

Prüfbericht-Nr.: Test report no.:	CN257220 001	Auftrags-Nr.: Order no.:	168544897	Seite 1 von 21 Page 1 of 21
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2025-03-25	
Auftraggeber: Client:	Sound Devices, LLC E7556 State Road 23 and 33, Reedsburg, WI 53959, United States Of America			
Prüfgegenstand: Test item:	Professional Handheld Wireless Microphone			
Bezeichnung / Typ-Nr.: Identification / Type no.:	Astral HH (Trademark: SOUND DEVICES)			
Auftrags-Inhalt: Order content:	Test Report			
Prüfgrundlage: Test specification:	CFR Title 47 FCC Part 15: Subpart C Section 15.247			
Wareneingangsdatum: Date of sample receipt:	2025-05-09	Please refer to Photo Document		
Prüfmuster-Nr.: Test sample no.:	STS2505036E03 STS2505036E04			
Prüfzeitraum: Testing period:	2025-05-13 - 2025-09-18			
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:	 Lin Lin	genehmigt von: authorized by:	 Hardy Suo	
Datum: Date:	2025-10-15	Ausstellungsdatum: Issue date:	2025-10-15	
Stellung / Position:	Sachverständige(r)/Expert	Stellung / Position:	Sachverständige(r)/Expert	
Sonstiges / Other:	FCC ID: 2AKLX-28297			
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
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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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. <i>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.</i>
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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. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, 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 bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>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 115:2023, 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.</i>

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Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM CONDUCTED OUTPUT POWER

RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY

RESULT: Pass

5.1.4 6dB BANDWIDTH

RESULT: Pass

5.1.5 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 kHz BANDWIDTH

RESULT: Pass

5.1.6 RADIATED SPURIOUS EMISSION

RESULT: Pass

5.1.7 CONDUCTED EMISSION ON AC MAINS

RESULT: Pass

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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: Test Results of Bluetooth LE;

Appendix B: Photographs of Test Set-up.

2 Test Sites

2.1 Test Facilities

SHENZHEN STS TEST SERVICES CO., LTD.

101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China

A2LA Certificate Number: 4338.01

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

RF Radiation Test Equipment					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Pre-Amplifier(0.1M-3GHz)	EM	EM330	060665	2025.02.22	2026.02.21
Pre-Amplifier(1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2024.09.23	2025.09.22
Pre-Amplifier(18G-40GHz)	SKET	LNPA_1840-50	SK2018101801	2025.02.22	2026.02.21
Active loop Antenna	ZHINAN	ZN30900C	16035	2025.02.25	2026.02.24
Bilog Antenna	TESEQ	CBL6111D	34678	2024.09.30	2025.09.29
Horn Antenna	SCHWARZBECK	BBHA 9120D	02014	2023.09.24	2025.09.23
Horn Antenna	A-INFOMW	LB-180400-KF	J211020657	2023.10.10	2025.10.09
Positioning Controller	MF	MF-7802	MF-780208587	N/A	N/A
Signal Analyzer	R&S	FSV 40-N	101823	2024.09.23	2025.09.22
Switch Control Box	N/A	N/A	N/A	N/A	N/A
Filter Box	BALUN Technology	SU319E	BL-SZ1530051	N/A	N/A
Antenna Mast	MF	MFA-440H	N/A	N/A	N/A
Turn Table	MF	SC100_1	60531	N/A	N/A
AC Power Source	APC	KDF-11010G	F214050035	N/A	N/A
DC power supply	HONGSHENGFEN G	DPS-305AF	17064939	2024.09.23	2025.09.22
Test SW	EZ-EMC	Ver.STSLAB-03A1 RE			
Conduction Test Equipment					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2024.09.24	2025.09.23
Limtter	CYBERTEK	EM5010	N/A	2024.09.24	2025.09.23
LISN	R&S	ENV216	101242	2024.09.24	2025.09.23
LISN	EMCO	3810/2NM	23625	2024.09.24	2025.09.23
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Test SW	EZ-EMC	Ver.STSLAB-03A1 CE			
RF Connected Test					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until

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Signal Analyzer	Agilent	N9020A	MY51510623	2025.02.22	2026.02.21
Power detector group	Keysight	NW2021031	N/A	2024.09.23	2025.09.22
Switch control box	MW	MW100-RFCB	N/A	N/A	N/A
Temperature & Humidity test chamber	Safety test	AG80L	171200018	2025.02.22	2026.02.21
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Test SW	MW	MTS 8310_2.0.0.0			

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 basis 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.

Table 2: Measurement Uncertainty

No.	Item	Uncertainty
1	RF output power, conducted	±0.755dB
2	Unwanted Emissions, conducted	±2.874dB
3	All emissions, radiated 9K-30MHz	±3.80dB
4	All emissions, radiated 30M-1GHz	±4.18dB
5	All emissions, radiated 1G-6GHz	±4.90dB
6	All emissions, radiated >6G	±5.24dB
7	Conducted Emission (9KHz-150KHz)	±2.19dB
8	Conducted Emission (150KHz-30MHz)	±2.53dB
9	Occupied Channel Bandwidth	±3.5%
10	Power Spectral Density, conducted	±1.245dB
11	Duty Cycle	±3.2%

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.

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2.7 Status of Facility Used for Testing

The SHENZHEN STS TEST SERVICES CO., LTD. Test facility located at 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, 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 EUT is a Professional Handheld Wireless Microphone, which supports Bluetooth low energy, 2.4GHz NexLink and Microphone functions.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment:	Professional Handheld Wireless Microphone
Type Designation:	Astral HH
Trademark:	SOUND DEVICES
FCC ID:	2AKLX-28297
Operating Voltage:	USB-C operated, or Battery operated (3.7Vdc, 4000mAh)
Operating Temperature Range:	-10 °C ~ +40 °C
Technical Specification of Bluetooth LE	
Operating Frequency:	2402-2480MHz
Type of Modulation:	GFSK
Channel Number:	40 channels
Data Rate:	1Mbps
Channel Separation:	2 MHz
Antenna Type:	Integrated Antenna
Antenna Gain:	-5.54 dBi (Provided by the Client)

Note: 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 by the use of incorrect data provided by customer shall be borne by the customer.

Table 4: RF Channel and Frequency of Bluetooth LE

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Bluetooth wireless transmitting mode
 - 1) Low Channel
 - 2) Middle Channel
 - 3) High Channel
- B. On, Keeping BT TX
- C. Co-location with Wireless Microphone
- D. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- User Manual
- Operation Description
- FCC/IC Label and Location Info

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 on model *Astral HH* in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Item	Equipment	Mfr/Brand	Model/Type No.	Note
E-1	Notebook	HP	HP Spectre Pro x360 G2	N/A
E-2	Adapter	HP	HP Spectre Pro x360 G2	N/A
C-1	USB Cable	N/A	TTL-232R-3V3	N/A

Item	Equipment	Mfr/Brand	Length	Note
C-1	Shielded	NO	100cm	N/A

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)

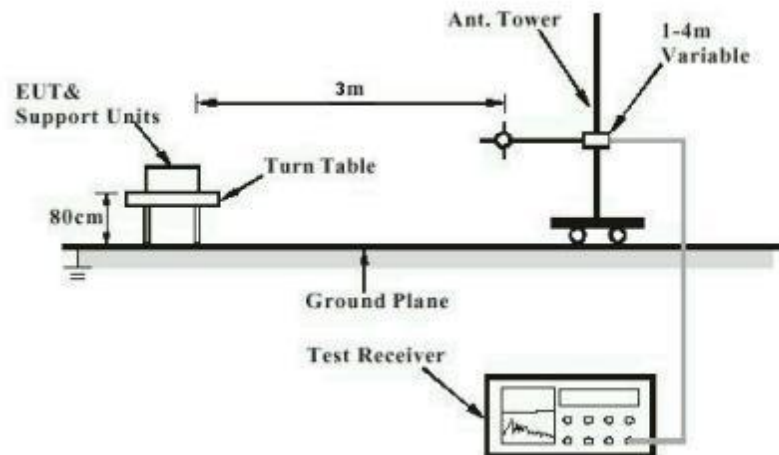


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

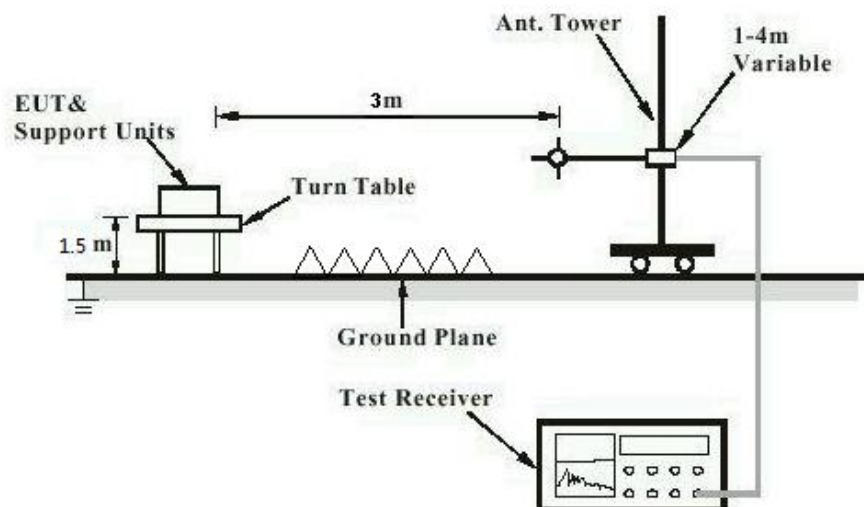


Diagram of Measurement Configuration for Mains Conduction Measurement

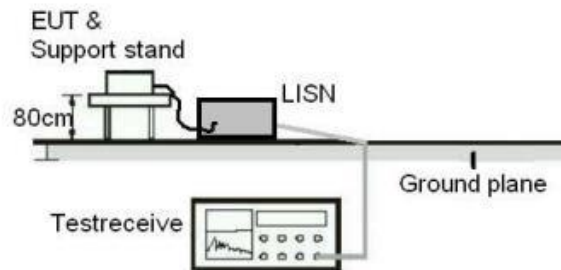
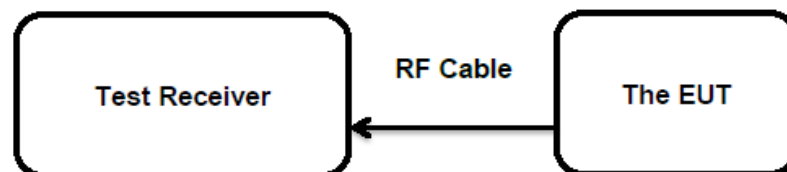


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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

According to the manufacturer declared, the EUT has Integral antenna, permanent attachment and no consideration of replacement, refer to section 3.2 for details.

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

Refer to EUT Photo for further details.

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5.1.2 Maximum Conducted Output Power

RESULT:

Pass

Test Specification

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

Test Setup

Date of testing	: 2025-05-13
Input voltage	: Battery operated (3.7Vdc)
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24.2 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A.

