FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-247 ISSUE 2

Bluetooth Low Energy

CERTIFICATION TEST REPORT

FOR

BT/BLE, DTS/UNII a/b/g/n/ac and ANT+ Tablet

MODEL NUMBER : SM-T830

FCC ID: A3LSMT830
IC : 649E-SMT830

REPORT NUMBER: 4788494706-E2V1

ISSUE DATE: JUN 25, 2018

Prepared for
SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, KOREA

Prepared by
UL Korea, Ltd.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

Suwon Test Site: UL Korea, Ltd. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433

ACCREDITED
Testing Laboratory

TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	06/25/18	Initial issue	Junwhan Lee

TABLE OF CONTENTS

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: BT/BLE, DTS/UNII a/b/g/n/ac and ANT+ Tablet

MODEL NUMBER: SM-T830

SERIAL NUMBER: R32K10045KW (RADIATED, Original);
R32K10044PB (CONDUCTED, Original)
R32K300G7VL (RADIATED, Spot check)

DATE TESTED: APR 17, 2018 - MAY 10, 2018 (Original)
JUN 16, 2018 (Spot check)

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 Issue 2	Pass
INDUSTRY CANADA RSS-GEN Issue 5	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:

SungGil Park
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:

Junwhan Lee
Suwon Lab Engineer
UL Korea, Ltd.

1.1. INTRODUCTION OF TEST DATA REUSE

This report referenced from the FCC ID: A3LSMT835 DTS BLE(FCC CFR 47 Part 15C).
And the applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID.

1.2. DIFFERENCE

The FCC ID: A3LSMT830(IC : 649E-SMT830, Model number : SM-T830), shares the same enclosure and circuit board as FCC ID: A3LSMT835 (Model number : SM-T835). The BLE antennas and surrounding circuitry and layout are identical between these two units.

After confirming through preliminary radiated emissions that the performance of the FCC ID: A3LSMT835 (Model number : SM-T835) remains representative of FCC ID: A3LSMT830(IC : 649E-SMT830, Model number : SM-T830). The test data of FCC ID: A3LSMT835 (Model number : SM-T835) being submitted for this application to cover BLE features.

Model number, SM-T835, is not certified for ISED certification.

1.3. SPOT CHECK VERIFICATION DATA

(Worst case of the radiated spurious and band edge emissions)

Band	Test Item	Frequency	Test Limit	Original model	Spot check model	Deviation	Remark
				SM-T835 Results	SM-T830 Results		
				FCC ID : A3LSMT835	FCC ID : A3LSMT830 IC : 649E-SMT830		
DTS BLE (2.4GHz)	Band Edge	2480 MHz	54 dBuV/m	47.45 dBuV/m	47.35 dBuV/m	-0.10 dB	BLE 2Mbps
	RSE	2480 MHz	74 dBuV/m	46.07 dBuV/m	45.72 dBuV/m	-0.35 dB	BLE 2Mbps

Comparison of two models, upper deviation is within 3dB range and all test results are under FCC Technical Limits.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

1.4. REFERENCE DETAIL

Reference application that contains the reused reference data.

Equipment Class	Reference FCC ID	Type Grant/Permissive Change	Reference Application	Folder Test/RF Exposure	Report Tittle / Section
DTS	A3LSMT835	Grant	4788429415-E1V2	Test	FCC Report DTS WLAN / Test results of Ch.1~Ch.11
			4788429415-E2V1	Test	FCC Report BLE All sections
DXX	A3LSMT835	Grant	4788429415-E5V1	Test	FCC Report ANT+ / All sections
NII	A3LSMT835	Grant	4788429415-E4V1	Test	FCC Report UNII WLAN / All sections

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. IC RSS-GEN Issue 5
4. IC RSS-247 Issue 2
5. KDB 558074 D01 DTS Meas Guidance v04.
6. ANSI C63.10-2013.

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, 16675, 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
☒ Chamber 3

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:

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	2.32 dB
Radiated Disturbance, Below 1GHz	3.86 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 BT/BLE, DTS/UNII a/b/g/n/ac and ANT+ Tablet.
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	Power Mode	Output Power [dBm]	Output Power [mW]
2402 - 2480	BLE	Peak	3.005	2.00
		Average	2.386	1.73

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of -1.84 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

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

Radiated emission above 1GHz was performed with the EUT set to transmit low/mid/high channels.

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

Note : All radiated and power line conducted tests were performed connected with earphone and charger for evaluation of worst case mode.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA20EWE	R37KDCZ1855DK3	N/A
Data Cable	SAMSUNG	EP-DN930CWE	N/A	N/A
Earphone	SAMSUNG	EO-EG920BW	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	C Type	Shielded	1.1m	N/A
2	Audio	2	Mini-Jack	Unshielded	1.2m	N/A

TEST SETUP

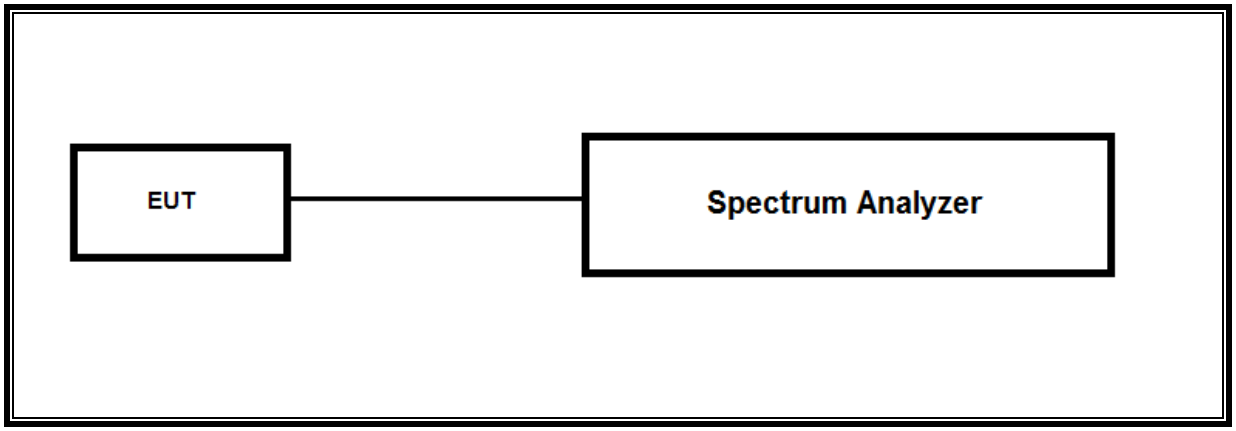
The EUT is a stand-alone unit during the tests.
Test software in hidden menu exercised the EUT to enable BLE mode.

NOTE

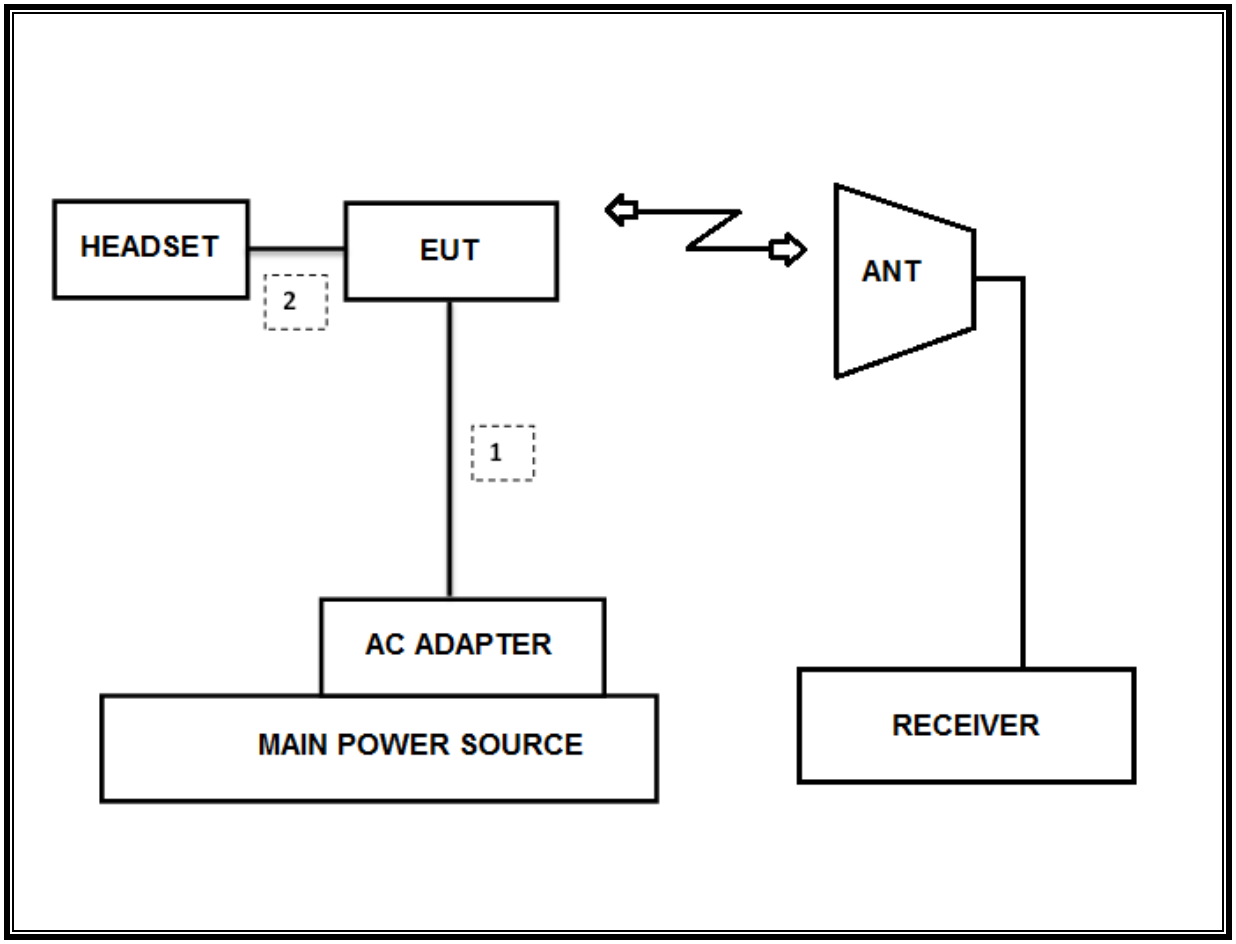
Additional tests under 1 GHz were performed with the keyboard attached to check on all port terminated conditions. Keyboard is not an in-box item.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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**	**S/N**	**Cal Due**
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	08-31-19
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	09-14-19
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-31-19
Antenna, Horn, 18 GHz	ETS	3115	00167211	10-14-18
Antenna, Horn, 18 GHz	ETS	3115	00161451	03-10-19
Antenna, Horn, 18 GHz	ETS	3117	00168724	05-31-19
Antenna, Horn, 18 GHz	ETS	3117	00168717	05-31-19
Antenna, Horn, 18 GHz	ETS	3117	00205959	11-29-18
Antenna, Horn, 40 GHz	ETS	3116C	00166155	12-04-19
Antenna, Horn, 40 GHz	ETS	3116C	00168645	12-04-19
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	11-13-19
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-09-18
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-07-18
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-10-18
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-08-18
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-08-18
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-11-18
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-08-18
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-08-18
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-08-18
Attenuator	PASTERNACK	PE7087-10	A001	08-08-18
Attenuator	PASTERNACK	PE7087-10	A008	08-08-18
Attenuator	PASTERNACK	PE7087-10	2	08-10-18
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-08-18
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-08-18
EMI Test Receive, 44 GHz	R&S	ESW44	101590	08-09-18
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-07-18
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	08-08-18
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	08-08-18
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	020	08-11-18
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	08-08-18
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	08-08-18
High Pass Filter 3GHz	Micro-Tronics	HPM17543	020	08-11-18
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	08-08-18
High Pass Filter 6GHz	Micro-Tronics	HPS17542	016	08-08-18
High Pass Filter 6GHz	Micro-Tronics	HPS17542	021	08-11-18
LISN	R&S	ENV-216	101837	08-09-18
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

7. REFERENCE MEASUREMENT RESULTS

7.1. ON TIME AND DUTY CYCLE RESULTS

LIMITS

None: for reporting purposes only.

Mode	ON Time B [msec]	Period [msec]	Duty Cycle x [linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
2400MHz Bands						
BLE (1M)	0.390	0.625	0.624	62.4%	2.05	2.564
BLE (2M)	0.205	0.625	0.328	32.8%	4.85	4.885

[1Mbps]

[2Mbps]

7.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

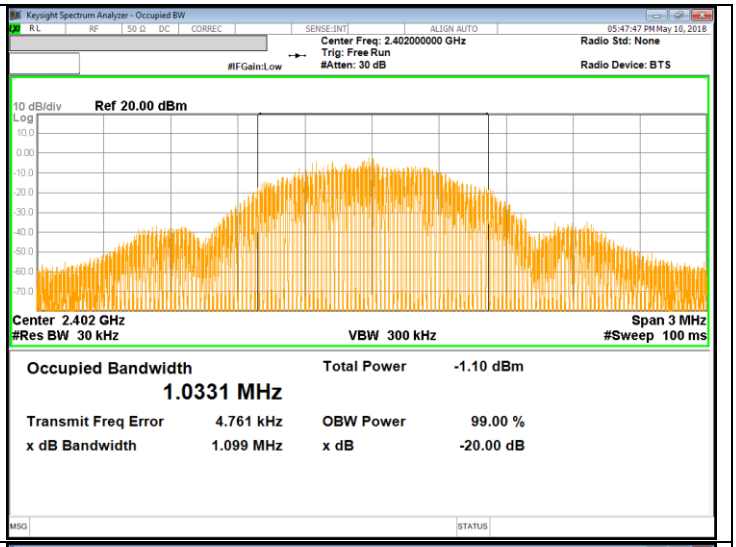
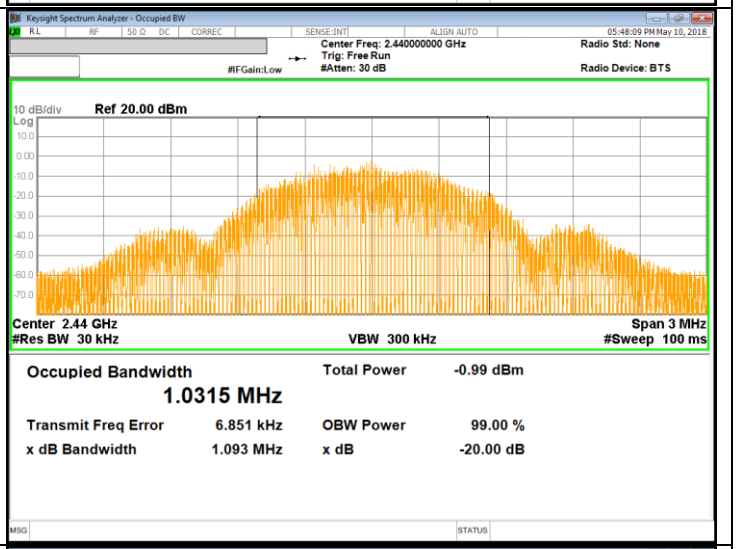
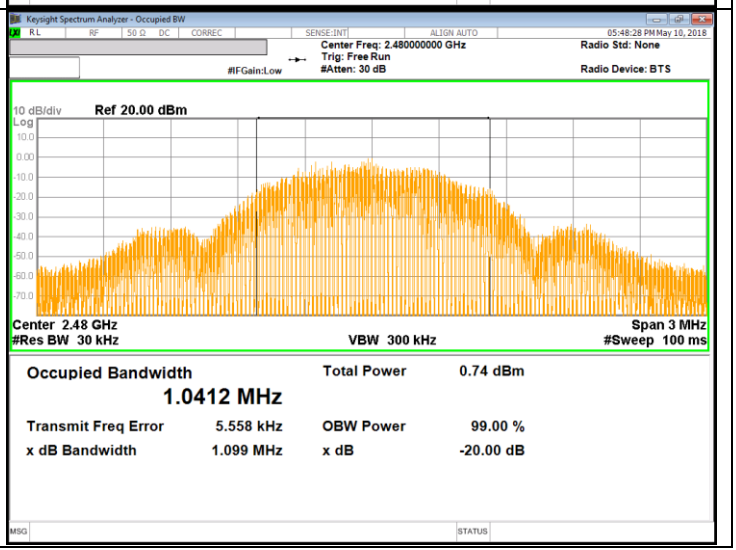
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to >= 3 times the RBW.
The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

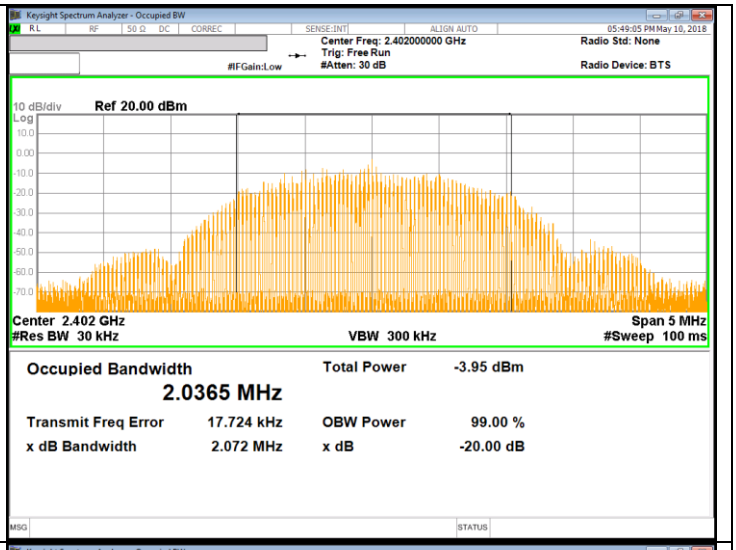
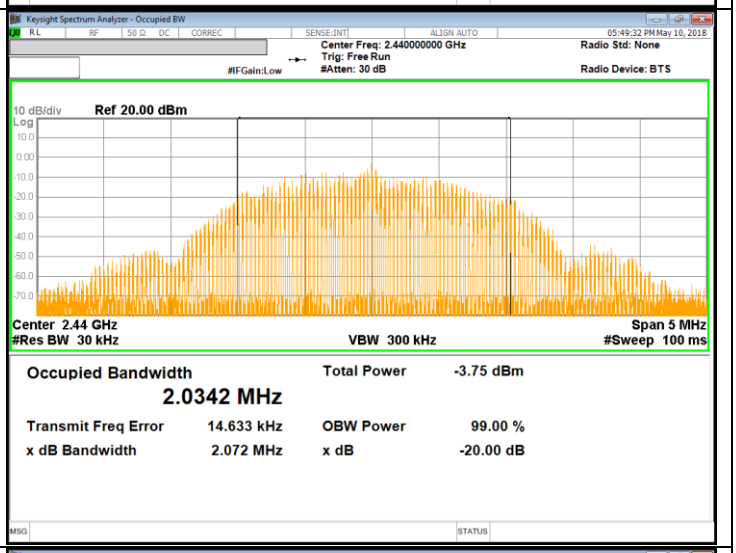
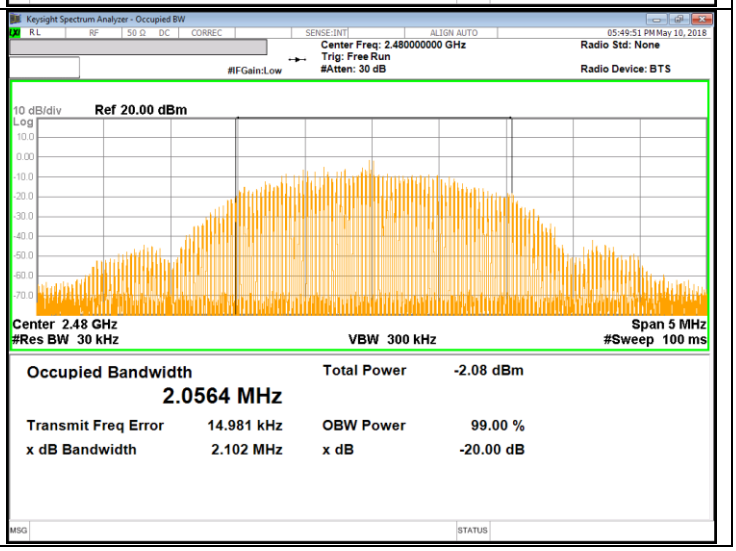
Data Rate [Mbps]	Channel	Frequency [MHz]	99% Bandwidth [MHz]
1	Low	2402	1.033
	Mid	2440	1.032
	High	2480	1.041
	Worst		**1.041**
2	Low	2402	2.037
	Mid	2440	2.034
	High	2480	2.056
	Worst		**2.056**

99% BANDWIDTH PLOTS

1 Mbps

Low CH	
Middle CH	
High CH	

2 Mbps

Low CH	
Middle CH	
High CH	

8. MEASUREMENT METHODS

6 dB BW : KDB 558074 D01 v04, Section 8.1.

