Website: www.cblueasia.com
Tel: +86-755-23059481
Email: marketing@cblueasia.com

Test Report

Applicant	:	SOUNDLAB TECHNOLOGY CO.,LTD
Address	:	Floor 6-7, 1-3, Building#2, No. 6-2, Shangxia Middle Road, Shangxia Area,Dongjiang Science Park, Zhongkai High-tech Zone, Huizhou
Product Name	:	Soundbar
Brand Mark	:	miroir
Model	:	SL3100
Series model	:	SL3100(37)
FCC ID	:	2ATKO-SL3100
Report Number	:	BLA-EMC-202502-A3601
Date of Receipt	:	Feb. 17, 2025
Date of Test	:	Feb. 17, 2025 to Feb. 20, 2025
Test Standard	:	47 CFR Part 15, Subpart C 15.247
Test Result	:	Pass

Compiled by: Mark Chen **Review by:** Sweely **Approved by:** Blue Zheng

Issued Date: Feb. 20, 2025

BlueAsia of Technical Services(Shenzhen) Co.,Ltd. BLA

BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

Address: Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China

Table of Contents

Revise Record

Version No.	Date	Description
01	Feb. 20, 2025	Original

1 General information

1.1 General information

Applicant	SOUNDLAB TECHNOLOGY CO.,LTD
Address	Floor 6-7, 1-3, Building#2, No. 6-2, Shangxia Middle Road, Shangxia Area,Dongjiang Science Park,Zhongkai High-tech Zone, Huizhou
Manufacturer	SOUNDLAB TECHNOLOGY CO.,LTD
Address	Floor 6-7, 1-3, Building#2, No. 6-2, Shangxia Middle Road, Shangxia Area,Dongjiang Science Park,Zhongkai High-tech Zone, Huizhou
Factory	SOUNDLAB TECHNOLOGY CO.,LTD
Address	Floor 6-7, 1-3, Building#2, No. 6-2, Shangxia Middle Road, Shangxia Area,Dongjiang Science Park,Zhongkai High-tech Zone, Huizhou

1.2 General description of EUT

Product Name	Soundbar	
Model No.	SL3100	
Series model	SL3100(37)	
Differences of Series model	The above-mentioned prototype is exactly the same in terms of appearance, PCB layout, internal structure and components, except for the difference in the agent for sales.	
Operation Frequency	2402MHz-2480MHz	
Modulation Type	GFSK, π/4DQPSK, 8DPSK	
Rate data	1Mbps, 2Mbps, 3Mbps	
Channel Spacing	1MHz	
Number of Channels	79	
Antenna Type	PCB antenna	
Antenna Gain	1.51dBi (Provided by customer)	
Power supply	Adapter	MODEL NO.: CW72E2402500SC INPUT: 100-240V, 50/60Hz 1.8A MAX OUTPUT: 24.0V, 2500mA
Test Voltage	AC 120V	

Hardware Version	N/A
Software Version	N/A
Note: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.	

2 Test summary

No.	Test item	FCC standard	Test Method(Clause)	Result
1	Antenna Requirement	§15.203	N/A	Pass
2	Conducted Emissions at AC Power Line (150kHz-30MHz)	§15.207	ANSI C63.10-2013 Clause 6.2	Pass
3	Conducted Peak Output Power	§ 15.247 (b)(1)	ANSI C63.10-2013 Clause 7.8.5	Pass
4	20dB Bandwidth	§ 15.247 (a)(1)	ANSI C63.10-2013 Clause 6.9.2	Pass
5	Conducted Band Edges Measurement	§ 15.247 (d)	ANSI C63.10-2013 Clause 7.8.6	Pass
6	Conducted Spurious Emissions	§ 15.247 (d)	ANSI C63.10-2013 Clause 7.8.8	Pass
7	Carrier Frequencies Separation	§ 15.247 (a)(1)	ANSI C63.10-2013 Clause 7.8.2	Pass
8	Hopping Channel Number	§ 15.247 (a)(1) (iii)	ANSI C63.10-2013 Clause 7.8.3	Pass
9	Dwell Time	§ 15.247 (a)(1) (iii)	ANSI C63.10-2013 Clause 7.8.4	Pass
10	Radiated Spurious Emissions	§ 15.247 (d) § 15209	ANSI C63.10-2013 Clause 6.4,6.5,6.6	Pass
11	Radiated Emissions which fall in the restricted bands	§ 15.247 (d) § 15.205	ANSI C63.10-2013 Clause 6.10.5	Pass

3 Test Configuration

3.1 Test mode

Test Mode Note 1	Description
TX	Keep the EUT in continuously transmitting mode with modulation. (hopping and non-hopping mode all have been tested)
RX	Keep the EUT in receiving mode
TX Low channel	Keep the EUT in continuously transmitting mode in low channel
TX middle channel	Keep the EUT in continuously transmitting mode in middle channel
TX high channel	Keep the EUT in continuously transmitting mode in high channel

Note 1: The EUT was configured to measure its highest possible emission and/or immunity level. The test modes were adapted according to the operation manual for use; the EUT was operated in the engineering mode Note 2 to fix the TX or Rx frequency that was for the purpose of the measurements.

Note 2: Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

Power level setup in software			
Test Software Name	BT FCC Tool		
Mode	Channel	Frequency (MHz)	Soft Set
TX	CH00	2402	TX level : Default
	CH39	2441	
	CH78	2480	

3.2 Operation Frequency each of channel

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz

5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
6	2408MHz	26	2428MHz	46	2448MHz	66	2468MHz
7	2409MHz	27	2429MHz	47	2449MHz	67	2469MHz
8	2410MHz	28	2430MHz	48	2450MHz	68	2470MHz
9	2411MHz	29	2431MHz	49	2451MHz	69	2471MHz
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
12	2414MHz	32	2434MHz	52	2454MHz	72	2474MHz
13	2415MHz	33	2435MHz	53	2455MHz	73	2475MHz
14	2416MHz	34	2436MHz	54	2456MHz	74	2476MHz
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz	--	

3.3 Test channel

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

3.4 Auxiliary equipment

Device Type	Manufacturer	Model Name	Serial No.	Remark
PC	Lenovo	E460C	N/A	From lab (No.BLA-ZC-BS-2022005)
Note: "--" mean no any auxiliary device during testing.				

3.5 Test environment

Environment	Temperature	Voltage
Normal	25°C	AC 120V

4 Laboratory information

4.1 Laboratory and accreditations

The test facility is recognized, certified, or accredited by the following organizations:

Company name:	BlueAsia of Technical Services(Shenzhen) Co., Ltd.
Address:	Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China
CNAS accredited No.:	L9788
A2LA Cert. No.:	5071.01
FCC Designation No.:	CN1252
ISED CAB identifier No.:	CN0028
Telephone:	+86-755-28682673
FAX:	+86-755-28682673

4.2 Measurement uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

Parameter	Expanded Uncertainty
Radiated Emission(9kHz-30MHz)	±4.34dB
Radiated Emission(30Mz-1000MHz)	±4.24dB
Radiated Emission(1GHz-18GHz)	±4.68dB
AC Power Line Conducted Emission(150kHz-30MHz)	±3.45dB
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3.0 dB
Unwanted Emissions, conducted	±3.0 dB
Temperature	±3 °C
Supply voltages	±3 %
Time	±5 %

5 Test equipment

Radiated Spurious Emissions (Below 1GHz)

Equipment	Name	Model	Manufacture	S/N	Cal. Date	Due. Date
BLA-EMC-002-01	Anechoic chamber	9*6*6 chamber	SKET	N/A	2024/3/27	2027/3/26
BLA-EMC-002-02	Control room	966 control room	SKET	N/A	2024/3/27	2027/3/26
BLA-EMC-009	EMI receiver	ESR7	R&S	101199	2024/08/08	2025/08/07
BLA-EMC-043	Loop antenna	FMZB1519B	Schwarzbeck	00102	2024/06/29	2026/06/28
BLA-EMC-065	Broadband antenna	VULB9168	Schwarzbeck	01065P	2024/06/29	2026/06/27
BLA-XC-01	Coaxial Cable	N/A	BlueAsia	V01	N/A	N/A
BLA-XC-02	Coaxial Cable	N/A	BlueAsia	V02	N/A	N/A

Radiated Spurious Emissions (Above 1GHz)

Equipment	Name	Model	Manufacture	S/N	Cal. Date	Due. Date
BLA-EMC-001-01	Anechoic chamber	9*6*6 chamber	SKET	N/A	2023/11/16	2026/11/15
BLA-EMC-001-02	Control Room	966 control room	SKET	N/A	2023/11/16	2025/11/15
BLA-EMC-008	Spectrum	FSP40	R&S	100817	2024/08/08	2025/08/07
BLA-EMC-012	Broadband antenna	VULB9168	Schwarzbeck	00836 P:00227	2022/10/12	2025/10/11
BLA-EMC-013	Horn Antenna	BBHA9120D	Schwarzbeck	01892	2024/06/29	2026/06/28
BLA-EMC-014	Amplifier	PA_000318G-45	SKET	PA2018043003	2024/08/08	2025/08/07
BLA-EMC-046	Filter bank	2.4G/5G Filter bank	SKET	N/A	2024/06/28	2025/06/27
BLA-EMC-061	Receiver	ESPI7	R&S	101477	2024/06/28	2025/06/27
BLA-EMC-066	Amplifier	LNPA_30M01G-30	SKET	SK2021060801	2024/06/28	2025/06/27
BLA-EMC-086	Amplifier	LNPA_18G40G-50dB	SKET	SK2022071301	2024/06/28	2025/06/27
BLA-EMC-087	Horn Antenna	BBHA 9170	Schwarzbeck	1106	2024/06/29	2026/06/28
BLA-XC-03	Coaxial Cable	N/A	BlueAsia	V03	N/A	N/A

BLA-XC-04	Coaxial Cable	N/A	BlueAsia	V04	N/A	N/A

RF conducted

Equipment	Name	Model	Manufacture	S/N	Cal. Date	Due. Date
BLA-EMC-003-003	Shield room	5*3*3	SKET	N/A	2023/11/16	2025/11/15
BLA-EMC-016	Signal Generator	N5182A	Agilent	MY52420567	2024/06/28	2025/06/27
BLA-EMC-038	Spectrum	N9020A	Agilent	MY49100060	2024/08/08	2025/08/07
BLA-EMC-042	Power sensor	RPR3006W	DARE	14I00889SN042	2024/08/08	2025/08/07
BLA-EMC-044	Radio communication tester	CMW500	R&S	132429	2024/08/08	2025/08/07
BLA-EMC-064	Signal Generator	N5182B	KEYSIGHT	MY58108892	2024/06/28	2025/06/27
BLA-EMC-079	Spectrum	N9020A	Agilent	MY54420161	2024/08/08	2025/08/07
BLA-EMC-088	Audio Analyzer	ATS-1	Audio Precision	ATS141094	2024/06/28	2025/06/27

Conducted Emissions

Equipment	Name	Model	Manufacture	S/N	Cal. Date	Due. Date
BLA-EMC-003-001	Shield room	8*3*3	SKET	N/A	2023/11/16	2025/11/15
BLA-EMC-009	EMI receiver	ESR7	R&S	101199	2024/08/08	2025/08/07
BLA-EMC-011	LISN	ENV216	R&S	101372	2024/08/08	2025/08/07
BLA-EMC-033	Impedance transformer	DC-2GHz	DFXP	N/A	2024/06/28	2025/06/27
BLA-EMC-041	LISN	AT166-2	ATTEN	AKK1806000003	2024/08/08	2025/08/07
BLA-EMC-045	Impedance stable network	ISNT8-cat6	TESEQ	53580	2024/08/08	2025/08/07
BLA-EMC-095	Single-channel vehicle artificial power network	NNBM 8124	Schwarzbeck	01045	2024/06/28	2025/06/27
BLA-EMC-096	Single-channel vehicle artificial	NNBM 8124	Schwarzbeck	01075	2024/06/28	2025/06/27

	power network					
BLA-XC-05	Coaxial Cable	N/A	BlueAsia	V05	N/A	N/A

Test Software Record：

Software No.	Software Name	Manufacture	Software version	Test site
BLA-EMC-S001	EZ-EMC	EZ	EEMC-3A1+	RE
BLA-EMC-S002	EZ-EMC	EZ	EEMC-3A1+	RE
BLA-EMC-S003	EZ-EMC	EZ	EEMC-3A1+	CE
BLA-EMC-S010	MTS 8310	MW	2.0.0.0	RF

6 Test result

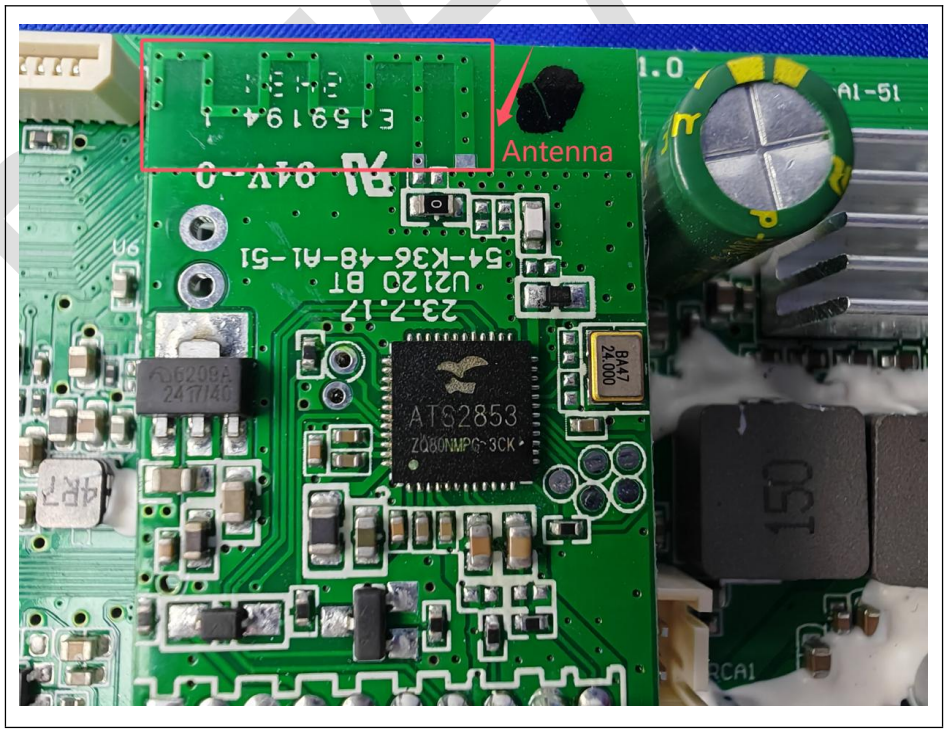
6.1 Antenna requirement

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	N/A

6.1.1 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 an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of a so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT antenna:
The antenna is PCB antenna. The best case gain of the antenna is 1.51dBi.



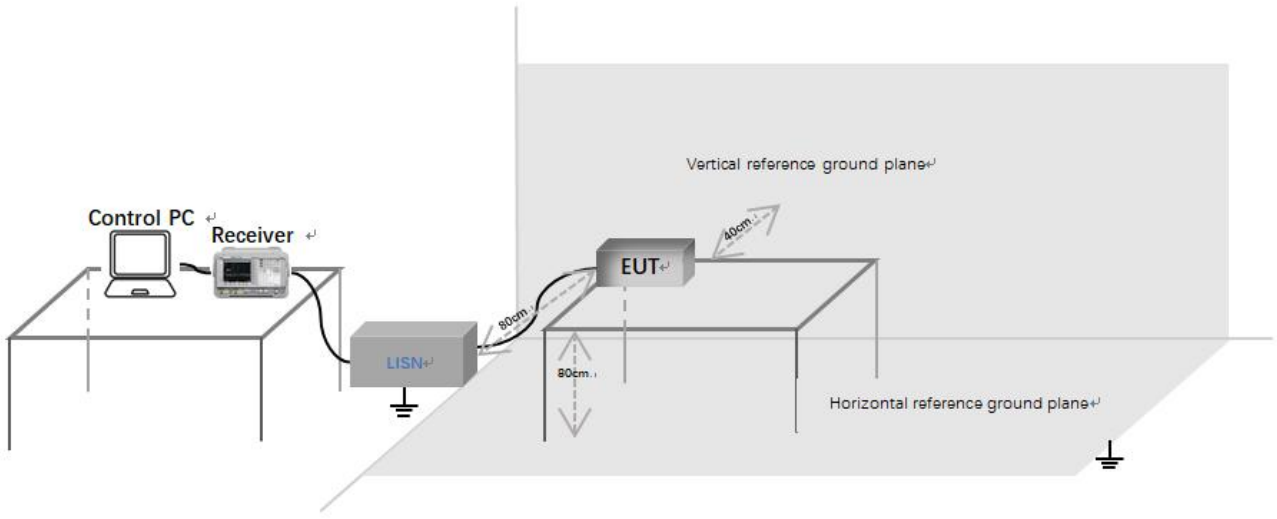
6.2 Conducted emissions at AC power line (150 kHz-30 MHz)

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.2.1 Limit

Frequency of emission(MHz)	**Conducted limit(dBμV)**	
	Quasi-peak	**Average**
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		

6.2.2 Test setup



Description of test setup connection:

a) Connect the control PC to the receiver through a USB to GPIB cable;

b) The receiver is connected to the LISN through a coaxial line;

c) Connect the power port of LISN to the EUT.

