

Report No.: TCWA25030014205

# TEST REPORT

Applicant: Sony Corporation

**EUT Description:** GSM/WCDMA/LTE Phone with BT. DTS/UNII a/b/g/n/ac/ax and NFC and

**GNSS** 

Brand: Sony

FCC ID: PY7-63277Y

Standards: FCC 47 CFR Part 15 Subpart E

**Date of Receipt:** 2025/03/07

> Date of Test: 2025/03/07 to 2025/05/21

Date of Issue: 2025/05/21

TOWE. Tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. Without written approval of TOWE, the test report shall not be reproduced except in full.





**Huang Kun** Approved By: Chen Chengfu Reviewed By:



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# **Revision History**

Rev. Issue Date		Description	Revised by	
01	2025/05/21	Original	Chen Chengfu	



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# **Summary of Test Results**

Clause	FCC Part	Test Items	Test Bands	Result
4.1	§15.203	Antenna Requirement		PASS
4.2	§15.407(g)	Frequency Stability		
4.3	§15.207	AC Power Line Conducted Emission	Section 2.2	PASS
4.4	§15.407(a)(1)(iv) §15.407(a)(2) §15.407(a)(3)(i)	Maximum Conducted Output Power	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS
4.5	§KDB 789033 II.C.1	Emission Bandwidth	U-NII-1 U-NII-2A U-NII-2C	Reporting purposes only
4.6	§15.407(e)	Minimum Emission Bandwidth	U-NII-3	PASS
4.7	§KDB 789033 II.D	Occupied Bandwidth	U-NII-1 U-NII-2A U-NII-2C U-NII-3	Reporting purposes only
4.8	§5.407(a)(1)(iv) §15.407(a)(2) §15.407(a)(3)(i)	Maximum Power Spectral Density	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS
4.9	§15.407(b) §15.209(d)	Unwanted Emissions	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS

Test Method: ANSI C63.10:2020, KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Remark: Pass is EUT meets standard requirements.



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### **General Description**

#### 1.1 Lab Information

#### 1.1.1 **Testing Location**

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. Facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3<sup>rd</sup> Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 Tel.: +86-755-27212361

Contact Email: info@towewireless.com

#### 1.1.2 **Test Facility / Accreditations**

#### A2LA (Certificate Number: 7088.01)

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

#### FCC Designation No.: CN1353

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. Has been recognized as an accredited testing laboratory. Designation Number: CN1353.

#### ISED CAB identifier: CN0152

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. Has been recognized by ISED as an accredited testing

laboratory.

CAB identifier: CN0152 Company Number: 31000

#### 1.2 Client Information

#### 1.2.1 **Applicant**

Applicant:	Sony Corporation
Address:	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan

#### 1.2.2 Manufacturer

Manufacturer:	Sony Corporation
Address:	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd.

Email: info@towewireless.com TOWE-QP-15-F05 Rev.1.1

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### 1.3 Product Information

EUT Description:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax and NFC and GNSS					
Brand:	Sony					
Hardware Version:	A					
Software Version:	0.144 (for RF Cond 0.166 (for RSE & A	,	er line)			
	RF Conducted	RF Conducted HQ652G00BA				
SN.:	RSE & AC power li	ne	HQ652D008 HQ654900A			
	802.11a:	OFDI	И-BPSK, QPS	SK, ´	16QAM, 64QAM	
	802.11n:	OFDI	И-BPSK, QPS	SK, ´	16QAM, 64QAM,	256QAM
Modulation Type:	802.11ac:	OFDI	И-BPSK, QPS	SK, ´	16QAM, 64QAM,	256QAM
	802.11ax:		M/OFDMA-BP QAM, 4096QA		QPSK, 16QAM,	64QAM, 256QAM,
	⊠siso	802.1	1a/n/ac/ax		/	
Smart System:	⊠MIMO	802.1	1n/ac/ax		( 2 )TX( 2 )RX	
	⊠CDD	802.1	1a		(2)TX(2)RX	
EUT Function	⊠Client	Ou	tdoor AP		☐Indoor AP	☐Fixed P2P AP
DFS Function:	☐Master ☐Slave with radar detection ☐Slave without radar detection					
	U-NII-1:	5150 ~ 5250MHz				
Frequency Range:	U-NII-2A:	5250 ~ 5350MHz				
Frequency Range:	U-NII-2C:	5470 ~ 5725MHz				
	U-NII-3:	5725 ~ 5850MHz				
		U-NII-	-1:	5180 ~ 5240MHz		4 Channels
		U-NII-	-2A:	52	260 ~ 5320MHz	4 Channels
	20M BWch.:	U-NII-	-2C:	55	500 ~ 5700MHz	11 Channels
		U-NII-	-3:	57	45 ~ 5825MHz	5 Channels
		Strad	dle Channel:	57	20MHz	1 Channel
		U-NII-	-1:	51	190 ~ 5230MHz	2 Channels
		U-NII-	-2A:	52	270 ~ 5310MHz	2 Channels
	40M BWch.:	U-NII-	-2C:	55	510 ~ 5670MHz	5 Channels
Channel Frequency:		U-NII-	-3:	57	755 ~ 5795MHz	2 Channels
		Strad	dle Channel:	57	10MHz	1 Channel
		U-NII-	-1:	52	210MHz	1 Channel
		U-NII-	-2A:	52	290MHz	1 Channel
	80M BWch.:	U-NII-	-2C:	55	530 ~ 5610MHz	2 Channels
		U-NII-	-3:		75MHz	1 Channel
		Strad	dle Channel:	56	690MHz	1 Channel
		U-NII-	-2A:	52	250MHz	1 Channel
	160M BWch.:	U-NII-			570MHz	1 Channel



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Antenna Type:	PIFA Antenna			
	Frequency Range	Ant6 (dBi)	Ant7 (dBi)	
	U-NII-1:	-1.2	-2.4	
Antenna Gain:	U-NII-2A:	-1.2	-1.7	
	U-NII-2C:	-1.5	-1.2	
	U-NII-3:	-1.3	-1.1	

Remark: The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description.



