



FCC TEST REPORT

FCC ID: 2A7ZC-SG20U

On Behalf of

GEOMATE POSITIONING PTE. LTD.

Geodetic GNSS Receiver

Model No.: SG20AR

Prepared for : GEOMATE POSITIONING PTE. LTD.
Address : 13 Tampines Lane #09-53 Singapore 528479

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.
Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,
Shenzhen, Guangdong, China

Report Number : A2503163-C12-R02
Date of Receipt : April 10, 2025
Date of Test : April 10, 2025 – June 20, 2025
Date of Report : June 21, 2025
Version Number : V0
Test Result : Pass

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TEST REPORT DECLARATION

Applicant : GEOMATE POSITIONING PTE. LTD.
Address : 13 Tampines Lane #09-53 Singapore 528479
Manufacturer : GEOMATE POSITIONING PTE. LTD.
Address : 13 Tampines Lane #09-53 Singapore 528479
EUT Description : Geodetic GNSS Receiver
(A) Model No. : SG20AR
(B) Trademark : 

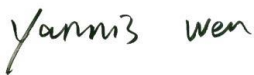
Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....: Yannis Wen
Project Engineer 

Approved by (name + signature).....: Jack Xu
Project Manager 

Date of issue.....: June 21, 2025

Revision History

Revision	Issue Date	Revisions	Revised By
V0	June 21, 2025	Initial released Issue	Yannis Wen

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Test Item	Standards Paragraph	Result
Conducted Emission	FCC Part 15: 15.207	P
6dB Bandwidth	FCC PART 15:15.247(a)(2) RSS-247(5.2 a), ANSI C63.10 :2013	P
Output Power	FCC Part 15: 15.247(b)(3)	P
Radiated Spurious Emission	FCC Part 15: 15.209, FCC Part 15: 15.247(d)	P
Conducted Spurious & Band Edge Emission	FCC Part 15: 15.247(d)	P
Power Spectral Density	FCC PART 15:15.247(e)	P
Radiated Band Edge Emission	FCC Part 15: 15.247(d)	P
Antenna Requirement	FCC Part 15: 15.203	P
Note: 1. P is an abbreviation for Pass. 2. F is an abbreviation for Fail. 3. N/A is an abbreviation for Not Applicable.		

1. Pass: The EUT complies with the essential requirements in the standard.
2. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT Name : Geodetic GNSS Receiver
Model No. : SG20AR
DIFF. : N/A
Power supply : DC 7.2V from battery and DC 5V form adapter

2.4G WIFI :

Operation frequency : 2412MHz-2462MHz for IEEE 802.11 g
Channel No. : 802.11g: 11CH
Modulation type : IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)
Antenna Type : Internal antenna, Maximum Gain is 0dBi
(Antenna information is provided by applicant.)

Software version : V1.0
Hardware version : V1.3.0
Intend use environment : Residential, commercial and light industrial environment

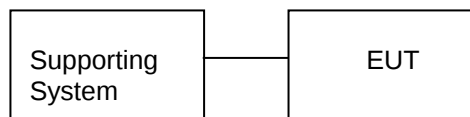
2.2. Accessories of Device (EUT)

Accessories : AC Adapter
 Manufacturer : Yisheng Electronics Co., LTD
 Model : EA1012AVRU-050
 Ratings : AC Input: 100-240Vac, 1.0A, 50~60Hz
 DC Output: 5.0V=2.4A 12.0W

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDOC
1	Notebook PC	Lenovo	ThinkPad L14	/	/

2.4. Block Diagram of connection between EUT and simulators



2.5. Test Mode Description

Duty cycle :100%Keeping TX			
Mode	data rate (Mbps)(see Note)	Channel	Frequency (MHz)
IEEE 802.11g	6	Low :CH1	2412
	6	Middle: CH6	2437
	6	High: CH11	2462
Note: 1.According exploratory test, EUT will have maximum output power in those data rate. So those data rate were used for all test. 2. Using SecureCRT testing software to control EUT work in Continuous TX mode, and select test channel, wireless mode, the power level of the test is set to default.			

Channel list:					
For IEEE 802.11g					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH1	2412	CH5	2432	CH9	2452
CH2	2417	CH6	2437	CH10	2457
CH3	2422	CH7	2442	CH11	2462
CH4	2427	CH8	2447		

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35℃	24℃
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	98kPa

2.7. Test Facility

Shenzhen Alpha Product Testing Co., Ltd

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,
Shenzhen, Guangdong, China

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	1.63dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.74dB(Polarize: V)
	3.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	3.77dB(Polarize: V)
	3.80dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31 dB(Polarize: V)
	4.30 dB(Polarize: H)
Uncertainty for radio frequency	5.06×10^{-8} GHz
Uncertainty for conducted RF Power	0.40dB
Uncertainty for temperature	0.2℃
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%

2.9. Test Equipment List

Equipment	Manufacture	Model No.	Firmware version	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	/	N/A	2025.03.09	4Year
4*4*3 Shielded room	CHENYU	4*4*3	/	N/A	2025.03.09	4Year
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	2.3	102137	2024.08.08	1Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2024.08.08	1Year
Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-10 2082-Wa	2024.08.08	1Year
Receiver	R&S	ESCI	4.42 SP1	101165	2024.08.08	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	/	VULB 9168#627	2023.08.28	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	/	2106	2023.08.19	2Year
Loop Antenna	SCHWARZBECK	FMZB 1519B	/	00128	2023.08.19	2Year
RF Cable	Resenberger	Cable 1	/	RE1	2024.08.08	1Year
RF Cable	Resenberger	Cable 2	/	RE2	2024.08.08	1Year
RF Cable	Resenberger	Cable 3	/	CE1	2024.08.08	1Year
Pre-amplifier	HP	HP8347A	/	2834A00455	2024.08.08	1Year
Pre-amplifier	Agilent	8449B	/	3008A02664	2024.08.08	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	/	8126-466	2024.08.08	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	101043	2024.08.08	1Year
Horn Antenna	SCHWARZBECK	BBHA 9170	/	00946	2023.08.19	2Year
Preamplifier	SKET	LNPA_1840 -50	/	SK2018101801	2024.08.08	1 Year
Power Meter	Agilent	E9300A	/	MY41496628	2024.08.08	1 Year
Power Sensor	DARE	RPR3006W	/	15100041SNO91	2024.08.08	1 Year
Temp. & Humid. Chamber	Teelong	TL-HW408S	/	TL-20191205-01	2024.07.15	1 Year
Electronic Thermo-Hygrometer	S.H.Qixiang	HTC-1	/	N/A	2024.08.11	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	/	20140927-6	2024.08.08	1 Year
Adjustable attenuator	MWRFTest	N/A	/	N/A	N/A	N/A
10dB Attenuator	Mini-Circuits	DC-6G	/	N/A	N/A	N/A

Software Information			
Test Item	Software Name	Manufacturer	Version
RE	EZ-EMC	Farad	Alpha-3A1
CE	EZ-EMC	Farad	Alpha-3A1
RF-CE	MTS 8310	MWRFTest	V2.0.0.0

3. SPURIOUS EMISSION

3.1. Test Limits

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

15.209 Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009-0.490	300	2400/F(KHz)	/
0.490-1.705	30	24000/F(KHz)	/
1.705-30	30	30	29.5
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	
Note 1: The peak limit is 20 dB higher than the average limit			
Note 2: Peak limit applies (AVG limit + 20 dB) as well as RSS-247 Section 5.5			

3.2. Test Procedure

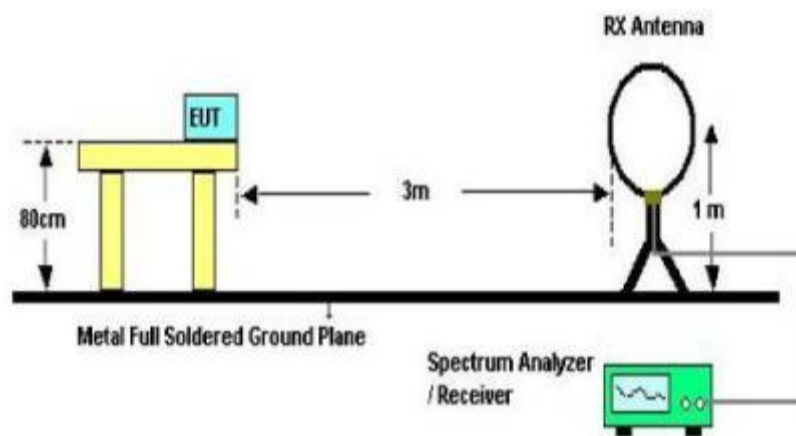
The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz. The EUT was placed on a rotating 0.8 m high above ground for below 1GHz and 1.5m high for above 1GHz testing, the table was rotated 360 degrees to determine the position of the highest radiation. The Test antenna shall vary between 1m and 4m, both Horizontal and Vertical antenna are set of make measurement.

The initial step in collecting radiated emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Quasi Peak Detector mode premeasured

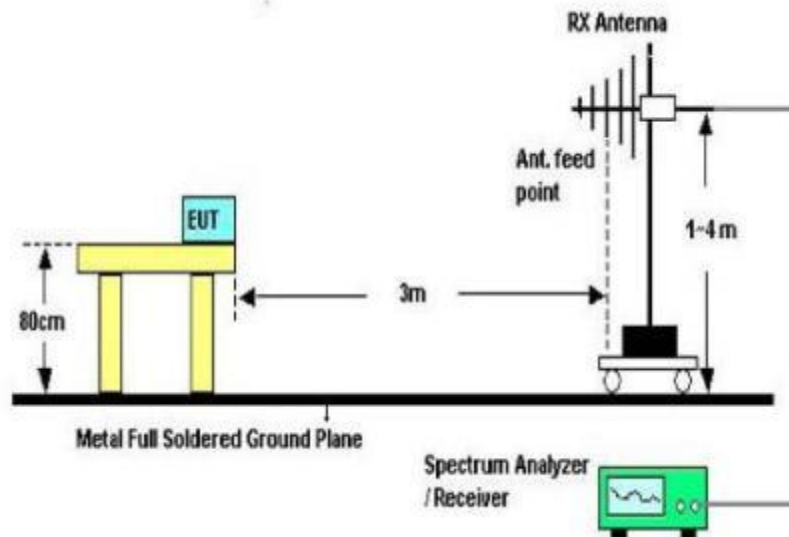
If Peak value comply with QP limit below 1GHz, the EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.

For the actual test setup, please see the test setup photo.

