Prüfbericht-Nr.: *Test report no.*:	**CN25ZBPR 001**	**Auftrags-Nr.:** *Order no.*:	**168546777**	Seite 1 von 20 *Page 1 of 20*
Kunden-Referenz-Nr.: *Client reference no.*:	N/A	**Auftragsdatum:** *Order date:*	2025-04-03	
Auftraggeber: *Client*:	**Shining 3D Tech Co., Ltd.** No. 1398, Xiangbin Road, Wenyan, Xiaoshan, Hangzhou, Zhejiang, P.R. China			
Prüfgegenstand: *Test item*:	Tracking Optical Probe			
Bezeichnung / Typ-Nr.: *Identification / Type no.*:	FreeProbe 2, FreeProbe 2 Pro			
Auftrags-Inhalt: *Order content*:	Test Report			
Prüfgrundlage: *Test specification*:	CFR47 FCC Part 15: Subpart C Section 15.247			
Wareneingangsdatum: *Date of sample receipt*:	2025-04-25	Refer to photos document		
Prüfmuster-Nr.: *Test sample no:*	A003959354-001 A003959230-001-002 A003959350-001-002			
Prüfzeitraum: *Testing period*:	2025-07-01 - 2025-07-09			
Ort der Prüfung: *Place of testing*:	Refer to section 2.1			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: *Test result**:	Pass			

geprüft von: tested by:	x Bell Hu Signed by: Bell Hu	**genehmigt von:** *authorized by*:	X Jonathan Li Signed by: Jonathan Li
Datum: *Date:* 2025-08-20		**Ausstellungsdatum:** *Issue date:* 2025-08-20	
Stellung / Position:	Sachverständige(r)/Expert	**Stellung** / Position:	Sachverständige(r)/Expert

Sonstiges / *Other*: FCC ID: 2AMG4-FPB2

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery*: Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*P(ass) = passed a.m. test specification(s)*	*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Prüfbericht-Nr.: CN25ZBPR 001
Test report no.:

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. *The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.*
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature *As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature*
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. *The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the “Zero Guard Band Rule” and “Simple Acceptance” in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.*

Test Summary

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER
RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY
RESULT: Pass

5.1.4 6DB BANDWIDTH
RESULT: Pass

5.1.5 99% BANDWIDTH
RESULT: Pass

5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH
RESULT: Pass

5.1.7 RADIATED SPURIOUS EMISSION
RESULT: Pass

5.1.8 AC CONDUCTED EMISSION
RESULT: Pass

Contents

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of Test Set-up

Appendix B: Test Results of SRD

2 Test Sites

2.1 Test Facilities

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road, Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104
A2LA Certificate Number: 6975.01
CNAS Registration Number: CNAS L19010

Note: TÜV Rheinland (Shenzhen) Co., Ltd. subcontracts the whole test to Shenzhen PSI Testing Co., Ltd., the tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

RF Test Equipment						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Firmware Version**	**Calibrated until**
1.	9*6*6 anechoic chamber	SKET	9*6*6	N/A	/	2026.12.19
2.	Test Receiver	Rohde&Schwarz	ESCI 7	101032/003	4.42 SP3	2025.12.17
3.	Loop Antenna	Schwarz beck	FMZB 1519B	00128	/	2026.12.24
4.	Bilog Antenna	Schwarz beck	VULB 9168	01448	/	2026.12.24
5.	Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101648	3.70	2025.12.17
6.	Horn Antenna	Schwarz beck	BBHA 9120 D	02706	/	2026.12.24
7.	Amplifier	SKET	LAPA_01G18G-45dB	SK2022032901	/	2025.12.17
8.	Horn Antenna	Schwarz beck	BBHA 9170	00946	/	2026.12.24
9.	Amplifier	SKET	LNPA_0118G-45	SK2020010801	/	2025.12.17
10.	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.02-117725-vh	/	2025.12.17
11.	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.02-1111533-Fz	/	2025.12.17
12	Vector Signal Generator	Agilent	N5182A	MY47420724	/	2025.12.17
13	Analog signal generator	Agilent	N5181A	MY50145363	/	2025.12.17
14	Comprehensive Test Instrument	Rohde&Schwarz	CMW 500	145266	/	2025.12.17
15	Spectrum Analyzer	Agilent	N9020A	MY51281067	A.14.03	2025.12.17
16	Temp. & Humid Chamber	Auchno	9606	/	/	2025.12.17
17	Regulated DC Power Supply	Xinouhua	ADC120V10A	202211251638		2025.12.17
18	Power meter	Agilent	E4419B	GB40202121	/	2025.12.17

Item	Software Name	Manufacturer
RE	EZ_EMC	Farad
RF	RTS	TACHOY

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular

basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty (k=2)
RF output power, conducted	± 0.41dB
Occupied Channel Bandwidth	± 2.08 %
RF power density, conducted	± 0.39 dB
Unwanted Emissions, conducted	± 0.59 dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	± 4.82 dB
Radiated Emission of Receiver, valid up to 26.5 GHz	± 4.82 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The Product is Tracking Optical Probe which supports 2.4GHz SRD function.
For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment:	Tracking Optical Probe
Type Designation:	FreeProbe 2, FreeProbe 2 Pro They identical in schematics and PCBA, only different in appreance, size and the battery capacity*.
FCC ID:	2AMG4-FPB2
Operating Voltage:	DC 3.6V
Operating Temperature Range:	-10 °C ~ +40 °C
Technical Specification of 2.4GHz SRD	
Operating Frequency:	2402-2480MHz
Type of Modulation:	GFSK
Channel Number:	40 channels
Channel Separation:	2 MHz
Antenna Type:	Integral Antenna
Antenna Systems	1T1R
Antenna Gain:	2.61dBi (Provided by client)

*The conducted antenna port test was performed on model FreeProbe 2 Pro. The RSE was tested for both FreeProbe 2 Pro and FreeProbe 2, only the worst-case reported.

The correctness of all data provided by customer in the test report is ensured and responsible of the customer. Any misjudgment of the test results caused using incorrect data provided by customer shall be borne by the customer.

Table 3: List of Test frequencies under Test

Wireless	Frequency list (MHz)			
2.4GHz SRD	2402	2422	2442	2462
	2404	2424	2444	2464
	2406	2426	2446	2466
	2408	2428	2448	2468
	2410	2430	2450	2470
	2412	2432	2452	2472
	2414	2434	2454	2474
	2416	2436	2456	2476
	2418	2438	2458	2478
	2420	2440	2460	2480

3.3 Independent Operation Modes

The basic operation modes are:

A. On, 2.4GHz SRD wireless transmitting mode

1) Low Channel
2) Middle Channel
3) High Channel

B. On, 2.4GHz SRD connecting mode

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- User Manual
- Operation Description

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2020.

According to clause 3.1, all tests were performed in this report.

Table 4: Test environments

Environment Parameter	Selected Values During Tests		
	Temperature	Voltage	Relative Humidity
NTNV	24.6°C	Normal	Ambient

Table 5: Test channel and frequency

Test Channels
2402MHz;2440MHz; 2480MHz

4.3 Special Accessories and Auxiliary Equipment

Table 6: Auxiliary Equipment Used during Test

Description	Manufacturer	Model	SN
Notebook PC(EMC)	Mitsubishi	XL-TYDQ2179	71902914158

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

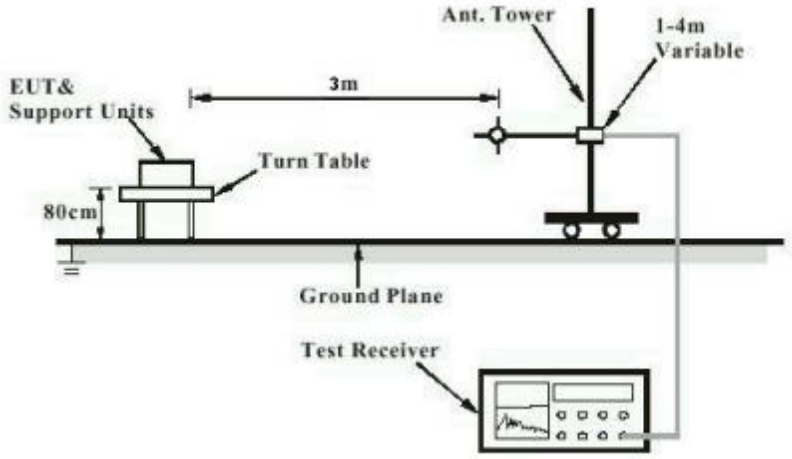


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

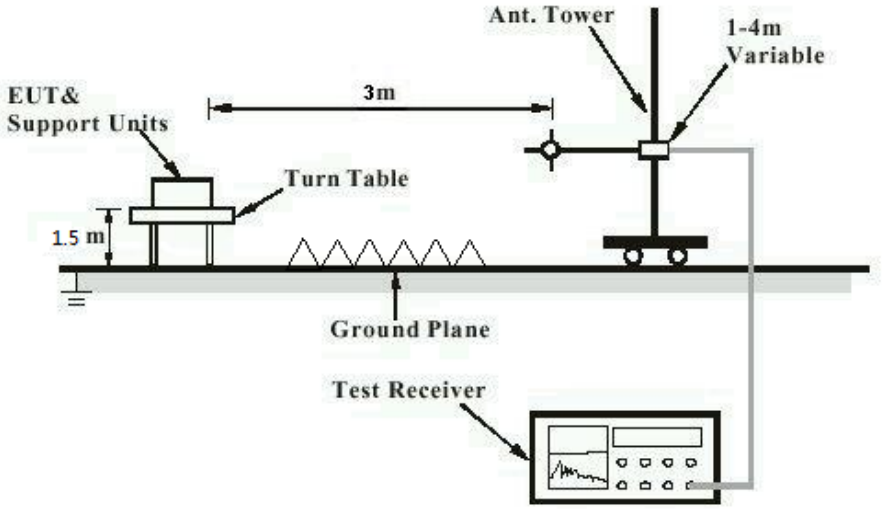
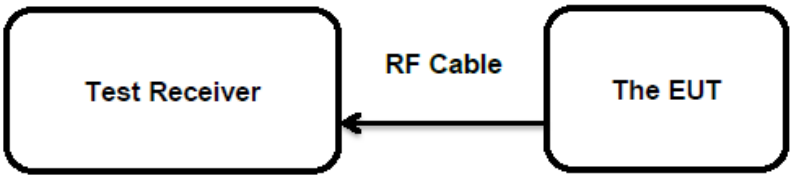


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203
RSS-Gen Clause 6.8

The EUT has two integral antennas with unique connector, which is designed with permanent attachment and no consideration of replacement, as detailed on section 3.2.

Therefore, the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Peak Conducted Output Power

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(b)(3) RSS-247 Clause 5.4(d)
Basic standard	:	ANSI C63.10: 2020
Limits	:	1.0 Watts
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2025-07-04 to 2025-07-08
Input voltage	:	DC 3.6V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.6 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

5.1.3 Conducted Power Spectral Density

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(e) RSS-247 Clause 5.2(b)
Basic standard	:	ANSI C63.10: 2020
Limits	:	< 8 dBm / 3kHz
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2024-09-25 to 2025-01-04
Input voltage	:	DC 3.6V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.6 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

5.1.4 6dB Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(a)(2) RSS-247 Clause 5.2(a)
Basic standard	:	ANSI C63.10: 2020
Limits	:	> 500 KHz
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2025-07-04 to 2025-07-08
Input voltage	:	DC 3.6V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.6 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

5.1.5 99% Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(a) RSS-Gen Clause 6.7
Basic standard	:	ANSI C63.10: 2020
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2025-07-04 to 2025-07-08
Input voltage	:	DC 3.6V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.6 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d) RSS-247 Clause 5.1(b)
Basic standard	:	ANSI C63.10: 2020
Limits	:	If the tested output power based on peak test: At least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. If the tested output power based on RMS averaging over a time interval: At least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2025-07-04 to 2025-07-08
Input voltage	:	DC 3.6V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.6 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.
For the measurement records, refer to the appendix B.

5.1.7 Radiated Spurious Emission

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3
Basic standard	:	ANSI C63.10: 2020
Limits	:	Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Table 5
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	2025-07-04 to 2025-07-08
Input voltage	:	DC 3.6V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	Refer to test result
Relative humidity	:	Refer to test result
Atmospheric pressure	:	101 kPa

Remark:
Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst-case spurious emissions configuration of the each mode were reported.

The RSE was tested for both FreeProbe 2 Pro and FreeProbe 2, only the worst-case reported.

For the measurement records, refer to the appendix B.

5.1.8 AC Conducted Emission

RESULT: **N/A**

Test Specification

Test standard	:	FCC Part 15.207(a) RSS-GEN clause 8.8
Basic standard	:	ANSI C63.10: 2020
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a)
Kind of test site	:	Shielded Room

This device is battery powered only.

