



TEST REPORT

Applicant: Shenzhen Jiajue Technology Co.,Ltd
Address of Applicant: B1105,No.16,Central Road,Xinqiao Sub-districtOffice,Bao'an District, Shenzhen
Manufacturer/Factory: Shenzhen Jiajue Technology Co.,Ltd
Address of Manufacturer/Factory: B1105,No.16,Central Road,Xinqiao Sub-districtOffice,Bao'an District, Shenzhen
Product Name: Video game
Model No.: SN-MINI,SN-PLUS,SN-PRO,NS-MINI,NS-PLUS,MD-MINI, MD-PLUS, NSG11, SN
Trade Mark: VILCORN
FCC ID: 2BART-SN
Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249
Date of Test: Apr.02,2023-Apr.11,2023
Date of report issued: Apr.14,2023
Test Result : PASS

Remark:

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

The 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

Prepared By

Shenzhen ETR Standard Technology Co., Ltd.

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Report Revision History		
Report No.	Description	Issue Date
ET-23030254E	Original	Apr.14,2023

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1 Test Summary

Test Item	Section in CFR 47	Result	Test by
Antenna requirement	15.203	Pass	/
AC Power Line Conducted Emission	15.207	N/A	/
Field strength of the fundamental signal	15.249 (a)	Pass	Yvan Fan
Spurious emissions	15.249 (a) (d)/15.209	Pass	Yvan Fan
Band edge	15.249 (d)/15.205	Pass	Yvan Fan
20dB Occupied Bandwidth 99% Occupied Bandwidth	15.215 (c)	Pass	Yvan Fan

Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. N/A: Not applicable.
3. Test according to ANSI C63.10:2013

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-1000MHz	±4.30 dB	(1)
Radiated Emission	1GHz-18GHz	±4.35 dB	(1)
Radiated Emission	18GHz-40GHz	±4.59 dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.02 dB	(1)
Occupied Channel Bandwidth	/	±0.55%	(1)

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

2 General Information

2.1 General Description of EUT

Product Name:	Video game
Model No.:	SN-MINI,SN-PLUS,SN-PRO,NS-MINI,NS-PLUS,MD-MINI, MD-PLUS, NSG11, SN
Model of difference:	All the model are the same circuit and RF module, except the model names and Appearance color.
Test model:	SN-MINI
Sample(s) Status:	Engineer sample
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	2429MHz
Channel numbers:	1
Channel separation:	N/A
Modulation type:	GFSK
Antenna Type:	PCB Antenna
Antenna gain:	2.0dBi Max (Declare by applicant)
Power supply:	DC 1.5V from battery

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2429 MHz	5	/	9	/	13	/
2	/	6	/	10	/	14	/
3	/	7	/	11	/	15	/
4	/	8	/	12	/	16	/

Note:

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:

Channel	Frequency
The lowest channel	2429 MHz
The middle channel	/
The Highest channel	/

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
<i>Remark: For battery operated equipment, the EUT was performed using a new DC 1.5V battery.</i>	

2.3 Description of Support Units

Equipment	Model	S/N	Manufacturer
/	/	/	/
/		/	/

2.4 Deviation from Standards

None.

2.5 Abnormalities from Standard Conditions

None.

2.6 Test Facility

Test laboratory:	Shenzhen ETR Standard Technology Co., Ltd.
CNAS Registration Number:	L11864
A2LA Certificate Number:	6640.01
FCC Designation Number:	CN1326
FCC Test Firm Registration:	183064

2.7 Test Location

All tests were performed at:	
Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	+86 755 85259392
Fax:	+86 755 27219460