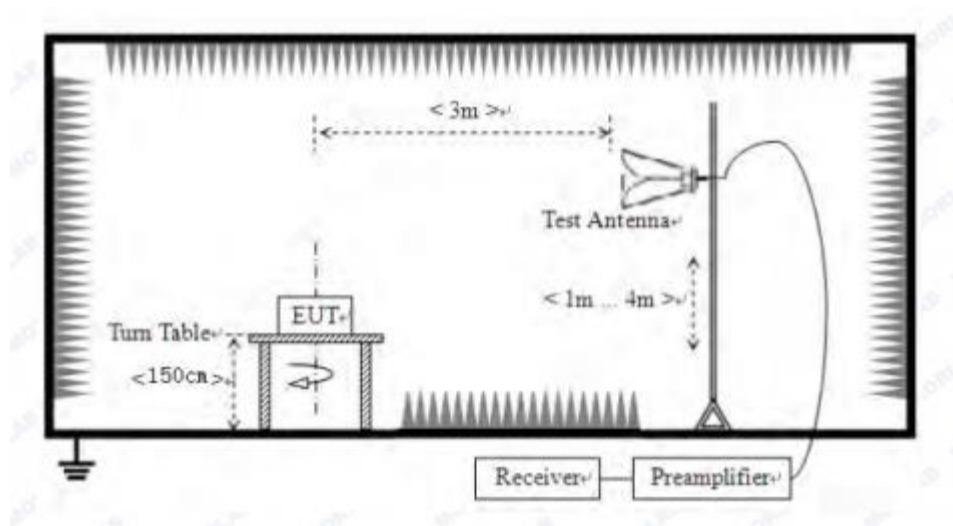
3.3. Test Setup



Below 30MHz Test Setup



Above 30MHz Test Setup



Above 1GHz Test Setup

3.4. Test Results

Test Condition

Continual Transmitting in maximum power.

9KHz~150KHz	RBW200Hz	VBW1KHz
150KHz~30MHz	RBW9KHz	VBW 30KHz
30MHz~1GHz	RBW120KHz	VBW 300KHz
Above1GHz	RBW1MHz	VBW 3MHz

We have scanned the EUT from 9kHz up to the 10th harmonic of the fundamental.

Detailed information please see the following page.

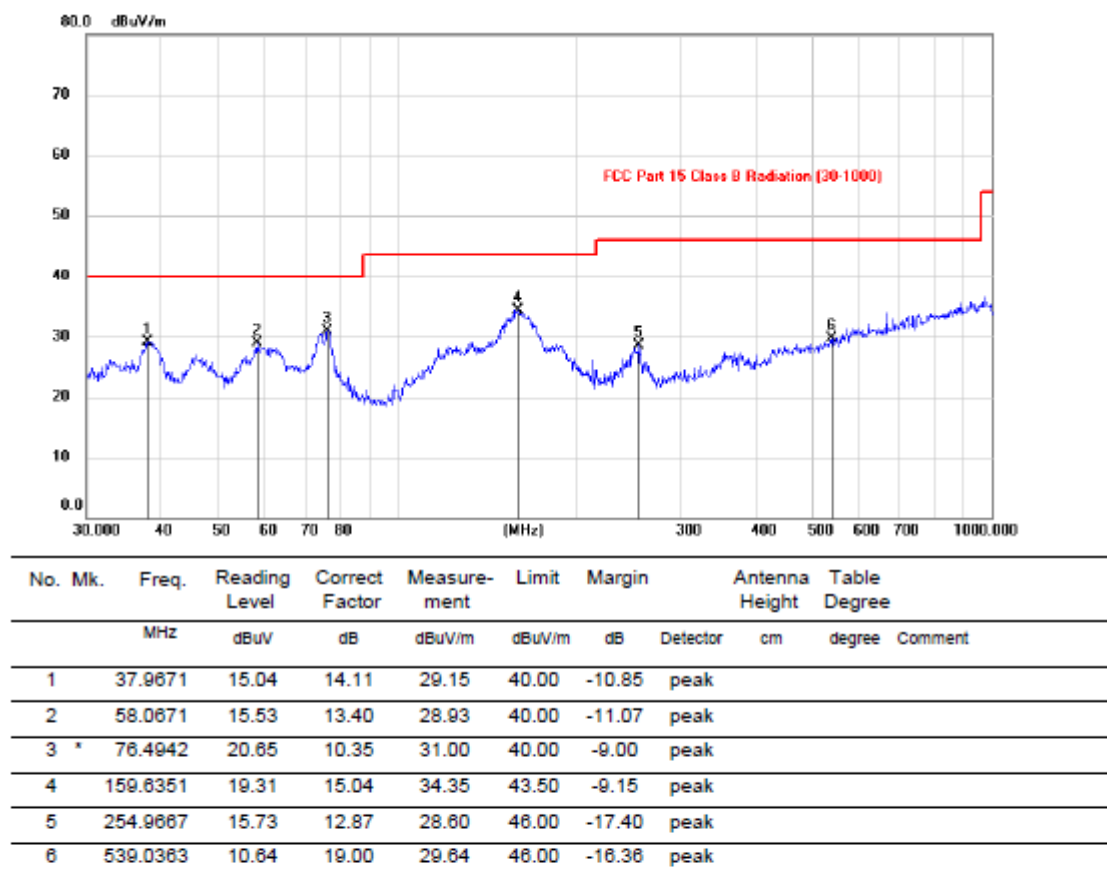
From 9KHz to 30MHz: Conclusion: PASS

Note: 1.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

2.Only show the test data of the worst Channel in this report.

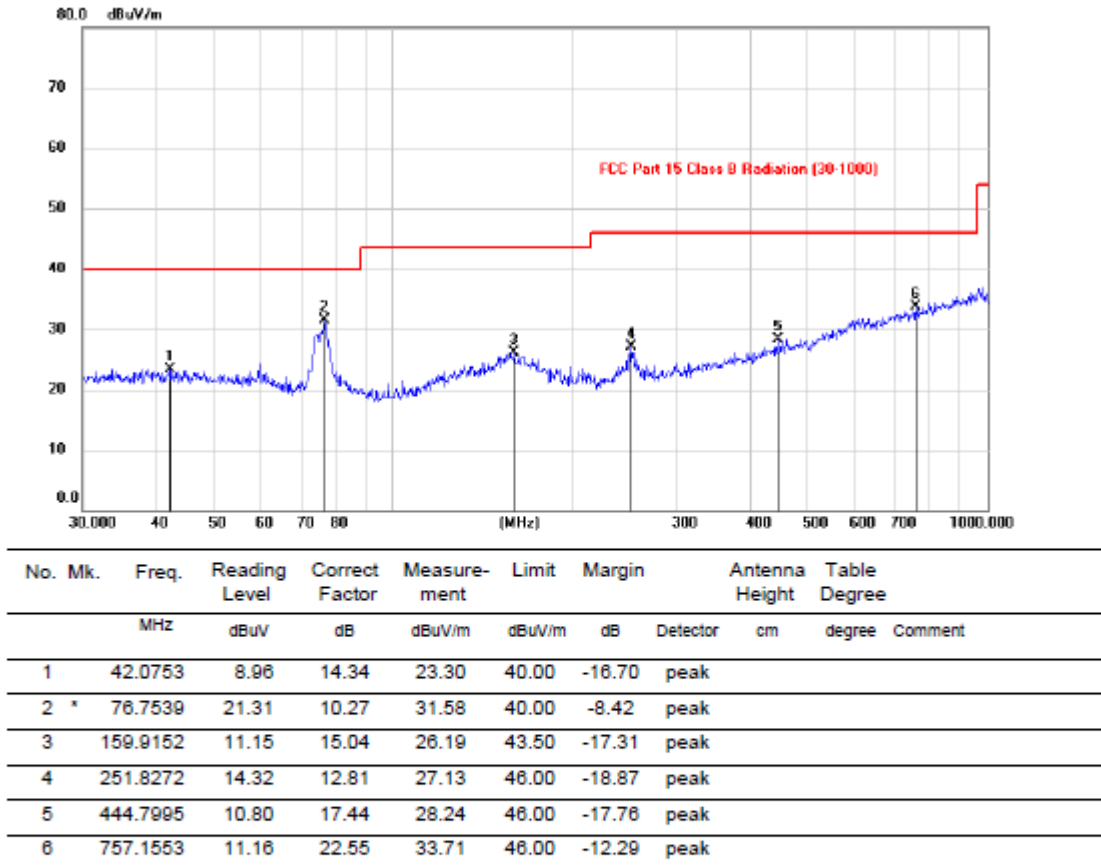
From 30MHz to 1000MHz: Conclusion: PASS

Vertical:



Note: 1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Horizontal:

Note: 1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

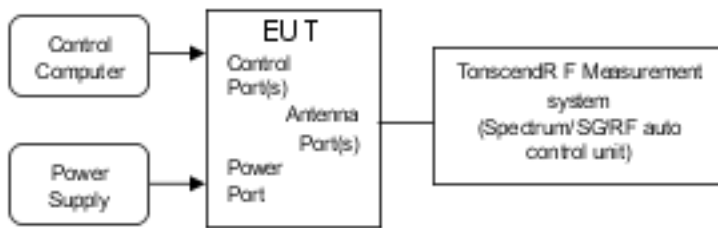
Remark: All modes have been tested, and only worst data of g mode, Channel 2412MHz was listed in this report.

From 1G-25GHz

Test Mode: IEEE 802.11g TX Low									
Freq (MHz)	Read Level (dBuV/m)	Polar (H/V)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824	43.88	V	33.95	10.18	34.26	53.75	74	-20.25	PK
4824	35.19	V	33.95	10.18	34.26	45.06	54	-8.94	AV
7236	/	/	/	/	/	/	/	/	/
9648	/	/	/	/	/	/	/	/	/
4824	44.11	H	33.95	10.18	34.26	53.98	74	-20.02	PK
4824	34.24	H	33.95	10.18	34.26	44.11	54	-9.89	AV
7236	/	/	/	/	/	/	/	/	/
9648	/	/	/	/	/	/	/	/	/
Test Mode: IEEE 802.11g TX Mid									
4874	45.70	V	33.93	10.2	34.29	55.54	74	-18.46	PK
4874	34.45	V	33.93	10.2	34.29	44.29	54	-9.71	AV
7311	/	/	/	/	/	/	/	/	/
9748	/	/	/	/	/	/	/	/	/
4874	45.01	H	33.93	10.2	34.29	54.85	74	-19.15	PK
4874	35.18	H	33.93	10.2	34.29	45.02	54	-8.98	AV
7311	/	/	/	/	/	/	/	/	/
9748	/	/	/	/	/	/	/	/	/
Test Mode: IEEE 802.11g TX High									
4924	47.18	V	33.98	10.22	34.25	57.13	74	-16.87	PK
4924	35.92	V	33.98	10.22	34.25	45.87	54	-8.13	AV
7386	/	/	/	/	/	/	/	/	/
9848	/	/	/	/	/	/	/	/	/
4924	48.38	H	33.98	10.22	34.25	58.33	74	-15.67	PK
4924	34.66	H	33.98	10.22	34.25	44.61	54	-9.39	AV
7386	/	/	/	/	/	/	/	/	/
9848	/	/	/	/	/	/	/	/	/
Note:									
1, Result = Read level + Antenna factor + cable loss-Amp factor									
2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

4. RF CONDUCTED SPURIOUS EMISSIONS

4.1. Block diagram of test setup



4.2. Limits

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 20dB.

