

FCC DTS REPORT

Certification

Applicant Name: SAMSUNG Electronics Co., Ltd.	Date of Issue: December 14, 2021
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	Report No.: HCT-RF-2112-FC011-R1

FCC ID:	A3LSMX700
APPLICANT:	SAMSUNG Electronics Co., Ltd.
According to the Evaluation report, all of the data contained herein is reused from the reference FCC ID : A3LSMX706B report.	

Model:	SM-X700
EUT Type:	Tablet
Average Output Power:	802.11ax(HE20) SUM (MIMO Ant 1 + MIMO Ant 2): 20.75 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-2112-FC011-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)

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2112-FC011	December 01, 2021	- First Approval Report
HCT-RF-2112-FC011-R1	December 14, 2021	- Page 6. Antenna configurations revised - Page 8. Add the sample calculation

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1. EUT DESCRIPTION

Model	SM-X700	
Additional Model	-	
EUT Type	Tablet	
Power Supply	DC 3.86 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)	27.80 dBm
	<u>Average Power</u>	20.75 dBm
Modulation Type	OFDMA	
Number of Channels	13 Channels	
Date(s) of Tests	October 28, 2021 ~ November 26, 2021	
Serial number	Radiated: R32R8005JJT Conducted: R32R80056RR	

ANTENNA CONFIGURATIONS

Configurations	SISO		CDD	SDM
	Ant1	Ant2	Ant1 + Ant2	Ant1 + Ant2
802.11ax(HE20)	X	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
- (5) SISO test was performed for the MIMO test result.

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	5 GHz WiFi Ant.1	5 GHz WiFi Ant.2	6 GHz WiFi Ant.1	6 GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2	Test case
2.4 GHz WiFi MIMO + 6 GHz WiFi MIMO	on	on			on	on			
2.4 GHz WiFi MIMO + 5 GHz WiFi MIMO	on	on	on	on					<u>Case 1</u>
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO		on	on	on			on		
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 6 GHz WiFi MIMO		on			on	on	on		

Non-DBS	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5 GHz WiFi Ant.1	5 GHz WiFi Ant.2	6 GHz WiFi Ant.1	6 GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2	Test case
Bluetooth ANT.2 + 6 GHz WiFi MIMO					on	on		on	
Bluetooth ANT.2 + 5GHz WiFi MIMO			on	on				on	
Bluetooth ANT.1 + 6 GHz WiFi MIMO					on	on	on		
Bluetooth ANT.1 + 5GHz WiFi MIMO			on	on	-	-	on	-	<u>Case 2</u>

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)
ANT1(Core 0)	-4.52	2 / 2	CDD : -2.28
ANT2(Core 1)	-6.14		SDM : -4.52

Sample Calculation

Directional Gain = 10*LOG(((10^(ANT1 Gain/20)+10^(ANT2 Gain/20))/2) dBi

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.

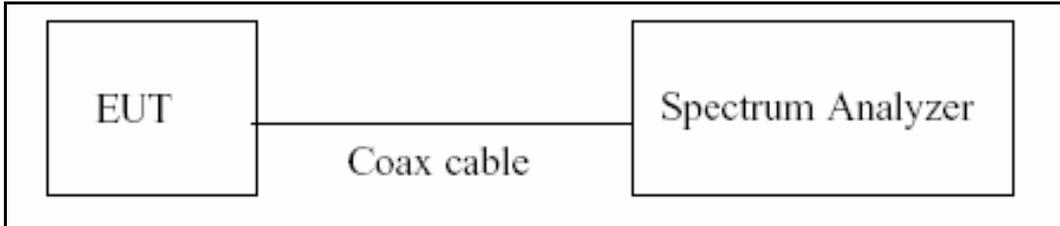
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

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 $> 50/T$.

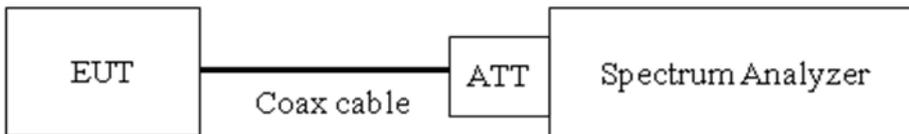
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz (\geq RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/T_{total} and Duty Cycle Factor = $10\log(1/Duty\ Cycle)$

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.

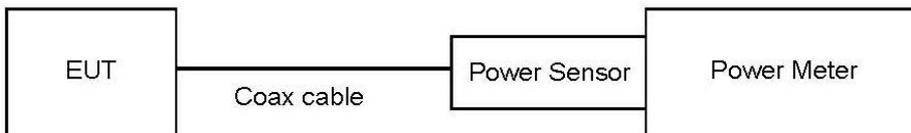
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

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

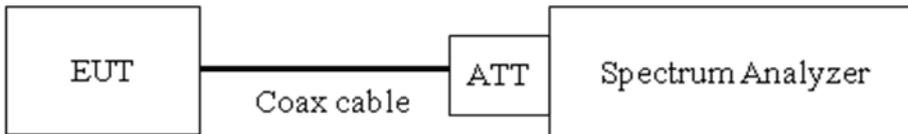
- Conducted Output Power(Peak) = Measured Level + ATT loss + Cable loss
- Conducted Output Power(Average) = Measured L Value + ATT loss + Cable loss + Duty Cycle Factor

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

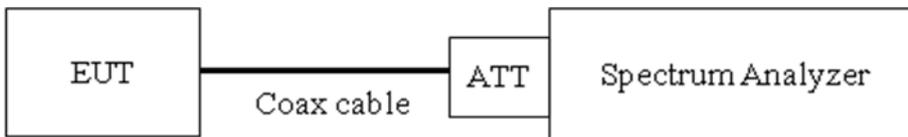
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

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	20.21
100	20.26
200	20.30
300	20.36
400	20.39
500	20.40
600	20.40
700	20.44
800	20.46
900	20.55
1000	20.59
2000	20.77
2400	20.84
2480	20.87
2500	20.87
3000	20.99
4000	21.14
5000	21.28
5150	21.32
5850	21.43
6000	21.43
7000	21.49
8000	21.57
9000	21.64
10 000	21.74
11 000	21.88
12 000	22.06
13 000	22.14
14 000	22.21
15 000	22.27
16 000	22.32
17 000	22.42
18 000	22.52
19 000	22.58
20 000	22.65
21 000	22.89
22 000	22.90
23 000	23.12
24 000	22.99
25 000	23.10
26 000	23.14

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

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

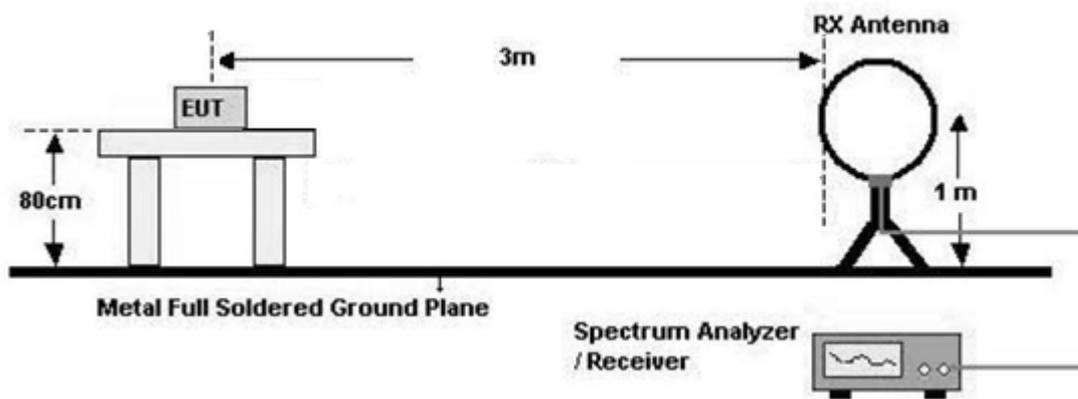
7.6. Radiated Test

Limit

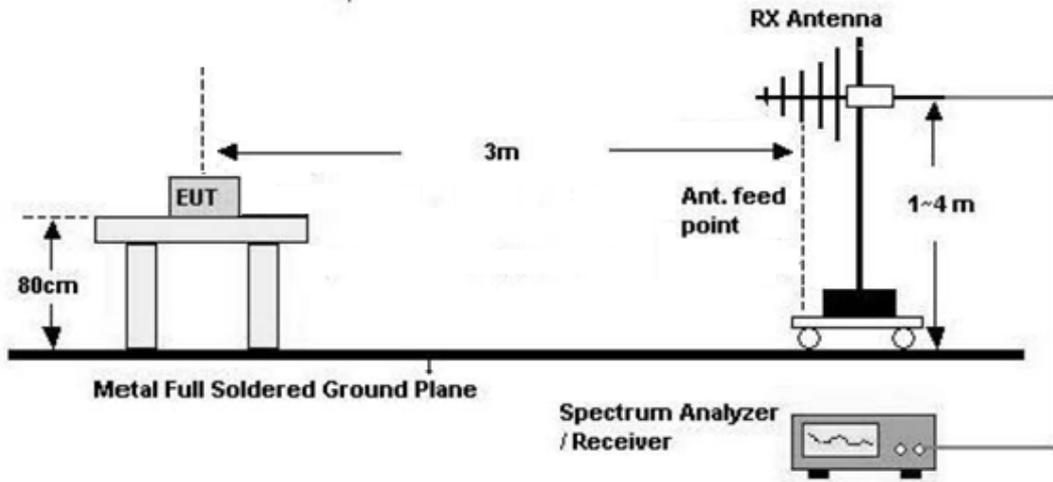
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

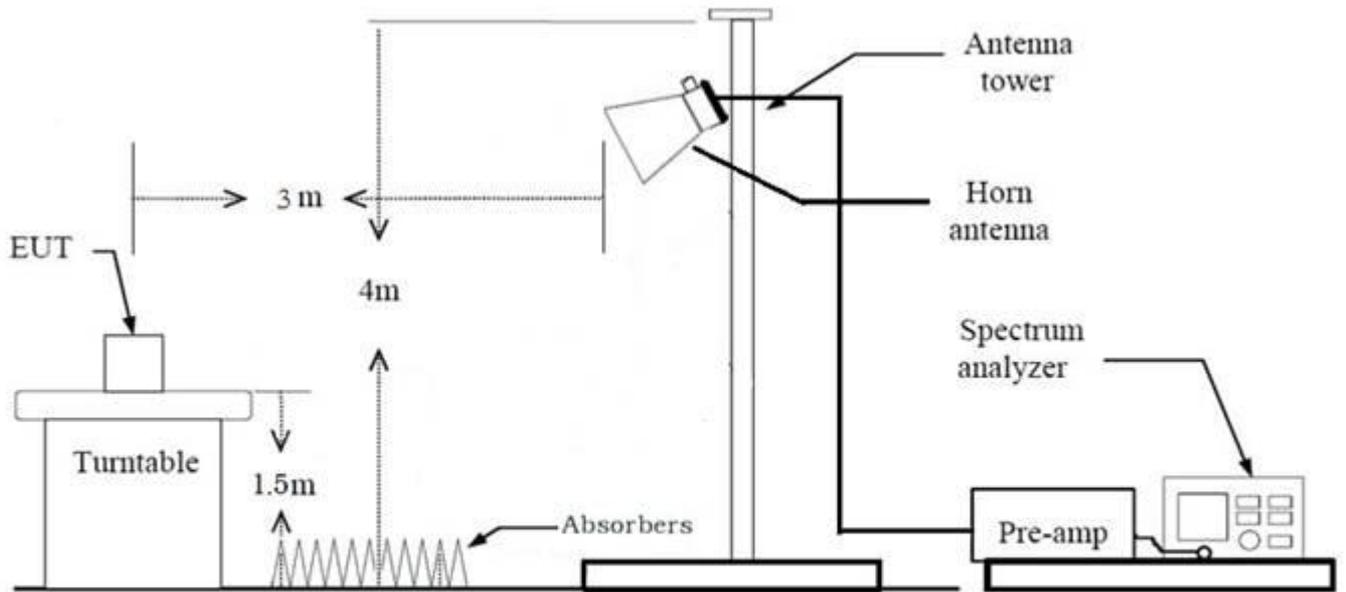
Below 30 MHz



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 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB μ V)	
	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, Keyboard, 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, 106T, 242 T	26 T : CH 1 (RU 4), CH 6 (RU 4), CH 11 (RU 4) 106 T : CH 1 (RU 54), CH 6 (RU 54), CH 11 (RU 54) 242 T : RU 61
Bandedge	Worst case : 26 T	Low Edge : RU 0 High Edge : RU 8
	Additional Tone : 52 T, 106 T, 242 T, SU	Low Edge : RU 37, RU 53, RU 61 High Edge : 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, Keyboard, 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	5 GHz WiFi Ant.1	5 GHz WiFi Ant.2	6 GHz WiFi Ant.1	6 GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2	Test case
2.4 GHz WiFi MIMO + 6 GHz WiFi MIMO	on	on			on	on			
2.4 GHz WiFi MIMO + 5 GHz WiFi MIMO	on	on	on	on					<u>Case 1</u>
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO		on	on	on			on		
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 6 GHz WiFi MIMO		on			on	on	on		

Non-DBS	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5 GHz WiFi Ant.1	5 GHz WiFi Ant.2	6 GHz WiFi Ant.1	6 GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2	Test case
Bluetooth ANT.2 + 6 GHz WiFi MIMO					on	on		on	
Bluetooth ANT.2 + 5GHz WiFi MIMO			on	on				on	
Bluetooth ANT.1 + 6 GHz WiFi MIMO					on	on	on		
Bluetooth ANT.1 + 5GHz WiFi MIMO			on	on	-	-	on	-	<u>Case 2</u>

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 Result : Please refer to the SM-X700 [BT, UNII, DTS] Test Report.)

