TEST REPORT

Reference No......	:	WTX23X12118265W001
FCC ID.....	:	2BDZJ-JR02
Applicant.....	:	Dongguan Yande Electronic Technology Co., Ltd
Address.....	:	Room 508, Building 3, No. 19 Jinpeng Road, Fenggang Town, Dongguan City, Guangdong Province,China
Product Name.....	:	earphone
Test Model.....	:	JR02
Standards.....	:	FCC Part 15.247
Date of Receipt sample.....	:	December 3, 2023
Date of Test.....	:	December 3~10, 2023
Date of Issue.....	:	December 10, 2023
Test Result.....	:	**Pass**

Remarks:
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:
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Tested by:

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TABLE OF CONTENTS

Report version

Version No.	Date of issue	Description
Rev.00	December 10, 2023	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Dongguan Yande Electronic Technology Co., Ltd

Address of applicant: Room 508, Building 3, No. 19 Jinpeng Road, Fenggang Town, Dongguan City, Guangdong Province,China

Manufacturer: Dongguan Yande Electronic Technology Co., Ltd

Address of manufacturer: Room 508, Building 3, No. 19 Jinpeng Road, Fenggang Town, Dongguan City, Guangdong Province,China

General Description of EUT	
Product Name:	earphone
Brand Name:	/
Model No.:	JR02
Adding Model(s):	JR01,JR03, JR04, JR05, JR06, JR07, JR08, JR09, JR10, YD01, YD02, YD03, YD04, YD05, YD06, YD07, YD08, YD09, YD10, BQ10, BQ20, BQ30, BQ40, BQ50, BQ60, BQ70, BQ80, BQ90, GT01, GT02, GT03, GT04, GT05, GT06, GT07, GT08, GT09, GT10, TM10, TM11, TM12, TM13, TM20, TM30, TM40, TM50, TM60, TM70, TM80, TM90, S20, F9, M10, M25, M28, M90, M41, M99, M98, M97, M96, M95, M94, M93, M92, M91, SM01, SM02, SM03, SM04, SM05, SM06, SM07, SM08, SM09, SM10, TG01, TG02, TG03, TG04, TG05, TG06, TG07, TG08, TG09, TG10, TG11, TG12, VG02, VG06, VG09, M12, M100, VG121, x15
Rated Voltage:	DC 3.7V from Battery
Power Adapter:	/
Software Version:	/
Hardware Version:	/
Serial Number:	S-001
Note: The test data is gathered from a production sample provided by the manufacturer.	

Technical Characteristics of EUT	
Bluetooth Type:	BLE
Frequency Range:	2402-2480MHz
RF Output Power:	3.25dBm
Data Rate:	1Mbps

Modulation:	GFSK
Quantity of Channels:	40
Channel Separation:	2MHz
Type of Antenna:	Chip
Antenna Gain:	1.5dBi

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
558074 D01 15.247 Meas Guidance v05r02: Guidance For Compliance Measurements On Digital Transmission System, Frequency Hopping Spread Spectrum System, And Hybrid System Devices Operating Under Section 15.247 Of The Fcc Rules
ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02.
The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

Address of the test laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990
Waltek Testing Group (Shenzhen) Co., Ltd. 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 maintain ed in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, with a duty cycle equal to 100%, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	Low	2402MHz
TM2	Middle	2440MHz
TM3	High	2480MHz

Test software(Fix the Tx frequency)	**Power level(Testing)**
Name	level
BT_Tool V1.0.9	Index

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	50~55 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	±0.42dB
Occupied Bandwidth	Conducted	±1.5%
Power Spectral Density	Conducted	±1.8dB
Conducted Spurious Emission	Conducted	±2.17dB
Conducted Emissions	Conducted	9-150kHz ±3.74dB
		0.15-30MHz ±3.34dB

Transmitter Spurious Emissions	Radiated	30-200MHz ±4.52dB
		0.2-1GHz ±5.56dB
		1-6GHz ±3.84dB
		6-18GHz ±3.92dB

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
SEMT-1075	Communication Tester	Rohde & Schwarz	CMW500	148650	2023-03-27	2024-03-26
SEMT-1063	GSM Tester	Rohde & Schwarz	CMU200	114403	2023-03-27	2024-03-26
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2023-03-27	2024-03-26
SEMT-1079	Spectrum Analyzer	Agilent	N9020A	US47140102	2023-03-27	2024-03-26
SEMT-1080	Signal Generator	Agilent	83752A	3610A01453	2023-03-27	2024-03-26
SEMT-1081	Vector Signal Generator	Agilent	N5182A	MY47070202	2023-03-27	2024-03-26
SEMT-1028	Power Divider	Weinschel	1506A	PM204	2023-03-27	2024-03-26
SEMT-1082	Power Divider	RF-Lambda	RFLT4W5M18G	14110400027	2023-03-27	2024-03-26
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2023-03-27	2024-03-26
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2023-03-27	2024-03-26
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2023-04-12	2024-04-11
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2023-04-12	2024-04-11
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2023-03-19	2025-03-18
SEMT-1068	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2023-03-19	2025-03-18
SEMT-1042	Horn Antenna	ETS	3117	00086197	2023-03-19	2025-03-18
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2023-03-27	2024-03-26
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2023-03-27	2024-03-26
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2023-03-27	2024-03-26
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2023-03-27	2024-03-26
SEMT-1076	RF Switcher	Top Precision	RCS03-A2	/	2023-03-19	2025-03-18
SEMT-1096	Power Sensor	Agilent	U2021XA	MY54250019	2023-03-27	2024-03-26
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	/	/
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	/	/
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	/	/
SEMT-C004	Cable	Zheng DI	2M0RFC	/	/	/

SEMT-C005	Cable	Zheng DI	1M0RFC	/	/	/
SEMT-C006	Cable	Zheng DI	1M0RFC	/	/	/

Software List			
Description	**Manufacturer**	**Model**	**Version**
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

*Remark: indicates software version used in the compliance certification testing

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§2.1093	RF Exposure	Compliant
§15.203; §15.247(b)(4)(i)	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	Compliant
§15.207(a)	Conducted Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.247(a)(2)	DTS Bandwidth	Compliant
§15.247(b)(3)	RF Output Power	Compliant
§15.209(a)	Radiated Emission	Compliant
§15.247(d)	Band Edge (Out of Band Emissions)	Compliant

N/A: not applicable

3. Antenna Requirement

3.1 Standard Applicable

According to FCC Part 15.203, 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 shall be considered sufficient to comply with the provisions of this section.

3.2 Evaluation Information

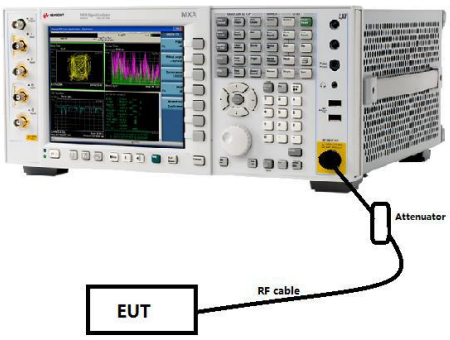
This product has a chip antenna, fulfill the requirement of this section.