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) (see § 15.205(c)).

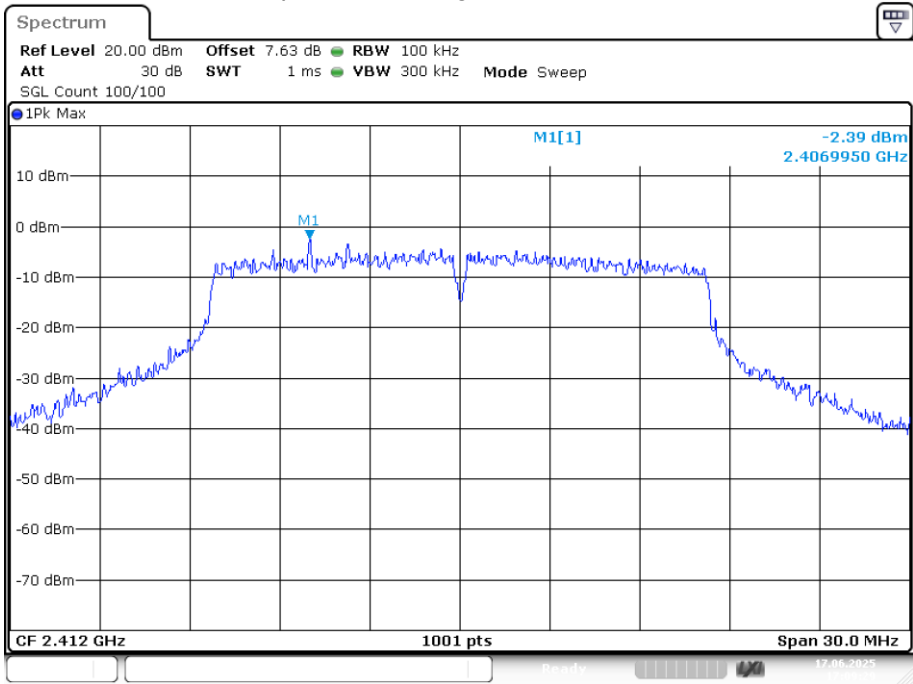
4.3. Test procedure

The test receiver set RBW = 100kHz, VBW ≥ 3*RBW = 300kHz, sweep time set auto

4.4. Test result

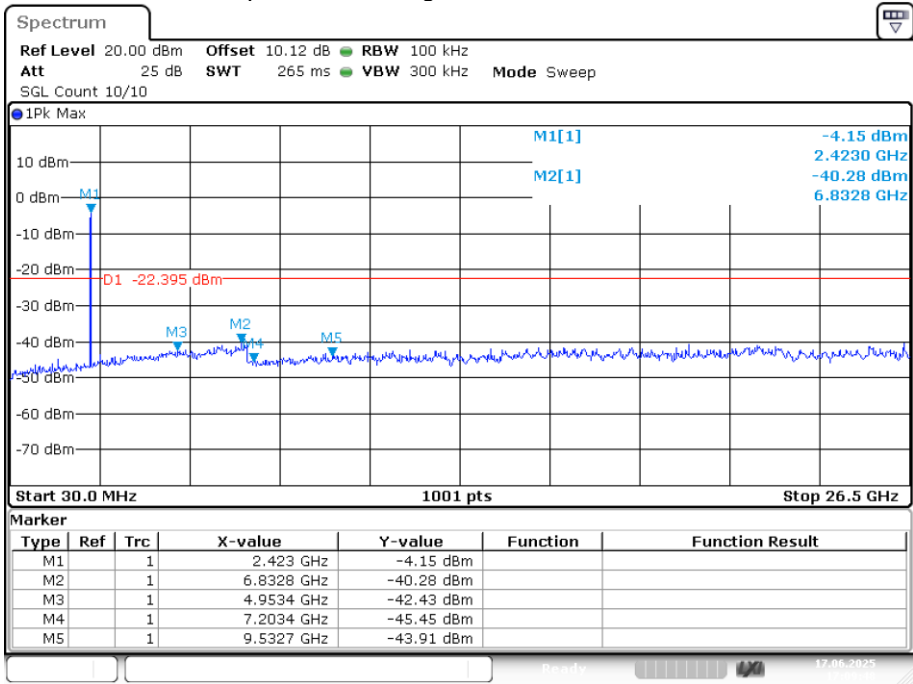
PASS

Tx. Spurious NVNT g 2412MHz Ant1 Ref



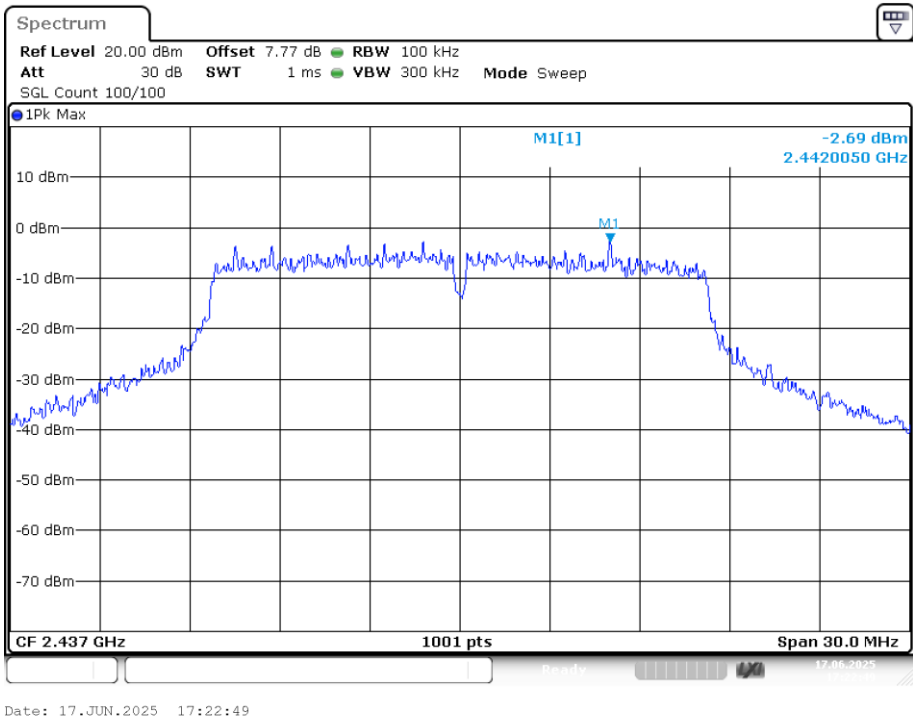
Date: 17.JUN.2025 17:09:29

Tx. Spurious NVNT g 2412MHz Ant1 Emission

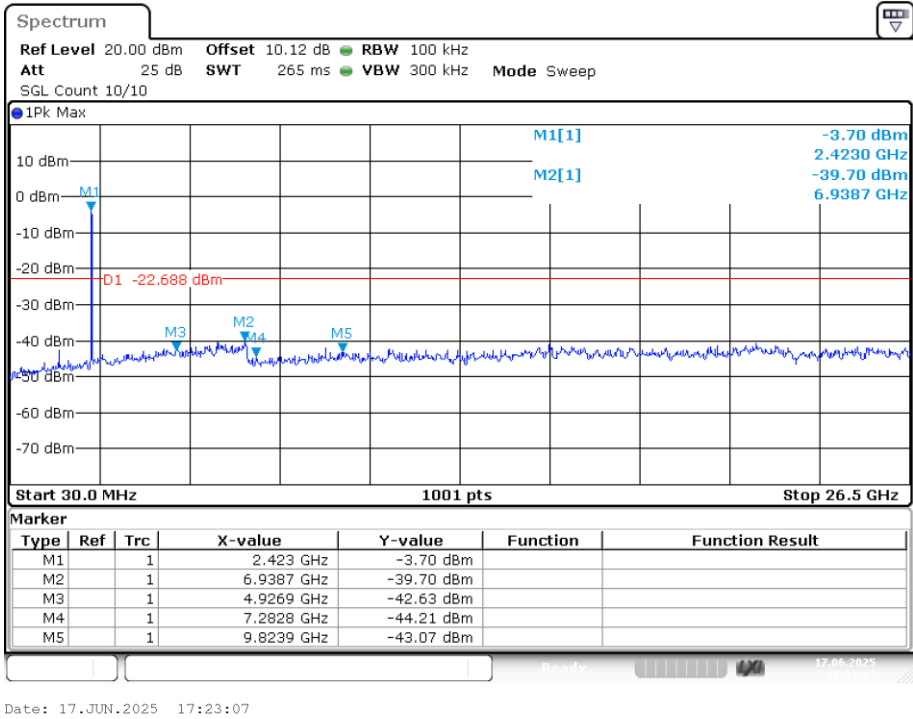


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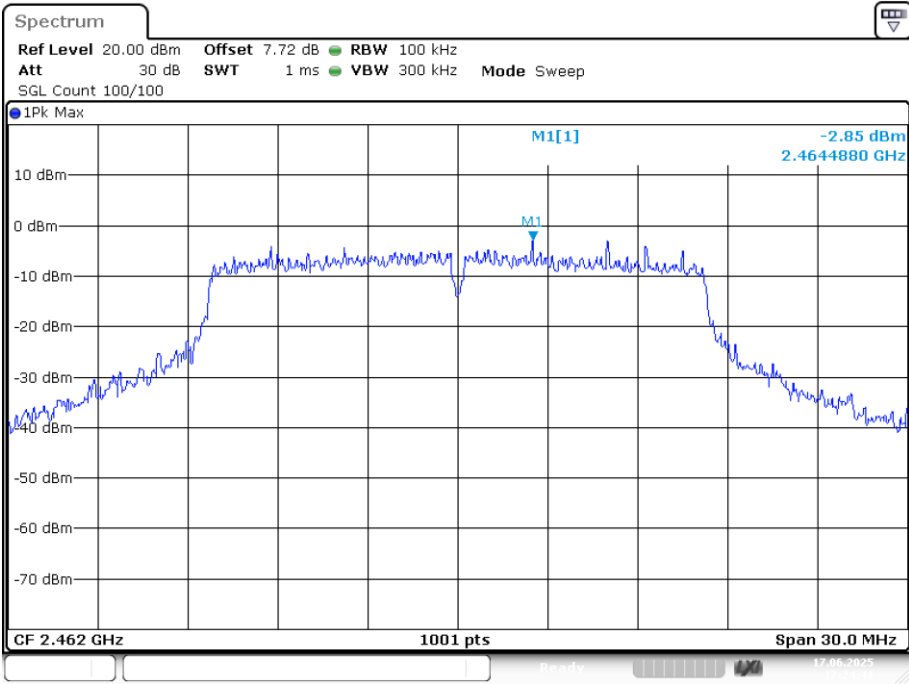
Tx. Spurious NVNT g 2437MHz Ant1 Ref