Case	Description	2.4GHz Emission	5 GHz Emission
1	Antenna	Ant All	Ant All
	Channel	6	36
	Data Rate	1 Mbps	MCS 0
	Mode	802.11b	802.11n

Case	Description	Bluetooth Emission	5 GHz Emission
2	Antenna	ANT1	Ant All
	Channel	39	36
	Data Rate	1 Mbps	MCS 0
	Mode	GFSK	802.11n

AC Power line Conducted Emissions

1. Please refer to the SM-X700[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

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	2.584	2.607	0.991	0.04
		MCS3	2.655	2.678	0.991	0.04
		MCS4	2.632	2.655	0.991	0.04
		MCS5	2.617	2.637	0.992	0.03
		MCS6	2.612	2.635	0.991	0.04
		MCS7	2.609	2.630	0.992	0.03
		MCS8	2.627	2.650	0.991	0.04
		MCS9	1.999	2.004	0.997	0.01
	52	MCS0	2.592	2.614	0.991	0.04
		MCS1	2.581	2.604	0.991	0.04
		MCS2	2.579	2.602	0.991	0.04
		MCS3	2.655	2.678	0.991	0.04
		MCS4	2.627	2.650	0.991	0.04
		MCS5	2.617	2.637	0.992	0.03
		MCS6	2.612	2.635	0.991	0.04
		MCS7	2.609	2.630	0.992	0.03
		MCS8	2.627	2.650	0.991	0.04
		MCS9	2.607	2.630	0.991	0.04
	106	MCS0	2.437	2.457	0.992	0.04
		MCS1	2.432	2.452	0.992	0.04
		MCS2	2.435	2.455	0.992	0.04
		MCS3	2.505	2.526	0.992	0.03
		MCS4	2.480	2.500	0.992	0.04
		MCS5	2.467	2.488	0.992	0.04
		MCS6	2.462	2.485	0.991	0.04
		MCS7	2.460	2.480	0.992	0.04
		MCS8	2.480	2.503	0.991	0.04
		MCS9	2.460	2.480	0.992	0.04

Mode	Tone (T)	Data Rate	On Time (ms)	Total Time (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ax (HE20)	242	MCS0	2.389	2.409	0.992	0.04
		MCS1	2.384	2.404	0.992	0.04
		MCS2	2.384	2.407	0.991	0.04
		MCS3	2.455	2.478	0.991	0.04
		MCS4	2.432	2.452	0.992	0.04
		MCS5	2.417	2.437	0.992	0.04
		MCS6	2.412	2.432	0.992	0.04
		MCS7	2.407	2.429	0.991	0.04
		MCS8	2.427	2.450	0.991	0.04
		MCS9	2.409	2.429	0.992	0.04
802.11ax(SU)	BW 20	MCS0	2.386	2.409	0.991	0.04
		MCS1	2.384	2.407	0.991	0.04
		MCS2	2.384	2.407	0.991	0.04
		MCS3	2.457	2.478	0.992	0.04
		MCS4	2.435	2.455	0.992	0.04
		MCS5	2.417	2.437	0.992	0.04
		MCS6	2.412	2.432	0.992	0.04
		MCS7	2.407	2.429	0.991	0.04
		MCS8	2.429	2.450	0.992	0.04
		MCS9	2.407	2.429	0.991	0.04

Note:

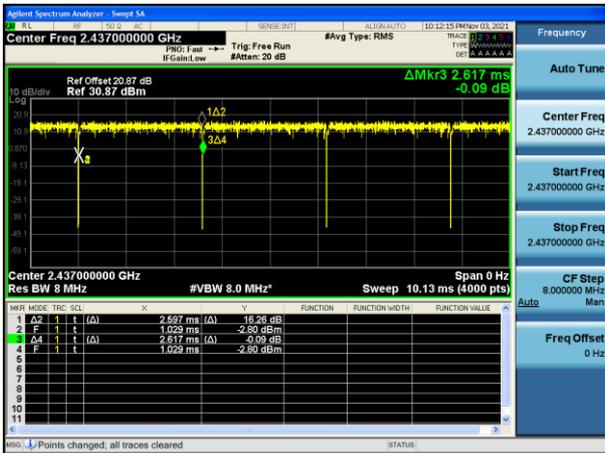
Duty cycle \geq 98% \rightarrow Continuous Signal

Test Plots

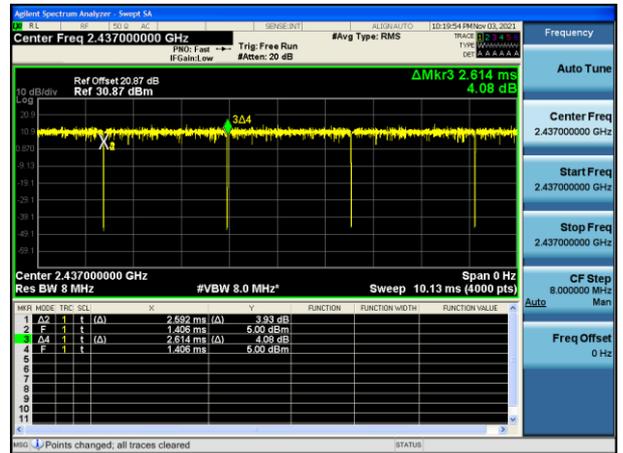
Note:

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

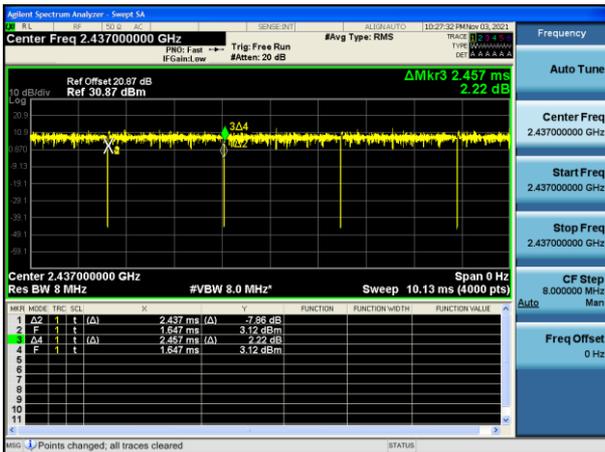
26 Tone MCS0



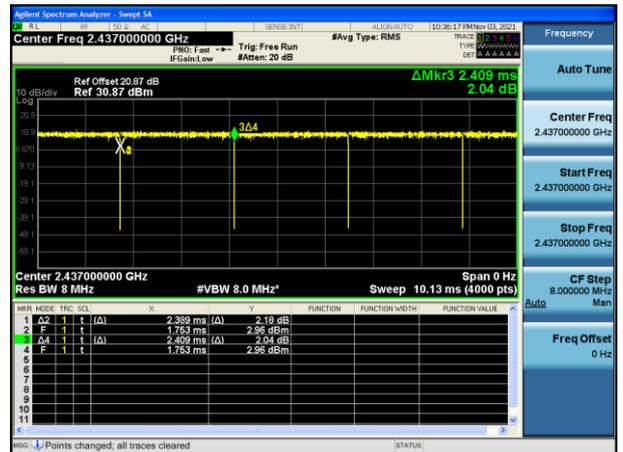
52 Tone MCS0



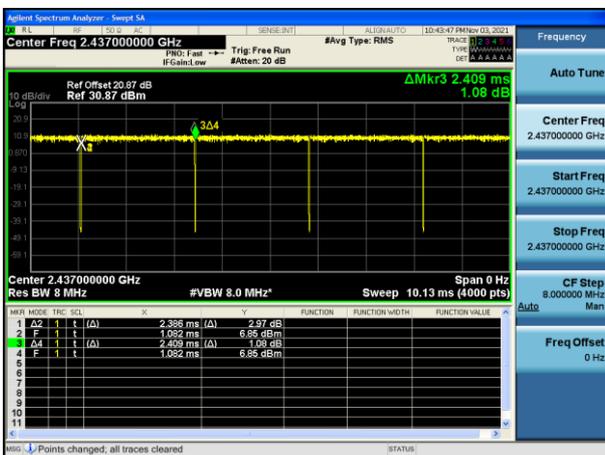
106 Tone MCS0



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	10.83	17.12	18.15	-	-
			Mid	2.760	15.13	-	19.02	19.03
			High	2.173	17.08	17.14	-	-
	2417	2	Low	2.182	17.13	18.13	-	-
			Mid	2.759	15.12	-	19.04	19.04
			High	2.168	17.08	17.15	-	-
	2437	6	Low	2.136	17.12	18.15	-	-
			Mid	2.774	15.13	-	19.06	19.05
			High	2.147	17.08	18.15	-	-
	2457	10	Low	2.134	17.12	18.13	-	-
			Mid	2.777	15.12	-	19.04	19.04
			High	2.148	17.09	17.16	-	-
	2462	11	Low	2.142	17.11	18.11	-	-
			Mid	2.765	15.12	-	19.05	19.04
			High	2.172	17.09	17.15	-	-
	2467	12	Low	2.133	17.08	18.16	-	-
			Mid	2.766	15.12	-	19.05	19.05
			High	2.141	17.08	17.14	-	-
	2472	13	Low	2.143	17.10	17.18	-	-
			Mid	2.770	15.10	-	18.99	18.98
			High	17.04	17.07	17.16	-	-

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	2.162	17.03	18.15	-	-
			Mid	2.701	15.09	-	19.08	19.07
			High	2.125	17.00	17.18	-	-
	2417	2	Low	2.128	17.03	18.14	-	-
			Mid	2.692	15.09	-	19.07	19.07
			High	2.112	17.05	17.17	-	-
	2437	6	Low	2.127	14.50	17.76	-	-
			Mid	2.693	15.10	-	19.09	19.10
			High	2.133	17.07	17.76	-	-
	2457	10	Low	2.088	17.01	17.77	-	-
			Mid	2.684	15.10	-	19.09	19.10
			High	2.114	17.07	17.17	-	-
	2462	11	Low	2.138	14.52	17.76	-	-
			Mid	2.700	15.09	-	19.09	19.09
			High	2.113	17.07	17.18	-	-
	2467	12	Low	2.113	14.519	17.73	-	-
			Mid	2.697	15.09	-	19.08	19.08
			High	2.134	17.07	17.16	-	-
2472	13	Low	2.137	14.51	17.72	-	-	
		Mid	2.698	15.09	-	19.07	19.07	
		High	2.133	17.07	17.17	-	-	

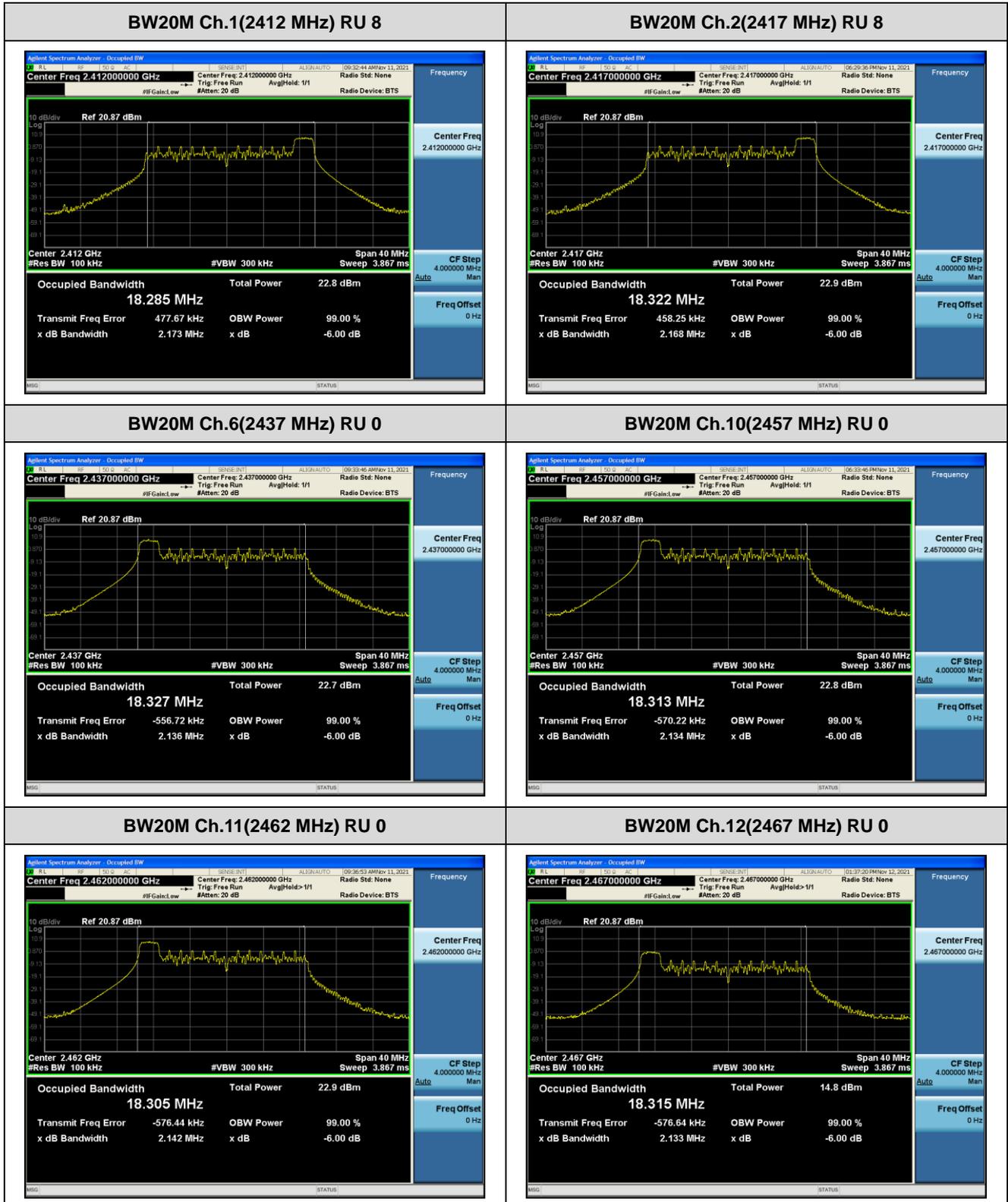
Limit : > 500 kHz

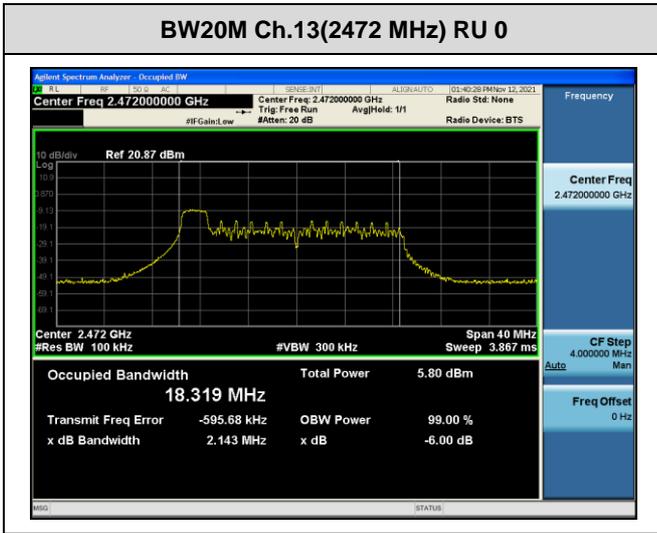
Test Plots

Note:

