TEST REPORT

Applicant:	Hit Technologies Inc.
Address of Applicant:	2050 Scotia St, Vancouver, BC V5T 4T1
Manufacturer/Factory:	Wonders Technology Co., Ltd.
Address of Manufacturer/Factory:	4F Block A Bldg 3 Phase I Tian' an Yungu Bantian Street Shenzhen, 518110 China

Equipment Under Test (EUT)

Product Name:	Wireless Bluetooth Speaker
Model No.:	smpl. audio3
Trade Mark:	smpl.
FCC ID:	2AX23SMPLSP3
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.249
Date of sample receipt:	December 11, 2020
Date of Test:	December 16- December 25, 2020
Date of report issued:	December 29, 2020
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	*December 29, 2020*	*Original*

Prepared By:		***Date:***	*December 29, 2020*
	Project Engineer		
Check By:		***Date:***	*December 29, 2020*
	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	N/A
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. *Test according to ANSI C63.10: 2013.*
2. *Pass: The EUT complies with the essential requirements in the standard.*

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
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:	Wireless Bluetooth Speaker
Model No.:	smpl. audio3
Serial No.:	N/A
Hardware Version:	1.0
Software Version:	N/A
Test sample(s) ID:	GTSL202101000014-1
Sample(s) Status	Engineered sample
Operation Frequency:	2402MHz~2480MHz
Channel numbers:	BLE:40 BT:79
Channel separation:	BLE:2MHz BT:1MHz
Modulation type:	BLE:GFSK BT:GFSK, π /4-DQPSK, 8DPSK
Antenna Type:	PCB Antenna
Antenna gain:	0.5dBi
Power supply:	Input: DC5V 2A

BLE

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402 MHz	11	2422 MHz	21	2442 MHz	31	2462 MHz
2	2404 MHz	12	2424 MHz	22	2444 MHz	32	2464 MHz
3	2406 MHz	13	2426 MHz	23	2446 MHz	33	2466 MHz
4	2408 MHz	14	2428 MHz	24	2448 MHz	34	2468 MHz
5	2410 MHz	15	2430 MHz	25	2450 MHz	35	2470 MHz
6	2412 MHz	16	2432 MHz	26	2452 MHz	36	2472 MHz
7	2414 MHz	17	2434 MHz	27	2454 MHz	37	2474 MHz
8	2416 MHz	18	2436 MHz	28	2456 MHz	38	2476 MHz
9	2418 MHz	19	2438 MHz	29	2458 MHz	39	2478 MHz
10	2420 MHz	20	2440 MHz	30	2460 MHz	40	2480 MHz

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	2402MHz
The middle channel	2440MHz
The Highest channel	2480MHz

BT

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz
7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
9	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz
13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz
16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

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	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

5.2 Test mode

BLE

Transmitting mode	Keep the EUT in continuously transmitting mode.
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.	

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)	95.74	93.39	94.60

BT

Transmitting mode	Keep the EUT in continuously transmitting mode.
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.	

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)	96.47	90.53	89.67

5.3 Description of Support Units

None.

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 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.

● **IC —Registration No.: 9079A**

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

● **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

5.7 Test Location

All 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

5.8 Additional Instructions

Test Software	Special test command provided by manufacturer
Power level setup	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	July. 02 2020	July. 01 2025
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. 25 2020	June. 24 2021
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 25 2020	June. 24 2021
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 25 2020	June. 24 2021
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 25 2020	June. 24 2021
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 25 2020	June. 24 2021
9	Coaxial Cable	GTS	N/A	GTS211	June. 25 2020	June. 24 2021
10	Coaxial cable	GTS	N/A	GTS210	June. 25 2020	June. 24 2021
11	Coaxial Cable	GTS	N/A	GTS212	June. 25 2020	June. 24 2021
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 25 2020	June. 24 2021
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 25 2020	June. 24 2021
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 25 2020	June. 24 2021
15	Band filter	Amindeon	82346	GTS219	June. 25 2020	June. 24 2021
16	Power Meter	Anritsu	ML2495A	GTS540	June. 25 2020	June. 24 2021
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 25 2020	June. 24 2021
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 25 2020	June. 24 2021
19	Splitter	Agilent	11636B	GTS237	June. 25 2020	June. 24 2021
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 25 2020	June. 24 2021
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 18 2020	Oct. 17 2021
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 18 2020	Oct. 17 2021
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 18 2020	Oct. 17 2021
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 25 2020	June. 24 2021

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	June. 25 2020	June. 24 2021
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 25 2020	June. 24 2021
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 25 2020	June. 24 2021
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 25 2020	June. 24 2021
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 25 2020	June. 24 2021
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 25 2020	June. 24 2021
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 25 2020	June. 24 2021

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	KTJ	TA328	GTS243	June. 25 2020	June. 24 2021
2	Barometer	ChangChun	DYM3	GTS255	June. 25 2020	June. 24 2021

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. **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 PCB antenna, the best case gain of the antenna is 0.5dBi, reference to the appendix II for details	

7.2 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	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)

