



FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

**EUT
HOME AUTOMATION DONGLE**

MODEL NUMBER: ID:083

FCC ID: DKN-201HD

REPORT NUMBER: 14U18557-1

ISSUE DATE: 2014-09-27

Prepared for

**ECHOSTAR
90 INVERNESS CIRCLE EAST
ENGLEWOOD, CO 80112**

Prepared by

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NVLAP LAB CODE 100255-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	2014- 09-27	Initial Issue	Joseph Danisi
1	2014- 10-08	Correct frequency typo, antenna calibration	Joseph Danisi

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: EHOSTAR
90 INVERNESS CIRCLE EAST
ENGLEWOOD, CO 80112

EUT DESCRIPTION: HOME AUTOMATION DONGLE

MODEL: ID:083

SERIAL NUMBER: Non serialized sample

DATE TESTED: 2014-08-25 to 2014-09-27

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	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, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL LLC. By:

Tested By:



Bob DeLisi
Program Manager – EMC
ULLLC

Joseph Danisi
Project Lead
UL LLC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 1285 Walt Whitman Rd. Melville, NY 11747, USA.

UL Melville is accredited by NVLAP, Laboratory Code 100255-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/1002550.htm>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

4.3. MEASUREMENT UNCERTAINTY

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

Test	Uncertainty
Conducted Emissions – ISN (worst case 150kHz-30MHz)	2.7, k=2 (95%)
Radiated Emissions, 30-200MHz, Horizontal	3.6, k=2 (95%)
Radiated Emissions, 30-200MHz, Vertical	3.8, k=2 (95%)
Radiated Emissions, 200-1000MHz, Horizontal	2.8, k=2 (95%)
Radiated Emissions, 200-1000MHz, Vertical	3.7, k=2 (95%)
Radiated Emissions, 1-18GHz (worst case, sVSWR)	4.9, k=2 (95%)

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.15.4 Zigbee transceiver. The dongle has two antenna ports that operate only as a SISO device they cannot transmit simultaneously only one at a time.

The radio module is manufactured by Echostar 90 Inverness Circle East Englewood, CO 80112

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2405 - 2475	802.15.4 ZigBee	17.92	61.94
2475	802.15.4 ZigBee	10.94	12.42
2480	802.15.4 ZigBee	-41.5	0.00

Note: 2405 to 2475MHz power levels indicated in above table exclude 2475MHz

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Monopole antenna, on J1 Antenna port with a maximum gain of 0dBi and on J2 antenna port it utilizes Inverted-F with a maximum gain of 0dBi

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Nodetest v5.1.1.

The EUT driver software installed during testing was N/A

The test utility software used during testing was putty to enter commands

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated Emission below 1GHz and power line Conducted Emission was performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

5.6 DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Hewlett Packard	Elite Book	N/A	N/A
Router	Netgear	MBRN3000	N/A	PY309200112
Hopper with Sling	Echostar	913	N/A	DKNCB1138

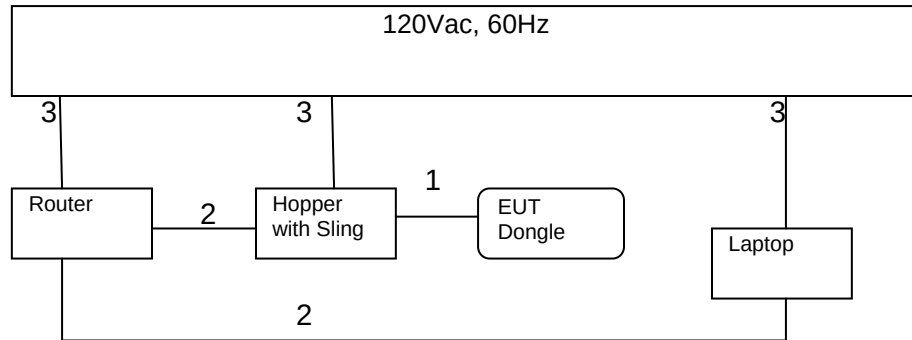
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Network	2	RJ45	Ethernet	5	None
2	Communication	1	USB	USB	1	None
3	Mains	3	Power	Wire	1	None

TEST SETUP

The EUT is stand-alone device software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
60Hz-30MHz					
EMI Receiver	Rohde & Schwarz	ESCI7	75141	2014-01-14	2015-01-29
Active Loop Antenna	EMCO	6507	ME5A-288	2013-12-02	2014-12-30
Switch Driver	HP	11713A	ME7A-627	N/A	N/A
System Controller	Sunol Sciences	SC98V	ME7A-624	N/A	N/A
Camera Controller	Panasonic	WV-CU254	44395	N/A	N/A
RF Switch Box	UL	1	44398	N/A	N/A
Measurement Software	UL	Version 9.5	44740	N/A	N/A
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268	2012-12-22	2014-12-22
Multimeter	Fluke	83III	ME5B-305	2014-01-28	2015-01-31

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
30-1000MHz					
EMI Receiver	Rohde & Schwarz	ESCI7	75141	2014-01-29	2015-01-31
Hybrid Antenna	Sunol	JB-1	84106	2014-02-19	2015-02-19
Switch Driver	HP	11713A	ME7A-627	N/A	N/A
System Controller	Sunol Sciences	SC99V	44396	N/A	N/A
Camera Controller	Panasonic	WV-CU254	44395	N/A	N/A
RF Switch Box	UL	1	44398	N/A	N/A
Measurement Software	UL	Version 9.5	44740	N/A	N/A
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268	2012-12-22	2014-12-22
Multimeter	Fluke	83III	ME5B-305	2014-01-28	2015-01-31
Above 1GHz (Band Optimized System)					
Spectrum Analyzer	Agilent	E4446A	72823	2014-06-13	2015-06-13
Horn Antenna (2-4 GHz)	ETS	3161-02 (22°)**	48107	2007-09-27	See * below
Horn Antenna (4-8 GHz)	ETS	3161-03 (22°)**	48106	2007-09-27	See * below
Horn Antenna (8-12 GHz)	ETS	3160-07 (26°)**	8933	2008-11-24	See * below
Horn Antenna (1-18GHz)	EMCO	3115	5A-766	2013-12-03	2014-12-03
Signal Path Controller	HP	11713A	50250	N/A	N/A
Gain Controller	HP	11713A	50251	N/A	N/A
RF Switch / Preamp Fixture	UL	BOMS1	50249	N/A	N/A
System Controller	UL	BOMS2	50252	N/A	N/A
Measurement Software	UL	Version 9.5	44740	N/A	N/A
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268	2012-12-22	2014-12-22
Multimeter	Fluke	83III	ME5B-305	2014-01-28	2015-01-31
* - Note: As allowed by the calibration standard ANSI C63.10-2009 section 4.4.2, standard gain horns need only a one-time calibration. Only if physical damage occurs will the horn antenna require re-calibration. Gain standard horn antennas (sometimes called standard gain horn antennas) need not be calibrated beyond that which is provided by the manufacturer unless they are damaged or deterioration is suspected, or they are used at a distance closer than $2D^2/\lambda$. Gain standard horn antennas have gains that are fixed by their dimensions and dimensional tolerances.** - Number in parentheses denotes antenna beam width.					

Bench Tests					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
RF Room 1					
Spectrum Analyzer	Agilent	N9030A	85671	2014-06-27	2015-06-27
Power Meter	Hewlett Packard	437B	73872	2014-01-29	2015-01-31
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	43733	2014-03-24	2016-03-24
Multimeter	Fluke	83III	ME5B-305	2014-01-28	2015-01-31

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
Conducted Emissions – GP 1					
EMI Receiver	Rohde & Schwarz	ESIB 40	34968	2014-04-09	2015-04-09
LISN	Solar	9252-50-R-24-BNC	ME5A-636	2014-01-28	2015-01-31
Switch Driver	HP	11713A	44397	N/A	N/A
RF Switch Box	UL	4	44404	N/A	N/A
Measurement Software	UL	Version 9.5	44736	N/A	N/A
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	43734	2014-03-24	2016-03-24
Multimeter	Fluke	83V	43443	2014-01-28	2015-01-31

7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

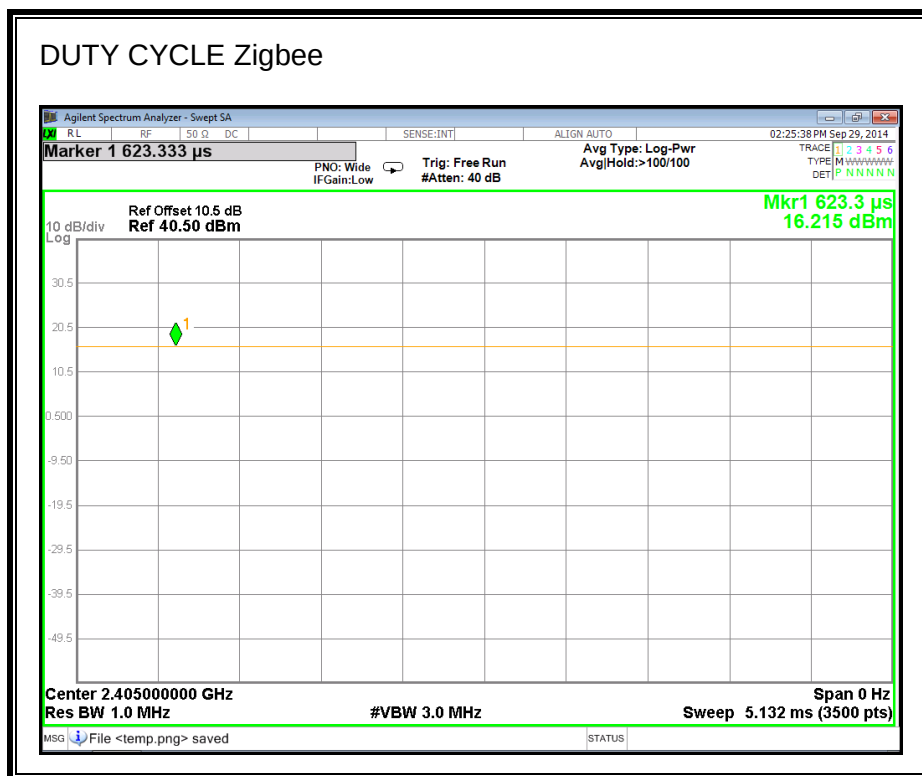
PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

7.1. ON TIME AND DUTY CYCLE RESULTS

7.2. DUTY CYCLE PLOTS

2.4 GHz BAND



8. ANTENNA PORT TEST RESULTS

8.1. 802.15.4 MODE IN THE 2.4 GHz BAND

8.1.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

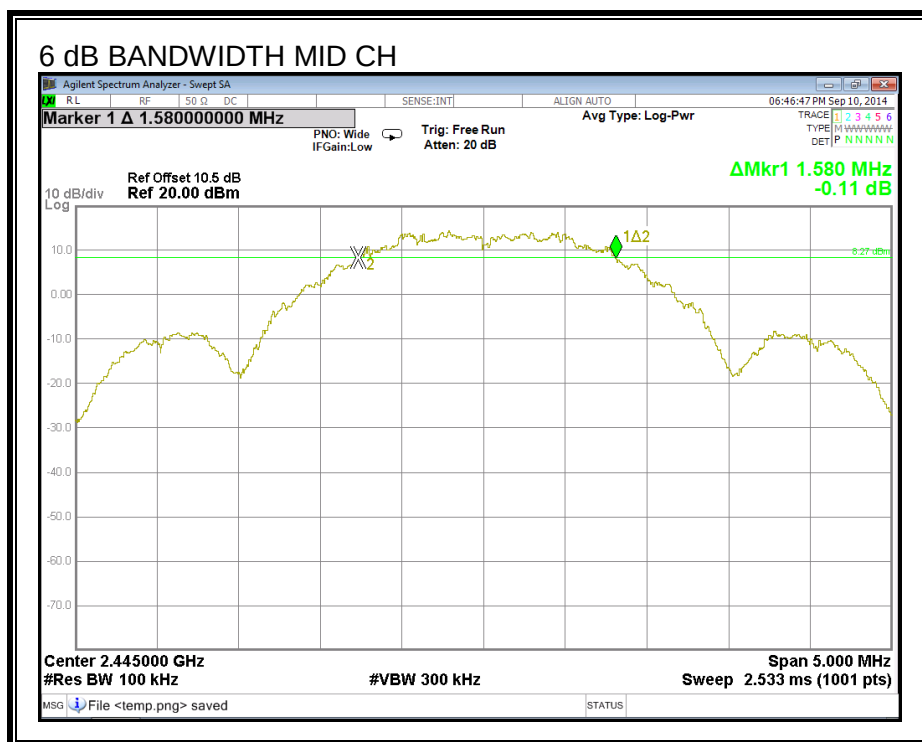
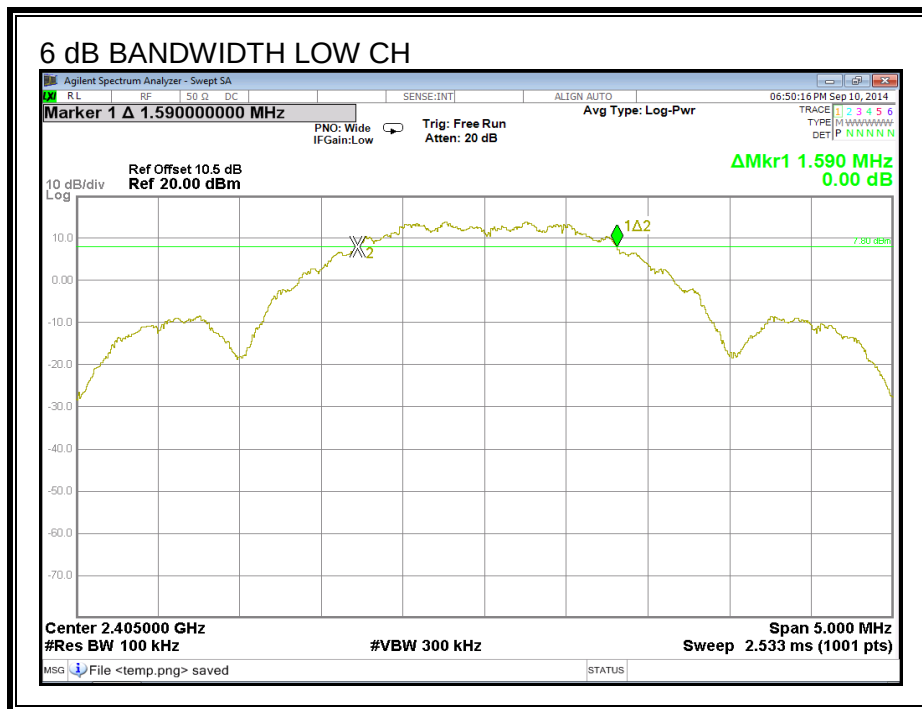
RESULTS J1 Antenna Port

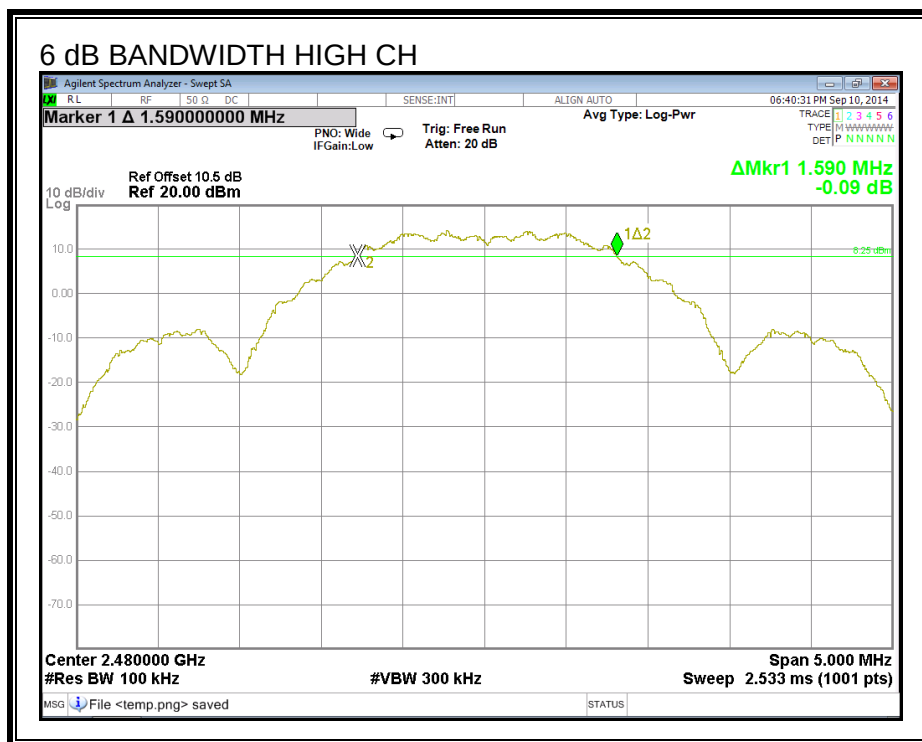
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2405	1.59	0.5
Middle	2445	1.58	0.5
High	2480	1.59	0.5

RESULTS J2 Antenna Port

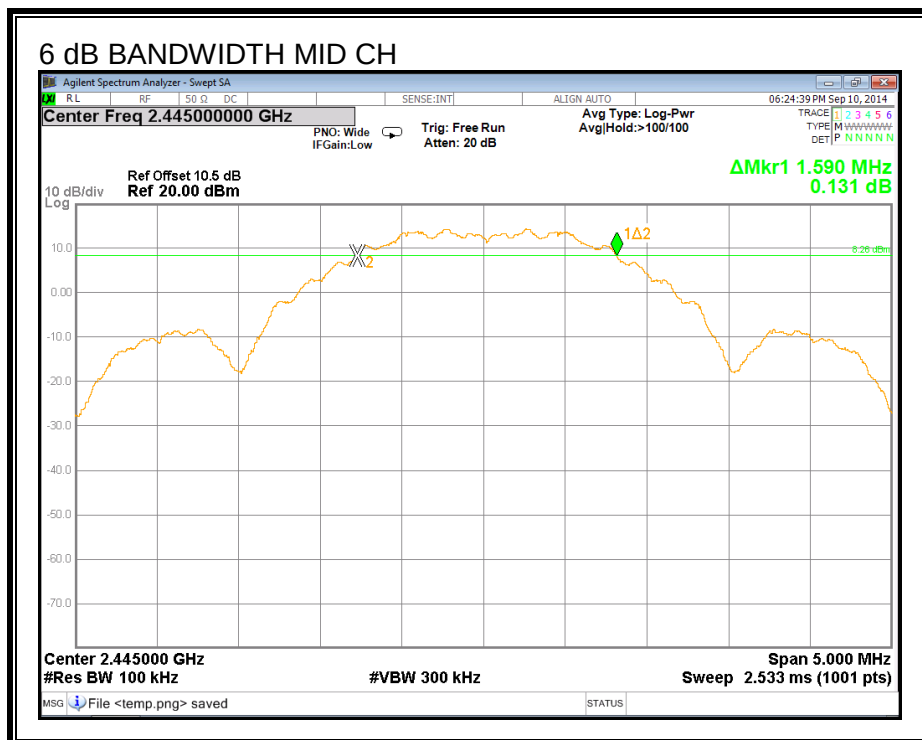
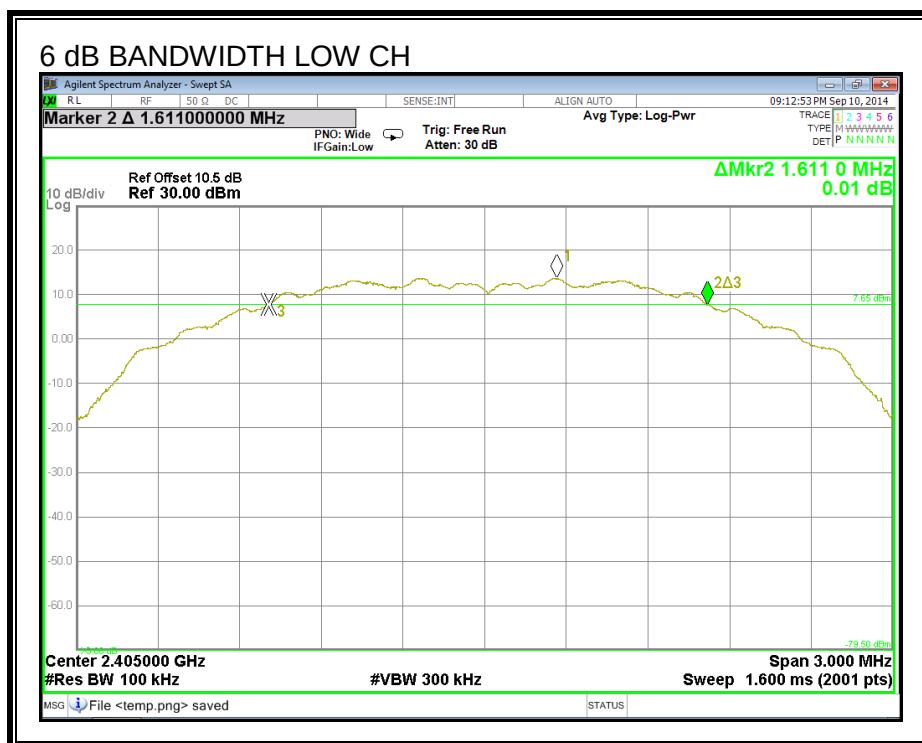
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2405	1.611	0.5
Middle	2445	1.59	0.5
High	2480	1.6	0.5

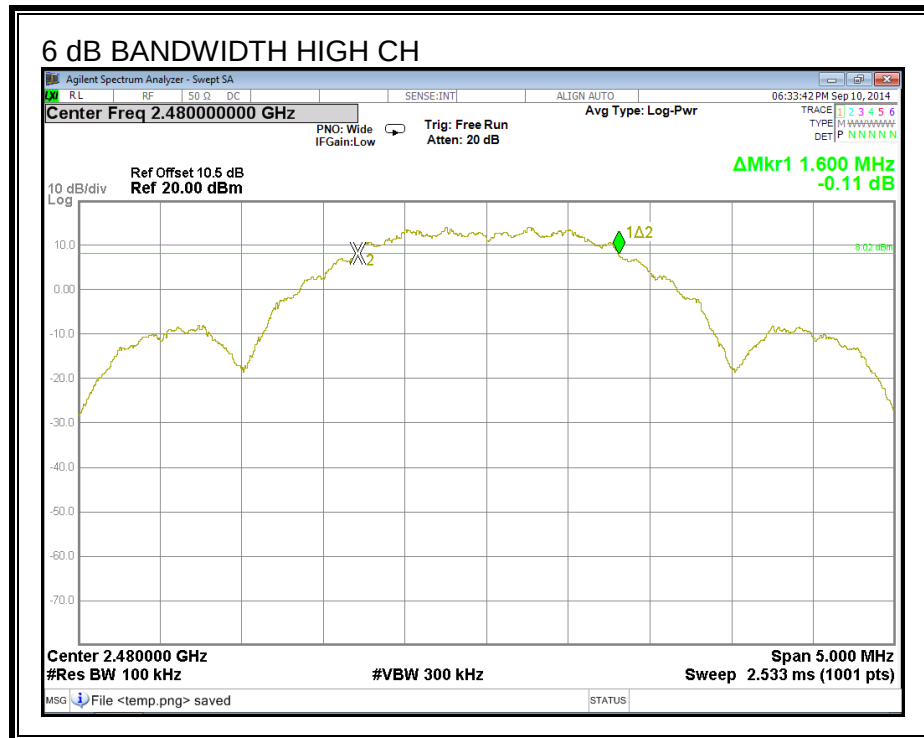
6 dB BANDWIDTH J1 Antenna Port





6 dB BANDWIDTH J2 Antenna Port





8.1.2 OUTPUT POWER

LIMITS

FCC §15.247 (b)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 6db bandwidth of the EUT.

