FCC CFR47 PART 15 SUBPART C

BLUETOOTH LOW ENERGY
CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone + Bluetooth, WLAN DTS/UNII a/b/g/n & ANT+ & NFC

MODEL NUMBER: SM-A500F/DS, SM-A500F

FCC ID: A3LSMA500F

REPORT NUMBER: 14U18538-E3

ISSUE DATE: SEPTEMBER 10, 2014

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	9/10/13	Initial Issue	P. Zhang

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	**SAMSUNG ELECTRONICS CO., LTD.**
EUT DESCRIPTION:	**GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n, ANT+ & NFC**
MODEL:	**SM-A500F/DS, SM-A500F**
SERIAL NUMBER:	**1959554 (CONDUCTED); 1948914 (RADIATED)**
DATE TESTED:	**SEPTEMBER 3-10, 2014**

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass

UL Verification Services Inc. 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 Verification Services 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.

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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services 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.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009, 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 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A	☐ Chamber D
☒ Chamber B	☐ Chamber E
☐ Chamber C	☐ Chamber F

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.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:

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

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 26000 MHz	4.94 dB

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

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone + Bluetooth, WLAN DTS & UNII a/b/g/n + ANT+ & NFC.

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)
2402-2480	BLE	3.86	2.43

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -5.49 dBi.

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5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

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5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	SAMSUNG	ETA0U83EWE	N/A	N/A
Earphone	SAMSUNG	EHS61ASFWE	N/A	N/A

I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1m	N/A

TEST SETUP

EUT was set in the Hidden menu mode to enable BLE communications.

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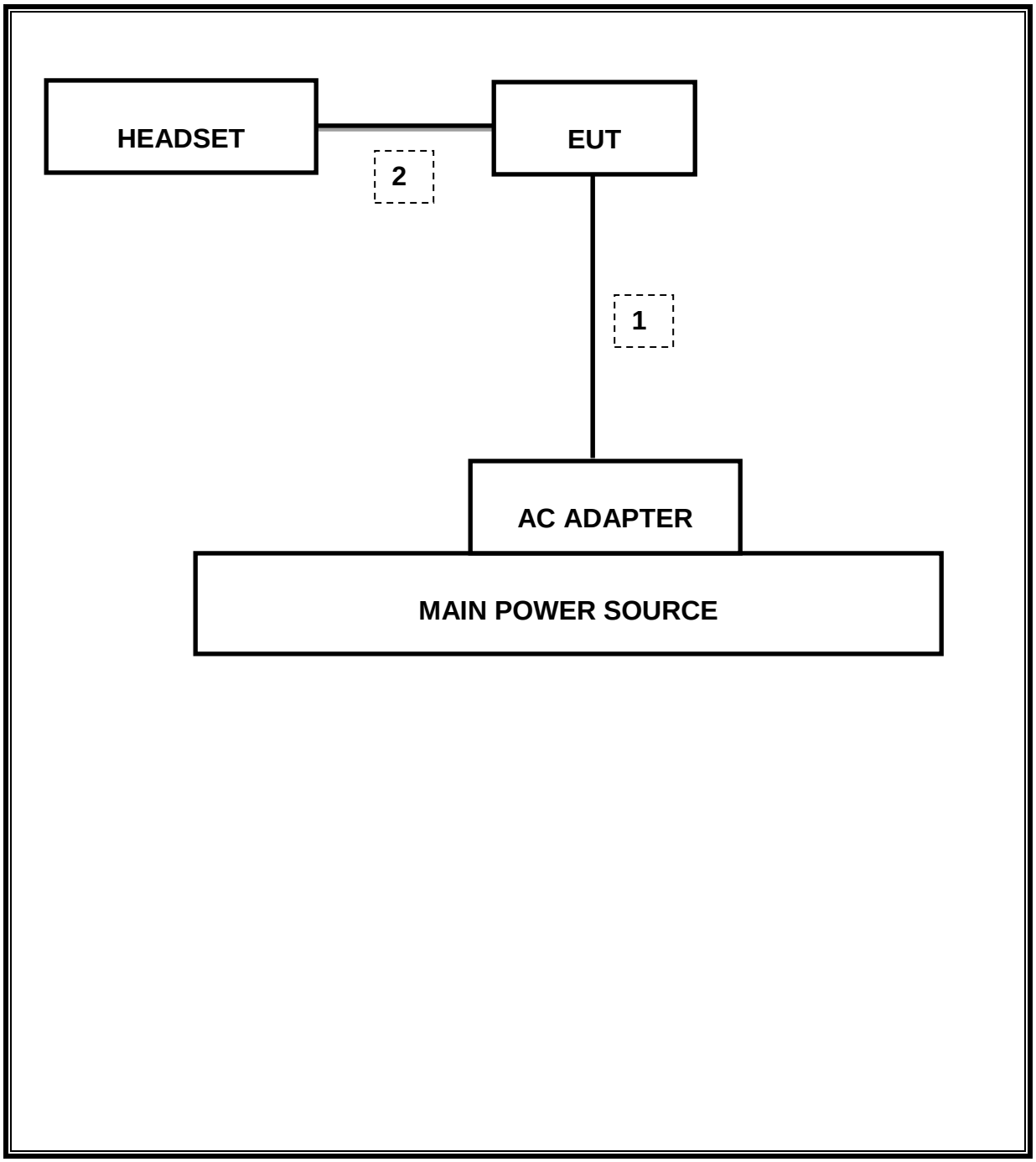
SETUP DIAGRAM FOR TESTS



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6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	4/1/2015
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	2/26/2015
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	8/18/2015
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	5/8/2015
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/2014
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	N/A	3/6/2015
Antenna, Horn, 18 GHz	ETS	3117	C01022	2/21/2015
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	12/17/2014
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/2014
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/2014
LISN, 30 MHz	FCC	50/250-25-2	C00626	1/14/2015

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7. SUMMARY

8.

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-210 A8.2(a)	Occupied Band width (6dB)	>500KHz	Conducted	Pass	0.654MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-53.23dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	3.86dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-11.71dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	34.01dBuV(AV)
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	42.16dBuV/m

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ANTENNA PORT TEST RESULTS

8.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

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

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6590	0.5
Middle	2440	0.6540	0.5
High	2480	0.6670	0.5

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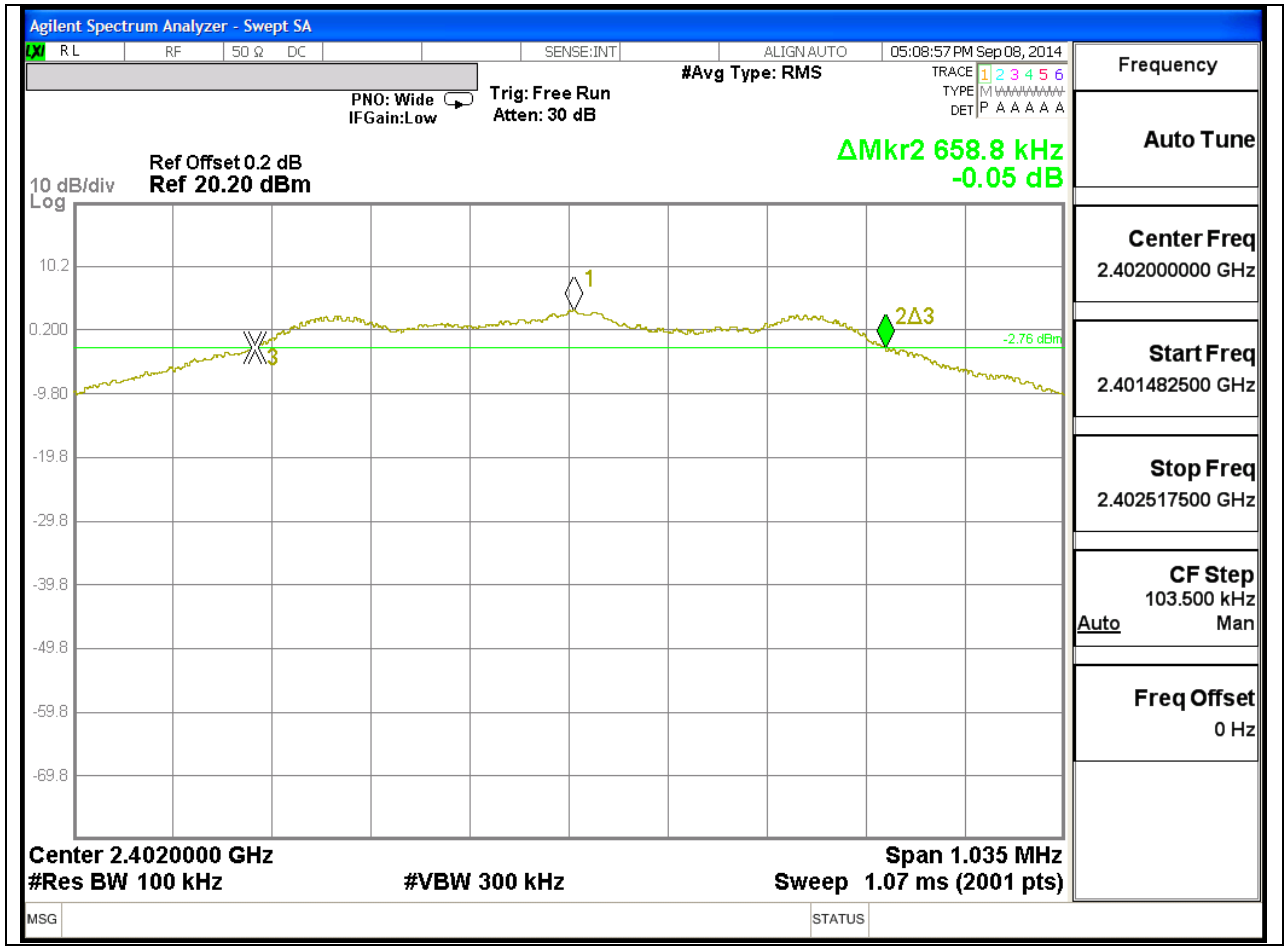
6 dB BANDWIDTH PLOTS

LOW CHANNEL



MID CHANNEL

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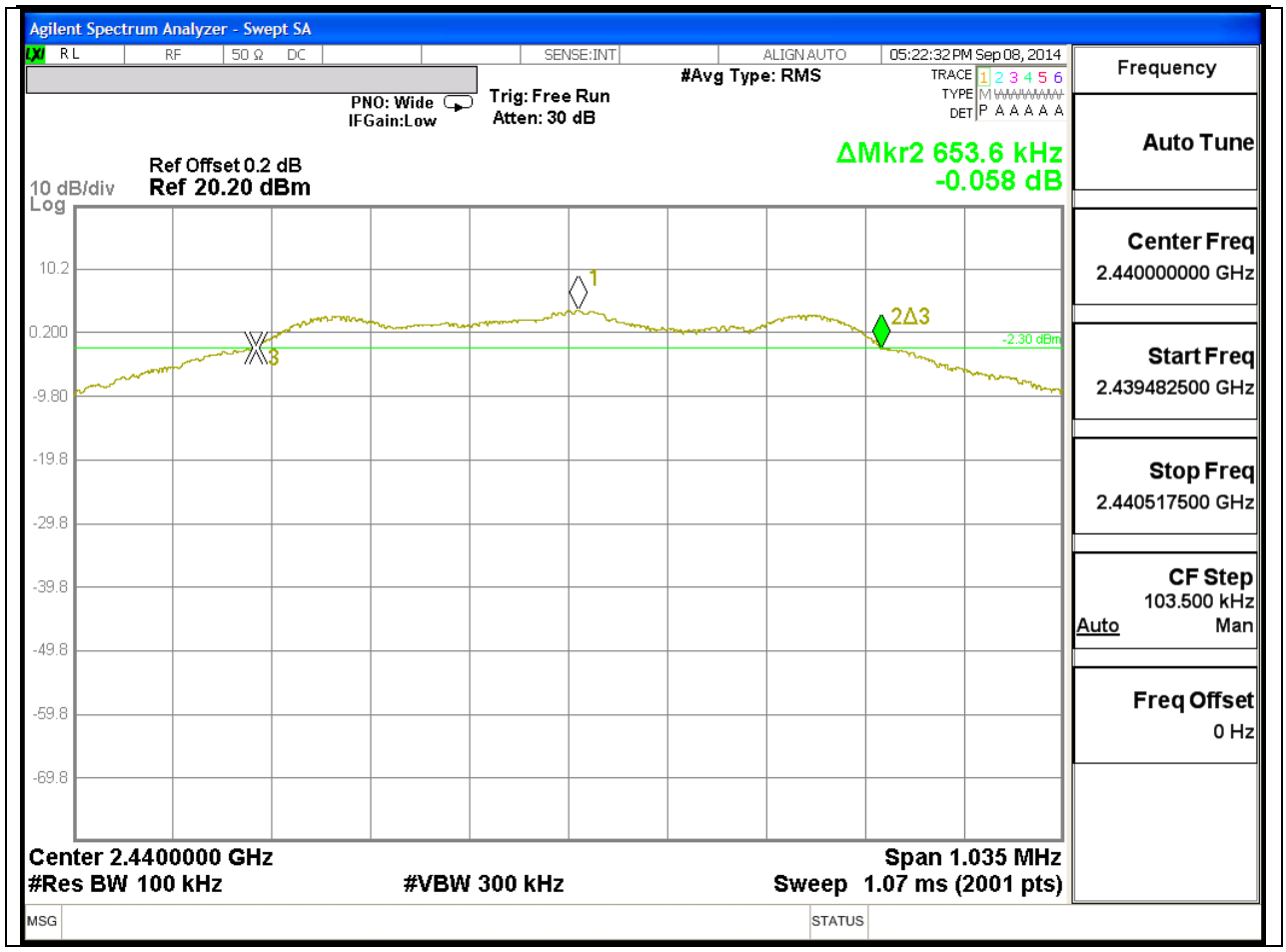

HIGH CHANNEL

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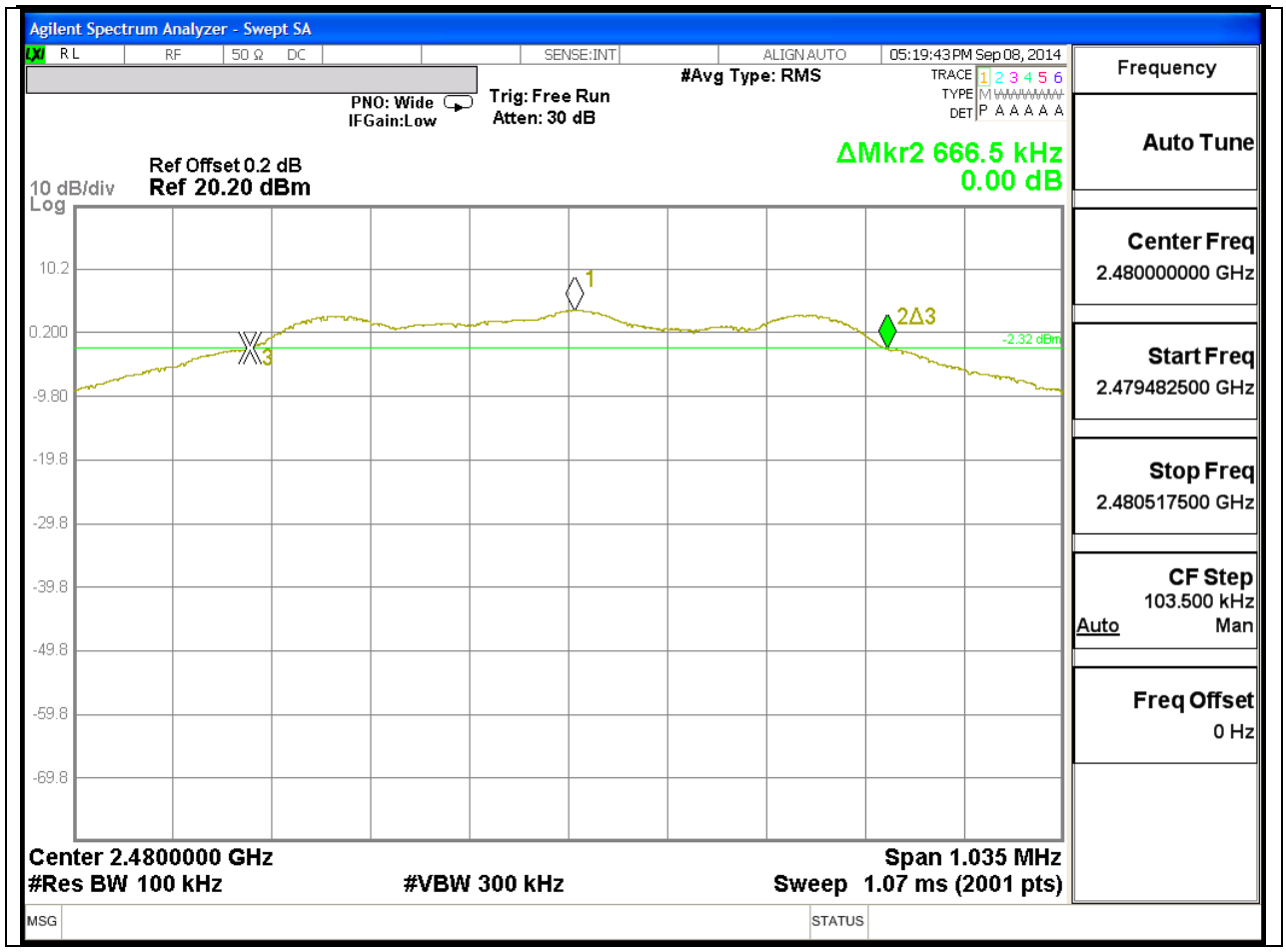