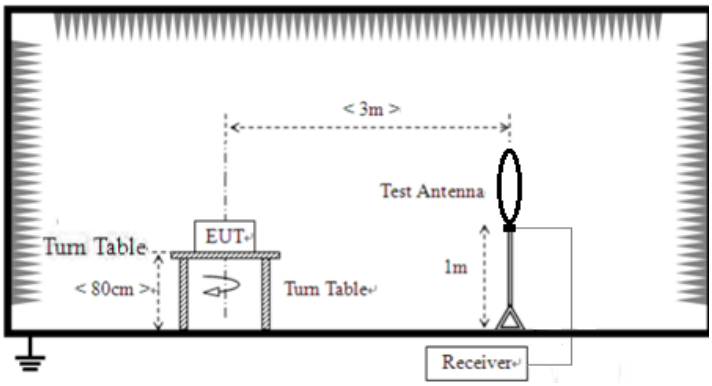
Frequency	Limit (uV/m)	Remark
0.009MHz-0.490MHz	2400/F(kHz) @300m	Quasi-peak Value
0.490MHz-1.705MHz	24000/F(kHz) @30m	Quasi-peak Value
1.705MHz-30.0MHz	30 @30m	Quasi-peak Value
30MHz-88MHz	100 @3m	Quasi-peak Value
88MHz-216MHz	150 @3m	Quasi-peak Value
216MHz-960MHz	200 @3m	Quasi-peak Value
960MHz-1GHz	500 @3m	Quasi-peak Value
Above 1GHz	500 @3m	Average Value
	5000 @3m	Peak Value

Limit: (band edge)

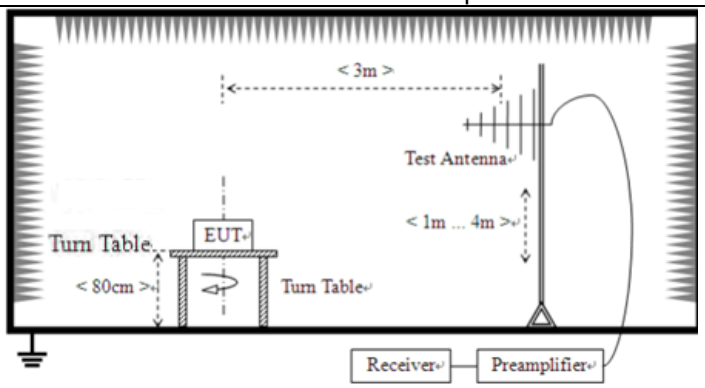
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Test setup:

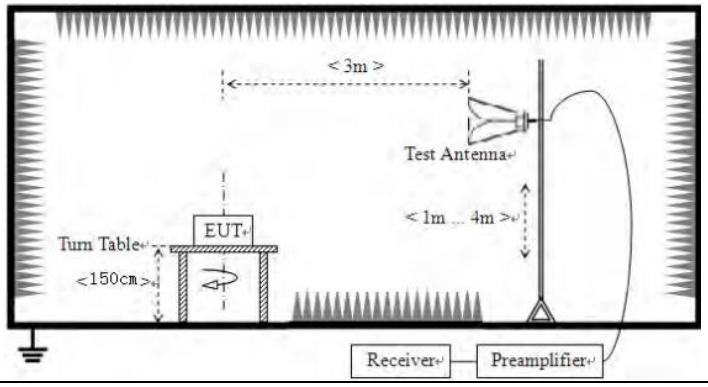
For radiated emissions from 9kHz to 30MHz



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 6.0 for details
Test mode:	Refer to section 5.2 for details
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1012mbar
Test voltage:	DC5V 2A
Test results:	Pass

Measurement data:

7.2.1 Field Strength of The Fundamental Signal

BLE

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.000	90.55	1.33	91.88	114	22.12	Vertical
2402.000	94.41	1.33	95,74	114	18.26	Horizontal
2440.000	88.54	1.55	90.09	114	23.91	Vertical
2440.000	90.19	1.55	91.74	114	22.26	Horizontal
2480.000	89.96	1.85	91.81	114	22.19	Vertical
2480.000	92.75	1.85	94.60	114	19.4	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.000	89.13	1.33	90.46	94	3.54	Vertical
2402.000	92.08	1.33	93.41	94	0.59	Horizontal
2440.000	89.47	1.55	91.02	94	2.98	Vertical
2440.000	91.84	1.55	93.39	94	0.61	Horizontal
2480.000	88.57	1.85	90.42	94	3.58	Vertical
2480.000	91.34	1.85	93.19	94	0.81	Horizontal

BT

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.000	84.51	1.33	85.54	114	28.46	Vertical
2402.000	95.14	1.33	96.47	114	17.53	Horizontal
2441.000	85.73	1.55	87.28	114	26.72	Vertical
2441.000	88.98	1.55	90.53	114	23.47	Horizontal
2480.000	86.03	1.85	87.88	114	26.12	Vertical
2480.000	87.82	1.85	89.67	114	24.33	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.000	83.57	1.33	84.9	94	9.1	Vertical
2402.000	92.21	1.33	93.54	94	0.46	Horizontal
2441.000	84.62	1.55	86.17	94	7.83	Vertical
2441.000	85.19	1.55	86.74	94	7.26	Horizontal
2480.000	82.93	1.85	84.78	94	9.22	Vertical
2480.000	86.9	1.85	88.75	94	5.25	Horizontal