Tx. Spurious NVNT g 2437MHz Ant1 Emission

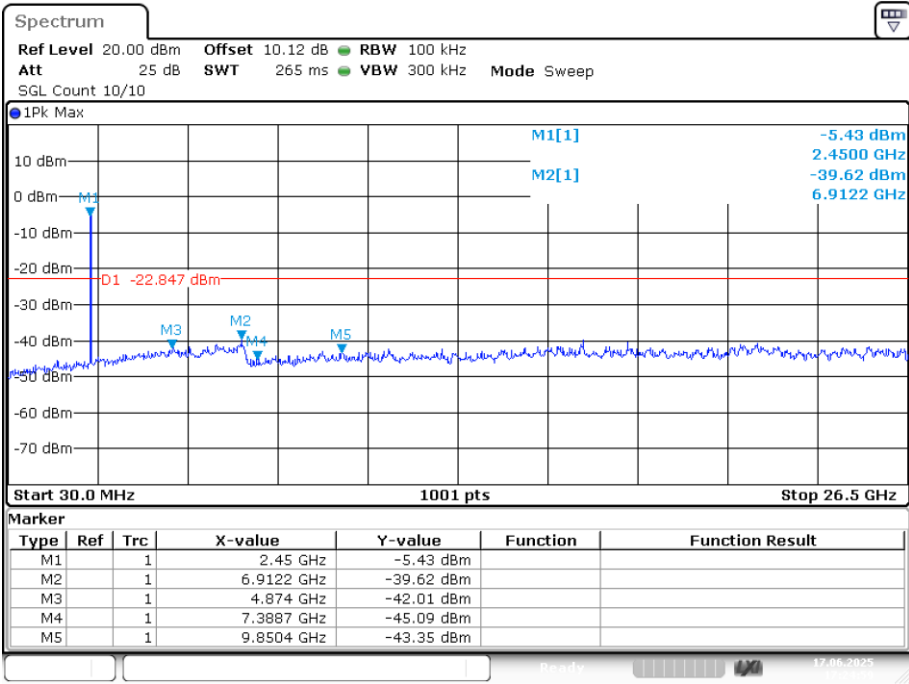


Tx. Spurious NVNT g 2462MHz Ant1 Ref



Date: 17.JUN.2025 17:24:41

Tx. Spurious NVNT g 2462MHz Ant1 Emission



Date: 17.JUN.2025 17:24:59

5. POWER LINE CONDUCTED EMISSION

5.1. Test Limits

Frequency MHz	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

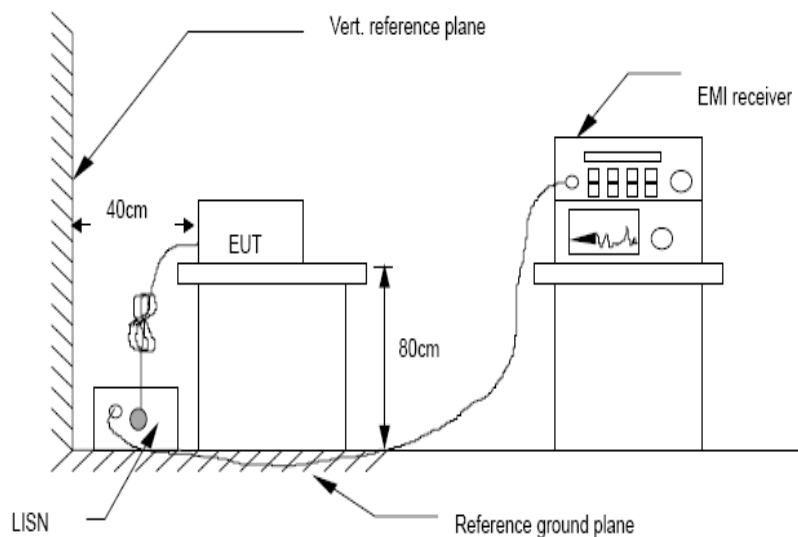
3. The limit decreases in line with the logarithm of the frequency in the rang of 0.15 to 0.50 MHz.

5.2. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10:2013 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9 kHz.

5.3. Test Setup

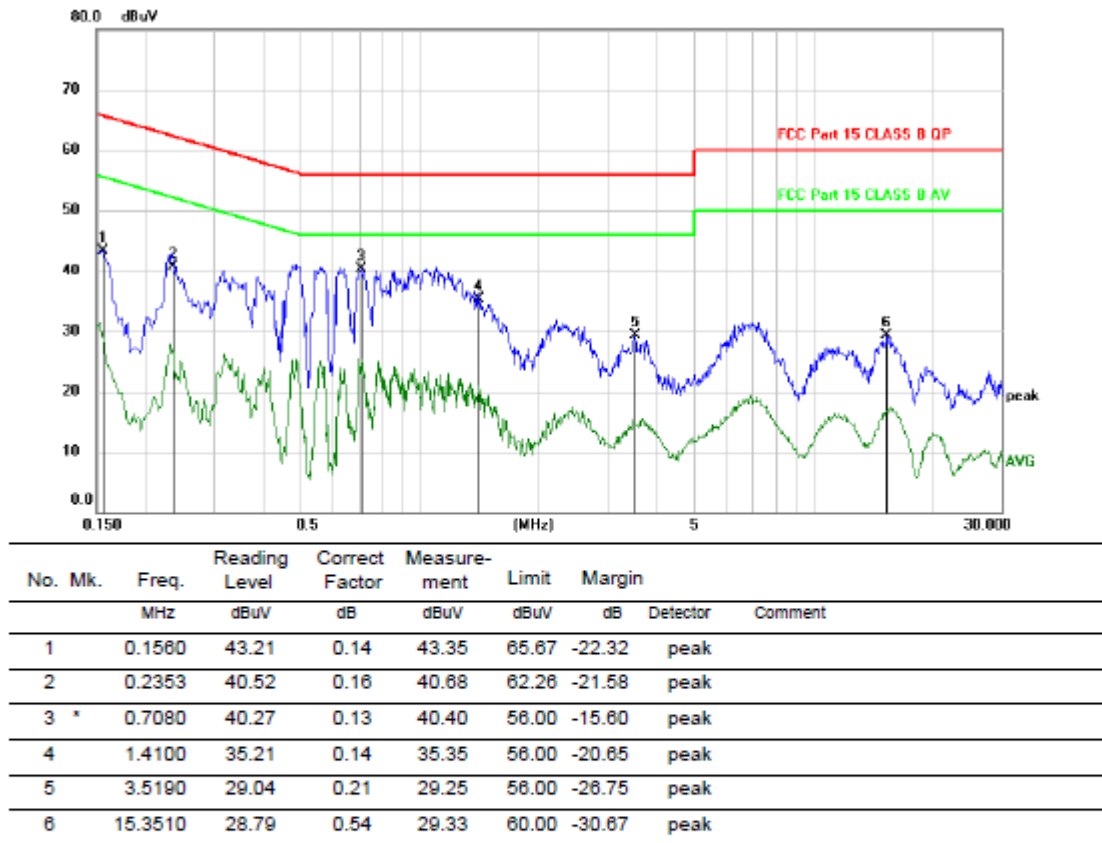


5.4. Test Results

PASS. (See below detailed test data)

Note: If peak Result comply with AV limit, QP and AV Result is deemed to comply with AV limit

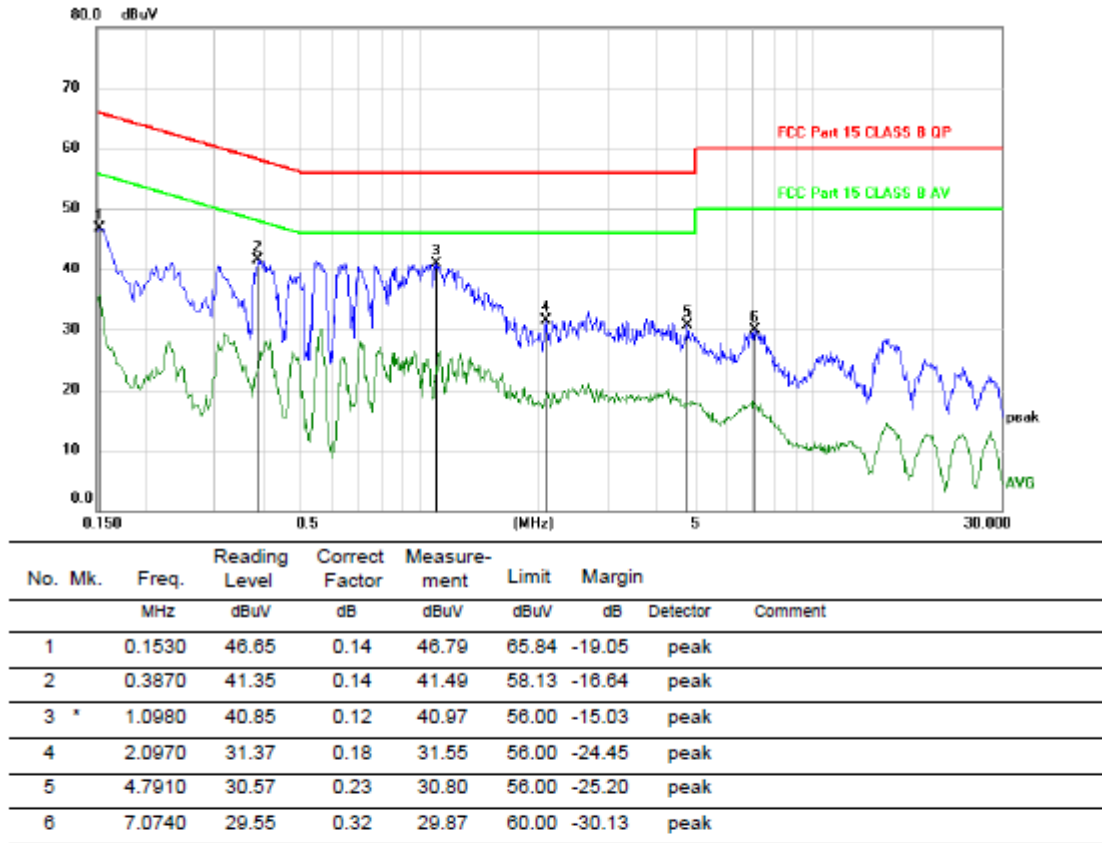
Line:



*:Maximum data x:Over limit !:over margin

(Reference Only)

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Neutral:

*:Maximum data x:Over limit !:over margin

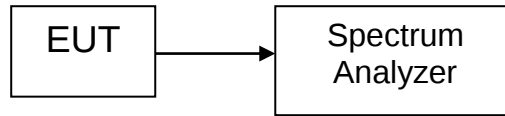
(Reference Only)

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Note: All modes and channels have been tested and only the g mode 2412MHz mode with the worst data is listed.

