CERTIFICATION TEST REPORT

Report Number. : 4789867746-E3V2

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

Model : SM-T735

FCC ID : A3LSMT735

EUT Description : GSM/WCDMA/LTE Tablet + BT/BLE, DTS/UNII a/b/g/n/ac

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
2021-04-30

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IAS ACCREDITED
Testing Laboratory
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2021-04-22	Initial issue	Hyunsik Yun
V2	2021-04-30	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 Tablet + BT/BLE, DTS/UNII a/b/g/n/ac
MODEL NUMBER:	SM-T735
SERIAL NUMBER:	R32R2009HKX (Conducted, Original); R32R2009QPH, R32R2009K5M, R32R300FS7B (Radiated, Original); R32R200DYSJ, R32R200DY4W (Radiated, Spot-check);
DATE TESTED:	2021-03-16 ~ 2021-04-20(Original); 2021-04-14 ~ 2021-04-22(Spot-check);

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

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.

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1.1. INTRODUCTION OF TEST DATA REUSE

This report referenced from the FCC ID: A3LSMT736B DTS(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: A3LSMT735 shares the same enclosure and circuit board as FCC ID: A3LSMT736B. The WLAN antennas and surrounding circuitry and layout are identical between these two units for re-used bands.

In SM-T735 model, 5G NR parts are removed from the PCB.

After confirming through preliminary radiated emissions that the performance of the FCC ID: A3LSMT736B remains representative of FCC ID: A3LSMT735. The test data of FCC ID: A3LSMT736B being submitted for this application to cover WLAN features.

1.3. SPOT CHECK VERIFICATION DATA

Band	Test Item	Mode	Frequency	Test Limit	Original model	Spot check model	Deviation	Remark
					SM-T736B	SM-T735		
					FCC ID : A3LSMT736B	FCC ID : A3LSMT735		
DTS WLAN (2.4 GHz)	Band Edge	11b 2462 ANT1	2462 MHz	74 dBuV/m	68.09 dBuV/m	52.71 dBuV/m	-15.38 dB	
	RSE	11b 2462 ANT1	4924 MHz	54 dBuV/m	44.20 dBuV/m	44.96 dBuV/m	0.76 dB	
	Band Edge	11b 2412 ANT2	2412 MHz	74 dBuV/m	69.80 dBuV/m	52.80 dBuV/m	-17.00 dB	
	RSE	11b 2437 ANT2	4874 MHz	54 dBuV/m	50.86 dBuV/m	40.62 dBuV/m	-10.24 dB	
	Band Edge	11g 2462 ALL	2462 MHz	54 dBuV/m	50.94 dBuV/m	49.57 dBuV/m	-1.37 dB	
	RSE	11g 2437 ALL	4874 MHz	54 dBuV/m	48.08 dBuV/m	47.55 dBuV/m	-0.53 dB	
	Band Edge	11n HT20 2412 ALL	2412 MHz	54 dBuV/m	51.17 dBuV/m	50.82 dBuV/m	-0.35 dB	
	RSE	11n HT20 2457 ALL	4914 MHz	54 dBuV/m	45.27 dBuV/m	38.08 dBuV/m	-7.19 dB	

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

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1.4. REFERENCE DETAIL

Reference application that contains the re-used reference data.

Equipment Class	Reference FCC ID	Application Type	Reference Test report	Reuse (EMC/RFX)	Report Title / Section
PCB	A3LSMT736B	Original Grant	4789841420-E2	EMC	FCC Report WWAN/ All sections
DTS	A3LSMT736B	Original Grant	4789841420-E3	EMC	Report DTS[b,g,n] WLAN/ All sections
			4789841420-E4	EMC	FCC Report BLE/ All sections
DSS	A3LSMT736B	Original Grant	4789841420-E5	EMC	FCC Report BT/ All sections
NII	A3LSMT736B	Original Grant	4789841420-E6	EMC	FCC Report UNII[a,n,ac] WLAN/ All sections

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2. TEST METHODOLOGY

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. KDB 558074 D01 DTS Meas Guidance v05r02.
4. KDB 662911 D01 Multiple Transmitter Output v02r01
5. ANSI C63.10-2013.
6. KDB 484596 D01 Referencing Test Data v01

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

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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)

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.01 dB
Radiated Disturbance, 30 MHz to 1 GHz	4.26 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.90 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.

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE Tablet + BT/BLE, DTS/UNII a/b/g/n/ac.
This test report addresses the DTS (WLAN) operational mode.

WiFi operating mode

Frequency rage	Mode	ANT 1	ANT 2
2.4GHz (2412 MHz ~ 2472 MHz)	802.11b SISO	TX/RX	TX/RX
	802.11g MIMO	TX/RX	
	802.11n(HT20) MIMO	TX/RX	

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range [MHz]	Mode	Output Power [dBm]		Output Power [mW]	
		ANT1	ANT2	ANT1	ANT2
2412 - 2472	802.11b SISO	17.90	18.34	61.66	68.23
	802.11g MIMO	21.11		129.12	
	802.11n(HT20) MIMO	19.87		97.05	

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5.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The internal antenna was Permanently attached.
Therefore this E.U.T Complies with the requirement of §15.203.

The radio utilizes an internal antennas, with ANT 1's maximum gain of -1.71 dBi and ANT 2's maximum gain of -3.31 dBi
"WiFi1" and "WiFi2" as indicated in antenna specification are written as ANT1 and ANT2 in this report.

5.4. TESTED CHANNELS LIST

Ch.	Frequency [MHz]	11b [SISO]	11g [MIMO]	11n(HT20) [MIMO]
1	2 412	O	O	O
2	2 417	-	O	O
6	2 437	O	O	O
10	2 457	-	O	O
11	2 462	O	O	O
12	2 467	O	O	O
13	2 472	O	O	O

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5.5. WORST-CASE CONFIGURATION AND MODE

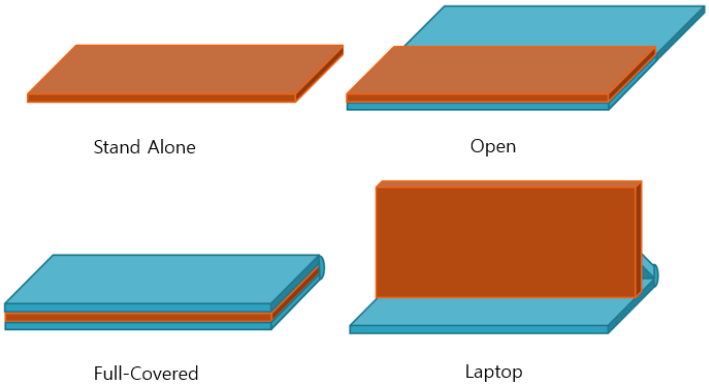
Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

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

i. Worst Axis Condition
The fundamental and radiated spurious emission were investigated in three orthogonal orientations X, Y and Z, it was determined that below orientation was worst-case orientation for each antenna.

Antenna	Worst Case			
	X	Y	Z	Laptop
ANT1	Stand Alone	-	-	-
ANT2	Full Covered	-	-	-
ANT ALL	Stand Alone	-	-	-

ii. Foldable Condition
The Fundamental of the EUT was investigated in four foldable conditions(Stand Alone, , Open, Full-Coverd, Laptop).



Based on the baseline scan, the worst-case data rates were:
802.11b mode: 1 Mbps 1TX
802.11g mode: 6 Mbps 2TX
802.11n HT20 mode: MCS0 2TX

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

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA200	R37R1XS0P35DK3	N/A
Data Cable	SAMSUNG	EP-DT725BBE	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	1.0 m	N/A

TEST SETUP

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

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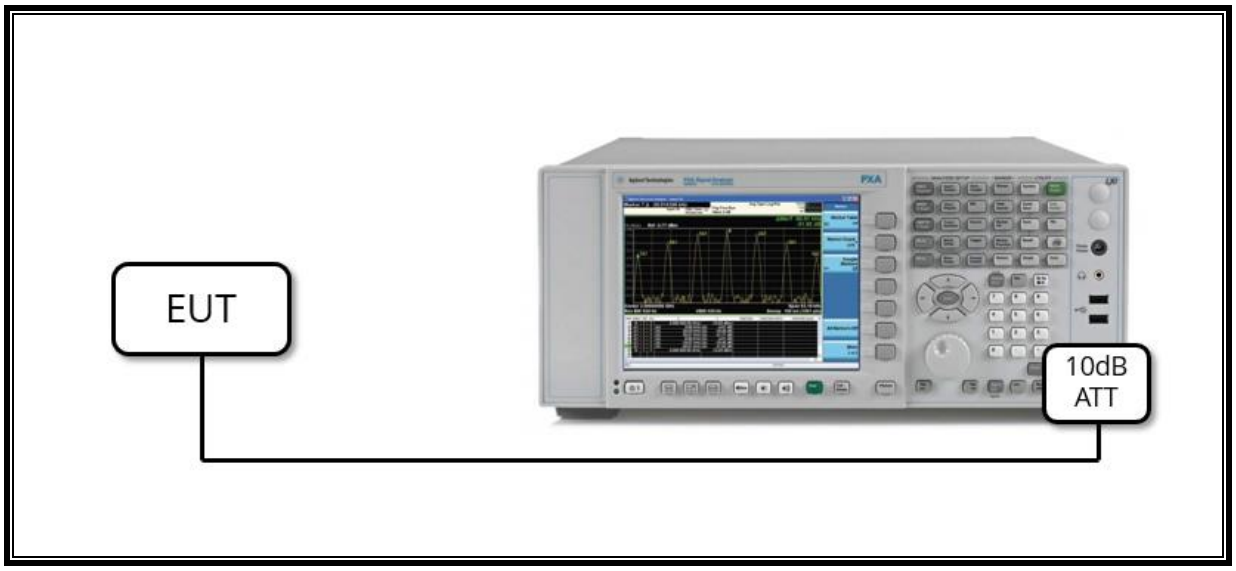
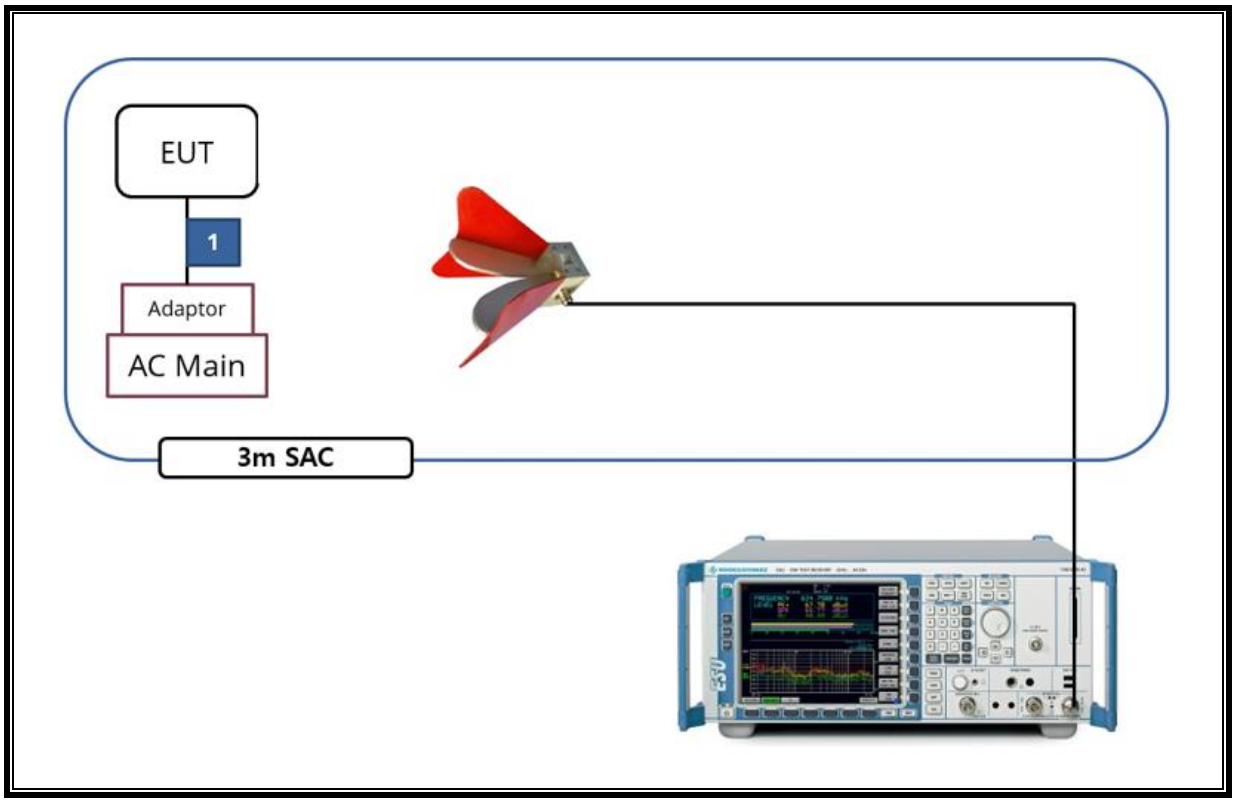
SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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6. MEASUREMENT METHOD

6 dB BW : KDB 558074 D01 v05r02, Section 8.2

OUTPUT POWER : KDB 558074 D01 v05r02, Section 8.3.2.3.

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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7. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	**Manufacturer**	**Model**	**S/N**	**Cal Due**
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	08-19-22
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	08-13-22
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-13-22
Antenna, Horn, 18 GHz	ETS	3115	00167211	07-27-22
Antenna, Horn, 18 GHz	ETS	3115	00161451	08-15-22
Antenna, Horn, 18 GHz	ETS	3117	00168724	07-27-22
Antenna, Horn, 18 GHz	ETS	3117	00168717	08-15-22
Antenna, Horn, 40 GHz	ETS	3116C	00166155	08-04-22
Antenna, Horn, 40 GHz	ETS	3116C	00168645	10-02-21
Preamplifier	ETS	3116C-PA	00168841	08-06-21
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-03-21
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-03-21
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-06-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-03-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-03-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-04-21
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-05-21
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-05-21
Spectrum Analyzer, 43.5 GHz	R&S	FSW43	104089	08-06-21
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-05-21
Attenuator	PASTERNACK	PE7087-10	A001	08-03-21
Attenuator	PASTERNACK	PE7087-10	A008	08-03-21
Attenuator	PASTERNACK	PE7004-10	2	08-04-21
Attenuator	PASTERNACK	PE7087-10	A009	08-03-21
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-03-21
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-03-21
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-03-21
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	08-03-21
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	08-03-21
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	020	08-04-21
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	08-03-21
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	08-03-21
High Pass Filter 3GHz	Micro-Tronics	HPM17543	020	08-04-21
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	08-03-21
High Pass Filter 6GHz	Micro-Tronics	HPS17542	016	08-03-21
High Pass Filter 6GHz	Micro-Tronics	HPS17542	021	08-04-21
LISN	R&S	ENV-216	101837	08-06-21
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

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8. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	Occupied Bandwidth(6dB)	> 500kHz	Conducted	PASS
2.1051, 15.247(d)	Band Edge / Conducted Spurious Emission	-30 dBc		PASS
15.247 (b)(3)	TX conducted output power	< 30 dBm		PASS
15.247(e)	PSD	< 8 dBm/3kHz		PASS
15.207(a)	AC Power Line conducted emissions	Section 11	Power Line conducted	PASS
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m(Av)	Radiated	PASS

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

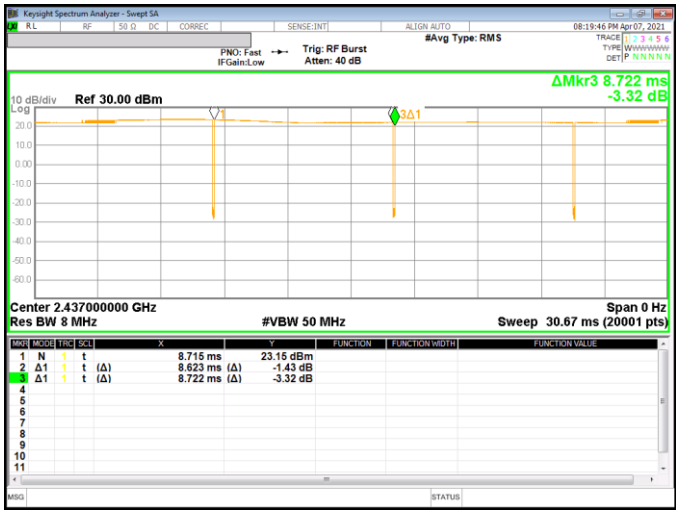
LIMITS

None; for reporting purposes only.

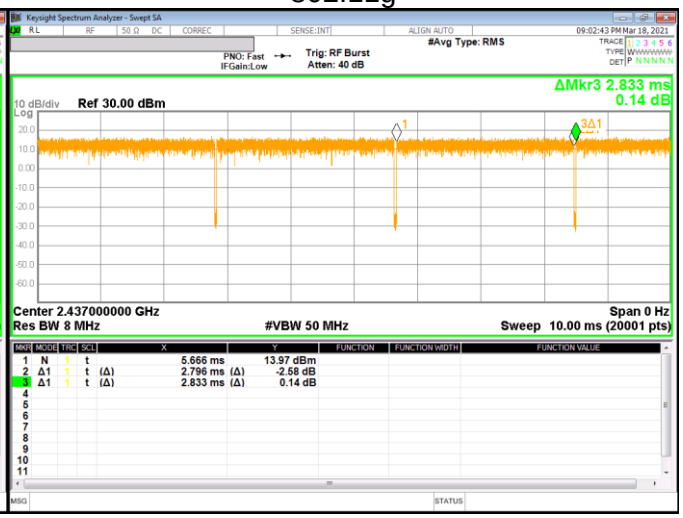
Mode	On Time [ms]	Period [ms]	Duty Cycle X [Linear]	Duty Cycle X [%]	Duty Cycle Correction Factor[dB]	1/T Minimum VBW[kHz]
802.11b	8.623	8.722	0.989	98.865	-	0.12
802.11g MIMO	2.796	2.833	0.987	98.694	-	0.36
802.11n(HT20) MIMO	2.599	2.637	0.986	98.559	-	0.38

Note. According to ANSI C63.10 Section 11.6, do not apply the Duty Cycle Correction Factor judging that a duty cycle of greater than or equal to 98% is continuous signal.

