

TEST REPORT

FCC DTS ax Test for SM-F741U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2404-FC045

DATE OF ISSUE
April 26, 2024

Tested by
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**TEST
REPORT****REPORT NO.**

HCT-RF-2404-FC045

DATE OF ISSUE

April 26, 2024

Additional Model

SM-F741U1

Applicant**SAMSUNG Electronics Co., Ltd.**

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

**Product Name
Model Name**Mobile Phone
SM-F741U**Average Output Power**SISO(Ant.1) : 16.64 dBm
SISO(Ant.2) : 15.90 dBm
MIMO_CDD (Ant.1+ Ant.2) : 19.29 dBm**FCC ID**

A3LSMF741U

Date of Test

February 23, 2024 ~ April 26, 2024

FCC Classification

Digital Transmission System(DTS)

Test Standard Used

FCC Rule Part(s): Part 15.247

Test Results

PASS

Location of Test☒ Permanent Testing Lab ☐ On Site Testing Lab
(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	April 26, 2024	Initial Release

Notice

Content

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.

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

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1. EUT DESCRIPTION

Model	SM-F741U		
Additional Model	SM-F741U1		
EUT Type	Mobile Phone		
Power Supply	DC 3.88 V		
Frequency Range	2 412 MHz ~ 2 462 MHz		
Max. RF Output Power	<u>Peak Power</u>	SISO(Ant.1)	25.94 dBm
		SISO(Ant.2)	25.26 dBm
		MIMO_CDD(Ant.1+ Ant.2)	28.62 dBm
	<u>Average Power</u>	SISO(Ant.1)	16.64 dBm
		SISO(Ant.2)	15.90 dBm
		MIMO_CDD(Ant.1+ Ant.2)	19.29 dBm
Modulation Type	OFDM, OFDMA		
Number of Channels	11 Channels		
Antenna Specification	Type: Metal		
Serial number	Conducted : 7b5599bda4507ece Radiated : R3CX30HJ2KL		

ANTENNA CONFIGURATIONS

1. Antenna configuration

Configurations	SISO		MIMO	
	ANT.1	ANT.2	CDD	SDM
802.11ax	O	O	O	O

Note:

- (1) O = Support, X = Not Support
- (2) SISO = Single Input Single Output
- (3) SDM = Spatial Diversity Multiplexing
- (4) CDD = Cyclic Delay Diversity

2.This device supports simultaneous transmission operation, which allows for two channels to operate independent of one another in the 2.4 GHz and 5 GHz or 6GHz 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					Scenario1
Dual Bluetooth + 5 GHz WiFi MIMO			on	on			on	on	Scenario2
Dual Bluetooth + 6 GHz WiFi MIMO					on	on	on	on	Scenario3
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO		on	on	on			on		Scenario4
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 6 GHz WiFi MIMO		on			on	on	on		

3. Directional Gain Calculation

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

$$\text{Directional Gain(CDD)} = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{k=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right]$$

$$\text{Directional gain(SDM)} = G_{\max} + 10 \cdot \text{LOG}(N_{ANT}/N_{SS})$$

Ant Gain (dBi)		N _{ANT} / N _{SS}	Directional Gain (dBi)	
			CDD	SDM
ANT.1	-5.28	2/2	-3.06	-5.28
ANT.2	-6.95			

Note

According to ANSI C63.10-2013 section 14.4.3, the directional gain is calculated using the formula, where G_N is the gain of the nth antenna and N_{ANT} is the total number of antennas used.

$$\text{Directional gain(CDD)} = 10 \cdot \log \left(\left(\frac{10^{(\text{ANT.0 Gain}/20)} + 10^{(\text{ANT.1 Gain}/20)} \right)^2 / 2 \right) \text{ dBi}$$

$$\text{Directional gain(SDM)} = G_{\max} + 10 \cdot \log(N_{ANT}/N_{SS})$$

Sample MIMO Calculation:

Ex) ANT.1 : 11.58 dBm ANT.2 : 12.08 dBm

$$\text{MIMO} = \text{ANT.1} + \text{ANT.2}$$

$$(11.58 \text{ dBm} + 12.08 \text{ dBm}) = (14.387 \text{ mW} + 16.143 \text{ mW}) = 30.53 \text{ mW} = 14.88 \text{ dBm}$$

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 1.5 m 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 March 11, 2024 (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.

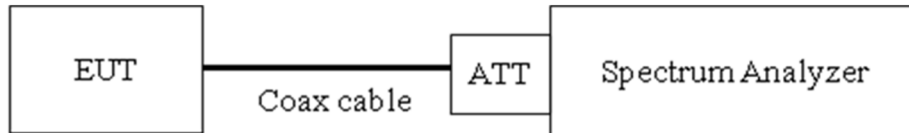
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.98 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (Above 40 GHz)	5.58 (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 $> 50/T$.

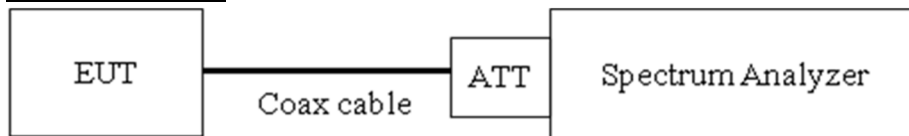
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ($\geq$ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = $T_{\text{on}} / T_{\text{total}}$ and Duty Cycle Factor = $10\log(1/\text{Duty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

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.

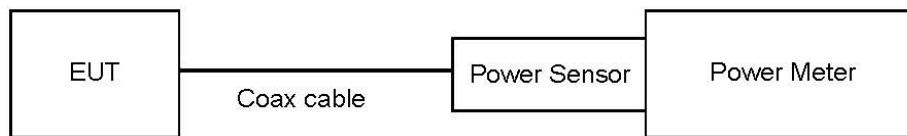
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

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

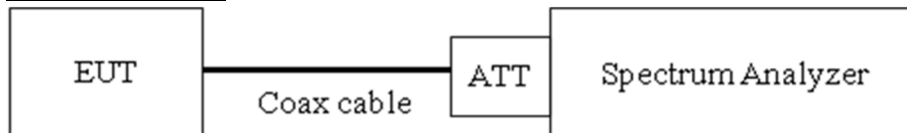
- Conducted Output Power(Peak) = Measured Value + ATT loss + Cable loss
- Conducted Output Power(Average) = Measured Value + ATT loss + Cable loss + Duty Cycle Factor

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 value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

- 11) if then duty factor shall be added to adjust the result if the duty cycle is less than 98 %

Sample Calculation

- Power Spectral Density = Measured Value + ATT loss + Cable loss + Duty Cycle Factor

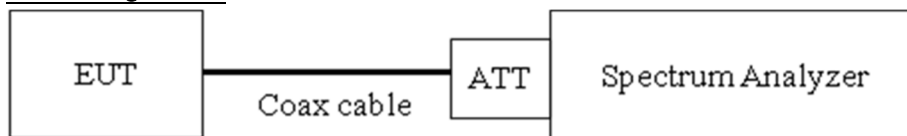
7.5. Conducted Band Edge (Out of Band Emissions) & Conducted Spurious Emissions

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 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	10.03
100	10.10
200	10.14
300	10.16
400	10.18
500	10.24
600	10.22
700	10.27
800	10.28
900	10.30
1000	10.31
2000	10.49
2400	10.51
2500	10.60
3000	10.52
4000	10.60
5000	10.71
6000	10.73
7000	10.80
8000	10.85
9000	10.91
10000	10.97
11000	11.02
12000	11.10
13000	11.19
14000	11.16
15000	11.21
16000	11.22
17000	11.25
18000	11.30
19000	11.32
20000	11.36
21000	11.48
22000	11.55
23000	11.55
24000	11.59
25000	11.68

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

2. Factor = Attenuator loss + Cable loss

3. Ant.1 Total Port offset = Attenuator loss + Cable loss + EUT cable loss(0.38 dB) = 10.98 dB

4. Ant.2 Total Port offset = Attenuator loss + Cable loss = 10.60 dB

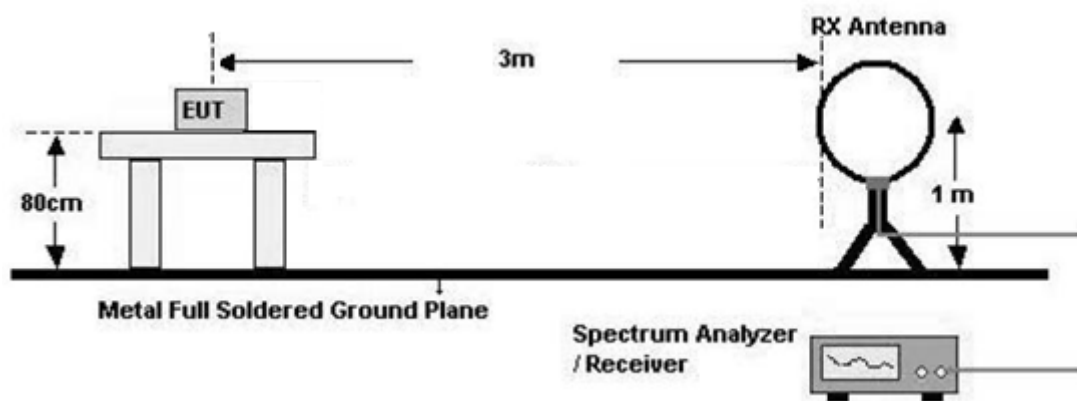
7.6. Radiated Test

Limit

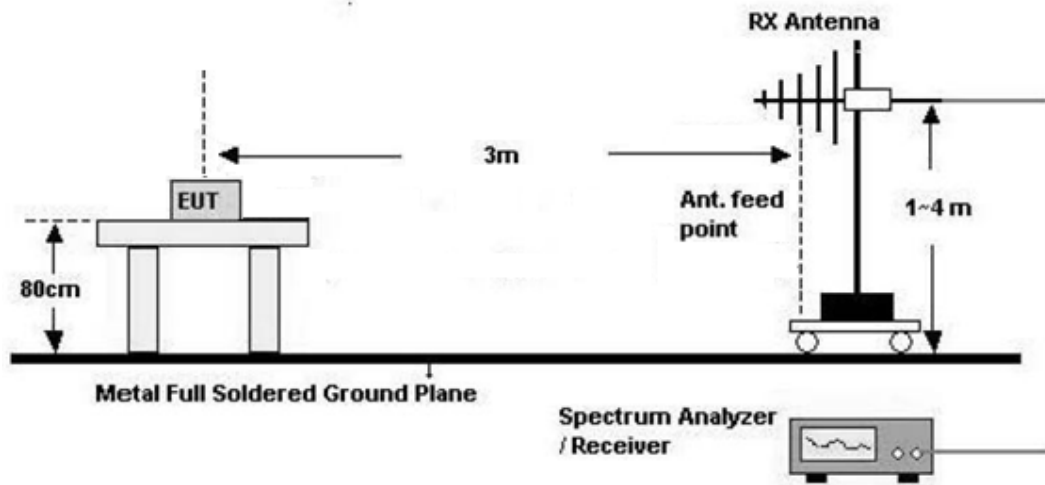
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

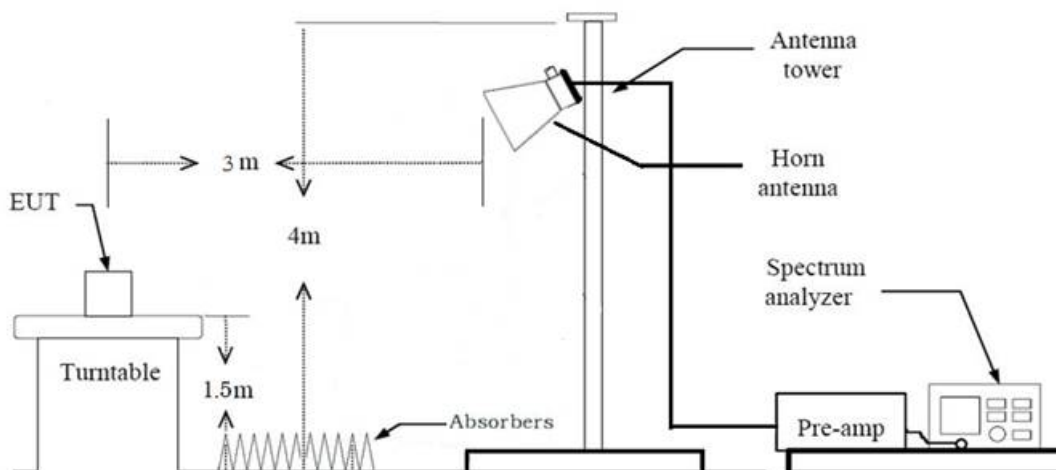
Below 30 MHz



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 = Maxhold
 - RBW = 9 kHz
 - VBW $\geq 3 \times$ RBW
9. Total = Measured value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

KDB 414788 OFS and Chamber Correlation Justification

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

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

Test Procedure of Radiated spurious emissions (Below 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 = Maxhold
- 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 Value + Antenna Factor(A.F) + Cable Loss(C.L)
8. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 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 = Maxhold

- 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 % 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 value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F)

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

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

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

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

+ Duty Cycle Factor

Test Procedure of Radiated Restricted Band Edge

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 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 = Maxhold
 - RBW = 1 MHz
 - VBW $\geq 3 \times$ 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 $\geq 3 \times$ 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 : 2310 MHz ~ 2390 MHz / 2483.5 MHz ~ 2500 MHz
 - 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 % 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 value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

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

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

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

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

7.7. AC Power line Conducted Emissions

Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 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 Value + Correction Factor

7.8. Test RU offset for Tones

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

7.9. Worst case configuration and mode

Conducted test

1. All data rate of operation were investigated and the worst case results are reported.

(Worst case : MCS0)

2. Bandedge (Conducted)

: All Mode (Channel, Tones, RU Offset) of operation were investigated and the worst case configuration results are reported.