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5.1.3 Conducted Power Spectral Density

RESULT:

Pass

Test Specification

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

Test Setup

Date of testing	: 2025-05-13
Input voltage	: Battery operated (3.7Vdc)
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24.2 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A.

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5.1.4 6dB Bandwidth

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(a)(2)
Basic standard	: ANSI C63.10:2020
Limits	: > 500 kHz
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2025-05-13
Input voltage	: Battery operated (3.7Vdc)
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24.2 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A.

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5.1.5 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT:

Pass

Test Specification

Test standard	: FCC Part 15.247(d)
Basic standard	: ANSI C63.10:2020
Limits	: 20dB (below that in the 100kHz 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	: 2025-05-13
Input voltage	: Battery operated (3.7Vdc)
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24.2 °C
Relative humidity	: 56 %
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 A.

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5.1.6 Radiated Spurious Emission

RESULT:**Pass****Test Specification**

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

Test Setup

Date of testing	: 2025-05-13 to 2025-09-18
Input voltage	: Battery operated (3.7Vdc)
Operation mode	: A, C
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.
- For co-location mode, there are no emissions that exceed the highest limit.

For the measurement records, refer to the appendix A.

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5.1.7 Conducted Emission on AC Mains

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.207(a)
Basic standard	: ANSI C63.10:2020
Frequency range	: 0.15 – 30MHz
Classification	: Class B
Limits	: FCC Part 15.207(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2025-05-13 to 2025-09-06
Input voltage	: AC 120V, 60Hz
Operation mode	: B
Ambient temperature	: Refer to test result
Relative humidity	: Refer to test result
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A.

6 Photographs of the Test Set-Up

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

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Appendix A: Test Results of Bluetooth LE

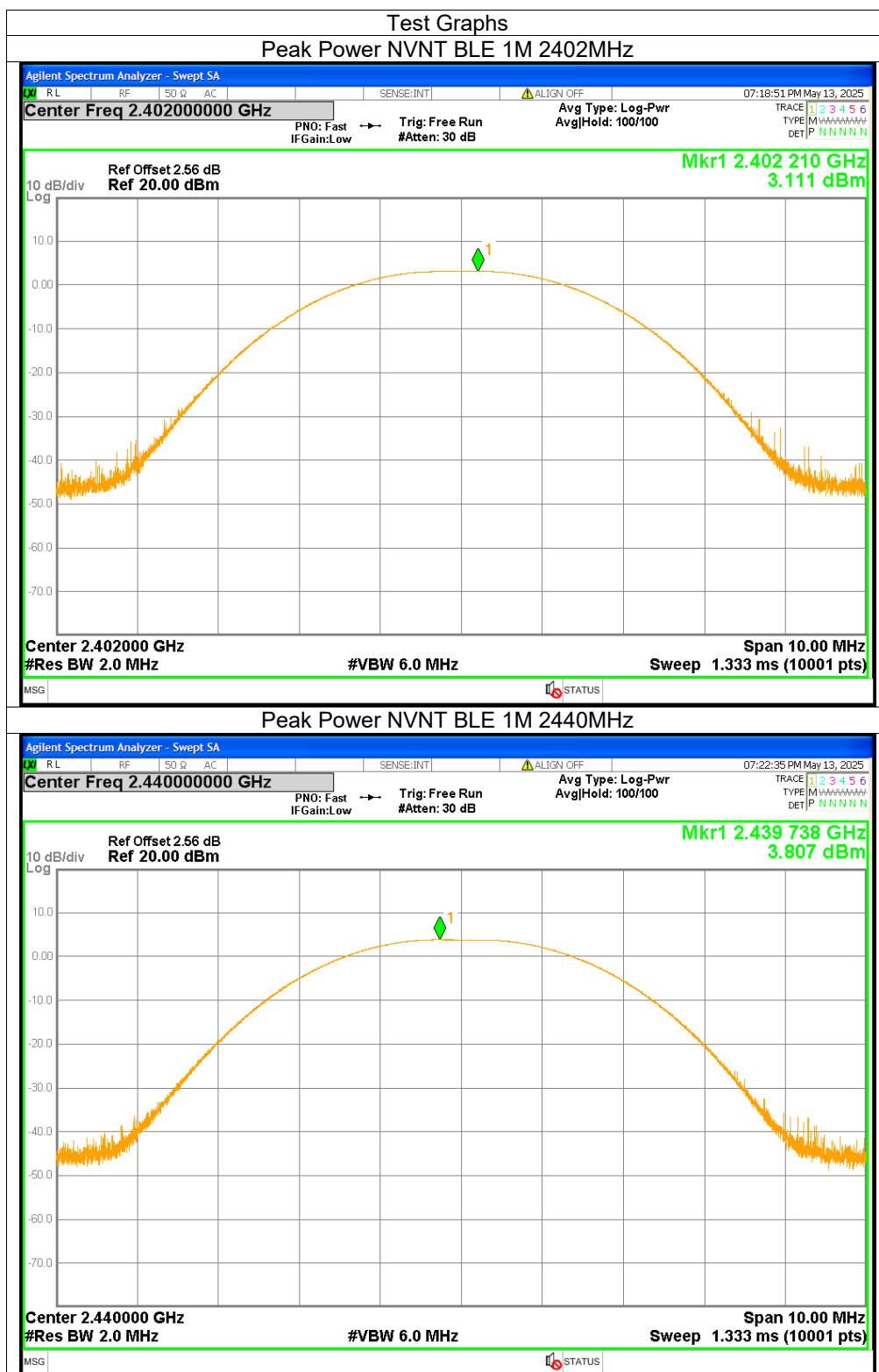
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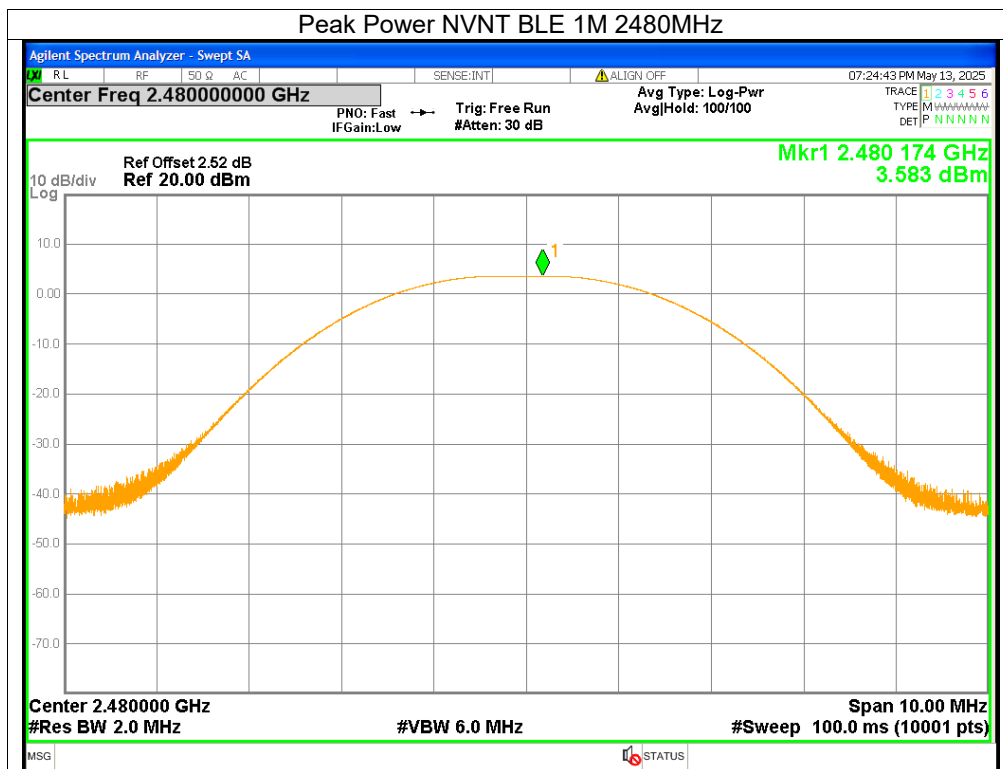
Appendix A.1: Test Results of Maximum Peak Conducted Output Power

Test Result

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	3.11	<=30	Pass
NVNT	BLE 1M	2440	3.81	<=30	Pass
NVNT	BLE 1M	2480	3.58	<=30	Pass

