



FCC RF Test Report

APPLICANT : Ascom (Sweden) AB
EQUIPMENT : Myco 4 WiFi, Myco 4 Slim
BRAND NAME : ascom
MODEL NAME : SH4-AABC, SH4-AABB, SH4-ABBC, SH4-ABBB
FCC ID : BXZSH4
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure
TEST DATE(S) : Feb. 06, 2023 ~ Jun. 01, 2023

We, Sporton International Inc. (ShenZhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (ShenZhen), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (ShenZhen)

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People's Republic of China



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR2D0705E	Rev. 01	Initial issue of report	Jun. 27, 2023

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit for U-NII-1/2A/2C	Limit for U-NII-3	Result	Remark
3.1	2.1049 & 15.403(i)	6dB, 26dB & 99% Bandwidth	-	6dB Bandwidth > 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 24 dBm	≤ 30 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 11 dBm/MHz	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b) & 15.209(a)	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 0.59 dB at 5351.55 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	15.207(a)	Pass	Under limit 13.66 dB at 0.66 MHz
3.6	15.203 & 15.407(a)	Antenna Requirement	15.203 & 15.407(a)	15.203 & 15.407(a)	Pass	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



1 General Description

1.1 Applicant

Ascom (Sweden) AB

Grimbodalen 2, SE-417 49 Gothenburg, Sweden

1.2 Manufacturer

Ascom (Sweden) AB

Grimbodalen 2, SE-417 49 Gothenburg, Sweden

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Myco 4 WiFi, Myco 4 Slim
Brand Name	ascom
Model Name	SH4-AABC, SH4-AABB, SH4-ABBC, SH4-ABBB
FCC ID	BXZSH4
SN Code	Conducted: 2211c95e for sku2 Conduction: 32fa7a52 for sku2 Radiation: 32fa7a52 for sku2 TI00000630 for sku3
HW Version	V0.50
SW Version	SH4_ASCOM_A12
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two SKUs under test, SKU 2 and SKU 3. The differences can be referred to the SH4-AABC, SH4-AABB, SH4-ABBC, SH4-ABBB_Operational Description of Product Equality Declaration which is exhibit separately. Each SKU has different IR/Scanner/Antenna configurations, the details are shown as below. According to the differences, we choose SKU2_Sample 1 to perform full test, and SKU3_Sample 3 verify the RSE worst case.

SKU	IR	Scanner	2.4G BT/WIFI Antenna
SKU2_Sample 1	Yes	Yes	Same
SKU2_Sample 2	No	Yes	Same
SKU3_Sample 3	No	No	Different

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5700 MHz 5745 MHz ~ 5825 MHz
Maximum Output Power to Antenna	MIMO <Ant. 3+10> <5180 MHz ~ 5250 MHz> 802.11a : 16.31 dBm / 0.0428 W 802.11n HT20 : 17.13 dBm / 0.0516 W 802.11n HT40 : 18.63 dBm / 0.0729 W 802.11ac VHT20: 17.08 dBm / 0.0511 W 802.11ac VHT40: 15.64 dBm / 0.0366 W 802.11ac VHT80: 15.43 dBm / 0.0349 W 802.11ac VHT160: 15.47 dBm / 0.0352 W 802.11ax HE20: 17.33 dBm / 0.0541 W 802.11ax HE40: 15.74 dBm / 0.0375 W 802.11ax HE80: 15.57 dBm / 0.0361 W 802.11ax HE160: 15.69 dBm / 0.0371 W <5260 MHz ~ 5320 MHz> 802.11a : 21.11 dBm / 0.1291 W 802.11n HT20 : 19.85 dBm / 0.0966 W 802.11n HT40 : 19.35 dBm / 0.0861 W 802.11ac VHT20: 17.93 dBm / 0.0621 W 802.11ac VHT40: 16.35 dBm / 0.0432 W 802.11ac VHT80: 15.75 dBm / 0.0376 W 802.11ax HE20: 18.05 dBm / 0.0638 W 802.11ax HE40: 16.44 dBm / 0.0441 W 802.11ax HE80: 15.89 dBm / 0.0388 W <5500 MHz ~ 5700 MHz > 802.11a : 21.11 dBm / 0.1291 W 802.11n HT20 : 19.90 dBm / 0.0977 W 802.11n HT40 : 19.46 dBm / 0.0883 W 802.11ac VHT20: 17.85 dBm / 0.0610 W 802.11ac VHT40: 16.41 dBm / 0.0438 W 802.11ac VHT80: 15.60 dBm / 0.0363 W 802.11ax HE20: 17.98 dBm / 0.0628 W 802.11ax HE40: 16.51 dBm / 0.0448 W 802.11ax HE80: 15.74 dBm / 0.0375 W <5745 MHz ~ 5825 MHz> 802.11a : 20.81 dBm / 0.1205 W 802.11n HT20 : 19.53 dBm / 0.0897 W 802.11n HT40 : 18.87 dBm / 0.0771 W 802.11ac VHT20: 17.54 dBm / 0.0568 W 802.11ac VHT40: 15.90 dBm / 0.0389 W 802.11ac VHT80: 15.88 dBm / 0.0387 W 802.11ax HE20: 17.66 dBm / 0.0583 W 802.11ax HE40: 16.00 dBm / 0.0398 W 802.11ax HE80: 16.02 dBm / 0.0400 W

99% Occupied Bandwidth	<5180 MHz ~ 5250 MHz> 802.11a : 16.70 MHz 802.11ax HE20: 19.02 MHz 802.11ax HE40: 37.80 MHz 802.11ax HE80: 76.88 MHz 802.11ax HE160: 157.92 MHz <5260 MHz ~ 5320 MHz> 802.11a : 17.94 MHz 802.11ax HE20: 19.02 MHz 802.11ax HE40: 37.80 MHz 802.11ax HE80: 77.04 MHz <5500 MHz ~ 5700 MHz> 802.11a : 16.74 MHz 802.11ax HE20: 18.98 MHz 802.11ax HE40: 37.96 MHz 802.11ax HE80: 77.68 MHz <5745 MHz ~ 5825 MHz> 802.11a : 17.46 MHz 802.11ax HE20: 19.10 MHz 802.11ax HE40: 37.80 MHz 802.11ax HE80: 76.88 MHz
Antenna Type / Gain	<5180 MHz ~ 5250 MHz> <Ant. 3> : PIFA Antenna with gain 0.32 dBi <Ant. 10> : PIFA Antenna with gain 0.85 dBi <5260 MHz ~ 5320 MHz> <Ant. 3> : PIFA Antenna with gain 0.86 dBi <Ant. 10> : PIFA Antenna with gain 1.16 dBi <5500 MHz ~ 5700 MHz> <Ant. 3> : PIFA Antenna with gain 0.65 dBi <Ant. 10> : PIFA Antenna with gain 1.57 dBi <5745 MHz ~ 5825 MHz> <Ant. 3> : PIFA Antenna with gain 0.25 dBi <Ant. 10> : PIFA Antenna with gain 0.61 dBi
Type of Modulation	802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) 802.11ax: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM / 4096QAM)