6.2.3 Procedure

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50H + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

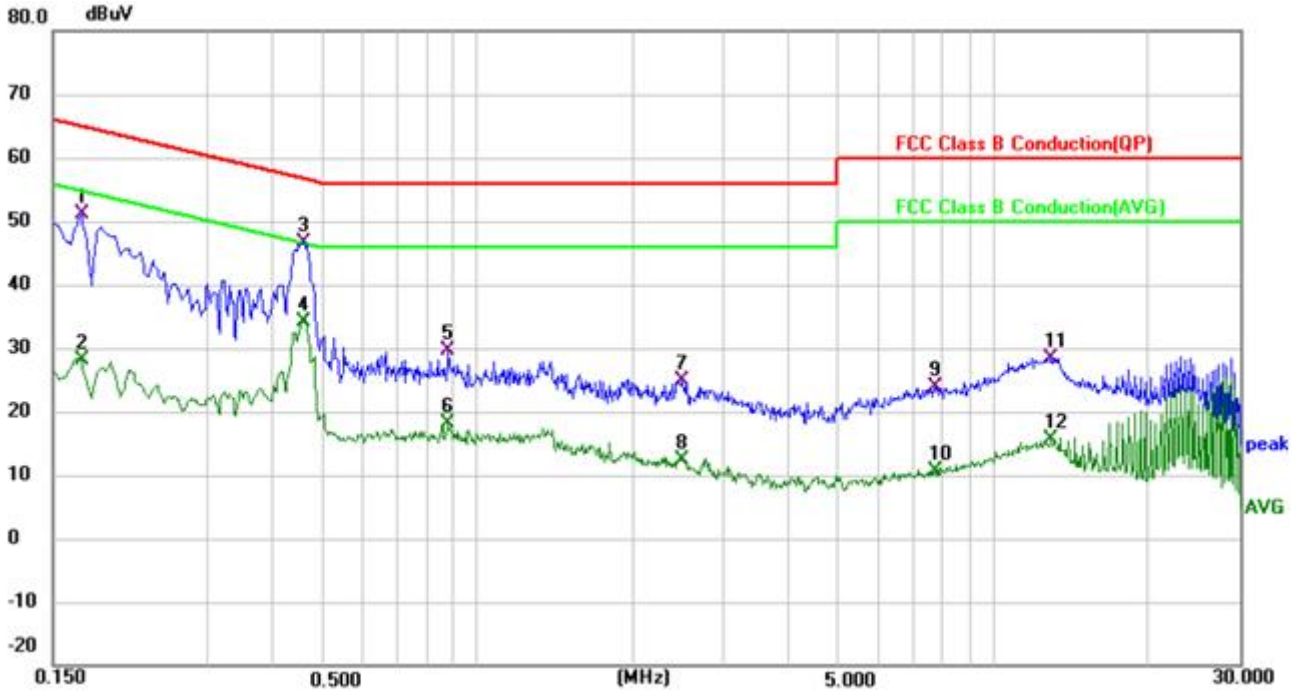
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

LISN=Read Level+ Cable Loss+ LISN Factor

6.2.4 Test data

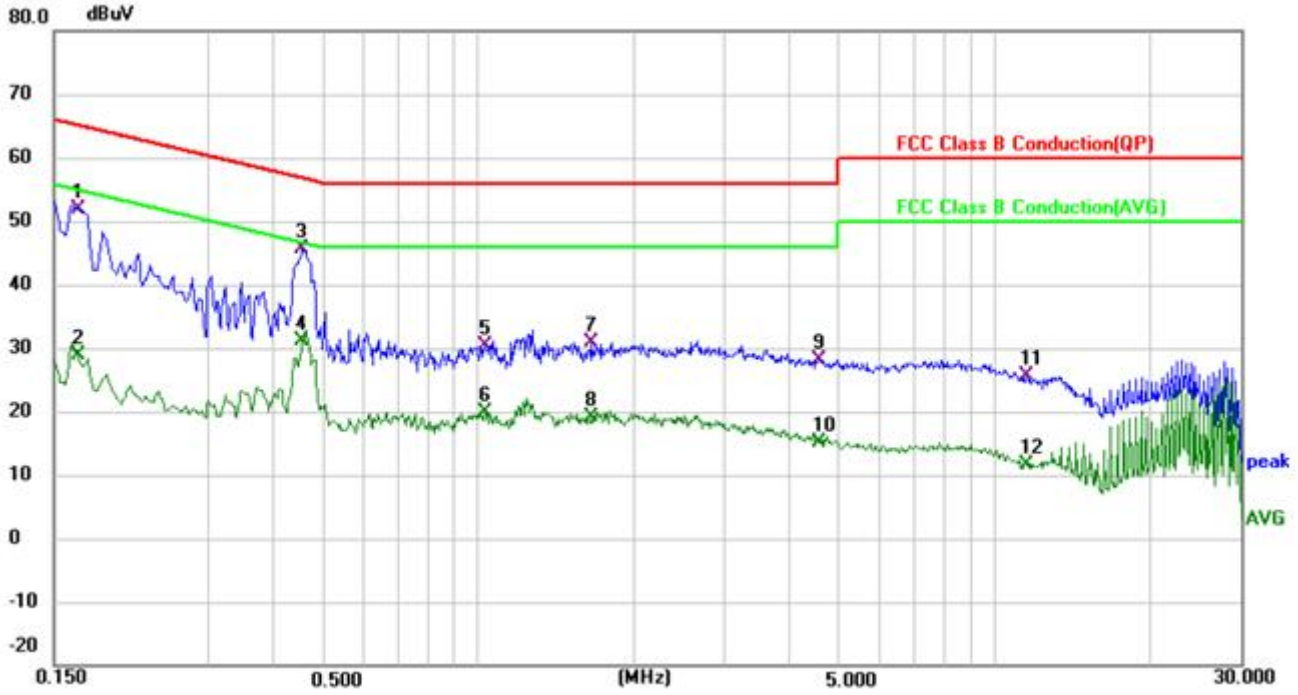
[Test Mode: TX]; [Line: Line];[Voltage:120V/60Hz]



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1700	40.82	10.19	51.01	64.96	-13.95	QP
2		0.1700	17.83	10.19	28.02	54.96	-26.94	AVG
3	*	0.4580	36.82	9.84	46.66	56.73	-10.07	QP
4		0.4580	24.40	9.84	34.24	46.73	-12.49	AVG
5		0.8780	19.83	9.68	29.51	56.00	-26.49	QP
6		0.8780	8.47	9.68	18.15	46.00	-27.85	AVG
7		2.4900	15.00	9.98	24.98	56.00	-31.02	QP
8		2.4900	2.48	9.98	12.46	46.00	-33.54	AVG
9		7.6940	13.51	10.34	23.85	60.00	-36.15	QP
10		7.6940	0.31	10.34	10.65	50.00	-39.35	AVG
11		12.9420	30.01	-1.58	28.43	60.00	-31.57	QP
12		12.9420	17.32	-1.58	15.74	50.00	-34.26	AVG

Test Result: Pass

[Test Mode: TX]; [Line: Neutral] ;[Voltage:120V/60Hz]



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1660	41.72	10.19	51.91	65.16	-13.25	QP
2		0.1660	18.77	10.19	28.96	55.16	-26.20	AVG
3	*	0.4540	35.83	9.79	45.62	56.80	-11.18	QP
4		0.4540	21.22	9.79	31.01	46.80	-15.79	AVG
5		1.0300	20.60	9.72	30.32	56.00	-25.68	QP
6		1.0300	10.17	9.72	19.89	46.00	-26.11	AVG
7		1.6580	21.21	9.79	31.00	56.00	-25.00	QP
8		1.6580	9.26	9.79	19.05	46.00	-26.95	AVG
9		4.5580	18.15	10.09	28.24	56.00	-27.76	QP
10		4.5580	5.09	10.09	15.18	46.00	-30.82	AVG
11		11.5340	26.24	-0.50	25.74	60.00	-34.26	QP
12		11.5340	12.16	-0.50	11.66	50.00	-38.34	AVG

Test Result: Pass

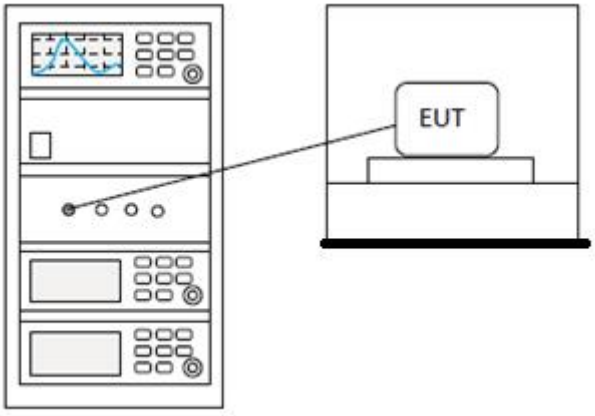
6.3 Conducted peak output Power

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.5
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.3.1 Limit

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥50 hopping channels
	0.25 for 25≤ hopping channels <50
	1 for digital modulation
2400-2483.5	1 for ≥75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

6.3.2 Test setup



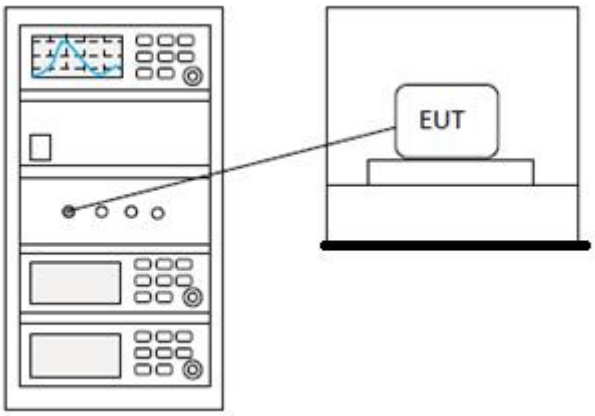
6.3.3 Test data

Pass: Please refer to appendix A for details

6.4 20dB Bandwidth

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.7
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.4.1 Test setup



6.4.2 Test data

Pass: Please refer to appendix A for details

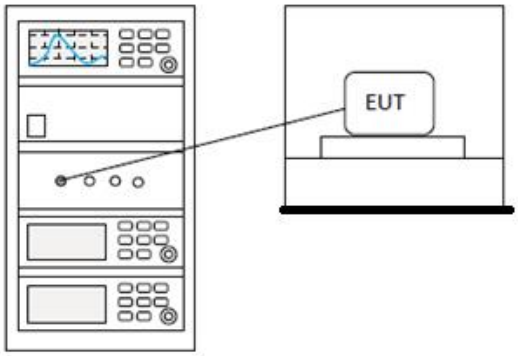
6.5 Conducted Band Edges Measurement

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.5.1 Limit

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.
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)).

6.5.2 Test setup



6.5.3 Test data

Pass: Please refer to appendix A for details

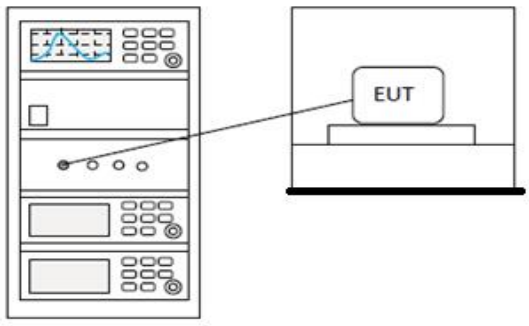
6.6 Conducted spurious emissions

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.6.1 Limit

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.
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)).

6.6.2 Test setup



6.6.3 Test data

Pass: Please refer to appendix A for details

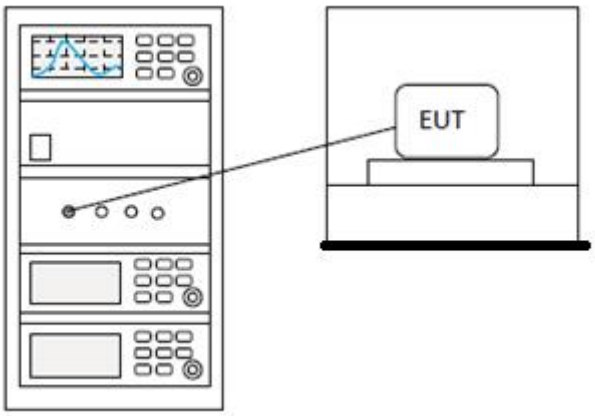
6.7 Carrier Frequencies Separation

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.7.1 Limit

2/3 of the 20dB bandwidth base on the transmission power is less than 0.125W

6.7.2 Test setup



6.7.3 Test data

Pass: Please refer to appendix A for details

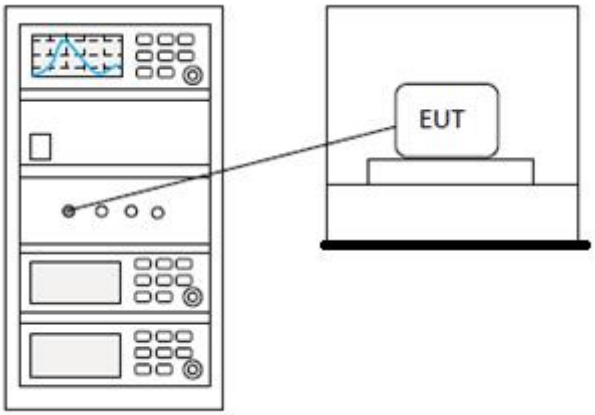
6.8 Hopping Channel Number

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.3
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.8.1 Limit

Frequency range(MHz)	Number of hopping channels (minimum)
902-928	50 for 20dB bandwidth <250kHz
	25 for 20dB bandwidth ≥250kHz
2400-2483.5	15
5725-5850	75

6.8.2 Test setup



6.8.3 Test data

Pass: Please refer to appendix A for details

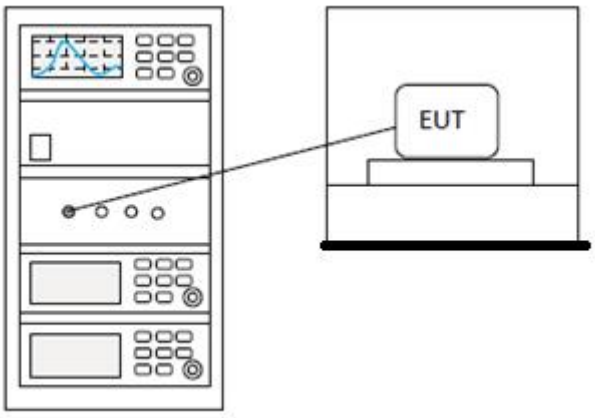
6.9 Dwell Time

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.4
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.9.1 Limit

Frequency(MHz)	Limit
902-928	0.4s within a 20s period(20dB bandwidth<250kHz)
	0.4s within a 10s period(20dB bandwidth≥250kHz)
2400-2483.5	0.4s within a period of 0.4s multiplied by the number of hopping channels
5725-5850	0.4s within a 30s period

6.9.2 Test setup



6.9.3 Test data

Pass: Please refer to appendix A for details

6.10 Radiated spurious emissions

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.4,6.5,6.6
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