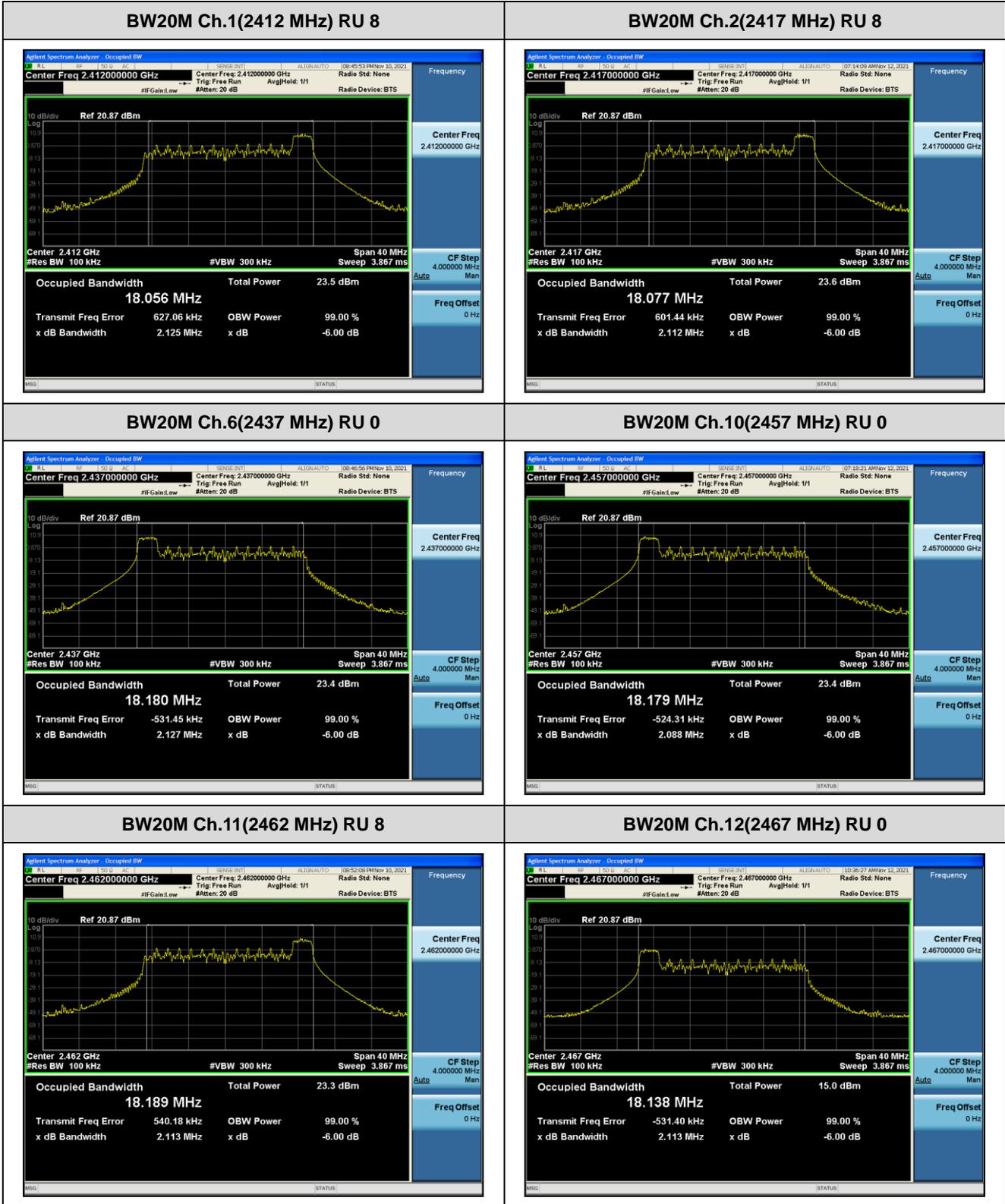
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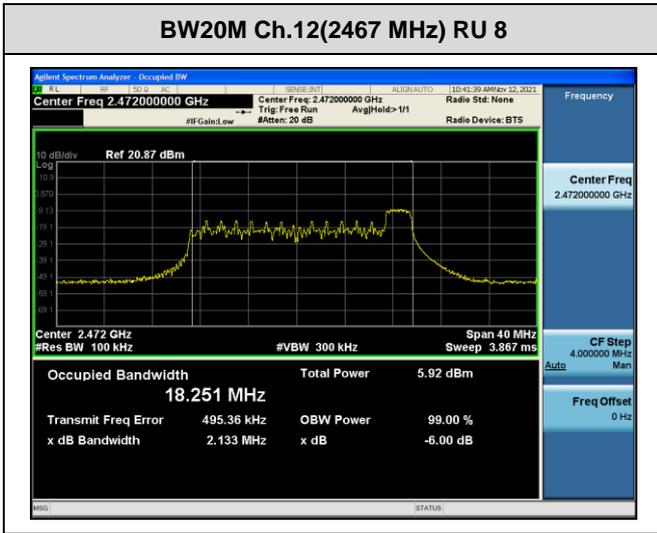
[ANT1]





[ANT2]





9.3 OUTPUT POWER

Peak Power

1. Power Meter offset

Ant1 : Attenuator loss(20 dB) + Cable loss + EUT Cable loss

Ant2 : Attenuator loss(20 dB) + Cable loss + EUT Cable loss

SISO Ant 1

BW	Frequency [MHz]	Channel No.	RU Index	Total Peak Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	22.14	22.51	22.30	-	-
			Mid	22.37	22.55	-	21.21	21.30
			High	22.17	22.54	22.26	-	-
	2417	2	Low	22.46	24.22	23.83	-	-
			Mid	22.43	24.31	-	22.83	23.80
			High	22.06	24.02	23.66	-	-
	2437	6	Low	22.15	24.07	23.57	-	-
			Mid	22.12	23.89	-	22.60	24.48
			High	22.22	23.96	23.54	-	-
	2457	10	Low	22.35	24.15	23.82	-	-
			Mid	22.34	24.16	-	22.67	23.83
			High	21.81	23.82	23.53	-	-
	2462	11	Low	22.47	23.02	22.65	-	-
			Mid	22.25	22.77	-	21.44	21.52
			High	21.84	22.44	22.26	-	-
	2467	12	Low	14.18	13.74	13.09	-	-
			Mid	14.08	13.41	-	12.11	12.12
			High	13.63	13.16	12.88	-	-
	2472	13	Low	5.19	6.83	7.38	-	-
			Mid	5.08	6.42	-	6.18	6.13
			High	4.26	5.89	6.97	-	-

Limit : 30 dBm

SISO Ant 2

BW	Frequency [MHz]	Channel No.	RU Index	Total Peak Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	22.46	23.02	22.58	-	-
			Mid	22.74	23.28	-	21.87	21.85
			High	23.04	23.49	22.89	-	-
	2417	2	Low	22.45	24.18	24.05	-	-
			Mid	22.87	24.27	-	22.97	23.90
			High	23.08	24.37	23.95	-	-
	2437	6	Low	22.84	24.37	24.13	-	-
			Mid	22.64	24.40	-	22.90	25.08
			High	22.69	24.35	23.72	-	-
	2457	10	Low	22.61	24.13	23.87	-	-
			Mid	22.80	24.13	-	22.77	23.69
			High	22.78	24.19	23.74	-	-
	2462	11	Low	23.02	23.55	23.15	-	-
			Mid	22.72	23.50	-	21.98	22.01
			High	22.80	23.25	22.86	-	-
	2467	12	Low	14.42	13.85	12.96	-	-
			Mid	14.14	13.63	-	12.20	12.17
			High	14.12	13.31	12.61	-	-
2472	13	Low	5.53	7.15	7.15	-	-	
		Mid	5.23	6.96	-	6.40	6.38	
		High	5.10	6.56	6.82	-	-	

Limit : 30 dBm

[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	25.32	25.78	25.45	-	-
			Mid	25.57	25.94	-	24.56	24.60
			High	25.64	26.05	25.59	-	-
	2417	2	Low	25.46	27.21	26.95	-	-
			Mid	25.66	27.30	-	25.91	26.86
			High	25.61	27.21	26.82	-	-
	2437	6	Low	25.52	27.23	26.87	-	-
			Mid	25.40	27.16	-	25.76	27.80
			High	25.47	27.17	26.64	-	-
	2457	10	Low	25.49	27.15	26.86	-	-
			Mid	25.59	27.15	-	25.73	26.77
			High	25.33	27.02	26.64	-	-
	2462	11	Low	25.77	26.31	25.92	-	-
			Mid	25.50	26.16	-	24.73	24.78
			High	25.36	25.87	25.58	-	-
	2467	12	Low	17.31	16.80	16.04	-	-
			Mid	17.12	16.53	-	15.17	15.15
			High	16.89	16.25	15.76	-	-
	2472	13	Low	8.38	10.00	10.27	-	-
			Mid	8.17	9.71	-	9.30	9.27
			High	7.71	9.25	9.91	-	-

Limit : 30 dBm

Average Power

1. Power Meter offset

Ant1 : Attenuator loss(20 dB) + Cable loss + EUT Cable loss

Ant2 : Attenuator loss(20 dB) + Cable loss + EUT Cable loss

SISO Ant 1

BW	Frequency [MHz]	Channel No.	RU Index	Total Average Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	13.07	13.85	14.14	-	-
			Mid	13.48	14.25	-	14.22	14.23
			High	13.39	14.17	14.24	-	-
	2417	2	Low	13.55	15.69	15.80	-	-
			Mid	13.53	15.75	-	15.74	16.71
			High	13.34	15.51	15.64	-	-
	2437	6	Low	13.28	15.42	15.52	-	-
			Mid	13.35	15.61	-	15.56	17.50
			High	13.35	15.56	15.55	-	-
	2457	10	Low	13.45	15.62	15.75	-	-
			Mid	13.48	15.70	-	15.65	16.62
			High	13.02	15.21	15.44	-	-
	2462	11	Low	13.62	14.65	14.67	-	-
			Mid	13.41	14.58	-	14.44	14.45
			High	12.94	13.96	14.16	-	-
	2467	12	Low	5.43	5.33	5.43	-	-
			Mid	5.30	5.27	-	5.30	5.30
			High	5.01	4.90	5.08	-	-
2472	13	Low	-3.44	-1.61	-0.50	-	-	
		Mid	-3.61	-1.68	-	-0.75	-0.74	
		High	-4.64	-2.53	-1.09	-	-	

Limit : 30 dBm

SISO Ant 2

BW	Frequency [MHz]	Channel No.	RU Index	Total Average Power (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	13.07	14.09	14.34	-	-
			Mid	13.72	14.51	-	14.69	14.66
			High	14.02	14.90	14.94	-	-
	2417	2	Low	13.25	15.29	15.53	-	-
			Mid	13.70	15.60	-	15.75	16.72
			High	13.81	15.75	15.90	-	-
	2437	6	Low	13.79	15.69	15.85	-	-
			Mid	13.76	15.79	-	15.75	17.97
			High	13.58	15.55	15.63	-	-
	2457	10	Low	13.53	15.43	15.57	-	-
			Mid	13.70	15.53	-	15.66	16.62
			High	13.58	15.49	15.62	-	-
	2462	11	Low	13.78	14.79	14.90	-	-
			Mid	13.87	14.90	-	14.87	14.87
			High	13.55	14.60	14.77	-	-
	2467	12	Low	5.36	5.41	5.33	-	-
			Mid	5.25	5.31	-	5.18	5.18
			High	4.82	4.86	4.97	-	-
2472	13	Low	-3.28	-1.43	-0.41	-	-	
		Mid	-3.59	-1.49	-	-0.58	-0.58	
		High	-4.02	-2.05	-0.83	-	-	

Limit : 30 dBm

[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	16.08	16.98	17.25	-	-
			Mid	16.61	17.39	-	17.47	17.46
			High	16.72	17.56	17.61	-	-
	2417	2	Low	16.41	18.50	18.68	-	-
			Mid	16.63	18.69	-	18.76	19.72
			High	16.60	18.64	18.78	-	-
	2437	6	Low	16.55	18.57	18.70	-	-
			Mid	16.57	18.71	-	18.67	20.75
			High	16.47	18.56	18.60	-	-
	2457	10	Low	16.50	18.54	18.67	-	-
			Mid	16.60	18.63	-	18.66	19.63
			High	16.32	18.36	18.54	-	-
	2462	11	Low	16.71	17.73	17.79	-	-
			Mid	16.66	17.76	-	17.67	17.67
			High	16.26	17.30	17.49	-	-
	2467	12	Low	8.40	8.38	8.39	-	-
			Mid	8.29	8.30	-	8.25	8.25
			High	7.92	7.89	8.04	-	-
	2472	13	Low	-0.35	1.49	2.55	-	-
			Mid	-0.59	1.43	-	2.34	2.35
			High	-1.31	0.73	2.06	-	-

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 + EUT Cable loss

Ant2 : Attenuator loss(20 dB) + Cable loss + EUT Cable loss

3. Total PSD = Measured Level + Duty Cycle Factor

SISO Ant 1

BW	Frequency [MHz]	Channel No.	RU Index	Total PSD (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	-3.905	-5.511	-8.476	-	-
			Mid	-3.289	-5.375	-	-11.713	-11.764
			High	-3.341	-5.184	-8.002	-	-
	2417	2	Low	-2.881	-3.790	-6.374	-	-
			Mid	-3.321	-4.034	-	-9.274	-9.326
			High	-3.366	-4.170	-6.316	-	-
	2437	6	Low	-3.619	-3.761	-6.652	-	-
			Mid	-3.575	-4.224	-	-8.664	-8.611
			High	-3.440	-4.385	-6.448	-	-
	2457	10	Low	-2.845	-4.091	-6.463	-	-
			Mid	-2.938	-3.964	-	-9.316	-9.380
			High	-3.742	-4.441	-6.573	-	-
	2462	11	Low	-3.108	-4.757	-7.865	-	-
			Mid	-3.503	-5.204	-	-11.231	-11.521
			High	-3.986	-5.939	-8.577	-	-
	2467	12	Low	-11.327	-14.142	-17.221	-	-
			Mid	-11.576	-14.285	-	-20.552	-20.662
			High	-11.837	-14.731	-17.633	-	-
2472	13	Low	-20.167	-21.120	-23.176	-	-	
		Mid	-20.529	-21.147	-	-26.650	-26.705	
		High	-21.395	-22.014	-23.510	-	-	

