

TEST REPORT

Reference No...... : WTX25X10281776W002
FCC ID : 2BTQ6-TM10B
Applicant : Huizhou Oule Technology Co., Ltd.
Address : East side, 4/F, Block A, Factory Building, No. 1 Xinxing Road (Factory Building No. 6), Daya Bay West District, Huizhou, China
Manufacturer : The same as Applicant
Address : The same as Applicant
Product Name : Barcode Scanner
Model No...... : TM-10B
Standards : FCC Part 15.247
Date of Receipt sample : 2025-10-27
Date of Test..... : 2025-11-03 to 2025-12-11
Date of Issue : 2025-12-15
Test Report Form No. : WTX_Part 15_247W
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 approver.

Prepared By:

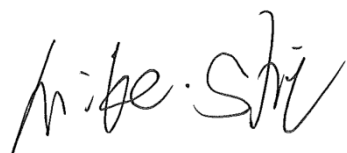
Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road,

Block 70 Bao'an District, Shenzhen, Guangdong, China

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Email: sem@waltek.com.cn

Tested by:



Mike Shi/Project Engineer

Approved by:



Jason Su/Manager

TABLE OF CONTENTS

1. GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
1.2 TEST STANDARDS.....	5
1.3 TEST METHODOLOGY	5
1.4 TEST FACILITY	5
1.5 EUT SETUP AND TEST MODE	6
1.6 MEASUREMENT UNCERTAINTY	7
1.7 TEST EQUIPMENT LIST AND DETAILS	8
2. SUMMARY OF TEST RESULTS.....	12
3. ANTENNA REQUIREMENT.....	13
3.1 STANDARD APPLICABLE	13
3.2 EVALUATION INFORMATION	13
4. POWER SPECTRAL DENSITY	14
4.1 STANDARD APPLICABLE	14
4.2 TEST SETUP BLOCK DIAGRAM	14
4.3 TEST PROCEDURE	14
5.4 SUMMARY OF TEST RESULTS/PLOTS.....	14
5. 6DB BANDWIDTH	15
5.1 STANDARD APPLICABLE	15
5.2 TEST SETUP BLOCK DIAGRAM	15
5.3 TEST PROCEDURE	15
5.4 SUMMARY OF TEST RESULTS/PLOTS.....	15
6. RF OUTPUT POWER.....	16
6.1 STANDARD APPLICABLE	16
6.2 TEST SETUP BLOCK DIAGRAM	16
6.3 TEST PROCEDURE.....	16
6.4 SUMMARY OF TEST RESULTS/PLOTS.....	16
7. FIELD STRENGTH OF SPURIOUS EMISSIONS.....	17
7.1 STANDARD APPLICABLE	17
7.2 TEST PROCEDURE	17
7.3 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	19
7.4 SUMMARY OF TEST RESULTS/PLOTS.....	19
8. OUT OF BAND EMISSIONS.....	23
8.1 STANDARD APPLICABLE	23
8.2 TEST PROCEDURE	23
8.3 SUMMARY OF TEST RESULTS/PLOTS.....	24
9. CONDUCTED EMISSIONS	26
9.1 TEST PROCEDURE	26
9.2 BASIC TEST SETUP BLOCK DIAGRAM	26
9.3 TEST RECEIVER SETUP	26
9.4 SUMMARY OF TEST RESULTS/PLOTS.....	26
APPENDIX SUMMARY	29
APPENDIX A: DTS BANDWIDTH	30
APPENDIX B: MAXIMUM CONDUCTED OUTPUT POWER	32
APPENDIX C: MAXIMUM POWER SPECTRAL DENSITY	34
APPENDIX D: REFERENCE LEVEL MEASUREMENT	36
APPENDIX E: BAND EDGE MEASUREMENTS.....	38
APPENDIX F: CONDUCTED SPURIOUS EMISSION.....	40
APPENDIX G: DUTY CYCLE.....	43
APPENDIX PHOTOGRAPHS.....	45

Report version

Version No.	Date of issue	Description
Rev.00	2025-12-15	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Barcode Scanner
Trade Name:	/
Model No.:	TM-10B
Adding Model(s):	/
Rated Voltage:	USB Port:DC5V Battery:DC3.7V
Battery Capacity:	2600mAh
Power Adapter:	/
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Frequency Range:	2402-2480MHz
RF Output Power:	-0.41dBm (Conducted)
Type of Modulation:	GFSK
Quantity of Channels:	40
Channel Separation:	2MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	3.79dBi
<i>Note The Antenna Gain is provided by the customer and can affect the validity of results.</i>	

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 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

558074 D01 DTS Meas Guidance v05r02: Guidance for performing Compliance Measurement on Digital Transmission Systems operating under section 15.247.

ANSI C63.10-2020: American National Standard of Procedures for Compliance Testing of 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 C63.10-2020, KDB 558074 D01 DTS 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 maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A and the CAB identifier is CN0057.

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, 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 Conditions	
Temperature:	22~25 °C
Relative Humidity:	50~56 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB cable	1.5	Unshielded	With 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
Computer	Lenovo	Pro14IHU2021	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.57\text{dB}$
Occupied Bandwidth	Conducted	$\pm 0.015\text{MHz}$
Power Spectral Density	Conducted	$\pm 1.8\text{dB}$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emission 1#	Conducted	@9kHz to 150kHz: $\pm 3.74\text{dB}$
		@150kHz to 30MHz: $\pm 3.34\text{dB}$
Conducted Emission 2#	Conducted	@9kHz to 150kHz: $\pm 3.74\text{dB}$
		@150kHz to 30MHz: $\pm 3.34\text{dB}$
Transmitter Spurious Emissions chamber A	Radiated	@9kHz to 30MHz: $\pm 3.0\text{dB}$
		@30MHz to 1GHz: $\pm 5.70\text{dB}$
		@1GHz to 6GHz: $\pm 5.88\text{dB}$
		@6GHz to 18GHz: $\pm 5.96\text{dB}$
Transmitter Spurious Emissions chamber B	Radiated	@30MHz to 1GHz: $\pm 5.36\text{dB}$
Transmitter Spurious Emissions chamber C	Radiated	@9kHz to 30MHz: $\pm 3.0\text{dB}$
		@30MHz to 1GHz: $\pm 5.28\text{dB}$
		@1GHz to 6GHz: $\pm 5.56\text{dB}$
		@6GHz to 18GHz: $\pm 5.72\text{dB}$

1.7 Test Equipment List and Details

Fixed asset Number	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
WTXE1041A 1001	Communication Tester	Rohde & Schwarz	CMW500	148650	2025-02-23	2026-02-22
WTXE1022A 1002	GSM Tester	Rohde & Schwarz	CMU200	114403	2025-02-23	2026-02-22
WTXE1005A 1005	Spectrum Analyzer	Agilent	N9020A	US471401 02	2025-02-23	2026-02-22
WTXE1084A 1001	Spectrum Analyzer	Agilent	N9020A	MY543205 48	2025-02-23	2026-02-22
WTXE1044A 1001	Signal Generator	Agilent	83752A	3610A014 53	2025-02-23	2026-02-22
WTXE1045A 1001	Vector Signal Generator	Agilent	N5182A	MY470702 02	2025-02-23	2026-02-22
WTXE1018A 1001	Power Divider	Weinschel	1506A	PM204	2025-02-23	2026-02-22
WTXW1105A 1010	Spectrum Analyzer	KEYSIGHT	N9020A	MY512856 77	2025-02-23	2026-02-22
WTXE1105A 1008	RF Control Unit	Tonscend	JS0806-2	24F80620 870	2025-02-23	2026-02-22
WTXE1103A 1003	Attenuator	Pasternack	PE4007-4	/	2025-02-23	2026-02-22
WTXE1003A 1-005	Coaxial Cable	/	0M4RFC	/	2025-02-23	2026-02-22
☐ Chamber A: Below 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/03 5	2025-02-23	2026-02-22
WTXE1001A 1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2025-02-23	2026-02-22
WTXE1007A 1002	Amplifier	HP	8447F	2805A034 75	2025-02-23	2026-02-22
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2026-02-25
WTXE1010A 1006	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2025-02-23	2026-02-22
WTXE1104A 1032-1	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1032-2	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
WTXE1104A	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22