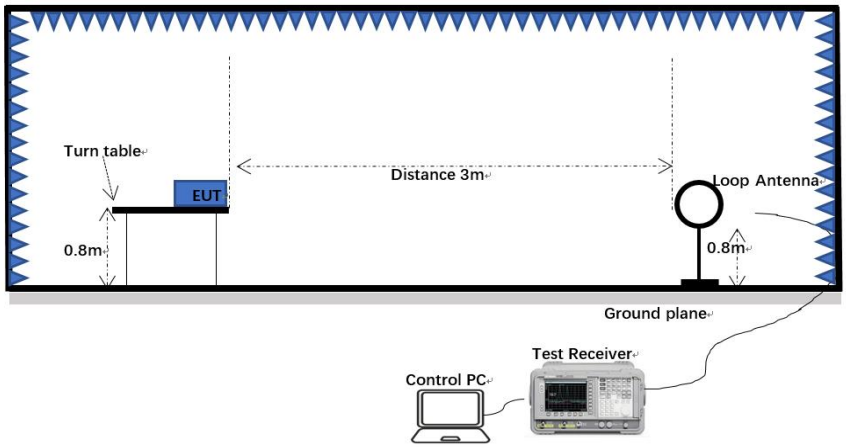
6.10.1 Limit

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

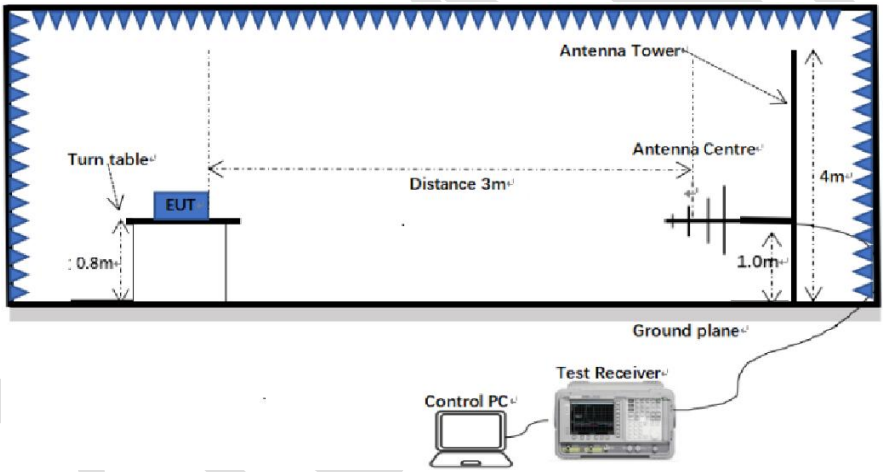
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

6.10.2 Test setup

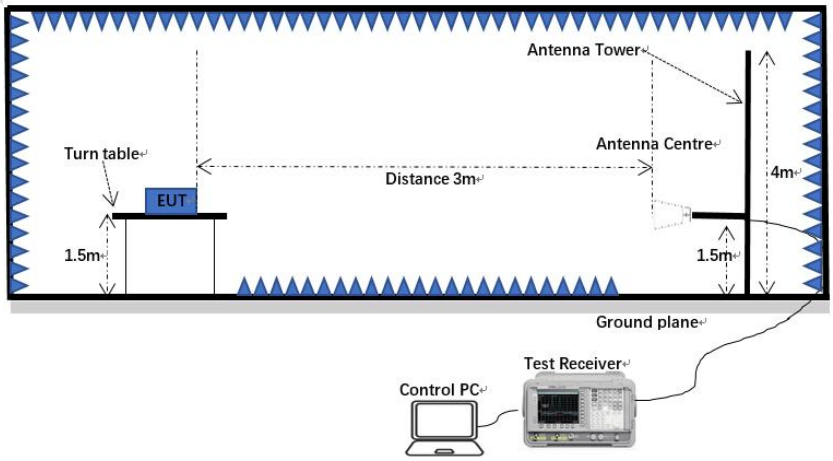
Below 1GHz：



30MHz-1GHz：



Above 1GHz：



6.10.3 Procedure

a) For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b) For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c) The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h) Test the EUT in the lowest channel, the middle channel, the highest channel.

i) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j) Repeat above procedures until all frequencies measured was complete.

Note 1: Scan from 9 kHz to 25GHz, the disturbance above 12.75GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. Fundamental frequency is blocked by filter, and only spurious emission is shown.

Note 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Note 3: The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Level (dBuV) = Reading (dBuV) + Factor (dB/m)

6.10.4 Test data

Below 1GHz

Remark: During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes, only the worst case lowest channel for DH5 was recorded in the report.

[Test mode: TX]; [Polarity: Horizontal]

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	37.5479	-0.73	19.10	18.37	40.00	-21.63	QP
2 *	86.5027	21.08	15.57	36.65	40.00	-3.35	QP
3	181.2834	12.49	17.94	30.43	43.50	-13.07	QP
4	331.3546	14.94	21.44	36.38	46.00	-9.62	QP
5	492.4685	2.84	25.12	27.96	46.00	-18.04	QP
6	938.8326	1.22	31.05	32.27	46.00	-13.73	QP

Test Result: Pass

[Test mode: TX]; [Polarity: Vertical]

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	39.5757	3.21	19.30	22.51	40.00	-17.49	QP
2	60.0691	3.31	18.58	21.89	40.00	-18.11	QP
3 *	96.7749	22.79	15.58	38.37	43.50	-5.13	QP
4	143.8295	7.40	20.12	27.52	43.50	-15.98	QP
5	336.0352	12.97	21.50	34.47	46.00	-11.53	QP
6	729.3583	0.98	29.00	29.98	46.00	-16.02	QP

Test Result: Pass

Above 1GHz:

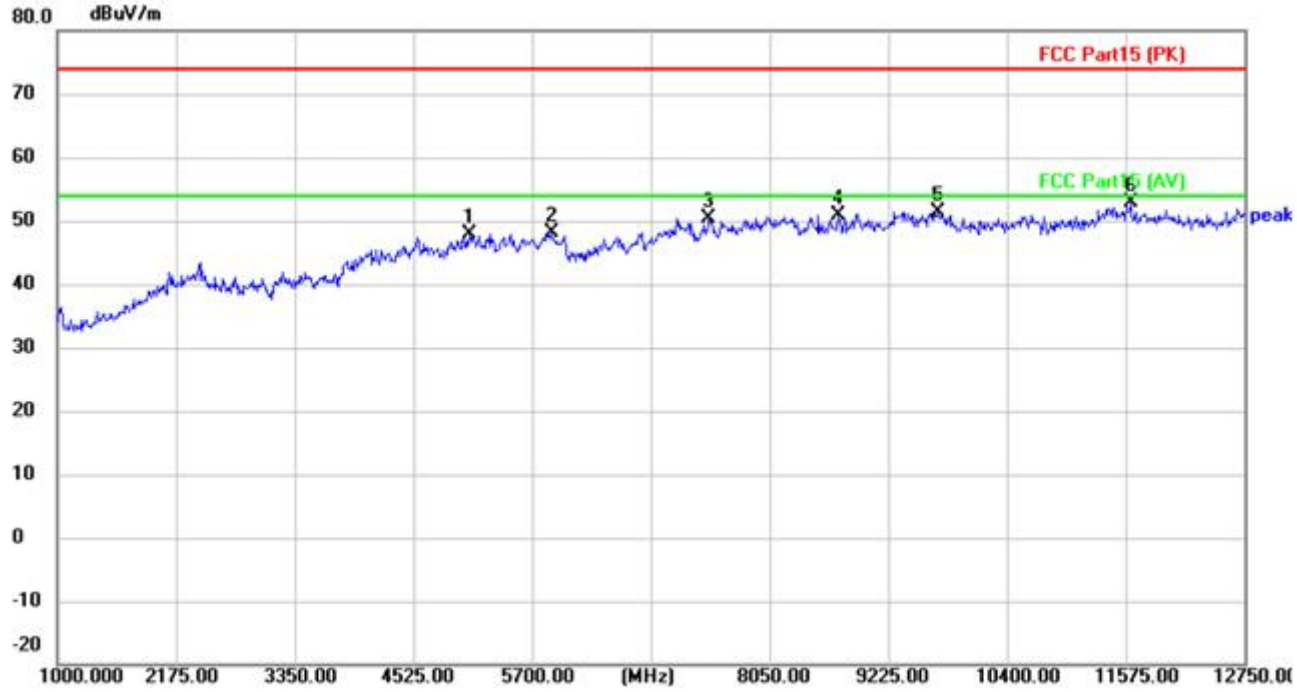
Remark: During the test, the Radiates Emission from above 1GHz was performed in all modes, only the worst case for DH5 was recorded in the report.

[Test mode: TX low channel]; [Polarity: Horizontal]

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		5018.500	38.98	8.09	47.07	74.00	-26.93	peak
2		6322.750	38.99	7.40	46.39	74.00	-27.61	peak
3		8790.250	37.74	12.20	49.94	74.00	-24.06	peak
4		9730.250	37.30	13.70	51.00	74.00	-23.00	peak
5	*	11069.75	38.26	13.18	51.44	74.00	-22.56	peak
6		11998.00	36.61	14.26	50.87	74.00	-23.13	peak

Test Result: Pass

[Test mode: TX low channel]; [Polarity: Vertical]



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		5077.250	39.38	8.38	47.76	74.00	-26.24	peak
2		5899.750	39.09	9.10	48.19	74.00	-25.81	peak
3		7450.750	39.06	11.21	50.27	74.00	-23.73	peak
4		8731.500	39.10	11.80	50.90	74.00	-23.10	peak
5		9718.500	37.74	13.63	51.37	74.00	-22.63	peak
6	*	11622.00	38.49	14.48	52.97	74.00	-21.03	peak

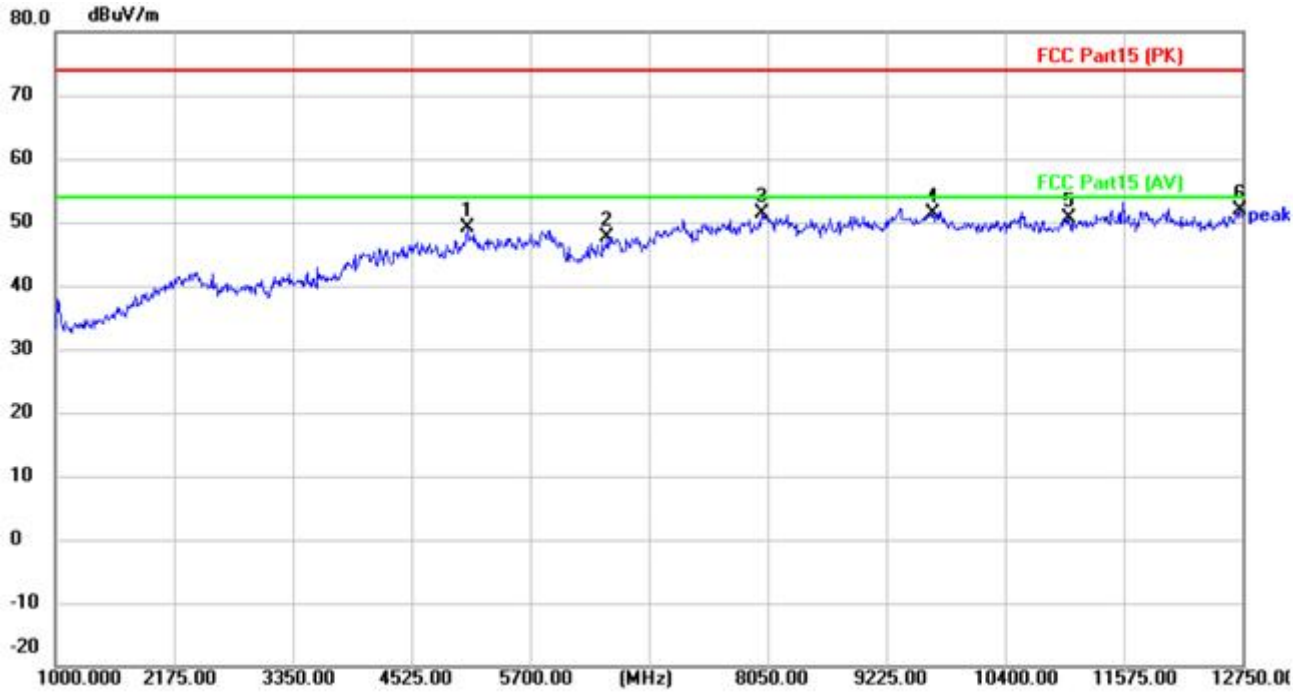
Test Result: Pass

[Test mode: TX middle channel]; [Polarity: Horizontal]

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4583.750	41.21	6.20	47.41	74.00	-26.59	peak
2		5946.750	39.27	9.03	48.30	74.00	-25.70	peak
3		7615.250	39.06	10.59	49.65	74.00	-24.35	peak
4		8719.750	37.99	11.79	49.78	74.00	-24.22	peak
5		10012.25	37.62	13.23	50.85	74.00	-23.15	peak
6	*	11363.50	37.72	13.87	51.59	74.00	-22.41	peak

Test Result: Pass

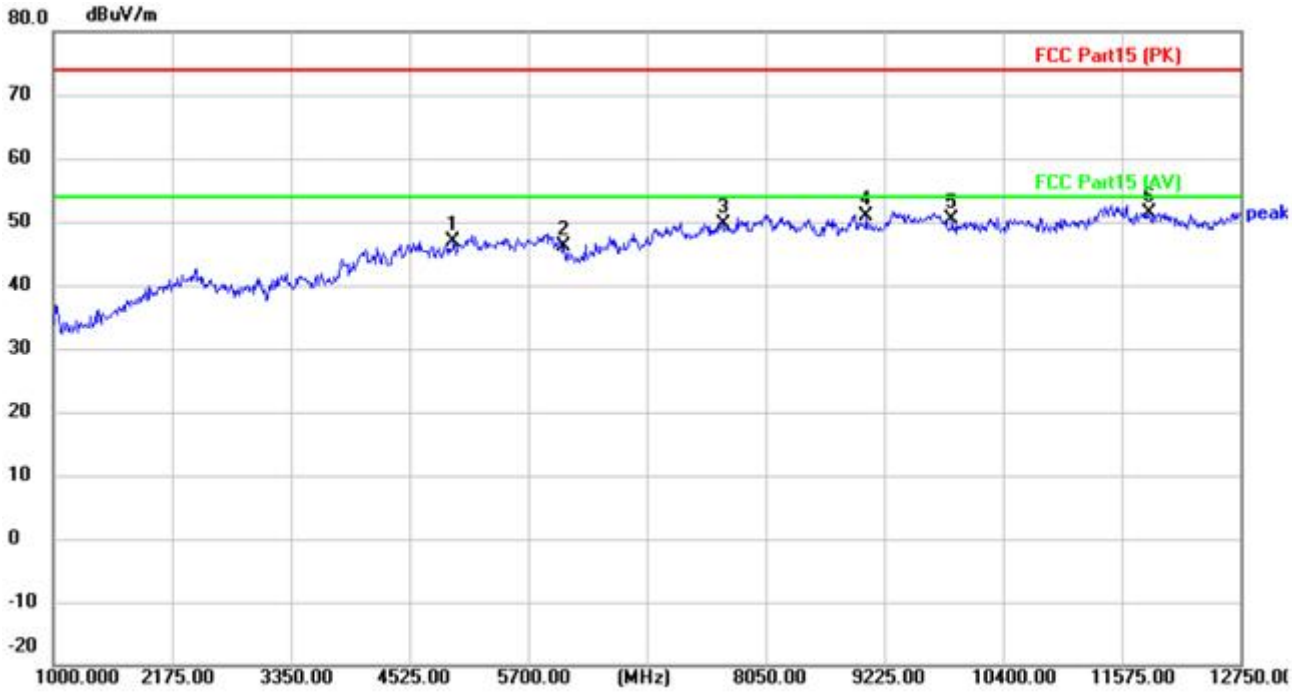
[Test mode: TX middle channel]; [Polarity: Vertical]



