



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

Bluetooth Low Energy Hearing Aid

MODEL NUMBER : EO-MG925

FCC ID: A3LEOMG925

REPORT NUMBER: 15I20035-E1

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Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	03/31/15	Initial issue	CY Choi
A	04/11/15	Update duty cycle test result	CY Choi
B	04/16/15	Related about IC Delete	CY Choi

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: Bluetooth Low Energy Hearing Aid
MODEL NUMBER: EO-MG925
SERIAL NUMBER: N/A (RADIATED/ CONDUCTED)
DATE TESTED: FEBRUARY 28 - MARCH 12, 2015

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

UL Korea, Ltd. 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 Korea, Ltd. 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 Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. 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 IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Korea, Ltd. By:

Tested By:



Ji Ho Choi
Suwon Lab Manager
UL Korea, Ltd.

CY Choi
Suwon Lab Engineer
UL Korea, Ltd.

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 and KDB 558074 D01 v3r02.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-823, Korea. Line conducted emissions are measured only at the 218 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.

218 Maeyeong-ro	
☒	Chamber 1
☐	Chamber 2

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.pdf>.

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:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.32 dB
Radiated Disturbance, Below 1GHz	4.14 dB
Radiated Disturbance, Above 1 GHz	5.97 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Bluetooth Low Energy Hearing Aid.
This test report addresses the DTS (BLE) operational mode.

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	-0.60	0.87

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an LDS antenna, with a maximum gain of -1.66 dBi.

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 and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
-	-	-	-	-

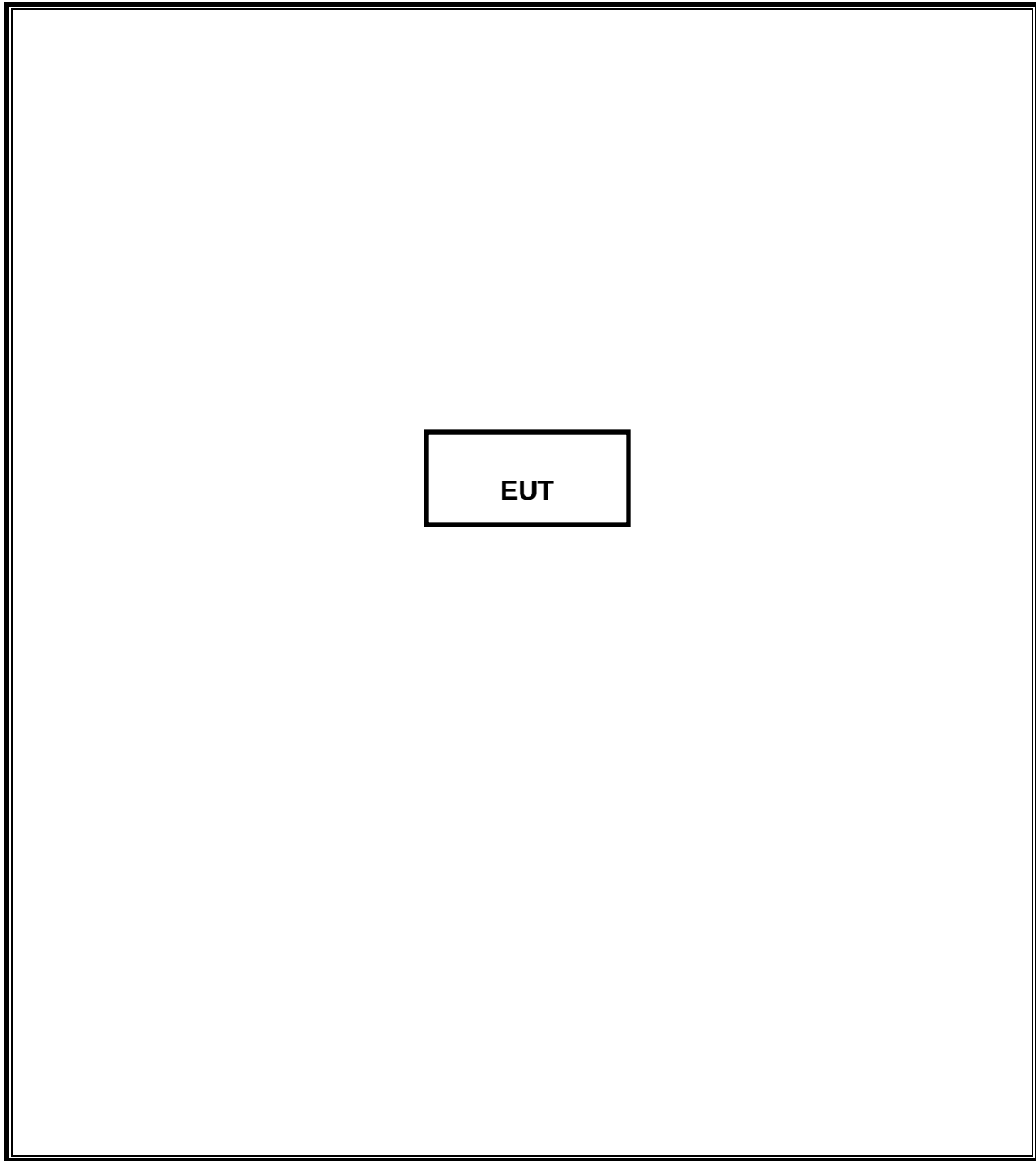
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
-	-	-	-	-	-	-

TEST SETUP

The EUT is a stand-alone unit during the tests.

SETUP DIAGRAM FOR TESTS



7. 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	S/N	Cal Due
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	950	11-17-15
Antenna, Horn, 18 GHz	ETS	3115	00167211	09-20-15
Antenna, Horn, 40 GHz	ETS	3116C	00166255	09-23-15
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	09-29-15
Preamplifier, 1000 MHz	Sonoma	310N	341282	11-17-15
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	11-18-15
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	09-23-15
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	11-17-15
Average Power Sensor	R&S	NRZ-Z91	102681	11-17-15
Average Power Sensor	Agilent / HP	U2000	MY54270007	09-23-15
EMI Test Receive, 40 GHz	R&S	ESU40	100439	11-17-15
EMI Test Receive, 3 GHz	R&S	ESR3	101832	11-17-15
Attenuator / Switch driver	HP	11713A	3748A04272	N/A
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	009	11-17-15
High Pass Filter 5GHz	Micro-Tronics	HPS17542	009	11-17-15
High Pass Filter 6GHz	Micro-Tronics	HPM17543	010	11-17-15

8. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	Occupied Band width (6dB)	>500KHz	Conducted	Pass	769 kHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-49.931 dBm
15.247 (b)	TX conducted output power	<30dBm		Pass	0.601 dBm
15.247 (e)	PSD	<8dBm		Pass	-15.61dBm
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	N/A	N/A
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	37.45dBuV/m (AV)

* This device is supplied power by battery only. So, not required AC Power Line Conducted Emission.

9. ANTENNA PORT TEST RESULTS

9.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

TEST PROCEDURE

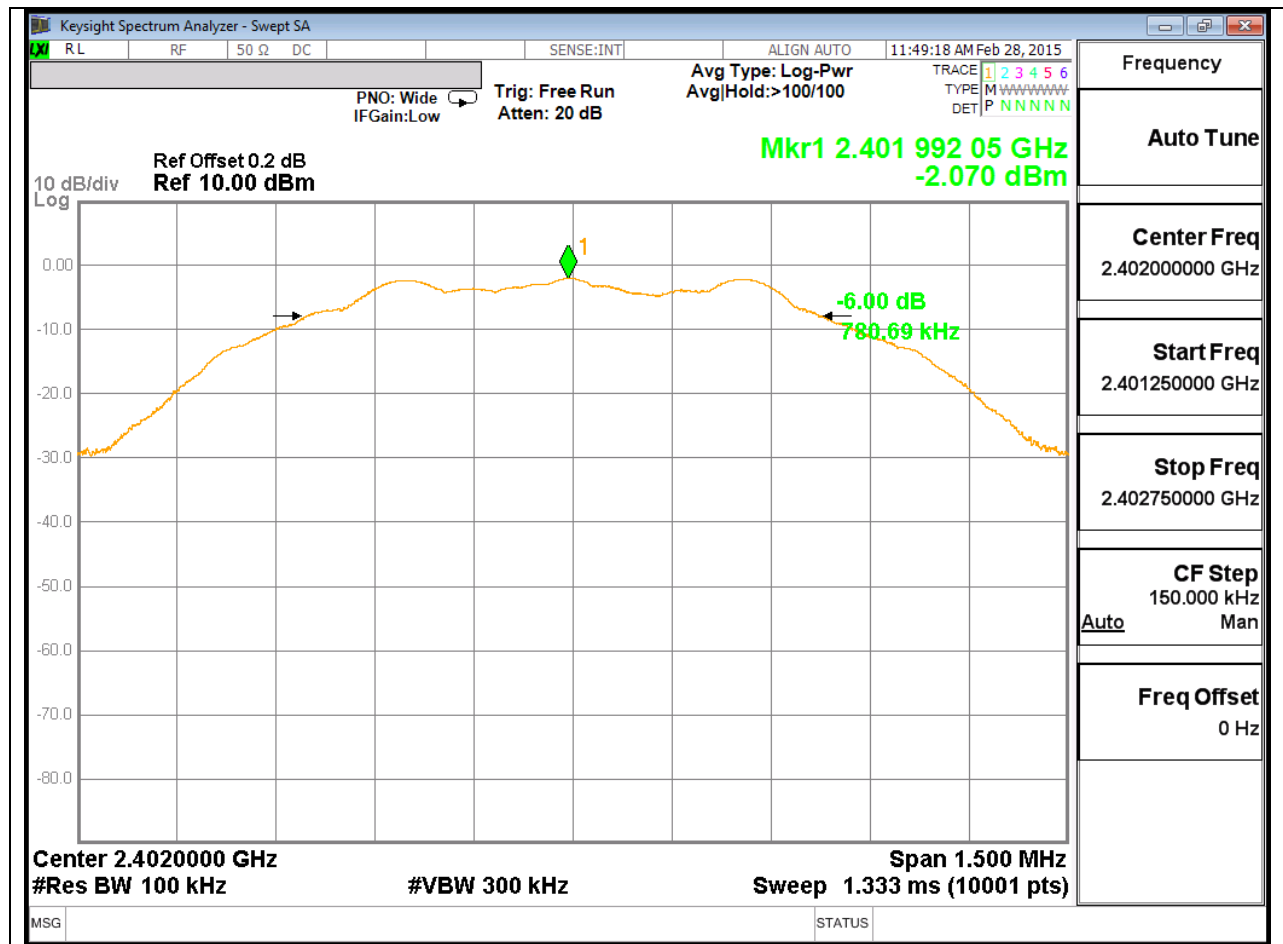
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

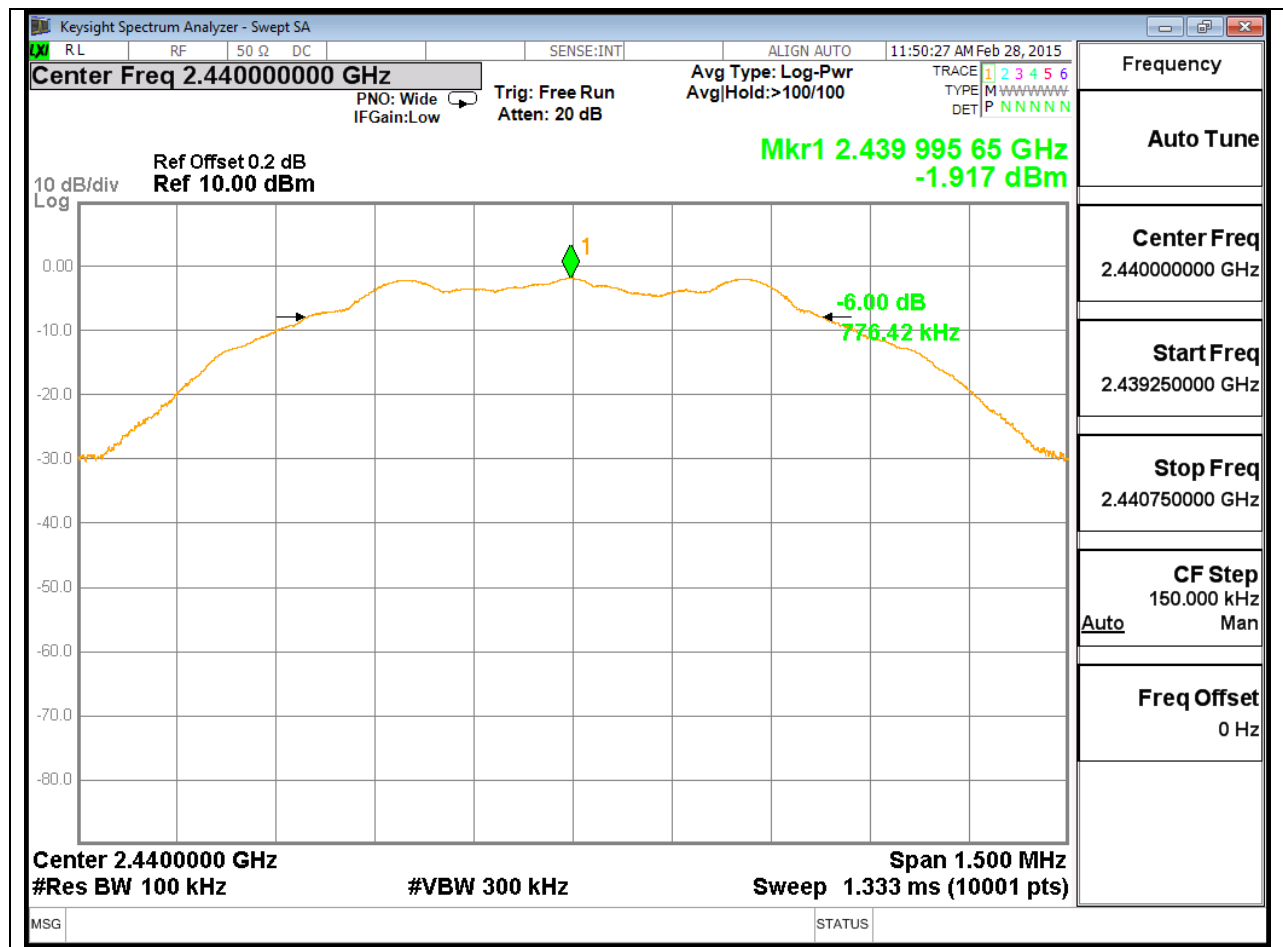
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.781	0.5
Mid	2440	0.776	0.5
High	2480	0.769	0.5
Worst		0.769	

