Honeywell Home

FCC Test Report

For

GRIP Defender Panel

Report #: 58791-D1

FCC ID: CFS8DL-GRIPDF1

Report Completion Date: 2019-08-22

Prepared by and for:

Ademco Inc.
2 Corporate Center Dr.
Suite 100 PO Box 9040
Melville, NY 11747

NVLAP®

Testing
NVLAP Lab Code: 600110

Document Introduction

Ademco Inc. tested the above equipment in accordance with the requirements set forth in the listed standards. All indications of Pass/Fail in the report are opinions expressed by Ademco Inc. 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.

This document is a record of the FCC Test Report for Ademco Inc. products. It demonstrates the data required to be analyzed to certify a product according to the requirements of the FCC.

The results in the report reflect only the model of the items under test unless noted otherwise. This document may not be altered or revised in any way unless done so my Ademco Inc. and all revisions are duly noted in the revisions section. Any alterations of this document not carried out by Ademco Inc. 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, any agency of the Federal Government, or any agency of any government.

Ademco Inc. is the legal entity name for Honeywell Home / Resideo. All three names can be used synonymously within this test report.

Test Report Revision History

Revision	Prepared By	Reviewed By	Revision Detail	Release Date
---	M. Antola	A. Roussin	Original Release	2019-08-20
A	M. Antola	A. Roussin	Added radiated simultaneous data – spurious & Bandedge	2019-08-22

Report Authorization

Report Prepared By:

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Reviewed & Approved By:

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RF & EMC / Wireless Certifications
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Contents

Applicable Test Standards/Limits

Test Standards/Limits	Result	Dates Tested
ANSI C63.10: 2013	Compliant	08/16/2019 – 08/21/2019
CFR 47 Pt 15 Subpart C, Section 15.207/209	Compliant	08/16/2019 – 08/21/2019
CFR 47 Pt 15 Subpart C, Section 15.247	Compliant	08/16/2019 – 08/21/2019

Deviations from Test Methods

#	Deviation Description
0	None

Facilities and Accreditation

The test site and measurement facility used to collect data are located at 2 Corporate Center Dr., Melville, NY 11747, USA. Ademco Inc. is accredited by NVLAP, Laboratory Code 600110-0. The full scope of accreditation can be viewed at the NVLAP website.

Test Item Description

The Global Residential Intrusion Platform (GRIP) Defender solution consists of a panel with a push-button interface and small LED screen display. The panel consists of a main PCB board that contains components (Display, camera, microphones, speaker) to support features such as video and audio, interfaces to external devices/sensors (sensors, devices, and cameras) and wireless communicators. The EUT is AC powered with a battery back-up.

There are two (2) on-board radios - Bluetooth (LE) and RF6. The Wiselink radio block & antenna has been removed from this device that was initially certified under FCC ID: CFS8DL-GRIPDF, IC: 573F-GRIPDF. Plug-in modules can support Wi-Fi, Z-Wave and cellular communications. This report will cover the Bluetooth (LE) portion of the EUT only. This report contains only radiated (spurious emissions, Bandedge, etc.) data. Conducted antenna port data is being leveraged from a previous certification (FCC ID: CFS8DL-GRIPAIO7, IC: 573F-GRIPAIO7) based on similarities. See test report exhibit titled “AIO 7-INCH EXHIBIT 5-1A FCC_ISED Test Report BLE” for specific data.

The Bluetooth LE circuitry contains a single integral PCB antenna with a gain of 6dBi.

Worse-Case Configuration & Mode

Radiated emissions was performed with the EUT set to transmit at the low/mid/high channels with the highest output power as worst-case scenario. The EUT has a typical installation orientation of vertical (i.e. wall-mounted or standing upright on desktop). Therefore, all final radiated test was performed with the EUT in the vertical orientation. See setup photos for details. The AC powered configuration proved to be the worse-case configuration and was tested as such.

Test Sample Identification

Sample ID Number	Sample Serial Number	Date Received
MEL-813	Non-serialized production unit	08/16/2019

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Calibration & Measurement Uncertainty

- Measuring Instrument Calibration – The measuring equipment utilized to perform the tests documented in this report have been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

- 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)

  [i.e.] 37 dBuV/m = 30 dBuV + 18.5 dB/m + 0.5 dB – 12 dB

- Uncertainty - Figures are valid to a confidence level of 95%.

Test	Standard Uncertainty
Radiated Emissions (30-200MHz Horizontal)	+/- 5.05 dB
Radiated Emissions (30-200MHz Vertical)	+/- 5.28 dB
Radiated Emissions (200-1000MHz Horizontal)	+/- 10.21 dB
Radiated Emissions (200-1000MHz Vertical)	+/- 10.36 dB
Radiated Emissions (Above 1GHz)	+/- 9.70 dB
Conducted Emissions (150KHz-30MHz)	+/- 4.36 dB

Opinions / Interpretations

None

Test Summary

All tests described below are required, unless otherwise noted. Notes should be described in detail in the "Additional notes" section.

#	Test Description	Status
1	Radiated Emissions (Intentional)	PASS

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On Time and Duty Cycle

Test Description

Refer to KDB 558074 Zero-Span Analyzer Method.

Test Criteria

Reference	Limit
KDB 558074, Section 6	None, for reporting only

Test Information

Tester	Test Location	Date	Temperature (ºC)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
CL	RF Lab	08/16/2019	22.6	37.2	1014	P

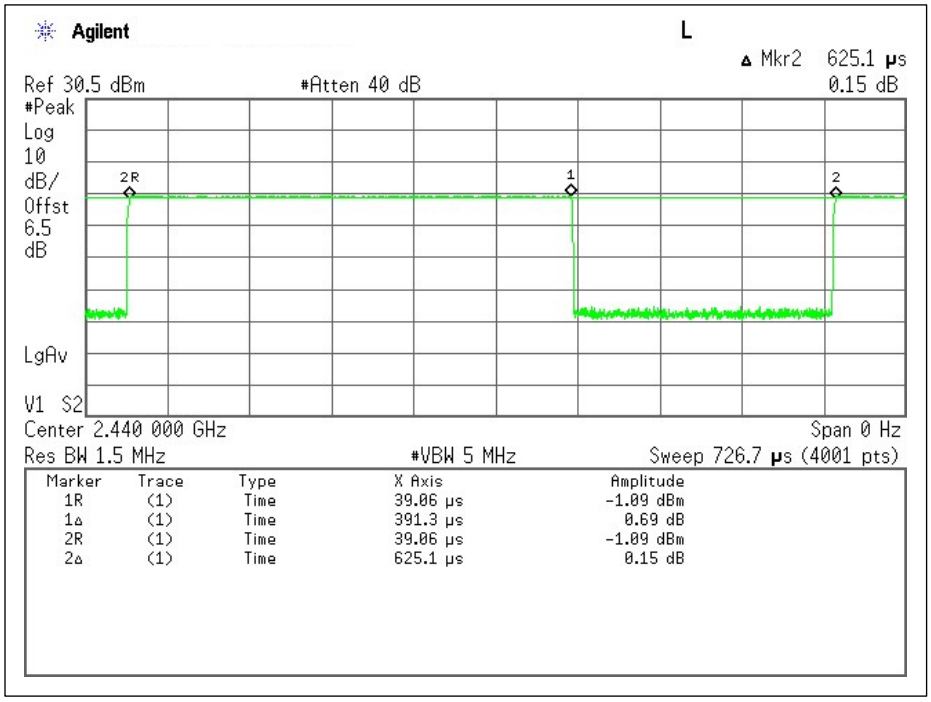
Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
Spectrum Analyzer	11549	MY46187211	Agilent	E4440A	06/25/19	06/25/21

Test Results

On Time (usec)	Period (usec)	Duty Cycle	Duty Cycle (%)	Correction Factor [10log(1/D)]
391.3	625.1	0.626	62.6	2.03

Duty Cycle Plot



Radiated Emissions (Intentional)

Test Description

Intentional Radiator Radiated Emissions are a test of the emissions, and harmonics on the EUT. The EUT is positioned to get the maximum emissions after a series of prescan measurements.
The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1 GHz measurements and 1.5 m above the ground plane for above 1 GHz measurements. The antenna to EUT distance is 3 meters.
For measurements below 1 GHz the resolution bandwidth is set to 120 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 1 MHz for peak measurements and as applicable for average measurements.
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.
The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Test Criteria

Reference	Limit		
CFR 47 Subpart C, 15.205 CFR 47 Subpart C, 15.209 RSS-GEN	Frequency Range (MHz)	Field Strength Limit (uV/m)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100**	3
	88-216	150**	3
	216-960	200**	3
	Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

Test Information

Tester	Test Location	Date	Temperature (ºC)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
CL/JB	RF Chamber/OATS	08/16/19-08/21/19	23.3	52	1018	P

NOTE: Below 30MHz, pretesting showed that no emissions as a product of the EUT were detected within 20dB of the regulatory limit. Worse-case plot/data reported from 30MHz - 1GHz and above 18GHz. Prescans performed in an anechoic chamber, final measurements performed on an OATS.

