

FCC DTS REPORT

Certification

Applicant Name: SAMSUNG Electronics Co., Ltd.	Date of Issue: November 05, 2021
Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea	Test Site/Location: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA
	Report No.: HCT-RF-2110-FC058-R1

FCC ID:	A3LSMS901B
APPLICANT:	SAMSUNG Electronics Co., Ltd.
Model:	SM-S901B/DS
EUT Type:	Mobile Phone
Average Output Power:	802.11ax(HE20) SUM (MIMO Ant 1 + MIMO Ant 2): 18.77 dBm
Frequency Range:	2 412 MHz ~ 2 472 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.

Report No.: HCT-RF-2110-FC058-R1

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 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 (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

* The report shall not be reproduced except in full(only partly) without approval of the laboratory.

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2110-FC058	October 28, 2021	- First Approval Report
HCT-RF-2110-FC058-R1	November 05, 2021	- Additional Model delete

Table of Contents

REVIEWED BY	2
1. EUT DESCRIPTION	5
ANTENNA CONFIGURATIONS	6
2. TEST METHODOLOGY	8
EUT CONFIGURATION	8
EUT EXERCISE	8
GENERAL TEST PROCEDURES	8
DESCRIPTION OF TEST MODES	8
3. INSTRUMENT CALIBRATION.....	9
4. FACILITIES AND ACCREDITATIONS	9
FACILITIES	9
EQUIPMENT	9
5. ANTENNA REQUIREMENTS	10
6. MEASUREMENT UNCERTAINTY	10
7. DESCRIPTION OF TESTS.....	11
8. SUMMARY TEST OF RESULTS	30
9. TEST RESULT	31
9.1 DUTY CYCLE.....	31
9.2 6 dB BANDWIDTH	34
9.3 OUTPUT POWER	40
9.4 POWER SPECTRAL DENSITY	43
9.5 BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS.....	48
9.6 RADIATED SPURIOUS EMISSIONS	55
9.7 RADIATED RESTRICTED BAND EDGES	69
10. LIST OF TEST EQUIPMENT	88
11. ANNEX A_ TEST SETUP PHOTO	90

1. EUT DESCRIPTION

Model	SM-S901B/DS	
Additional Model	-	
EUT Type	Mobile Phone	
Power Supply	DC 3.88 V	
Frequency Range	2 412 MHz ~ 2 472 MHz	
Max. RF Output Power SUM (MIMO Ant 1 + MIMO Ant 2)	<u>Peak Power</u> (For information only)	25.51 dBm
	<u>Average Power</u>	18.77 dBm
Modulation Type	OFDMA	
Number of Channels	13 Channels	
Date(s) of Tests	September 24, 2021 ~ October 28, 2021	
Serial number	Radiated: R3CR90EYFYM Conducted: R3CR90EYJRZ	

ANTENNA CONFIGURATIONS

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

Configurations	SISO		SDM	CDD
	Ant1	Ant2	Ant1 + Ant2	Ant1 + Ant2
802.1ax(HE20)	X	X	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 2.4 GHz and 5 GHz bands simultaneously on each antenna.

RSDB Scenario	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5GHz WiFi Ant.1	5GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2 (N/A)
2.4 GHz WiFi MIMO + 5GHz WiFi	On	On	On			-
2.4 GHz WiFi MIMO + 5GHz WiFi MIMO	On	On	On	On		-
2.4 GHz WiFi + 5GHz WiFi + Bluetooth		On	On		On	-
2.4 GHz WiFi + 5GHz WiFi MIMO + Bluetooth		On	On	On	On	-

Non-DBS	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5GHz WiFi Ant.1	5GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2 (N/A)
5GHz WiFi MIMO + Bluetooth			On	On	On	-
			On	On		-

3. Directional Gain Calculation

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

Directional gain =

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

Ant Gain (dBi)		N _{ANT} / N _{SS}	Directional Gain (dBi)
ANT1(Core 0)	-4.15	2 / 2	CDD :-1.79
ANT2(Core 1)	-5.52		SDM: -4.15

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 purpose 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 30 MHz 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 1 GHz. Above 1 GHz 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.

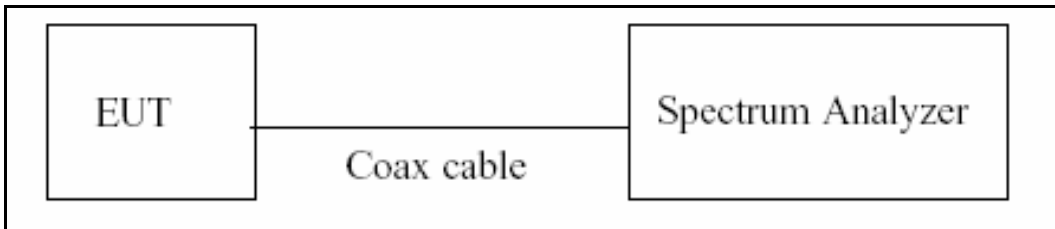
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05 (Confidence level about 95 %, $k=2$)

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 available value of RBW is 8 MHz and VBW is 50 MHz.

The zero-span method of measuring duty cycle shall not be used if $T \leq 6.25$ 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 $> 50/T$.

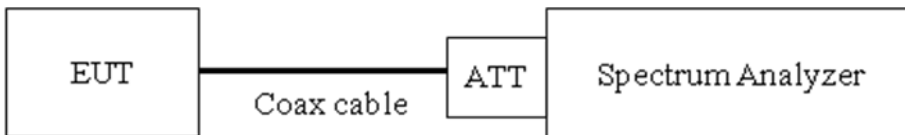
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz (\geq RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/T_{total} and Duty Cycle Factor = $10\log(1/Duty\ Cycle)$

7.2. 6 dB 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 $\geq 3 \times$ 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.

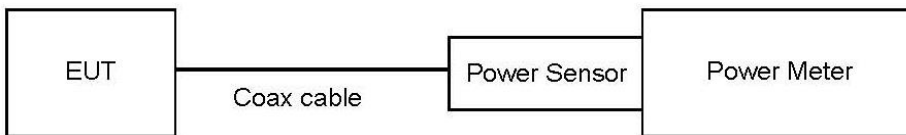
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

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

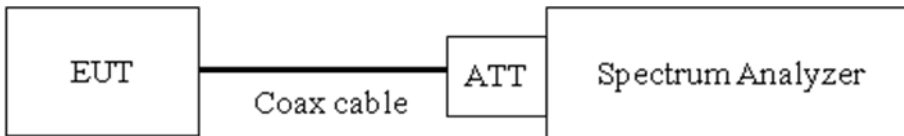
- Conducted Output Power(Peak) = Measured Level + ATT loss + Cable loss
- Conducted Output Power(Average) = Measured L Value + ATT loss + Cable loss + Duty Cycle Factor

7.4. Power Spectral Density

Limit

The transmitter power density average over 1-second interval shall not be greater than 8 dBm in any 3 kHz 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) $RBW = 3 \text{ kHz} \leq RBW \leq 100 \text{ kHz}$.
- 4) $VBW \geq 3 \times RBW$.
- 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 $\geq [2 \times \text{span} / RBW]$.
- 8) Employ trace averaging (rms) mode over 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 Level 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 = Measured Level + ATT loss + Cable loss

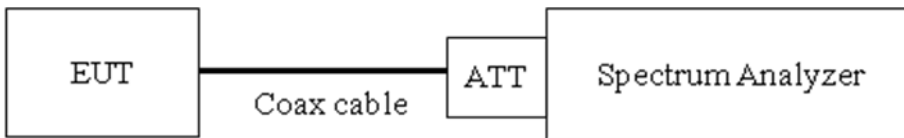
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

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 30 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 $\geq 3 \times$ 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 $\geq 2 \times$ 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	20.04
100	20.09
200	20.13
300	20.19
400	20.22
500	20.23
600	20.23
700	20.25
800	20.27
900	20.29
1000	20.31
2000	20.46
2400	20.52
2480	20.52
2500	20.52
3000	20.57
4000	20.67
5000	20.75
5150	20.77
5850	20.82
6000	20.82
7000	20.91
8000	20.98
9000	21.05
10 000	21.12
11 000	21.16
12 000	21.24
13 000	21.32
14 000	21.30
15 000	21.32
16 000	21.37
17 000	21.41
18 000	21.47
19 000	21.50
20 000	21.56
21 000	21.77
22 000	21.74
23 000	21.94
24 000	21.77

Note : 1. 2400 ~ 2500 MHz is fundamental frequency range.

2. Factor = Attenuator loss(20 dB) + Cable loss(1ea)

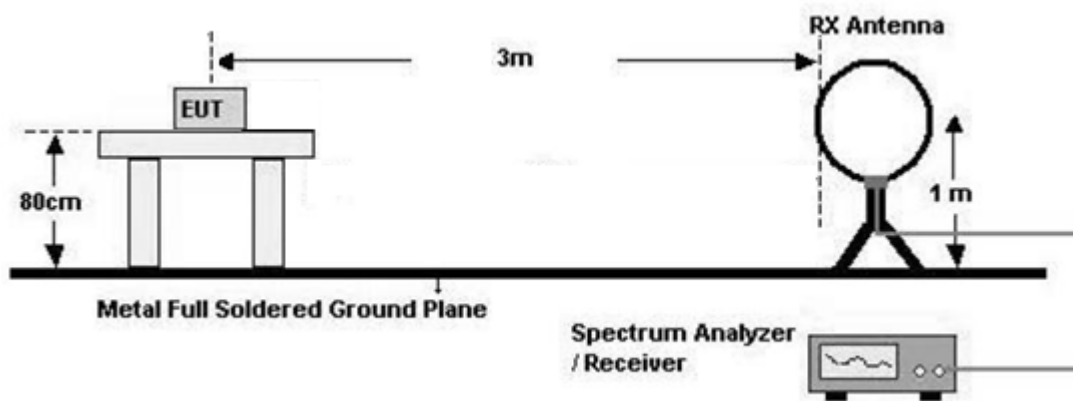
7.6. Radiated Test

Limit

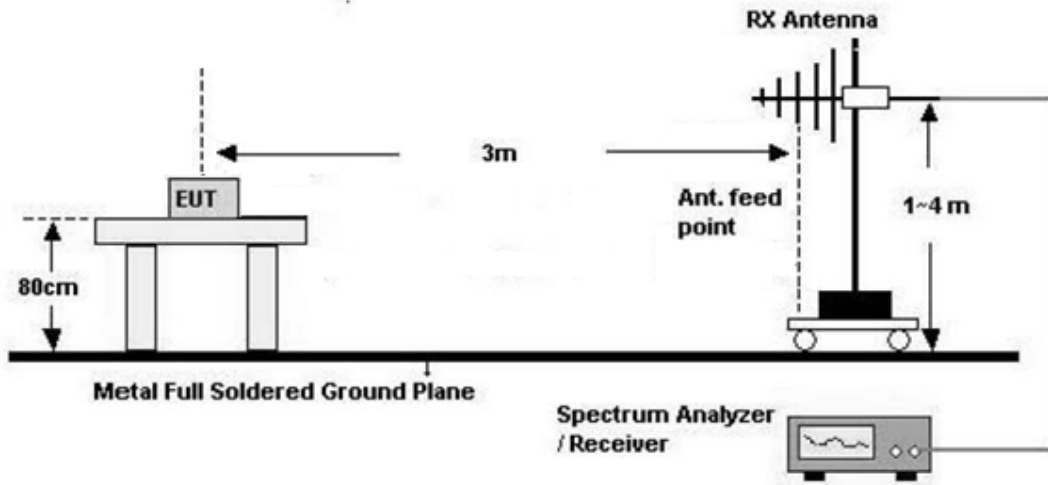
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

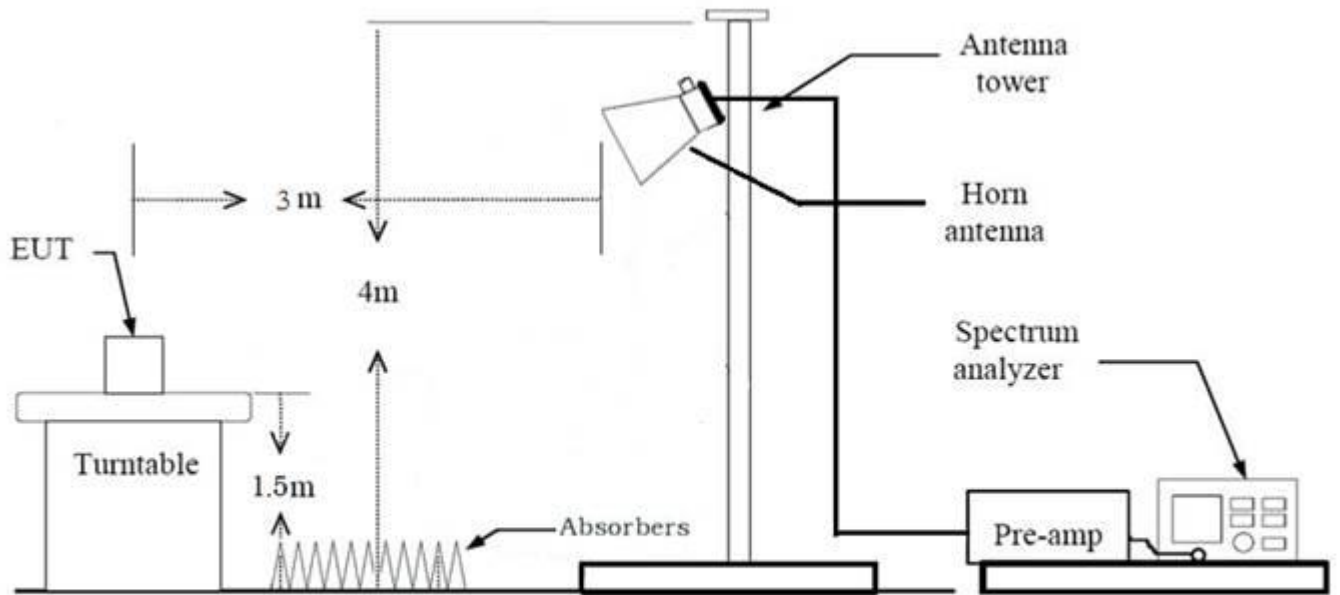
Below 30 MHz



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 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8 m 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) = $40\log(3\text{ m}/300\text{ m}) = - 80\text{ dB}$
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = $40\log(3\text{ m}/30\text{ m}) = - 40\text{ dB}$
Measurement Distance : 3 m
8. Spectrum Setting
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Max Hold
 - RBW = 9 kHz
 - VBW $\geq 3 \times$ RBW
9. Total = Measured Level + 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 1 GHz)

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 0.8 m above ground plane.
3. The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1 m to 4 m 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 = Max Hold
 - RBW = 100 kHz
 - VBW \geq 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 = Measured Level + 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 1 m to 4 m 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 = Max Hold
- RBW = 1 MHz
- VBW $\geq 3 \times$ RBW

(2) Measurement Type(Average): Duty cycle $\geq 98 \%$

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

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

- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW $\geq 3 \times$ 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 = $20\log$ (test distance / specific distance) (dB)

11. Total (Measurement Type : Peak)

$$= \text{Measured Level} + \text{Antenna Factor(A.F)} + \text{Cable Loss(C.L)} - \text{Amp Gain(A.G)} + \text{Distance Factor(D.F)}$$

Total (Measurement Type : Average, Duty cycle $\geq 98 \%$)

$$= \text{Measured Level} + \text{Antenna Factor(A.F)} + \text{Cable Loss(C.L)} - \text{Amp Gain(A.G)} + \text{Distance Factor(D.F)}$$

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

$$= \text{Measured Level} + \text{Antenna Factor(A.F)} + \text{Cable Loss(C.L)} - \text{Amp Gain(A.G)} + \text{Distance Factor(D.F)} \\ + \text{Duty Cycle Factor}$$

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 1 m to 4 m 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 = Max Hold
 - RBW = 1 MHz
 - VBW \geq 3 x RBW
 - (2) Measurement Type(Average): Duty cycle \geq 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 \geq 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 \geq 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 = $20\log(\text{test distance} / \text{specific distance})$ (dB)

11. Total (Measurement Type : Peak)

= Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

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

= Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

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

= Measured Level + 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) = Measured Level + 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, 11	0, 8
52	1, 11	37, 40
106	1, 11	53, 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)
 - Worst case : Stand alone
3. EUT Axis
 - Radiated Spurious Emissions : Y, Z
 - 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+Ant2(SDM), Ant1+Ant2(CDD)
 - Worst case : 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 : SU	-
	Additional Tone : 26T, 52 T, 106T, 242 T	26 T : CH 1 (RU 4), CH 6 (RU 4), CH 11 (RU 4) 52 T : CH 1 (RU 38), CH 6 (RU 38), CH 11 (RU 38) 106 T : CH 1 (RU 54), CH 6 (RU 54), CH 11 (RU 54) 242 T : RU 61
Bandedge	Worst case : SU	-
	Additional Tone : 26 T, 52 T, 106 T, 242 T	Low Edge : RU 0, RU 37, RU 53, RU 61 High Edge : RU 8, RU 40, RU 54, RU 61

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 : X, Z

3. Test case

RSDB Scenario	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5GHz WiFi Ant.1	5GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2 (N/A)
2.4 GHz WiFi MIMO + 5GHz WiFi	On	On	On			-
2.4 GHz WiFi MIMO + 5GHz WiFi MIMO	On	On	On	On		-
2.4 GHz WiFi + 5GHz WiFi + Bluetooth		On	On		On	-
2.4 GHz WiFi + 5GHz WiFi MIMO + Bluetooth		On	On	On	On	-

Non-DBS	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5GHz WiFi Ant.1	5GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2 (N/A)
5GHz WiFi MIMO + Bluetooth			On	On	On	-
			On	On		-

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 1,2,5,6 Result : Please refer to the SM-S901B/DS [BT, UNII, DTS] Test Report.)