Test Graphs



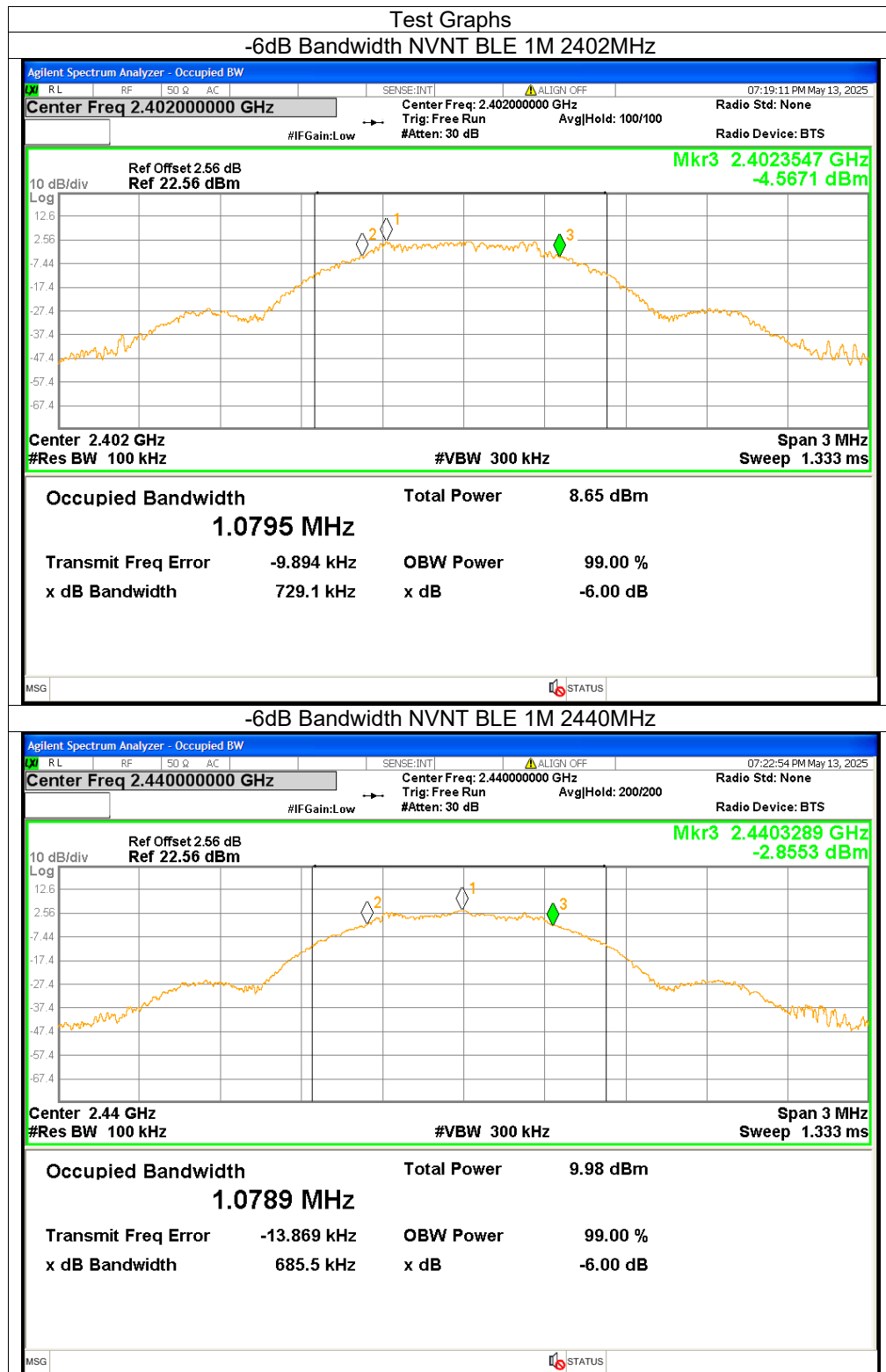


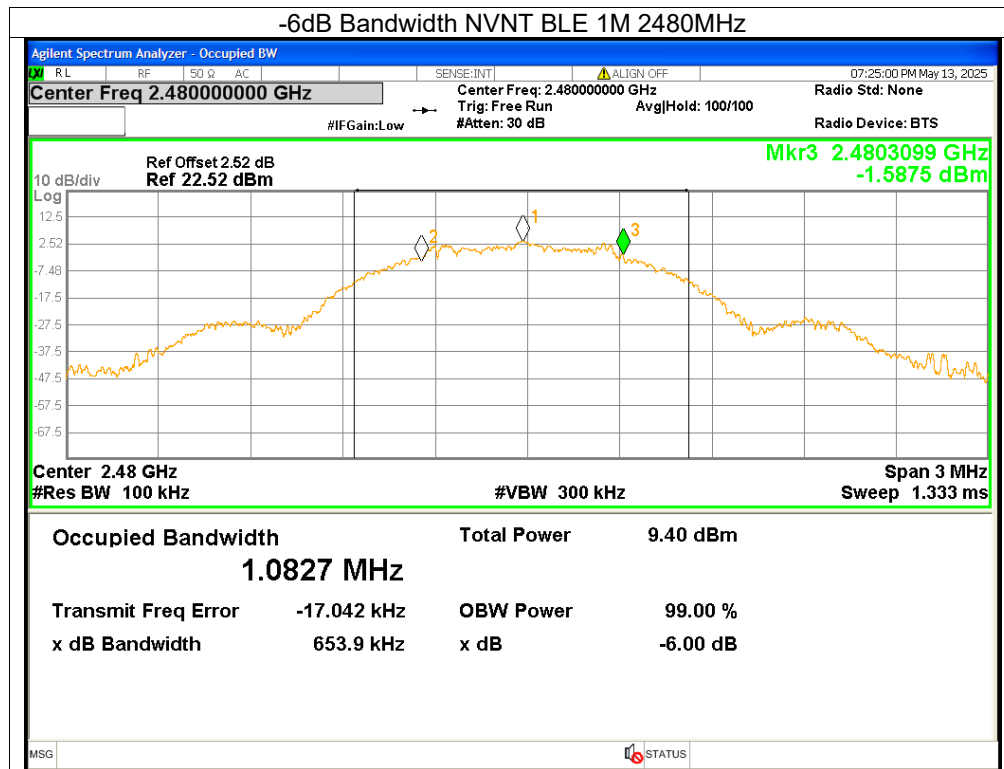
Appendix A.2: Test Results of 6dB Bandwidth

Test Result

Condition	Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	0.7291	≥ 0.5	Pass
NVNT	BLE 1M	2440	0.6855	≥ 0.5	Pass
NVNT	BLE 1M	2480	0.6539	≥ 0.5	Pass

Test Graphs



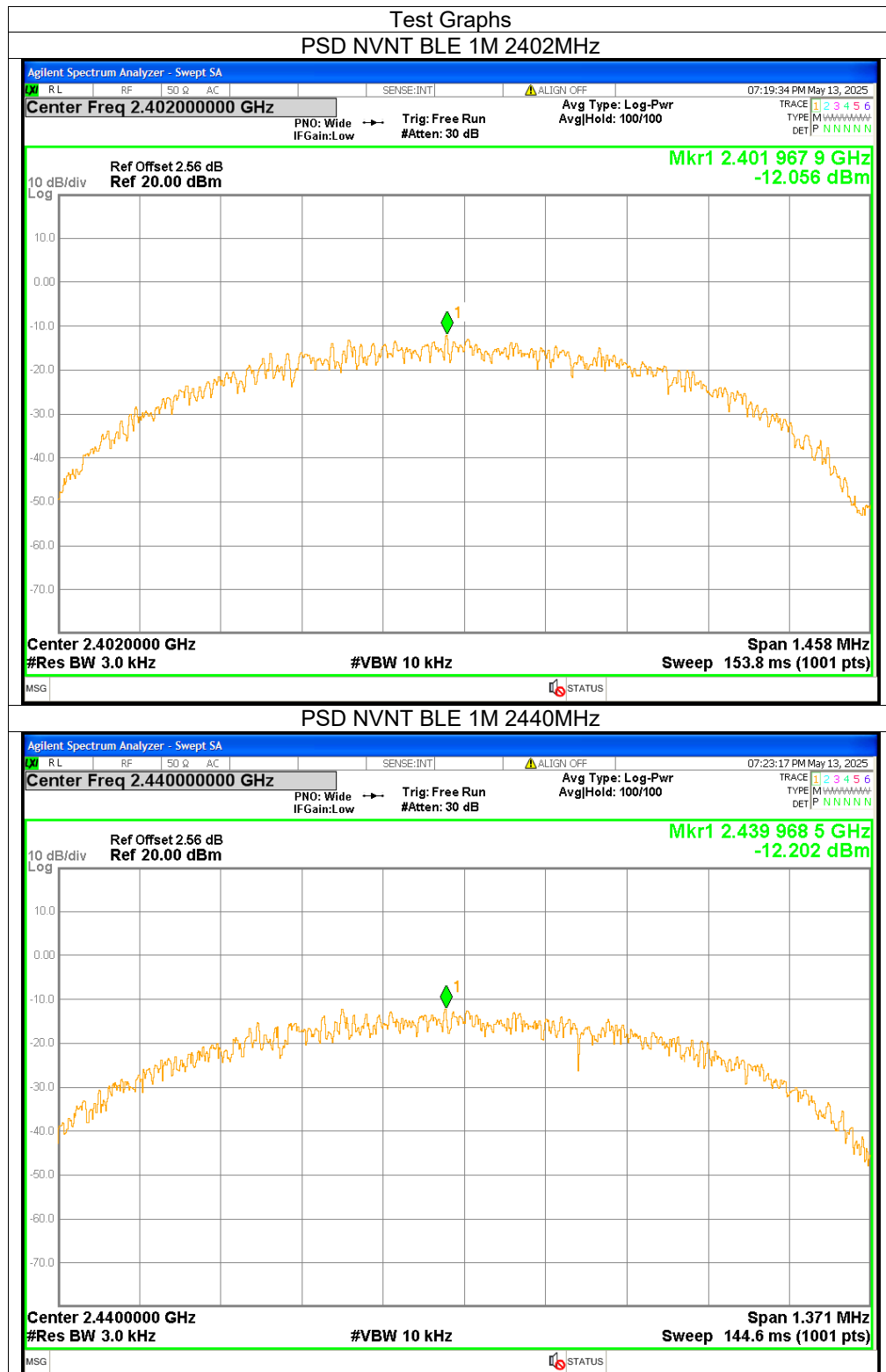


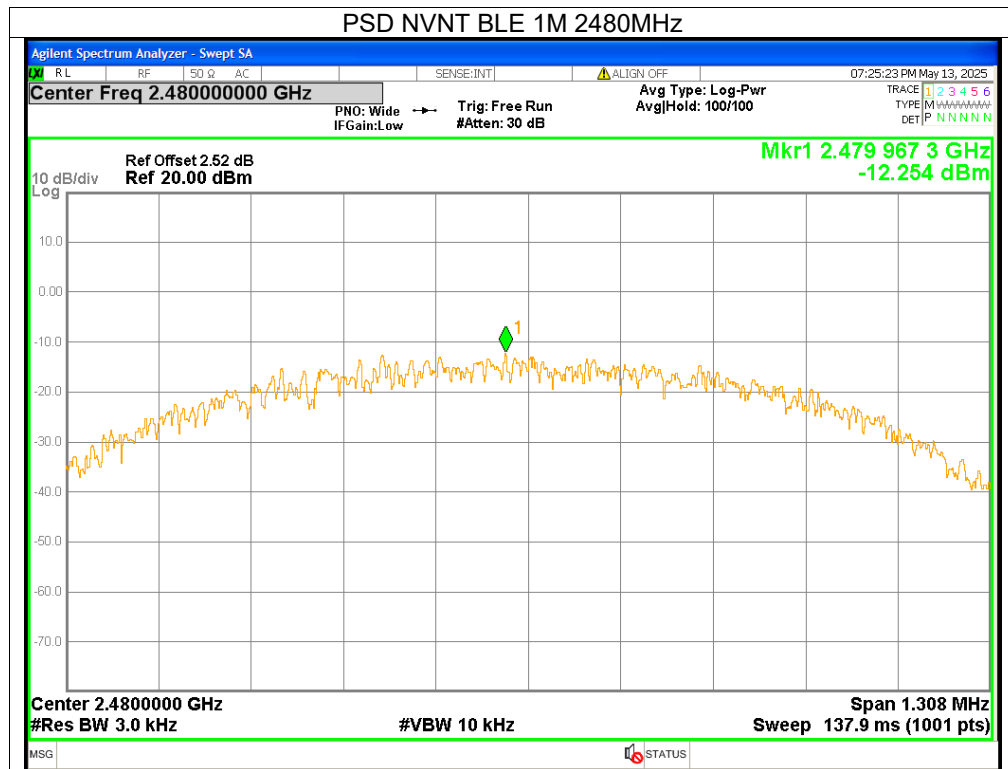
Appendix A.3: Test Results of Conducted Power Spectral Density

Test Result

Condition	Mode	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	-12.06	<=8	Pass
NVNT	BLE 1M	2440	-12.2	<=8	Pass
NVNT	BLE 1M	2480	-12.25	<=8	Pass