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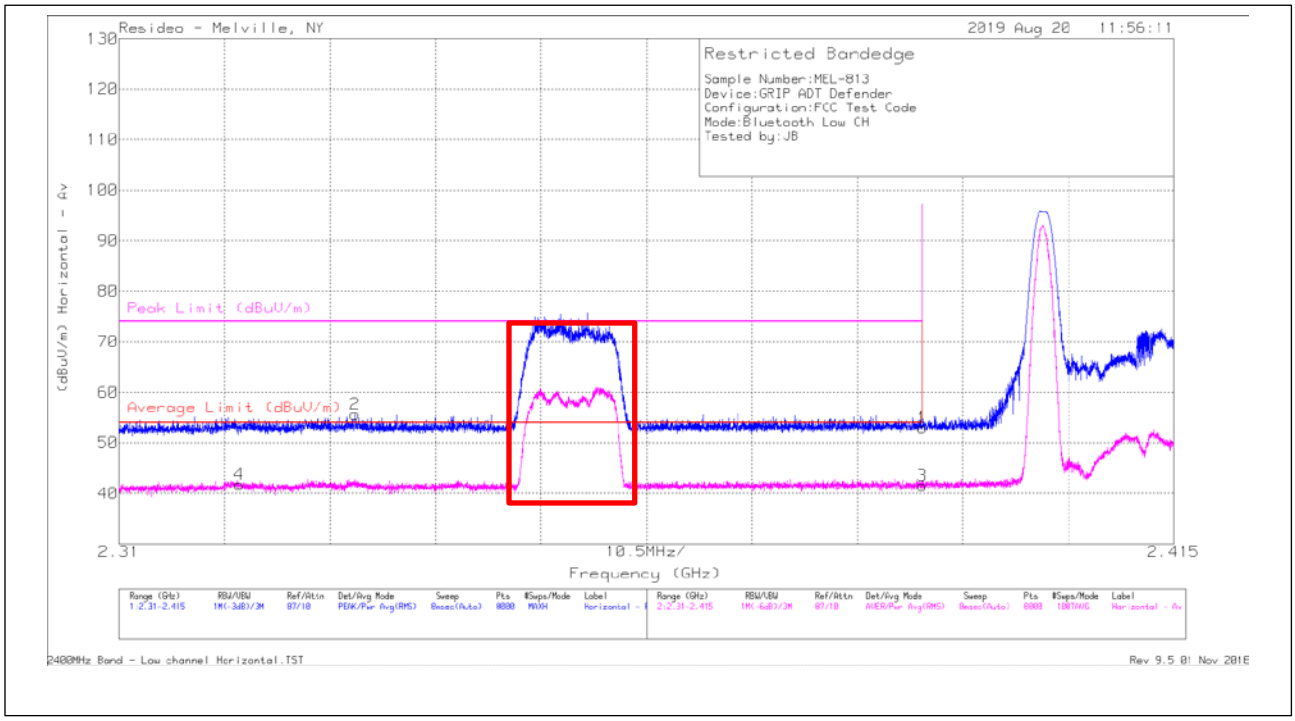
Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
RF Chamber						
Spectrum Analyzer	11496	100303	Rohde & Schwarz	FSU26	04/11/19	04/11/21
Loop Antenna (9kHz-30MHz)	11535	121080	Com-Power	AL-130R	10/29/18	10/29/19
Bilog Antenna (30MHz-5GHz)	11311	A022406	Sunol	JB5	02/13/19	02/13/21
Horn Antenna (1-18GHz)	2319	2317	EMCO	3115	01/08/19	01/08/21
Horn Antenna (18-40GHz)	11472	151	EMCO	EM-6963	02/22/19	02/22/21
Preamp (10-4200MHz)	11537	1603006	Mini Circuits	TVA-11-422	N/A	N/A
Preamp (1-18GHz)	11557	18040034	Com-Power	PAM-118A	N/A	N/A
Preamp (18-40GHz)	11541	160911	Amplical	AMP18G40-35	N/A	N/A
Band Reject Filter	11553	G041	Micro-tronics	BRM50702-01	N/A	N/A
Measurement Software	11543	Version 9.5	UL	UL EMC	N/A	N/A
Environmental Meter	11548	A078188	Extech Instruments	SD700	09/29/18	09/29/21
OATS						
Spectrum Analyzer	11545	103125	Rohde & Schwarz	FSW26	03/13/19	03/15/20
Bilog Antenna (30MHz-6GHz)	11534	A012816	Sunol	JB6	04/05/19	04/05/21
Horn Antenna (1-18GHz)	2973	3127	EMCO	RGA-60	01/31/19	01/31/21
Preamp (800MHz-21GHz)	11538	233701631	Mini Circuits	ZVA-213-S+	N/A	N/A
Preamp (18-40GHz)	11541	160911	Amplical	AMP18G40-35	N/A	N/A
High Pass Filter	11552	G018	Micro-tronics	HPM50111-01	N/A	N/A
Measurement Software	11543	Version 9.5	UL	UL EMC	N/A	N/A
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20

All testing performed using equipment that remained within the calibration cycle at the time of testing.

Test Results

Restricted Band Edge



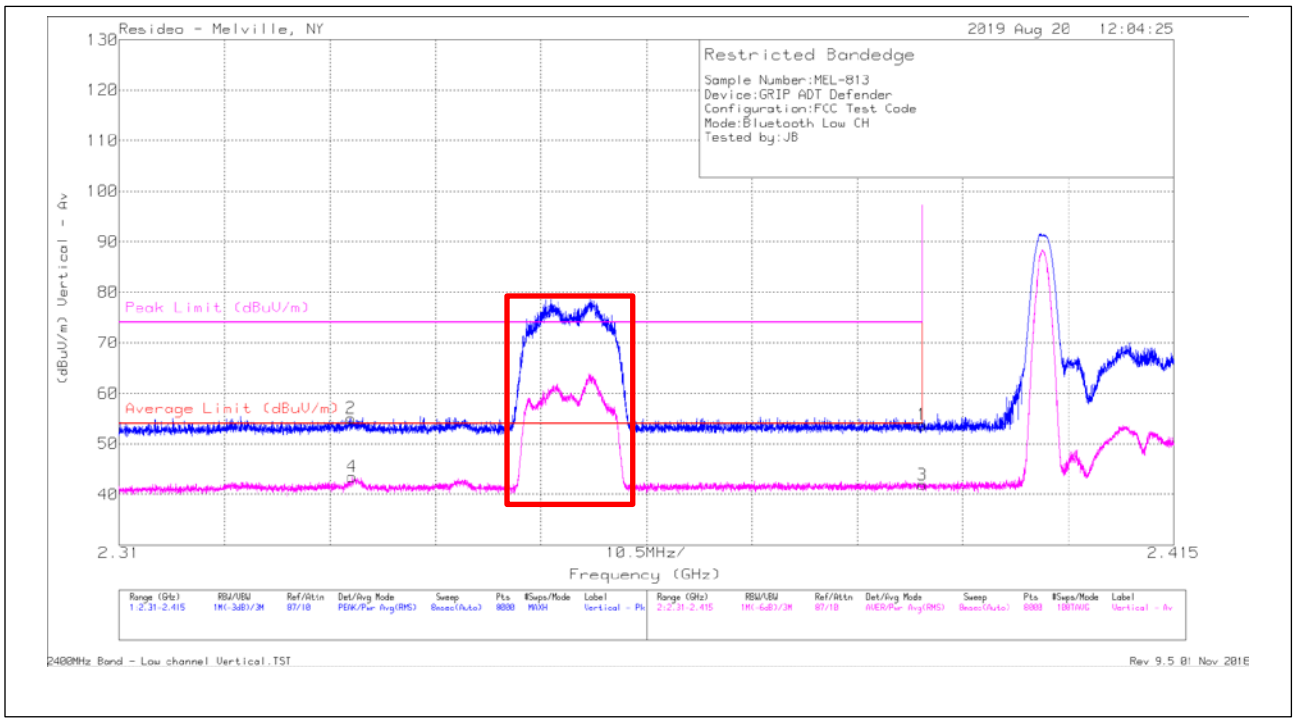
Low Channel Horizontal – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	DC Corr [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	18.69	Pk	28.5	5.8	-	52.99	-	-	74	-21.01	210	216	H
* 2.334	21.72	Pk	28.1	5.8	-	55.62	-	-	74	-18.38	210	216	H
* 2.39	7.16	RMS	28.5	5.8	2.03	43.49	54	-10.51	-	-	210	216	H
* 2.322	8.11	RMS	28	5.7	2.03	43.84	54	-10.16	-	-	210	216	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter.