2.8 Additional Instructions

Test Software	/
Power level setup	Default

3 Test Instruments list

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	100605	2023.3.02	2024.3.01
2	EMI Test Receiver	Rohde&schwarz	ESCI3	102696	2023.3.02	2024.3.01
3	Loop Antenna	schwarabeck	FMZB 1519 B	FMZB 1519 B	2022.3.11	2024.3.10
4	Broadband antenna	schwarabeck	VULB9168	1064	2022.3.11	2024.3.10
5	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2022.3.11	2024.3.10
6	amplifier	EMtrace	RP01A	50117	2023.3.02	2024.3.01
7	Artificial power network	schwarabeck	NSLK8127	8127483	2023.3.02	2024.3.01
8	Artificial power network	ETS	3186/2NM	1132	2023.3.02	2024.3.01
9	10dB attenuator	HUBER+SUHNER	10dB	/	2023.3.02	2024.3.01
10	amplifier	Space-Dtronics	EWLAN0118 G-P40	19113001	2023.3.02	2024.3.01
11	Filter	Xingbo	XBLBQ-GTA19	210410-3-1	2023.3.06	2024.3.05
12	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2023.3.02	2024.3.01
13	Power detector box	MWRFtest	MW100-PSB	MW201020JYT	2022.11.18	2023.11.17

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

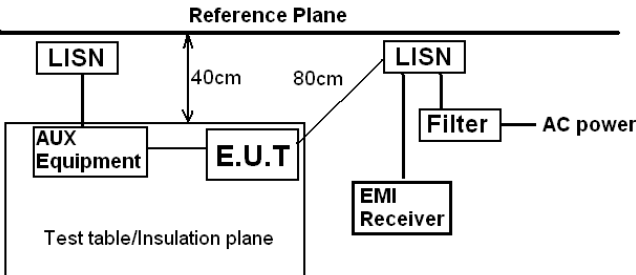
Software Name	Manufacturer	Model	Version
RF test software	MWRFtest	MTS 8310	V2.0.0.0
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4 Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:
FCC part 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.
RSS-Gen 6.8: The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list. For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).
EUT Antenna:
The antenna is PCB antenna, the best case gain of the antenna is 2.0dBi, reference to the appendix II for details.

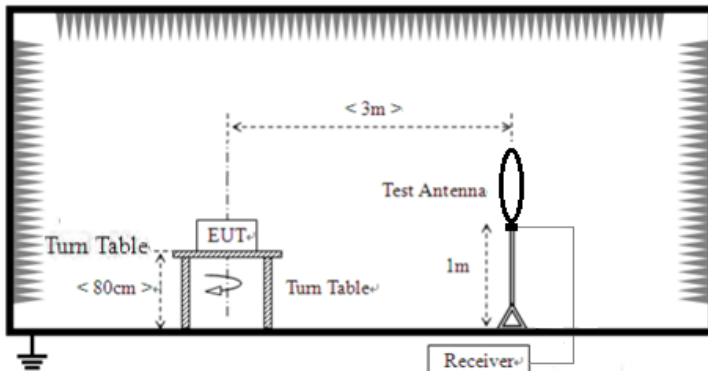
4.2 Conducted Emissions

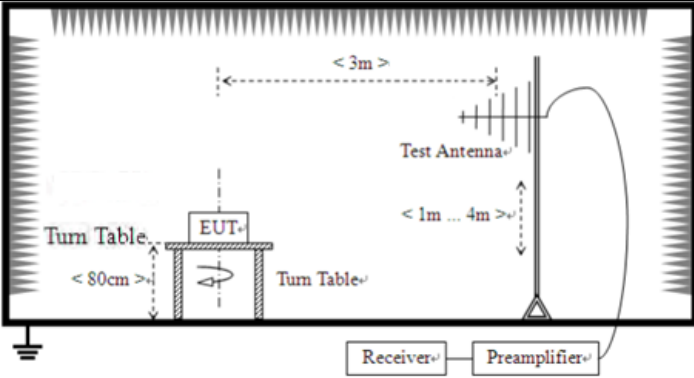
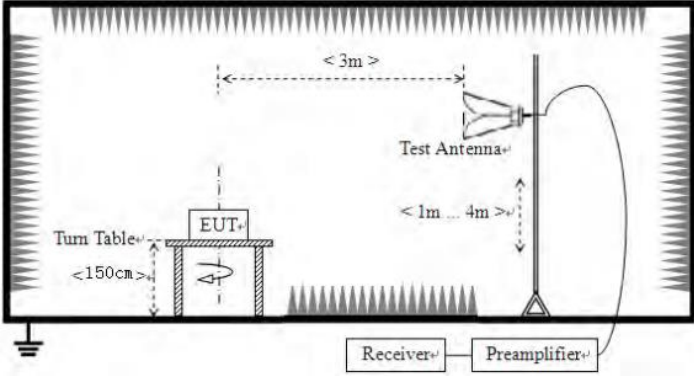
Test Requirement:	FCC Part15 C Section 15.207,					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150KHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto					
Limit:	Frequency range (MHz)		Limit (dBuV)			
			Quasi-peak		Average	
	0.15-0.5		66 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  <i>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</i>					
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 3.0 for details					
Test mode:	Refer to section 2.2 for details					
Test environment:	Temp.:	/°C	Humid.:	/%	Press.:	/mbar
Test voltage:	/					

