

FCC REPORT

Applicant: Quanzhou Skydroid Technology Co., Ltd.

Address of Applicant: No. 252, Fengfeng Road, Fengze District, Quanzhou City, Fujian, China

Manufacturer/Factory: Quanzhou Skydroid Technology Co., Ltd.

Address of Manufacturer/Factory: No. 252, Fengfeng Road, Fengze District, Quanzhou City, Fujian, China

Equipment Under Test (EUT)

Product Name: 2.4G video transmitter

Model No.: T12, R12

Trade Mark: SKYDROID

FCC ID: 2ATGZQZY12

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249

Date of sample receipt: May 13, 2019

Date of Test: May 14, 2019-June 04, 2019

Date of report issued: June 05, 2019

Test Result : PASS *

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

Authorized Signature:

Robinson Lo

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	June 05, 2019	Original

Prepared By:

Bill. Yuan

Date:

June 05, 2019

Project Engineer

Check By:

Robinson

Date:

June 05, 2019

Reviewer

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4 Test Summary

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

Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10:2013.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	$\pm 4.34\text{dB}$	(1)
Radiated Emission	30MHz ~ 1000MHz	$\pm 4.24\text{dB}$	(1)
Radiated Emission	1GHz ~ 26.5GHz	$\pm 4.68\text{dB}$	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	$\pm 3.45\text{dB}$	(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:	2.4G video transmitter
Model No.:	TX: T12 RX: R12
Test Model No:	T12
Test sample(s) ID:	GTS201905000091-1
Serial No.:	T12V1
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2420MHz~2480MHz
Channel Numbers:	31
Channel Separation:	1MHz
Modulation Type:	GFSK
Antenna Type:	TX ANT1/2: External antenna with reversed polarity non standard unique antenna port
Antenna Gain:	TX ANT1/2: 2.0dBi(Max) Two antennas can synchronous transmission only.
Power Supply:	TX: DC 3.7V Li-ion Battery 4000mAh RX: DC 5.0V

Remarks:

1. TX for transmitter, RX for receiver.
2. The test report only tested results of T12.
3. The two modules can only transmit at the same time and there are no separate transmit states.
4. The system works in the frequency range of 2420MHz to 2480MHz. This band has been divided to 31 independent channels. Each radio system uses 12 different channels; by using various switch-on times, hopping scheme and channel frequencies, the system can guarantee a jamming free radio transmission. The channel list is below.

Operation Frequency of each channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2420	9	2436	17	2452	25	2468
2	2422	10	2438	18	2454	26	2470
3	2424	11	2440	19	2456	27	2472
4	2426	12	2442	20	2458	28	2474
5	2428	13	2444	21	2460	29	2476
6	2430	14	2446	22	2462	30	2478
7	2432	15	2448	23	2464	31	2480
8	2434	16	2450	24	2466		

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:

The test frequencies are below:

Channel	Frequency
Lowest:	2420MHz
Middle:	2440MHz
Highest:	2480MHz

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode. (Two Antenna TX simultaneously)
<i>Remark: During the test, the dutycycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	X	Y	Z
Field Strength(dBuV/m)	91.85	93.76	92.74

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
AoHai Adapter	USB Charger	A9A-050100U-US1	N/A

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC —Registration No.: 381383**

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. Registration 381383.

- **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2.

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

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	July. 03 2015	July. 02 2020
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	June. 27 2018	June. 26 2019
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2018	June. 26 2019
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2018	June. 26 2019
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2018	June. 26 2019
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2018	June. 26 2019
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2018	June. 26 2019
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2018	June. 26 2019
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2018	June. 26 2019
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2018	June. 26 2019
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2018	June. 26 2019
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2018	June. 26 2019
15	Band filter	Amindeon	82346	GTS219	June. 27 2018	June. 26 2019
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2018	June. 26 2019
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2018	June. 26 2019
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2018	June. 26 2019
19	Splitter	Agilent	11636B	GTS237	June. 27 2018	June. 26 2019
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2018	June. 26 2019
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 20 2018	Oct. 19 2019
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 20 2018	Oct. 19 2019
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 20 2018	Oct. 19 2019
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 27 2018	June. 26 2019

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	May.16 2014	May.15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 27 2018	June. 26 2019
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 27 2018	June. 26 2019
5	Coaxial Cable	GTS	N/A	GTS227	June. 27 2018	June. 26 2019
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 27 2018	June. 26 2019
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 27 2018	June. 26 2019

RF Conducted:						
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	June. 27 2018	June. 26 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 27 2018	June. 26 2019
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 27 2018	June. 26 2019
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 27 2018	June. 26 2019
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 27 2018	June. 26 2019
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 27 2018	June. 26 2019
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 27 2018	June. 26 2019