Limit : 8 dBm

SISO Ant 2

BW	Frequency [MHz]	Channel No.	RU Index	Total PSD (dBm)				
				26 T	52 T	106 T	242 T	SU
HE20	2412	1	Low	-3.729	-5.597	-7.861	-	-
			Mid	-3.159	-5.189	-	-11.298	-11.105
			High	-2.318	-4.765	-7.722	-	-
	2417	2	Low	-3.802	-4.203	-6.655	-	-
			Mid	-3.107	-4.334	-	-8.952	-8.900
			High	-3.093	-4.180	-6.186	-	-
	2437	6	Low	-3.143	-3.864	-6.292	-	-
			Mid	-2.999	-3.853	-	-7.901	-7.882
			High	-3.349	-4.045	-5.909	-	-
	2457	10	Low	-3.483	-4.235	-6.440	-	-
			Mid	-2.978	-4.132	-	-8.841	-9.287
			High	-3.192	-3.951	-6.702	-	-
	2462	11	Low	-3.062	-5.000	-7.830	-	-
			Mid	-2.876	-4.687	-	-10.939	-10.969
			High	-3.315	-5.311	-7.548	-	-
	2467	12	Low	-11.377	-14.358	-17.173	-	-
			Mid	-11.606	-14.195	-	-20.688	-20.637
			High	-11.891	-14.560	-17.508	-	-
2472	13	Low	-20.304	-21.044	-23.129	-	-	
		Mid	-20.313	-20.804	-	-25.851	-26.369	
		High	-20.857	-21.669	-23.266	-	-	

Limit : 8 dBm

[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	-0.806	-2.544	-5.148	-	-
			Mid	-0.213	-2.271	-	-8.490	-8.412
			High	0.211	-1.959	-4.850	-	-
	2417	2	Low	-0.307	-0.982	-3.502	-	-
			Mid	-0.203	-1.171	-	-6.100	-6.098
			High	-0.217	-1.165	-3.240	-	-
	2437	6	Low	-0.364	-0.802	-3.458	-	-
			Mid	-0.267	-1.024	-	-5.256	-5.221
			High	-0.384	-1.202	-3.160	-	-
	2457	10	Low	-0.142	-1.152	-3.441	-	-
			Mid	0.052	-1.037	-	-6.062	-6.323
			High	-0.448	-1.179	-3.627	-	-
	2462	11	Low	-0.075	-1.867	-4.837	-	-
			Mid	-0.168	-1.928	-	-8.072	-8.226
			High	-0.628	-2.604	-5.022	-	-
	2467	12	Low	-8.342	-11.238	-14.187	-	-
			Mid	-8.581	-11.229	-	-17.609	-17.639
			High	-8.854	-11.634	-14.560	-	-
2472	13	Low	-17.225	-18.071	-20.142	-	-	
		Mid	-17.410	-17.962	-	-23.222	-23.523	
		High	-18.108	-18.828	-20.376	-	-	

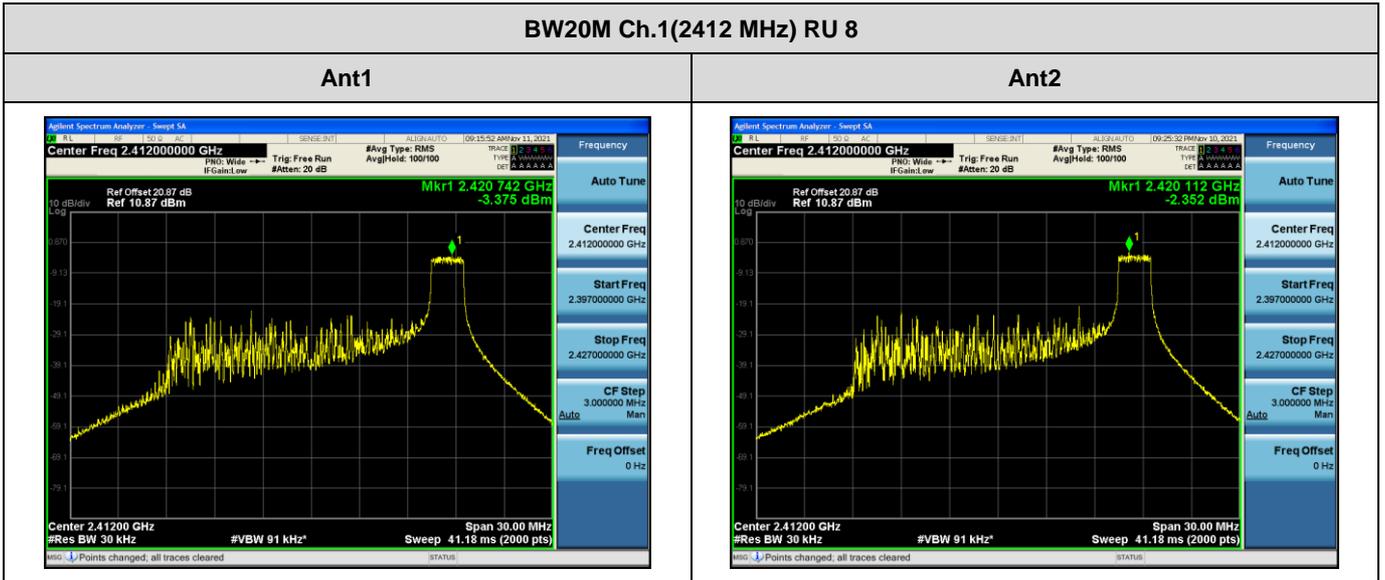
Limit : 8 dBm

Test Plots

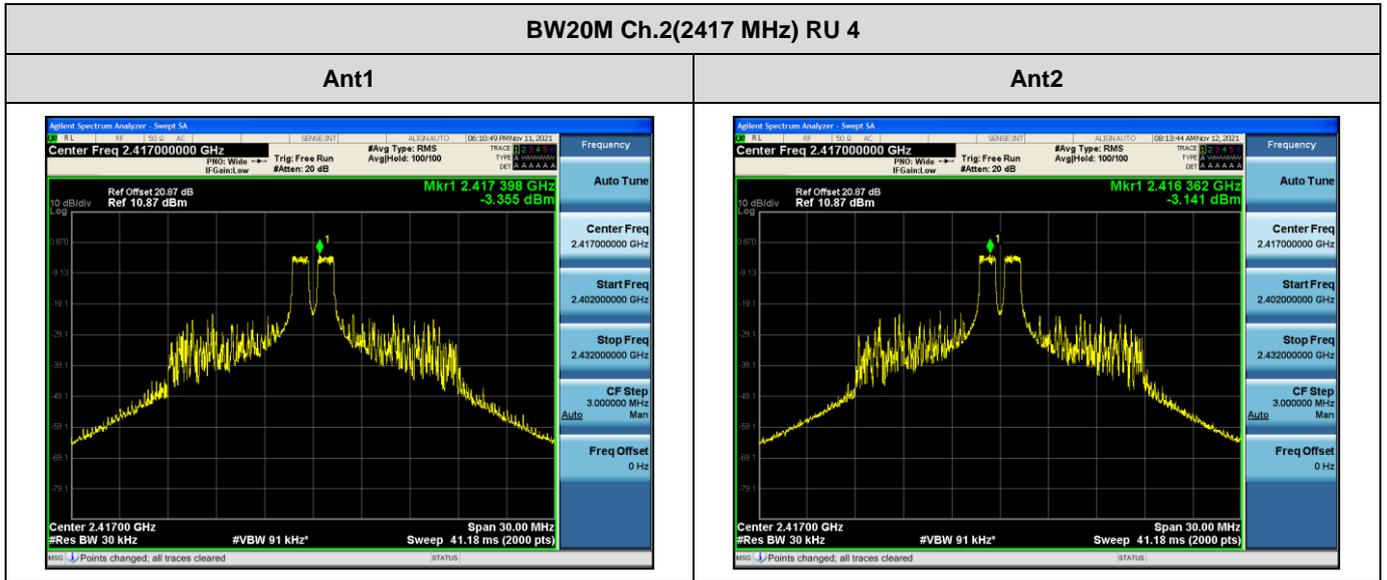
Note:

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

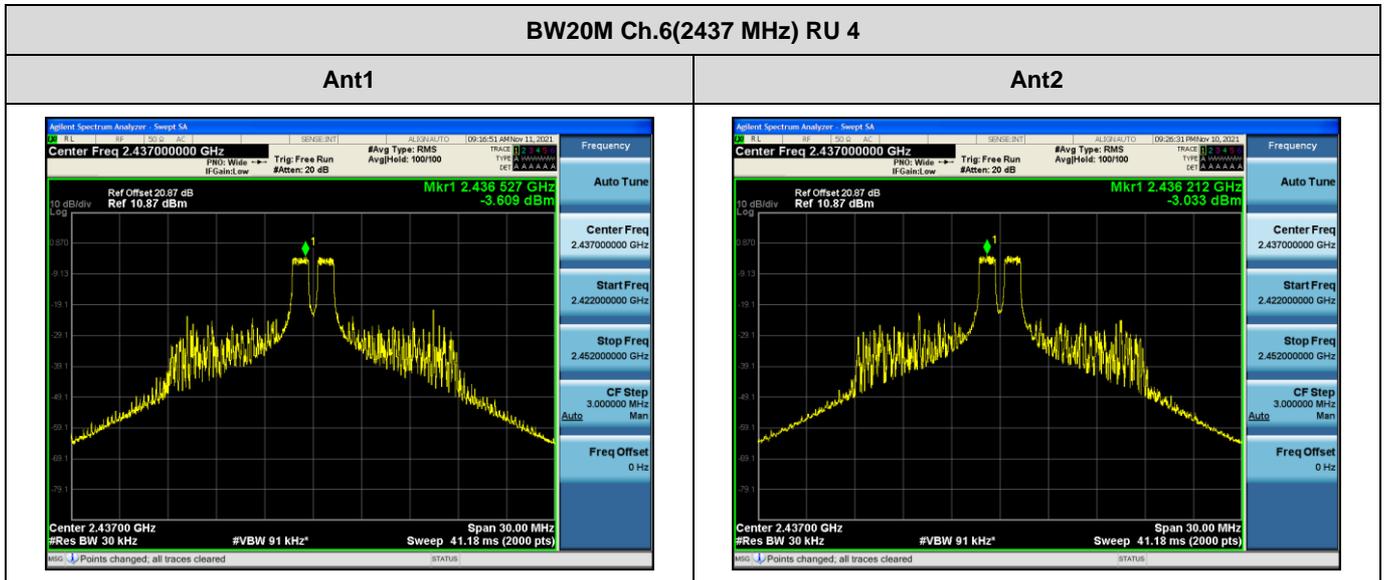
[SUM (MIMO Ant 1 + MIMO Ant 2)]



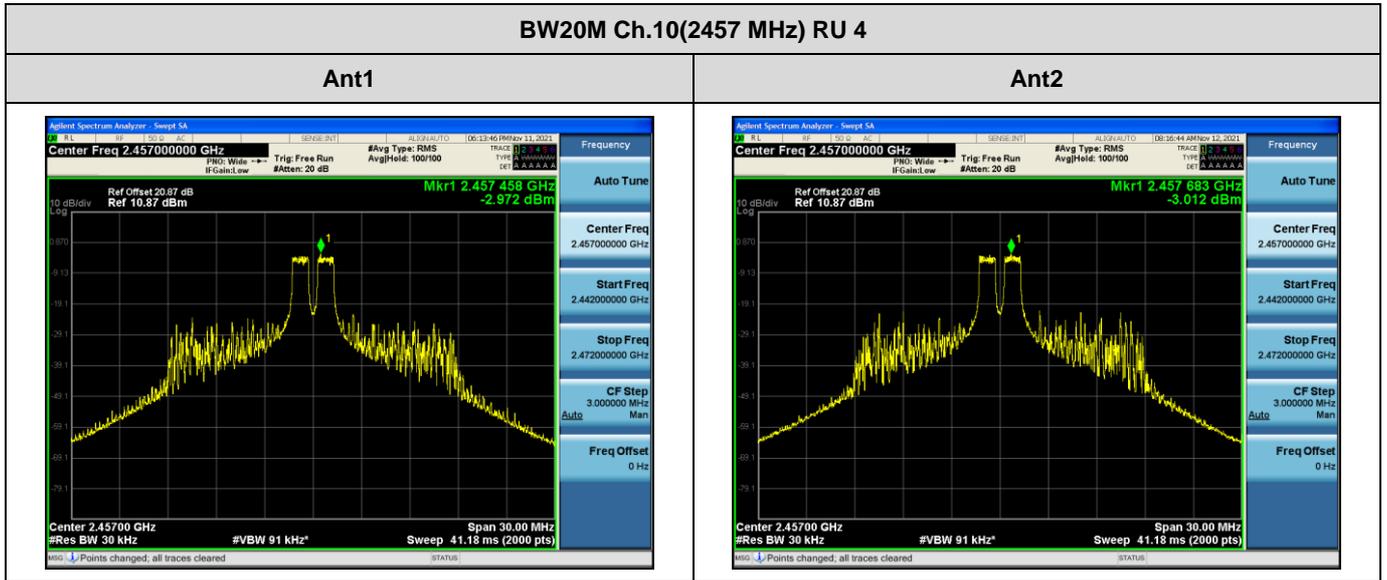
SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
0.177	0.034	0.211