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

7 List of Tables

Appendix B: Test Results of 2.4GHz SRD

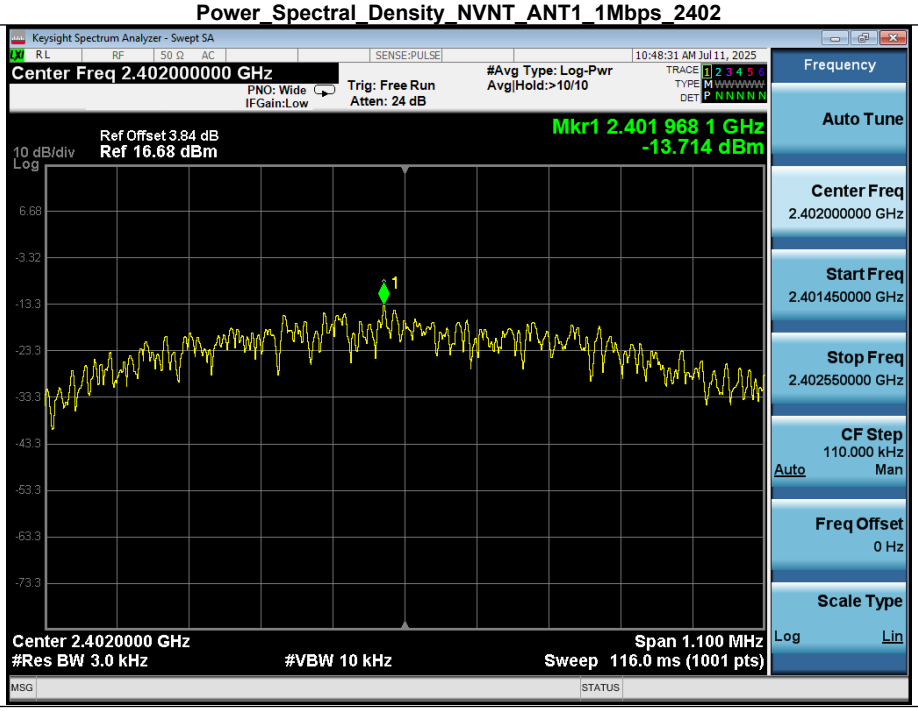
Appendix B.1: Test Results of Conducted Peak Power

Condition	Antenna	Rate	Frequency (MHz)	Max. Peak Conducted Power		Max. average Conducted Power (For reference only)		Limit(mW)	Result
				(dBm)	(mW)	(dBm)	(mW)		
NVNT	ANT1	1Mbps	2402.00	2.01	1.59	1.52	1.419	1000	Pass
NVNT	ANT1	1Mbps	2440.00	0.41	1.10	0.02	1.005	1000	Pass
NVNT	ANT1	1Mbps	2480.00	-0.86	0.82	-1.24	0.752	1000	Pass
NVNT	ANT1	2Mbps	2402.00	2.02	1.59	1.52	1.419	1000	Pass
NVNT	ANT1	2Mbps	2440.00	0.20	1.05	-0.14	0.968	1000	Pass
NVNT	ANT1	2Mbps	2480.00	-1.16	0.77	-1.57	0.697	1000	Pass

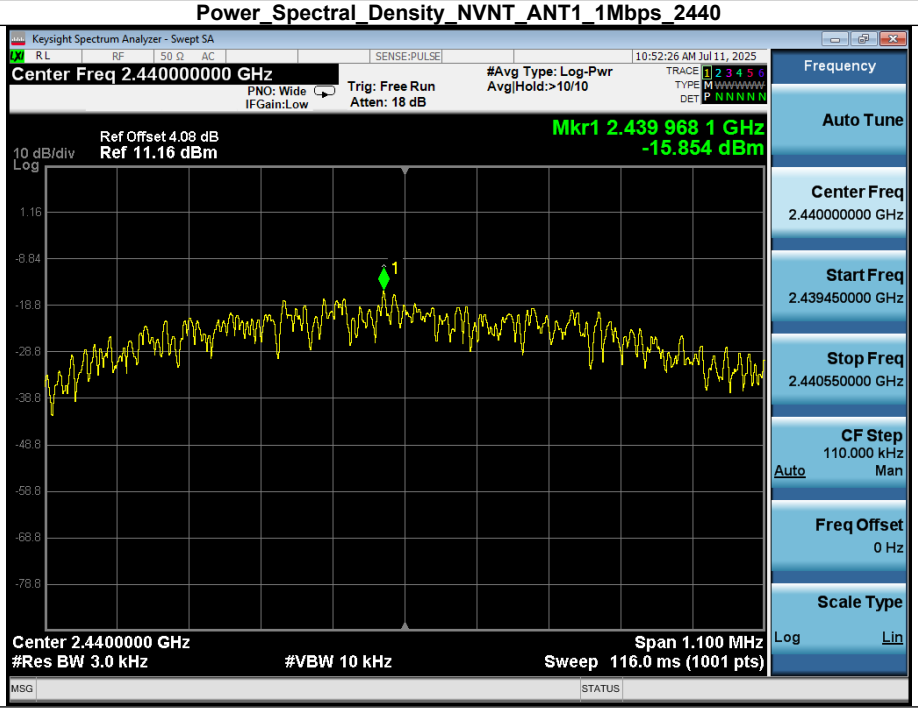
Appendix B.2: Test Results of Conducted Power Spectral Density

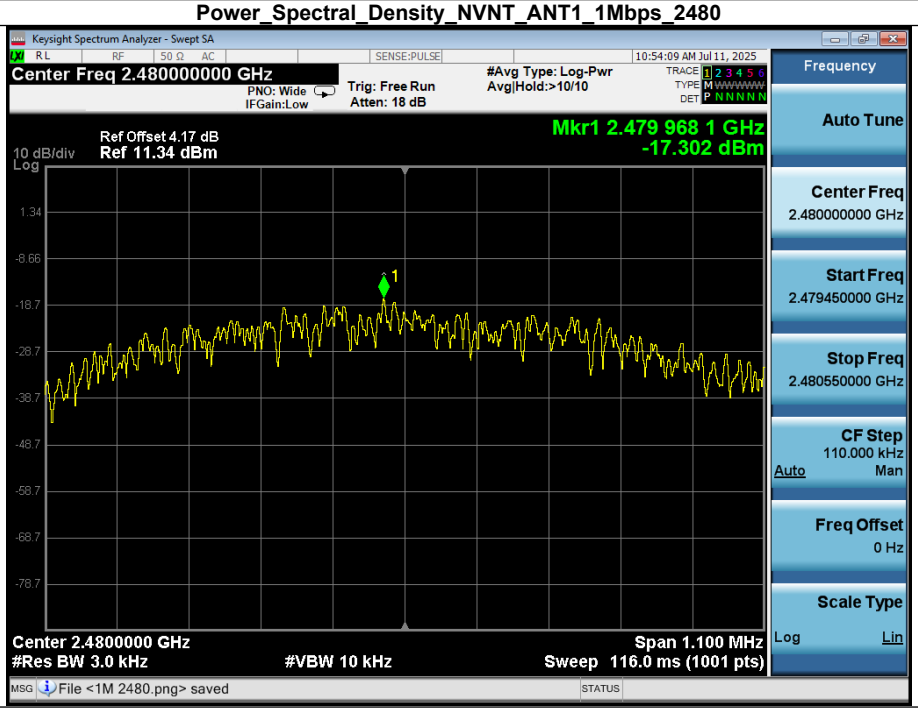
Condition	Antenna	Rate	Frequency (MHz)	Power Spectral Density(dBm/3kHz)	Limit(dBm/3kHz)	Result
NVNT	ANT1	1Mbps	2402.00	-13.714	8	Pass
NVNT	ANT1	1Mbps	2440.00	-15.854	8	Pass
NVNT	ANT1	1Mbps	2480.00	-17.302	8	Pass
NVNT	ANT1	2Mbps	2402.00	-15.705	8	Pass
NVNT	ANT1	2Mbps	2440.00	-17.572	8	Pass
NVNT	ANT1	2Mbps	2480.00	-17.144	8	Pass

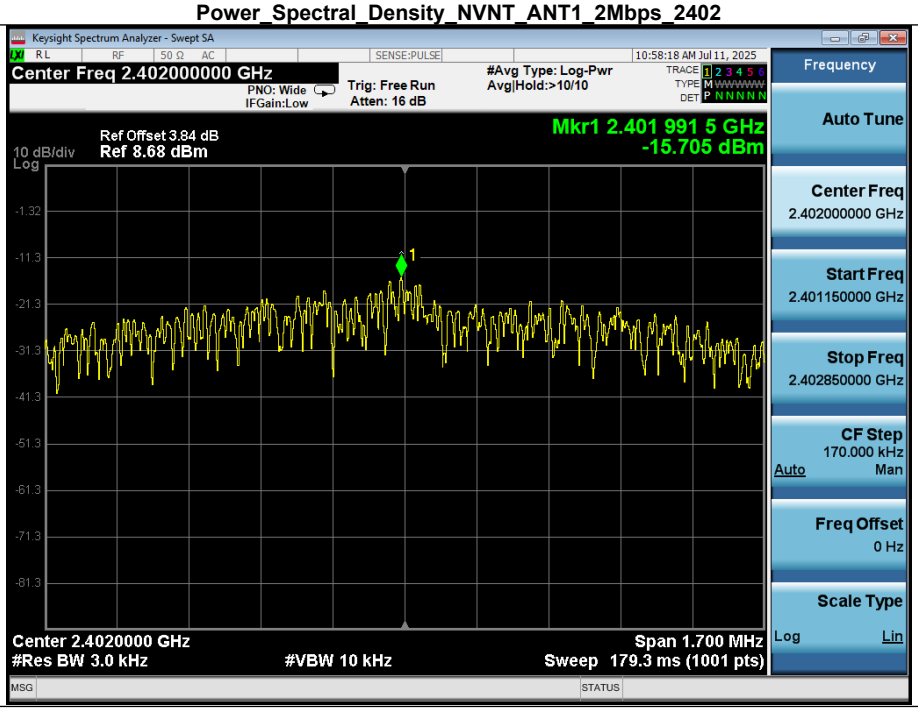
Power_Spectral_Density_NVNT_ANT1_1Mbps_2402



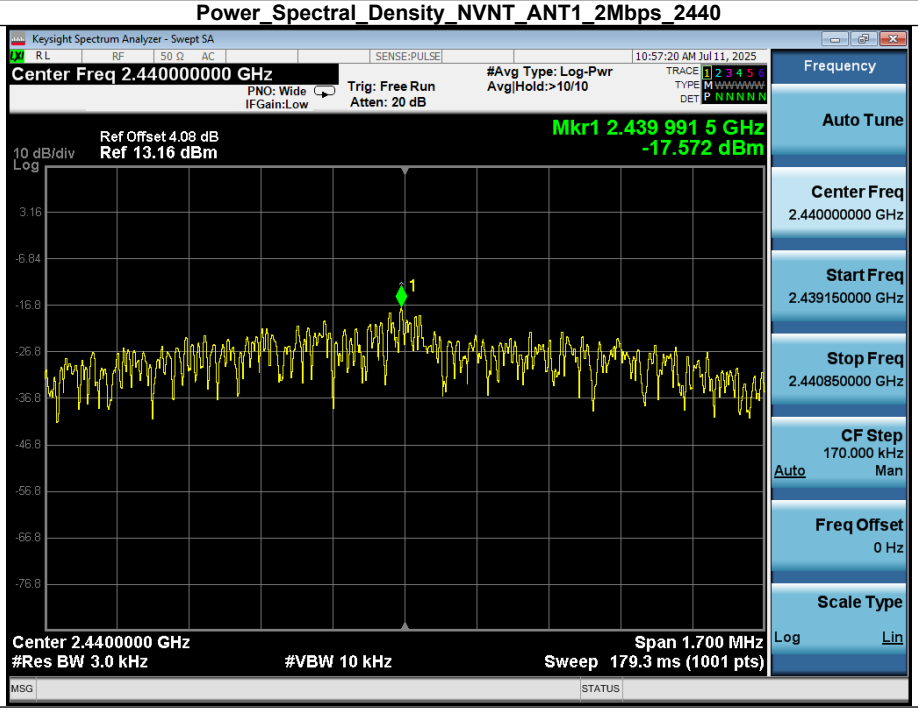
Power_Spectral_Density_NVNT_ANT1_1Mbps_2440



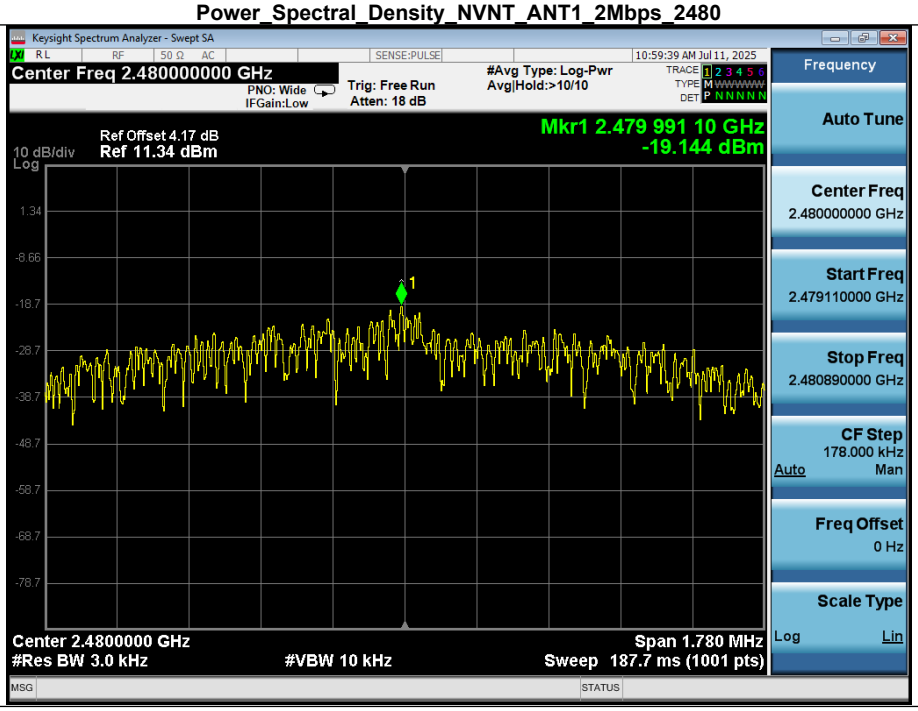
Power_Spectral_Density_NVNT_ANT1_1Mbps_2480


Power_Spectral_Density_NVNT_ANT1_2Mbps_2402


Power_Spectral_Density_NVNT_ANT1_2Mbps_2440



Power_Spectral_Density_NVNT_ANT1_2Mbps_2480



Appendix B.3: Test Results of 6dB Bandwidth

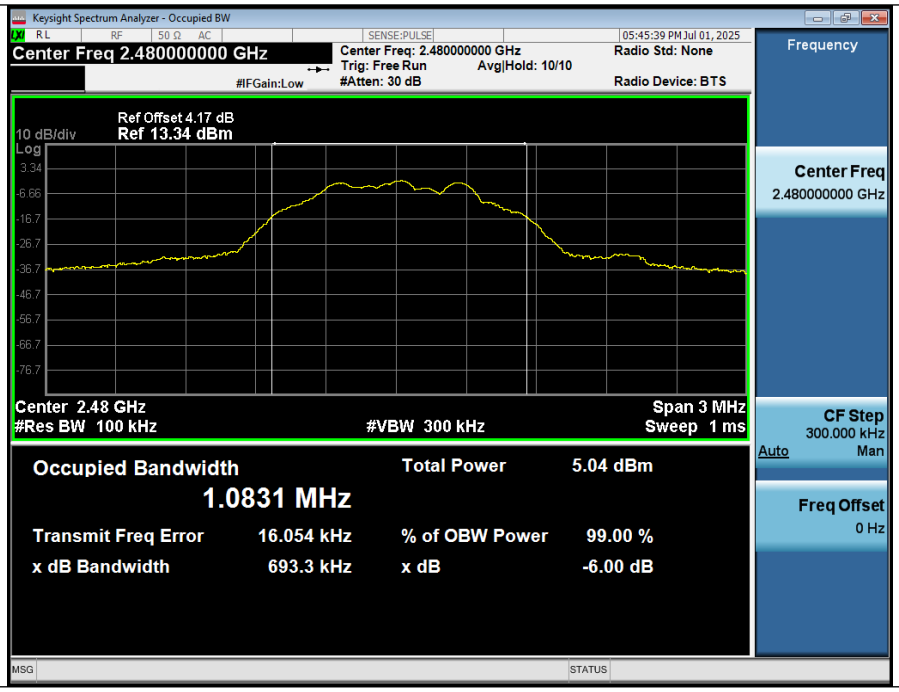
DTS Bandwidth Test Result

Condition	Antenna	Rate	Frequency (MHz)	-6dB BW(kHz)	limit(kHz)	Result
NVNT	ANT1	1Mbps	2402.00	689.93	500	Pass
NVNT	ANT1	1Mbps	2440.00	683.74	500	Pass
NVNT	ANT1	1Mbps	2480.00	693.34	500	Pass
NVNT	ANT1	2Mbps	2402.00	1132.49	500	Pass
NVNT	ANT1	2Mbps	2440.00	1121.79	500	Pass
NVNT	ANT1	2Mbps	2480.00	1128.25	500	Pass