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8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Reference to KDB558074 D01 DTS Meas Guidance v03r02: The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0858
Middle	2440	1.0080
High	2480	1.0299

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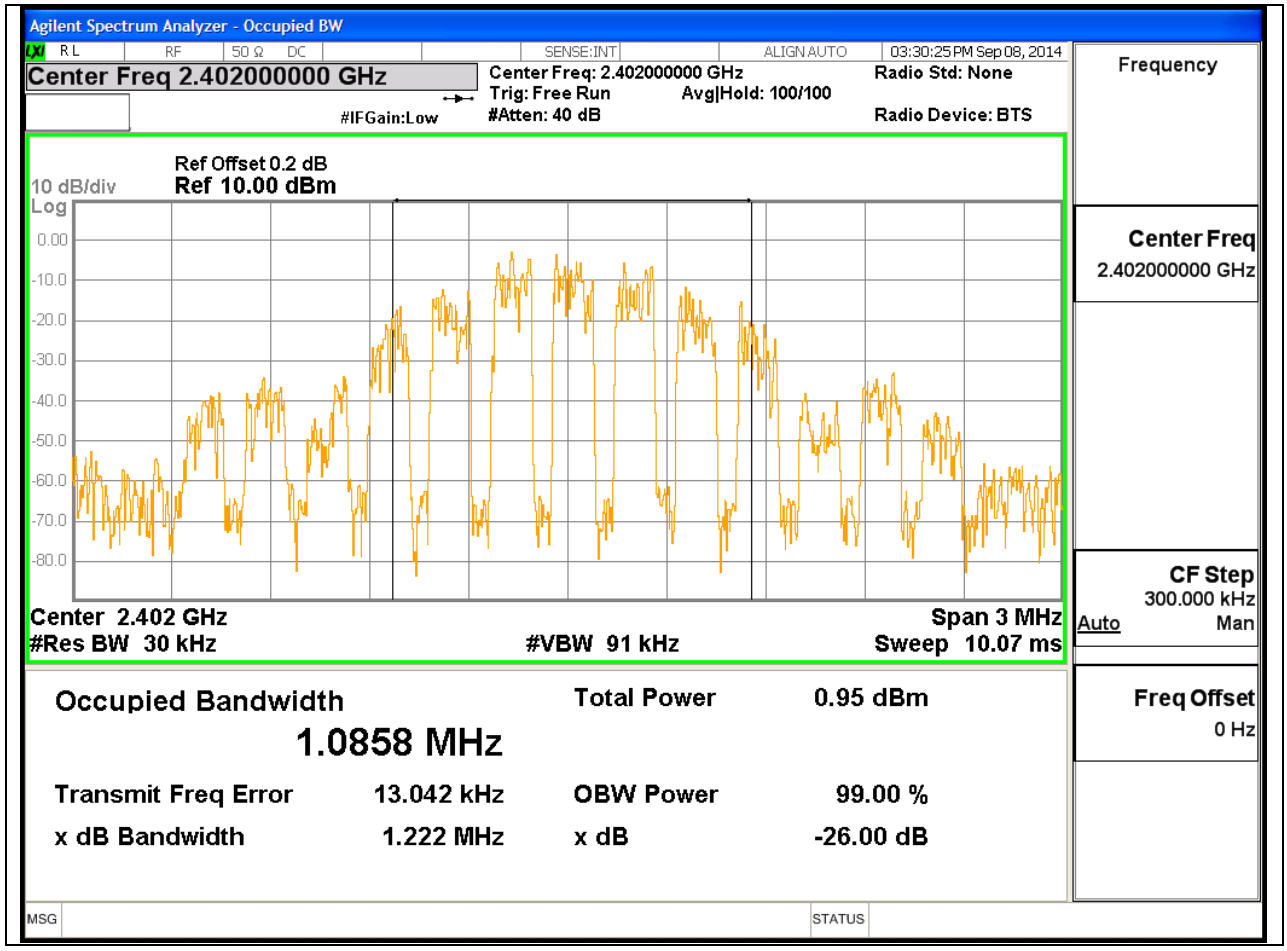
99% BANDWIDTH PLOTS

LOW CHANNEL



MID CHANNEL

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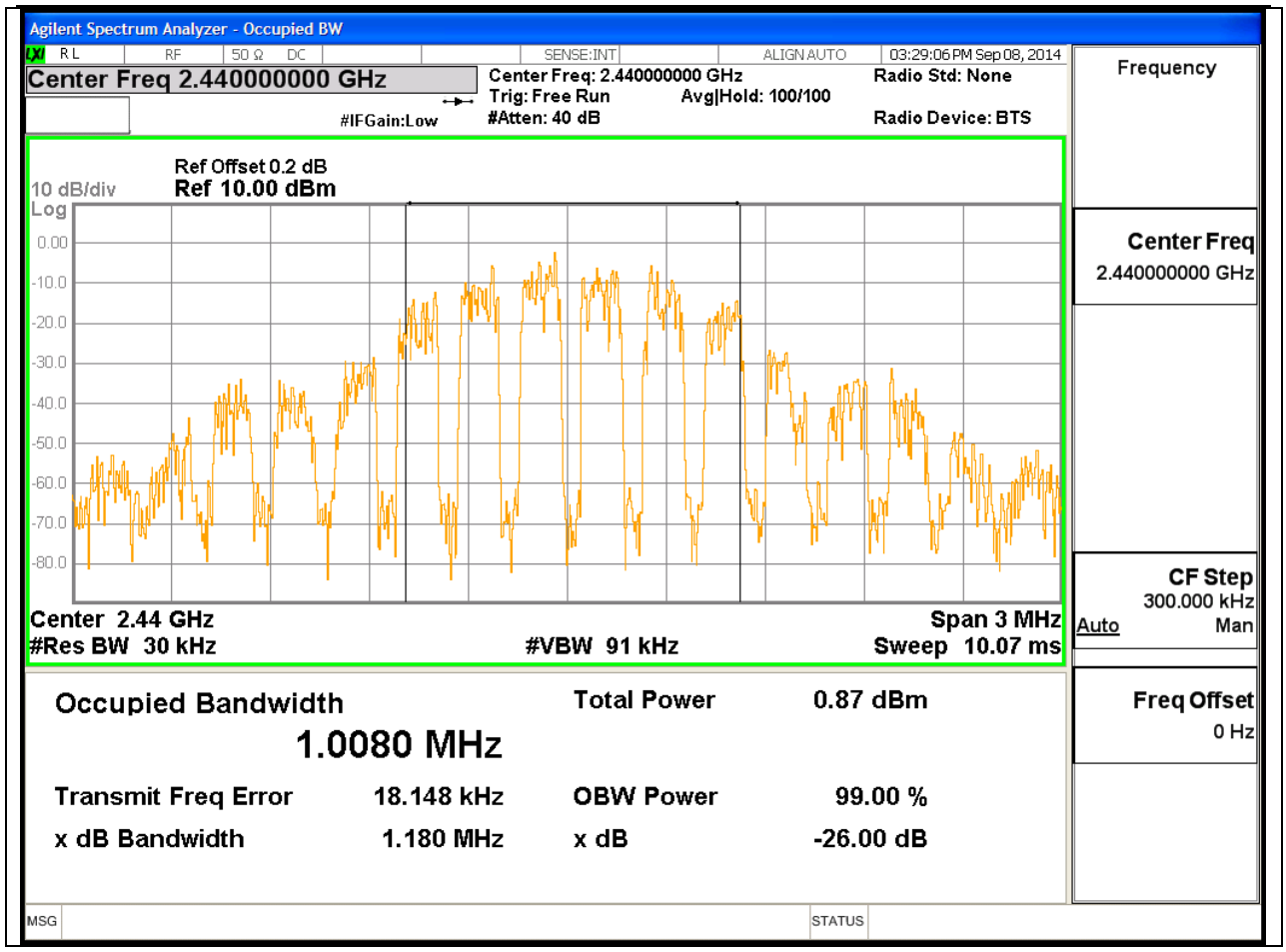

HIGH CHANNEL

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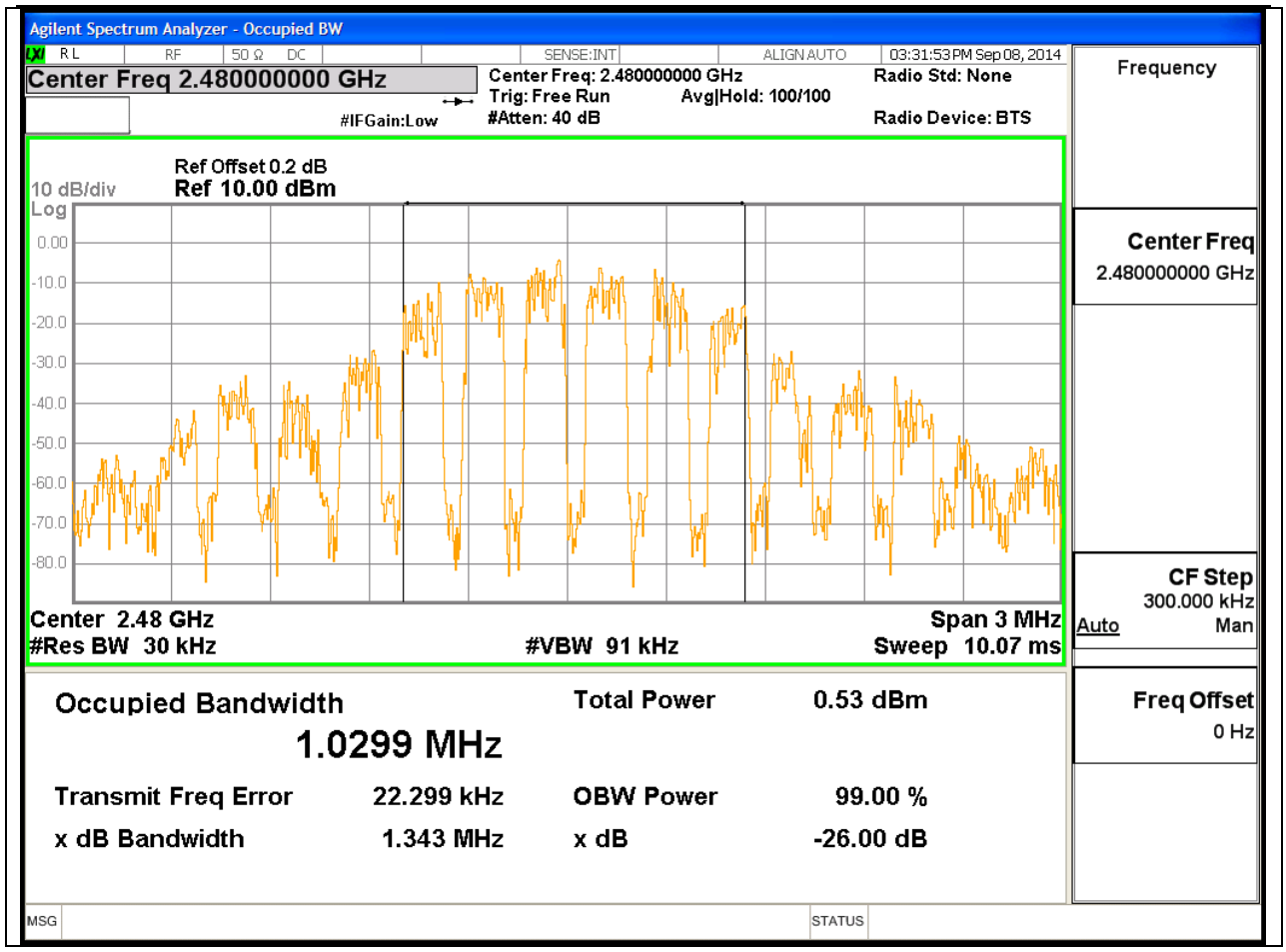

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8.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

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

TEST PROCEDURE

Peak power is measured using KDB558074 D01 DTS Meas Guidance v03r02 under section 9.1.1 utilizing spectrum analyze.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	3.500	30	-26.500
Middle	2440	3.850	30	-26.150
High	2480	3.860	30	-26.140

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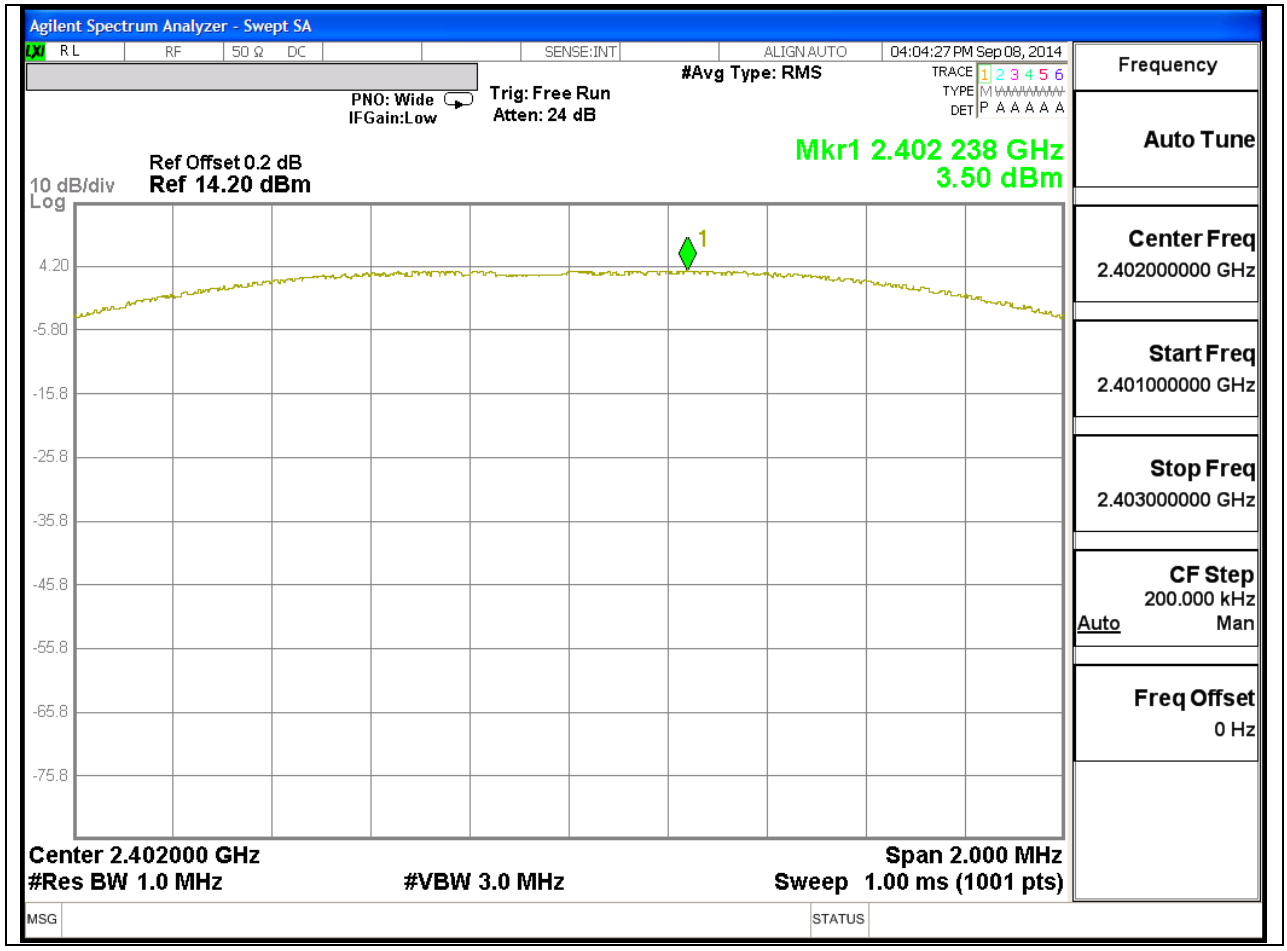
OUTPUT POWER PLOTS