Case	Description	Bluetooth Emission	5 GHz Emission
1 (DBS mode)	Antenna	Ant 1	Ant All
	Channel	78	52
	Data Rate	1 Mbps	MCS 0
	Mode	GFSK : DH5	802.11n(HT20)
Case	Description	Bluetooth Emission	5 GHz Emission
2 (DBS mode)	Antenna	Ant 1	Ant All
	Channel	0	36
	Data Rate	1 Mbps	6 Mbps
	Mode	GFSK : DH5	802.11a
Case	Description	2.4 GHz Emission	5 GHz Emission
3 (RSDB mode)	Antenna	Ant All	Ant All
	Channel	6	36
	Data Rate	MCS 0	MCS 0
	Mode	802.11ax(HE20)	802.11ax(HE20)
	Tone / RU	SU	SU
Case	Description	2.4 GHz Emission	5 GHz Emission
4 (RSDB mode)	Antenna	Ant All	Ant All
	Channel	1	36
	Data Rate	MCS 0	MCS 0
	Mode	802.11ax(HE20)	802.11ax(HE20)
	Tone / RU	26 / 4	36 / 4
Case	Description	2.4 GHz Emission	5 GHz Emission
5 (RSDB mode)	Antenna	Ant All	Ant All
	Channel	6	36
	Data Rate	1 Mbps	6 Mbps
	Mode	802.11b	802.11a
Case	Description	2.4 GHz Emission	5 GHz Emission
6 (RSDB mode)	Antenna	Ant All	Ant All
	Channel	1	36
	Data Rate	1 Mbps	MCS 0
	Mode	802.11b	802.11n(HT20)

AC Power line Conducted Emissions

1. Please refer to the SM-S901B/DS[DTS] Test Report.

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-S901B/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	2.597	2.617	0.992	0.03
		MCS1	2.592	2.614	0.991	0.04
		MCS2	1.999	2.022	0.989	0.05
		MCS3	1.520	1.540	0.987	0.06
		MCS4	1.044	1.067	0.979	0.09
		MCS5	0.803	0.826	0.972	0.12
		MCS6	0.730	0.750	0.973	0.12
		MCS7	0.669	0.689	0.971	0.13
		MCS8	0.570	0.590	0.966	0.15
		MCS9	0.522	0.545	0.958	0.19
	52	MCS0	2.592	2.614	0.991	0.04
		MCS1	1.517	1.540	0.985	0.06
		MCS2	1.046	1.067	0.981	0.08
		MCS3	0.803	0.826	0.972	0.12
		MCS4	0.567	0.590	0.961	0.17
		MCS5	0.446	0.469	0.951	0.22
		MCS6	0.408	0.431	0.947	0.24
		MCS7	0.380	0.403	0.943	0.25
		MCS8	0.329	0.350	0.942	0.26
		MCS9	0.309	0.329	0.938	0.28
	106	MCS0	2.435	2.457	0.991	0.04
		MCS1	1.409	1.429	0.986	0.06
		MCS2	0.968	0.988	0.979	0.09
		MCS3	0.747	0.768	0.974	0.12
		MCS4	0.527	0.547	0.963	0.16
		MCS5	0.421	0.441	0.954	0.20
		MCS6	0.383	0.405	0.944	0.25
		MCS7	0.352	0.375	0.939	0.27
		MCS8	0.205	0.231	0.890	0.50
		MCS9	0.188	0.213	0.881	0.55

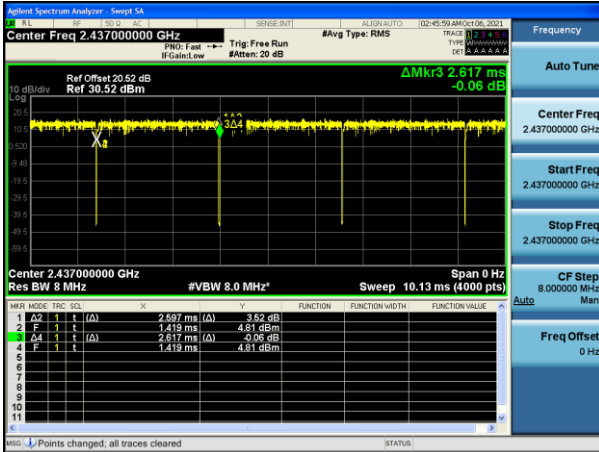
Mode	Tone (T)	Data Rate	On Time (ms)	Total Time (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ax (HE20)	242	MCS0	1.236	1.257	0.984	0.07
		MCS1	0.664	0.687	0.967	0.15
		MCS2	0.471	0.491	0.959	0.18
		MCS3	0.375	0.395	0.949	0.23
		MCS4	0.190	0.213	0.893	0.49
		MCS5	0.162	0.185	0.877	0.57
		MCS6	0.160	0.182	0.875	0.58
		MCS7	0.147	0.172	0.853	0.69
		MCS8	0.142	0.167	0.849	0.71
		MCS9	0.132	0.157	0.838	0.77
802.11ax(SU)	BW 20	MCS0	5.441	5.458	0.997	0.01
		MCS1	5.441	5.458	0.997	0.01
		MCS2	5.441	5.458	0.997	0.01
		MCS3	5.441	5.458	0.997	0.01
		MCS4	5.441	5.458	0.997	0.01
		MCS5	5.441	5.458	0.997	0.01
		MCS6	5.441	5.458	0.997	0.01
		MCS7	5.441	5.458	0.997	0.01
		MCS8	5.441	5.458	0.997	0.01
		MCS9	5.441	5.458	0.997	0.01

Test Plots

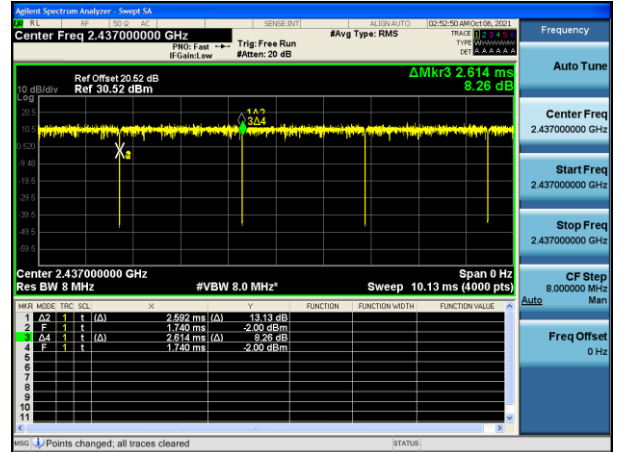
Note:

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

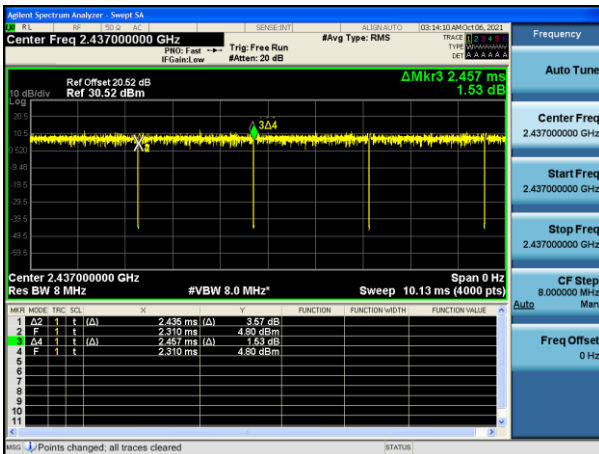
26 Tone MCS0



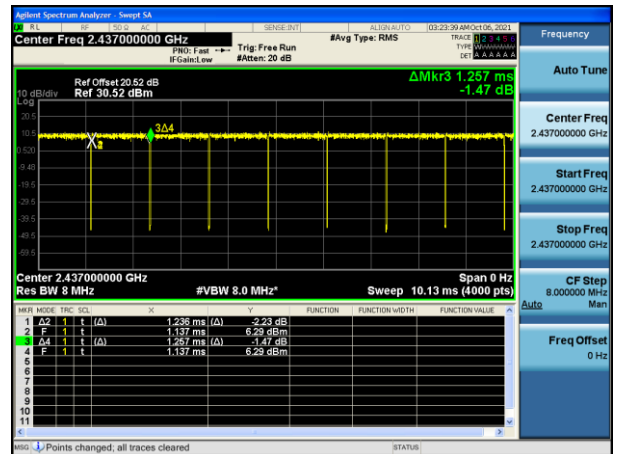
52 Tone MCS0



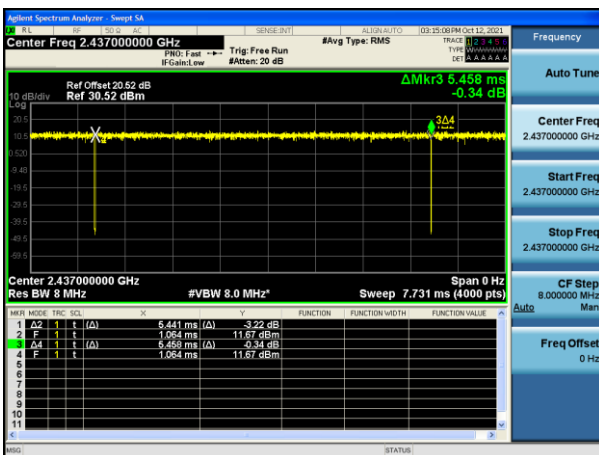
106 Tone MCS0



242 Tone MCS0



SU MCS0



9.2 6 dB BANDWIDTH

[ANT1]

BW	Frequency [MHz]	Channel No.	RU Index	6 dB BW (MHz)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	17.09	18.09	18.15	-	-
			Mid	8.942	15.14	-	18.95	18.94
			High	2.150	15.82	17.17	-	-
	2417	2	Low	2.144	17.11	18.11	-	-
			Mid	6.441	15.12	-	19.00	18.94
			High	2.143	17.06	17.17	-	-
	2437	6	Low	2.158	17.09	17.17	-	-
			Mid	8.886	15.11	-	19.04	19.04
			High	2.147	17.11	17.17	-	-
	2457	10	Low	17.08	17.12	18.15	-	-
			Mid	6.415	15.14	-	18.97	18.98
			High	2.152	17.02	17.17	-	-
	2462	11	Low	14.58	17.12	18.14	-	-
			Mid	6.428	15.13	-	18.98	18.97
			High	2.142	17.06	17.18	-	-
	2467	12	Low	2.168	17.13	18.12	-	-
			Mid	2.772	15.13	-	19.07	19.08
			High	2.146	17.08	17.34	-	-
	2472	13	Low	2.171	10.86	17.14	-	-
			Mid	8.879	10.10	-	17.67	17.66
			High	17.08	17.09	18.35	-	-

Limit : > 500 kHz

[ANT2]

BW	Frequency [MHz]	Channel No.	RU Index	6 dB BW (MHz)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	2.127	17.04	17.71	-	-
			Mid	2.692	15.14	-	19.11	19.11
			High	2.142	17.05	17.17	-	-
	2417	2	Low	2.162	17.03	17.71	-	-
			Mid	2.704	15.09	-	19.12	19.10
			High	2.141	17.06	17.19	-	-
	2437	6	Low	2.154	15.81	17.72	-	-
			Mid	2.688	15.09	-	19.12	19.10
			High	2.140	17.07	17.72	-	-
	2457	10	Low	2.145	14.56	17.17	-	-
			Mid	2.699	15.08	-	19.11	19.12
			High	2.142	17.08	17.19	-	-
	2462	11	Low	2.130	14.57	17.16	-	-
			Mid	2.686	15.08	-	19.11	19.11
			High	2.102	17.09	17.19	-	-
	2467	12	Low	2.131	4.093	17.17	-	-
			Mid	2.700	15.07	-	19.12	19.11
			High	2.143	17.10	17.37	-	-
	2472	13	Low	2.133	14.53	17.72	-	-
			Mid	2.693	15.06	-	19.12	19.12
			High	2.134	17.08	17.19	-	-

