CERTIFICATION TEST REPORT

Report Number. : 4789247757-E5V2

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-G985F/DS, SM-G985F
FCC ID	:	A3LSMG985F
EUT Description	:	GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, ANT+, NFC and WPT
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
December 17, 2019

Prepared by:
UL Korea, Ltd.
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Suwon Test Site: UL Korea, Ltd. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
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TEL: (031) 337-9902
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IAS ACCREDITED
Testing Laboratory
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	12/12/19	Initial issue	Hyunsik Yun
V2	12/17/19	Updated to address TCB's question	Hyunsik Yun

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, ANT+, NFC and WPT
MODEL NUMBER:	SM-G985F/DS, SM-G985F
SERIAL NUMBER:	R3CM9030DBT, R3CM90FS9RV (CONDUCTED, Original); R3CM9033H2J, R3CM90FS9YL (RADIATED, Original); R38MA0KHL5Y (RADIATED, Spot check)
DATE TESTED:	OCT 22, 2019 – NOV 14, 2019 (Original); NOV 21, 2019 – NOV 22, 2019 (Spot check)

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:

Junwhan Lee
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:

Hyunsik Yun
Suwon Lab Engineer
UL Korea, Ltd.

1.1. INTRODUCTION OF TEST DATA REUSE

This report referenced from the FCC ID: A3LSMG986B 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: A3LSMG985F shares the same enclosure and circuit board as FCC ID: A3LSMG986B. 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: A3LSMG986B remains representative of FCC ID: A3LSMG985F. The test data of FCC ID: A3LSMG986B being submitted for this application to cover BLE features.

1.3. SPOT CHECK VERIFICATION DATA

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

Band	Test Item	Simbol rate	Frequency	Test Limit	Original model	Spot check model	Deviation	Remark
					SM-G986B/DS	SM-G985F/DS		
					FCC ID : A3LSMG986B	FCC ID : A3LSMG985F		
DTS BLE	Band Edge	BLE_2480_1M	2480 MHz	54 dBuV/m	45.18 dBuV/m	45.00 dBuV/m	-0.18 dB	-
	RSE	BLE_2480_1M	2480 MHz	54 dBuV/m	36.30 dBuV/m	36.67 dBuV/m	0.37 dB	2nd Harmonic
	Band Edge	BLE_2480_2M	2480 MHz	54 dBuV/m	48.11 dBuV/m	48.24 dBuV/m	0.13 dB	-
	RSE	BLE_2440_2M	2440 MHz	74 dBuV/m	49.06 dBuV/m	48.15 dBuV/m	-0.91 dB	4th Harmonic Noise floor

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

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1.4. REFERENCE DETAIL

Reference application that contains the reused reference data in the individual test reports:

Equipment Class	Reference FCC ID (Parent)	Application Type	Reference Test report number	Exhibit Type	Variant Test Report Number	Data Re-used
PCE	A3LSMG986B	Original Grant	4789219881-E2	Test Report	4789247757-E2	All
DTS	A3LSMG986B	Original Grant	4789219881-E3 (802.11b/g/n)	Test Report	4789247757-E3 (802.11b/g/n)	All
			4789219881-E4 (802.11ax)	Test Report	4789247757-E4 (802.11ax)	All
			4789219881-E5 Bluetooth LE	Test Report	4789247757-E5 Bluetooth LE	All
DSS	A3LSMG986B	Original Grant	4789219881-E6 (Bluetooth)	Test Report	4789247757-E6 (Bluetooth)	All
NII	A3LSMG986B	Original Grant	4789219881-E7 (802.11a/n/ac)	Test Report	4789247757-E7 (802.11a/n/ac)	All
			4789219881-E8 (802.11ax)	Test Report	4789247757-E8 (802.11ax)	All
DXX	A3LSMG986B	Original Grant	4789219881-E9 (ANT+)	Test Report	4789247757-E9 (ANT+)	All
			4789219881-E10 (NFC)	Test Report	4789247757-E10 (NFC)	All
DCD	A3LSMG986B	Original Grant	4789219881-E11 (WPT)	Test Report	4789247757-E11 (WPT)	All

For this application the data reuse is summarized below for each equipment class:

Equipment Class	Reference FCC ID (Parent)	Application Type	Test Item	Data Re-used
PCE	A3LSMG986B	Original Grant	WWAN	All except SAR (full test), HAC (full test)
DTS	A3LSMG986B	Original Grant	BLE	All
			WLAN	All except SAR (full test), HAC (full test)
			WLAN 802.11ax	All except HAC (full test)
DSS	A3LSMG986B	Original Grant	BT	All except SAR (full test)
NII	A3LSMG986B	Original Grant	WLAN	All except SAR (full test), HAC (full test)
			WLAN 802.11ax	All except HAC (full test)
DXX	A3LSMG986B	Original Grant	ANT+	All
			NFC	All
DCD	A3LSMG986B	Original Grant	WPT	All except RF exposure

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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. KDB 558074 D01 15.247 Meas Guidance v05r02.
4. 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/wp-content/uploads/2017/05/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	2.35 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.49 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.82 dB
Radiated Disturbance, 18 GHz to 40 GHz	5.49 dB

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

4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedure 1, Clause 4.4.2 in IEC Guide 115:2007.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, ANT+, NFC and WPT. This test report addresses the DTS (BLE) operational mode.

This report covers the Samsung models SM-G985F/DS and SM-G985F.
These models are identical in hardware except SM-G985F has single SIM tray.
With some pre-scan, model SM-G985F/DS was set for spot check test.

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]
2 402 ~ 2 480	1Mbps	Peak	7.315	5.39
		Average	6.637	4.61
	2Mbps	Peak	8.438	6.98
		Average	7.478	5.59

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of -6.46 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 X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

Note : All radiated and power line conducted tests were performed attached with travel adapter for the worst case condition mode.

Power verification

The Output Power of all data rate are all investigated, the 1Mbps(37 pkt) and 2Mbps(37 pkt) power is the worst case for symbol rate. All tests were performed in these two modes.

Symbol Rate [Ms/s]	Mode	Frequency [MHz]	Conducted Burst Avg [dBm]	Symbol Rate [Ms/s]	Mode	Frequency [MHz]	Conducted Burst Avg [dBm]
1	1Mbps (37 pkt)	2402	4.386	2	2Mbps (37 pkt)	2402	5.299
		2440	***6.637***			2440	***7.478***
		2480	6.412			2480	6.977
	1Mbps (255 pkt)	2402	4.333		2Mbps (255 pkt)	2402	5.345
		2440	6.571			2440	7.477
		2480	6.333			2480	6.890

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA800	R37M5DX86X1SE3	N/A
Data Cable	SAMSUNG	EP-DG977	N/A	N/A

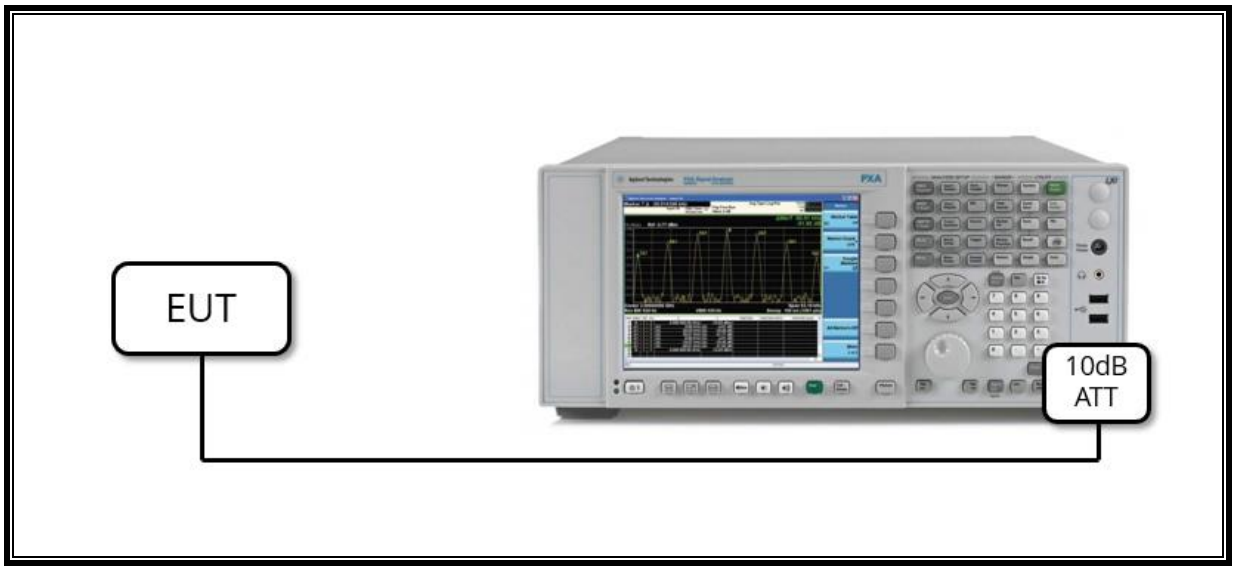
I/O CABLE

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	1.0m	N/A

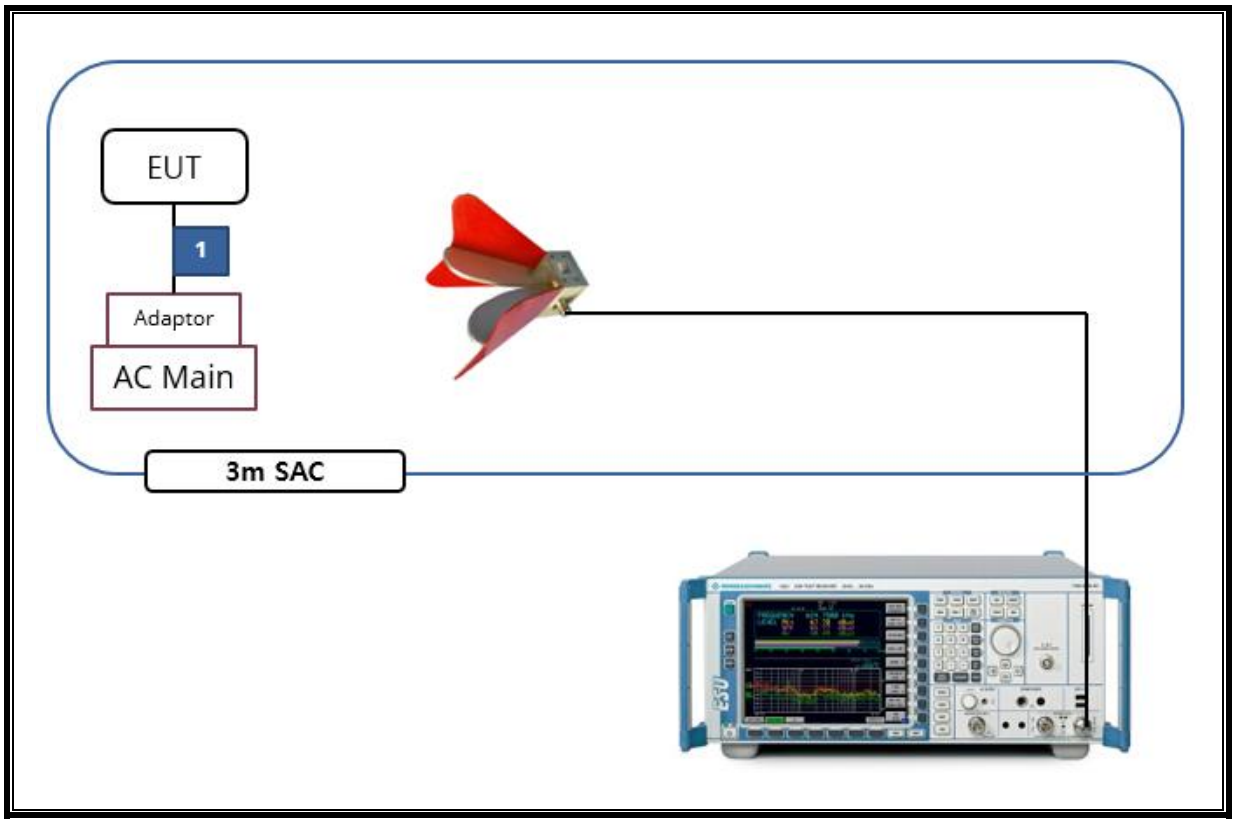
TEST SETUP

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

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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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**	**S/N**	**Cal Due**
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	08-04-20
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	08-04-20
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-04-20
Antenna, Horn, 18 GHz	ETS	3115	00167211	08-04-20
Antenna, Horn, 18 GHz	ETS	3115	00161451	08-04-20
Antenna, Horn, 18 GHz	ETS	3117	00168724	08-04-20
Antenna, Horn, 18 GHz	ETS	3117	00168717	08-04-20
Antenna, Horn, 18 GHz	ETS	3117	00205959	08-04-20
Antenna, Horn, 40 GHz	ETS	3116C	00166155	08-14-20
Antenna, Horn, 40 GHz	ETS	3116C	00168645	10-02-21
Preamplifier	ETS	3116C-PA	00168841	08-08-20
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-05-20
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-05-20
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-05-20
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-06-20
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-06-20
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-06-20
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-06-20
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-06-20
Spectrum Analyzer, 43.5 GHz	R&S	FSW43	104089	08-06-20
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-09-20
Attenuator	PASTERNACK	PE7087-10	A001	08-08-20
Attenuator	PASTERNACK	PE7087-10	A008	08-08-20
Attenuator	PASTERNACK	PE7004-10	2	08-06-20
Attenuator	PASTERNACK	PE7087-10	A009	08-08-20
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-06-20
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-06-20
EMI Test Receive, 44 GHz	R&S	ESW44	101590	08-05-20
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-05-20
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	08-06-20
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	08-06-20
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	020	08-06-20
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	08-06-20
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	08-06-20
High Pass Filter 3GHz	Micro-Tronics	HPM17543	020	08-06-20
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	08-06-20
High Pass Filter 6GHz	Micro-Tronics	HPS17542	016	08-06-20
High Pass Filter 6GHz	Micro-Tronics	HPS17542	021	08-06-20
LISN	R&S	ENV-216	101837	08-09-20
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	10-02-21
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

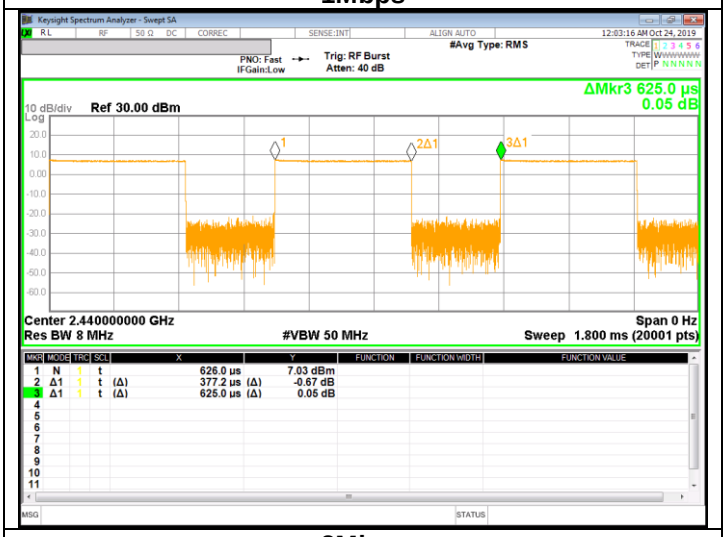
7.1. ON TIME AND DUTY CYCLE RESULTS

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	0.377	0.625	0.603	60.3%	2.20	2.653
BLE 2M	0.193	0.625	0.309	30.9%	5.10	5.181

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

- 1Mbps

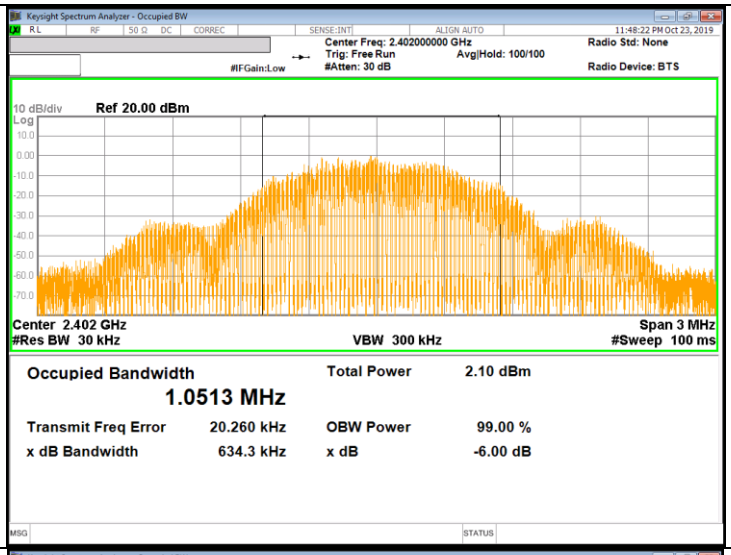
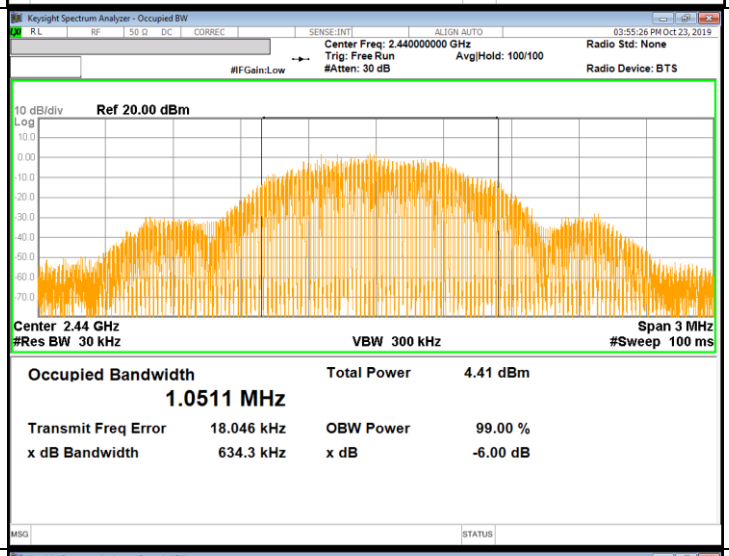
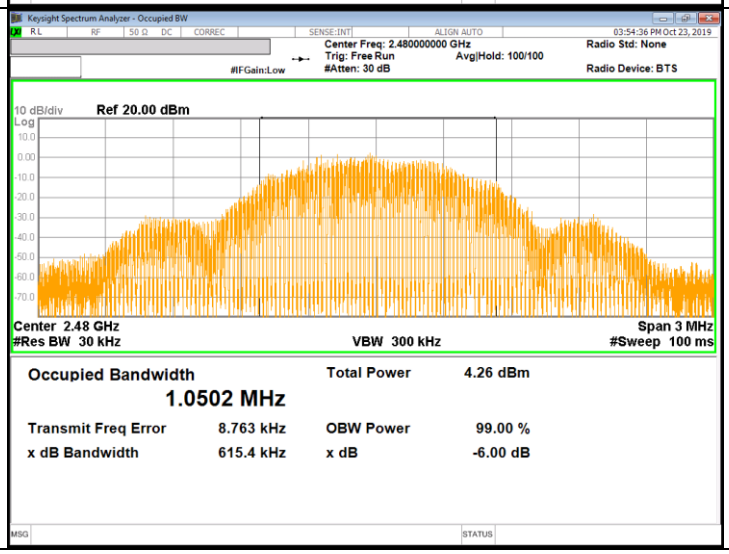
Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2 402	**1.051**
Mid	2 440	1.051
High	2 480	1.050
Worst		1.051