4. Power Spectral Density

4.1 Standard Applicable

According to 15.247(a)(1)(iii), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.2 Test Setup Block Diagram



4.3 Test Procedure

According to the KDB 558074 D01 v05r02 Subclause 8.4 and ANSI C63.10-2013 Subclause 11.10.2, the test method of power spectral density as below:

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ 3 × RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.4 Summary of Test Results/Plots

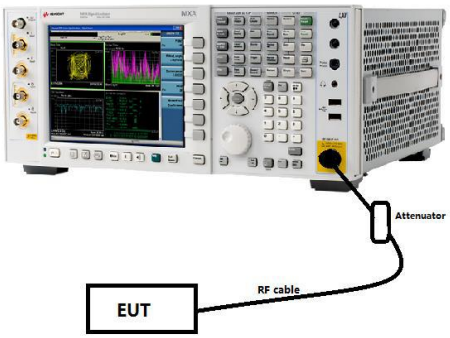
Please refer to Appendix A

5. DTS Bandwidth

5.1 Standard Applicable

According to 15.247(a)(2), systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.2 Test Setup Block Diagram



5.3 Test Procedure

According to the KDB 558074 D01 v05r02 Subclause 8.2 and ANSI C63.10-2013 Subclause 11.8.1, the test method of DTS Bandwidth as below:

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.3 Summary of Test Results/Plots

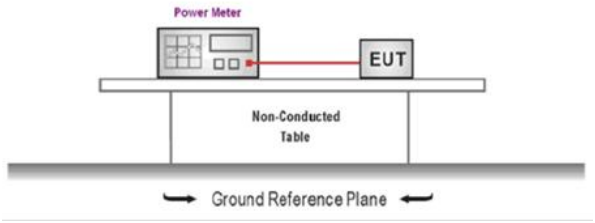
Please refer to Appendix B

6. RF Output Power

6.1 Standard Applicable

According to 15.247(b)(3), for systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

6.2 Test Setup Block Diagram



6.3 Test Procedure

According to the KDB-558074 D01 v05r02 Subclause 8.3.1.1 and ANSI C63.10-2013 Subclause 11.9.1.1, this procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

a)The maximum peak conducted output power may be measured using a broadband peak RF power meter.
b)The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.
c)Record the measurement data.

6.4 Summary of Test Results/Plots

Please refer to Appendix C

7. Field Strength of Spurious Emissions

7.1 Standard Applicable

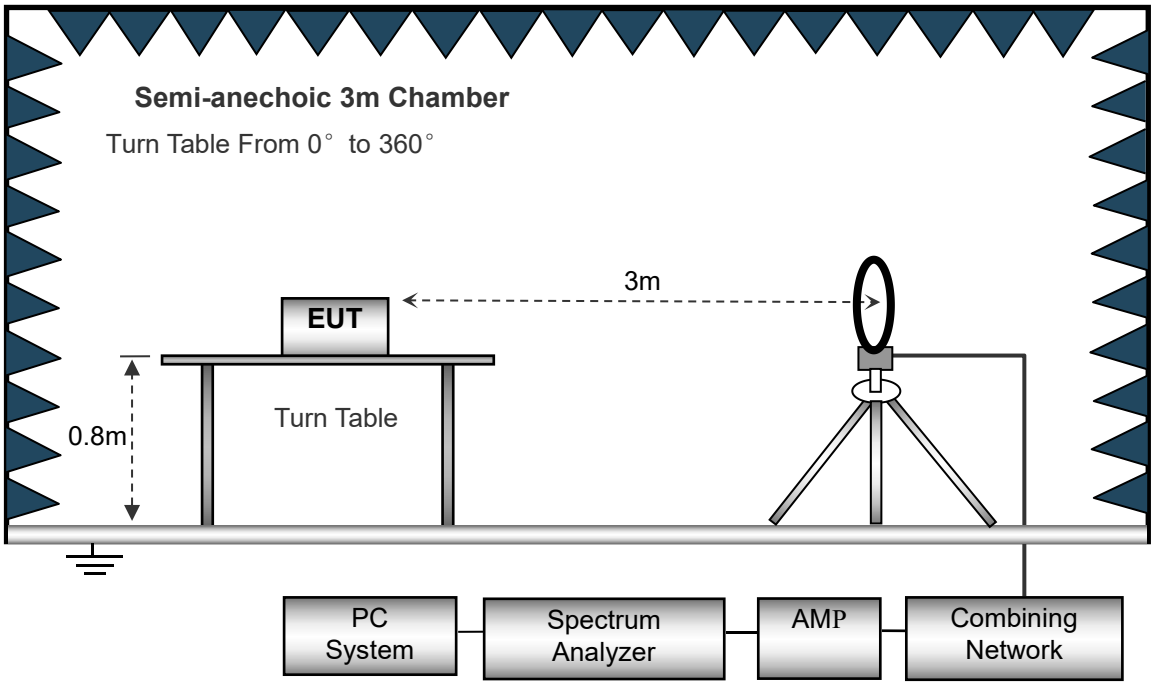
According to §15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

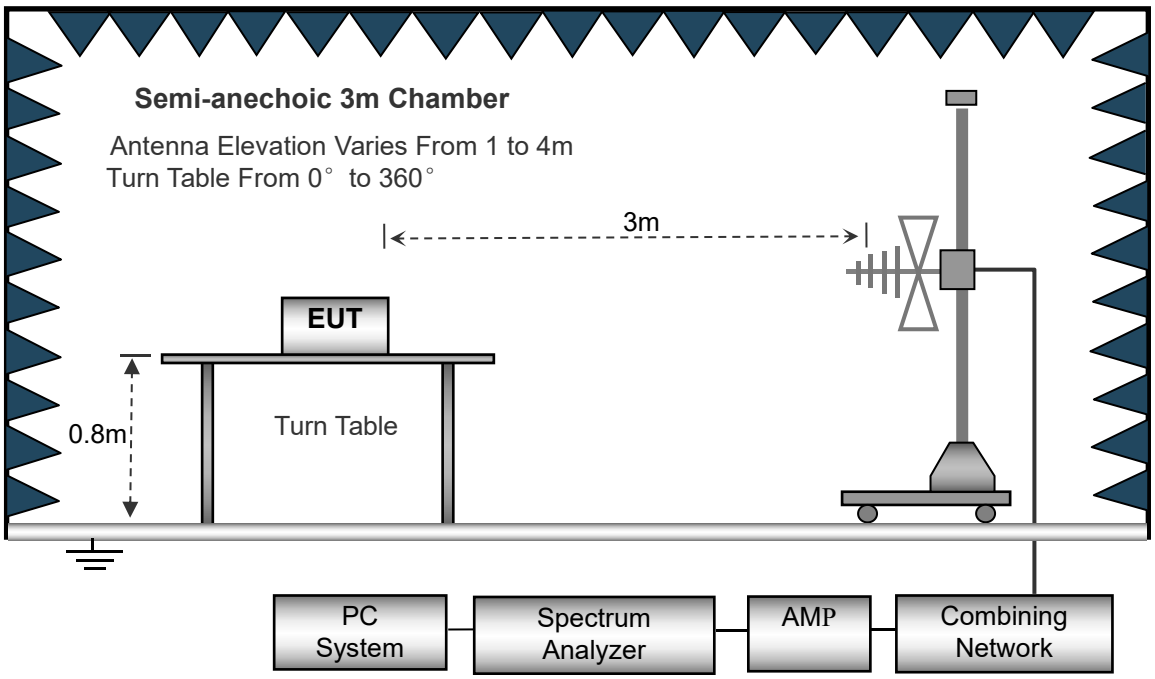
7.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.
The spacing between the peripherals was 10cm.