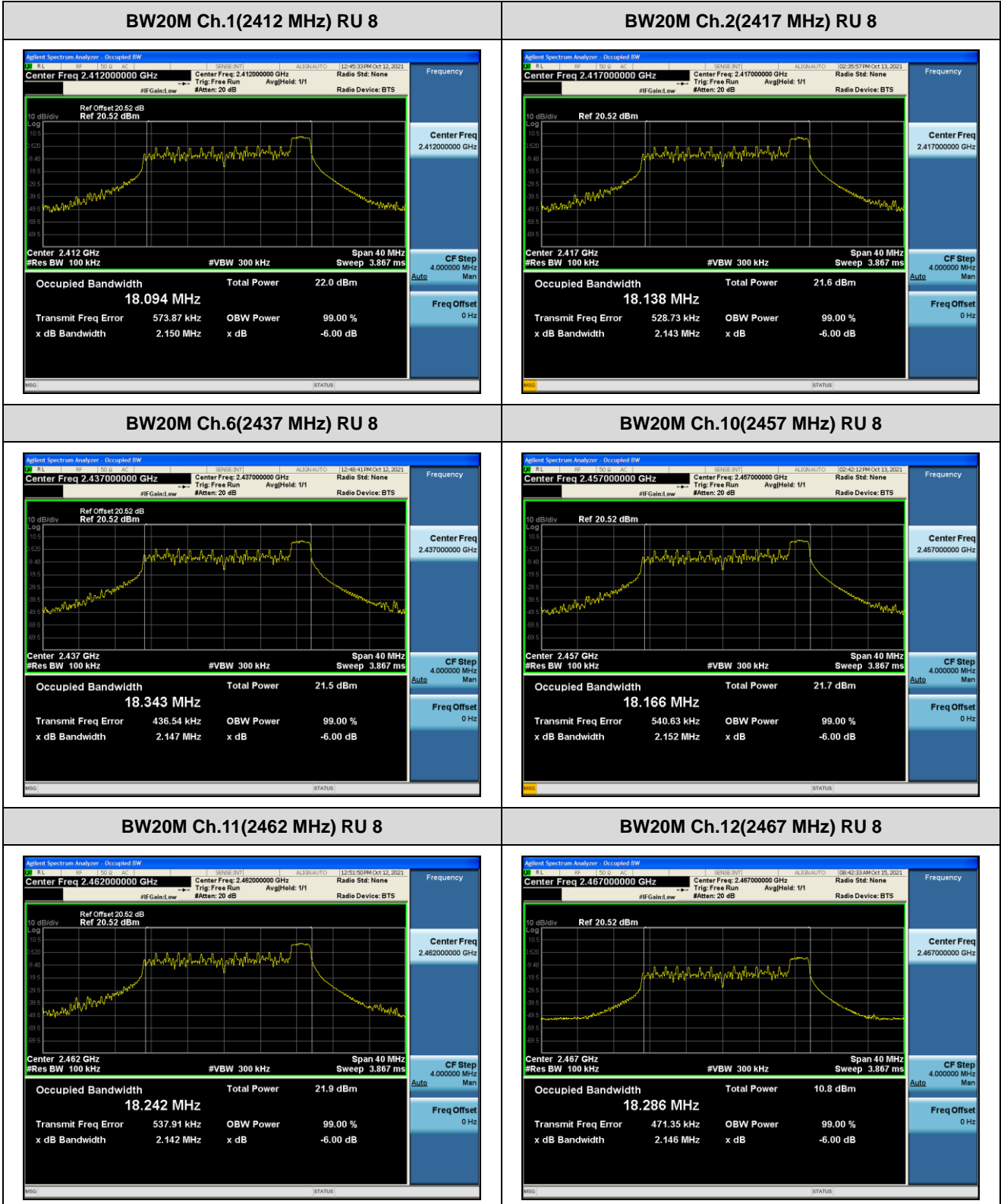
Limit : > 500 kHz

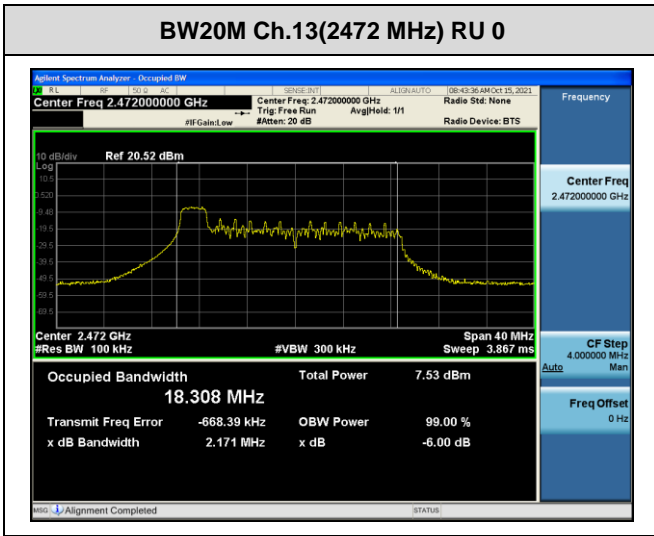
Test Plots

Note:

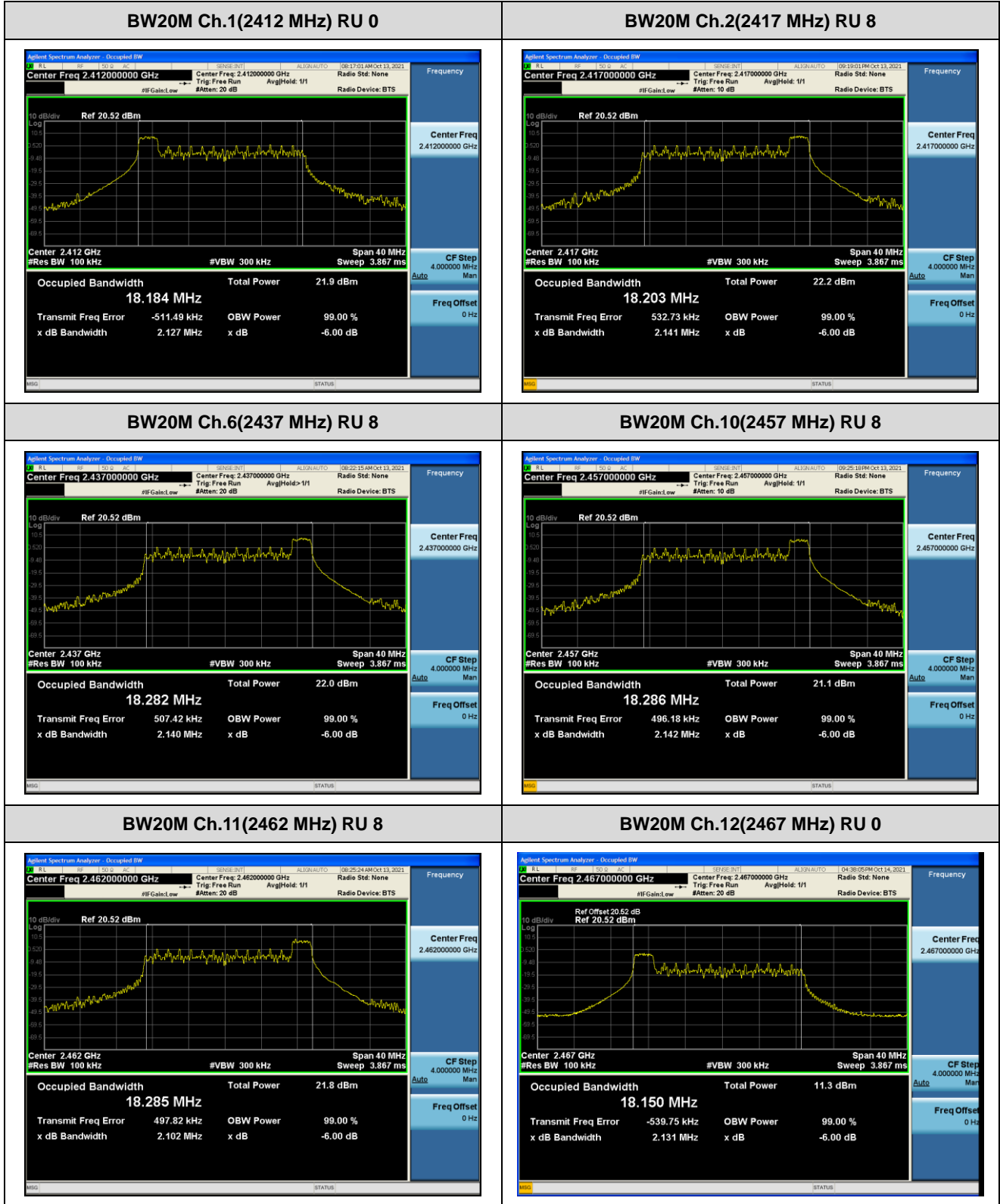
In order to simplify the report, attached plots were only the most narrow 6 dB BW channel.

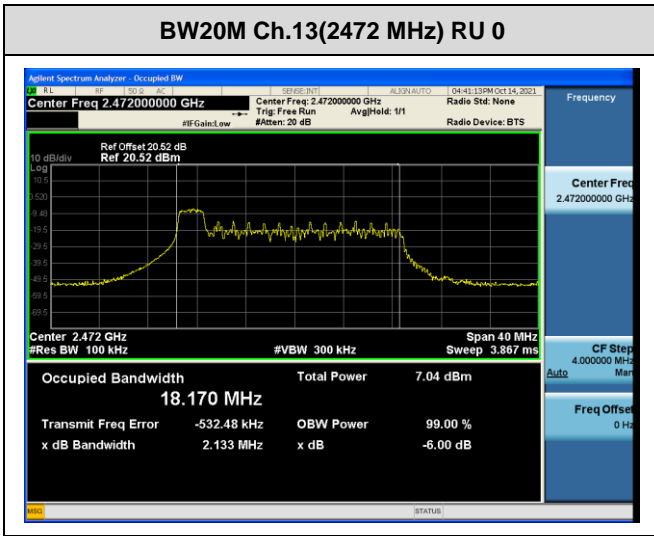
[ANT1]





[ANT2]





9.3 OUTPUT POWER

Power Level Setting

802.11ax Mode	Frequency [MHz]	Channel No.	26 T	52T	106T	242 T	SU
Low	2412	1	12	13	14	12	14
	2417	2	12	13	14	15	16
Mid	2437	6	12	13	14	15	16
	2457	10	12	13	14	15	16
High	2462	11	12	13	14	10	13
	2467	12	1	1	1	1	1
	2472	13	-3	-2	-1	-1	-1

Peak Power

1. Power Meter offset

Ant1 : Attenuator loss(20 dB) + Cable loss

Ant2 : Attenuator loss(20 dB) + Cable loss

[SUM (MIMO Ant 1 + MIMO Ant 2)]

1. Total peak power for MIMO= $10 \cdot \text{LOG}((10^{(\text{MIMO Ant1 Total power} / 10)}) + (10^{(\text{MIMO Ant2 Total power} / 10)}))$

BW	Frequency [MHz]	Channel No.	RU Index	SUM Peak Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	23.96	24.09	24.70	-	-
			Mid	23.95	24.13	-	21.81	23.69
			High	24.25	24.60	25.00	-	-
	2417	2	Low	23.82	24.30	24.73	-	-
			Mid	23.95	24.17	-	24.70	25.33
			High	24.00	24.38	24.91	-	-
	2437	6	Low	24.21	24.47	24.84	-	-
			Mid	23.61	24.15	-	24.65	25.44
			High	23.85	24.12	24.55	-	-
	2457	10	Low	23.52	24.18	24.73	-	-
			Mid	23.45	24.05	-	24.53	25.51
			High	23.70	24.34	24.87	-	-
	2462	11	Low	23.99	24.34	24.87	-	-
			Mid	23.79	24.37	-	19.97	22.70
			High	23.96	24.45	24.81	-	-
	2467	12	Low	13.42	12.77	12.31	-	-
			Mid	13.05	12.40	-	10.95	10.85
			High	12.94	12.34	12.00	-	-
	2472	13	Low	9.99	11.39	10.40	-	-
			Mid	9.09	10.71	-	8.87	8.87
			High	8.58	10.10	9.67	-	-

Limit : 30 dBm

Average Power

1. Power Meter offset

Ant1 : Attenuator loss(20 dB) + Cable loss

Ant2 : Attenuator loss(20 dB) + Cable loss

[SUM (MIMO Ant 1 + MIMO Ant 2)]

1. Total average power for MIMO= $10 \cdot \text{LOG}((10^{(\text{Ant1 Total power} / 10)}) + (10^{(\text{Ant2 Total power} / 10)}))$

BW	Frequency [MHz]	Channel No.	RU Index	SUM Average Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	14.72	15.54	16.71	-	-
			Mid	15.11	15.77	-	15.22	16.98
			High	15.74	16.55	17.47	-	-
	2417	2	Low	15.18	15.88	16.92	-	-
			Mid	15.18	15.95	-	18.07	18.73
			High	15.53	16.25	17.28	-	-
	2437	6	Low	15.78	16.36	17.17	-	-
			Mid	14.88	15.98	-	18.02	18.77
			High	15.24	15.92	16.79	-	-
	2457	10	Low	14.76	15.89	16.84	-	-
			Mid	14.64	15.80	-	17.96	18.54
			High	15.14	16.21	17.10	-	-
	2462	11	Low	15.22	16.03	17.04	-	-
			Mid	15.03	16.01	-	13.38	16.01
			High	15.37	16.25	17.17	-	-
	2467	12	Low	4.59	4.37	4.35	-	-
			Mid	4.09	4.15	-	4.24	4.19
			High	4.15	4.01	4.09	-	-
	2472	13	Low	1.23	2.05	2.71	-	-
			Mid	0.03	1.51	-	2.22	2.15
			High	-0.59	0.42	1.60	-	-

Limit : 30 dBm

9.4 POWER SPECTRAL DENSITY

Note :

1. Spectrum Measured Levels 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

Ant1 : Attenuator loss(20 dB) + Cable loss

Ant2 : Attenuator loss(20 dB) + Cable loss

3. Total PSD = Measured Level + Duty Cycle Factor

[SUM (MIMO Ant 1 + MIMO Ant 2)]

BW	Frequency [MHz]	Channel No.	RU Index	SUM Total PSD (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	-2.241	-4.013	-5.843	-	-
			Mid	-1.454	-3.441	-	-9.939	-8.023
			High	-0.828	-2.734	-4.593	-	-
	2417	2	Low	-1.524	-3.625	-5.695	-	-
			Mid	-1.631	-3.677	-	-7.158	-6.586
			High	-1.370	-3.581	-5.203	-	-
	2437	6	Low	-0.880	-2.397	-5.140	-	-
			Mid	-1.922	-3.365	-	-7.115	-6.134
			High	-1.223	-3.427	-5.733	-	-
	2457	10	Low	-2.109	-3.854	-5.621	-	-
			Mid	-2.132	-4.122	-	-7.387	-6.094
			High	-1.533	-3.473	-5.231	-	-
	2462	11	Low	-1.040	-3.520	-5.389	-	-
			Mid	-1.606	-3.622	-	-11.688	-8.682
			High	-1.284	-3.331	-5.331	-	-
	2467	12	Low	-12.424	-15.053	-17.958	-	-
			Mid	-13.044	-15.549	-	-20.922	-21.022
			High	-12.686	-15.916	-18.300	-	-
2472	13	Low	-15.715	-16.781	-19.294	-	-	
		Mid	-16.831	-17.433	-	-22.716	-22.664	
		High	-7.456	-18.336	-20.957	-	-	

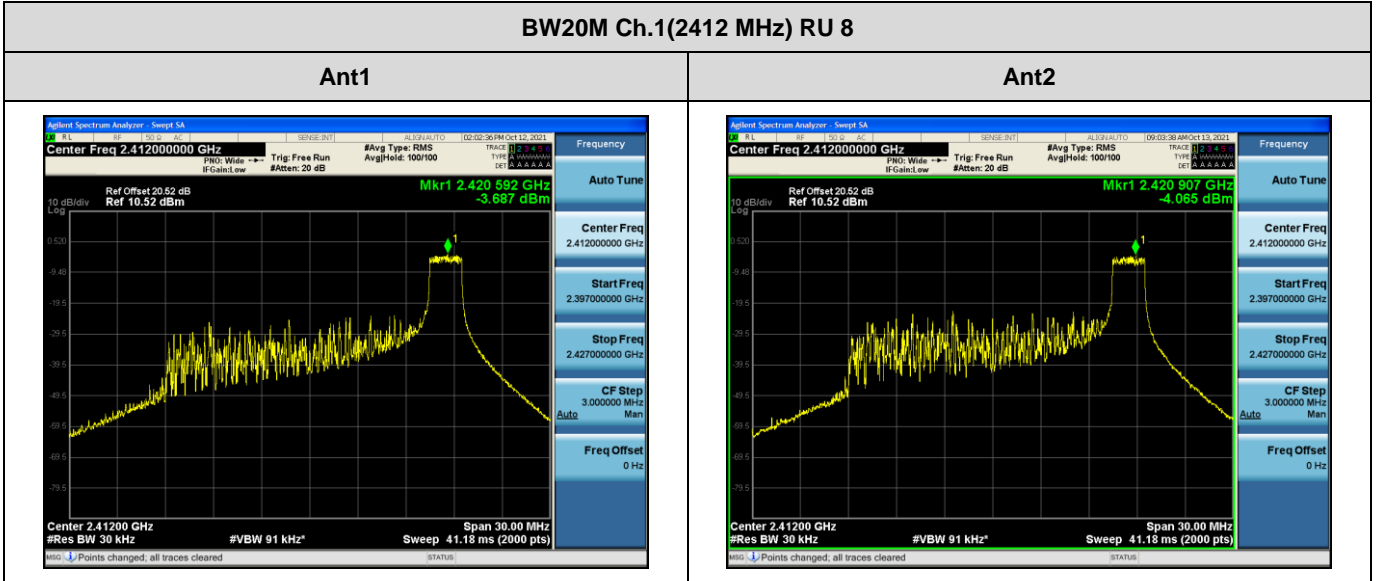
Limit : 8 dBm

Test Plots

Note:

1. In order to simplify the report, attached plots were only the worst case PSD channel.
2. Total PSD(dBm) = Measured Level + Duty Cycle Factor