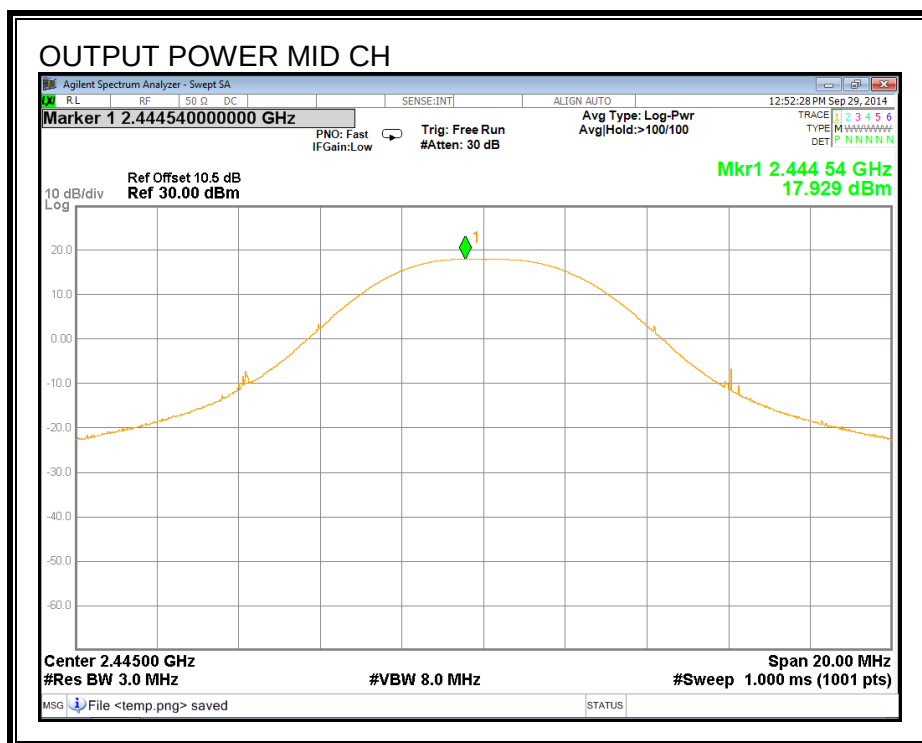
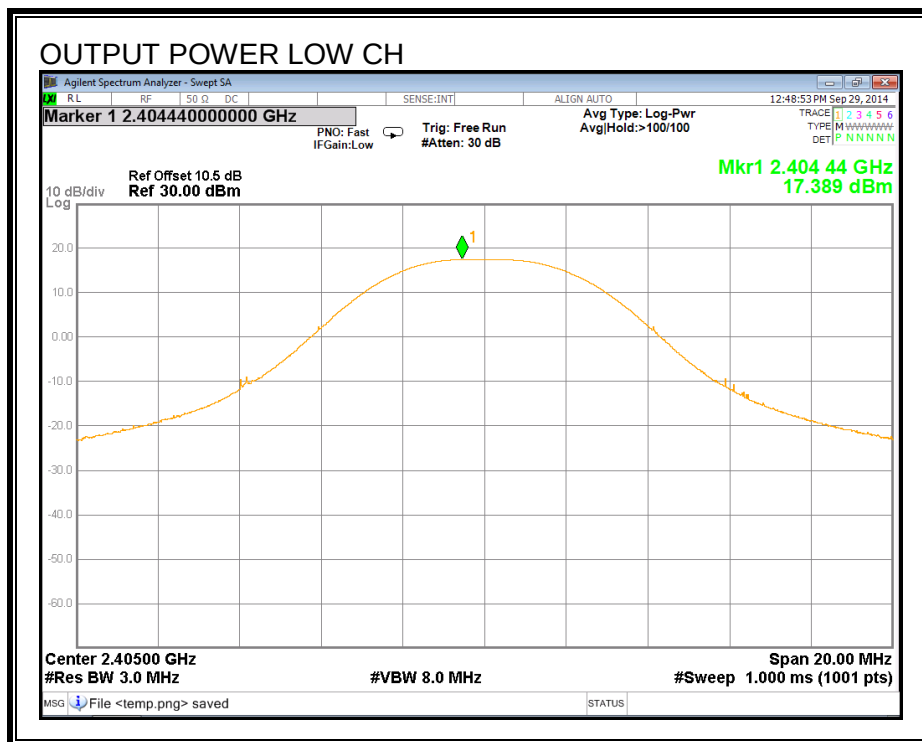
RESULTS J1 Antenna Port

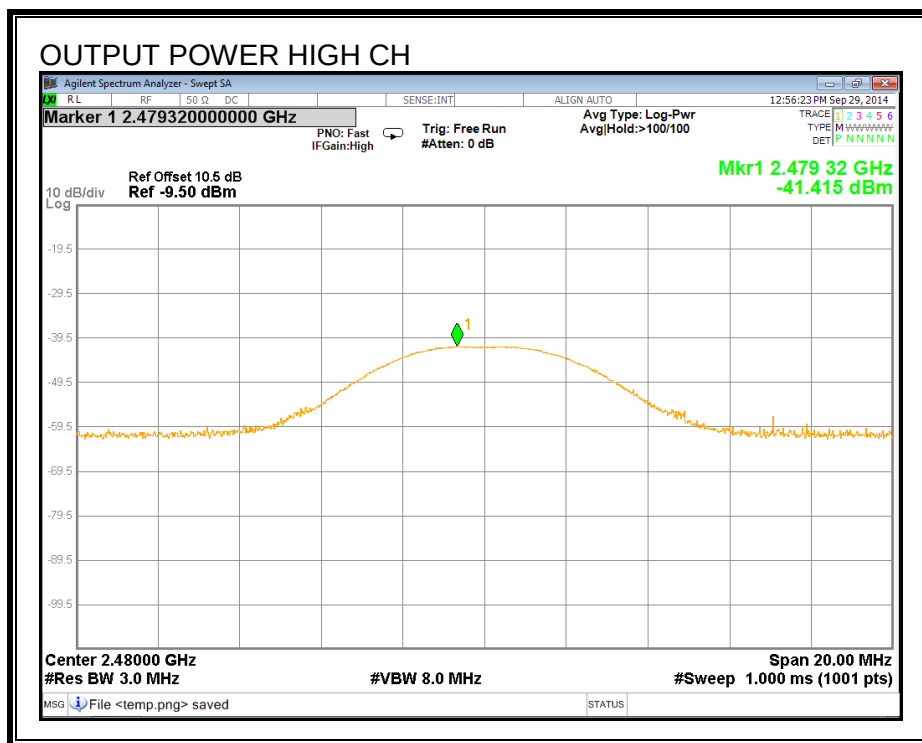
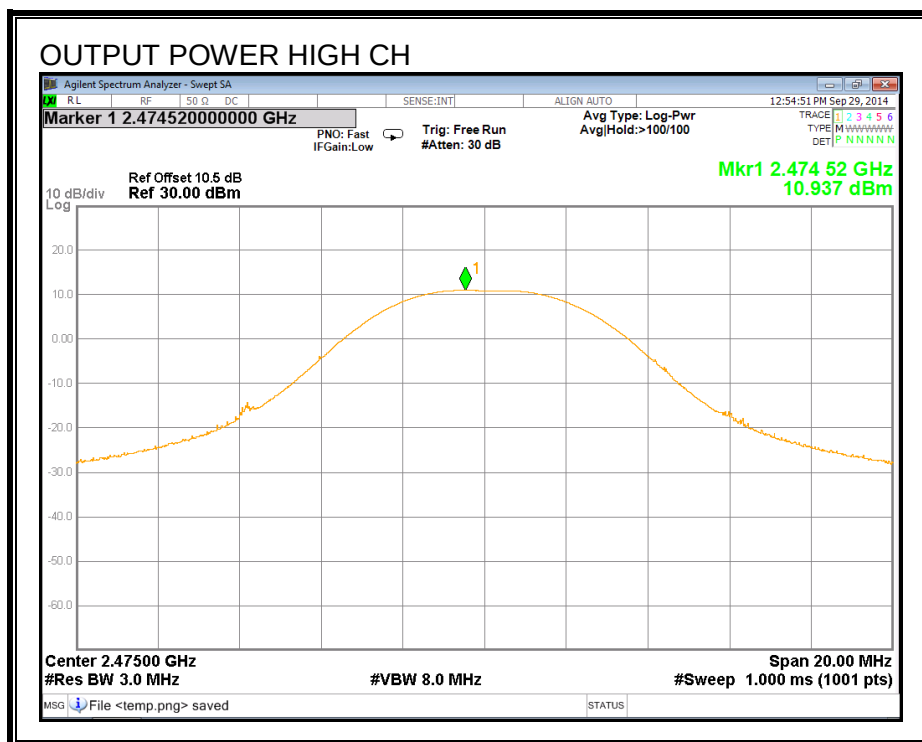
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2405	17.24	30	-12.76
Middle	2445	17.92	30	-12.08
High	2475	10.94	30	-19.06
High	2480	-41.50	30	-71.50

RESULTS J2 Antenna Port

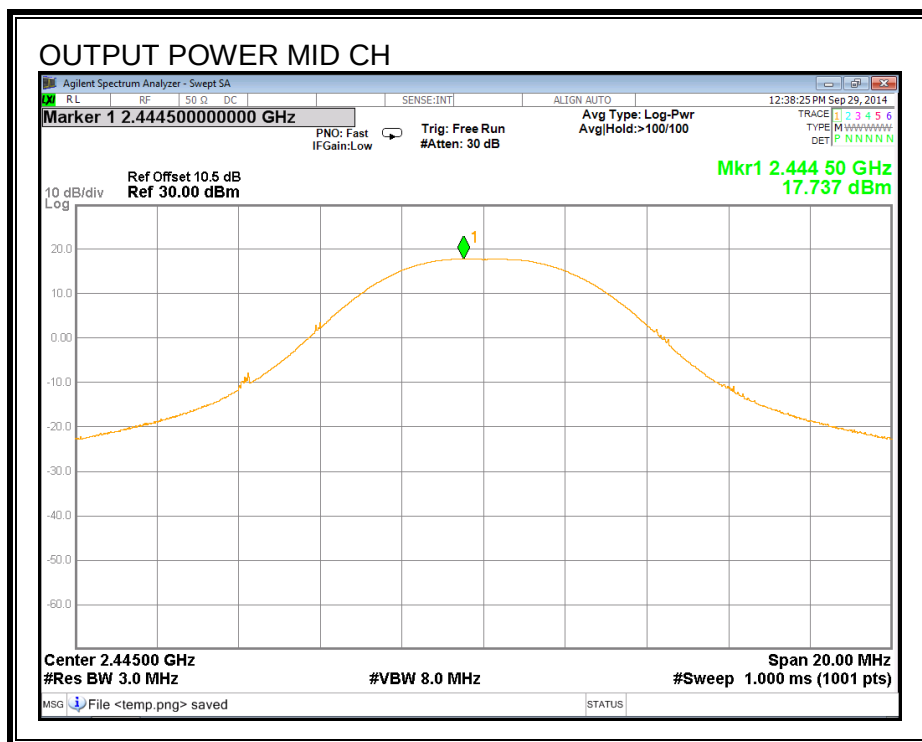
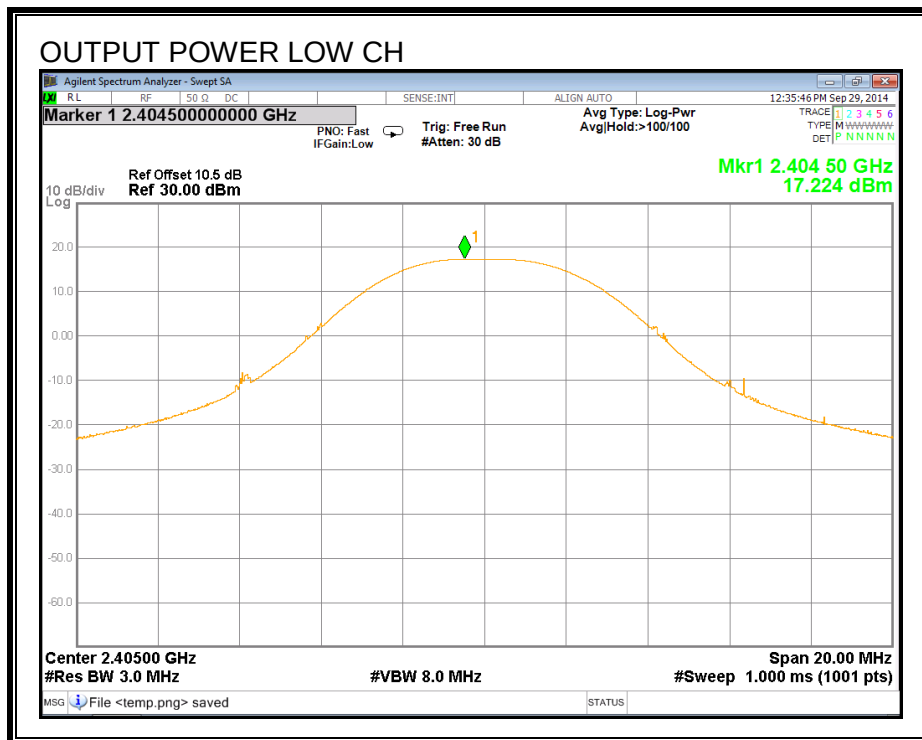
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2405	17.20	30	-12.80
Middle	2445	17.70	30	-12.30
High	2475	10.79	30	-19.21
High	2480	-41.40	30	-71.40

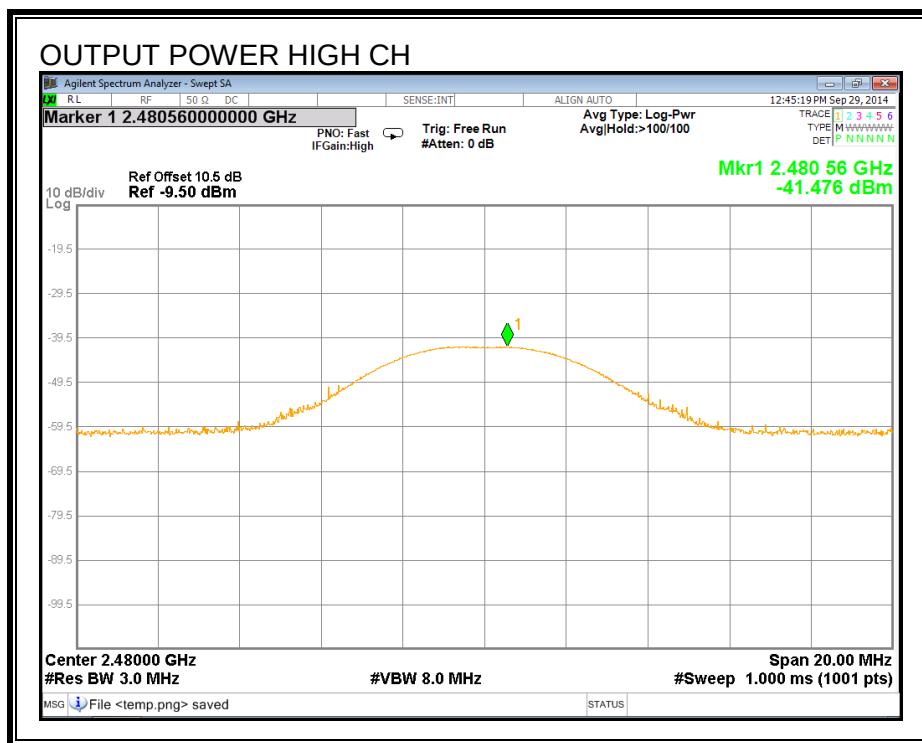
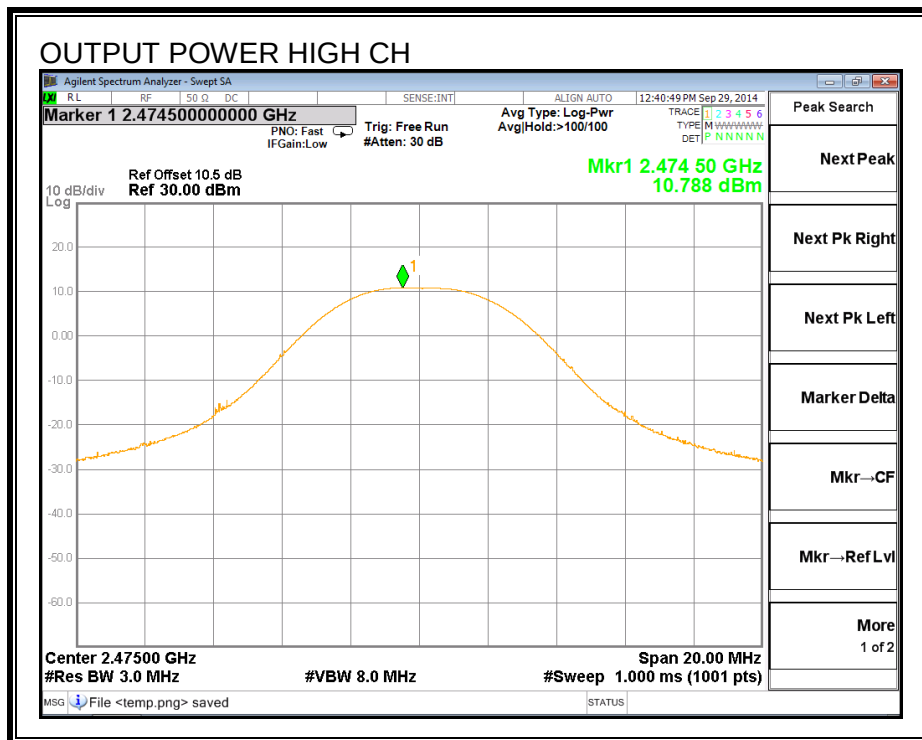
OUTPUT POWER J1 Antenna Port





OUTPUT POWER J2 Antenna Port





8.1.3 AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS J1 Antenna Port

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2405	17.21
Middle	2445	17.82
High	2475	10.91
High	2480	-45.70

RESULTS J2 Antenna Port

Channel	Frequency (MHz)	Power (dBm)
Low	2405	17.10
Middle	2445	17.60
High	2475	10.60
High	2480	-45.20

8.1.4 POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", June 5th 2014.

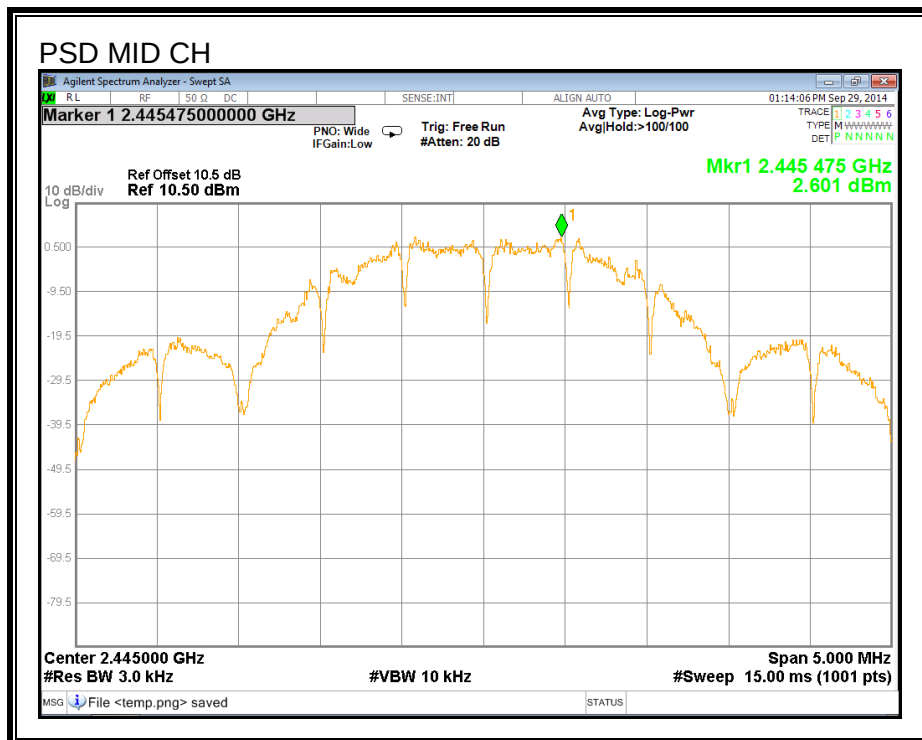
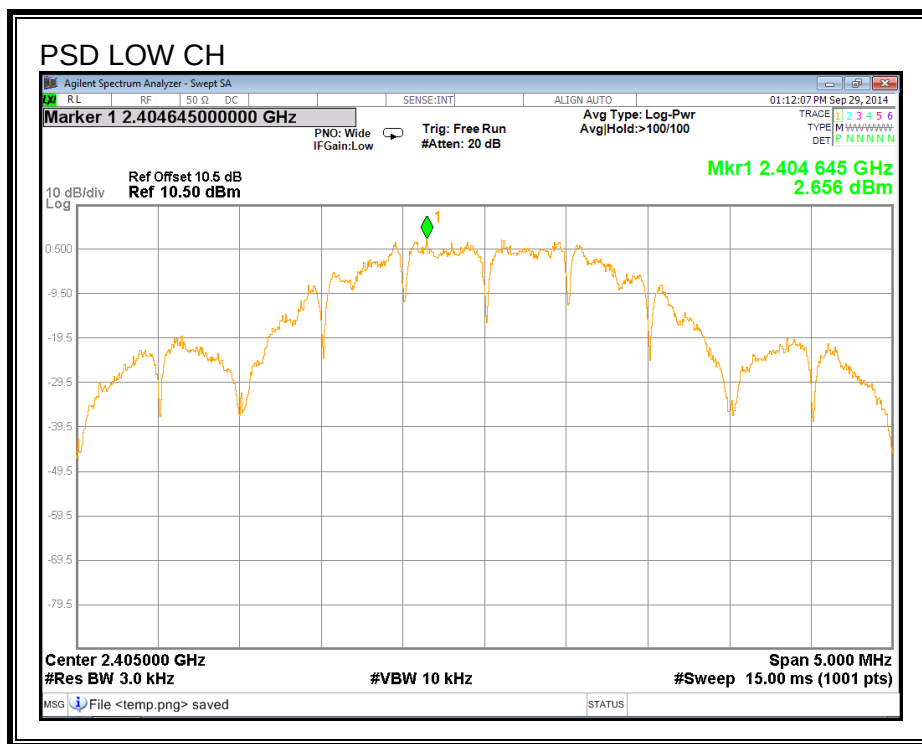
RESULTS J1 Antenna Port

