

TEST REPORT

Applicant: Quectel Wireless Solutions Co., Ltd.
EUT Description: SBC(Single-Board Computers)
Model: QSM560DR-NA
Brand: QUECTEL
FCC ID: XMR2024SG560DNA
Standards: FCC 47 CFR Part 15 Subpart E
Date of Receipt: 2025/10/22
Date of Test: 2025/10/22 to 2026/03/06
Date of Issue: 2026/03/17

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.



A handwritten signature in black ink, appearing to read "Jim Huang".

Jim Huang
Approved By:

A handwritten signature in black ink, appearing to read "Carey Chen".

Carey Chen
Reviewed By:

Revision History

Rev.	Issue Date	Description	Revised by
01	2026/03/17	Original	Carey Chen

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	Reference report SZCR240100038405
4.5	§KDB 789033 II.C.1	Emission Bandwidth	U-NII-1 U-NII-2A U-NII-2C	
4.6	§15.407(e)	Minimum Emission Bandwidth	U-NII-3	
4.7	§KDB 789033 II.D	Occupied Bandwidth	U-NII-1 U-NII-2A U-NII-2C U-NII-3	
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	
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+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Remark: Pass is EUT meets standard requirements.				

Remark:

In this report the worst data of AC Power Line Conducted Emission and Unwanted Emissions were spot checked, and the other data please refer to the previous report with report number SZCR240100038405 (FCC ID: XMR2024SG560DNA) issued by SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch.

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1 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 3rd 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.

Test Firm Registration Number: 684095

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:	Quectel Wireless Solutions Co., Ltd.
Address:	No. 8 Waipojing Road, Sijing Town, Songjiang District, Shanghai 201601, China

1.2.2 Manufacturer

Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address:	No. 8 Waipojing Road, Sijing Town, Songjiang District, Shanghai 201601, China

1.3 Product Information

EUT Description:	SBC(Single-Board Computers)			
Model No.:	QSM560DR-NA			
Brand:	QUECTEL			
Hardware Version:	R1.5			
Software Version:	SG560DNAPAR60A01			
IMEI:	865136060043581			
Modulation Type:	802.11a/n:	OFDM-BPSK, QPSK, 16QAM, 64QAM		
	802.11ac:	OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM		
	802.11ax:	OFDM/OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM		
Smart System:	☐ SISO	802.11a/n/ac/ax	/	
	☒ MIMO	802.11n/ac/ax	(2)TX(2)RX	
	☒ CDD	802.11a	(2)TX(2)RX	
EUT Function	☒ Client	☐ Outdoor AP	☐ Indoor AP ☐ Fixed P2P AP	
DFS Function:	☒ Master ☐ Slave with radar detection ☐ Slave without radar detection			
Frequency Range:	U-NII-1:	5150 ~ 5250MHz		
	U-NII-2A:	5250 ~ 5350MHz		
	U-NII-2C:	5470 ~ 5725MHz		
	U-NII-3:	5725 ~ 5850MHz		
Channel Frequency:	20M BWch.:	U-NII-1:	5180 ~ 5240MHz	4 Channels
		U-NII-2A:	5260 ~ 5320MHz	4 Channels
		U-NII-2C:	5500 ~ 5700MHz	11 Channels
		U-NII-3:	5745 ~ 5825MHz	5 Channels
		Straddle Channel:	5720MHz	1 Channel
	40M BWch.:	U-NII-1:	5190 ~ 5230MHz	2 Channels
		U-NII-2A:	5270 ~ 5310MHz	2 Channels
		U-NII-2C:	5510 ~ 5670MHz	5 Channels
		U-NII-3:	5755 ~ 5795MHz	2 Channels
		Straddle Channel:	5710MHz	1 Channel
	80M BWch.:	U-NII-1:	5210MHz	1 Channel
		U-NII-2A:	5290MHz	1 Channel
		U-NII-2C:	5530 ~ 5610MHz	2 Channels
		U-NII-3:	5775MHz	1 Channel
		Straddle Channel:	5690MHz	1 Channel
	160M BWch.:	U-NII-2A:	5250MHz	1 Channel
		U-NII-2C:	5570MHz	1 Channel
Antenna Type:	☒ External, ☐ Integrated			
Antenna Gain:	Frequency Range	Ant1 (dBi)	Ant2 (dBi)	
	U-NII-1:	-0.7	-0.7	

	U-NII-2A:	-0.7	-0.7
	U-NII-2C:	-0.7	-0.7
	U-NII-3:	-0.7	-0.7
Remark: The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description.			