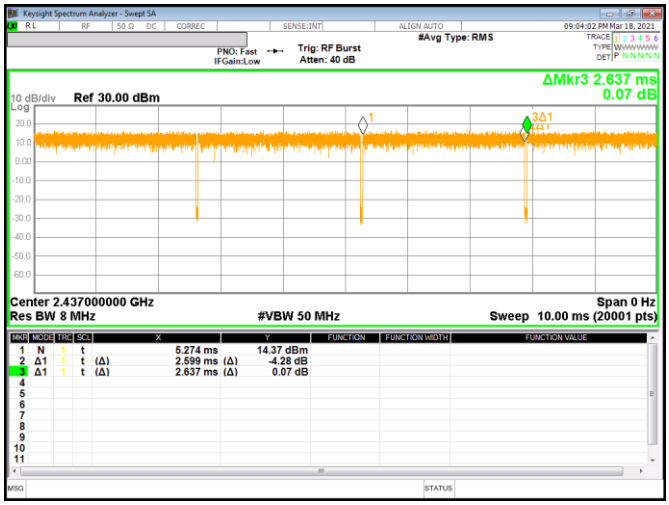
802.11b



802.11g



802.11n HT20



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9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)
The minimum 6 dB bandwidth shall be at least 500 kHz.

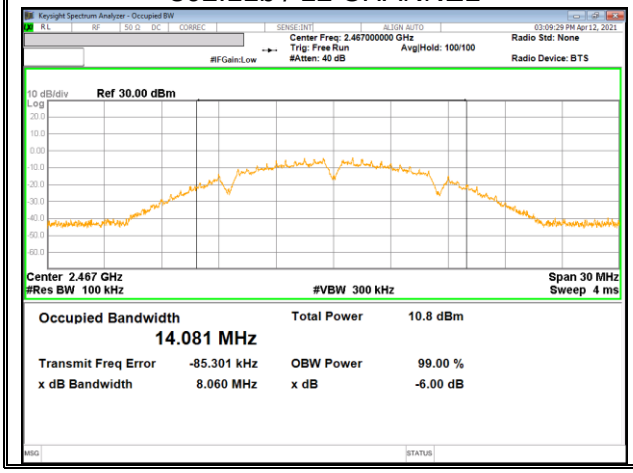
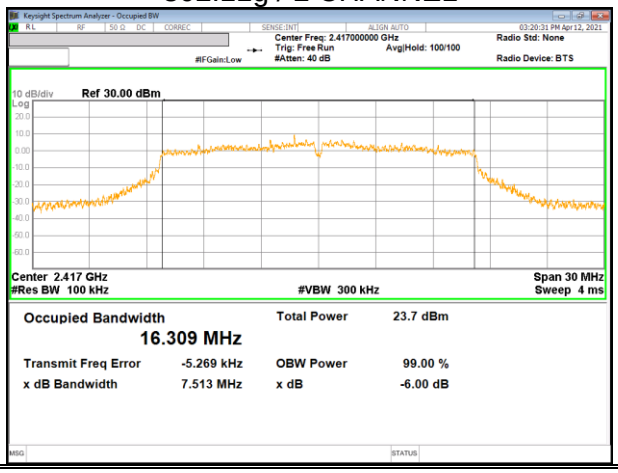
TEST PROCEDURE

Reference to KDB 558074 D01 15.247 Meas Guidance: The transmitter output is connected to a spectrum analyzer with the RBW set to100 kHz, the VBW >= 3 x RBW, peak detector and max hold.

RESULTS

- Please refer to the next page

WORST CASE TEST PLOTS

ANT1	ANT2
802.11b / 12 CHANNEL	802.11g / 2 CHANNEL
	

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9.2.1. 802.11b SISO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		ANT 1	ANT 2	
1	2 412	8.51	9.04	0.5
6	2 437	9.03	**8.04**	
11	2 462	8.06	8.54	
12	2 467	**8.06**	9.01	
13	2 472	8.53	8.07	
Worst		**8.06**	**8.04**	

9.2.2. 802.11g MIMO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		ANT 1	ANT 2	
1	2 412	15.02	11.30	0.5
2	2 417	13.55	**7.51**	
6	2 437	13.49	13.80	
10	2 457	12.57	15.05	
11	2 462	**10.28**	13.18	
12	2 467	12.59	13.78	
13	2 472	12.52	15.07	
Worst		**10.28**	**7.51**	

9.2.3. 802.11n HT20 MIMO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		ANT 1	ANT 2	
1	2 412	14.68	11.78	0.5
2	2 417	**12.60**	15.62	
6	2 437	14.91	13.73	
10	2 457	13.78	13.82	
11	2 462	13.72	13.81	
12	2 467	15.89	**11.32**	
13	2 472	16.77	16.24	
Worst		**12.60**	**11.32**	

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9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband RF frame average power sensor.
The cable assembly insertion loss and duty cycle correction factor was entered as an offset in the power sensor to allow for direct reading of power.
Output power measurement was performed utilizing the 8.3.2.3 under KDB558074 D01 15.247 Meas Guidance.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated and the antenna gain is unequal among the chains.
The directional gain is:

Bands [MHz]	ANT 1 [dBi]	ANT 2 [dBi]	Correlated Directional Gain [dBi]
2 412 – 2 472	-1.71	-3.31	0.54

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9.3.1. TEST RESULTS

Included in Calculations of Corr'd Power			
Duty Cycle CF	802.11b SISO	-	dB
	802.11g MIMO	-	dB
	802.11n HT20 MIMO	-	dB

Calculation of Output Power result
Average Power = Meas. Power + Duty Cycle CF / Total Corr'd Power = ANT1's Avearage Power + ANT2's Average Power

- SISO Mode

Mode	Channel	Frequency [MHz]	SISO Average Power [dBm]		MIMO Average Power [dBm]			Power Limit [dBm]
			ANT1	ANT2	ANT1	ANT2	Total Corr'd Power [dBm]	
802.11b	1	2 412	17.71	17.75	Not Supported			30.00
	6	2 437	17.90	18.34				
	11	2 462	17.81	18.01				
	12	2 467	4.45	3.98				
	13	2 472	1.19	1.51				
Worst Case			**17.90**	**18.34**				
802.11g	1	2 412	15.18	15.03	15.21	14.93	18.08	30.00
	2	2 417	18.05	18.15	18.16	18.03	21.11	
	6	2 437	17.98	18.16	18.05	18.07	21.07	
	10	2 457	18.12	18.03	18.16	17.92	21.05	
	11	2 462	15.10	15.01	15.08	14.84	17.97	
	12	2 467	4.52	4.47	3.98	4.24	7.12	
	13	2 472	0.61	1.03	0.58	0.71	3.66	
Worst Case			**18.12**	**18.16**			**21.11**	
802.11n HT20	1	2 412	15.02	14.85	15.04	14.76	17.91	30.00
	2	2 417	16.83	16.96	16.87	16.85	19.87	
	6	2 437	16.76	16.98	16.79	16.9	19.86	
	10	2 457	16.91	16.85	16.93	16.78	19.87	
	11	2 462	14.93	14.83	14.93	14.71	17.83	
	12	2 467	3.85	4.27	3.86	4.17	7.03	
	13	2 472	0.47	0.84	0.43	0.41	3.43	
Worst Case			**16.91**	**16.98**			**19.87**	

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9.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

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.

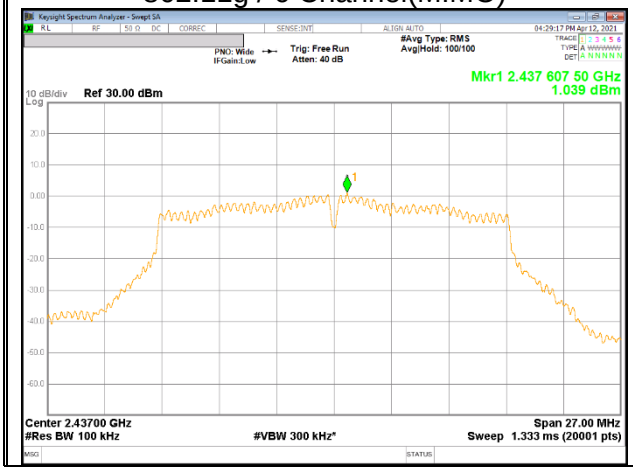
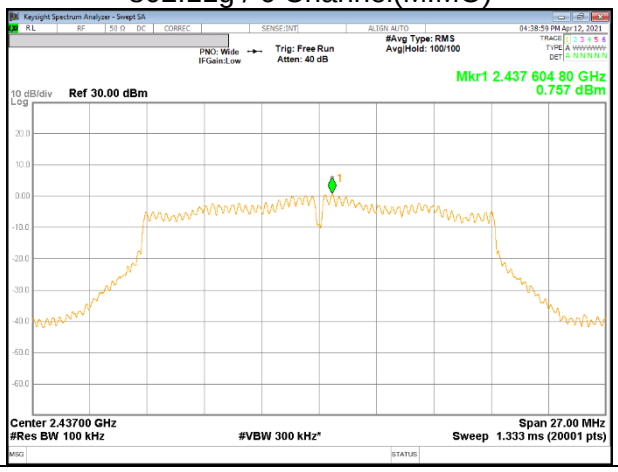
TEST PROCEDURE

Power Spectral Density was performed utilizing the section8.4 under KDB558074 D01 15.247 Meas Guidance.

RESULTS

- Please refer to the next page

WORST CASE TEST PLOTS

ANT 1	ANT 2
802.11g / 6 Channel(MIMO)	802.11g / 6 Channel(MIMO)
	

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9.4.1. 802.11b/g/n HT20 MODE TEST RESULTS

Included in Calculations of Corr'd Power			
Duty Cycle CF	802.11b SISO	-	dB
	802.11g MIMO	0.11	dB
	802.11n HT20 MIMO	0.11	dB

Calculation of Output PSD result
1. 1TX : Corr'd PSD = Meas PSD + Duty Cycle CF
2. 2TX : Total PSD = ANT1 Meas PSD + ANT2 Meas PSD + Duty Cycle CF

- SISO Mode

Mode	Channel	Frequency [MHz]	Meas PSD [dBm/100kHz]		Total Corr'd PSD [dBm/100kHz]		PSD Limit [dBm/3kHz]
			ANT1	ANT2	ANT1	ANT2	
802.11b	1	2 412	1.689	1.289	1.689	1.289	8.00
	6	2 437	1.390	1.552	1.390	1.552	
	11	2 462	1.504	1.138	1.504	1.138	
	12	2 467	-11.836	-12.675	-11.836	-12.675	
	13	2 472	-14.690	-15.208	-14.690	-15.208	

- MIMO Mode

Mode	Channel	Frequency [MHz]	Meas PSD [dBm/100kHz]		Total Corr'd PSD [dBm/100kHz]	PSD Limit [dBm/3kHz]
			ANT1	ANT2		
802.11g	1	2 412	-2.680	-2.705	0.318	8.00
	2	2 417	0.301	0.804	3.570	
	6	2 437	**1.039**	**0.757**	**3.911**	
	10	2 457	0.727	0.102	3.436	
	11	2 462	-2.847	-3.012	0.082	
	12	2 467	-13.419	-13.495	-10.447	
	13	2 472	-17.345	-17.461	-14.392	
802.11n HT20	1	2 412	-2.804	-2.432	0.396	8.00
	2	2 417	-0.587	-0.749	2.343	
	6	2 437	-1.036	-0.994	1.995	
	10	2 457	-0.303	-0.553	2.584	
	11	2 462	-2.467	-3.264	0.163	
	12	2 467	-13.879	-13.808	-10.833	
	13	2 472	-17.692	-17.904	-14.786	

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9.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

RSS-247 5.5

Output power was measured based on the use of average measurement, therefore the required attenuation is 30 dB.

RESULTS

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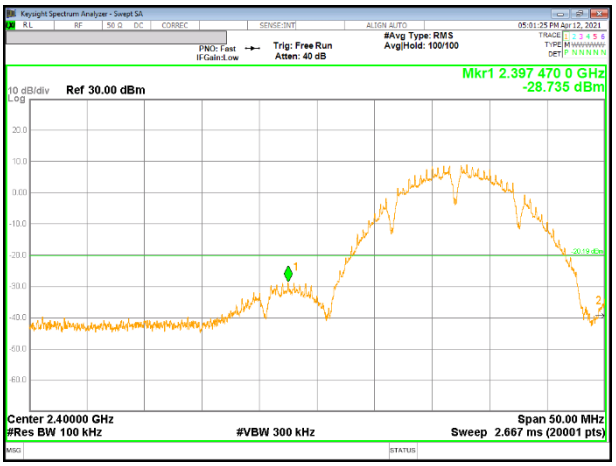
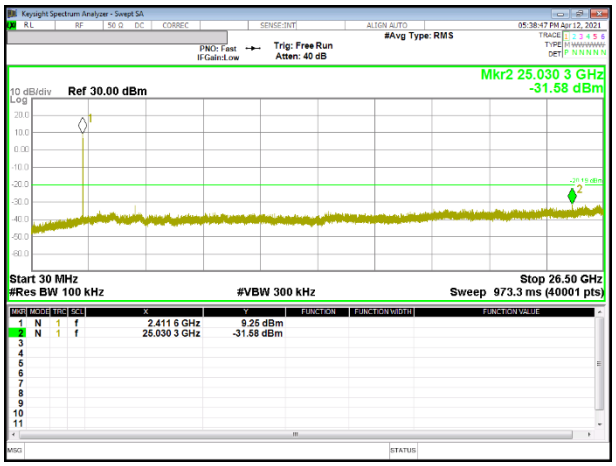
9.5.1. 802.11b MODE

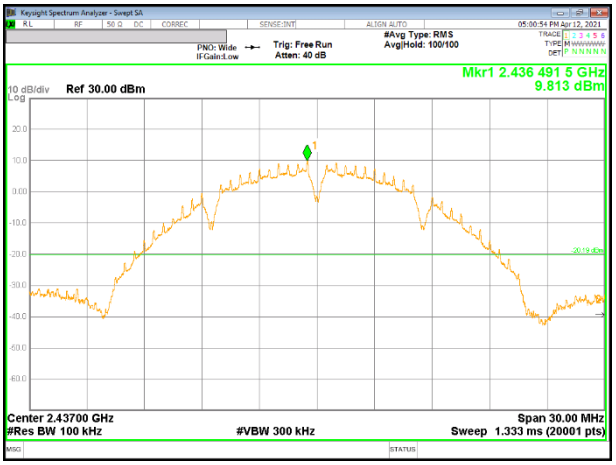
1TX Antenna 1



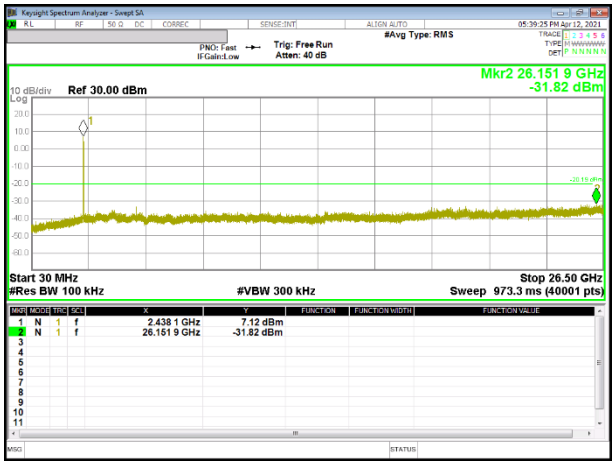
1 Channel Band-edge



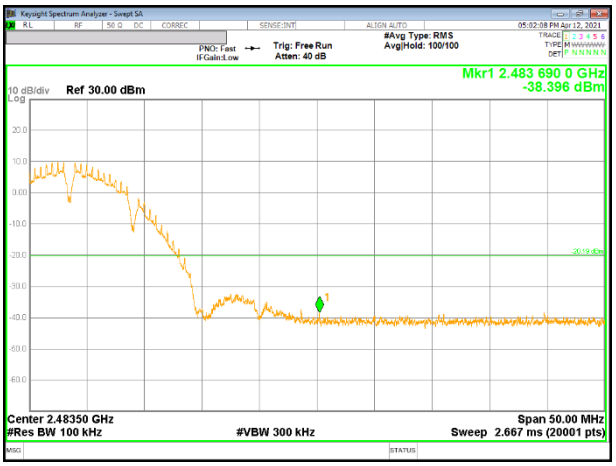
Out-Of-Band 1 Channel



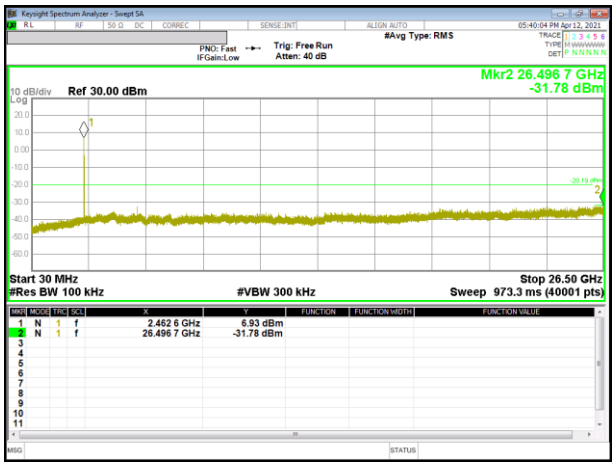
In-Band Reference Level



Out-Of-Band 6 Channel



11 Channel Band-edge



Out-Of-Band 11 Channel

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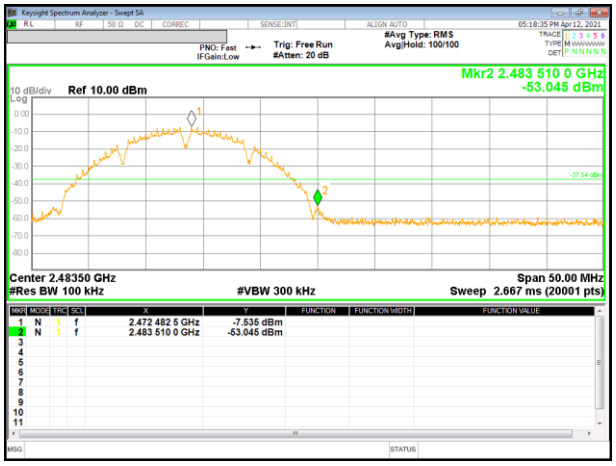
12 Channel Band-edge



