

TEST REPORT

Applicant: Radiolink Electronic Limited

Address of Applicant: 3/F,BLD2,FuGuo industrial park,KaiFeng North Road, MeiLin, Shenzhen, China

Manufacturer/Factory: Radiolink Electronic Limited

Address of Manufacturer/Factory: 3/F,BLD2,FuGuo industrial park,KaiFeng North Road, MeiLin, Shenzhen, China

Equipment Under Test (EUT)

Product Name: Receiver

Model No.: R12DS, R12DSM, R9DS, R6DS, R6DSM, R8EF, R8FM, R8SM, R8XM, R8FGH, R8FG, R7FG, R6FG, R6F, R4F, R4FGM

Trade Mark: 

FCC ID: U2BRL039RECEIVER

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: February 29, 2024

Date of Test: March 01-14, 2024

Date of report issued: March 14, 2024

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



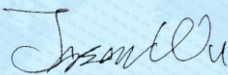
Robinson Luo
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	March 14, 2024	Original

Prepared By:

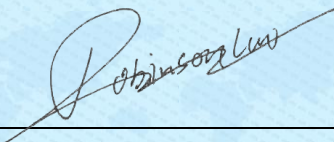


Date:

March 14, 2024

Project Engineer

Check By:



Date:

March 14, 2024

Reviewer

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4 Test Summary

Test Item	Section	Result
Antenna Requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(1)	Pass
20dB Occupied Bandwidth	15.247 (a)(1)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	15.247 (a)(1)(iii)	Pass
Dwell Time	15.247 (a)(1)(iii)	Pass
Radiated Emission	15.205/15.209	Pass
Band Edge	15.247(d)	Pass

Pass: The EUT complies with the essential requirements in the standard.

Remark: Test according to ANSI C63.10:2013 .

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz-30MHz	3.1dB	(1)
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Product Name:	Receiver
Model No.:	R12DS, R12DSM, R9DS, R6DS, R6DSM, R8EF, R8FM, R8SM, R8XM, R8FGH, R8FG, R7FG, R6FG, R6F, R4F, R4FGM
Test Model No.:	R12DS
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is model name for commercial purpose.	
Serial No.:	04031350472R12DS
Test sample(s) ID:	GTSL2024020126-1
Sample(s) Status	Engineer sample
Operation Frequency:	2409MHz~2475MHz
Channel numbers:	34
Modulation method:	FHSS
Modulation technology:	QPSK
Antenna Type:	ANT 1&2: Integral antenna
Antenna gain:	ANT 1&2: 1.5dBiDC
Power supply:	3.6V-12V

Remark:

1. Antenna gain information provided by the customer
2. The relevant information of the sample is provided by the entrusting company, and the laboratory is not responsible for its authenticity.
3. All two antennas transmitters were work in asynchronous status, MIMO mode is not supported .
4. The system works in the frequency range of 2409MHz to 2475MHz. This band has been divided to 34 independent channels. Each radio system uses 34 different channels; the minimum channel separation is $\geq 1.998\text{MHz}$. By using various switch-on times, hopping scheme and channel frequencies, the system can guarantee a jamming free radio transmission. Pre-testing all radio systems, this radio system recorded in the report is the worst mode. The channel list is below.

Operation Frequency each of channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2409	10	2427	19	2445	28	2463
2	2411	11	2429	20	2447	29	2465
3	2413	12	2431	21	2449	30	2467
4	2415	13	2433	22	2451	31	2469
5	2417	14	2435	23	2453	32	2471
6	2419	15	2437	24	2455	33	2473
7	2421	16	2439	25	2457	34	2475
8	2423	17	2441	26	2459		
9	2425	18	2443	27	2461		

The test frequencies are below:

Channel	Frequency
The lowest channel	2409MHz
The middle channel	2443MHz
The Highest channel	2475MHz

5.2 Test mode

Transmitting mode	Keep the EUT in transmitting mode.
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5.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations: ● FCC —Registration No.: 381383 Designation Number: CN5029 Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. ● ISED—Registration No.: 9079A CAB identifier: CN0091 The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of ISED for radio equipment testing. ● NVLAP (LAB CODE:600179-0) Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).
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5.4 Test Location

All other tests were performed at:
Global United Technology Services Co., Ltd. Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102 Tel: 0755-27798480 Fax: 0755-27798960

5.5 Description of Support Units

Manufacturer	Description	Model	Serial Number
GW	DC POWER SUPPLY	GPR-6030D	EF924756

5.6 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

5.8 Additional Instructions

Software (Used for test) from client
Built-in by manufacturer, power set default.

