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FCC DTS REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Date of Issue:
July 15, 2020

Test Site/Location:
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA

Report No.: HCT-RF-2007-FC013

FCC ID:	**A3LSMT878U**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**
Model:	SM-T878U
EUT Type:	Tablet
Average Output Power:	802.11ax(HE20) Ant.1 (SISO): 14.68 dBm 802.11ax(HE20) Ant 2 (SISO): 14.64 dBm 802.11ax(HE20) Ant 1&2 (MIMO): 17.56 dBm
Frequency Range:	2 412 MHz ~ 2 462 MHz (US Only: 2 412 MHz ~ 2 462 MHz)
Modulation type:	OFDMA
FCC Classification:	Digital Transmission System(DTS)
FCC Rule Part(s):	Part 15.247

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

REVIEWED BY

Report prepared by : Jeong Ho Kim Engineer of Telecommunication Testing Center	Report approved by : Jong Seok Lee Manager of Telecommunication Testing Center

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2007-FC013	July 15, 2020	- First Approval Report

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1. EUT DESCRIPTION

Model	SM-T878U		
Additional Model	-		
EUT Type	Tablet		
Power Supply	DC 3.85 V		
Battery Information	Model: EB-BT875ABY Type: Li-ion Battery		
Travel Adapter Information	Model : EP-TA200 Manufacture: RFTech		
Data Cable Information	Model : EP-DT725BBE Manufacture: KSDCO		
Ear-jack Information	Model : GHSS028-K8 Manufacture: BUJEON		
S-PEN Information	Model : EJ-PT870 Manufacture: WACOM		
Keyboard Information	Model : EF-DT870 Manufacture: SAMSUNG		
Frequency Range	2 412 MHz ~ 2 462 MHz(US Only: 2 412 MHz ~ 2 462 MHz)		
Max. RF Output Power	Peak Power (For information only)	Ant. 1 (SISO)	22.85 dBm
		Ant.2 (SISO)	22.89 dBm
		Ant.1&2 (MIMO)	25.74 dBm
	Average Power	Ant. 1 (SISO)	14.68 dBm
		Ant.2 (SISO)	14.64 dBm
		Ant.1&2 (MIMO)	17.56 dBm
Modulation Type	OFDMA		
Number of Channels	11 Channels		
Antenna Specification	Antenna type: Metal Peak Gain: Ant.1: 0.90 dBi / Ant.2: -0.50 dBi		
Date(s) of Tests	May 28, 2020 ~ July 01, 2020		

ANTENNA CONFIGURATIONS

1. The device employs MIMO technology. Below are the possible configurations

Configurations	SISO		SDM	CDD
	Ant1	Ant2	Ant1 + Ant2	Ant1 + Ant2
802.11ax(HE20)	O	O	O	O

Note:

(1) O = Support, X = Not Support

(2) SISO = Single Input Single Output

(3) SDM = Spatial Diversity Multiplexing

(4) CDD = Cyclic Delay Diversity

2.This device supports simultaneous transmission operation, which allows for two channels to operate independent of one another in the 2.4GHz and 5GHz bands simultaneously on each antenna.

	2.4GHz WIFI		5GHz WIFI		Test case
	Ant1	Ant2	Ant1	Ant2	
2.4 GHz + 5 GHz RSDB Only	B			C	O
		B	C		O
	B		C		-
		B		C	O
2.4 GHz + 5 GHz RSDB & MIMO	B	B	C		-
	B	B		C	O
	B		C	C	-
		B	C	C	-
2.4 GHz + 5 GHz RSDB MIMO	B	B	C	C	O

3. Directional Gain Calculation

According to KDB 662911 D01 Multiple Transmitter Output v02r01 F) 2) f) (ii)

Directional gain =

- $$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$$

Ant Gain (dBi)		N_{ANT}/ N_{SS}	Directional Gain (dBi)
Ant.1	0.90	2 / 2	3.24
Ant.2	-0.50		

2. TEST METHODOLOGY

FCC KDB 558074 D01 15.247 Meas Guidance v05r02 dated April 02, 2019 entitled “guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices and the measurement procedure described in ANSI C63.10(Version : 2013) ‘the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices’.

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpse of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 6.6.5 of ANSI C63.10. (Version: 2013)

DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

3. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment's, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

4. FACILITIES AND ACCREDITATIONS

FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (Registration Number: KR0032).

EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

"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."

(1) The antennas of this E.U.T are permanently attached.

(2) The E.U.T Complies with the requirement of §15.203

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

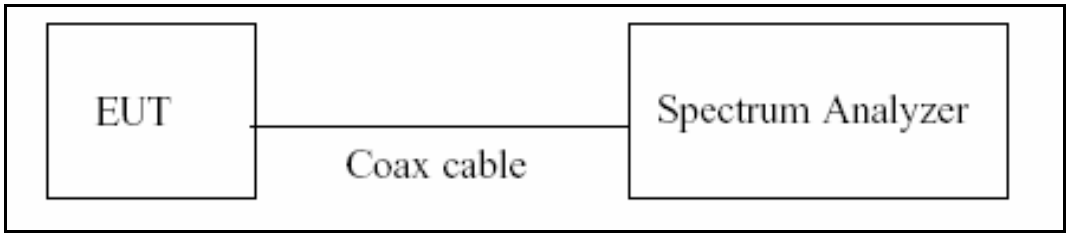
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05

7. DESCRIPTION OF TESTS

7.1. Duty Cycle

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to the zero-span measurement method.

The largest availble value of RBW is 8 MHz and VBW is 50 MHz.

The zero-span method of measuring duty cycle shall not be used if T ≤ 6.25 microseconds. (50/6.25 = 8)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/*T*.

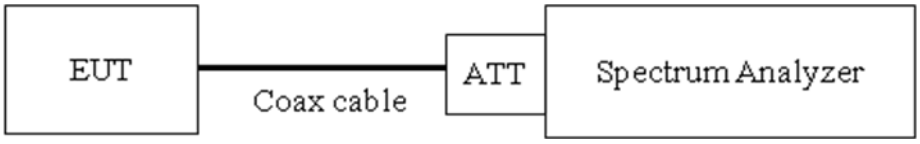
1. RBW = 8 MHz (the largest availble value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

7.2. 6dB Bandwidth

Limit

The minimum permissible 6 dB bandwidth is 500 kHz.

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to (Procedure 11.8.1 in ANSI 63.10-2013)

1) RBW = 100 kHz
2) VBW ≥ 3 x RBW
3) Detector = Peak
4) Trace mode = max hold
5) Sweep = auto couple
6) Allow the trace to stabilize
7) We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

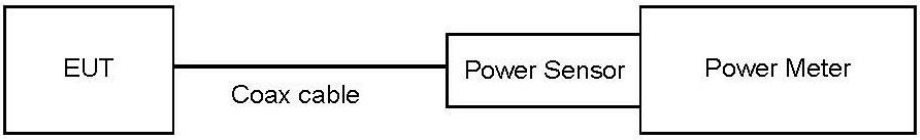
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

7.3. Output Power

Limit

The maximum permissible conducted output power is 1 Watt.

Test Configuration



Test Procedure

The transmitter output is connected to the Power Meter.

▪ Peak Power (Procedure 11.9.1.3 in ANSI 63.10-2013)

: Measure the peak power of the transmitter.

▪ Average Power (Procedure 11.9.2.3 in ANSI 63.10-2013)

1) Measure the duty cycle.
2) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Sample Calculation

▪ Conducted Output Power(Peak) = Reading Value + ATT loss + Cable loss

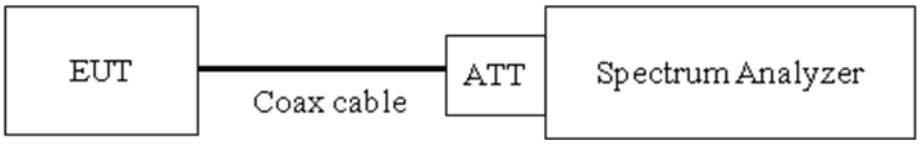
▪ Conducted Output Power(Average) = Reading Value + ATT loss + Cable loss + Duty Cycle Factor

7.4. Power Spectral Density

Limit

The transmitter power density average over 1-second interval shall not be greater than 8 dBm in any 3kHz BW.

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure 8.4 in KDB 558074 v05r02, Procedure 11.10 in ANSI 63.10-2013.

The spectrum analyzer is set to :

1) Set analyzer center frequency to DTS channel center frequency.
2) Set span to at least 1.5 times the OBW.
3) RBW = 3 kHz ≤ RBW ≤ 100 kHz.
4) VBW ≥ 3 x RBW.
5) Sweep = auto couple
6) Detector = power averaging (rms) or sample detector (when rms not available).
7) Ensure that the number of measurement points in the sweep ≥[2 ×span / RBW].
8) Employ trace averaging (rms) modeover a minimum of 100 traces
9) Use the peak marker function to determine the maximum amplitude level.
10) Use the peak marker function to determine the maximum amplitude level within the RBW.
    If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11) if then duty factor shall be added to adjust the result if the duty cycle is less than 98%

Sample Calculation

▪ Power Spectral Density = Reading Value + ATT loss + Cable loss

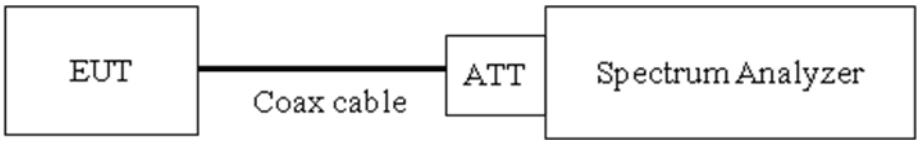
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

Limit

The maximum conducted (Average) output power was used to demonstrate compliance, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

[Conducted > 30 dBc]

Test Configuration



Test Procedure

The transmitter output is connected to the spectrum analyzer.

(Procedure 11.11 in ANSI 63.10-2013)

1) RBW = 100 kHz
2) VBW ≥ 3 x RBW
3) Set span to encompass the spectrum to be examined
4) Detector = Peak
5) Trace Mode = max hold
6) Sweep time = auto couple
7) Ensure that the number of measurement points ≥ 2 x Span/RBW
8) Allow trace to fully stabilize.
9) Use peak marker function to determine the maximum amplitude level.

Measurements are made over the 30 MHz to 25 GHz range with the transmitter set to the lowest, middle, and highest channels.

Factors for frequency

Freq(MHz)	Factor(dB)
30	20.16
100	20.19
200	20.14
300	20.19
400	20.22
500	20.23
600	20.23
700	20.25
800	20.26
900	20.30
1000	20.31
2000	20.35
2400	20.40
2480	20.40
2500	20.87
3000	21.03
4000	21.08
5000	21.26
5150	21.26
5850	21.36
6000	21.36
7000	21.43
8000	21.48
9000	21.54
10000	21.60
11000	21.65
12000	21.73
13000	21.82
14000	21.79
15000	21.84
16000	21.85
17000	21.88
18000	21.93
19000	21.95
20000	21.99
21000	22.11
22000	22.18
23000	22.18
24000	22.22
25000	22.31
26000	22.32

Note : 1. 2 400 ~ 2 500 MHz is fundamental frequency range.

2. Factor = Attenuator loss(20dB) + EUT Cable loss

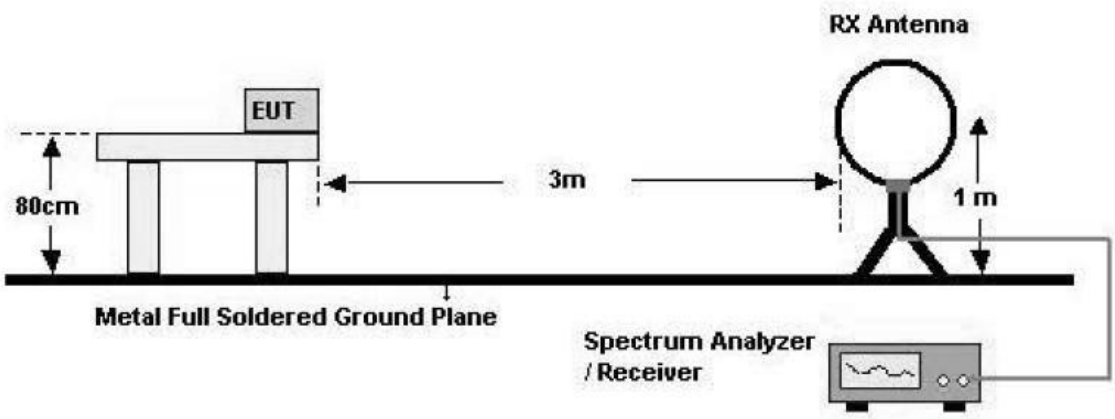
7.6. Radiated Test

Limit

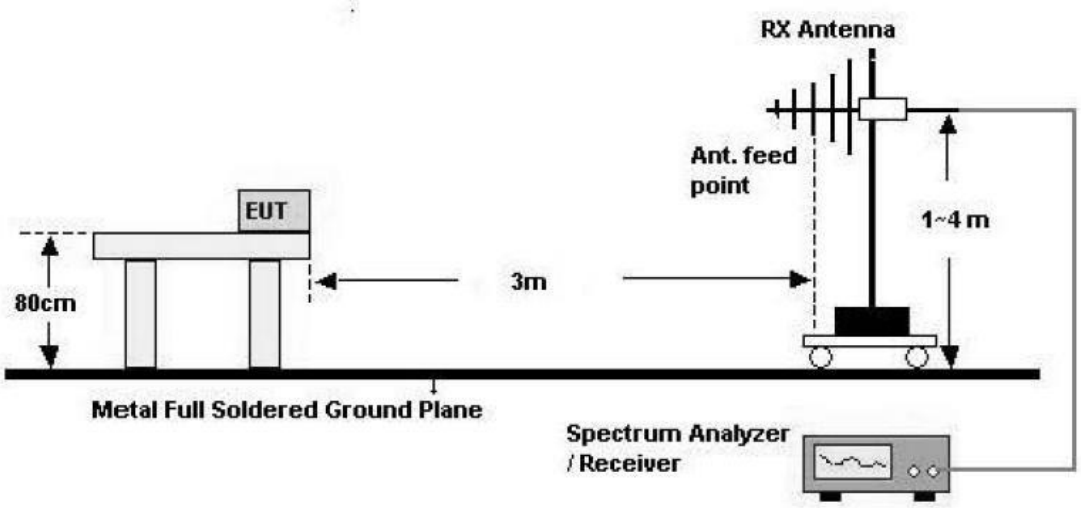
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

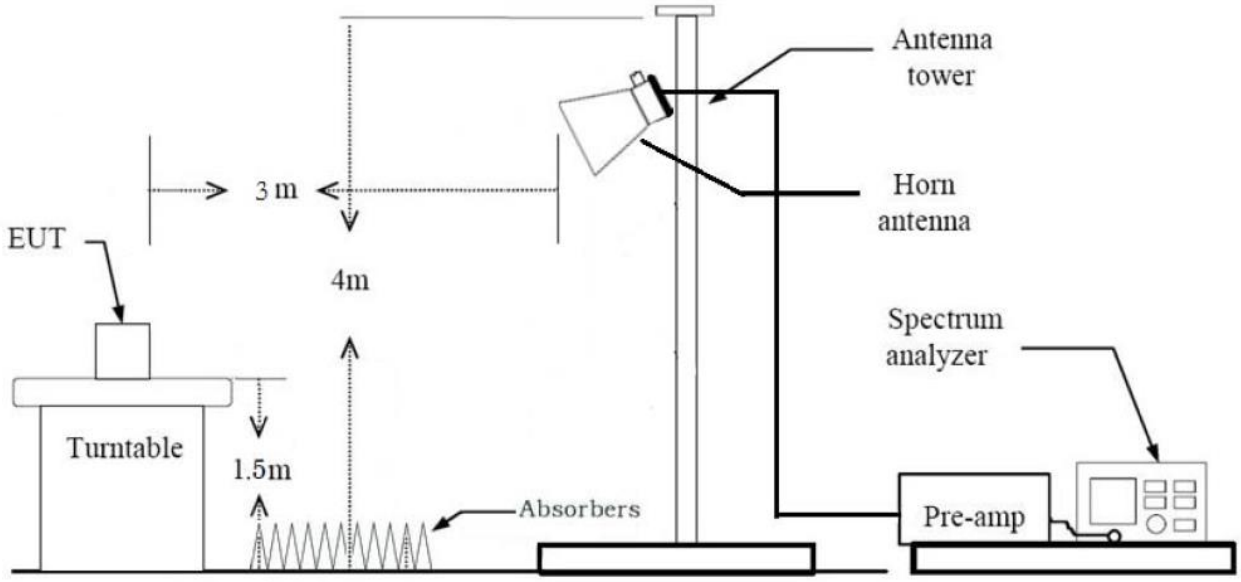
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions(Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) = 40log(3 m/300 m) = - 80 dB
   Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = 40log(3 m/30 m) = - 40 dB
   Measurement Distance : 3 m
8. Spectrum Setting
   - Frequency Range = 9 kHz ~ 30 MHz
   - Detector = Peak
   - Trace = Maxhold
   - RBW = 9 kHz
   - VBW ≥ 3 x RBW
9. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Test Procedure of Radiated spurious emissions(Below 1GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. The Hybrid antenna was placed at a location 3m from the EUT, which is varied from 1m to 4m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Spectrum Setting
   (1) Measurement Type(Peak):
   - Measured Frequency Range : 30 MHz – 1 GHz
   - Detector = Peak
   - Trace = Maxhold
   - RBW = 100 kHz
   - VBW ≥ 3 x RBW

   (2) Measurement Type(Quasi-peak):
   - Measured Frequency Range : 30 MHz – 1 GHz
   - Detector = Quasi-Peak
   - RBW = 120 kHz

   ※In general, (1) is used mainly
7. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)
8. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting (Method 8.6 in KDB 558074 v05r02, Procedure 11.12 in ANSI 63.10-2013)
   (1) Measurement Type(Peak):
   - Measured Frequency Range : 1 GHz – 25 GHz
   - Detector = Peak

- Trace = Maxhold
- RBW = 1 MHz
- VBW ≥ 3 x RBW

(2) Measurement Type(Average): Duty cycle ≥ 98%

- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3 x RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).

