

TEST REPORT

Product Name : Speaker
Brand Mark : N/A
Model No. : GS22
FCC ID : 2AZDO-GS22
Report Number : BLA-EMC-202203-A1502
Date of Sample Receipt : 2022/3/5
Date of Test : 2022/3/5 to 2022/3/23
Date of Issue : 2022/3/23
Test Standard : 47 CFR Part 15, Subpart C 15.247
Test Result : Pass

Prepared for:

Gabb Wireless Inc.

4101 N Thanksgiving Way #300, Lehi, UT 84043, United States

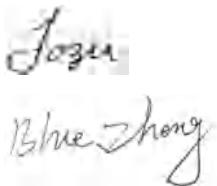
Prepared by:

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

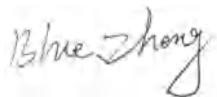
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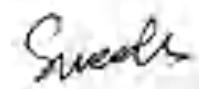
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Approved by:



Review by:



Date:

2022/3/23



REPORT REVISE RECORD

Version No.	Date	Description
00	2022/3/23	Original

BlueAsia

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1 TEST SUMMARY

Test item	Test Requirement	Test Method	Class/Severity	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
Dwell Time	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.4	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Hopping Channel Number	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.3	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Carrier Frequencies Separation	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.2	47 CFR Part 15, Subpart C 15.247a(1)	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.7	47 CFR Part 15, Subpart C 15.247(a)(1)	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass

2 GENERAL INFORMATION

Applicant	Gabb Wireless Inc.
Address	4101 N Thanksgiving Way #300, Lehi, UT 84043, United States
Manufacturer	Shenzhen Hutianmei Technology Co., Ltd
Address	3 Floor, #32 Building, The third Industrial Park, Houting, Shajing, Baoan District, Shenzhen
Factory	Shenzhen Hutianmei Technology Co., Ltd
Address	3 Floor, #32 Building, The third Industrial Park, Houting, Shajing, Baoan District, Shenzhen
Product Name	Speaker
Test Model No.	GS22

3 GENERAL DESCRIPTION OF E.U.T.

Hardware Version	V2.2
Software Version	V2.2
Operation Frequency:	2402MHz-2480MHz
Modulation Type:	GFSK, pi/4DQPSK, 8DPSK
Channel Spacing:	1MHz
Number of Channels:	79
Antenna Type:	PCB Antenna
Antenna Gain:	0.5dBi(Provided by the applicant)

4 TEST ENVIRONMENT

Environment	Temperature	Voltage
Normal	25°C	3.7Vdc

5 TEST MODE

TEST MODE	TEST MODE DESCRIPTION
TX	Keep the EUT in transmitting mode

Remark: Only the data of the worst mode would be recorded in this report.

6 MEASUREMENT UNCERTAINTY

Parameter	Expanded Uncertainty (Confidence of 95%)
Radiated Emission(9kHz-30MHz)	±4.34dB
Radiated Emission(30MHz-1000MHz)	±4.24dB
Radiated Emission(1GHz-18GHz)	±4.68dB
AC Power Line Conducted Emission(150kHz-30MHz)	±3.45dB

Parameter	Expanded Uncertainty (Confidence of 95%)
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 %
Unwanted Radiated Emission (30MHz ~ 1000MHz)	±4.35 dB
Unwanted Radiated Emission (1GHz ~ 18GHz)	±4.44 dB

7 DESCRIPTION OF SUPPORT UNIT

Device Type	Manufacturer	Model Name	Serial No.	Remark
AC Adapter (UGREEN)	UGREEN	CD112	N/A	N/A

8 LABORATORY LOCATION

All tests were performed at:
BlueAsia of Technical Services(Shenzhen) Co., Ltd.
Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province,
China
Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673
No tests were sub-contracted.