13 Channel Band-edge

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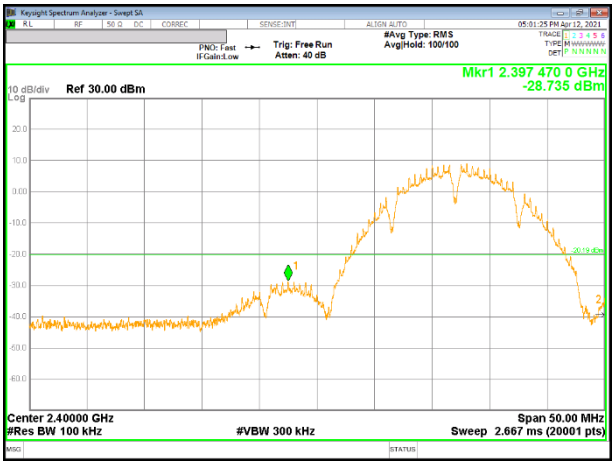
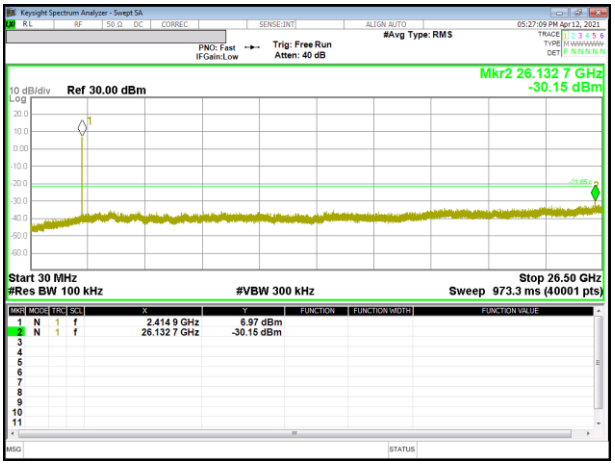
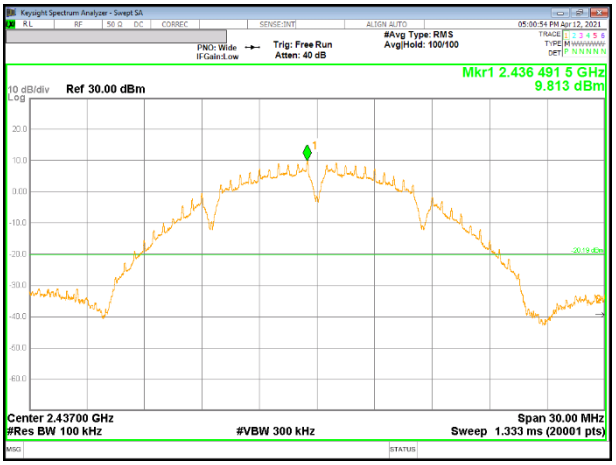
1TX Antenna 2



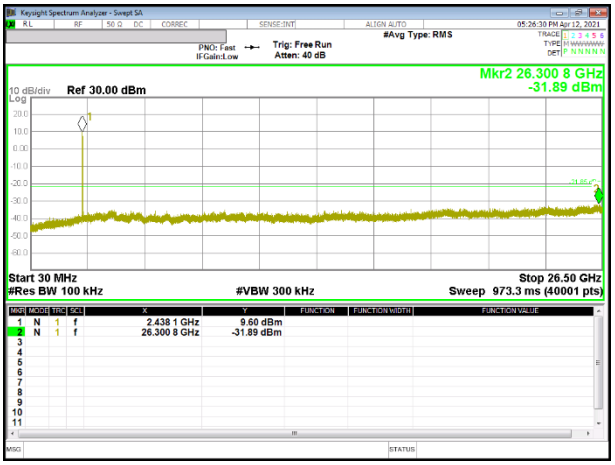
1 Channel Band-edge



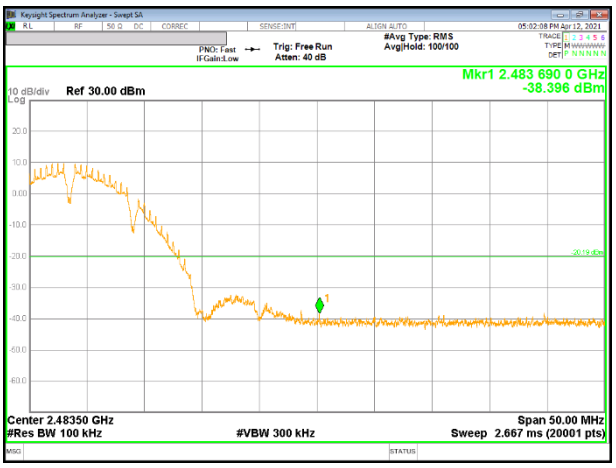
Out-Of-Band 1 Channel



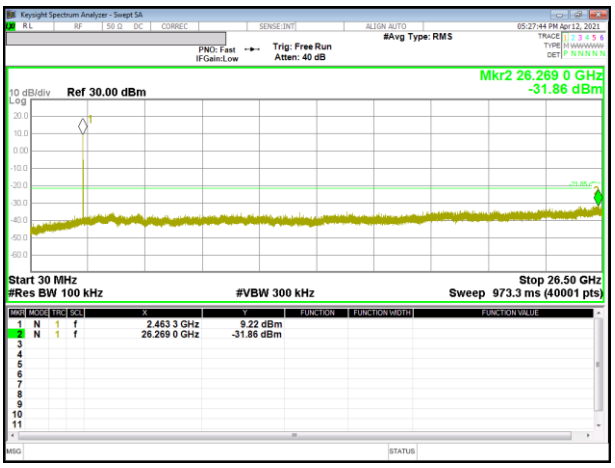
In-Band Reference Level



Out-Of-Band 6 Channel



11 Channel Band-edge



Out-Of-Band 11 Channel

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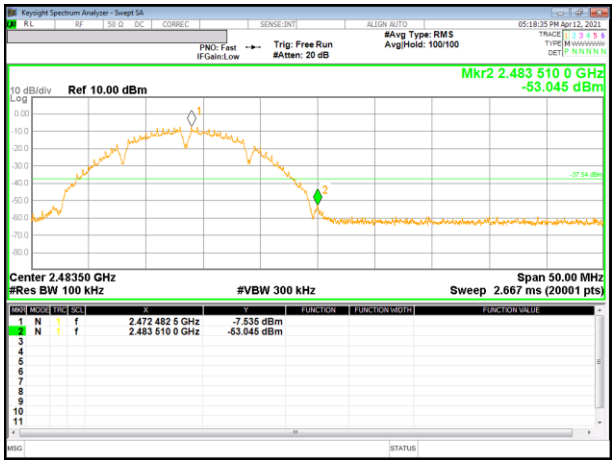
12 Channel Band-edge



13 Channel Band-edge

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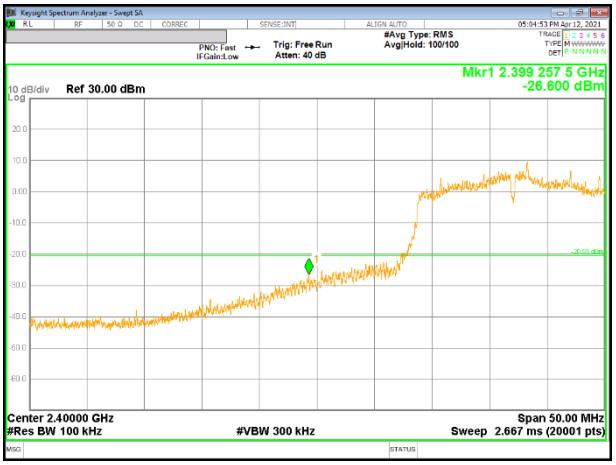
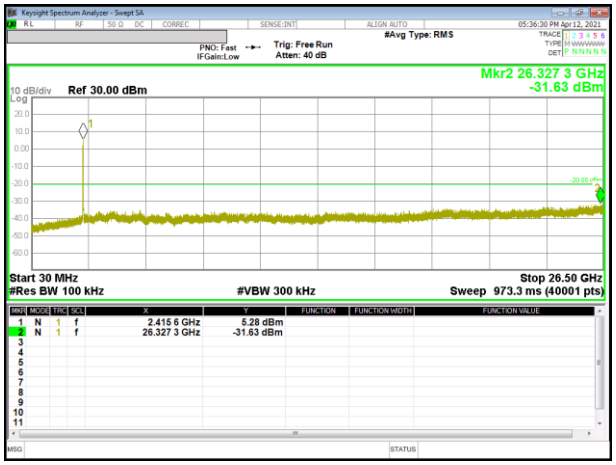
9.5.2. 802.11g MODE

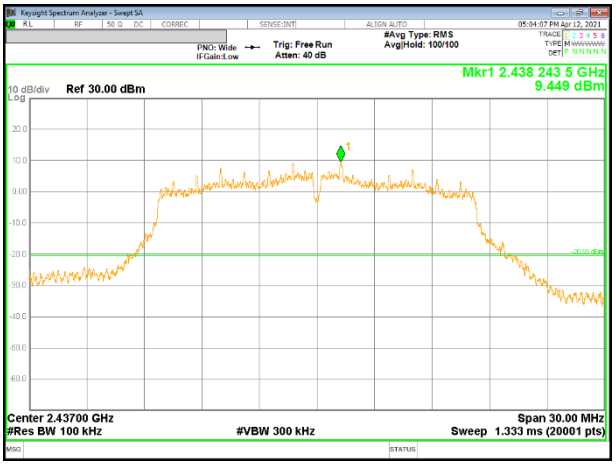
2TX Antenna 1



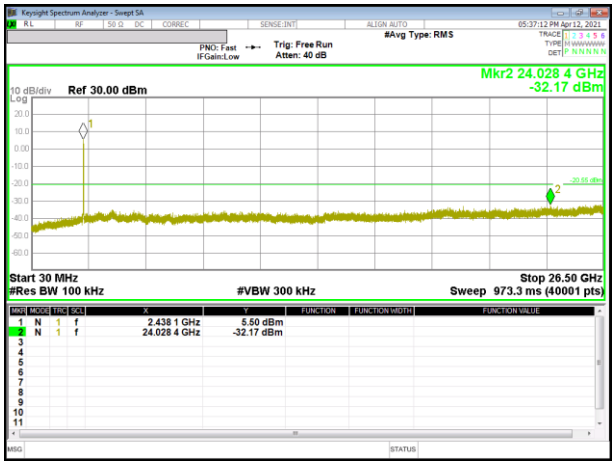
2 Channel Band-edge



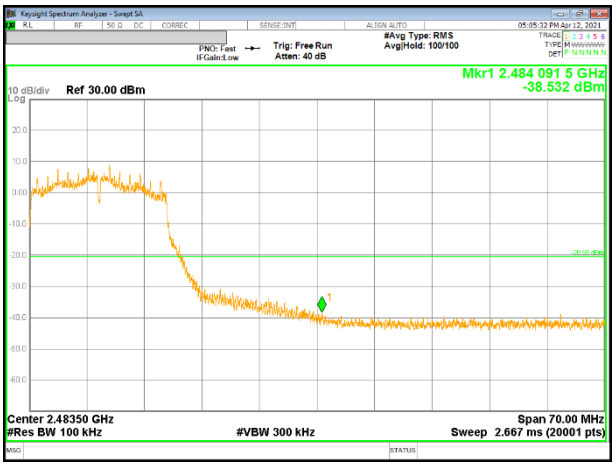
Out-Of-Band 2 Channel



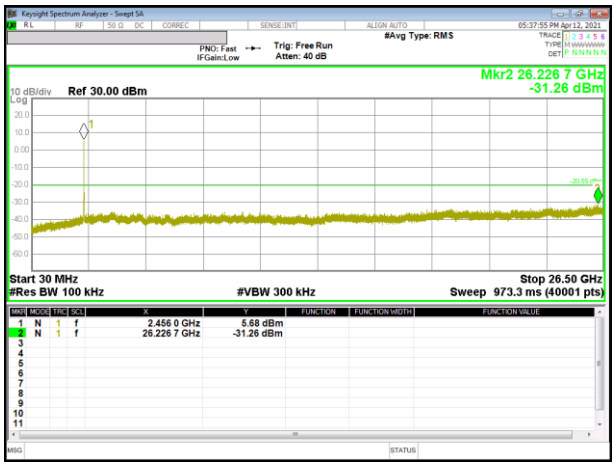
In-Band Reference Level



Out-Of-Band 6 Channel



10 Channel Band-edge



Out-Of-Band 10 Channel

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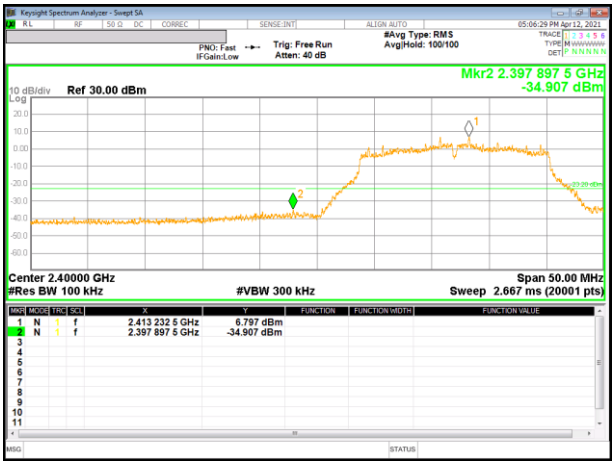

1 Channel Band-edge

11 Channel Band-edge

12 Channel Band-edge

13 Channel Band-edge

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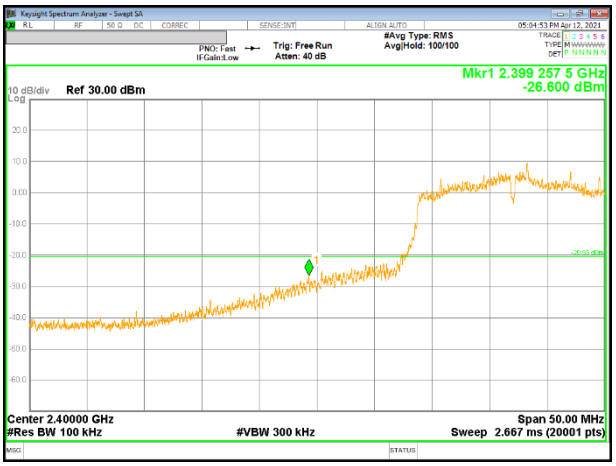
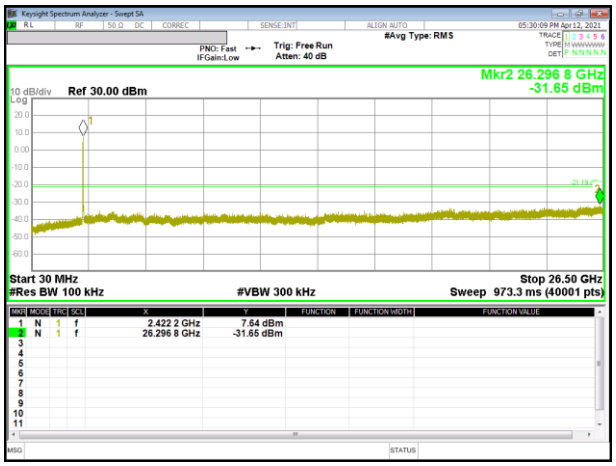
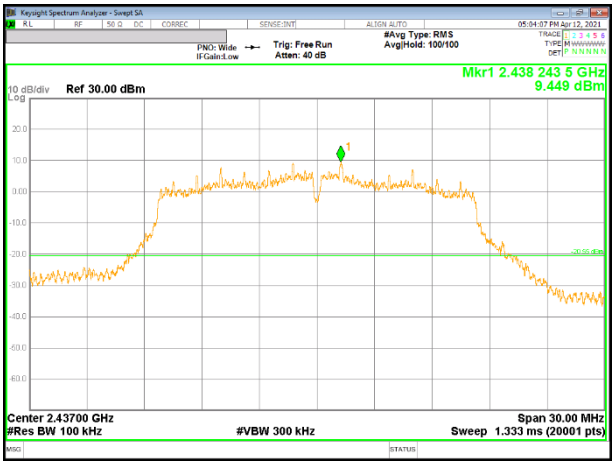
2TX Antenna 2



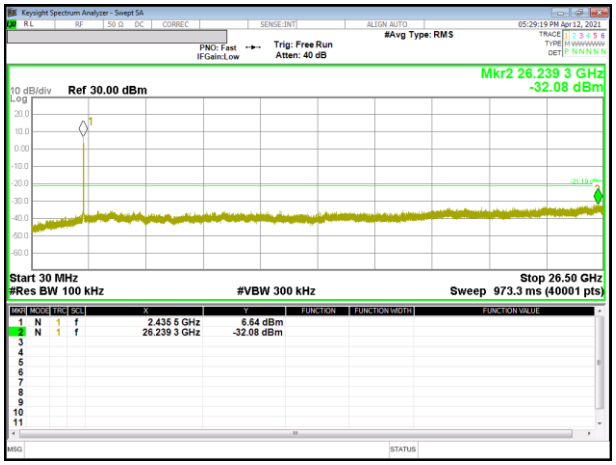
2 Channel Band-edge



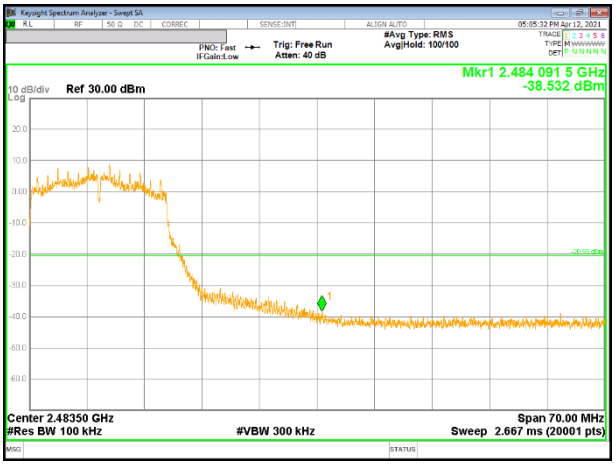
Out-Of-Band 2 Channel



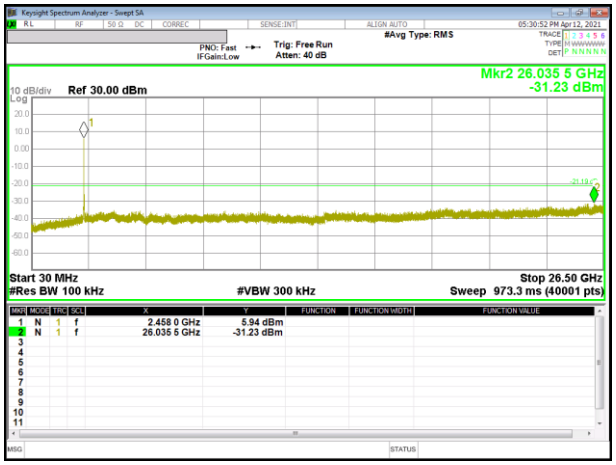
In-Band Reference Level



Out-Of-Band 6 Channel



10 Channel Band-edge



Out-Of-Band 10 Channel

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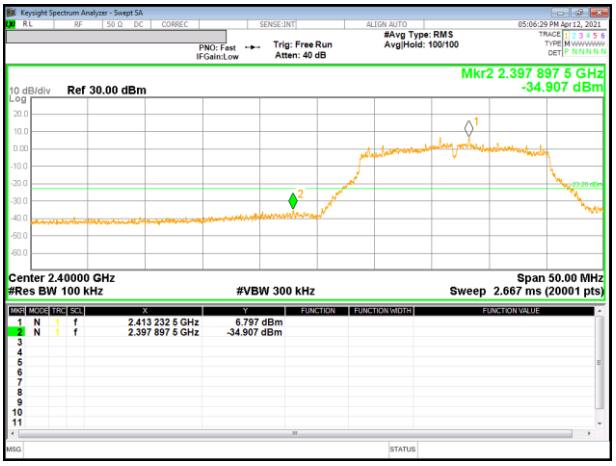