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# **Test Configuration**

### 2.1 Test Channel

Frequency Channels for U-NII-1								
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz	
38	5190MHz	42	5210MHz	46	5230MHz	50	5250MHz	

#### Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	Test Channel	Test Frequency		
000 44 / 00	The Lowest channel (CH36)	5180MHz		
802.11a/n20 /ac20/ax20	The Middle channel (CH40)	5200MHz		
/4020/4820	The Highest channel (CH48)	5240MHz		
Modulation Type	Test Channel	Test Frequency		
802.11n40	The Lowest channel (CH38)	5190MHz		
/ac40/ax40	The Highest channel (CH46)	5230MHz		
Modulation Type	Test Channel	Test Frequency		
802.11 ac80/ax80	The Middle channel (CH42)	5210MHz		
Modulation Type	Test Channel	Test Frequency		
802.11 ac160/ax160	The Middle channel (CH50)	5250MHz		

	Frequency Channels for U-NII-2A								
Channel Frequency Channel Frequency Channel Frequency Channel Freque									
50	5250MHz	54	5270MHz	58	5290MHz	62	5310MHz		
52	5260MHz	56	5280MHz	60	5300MHz	64	5320MHz		

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	Test Channel	Test Frequency		
000 44 - /- 00	The Lowest channel (CH52)	5260MHz		
802.11a/n20 /ac20/ax20	The Middle channel (CH60)	5300MHz		
7402074220	The Highest channel (CH64)	5320MHz		
Modulation Type	Test Channel	Test Frequency		
802.11n40	The Lowest channel (CH54)	5270MHz		
/ac40/ax40	The Highest channel (CH62)	5310MHz		
Modulation Type	Test Channel	Test Frequency		
802.11 ac80/ax80	The Middle channel (CH58)	5290MHz		
Modulation Type	Test Channel	Test Frequency		
802.11 ac160/ax160	The Middle channel (CH50)	5250MHz		

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	Frequency Channels for U-NII-2C								
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency		
100	5500MHz	110	5550MHz	120	5600MHz	132	5660MHz		
102	5510MHz	112	5560MHz	122	5610MHz	134	5670MHz		
104	5520MHz	114	5570MHz	124	5620MHz	136	5680MHz		
106	5530MHz	116	5580MHz	126	5630MHz	140	5700MHz		
108	5540MHz	118	5590MHz	128	5640MHz		1		

#### Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	Test Channel	Test Frequency
000.44 / 00	The Lowest channel (CH100)	5500MHz
802.11a/n20 /ac20/ax20	The Middle channel (CH116)	5580MHz
/4020/4120	The Highest channel (CH140)	5700MHz
Modulation Type	Test Channel	Test Frequency
000 4440	The Lowest channel (CH102)	5510MHz
802.11n40 /ac40/ax40	The Middle channel (CH118)	5590MHz
/4040/4140	The Highest channel (CH134)	5670MHz
Modulation Type	Test Channel	Test Frequency
802.11	The Lowest channel (CH106)	5530MHz
ac80/ax80	The Highest channel (CH122)	5610MHz
Modulation Type	Test Channel	Test Frequency
802.11 ac160/ax160	The Middle channel (CH114)	5570MHz

Frequency Channels for U-NII-3							
Channel Frequency Channel Frequency Channel Frequency Channel Frequency						Frequency	
149	5745MHz	153	5765MHz	157	5785MHz	161	5805MHz
151	5755MHz	155	5775MHz	159	5795MHz	165	5825MHz

#### Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	Test Channel	Test Frequency
000 44 - /- 00	The Lowest channel (CH149)	5745MHz
802.11a/n20 /ac20/ax20	The Middle channel (CH157)	5785MHz
/aczo/axzo	The Highest channel (CH165)	5825MHz
Modulation Type	Test Channel	Test Frequency
802.11n40	The Lowest channel (CH151)	5755MHz
/ac40/ax40	The Highest channel (CH159)	5795MHz
Modulation Type	Test Channel	Test Frequency
802.11 ac80/ax80	The Middle channel (CH155)	5775MHz



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	Straddle Channel					
Modulation Type	Test Channel	Test Frequency				
802.11a/n20 /ac20/ax20	The channel (CH144)	5720MHz				
Modulation Type	Test Channel	Test Frequency				
802.11n40 /ac40/ax40	The channel (CH142)	5710MHz				
Modulation Type	Test Channel	Test Frequency				
802.11 ac80/ax80	The channel (CH138)	5690MHz				
Modulation Type	Test Channel	Test Frequency				
802.11 ac160/ax160	The channel (CH50)	5250MHz				



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## 2.2 Worst-case configuration and Mode

Modulation Type	SISO - Data Rate	CDD/MIMO( 2 )TX( 2 )RX Data Rate		
802.11a	6 Mbps	12 Mbps		
802.11n20	MCS0 (6.5 Mbps)	MCS0 (13 Mbps)		
802.11n40	MCS0 (13.5 Mbps)	MCS0 (27 Mbps)		
802.11ac80	MCS0 (29.3 Mbps)	MCS0 (58.6 Mbps)		
802.11ac160	MCS0 (58.5 Mbps)	MCS0 (117 Mbps)		
802.11ax20	MCS0 (8.6 Mbps)	MCS0 (17.2 Mbps)		
802.11ax40	MCS0 (17.2 Mbps)	MCS0 (34.4 Mbps)		
802.11ax80	MCS0 (36.0 Mbps)	MCS0 (72.1 Mbps)		
802.11ax160	MCS0 (72.1 Mbps)	MCS0 (144.1 Mbps)		
Transmitting mode: Keep the EUT	was programmed to be in continuously	r transmitting mode.		
Normal Link: Keep the EUT operation to normal function.				

Remark: For 802.11ac20/40 and 802.11ax20/40 mode, the whole testing have assessed only, 802.11ax20/40 by referring to their higher output power.

### **Test RU Types & Channel Bandwidth:**

RU Types	ax20	ax40	ax80	ax160
26-tone RU	26 tone_0 26 tone_8	/	/	1
52-tone RU	52 tone_37 52 tone_40	/	/	1
106-tone RU	106 tone_53 106 tone_54	/	/	1
242-tone RU	/	242 tone 61 242 tone 62	/	/
484-tone RU	/	/	484 tone 65 484 tone 66	/
996-tone RU	/	1	/	996 tone 67 996 tone 68



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### 2.3 Support Unit used in test

The EUT has been tested as an independent unit.

#### 2.4 Test Environment

Temperature:	Normal: 15°C ~ 35°C
Humidity:	45 ~ 56 % RH Ambient
Voltage:	DC 3.89V
AC Voltage:	AC 120V/60Hz for Conducted Emissions

Remark: The testing environment is within the scope of the EUT user manual and meets the requirements of the standard testing environment.

### 2.5 Test RF Cable

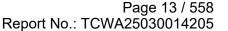
**For all conducted test items**: The offset level is set spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

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

Offset = RF cable loss + attenuator factor.

### 2.6 Modifications

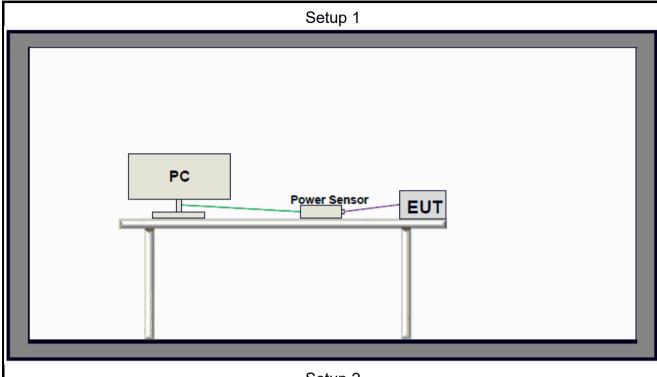
No modifications were made during testing.