1032-3						
☐ Chamber A: Above 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/03 5	2025-02-23	2026-02-22
WTXE1001A 1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2025-02-23	2026-02-22
WTXE1065A 1001	Amplifier	C&D	PAP-1.0G18	14918	2025-02-23	2026-02-22
WTXE1010A 1005	Horn Antenna	ETS	3117	00086197	2025-02-23	2026-02-22
WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2026-03-16
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2025-02-23	2026-02-22
WTXE1104A 1033-1	Coaxial Cable	/	C16-07-07	/	2025-02-23	2026-02-22
WTXE1104A 1033-2	Coaxial Cable	/	C16-07-07	/	2025-02-23	2026-02-22
WTXE1104A 1033-3	Coaxial Cable	/	C16-07-07	/	2025-02-23	2026-02-22
☐ Chamber B:Below 1GHz						
WTXE1010A 1006	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2024-03-17	2027-03-16
WTXE1038A 1001	Amplifier	Agilent	8447D	2944A104 57	2025-02-23	2026-02-22
WTXE1001A 1002	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2025-02-23	2026-02-22
WTXE1104A 1031-1	Coaxial Cable	/	1.5MRFC-LWB3	/	2025-02-23	2026-02-22
WTXE1104A 1031-2	Coaxial Cable	/	RG 316	/	2025-02-23	2026-02-22
WTXE1104A 1031-3	Coaxial Cable	/	RG 316	/	2025-02-23	2026-02-22
☒ Chamber C:Below 1GHz						
WTXE1093A 1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2025-02-23	2026-02-22
WTXE1010A 1013-1	Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2024-04-18	2027-04-17
WTXE1007A 1003	Amplifier	HP	8447F	2944A038 69	2025-02-23	2026-02-22

WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2026-02-25
WTXE1104A 1034-1	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1034-2	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1034-3	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
☒ Chamber C: Above 1GHz						
WTXE1093A 1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2025-02-23	2026-02-22
WTXE1103A 1005	Horn Antenna	POAM	RTF-118A	1820	2025-06-13	2027-06-12
WTXE1103A 1006	Amplifier	Tonscend	TAP01018050	AP22E806 235	2025-02-23	2026-02-22
WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2026-03-16
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2025-02-23	2026-02-22
WTXE1104A 1035-1	Coaxial Cable	/	RC-18G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1035-2	Coaxial Cable	/	RC-18G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1035-3	Coaxial Cable	/	RC-18G-N-M	/	2025-02-23	2026-02-22
☐ Conducted Room 1#						
WTXE1104A 1029	EMI Test Receiver	Rohde & Schwarz	ESCI	100525	2024-12-08	2025-12-07
					2025-11-25	2026-11-24
WTXE1002A 1001	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2025-02-23	2026-02-22
WTXE1003A 1001	AC LISN	Schwarz beck	NSLK8126	8126-279	2025-02-23	2026-02-22
WTXE1104A 1036	Coaxial Cable	/	RG 316	/	2025-02-23	2026-02-22
WTXE1104A 1038	Coaxial Cable	/	6MRFC-DP	/	2025-02-23	2026-02-22
☒ Conducted Room 2#						
WTXE1001A 1004	EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2025-02-23	2026-02-22
WTXE1003A 1003	LISN	Rohde & Schwarz	ENV 216	100097	2025-02-23	2026-02-22
WTXE1104A	Coaxial Cable	/	RG 316	/	2025-02-23	2026-02-22

1037						
------	--	--	--	--	--	--

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission A)	Farad	EZ-EMC	RA-03A1 (1.1.4.2)
EMI Test Software (Radiated Emission B)	Farad	EZ-EMC	RA-03A1 (1.1.4.2)
EMI Test Software (Radiated Emission C)	Farad	EZ-EMC	RA-03A1-2 (1.1.4.2)
EMI Test Software (Conducted Emission Room 1#)	Farad	EZ-EMC	3A1*CE-RE 1.1.4.3
EMI Test Software (Conducted Emission Room 2#)	Farad	EZ-EMC	3A1*CE-RE 1.1.4.3
RF Test System	Tonscend	JS1120-3	V3.5.39

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

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§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)	6 dB 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

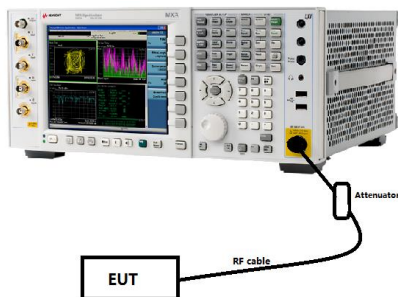
This product has an Integral antenna, fulfill the requirement of this section.

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 8dBm in any 3kHz band during any time interval of continuous transmission.

4.2 Test Setup Block Diagram



4.3 Test Procedure

According to the KDB 558074, such specifications require that the same method as used to determine the conducted output power shall also be used to determine the power spectral density. The test method of power spectral density as below:

- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$.
- Set VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- Sweep time = auto couple.
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.
- If measured value exceeds limit, reduce RBW (no less than 3kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span in order to meet the minimum measurement point requirement as the RBW is reduced).

5.4 Summary of Test Results/Plots

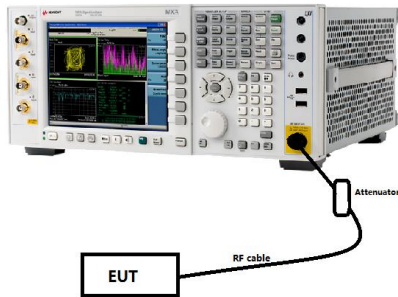
Please refer to Appendix C

5. 6dB Bandwidth

5.1 Standard Applicable

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

5.2 Test Setup Block Diagram



5.3 Test Procedure

- a) Set RBW = 100kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ 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 6dB relative to the maximum level measured in the fundamental emission.

5.4 Summary of Test Results/Plots

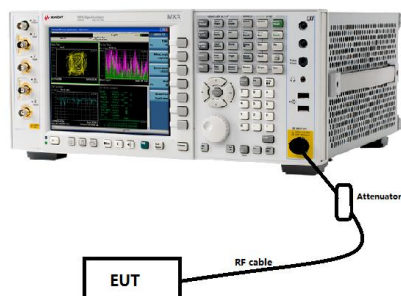
Please refer to Appendix A

6. RF Output Power

6.1 Standard Applicable

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

6.2 Test Setup Block Diagram



6.3 Test Procedure

- Set the RBW $\geq$ DTS bandwidth.
- Set VBW $\geq$ 3RBW.
- Set span $\geq$ 3RBW.
- Sweep time = auto couple.
- Detector = peak.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use peak marker function to determine the peak amplitude level.

6.4 Summary of Test Results/Plots

Please refer to Appendix B

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).

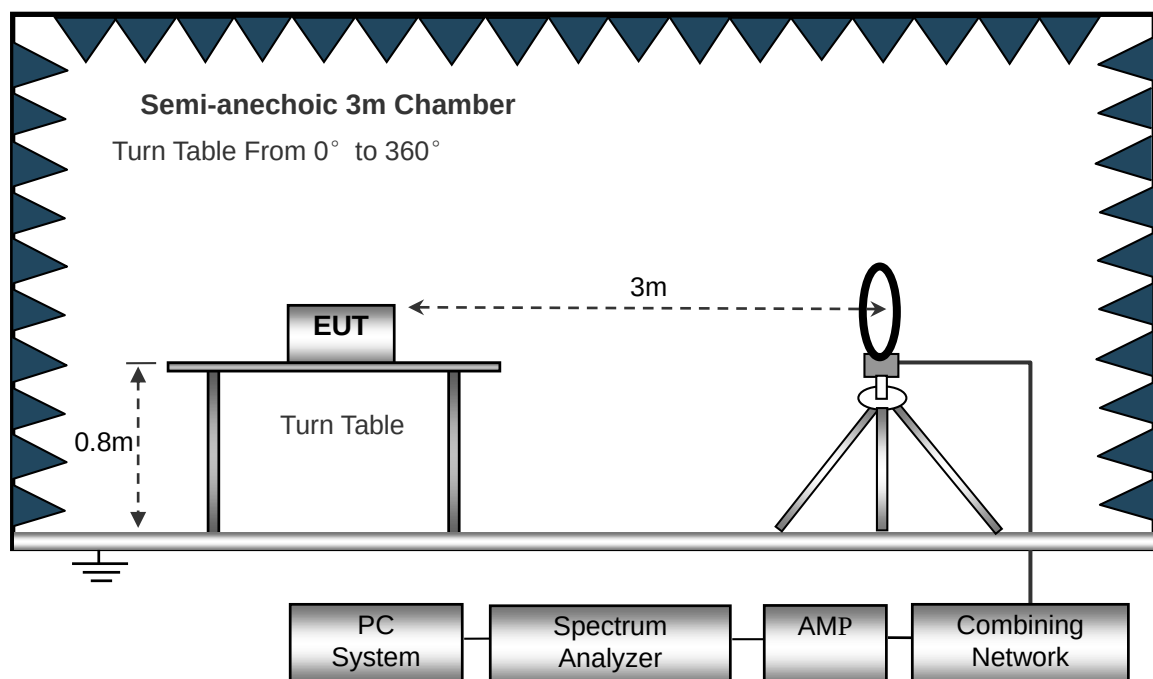
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