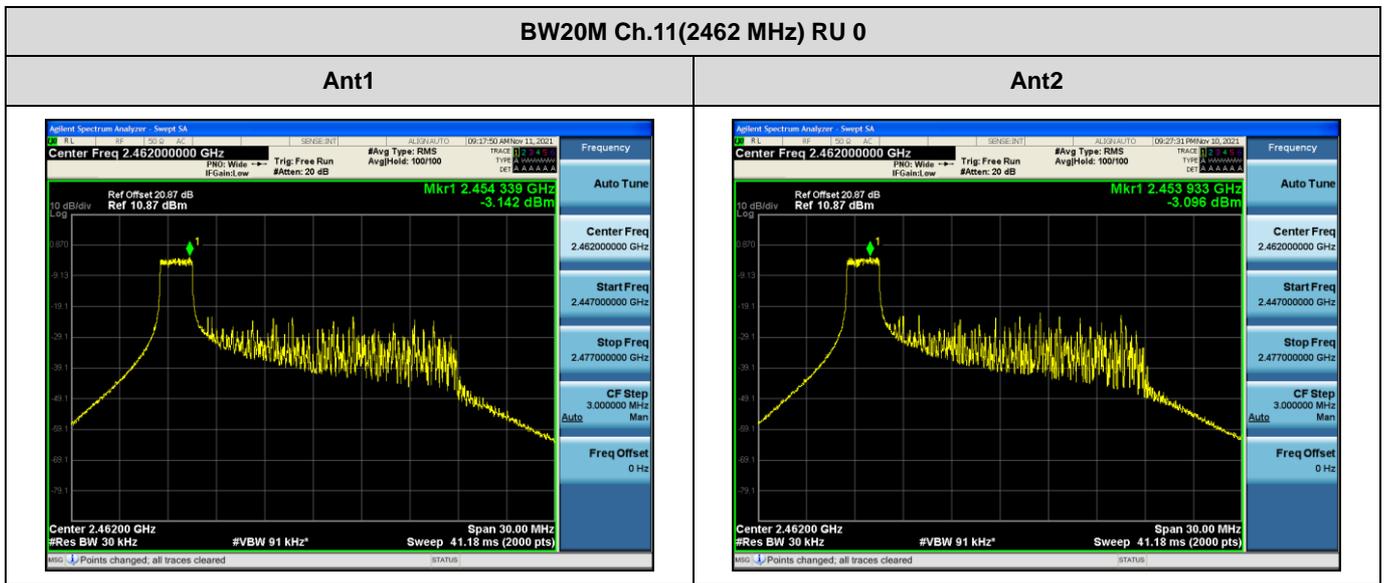
SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-0.237	0.034	-0.203



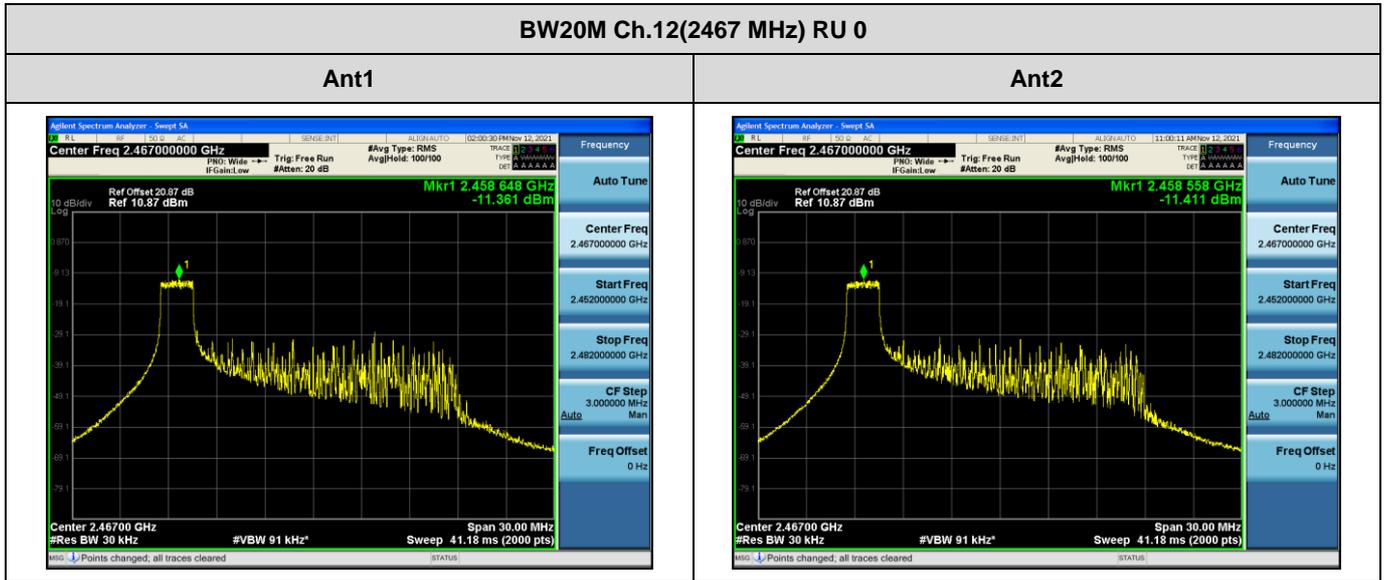
SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-0.301	0.034	-0.267



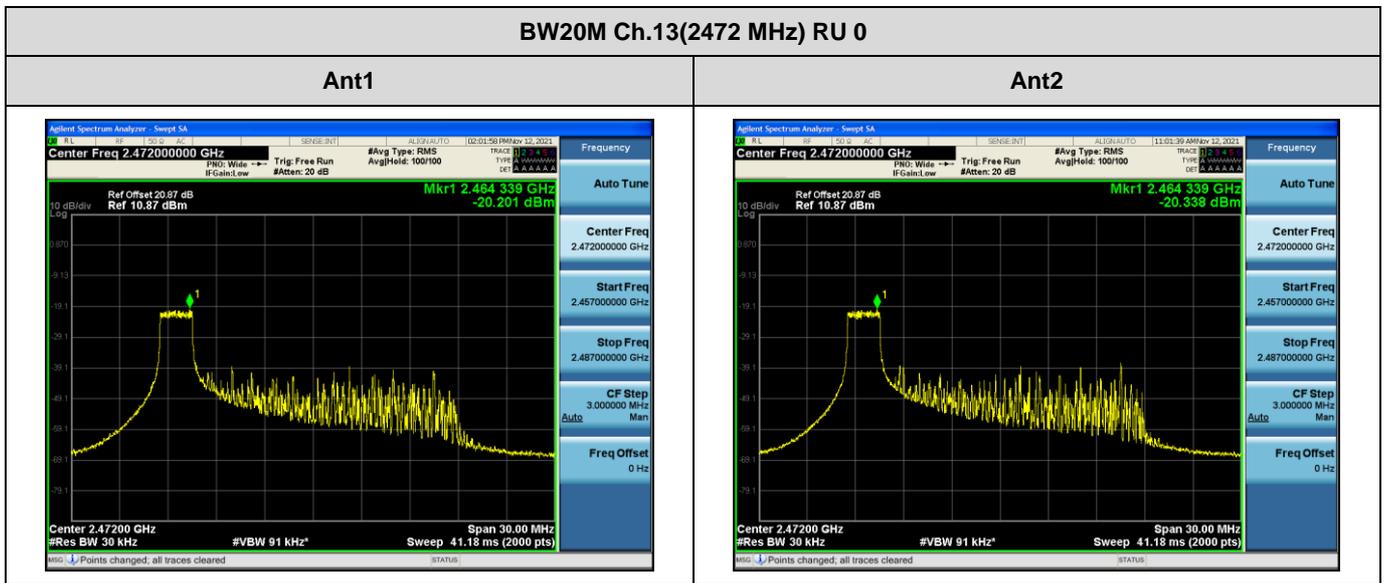
SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
0.018	0.034	0.052



SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-0.109	0.034	-0.075



SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-8.376	0.034	-8.342



SUM PSD (dBm)	Duty Cycle Factor (dB)	Total SUM PSD (dBm)
-17.259	0.034	-17.225

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	33.630	30.373	32.137
	2417	2	Low	Lowest Bandedge	56.400	51.105	47.233
	2457	10	High	Highest Bandedge	58.855	58.732	55.457
	2462	11	High	Highest Bandedge	58.612	56.974	53.225
	2467	12	High	Highest Bandedge	48.625	47.799	45.103
	2472	13	High	Highest Bandedge	32.853	32.542	30.793

Limit : 30 dBc

BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)	
					242 T	SU
HE20	2412	1	Mid	Lowest Bandedge	35.454	35.637
	2417	2		Lowest Bandedge	45.204	45.942
	2457	10		Highest Bandedge	53.575	53.095
	2462	11		Highest Bandedge	52.913	51.397
	2467	12		Highest Bandedge	44.223	43.169
	2472	13		Highest Bandedge	33.218	34.052

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	35.182	35.451	34.896
	2417	2	Low	Lowest Bandedge	54.681	49.273	43.723
	2457	10	High	Highest Bandedge	59.938	57.746	54.363
	2462	11	High	Highest Bandedge	59.507	56.871	48.905
	2467	12	High	Highest Bandedge	51.510	48.200	45.709
	2472	13	High	Highest Bandedge	32.518	33.238	32.422

Limit : 30 dBc

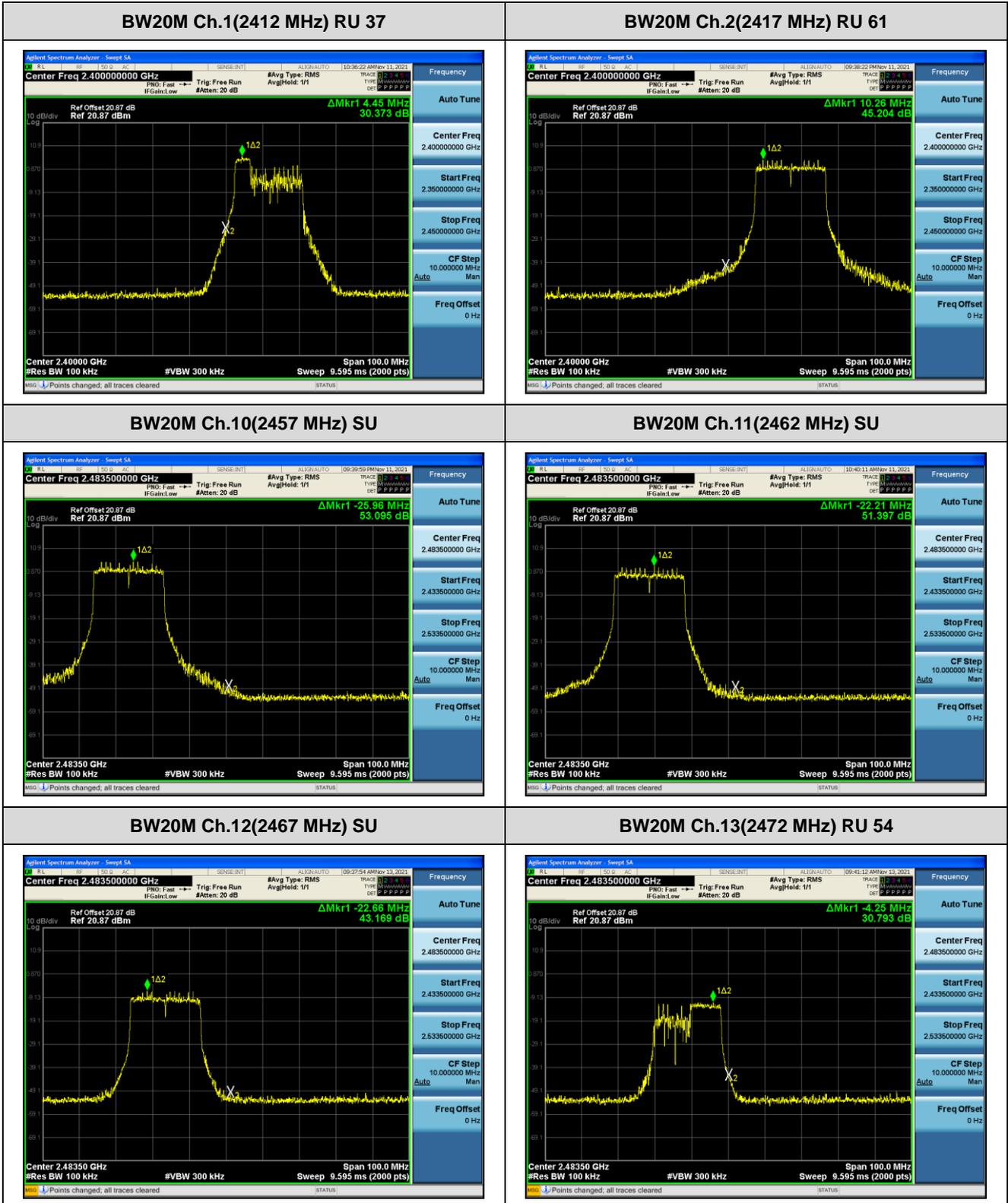
BW	Frequency [MHz]	Channel No.	RU Index	Measured Position	Result (dB)	
					242 T	SU
HE20	2412	1	Mid	Lowest Bandedge	36.038	35.140
	2417	2		Lowest Bandedge	41.632	41.780
	2457	10		Highest Bandedge	50.626	50.554
	2462	11		Highest Bandedge	46.188	47.982
	2467	12		Highest Bandedge	45.643	42.523
	2472	13		Highest Bandedge	33.594	34.029