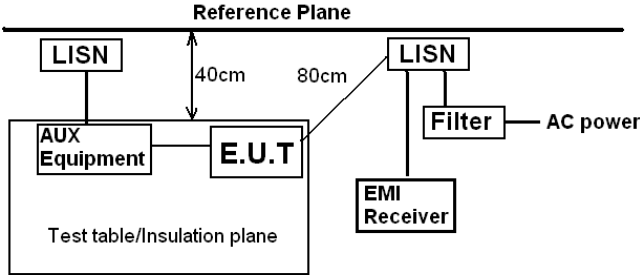
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	GTS243	June. 27 2018	June. 26 2019
2	Barometer	ChangChun	DYM3	GTS255	June. 27 2018	June. 26 2019

7 Test Results and Measurement Data

7.1 Antenna Requirement

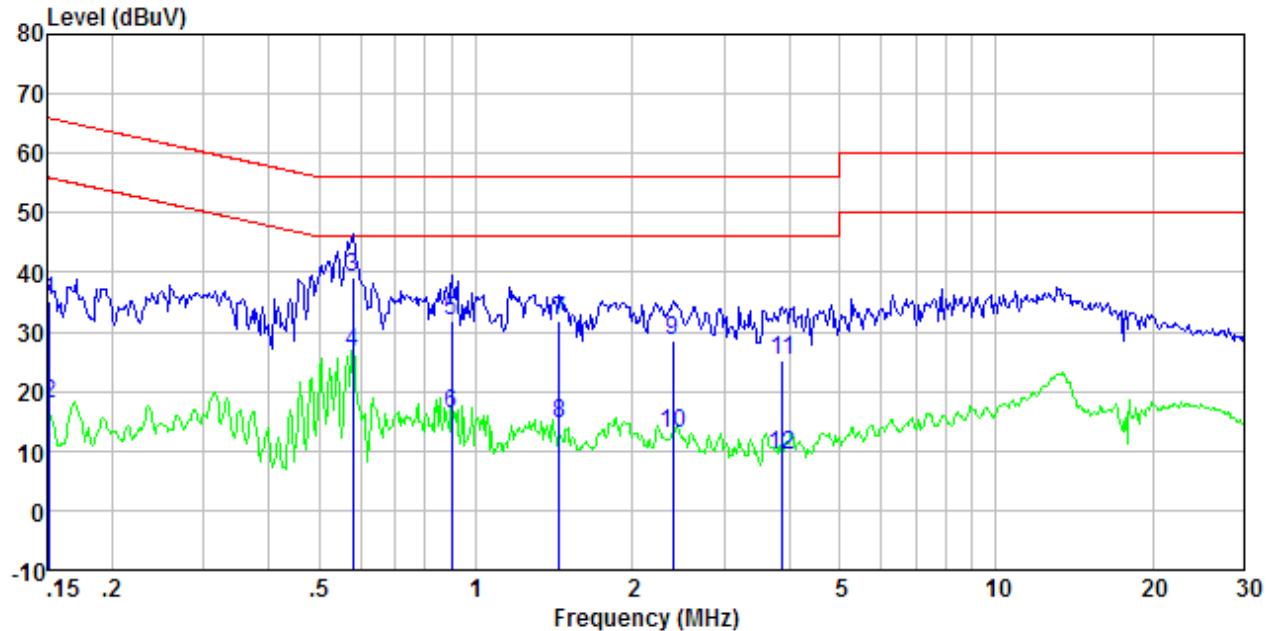
Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling 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.	
EUT Antenna:	
<i>The antenna is External antenna and the best case gain is 2.0dBi, reference to the appendix II for details.</i>	

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:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr> <tr> <th>Quasi-peak</th><th>Average</th></tr> </thead> <tbody> <tr> <td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr> <tr> <td>0.5-5</td><td>56</td><td>46</td></tr> <tr> <td>5-30</td><td>60</td><td>50</td></tr> </tbody> </table> * Decreases with the logarithm of the frequency.		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
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														
Test setup:	 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 voltage:	AC 120V, 60Hz															
Test results:	Pass															