2.7 Test Setup Diagram

### 2.7.1 Conducted Configuration



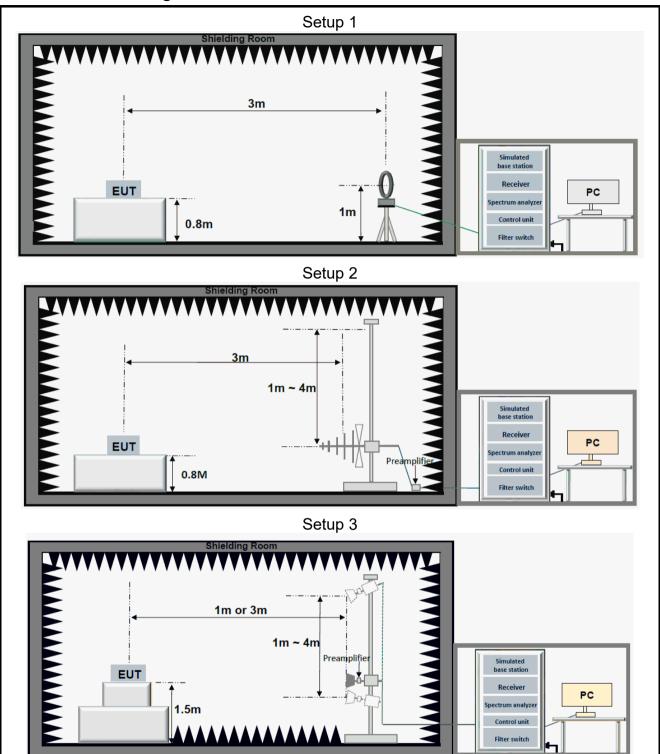
Shielding Room

Automatic Test System
Communication Tester
Signal Analyzer
RF Control Unit
PC
Band Reject Filter Group
DC Power-





### 2.7.2 Radiated Configuration



### 2.8 Accessory

Name	Model	Length (cm)	Shielded (Y/N)	Manufacturer
Adapter	XQZ-UC1	1	/	Sony Corporation
USB Cable	XQZ-UB1	100	Y	Sony Corporation
Earphone	MDR-EX15AP	125	1	Sony Corporation



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#### Directional gain calculations:

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

If all antennas have the same gain,  $G_{ANT}$ , Directional gain =  $G_{ANT}$  + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices
   Array Gain = 10 log(N<sub>ANT</sub>/N<sub>SS</sub>=1) dB
- For power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for N<sub>ANT</sub> ≤ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N<sub>ANT</sub>;

Array Gain =  $5 \log(N_{ANT}/N_{SS}=1)$  dB or 3 dB, whichever is less, for 20-MHz channel widths with  $N_{ANT} \ge 5$ . Directional gain may be calculated by using the formulas applicable to equal gain antennas with  $G_{ANT}$  set equal to the gain of the antenna having the highest gain.

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, ..., GN dBi

- If transmit signals are correlated, then

  Directional gain = 10 log[(10<sup>G1/20</sup> + 10<sup>G2/20</sup> + ... + 10<sup>GN/20</sup>)<sup>2</sup> /N<sub>ANT</sub>] dBi [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]
- If all transmit signals are completely uncorrelated, then
   Directional gain = 10 log[(10<sup>G1/10</sup> + 10<sup>G2/10</sup> + ... + 10<sup>GN/10</sup>)/N<sub>ANT</sub>] dBi

#### The Power and PSD limit should be modified if the directional gain of EUT is over 6dBi.

The EUT supports CDD System.

The Let eapporte	The Edit supports GBB Gystom.								
	Transmit signals are completely correlated								
Operation Band ANT Gain6 (dBi) ANT Gain7 (dBi) Directional gain For Power (dBi) (dBi) (dBi)						PSD Limit Reduction (dBm)			
5150~5250MHz	-1.2	-2.4	-1.2	1.23	0	0			
5250~5350MHz	-1.2	-1.7	-1.2	1.56	0	0			
5470~5725MHz	-1.5	-1.2	-1.2	1.66	0	0			
5725~5850MHz	-1.3	-1.1	-1.1	1.81	0	0			

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# 3 Equipment and Measurement Uncertainty

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, whichever is less, and where applicable is traceable to recognized national standards.

### 3.1 Test Equipment List

RF Conducted								
Description	Manufacturer	Model S.N.		Last Due	Cal Due			
Cianal Analyzar	Kovojaht	N9020A	US46470429	2024/03/25	2025/03/24			
Signal Analyzer	Keysight	N9020A	0546470429	2025/03/14	2026/03/13			
Signal Congretor	R&S	SMD20	101027	2024/03/25	2025/03/24			
Signal Generator	Ras	SMR20	101027	2025/03/11	2026/03/10			
Vector Signal Generator	R&S	SMM100A	549353	2024/05/30	2025/05/29			
Power Sensor	Anritsu	MA24408A	12520	2024/05/30	2025/05/29			
RF Control Unit	Tonscend	JS0806-2	23C80620671	2024/05/30	2025/05/29			
EXA Signal Analyzer, Multi- touch	Keysight	N9010B	MY63440541	2024/05/30	2025/05/29			
Measurement Software	Tonscend	TS1120-3	10659	N/A	N/A			

	Radiated Emission								
Description	Manufacturer	Model	S.N.	Last Due	Cal Due				
Biconic Logarithmic Periodic Antennas	Schwarzbeck	VULB9163	1643	2023/06/25	2025/06/24				
Double-Ridged Horn Antennas	Schwarzbeck	BBHA 9120D	2809	2023/06/25	2025/06/24				
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	1290	2023/06/25	2025/06/24				
Loop Antenna	Schwarzbeck	FMZB 1519C	1519C-028	2023/06/29	2025/06/28				
Signal Analyzer	Keysight	N9020A	MY49100252	2024/03/25	2025/03/24				
Signal Analyzei	Reysignt	N9020A	101149100232	2025/03/11	2026/03/10				
EXA Signal Analyzer, Multi- touch	Keysight	N9010B	MY63440541	2024/05/30	2025/05/29				
Wideband Radio	R&S	CMW500	150645	2024/03/25	2025/03/24				
Communication Tester	Ras	CIVIVVSOO	150045	2025/03/11	2026/03/10				
Low Noise Amplifier	Tonscend	TAP9K3G40	AP23A8060273	2023/04/08	2025/04/07				
Low Noise Amplifier	Torisceria	1AF 9N3O40	AF 23A0000213	2025/03/11	2027/03/10				
Low Noise Amplifier	Tonscend	TAP01018050	AP22G806258	2023/04/08	2025/04/07				
Low Noise Amplifier	Torisceria	1AF01016050	AP22G000250	2025/03/11	2027/03/10				
Low Noise Amplifier	Tanagand	TAD10040040	AD22C006247	2023/04/08	2025/04/07				
Low Noise Amplifier	Tonscend	TAP18040048	AP22G806247	2025/03/11	2027/03/10				
Hygrometer	BINGYU	HTC-1	N/A	2023/06/01	2025/05/31				
Band Reject Filter Group	Townshend	JS0806-F	23A806F0652	N/A	N/A				
Test Software	Tonscend	TS+	Version: 5.0.0	N/A	N/A				