OUTPUT POWER : KDB 558074 D01 v04, Section 9.1.1.

POWER SPECTRAL DENSITY : KDB 558074 D01 v04, Section 10.2.

Out-of-band EMISSIONS (Conducted) : KDB 558074 D01 v04, Section 11.1, 11.2.

Out-of-band EMISSIONS IN NON-RESTRICTED BANDS: KDB 558074 D01 v04, Section 11.0.

Out-of-band EMISSIONS IN RESTRICTED BANDS : KDB 558074 D01 v04, Section 12.1.

AC Power Line Conducted Emission : ANSI C63.10-2013, Section 6.2.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

9. SUMMARY TABLE

FCC Part Section	IC Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	RSS-247 5.2(a)	Occupied Band width (6dB)	>500KHz	Conducted	Pass
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass
15.247 (b)(3)	RSS-247 5.4(d)	TX conducted output power	<30dBm		Pass
15.247 (e)	RSS-247 5.2(b)	PSD	<8dBm		Pass
15.207 (a)	RSS-GEN Clause 7 & 8.9	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass
15.205, 15.209	RSS-GEN Clause 8.8	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass

10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)
IC RSS-247 §5.2 (a)

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

TEST PROCEDURE

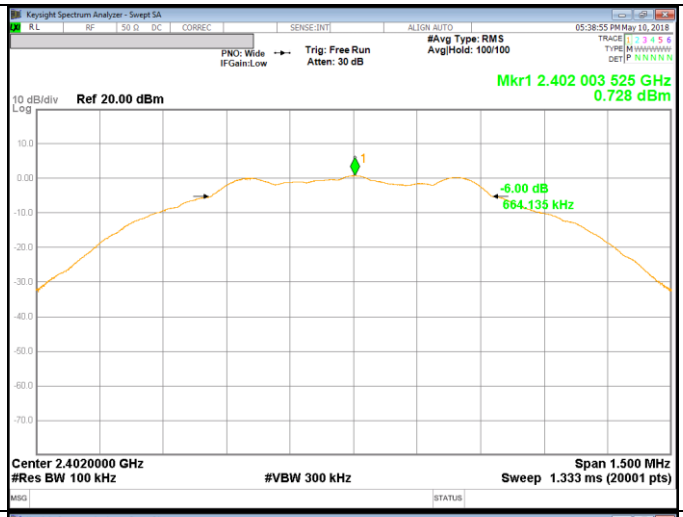
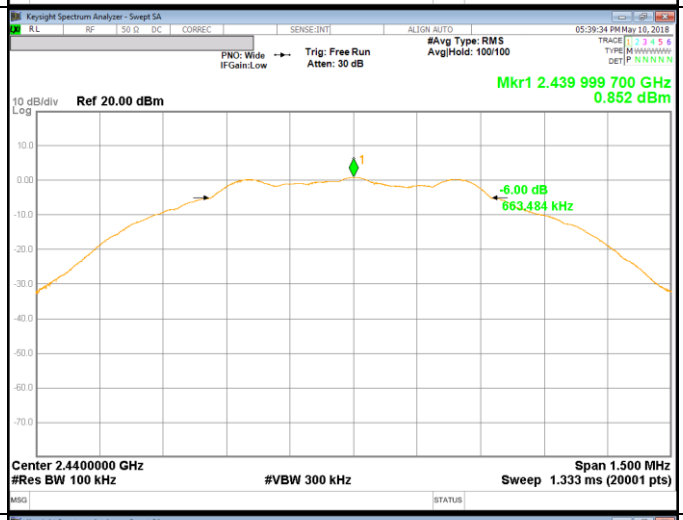
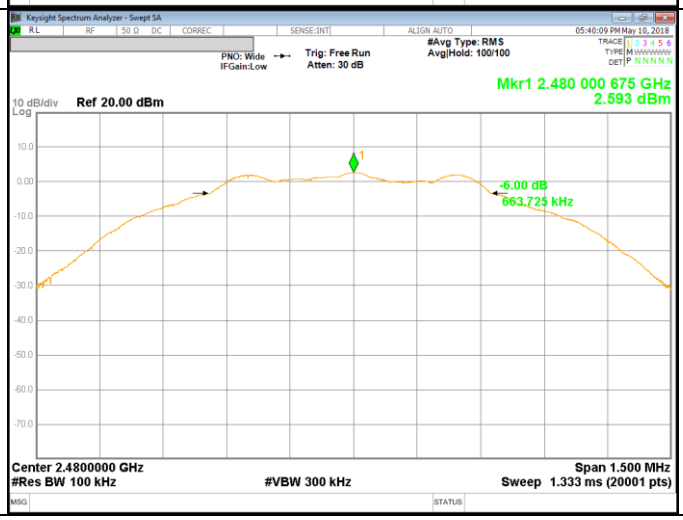
Reference to KDB 558074 D01 DTS Meas Guidance v04: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

RESULTS

Data Rate [Mbps]	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
1	Low	2402	664.14	500.0
	Mid	2440	663.48	500.0
	High	2480	663.73	500.0
	Worst		**663.48**	500.0
2	Low	2402	1139.75	500.0
	Mid	2440	1139.50	500.0
	High	2480	1137.75	500.0
	Worst		**1137.75**	500.0

6 dB BANDWIDTH PLOTS

1 Mbps

Low CH	
Middle CH	
High CH	

2 Mbps

Low CH	
Middle CH	
High CH	

10.2. OUTPUT POWER

LIMITS

FCC §15.247 (b)
IC RSS-247 §5.4 (d)

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

TEST PROCEDURE

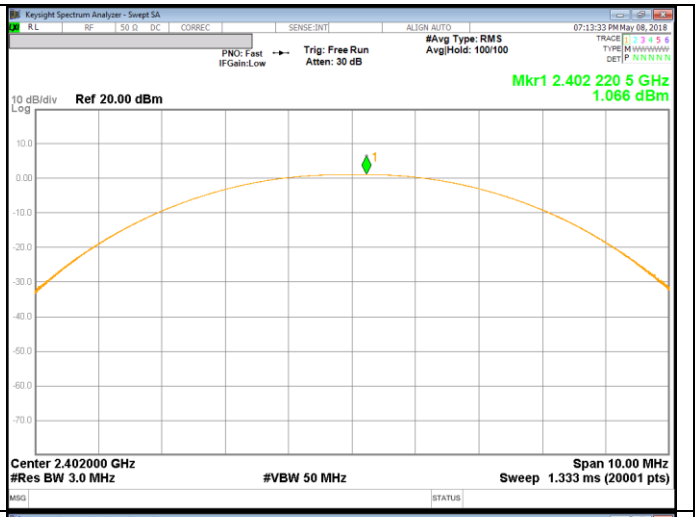
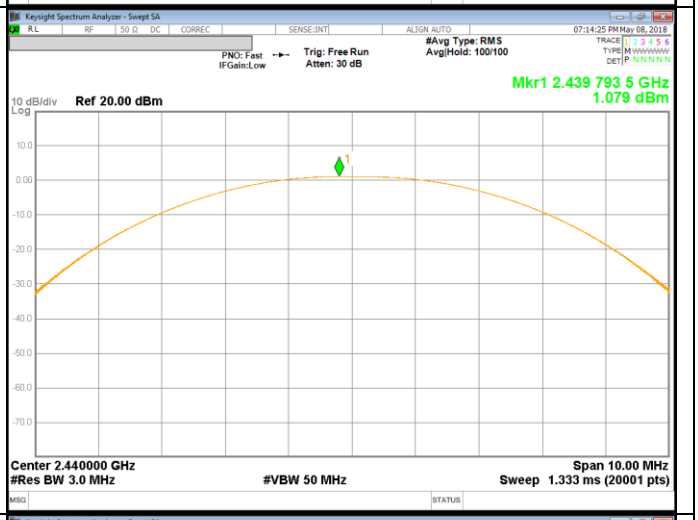
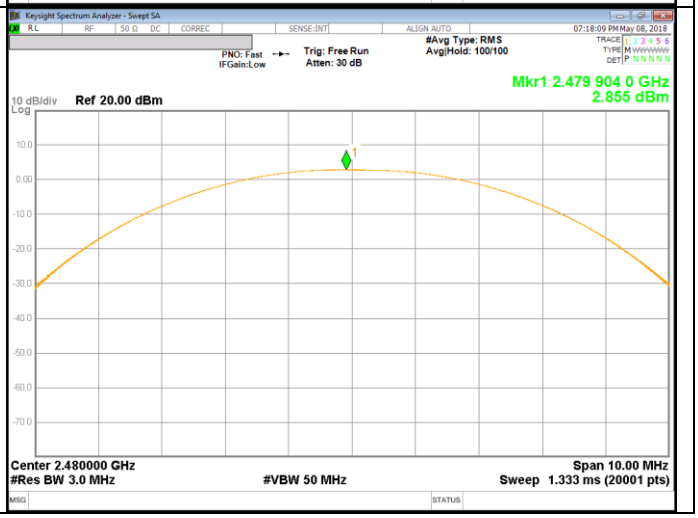
Peak power is measured using KDB558074 D01 DTS Meas Guidance v04 under section 9.1.1 utilizing spectrum analyzer.

RESULTS

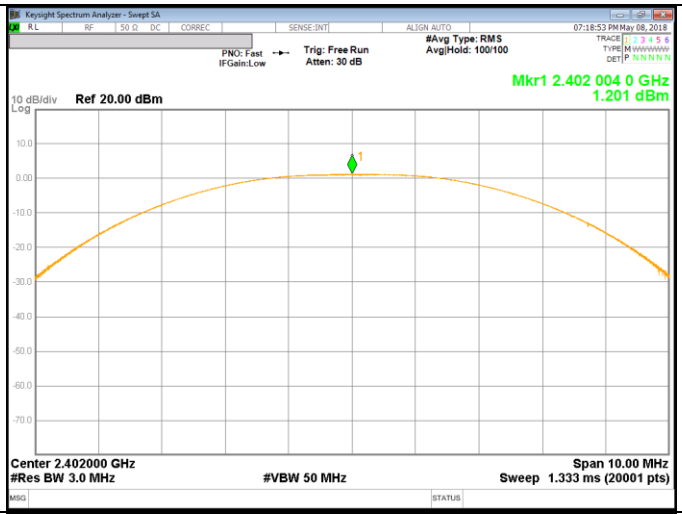
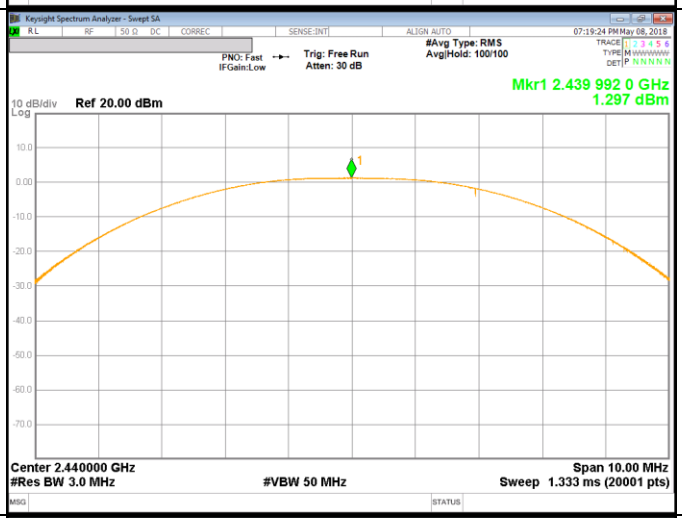
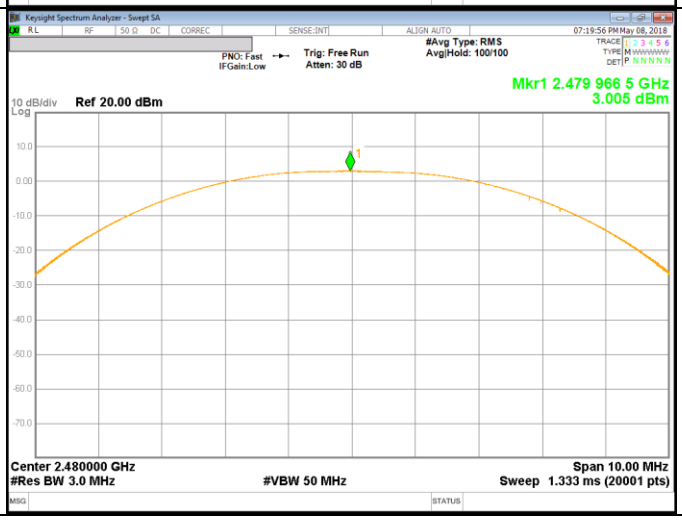
Data Rate [Mbps]	Channel	Frequency [MHz]	Peak Power Reading [dBm]	Limit [dBm]	Margin [dB]
1	Low	2402	1.066	30.000	-28.934
	Mid	2440	1.079	30.000	-28.921
	High	2480	2.855	30.000	-27.145
	Worst		**2.855**	30.000	**-27.145**
2	Low	2402	1.201	30.000	-28.799
	Mid	2440	1.297	30.000	-28.703
	High	2480	3.005	30.000	-26.995
	Worst		**3.005**	30.000	**-26.995**

OUTPUT POWER PLOTS

1 Mbps

Low CH	
Middle CH	
High CH	

2 Mbps

Low CH	
Middle CH	
High CH	

10.3. 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 was entered as an offset in the power meter to allow for direct reading of power.

Data Rate [Mbps]	Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
1	Low	2402	0.816	1.207
	Middle	2440	0.813	1.206
	High	2480	2.585	1.813
2	Low	2402	0.582	1.143
	Middle	2440	0.654	1.162
	High	2480	2.386	1.732

10.4. PSD

LIMITS

FCC §15.247
IC RSS-247 §5.2 (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

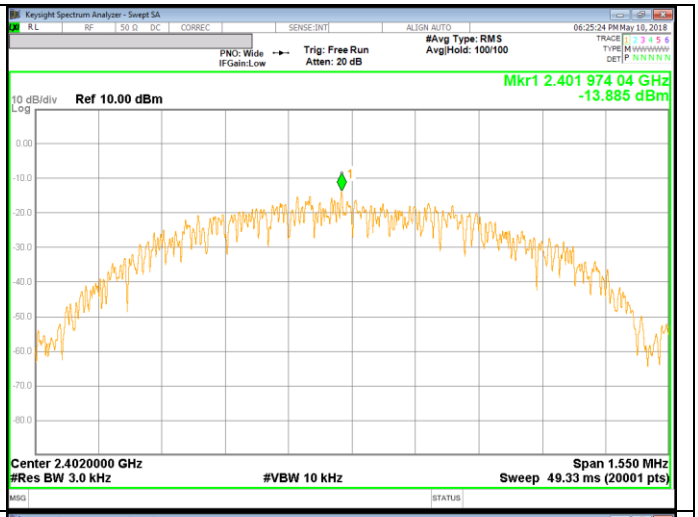
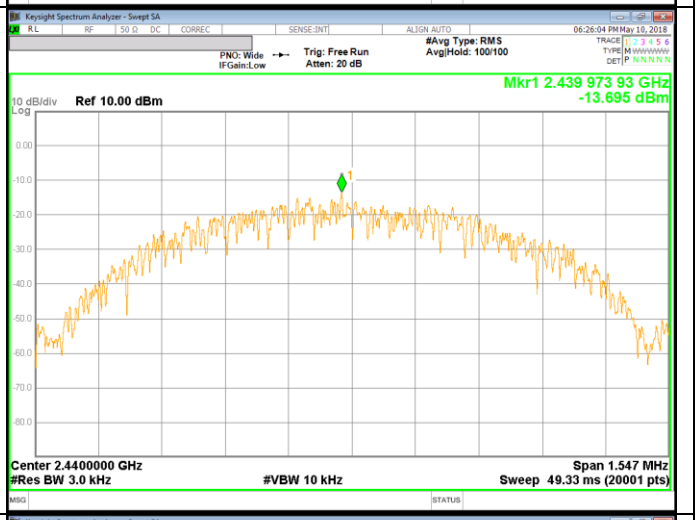
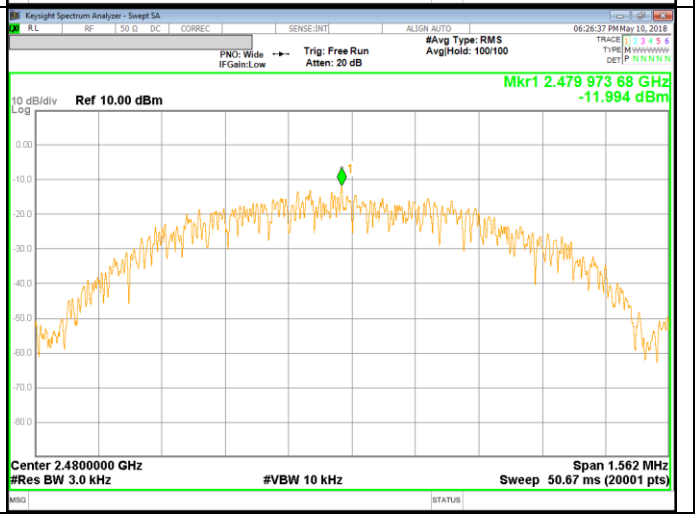
Power Spectral Density was performed utilizing the "§10.2 Method PKPSD (Peak PSD)" under KDB558074 D01 DTS Meas Guidance v04