6. DUTY CYCLE

6.1. Block diagram of test setup



6.2. Test Procedure

Details see the KDB 558074 D01 15.247 Meas Guidance v05r02

- 11.2.1 A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on and off times of the transmitted signal.
- 11.2.2 The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set $RBW \geq EBW$ if possible; otherwise, set RBW to the largest available value. Set $VBW \geq RBW$. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$, where T is defined in II.B.1.a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

6.3. Test Results

Pass

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)
NVNT	g	2412	Ant1	91.58	0.38
NVNT	g	2437	Ant1	91.78	0.37
NVNT	g	2462	Ant1	91.65	0.38

7. MAXIMUM CONDUCTED OUTPUT POWER

7.1. Test limits

Please refer RSS-247 & FCC PART 15: 15.247.

Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1 W(30dBm)

7.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

7.2.1 Place the EUT on the table and set it in transmitting mode.

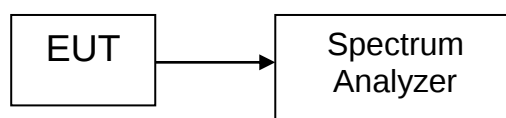
7.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

7.2.3 Set the spectrum analyzer as RBW = Set RBW = 1% to 5% of the OBW, but do not exceed 1 MHz, Set VBW $\geq [3 \times \text{RBW}]$, span $\geq 1.5 \times \text{OBW}$, detail see the test plot.

7.2.4 Record the max reading.

7.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

7.3. Test Setup



7.4. Test Results

PASS

Detailed information please see the following page.

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty cycle Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	g	2412	Ant1	14.382	0.38	14.762	30	Pass
NVNT	g	2437	Ant1	15.123	0.37	15.493	30	Pass
NVNT	g	2462	Ant1	14.593	0.38	14.973	30	Pass

Note: Total Power= Conducted Power+ Duty cycle Factor

8. POWER SPECTRAL DENSITY

8.1. Test limits

8.1.1 Please refer FCC PART 15: 15.247.

8.1.2 For direct sequence systems, the peak 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.

8.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

8.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

8.2.1 Place the EUT on the table and set it in transmitting mode.

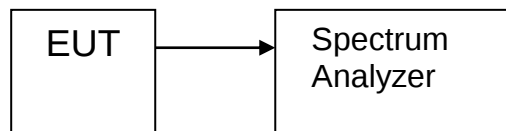
8.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

8.2.3 Set the spectrum analyzer as RBW = 3kHz(Set the RBW to: $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$.), VBW = 10kHz(Set the VBW $\geq 3 \times \text{RBW}$), span $\geq 1.5 \times \text{DTS bandwidth}$., detail see the test plot.

8.2.4 Record the max reading.

8.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

8.3. Test Setup



8.4. Test Results

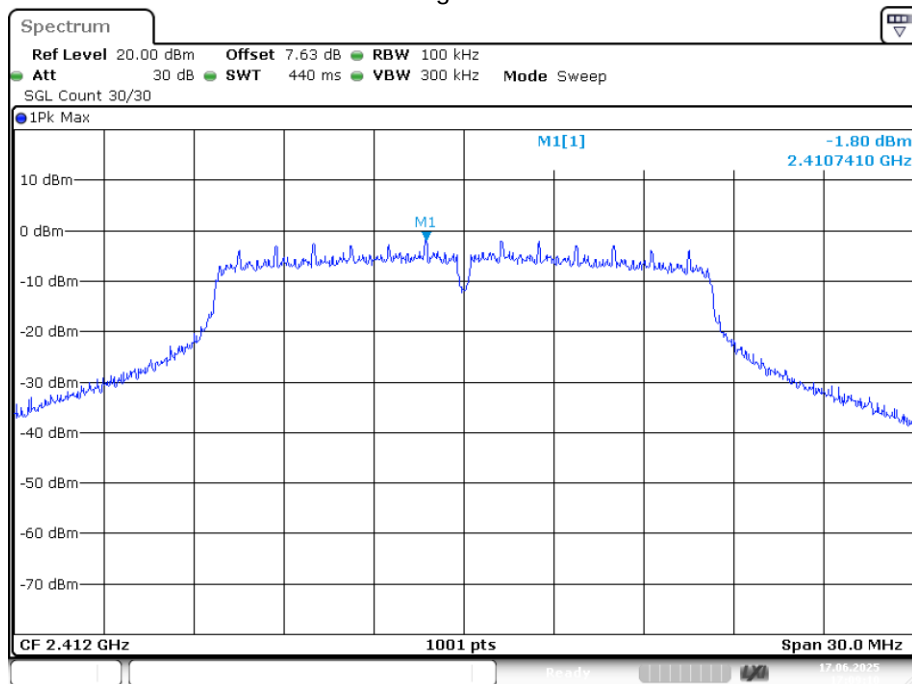
Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/100KHz)	Duty cycle Factor (dB)	Total PSD (dBm/100KHz)	Max PSD (dBm/3KHz)	Limit (dBm/3KHz)	Verdict
NVNT	g	2412	Ant1	-1.797	0.38	-1.417	-16.646	8	Pass
NVNT	g	2437	Ant1	-8.809	0.37	-8.439	-23.668	8	Pass
NVNT	g	2462	Ant1	-9.601	0.38	-9.221	-24.450	8	Pass

Note: 1. Total PSD= Max PSD + Duty cycle Factor

2. PSD(dBm/3kHz) = SA_PSD(dBm/100kHz) + RB factor(dB)

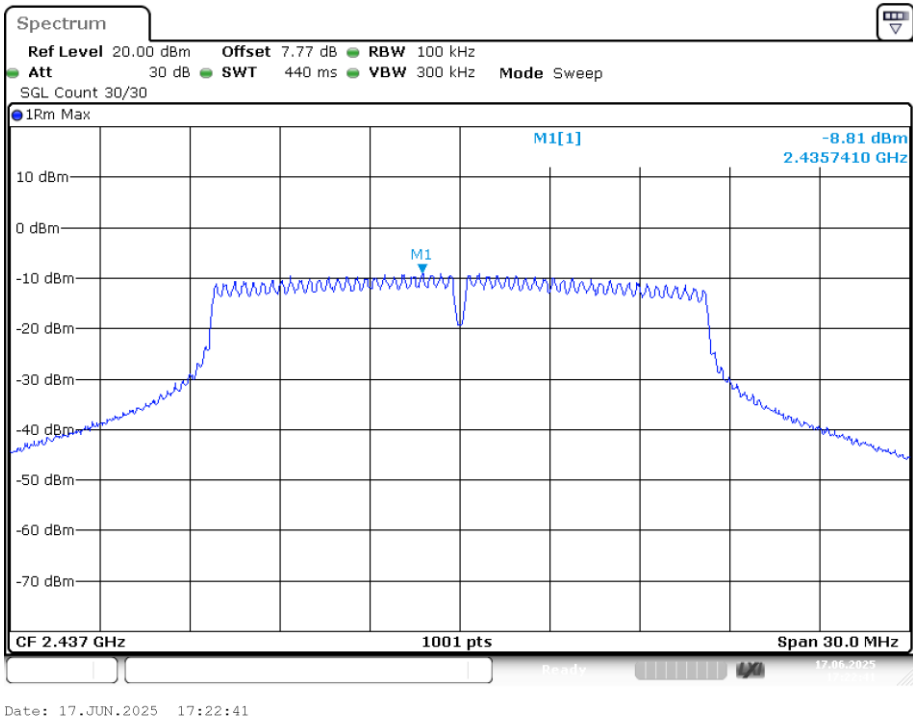
3. RB factor(dB) = $10 \cdot \log(3\text{kHz} / \text{meas. RB})$; meas. RB = RBW set

PSD NVNT g 2412MHz Ant1

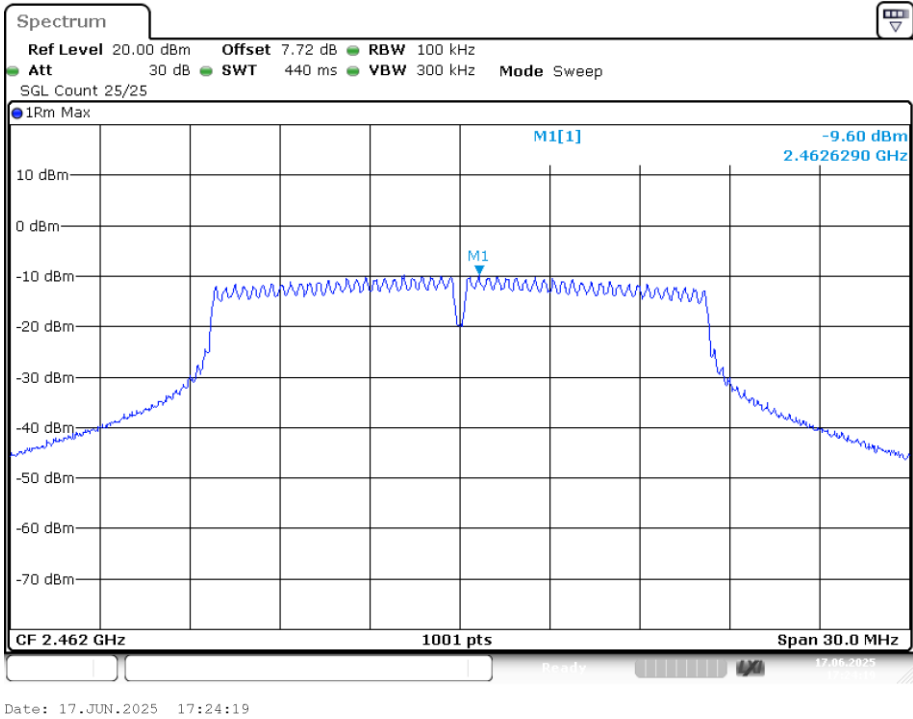


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PSD NVNT g 2437MHz Ant1



PSD NVNT g 2462MHz Ant1



9. BANDWIDTH

9.1. Test limits

Please refer FCC PART 15: 15.247

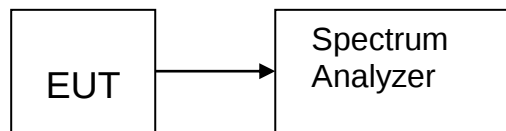
For direct sequence systems, the minimum 6dB bandwidth shall be at least 500 kHz.

9.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

- a) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.
- b) The test receiver set RBW = 100kHz, VBW $\geq 3 \times$ RBW = 300kHz, , Peak Detector, Sweep time set auto, detail see the test plot.