6 dB BANDWIDTH PLOTS

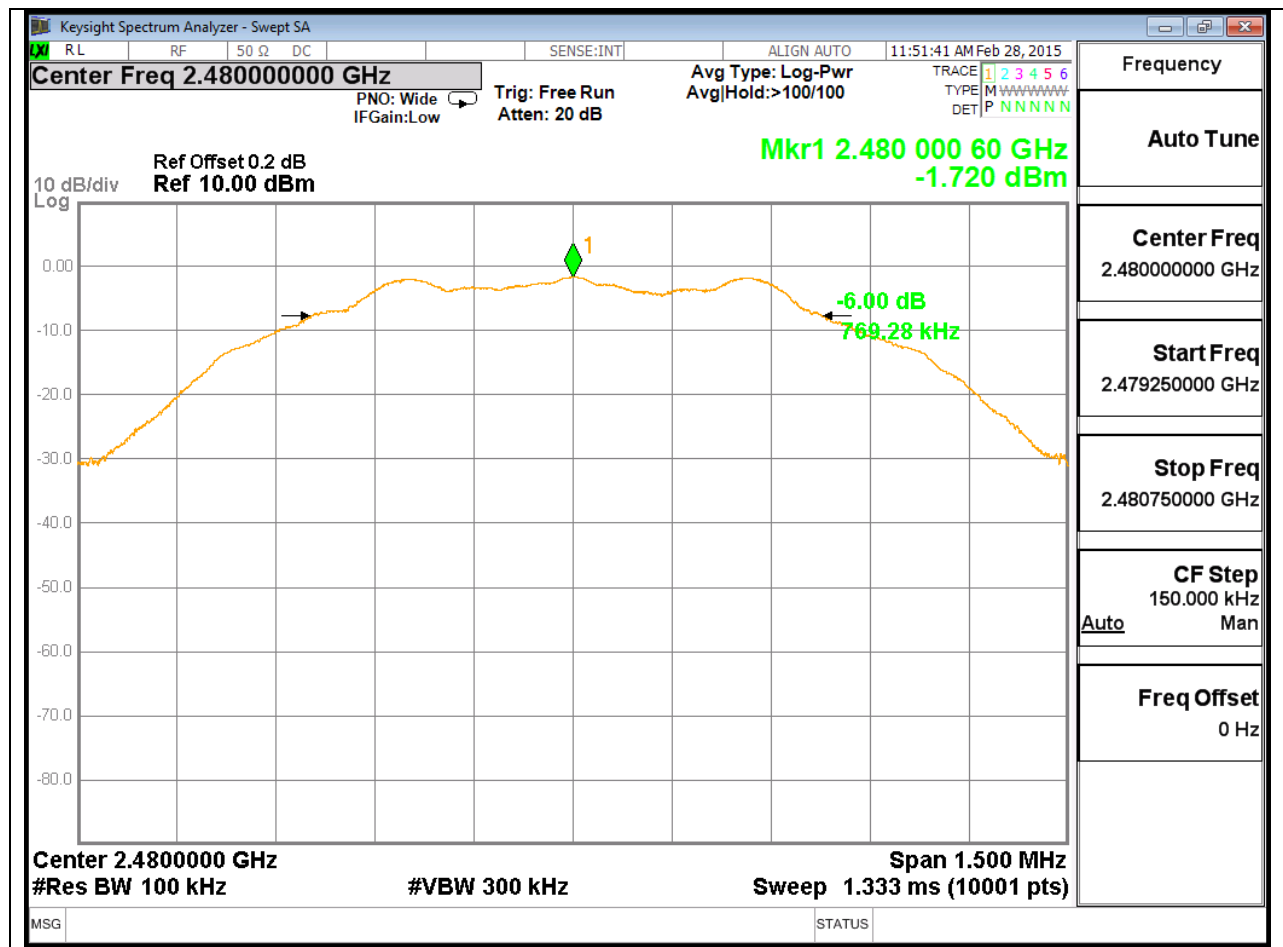
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

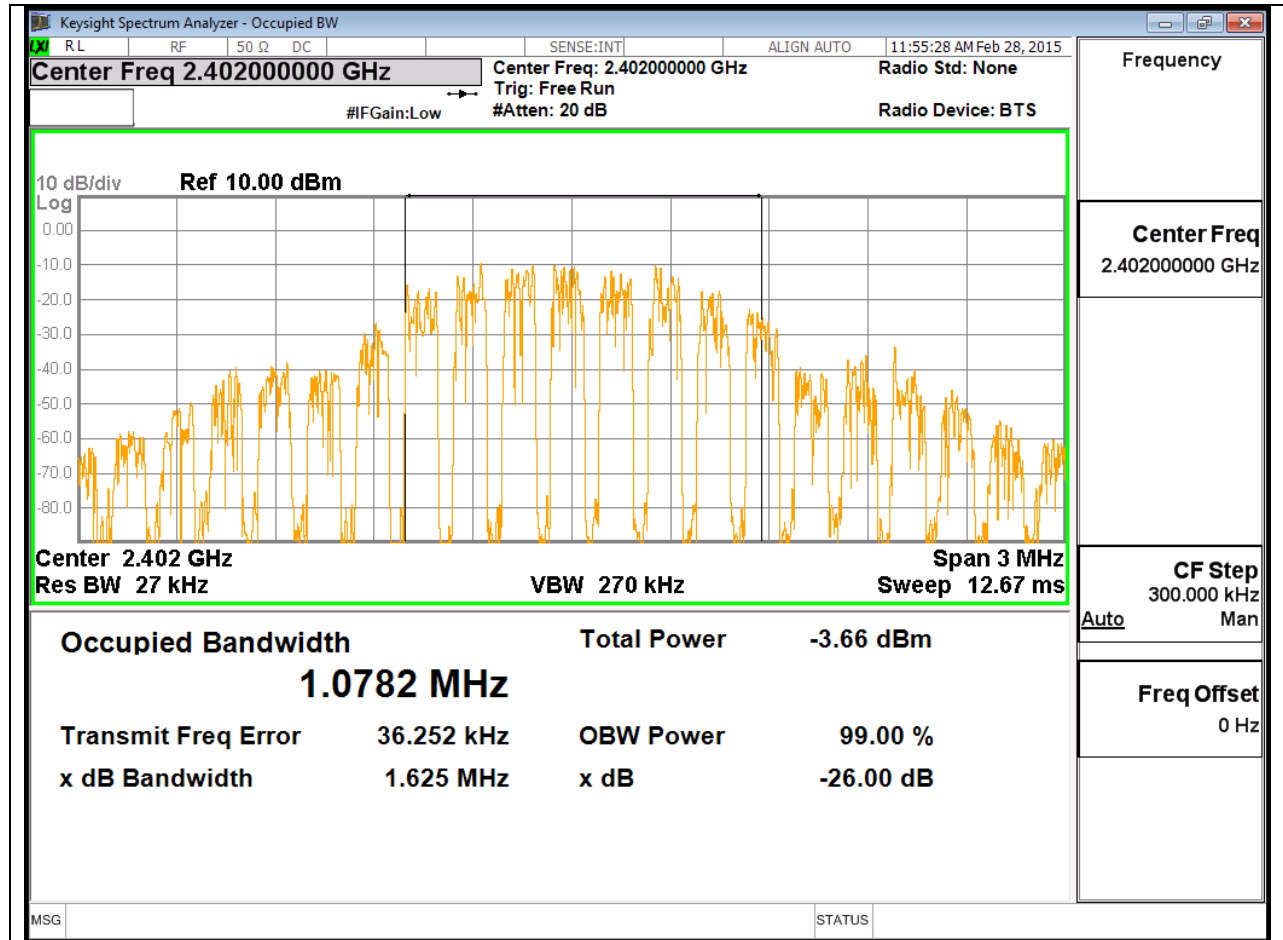
Reference to KDB558074 D01 DTS Meas Guidance v03r02: The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function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

RESULTS

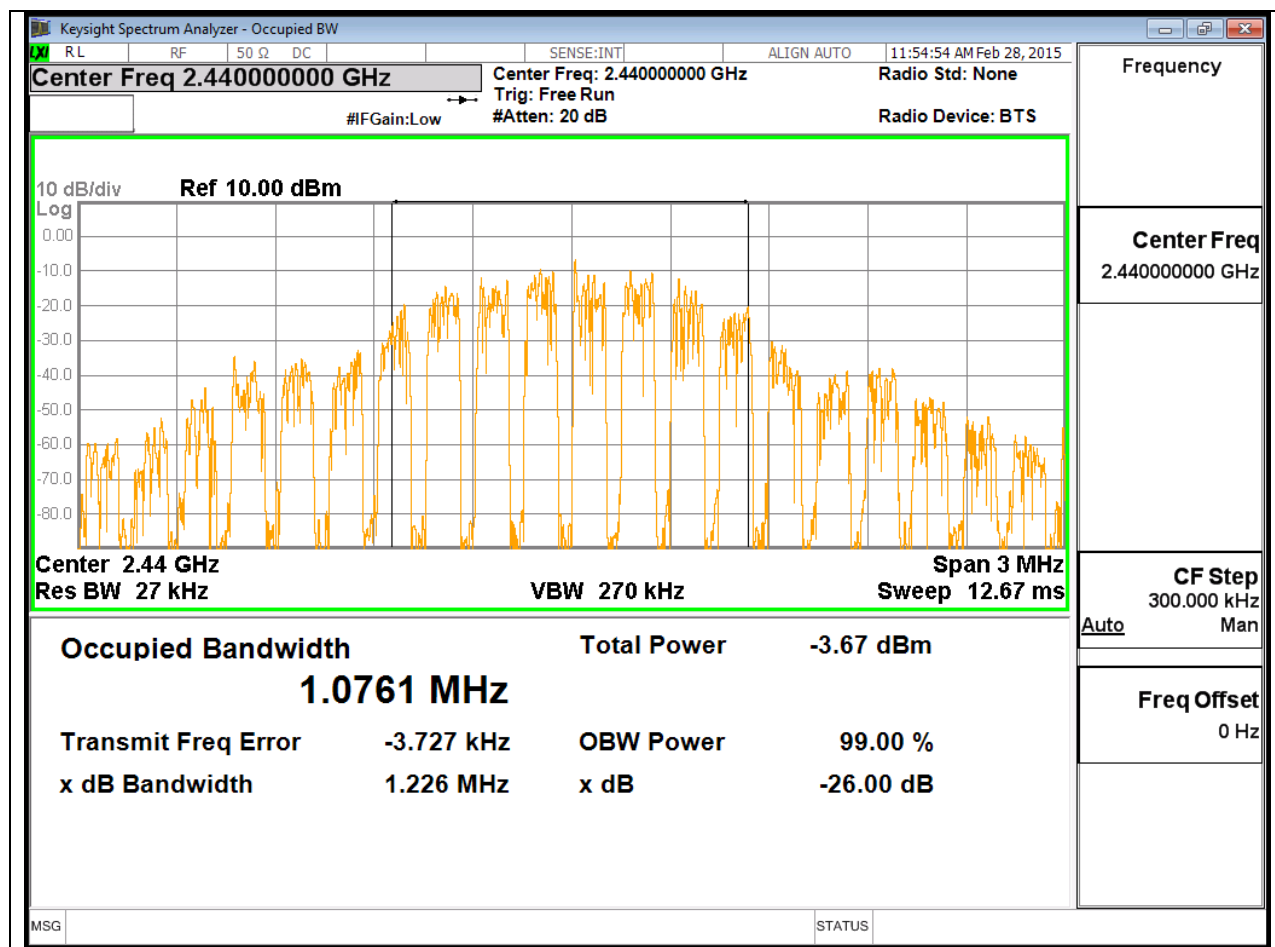
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.078
Mid	2440	1.076
High	2480	1.074
Worst		1.078

99% BANDWIDTH PLOTS

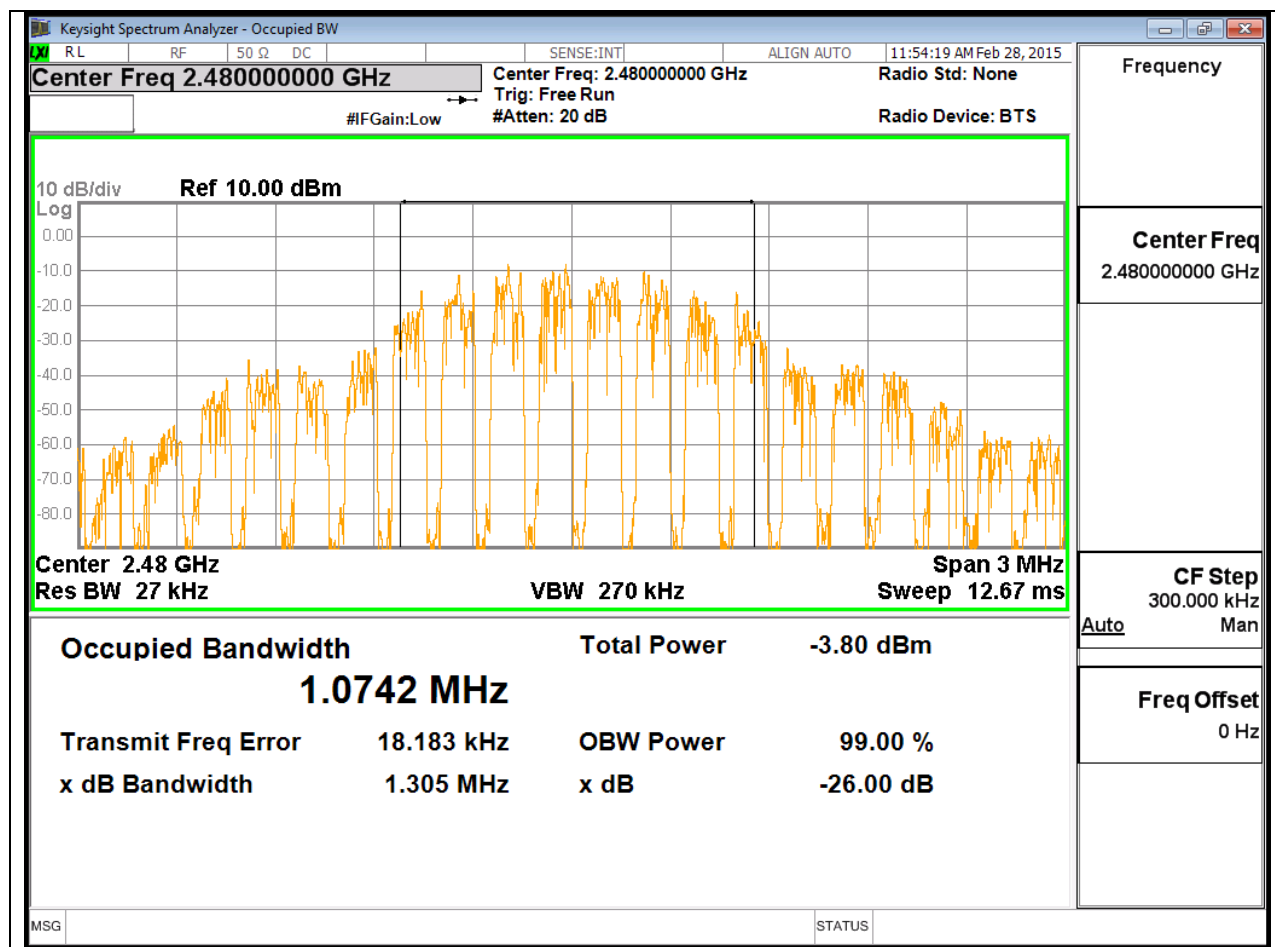
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