7.2 Test Procedure

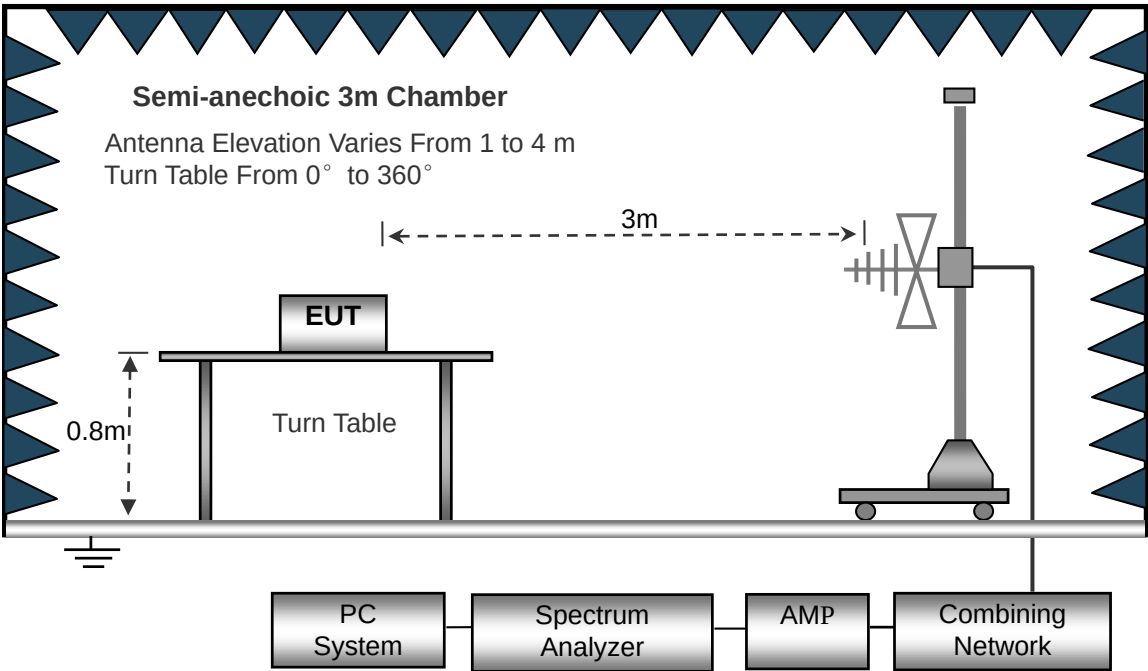
The setup of EUT is according with per ANSI C63.10-2020 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10cm.

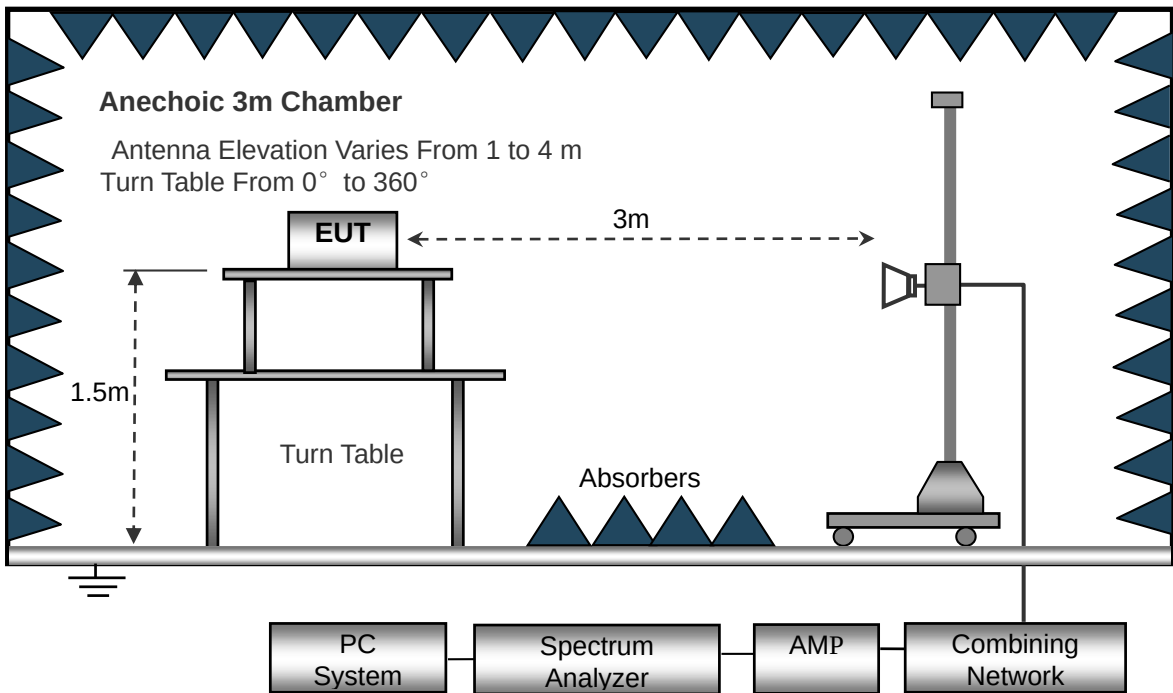
The test setup for emission measurement below 30MHz.



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



The test setup for emission measurement above 1GHz.



Frequency :9kHz-30MHz
RBW=10kHz,
VBW =30kHz
Sweep time= Auto
Trace = max hold
Detector function = peak

Frequency :30MHz-1GHz
RBW=120kHz,
VBW=300kHz
Sweep time= Auto
Trace = max hold
Detector function = peak, QP

Frequency :Above 1GHz
RBW=1MHz,
VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto
Trace = max hold
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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

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

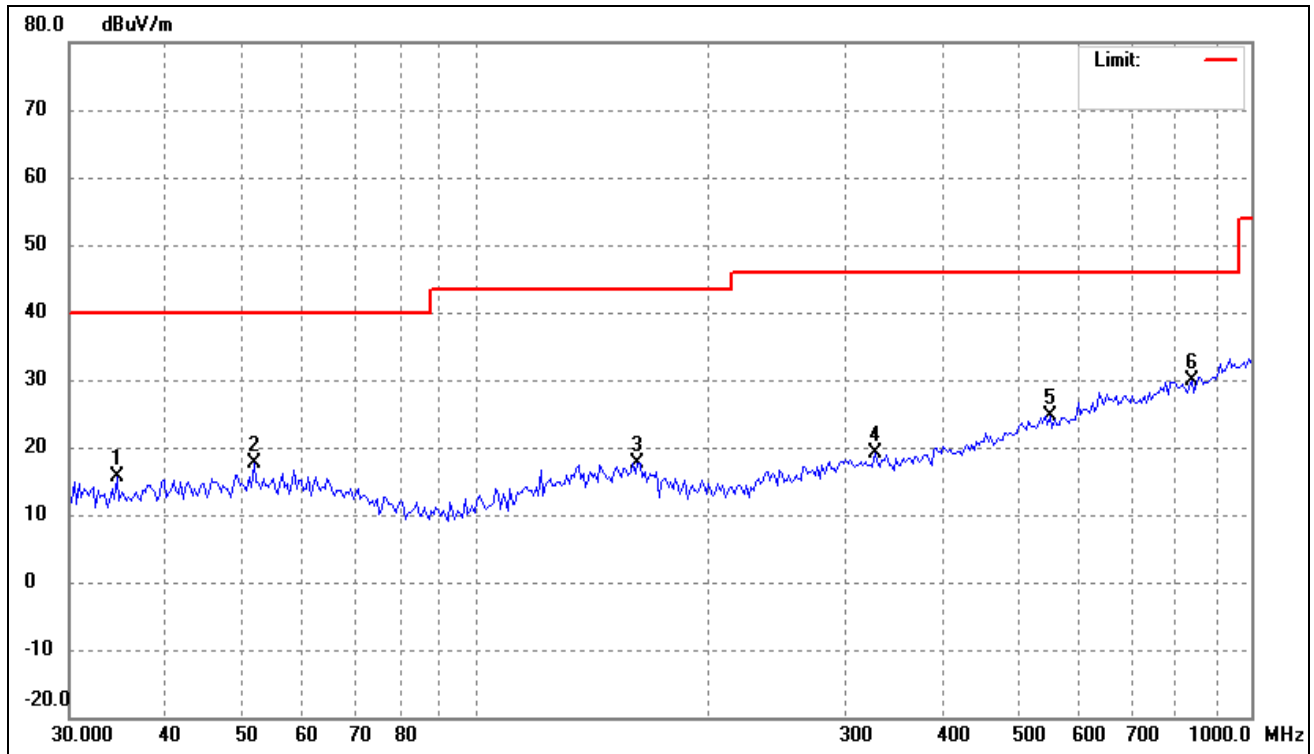
$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