Test Graphs





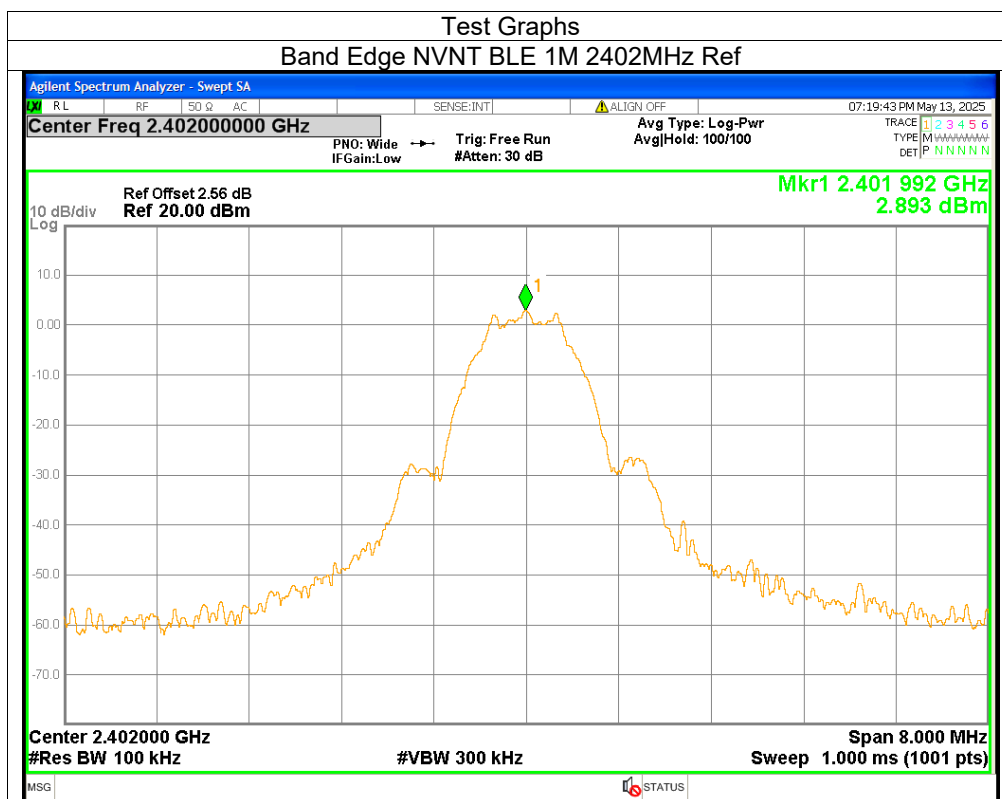
Appendix A.4: Test Results of Band Edge Measurements

Test Result

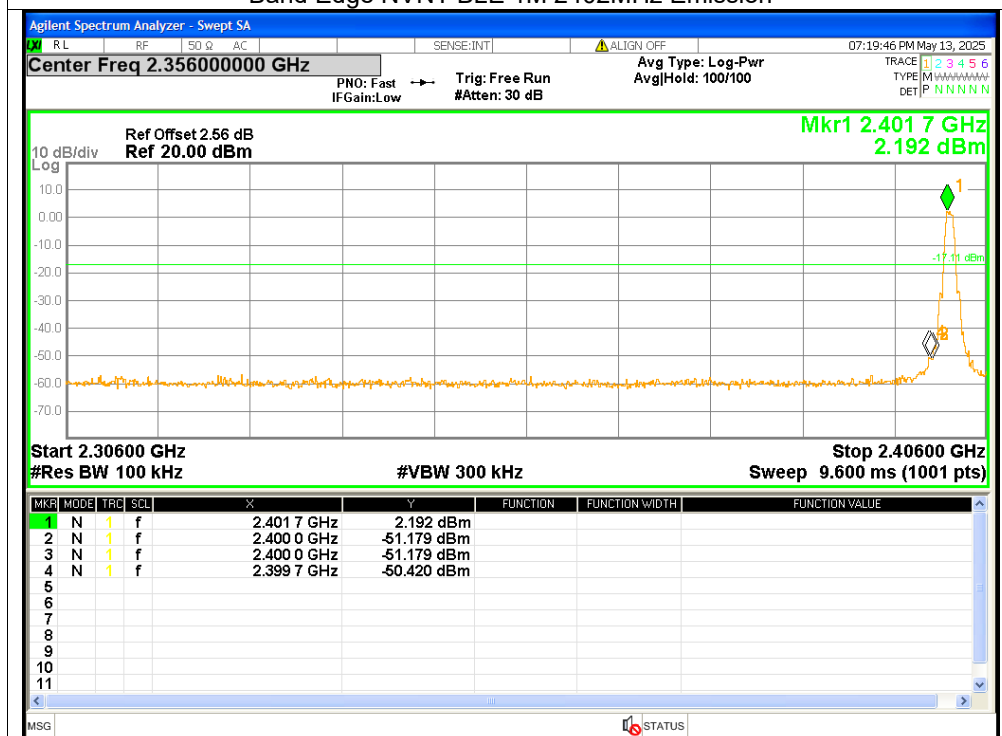
Condition	Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	-53.31	<=-20	Pass
NVNT	BLE 1M	2480	-58.11	<=-20	Pass