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

3. SM-F741U, SM-F741U1 were tested and the worst case results are reported.

(Worst case: SM-F741U)

Radiated test

1. 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

2. The EUT was tested in three modes(Open, Half-open, Closed), the worst case configuration results are reported.

- Radiated Spurious Emissions Worst case : Open mode

- Radiated Restricted Band Edge : Open mode

3. All data rate of operation were investigated and the worst case results are reported.

(Worst case : MCS 0)

4. All Antenna of operation were investigated and the worst case results are reported

- Antenna Operation Type : SISO, MIMO_CDD(Ant.1+Ant.2), MIMO_SDM(Ant.1+Ant.2)

- Worstcase: MIMO_CDD(Ant.1+Ant.2)

5. EUT Axis

- Radiated Spurious Emissions : Z

- Radiated Restricted Band Edge : X

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

Mode	TEST	TONE	RU OFFSET
Open Mode	RSE	WORST CASE : 106T	53
		ADDITIONAL TONE : 26T, 52T, 242T, SU	26T : 8 52T : 40 242T : 61 SU: -
		ADDITIONAL TONE : 106T, 242T, SU	106T : 53 242T : 61 SU: -
		ADDITIONAL TONE : 106T, 242T, SU	106T : 54 242T : 61 SU: -
Half-open mode	Band-Edge	WORST CASE : 242T	61
Closed mode		ADDITIONAL TONE : 26T, 52T, 106T, SU	Low Edge : 0, 37, 53 High Edge : 8, 40, 54
Open Mode		ADDITIONAL TONE : 242T, SU	61
Half-open mode			
Closed mode			

8. SM-F741U, SM-F741U1 were tested and the worst case results are reported.
(Worst case: SM-F741U)

Radiated test(RSDB)

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 : Y, X

3. All of RSDB Scenario were investigated and the worst case configuration results are reported.

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					Scenario1
Dual Bluetooth + 5 GHz WiFi MIMO			on	on			on	on	Scenario2
Dual Bluetooth + 6 GHz WiFi MIMO					on	on	on	on	Scenario3
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO		on	on	on			on		Scenario4
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 6 GHz WiFi MIMO		on			on	on	on		

4. The RSDB mode test investigated both intermodulation and radiated spurious emissions.

And the worst results were reported.

- Worst result: Radiated spurious emissions
- Intermodulation: No signals are generated.
- Radiated spurious emissions: cf. Section 10.6.2.

5. 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.)

RSDB Scenario 1	Description	2.4GHz Emission	5 GHz Emission
2.4 GHz WiFi MIMO + 5 GHz WiFi MIMO	Antenna	Ant All	Ant All
	Channel	11	36
	Data Rate	MCS0	MCS0
	Mode	802.11ax(HE20)	802.11ax(HE20)
	Tone, RU	106, 53	106, 53

Note : UNII RSDB Data refer to [UNII ax] Test Report

RSDB Scenario 4	Description	Bluetooth Emission	2.4GHz Emission	5 GHz Emission
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO	Antenna	ANT1	ANT2	Ant All
	Channel	78	11	36
	Data Rate	1 Mbps	MCS0	MCS0
	Mode	GFSK	802.11ax(HE20)	802.11ax(HE20)
	Tone, RU	N/A	106, 53	106, 53

Note : UNII ax, BT RSDB Data refer to [UNII ax], [BT] Test Report

6. SM-F741U, SM-F741U1 were tested and the worst case results are reported.

(Worst case: SM-F741U)

AC Power line Conducted Emissions

1. Please refer to the [DTS] Test Report.

2. SM-F741U, SM-F741U1 were tested and the worst case results are reported.

(Worst case: SM-F741U)

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

Note1:

1. Please refer to the [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	4.575	4.606	0.993	0.029
		MCS1	4.568	4.594	0.995	0.024
		MCS2	3.503	3.528	0.993	0.031
		MCS3	2.643	2.668	0.991	0.041
		MCS4	1.786	1.809	0.987	0.057
		MCS5	1.354	1.377	0.983	0.073
		MCS6	1.214	1.238	0.981	0.083
		MCS7	1.103	1.126	0.980	0.089
		MCS8	0.926	0.949	0.976	0.107
		MCS9	0.843	0.867	0.973	0.121
	52	MCS0	4.565	4.590	0.994	0.024
		MCS1	2.645	2.668	0.991	0.037
		MCS2	1.787	1.808	0.988	0.051
		MCS3	1.352	1.377	0.982	0.078
		MCS4	0.926	0.950	0.975	0.110
		MCS5	0.710	0.733	0.969	0.135
		MCS6	0.667	0.690	0.968	0.143
		MCS7	0.658	0.682	0.966	0.150
		MCS8	0.659	0.682	0.967	0.145
		MCS9	0.656	0.679	0.967	0.148
	106	MCS0	2.490	2.516	0.990	0.044
		MCS1	1.279	1.301	0.983	0.076
		MCS2	0.875	0.898	0.974	0.113
		MCS3	0.674	0.696	0.968	0.142
		MCS4	0.623	0.646	0.965	0.156
		MCS5	0.616	0.639	0.964	0.157
		MCS6	0.613	0.636	0.964	0.158
		MCS7	0.613	0.636	0.964	0.158
		MCS8	0.613	0.636	0.964	0.158

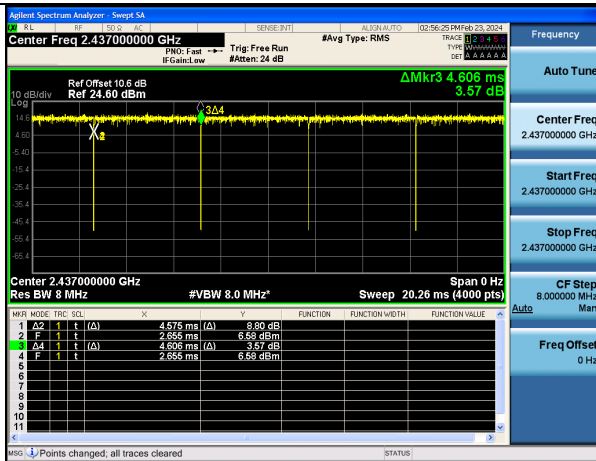
Mode	Tone (T)	Data Rate	On Time (ms)	Total Time (ms)	Duty Cycle	Duty Cycle Factor (dB)
	242	MCS9	0.609	0.632	0.964	0.159
		MCS0	1.123	1.145	0.981	0.084
		MCS1	0.605	0.628	0.964	0.160
		MCS2	0.598	0.622	0.962	0.167
		MCS3	0.613	0.636	0.964	0.161
		MCS4	0.601	0.624	0.962	0.166
		MCS5	0.598	0.622	0.963	0.165
		MCS6	0.595	0.617	0.963	0.163
		MCS7	0.595	0.617	0.963	0.163
		MCS8	0.599	0.622	0.963	0.162
		MCS9	0.595	0.617	0.963	0.163
802.11ax(SU)	BW 20	MCS0	5.447	5.462	0.997	0.012
		MCS1	5.452	5.467	0.997	0.012
		MCS2	5.447	5.462	0.997	0.012
		MCS3	5.447	5.467	0.996	0.016
		MCS4	5.447	5.467	0.996	0.016
		MCS5	5.442	5.462	0.996	0.016
		MCS6	5.447	5.464	0.997	0.013
		MCS7	5.447	5.467	0.996	0.016
		MCS8	5.447	5.462	0.997	0.012
		MCS9	5.447	5.467	0.996	0.016

Test Plots

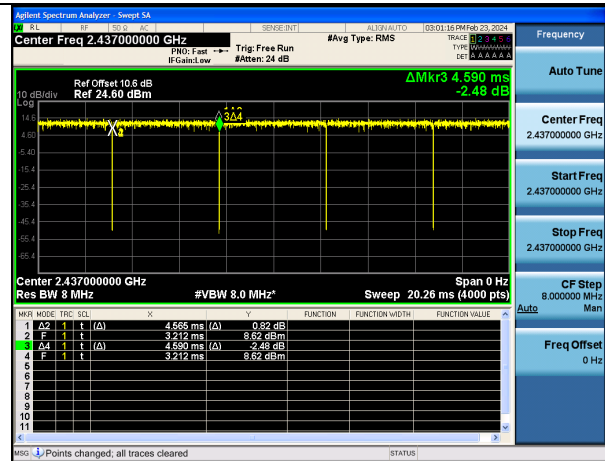
Note:

In order to simplify the report, attached plots were only the lowest data rate.

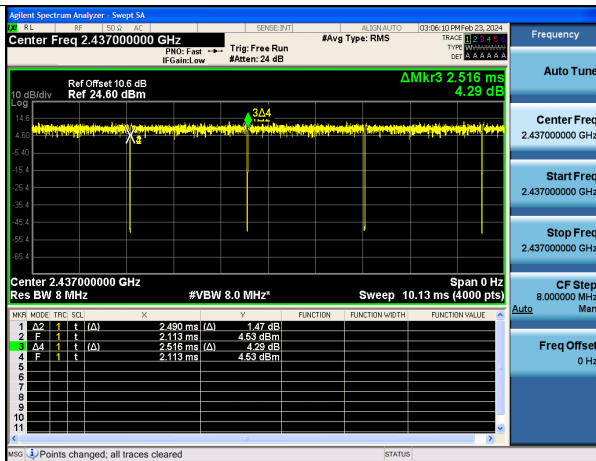
26 Tones (MCS 0)



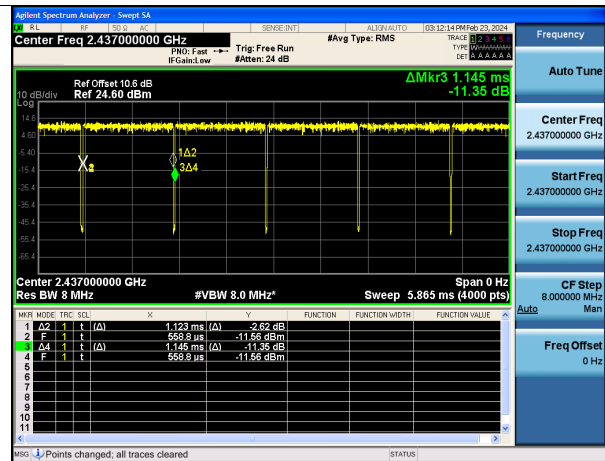
52 Tones (MCS 0)



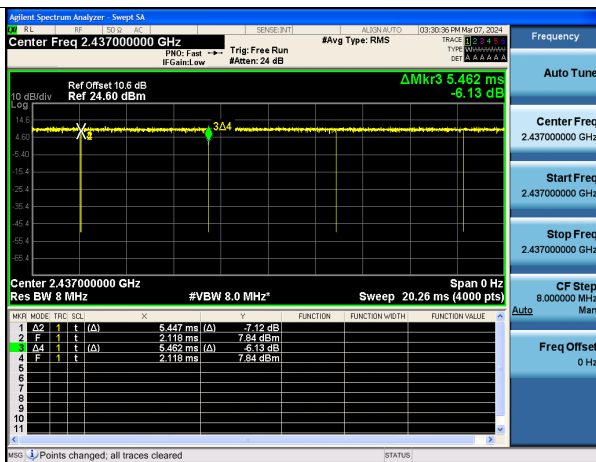
106 Tones (MCS 0)



242 Tones (MCS 0)



SU (MCS 0)



9.2 6 dB BANDWIDTH

Limit : > 500 kHz

[ANT.1]

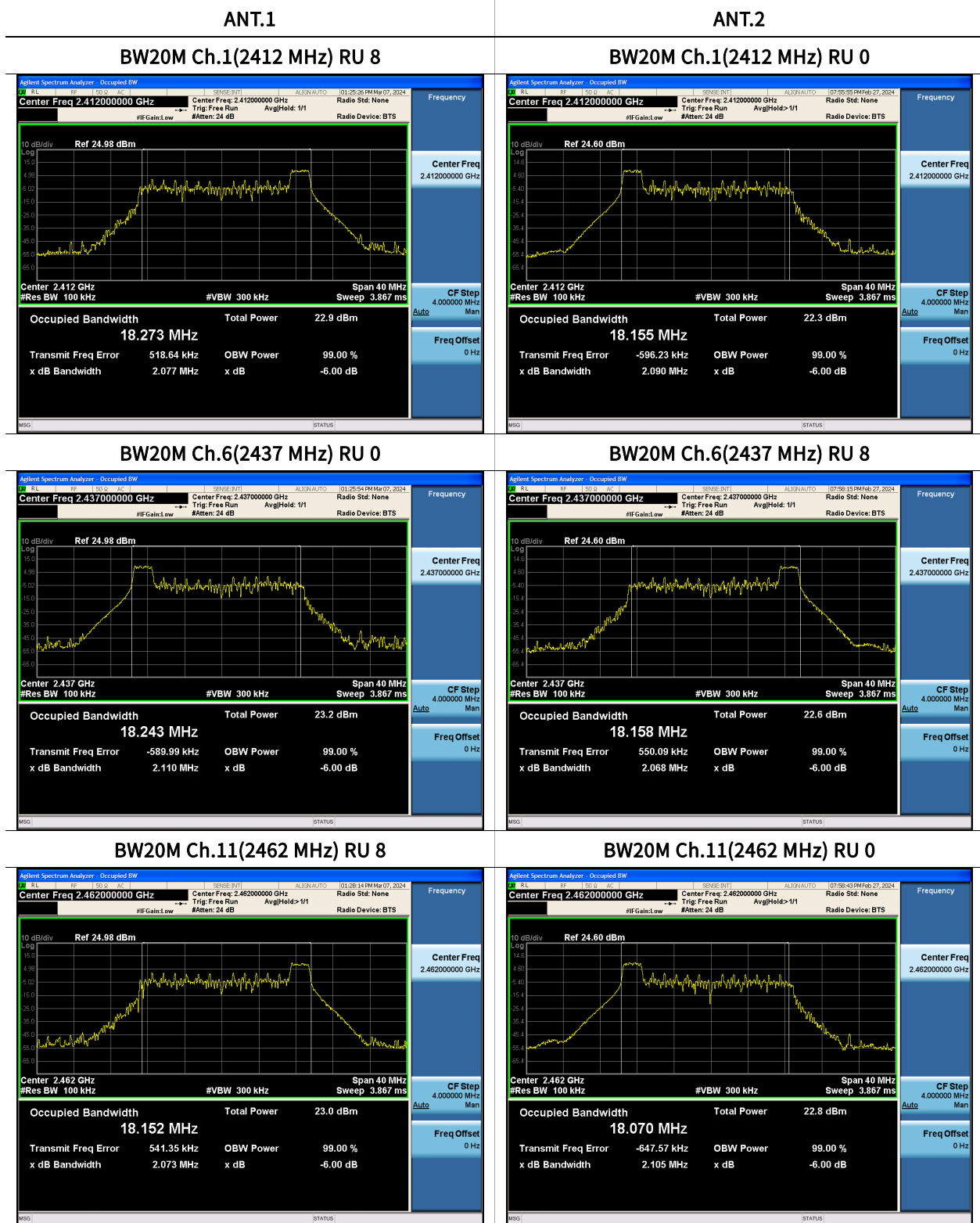
Mode	Freq. [MHz]	CH.	6dB Bandwidth [MHz]			99% Occupied Bandwidth [MHz]		
			RU Index : Low	RU Index : Mid	RU Index : High	RU Index : Low	RU Index : Mid	RU Index : High
			ANT1	ANT1	ANT1	ANT1	ANT1	ANT1
HE20 26T	2412	1	2.101	2.677	2.077	18.193	17.219	18.273
	2437	6	2.110	2.697	2.127	18.243	17.337	18.291
	2462	11	2.089	2.702	2.073	18.081	17.100	18.152
HE20 52T	2412	1	17.09	13.85	17.04	18.162	17.247	18.209
	2437	6	17.09	15.10	4.503	18.199	17.383	18.003
	2462	11	14.55	15.06	17.02	18.096	17.186	18.099
HE20 106T	2412	1	18.15	-	17.41	18.187	-	18.257
	2437	6	18.16	-	17.38	18.258	-	18.251
	2462	11	17.19	-	17.35	18.163	-	18.222
HE20 242T	2412	1	-	19.12	-	-	18.993	-
	2437	6	-	19.11	-	-	19.006	-
	2462	11	-	19.10	-	-	18.964	-
HE20 SU	2412	1	-	19.11	-	-	19.023	-
	2437	6	-	19.15	-	-	19.038	-
	2462	11	-	19.11	-	-	18.996	-