7.4 Summary of Test Results/Plots

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

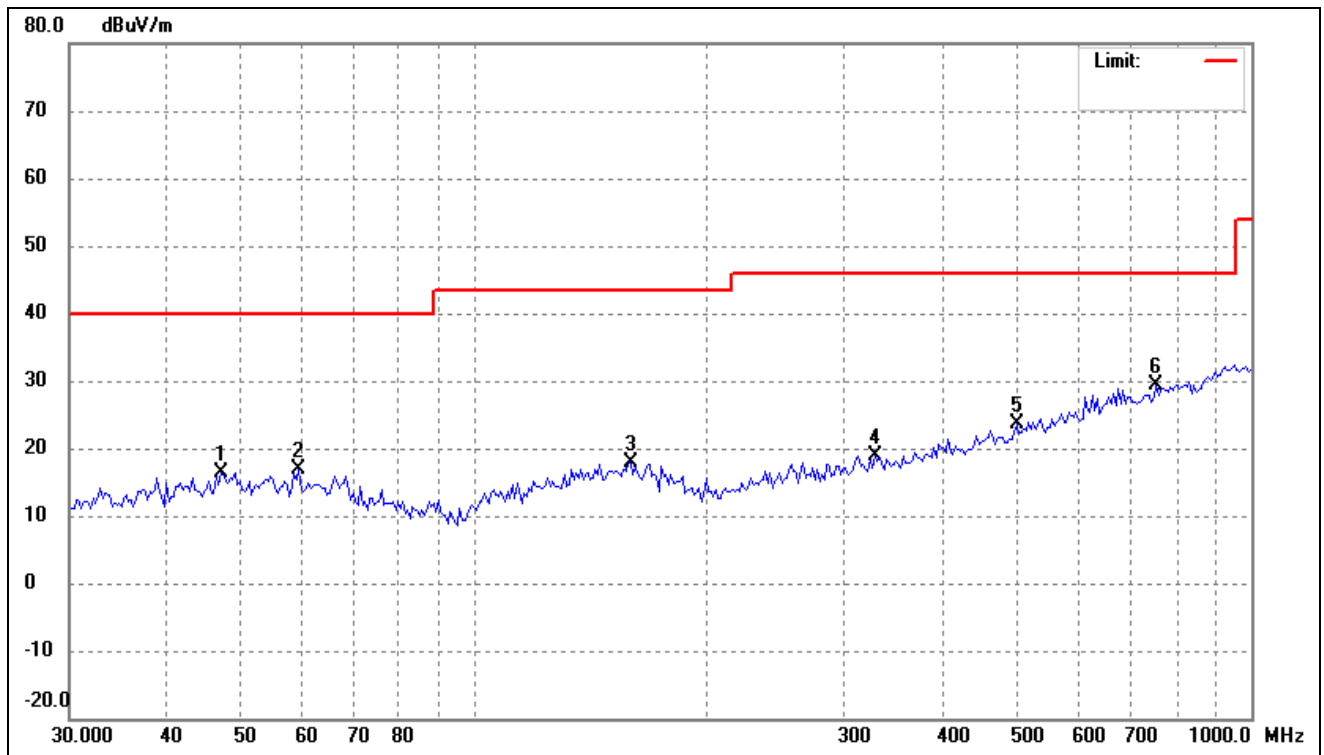
➤ Spurious Emissions Below 1GHz

Test Channel	Low(worst case)	Polarity:	Horizontal
--------------	-----------------	-----------	------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	34.5270	25.09	-9.57	15.52	40.00	-24.48	-	-	peak
2	51.8999	25.86	-8.30	17.56	40.00	-22.44	-	-	peak
3	162.0197	26.05	-8.31	17.74	43.50	-25.76	-	-	peak
4	327.1554	26.63	-7.60	19.03	46.00	-26.97	-	-	peak
5	550.2902	27.45	-2.77	24.68	46.00	-21.32	-	-	peak
6	838.8870	28.17	1.66	29.83	46.00	-16.17	-	-	peak

Test Channel	Low(worst case)	Polarity:	Vertical
--------------	-----------------	-----------	----------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	47.0371	24.71	-8.31	16.40	40.00	-23.60	-	-	peak
2	59.3133	25.55	-8.79	16.76	40.00	-23.24	-	-	peak
3	158.6399	26.12	-8.30	17.82	43.50	-25.68	-	-	peak
4	327.1554	26.54	-7.60	18.94	46.00	-27.06	-	-	peak
5	498.7303	27.20	-3.60	23.60	46.00	-22.40	-	-	peak
6	754.9628	28.10	1.19	29.29	46.00	-16.71	-	-	peak

Remark: '-' Means the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

➤ Spurious Emissions Above 1GHz

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2402MHz							
4804	64.60	-13.23	51.37	74	-22.63	H	PK
4804	63.33	-13.23	50.10	54	-3.90	H	AV
7206	59.50	-6.85	52.65	74	-21.35	H	PK
7206	57.31	-6.85	50.46	54	-3.54	H	AV
4804	63.18	-13.23	49.95	74	-24.05	V	PK
4804	60.22	-13.23	46.99	54	-7.01	V	AV
7206	57.59	-6.85	50.74	74	-23.26	V	PK
7206	55.53	-6.85	48.68	54	-5.32	V	AV
Middle Channel-2440MHz							
4882	65.46	-13.10	52.36	74	-21.64	H	PK
4882	62.69	-13.10	49.59	54	-4.41	H	AV
7323	60.34	-7.12	53.22	74	-20.78	H	PK
7323	57.09	-7.12	49.97	54	-4.03	H	AV
4882	62.98	-13.10	49.88	74	-24.12	V	PK
4882	59.57	-13.10	46.47	54	-7.53	V	AV
7323	57.72	-7.12	50.60	74	-23.40	V	PK
7323	55.76	-7.12	48.64	54	-5.36	V	AV
High Channel-2480MHz							
4960	64.50	-13.03	51.47	74	-22.53	H	PK
4960	63.43	-13.03	50.40	54	-3.60	H	AV
7440	59.71	-7.52	52.19	74	-21.81	H	PK
7440	57.47	-7.52	49.95	54	-4.05	H	AV
4960	62.74	-13.03	49.71	74	-24.29	V	PK
4960	60.45	-13.03	47.42	54	-6.58	V	AV
7440	57.76	-7.52	50.24	74	-23.76	V	PK
7440	55.42	-7.52	47.90	54	-6.10	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.

Conducted Spurious Emission Please refer to Appendix F

8. Out of Band Emissions

8.1 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).

8.2 Test Procedure

According to the KDB 558074, the band-edge radiated test method as follows:

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.