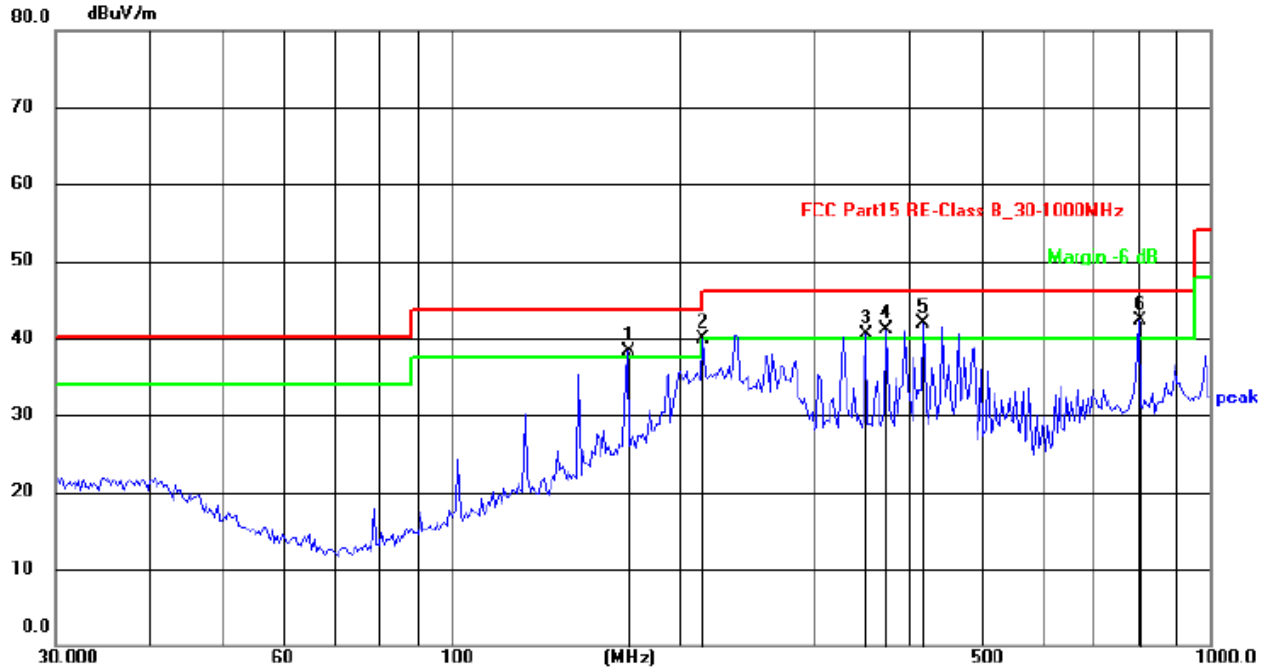
7.2.2 Spurious emissions

■ **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.

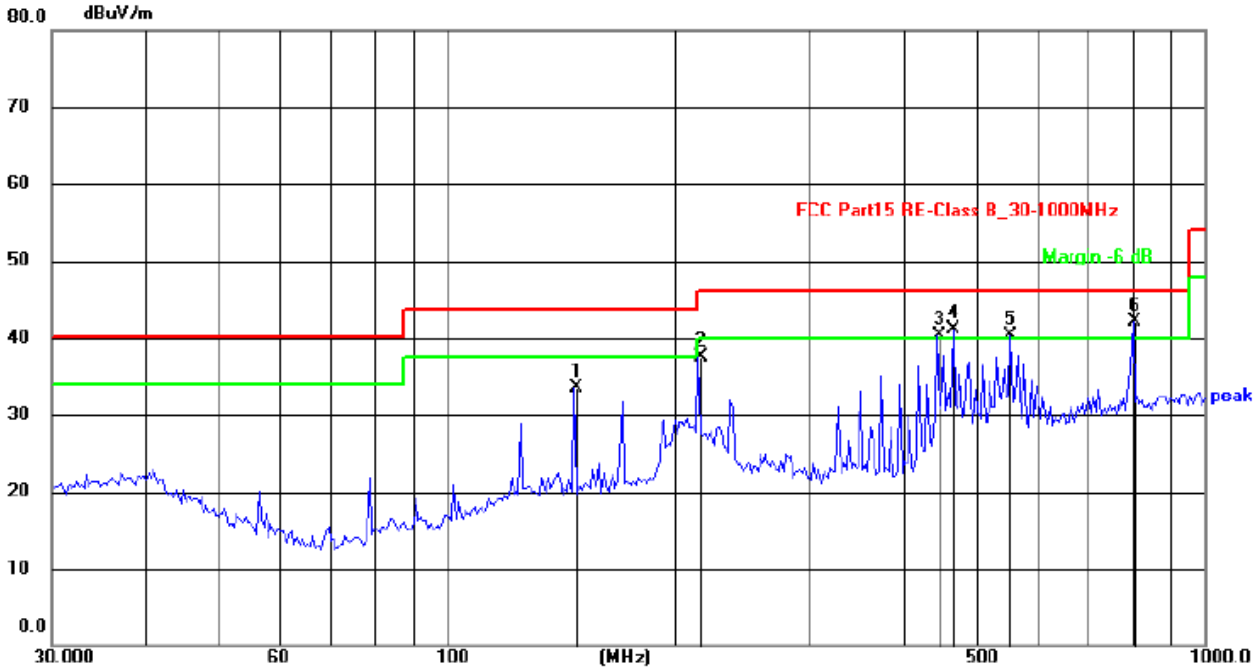
■ **Below 1GHz**

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	170.1888	42.65	-4.34	38.31	43.50	-5.19	QP
2	214.6062	38.80	1.18	39.98	43.50	-3.52	QP
3	350.9721	41.78	-1.29	40.49	46.00	-5.51	QP
4	373.8860	41.89	-0.75	41.14	46.00	-4.86	QP
5	418.3783	41.79	0.12	41.91	46.00	-4.09	QP
6	804.2523	35.99	6.22	42.21	46.00	-3.79	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	146.8392	38.34	-4.82	33.52	43.50	-9.98	QP
2	214.6063	36.29	1.18	37.47	43.50	-6.03	QP
3	442.5722	40.21	0.16	40.37	46.00	-5.63	QP
4	464.8867	40.38	0.79	41.17	46.00	-4.83	QP
5	554.1708	36.82	3.52	40.34	46.00	-5.66	QP
6	804.2523	35.87	6.22	42.09	46.00	-3.91	QP