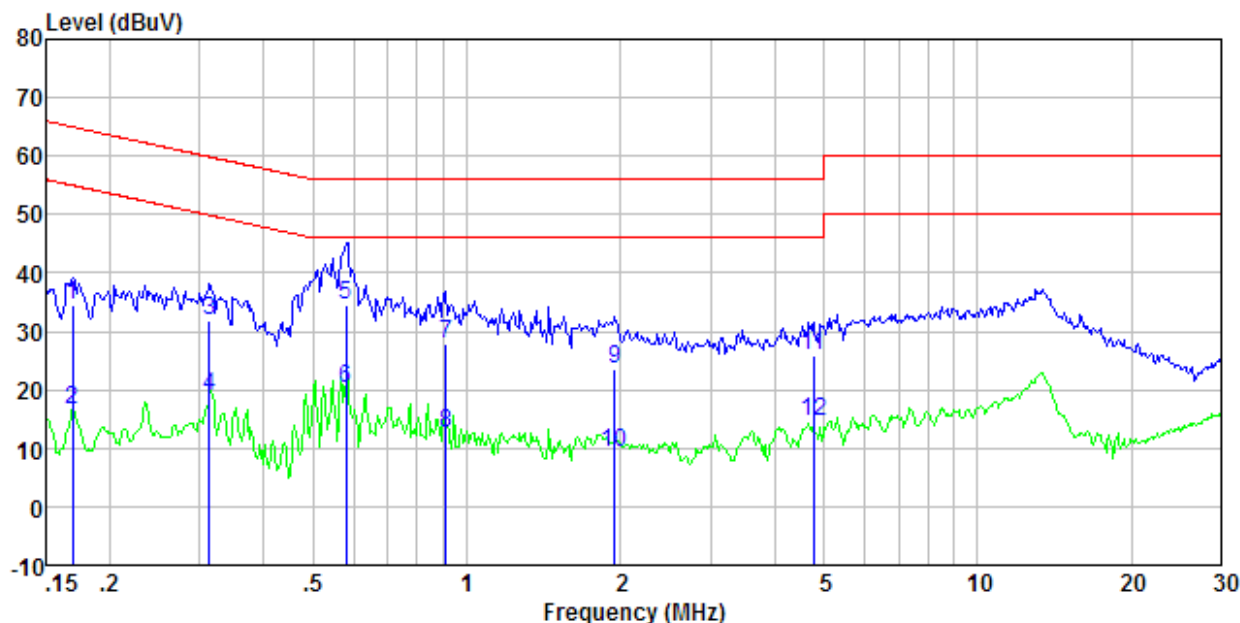
Measurement data

Mode:	Transmitting mode	Test by:	Bill
Temp./Hum.(%RH):	26°C/56%RH	Probe:	Line



Freq MHz	Reading level dBUV	LISN/ISN factor dB/m	Cable loss dB	Level dBUV	Limit level dBUV	Over limit dB	Remark
0.15	34.64	0.40	0.07	35.11	65.91	-30.80	QP
0.15	17.49	0.40	0.07	17.96	55.91	-37.95	Average
0.58	38.68	0.29	0.12	39.09	56.00	-16.91	QP
0.58	26.21	0.29	0.12	26.62	46.00	-19.38	Average
0.90	31.36	0.22	0.14	31.72	56.00	-24.28	QP
0.90	15.99	0.22	0.14	16.35	46.00	-29.65	Average
1.45	31.37	0.20	0.16	31.73	56.00	-24.27	QP
1.45	14.12	0.20	0.16	14.48	46.00	-31.52	Average
2.40	28.01	0.20	0.18	28.39	56.00	-27.61	QP
2.40	12.69	0.20	0.18	13.07	46.00	-32.93	Average
3.88	24.71	0.20	0.18	25.09	56.00	-30.91	QP
3.88	8.90	0.20	0.18	9.28	46.00	-36.72	Average