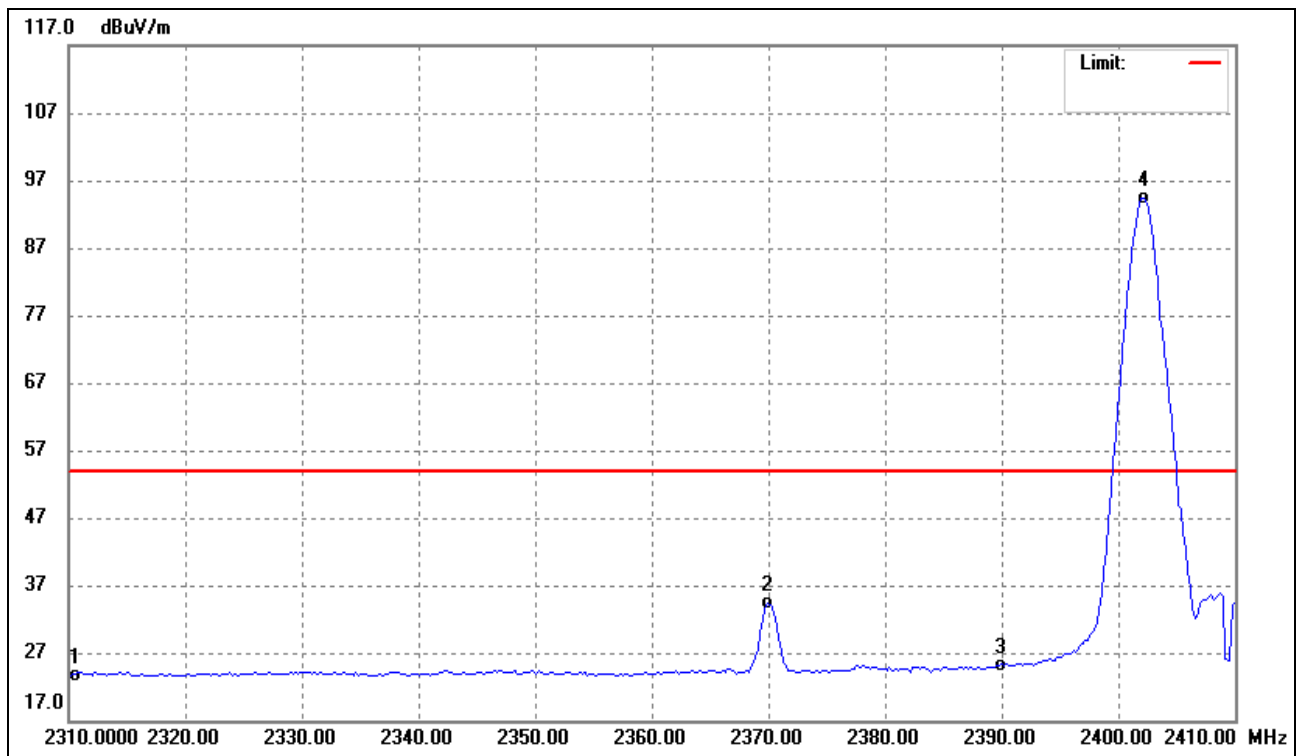
According to the KDB 558074, the conducted spurious emissions test method as follows:

1. Set start frequency to DTS channel edge frequency.
2. Set stop frequency so as to encompass the spectrum to be examined.
3. Set RBW = 100kHz.
4. Set VBW $\geq$ 300kHz.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize (this may take some time, depending on the extent of the span).
9. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100kHz bandwidth.

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.

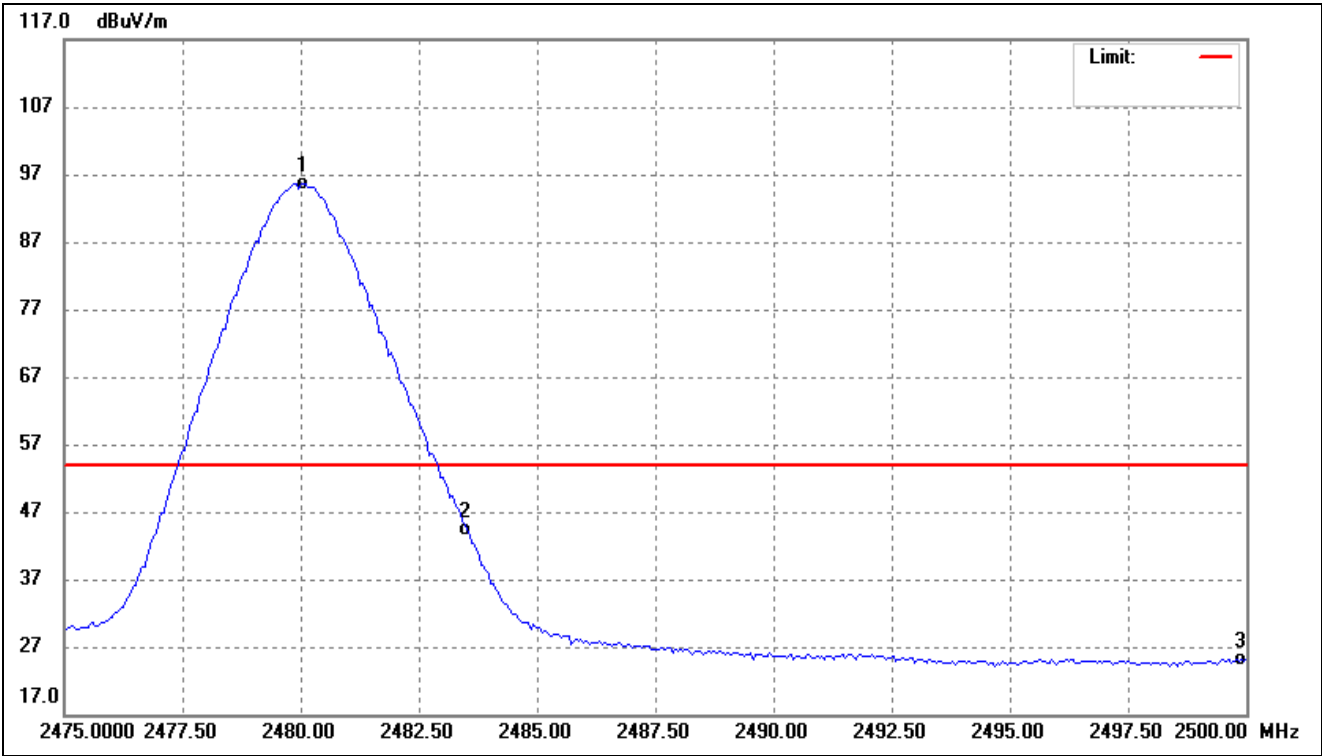
8.3 Summary of Test Results/Plots

Test Channel	Low	Polarity:	Horizontal (worst case)
--------------	-----	-----------	-------------------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	43.23	-19.50	23.73	54.00	-30.27	Average Detector
	2310.000	61.57	-19.50	42.07	74.00	-31.93	Peak Detector
2	2369.920	53.69	-19.36	34.33	54.00	-19.67	Average Detector
	2386.353	77.57	-19.32	58.25	74.00	-15.75	Peak Detector
3	2390.000	44.46	-19.31	25.15	54.00	-28.85	Average Detector
	2390.000	65.69	-19.31	46.38	74.00	-27.62	Peak Detector
4	2402.184	113.72	-19.29	94.43	/	/	Average Detector
	2401.984	114.39	-19.29	95.10	/	/	Peak Detector

Test Channel	High	Polarity:	Horizontal (worst case)
--------------	------	-----------	-------------------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.060	114.83	-19.09	95.74	/	/	Average Detector
	2480.010	115.77	-19.09	96.68	/	/	Peak Detector
2	2483.500	63.55	-19.09	44.46	54.00	-9.54	Average Detector
	2483.500	76.33	-19.09	57.24	74.00	-16.76	Peak Detector
3	2500.000	44.13	-19.05	25.08	54.00	-28.92	Average Detector
	2500.000	61.68	-19.05	42.63	74.00	-31.37	Peak Detector

➤ Conducted test
Please refer to Appendix D&E

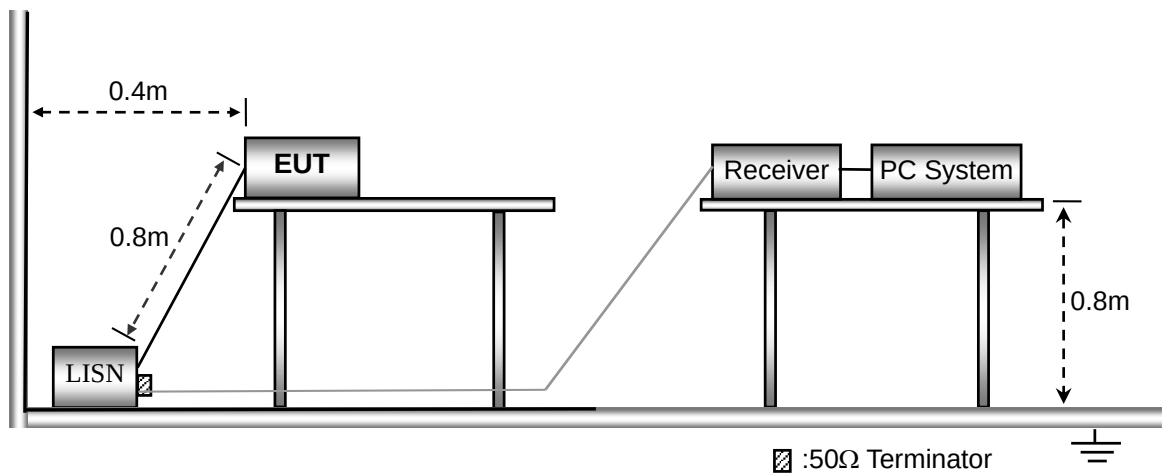
9. Conducted Emissions

9.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2020 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 40cm long in the middle. The spacing between the peripherals was 10cm.