Note:

1. WLAN operation in 5600 MHz ~ 5650 MHz is notched.
2. For WLAN SISO & MIMO mode, the whole testing assess MIMO mode to cover SISO mode.
3. MIMO mode only support CDD mode.
4. For 802.11ac & 11ax mode, the whole testing have assessed 802.11ax HE20 / HE40 / HE80 / HE160 by referring to the higher output power.
5. 802.11ax support full RU tone and partial RU tone, both full RU and partial RU-left (for low CH) and partial RU-right (for high CH) are tested for conducted power/PSD, the full RU power/PSD > partial RU, therefore the full RU perform full test and Partial RU verified spurious and bandedge.
6. The device does not support 802.11ax channel puncture mode.



1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-SZ TH01-SZ	CN1256	421272

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103 TEL: +86-755-33202398		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH03-SZ	CN1256	421272

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH03-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b



1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5180-5240 MHz U-NII-1	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	42 [#]	5210	50 ^{\$}	5250
Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5260-5320 MHz U-NII-2A	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	58 [#]	5290	-	-
Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5700MHz U-NII-2C	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	106 [#]	5530	134*	5670
	108	5540	136	5680
	110*	5550	140	5700



Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5745-5825 MHz U-NII-3	149	5745	157	5785
	151 [*]	5755	159 [*]	5795
	153	5765	161	5805
	155 [#]	5775	165	5825

Note:

1. The above Frequency and Channel in "^{*}" were 802.11n HT40 and 802.11ac VHT40 and 802.11ax HE40.
2. The above Frequency and Channel in "[#]" were 802.11ac VHT80 and 802.11ax HE80.
3. The above Frequency and Channel in "^{\$}" were 802.11ac VHT160 and 802.11ax HE160.

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

MIMO Mode

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0
802.11ax HE160	MCS0

RSE Co-location
802.11g CH01 MIMO (Ant.5+6) + 802.11n HT40 CH62 MIMO (Ant.3+10) Bluetooth LE CH39 2Mbps (Ant.6) + 802.11g CH01 (Ant.5) + 802.11n HT40 CH62 MIMO (Ant.3+10)

AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN Link(5G) + USB Cable (Charging From Adapter) + Battery
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Remark: For Radiated Test Cases, The tests were performance with Adapter, Battery and USB Cable.

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11a	802.11a	802.11a	802.11a
L	Low	36	52	100	149
M	Middle	44	60	116	157
H	High	48	64	140	165

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11n HT20	802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100	149
M	Middle	44	60	116	157
H	High	48	64	140	165



Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11n HT40	802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102	151
M	Middle	-	-	110	-
H	High	46	62	134	159

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11ax HE20	802.11ax HE20	802.11ax HE20	802.11ax HE20
L	Low	36	52	100	149
M	Middle	44	60	116	157
H	High	48	64	140	165

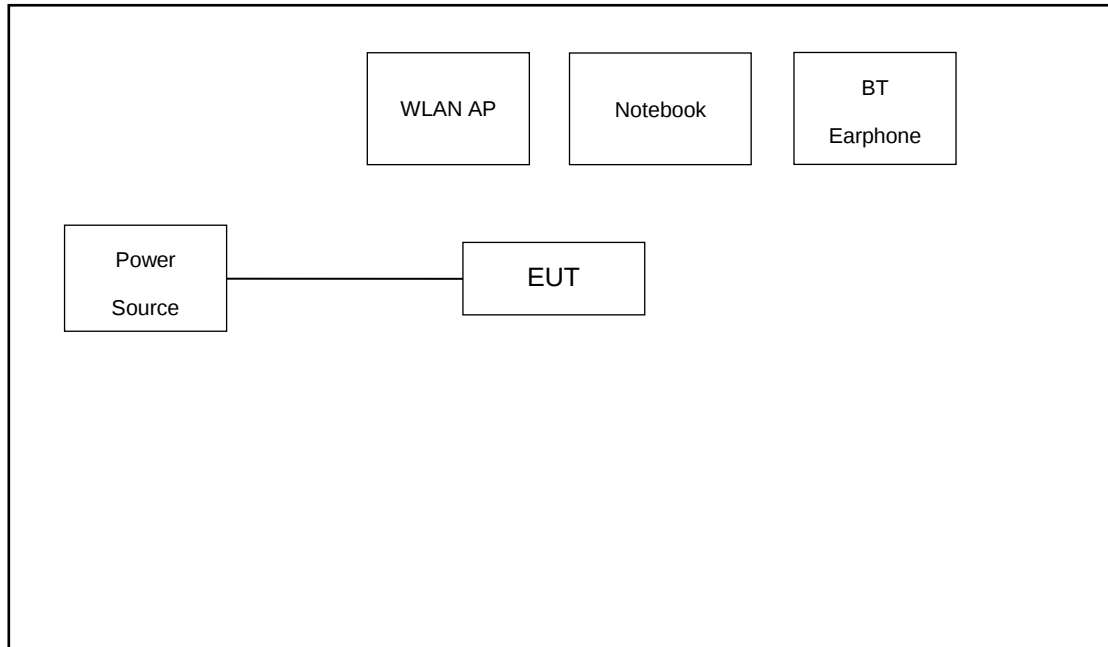
Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11ax HE40	802.11ax HE40	802.11ax HE40	802.11ax HE40
L	Low	38	54	102	151
M	Middle	-	-	110	-
H	High	46	62	134	159

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11ax HE80	802.11ax HE80	802.11ax HE80	802.11ax HE80
L	Low	-	-	106	-
M	Middle	42	58	-	155
H	High	-	-	-	-