9.3. 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

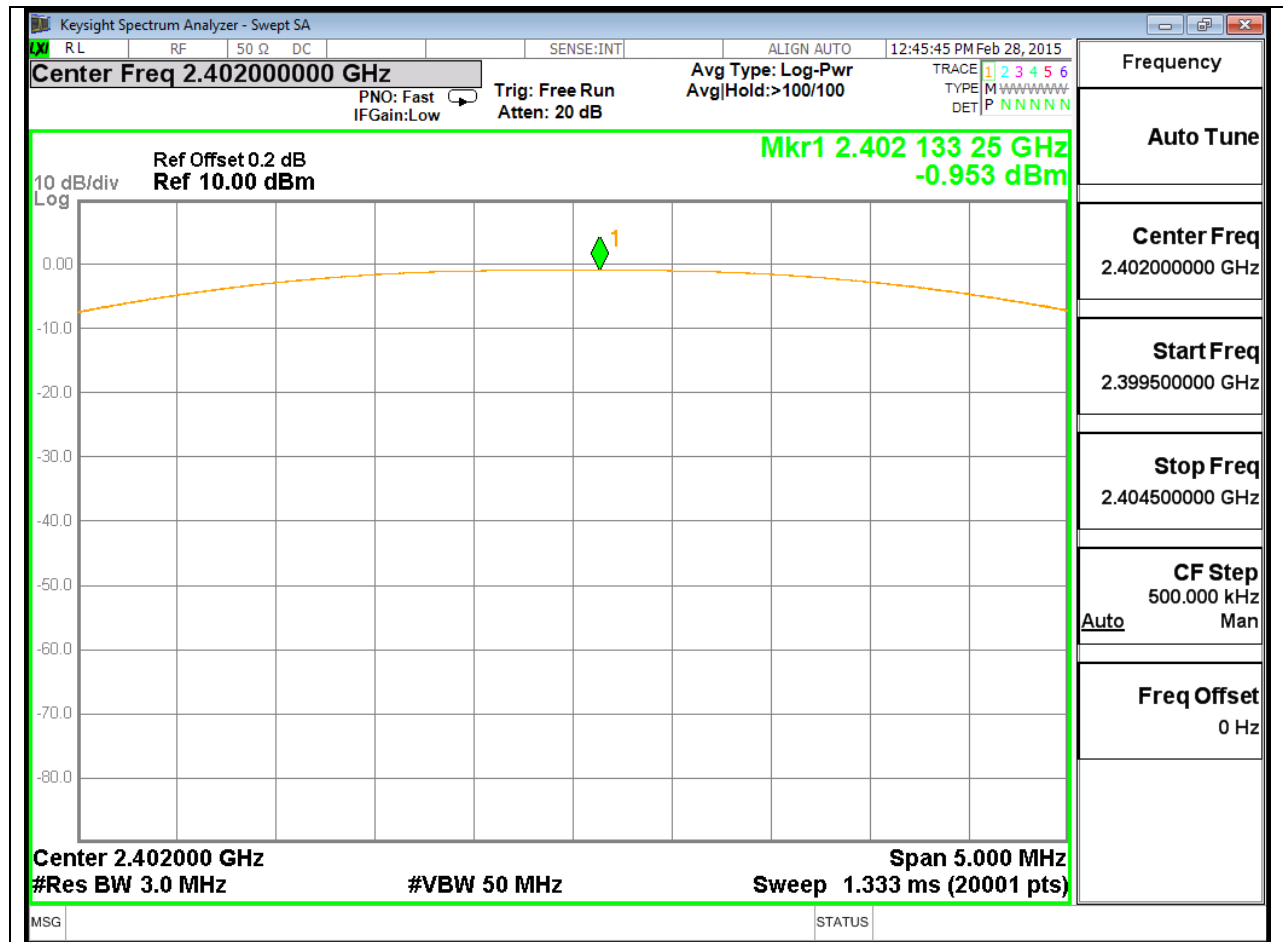
Peak power is measured using KDB558074 D01 DTS Meas Guidance v03r02 under section 9.1.1 utilizing spectrum analyze.

RESULTS

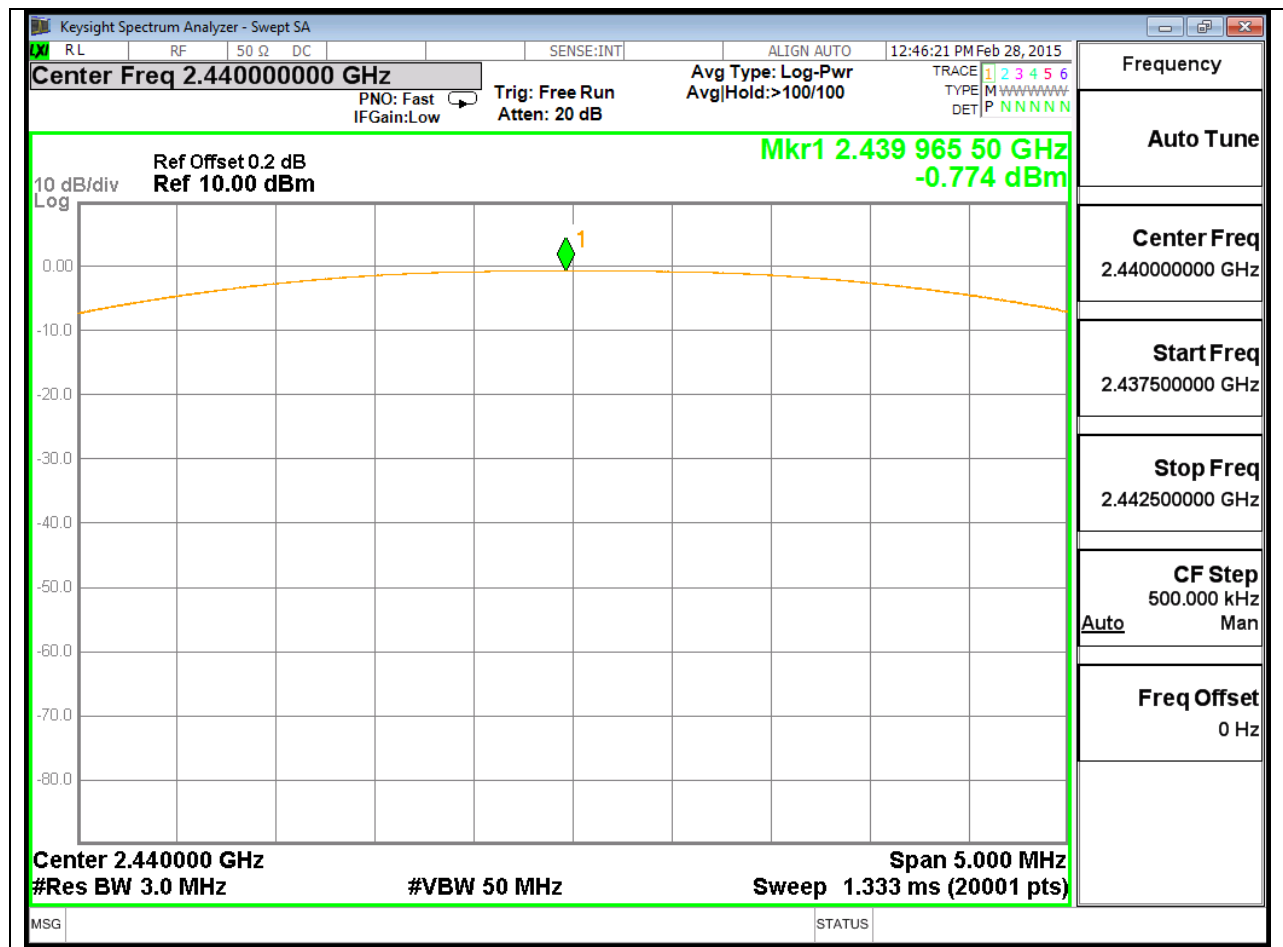
Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-0.953	30.000	-30.953
Mid	2440	-0.774	30.000	-30.774
High	2480	-0.601	30.000	-30.601
Worst		-0.601		-30.601

OUTPUT POWER PLOTS

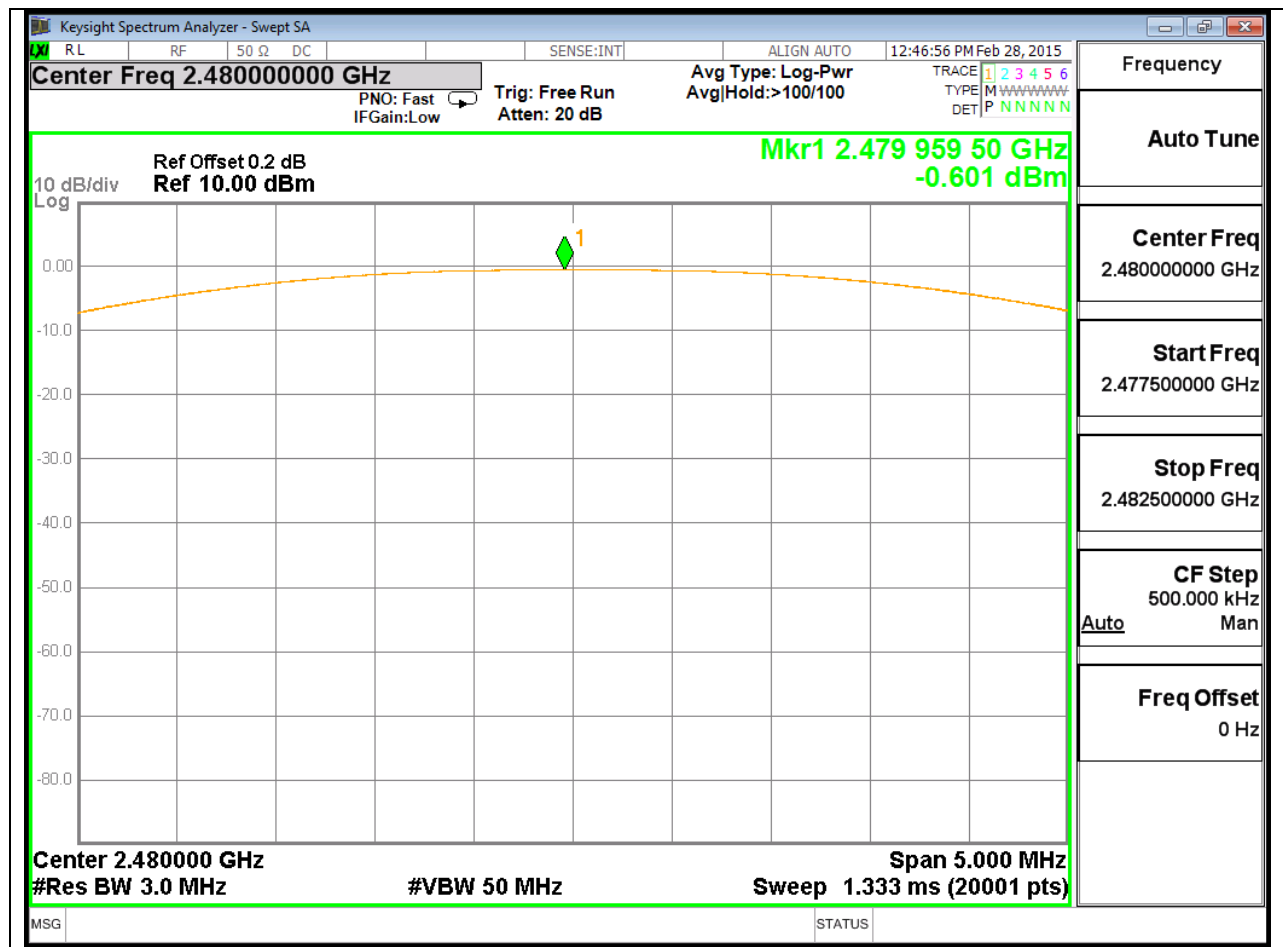
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



9.4. 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 10.1 dB (including 10 dB pad and 0.1 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	-3.31
Middle	2440	-3.08
High	2480	-2.72

9.5. PSD

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.