Test result:

N/A, The EUT is powered by the battery 1.5V, so the item is not applicable.

4.3 Radiated Emission measurement

Test Requirement:	FCC Part15 C Section 15.209 & 15.249 (a) &(d). RSS-210 B10(a)& RSS-210 B10(b)& RSS-Gen Clause 8.9&8.10				
Test Method:	ANSI C63.10: 2013 & RSS-Gen				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz-150kHz	Quasi-peak	200Hz	300Hz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	10kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
Limit: (Field strength of the fundamental signal)	Frequency		Limit (dBuV/m @3m)		Remark
	2400MHz-2483.5MHz		94.00		Average Value
			114.00		Peak Value
Limit: (Spurious Emissions)	Frequency		Limit (uV/m)		Remark
	0.009MHz-0.490MHz		2400/F(kHz) @300m		Quasi-peak Value
	0.490MHz-1.705MHz		24000/F(kHz) @30m		Quasi-peak Value
	1.705MHz-30.0MHz		30 @30m		Quasi-peak Value
	30MHz-88MHz		100 @3m		Quasi-peak Value
	88MHz-216MHz		150 @3m		Quasi-peak Value
	216MHz-960MHz		200 @3m		Quasi-peak Value
	960MHz-1GHz		500 @3m		Quasi-peak Value
	Above 1GHz		500 @3m		Average Value
5000 @3m			Peak Value		
Limit: (band edge)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.				
Test setup:	For radiated emissions from 9kHz to 30MHz				
					
	For radiated emissions from 30MHz to1GHz				

	 For radiated emissions above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters 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 3.0 for details
Test mode:	Refer to section 2.2 for details
Test environment:	Temp.: 24.3 °C Humid.: 55% Press.: 1012mbar
Test voltage:	DC1.5V
Test results:	Pass

4.3.1 Field Strength of The Fundamental Signal

Peak value:

Frequency (MHz)	Read Level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2429	105.82	-14.03	91.79	114	-22.21	Vertical
2429	111.58	-14.03	97.55	114	-16.45	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2429	96.98	-14.03	82.95	94	-11.05	Vertical
2429	102.65	-14.03	88.62	94	-5.38	Horizontal