Low Channel Horizontal - Data



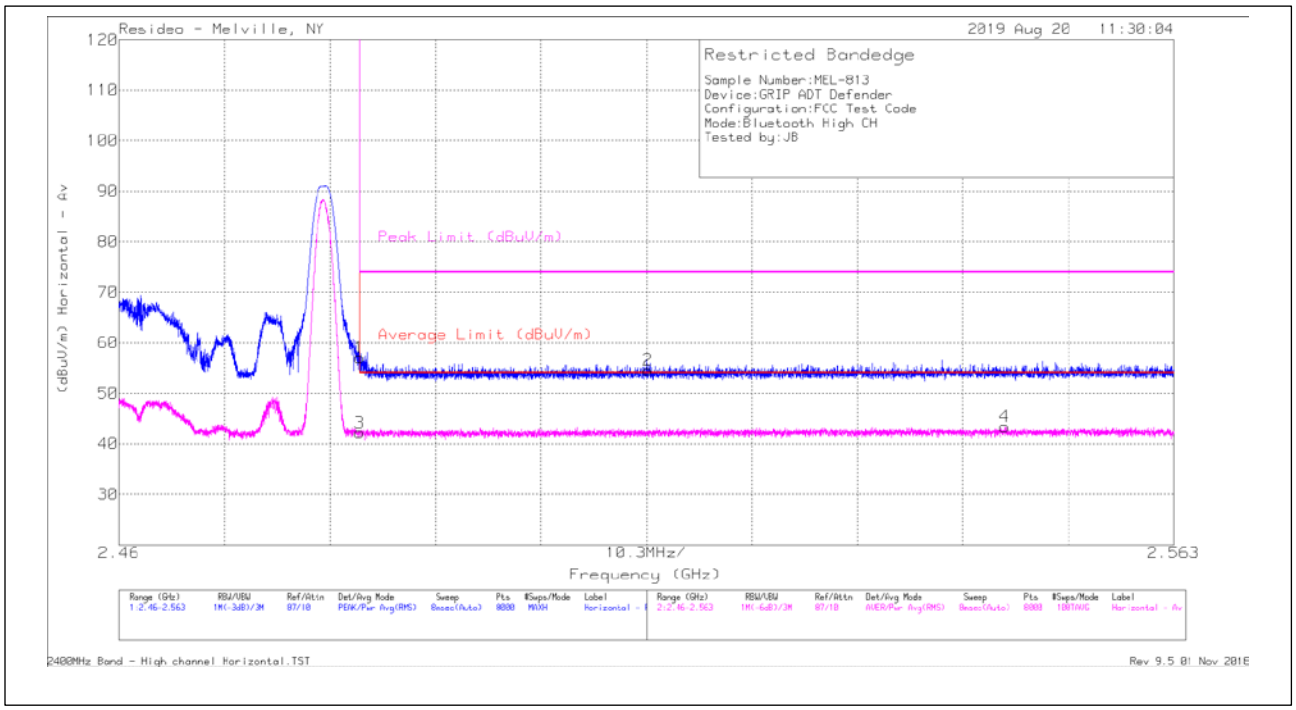
Low Channel Vertical – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	DC Corr [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	19.54	Pk	28.5	5.8	-	53.84	-	-	74	-20.16	261	368	V
* 2.333	21.19	Pk	28.1	5.8	-	55.09	-	-	74	-18.91	261	368	V
* 2.39	7.61	RMS	28.5	5.8	2.03	43.94	54	-10.06	-	-	261	368	V
* 2.333	9.55	RMS	28.1	5.8	2.03	45.48	54	-8.52	-	-	261	368	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter.

Low Channel Vertical - Data

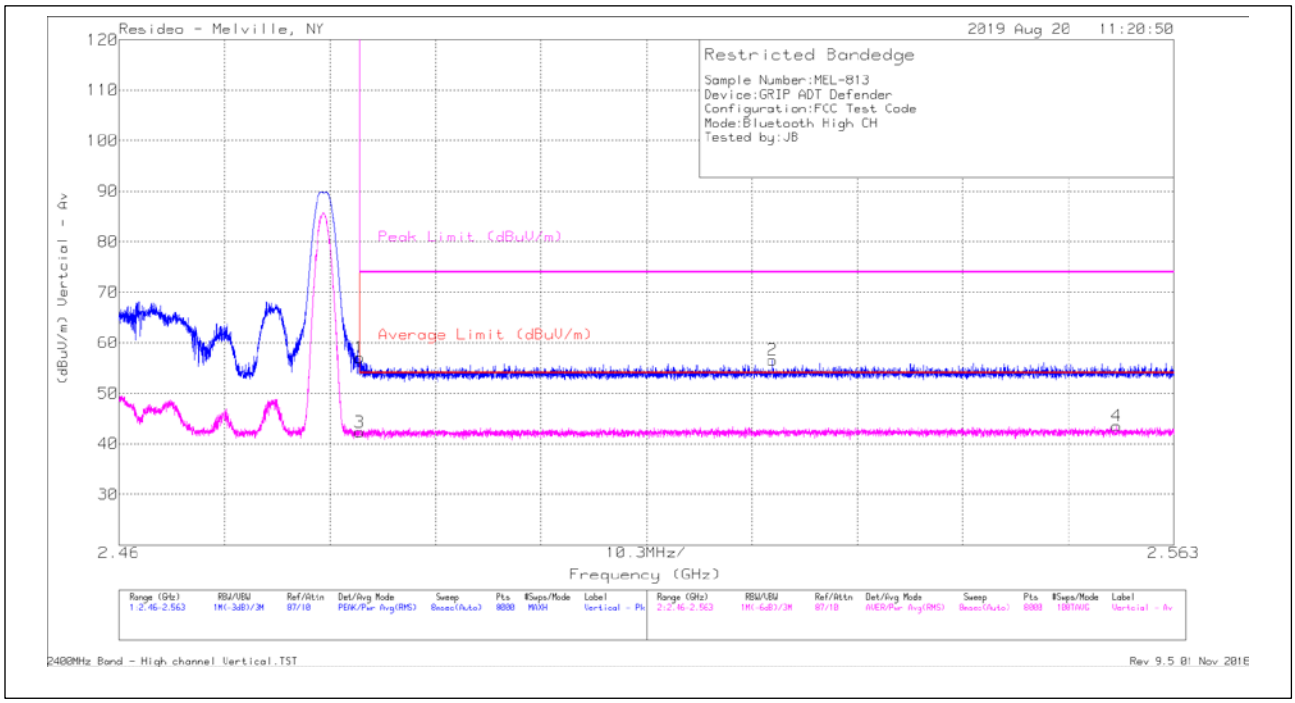


High Channel Horizontal – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	DC Corr [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	22.43	Pk	28.7	5.9	-	57.03	-	-	74	-16.97	326	312	H
2.512	19.84	Pk	28.8	6	-	54.64	-	-	74	-19.36	326	312	H
* 2.484	7.62	RMS	28.7	5.9	2.03	44.25	54	-9.75	-	-	326	312	H
2.546	8.37	RMS	29	6	2.03	45.4	54	-8.6	-	-	326	312	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

High Channel Horizontal - Data



High Channel Vertical – Plot

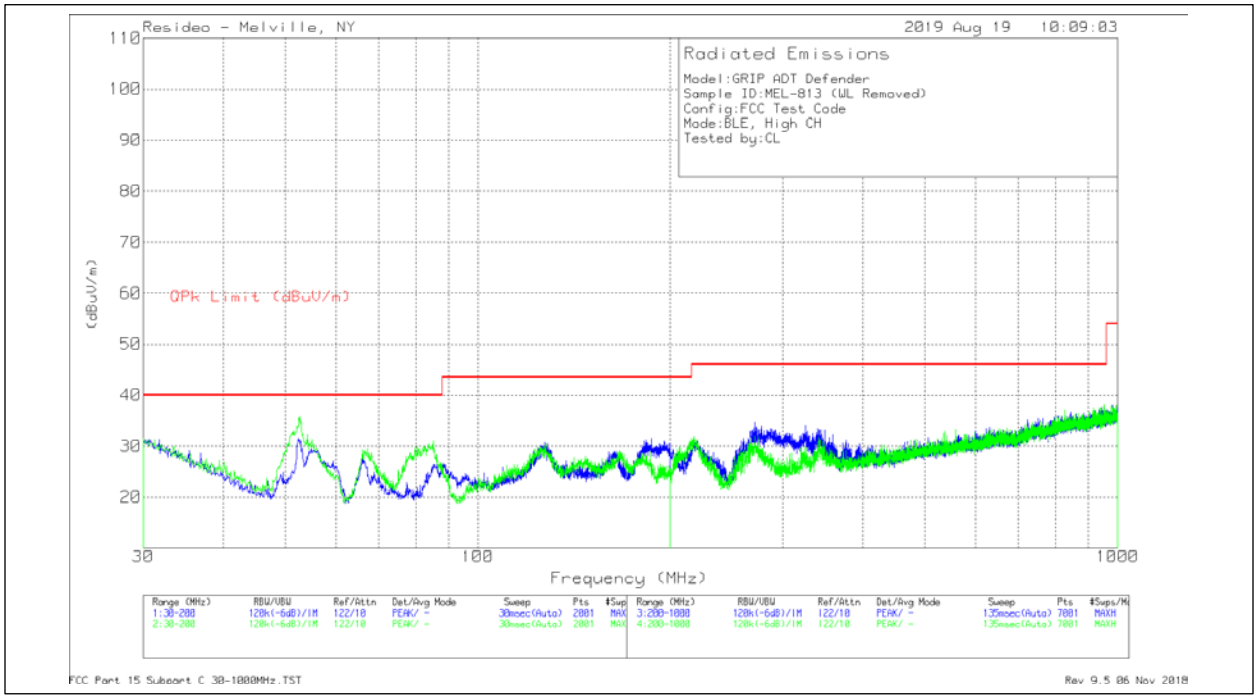
Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	DC Corr [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	22.48	Pk	28.7	5.9	-	57.08	-	-	74	-16.92	267	286	V
2.524	21.69	Pk	28.9	6	-	56.59	-	-	74	-17.41	267	286	V
* 2.484	7.7	RMS	28.7	5.9	2.03	44.33	54	-9.67	-	-	267	286	V
2.557	8.5	RMS	29	6	2.03	45.53	54	-8.47	-	-	267	286	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