LOW CHANNEL



MID CHANNEL

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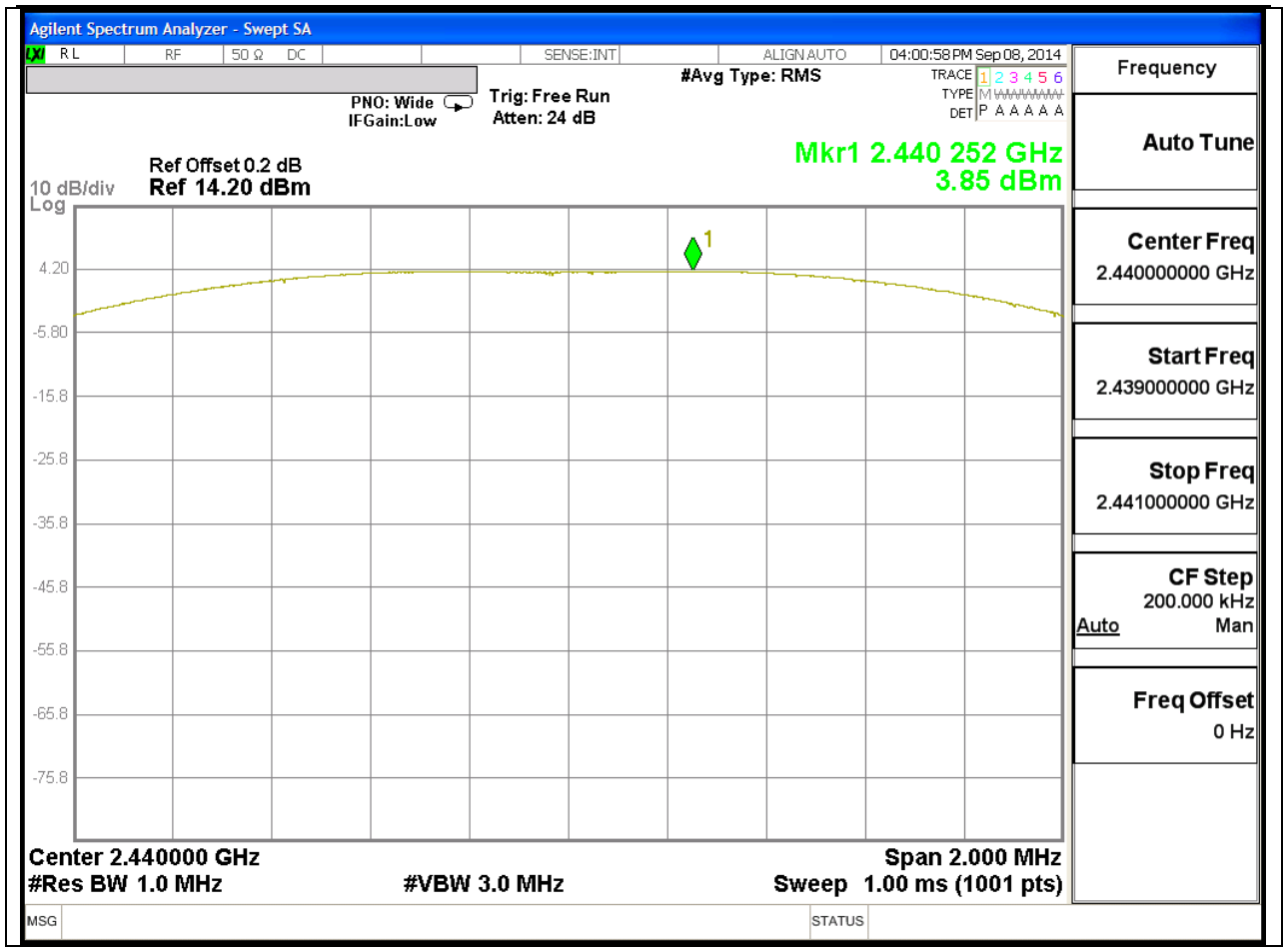

HIGH CHANNEL

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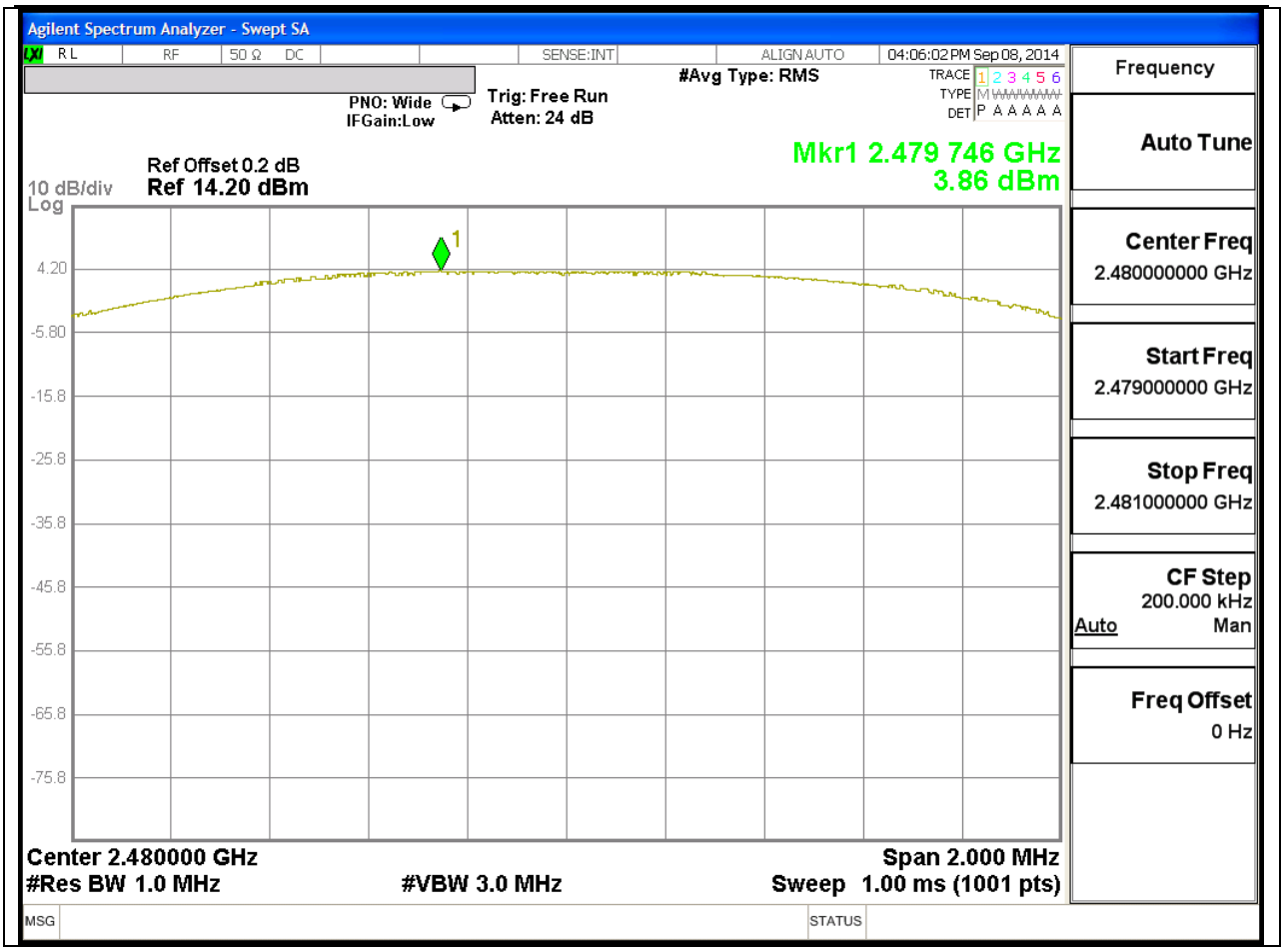

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8.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 0.2 dB (including 0.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	2.8
Middle	2440	3.1
High	2480	3.2

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8.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

Power Spectral Density was performed utilizing the “Method PKPSD (Peak PSD)” under KDB558074 D01 DTS Meas Guidance v03r01

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-11.71	8	-19.71
Middle	2440	-11.71	8	-19.71
High	2480	-11.97	8	-19.97

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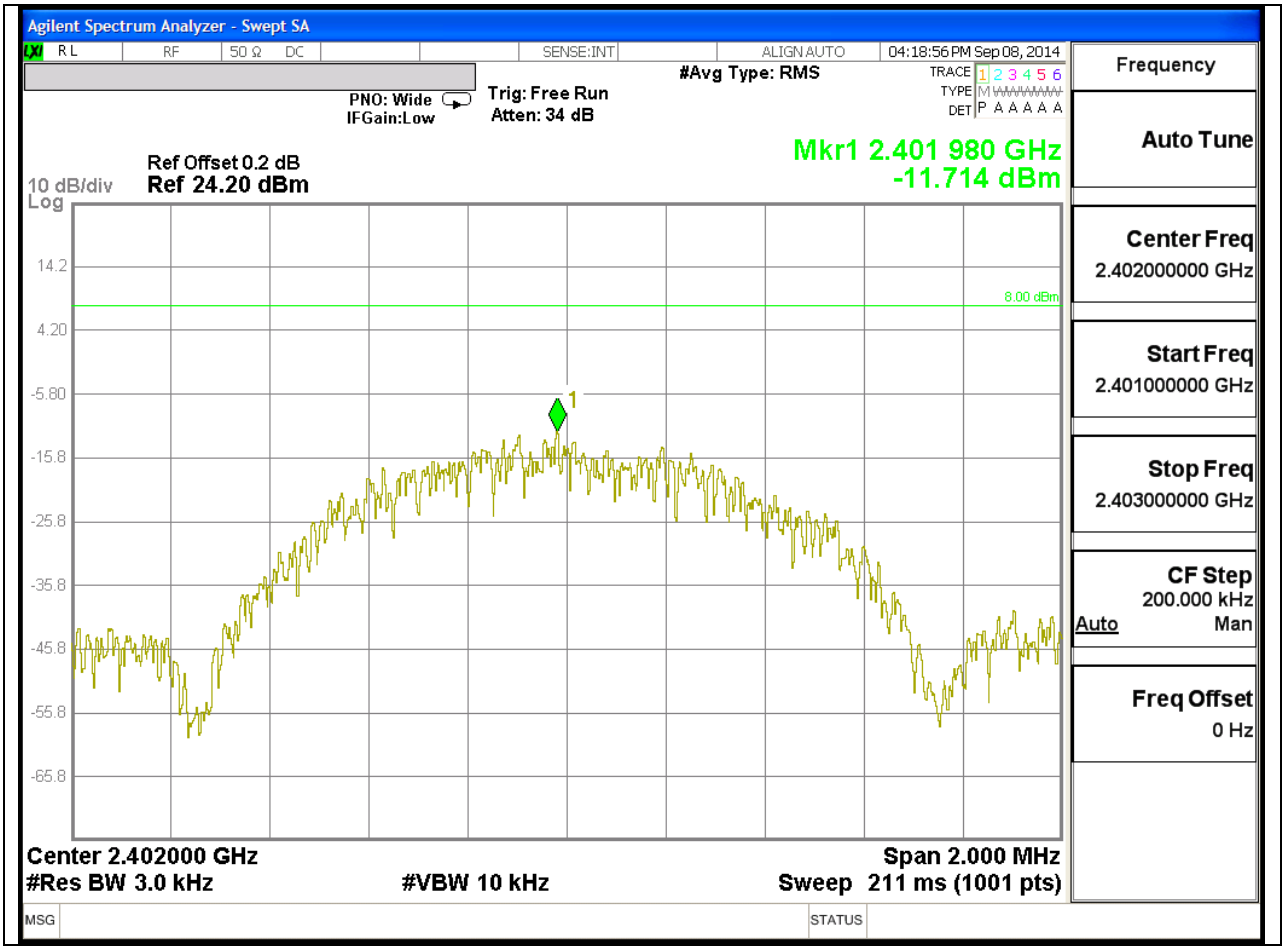
POWER SPECTRAL DENSITY PLOTS

LOW CHANNEL



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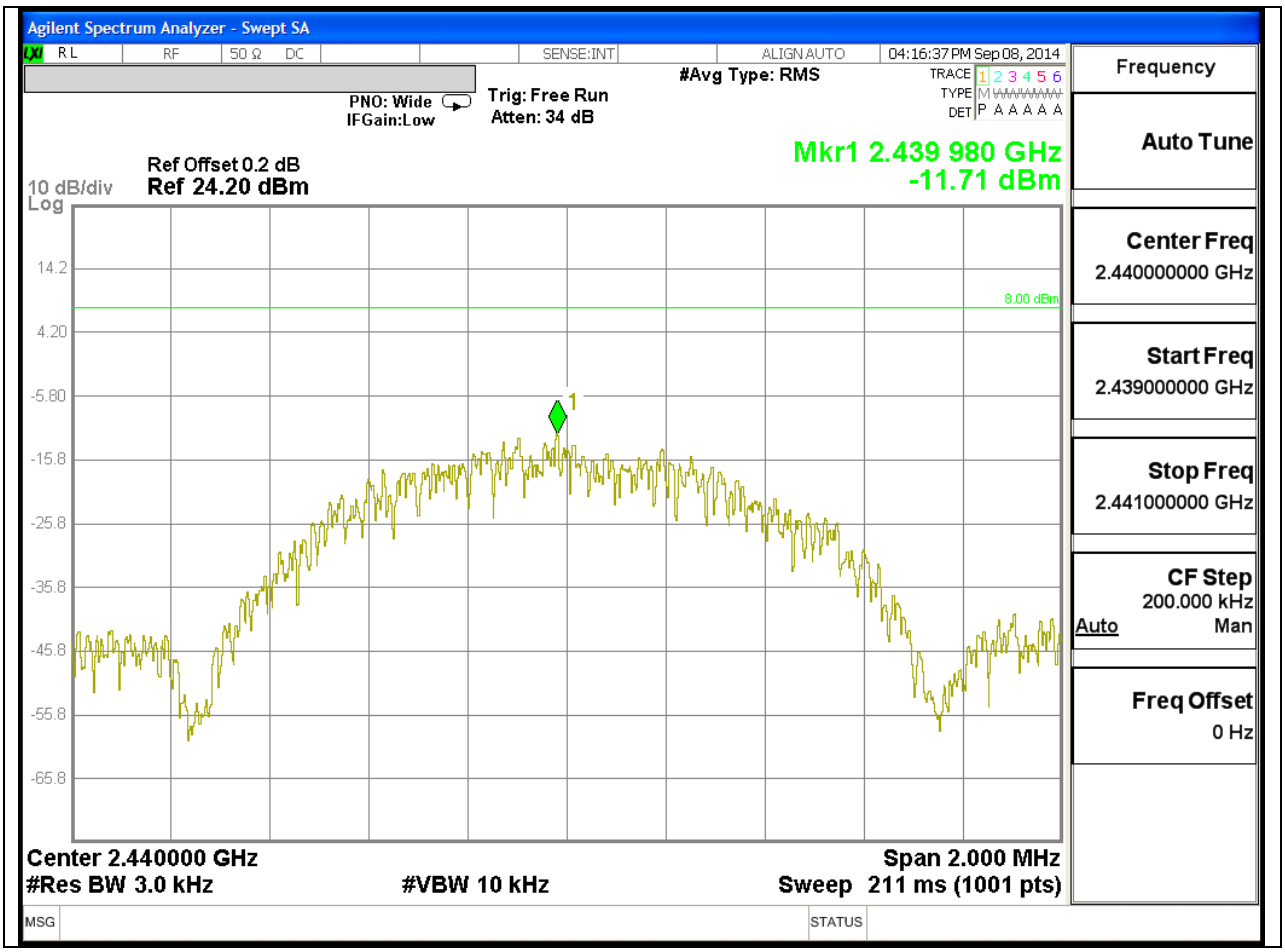
MID CHANNEL