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Conducted Emission							
Description Manufacturer Model S.N. Last Due Cal Due							
EMI Tester Receiver	Rohde & Schwarz	ESR3	103108	2024/05/31	2025/05/30		
LISN	Rohde & Schwarz	ENV 216	102836	2025/01/04	2026/01/03		
Test software	Rohde & Schwarz	ELEKTRA V4.61	N/A	N/A	N/A		



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# 3.2 Measurement Uncertainty

Parameter	U <sub>lab</sub>
Frequency Error	679.98Hz
Output Power	0.76dB
Conducted Spurious Emissions	2.22dB
Conducted Emissions(150kHz~30MHz)	2.43dB
Radiated Emissions(9kHz~30MHz)	2.40dB
Radiated Emissions(30MHz~1000MHz)	4.66dB
Radiated Emissions(1GHz~18GHz)	5.42dB
Radiated Emissions(18GHz~40GHz)	5.46dB

Uncertainty figures are valid to a confidence level of 95%



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### 4 Test Results

### 4.1 Antenna Requirement

### Standard Applicable: 47 CFR Part 15C Section 15.203

15.203 requirement: 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, 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.

The antenna gain and type as provided by the manufacturer are as follows:

The antenna Type is PIFA Antenna. With Antenna gain is

5150 ~ 5250MHz: -1.2dBi(Ant6); -2.4dBi(Ant7); 5250 ~ 5350MHz: -1.2dBi(Ant6); -1.7dBi(Ant7);

5470 ~ 5725MHz: -1.5dBi(Ant6); -1.2dBi(Ant7); 5725 ~ 5850MHz: -1.3dBi(Ant6); -1.1dBi(Ant7);

Antenna Anti-Replacement Construction: An embedded-in antenna design is used.

### 4.2 Frequency Stability

### Standard Applicable: 47 CFR Part 15C Section 15.407(g)

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

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#### 4.3 AC Power Line Conducted Emissions

#### **Limits**

Fraguency range (MHz)	Limit (dBµV)						
Frequency range (MHz)	Quasi-peak	Average					
0.15-0.5	66 to 56*	56 to 46*					
0.5-5	56	46					
5-30	60	50					
* Decreases with the logarithm of the frequency.							

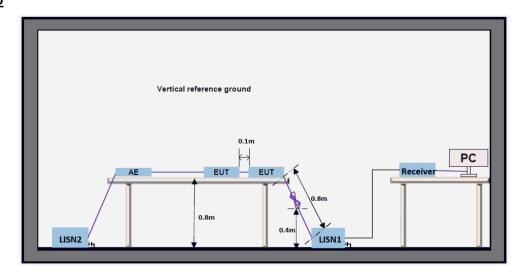
#### **Test Procedure**

ANSI C63.10:2020, Section 6.2.

#### **Test Settings**

- 1. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu H + 5\Omega$  linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
- 3. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 4. Set the test-receiver system to Peak detect function and specified bandwidth (if bandwidth =9kHz) with maximum hod mode. Then measurement is also conducted by average detector and Quasi-Peak detector function respectively
- 5. Both sides of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

#### **Test Setup**



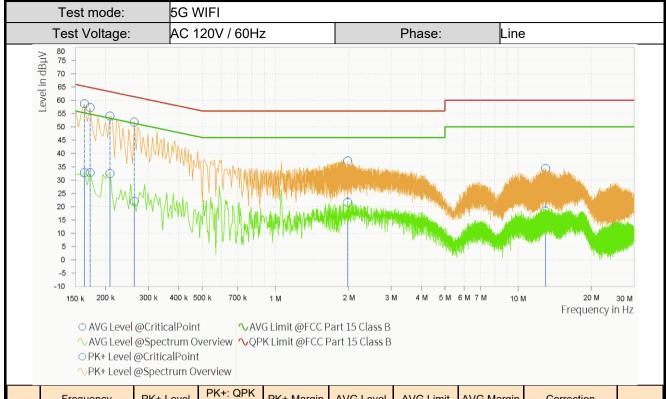
#### **Measuring Instruments**

The measuring equipment is listed in the section 3.1 of this test report.





#### **Test Result:**



Rg	Frequency [MHz]	PK+ Level [dBµV]	PK+: QPK Limit [dBµV]	PK+ Margin [dB]	AVG Level [dBµV]	AVG Limit [dBµV]	AVG Margin [dB]	Correction [dB]	Line
1	0.164	58.74	65.28	6.54	32.84	55.28	22.44	9.51	L1
2	0.173	57.34	64.84	7.50	32.86	54.84	21.98	9.53	L1
3	0.209	54.12	63.26	9.14	32.46	53.26	20.80	9.54	L1
4	0.263	51.80	61.35	9.55	21.97	51.35	29.38	9.56	L1
5	1.986	37.26	56.00	18.74	21.64	46.00	24.36	9.95	L1
6	12.957	34.29	60.00	25.71	18.28	50.00	31.72	9.90	L1

#### Note

<sup>1.</sup> The following Quasi-Peak and Average measurements were performed on the EUT:

<sup>2.</sup> Margin[dΒ] = Limit[dΒμV] - Level[dΒμV]





50.00

34.72

15.28

### 6 Note:

29.07

60.00

30.93

12.561

10.05

Ν

<sup>1.</sup> The following Quasi-Peak and Average measurements were performed on the EUT:

<sup>2.</sup> Margin[dB] = Limit[dBµV] - Level[dBµV]



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### 4.4 Maximum Conducted Output Power

#### Limits

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.

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.

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

#### **Test Procedure**

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.E.2.b (Other Channel) KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.E.3.b(Straddle Channel)

#### **Test Settings**

1. PM-G:

Set to the maximum power setting and enable the EUT transmit continuously.

The power output was measured on the EUT antenna port using RF Cable with attenuator connected to a power meter via wideband power sensor. Peak output power was read directly from power meter. Measure and record the results in the test report.

2. SA:

RBW = 1MHz

VBW ≥ 3MHz

Span = Encompass the EBW (or, alternatively, the entire 99% occupied bandwidth)

Sweep = Auto

Detector = power averaging (rms)

#### **Test Setup**

Refer to section 2.7.1 Setup 1 for details.

#### **Measuring Instruments**

The measuring equipment is listed in the section 3.1 of this test report.

#### **Test Result**

The detailed test data see: Appendix.

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#### 4.5 Emission Bandwidth

#### Limits

None, for reporting purposes only.

#### **Test Procedure**

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.C.1.

#### **Test Settings**

- 1. Set to the maximum power setting and enable the EUT transmit continuously.
- 2. The transmitter output is connected to a spectrum analyzer:
- 3. RBW = 1% 5%(99%BW)
- 4. VBW = 3 times the RBW
- 5. Sweep = Auto
- 6. Detector = Peak
- 7. Trace = Max hold
- 8. The trace was allowed to stabilize
- 9. Measure and record the results in the test report.

#### **Test Notes**

The signal analyzers' automatic bandwidth measurement capability of the spectrum analyzer was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X= 26. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.