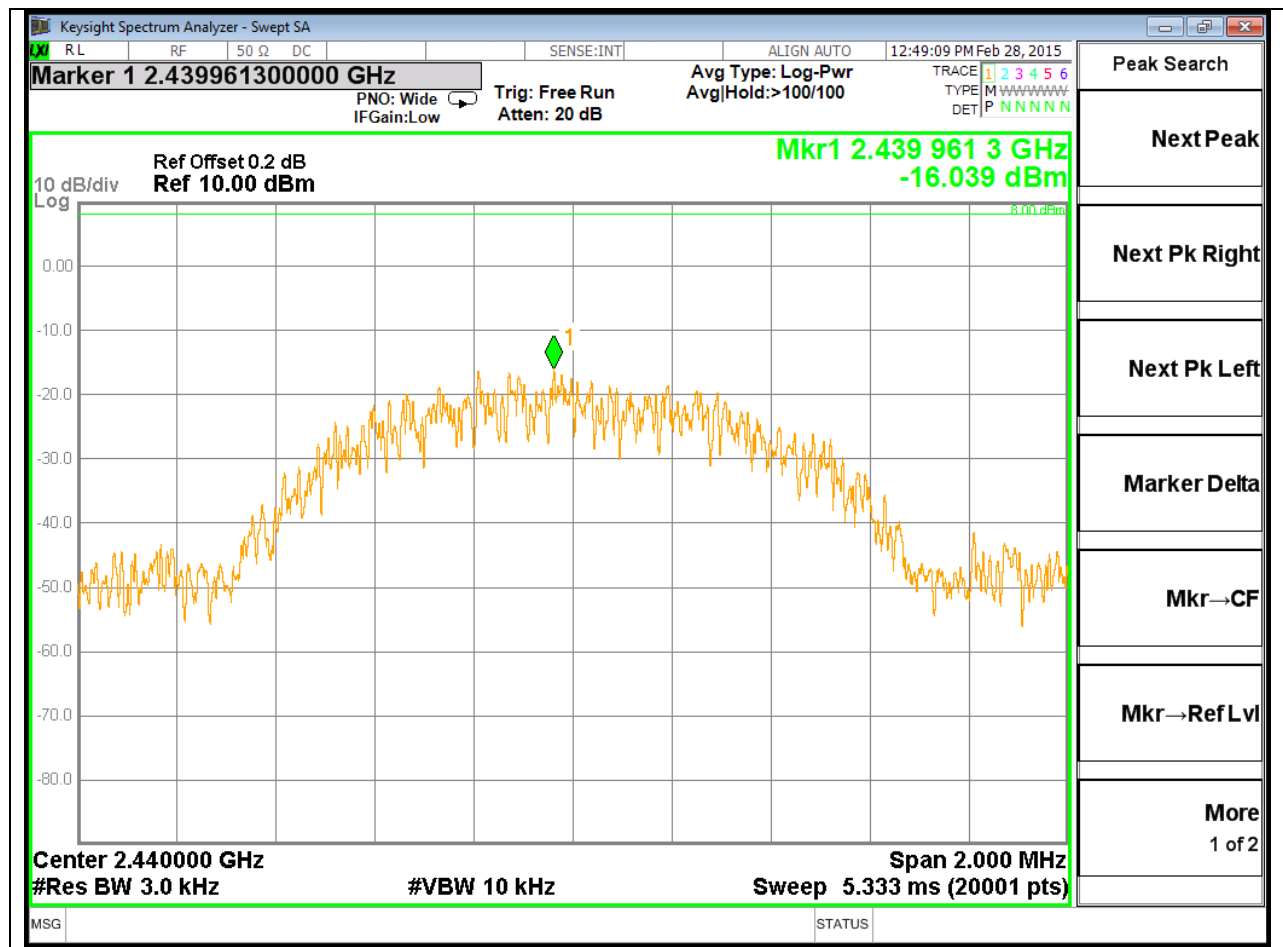
TEST PROCEDURE

Power Spectral Density was performed utilizing the “Method PKPSD (Peak PSD)” under KDB558074 D01 DTS Meas Guidance v03r02

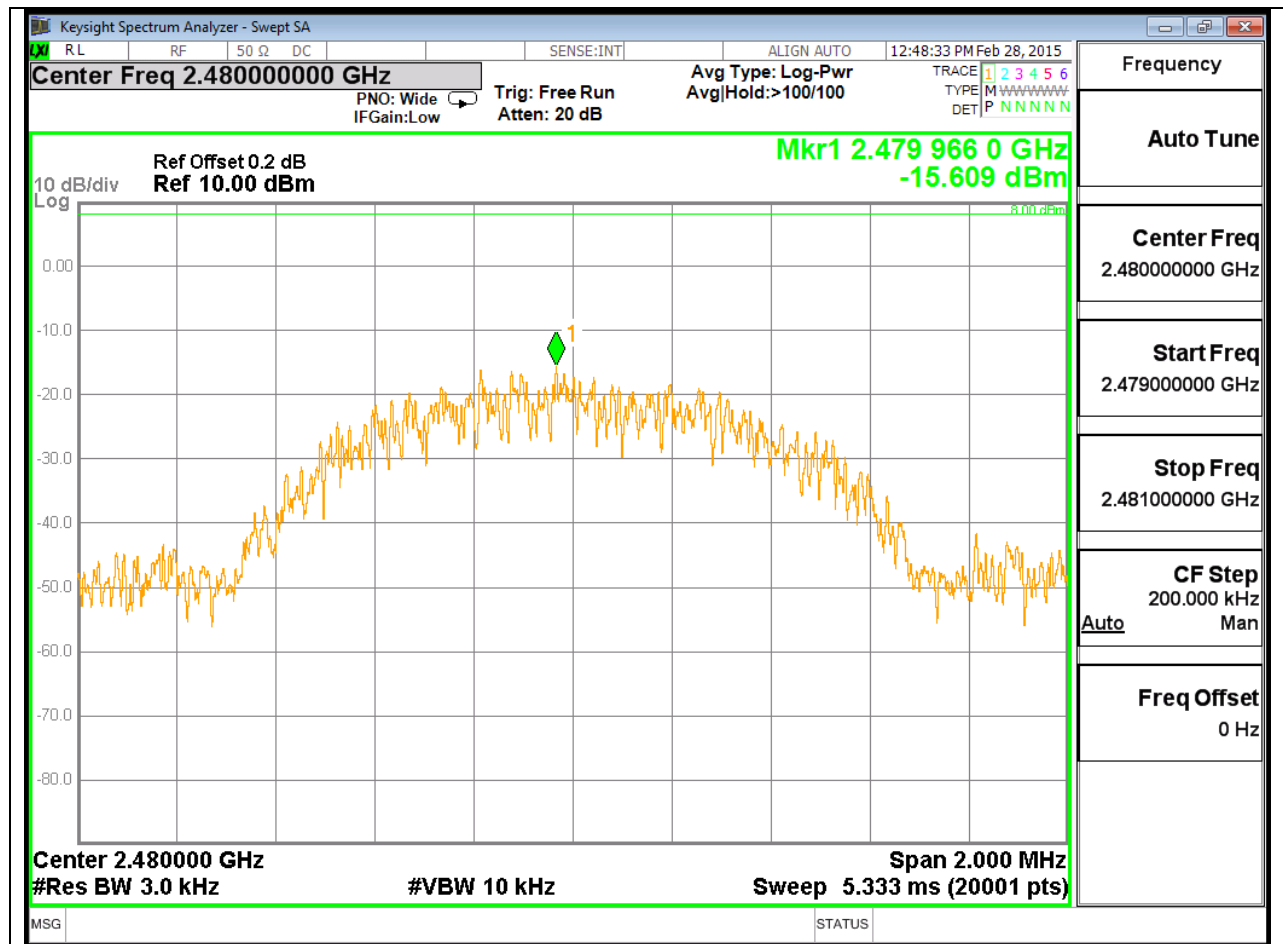
RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-16.16	8.00	-24.16
Mid	2440	-16.04	8.00	-24.04
High	2480	-15.61	8.00	-23.61

MID CHANNEL



HIGH CHANNEL



9.6. 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

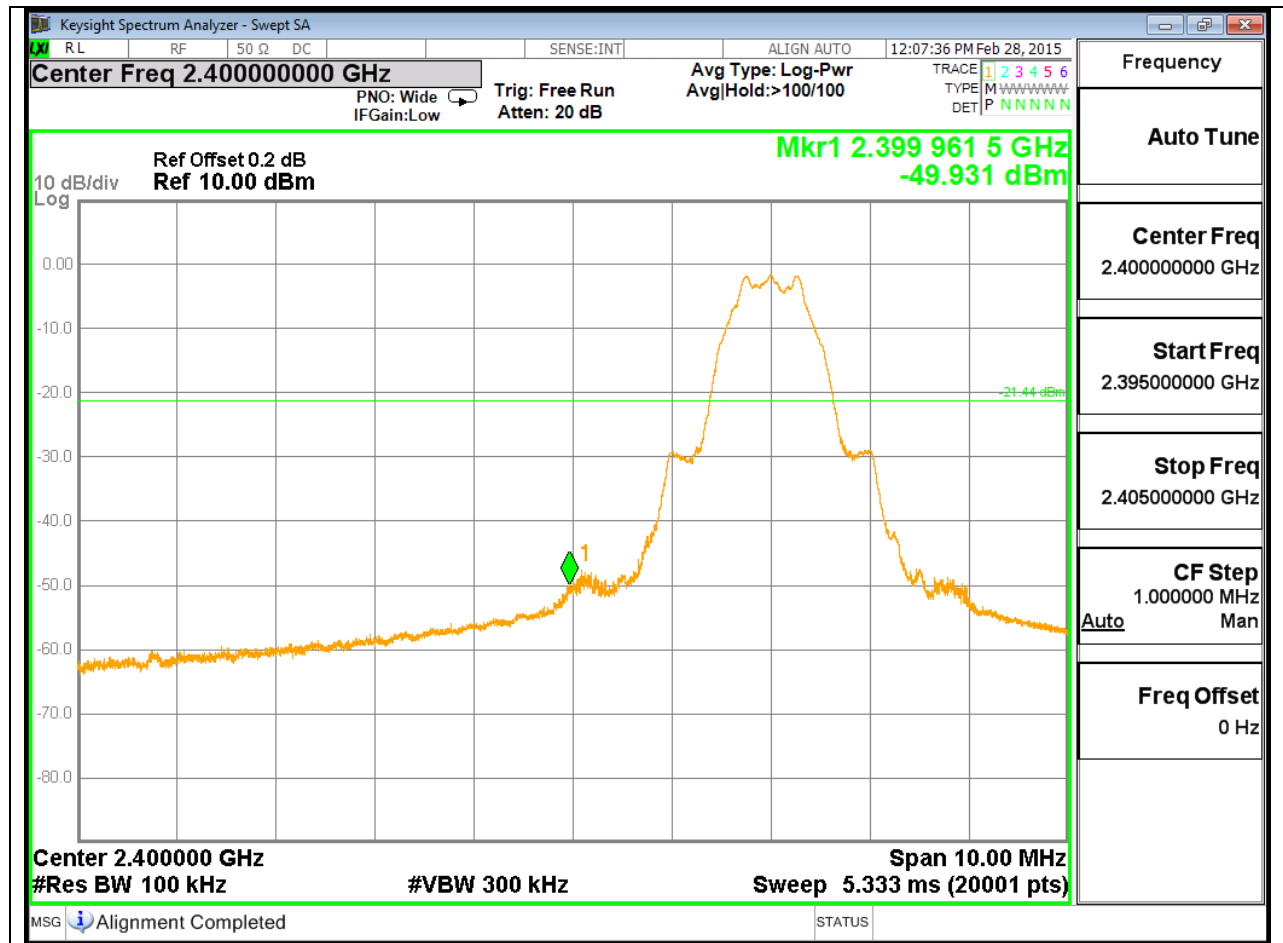
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

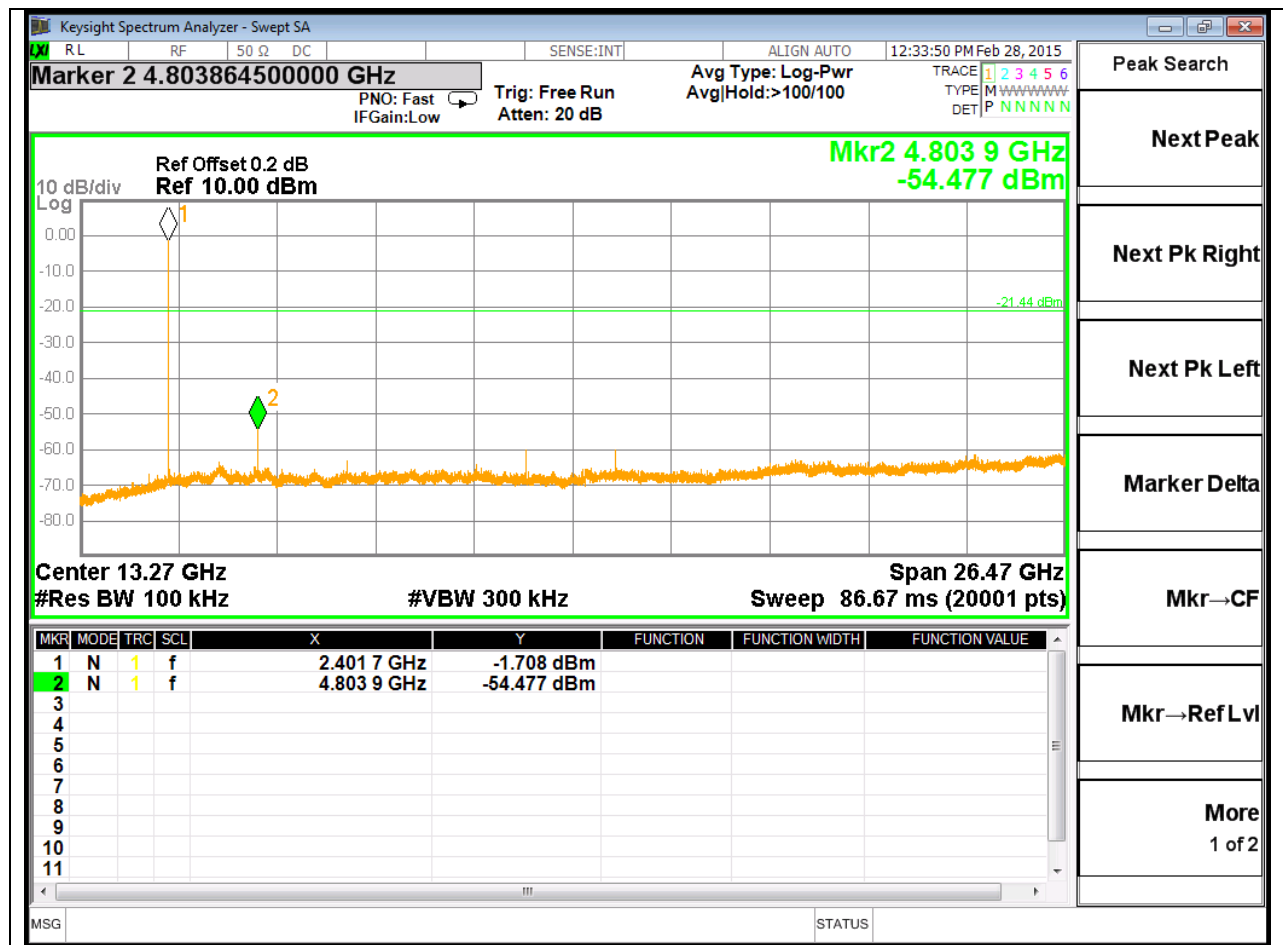
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE