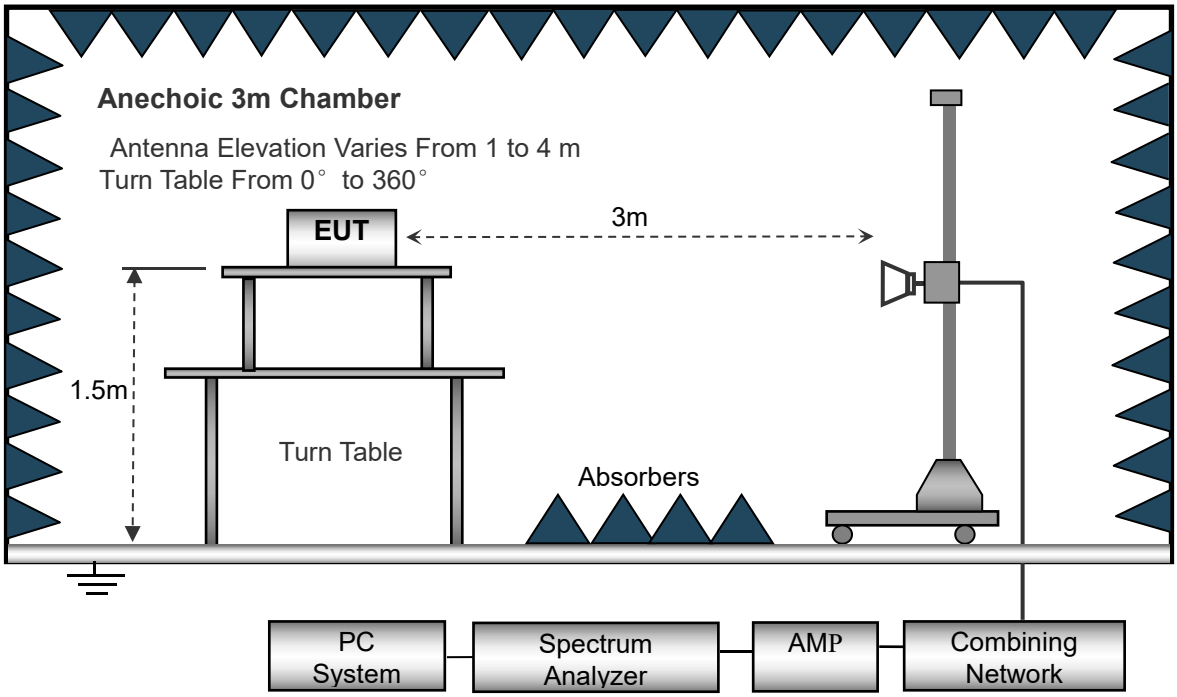
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30MHz to 1GHz.



The test setup for emission measurement above 1GHz.



Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

7.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Result = Indicated Reading + Correct

Correct =Ant. Factor + Cable Loss – Ampl. Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit. The equation for margin calculation is as follows:

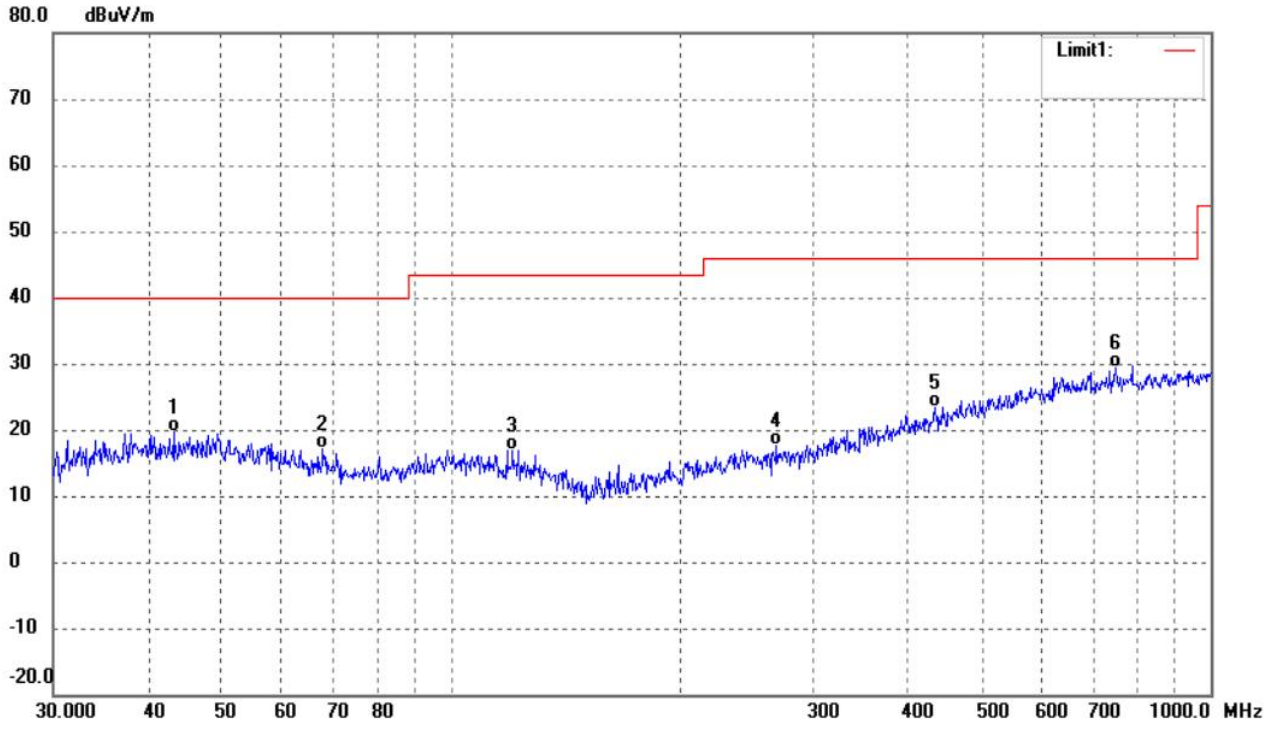
Margin = Result – FCC Part 15 Limit

7.4 Summary of Test Results/Plots

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

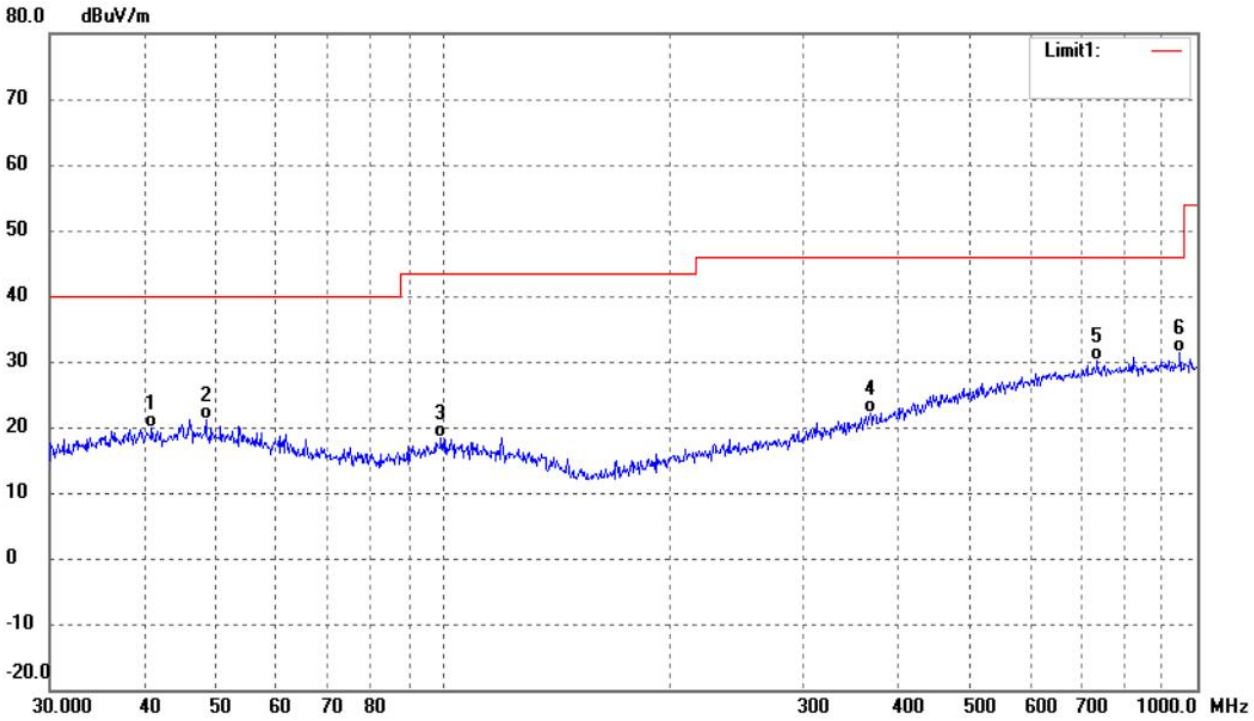
➢ Spurious Emissions Below 1GHz

Test Chanel	Low Channel(Worst Case)	Polarity:	H



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	43.2017	26.71	-7.00	19.71	40.00	-20.29	-	-	QP
2	67.9129	26.90	-9.81	17.09	40.00	-22.91	-	-	QP
3	120.6991	26.54	-9.72	16.82	43.50	-26.68	-	-	QP
4	268.4853	25.40	-7.81	17.59	46.00	-28.41	-	-	QP
5	434.0651	26.48	-2.99	23.49	46.00	-22.51	-	-	QP
6	750.1083	27.61	1.76	29.37	46.00	-16.63	-	-	QP

Test Chanel	Low Channel(Worst Case)	Polarity:	V



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	40.9881	26.88	-7.00	19.88	40.00	-20.12	-	-	QP
2	48.3318	28.11	-6.96	21.15	40.00	-18.85	-	-	QP
3	99.1797	27.23	-8.88	18.35	43.50	-25.15	-	-	QP
4	368.1116	26.99	-4.85	22.14	46.00	-23.86	-	-	QP
5	737.0714	28.34	1.67	30.01	46.00	-15.99	-	-	QP
6	948.7610	28.77	2.59	31.36	46.00	-14.64	-	-	QP

➢ Spurious Emissions Above 1GHz

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel-2402MHz							
4804	55.85	-3.59	52.26	74	-21.74	H	PK
4804	47.62	-3.59	44.03	54	-9.97	H	AV
7206	52.43	-0.52	51.91	74	-22.09	H	PK
7206	40.85	-0.52	40.33	54	-13.67	H	AV
4804	54.84	-3.59	51.25	74	-22.75	V	PK
4804	47.09	-3.59	43.50	54	-10.50	V	AV
7206	50.45	-0.52	49.93	74	-24.07	V	PK
7206	43.23	-0.52	42.71	54	-11.29	V	AV
Middle Channel-2440MHz							
4880	55.04	-3.49	51.55	74	-22.45	H	PK
4880	47.76	-3.49	44.27	54	-9.73	H	AV
7320	51.99	-0.47	51.52	74	-22.48	H	PK
7320	39.78	-0.47	39.31	54	-14.69	H	AV
4880	52.20	-3.49	48.71	74	-25.29	V	PK
4880	45.51	-3.49	42.02	54	-11.98	V	AV
7320	50.45	-0.47	49.98	74	-24.02	V	PK
7320	42.76	-0.47	42.29	54	-11.71	V	AV
High Channel-2480MHz							
4960	55.14	-3.41	51.73	74	-22.27	H	PK
4960	49.24	-3.41	45.83	54	-8.17	H	AV
7440	51.84	-0.42	51.42	74	-22.58	H	PK
7440	39.94	-0.42	39.52	54	-14.48	H	AV
4960	54.01	-3.41	50.60	74	-23.40	V	PK
4960	46.57	-3.41	43.16	54	-10.84	V	AV
7440	51.74	-0.42	51.32	74	-22.68	V	PK
7440	42.59	-0.42	42.17	54	-11.83	V	AV

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

8. Out of Band Emissions

8.1 Standard Applicable

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

8.2 Test Procedure

According to the KDB 558074 D01 v05r02 Subclause 8.4 and ANSI C63.10-2013 Subclause 11.11, the Emissions in nonrestricted frequency bands test method as follows:

a) Set the center frequency and span to encompass frequency range to be measured.
b) Set the RBW = 100 kHz.
c) Set the VBW ≥ [3 × RBW].
d) Detector = peak.
e) Sweep time = auto couple.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the peak marker function to determine the maximum amplitude level.

According to the KDB 558074 D01 v05r02 Subclause 8.5 and ANSI C63.10-2013 Subclause 11.12, the Emissions in restricted frequency bands test method as follows:

A. Radiated emission measurements:
Set span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation (2310MHz to 2420MHz for low bandedge, 2460MHz to 2500MHz for the high bandedge)
RBW = 1MHz, VBW = 1MHz for peak value measured
RBW = 1MHz, VBW = 10Hz for average value measured
Sweep = auto; Detector function = peak/average; Trace = max hold
All the trace to stabilize, set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. Those emission must comply with the 15.209 limit for fall in the restricted bands listed in section 15.205. Note that the method of measurement KDB publication number: 913591 may be used for the radiated bandedge measurements.

B. Antenna-port conducted measurements

Peak emission levels are measured by setting the instrument as follows:

a) RBW = as specified in Table 9/

b) VBW ≥ [3 × RBW].

c) Detector = peak.

d) Sweep time = auto.

e) Trace mode = max hold.

f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be lengthened for low-duty-cycle applications.)

Table 9—RBW as a function of frequency

Frequency	RBW
9 kHz to 150 kHz	200 Hz to 300 Hz
0.15 MHz to 30 MHz	9 kHz to 10 kHz
30 MHz to 1000 MHz	100 kHz to 120 kHz
>1000 MHz	1 MHz

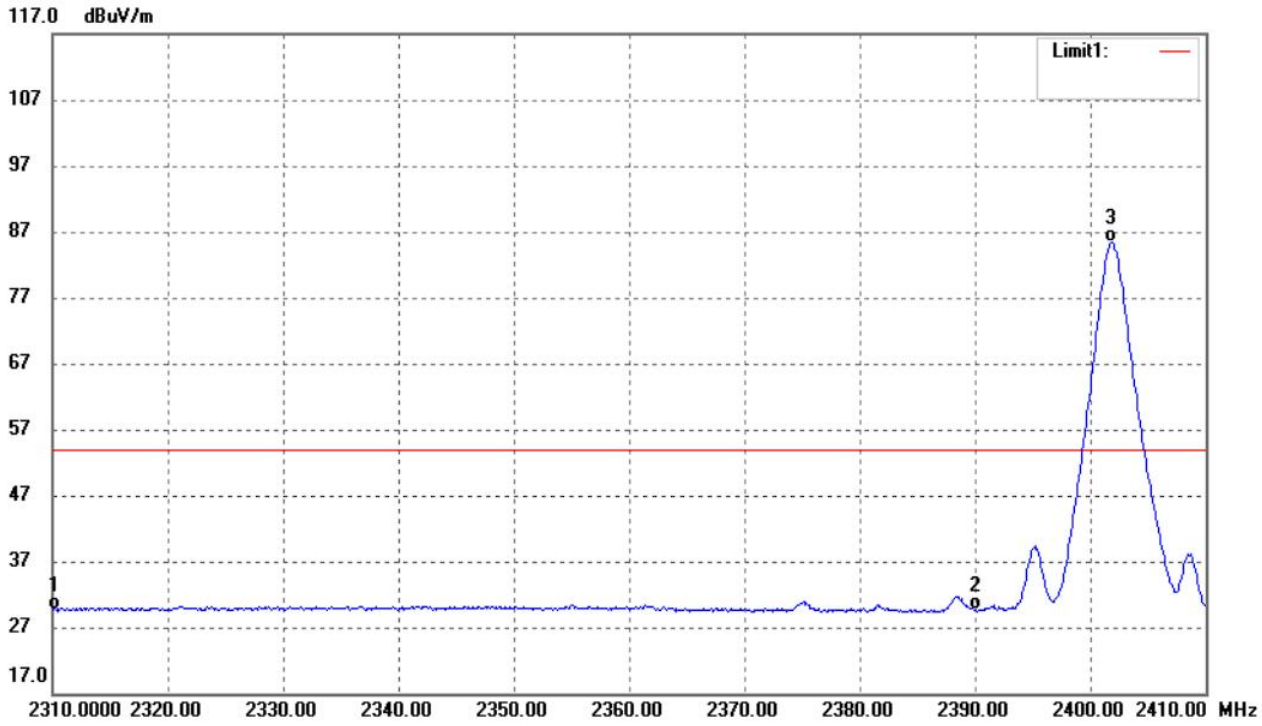
If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in section 8.1. Report the three highest emissions relative to the limit.