#### **Test Setup**

Refer to section 2.7.1 Setup 2 for details.

#### **Measuring Instruments**

The measuring equipment is listed in the section 3.1 of this test report.

#### **Test Result**

The detailed test data see: Appendix.

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### 4.6 Minimum Emission Bandwidth

#### Limits

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.

#### **Test Procedure**

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.C.2.

#### **Test Settings**

- 1. Set to the maximum power setting and enable the EUT transmit continuously.
- 2. The transmitter output is connected to a spectrum analyzer:
- 3. RBW = 100kHz(DTS)
- 4. VBW = 3 times the RBW
- 5. Sweep = Auto
- 6. Detector = Peak
- 7. Trace = Max hold
- 8. The trace was allowed to stabilize
- 9. Measure and record the results in the test report.

#### **Test Notes**

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.

#### **Test Setup**

Refer to section 2.7.1- Setup 2 for details.

#### **Measuring Instruments**

The measuring equipment is listed in the section 3.1 of this test report.

#### **Test Result**

The detailed test data see: Appendix.

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### 4.7 Occupied Bandwidth

#### Limits

None, for reporting purposes only.

#### **Test Procedure**

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.D.

#### **Test Settings**

- 1. Set to the maximum power setting and enable the EUT transmit continuously.
- 2. The transmitter output is connected to a spectrum analyzer:
- 3. RBW = 1% 5%(99%BW)
- 4. VBW = 3 times the RBW
- 5. Sweep = Auto
- 6. Detector = Peak
- 7. Trace = Max hold
- 8. The trace was allowed to stabilize
- 9. Measure and record the results in the test report.

#### **Test Setup**

Refer to section 2.7.1- Setup 2 for details.

#### **Measuring Instruments**

The measuring equipment is listed in the section 3.1 of this test report.

#### **Test Result**

The detailed test data see: Appendix.

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### 4.8 Maximum Power Spectral Density

#### **Limits**

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

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1-megahertz band.

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

#### **Test Procedure**

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.F

#### **Test Settings**

- 1. Set to the maximum power setting and enable the EUT transmit continuously
- 2. The transmitter output is connected to a spectrum analyzer
- 3. RBW = 1MHz (for 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz)
- 4. RBW = 500kHz (for 5.725-5.85 GHz)
- 5. VBW ≥ 3 times RBW
- 6. Sweep = Auto
- 7. Detector = Peak
- 8. Trace = Max hold
- 9. The trace was allowed to stabilize
- 10. Measure and record the results in the test report.

#### **Test Setup**

Refer to section 2.7.1- Setup 2 for details.

#### **Measuring Instruments**

The measuring equipment is listed in the section 3.1 of this test report.

#### **Test Result**

The detailed test data see: Appendix.

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#### 4.9 Unwanted Emissions

#### Limits

Spurious emissions are permitted in an of the frequency bands:

MHz	MHz	MHz	MHz	GHz	GHz
0.090 - 0.110	12.29 - 12.293	149.9 - 150.05	1660 - 1710	4.5 - 5.15	14.47 - 14.5
0.495 - 0.505	12.51975 - 1252025	156.52475 - 156.52525	1718.8 - 1722.2	5.35 - 5.46	15.35 - 16.2
2.1735 - 2.1905	12.5767 - 12.57725	156.7 - 156.9	2200 - 2300	7.25 - 7.75	17.7 - 21.4
4.125 - 128	13.36 - 13.41	162.0125 - 167.17	2310 - 2390	8.025 - 8.5	22.01 - 23.12
4.17725 - 4.17775	16.42 - 16.423	167.72 - 173.2	2483.5 - 2500	9.0 - 9.2	23.6 - 24.0
4.20725 - 4.20775	16.69475 - 16.69525	240 - 285	2655 - 2900	9.3 - 9.5	31.2 - 31.8
6.215 - 6.218	1680425 - 1680475	322 - 335.4	3260 - 3267	10.6 - 12.7	36.43 - 36.5
6.26775 - 6.26825	25.5 - 25.67	399.9 - 410	3332 - 3339	13.25 - 13.4	
6.31175 - 6.31225	37.5 - 38.25	608 - 614	3345.8 - 3358		
8.291 - 8.294	73 - 74.6	960 - 1240	3600 - 4400		
8.362 - 8.366	74.8 - 75.2	1300 - 1427			
8.37625 - 8.38675	108 - 121.94	1435 - 1626.5			
8.41425 - 8.41475	123 - 138	1645.5 - 1646.5			

Radiated disturbance of an intentional radiator:

Frequency	Field strength (µV/m)	Limit (dBµV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	74.0	Peak	3
Above IGHZ	500	54.0	Average	ა 

Un-restricted band emissions above 1GHz limit:

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.

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.

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.

For transmitters operating solely in the 5.725-5.850 GHz band:

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.

#### **Test Procedure**

ANSI C63.10:2020 Section 6.4 & 6.5 & 6.6.

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.G.3 ~ 6.

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#### **Test Settings**

- For radiated emissions measurements performed at frequencies less than or equal to 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80cm above the reference ground plane.
- 2. For radiated emissions measurements performed at frequencies above 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80cm above the ground plane.
- 3. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1m to 4m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e, field strength or received power), when orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25cm.
- 4. For each suspected emission, the EUT was ranged its worst case and then tune the antenna tower(from 1~4m) and turntable(from 0~360°) find the maximum reading. Preamplifier and a high pass filter are used for the test in order get better signal level comply with the guidelines.
- 5. The simulated base station was set to force the EUT to its maximum transmitting power.
- 6. The emission limits shown in the above table are based on measurements employing a CISPR quasipeak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
- 7. spectrum analyzer setting:

Measurements Below 1000MHz: RBW = 120 kHz; VBW ≥ 300 kHz; Detector = Peak

Measurements Above 1000MHz: RBW = 1 MHz; VBW ≥ 3 MHz; Detector = Peak

Average Measurements Above 1000MHz:

RBW = 1 MHz, VBW ≥ 1/T, with peak detector for average measurements.

8. The field strength is calculated by adding the Antenna Factor, Cable Factor. The basic equation with a sample calculation is as follows:

Level = Reading( $dB\mu V$ ) + AF(dB/m) + Factor(dB):

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier gain(dB)

Margin = Limit( $dB\mu V/m$ ) – Level( $dB\mu V/m$ )

- 9. Repeat above procedures until all frequencies measured was complete.
- 10. Measure and record the results in the test report.

#### **Test Notes**

- 1. Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
- Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 1GHz. the
  disturbance between 9kHz to 30MHz, 30MHz-1GHz and 18GHz to 40GHz was very low. The amplitude of
  spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be
  recorded, so only the harmonics had been displayed.
- 3. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

#### **Test Setup**

Refer to section 2.7.2 for details.

#### **Measuring Instruments**

The measuring equipment is listed in the section 3.1 of this test report.

#### **Test Result**

The detailed test data see: Appendix.