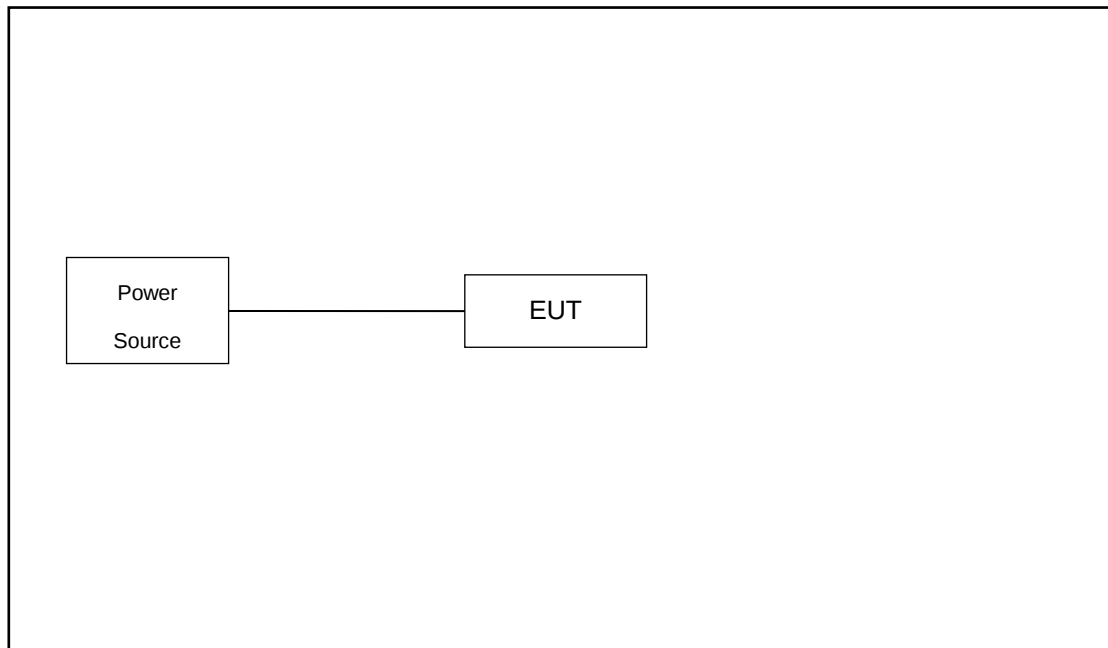
Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		802.11ax HE160	802.11ax HE160	802.11ax HE160	802.11ax HE160
M	Middle	50		-	-

2.3 Connection Diagram of Test System

For Conducted Emission:



For Radiated Emission:



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Base Station(LTE)	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
3.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	N/A	N/A

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5.24 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 5.24 + 10 = 15.24 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

3.1.2 Measuring Instruments

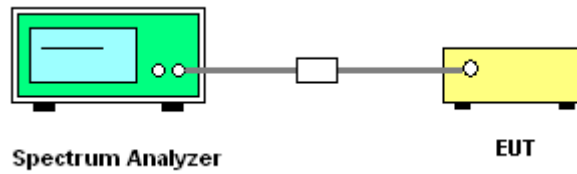
The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

☒	Section C) Bandwidth Measurement 1. Emission Bandwidth (EBW) and 99% OBW
	- Set RBW = approximately 1% of the emission bandwidth. - Set the VBW > RBW. - Detector = Peak. - Trace mode = max hold - Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%. - For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set to 1%~5% of the OBW and set the Video bandwidth (VBW) $\geq 3 * RBW$. - Measure and record the results in the test report.
☒	Section C) Bandwidth Measurement 2. Minimum Emission Bandwidth for the band 5.725 - 5.85 GHz
	- Set RBW = 100kHz. - Set the VBW $\geq 3 \times RBW$. - Detector = Peak. - Trace mode = max hold - Measure the maximum width of the emission that is 6 dB down from the peak of the emission. - Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB and 26dB and 99% Bandwidth

Please refer to Appendix A.



3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

For the 5.25–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm $10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

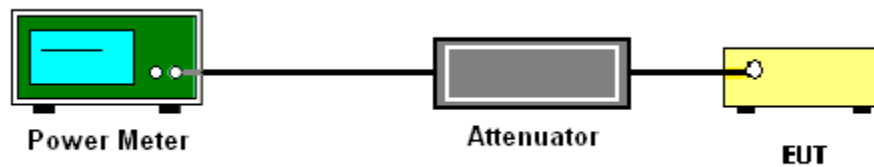
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.
4. For MIMO mode, the measure-and-sum technique should be used for measuring the in-band transmit power of a device.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

For the 5.25–5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.

Section F) Maximum power spectral density.

For devices operating in the bands 5.15 - 5.25 GHz, 5.25 - 5.35 GHz, and 5.47 - 5.725 GHz

Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW $\geq$ 3 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- 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. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

For devices operating in the band 5.725 - 5.85 GHz

Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 500KHz (or 300 kHz if the SA can't set RBW=500KHz).
- Set VBW $\geq$ 1 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- If the SA can't set RBW=500KHz, then add $10 \log(500\text{kHz}/\text{RBW})$ to the test result.
- 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. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

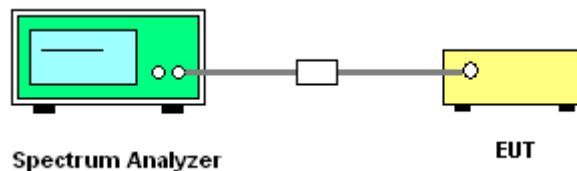
Method (a): Measure and sum the spectra across the outputs for UNII1/2A/2C.

The total final Power Spectral Density is the bin-by-bin summation to obtain the combined spectrum. For the device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

Method (b): Measure and sum spectral maxima across the outputs for UNII-3 and 11ax partial RU PSD.

The measurement on each individual output were performed with the same span and number on each individual output. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



3.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part 15.205.

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

- (2) For transmitters operating in the 5.725-5.85 GHz band:
- 15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(3) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

(4) EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.2

Note: The following formula is used to convert the EIRP to field strength.

$$EIRP = E_{Meas} + 20\log (d_{Meas}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

3.4.2 Measuring Instruments

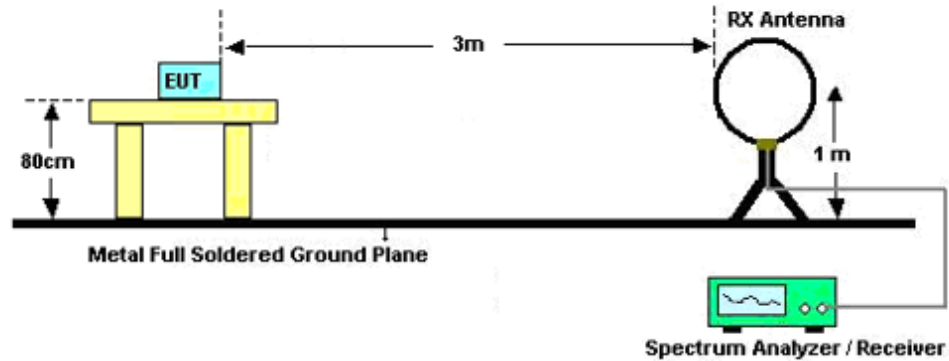
The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

