



# **TEST REPORT**

Applicant: FCC: MAXWEST COMMUNICATION LIMITED IC: MAXWEST INTERNATIONAL LIMITED

FCC: FLAT/RM 707 7/F, FORTRESS TOWER 250 KING'S ROAD,

Address: NORTH POINT, HONG KONG

IC: FLAT/RM 1802 18/F ON HONG COMMERCIAL BUILDING

145 HENNESSY ROAD WANCHAI HK 518000 China

Product Name: Phone

FCC ID: 2ASP8GRAVITYG68

IC: 24313-GRAVITYG68

**HVIN: GRAVITY G68** 

47 CFR Part 15, Subpart E (15.407)

RSS-247 Issue 3, August 2023

Standard(s): RSS-Gen, Issue 5, February 2021 Amendment 2

ANSI C63.10-2013

KDB 789033 D02 General U-NII Test Procedures New Rules v02r01

Report Number: 2402Z68759E-RF-00D

**Report Date: 2025/3/4** 

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

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# DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402Z68759E-RF-00D	Original Report	2025/3/4

Report Template Version: FCC+IC-WiFi5-Client-V1.2

## 1. GENERAL INFORMATION

## 1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Phone
EUT Model:	GRAVITY G68
Operation Frequency:	U-NII-1: 5180-5240 MHz (802.11a/n ht20/ac vht20) 5190-5230 MHz (802.11n ht40/ac vht40) 5210 MHz (802.11ac vht80) U-NII-3: 5745-5825 MHz (802.11a/n ht20/ac vht20) 5755-5795 MHz (802.11n ht40/ac vht40)
Maximum Average Conducted	5775 MHz (802.11ac vht80) 14.52dBm (U-NII-1: 5150-5250MHz)
	15.48dBm (U-NII-3: 5725-5850MHz)
Modulation Type:	802.11a/n/ac: OFDM-BPSK, QPSK, 16QAM, 64QAM,256QAM
Rated Input Voltage:	DC 3.87V from battery or DC 5/9/12V from adapter
Serial Number:	2UZB-1 (for RF Conducted Test) 2UZB-2 (for Radiated Spurious Emissions Test and AC Line Conducted Emissions Test)
<b>EUT Received Date:</b>	2024/11/23
EUT Received Status:	Good

## 1.2 Accessory Information

Accessory Description	Manufacturer	Model	Parameters
Adapter	MAXWEST	HA-88050300UUBQ	Input:100-240V~50/60Hz 0.5A Output: 5.0V 3A 15.0W OR 9.0V 2.0A 18.0W OR 12.0V 1.5A 18.0W MAX
Earphone	MAXWEST	Unknown	Unshielded without Ferrite Core, 1.2m length
USB Cable	MAXWEST	Unknown	Unshielded without Ferrite Core, 1m length

## 1.3 Antenna Information Detail

Anten	ına Type	input impedance (Ohm)	Frequency Range	Antenna Gain
Т	FPC	50	5.15~5.25GHz	1.81dBi
1	PC	50 5.725~5.85 GHz		1.91dBi
The design of compliance with §15.203:				
Unit uses a permanently attached antenna.				
	Unit uses a unique coupling to the intentional radiator.			
Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.				

# 1.4 Equipment Modifications

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

Standard(s) Section	Test Items	Result
§15.207(a) RSS-Gen Clause 8.8	AC line conducted emissions	Compliant
FCC§15.205& §15.209 &§15.407(b) RSS-247 Clause 6.2	Undesirable Emission& Restricted Bands	Compliant
RSS-247 Clause 6.2.1.2	26dB attenuated below the channel power	Compliant
FCC§15.407(a) (e) RSS-247 Clause 6.2 RSS-Gen Clause 6.7	Emission Bandwidth	Compliant
FCC§15.407(a) RSS-247 Clause 6.2	Maximum Conducted Output Power	Compliant
FCC§15.407 (a) RSS-247 Clause 6.2	Power Spectral Density	Compliant
\$15.203 RSS-GEN Clause 6.8	Antenna Requirement	Compliant
RSS-247 Clause 6.4	Additional requirements	Compliant

Note 1: For AC line conducted emissions, the maximum output power channel was tested.

Note 2: For Radiated Spurious Emissions 9kHz~ 1GHz and 18-40GHz, the maximum output power channel was tested.

# 3. DESCRIPTION OF TEST CONFIGURATION

# 3.1 Operation Frequency Detail

## For 802.11a/n ht20/ac vht20:

U-NII-1: 5150-5250MHz		U-NII-3: 5725-5850MHz	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	149	5745
40	5200	153	5765
44	5220	157	5785
48	5240	161	5805
/	/	165	5825

## For 802.11n ht40/ac vht40:

U-NII-1: 5150-5250MHz		U-NII-3: 5725-5850MHz	
Channel Frequency (MHz)		Channel	Frequency (MHz)
38	5190	151	5755
46	5230	159	5795

## For 802.11ac vht80:

U-NII-1: 5150-5250MHz		U-NII-3: 5725-5850MHz	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	155	5775

## 3.2 EUT Operation Condition

The system was configured for testing in Engineering Mode, which was provided by the manufacturer. The EUT configuration is below:

<b>EUT Exercise Software:</b> engin	eering mode
-------------------------------------	-------------

The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer **\( \Lambda \)**:

#### U-NII-1: 5150-5250MHz

Test Modes	Test Channels	Test Frequency (MHz)	Data Rate	Power Level Setting
	Lowest	5180	6Mbps	Default
802.11a	Middle	5200	6Mbps	Default
	Highest	5240	6Mbps	Default
	Lowest	5180	MCS0	Default
802.11n ht20	Middle	5200	MCS0	Default
	Highest	5240	MCS0	Default
802 11n ht40	Lowest	5190	MCS0	Default
002.111111140	Highest	5230	MCS0	Default
802.11ac vht80	Middle	5210	MCS0	Default

#### U-NII-3: 5725-5850MHz

Test Modes	Test Channels	Test Frequency (MHz)	Data Rate	Power Level Setting
	Lowest	5745	6Mbps	Default
802.11a	Middle	5785	6Mbps	Default
	Highest	5825	6Mbps	Default
	Lowest	5745	MCS0	Default
802.11n ht20	Middle	5785	MCS0	Default
	Highest	5825	MCS0	Default
802.11n ht40	Lowest	5755	MCS0	Default
	Highest	5795	MCS0	Default
802.11ac vht80	Middle	5775	MCS0	Default

#### Note:

## 3.3 Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
MAXWEST	Adapter	HA-88050300UUBQ	/

## 3.4 Support Cable List and Details

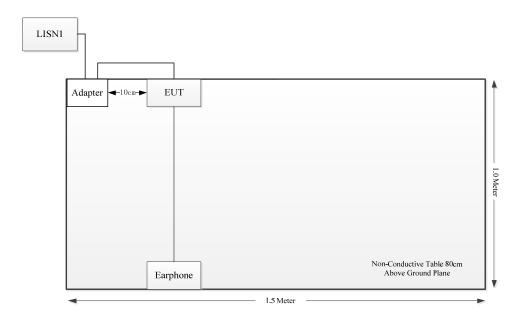
Manufacturer	Shielding Type	Ferrite Core	Length (m)	From Port	То
Earphone Cable	No	No	1.2	EUT	Earphone
USB-C Cable	No	No	1	Adapter	EUT

<sup>1.</sup> The system support  $802.11a/n \ ht20/n \ ht40/ac \ vht20/ac \ vht40/ac \ vht80$ , the  $802.11ac \ vht20/vht40$  were reduced since the identical parameters with  $802.11n \ ht20$  and ht40.

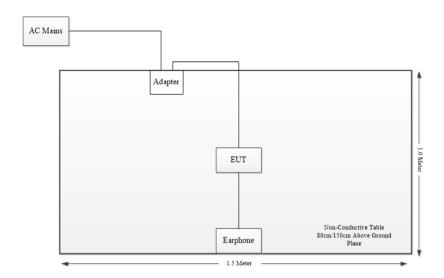
<sup>2.</sup> The above are the worst-case data rates, which are determined for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths, and modulations.

# 3.5 Block Diagram of Test Setup

AC line conducted emissions:



## Spurious Emissions:



# 3.6 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

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The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

## 3.7 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	9kHz~30MHz: 3.3dB, 30MHz~200MHz: 4.55 dB, 200MHz~1GHz: 5.92 dB, 1GHz~6GHz: 4.98 dB, 6GHz~18GHz: 5.89 dB, 18GHz~26.5GHz:5.47 dB, 26.5GHz~40GHz:5.63 dB
Unwanted Emissions, conducted	±2.47 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.11 dB (150 kHz to 30 MHz)

## 4. REQUIREMENTS AND TEST PROCEDURES

#### 4.1 AC Line Conducted Emissions

## 4.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, 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  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

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

<sup>\*</sup>Decreases with the logarithm of the frequency.

- (b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:
- (1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.
- (2) For all other carrier current systems:  $1000 \,\mu\text{V}$  within the frequency band 535-1705 kHz, as measured using a 50  $\mu\text{H}/50$  ohms LISN.
- (3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.
- (c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

#### RSS-Gen Clause 8.8

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4, as measured using a 50  $\mu H$  / 50  $\Omega$  line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

 Frequency (MHz)
 Conducted limit (dBμV)

 0.15 - 0.5
 Quasi-peak
 Average

 0.5 - 5
 56 to 46¹
 46

 5 - 30
 60
 50

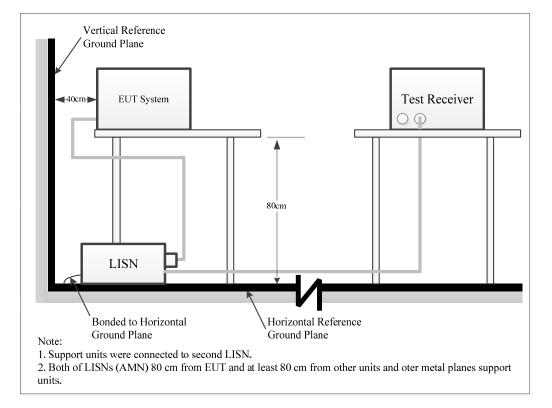
Table 4 – AC power-line conducted emissions limits

Note 1: The level decreases linearly with the logarithm of the frequency.

For an EUT with a permanent or detachable antenna operating between 150 kHz and 30 MHz, the AC power-line conducted emissions must be measured using the following configurations:

- (a) Perform the AC power-line conducted emissions test with the antenna connected to determine compliance with the limits of table 4 outside the transmitter's fundamental emission band.
- (b) Retest with a dummy load instead of the antenna to determine compliance with the limits of table 4 within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network that simulates the antenna in the fundamental frequency band.

## 4.1.2 EUT Setup



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207, RSS-Gen limits.

The spacing between the peripherals was 10 cm.

The adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

## 4.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

#### 4.1.4 Test Procedure

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

## 4.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

The "Margin" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit - Result

#### 4.1.6 Test Result

Please refer to section 5.1.

### 4.2 Radiation Spurious Emissions

## 4.2.1 Applicable Standard

FCC §15.407 (b);

*Undesirable emission limits.* Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of \_ 27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz
- band shall not exceed an e.i.r.p. of \_ 27 dBm/MHz.

  (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of \_ 27 dBm/MHz.
- (4) For transmitters operating solely in the 5.725-5.850 GHz band:
- (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.
- (ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in § 15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in § 15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.
- (5) For transmitters operating solely in the 5.850-5.895 GHz band or operating on a channel that spans across 5.725-5.895 GHz:
- (i) For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of -7 dBm/MHz at or above 5.925 GHz.
- (ii) For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/ MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.

  (iii) For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz
- shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.
- (8) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. À lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (9) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in § 15.207.
- (10) The provisions of § 15.205 apply to intentional radiators operating under this section.
- (11) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.
- (c) The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

#### Frequency band 5150-5250 MHz:

RSS-247 Clause 6.2.1.2

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied

bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

## Frequency band 5250-5350 MHz:

RSS-247 Clause 6.2.2.2

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

## Frequency bands 5470-5600 MHz and 5650-5725 MHz:

RSS-247 Clause 6.2.3.2

Emissions outside the band 5470-5600 MHz and 5650-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, devices with bandwidth overlapping the band edge of 5725 MHz can meet the emission limit of -27 dBm/MHz e.i.r.p. at 5850 MHz instead of 5725 MHz.

## Frequency band 5725-5850 MHz

RSS-247 Clause 6.2.4.2

Devices operating in the band 5725-5850 MHz with antenna gain greater than 10 dBi can have unwanted emissions that comply with either the limits in this section or in section 5.5 until six (6) months after the publication date of this standard for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2018.