2 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	/	
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			
802.11a/n20 /ac20/ax20		The Lowest channel (CH36)		5180MHz			
		The Middle channel (CH40)		5200MHz			
		The Highest channel (CH48)		5240MHz			
Modulation Type		Test Channel		Test Frequency			
802.11n40 /ac40/ax40		The Lowest channel (CH38)		5190MHz			
		The Highest channel (CH46)		5230MHz			
Modulation Type		Test Channel		Test Frequency			
802.11 ac80/ax80		The Middle channel (CH42)		5210MHz			

Frequency Channels for U-NII-2A							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
50	5250MHz	54	5270MHz	58	5290MHz	62	5310MHz
52	5260MHz	56	5280MHz	60	5300MHz	64	5320MHz
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				
802.11a/n20 /ac20/ax20	The Lowest channel (CH52)		5260MHz				
	The Middle channel (CH60)		5300MHz				
	The Highest channel (CH64)		5320MHz				
Modulation Type	Test Channel		Test Frequency				
802.11n40 /ac40/ax40	The Lowest channel (CH54)		5270MHz				
	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				

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	/	

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
802.11a/n20 /ac20/ax20	The Lowest channel (CH100)	5500MHz
	The Middle channel (CH116)	5580MHz
	The Highest channel (CH140)	5700MHz
Modulation Type	Test Channel	Test Frequency
802.11n40 /ac40/ax40	The Lowest channel (CH102)	5510MHz
	The Middle channel (CH118)	5590MHz
	The Highest channel (CH134)	5670MHz
Modulation Type	Test Channel	Test Frequency
802.11 ac80/ax80	The Lowest channel (CH106)	5530MHz
	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
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
802.11a/n20 /ac20/ax20	The Lowest channel (CH149)	5745MHz
	The Middle channel (CH157)	5785MHz
	The Highest channel (CH165)	5825MHz
Modulation Type	Test Channel	Test Frequency
802.11n40 /ac40/ax40	The Lowest channel (CH151)	5755MHz
	The Highest channel (CH159)	5795MHz
Modulation Type	Test Channel	Test Frequency
802.11 ac80/ax80	The Middle channel (CH155)	5775MHz

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

2.2 Worst-case configuration and Mode

Modulation Type	SISO - Data Rate	CDD/MIMO(2)TX(2)RX Data Rate
802.11a	N/A	12 Mbps
802.11n20	N/A	MCS0 (13 Mbps)
802.11n40	N/A	MCS0 (27 Mbps)
802.11ac20	N/A	MCS0 (13 Mbps)
802.11ac40	N/A	MCS0 (27 Mbps)
802.11ac80	N/A	MCS0 (58.5 Mbps)
802.11ac160	N/A	MCS0 (117 Mbps)
802.11ax20	N/A	MCS0 (17.2 Mbps)
802.11ax40	N/A	MCS0 (34.4 Mbps)
802.11ax80	N/A	MCS0 (72.1 Mbps)
802.11ax160	N/A	MCS0 (144.1 Mbps)
Transmitting mode:	Keep the EUT was programmed to be in continuously transmitting mode.	
Normal Link:	Keep the EUT operation to normal function.	

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 12V
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.