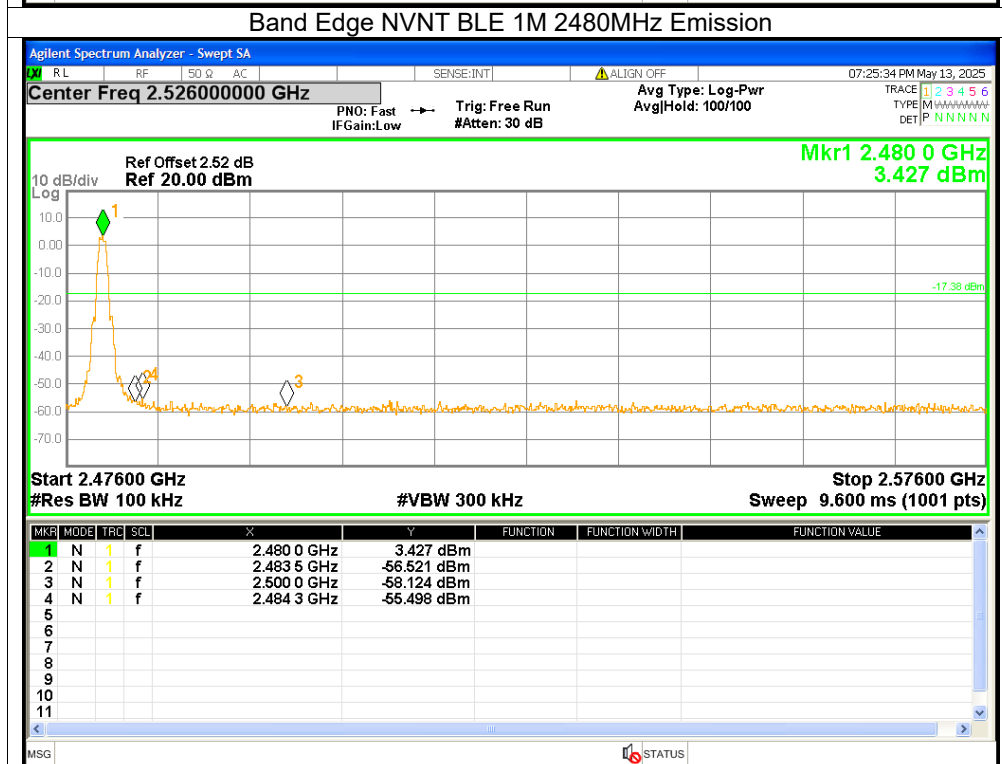
Test Graphs

Test Graphs



Band Edge NVNT BLE 1M 2402MHz Emission



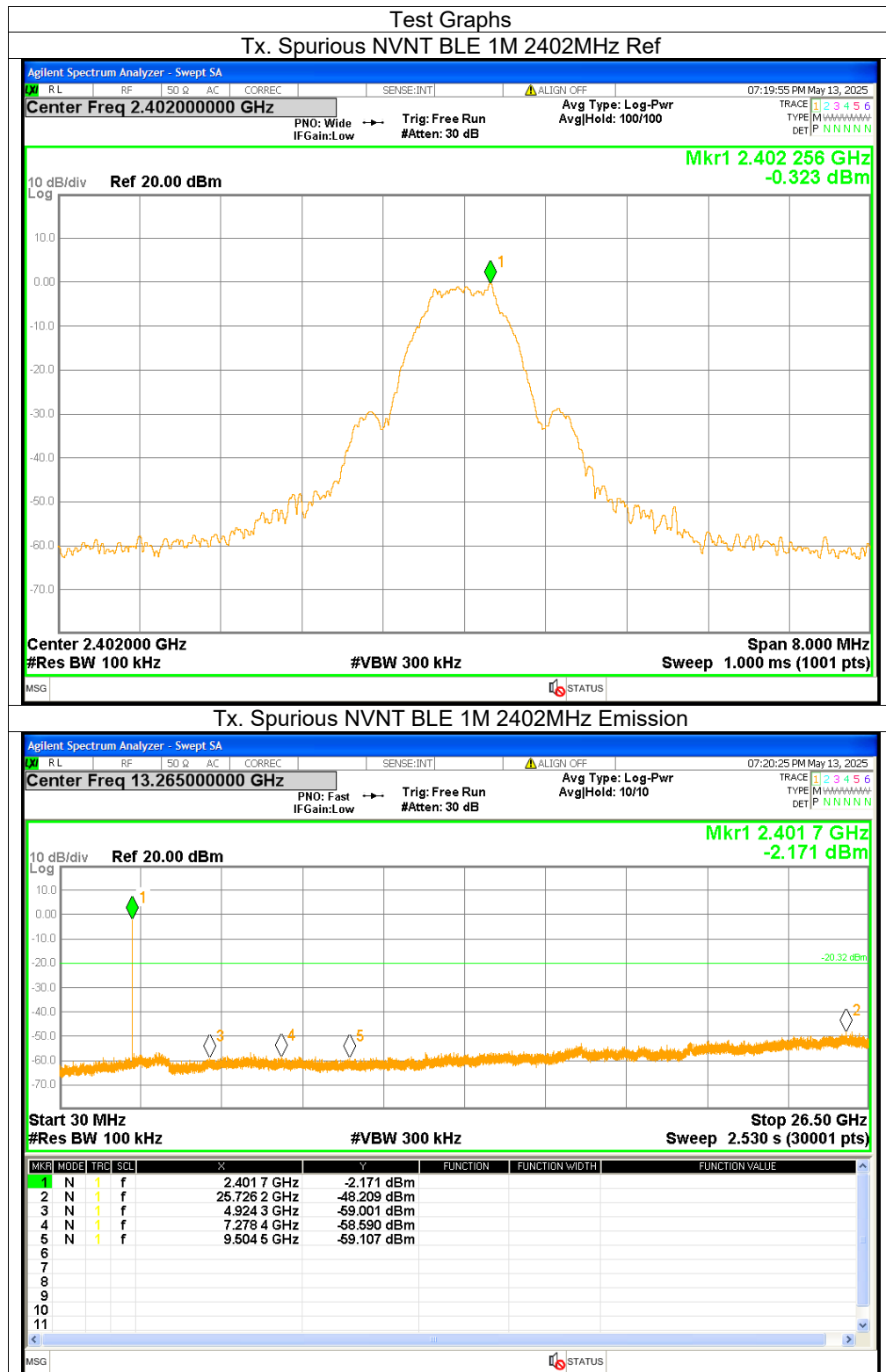


Appendix A.5: Test Results of Conducted Spurious Emission

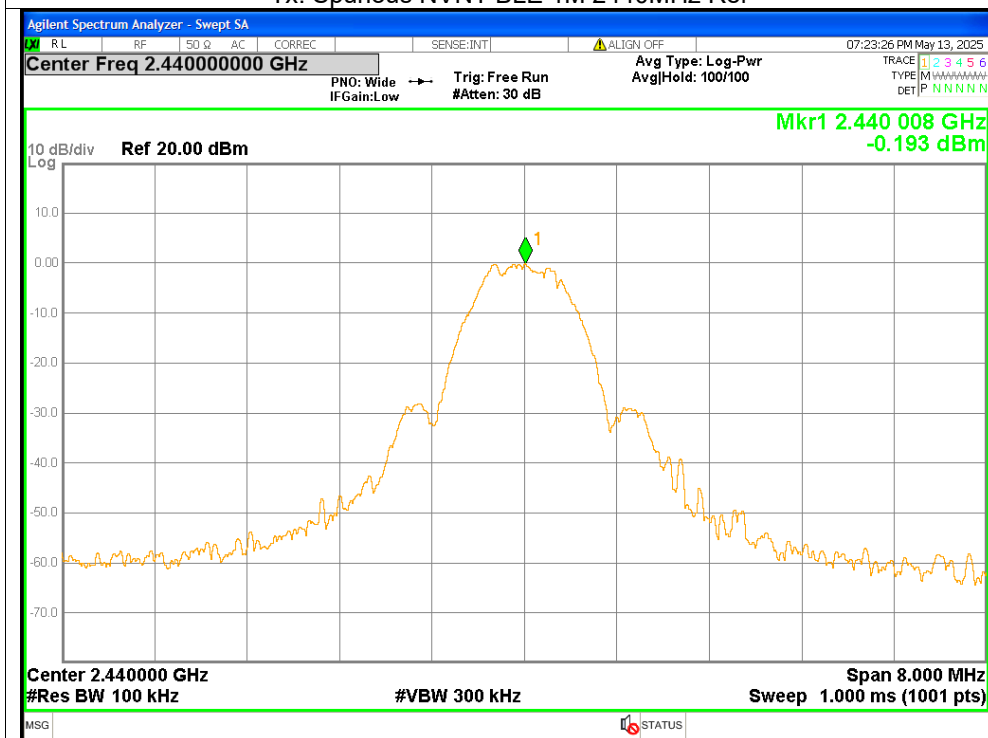
Test Result

Condition	Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	-47.88	<=-20	Pass
NVNT	BLE 1M	2440	-48.48	<=-20	Pass
NVNT	BLE 1M	2480	-48.82	<=-20	Pass

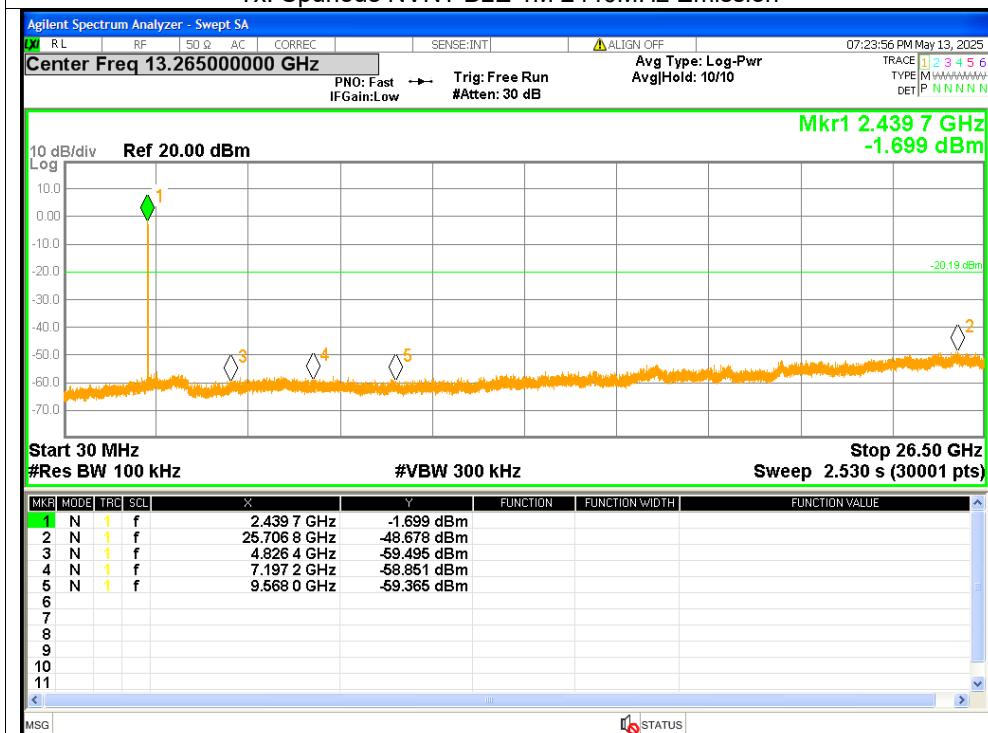
Test Graphs



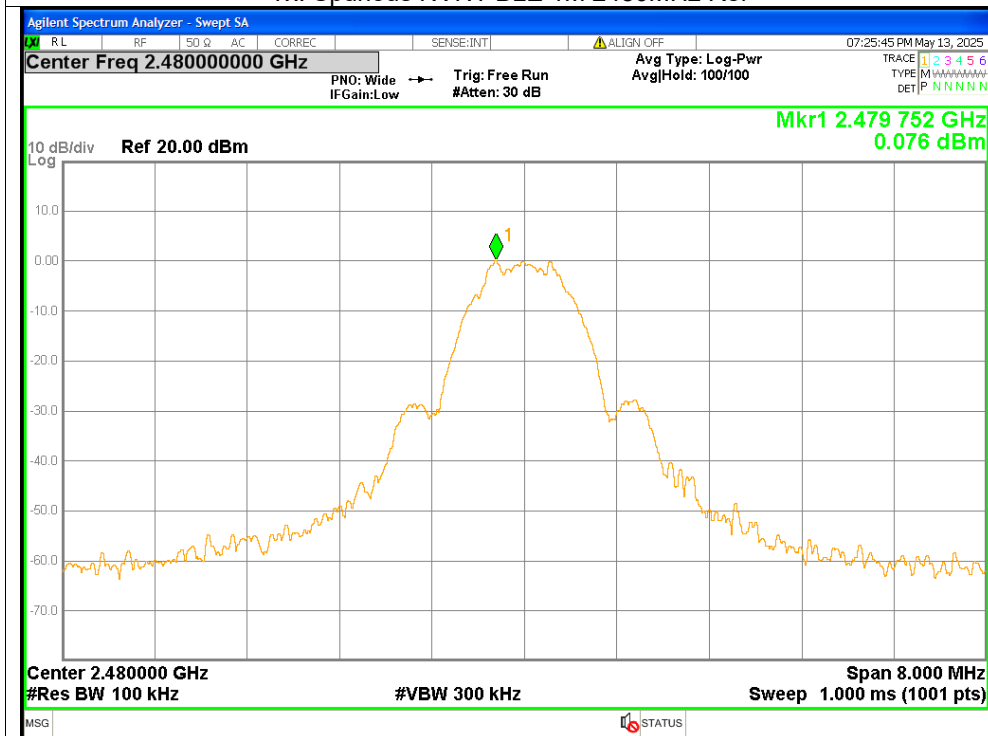
Tx. Spurious NVNT BLE 1M 2440MHz Ref



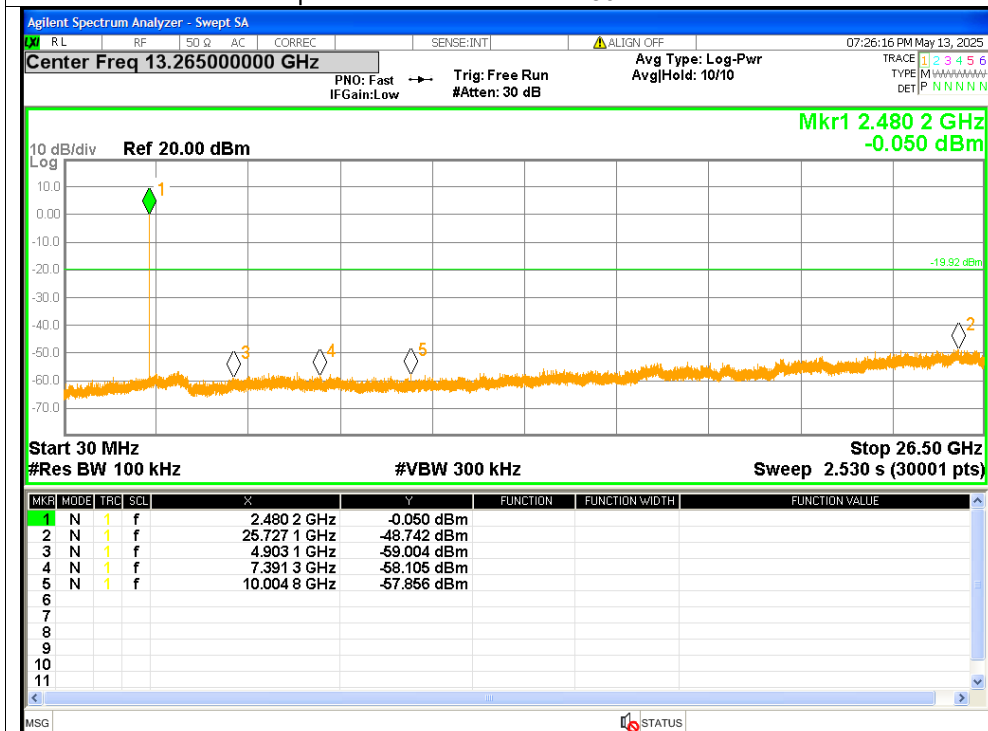
Tx. Spurious NVNT BLE 1M 2440MHz Emission



Tx. Spurious NVNT BLE 1M 2480MHz Ref



Tx. Spurious NVNT BLE 1M 2480MHz Emission



Appendix A.6: Test Results of Radiated Spurious Emissions

9kHz - 30 MHz

Temperature:	23.4°C	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Polarization:	--
Test Mode:	Mode A		

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

Note:

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

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuV) + distance extrapolation factor.