9 TEST INSTRUMENTS LIST

Test Equipment Of Conducted Spurious Emissions					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Dwell Time					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Hopping Channel Number					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Carrier Frequencies Separation					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due

Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of 20dB Bandwidth					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Conducted Peak Output Power					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Shield room	SKET	833	N/A	25/11/2020	24/11/2023
Receiver	R&S	ESPI3	101082	24/9/2021	23/9/2022

LISN	R&S	ENV216	3560.6550.15	24/9/2021	23/9/2022
LISN	AT	AT166-2	AKK1806000003	26/9/2021	25/9/2022
EMI software	EZ	EZ-EMC	N/A	N/A	N/A

Test Equipment Of Radiated Spurious Emissions

Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Chamber	SKET	966	N/A	10/11/2020	9/11/2023
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Receiver	R&S	ESR7	101199	24/9/2021	23/9/2022
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	26/9/2020	25/9/2022
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	26/9/2020	25/9/2022
Amplifier	SKET	LNPA-0118-45	N/A	24/9/2021	23/9/2022
EMI software	EZ	EZ-EMC	N/A	N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	26/9/2020	25/9/2022

Test Equipment Of Radiated Emissions which fall in the restricted bands

Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Chamber	SKET	966	N/A	10/11/2020	9/11/2023
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Receiver	R&S	ESR7	101199	24/9/2021	23/9/2022
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	26/9/2020	25/9/2022
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	26/9/2020	25/9/2022

Amplifier	SKET	LNPA-0118-45	N/A	24/9/2021	23/9/2022
EMI software	EZ	EZ-EMC	N/A	N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	26/9/2020	25/9/2022

Test Equipment Of Conducted Band Edges Measurement					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

10 ANTENNA REQUIREMENT

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

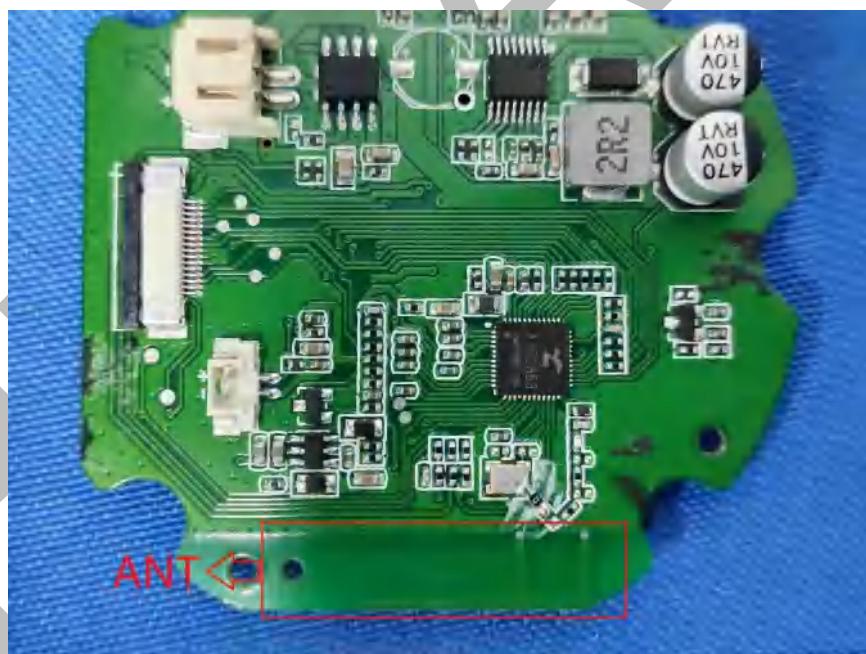
10.1 CONCLUSION

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an 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 integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0.5dBi.



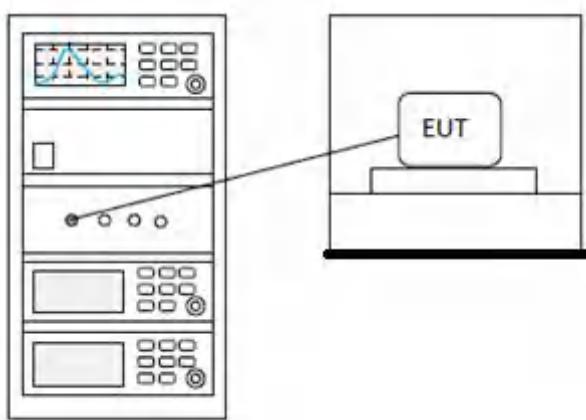
11 CONDUCTED SPURIOUS EMISSIONS

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
Tester	Jozu
Temperature	25 °C
Humidity	60%