Mode:	Transmitting mode	Test by:	Bill
Temp./Hum.(%RH):	26°C/56%RH	Probe:	Neutral

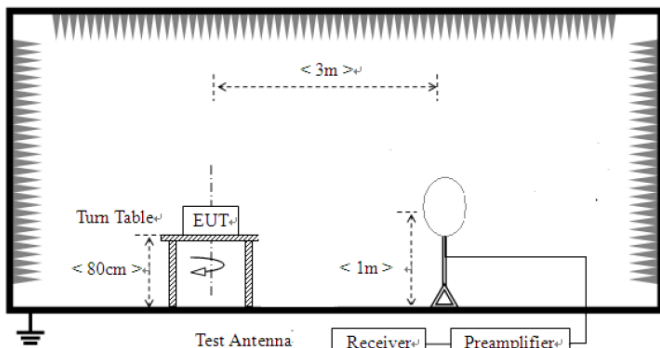


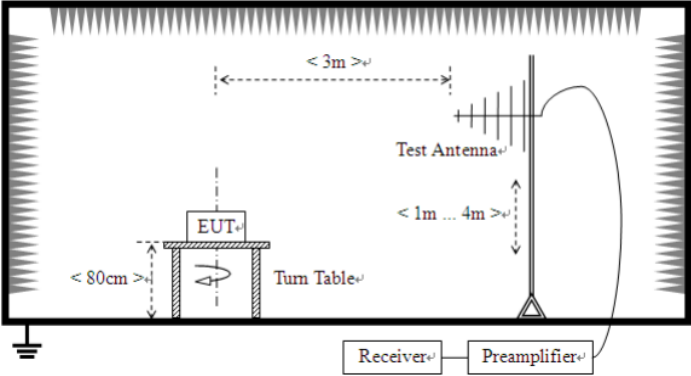
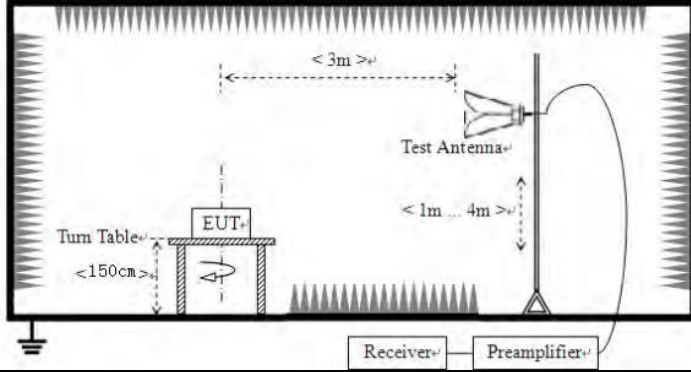
Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.17	33.85	0.40	0.09	34.34	64.99	-30.65	QP
0.17	16.11	0.40	0.09	16.60	54.99	-38.39	Average
0.31	31.36	0.39	0.10	31.85	59.88	-28.03	QP
0.31	18.49	0.39	0.10	18.98	49.88	-30.90	Average
0.58	34.04	0.29	0.12	34.45	56.00	-21.55	QP
0.58	19.89	0.29	0.12	20.30	46.00	-25.70	Average
0.91	27.44	0.22	0.14	27.80	56.00	-28.20	QP
0.91	12.10	0.22	0.14	12.46	46.00	-33.54	Average
1.95	23.01	0.20	0.17	23.38	56.00	-32.62	QP
1.95	8.99	0.20	0.17	9.36	46.00	-36.64	Average
4.77	25.40	0.20	0.17	25.77	56.00	-30.23	QP
4.77	14.13	0.20	0.17	14.50	46.00	-31.50	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
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

7.3 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz-150kHz	PK,AV,QP	200Hz	300Hz	PK,AV,QP
	150kHz-30MHz	PK,AV,QP	9kHz	10kHz	PK,AV,QP
	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 to 1GHz				

	 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 6.0 for details
Test mode:	Refer to section 5.2 for details
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1012mbar
Test voltage:	DC 6.0V
Test results:	Pass

Measurement data:

7.3.1 Field Strength of The Fundamental Signal

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
2420.00	89.71	27.57	5.40	30.17	92.51	114.00	-21.49	Vertical
2420.00	87.53	27.57	5.40	30.17	90.33	114.00	-23.67	Horizontal
2440.00	88.24	27.55	5.43	30.06	91.16	114.00	-22.84	Vertical
2440.00	86.58	27.55	5.43	30.06	89.50	114.00	-24.50	Horizontal
2480.00	90.70	27.52	5.47	29.93	93.76	114.00	-20.24	Vertical
2480.00	87.85	27.52	5.47	29.93	90.91	114.00	-23.09	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
2420.00	74.81	27.57	5.40	30.17	77.61	94.00	-16.39	Vertical
2420.00	73.34	27.57	5.40	30.17	76.14	94.00	-17.86	Horizontal
2440.00	73.52	27.55	5.43	30.06	76.44	94.00	-17.56	Vertical
2440.00	70.92	27.55	5.43	30.06	73.84	94.00	-20.16	Horizontal
2480.00	75.24	27.52	5.47	29.93	78.30	94.00	-15.70	Vertical
2480.00	73.23	27.52	5.47	29.93	76.29	94.00	-17.71	Horizontal

Note: The 20dB Occupancy Bandwidth maximum value for 1.645MHz.

So receiver setup as follow:

Frequency (MHz)	Detector	RBW (MHz)	VBW (MHz)	Remark
2420~2480	Peak	3	3	Peak Value
	RMS	3	3	Average Value