Limit : 30 dBc

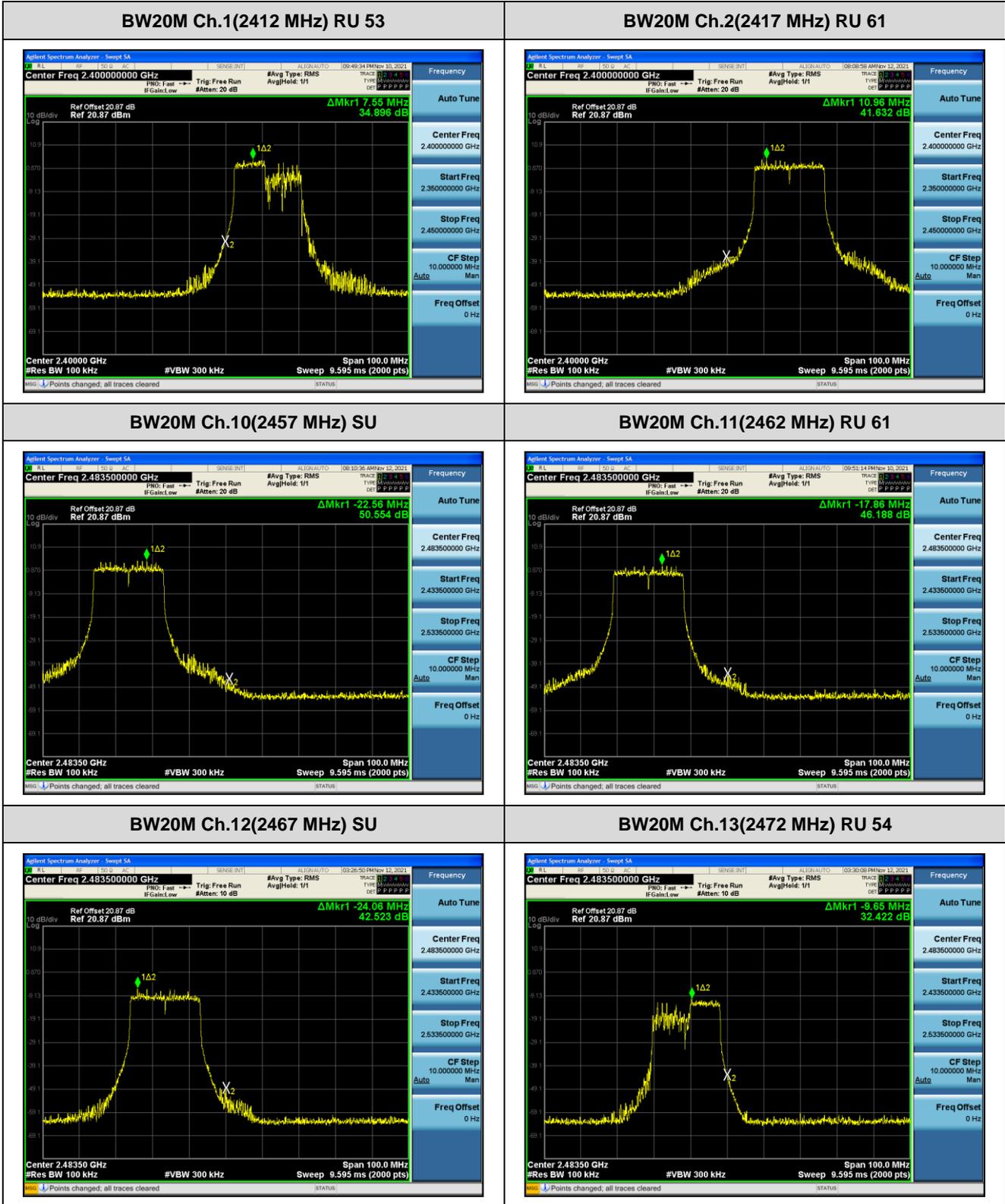
☐ Test Plots

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	43.341	42.372	38.729	-	-
			Mid	45.126	43.063	-	35.296	37.012
			High	43.375	43.373	39.767	-	-
	2417	2	Low	44.703	44.606	42.814	-	-
			Mid	43.898	44.894	-	38.518	38.486
			High	44.100	43.333	41.970	-	-
	2437	6	Low	43.978	43.146	40.730	-	-
			Mid	43.211	43.509	-	41.412	38.899
			High	45.812	44.053	41.880	-	-
	2457	10	Low	44.752	43.585	41.409	-	-
			Mid	44.165	44.443	-	37.617	38.209
			High	43.633	42.583	40.168	-	-
	2462	11	Low	43.646	41.719	40.134	-	-
			Mid	44.712	43.261	-	38.057	36.094
			High	42.984	42.960	39.122	-	-
	2467	12	Low	46.876	42.862	40.735	-	-
			Mid	44.875	43.707	-	38.971	37.430
			High	44.673	43.113	40.381	-	-
	2472	13	Low	36.969	34.848	34.795	-	-
			Mid	35.478	36.551	-	32.770	34.130
			High	34.777	34.911	34.462	-	-

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	45.722	42.629	40.459	-	-
			Mid	44.974	43.557	-	38.963	38.156
			High	45.060	42.760	41.828	-	-
	2417	2	Low	44.320	43.499	41.836	-	-
			Mid	44.048	43.582	-	41.599	39.051
			High	45.107	45.506	42.713	-	-
	2437	6	Low	43.192	44.776	41.710	-	-
			Mid	42.352	44.073	-	41.399	42.659
			High	44.082	44.248	41.838	-	-
	2457	10	Low	43.611	43.533	41.669	-	-
			Mid	43.761	43.276	-	39.989	40.581
			High	44.385	43.889	41.534	-	-
	2462	11	Low	44.054	43.814	40.799	-	-
			Mid	45.635	43.110	-	37.453	38.065
			High	44.187	42.400	40.101	-	-
	2467	12	Low	46.170	42.258	40.258	-	-
			Mid	45.013	43.057	-	37.721	38.644
			High	46.572	43.283	38.955	-	-
2472	13	Low	37.570	38.003	34.995	-	-	
		Mid	36.878	38.145	-	34.546	31.950	
		High	37.678	35.069	34.975	-	-	

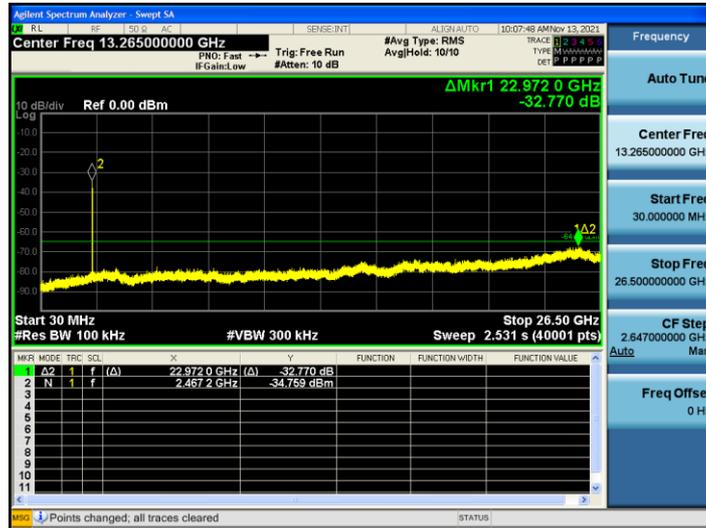
Limit : 30 dBc

☐ Test Plots

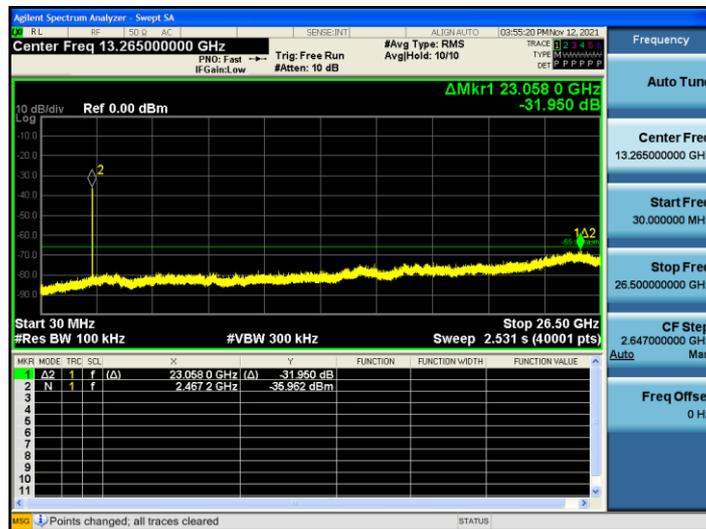
Note:

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

[MIMO ANT1] BW20M Ch.13(2 472 MHz) RU 61



[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-A.G+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 = 40log (specific distance / 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+D.F	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	40.36	0.00	5.27	V	45.63	73.98	28.35	PK
4824	29.09	0.00	5.27	V	34.36	53.98	19.62	AV
7236	37.34	0.00	12.86	V	50.20	73.98	23.78	PK
7236	25.54	0.00	12.86	V	38.40	53.98	15.58	AV
4824	41.37	0.00	5.27	H	46.64	73.98	27.34	PK
4824	29.11	0.00	5.27	H	34.38	53.98	19.60	AV
7236	37.75	0.00	12.86	H	50.61	73.98	23.37	PK
7236	25.61	0.00	12.86	H	38.47	53.98	15.51	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	40.72	0.00	5.43	V	46.15	73.98	27.83	PK
4874	29.63	0.00	5.43	V	35.06	53.98	18.92	AV
7311	38.33	0.00	12.90	V	51.23	73.98	22.75	PK
7311	26.21	0.00	12.90	V	39.11	53.98	14.87	AV
4874	41.41	0.00	5.43	H	46.84	73.98	27.14	PK
4874	29.66	0.00	5.43	H	35.09	53.98	18.89	AV
7311	39.12	0.00	12.90	H	52.02	73.98	21.96	PK
7311	26.25	0.00	12.90	H	39.15	53.98	14.83	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	40.59	0.00	5.94	V	46.53	73.98	27.45	PK
4924	28.89	0.00	5.94	V	34.83	53.98	19.15	AV
7386	38.31	0.00	12.66	V	50.97	73.98	23.01	PK
7386	26.11	0.00	12.66	V	38.77	53.98	15.21	AV
4924	41.46	0.00	5.94	H	47.40	73.98	26.58	PK
4924	28.91	0.00	5.94	H	34.85	53.98	19.13	AV
7386	38.47	0.00	12.66	H	51.13	73.98	22.85	PK
7386	26.12	0.00	12.66	H	38.78	53.98	15.20	AV

2. 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	40.80	0.00	5.27	V	46.07	73.98	27.91	PK
4824	29.05	0.00	5.27	V	34.32	53.98	19.66	AV
7236	37.23	0.00	12.86	V	50.09	73.98	23.89	PK
7236	25.72	0.00	12.86	V	38.58	53.98	15.40	AV
4824	40.90	0.00	5.27	H	46.17	73.98	27.81	PK
4824	29.07	0.00	5.27	H	34.34	53.98	19.64	AV
7236	37.59	0.00	12.86	H	50.45	73.98	23.53	PK
7236	25.77	0.00	12.86	H	38.63	53.98	15.35	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	40.53	0.00	5.43	V	45.96	73.98	28.02	PK
4874	28.83	0.00	5.43	V	34.26	53.98	19.72	AV
7311	38.23	0.00	12.90	V	51.13	73.98	22.85	PK
7311	26.06	0.00	12.90	V	38.96	53.98	15.02	AV
4874	41.08	0.00	5.43	H	46.51	73.98	27.47	PK
4874	28.95	0.00	5.43	H	34.38	53.98	19.60	AV
7311	38.60	0.00	12.90	H	51.50	73.98	22.48	PK
7311	26.08	0.00	12.90	H	38.98	53.98	15.00	AV

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2462
 Channel No.: 11 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
4924	40.90	0.00	5.94	V	46.84	73.98	27.14	PK
4924	28.97	0.00	5.94	V	34.91	53.98	19.07	AV
7386	38.65	0.00	12.66	V	51.31	73.98	22.67	PK
7386	26.13	0.00	12.66	V	38.79	53.98	15.19	AV
4924	41.67	0.00	5.94	H	47.61	73.98	26.37	PK
4924	29.03	0.00	5.94	H	34.97	53.98	19.01	AV
7386	38.39	0.00	12.66	H	51.05	73.98	22.93	PK
7386	26.18	0.00	12.66	H	38.84	53.98	15.14	AV

3. 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	40.96	0.00	5.27	V	46.23	73.98	27.75	PK
4824	29.01	0.00	5.27	V	34.28	53.98	19.70	AV
7236	38.05	0.00	12.86	V	50.91	73.98	23.07	PK
7236	26.15	0.00	12.86	V	39.01	53.98	14.97	AV
4824	40.99	0.00	5.27	H	46.26	73.98	27.72	PK
4824	29.03	0.00	5.27	H	34.30	53.98	19.68	AV
7236	38.32	0.00	12.86	H	51.18	73.98	22.80	PK
7236	26.19	0.00	12.86	H	39.05	53.98	14.93	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	40.41	0.00	5.43	V	45.84	73.98	28.14	PK
4874	28.74	0.00	5.43	V	34.17	53.98	19.81	AV
7311	37.69	0.00	12.90	V	50.59	73.98	23.39	PK
7311	26.11	0.00	12.90	V	39.01	53.98	14.97	AV
4874	41.10	0.00	5.43	H	46.53	73.98	27.45	PK
4874	28.83	0.00	5.43	H	34.26	53.98	19.72	AV
7311	38.38	0.00	12.90	H	51.28	73.98	22.70	PK
7311	26.17	0.00	12.90	H	39.07	53.98	14.91	AV

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

Frequency [MHz]	Measured Level [dB μ V]	Duty Cycle Factor [dB]	A.F+C.L -A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Measurement Type
4924	40.84	0.00	5.94	V	46.78	73.98	27.20	PK
4924	28.88	0.00	5.94	V	34.82	53.98	19.16	AV
7386	37.77	0.00	12.66	V	50.43	73.98	23.55	PK
7386	26.14	0.00	12.66	V	38.80	53.98	15.18	AV
4924	41.43	0.00	5.94	H	47.37	73.98	26.61	PK
4924	28.91	0.00	5.94	H	34.85	53.98	19.13	AV
7386	38.47	0.00	12.66	H	51.13	73.98	22.85	PK
7386	26.16	0.00	12.66	H	38.82	53.98	15.16	AV

4. SU

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

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	40.99	0.00	5.27	V	46.26	73.98	27.72	PK
4824	29.19	0.00	5.27	V	34.46	53.98	19.52	AV
7236	38.22	0.00	12.86	V	51.08	73.98	22.90	PK
7236	26.15	0.00	12.86	V	39.01	53.98	14.97	AV
4824	41.10	0.00	5.27	H	46.37	73.98	27.61	PK
4824	29.22	0.00	5.27	H	34.49	53.98	19.49	AV
7236	38.32	0.00	12.86	H	51.18	73.98	22.80	PK
7236	26.19	0.00	12.86	H	39.05	53.98	14.93	AV

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

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	40.75	0.00	5.43	V	46.18	73.98	27.80	PK
4874	29.03	0.00	5.43	V	34.46	53.98	19.52	AV
7311	38.28	0.00	12.90	V	51.18	73.98	22.80	PK
7311	26.21	0.00	12.90	V	39.11	53.98	14.87	AV
4874	41.00	0.00	5.43	H	46.43	73.98	27.55	PK
4874	29.05	0.00	5.43	H	34.48	53.98	19.50	AV
7311	38.67	0.00	12.90	H	51.57	73.98	22.41	PK
7311	26.28	0.00	12.90	H	39.18	53.98	14.80	AV