8.3 Summary of Test Results/Plots

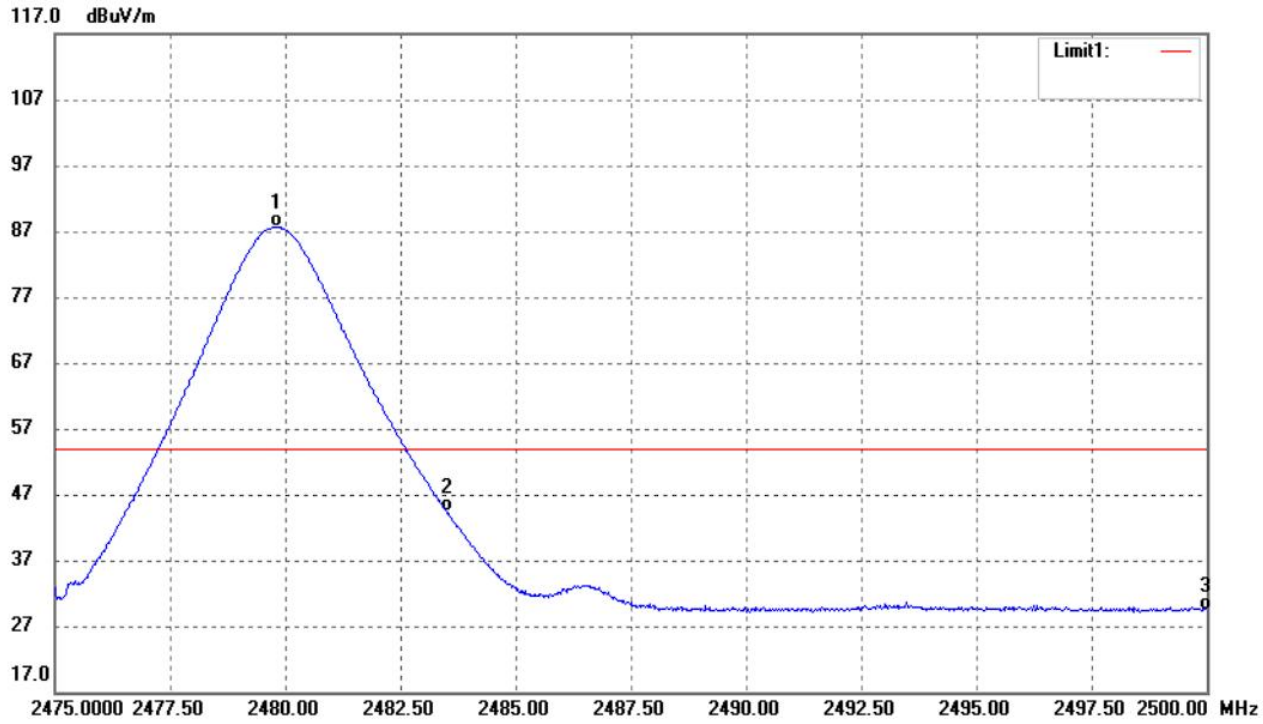
➢ Radiated test

Test Chanel	Low Channel	Polarity:	V(Worst Case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	40.46	-10.82	29.64	54.00	-24.36	Average Detector
	2310.000	53.44	-10.82	42.62	74.00	-31.38	Peak Detector
2	2390.000	40.36	-10.70	29.66	54.00	-24.34	Average Detector
	2390.000	53.51	-10.70	42.81	74.00	-31.19	Peak Detector
3	2401.800	96.12	-10.69	85.43	/	/	Average Detector
	2401.900	101.30	-10.69	90.61	/	/	Peak Detector

Test Chanel	High Channel(Worst Case)	Polarity:	V(Worst Case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.800	98.21	-10.58	87.63	/	/	Average Detector
	2479.825	98.96	-10.58	88.38	/	/	Peak Detector
2	2483.500	55.03	-10.58	44.45	54.00	-9.55	Average Detector
	2483.500	60.21	-10.58	49.63	74.00	-24.37	Peak Detector
3	2500.000	39.89	-10.55	29.34	54.00	-24.66	Average Detector
	2500.000	50.76	-10.55	40.21	74.00	-33.79	Peak Detector

- Conducted test

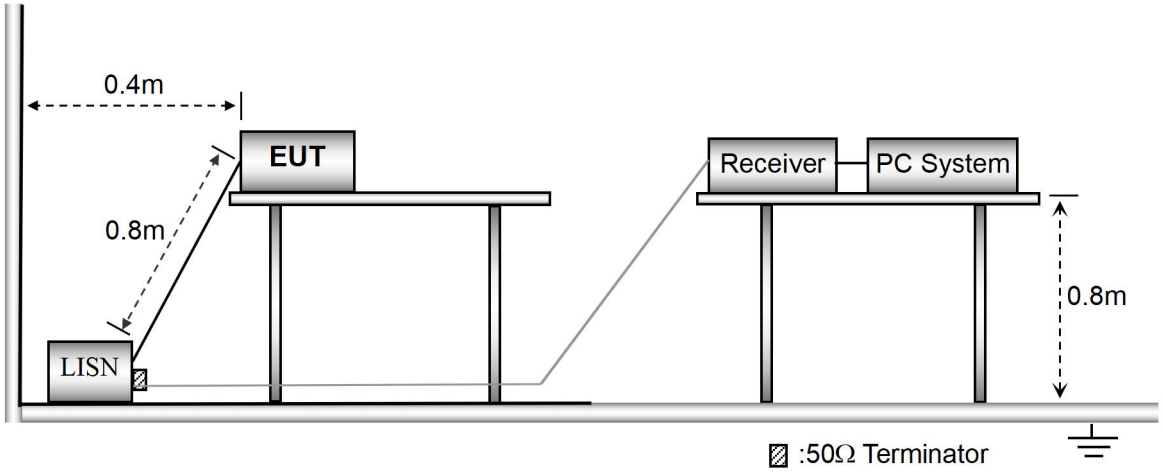
Please refer to Appendix D and E

9. Conducted Emissions

9.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.