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	June 23, 2021	June 22, 2024
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 14, 2023	April 13, 2024
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 19, 2023	March 18, 2025
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	April 17, 2023	April 16, 2025
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 14, 2023	April 13, 2024
8	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 13, 2023	Nov.12, 2024
9	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 14, 2023	April 13, 2024
10	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 14, 2023	April 13, 2024
11	Horn Antenna (18-26.5GHz)	/	UG-598A/U	GTS664	Oct. 29, 2023	Oct. 28, 2024
12	Horn Antenna (26.5-40GHz)	A.H Systems	SAS-573	GTS665	Oct. 29, 2023	Oct. 28, 2024
13	FSV·Signal Analyzer (10Hz-40GHz)	Keysight	FSV-40-N	GTS666	March 12, 2024	March 11, 2025
14	Amplifier	/	LNA-1000-30S	GTS650	April 14, 2023	April 13, 2024
15	CDNE M2+M3-16A	HCT	30MHz-300MHz	GTS692	Nov. 08, 2023	Nov.07, 2024
16	Wideband Amplifier	/	WDA-01004000-15P35	GTS602	April 14, 2023	April 13, 2024
17	Thermo meter	JINCHUANG	GSP-8A	GTS643	April 19, 2023	April 18, 2024
18	RE cable 1	GTS	N/A	GTS675	July 31. 2023	July 30. 2024
19	RE cable 2	GTS	N/A	GTS676	July 31. 2023	July 30. 2024
20	RE cable 3	GTS	N/A	GTS677	July 31. 2023	July 30. 2024
21	RE cable 4	GTS	N/A	GTS678	July 31. 2023	July 30. 2024
22	RE cable 5	GTS	N/A	GTS679	July 31. 2023	July 30. 2024
23	RE cable 6	GTS	N/A	GTS680	July 31. 2023	July 30. 2024
24	RE cable 7	GTS	N/A	GTS681	July 31. 2023	July 30. 2024
25	RE cable 8	GTS	N/A	GTS682	July 31. 2023	July 30. 2024

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	July 12, 2022	July 11, 2027
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 14, 2023	April 13, 2024
3	LISN	ROHDE & SCHWARZ	ENV216	GTS226	April 14, 2023	April 13, 2024
4	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
6	Thermo meter	JINCHUANG	GSP-8A	GTS642	April 19, 2023	April 18, 2024
7	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	April 14, 2023	April 13, 2024
8	ISN	SCHWARZBECK	NTFM 8158	GTS565	April 14, 2023	April 13, 2024
9	High voltage probe	SCHWARZBECK	TK9420	GTS537	April 14, 2023	April 13, 2024
10	Antenna end assembly	Weinschel	1870A	GTS560	April 14, 2023	April 13, 2024

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 14, 2023	April 13, 2024
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 14, 2023	April 13, 2024
3	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	April 14, 2023	April 13, 2024
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 14, 2023	April 13, 2024
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 14, 2023	April 13, 2024
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 14, 2023	April 13, 2024
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 14, 2023	April 13, 2024
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 14, 2023	April 13, 2024
9	Thermo meter	JINCHUANG	GSP-8A	GTS641	April 19, 2023	April 18, 2024

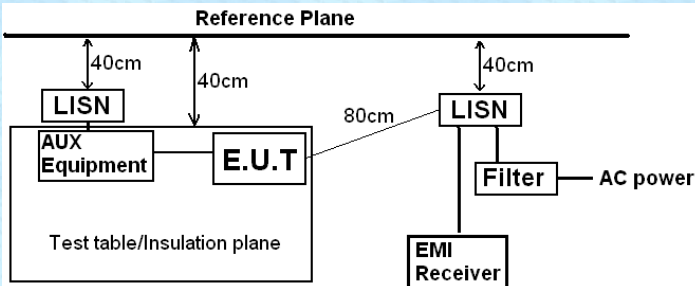
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	KUMAO	SF132	GTS647	April 19, 2023	April 18, 2024

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
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.	
15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
The antenna is coaxial antenna, reference to the appendix II for details.	