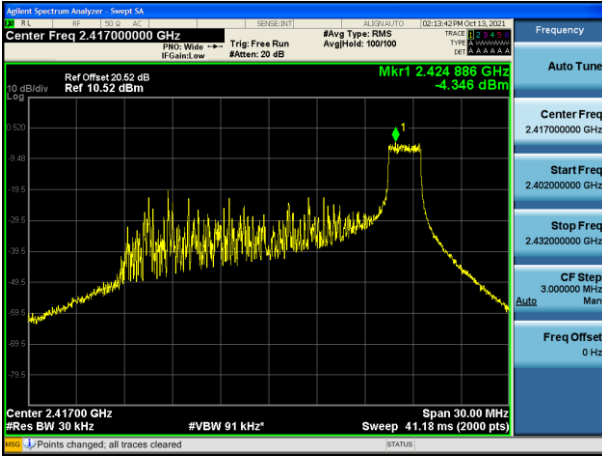
[SUM (MIMO Ant 1 + MIMO Ant 2)]



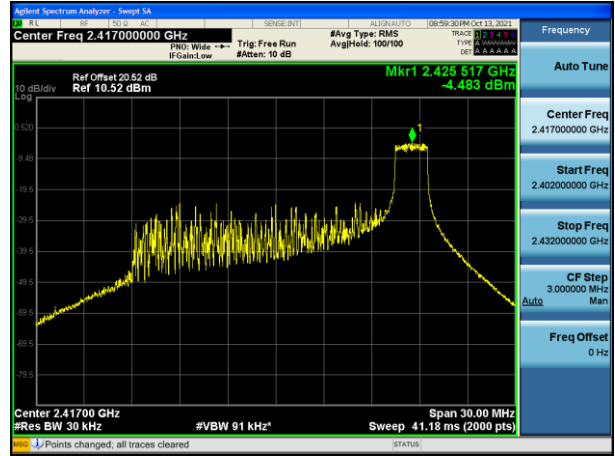
SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-0.862	0.034	-0.828

BW20M Ch.2(2417 MHz) RU 8

Ant1



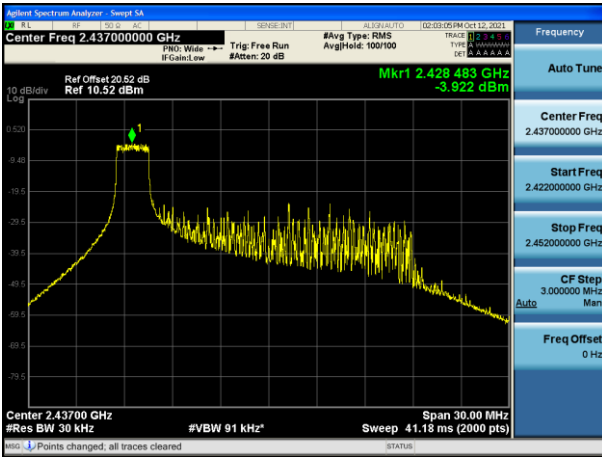
Ant2



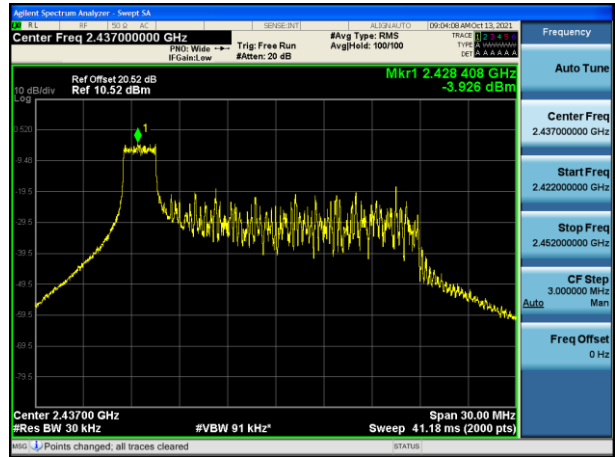
SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-1.404	0.034	-1.370

BW20M Ch.6(2437 MHz) RU 0

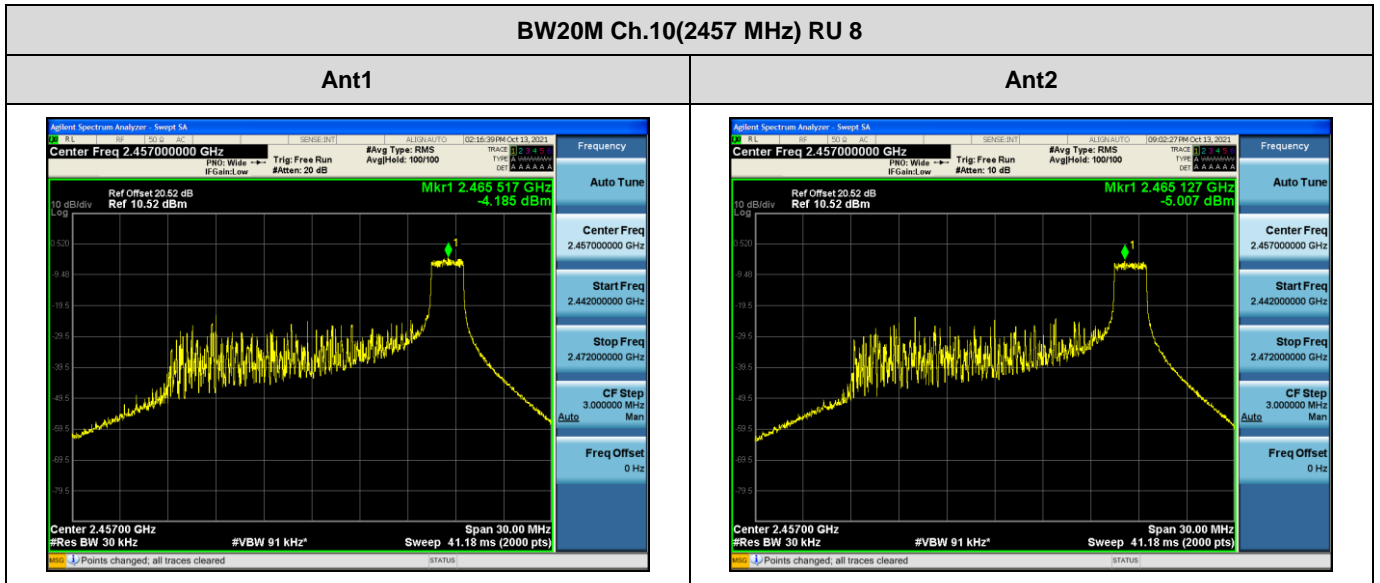
Ant1



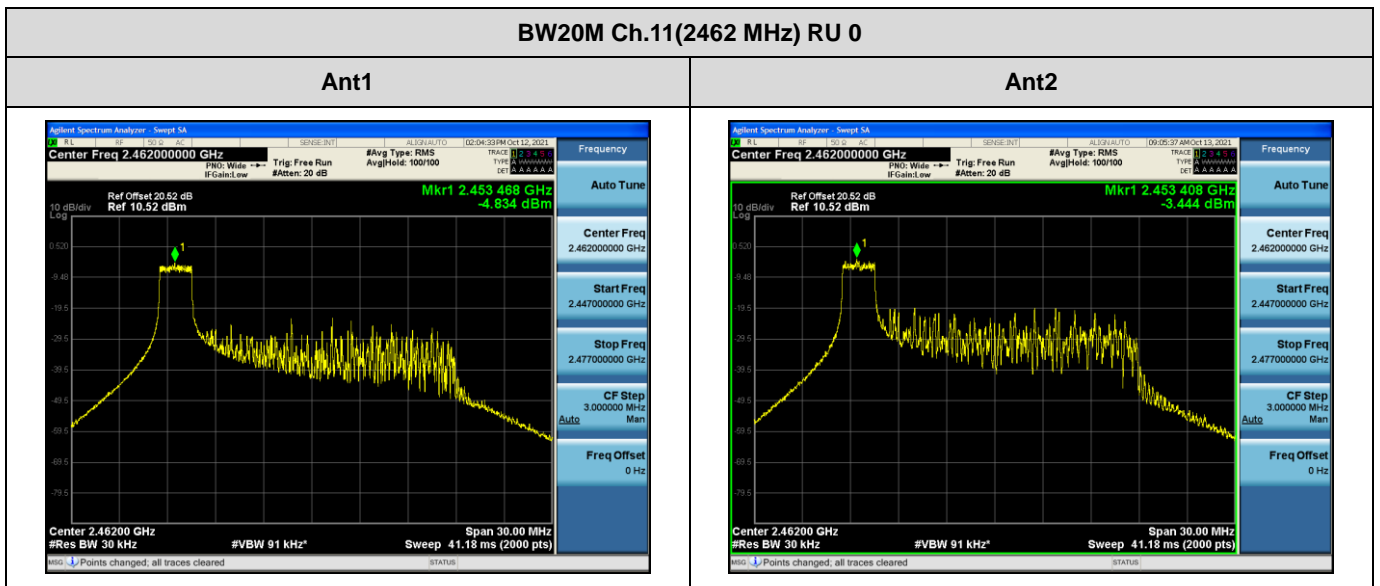
Ant2



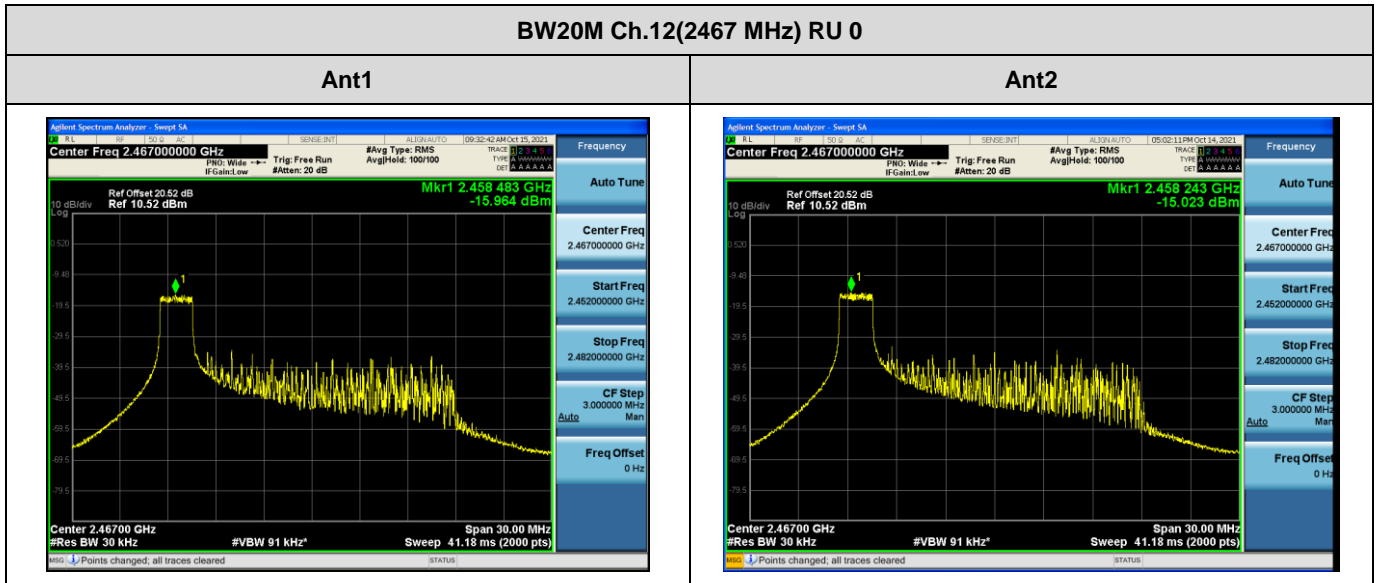
SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-0.914	0.034	-0.880



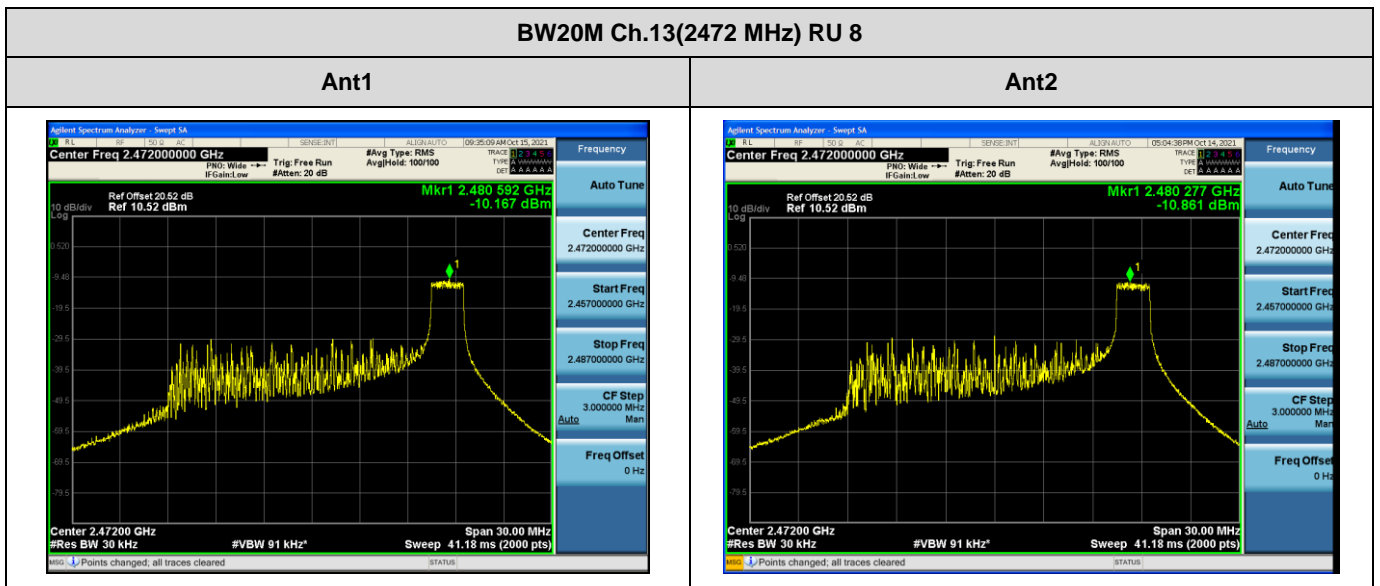
SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-1.567	0.081	-1.533



SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-1.074	0.034	-1.040



SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-12.458	0.034	-12.424



SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-7.490	0.034	-7.456

9.5 BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS

Band Edge

[MIMO Ant1]

BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)		
					26 T	52 T	106 T
HE20	2412	1	Low	Lowest Bandedge	33.054	31.792	33.622
	2417	2	Low	Lowest Bandedge	33.853	31.017	34.692
	2457	10	High	Highest Bandedge	59.071	57.497	49.047
	2462	11	High	Highest Bandedge	57.220	54.823	51.191
	2467	12	High	Highest Bandedge	46.759	43.863	42.070
	2472	13	High	Highest Bandedge	31.153	31.090	31.539

Limit : 30 dBc

BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)	
					242 T	SU
HE20	2412	1	Mid	Lowest Bandedge	34.729	34.307
	2417	2		Lowest Bandedge	34.276	32.602
	2457	10		Highest Bandedge	42.860	42.070
	2462	11		Highest Bandedge	48.230	44.622
	2467	12		Highest Bandedge	39.634	39.339
	2472	13		Highest Bandedge	32.714	33.639

Limit : 30 dBc

[MIMO Ant2]

BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)		
					26 T	52 T	106 T
HE20	2412	1	Low	Lowest Bandedge	36.671	33.533	32.679
	2417	2	Low	Lowest Bandedge	34.484	35.315	32.421
	2457	10	High	Highest Bandedge	56.189	51.379	45.262
	2462	11	High	Highest Bandedge	56.207	52.476	44.016
	2467	12	High	Highest Bandedge	55.248	53.313	49.587
	2472	13	High	Highest Bandedge	31.853	30.901	30.458