- 2Mbps

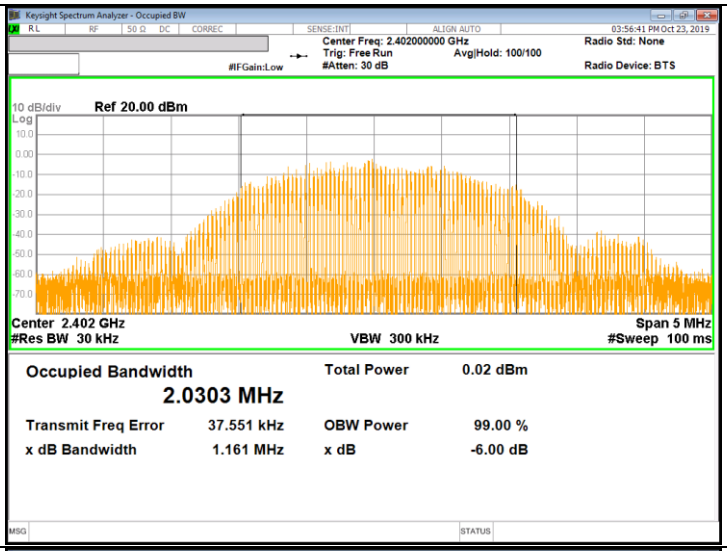
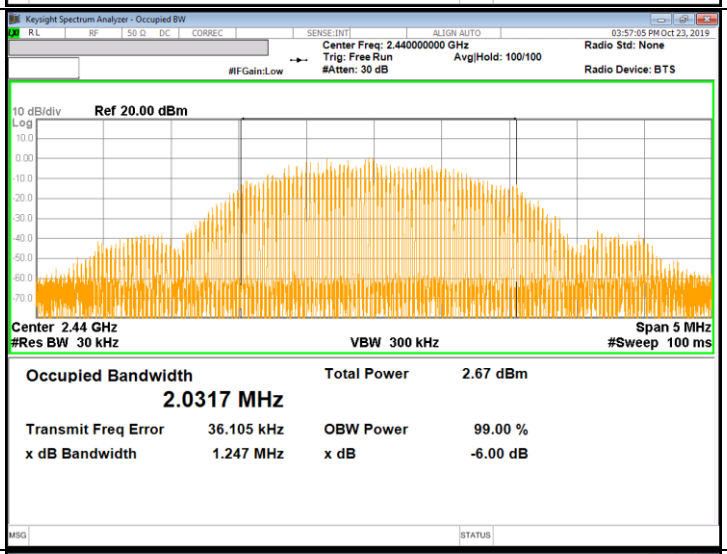
Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2 402	2.030
Mid	2 440	2.032
High	2 480	**2.033**
Worst		2.033

99% BANDWIDTH PLOTS

- 1Mbps

Low Ch.	
Middle Ch.	
High Ch.	

- 2Mbps

Low Ch.	
Middle Ch.	
High Ch.	

8. MEASUREMENT METHODS

6 dB BW : KDB 558074 D01 v05r02, Section 8.2.

OUTPUT POWER : KDB 558074 D01 v05r02, Section 8.3.1.1

POWER SPECTRAL DENSITY : KDB 558074 D01 v05r02, Section 8.4.

Out-of-band Emissions (Conducted) : KDB 558074 D01 v05r02, Section 8.5.

Out-of-band Emissions in Non-restricted Bands: KDB 558074 D01 v05r02, Section 8.5.

Out-of-band Emissions in Restricted Bands : KDB 558074 D01 v05r02, Section 8.6.

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

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9. SUMMARY TABLE

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

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10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

TEST PROCEDURE

Reference to section 11.8 in ANSI C63.10(2013): 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

- 1Mbps

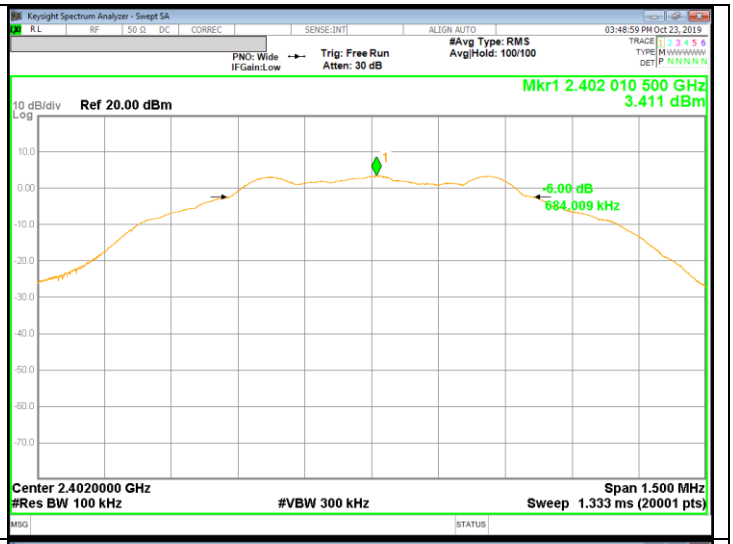
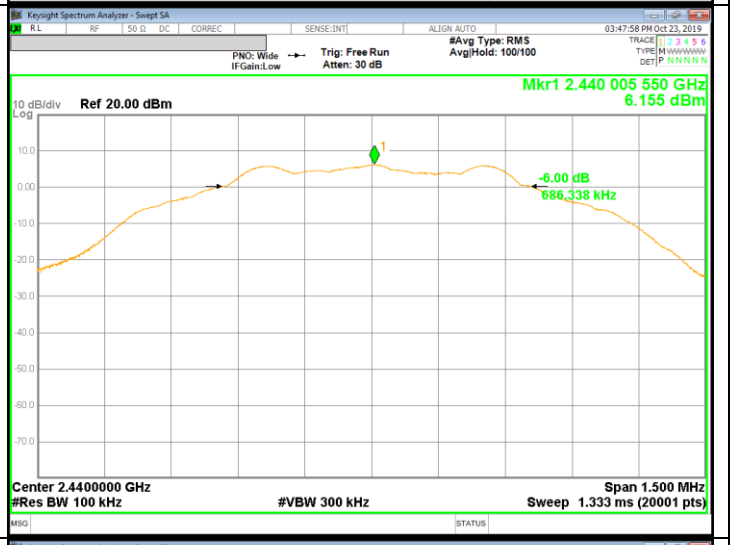
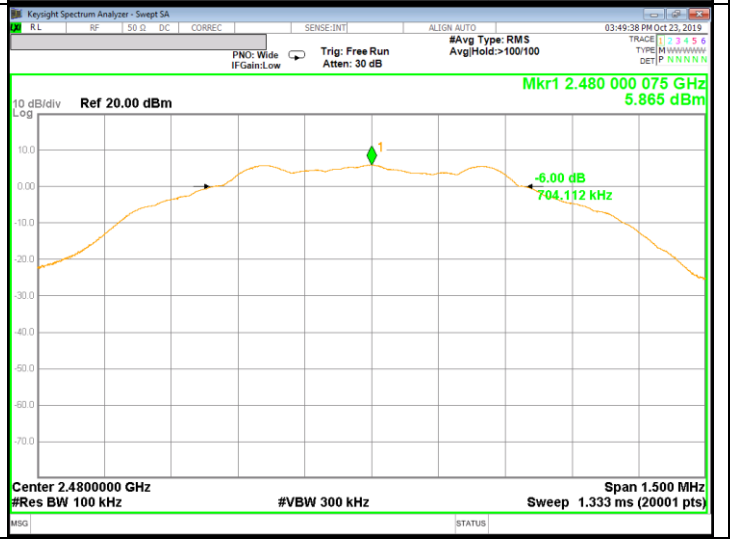
Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minumun Limit [kHz]
Low	2 402	**684.01**	**500.00**
Mid	2 440	686.34	500.00
High	2 480	704.11	500.00
Worst		684.01	500.00

- 2Mbps

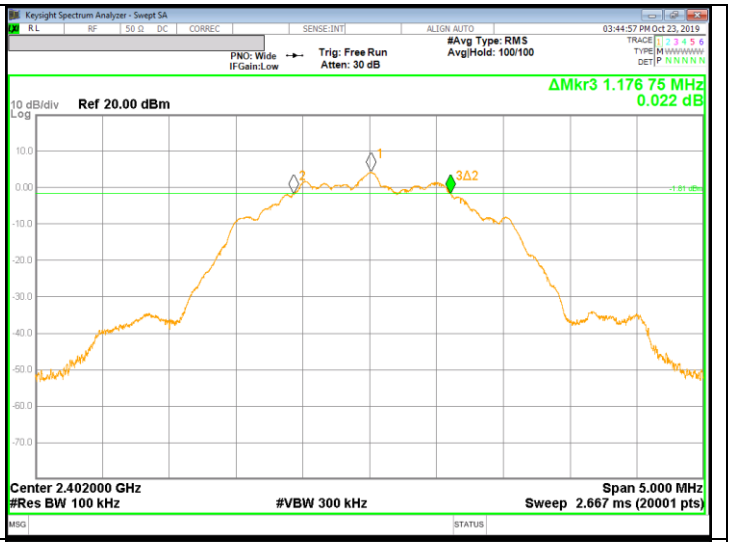
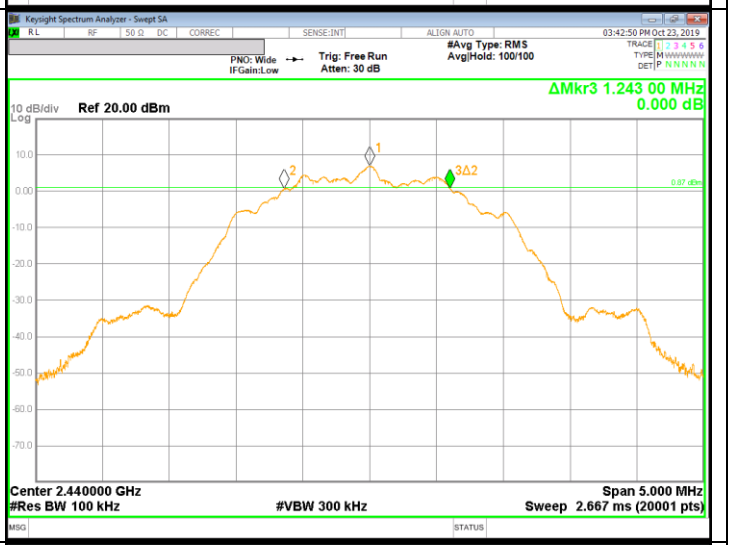
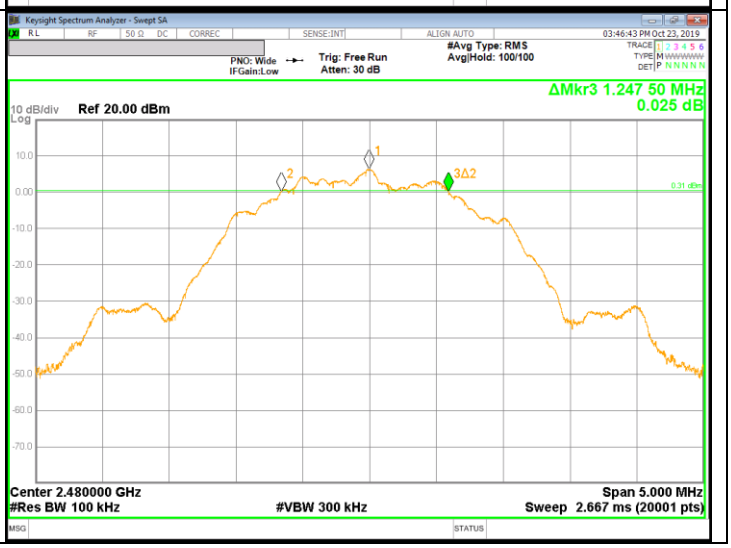
Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minumun Limit [kHz]
Low	2 402	**1176.75**	**500.00**
Mid	2 440	1243.00	500.00
High	2 480	1247.50	500.00
Worst		1176.75	500.00

6 dB BANDWIDTH PLOTS

- 1Mbps

Low Ch.	
Middle Ch.	
High Ch.	

- 2Mbps

Low Ch.	
Middle Ch.	
High Ch.	

10.2. OUTPUT POWER

LIMITS

FCC §15.247 (b)

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

TEST PROCEDURE

Peak power is measured using ANSI C63.10(2013) under section 11.9.1.1 utilizing spectrum analyzer.

RESULTS

- 1Mbps

Channel	Frequency [MHz]	Peak Power [dBm]	Limit [dBm]	Margin [dB]
Low	2 402	5.071	30.000	-24.929
Mid	2 440	**7.315**	**30.000**	**-22.685**
High	2 480	7.083	30.000	-22.917
Worst		7.315	30.000	-22.685

- 2Mbps

Channel	Frequency [MHz]	Peak Power [dBm]	Limit [dBm]	Margin [dB]
Low	2 402	6.341	30.000	-23.659
Mid	2 440	**8.438**	30.000	-21.562
High	2 480	7.856	30.000	-22.144
Worst		8.438	30.000	-21.562

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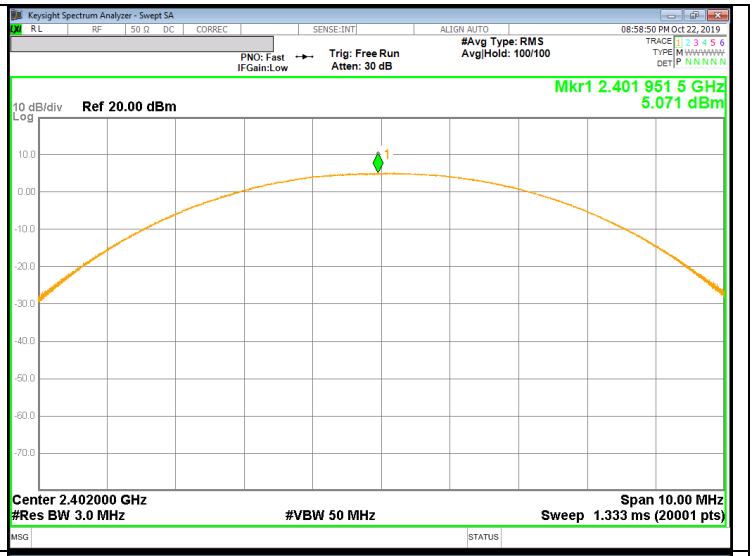
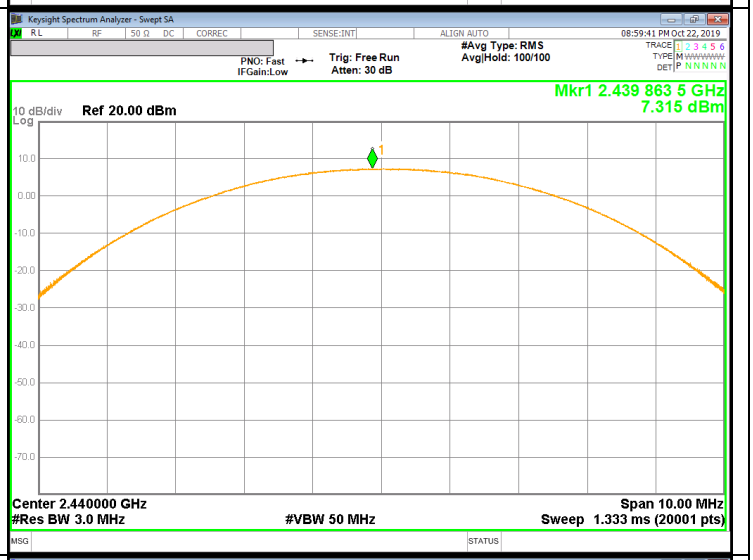
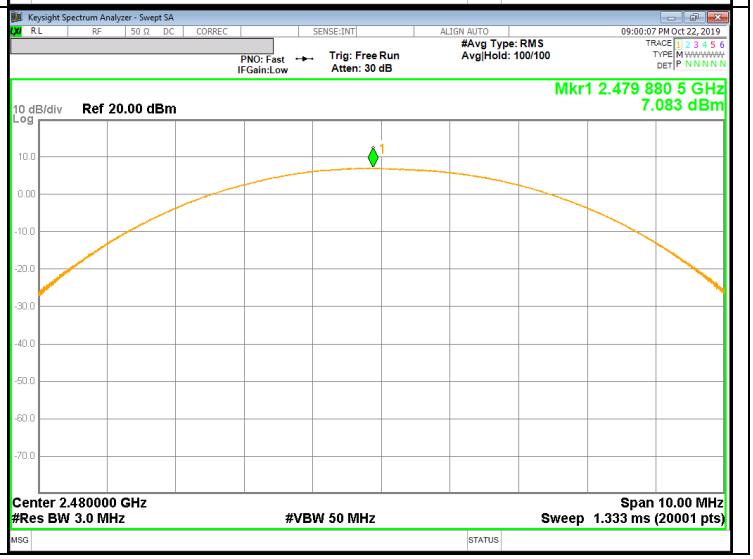
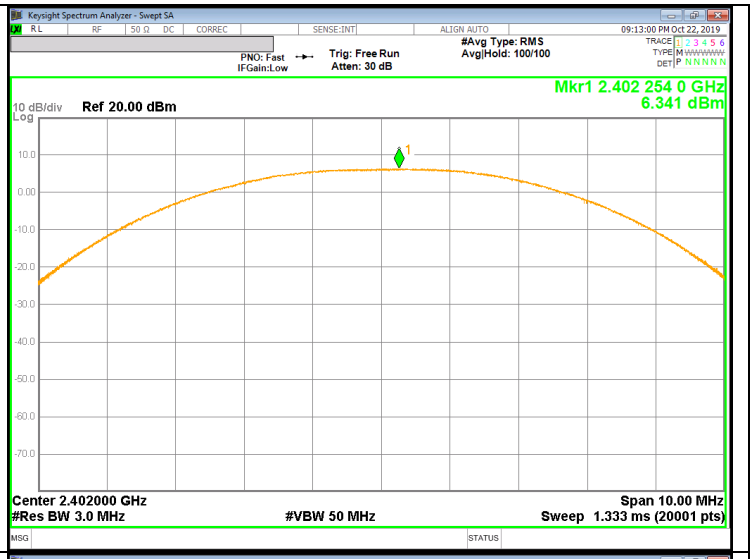
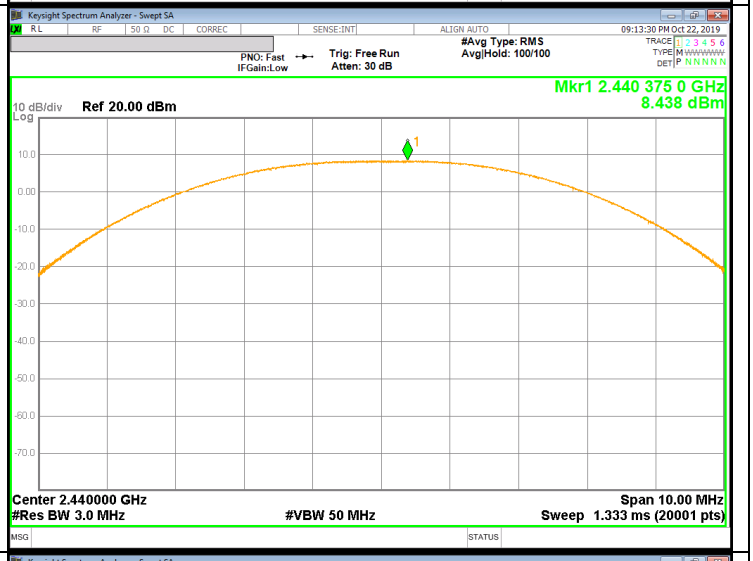
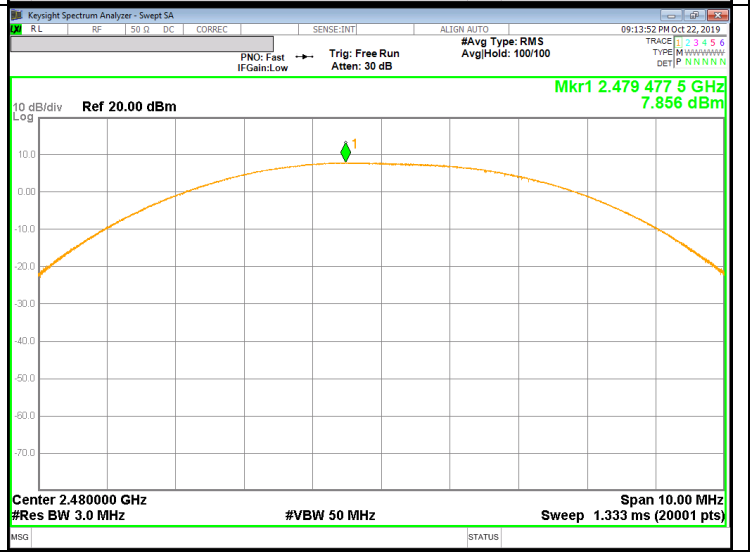
OUTPUT POWER PLOTS

- 1Mbps

Low Ch.	
Middle Ch.	
High Ch.	