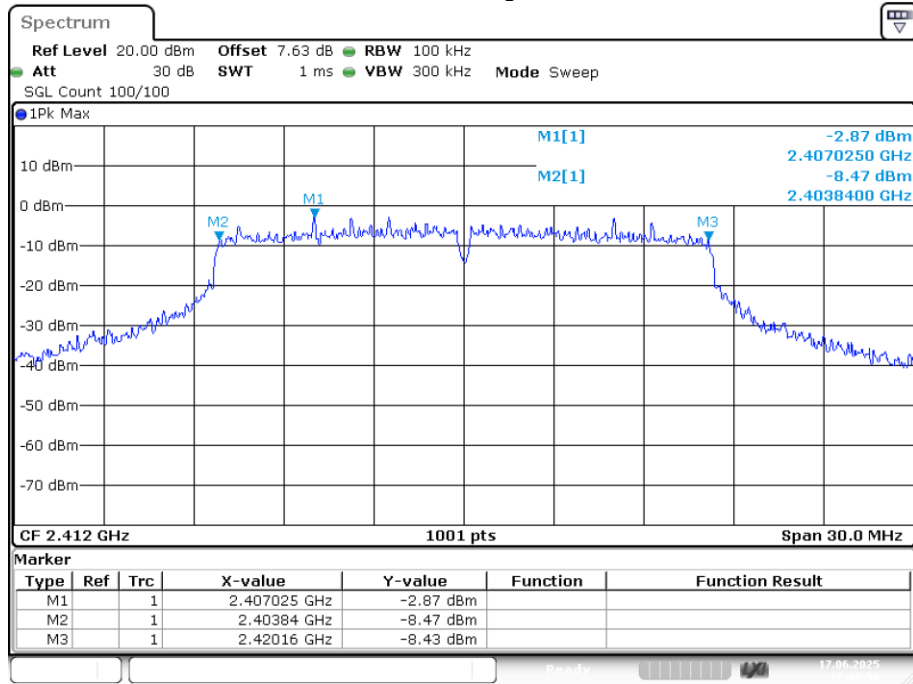
9.3. Test Setup



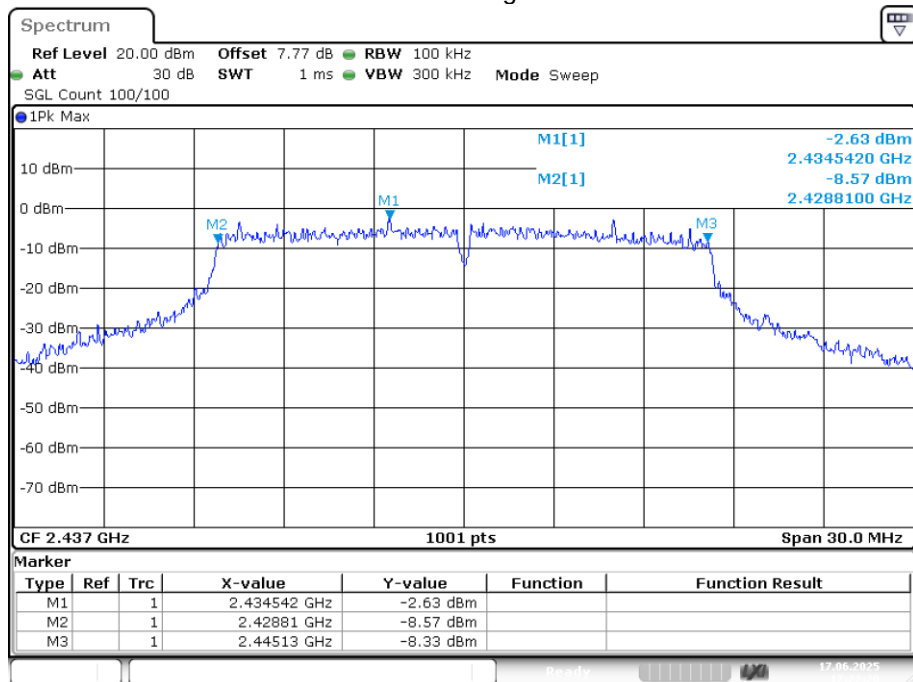
9.4. Test Results

-6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 db bandwidth (MHz)	Limit -6 db bandwidth (MHz)	Verdict
NVNT	g	2412	Ant1	16.32	0.5	Pass
NVNT	g	2437	Ant1	16.32	0.5	Pass
NVNT	g	2462	Ant1	15.42	0.5	Pass

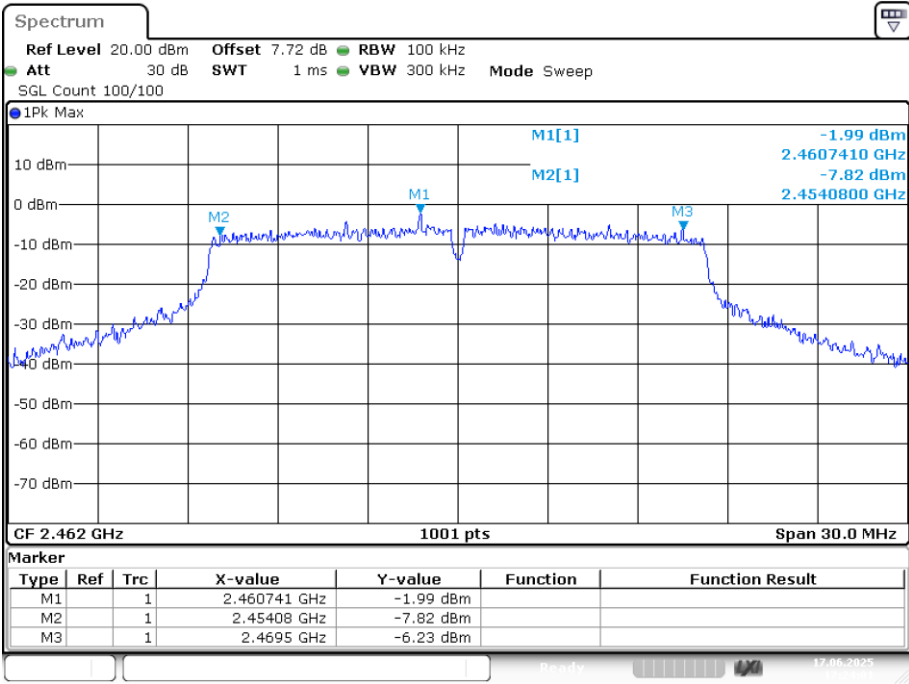
-6dB Bandwidth NVNT g 2412MHz Ant1

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-6dB Bandwidth NVNT g 2437MHz Ant1

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-6dB Bandwidth NVNT g 2462MHz Ant1

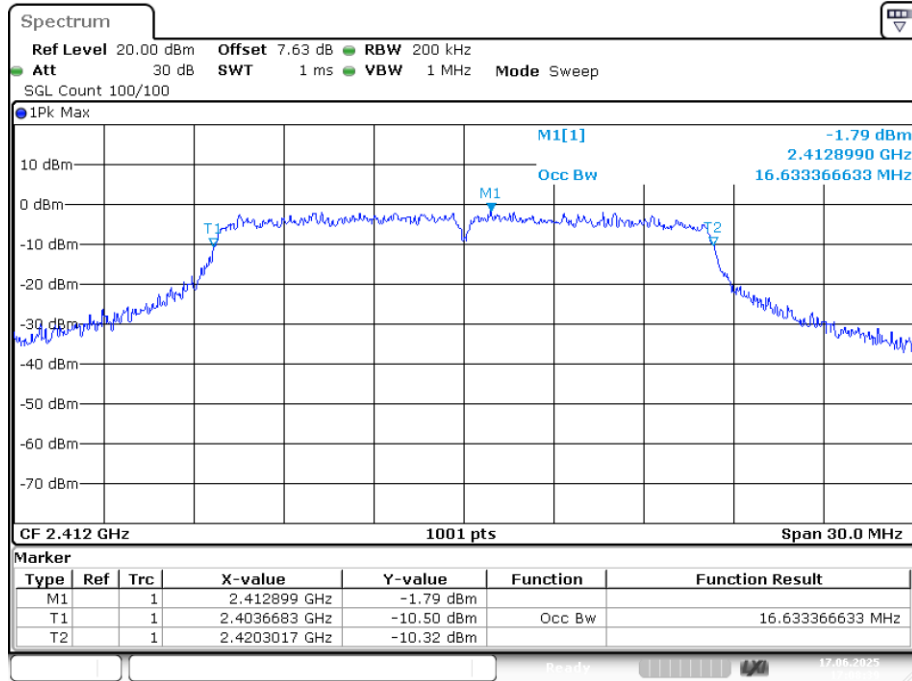


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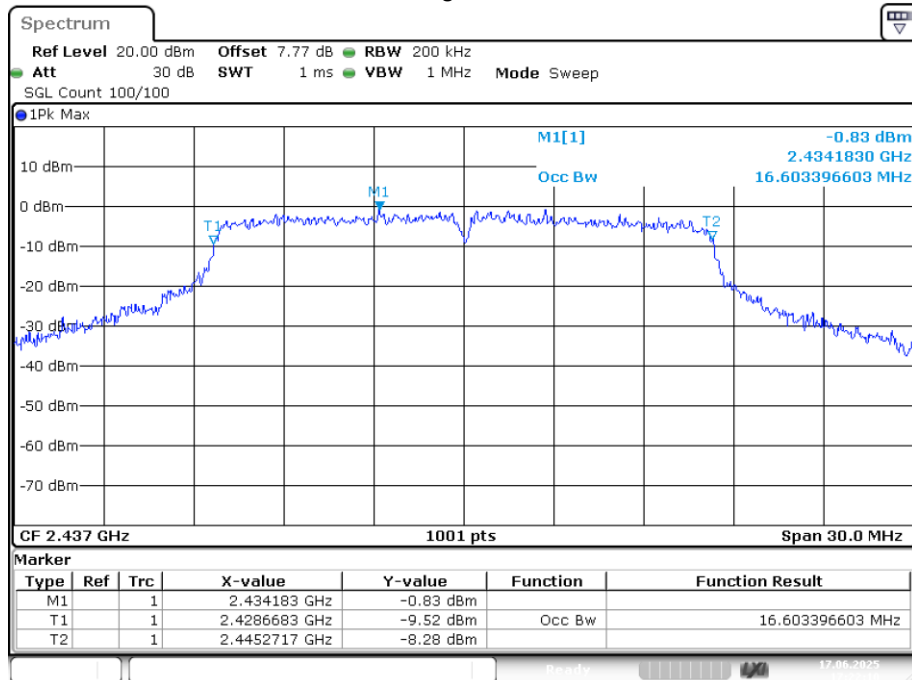
Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% ObW (MHz)
NVNT	g	2412	Ant1	16.633
NVNT	g	2437	Ant1	16.603
NVNT	g	2462	Ant1	16.633