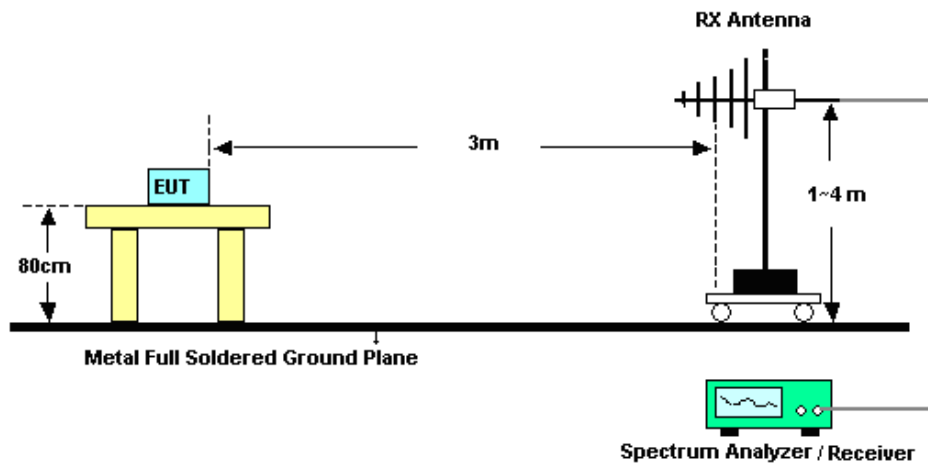
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

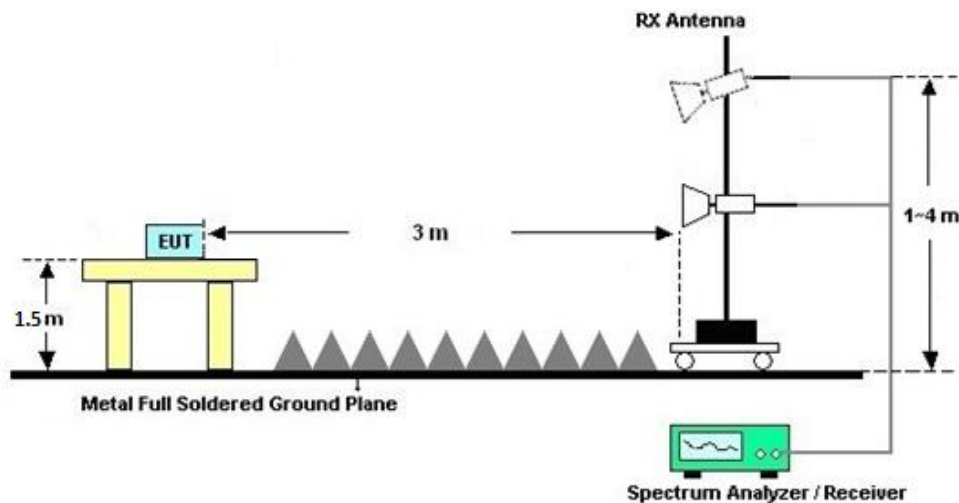
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



**3.4.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment 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.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

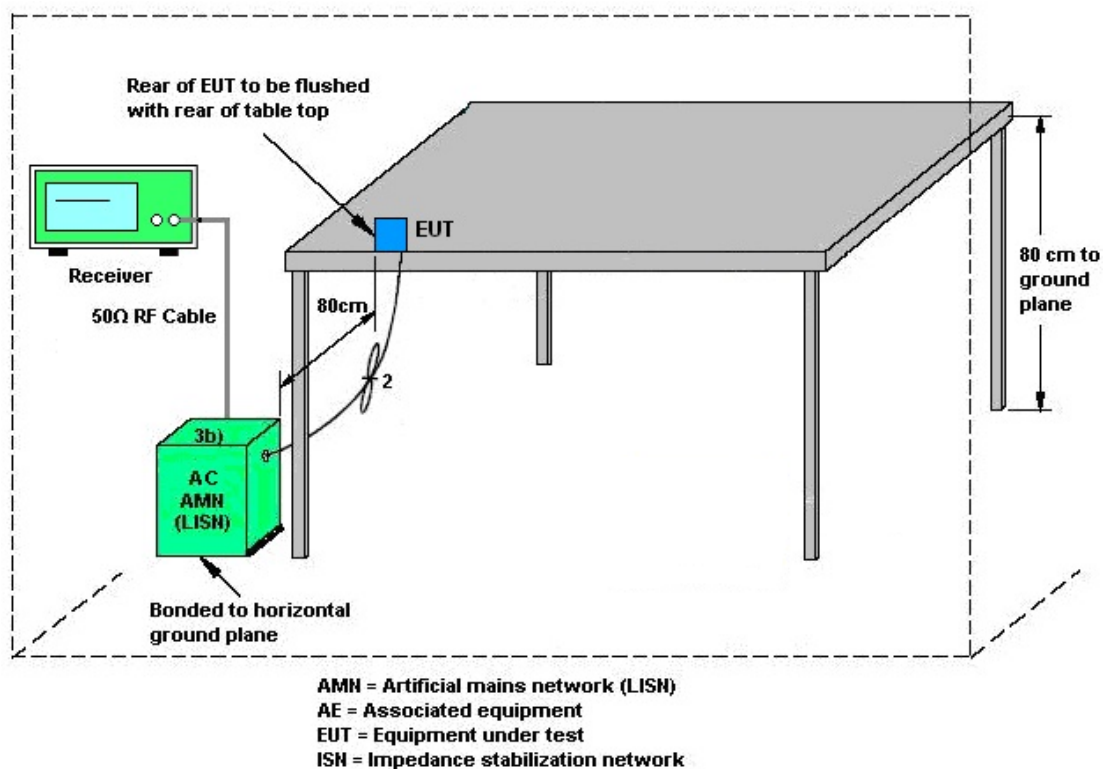
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Antenna Requirements

3.6.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.6.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(\text{NANT}/\text{NSS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $\text{NANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with

GANT set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain GANT is set equal to the antenna having the highest gain, i.e., F2)f)i).