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		5077.250	40.63	8.38	49.01	74.00	-24.99	peak
2		6463.750	39.48	8.15	47.63	74.00	-26.37	peak
3		7991.250	39.87	11.55	51.42	74.00	-22.58	peak
4		9683.250	37.78	13.52	51.30	74.00	-22.70	peak
5		11034.50	37.58	13.07	50.65	74.00	-23.35	peak
6	*	12726.50	37.89	13.90	51.79	74.00	-22.21	peak

Test Result: Pass

[Test mode: TX High channel]; [Polarity: Horizontal]



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4959.750	39.46	7.41	46.87	74.00	-27.13	peak
2		6052.500	39.94	6.26	46.20	74.00	-27.80	peak
3		7627.000	39.22	10.53	49.75	74.00	-24.25	peak
4		9048.750	39.10	11.80	50.90	74.00	-23.10	peak
5		9894.750	37.30	13.15	50.45	74.00	-23.55	peak
6	*	11845.25	37.98	13.52	51.50	74.00	-22.50	peak

Test Result: Pass

[Test mode: TX High channel]; [Polarity: Vertical]

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4654.250	39.50	5.97	45.47	74.00	-28.53	peak
2		5876.250	38.85	8.99	47.84	74.00	-26.16	peak
3		7215.750	38.31	10.42	48.73	74.00	-25.27	peak
4		8226.250	39.03	11.34	50.37	74.00	-23.63	peak
5	*	9683.250	37.50	13.52	51.02	74.00	-22.98	peak
6		12468.00	37.74	12.85	50.59	74.00	-23.41	peak

Test Result: Pass

6.11 Radiated emissions which fall in the restricted bands

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.10.5
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

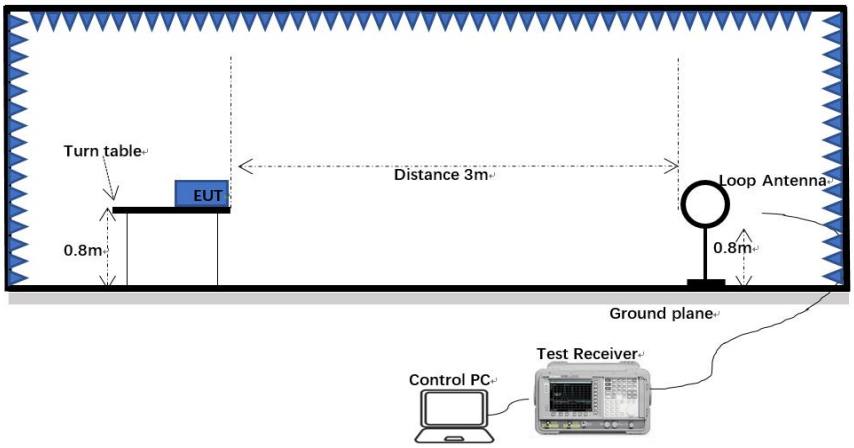
6.11.1 Limit

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

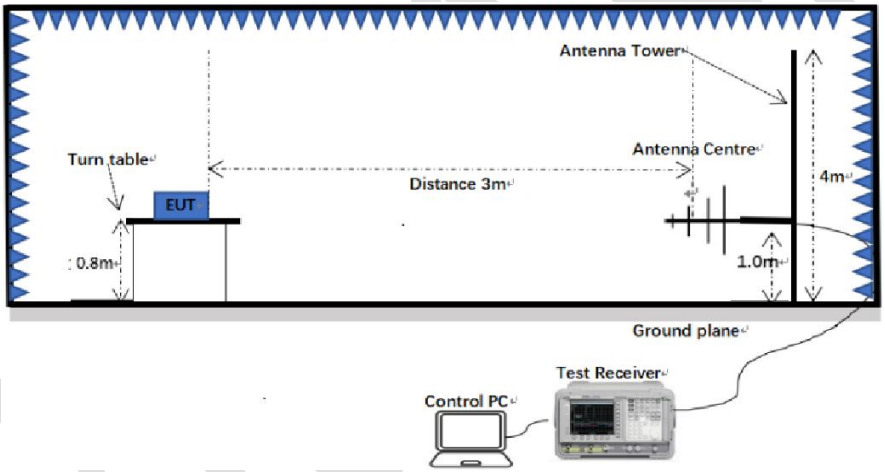
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

6.11.2 Test setup

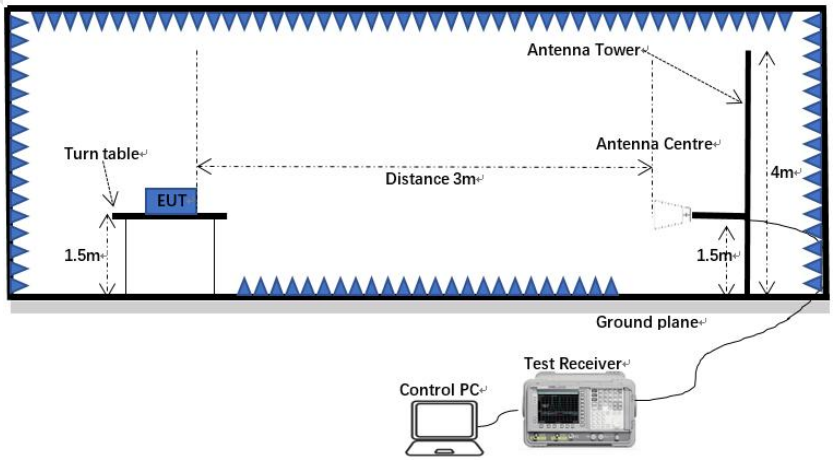
Below 1GHz：



30MHz-1GHz：



Above 1GHz：



6.11.3 Procedure

a) For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b) For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c) The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h) Test the EUT in the lowest channel, the middle channel, the highest channel.

i) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

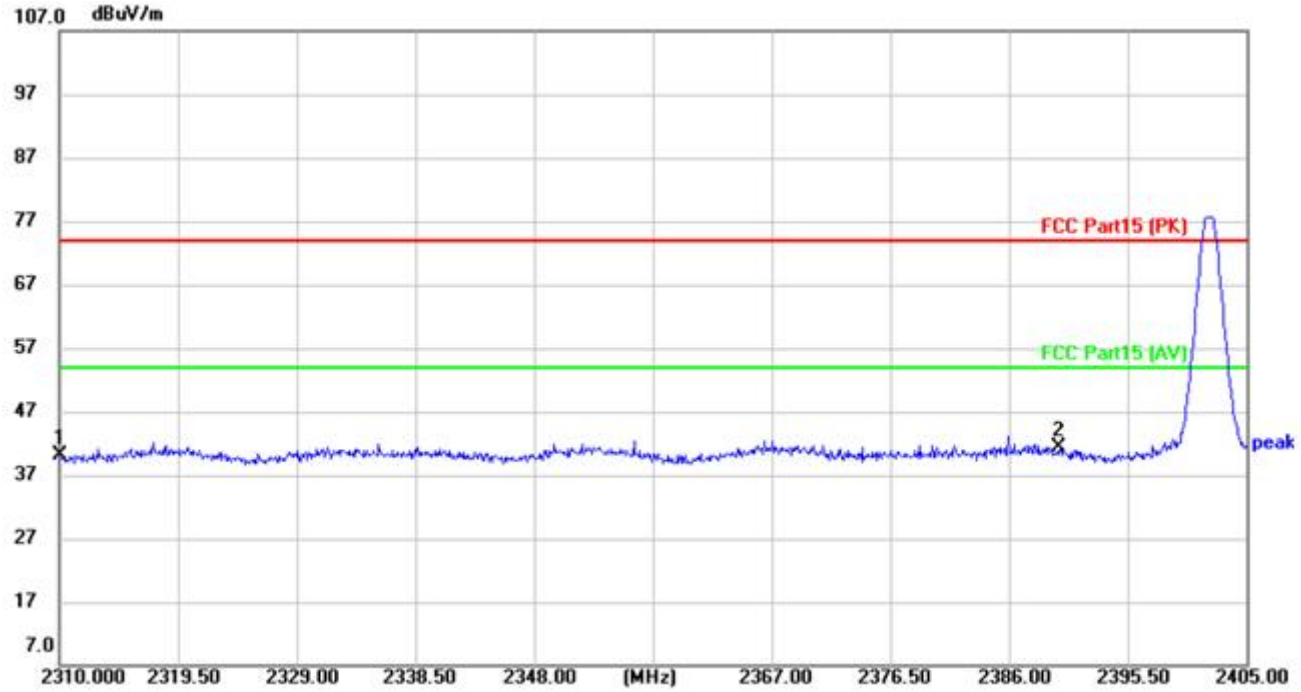
j) Repeat above procedures until all frequencies measured was complete.

Note 1: Level (dBuV) = Reading (dBuV) + Factor (dB/m)
Note 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

6.11.4 Test data

Remark: During the test, the Radiates Emission restricted bands from above 1GHz was performed in all modes, only the worst case for DH5 was recorded in the report.

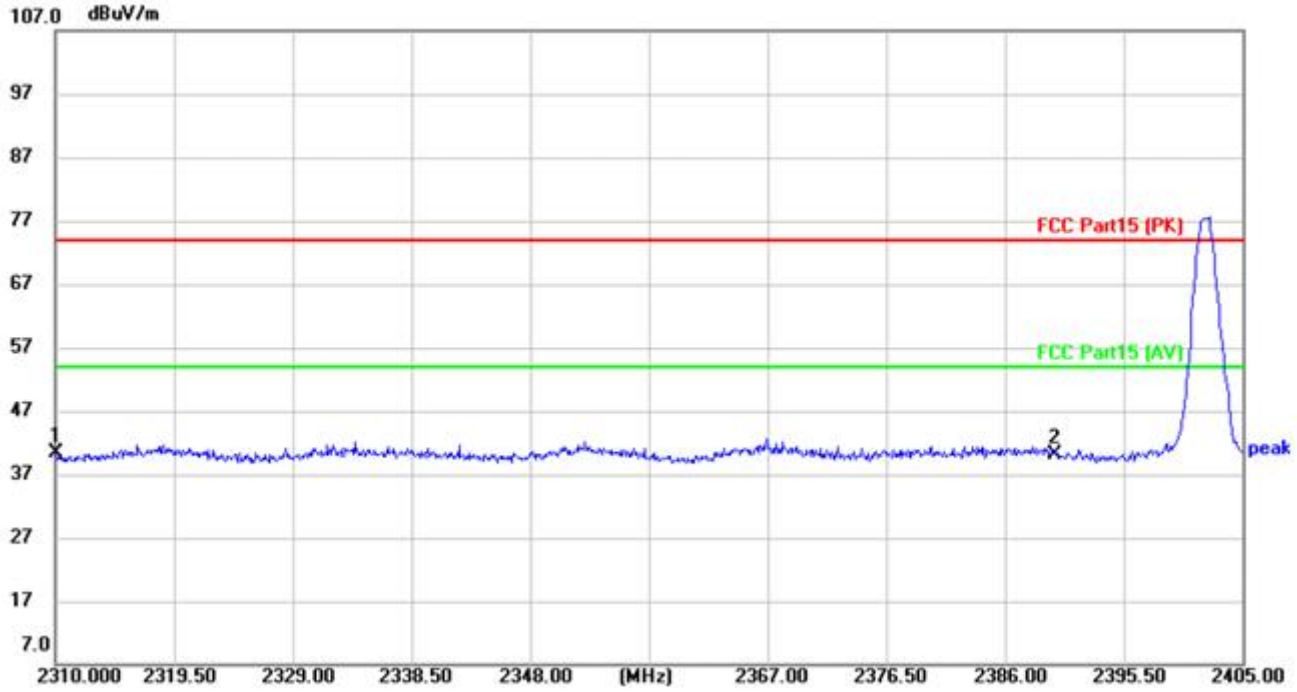
[Test mode: TX low channel]; [Polarity: Horizontal]



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		2310.000	42.96	-2.87	40.09	74.00	-33.91	peak
2	*	2390.000	43.71	-2.44	41.27	74.00	-32.73	peak

Test Result: Pass

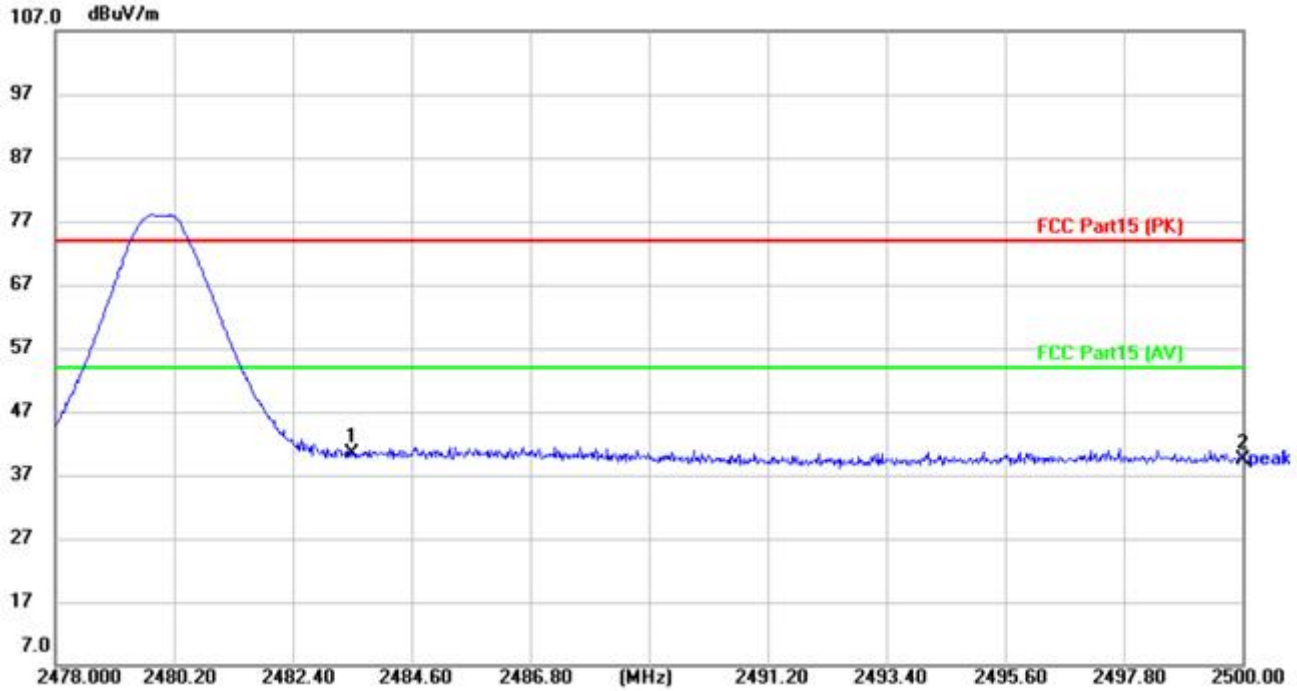
[Test mode:TX low channel]; [Polarity: Vertical]



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	2310.000	43.31	-2.87	40.44	74.00	-33.56	peak
2		2390.000	42.57	-2.44	40.13	74.00	-33.87	peak