7.3.2 Spurious Emissions

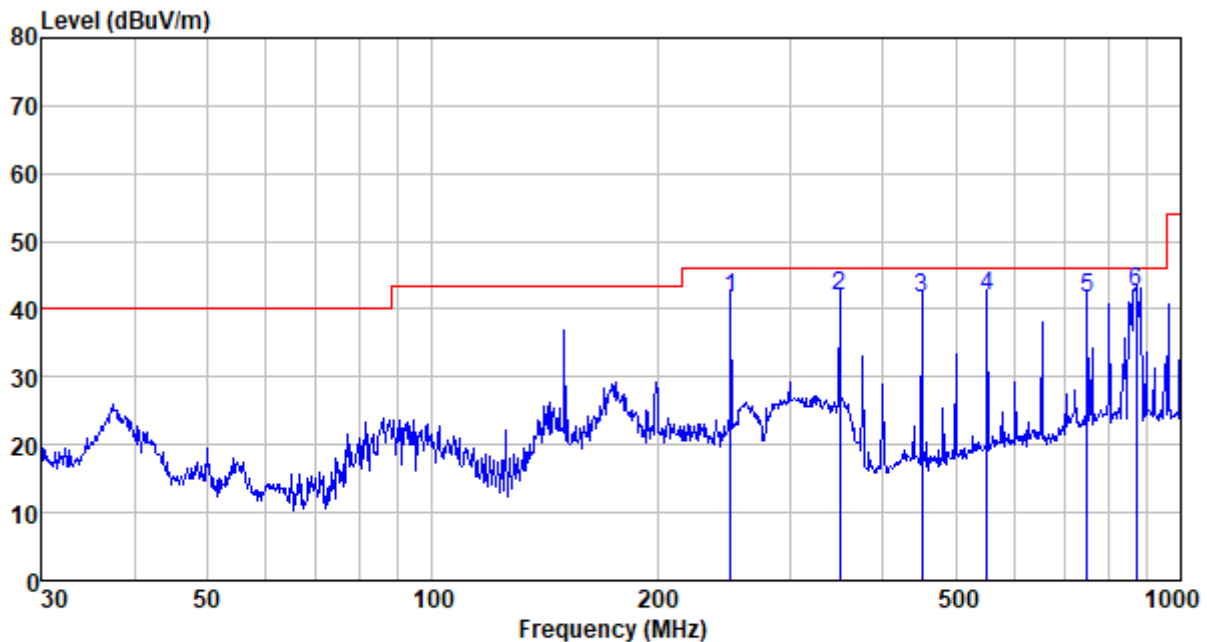
■ Below 30MHz

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), the test result no need to reported.

■ Below 1GHz

Temp./Hum.(%RH): 26°C/56%RH

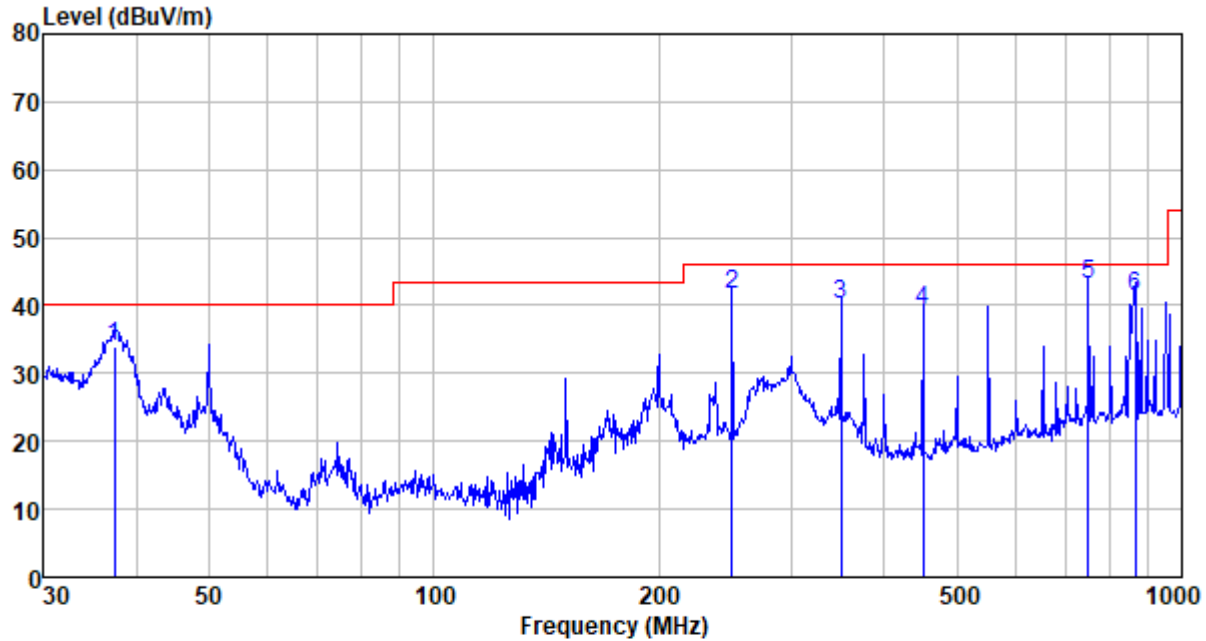
Polarization: Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
250.301	64.80	12.18	2.12	37.38	41.72	46.00	-4.28	QP
350.477	62.29	14.53	2.62	37.47	41.97	46.00	-4.03	QP
451.135	59.64	16.40	3.09	37.51	41.62	46.00	-4.38	QP
550.948	57.39	18.45	3.53	37.53	41.84	46.00	-4.16	QP
750.108	54.42	20.53	4.28	37.62	41.61	46.00	-4.39	QP
872.183	53.36	22.06	4.74	37.61	42.55	46.00	-3.45	QP