For PSD, the directional gain calculation is following F2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

<CDD Modes>						
			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant. 3 (dBi)	Ant. 10 (dBi)				
UNII-1	-3.00	-3.00	-3.00	0.01	0.00	0.00
UNII-2A	-2.20	-2.20	-2.20	0.81	0.00	0.00
UNII-2C	-2.40	-2.40	-2.40	0.61	0.00	0.00
UNII-3	-2.50	-2.70	-2.50	0.41	0.00	0.00

Power limit reduction = Composite gain – 6dBi, (min = 0)

PSD limit reduction = Composite gain + PSD Array gain – 6dBi, (min = 0)



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 06, 2022	Mar. 17, 2023~ Jun. 01, 2023	Apr. 05, 2023	Conducted (TH01-SZ)
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 06, 2023		Apr. 05, 2024	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1339473	30MHz~40GHz	Dec. 27, 2022	Mar. 17, 2023~ Jun. 01, 2023	Dec. 26, 2023	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1542004	50MHz Bandwidth	Dec. 27, 2022	Mar. 17, 2023~ Jun. 01, 2023	Dec. 26, 2023	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 07, 2022	Mar. 17, 2023~ Jun. 01, 2023	Jul. 06, 2023	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 04, 2023	Apr. 10, 2023	Apr. 03, 2024	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 04, 2023	Apr. 10, 2023	Apr. 03, 2024	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 28, 2022	Apr. 10, 2023	Jul. 27, 2023	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	Aug. 09, 2021	Apr. 10, 2023	Aug. 08, 2023	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 08, 2023	Apr. 10, 2023	Apr. 07, 2024	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Apr. 08, 2023	Apr. 10, 2023	Apr. 07, 2024	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz~3000MHz	Oct. 19, 2022	Apr. 10, 2023	Oct. 18, 2023	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 19, 2022	Apr. 10, 2023	Oct. 18, 2023	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 26, 2022	Apr. 10, 2023	Dec. 25, 2023	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 06, 2022	Apr. 10, 2023	Jul. 05, 2023	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010002729	1 N/A	Nov. 10, 2022	Apr. 10, 2023	Nov. 09, 2023	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 10, 2023	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 10, 2023	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Jul. 07, 2022	Feb. 06, 2023	Jul. 06, 2023	Conduction (CO01-SZ)
AC LISN	R&S	ENV216	100063	9kHz~30MHz	Sep. 15, 2022	Feb. 06, 2023	Sep. 14, 2023	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 17, 2022	Feb. 06, 2023	Oct. 16, 2023	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 07, 2022	Feb. 06, 2023	Jul. 06, 2023	Conduction (CO01-SZ)

NCR: No Calibration Required

5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Power	±1.34 dB
Conducted Emissions	±1.34 dB
Occupied Channel Bandwidth	±0.13 %
Conducted Power Spectral Density	±1.32 dB

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.2dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.9dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0dB
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Appendix A. Conducted Test Results

Test Engineer:	Zhang Xue Yi	Temperature:	21~26	°C
Test Date:	2023/3/17~2023/6/1	Relative Humidity:	50~53	%

TEST RESULTS DATA
Average Power Table

FCC U-NII-1																	
Mod.	Data Rate	Ntx	CH.	RU Config	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)			Pass/Fail	Power Setting
						Ant 3	Ant 10	Ant 3	Ant 10	SUM	Ant 3	Ant 10	Ant 3	Ant 10			
11a	6Mbps	2	36	Full	5180	0.04	0.02	12.17	13.86	16.11	24.00		0.85			Pass	13
11a	6Mbps	2	44	Full	5220	0.04	0.02	12.30	13.68	16.06	24.00		0.85			Pass	13
11a	6Mbps	2	48	Full	5240	0.04	0.02	12.33	14.08	16.31	24.00		0.85			Pass	13.5
HT20	MCS0	2	36	Full	5180	0.00	0.00	12.64	14.36	16.59	24.00		0.85			Pass	13.5
HT20	MCS0	2	44	Full	5220	0.00	0.00	13.36	14.76	17.13	24.00		0.85			Pass	14
HT20	MCS0	2	48	Full	5240	0.00	0.00	13.23	14.68	17.03	24.00		0.85			Pass	14
HT40	MCS0	2	38	Full	5190	0.02	0.02	14.68	16.38	18.63	24.00		0.85			Pass	15
HT40	MCS0	2	46	Full	5230	0.02	0.02	14.73	16.14	18.51	24.00		0.85			Pass	15
VHT20	MCS0	2	36	Full	5180	0.00	0.00	12.60	14.31	16.55	24.00		0.85			Pass	13.5
VHT20	MCS0	2	44	Full	5220	0.00	0.00	13.31	14.72	17.08	24.00		0.85			Pass	14
VHT20	MCS0	2	48	Full	5240	0.00	0.00	13.21	14.66	17.01	24.00		0.85			Pass	14
VHT40	MCS0	2	38	Full	5190	0.02	0.02	11.51	13.53	15.64	24.00		0.85			Pass	12.5
VHT40	MCS0	2	46	Full	5230	0.02	0.02	11.60	13.13	15.44	24.00		0.85			Pass	12.5
VHT80	MCS0	2	42	Full	5210	0.01	0.01	11.56	13.13	15.43	24.00		0.85			Pass	12.5
VHT160	MCS0	2	50	Full	5250	0.00	0.00	11.53	13.22	15.47	24.00		0.85			Pass	12
HE20	MCS0	2	36	Full	5180	0.00	0.00	13.38	15.10	17.33	24.00		0.85			Pass	14
				26/0		0.00	0.00	4.72	5.09	7.92	24.00		0.85			Pass	5.5
				52/37		0.00	0.00	7.71	8.28	11.01	24.00		0.85			Pass	8.5
				106/53		0.00	0.00	10.42	11.97	14.27	24.00		0.85			Pass	11.5
			48	Full	5240	0.00	0.00	13.42	14.85	17.20	24.00		0.85			Pass	14
				Full		0.00	0.00	13.32	14.79	17.13	24.00		0.85			Pass	14
				26/8		0.00	0.00	2.48	4.76	6.78	24.00		0.85			Pass	5.5
				52/40		0.00	0.00	5.50	7.75	9.78	24.00		0.85			Pass	8.5
				106/54		0.00	0.00	9.25	11.03	13.24	24.00		0.85			Pass	11.5
				Full		0.00	0.00	13.32	14.79	17.13	24.00		0.85			Pass	14
HE40	MCS0	2	38	Full	5190	0.01	0.01	11.62	13.61	15.74	24.00		0.85			Pass	12.5
HE40	MCS0	2	46	Full	5230	0.01	0.01	11.71	13.21	15.53	24.00		0.85			Pass	12.5
HE80	MCS0	2	42	Full	5210	0.03	0.03	11.70	13.27	15.57	24.00		0.85			Pass	12.5
HE160	MCS0	2	50	Full	5250	0.00	0.00	11.72	13.47	15.69	24.00		0.85			Pass	12