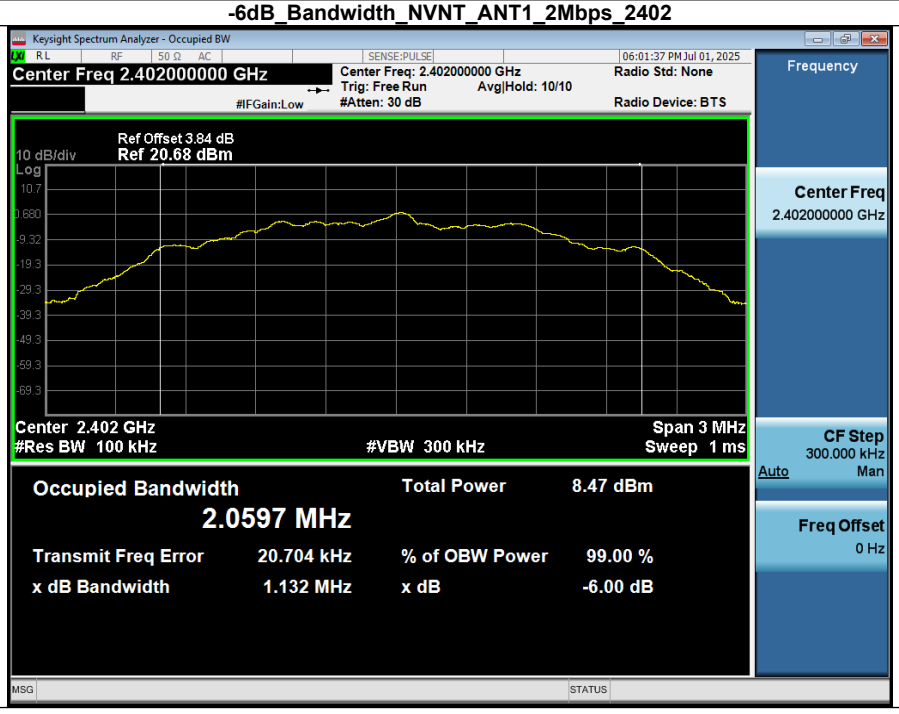
-6dB_Bandwidth_NVNT_ANT1_1Mbps_2402

-6dB_Bandwidth_NVNT_ANT1_1Mbps_2440

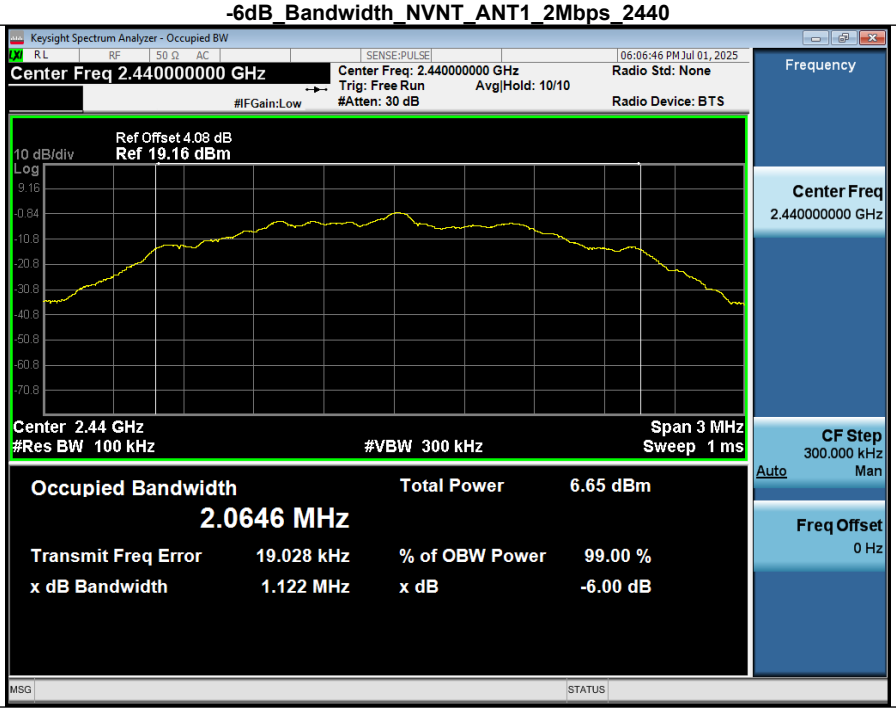
-6dB_Bandwidth_NVNT_ANT1_1Mbps_2480



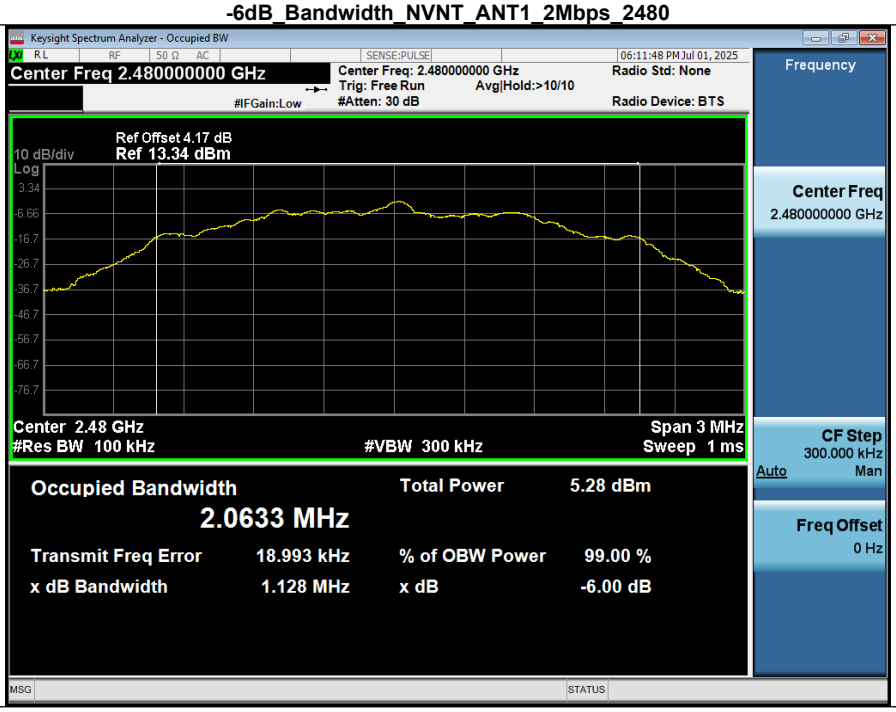
-6dB_Bandwidth_NVNT_ANT1_2Mbps_2402



-6dB_Bandwidth_NVNT_ANT1_2Mbps_2440



-6dB_Bandwidth_NVNT_ANT1_2Mbps_2480

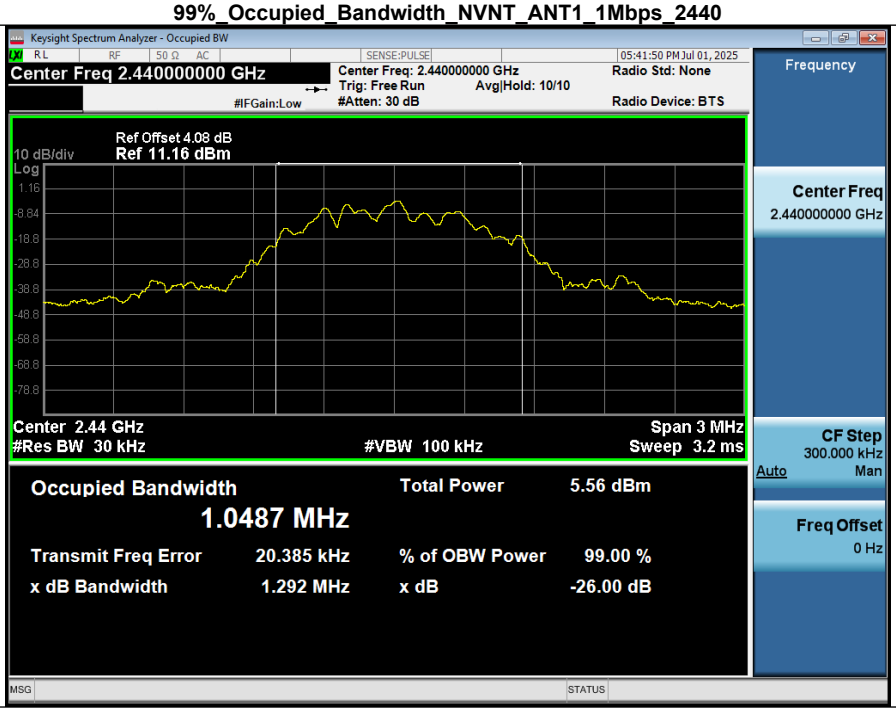


Appendix B.4: Test Results of 99% Bandwidth

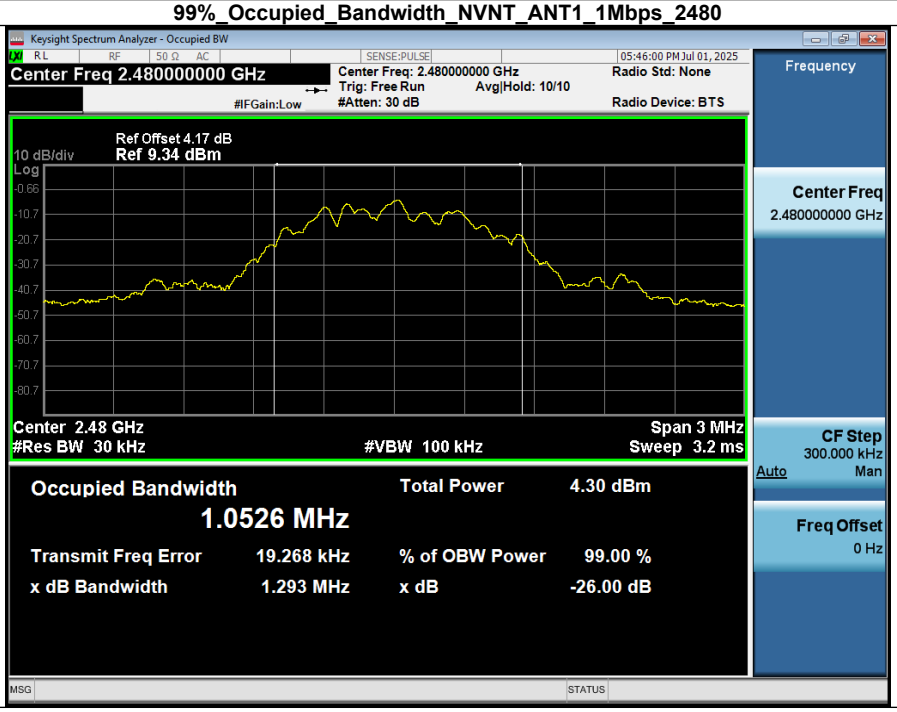
Condition	Antenna	Rate	Frequency (MHz)	99%%BW(MHz)
NVNT	ANT1	1Mbps	2402.00	1.047
NVNT	ANT1	1Mbps	2440.00	1.049
NVNT	ANT1	1Mbps	2480.00	1.053
NVNT	ANT1	2Mbps	2402.00	2.045
NVNT	ANT1	2Mbps	2440.00	2.051
NVNT	ANT1	2Mbps	2480.00	2.051

99%_Occupied_Bandwidth_NVNT_ANT1_1Mbps_2402

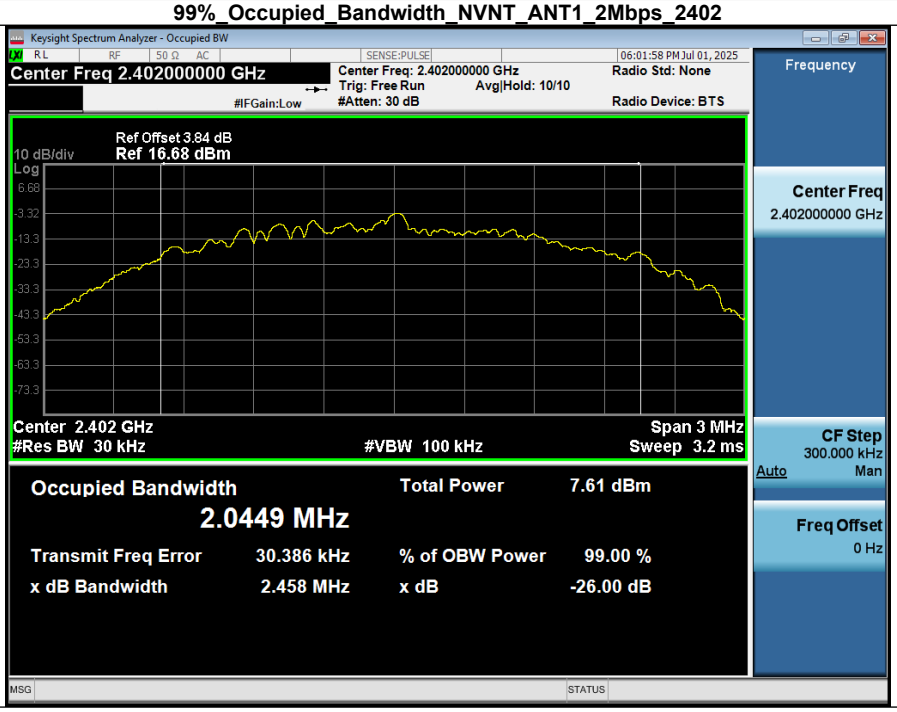
99%_Occupied_Bandwidth_NVNT_ANT1_1Mbps_2440



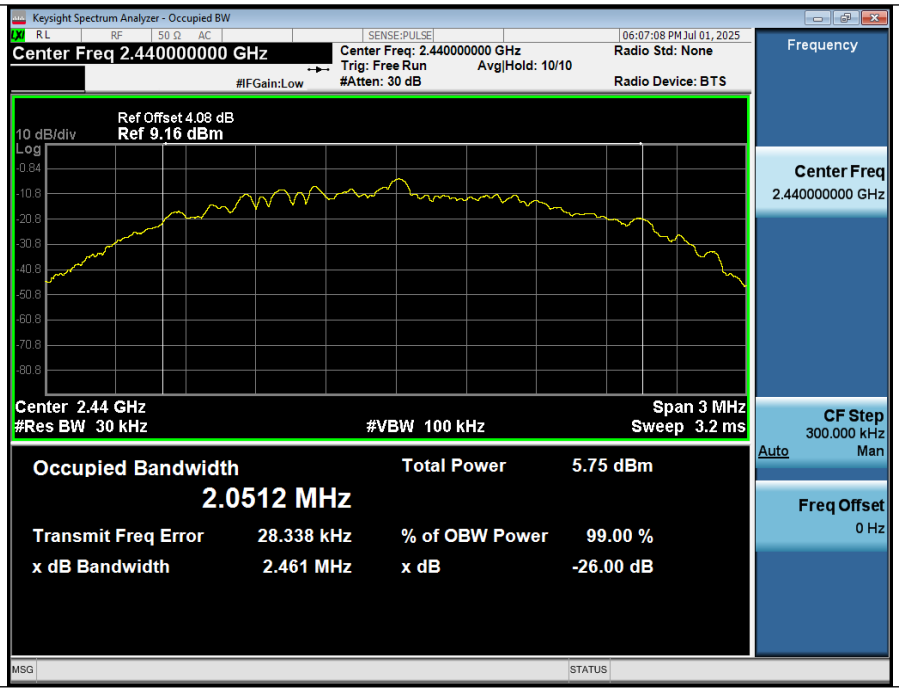
99%_Occupied_Bandwidth_NVNT_ANT1_1Mbps_2480