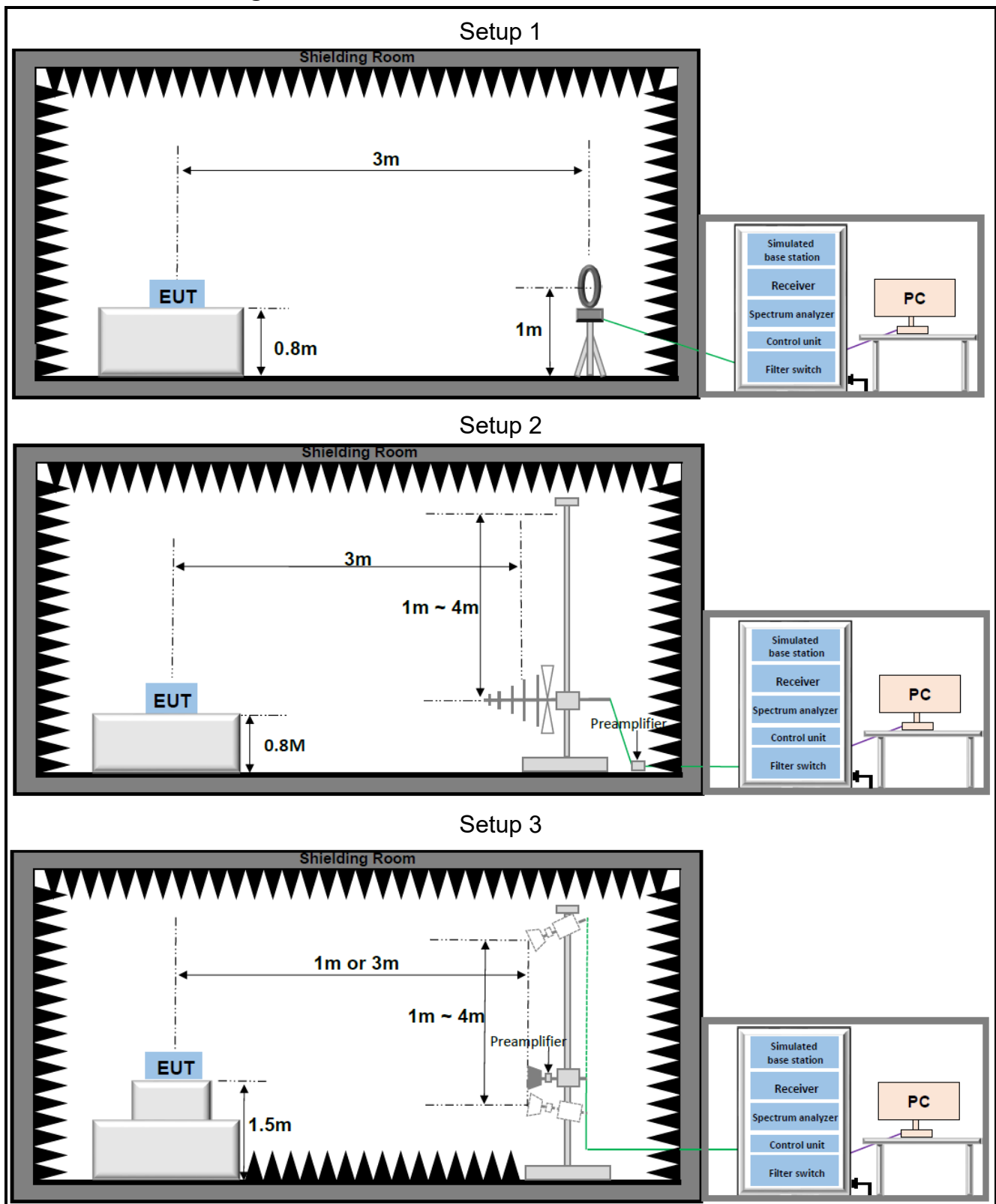
Offset = RF cable loss + attenuator factor.

2.6 Modifications

No modifications were made during testing.

2.7 Test Setup Diagram

2.7.1 Radiated Configuration



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

$$\text{Array Gain} = 10 \log(N_{ANT}/N_{SS}=1) \text{ dB}$$

- For power measurements on IEEE 802.11 devices:

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

$$\text{Array Gain} = 0 \text{ dB (i.e., no array gain) for channel widths } \geq 40 \text{ MHz for any } N_{ANT};$$

$$\text{Array Gain} = 5 \log(N_{ANT}/N_{SS}=1) \text{ dB or } 3 \text{ dB, whichever is less, for 20-MHz channel widths with } N_{ANT} \geq 5.$$

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 $G_1, G_2, \dots, G_N$ dBi

- If transmit signals are correlated, then

$$\text{Directional gain} = 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]}$$

- If all transmit signals are completely uncorrelated, then

$$\text{Directional gain} = 10 \log[(10^{G_1/10} + 10^{G_2/10} + \dots + 10^{G_N/10}) / N_{ANT}] \text{ dBi}$$

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

The EUT supports CDD System.