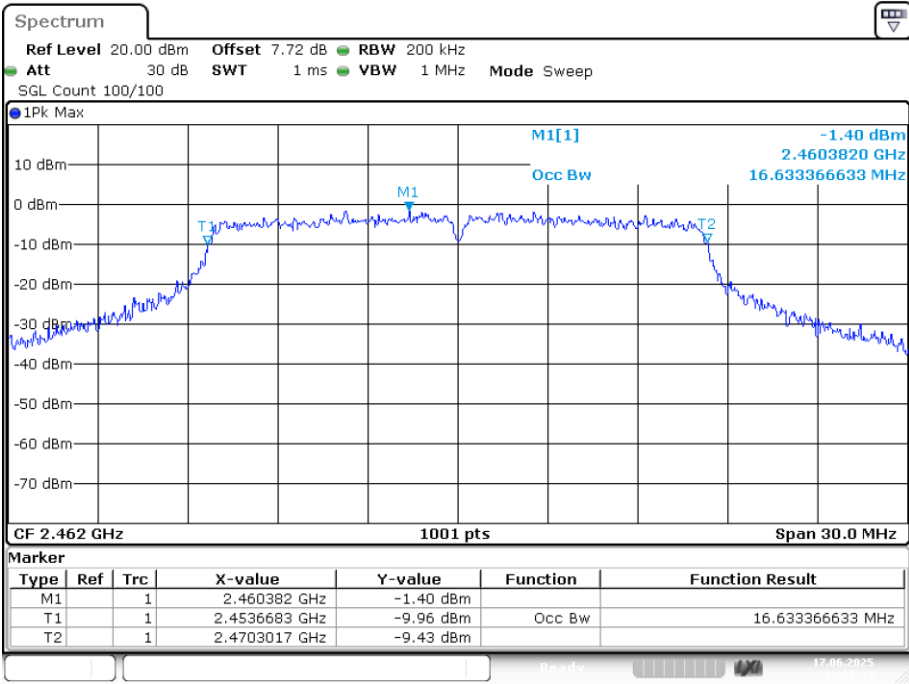
OBW NVNT g 2412MHz Ant1



OBW NVNT g 2437MHz Ant1



OBW NVNT g 2462MHz Ant1



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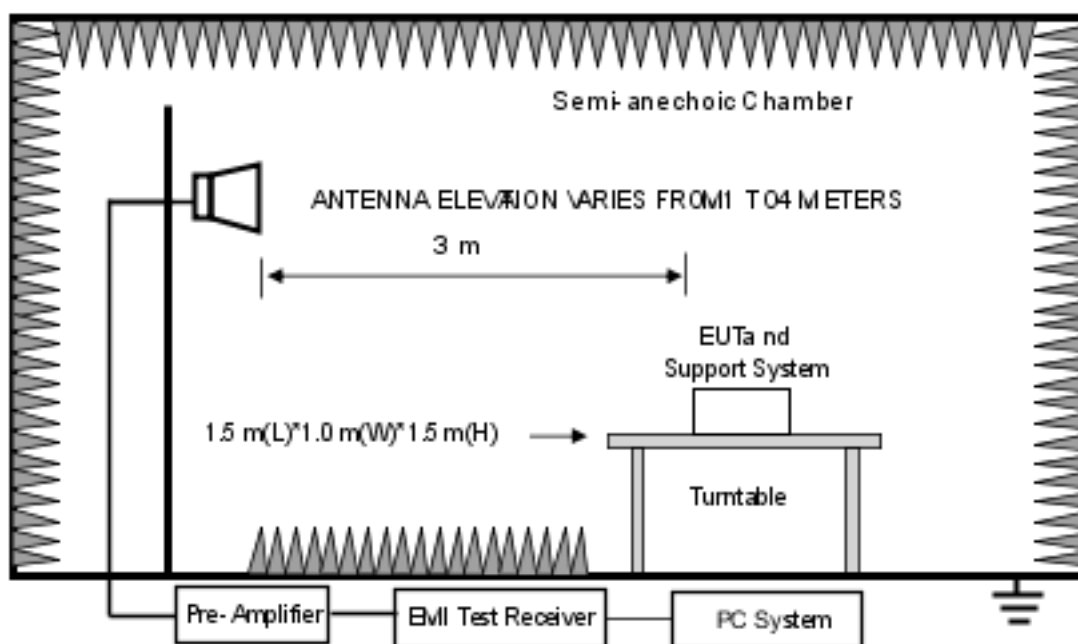
10. BAND EDGE CHECK

10.1. Test limits

Please refer FCC PART 15: 15.247

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits and RSS-GEN limits.

10.2. Block diagram of test setup



10.3. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

10.3.1 Put the EUT on a 1.5m high table, power on the EUT. Emissions were scanned and measured rotating the EUT to 360 degrees, Find the maximum Emission

10.3.2 Check the spurious emissions out of band.

10.3.3 RBW 1MHz, VBW 3MHz, peak detector for peak value, RBW 1MHz, VBW 10Hz, RMS detector for AV value.

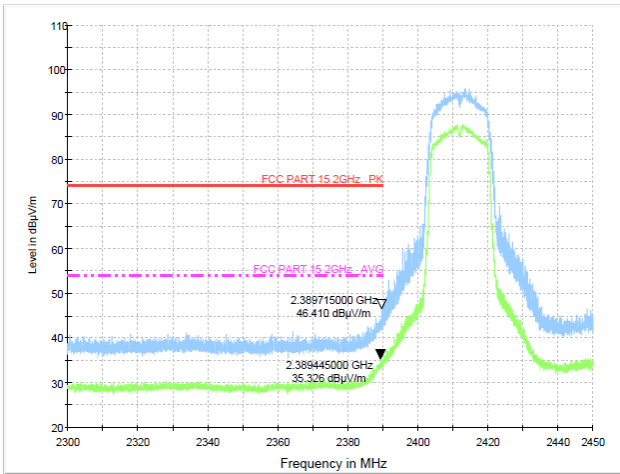
All restriction band and non- restriction band have been tested, only worse case is reported.

10.4. Test Results

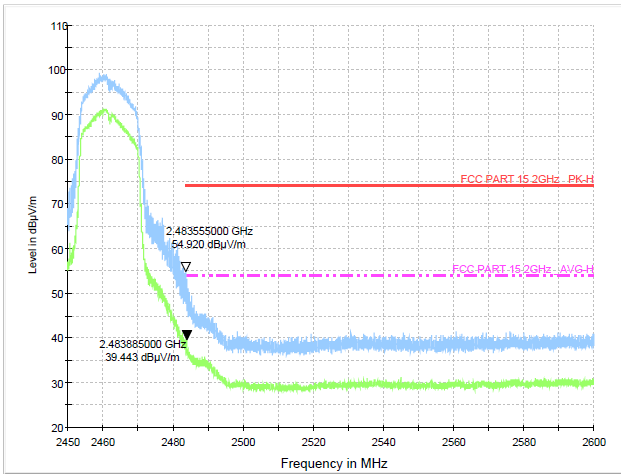
PASS.

Detailed information please see the following page.

Test Mode: IEEE 802.11g-Low



Test Mode: IEEE 802.11g-High

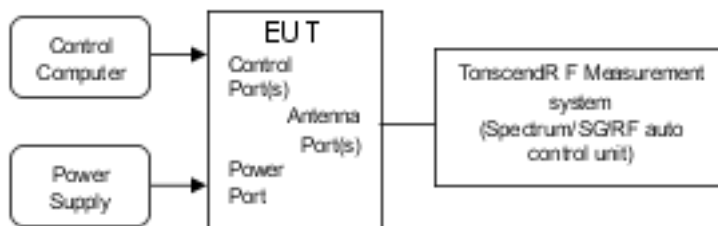


11. BAND EDGE (CONDUCTED)

11.1. Test limits

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) (see § 15.205(c)).

11.2. Block diagram of test setup



11.3. Test Procedure

Details see the KDB 558074 D01 15.247 Meas Guidance v05r02

11.3.1. Place the EUT on the table and set it in transmitting mode.

11.3.2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

11.3.3. Set center frequency of spectrum analyzer = operating frequency.

11.3.4. Set the spectrum analyzer as RBW=100KHz, VBW=300KHz, Span = 30MHz, Sweep = auto.

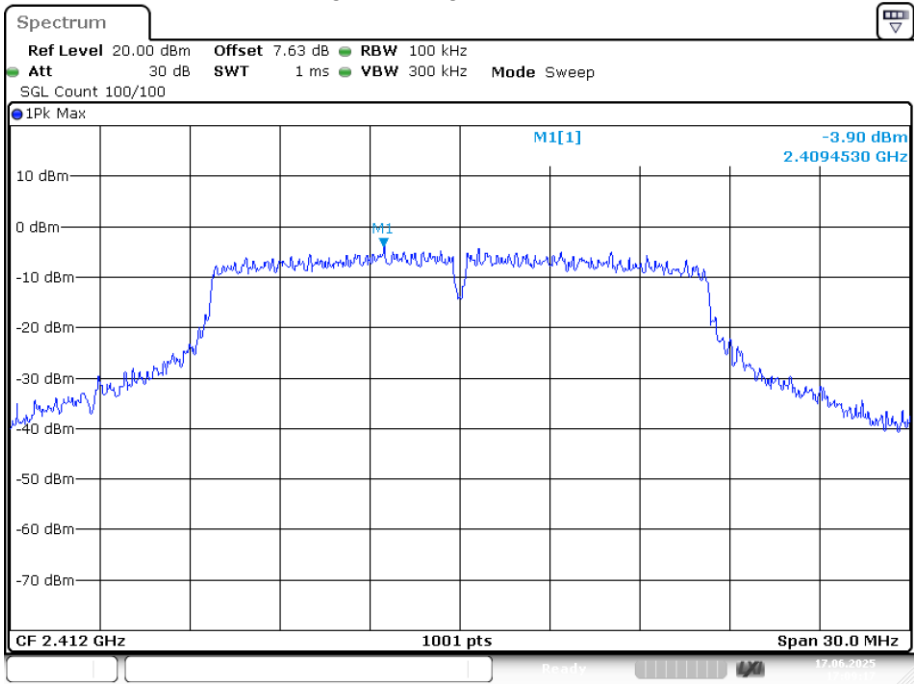
11.3.5. Repeat above procedures until all frequency measured were complete.