1 Channel Band-edge

11 Channel Band-edge

12 Channel Band-edge

13 Channel Band-edge

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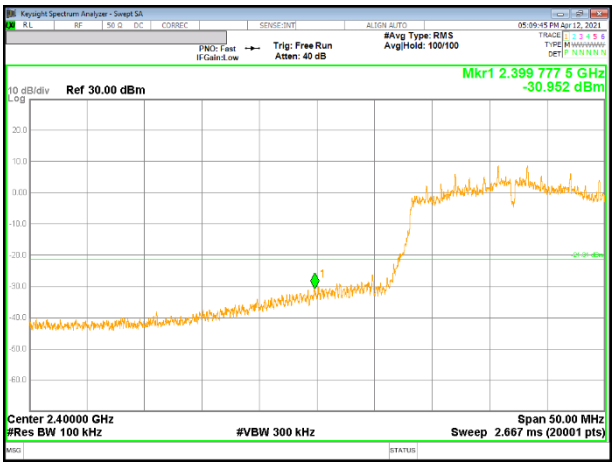
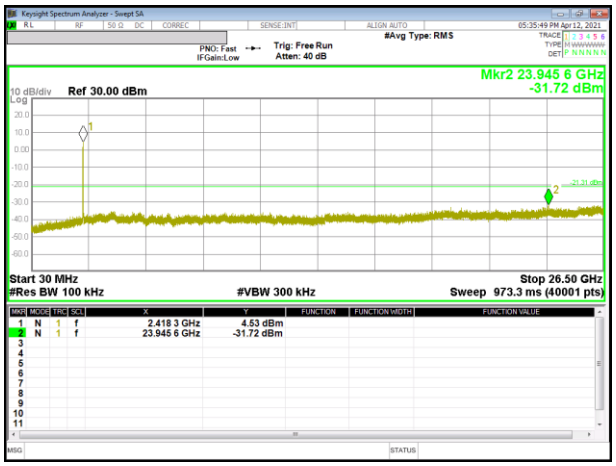
9.5.3. 802.11n HT20 MODE

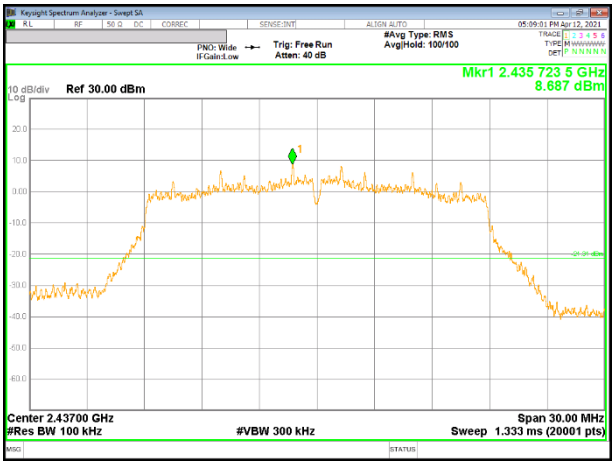
2TX Antenna 1 MODE



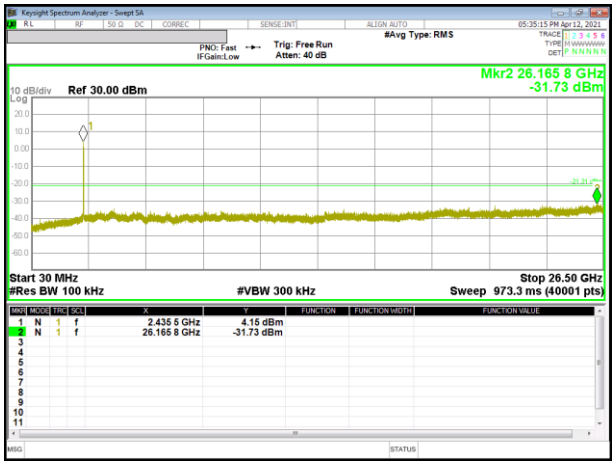
2 Channel Band-edge



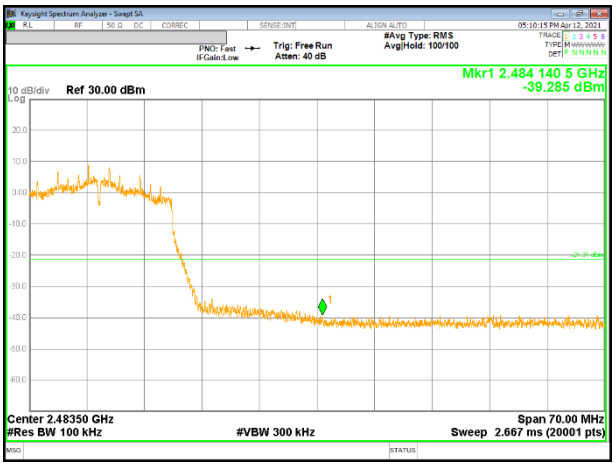
Out-Of-Band 2 Channel



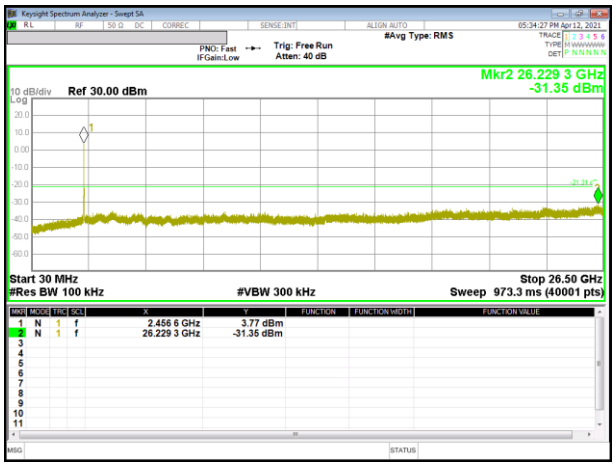
In-Band Reference Level



Out-Of-Band 6 Channel



10 Channel Band-edge



Out-Of-Band 10 Channel

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1 Channel Band-edge

11 Channel Band-edge

12 Channel Band-edge

13 Channel Band-edge

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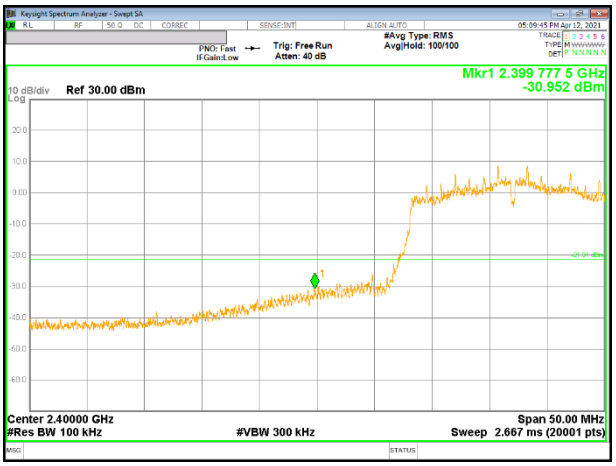
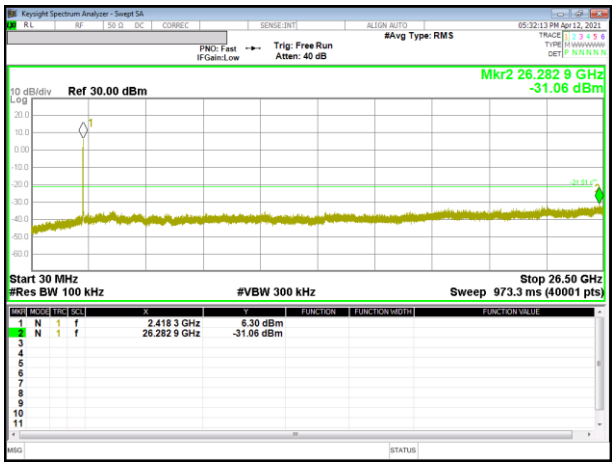
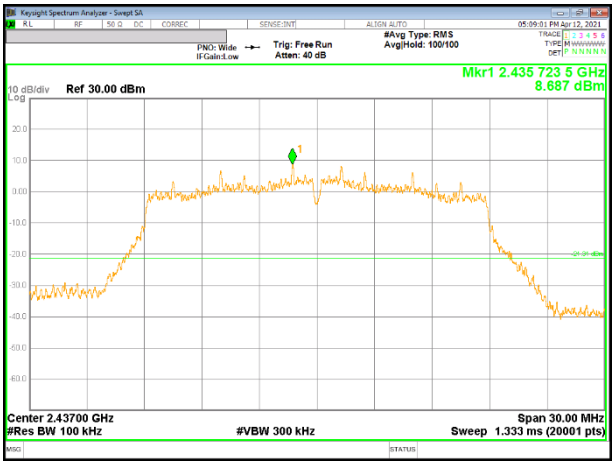
2TX Antenna 2 MODE



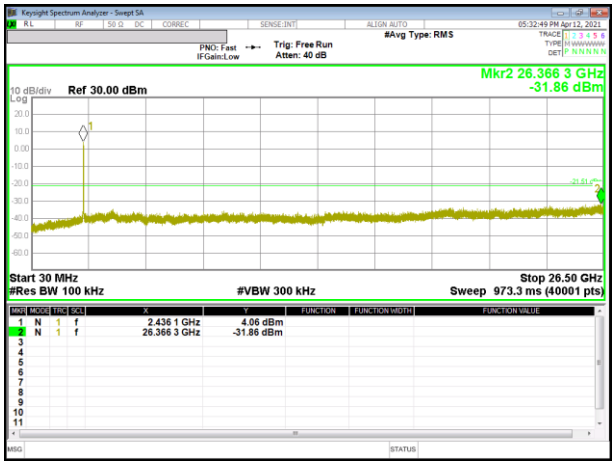
2 Channel Band-edge



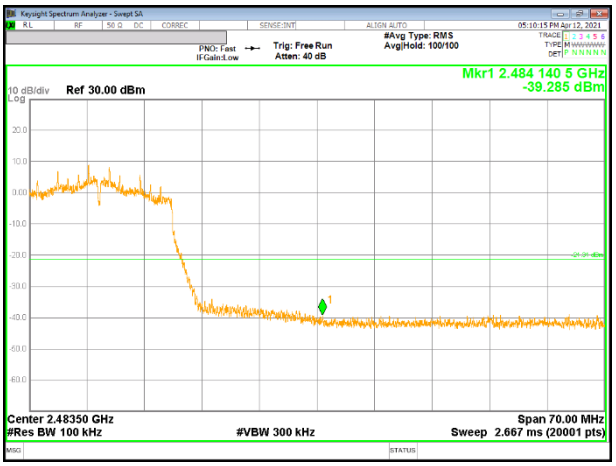
Out-Of-Band 2 Channel



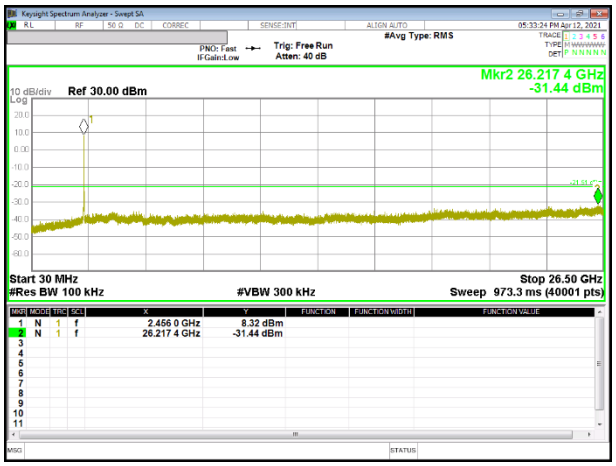
In-Band Reference Level



Out-Of-Band 6 Channel



10 Channel Band-edge



Out-Of-Band 10 Channel

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1 Channel Band-edge

11 Channel Band-edge

12 Channel Band-edge

13 Channel Band-edge

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10. RADIATED TEST RESULTS

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.

FCC Part 15.205 (a) : Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.17	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	167.72 ~ 173.2	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	240 ~ 285	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	322 ~ 335.4	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	399.90 ~ 410	3345.8 ~ 3358		
		608 ~ 614	3600 ~ 4400		
		960 ~ 1240			

▪ FCC Part 15.205(b) : The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

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TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1 GHz and 150 cm for above 1 GHz. 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; 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 = 10log (1/x) For this sample:

802.11b SISO mode = 0 dB (duty cycle > 98%);
802.11g MIMO mode = 0 dB (duty cycle > 98%);
802.11n(HT20) MIMO mode = 0 dB (duty cycle > 98%);

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 each applicable 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 9 kHz to 30 MHz; 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.

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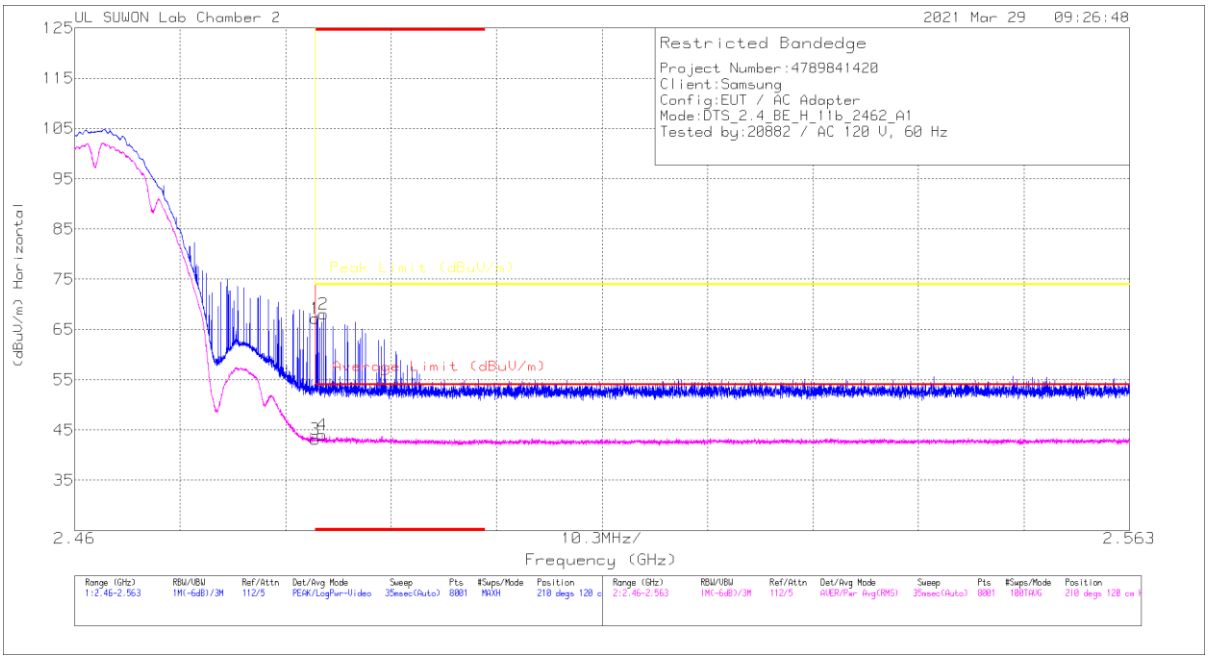
10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

BANDEDGE(ANT1 WORST CASE: 11 CHANNEL)

HORIZONTAL RESULT



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	55.35	Pk	32	-20.2	0	67.15	-	-	74	-6.85	210	120	H
2	* 2.4843	56.29	Pk	32	-20.2	0	68.09	-	-	74	-5.91	210	120	H
3	* 2.48351	31.35	RMS	32	-20.2	0	43.15	54	-10.85	-	-	210	120	H
4	* 2.48417	32.18	RMS	32	-20.2	0	43.98	54	-10.02	-	-	210	120	H

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

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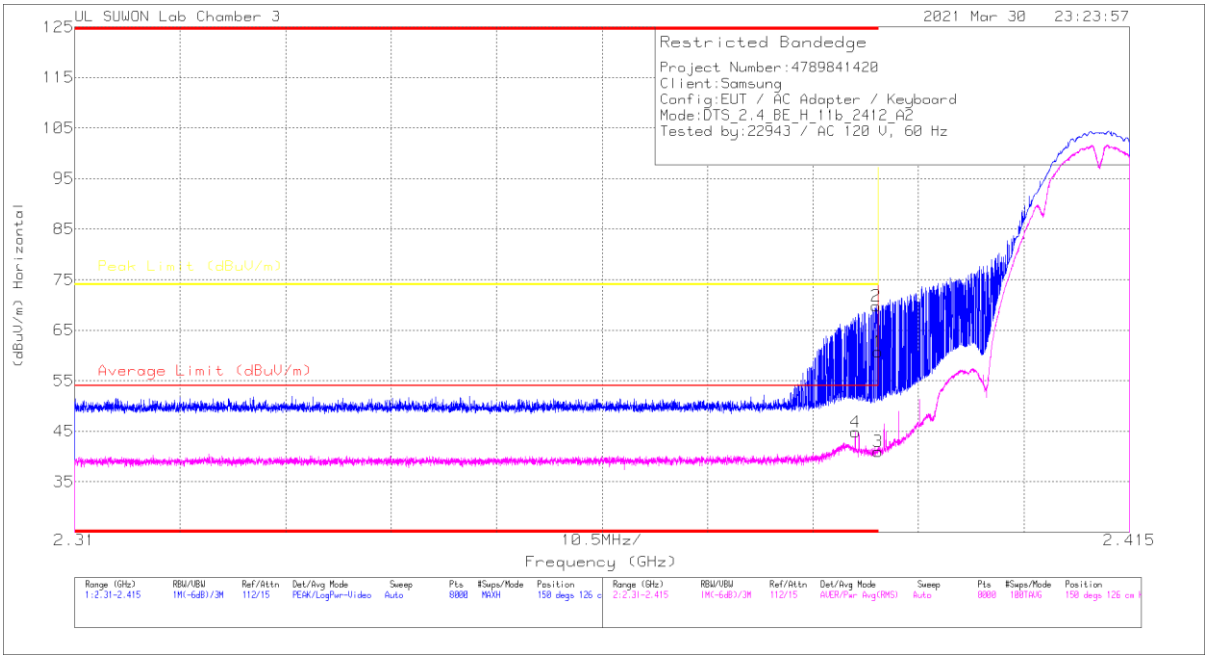
BANDEDGE(ANT2 WORST CASE: 1 CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	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	53.08	Pk	32.8	-25.2	0	60.68	-	-	74	-13.32	150	126	H
2	* 2.3898	62.2	Pk	32.8	-25.2	0	69.8	-	-	74	-4.2	150	126	H
3	* 2.39	33.4	RMS	32.8	-25.2	0	41	54	-13	-	-	150	126	H
4	* 2.38771	37.26	RMS	32.8	-25.2	0	44.86	54	-9.14	-	-	150	126	H