TEST RESULTS DATA
Average Power Table

FCC U-NII-2A																	
Mod.	Data Rate	Ntx	CH.	RU Config	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail	Power Setting
						Ant 3	Ant 10	Ant 3	Ant 10	SUM	Ant 3	Ant 10	Ant 3	Ant 10			
11a	6Mbps	2	52	Full	5260	0.04	0.02	17.22	17.86	20.56	24.00		1.16		26.99	Pass	17
11a	6Mbps	2	60	Full	5300	0.04	0.02	17.10	17.91	20.54	24.00		1.16		26.99	Pass	17
11a	6Mbps	2	64	Full	5320	0.04	0.02	17.74	18.42	21.11	24.00		1.16		26.99	Pass	17
HT20	MCS0	2	52	Full	5260	0.00	0.00	15.97	16.56	19.29	24.00		1.16		26.99	Pass	16
HT20	MCS0	2	60	Full	5300	0.00	0.00	15.81	16.60	19.23	24.00		1.16		26.99	Pass	16
HT20	MCS0	2	64	Full	5320	0.00	0.00	16.50	17.15	19.85	24.00		1.16		26.99	Pass	16
HT40	MCS0	2	54	Full	5270	0.02	0.02	15.48	16.05	18.79	24.00		1.16		26.99	Pass	15
HT40	MCS0	2	62	Full	5310	0.02	0.02	16.11	16.55	19.35	24.00		1.16		26.99	Pass	15
VHT20	MCS0	2	52	Full	5260	0.00	0.00	13.93	14.60	17.29	24.00		1.16		26.99	Pass	14
VHT20	MCS0	2	60	Full	5300	0.00	0.00	13.79	14.65	17.25	24.00		1.16		26.99	Pass	14
VHT20	MCS0	2	64	Full	5320	0.00	0.00	14.70	15.12	17.93	24.00		1.16		26.99	Pass	14
VHT40	MCS0	2	54	Full	5270	0.02	0.02	12.61	13.01	15.82	24.00		1.16		26.99	Pass	12.5
VHT40	MCS0	2	62	Full	5310	0.02	0.02	13.14	13.53	16.35	24.00		1.16		26.99	Pass	12.5
VHT80	MCS0	2	58	Full	5290	0.01	0.01	12.46	13.00	15.75	24.00		1.16		26.99	Pass	12.5
HE20	MCS0	2	52	Full	5260	0.00	0.00	14.04	14.73	17.41	24.00		1.16		26.99	Pass	14
				26/0		0.00	0.00	4.60	5.22	7.93	24.00		1.16		26.99	Pass	6
				52/37		0.00	0.00	7.46	7.92	10.71	24.00		1.16		26.99	Pass	9
				106/53		0.00	0.00	10.50	11.37	13.97	24.00		1.16		26.99	Pass	12
			64	Full	5320	0.00	0.00	13.90	14.78	17.37	24.00		1.16		26.99	Pass	14
				26/8		0.00	0.00	14.81	15.25	18.05	24.00		1.16		26.99	Pass	14
				52/40		0.00	0.00	5.34	5.68	8.52	24.00		1.16		26.99	Pass	5.5
				106/54		0.00	0.00	8.20	8.73	11.48	24.00		1.16		26.99	Pass	8.5
						0.00	0.00	11.20	11.96	14.61	24.00		1.16		26.99	Pass	11.5
HE40	MCS0	2	54	Full	5270	0.01	0.01	12.72	13.09	15.92	24.00		1.16		26.99	Pass	12.5
			62	Full	5310	0.01	0.01	13.25	13.61	16.44	24.00		1.16		26.99	Pass	12.5
HE80	MCS0	2	58	Full	5290	0.03	0.03	12.60	13.14	15.89	24.00		1.16		26.99	Pass	12.5

TEST RESULTS DATA
Average Power Table

FCC U-NII-2C																			
Mod.	Data Rate	Ntx	CH.	RU Config	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		EIRP Power Limit (dBm)	Pass/Fail	Power Setting		
						Ant 3	Ant 10	Ant 3	Ant 10	SUM	Ant 3	Ant 10	Ant 3	Ant 10					
11a	6Mbps	2	100	Full	5500	0.04	0.02	17.39	17.70	20.56	24.00		1.57		26.99	Pass	17		
11a	6Mbps	2	116	Full	5580	0.04	0.02	17.81	18.36	21.11	24.00		1.57		26.99	Pass	17		
11a	6Mbps	2	140	Full	5700	0.04	0.02	17.16	18.30	20.78	24.00		1.57		26.99	Pass	17		
HT20	MCS0	2	100	Full	5500	0.00	0.00	16.05	16.40	19.24	24.00		1.57		26.99	Pass	16		
HT20	MCS0	2	116	Full	5580	0.00	0.00	16.57	17.19	19.90	24.00		1.57		26.99	Pass	16		
HT20	MCS0	2	140	Full	5700	0.00	0.00	15.92	17.09	19.55	24.00		1.57		26.99	Pass	16		
HT40	MCS0	2	102	Full	5510	0.02	0.02	15.64	15.74	18.70	24.00		1.57		26.99	Pass	15		
HT40	MCS0	2	110	Full	5550	0.02	0.02	15.75	16.31	19.05	24.00		1.57		26.99	Pass	15		
HT40	MCS0	2	134	Full	5670	0.02	0.02	16.09	16.77	19.46	24.00		1.57		26.99	Pass	15		
VHT20	MCS0	2	100	Full	5500	0.00	0.00	14.18	14.36	17.28	24.00		1.57		26.99	Pass	14		
VHT20	MCS0	2	116	Full	5580	0.00	0.00	14.55	15.12	17.85	24.00		1.57		26.99	Pass	14		
VHT20	MCS0	2	140	Full	5700	0.00	0.00	13.97	15.05	17.55	24.00		1.57		26.99	Pass	14		
VHT40	MCS0	2	102	Full	5510	0.02	0.02	12.68	12.72	15.71	24.00		1.57		26.99	Pass	12.5		
VHT40	MCS0	2	110	Full	5550	0.02	0.02	12.89	13.24	16.07	24.00		1.57		26.99	Pass	12.5		
VHT40	MCS0	2	134	Full	5670	0.02	0.02	12.95	13.82	16.41	24.00		1.57		26.99	Pass	12.5		
VHT80	MCS0	2	106	Full	5530	0.01	0.01	12.55	12.62	15.60	24.00		1.57		26.99	Pass	12.5		
HE20	MCS0	2	100	Full	5500	0.00	0.00	14.29	14.49	17.40	24.00		1.57		26.99	Pass	14		
				26/0		0.00	0.00	5.43	5.32	8.39	24.00		1.57		26.99	Pass	6		
				52/37		0.00	0.00	8.25	8.17	11.22	24.00		1.57		26.99	Pass	9		
				106/53		0.00	0.00	11.18	11.77	14.50	24.00		1.57		26.99	Pass	12		
			140	Full	5700	0.00	0.00	14.66	15.25	17.98	24.00		1.57		26.99	Pass	14		
				26/8		0.00	0.00	4.55	6.01	8.35	24.00		1.57		26.99	Pass	5.5		
				52/40		0.00	0.00	7.52	9.31	11.52	24.00		1.57		26.99	Pass	8.5		
				106/54		0.00	0.00	10.87	12.12	14.55	24.00		1.57		26.99	Pass	11.5		
				102		Full	5510	0.01	0.01	12.79	12.80	15.80	24.00		1.57		26.99	Pass	12.5
				110		Full	5550	0.01	0.01	13.00	13.32	16.17	24.00		1.57		26.99	Pass	12.5
134	Full	5670	0.01	0.01	13.06	13.90	16.51	24.00		1.57		26.99	Pass	12.5					
HE80	MCS0	2	106	Full	5530	0.03	0.03	12.69	12.76	15.74	24.00		1.57		26.99	Pass	12.5		