(3) Measurement Type(Average): Duty cycle < 98%, duty cycle variations are less than ±2%

- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3 x RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.
- Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.

9. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
10. Distance extrapolation factor = 20log (test distance / specific distance) (dB)
11. Total(Measurement Type : Peak)

= Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

Total(Measurement Type : Average, Duty cycle ≥ 98%)

= Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

Total(Measurement Type : Average, Duty cycle < 98%)

= Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F) + Duty Cycle Factor

Test Procedure of Radiated Restricted Band Edge

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

(1) Measurement Type(Peak):

- Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
- Detector = Peak
- Trace = Maxhold
- RBW = 1 MHz
- VBW ≥ 3 x RBW

(2) Measurement Type(Average): Duty cycle ≥ 98%,

- Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3 x RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).

(3) Measurement Type(Average): Duty cycle < 98%, duty cycle variations are less than ±2%

- Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3 x RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.

- Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.

9. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
10. Distance extrapolation factor = 20log (test distance / specific distance) (dB)
11. Total(Measurement Type : Peak)
    = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

    Total(Measurement Type : Average, Duty cycle ≥ 98%)
    = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

    Total(Measurement Type : Average, Duty cycle < 98%)
    = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
    + Duty Cycle Factor

7.7. AC Power line Conducted Emissions

Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56[(a)]	56 to 46[(a)]
0.50 to 5	56	46
5 to 30	60	50

[(a)]Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors : Quasi Peak and Average Detector.

Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

7.8. Test RU offset for Tones

BW (MHz)	Tones (T)	RU offset	Test RU offset		
			Low	Mid	High
20	26	0~8	0	4	8
	52	37~40	37	38	40
	106	53~54	53	-	54
	242	61	-	61	-

7.9. Worst case configuration and mode

Conducted test

1. All data rate of operation were investigated and the worst case results are reported.
   (Worst case : MCS0)
2. Bandedge (Conducted)
   : All Mode(Channel, Tone, RU Offset) of operation were investigated and the worst case configuration results are reported

Tone	Channel	RU Index
26	1	0
	11	8
52	1	37
	11	40
106	1	53
	11	54
242	1, 11	61

Radiated test

1. Full RU(Resource Unit) mode and SU(Single Unit) mode have no difference in physical waveform.
   This Report has been described only Full RU(Resource Unit) mode with worst output power
2. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
   - Worstcase : Stand alone
3. EUT Axis
   - Radiated Spurious Emissions : Y
   - Radiated Restricted Band Edge : X
4. All data rate of operation were investigated and the worst case results are reported.
   (Worst case : MCS0)
5. All Antenna of operation were investigated and the worst case results are reported
   - Mode : Ant1(SISO), Ant2(SISO), Ant1+Ant2(SDM), Ant1+Ant2(CDD)
   - Worstcase : Ant1+Ant2(CDD)
6. All position of loop antenna were investigated and the test result is a no critical peak found at all positions.
   - Position : Horizontal, Vertical, Parallel to the ground plane
7. All mode(Tone, RU Offset) of operation were investigated and the worst case configuration results are reported

Test	Tone	RU Offset
RSE	Worst case : 26 T	4
	Worst case(Highest Power) : 242 T	61
Bandedge	Worst case : 26T	Low Edge: 0 High Edge: 8
	Worst case(Highest Power) : 242T	Low Edge: 61 High Edge: 61
	Additional Tone : 52, 106T	Low Edge: 37, 53 High Edge: 40, 54

Radiated test(DBS)

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
   - Worstcase : Stand alone
2. EUT Axis
   - Radiated Spurious Emissions : Y
3. Test case

RSDB	2.4GHz WIFI		5GHz WIFI		Test case
	Ant1	Ant2	Ant1	Ant2	
2.4 GHz + 5 GHz RSDB Only	C			B	Case1
		C	B		Case2
	C		B		-
		C		B	Case3
2.4 GHz + 5 GHz RSDB & MIMO	C	C	B		-
	C	C		B	-
	C		B	B	-
		C	B	B	Case4
2.4 GHz + 5 GHz RSDB MIMO	C	C	B	B	Case5

4. The following tables show the worst case configurations determined during testing.

   (Worst case: The lowest margin condition the channels and modes were selected for test.)

Test case	Description	2.4 GHz Emission	5 GHz Emission
1	Antenna	Ant 1	Ant 2
	Channel	11	48
	Data Rate	1Mbps	6Mbps
	Mode	802.11b	802.11a

Test case	Description	2.4 GHz Emission	5 GHz Emission
2	Antenna	Ant 2	Ant 1
	Channel	11	165
	Data Rate	1Mbps	6Mbps
	Mode	802.11b	802.11a

Test case	Description	2.4 GHz Emission	5 GHz Emission
3-1	Antenna	Ant 2	Ant 2
	Channel	1	159
	Data Rate	1Mbps	6Mbps
	Mode	802.11b	802.11a
3-2	Antenna	Ant 2	Ant 2
	Channel	6	165
	Data Rate	1Mbps	6Mbps
	Mode	802.11b	802.11a
3-3	Antenna	Ant 2	Ant 2
	Channel	11	159
	Data Rate	1Mbps	6Mbps
	Mode	802.11b	802.11a

Test case	Description	2.4 GHz Emission	5 GHz Emission
4	Antenna	Ant 2	Ant ALL
	Channel	11	64
	Data Rate	1Mbps	6Mbps
	Mode	802.11b	802.11a

Test case	Description	2.4 GHz Emission	5 GHz Emission
5-1	Antenna	Ant ALL	Ant ALL
	Channel	1	48
	Data Rate	1Mbps	6Mbps
	Mode	802.11b	802.11a
5-2	Antenna	Ant ALL	Ant ALL
	Channel	6	48
	Data Rate	6Mbps	6Mbps
	Mode	802.11g	802.11a

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone + External accessories(Earphone, etc)+Travel Adapter, Stand alone + Travel Adapter
   - Worstcase : Stand alone + Travel Adapter

8. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	> 500 kHz	Conducted	PASS
Conducted Maximum Output Power	§15.247(b)(3)	< 1 Watt		PASS
Power Spectral Density	§15.247(e)	< 8 dBm / 3 kHz Band		PASS
Band Edge (Out of Band Emissions)	§15.247(d)	Conducted > 30 dBc		PASS
AC Power line Conducted Emissions	§15.207	cf. Section 7.7		PASS (Note1)
Radiated Spurious Emissions	§15.247(d), 15.205, 15.209	cf. Section 7.6	Radiated	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	cf. Section 7.6		PASS

Note:

1. Please refer to the SM-N981B/DS [DTS] Test Report.

9. TEST RESULT

9.1 DUTY CYCLE

Mode	Tone (T)	Data Rate	On Time (ms)	Total Time (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ax (HE20)	26	MCS0	5.084	5.107	0.996	0.02
		MCS1	5.077	5.092	0.997	0.01
		MCS2	5.058	5.077	0.996	0.02
		MCS3	5.206	5.225	0.996	0.02
		MCS4	5.153	5.172	0.996	0.02
		MCS5	5.126	5.145	0.996	0.02
		MCS6	5.122	5.138	0.997	0.01
		MCS7	5.115	5.130	0.997	0.01
		MCS8	5.153	5.172	0.996	0.02
		MCS9	5.103	5.126	0.996	0.02
	52	MCS0	5.075	5.094	0.996	0.02
		MCS1	5.060	5.075	0.997	0.01
		MCS2	5.050	5.073	0.996	0.02
		MCS3	5.210	5.225	0.997	0.01
		MCS4	5.153	5.168	0.997	0.01
		MCS5	5.122	5.141	0.996	0.02
		MCS6	5.115	5.133	0.997	0.02
		MCS7	5.111	5.126	0.997	0.01
		MCS8	5.152	5.167	0.997	0.01
		MCS9	5.107	5.126	0.996	0.02
	106	MCS0	4.759	4.778	0.996	0.02
		MCS1	4.759	4.778	0.996	0.02
		MCS2	4.758	4.773	0.997	0.01
		MCS3	4.902	4.921	0.996	0.02
		MCS4	4.853	4.868	0.997	0.01
		MCS5	4.827	4.845	0.996	0.02
		MCS6	4.818	4.836	0.996	0.02
		MCS7	4.811	4.826	0.997	0.01
		MCS8	4.853	4.868	0.997	0.01
		MCS9	4.803	4.822	0.996	0.02

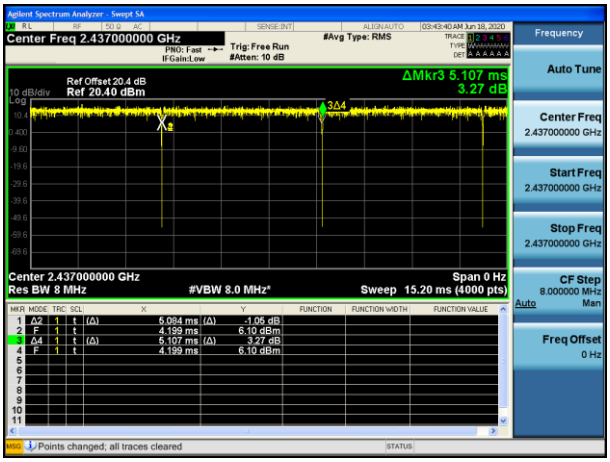
Mode	Tone (T)	Data Rate	On Time (ms)	Total Time (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ax (HE20)	242	MCS0	4.769	4.784	0.997	0.01
		MCS1	4.664	4.680	0.997	0.01
		MCS2	4.661	4.677	0.997	0.01
		MCS3	4.803	4.822	0.996	0.02
		MCS4	4.750	4.765	0.997	0.01
		MCS5	4.720	4.735	0.997	0.01
		MCS6	4.712	4.731	0.996	0.02
		MCS7	4.704	4.720	0.997	0.01
		MCS8	4.741	4.756	0.997	0.01
		MCS9	4.697	4.712	0.997	0.01
802.11ax(SU)	BW 20	MCS0	4.670	4.685	0.997	0.01
		MCS1	4.663	4.678	0.997	0.01
		MCS2	4.663	4.678	0.997	0.01
		MCS3	4.803	4.822	0.996	0.02
		MCS4	4.747	4.763	0.997	0.01
		MCS5	4.720	4.739	0.996	0.02
		MCS6	4.710	4.729	0.996	0.02
		MCS7	4.704	4.720	0.997	0.01
		MCS8	4.741	4.756	0.997	0.01
		MCS9	4.697	4.712	0.997	0.01

▣ Test Plots

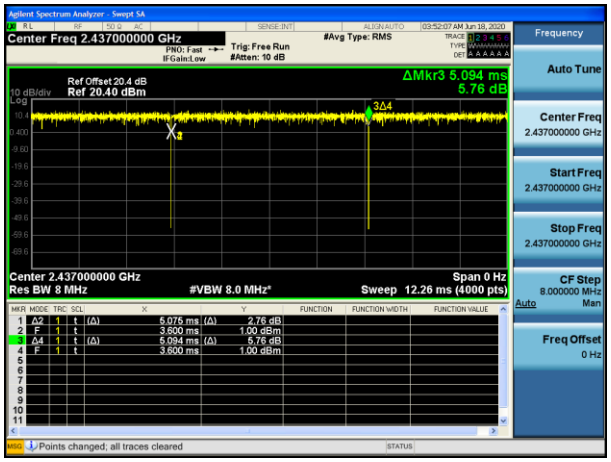
Note:

In order to simplify the report, attached plots were only the most lowest datarate.

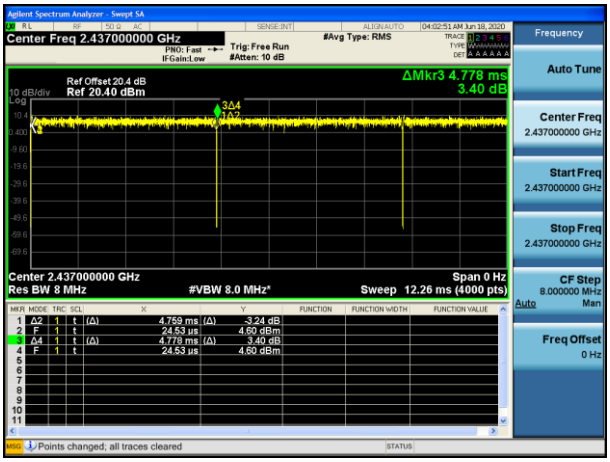
26 Tone MCS0



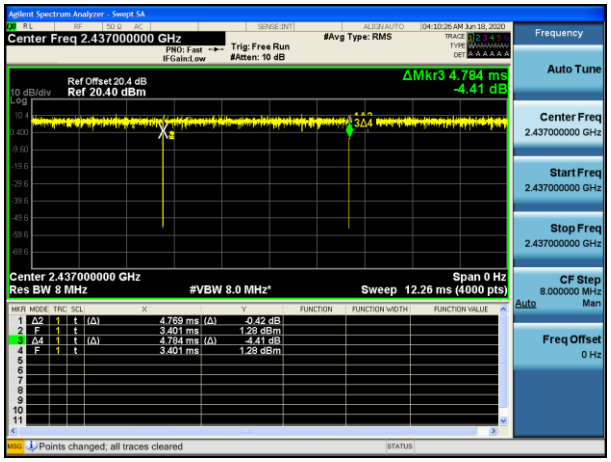
52 Tone MCS0



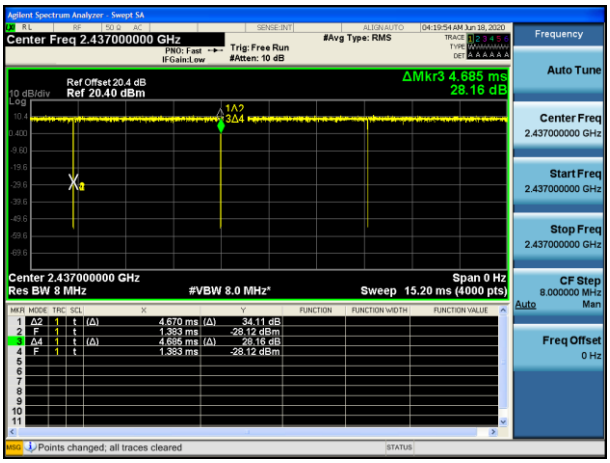
106 Tone MCS0



242 Tone MCS0



SU MCS0



9.2 6dB BANDWIDTH

[ANT1]

BW	Frequency [MHz]	Channel No.	RU Index	6dB BW (MHz)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	17.066	17.111	18.135	-	-
			Mid	2.686	15.121	-	19.075	19.043
			High	2.151	17.062	18.137	-	-
	2437	6	Low	2.144	17.102	17.170	-	-
			Mid	2.689	15.118	-	19.092	19.096
			High	2.137	17.081	17.170	-	-
	2462	11	Low	2.146	17.108	17.165	-	-
			Mid	2.700	15.098	-	19.094	19.081
			High	2.136	17.103	17.158	-	-

Limit : > 500kHz

[ANT2]

BW	Frequency [MHz]	Channel No.	RU Index	6dB BW (MHz)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	2.153	17.111	18.156	-	-
			Mid	2.698	15.092	-	19.097	19.106
			High	2.146	17.092	17.170	-	-
	2437	6	Low	12.062	17.121	17.162	-	-
			Mid	2.711	15.118	-	19.071	19.096
			High	2.134	17.059	17.162	-	-
	2462	11	Low	2.147	17.110	17.161	-	-
			Mid	2.695	15.118	-	19.090	19.095
			High	15.765	17.062	17.166	-	-