Remarks:

1. *Final Level =Receiver Read level + Correct Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *"*", means this data is the too weak instrument of signal is unable to test.*

■ Above 1GHz

BLE

Test channel:2402MHz	Lowest channel

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4803.630	41.69	13.01	54.70	74.00	-19.30	Vertical
4803.722	42.17	13.01	55.18	74.00	-18.82	Vertical
4804.439	44.65	13.01	57.66	74.00	-16.34	Vertical
4803.639	41.63	13.01	54.64	74.00	-19.36	Horizontal
4803.698	40.95	13.01	53.96	74.00	-20.04	Horizontal
4804.088	41.40	13.01	54.41	74.00	-19.59	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4803.749	31.42	13.01	44.43	54.00	-9,57	Vertical
4803.852	31.65	13.01	44.66	54.00	-9.34	Vertical
4804.078	27.90	13.01	40.91	54.00	-13.09	Vertical
4803.566	27.76	13.01	40.77	54.00	-13.23	Horizontal
4803.749	28.01	13.01	41.02	54.00	-12.98	Horizontal
4804.162	28.94	13.01	41.95	54.00	-12.05	Horizontal

Remarks:

1. *Final Level =Receiver Read level + Correct Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *"*", means this data is the too weak instrument of signal is unable to test.*

Test channel:2440MHz	Middle

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4881.702	42.52	13.59	56.11	74.00	-17.89	Vertical
4882.272	42.46	13.59	56.05	74.00	-17.95	Vertical
4883.584	42.34	13.59	55.93	74.00	-18.07	Vertical
4881.796	43.05	13.59	56.64	74.00	-17.36	Horizontal
4882.066	42.88	13.59	56.47	74.00	-17.53	Horizontal
4883.766	43.02	13.59	56.61	74.00	-17.39	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4881.513	28.74	13.59	42.33	54.00	-11.67	Vertical
4882.070	28.90	13.59	42.49	54.00	-11.51	Vertical
4883.766	28.44	13.59	42.03	54.00	-11.97	Vertical
4881.909	28.79	13.59	42.38	54.00	-11.62	Horizontal
4882.212	28.57	13.59	42.16	54.00	-11.84	Horizontal
4883.820	28.81	13.59	42.40	54.00	-11.60	Horizontal

Remarks:

1. *Final Level =Receiver Read level + Correct Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *"*", means this data is the too weak instrument of signal is unable to test.*

Test channel:2480MHz	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4959.536	41.32	14.15	55.47	74.00	-18.53	Vertical
4959.992	42.01	14.15	56.16	74.00	-17.84	Vertical
4960.180	41.58	14.15	55.73	74.00	-18.27	Vertical
4959.386	41.44	14.15	55.59	74.00	-18.41	Horizontal
4959.670	41.47	14.15	55.62	74.00	-18.38	Horizontal
4960.578	41.82	14.15	55.97	74.00	-18.03	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4959.534	28.25	14.15	42.40	54.00	-11.60	Vertical
4959.902	28.09	14.15	42.24	54.00	-11.76	Vertical
4960.349	28.33	14.15	42.48	54.00	-11.52	Vertical
4959.096	28.41	14.15	42.56	54.00	-111.44	Horizontal
4960.426	28.18	14.16	42.34	54.00	-11.66	Horizontal
4960.458	28.05	14.15	42.20	54.00	-11.80	Horizontal

Remarks:

1. *Final Level =Receiver Read level + Correct Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *"*", means this data is the too weak instrument of signal is unable to test.*

BT

Test channel:2402MHz	Lowest channel

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4803.820	42.70	13.01	55.71	74.00	-18.29	Vertical
4804.431	44.07	13.01	57.08	74.00	-16.92	Vertical
4804.436	44.05	13.03	57.08	74.00	-16.92	Vertical
4803.636	41.66	13.01	54.67	74.00	-19.33	Horizontal
4804.082	41.57	13.01	54.58	74.00	-19.42	Horizontal
4804.086	41.43	13.02	54.45	74.00	-19.55	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4803.874	31.79	13.01	44.80	54.00	-9.20	Vertical
4803.932	31.77	13.01	44.78	54.00	-9.22	Vertical
4803.996	31.54	13.01	44.55	54.00	-9.45	Vertical
4803.794	28.36	13.01	41.37	54.00	-12.63	Horizontal
4803.976	28.14	13.01	41.15	54.00	-12.85	Horizontal
4804.052	28.31	13.01	41.32	54.00	-12.68	Horizontal

Remarks:

1. *Final Level =Receiver Read level + Correct Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *"*", means this data is the too weak instrument of signal is unable to test.*