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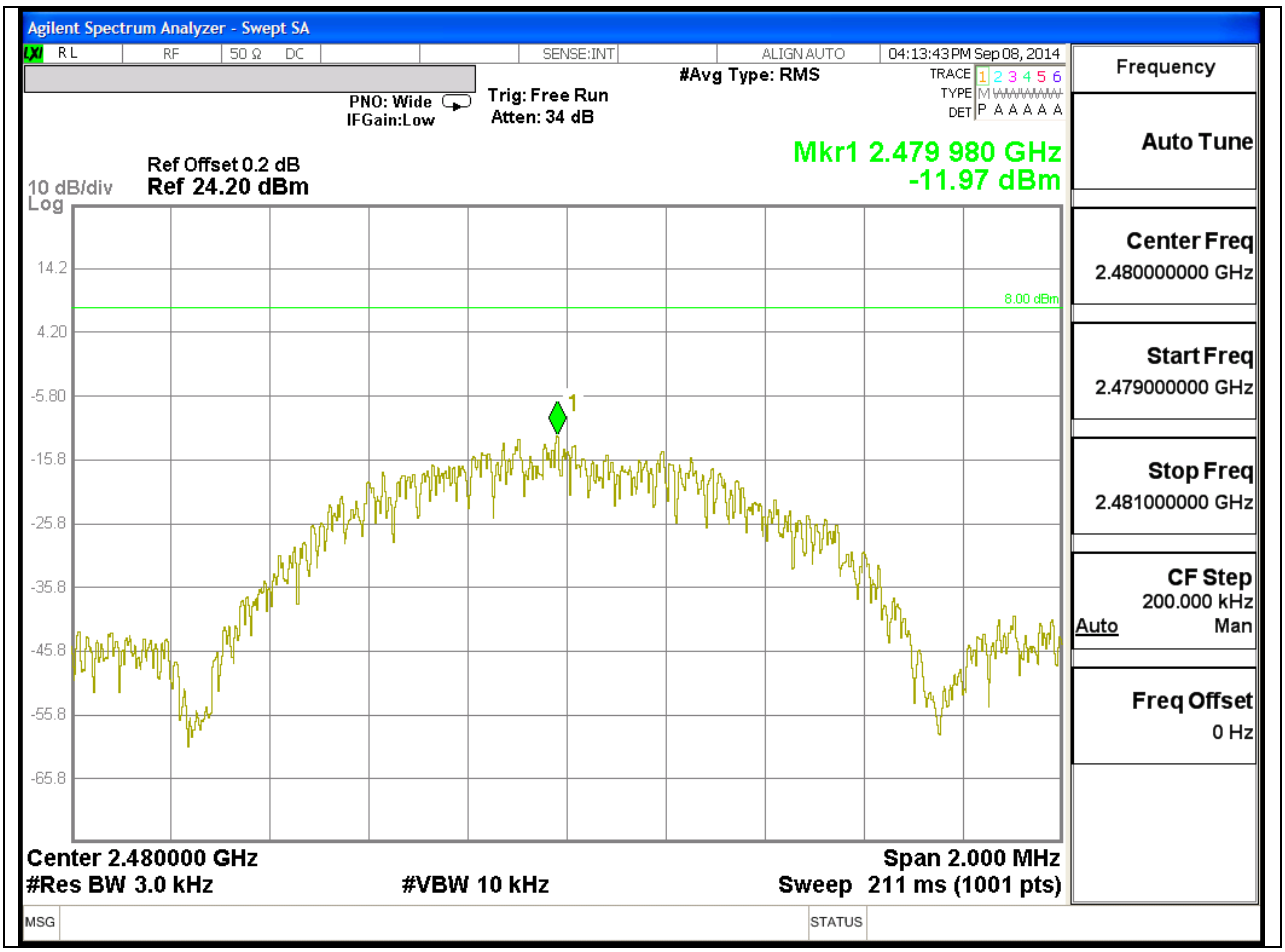
HIGH CHANNEL



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8.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

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.

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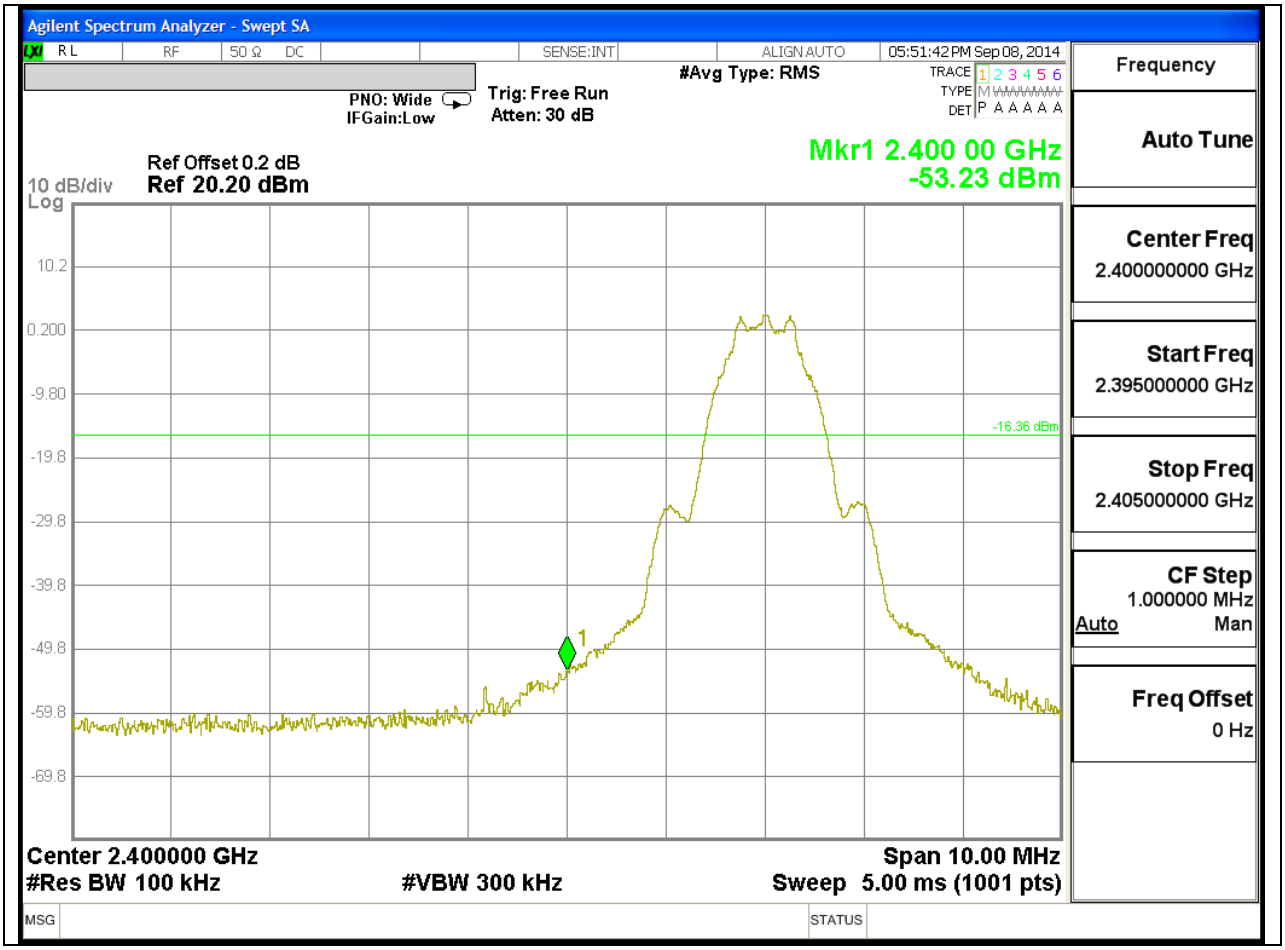
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE



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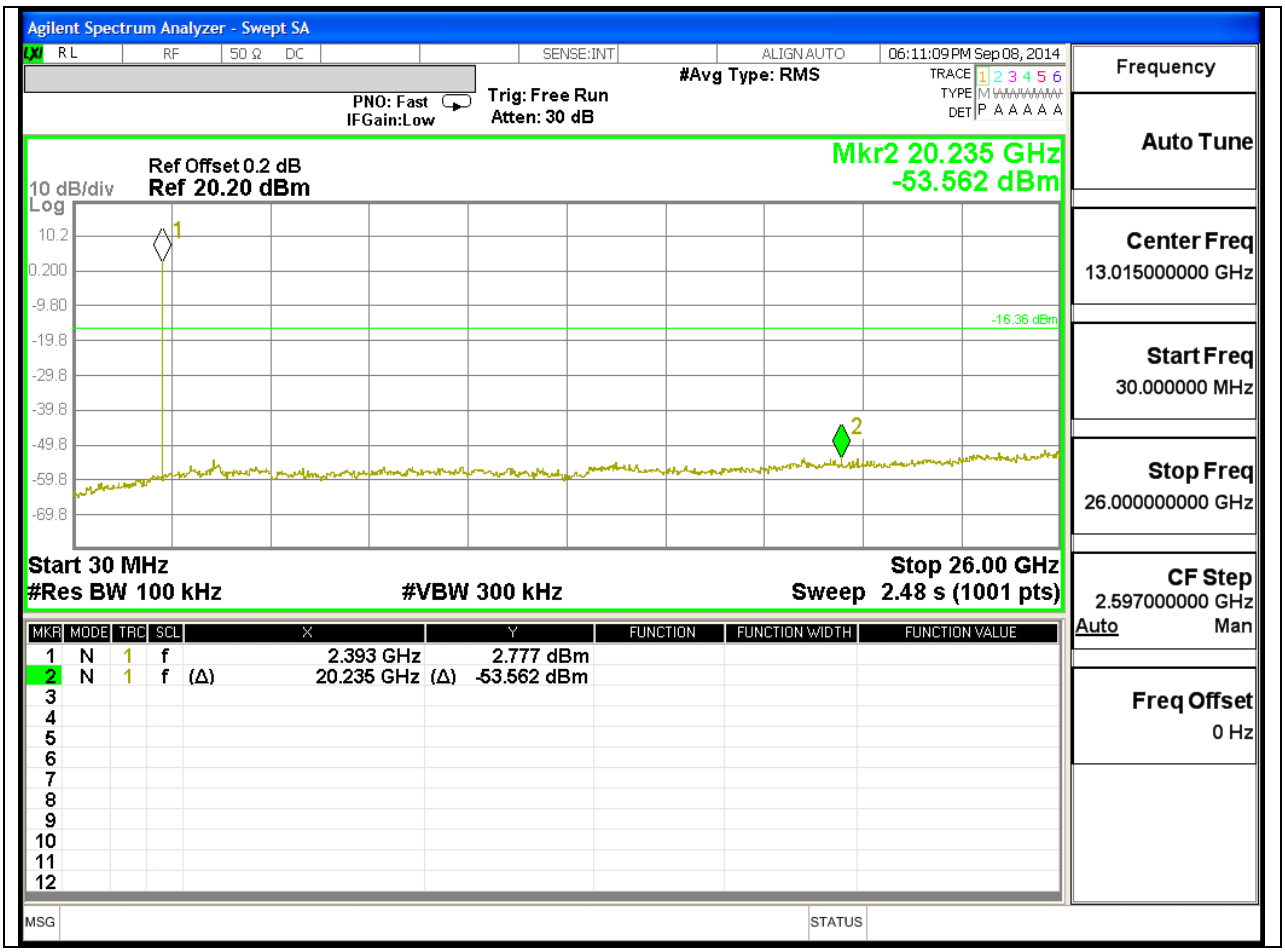
LOW CHANNEL SPURIOUS



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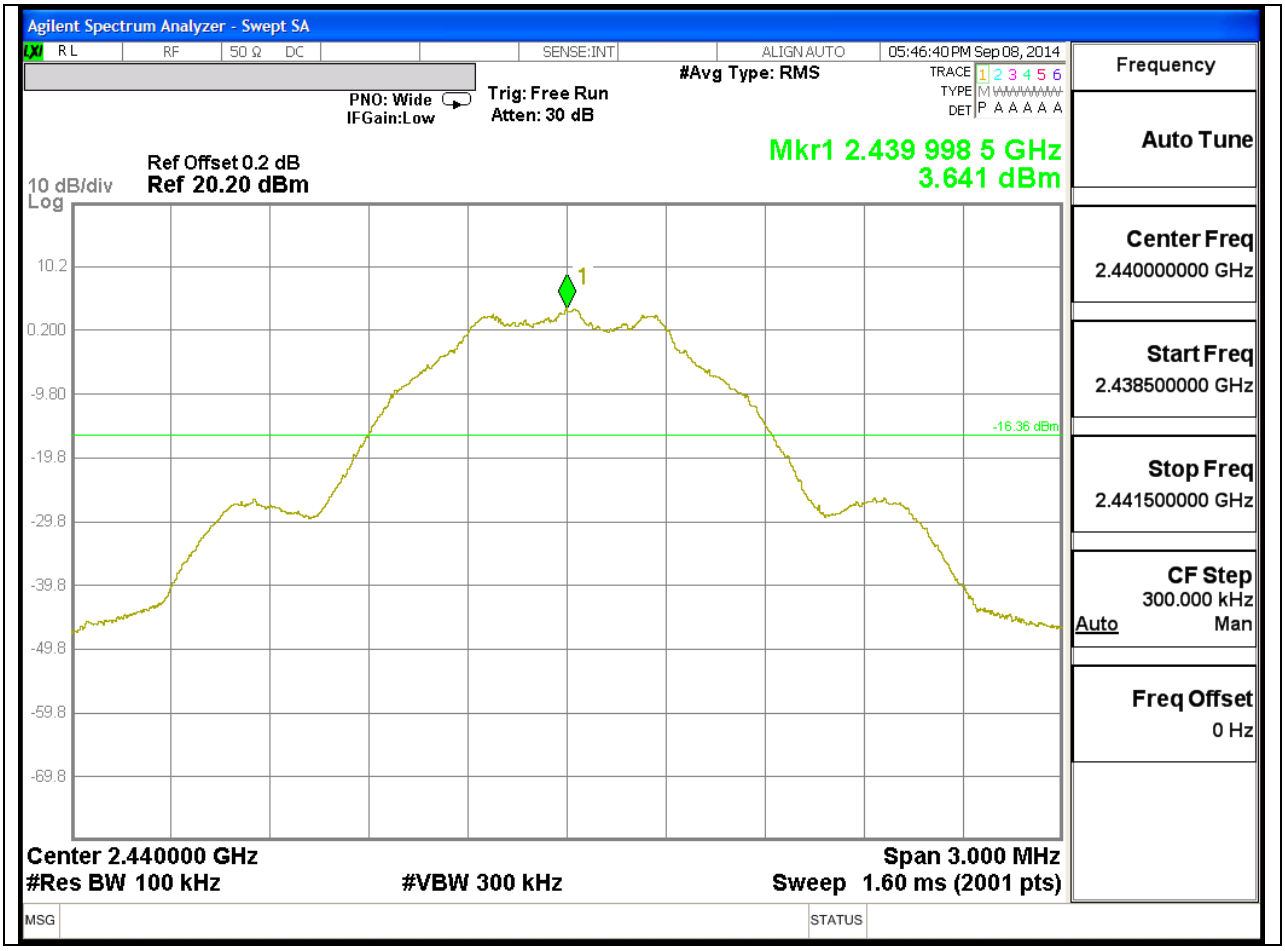
SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL REFERENCE