Temp./Hum.(%H): 26°C/56%RH

Polarization: Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
37.416	57.07	11.77	0.64	35.51	33.97	40.00	-6.03	QP
250.301	64.79	12.18	2.12	37.38	41.71	46.00	-4.29	QP
350.477	60.61	14.53	2.62	37.47	40.29	46.00	-5.71	QP
451.135	57.30	16.40	3.09	37.51	39.28	46.00	-6.72	QP
750.108	55.78	20.53	4.28	37.62	42.97	46.00	-3.03	QP
866.088	52.16	21.99	4.73	37.61	41.27	46.00	-4.73	QP

■ Above 1GHz

Test channel:	Lowest
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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
4840.00	35.07	31.78	8.60	32.09	43.36	74.00	-30.64	Vertical
7260.00	30.35	36.15	11.65	32.00	46.15	74.00	-27.85	Vertical
9680.00	30.15	37.95	14.14	31.62	50.62	74.00	-23.38	Vertical
12100.00	*					74.00		Vertical
14520.00	*					74.00		Vertical
4840.00	38.90	31.78	8.60	32.09	47.19	74.00	-26.81	Horizontal
7260.00	31.90	36.15	11.65	32.00	47.70	74.00	-26.30	Horizontal
9680.00	29.36	37.95	14.14	31.62	49.83	74.00	-24.17	Horizontal
12100.00	*					74.00		Horizontal
14520.00	*					74.00		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
4840.00	24.30	31.78	8.60	32.09	32.59	54.00	-21.41	Vertical
7260.00	19.29	36.15	11.65	32.00	35.09	54.00	-18.91	Vertical
9680.00	18.50	37.95	14.14	31.62	38.97	54.00	-15.03	Vertical
12100.00	*					54.00		Vertical
14520.00	*					54.00		Vertical
4840.00	28.28	31.78	8.60	32.09	36.57	54.00	-17.43	Horizontal
7260.00	21.31	36.15	11.65	32.00	37.11	54.00	-16.89	Horizontal
9680.00	18.05	37.95	14.14	31.62	38.52	54.00	-15.48	Horizontal
12100.00	*					54.00		Horizontal
14520.00	*					54.00		Horizontal

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.

Test channel:	Middle
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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
4880.00	35.27	31.85	8.67	32.12	43.67	74.00	-30.33	Vertical
7320.00	30.48	36.37	11.72	31.89	46.68	74.00	-27.32	Vertical
9760.00	30.27	38.35	14.25	31.62	51.25	74.00	-22.75	Vertical
12200.00	*					74.00		Vertical
14640.00	*					74.00		Vertical
4880.00	39.14	31.85	8.67	32.12	47.54	74.00	-26.46	Horizontal
7320.00	32.06	36.37	11.72	31.89	48.26	74.00	-25.74	Horizontal
9760.00	29.50	38.35	14.25	31.62	50.48	74.00	-23.52	Horizontal
12200.00	*					74.00		Horizontal
14640.00	*					74.00		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
4880.00	24.47	31.85	8.67	32.12	32.87	54.00	-21.13	Vertical
7320.00	19.40	36.37	11.72	31.89	35.60	54.00	-18.40	Vertical
9760.00	18.60	38.35	14.25	31.62	39.58	54.00	-14.42	Vertical
12200.00	*					54.00		Vertical
14640.00	*					54.00		Vertical
4880.00	28.48	31.85	8.67	32.12	36.88	54.00	-17.12	Horizontal
7320.00	21.44	36.37	11.72	31.89	37.64	54.00	-16.36	Horizontal
9760.00	18.16	38.35	14.25	31.62	39.14	54.00	-14.86	Horizontal
12200.00	*					54.00		Horizontal
14640.00	*					54.00		Horizontal

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.

Test channel:	Highest
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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
4960.00	34.99	31.93	8.73	32.16	43.49	74.00	-30.51	Vertical
7440.00	30.29	36.59	11.79	31.78	46.89	74.00	-27.11	Vertical
9920.00	30.10	38.81	14.38	31.88	51.41	74.00	-22.59	Vertical
12400.00	*					74.00		Vertical
14880.00	*					74.00		Vertical
4960.00	38.80	31.93	8.73	32.16	47.30	74.00	-26.70	Horizontal
7440.00	31.84	36.59	11.79	31.78	48.44	74.00	-25.56	Horizontal
9920.00	29.30	38.81	14.38	31.88	50.61	74.00	-23.39	Horizontal
12400.00	*					74.00		Horizontal
14880.00	*					74.00		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
4960.00	24.26	31.93	8.73	32.16	32.76	54.00	-21.24	Vertical
7440.00	19.25	36.59	11.79	31.78	35.85	54.00	-18.15	Vertical
9920.00	18.47	38.81	14.38	31.88	39.78	54.00	-14.22	Vertical
12400.00	*					54.00		Vertical
14880.00	*					54.00		Vertical
4960.00	28.23	31.93	8.73	32.16	36.73	54.00	-17.27	Horizontal
7440.00	21.27	36.59	11.79	31.78	37.87	54.00	-16.13	Horizontal
9920.00	18.01	38.81	14.38	31.88	39.32	54.00	-14.68	Horizontal
12400.00	*					54.00		Horizontal
14880.00	*					54.00		Horizontal

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.