Test channel:2441MHz	Middle

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4881.762	42.50	13.59	56.09	74.00	-17.91	Vertical
4882.202	42.26	13.59	55.85	74.00	-18.15	Vertical
4882.508	42.33	13.59	55.92	74.00	-18.08	Vertical
4881.471	43.09	13.59	56.68	74.00	-17.32	Horizontal
4881.642	43.00	13.59	56.59	74.00	-17.41	Horizontal
4882.062	42.81	13.59	56.40	74.00	-17.60	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4881.512	28.83	13.59	42.42	54.00	-11.58	Vertical
4882.074	28.77	13.59	42.36	54.00	-11.64	Vertical
4882.173	28.54	13.59	42.13	54.00	-11.87	Vertical
4881.878	28.82	13.59	42.41	54.00	-11.59	Horizontal
4881.909	28.11	13.59	41.70	54.00	-12.30	Horizontal
4882.202	28.63	13.59	42.22	54.00	-11.78	Horizontal

Remarks:

1. *Final Level =Receiver Read level + Correct Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *"*", means this data is the too weak instrument of signal is unable to test.*

Test channel:2480MHz	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4959.952	42.00	14.15	56.15	74.00	-17.85	Vertical
4960.184	41.54	14.15	55.69	74.00	-18.31	Vertical
4960.195	41.22	14.15	55.37	74.00	-18.63	Vertical
4959.376	41.58	14.15	55.73	74.00	-18.27	Horizontal
4959.556	41.49	14.15	55.64	74.00	-18.36	Horizontal
4960.278	41.87	14.15	56.02	74.00	-17.98	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4959.962	28.46	14.15	42.61	54.00	-11.39	Vertical
4960.333	28.35	14.15	42.50	54.00	-11.50	Vertical
4960.336	28.31	14.16	42.47	54.00	-11.53	Vertical
4959.705	28.33	14.15	42.48	54.00	-11.52	Horizontal
4959.796	28.30	14.15	42.45	54.00	-11.55	Horizontal
4960.440	28.11	14.16	42.27	54.00	-11.73	Horizontal

Remarks:

1. *Final Level =Receiver Read level + Correct Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *"*", means this data is the too weak instrument of signal is unable to test.*

7.2.3 Bandedge emissions

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

BLE

Test channel:2402MHz	Lowest channel

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.000	45.37	1.28	46.65	74.00	-27.35	Horizontal
2390.000	45.68	1.28	46.96	74.00	-27.04	Horizontal
2400.000	46.01	1.28	47.29	74.00	-26.71	Horizontal
2310.000	44.57	1.28	45.85	74.00	-28,15	Vertical
2390.000	46.04	1.28	47.32	74.00	-26.68	Vertical
2400.000	46.85	1.28	48.13	74.00	-25.87	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.000	33.05	1.28	34.33	54.00	-19.67	Horizontal
2390.000	32.90	1.28	34.18	54.00	-19.82	Horizontal
2400.000	33.95	1.28	35.23	54.00	-18.77	Horizontal
2310.000	31.16	1.28	32.44	54.00	-21.56	Vertical
2390.000	32.36	1.28	33.64	54.00	-20.36	Vertical
2400.000	32.41	1.28	33.69	54.00	-20.31	Vertical

Test channel:2480MHz	Highest channel

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.500	51.08	1.88	52.96	74.00	-21.04	Horizontal
2500.000	53.68	1.88	55.56	74.00	-18.44	Horizontal
2483.500	48.33	1.88	50.21	74.00	-23.79	Vertical
2500.000	51.34	1.88	53.22	74.00	-20.78	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.500	45.28	1.88	47.16	54.00	-6.84	Horizontal
2500.000	49.69	1.88	51.57	54.00	-2.43	Horizontal
2483.500	41.97	1.88	43.85	54.00	-10.15	Vertical
2500.000	46.87	1.88	48.75	54.00	-5.25	Vertical

Remark:

1. Final Level =Receiver Read level + Correct Factor

BT

Test channel:2402MHz	Lowest channel

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.000	45.43	1.28	46.71	74.00	-27.29	Horizontal
2390.000	44.96	1.28	46.24	74.00	-27.76	Horizontal
2400.000	44.16	1.28	45.44	74.00	-28.56	Horizontal
2310.000	44.92	1.28	46.20	74.00	-27.80	Vertical
2390.000	45.42	1.28	46.70	74.00	-27.30	Vertical
2400.000	45.72	1.28	47.00	74.00	-27.00	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.000	33.23	1.28	34.51	54.00	-19.49	Horizontal
2390.000	32.66	1.28	33.94	54.00	-20.06	Horizontal
2400.000	32.77	1.28	34.05	54.00	-19.95	Horizontal
2310.000	31.99	1.28	33.27	54.00	-20.73	Vertical
2390.000	32.45	1.28	33.73	54.00	-20.27	Vertical
2400.000	32.29	1.28	33.57	54.00	-20.43	Vertical

Test channel:2480MHz	Highest channel

Peak value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.500	51.28	1.88	53.16	74.00	-20.84	Horizontal
2500.000	49.07	1.88	50.95	74.00	-23.05	Horizontal
2483.500	48.77	1.88	50.65	74.00	-23.35	Vertical
2500.000	47.52	1.88	49.40	74.00	-24.60	Vertical