99%_Occupied_Bandwidth_NVNT_ANT1_2Mbps_2402



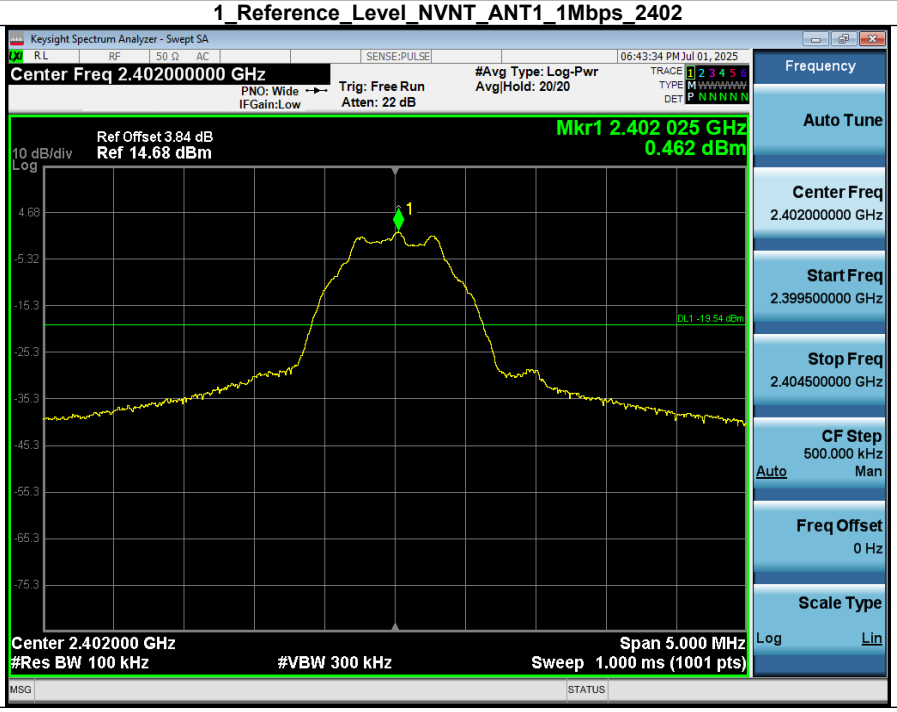
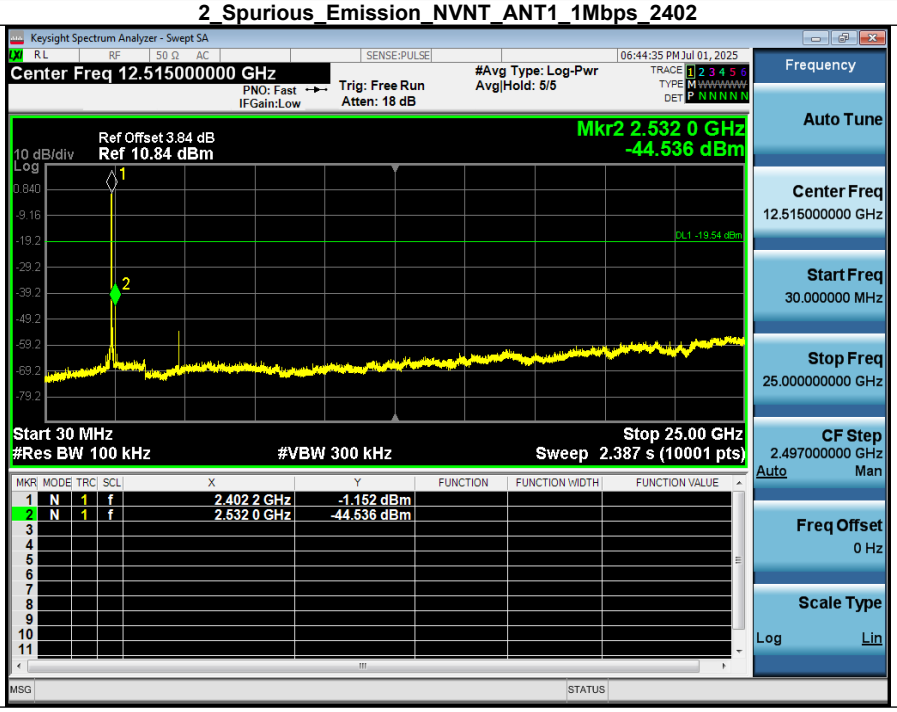
99%_Occupied_Bandwidth_NVNT_ANT1_2Mbps_2440

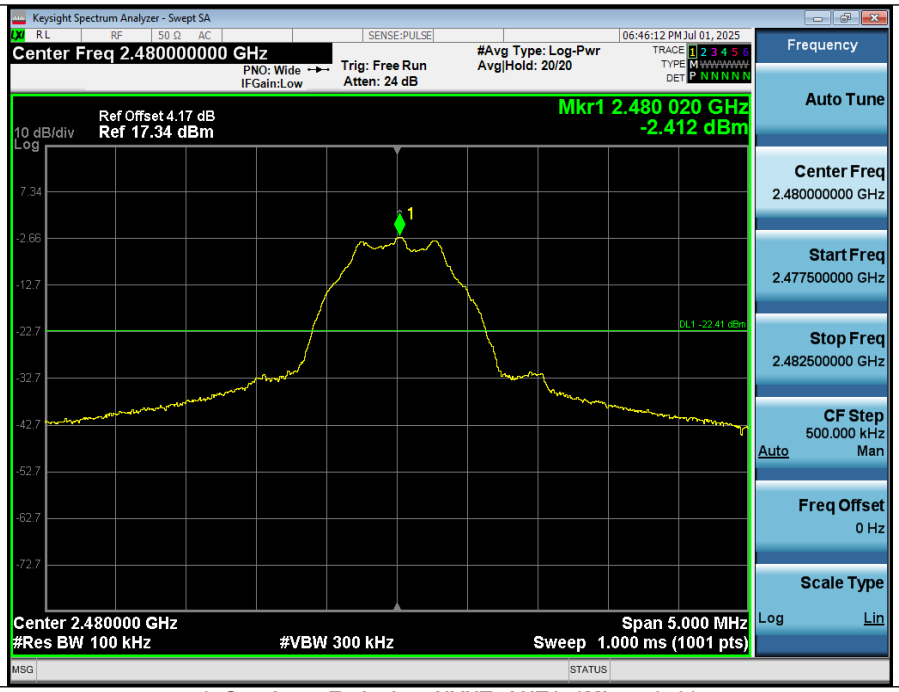


99%_Occupied_Bandwidth_NVNT_ANT1_2Mbps_2480

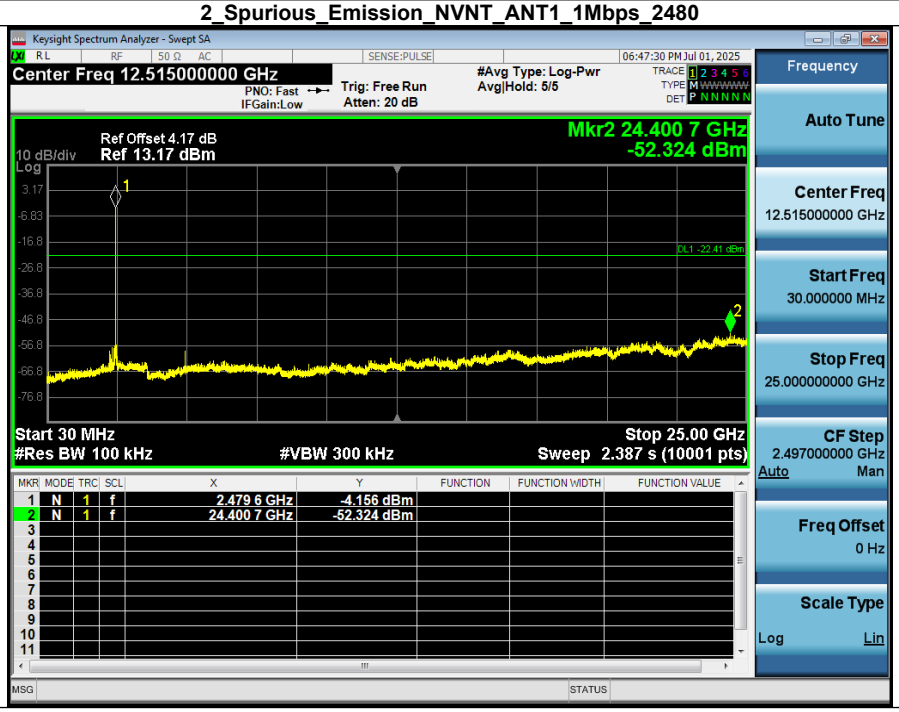
Appendix B.5: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Condition	Antenna	Modulation	TX_Frequency (MHz)	Ref_level(dBm)	Spurious level(dBm)	limit(dBm)	Result
NVNT	ANT1	1Mbps	2402.00	0.462	-44.536	-19.538	Pass
NVNT	ANT1	1Mbps	2480.00	-2.412	-52.324	-22.412	Pass
NVNT	ANT1	1Mbps	2440.00	-1.291	-56.600	-21.291	Pass
NVNT	ANT1	2Mbps	2402.00	0.391	-54.020	-19.609	Pass
NVNT	ANT1	2Mbps	2480.00	-2.378	-52.785	-22.378	Pass
NVNT	ANT1	2Mbps	2440.00	-1.316	-46.384	-21.316	Pass

1_Reference_Level_NVNT_ANT1_1Mbps_2402

2_Spurious_Emission_NVNT_ANT1_1Mbps_2402

1_Reference_Level_NVNT_ANT1_1Mbps_2480

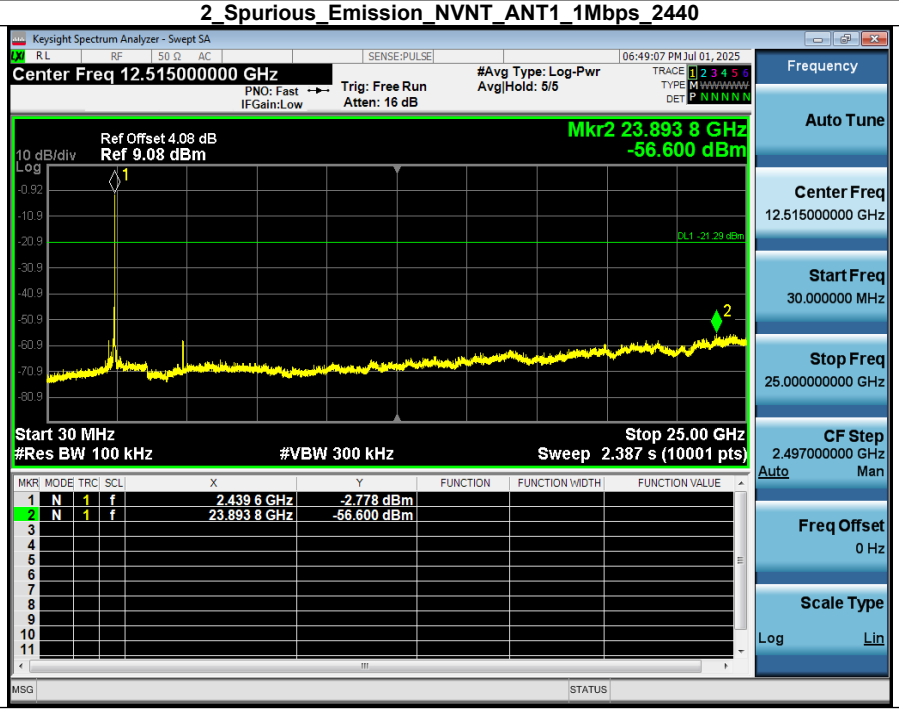


2_Spurious_Emission_NVNT_ANT1_1Mbps_2480

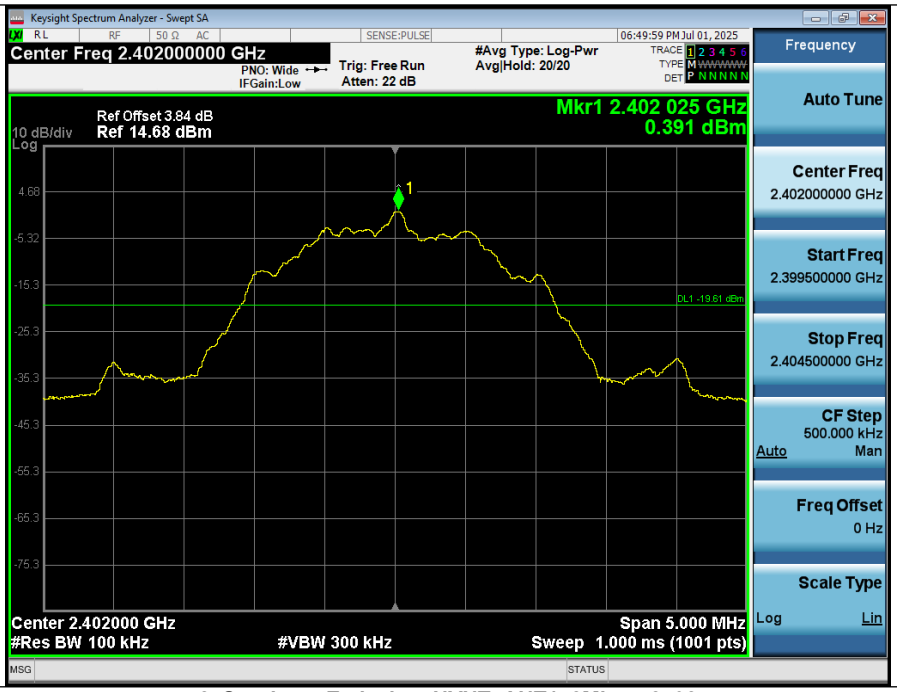


1_Reference_Level_NVNT_ANT1_1Mbps_2440

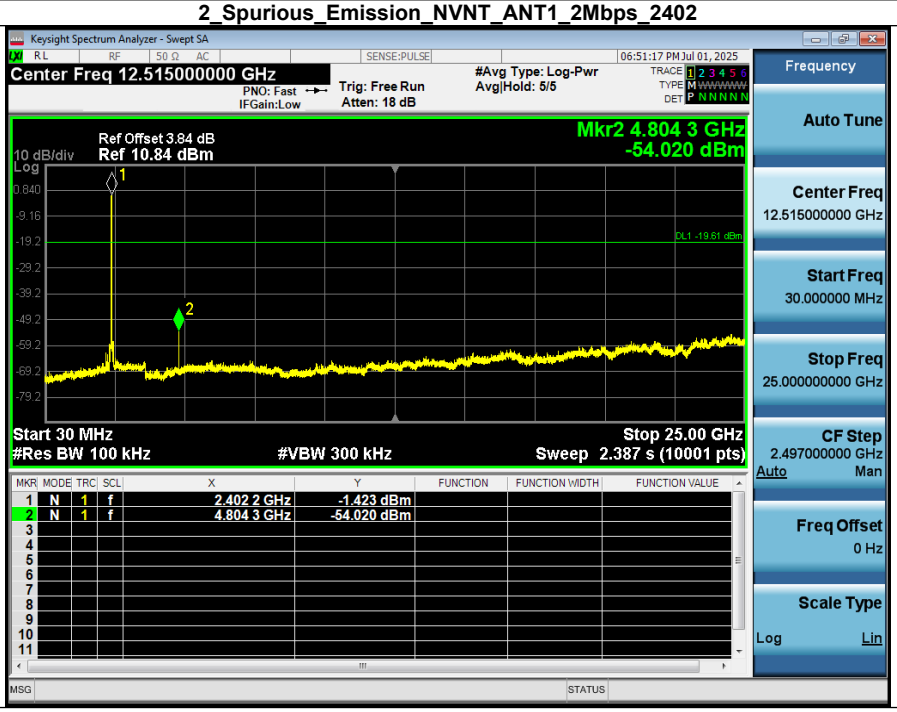
2_Spurious_Emission_NVNT_ANT1_1Mbps_2440