7.3.3 Bandedge Emissions

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	40.64	27.59	5.38	30.18	43.43	74.00	-30.57	Horizontal
2400.00	55.11	27.58	5.40	30.18	57.91	74.00	-16.09	Horizontal
2310.00	40.97	27.59	5.38	30.18	43.76	74.00	-30.24	Vertical
2400.00	56.90	27.58	5.40	30.18	59.70	74.00	-14.30	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	31.70	27.59	5.38	30.18	34.49	54.00	-19.51	Horizontal
2400.00	39.80	27.58	5.40	30.18	42.60	54.00	-11.40	Horizontal
2310.00	31.48	27.59	5.38	30.18	34.27	54.00	-19.73	Vertical
2400.00	39.83	27.58	5.40	30.18	42.63	54.00	-11.37	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	42.48	27.53	5.47	29.93	45.55	74.00	-28.45	Horizontal
2500.00	42.07	27.55	5.49	29.93	45.18	74.00	-28.82	Horizontal
2483.50	42.95	27.53	5.47	29.93	46.02	74.00	-27.98	Vertical
2500.00	42.86	27.55	5.49	29.93	45.97	74.00	-28.03	Vertical

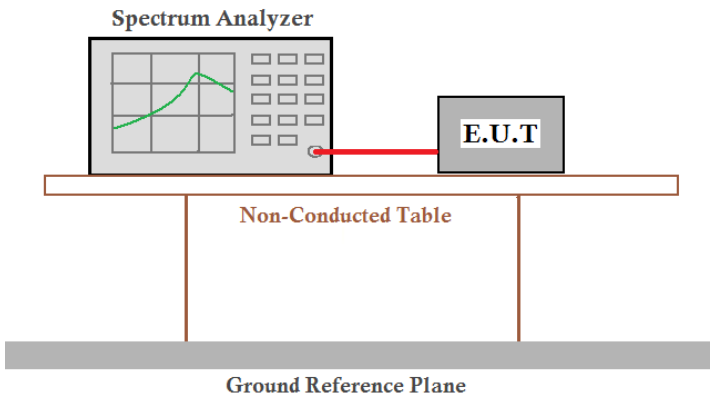
Average value:

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	34.50	27.53	5.47	29.93	37.57	54.00	-16.43	Horizontal
2500.00	32.82	27.55	5.49	29.93	35.93	54.00	-18.07	Horizontal
2483.50	35.52	27.53	5.47	29.93	38.59	54.00	-15.41	Vertical
2500.00	32.55	27.55	5.49	29.93	35.66	54.00	-18.34	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.

7.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.10:2013
Limit:	Operation Frequency range 2400MHz~2483.5MHz
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

Module 1

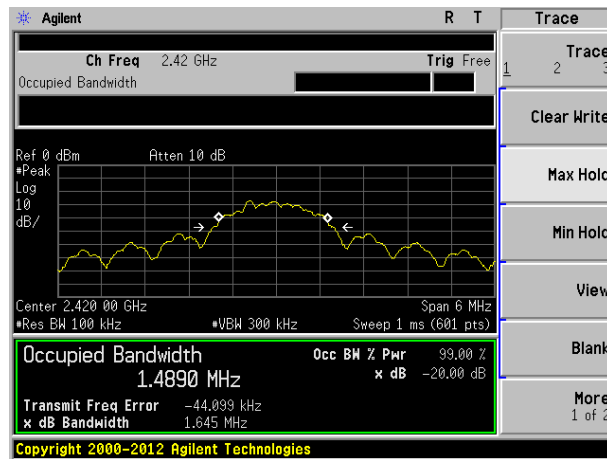
Test channel	20dB bandwidth(MHz)	Result
Lowest	1.645	Pass
Middle	1.634	Pass
Highest	1.622	Pass