[ANT.2]

Mode	Freq. [MHz]	CH.	6dB Bandwidth [MHz]			99% Occupied Bandwidth [MHz]		
			RU Index : Low	RU Index : Mid	RU Index : High	RU Index : Low	RU Index : Mid	RU Index : High
			ANT2	ANT2	ANT2	ANT2	ANT2	ANT2
HE20 26T	2412	1	2.090	2.703	2.100	18.155	17.069	18.262
	2437	6	2.072	2.737	2.068	18.176	17.133	18.158
	2462	11	2.105	2.725	2.106	18.070	17.110	18.329
HE20 52T	2412	1	17.09	15.07	17.05	18.163	17.077	18.132
	2437	6	15.83	15.09	8.241	18.174	17.189	18.047
	2462	11	10.86	12.55	17.04	18.083	17.215	18.260
HE20 106T	2412	1	17.19	-	17.43	18.171	-	18.247
	2437	6	18.14	-	17.19	18.214	-	18.163
	2462	11	17.17	-	17.41	18.134	-	18.266
HE20 242T	2412	1	-	19.09	-	-	18.974	-
	2437	6	-	19.08	-	-	18.973	-
	2462	11	-	19.05	-	-	18.963	-
HE20 SU	2412	1	-	19.12	-	-	19.002	-
	2437	6	-	19.15	-	-	18.996	-
	2462	11	-	19.08	-	-	18.996	-

Test Plots

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



9.3 OUTPUT POWER

Limit : 30 dBm

Peak Power

[MIMO_CDD(Ant.1+Ant.2)]

Note:

1. MIMO Peak Power = $10 \cdot \log((10^{(\text{Ant.1 Peak power} / 10)}) + (10^{(\text{Ant.2 Peak power} / 10)}))$

Mode	Freq. [MHz]	CH.	Total Peak Power [dBm]								
			RU Index : Low			RU Index : Mid			RU Index : High		
			ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO
HE20 26T	2412	1	24.12	23.30	26.74	23.53	22.91	26.24	23.86	23.17	26.54
	2437	6	24.29	23.53	26.94	23.30	23.15	26.24	24.44	23.71	27.10
	2462	11	24.35	23.81	27.10	23.98	22.97	26.52	23.97	22.97	26.50
HE20 52T	2412	1	24.89	24.20	27.57	24.69	24.08	27.40	24.82	24.07	27.47
	2437	6	25.04	24.29	27.69	24.19	24.23	27.22	25.16	24.42	27.82
	2462	11	25.15	24.58	27.88	24.89	24.23	27.59	24.80	23.83	27.35
HE20 106T	2412	1	25.80	25.09	28.47	-	-	-	25.69	25.07	28.40
	2437	6	25.55	25.07	28.32	-	-	-	25.80	25.14	28.50
	2462	11	25.94	25.26	28.62	-	-	-	25.73	24.82	28.30
HE20 242T	2412	1	-	-	-	25.17	24.46	27.84	-	-	-
	2437	6	-	-	-	25.07	24.52	27.81	-	-	-
	2462	11	-	-	-	23.20	22.35	25.81	-	-	-
HE20 SU	2412	1	-	-	-	25.83	25.03	28.46	-	-	-
	2437	6	-	-	-	25.70	25.05	28.40	-	-	-
	2462	11	-	-	-	24.75	25.02	27.90	-	-	-

Average Power

[MIMO_CDD(Ant.1+Ant.2)]

Note:

1. MIMO Average Power = $10 \cdot \log(((10^{(\text{Ant.1 Average power} / 10)}) + (10^{(\text{Ant.2 Average power} / 10)}))$

Mode	Freq. [MHz]	CH.	Total Average Power [dBm]								
			RU Index : Low			RU Index : Mid			RU Index : High		
			ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO
HE20 26T	2412	1	13.81	12.97	16.42	13.19	12.58	15.90	13.68	12.84	16.29
	2437	6	13.98	12.98	16.52	12.68	12.81	15.75	13.98	13.38	16.70
	2462	11	13.97	13.67	16.83	13.70	12.69	16.23	13.57	12.20	15.95
HE20 52T	2412	1	14.65	14.03	17.37	14.39	13.84	17.14	14.45	13.82	17.16
	2437	6	14.77	13.96	17.40	13.49	13.86	16.69	14.97	14.24	17.63
	2462	11	14.87	14.44	17.67	14.74	14.01	17.40	14.60	13.36	17.04
HE20 106T	2412	1	15.70	14.91	18.34	-	-	-	15.55	14.85	18.23
	2437	6	15.15	14.78	17.98	-	-	-	15.81	14.99	18.43
	2462	11	15.68	15.21	18.47	-	-	-	15.55	14.41	18.03
HE20 242T	2412	1	-	-	-	16.48	15.73	19.14	-	-	-
	2437	6	-	-	-	16.37	15.73	19.08	-	-	-
	2462	11	-	-	-	14.51	13.58	17.08	-	-	-
HE20 SU	2412	1	-	-	-	16.64	15.89	19.29	-	-	-
	2437	6	-	-	-	16.58	15.90	19.27	-	-	-
	2462	11	-	-	-	15.55	14.81	18.21	-	-	-

9.4 POWER SPECTRAL DENSITY

Limit : 8 dBm/3kHz

Note :

1. MIMO Total PSD = $10 \cdot \log(((10^{\text{Ant.1 PSD}/10}) + (10^{\text{Ant.2 PSD}/10})))$
2. Total PSD = Measured Value + Duty Cycle Factor

[MIMO_CDD(Ant.1+Ant.2)]

Mode	Freq. [MHz]	CH.	Total Power Spectral Density [dBm/MHz]								
			RU Index : Low			RU Index : Mid			RU Index : High		
			ANT1	ANT2	MIMO	ANT1	ANT2	MIMO	ANT1	ANT2	MIMO
HE20 26T	2412	1	-3.312	-4.273	-0.756	-4.113	-4.781	-1.424	-3.472	-4.656	-1.014
	2437	6	-3.284	-4.146	-0.684	-4.553	-4.427	-1.479	-2.904	-3.994	-0.405
	2462	11	-3.350	-3.536	-0.432	-3.774	-4.591	-1.153	-3.853	-5.043	-1.397
HE20 52T	2412	1	-5.686	-6.193	-2.922	-5.755	-6.082	-2.905	-5.770	-6.287	-3.010
	2437	6	-4.979	-6.242	-2.554	-6.533	-5.982	-3.238	-5.044	-5.794	-2.392
	2462	11	-5.195	-5.808	-2.480	-5.521	-5.632	-2.566	-5.737	-6.980	-3.304
HE20 106T	2412	1	-7.363	-7.903	-4.614	-	-	-	-7.456	-8.037	-4.727
	2437	6	-7.343	-8.282	-4.777	-	-	-	-6.820	-7.903	-4.318
	2462	11	-7.286	-7.614	-4.437	-	-	-	-7.334	-8.559	-4.893
HE20 242T	2412	1	-	-	-	-9.107	-10.077	-6.554	-	-	-
	2437	6	-	-	-	-8.657	-9.811	-6.185	-	-	-
	2462	11	-	-	-	-11.654	-12.002	-8.814	-	-	-
HE20 SU	2412	1	-	-	-	-10.578	-11.087	-7.815	-	-	-
	2437	6	-	-	-	-10.167	-11.219	-7.651	-	-	-
	2462	11	-	-	-	-11.164	-11.842	-8.479	-	-	-

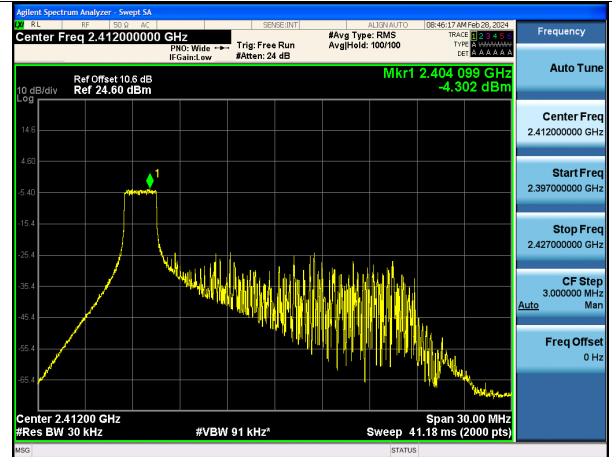
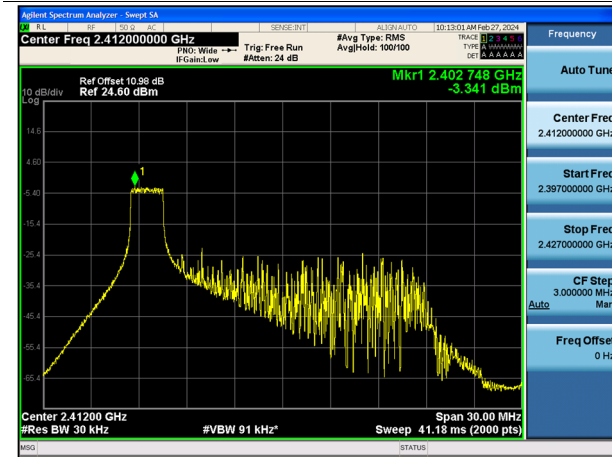
Test Plots

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

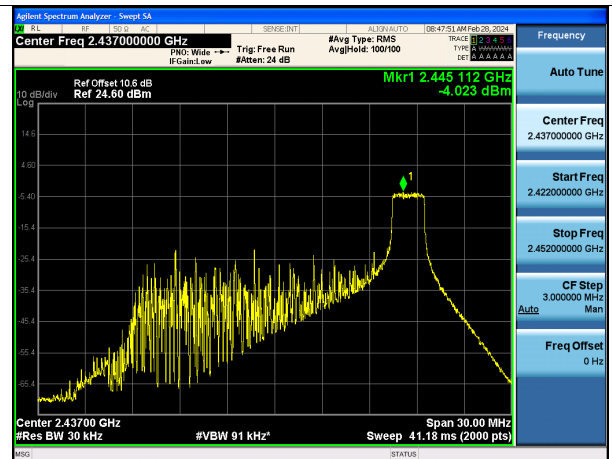
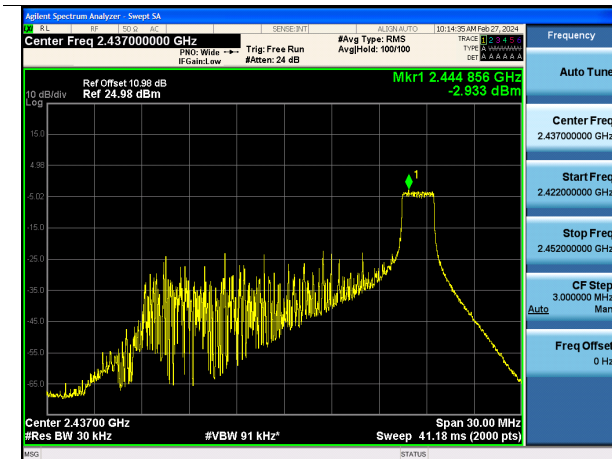
ANT.1

ANT.2

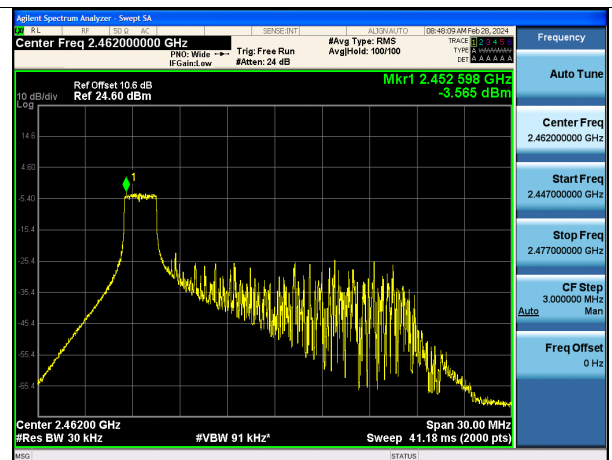
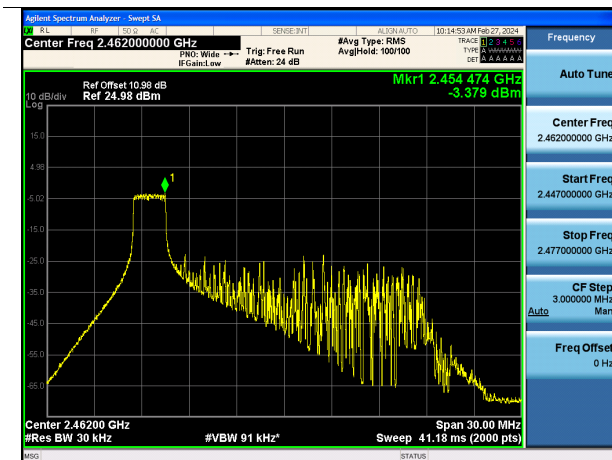
BW20M Ch.1(2412 MHz) RU 0