1_Reference_Level_NVNT_ANT1_2Mbps_2402

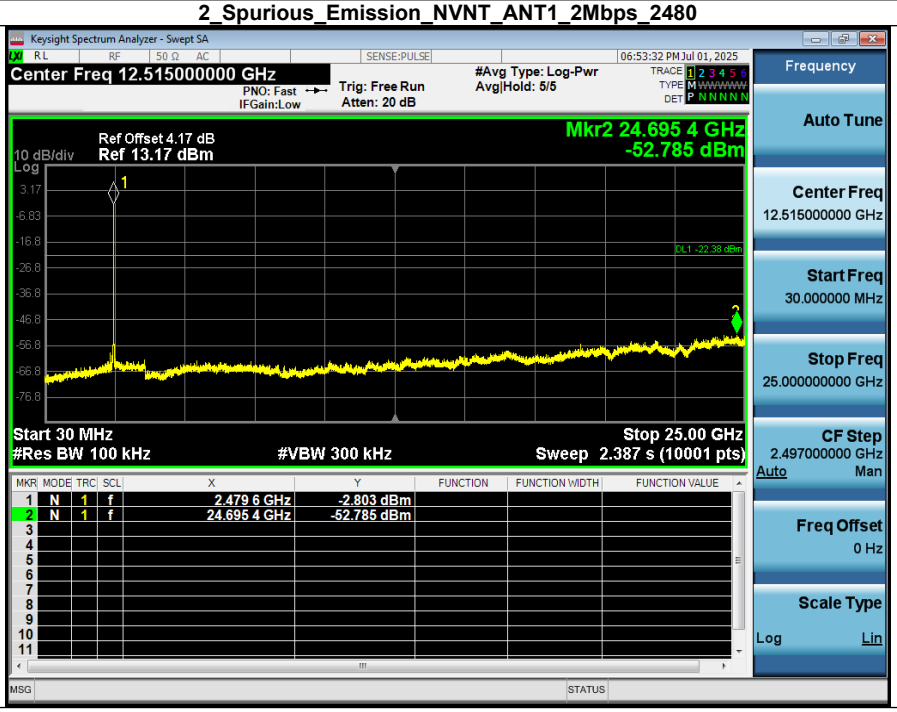


2_Spurious_Emission_NVNT_ANT1_2Mbps_2402

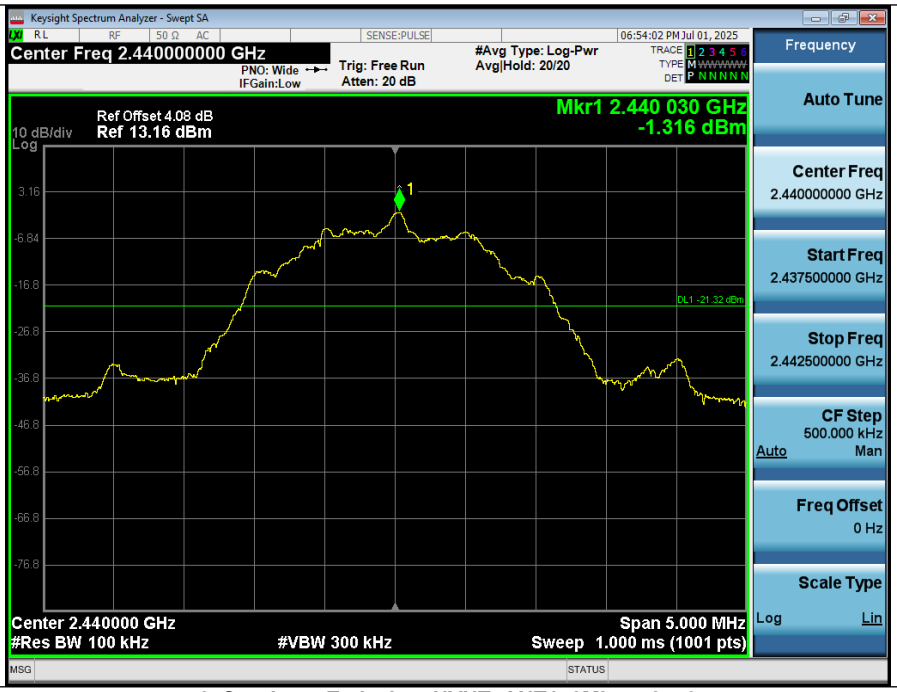


1_Reference_Level_NVNT_ANT1_2Mbps_2480

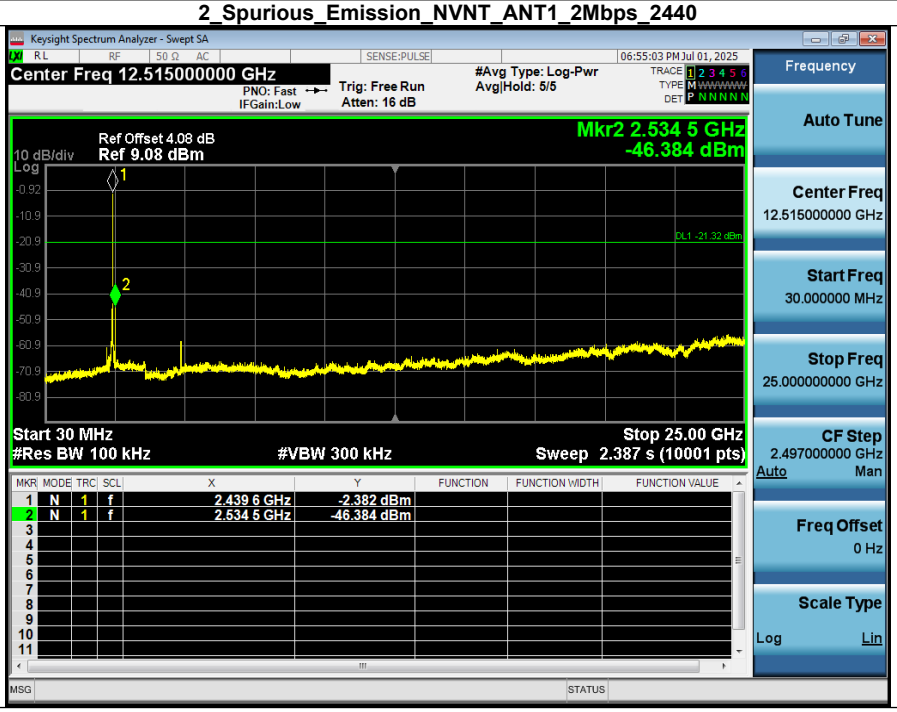
2_Spurious_Emission_NVNT_ANT1_2Mbps_2480



1_Reference_Level_NVNT_ANT1_2Mbps_2440



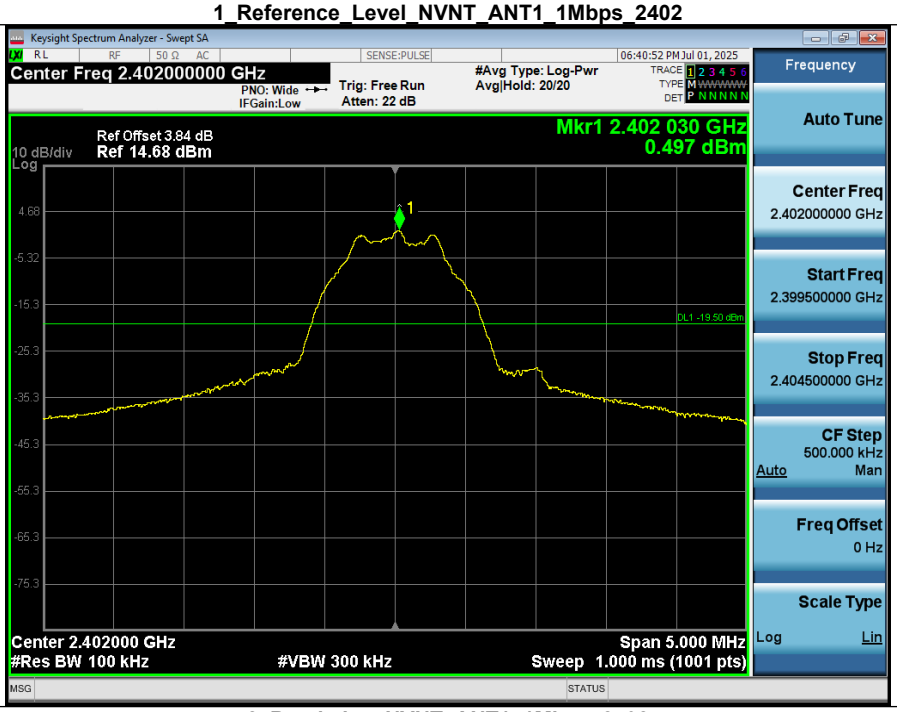
2_Spurious_Emission_NVNT_ANT1_2Mbps_2440



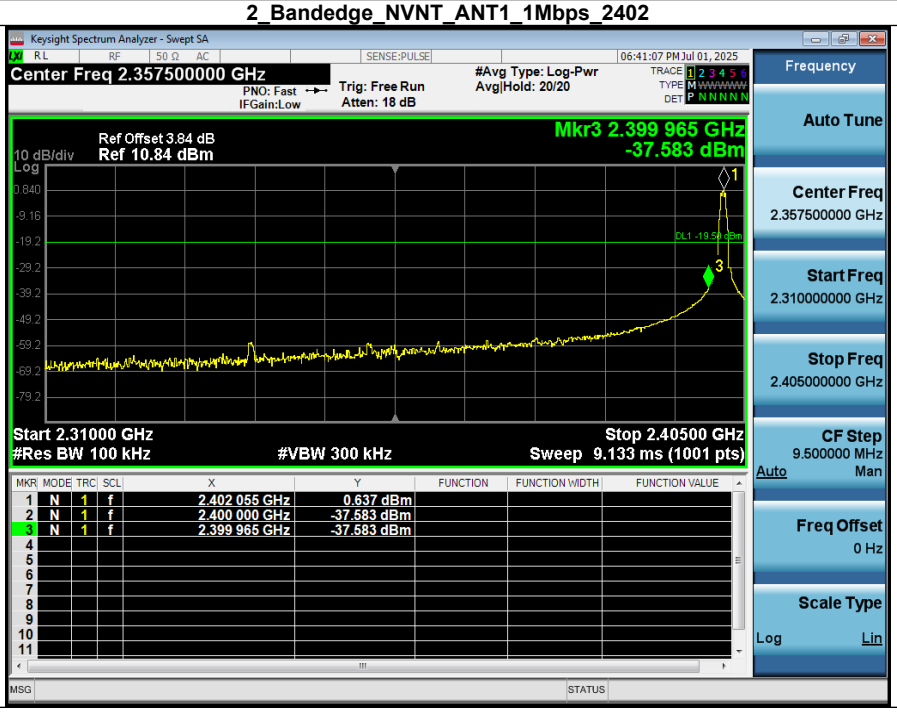
Band edge:

Condition	Antenna	Modulation	TX_Frequency (MHz)	Max. Mark_freq(MHz)	Ref_level(dBm)	Spurious level(dBm)	limit(dBm)	Result
NVNT	ANT1	1Mbps	2402.00	2399.965	0.497	-37.583	-19.503	Pass
NVNT	ANT1	1Mbps	2480.00	2483.650	-2.412	-45.872	-22.412	Pass
NVNT	ANT1	2Mbps	2402.00	2399.965	0.391	-31.879	-19.609	Pass
NVNT	ANT1	2Mbps	2480.00	2483.525	-2.378	-45.161	-22.378	Pass