Limit : > 500kHz

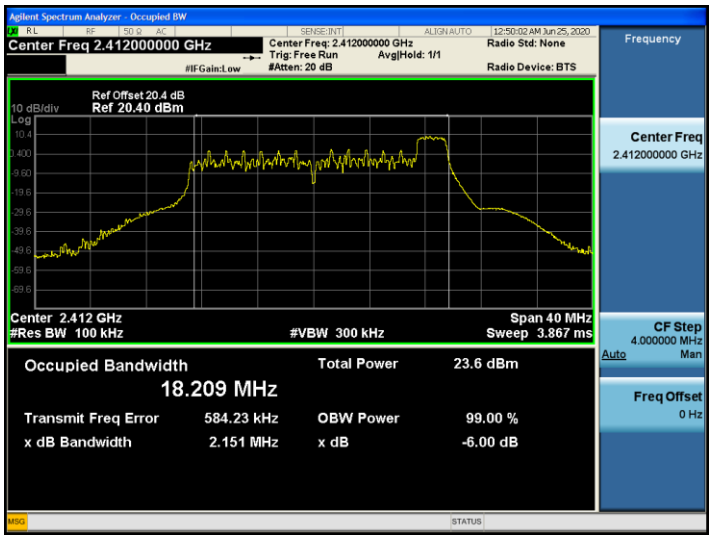
▣ Test Plots

Note:

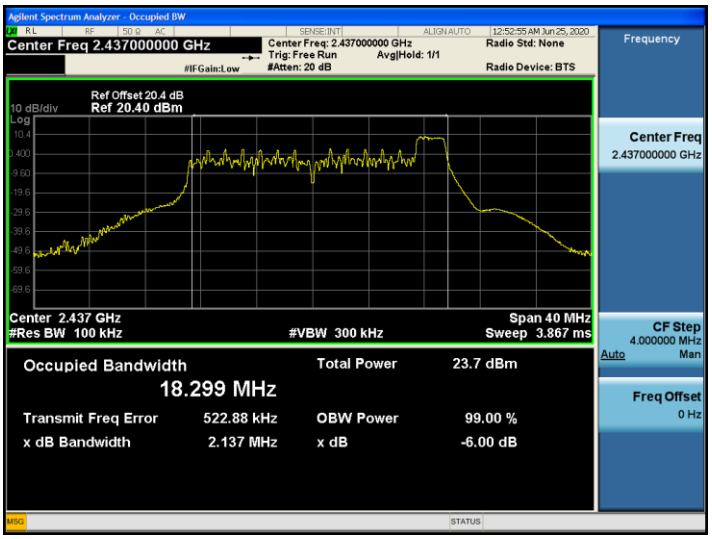
In order to simplify the report, attached plots were only the most narrow 6 dB BW channel.

[ANT1]

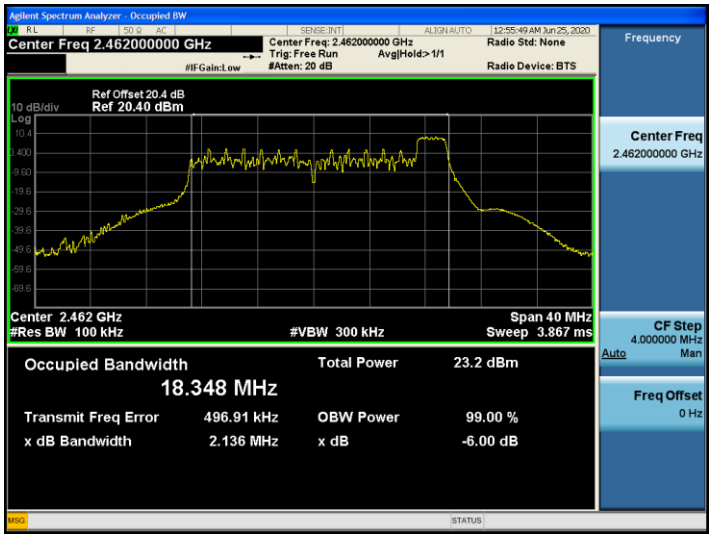
BW20M Ch.1(2412MHz) RU 8



BW20M Ch.6(2437MHz) RU 8

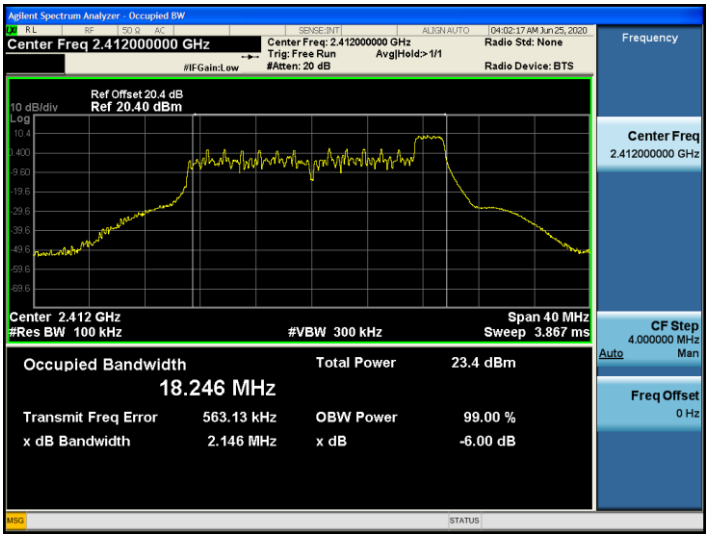


BW20M Ch.11(2462MHz) RU 8

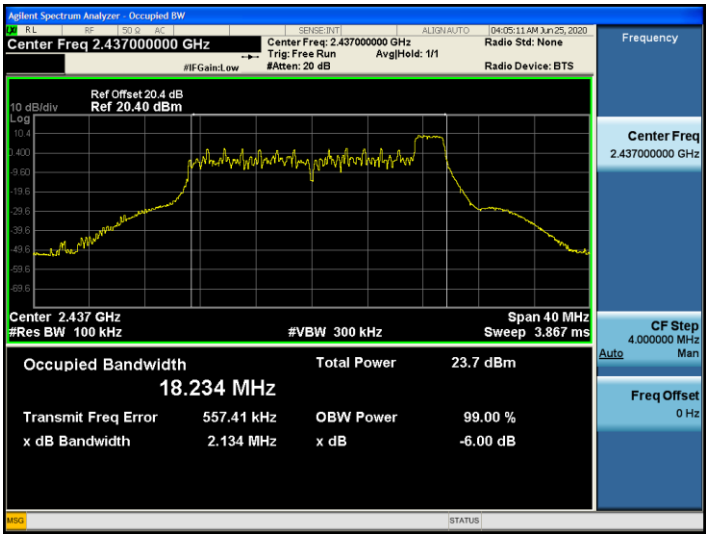


[ANT2]

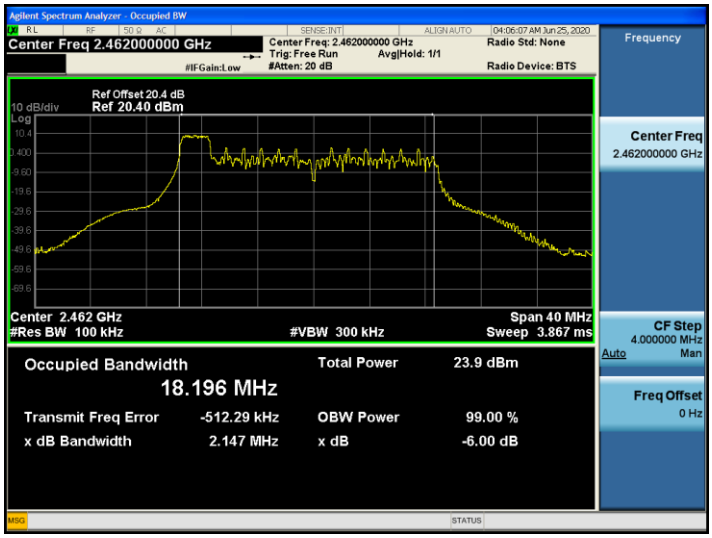
BW20M Ch.1(2412MHz) RU 8



BW20M Ch.6(2437MHz) RU 8



BW20M Ch.11(2462MHz) RU 0



9.3 OUTPUT POWER

Power Level Setting

802.11ax Mode	Frequency [MHz]	Channel No.	26 T	52T	106T	242 T
Low	2412	1	15	15	15	15
Mid	2437	6	15	15	15	15
High	2462	11	15	15	15	15

Peak Power

1. Power Meter offset = Attenuator loss + Cable loss

2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.

So, 20.40 dB is offset for 2.4 GHz Band

[ANT1]

BW	Frequency [MHz]	Channel No.	RU Index	Total Peak Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	21.90	22.06	22.11	-	-
			Mid	22.56	22.53	-	21.48	21.44
			High	22.53	22.65	22.30	-	-
	2437	6	Low	22.83	22.82	22.56	-	-
			Mid	22.85	22.85	-	21.75	21.74
			High	22.66	22.77	22.44	-	-
	2462	11	Low	22.68	22.55	22.29	-	-
			Mid	22.41	22.53	-	21.46	21.45
			High	22.33	22.39	22.08	-	-

Limit : 30dBm

[ANT2]

BW	Frequency [MHz]	Channel No.	RU Index	Total Peak Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	22.16	21.87	21.96	-	-
			Mid	22.10	22.08	-	21.25	21.22
			High	22.28	22.21	22.09	-	-
	2437	6	Low	22.24	22.36	22.15	-	-
			Mid	22.50	22.55	-	21.45	21.48
			High	22.49	22.53	22.19	-	-
	2462	11	Low	22.78	22.89	22.50	-	-
			Mid	22.61	22.83	-	21.68	21.70
			High	22.26	22.31	22.33	-	-

Limit : 30dBm

[MIMO]

BW	Frequency [MHz]	Channel No.	RU Index	Total Peak Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	25.04	24.98	25.04	-	-
			Mid	25.35	25.32	-	24.37	24.34
			High	25.41	25.45	25.20	-	-
	2437	6	Low	25.55	25.61	25.37	-	-
			Mid	25.69	25.71	-	24.61	24.62
			High	25.58	25.66	25.33	-	-
	2462	11	Low	25.74	25.73	25.41	-	-
			Mid	25.52	25.69	-	24.58	24.58
			High	25.30	25.36	25.22	-	-

Limit : 30dBm

Average Power

1. Power Meter offset = Attenuator loss + Cable loss

2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.

So, 20.40 dB is offset for 2.4 GHz Band

[ANT1]

BW	Frequency [MHz]	Channel No.	RU Index	Total Average Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	13.24	13.58	13.82	-	-
			Mid	14.19	14.22	-	14.34	14.33
			High	14.18	14.21	14.39	-	-
	2437	6	Low	14.28	14.42	14.47	-	-
			Mid	14.32	14.63	-	14.68	14.62
			High	14.14	14.31	14.48	-	-
	2462	11	Low	14.03	14.24	14.22	-	-
			Mid	14.04	14.31	-	14.32	14.31
			High	13.71	13.90	14.23	-	-

Limit : 30dBm

[ANT2]

BW	Frequency [MHz]	Channel No.	RU Index	Total Average Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	13.52	13.47	13.90	-	-
			Mid	13.76	13.87	-	14.20	14.19
			High	13.75	13.86	14.12	-	-
	2437	6	Low	13.69	13.94	14.06	-	-
			Mid	14.03	14.33	-	14.43	14.42
			High	13.98	14.32	14.27	-	-
	2462	11	Low	14.21	14.55	14.44	-	-
			Mid	14.22	14.63	-	14.64	14.63
			High	13.66	13.97	14.45	-	-

Limit : 30dBm

[MIMO]

BW	Frequency [MHz]	Channel No.	RU Index	Total Average Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	16.39	16.54	16.87	-	-
			Mid	16.99	17.06	-	17.28	17.27
			High	16.98	17.05	17.27	-	-
	2437	6	Low	17.00	17.20	17.28	-	-
			Mid	17.19	17.50	-	17.56	17.53
			High	17.07	17.32	17.39	-	-
	2462	11	Low	17.13	17.41	17.34	-	-
			Mid	17.14	17.48	-	17.49	17.48
			High	16.69	16.95	17.35	-	-

Limit : 30dBm

9.4 POWER SPECTRAL DENSITY

Note :

1. Spectrum reading values are not plot data.
   The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss + Cable loss
3. 20.40 dB is offset for 2.4 GHz Band.
4. Total PSD = Reading Value + Duty Cycle Factor

[ANT1]

BW	Frequency [MHz]	Channel No.	RU Index	Total PSD (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	-3.71	-6.32	-8.54	-	-
			Mid	-3.12	-5.80	-	-11.71	-11.64
			High	-2.81	-5.47	-8.45	-	-
	2437	6	Low	-2.59	-4.99	-8.25	-	-
			Mid	-2.67	-5.21	-	-11.30	-11.34
			High	-2.81	-5.45	-8.09	-	-
	2462	11	Low	-2.50	-5.64	-8.59	-	-
			Mid	-3.09	-5.52	-	-11.82	-11.35
			High	-3.54	-5.83	-8.39	-	-

Limit : 8dBm

[ANT2]

BW	Frequency [MHz]	Channel No.	RU Index	Total PSD (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	-3.45	-5.57	-8.78	-	-
			Mid	-3.08	-5.87	-	-11.95	-11.93
			High	-3.13	-5.78	-8.53	-	-
	2437	6	Low	-3.10	-5.99	-8.46	-	-
			Mid	-2.72	-5.49	-	-11.52	-11.39
			High	-2.71	-5.41	-8.43	-	-
	2462	11	Low	-2.40	-5.05	-7.77	-	-
			Mid	-2.61	-5.24	-	-11.27	-11.29
			High	-3.25	-5.56	-8.26	-	-

Limit : 8dBm

[MIMO]

BW	Frequency [MHz]	Channel No.	RU Index	Total PSD (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	-0.57	-2.92	-5.64	-	-
			Mid	-0.09	-2.82	-	-8.82	-8.77
			High	0.04	-2.61	-5.48	-	-
	2437	6	Low	0.17	-2.45	-5.34	-	-
			Mid	0.31	-2.34	-	-8.40	-8.35
			High	0.25	-2.42	-5.25	-	-
	2462	11	Low	0.56	-2.32	-5.15	-	-
			Mid	0.17	-2.37	-	-8.52	-8.31
			High	-0.38	-2.68	-5.31	-	-

Limit : 8dBm

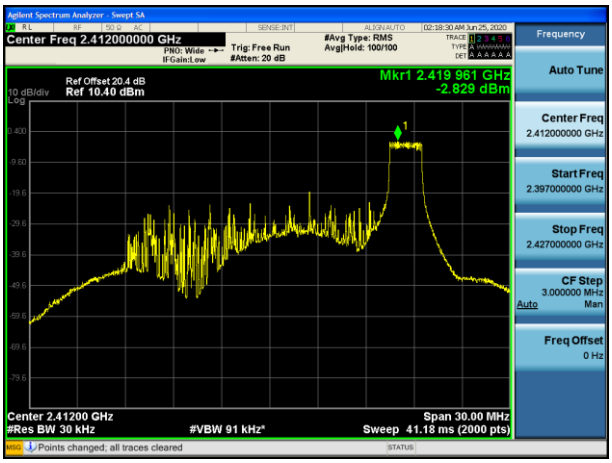
▣ Test Plots

Note:

1. In order to simplify the report, attached plots were only the worstcase PSD channel.
2. Total PSD(dBm) = Reading Value + Duty Cycle Factor

[ANT1]