BW20M Ch.6(2437 MHz) RU 8



BW20M Ch.11(2462 MHz) RU 0



9.5 BAND EDGE / CONDUCTED SPURIOUS EMISSIONS

Band Edge

Limit : 30 dBc

[ANT.1]

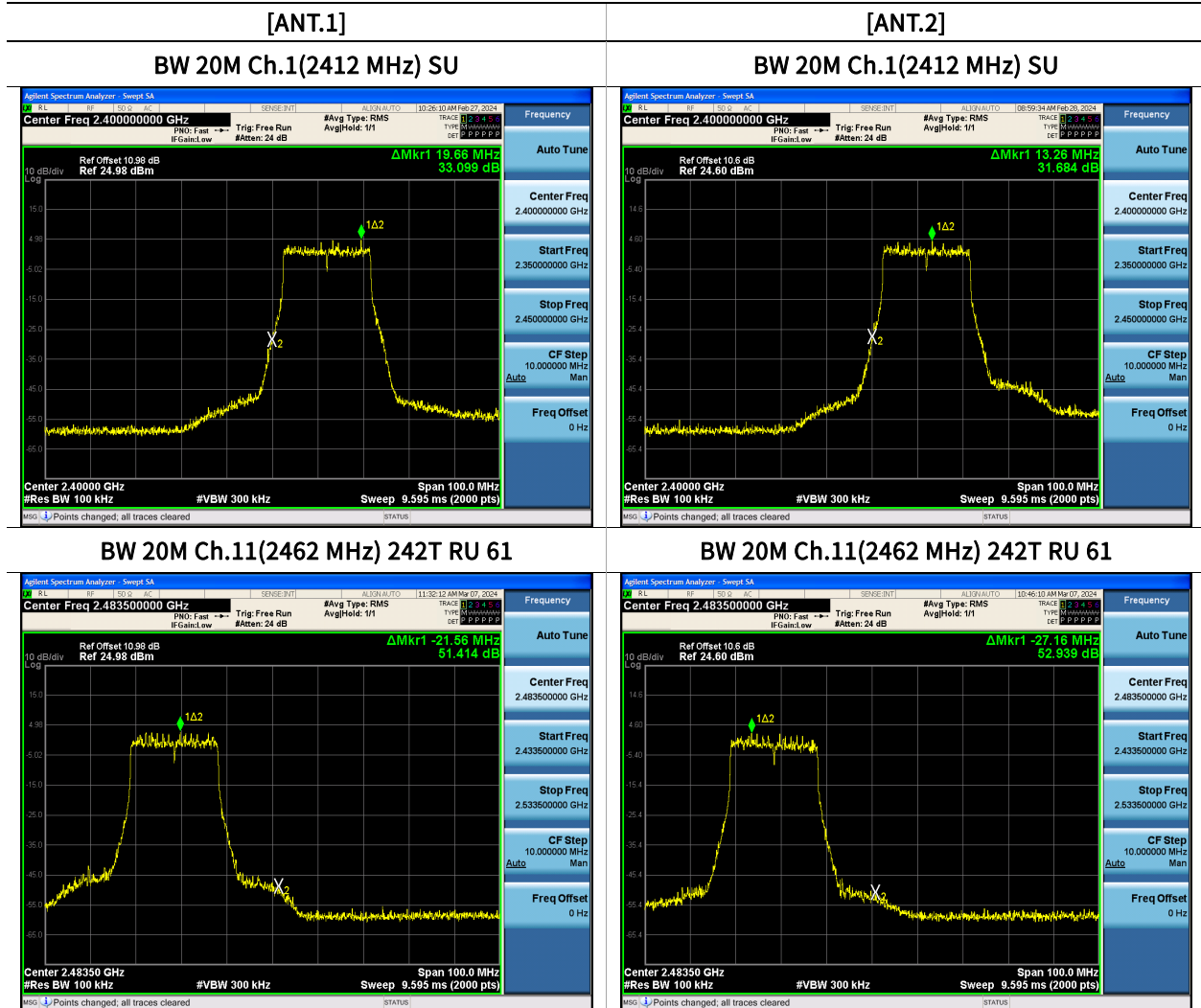
Mode	Freq. [MHz]	CH.	RU Index	Measured Position	Band edge [dB]
HE20	2412	1	Low	Lowest Bandedge	35.180
26T	2462	11	High	Highest Bandedge	64.019
HE20	2412	1	Low	Lowest Bandedge	34.381
52T	2462	11	High	Highest Bandedge	58.798
HE20	2412	1	Low	Lowest Bandedge	35.143
106T	2462	11	High	Highest Bandedge	59.036
HE20	2412	1	Low	Lowest Bandedge	36.893
242T	2462	11	High	Highest Bandedge	51.414
HE20	2412	1	Low	Lowest Bandedge	33.099
SU	2462	11	High	Highest Bandedge	53.151

[ANT.2]

Mode	Freq. [MHz]	CH.	RU Index	Measured Position	Band edge [dB]
HE20	2412	1	Low	Lowest Bandedge	35.814
26T	2462	11	High	Highest Bandedge	62.512
HE20	2412	1	Low	Lowest Bandedge	35.817
52T	2462	11	High	Highest Bandedge	60.552
HE20	2412	1	Low	Lowest Bandedge	35.462
106T	2462	11	High	Highest Bandedge	58.582
HE20	2412	1	Low	Lowest Bandedge	37.396
242T	2462	11	High	Highest Bandedge	52.939
HE20	2412	1	Low	Lowest Bandedge	31.684
SU	2462	11	High	Highest Bandedge	54.816

Test Plots

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



Conducted Spurious Emissions

Limit : 30 dBc

[ANT.1]

Mode	Freq. [MHz]	CH.	Conducted Spurious Emissions [dB]		
			RU Index : Low	RU Index : Mid	RU Index : High
			ANT1	ANT1	ANT1
HE20 26T	2412	1	61.034	60.333	59.584
	2437	6	61.551	58.193	60.716
	2462	11	61.539	61.329	60.492
HE20 52T	2412	1	58.990	58.054	57.899
	2437	6	58.921	57.329	58.805
	2462	11	58.989	58.784	58.222
HE20 106T	2412	1	58.195	-	57.187
	2437	6	56.750	-	56.129
	2462	11	58.260	-	58.309
HE20 242T	2412	1	-	56.471	-
	2437	6	-	57.075	-
	2462	11	-	54.900	-
HE20 SU	2412	1	-	57.224	-
	2437	6	-	55.397	-
	2462	11	-	54.523	-

[ANT.2]

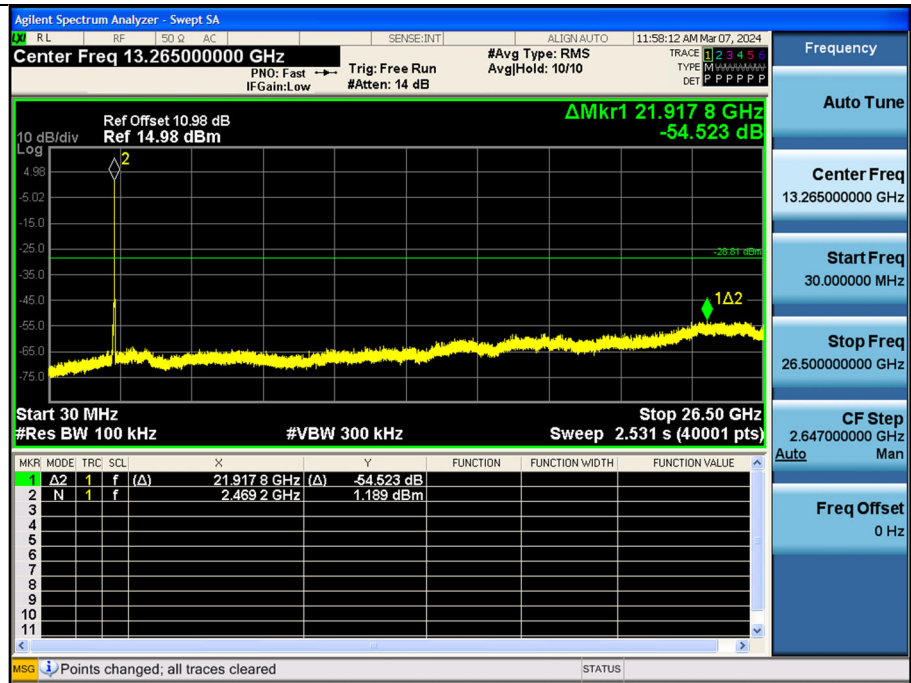
Mode	Freq. [MHz]	CH.	Conducted Spurious Emissions [dB]		
			RU Index : Low	RU Index : Mid	RU Index : High
			ANT2	ANT2	ANT2
HE20 26T	2412	1	53.852	54.914	54.285
	2437	6	51.811	52.400	52.154
	2462	11	49.562	52.855	55.525
HE20 52T	2412	1	50.763	50.146	50.423
	2437	6	49.750	51.422	51.312
	2462	11	50.101	52.417	51.965
HE20 106T	2412	1	51.339	-	50.381
	2437	6	49.967	-	53.884
	2462	11	50.616	-	53.236
HE20 242T	2412	1	-	48.516	-
	2437	6	-	56.719	-
	2462	11	-	53.144	-
HE20 SU	2412	1	-	52.249	-
	2437	6	-	51.072	-
	2462	11	-	54.869	-

Test Plots

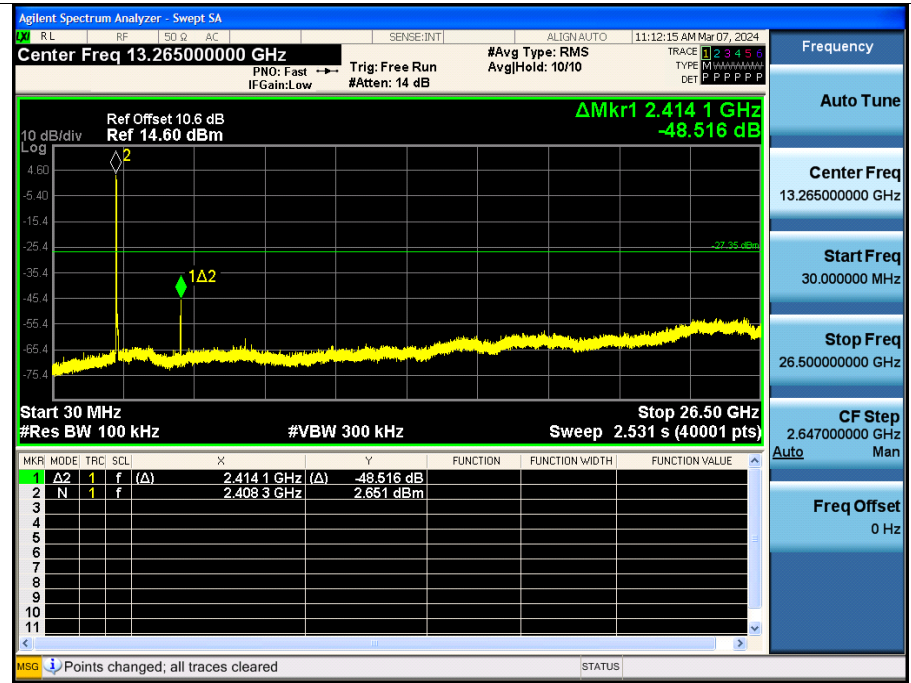
Note:

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

[ANT.1] BW20M Ch.11(2 462 MHz) SU



[ANT.2] BW20M Ch.1(2 412 MHz) 242T RU 61



9.6 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30 MHz

Frequency	Measured Value	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 (dB V) + Distance extrapolation factor

Frequency Range : Below 1 GHz

Frequency	Measured Value	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.