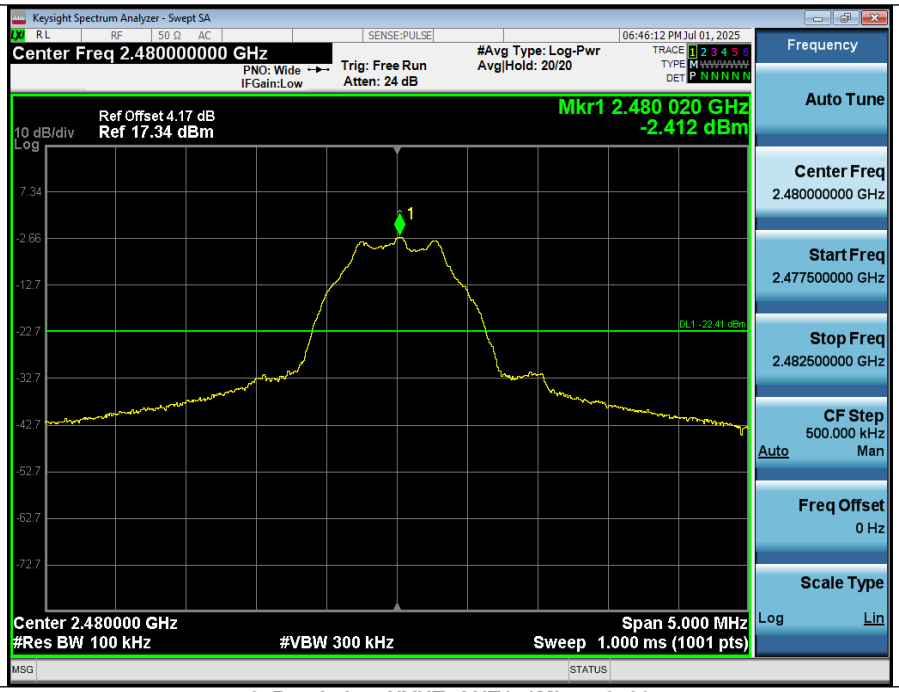
1_Reference_Level_NVNT_ANT1_1Mbps_2402



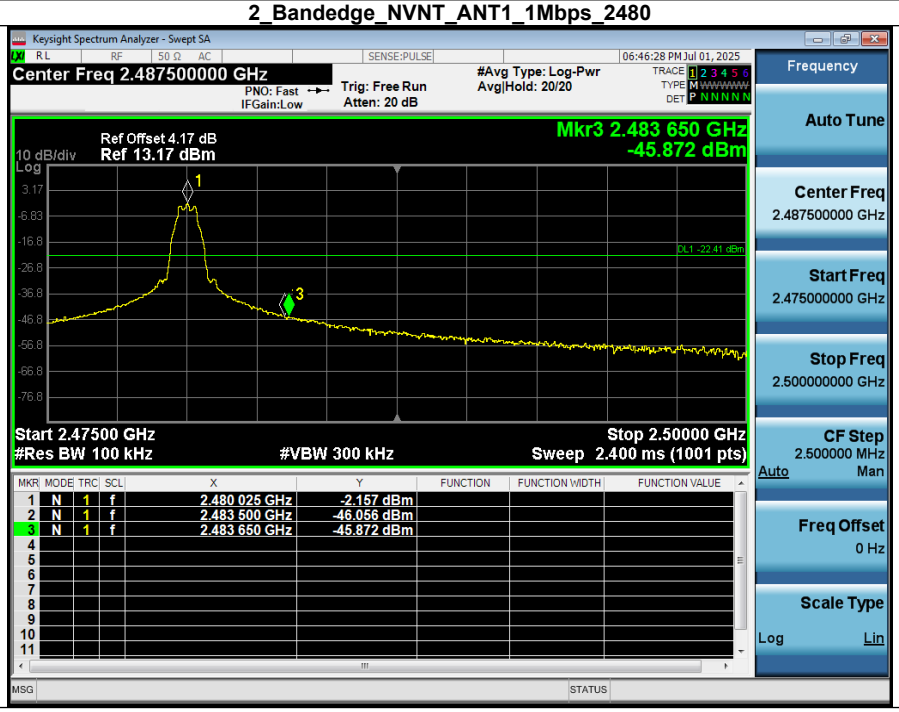
2_Bandedge_NVNT_ANT1_1Mbps_2402



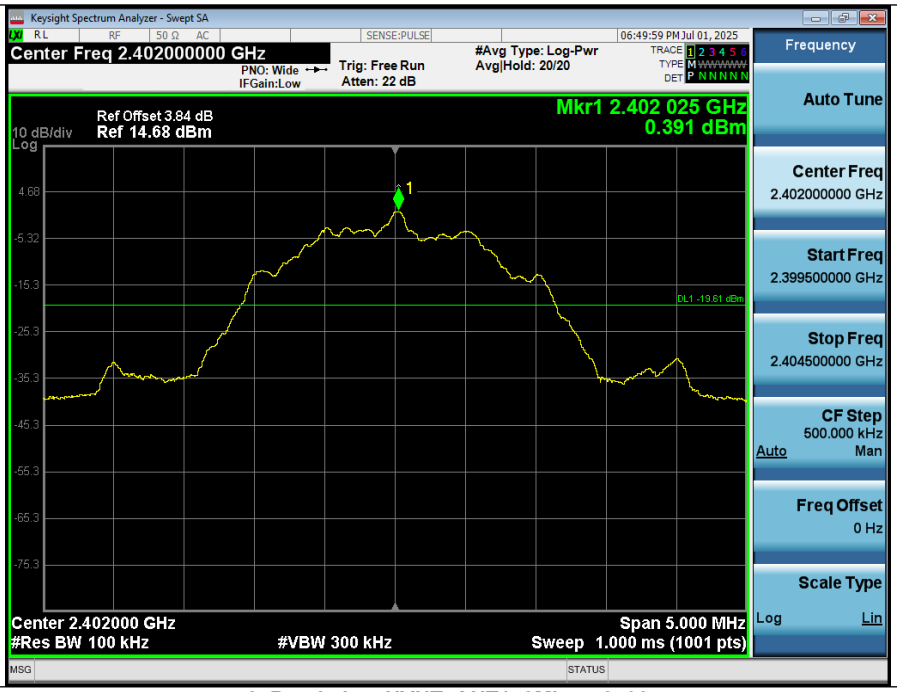
1_Reference_Level_NVNT_ANT1_1Mbps_2480



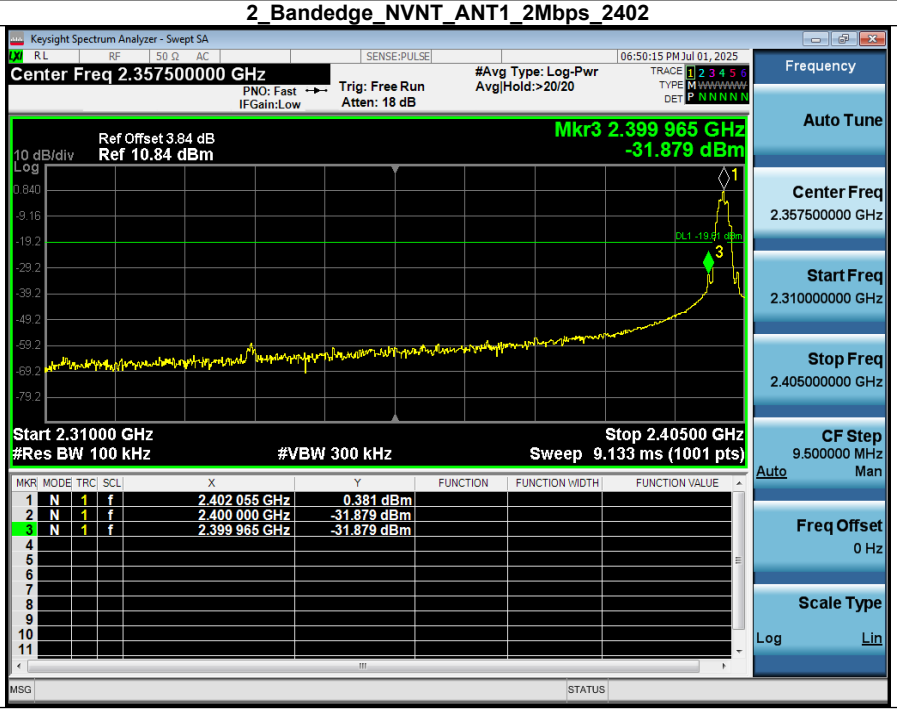
2_Bandedge_NVNT_ANT1_1Mbps_2480



1_Reference_Level_NVNT_ANT1_2Mbps_2402

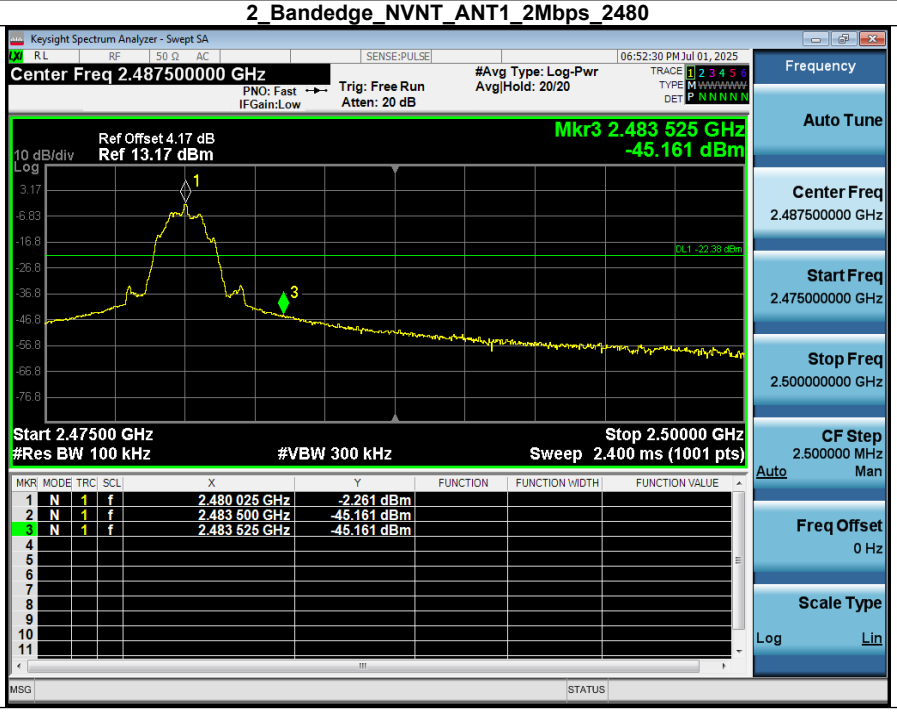


2_Bandedge_NVNT_ANT1_2Mbps_2402



1_Reference_Level_NVNT_ANT1_2Mbps_2480

2_Bandedge_NVNT_ANT1_2Mbps_2480



Appendix B.6: Test Results of Radiated Spurious Emissions

Note 1: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.
Note 2: The highest emissions are the fundamental waves.
Note 3: Both FreeProbe 2 and FreeProbe 2 Pro tested, only the worst case reported.

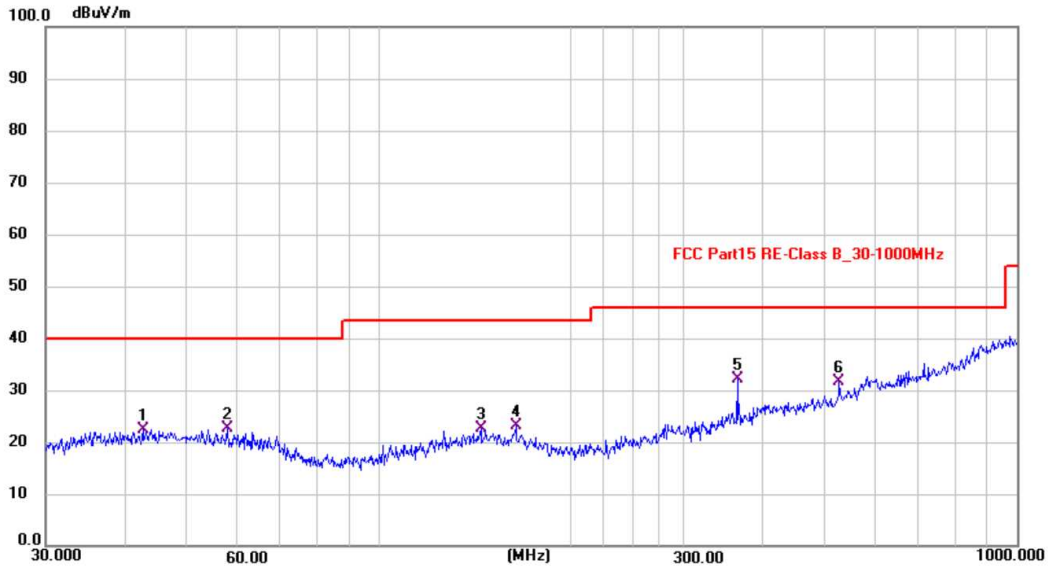
30MHz - 1GHz

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Test Site: PSI EMC Lab-3m Chamber	Polarization: ***Horizontal***	Temperature: 26 ℃
EUT: FreeProbe	Distance: 3m	Humidity: 54 %RH
M/N: FreeProbe L2	Test Engineer: Felix	
Test Mode: 1M 2440MHz		
Test Voltage: DC 3.6V		
Note:		

Radiated Emission Measurement

Test Date: 2025/7/5 15:40:02



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	42.6000	7.98	14.46	22.44	40.00	-17.56	QP	200	166	P	
2	57.7962	9.36	13.34	22.70	40.00	-17.30	QP	200	324	P	
3	144.3347	8.60	14.00	22.60	43.50	-20.90	QP	200	159	P	
4	163.7550	9.12	13.98	23.10	43.50	-20.40	QP	200	82	P	
5 *	364.2595	15.47	16.72	32.19	46.00	-13.81	QP	200	120	P	
6	526.3967	10.72	20.88	31.60	46.00	-14.40	QP	200	16	P	

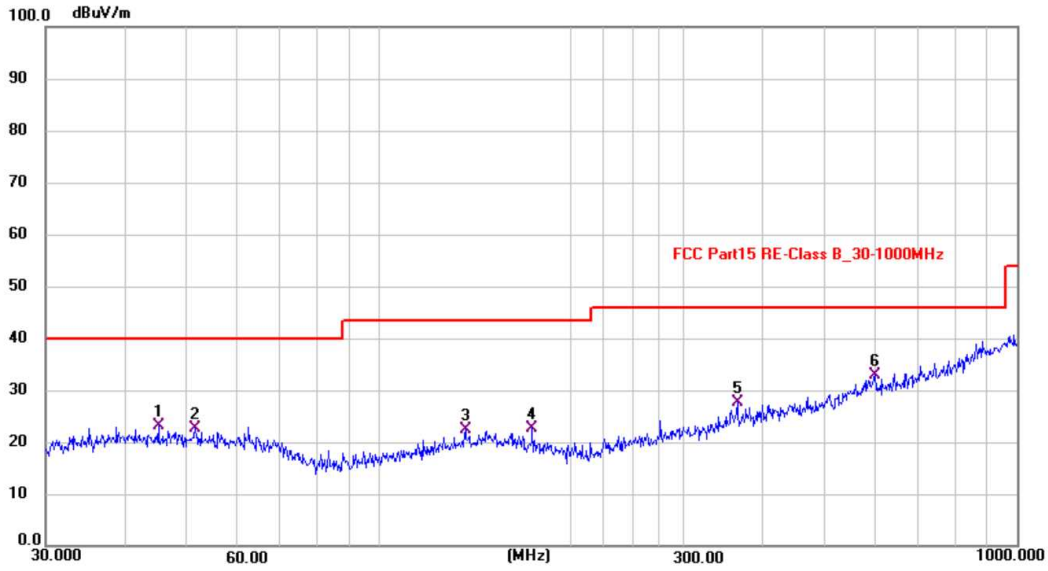
Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Test Site: PSI EMC Lab-3m Chamber	Polarization: ***Vertical***	Temperature: 26 ℃
EUT: FreeProbe	Distance: 3m	Humidity: 54 %RH
M/N: FreeProbe L2	Test Engineer: Felix	
Test Mode: 1M 2440MHz		
Test Voltage: DC 3.6V		
Note:		