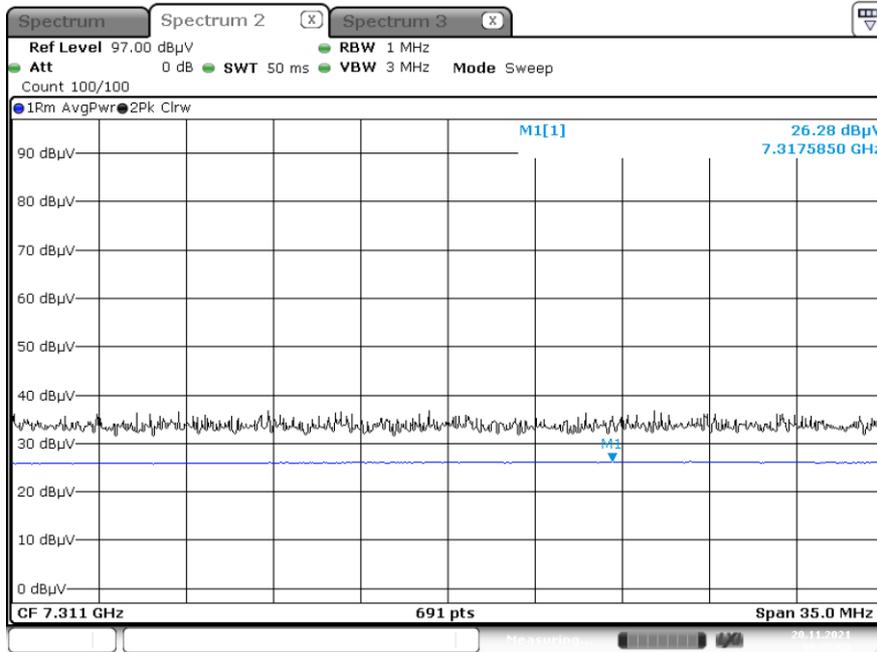
Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2462
 Channel No.: 11 Ch

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	40.87	0.00	5.94	V	46.81	73.98	27.17	PK
4924	29.11	0.00	5.94	V	35.05	53.98	18.93	AV
7386	38.26	0.00	12.66	V	50.92	73.98	23.06	PK
7386	26.23	0.00	12.66	V	38.89	53.98	15.09	AV
4924	41.43	0.00	5.94	H	47.37	73.98	26.61	PK
4924	29.13	0.00	5.94	H	35.07	53.98	18.91	AV
7386	38.33	0.00	12.66	H	50.99	73.98	22.99	PK
7386	26.24	0.00	12.66	H	38.90	53.98	15.08	AV

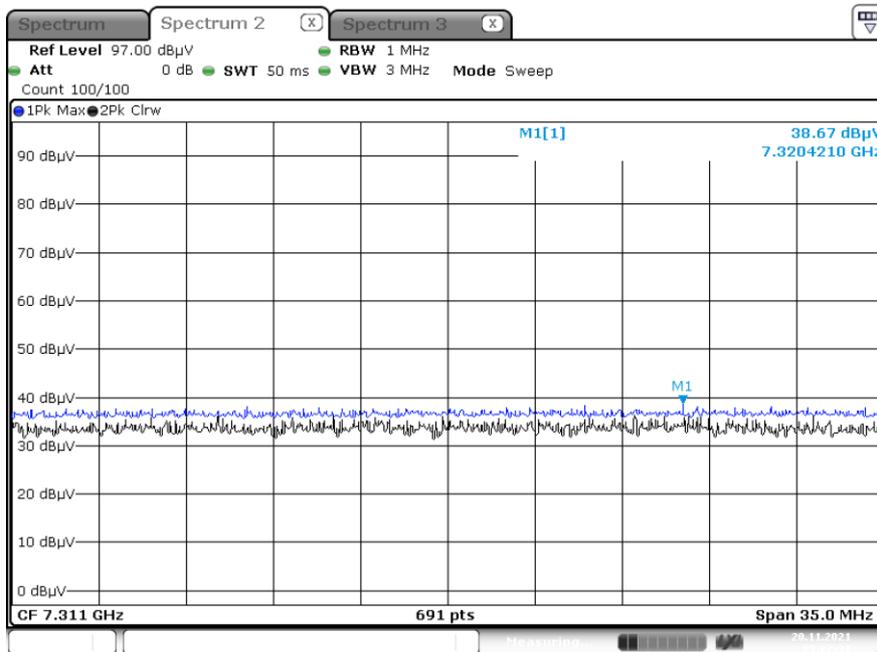
▣ Test Plots

[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.

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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	26.84	0.00	35.23	H	62.07	73.98	11.91	PK
2390.0	9.08	0.00	35.23	H	44.31	53.98	9.67	AV
2390.0	26.55	0.00	35.23	V	61.78	73.98	12.20	PK
2390.0	9.04	0.00	35.23	V	44.27	53.98	9.71	AV
2483.5	30.33	0.00	35.96	H	66.29	73.98	7.69	PK
2483.5	9.47	0.00	35.96	H	45.43	53.98	8.55	AV
2483.5	29.86	0.00	35.96	V	65.82	73.98	8.16	PK
2483.5	9.43	0.00	35.96	V	45.39	53.98	8.59	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	19.69	0.00	35.23	H	54.92	73.98	19.06	PK
2390.0	8.68	0.00	35.23	H	43.91	53.98	10.07	AV
2390.0	19.55	0.00	35.23	V	54.78	73.98	19.20	PK
2390.0	8.61	0.00	35.23	V	43.84	53.98	10.14	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	29.09	0.00	35.96	H	65.05	73.98	8.93	PK
2483.5	9.12	0.00	35.96	H	45.08	53.98	8.90	AV
2483.5	28.49	0.00	35.96	V	64.45	73.98	9.53	PK
2483.5	9.08	0.00	35.96	V	45.04	53.98	8.94	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	32.70	0.00	35.96	H	68.66	73.98	5.32	PK
2483.5	10.22	0.00	35.96	H	46.18	53.98	7.80	AV
2483.5	32.28	0.00	35.96	V	68.24	73.98	5.74	PK
2483.5	10.07	0.00	35.96	V	46.03	53.98	7.95	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5 [#] (2484)	27.51	0.00	35.96	H	63.47	73.98	10.51	PK
2483.5 [#] (2484)	15.08	0.00	35.96	H	51.04	53.98	2.94	AV
2483.5 [#] (2485)	23.15	0.00	35.96	H	59.11	73.98	14.87	PK
2483.5 [#] (2485)	11.56	0.00	35.96	H	47.52	53.98	6.46	AV
2485.5~2500	29.95	0.00	35.96	H	65.91	73.98	8.07	PK
2485.5~2500	10.85	0.00	35.96	H	46.81	53.98	7.17	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	30.46	0.00	35.23	H	65.69	73.98	8.29	PK
2390.0	9.58	0.00	35.23	H	44.81	53.98	9.17	AV
2390.0	29.73	0.00	35.23	V	64.96	73.98	9.02	PK
2390.0	9.49	0.00	35.23	V	44.72	53.98	9.26	AV
2483.5#(2484)	27.14	0.00	35.96	H	63.10	73.98	10.88	PK
2483.5#(2484)	9.44	0.00	35.96	H	45.40	53.98	8.58	AV
2483.5#(2485)	22.21	0.00	35.96	V	58.17	73.98	15.81	PK
2483.5#(2485)	9.10	0.00	35.96	V	45.06	53.98	8.92	AV
2485.5~2500	30.27	0.00	35.96	V	66.23	73.98	7.75	PK
2485.5~2500	9.29	0.00	35.96	V	45.25	53.98	8.73	AV

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

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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	20.60	0.00	35.23	H	55.83	73.98	18.15	PK
2390.0	8.76	0.00	35.23	H	43.99	53.98	9.99	AV
2390.0	19.43	0.00	35.23	V	54.66	73.98	19.32	PK
2390.0	8.72	0.00	35.23	V	43.95	53.98	10.03	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	28.93	0.00	35.96	H	64.89	73.98	9.09	PK
2483.5	9.18	0.00	35.96	H	45.14	53.98	8.84	AV
2483.5	27.61	0.00	35.96	V	63.57	73.98	10.41	PK
2483.5	9.09	0.00	35.96	V	45.05	53.98	8.93	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	33.08	0.00	35.96	H	69.04	73.98	4.94	PK
2483.5	9.79	0.00	35.96	H	45.75	53.98	8.23	AV
2483.5	32.57	0.00	35.96	V	68.53	73.98	5.45	PK
2483.5	9.62	0.00	35.96	V	45.58	53.98	8.40	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5 [#] (2484)	29.21	0.00	35.96	H	65.17	73.98	8.81	PK
2483.5 [#] (2484)	14.96	0.00	35.96	H	50.92	53.98	3.06	AV
2483.5 [#] (2485)	24.38	0.00	35.96	H	60.34	73.98	13.64	PK
2483.5 [#] (2485)	11.54	0.00	35.96	H	47.50	53.98	6.48	AV
2485.5~2500	30.11	0.00	35.96	H	66.07	73.98	7.91	PK
2485.5~2500	10.84	0.00	35.96	H	46.80	53.98	7.18	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	30.58	0.00	35.23	H	65.81	73.98	8.17	PK
2390.0	10.26	0.00	35.23	H	45.49	53.98	8.49	AV
2390.0	29.11	0.00	35.23	V	64.34	73.98	9.64	PK
2390.0	10.11	0.00	35.23	V	45.34	53.98	8.64	AV
2483.5#(2484)	25.52	0.00	35.96	H	61.48	73.98	12.50	PK
2483.5#(2484)	9.62	0.00	35.96	H	45.58	53.98	8.40	AV
2483.5#(2485)	23.98	0.00	35.96	V	59.94	73.98	14.04	PK
2483.5#(2485)	9.12	0.00	35.96	V	45.08	53.98	8.90	AV
2485.5~2500	30.60	0.00	35.96	V	66.56	73.98	7.42	PK
2485.5~2500	9.34	0.00	35.96	V	45.30	53.98	8.68	AV

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

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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	21.43	0.00	35.23	H	56.66	73.98	17.32	PK
2390.0	8.88	0.00	35.23	H	44.11	53.98	9.87	AV
2390.0	19.89	0.00	35.23	V	55.12	73.98	18.86	PK
2390.0	8.74	0.00	35.23	V	43.97	53.98	10.01	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	30.56	0.00	35.96	H	66.52	73.98	7.46	PK
2483.5	9.29	0.00	35.96	H	45.25	53.98	8.73	AV
2483.5	29.83	0.00	35.96	V	65.79	73.98	8.19	PK
2483.5	9.11	0.00	35.96	V	45.07	53.98	8.91	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 +D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	33.05	0.00	35.96	H	69.01	73.98	4.97	PK
2483.5	10.51	0.00	35.96	H	46.47	53.98	7.51	AV
2483.5	32.67	0.00	35.96	V	68.63	73.98	5.35	PK
2483.5	10.42	0.00	35.96	V	46.38	53.98	7.60	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+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5 [#] (2484)	25.72	0.00	35.96	H	61.68	73.98	12.30	PK
2483.5 [#] (2484)	13.72	0.00	35.96	H	49.68	53.98	4.30	AV
2483.5 [#] (2485)	22.48	0.00	35.96	H	58.44	73.98	15.54	PK
2483.5 [#] (2485)	10.92	0.00	35.96	H	46.88	53.98	7.10	AV
2485.5~2500	29.08	0.00	35.96	H	65.04	73.98	8.94	PK
2485.5~2500	10.42	0.00	35.96	H	46.38	53.98	7.60	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
 RU Size: 61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	33.14	0.00	35.23	H	68.37	73.98	5.61	PK
2390.0	15.71	0.00	35.23	H	50.94	53.98	3.04	AV
2390.0	32.96	0.00	35.23	V	68.19	73.98	5.79	PK
2390.0	15.58	0.00	35.23	V	50.81	53.98	3.17	AV
2483.5#(2484)	28.21	0.00	35.96	H	64.17	73.98	9.81	PK
2483.5#(2484)	11.72	0.00	35.96	H	47.68	53.98	6.30	AV
2483.5#(2485)	23.67	0.00	35.96	V	59.63	73.98	14.35	PK
2483.5#(2485)	10.61	0.00	35.96	V	46.57	53.98	7.41	AV
2485.5~2500	32.20	0.00	35.96	V	68.16	73.98	5.82	PK
2485.5~2500	10.80	0.00	35.96	V	46.76	53.98	7.22	AV

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

Operation Mode: 802.11ax(HE20)
 Transfer MCS Index: 0
 Operating Frequency: 2417 MHz
 Channel No.: 2 Ch
 RU Size: 61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	33.17	0.00	35.23	H	68.40	73.98	5.58	PK
2390.0	15.39	0.00	35.23	H	50.62	53.98	3.36	AV
2390.0	32.98	0.00	35.23	V	68.21	73.98	5.77	PK
2390.0	15.20	0.00	35.23	V	50.43	53.98	3.55	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2457 MHz
Channel No.	10 Ch
RU Size	61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5#(2484)	25.60	0.00	35.96	H	61.56	73.98	12.42	PK
2483.5#(2484)	13.09	0.00	35.96	H	49.05	53.98	4.93	AV
2483.5#(2485)	23.81	0.00	35.96	V	59.77	73.98	14.21	PK
2483.5#(2485)	12.08	0.00	35.96	V	48.04	53.98	5.94	AV
2485.5~2500	28.77	0.00	35.96	V	64.73	73.98	9.25	PK
2485.5~2500	12.02	0.00	35.96	V	47.98	53.98	6.00	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+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	33.19	0.00	35.96	H	69.15	73.98	4.83	PK
2483.5	12.23	0.00	35.96	H	48.19	53.98	5.79	AV
2483.5	31.36	0.00	35.96	V	67.32	73.98	6.66	PK
2483.5	11.99	0.00	35.96	V	47.95	53.98	6.03	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2472 MHz
Channel No.	13 Ch
RU Size	61

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5#(2484)	25.17	0.00	35.96	H	61.13	73.98	12.85	PK
2483.5#(2484)	12.79	0.00	35.96	H	48.75	53.98	5.23	AV
2483.5#(2485)	21.62	0.00	35.96	H	57.58	73.98	16.40	PK
2483.5#(2485)	10.43	0.00	35.96	H	46.39	53.98	7.59	AV
2485.5~2500	28.37	0.00	35.96	H	64.33	73.98	9.65	PK
2485.5~2500	9.97	0.00	35.96	H	45.93	53.98	8.05	AV