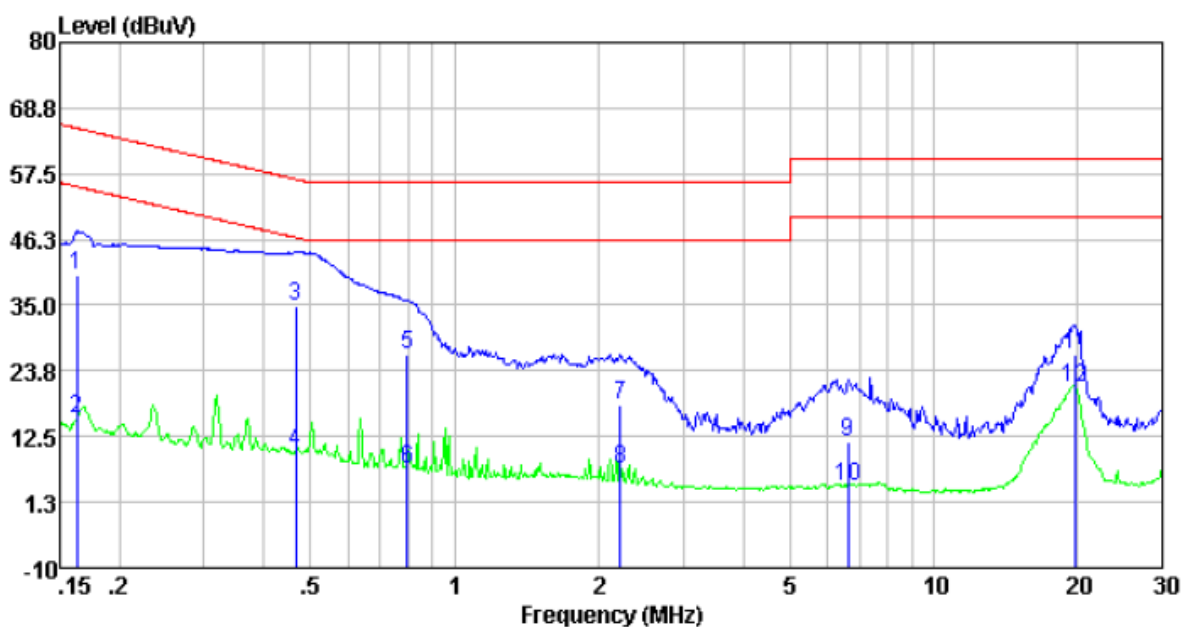
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207						
Test Method:	ANSI C63.10:2013						
Test Frequency Range:	150KHz to 30MHz						
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto						
Limit:	Frequency range (MHz)		Limit (dBuV)				
			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 setup:	Reference Plane  Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m						
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. 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 C63.10:2013 on conducted measurement.						
Test Instruments:	Refer to section 6.0 for details						
Test mode:	Refer to section 5.2 for details						
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar	
Test voltage:	AC 120V, 60Hz						
Test results:	Pass						

Measurement data:

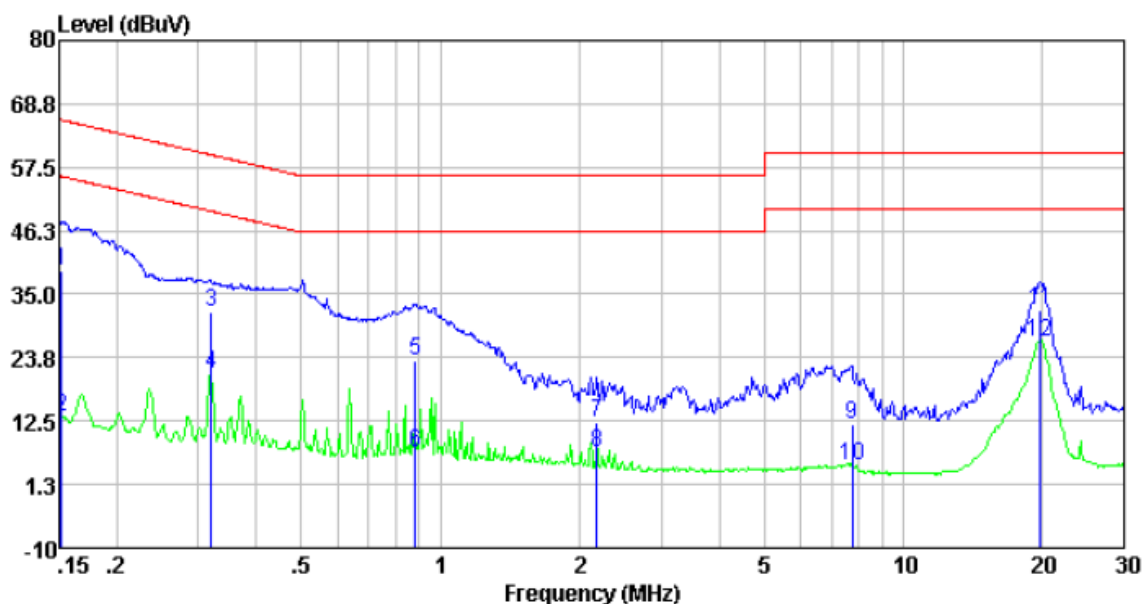
Pre-scan all test modes, found worst case at 2409MHz@Ant 1, and so only show the test result of it.

Line:



Freq	Reading	LISN/ISN	Cable	Level	Limit	Over	Remark
MHz	dBuV	dB	loss	dBuV	dBuV	dB	
0.16	30.72	9.55	0.01	40.28	65.34	-25.06	QP
0.16	5.89	9.55	0.01	15.45	55.34	-39.89	Average
0.47	25.42	9.49	0.01	34.92	56.58	-21.66	QP
0.47	0.56	9.49	0.01	10.06	46.58	-36.52	Average
0.80	16.88	9.50	0.02	26.40	56.00	-29.60	QP
0.80	-2.48	9.50	0.02	7.04	46.00	-38.96	Average
2.21	8.16	9.59	0.05	17.80	56.00	-38.20	QP
2.21	-2.75	9.59	0.05	6.89	46.00	-39.11	Average
6.63	2.26	9.34	0.08	11.68	60.00	-48.32	QP
6.63	-5.32	9.34	0.08	4.10	50.00	-45.90	Average
19.74	16.41	9.98	0.18	26.57	60.00	-33.43	QP
19.74	10.65	9.98	0.18	20.81	50.00	-29.19	Average