Radiated Emission Measurement

Test Date: 2025/7/5 15:45:18



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	45.0583	8.66	14.36	23.02	40.00	-16.98	QP	100	197	P	
2	51.4807	8.55	13.99	22.54	40.00	-17.46	QP	100	48	P	
3	136.4598	8.77	13.66	22.43	43.50	-21.07	QP	100	52	P	
4	173.8135	9.65	13.00	22.65	43.50	-20.85	QP	100	162	P	
5	364.2595	10.99	16.72	27.71	46.00	-18.29	QP	100	220	P	
6 *	599.3212	10.11	22.86	32.97	46.00	-13.03	QP	100	310	P	

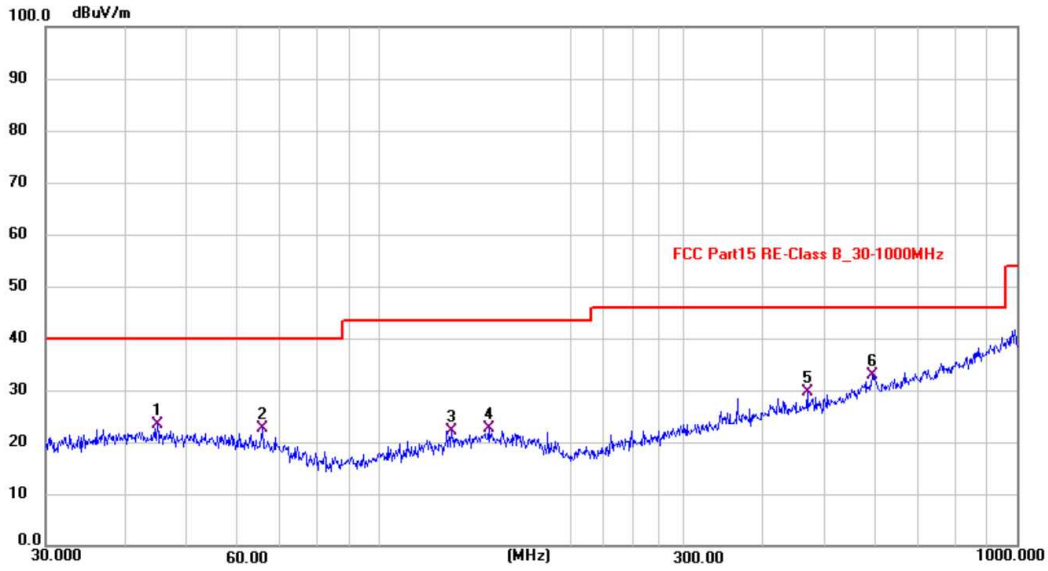
Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Test Site: PSI EMC Lab-3m Chamber	Polarization: ***Vertical***	Temperature: 26 ℃
EUT: FreeProbe	Distance: 3m	Humidity: 54 %RH
M/N: FreeProbe L2	Test Engineer: Felix	
Test Mode: 1M 2480MHz		
Test Voltage: DC 3.6V		
Note:		

Radiated Emission Measurement

Test Date: 2025/7/5 15:50:29



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	44.9006	9.00	14.36	23.36	40.00	-16.64	QP	100	162	P	
2	65.5727	10.13	12.54	22.67	40.00	-17.33	QP	100	320	P	
3	129.9225	9.00	13.21	22.21	43.50	-21.29	QP	100	119	P	
4	148.4410	8.62	14.09	22.71	43.50	-20.79	QP	100	45	P	
5	468.8762	10.13	19.40	29.53	46.00	-16.47	QP	100	57	P	
6 *	593.0496	10.11	22.70	32.81	46.00	-13.19	QP	100	184	P	

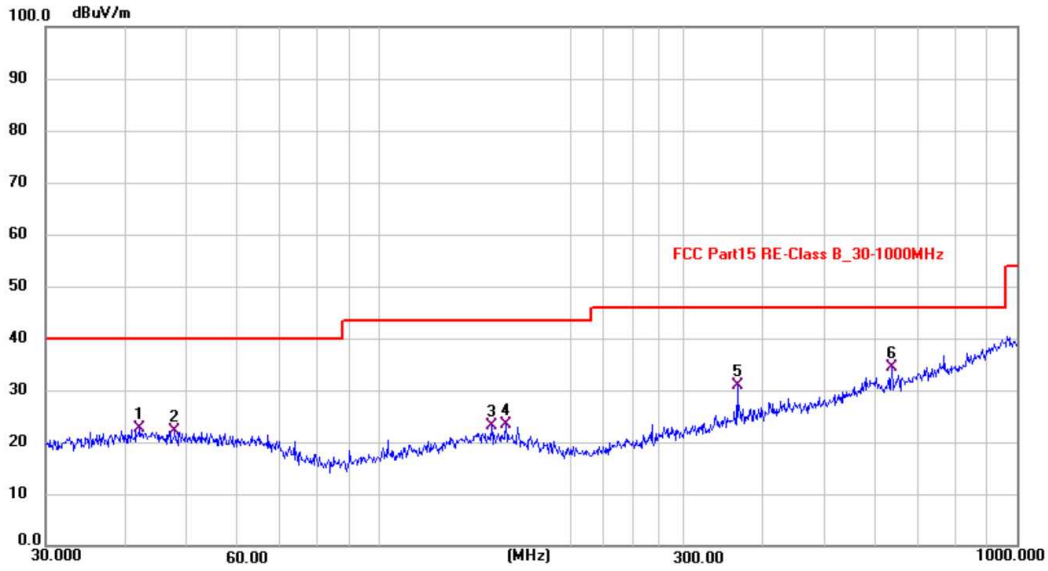
Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Test Site: PSI EMC Lab-3m Chamber	Polarization: ***Horizontal***	Temperature: 26 ℃
EUT: FreeProbe	Distance: 3m	Humidity: 54 %RH
M/N: FreeProbe L2	Test Engineer: Felix	
Test Mode: 1M 2480MHz		
Test Voltage: DC 3.6V		
Note:		

Radiated Emission Measurement

Test Date: 2025/7/5 15:55:46



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	42.1541	8.07	14.48	22.55	40.00	-17.45	QP	200	126	P	
2	47.8260	7.82	14.24	22.06	40.00	-17.94	QP	200	350	P	
3	150.0108	8.96	14.13	23.09	43.50	-20.41	QP	200	229	P	
4	158.1123	9.17	14.31	23.48	43.50	-20.02	QP	200	54	P	
5	364.2595	14.24	16.72	30.96	46.00	-15.04	QP	200	167	P	
6 *	636.1340	10.93	23.47	34.40	46.00	-11.60	QP	200	48	P	

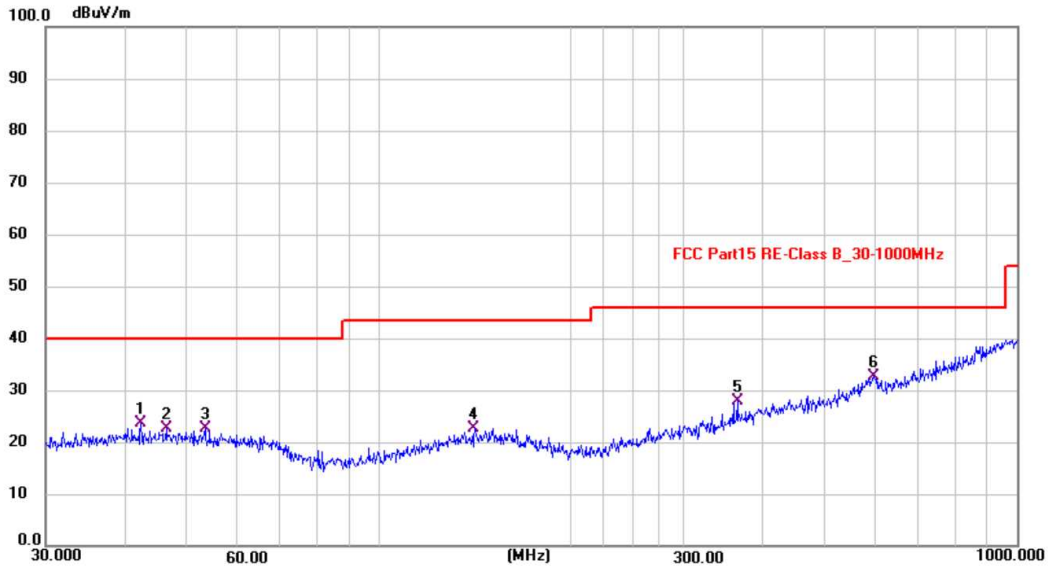
Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Test Site: PSI EMC Lab-3m Chamber	Polarization: ***Vertical***	Temperature: 26 ℃
EUT: FreeProbe	Distance: 3m	Humidity: 54 %RH
M/N: FreeProbe L2	Test Engineer: Felix	
Test Mode: 1M 2402MHz		
Test Voltage: DC 3.6V		
Note:		

Radiated Emission Measurement

Test Date: 2025/7/5 15:30:37



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	42.3022	9.13	14.47	23.60	40.00	-16.40	QP	100	162	P	
2	46.3402	8.34	14.30	22.64	40.00	-17.36	QP	100	194	P	
3	53.3180	8.82	13.81	22.63	40.00	-17.37	QP	100	225	P	
4	141.3296	8.72	13.93	22.65	43.50	-20.85	QP	100	164	P	
5	364.2595	11.17	16.72	27.89	46.00	-18.11	QP	100	95	P	
6 *	595.1327	9.78	22.75	32.53	46.00	-13.47	QP	100	54	P	

Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

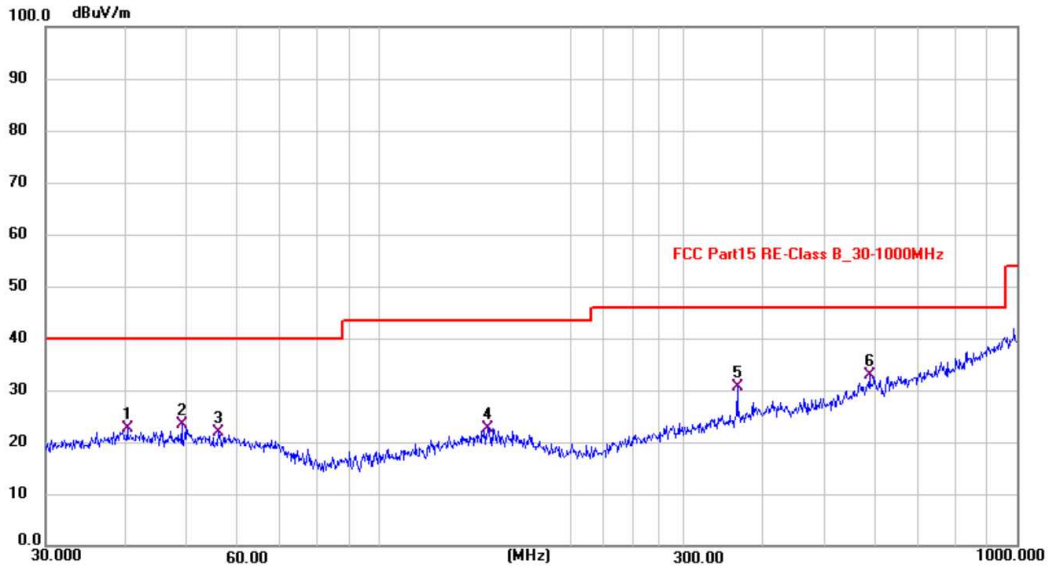
Test Site: PSI EMC Lab-3m Chamber
EUT: FreeProbe
M/N: FreeProbe L2
Test Mode: 1M 2402MHz
Test Voltage: DC 3.6V
Note:

Polarization: ***Horizontal***
Distance: 3m
Test Engineer: Felix

Temperature: 26 ℃
Humidity: 54 %RH

Radiated Emission Measurement

Test Date: 2025/7/5 15:35:51



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	40.2756	7.97	14.56	22.53	40.00	-17.47	QP	200	126	P	
2	49.0144	9.15	14.19	23.34	40.00	-16.66	QP	200	320	P	
3	56.0007	8.38	13.53	21.91	40.00	-18.09	QP	200	119	P	
4	147.9214	8.51	14.08	22.59	43.50	-20.91	QP	200	45	P	
5	364.2595	13.93	16.72	30.65	46.00	-15.35	QP	200	184	P	
6 *	586.8436	10.27	22.53	32.80	46.00	-13.20	QP	200	74	P	

Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Above 1GHz

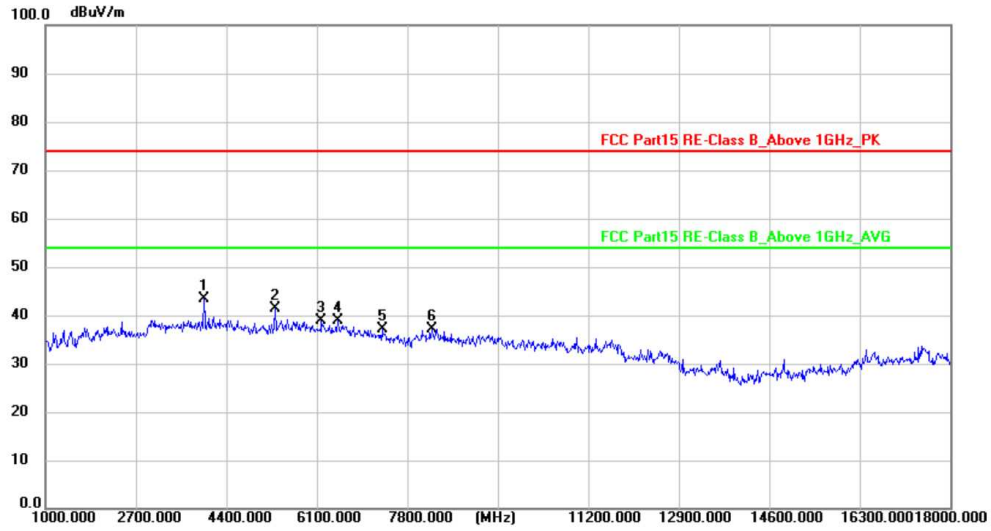
Note: The highest waveform in the figure is 2.4GHz SRD Fundamental.