Test Result: Pass

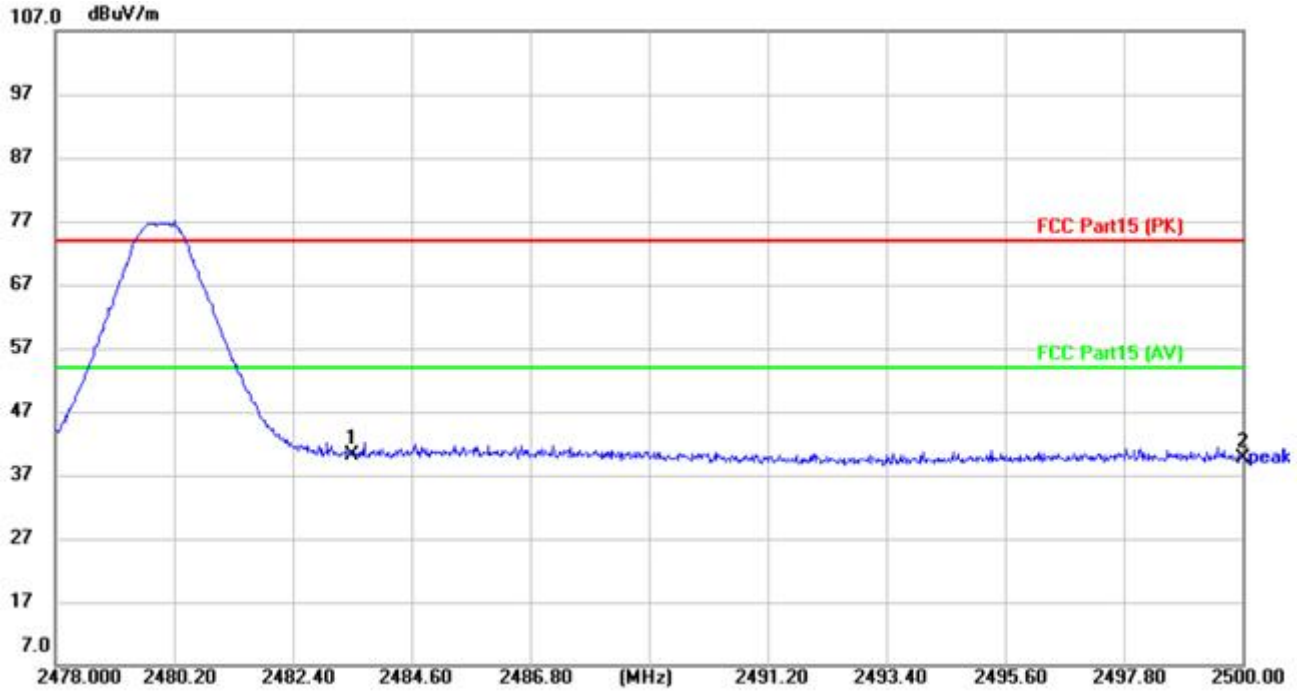
[Test mode: TX High channel]; [Polarity: Horizontal]



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	2483.500	43.27	-2.91	40.36	74.00	-33.64	peak
2		2500.000	42.39	-3.00	39.39	74.00	-34.61	peak

Test Result: Pass

[Test mode:TX High channel]; [Polarity: Vertical]



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	2483.500	43.13	-2.91	40.22	74.00	-33.78	peak
2		2500.000	42.51	-3.00	39.51	74.00	-34.49	peak

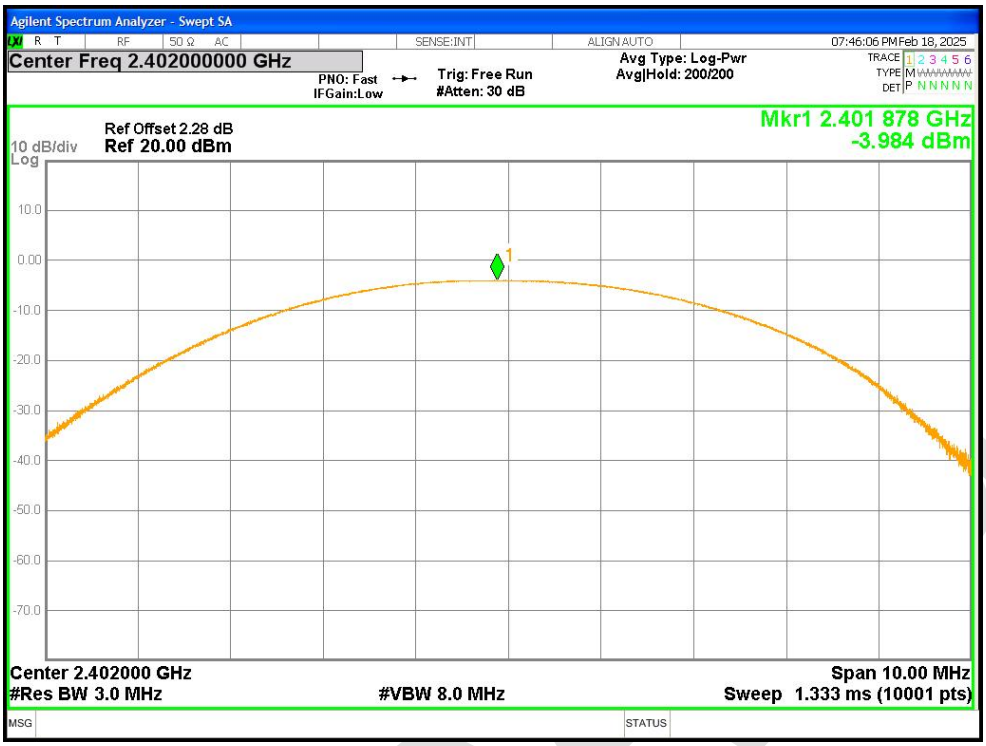
Test Result: Pass

7 Appendix A

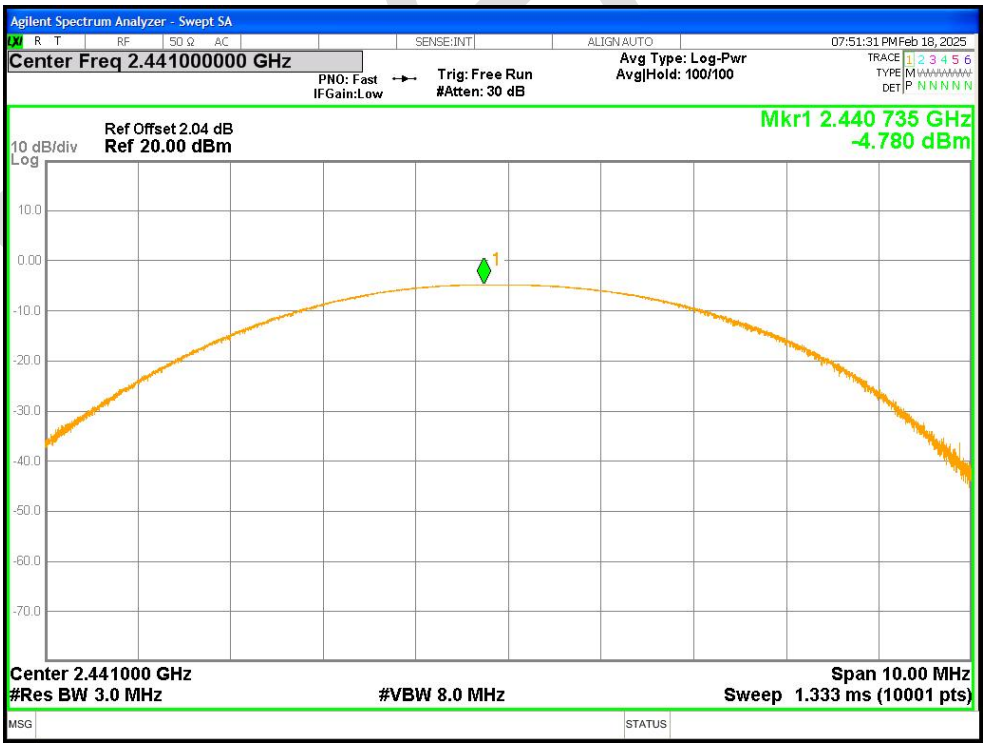
7.1 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	-3.984	21	Pass
NVNT	1-DH1	2441	Ant1	-4.78	21	Pass
NVNT	1-DH1	2480	Ant1	-4.14	21	Pass
NVNT	2-DH1	2402	Ant1	-3.864	21	Pass
NVNT	2-DH1	2441	Ant1	-4.619	21	Pass
NVNT	2-DH1	2480	Ant1	-3.951	21	Pass
NVNT	3-DH1	2402	Ant1	-3.779	21	Pass
NVNT	3-DH1	2441	Ant1	-4.495	21	Pass
NVNT	3-DH1	2480	Ant1	-3.877	21	Pass