Frequency Range : Above 1 GHz

[MIMO_CDD(Ant.1+Ant.2)]

[Open mode]

1. 26 Tones RU 8

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz
Channel No.	1 Ch
RU offset	8

Frequency	Measured Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	44.13	0.00	4.15	V	48.28	73.98	25.70	PK
4824	33.11	0.00	4.15	V	37.26	53.98	16.72	AV
7236	38.63	0.00	13.01	V	51.64	73.98	22.34	PK
7236	26.92	0.00	13.01	V	39.93	53.98	14.05	AV
4824	43.72	0.00	4.15	H	47.87	73.98	26.11	PK
4824	33.37	0.00	4.15	H	37.52	53.98	16.46	AV
7236	39.17	0.00	13.01	H	52.18	73.98	21.80	PK
7236	27.04	0.00	13.01	H	40.05	53.98	13.93	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437 MHz
Channel No.	6 Ch
RU offset	8

Frequency	Measured Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	44.68	0.00	4.11	V	48.79	73.98	25.19	PK
4874	33.90	0.00	4.11	V	38.01	53.98	15.97	AV
7311	38.88	0.00	12.33	V	51.21	73.98	22.77	PK
7311	27.46	0.00	12.33	V	39.79	53.98	14.19	AV
4874	44.20	0.00	4.11	H	48.31	73.98	25.67	PK
4874	33.25	0.00	4.11	H	37.36	53.98	16.62	AV
7311	39.32	0.00	12.33	H	51.65	73.98	22.33	PK
7311	27.52	0.00	12.33	H	39.85	53.98	14.13	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462 MHz
Channel No.	11 Ch
RU offset	8

Frequency	Measured Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	44.13	0.00	5.10	V	49.23	73.98	24.75	PK
4924	32.68	0.00	5.10	V	37.78	53.98	16.20	AV
7386	39.28	0.00	12.74	V	52.02	73.98	21.96	PK
7386	27.58	0.00	12.74	V	40.32	53.98	13.66	AV
4924	43.99	0.00	5.10	H	49.09	73.98	24.89	PK
4924	32.77	0.00	5.10	H	37.87	53.98	16.11	AV
7386	39.37	0.00	12.74	H	52.11	73.98	21.87	PK
7386	27.75	0.00	12.74	H	40.49	53.98	13.49	AV

2. 52 Tones RU 40

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz
Channel No.	1 Ch
RU offset	40

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	43.63	0.00	4.15	V	47.78	73.98	26.20	PK
4824	33.12	0.00	4.15	V	37.27	53.98	16.71	AV
7236	38.54	0.00	13.01	V	51.55	73.98	22.43	PK
7236	26.91	0.00	13.01	V	39.92	53.98	14.06	AV
4824	44.54	0.00	4.15	H	48.69	73.98	25.29	PK
4824	33.17	0.00	4.15	H	37.32	53.98	16.66	AV
7236	42.82	0.00	13.01	H	55.83	73.98	18.15	PK
7236	27.01	0.00	13.01	H	40.02	53.98	13.96	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437 MHz
Channel No.	6 Ch
RU offset	40

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	44.97	0.00	4.11	V	49.08	73.98	24.90	PK
4874	33.61	0.00	4.11	V	37.72	53.98	16.26	AV
7311	39.45	0.00	12.33	V	51.78	73.98	22.20	PK
7311	27.44	0.00	12.33	V	39.77	53.98	14.21	AV
4874	43.65	0.00	4.11	H	47.76	73.98	26.22	PK
4874	33.29	0.00	4.11	H	37.40	53.98	16.58	AV
7311	39.48	0.00	12.33	H	51.81	73.98	22.17	PK
7311	27.51	0.00	12.33	H	39.84	53.98	14.14	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462 MHz
Channel No.	11 Ch
RU offset	40

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	43.34	0.00	5.10	V	48.44	73.98	25.54	PK
4924	32.93	0.00	5.10	V	38.03	53.98	15.95	AV
7386	38.97	0.00	12.74	V	51.71	73.98	22.27	PK
7386	27.51	0.00	12.74	V	40.25	53.98	13.73	AV
4924	44.27	0.00	5.10	H	49.37	73.98	24.61	PK
4924	32.74	0.00	5.10	H	37.84	53.98	16.14	AV
7386	39.81	0.00	12.74	H	52.55	73.98	21.43	PK
7386	27.79	0.00	12.74	H	40.53	53.98	13.45	AV

3. 106 Tones RU 53

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz
Channel No.	1 Ch
RU offset	53

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	43.48	0.00	4.15	V	47.63	73.98	26.35	PK
4824	33.38	0.00	4.15	V	37.53	53.98	16.45	AV
7236	38.95	0.00	13.01	V	51.96	73.98	22.02	PK
7236	26.85	0.00	13.01	V	39.86	53.98	14.12	AV
4824	43.81	0.00	4.15	H	47.96	73.98	26.02	PK
4824	33.11	0.00	4.15	H	37.26	53.98	16.72	AV
7236	38.22	0.00	13.01	H	51.23	73.98	22.75	PK
7236	26.97	0.00	13.01	H	39.98	53.98	14.00	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437 MHz
Channel No.	6 Ch
RU offset	53

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	43.98	0.00	4.11	V	48.09	73.98	25.89	PK
4874	33.28	0.00	4.11	V	37.39	53.98	16.59	AV
7311	39.91	0.00	12.33	V	52.24	73.98	21.74	PK
7311	27.31	0.00	12.33	V	39.64	53.98	14.34	AV
4874	45.33	0.00	4.11	H	49.44	73.98	24.54	PK
4874	33.15	0.00	4.11	H	37.26	53.98	16.72	AV
7311	39.71	0.00	12.33	H	52.04	73.98	21.94	PK
7311	27.57	0.00	12.33	H	39.90	53.98	14.08	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462 MHz
Channel No.	11 Ch
RU offset	53

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	43.97	0.00	5.10	V	49.07	73.98	24.91	PK
4924	32.68	0.00	5.10	V	37.78	53.98	16.20	AV
7386	39.46	0.00	12.74	V	52.20	73.98	21.78	PK
7386	27.80	0.00	12.74	V	40.54	53.98	13.44	AV
4924	43.31	0.00	5.10	H	48.41	73.98	25.57	PK
4924	32.62	0.00	5.10	H	37.72	53.98	16.26	AV
7386	38.59	0.00	12.74	H	51.33	73.98	22.65	PK
7386	27.68	0.00	12.74	H	40.42	53.98	13.56	AV

4. 242 Tones RU 61

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	43.41	0.00	4.15	V	47.56	73.98	26.42	PK
4824	33.18	0.00	4.15	V	37.33	53.98	16.65	AV
7236	39.09	0.00	13.01	V	52.10	73.98	21.88	PK
7236	26.55	0.00	13.01	V	39.56	53.98	14.42	AV
4824	44.20	0.00	4.15	H	48.35	73.98	25.63	PK
4824	33.06	0.00	4.15	H	37.21	53.98	16.77	AV
7236	38.79	0.00	13.01	H	51.80	73.98	22.18	PK
7236	26.49	0.00	13.01	H	39.50	53.98	14.48	AV

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	43.95	0.00	4.11	V	48.06	73.98	25.92	PK
4874	33.43	0.00	4.11	V	37.54	53.98	16.44	AV
7311	39.26	0.00	12.33	V	51.59	73.98	22.39	PK
7311	27.41	0.00	12.33	V	39.74	53.98	14.24	AV
4874	43.98	0.00	4.11	H	48.09	73.98	25.89	PK
4874	33.25	0.00	4.11	H	37.36	53.98	16.62	AV
7311	39.58	0.00	12.33	H	51.91	73.98	22.07	PK
7311	27.51	0.00	12.33	H	39.84	53.98	14.14	AV

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	43.67	0.00	5.10	V	48.77	73.98	25.21	PK
4924	32.62	0.00	5.10	V	37.72	53.98	16.26	AV
7386	39.21	0.00	12.74	V	51.95	73.98	22.03	PK
7386	27.23	0.00	12.74	V	39.97	53.98	14.01	AV
4924	43.33	0.00	5.10	H	48.43	73.98	25.55	PK
4924	32.69	0.00	5.10	H	37.79	53.98	16.19	AV
7386	39.46	0.00	12.74	H	52.20	73.98	21.78	PK
7386	27.15	0.00	12.74	H	39.89	53.98	14.09	AV

5. SU

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz
Channel No.	01 Ch
RU offset	None

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	43.80	0.00	4.15	V	47.95	73.98	26.03	PK
4824	33.10	0.00	4.15	V	37.25	53.98	16.73	AV
7236	38.96	0.00	13.01	V	51.97	73.98	22.01	PK
7236	27.06	0.00	13.01	V	40.07	53.98	13.91	AV
4824	43.54	0.00	4.15	H	47.69	73.98	26.29	PK
4824	33.30	0.00	4.15	H	37.45	53.98	16.53	AV
7236	38.69	0.00	13.01	H	51.70	73.98	22.28	PK
7236	27.23	0.00	13.01	H	40.24	53.98	13.74	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437 MHz
Channel No.	06 Ch
RU offset	None

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	43.79	0.00	4.11	V	47.90	73.98	26.08	PK
4874	33.15	0.00	4.11	V	37.26	53.98	16.72	AV
7311	47.09	0.00	12.33	V	59.42	73.98	14.56	PK
7311	27.52	0.00	12.33	V	39.85	53.98	14.13	AV
4874	44.16	0.00	4.11	H	48.27	73.98	25.71	PK
4874	33.35	0.00	4.11	H	37.46	53.98	16.52	AV
7311	38.88	0.00	12.33	H	51.21	73.98	22.77	PK
7311	27.68	0.00	12.33	H	40.01	53.98	13.97	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462 MHz
Channel No.	11 Ch
RU offset	None

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	43.25	0.00	5.10	V	48.35	73.98	25.63	PK
4924	32.53	0.00	5.10	V	37.63	53.98	16.35	AV
7386	38.24	0.00	12.74	V	50.98	73.98	23.00	PK
7386	27.14	0.00	12.74	V	39.88	53.98	14.10	AV
4924	43.42	0.00	5.10	H	48.52	73.98	25.46	PK
4924	32.78	0.00	5.10	H	37.88	53.98	16.10	AV
7386	38.76	0.00	12.74	H	51.50	73.98	22.48	PK
7386	27.25	0.00	12.74	H	39.99	53.98	13.99	AV

[Half-open mode]

1. 106 Tones RU 53

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz
Channel No.	1 Ch
RU offset	53

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	44.04	0.00	4.15	V	48.19	73.98	25.79	PK
4824	32.88	0.00	4.15	V	37.03	53.98	16.95	AV
7236	38.43	0.00	13.01	V	51.44	73.98	22.54	PK
7236	26.83	0.00	13.01	V	39.84	53.98	14.14	AV
4824	43.37	0.00	4.15	H	47.52	73.98	26.46	PK
4824	32.60	0.00	4.15	H	36.75	53.98	17.23	AV
7236	39.11	0.00	13.01	H	52.12	73.98	21.86	PK
7236	26.89	0.00	13.01	H	39.90	53.98	14.08	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437 MHz
Channel No.	6 Ch
RU offset	53

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	43.74	0.00	4.11	V	47.85	73.98	26.13	PK
4874	33.16	0.00	4.11	V	37.27	53.98	16.71	AV
7311	39.67	0.00	12.33	V	52.00	73.98	21.98	PK
7311	27.42	0.00	12.33	V	39.75	53.98	14.23	AV
4874	43.78	0.00	4.11	H	47.89	73.98	26.09	PK
4874	33.12	0.00	4.11	H	37.23	53.98	16.75	AV
7311	39.04	0.00	12.33	H	51.37	73.98	22.61	PK
7311	27.25	0.00	12.33	H	39.58	53.98	14.40	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462 MHz
Channel No.	11 Ch
RU offset	53

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	44.59	0.00	5.10	V	49.69	73.98	24.29	PK
4924	32.43	0.00	5.10	V	37.53	53.98	16.45	AV
7386	39.80	0.00	12.74	V	52.54	73.98	21.44	PK
7386	27.58	0.00	12.74	V	40.32	53.98	13.66	AV
4924	42.91	0.00	5.10	H	48.01	73.98	25.97	PK
4924	32.51	0.00	5.10	H	37.61	53.98	16.37	AV
7386	39.06	0.00	12.74	H	51.80	73.98	22.18	PK
7386	27.54	0.00	12.74	H	40.28	53.98	13.70	AV

2. 242 Tones RU 61

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	43.55	0.00	4.15	V	47.70	73.98	26.28	PK
4824	32.85	0.00	4.15	V	37.00	53.98	16.98	AV
7236	38.53	0.00	13.01	V	51.54	73.98	22.44	PK
7236	26.89	0.00	13.01	V	39.90	53.98	14.08	AV
4824	43.64	0.00	4.15	H	47.79	73.98	26.19	PK
4824	32.79	0.00	4.15	H	36.94	53.98	17.04	AV
7236	38.78	0.00	13.01	H	51.79	73.98	22.19	PK
7236	26.77	0.00	13.01	H	39.78	53.98	14.20	AV

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	43.83	0.00	4.11	V	47.94	73.98	26.04	PK
4874	33.02	0.00	4.11	V	37.13	53.98	16.85	AV
7311	39.28	0.00	12.33	V	51.61	73.98	22.37	PK
7311	27.41	0.00	12.33	V	39.74	53.98	14.24	AV
4874	44.41	0.00	4.11	H	48.52	73.98	25.46	PK
4874	32.97	0.00	4.11	H	37.08	53.98	16.90	AV
7311	39.57	0.00	12.33	H	51.90	73.98	22.08	PK
7311	27.41	0.00	12.33	H	39.74	53.98	14.24	AV

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	43.99	0.00	5.10	V	49.09	73.98	24.89	PK
4924	32.42	0.00	5.10	V	37.52	53.98	16.46	AV
7386	39.62	0.00	12.74	V	52.36	73.98	21.62	PK
7386	27.48	0.00	12.74	V	40.22	53.98	13.76	AV
4924	44.15	0.00	5.10	H	49.25	73.98	24.73	PK
4924	32.44	0.00	5.10	H	37.54	53.98	16.44	AV
7386	39.45	0.00	12.74	H	52.19	73.98	21.79	PK
7386	27.52	0.00	12.74	H	40.26	53.98	13.72	AV

3. SU

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz
Channel No.	01 Ch
RU offset	None

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	43.79	0.00	4.15	V	47.94	73.98	26.04	PK
4824	32.77	0.00	4.15	V	36.92	53.98	17.06	AV
7236	38.33	0.00	13.01	V	51.34	73.98	22.64	PK
7236	26.86	0.00	13.01	V	39.87	53.98	14.11	AV
4824	43.35	0.00	4.15	H	47.50	73.98	26.48	PK
4824	32.81	0.00	4.15	H	36.96	53.98	17.02	AV
7236	38.48	0.00	13.01	H	51.49	73.98	22.49	PK
7236	26.76	0.00	13.01	H	39.77	53.98	14.21	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437 MHz
Channel No.	06 Ch
RU offset	None

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	45.12	0.00	4.11	V	49.23	73.98	24.75	PK
4874	33.14	0.00	4.11	V	37.25	53.98	16.73	AV
7311	39.45	0.00	12.33	V	51.78	73.98	22.20	PK
7311	27.34	0.00	12.33	V	39.67	53.98	14.31	AV
4874	43.69	0.00	4.11	H	47.80	73.98	26.18	PK
4874	33.07	0.00	4.11	H	37.18	53.98	16.80	AV
7311	39.61	0.00	12.33	H	51.94	73.98	22.04	PK
7311	27.39	0.00	12.33	H	39.72	53.98	14.26	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462 MHz
Channel No.	11 Ch
RU offset	None

Frequency	Measured Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	42.91	0.00	5.10	V	48.01	73.98	25.97	PK
4924	32.42	0.00	5.10	V	37.52	53.98	16.46	AV
7386	39.64	0.00	12.74	V	52.38	73.98	21.60	PK
7386	27.47	0.00	12.74	V	40.21	53.98	13.77	AV
4924	43.97	0.00	5.10	H	49.07	73.98	24.91	PK
4924	32.31	0.00	5.10	H	37.41	53.98	16.57	AV
7386	39.41	0.00	12.74	H	52.15	73.98	21.83	PK
7386	27.43	0.00	12.74	H	40.17	53.98	13.81	AV