Devices operating in the band 5725-5850 MHz with antenna gain of 10 dBi or less can have unwanted emissions that comply with either the limits in this section or in section 5.5 until April 1, 2018 for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2020.

Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

- a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;
- b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
- c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
- d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

## Frequency band 5850-5895 MHz

RSS-247 Clause 6.2.5.3

For the band edge 5725 MHz and below, all devices shall be measured using peak detection and shall comply with the following e.i.r.p. spectral density limits:

- a) 27 dBm/MHz at frequencies from the 5725 MHz band edge decreasing linearly to 15.6 dBm/MHz at 5 MHz below the 5725 MHz band edge
- b) 15.6 dBm/MHz at 5 MHz below the 5725 MHz band edge decreasing linearly to 10 dBm/MHz at 25 MHz below the 5725 MHz band edge
- c) 10 dBm/MHz at 25 MHz below the 5725 MHz band edge decreasing linearly to -27 dBm/MHz at 75 MHz below the 5725 MHz band edge
- d) -27 dBm/MHz at frequencies more than 75 MHz below the 5725 MHz band edge

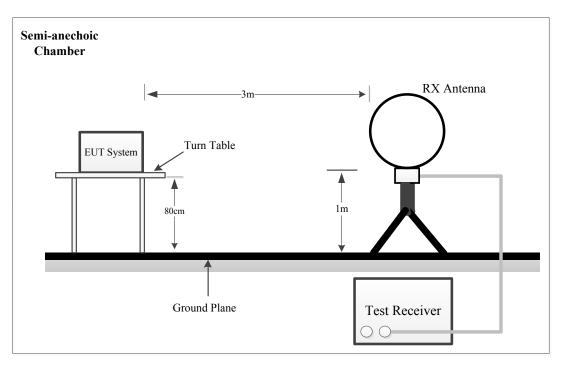
For the 5895 MHz band edge and above, all devices shall be measured using average detection and shall comply with the following e.i.r.p. spectral density limits:

- a) Fixed outdoor access points and fixed outdoor client devices shall not exceed -27 dBm/MHz e.i.r.p. spectral density at or above the 5895 MHz band edge.
- b) Indoor access points or indoor subordinate devices shall not exceed 15 dBm/MHz e.i.r.p. spectral density at the 5895 MHz band edge and shall decrease linearly to not exceed -7 dBm/MHz e.i.r.p. spectral density at or above 5925 MHz.
- c) Client devices shall not exceed -5 dBm/MHz e.i.r.p. spectral density at the 5895 MHz band edge and shall decrease linearly to not exceed -27 dBm/MHz e.i.r.p. spectral density at or above 5925 MHz.

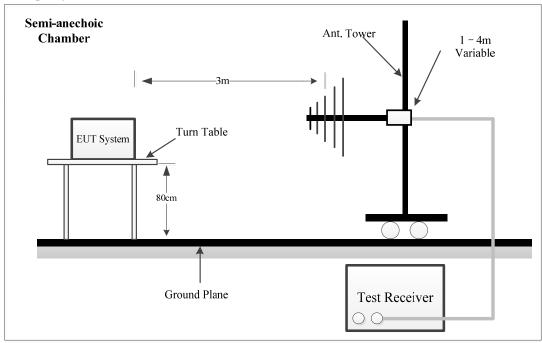
Report Template Version: FCC+IC-WiFi5-Client-V1.2

## **4.2.2 EUT Setup**

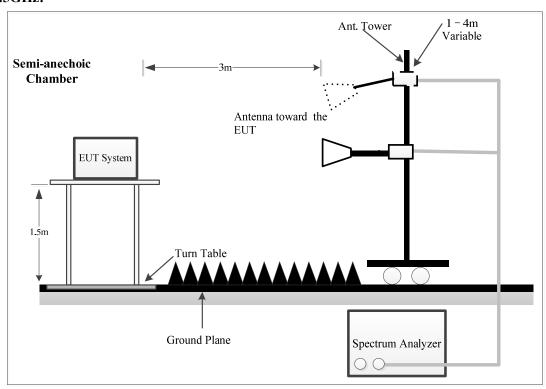
## 9kHz~30MHz:



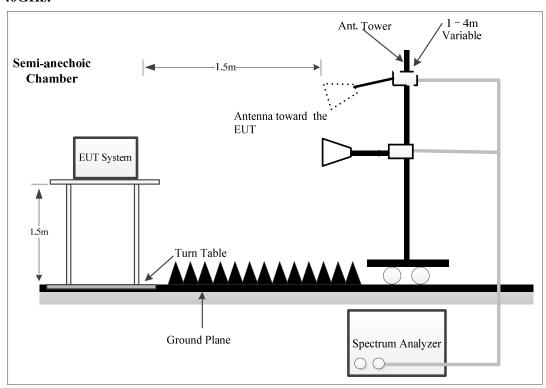
## 30MHz~1GHz:



#### 1-26.5GHz:



## 26.5-40GHz:



The radiated emission tests were performed in the semi-anechoic chamber, using the setup accordance with the ANSI C63.10-2013. The specification used was FCC 15.209, FCC 15.407, RSS-247, RSS-Gen limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

## 4.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

#### 9kHz-1000MHz:

Frequency Range	Measurement	RBW	Video B/W	IF B/W	Detector
9 kHz – 150 kHz	QP/AV	200Hz	1 kHz	200 Hz	QP/AV
150 kHz – 30 MHz	QP/AV	9 kHz	30 kHz	9 kHz	QP/AV
20MH 1000 MH	PK	100 kHz	300 kHz	/	PK
30MHz – 1000 MHz	QP	/	/	120kHz	QP

#### 1GHz-40GHz:

#### Pre-scan:

Measurement	Detector	Duty cycle	RBW	Video B/W
PK	Peak	Any	1MHz	3 MHz
Ave.	Dools	>98%	1MHz	5kHz
	Peak	<98%	1MHz	1/T, not less than 5kHz

Final measurement for emission identified during the pre-scan:

Measurement	Detector	Duty cycle	RBW	Video B/W
PK	Peak	Any	1MHz	3 MHz
Ave.	Dools	>98%	1MHz	10 Hz
	Peak	<98%	1MHz	1/T

Note: T is minimum transmission duration

If the maximized peak measured value is under the QP limit by more than 6dB, then it is unnecessary to perform an QP measurement.

If the maximized peak measured value is under the average limit, then it is unnecessary to perform an QP measurement.

## **4.2.4 Test Procedure**

During the radiated emission test, the adapter was connected to the first AC floor outlet.

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, emission shall be computed as:  $E [dB\mu V/m] = EIRP [dBm] + 95.2$ , for d = 3 meters.

If the maximized peak measured value is under the QP limit by more than 6dB, then it is unnecessary to perform an QP measurement.

All emissions under the average limit and under the noise floor have not recorded in the report.

For Radiated 26.5-40GHz test, which was performed at 1.5 m distance, according to C63.10, the test result shall be extrapolated to the specified distance using an extrapolation Factor of 20dB/decade from 3m to 1.5m:

Distance extrapolation Factor = 20 log (specific distance [3m]/test distance [1.5m]) dB= 6.0 dB

## 4.2.5 Corrected Result & Margin Calculation

The basic equation except 26.5-40GHz test is as follows: Factor = Antenna Factor + Cable Loss- Amplifier Gain

For Radiated 26.5-40GHz test:

Factor = Antenna Factor + Cable Loss- Distance extrapolation Factor

Result = Reading + Factor

The "Margin" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit - Result

For the spurious emission below 30MHz, the limit was converted from  $dB\mu A/m$  to  $dB\mu V/m$  by adding 51.5 dB.

#### 4.2.6 Test Result

Please refer to section 5.2.

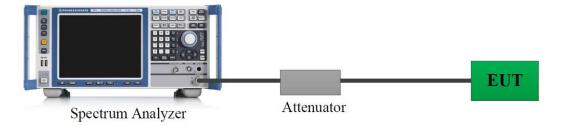
#### 4.3 26dB Attenuated Below the Channel Power

## 4.3.1 Applicable Standard

RSS-247 Clause 6.2.1.2

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e., 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

## 4.3.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, which was provided by manufacturer. The insert loss of this RF cable/attenuator was offset into the setting of test equipment.

#### 4.3.3 Test Procedure

- a) Set RBW =  $1\%\sim5\%$  of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = RMS.
- d) Trace mode = max hold
- e) Measure the emission attenuated below the channel power

#### 4.3.4 Test Result

Please refer to section 5.3.

#### 4.4 Emission Bandwidth

### 4.4.1 Applicable Standard

FCC §15.407 (a),(h)

(h)(2) Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating with any part of its 26 dB emission bandwidth in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems.

FCC §15.407 (e)

Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

RSS-247 Clause 6.2.1.2

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

RSS-247 Clause 6.2.2.1

Devices, other than devices installed in vehicles, shall comply with the following:

- a) The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;
- b) The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that 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.

RSS-247 Clause 6.2.3.1

The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that 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.

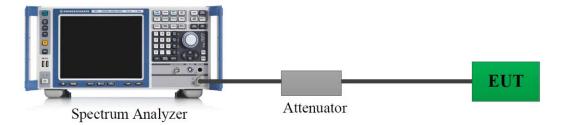
RSS-247 Clause 6.2.4.2

For equipment operating in the band 5725-5850 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

RSS-247 Clause 6.2.5.2

For equipment operating in the band 5850-5895 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

#### 4.4.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, which was provided by manufacturer. The insert loss of this RF cable/attenuator was offset into the setting of test equipment.

#### 4.4.3 Test Procedure

#### 26dB Emission Bandwidth:

According to ANSI C63.10-2013 Section 12.4.1

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = peak.
- d) Trace mode = max hold
- e) 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 instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 6 dB emission bandwidth:

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq$  3 RBW.
- c) Detector = Peak.
- d) Trace mode =  $\max$  hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described in this section. For devices that use channel aggregation refer to III.A and III.C for determining emission bandwidth.

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#### 99% Occupied Bandwidth:

According to ANSI C63.10-2013 Section 12.4.2&6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used. f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

#### 4.4.4 Test Result

Please refer to section 5.4 and section 5.5.

### 4.5 Maximum Conducted Output Power

### 4.5.1 Applicable Standard

FCC §15.407(a) (1)(iv)

For 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 provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

FCC §15.407(a) (2)

For the 5.25-5.35 GHz and 5.47-5.725 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

FCC §15.407(a) (3)(i)

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

FCC §15.407(a) (3)(iii)

For client devices operating under the control of an indoor access point in the 5.850 – 5.895 GHz band, the maximum power spectral density must not exceed 14 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm. Client devices operating on a channel that spans the 5.725 – 5.850 GHz and 5.850 – 5.895 GHz bands must not exceed an e.i.r.p. of 30 dBm.

RSS-247 Clause 6.2.1.1

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less stringent. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For other devices, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

RSS-247 Clause 6.2.2.1

Devices, other than devices installed in vehicles, shall comply with the following:

a) The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;

b) The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that 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.

#### RSS-247 Clause 6.2.3.1

The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that 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.

#### RSS-247 Clause 6.2.4.2

The maximum conducted output power shall not exceed 1 W. The output 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, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint3 systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

#### RSS-247 Clause 6.2.5.2

For fixed outdoor access points, the maximum e.i.r.p. shall not exceed 4 W (36 dBm). The maximum e.i.r.p. spectral density shall not exceed 23 dBm/MHz. The maximum e.i.r.p. measured at any elevation angle greater than 30 degrees above the horizon, shall not exceed 125 mW (21 dBm) over the 5850-5895 MHz frequency band.

For fixed outdoor client devices, the maximum e.i.r.p. shall not exceed 1 W (30 dBm). The maximum e.i.r.p. spectral density shall not exceed 17 dBm/MHz.

For indoor access points, the maximum e.i.r.p. shall not exceed 4 W (36 dBm). The maximum e.i.r.p. spectral density shall not exceed 20 dBm/MHz.

For indoor subordinate devices, the maximum e.i.r.p. shall not exceed 4 W (36 dBm). The maximum e.i.r.p. spectral density shall not exceed 20 dBm/MHz.

For indoor client devices, the maximum e.i.r.p. shall not exceed 1 W (30 dBm). The maximum e.i.r.p. spectral density shall not exceed 14 dBm/MHz.

## **4.5.2 EUT Setup**



A short RF cable with low cable loss connected to the EUT antenna port, which was provided by manufacturer. The insert loss of this RF cable/attenuator was offset into the setting of test equipment.

## 4.5.3 Test Procedure

According to ANSI C63.10-2013 Section 12.3.3.1

Method PM-G is measurement using a gated RF average power meter.