RESULTS

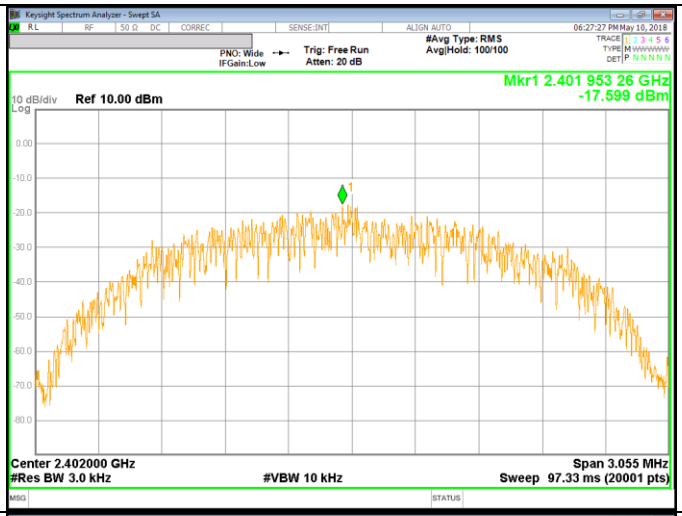
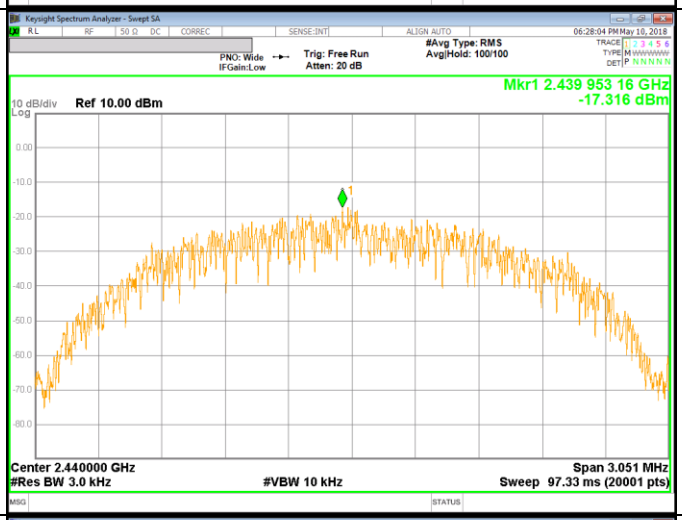
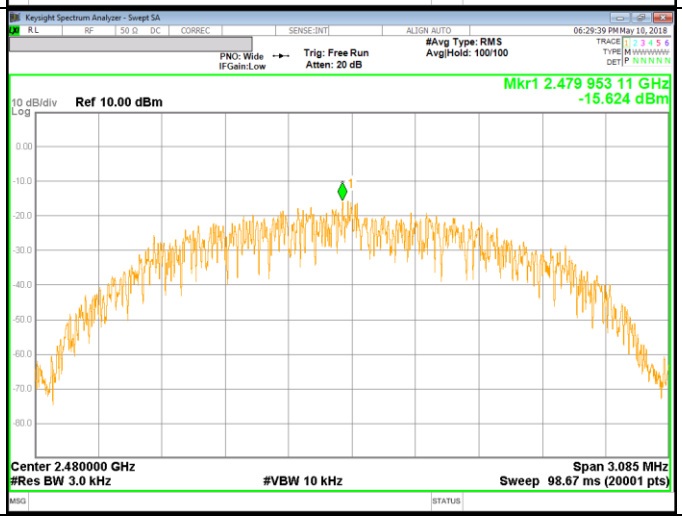
Data Rate	Channel	Frequency	PSD	Limit	Margin
[Mbps]		[MHz]	[dBm/3kHz]	[dBm/3kHz]	[dB]
1	Low	2402	-13.89	8.00	-21.89
	Mid	2440	-13.70	8.00	-21.70
	High	2480	-11.99	8.00	-19.99
2	Low	2402	-17.60	8.00	-25.60
	Mid	2440	-17.32	8.00	-25.32
	High	2480	-15.62	8.00	-23.62

POWER SPECTRAL DENSITY PLOTS

1 Mbps

Low CH	
Middle CH	
High CH	

2 Mbps

Low CH	
Middle CH	
High CH	

10.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)
IC RSS-247 §5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

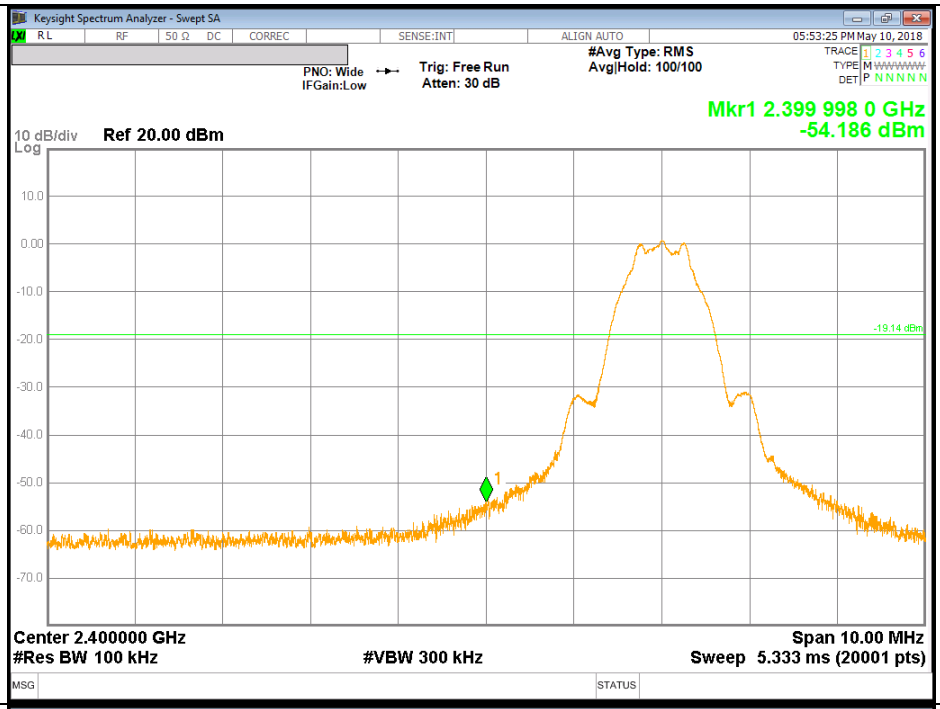
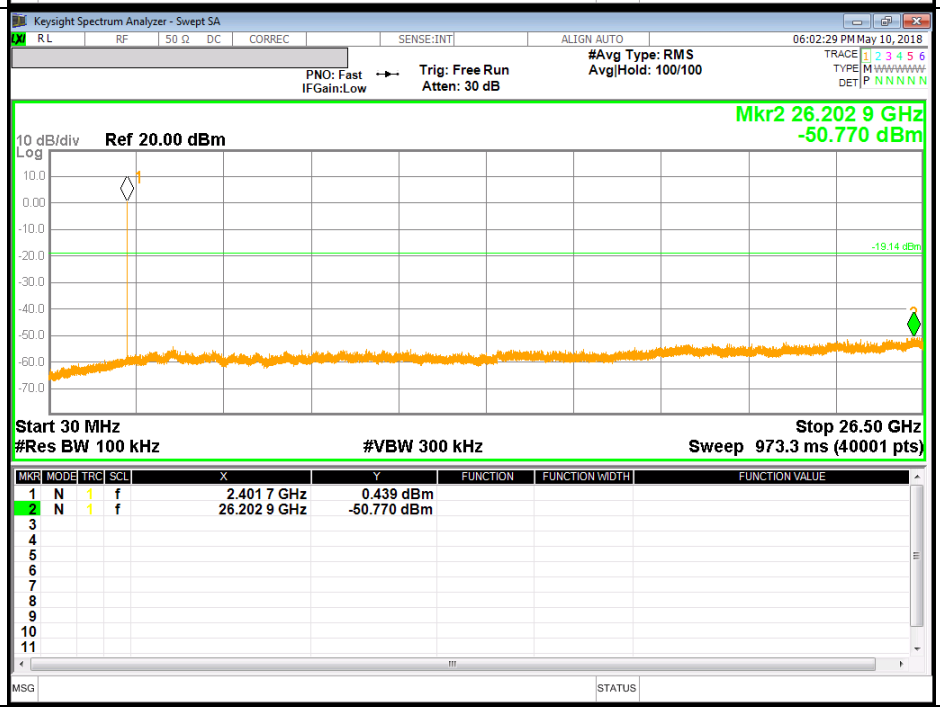
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

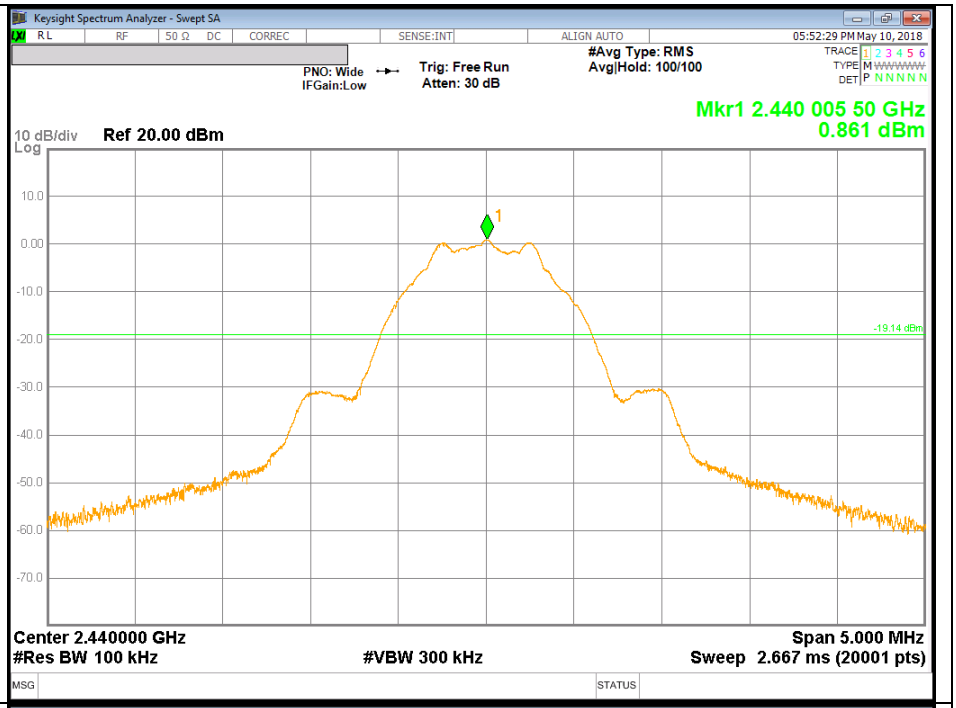
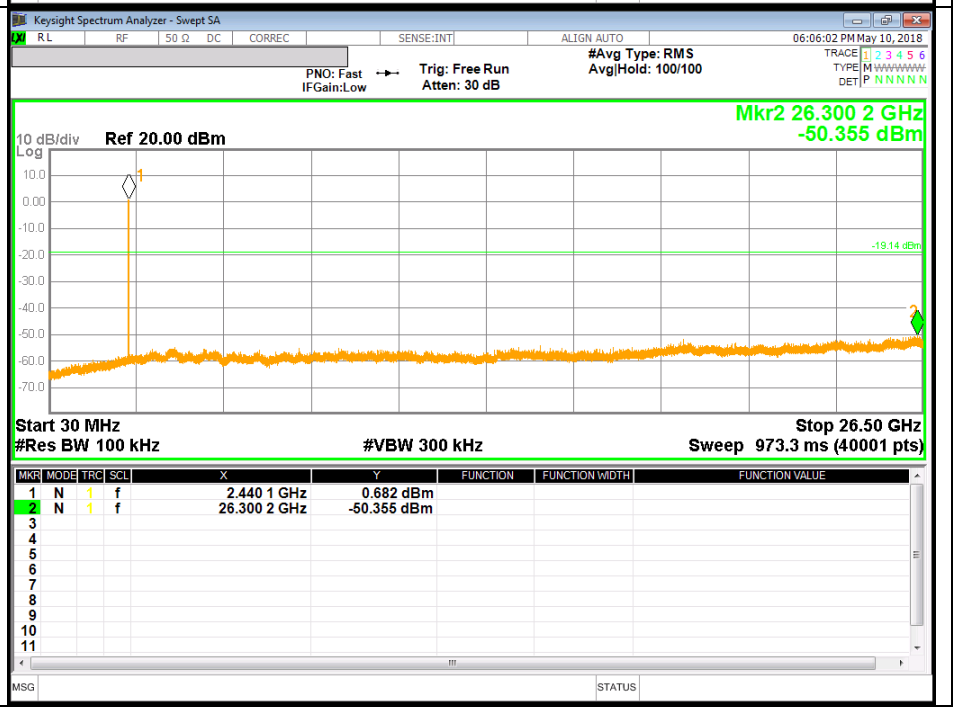
RESULTS

BANDEDGE & SPURIOUS EMISSIONS, LOW CHANNEL

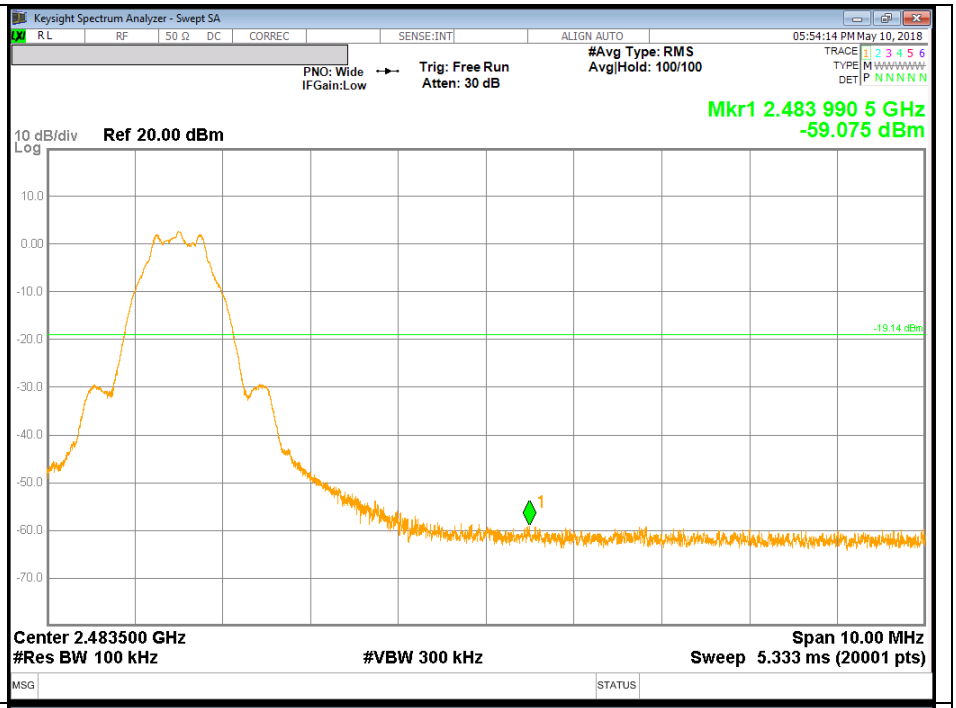
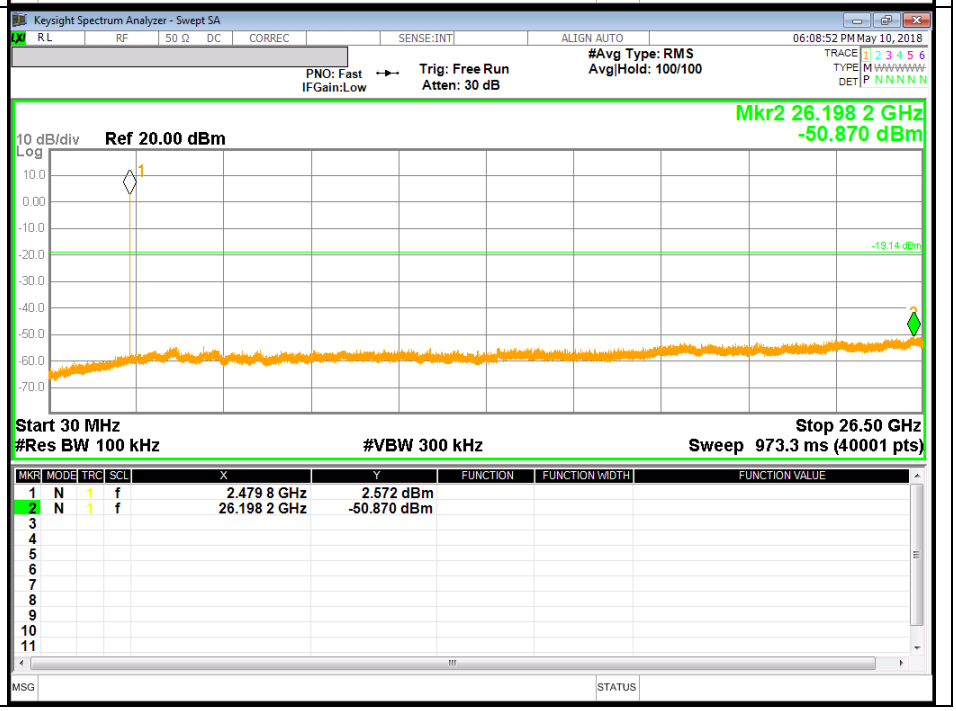
1 Mbps

Low CH BandEdge	
Low CH Spurious	

SPURIOUS EMISSIONS, MID CHANNEL

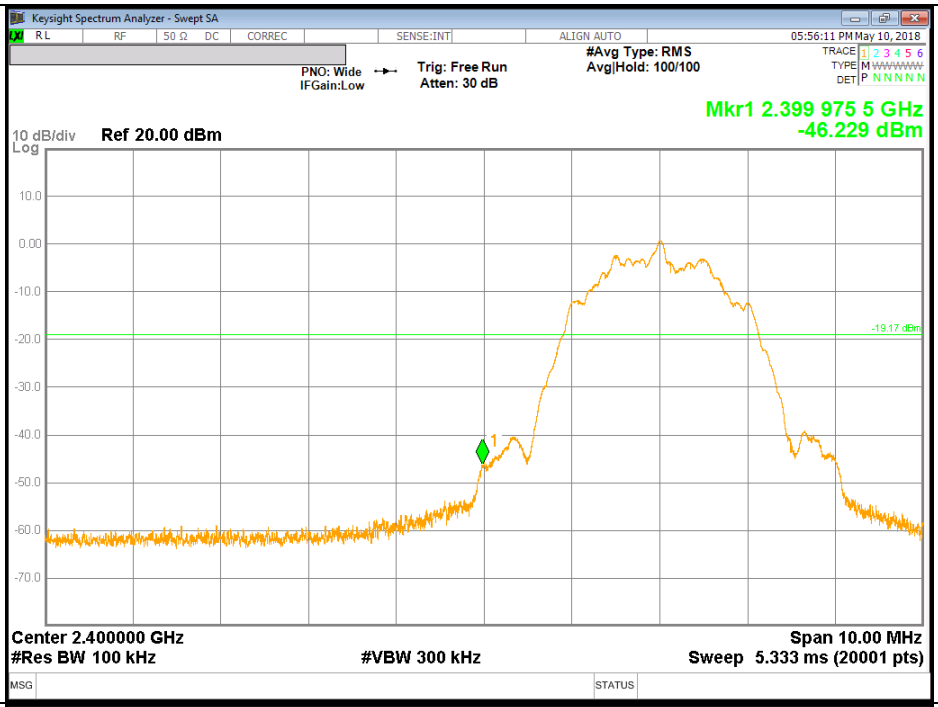
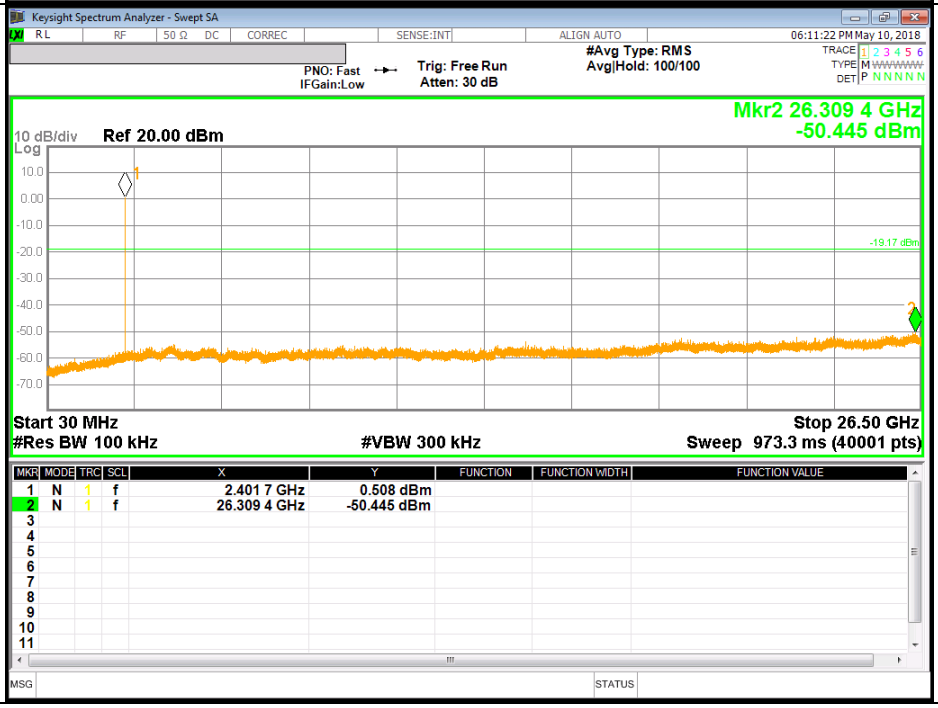
Middle CH BandEdge	
Middle CH Spurious	