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Test Site: PSI EMC Lab-3m Chamber	Polarization: ***Horizontal***	Temperature: 26 ℃
EUT: FreeProbe	Distance: 3m	Humidity: 54 %RH
M/N: FreeProbe L2	Test Engineer: Felix	
Test Mode: 1M 2440MHz		
Test Voltage: DC 3.6V		
Note:		

Radiated Emission Measurement

Test Date: 2025/7/5 14:45:37



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	3981.375	56.75	-13.36	43.39	74.00	-30.61	peak	150	122	P	
2	5330.750	52.37	-11.03	41.34	74.00	-32.66	peak	150	167	P	
3	6185.000	48.27	-9.36	38.91	74.00	-35.09	peak	150	0	P	
4	6499.500	47.94	-9.17	38.77	74.00	-35.23	peak	150	360	P	
5	7338.875	45.83	-8.75	37.08	74.00	-36.92	peak	150	164	P	
6	8273.875	45.40	-8.21	37.19	74.00	-36.81	peak	150	95	P	

Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Shenzhen PSI Testing Co., Ltd.
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Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

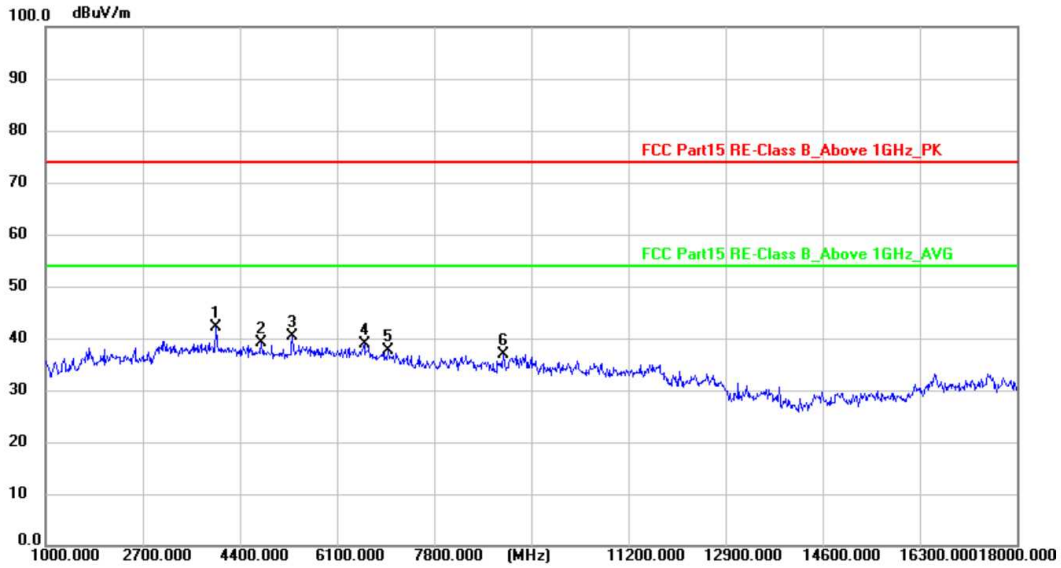
Test Site: PSI EMC Lab-3m Chamber
EUT: FreeProbe
M/N: FreeProbe L2
Test Mode: 1M 2480MHz
Test Voltage: DC 3.6V
Note:

Polarization: ***Horizontal***
Distance: 3m
Test Engineer: Felix

Temperature: 26 ℃
Humidity: 54 %RH

Radiated Emission Measurement

Test Date: 2025/7/5 14:50:26



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	3989.875	55.56	-13.34	42.22	74.00	-31.78	peak	150	194	P	
2	4782.500	51.18	-12.14	39.04	74.00	-34.96	peak	150	288	P	
3	5332.875	51.39	-11.03	40.36	74.00	-33.64	peak	150	64	P	
4	6580.250	47.98	-9.11	38.87	74.00	-35.13	peak	150	37	P	
5	6998.875	46.55	-8.85	37.70	74.00	-36.30	peak	150	182	P	
6	9015.500	44.25	-7.40	36.85	74.00	-37.15	peak	150	54	P	

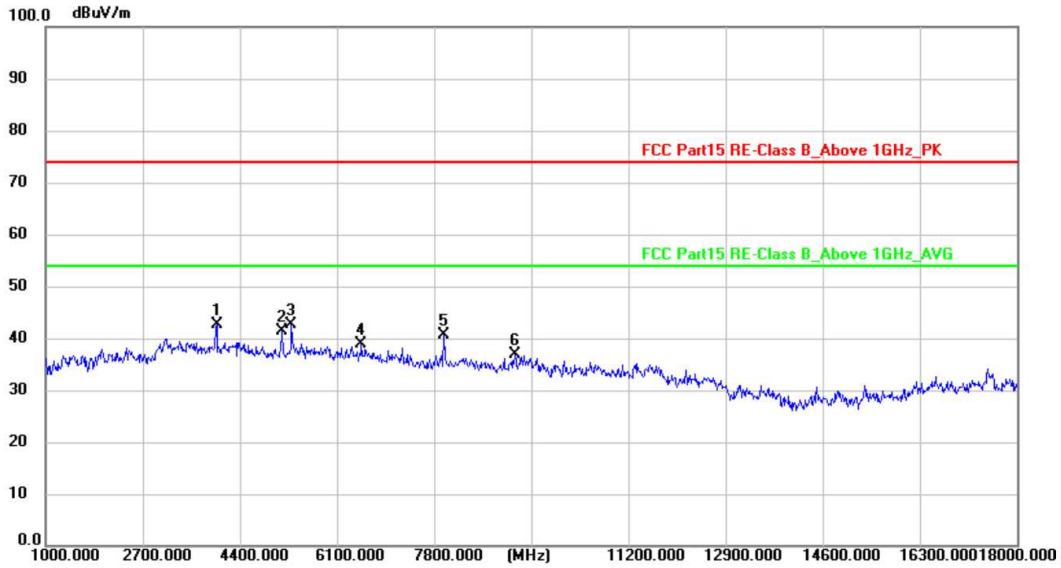
Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Test Site: PSI EMC Lab-3m Chamber	Polarization: ***Vertical***	Temperature: 26 ℃
EUT: FreeProbe	Distance: 3m	Humidity: 54 %RH
M/N: FreeProbe L2	Test Engineer: Felix	
Test Mode: 1M 2480MHz		
Test Voltage: DC 3.6V		
Note:		

Radiated Emission Measurement

Test Date: 2025/7/5 14:55:51



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	3994.125	55.92	-13.33	42.59	74.00	-31.41	peak	150	116	P	
2	5143.750	52.85	-11.47	41.38	74.00	-32.62	peak	150	246	P	
3 *	5309.500	53.80	-11.08	42.72	74.00	-31.28	peak	150	94	P	
4	6535.625	48.03	-9.15	38.88	74.00	-35.12	peak	150	158	P	
5	7982.750	49.28	-8.54	40.74	74.00	-33.26	peak	150	241	P	
6	9223.750	44.12	-7.13	36.99	74.00	-37.01	peak	150	303	P	

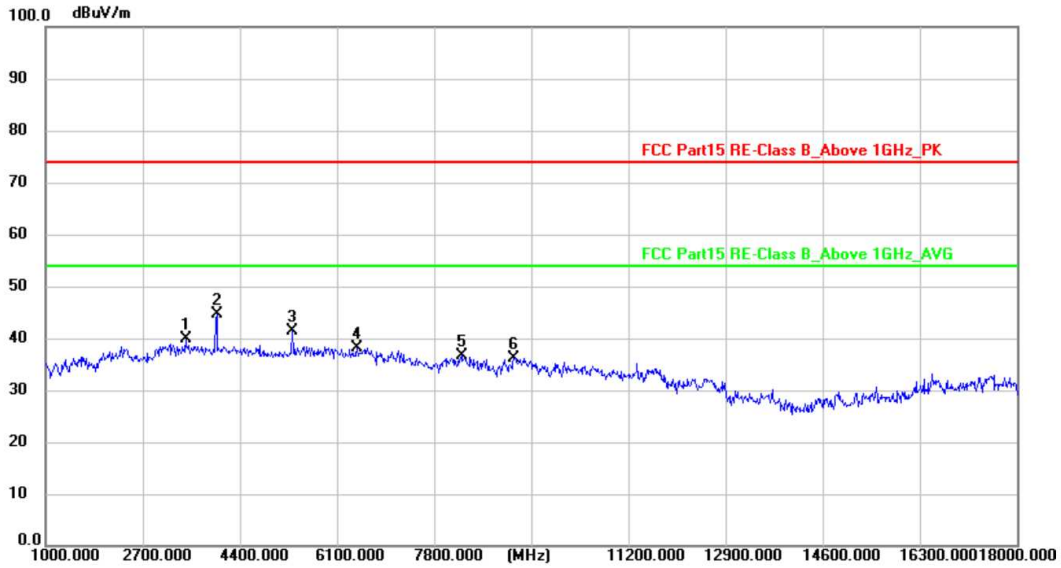
Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Test Site: PSI EMC Lab-3m Chamber	Polarization: ***Horizontal***	Temperature: 26 ℃
EUT: FreeProbe	Distance: 3m	Humidity: 54 %RH
M/N: FreeProbe L2	Test Engineer: Felix	
Test Mode: 1M 2402MHz		
Test Voltage: DC 3.6V		
Note:		

Radiated Emission Measurement

Test Date: 2025/7/5 14:30:52



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	3460.750	54.02	-14.20	39.82	74.00	-34.18	peak	150	112	P	
2 *	3992.000	58.07	-13.34	44.73	74.00	-29.27	peak	150	154	P	
3	5332.875	52.39	-11.03	41.36	74.00	-32.64	peak	150	199	P	
4	6448.500	47.41	-9.21	38.20	74.00	-35.80	peak	150	136	P	
5	8282.375	44.93	-8.21	36.72	74.00	-37.28	peak	150	277	P	
6	9206.750	43.40	-7.16	36.24	74.00	-37.76	peak	150	61	P	

Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

 Engineer Signature:

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

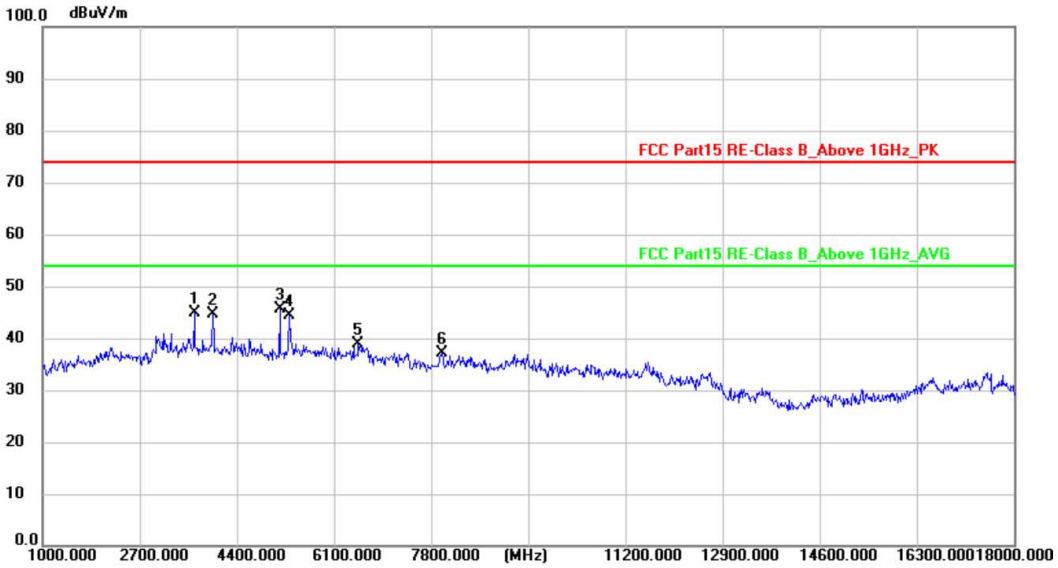
Test Site: PSI EMC Lab-3m Chamber
EUT: FreeProbe
M/N: FreeProbe L2
Test Mode: 1M 2402MHz
Test Voltage: DC 3.6V
Note:

Polarization: ***Vertical***
Distance: 3m
Test Engineer: Felix

Temperature: 26 ℃
Humidity: 54 %RH

Radiated Emission Measurement

Test Date: 2025/7/5 14:35:18



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	3654.125	58.76	-13.89	44.87	74.00	-29.13	peak	150	360	P	
2	3989.875	57.86	-13.34	44.52	74.00	-29.48	peak	150	123	P	
3 *	5160.750	57.01	-11.43	45.58	74.00	-28.42	peak	150	226	P	
4	5330.750	55.51	-11.03	44.48	74.00	-29.52	peak	150	90	P	
5	6527.125	47.96	-9.15	38.81	74.00	-35.19	peak	150	42	P	
6	7987.000	45.62	-8.53	37.09	74.00	-36.91	peak	150	6	P	

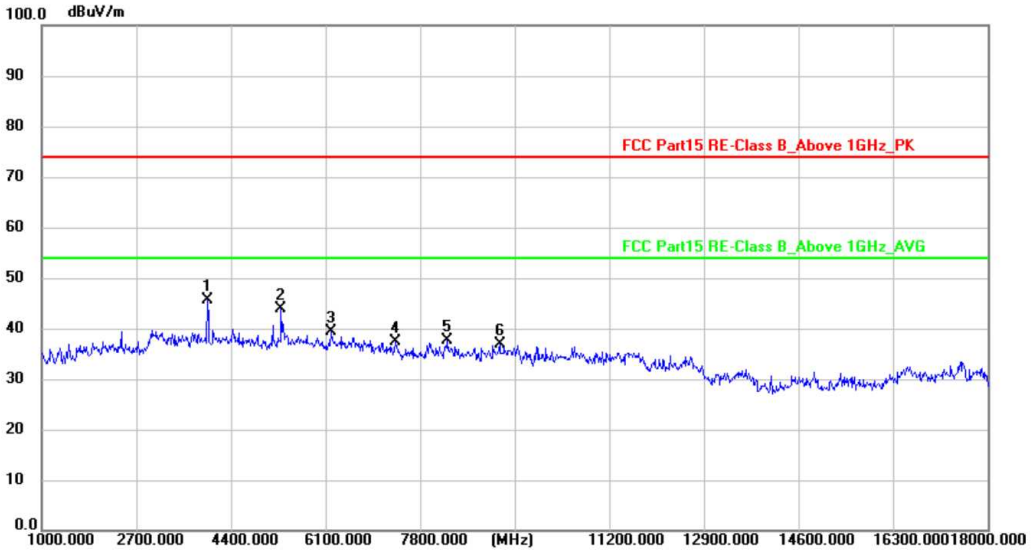
Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit

Shenzhen PSI Testing Co., Ltd.
1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road,
Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Test Site: PSI EMC Lab-3m Chamber	Polarization: ***Vertical***	Temperature: 26 ℃
EUT: FreeProbe	Distance: 3m	Humidity: 54 %RH
M/N: FreeProbe L2	Test Engineer: Felix	
Test Mode: 1M 2440MHz		
Test Voltage: DC 3.6V		
Note:		

Radiated Emission Measurement

Test Date: 2025/7/5 14:40:07



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	3987.750	58.86	-13.34	45.52	74.00	-28.48	peak	150	124	P	
2	5309.500	54.89	-11.08	43.81	74.00	-30.19	peak	150	197	P	
3	6204.125	48.63	-9.35	39.28	74.00	-34.72	peak	150	54	P	
4	7362.250	46.14	-8.74	37.40	74.00	-36.60	peak	150	330	P	
5	8295.125	45.92	-8.19	37.73	74.00	-36.27	peak	150	264	P	
6	9234.375	43.99	-7.12	36.87	74.00	-37.13	peak	150	184	P	

Note: *:Maximum data x:Over limit !:over margin Level = Reading + Factor Margin = Level - Limit