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

## 4.5.4 Test Result

Please refer to section 5.6.

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## 4.6 Maximum Power Spectral Density

### 4.6.1 Applicable Standard

FCC §15.407(a) (1)(iv)

For 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 provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

FCC §15.407(a) (2)

For the 5.25-5.35 GHz and 5.47-5.725 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

FCC §15.407(a) (3)(i)

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

FCC §15.407(a) (3)(iii)

For client devices operating under the control of an indoor access point in the 5.850 – 5.895 GHz band, the maximum power spectral density must not exceed 14 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm. Client devices operating on a channel that spans the 5.725 – 5.850 GHz and 5.850 – 5.895 GHz bands must not exceed an e.i.r.p. of 30 dBm.

RSS-247 Clause 6.2.1.1

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less stringent. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For other devices, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

RSS-247 Clause 6.2.2.1

Devices, other than devices installed in vehicles, shall comply with the following:

a) The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;

b) The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that 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.

#### RSS-247 Clause 6.2.3.1

The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that 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.

#### RSS-247 Clause 6.2.4.2

The maximum conducted output power shall not exceed 1 W. The output 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, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint3 systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

#### RSS-247 Clause 6.2.5.2

For fixed outdoor access points, the maximum e.i.r.p. shall not exceed 4 W (36 dBm). The maximum e.i.r.p. spectral density shall not exceed 23 dBm/MHz. The maximum e.i.r.p. measured at any elevation angle greater than 30 degrees above the horizon, shall not exceed 125 mW (21 dBm) over the 5850-5895 MHz frequency band.

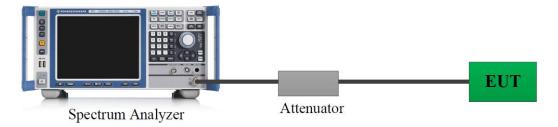
For fixed outdoor client devices, the maximum e.i.r.p. shall not exceed 1 W (30 dBm). The maximum e.i.r.p. spectral density shall not exceed 17 dBm/MHz.

For indoor access points, the maximum e.i.r.p. shall not exceed 4 W (36 dBm). The maximum e.i.r.p. spectral density shall not exceed 20 dBm/MHz.

For indoor subordinate devices, the maximum e.i.r.p. shall not exceed 4 W (36 dBm). The maximum e.i.r.p. spectral density shall not exceed 20 dBm/MHz.

For indoor client devices, the maximum e.i.r.p. shall not exceed 1 W (30 dBm). The maximum e.i.r.p. spectral density shall not exceed 14 dBm/MHz.

#### 4.6.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, which was provided by manufacturer. The insert loss of this RF cable/attenuator was offset into the setting of test equipment.

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#### 4.6.3 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

**Duty cycle** ≥98%

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1 should be applied.

Duty cycle <98%, duty cycle variations are less than  $\pm 2\%$ 

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-2 should be applied.

Duty cycle <98%, duty cycle variations exceed  $\pm 2\%$ 

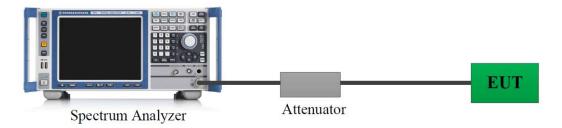
KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-3 should be applied.

#### 4.6.4 Test Result

Please refer to section 5.7.

## 4.7 Duty Cycle

### 4.7.1 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, which was provided by manufacturer. The insert loss of this RF cable/attenuator was offset into the setting of test equipment.

#### 4.7.2 Test Procedure

According to ANSI C63.10-2013 Section 12.2

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

- 1) Set the center frequency of the instrument to the center frequency of the transmission.
- 2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.
   3) Set VBW ≥ RBW. Set detector = peak or average.
- 4) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if  $T \le 16.7$ μs.)

## 4.7.3 Judgment

Report Only. Please refer to section 5.8.

## 4.8 Antenna Requirement

### 4.8.1 Applicable Standard

FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

#### RSS-Gen Clause 6.8

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

#### 4.8.2 Judgment

**Compliant.** Please refer to the Antenna Information detail in Section 1.3.

## 4.9 Additional requirement

### 4.9.1 Applicable Standard

According to RSS-247 Clause 6.4 Additional requirement

The following requirements shall apply:

- a) The device shall automatically discontinue transmission in cases of absence of information to transmit, or operational failure. A description on how this is done shall accompany the application for equipment certification. Note that this is not intended to prohibit transmission of control or signalling information or the use of repetitive codes where required by the technology.
- All LE-LAN devices must contain security features to protect against modification of software by unauthorized parties.

Manufacturers must implement security features in any digitally modulated devices capable of operating in any of the frequency ranges within the 5 GHz band, so that third parties are not able to reprogram the device to operate outside the parameters for which the device was certified. The software must prevent the user from operating the transmitter with operating frequencies, output power, modulation types or other radio frequency parameters outside those that were approved for the device. Manufacturers may use various means, including the use of a private network that allows only authenticated users to download software, electronic signatures in software or coding in hardware that is decoded by software to verify that new software can be legally loaded into a device to meet these requirements and must describe the methods in their application for equipment certification.

Manufacturers must take steps to ensure that DFS functionality cannot be disabled by the operator of the LE-LAN device.

- c) The user manual for LE-LAN devices shall contain instructions related to the restrictions mentioned in the above sections, namely that:
  - the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;<sup>4</sup>
  - for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;
  - iii. for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate; and
  - iv. where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

Report Template Version: FCC+IC-WiFi5-Client-V1.2

## 4.9.2 Judgment

RSS-247 Clause 6.4 a):

The device shall automatically discontinue transmission in cases of absence of information to transmit, or operational failure. Please refer to the declaration

RSS-247 Clause 6.4 b):

The devices must contain security features to protect against modification of software by unauthorized parties. Please refer to the declaration

RSS-247 Clause 6.4 c):

- i). The device is only for indoor use on 5150-5250MHz.
- ii). The device is not operating in 5250-5350MHz and 5470-5725MHz
- iii). The EIRP meet the requirement in the operation band 5725-5850MHz, please refer to the power test result. The user manual includes maximum antenna gain permitted.
- iv). The device is not operating in 5250-5350MHz.

## 5. Test DATA AND RESULTS

## **5.1 AC Line Conducted Emissions**

Serial Number:	2UZB-2	Test Date:	2024/11/27
Test Site:	CE	Test Mode:	Transmitting
Tester:	Yukin Qiu	Test Result:	Pass

#### **Environmental Conditions:**

Temperature: (°C) 24.7 Relative Humidity: (%) ATM Pressu (kF
--

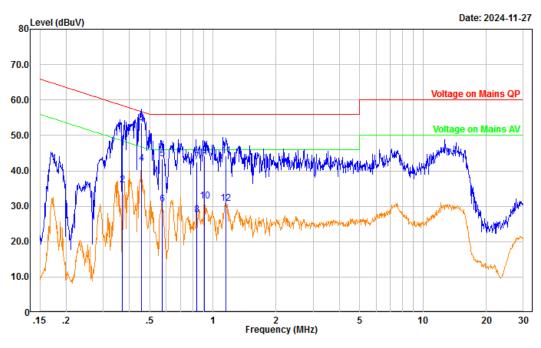
## **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101614	2024/9/5	2025/9/4
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2024/9/5	2025/9/4
R&S	EMI Test Receiver	ESCI	100035	2024/8/26	2025/8/25
Audix	Test Software	E3	191218 V9	N/A	N/A

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

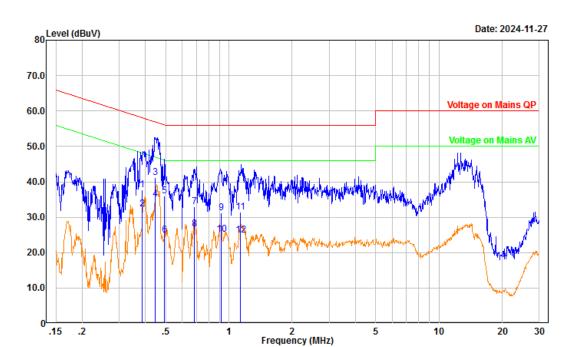
Note: The maximum output power mode and channel: U-NII 3 band\_802.11a high channel (5825MHz) was tested.

Project No.: 2402Z68759E-RF Port: Line Test Mode: Transmitting Note: 5G Serial No.: 2UZB-2 Tester: Yukin Qiu



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.371	36.53	10.83	47.36	58.47	11.11	QP
2	0.371	25.11	10.83	35.94	48.47	12.53	Average
3	0.456	42.66	10.84	53.50	56.76	3.26	QP
4	0.456	31.16	10.84	42.00	46.76	4.76	Average
5	0.571	32.51	10.83	43.34	56.00	12.66	QP
6	0.571	19.71	10.83	30.54	46.00	15.46	Average
7	0.840	31.68	10.85	42.53	56.00	13.47	QP
8	0.840	16.71	10.85	27.56	46.00	18.44	Average
9	0.914	33.34	10.86	44.20	56.00	11.80	QP
10	0.914	20.55	10.86	31.41	46.00	14.59	Average
11	1.148	33.41	10.85	44.26	56.00	11.74	QP
12	1.148	19.86	10.85	30.71	46.00	15.29	Average

Project No.: 2402Z68759E-RF Port: neutral Test Mode: Transmitting Note: 5G Serial No.: 2UZB-2 Tester: Yukin Qiu



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.385	26.91	10.78	37.69	58.17	20.48	QP
2	0.385	21.45	10.78	32.23	48.17	15.94	Average
3	0.445	30.37	10.76	41.13	56.97	15.84	QP
4	0.445	24.41	10.76	35.17	46.97	11.80	Average
5	0.494	25.32	10.74	36.06	56.09	20.03	QP
6	0.494	14.26	10.74	25.00	46.09	21.09	Average
7	0.687	22.19	10.75	32.94	56.00	23.06	QP
8	0.687	15.94	10.75	26.69	46.00	19.31	Average
9	0.918	20.35	10.83	31.18	56.00	24.82	QP
10	0.918	14.28	10.83	25.11	46.00	20.89	Average
11	1.134	20.62	10.86	31.48	56.00	24.52	QP
12	1.134	14.13	10.86	24.99	46.00	21.01	Average

## **5.2 Radiation Spurious Emissions**

## 1) 9kHz - 1GHz

Serial Number:	2UZB-2	Test Date:	2024/12/11
Test Site:	Chamber A	Test Mode:	Transmitting
Tester:	Jayce Wang	Test Result:	Pass

Report No.: 2402Z68759E-RF-00D

<b>Environmental C</b>	Environmental Conditions:								
Temperature: $(^{\circ}C)$	22.8	Relative Humidity: (%)	45	ATM Pressure: (kPa)	101.8				

### **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EMCO	Passive Loop Antenna	6512	9706-1206	2023/10/25	2026/10/24
Sunol Sciences	Hybrid Antenna	JB3	A060611-2	2024/4/16	2027/4/15
Narda	Coaxial Attenuator	757C-6dB	34010	2024/4/16	2027/4/15
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2024/7/1	2025/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2024/7/1	2025/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2024/7/1	2025/6/30
Sonoma	Amplifier	310N	372193	2024/8/16	2025/8/15
R&S	EMI Test Receiver	ESR3	102453	2024/8/26	2025/8/25
Audix	Test Software	E3	191218 V9	N/A	N/A

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

### **Test Data:**

Please refer to the below table and plots.

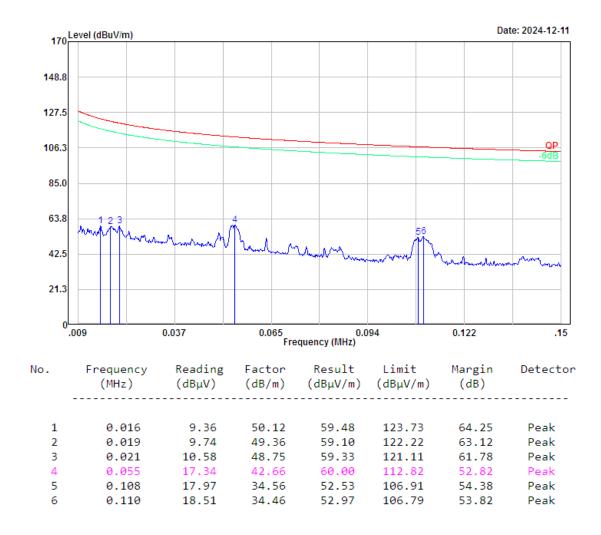
After pre-scan in the X, Y and Z axes of orientation, the worst case is referred to table and plots.