SPURIOUS EMISSIONS, HIGH CHANNEL

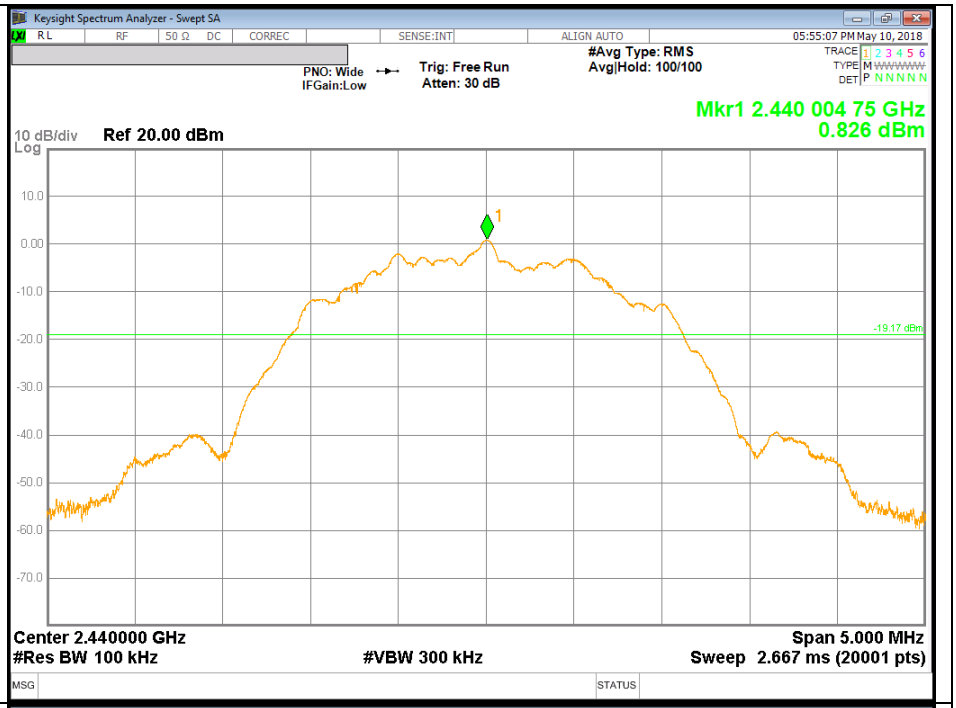
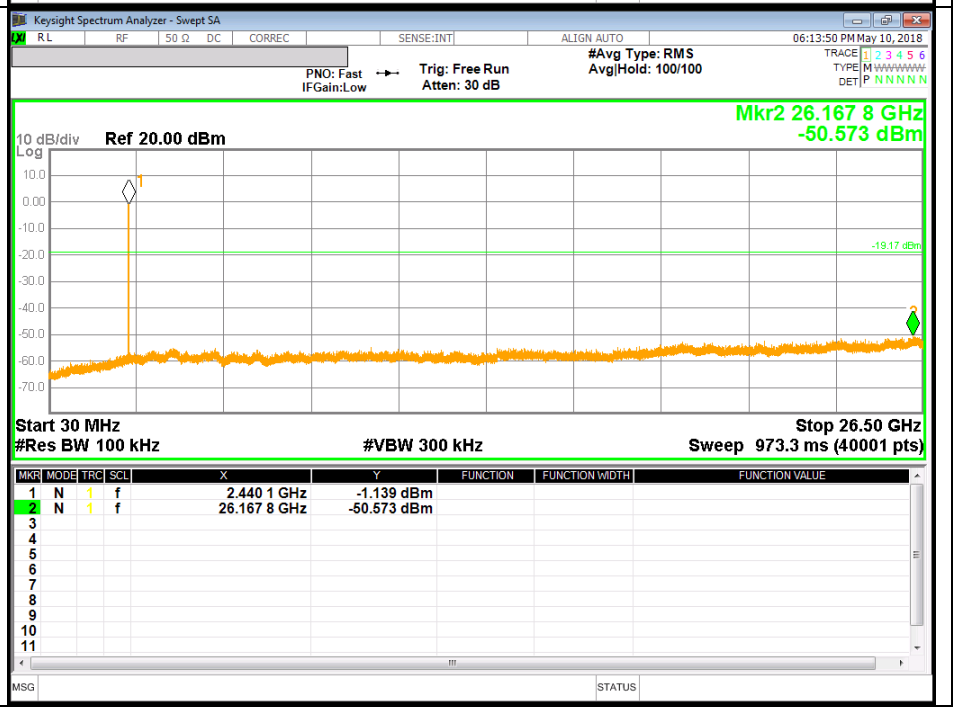
High CH BandEdge	
High CH Spurious	

BANDEDGE & SPURIOUS EMISSIONS, LOW CHANNEL

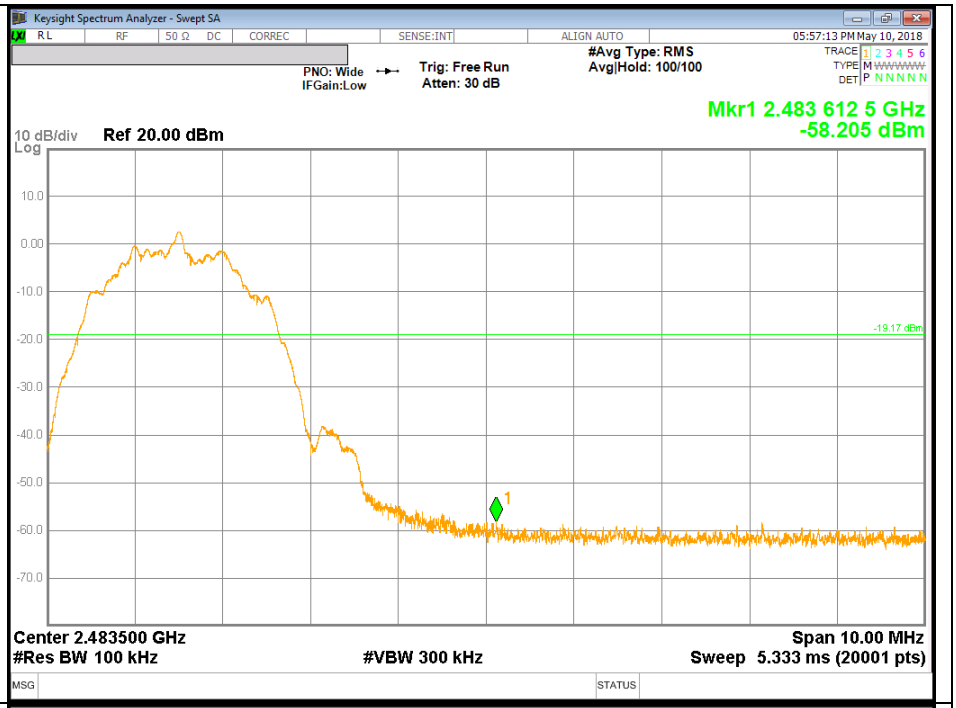
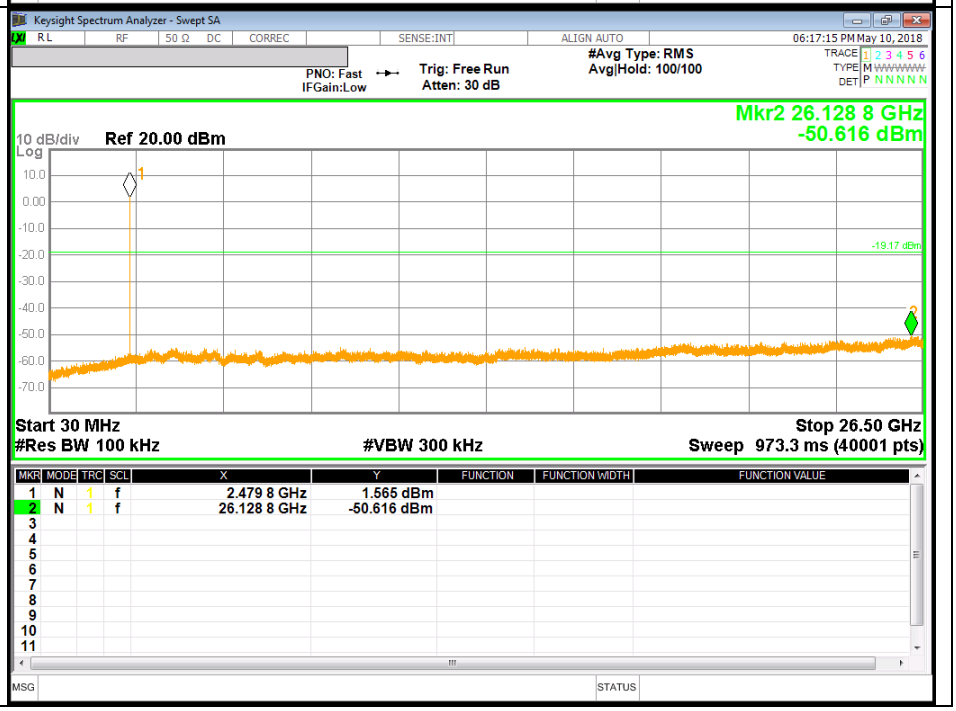
2 Mbps

Low CH BandEdge	
Low CH Spurious	

SPURIOUS EMISSIONS, MID CHANNEL

Middle CH BandEdge	
Middle CH Spurious	

SPURIOUS EMISSIONS, HIGH CHANNEL

High CH BandEdge	
High CH Spurious	

11. RADIATED TEST RESULTS

11.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209
IC RSS-GEN Clause 8.9 (Transmitter)
IC RSS-GEN Clause 7 (Receiver)

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (μV/m)	Measurement Distance (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**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. 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 3 MHz for peak measurements and add duty cycle factor for average measurements. (Restriced bandedge, Final detection of spurious harmonic emissions)Duty cycle factor = 10 log (1/x). For this sample: DCF = 10log(1/0.623)=2.06dB
(Spectrum Analyzer round it up to 2.06dB)

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

The spectrum from 1 GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

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.

Note : Emission was pre-scanned from 9KHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

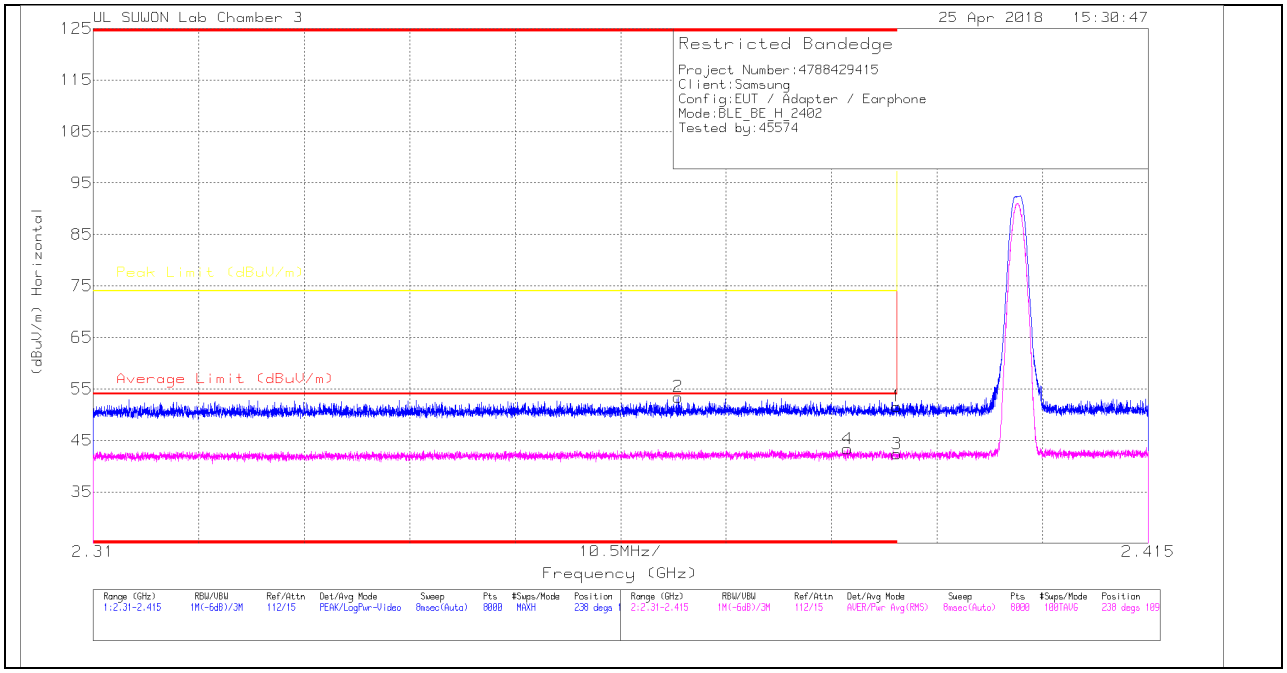
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

11.2. TRANSMITTER ABOVE 1 GHz

1 Mbps

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



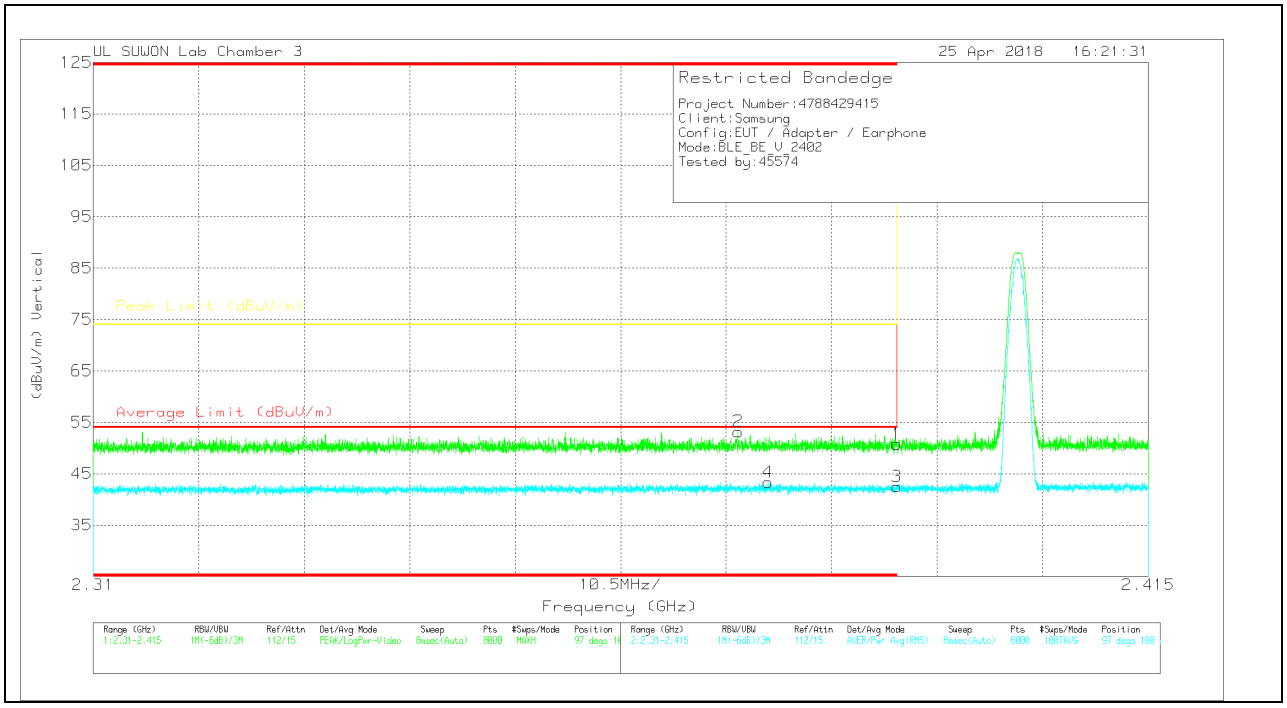
HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	10dB_ATT[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	43.11	Pk	31.8	-23.3	0	51.61	-	-	74	-22.39	238	109	H
2	* 2.368	44.94	Pk	31.7	-23.2	0	53.44	-	-	74	-20.56	238	109	H
3	* 2.39	32.42	RMS	31.8	-23.3	1.45	42.37	54	-11.63	-	-	238	109	H
4	* 2.385	33.29	RMS	31.8	-23.2	1.45	43.34	54	-10.66	-	-	238	109	H

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

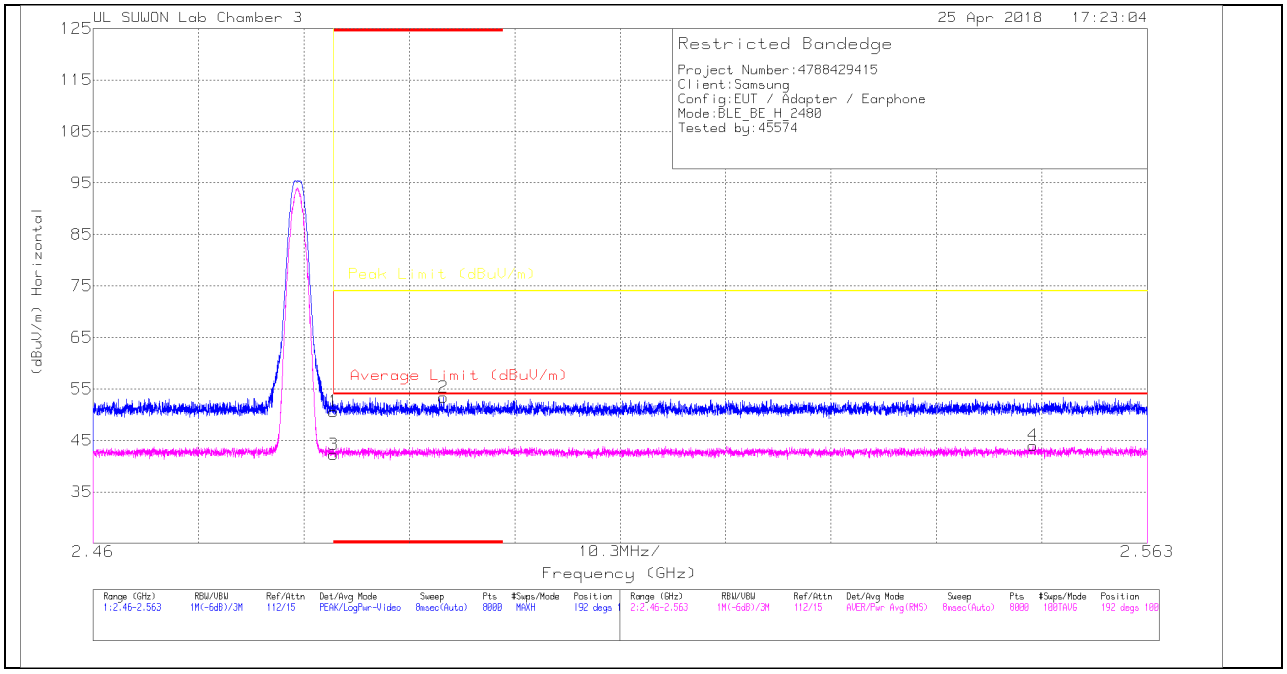
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	10dB_ATT[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.27	Pk	31.8	-23.3	0	50.77	-	-	74	-23.23	97	100	V
2	* 2.374	44.69	Pk	31.7	-23.2	0	53.19	-	-	74	-20.81	97	100	V
3	* 2.39	32.53	RMS	31.8	-23.3	1.45	42.48	54	-11.52	-	-	97	100	V
4	* 2.377	33.27	RMS	31.8	-23.2	1.45	43.32	54	-10.68	-	-	97	100	V

