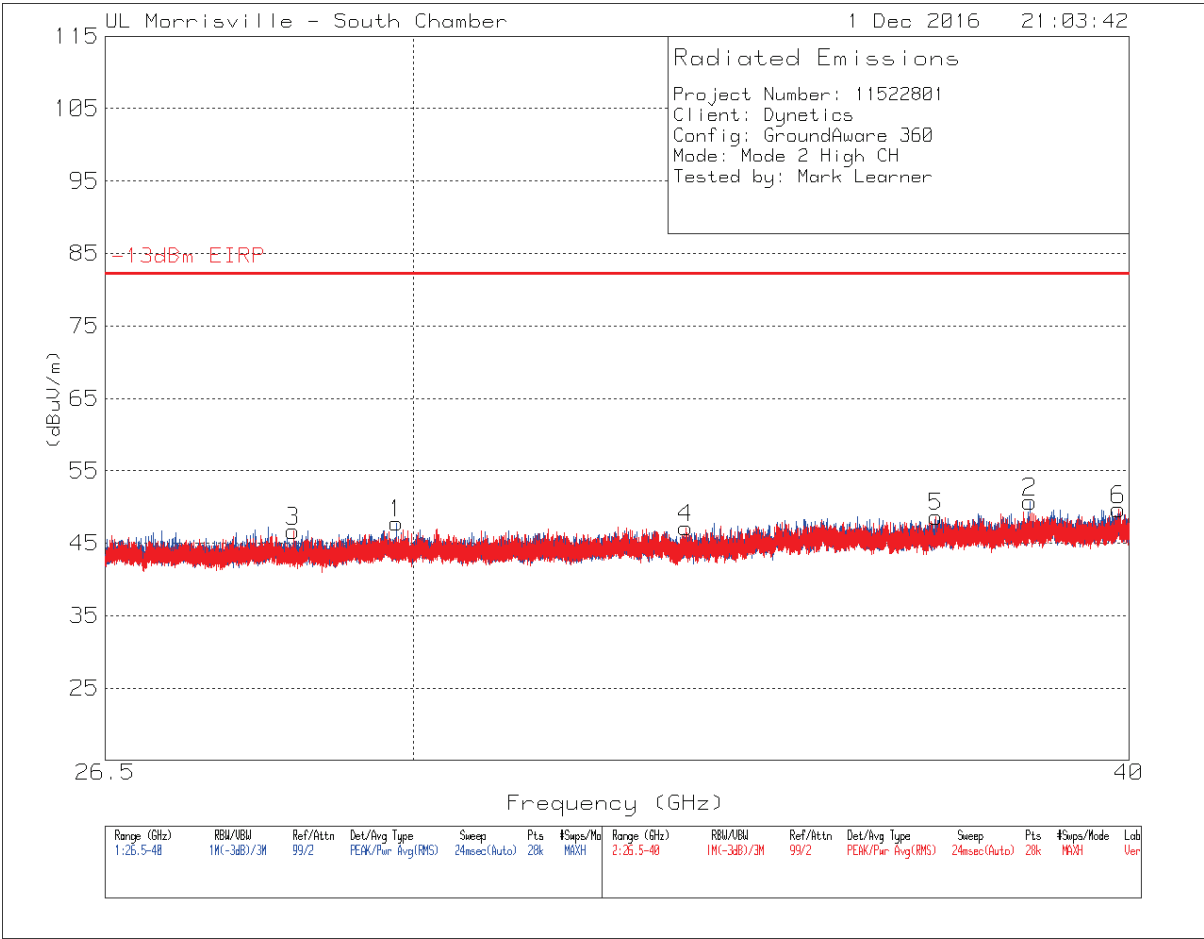
Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 2, Middle Channel, Above 26.5GHz-- Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBUV)	Det	AF AT0077 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBUV/m)	-13dBm EIRP equivalent E-field (dBUV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	26.621	47.91	Pk	36	-37.2	46.71	82.2	-35.49	0-360	151	V
1	28.753	46.38	Pk	36.3	-36	46.68	82.2	-35.52	0-360	249	H
5	29.581	45.88	Pk	36.6	-35.8	46.68	82.2	-35.52	0-360	101	V
2	31.021	45.69	Pk	36.8	-35.5	46.99	82.2	-35.21	0-360	102	H
3	35.759	47.34	Pk	38.1	-36.3	49.14	82.2	-33.06	0-360	249	H
6	39.596	46.55	Pk	39	-35.8	49.75	82.2	-32.45	0-360	251	V

Pk - Peak detector

Mode 2, High Channel, Above 26.5GHz – Plot



Limit line represents an E-field equivalent of 82.2dBuV/m at a 3m measurement distance.