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

5. SU

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

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	27.83	0.00	35.23	H	63.06	73.98	10.92	PK
2390.0	11.91	0.00	35.23	H	47.14	53.98	6.84	AV
2390.0	27.61	0.00	35.23	V	62.84	73.98	11.14	PK
2390.0	11.89	0.00	35.23	V	47.12	53.98	6.86	AV
2483.5	27.33	0.00	35.96	H	63.29	73.98	10.69	PK
2483.5	10.13	0.00	35.96	H	46.09	53.98	7.89	AV
2483.5	26.89	0.00	35.96	V	62.85	73.98	11.13	PK
2483.5	10.11	0.00	35.96	V	46.07	53.98	7.91	AV

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

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	26.27	0.00	35.23	H	61.50	73.98	12.48	PK
2390.0	11.19	0.00	35.23	H	46.42	53.98	7.56	AV
2390.0	25.94	0.00	35.23	V	61.17	73.98	12.81	PK
2390.0	10.59	0.00	35.23	V	45.82	53.98	8.16	AV

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

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	23.69	0.00	35.96	H	59.65	73.98	14.33	PK
2390.0	10.73	0.00	35.96	H	46.69	53.98	7.29	AV
2390.0	23.34	0.00	35.96	V	59.30	73.98	14.68	PK
2390.0	10.43	0.00	35.96	V	46.39	53.98	7.59	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2467 MHz, 2472 MHz
Channel No.	12 Ch, 13 Ch
RU Size	SU

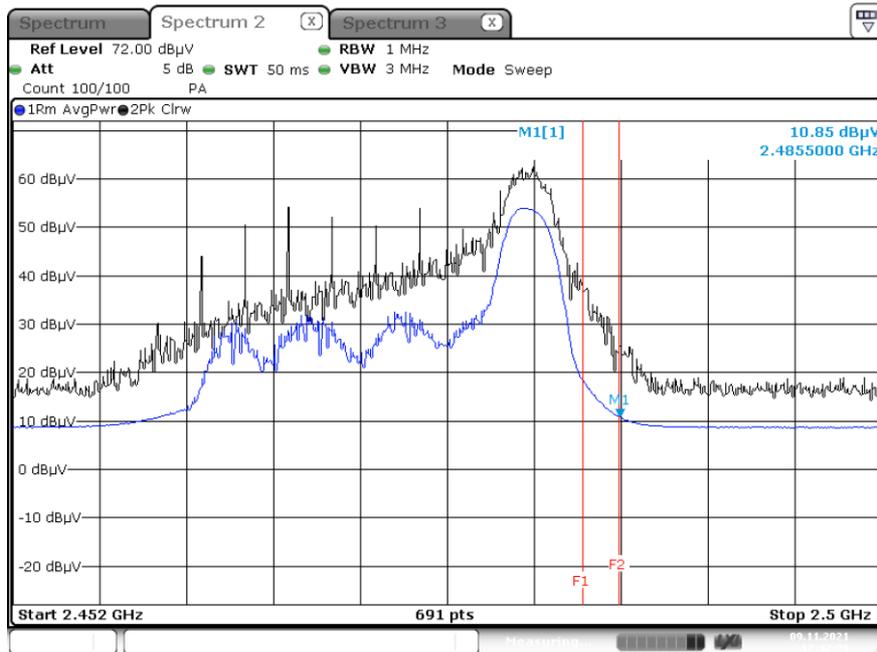
Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L+D .F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	21.50	0.00	35.96	H	57.46	73.98	16.52	PK
2483.5	9.20	0.00	35.96	H	45.16	53.98	8.82	AV
2483.5	21.26	0.00	35.96	V	57.22	73.98	16.76	PK
2483.5	9.11	0.00	35.96	V	45.07	53.98	8.91	AV
2483.5	30.18	0.00	35.96	H	66.14	73.98	7.84	PK
2483.5	10.78	0.00	35.96	H	46.74	53.98	7.24	AV
2483.5	29.57	0.00	35.96	V	65.53	73.98	8.45	PK
2483.5	10.55	0.00	35.96	V	46.51	53.98	7.47	AV

■ Test Plots (26 Tone, RU 8) Z-H

[MIMO]

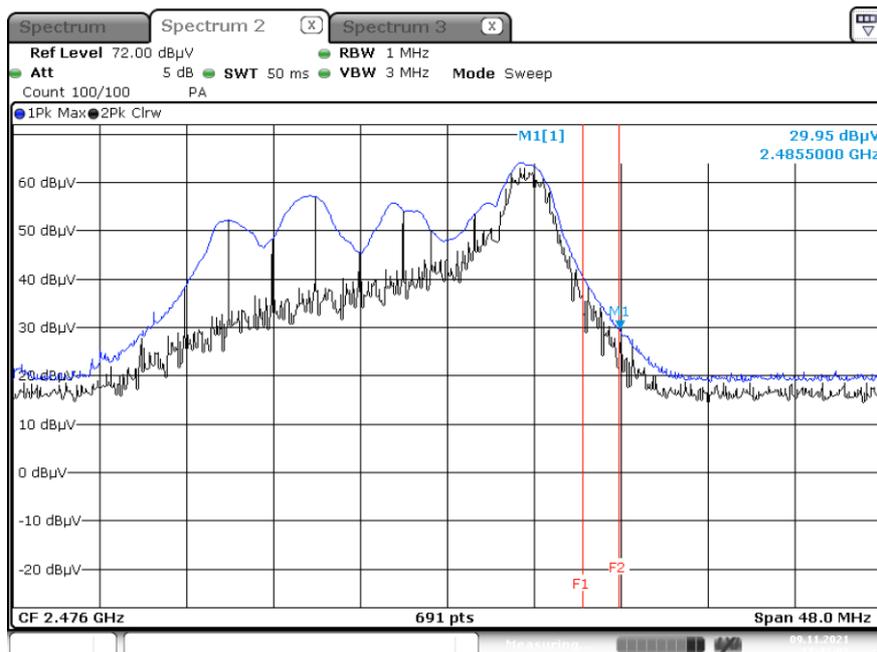
Radiated Restricted Band Edges plot – Average result (802.11ax(HE20) Ch.13)

2 485.5 MHz ~ 2 500.0 MHz



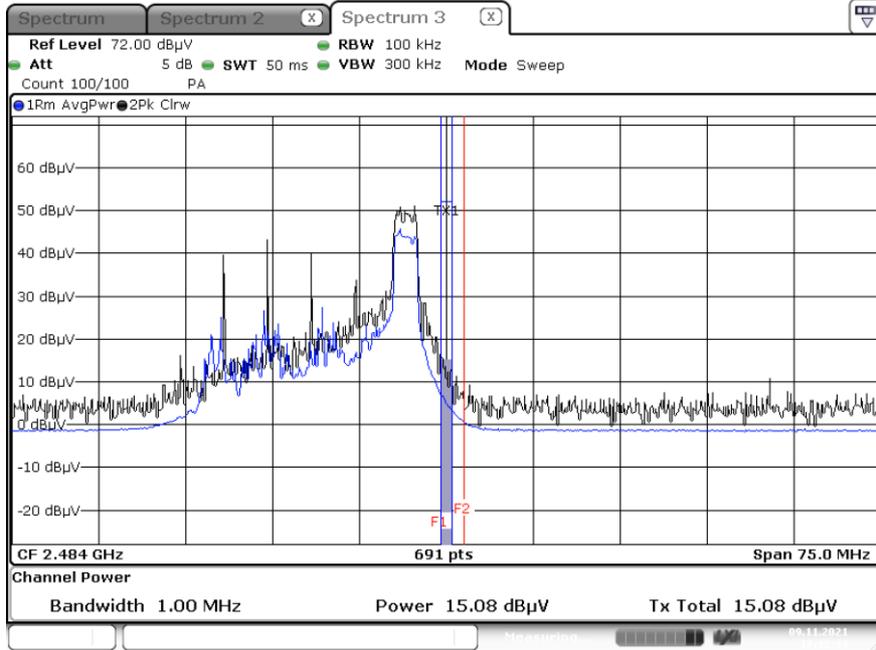
Radiated Restricted Band Edges plot – Peak result (802.11ax(HE20) Ch.13)

2 485.5 MHz ~ 2 500.0 MHz



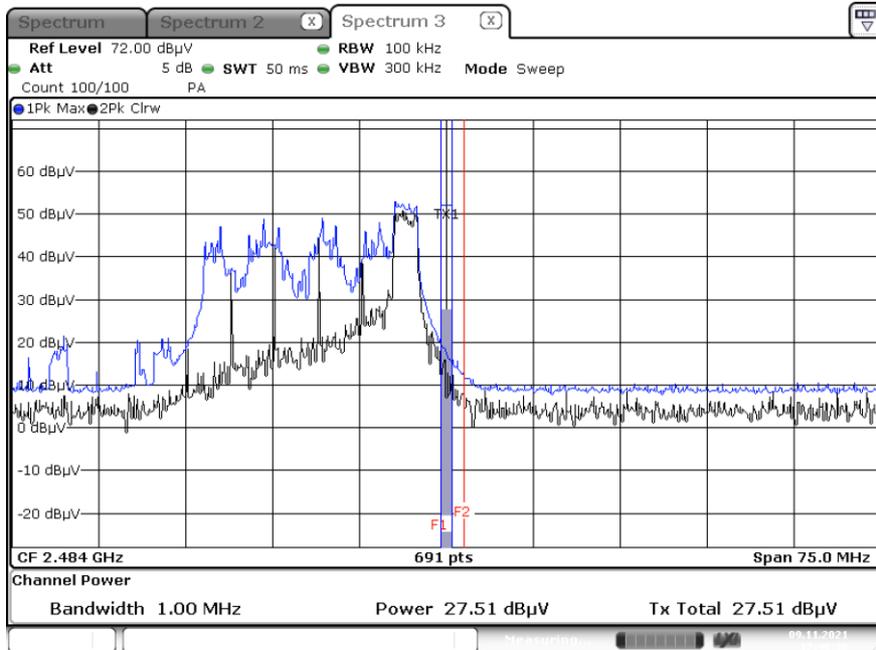
Radiated Restricted Band Edges plot – Average result (802.11ax(HE20) Ch.13)

Integration method Used 2 484.0 MHz



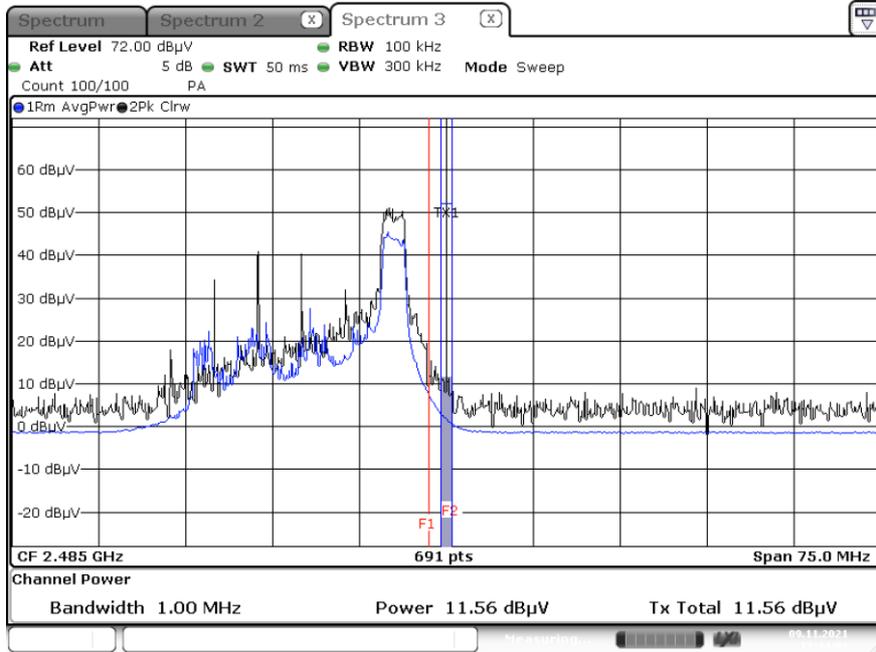
Radiated Restricted Band Edges plot – Peak result (802.11ax(HE20) Ch.13)

Integration method Used 2 484.0 MHz



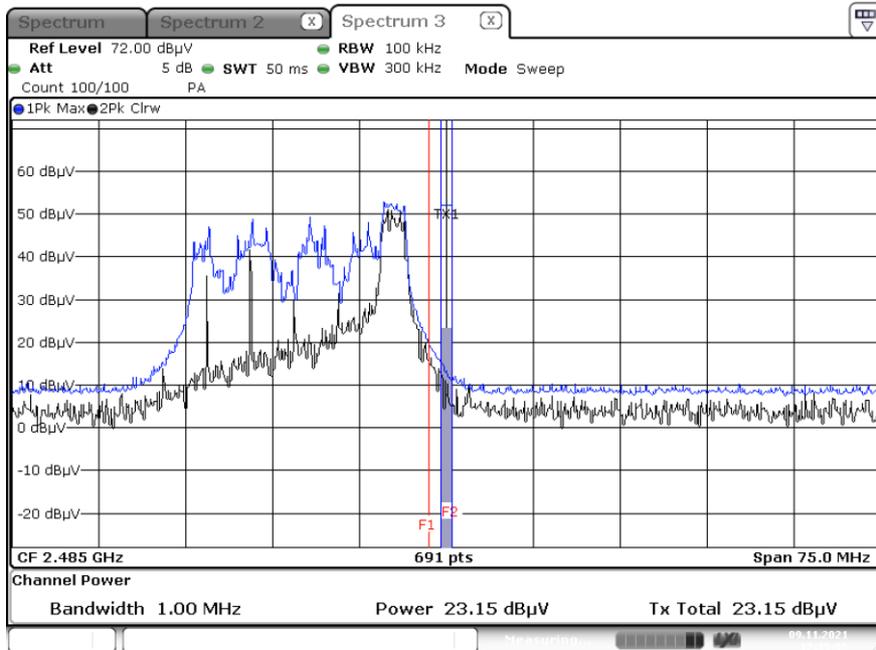
Radiated Restricted Band Edges plot – Average result (802.11ax(HE20) Ch.13)

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.

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-2112-FC011-P