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# 5 Test Setup Photos

The detailed test data see: Appendix-A BTWIFI Setup Photos

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# **Appendix**

### **Emission Bandwidth** Test Result

TestMode	Antenna	Frequency[MHz]	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11a-CDD	Ant6	5180	18.240	5170.920	5189.160		
11a-CDD	Ant7	5180	18.320	5170.960	5189.280		
11a-CDD	Ant6	5200	18.560	5190.680	5209.240		
11a-CDD	Ant7	5200	18.640	5190.760	5209.400		
11a-CDD	Ant6	5240	19.440	5230.040	5249.480		
11a-CDD	Ant7	5240	18.840	5230.480	5249.320		
11a-CDD	Ant6	5260	18.760	5250.560	5269.320		
11a-CDD	Ant7	5260	18.480	5250.600	5269.080		
11a-CDD	Ant6	5300	18.360	5290.880	5309.240		
11a-CDD	Ant7	5300	18.400	5290.840	5309.240		
11a-CDD	Ant6	5320	19.480	5309.840	5329.320		
11a-CDD	Ant7	5320	18.360	5310.800	5329.160		
11a-CDD	Ant6	5500	18.640	5490.600	5509.240		
11a-CDD	Ant7	5500	24.920	5490.480	5515.400		
11a-CDD	Ant6	5600	18.200	5590.920	5609.120		
11a-CDD	Ant7	5600	18.960	5590.480	5609.440		
11a-CDD	Ant6	5720	18.640	5710.560	5729.200		
11a-CDD	Ant7	5720	18.720	5710.560	5729.280		
11a-CDD	Ant6	5720_UNII-2C	14.44	5710.560	5725		
11a-CDD	Ant7	5720_UNII-2C	14.44	5710.560	5725		
11a-CDD	Ant6	5720_UNII-3	4.2	5725	5729.200		
11a-CDD	Ant7	5720 UNII-3	4.28	5725	5729.280		
11a-CDD	Ant6	5745	18.400	5735.760	5754.160		
11a-CDD	Ant7	5745	18.600	5735.720	5754.320		
11a-CDD	Ant6	5785	18.400	5775.720	5794.120		
11a-CDD	Ant7	5785	18.520	5775.760	5794.280		
11a-CDD	Ant6	5825	18.480	5815.760	5834.240		
11a-CDD	Ant7	5825	18.560	5815.640	5834.200		
11n20MIMO	Ant6	5180	19.480	5170.240	5189.720		
11n20MIMO	Ant7	5180	19.520	5170.240	5189.760		
11n20MIMO	Ant6	5200	19.600	5190.240	5209.840		
11n20MIMO	Ant7	5200	19.160	5190.440	5209.600		
11n20MIMO	Ant6	5240	19.400	5230.360	5249.760		
11n20MIMO	Ant7	5240	19.440	5230.360	5249.800		
11n20MIMO	Ant6	5260	19.440	5250.360	5269.800		
11n20MIMO	Ant7	5260	19.440	5250.160	5269.600		
11n20MIMO	Ant6	5300	19.440	5290.280	5309.720		
11n20MIMO	Ant7	5300	19.440	5290.280	5309.720		
11n20MIMO	Ant6	5320	19.560	5310.240	5329.800		
11n20MIMO	Ant7	5320	19.520	5310.120	5329.640		
11n20MIMO	Ant6	5500	19.800	5490.080	5509.880		
11n20MIMO	Ant7	5500	19.240	5490.360	5509.600		
11n20MIMO	Ant6	5600	19.320	5590.320	5609.640		
11n20MIMO	Ant7	5600	19.320	5590.320	5609.640		
11n20MIMO	Ant6	5720	19.400	5710.280	5729.680		
11n20MIMO	Ant7	5720	19.520	5710.200	5729.720		
11n20MIMO	Ant6	5720 UNII-2C	14.72	5710.280	5725		
11n20MIMO	Ant7	5720_UNII-2C	14.72	5710.200	5725		
11n20MIMO	Ant6	5720_0NII-20	4.68	5725	5729.680		
11n20MIMO	Ant7	5720_UNII-3	4.72	5725	5729.000		1
11n20MIMO							
	Ant6	5745 5745	19.360 19.840	5735.280 5735.160	5754.640 5755.000		
11n20MIMO	Ant7			5735.160			
11n20MIMO	Ant6	5785 5785	19.400	5775.320	5794.720		
11n20MIMO	Ant7	5785	19.400	5775.320	5794.720		
11n20MIMO	Ant6	5825	19.400	5815.360	5834.760		
11n20MIMO	Ant7	5825	20.080	5814.880	5834.960		