Mode 2, High Channel, Above 26.5GHz– Tabular Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0077 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	-13dBm EIRP equivalent E-field (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	28.582	46.38	Pk	36.5	-36.2	46.68	82.2	-35.52	0-360	151	V
1	29.796	46.79	Pk	36.6	-35.6	47.79	82.2	-34.41	0-360	299	H
4	33.47	46.56	Pk	37.2	-36.6	47.16	82.2	-35.04	0-360	299	V
5	37.015	47.66	Pk	38.3	-37.3	48.66	82.2	-33.54	0-360	201	V
2	38.442	48.7	Pk	38.7	-36.7	50.7	82.2	-31.5	0-360	102	H
6	39.834	45.98	Pk	39	-35.3	49.68	82.2	-32.52	0-360	151	V

Pk - Peak detector

10. FREQUENCY STABILITY

RULE PART(S)

§2.1055

§90.213 Frequency stability

Above 2450 MHz ¹⁰

¹⁰Except 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 3100MHz to 3300MHz.

TEST PROCEDURE

Use spectrum analyzer to measure -6dBc points

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

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 25°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by changed to either +30°C or +20°C degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C and -30°C is reached in 10° steps.

Frequency Stability vs Voltage:

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 3100MHz - 3300MHz under all temperature and voltage variations.

See UL LLC report number 10965797A (FCC ID QFS001-10024640) for data demonstrating compliance to this requirement. All clocks that are a part of the system were tested for frequency stability under the previous grant for FCC ID: QFS001-10024640. The exact same PCB that supplies all clocks and waveforms for that product is employed to supply clocks and waveforms for this product without revision, therefore the test data for that FCC ID is useable for this submission also.

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

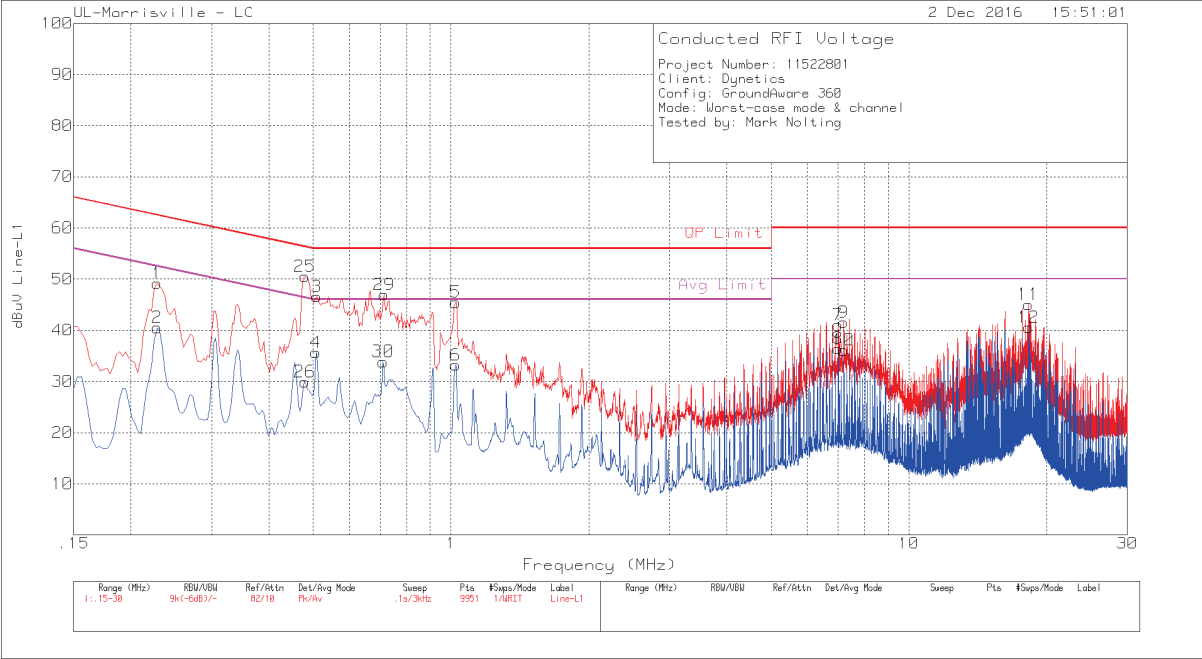
The receiver is set to a resolution bandwidth of 9 kHz. Quasi-Peak and CISPR Average detection is used unless otherwise noted.

Line conducted data is recorded for both line of the power supply feeding the EUT via a PoE injector.