High Channel Vertical - Data

Spurious Emissions

Below 1GHz (Worse-case)



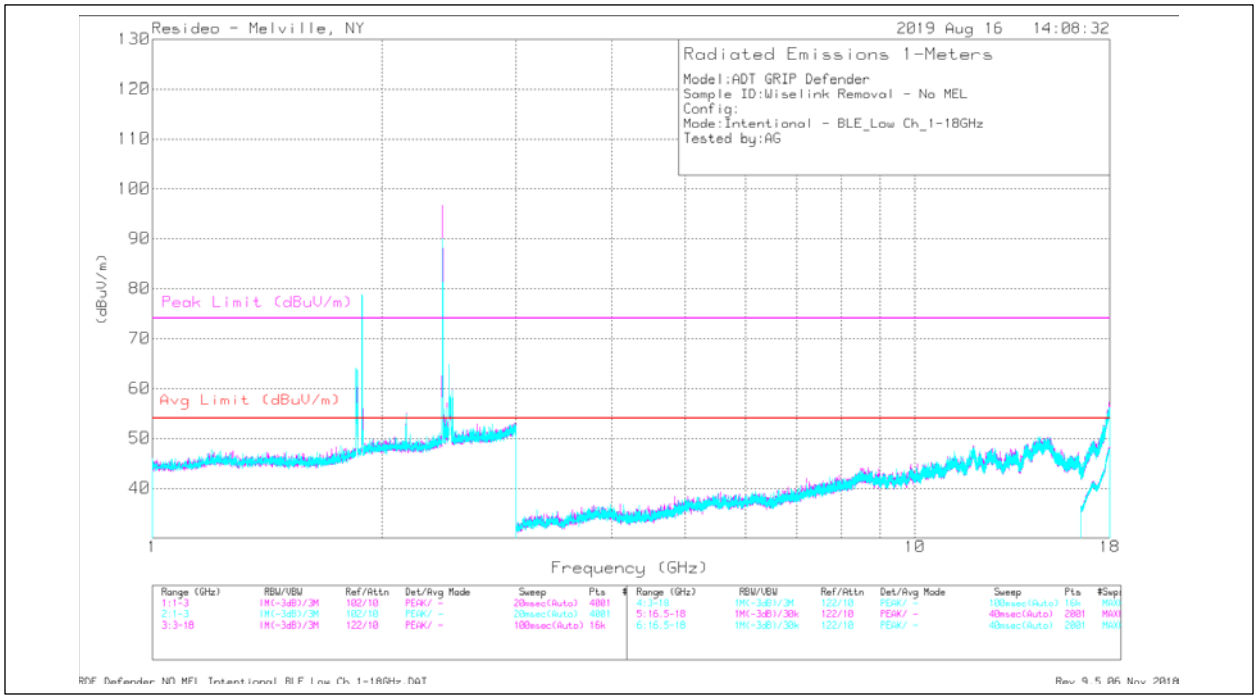
High Channel - Plot

Frequency (MHz)	Meter Reading (dBuV)	Det	AF [dB]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
52.6559	10.47	Qp	12.2	1.1	23.77	40	-16.23	122	367	H
* 127.7381	5.4	Qp	17.6	1.8	24.8	43.52	-18.72	282	380	H
65.4676	25.35	Qp	12	1.3	38.65	40	-1.35	96	209	H
53.0794	20.69	Qp	12.1	1.1	33.89	40	-6.11	157	199	V
84.9013	10.87	Qp	11.8	1.4	24.07	40	-15.93	183	314	V
* 127.0789	6.42	Qp	17.6	1.8	25.82	43.52	-17.7	61	116	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

High Channel - Data

1-18GHz



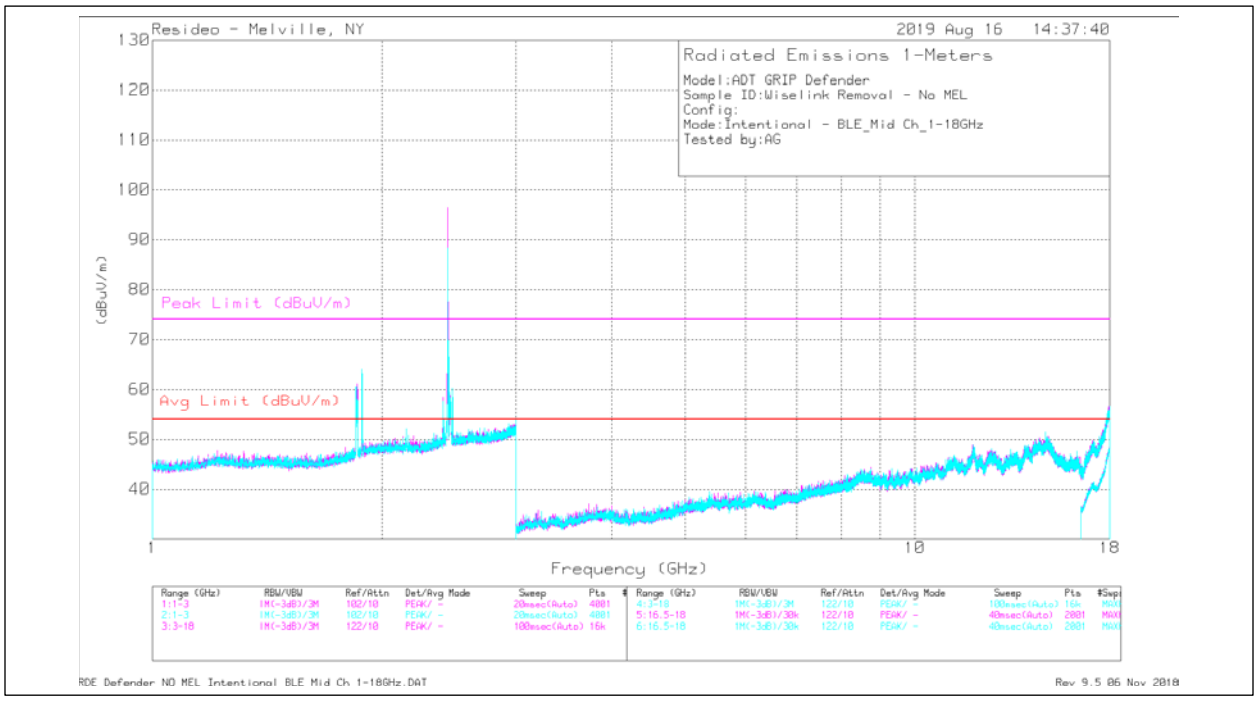
Low Channel - Plot

Note: Emissions detected at ~1.8GHz were found to be ambient and not a product of the EUT

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	DC Corr [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.154	75.37	PK2	28	-37.8	-	65.57	-	-	74	-8.43	158	306	H
* 8.478	37.37	PK2	37.4	-29.2	-	45.57	-	-	74	-28.43	290	310	H
* 8.482	26.44	MAv1	37.4	-29.2	2.03	36.67	54	-17.33	-	-	290	310	H
* 11.949	35.92	PK2	39.5	-25.5	-	49.92	-	-	74	-24.08	341	339	H
* 11.948	25.88	MAv1	39.5	-25.5	2.03	41.91	54	-12.09	-	-	341	339	H
2.153	72.07	PK2	28	-37.8	-	62.27	-	-	74	-11.73	39	197	V
8.684	36.97	PK2	37.6	-29	-	45.57	-	-	74	-28.43	315	142	V
14.617	36.73	PK2	42.6	-24.7	-	54.63	-	-	74	-19.37	115	265	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Low Channel - Data