Note: The maximum output power mode and channel: U-NII 3 band\_802.11a high channel (5825MHz) was tested.

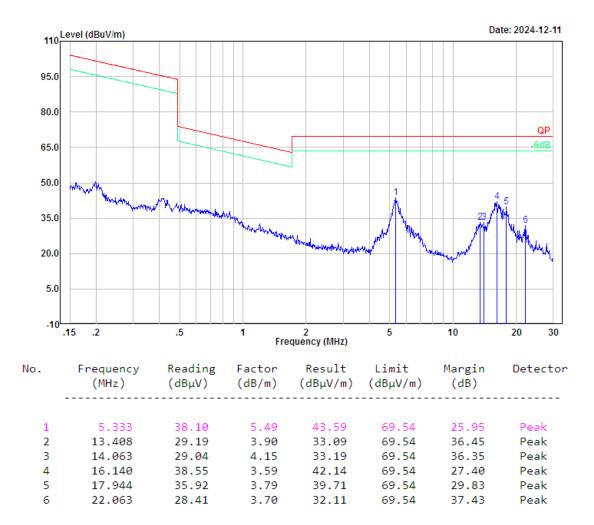
### 9kHz~30MHz:

Three antenna orientations (parallel, perpendicular, and ground-parallel) were measured, the worst orientations were below:

Project No.: 2402Z68759E-RF Serial No.: 2UZB-2
Polarization: Parallel Tester: Jayce Wang
Test Mode: Transmitting

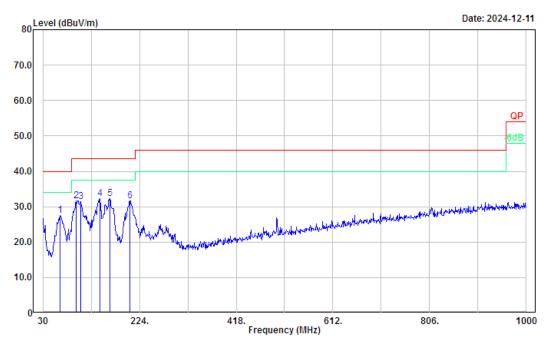


Project No.: 2402Z68759E-RF Polarization: Parallel Test Mode: Transmitting Serial No.: 2UZB-2 Tester: Jayce Wang



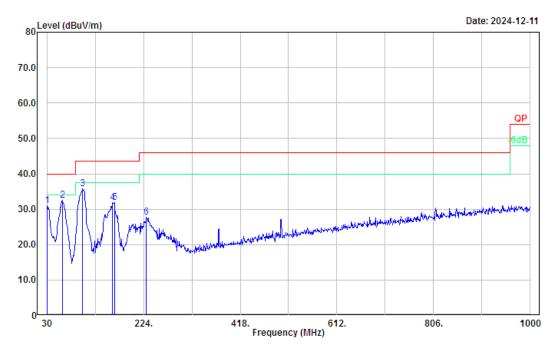
## 30MHz-1GHz:

Project No.: 2402Z68759E-RF Polarization: Horizontal Test Mode: Transmitting Serial No.: 2UZB-2 Tester: Jayce Wang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	63.95	44.17	-16.67	27.50	40.00	12.50	Peak
2	96.93	46.27	-14.60	31.67	43.50	11.83	Peak
3	105.66	43.70	-12.17	31.53	43.50	11.97	Peak
4	144.46	43.36	-11.09	32.27	43.50	11.23	Peak
5	164.83	43.97	-11.60	32.37	43.50	11.13	Peak
6	204.60	42.81	-11.12	31.69	43.50	11.81	Peak

Project No.: 2402Z68759E-RF Serial No.: 2UZB-2
Polarization: Vertical Tester: Jayce Wang
Test Mode: Transmitting



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.00	34.75	-3.71	31.04	40.00	8.96	Peak
2	61.04	49.65	-17.20	32.45	40.00	7.55	Peak
3	101.78	48.88	-13.19	35.69	43.50	7.81	Peak
4	161.92	43.31	-11.51	31.80	43.50	11.70	Peak
5	165.80	43.39	-11.63	31.76	43.50	11.74	Peak
6	229.82	38.75	-11.10	27.65	46.00	18.35	Peak

## 2) 1-40GHz:

Serial Number:	2UZB-2	Test Date:	2024/12/13
Test Site:	Chamber B	Test Mode:	Transmitting
Tester:	Colin Yang	Test Result:	Pass

Report No.: 2402Z68759E-RF-00D

<b>Environmental C</b>	Conditions:			
Temperature: $(^{\circ}\mathbb{C})$	22.5	Relative Humidity: (%) 40	ATM Pressure: (kPa)	102.2

### **Test Equipment List and Details:**

Test Equipment List and Details.							
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date		
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2026/9/6		
Xinhang Macrowave	Coaxial Cable	XH750A-N/J- SMA/J-10M	20231117004 #0001	2024/11/17	2025/11/16		
AH	Preamplifier	PAM-0118P	469	2024/4/15	2025/4/14		
Audix	Test Software	E3	191218 V9	N/A	N/A		
R&S	Spectrum Analyzer	FSV40	101944	2024/9/6	2025/9/5		
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2023/2/22	2026/2/21		
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2023/2/22	2026/2/21		
Xinhang Macrowave	Coaxial Cable	XH360A-2.92/J- 2.92/J-6M-A	20231208001 #0001	2024/12/9	2025/12/8		
AH	Preamplifier	PAM-1840VH	191	2024/9/5	2025/9/4		
Decentest	Multiplex Switch Test Control Set & Filter Switch Unit	DT7220SCU & DT7220FCU	DC79902 & DC79905	2024/8/27	2025/8/26		

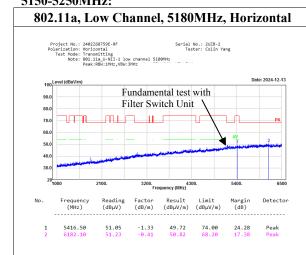
<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

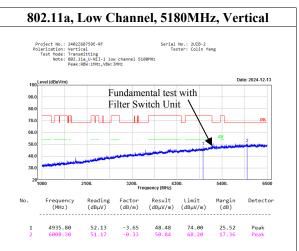
## **Test Data:**

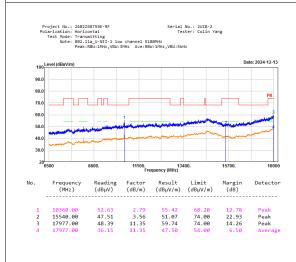
Please refer to the below table and plots.

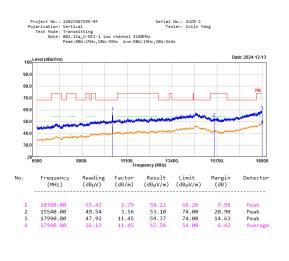
After pre-scan in the X, Y and Z axes of orientation, the worst case is referred to table and plots.

## Test Plots for 1GHz~18GHz: 5150-5250MHz:



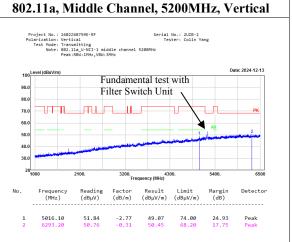


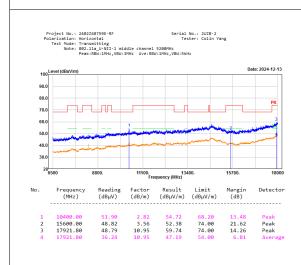


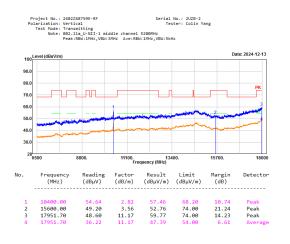


## 802.11a, Middle Channel, 5200MHz, Horizontal Project No.: 24022687596-8F Polarization: Horizontal Tester: Colin Vang Tester: C

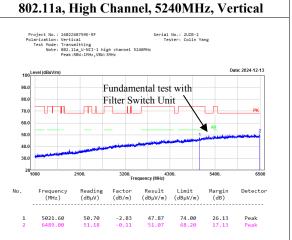
4910.50

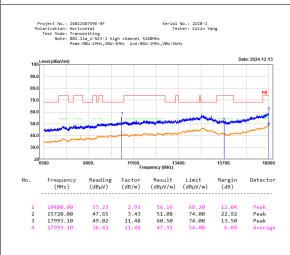


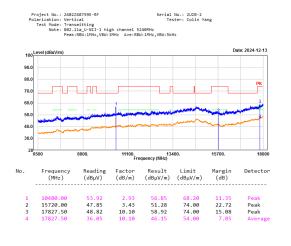




## 

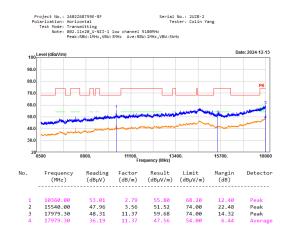


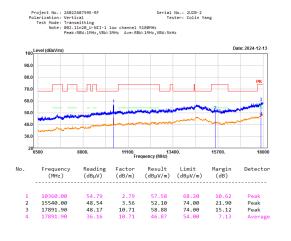




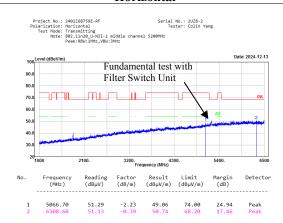
# Project No.: 24022687508-RF Serial No.: 2028-2 Tester: Calin Yang Tester: From the Project No.: 24022687508-RF Serial No.: 2028-2 Tester: Calin Yang Tester: Calin Yang Tester: Result No.: 2028-2 Tester: Calin Yang Tester: Calin Yang Tester: Result No.: 2028-2 Tester: Calin Yang T

## 

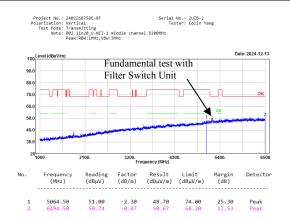


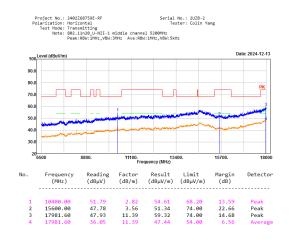


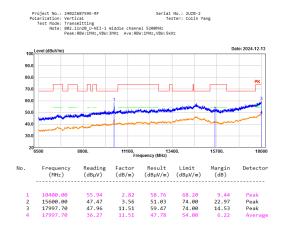
## 802.11n20, Middle Channel, 5200MHz, Horizontal



## 802.11n20, Middle Channel, 5200MHz, Vertical

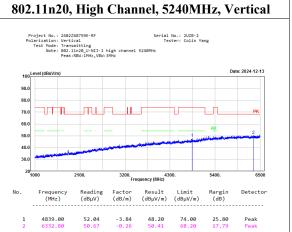


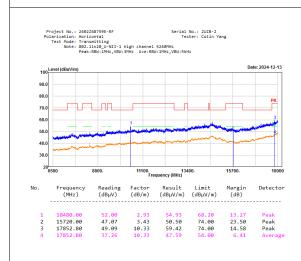


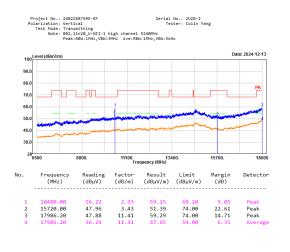


# ## Second Second

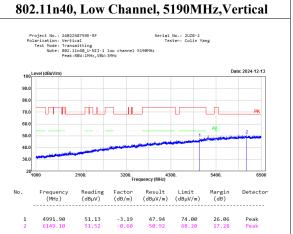
5015.00 6493.40

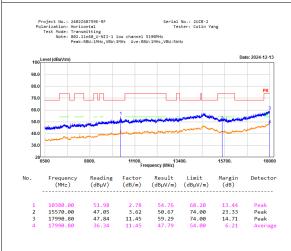


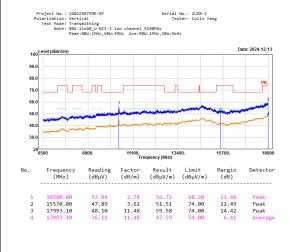




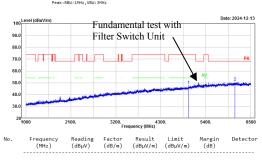
# Project No.: 2402268750E-8F Serial No.: 20078-2 Texter: Colin Yang Text Note: Propagation Horizontal Serial No.: 20078-2 Texter: Colin Yang Text Note: Propagation Horizontal Text Note: Propagation Horizontal Text Note: Propagation Horizontal Text Note: Note:



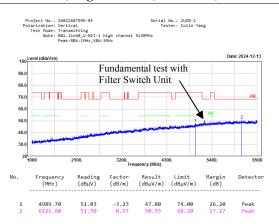


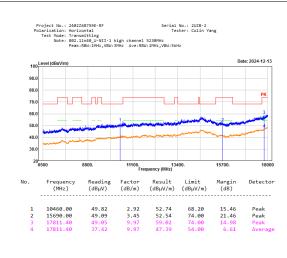


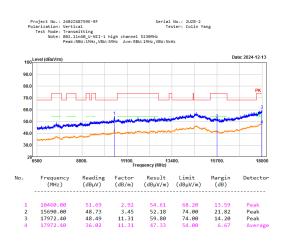
## 802.11n40, High Channel, 5230MHz, Horizontal Project No.: 24022687596-8F Serial No.: 2UZB-2 Polarization: Norticontal Test Mode: Transmitting Test Mode: Transmitting Test Note: 802.11n40\_U-WII-1 high channel 5230HVz Peak: RBUI-11n40\_U-WII-1 high channel 5230HVz



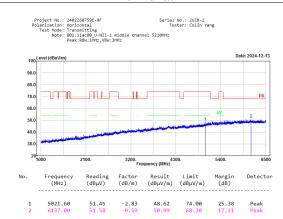
## 802.11n40, High Channel, 5230MHz, Vertical



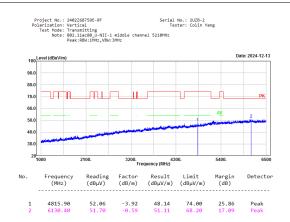


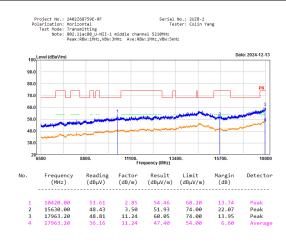


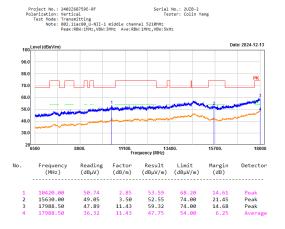
## 802.11ac80, Middle Channel, 5210MHz, Horizontal



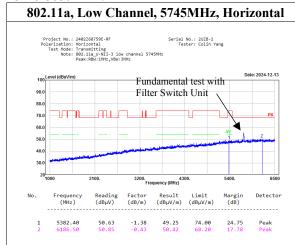
## 802.11ac80, Middle Channel, 5210MHz, Vertical

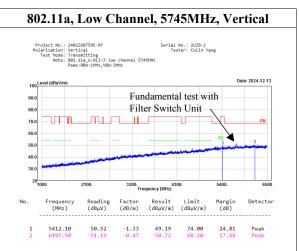


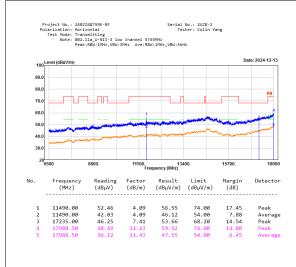


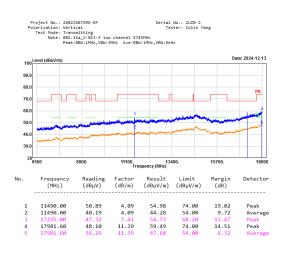


### 5725-5850MHz:

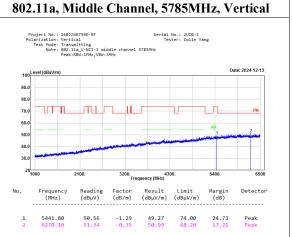


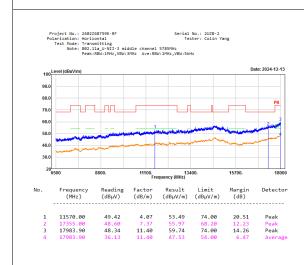


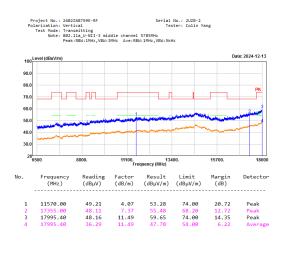


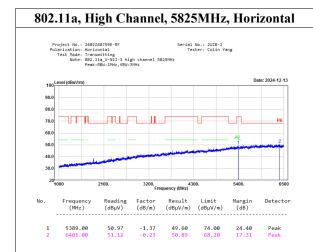


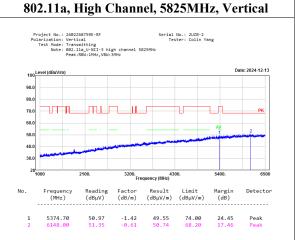
## 

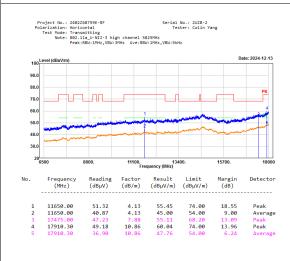


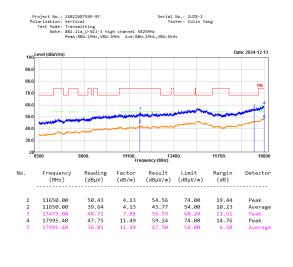




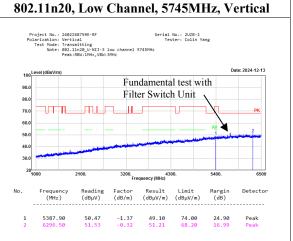


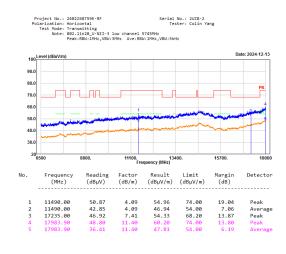


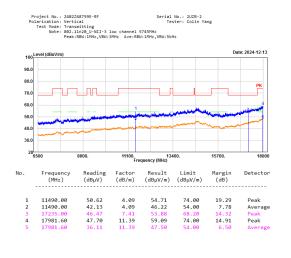




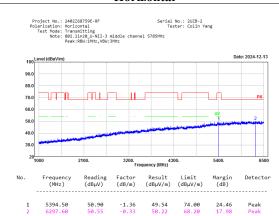
# ### Section | Se



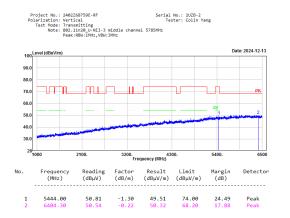


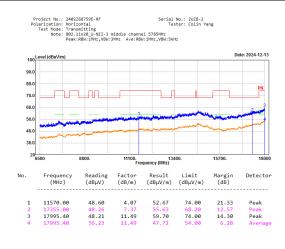


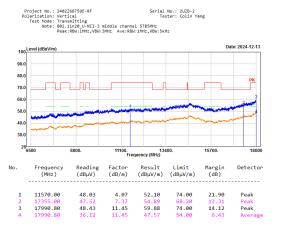
## 802.11n20, Middle Channel, 5785MHz, Horizontal



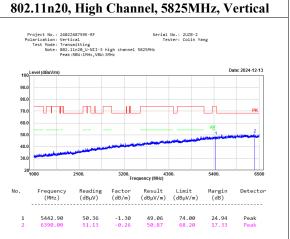
## 802.11n20, Middle Channel, 5785MHz, Vertical

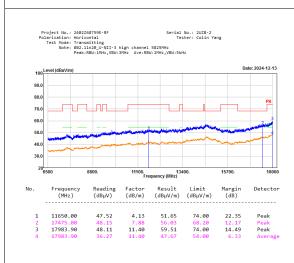


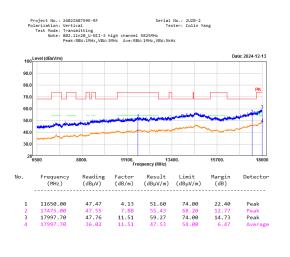




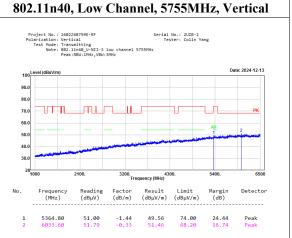
# 802.11n20, High Channel, 5825MHz, Horizontal Project No.: 24022687592-RF Polarization Horizontal Test Colin Vang Tester: Colin

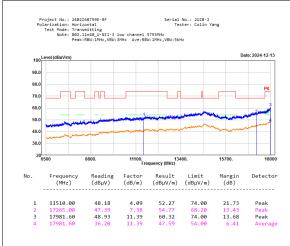


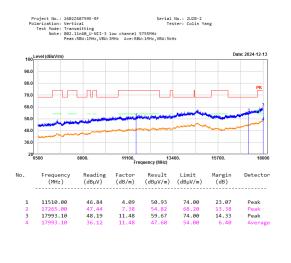




# Project No.: 2402256750F-RF Serial No.: 2028-2 Tester: Colin Yang Test Mode: Transmitting Test Mode: Transmitting Test Mode: Instance 19755NHz Peack (Min.: 1942, VMM: 13942 Peack (Min.: 1942, VMM: 19

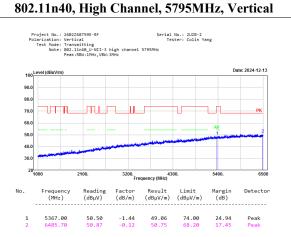


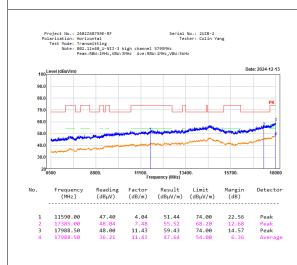


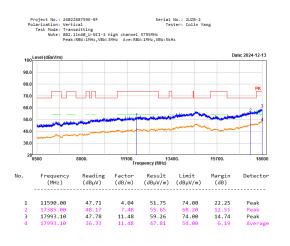


# Project No.: 2402268759E-RF Serial No.: 2028-2 Tester: Colin Yang Test Note: 1 Tester: Colin Yang Test Note: 1 Tester: Roll 1

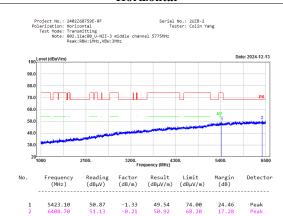
5411.00



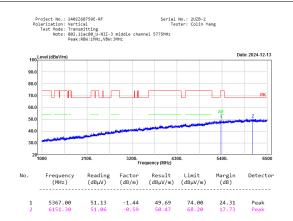


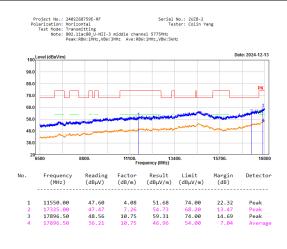


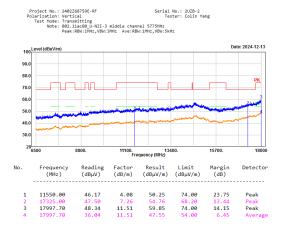
## 802.11ac80, Middle Channel, 5775MHz, Horizontal



## 802.11ac80, Middle Channel, 5775MHz, Vertical







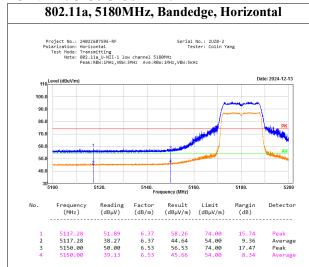
## **Test Plots for 18GHz -40GHz:**

Note: The maximum output power mode and channel: U-NII 3 band\_802.11a high channel (5825MHz) was tested.