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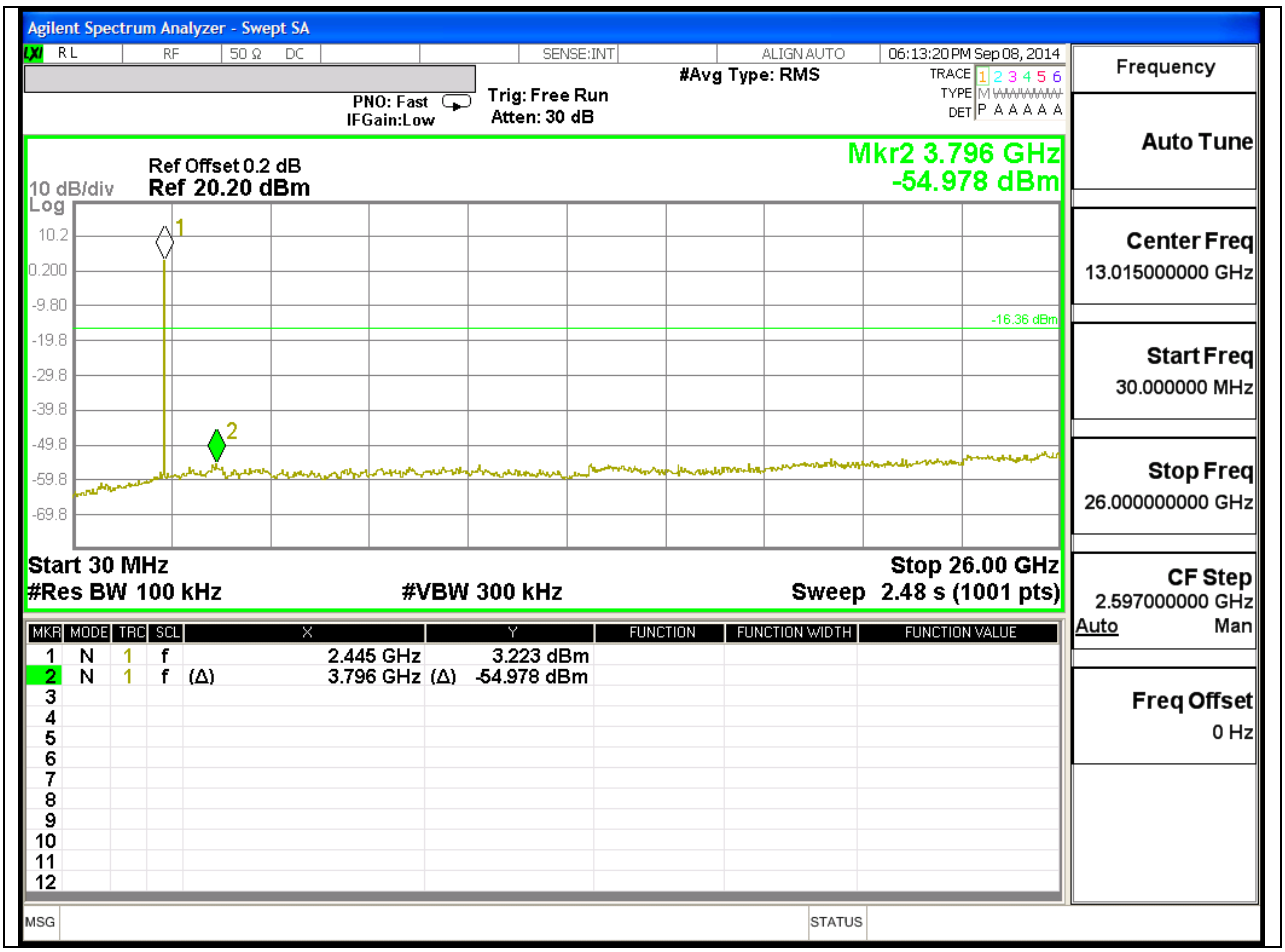
MID CHANNEL SPURIOUS



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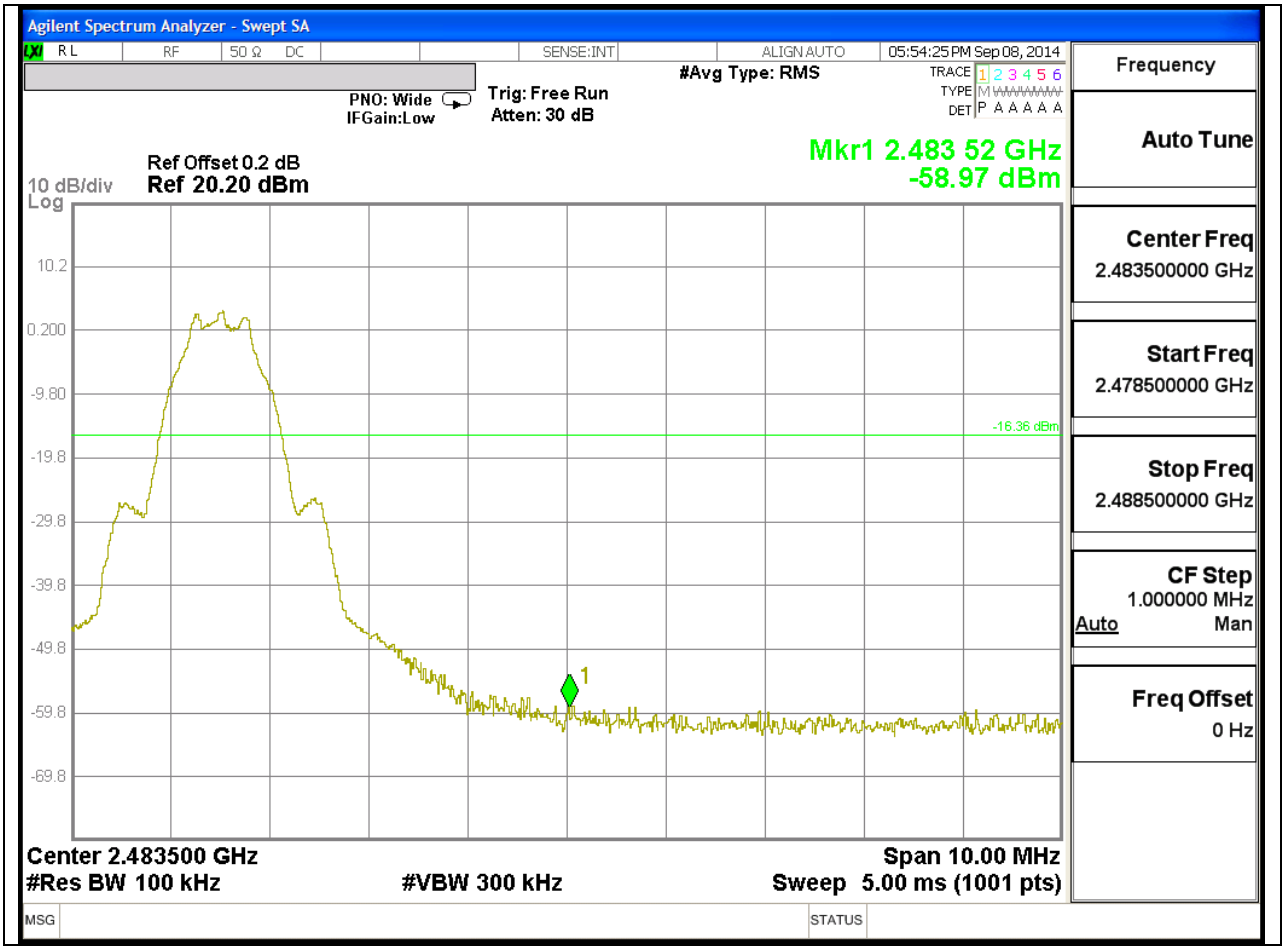
SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE



HIGH CHANNEL SPURIOUS

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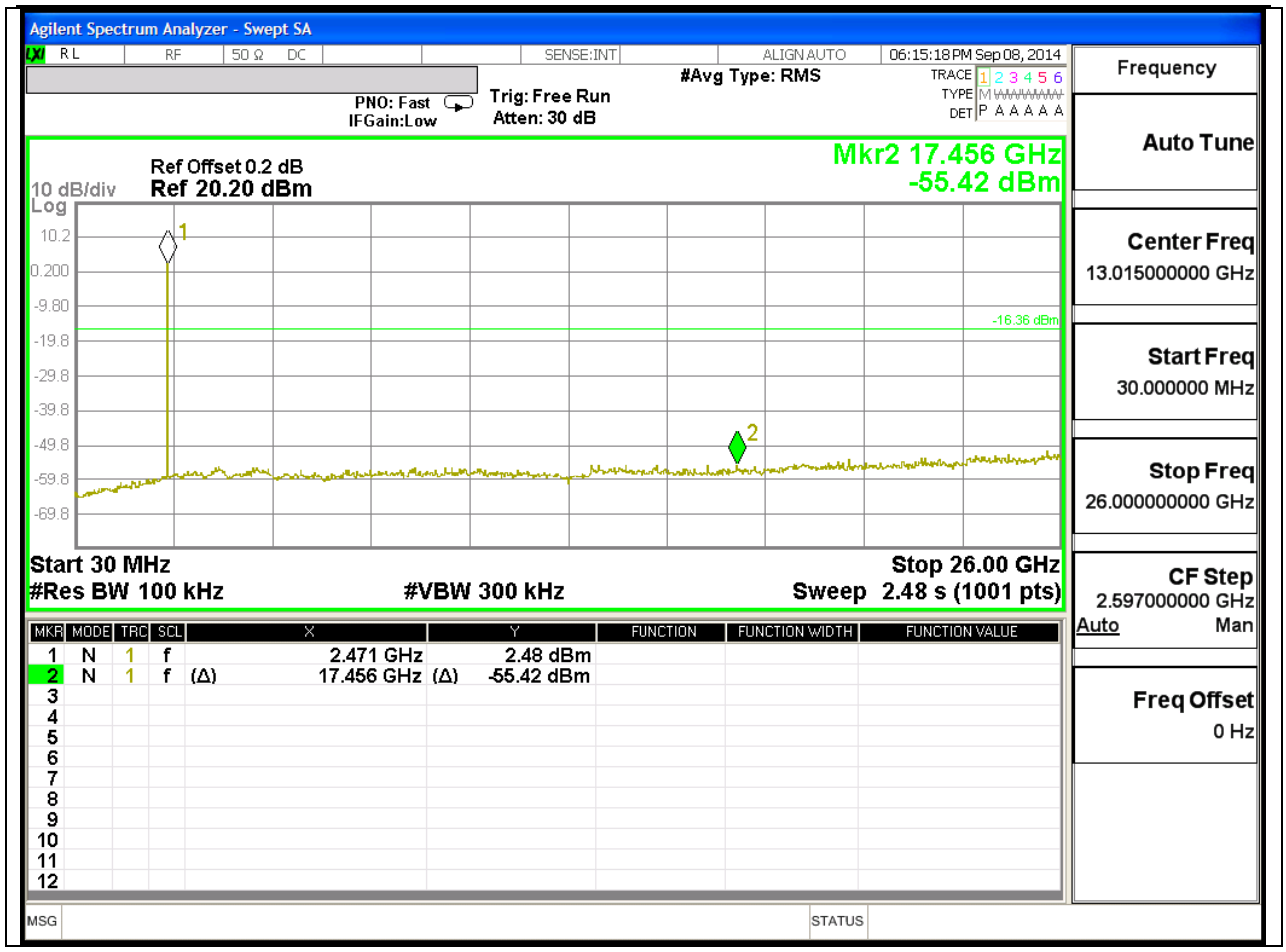

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9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
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 C63.4 - 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 add duty cycle factor for average measurements. Duty cycle factor = 10 log (1/x). For this sample: DCF = 10log(1/0.618)=2.07dB

The spectrum from 1GHz 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.

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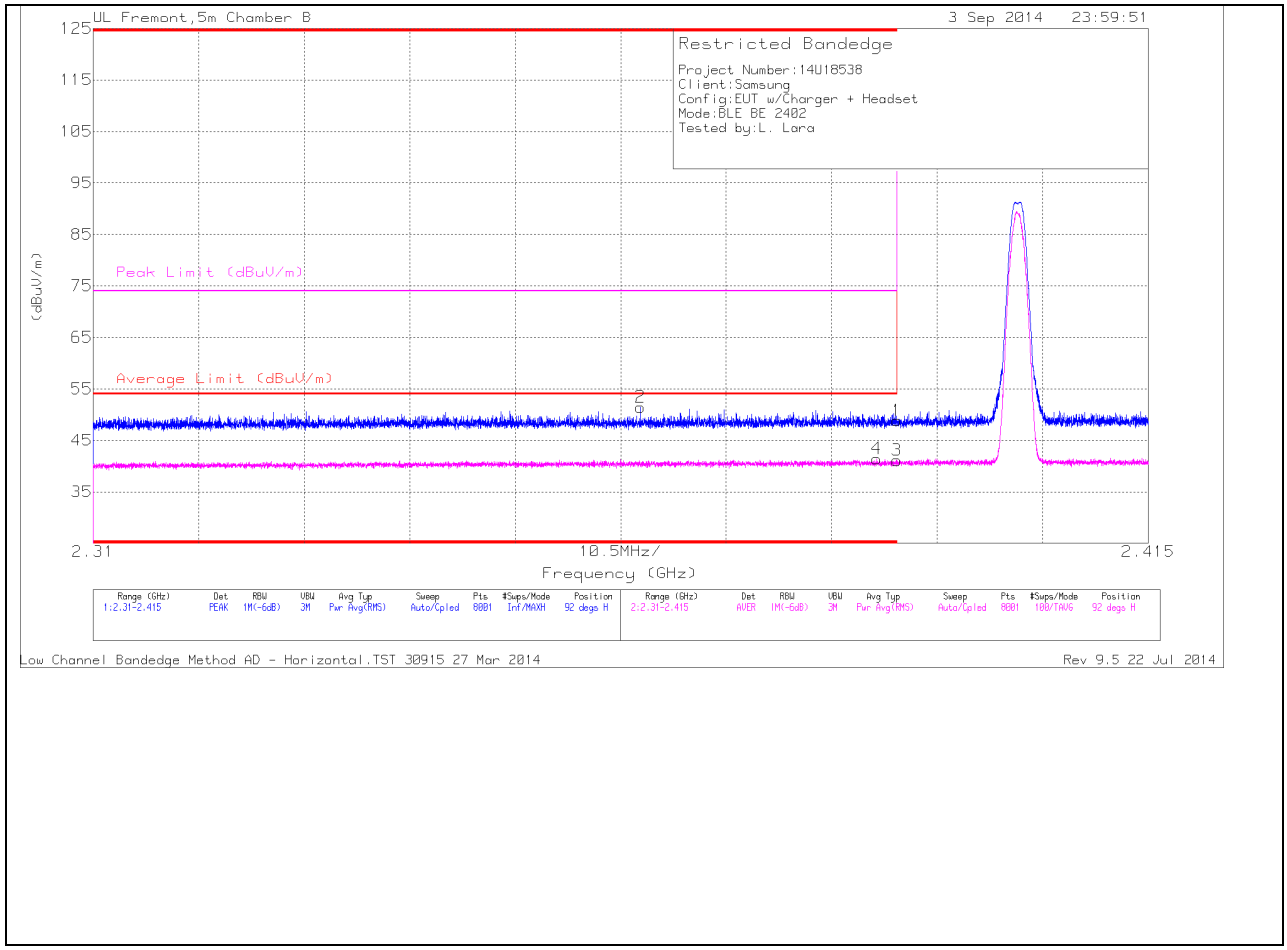
9.2. TRANSMITTER ABOVE 1 GHz

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

LOW CHANNEL RESTRICTED, PEAK & AVERAGE, HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (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
1	* 2.39	39.47	PK	32.1	-22.7	0	48.87	-	-	74	-25.13	92	231	H
2	* 2.364	42.27	PK	32	-22.8	0	51.47	-	-	74	-22.53	92	231	H
3	* 2.39	29.65	RMS	32.1	-22.7	2.07	41.12	54	-12.88	-	-	92	231	H
4	* 2.388	29.98	RMS	32.1	-22.7	2.07	41.45	54	-12.55	-	-	92	231	H