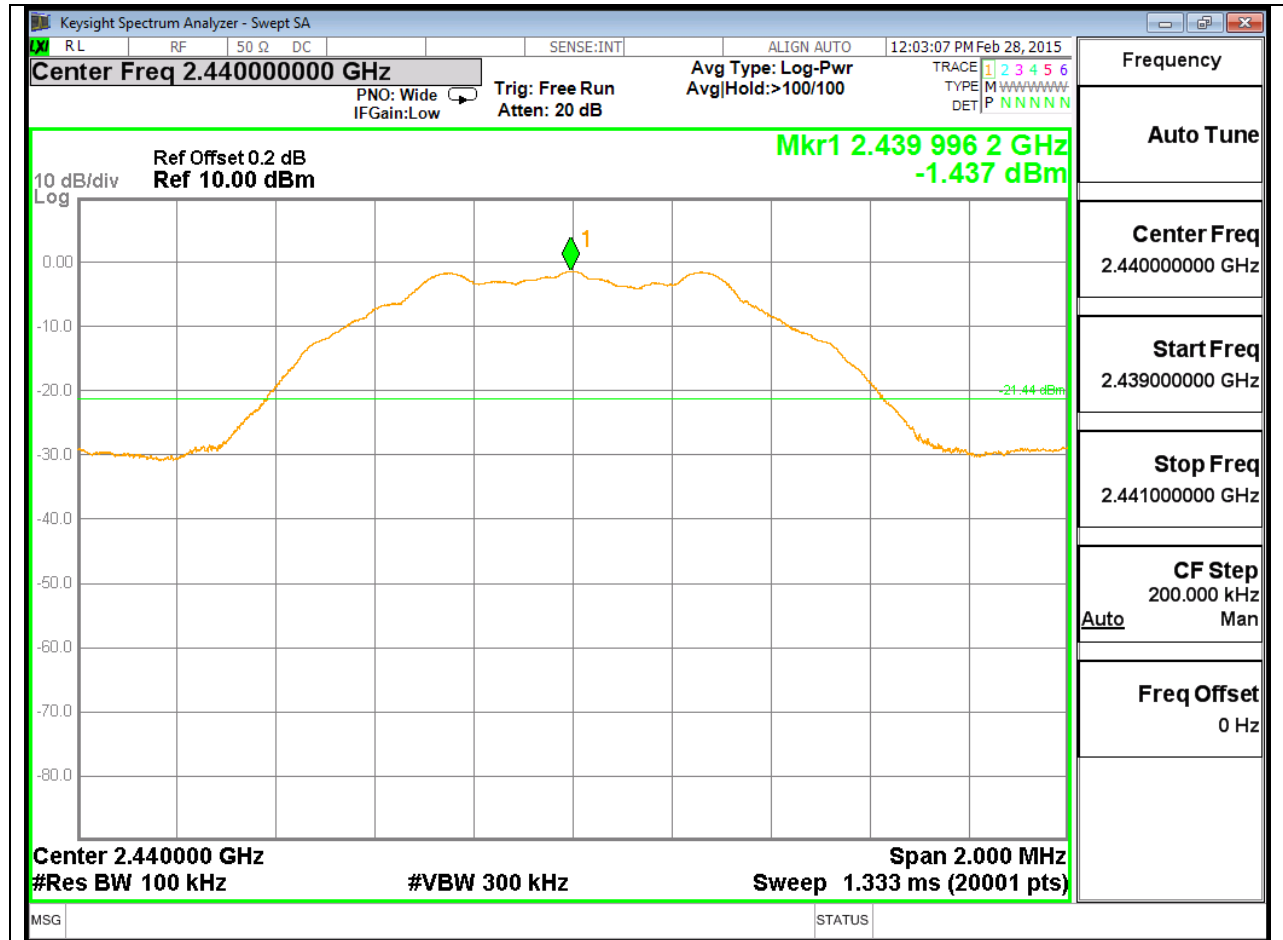


LOW CHANNEL SPURIOUS

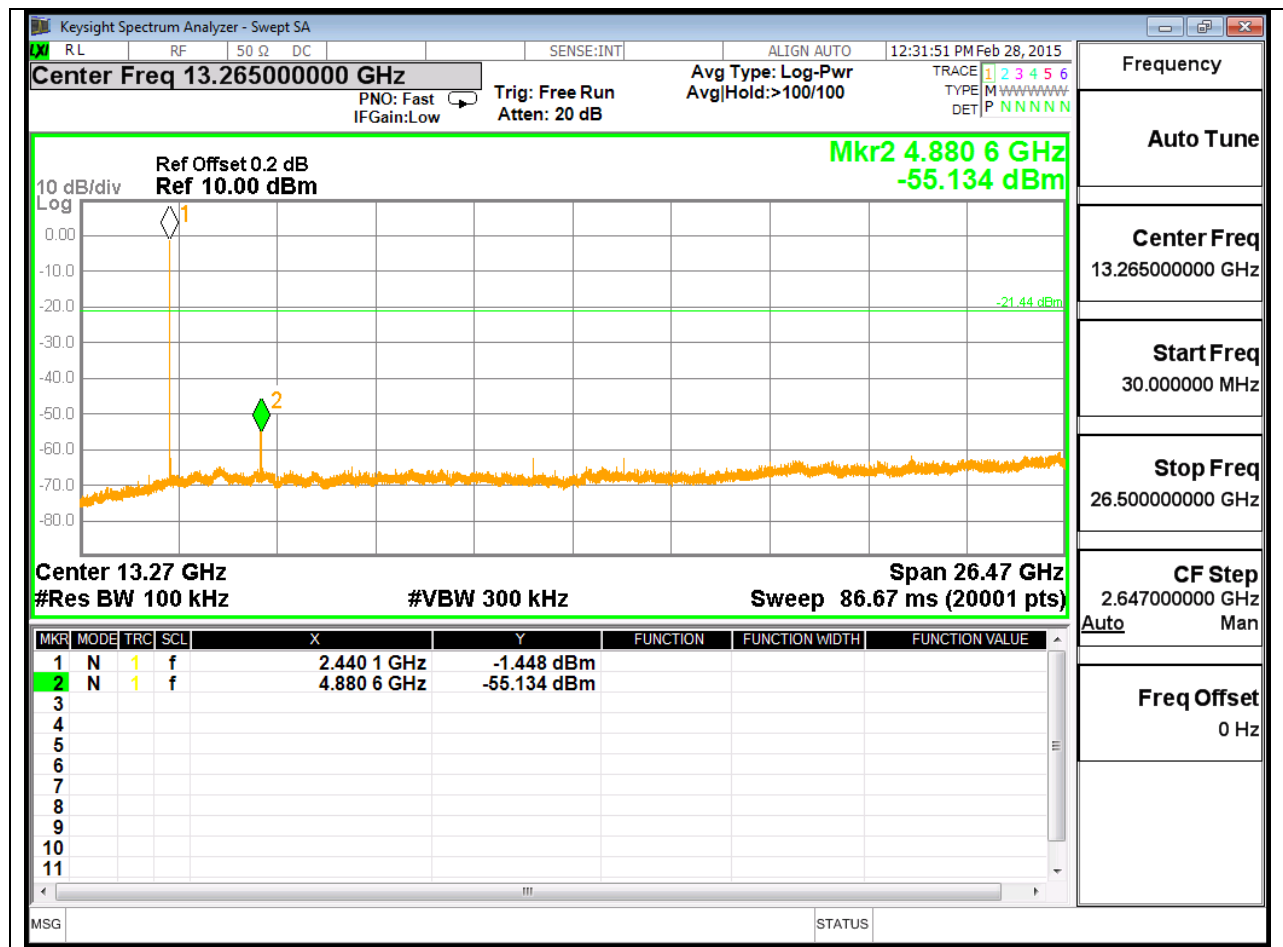


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL REFERENCE

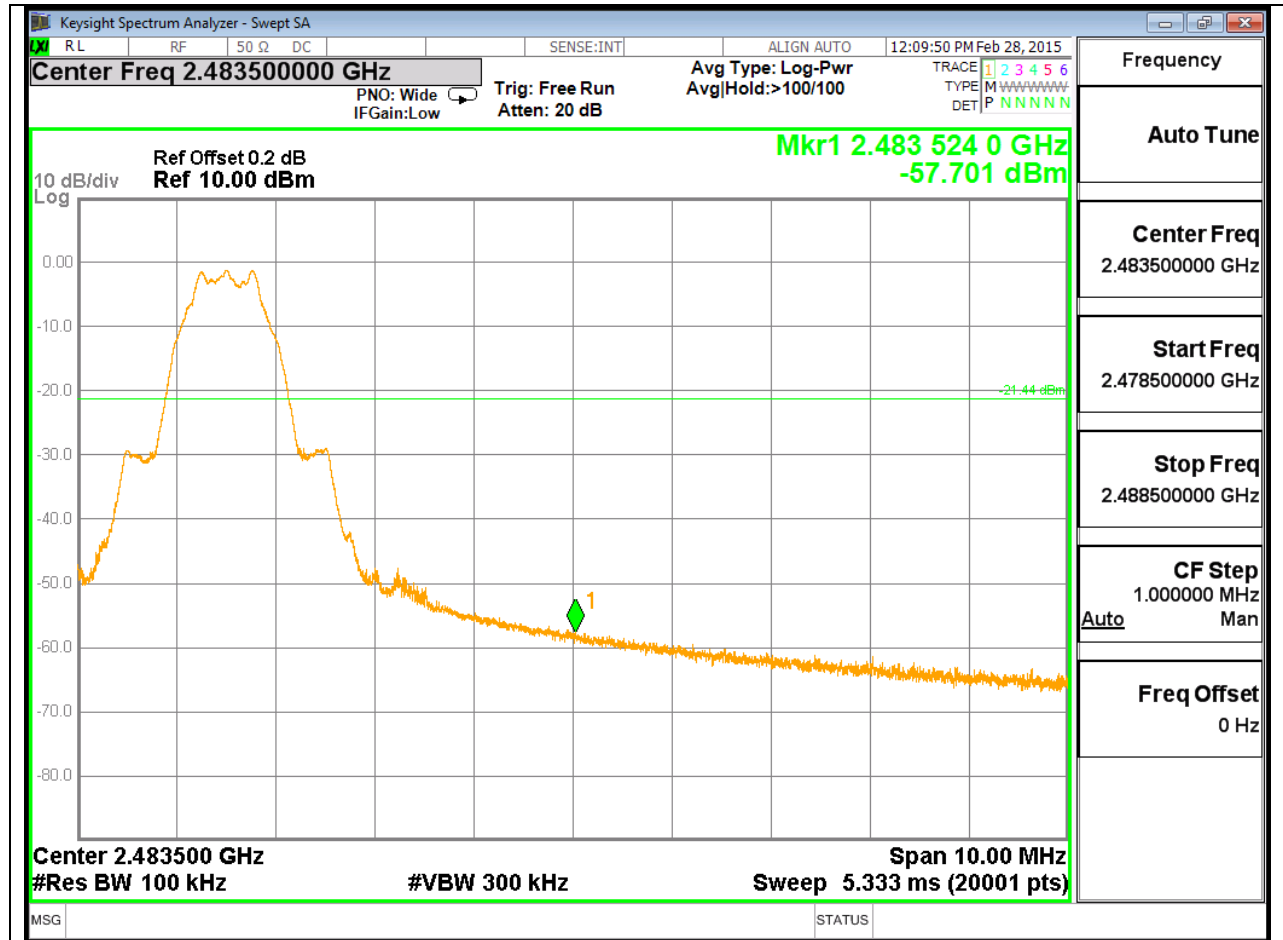


MID CHANNEL SPURIOUS

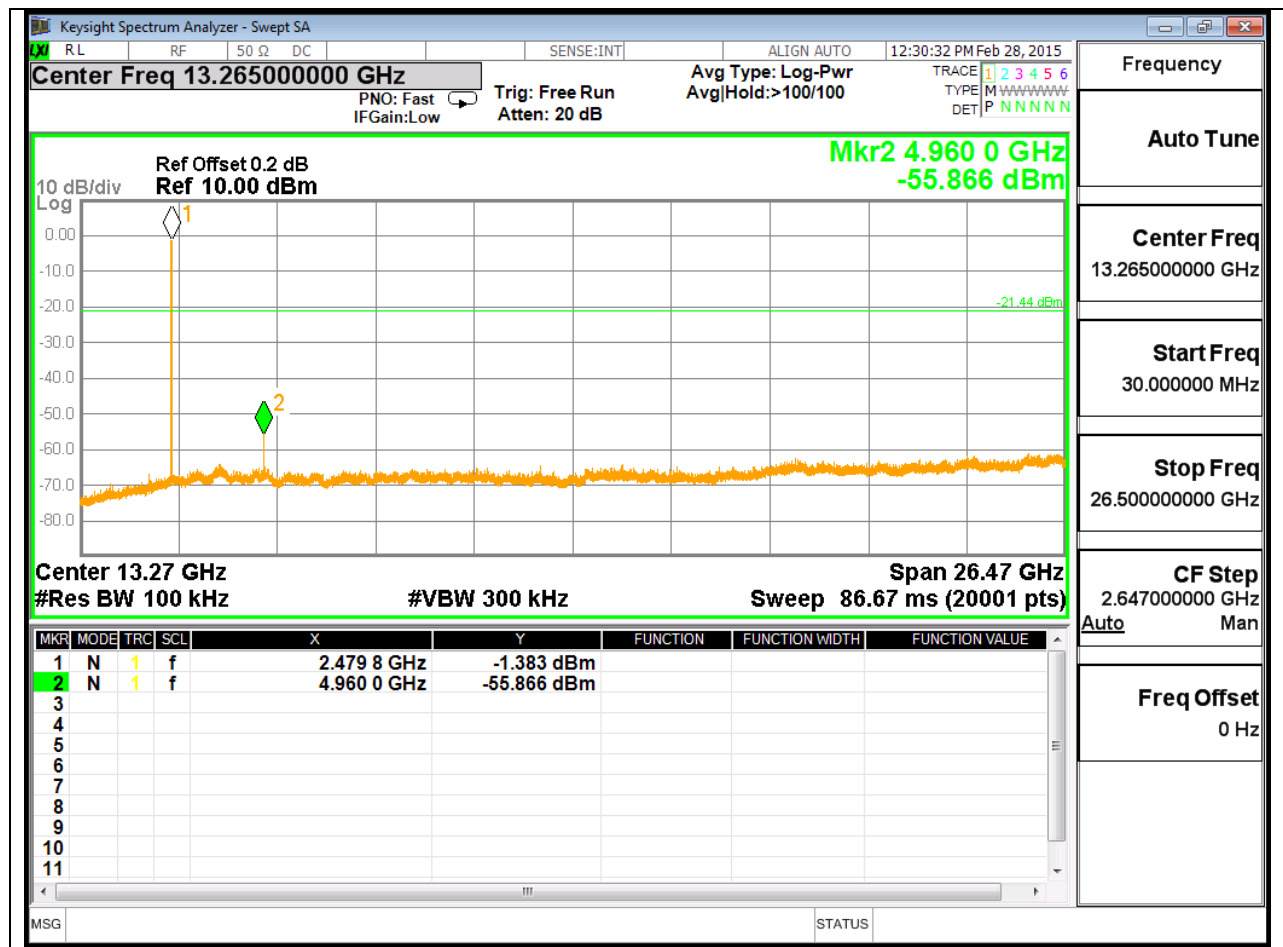


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE



HIGH CHANNEL SPURIOUS



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209
KDB 558074 D01 v3r02

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 C63.10 - 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.