Neutral:

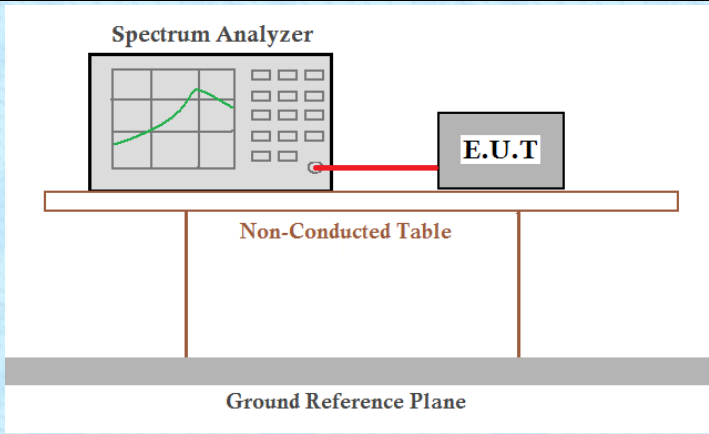


Freq	Reading level	LISN/ISN factor	Cable loss	Level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.15	29.73	9.55	0.01	39.29	65.91	-26.62	QP
0.15	3.56	9.55	0.01	13.12	55.91	-42.79	Average
0.32	22.21	9.56	0.01	31.78	59.71	-27.93	QP
0.32	11.18	9.56	0.01	20.75	49.71	-28.96	Average
0.88	13.79	9.55	0.03	23.37	56.00	-32.63	QP
0.88	-2.61	9.55	0.03	6.97	46.00	-39.03	Average
2.18	2.71	9.55	0.05	12.31	56.00	-43.69	QP
2.18	-2.69	9.55	0.05	6.91	46.00	-39.09	Average
7.77	2.34	9.52	0.09	11.95	60.00	-48.05	QP
7.77	-4.85	9.52	0.09	4.76	50.00	-45.24	Average
19.74	21.97	10.07	0.18	32.22	60.00	-27.78	QP
19.74	16.17	10.07	0.18	26.42	50.00	-23.58	Average

Notes:

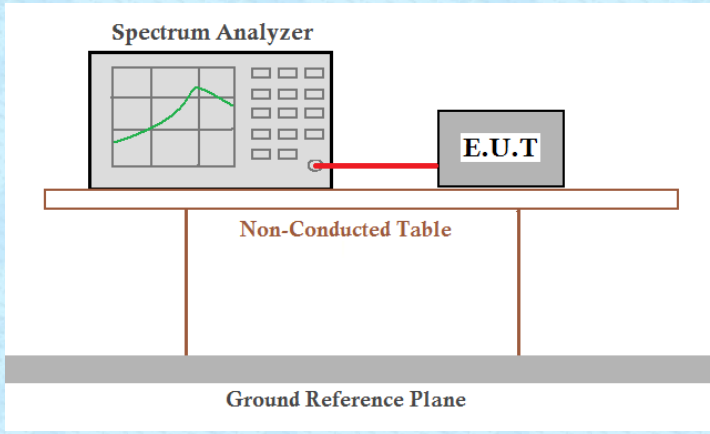
1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss

7.3 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247(a)(1)
Test Method:	ANSI C63.10:2013
Limit:	20.97dBm
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, shown with a green trace on its screen, is connected to an E.U.T. (Equipment Under Test) by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a table labeled 'Non-Conducted Table'. This table is supported by a 'Ground Reference Plane'.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

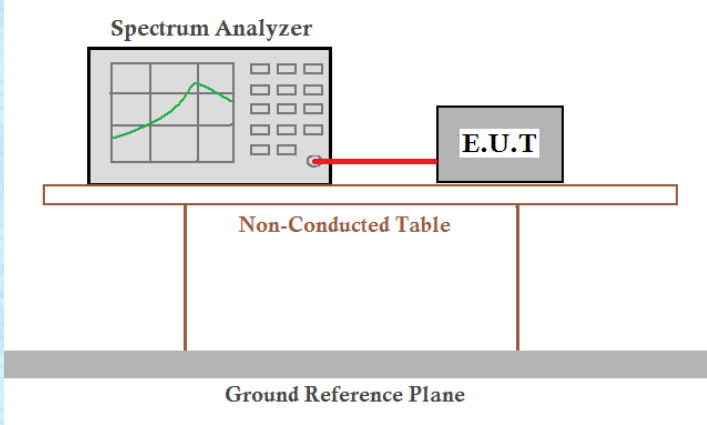
Measurement Data: The detailed test data see Appendix for 2.4G.