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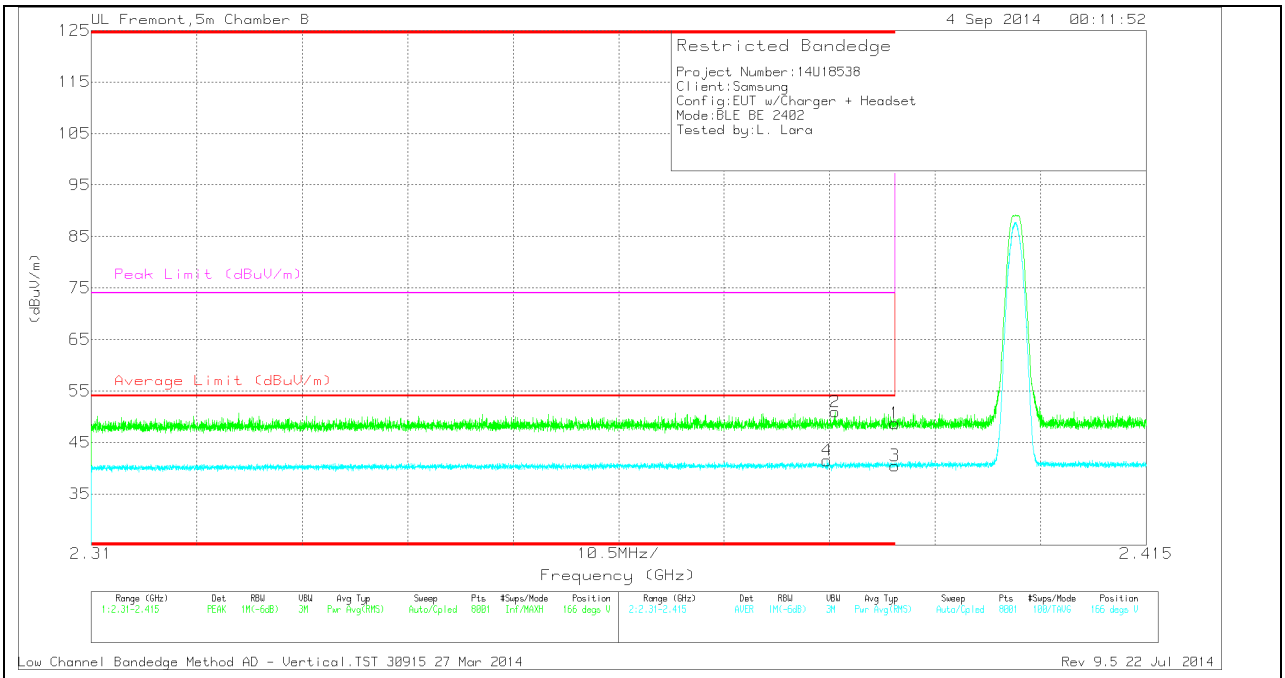
LOW CHANNEL RESTRICTED, PEAK & AVERAGE, VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Flt r/Pad (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
1	* 2.39	39.3	PK	32.1	-22.7	0	48.7	-	-	74	-25.3	166	289	V
2	* 2.384	41.51	PK	32.1	-22.7	0	50.91	-	-	74	-23.09	166	289	V
3	* 2.39	29	RMS	32.1	-22.7	2.07	40.47	54	-13.53	-	-	166	289	V
4	* 2.383	30.02	RMS	32.1	-22.7	2.07	41.49	54	-12.51	-	-	166	289	V

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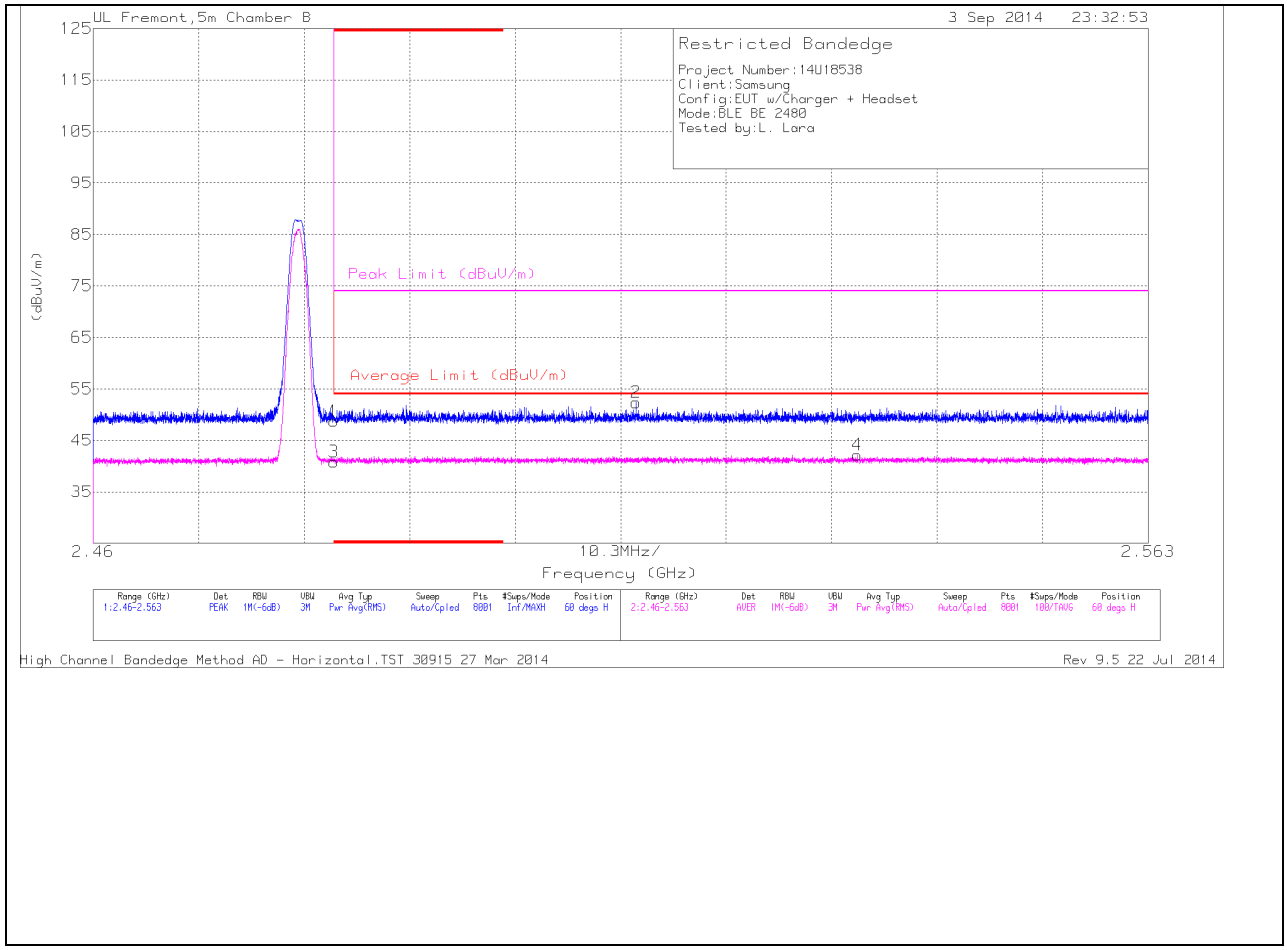
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

HIGH CHANNEL RESTRICTED, PEAK & AVERAGE, HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (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
1	* 2.484	38.95	PK	32.4	-22.6	0	48.75	-	-	74	-25.25	60	140	H
3	* 2.484	28.95	RMS	32.4	-22.6	2.07	40.82	54	-13.18	-	-	60	140	H
2	2.513	42.46	PK	32.5	-22.6	0	52.36	-	-	74	-21.64	60	140	H
4	2.535	30.09	RMS	32.5	-22.5	2.07	42.16	54	-11.84	-	-	60	140	H

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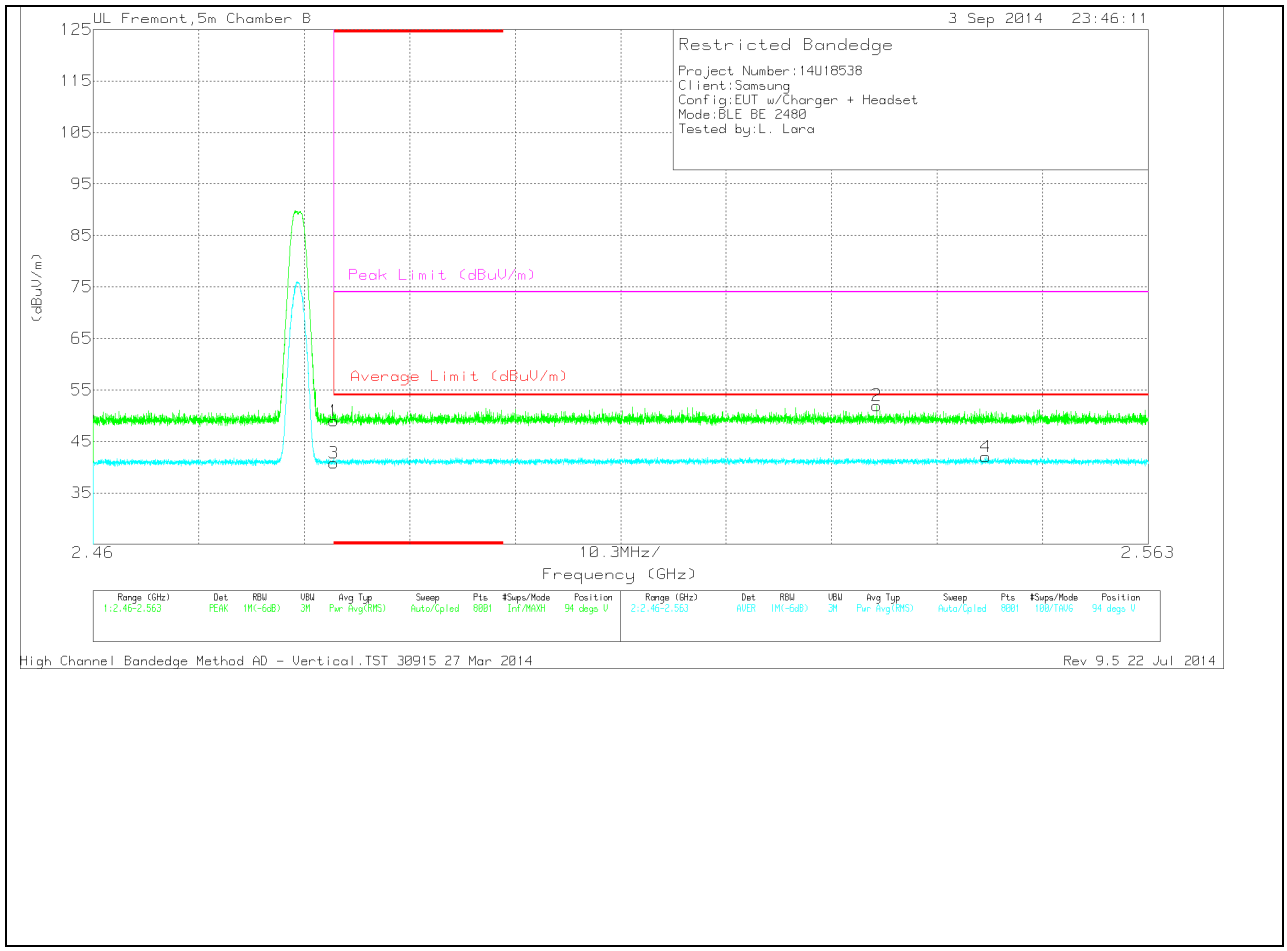
HIGH CHANNEL RESTRICTED, PEAK & AVERAGE, VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Flt r/Pad (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
1	* 2.484	39.15	PK	32.4	-22.6	0	48.95	-	-	74	-25.05	94	271	V
3	* 2.484	28.91	RMS	32.4	-22.6	2.07	40.78	54	-13.22	-	-	94	271	V
2	2.536	41.94	PK	32.5	-22.5	0	51.94	-	-	74	-22.06	94	271	V
4	2.547	30.02	RMS	32.5	-22.6	2.07	41.99	54	-12.01	-	-	94	271	V