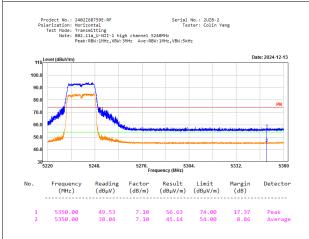
## **Test plots for Bandedge:**

## U-NII-1: 5150-5250MHz:

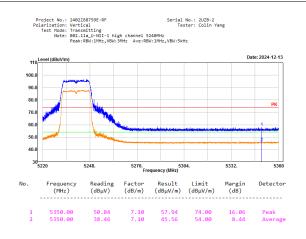


# 802.11a, 5180MHz, Bandedge, Vertical Project No.: 2402268759E-RF Polarization: Vertical Tester: Colin Yang Tester: Colin Yang

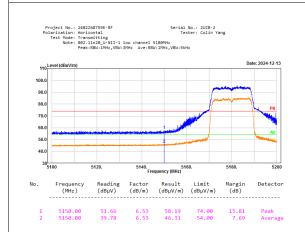
## 802.11a, 5240MHz, Bandedge, Horizontal



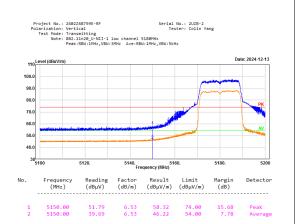
## 802.11a, 5240MHz, Bandedge, Vertical



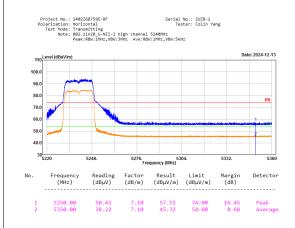
## 802.11n20, 5180MHz, Bandedge, Horizontal



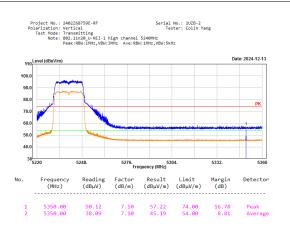
## 802.11n20, 5180MHz, Bandedge, Vertical



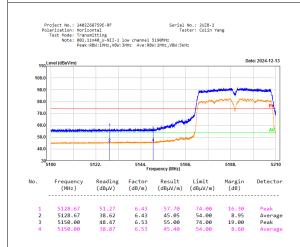
## 802.11n20, 5240MHz, Bandedge, Horizontal



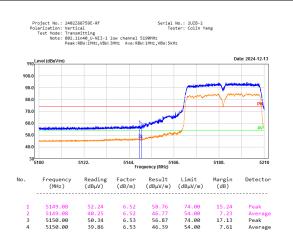
## 802.11n20, 5240MHz, Bandedge, Vertical



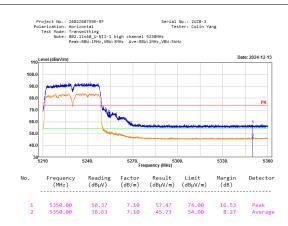
## 802.11n40, 5190MHz, Bandedge, Horizontal



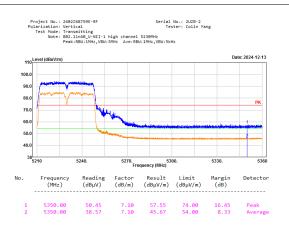
## 802.11n40, 5190MHz, Bandedge, Vertical

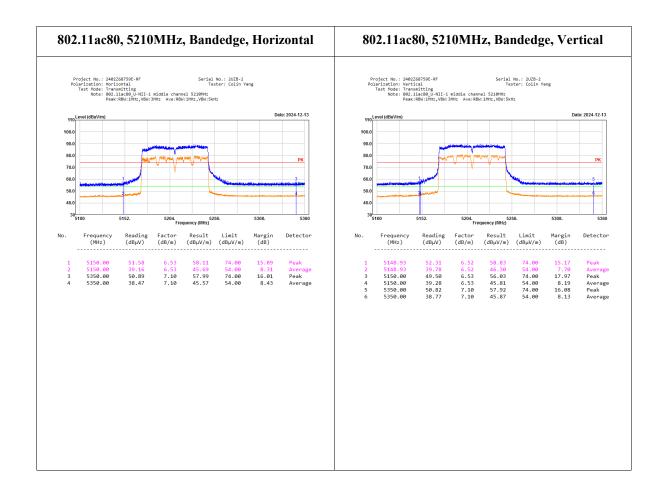


## 802.11n40, 5230MHz, Bandedge, Horizontal



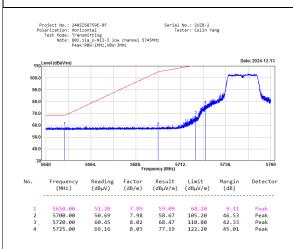
## 802.11n40, 5230MHz, Bandedge, Vertical



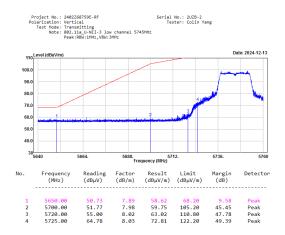


### U-NII-3: 5725-5850MHz:

## 802.11a, 5745MHz, Bandedge, Horizontal



### 802.11a, 5745MHz, Bandedge, Vertical



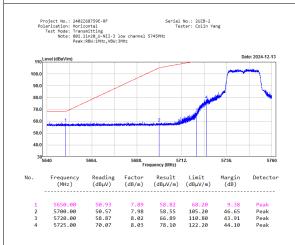
## 802.11a, 5825MHz, Bandedge, Horizontal



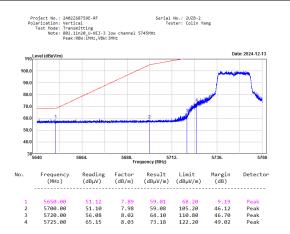
## 802.11a, 5825MHz, Bandedge, Vertical



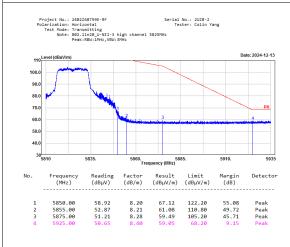
## 802.11n20, 5745MHz, Bandedge, Horizontal



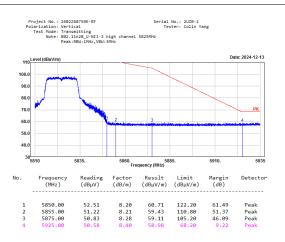
## 802.11n20, 5745MHz, Bandedge, Vertical



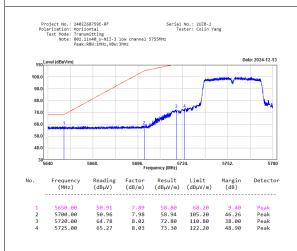
## 802.11n20, 5825MHz, Bandedge, Horizontal



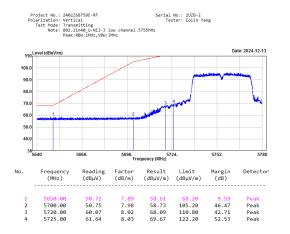
## 802.11n20, 5825MHz, Bandedge, Vertical



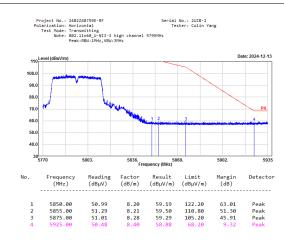
## 802.11n40, 5755MHz, Bandedge, Horizontal



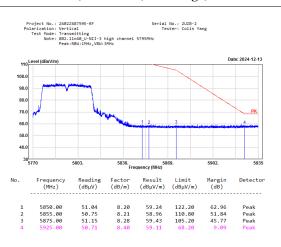
## 802.11n40, 5755MHz, Bandedge, Vertical

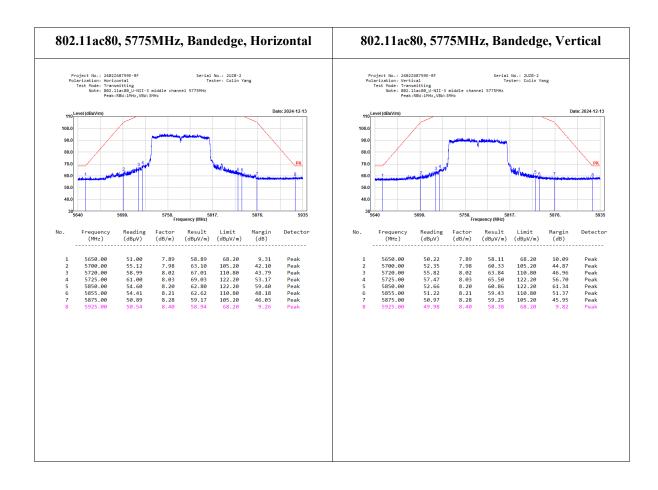


## 802.11n40, 5795MHz, Bandedge, Horizontal



## 802.11n40, 5795MHz, Bandedge, Vertical





## 5.3 26dB attenuated below the channel power

## **Test Information:**

Serial No.:	2UZB-1	Test Date:	2024/11/30
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jeff Wei	Test Result:	Pass

Report No.: 2402Z68759E-RF-00D

## **Environmental Conditions:**

Temperature:		Relative		ATM Pressure:	
(°C):	23.1	Humidity:	37	(kPa)	102
` '		(%)			

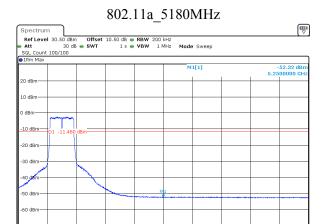
## **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Coaxial Attenuator	10dB	F-08-EM512	2024/06/13	2025/06/12
R&S	Spectrum Analyzer	FSV40	101589	2024/09/05	2025/09/04

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

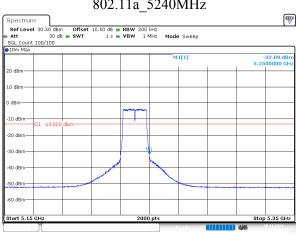
## **Test Data:**

The channel power please refer to the power test result. Please refer to the following plots.



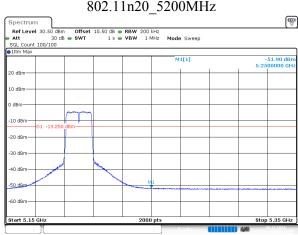
ProjectNo.:2402Z6B759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:37:05

#### 802.11a 5240MHz



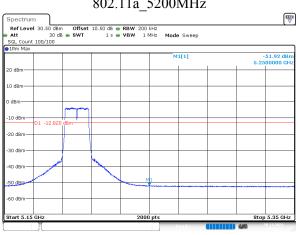
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:44:04

## 802.11n20\_5200MHz



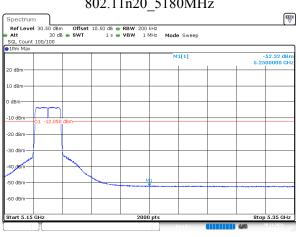
Date: 30.NOV.2024 20:52:04

#### 802.11a 5200MHz



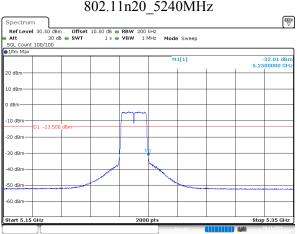
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:41:43

### 802.11n20\_5180MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:48:21

# 802.11n20\_5240MHz



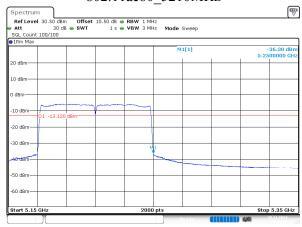
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:54:43

# $802.11n40\_5190MHz$



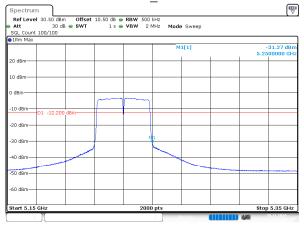
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:21:56

# 802.11ac80\_5210MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:32:23

### 802.11n40\_5230MHz



Date: 30.NOV.2024 20:26:08

#### 5.4 Emission Bandwidth

#### **Test Information:**

Serial No.:	2UZB-1	Test Date:	2024/11/29~2024/11/30
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jeff Wei	Test Result:	Pass

Report No.: 2402Z68759E-RF-00D

#### **Environmental Conditions:**

Temperature:		Relative		ATM Pressure:	
(°C):	23.1	Humidity:	37	(kPa)	102
( C).		(%)		(KI a)	

### **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Coaxial Attenuator	10dB	F-08-EM512	2024/06/13	2025/06/12
R&S	Spectrum Analyzer	FSV40	101589	2024/09/05	2025/09/04

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data:**

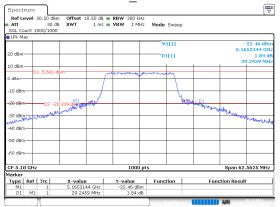
# 26dB Emission Bandwidth 5150-5250MHz

Mode	Antenna	Test Frequency (MHz)	Result (MHz)
		5180	29.246
802.11a	Chain 0	5200	28.243
		5240	29.058
		5180	36.638
802.11n20	Chain 0	5200	31.082
		5240	29.338
902 11m40	Chain 0	5190	49.750
802.11n40	Chain 0	5230	49.349
802.11ac80	Chain 0	5210	90.290