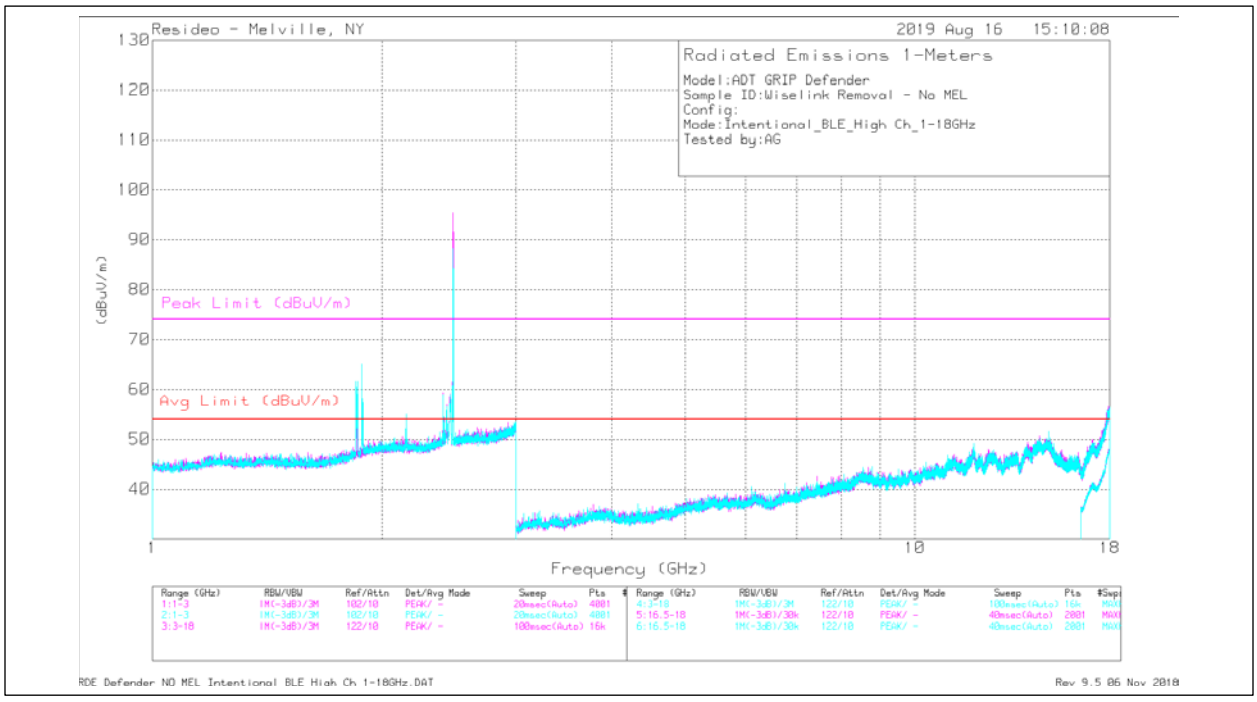
Mid Channel - Plot

Note: Emissions detected at ~1.8GHz were found to be ambient and not a product of the EUT

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	DC Corr [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 8.47	37.32	PK2	37.4	-29.2	-	45.52	-	-	74	-28.48	270	204	H
* 8.469	27.1	MAv1	37.4	-29.2	2.03	37.33	54	-16.67	-	-	270	204	H
* 11.245	34.7	PK2	38.7	-26.9	-	46.5	-	-	74	-27.5	23	184	H
* 11.245	25.45	MAv1	38.7	-26.9	2.03	39.28	54	-14.72	-	-	23	184	H
14.892	36.83	PK2	41.8	-24.6	-	54.03	-	-	74	-19.97	156	135	H
8.738	36.8	PK2	37.7	-29	-	45.5	-	-	74	-28.5	26	196	V
* 12.596	36.4	PK2	38.7	-26	-	49.1	-	-	74	-24.9	168	169	V
* 12.597	26.88	MAv1	38.7	-26.1	2.03	41.51	54	-12.49	-	-	168	169	V
* 11.92	36.05	PK2	39.5	-25.4	-	50.15	-	-	74	-23.85	80	227	V
* 11.919	25.97	MAv1	39.5	-25.4	2.03	42.1	54	-11.9	-	-	80	227	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Mid Channel - Data



High Channel - Plot

Note: Emissions detected at ~1.8GHz were found to be ambient and not a product of the EUT

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	DC Corr [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.158	44.3	PK2	27.9	-37.8	-	34.4	-	-	74	-39.6	84	243	H
8.658	36.49	PK2	37.6	-29	-	45.09	-	-	74	-28.91	257	317	H
* 11.075	34.64	PK2	38.6	-27	-	46.24	-	-	74	-27.76	0	222	H
* 11.074	25.19	MAv1	38.6	-27	2.03	38.82	54	-15.18	-	-	0	222	H
14.553	37.7	PK2	42.4	-24.5	-	55.6	-	-	74	-18.4	18	140	H
* 11.935	38.13	PK2	39.5	-25.4	-	52.23	-	-	74	-21.77	124	103	V
* 11.938	26.68	MAv1	39.5	-25.5	2.03	42.71	54	-11.29	-	-	124	103	V
14.989	40.35	PK2	41.4	-24.5	-	57.25	-	-	74	-16.75	7	288	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

High Channel – Data

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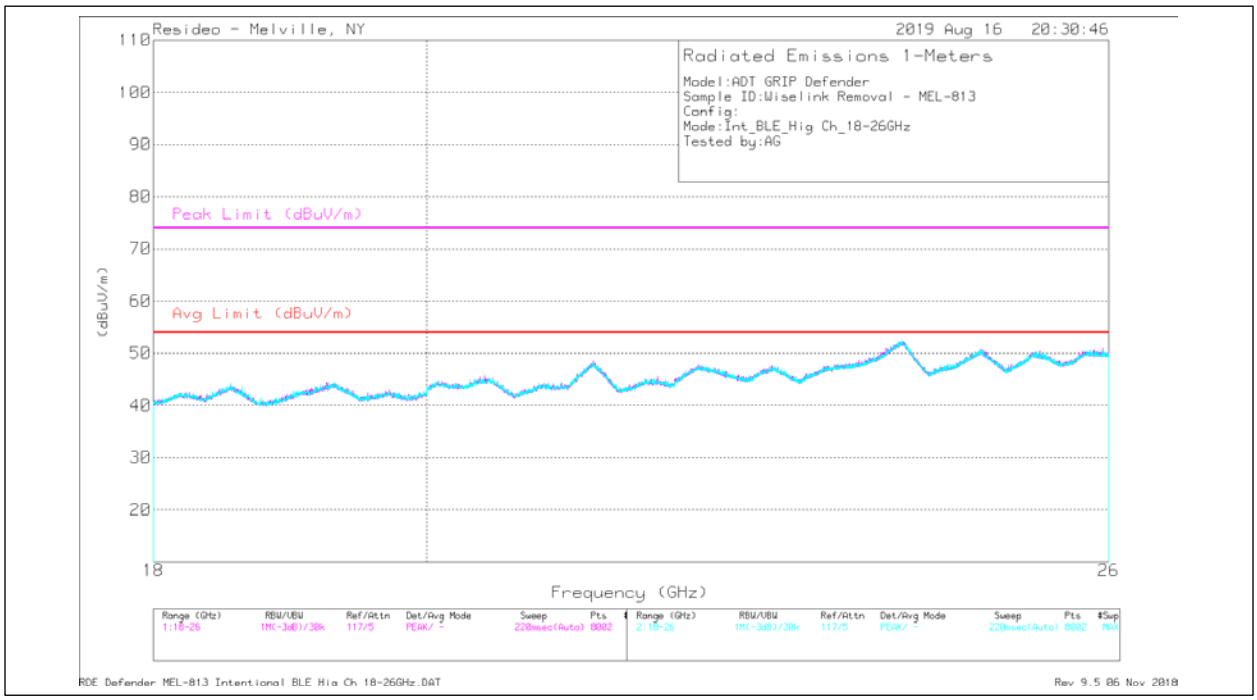
2 Corporate Center Dr., Melville, NY 11747 **TEL: (516) 577-2000**