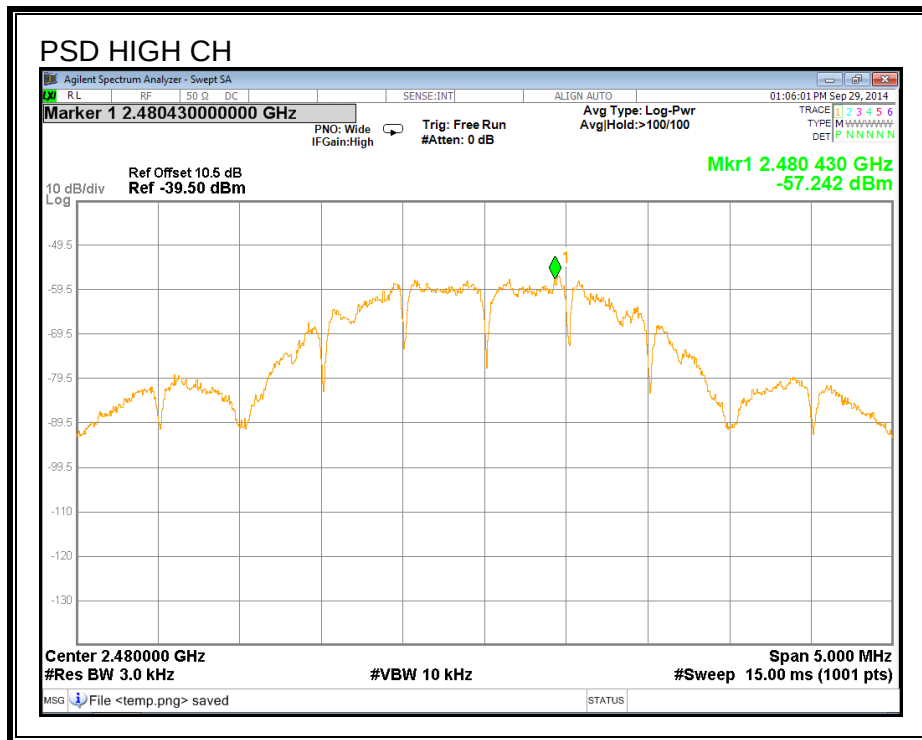
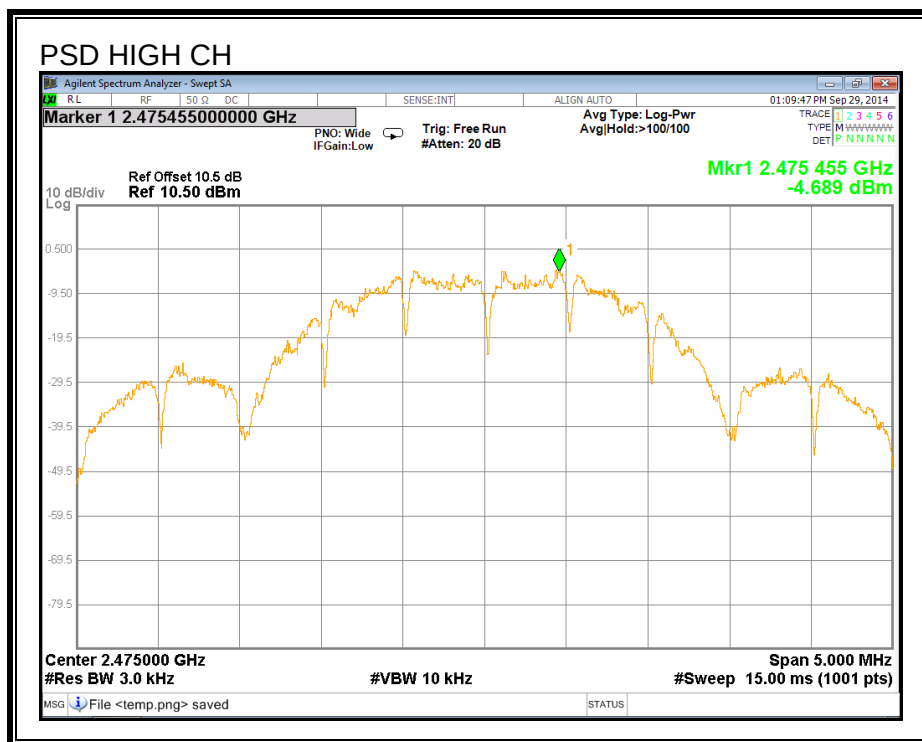
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2405	2.65	8	-5.35
Middle	2440	2.60	8	-5.40
High	2475	-4.69	8	-12.69
High	2480	-57.20	8	-65.20

RESULTS J2 Antenna Port

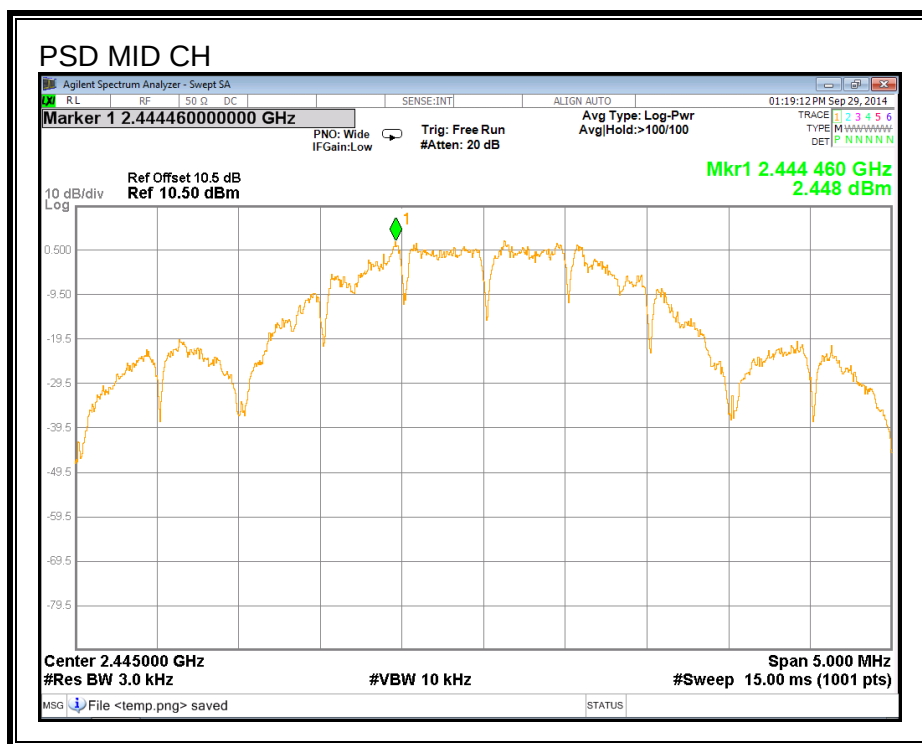
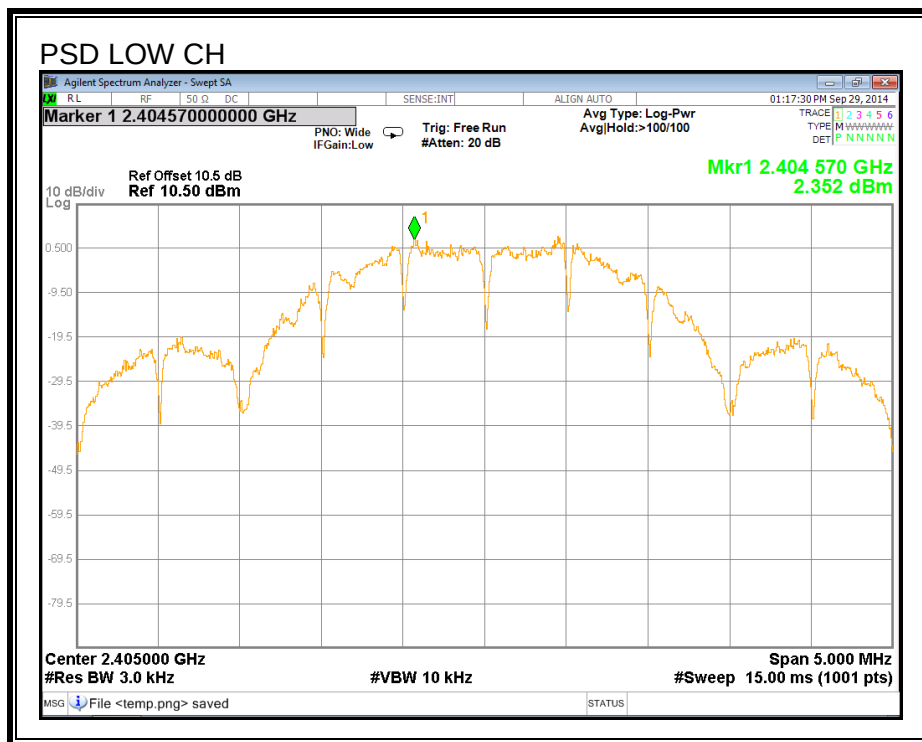
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2405	2.35	8	-5.65
Middle	2440	2.45	8	-5.55
High	2475	-5.20	8	-13.20
High	2480	-57.40	8	-65.40

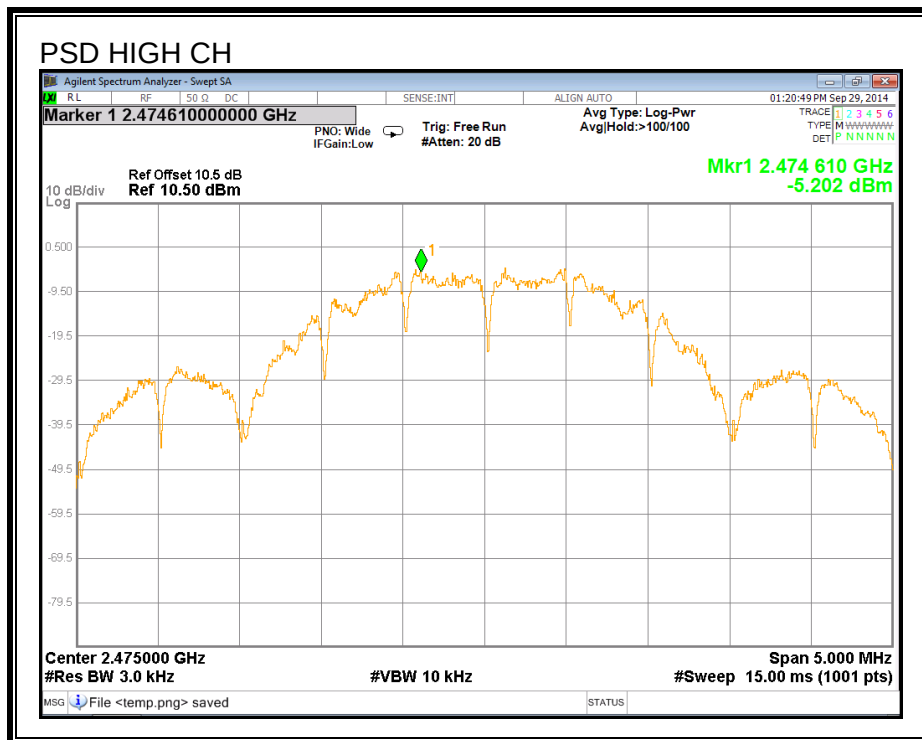
POWER SPECTRAL DENSITY J1 Antenna Port





POWER SPECTRAL DENSITY J2 Antenna Port





8.1.5 CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

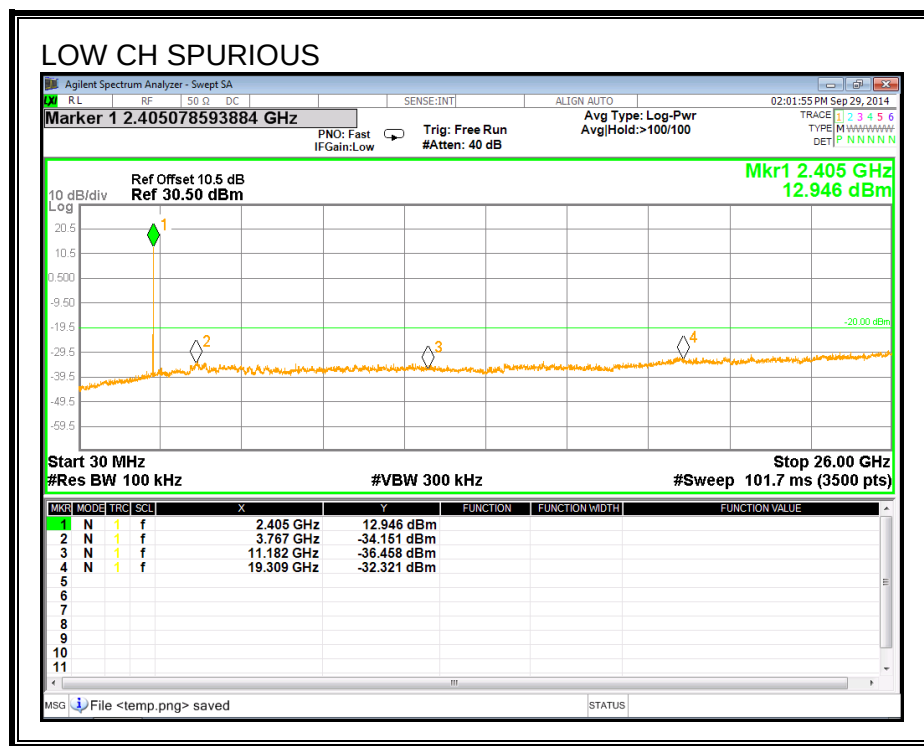
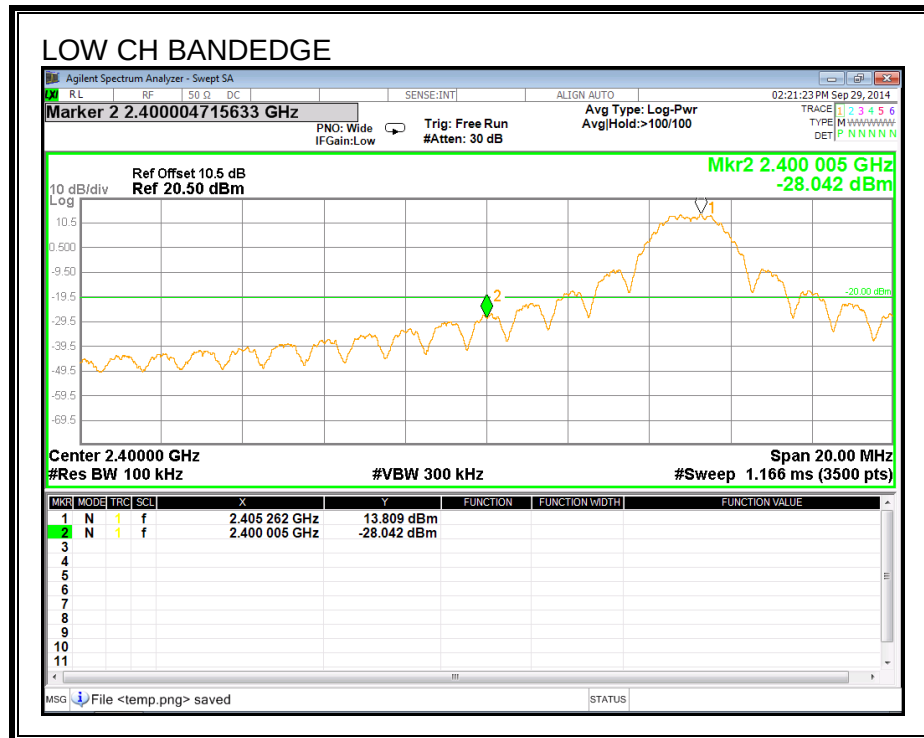
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

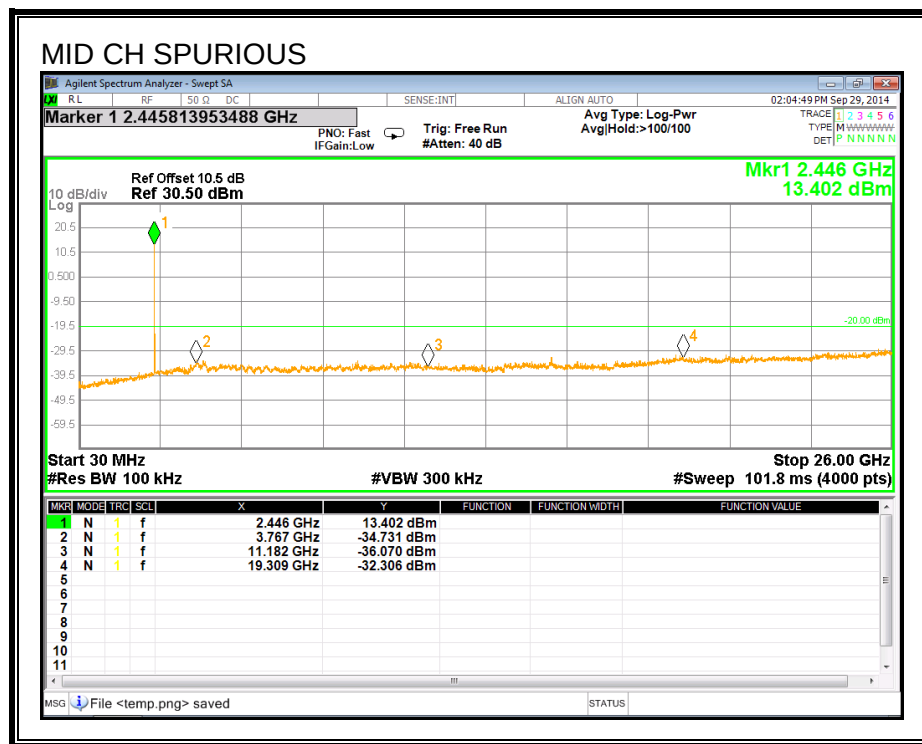
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS J1 Antenna Port

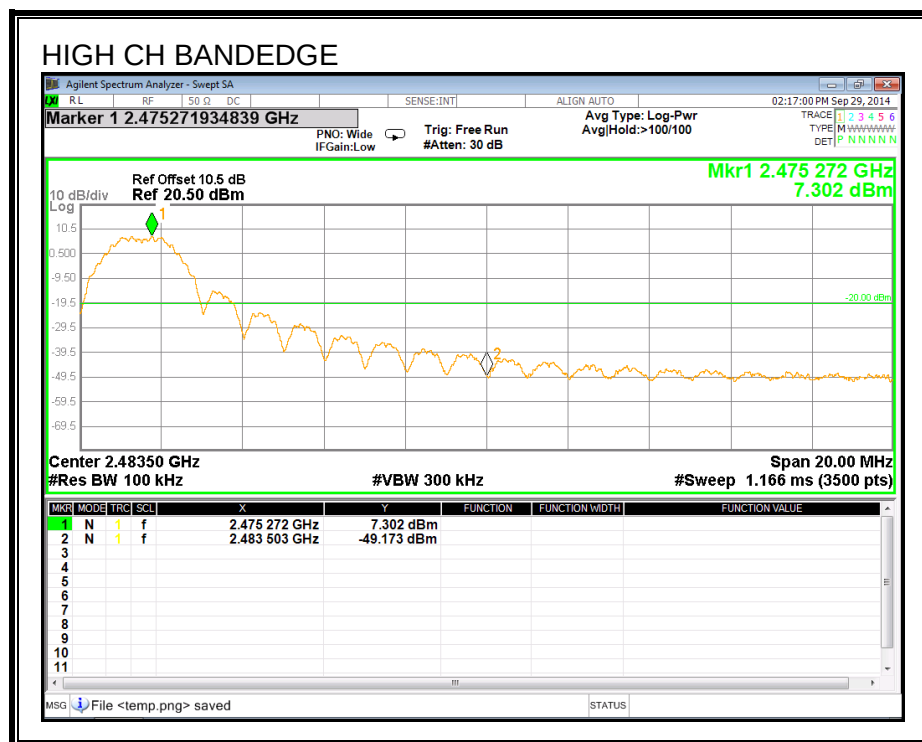
SPURIOUS EMISSIONS, LOW CHANNEL

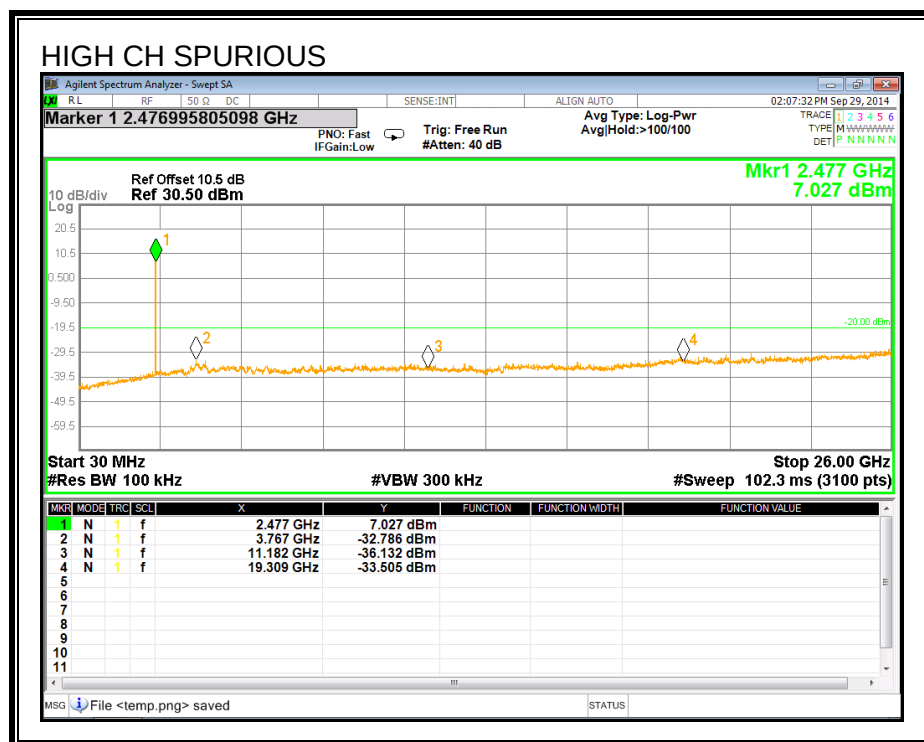
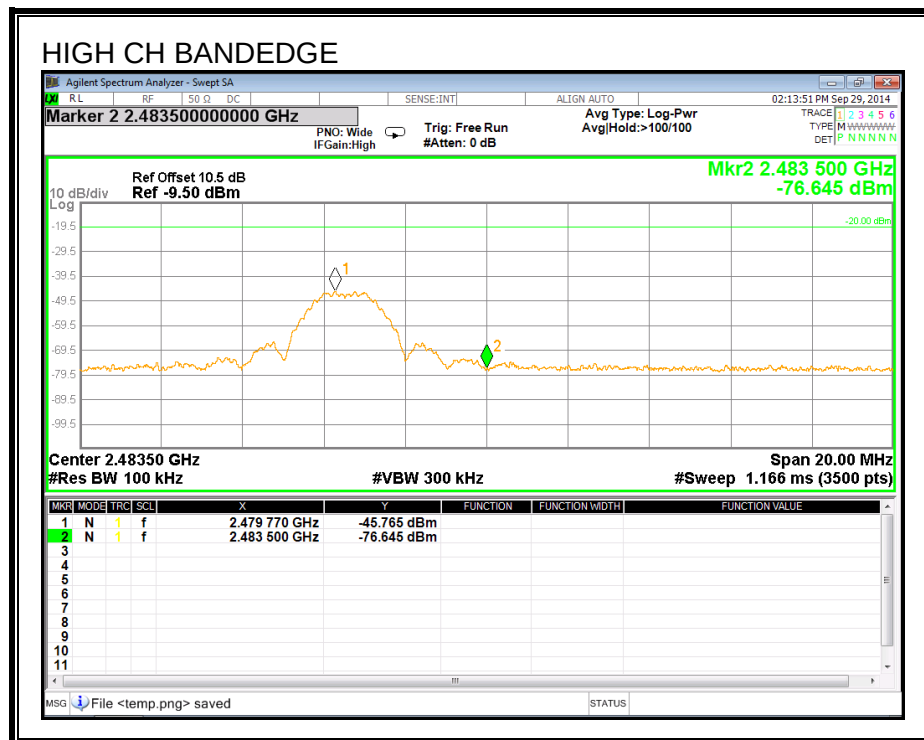