7.4 20dB Emission Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Limit:	N/A
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, showing a frequency spectrum on its screen, is connected to an E.U.T. (Equipment Under Test) by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a 'Non-Conducted Table'. This table is supported by a 'Ground Reference Plane'.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

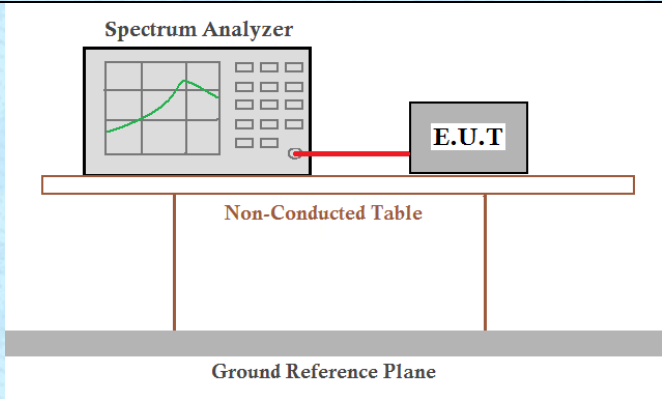
Measurement Data: The detailed test data see Appendix for 2.4G.

7.5 Carrier Frequencies Separation

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=300KHz, VBW=300KHz, detector=Peak
Limit:	0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

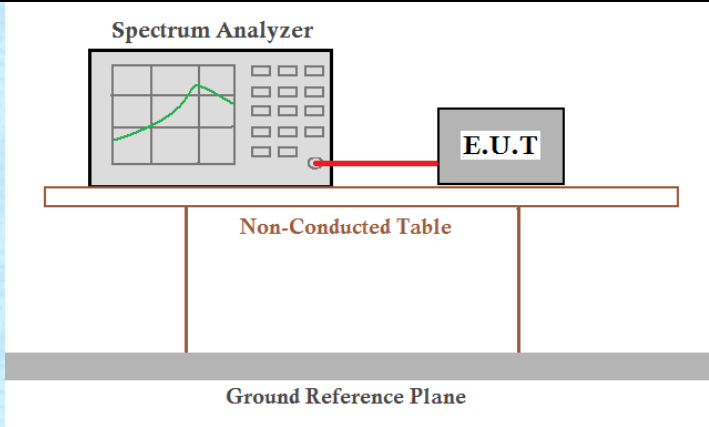
Measurement Data: The detailed test data see Appendix for 2.4G.

7.6 Hopping Channel Number

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=300kHz, VBW=300kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
Limit:	15 channels
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix for 2.4G.

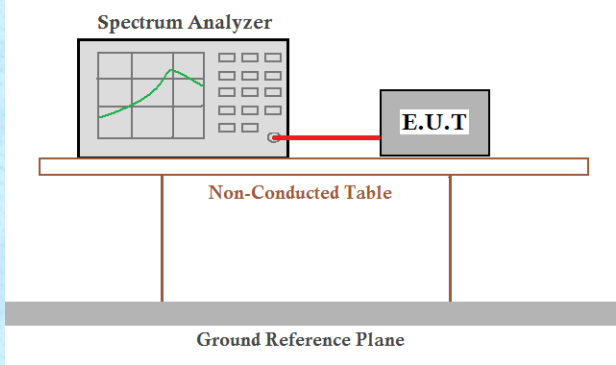
7.7 Dwell Time

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=300KHz, VBW=300KHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix for 2.4G.

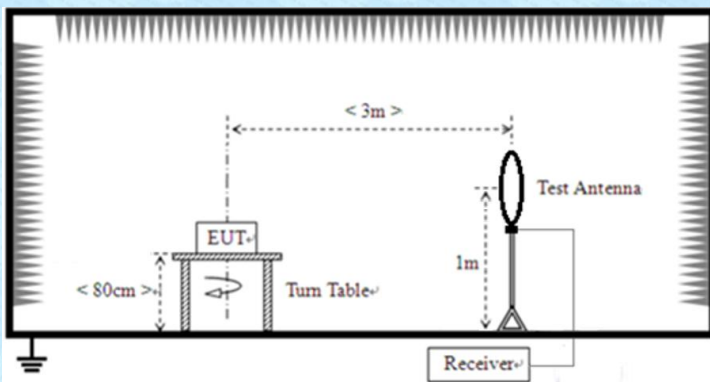
7.8 Spurious Emission in Non-restricted & restricted Bands

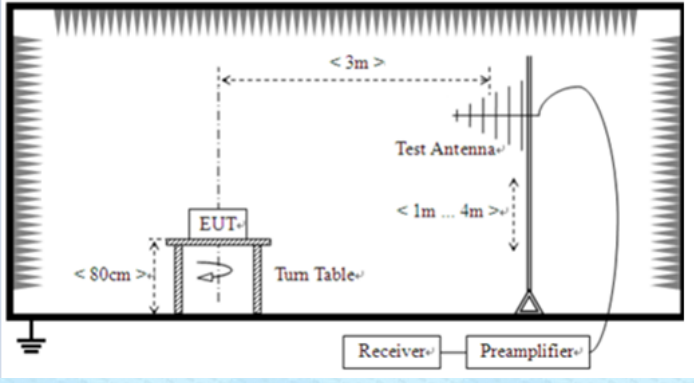
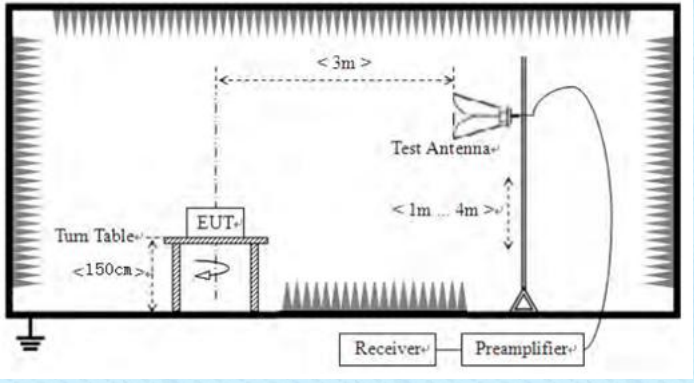
7.8.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100kHz, VBW=300kHz, Detector=Peak
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a table labeled 'Non-Conducted Table'. This table is supported by a 'Ground Reference Plane'.
Test Instruments:	Refer to section6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix for 2.4G.