18-26GHz

Note: No emissions detected above the system noise floor



Mid Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF EM-6963 [dB/m]	Preamp [dB]	SMA7 [dB]	SMA5 [dB]	Dist Corr [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 19.274	28.65	PK2	44.1	-34.5	7.9	8	-9.5	44.65	-	-	74	-29.35	0	100	H
* 19.276	20.91	MAv1	44.1	-34.5	7.9	8	-9.5	36.91	54	-17.09	-	-	0	100	H
* 21.319	33.99	PK2	44.5	-31.9	8.3	8.1	-9.5	53.49	-	-	74	-20.51	0	100	H
* 21.319	20.79	MAv1	44.5	-31.9	8.3	8.1	-9.5	40.29	54	-13.71	-	-	0	100	H
* 21.318	31.03	PK2	44.5	-31.9	8.3	8.1	-9.5	50.53	-	-	74	-23.47	193	166	H
* 21.318	20.71	MAv1	44.5	-31.9	8.3	8.1	-9.5	40.21	54	-13.79	-	-	193	166	H
24.027	30.98	PK2	46.4	-30.4	8.9	8.4	-9.5	54.78	-	-	74	-19.22	140	354	H
24.026	20.24	MAv1	46.4	-30.4	8.9	8.4	-9.5	44.04	54	-9.96	-	-	140	354	H
* 19.29	31	PK2	44.2	-34.3	7.9	8	-9.5	47.3	-	-	74	-26.7	277	321	V
* 19.29	21.1	MAv1	44.2	-34.3	7.9	8	-9.5	37.4	54	-16.6	-	-	277	321	V
* 21.323	31.14	PK2	44.5	-32	8.3	8.1	-9.5	50.54	-	-	74	-23.46	139	366	V
* 21.324	20.5	MAv1	44.5	-32	8.3	8.1	-9.5	39.9	54	-14.1	-	-	139	366	V
24.018	30.41	PK2	46.4	-30.3	8.9	8.4	-9.5	54.31	-	-	74	-19.69	272	380	V
24.019	20.61	MAv1	46.4	-30.3	8.9	8.4	-9.5	44.51	54	-9.49	-	-	272	380	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

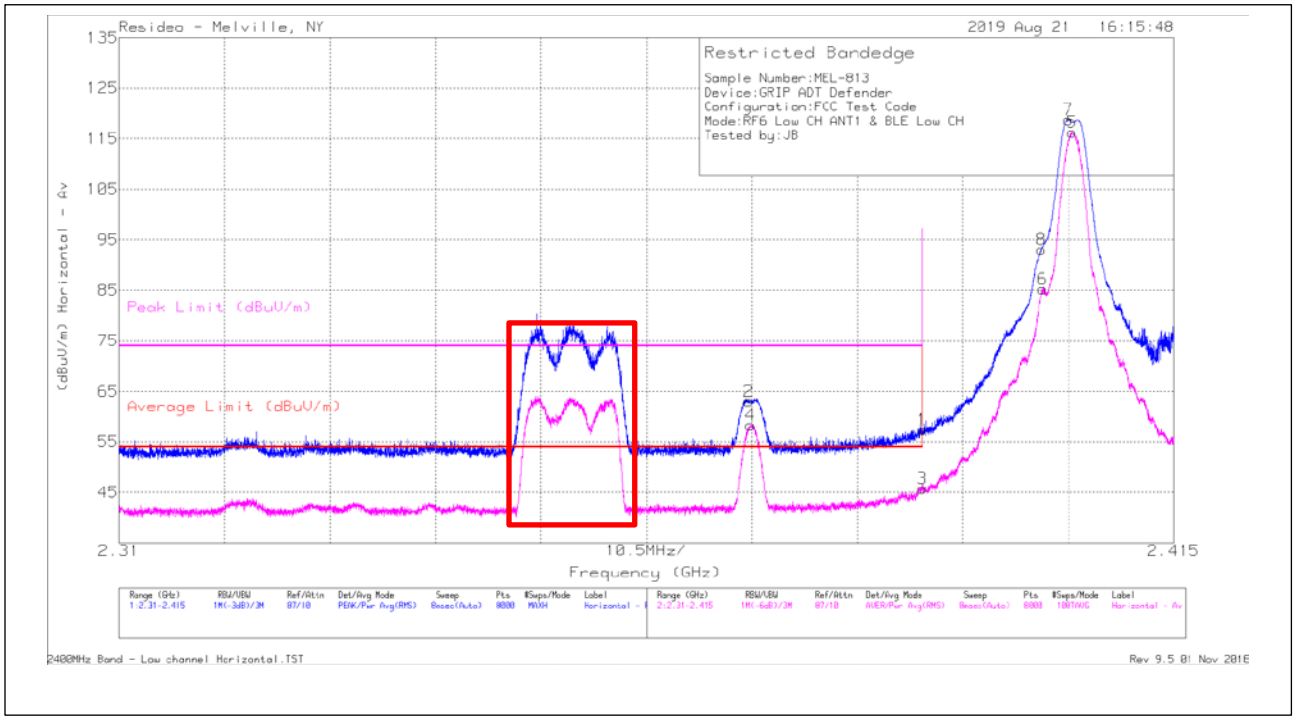
Mid Channel – Data

Simultaneous Transmission

Configuration (Worse-case):

RF6 – Antenna 1, Low Channel
Bluetooth (LE) – Mid Channel

Restricted Band Edge



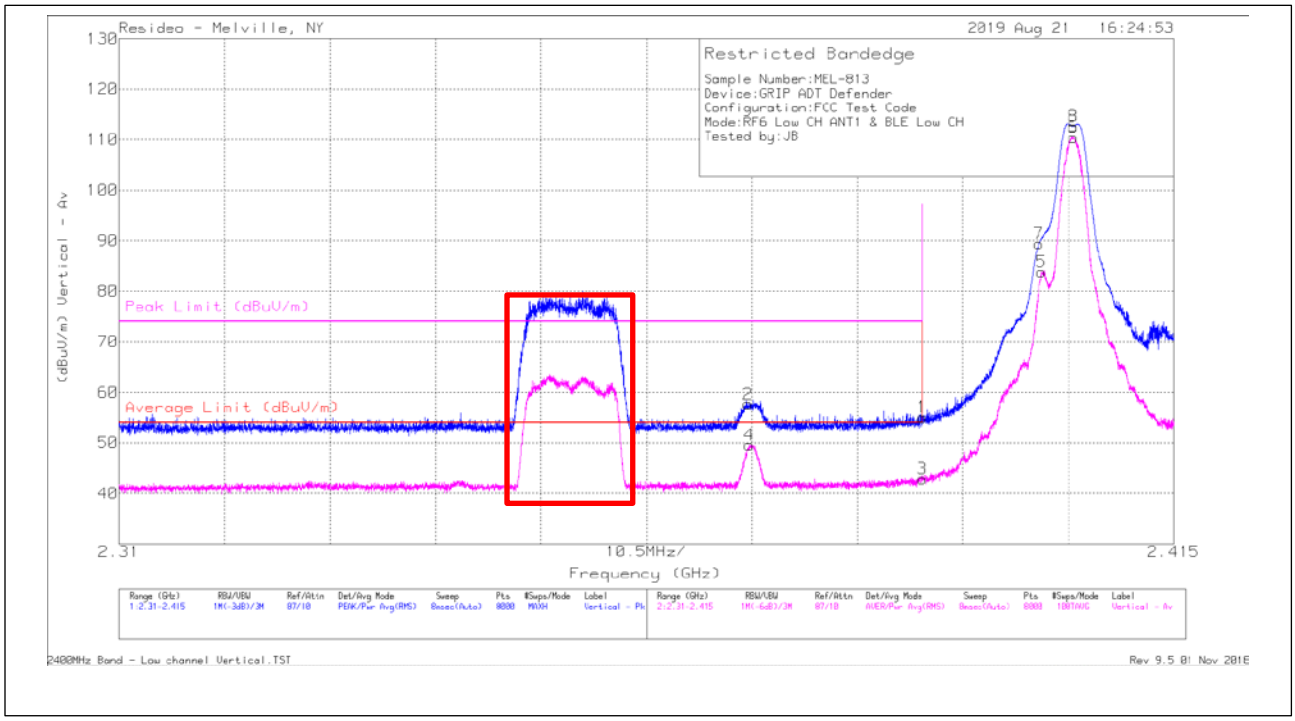
Low Channel Horizontal – Plot

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	23.17	Pk	28.5	5.8	57.47	-	-	74	-16.53	350	348	H
2	* 2.373	28.85	Pk	28.4	5.8	63.05	-	-	74	-10.95	350	348	H
7	** 2.404	84.37	Pk	28.6	5.8	118.77	-	-	-	-	350	348	H
8	** 2.402	58.65	Pk	28.6	5.8	93.05	-	-	-	-	350	348	H
3	* 2.39	11.45	RMS	28.5	5.8	45.75	54	-8.25	-	-	350	348	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - Fundamental frequency
Pk - Peak detector
RMS - RMS detection

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter. Markers 2 & 4 are products of the RF6 radio