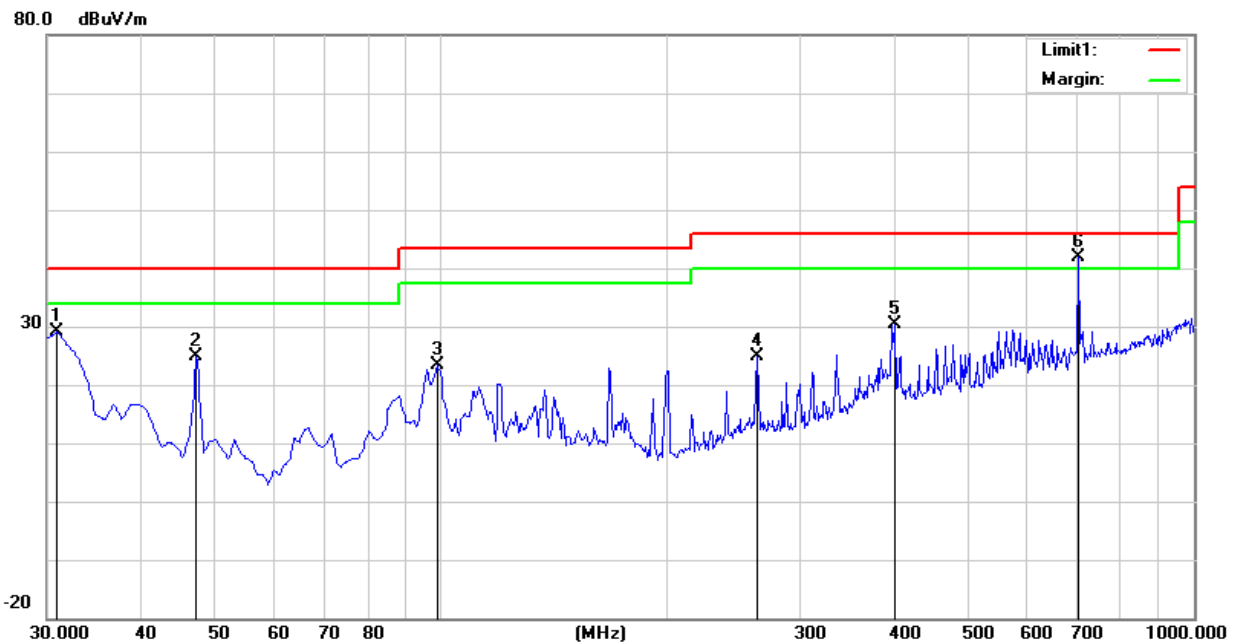
30 MHz - 1GHz

Temperature:	23.4°C	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	Mode A (Mode A.2 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.9700	42.40	-13.35	29.05	40.00	-10.95	peak
2	47.4600	46.70	-21.92	24.78	40.00	-15.22	peak
3	98.8700	43.70	-20.31	23.39	43.50	-20.11	peak
4	263.7700	39.54	-14.75	24.79	46.00	-21.21	peak
5	401.5100	41.44	-11.06	30.38	46.00	-15.62	peak
6	703.1800	45.90	-4.07	41.83	46.00	-4.17	peak

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. All modes have been tested,only show the worst case.

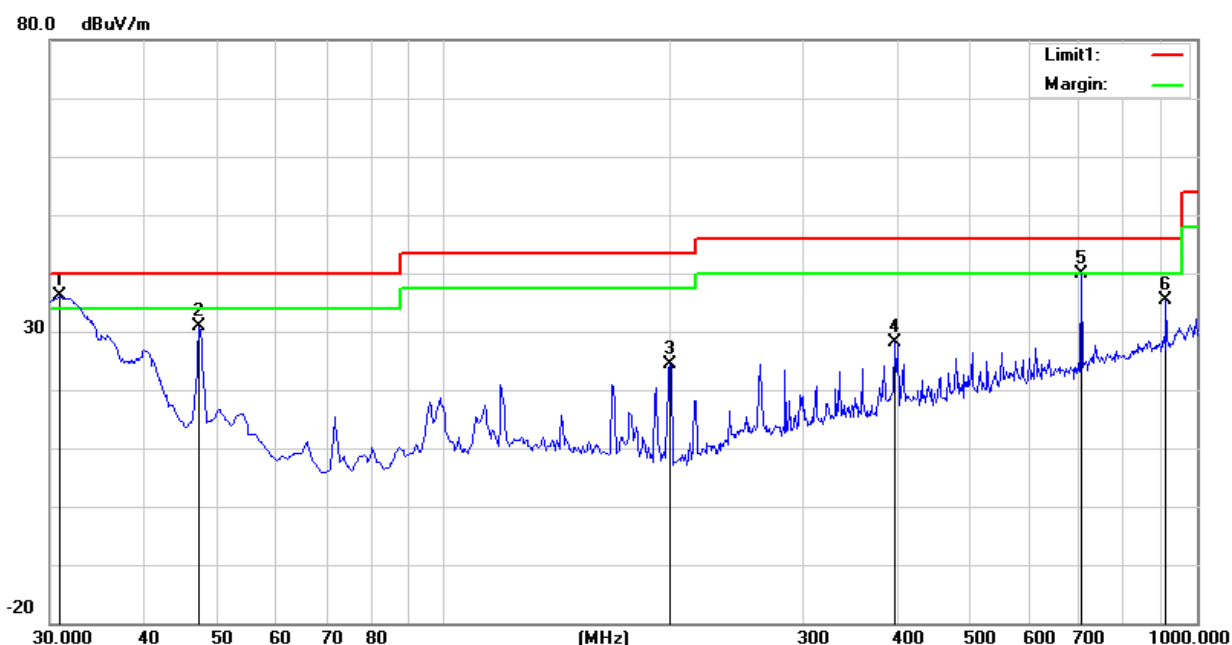


Temperature:	23.4°C	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	Mode A (Mode A.2 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.9700	49.37	-13.35	36.02	40.00	-3.98	peak
2	47.4600	52.91	-21.92	30.99	40.00	-9.01	peak
3	199.7500	45.42	-21.11	24.31	43.50	-19.19	peak
4	397.6300	39.27	-11.24	28.03	46.00	-17.97	peak
5	703.1800	44.01	-4.07	39.94	46.00	-6.06	peak
6	911.7300	35.53	-0.16	35.37	46.00	-10.63	peak

Remark:

1. Margin = Result (Result = Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. All modes have been tested,only show the worst case.



1GHz - 25GHz

Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Corrected Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
Low Channel (GFSK/2402 MHz)										
3264.65	61.74	44.70	6.70	28.20	-9.80	51.94	74.00	-22.06	PK	Vertical
3264.65	50.88	44.70	6.70	28.20	-9.80	41.08	54.00	-12.92	AV	Vertical
3264.67	61.08	44.70	6.70	28.20	-9.80	51.28	74.00	-22.72	PK	Horizontal
3264.67	50.94	44.70	6.70	28.20	-9.80	41.14	54.00	-12.86	AV	Horizontal
4804.29	58.30	44.20	9.04	31.60	-3.56	54.74	74.00	-19.26	PK	Vertical
4804.29	49.14	44.20	9.04	31.60	-3.56	45.58	54.00	-8.42	AV	Vertical
4804.42	58.83	44.20	9.04	31.60	-3.56	55.27	74.00	-18.73	PK	Horizontal
4804.42	49.78	44.20	9.04	31.60	-3.56	46.22	54.00	-7.78	AV	Horizontal
5359.71	48.48	44.20	9.86	32.00	-2.34	46.14	74.00	-27.86	PK	Vertical
5359.71	40.28	44.20	9.86	32.00	-2.34	37.94	54.00	-16.06	AV	Vertical
5359.86	48.46	44.20	9.86	32.00	-2.34	46.12	74.00	-27.88	PK	Horizontal
5359.86	39.14	44.20	9.86	32.00	-2.34	36.80	54.00	-17.20	AV	Horizontal
7205.79	54.90	43.50	11.40	35.50	3.40	58.30	74.00	-15.70	PK	Vertical
7205.79	43.71	43.50	11.40	35.50	3.40	47.11	54.00	-6.89	AV	Vertical
7205.67	54.67	43.50	11.40	35.50	3.40	58.07	74.00	-15.93	PK	Horizontal
7205.67	44.83	43.50	11.40	35.50	3.40	48.23	54.00	-5.77	AV	Horizontal
Middle Channel (GFSK/2440 MHz)										
3263.14	61.72	44.70	6.70	28.20	-9.80	51.92	74.00	-22.08	PK	Vertical
3263.14	49.82	44.70	6.70	28.20	-9.80	40.02	54.00	-13.98	AV	Vertical
3263.00	61.99	44.70	6.70	28.20	-9.80	52.19	74.00	-21.81	PK	Horizontal
3263.00	51.23	44.70	6.70	28.20	-9.80	41.43	54.00	-12.57	AV	Horizontal
4879.88	58.63	44.20	9.04	31.60	-3.56	55.07	74.00	-18.93	PK	Vertical
4879.88	49.11	44.20	9.04	31.60	-3.56	45.55	54.00	-8.45	AV	Vertical
4880.01	58.60	44.20	9.04	31.60	-3.56	55.04	74.00	-18.96	PK	Horizontal
4880.01	49.21	44.20	9.04	31.60	-3.56	45.65	54.00	-8.35	AV	Horizontal
5357.06	48.22	44.20	9.86	32.00	-2.34	45.88	74.00	-28.12	PK	Vertical
5357.06	39.38	44.20	9.86	32.00	-2.34	37.04	54.00	-16.96	AV	Vertical
5357.39	48.14	44.20	9.86	32.00	-2.34	45.80	74.00	-28.20	PK	Horizontal
5357.02	39.27	44.20	9.86	32.00	-2.34	36.93	54.00	-17.07	AV	Horizontal
7320.85	54.14	43.50	11.40	35.50	3.40	57.54	74.00	-16.46	PK	Vertical
7320.85	44.06	43.50	11.40	35.50	3.40	47.46	54.00	-6.54	AV	Vertical
7320.29	53.72	43.50	11.40	35.50	3.40	57.12	74.00	-16.88	PK	Horizontal
7320.29	44.81	43.50	11.40	35.50	3.40	48.21	54.00	-5.79	AV	Horizontal
High Channel (GFSK/2480 MHz)										
3264.76	62.14	44.70	6.70	28.20	-9.80	52.34	74.00	-21.66	PK	Vertical
3264.76	51.42	44.70	6.70	28.20	-9.80	41.62	54.00	-12.38	AV	Vertical
3264.65	62.10	44.70	6.70	28.20	-9.80	52.30	74.00	-21.70	PK	Horizontal
3264.65	50.91	44.70	6.70	28.20	-9.80	41.11	54.00	-12.89	AV	Horizontal
4960.38	58.61	44.20	9.04	31.60	-3.56	55.05	74.00	-18.95	PK	Vertical
4960.38	49.89	44.20	9.04	31.60	-3.56	46.33	54.00	-7.67	AV	Vertical
4960.53	58.93	44.20	9.04	31.60	-3.56	55.37	74.00	-18.63	PK	Horizontal
4960.53	50.54	44.20	9.04	31.60	-3.56	46.98	54.00	-7.02	AV	Horizontal
5359.72	48.20	44.20	9.86	32.00	-2.34	45.86	74.00	-28.14	PK	Vertical
5359.72	39.90	44.20	9.86	32.00	-2.34	37.56	54.00	-16.44	AV	Vertical
5359.80	48.37	44.20	9.86	32.00	-2.34	46.03	74.00	-27.97	PK	Horizontal
5359.80	38.98	44.20	9.86	32.00	-2.34	36.64	54.00	-17.36	AV	Horizontal
7439.73	54.92	43.50	11.40	35.50	3.40	58.32	74.00	-15.68	PK	Vertical
7439.73	43.68	43.50	11.40	35.50	3.40	47.08	54.00	-6.92	AV	Vertical
7439.70	54.66	43.50	11.40	35.50	3.40	58.06	74.00	-15.94	PK	Horizontal
7439.70	44.68	43.50	11.40	35.50	3.40	48.08	54.00	-5.92	AV	Horizontal

Note:

1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.