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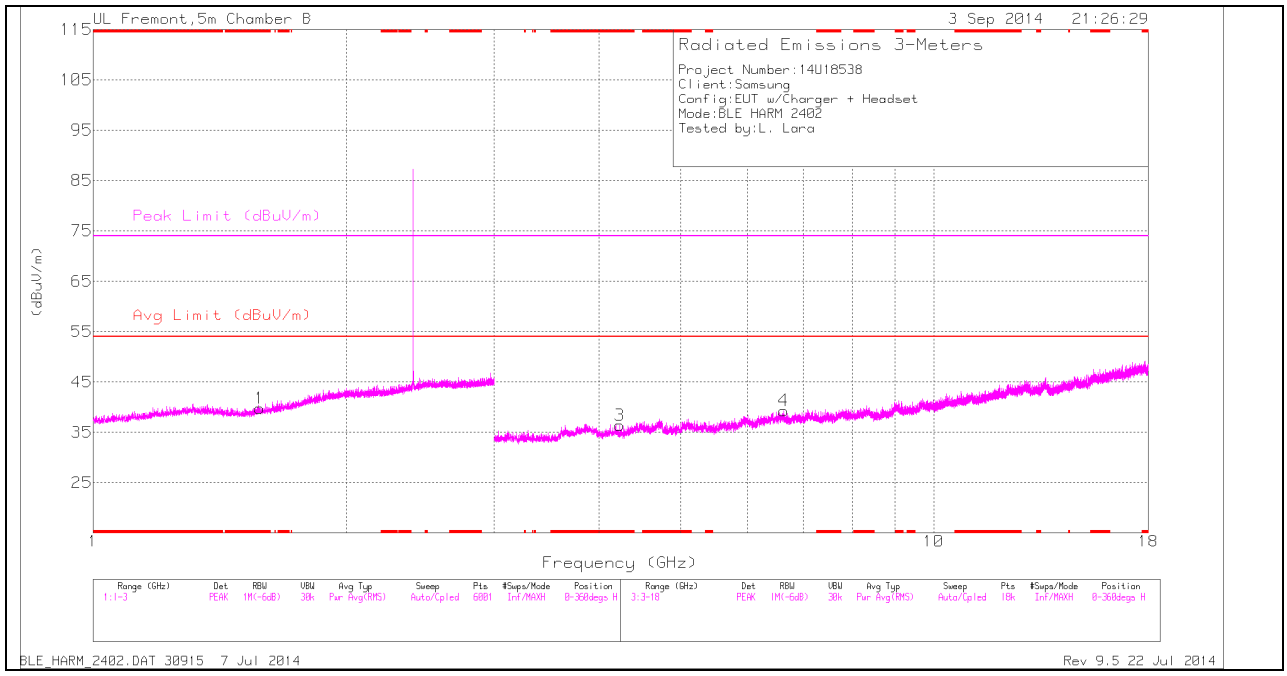
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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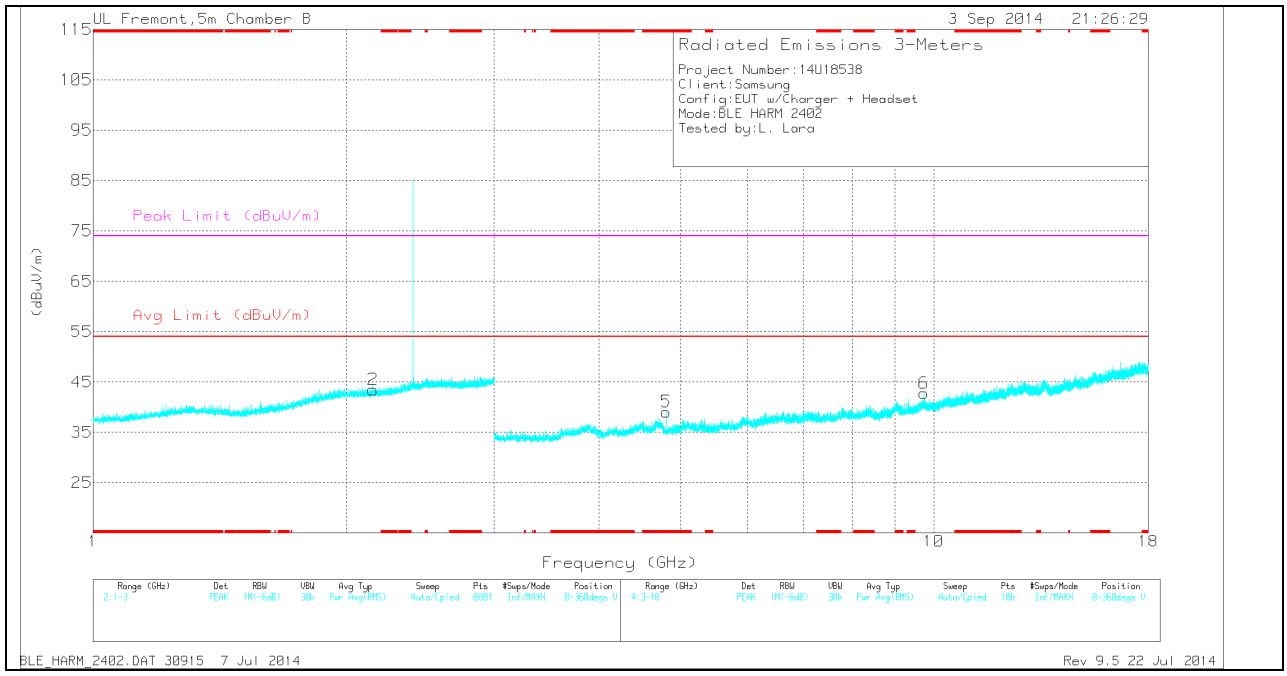
LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr /Pad (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
1	* 1.578	35.18	PK	28.4	-23.8	0	39.78	-	-	74	-34.22	0-360	200	H
3	* 4.231	33	PK	33.6	-30.2	0	36.4	-	-	74	-37.6	0-360	200	H
5	* 4.804	34.48	PK	34.2	-29.6	0	39.08	-	-	74	-34.92	0-360	200	V
2	2.153	35.28	PK	31.3	-23.1	0	43.48	-	-	-	-	0-360	200	V
4	6.632	31.92	PK	35.7	-28.3	0	39.32	-	-	-	-	0-360	101	H
6	9.735	30.16	PK	36.9	-24.3	0	42.76	-	-	-	-	0-360	200	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (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
* 1.577	43.01	PK2	28.4	-23.8	0	47.61	-	-	74	-26.39	211	201	H
* 1.577	31.91	MAv1	28.4	-23.8	2.07	38.58	54	-15.42	-	-	211	201	H
* 4.229	40.83	PK2	33.6	-30.2	0	44.23	-	-	74	-29.77	211	201	H
* 4.233	29.59	MAv1	33.6	-30.3	2.07	34.96	54	-19.04	-	-	211	201	H
* 3.889	41.51	PK2	33.8	-30.3	0	45.01	-	-	74	-28.99	38	199	H
* 3.89	30.33	MAv1	33.8	-30.3	2.07	35.9	54	-18.1	-	-	38	199	H
* 4.804	41.18	PK2	34.2	-29.6	0	45.78	-	-	74	-28.22	211	251	V
* 4.804	32.7	MAv1	34.2	-29.6	2.07	39.37	54	-14.63	-	-	211	251	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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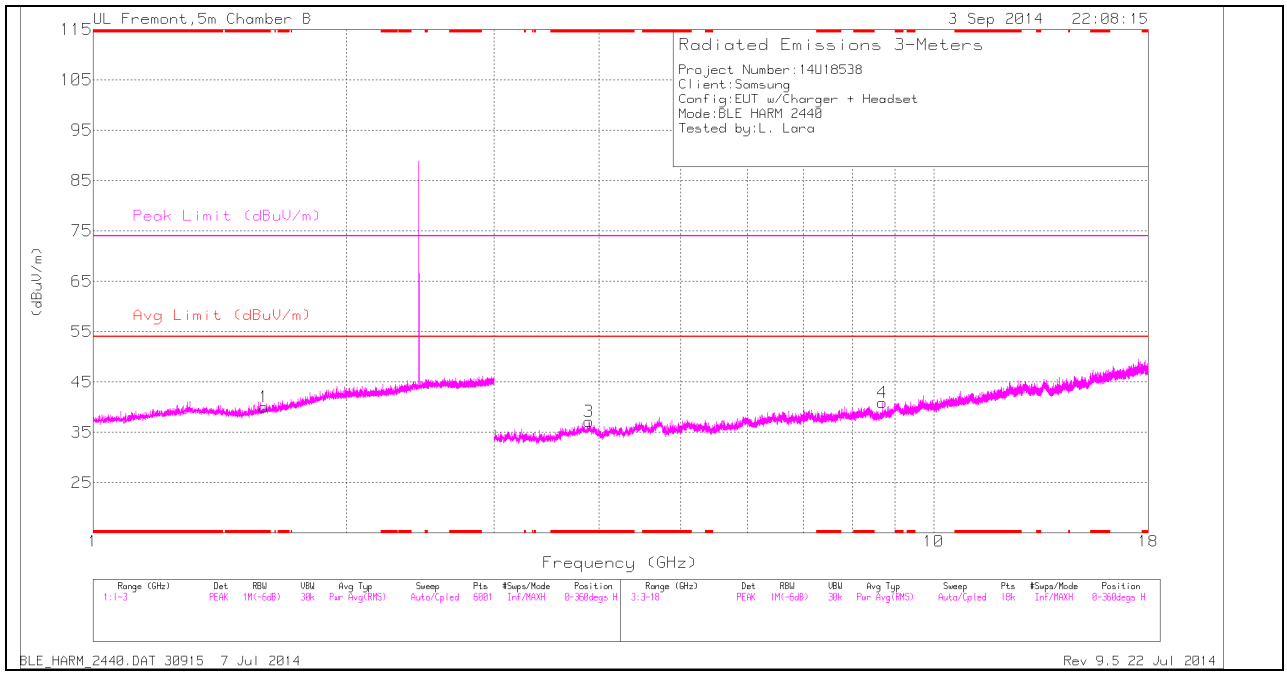
MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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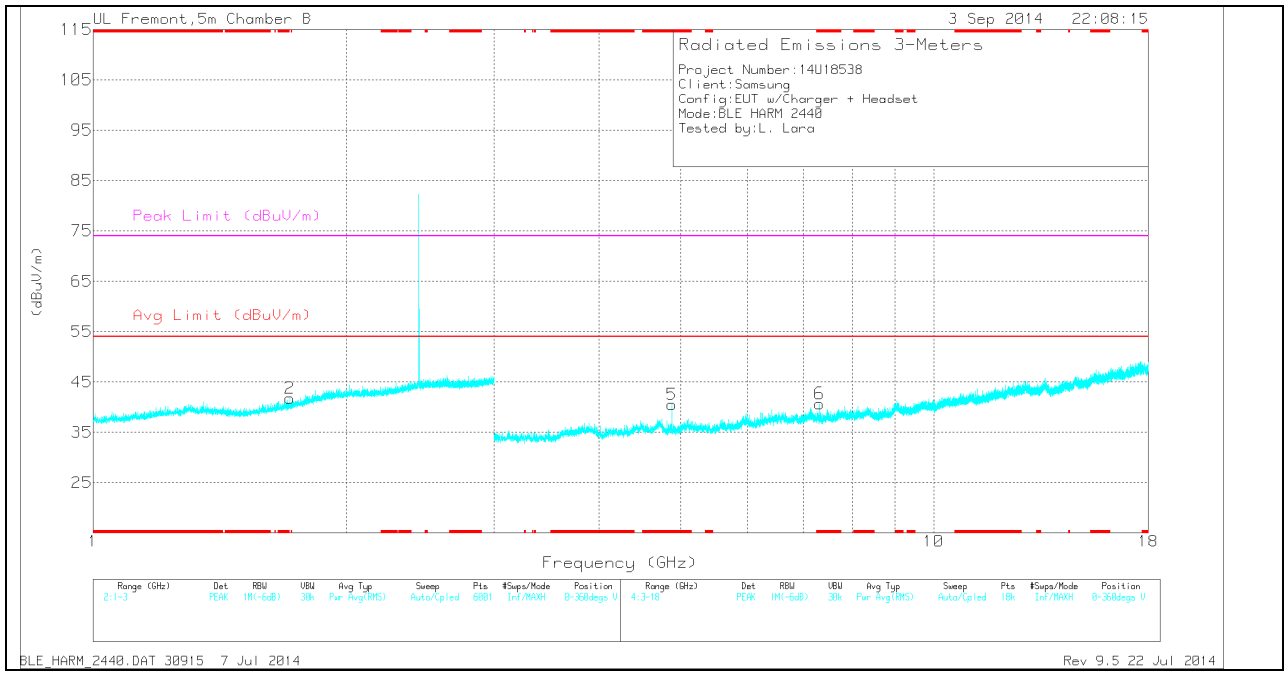
MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr /Pad (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
1	* 1.597	35.33	PK	28.5	-23.8	0	40.03	-	-	74	-33.97	0-360	101	H
3	* 3.89	33.65	PK	33.8	-30.3	0	37.15	-	-	74	-36.85	0-360	200	H
5	* 4.88	37.03	PK	34.2	-30.7	0	40.53	-	-	74	-33.47	0-360	200	V
6	* 7.319	33.48	PK	35.6	-28.4	0	40.68	-	-	74	-33.32	0-360	200	V
2	1.713	36.08	PK	29.2	-23.5	0	41.78	-	-	-	-	0-360	101	V
4	8.687	30.47	PK	35.9	-25.5	0	40.87	-	-	-	-	0-360	101	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (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
* 1.598	43.29	PK2	28.5	-23.8	0	47.99	-	-	74	-26.01	38	102	H
* 1.598	31.94	MAv1	28.5	-23.8	2.07	38.71	54	-15.29	-	-	38	102	H
* 3.889	41.51	PK2	33.8	-30.3	0	45.01	-	-	74	-28.99	38	199	H
* 3.89	30.33	MAv1	33.8	-30.3	2.07	35.9	54	-18.1	-	-	38	199	H
* 4.88	43.23	PK2	34.2	-30.7	0	46.73	-	-	74	-27.27	275	273	V
* 4.88	35.86	MAv1	34.2	-30.7	2.07	41.43	54	-12.57	-	-	275	273	V
* 7.32	41.6	PK2	35.6	-28.4	0	48.8	-	-	74	-25.2	38	201	V
* 7.319	32.06	MAv1	35.6	-28.4	2.07	41.33	54	-12.67	-	-	38	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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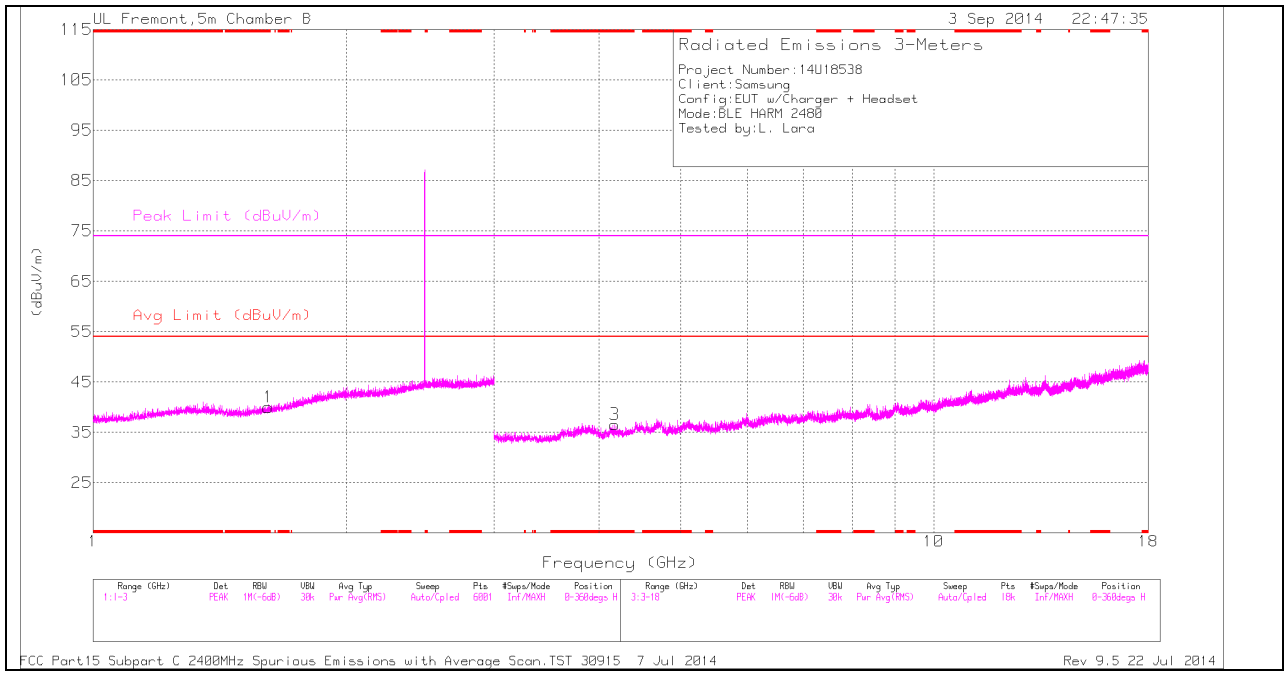
HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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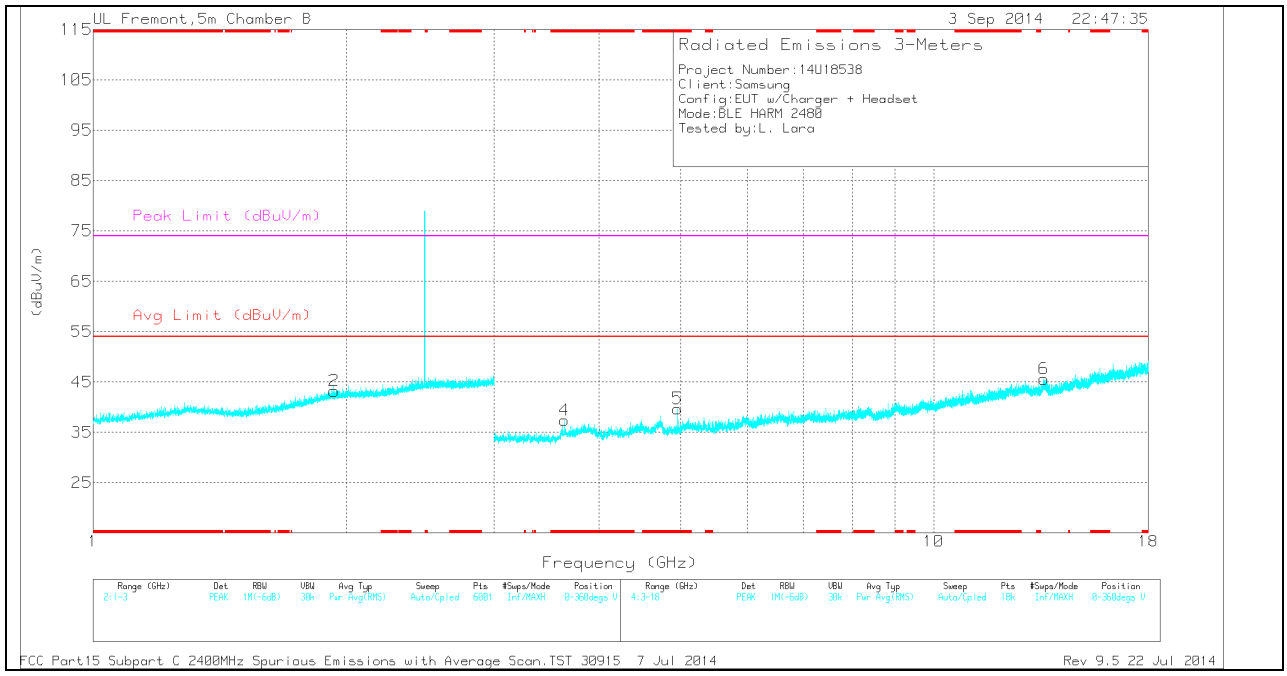
HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr /Pad (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
1	* 1.616	35.09	PK	28.6	-23.7	0	39.99	-	-	74	-34.01	0-360	200	H
3	* 4.172	33.06	PK	33.6	-30.1	0	36.56	-	-	74	-37.44	0-360	101	H
4	* 3.635	35.2	PK	33.2	-31	0	37.4	-	-	74	-36.6	0-360	101	V
5	* 4.96	36.1	PK	34.2	-30.6	0	39.7	-	-	74	-34.3	0-360	200	V
2	1.936	35.33	PK	31.2	-23.3	0	43.23	-	-	-	-	0-360	101	V
6	13.517	27.41	PK	38.9	-20.7	0	45.61	-	-	-	-	0-360	200	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (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
* 1.617	43.53	PK2	28.6	-23.7	0	48.43	-	-	74	-25.57	1	200	H
* 1.615	31.91	MAv1	28.6	-23.7	2.07	38.88	54	-15.12	-	-	1	200	H
* 4.172	40	PK2	33.6	-30.1	0	43.5	-	-	74	-30.5	1	102	H
* 4.173	29.2	MAv1	33.6	-30.1	2.07	34.77	54	-19.23	-	-	1	102	H
* 3.636	40.96	PK2	33.2	-31	0	43.16	-	-	74	-30.84	1	102	V
* 3.637	30.04	MAv1	33.2	-31	2.07	34.31	54	-19.69	-	-	1	102	V
* 4.96	42.98	PK2	34.2	-30.6	0	46.58	-	-	74	-27.42	1	199	V
* 4.96	33.89	MAv1	34.2	-30.6	2.07	39.56	54	-14.44	-	-	1	199	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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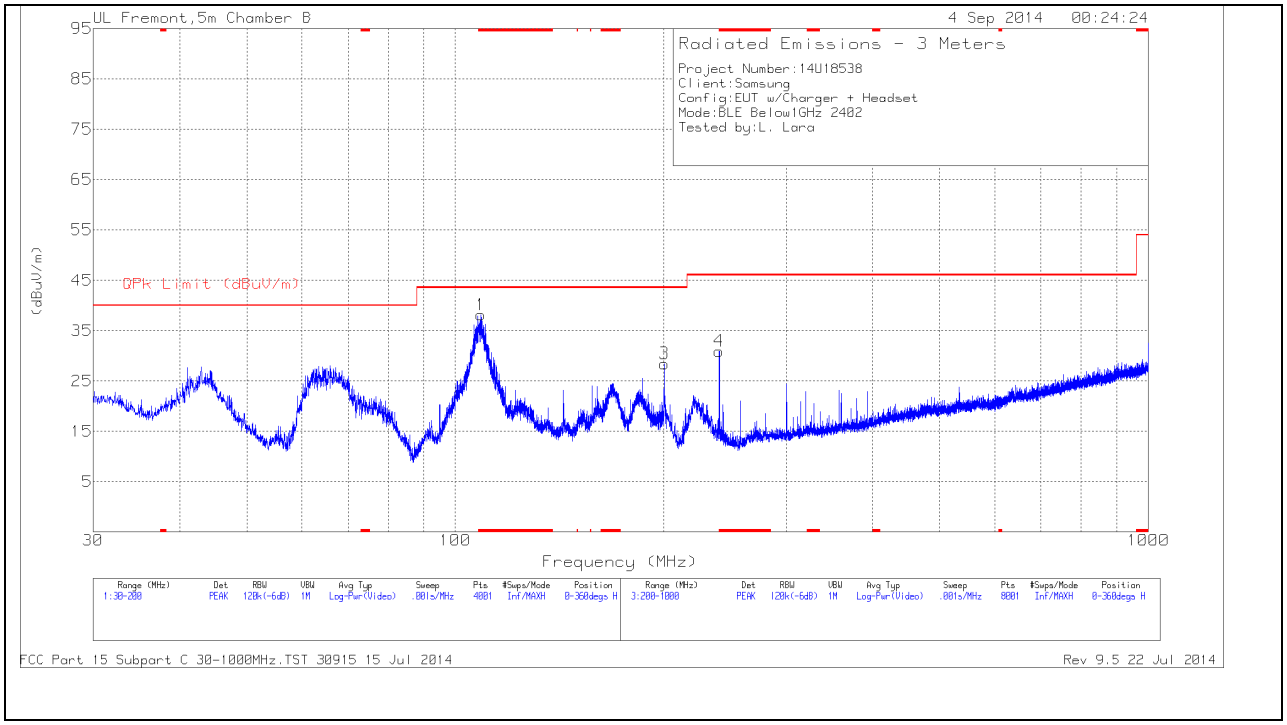
9.1. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