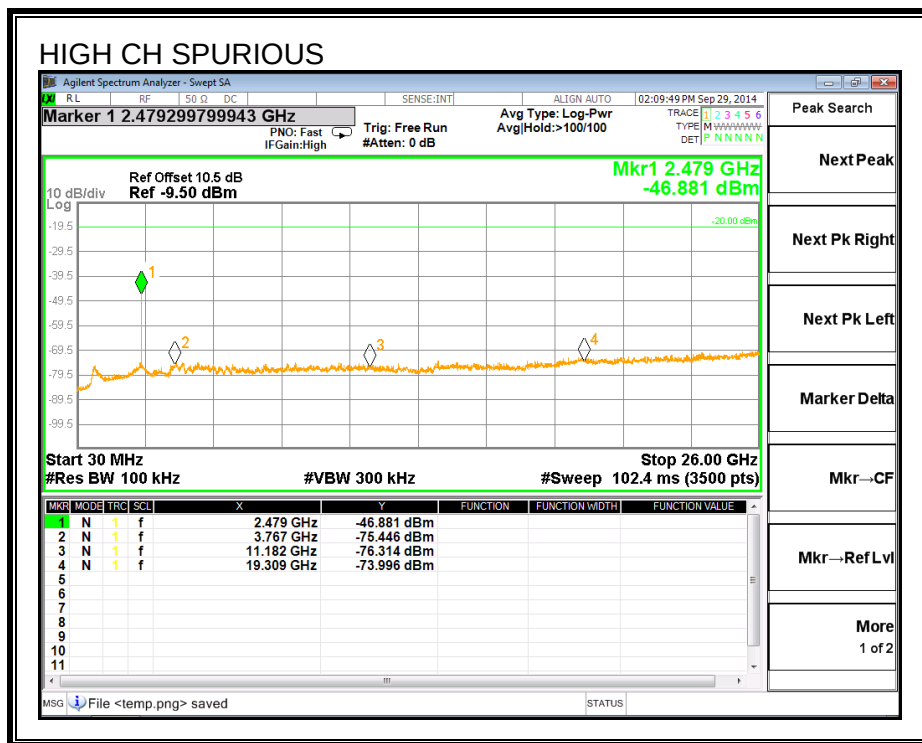
SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL

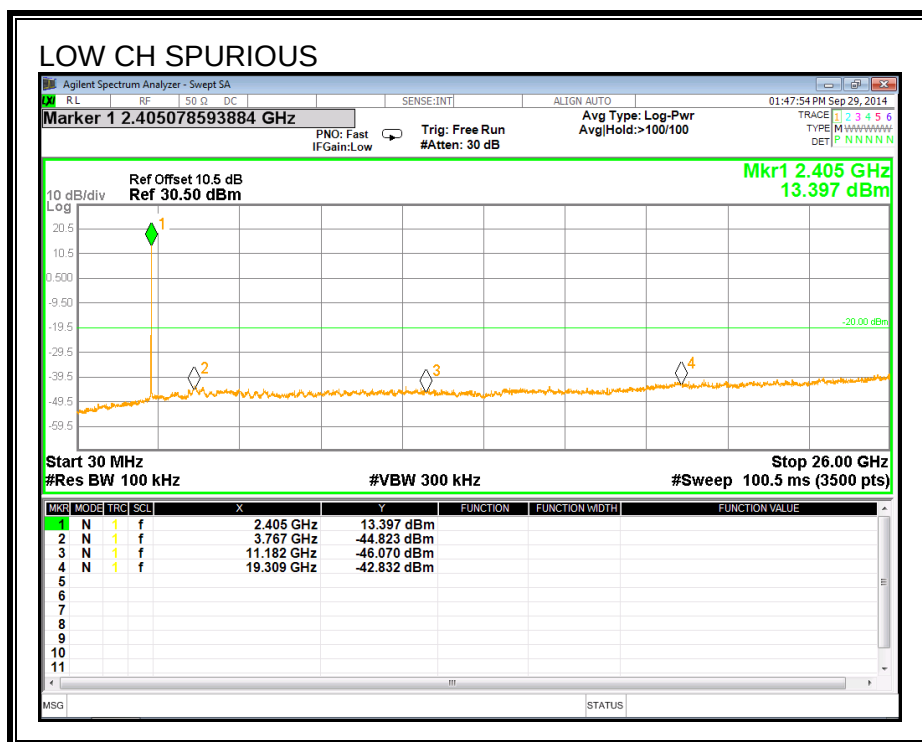
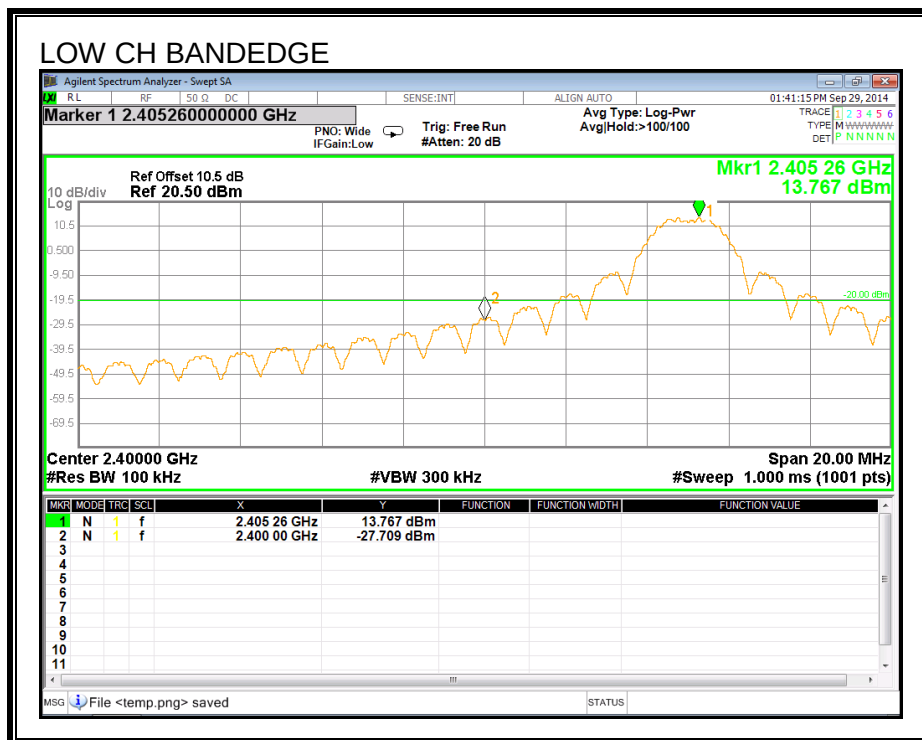




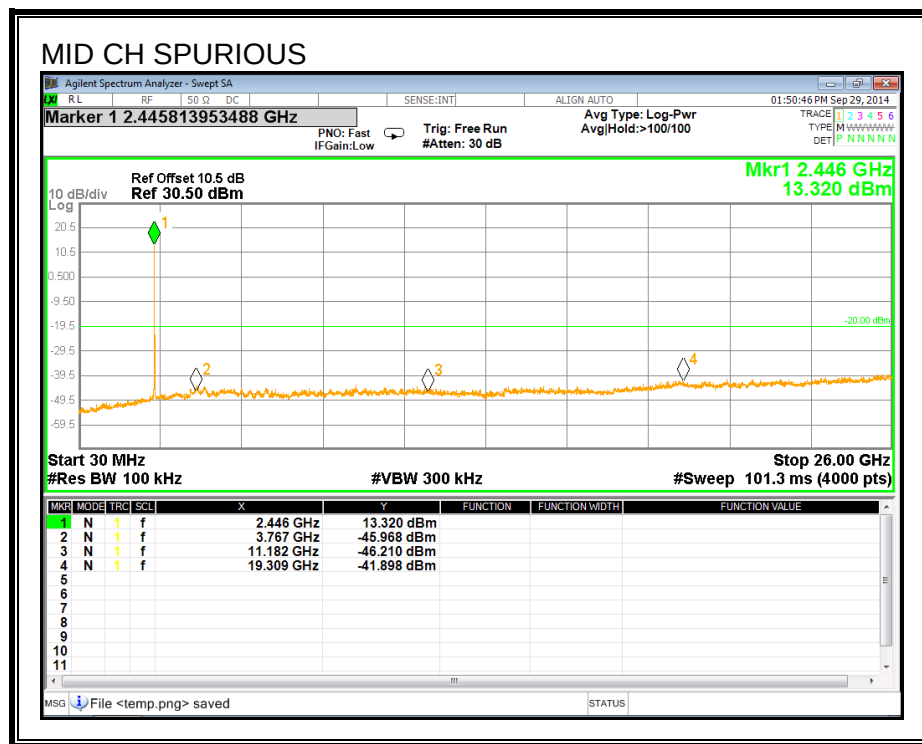


RESULTS J2 Antenna Port

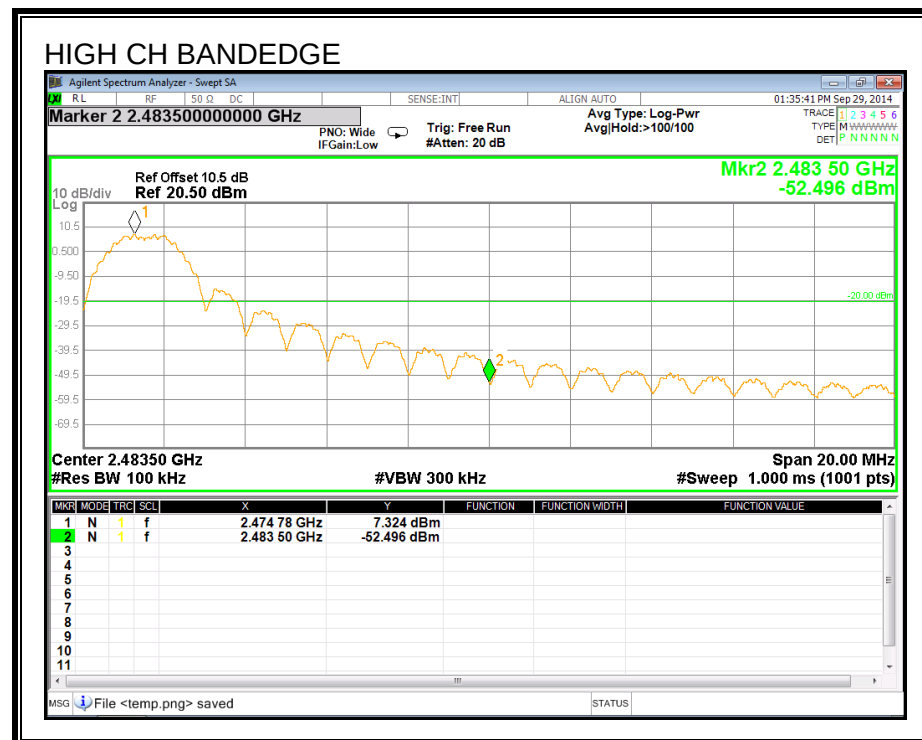
SPURIOUS EMISSIONS, LOW CHANNEL

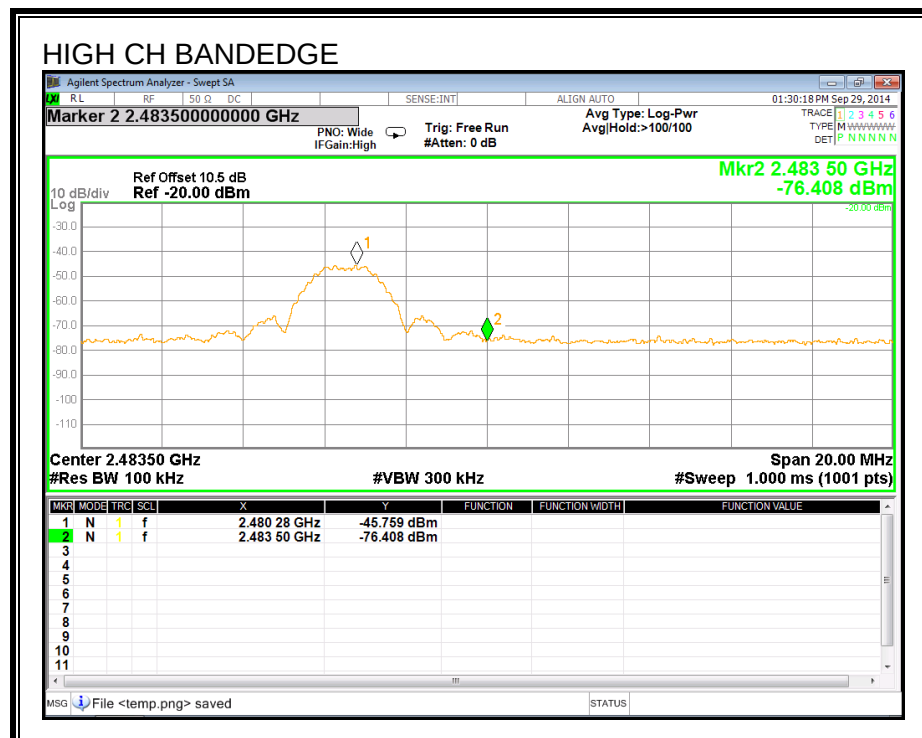
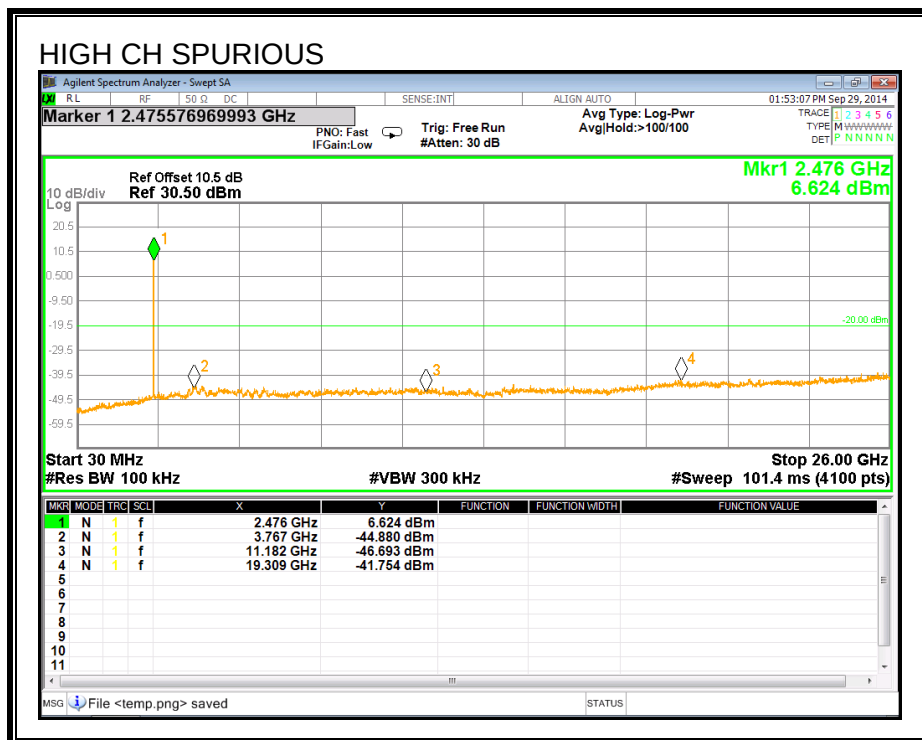


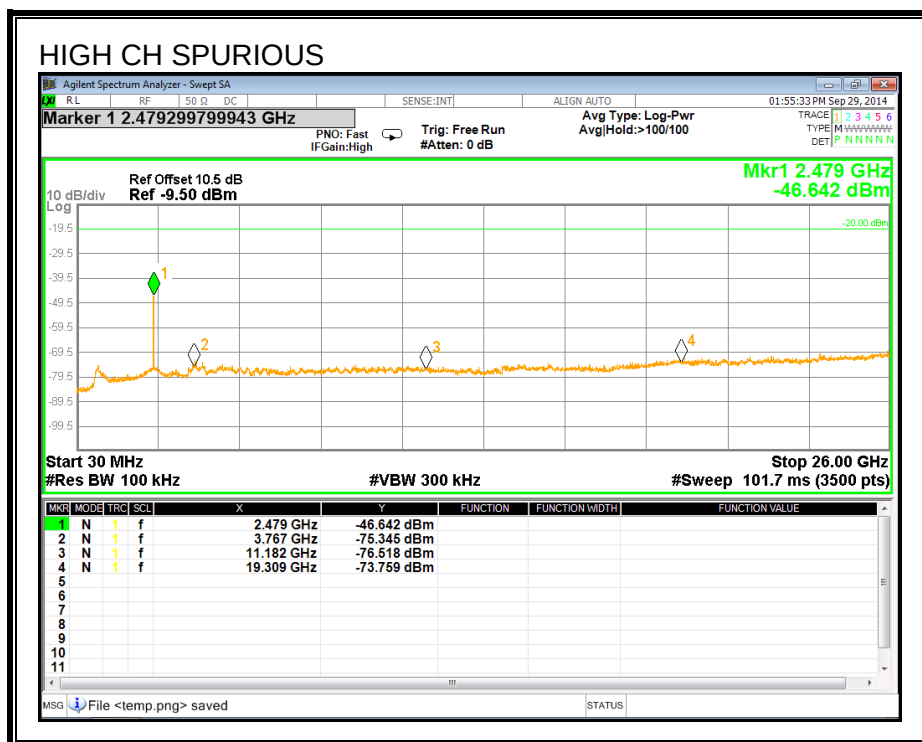
SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL







9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
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	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10-2009. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 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, then the video bandwidth is set to 1 MHz for peak measurements and Maximum RMS average measurements.

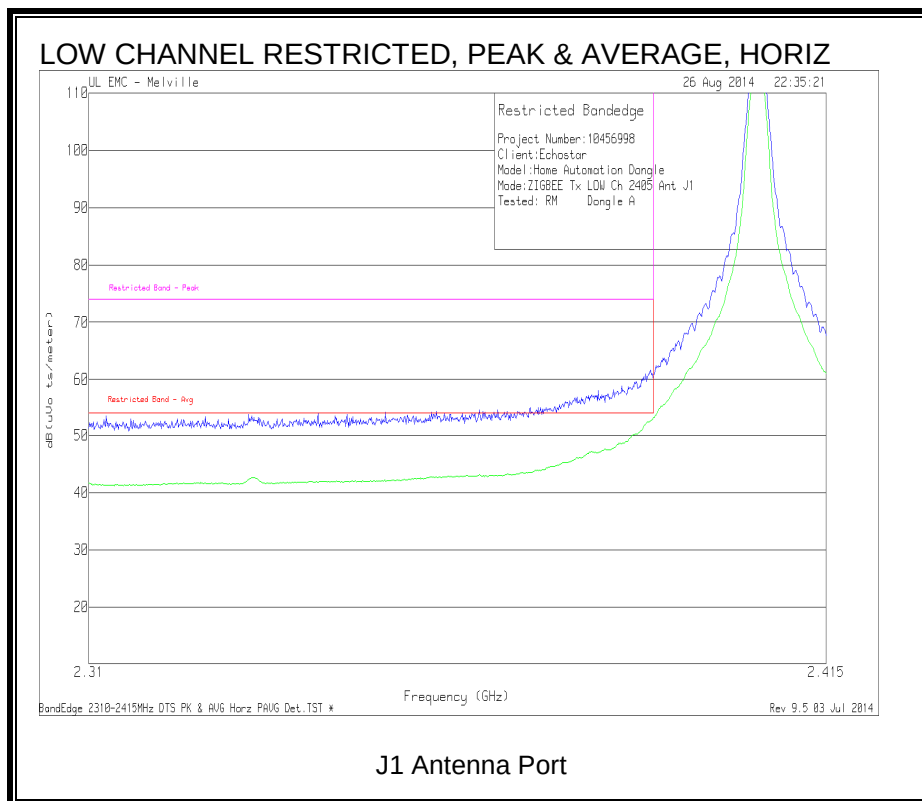
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. 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.

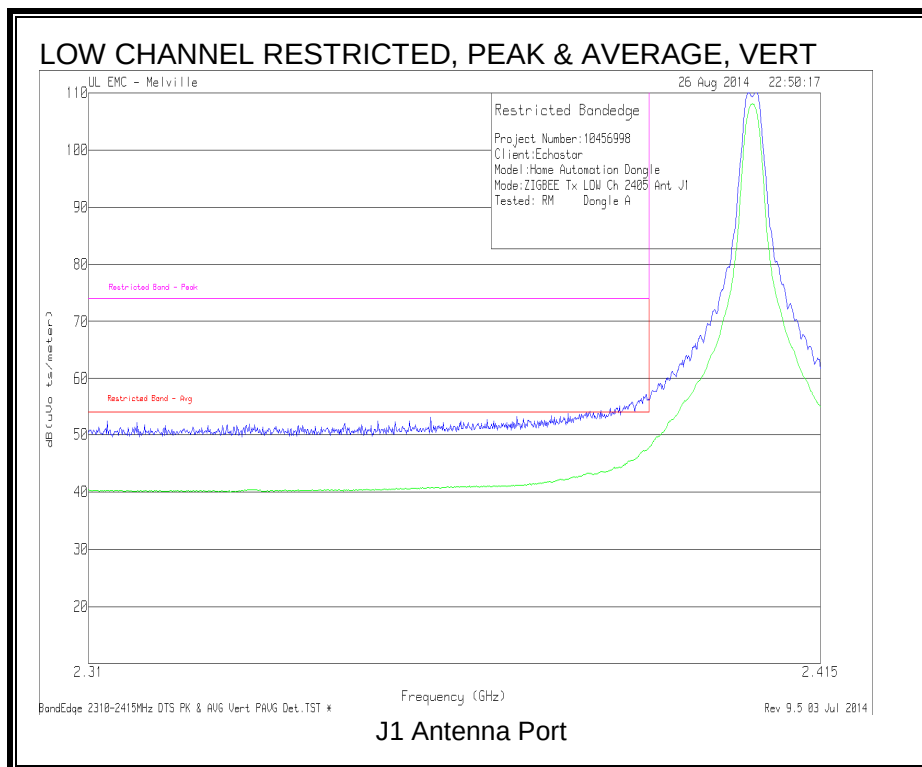
9.2 TRANSMITTER ABOVE 1 GHz

9.2.1 TX ABOVE 1 GHz FOR 802.15.4 MODE IN THE 2.4 GHz BAND

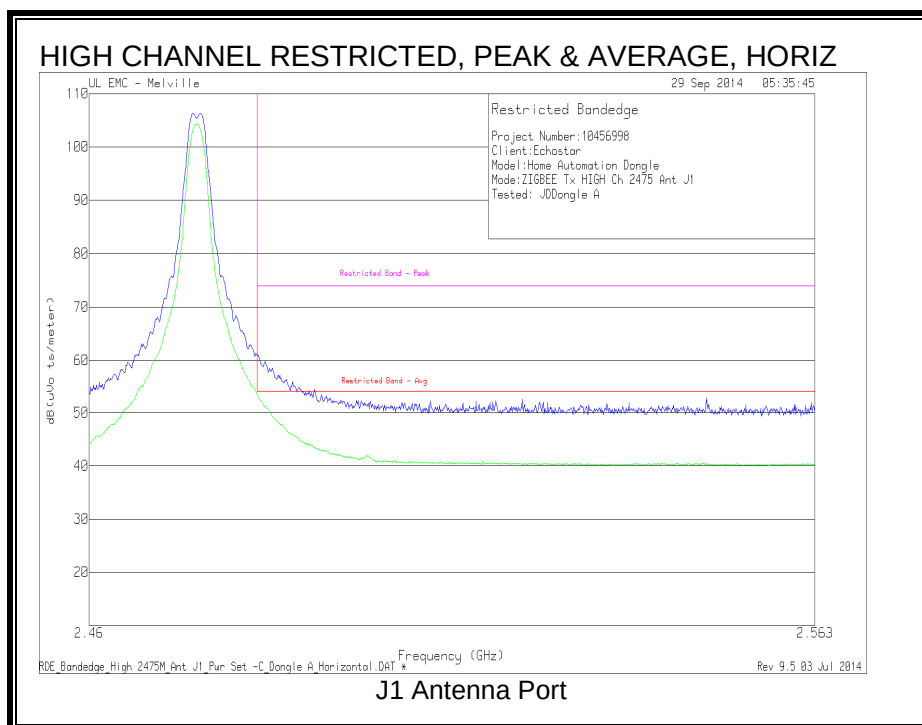
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