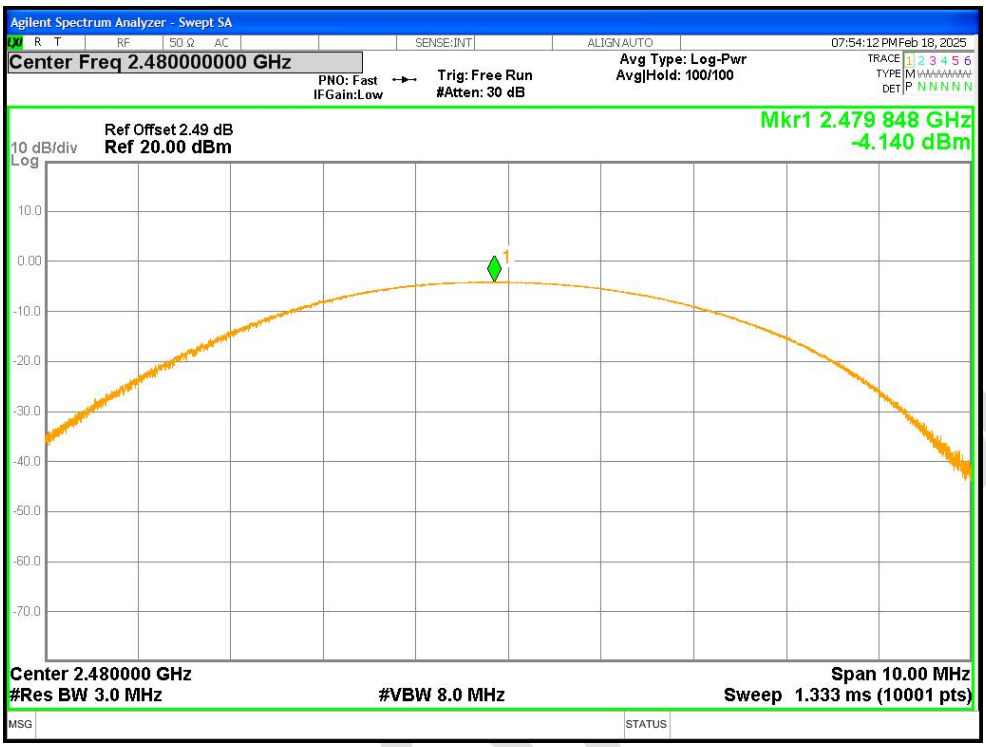
Power NVNT 1-DH1 2402MHz Ant1



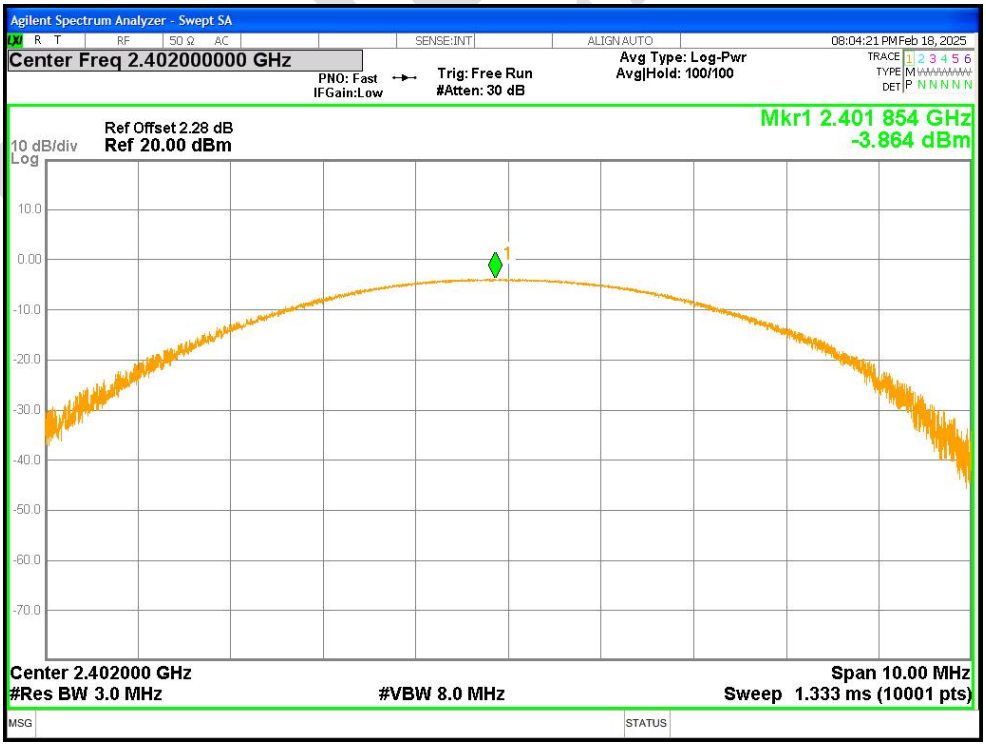
Power NVNT 1-DH1 2441MHz Ant1



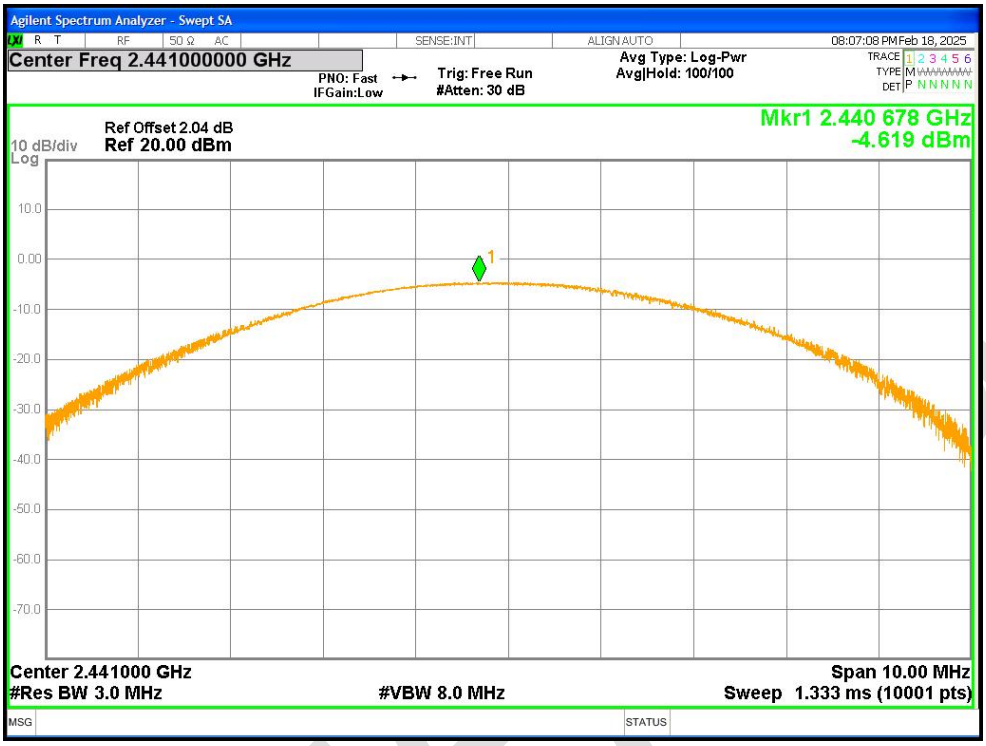
Power NVNT 1-DH1 2480MHz Ant1



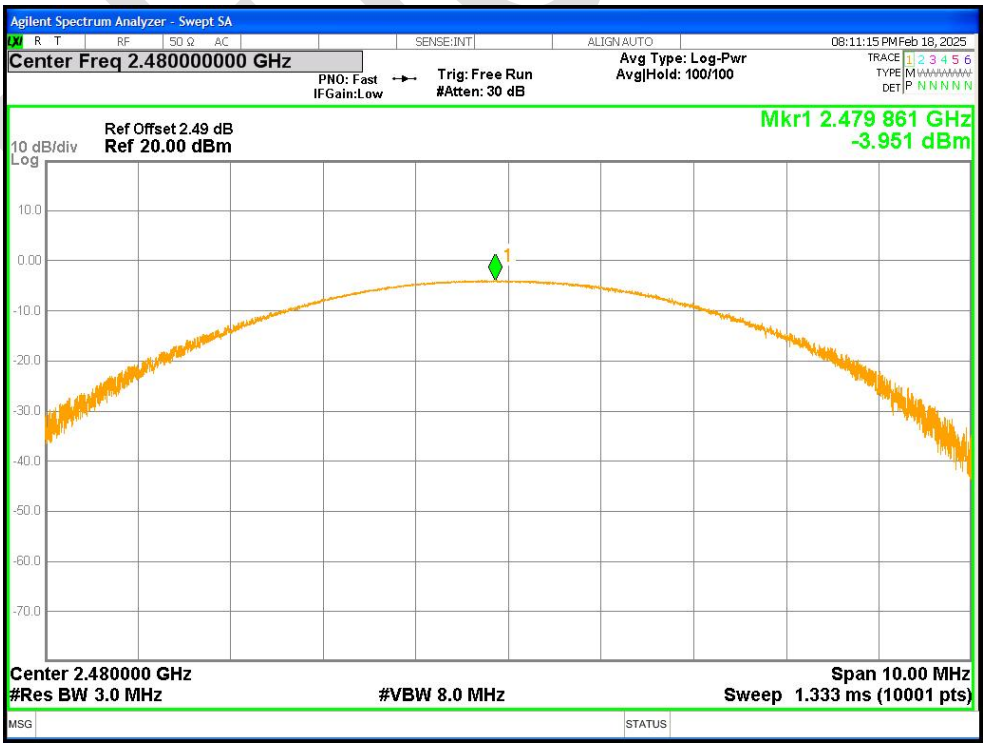
Power NVNT 2-DH1 2402MHz Ant1



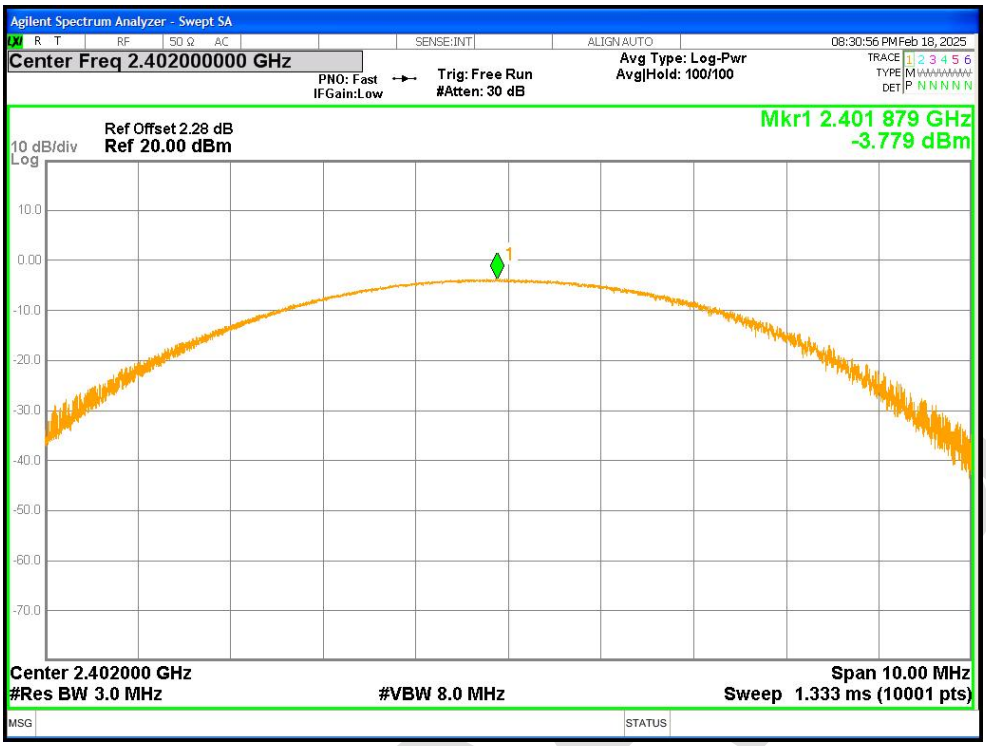
Power NVNT 2-DH1 2441MHz Ant1



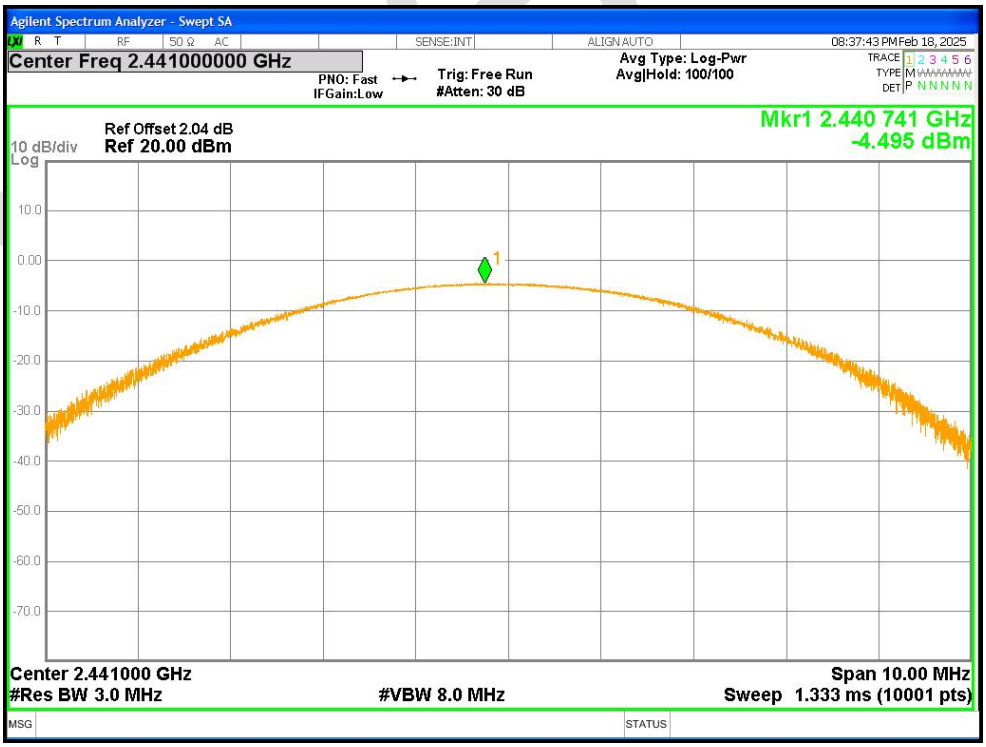
Power NVNT 2-DH1 2480MHz Ant1



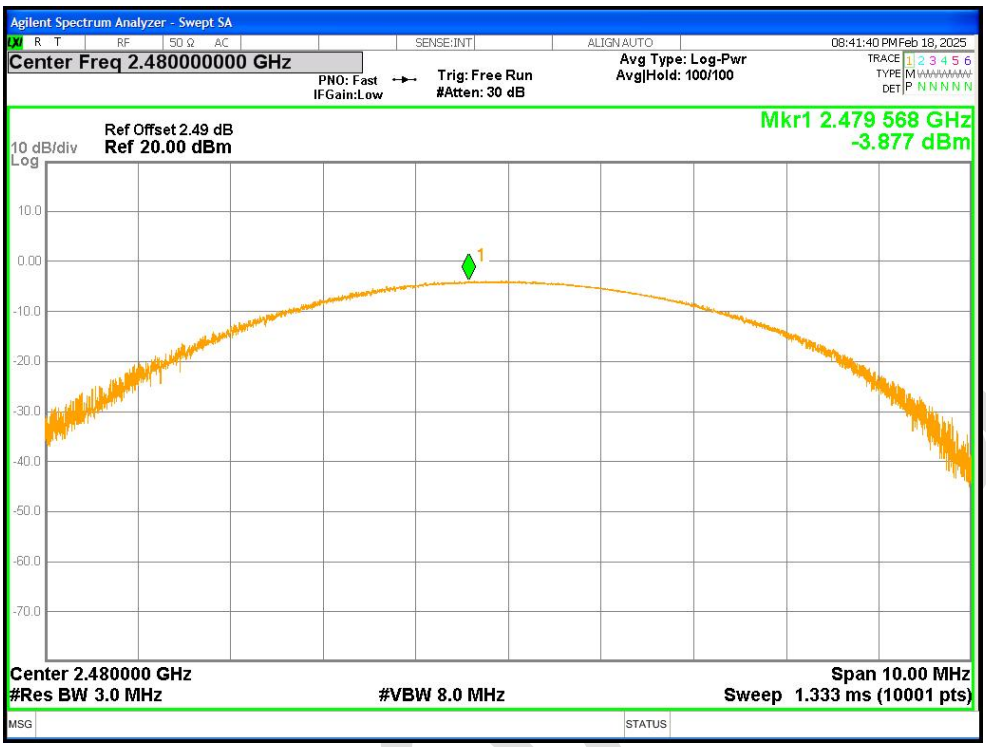
Power NVNT 3-DH1 2402MHz Ant1



Power NVNT 3-DH1 2441MHz Ant1



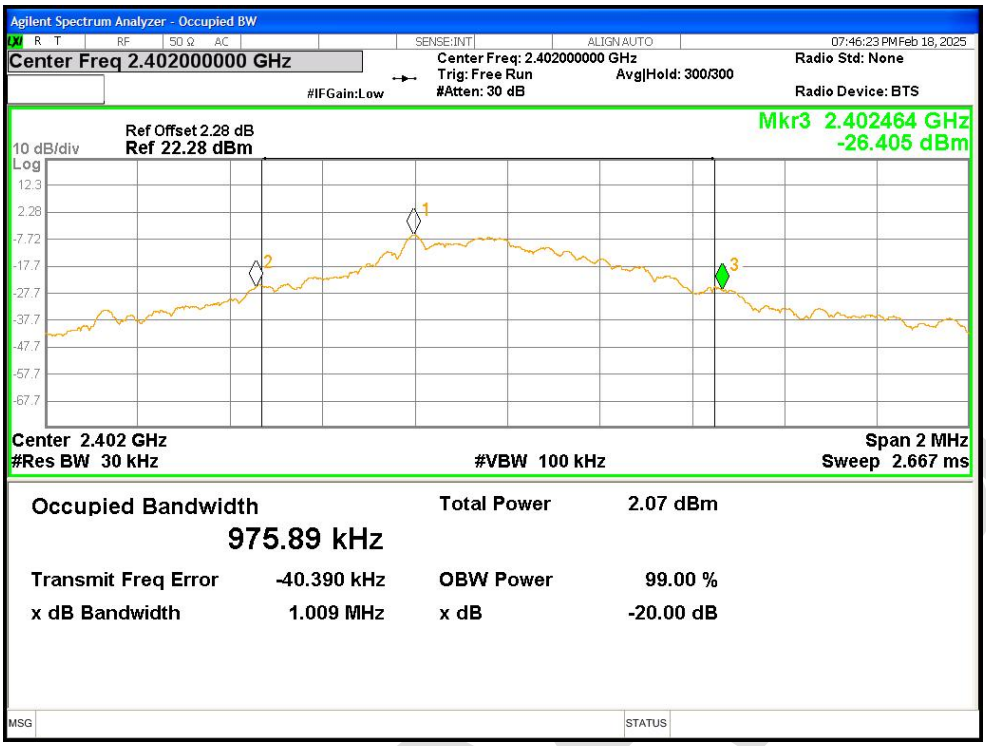
Power NVNT 3-DH1 2480MHz Ant1



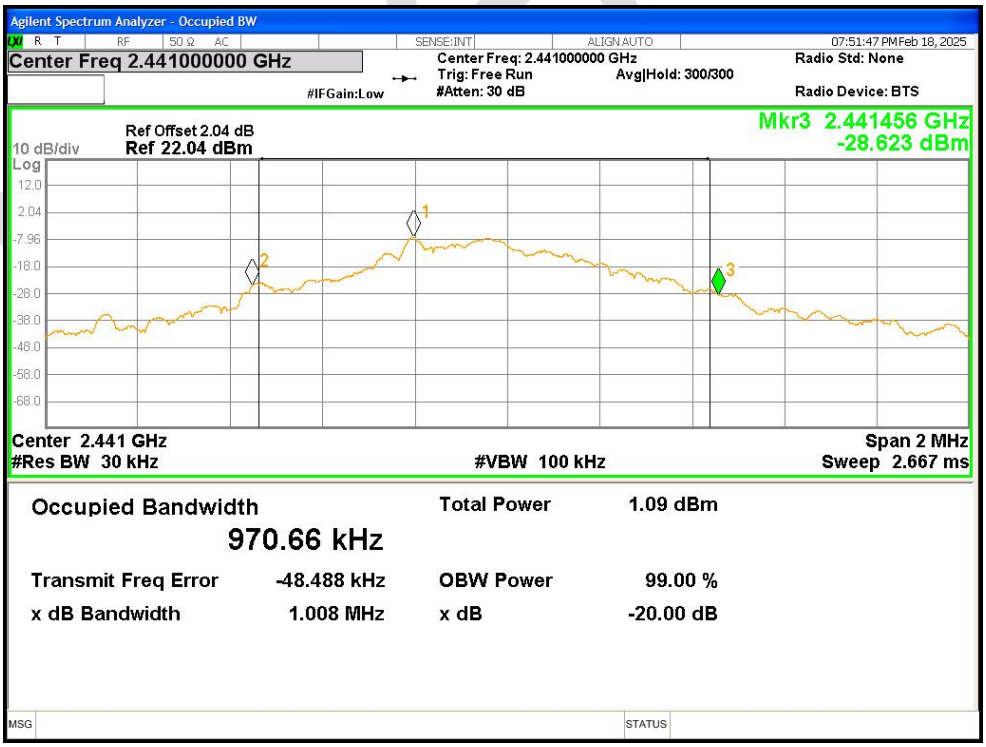
7.2 -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	Ant1	1.009	N/A	Pass
NVNT	1-DH1	2441	Ant1	1.008	N/A	Pass
NVNT	1-DH1	2480	Ant1	1.016	N/A	Pass
NVNT	2-DH1	2402	Ant1	1.285	N/A	Pass
NVNT	2-DH1	2441	Ant1	1.287	N/A	Pass
NVNT	2-DH1	2480	Ant1	1.324	N/A	Pass
NVNT	3-DH1	2402	Ant1	1.246	N/A	Pass
NVNT	3-DH1	2441	Ant1	1.253	N/A	Pass
NVNT	3-DH1	2480	Ant1	1.246	N/A	Pass