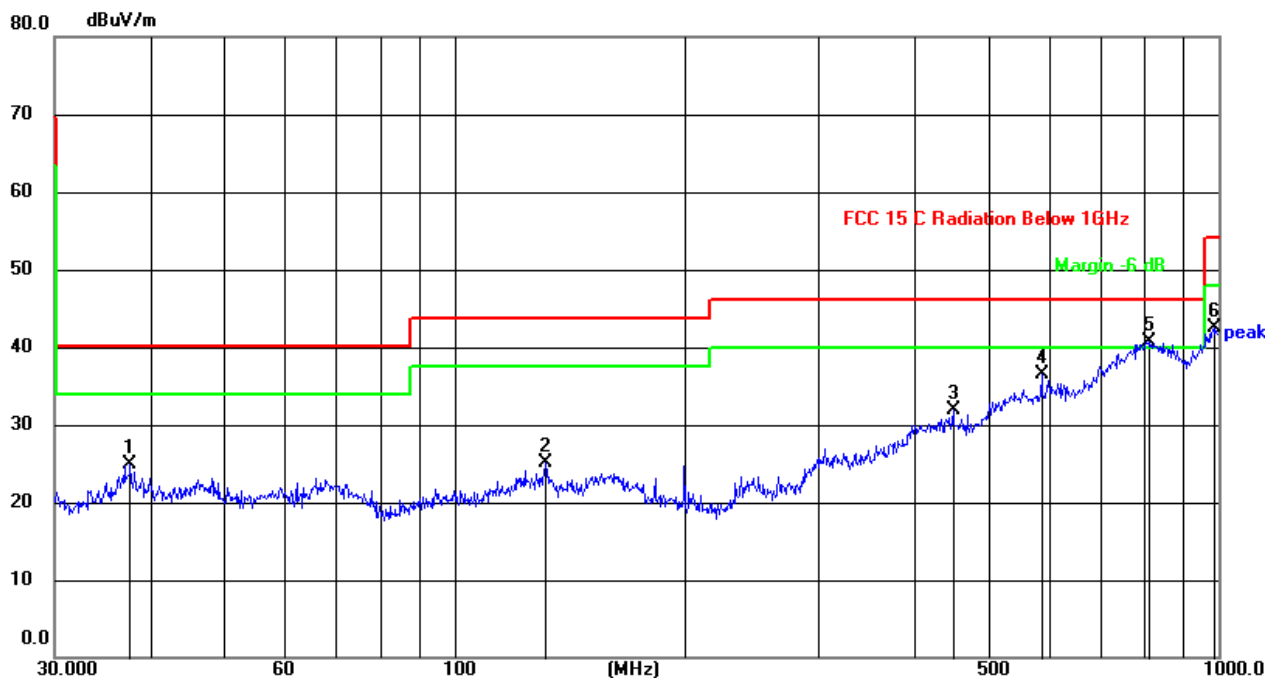
4.3.2 Spurious emissions

■ Below 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

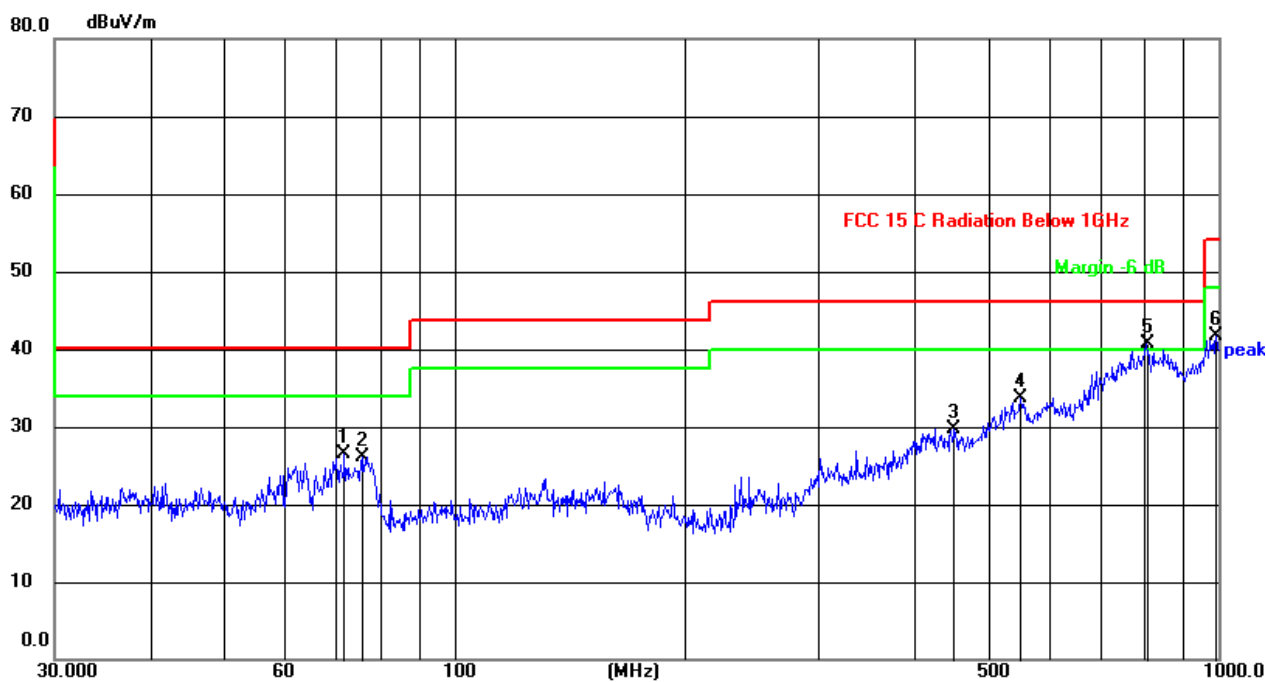
■ Below 1GHz

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	37.6796	36.38	-11.47	24.91	40.00	-15.09	QP
2	131.7575	38.09	-13.08	25.01	43.50	-18.49	QP
3	449.5557	35.97	-4.16	31.81	46.00	-14.19	QP
4	586.8436	36.39	0.05	36.44	46.00	-9.56	QP
5	810.2653	34.69	6.06	40.75	46.00	-5.25	QP
6	989.5353	33.58	9.01	42.59	54.00	-11.41	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	71.8320	39.40	-12.85	26.55	40.00	-13.45	QP
2	75.9773	40.13	-13.95	26.18	40.00	-13.82	QP
3	451.1349	33.64	-3.91	29.73	46.00	-16.27	QP
4	550.9480	34.09	-0.37	33.72	46.00	-12.28	QP
5	804.6028	33.93	6.77	40.70	46.00	-5.30	QP
6	993.0114	33.08	8.67	41.75	54.00	-12.25	QP

■ Above 1GHz

Test channel:	2429MHz
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Peak value:

Frequency (MHz)	Read Level (dBuV/m)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4858.00	73.81	-9.34	64.47	74	-9.53	Horizontal
7287.00	56.96	-3.79	53.17	74	-20.83	Horizontal
9716.00	---	---	---	---	---	Horizontal
12145.00	---	---	---	---	---	Horizontal
4858.00	76.64	-9.34	67.30	74	-6.70	Vertical
7287.00	60.18	-3.79	56.39	74	-17.61	Vertical
9716.00	---	---	---	---	---	Vertical
12145.00	---	---	---	---	---	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV/m)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4858.00	52.76	-9.34	43.42	54	-10.58	Horizontal
7287.00	42.08	-3.79	38.29	54	-15.71	Horizontal
9716.00	---	---	---	---	---	Horizontal