RESTRICTED BANDEGE (LOW CHANNEL, VERTICAL)

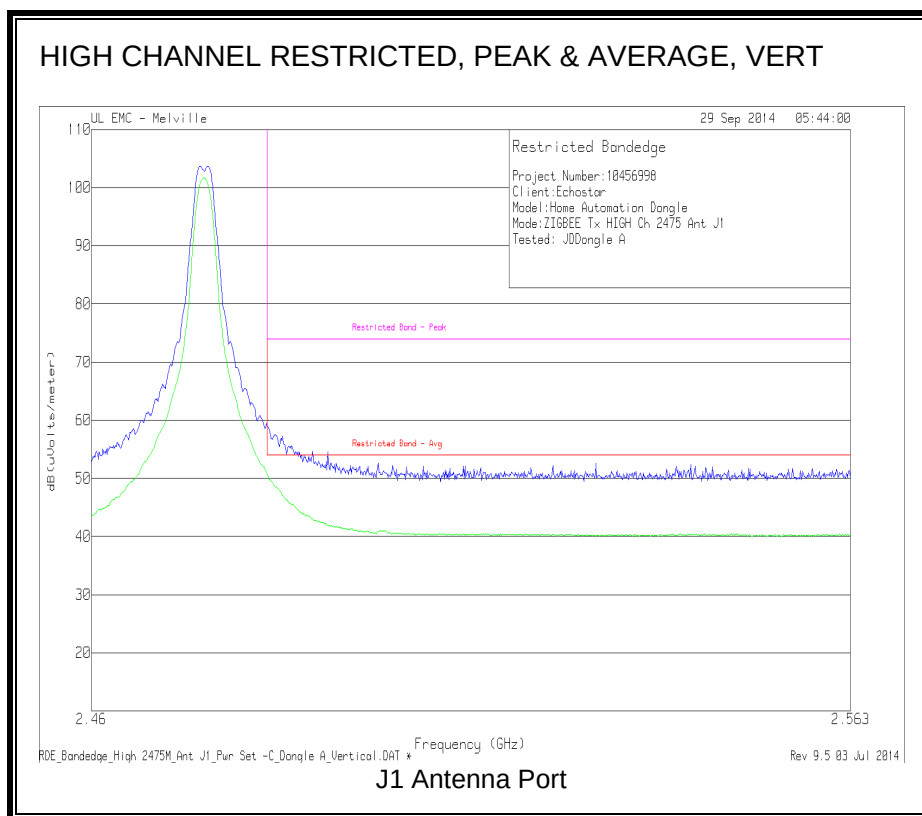


RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

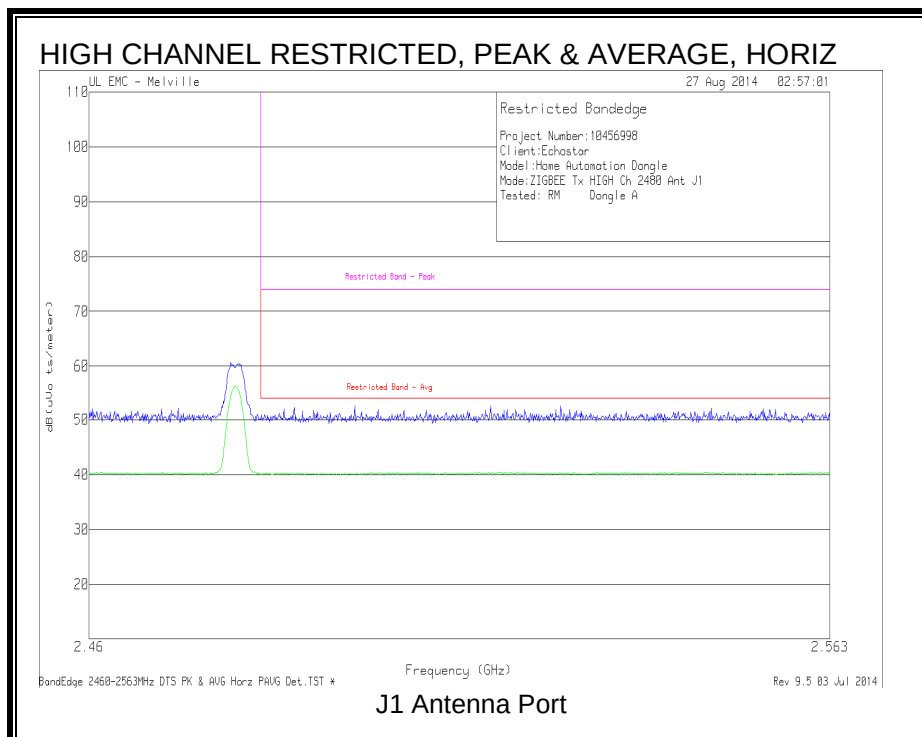


Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading dB(uVolts/meter)	Restricted Band - Avg	Margin (dB)	Restricted Band - Peak	Margin (dB)
2.484	35.53	PK	21.4	4.01	60.94	-	-	74	-13.06
2.4835	28.18	AVG	21.6	4.01	53.79	54	-0.21	-	-

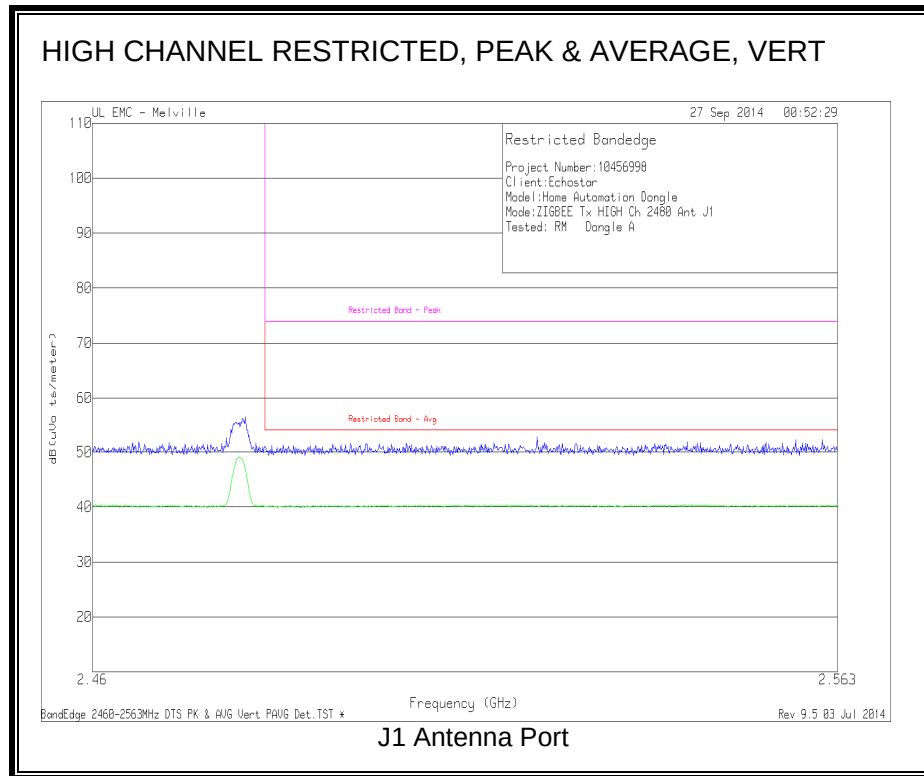
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



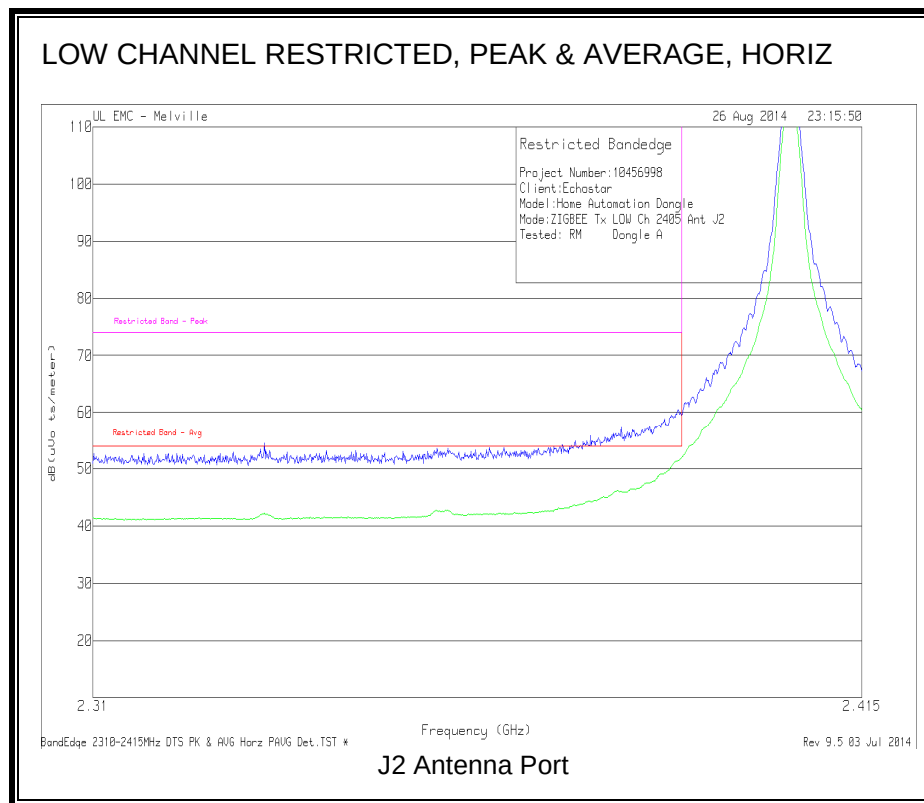
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



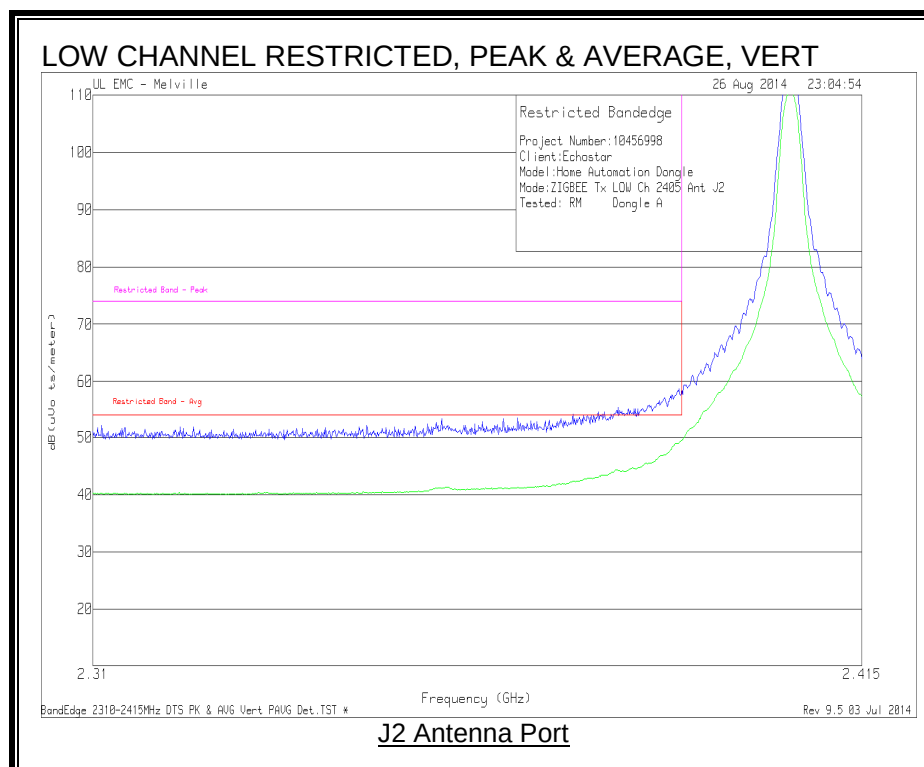
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



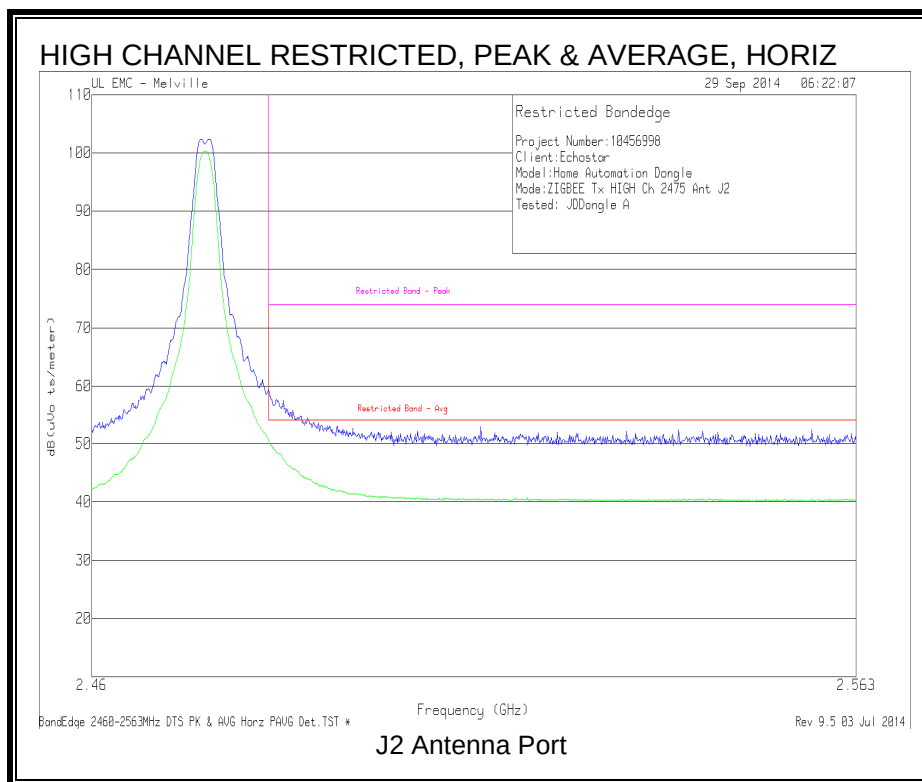
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



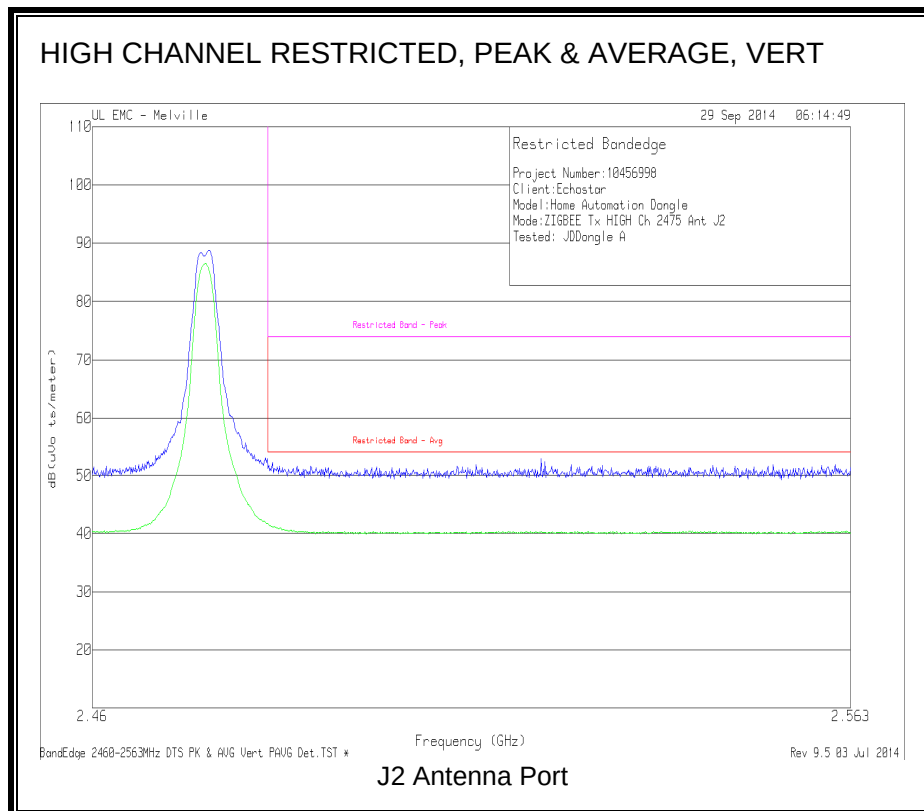
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



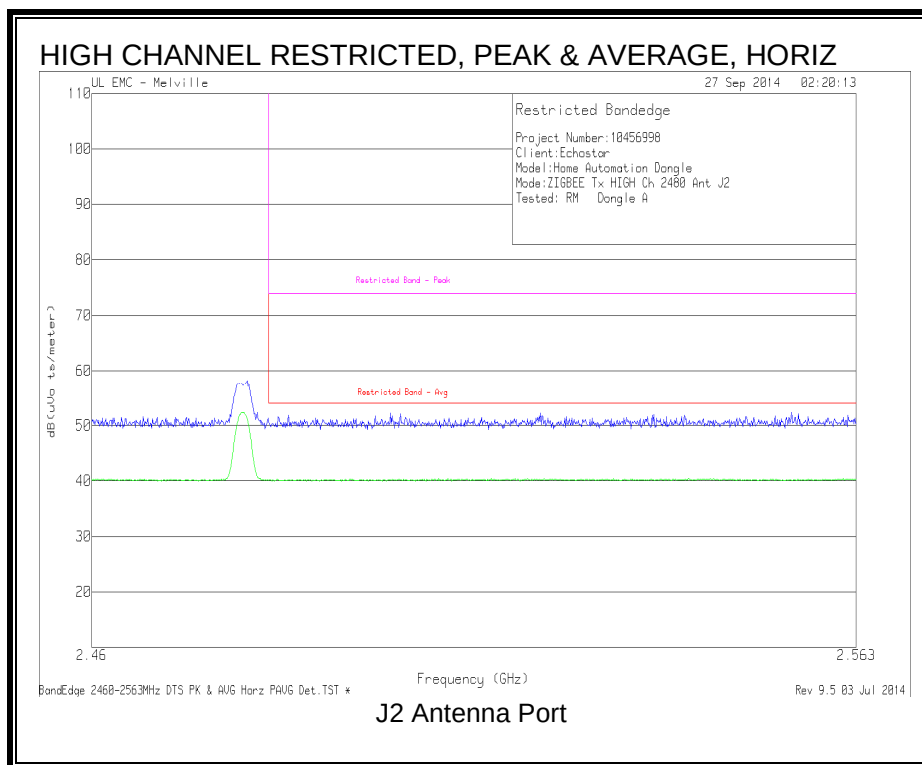
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



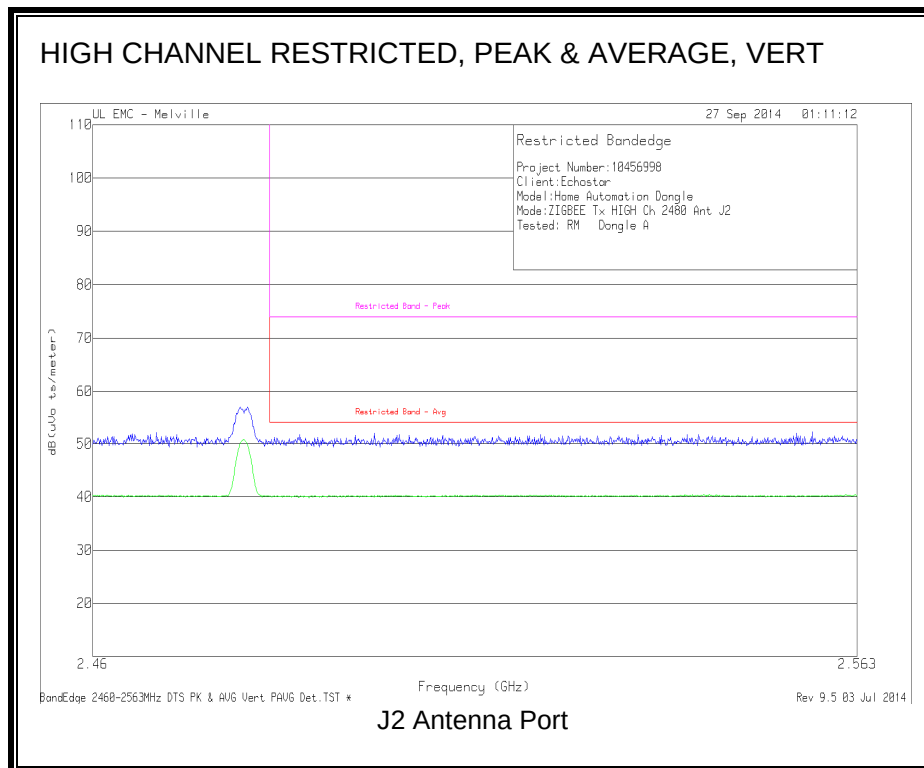
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



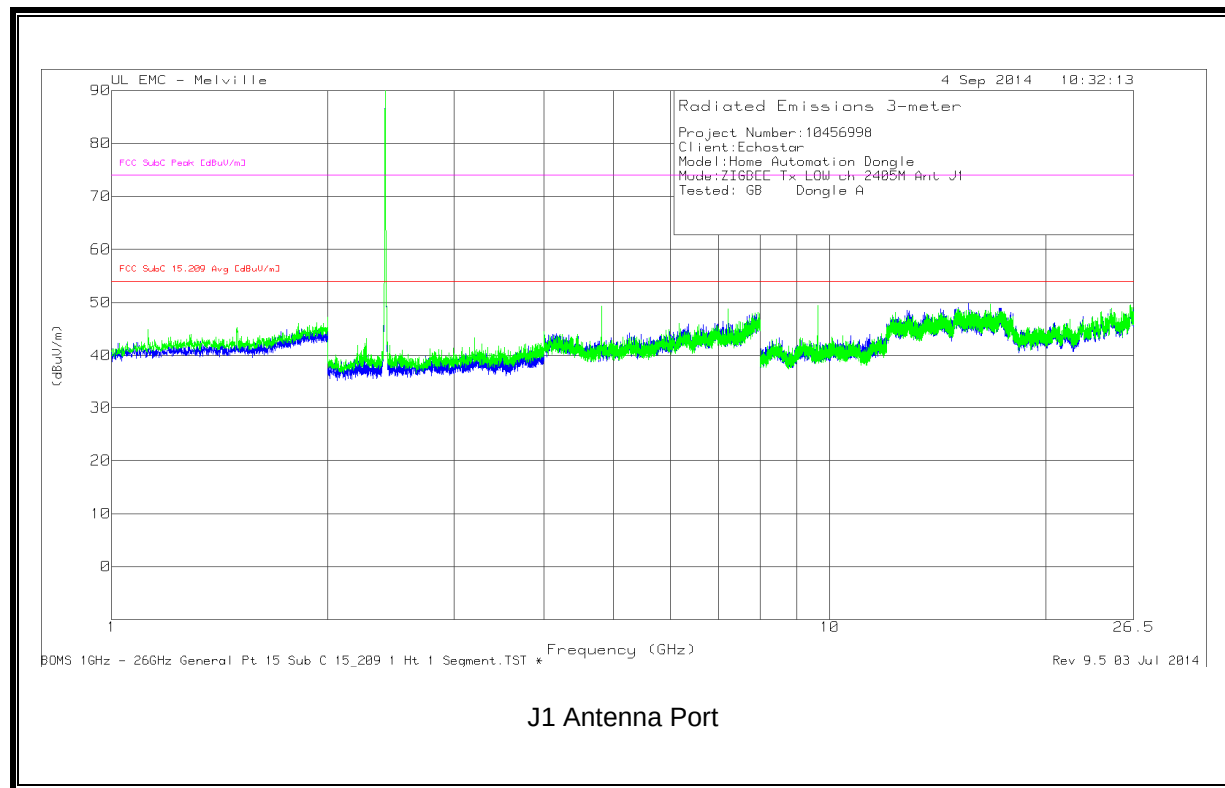
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