BW20M Ch.1(2412MHz) RU 8

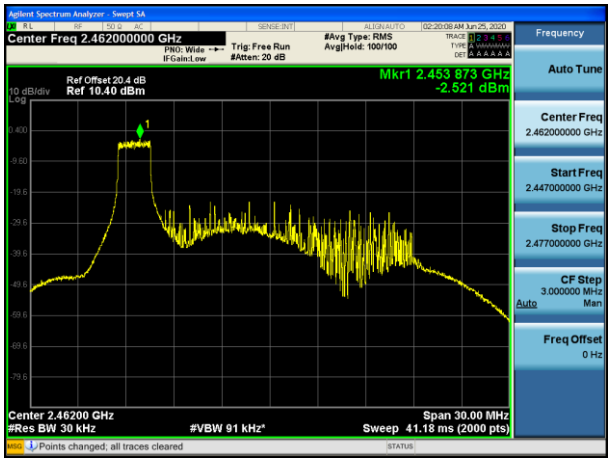


Reading Value (dBm)	Duty Cycle Factor (dB)	Total PSD (dBm)
-2.829	0.02	-2.81

BW20M Ch.6(2437MHz) RU 0

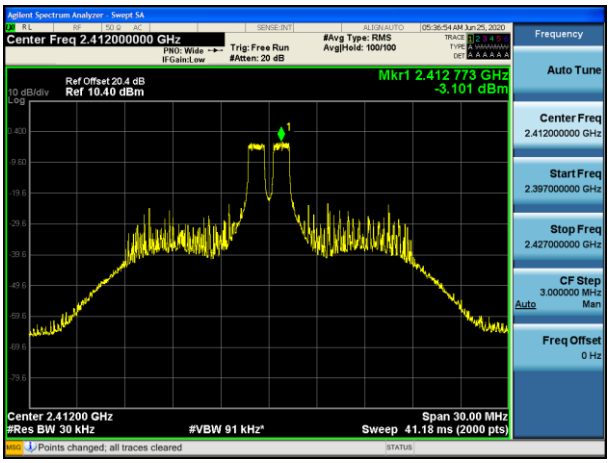
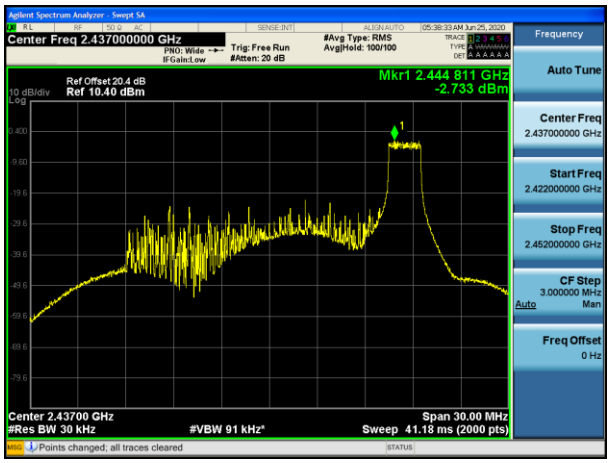
Reading Value (dBm)	Duty Cycle Factor (dB)	Total PSD (dBm)
-2.612	0.02	-2.59

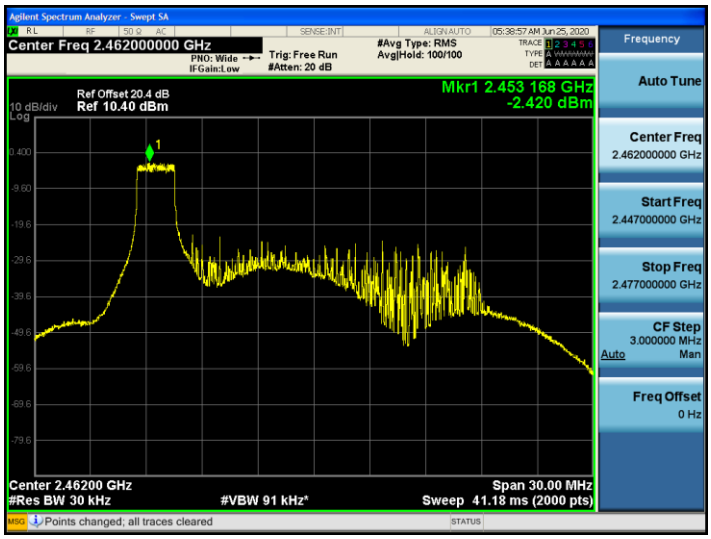
BW20M Ch.11(2462MHz) RU 0



Reading Value (dBm)	Duty Cycle Factor (dB)	Total PSD (dBm)
-2.521	0.02	-2.50

[ANT2]

BW20M Ch.1(2412MHz) RU 4			BW20M Ch.6(2437MHz) RU 8		
					
Reading Value (dBm)	**Duty Cycle Factor (dB)**	**Total PSD (dBm)**	**Reading Value (dBm)**	**Duty Cycle Factor (dB)**	**Total PSD (dBm)**
-3.101	0.02	-3.08	-2.733	0.02	-2.71

BW20M Ch.11(2462MHz) RU 0		
		
Reading Value (dBm)	**Duty Cycle Factor (dB)**	**Total PSD (dBm)**
-2.420	0.02	-2.40

9.5 BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS

Band Edge

[ANT1]

BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)		
					26 T	52 T	106 T
HE20	2412	1	Low	Lowest Bandedge	37.857	35.899	32.585
	2462	11	High	Highest Bandedge	57.656	56.824	54.117

Limit : 30 dB

BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)	
					242 T	SU
HE20	2412	1	Mid	Lowest Bandedge	35.050	34.657
	2462	11		Highest Bandedge	46.219	48.244

Limit : 30 dB

[ANT2]

BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)		
					26 T	52 T	106 T
HE20	2412	1	Low	Lowest Bandedge	38.024	34.636	33.387
	2462	11	High	Highest Bandedge	59.624	57.743	47.692

Limit : 30 dB

BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)	
					242 T	SU
HE20	2412	1	Mid	Lowest Bandedge	34.196	35.491
	2462	11		Highest Bandedge	43.607	44.006

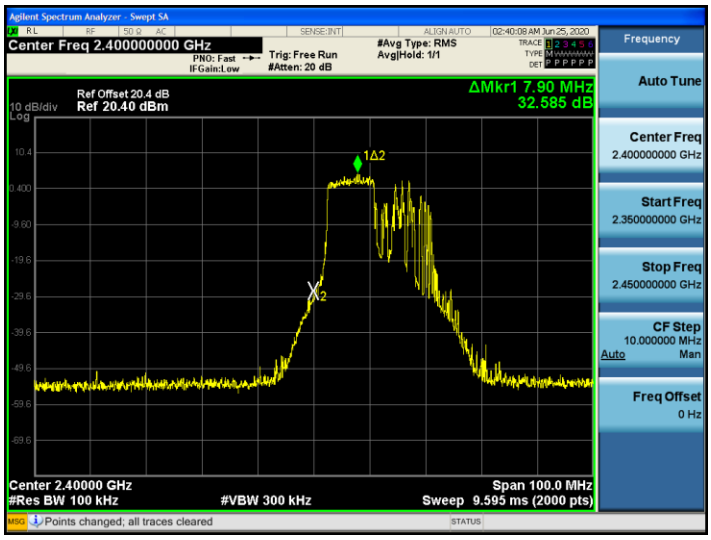
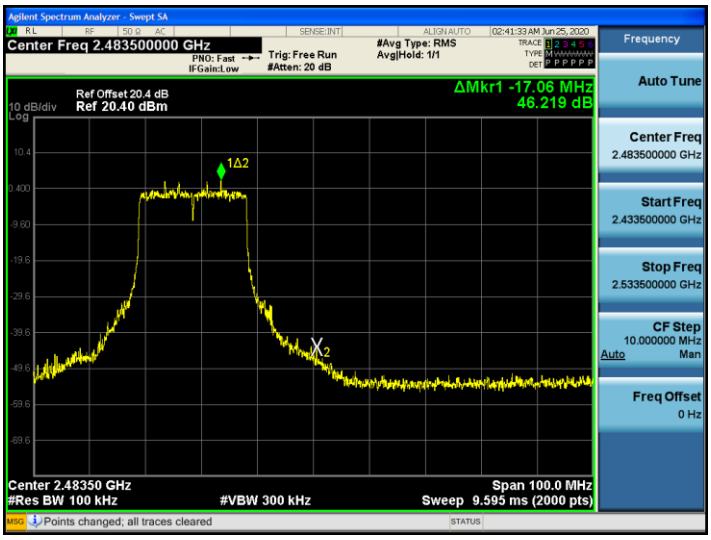
Limit : 30 dB

▣ Test Plots

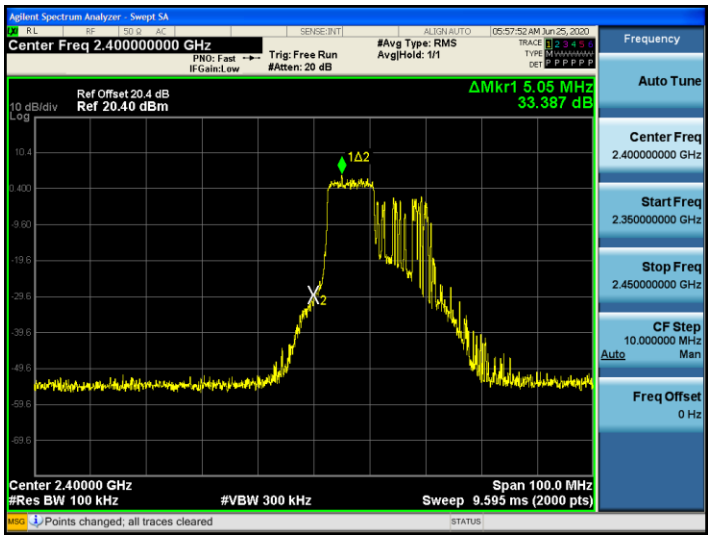
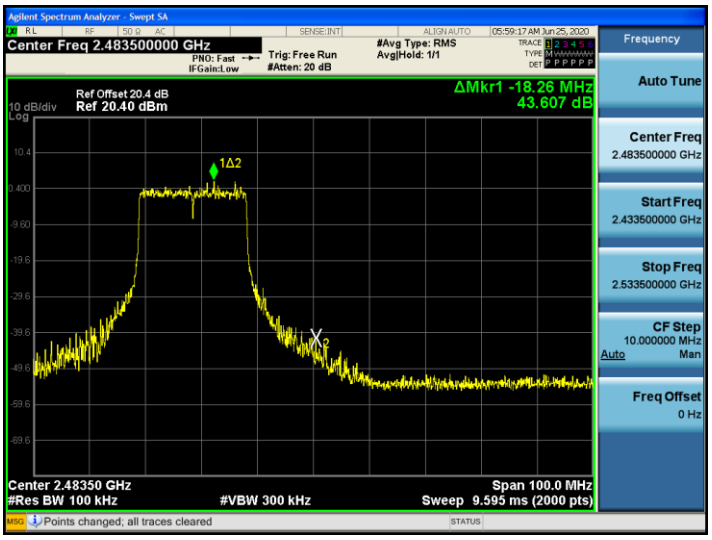
Note:

In order to simplify the report, attached plots were only the worst case.

[ANT1]

BW20M Ch.1(2412MHz) RU 53	BW20M Ch.11(2462MHz) RU 61
	

[ANT2]

BW20M Ch.1(2412MHz) RU 53	BW20M Ch.11(2462MHz) RU 61
	

Conducted Spurious Emissions

[ANT1]

BW	Frequency [MHz]	Channel No.	RU Index	Result (dB)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	45.838	43.078	42.705	-	-
			Mid	46.252	43.847	-	38.010	40.332
			High	45.066	44.648	40.637	-	-
	2437	6	Low	47.005	43.740	41.925	-	-
			Mid	46.685	44.674	-	39.688	41.001
			High	47.099	44.822	41.151	-	-
	2462	11	Low	46.450	43.005	40.797	-	-
			Mid	45.285	44.933	-	38.304	40.229
			High	44.957	43.585	41.081	-	-

Limit : 30 dBc

[ANT2]

BW	Frequency [MHz]	Channel No.	RU Index	Result (dB)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	45.171	43.173	39.019	-	-
			Mid	45.420	44.104	-	36.561	38.166
			High	46.251	45.440	41.160	-	-
	2437	6	Low	45.798	43.447	42.262	-	-
			Mid	45.931	43.097	-	37.318	38.428
			High	46.517	42.563	40.753	-	-
	2462	11	Low	45.564	43.863	41.335	-	-
			Mid	47.240	43.908	-	39.062	37.185
			High	46.018	44.528	40.880	-	-

Limit : 30 dBc

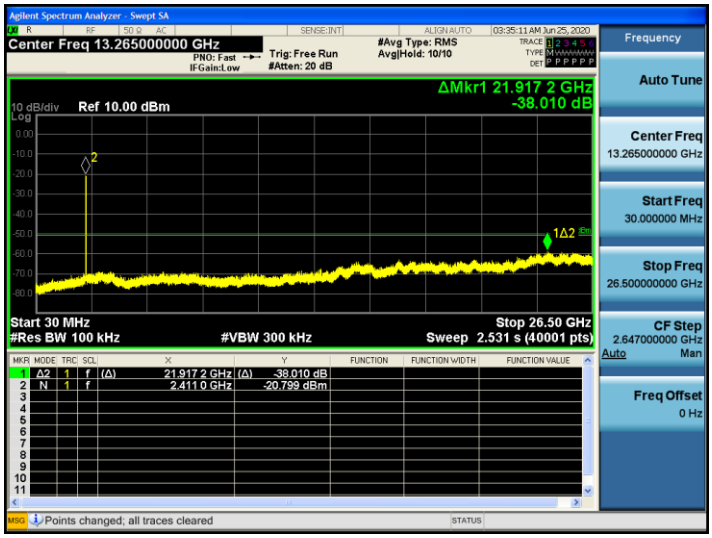
▣ Test Plots

Note:

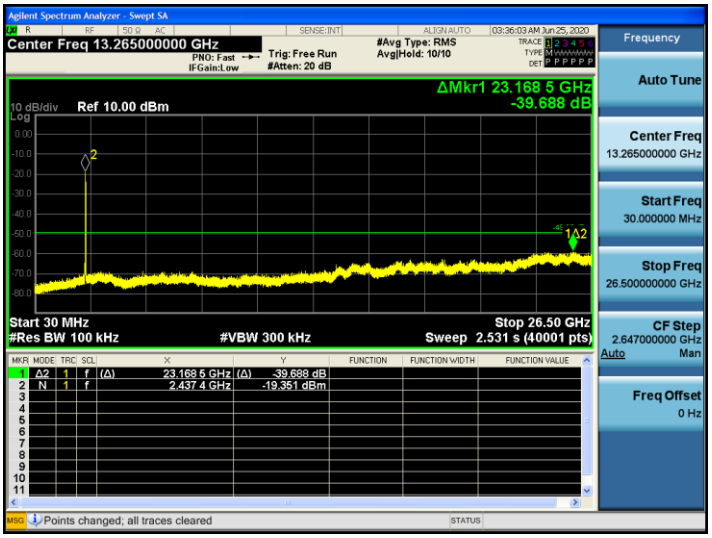
In order to simplify the report, attached plots were only the worst case.