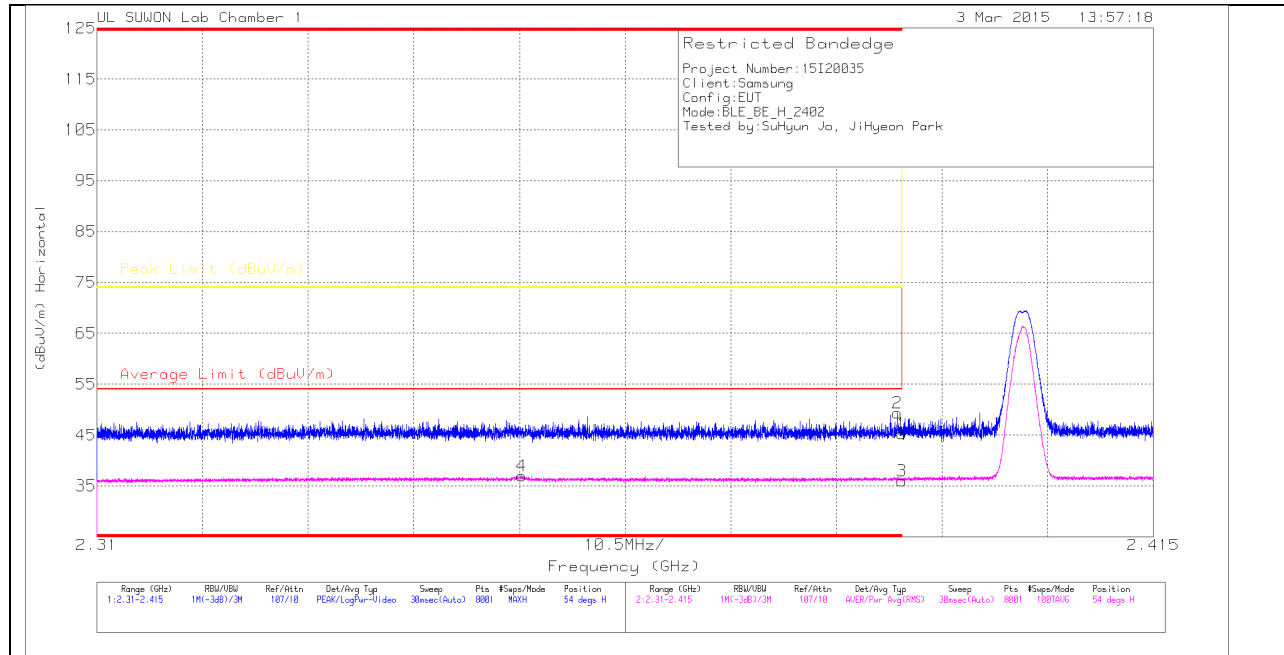
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor = $10 \log(1/x)$. For this sample: DCF = $10\log(1/0.628)=2.02\text{dB}$ (Spectrum Analyzer round it up to 2.02dB)

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.

10.2. TRANSMITTER ABOVE 1 GHz RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

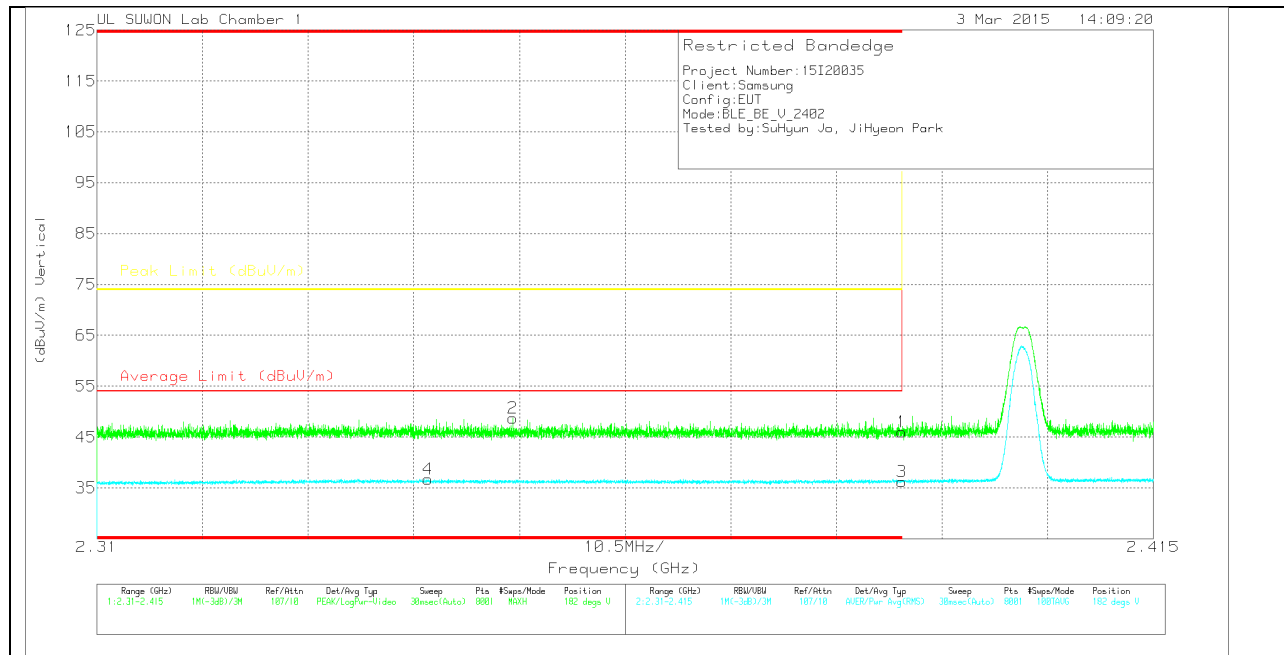
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.91	Pk	27.9	-22.6	0	45.21	-	-	74	-28.79	54	362	H
2	* 2.39	44.03	Pk	27.9	-22.6	0	49.33	-	-	74	-24.67	54	362	H
3	* 2.39	30.69	RMS	27.9	-22.6	2.02	38.01	54	-15.99	-	-	54	362	H
4	* 2.352	31.82	RMS	27.8	-22.7	2.02	38.94	54	-15.06	-	-	54	362	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path2	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	40.74	Pk	27.9	-22.6	0	46.04	-	-	74	-27.96	182	366	V
2	* 2.351	43.6	Pk	27.8	-22.7	0	48.7	-	-	74	-25.3	182	366	V
3	* 2.39	30.92	RMS	27.9	-22.6	2.02	38.24	54	-15.76	-	-	182	366	V
4	* 2.343	31.65	RMS	27.8	-22.7	2.02	38.77	54	-15.23	-	-	182	366	V

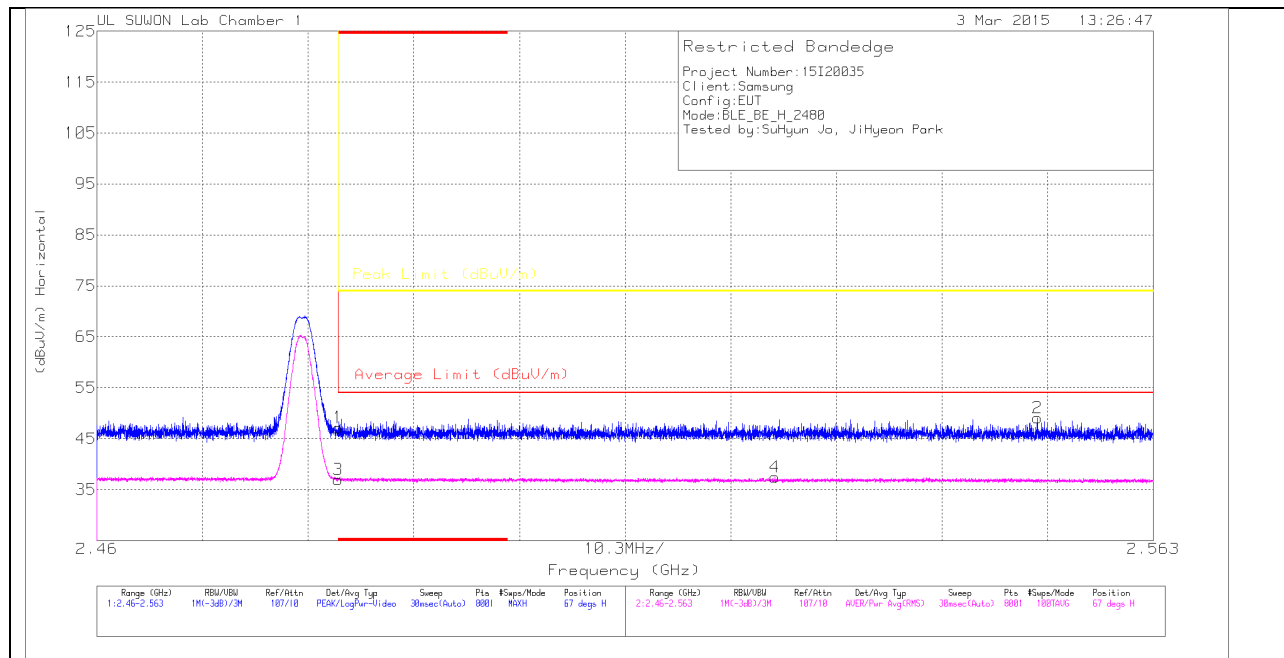
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

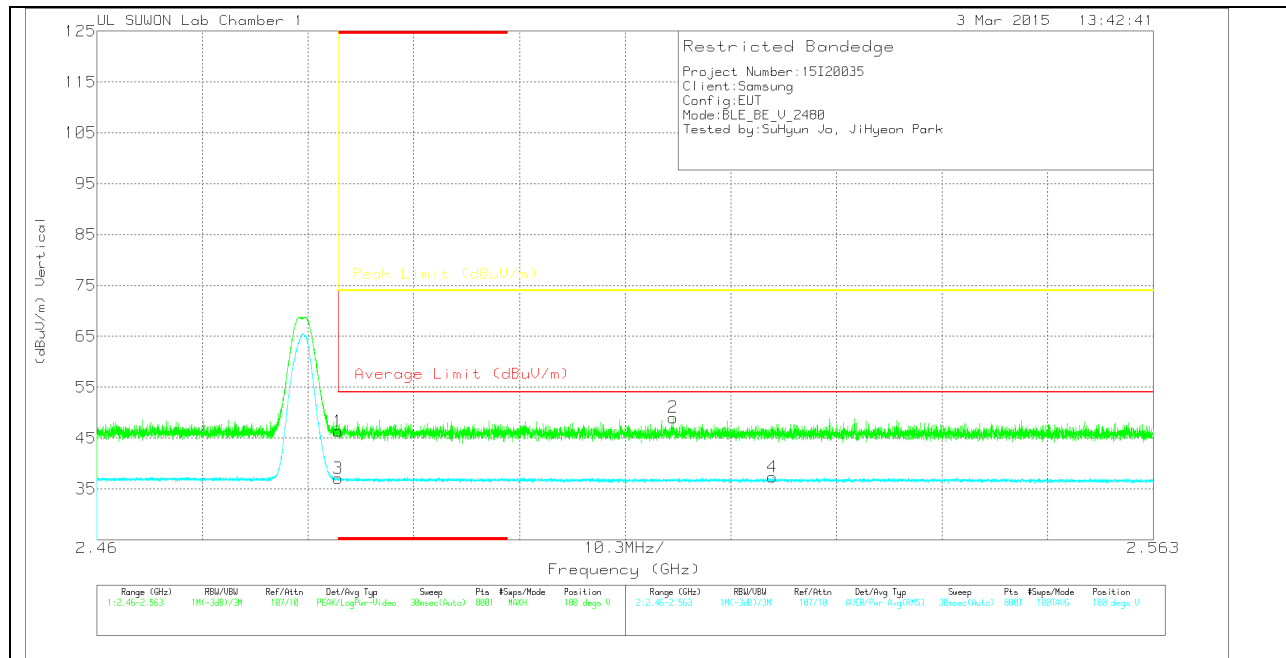
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	31150 Factor	10dB_Path2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Pk Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.77	Pk	27.9	-22.5	0	47.17	-	-	74	-26.83	67	330	H
2	2.552	43.62	Pk	27.9	-22.4	0	49.12	-	-	74	-24.88	67	330	H
3	* 2.484	31.6	RMS	27.9	-22.5	2.02	39.02	54	-14.98	-	-	67	330	H
4	2.526	32.05	RMS	27.9	-22.5	2.02	39.47	54	-14.53	-	-	67	330	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path2	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	40.92	Pk	27.9	-22.5	0	46.32	-	-	74	-27.68	180	334	V
2	2.516	43.63	Pk	27.9	-22.5	0	49.03	-	-	74	-24.97	180	334	V
3	* 2.484	31.68	RMS	27.9	-22.5	2.02	39.1	54	-14.9	-	-	180	334	V
4	2.526	31.92	RMS	27.9	-22.5	2.02	39.34	54	-14.66	-	-	180	334	V

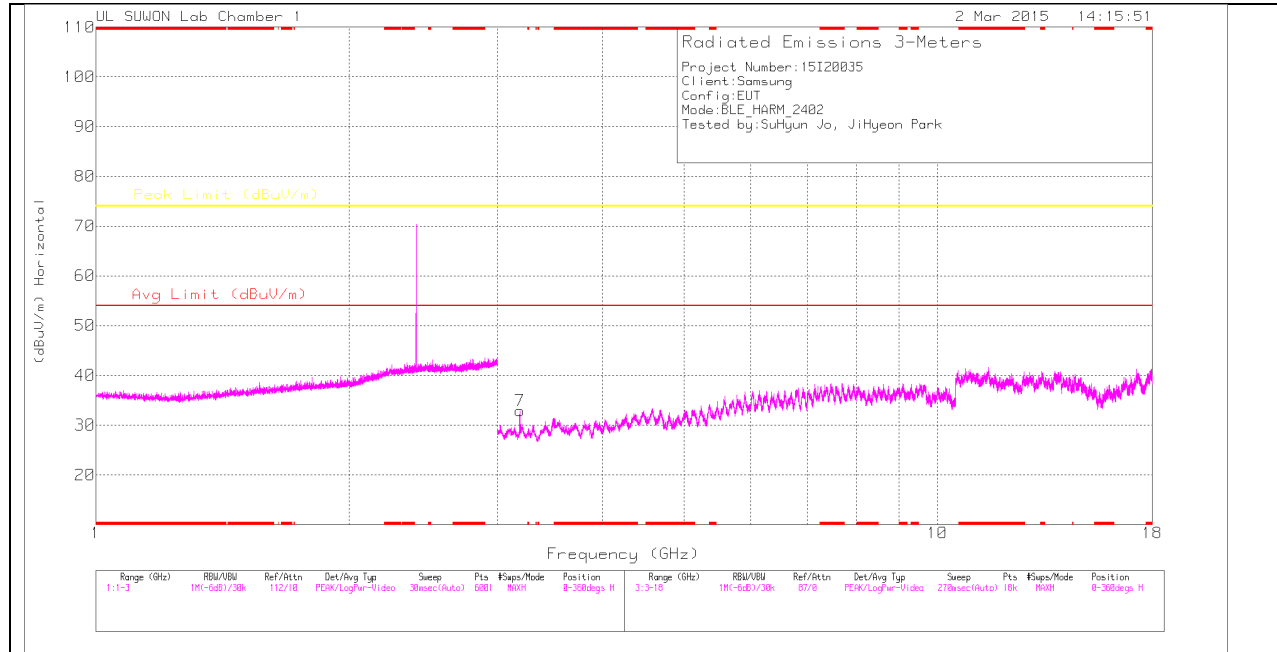
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