9.2 Basic Test Setup Block Diagram



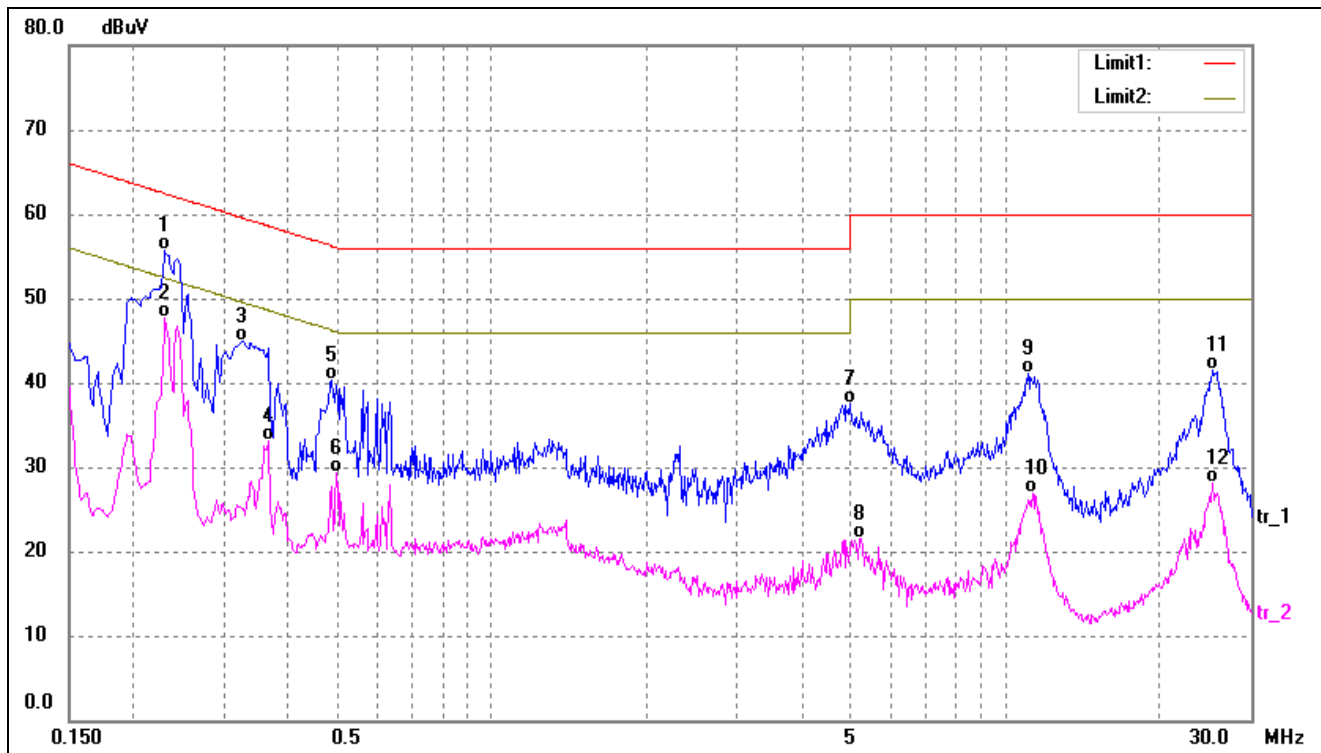
9.3 Test Receiver Setup

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

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

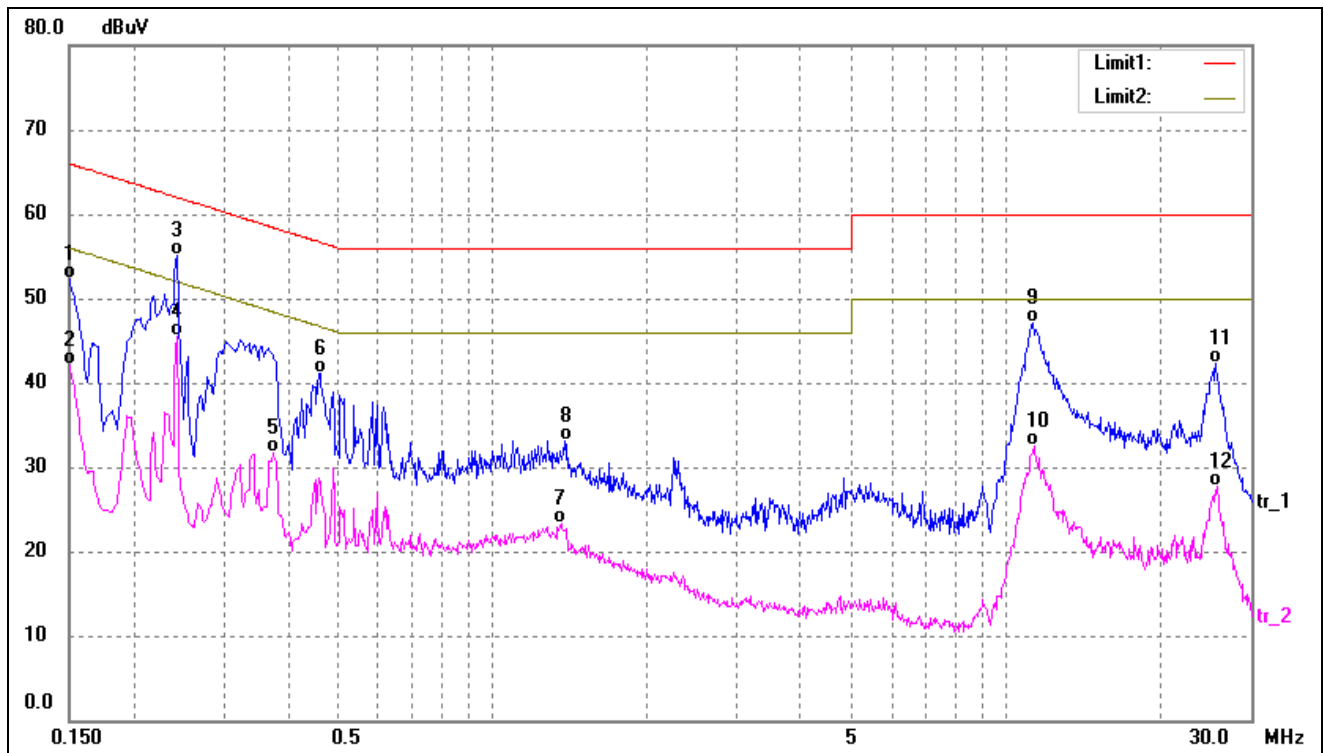
9.4 Summary of Test Results/Plots

Test Mode	Communication	AC120V 60Hz	Polarity:	Neutral
-----------	---------------	-------------	-----------	---------



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2300	45.99	9.63	55.62	62.45	-6.83	QP
2*	0.2300	38.13	9.63	47.76	52.45	-4.69	AVG
3	0.3260	35.27	9.63	44.90	59.55	-14.65	QP
4	0.3660	23.44	9.64	33.08	48.59	-15.51	AVG
5	0.4860	30.60	9.65	40.25	56.24	-15.99	QP
6	0.4980	19.65	9.65	29.30	46.03	-16.73	AVG
7	4.9740	27.85	9.57	37.42	56.00	-18.58	QP
8	5.1900	12.00	9.59	21.59	50.00	-28.41	AVG
9	11.0780	31.28	9.75	41.03	60.00	-18.97	QP
10	11.3060	17.12	9.73	26.85	50.00	-23.15	AVG
11	25.1900	32.05	9.55	41.60	60.00	-18.40	QP
12	25.1900	18.63	9.55	28.18	50.00	-21.82	AVG