- 2Mbps

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. The duty factor already has been added.

- 1Mbps

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2 402	4.386	2.746
Middle	2 440	**6.637**	**4.610**
High	2 480	6.412	4.377

- 2Mbps

Channel	Frequency [MHz]	AV power [dBm]	AV power [mW]
Low	2 402	5.299	3.388
Middle	2 440	**7.478**	**5.594**
High	2 480	6.977	4.986

10.4. PSD

LIMITS

FCC §15.247

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 ANSI C63.10 section 11.10.2 (Method PKPSD).

RESULTS

- 1Mbps

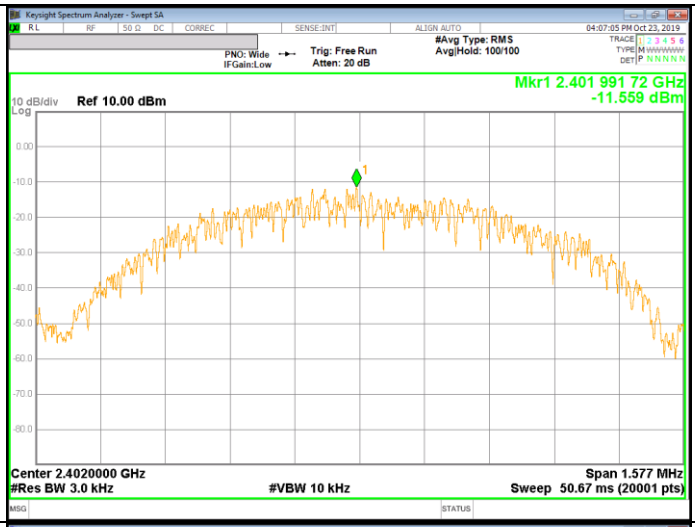
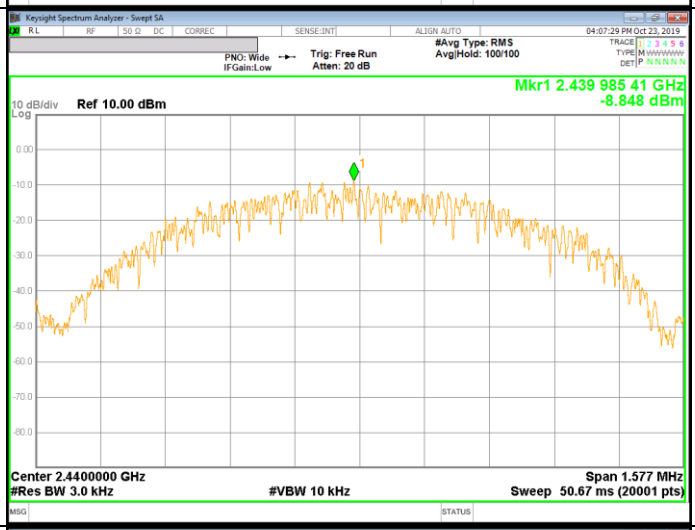
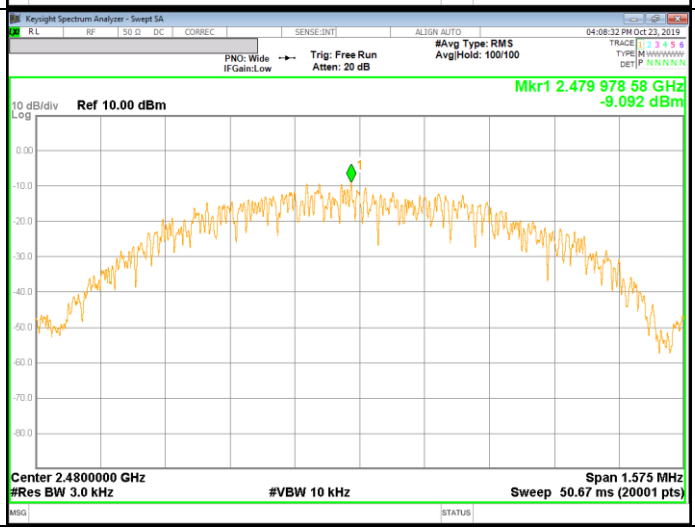
Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
Low	2 402	-11.56	8.00	-19.56
Mid	2 440	**-8.85**	**8.00**	**-16.85**
High	2 480	-9.09	8.00	-17.09

- 2Mbps

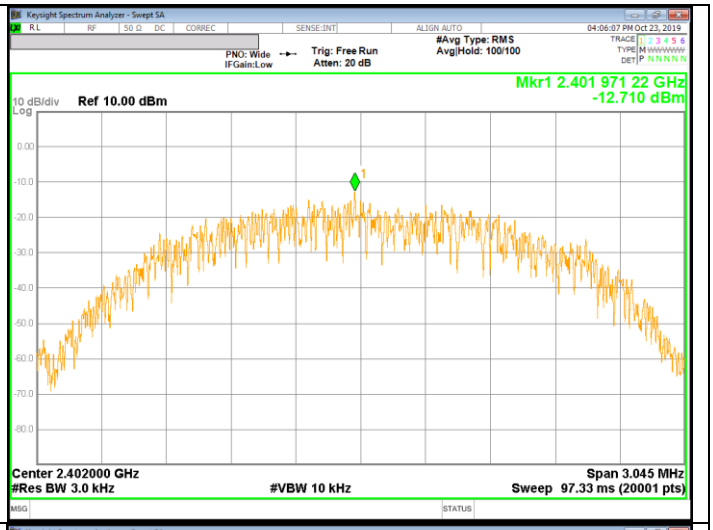
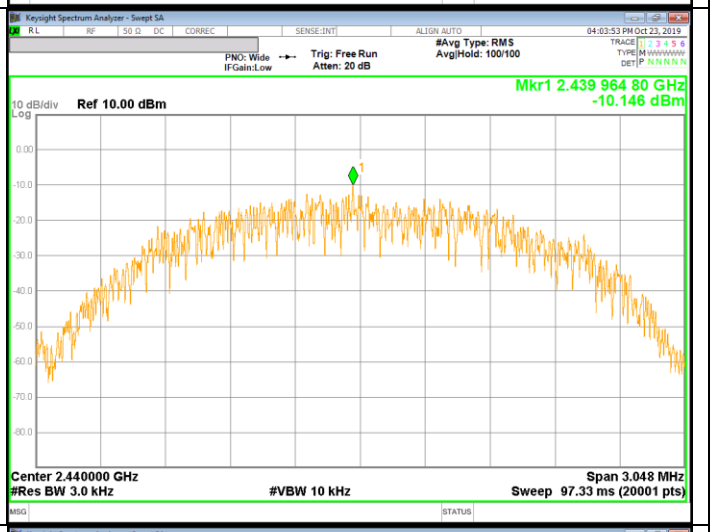
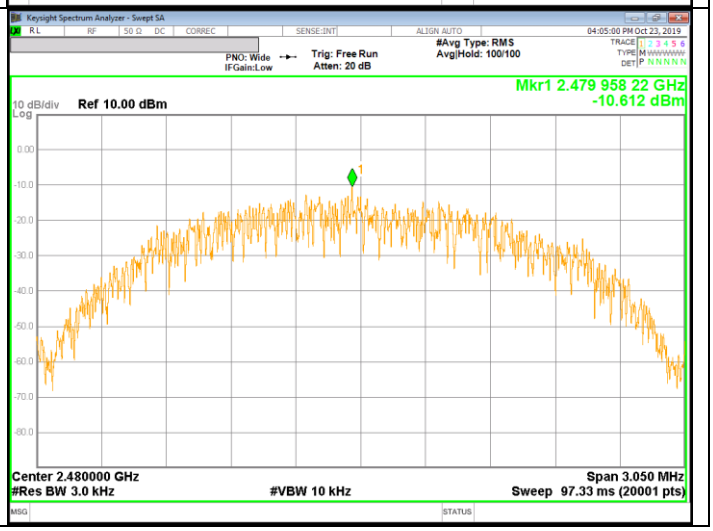
Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
Low	2 402	-12.71	8.00	-20.71
Mid	2 440	**-10.15**	**8.00**	**-18.15**
High	2 480	-10.61	8.00	-18.61

POWER SPECTRAL DENSITY PLOTS

- 1Mbps

Low Ch.	
Middle Ch.	
High Ch.	

- 2Mbps

Low Ch.	
Middle Ch.	
High Ch.	

10.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

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.

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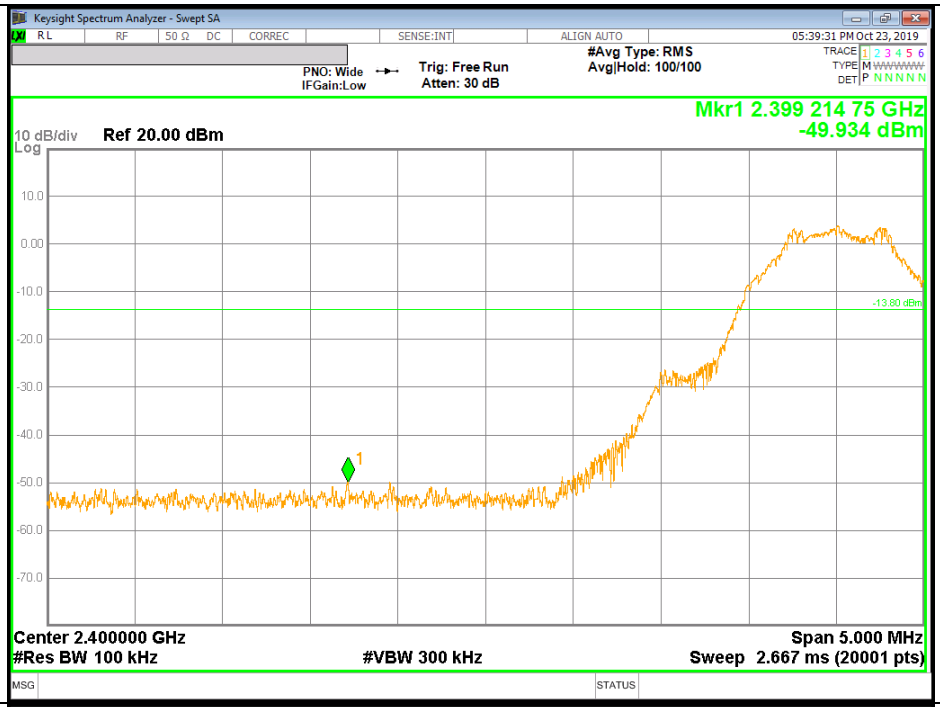
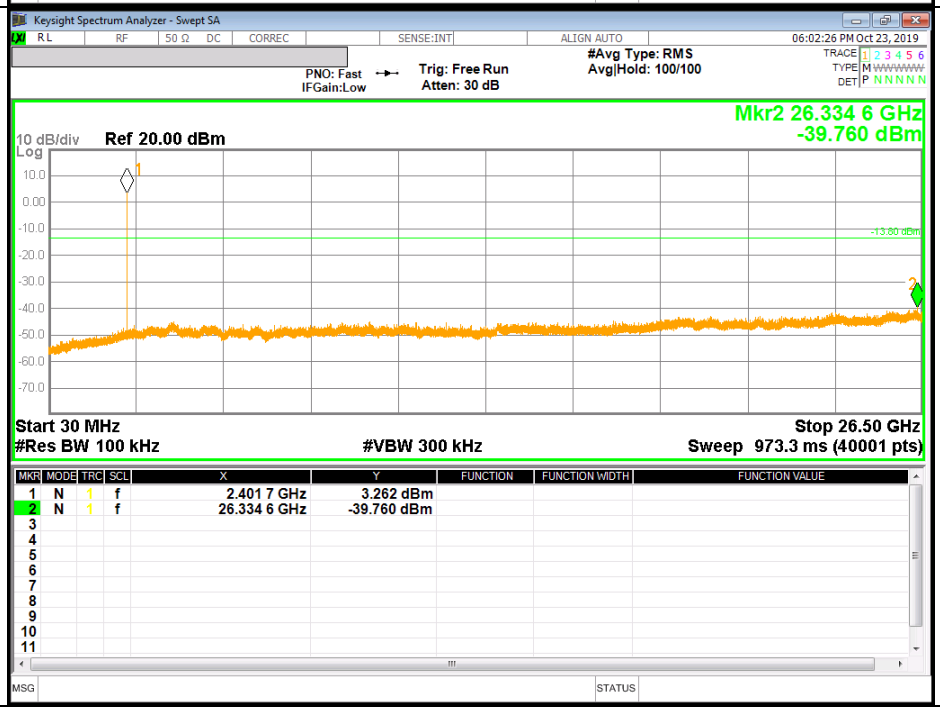
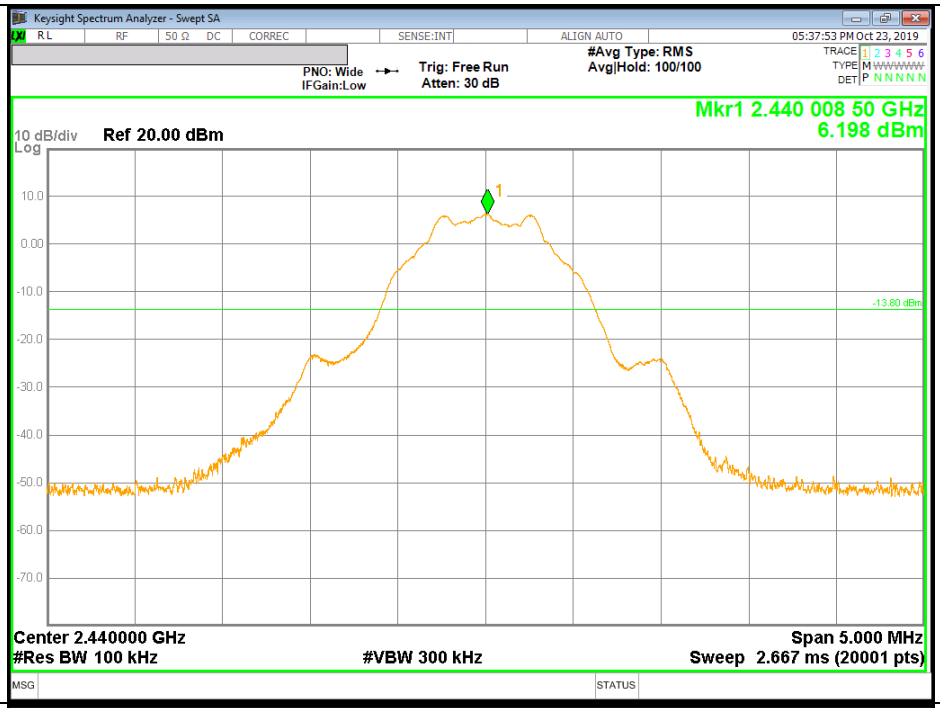
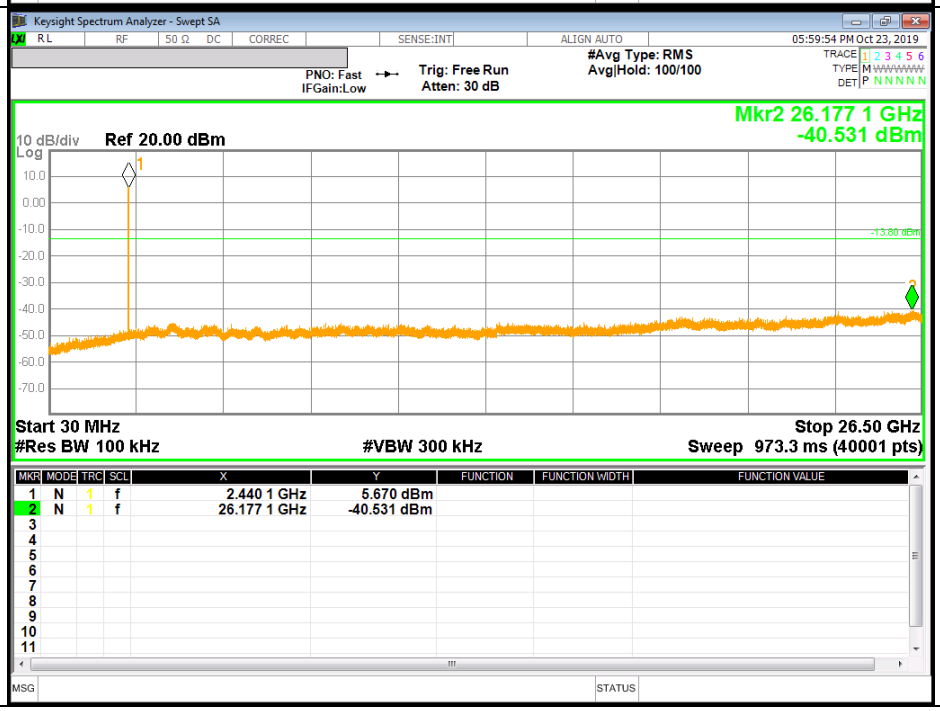
RESULTS