Low Channel Horizontal - Data



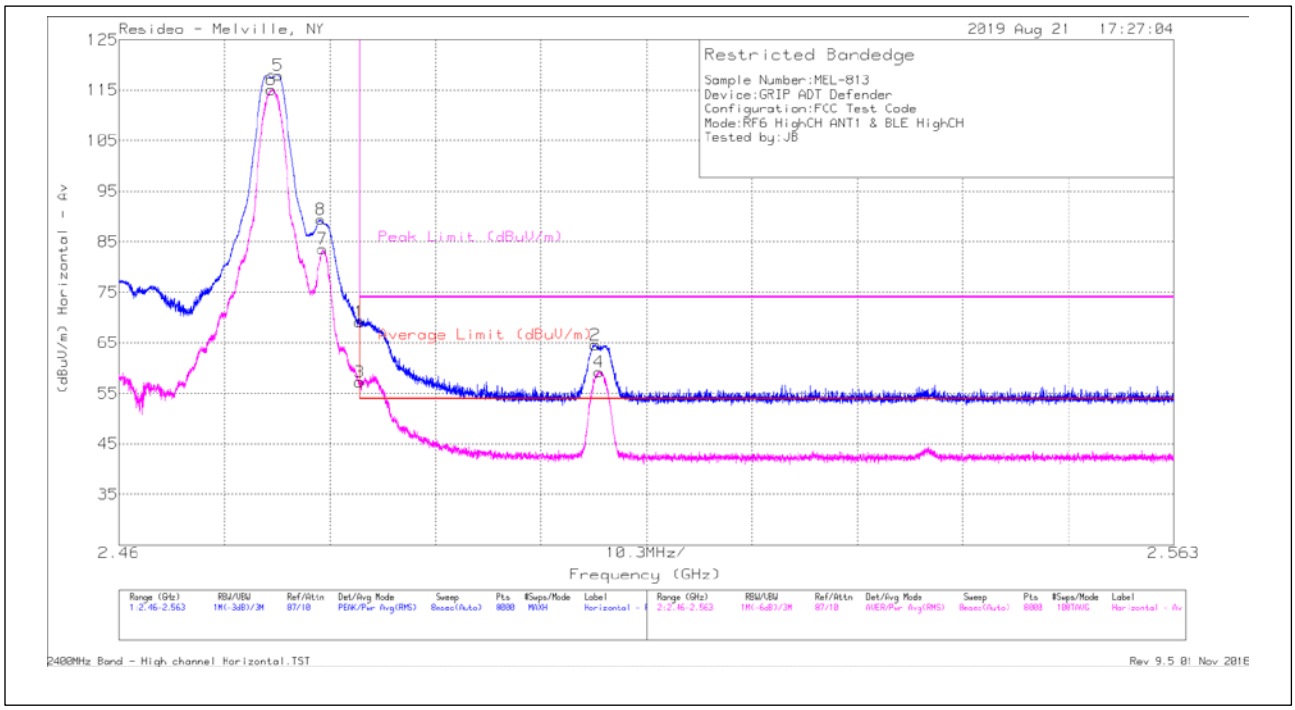
Low Channel Vertical – Plot

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	20.76	Pk	28.5	5.8	55.06	-	-	74	-18.94	265	391	V
2	* 2.373	23.49	Pk	28.4	5.8	57.69	-	-	74	-16.31	265	391	V
7	** 2.402	55	Pk	28.6	5.8	89.4	-	-	-	-	265	391	V
8	** 2.405	78.3	Pk	28.6	5.8	112.7	-	-	-	-	265	391	V
3	* 2.39	8.58	RMS	28.5	5.8	42.88	54	-11.12	-	-	265	391	V
4	* 2.373	15.42	RMS	28.4	5.8	49.62	54	-4.38	-	-	265	391	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - Fundamental frequency
Pk - Peak detector
RMS - RMS detection

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter. Markers 2 & 4 are products of the RF6 radio

Low Channel Vertical - Data



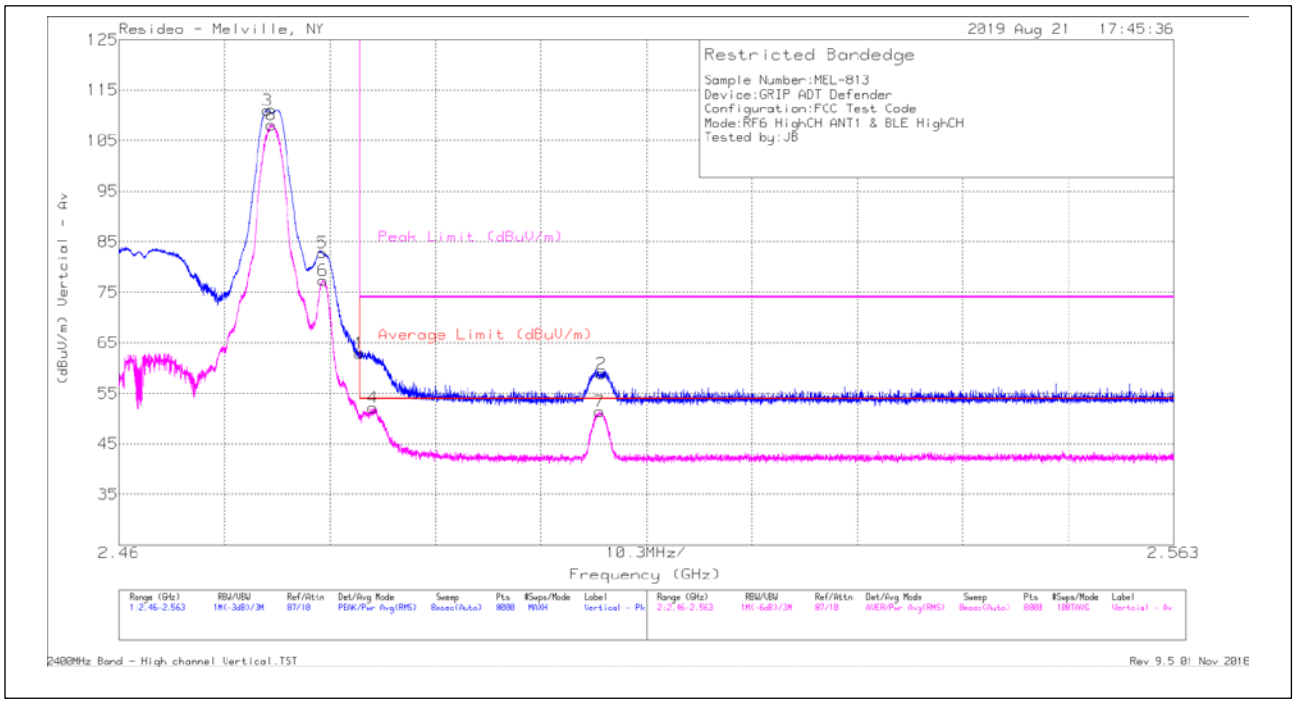
High Channel Horizontal – Plot

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	34.51	Pk	28.7	5.9	69.11	-	-	74	-4.89	342	167	H
2	2.507	29.79	Pk	28.8	6	64.59	-	-	74	-9.41	342	167	H
5	** 2.476	83.34	Pk	28.7	5.9	117.94	-	-	-	-	342	167	H
8	** 2.48	54.79	Pk	28.7	5.9	89.39	-	-	-	-	342	167	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - Fundamental frequency
Pk - Peak detector
RMS - RMS detection