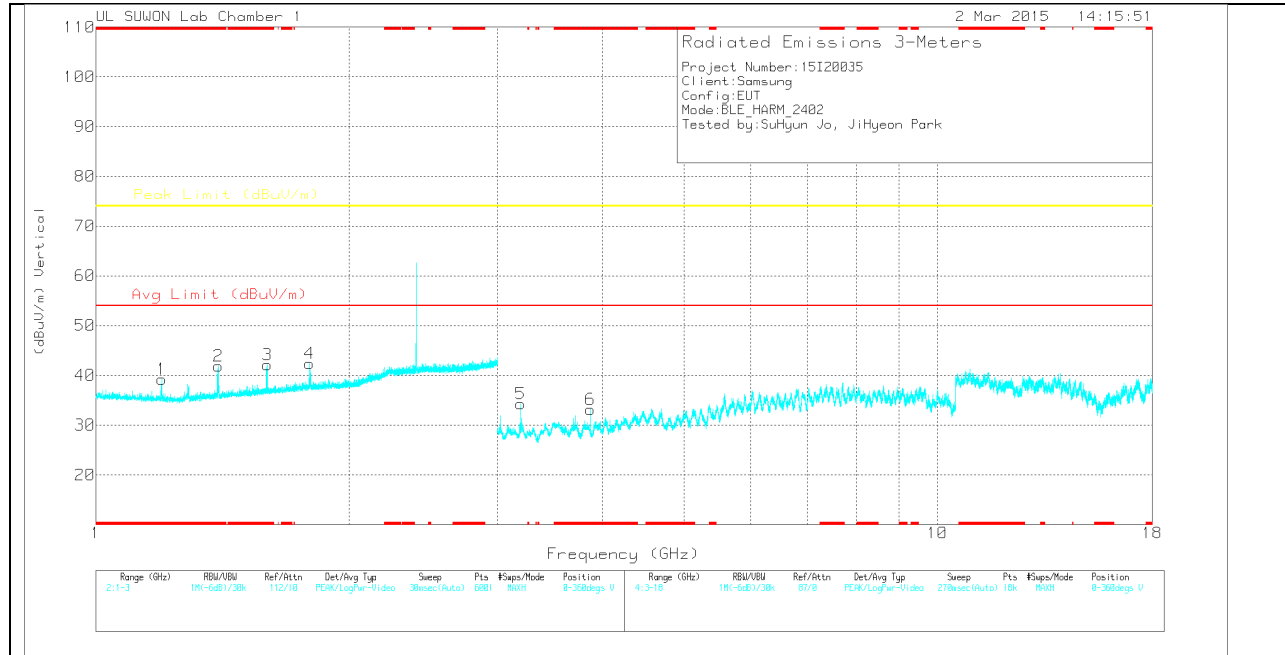
HARMONICS AND SPURIOUS EMISSIONS

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.

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.

LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path2	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.197	40.09	PK	23.8	-24.7	0	39.19	-	-	74	-34.81	0-360	100	V
2	* 1.397	42.03	PK	24.2	-24.3	0	41.93	-	-	74	-32.07	0-360	200	V
3	* 1.599	41.38	PK	24.8	-24	0	42.18	-	-	74	-31.82	0-360	100	V
4	1.793	40.64	PK	25.3	-23.5	0	42.44	-	-	-	-	0-360	200	V
7	3.192	34.33	PK	29	-30.4	0	32.93	-	-	-	-	0-360	100	H
5	3.199	35.67	PK	29	-30.4	0	34.27	-	-	-	-	0-360	200	V
6	* 3.869	32.72	PK	30.5	-30.1	0	33.12	-	-	74	-40.88	0-360	200	V

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

PK – Peak Detector

Radiated Emissions

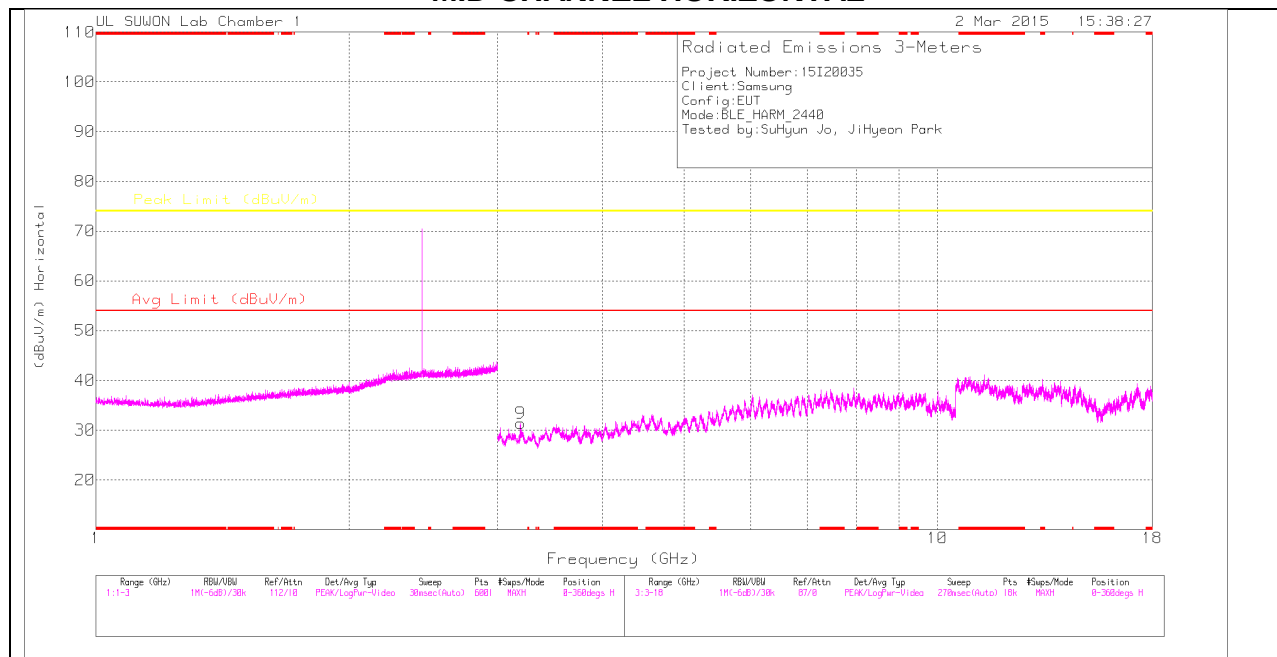
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.197	50.56	PK2	23.8	-24.7	0	49.66	-	-	74	-24.34	354	181	V
* 1.198	32.52	MAV1	23.8	-24.7	2.02	33.64	54	-20.36	-	-	354	181	V
* 1.397	46.31	PK2	24.2	-24.3	0	46.21	-	-	74	-27.79	56	234	V
* 1.399	31.61	MAV1	24.2	-24.3	2.02	33.53	54	-20.47	-	-	56	234	V
* 1.596	45.08	PK2	24.8	-24	0	45.88	-	-	74	-28.12	130	364	V
* 1.597	31.59	MAV1	24.8	-24	2.02	34.41	54	-19.51	-	-	130	364	V
1.795	43.9	PK2	25.3	-23.5	0	45.7	-	-	-	-	69	367	V
1.792	31.79	MAV1	25.2	-23.5	2.02	35.51	-	-	-	-	69	367	V
3.192	28.81	MAV1	29	-30.4	2.02	29.43	-	-	-	-	106	387	H
3.197	28.97	MAV1	29	-30.4	2.02	29.59	-	-	-	-	16	377	V
* 3.868	26.64	MAV1	30.5	-30.1	2.02	29.06	54	-24.94	-	-	104	322	V
3.195	43.42	PK2	29	-30.4	0	42.02	-	-	-	-	106	387	H
3.198	45.93	PK2	29	-30.4	0	44.53	-	-	-	-	16	377	V
* 3.87	38.77	PK2	30.5	-30.1	0	39.17	-	-	74	-34.83	104	322	V

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

PK2 - KDB558074 Method: Maximum Peak

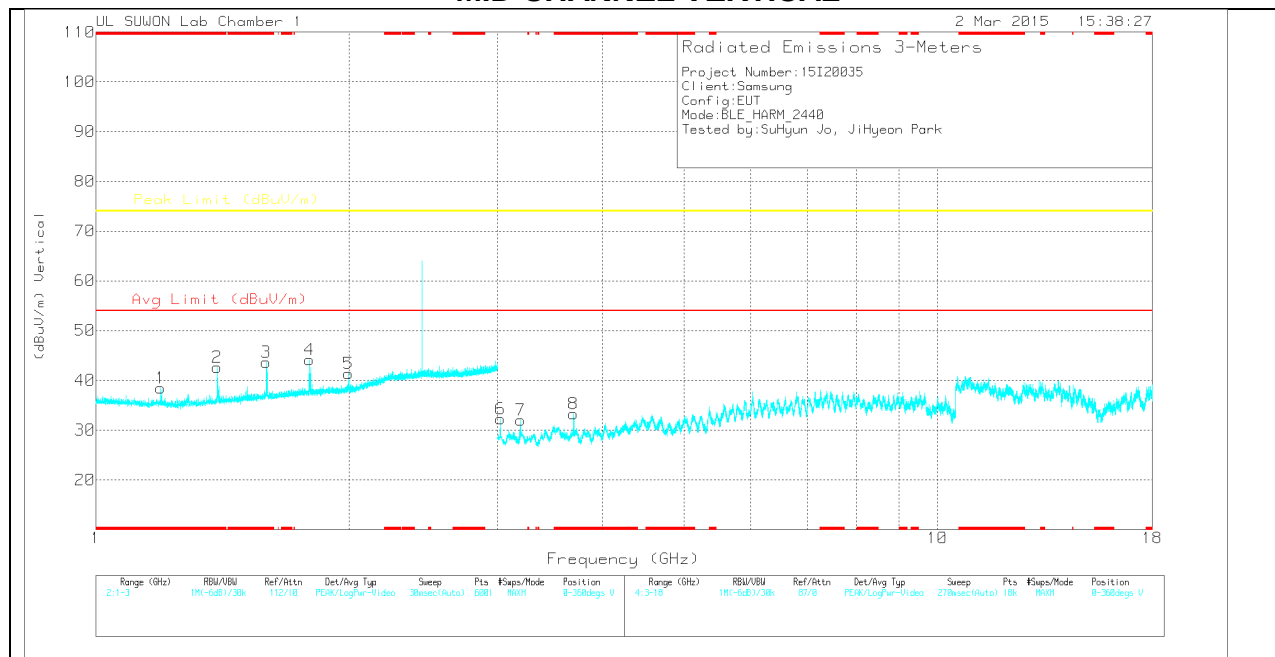
MAV1 - KDB558074 Option 1 Maximum RMS Average

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.

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.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path2	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.194	39.51	PK	23.8	-24.8	0	38.51	-	-	74	-35.49	0-360	100	V
2	* 1.394	42.78	PK	24.2	-24.3	0	42.68	-	-	74	-31.32	0-360	200	V
3	* 1.594	42.82	PK	24.8	-24	0	43.62	-	-	74	-30.38	0-360	100	V
4	1.793	42.3	PK	25.3	-23.5	0	44.1	-	-	-	-	0-360	200	V
5	1.996	39.12	PK	25.5	-23.2	0	41.42	-	-	-	-	0-360	200	V
9	3.198	32.76	PK	29	-30.4	0	31.36	-	-	-	-	0-360	200	H
6	3.023	34.59	PK	28.8	-31.1	0	32.29	-	-	-	-	0-360	200	V
7	3.195	33.37	PK	29	-30.4	0	31.97	-	-	-	-	0-360	100	V
8	* 3.696	33.3	PK	30.1	-30.1	0	33.3	-	-	74	-40.7	0-360	100	V