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

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BANDEDGE TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	ANT1	* 2.39	40.61	Pk	31.90	-20.30	0.00	52.21	-	-	74.00	-21.79	212	111	H
		* 2.38966	55.06	Pk	31.90	-20.30	0.00	66.66	-	-	74.00	-7.34	212	111	H
		* 2.39	31.38	RMS	31.90	-20.30	0.00	42.98	54.00	-11.02	-	-	212	111	H
		* 2.3885	32.16	RMS	31.90	-20.30	0.00	43.76	54.00	-10.24	-	-	212	111	H
		* 2.39	40.55	Pk	31.90	-20.30	0.00	52.15	-	-	74.00	-21.85	169	377	V
		* 2.38956	53.34	Pk	31.90	-20.30	0.00	64.94	-	-	74.00	-9.06	169	377	V
		* 2.39	30.89	RMS	31.90	-20.30	0.00	42.49	54.00	-11.51	-	-	169	377	V
		* 2.38928	31.59	RMS	31.90	-20.30	0.00	43.19	54.00	-10.81	-	-	169	377	V
2462	ANT1	* 2.48351	55.35	Pk	32.00	-20.20	0.00	67.15	-	-	74.00	-6.85	210	120	H
		* 2.4843	56.29	Pk	32.00	-20.20	0.00	68.09	-	-	74.00	**-5.91**	210	120	H
		* 2.48351	31.35	RMS	32.00	-20.20	0.00	43.15	54.00	-10.85	-	-	210	120	H
		* 2.48417	32.18	RMS	32.00	-20.20	0.00	43.98	54.00	**-10.02**	-	-	210	120	H
		* 2.48351	40.31	Pk	32.00	-20.20	0.00	52.11	-	-	74.00	-21.89	162	312	V
		* 2.48387	55.05	Pk	32.00	-20.20	0.00	66.85	-	-	74.00	-7.15	162	312	V
		* 2.48351	31.25	RMS	32.00	-20.20	0.00	43.05	54.00	-10.95	-	-	162	312	V
		* 2.48372	31.78	RMS	32.00	-20.20	0.00	43.58	54.00	-10.42	-	-	162	312	V
2467	ANT1	* 2.48351	41.51	Pk	32.00	-20.20	0.00	53.31	-	-	74.00	-20.69	214	106	H
		* 2.484	49.88	Pk	32.00	-20.20	0.00	61.68	-	-	74.00	-12.32	214	106	H
		* 2.48351	30.92	RMS	32.00	-20.20	0.00	42.72	54.00	-11.28	-	-	214	106	H
		2.560	31.37	RMS	32.20	-20.10	0.00	43.47	54.00	-10.53	-	-	214	106	H
		* 2.48351	41.26	Pk	32.00	-25.30	0.00	47.96	-	-	74.00	-26.04	168	310	V
		2.522	45.90	Pk	32.00	-25.10	0.00	52.80	-	-	74.00	-21.20	168	310	V
		* 2.48351	33.04	RMS	32.00	-25.30	0.00	39.74	54.00	-14.26	-	-	168	310	V
		2.538	33.45	RMS	32.00	-25.10	0.00	40.35	54.00	-13.65	-	-	168	310	V
2472	ANT1	* 2.48351	41.38	Pk	32.00	-20.20	0.00	53.18	-	-	74.00	-20.82	209	170	H
		* 2.48468	45.73	Pk	32.00	-20.20	0.00	57.53	-	-	74.00	-16.47	209	170	H
		* 2.48351	31.65	RMS	32.00	-20.20	0.00	43.45	54.00	-10.55	-	-	209	170	H
		* 2.48352	31.96	RMS	32.00	-20.20	0.00	43.76	54.00	-10.24	-	-	209	170	H
		* 2.48351	40.36	Pk	32.00	-20.20	0.00	52.16	-	-	74.00	-21.84	161	312	V
		* 2.4843	45.17	Pk	32.00	-20.20	0.00	56.97	-	-	74.00	-17.03	161	312	V
		* 2.48351	31.82	RMS	32.00	-20.20	0.00	43.62	54.00	-10.38	-	-	161	312	V
		* 2.4837	31.74	RMS	32.00	-20.20	0.00	43.54	54.00	-10.46	-	-	161	312	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	ANT2	* 2.39	53.08	Pk	32.80	-25.20	0.00	60.68	-	-	74.00	-13.32	150	126	H
		* 2.3898	62.20	Pk	32.80	-25.20	0.00	69.80	-	-	74.00	**-4.20**	150	126	H
		* 2.39	33.40	RMS	32.80	-25.20	0.00	41.00	54.00	-13.00	-	-	150	126	H
		* 2.38771	37.26	RMS	32.80	-25.20	0.00	44.86	54.00	-9.14	-	-	150	126	H
		* 2.39	43.08	Pk	32.80	-25.20	0.00	50.68	-	-	74.00	-23.32	197	315	V
		* 2.38973	60.11	Pk	32.80	-25.20	0.00	67.71	-	-	74.00	-6.29	197	315	V
		* 2.39	33.18	RMS	32.80	-25.20	0.00	40.78	54.00	-13.22	-	-	197	315	V
		* 2.38833	34.55	RMS	32.80	-25.20	0.00	42.15	54.00	-11.85	-	-	197	315	V
2462	ANT2	* 2.4835	48.69	Pk	32.90	-25.00	0.00	56.59	-	-	74.00	-17.41	151	111	H
		* 2.48362	61.51	Pk	32.90	-25.00	0.00	69.41	-	-	74.00	-4.59	151	111	H
		* 2.4835	34.31	RMS	32.90	-25.00	0.00	42.21	54.00	-11.79	-	-	151	111	H
		* 2.48373	37.25	RMS	32.90	-25.00	0.00	45.15	54.00	**-8.85**	-	-	151	111	H
		* 2.4835	58.23	Pk	32.90	-25.00	0.00	66.13	-	-	74.00	-7.87	194	296	V
		* 2.48364	59.55	Pk	32.90	-25.00	0.00	67.45	-	-	74.00	-6.55	194	296	V
		* 2.4835	33.37	RMS	32.90	-25.00	0.00	41.27	54.00	-12.73	-	-	194	296	V
		* 2.4836	35.42	RMS	32.90	-25.00	0.00	43.32	54.00	-10.68	-	-	194	296	V
2467	ANT2	* 2.4835	41.75	Pk	32.90	-25.00	0.00	49.65	-	-	74.00	-24.35	153	116	H
		* 2.48368	51.56	Pk	32.90	-25.00	0.00	59.46	-	-	74.00	-14.54	153	116	H
		* 2.4835	32.58	RMS	32.90	-25.00	0.00	40.48	54.00	-13.52	-	-	153	116	H
		2.513	33.03	RMS	32.90	-25.00	0.00	40.93	54.00	-13.07	-	-	153	116	H
		* 2.4835	49.07	Pk	32.90	-25.00	0.00	56.97	-	-	74.00	-17.03	197	297	V
		* 2.4853	49.85	Pk	32.90	-25.00	0.00	57.75	-	-	74.00	-16.25	197	297	V
		* 2.4835	32.04	RMS	32.90	-25.00	0.00	39.94	54.00	-14.06	-	-	197	297	V
		2.525	33.25	RMS	32.90	-25.00	0.00	41.15	54.00	-12.85	-	-	197	297	V
2472	ANT2	* 2.4835	42.32	Pk	32.90	-25.00	0.00	50.22	-	-	74.00	-23.78	172	175	H
		* 2.48387	46.31	Pk	32.90	-25.00	0.00	54.21	-	-	74.00	-19.79	172	175	H
		* 2.4835	32.10	RMS	32.90	-25.00	0.00	40.00	54.00	-14.00	-	-	172	175	H
		* 2.48364	33.58	RMS	32.90	-25.00	0.00	41.48	54.00	-12.52	-	-	172	175	H
		* 2.4835	43.80	Pk	32.90	-25.00	0.00	51.70	-	-	74.00	-22.30	130	137	V
		* 2.48389	46.17	Pk	32.90	-25.00	0.00	54.07	-	-	74.00	-19.93	130	137	V
		* 2.4835	32.31	RMS	32.90	-25.00	0.00	40.21	54.00	-13.79	-	-	130	137	V
		2.512	33.16	RMS	32.90	-25.00	0.00	41.06	54.00	-12.94	-	-	130	137	V

Note1. Pk - Peak detector, RMS - RMS detectior
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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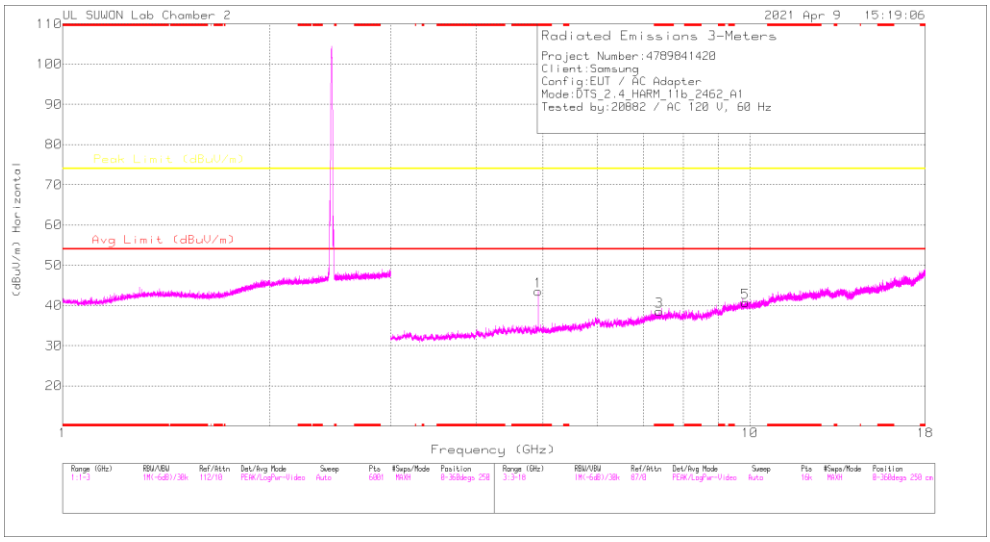
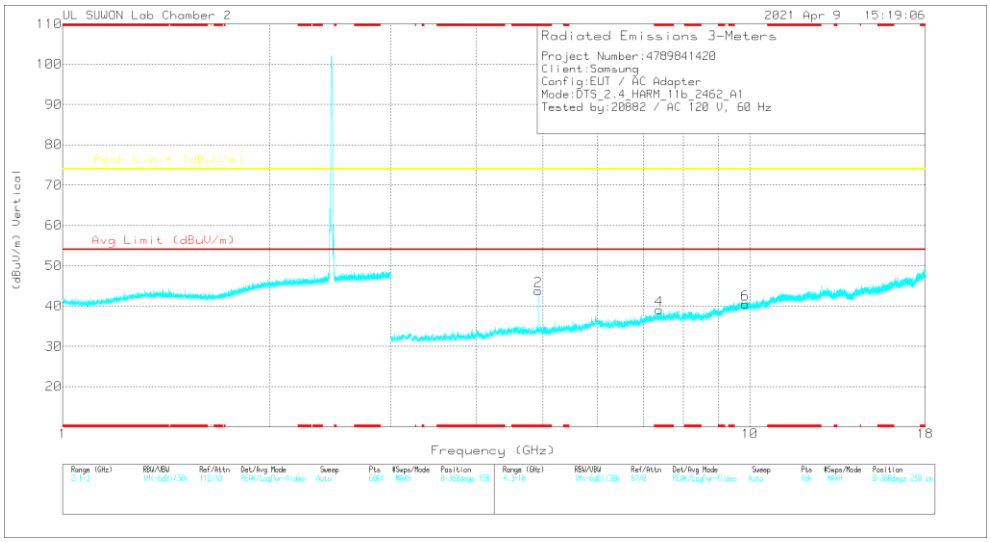
HARMONICS AND SPURIOUS EMISSIONS(ANT1 WORST CASE: 11 CHANNEL)
CH 11 RESULTS



HORIZONTAL



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.

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
* 4.92399	41.82	PK2	34.1	-26.8	0	49.12	-	-	74	-24.88	204	108	H
* 4.92397	36.9	MAv1	34.1	-26.8	0	44.2	54	-9.8	-	-	204	108	H
* 4.92397	41.74	PK2	34.1	-26.8	0	49.04	-	-	74	-24.96	177	233	V
* 4.92399	36.76	MAv1	34.1	-26.8	0	44.06	54	-9.94	-	-	177	233	V
* 7.37564	35.26	PK2	36.1	-24.1	0	47.26	-	-	74	-26.74	74	120	H
* 7.38508	23.57	MAv1	36.1	-24	0	35.67	54	-18.33	-	-	74	120	H
* 7.38846	34.95	PK2	36.1	-24	0	47.05	-	-	74	-26.95	286	378	V
* 7.38512	23.7	MAv1	36.1	-24	0	35.8	54	-18.2	-	-	286	378	V
9.84378	32.23	PK2	37.3	-21	0	48.53	-	-	74	-25.47	74	120	H
9.84154	32.53	PK2	37.3	-20.9	0	48.93	-	-	74	-25.07	0	100	V

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

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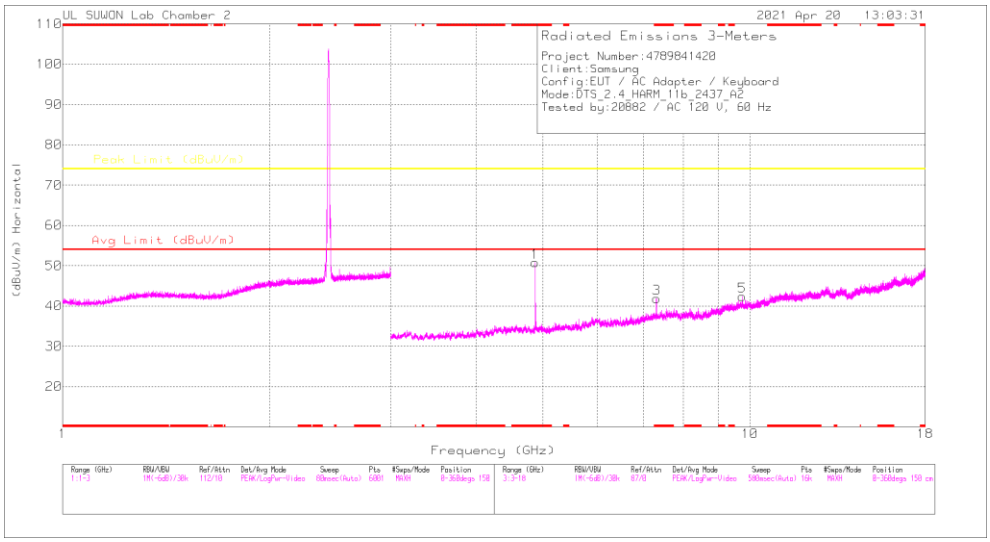
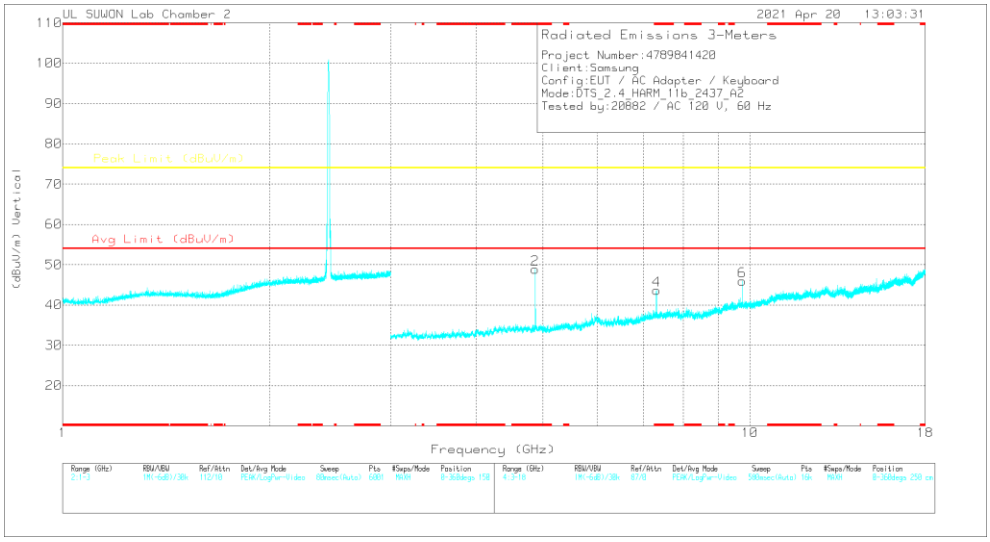
HARMONICS AND SPURIOUS EMISSIONS(ANT2 WORST CASE: 6 CHANNEL)
CH 6 RESULTS



HORIZONTAL



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.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872 4	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
* 4.87392	47.49	PK2	34.1	-27.7	0	53.89	-	-	74	-20.11	167	130	H
* 4.87402	44.46	MAv1	34.1	-27.7	0	50.86	54	-3.14	-	-	167	130	H
* 4.87398	46.72	PK2	34.1	-27.7	0	53.12	-	-	74	-20.88	193	250	V
* 4.87398	44.34	MAv1	34.1	-27.7	0	50.74	54	-3.26	-	-	193	250	V
* 7.31061	38.83	PK2	36.2	-24.6	0	50.43	-	-	74	-23.57	150	135	H
* 7.31183	30.58	MAv1	36.2	-24.6	0	42.18	54	-11.82	-	-	150	135	H
* 7.31161	41.81	PK2	36.2	-24.6	0	53.41	-	-	74	-20.59	214	100	V
* 7.31187	36.37	MAv1	36.2	-24.6	0	47.97	54	-6.03	-	-	214	100	V
9.74786	34.82	PK2	37.2	-20.5	0	51.52	-	-	74	-22.48	100	104	V
9.74784	33.19	PK2	37.2	-20.5	0	49.89	-	-	74	-24.11	58	100	H