	11n40MIMO						 
		Ant7					 
		Ant7					 
	11n40MIMO	Ant6					 
	11n40MIMO	Ant7	5270	39.760			 
	11n40MIMO	Ant6	5310	39.920	5290.000	5329.920	 
	11n40MIMO	Ant7	5310	39.840	5290.080	5329.920	 
	11n40MIMO	Ant6	5510	39.680	5490.240	5529.920	 
	11n40MIMO	Ant7	5510	39.760	5490.080	5529.840	 
	11n40MIMO	Ant6	5590	39.840	5570.160	5610.000	 
	11n40MIMO	Ant7	5590	39.760	5570.080	5609.840	 
11140MIMO	11n40MIMO	Ant6	5710	40.080	5689.920	5730.000	 
11140MIMO	11n40MIMO	Ant7	5710	39.760	5690.000	5729.760	 
	11n40MIMO	Ant6	5710 UNII-2C	35.08	5689.920	5725	 
	11n40MIMO	Ant7	5710 UNII-2C	35	5690.000	5725	 
1114dOMIMO	11n40MIMO	Ant6	5710 UNII-3	5	5725	5730.000	 
1114dOMIMO				4.76			 
11140MIMO							 
1114d0MIMO							 
111ac80MIMO							
11ac80MIMO							+
11ac80MIMO							
11ac80MIMO							
11ac80MIMO							
11ac80MIMO							
11ac80MIMO   Ant7   5610   79.840   5569.840   5649.680         11ac80MIMO   Ant6   5690   80.480   5649.840   5703.320         11ac80MIMO   Ant6   5690   VNII-2C   75.16   5649.840   5725       11ac80MIMO   Ant6   5690   UNII-2C   75.16   5649.840   5725       11ac80MIMO   Ant6   5690   UNII-3   5.32   5725   5730.320         11ac80MIMO   Ant6   5690   UNII-3   5.32   5725   5730.320         11ac80MIMO   Ant6   5690   UNII-3   5.32   5725   5730.320         11ac80MIMO   Ant6   5775   80.480   5734.520   5815.000         11ac80MIMO   Ant6   5775   81.760   5733.560   5815.320         11ac80MIMO   Ant7   5775   81.760   5733.560   5815.320         11ac160MIMO   Ant6   5250   163.520   5168.400   5331.920         11ac160MIMO   Ant6   5250   UNII-1   81.6   5168.400   5250         11ac160MIMO   Ant6   5250   UNII-1   81.6   5168.400   5250         11ac160MIMO   Ant6   5250   UNII-1   82.24   5167.760   5331.920         11ac160MIMO   Ant7   5250   UNII-1   82.24   5167.760   5331.920         11ac160MIMO   Ant7   5250   UNII-2   81.92   5250   5331.920         11ac160MIMO   Ant7   5250   UNII-2   81.92   5250   5331.920         11ac160MIMO   Ant7   5570   163.200   5488.720   5651.920         11ac160MIMO   Ant6   5180   20.600   5169.680   5190.280         11ax20MIMO   Ant6   5200   20.400   5189.720   5210.120         11ax20MIMO   Ant6   5200   20.400   5189.840   5210.280         11ax20MIMO   Ant6   5240   20.560   5229.720   5250.280         11ax20MIMO   Ant6   5260   20.440   5189.840   5210.280         11ax20MIMO   Ant6   5260   20.440   549.840   5210.280         11ax20MIMO   Ant6   5260   20.440   529.840   5210.280           11ax20MIMO   Ant6   5300   20.880   5229.720   5250.880							
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11ac160MIMO         Ant6         5570         164.160         5488.080         5652.240             11ax20MIMO         Ant6         5180         20.600         5169.680         5190.280             11ax20MIMO         Ant7         5180         20.600         5169.920         5190.520             11ax20MIMO         Ant6         5200         20.400         5189.720         5210.120             11ax20MIMO         Ant6         5200         20.440         5189.840         5210.280             11ax20MIMO         Ant6         5240         20.560         5229.720         5250.280             11ax20MIMO         Ant7         5240         20.240         5229.840         5250.080             11ax20MIMO         Ant6         5260         20.560         5249.840         5270.400             11ax20MIMO         Ant6         5300         20.280         5289.800         5310.080             11ax20MIMO         Ant6         5320         20.440         5289.800         5310.280							
11ax20MIMO         Ant6         5180         20.600         5169.680         5190.280             11ax20MIMO         Ant7         5180         20.600         5169.920         5190.520             11ax20MIMO         Ant6         5200         20.400         5189.720         5210.120             11ax20MIMO         Ant6         5200         20.440         5189.840         5210.280             11ax20MIMO         Ant6         5240         20.560         5229.720         5250.280             11ax20MIMO         Ant6         5240         20.560         5229.840         5250.080             11ax20MIMO         Ant6         5260         20.560         5229.840         5250.080             11ax20MIMO         Ant6         5260         20.560         5249.840         5270.400             11ax20MIMO         Ant6         5300         20.280         5289.800         5310.080             11ax20MIMO         Ant6         5320         20.400         5309.720         5330.120							
11ax20MIMO         Ant7         5180         20.600         5169.920         5190.520 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
11ax20MIMO         Ant6         5200         20.400         5189.720         5210.120            11ax20MIMO         Ant7         5200         20.440         5189.840         5210.280 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>ł</td>							ł
11ax20MIMO         Ant7         5200         20.440         5189.840         5210.280             11ax20MIMO         Ant6         5240         20.560         5229.720         5250.280             11ax20MIMO         Ant7         5240         20.240         5229.840         5250.080             11ax20MIMO         Ant6         5260         20.560         5249.840         5270.400             11ax20MIMO         Ant6         5260         20.440         5249.800         5270.240             11ax20MIMO         Ant6         5300         20.280         5289.800         5310.080             11ax20MIMO         Ant7         5300         20.480         5289.800         5310.280             11ax20MIMO         Ant6         5320         20.400         5309.720         5330.120             11ax20MIMO         Ant7         5320         20.440         5309.840         5310.320             11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320							
11ax20MIMO         Ant6         5240         20.560         5229.720         5250.280             11ax20MIMO         Ant7         5240         20.240         5229.840         5250.080             11ax20MIMO         Ant6         5260         20.560         5249.840         5270.400             11ax20MIMO         Ant7         5260         20.440         5249.800         5270.240             11ax20MIMO         Ant6         5300         20.280         5289.800         5310.080             11ax20MIMO         Ant7         5300         20.480         5289.800         5310.280             11ax20MIMO         Ant6         5320         20.400         5309.720         5330.120             11ax20MIMO         Ant7         5320         20.440         5309.840         5330.280             11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320             11ax20MIMO         Ant6         5600         20.360         5489.880         5510.240							
11ax20MIMO         Ant7         5240         20.240         5229.840         5250.080             11ax20MIMO         Ant6         5260         20.560         5249.840         5270.400             11ax20MIMO         Ant7         5260         20.440         5249.800         5270.240             11ax20MIMO         Ant6         5300         20.280         5289.800         5310.080             11ax20MIMO         Ant7         5300         20.480         5289.800         5310.280             11ax20MIMO         Ant6         5320         20.400         5309.720         5330.120             11ax20MIMO         Ant7         5320         20.440         5309.840         5330.280             11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320             11ax20MIMO         Ant6         5600         20.360         5489.880         5510.240             11ax20MIMO         Ant6         5600         20.400         5589.840         5610.240							
11ax20MIMO         Ant6         5260         20.560         5249.840         5270.400             11ax20MIMO         Ant7         5260         20.440         5249.800         5270.240             11ax20MIMO         Ant6         5300         20.280         5289.800         5310.080             11ax20MIMO         Ant7         5300         20.480         5289.800         5310.280             11ax20MIMO         Ant6         5320         20.400         5309.720         5330.120             11ax20MIMO         Ant7         5320         20.440         5309.840         5330.280             11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320             11ax20MIMO         Ant7         5500         20.360         5489.880         5510.240             11ax20MIMO         Ant6         5600         20.360         5589.840         5610.240             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160							
11ax20MIMO         Ant7         5260         20.440         5249.800         5270.240             11ax20MIMO         Ant6         5300         20.280         5289.800         5310.080             11ax20MIMO         Ant7         5300         20.480         5289.800         5310.280             11ax20MIMO         Ant6         5320         20.400         5309.720         5330.120             11ax20MIMO         Ant7         5320         20.440         5309.840         5330.280             11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320             11ax20MIMO         Ant7         5500         20.360         5489.880         5510.240             11ax20MIMO         Ant6         5600         20.360         5589.840         5610.200             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725							
11ax20MIMO         Ant6         5300         20.280         5289.800         5310.080             11ax20MIMO         Ant7         5300         20.480         5289.800         5310.280             11ax20MIMO         Ant6         5320         20.400         5309.720         5330.120             11ax20MIMO         Ant7         5320         20.440         5309.840         5330.280             11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320             11ax20MIMO         Ant7         5500         20.360         5489.880         5510.240             11ax20MIMO         Ant6         5600         20.360         5589.840         5610.200             11ax20MIMO         Ant7         5600         20.400         5589.840         5610.240             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725							
11ax20MIMO         Ant7         5300         20.480         5289.800         5310.280             11ax20MIMO         Ant6         5320         20.400         5309.720         5330.120             11ax20MIMO         Ant7         5320         20.440         5309.840         5330.280             11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320             11ax20MIMO         Ant7         5500         20.360         5489.880         5510.240             11ax20MIMO         Ant6         5600         20.360         5589.840         5610.200             11ax20MIMO         Ant7         5600         20.400         5589.840         5610.240             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							
11ax20MIMO         Ant6         5320         20.400         5309.720         5330.120             11ax20MIMO         Ant7         5320         20.440         5309.840         5330.280             11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320             11ax20MIMO         Ant7         5500         20.360         5489.880         5510.240             11ax20MIMO         Ant6         5600         20.360         5589.840         5610.200             11ax20MIMO         Ant7         5600         20.400         5589.840         5610.240             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							
11ax20MIMO         Ant7         5320         20.440         5309.840         5330.280             11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320             11ax20MIMO         Ant7         5500         20.360         5489.880         5510.240             11ax20MIMO         Ant6         5600         20.360         5589.840         5610.200             11ax20MIMO         Ant7         5600         20.400         5589.840         5610.240             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							
11ax20MIMO         Ant6         5500         20.640         5489.680         5510.320             11ax20MIMO         Ant7         5500         20.360         5489.880         5510.240             11ax20MIMO         Ant6         5600         20.360         5589.840         5610.200             11ax20MIMO         Ant7         5600         20.400         5589.840         5610.240             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant7         5720         20.280         5709.800         5730.080             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							
11ax20MIMO         Ant7         5500         20.360         5489.880         5510.240             11ax20MIMO         Ant6         5600         20.360         5589.840         5610.200             11ax20MIMO         Ant7         5600         20.400         5589.840         5610.240             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant7         5720         20.280         5709.800         5730.080             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							
11ax20MIMO         Ant6         5600         20.360         5589.840         5610.200             11ax20MIMO         Ant7         5600         20.400         5589.840         5610.240             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant7         5720         20.280         5709.800         5730.080             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							
11ax20MIMO         Ant7         5600         20.400         5589.840         5610.240             11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant7         5720         20.280         5709.800         5730.080             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							
11ax20MIMO         Ant6         5720         20.400         5709.760         5730.160             11ax20MIMO         Ant7         5720         20.280         5709.800         5730.080             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							
11ax20MIMO         Ant7         5720         20.280         5709.800         5730.080             11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							 
11ax20MIMO         Ant6         5720_UNII-2C         15.24         5709.760         5725             11ax20MIMO         Ant7         5720_UNII-2C         15.2         5709.800         5725							 
11ax20MIMO Ant7 5720_UNII-2C 15.2 5709.800 5725							 
11ax20MIMO   Ant6   5720_UNII-3   5.16   5725   5730.160			_				 
	11ax20MIMO	Ant6	5720_UNII-3	5.16	5725	5730.160	 