NOTE: Markers 1-4 are products of the RF6 radio

High Channel Horizontal - Data



High Channel Vertical – Plot

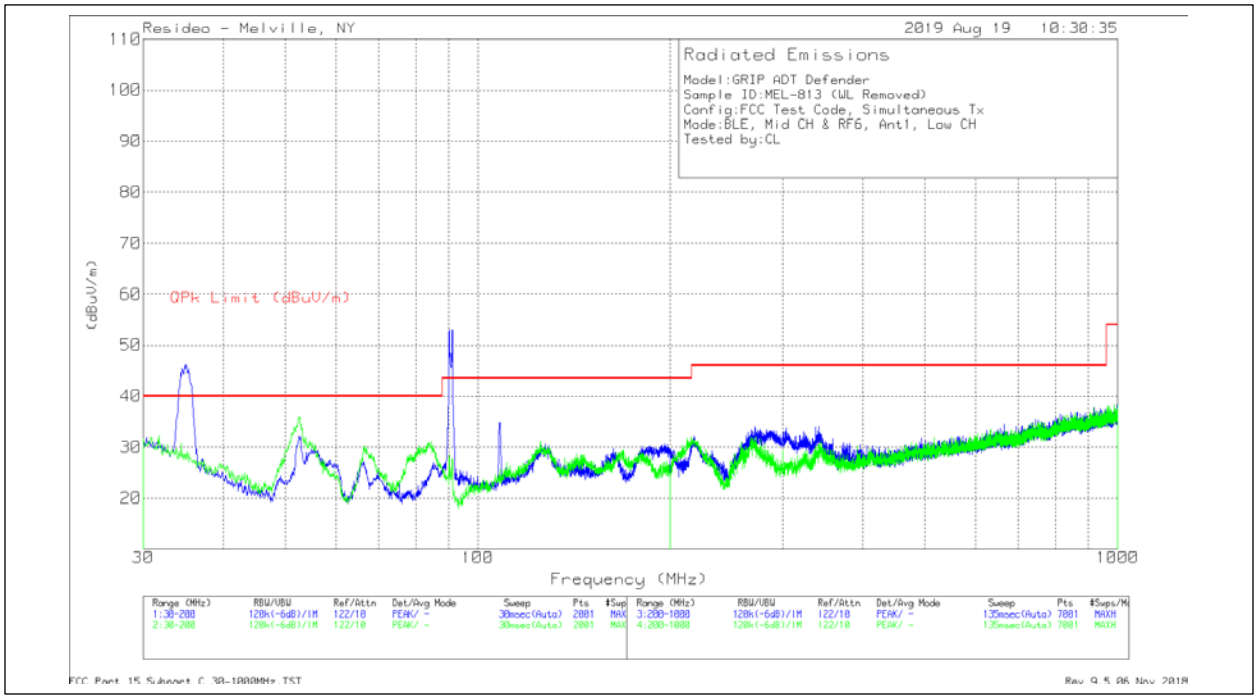
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	28.31	Pk	28.7	5.9	62.91	-	-	74	-11.09	266	372	V
2	2.507	24.05	Pk	28.8	6	58.85	-	-	74	-15.15	266	372	V
3	** 2.475	76.38	Pk	28.7	5.9	110.98	-	-	-	-	266	372	V
5	** 2.48	48.19	Pk	28.7	5.9	82.79	-	-	-	-	266	372	V
4	* 2.485	17.53	RMS	28.7	5.9	52.13	54	-1.87	-	-	266	372	V
7	2.507	16.58	RMS	28.8	6	51.38	54	-2.62	-	-	266	372	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - Fundamental frequency
Pk - Peak detector
RMS - RMS detection

NOTE: Markers 1,2,4,7 are products of the RF6 radio

High Channel Vertical - Data

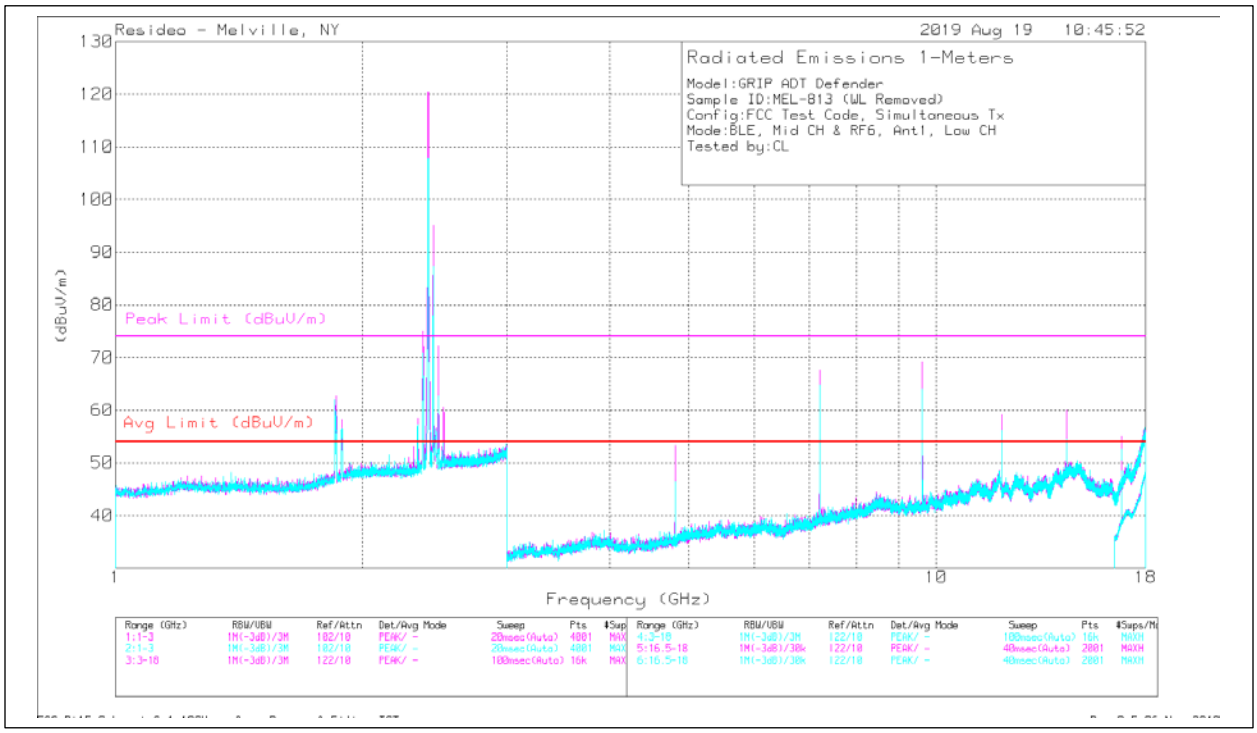
Spurious Emissions



Frequency (MHz)	Meter Reading (dBuV)	Det	AF_JB6 [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
35.3559	10.27	Qp	21	.9	32.17	40	-7.83	117	392	H
52.0262	12.57	Qp	12.2	1.1	25.87	40	-14.13	309	390	H
91.9168	27.31	Qp	12.4	1.5	41.21	43.52	-2.31	178	366	H
* 109.0431	6.01	Qp	16.4	1.6	24.01	43.52	-19.51	321	381	H
52.02	19.47	Qp	12.2	1.1	32.77	40	-7.23	1	164	V
84.4364	12.4	Qp	11.8	1.4	25.6	40	-14.4	135	117	V
* 125.6071	7.63	Qp	17.6	1.8	27.03	43.52	-16.49	80	172	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

30-1000MHz – Plot / Data



1-18GHz – Plot

Note: Emissions detected at ~1.8GHz were found to be ambient and not a product of the EUT. Harmonics depicted above are a product of the RF6 transmitter only. As such, final detection results below are based on that test method (i.e. duty cycle correction factor).

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.889	51.57	PK	33.2	-34.1	50.67	74	-23.33	132	103	H
* 7.333	52.49	PK	36.6	-30.6	58.49	74	-15.51	248	325	H
9.782	58.25	PK	38.1	-28.3	68.05	74	-5.95	302	337	H
* 12.227	43.48	PK	39.2	-24.8	57.88	74	-16.12	46	258	H
14.67	39.78	PK	42.6	-23.8	58.58	74	-15.42	280	127	H
17.114	39.48	PK	41.1	-23.6	56.98	74	-17.02	284	354	H
* 4.889	46.66	PK	33.2	-34.1	45.76	74	-28.24	150	263	V
* 7.333	50.87	PK	36.6	-30.6	56.87	74	-17.13	99	103	V
9.782	55.35	PK	38.1	-28.3	65.15	74	-8.85	157	107	V
* 12.227	40.91	PK	39.2	-24.8	55.31	74	-18.69	53	104	V
14.672	39.31	PK	42.6	-23.9	58.01	74	-15.99	184	368	V
17.111	39.68	PK	41.1	-23.6	57.18	74	-16.82	223	372	V

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	DCF [dB]	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.889	51.57	Av	33.2	-34.1	-23.4	27.27	54	-26.73	132	103	H
* 7.333	52.49	Av	36.6	-30.6	-23.4	35.09	54	-18.91	248	325	H
9.782	58.25	Av	38.1	-28.3	-23.4	44.65	54	-9.35	302	337	H
* 12.227	43.48	Av	39.2	-24.8	-23.4	34.48	54	-19.52	46	258	H
14.67	39.78	Av	42.6	-23.8	-23.4	35.18	54	-18.82	280	127	H
17.114	39.48	Av	41.1	-23.6	-23.4	33.58	54	-20.42	284	354	H
* 4.889	46.66	Av	33.2	-34.1	-23.4	22.36	54	-31.64	150	263	V
* 7.333	50.87	Av	36.6	-30.6	-23.4	33.47	54	-20.53	99	103	V
9.782	55.35	Av	38.1	-28.3	-23.4	41.75	54	-12.25	157	107	V
* 12.227	40.91	Av	39.2	-24.8	-23.4	31.91	54	-22.09	53	104	V
14.672	39.31	Av	42.6	-23.9	-23.4	34.61	54	-19.39	184	368	V
17.111	39.68	Av	41.1	-23.6	-23.4	33.78	54	-20.22	223	372	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK - KDB558074 Method: Maximum Peak
Av - KDB558074 Method: PK + DC Corr (Duty Cycle Correction Factor)

Duty Cycle = 6.75%, thus DC Corr = 20log(0.0675) = -23.4dB

1-18GHz – Data

END OF REPORT