# 6dB Emission Bandwidth 5725-5850MHz

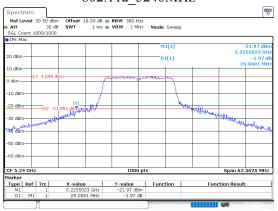
Mode	Antenna	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
		5745	16.466	0.5	Pass
802.11a	Chain 0	5785	16.416	0.5	Pass
		5825	16.416	0.5	Pass
	Chain 0	5745	17.317	0.5	Pass
802.11n20		5785	17.518	0.5	Pass
		5825	17.267	0.5	Pass
902 11540	802.11n40 Chain 0	5755	35.836	0.5	Pass
002.111140		5795	36.136	0.5	Pass
802.11ac80	Chain 0	5775	76.076	0.5	Pass

#### 802.11a\_5180MHz



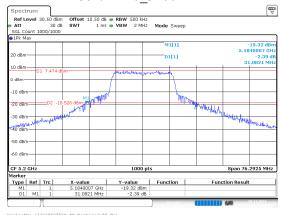
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei

#### 802.11a 5240MHz



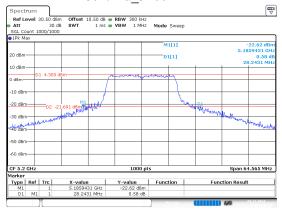
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:17:00

#### 802.11n20\_5200MHz



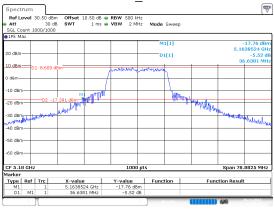
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:40:37

#### 802.11a\_5200MHz



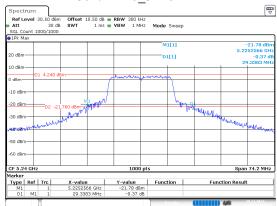
ProjectNo.:2402Z68759E-RF Tester:Jeff We:

#### 802.11n20 5180MHz



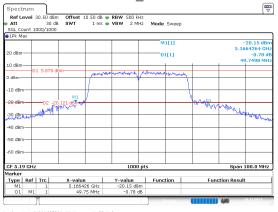
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:38:09

## 802.11n20\_5240MHz



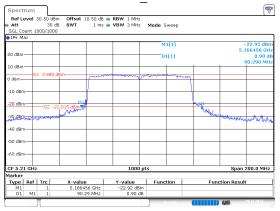
ProjectNo.:2402Z68759E-RF Tester:Jeff We

# 802.11n40\_5190MHz



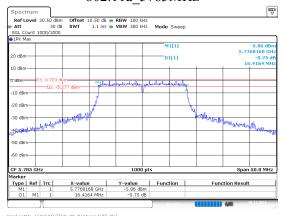
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:59:23

#### 802.11ac80 5210MHz



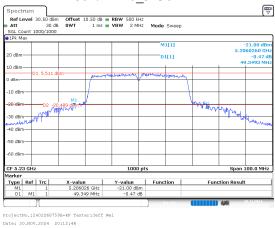
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:34:02

#### 802.11a\_5785MHz



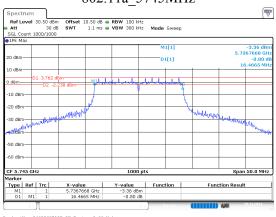
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:21:55

#### 802.11n40\_5230MHz



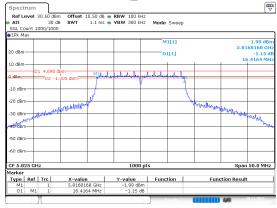
#### 5725-5850MHz

#### 802.11a\_5745MHz

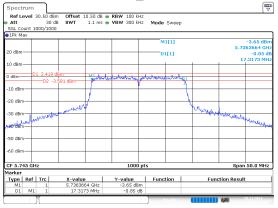


ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:19:30

## 802.11a\_5825MHz

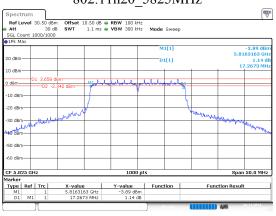


#### 802.11n20\_5745MHz

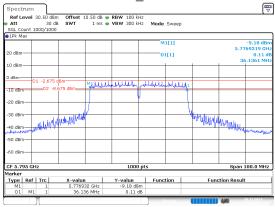


ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:49:23

### 802.11n20\_5825MHz

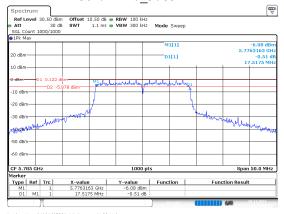


### 802.11n40\_5795MHz



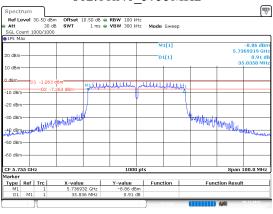
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:16:30

#### 802.11n20\_5785MHz



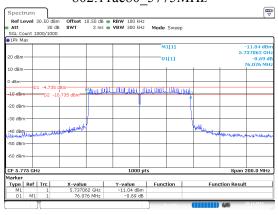
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:51:56

# 802.11n40\_5755MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei

# 802.11ac80 5775MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:35:36

### 5.5 99% Occupied Bandwidth

#### **Test Information:**

Serial No.:	2UZB-1	Test Date:	2024/11/29~2024/11/30
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jeff Wei	Test Result:	N/A

Report No.: 2402Z68759E-RF-00D

#### **Environmental Conditions:**

Temperature: (°C):	23.1	Relative Humidity: (%)	37	ATM Pressure: (kPa)	102
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#### **Test Equipment List and Details:**

Manufac	turer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	,	Coaxial Attenuator	10dB	F-08-EM512	2024/06/13	2025/06/12
R&S	,	Spectrum Analyzer	FSV40	101589	2024/09/05	2025/09/04

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data:**

#### 5150-5250MHz

Mode	Antenna	Test Frequency (MHz)	99% OBW (MHz)
		5180	16.700
802.11a	Chain 0	5200	16.700
		5240	16.650
		5180	17.800
802.11n20	Chain 0	5200	17.750
		5240	17.750
802.11n40	Chain 0	5190	36.400
δυ2.11Π4U	Chain 0	5230	36.300
802.11ac80	Chain 0	5210	75.600

#### Note:

The 99% Occupied Bandwidth have not fall into the band 5250-5350MHz, please refer to the test plots of 99% Occupied Bandwidth.

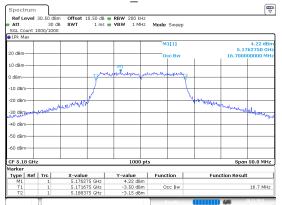
#### 5725-5850MHz

Mode	Antenna	Test Frequency (MHz)	99% OBW (MHz)
		5745	16.750
802.11a	Chain 0	5785	16.700
		5825	16.800
		5745	17.750
802.11n20	Chain 0	5785	17.750
		5825	17.800
902 11540	Chain 0	5755	36.400
802.11n40	Chain 0	5795	36.400
802.11ac80	Chain 0	5775	75.600

#### Note:

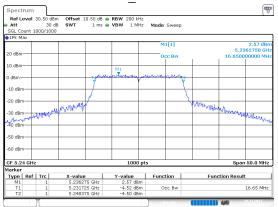
The 99% Occupied Bandwidth have not fall into the band 5470-5725MHz, please refer to the test plots of 99% Occupied Bandwidth.

#### 802.11a\_5180MHz



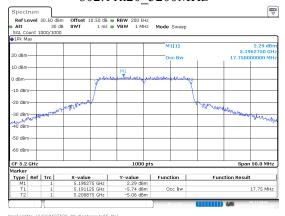
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:12:40

#### 802.11a 5240MHz



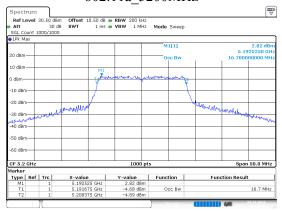
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:17:23

#### 802.11n20\_5200MHz



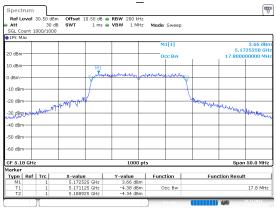
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:40:59

#### 802.11a\_5200MHz



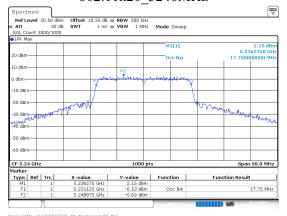
ProjectNo.:2402Z68759E-RF Tester:Jeff We: Date: 29.NOV.2024 16:14:55

#### 802.11n20 5180MHz



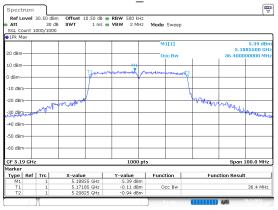
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:38:35

#### 802.11n20\_5240MHz



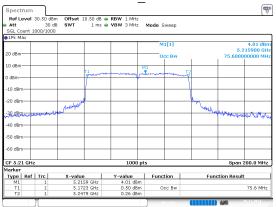
Date: 29.NOV.2024 16:47:27

#### 802.11n40\_5190MHz



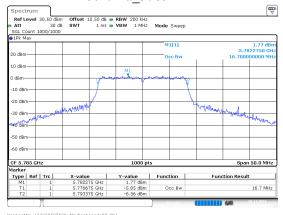
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:59:36

#### 802.11ac80 5210MHz



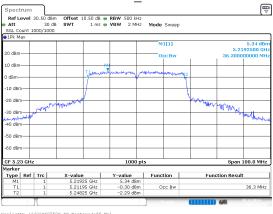
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:34:19

#### 802.11a\_5785MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:22:24

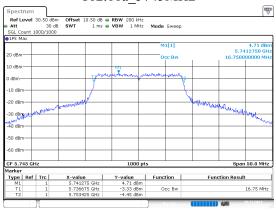
#### 802.11n40\_5230MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:13:01

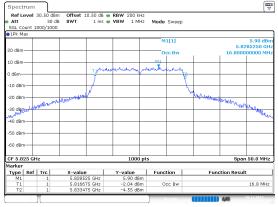
#### 5725-5850MHz

#### 802.11a 5745MHz



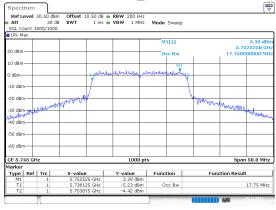
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:19:55

#### 802.11a\_5825MHz



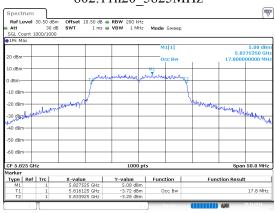
ProjectNo.:2402Z68759E-RF Tester:Jeff We

#### 802.11n20\_5745MHz



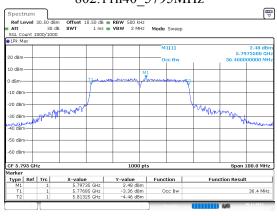
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:49:50

# 802.11n20\_5825MHz



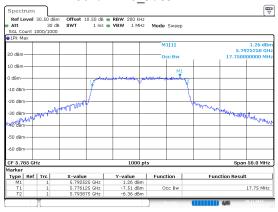
ProjectNo.:2402Z68759B-RF Tester:Jeff Wei

# 802.11n40\_5795MHz



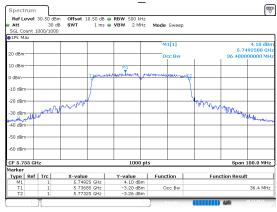
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 30.NOV.2024 20:16:43

#### 802.11n20\_5785MHz



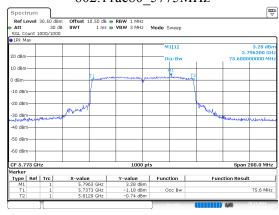
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:52:27

# 802.11n40\_5755MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei

# 802.11ac80 5775MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 29.NOV.2024 16:35:52

# **5.6 Maximum Conducted Output Power**

#### **Test Information:**

Serial No.:	2UZB-1	Test Date:	2024/11/29~2024/11/30
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jeff Wei	Test Result:	Pass

### **Environmental Conditions:**

#### **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Eastsheep	Coaxial Attenuator	5W-N-JK-6G- 10dB	F-08-EM504	2024/06/07	2025/06/06
Anritsu	Microwave Peak Power Sensor	MA24418A	12618	2024/09/04	2025/09/03

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

### **Test Data:**

#### 5150-5250MHz

Mode	Test Frequency (MHz)	Average Output Power(dBm)	FCC Limit (dBm)	EIRP (dBm)	RSS-247 Limit	Verdict
	5180	14.52	24	16.33	22.23	Pass
802.11a	5200	13.18	24	14.99	22.23	Pass
	5240	12.98	24	14.79	22.21	Pass
	5180	13.95	24	15.76	22.50	Pass
802.11n20	5200	12.75	24	14.56	22.49	Pass
	5240	12.50	24	14.31	22.49	Pass
902 11 - 40	5190	13.99	24	15.80	23.00	Pass
802.11n40	5230	13.80	24	15.61	23.00	Pass
802.11ac80	5210	12.88	24	14.69	23.00	Pass
Antenna Gain:		1.81	1.81dBi		Directional Gain:	
	Maximi	ım EIRP			16.33dBm	

#### Note:

- EIRP = Average Output Power + Antenna gain
   The device is a client device.