[Closed mode]

1. 106 Tones RU 54

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz
Channel No.	1 Ch
RU offset	54

Frequency	Measured Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	43.91	0.00	4.15	V	48.06	73.98	25.92	PK
4824	32.83	0.00	4.15	V	36.98	53.98	17.00	AV
7236	38.13	0.00	13.01	V	51.14	73.98	22.84	PK
7236	26.76	0.00	13.01	V	39.77	53.98	14.21	AV
4824	43.75	0.00	4.15	H	47.90	73.98	26.08	PK
4824	32.70	0.00	4.15	H	36.85	53.98	17.13	AV
7236	38.41	0.00	13.01	H	51.42	73.98	22.56	PK
7236	26.95	0.00	13.01	H	39.96	53.98	14.02	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437 MHz
Channel No.	6 Ch
RU offset	54

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	46.30	0.00	4.11	V	50.41	73.98	23.57	PK
4874	34.12	0.00	4.11	V	38.23	53.98	15.75	AV
7311	39.20	0.00	12.33	V	51.53	73.98	22.45	PK
7311	27.41	0.00	12.33	V	39.74	53.98	14.24	AV
4874	44.92	0.00	4.11	H	49.03	73.98	24.95	PK
4874	33.75	0.00	4.11	H	37.86	53.98	16.12	AV
7311	39.44	0.00	12.33	H	51.77	73.98	22.21	PK
7311	27.42	0.00	12.33	H	39.75	53.98	14.23	AV

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	44.44	0.00	5.10	V	49.54	73.98	24.44	PK
4924	32.62	0.00	5.10	V	37.72	53.98	16.26	AV
7386	39.44	0.00	12.74	V	52.18	73.98	21.80	PK
7386	27.70	0.00	12.74	V	40.44	53.98	13.54	AV
4924	44.67	0.00	5.10	H	49.77	73.98	24.21	PK
4924	33.14	0.00	5.10	H	38.24	53.98	15.74	AV
7386	40.00	0.00	12.74	H	52.74	73.98	21.24	PK
7386	27.45	0.00	12.74	H	40.19	53.98	13.79	AV

2. 242 Tones RU 61

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	43.79	0.00	4.15	V	47.94	73.98	26.04	PK
4824	32.82	0.00	4.15	V	36.97	53.98	17.01	AV
7236	38.41	0.00	13.01	V	51.42	73.98	22.56	PK
7236	26.94	0.00	13.01	V	39.95	53.98	14.03	AV
4824	44.32	0.00	4.15	H	48.47	73.98	25.51	PK
4824	32.77	0.00	4.15	H	36.92	53.98	17.06	AV
7236	39.37	0.00	13.01	H	52.38	73.98	21.60	PK
7236	26.90	0.00	13.01	H	39.91	53.98	14.07	AV

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	44.09	0.00	4.11	V	48.20	73.98	25.78	PK
4874	33.11	0.00	4.11	V	37.22	53.98	16.76	AV
7311	39.64	0.00	12.33	V	51.97	73.98	22.01	PK
7311	27.45	0.00	12.33	V	39.78	53.98	14.20	AV
4874	44.33	0.00	4.11	H	48.44	73.98	25.54	PK
4874	32.93	0.00	4.11	H	37.04	53.98	16.94	AV
7311	39.17	0.00	12.33	H	51.50	73.98	22.48	PK
7311	27.39	0.00	12.33	H	39.72	53.98	14.26	AV

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

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	44.15	0.00	5.10	V	49.25	73.98	24.73	PK
4924	32.92	0.00	5.10	V	38.02	53.98	15.96	AV
7386	39.43	0.00	12.74	V	52.17	73.98	21.81	PK
7386	27.78	0.00	12.74	V	40.52	53.98	13.46	AV
4924	44.08	0.00	5.10	H	49.18	73.98	24.80	PK
4924	32.95	0.00	5.10	H	38.05	53.98	15.93	AV
7386	39.46	0.00	12.74	H	52.20	73.98	21.78	PK
7386	27.63	0.00	12.74	H	40.37	53.98	13.61	AV

3. SU

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz
Channel No.	01 Ch
RU offset	None

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4824	43.75	0.00	4.15	V	47.90	73.98	26.08	PK
4824	32.86	0.00	4.15	V	37.01	53.98	16.97	AV
7236	38.67	0.00	13.01	V	51.68	73.98	22.30	PK
7236	26.83	0.00	13.01	V	39.84	53.98	14.14	AV
4824	44.55	0.00	4.15	H	48.70	73.98	25.28	PK
4824	32.73	0.00	4.15	H	36.88	53.98	17.10	AV
7236	38.70	0.00	13.01	H	51.71	73.98	22.27	PK
7236	26.86	0.00	13.01	H	39.87	53.98	14.11	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2437 MHz
Channel No.	06 Ch
RU offset	None

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4874	44.03	0.00	4.11	V	48.14	73.98	25.84	PK
4874	33.00	0.00	4.11	V	37.11	53.98	16.87	AV
7311	40.21	0.00	12.33	V	52.54	73.98	21.44	PK
7311	27.65	0.00	12.33	V	39.98	53.98	14.00	AV
4874	44.27	0.00	4.11	H	48.38	73.98	25.60	PK
4874	33.14	0.00	4.11	H	37.25	53.98	16.73	AV
7311	39.59	0.00	12.33	H	51.92	73.98	22.06	PK
7311	27.41	0.00	12.33	H	39.74	53.98	14.24	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
Operating Frequency	2462 MHz
Channel No.	11 Ch
RU offset	None

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	43.51	0.00	5.10	V	48.61	73.98	25.37	PK
4924	32.50	0.00	5.10	V	37.60	53.98	16.38	AV
7386	39.66	0.00	12.74	V	52.40	73.98	21.58	PK
7386	27.74	0.00	12.74	V	40.48	53.98	13.50	AV
4924	43.86	0.00	5.10	H	48.96	73.98	25.02	PK
4924	32.63	0.00	5.10	H	37.73	53.98	16.25	AV
7386	40.42	0.00	12.74	H	53.16	73.98	20.82	PK
7386	27.52	0.00	12.74	H	40.26	53.98	13.72	AV

[RSDB]

Scenario 1

Ant All(MIMO) 2.4 GHz 802.11ax(HE20)_Ch.11_106T_RU53 + Ant All(MIMO) 5 GHz 802.11ax(HE20)_Ch.36_106T_RU53

Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	43.62	0.00	5.10	V	48.72	73.98	25.26	PK
4924	31.04	0.00	5.10	V	36.14	53.98	17.84	AV
7386	39.67	0.00	12.74	V	52.41	73.98	21.57	PK
7386	27.46	0.00	12.74	V	40.20	53.98	13.78	AV
4924	44.18	0.00	5.10	H	49.28	73.98	24.70	PK
4924	31.85	0.00	5.10	H	36.95	53.98	17.03	AV
7386	41.85	0.00	12.74	H	54.59	73.98	19.39	PK
7386	27.49	0.00	12.74	H	40.23	53.98	13.75	AV

Note : UNII ax RSDB Data refer to [UNII ax] Test Report

Scenario 4

Ant.1 Bluetooth DH5_Ch.78 + Ant.2_2.4 GHz 802.11ax(HE20)_Ch.11_106T_RU53 + Ant All(MIMO) 5 GHz 802.11ax(HE20)_Ch.36_106T_RU53

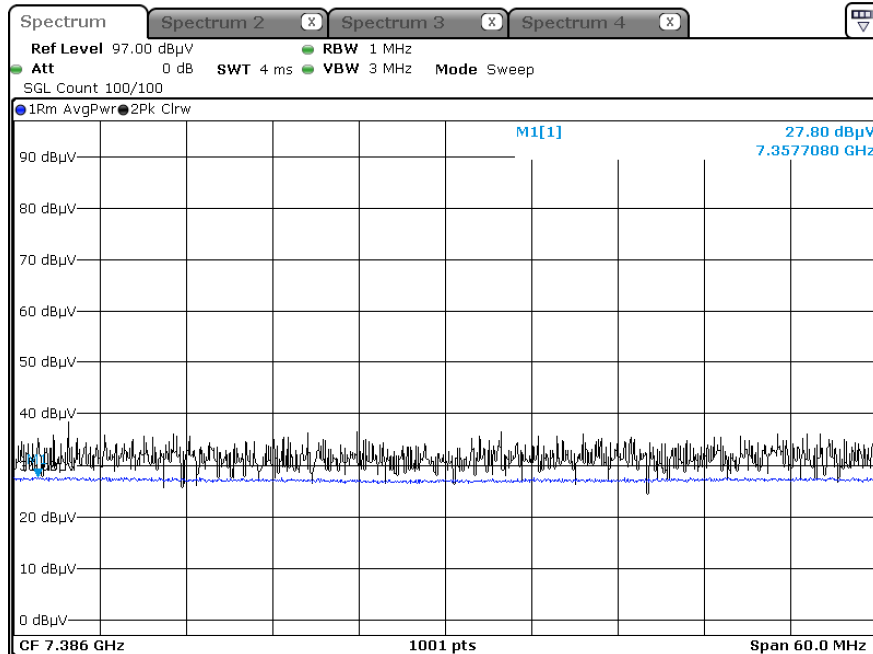
Frequency	Measure d Value	Duty Cycle Factor	C.L+A.F +D.F-A.G	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4924	43.88	0.00	5.10	V	48.98	73.98	25.00	PK
4924	31.42	0.00	5.10	V	36.52	53.98	17.46	AV
7386	39.97	0.00	12.74	V	52.71	73.98	21.27	PK
7386	27.62	0.00	12.74	V	40.36	53.98	13.62	AV
4924	44.30	0.00	5.10	H	49.40	73.98	24.58	PK
4924	31.94	0.00	5.10	H	37.04	53.98	16.94	AV
7386	39.62	0.00	12.74	H	52.36	73.98	21.62	PK
7386	27.51	0.00	12.74	H	40.25	53.98	13.73	AV

Note :BT, UNII ax RSDB Data refer to [BT], [UNII ax] Test Report

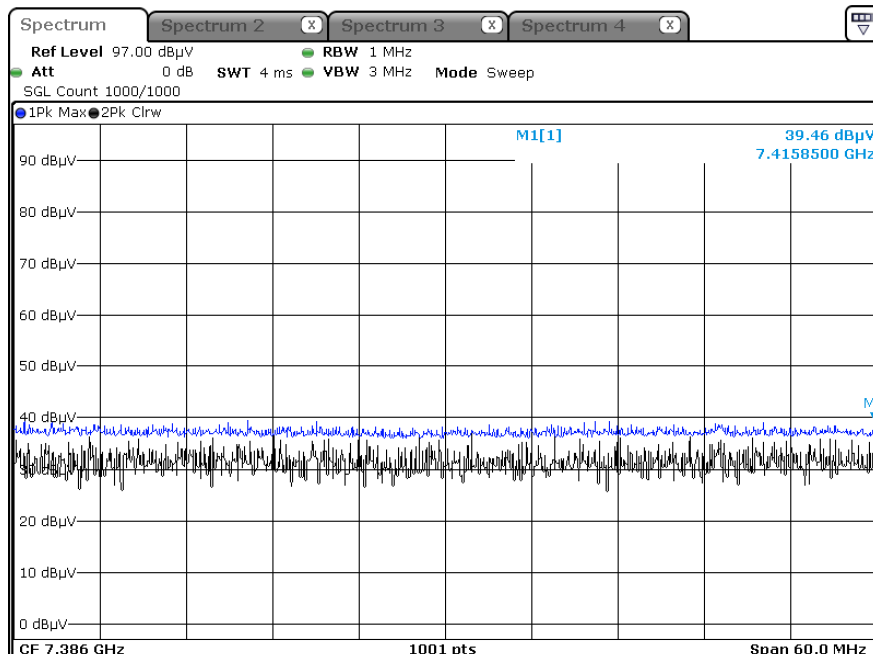
Test Plots(106T RU 53) - [Open mode]

Note: In order to simplify, Plots of worst case are only reported.

Radiated Spurious Emissions plot – Average result (802.11ax(HE20), Ch.11 3rd Harmonic, Z-V)



Radiated Spurious Emissions plot – Peak result (802.11ax(HE20), Ch.11 3rd Harmonic, Z-V)

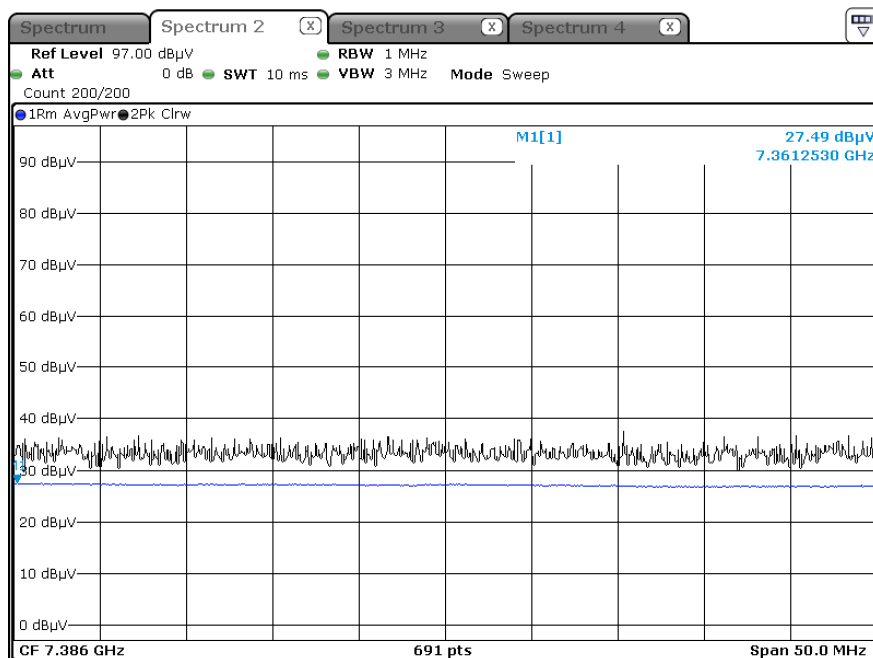


[RSDB]