[ANT1]

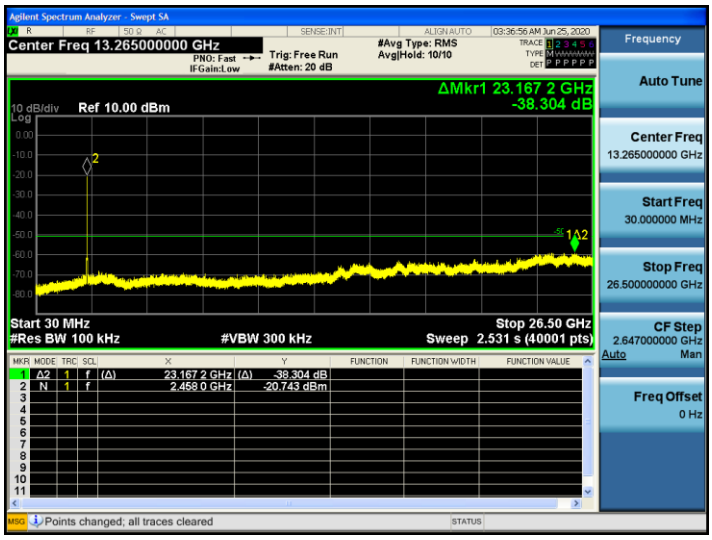
BW20M Ch.1(2412MHz) RU 61



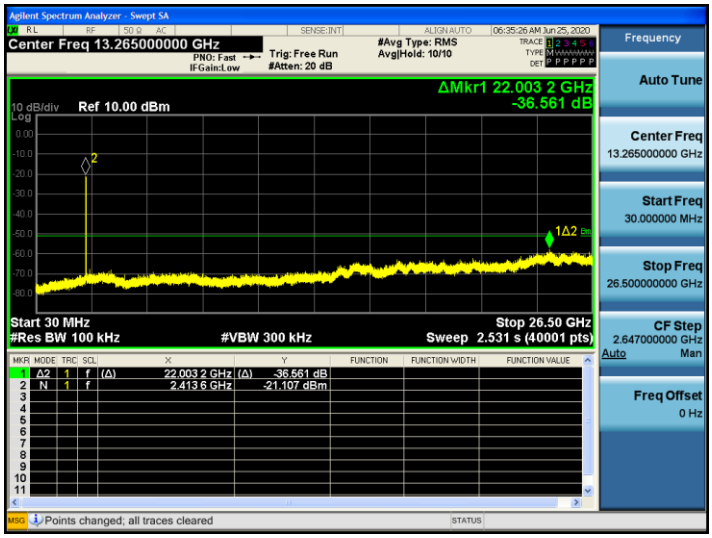
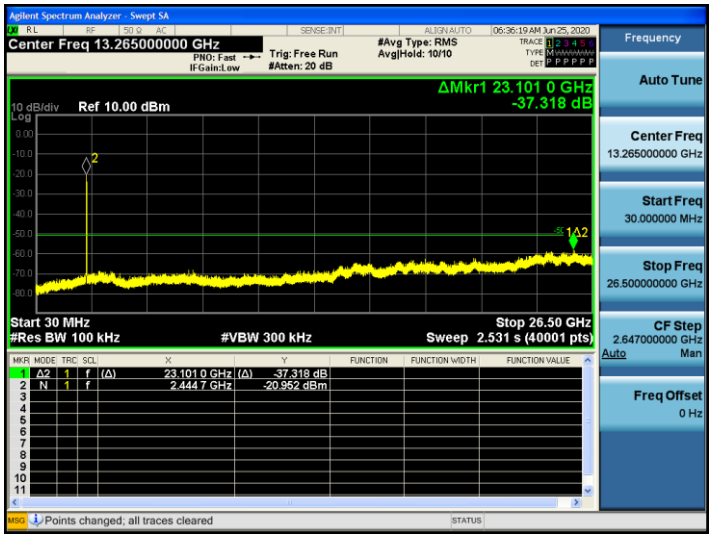
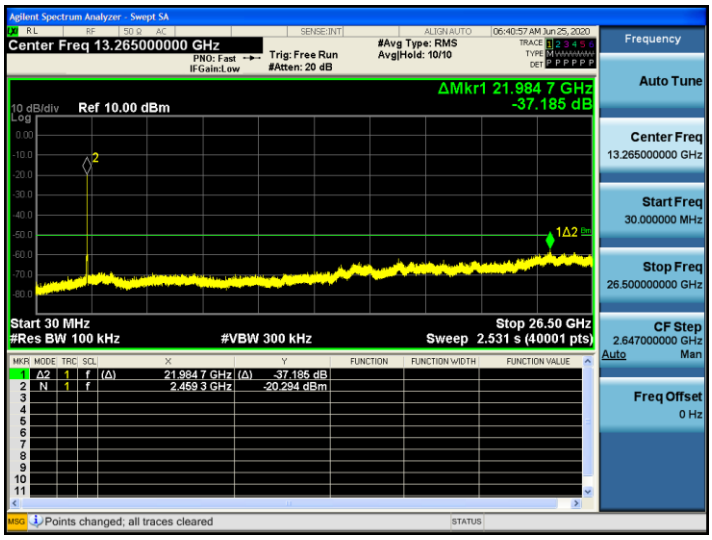
BW20M Ch.6(2437MHz) RU 61



BW20M Ch.11(2462MHz) RU 61



[ANT2]

BW20M Ch.1(2412MHz) RU 61	BW20M Ch.6(2437MHz) RU 61
	
BW20M Ch.11(2462MHz) SU	
	

9.6 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30MHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

Note:

1. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor = 40log (specific distance / test distance) (dB)
3. Limit line = specific Limits (dBuV) + Distance extrapolation factor

Frequency Range : Below 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

Note:

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.

Frequency Range : Above 1 GHz

1. 26 Tone

Operation Mode: 802.11ax(HE20)
Transfer MCS Index: 0
Operating Frequency 2412
Channel No. 01 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	42.77	0.00	4.31	V	47.08	73.98	26.90	PK
4824	30.39	0.00	4.31	V	34.70	53.98	19.28	AV
7236	37.56	0.00	12.35	V	49.91	73.98	24.07	PK
7236	25.97	0.00	12.35	V	38.32	53.98	15.66	AV
4824	43.95	0.00	4.31	H	48.26	73.98	25.72	PK
4824	30.43	0.00	4.31	H	34.74	53.98	19.24	AV
7236	38.09	0.00	12.35	H	50.44	73.98	23.54	PK
7236	26.01	0.00	12.35	H	38.36	53.98	15.62	AV

Operation Mode: 802.11ax(HE20)
Transfer MCS Index: 0
Operating Frequency 2437
Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	40.57	0.00	4.40	V	44.97	73.98	29.01	PK
4874	29.04	0.00	4.40	V	33.44	53.98	20.54	AV
7311	37.69	0.00	12.37	V	50.06	73.98	23.92	PK
7311	26.18	0.00	12.37	V	38.55	53.98	15.43	AV
4874	42.51	0.00	4.40	H	46.91	73.98	27.07	PK
4874	29.13	0.00	4.40	H	33.53	53.98	20.45	AV
7311	38.54	0.00	12.37	H	50.91	73.98	23.07	PK
7311	26.39	0.00	12.37	H	38.76	53.98	15.22	AV

Operation Mode: 802.11ax(HE20)

Transfer MCS Index: 0

Operating Frequency 2462

Channel No. 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	42.19	0.00	4.51	V	46.70	73.98	27.28	PK
4924	29.09	0.00	4.51	V	33.60	53.98	20.38	AV
7386	38.49	0.00	12.31	V	50.80	73.98	23.18	PK
7386	26.32	0.00	12.31	V	38.63	53.98	15.35	AV
4924	42.56	0.00	4.51	H	47.07	73.98	26.91	PK
4924	29.11	0.00	4.51	H	33.62	53.98	20.36	AV
7386	39.64	0.00	12.31	H	51.95	73.98	22.03	PK
7386	26.49	0.00	12.31	H	38.80	53.98	15.18	AV

2. 242 Tone

Operation Mode: 802.11ax(HE20)

Transfer MCS Index: 0

Operating Frequency 2412

Channel No. 01 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	40.75	0.00	4.31	V	45.06	73.98	28.92	PK
4824	28.68	0.00	4.31	V	32.99	53.98	20.99	AV
7236	38.44	0.00	12.35	V	50.79	73.98	23.19	PK
7236	25.97	0.00	12.35	V	38.32	53.98	15.66	AV
4824	41.42	0.00	4.31	H	45.73	73.98	28.25	PK
4824	28.74	0.00	4.31	H	33.05	53.98	20.93	AV
7236	38.68	0.00	12.35	H	51.03	73.98	22.95	PK
7236	26.02	0.00	12.35	H	38.37	53.98	15.61	AV

Operation Mode: 802.11ax(HE20)

Transfer MCS Index: 0

Operating Frequency 2437

Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	40.41	0.00	4.40	V	44.81	73.98	29.17	PK
4874	28.57	0.00	4.40	V	32.97	53.98	21.01	AV
7311	37.98	0.00	12.37	V	50.35	73.98	23.63	PK
7311	25.31	0.00	12.37	V	37.68	53.98	16.30	AV
4874	41.06	0.00	4.40	H	45.46	73.98	28.52	PK
4874	28.72	0.00	4.40	H	33.12	53.98	20.86	AV
7311	38.13	0.00	12.37	H	50.50	73.98	23.48	PK
7311	26.34	0.00	12.37	H	38.71	53.98	15.27	AV

Operation Mode: 802.11ax(HE20)

Transfer MCS Index: 0

Operating Frequency 2462

Channel No. 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	40.10	0.00	4.51	V	44.61	73.98	29.37	PK
4924	28.86	0.00	4.51	V	33.37	53.98	20.61	AV
7386	38.21	0.00	12.31	V	50.52	73.98	23.46	PK
7386	25.44	0.00	12.31	V	37.75	53.98	16.23	AV
4924	41.60	0.00	4.51	H	46.11	73.98	27.87	PK
4924	28.93	0.00	4.51	H	33.44	53.98	20.54	AV
7386	38.95	0.00	12.31	H	51.26	73.98	22.72	PK
7386	26.45	0.00	12.31	H	38.76	53.98	15.22	AV

3. DBS Mode

Test case1

Ant.1 802.11b ch.11 1 Mbps & Ant.2 802.11a ch.48 6 Mbps

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	41.55	4.51	V	46.06	73.98	27.92	PK
4924	31.65	4.51	V	36.16	53.98	17.82	AV
7386	37.18	12.31	V	49.49	73.98	24.49	PK
7386	26.29	12.31	V	38.60	53.98	15.38	AV
4924	42.28	4.51	H	46.79	73.98	27.19	PK
4924	31.57	4.51	H	36.08	53.98	17.90	AV
7386	38.53	12.31	H	50.84	73.98	23.14	PK
7386	26.48	12.31	H	38.79	53.98	15.19	AV

Test case2

Ant.2 802.11b ch.11 1 Mbps & Ant.1 802.11a ch.165 6 Mbps

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	42.11	4.51	V	46.62	73.98	27.36	PK
4924	34.12	4.51	V	38.63	53.98	15.35	AV
7386	37.91	12.31	V	50.22	73.98	23.76	PK
7386	26.42	12.31	V	38.73	53.98	15.25	AV
4924	43.99	4.51	H	48.50	73.98	25.48	PK
4924	35.48	4.51	H	39.99	53.98	13.99	AV
7386	38.43	12.31	H	50.74	73.98	23.24	PK
7386	26.55	12.31	H	38.86	53.98	15.12	AV

Test case3-1

Ant.2 802.11a ch.159 6 Mbps & Ant.2 802.11b ch.1 1 Mbps

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	46.46	4.31	V	50.77	73.98	23.21	PK
4824	41.05	4.31	V	45.36	53.98	8.62	AV
7236	37.05	12.35	V	49.40	73.98	24.58	PK
7236	26.05	12.35	V	38.40	53.98	15.58	AV
4824	47.19	4.31	H	51.50	73.98	22.48	PK
4824	42.11	4.31	H	46.42	53.98	7.56	AV
7236	38.35	12.35	H	50.70	73.98	23.28	PK
7236	26.24	12.35	H	38.59	53.98	15.39	AV

Test case3-2

Ant.2 802.11a ch.165 6 Mbps & Ant.2 802.11b ch.6 1 Mbps

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	43.85	4.40	V	48.25	73.98	25.73	PK
4874	37.06	4.40	V	41.46	53.98	12.52	AV
7311	37.36	12.37	V	49.73	73.98	24.25	PK
7311	26.31	12.37	V	38.68	53.98	15.30	AV
4874	44.93	4.40	H	49.33	73.98	24.65	PK
4874	38.84	4.40	H	43.24	53.98	10.74	AV
7311	38.44	12.37	H	50.81	73.98	23.17	PK
7311	26.42	12.37	H	38.79	53.98	15.19	AV

Test case3-3

Ant.2 802.11a ch.159 6 Mbps & Ant.2 802.11b ch.11 1 Mbps

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	48.45	4.51	V	52.96	73.98	21.02	PK
4924	43.74	4.51	V	48.25	53.98	5.73	AV
7386	37.72	12.31	V	50.03	73.98	23.95	PK
7386	26.29	12.31	V	38.60	53.98	15.38	AV
4924	49.34	4.51	H	53.85	73.98	20.13	PK
4924	44.76	4.51	H	49.27	53.98	4.71	AV
7386	37.89	12.31	H	50.20	73.98	23.78	PK
7386	26.34	12.31	H	38.65	53.98	15.33	AV

Test case4

Ant.1&Ant.2 802.11a ch.64 6 Mbps & Ant.2 802.11b ch.11 1 Mbps

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	47.61	4.51	V	52.12	73.98	21.86	PK
4924	42.71	4.51	V	47.22	53.98	6.76	AV
7386	38.05	12.31	V	50.36	73.98	23.62	PK
7386	26.52	12.31	V	38.83	53.98	15.15	AV
4924	49.04	4.51	H	53.55	73.98	20.43	PK
4924	44.88	4.51	H	49.39	53.98	4.59	AV
7386	39.10	12.31	H	51.41	73.98	22.57	PK
7386	26.60	12.31	H	38.91	53.98	15.07	AV

Test case5-1

Ant.1&Ant.2 802.11a ch.48 6 Mbps & Ant.1&Ant.2 802.11b ch.1 1 Mbps

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	42.47	4.51	V	46.98	73.98	27.00	PK
4924	29.86	4.51	V	34.37	53.98	19.61	AV
7386	38.55	12.31	V	50.86	73.98	23.12	PK
7386	25.39	12.31	V	37.70	53.98	16.28	AV
4924	45.55	4.51	H	50.06	73.98	23.92	PK
4924	30.03	4.51	H	34.54	53.98	19.44	AV
7386	38.81	12.31	H	51.12	73.98	22.86	PK
7386	25.48	12.31	H	37.79	53.98	16.19	AV

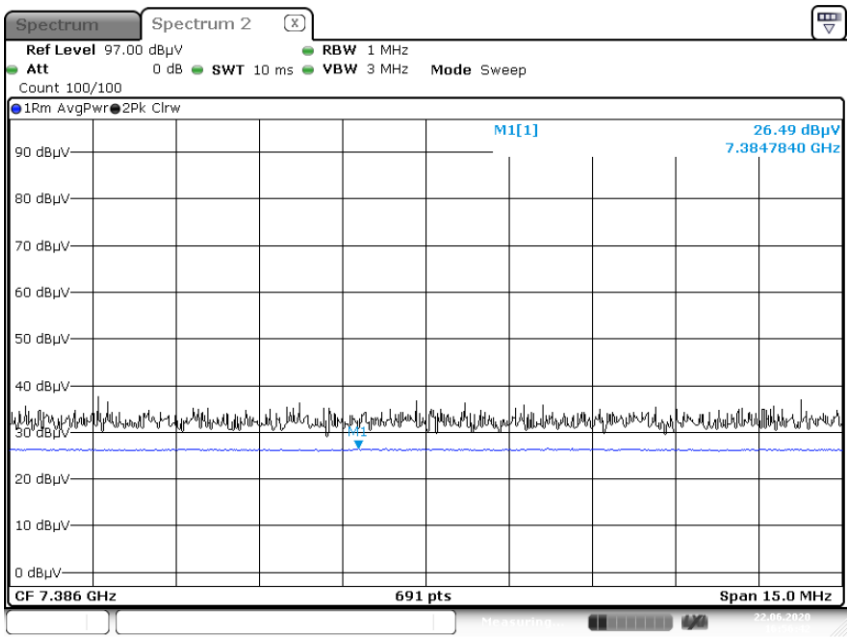
Test case5-2

Ant.1&Ant.2 802.11a ch.48 6 Mbps & Ant.1&Ant.2 802.11g ch.6 6 Mbps

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	42.14	4.40	V	46.54	73.98	27.44	PK
4874	30.67	4.40	V	35.07	53.98	18.91	AV
7311	37.79	12.37	V	50.16	73.98	23.82	PK
7311	25.47	12.37	V	37.84	53.98	16.14	AV
4874	42.63	4.40	H	47.03	73.98	26.95	PK
4874	30.78	4.40	H	35.18	53.98	18.80	AV
7311	39.78	12.37	H	52.15	73.98	21.83	PK
7311	26.20	12.37	H	38.57	53.98	15.41	AV

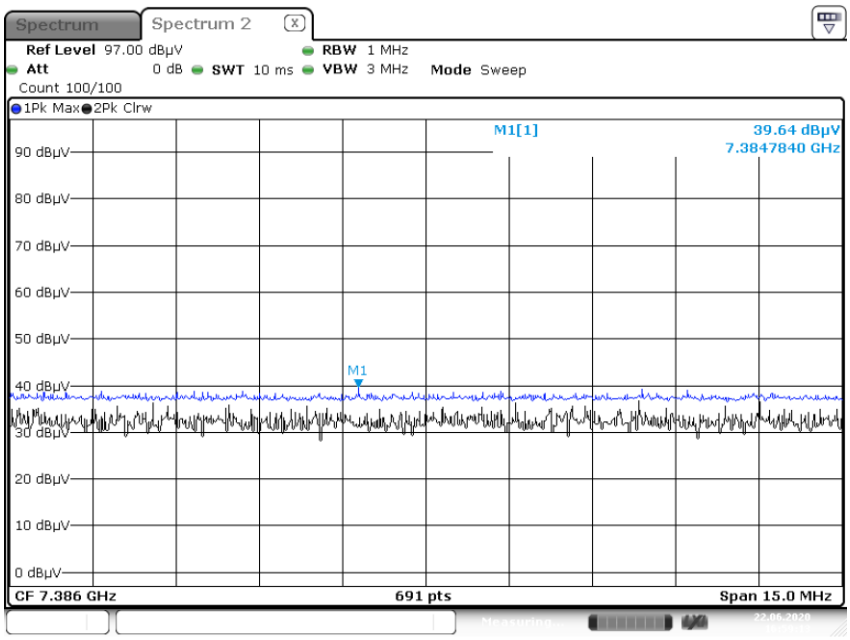
▣ Test Plots (26 Tone) - Y-H

Radiated Spurious Emissions plot – Average Reading (802.11ax(HE20), Ch.11 3rd Harmonic)