9.2 Basic Test Setup Block Diagram



9.3 Test Receiver Setup

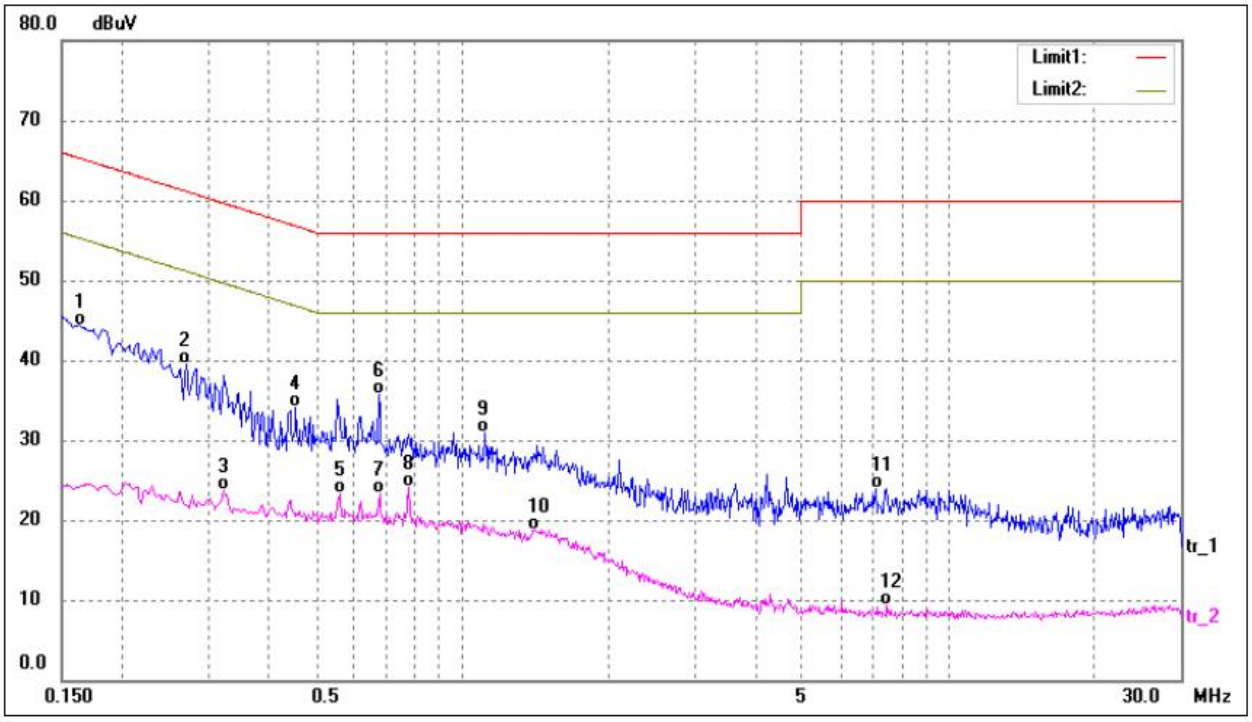
During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency..... 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed..... Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth..... 9 kHz
Quasi-Peak Adapter Mode.....Normal

9.4 Summary of Test Results/Plots

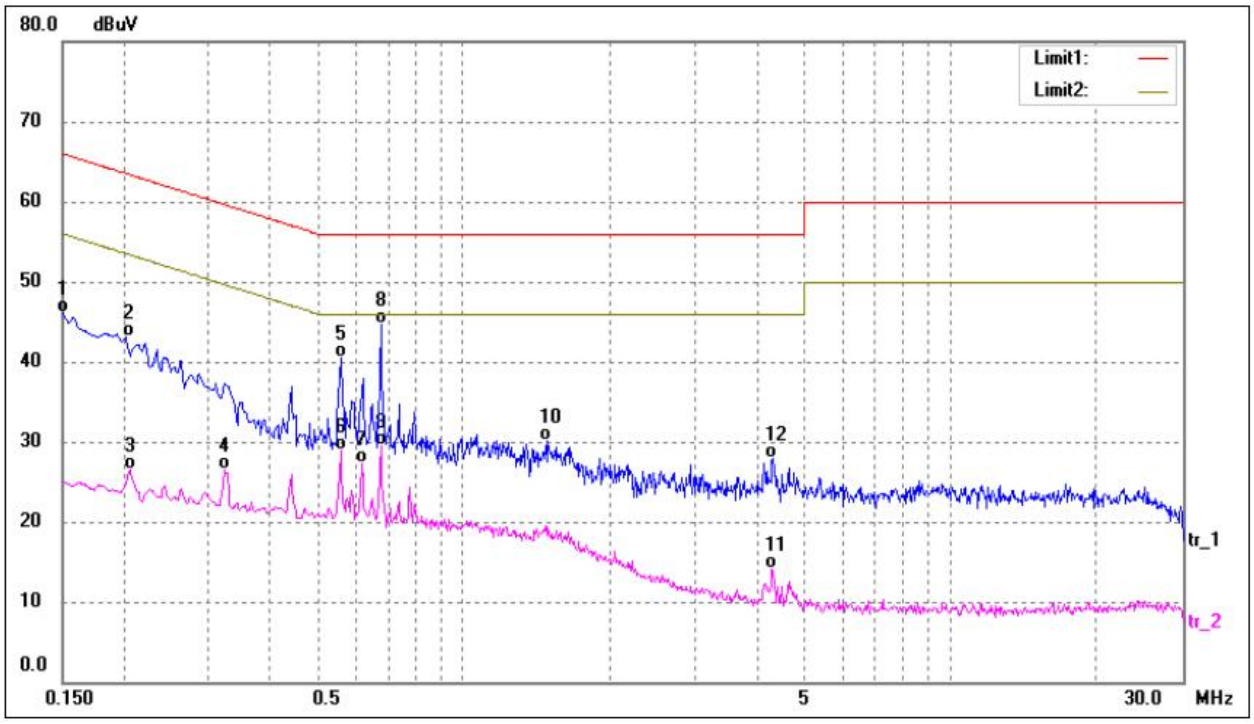
Remark:
Result = Indicated Reading + Correct
Correct=Cable lose + Pulse Limiter Factor + Artificial Mains Factor
Margin=Result- Limit

Test Mode	TM1(AC120V 60Hz)	Polarity:	Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1620	34.03	10.37	44.40	65.36	-20.96	QP
2	0.2700	29.11	10.35	39.46	61.12	-21.66	QP
3	0.3220	13.40	10.33	23.73	49.65	-25.92	AVG
4	0.4540	23.74	10.28	34.02	56.80	-22.78	QP
5	0.5580	13.01	10.29	23.30	46.00	-22.70	AVG
6*	0.6740	25.44	10.36	35.80	56.00	-20.20	QP
7	0.6780	13.02	10.37	23.39	46.00	-22.61	AVG
8	0.7780	13.62	10.43	24.05	46.00	-21.95	AVG
9	1.1140	20.38	10.51	30.89	56.00	-25.11	QP
10	1.4138	8.41	10.38	18.79	46.00	-27.21	AVG
11	7.0659	13.90	9.95	23.85	60.00	-36.15	QP
12	7.4820	-0.72	9.94	9.22	50.00	-40.78	AVG

Test Mode	TM1(AC120V 60Hz)	Polarity:	Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1500	35.80	10.38	46.18	65.99	-19.81	QP
2	0.2020	32.76	10.37	43.13	63.52	-20.39	QP
3	0.2060	16.17	10.37	26.54	53.36	-26.82	AVG
4	0.3220	16.21	10.33	26.54	49.65	-23.11	AVG
5	0.5580	30.16	10.29	40.45	56.00	-15.55	QP
6	0.5580	18.59	10.29	28.88	46.00	-17.12	AVG
7	0.6180	17.03	10.33	27.36	46.00	-18.64	AVG
8*	0.6780	34.38	10.37	44.75	56.00	-11.25	QP
9	0.6780	19.07	10.37	29.44	46.00	-16.56	AVG
10	1.4900	19.79	10.35	30.14	56.00	-25.86	QP
11	4.3140	4.10	10.03	14.13	46.00	-31.87	AVG
12	4.3180	17.84	10.03	27.87	56.00	-28.13	QP