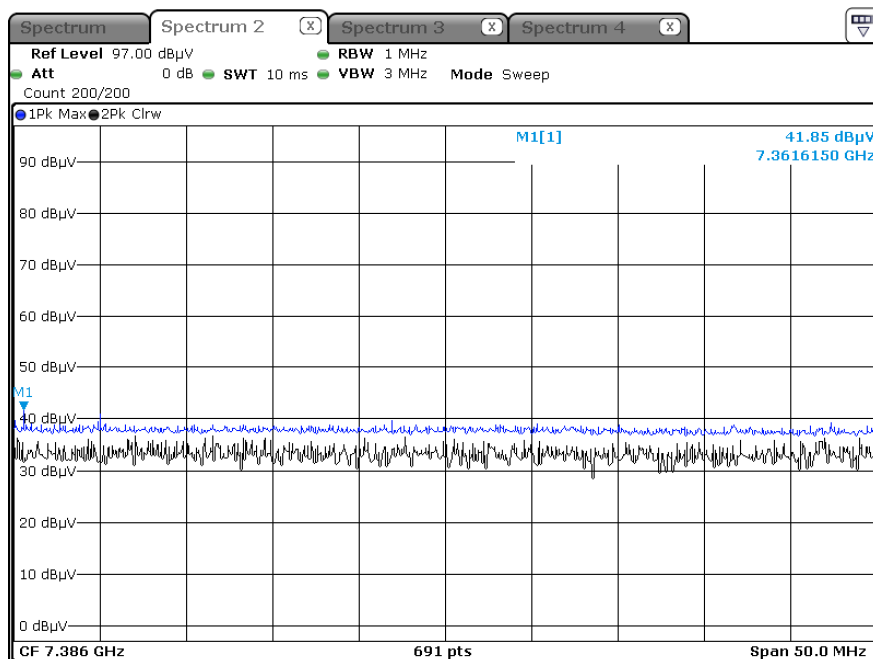
Scenario 1

Ant All(MIMO) 2.4 GHz 802.11ax(HE20)_Ch.11_106T_RU53 + Ant All(MIMO) 5 GHz 802.11ax(HE20)_Ch.36_106T_RU53

Radiated Spurious Emissions plot – Average Result (Spurious Emissions, 3rd, Y-H)



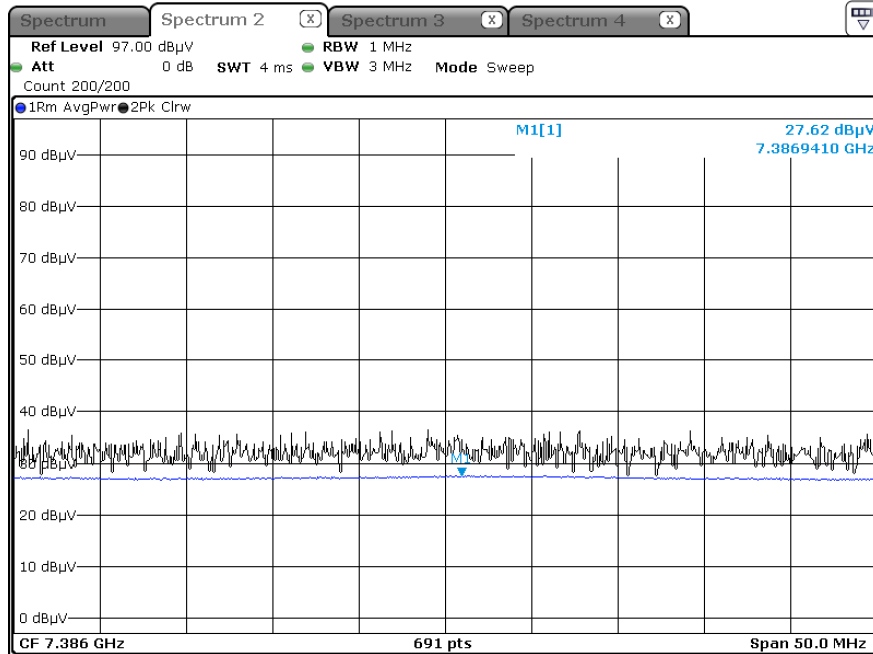
Radiated Spurious Emissions plot – Peak Result (Spurious Emissions, 3rd, Y-H)



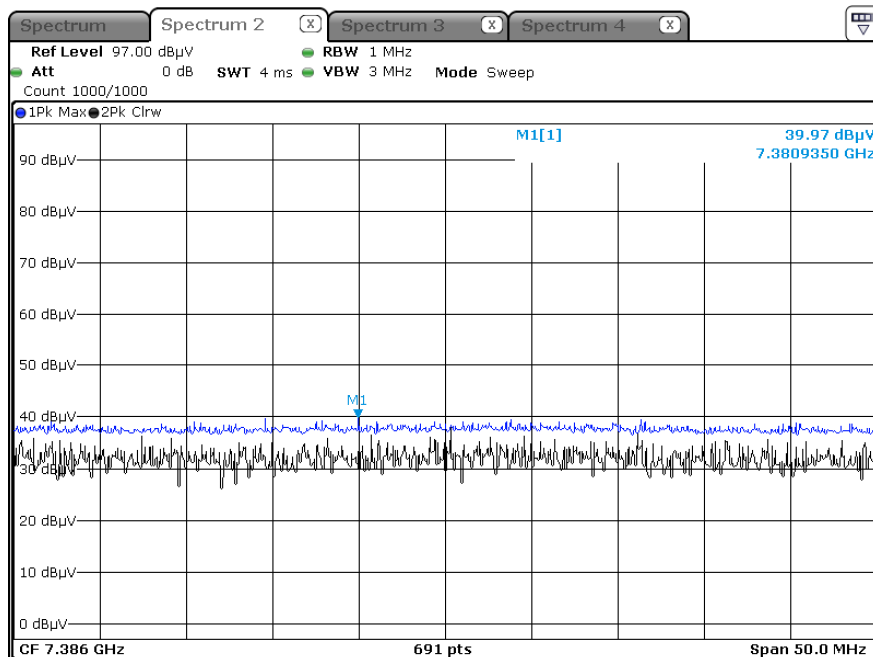
Scenario 4

Ant.1 Bluetooth DH5_Ch.78 + Ant.2_2.4 GHz 802.11ax(HE20)_Ch.11_106T_RU53 + Ant All(MIMO) 5 GHz 802.11ax(HE20)_Ch.36_106T_RU53

Radiated Spurious Emissions plot – Average Result (Spurious Emissions, 3rd, X-V)



Radiated Spurious Emissions plot – Peak Result (Spurious Emissions, 3rd, X-V)



Note: Only the worst case plots for Radiated Spurious Emissions.

9.7 RADIATED RESTRICTED BAND EDGES

[MIMO_CDD(Ant.1+Ant.2)]

[Open mode]

1. 26 Tones

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	22.660	0.00	34.73	H	57.39	73.98	16.59	PK
2390.0	9.360	0.00	34.73	H	44.09	53.98	9.89	AV
2390.0	21.680	0.00	34.73	V	56.41	73.98	17.57	PK
2390.0	9.140	0.00	34.73	V	43.87	53.98	10.11	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
RU Index:	8
Operating Frequency	2462 MHz
Channel No.	11 Ch

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	25.330	0.00	35.59	H	60.92	73.98	13.06	PK
2483.5	9.220	0.00	35.59	H	44.81	53.98	9.17	AV
2483.5	23.510	0.00	35.59	V	59.10	73.98	14.88	PK
2483.5	9.160	0.00	35.59	V	44.75	53.98	9.23	AV

2. 52 Tones

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
RU Index:	37
Operating Frequency	2412 MHz
Channel No.	01 Ch

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	21.110	0.00	34.73	H	55.84	73.98	18.14	PK
2390.0	9.430	0.00	34.73	H	44.16	53.98	9.82	AV
2390.0	20.300	0.00	34.73	V	55.03	73.98	18.95	PK
2390.0	9.210	0.00	34.73	V	43.94	53.98	10.04	AV

Operation Mode:	802.11ax(HE20)
Transfer MCS Index:	0
RU Index:	40
Operating Frequency	2462 MHz
Channel No.	11 Ch

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	24.340	0.00	35.59	H	59.93	73.98	14.05	PK
2483.5	9.660	0.00	35.59	H	45.25	53.98	8.73	AV
2483.5	23.310	0.00	35.59	V	58.90	73.98	15.08	PK
2483.5	9.520	0.00	35.59	V	45.11	53.98	8.87	AV

3. 106 Tones

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	23.130	0.00	34.73	H	57.86	73.98	16.12	PK
2390.0	10.450	0.00	34.73	H	45.18	53.98	8.80	AV
2390.0	22.870	0.00	34.73	V	57.60	73.98	16.38	PK
2390.0	10.020	0.00	34.73	V	44.75	53.98	9.23	AV

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	26.920	0.00	35.59	H	62.51	73.98	11.47	PK
2483.5	10.670	0.00	35.59	H	46.26	53.98	7.72	AV
2483.5	25.470	0.00	35.59	V	61.06	73.98	12.92	PK
2483.5	10.220	0.00	35.59	V	45.81	53.98	8.17	AV

4. 242 Tones

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	26.850	0.00	34.73	H	61.58	73.98	12.40	PK
2390.0	13.720	0.00	34.73	H	48.45	53.98	5.53	AV
2390.0	25.790	0.00	34.73	V	60.52	73.98	13.46	PK
2390.0	12.080	0.00	34.73	V	46.81	53.98	7.17	AV

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	28.090	0.00	35.59	H	63.68	73.98	10.30	PK
2483.5	14.470	0.00	35.59	H	50.06	53.98	3.92	AV
2483.5	27.350	0.00	35.59	V	62.94	73.98	11.04	PK
2483.5	14.050	0.00	35.59	V	49.64	53.98	4.34	AV

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

Frequency	Measured Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
#2483.5~2493.5	25.85	0.00	35.59	H	61.44	73.98	12.54	PK
#2483.5~2493.5	15.67	0.00	35.59	H	51.26	53.98	2.72	AV
2493.5~2500	20.46	0.00	35.59	H	56.05	73.98	17.93	PK
2493.5~2500	8.50	0.00	35.59	H	44.09	53.98	9.89	AV
#2483.5~2493.5	24.92	0.00	35.59	V	60.51	73.98	13.47	PK
#2483.5~2493.5	15.51	0.00	35.59	V	51.10	53.98	2.88	AV
2493.5~2500	20.15	0.00	35.59	V	55.74	73.98	18.24	PK
2493.5~2500	8.46	0.00	35.59	V	44.05	53.98	9.93	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
Channel No.	01 Ch

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	26.970	0.00	34.73	H	61.70	73.98	12.28	PK
2390.0	13.460	0.00	34.73	H	48.19	53.98	5.79	AV
2390.0	25.940	0.00	34.73	V	60.67	73.98	13.31	PK
2390.0	13.040	0.00	34.73	V	47.77	53.98	6.21	AV

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	30.610	0.00	35.59	H	66.20	73.98	7.78	PK
2483.5	13.660	0.00	35.59	H	49.25	53.98	4.73	AV
2483.5	29.410	0.00	35.59	V	65.00	73.98	8.98	PK
2483.5	12.970	0.00	35.59	V	48.56	53.98	5.42	AV

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

Frequency	Measured Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
#2483.5~2493.5	25.05	0.00	35.59	H	60.64	73.98	13.34	PK
#2483.5~2493.5	15.05	0.00	35.59	H	50.64	53.98	3.34	AV
2493.5~2500	21.17	0.00	35.59	H	56.76	73.98	17.22	PK
2493.5~2500	8.49	0.00	35.59	H	44.08	53.98	9.90	AV
#2483.5~2493.5	24.33	0.00	35.59	V	59.92	73.98	14.06	PK
#2483.5~2493.5	14.14	0.00	35.59	V	49.73	53.98	4.25	AV
2493.5~2500	20.23	0.00	35.59	V	55.82	73.98	18.16	PK
2493.5~2500	8.47	0.00	35.59	V	44.06	53.98	9.92	AV

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

[Half-open mode]

1. 242 Tones

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	24.470	0.00	34.73	H	59.20	73.98	14.78	PK
2390.0	12.110	0.00	34.73	H	46.84	53.98	7.14	AV
2390.0	25.990	0.00	34.73	V	60.72	73.98	13.26	PK
2390.0	12.950	0.00	34.73	V	47.68	53.98	6.30	AV

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	24.430	0.00	35.59	H	60.02	73.98	13.96	PK
2483.5	11.970	0.00	35.59	H	47.56	53.98	6.42	AV
2483.5	25.730	0.00	35.59	V	61.32	73.98	12.66	PK
2483.5	12.230	0.00	35.59	V	47.82	53.98	6.16	AV

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

Frequency	Measured Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
#2483.5~2493.5	24.34	0.00	35.59	H	59.93	73.98	14.05	PK
#2483.5~2493.5	13.85	0.00	35.59	H	49.44	53.98	4.54	AV
2493.5~2500	20.95	0.00	35.59	H	56.54	73.98	17.44	PK
2493.5~2500	8.49	0.00	35.59	H	44.08	53.98	9.90	AV
#2483.5~2493.5	23.39	0.00	35.59	V	58.98	73.98	15.00	PK
#2483.5~2493.5	12.34	0.00	35.59	V	47.93	53.98	6.05	AV
2493.5~2500	20.41	0.00	35.59	V	56.00	73.98	17.98	PK
2493.5~2500	8.36	0.00	35.59	V	43.95	53.98	10.03	AV

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

2. SU

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	23.220	0.00	34.73	H	57.95	73.98	16.03	PK
2390.0	12.030	0.00	34.73	H	46.76	53.98	7.22	AV
2390.0	23.750	0.00	34.73	V	58.48	73.98	15.50	PK
2390.0	12.580	0.00	34.73	V	47.31	53.98	6.67	AV

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	25.790	0.00	35.59	H	61.38	73.98	12.60	PK
2483.5	10.960	0.00	35.59	H	46.55	53.98	7.43	AV
2483.5	26.050	0.00	35.59	V	61.64	73.98	12.34	PK
2483.5	11.250	0.00	35.59	V	46.84	53.98	7.14	AV