Limit : 30 dBc

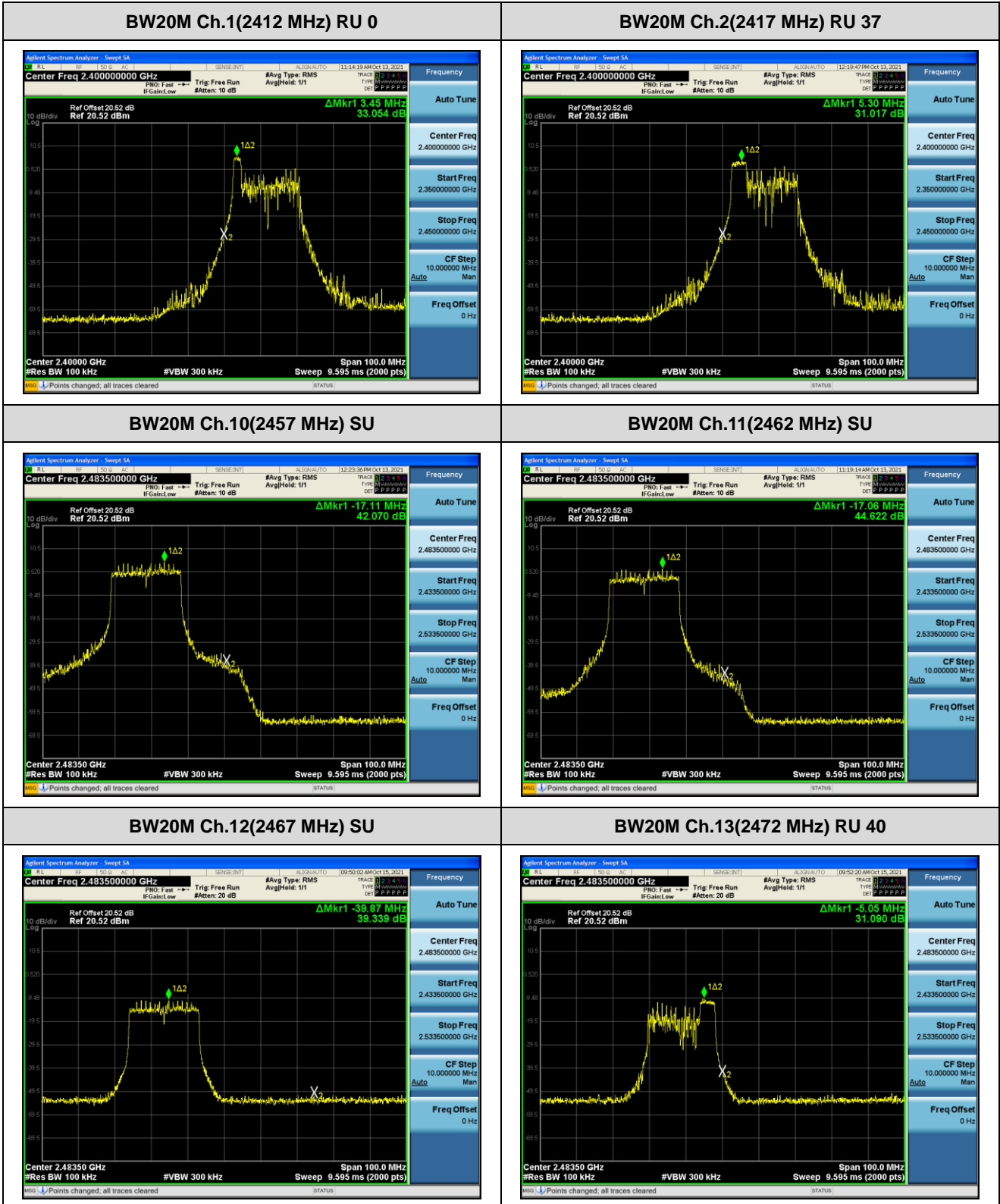
BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)	
					242 T	SU
HE20	2412	1	Mid	Lowest Bandedge	35.108	35.672
	2417	2		Lowest Bandedge	32.579	34.200
	2457	10		Highest Bandedge	39.329	35.574
	2462	11		Highest Bandedge	48.815	46.485
	2467	12		Highest Bandedge	49.660	48.325
	2472	13		Highest Bandedge	33.838	33.510

Limit : 30 dBc

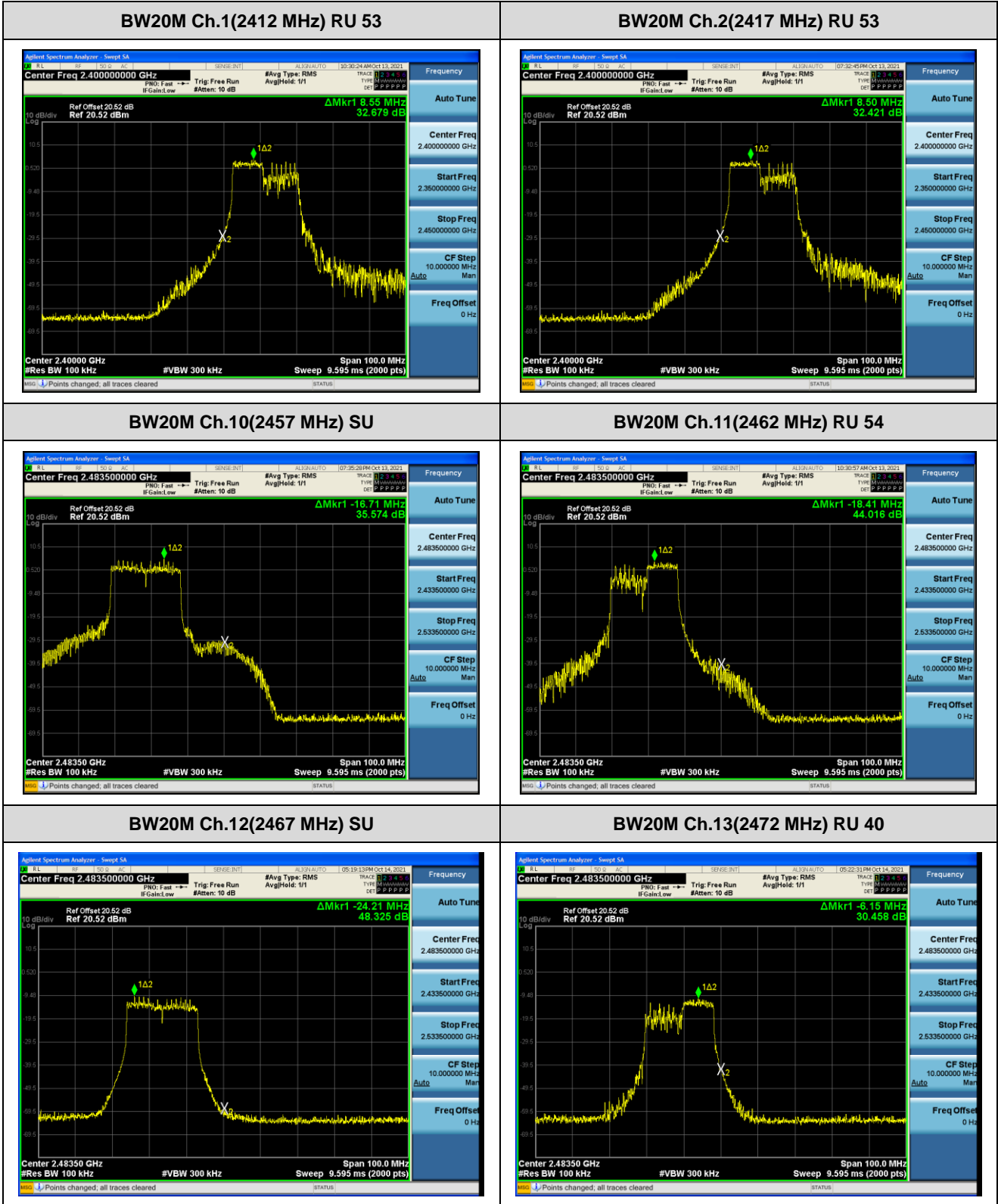
Test Plots

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

[MIMO Ant1]



[MIMO Ant2]



Conducted Spurious Emissions

[MIMO ANT1]

BW	Frequency [MHz]	Channel No.	RU Index	Result (dB)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	51.113	49.770	50.676	-	-
			Mid	52.829	51.243	-	46.148	48.300
			High	53.846	51.514	51.402	-	-
	2417	2	Low	51.575	50.237	49.008	-	-
			Mid	54.048	49.985	-	49.931	49.992
			High	53.616	51.888	50.305	-	-
	2437	6	Low	54.186	51.924	49.843	-	-
			Mid	52.059	51.164	-	48.436	50.115
			High	52.431	51.919	48.295	-	-
	2457	10	Low	52.812	50.543	48.938	-	-
			Mid	52.796	50.050	-	49.091	50.653
			High	53.810	51.706	49.992	-	-
	2462	11	Low	51.202	50.756	48.641	-	-
			Mid	52.020	51.034	-	42.989	47.814
			High	53.672	52.518	50.113	-	-
	2467	12	Low	38.514	38.869	36.763	-	-
			Mid	35.910	39.606	-	35.346	33.367
			High	36.684	40.260	35.768	-	-
	2472	13	Low	43.119	39.000	35.982	-	-
			Mid	41.287	37.498	-	35.807	34.303
			High	42.133	37.511	33.937	-	-

Limit : 30 dBc

[MIMO ANT2]

BW	Frequency [MHz]	Channel No.	RU Index	Result (dB)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	53.688	51.854	50.491	-	-
			Mid	51.723	50.663	-	46.517	49.648
			High	54.809	51.709	49.523	-	-
	2417	2	Low	52.147	51.337	50.062	-	-
			Mid	53.333	51.689	-	50.918	51.580
			High	54.466	50.693	50.503	-	-
	2437	6	Low	54.483	52.355	50.415	-	-
			Mid	54.870	51.712	-	50.664	50.274
			High	54.521	53.274	50.039	-	-
	2457	10	Low	53.425	52.066	50.772	-	-
			Mid	51.735	51.731	-	49.877	50.152
			High	53.106	50.792	49.817	-	-
	2462	11	Low	53.837	51.786	50.704	-	-
			Mid	53.304	51.950	-	45.512	48.284
			High	52.025	52.314	50.533	-	-
	2467	12	Low	37.915	40.446	36.634	-	-
			Mid	38.088	39.535	-	36.207	37.247
			High	38.399	39.288	35.486	-	-
2472	13	Low	43.756	37.031	34.566	-	-	
		Mid	43.479	37.824	-	34.671	32.751	
		High	40.970	37.699	34.539	-	-	

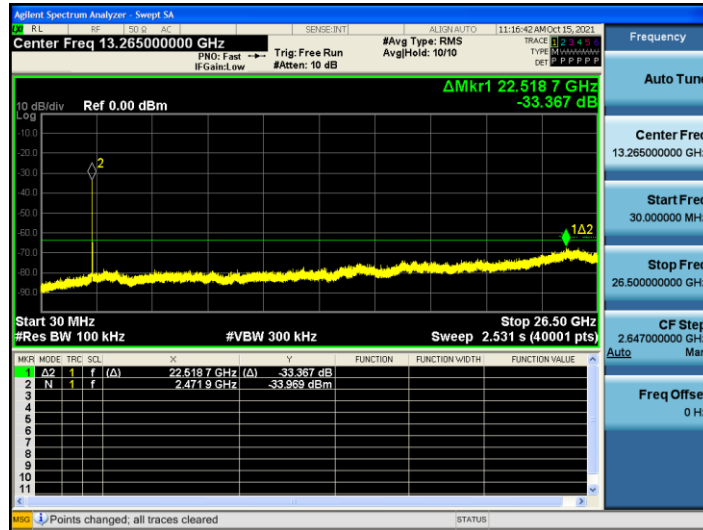
Limit : 30 dBc

☐ Test Plots

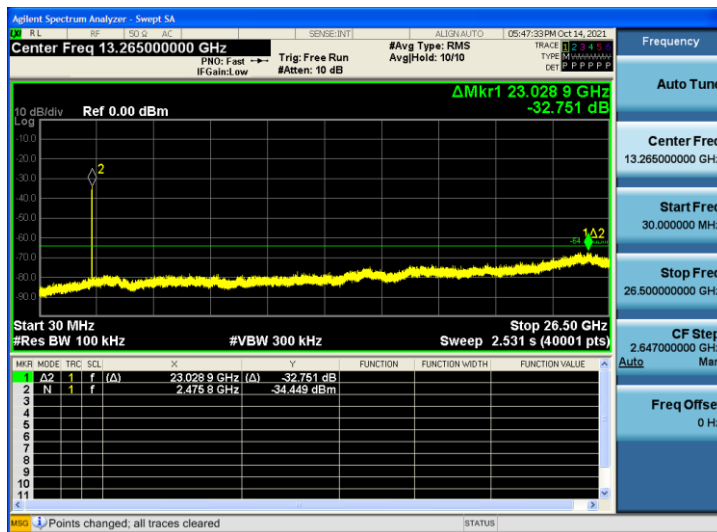
Note:

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

[MIMO ANT1] BW20M Ch.12(2 467 MHz) SU



[MIMO ANT2] BW20M Ch.13(2 472 MHz) SU



9.6 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30 MHz

Frequency	Measured Level	A.F+C.L+D.F	POL	Total	Limit	Margin
[MHz]	[dBµV/m]	[dB/m]	[H/V]	[dBµV/m]	[dBµV/m]	[dB]
No Critical peaks found						

Note:

1. The Measured 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 = $40 \log(\text{specific distance} / \text{test distance})$ (dB)
3. Limit line = specific Limits (dBµV) + Distance extrapolation factor
4. Radiated test is performed with hopping off.

Frequency Range : Below 1 GHz

Frequency	Measured Level	A.F+C.L	POL	Total	Limit	Margin
[MHz]	[dBµV/m]	[dB/m]	[H/V]	[dBµV/m]	[dBµV/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.
2. Radiated test is performed with hopping off.

Frequency Range : Above 1 GHz

[MIMO]

1. 26 Tone

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412
Channel No.	01 Ch
RU offset	4

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4824	44.87	0.00	5.27	V	50.14	73.98	23.84	PK
4824	32.28	0.03	5.27	V	37.58	53.98	16.40	AV
7236	39.96	0.00	12.86	V	52.82	73.98	21.16	PK
7236	26.01	0.03	12.86	V	38.90	53.98	15.08	AV
4824	46.33	0.00	5.27	H	51.60	73.98	22.38	PK
4824	33.55	0.03	5.27	H	38.85	53.98	15.13	AV
7236	42.05	0.00	12.86	H	54.91	73.98	19.07	PK
7236	26.95	0.03	12.86	H	39.84	53.98	14.14	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437
Channel No.	06 Ch
RU offset	4

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4874	42.20	0.00	5.43	V	47.63	73.98	26.35	PK
4874	30.12	0.03	5.43	V	35.58	53.98	18.40	AV
7311	41.31	0.00	12.90	V	54.21	73.98	19.77	PK
7311	27.08	0.03	12.90	V	40.01	53.98	13.97	AV
4874	42.42	0.00	5.43	H	47.85	73.98	26.13	PK
4874	30.37	0.03	5.43	H	35.83	53.98	18.15	AV
7311	42.23	0.00	12.90	H	55.13	73.98	18.85	PK
7311	27.37	0.03	12.90	H	40.30	53.98	13.68	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462
Channel No.	11 Ch
RU offset	4

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4924	44.32	0.00	5.94	V	50.26	73.98	23.72	PK
4924	31.76	0.03	5.94	V	37.73	53.98	16.25	AV
7386	43.24	0.00	12.66	V	55.90	73.98	18.08	PK
7386	27.03	0.03	12.66	V	39.72	53.98	14.26	AV
4924	45.26	0.00	5.94	H	51.20	73.98	22.78	PK
4924	32.58	0.03	5.94	H	38.55	53.98	15.43	AV
7386	44.45	0.00	12.66	H	57.11	73.98	16.87	PK
7386	28.00	0.03	12.66	H	40.69	53.98	13.29	AV

2. 52 Tone

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412
Channel No.	01 Ch
RU offset	38

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4824	44.85	0.00	5.27	V	50.12	73.98	23.86	PK
4824	31.26	0.04	5.27	V	36.57	53.98	17.41	AV
7236	40.21	0.00	12.86	V	53.07	73.98	20.91	PK
7236	26.13	0.04	12.86	V	39.03	53.98	14.95	AV
4824	46.31	0.00	5.27	H	51.58	73.98	22.40	PK
4824	32.72	0.04	5.27	H	38.03	53.98	15.95	AV
7236	41.98	0.00	12.86	H	54.84	73.98	19.14	PK
7236	27.40	0.04	12.86	H	40.30	53.98	13.68	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437
Channel No.	06 Ch
RU offset	38