Test Mode	Communication	AC120V 60Hz	Polarity:	Line
-----------	---------------	-------------	-----------	------



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	42.88	9.43	52.31	65.99	-13.68	QP
2	0.1500	32.73	9.43	42.16	55.99	-13.83	AVG
3	0.2420	45.42	9.63	55.05	62.02	-6.97	QP
4*	0.2420	35.82	9.63	45.45	52.02	-6.57	AVG
5	0.3740	21.98	9.64	31.62	48.41	-16.79	AVG
6	0.4620	31.54	9.65	41.19	56.66	-15.47	QP
7	1.3660	13.69	9.61	23.30	46.00	-22.70	AVG
8	1.3860	23.53	9.61	33.14	56.00	-22.86	QP
9	11.3100	37.29	9.73	47.02	60.00	-12.98	QP
10	11.3620	22.76	9.73	32.49	50.00	-17.51	AVG
11	25.6180	32.70	9.55	42.25	60.00	-17.75	QP
12	25.7820	18.18	9.55	27.73	50.00	-22.27	AVG

APPENDIX SUMMARY

Project No.	WTX25X10281776W002	Test Engineer	BAldi Zhong
Start date	2025-12-09	Finish date	2025-12-11
Temperature	25℃	Humidity	56%
RF specifications	SRD		

APPENDIX	Description of Test Item	Result
A	DTS Bandwidth	Compliant
B	Maximum conducted output power	Compliant
C	Maximum power spectral density	Compliant
D	Reference level measurement	Compliant
E	Band edge measurements	Compliant
F	Conducted Spurious Emission	Compliant
G	Duty Cycle	Compliant

Appendix A: DTS Bandwidth

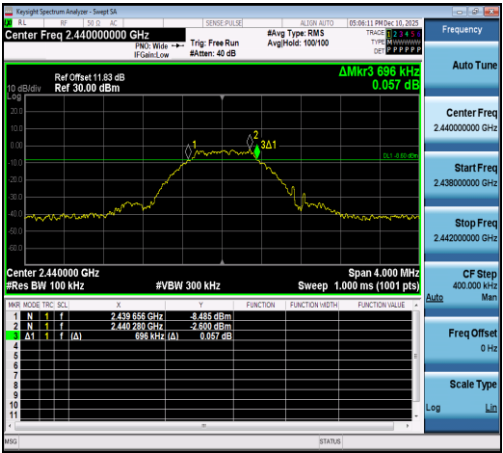
Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
2.4GHz	Ant1	2402	0.668	2401.676	2402.344	0.5	PASS
2.4GHz	Ant1	2440	0.696	2439.656	2440.352	0.5	PASS
2.4GHz	Ant1	2480	0.696	2479.672	2480.368	0.5	PASS

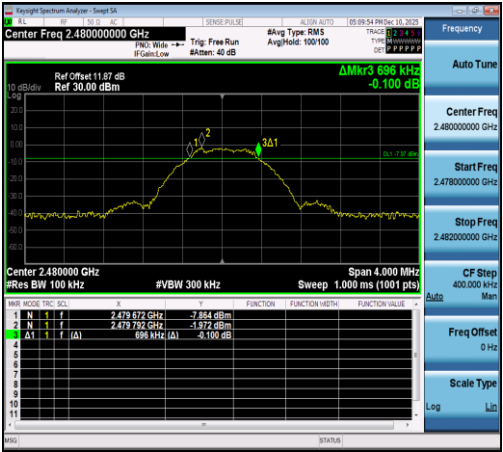
Test Graphs



2.4GHz-Ant1-2402-PASS



2.4GHz-Ant1-2440-PASS



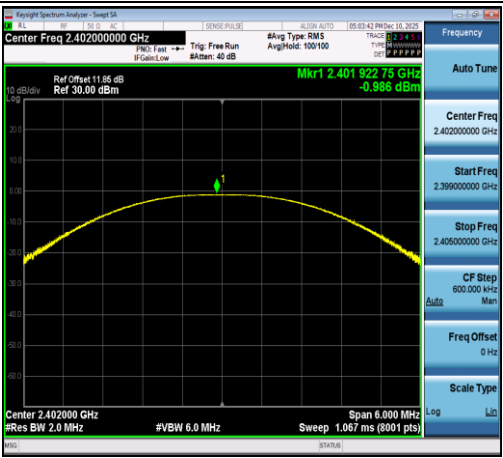
2.4GHz-Ant1-2480-PASS

Appendix B: Maximum conducted output power

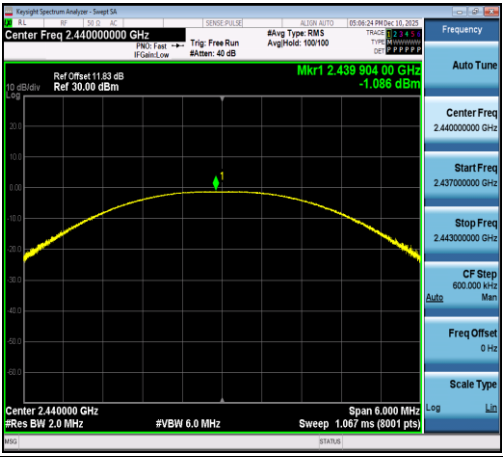
Test Result Peak

TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
2.4GHz	Ant1	2402	-0.99	≤30	PASS
2.4GHz	Ant1	2440	-1.09	≤30	PASS
2.4GHz	Ant1	2480	-0.41	≤30	PASS

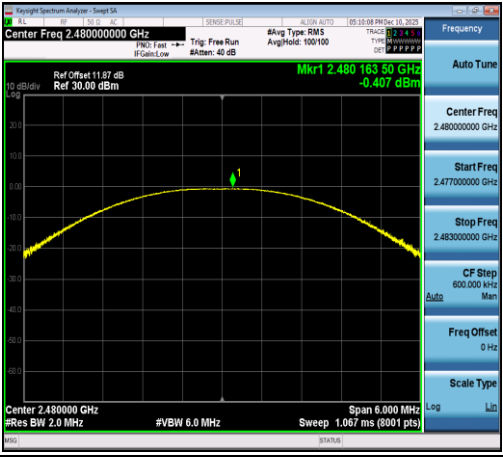
Test Graphs Peak



2.4GHz-Ant1-2402-PASS



2.4GHz-Ant1-2440-PASS



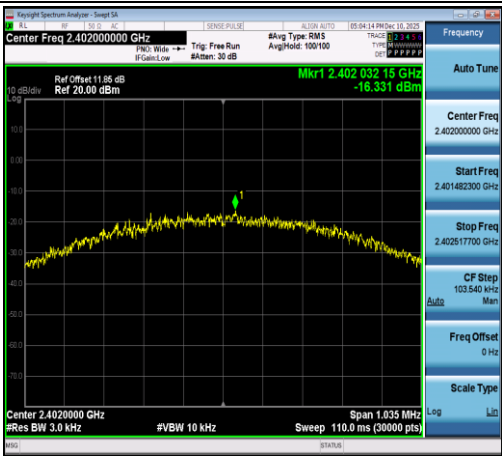
2.4GHz-Ant1-2480-PASS

Appendix C: Maximum power spectral density

Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
2.4GHz	Ant1	2402	-16.33	≤8.00	PASS
2.4GHz	Ant1	2440	-16.48	≤8.00	PASS
2.4GHz	Ant1	2480	-15.29	≤8.00	PASS

Test Graphs



2.4GHz-Ant1-2402-PASS



2.4GHz-Ant1-2440-PASS



2.4GHz-Ant1-2480-PASS

Appendix D: Reference level measurement

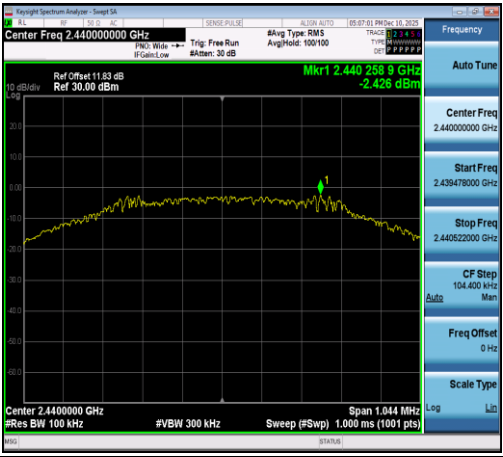
Test Result

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
2.4GHz	Ant1	2402	2402.26	-2.28
2.4GHz	Ant1	2440	2440.26	-2.43
2.4GHz	Ant1	2480	2480.00	-1.73