- Emission Level = Reading + Factor
- 2) The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

Co-location with Wireless Microphone

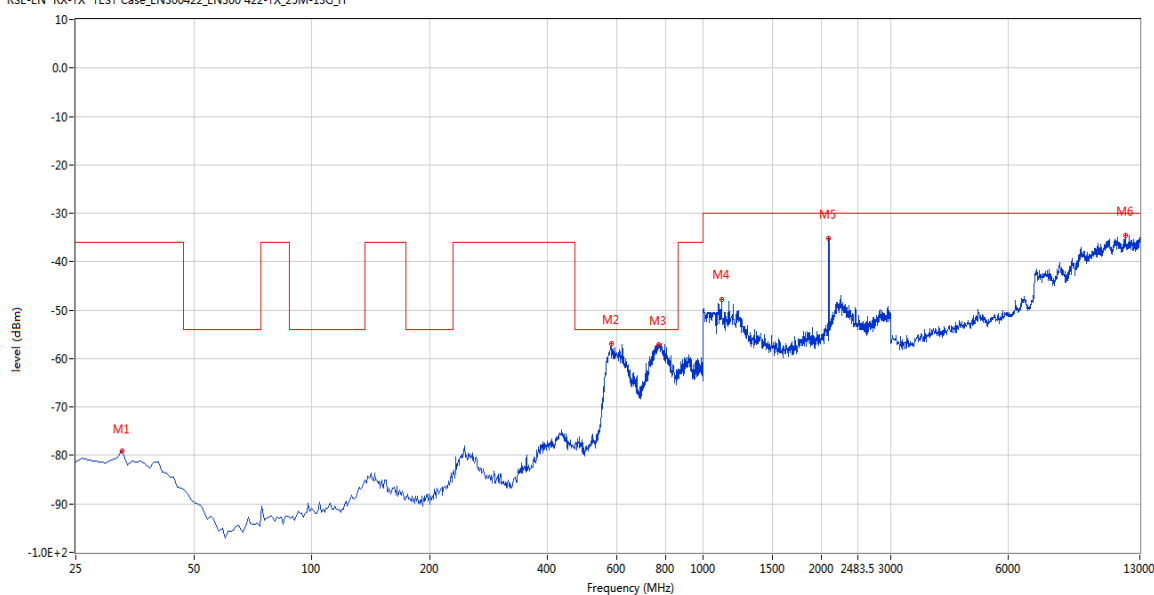
Temperature:	23.4°C	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	Worst case mode of Bluetooth +Wireless Mircophone		

Frequency (MHz)	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
32.800	-79.14	-1.89	-36.0	43.14	0.30	Horizontal	Vertical	Pass
581.725	-56.83	6.65	-54.0	2.83	278.20	Horizontal	Vertical	Pass
767.950	-56.34	7.15	-54.0	2.34	48.60	Horizontal	Vertical	Pass
1114.000	-47.70	11.24	-30.0	17.70	322.60	Horizontal	Vertical	Pass
2090.000	-35.25	15.00	-30.0	5.25	70.30	Horizontal	Vertical	Pass
11940.000	-34.55	19.53	-30.0	4.55	213.00	Horizontal	Vertical	Pass

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

RSE-EN RX-TX TEST Case_EN300422_EN300 422-TX_25M-13G_H



Note:

- 1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
- 2) The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

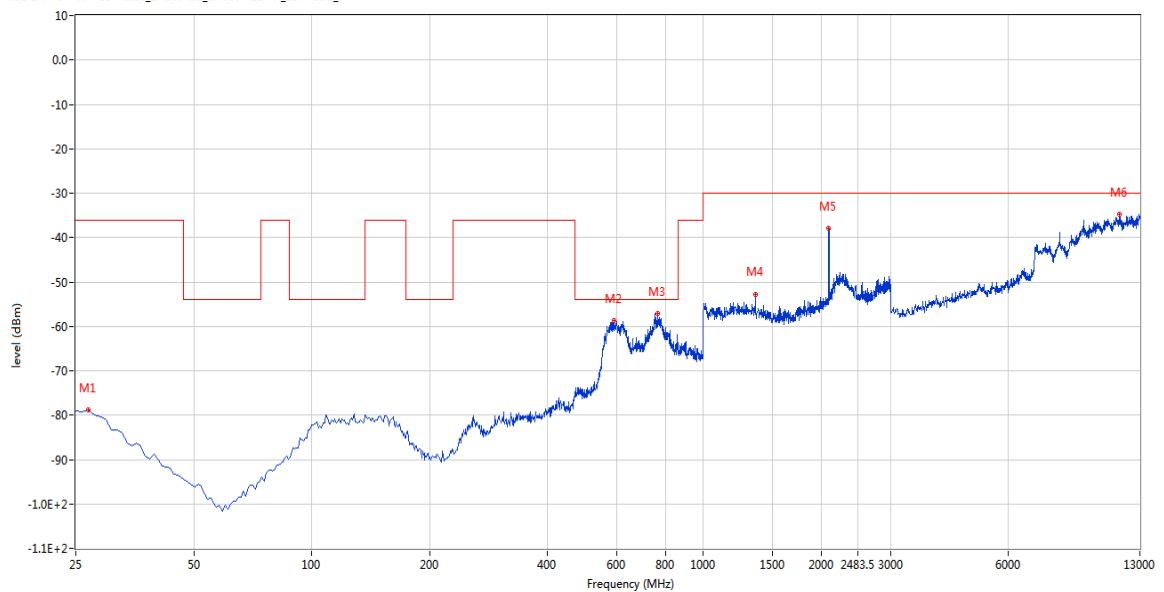
Temperature:	23.4°C	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	Worst case mode of Bluetooth +Wireless Microphone		

Frequency (MHz)	Result (dBm)	Factor (dB)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
26.950	-78.77	-1.72	-36.0	42.77	48.40	Vertical	Vertical	Pass
591.475	-58.67	5.06	-54.0	4.67	360.00	Vertical	Vertical	Pass
762.100	-57.06	7.10	-54.0	3.06	338.30	Vertical	Vertical	Pass
1358.000	-52.72	12.36	-30.0	22.72	329.50	Vertical	Vertical	Pass
2090.000	-37.91	15.00	-30.0	7.91	44.80	Vertical	Vertical	Pass
11550.000	-34.79	20.63	-30.0	4.79	141.10	Vertical	Vertical	Pass

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

RSE-EN RX-TX TEST Case_EN300422_EN300 422-TX_25M-13G_V

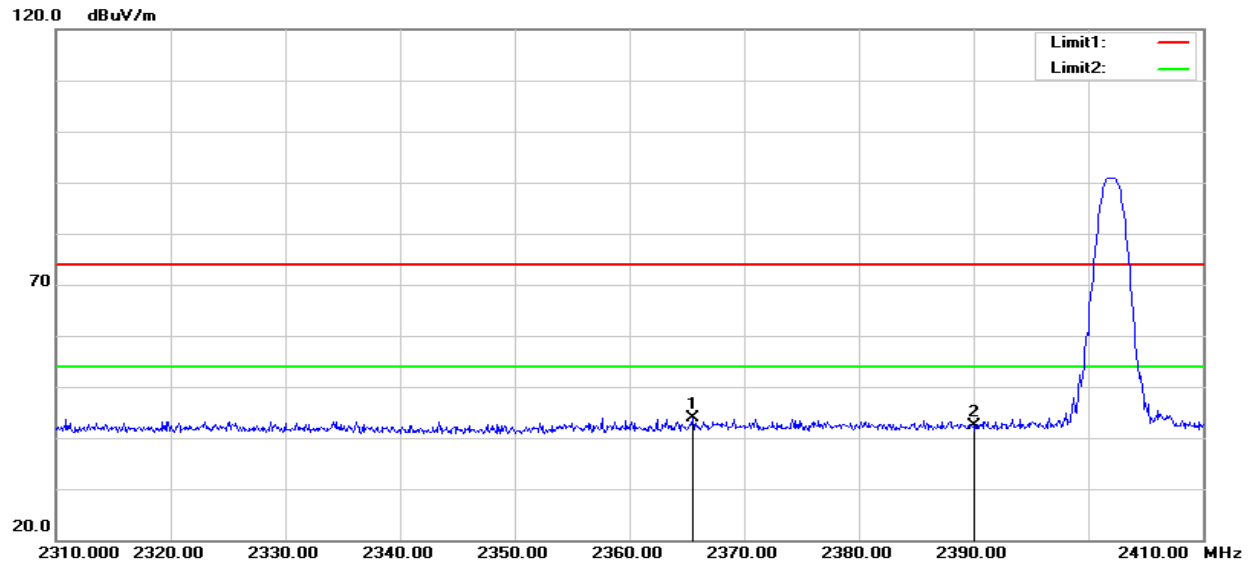


Note:

- 1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
- 2) The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

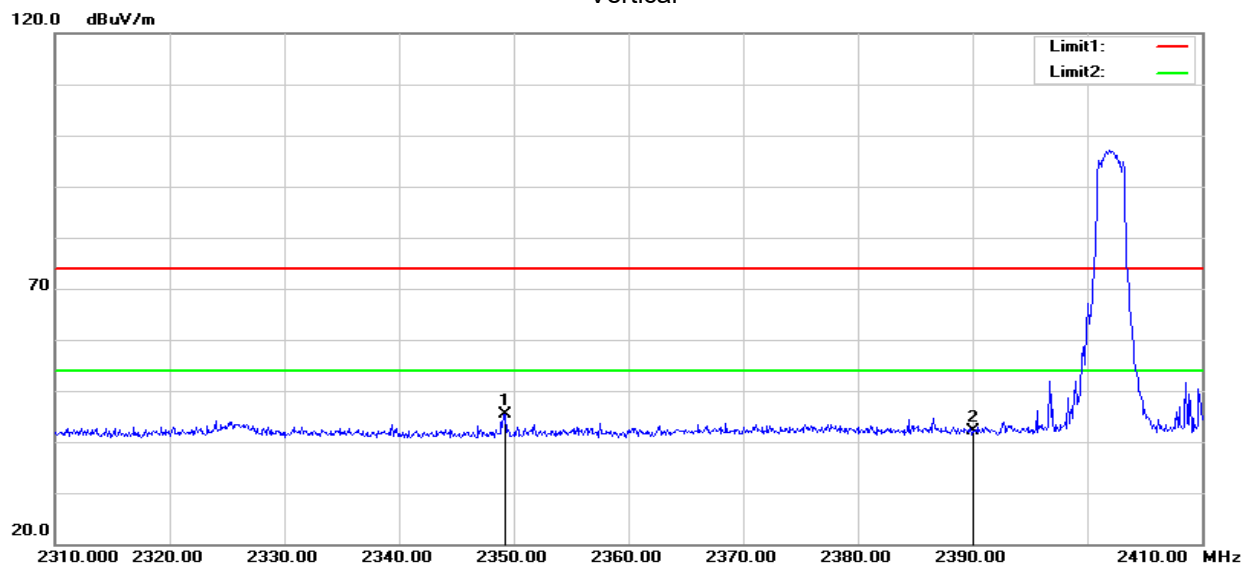
Appendix A.7: Test Results of Radiated Emissions in Restricted Bands