12145.00	---	---	---	---	---	Horizontal
4858.00	57.41	-9.34	48.07	54	-5.93	Vertical
7287.00	47.05	-3.79	43.26	54	-10.74	Vertical
9716.00	---	---	---	---	---	Vertical
12145.00	---	---	---	---	---	Vertical

Remark:

1. Final Level =Receiver Read level +Correction Factor(Antenna Factor + Cable Loss – Preamplifier Factor)
2. The emission levels of other frequencies are more than 20 dB below the limit and not show in test report.
3. “*”, means this data is the too weak instrument of signal is unable to test.

4.3.3 Bandedge emissions

All of the restriction bands were tested, and only the data of worst case was exhibited.

Test channel:	2429MHz
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Peak value:

Frequency (MHz)	Read Level (dBuV/m)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	53.53	-14.57	38.96	74	-35.04	Horizontal
2390.00	60.98	-14.87	46.11	74	-27.89	Horizontal
2310.00	54.74	-14.57	40.17	74	-33.83	Vertical
2390.00	61.70	-14.87	46.83	74	-27.17	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV/m)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	45.13	-14.57	30.56	54	-23.44	Horizontal
2390.00	52.01	-14.87	37.14	54	-16.86	Horizontal
2310.00	44.99	-14.57	30.42	54	-23.58	Vertical
2390.00	51.08	-14.87	36.21	54	-17.79	Vertical

Test channel:	2429MHz
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	58.41	-13.82	44.59	74.00	-29.41	Horizontal
2500.00	56.87	-13.76	43.11	74.00	-30.89	Horizontal
2483.50	60.81	-13.82	46.99	74.00	-27.01	Vertical
2500.00	57.50	-13.76	43.74	74.00	-30.26	Vertical

Average value:

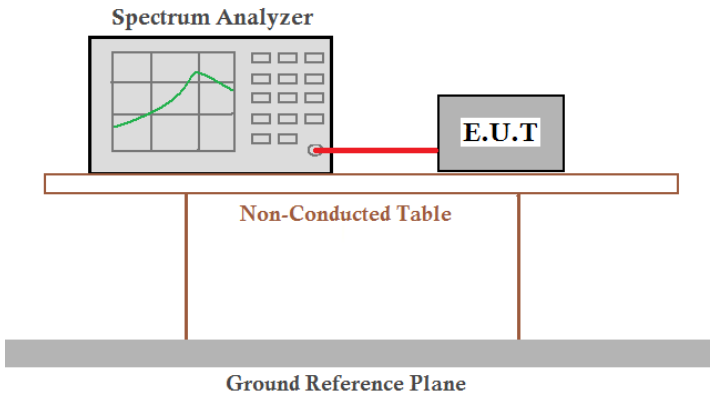
Frequency (MHz)	Read Level (dBuV)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	49.96	-13.82	36.14	54.00	-17.86	Horizontal
2500.00	50.34	-13.76	36.58	54.00	-17.42	Horizontal
2483.50	51.04	-13.82	37.22	54.00	-16.78	Vertical
2500.00	49.59	-13.76	35.83	54.00	-18.17	Vertical

Remarks:

Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor

The emission levels of other frequencies are very lower than the limit and not show in test report.

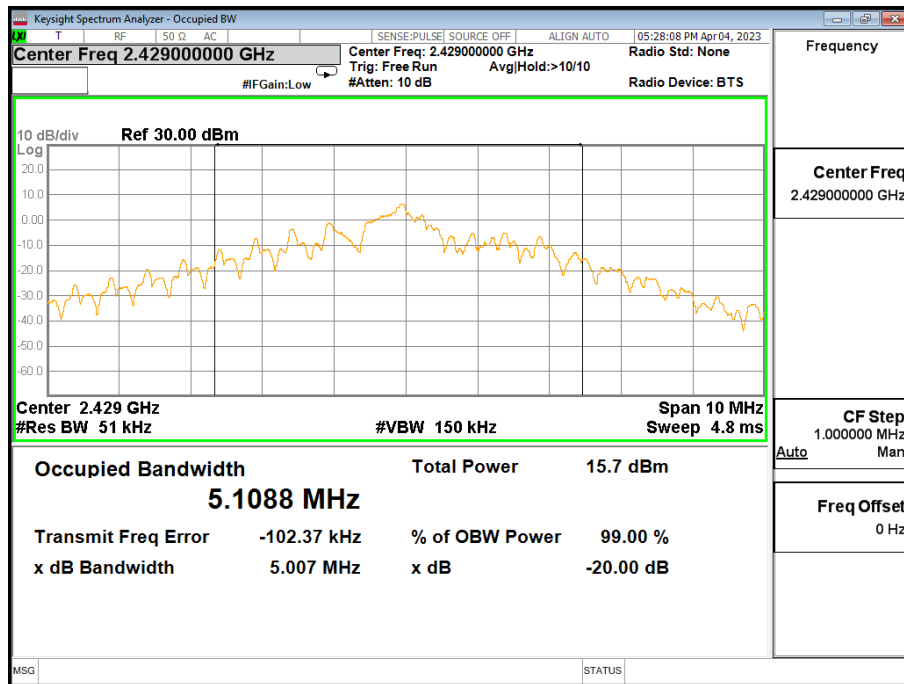
4.4 20dB Bandwidth and 99% bandwidth

Test Requirement:	FCC Part15 C Section 15.215 RSS-Gen Section 6.7					
Test Method:	ANSI C63.10:2013 and RSS-Gen					
Limit:	Operation Frequency range 2400MHz~2483.5MHz					
Test setup:						
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	24.3 °C	Humid.:	54%	Press.:	1012mbar
Test voltage:	DC 1.5V					
Test Mode:	TX					

Measurement Data

Test channel	20dB bandwidth(MHz)	99% bandwidth(MHz)	Result
2429MHz	5.007	5.1088	Pass

Test plots as follows:



5 Test Setup Photo

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

6 EUT Constructional Details

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

-----End-----