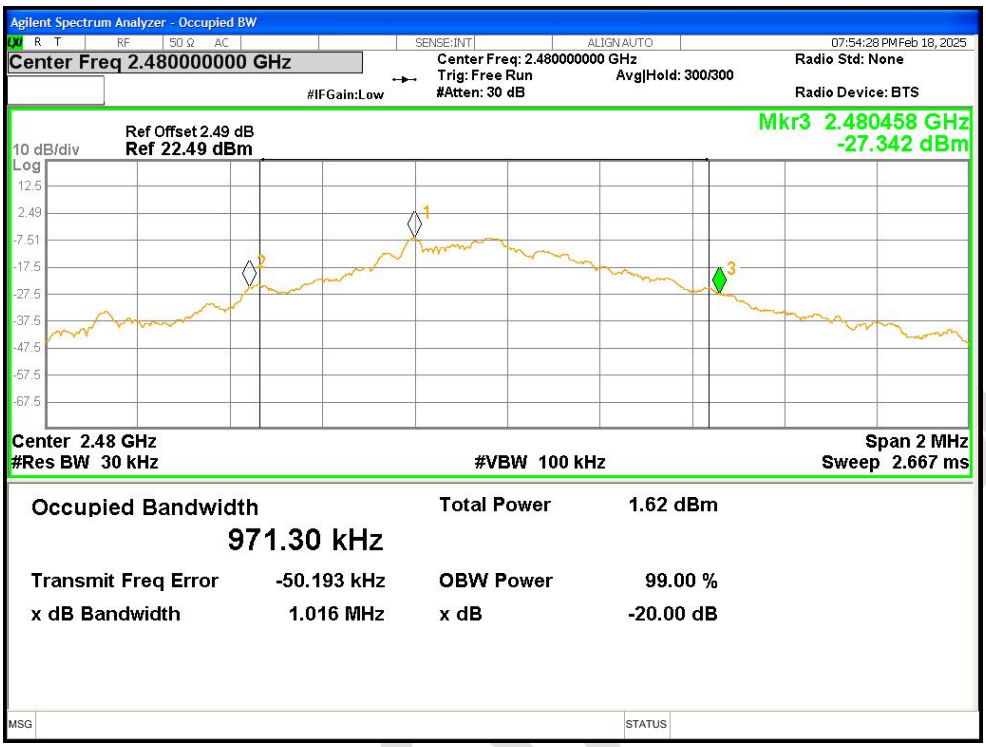
-20dB Bandwidth NVNT 1-DH1 2402MHz Ant1



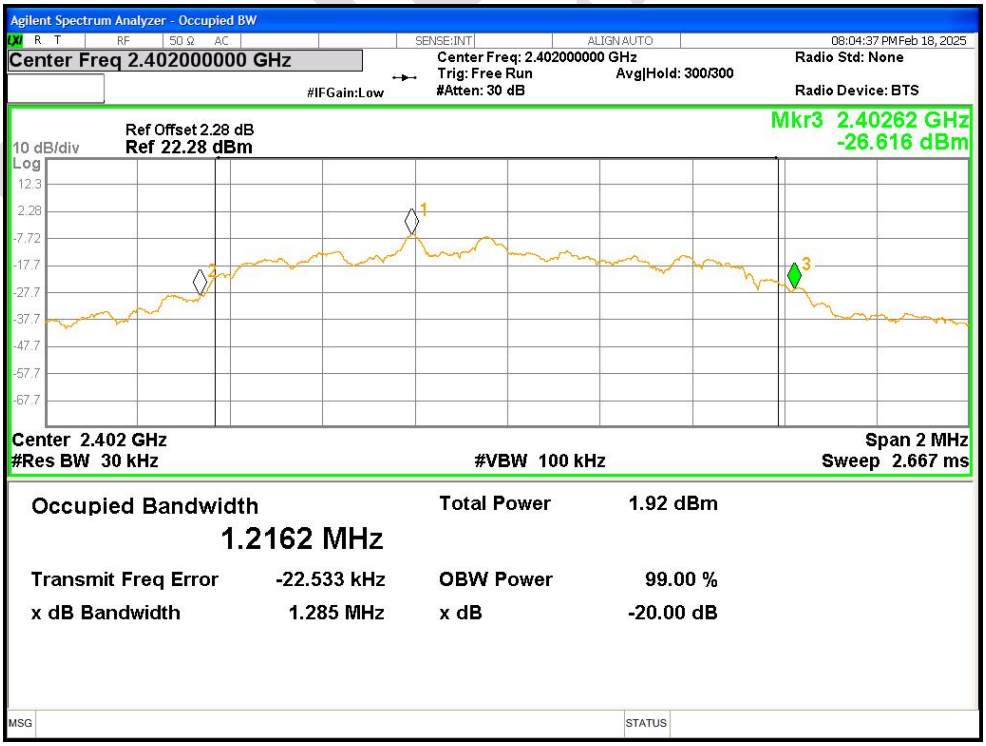
-20dB Bandwidth NVNT 1-DH1 2441MHz Ant1



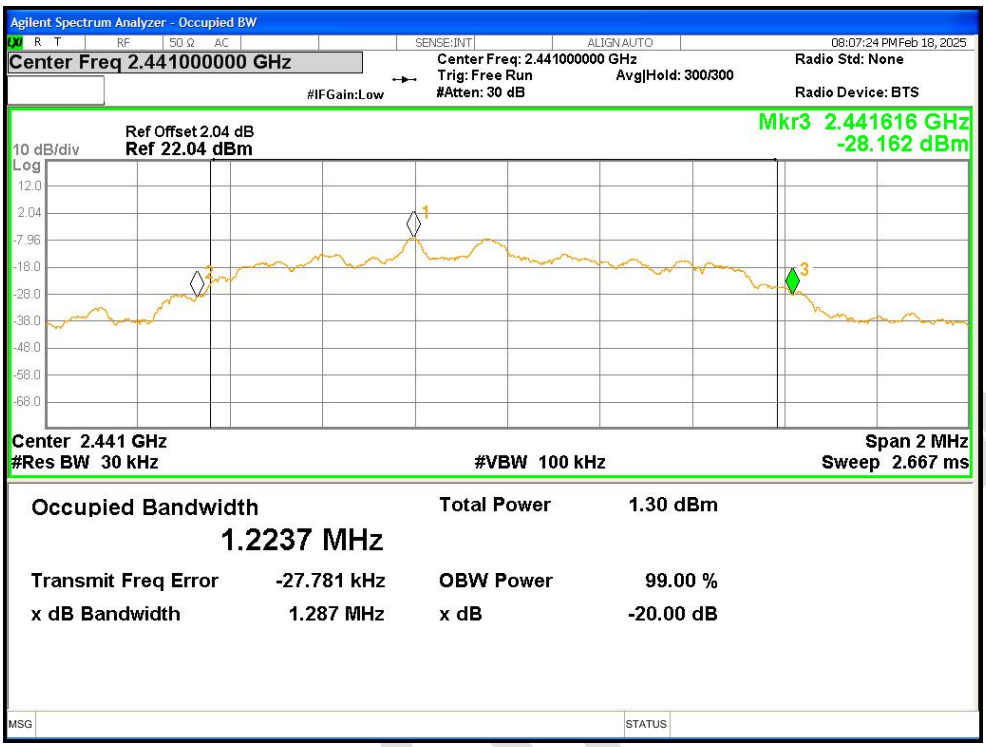
-20dB Bandwidth NVNT 1-DH1 2480MHz Ant1



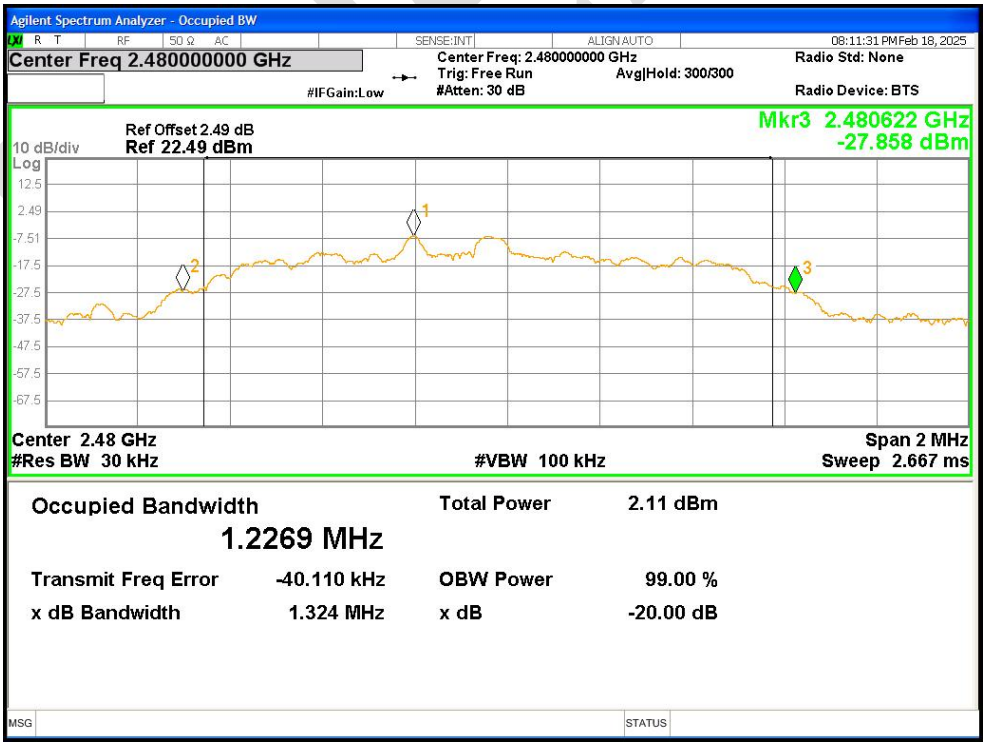
-20dB Bandwidth NVNT 2-DH1 2402MHz Ant1



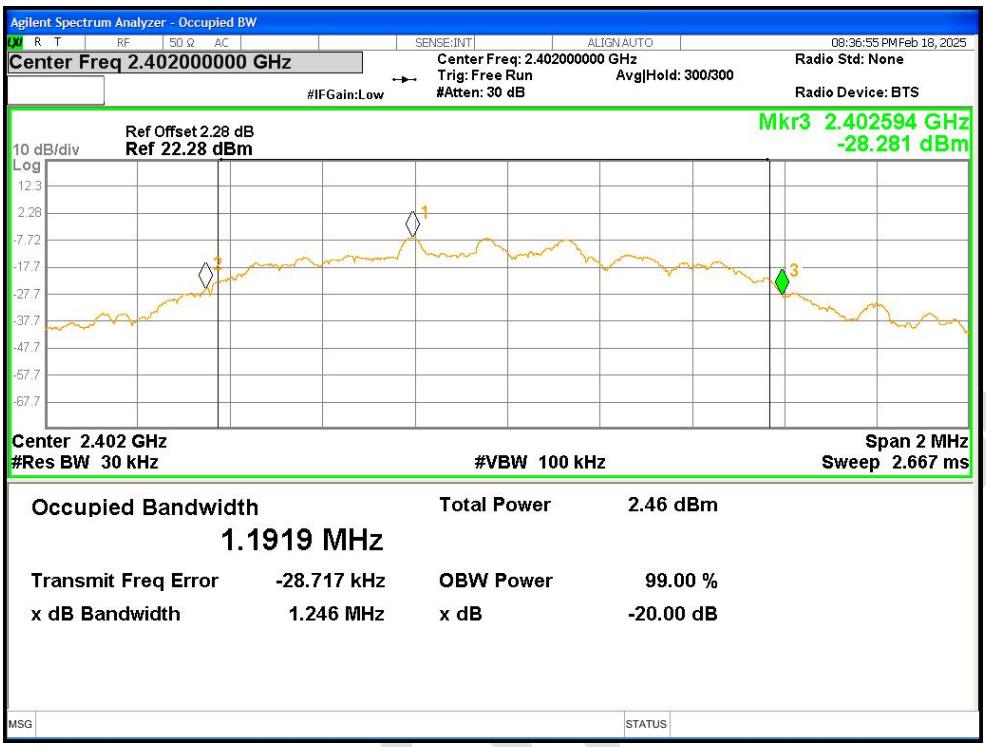
-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



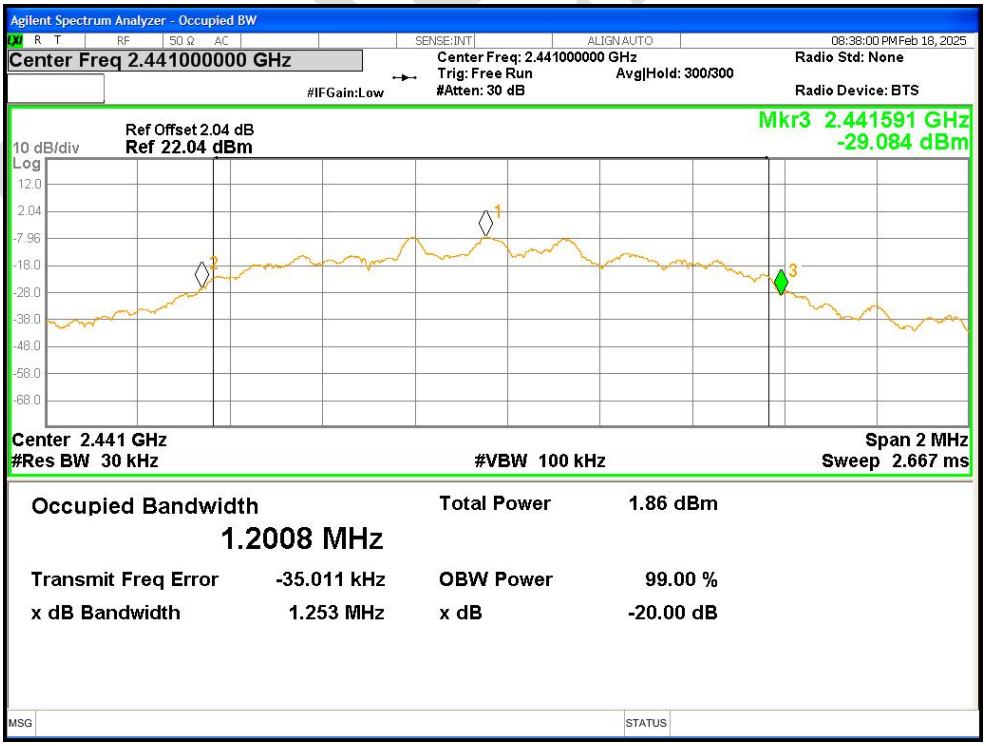
-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1



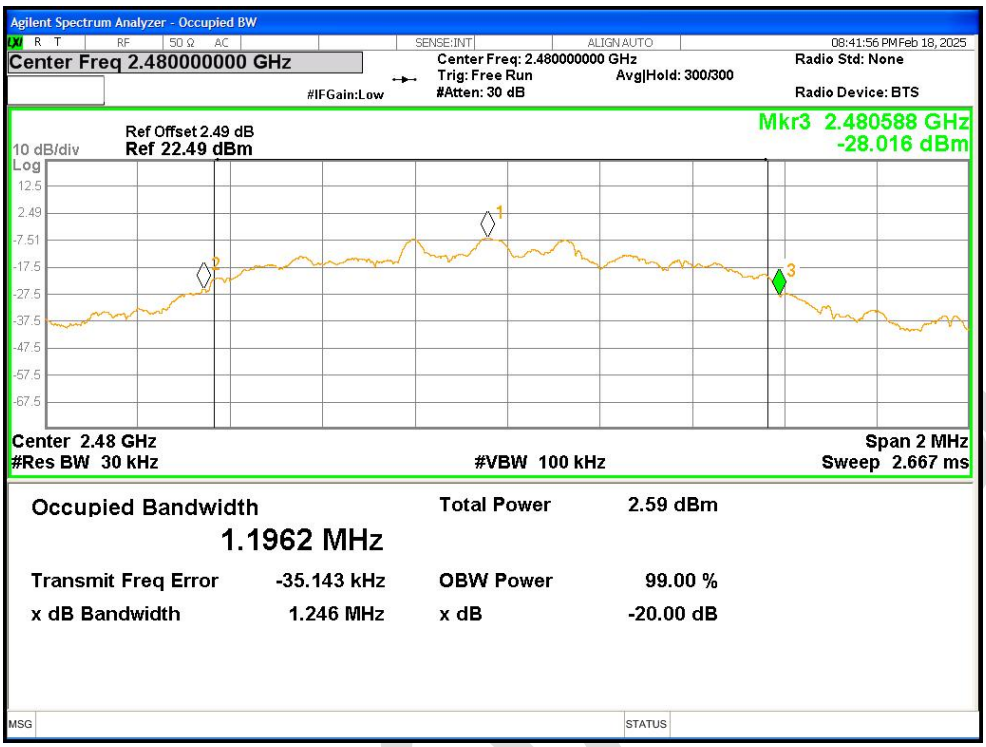
-20dB Bandwidth NVNT 3-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2441MHz Ant1