11.4. Test Results

Pass

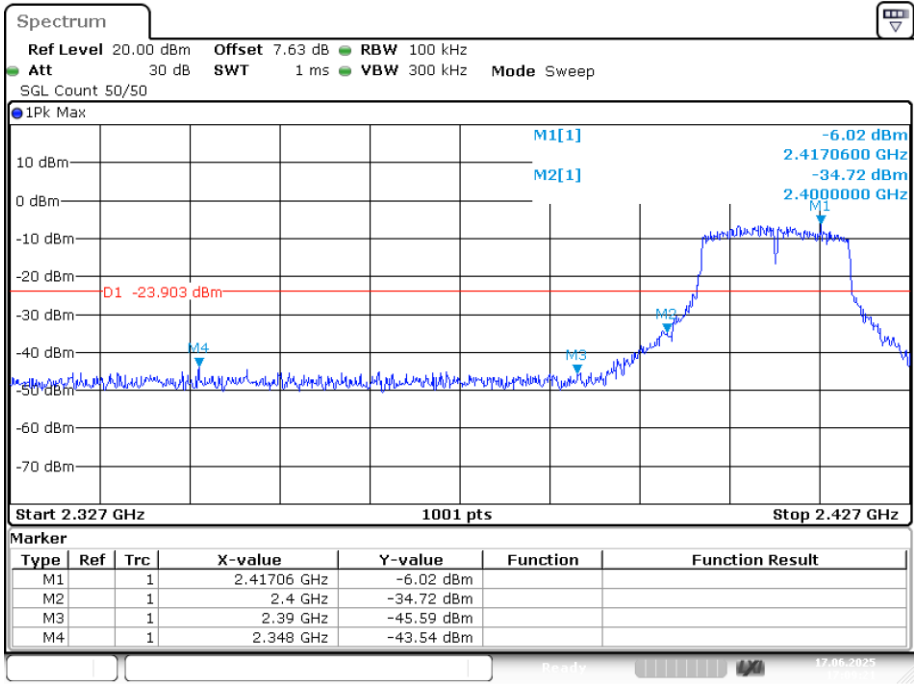
The test results are listed in next pages.

Band Edge NVNT g 2412MHz Ant1 Ref



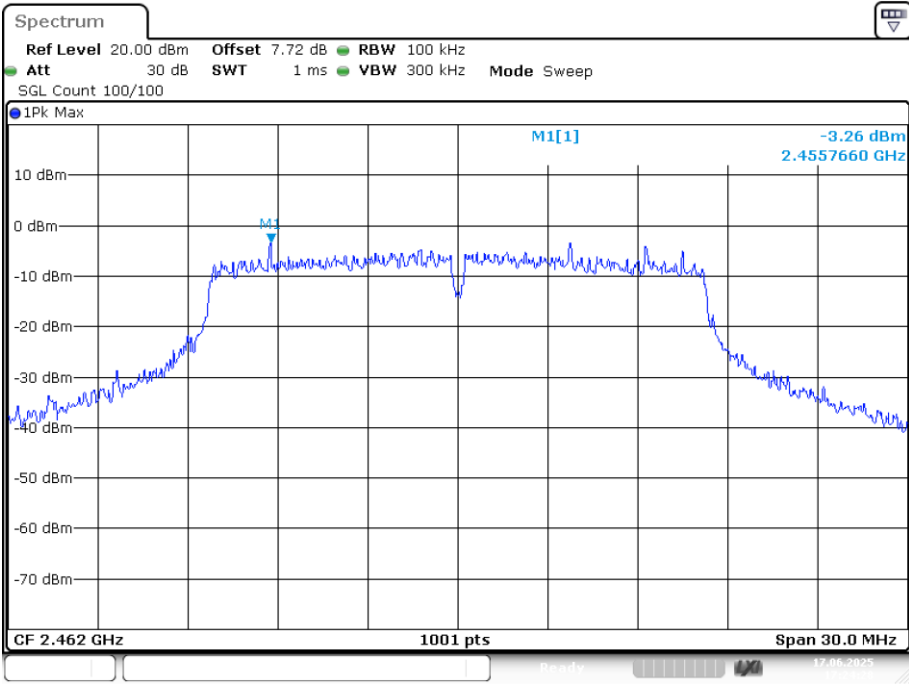
Date: 17.JUN.2025 17:09:17

Band Edge NVNT g 2412MHz Ant1 Emission



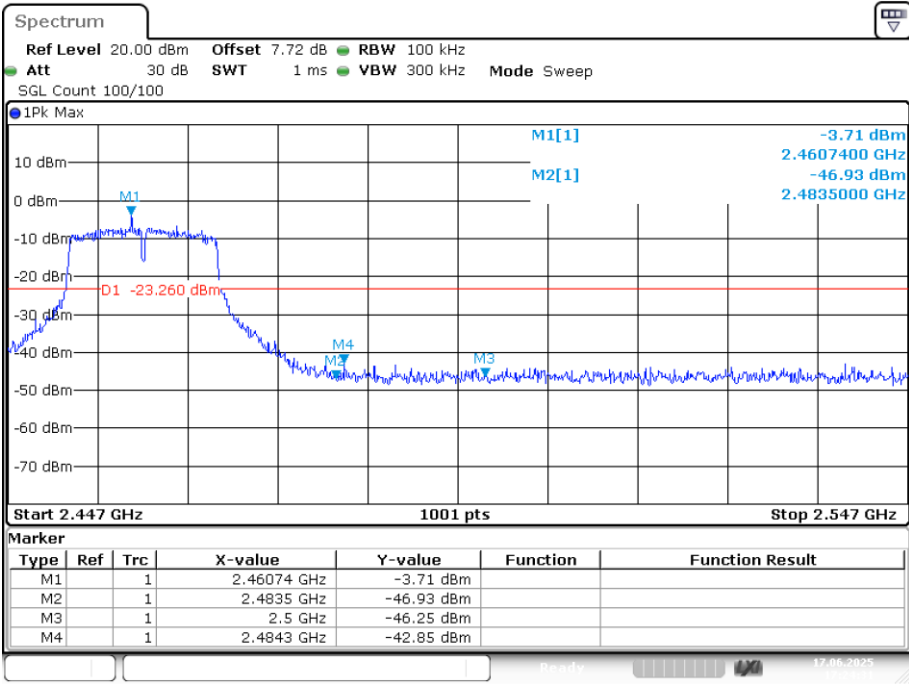
Date: 17.JUN.2025 17:09:21

Band Edge NVNT g 2462MHz Ant1 Ref



Date: 17.JUN.2025 17:24:28

Band Edge NVNT g 2462MHz Ant1 Emission



Date: 17.JUN.2025 17:24:31

12. ANTENNA REQUIREMENT

12.1. Standard 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 shall be considered sufficient to comply with the provisions of this Section. 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.

12.2. Antenna Connected Construction

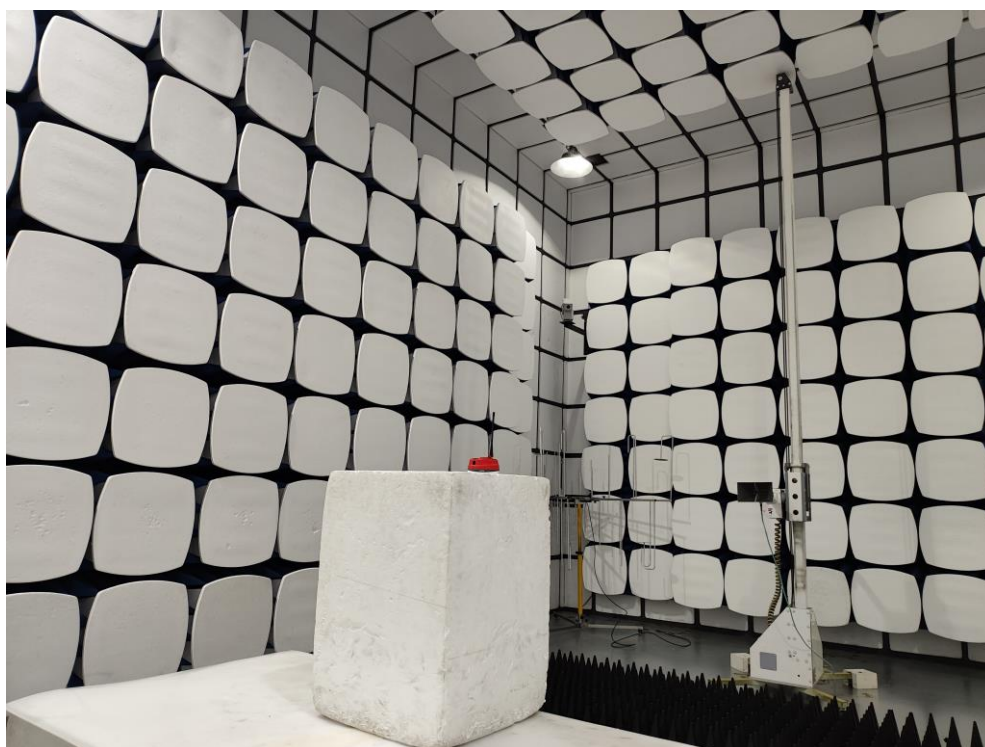
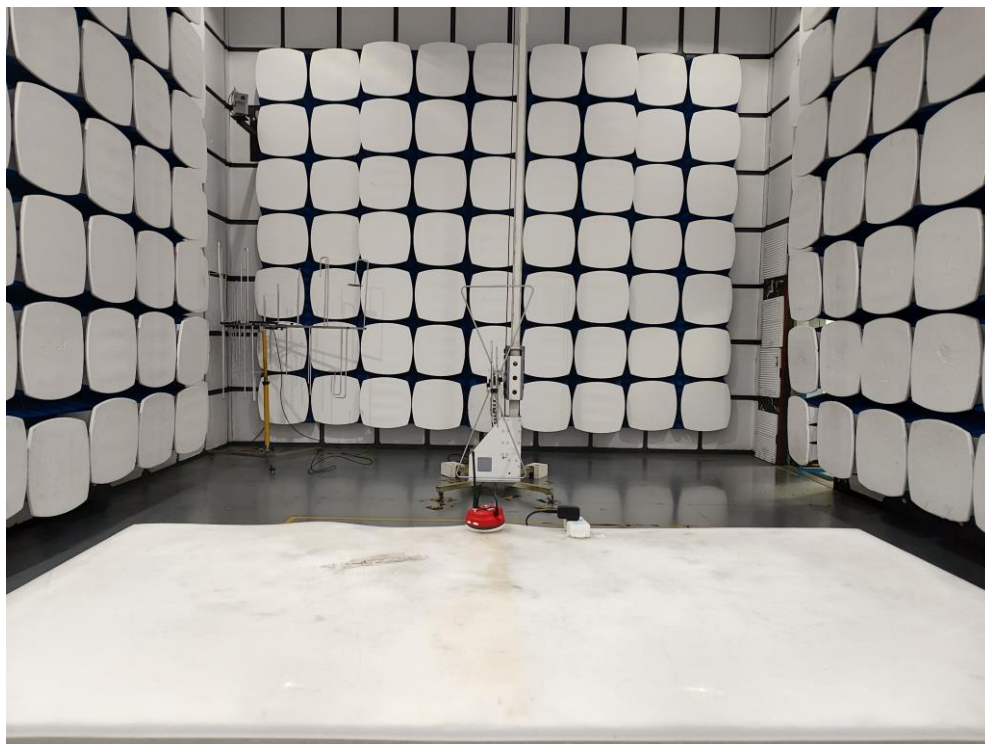
The antenna connector is unique antenna and no consideration of replacement. Please see EUT photo for details.

12.3. Results

The EUT antenna is internal antenna. It complies with the standard requirement.

13. TEST SETUP PHOTO

13.1. Photos of Radiated emission



13.2.Photos of Conducted Emission test



-----END OF REPORT-----