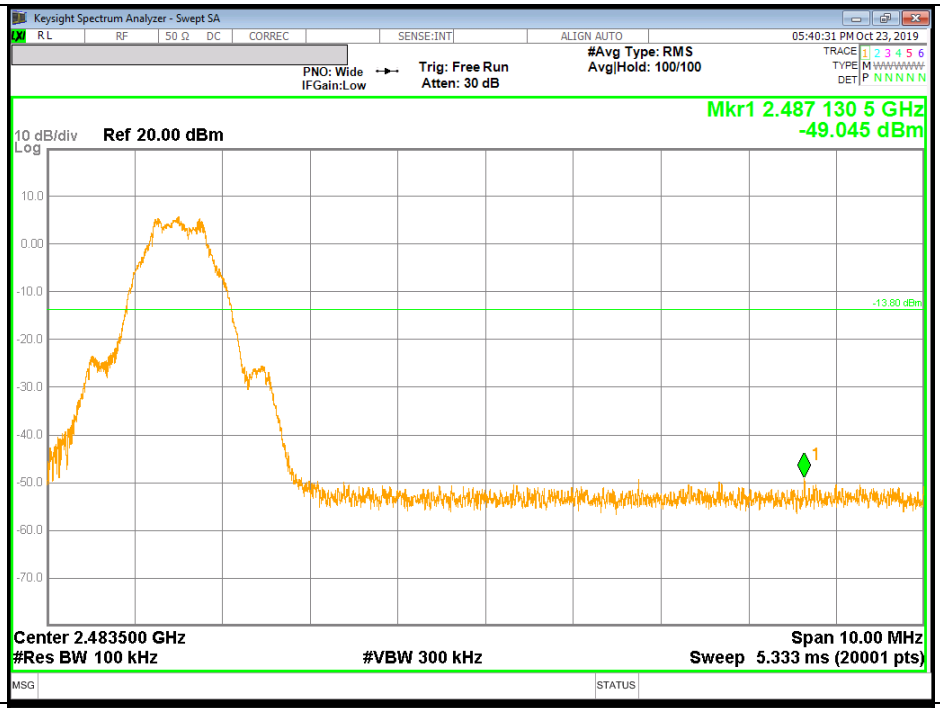
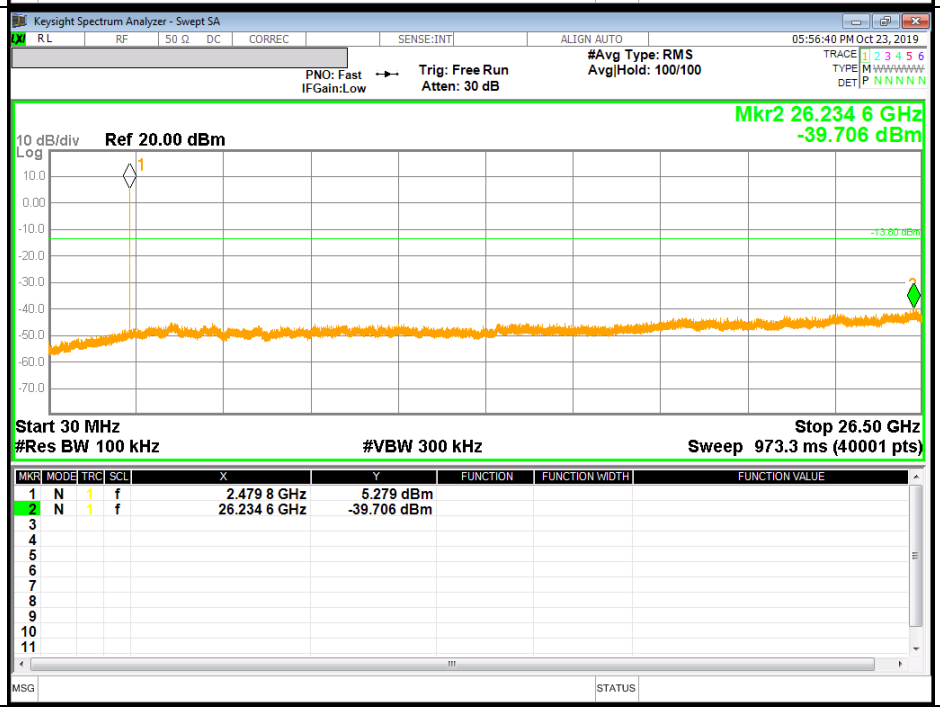
BANDEDGE & SPURIOUS EMISSIONS, LOW CHANNEL (1Mbps)

Low Ch. BandEdge	
Low Ch. Spurious	

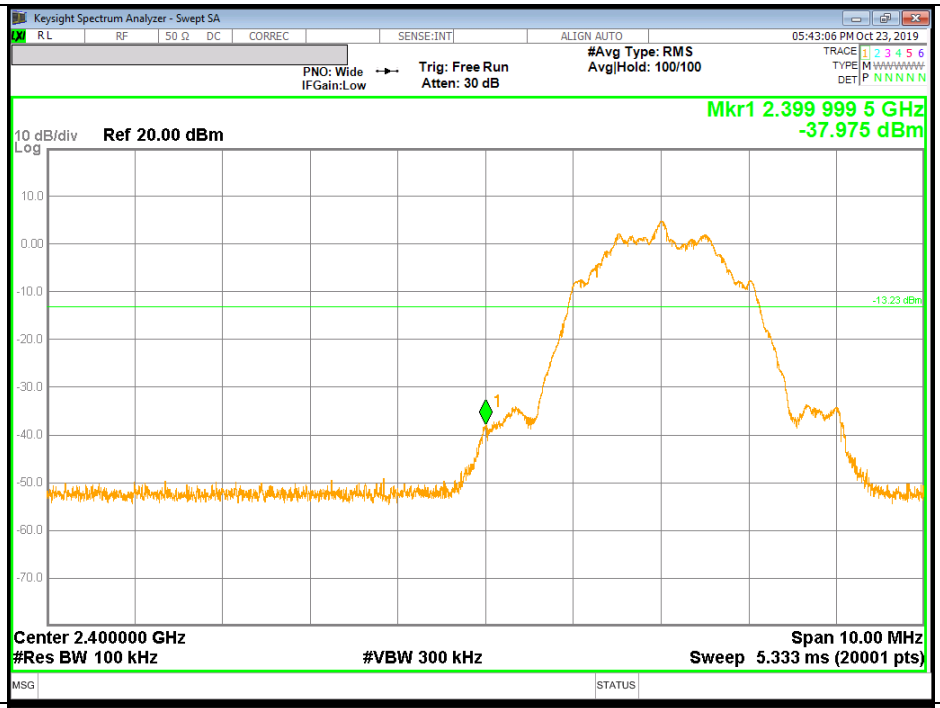
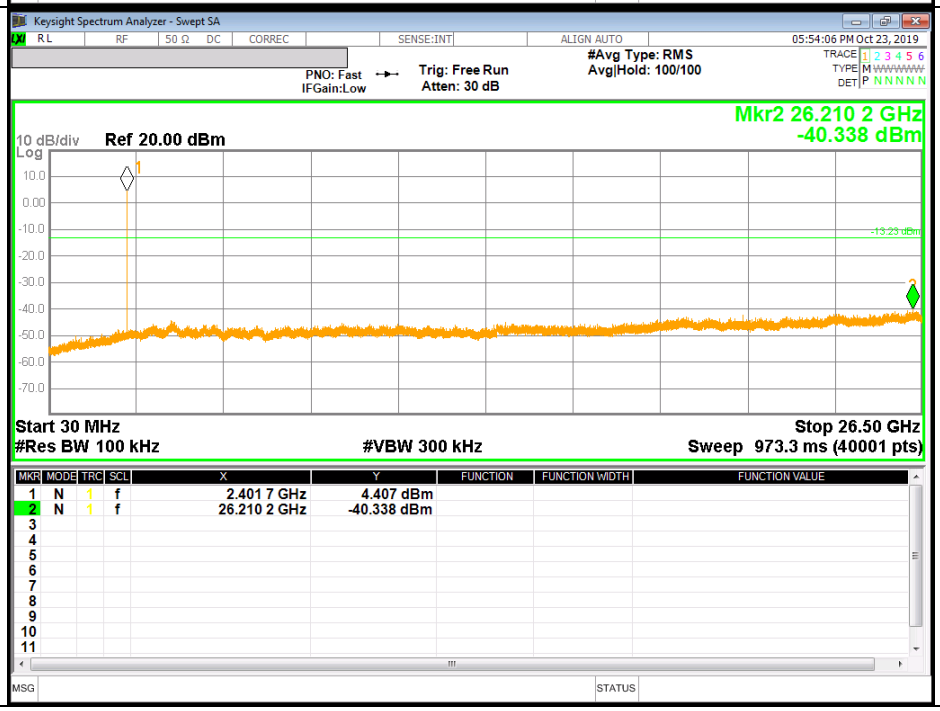
BANDEDGE & SPURIOUS EMISSIONS, MID CHANNEL (1Mbps)

Middle Ch. Reference level	
Middle Ch. Spurious	

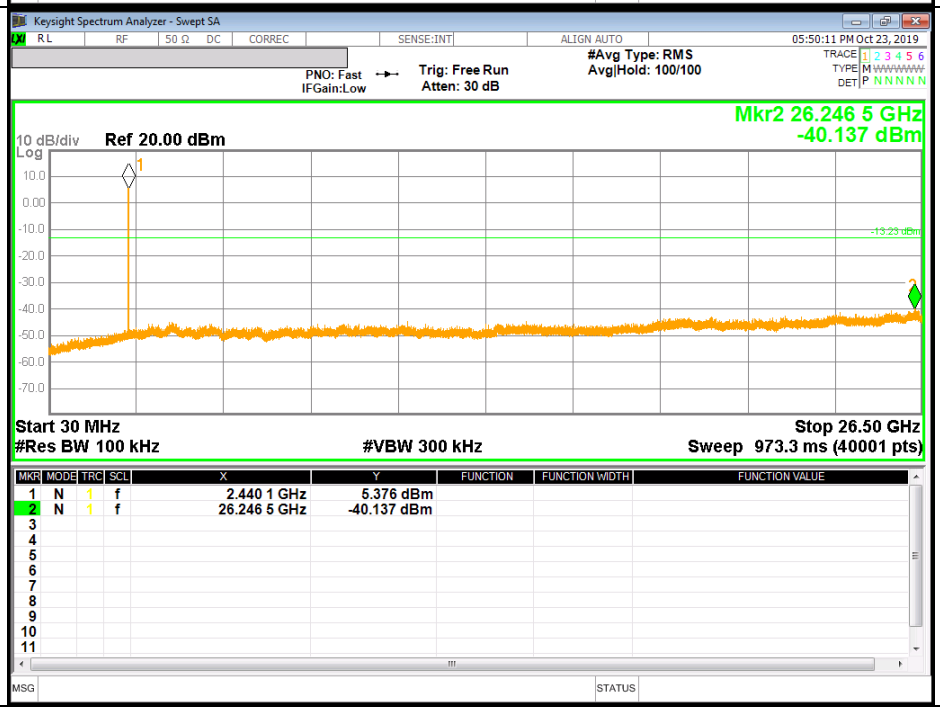
BANDEDGE & SPURIOUS EMISSIONS, HIGH CHANNEL (1Mbps)

High Ch. BandEdge	
High Ch. Spurious	

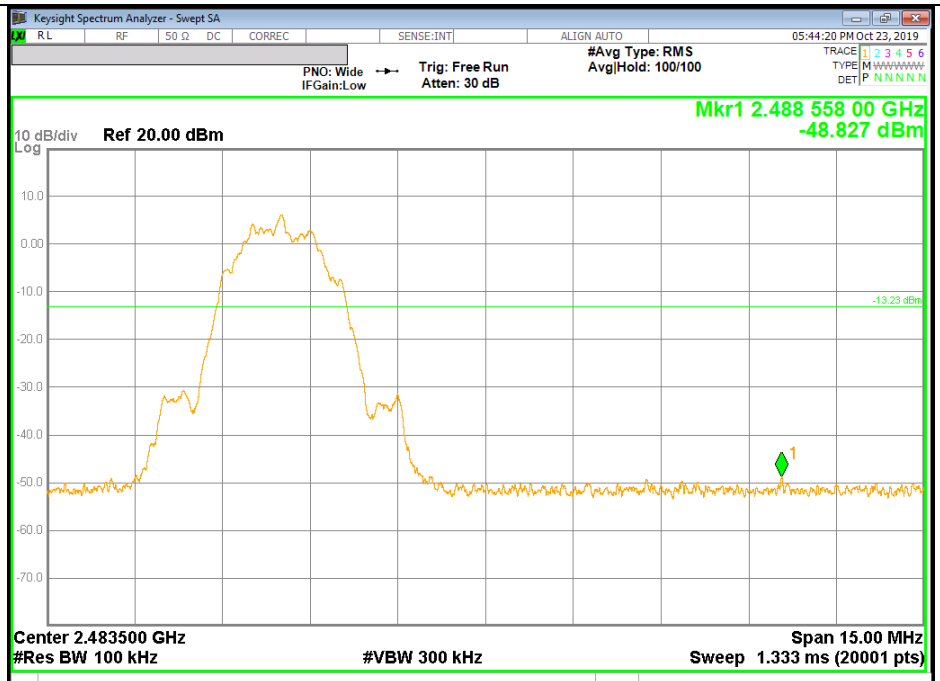
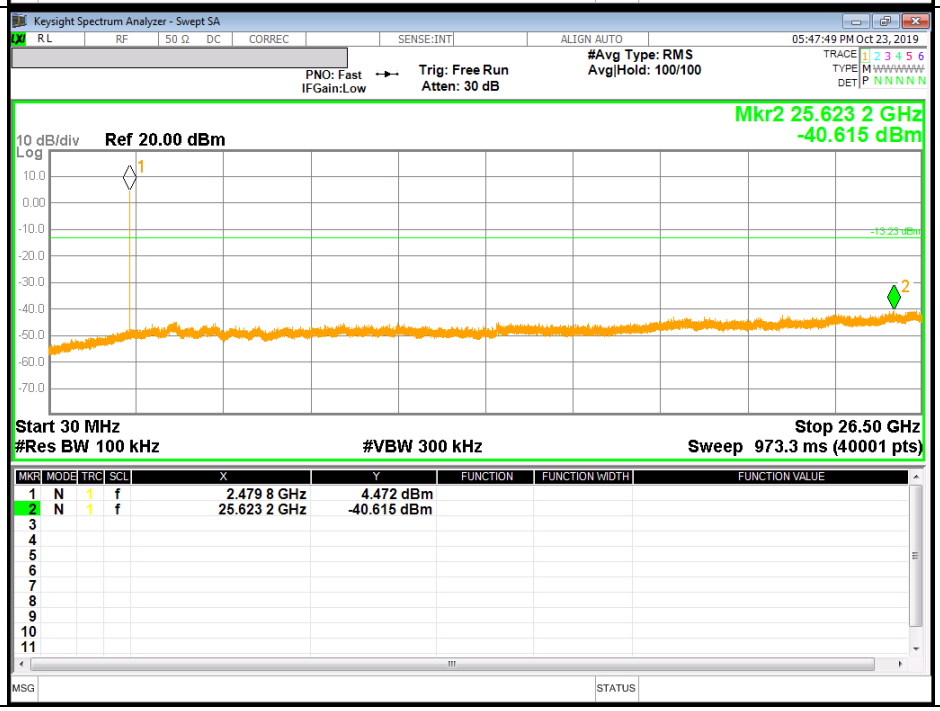
BANDEDGE & SPURIOUS EMISSIONS, LOW CHANNEL (2Mbps)

Low Ch. BandEdge	
Low Ch. Spurious	

BANDEDGE & SPURIOUS EMISSIONS, MID CHANNEL (2Mbps)

Middle Ch. Reference level	
Middle Ch. Spurious	

BANDEDGE & SPURIOUS EMISSIONS, HIGH CHANNEL (2Mbps)

High Ch. BandEdge	
High Ch. Spurious	

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11. RADIATED TEST RESULTS

11.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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.

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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: For 1Mbps, DCF = 10log(1/0.603)=2.20 dB (Spectrum Analyzer round it up to 2.19dB) and for 2Mbps, DCF = 10log(1/0.309)=5.10dB (Spectrum Analyzer round it up to 5.10dB)

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 field 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.

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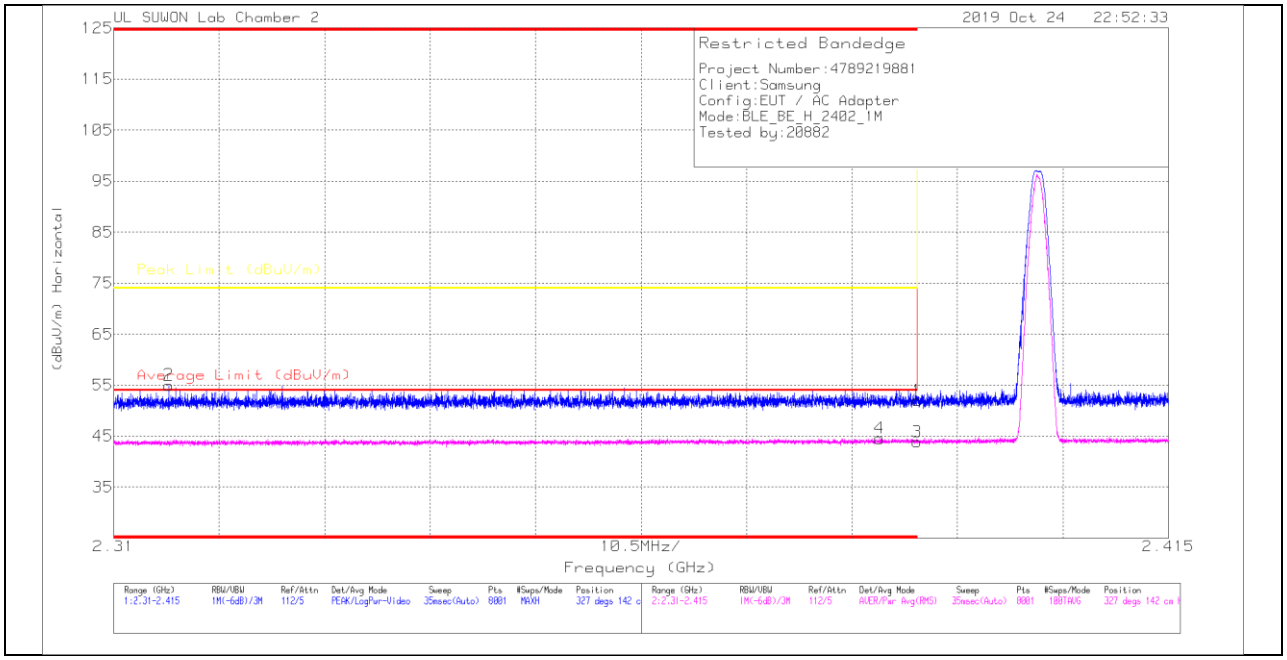
11.2. TRANSMITTER ABOVE 1 GHz