Test Graphs



2.4GHz-Ant1-2402-PASS



2.4GHz-Ant1-2440-PASS



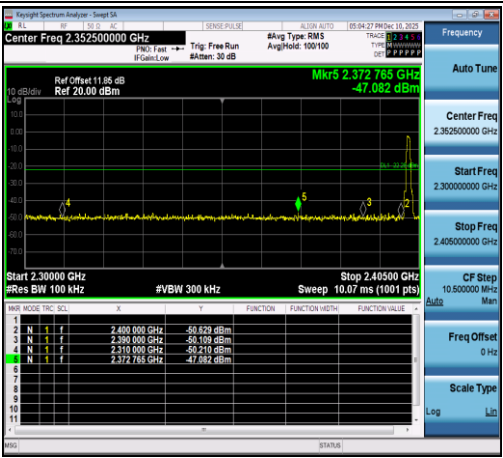
2.4GHz-Ant1-2480-PASS

Appendix E: Band edge measurements

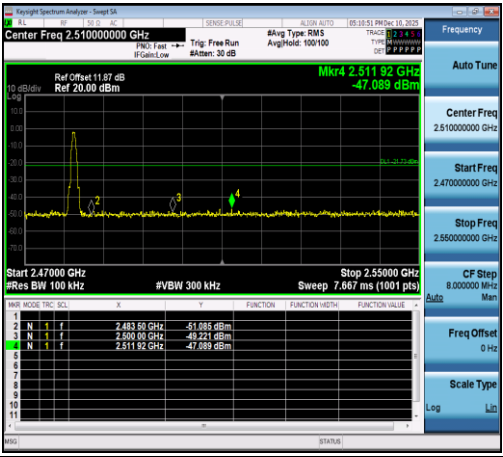
Test Result

TestMode	Antenna	ChName	Frequency [MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
2.4GHz	Ant1	Low	2402	-2.28	-47.08	≤-22.28	PASS
2.4GHz	Ant1	High	2480	-1.73	-47.09	≤-21.73	PASS

Test Graphs



2.4GHz-Ant1-2402-PASS



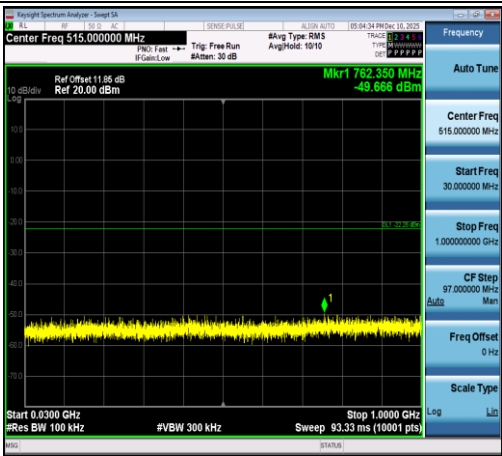
2.4GHz-Ant1-2480-PASS

Appendix F: Conducted Spurious Emission

Test Result

TestMode	Antenna	Frequency [MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
2.4GHz	Ant1	2402	30~1000	-2.28	-49.67	≤-22.28	PASS
2.4GHz	Ant1	2402	1000~26500	-2.28	-33.57	≤-22.28	PASS
2.4GHz	Ant1	2440	30~1000	-2.43	-48.76	≤-22.43	PASS
2.4GHz	Ant1	2440	1000~26500	-2.43	-34.12	≤-22.43	PASS
2.4GHz	Ant1	2480	30~1000	-1.73	-49.78	≤-21.73	PASS
2.4GHz	Ant1	2480	1000~26500	-1.73	-33.36	≤-21.73	PASS

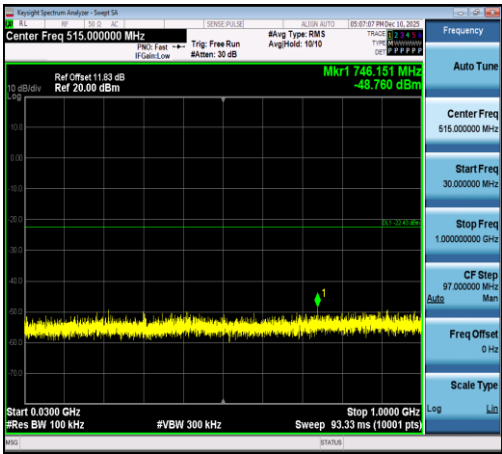
Test Graphs



2.4GHz-Ant1-2402-30~1000-PASS



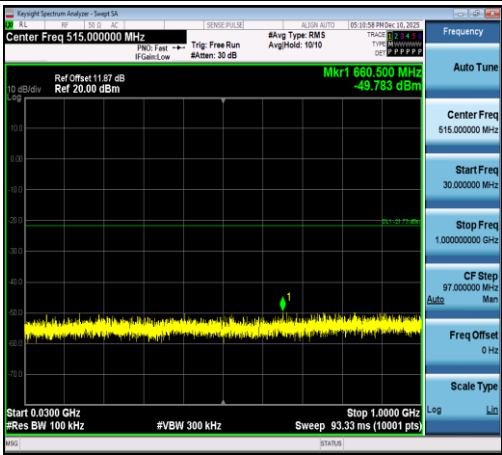
2.4GHz-Ant1-2402-1000~26500-PASS



2.4GHz-Ant1-2440-30~1000-PASS



2.4GHz-Ant1-2440-1000~26500-PASS



2.4GHz-Ant1-2480-30~1000-PASS



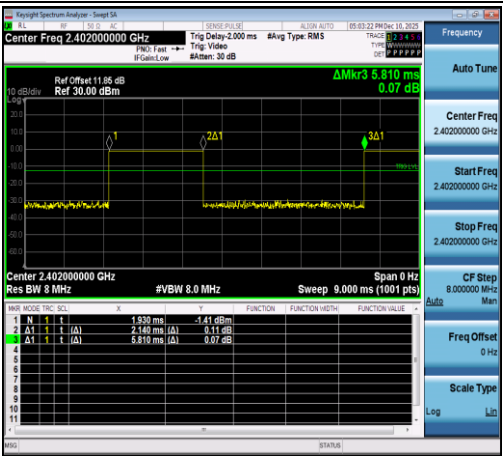
2.4GHz-Ant1-2480-1000~26500-PASS

Appendix G: Duty Cycle

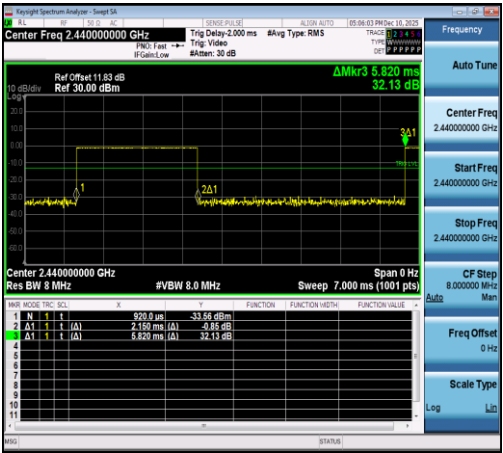
Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
2.4GHz	Ant1	2402	2.14	5.81	36.83	4.34
2.4GHz	Ant1	2440	2.15	5.82	36.94	4.33
2.4GHz	Ant1	2480	2.14	5.81	36.83	4.34

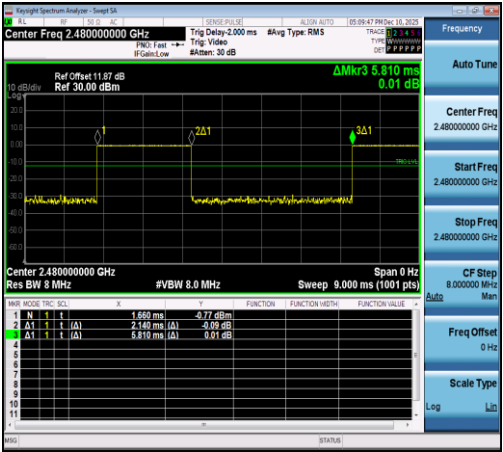
Test Graphs



NTNV-2.4GHz-Ant1-2402



NTNV-2.4GHz-Ant1-2440



NTNV-2.4GHz-Ant1-2480

APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

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