Transmit signals are completely correlated						
Operation Band	ANT Gain1 (dBi)	ANT Gain2 (dBi)	Directional gain For Power (dBi)	Directional gain For PSD (dBi)	Power Limit Reduction (dBm)	PSD Limit Reduction (dBm)
U-NII-1	-0.7	-0.7	-0.7	2.31	0	0
U-NII-2A	-0.7	-0.7	-0.7	2.31	0	0
U-NII-2C	-0.7	-0.7	-0.7	2.31	0	0
U-NII-3	-0.7	-0.7	-0.7	2.31	0	0

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

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

Conducted Emission					
Description	Manufacturer	Model	Serial No.	Last Cal	Cal Due
EMI Tester Receiver	Rohde & Schwarz	ESR3	103108	2025/05/29	2026/05/28
LISN*	Rohde & Schwarz	ENV 216	102836	2025/01/04	2026/01/03
				2026/01/19	2027/01/18
Test Software	Rohde & Schwarz	ELEKTRA	Version: 4.61	N/A	N/A
*There was no testing between 2026/01/03~2026/01/19.					

3.2 Measurement Uncertainty

Parameter	U _{lab}
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%

4 Test Results

4.1 Antenna Requirement

Standard Applicable:	47 CFR Part 15E 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 Integrated. With Antenna gain is U-NII-1: -0.7dBi(Ant1); -0.7dBi(Ant2); U-NII-2A: -0.7dBi(Ant1); -0.7dBi(Ant2); U-NII-2C: -0.7dBi(Ant1); -0.7dBi(Ant2); U-NII-3: -0.7dBi(Ant1); -0.7dBi(Ant2); Antenna Anti-Replacement Construction: An embedded-in antenna design is used.	

4.2 Frequency Stability

Standard Applicable:	47 CFR Part 15E 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.	

4.3 AC Power Line Conducted Emissions

Limits

Frequency range (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

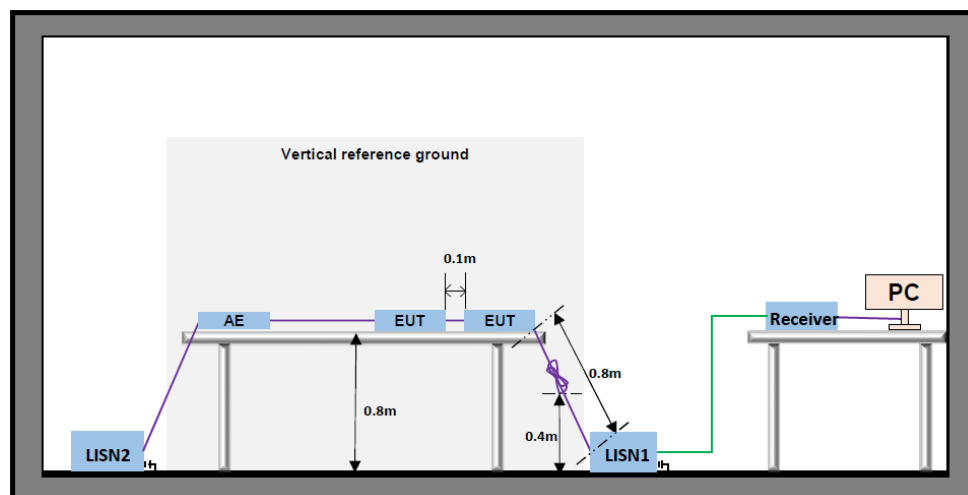
Test Procedure

ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, 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 $50\Omega/50\mu\text{H} + 5\Omega$ 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 hold 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