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

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HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	ANT1	* 4.82406	40.54	PK2	34.10	-27.90	0.00	46.74	-	-	74.00	-27.26	205	100	H
		* 4.82402	34.49	MAv1	34.10	-27.90	0.00	40.69	54.00	-13.31	-	-	205	100	H
		* 4.824	40.57	PK2	34.10	-27.90	0.00	46.77	-	-	74.00	-27.23	179	247	V
		* 4.82394	34.76	MAv1	34.10	-27.90	0.00	40.96	54.00	-13.04	-	-	179	247	V
		7.237	35.46	PK2	36.20	-25.10	0.00	46.56	-	-	74.00	-27.44	246	369	H
		7.236	37.09	PK2	36.20	-25.10	0.00	48.19	-	-	74.00	-25.81	172	363	V
		9.646	32.41	PK2	37.00	-20.80	0.00	48.61	-	-	74.00	-25.39	360	100	H
		9.648	33.15	PK2	37.00	-20.90	0.00	49.25	-	-	74.00	-24.75	360	100	V
2437	ANT1	* 4.8738	40.37	PK2	34.10	-27.70	0.00	46.77	-	-	74.00	-27.23	206	131	H
		* 4.87394	34.15	MAv1	34.10	-27.70	0.00	40.55	54.00	-13.45	-	-	206	131	H
		* 4.87404	40.98	PK2	34.10	-27.70	0.00	47.38	-	-	74.00	-26.62	178	261	V
		* 4.87396	35.52	MAv1	34.10	-27.70	0.00	41.92	54.00	-12.08	-	-	178	261	V
		* 7.30799	35.78	PK2	36.20	-24.70	0.00	47.28	-	-	74.00	-26.72	67	128	H
		* 7.31005	24.69	MAv1	36.20	-24.60	0.00	36.29	54.00	-17.71	-	-	67	128	H
		* 7.30951	37.84	PK2	36.20	-24.70	0.00	49.34	-	-	74.00	-24.66	173	265	V
		* 7.30993	27.65	MAv1	36.20	-24.60	0.00	39.25	54.00	-14.75	-	-	173	265	V
		9.752	32.09	PK2	37.20	-20.50	0.00	48.79	-	-	74.00	-25.21	0	100	H
		9.752	33.08	PK2	37.20	-20.50	0.00	49.78	-	-	74.00	**-24.22**	0	100	V
2462	ANT1	* 4.92399	41.82	PK2	34.10	-26.80	0.00	49.12	-	-	74.00	-24.88	204	108	H
		* 4.92397	36.90	MAv1	34.10	-26.80	0.00	44.20	54.00	**-9.80**	-	-	204	108	H
		* 4.92397	41.74	PK2	34.10	-26.80	0.00	49.04	-	-	74.00	-24.96	177	233	V
		* 4.92399	36.76	MAv1	34.10	-26.80	0.00	44.06	54.00	-9.94	-	-	177	233	V
		* 7.37564	35.26	PK2	36.10	-24.10	0.00	47.26	-	-	74.00	-26.74	74	120	H
		* 7.38508	23.57	MAv1	36.10	-24.00	0.00	35.67	54.00	-18.33	-	-	74	120	H
		* 7.38846	34.95	PK2	36.10	-24.00	0.00	47.05	-	-	74.00	-26.95	286	378	V
		* 7.38512	23.70	MAv1	36.10	-24.00	0.00	35.80	54.00	-18.20	-	-	286	378	V
		9.844	32.23	PK2	37.30	-21.00	0.00	48.53	-	-	74.00	-25.47	74	120	H
		9.842	32.53	PK2	37.30	-20.90	0.00	48.93	-	-	74.00	-25.07	0	100	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	ANT2	* 4.82398	47.83	PK2	34.10	-31.30	0.00	50.63	-	-	74.00	-23.37	170	155	H
		* 4.82392	43.95	MAv1	34.10	-31.30	0.00	46.75	54.00	-7.25	-	-	170	155	H
		* 4.82408	47.36	PK2	34.10	-31.30	0.00	50.16	-	-	74.00	-23.84	194	254	V
		* 4.82398	43.25	MAv1	34.10	-31.30	0.00	46.05	54.00	-7.95	-	-	194	254	V
		7.237	39.87	PK2	35.80	-27.60	0.00	48.07	-	-	74.00	-25.93	152	147	H
		7.235	41.97	PK2	35.80	-27.60	0.00	50.17	-	-	74.00	-23.83	217	100	V
		9.648	37.51	PK2	37.20	-23.10	0.00	51.61	-	-	74.00	-22.39	333	104	H
		9.648	40.86	PK2	37.20	-23.20	0.00	54.86	-	-	74.00	**-19.14**	109	101	V
2437	ANT2	* 4.87392	47.49	PK2	34.10	-27.70	0.00	53.89	-	-	74.00	-20.11	167	130	H
		* 4.87402	44.46	MAv1	34.10	-27.70	0.00	50.86	54.00	**-3.14**	-	-	167	130	H
		* 4.87398	46.72	PK2	34.10	-27.70	0.00	53.12	-	-	74.00	-20.88	193	250	V
		* 4.87398	44.34	MAv1	34.10	-27.70	0.00	50.74	54.00	-3.26	-	-	193	250	V
		* 7.31061	38.83	PK2	36.20	-24.60	0.00	50.43	-	-	74.00	-23.57	150	135	H
		* 7.31183	30.58	MAv1	36.20	-24.60	0.00	42.18	54.00	-11.82	-	-	150	135	H
		* 7.31161	41.81	PK2	36.20	-24.60	0.00	53.41	-	-	74.00	-20.59	214	100	V
		* 7.31187	36.37	MAv1	36.20	-24.60	0.00	47.97	54.00	-6.03	-	-	214	100	V
		9.748	34.82	PK2	37.20	-20.50	0.00	51.52	-	-	74.00	-22.48	100	104	V
		9.748	33.19	PK2	37.20	-20.50	0.00	49.89	-	-	74.00	-24.11	58	100	H
2462	ANT2	* 4.92395	41.45	PK2	34.10	-26.80	0.00	48.75	-	-	74.00	-25.25	183	139	H
		* 4.92397	36.62	MAv1	34.10	-26.80	0.00	43.92	54.00	-10.08	-	-	183	139	H
		* 4.92399	41.51	PK2	34.10	-26.80	0.00	48.81	-	-	74.00	-25.19	192	272	V
		* 4.92395	37.04	MAv1	34.10	-26.80	0.00	44.34	54.00	-9.66	-	-	192	272	V
		* 7.38301	36.83	PK2	36.10	-24.00	0.00	48.93	-	-	74.00	-25.07	153	132	H
		* 7.38501	27.24	MAv1	36.10	-24.00	0.00	39.34	54.00	-14.66	-	-	153	132	H
		* 7.38513	39.17	PK2	36.10	-24.00	0.00	51.27	-	-	74.00	-22.73	216	100	V
		* 7.38521	32.28	MAv1	36.10	-24.00	0.00	44.38	54.00	-9.62	-	-	216	100	V
		9.848	33.20	PK2	37.30	-20.90	0.00	49.60	-	-	74.00	-24.40	56	100	H
		9.848	36.30	PK2	37.30	-20.90	0.00	52.70	-	-	74.00	-21.30	280	331	V

Note1. PK2 - KDB558074 Method: Maximum Peak / MAv1 - KDB558074 Option 1 Maximum RMS Average
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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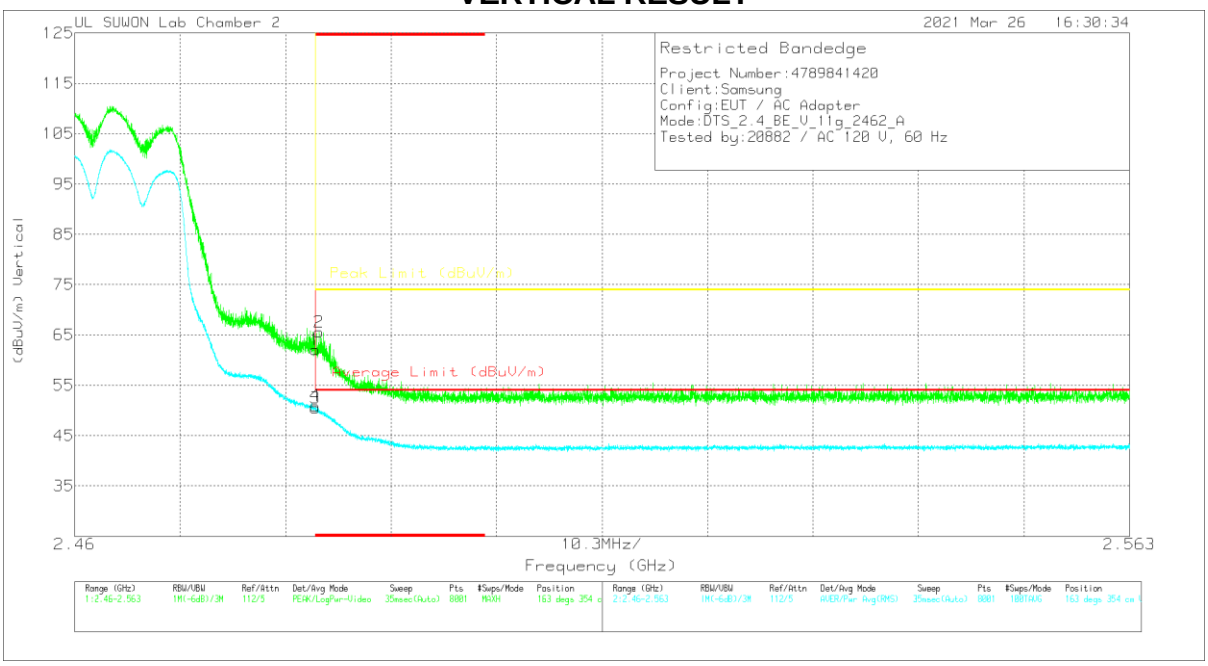
10.1.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

2TX Antenna 1 + Antenna 2

BANDEDGE (WORST CASE: 11 CHANNEL)

VERTICAL RESULT



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	50.3	Pk	32	-20.2	0	62.1	-	-	74	-11.9	163	354	V
2	* 2.48384	53.77	Pk	32	-20.2	0	65.57	-	-	74	-8.43	163	354	V
3	* 2.48351	38.75	RMS	32	-20.2	0	50.55	54	-3.45	-	-	163	354	V
4	* 2.48352	39.14	RMS	32	-20.2	0	50.94	54	-3.06	-	-	163	354	V

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

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BANDEDGE TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	MIMO	* 2.39	53.40	Pk	32.80	-25.20	0.00	61.00	-	-	74.00	-13.00	205	106	H
		* 2.38922	54.60	Pk	32.80	-25.10	0.00	62.30	-	-	74.00	-11.70	205	106	H
		* 2.39	40.26	RMS	32.80	-25.20	0.00	47.86	54.00	-6.14	-	-	205	106	H
		* 2.38938	41.42	RMS	32.80	-25.10	0.00	49.12	54.00	-4.88	-	-	205	106	H
		* 2.39	48.71	Pk	31.90	-20.30	0.00	60.31	-	-	74.00	-13.69	158	333	V
		* 2.38773	52.47	Pk	31.90	-20.20	0.00	64.17	-	-	74.00	-9.83	158	333	V
		* 2.39	36.98	RMS	31.90	-20.30	0.00	48.58	54.00	-5.42	-	-	158	333	V
		* 2.38804	38.66	RMS	31.90	-20.20	0.00	50.36	54.00	-3.64	-	-	158	333	V
2417	MIMO	* 2.39	52.23	Pk	32.80	-25.20	0.00	59.83	-	-	74.00	-14.17	200	103	H
		* 2.38864	53.41	Pk	32.80	-25.20	0.00	61.01	-	-	74.00	-12.99	200	103	H
		* 2.39	39.27	RMS	32.80	-25.20	0.00	46.87	54.00	-7.13	-	-	200	103	H
		* 2.38833	41.57	RMS	32.80	-25.20	0.00	49.17	54.00	-4.83	-	-	200	103	H
		* 2.39	49.07	Pk	31.90	-20.30	0.00	60.67	-	-	74.00	-13.33	167	334	V
		* 2.38977	51.85	Pk	31.90	-20.30	0.00	63.45	-	-	74.00	-10.55	167	334	V
		* 2.39	37.93	RMS	31.90	-20.30	0.00	49.53	54.00	-4.47	-	-	167	334	V
		* 2.38922	39.10	RMS	31.90	-20.30	0.00	50.70	54.00	-3.30	-	-	167	334	V
2457	MIMO	* 2.4835	50.80	Pk	32.90	-25.00	0.00	58.70	-	-	74.00	-15.30	203	119	H
		* 2.48409	53.15	Pk	32.90	-25.00	0.00	61.05	-	-	74.00	-12.95	203	119	H
		* 2.4835	39.81	RMS	32.90	-25.00	0.00	47.71	54.00	-6.29	-	-	203	119	H
		* 2.48416	41.27	RMS	32.90	-25.00	0.00	49.17	54.00	-4.83	-	-	203	119	H
		* 2.48351	46.97	Pk	32.00	-20.20	0.00	58.77	-	-	74.00	-15.23	160	318	V
		* 2.48428	47.48	Pk	32.00	-20.20	0.00	59.28	-	-	74.00	-14.72	160	318	V
		* 2.48351	35.40	RMS	32.00	-20.20	0.00	47.20	54.00	-6.80	-	-	160	318	V
		* 2.48554	35.39	RMS	32.00	-20.20	0.00	47.19	54.00	-6.81	-	-	160	318	V
2462	MIMO	* 2.4835	51.54	Pk	32.90	-25.00	0.00	59.44	-	-	74.00	-14.56	186	148	H
		* 2.48422	51.94	Pk	32.90	-25.00	0.00	59.84	-	-	74.00	-14.16	186	148	H
		* 2.4835	41.28	RMS	32.90	-25.00	0.00	49.18	54.00	-4.82	-	-	186	148	H
		* 2.48381	40.74	RMS	32.90	-25.00	0.00	48.64	54.00	-5.36	-	-	186	148	H
		* 2.48351	50.30	Pk	32.00	-20.20	0.00	62.10	-	-	74.00	-11.90	163	354	V
		* 2.48384	53.77	Pk	32.00	-20.20	0.00	65.57	-	-	74.00	**-8.43**	163	354	V
		* 2.48351	38.75	RMS	32.00	-20.20	0.00	50.55	54.00	-3.45	-	-	163	354	V
		* 2.48352	39.14	RMS	32.00	-20.20	0.00	50.94	54.00	**-3.06**	-	-	163	354	V
2467	MIMO	* 2.4835	43.27	Pk	32.90	-25.00	0.00	51.17	-	-	74.00	-22.83	152	112	H
		* 2.48389	45.98	Pk	32.90	-25.00	0.00	53.88	-	-	74.00	-20.12	152	112	H
		* 2.4835	32.89	RMS	32.90	-25.00	0.00	40.79	54.00	-13.21	-	-	152	112	H
		* 2.48377	34.73	RMS	32.90	-25.00	0.00	42.63	54.00	-11.37	-	-	152	112	H
		* 2.4835	42.46	Pk	32.90	-25.00	0.00	50.36	-	-	74.00	-23.64	168	329	V
		* 2.48479	45.15	Pk	32.90	-25.00	0.00	53.05	-	-	74.00	-20.95	168	329	V
		* 2.4835	32.97	RMS	32.90	-25.00	0.00	40.87	54.00	-13.13	-	-	168	329	V
		* 2.48601	34.16	RMS	32.90	-25.00	0.00	42.06	54.00	-11.94	-	-	168	329	V
2472	MIMO	* 2.4835	45.58	Pk	32.90	-25.00	0.00	53.48	-	-	74.00	-20.52	182	124	H
		* 2.48353	47.64	Pk	32.90	-25.00	0.00	55.54	-	-	74.00	-18.46	182	124	H
		* 2.4835	34.67	RMS	32.90	-25.00	0.00	42.57	54.00	-11.43	-	-	182	124	H
		* 2.48354	35.17	RMS	32.90	-25.00	0.00	43.07	54.00	-10.93	-	-	182	124	H
		* 2.4835	51.74	Pk	32.90	-25.00	0.00	59.64	-	-	74.00	-14.36	170	312	V
		* 2.48353	51.54	Pk	32.90	-25.00	0.00	59.44	-	-	74.00	-14.56	170	312	V
		* 2.4835	38.29	RMS	32.90	-25.00	0.00	46.19	54.00	-7.81	-	-	170	312	V
		* 2.48351	38.33	RMS	32.90	-25.00	0.00	46.23	54.00	-7.77	-	-	170	312	V