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

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



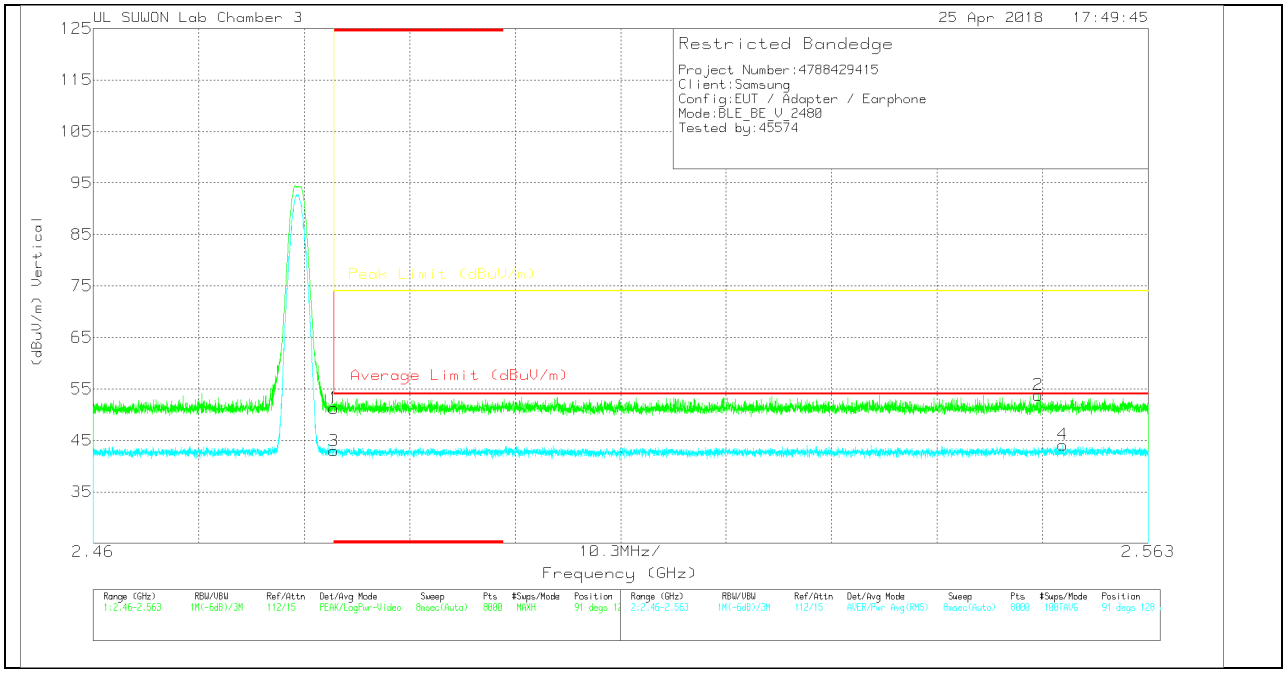
HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	10dB_ATT[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	41.52	Pk	32.1	-23	0	50.62	-	-	74	-23.38	192	100	H
2	* 2.494	44.39	Pk	32.1	-23.1	0	53.39	-	-	74	-20.61	192	100	H
3	* 2.484	31.71	RMS	32.1	-23	1.45	42.26	54	-11.74	-	-	192	100	H
4	2.552	33.47	RMS	32.1	-23	1.45	44.02	54	-9.98	-	-	192	100	H

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

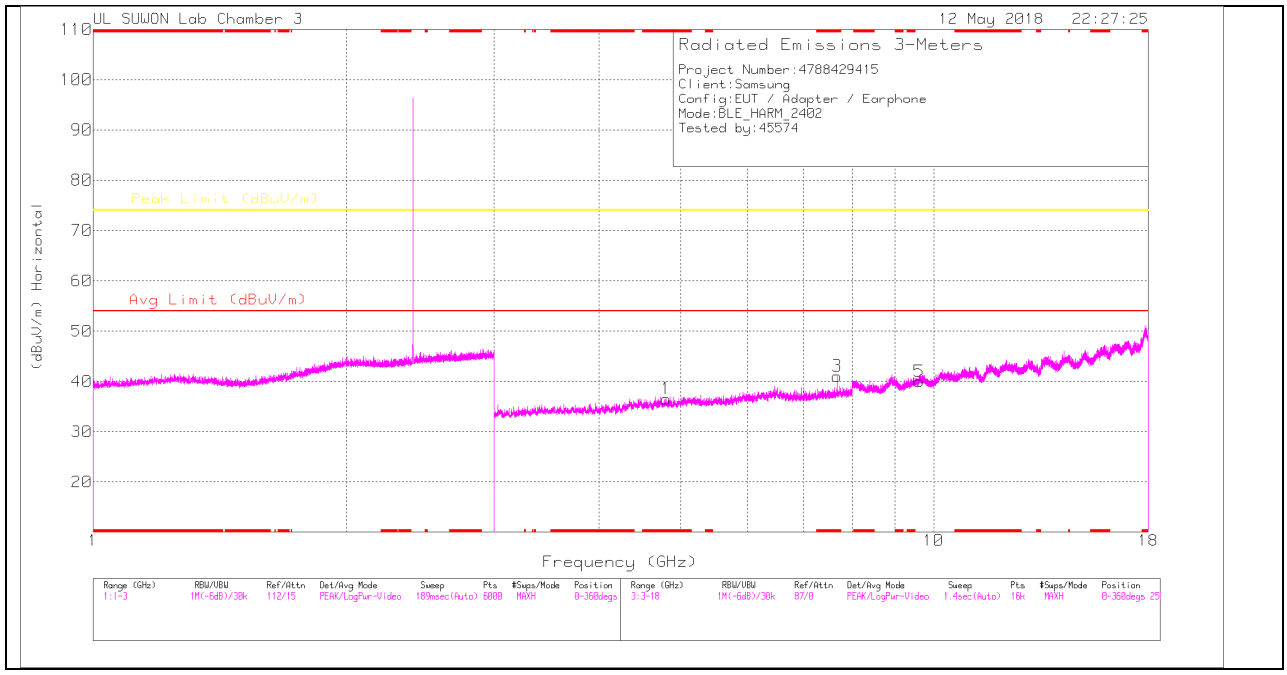
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	10dB_ATT[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	42.16	Pk	32.1	-23	0	51.26	-	-	74	-22.74	91	128	V
2	2.552	44.7	Pk	32.1	-23	0	53.8	-	-	74	-20.2	91	128	V
3	* 2.484	32.43	RMS	32.1	-23	1.45	42.98	54	-11.02	-	-	91	128	V
4	2.555	33.51	RMS	32.1	-22.9	1.45	44.16	54	-9.84	-	-	91	128	V

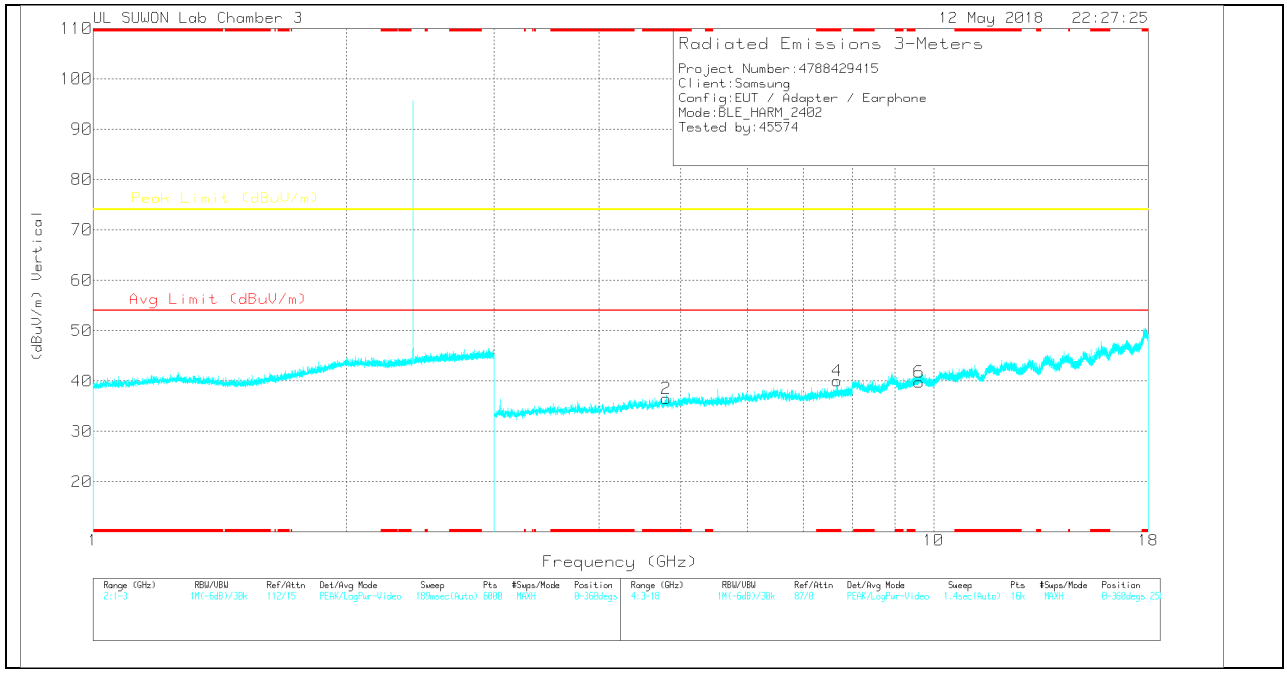
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



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	3117[00205959]	3GHz_HP[dB]	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	* 4.804	30.86	PK	33.9	-28.2	0	36.56	-	-	74	-37.44	0-360	150	H
3	* 7.679	27.76	PK	35.6	-22.3	0	41.06	-	-	74	-32.94	0-360	150	H
5	9.609	23.22	PK	36.7	-19.9	0	40.02	-	-	74	-33.98	0-360	150	H
2	* 4.804	30.82	PK	33.9	-28.2	0	36.52	-	-	74	-37.48	0-360	250	V
4	* 7.68	26.83	PK	35.6	-22.4	0	40.03	-	-	74	-33.97	0-360	149	V
6	9.609	22.99	PK	36.7	-19.9	0	39.79	-	-	74	-34.21	0-360	149	V

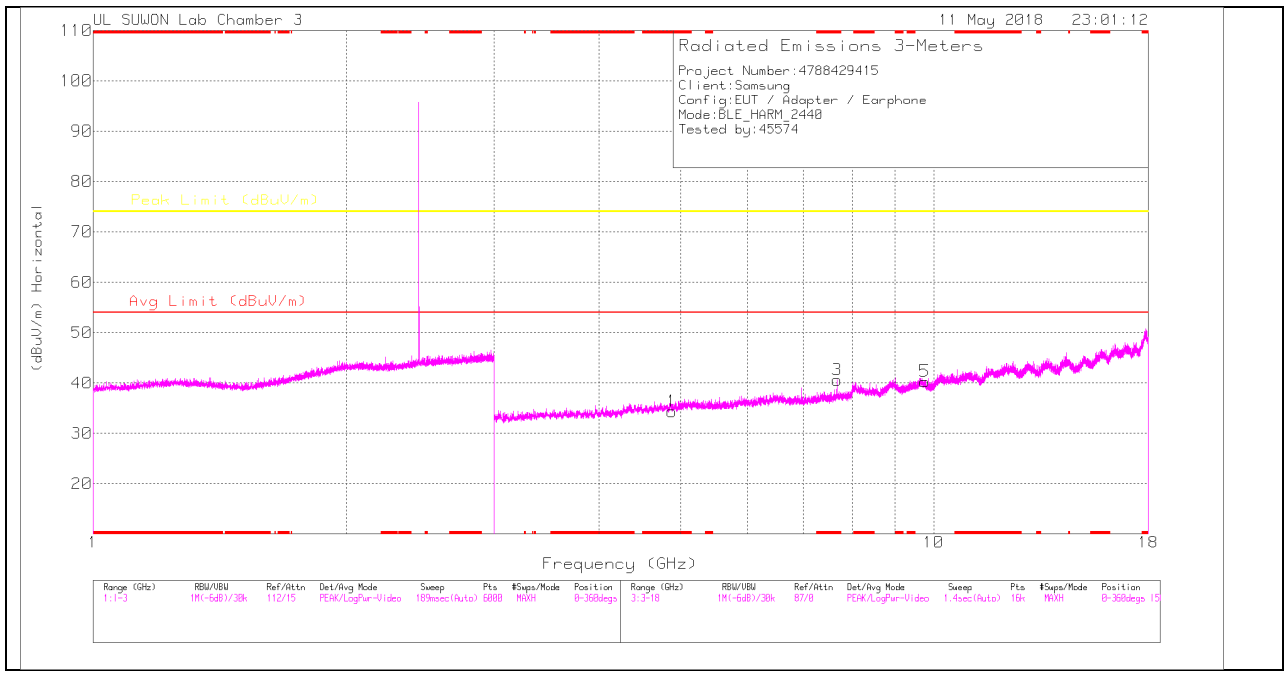
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

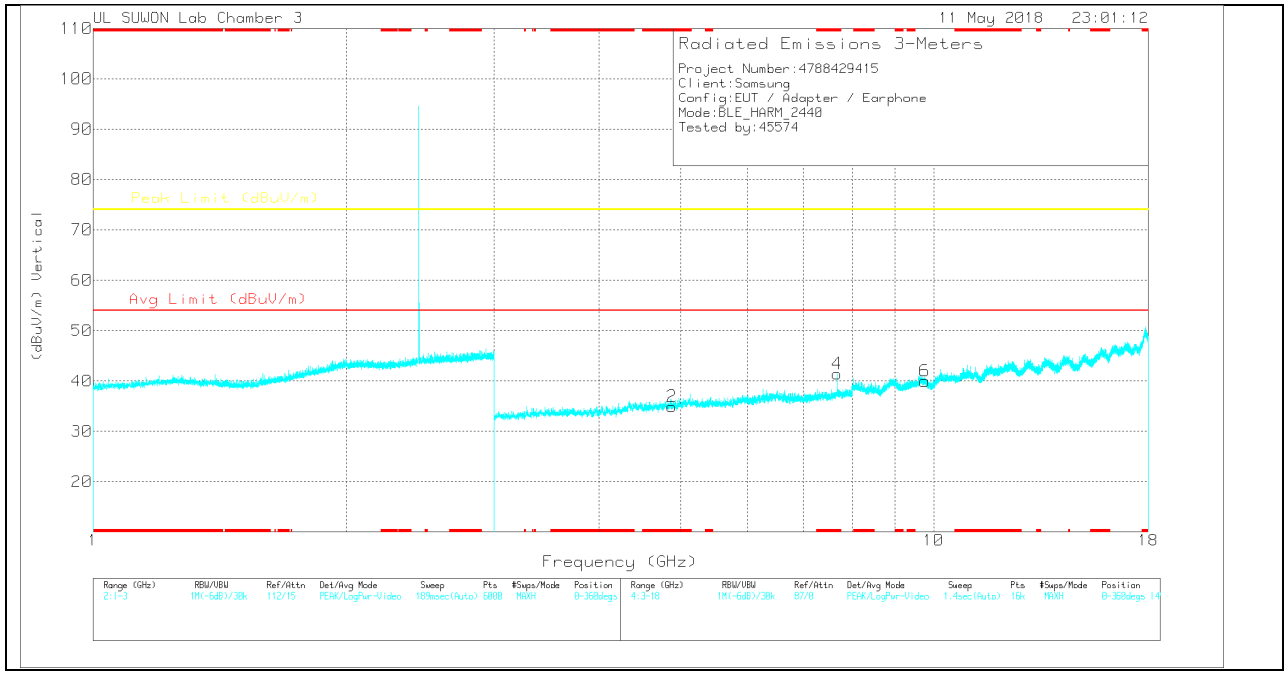
Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.68	33.74	PK2	35.6	-22.3	0	47.04	-	-	74	-26.96	205	160	H
* 7.68	26.49	MAv1	35.6	-22.3	1.45	41.24	54	-12.76	-	-	205	160	H
* 7.68	34.7	PK2	35.6	-22.3	0	48	-	-	74	-26	205	138	V
* 7.68	28.17	MAv1	35.6	-22.3	1.45	42.92	54	-11.08	-	-	205	138	V

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

MID CHANNEL HORIZONTAL



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	3117[00205959]	3GHz_HP[dB]	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	* 4.881	29.26	PK	34	-28.9	0	34.36	-	-	74	-39.64	0-360	150	H
3	* 7.679	27.31	PK	35.6	-22.3	0	40.61	-	-	74	-33.39	0-360	150	H
5	9.759	22.9	PK	36.9	-19.5	0	40.3	-	-	74	-33.7	0-360	150	H
2	* 4.881	29.82	PK	34	-28.9	0	34.92	-	-	74	-39.08	0-360	149	V
4	* 7.679	28.13	PK	35.6	-22.3	0	41.43	-	-	74	-32.57	0-360	149	V
6	9.76	22.58	PK	36.9	-19.5	0	39.98	-	-	74	-34.02	0-360	149	V

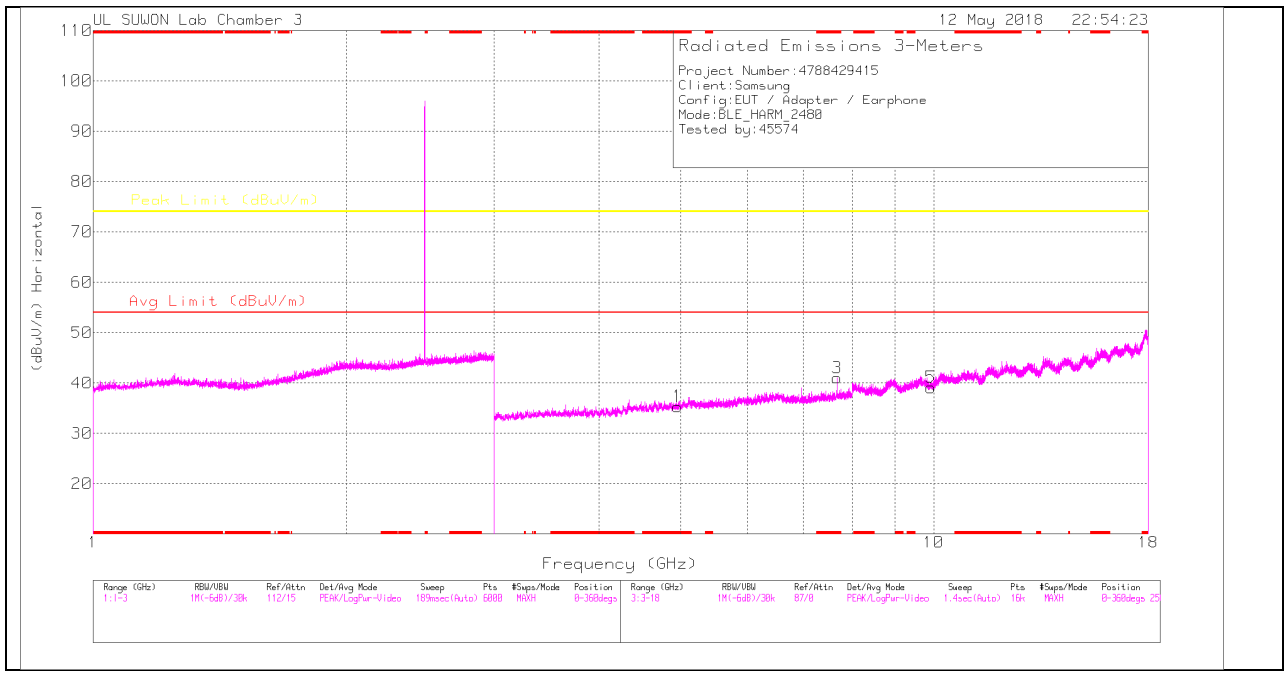
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