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4874	42.45	0.00	5.43	V	47.88	73.98	26.10	PK
4874	29.94	0.04	5.43	V	35.41	53.98	18.57	AV
7311	42.43	0.00	12.90	V	55.33	73.98	18.65	PK
7311	27.41	0.04	12.90	V	40.35	53.98	13.63	AV
4874	42.84	0.00	5.43	H	48.27	73.98	25.71	PK
4874	30.27	0.04	5.43	H	35.74	53.98	18.24	AV
7311	42.81	0.00	12.90	H	55.71	73.98	18.27	PK
7311	27.59	0.04	12.90	H	40.53	53.98	13.45	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2462
 Channel No.: 11 Ch
 RU offset: 38

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4924	44.68	0.00	5.94	V	50.62	73.98	23.36	PK
4924	31.34	0.04	5.94	V	37.32	53.98	16.66	AV
7386	45.87	0.00	12.66	V	58.53	73.98	15.45	PK
7386	28.12	0.04	12.66	V	40.82	53.98	13.16	AV
4924	45.61	0.00	5.94	H	51.55	73.98	22.43	PK
4924	32.22	0.04	5.94	H	38.20	53.98	15.78	AV
7386	46.73	0.00	12.66	H	59.39	73.98	14.59	PK
7386	29.20	0.04	12.66	H	41.90	53.98	12.08	AV

3. 106 Tone

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412
Channel No.	01 Ch
RU offset	53

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4824	42.68	0.00	5.27	V	47.95	73.98	26.03	PK
4824	30.19	0.04	5.27	V	35.50	53.98	18.48	AV
7236	39.22	0.00	12.86	V	52.08	73.98	21.90	PK
7236	26.03	0.04	12.86	V	38.93	53.98	15.05	AV
4824	44.27	0.00	5.27	H	49.54	73.98	24.44	PK
4824	31.38	0.04	5.27	H	36.69	53.98	17.29	AV
7236	40.75	0.00	12.86	H	53.61	73.98	20.37	PK
7236	27.14	0.04	12.86	H	40.04	53.98	13.94	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437
Channel No.	06 Ch
RU offset	53

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4874	41.13	0.00	5.43	V	46.56	73.98	27.42	PK
4874	29.87	0.04	5.43	V	35.34	53.98	18.64	AV
7311	41.38	0.00	12.90	V	54.28	73.98	19.70	PK
7311	27.23	0.04	12.90	V	40.17	53.98	13.81	AV
4874	42.41	0.00	5.43	H	47.84	73.98	26.14	PK
4874	30.05	0.04	5.43	H	35.52	53.98	18.46	AV
7311	41.57	0.00	12.90	H	54.47	73.98	19.51	PK
7311	27.43	0.04	12.90	H	40.37	53.98	13.61	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462
Channel No.	11 Ch
RU offset	54

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4924	43.24	0.00	5.94	V	49.18	73.98	24.80	PK
4924	30.62	0.04	5.94	V	36.60	53.98	17.38	AV
7386	44.59	0.00	12.66	V	57.25	73.98	16.73	PK
7386	28.67	0.04	12.66	V	41.37	53.98	12.61	AV
4924	44.40	0.00	5.94	H	50.34	73.98	23.64	PK
4924	31.55	0.04	5.94	H	37.53	53.98	16.45	AV
7386	45.52	0.00	12.66	H	58.18	73.98	15.80	PK
7386	29.40	0.04	12.66	H	42.10	53.98	11.88	AV

4. 242 Tone

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2412
 Channel No.: 01 Ch
 RU offset: 61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4824	41.83	0.00	5.27	V	47.10	73.98	26.88	PK
4824	29.22	0.07	5.27	V	34.56	53.98	19.42	AV
7236	38.63	0.00	12.86	V	51.49	73.98	22.49	PK
7236	25.85	0.07	12.86	V	38.78	53.98	15.20	AV
4824	42.03	0.00	5.27	H	47.30	73.98	26.68	PK
4824	29.74	0.07	5.27	H	35.08	53.98	18.90	AV
7236	38.31	0.00	12.86	H	51.17	73.98	22.81	PK
7236	25.73	0.07	12.86	H	38.66	53.98	15.32	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2437
 Channel No.: 06 Ch
 RU offset: 61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4874	41.75	0.00	5.43	V	47.18	73.98	26.80	PK
4874	29.62	0.07	5.43	V	35.12	53.98	18.86	AV
7311	42.34	0.00	12.90	V	55.24	73.98	18.74	PK
7311	28.16	0.07	12.90	V	41.13	53.98	12.85	AV
4874	41.36	0.00	5.43	H	46.79	73.98	27.19	PK
4874	29.14	0.07	5.43	H	34.64	53.98	19.34	AV
7311	44.55	0.00	12.90	H	57.45	73.98	16.53	PK
7311	29.06	0.07	12.90	H	42.03	53.98	11.95	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462
Channel No.	11 Ch
RU offset	61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4924	40.98	0.00	5.94	V	46.92	73.98	27.06	PK
4924	28.96	0.07	5.94	V	34.97	53.98	19.01	AV
7386	38.26	0.00	12.66	V	50.92	73.98	23.06	PK
7386	26.11	0.07	12.66	V	38.84	53.98	15.14	AV
4924	41.60	0.00	5.94	H	47.54	73.98	26.44	PK
4924	29.01	0.07	5.94	H	35.02	53.98	18.96	AV
7386	38.10	0.00	12.66	H	50.76	73.98	23.22	PK
7386	26.04	0.07	12.66	H	38.77	53.98	15.21	AV

5. SU

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412
Channel No.	01 Ch
RU offset	61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4824	42.28	0.00	5.27	V	47.55	73.98	26.43	PK
4824	30.20	0.01	5.27	V	35.48	53.98	18.50	AV
7236	37.98	0.00	12.86	V	50.84	73.98	23.14	PK
7236	25.78	0.01	12.86	V	38.65	53.98	15.33	AV
4824	44.10	0.00	5.27	H	49.37	73.98	24.61	PK
4824	31.51	0.01	5.27	H	36.79	53.98	17.19	AV
7236	39.87	0.00	12.86	H	52.73	73.98	21.25	PK
7236	25.81	0.01	12.86	H	38.68	53.98	15.30	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437
Channel No.	06 Ch
RU offset	61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4874	41.82	0.00	5.43	V	47.25	73.98	26.73	PK
4874	29.13	0.01	5.43	V	34.57	53.98	19.41	AV
7311	48.30	0.00	12.90	V	61.20	73.98	12.78	PK
7311	30.99	0.01	12.90	V	43.90	53.98	10.08	AV
4874	41.16	0.00	5.43	H	46.59	73.98	27.39	PK
4874	28.67	0.01	5.43	H	34.11	53.98	19.87	AV
7311	50.53	0.00	12.90	H	63.43	73.98	10.55	PK
7311	32.34	0.01	12.90	H	45.25	53.98	8.73	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462
Channel No.	11 Ch
RU offset	61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4924	41.82	0.00	5.94	V	47.76	73.98	26.22	PK
4924	29.34	0.01	5.94	V	35.29	53.98	18.69	AV
7386	28.17	0.00	12.66	V	40.83	73.98	33.15	PK
7386	26.20	0.01	12.66	V	38.87	53.98	15.11	AV
4924	42.66	0.00	5.94	H	48.60	73.98	25.38	PK
4924	30.00	0.01	5.94	H	35.95	53.98	18.03	AV
7386	39.21	0.00	12.66	H	51.87	73.98	22.11	PK
7386	26.75	0.01	12.66	H	39.42	53.98	14.56	AV

[DBS Mode]

Test case 3

2.4 GHz 802.11ax(HE20) SU ch.6 & 5 GHz 802.11ax(HE20) SU ch.36

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4874	55.29	0.00	7.60	V	62.89	73.98	11.09	PK
4874	41.85	0.01	7.60	V	49.46	53.98	4.52	AV
7311	36.96	0.00	14.96	V	51.92	73.98	22.06	PK
7311	25.38	0.01	14.96	V	40.35	53.98	13.63	AV
4874	56.00	0.00	7.60	H	63.60	73.98	10.38	PK
4874	41.93	0.01	7.60	H	49.54	53.98	4.44	AV
7311	37.39	0.00	14.96	H	52.35	73.98	21.63	PK
7311	25.62	0.01	14.96	H	40.59	53.98	13.39	AV

Test case 4

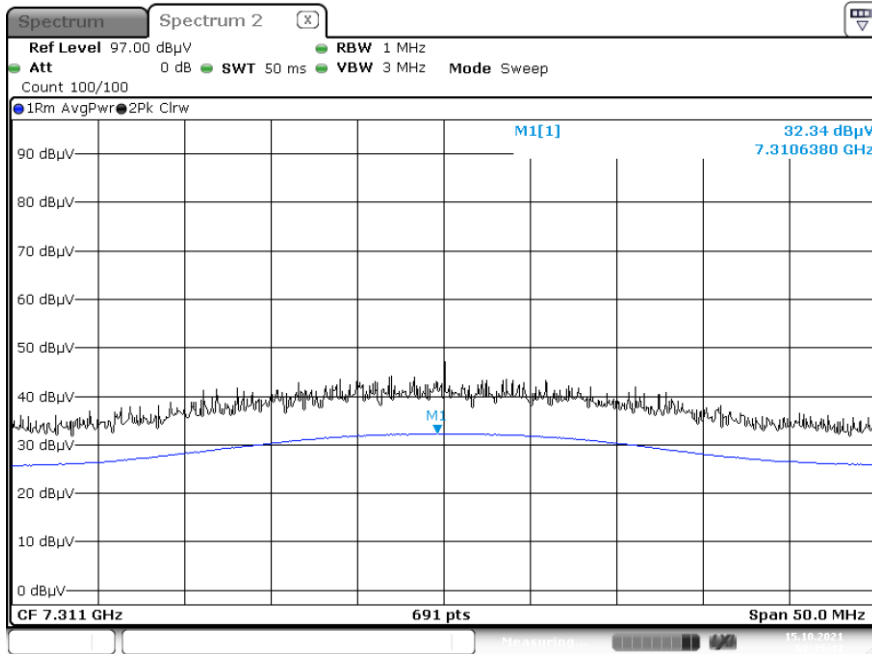
2.4 GHz 802.11ax(HE20) 26 Tone RU4 ch.1 & 5 GHz 802.11ax(HE20) 26 Tone RU4 ch.36

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4824	58.28	0.00	8.22	V	66.50	73.98	7.48	PK
4824	41.73	0.03	8.22	V	49.98	53.98	4.00	AV
7236	37.56	0.00	15.25	V	52.81	73.98	21.17	PK
7236	25.50	0.03	15.25	V	40.78	53.98	13.20	AV
4824	56.05	0.00	8.22	H	64.27	73.98	9.71	PK
4824	40.67	0.03	8.22	H	48.92	53.98	5.06	AV
7236	37.32	0.00	15.25	H	52.57	73.98	21.41	PK
7236	25.48	0.03	15.25	H	40.76	53.98	13.22	AV

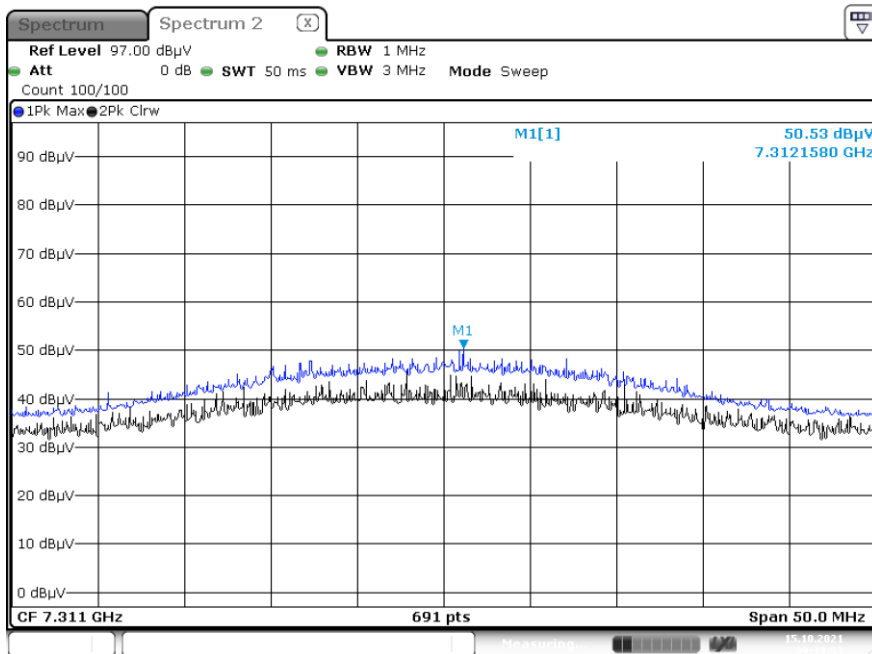
Test Plots

[MIMO] (SU) – Y-H

Radiated Spurious Emissions plot – Average result (802.11ax(HE20), Ch.6 3rd Harmonic)



Radiated Spurious Emissions plot – Peak result (802.11ax(HE20), Ch.6 3rd Harmonic)

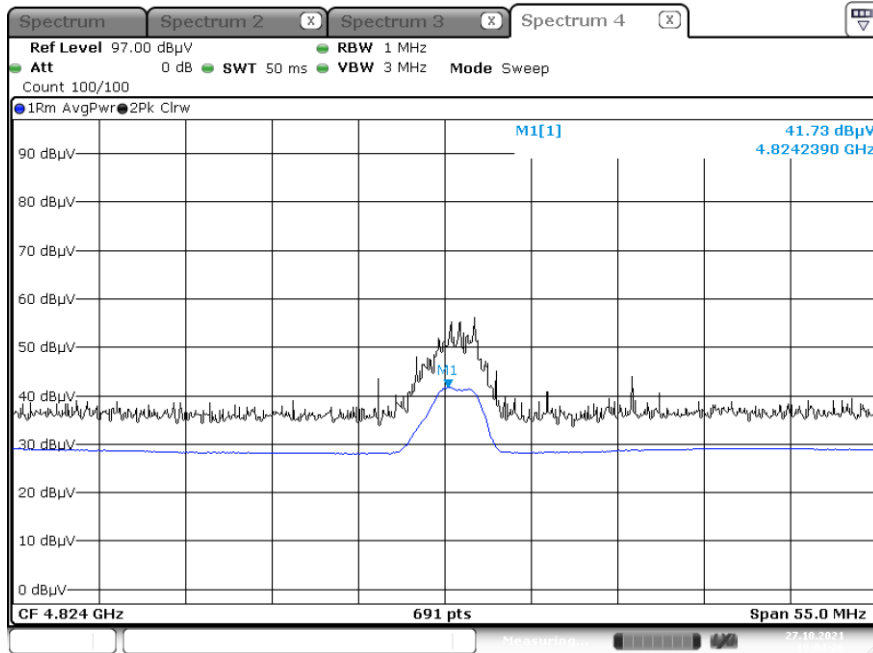


Note:

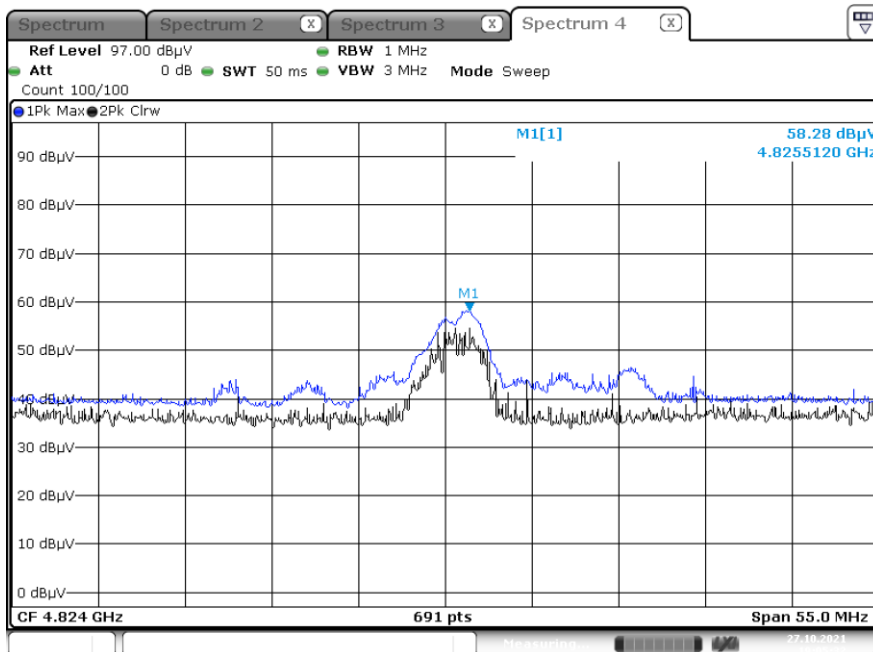
Plot of worst case are only reported.