11.2.1.1Mbps MODE

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



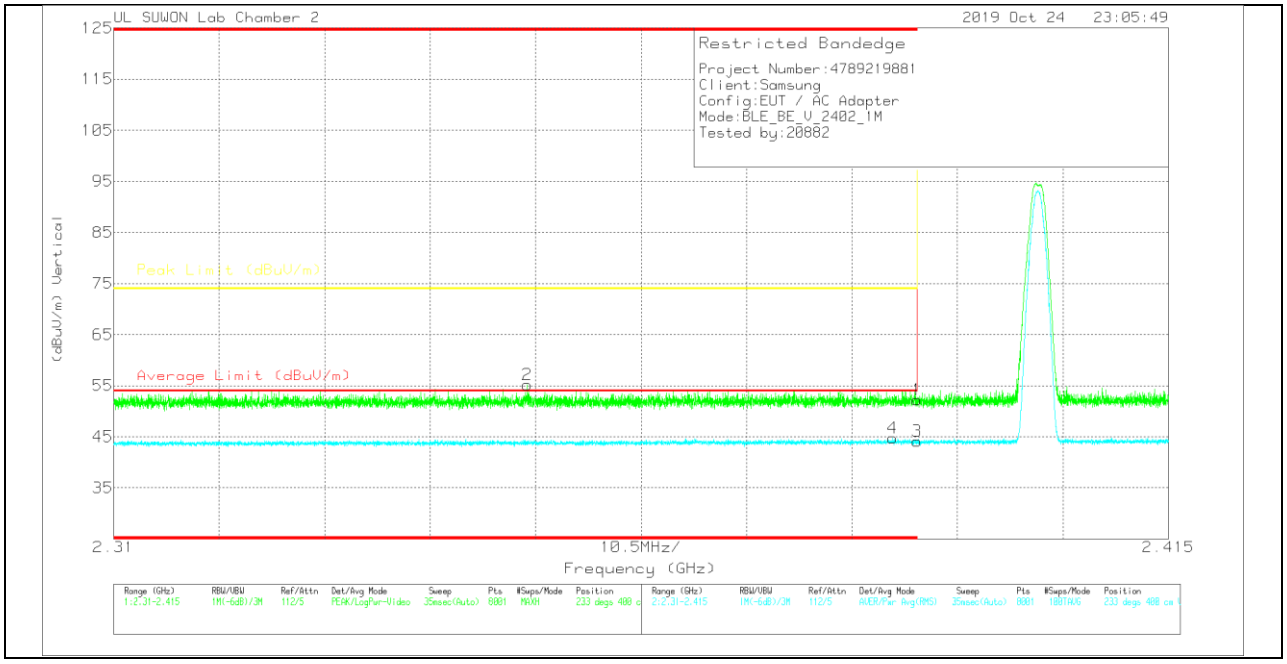
HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	41.04	Pk	31.6	-20.6	0	52.04	-	-	74	-21.96	327	142	H
2	* 2.31547	44.2	Pk	31.5	-20.7	0	55	-	-	74	-19	327	142	H
3	* 2.39	30.72	RMS	31.6	-20.6	2.2	43.92	54	-10.08	-	-	327	142	H
4	* 2.38626	31.37	RMS	31.6	-20.6	2.2	44.57	54	-9.43	-	-	327	142	H

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

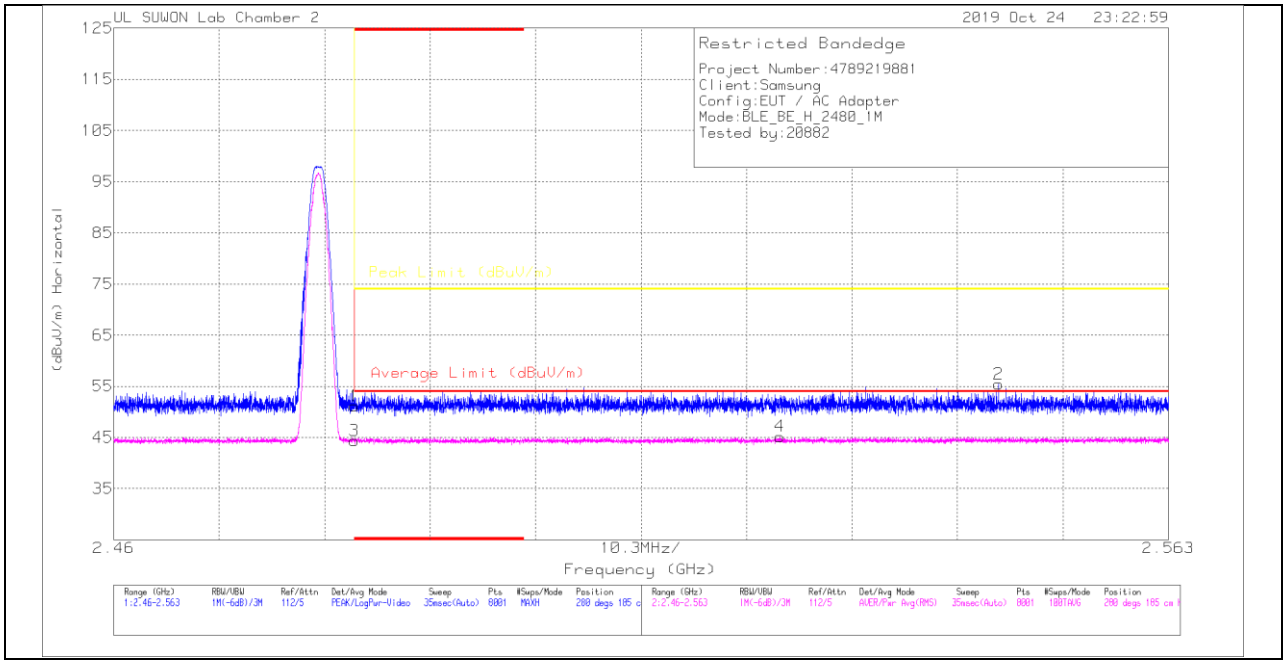
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	41.21	Pk	31.6	-20.6	0	52.21	-	-	74	-21.79	233	400	V
2	* 2.3512	44.32	Pk	31.6	-20.7	0	55.22	-	-	74	-18.78	233	400	V
3	* 2.39	30.94	RMS	31.6	-20.6	2.2	44.14	54	-9.86	-	-	233	400	V
4	* 2.38757	31.55	RMS	31.6	-20.6	2.2	44.75	54	-9.25	-	-	233	400	V

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

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



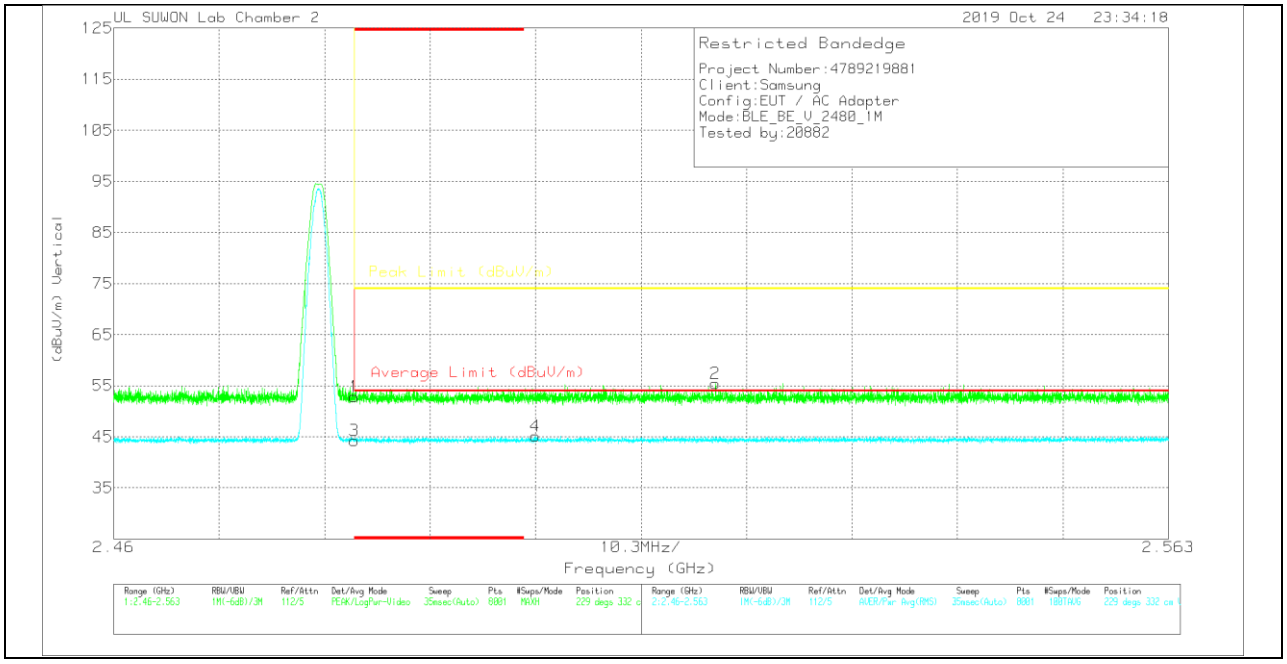
HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	* 2.48351	39.62	Pk	31.9	-20.4	0	51.12	-	-	74	-22.88	280	185	H
2	2.5464	43.84	Pk	32	-20.4	0	55.44	-	-	74	-18.56	280	185	H
3	* 2.48351	30.68	RMS	31.9	-20.4	2.2	44.38	54	-9.62	-	-	280	185	H
4	2.52507	31.48	RMS	31.9	-20.4	2.2	45.18	54	-8.82	-	-	280	185	H

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

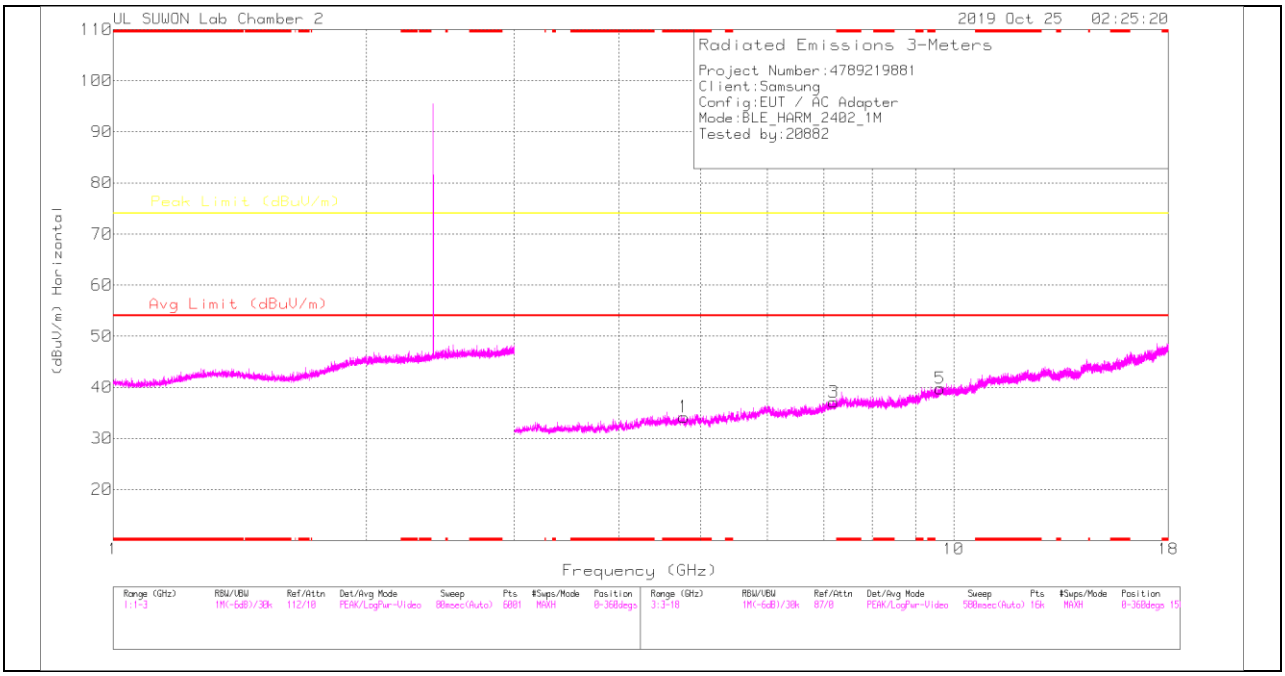
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	* 2.48351	41.36	Pk	31.9	-20.4	0	52.86	-	-	74	-21.14	229	332	V
2	2.51877	43.96	Pk	31.9	-20.4	0	55.46	-	-	74	-18.54	229	332	V
3	* 2.48351	30.56	RMS	31.9	-20.4	2.2	44.26	54	-9.74	-	-	229	332	V
4	2.5012	31.44	RMS	31.9	-20.4	2.2	45.14	54	-8.86	-	-	229	332	V

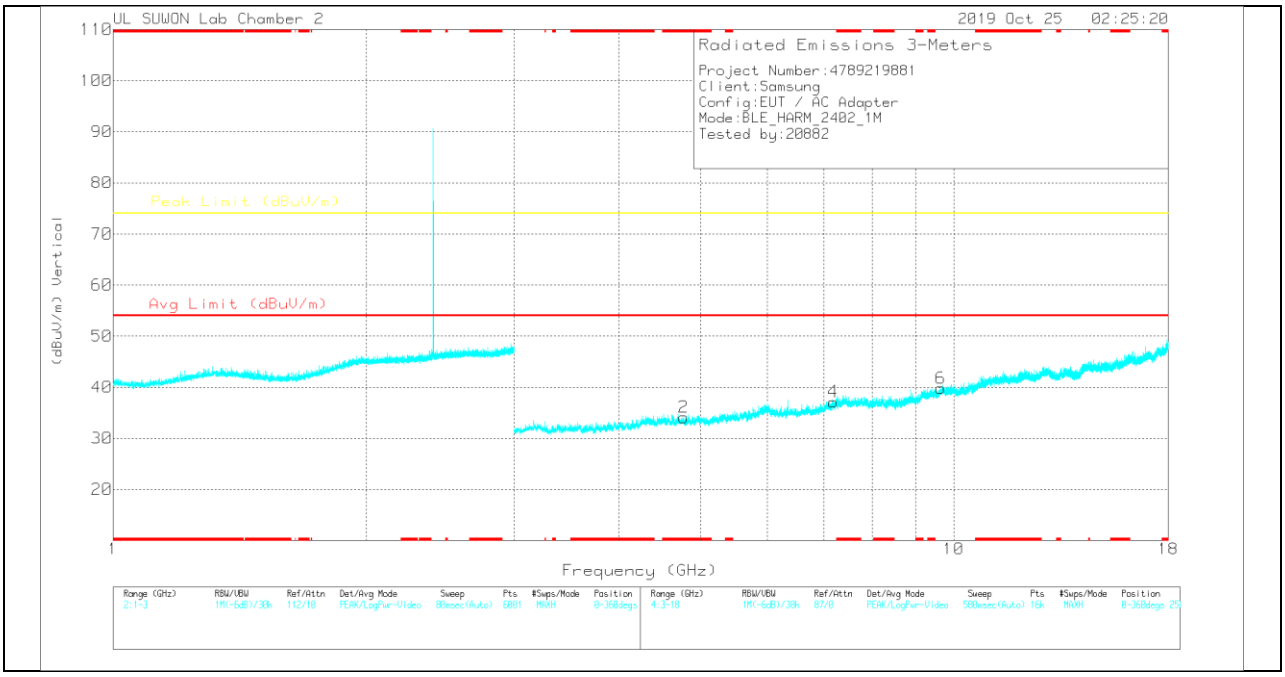
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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_00168724	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	* 4.77645	27.96	PK	34	-27.8	0	34.16	-	-	74	-39.84	0-360	250	H
3	7.19505	26.2	PK	36.1	-25.2	0	37.1	-	-	74	-36.9	0-360	150	H
5	9.63427	24.25	PK	37	-21.5	0	39.75	-	-	74	-34.25	0-360	250	H
2	* 4.77176	27.91	PK	34	-27.8	0	34.11	-	-	74	-39.89	0-360	250	V
4	7.18942	26.23	PK	36.1	-25.2	0	37.13	-	-	74	-36.87	0-360	250	V
6	9.65114	24.09	PK	37.1	-21.4	0	39.79	-	-	74	-34.21	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_00168724	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
* 4.77735	28.83	PK2	34	-27.8	0	35.03	-	-	74	-38.97	0	100	H
* 4.77076	29.73	PK2	34	-27.7	0	36.03	-	-	74	-37.97	0	100	V
7.19686	27.28	PK2	36.1	-25.1	0	38.28	-	-	74	-35.72	0	100	H
7.18966	28.24	PK2	36.1	-25.2	0	39.14	-	-	74	-34.86	0	100	V
9.63623	24.15	PK2	37	-21.5	0	39.65	-	-	74	-34.35	0	100	H
9.65091	23.78	PK2	37.1	-21.4	0	39.48	-	-	74	-34.52	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C(03)
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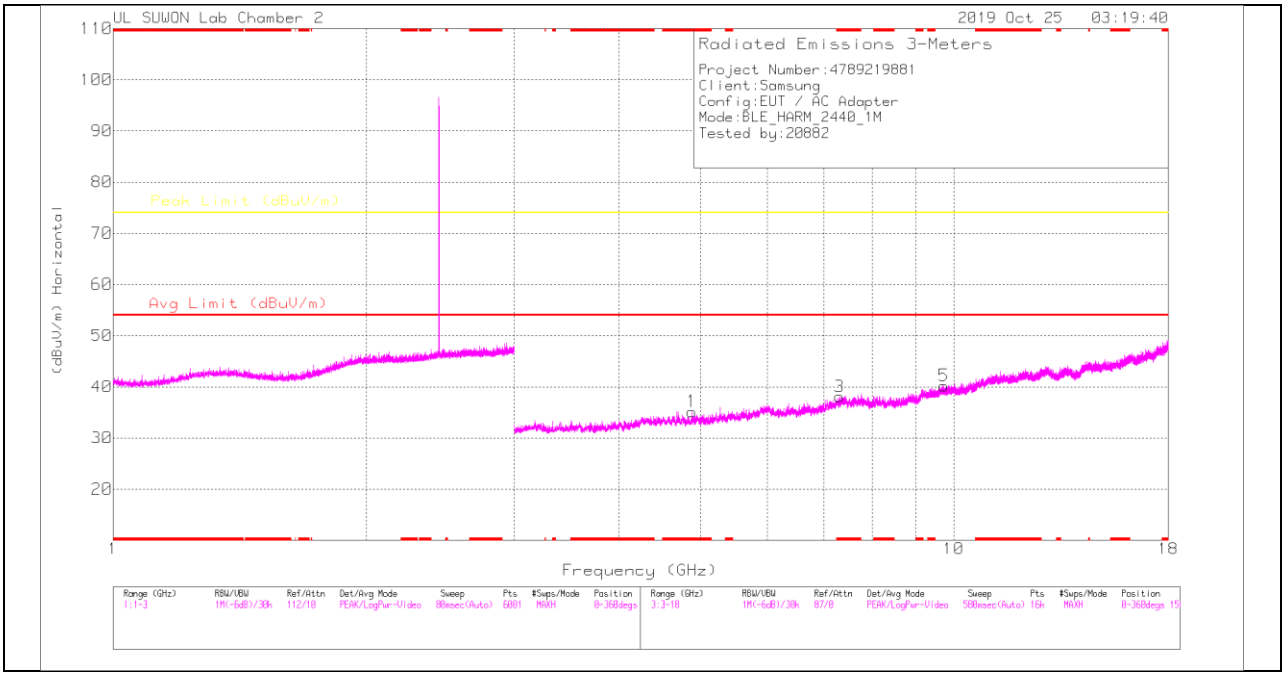
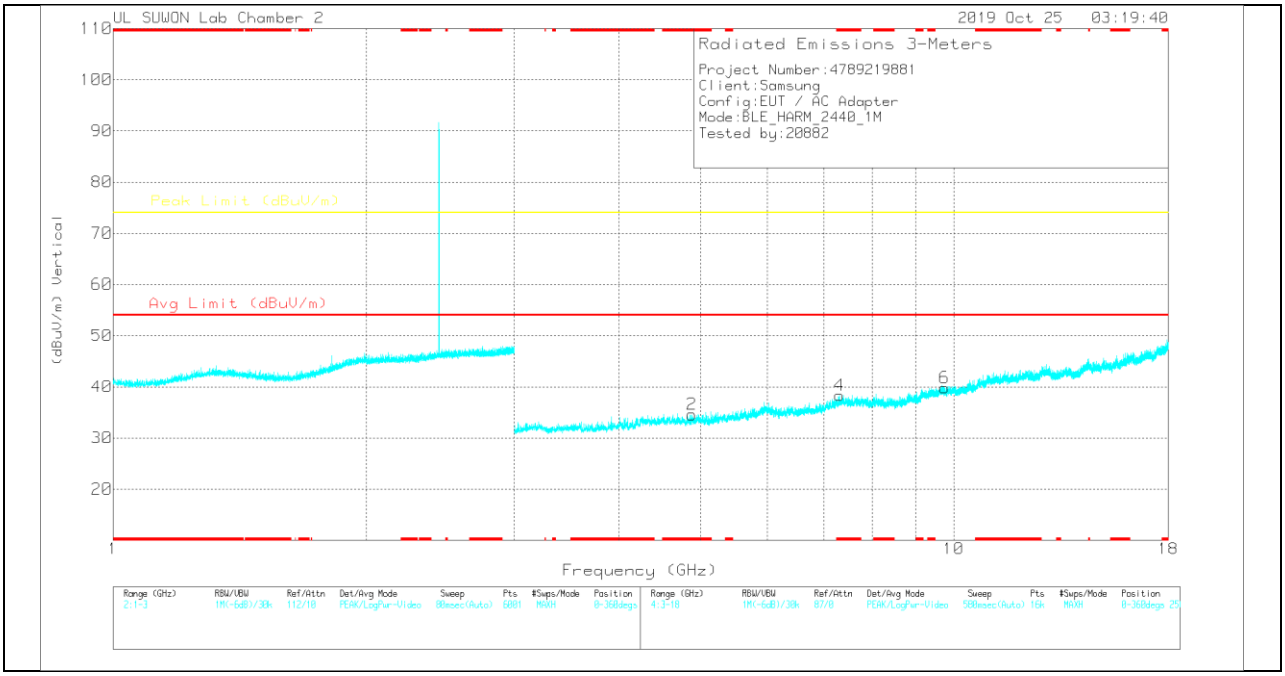
MID CHANNEL HORIZONTAL