7.8.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Note: For Duty cycle ≥ 98%, average detector set as above For Duty cycle < 98%, average detector set as below: VBW ≥ 1 / T					
Limit: (Spurious Emissions)	Frequency	Limit (uV/m)	Value	Measurement Distance	
	0.009MHz-0.490MHz	2400/F(KHz)	PK,QP,AV	300m	
	0.490MHz-1.705MHz	24000/F(KHz)	QP	30m	
	1.705MHz-30MHz	30	QP	30m	
	30MHz-88MHz	100	QP	3m	
	88MHz-216MHz	150	QP		
	216MHz-960MHz	200	QP		
	960MHz-1GHz	500	QP		
	Above 1GHz	500	Average		
5000		Peak			
Test setup:	Below 30MHz				
					
Below 1GHz					

	 Above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8 meters for below 1GHz and 1.5meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.2 for details
Temp. / Hum.	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Test results:	Pass

Remark:

1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

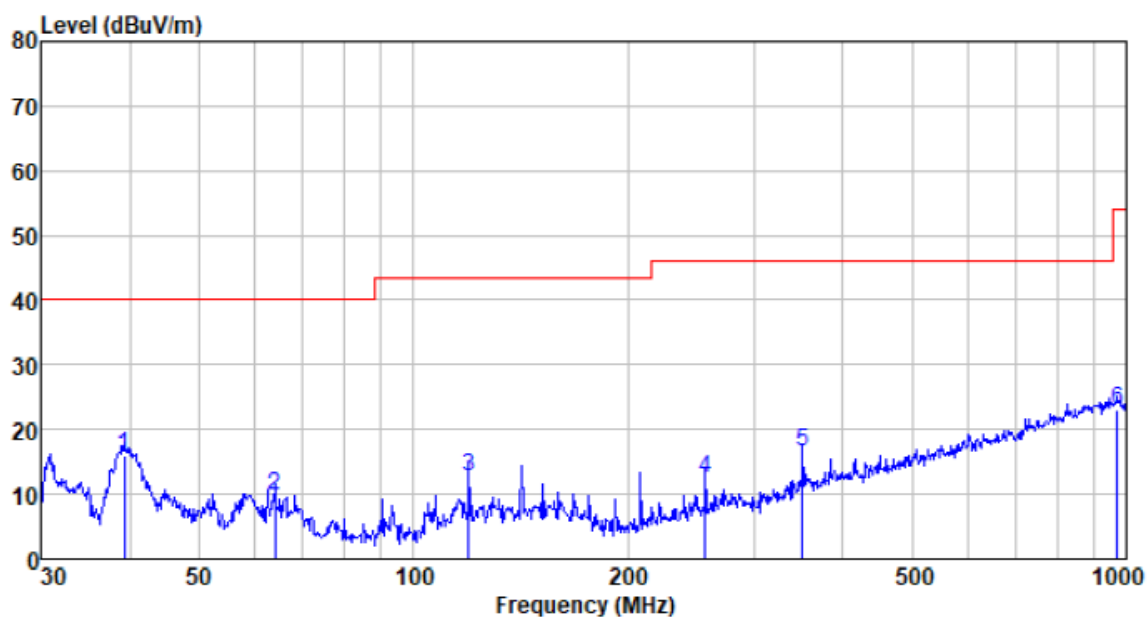
Measurement data:

■ **Below 30MHz**

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

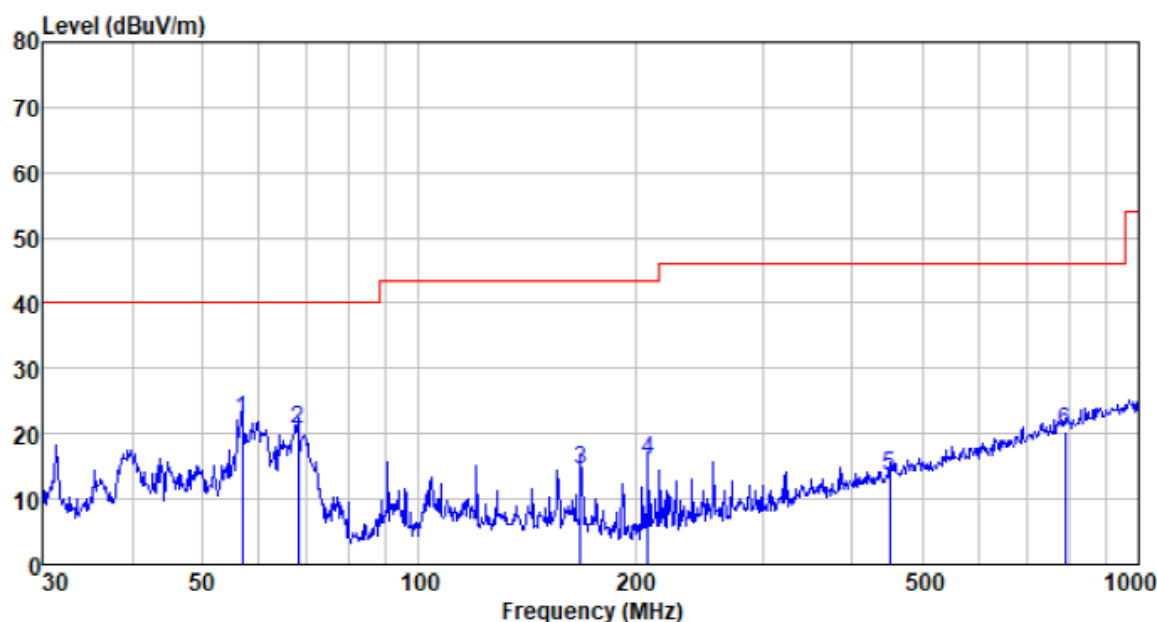
30MHz ~ 1GHz

Pre-scan all test modes, found worst case at 2409MHz@Ant 1, and so only show the test result of it. Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
39.299	35.58	13.39	0.65	33.74	15.88	40.00	-24.12	QP
63.983	30.63	11.72	0.89	33.62	9.62	40.00	-30.38	QP
119.436	33.50	11.16	1.36	33.40	12.62	43.50	-30.88	QP
256.521	31.54	11.35	2.16	32.74	12.31	46.00	-33.69	QP
351.708	32.20	14.22	2.63	32.48	16.57	46.00	-29.43	QP
972.337	24.20	24.49	5.12	30.77	23.04	54.00	-30.96	QP

Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
56.792	42.31	12.78	0.83	33.65	22.27	40.00	-17.73	QP
67.913	42.30	10.91	0.92	33.61	20.52	40.00	-19.48	QP
167.824	34.17	11.67	1.67	33.00	14.51	43.50	-28.99	QP
207.850	37.25	9.64	1.89	32.79	15.99	43.50	-27.51	QP
451.135	25.99	16.72	3.09	32.14	13.66	46.00	-32.34	QP
790.619	24.80	22.53	4.42	31.29	20.46	46.00	-25.54	QP

- Above 1GHz
- Unwanted Emissions in Non-restricted Frequency Bands
- All antennas have test, only the worst case ANT 1 report.

Test channel:	Lowest channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4818.00	35.87	31.08	7.30	38.36	35.89	74.00	-38.11	Vertical
7227.00	30.88	35.95	9.44	38.97	37.30	74.00	-36.70	Vertical
9636.00	30.62	37.93	10.01	39.69	38.87	74.00	-35.13	Vertical
4818.00	39.86	31.08	7.30	38.36	39.88	74.00	-34.12	Horizontal
7227.00	32.50	35.95	9.44	38.97	38.92	74.00	-35.08	Horizontal
9636.00	29.91	37.93	10.01	39.69	38.16	74.00	-35.84	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4818.00	24.95	31.08	7.30	38.36	24.97	54.00	-29.03	Vertical
7227.00	19.72	35.95	9.44	38.97	26.14	54.00	-27.86	Vertical
9636.00	18.89	37.93	10.01	39.69	27.14	54.00	-26.86	Vertical
4818.00	29.02	31.08	7.30	38.36	29.04	54.00	-24.96	Horizontal
7227.00	21.80	35.95	9.44	38.97	28.22	54.00	-25.78	Horizontal
9636.00	18.50	37.93	10.01	39.69	26.75	54.00	-27.25	Horizontal

Test channel:	Middle channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4886.00	36.03	31.26	7.04	38.38	35.95	74.00	-38.05	Vertical
7329.00	30.98	36.14	9.18	39.00	37.30	74.00	-36.70	Vertical
9772.00	30.71	38.06	10.27	39.73	39.31	74.00	-34.69	Vertical
4886.00	40.05	31.26	7.04	38.38	39.97	74.00	-34.03	Horizontal
7329.00	32.63	36.14	9.18	39.00	38.95	74.00	-35.05	Horizontal
9772.00	30.02	38.06	10.27	39.73	38.62	74.00	-35.38	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4886.00	25.09	31.26	7.04	38.38	25.01	54.00	-28.99	Vertical
7329.00	19.82	36.14	9.18	39.00	26.14	54.00	-27.86	Vertical
9772.00	18.97	38.06	10.27	39.73	27.57	54.00	-26.43	Vertical
4886.00	29.18	31.26	7.04	38.38	29.10	54.00	-24.90	Horizontal
7329.00	21.91	36.14	9.18	39.00	28.23	54.00	-25.77	Horizontal
9772.00	18.60	38.06	10.27	39.73	27.20	54.00	-26.80	Horizontal