Date: 22.JUN.2020 16:56:43

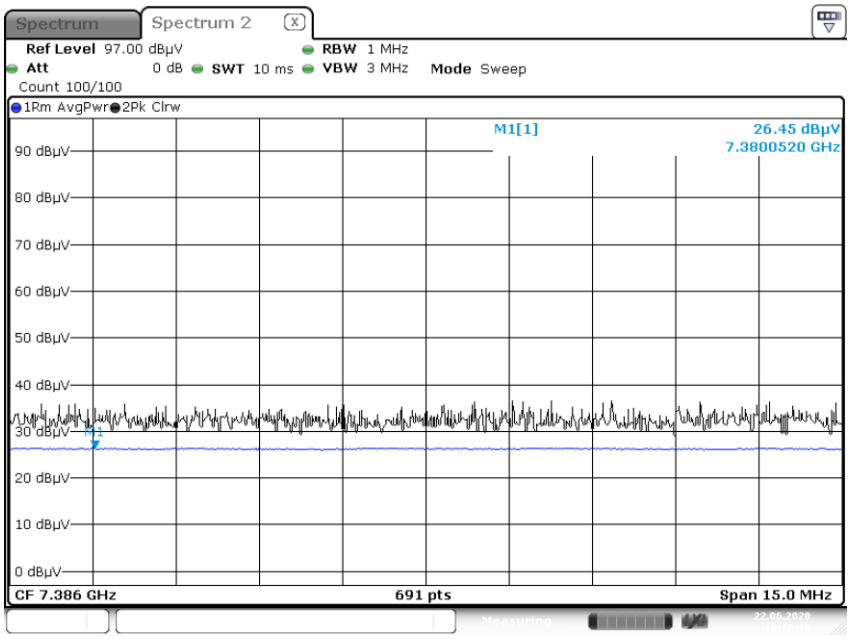
Radiated Spurious Emissions plot – Peak Reading (802.11ax(HE20), Ch.11 3rd Harmonic)



Date: 22.JUN.2020 16:59:14

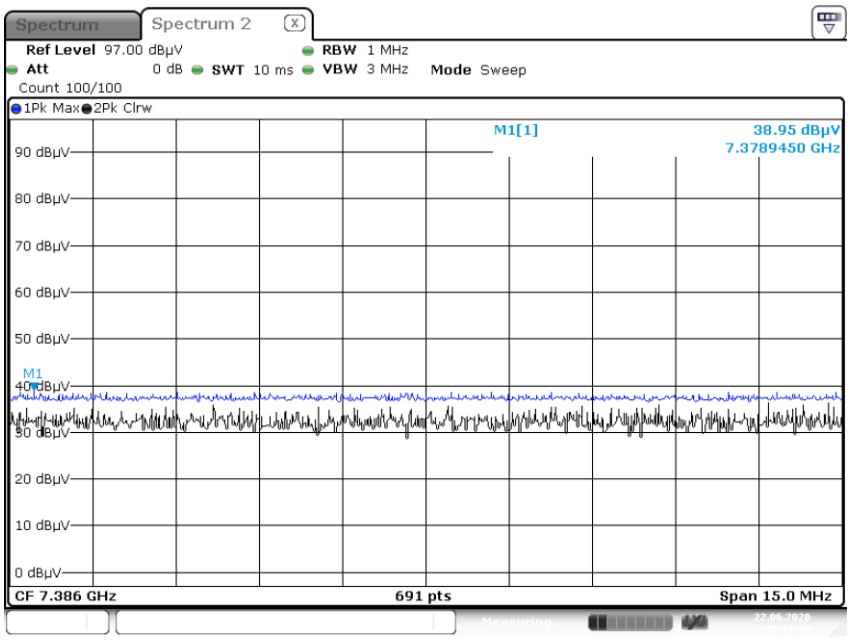
▣ Test Plots (242 Tone) - Y-H

Radiated Spurious Emissions plot – Average Reading (802.11ax(HE20), Ch.11 3rd Harmonic)



Date: 22.JUN.2020 18:12:19

Radiated Spurious Emissions plot – Peak Reading (802.11ax(HE20), Ch.11 3rd Harmonic)



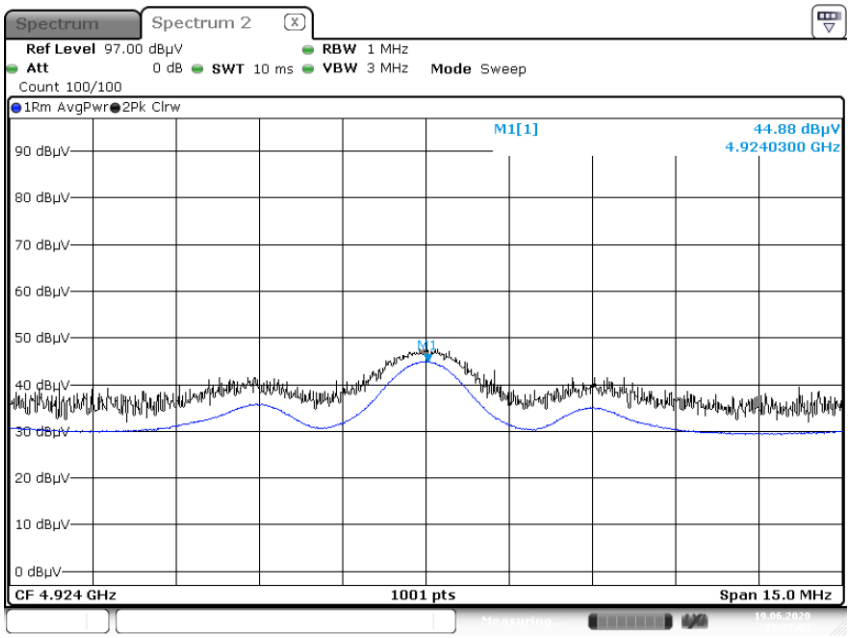
Date: 22.JUN.2020 18:11:50

Note:

Plot of worst case are only reported.

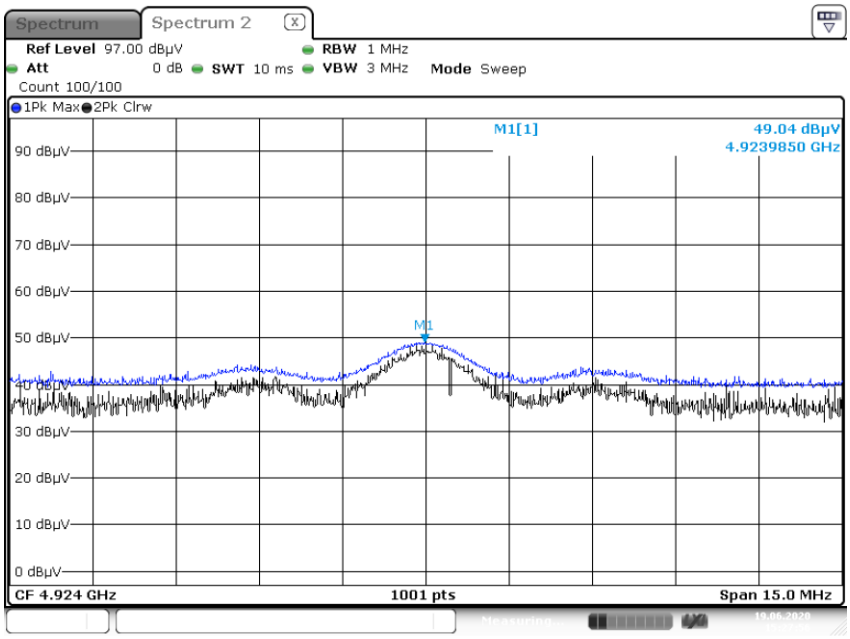
▣ Test Plots (DBS_ Test case4) - X-H

Average Reading MIMO (802.11a 6Mbps ch. 64) & SISO ANT2 (802.11b 1Mbps ch.11)_2nd



Date: 19.JUN.2020 15:27:02

Peak Reading MIMO (802.11a 6Mbps ch. 64) & SISO ANT2 (802.11b 1Mbps ch.11)_2nd



Date: 19.JUN.2020 15:27:56

Note:

Plot of worst case are only reported.

9.7 RADIATED RESTRICTED BAND EDGES

1. 26 Tone

Operation Mode: 802.11ax(HE20)

Transfer MCS Index: 0

Operating Frequency 2412 MHz, 2462 MHz

Channel No. 01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.+ATT -A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	60.34	0.00	5.61	H	65.95	73.98	8.03	PK
2390.0	39.21	0.00	5.61	H	44.82	53.98	9.16	AV
2390.0	58.44	0.00	5.61	V	64.05	73.98	9.93	PK
2390.0	37.48	0.00	5.61	V	43.09	53.98	10.89	AV
2483.5	65.58	0.00	6.13	H	71.71	73.98	2.27	PK
2483.5	39.75	0.00	6.13	H	45.88	53.98	8.10	AV
2483.5	56.61	0.00	6.13	V	62.74	73.98	11.24	PK
2483.5	38.59	0.00	6.13	V	44.72	53.98	9.26	AV

2. 52 Tone

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.+ATT -A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	55.76	0.00	5.61	H	61.37	73.98	12.61	PK
2390.0	39.18	0.00	5.61	H	44.79	53.98	9.19	AV
2390.0	52.33	0.00	5.61	V	57.94	73.98	16.04	PK
2390.0	38.69	0.00	5.61	V	44.30	53.98	9.68	AV
2483.5	61.00	0.00	6.13	H	67.13	73.98	6.85	PK
2483.5	39.46	0.00	6.13	H	45.59	53.98	8.39	AV
2483.5	59.73	0.00	6.13	V	65.86	73.98	8.12	PK
2483.5	38.81	0.00	6.13	V	44.94	53.98	9.04	AV

3. 106 Tone

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.+ATT -A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	58.34	0.00	5.61	H	63.95	73.98	10.03	PK
2390.0	39.51	0.00	5.61	H	45.12	53.98	8.86	AV
2390.0	56.03	0.00	5.61	V	61.64	73.98	12.34	PK
2390.0	38.74	0.00	5.61	V	44.35	53.98	9.63	AV
2483.5	61.67	0.00	6.13	H	67.80	73.98	6.18	PK
2483.5	40.23	0.00	6.13	H	46.36	53.98	7.62	AV
2483.5	60.55	0.00	6.13	V	66.68	73.98	7.30	PK
2483.5	38.42	0.00	6.13	V	44.55	53.98	9.43	AV

4. 242 Tone

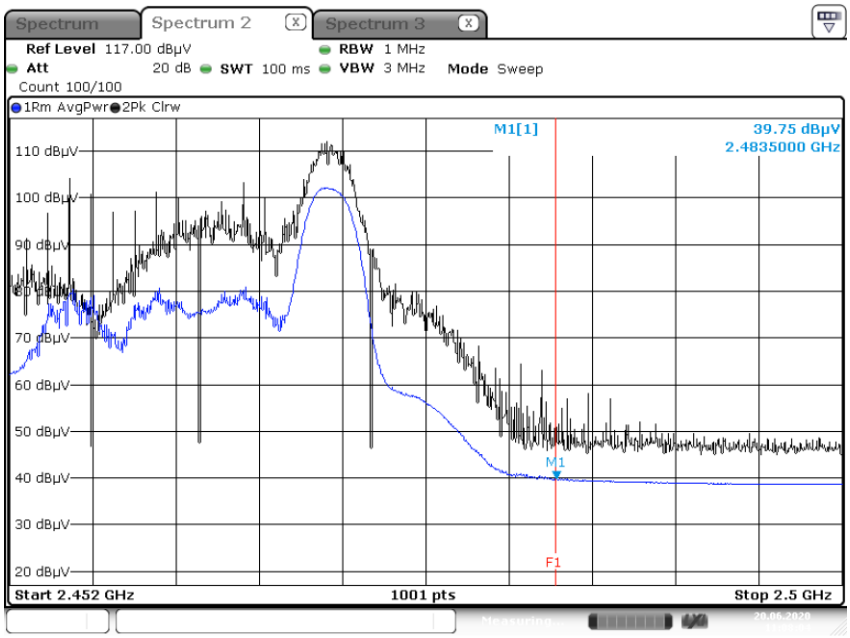
Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor	A.F.+C.L.+ATT -A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390#(2389.5)	58.92	0.00	5.61	H	64.53	73.98	9.45	PK
2390#(2389.5)	45.27	0.00	5.61	H	50.88	53.98	3.10	AV
2390#(2388.5)	57.92	0.00	5.61	V	63.53	73.98	10.45	PK
2390#(2388.5)	44.02	0.00	5.61	V	49.63	53.98	4.35	AV
2310~2388	64.02	0.00	5.61	V	69.63	73.98	4.35	PK
2310~2388	43.24	0.00	5.61	V	48.85	53.98	5.13	AV
2483.5#(2484)	57.83	0.00	6.13	H	63.96	73.98	10.02	PK
2483.5#(2484)	45.08	0.00	6.13	H	51.21	53.98	2.77	AV
2483.5#(2485)	56.67	0.00	6.13	V	62.80	73.98	11.18	PK
2483.5#(2485)	43.81	0.00	6.13	V	49.94	53.98	4.04	AV
2485.5~2500	63.19	0.00	6.13	V	69.32	73.98	4.66	PK
2485.5~2500	43.95	0.00	6.13	V	50.08	53.98	3.90	AV

Note : “#” integration method Used (ANSI C63.10 Section11.13.3)

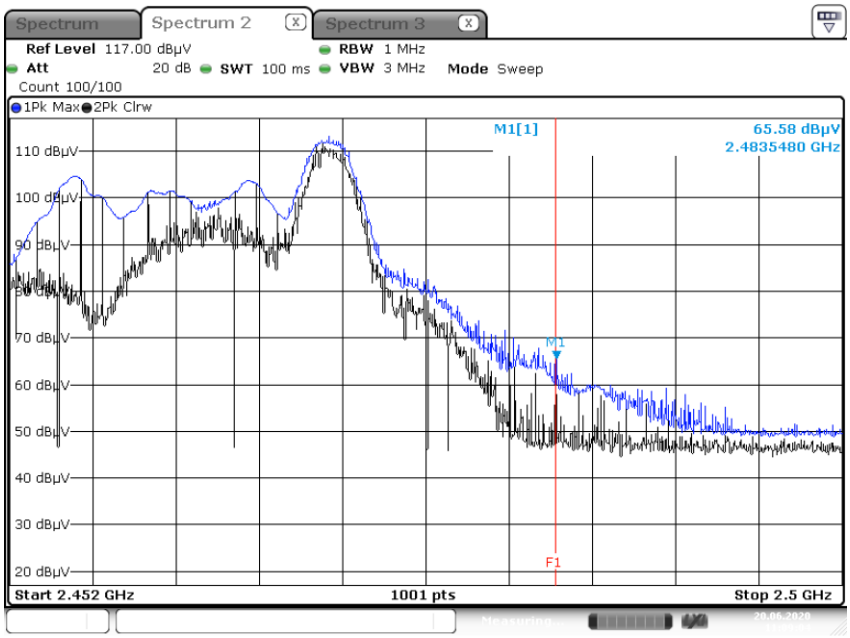
▣ Test Plots (26 Tone)-Z-H

Radiated Restricted Band Edges plot – Average Reading (802.11ax(HE20) Ch.11) RU 8



Date: 20.JUN.2020 11:08:05

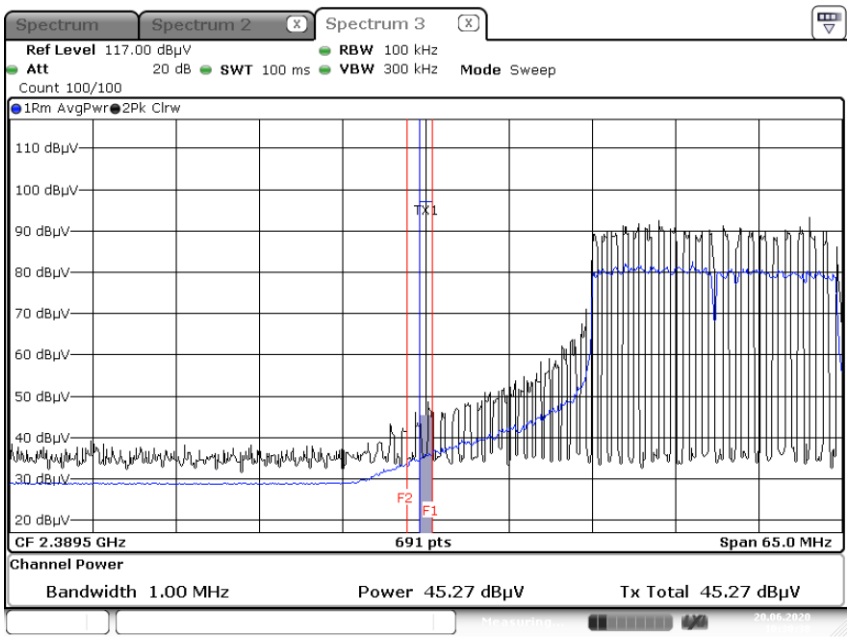
Radiated Restricted Band Edges plot – Peak Reading (802.11ax(HE20) Ch.11) RU 8