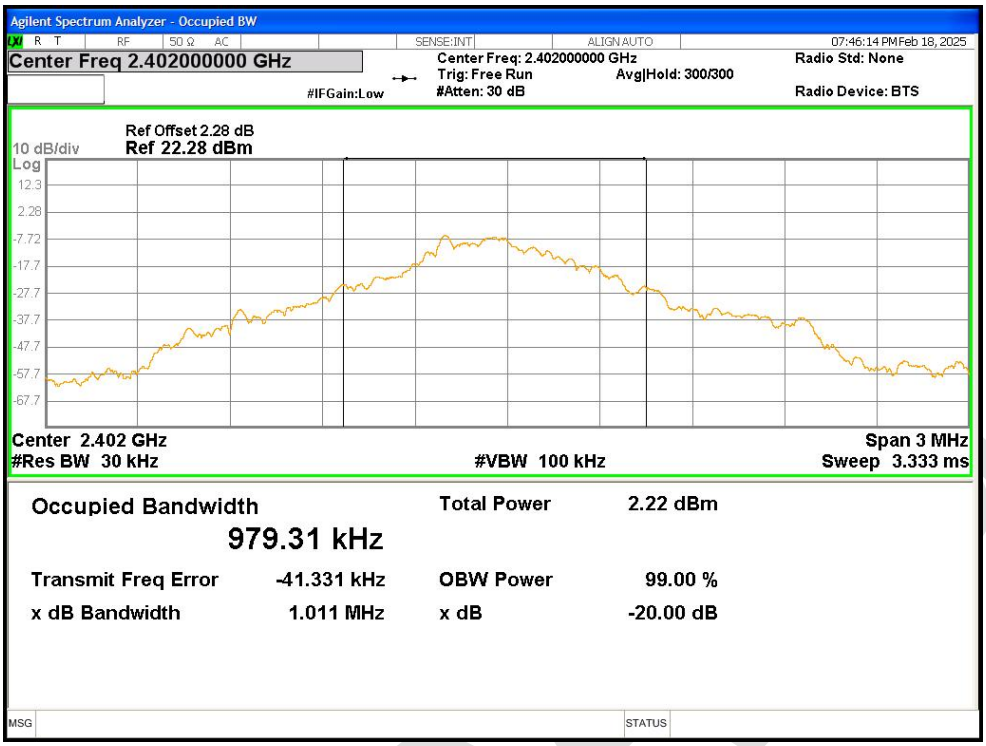
-20dB Bandwidth NVNT 3-DH1 2480MHz Ant1



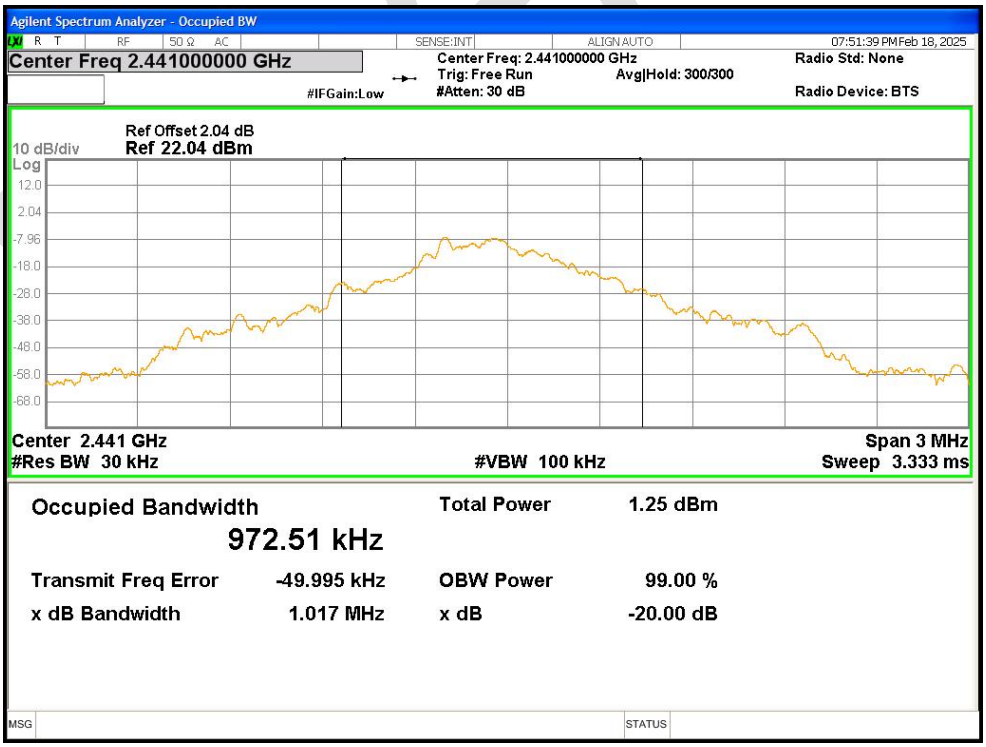
7.3 Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH1	2402	Ant1	0.97931
NVNT	1-DH1	2441	Ant1	0.97251
NVNT	1-DH1	2480	Ant1	0.97020
NVNT	2-DH1	2402	Ant1	1.2560
NVNT	2-DH1	2441	Ant1	1.2729
NVNT	2-DH1	2480	Ant1	1.2797
NVNT	3-DH1	2402	Ant1	1.2416
NVNT	3-DH1	2441	Ant1	1.2371
NVNT	3-DH1	2480	Ant1	1.2328

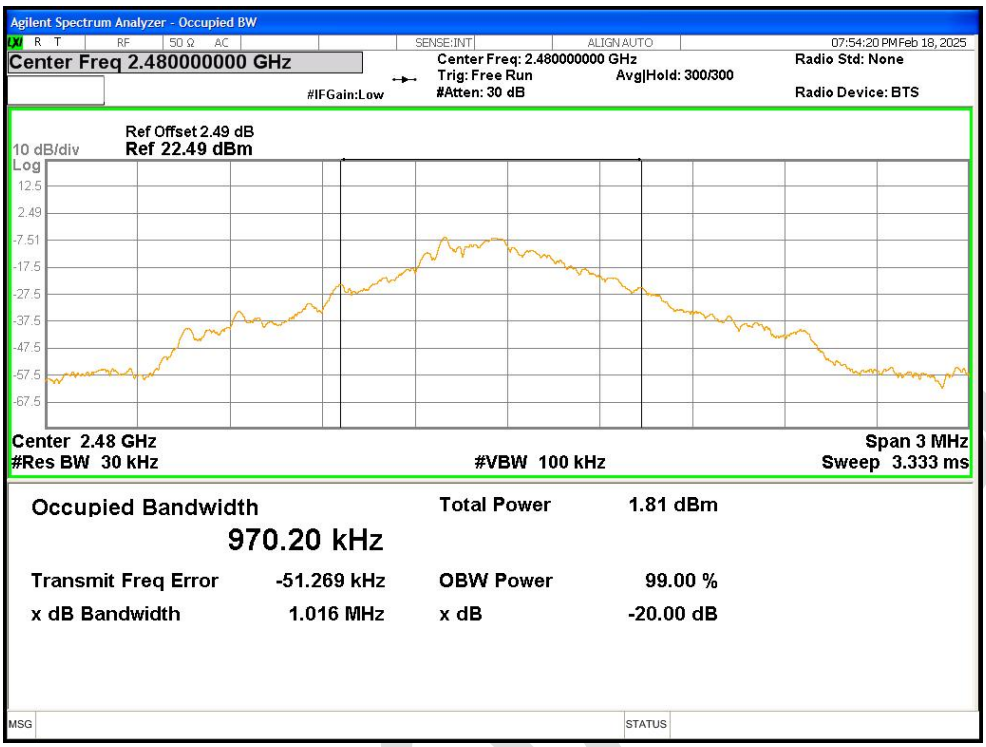
OBW NVNT 1-DH1 2402MHz Ant1



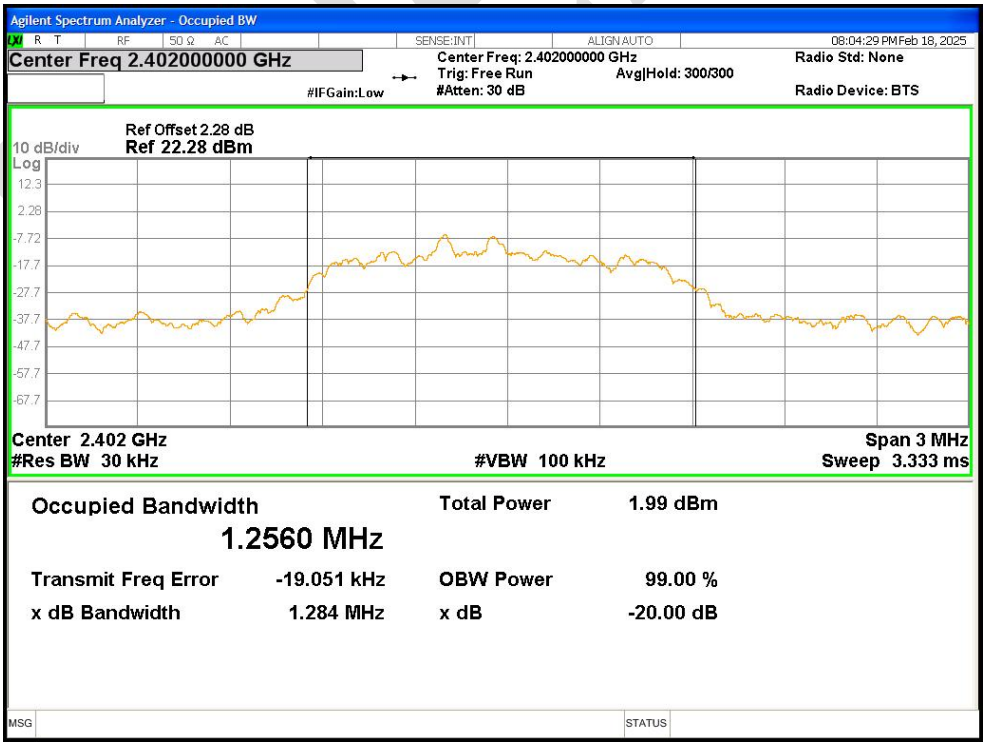
OBW NVNT 1-DH1 2441MHz Ant1



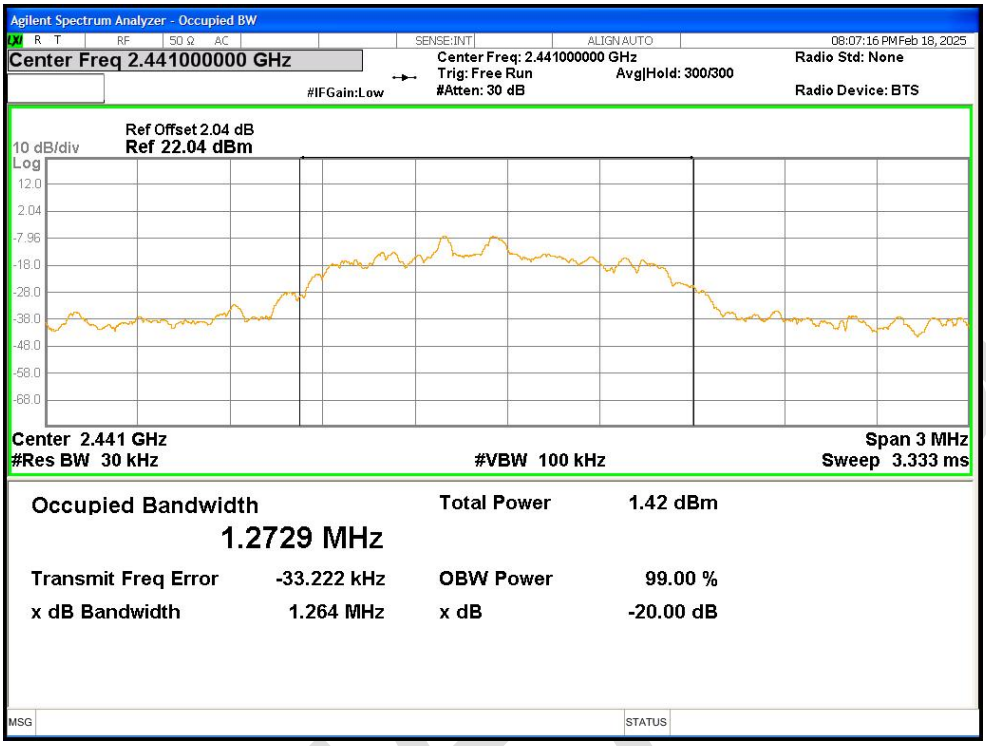
OBW NVNT 1-DH1 2480MHz Ant1



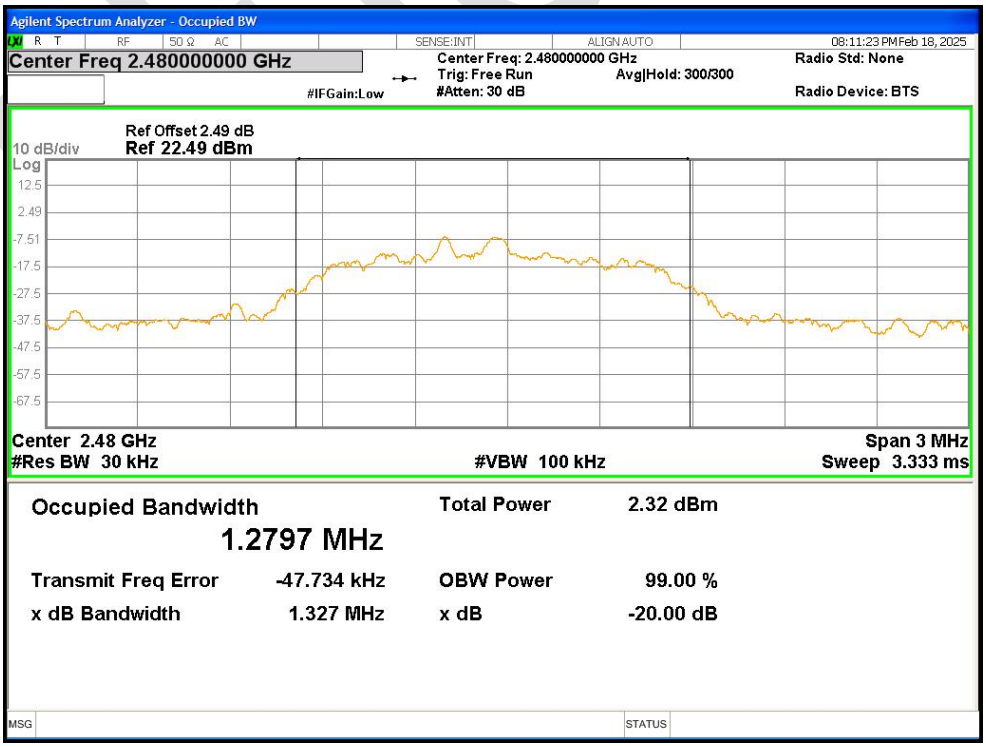
OBW NVNT 2-DH1 2402MHz Ant1



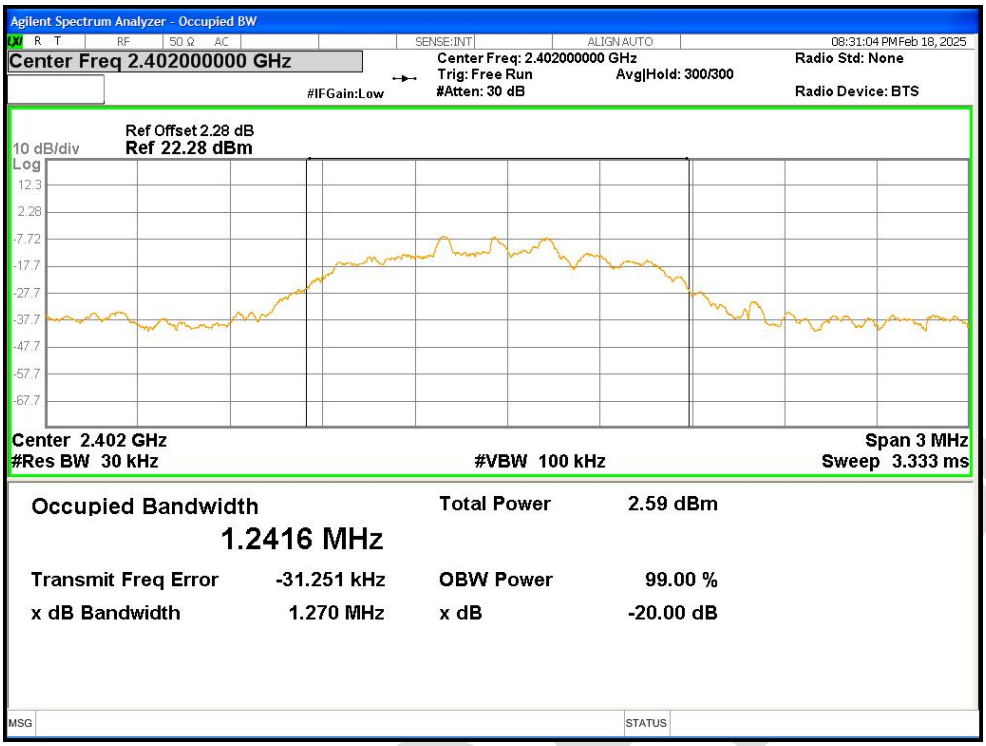
OBW NVNT 2-DH1 2441MHz Ant1



OBW NVNT 2-DH1 2480MHz Ant1



OBW NVNT 3-DH1 2402MHz Ant1



OBW NVNT 3-DH1 2441MHz Ant1