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

PK – Peak Detector

Radiated Emissions

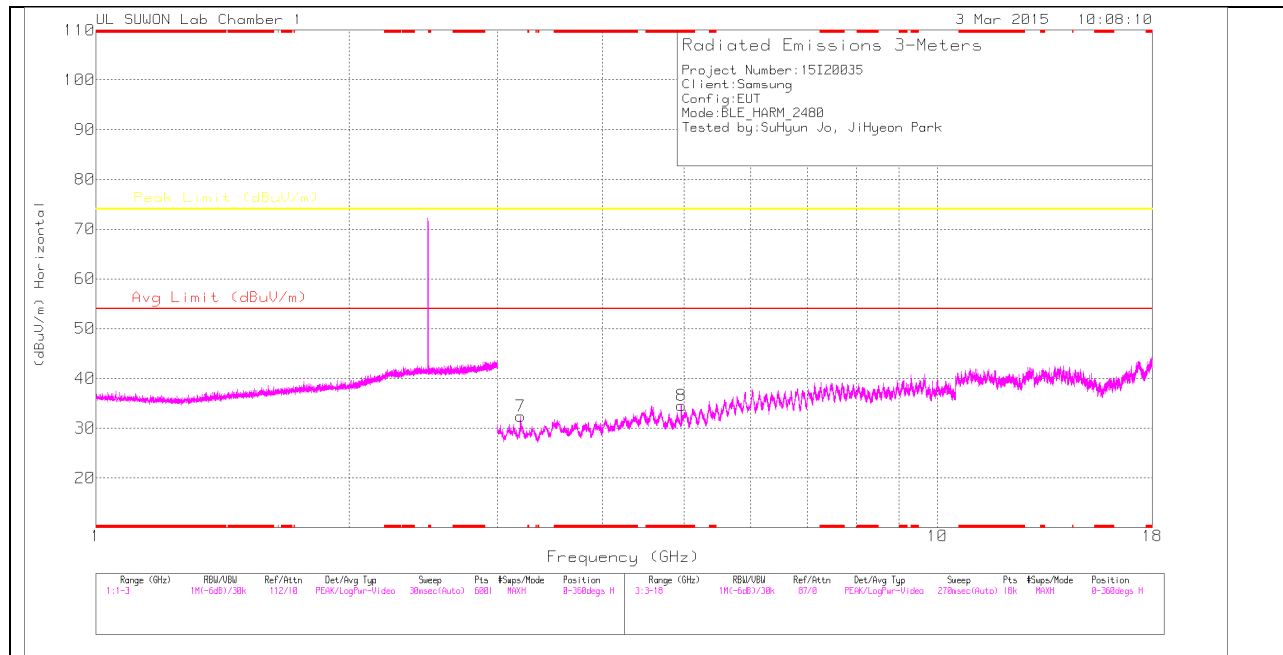
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.196	49.67	PK2	23.8	-24.8	0	48.67	-	-	74	-25.33	198	357	V
* 1.195	32.82	MAV1	23.8	-24.8	2.02	33.84	54	-20.16	-	-	198	357	V
* 1.394	48.98	PK2	24.2	-24.3	0	48.88	-	-	74	-25.12	201	193	V
* 1.393	31.71	MAV1	24.2	-24.3	2.02	33.63	54	-20.37	-	-	201	193	V
* 1.593	54.26	PK2	24.8	-24	0	55.06	-	-	74	-18.94	24	193	V
* 1.593	31.96	MAV1	24.8	-24	2.02	34.78	54	-19.22	-	-	24	193	V
1.792	51.91	PK2	25.3	-23.5	0	53.71	-	-	-	-	14	322	V
1.792	31.16	MAV1	25.3	-23.5	2.02	34.98	-	-	-	-	14	322	V
1.995	46.41	PK2	25.5	-23.2	0	48.71	-	-	-	-	311	191	V
1.993	32	MAV1	25.5	-23.2	2.02	36.32	-	-	-	-	311	191	V
3.202	29.31	MAV1	29	-30.5	2.02	29.83	-	-	-	-	102	298	H
3.023	30.9	MAV1	28.8	-31.1	2.02	30.62	-	-	-	-	25	253	V
3.194	28.58	MAV1	29	-30.4	2.02	29.2	-	-	-	-	10	234	V
* 3.693	27.6	MAV1	30.1	-30.2	2.02	29.52	54	-24.48	-	-	306	136	V
3.2	42.93	PK2	29	-30.4	0	41.53	-	-	-	-	102	298	H
3.021	42.89	PK2	28.8	-31.1	0	40.59	-	-	-	-	25	253	V
3.193	47.35	PK2	29	-30.4	0	45.95	-	-	-	-	10	234	V
* 3.695	40.16	PK2	30.1	-30.1	0	40.16	-	-	74	-33.84	306	136	V

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

PK2 - KDB558074 Method: Maximum Peak

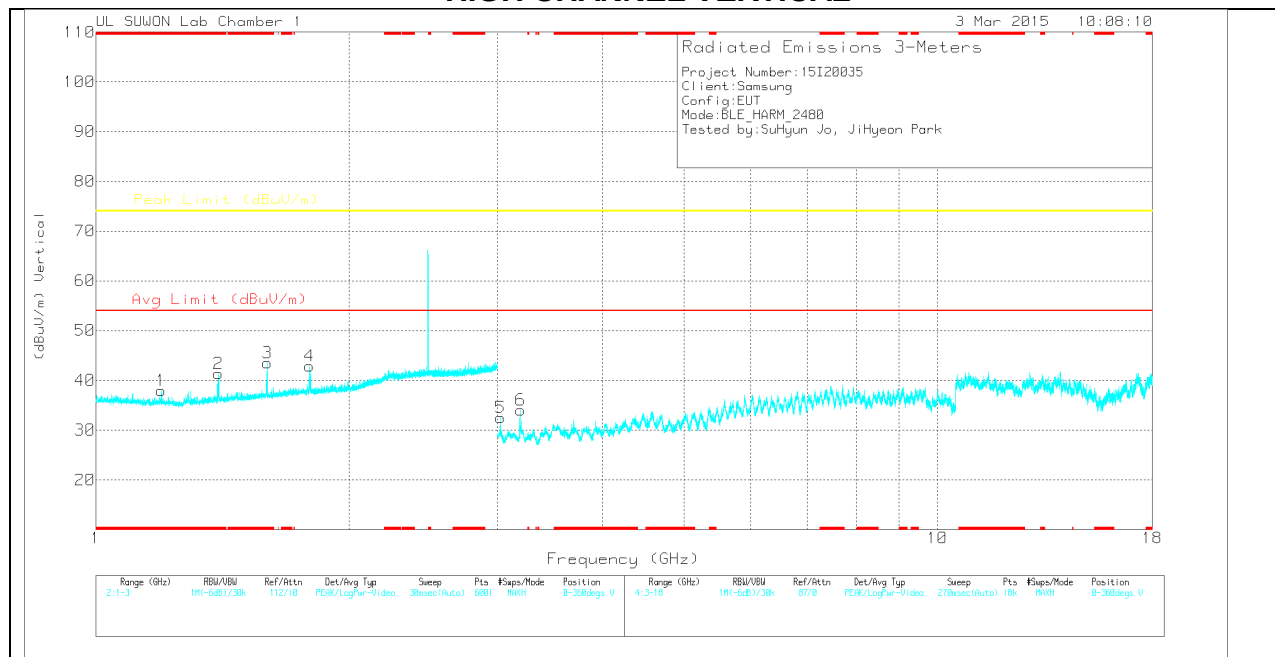
MAV1 - KDB558074 Option 1 Maximum RMS Average

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.

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.

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path2	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.195	38.98	PK	23.8	-24.8	0	37.98	-	-	74	-36.02	0-360	200	V
2	* 1.399	41.52	PK	24.2	-24.3	0	41.42	-	-	74	-32.58	0-360	100	V
3	* 1.6	42.72	PK	24.8	-24	0	43.52	-	-	74	-30.48	0-360	200	V
4	1.793	41.05	PK	25.3	-23.5	0	42.85	-	-	-	-	0-360	200	V
7	3.199	33.8	PK	29	-30.4	0	32.4	-	-	-	-	0-360	100	H
8	* 4.961	31.26	PK	32.1	-28.8	0	34.56	-	-	74	-39.44	0-360	100	H
5	3.023	34.79	PK	28.8	-31.1	0	32.49	-	-	-	-	0-360	200	V
6	3.199	35.41	PK	29	-30.4	0	34.01	-	-	-	-	0-360	100	V

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

PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	10dB_Path 2	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.194	44.77	PK2	23.8	-24.8	0	43.77	-	-	74	-30.23	110	101	V
* 1.195	32.64	MAV1	23.8	-24.8	2.02	33.66	54	-20.34	-	-	110	101	V
* 1.398	46.86	PK2	24.2	-24.3	0	46.76	-	-	74	-27.24	141	305	V
* 1.399	31.75	MAV1	24.2	-24.3	2.02	33.67	54	-20.33	-	-	141	305	V
* 1.598	43.71	PK2	24.8	-24	0	44.51	-	-	74	-29.49	270	355	V
* 1.597	32.03	MAV1	24.8	-24	2.02	32.83	54	-19.15	-	-	270	355	V
1.792	50.02	PK2	25.3	-23.5	0	51.82	-	-	-	-	354	314	V
1.792	31.61	MAV1	25.3	-23.5	2.02	35.43	-	-	-	-	354	314	V
3.2	28.07	MAV1	29	-30.4	2.02	28.69	-	-	-	-	229	225	H
* 4.96	25.51	MAV1	32.1	-28.8	2.02	30.83	54	-23.17	-	-	21	383	H
3.202	29.31	MAV1	29	-30.5	2.02	29.83	-	-	-	-	102	298	H
3.023	30.47	MAV1	28.8	-31.1	2.02	30.19	-	-	-	-	266	109	V
3.199	29.48	MAV1	29	-30.4	2.02	30.1	-	-	-	-	290	124	V
3.199	42.01	PK2	29	-30.4	0	40.61	-	-	-	-	229	225	H
* 4.96	37.84	PK2	32.1	-28.8	0	41.14	-	-	74	-32.86	21	383	H
3.2	42.93	PK2	29	-30.4	0	41.53	-	-	-	-	102	298	H
3.023	41.47	PK2	28.8	-31.1	0	39.17	-	-	-	-	266	109	V
3.197	47.16	PK2	29	-30.4	0	45.76	-	-	-	-	290	124	V

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

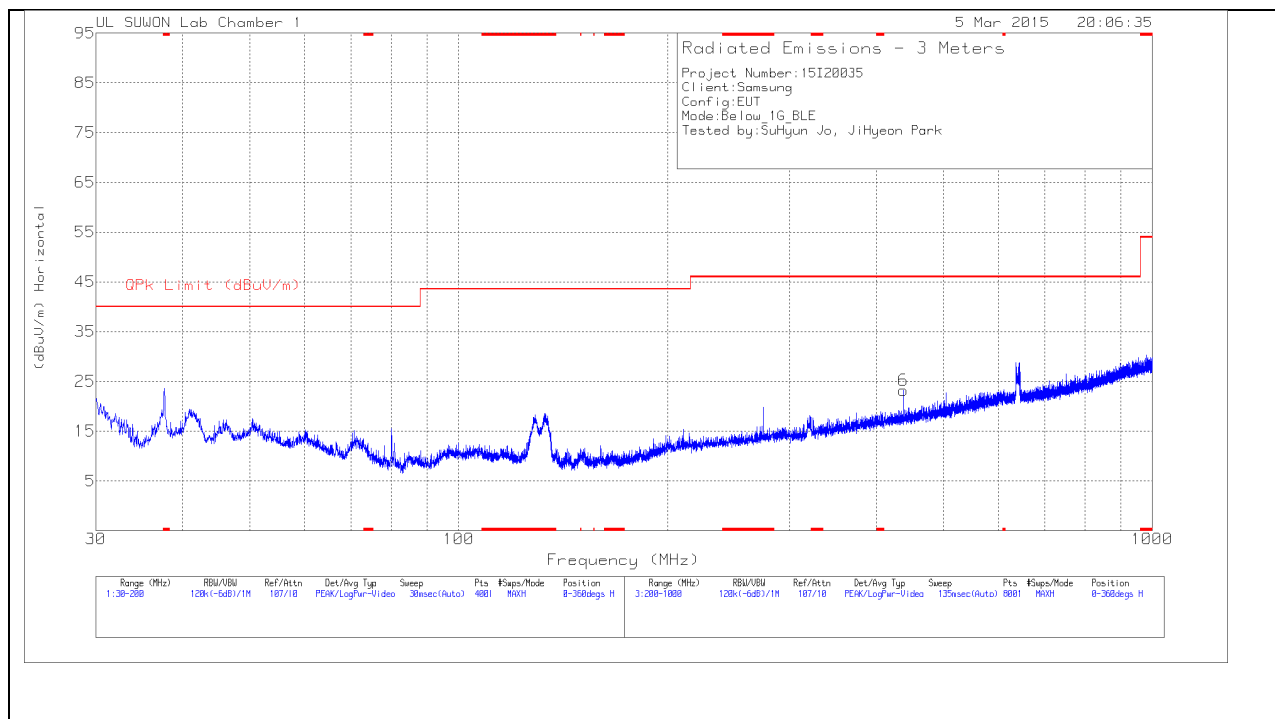
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

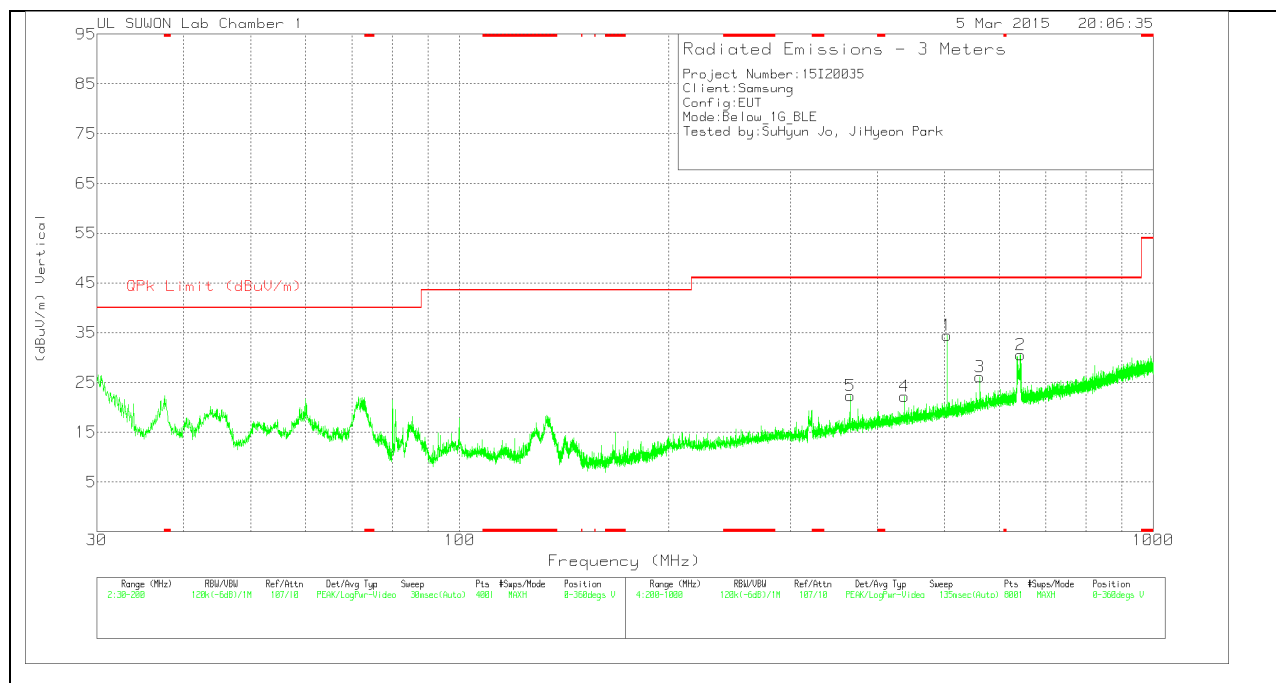
10.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-750	Bi-Log Ant Pathloss	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	437.5	33.87	Pk	16.1	-26.8	23.17	46.02	-22.85	0-360	300	H
1	504	43.74	Pk	17.1	-26.4	34.44	46.02	-11.58	0-360	100	V
2	644.2	37.04	Pk	19.3	-25.8	30.54	46.02	-15.48	0-360	100	V
3	562.6	33.92	Pk	18.4	-26.2	26.12	46.02	-19.9	0-360	100	V
4	437.5	32.85	Pk	16.1	-26.8	22.15	46.02	-23.87	0-360	100	V
5	365.4	34.72	Pk	14.8	-27.2	22.32	46.02	-23.7	0-360	200	V

Pk - Peak detector