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_00168724	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
`	* 4.87957	28.95	PK	34	-27.8	0	35.15	-	-	74	-38.85	0-360	150	H
3	* 7.31129	26.77	PK	36.2	-24.9	0	38.07	-	-	74	-35.93	0-360	250	H
5	9.73645	24.18	PK	37.2	-21.2	0	40.18	-	-	74	-33.82	0-360	150	H
2	* 4.87957	28.38	PK	34	-27.8	0	34.58	-	-	74	-39.42	0-360	150	V
4	* 7.31504	26.92	PK	36.2	-24.8	0	38.32	-	-	74	-35.68	0-360	150	V
6	9.74958	23.8	PK	37.2	-21.2	0	39.8	-	-	74	-34.2	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_00168724	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
* 4.88132	28.59	PK2	34	-27.8	0	34.79	-	-	74	-39.21	0	100	H
* 4.87918	29.43	PK2	34	-27.8	0	35.63	-	-	74	-38.37	0	100	V
* 7.31227	27.38	PK2	36.2	-24.8	0	38.78	-	-	74	-35.22	0	100	H
* 7.31618	23.78	PK2	36.2	-24.8	0	35.18	-	-	74	-38.82	0	100	V
9.73507	18.93	PK2	37.2	-21.2	0	34.93	-	-	74	-39.07	0	100	H
9.74885	22.75	PK2	37.2	-21.2	0	38.75	-	-	74	-35.25	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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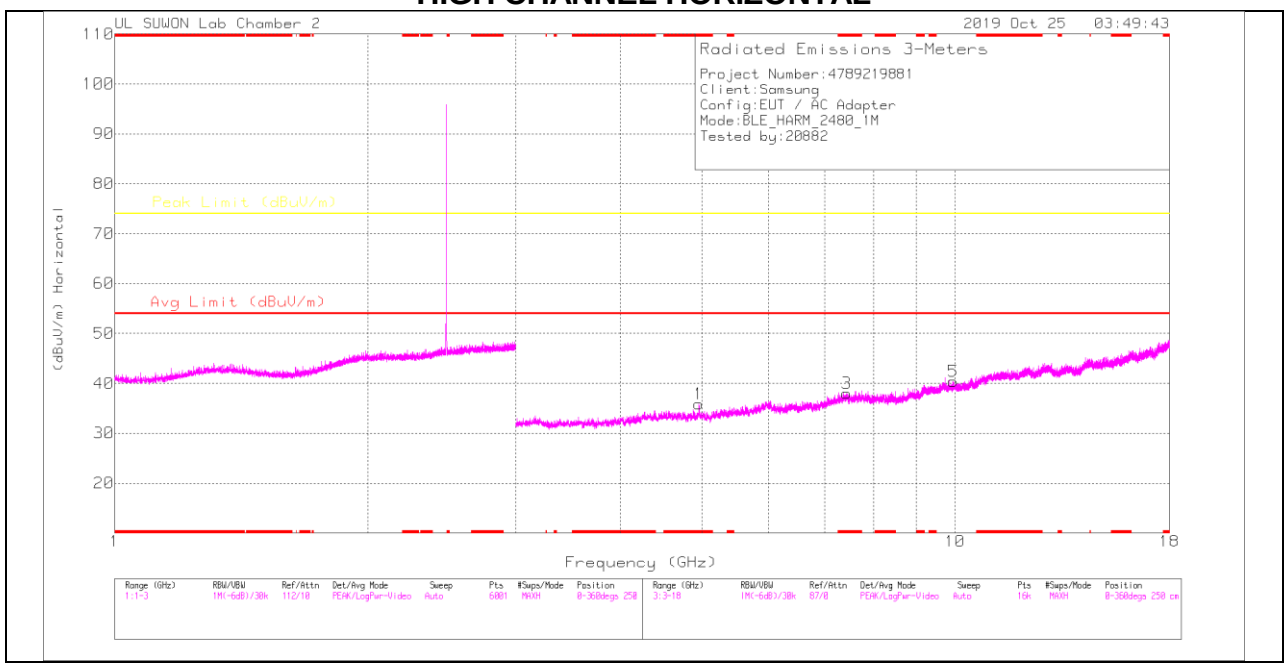
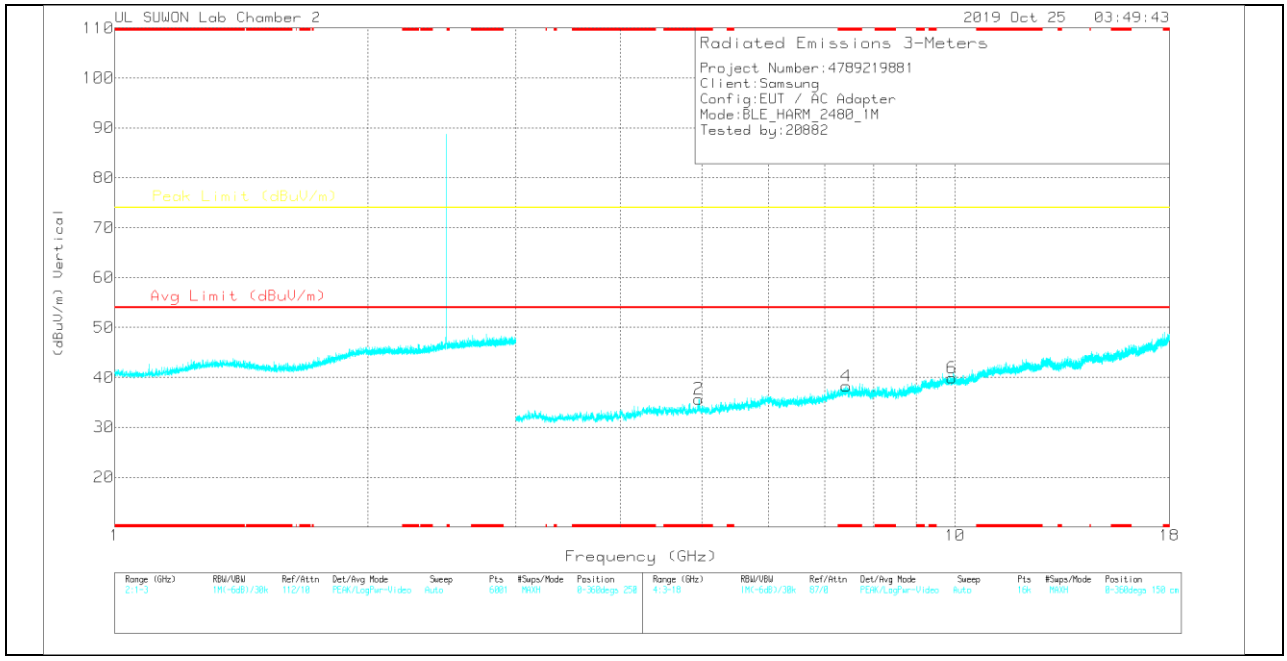
HIGH CHANNEL HORIZONTAL



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.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	* 4.95925	28.81	PK	34.1	-27	0	35.91	-	-	74	-38.09	0-360	150	H
3	* 7.4341	25.66	PK	36.2	-23.9	0	37.96	-	-	74	-36.04	0-360	150	H
5	9.94831	23.47	PK	37.5	-20.6	0	40.37	-	-	74	-33.63	0-360	250	H
2	* 4.95925	28.59	PK	34.1	-27	0	35.69	-	-	74	-38.31	0-360	150	V
4	* 7.42566	25.98	PK	36.2	-23.9	0	38.28	-	-	74	-35.72	0-360	150	V
6	9.923	23.43	PK	37.4	-20.9	0	39.93	-	-	74	-34.07	0-360	150	V

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

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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
* 4.95955	31.27	PK2	34.1	-27	0	38.37	-	-	74	-35.63	141	118	H
* 4.95975	25.93	MAv1	34.1	-27	2.2	35.23	54	-18.77	-	-	141	118	H
* 4.95963	37.9	PK2	34.1	-27	0	45	-	-	74	-29	188	100	V
* 4.95961	27	MAv1	34.1	-27	2.2	36.3	54	-17.7	-	-	188	100	V
* 7.43498	34.27	PK2	36.2	-23.9	0	46.57	-	-	74	-27.43	360	100	H
* 7.42451	33.97	PK2	36.2	-23.9	0	46.27	-	-	74	-27.73	360	100	V
9.9501	31.75	PK2	37.5	-20.6	0	48.65	-	-	74	-25.35	360	100	H
9.92265	31.83	PK2	37.4	-20.9	0	48.33	-	-	74	-25.67	360	100	V

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

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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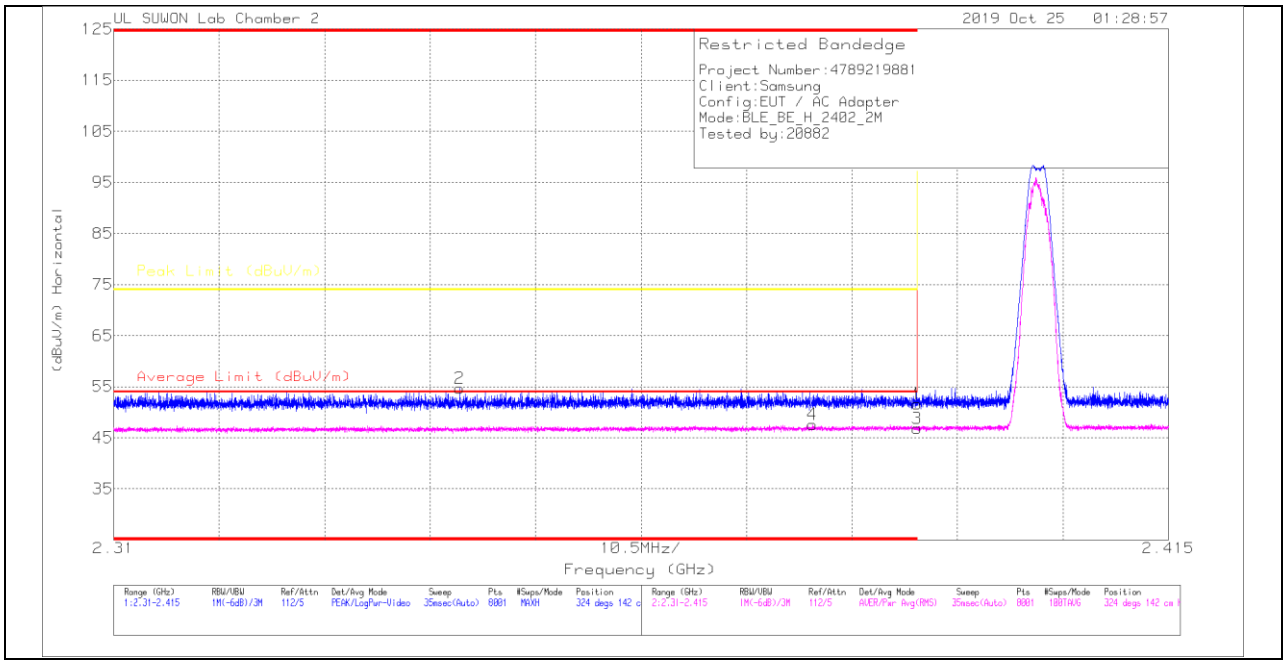
11.2.2.2Mbps MODE

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



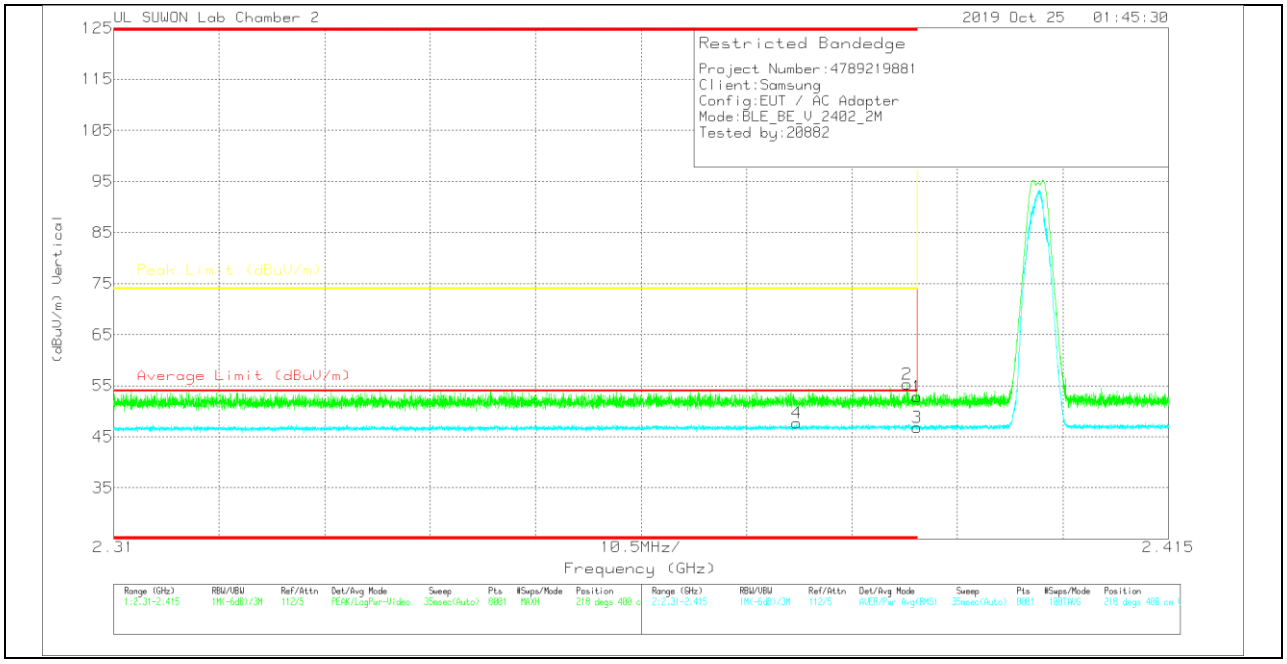
HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	40.65	Pk	31.6	-20.6	0	51.65	-	-	74	-22.35	324	142	H
2	* 2.34444	43.86	Pk	31.5	-20.7	0	54.66	-	-	74	-19.34	324	142	H
3	* 2.39	30.75	RMS	31.6	-20.6	5.1	46.85	54	-7.15	-	-	324	142	H
4	* 2.37959	31.53	RMS	31.6	-20.6	5.1	47.63	54	-6.37	-	-	324	142	H

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

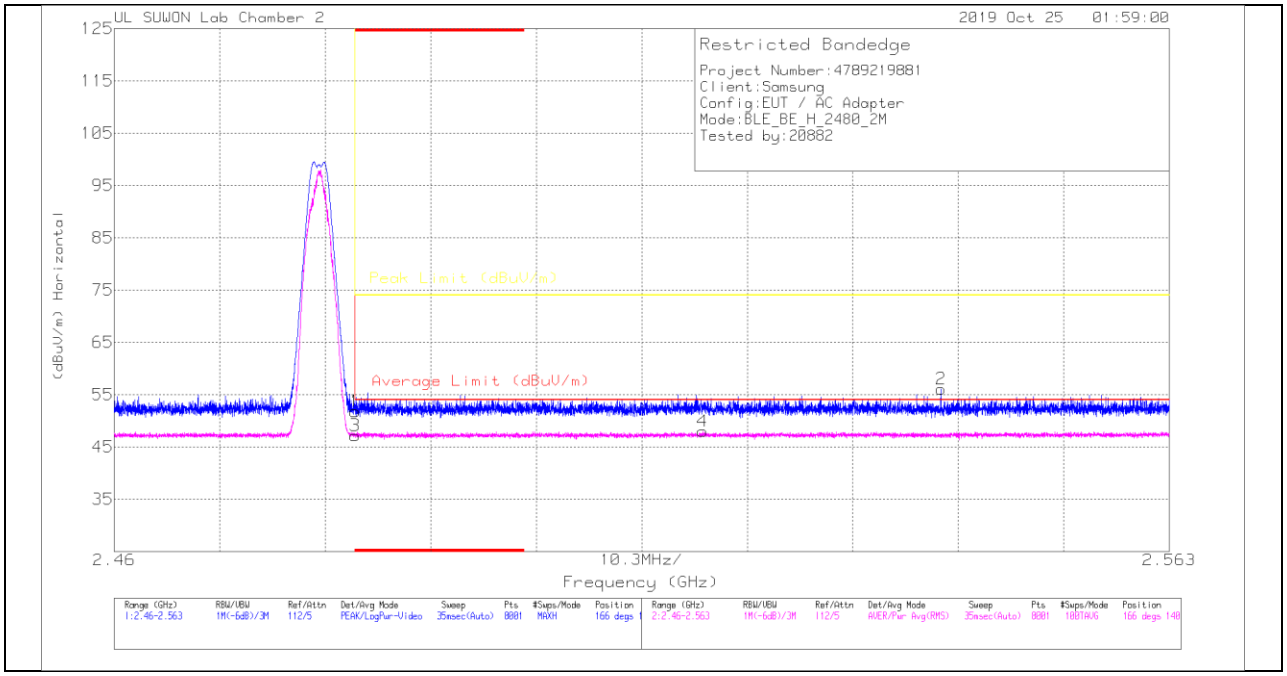
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	41.9	Pk	31.6	-20.6	0	52.9	-	-	74	-21.1	218	400	V
2	* 2.389	44.36	Pk	31.6	-20.6	0	55.36	-	-	74	-18.64	218	400	V
3	* 2.39	30.74	RMS	31.6	-20.6	5.1	46.84	54	-7.16	-	-	218	400	V
4	* 2.37797	31.64	RMS	31.6	-20.7	5.1	47.64	54	-6.36	-	-	218	400	V