Test channel:	Highest channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4950.00	36.30	31.46	6.75	38.39	36.12	74.00	-37.88	Vertical
7425.00	31.16	36.35	9.00	39.03	37.48	74.00	-36.52	Vertical
9900.00	30.87	38.20	10.12	39.77	39.42	74.00	-34.58	Vertical
4950.00	40.38	31.46	6.75	38.39	40.20	74.00	-33.80	Horizontal
7425.00	32.83	36.35	9.00	39.03	39.15	74.00	-34.85	Horizontal
9900.00	30.20	38.20	10.12	39.77	38.75	74.00	-35.25	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4950.00	25.36	31.46	6.75	38.39	25.18	54.00	-28.82	Vertical
7425.00	20.00	36.35	9.00	39.03	26.32	54.00	-27.68	Vertical
9900.00	19.13	38.20	10.12	39.77	27.68	54.00	-26.32	Vertical
4950.00	29.48	31.46	6.75	38.39	29.30	54.00	-24.70	Horizontal
7425.00	22.11	36.35	9.00	39.03	28.43	54.00	-25.57	Horizontal
9900.00	18.79	38.20	10.12	39.77	27.34	54.00	-26.66	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. For above 18GHz, no emission found.

■ Unwanted Emissions in Restricted Frequency Bands

ANT 1:

Test channel:	Lowest channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	46.19	27.17	4.65	38.52	39.49	74.00	-34.51	Horizontal
2390.00	50.45	27.27	4.60	38.56	43.76	74.00	-30.24	Horizontal
2310.00	47.06	27.17	4.65	38.52	40.36	74.00	-33.64	Vertical
2390.00	51.84	27.27	4.60	38.56	45.15	74.00	-28.85	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	35.99	27.17	4.65	38.52	29.29	54.00	-24.71	Horizontal
2390.00	37.43	27.27	4.60	38.56	30.74	54.00	-23.26	Horizontal
2310.00	36.17	27.17	4.65	38.52	29.47	54.00	-24.53	Vertical
2390.00	38.39	27.27	4.60	38.56	31.70	54.00	-22.30	Vertical

Test channel:	Highest channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	48.69	27.38	4.52	38.59	42.00	74.00	-32.00	Horizontal
2500.00	47.23	27.40	4.49	38.60	40.52	74.00	-33.48	Horizontal
2483.50	50.08	27.38	4.52	38.59	43.39	74.00	-30.61	Vertical
2500.00	48.54	27.40	4.49	38.60	41.83	74.00	-32.17	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	36.86	27.38	4.52	38.59	30.17	54.00	-23.83	Horizontal
2500.00	36.39	27.40	4.49	38.60	29.68	54.00	-24.32	Horizontal
2483.50	36.64	27.38	4.52	38.59	29.95	54.00	-24.05	Vertical
2500.00	36.58	27.40	4.49	38.60	29.87	54.00	-24.13	Vertical

ANT 2:

Test channel:	Lowest channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	45.27	27.17	4.65	38.52	38.57	74.00	-35.43	Horizontal
2390.00	49.40	27.27	4.60	38.56	42.71	74.00	-31.29	Horizontal
2310.00	46.04	27.17	4.65	38.52	39.34	74.00	-34.66	Vertical
2390.00	50.69	27.27	4.60	38.56	44.00	74.00	-30.00	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	35.28	27.17	4.65	38.52	28.58	54.00	-25.42	Horizontal
2390.00	36.66	27.27	4.60	38.56	29.97	54.00	-24.03	Horizontal
2310.00	35.39	27.17	4.65	38.52	28.69	54.00	-25.31	Vertical
2390.00	37.53	27.27	4.60	38.56	30.84	54.00	-23.16	Vertical

Test channel:	Highest channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	47.66	27.38	4.52	38.59	40.97	74.00	-33.03	Horizontal
2500.00	46.37	27.40	4.49	38.60	39.66	74.00	-34.34	Horizontal
2483.50	48.90	27.38	4.52	38.59	42.21	74.00	-31.79	Vertical
2500.00	47.60	27.40	4.49	38.60	40.89	74.00	-33.11	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	36.13	27.38	4.52	38.59	29.44	54.00	-24.56	Horizontal
2500.00	35.79	27.40	4.49	38.60	29.08	54.00	-24.92	Horizontal
2483.50	36.17	27.38	4.52	38.59	29.48	54.00	-24.52	Vertical
2500.00	35.91	27.40	4.49	38.60	29.20	54.00	-24.80	Vertical

Remarks:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

---End---