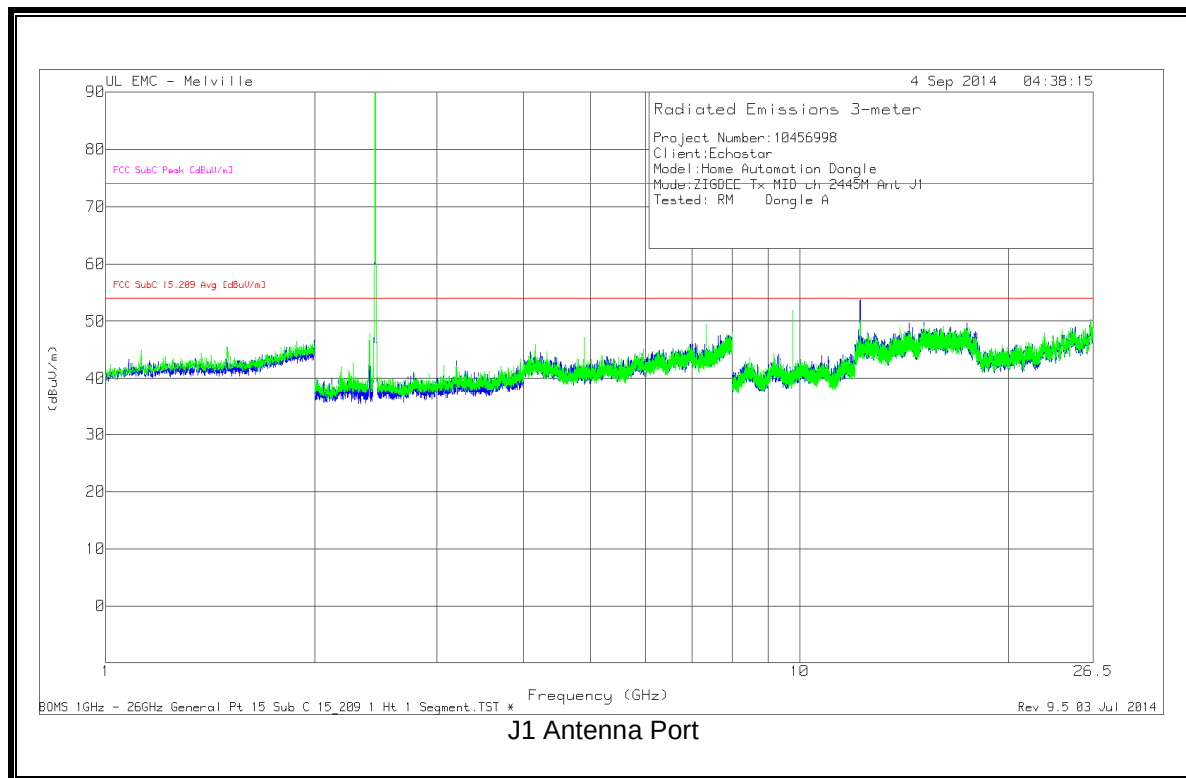
HARMONICS AND SPURIOUS EMISSIONS – LOW CHANNEL



Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.811	59.67	MAv1	27.1	-45.26	41.51	54	-12.49	-	-	197	267	H
* 11.37	46.29	MAv1	33.3	-47.96	31.63	54	-22.37	-	-	206	289	H
* 15.594	46.33	MAv1	37.3	-45.97	37.66	54	-16.34	-	-	22	128	H
* 1.125	55.33	MAv1	24.7	-44.53	35.5	54	-18.5	-	-	157	136	V
* 1.497	52.86	MAv1	25.1	-44.34	33.62	54	-20.38	-	-	355	110	V
* 2.264	51.35	MAv1	21.4	-42.17	30.58	54	-23.42	-	-	5	181	V
* 4.811	62.95	MAv1	27.3	-45.26	44.99	54	-9.01	-	-	162	325	V
* 4.811	67.88	PK2	27.1	-45.26	49.72	-	-	74	-24.28	197	267	H
* 11.37	58.18	PK2	33.3	-47.96	43.52	-	-	74	-30.48	206	289	H
* 15.593	58.26	PK2	37.3	-45.97	49.59	-	-	74	-24.41	22	128	H
* 1.125	65.47	PK2	24.7	-44.53	45.64	-	-	74	-28.36	157	136	V
* 1.497	65.36	PK2	25.1	-44.33	46.13	-	-	74	-27.87	355	110	V
* 2.264	67.22	PK2	21.4	-42.18	46.44	-	-	74	-27.56	5	181	V
* 4.811	69.85	PK2	27.3	-45.26	51.89	-	-	74	-22.11	162	325	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

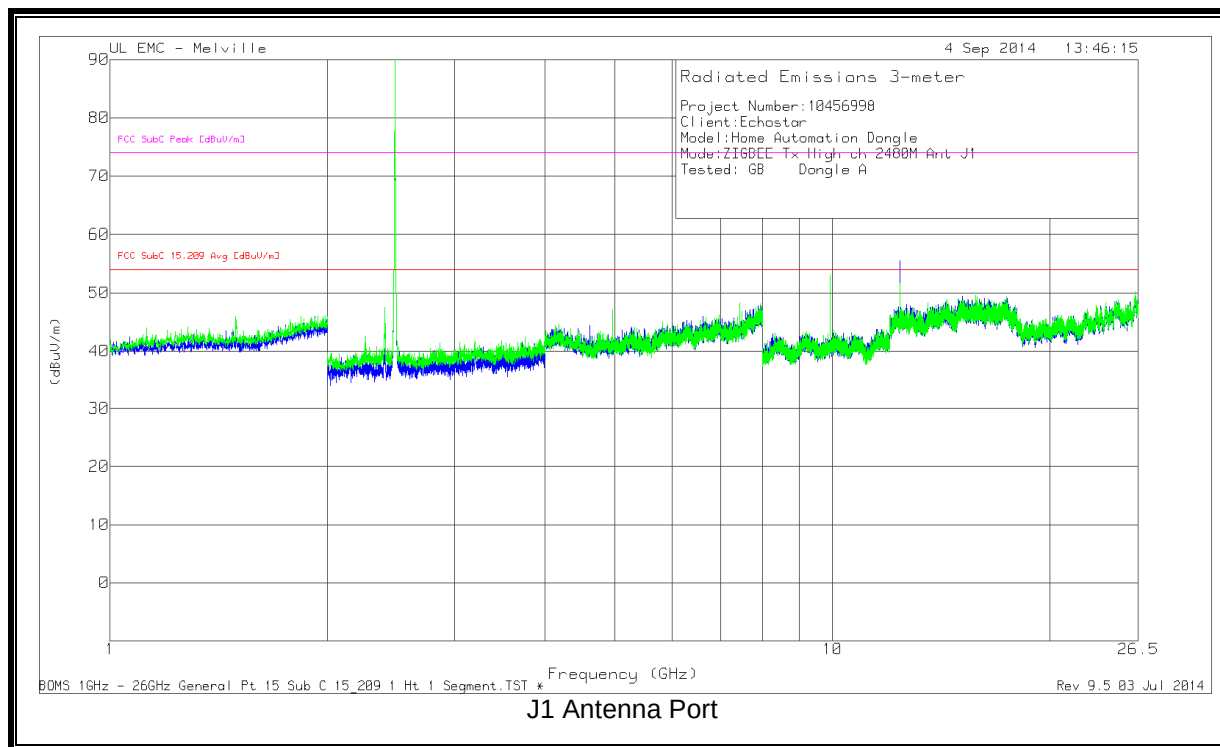
HARMONICS AND SPURIOUS EMISSIONS – MID CHANNEL



Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.889	60.6	MAv1	27.2	-45.68	42.12	54	-11.88	-	-	154	147	H
* 12.222	56.34	MAv1	37.2	-46.37	47.17	54	-6.83	-	-	124	161	H
* 1.125	52.64	MAv1	24.7	-44.53	32.81	54	-21.19	-	-	0	170	H
* 1.125	53.35	MAv1	24.7	-44.53	33.52	54	-20.48	-	-	171	127	V
* 1.494	54.12	MAv1	25.1	-44.36	34.86	54	-19.14	-	-	6	102	V
* 4.889	61.63	MAv1	27.6	-45.68	43.55	54	-10.45	-	-	183	217	V
* 7.337	57.68	MAv1	27.9	-42.4	43.18	54	-10.82	-	-	313	252	V
* 4.162	49.96	MAv1	27.8	-44.4	33.36	54	-20.64	-	-	158	275	V
* 12.222	57.89	MAv1	37.3	-46.37	48.82	54	-5.18	-	-	43	388	V
* 4.889	68.7	PK2	27.2	-45.68	50.22	-	-	74	-23.78	154	147	H
* 12.222	64.37	PK2	37.2	-46.37	55.2	-	-	74	-18.8	124	161	H
* 1.125	64.17	PK2	24.7	-44.53	44.34	-	-	74	-29.66	0	170	H
* 1.125	63.97	PK2	24.7	-44.53	44.14	-	-	74	-29.86	171	127	V
* 1.495	67.5	PK2	25.1	-44.35	48.25	-	-	74	-25.75	6	102	V
* 4.891	68.85	PK2	27.6	-45.7	50.75	-	-	74	-23.25	183	217	V
* 7.337	65.88	PK2	27.9	-42.41	51.37	-	-	74	-22.63	313	252	V
* 4.163	62.1	PK2	27.8	-44.4	45.5	-	-	74	-28.5	158	275	V
* 12.222	65.39	PK2	37.3	-46.37	56.32	-	-	74	-17.68	43	388	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

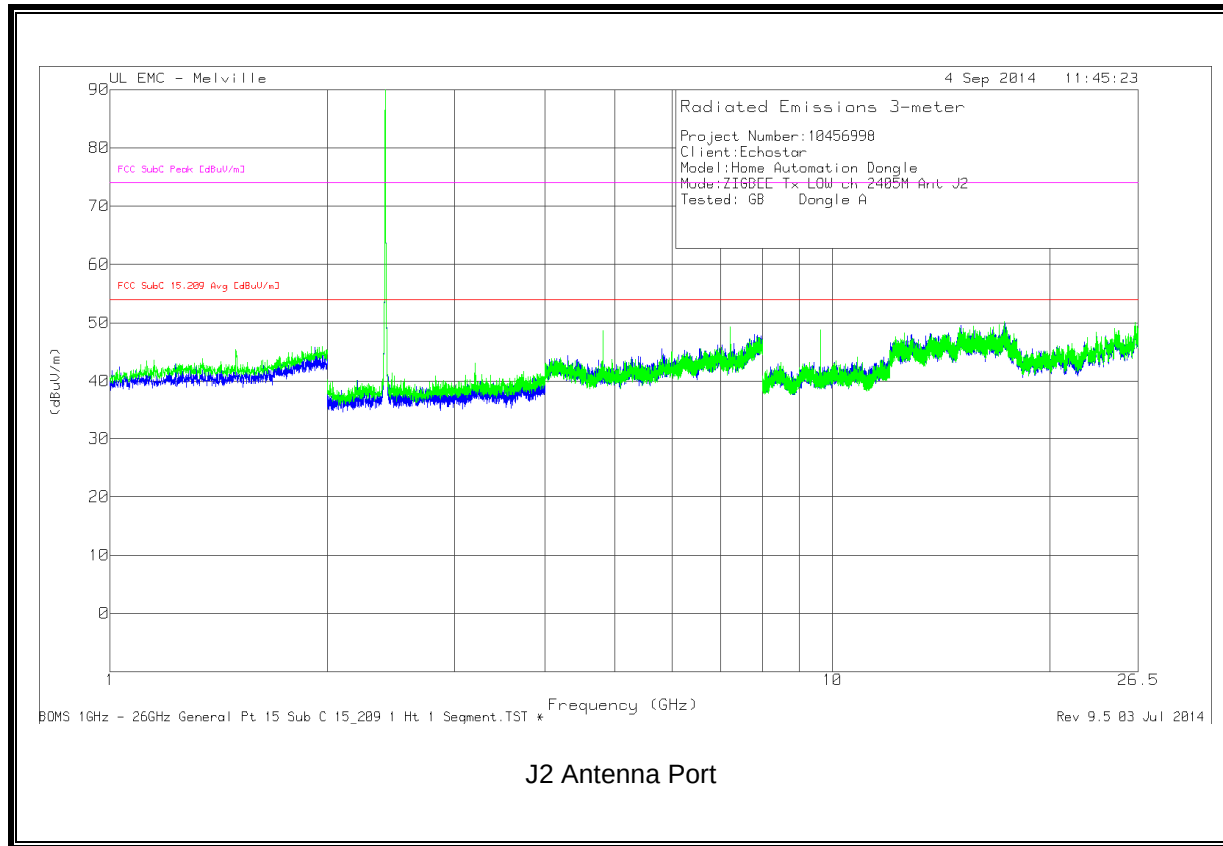
HARMONICS AND SPURIOUS EMISSIONS – HIGH CHANNEL



Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.446	51.62	MAv1	25	-44.52	32.1	54	-21.9	-	-	346	135	H
* 4.614	50.33	MAv1	27.3	-45.28	32.35	54	-21.65	-	-	296	327	H
* 4.961	63.06	MAv1	27.3	-45.14	45.22	54	-8.78	-	-	46	254	H
* 7.442	55.5	MAv1	28.1	-42.59	41.01	54	-12.99	-	-	1	383	H
* 12.403	54.82	MAv1	37.3	-47.83	44.29	54	-9.71	-	-	333	302	H
* 1.494	53.42	MAv1	25.1	-44.36	34.16	54	-19.84	-	-	164	100	V
* 3.753	45.04	MAv1	22.4	-40.74	26.7	54	-27.3	-	-	160	151	V
* 4.961	60.22	MAv1	27.4	-45.14	42.48	54	-11.52	-	-	205	259	V
* 7.438	59.55	MAv1	28	-42.61	44.94	54	-9.06	-	-	305	231	V
* 12.403	59.02	MAv1	37.4	-47.83	48.59	54	-5.41	-	-	255	211	V
* 1.447	63.5	PK2	25.1	-44.51	44.09	-	-	74	-29.91	346	135	H
* 4.614	62.41	PK2	27.3	-45.28	44.43	-	-	74	-29.57	296	327	H
* 4.961	69.83	PK2	27.3	-45.14	51.99	-	-	74	-22.01	46	254	H
* 7.442	64.87	PK2	28.1	-42.59	50.38	-	-	74	-23.62	1	383	H
* 12.402	63.39	PK2	37.2	-47.83	52.76	-	-	74	-21.24	333	302	H
* 1.493	66.2	PK2	25.1	-44.35	46.95	-	-	74	-27.05	164	100	V
* 3.754	56.92	PK2	22.4	-40.72	38.6	-	-	74	-35.4	160	151	V
* 4.961	68.02	PK2	27.4	-45.14	50.28	-	-	74	-23.72	205	259	V
* 7.438	67.33	PK2	28	-42.62	52.71	-	-	74	-21.29	305	231	V
* 12.403	66.12	PK2	37.4	-47.83	55.69	-	-	74	-18.31	255	211	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAV1 - KDB558074 Option 1 Maximum RMS Average

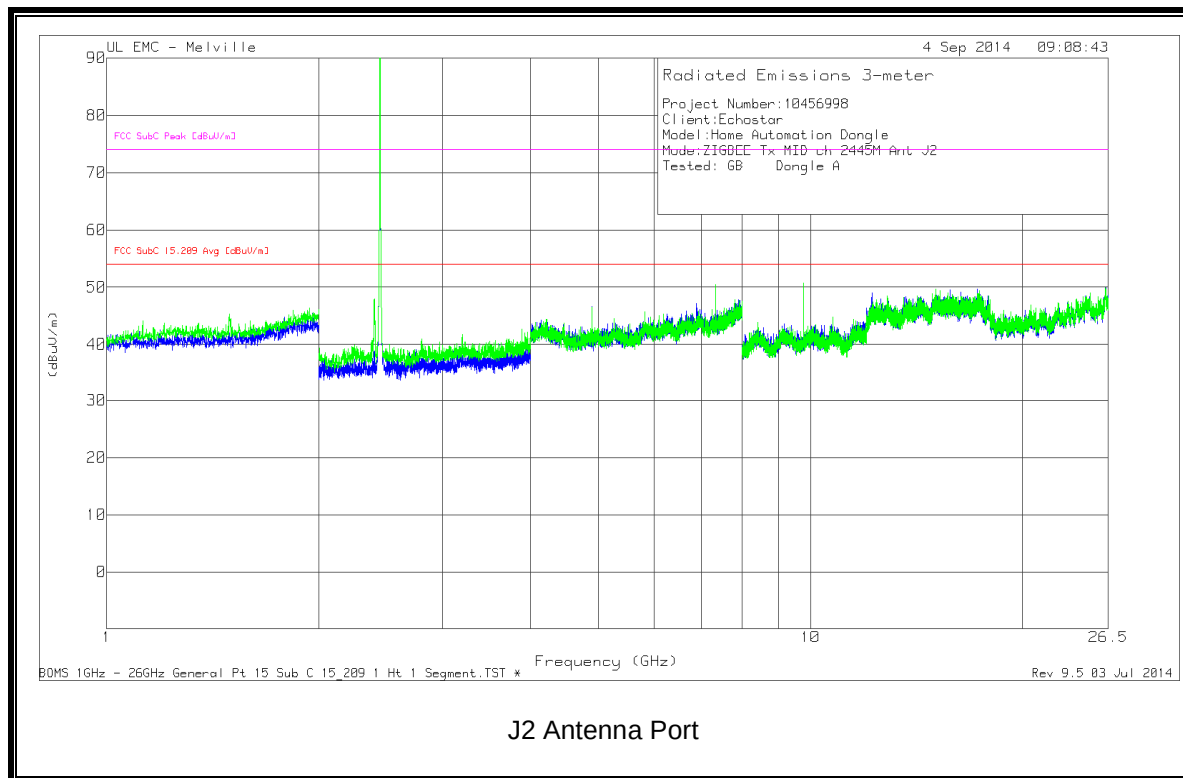
HARMONICS AND SPURIOUS EMISSIONS – LOW CHANNEL



Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.203	49.7	MAv1	21.5	-42.32	28.88	54	-25.12	-	-	72	387	H
* 4.809	64.6	MAv1	27.1	-45.28	46.42	54	-7.58	-	-	71	285	H
* 7.301	49.28	MAv1	28	-42.24	35.04	54	-18.96	-	-	347	250	H
* 1.494	53.67	MAv1	25.1	-44.36	34.41	54	-19.59	-	-	305	167	V
* 4.811	64.36	MAv1	27.3	-45.26	46.4	54	-7.6	-	-	134	167	V
* 12.573	46.3	MAv1	37.4	-47.35	36.35	54	-17.65	-	-	42	211	V
* 2.203	61.99	PK2	21.5	-42.31	41.18	-	-	74	-32.82	72	387	H
* 4.809	71.37	PK2	27.1	-45.28	53.19	-	-	74	-20.81	71	285	H
* 7.301	61.4	PK2	28	-42.24	47.16	-	-	74	-26.84	347	250	H
* 1.494	66.29	PK2	25.1	-44.36	47.03	-	-	74	-26.97	305	167	V
* 4.811	71.02	PK2	27.3	-45.26	53.06	-	-	74	-20.94	134	167	V
* 12.572	58.75	PK2	37.4	-47.35	48.8	-	-	74	-25.2	42	211	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

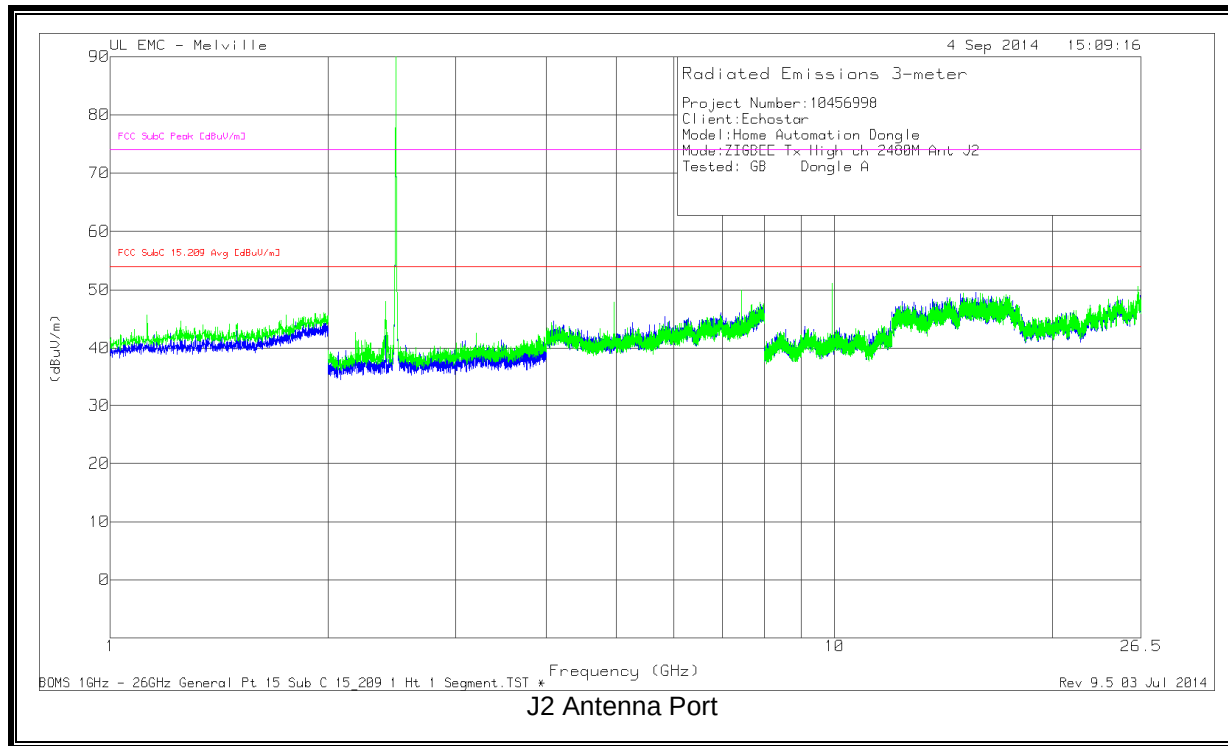
HARMONICS AND SPURIOUS EMISSIONS – MID CHANNEL



Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.889	59.49	MAv1	27.2	-45.68	41.01	54	-12.99	-	-	141	168	H
* 7.333	56.75	MAv1	28	-42.36	42.39	54	-11.61	-	-	263	136	H
* 12.228	52.57	MAv1	37.2	-46.44	43.33	54	-10.67	-	-	158	166	H
* 15.778	47.27	MAv1	37.3	-46.84	37.73	54	-16.27	-	-	0	221	H
* 3.887	49.75	MAv1	22.6	-41.13	31.22	54	-22.78	-	-	218	170	V
* 4.891	60.47	MAv1	27.6	-45.7	42.37	54	-11.63	-	-	213	211	V
* 7.333	61.18	MAv1	27.9	-42.36	46.72	54	-7.28	-	-	306	167	V
* 8.41	48.4	MAv1	33.2	-50.04	31.56	54	-22.44	-	-	306	353	V
* 10.761	45.58	MAv1	33.2	-47.31	31.47	54	-22.53	-	-	3	154	V
* 4.889	68.09	PK2	27.2	-45.68	49.61	54	-	-	-24.39	141	168	H
* 7.333	65.49	PK2	28	-42.36	51.13	54	-	-	-22.87	263	136	H
* 12.228	62.08	PK2	37.2	-46.44	52.84	54	-	-	-21.16	158	166	H
* 15.778	59.23	PK2	37.3	-46.84	49.69	54	-	-	-24.31	0	221	H
* 3.886	62.09	PK2	22.6	-41.09	43.6	54	-	-	-30.4	218	170	V
* 4.891	68.13	PK2	27.6	-45.7	50.03	54	-	-	-23.97	213	211	V
* 7.333	68.54	PK2	27.9	-42.36	54.08	54	-	-	-19.92	306	167	V
* 8.409	60.62	PK2	33.2	-50.04	43.78	54	-	-	-30.22	306	353	V
* 10.762	58.12	PK2	33.2	-47.32	44	54	-	-	-30	3	154	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS – HIGH CHANNEL

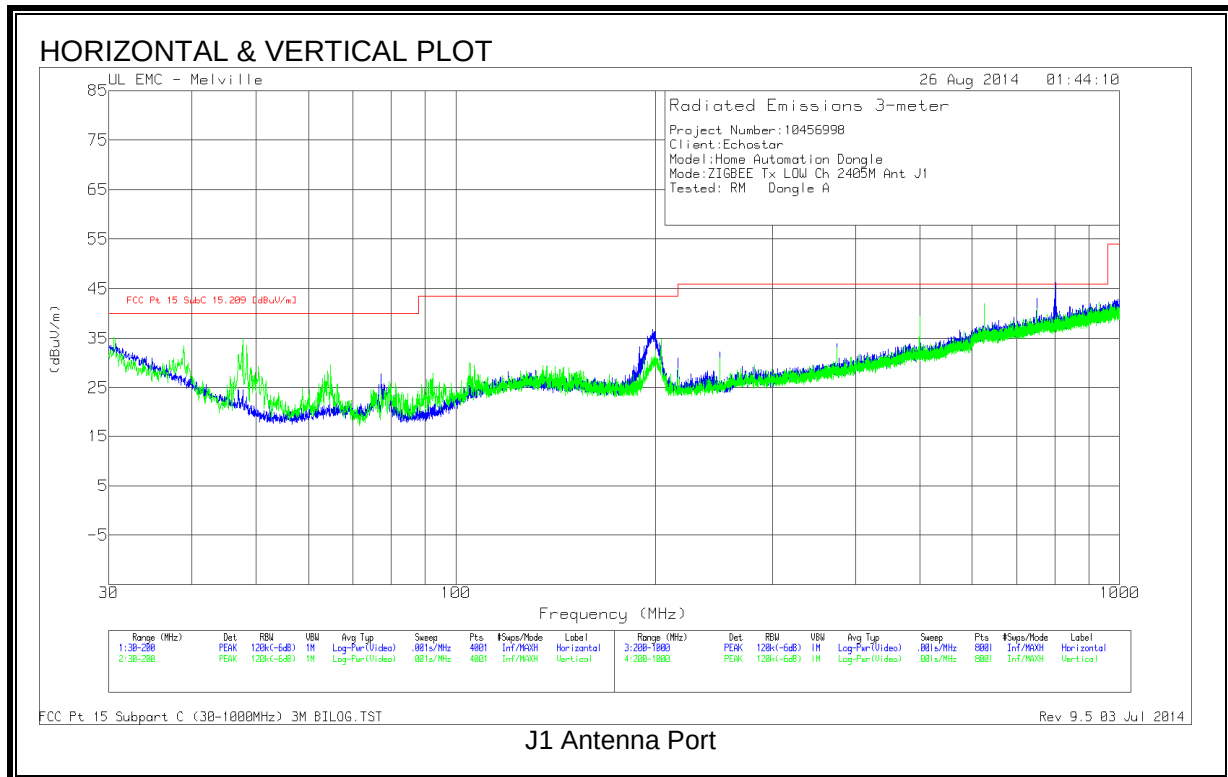


Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.211	51.84	MAv1	25	-44.66	32.18	54	-21.82	-	-	236	336	H
* 12.397	49.94	MAv1	37.2	-47.79	39.35	54	-14.65	-	-	248	207	H
* 1.125	58.73	MAv1	24.7	-44.53	38.9	54	-15.1	-	-	336	211	V
* 4.961	61.56	MAv1	27.4	-45.14	43.82	54	-10.18	-	-	212	208	V
* 7.442	61.79	MAv1	28	-42.59	47.2	54	-6.8	-	-	308	174	V
* 15.889	47.14	MAv1	37.4	-46.79	37.75	54	-16.25	-	-	259	304	V
* 1.212	63.63	PK2	25	-44.66	43.97	-	-	74	-30.03	236	336	H
* 12.397	60.34	PK2	37.2	-47.78	49.76	-	-	74	-24.24	248	207	H
* 1.125	67.77	PK2	24.7	-44.53	47.94	-	-	74	-26.06	336	211	V
* 4.961	68.81	PK2	27.4	-45.14	51.07	-	-	74	-22.93	212	208	V
* 7.442	69.06	PK2	28	-42.59	54.47	-	-	74	-19.53	308	174	V
* 15.89	58.92	PK2	37.4	-46.79	49.53	-	-	74	-24.47	259	304	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

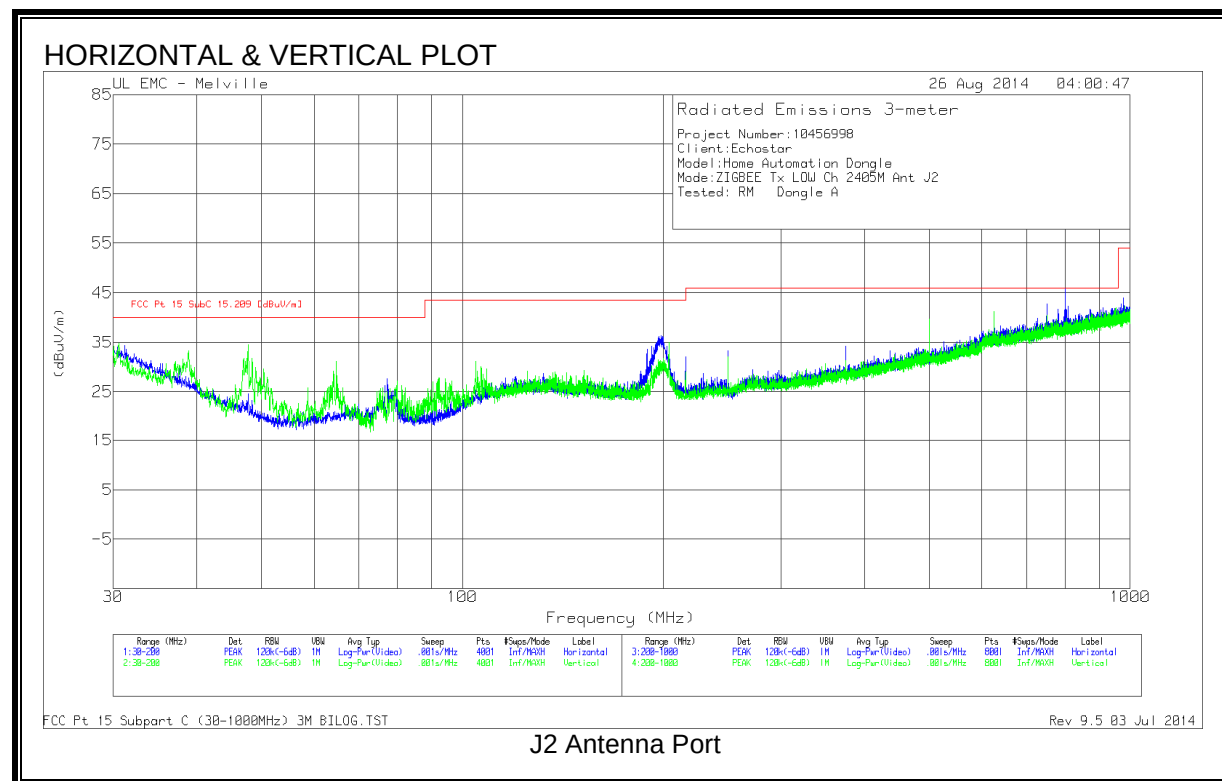
9.2.2 WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION) LOW CHANNEL



Note: No peak emissions observed within 6dB of the limit

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION) LOW CHANNEL

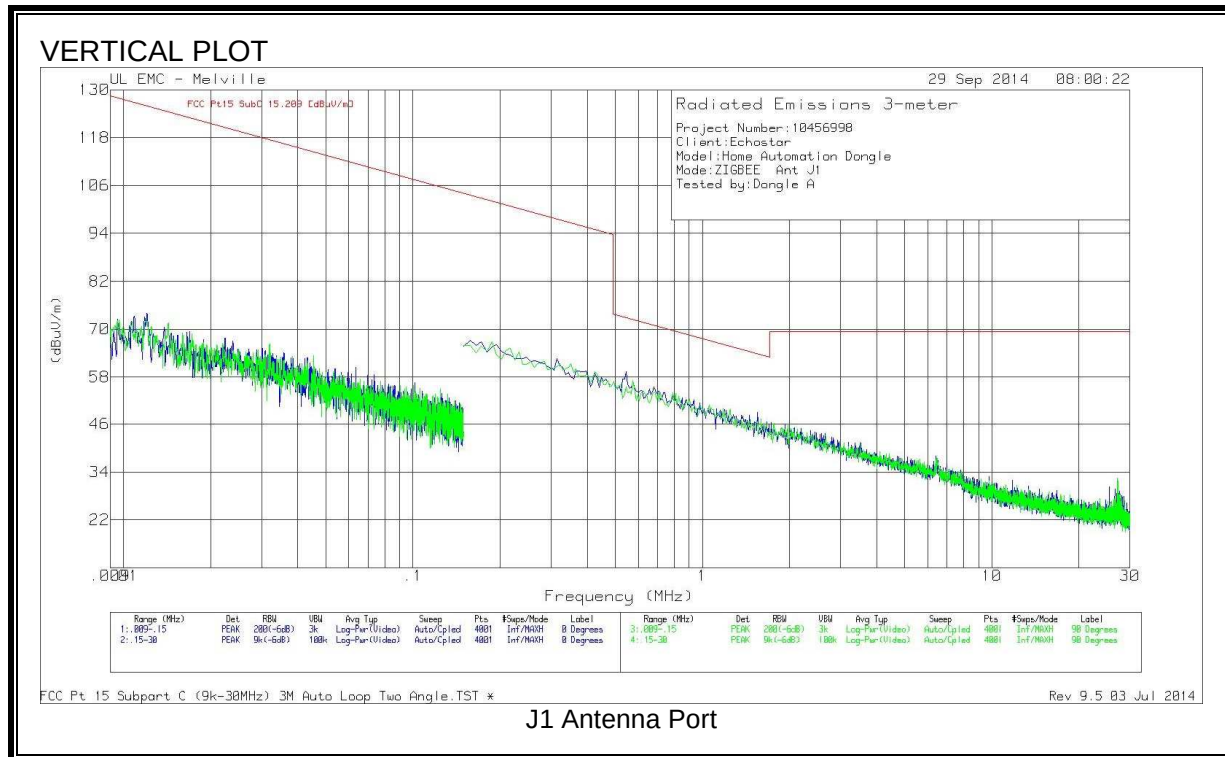


Frequency (MHz)	Meter Reading (dBuV)	Det	AF-84106 [dB/m]	GL [dB]	Corrected Reading (dBuV/m)	FCC Pt 15 SubC 15.209 [dBuV/m]	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 250.0029	17.36	QP	12.1	2.3	31.76	46	-14.24	237	124	H
* 250.0088	15.81	QP	12.3	2.3	30.41	46	-15.59	80	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
QP - Quasi-Peak detector

9.2.3 WORST-CASE BELOW 30 MHz

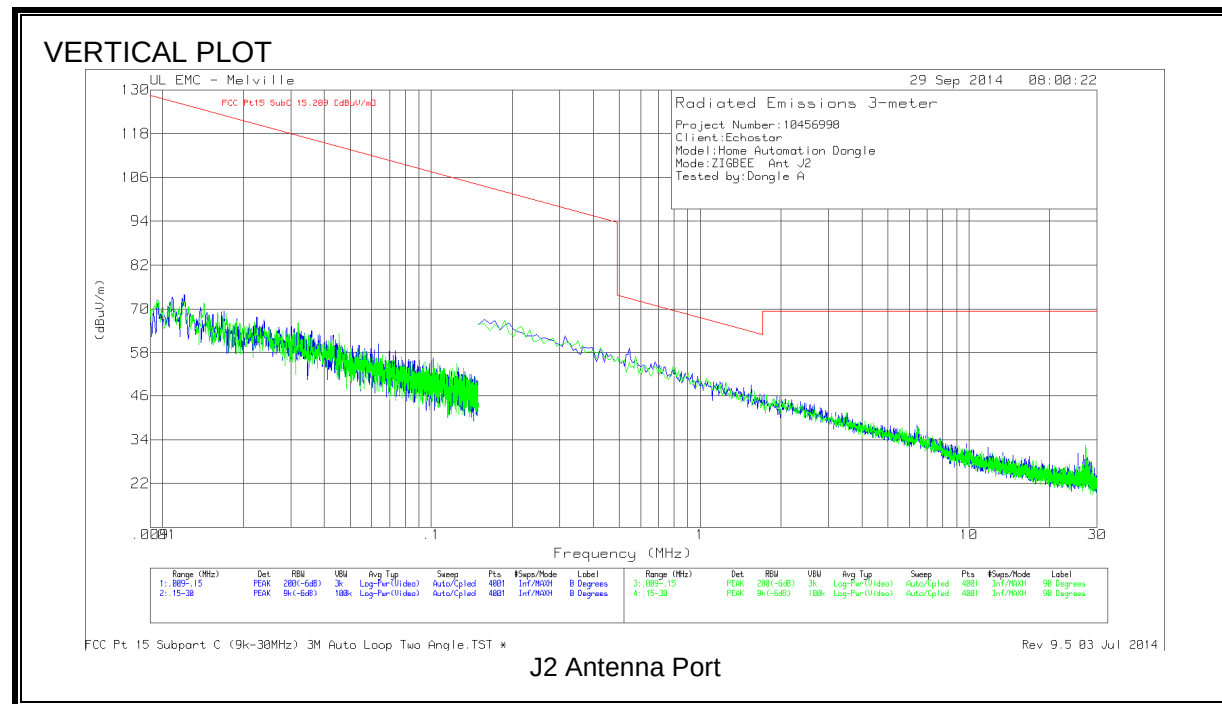
SPURIOUS EMISSIONS 9KHZ TO 30 MHz (WORST-CASE CONFIGURATION) LOW CHANNEL



Frequency (MHz)	Meter Reading (dBuV)	Det	AF-5A288 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	FCC Pt15 SubC 15.209 [dBuV/m]	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
.01089	43.82	PK	29.3	.2	73.32	126.85	-53.53	0-360	101	V
.01212	44.22	PK	28.6	.2	73.02	125.92	-52.9	0-360	101	V
.0635	42.44	PK	17.7	.3	60.44	111.54	-51.1	0-360	101	V
.54554	42.81	PK	16.2	.3	59.31	72.87	-13.56	0-360	101	V
6.50101	20.03	PK	16.5	.4	36.93	69.5	-32.57	0-360	101	V
25.51674	12.79	PK	16.8	.7	30.29	69.5	-39.21	0-360	101	V
.01194	43.18	PK	28.7	.2	72.08	126.05	-53.97	0-360	145	V
.01429	43.92	PK	27.4	.2	71.52	124.49	-52.97	0-360	145	V
.04544	43.5	PK	19.6	.2	63.3	114.44	-51.14	0-360	145	V
1.66499	29.08	PK	16.5	.4	45.98	63.18	-17.2	0-360	145	V
16.03126	9.83	PK	16.7	.5	27.03	69.5	-42.47	0-360	145	V
27.21084	15.09	PK	16.7	.7	32.49	69.5	-37.01	0-360	145	V

PK - Peak detector

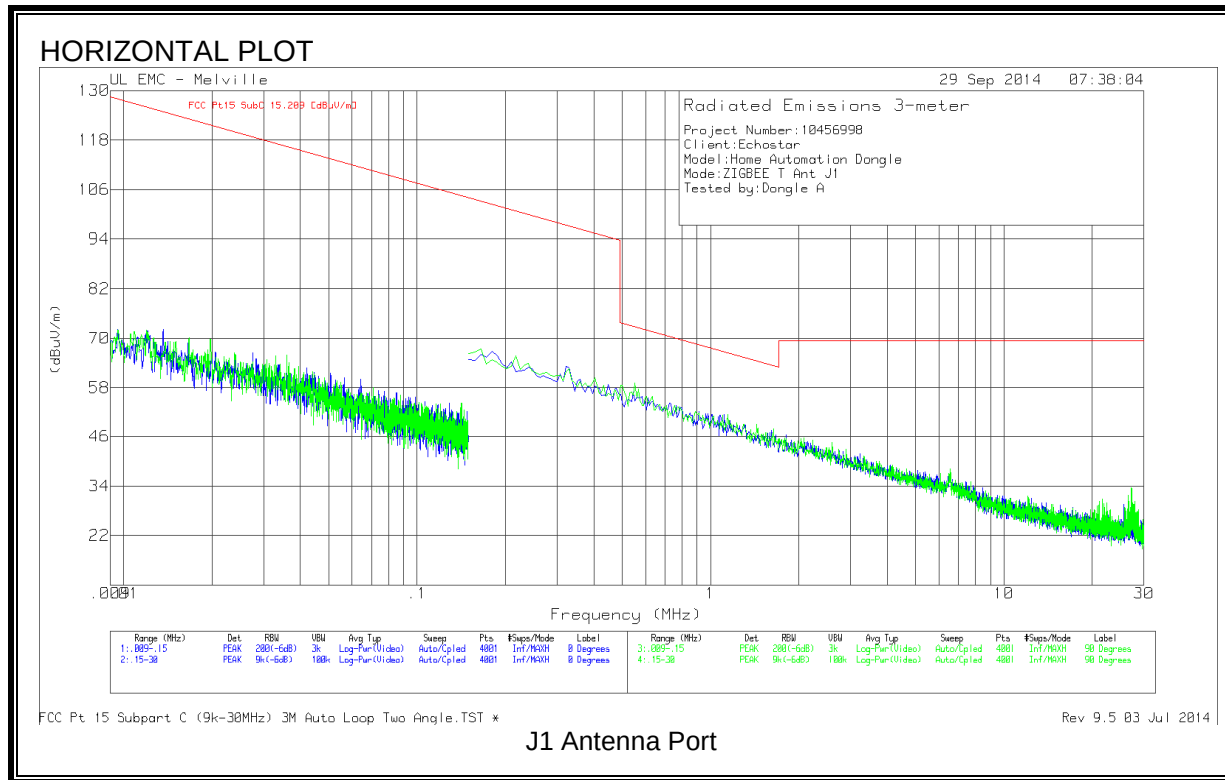
SPURIOUS EMISSIONS 9KHZ TO 30 MHz (WORST-CASE CONFIGURATION) LOW CHANNEL



Frequency (MHz)	Meter Reading (dBuV)	Det	AF-5A288 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	FCC Pt15 SubC 15.209 [dBuV/m]	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
.01089	43.82	PK	29.3	.2	73.32	126.85	-53.53	0-360	101	V
.01212	44.22	PK	28.6	.2	73.02	125.92	-52.9	0-360	101	V
.0635	42.44	PK	17.7	.3	60.44	111.54	-51.1	0-360	101	V
.54554	42.81	PK	16.2	.3	59.31	72.87	-13.56	0-360	101	V
6.50101	20.03	PK	16.5	.4	36.93	69.5	-32.57	0-360	101	V
25.51674	12.79	PK	16.8	.7	30.29	69.5	-39.21	0-360	101	V
.01194	43.18	PK	28.7	.2	72.08	126.05	-53.97	0-360	145	V
.01429	43.92	PK	27.4	.2	71.52	124.49	-52.97	0-360	145	V
.04544	43.5	PK	19.6	.2	63.3	114.44	-51.14	0-360	145	V
1.66499	29.08	PK	16.5	.4	45.98	63.18	-17.2	0-360	145	V
16.03126	9.83	PK	16.7	.5	27.03	69.5	-42.47	0-360	145	V
27.21084	15.09	PK	16.7	.7	32.49	69.5	-37.01	0-360	145	V

PK - Peak detector

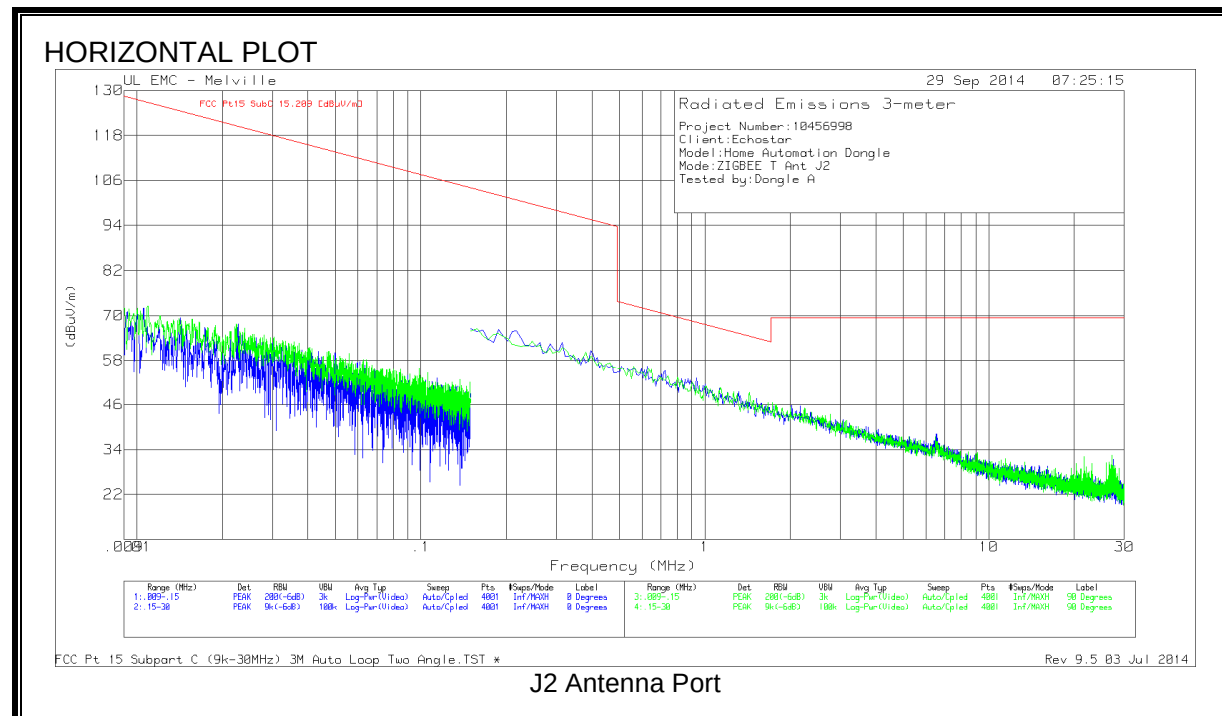
SPURIOUS EMISSIONS 9KHZ TO 30 MHz (WORST-CASE CONFIGURATION) LOW CHANNEL



Frequency (MHz)	Meter Reading (dBuV)	Det	AF-5A288 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	FCC Pt15 SubC 15.209 [dBuV/m]	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
.01366	44.09	PK	27.8	.2	72.09	124.88	-52.79	0-360	100	H
.03655	39.91	PK	21.2	.2	61.31	116.33	-55.02	0-360	100	H
.06514	38.65	PK	17.6	.3	56.55	111.32	-54.77	0-360	100	H
6.54579	19.69	PK	16.5	.4	36.59	69.5	-32.91	0-360	100	H
22.28526	9.54	PK	16.9	.6	27.04	69.5	-42.46	0-360	100	H
27.21084	15.96	PK	16.7	.7	33.36	69.5	-36.14	0-360	100	H
.01198	43.11	PK	28.7	.2	72.01	126.02	-54.01	0-360	145	H
.03599	44.43	PK	21.3	.2	65.93	116.47	-50.54	0-360	145	H
.08674	37.21	PK	16.9	.3	54.41	108.83	-54.42	0-360	145	H
.553	42.6	PK	16.2	.3	59.1	72.75	-13.65	0-360	145	H
6.57564	21.23	PK	16.5	.4	38.13	69.5	-31.37	0-360	145	H
21.91211	12.29	PK	16.9	.6	29.79	69.5	-39.71	0-360	145	H
27.16606	16.2	PK	16.7	.7	33.6	69.5	-35.9	0-360	145	H