[RSDB]

Radiated Spurious Emissions plot – Average Result (Test case 4_ Z-H_2nd Harmonic)



Radiated Spurious Emissions plot – Peak Result (Test case 4_ Z-H_2nd Harmonic)



Note: Plot of worst case are only reported.

9.7 RADIATED RESTRICTED BAND EDGES

[MIMO]

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]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	53.53	0.00	2.99	H	56.52	73.98	17.46	PK
2390.0	38.12	0.03	2.99	H	41.14	53.98	12.84	AV
2390.0	53.83	0.00	2.99	V	56.82	73.98	17.16	PK
2390.0	38.18	0.03	2.99	V	41.20	53.98	12.78	AV
2483.5	58.40	0.00	4.20	H	62.60	73.98	11.38	PK
2483.5	38.07	0.03	4.20	H	42.30	53.98	11.68	AV
2483.5	58.18	0.00	4.20	V	62.38	73.98	11.60	PK
2483.5	37.85	0.03	4.20	V	42.08	53.98	11.90	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2417 MHz
Channel No.	2 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	54.61	0.00	2.99	H	57.60	73.98	16.38	PK
2390.0	38.12	0.03	2.99	H	41.14	53.98	12.84	AV
2390.0	54.80	0.00	2.99	V	57.79	73.98	16.19	PK
2390.0	38.23	0.03	2.99	V	41.25	53.98	12.73	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2457 MHz
 Channel No.: 10 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	53.60	0.00	4.20	H	57.80	73.98	16.18	PK
2483.5	37.97	0.03	4.20	H	42.20	53.98	11.78	AV
2483.5	53.12	0.00	4.20	V	57.32	73.98	16.66	PK
2483.5	37.43	0.03	4.20	V	41.66	53.98	12.32	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2467 MHz
 Channel No.: 12 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	54.29	0.00	4.20	H	58.49	73.98	15.49	PK
2483.5	37.26	0.03	4.20	H	41.49	53.98	12.49	AV
2483.5	53.87	0.00	4.20	V	58.07	73.98	15.91	PK
2483.5	37.01	0.03	4.20	V	41.24	53.98	12.74	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2472 MHz
 Channel No.: 13 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5 [#] (2484)	60.83	0.00	4.20	H	65.03	73.98	8.95	PK
2483.5 [#] (2484)	46.18	0.03	4.20	H	50.41	53.98	3.57	AV
2483.5 [#] (2485)	56.02	0.00	4.20	H	60.22	73.98	13.76	PK
2483.5 [#] (2485)	41.69	0.03	4.20	H	45.92	53.98	8.06	AV
2485.5~2500	63.58	0.00	4.20	H	67.78	73.98	6.20	PK
2485.5~2500	40.92	0.03	4.20	H	45.15	53.98	8.83	AV

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

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]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	57.09	0.00	2.99	H	60.08	73.98	13.90	PK
2390.0	39.34	0.04	2.99	H	42.37	53.98	11.61	AV
2390.0	57.61	0.00	2.99	V	60.60	73.98	13.38	PK
2390.0	39.72	0.04	2.99	V	42.75	53.98	11.23	AV
2483.5	61.35	0.00	4.20	H	65.55	73.98	8.43	PK
2483.5	39.19	0.04	4.20	H	43.43	53.98	10.55	AV
2483.5	61.12	0.00	4.20	V	65.32	73.98	8.66	PK
2483.5	38.93	0.04	4.20	V	43.17	53.98	10.81	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2417 MHz
 Channel No. 2 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	53.91	0.00	2.99	H	56.90	73.98	17.08	PK
2390.0	38.92	0.04	2.99	H	41.95	53.98	12.03	AV
2390.0	54.05	0.00	2.99	V	57.04	73.98	16.94	PK
2390.0	39.03	0.04	2.99	V	42.06	53.98	11.92	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2457 MHz
 Channel No.: 10 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	53.51	0.00	4.20	H	57.71	73.98	16.27	PK
2483.5	38.10	0.04	4.20	H	42.34	53.98	11.64	AV
2483.5	53.08	0.00	4.20	V	57.28	73.98	16.70	PK
2483.5	37.69	0.04	4.20	V	41.93	53.98	12.05	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2467 MHz
 Channel No.: 12 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	52.08	0.00	4.20	H	56.28	73.98	17.70	PK
2483.5	37.09	0.04	4.20	H	41.33	53.98	12.65	AV
2483.5	51.83	0.00	4.20	V	56.03	73.98	17.95	PK
2483.5	36.85	0.04	4.20	V	41.09	53.98	12.89	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2472 MHz
Channel No.	13 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5#(2484)	58.23	0.00	4.20	H	62.43	73.98	11.55	PK
2483.5#(2484)	45.08	0.04	4.20	H	49.32	53.98	4.66	AV
2483.5#(2485)	54.35	0.00	4.20	H	58.55	73.98	15.43	PK
2483.5#(2485)	40.91	0.04	4.20	H	45.15	53.98	8.83	AV
2485.5~2500	61.75	0.00	4.20	H	65.95	73.98	8.03	PK
2485.5~2500	40.55	0.04	4.20	H	44.79	53.98	9.19	AV

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

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]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	62.17	0.00	2.99	H	65.16	73.98	8.82	PK
2390.0	41.97	0.04	2.99	H	45.00	53.98	8.98	AV
2390.0	62.94	0.00	2.99	V	65.93	73.98	8.05	PK
2390.0	42.20	0.04	2.99	V	45.23	53.98	8.75	AV
2483.5	65.21	0.00	4.20	H	69.41	73.98	4.57	PK
2483.5	41.47	0.04	4.20	H	45.71	53.98	8.27	AV
2483.5	64.78	0.00	4.20	V	68.98	73.98	5.00	PK
2483.5	41.06	0.04	4.20	V	45.30	53.98	8.68	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2417 MHz
 Channel No. 2 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	62.67	0.00	2.99	H	65.66	73.98	8.32	PK
2390.0	40.01	0.04	2.99	H	43.04	53.98	10.94	AV
2390.0	62.83	0.00	2.99	V	65.82	73.98	8.16	PK
2390.0	40.14	0.04	2.99	V	43.17	53.98	10.81	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2457 MHz
 Channel No.: 10 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	59.78	0.00	4.20	H	63.98	73.98	10.00	PK
2483.5	38.50	0.04	4.20	H	42.74	53.98	11.24	AV
2483.5	59.24	0.00	4.20	V	63.44	73.98	10.54	PK
2483.5	37.89	0.04	4.20	V	42.13	53.98	11.85	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2467 MHz
 Channel No.: 12 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	51.25	0.00	4.20	H	55.45	73.98	18.53	PK
2483.5	37.18	0.04	4.20	H	41.42	53.98	12.56	AV
2483.5	50.62	0.00	4.20	V	54.82	73.98	19.16	PK
2483.5	36.67	0.04	4.20	V	40.91	53.98	13.07	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2472 MHz
Channel No.	13 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5#(2484)	56.24	0.00	4.20	H	60.44	73.98	13.54	PK
2483.5#(2484)	43.62	0.04	4.20	H	47.86	53.98	6.12	AV
2483.5#(2485)	52.33	0.00	4.20	H	56.53	73.98	17.45	PK
2483.5#(2485)	39.91	0.04	4.20	H	44.15	53.98	9.83	AV
2485.5~2500	59.28	0.00	4.20	H	63.48	73.98	10.50	PK
2485.5~2500	39.67	0.04	4.20	H	43.91	53.98	10.07	AV

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

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]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	59.58	0.00	2.99	H	62.57	73.98	11.41	PK
2390.0	47.32	0.07	2.99	H	50.38	53.98	3.60	AV
2390.0	58.96	0.00	2.99	V	61.95	73.98	12.03	PK
2390.0	46.75	0.07	2.99	V	49.81	53.98	4.17	AV
2483.5	58.65	0.00	4.20	H	62.85	73.98	11.13	PK
2483.5	45.60	0.07	4.20	H	49.87	53.98	4.11	AV
2483.5	57.78	0.00	4.20	V	61.98	73.98	12.00	PK
2483.5	44.72	0.07	4.20	V	48.99	53.98	4.99	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2417 MHz
Channel No.	2 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	60.62	0.00	2.99	H	63.61	73.98	10.37	PK
2390.0	46.18	0.07	2.99	H	49.24	53.98	4.74	AV
2390.0	59.85	0.00	2.99	V	62.84	73.98	11.14	PK
2390.0	45.47	0.07	2.99	V	48.53	53.98	5.45	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2457 MHz
 Channel No.: 10 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5#(2484)	58.60	0.00	4.20	H	62.80	73.98	11.18	PK
2483.5#(2484)	46.06	0.07	4.20	H	50.33	53.98	3.65	AV
2483.5#(2485)	54.05	0.00	4.20	V	58.25	73.98	15.73	PK
2483.5#(2485)	42.38	0.07	4.20	V	46.65	53.98	7.33	AV
2485.5~2500	59.45	0.00	4.20	V	63.65	73.98	10.33	PK
2485.5~2500	42.18	0.07	4.20	V	46.45	53.98	7.53	AV

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

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2467 MHz
 Channel No.: 12 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	48.02	0.00	4.20	H	52.22	73.98	21.76	PK
2483.5	35.31	0.07	4.20	H	39.58	53.98	14.40	AV
2483.5	47.28	0.00	4.20	V	51.48	73.98	22.50	PK
2483.5	34.79	0.07	4.20	V	39.06	53.98	14.92	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2472 MHz
Channel No.	13 Ch

Frequency [MHz]	Measured Level [dB μ V]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Measurement Type
2483.5	65.20	0.00	4.20	H	69.40	73.98	4.58	PK
2483.5	43.94	0.07	4.20	H	48.21	53.98	5.77	AV
2483.5	64.72	0.00	4.20	V	68.92	73.98	5.06	PK
2483.5	43.26	0.07	4.20	V	47.53	53.98	6.45	AV

5. SU

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

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	62.68	0.00	2.99	H	65.67	73.98	8.31	PK
2390.0	47.85	0.01	2.99	H	50.85	53.98	3.13	AV
2390.0	61.89	0.00	2.99	V	64.88	73.98	9.10	PK
2390.0	47.02	0.01	2.99	V	50.02	53.98	3.96	AV
2483.5	60.18	0.00	4.20	H	64.38	73.98	9.60	PK
2483.5	45.00	0.01	4.20	H	49.21	53.98	4.77	AV
2483.5	59.31	0.00	4.20	V	63.51	73.98	10.47	PK
2483.5	44.16	0.01	4.20	V	48.37	53.98	5.61	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2417 MHz
 Channel No. 2 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	62.02	0.00	2.99	H	65.01	73.98	8.97	PK
2390.0	47.24	0.01	2.99	H	50.24	53.98	3.74	AV
2390.0	61.18	0.00	2.99	V	64.17	73.98	9.81	PK
2390.0	46.66	0.01	2.99	V	49.66	53.98	4.32	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2457 MHz
 Channel No.: 10 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	62.22	0.00	4.20	H	66.42	73.98	7.56	PK
2483.5	45.12	0.01	4.20	H	49.33	53.98	4.65	AV
2483.5	61.19	0.00	4.20	V	65.39	73.98	8.59	PK
2483.5	44.66	0.01	4.20	V	48.87	53.98	5.11	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2467 MHz
 Channel No.: 12 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	47.36	0.00	4.20	H	51.56	73.98	22.42	PK
2483.5	34.93	0.01	4.20	H	39.14	53.98	14.84	AV
2483.5	46.48	0.00	4.20	V	50.68	73.98	23.30	PK
2483.5	34.87	0.01	4.20	V	39.08	53.98	14.90	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2472 MHz
Channel No.	13 Ch

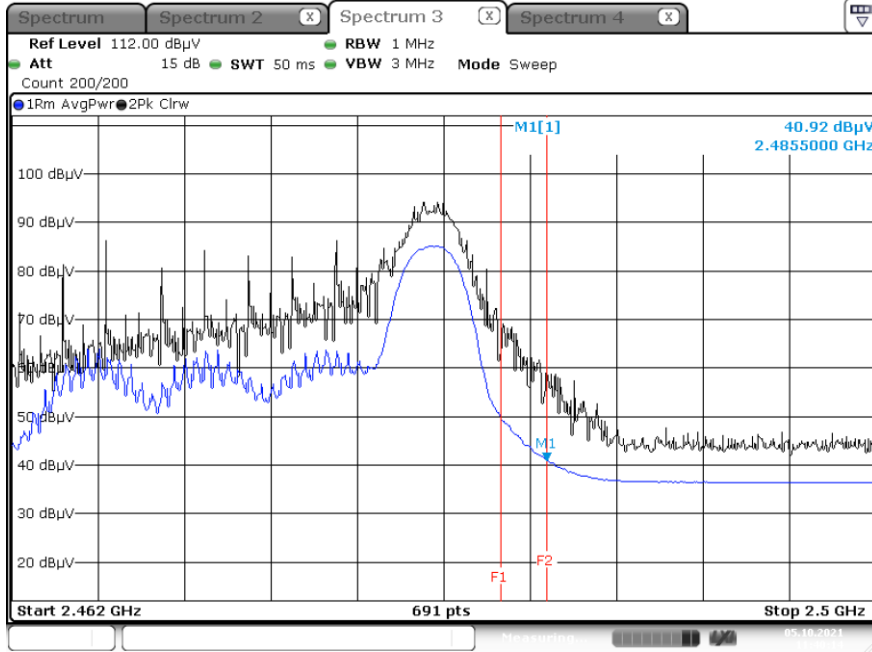
Frequency [MHz]	Measured Level [dB μ V]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F +ATT [dB/m]	ANT. POL [H/V]	Total [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Measurement Type
2483.5	62.74	0.00	4.20	H	66.94	73.98	7.04	PK
2483.5	42.76	0.01	4.20	H	46.97	53.98	7.01	AV
2483.5	61.24	0.00	4.20	V	65.44	73.98	8.54	PK
2483.5	42.17	0.01	4.20	V	46.38	53.98	7.60	AV

■ Test Plots (26 Tone, RU 8) Z-H

[MIMO]

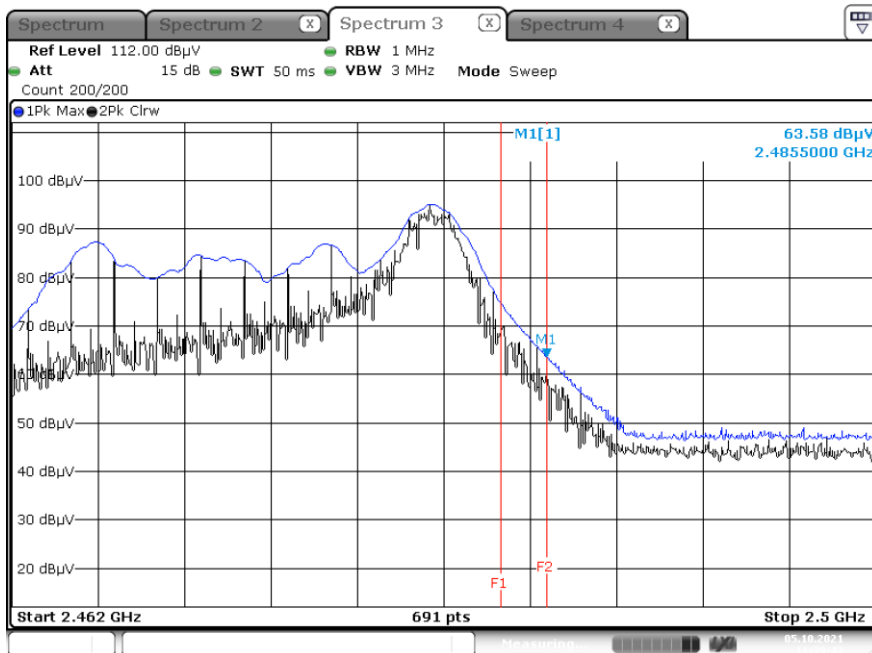
Radiated Restricted Band Edges plot – Average result (802.11ax(HE20) Ch.13)