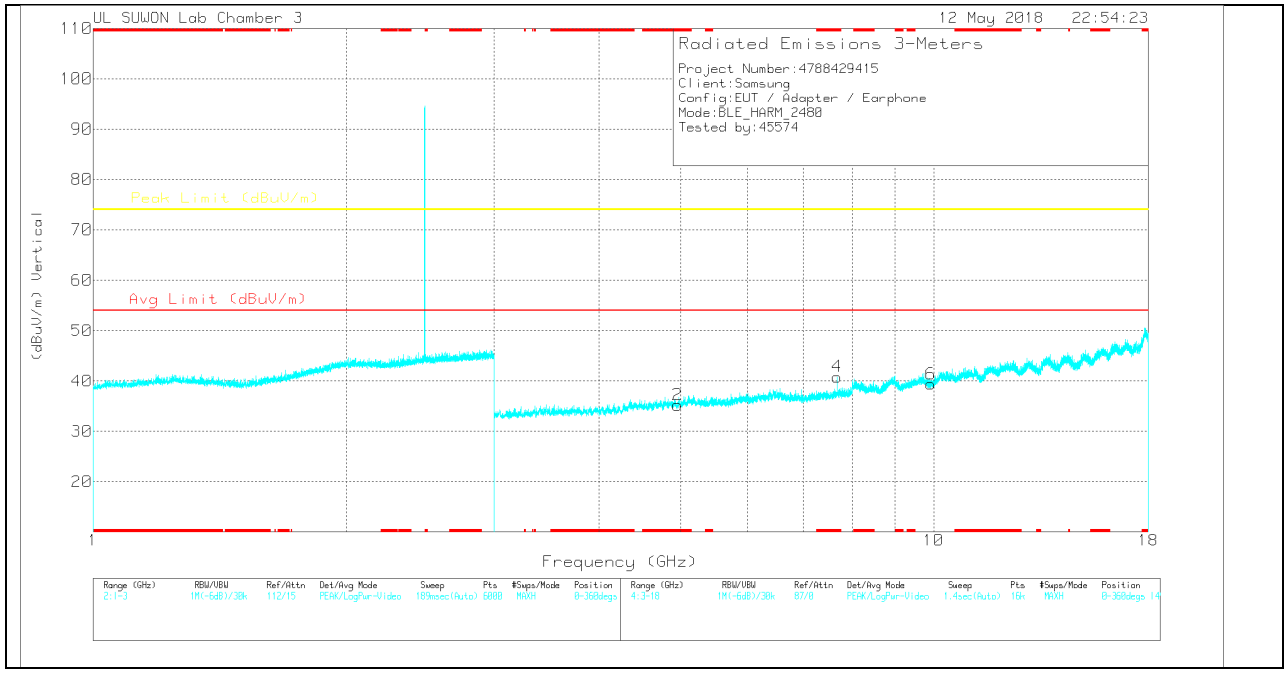
Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.68	33.46	PK2	35.6	-22.3	0	46.76	-	-	74	-27.24	205	160	H
* 7.68	26.72	MAv1	35.6	-22.3	1.45	41.47	54	-12.53	-	-	205	160	H
* 7.68	33.65	PK2	35.6	-22.3	0	46.95	-	-	74	-27.05	205	138	V
* 7.68	27.13	MAv1	35.6	-22.3	1.45	41.88	54	-12.12	-	-	205	138	V

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

HIGH CHANNEL HORIZONTAL



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	3117[00205959]	3GHz_HP[dB]	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	* 4.96	29.73	PK	34.1	-28.5	0	35.33	-	-	74	-38.67	0-360	150	H
3	* 7.679	27.73	PK	35.6	-22.3	0	41.03	-	-	74	-32.97	0-360	150	H
5	9.92	21.8	PK	37	-19.7	0	39.1	-	-	74	-34.9	0-360	150	H
2	* 4.96	29.63	PK	34.1	-28.5	0	35.23	-	-	74	-38.77	0-360	149	V
4	* 7.68	27.63	PK	35.6	-22.4	0	40.83	-	-	74	-33.17	0-360	149	V
6	9.92	22.08	PK	37	-19.7	0	39.38	-	-	74	-34.62	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

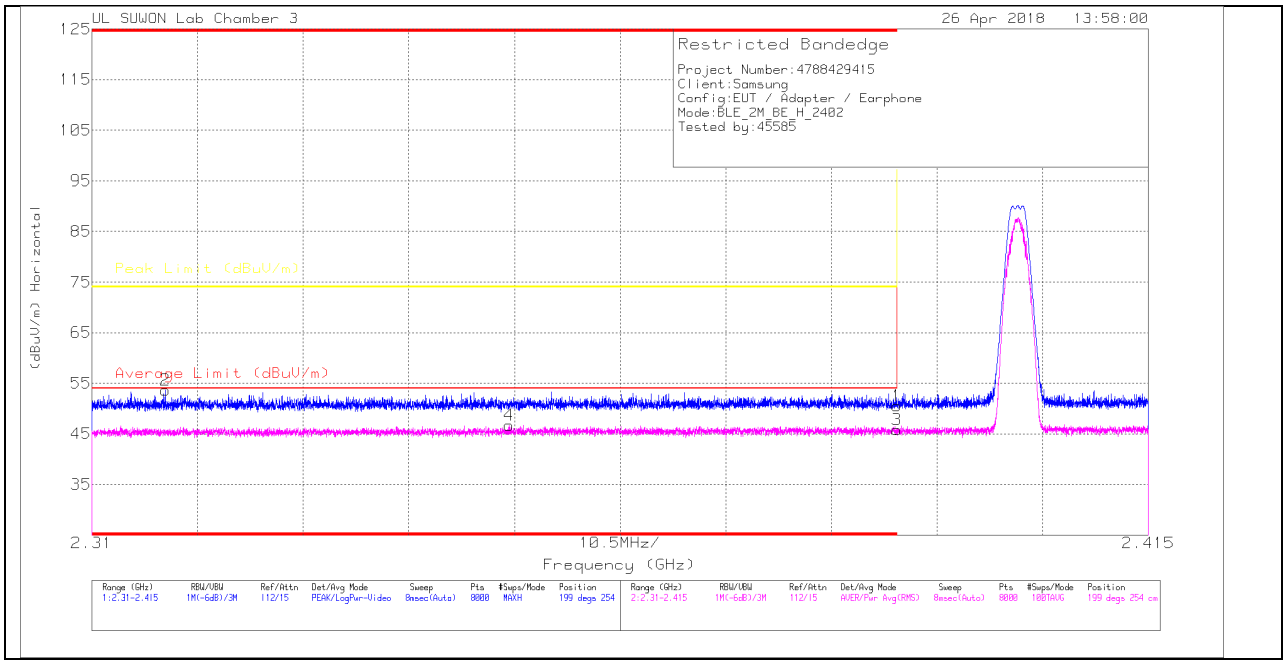
Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.68	33.19	PK2	35.6	-22.3	0	46.49	-	-	74	-27.51	205	160	H
* 7.68	26.41	MAv1	35.6	-22.3	1.45	41.16	54	-12.84	-	-	205	160	H
* 7.68	33.75	PK2	35.6	-22.3	0	47.05	-	-	74	-26.95	205	138	V
* 7.68	28.52	MAv1	35.6	-22.3	1.45	43.27	54	-10.73	-	-	205	138	V

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

2 Mbps

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



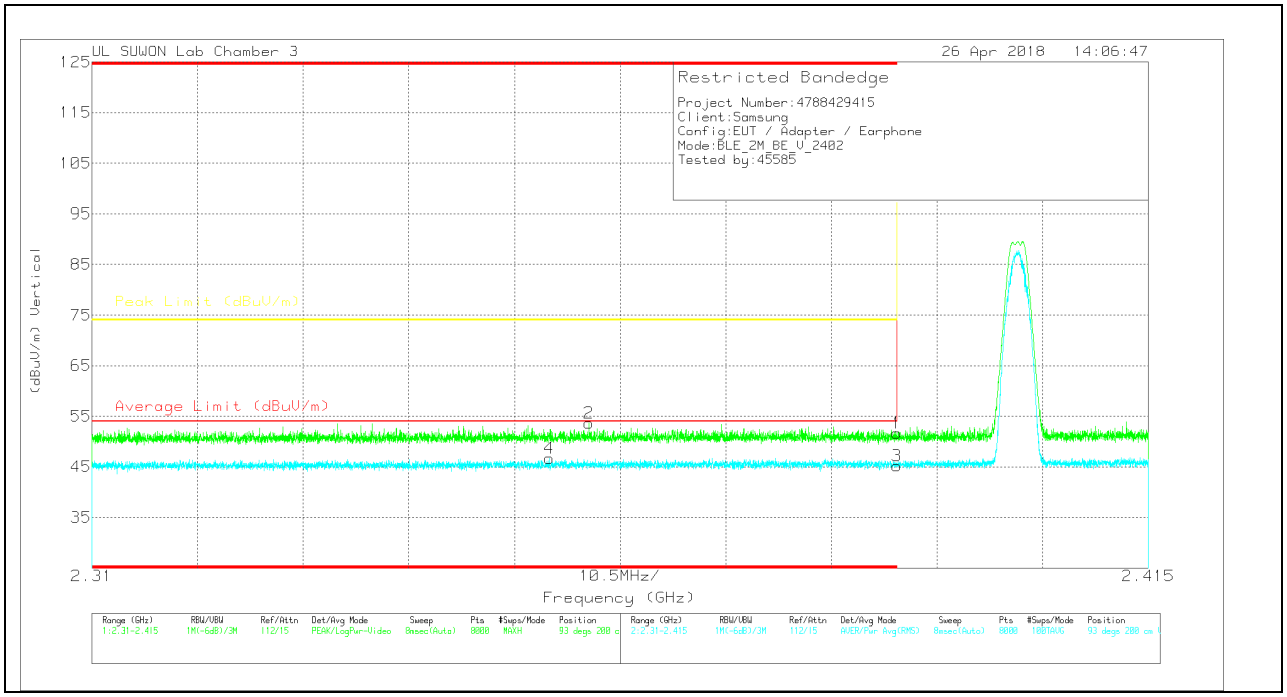
HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	10dB_ATT[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	42.05	Pk	31.8	-23.3	0	50.55	-	-	74	-23.45	199	254	H
2	* 2.317	45.31	Pk	31.6	-23.3	0	53.61	-	-	74	-20.39	199	254	H
3	* 2.39	32.49	RMS	31.8	-23.3	4.85	45.84	54	-8.16	-	-	199	254	H
4	* 2.351	33.44	RMS	31.7	-23.3	4.85	46.69	54	-7.31	-	-	199	254	H

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

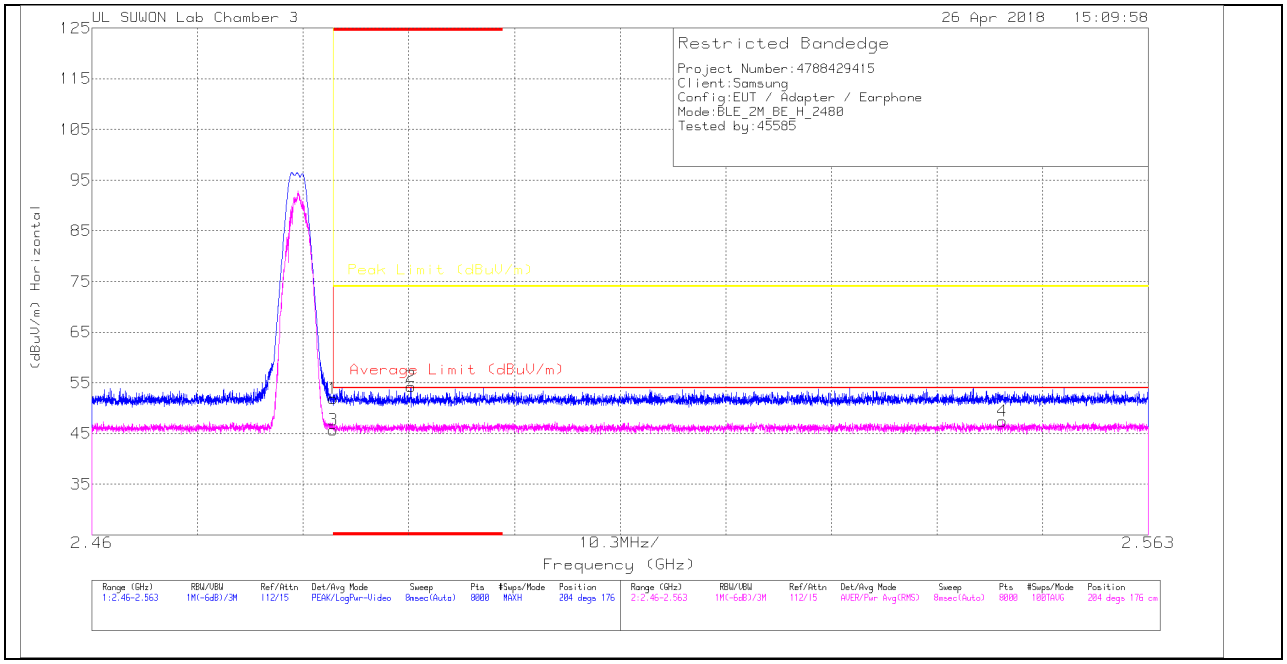
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	10dB_ATT[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	43.18	Pk	31.8	-23.3	0	51.68	-	-	74	-22.32	93	200	V
2	* 2.359	45.13	Pk	31.7	-23.2	0	53.63	-	-	74	-20.37	93	200	V
3	* 2.39	31.86	RMS	31.8	-23.3	4.85	45.21	54	-8.79	-	-	93	200	V
4	* 2.355	33.49	RMS	31.7	-23.3	4.85	46.74	54	-7.26	-	-	93	200	V

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

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



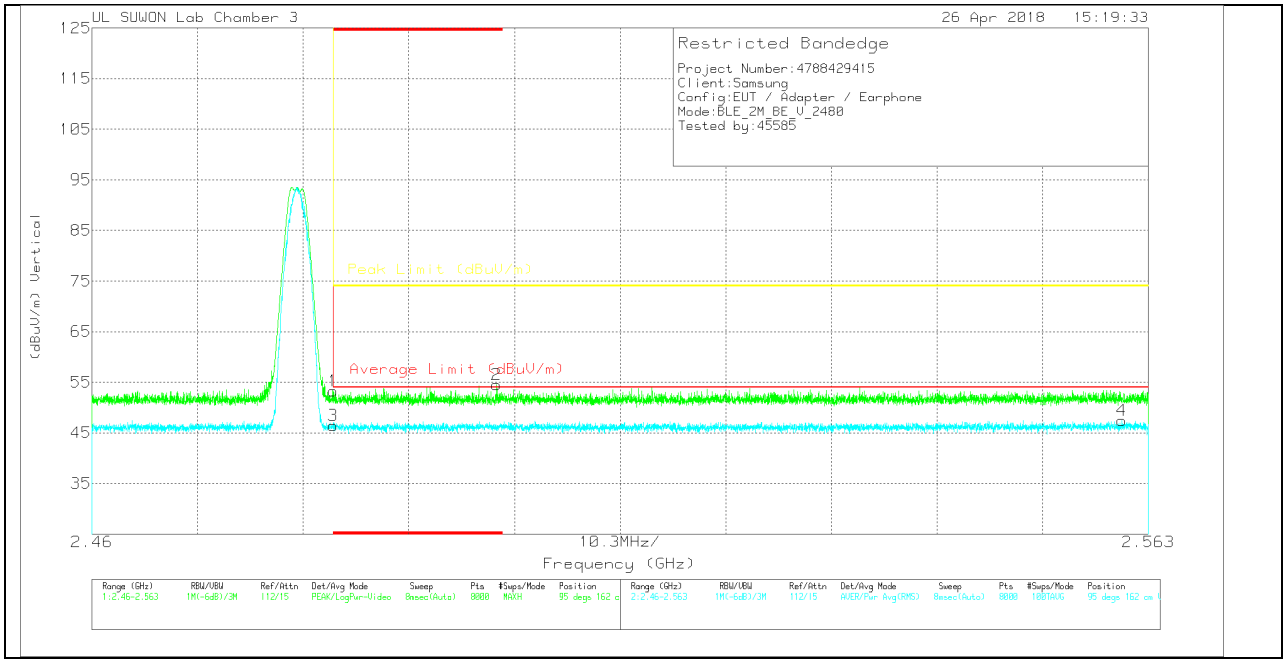
HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	10dB_ATT[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	42.81	Pk	32.1	-23	0	51.91	-	-	74	-22.09	204	176	H
2	* 2.491	45.22	Pk	32.1	-23.1	0	54.22	-	-	74	-19.78	204	176	H
3	* 2.484	31.76	RMS	32.1	-23	4.85	45.71	54	-8.29	-	-	204	176	H
4	2.549	33.47	RMS	32.1	-23	4.85	47.42	54	-6.58	-	-	204	176	H

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

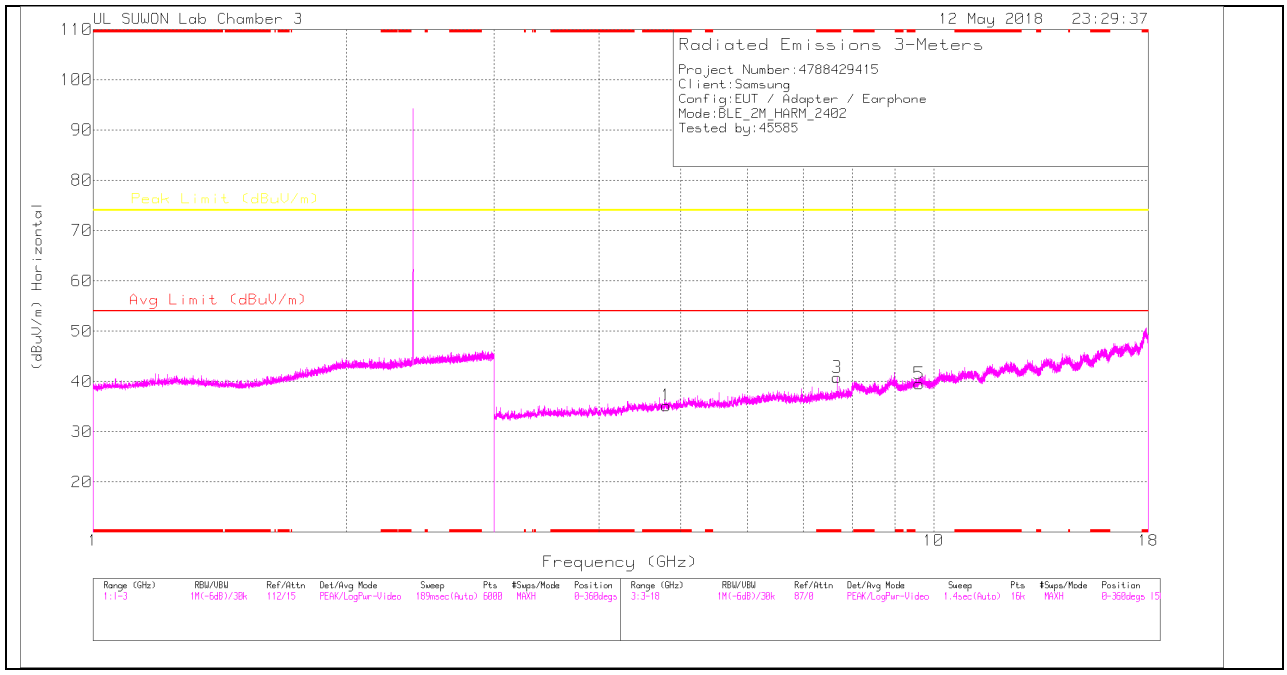
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	10dB_ATT[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	44.17	Pk	32.1	-23	0	53.27	-	-	74	-20.73	95	162	V
2	* 2.499	45.36	Pk	32.1	-23	0	54.46	-	-	74	-19.54	95	162	V
3	* 2.484	32.49	RMS	32.1	-23	4.85	46.44	54	-7.56	-	-	95	162	V
4	2.56	33.5	RMS	32.1	-23	4.85	47.45	54	-6.55	-	-	95	162	V