PK - Peak detector

SPURIOUS EMISSIONS 9KHZ TO 30 MHz (WORST-CASE CONFIGURATION) LOW CHANNEL



Frequency (MHz)	Meter Reading (dBuV)	Det	AF-5A288 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	FCC Pt15 SubC 15.209 [dBuV/m]	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
.01054	42.36	PK	29.5	.2	72.06	127.13	-55.07	0-360	100	H
.02293	40.56	PK	23.8	.2	64.56	120.38	-55.82	0-360	100	H
.09934	36.33	PK	16.7	.3	53.33	107.65	-54.32	0-360	100	H
6.61296	20.16	PK	16.5	.4	37.06	69.5	-32.44	0-360	100	H
21.66583	9.55	PK	16.9	.6	27.05	69.5	-42.45	0-360	100	H
27.0765	14.36	PK	16.7	.7	31.76	69.5	-37.74	0-360	100	H
.00939	40.93	PK	30.5	.3	71.73	128.14	-56.41	0-360	145	H
.01026	41.41	PK	29.7	.2	71.31	127.36	-56.05	0-360	145	H
.02241	43.7	PK	23.9	.2	67.8	120.58	-52.78	0-360	145	H
.38135	43.73	PK	16.2	.3	60.23	95.98	-35.75	0-360	145	H
6.6055	19.24	PK	16.5	.4	36.14	69.5	-33.36	0-360	145	H
27.27801	11.21	PK	16.7	.7	28.61	69.5	-40.89	0-360	145	H

PK - Peak detector

10. 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

ANSI C63.10-2009

RESULTS

WORST EMISSIONS

Frequency (MHz)	Meter Reading (dBuV)	Det	Line 1 G/L (dB)	Corrected Reading (dBuV)	Subpart C QPK Limit (dBuV)	Margin (dB)	Subpart C Avg Limit (dBuV)	Margin (dB)
.16022	50.32	PK	10	60.32	65.45	-5.13	-	-
.1764	49.78	PK	10	59.78	64.65	-4.87	-	-
.18748	49.8	PK	10	59.8	64.15	-4.35	-	-
.2011	47.56	PK	10	57.56	63.57	-6.01	-	-
.26243	39.1	PK	10	49.1	61.35	-12.25	-	-
.31182	37.56	PK	10	47.56	59.92	-12.36	-	-
.33738	35.55	PK	10	45.55	59.27	-13.72	-	-
.40892	32.08	PK	10	42.08	57.67	-15.59	-	-
.52134	30.27	PK	10	40.27	56	-15.73	-	-
.58437	32.13	PK	10	42.13	56	-13.87	-	-
.6491	33.34	PK	10	43.34	56	-12.66	-	-
.71383	33.57	PK	10	43.57	56	-12.43	-	-
.77856	33.23	PK	10	43.23	56	-12.77	-	-
.84499	29.7	PK	10	39.7	56	-16.3	-	-
16.23008	36.67	PK	10.9	47.57	60	-12.43	-	-
18.25108	40.34	PK	11	51.34	60	-8.66	-	-
18.91831	36.74	PK	11.1	47.84	60	-12.16	-	-
23.13438	36.34	PK	11.5	47.84	60	-12.16	-	-
26.61554	38.6	PK	11.8	50.4	60	-9.6	-	-
27.16672	38.19	PK	11.8	49.99	60	-10.01	-	-
28.69457	36.86	PK	11.9	48.76	60	-11.24	-	-

PK - Peak detector

Frequency (MHz)	Meter Reading (dBuV)	Det	Line 2 G/L (dB)	Corrected Reading (dBuV)	Subpart C QPK Limit (dBuV)	Margin (dB)	Subpart C Avg Limit (dBuV)	Margin (dB)
.16363	50.22	PK	10	60.22	65.28	-5.06	-	-
.17555	47.4	PK	10	57.4	64.69	-7.29	-	-
.19429	46.03	PK	10	56.03	63.85	-7.82	-	-
.21132	42.23	PK	10	52.23	63.15	-10.92	-	-
.22495	40.56	PK	10	50.56	62.63	-12.07	-	-
.23687	39.36	PK	10	49.36	62.21	-12.85	-	-
.26072	40.04	PK	10	50.04	61.41	-11.37	-	-
.27094	37.14	PK	10	47.14	61.09	-13.95	-	-
.29649	36.27	PK	10	46.27	60.34	-14.07	-	-
.34249	34.2	PK	10	44.2	59.14	-14.94	-	-
.42936	29.99	PK	10	39.99	57.27	-17.28	-	-
.45321	29.66	PK	10	39.66	56.82	-17.16	-	-
.51964	28.68	PK	10.1	38.78	56	-17.22	-	-
.58437	29	PK	10.1	39.1	56	-16.9	-	-
.6508	32.48	PK	10.1	42.58	56	-13.42	-	-
.71553	31.89	PK	10.1	41.99	56	-14.01	-	-
.77345	32.33	PK	10.1	42.43	56	-13.57	-	-
.84499	28.63	PK	10.1	38.73	56	-17.27	-	-
16.23008	35.2	PK	10.9	46.1	60	-13.9	-	-
18.25108	41.15	PK	11	52.15	60	-7.85	-	-
18.91831	39.39	PK	11.2	50.59	60	-9.41	-	-
19.71124	37.31	PK	11.1	48.41	60	-11.59	-	-
23.13438	37.41	PK	11.5	48.91	60	-11.09	-	-
27.16672	34.7	PK	11.9	46.6	60	-13.4	-	-
28.69457	35.46	PK	12	47.46	60	-12.54	-	-
29.24575	36.15	PK	12	48.15	60	-11.85	-	-

PK - Peak detector

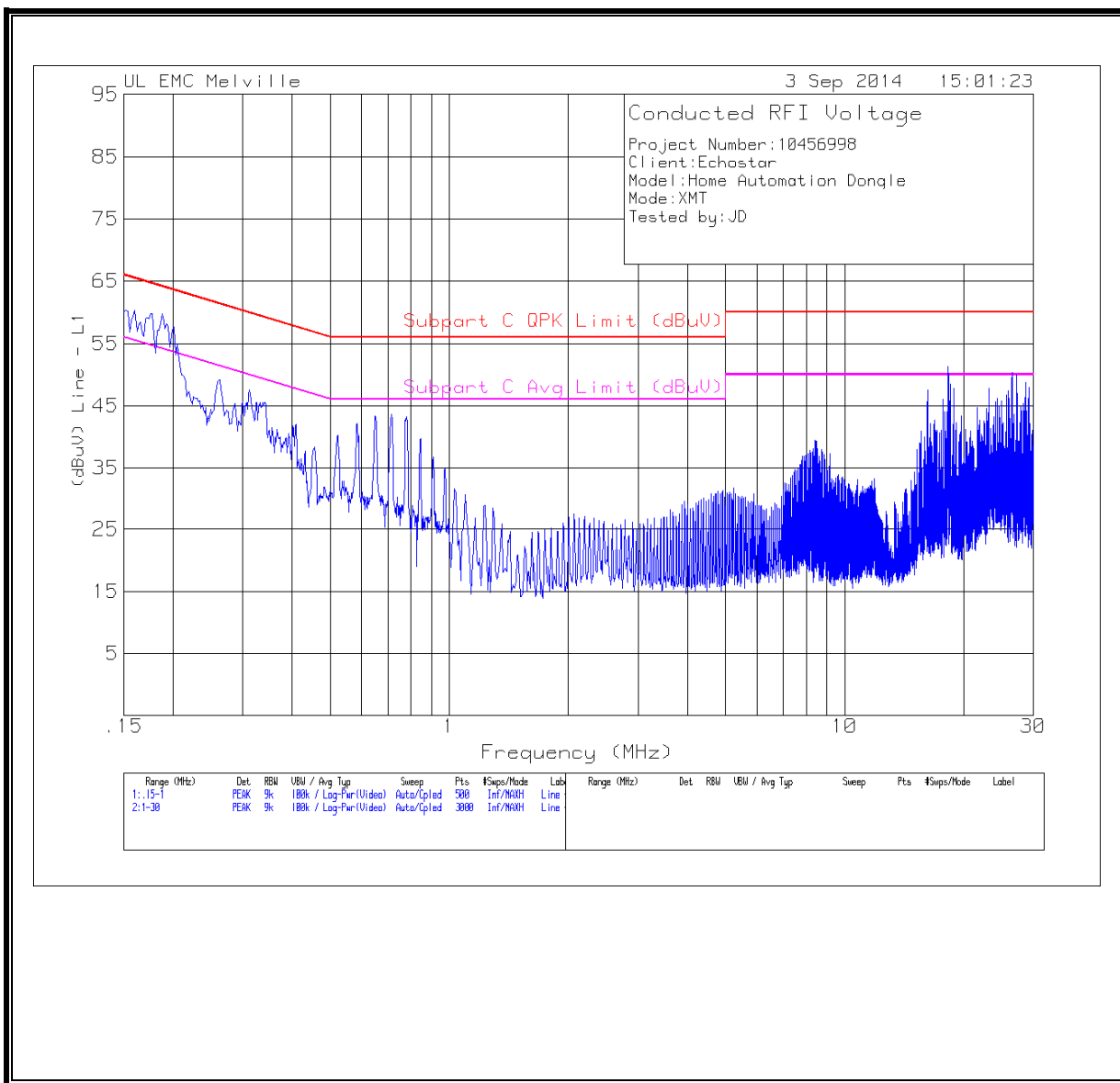
Frequency (MHz)	Meter Reading (dBuV)	Det	Line 1 G/L (dB)	Corrected Reading (dBuV)	Subpart C QPK Limit (dBuV)	Margin (dB)	Subpart C Avg Limit (dBuV)	Margin (dB)
.15767	22.77	CAV	10	32.77	-	-	55.59	-22.82
.17397	22.25	CAV	10	32.25	-	-	54.77	-22.52
.19162	32.95	CAV	10	42.95	-	-	53.97	-11.02
.1969	32.74	CAV	10	42.74	-	-	53.74	-11
.25875	32.33	CAV	10	42.33	-	-	51.47	-9.14
.31598	12.92	CAV	10	22.92	-	-	49.81	-26.89
.34074	12.5	CAV	10	22.5	-	-	49.19	-26.69
.40691	5.06	CAV	10	15.06	-	-	47.71	-32.65
.51767	24.29	CAV	10	34.29	-	-	46	-11.71
.58205	29.66	CAV	10	39.66	-	-	46	-6.34
.64703	31.71	CAV	10	41.71	-	-	46	-4.29
.71152	31.06	CAV	10	41.06	-	-	46	-4.94
.77638	31.34	CAV	10	41.34	-	-	46	-4.66
.84182	20.41	CAV	10	30.41	-	-	46	-15.59
16.2279	30.08	CAV	10.9	40.98	-	-	50	-9.02
18.2428	34.6	CAV	11	45.6	-	-	50	-4.4
18.9146	34.52	CAV	11.1	45.62	-	-	50	-4.38
23.1278	35.02	CAV	11.5	46.52	-	-	50	-3.48
26.6083	34.5	CAV	11.8	46.3	-	-	50	-3.7
27.1579	31.85	CAV	11.8	43.65	-	-	50	-6.35
28.6845	33.33	CAV	11.9	45.23	-	-	50	-4.77

CAV - CISPR average detection

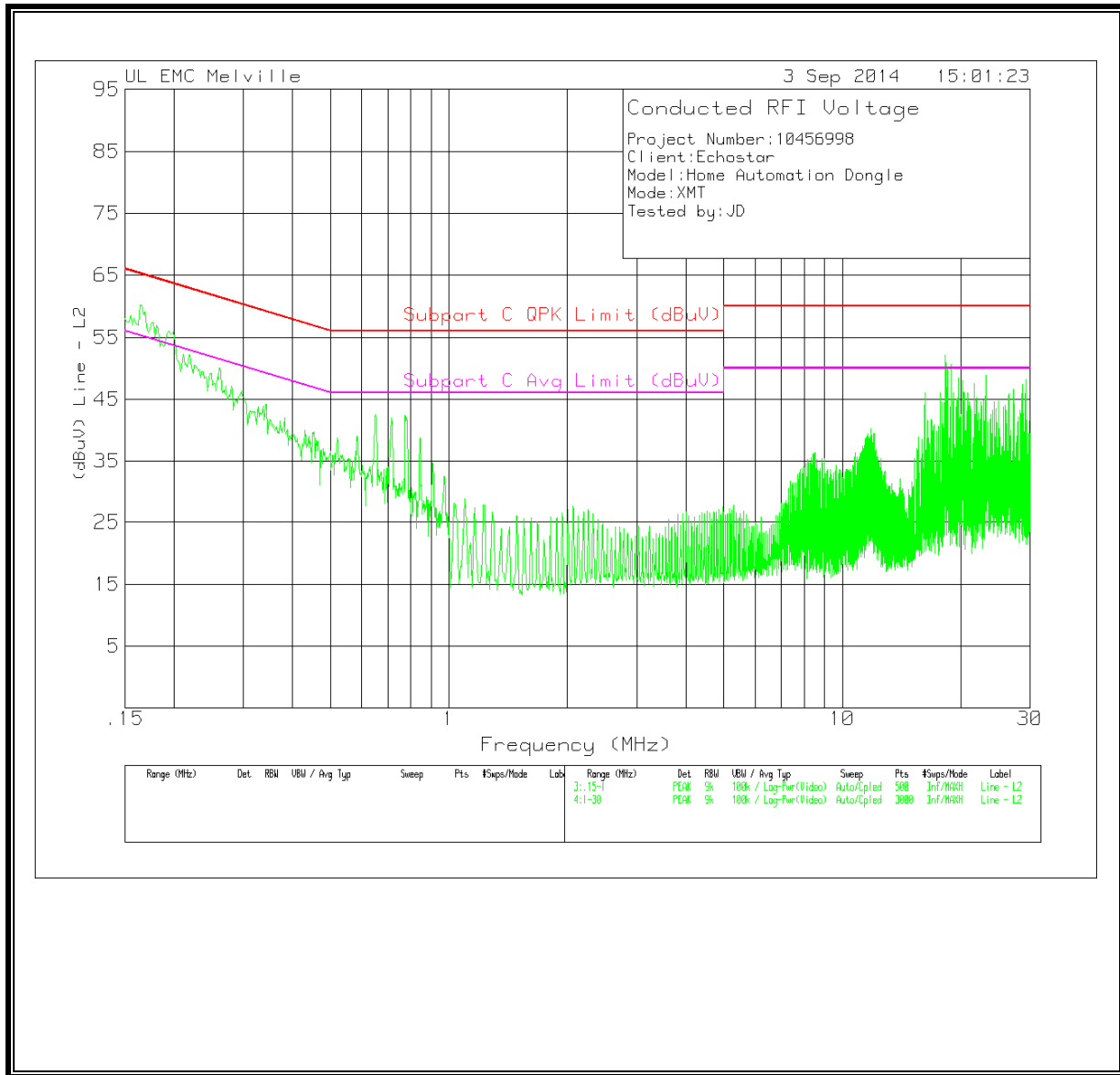
Frequency (MHz)	Meter Reading (dBuV)	Det	Line 2 G/L (dB)	Corrected Reading (dBuV)	Subpart C QPK Limit (dBuV)	Margin (dB)	Subpart C Avg Limit (dBuV)	Margin (dB)
.1599	21.86	CAV	10	31.86	-	-	55.47	-23.61
.17291	21.59	CAV	10	31.59	-	-	54.82	-23.23
.19394	34.16	CAV	10	44.16	-	-	53.87	-9.71
.20767	15.18	CAV	10	25.18	-	-	53.3	-28.12
.22501	14.52	CAV	10	24.52	-	-	52.63	-28.11
.23606	10.42	CAV	10	20.42	-	-	52.23	-31.81
.25878	31.74	CAV	10	41.74	-	-	51.47	-9.73
.26673	17.36	CAV	10	27.36	-	-	51.22	-23.86
.29492	9.7	CAV	10	19.7	-	-	50.38	-30.68
.34217	9.08	CAV	10	19.08	-	-	49.15	-30.07
.42682	3.38	CAV	10	13.38	-	-	47.31	-33.93
.45311	23.83	CAV	10	33.83	-	-	46.82	-12.99
.51746	25.68	CAV	10.1	35.78	-	-	46	-10.22
.58263	26.82	CAV	10.1	36.92	-	-	46	-9.08
.64694	31.07	CAV	10.1	41.17	-	-	46	-4.83
.71276	30.52	CAV	10.1	40.62	-	-	46	-5.38
.77632	31.75	CAV	10.1	41.85	-	-	46	-4.15
.84179	16.16	CAV	10.1	26.26	-	-	46	-19.74
16.2275	33.11	CAV	10.9	44.01	-	-	50	-5.99
18.2431	36.77	CAV	11	47.77	-	-	50	-2.23
18.9144	36.15	CAV	11.2	47.35	-	-	50	-2.65
19.7083	34.56	CAV	11.1	45.66	-	-	50	-4.34
23.1277	36.22	CAV	11.5	47.72	-	-	50	-2.28
27.158	35.34	CAV	11.9	47.24	-	-	50	-2.76
28.6847	33.24	CAV	12	45.24	-	-	50	-4.76
29.234	33.52	CAV	12	45.52	-	-	50	-4.48

CAV - CISPR average detection

LINE 1 RESULTS

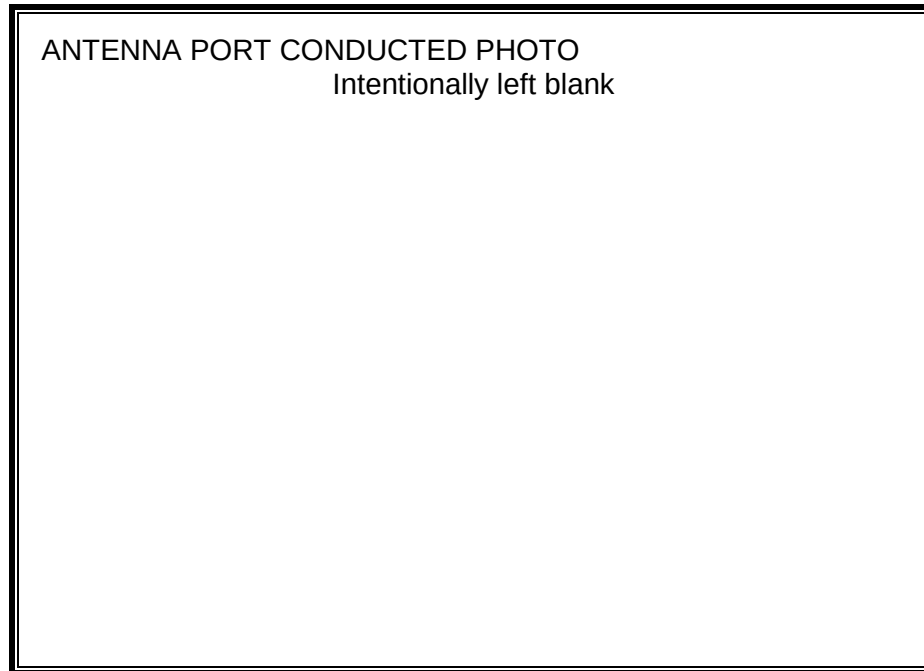


LINE 2 RESULTS



11. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



RADIATED RF MEASUREMENT SETUP (BELOW 30MHz)

RADIATED FRONT PHOTO (BELOW 30MHz)
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Horizontal

RADIATED REAR PHOTO (BELOW 30MHz)
Intentionally left blank

Horizontal

RADIATED FRONT PHOTO (BELOW 30MHz)
Intentionally left blank

Vertical

RADIATED REAR PHOTO (BELOW 30MHz)
Intentionally left blank

Vertical

RADIATED RF MEASUREMENT SETUP (BELOW 1 GHz)

RADIATED FRONT PHOTO (BELOW 1 GHz)
Intentionally left blank

RADIATED BACK PHOTO (BELOW 1 GHz)
Intentionally left blank

RADIATED RF MEASUREMENT SETUP (ABOVE 1 GHz)

RADIATED FRONT PHOTO (ABOVE 1 GHz)
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RADIATED BACK PHOTO (ABOVE 1 GHz)
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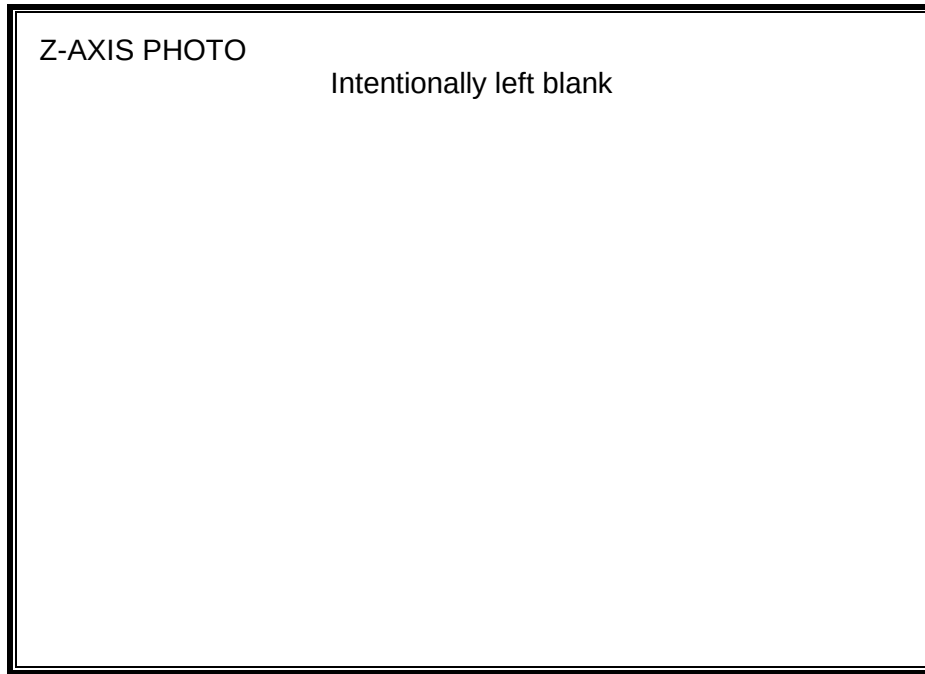
RADIATED RF MEASUREMENT SETUP FOR PORTABLE CONFIGURATION

X-AXIS PHOTO

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Y-AXIS PHOTO

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POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO
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LINE CONDUCTED BACK PHOTO
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END OF REPORT