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

Frequency	Measured Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
#2483.5~2493.5	23.13	0.00	35.59	H	58.72	73.98	15.26	PK
#2483.5~2493.5	12.80	0.00	35.59	H	48.39	53.98	5.59	AV
2493.5~2500	20.41	0.00	35.59	H	56.00	73.98	17.98	PK
2493.5~2500	8.47	0.00	35.59	H	44.06	53.98	9.92	AV
#2483.5~2493.5	22.15	0.00	35.59	V	57.74	73.98	16.24	PK
#2483.5~2493.5	12.24	0.00	35.59	V	47.83	53.98	6.15	AV
2493.5~2500	20.11	0.00	35.59	V	55.70	73.98	18.28	PK
2493.5~2500	8.26	0.00	35.59	V	43.85	53.98	10.13	AV

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

[Closed mode]

1. 242 Tones

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	25.600	0.00	34.73	H	60.33	73.98	13.65	PK
2390.0	12.150	0.00	34.73	H	46.88	53.98	7.10	AV
2390.0	24.060	0.00	34.73	V	58.79	73.98	15.19	PK
2390.0	11.970	0.00	34.73	V	46.70	53.98	7.28	AV

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	24.150	0.00	35.59	H	59.74	73.98	14.24	PK
2483.5	10.950	0.00	35.59	H	46.54	53.98	7.44	AV
2483.5	22.990	0.00	35.59	V	58.58	73.98	15.40	PK
2483.5	10.520	0.00	35.59	V	46.11	53.98	7.87	AV

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

Frequency	Measured Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
#2483.5~2493.5	22.66	0.00	35.59	H	58.25	73.98	15.73	PK
#2483.5~2493.5	12.10	0.00	35.59	H	47.69	53.98	6.29	AV
2493.5~2500	20.89	0.00	35.59	H	56.48	73.98	17.50	PK
2493.5~2500	8.52	0.00	35.59	H	44.11	53.98	9.87	AV
#2483.5~2493.5	21.57	0.00	35.59	V	57.16	73.98	16.82	PK
#2483.5~2493.5	12.01	0.00	35.59	V	47.60	53.98	6.38	AV
2493.5~2500	20.14	0.00	35.59	V	55.73	73.98	18.25	PK
2493.5~2500	8.46	0.00	35.59	V	44.05	53.98	9.93	AV

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

2. SU

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	25.100	0.00	34.73	H	59.83	73.98	14.15	PK
2390.0	11.930	0.00	34.73	H	46.66	53.98	7.32	AV
2390.0	23.380	0.00	34.73	V	58.11	73.98	15.87	PK
2390.0	11.420	0.00	34.73	V	46.15	53.98	7.83	AV

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

Frequency	Measure d Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	24.520	0.00	35.59	H	60.11	73.98	13.87	PK
2483.5	10.720	0.00	35.59	H	46.31	53.98	7.67	AV
2483.5	23.490	0.00	35.59	V	59.08	73.98	14.90	PK
2483.5	10.330	0.00	35.59	V	45.92	53.98	8.06	AV

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

Frequency	Measured Value	Duty Cycle Factor	A.F+C.L +D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
#2483.5~2493.5	22.10	0.00	35.59	H	57.69	73.98	16.29	PK
#2483.5~2493.5	11.76	0.00	35.59	H	47.35	53.98	6.63	AV
2493.5~2500	21.15	0.00	35.59	H	56.74	73.98	17.24	PK
2493.5~2500	8.49	0.00	35.59	H	44.08	53.98	9.90	AV
#2483.5~2493.5	21.44	0.00	35.59	V	57.03	73.98	16.95	PK
#2483.5~2493.5	11.22	0.00	35.59	V	46.81	53.98	7.17	AV
2493.5~2500	19.91	0.00	35.59	V	55.50	73.98	18.48	PK
2493.5~2500	8.32	0.00	35.59	V	43.91	53.98	10.07	AV

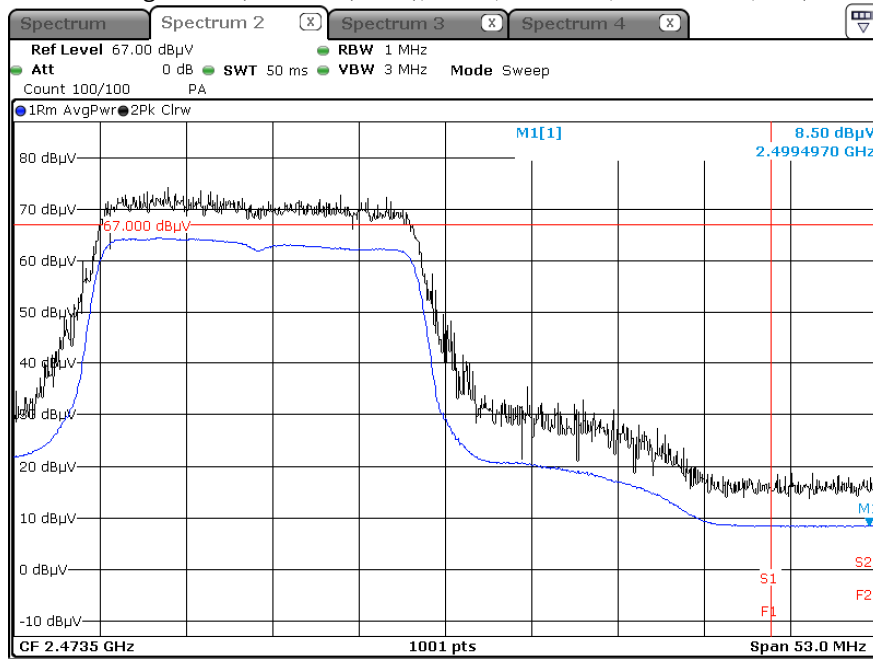
Note : # integration method Used (ANSI C63.10 Section11.13.3)

Test Plots - [Open mode]

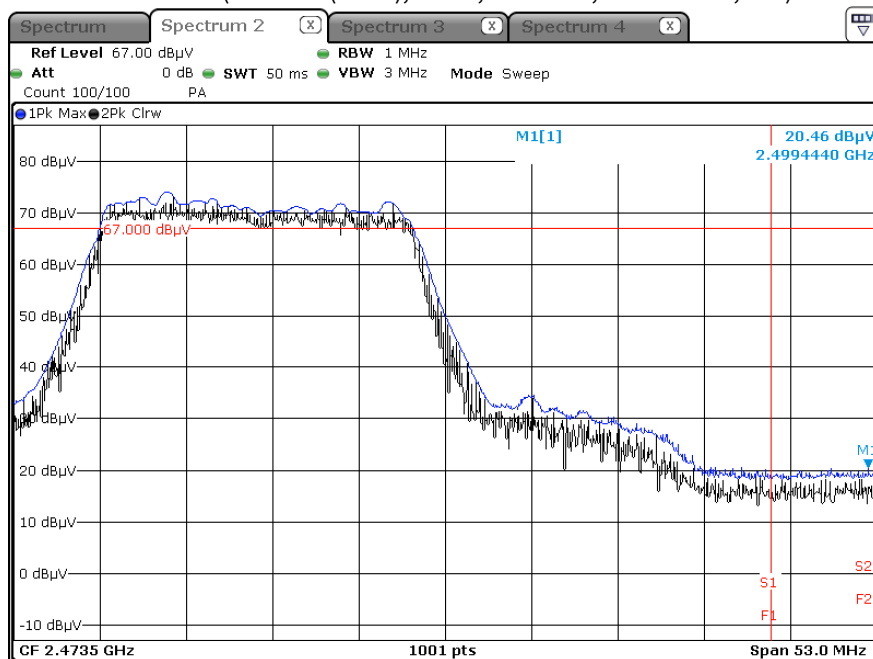
[MIMO_CDD(Ant.1+Ant.2)]

Note: In order to simplify the report, Plots of worst case are only reported.

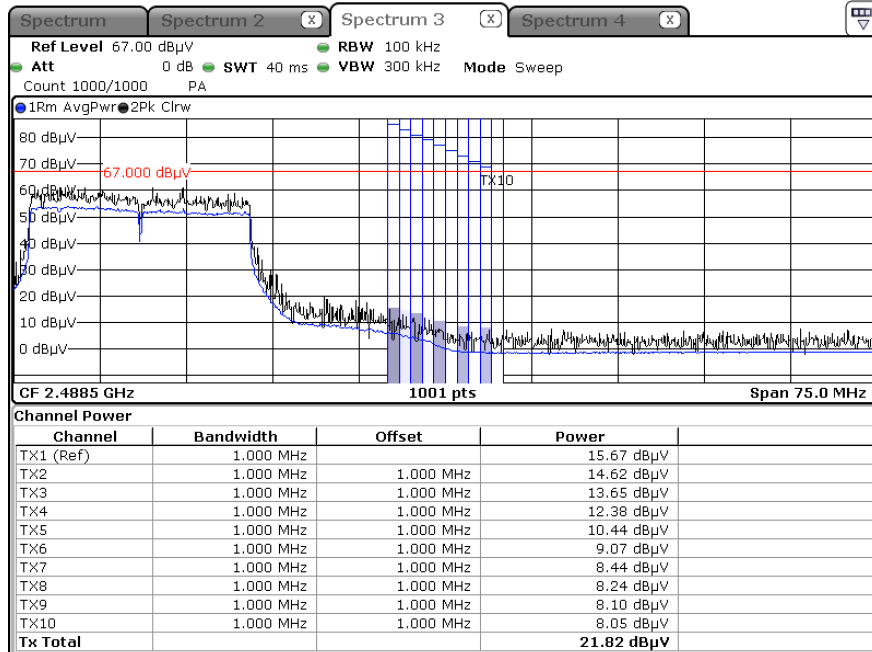
Average result(802.11ax(HE20), MCS0, 242 Tone, RU 61 ch.11, X-H)



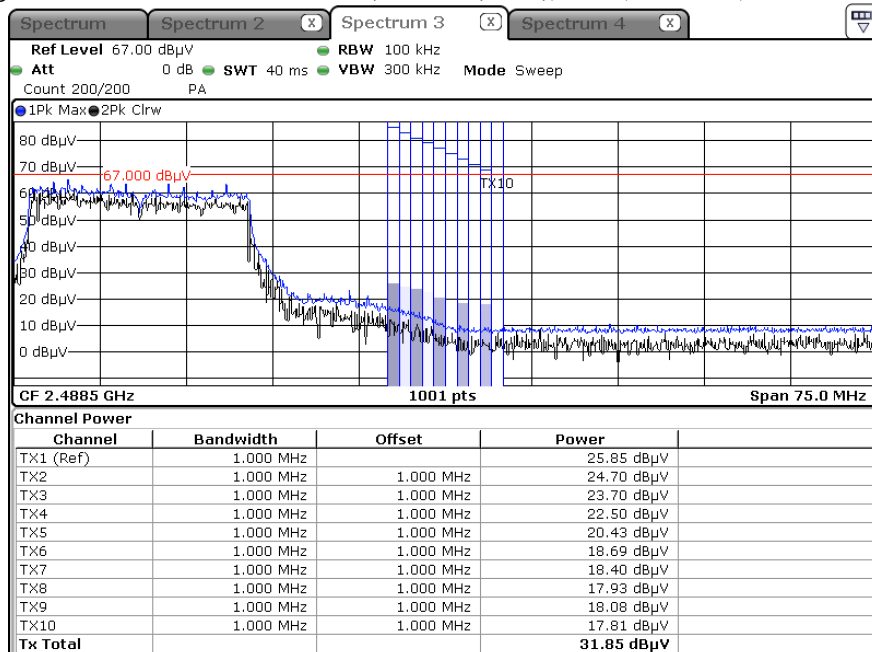
Peak result(802.11ax(HE20), MCS0, 242 Tone, RU 61 ch.11, X-H)



Integration method Used_ Average result(802.11ax(HE20), MCS0, 242 Tone, RU 61 ch.11, X-H)



Integration method Used_ Peak result(802.11ax(HE20), MCS0, 242 Tone, RU 61 ch.11, X-H)



10. LIST OF TEST EQUIPMENT

Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	08/02/2024	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	05/26/2024	Annual
Temperature Chamber	SU-642	ESPEC	0093008124	02/19/2025	Annual
Signal Analyzer	N9030A	Agilent	MY49431210	12/19/2024	Annual
Power Measurement Set	OSP 120	Rohde & Schwarz	101231	06/09/2024	Annual
Power Meter	N1911A	Agilent	MY45100523	02/28/2025	Annual
Power Sensor	N1921A	Agilent	MY57820067	02/22/2025	Annual
Directional Coupler	87300B	Agilent	3116A03621	10/30/2024	Annual
Power Splitter	11667B	Hewlett Packard	05001	04/17/2025	Annual
DC Power Supply	E3632A	H.P	KR75303243	04/19/2025	Annual
Attenuator(10 dB)	8493C	Hewlett Packard	07560	06/12/2024	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	S2AM	08/03/2025	Biennial
Controller	EM1000	Audix	060520	N/A	N/A
Turn Table	N/A	Audix	N/A	N/A	N/A
Loop Antenna	FMZB 1513	Rohde & Schwarz	1513-333	03/07/2026	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	760	02/24/2025	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	02299	01/29/2026	Biennial
Horn Antenna (15GHz ~ 40 GHz)	BBHA9170	Schwarzbeck	BBHA9170342	09/29/2024	Biennial
Spectrum Analyzer	FSV40	Rohde & Schwarz	100901	02/22/2025	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	5	06/12/2024	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	6	06/12/2024	Annual
Band Reject Filter	WRCJV2400/2483.5-2370/2520-60/12SS	Wainwright Instruments	2	01/02/2025	Annual
Band Reject Filter	WRCJV5100/5850-40/50-8EEK	Wainwright Instruments	1	02/14/2025	Annual
RF Switching System	FMSR-04B (3G HPF+LNA)	T&M SYSTEM	S2L1	12/27/2024	Annual
RF Switching System	FMSR-04B (10dB ATT+LNA)	T&M SYSTEM	S2L2	12/27/2024	Annual
RF Switching System	FMSR-04B (3dB ATT+LNA)	T&M SYSTEM	S2L3	12/27/2024	Annual
RF Switching System	FMSR-04B (LNA)	T&M SYSTEM	S2L4	12/27/2024	Annual
RF Switching System	FMSR-04B (7G HPF+LNA)	T&M SYSTEM	S2L5	12/27/2024	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/17/2024	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/26/2025	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-2404-FC045-P