Date: 20.JUN.2020 11:09:04

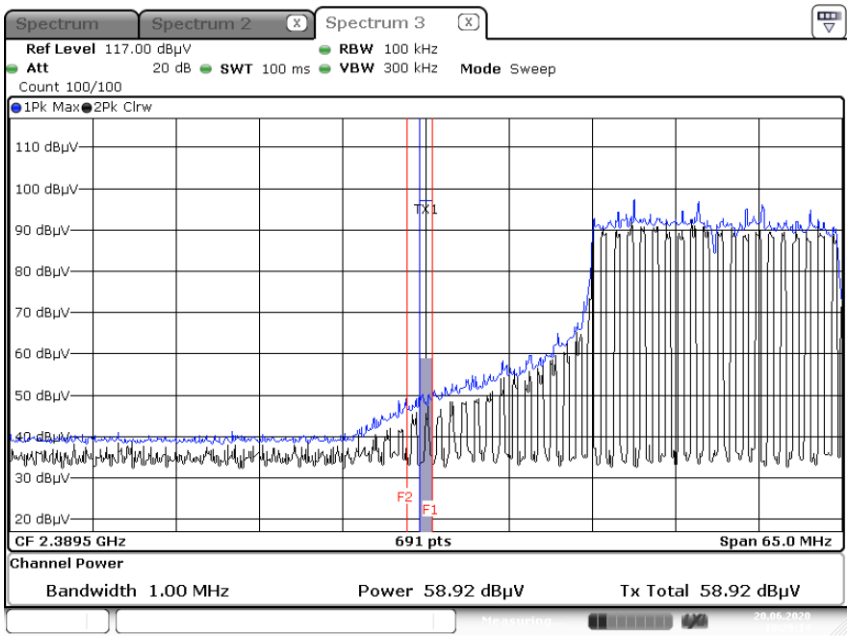
▣ Test Plots (242 Tone)

Radiated Restricted Band Edges plot – Average Reading (802.11ax(HE20) Ch.1)_ Z-H, RU 61
Integration method _ 2 389.5 MHz



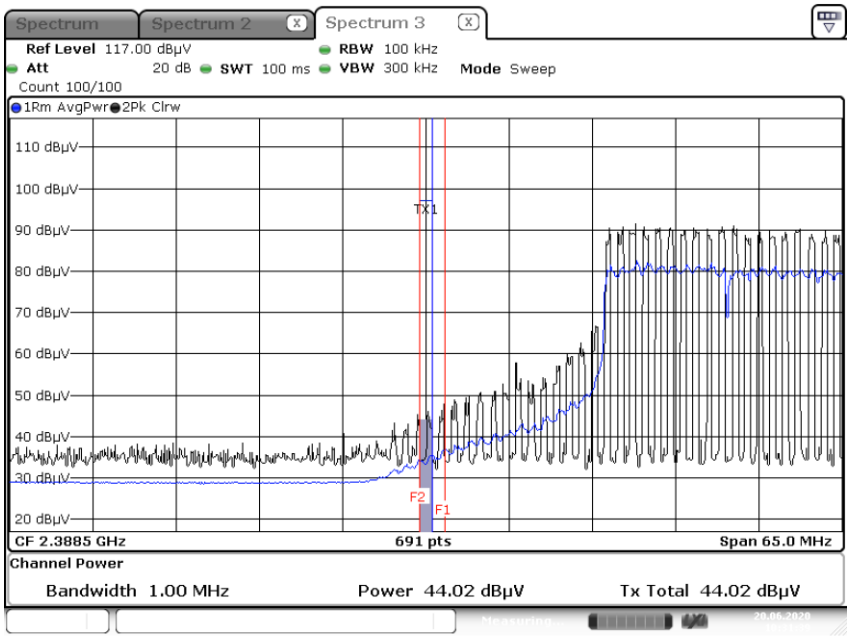
Date: 20.JUN.2020 10:30:39

Radiated Restricted Band Edges plot – Peak Reading (802.11ax(HE20) Ch.1) _Z-H, RU 61
Integration method _ 2 389.5 MHz



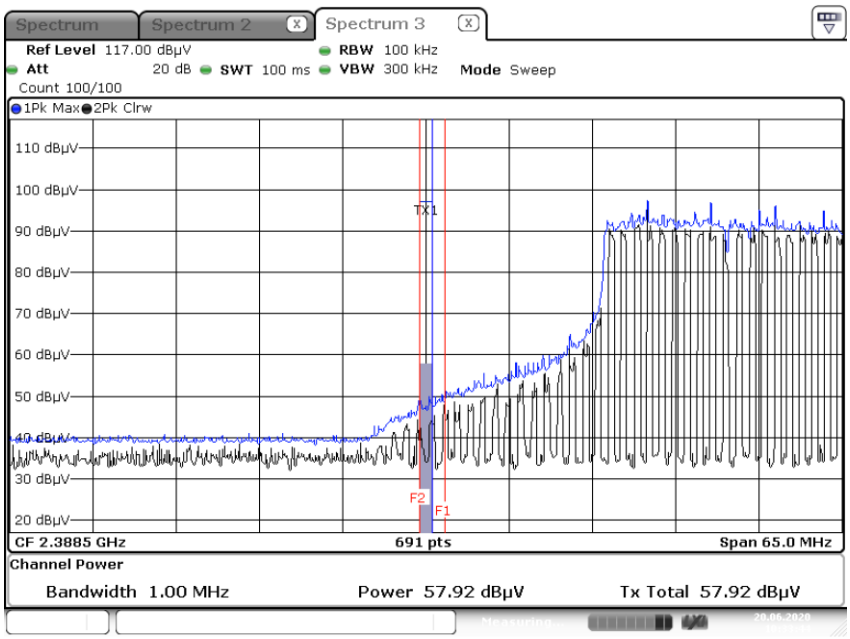
Date: 20.JUN.2020 10:29:14

Radiated Restricted Band Edges plot – Average Reading (802.11ax(HE20) Ch.1) _Z-H, RU 61
Integration method _ 2 388.5 MHz



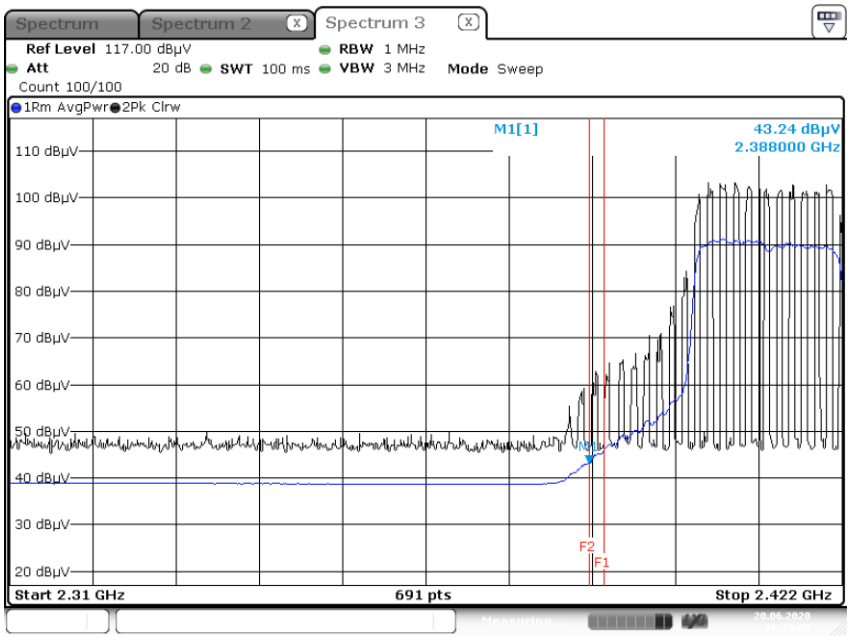
Date: 20.JUN.2020 10:31:39

Radiated Restricted Band Edges plot – Peak Reading (802.11ax(HE20) Ch.1) _Z-H, RU 61
Integration method _ 2 388.5 MHz



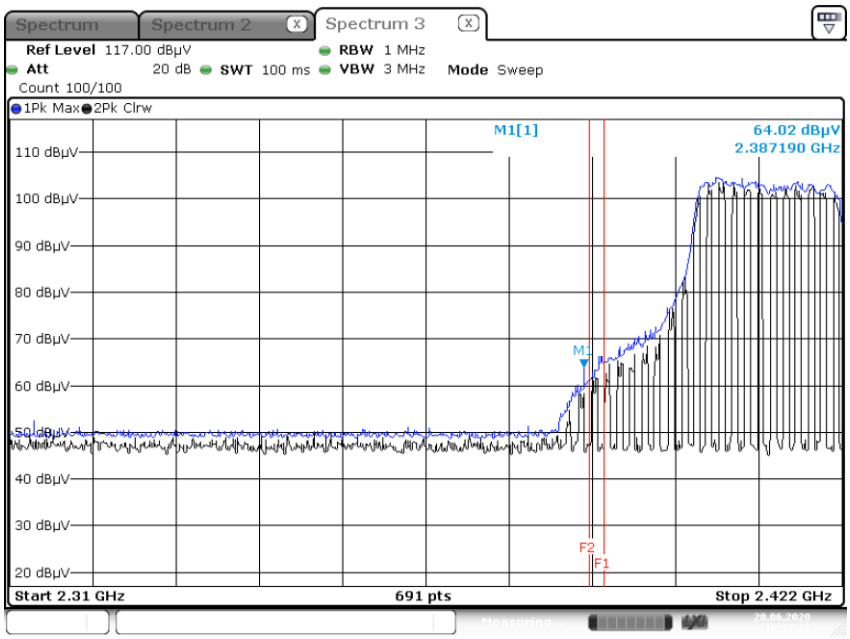
Date: 20.JUN.2020 10:33:44

Radiated Restricted Band Edges plot – Average Reading (802.11ax(HE20) Ch.1) _Z-H, RU 61
2 310 MHz ~ 2 388 MHz



Date: 20.JUN.2020 10:39:09

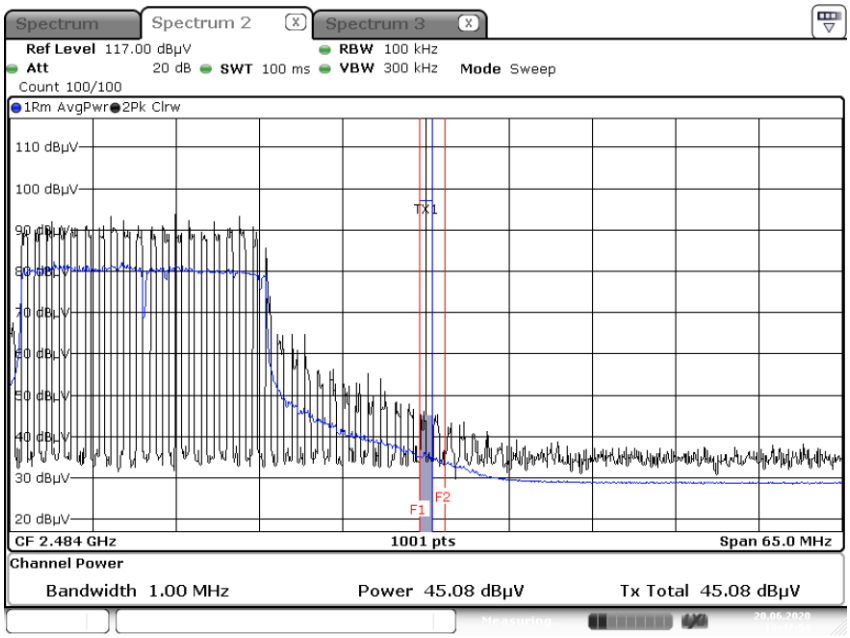
Radiated Restricted Band Edges plot – Peak Reading (802.11ax(HE20) Ch.1) _Z-H, RU 61
2 310 MHz ~ 2 388 MHz



Date: 20.JUN.2020 10:37:29

Radiated Restricted Band Edges plot – Average Reading (802.11ax(HE20) Ch.11) _ Z-H, RU 61

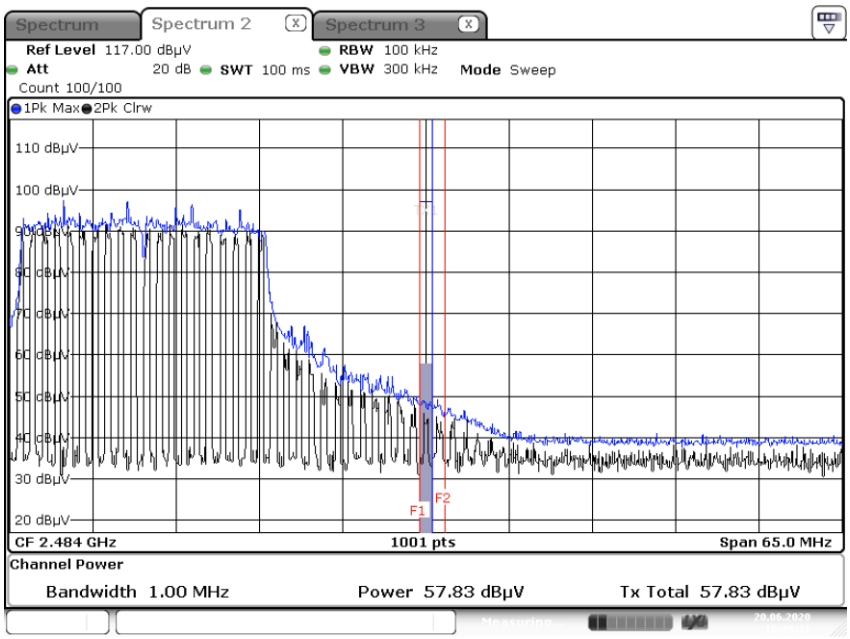
Integration method _2 484.0 MHz



Date: 20.JUN.2020 10:47:53

Radiated Restricted Band Edges plot – Peak Reading (802.11ax(HE20) Ch.11) _ Z-H, RU 61

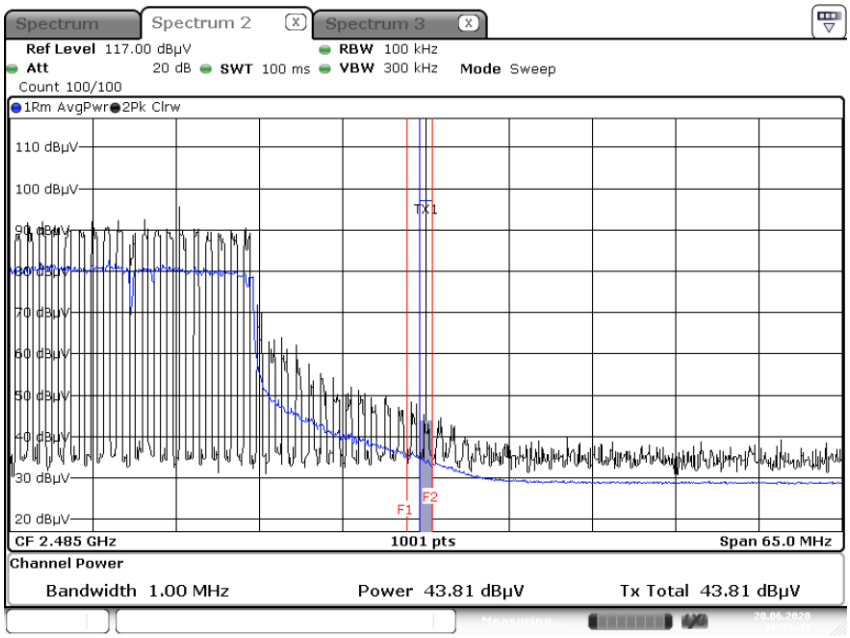
Integration method _2 484.0 MHz



Date: 20.JUN.2020 10:49:37

Radiated Restricted Band Edges plot – Average Reading (802.11ax(HE20) Ch.11)_ X-H, RU 61