Module 2

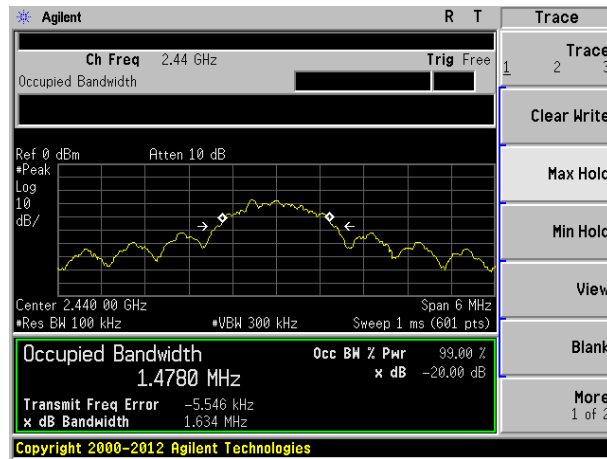
Test channel	20dB bandwidth(MHz)	Result
Lowest	1.623	Pass
Middle	1.633	Pass
Highest	1.623	Pass

Test plot as follows:

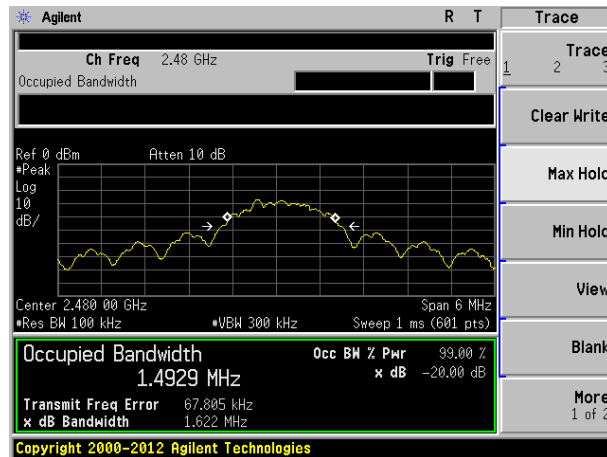
Module 1



Lowest channel

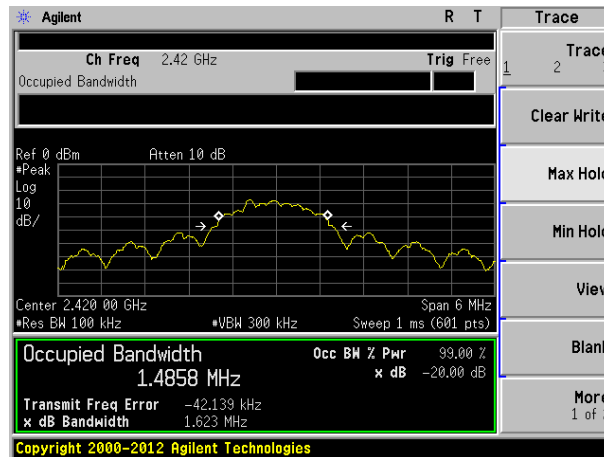


Middle channel

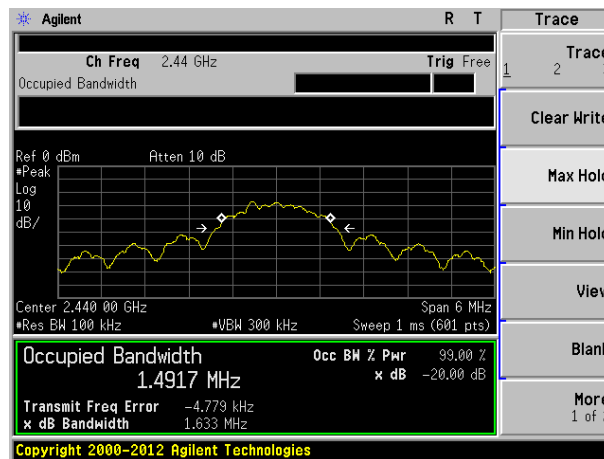


Highest channel

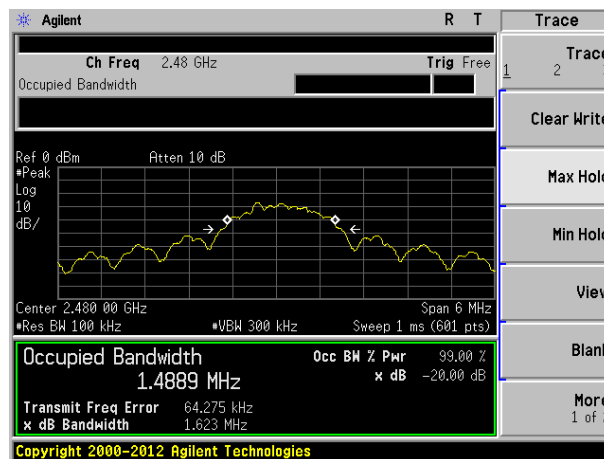
Module 2



Lowest channel



Middle channel



Highest channel

8 Test Setup Photo

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

9 EUT Constructional Details

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

-----End-----