2 485.5 MHz ~ 2 500.0 MHz



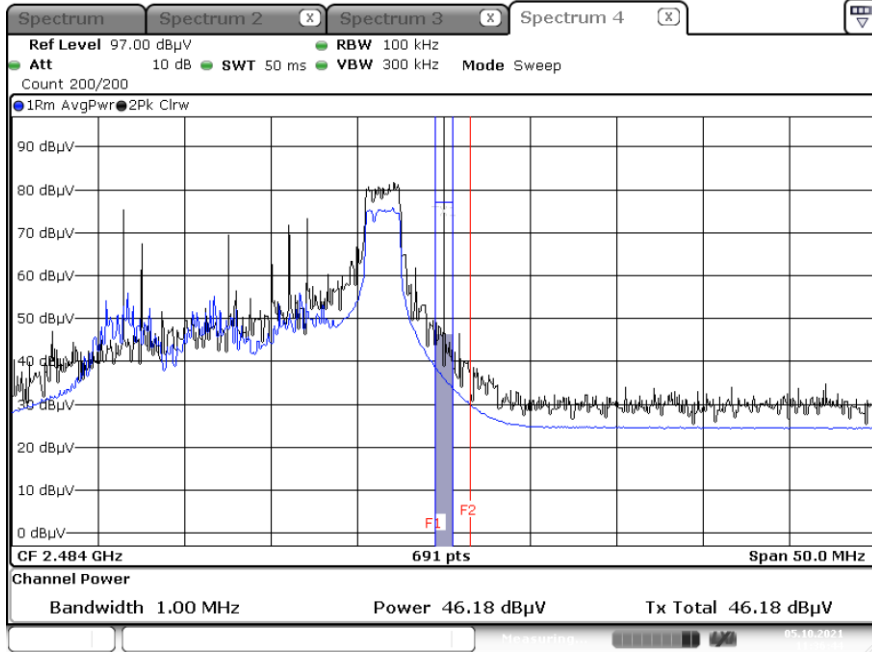
Radiated Restricted Band Edges plot – Peak result (802.11ax(HE20) Ch.13)

2 485.5 MHz ~ 2 500.0 MHz



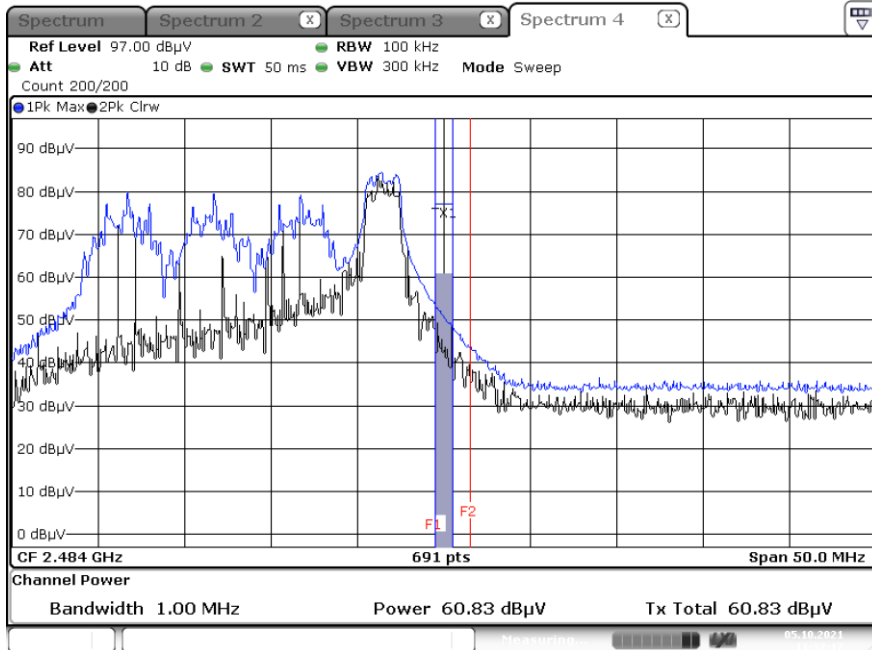
Radiated Restricted Band Edges plot – Average result (802.11ax(HE20) Ch.13)

Integration method Used 2 484.0 MHz



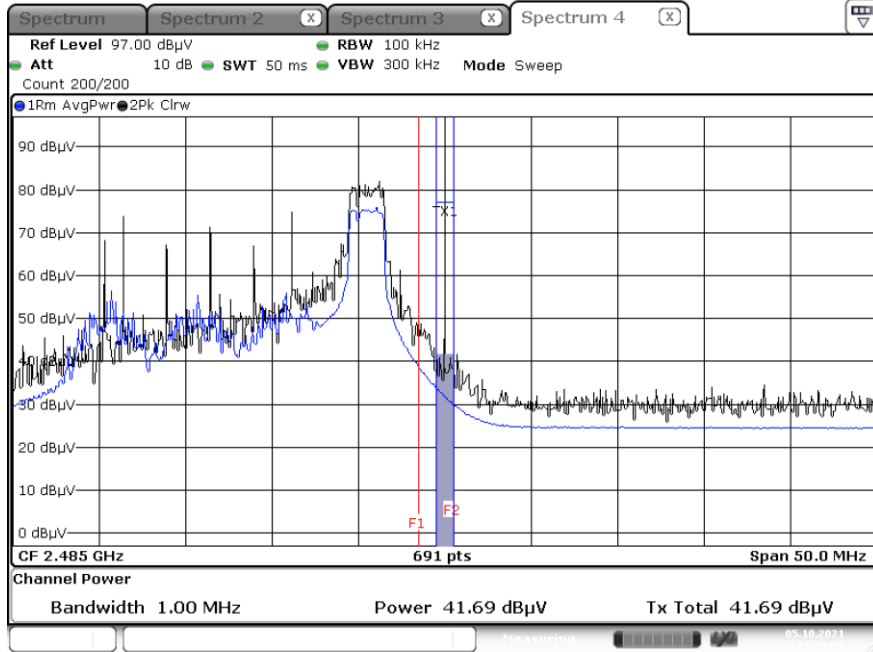
Radiated Restricted Band Edges plot – Peak result (802.11ax(HE20) Ch.13)

Integration method Used 2 484.0 MHz



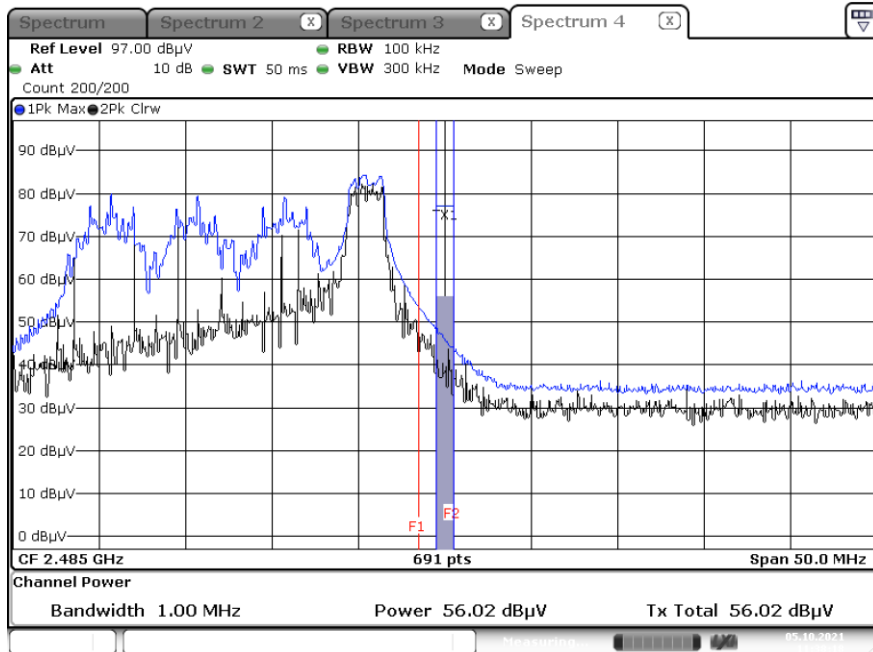
Radiated Restricted Band Edges plot – Average result (802.11ax(HE20) Ch.13)

Integration method Used 2 485.0 MHz



Radiated Restricted Band Edges plot – Peak result (802.11ax(HE20) Ch.13)

Integration method Used 2 485.0 MHz



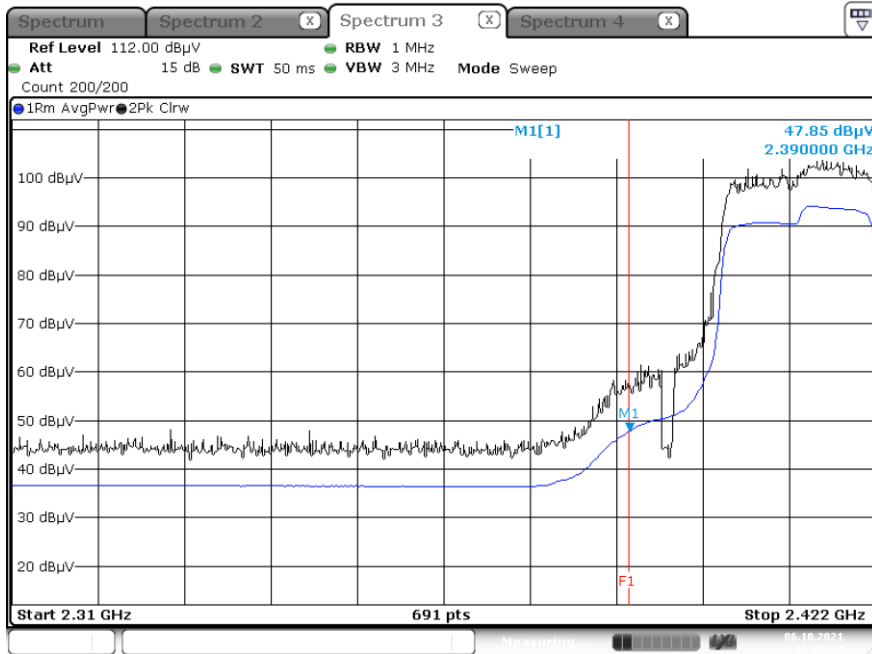
Note:

Plot of worst case are only reported.

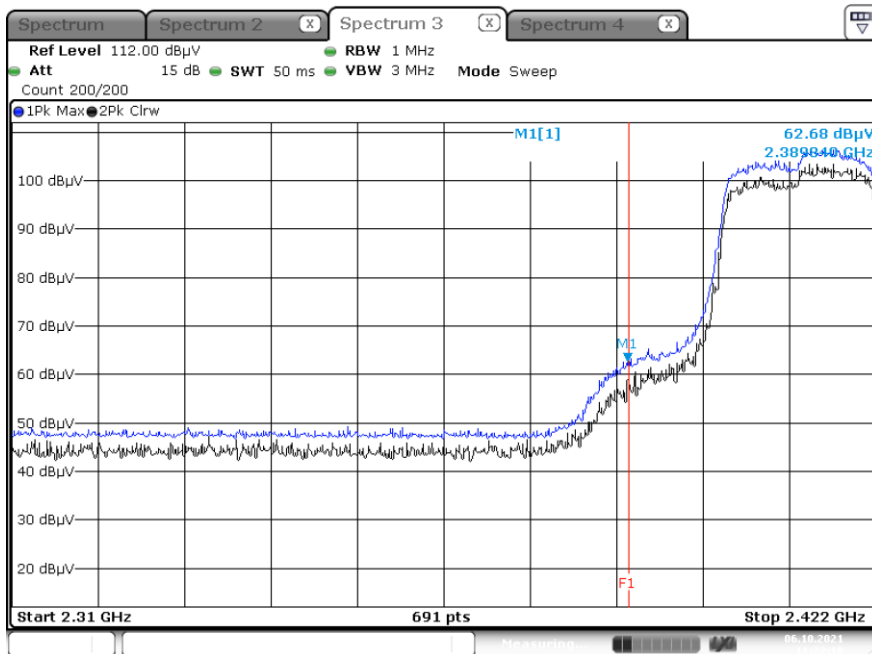
■ Test Plots (SU) X-H

[MIMO]

Radiated Restricted Band Edges plot – Average result (802.11ax(HE20) Ch.1)



Radiated Restricted Band Edges plot – Peak result (802.11ax(HE20) Ch.1)



Note:

Plot of worst case are only reported.

10. LIST OF TEST EQUIPMENT

Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	08/23/2022	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	06/17/2022	Annual
Temperature Chamber	SU-642	ESPEC	0093008124	03/15/2022	Annual
Signal Analyzer	N9030A	Agilent	MY49432108	03/09/2022	Annual
Power Meter	N1911A	Agilent	MY45100523	04/08/2022	Annual
Power Sensor	N1921A	Agilent	MY57820067	04/08/2022	Annual
Power Splitter	11667B	Hewlett Packard	10545	02/09/2022	Annual
DC Power Supply	E3632A	HP	MY50360067	02/26/2022	Annual
Attenuator(10 dB)(DC-26.5 GHz)	8493C	HP	07560	06/18/2022	Annual
Attenuator(10 dB)(DC-26.5 GHz)	8493C	HP	08285	06/28/2022	Annual
Attenuator(20 dB)	18N-20dB	Rohde & Schwarz	8	03/08/2022	Annual
Software	EMC32	Rohde & Schwarz	N/A	N/A	N/A
FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	HCT CO., LTD.	N/A	N/A	N/A

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

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Controller(Antenna mast)	CO3000	Innco system	CO3000-4p	N/A	N/A
Antenna Position Tower	MA4640/800-XP-EP	Innco system	N/A	N/A	N/A
Controller	EM1000	Audix	060520	N/A	N/A
Turn Table	N/A	Audix	N/A	N/A	N/A
Amp & Filter Bank Switch Controller	FBSM-01B	TNM system	TM19050002	N/A	N/A
Loop Antenna	1513	Schwarzbeck	1513-333	03/19/2022	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	9168-0895	09/04/2022	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	02296	05/19/2022	Biennial
Horn Antenna(15 GHz ~ 40 GHz)	BBHA9170	Schwarzbeck	BBHA9170124	04/12/2023	Biennial
Spectrum Analyzer	FSV(10 Hz ~ 40 GHz)	Rohde & Schwarz	101055	05/14/2022	Annual
Band Reject Filter	WRCJV2400/2483.5-2370/2520-60/12SS	Wainwright Instruments	2	01/06/2022	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	5	06/24/2022	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	6	06/24/2022	Annual
Power Amplifier	CBL18265035	CERNEX	22966	12/04/2021	Annual
Power Amplifier	CBL26405040	CERNEX	25956	03/23/2022	Annual
HPF(3~18GHz) LNA1(1~18GHz)	FMSR-05B	TNM system	F6	01/20/2022	Annual
ATT(10dB) + LNA1(1~18GHz)	FMSR -05B	TNM system	None	01/20/2022	Annual
ATT(3dB) + LNA1(1~18GHz)	FMSR -05B	TNM system	None	01/20/2022	Annual
LNA1(1~18GHz)	FMSR -05B	TNM system	25540	01/20/2022	Annual
HPF(7~18GHz) LNA2(6~18GHz)	FMSR -05B	TNM system	28550	01/20/2022	Annual
Thru(30MHz ~ 18GHz)	FMSR -05B	TNM system	None	01/20/2022	Annual

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-2110-FC058-P