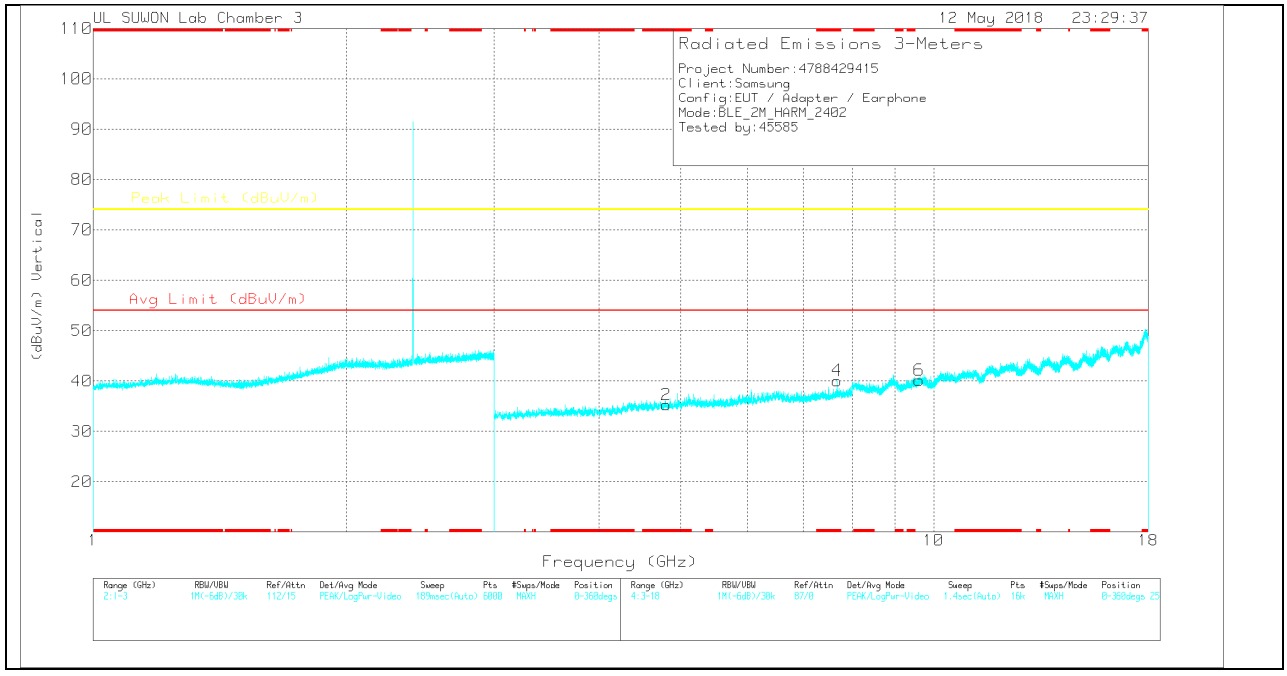
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



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	3117[00205959]	3GHz_HP[dB]	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	* 4.804	29.52	PK	33.9	-28.2	0	35.22	-	-	74	-38.78	0-360	250	H
3	* 7.68	27.59	PK	35.6	-22.4	0	40.79	-	-	74	-33.21	0-360	150	H
5	9.609	22.75	PK	36.7	-19.9	0	39.55	-	-	74	-34.45	0-360	250	H
2	* 4.804	29.55	PK	33.9	-28.2	0	35.25	-	-	74	-38.75	0-360	251	V
4	* 7.68	26.87	PK	35.6	-22.4	0	40.07	-	-	74	-33.93	0-360	149	V
6	9.609	23.36	PK	36.7	-19.9	0	40.16	-	-	74	-33.84	0-360	251	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

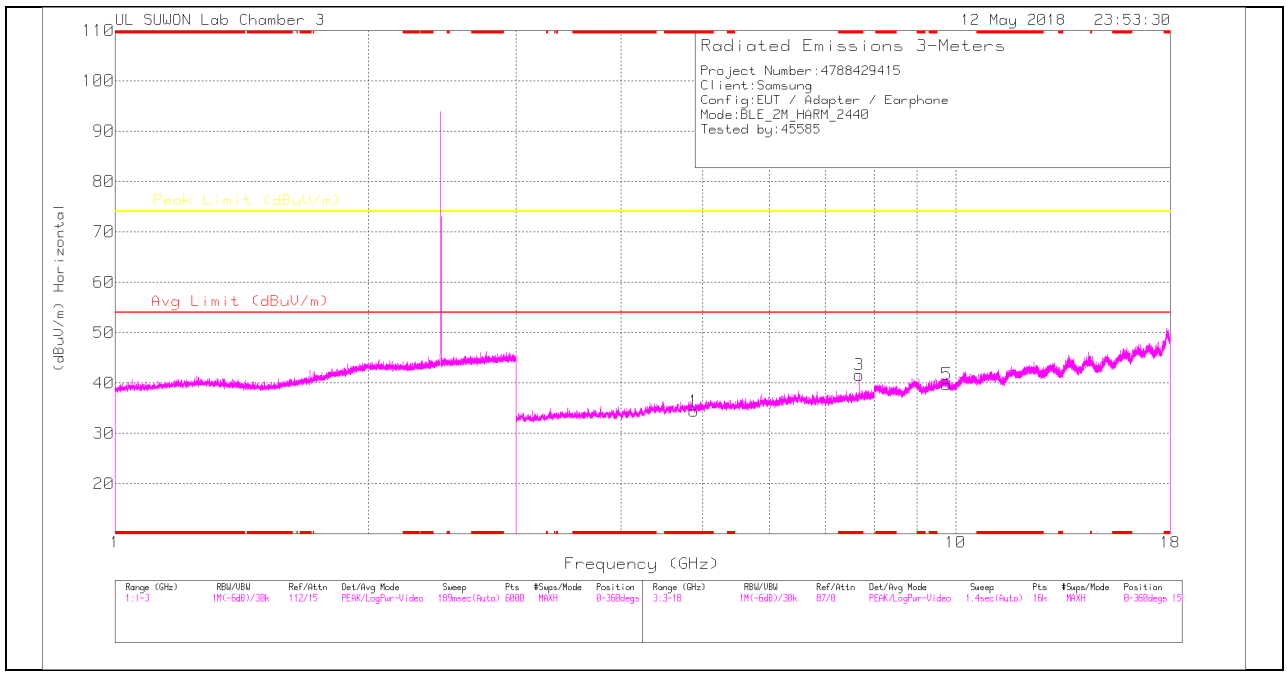
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.68	32.69	PK2	35.6	-22.4	0	45.89	-	-	74	-28.11	205	150	H
* 7.68	26.4	MAv1	35.6	-22.3	4.85	44.55	54	-9.45	-	-	205	150	H
* 7.68	35.06	PK2	35.6	-22.3	0	48.36	-	-	74	-25.64	205	138	V
* 7.68	27.62	MAv1	35.6	-22.3	4.85	45.77	54	-8.23	-	-	205	138	V

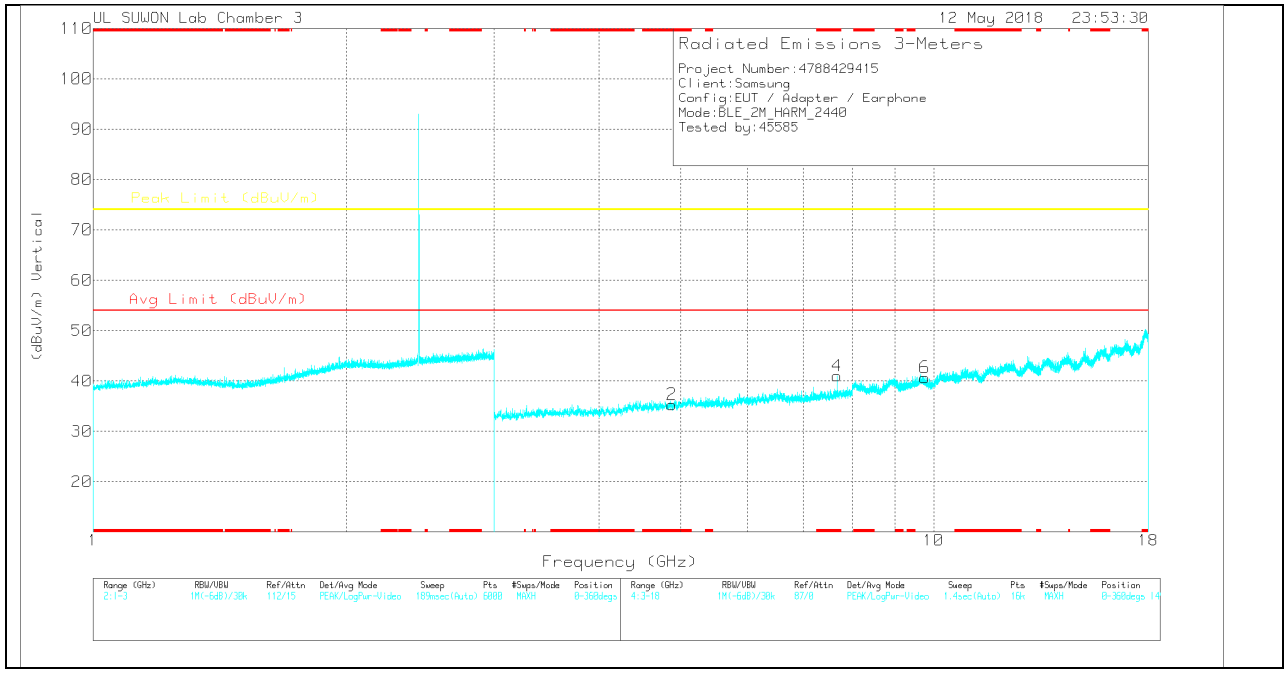
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

MID CHANNEL HORIZONTAL



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	3117[00205959]	3GHz_HP[dB]	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	* 4.881	29.29	PK	34	-28.9	0	34.39	-	-	74	-39.61	0-360	250	H
3	* 7.68	28.41	PK	35.6	-22.4	0	41.61	-	-	74	-32.39	0-360	150	H
5	9.761	22.29	PK	36.9	-19.5	0	39.69	-	-	74	-34.31	0-360	150	H
2	* 4.881	30.22	PK	34	-28.9	0	35.32	-	-	74	-38.68	0-360	149	V
4	* 7.68	27.83	PK	35.6	-22.4	0	41.03	-	-	74	-32.97	0-360	149	V
6	9.761	23.27	PK	36.9	-19.5	0	40.67	-	-	74	-33.33	0-360	250	V

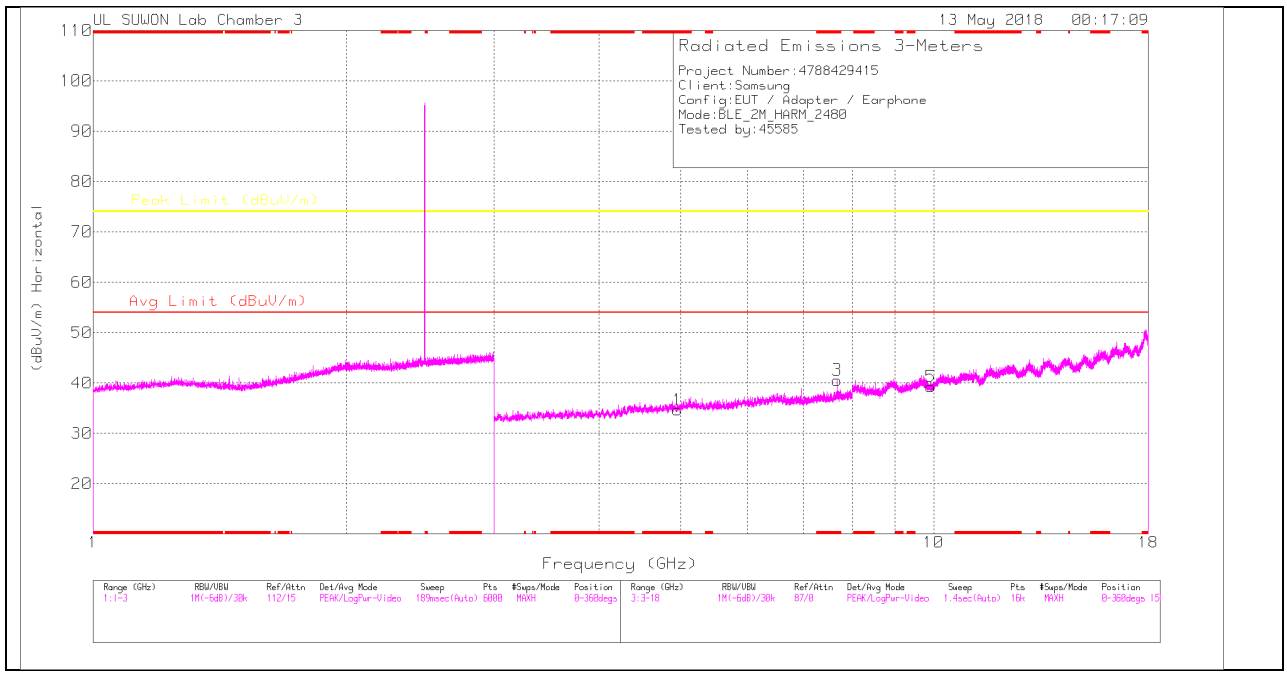
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

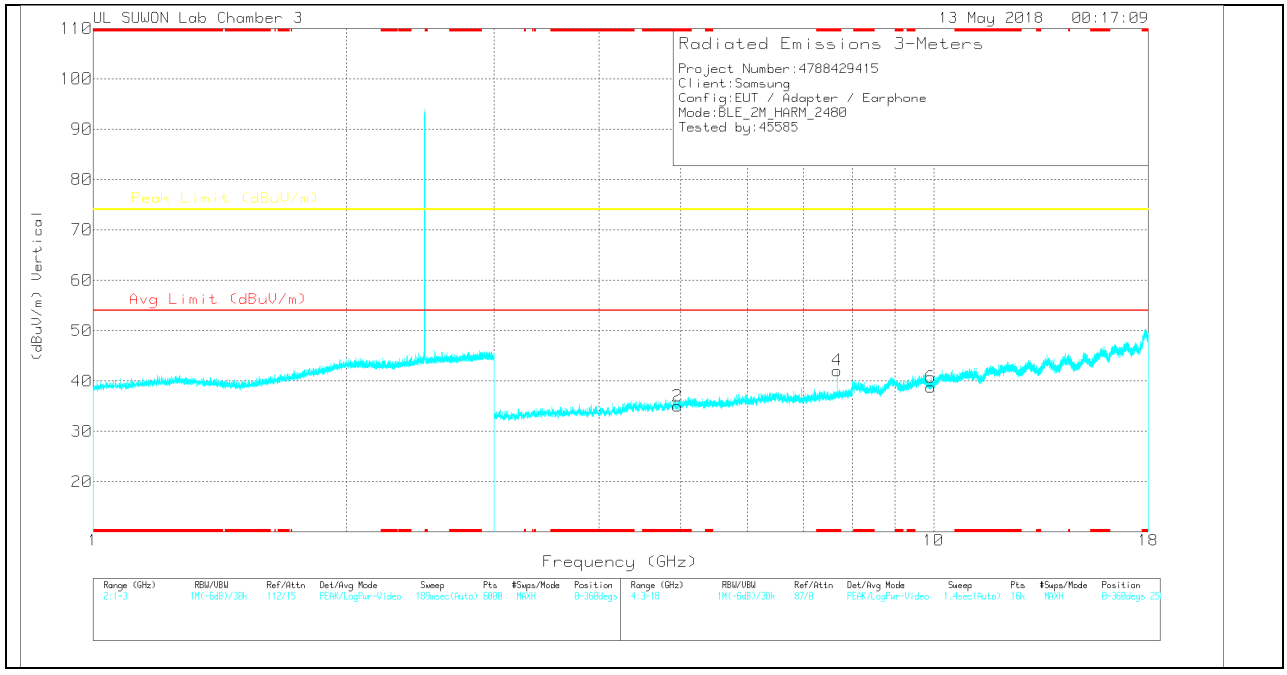
Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.68	33.13	PK2	35.6	-22.3	0	46.43	-	-	74	-27.57	205	150	H
* 7.68	25.89	MAv1	35.6	-22.3	4.85	44.04	54	-9.96	-	-	205	150	H
* 7.68	32.46	PK2	35.6	-22.3	0	45.76	-	-	74	-28.24	205	138	V
* 7.68	27.92	MAv1	35.6	-22.3	4.85	46.07	54	-7.93	-	-	205	138	V

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

HIGH CHANNEL HORIZONTAL



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	3117[00205959]	3GHz_HP[dB]	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	* 4.96	29.05	PK	34.1	-28.5	0	34.65	-	-	74	-39.35	0-360	150	H
3	* 7.679	27.26	PK	35.6	-22.3	0	40.56	-	-	74	-33.44	0-360	150	H
5	9.92	21.98	PK	37	-19.7	0	39.28	-	-	74	-34.72	0-360	150	H
2	* 4.96	29.4	PK	34.1	-28.5	0	35	-	-	74	-39	0-360	250	V
4	* 7.679	28.78	PK	35.6	-22.3	0	42.08	-	-	74	-31.92	0-360	149	V
6	9.92	21.47	PK	37	-19.7	0	38.77	-	-	74	-35.23	0-360	149	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

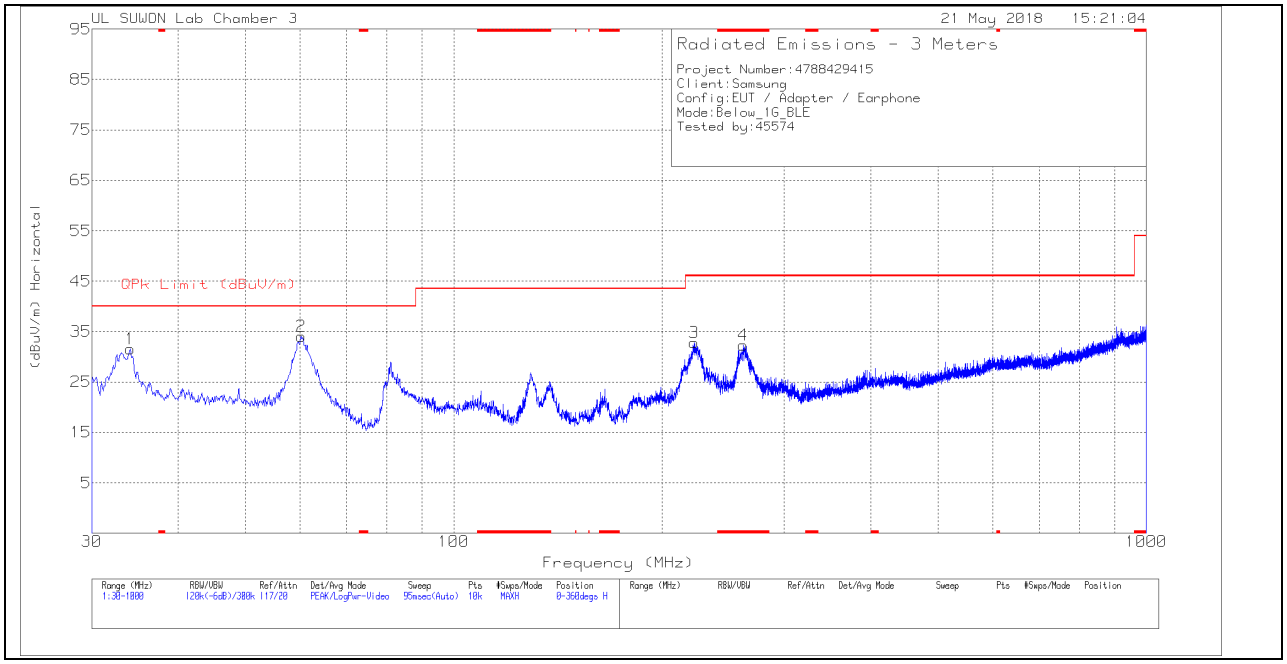
Frequency (GHz)	Meter Reading (dBuV)	Det	3117[00205959]	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.684	31.41	PK2	35.6	-22.3	0	44.71	-	-	74	-29.29	205	160	H
* 7.68	26.32	MAv1	35.6	-22.3	4.85	44.47	54	-9.53	-	-	205	160	H
* 7.68	33.85	PK2	35.6	-22.3	0	47.15	-	-	74	-26.85	205	138	V
* 7.68	27.67	MAv1	35.6	-22.3	4.85	45.82	54	-8.18	-	-	205	138	V