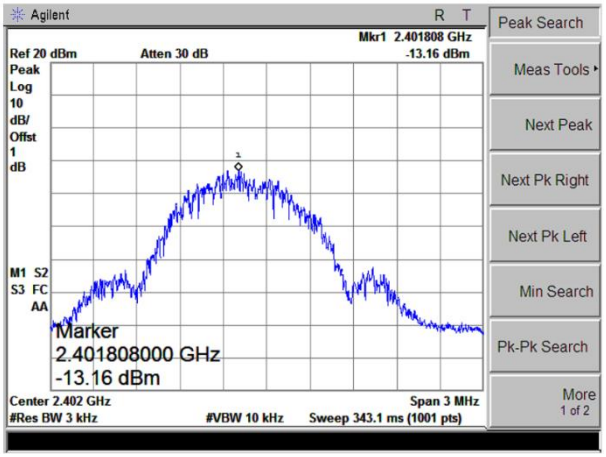
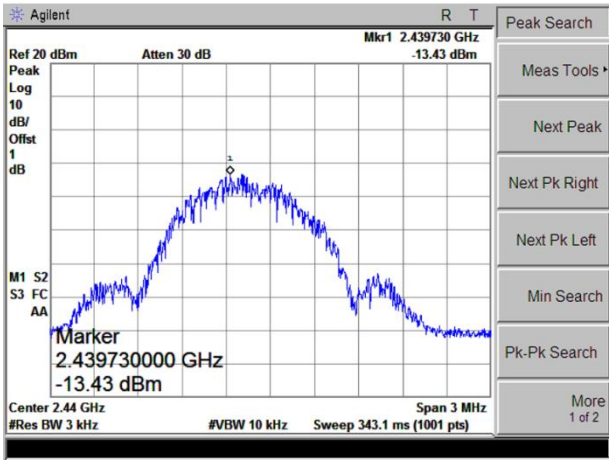
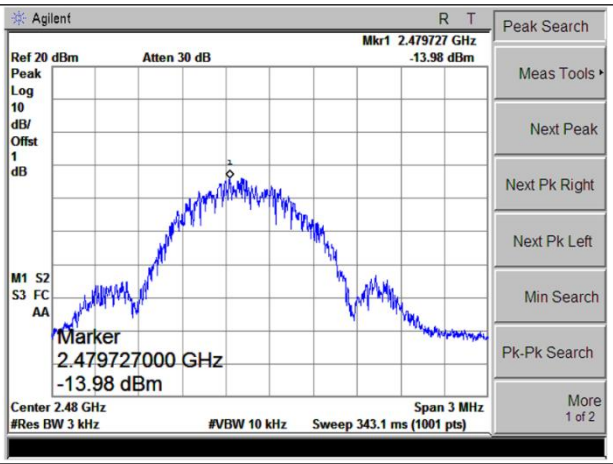
APPENDIX SUMMARY

Project No.	WTX23X12118265W001	Test Engineer	Jack Huang
Start date	2023/12/03	Finish date	2023/12/10
Temperature	24.8℃	Humidity	47%
RF specifications	BT-BLE		

APPENDIX	Description of Test Item	Result
A	Power Spectral Density	Compliant
B	DTS Bandwidth	Compliant
C	RF Output Power	Compliant
D	Conducted Out of Band Emissions and	Compliant
E	Conducted Sprious Emissions	Compliant

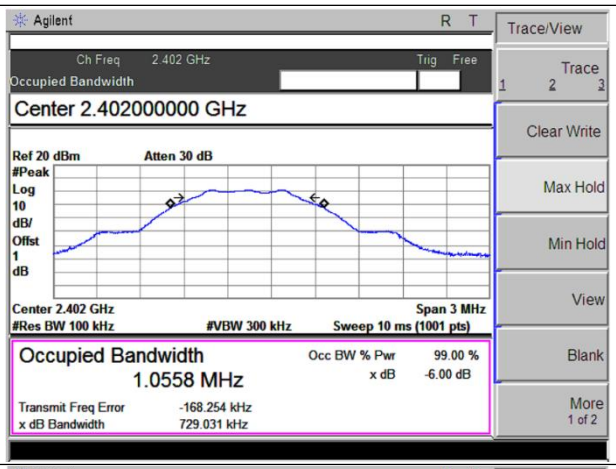
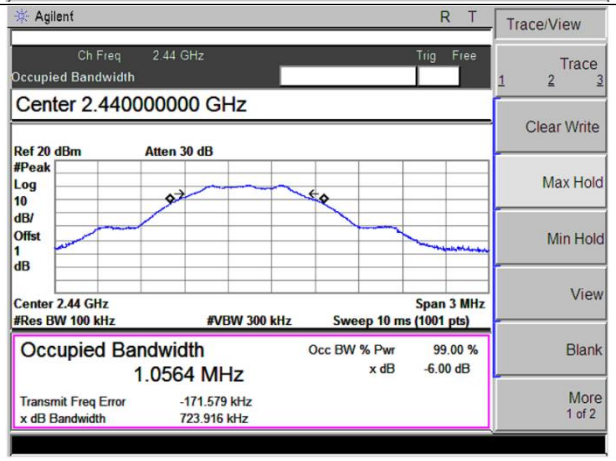
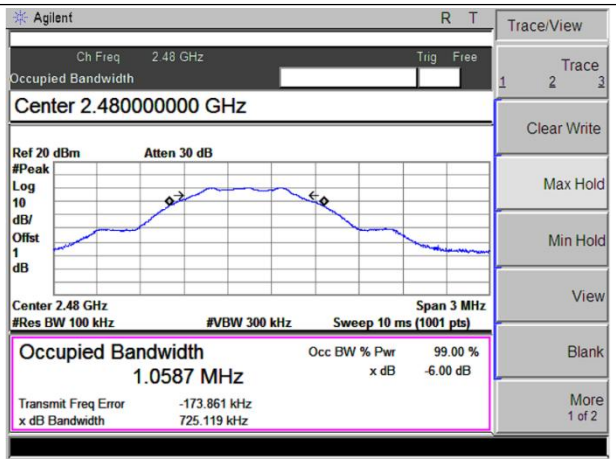
APPENDIX A

Power Spectral Density			
Test Mode	Test Channel	Power Spectral Density dBm/3kHz	Limit dBm/3kHz
GFSK(BLE)	Low	-13.16	8
	Middle	-13.43	8
	High	-13.98	8

Low	
Middle	
High	

APPENDIX B

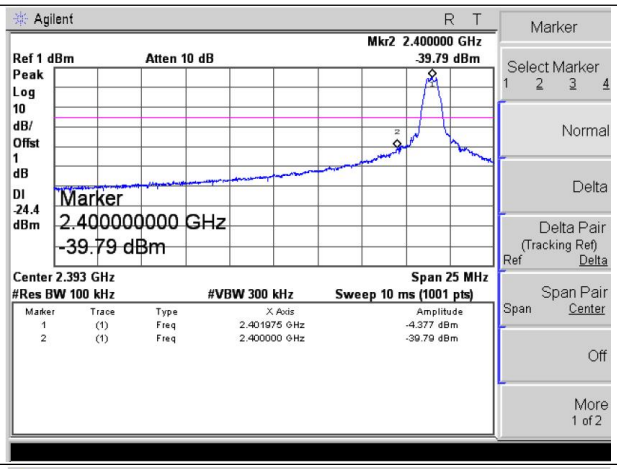
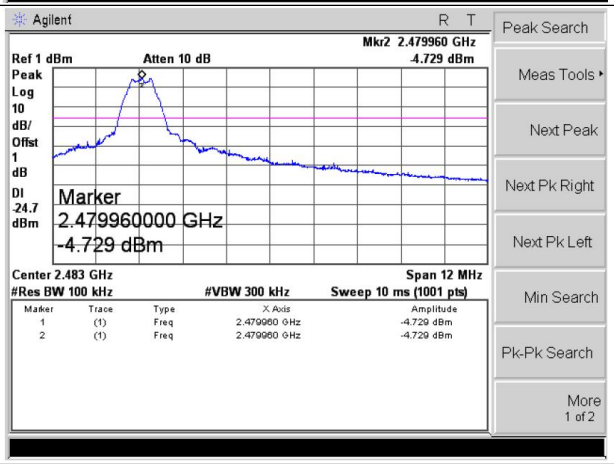
DTS Bandwidth			
Test Mode	Test Channel	6 dB Bandwidth kHz	Limit kHz
GFSK(BLE)	Low	729.031	≥500
	Middle	723.916	≥500
	High	725.119	≥500