TEST RESULTS DATA
Average Power Table

U-NII-3																
Mod.	Data Rate	NTx	CH.	RU Config	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail	Power Setting
						Ant 3	Ant 10	Ant 3	Ant 10	SUM	Ant 3	Ant 10	Ant 3	Ant 10		
11a	6Mbps	2	149	Full	5745	0.04	0.02	17.22	17.65	20.45	30.00	0.61		Pass	17	
11a	6Mbps	2	157	Full	5785	0.04	0.02	17.43	17.75	20.61	30.00	0.61		Pass	17	
11a	6Mbps	2	165	Full	5825	0.04	0.02	17.72	17.87	20.81	30.00	0.61		Pass	17	
HT20	MCS0	2	149	Full	5745	0.00	0.00	16.09	16.52	19.32	30.00	0.61		Pass	16	
HT20	MCS0	2	157	Full	5785	0.00	0.00	16.30	16.37	19.35	30.00	0.61		Pass	16	
HT20	MCS0	2	165	Full	5825	0.00	0.00	16.48	16.56	19.53	30.00	0.61		Pass	16	
HT40	MCS0	2	151	Full	5755	0.02	0.02	15.37	15.96	18.69	30.00	0.61		Pass	15	
HT40	MCS0	2	159	Full	5795	0.02	0.02	15.71	15.99	18.87	30.00	0.61		Pass	15	
VHT20	MCS0	2	149	Full	5745	0.00	0.00	13.95	14.57	17.28	30.00	0.61		Pass	14	
VHT20	MCS0	2	157	Full	5785	0.00	0.00	14.44	14.45	17.46	30.00	0.61		Pass	14	
VHT20	MCS0	2	165	Full	5825	0.00	0.00	14.52	14.54	17.54	30.00	0.61		Pass	14	
VHT40	MCS0	2	151	Full	5755	0.02	0.02	12.48	13.04	15.78	30.00	0.61		Pass	12.5	
VHT40	MCS0	2	159	Full	5795	0.02	0.02	12.86	12.92	15.90	30.00	0.61		Pass	12.5	
VHT80	MCS0	2	155	Full	5775	0.01	0.01	12.88	12.85	15.88	30.00	0.61		Pass	12.5	
HE20	MCS0	2	149	Full	5745	0.00	0.00	14.07	14.69	17.40	30.00	0.61		Pass	14	
HE20	MCS0	2	149	26/0	5745	0.00	0.00	5.67	4.64	8.20	30.00	0.61		Pass	5.5	
HE20	MCS0	2	149	52/37	5745	0.00	0.00	8.56	7.72	11.17	30.00	0.61		Pass	8.5	
HE20	MCS0	2	149	106/53	5745	0.00	0.00	11.30	11.49	14.41	30.00	0.61		Pass	11.5	
HE20	MCS0	2	157	Full	5785	0.00	0.00	14.56	14.57	17.58	30.00	0.61		Pass	14	
HE20	MCS0	2	165	Full	5825	0.00	0.00	14.64	14.66	17.66	30.00	0.61		Pass	14	
HE20	MCS0	2	165	26/8	5825	0.00	0.00	5.76	5.26	8.53	30.00	0.61		Pass	5.5	
HE20	MCS0	2	165	52/40	5825	0.00	0.00	8.33	8.39	11.37	30.00	0.61		Pass	8.5	
HE20	MCS0	2	165	106/54	5825	0.00	0.00	11.57	11.30	14.45	30.00	0.61		Pass	11.5	
HE40	MCS0	2	151	Full	5755	0.01	0.01	12.58	13.14	15.88	30.00	0.61		Pass	12.5	
HE40	MCS0	2	159	Full	5795	0.01	0.01	12.96	13.02	16.00	30.00	0.61		Pass	12.5	
HE80	MCS0	2	155	Full	5775	0.03	0.03	13.02	12.99	16.02	30.00	0.61		Pass	12.5	



26dB Emission Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	26dB EBW [MHz]	FL[MHz]	FH[MHz]
11A-CDD	Ant3	5180	18.64	5170.68	5189.32
	Ant10	5180	19.60	5170.68	5190.28
	Ant3	5220	18.64	5210.64	5229.28
	Ant10	5220	22.28	5208.68	5230.96
	Ant3	5240	18.76	5230.56	5249.32
	Ant10	5240	20.16	5229.32	5249.48
	Ant3	5260	20.28	5249.80	5270.08
	Ant10	5260	32.12	5244.92	5277.04
	Ant3	5300	18.76	5290.60	5309.36
	Ant10	5300	19.04	5290.72	5309.76
	Ant3	5320	18.72	5310.56	5329.28
	Ant10	5320	19.84	5310.56	5330.40
	Ant3	5500	18.84	5490.68	5509.52
	Ant10	5500	20.32	5489.32	5509.64
	Ant3	5580	21.88	5570.08	5591.96
	Ant10	5580	19.04	5570.72	5589.76
	Ant3	5700	21.92	5690.04	5711.96
	Ant10	5700	21.12	5689.28	5710.40
	Ant3	5745	21.96	5735.04	5757.00
	Ant10	5745	20.28	5734.88	5755.16
	Ant3	5785	21.00	5774.72	5795.72
	Ant10	5785	19.60	5774.84	5794.44
	Ant3	5825	23.00	5814.48	5837.48
	Ant10	5825	30.16	5809.88	5840.04
11N20MIMO	Ant3	5180	19.96	5170.00	5189.96
	Ant10	5180	20.12	5170.36	5190.48
	Ant3	5220	20.56	5209.60	5230.16
	Ant10	5220	21.76	5208.92	5230.68
	Ant3	5240	20.28	5229.64	5249.92
	Ant10	5240	21.52	5228.40	5249.92
	Ant3	5260	20.28	5249.68	5269.96
	Ant10	5260	29.08	5245.92	5275.00
	Ant3	5300	20.40	5289.76	5310.16
	Ant10	5300	19.96	5290.20	5310.16