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11ax20MIMO	Ant7	5720_UNII-3	5.08	5725	5730.080		
11ax20MIMO	Ant6	5745	20.520	5734.600	5755.120		
11ax20MIMO	Ant7	5745	20.360	5734.840	5755.200		
11ax20MIMO	Ant6	5785	20.280	5774.800	5795.080		
11ax20MIMO	Ant7	5785	20.400	5774.880	5795.280		
11ax20MIMO	Ant6	5825	20.320	5814.880	5835.200		
11ax20MIMO	Ant7	5825	20.440	5814.920	5835.360		
11ax40MIMO	Ant6	5190	39.600	5170.320	5209.920		
11ax40MIMO	Ant7	5190	39.680	5170.160	5209.840		
11ax40MIMO	Ant6	5230	40.000	5209.920	5249.920		
11ax40MIMO	Ant7	5230	39.760	5210.080	5249.840		
11ax40MIMO	Ant6	5270	39.680	5250.160	5289.840		
11ax40MIMO	Ant7	5270	40.080	5250.000	5290.080		
11ax40MIMO	Ant6	5310	40.000	5290.000	5330.000		
11ax40MIMO	Ant7	5310	39.840	5290.080	5329.920		
11ax40MIMO	Ant6	5510	39.760	5490.160	5529.920		
11ax40MIMO	Ant7	5510	39.920	5490.160	5530.080		
11ax40MIMO	Ant6	5590	40.320	5569.600	5609.920		
11ax40MIMO	Ant7	5590	39.920	5570.000	5609.920		
11ax40MIMO	Ant6	5710	39.840	5690.080	5729.920		
11ax40MIMO	Ant7	5710	39.760	5690.080	5729.840		
11ax40MIMO	Ant6	5710 UNII-2C	34.92	5690.080	5725		
11ax40MIMO	Ant7	5710_UNII-2C	34.92	5690.080	5725	1	
11ax40MIMO	Ant6	5710_UNII-3	4.92	5725	5729.920		
					5729.920		
11ax40MIMO	Ant7	5710_UNII-3	4.84	5725			
11ax40MIMO	Ant6	5755	39.680	5735.160	5774.840		
11ax40MIMO	Ant7	5755	39.920	5735.080	5775.000		
11ax40MIMO	Ant6	5795	39.920	5775.080	5815.000		
11ax40MIMO	Ant7	5795	39.600	5775.320	5814.920		
11ax80MIMO	Ant6	5210	81.120	5169.680	5250.800		
11ax80MIMO	Ant7	5210	80.640	5170.000	5250.640		
11ax80MIMO	Ant6	5290	80.960	5250.000	5330.960		
11ax80MIMO	Ant7	5290	81.120	5249.840	5330.960		
11ax80MIMO	Ant6	5530	80.480	5490.000	5570.480		
11ax80MIMO	Ant7	5530	81.760	5489.040	5570.800		
11ax80MIMO	Ant6	5610	80.800	5569.680	5650.480		
11ax80MIMO	Ant7	5610	80.640	5569.840	5650.480		
11ax80MIMO	Ant6	5690	80.800	5649.680	5730.480		
11ax80MIMO	Ant7	5690	81.120	5649.680	5730.800		
11ax80MIMO	Ant6	5690_UNII-2C	75.32	5649.680	5725		
11ax80MIMO	Ant7	5690_UNII-2C	75.32	5649.680	5725		
11ax80MIMO	Ant6	5690_UNII-3	5.48	5725	5730.480		
11ax80MIMO	Ant7	5690_UNII-3	5.8	5725	5730.800		
11ax80MIMO	Ant6	5775	80.960	5734.520	5815.480		
11ax80MIMO	Ant7	5775	80.480	5734.680	5815.160		
11ax160MIMO	Ant6	5250	163.200	5168.720	5331.920		-
11ax160MIMO	Ant7	5250	164.160	5168.400	5332.560		
11ax160MIMO	Ant6	5250_UNII-1	81.28	5168.720	5250		
11ax160MIMO	Ant7	5250 UNII-1	81.6	5168.400	5250		
11ax160MIMO	Ant6	5250 UNII-2A	81.92	5250	5331.920		
11ax160MIMO	Ant7	5250 UNII-2A	82.56	5250	5332.560		
11ax160MIMO	Ant6	5570	164.480	5488.080	5652.560		
11ax160MIMO	Ant7	5570	163.520	5488.720	5652.240		
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### **Test Graphs**