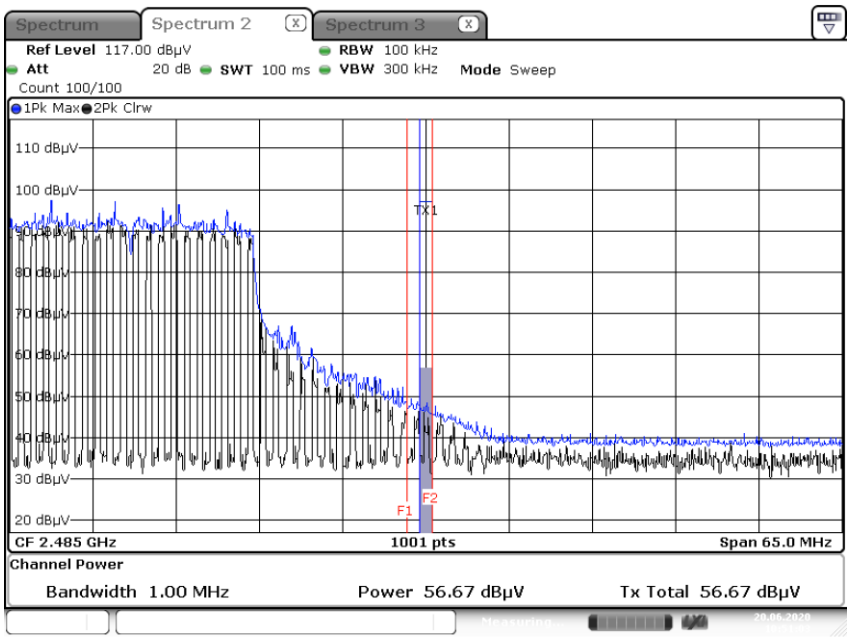
Integration method _ 2 485.0 MHz



Date: 20.JUN.2020 10:51:43

Radiated Restricted Band Edges plot – Peak Reading (802.11ax(HE20) Ch.11) _ X-H, RU 61

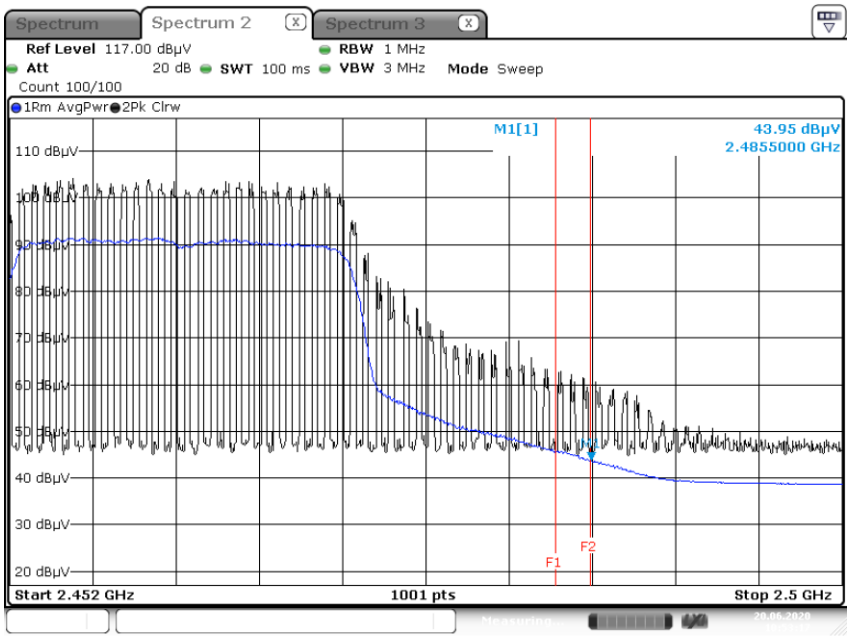
Integration method _ 2 485.0 MHz



Date: 20.JUN.2020 10:51:03

Radiated Restricted Band Edges plot – Average Reading (802.11ax(HE20) Ch.11) _ X-H, RU 61

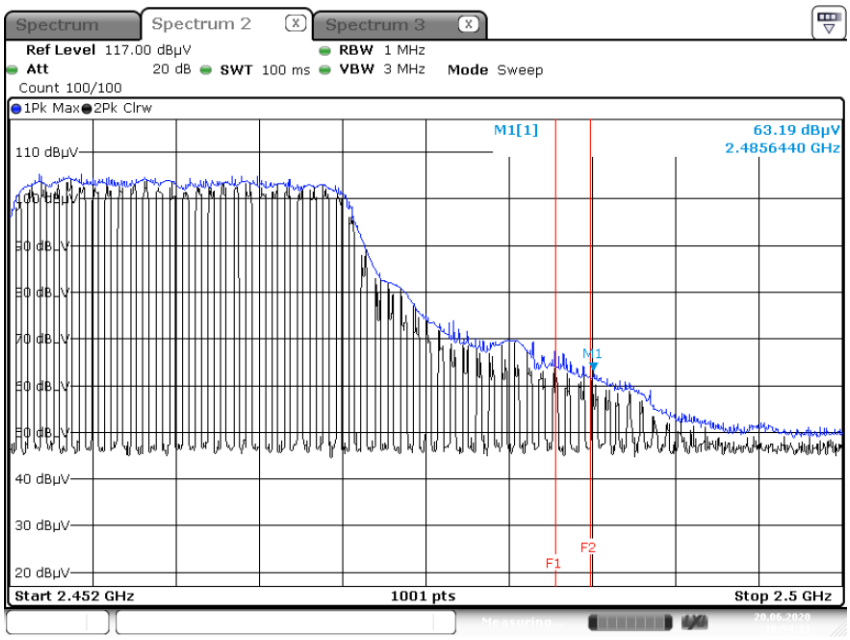
2 485.5 MHz ~ 2 500.0 MHz



Date: 20.JUN.2020 10:53:17

Radiated Restricted Band Edges plot – Peak Reading (802.11ax(HE20) Ch.11) _ X-H, RU 61

2 485.5 MHz ~ 2 500.0 MHz



Date: 20.JUN.2020 10:54:31

Note:

Plot of worst case are only reported.

9.8 POWERLINE CONDUCTED EMISSIONS

Conducted Emissions (Line 1)

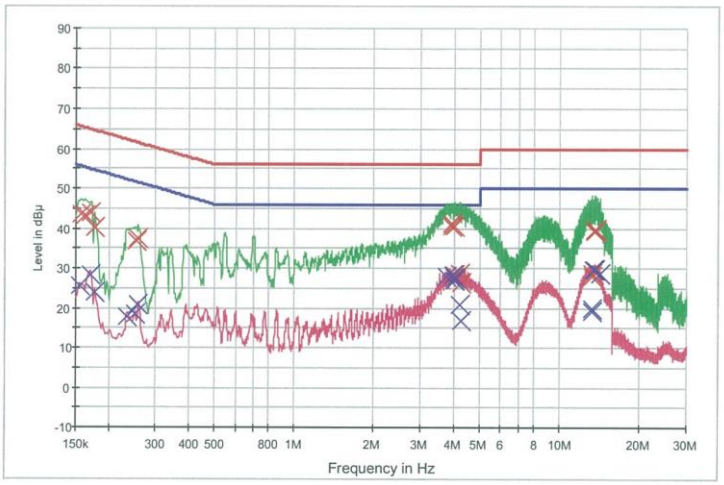
WLAN 2.4G AX MODE_L1 1 / 2

HCT TEST Report

Common Information

EUT:	SM-T878U
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN 2.4G AX MODE_L1

FCC CLASS B_Exten Cable



FCC CLASS B_QP
Preview Result 2-AVG
FCC CLASS B_ AV
Final Result 1-QPK
Preview Result 1-PK+
Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.158000	43.5	9.000	Off	L1	9.8	22.1	65.6
0.162000	43.3	9.000	Off	L1	9.8	22.1	65.4
0.170000	43.8	9.000	Off	L1	9.8	21.2	65.0
0.176000	40.1	9.000	Off	L1	9.8	24.6	64.7
0.254000	36.6	9.000	Off	L1	9.8	25.0	61.6
0.258000	37.5	9.000	Off	L1	9.8	24.0	61.5
3.906000	40.4	9.000	Off	L1	10.0	15.6	56.0
3.928000	41.2	9.000	Off	L1	10.0	14.8	56.0
4.000000	40.5	9.000	Off	L1	10.0	15.5	56.0
4.006000	28.4	9.000	Off	L1	10.0	27.6	56.0
4.226000	28.7	9.000	Off	L1	10.0	27.3	56.0
4.248000	26.3	9.000	Off	L1	10.0	29.7	56.0
13.156000	27.9	9.000	Off	L1	10.3	32.1	60.0
13.264000	28.5	9.000	Off	L1	10.3	31.5	60.0
13.496000	39.6	9.000	Off	L1	10.3	20.4	60.0
13.612000	39.2	9.000	Off	L1	10.3	20.8	60.0
13.692000	39.4	9.000	Off	L1	10.3	20.6	60.0
13.768000	39.4	9.000	Off	L1	10.3	20.6	60.0

2020-06-22 오후 5:03:30

WLAN 2.4G AX MODE_L1 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.156000	25.5	9.000	Off	L1	9.8	30.2	55.7
0.170000	28.3	9.000	Off	L1	9.8	26.6	55.0
0.176000	23.9	9.000	Off	L1	9.8	30.8	54.7
0.234000	18.0	9.000	Off	L1	9.8	34.4	52.3
0.252000	18.6	9.000	Off	L1	9.8	33.1	51.7
0.258000	20.8	9.000	Off	L1	9.8	30.7	51.5
3.726000	27.9	9.000	Off	L1	10.0	18.1	46.0
3.982000	28.4	9.000	Off	L1	10.0	17.6	46.0
4.000000	27.0	9.000	Off	L1	10.0	19.0	46.0
4.004000	27.5	9.000	Off	L1	10.0	18.5	46.0
4.226000	20.7	9.000	Off	L1	10.0	25.3	46.0
4.246000	16.7	9.000	Off	L1	10.0	29.3	46.0
13.156000	19.2	9.000	Off	L1	10.3	30.8	50.0
13.238000	19.2	9.000	Off	L1	10.3	30.8	50.0
13.264000	19.8	9.000	Off	L1	10.3	30.2	50.0
13.440000	29.8	9.000	Off	L1	10.3	20.2	50.0
13.612000	29.7	9.000	Off	L1	10.3	20.3	50.0
14.138000	28.7	9.000	Off	L1	10.3	21.3	50.0

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Conducted Emissions (Line 2)

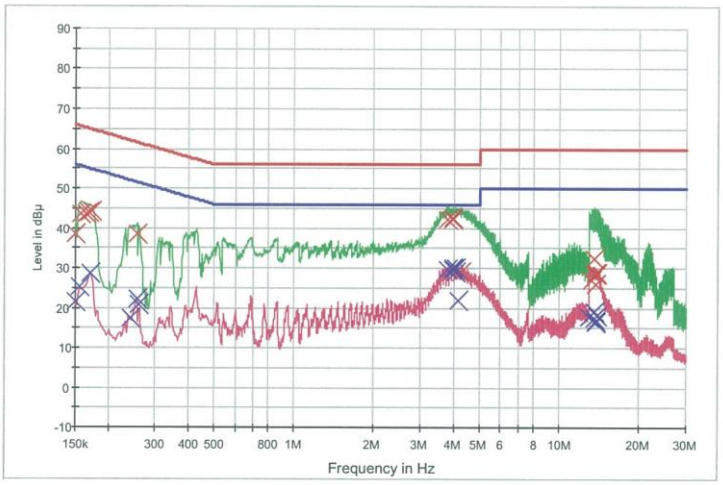
WLAN 2.4G AX MODE_N 1 / 2

HCT TEST Report

Common Information

EUT:	SM-T878U
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN 2.4G AX MODE_N

FCC CLASS B_Exten Cable



FCC CLASS B_QP
Preview Result 2-AVG
FCC CLASS B_ AV
Final Result 1-QPK
Preview Result 1-PK+
Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	38.6	9.000	Off	N	9.8	27.4	66.0
0.158000	43.7	9.000	Off	N	9.8	21.9	65.6
0.164000	43.5	9.000	Off	N	9.8	21.7	65.3
0.168000	43.8	9.000	Off	N	9.8	21.3	65.1
0.172000	44.1	9.000	Off	N	9.8	20.8	64.9
0.256000	38.5	9.000	Off	N	9.8	23.1	61.6
3.806000	42.3	9.000	Off	N	10.0	13.7	56.0
3.972000	42.5	9.000	Off	N	10.0	13.5	56.0
3.976000	42.6	9.000	Off	N	10.0	13.4	56.0
3.984000	42.1	9.000	Off	N	10.0	13.9	56.0
4.074000	30.1	9.000	Off	N	10.0	25.9	56.0
4.244000	29.0	9.000	Off	N	10.0	27.0	56.0
13.280000	26.9	9.000	Off	N	10.4	33.1	60.0
13.286000	26.9	9.000	Off	N	10.4	33.1	60.0
13.574000	32.3	9.000	Off	N	10.4	27.7	60.0
13.678000	26.0	9.000	Off	N	10.4	34.0	60.0
13.722000	28.8	9.000	Off	N	10.4	31.2	60.0
13.862000	28.8	9.000	Off	N	10.4	31.2	60.0

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WLAN 2.4G AX MODE_N 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	21.7	9.000	Off	N	9.8	34.3	56.0
0.156000	25.4	9.000	Off	N	9.8	30.3	55.7
0.170000	28.5	9.000	Off	N	9.8	26.4	55.0
0.242000	17.3	9.000	Off	N	9.8	34.7	52.0
0.256000	22.2	9.000	Off	N	9.8	29.4	51.6
0.260000	20.8	9.000	Off	N	9.8	30.6	51.4
3.806000	29.8	9.000	Off	N	10.0	16.2	46.0
3.976000	29.9	9.000	Off	N	10.0	16.1	46.0
3.980000	29.7	9.000	Off	N	10.0	16.3	46.0
4.062000	29.9	9.000	Off	N	10.0	16.1	46.0
4.074000	29.1	9.000	Off	N	10.0	16.9	46.0
4.154000	21.9	9.000	Off	N	10.0	24.1	46.0
12.892000	17.7	9.000	Off	N	10.4	32.3	50.0
13.532000	17.5	9.000	Off	N	10.4	32.5	50.0
13.564000	19.3	9.000	Off	N	10.4	30.7	50.0
13.674000	16.7	9.000	Off	N	10.4	33.3	50.0
13.678000	16.5	9.000	Off	N	10.4	33.5	50.0
13.862000	18.1	9.000	Off	N	10.4	31.9	50.0

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10. LIST OF TEST EQUIPMENT

Conducted Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	09/11/2019	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	06/10/2020	Annual	100584
ESPAC	SU-642 /Temperature Chamber	08/14/2019	Annual	0093000718
Agilent	N9020A / Signal Analyzer	05/11/2020	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	03/23/2020	Annual	MY49432108
Agilent	N1911A / Power Meter	04/07/2020	Annual	MY45100523
Agilent	N1921A / Power Sensor	03/23/2020	Annual	MY52260025
Agilent	87300B / Directional Coupler	11/11/2019	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	02/24/2020	Annual	10545
Hewlett Packard	E3632A / DC Power Supply	09/27/2019	Annual	MY40004427
Agilent	8493C / Attenuator(10 dB)	07/02/2019	Annual	07560
Rohde & Schwarz	18N-20dB / Attenuator(20 dB)	03/23/2020	Annual	8
Rohde & Schwarz	EMC32 / Software	N/A	N/A	N/A
HCT CO., LTD.	FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	N/A	N/A
Rohde & Schwarz	CBT / Bluetooth Tester	03/02/2020	Annual	100808

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

Radiated Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Audix	Turn Table	N/A	N/A	N/A
TNM system	FBSM-01B / Amp & Filter Bank Switch Controller	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	05/18/2020	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	08/02/2019	Biennial	01039
Schwarzbeck	BBHA 9120D / Horn Antenna	06/28/2019	Biennial	1300
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	04/29/2019	Biennial	BBHA9170342
Weinschel	2-3 / Attenuator (3 dB)	10/08/2019	Annual	BR0617
Rohde & Schwarz	FSV(10 Hz ~ 40 GHz) / Spectrum Analyzer	05/13/2020	Annual	101055
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	01/21/2020	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	02/10/2020	Annual	1
CERNEX	CBL18265035 / Power Amplifier	12/26/2019	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	03/23/2020	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/18/2020	Annual	3000C000276
TNM system	FBSM-05B / HPF(3~18GHz) + LNA1(1~18GHz)	01/21/2020	Annual	F6
TNM system	FBSM-05B / ATT(10dB) + LNA1(1~18GHz)	01/21/2020	Annual	None
TNM system	FBSM-05B / ATT(3dB) + LNA1(1~18GHz)	01/21/2020	Annual	None
TNM system	FBSM-05B / LNA1(1~18GHz)	01/21/2020	Annual	25540
TNM system	FBSM-05B / HPF(7~18GHz) + LNA2(6~18GHz)	01/21/2020	Annual	28550
TNM system	FBSM-05B / Thru(30MHz ~ 18GHz)	01/21/2020	Annual	None

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5(Version : 2017).

11. ANNEX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2007-FC013-P