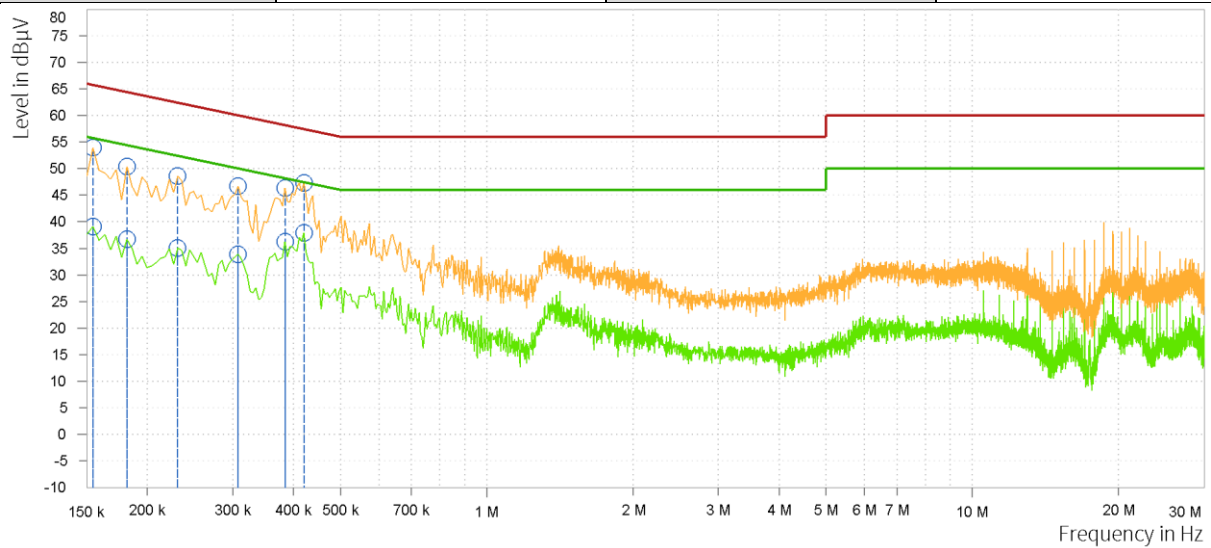


Measuring Instruments

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

Test Result:

Test mode:	5G WIFI		
Test Voltage:	AC 120V / 60Hz	Phase:	Line

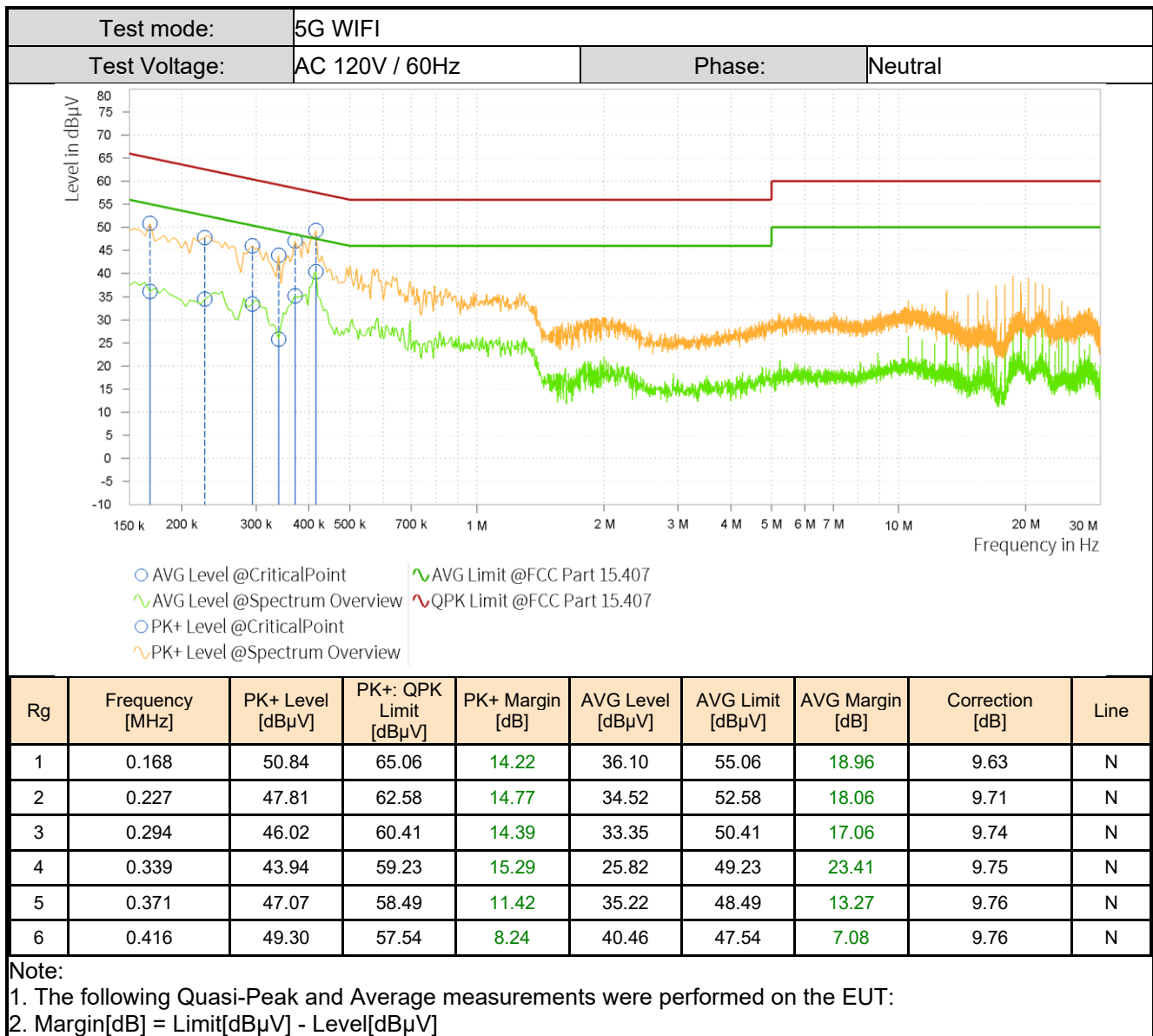


○ AVG Level @CriticalPoint
 ▲ AVG Limit @FCC Part 15.407
 ▲ AVG Level @Spectrum Overview
 ▲ QPK Limit @FCC Part 15.407
 ○ PK+ Level @CriticalPoint
 ▲ PK+ Level @Spectrum Overview

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	0.155	53.91	65.75	11.84	39.11	55.75	16.65	9.55	L1
2	0.182	50.43	64.42	13.99	36.68	54.42	17.74	9.49	L1
3	0.231	48.64	62.41	13.77	35.01	52.41	17.40	9.61	L1
4	0.308	46.74	60.04	13.30	33.90	50.04	16.14	9.70	L1
5	0.384	46.38	58.19	11.82	36.28	48.19	11.91	9.69	L1
6	0.420	47.36	57.45	10.09	37.90	47.45	9.55	9.72	L1

Note:

- The following Quasi-Peak and Average measurements were performed on the EUT:
- $\text{Margin[dB]} = \text{Limit[dB}\mu\text{V]} - \text{Level[dB}\mu\text{V]}$



4.4 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 - 12.52025	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 ($\mu\text{V/m}$)	Limit (dB $\mu\text{V/m}$)	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
		54.0	Average	

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+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 Section 6.4 & 6.5 & 6.6.

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

Test Settings

1. 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 quasi-peak 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(dBμV) + Factor(dB):
Factor = Cable Factor(dB) + AF(dB/m) - Preamplifier gain(dB)
AF = Antenna Factor(dB/m)
Margin = Limit(dBμV/m) – Level(dBμV/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.
2. Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 1GHz. the disturbance between 9kHz to 30MHz 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. These frequencies which near "-" should be ignored because they are Fundamental frequency.

Test Setup

Refer to section 2.7.1 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.**

5 Test Setup Photos

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

Appendix

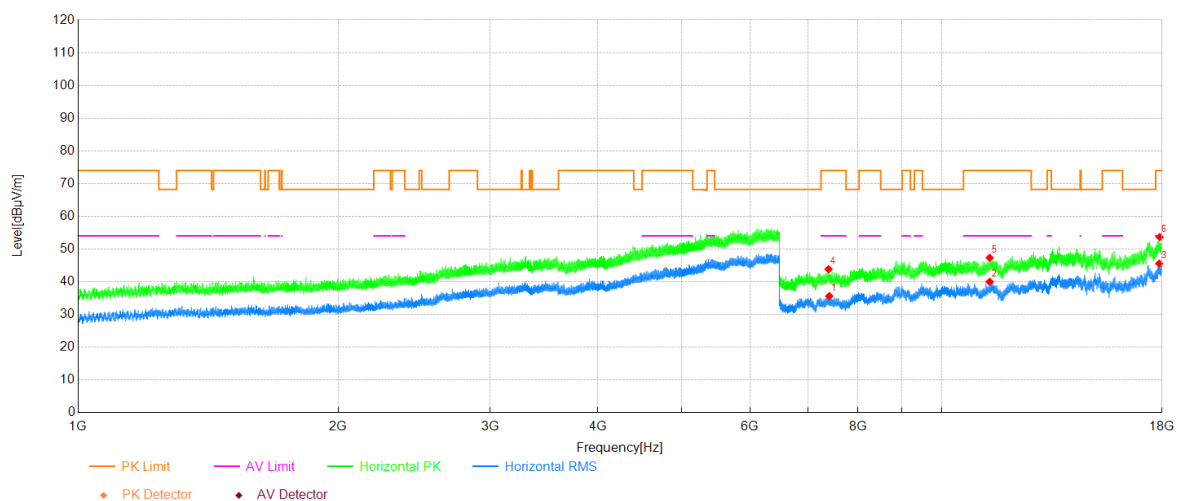
Test for spot check:

Radiated Spurious Emissions

Test Result

Project Information			
Mode:	802.11ax40	Band:	-
Bandwidth	40MHz	Channel	134
SN:	865136060043581	Engineer:	Tian Shuo
Remark:	Power 13		

Test Graph

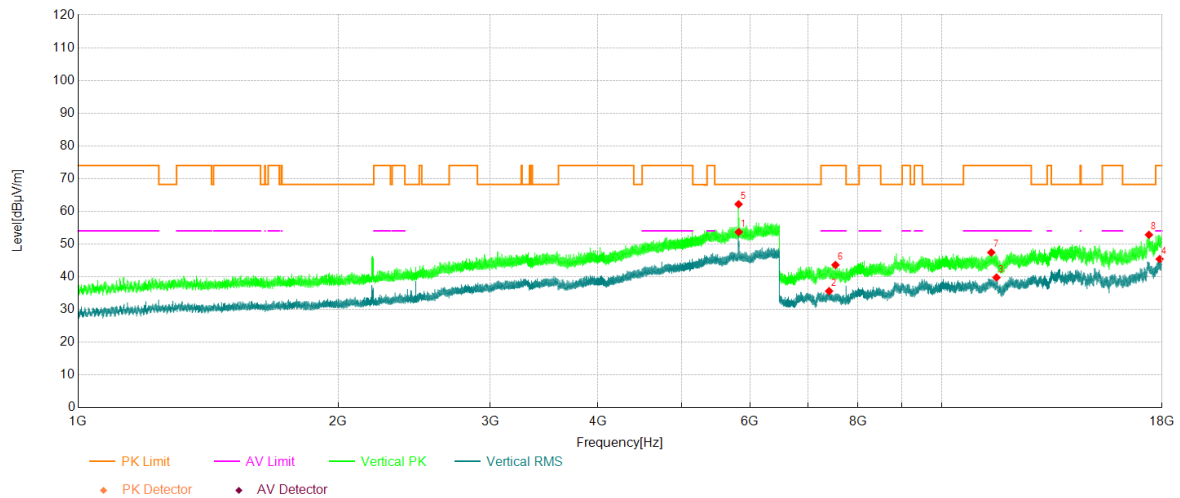


Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Verdict
1	7411.21	36.19	-0.57	35.62	54.00	18.38	Horizontal	PASS
2	11368.88	34.84	5.16	40.00	54.00	14.00	Horizontal	PASS
3	17866.21	31.77	13.78	45.55	54.00	8.45	Horizontal	PASS
4	7397.03	44.17	-0.33	43.84	74.00	30.16	Horizontal	PASS
5	11368.11	42.17	5.16	47.33	74.00	26.67	Horizontal	PASS
6	17888.06	40.17	13.50	53.67	74.00	20.33	Horizontal	PASS

Project Information

Mode:	802.11ax40	Band:	-
Bandwidth	40MHz	Channel	134
SN:	865136060043581	Engineer:	Tian Shuo
Remark:	Power 13		