Note1. Pk - Peak detector, RMS - RMS detectior
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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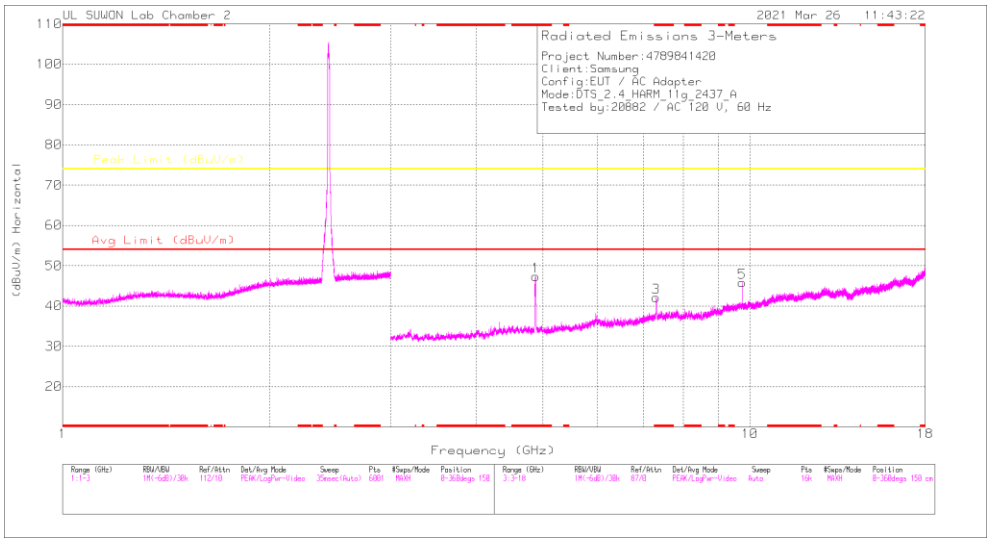
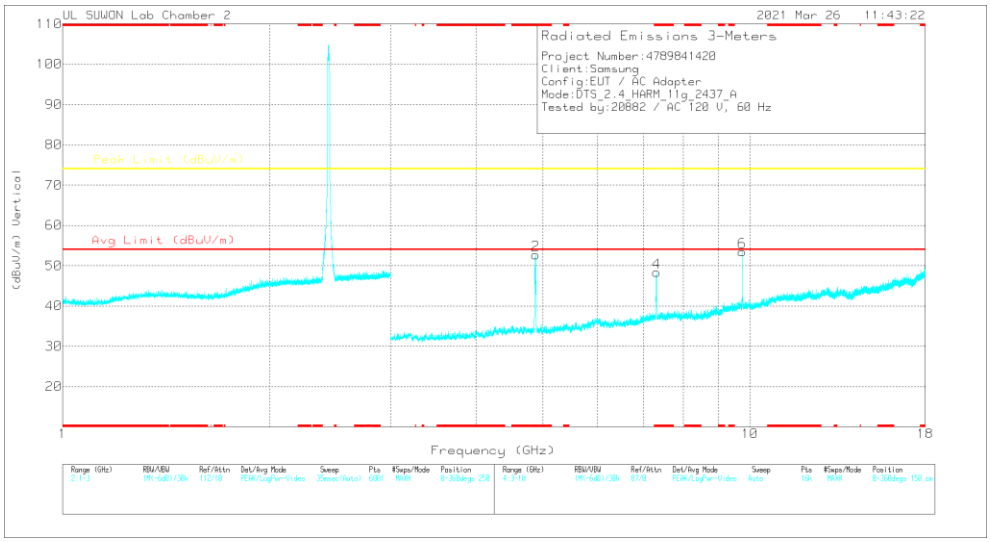
HARMONICS AND SPURIOUS EMISSIONS (WORST CASE: 6 CHANNEL)
CH 6 RESULTS



HORIZONTAL



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.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872 4	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
* 4.87622	49.78	PK2	34.1	-27.6	0	56.28	-	-	74	-17.72	209	217	H
* 4.87634	35.96	MAv1	34.1	-27.6	0	42.46	54	-11.54	-	-	209	217	H
* 4.87612	55.72	PK2	34.1	-27.6	0	62.22	-	-	74	-11.78	211	101	V
* 4.8762	41.58	MAv1	34.1	-27.6	0	48.08	54	-5.92	-	-	211	101	V
* 7.30727	43.11	PK2	36.2	-24.7	0	54.61	-	-	74	-19.39	350	107	H
* 7.31139	29.2	MAv1	36.2	-24.6	0	40.8	54	-13.2	-	-	350	107	H
* 7.30735	48.29	PK2	36.2	-24.7	0	59.79	-	-	74	-14.21	354	240	V
* 7.31255	33.83	MAv1	36.1	-24.6	0	45.33	54	-8.67	-	-	354	240	V
9.74782	35.91	PK2	37.2	-20.5	0	52.61	-	-	74	-21.39	253	101	H
9.74802	40.03	PK2	37.2	-20.5	0	56.73	-	-	74	-17.27	318	256	V

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

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HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2417	MIMO	* 4.83628	41.72	PK2	34.60	-30.40	0.00	45.92	-	-	74.00	-28.08	101	207	H
		* 4.83662	30.24	MAv1	34.60	-30.40	0.00	34.44	54.00	-19.56	-	-	101	207	H
		* 4.83443	52.36	PK2	34.60	-30.40	0.00	56.56	-	-	74.00	-17.44	155	111	V
		* 4.83441	38.70	MAv1	34.60	-30.40	0.00	42.90	54.00	-11.10	-	-	155	111	V
		* 7.25025	37.26	PK2	36.00	-25.40	0.00	47.86	-	-	74.00	-26.14	43	253	H
		* 7.25475	25.91	MAv1	36.00	-25.40	0.00	36.51	54.00	-17.49	-	-	43	253	H
		* 7.25475	45.35	PK2	36.00	-25.40	0.00	55.95	-	-	74.00	-18.05	173	100	V
		* 7.25075	32.08	MAv1	36.00	-25.40	0.00	42.68	54.00	-11.32	-	-	173	100	V
		9.668	35.89	PK2	37.40	-21.30	0.00	51.99	-	-	74.00	-22.01	78	101	H
		9.668	41.28	PK2	37.40	-21.30	0.00	57.38	-	-	74.00	-16.62	145	222	V
2437	MIMO	* 4.87622	49.78	PK2	34.10	-27.60	0.00	56.28	-	-	74.00	-17.72	209	217	H
		* 4.87634	35.96	MAv1	34.10	-27.60	0.00	42.46	54.00	-11.54	-	-	209	217	H
		* 4.87612	55.72	PK2	34.10	-27.60	0.00	62.22	-	-	74.00	**-11.78**	211	101	V
		* 4.8762	41.58	MAv1	34.10	-27.60	0.00	48.08	54.00	**-5.92**	-	-	211	101	V
		* 7.30727	43.11	PK2	36.20	-24.70	0.00	54.61	-	-	74.00	-19.39	350	107	H
		* 7.31139	29.20	MAv1	36.20	-24.60	0.00	40.80	54.00	-13.20	-	-	350	107	H
		* 7.30735	48.29	PK2	36.20	-24.70	0.00	59.79	-	-	74.00	-14.21	354	240	V
		* 7.31255	33.83	MAv1	36.10	-24.60	0.00	45.33	54.00	-8.67	-	-	354	240	V
		9.748	35.91	PK2	37.20	-20.50	0.00	52.61	-	-	74.00	-21.39	253	101	H
		9.748	40.03	PK2	37.20	-20.50	0.00	56.73	-	-	74.00	-17.27	318	256	V
2457	MIMO	* 4.91442	48.73	PK2	34.70	-31.00	0.00	52.43	-	-	74.00	-21.57	60	100	H
		* 4.91488	36.79	MAv1	34.70	-31.00	0.00	40.49	54.00	-13.51	-	-	60	100	H
		* 4.9117	54.22	PK2	34.70	-31.00	0.00	57.92	-	-	74.00	-16.08	156	250	V
		* 4.91204	42.80	MAv1	34.70	-31.00	0.00	46.50	54.00	-7.50	-	-	156	250	V
		* 7.36583	39.39	PK2	36.00	-24.80	0.00	50.59	-	-	74.00	-23.41	165	138	H
		* 7.36557	26.91	MAv1	36.00	-24.80	0.00	38.11	54.00	-15.89	-	-	165	138	H
		* 7.37522	47.75	PK2	36.00	-24.60	0.00	59.15	-	-	74.00	-14.85	169	101	V
		* 7.37036	34.05	MAv1	36.00	-24.70	0.00	45.35	54.00	-8.65	-	-	169	101	V
		9.828	34.77	PK2	37.70	-21.30	0.00	51.17	-	-	74.00	-22.83	76	103	H
		9.828	42.44	PK2	37.70	-21.30	0.00	58.84	-	-	74.00	-15.16	140	217	V

Note1. PK2 - KDB558074 Method: Maximum Peak / MAv1 - KDB558074 Option 1 Maximum RMS Average
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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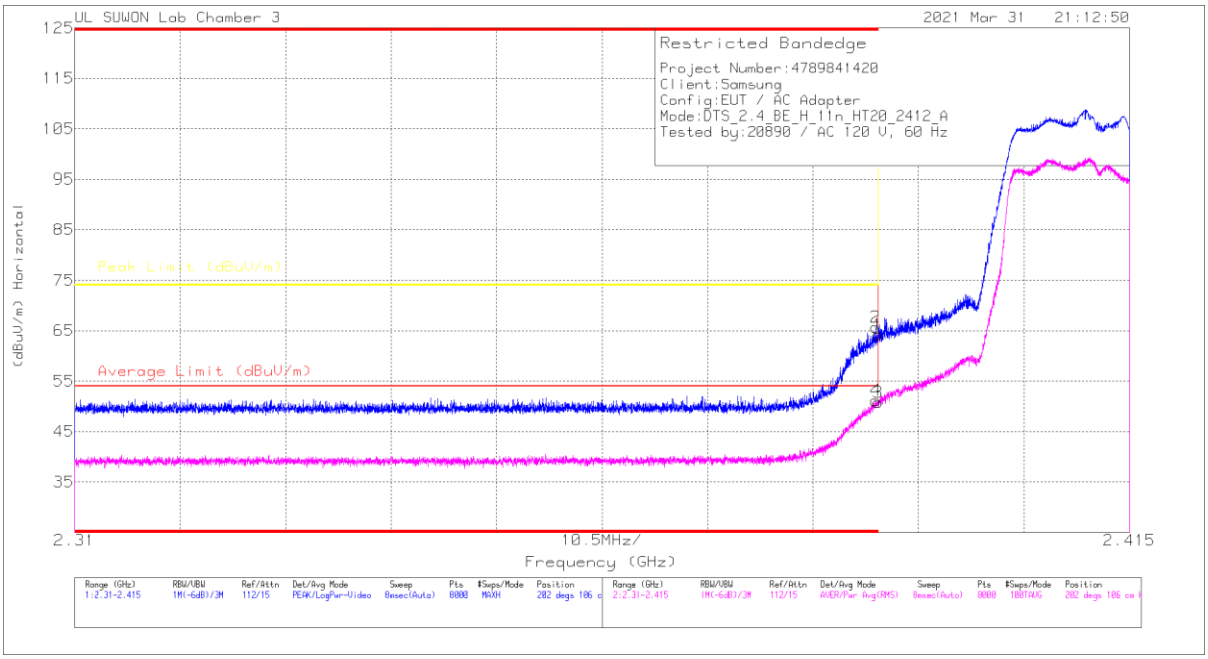
10.1.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

2TX Antenna 1 + Antenna 2

BANDEDGE (WORST CASE: 1 CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	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	56.65	Pk	32.8	-25.2	0	64.25	-	-	74	-9.75	202	106	H
2	* 2.38971	58.03	Pk	32.8	-25.2	0	65.63	-	-	74	-8.37	202	106	H
3	* 2.39	43.14	RMS	32.8	-25.2	0	50.74	54	-3.26	-	-	202	106	H
4	* 2.38976	43.57	RMS	32.8	-25.2	0	51.17	54	-2.83	-	-	202	106	H

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

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BANDEDGE TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2412	MIMO	* 2.39	56.65	Pk	32.80	-25.20	0.00	64.25	-	-	74.00	-9.75	202	106	H
		* 2.38971	58.03	Pk	32.80	-25.20	0.00	65.63	-	-	74.00	**-8.37**	202	106	H
		* 2.39	43.14	RMS	32.80	-25.20	0.00	50.74	54.00	-3.26	-	-	202	106	H
		* 2.38976	43.57	RMS	32.80	-25.20	0.00	51.17	54.00	**-2.83**	-	-	202	106	H
		* 2.39	55.14	Pk	32.80	-25.20	0.00	62.74	-	-	74.00	-11.26	187	326	V
		* 2.38893	57.44	Pk	32.80	-25.10	0.00	65.14	-	-	74.00	-8.86	187	326	V
		* 2.39	42.85	RMS	32.80	-25.20	0.00	50.45	54.00	-3.55	-	-	187	326	V
		* 2.38934	43.26	RMS	32.80	-25.10	0.00	50.96	54.00	-3.04	-	-	187	326	V
2417	MIMO	* 2.39	54.78	Pk	32.80	-25.20	0.00	62.38	-	-	74.00	-11.62	204	105	H
		* 2.38997	56.47	Pk	32.80	-25.20	0.00	64.07	-	-	74.00	-9.93	204	105	H
		* 2.39	41.62	RMS	32.80	-25.20	0.00	49.22	54.00	-4.78	-	-	204	105	H
		* 2.38998	42.77	RMS	32.80	-25.20	0.00	50.37	54.00	-3.63	-	-	204	105	H
		* 2.39	47.65	Pk	31.90	-20.30	0.00	59.25	-	-	74.00	-14.75	190	332	V
		* 2.38976	51.75	Pk	31.90	-20.30	0.00	63.35	-	-	74.00	-10.65	190	332	V
		* 2.39	37.57	RMS	31.90	-20.30	0.00	49.17	54.00	-4.83	-	-	190	332	V
		* 2.38993	37.88	RMS	31.90	-20.30	0.00	49.48	54.00	-4.52	-	-	190	332	V
2457	MIMO	* 2.4835	50.25	Pk	32.90	-25.00	0.00	58.15	-	-	74.00	-15.85	201	102	H
		* 2.48471	51.66	Pk	32.90	-25.00	0.00	59.56	-	-	74.00	-14.44	201	102	H
		* 2.4835	39.49	RMS	32.90	-25.00	0.00	47.39	54.00	-6.61	-	-	201	102	H
		* 2.48385	39.72	RMS	32.90	-25.00	0.00	47.62	54.00	-6.38	-	-	201	102	H
		* 2.48351	45.02	Pk	32.00	-20.20	0.00	56.82	-	-	74.00	-17.18	169	352	V
		* 2.48365	47.98	Pk	32.00	-20.20	0.00	59.78	-	-	74.00	-14.22	169	352	V
		* 2.48351	35.67	RMS	32.00	-20.20	0.00	47.47	54.00	-6.53	-	-	169	352	V
		* 2.48368	36.51	RMS	32.00	-20.20	0.00	48.31	54.00	-5.69	-	-	169	352	V
2462	MIMO	* 2.4835	54.85	Pk	32.90	-25.00	0.00	62.75	-	-	74.00	-11.25	212	150	H
		* 2.48402	55.53	Pk	32.90	-25.00	0.00	63.43	-	-	74.00	-10.57	212	150	H
		* 2.4835	41.21	RMS	32.90	-25.00	0.00	49.11	54.00	-4.89	-	-	212	150	H
		* 2.48364	41.98	RMS	32.90	-25.00	0.00	49.88	54.00	-4.12	-	-	212	150	H
		* 2.48351	48.86	Pk	32.00	-20.20	0.00	60.66	-	-	74.00	-13.34	193	353	V
		* 2.48617	50.10	Pk	32.00	-20.20	0.00	61.90	-	-	74.00	-12.10	193	353	V
		* 2.48351	37.65	RMS	32.00	-20.20	0.00	49.45	54.00	-4.55	-	-	193	353	V
		* 2.48361	37.76	RMS	32.00	-20.20	0.00	49.56	54.00	-4.44	-	-	193	353	V
2467	MIMO	* 2.4835	42.96	Pk	32.90	-25.00	0.00	50.86	-	-	74.00	-23.14	155	113	H
		2.541	45.24	Pk	32.90	-25.00	0.00	53.14	-	-	74.00	-20.86	155	113	H
		* 2.4835	33.31	RMS	32.90	-25.00	0.00	41.21	54.00	-12.79	-	-	155	113	H
		* 2.48356	33.93	RMS	32.90	-25.00	0.00	41.83	54.00	-12.17	-	-	155	113	H
		* 2.4835	42.92	Pk	32.90	-25.00	0.00	50.82	-	-	74.00	-23.18	166	345	V
		* 2.48521	45.00	Pk	32.90	-25.00	0.00	52.90	-	-	74.00	-21.10	166	345	V
		* 2.4835	31.92	RMS	32.90	-25.00	0.00	39.82	54.00	-14.18	-	-	166	345	V
		* 2.48417	33.54	RMS	32.90	-25.00	0.00	41.44	54.00	-12.56	-	-	166	345	V
2472	MIMO	* 2.4835	50.17	Pk	32.90	-25.00	0.00	58.07	-	-	74.00	-15.93	169	123	H
		* 2.48363	51.26	Pk	32.90	-25.00	0.00	59.16	-	-	74.00	-14.84	169	123	H
		* 2.4835	38.06	RMS	32.90	-25.00	0.00	45.96	54.00	-8.04	-	-	169	123	H
		* 2.48359	38.62	RMS	32.90	-25.00	0.00	46.52	54.00	-7.48	-	-	169	123	H
		* 2.4835	53.27	Pk	32.90	-25.00	0.00	61.17	-	-	74.00	-12.83	192	339	V
		* 2.48353	52.65	Pk	32.90	-25.00	0.00	60.55	-	-	74.00	-13.45	192	339	V
		* 2.4835	39.62	RMS	32.90	-25.00	0.00	47.52	54.00	-6.48	-	-	192	339	V
		* 2.48351	40.63	RMS	32.90	-25.00	0.00	48.53	54.00	-5.47	-	-	192	339	V

Note1. Pk - Peak detector, RMS - RMS detectior
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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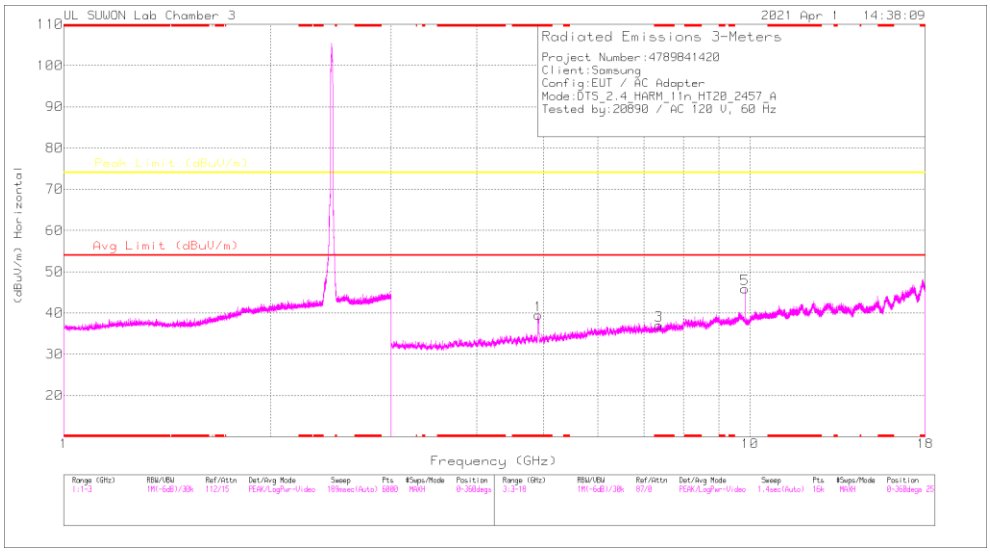
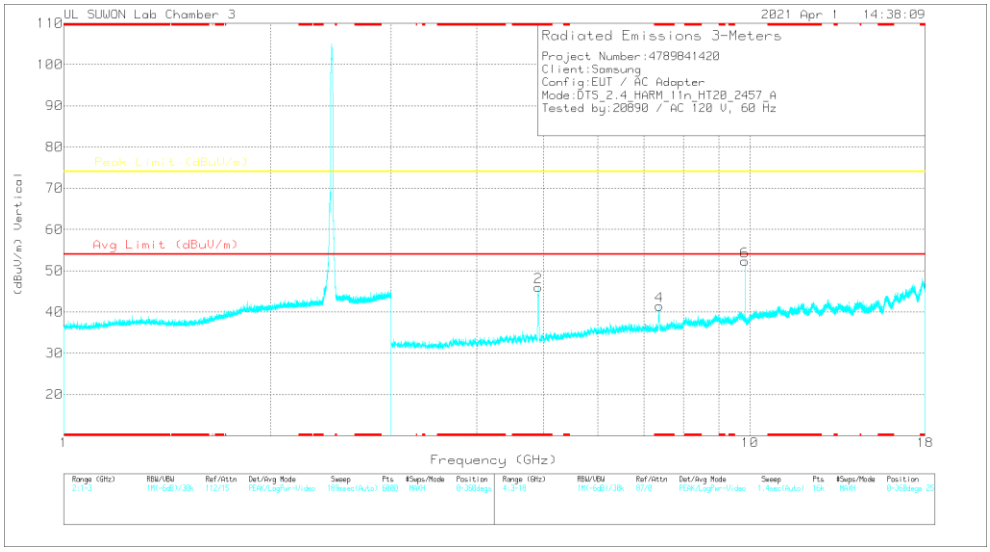
HARMONICS AND SPURIOUS EMISSIONS (WORST CASE: 10 CHANNEL)
CH 10 RESULTS