GFSK-Low
Horizontal



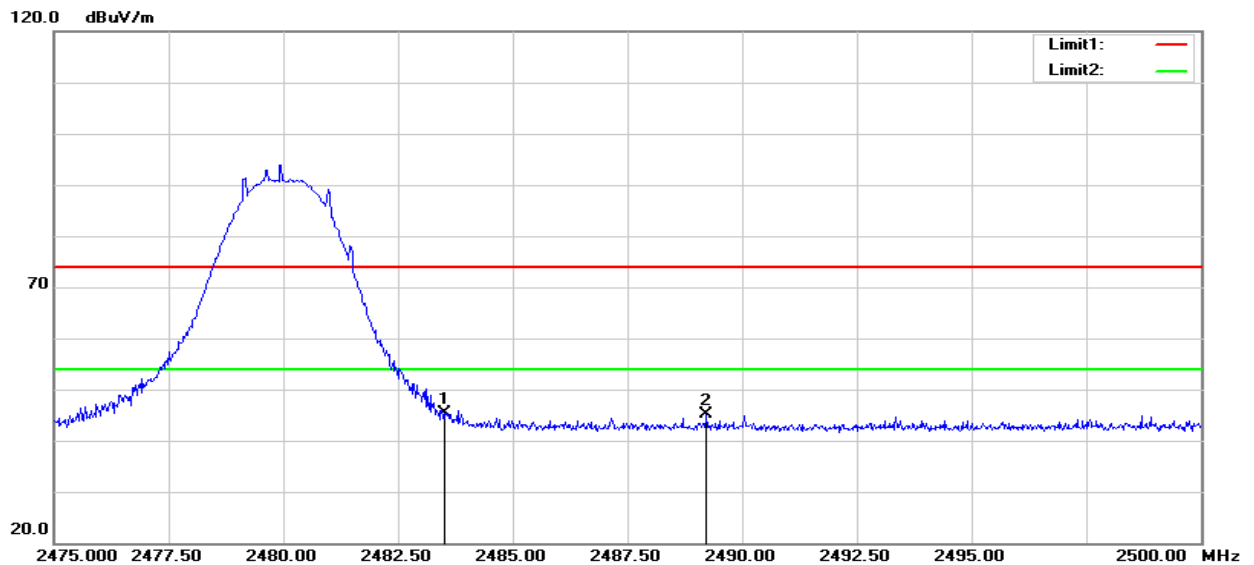
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2365.500	40.00	3.97	43.97	54.00	-10.03	peak
2	2390.000	38.05	4.34	42.39	54.00	-11.61	peak

Vertical



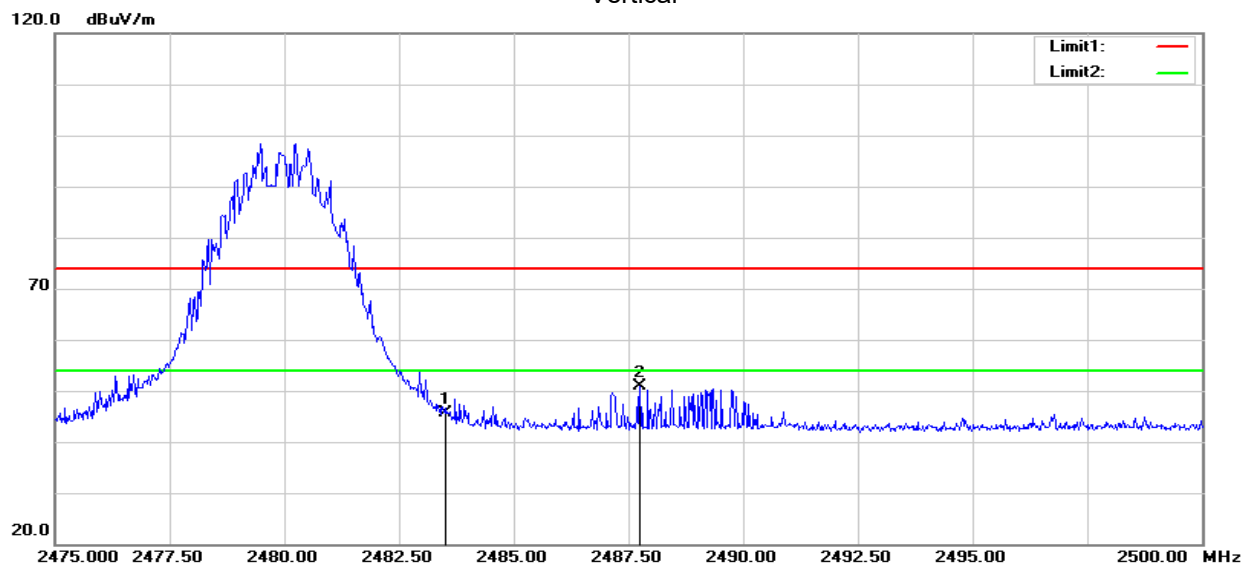
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2349.300	41.62	3.74	45.36	54.00	-8.64	peak
2	2390.000	37.90	4.34	42.24	54.00	-11.76	peak

GFSK-High
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	40.85	4.60	45.45	54.00	-8.55	peak
2	2489.225	40.48	4.62	45.10	54.00	-8.90	peak

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	41.15	4.60	45.75	54.00	-8.25	peak
2	2487.750	46.18	4.62	50.80	54.00	-3.20	peak

Appendix A.8: Test Results of Conducted Emission on AC Mains

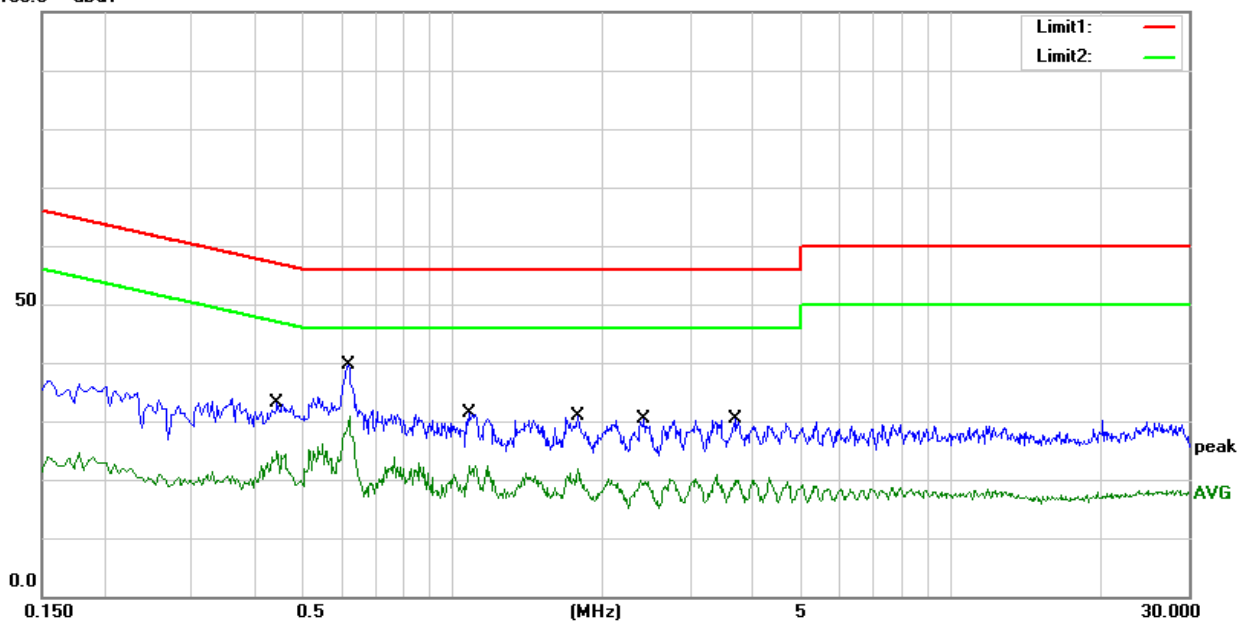
Temperature:	25.1°C	Relative Humidity:	59%
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode B		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4460	13.05	20.01	33.06	56.95	-23.89	QP
2	0.4460	4.97	20.01	24.98	46.95	-21.97	AVG
3	0.6180	19.66	19.90	39.56	56.00	-16.44	QP
4	0.6180	10.89	19.90	30.79	46.00	-15.21	AVG
5	1.0820	11.61	19.77	31.38	56.00	-24.62	QP
6	1.0820	2.64	19.77	22.41	46.00	-23.59	AVG
7	1.7820	11.02	19.78	30.80	56.00	-25.20	QP
8	1.7820	2.18	19.78	21.96	46.00	-24.04	AVG
9	2.4340	10.53	19.81	30.34	56.00	-25.66	QP
10	2.4340	0.20	19.81	20.01	46.00	-25.99	AVG
11	3.6820	10.42	19.83	30.25	56.00	-25.75	QP
12	3.6820	0.92	19.83	20.75	46.00	-25.25	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) - Limit
3. Factor = LISN factor + Cable loss + Limiter (10dB)

100.0 dBuV



Temperature:	25.1°C	Relative Humidity:	59%
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode B		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.3580	11.99	20.10	32.09	58.77	-26.68	QP
2	0.3580	0.07	20.10	20.17	48.77	-28.60	AVG
3	0.6180	20.13	19.90	40.03	56.00	-15.97	QP
4	0.6180	13.93	19.90	33.83	46.00	-12.17	AVG
5	1.0980	11.64	19.77	31.41	56.00	-24.59	QP
6	1.0980	3.84	19.77	23.61	46.00	-22.39	AVG
7	1.8020	11.15	19.78	30.93	56.00	-25.07	QP
8	1.8020	2.24	19.78	22.02	46.00	-23.98	AVG
9	2.7580	9.57	19.83	29.40	56.00	-26.60	QP
10	2.7580	1.15	19.83	20.98	46.00	-25.02	AVG
11	4.3100	10.05	19.83	29.88	56.00	-26.12	QP
12	4.3100	0.86	19.83	20.69	46.00	-25.31	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) – Limit
3. Factor = LISN factor + Cable loss + Limiter (10dB)

100.0 dBuV