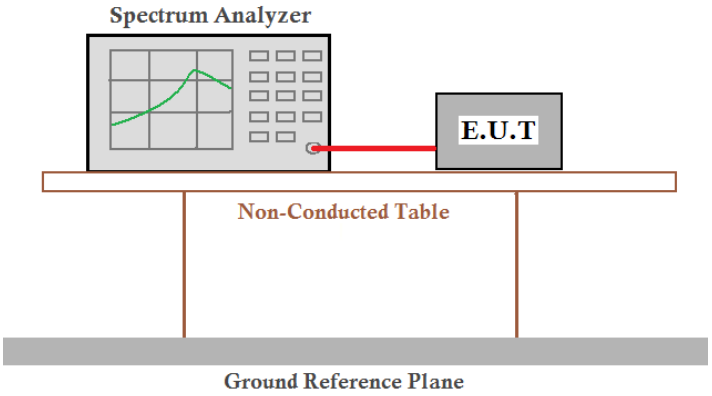
Average value:

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.500	45.25	1.88	47.13	54.00	-6.87	Horizontal
2500.000	44.78	1.88	46.66	54.00	-7.34	Horizontal
2483.500	41.60	1.88	43.48	54.00	-10.52	Vertical
2500.000	40.96	1.88	42.84	54.00	-11.16	Vertical

Remark:

1. *Final Level =Receiver Read level + Correct Factor*

7.3 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:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

BLE

Test channel	20dB bandwidth(MHz)	Result
Lowest	1.186	Pass
Middle	1.184	Pass
Highest	1.184	Pass

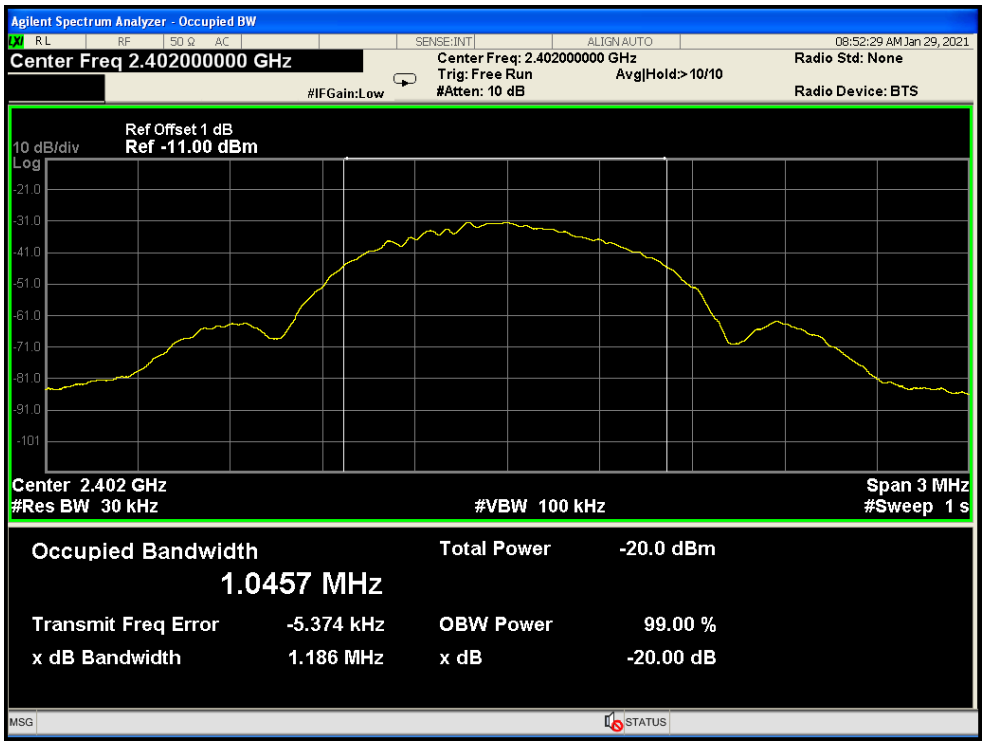
BT

Test channel	20dB bandwidth(MHz)	Result
Lowest	1.247	Pass
Middle	1.263	Pass
Highest	1.258	Pass

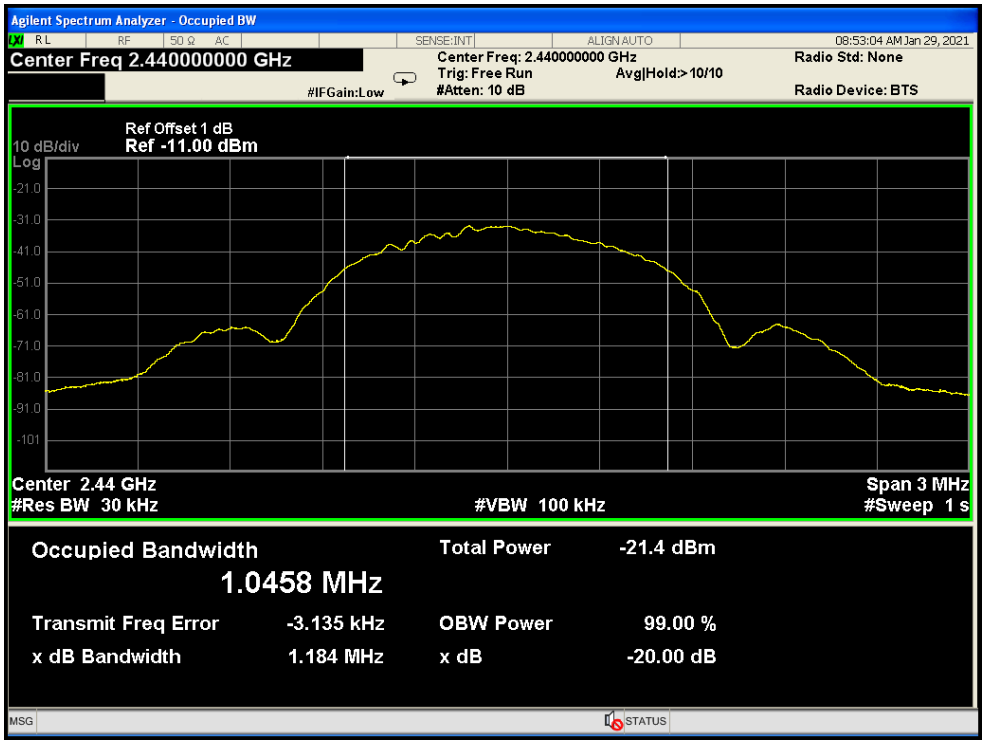
BLE

Test plot as follows:

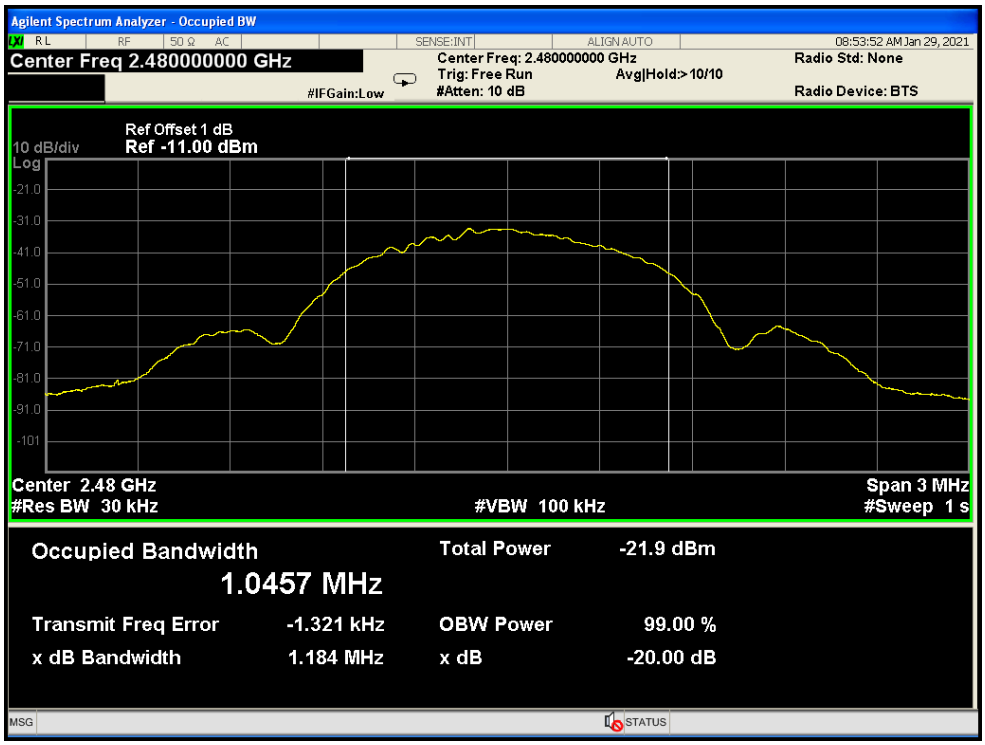
Lowest channel



Middle channel



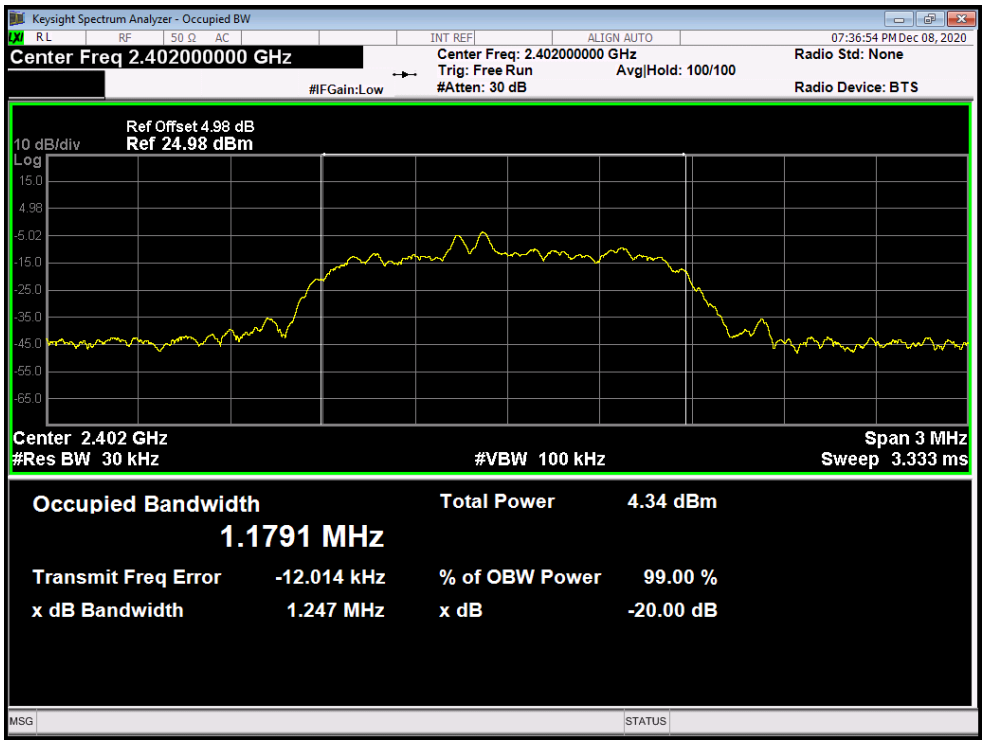
Highest channel



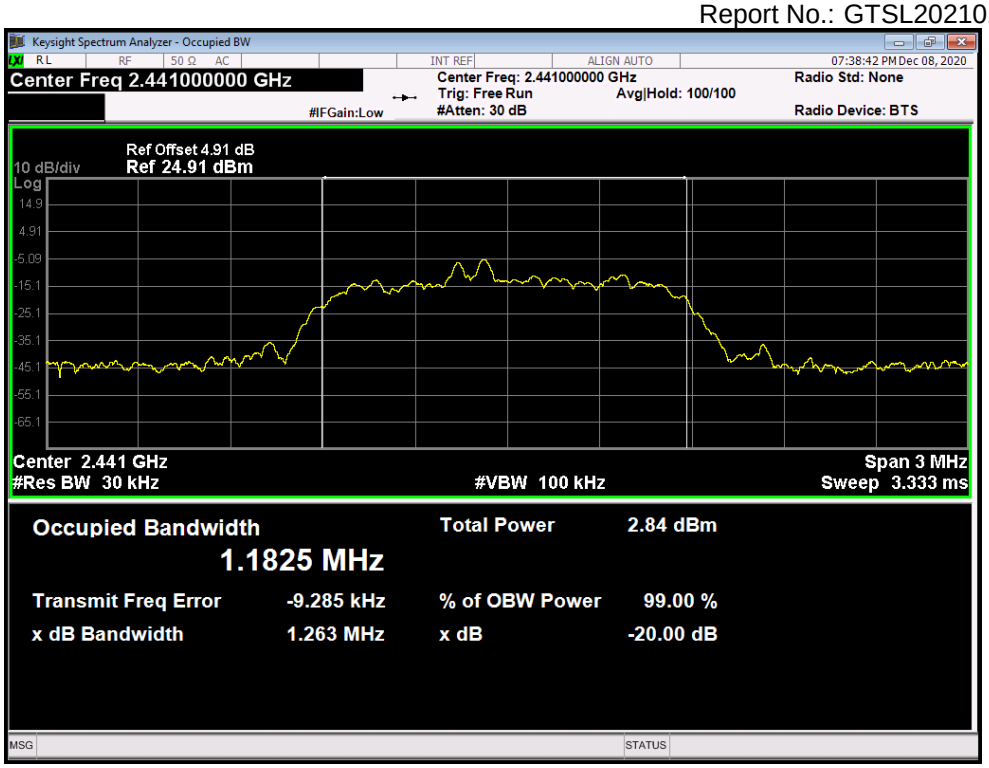
BT

Test plot as follows:

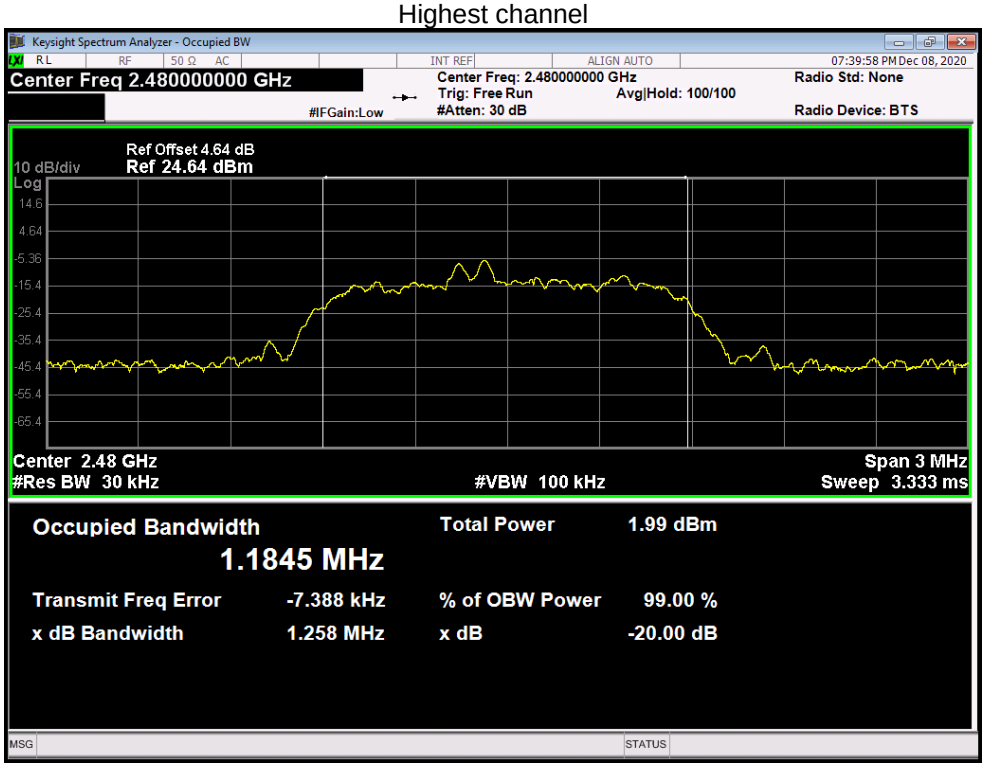
Lowest channel



Middle channel



Highest channel



8 Test Setup Photo

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

9 EUT Constructional Details

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

------End------