Test Graph



Data List

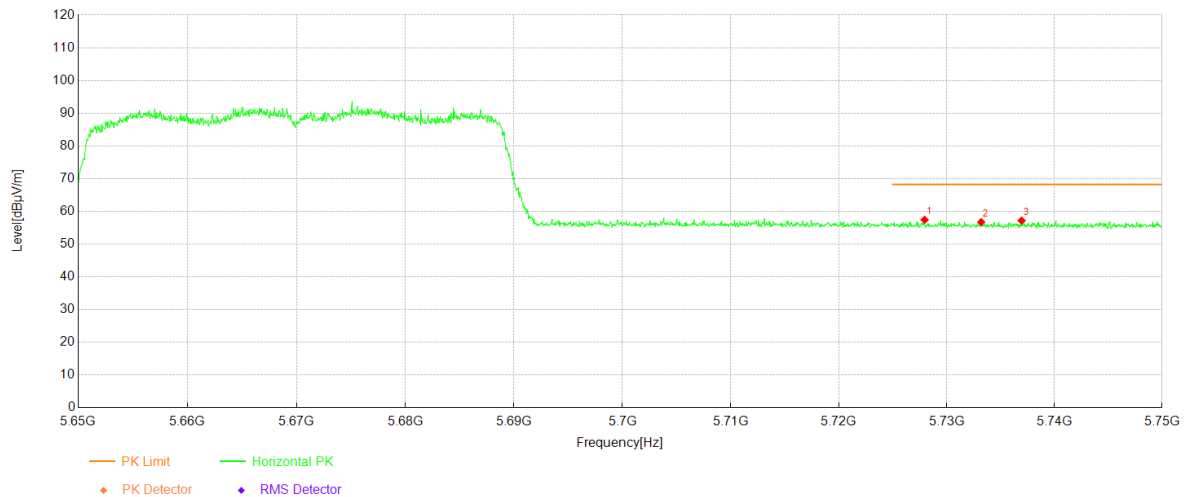
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Verdict
1	5821.09	38.00	15.66	53.66	-	-	Vertical	NA
2	7407.76	36.10	-0.48	35.62	54.00	18.38	Vertical	PASS
3	11576.27	34.44	5.34	39.78	54.00	14.22	Vertical	PASS
4	17886.15	31.88	13.52	45.40	54.00	8.60	Vertical	PASS
5	5819.44	46.51	15.66	62.17	-	-	Vertical	NA
6	7533.88	44.55	-0.94	43.61	74.00	30.39	Vertical	PASS
7	11415.65	42.13	5.29	47.42	74.00	26.58	Vertical	PASS
8	17381.66	40.70	12.13	52.83	68.20	15.37	Vertical	PASS

Radiated Band Edge

Test Result

Project Information			
Mode:	802.11ax40	Band:	-
Bandwidth	40MHz	Channel	134
SN:	865136060043581	Engineer:	Tian Shuo
Remark:	Power 13		

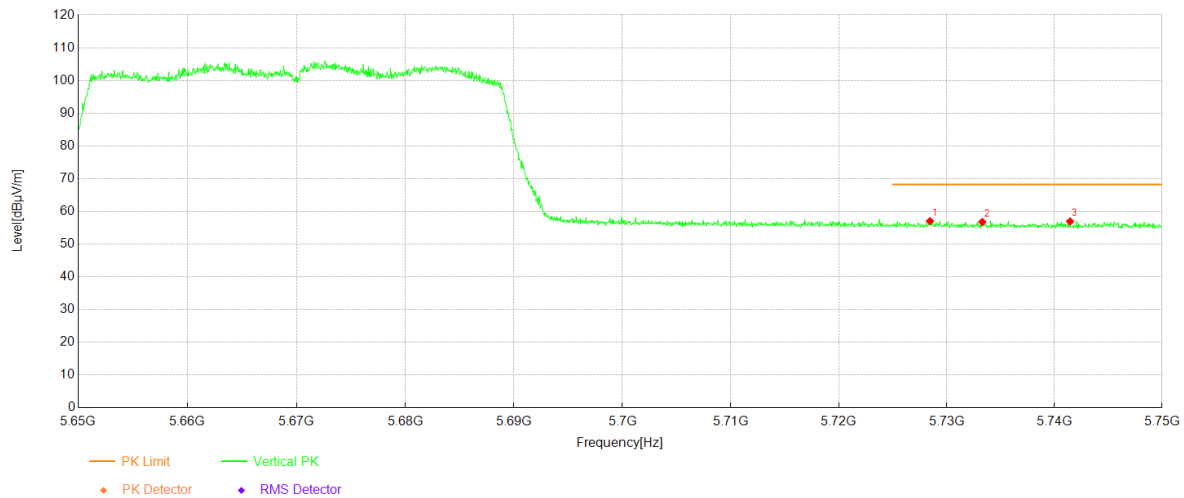
Test Graph



Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Verdict
1	5727.94	44.09	13.32	57.41	68.20	10.79	Horizontal	PASS
2	5733.19	43.47	13.24	56.71	68.20	11.49	Horizontal	PASS
3	5736.94	44.00	13.17	57.17	68.20	11.03	Horizontal	PASS

Project Information			
Mode:	802.11ax40	Band:	-
Bandwidth	40MHz	Channel	134
SN:	865136060043581	Engineer:	Tian Shuo
Remark:	Power 13		

Test Graph



Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Verdict
1	5728.44	43.71	13.31	57.02	68.20	11.18	Vertical	PASS
2	5733.29	43.51	13.23	56.74	68.20	11.46	Vertical	PASS
3	5741.45	43.82	13.10	56.92	68.20	11.28	Vertical	PASS

~The End~