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

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



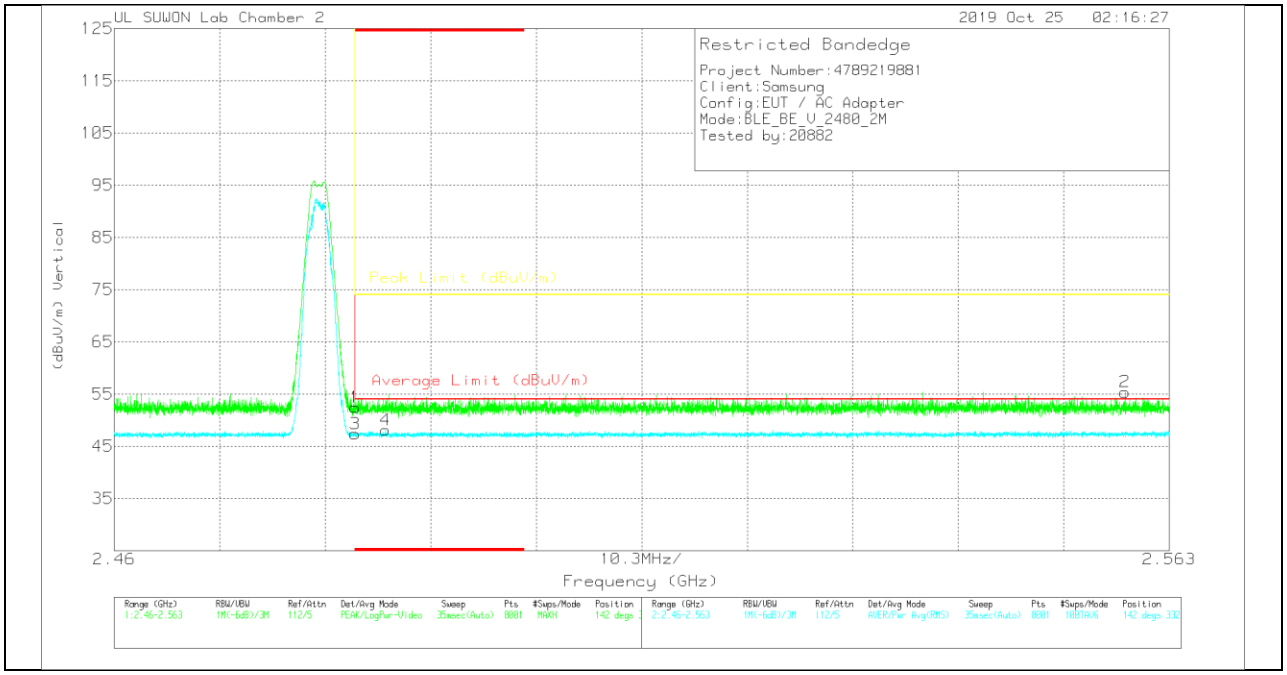
HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	* 2.48351	40.33	Pk	31.9	-20.4	0	51.83	-	-	74	-22.17	166	140	H
2	2.54073	44.59	Pk	32	-20.5	0	56.09	-	-	74	-17.91	166	140	H
3	* 2.48351	30.58	RMS	31.9	-20.4	5.1	47.18	54	-6.82	-	-	166	140	H
4	2.51745	31.41	RMS	31.9	-20.4	5.1	48.01	54	-5.99	-	-	166	140	H

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

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

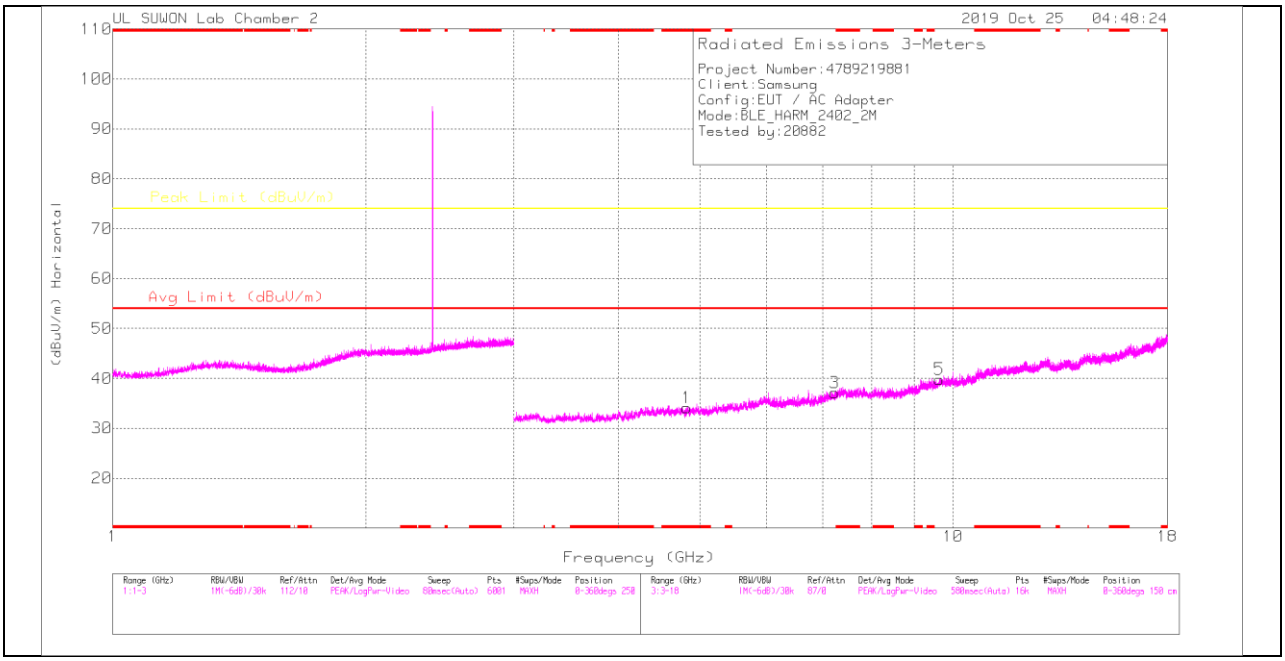
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	* 2.48351	40.97	Pk	31.9	-20.4	0	52.47	-	-	74	-21.53	142	332	V
2	2.55867	43.81	Pk	32	-20.4	0	55.41	-	-	74	-18.59	142	332	V
3	* 2.48351	30.81	RMS	31.9	-20.4	5.1	47.41	54	-6.59	-	-	142	332	V
4	* 2.48651	31.61	RMS	31.9	-20.5	5.1	48.11	54	-5.89	-	-	142	332	V

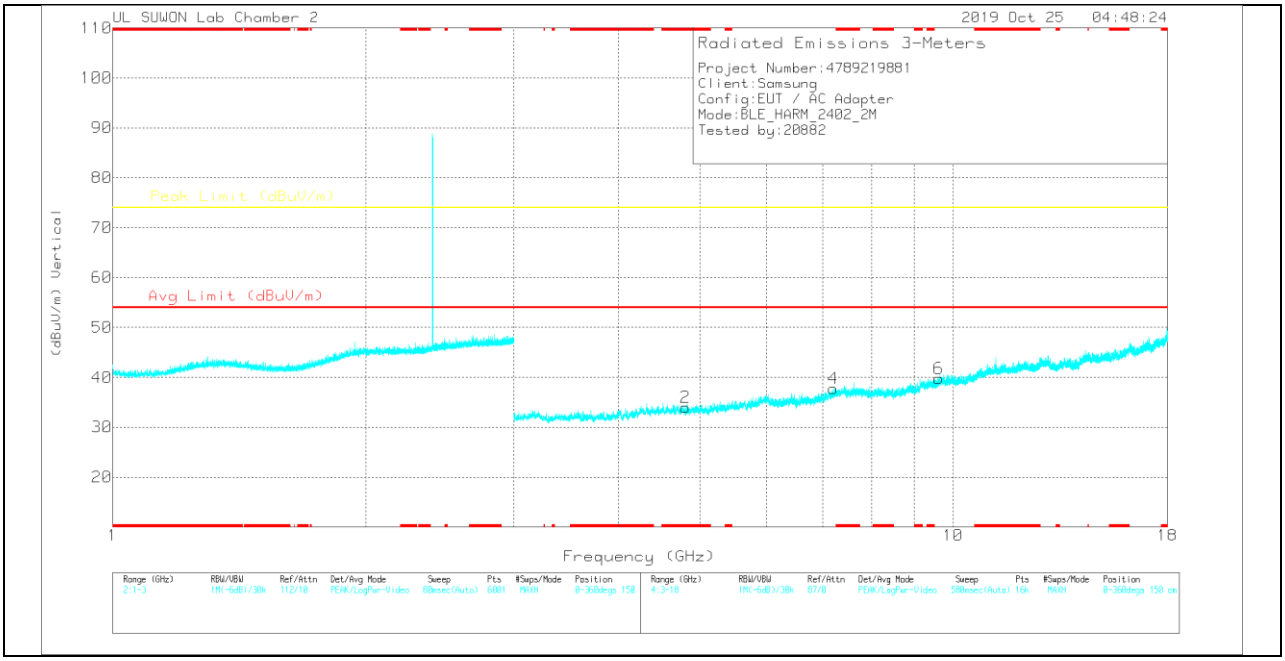
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	* 4.82051	28.25	PK	34	-28.1	0	34.15	-	-	74	-39.85	0-360	150	H
3	7.22786	26.3	PK	36.1	-25.3	0	37.1	-	-	74	-36.9	0-360	150	H
5	9.62771	24.33	PK	37	-21.5	0	39.83	-	-	74	-34.17	0-360	150	H
2	* 4.80457	27.95	PK	34	-27.9	0	34.05	-	-	74	-39.95	0-360	150	V
4	7.21099	26.95	PK	36.1	-25.3	0	37.75	-	-	74	-36.25	0-360	150	V
6	9.6099	24.49	PK	37	-21.7	0	39.79	-	-	74	-34.21	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_00168724	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
* 4.82164	36.65	PK2	34	-28.1	0	42.55	-	-	74	-31.45	360	100	H
* 4.80331	37.17	PK2	34	-28	0	43.17	-	-	74	-30.83	360	100	V
7.22861	34.44	PK2	36.1	-25.4	0	45.14	-	-	74	-28.86	360	100	H
7.21266	34.77	PK2	36.1	-25.3	0	45.57	-	-	74	-28.43	360	100	V
9.6289	32.65	PK2	37	-21.5	0	48.15	-	-	74	-25.85	360	100	H
9.61178	32.67	PK2	37	-21.7	0	47.97	-	-	74	-26.03	360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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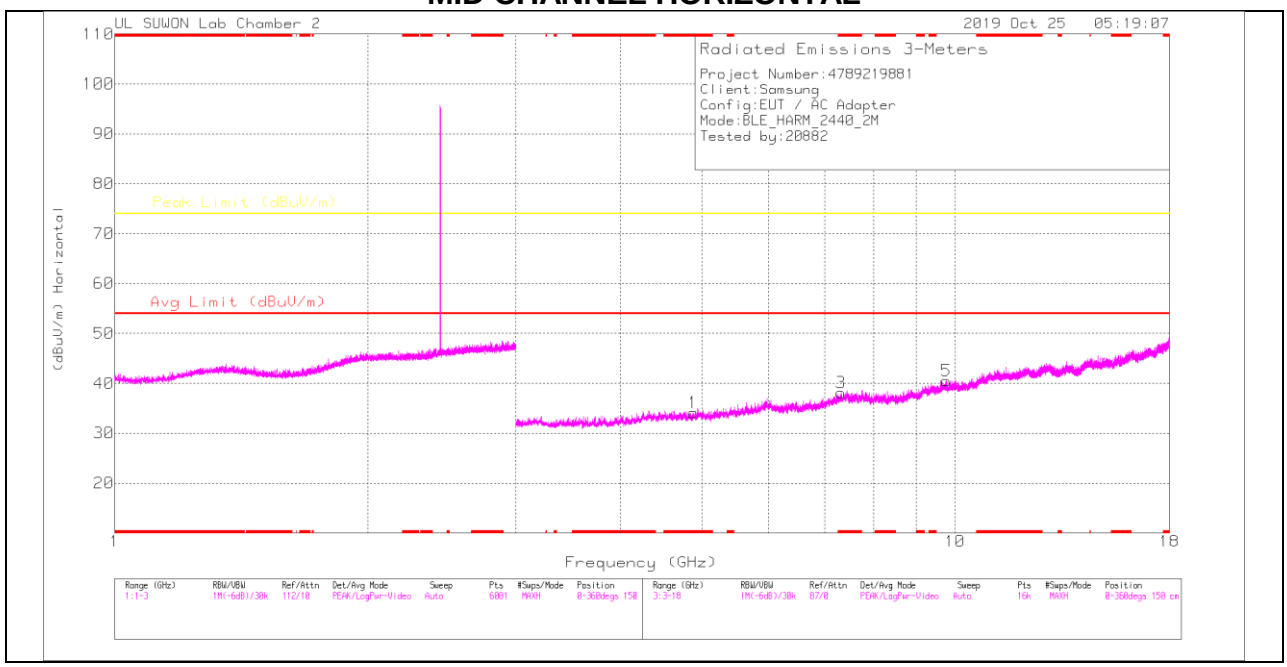
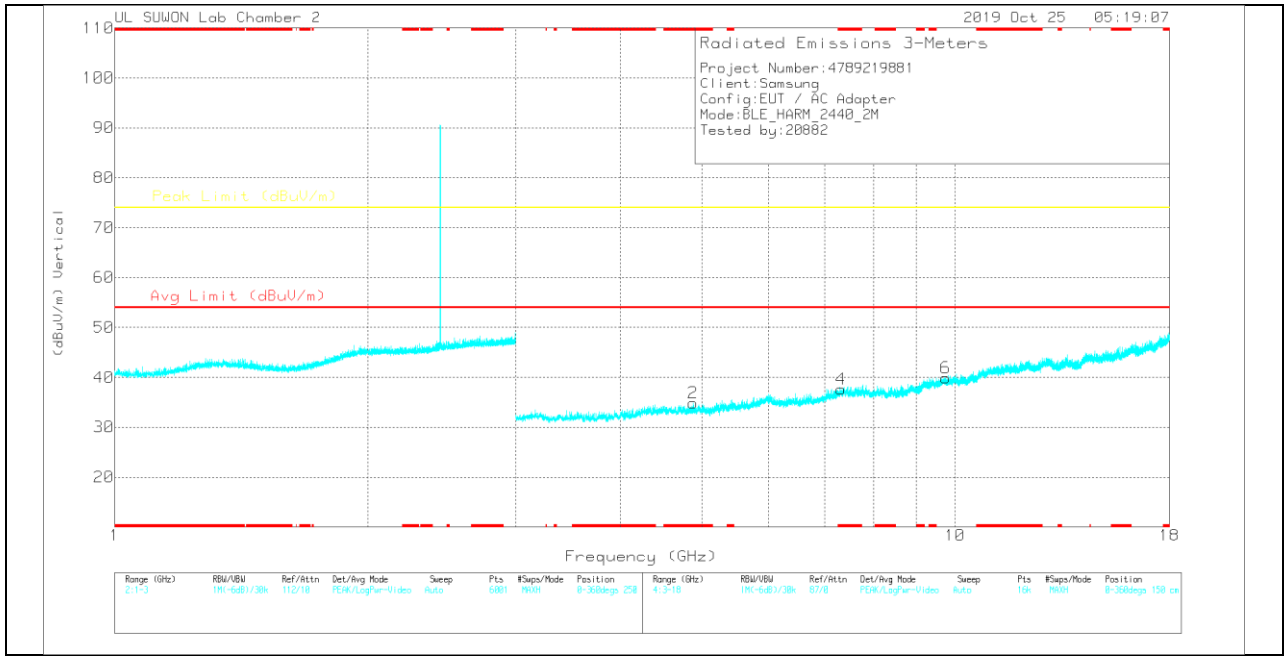
MID CHANNEL HORIZONTAL



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.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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	* 4.87676	27.96	PK	34	-27.8	0	34.16	-	-	74	-39.84	0-360	150	H
3	* 7.31317	26.88	PK	36.2	-24.9	0	38.18	-	-	74	-35.82	0-360	250	H
5	9.7627	24.56	PK	37.2	-21.2	0	40.56	-	-	74	-33.44	0-360	150	H
2	* 4.87863	28.69	PK	34	-27.8	0	34.89	-	-	74	-39.11	0-360	150	V
4	* 7.31692	26.19	PK	36.2	-24.8	0	37.59	-	-	74	-36.41	0-360	150	V
6	9.75426	23.94	PK	37.2	-21.2	0	39.94	-	-	74	-34.06	0-360	150	V