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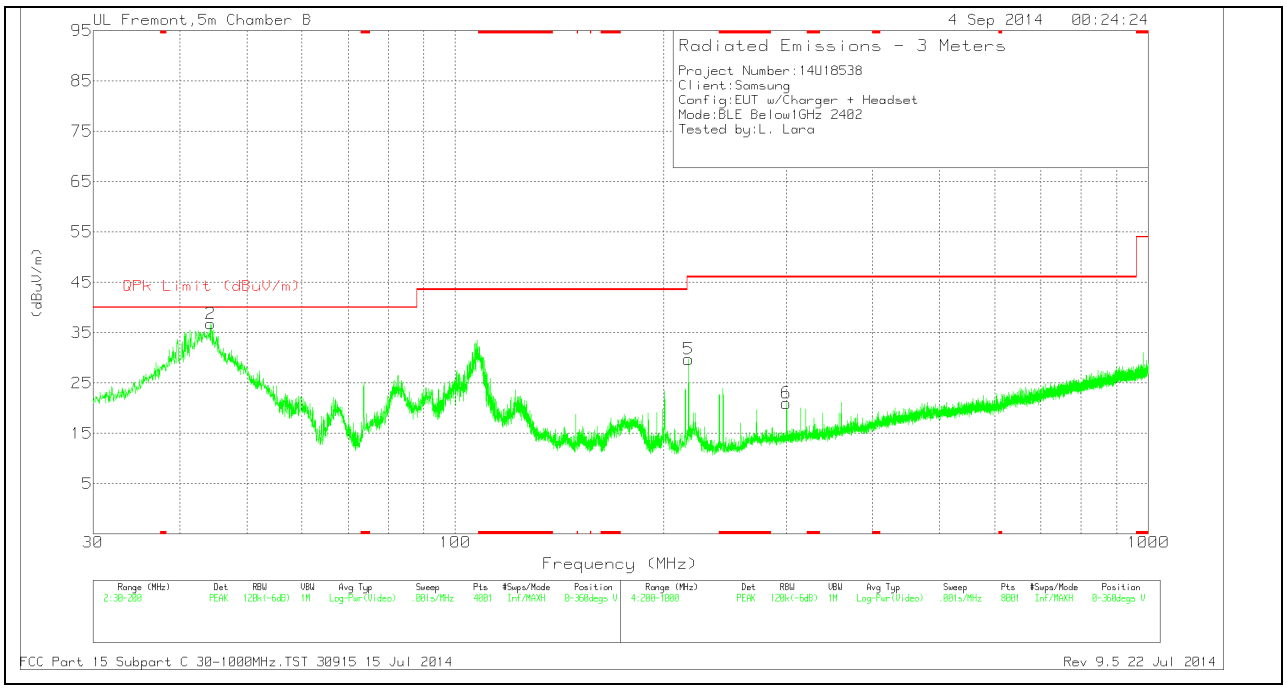
VERTICAL PLOT



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BELOW 1 GHz TABLE

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 108.795	53.63	PK	12.4	-27.9	0	38.13	43.52	-5.39	0-360	300	H
4	* 240.3	45.75	PK	11.7	-26.5	0	30.95	46.02	-15.07	0-360	101	H
3	200.3	43.05	PK	12.3	-26.9	0	28.45	43.52	-15.07	0-360	101	H
5	217	45.82	PK	10.6	-26.7	0	29.72	46.02	-16.3	0-360	200	V
6	300.4	33.59	PK	13.3	-25.9	0	20.99	46.02	-25.03	0-360	200	V
2	44.3225	54.47	PK	10.9	-28.6	0	36.77	40	-3.23	0-360	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

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10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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 C63.4 - 2009

RESULTS

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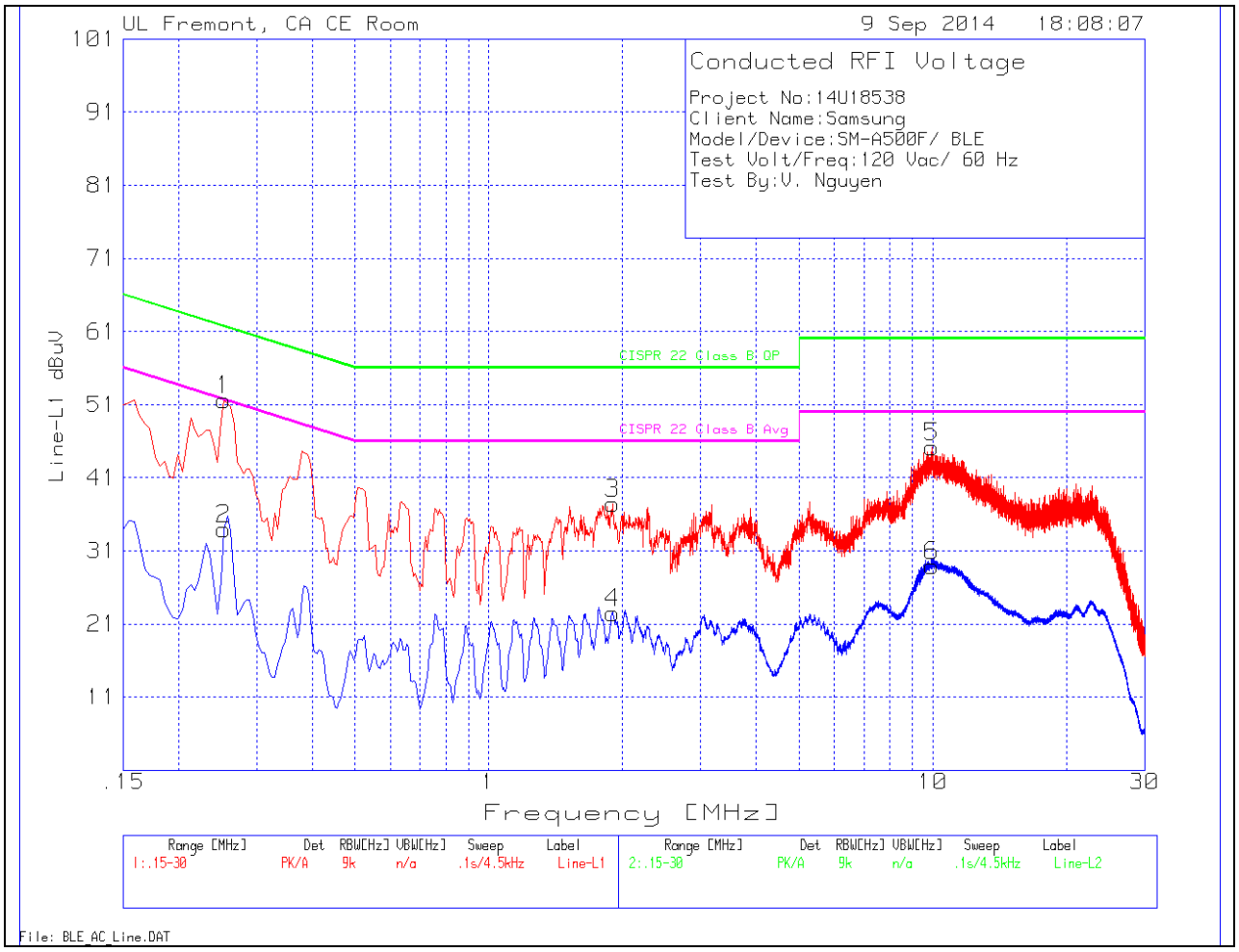
6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
1	.2535	50.89	PK	.7	0	51.59	61.6	-10.01	-	-
2	.2535	33.31	Av	.7	0	34.01	-	-	51.6	-17.59
3	1.905	37.11	PK	.2	.1	37.41	56	-18.59	-	-
4	1.905	22.16	Av	.2	.1	22.46	-	-	46	-23.54
5	9.9735	44.77	PK	.2	.2	45.17	60	-14.83	-	-
6	9.9735	28.55	Av	.2	.2	28.95	-	-	50	-21.05

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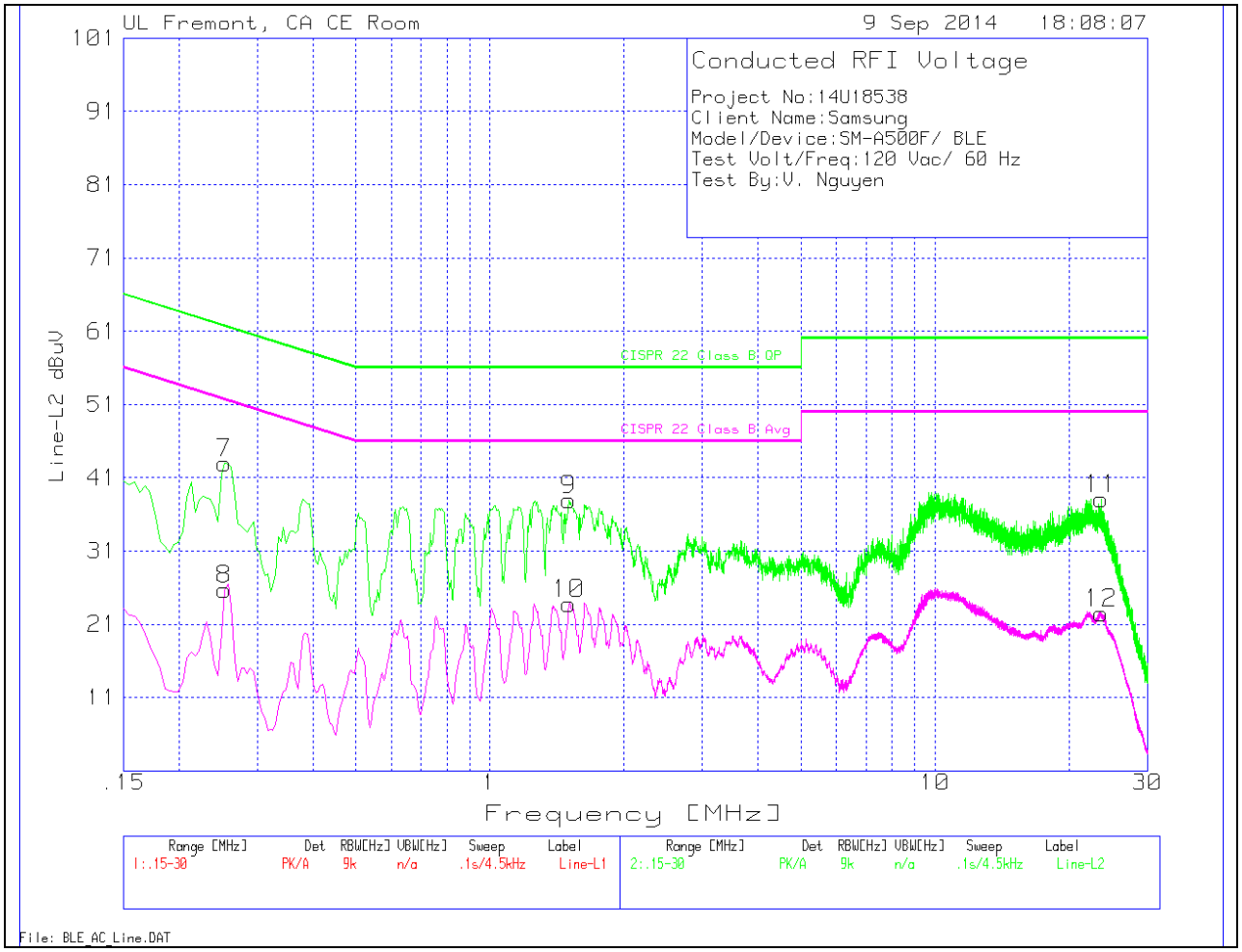
LINE 2 PLOT



LINE 2 RESULTS

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
7	.2535	42.34	PK	.7	0	43.04	61.6	-18.56	-	-
8	.2535	25.01	Av	.7	0	25.71	-	-	51.6	-25.89
9	1.5045	37.65	PK	.2	.1	37.95	56	-18.05	-	-
10	1.5045	23.43	Av	.2	.1	23.73	-	-	46	-22.27
11	23.586	37.58	PK	.3	.2	38.08	60	-21.92	-	-
12	23.586	21.97	Av	.3	.2	22.47	-	-	50	-27.53

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