HORIZONTAL



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.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	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
* 4.91318	45.25	PK2	34.7	-30.9	0	49.05	-	-	74	-24.95	63	101	H
* 4.91546	33.51	MAv1	34.7	-31	0	37.21	54	-16.79	-	-	63	101	H
* 4.91486	53.99	PK2	34.7	-31	0	57.69	-	-	74	-16.31	119	276	V
* 4.91522	41.57	MAv1	34.7	-31	0	45.27	54	-8.73	-	-	119	276	V
* 7.36714	37.81	PK2	36	-24.8	0	49.01	-	-	74	-24.99	163	128	H
* 7.36483	25.33	MAv1	36	-24.8	0	36.53	54	-17.47	-	-	163	128	H
* 7.3736	39.34	PK2	36	-24.6	0	50.74	-	-	74	-23.26	166	102	V
* 7.37262	26.05	MAv1	36	-24.6	0	37.45	54	-16.55	-	-	166	102	V
9.82822	34.63	PK2	37.7	-21.3	0	51.03	-	-	74	-22.97	73	105	H
9.82796	40.91	PK2	37.7	-21.3	0	57.31	-	-	74	-16.69	137	211	V

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

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HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2417	MIMO	* 4.83766	45.62	PK2	34.60	-30.40	0.00	49.82	-	-	74.00	-24.18	61	109	H
		* 4.83704	34.21	MAv1	34.60	-30.40	0.00	38.41	54.00	-15.59	-	-	61	109	H
		* 4.8377	50.62	PK2	34.60	-30.40	0.00	54.82	-	-	74.00	-19.18	156	227	V
		* 4.83608	38.37	MAv1	34.60	-30.40	0.00	42.57	54.00	-11.43	-	-	156	227	V
		* 7.25075	34.85	PK2	36.00	-25.40	0.00	45.45	-	-	74.00	-28.55	176	108	H
		* 7.25125	23.94	MAv1	36.00	-25.40	0.00	34.54	54.00	-19.46	-	-	176	108	H
		* 7.25325	37.99	PK2	36.00	-25.40	0.00	48.59	-	-	74.00	-25.41	201	104	V
		* 7.25175	25.38	MAv1	36.00	-25.40	0.00	35.98	54.00	-18.02	-	-	201	104	V
		9.668	36.03	PK2	37.40	-21.30	0.00	52.13	-	-	74.00	-21.87	71	104	H
		9.668	42.24	PK2	37.40	-21.30	0.00	58.34	-	-	74.00	**-15.66**	145	224	V
2437	MIMO	* 4.87722	48.57	PK2	34.10	-27.60	0.00	55.07	-	-	74.00	-18.93	39	188	H
		* 4.87464	35.05	MAv1	34.10	-27.70	0.00	41.45	54.00	-12.55	-	-	39	188	H
		* 4.87793	49.52	PK2	34.10	-27.60	0.00	56.02	-	-	74.00	-17.98	123	389	V
		* 4.87738	36.35	MAv1	34.10	-27.60	0.00	42.85	54.00	-11.15	-	-	123	389	V
		* 7.31346	42.55	PK2	36.10	-24.60	0.00	54.05	-	-	74.00	-19.95	167	127	H
		* 7.31116	29.20	MAv1	36.20	-24.60	0.00	40.80	54.00	-13.20	-	-	167	127	H
		* 7.31132	46.17	PK2	36.20	-24.60	0.00	57.77	-	-	74.00	-16.23	234	100	V
		* 7.30996	32.31	MAv1	36.20	-24.60	0.00	43.91	54.00	-10.09	-	-	234	100	V
		9.748	36.06	PK2	37.20	-20.50	0.00	52.76	-	-	74.00	-21.24	38	100	H
		9.748	41.44	PK2	37.20	-20.50	0.00	58.14	-	-	74.00	-15.86	138	229	V
2457	MIMO	* 4.91318	45.25	PK2	34.70	-30.90	0.00	49.05	-	-	74.00	-24.95	63	101	H
		* 4.91546	33.51	MAv1	34.70	-31.00	0.00	37.21	54.00	-16.79	-	-	63	101	H
		* 4.91486	53.99	PK2	34.70	-31.00	0.00	57.69	-	-	74.00	-16.31	119	276	V
		* 4.91522	41.57	MAv1	34.70	-31.00	0.00	45.27	54.00	**-8.73**	-	-	119	276	V
		* 7.36714	37.81	PK2	36.00	-24.80	0.00	49.01	-	-	74.00	-24.99	163	128	H
		* 7.36483	25.33	MAv1	36.00	-24.80	0.00	36.53	54.00	-17.47	-	-	163	128	H
		* 7.3736	39.34	PK2	36.00	-24.60	0.00	50.74	-	-	74.00	-23.26	166	102	V
		* 7.37262	26.05	MAv1	36.00	-24.60	0.00	37.45	54.00	-16.55	-	-	166	102	V
		9.828	34.63	PK2	37.70	-21.30	0.00	51.03	-	-	74.00	-22.97	73	105	H
		9.828	40.91	PK2	37.70	-21.30	0.00	57.31	-	-	74.00	-16.69	137	211	V

Note1. PK2 - KDB558074 Method: Maximum Peak / MAv1 - KDB558074 Option 1 Maximum RMS Average
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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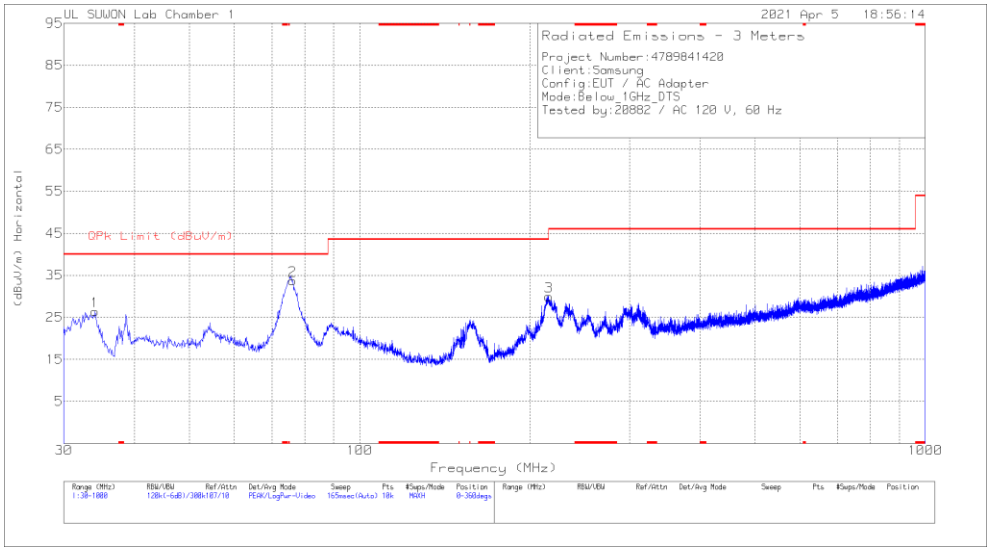
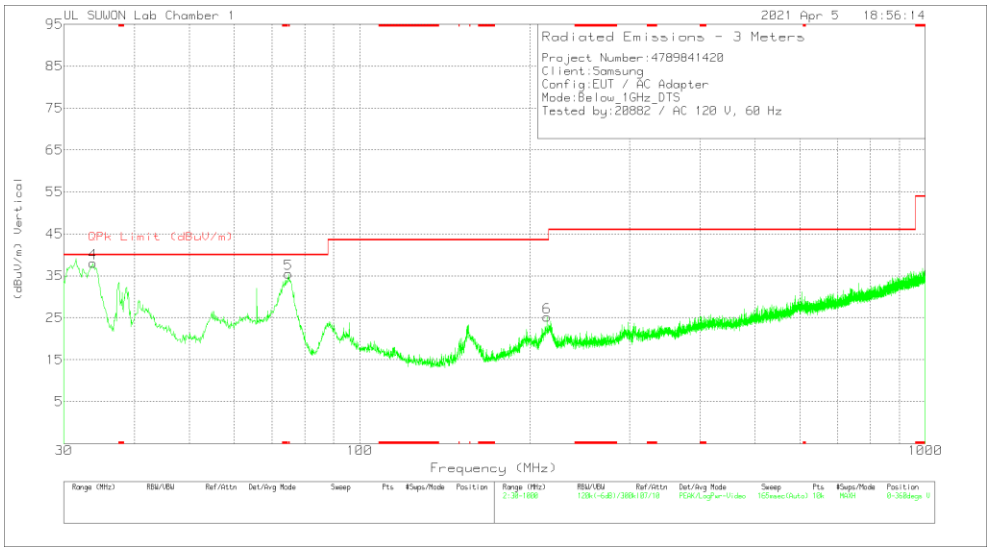
10.2. WORST CASE BELOW 1 GHZ



HORIZONTAL



VERTICAL

Below 1GHz DATA

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	34.074	41.15	Pk	16.2	-30.9	0	26.45	40	-13.55	0-360	300	H
2	76.075	50.66	Pk	13.1	-30	0	33.76	40	-6.24	0-360	200	H
3	216.046	41.5	Pk	16.9	-28.4	0	30	46.02	-16.02	0-360	200	H
4	33.783	52.76	Pk	16.1	-30.8	0	38.06	40	-1.94	0-360	100	V
5	* 74.911	52.21	Pk	13.4	-30.1	0	35.51	40	-4.49	0-360	100	V
6	214.494	36.56	Pk	16.8	-28.2	0	25.16	43.52	-18.36	0-360	200	V

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

Radiated Emissions

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
33.783	46.05	Qp	16.1	-30.8	0	31.35	40	-8.65	202	101	V

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

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11. 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.

RESULTS

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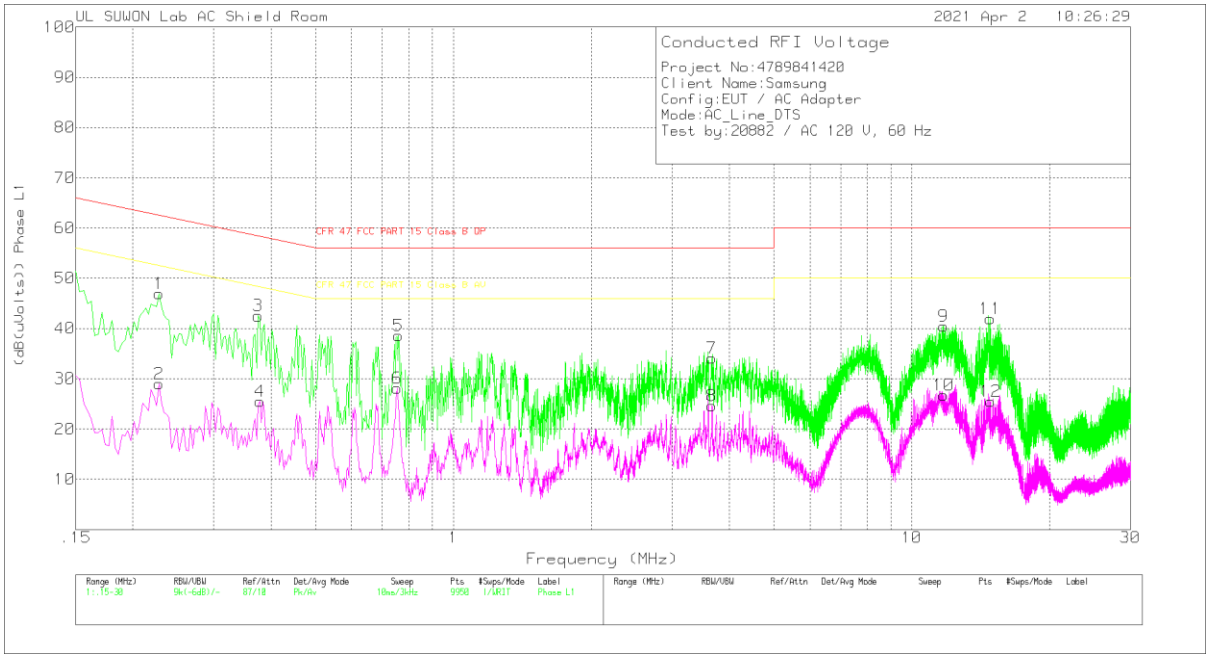
11.1.1. AC Power Line

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	.228	36.91	Pk	9.8	.2	46.91	62.52	-15.61	-	-
2	.228	19.05	Av	9.8	.2	29.05	-	-	52.52	-23.47
3	.375	32.42	Pk	9.9	.2	42.52	58.39	-15.87	-	-
4	.378	15.36	Av	9.9	.2	25.46	-	-	48.32	-22.86
5	.759	28.5	Pk	9.9	.2	38.6	56	-17.4	-	-
6	.753	18.07	Av	9.9	.2	28.17	-	-	46	-17.83
7	3.666	23.95	Pk	9.8	.3	34.05	56	-21.95	-	-
8	3.666	14.53	Av	9.8	.3	24.63	-	-	46	-21.37
9	11.733	30.21	Pk	10	.3	40.51	60	-19.49	-	-
10	11.724	16.5	Av	10	.3	26.8	-	-	50	-23.2
11	14.841	31.42	Pk	10.1	.4	41.92	60	-18.08	-	-
12	14.844	14.97	Av	10.1	.4	25.47	-	-	50	-24.53

Pk - Peak detector

Av - Average detection

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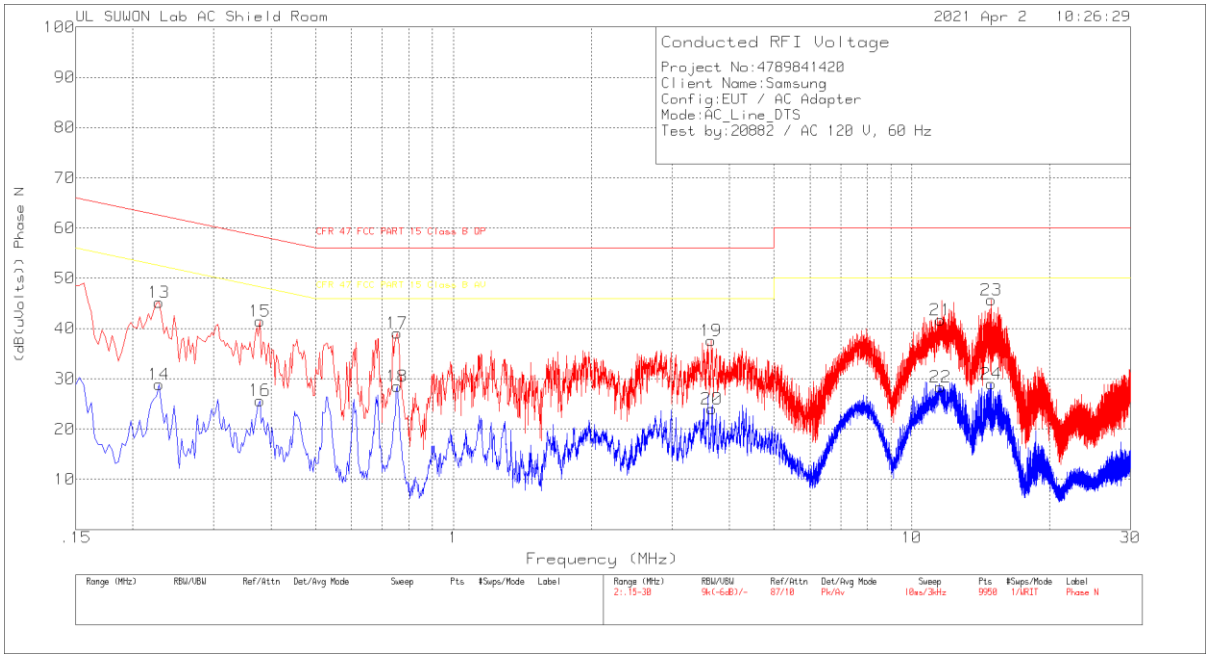
LINE 2 RESULTS



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	.228	35.14	Pk	9.8	.2	45.14	62.52	-17.38	-	-
14	.228	18.88	Av	9.8	.2	28.88	-	-	52.52	-23.64
15	.378	31.4	Pk	9.9	.2	41.5	58.32	-16.82	-	-
16	.378	15.59	Av	9.9	.2	25.69	-	-	48.32	-22.63
17	.753	29.04	Pk	9.9	.2	39.14	56	-16.86	-	-
18	.753	18.38	Av	9.9	.2	28.48	-	-	46	-17.52
19	3.651	27.45	Pk	9.8	.3	37.55	56	-18.45	-	-
20	3.666	13.9	Av	9.8	.3	24	-	-	46	-22
21	11.556	31.42	Pk	10	.3	41.72	60	-18.28	-	-
22	11.559	18.09	Av	10	.3	28.39	-	-	50	-21.61
23	14.922	35.14	Pk	10.1	.4	45.64	60	-14.36	-	-
24	14.916	18.52	Av	10.1	.4	29.02	-	-	50	-20.98

Pk - Peak detector

Av - Average detection

END OF TEST REPORT

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