Low	
Middle	
High	

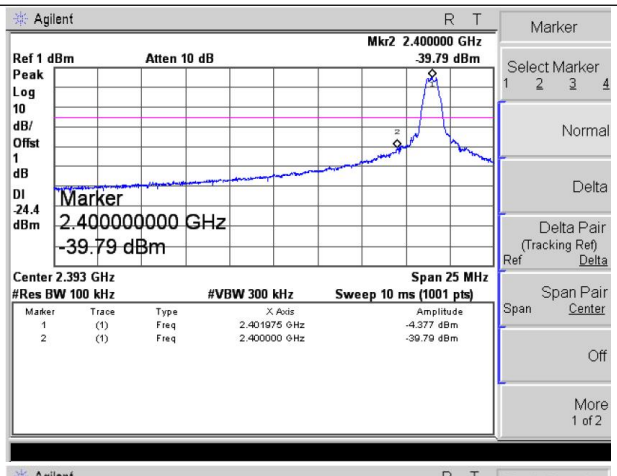
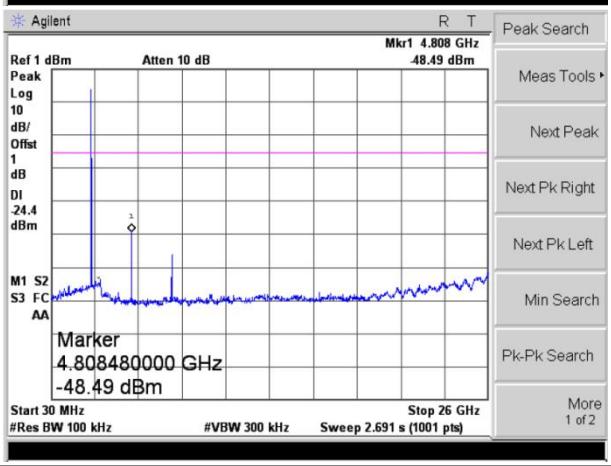
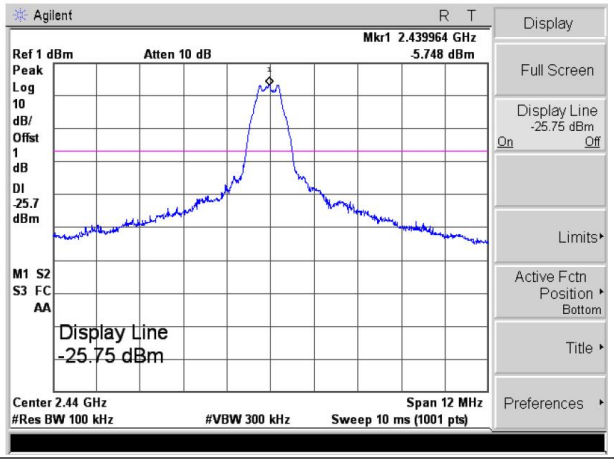
APPENDIX C

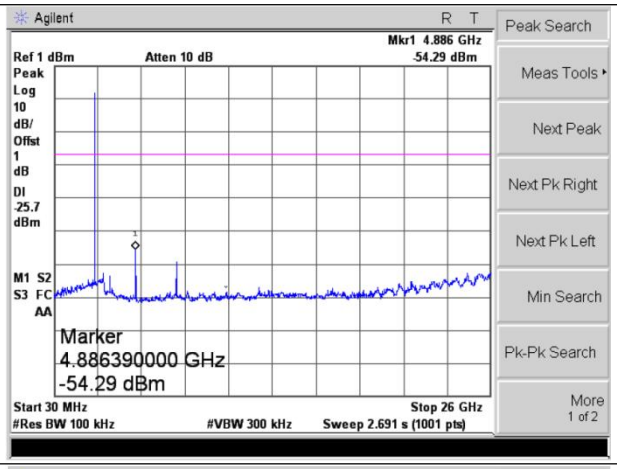
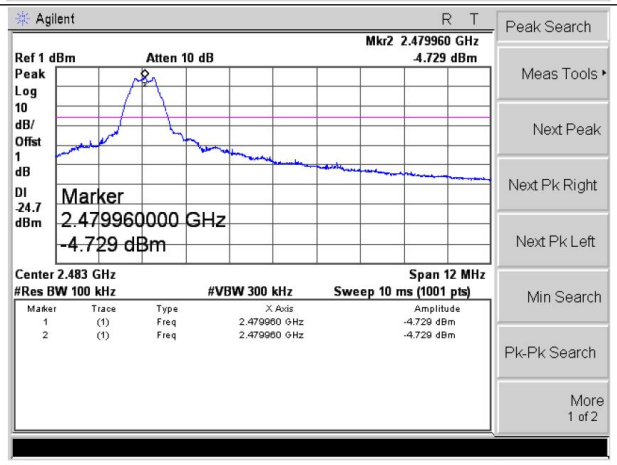
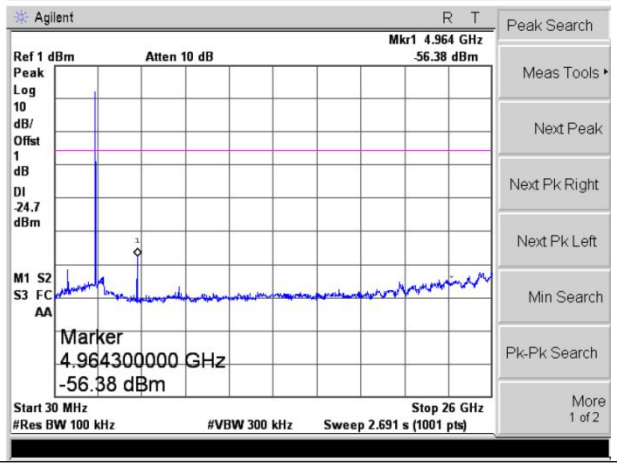
RF Output Power			
Test Mode	Test Channel	Reading dBm	Limit dBm
GFSK(BLE)	Low	3.25	30
	Middle	3.14	30
	High	3.12	30

APPENDIX D

Low		
High		

APPENDIX E

Low	 
Middle	

		 Agilent R T Mkr1 4.886 GHz Ref 1 dBm Atten 10 dB -54.29 dBm Peak Log 10 dB/ Offst 1 dB Dl -25.7 dBm M1 S2 S3 FC AA Marker 4.886390000 GHz -54.29 dBm Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26 GHz Sweep 2.691 s (1001 pts) Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2
High		 Agilent R T Mkr2 2.479960 GHz Ref 1 dBm Atten 10 dB -4.729 dBm Peak Log 10 dB/ Offst 1 dB Dl -24.7 dBm Marker 2.479960000 GHz -4.729 dBm Center 2.483 GHz #Res BW 100 kHz #VBW 300 kHz Span 12 MHz Sweep 10 ms (1001 pts) Marker Trace Type X Axis Amplitude 1 (1) Freq 2.479960 GHz -4.729 dBm 2 (1) Freq 2.479960 GHz -4.729 dBm Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2  Agilent R T Mkr1 4.964 GHz Ref 1 dBm Atten 10 dB -56.38 dBm Peak Log 10 dB/ Offst 1 dB Dl -24.7 dBm M1 S2 S3 FC AA Marker 4.964300000 GHz -56.38 dBm Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26 GHz Sweep 2.691 s (1001 pts) Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2

APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

******* END OF REPORT *******