	Ant3	5320	20.32	5310.00	5330.32
	Ant10	5320	20.52	5310.00	5330.52
	Ant3	5500	20.08	5489.92	5510.00
	Ant10	5500	20.88	5489.28	5510.16
	Ant3	5580	21.16	5569.00	5590.16
	Ant10	5580	20.00	5570.16	5590.16
	Ant3	5700	20.32	5690.04	5710.36
	Ant10	5700	22.16	5688.32	5710.48
	Ant3	5745	20.52	5734.92	5755.44
	Ant10	5745	20.80	5734.88	5755.68
	Ant3	5785	20.72	5774.76	5795.48
	Ant10	5785	20.16	5774.96	5795.12
	Ant3	5825	20.80	5814.96	5835.76
	Ant10	5825	24.40	5812.72	5837.12
11N40MIMO	Ant3	5190	39.84	5170.00	5209.84
	Ant10	5190	39.60	5170.48	5210.08
	Ant3	5230	39.68	5210.08	5249.76
	Ant10	5230	40.00	5209.52	5249.52
	Ant3	5270	40.40	5249.84	5290.24
	Ant10	5270	43.52	5249.12	5292.64
	Ant3	5310	39.76	5290.16	5329.92
	Ant10	5310	39.44	5290.64	5330.08
	Ant3	5510	39.92	5490.08	5530.00
	Ant10	5510	39.76	5489.68	5529.44
	Ant3	5550	39.68	5530.16	5569.84
	Ant10	5550	40.24	5530.24	5570.48
	Ant3	5670	39.76	5649.92	5689.68
	Ant10	5670	39.84	5649.76	5689.60
	Ant3	5755	40.00	5734.84	5774.84
	Ant10	5755	39.84	5735.00	5774.84
	Ant3	5795	39.76	5775.08	5814.84
	Ant10	5795	40.00	5774.84	5814.84
11AC80MIMO	Ant3	5210	80.80	5169.20	5250.00
	Ant10	5210	79.36	5170.32	5249.68
	Ant3	5290	79.84	5250.00	5329.84
	Ant10	5290	82.08	5250.00	5332.08
	Ant3	5530	80.16	5489.84	5570.00
	Ant10	5530	81.60	5488.40	5570.00



	Ant3	5775	80.00	5735.00	5815.00
	Ant10	5775	79.84	5734.84	5814.68
11AC160MIMO	Ant3	5250	162.88	5168.72	5331.60
	Ant10	5250	164.80	5168.08	5332.88
	Ant3	5250_UNII-1	81.28	5168.72	5250
	Ant10	5250_UNII-1	81.92	5168.08	5250
	Ant3	5250_UNII-2A	81.6	5250	5331.60
	Ant10	5250_UNII-2A	82.88	5250	5332.88
11AX20MIMO	Ant3	5180	20.84	5169.68	5190.52
	Ant10	5180	20.52	5169.88	5190.40
	Ant3	5220	20.76	5209.64	5230.40
	Ant10	5220	21.04	5209.40	5230.44
	Ant3	5240	20.80	5229.52	5250.32
	Ant10	5240	21.12	5229.24	5250.36
	Ant3	5260	20.80	5249.56	5270.36
	Ant10	5260	22.28	5248.44	5270.72
	Ant3	5300	20.68	5289.68	5310.36
	Ant10	5300	20.88	5289.80	5310.68
	Ant3	5320	20.68	5309.64	5330.32
	Ant10	5320	20.72	5309.72	5330.44
	Ant3	5500	20.64	5489.76	5510.40
	Ant10	5500	20.88	5489.60	5510.48
	Ant3	5580	20.96	5569.60	5590.56
	Ant10	5580	20.72	5569.88	5590.60
	Ant3	5700	20.80	5689.52	5710.32
	Ant10	5700	21.44	5689.44	5710.88
	Ant3	5745	20.68	5734.68	5755.36
	Ant10	5745	20.96	5734.56	5755.52
	Ant3	5785	21.28	5774.32	5795.60
	Ant10	5785	21.04	5774.56	5795.60
	Ant3	5825	20.84	5814.56	5835.40
	Ant10	5825	21.08	5814.40	5835.48
11AX40MIMO	Ant3	5190	40.40	5169.76	5210.16
	Ant10	5190	40.16	5170.08	5210.24
	Ant3	5230	40.24	5209.92	5250.16
	Ant10	5230	40.40	5209.44	5249.84
	Ant3	5270	40.08	5249.92	5290.00
	Ant10	5270	40.72	5249.76	5290.48



	Ant3	5310	40.56	5289.60	5330.16
	Ant10	5310	40.40	5289.84	5330.24
	Ant3	5510	40.56	5489.60	5530.16
	Ant10	5510	40.40	5489.60	5530.00
	Ant3	5550	40.56	5529.84	5570.40
	Ant10	5550	40.32	5530.00	5570.32
	Ant3	5670	40.32	5649.84	5690.16
	Ant10	5670	40.64	5649.36	5690.00
	Ant3	5755	40.64	5734.60	5775.24
	Ant10	5755	40.16	5734.84	5775.00
	Ant3	5795	40.72	5774.60	5815.32
	Ant10	5795	40.48	5774.60	5815.08
11AX80MIMO	Ant3	5210	80.16	5170.00	5250.16
	Ant10	5210	79.84	5170.00	5249.84
	Ant3	5290	80.80	5249.36	5330.16
	Ant10	5290	81.76	5249.84	5331.60
	Ant3	5530	80.48	5489.68	5570.16
	Ant10	5530	82.72	5488.08	5570.80
	Ant3	5775	80.80	5734.36	5815.16
	Ant10	5775	81.60	5733.56	5815.16
11AX160MIMO	Ant3	5250	162.88	5168.40	5331.28
	Ant10	5250	164.48	5167.76	5332.24
	Ant3	5250_UNII-1	81.6	5168.40	5250
	Ant10	5250_UNII-1	82.24	5167.76	5250
	Ant3	5250_UNII-2A	81.28	5250	5331.28
	Ant10	5250_UNII-2A	82.24	5250	5332.24



Test Graphs