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

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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
* 4.87679	37.07	PK2	34	-27.8	0	43.27	-	-	74	-30.73	360	100	H
* 4.88045	38.01	PK2	34	-27.8	0	44.21	-	-	74	-29.79	360	100	V
* 7.31163	34.75	PK2	36.2	-24.8	0	46.15	-	-	74	-27.85	360	100	H
* 7.3151	35.27	PK2	36.2	-24.8	0	46.67	-	-	74	-27.33	360	100	V
9.761	32.45	PK2	37.2	-21.2	0	48.45	-	-	74	-25.55	360	100	H
9.75583	33.06	PK2	37.2	-21.2	0	49.06	-	-	74	-24.94	360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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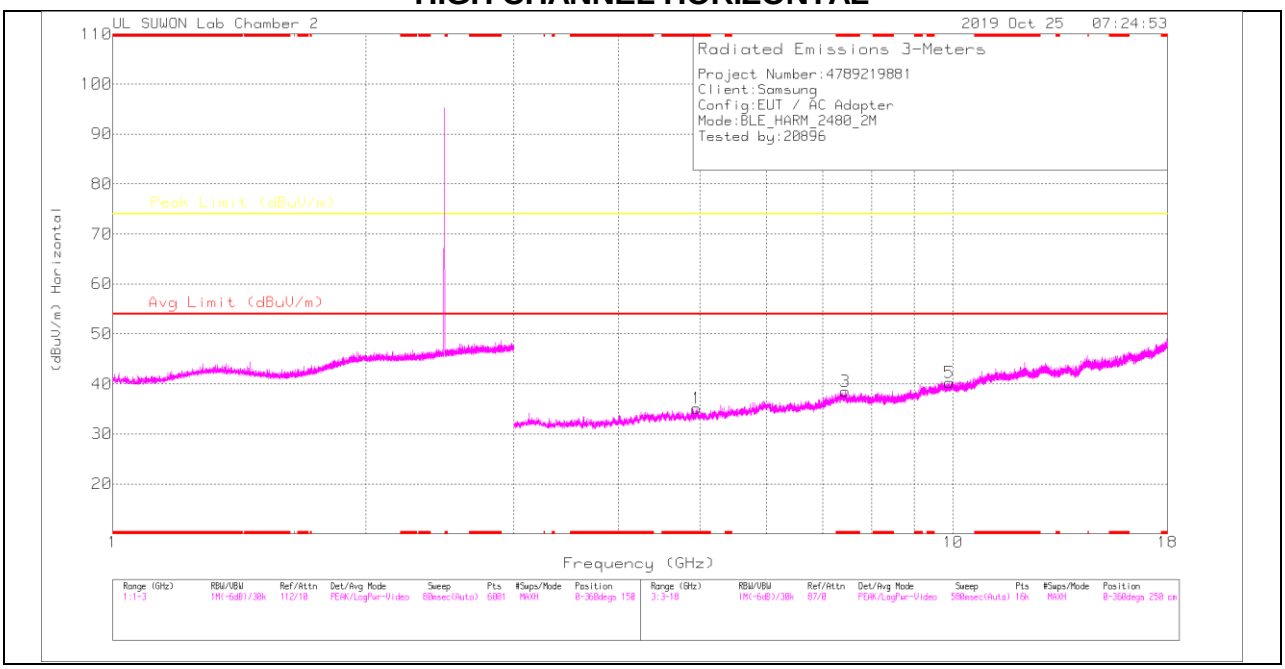
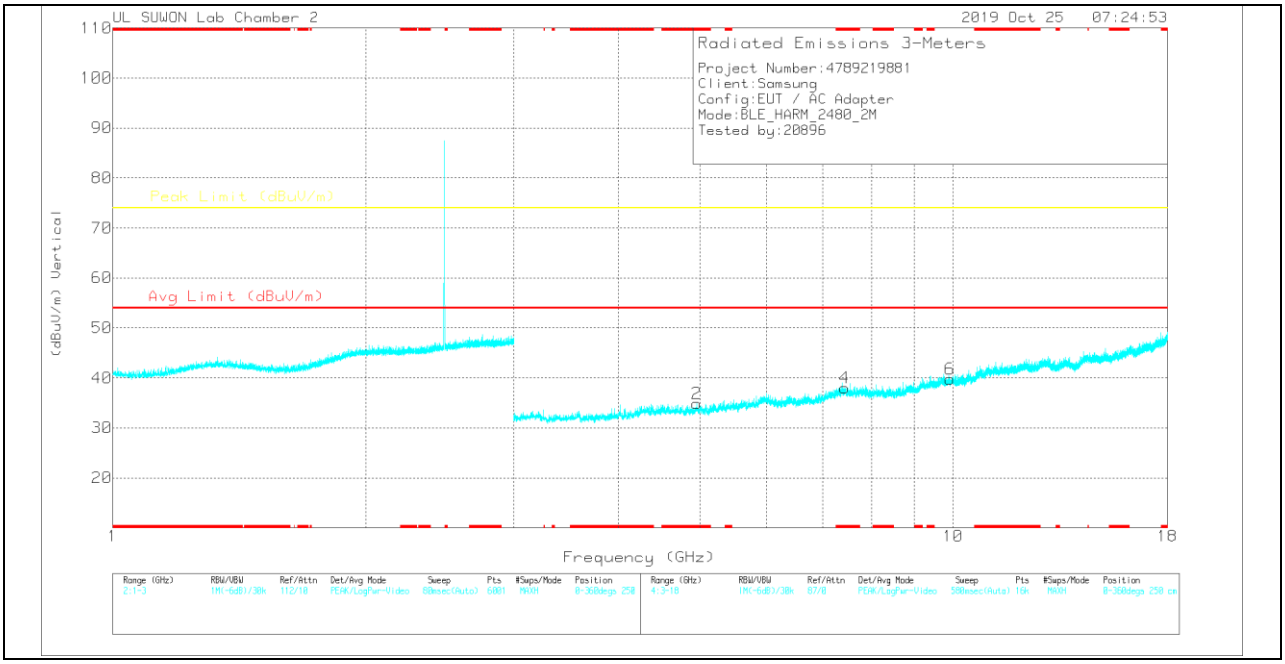
HIGH CHANNEL HORIZONTAL



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_00168724	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	* 4.95831	27.98	PK	34.1	-27	0	35.08	-	-	74	-38.92	0-360	250	H
3	* 7.45097	26.3	PK	36.2	-24	0	38.5	-	-	74	-35.5	0-360	250	H
5	9.89675	23.94	PK	37.4	-21.1	0	40.24	-	-	74	-33.76	0-360	250	H
2	* 4.95644	27.78	PK	34.1	-27	0	34.88	-	-	74	-39.12	0-360	150	V
4	* 7.43128	25.67	PK	36.2	-23.9	0	37.97	-	-	74	-36.03	0-360	150	V
6	9.91363	23.4	PK	37.4	-21	0	39.8	-	-	74	-34.2	0-360	150	V

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

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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
* 4.95891	35.84	PK2	34.1	-27	0	42.94	-	-	74	-31.06	360	100	H
* 4.95912	37.92	PK2	34.1	-27	0	45.02	-	-	74	-28.98	360	100	V
* 7.45028	34.32	PK2	36.2	-24	0	46.52	-	-	74	-27.48	360	100	H
* 7.44967	34.26	PK2	36.2	-24	0	46.46	-	-	74	-27.54	360	100	V
9.89551	31.93	PK2	37.4	-21.1	0	48.23	-	-	74	-25.77	360	100	H
9.89591	32.07	PK2	37.4	-21.1	0	48.37	-	-	74	-25.63	360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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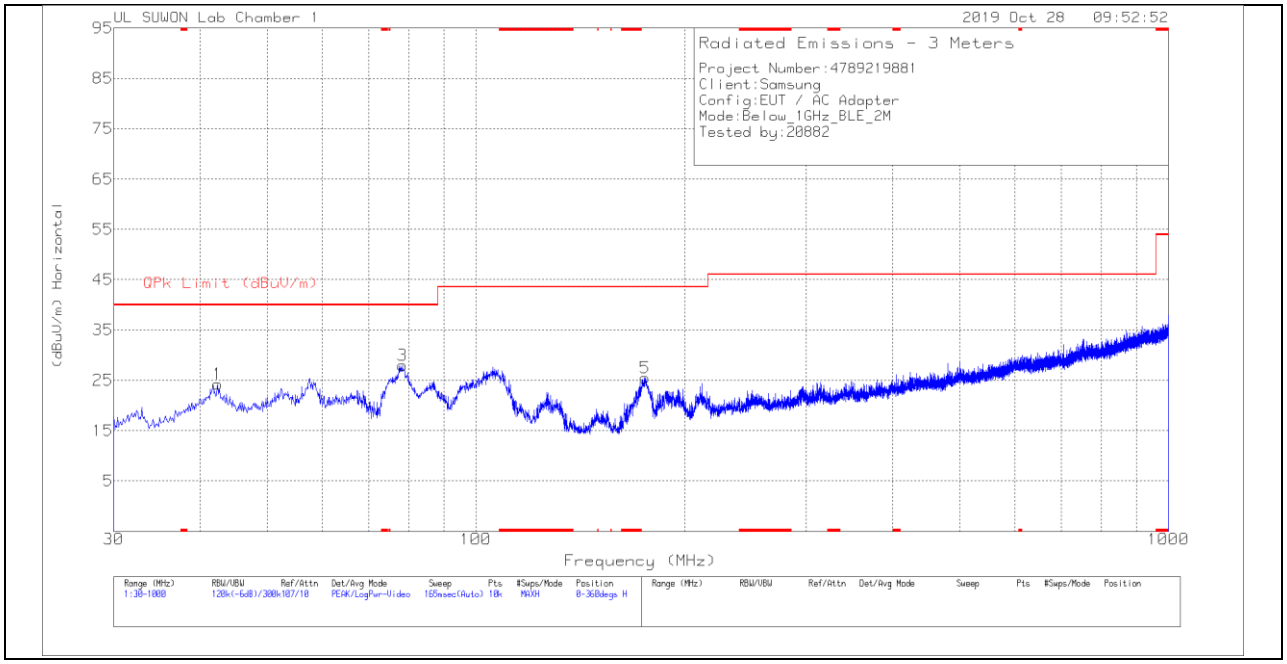
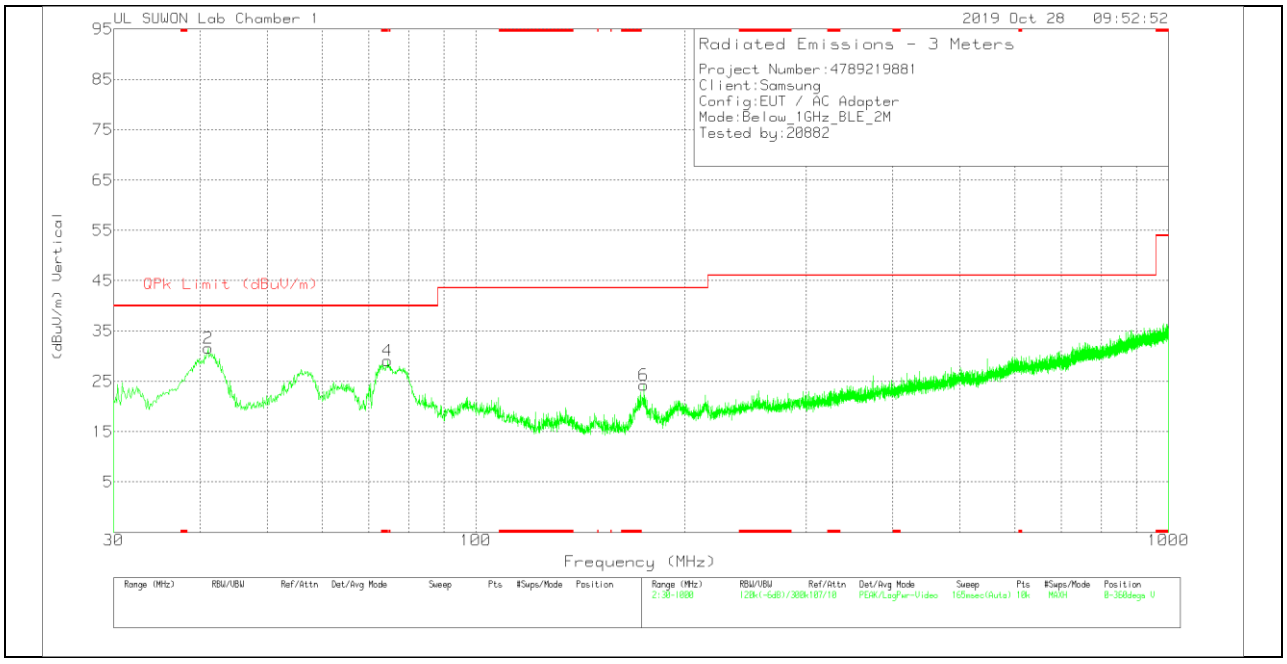
11.3. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (2Mbps)

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	42.416	34.64	Pk	19.2	-29.6	0	24.24	40	-15.76	0-360	400	H
3	78.306	44.26	Pk	12.7	-29	0	27.96	40	-12.04	0-360	200	H
5	175.597	38.17	Pk	15.1	-27.8	0	25.47	43.52	-18.05	0-360	100	H
2	41.058	42.26	Pk	19	-29.7	0	31.56	40	-8.44	0-360	100	V
4	74.62	44.57	Pk	13.7	-29.2	0	29.07	40	-10.93	0-360	200	V
6	174.918	36.87	Pk	15.1	-27.7	0	24.27	43.52	-19.25	0-360	100	V

Pk - Peak detector

12. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

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.

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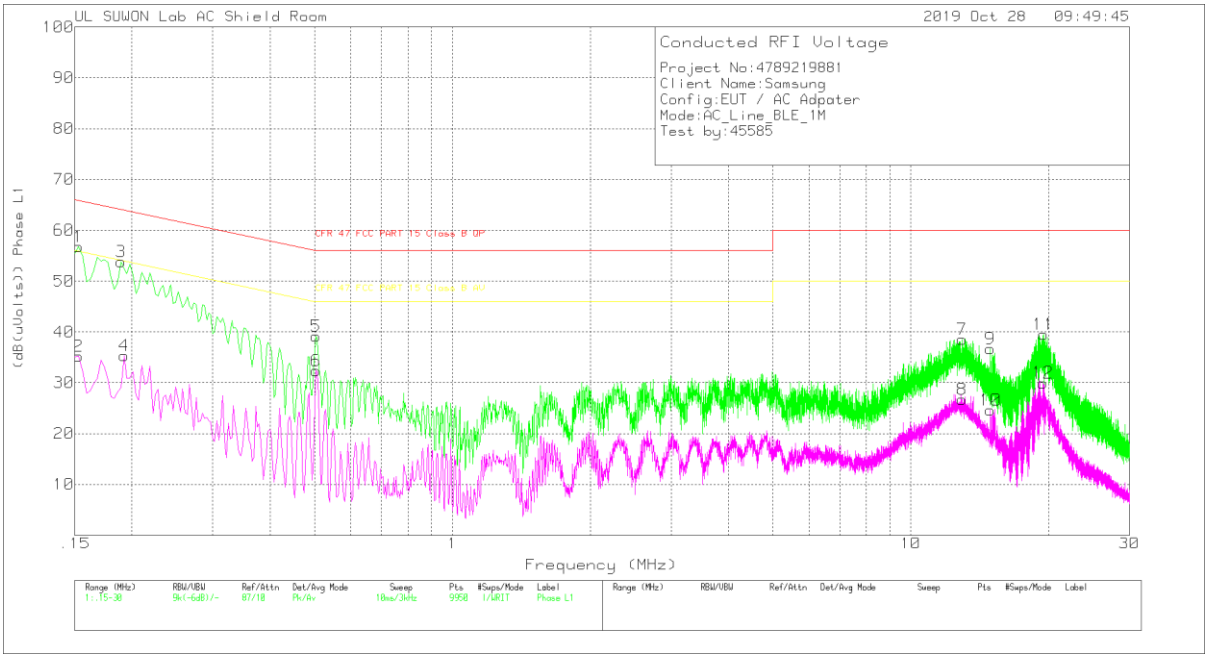
RESULTS

WORST EMISSIONS (1Mbps)

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With Ex_L1[dB]	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	.153	46.87	Pk	9.8	.1	56.77	65.84	-9.07	-	-
2	.153	25.33	Av	9.8	.1	35.23	-	-	55.84	-20.61
3	.189	43.65	Pk	10	.2	53.85	64.08	-10.23	-	-
4	.192	25.09	Av	10	.2	35.29	-	-	53.95	-18.66
5	.504	29.07	Pk	9.9	.2	39.17	56	-16.83	-	-
6	.504	22.28	Av	9.9	.2	32.38	-	-	46	-13.62
7	12.957	28.09	Pk	10	.4	38.49	60	-21.51	-	-
8	12.957	16.32	Av	10	.4	26.72	-	-	50	-23.28
9	14.934	26.2	Pk	10.1	.4	36.7	60	-23.3	-	-
10	14.934	14.11	Av	10.1	.4	24.61	-	-	50	-25.39
11	19.47	28.85	Pk	10.3	.4	39.55	60	-20.45	-	-
12	19.449	19.28	Av	10.3	.4	29.98	-	-	50	-20.02

Pk - Peak detector
Av - Average detection

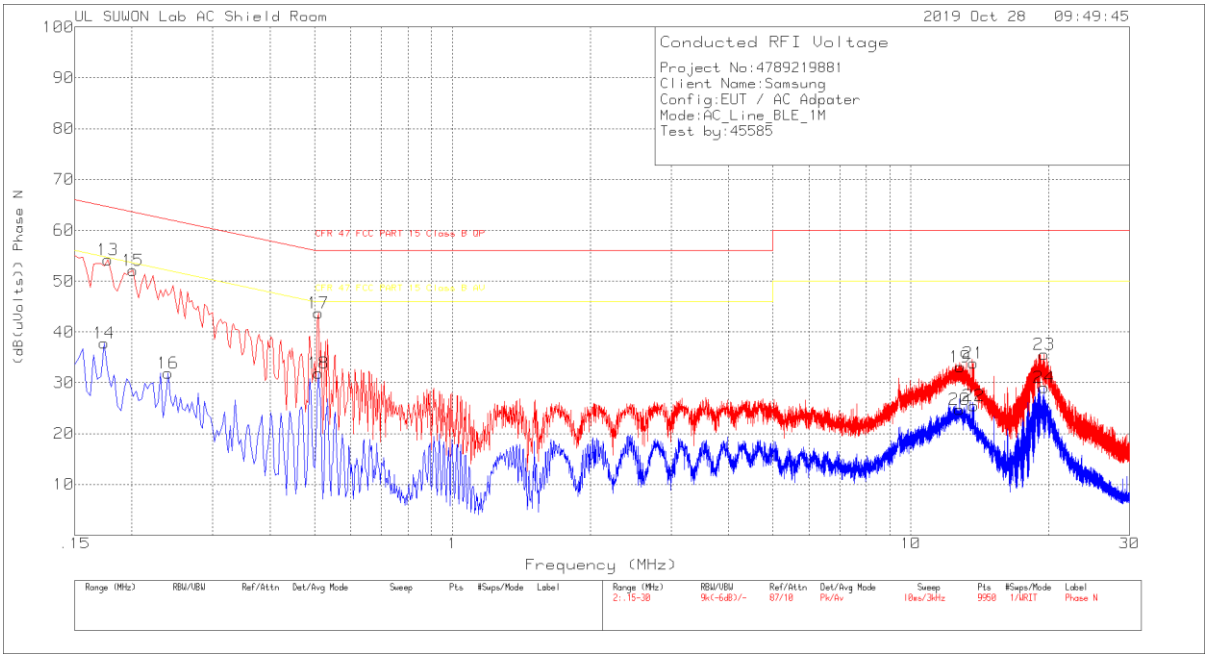
Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With Ex_L1[dB]	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)
.17175	42.15	Qp	10.1	.2	52.45	64.88	-12.43	-	-
.17415	40.23	Qp	10	.2	50.43	64.76	-14.33	-	-

Qp - Quasi-Peak detector

LINE 2 PLOT



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LINE 2 RESULTS

Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_N[dB]	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	.177	43.95	Pk	10	.2	54.15	64.63	-10.48	-	-
14	.174	27.65	Av	10	.2	37.85	-	-	54.77	-16.92
15	.201	42.02	Pk	9.9	.2	52.12	63.57	-11.45	-	-
16	.24	21.97	Av	9.7	.2	31.87	-	-	52.1	-20.23
17	.51	33.6	Pk	9.9	.2	43.7	56	-12.3	-	-
18	.51	21.79	Av	9.9	.2	31.89	-	-	46	-14.11
19	12.831	22.62	Pk	10.1	.4	33.12	60	-26.88	-	-
20	12.798	14.24	Av	10.1	.4	24.74	-	-	50	-25.26
21	13.686	23.38	Pk	10.1	.4	33.88	60	-26.12	-	-
22	13.719	14.97	Av	10.1	.4	25.47	-	-	50	-24.53
23	19.545	24.91	Pk	10.3	.4	35.61	60	-24.39	-	-
24	19.545	18.33	Av	10.3	.4	29.03	-	-	50	-20.97

Pk - Peak detector
Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_N[dB]	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)
.15225	42.37	Qp	9.8	.1	52.27	65.88	-13.61	-	-
.25875	34.74	Qp	9.7	.2	44.64	61.47	-16.83	-	-

Qp - Quasi-Peak detector

END OF REPORT

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