#### 5725-5850MHz

Mode	Test Frequency (MHz)	Average Output Power(dBm)	Limit (dBm)	Verdict
	5745	14.71	30	Pass
802.11a	5785	12.15	30	Pass
	5825	15.48	30	Pass
	5745	13.7	30	Pass
802.11n20	5785	11.63	30	Pass
	5825	15.17	30	Pass
802.11n40	5755	12.94	30	Pass
802.111140	5795	11.26	30	Pass
802.11ac80	5775	11.82	30	Pass
Antenna Gain:	1.91dBi	Directional	Gain:	1.91dBi

#### Note:

1. EIRP = Average Output Power + Antenna gain

Report No.: 2402Z68759E-RF-00D

### **5.7 Power Spectral Density**

#### **Test Information:**

Serial No.:	2UZB-1	Test Date:	2025/03/04
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jeff Wei	Test Result:	Pass

Report No.: 2402Z68759E-RF-00D

#### **Environmental Conditions:**

Temperature: (°C) 25.9	Relative Humidity: (%)	54	ATM Pressure: (kPa)	100.3
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### **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Coaxial Attenuator	10dB	F-08-EM512	2024/06/13	2025/06/12
R&S	Spectrum Analyzer	FSV40	101589	2024/09/05	2025/09/04

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data:**

#### 5150-5250MHz

Mode	Test Frequency (MHz)	Reading (dBm/MHz)	Duty Cycle Factor(dB)	Result (dBm/MHz)	Limit (dBm/MHz)	Verdict
	5180	3.40	0.52	3.92	11	Pass
802.11a	5200	1.64	0.52	2.16	11	Pass
	5240	1.52	0.52	2.04	11	Pass
	5180	2.42	0.60	3.02	11	Pass
802.11n20	5200	1.15	0.60	1.75	11	Pass
	5240	0.85	0.60	1.45	11	Pass
902 11-40	5190	-0.89	1.14	0.25	11	Pass
802.11n40	5230	-1.65	1.14	-0.51	11	Pass
802.11ac80	5210	-6.09	1.94	-4.15	11	Pass
Antenna Gain (dBi):		1.81	Directional Gain(dBi):		1.81	
Maximum EIRP (dBm/MHz)		5.73	EIRP Limit for RSS-247 (dBm/MHz)		10	Pass

Report No.: 2402Z68759E-RF-00D

#### Note:

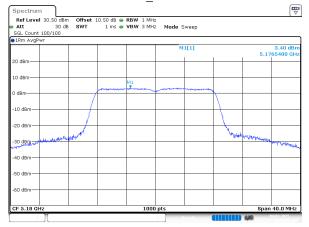
- 1. The device is a client device.
- 2. for the Duty Cycle <98% (duty cycle refers to Section 5.8 Duty Cycle), and duty cycle variations less than  $\pm$ 2%, KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-2 was performed to the PSD test.

#### 5725-5850MHz

Mode	Test Frequency (MHz)	Reading (dBm/500kHz)	Duty Cycle Factor(dB)	Result (dBm/500kHz)	Limit (dBm/500kHz)	Verdict
	5180	-0.54	0.52	-0.02	30	Pass
802.11a	5200	-3.72	0.52	-3.20	30	Pass
	5240	-0.46	0.52	0.06	30	Pass
	5180	-1.24	0.60	-0.64	30	Pass
802.11n20	5200	-4.11	0.60	-3.51	30	Pass
	5240	-1.33	0.60	-0.73	30	Pass
202 11-40	5190	-5.74	1.14	-4.60	30	Pass
802.11n40	5230	-7.26	1.14	-6.12	30	Pass
802.11ac80	5210	-10.90	1.94	-8.96	30	Pass
Antenna C	Gain (dBi):	1.91	Directional	Gain(dBi):	1.91	

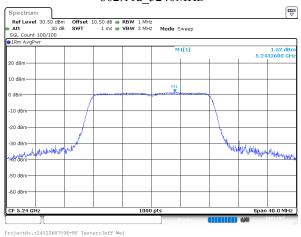
Note: for the Duty Cycle <98% (duty cycle refers to Section 5.8 Duty Cycle), and duty cycle variations less than  $\pm2\%$ , KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-2 was performed to the PSD test.

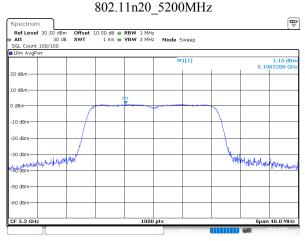
#### 802.11a\_5180MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:54:39

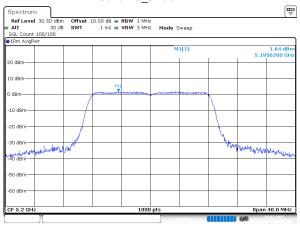
#### 802.11a\_5240MHz





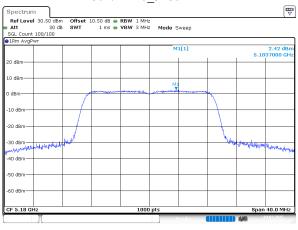
Date: 4.MAR.2025 17:56:11

#### 802.11a\_5200MHz



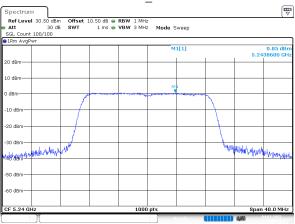
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:52:45

#### 802.11n20\_5180MHz



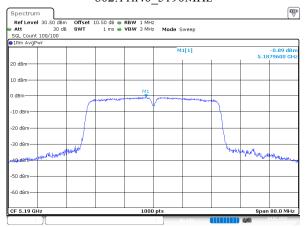
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:55:52

#### 802.11n20\_5240MHz



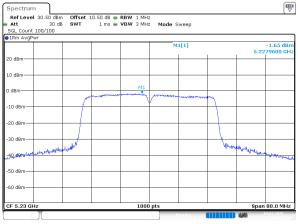
Date: 4.MAR.2025 17:56:29

# 802.11n40\_5190MHz



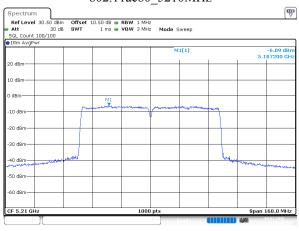
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:58:32

# 802.11n40\_5230MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff V Date: 4.MAR.2025 17:58:54

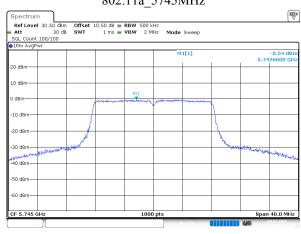
# 802.11ac80\_5210MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:48:20

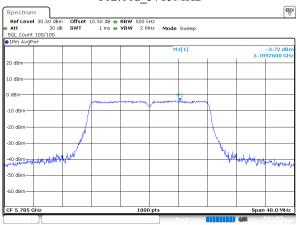
#### 5725-5850MHz

### 802.11a\_5745MHz



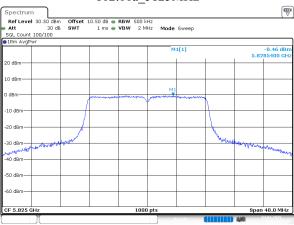
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:53:29

#### 802.11a\_5785MHz



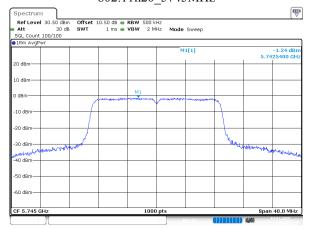
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:53:50

#### 802.11a\_5825MHz



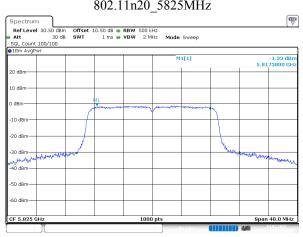
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:54:09

#### 802.11n20\_5745MHz



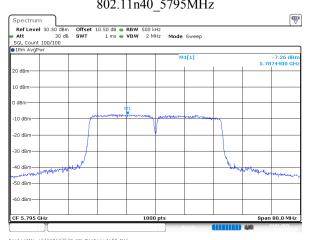
Date: 4.MAR.2025 17:56:48

# $802.11n20\_5825MHz$



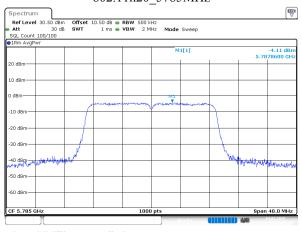
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:57:55

# 802.11n40\_5795MHz



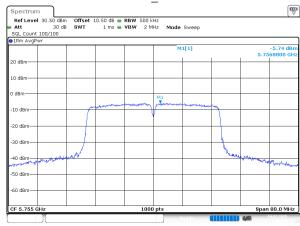
Date: 4.MAR.2025 17:59:35

#### 802.11n20\_5785MHz



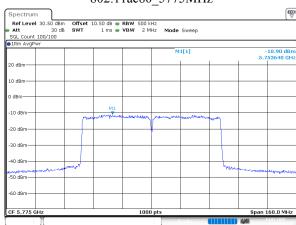
Date: 4.MAR.2025 17:57:07

#### 802.11n40\_5755MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:59:16

# 802.11ac80\_5775MHz



Date: 4.MAR.2025 17:48:45

# 5.8 Duty Cycle

### **Test Information:**

Serial No.:	2UZB-1	Test Date:	2025/03/04
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jeff Wei	Test Result:	N/A

Report No.: 2402Z68759E-RF-00D

#### **Environmental Conditions:**

Temperature: (°C)	Relative Humidity: (%)	54	ATM Pressure: (kPa)	100.3
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# **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Coaxial Attenuator	10dB	F-08-EM512	2024/06/13	2025/06/12
R&S	Spectrum Analyzer	FSV40	101589	2024/09/05	2025/09/04

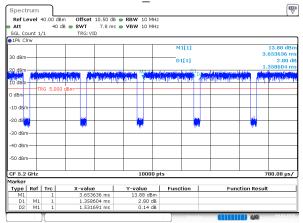
<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data:**

### 5150-5250MHz

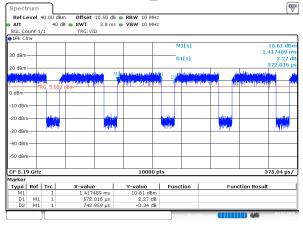
Mode	Test Frequency (MHz)	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)	1/Ton (Hz)	VBW Setting (kHz)
802.11a	5200	1.359	1.532	88.71	0.52	736	1
802.11n20	5200	1.148	1.319	87.04	0.60	871	1
802.11n40	5190	0.572	0.743	76.99	1.14	1748	2
802.11ac80	5210	0.288	0.450	64.00	1.94	3472	5

#### 802.11a\_5200MHz



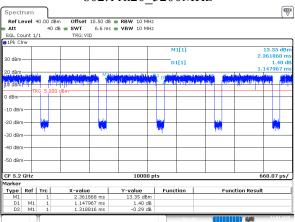
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei

### 802.11n40\_5190MHz



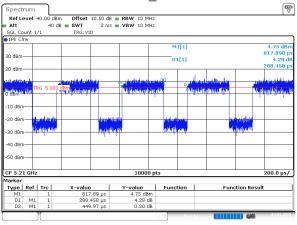
ProjectNo.:2402Z68759E-RF Tester:Jeff Wei Date: 4.MAR.2025 17:45:26

#### 802.11n20\_5200MHz



ProjectNo.:2402Z68759E-RF Tester:Jeff Wei

#### 802.11ac80\_5210MHz



Date: 4.MAR.2025 17:47:09

# **EXHIBIT A - EUT PHOTOGRAPHS**

Please refer to the attachment 2402Z68759E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2402Z68759E-RF-INP EUT INTERNAL PHOTOGRAPHS.

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# **EXHIBIT B - TEST SETUP PHOTOGRAPHS**

Please refer to the attachment 2402Z68759E-RF-00D-TSP TEST SETUP PHOTOGRAPHS.

\*\*\*\*\* END OF REPORT \*\*\*\*\*

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