RESULTS

LINE 1 RESULTS

Graphical Data



Tabular Data

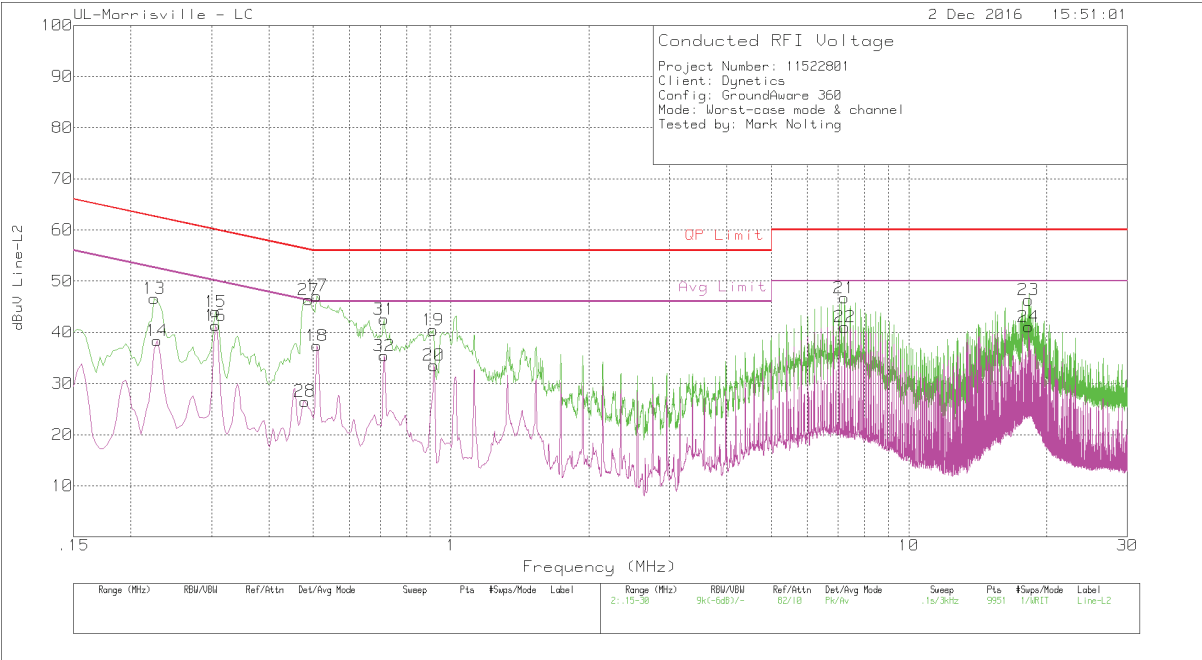
Line-L1 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit	Margin (dB)	Avg Limit	Margin (dB)
1	.228	39.09	Pk	.1	10	49.19	62.52	-13.33	-	-
2	.228	30.43	Av	.1	10	40.53	-	-	52.52	-11.99
25	.48	40.52	Pk	0	10	50.52	56.34	-5.82	-	-
26	.48	19.93	Av	0	10	29.93	-	-	46.34	-16.41
3	.51	36.6	Pk	0	10	46.6	56	-9.4	-	-
4	.507	25.65	Av	0	10	35.65	-	-	46	-10.35
29	.714	37	Pk	0	10	47	56	-9	-	-
30	.711	23.88	Av	0	10	33.88	-	-	46	-12.12
5	1.023	35.45	Pk	0	10	45.45	56	-10.55	-	-
6	1.023	23.21	Av	0	10	33.21	-	-	46	-12.79
7	7.008	30.73	Pk	.1	10.2	41.03	60	-18.97	-	-
8	7.008	26.14	Av	.1	10.2	36.44	-	-	50	-13.56
9	7.212	31.25	Pk	.1	10.2	41.55	60	-18.45	-	-
10	7.209	25.81	Av	.1	10.2	36.11	-	-	50	-13.89
11	18.243	34.36	Pk	.2	10.5	45.06	60	-14.94	-	-
12	18.243	29.87	Av	.2	10.5	40.57	-	-	50	-9.43

Pk - Peak detector

Av - Average detection

LINE 2 RESULTS

Graphical Data



Tabular Data

Line-L2 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit	Margin (dB)	Avg Limit	Margin (dB)
13	.225	36.53	Pk	.1	10	46.63	62.63	-16	-	-
14	.228	28.23	Av	.1	10	38.33	-	-	52.52	-14.19
15	.306	33.93	Pk	.1	10	44.03	60.08	-16.05	-	-
16	.306	31.22	Av	.1	10	41.32	-	-	50.08	-8.76
27	.489	36.24	Pk	.1	10	46.34	56.18	-9.84	-	-
28	.48	16.4	Av	.1	10	26.5	-	-	46.34	-19.84
17	.51	37.14	Pk	0	10	47.14	56	-8.86	-	-
18	.51	27.39	Av	0	10	37.39	-	-	46	-8.61
31	.714	32.58	Pk	0	10	42.58	56	-13.42	-	-
32	.714	25.43	Av	0	10	35.43	-	-	46	-10.57
19	.915	30.41	Pk	0	10	40.41	56	-15.59	-	-
20	.918	23.53	Av	0	10	33.53	-	-	46	-12.47
21	7.221	36.41	Pk	.1	10.2	46.71	60	-13.29	-	-
22	7.242	30.73	Av	.1	10.2	41.03	-	-	50	-8.97
23	18.243	35.71	Pk	.1	10.5	46.31	60	-13.69	-	-
24	18.243	30.45	Av	.1	10.5	41.05	-	-	50	-8.95

Pk - Peak detector

Av - Average detection