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

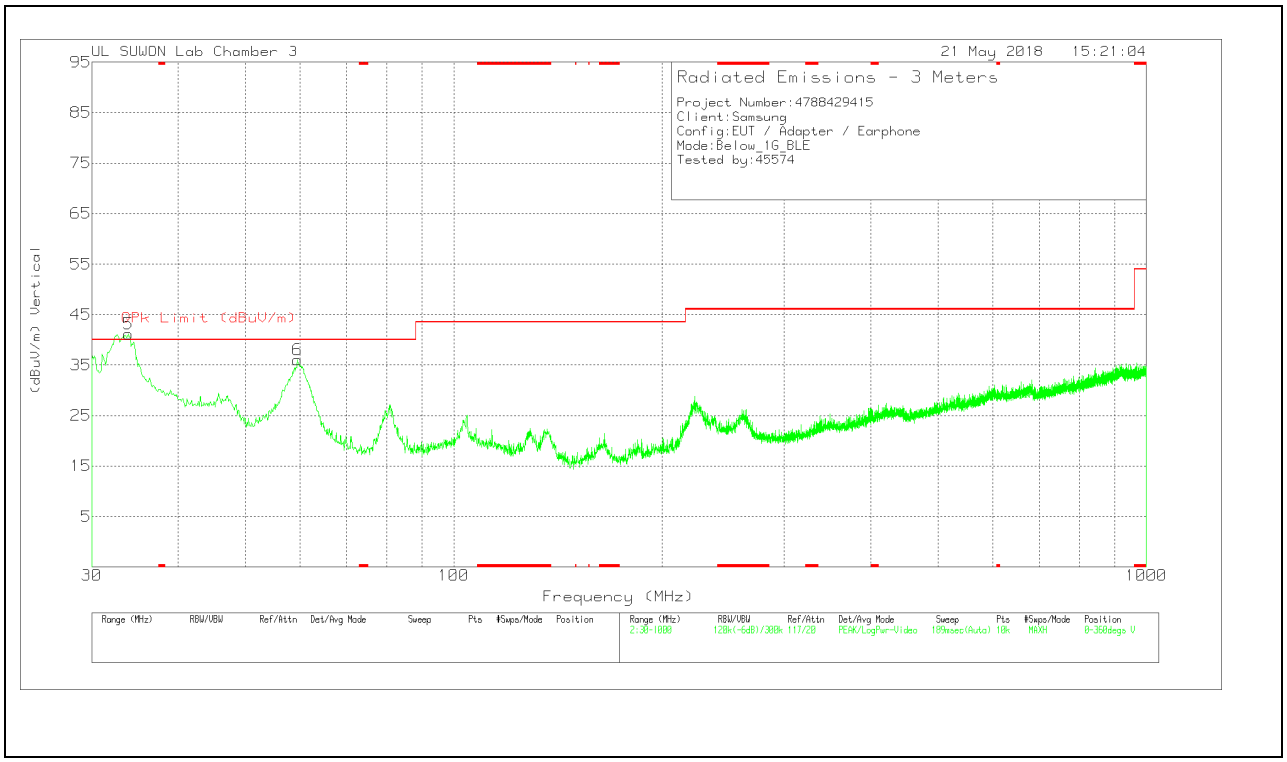
11.3. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-845	30-1000MHz[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	34.0744	46.8	Pk	16.8	-32	31.6	40	-8.4	0-360	400	H
2	60.1701	47.44	Pk	18.5	-31.9	34.04	40	-5.96	0-360	400	H
3	222.4678	46.47	Pk	17.3	-31	32.77	46.02	-13.25	0-360	100	H
4	* 261.8539	44.6	Pk	18.6	-30.9	32.3	46.02	-13.72	0-360	100	H
5	33.8804	56.36	Pk	16.8	-32	41.16	40	1.16	0-360	100	V
6	59.491	49.26	Pk	18.6	-31.8	36.06	40	-3.94	0-360	100	V

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

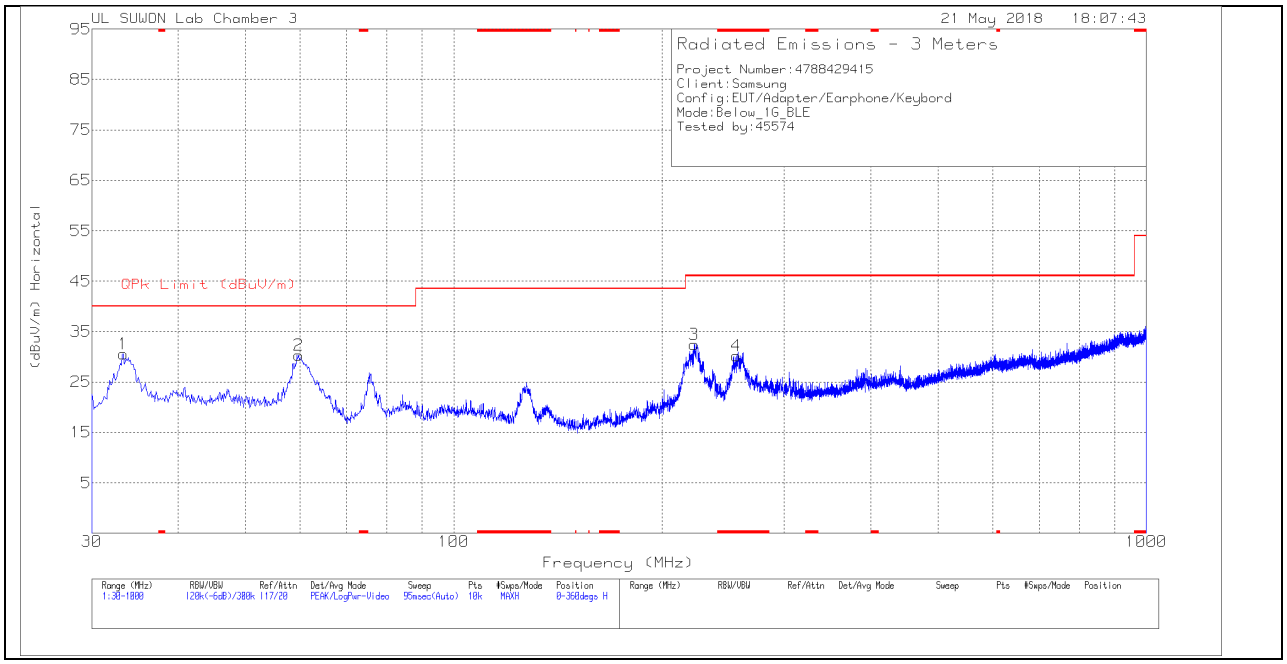
Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-845	30-1000MHz[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
60.1701	43.15	Qp	18.5	-31.9	29.75	40	-10.25	18	256	H
33.8804	49.92	Qp	16.8	-32	34.72	40	-5.28	270	100	V
59.491	40.6	Qp	18.6	-31.8	27.4	40	-12.6	177	100	V

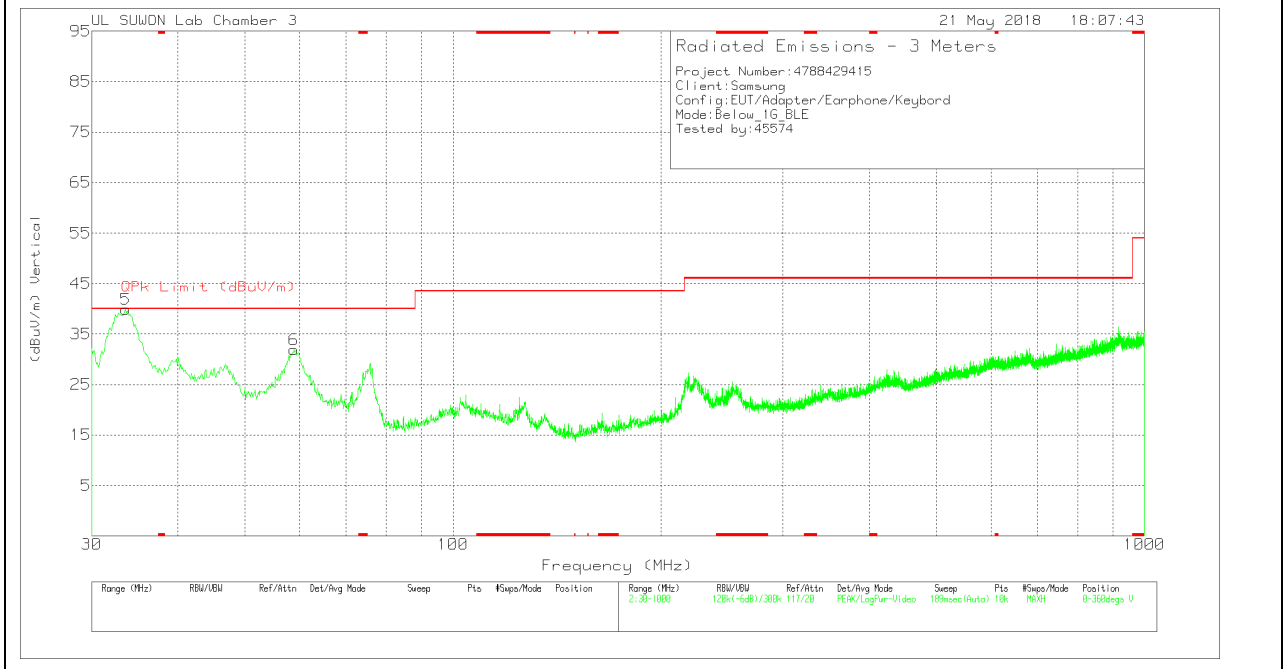
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

SPURIOUS EMISSIONS 30 TO 1000 MHz (EQUIPPED WITH KEYBOARD)

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-845	30-1000MHz[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	33.2983	46.1	Pk	16.6	-32.1	30.6	40	-9.4	0-360	300	H
2	59.6851	43.56	Pk	18.6	-31.8	30.36	40	-9.64	0-360	400	H
3	222.4678	46.18	Pk	17.3	-31	32.48	46.02	-13.54	0-360	100	H
4	* 255.7423	42.68	Pk	18.4	-30.9	30.18	46.02	-15.84	0-360	100	H
5	33.5894	55.26	Pk	16.7	-32.1	39.86	40	-.14	0-360	100	V
6	58.812	44.98	Pk	18.8	-31.9	31.88	40	-8.12	0-360	100	V

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

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-845	30-1000MHz[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
33.5894	49.15	Qp	16.7	-32.1	33.75	40	-6.25	272	100	V
58.812	37.91	Qp	18.8	-31.9	24.81	40	-15.19	31	100	V
59.491	40.6	Qp	18.6	-31.8	27.4	40	-12.6	177	100	V

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

12. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)
IC RSS-GEN Clause 8.8

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

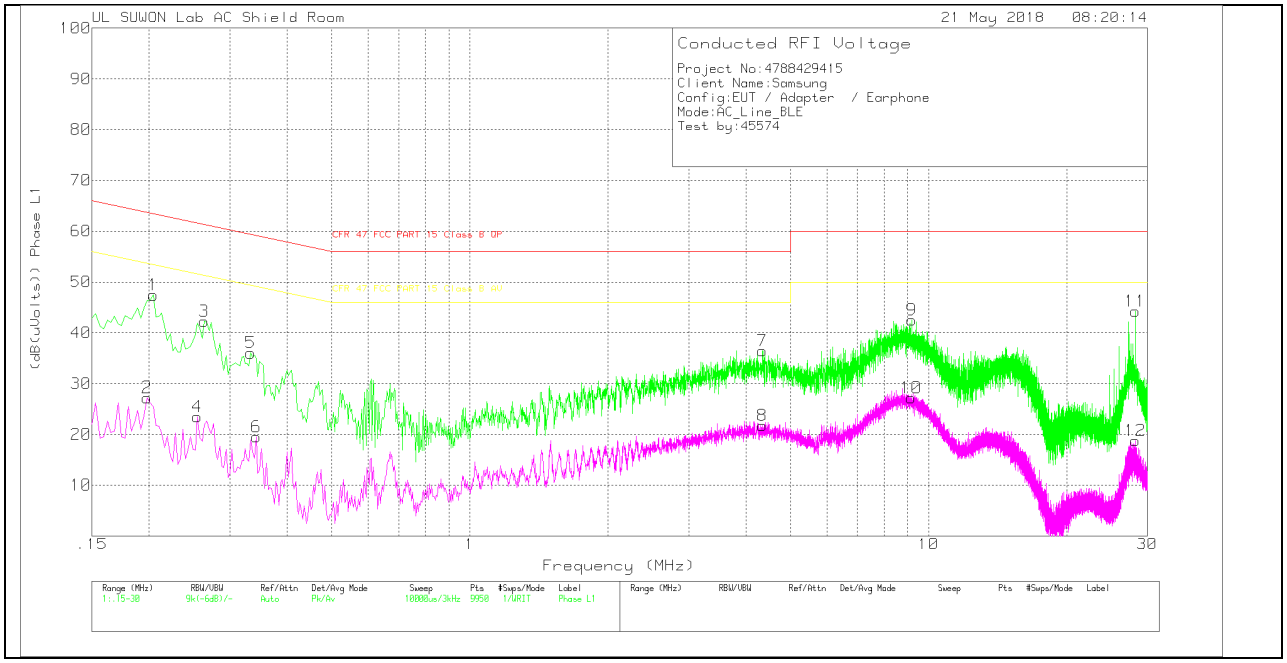
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

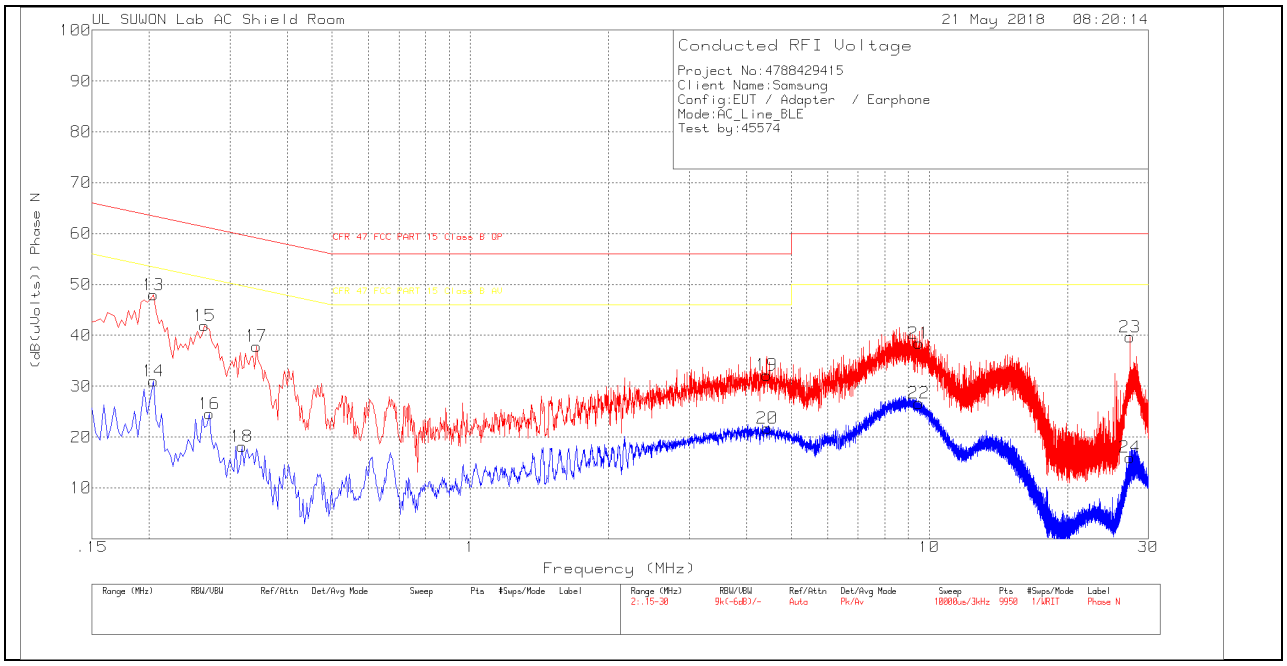
Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_L1_with extension	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
1	.204	37.41	Pk	9.8	.2	47.41	63.45	-16.04	-	-
2	.198	17.24	Av	9.8	.2	27.24	-	-	53.69	-26.45
3	.264	32.59	Pk	9.5	.2	42.29	61.3	-19.01	-	-
4	.255	13.78	Av	9.5	.2	23.48	-	-	51.59	-28.11
5	.333	26.13	Pk	9.7	.2	36.03	59.38	-23.35	-	-
6	.342	9.56	Av	9.7	.2	19.46	-	-	49.15	-29.69
7	4.347	26.46	Pk	9.7	.3	36.46	56	-19.54	-	-
8	4.347	11.73	Av	9.7	.3	21.73	-	-	46	-24.27
9	9.195	32.37	Pk	9.7	.4	42.47	60	-17.53	-	-
10	9.18	17.04	Av	9.7	.4	27.14	-	-	50	-22.86
11	28.212	33.68	Pk	10.3	.3	44.28	60	-15.72	-	-
12	28.206	8.19	Av	10.3	.3	18.79	-	-	50	-31.21

Pk - Peak detector
Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_N_with extension	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
13	.204	37.92	Pk	9.8	.2	47.92	63.45	-15.53	-	-
14	.204	21.03	Av	9.8	.2	31.03	-	-	53.45	-22.42
15	.264	32.07	Pk	9.6	.2	41.87	61.3	-19.43	-	-
16	.27	14.8	Av	9.6	.2	24.6	-	-	51.12	-26.52
17	.342	27.88	Pk	9.8	.2	37.88	59.15	-21.27	-	-
18	.318	8.28	Av	9.7	.2	18.18	-	-	49.76	-31.58
19	4.431	22.09	Pk	9.8	.3	32.19	56	-23.81	-	-
20	4.437	11.63	Av	9.8	.3	21.73	-	-	46	-24.27
21	9.495	28.23	Pk	9.8	.4	38.43	60	-21.57	-	-
22	9.495	16.43	Av	9.8	.4	26.63	-	-	50	-23.37
23	27.357	29.11	Pk	10.3	.3	39.71	60	-20.29	-	-
24	27.36	5.39	Av	10.3	.3	15.99	-	-	50	-34.01

Pk - Peak detector
Av - Average detection