11.1 LIMITS

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 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
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11.2 BLOCK DIAGRAM OF TEST SETUP



11.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

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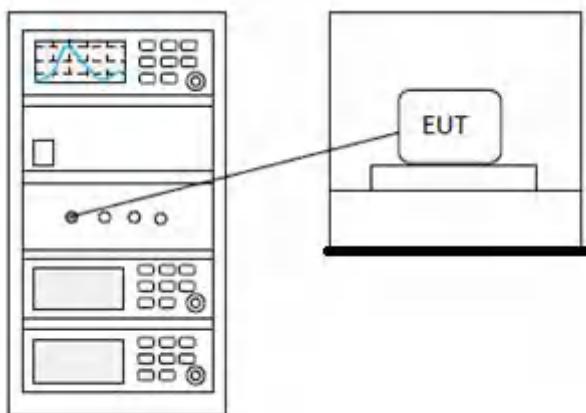
12 DWELL TIME

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
Tester	Jozu
Temperature	25°C
Humidity	60%

12.1 LIMITS

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

12.2 BLOCK DIAGRAM OF TEST SETUP



12.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

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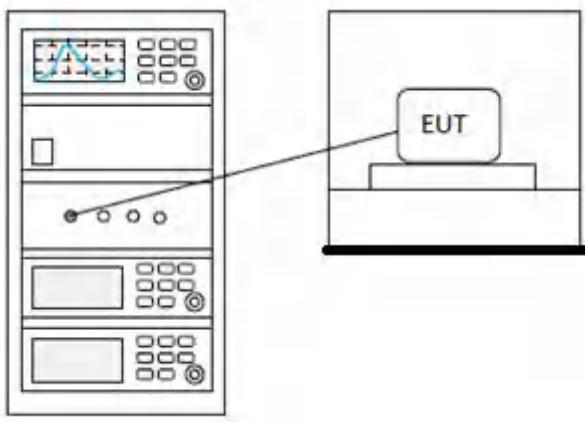
13 HOPPING CHANNEL NUMBER

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
Tester	Jozu
Temperature	25°C
Humidity	60%

13.1 LIMITS

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

13.2 BLOCK DIAGRAM OF TEST SETUP



13.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

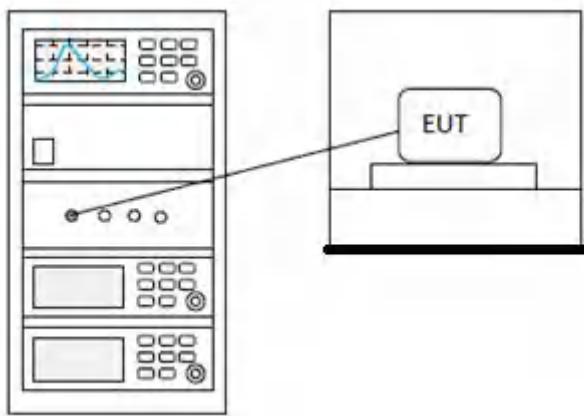
14 CARRIER FREQUENCIES SEPARATION

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
Tester	Jozu
Temperature	25°C
Humidity	60%

14.1 LIMITS

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

14.2 BLOCK DIAGRAM OF TEST SETUP



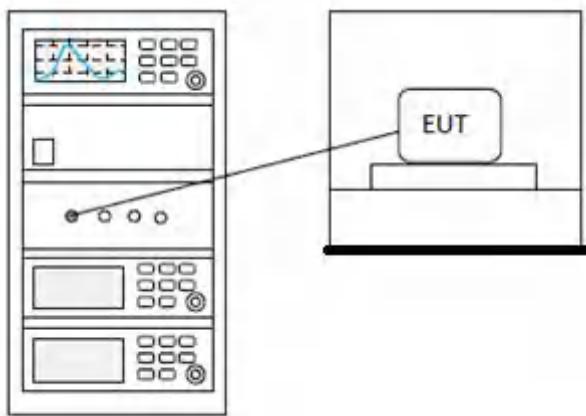
14.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

15 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
Tester	Jozu
Temperature	25°C
Humidity	60%

15.1 BLOCK DIAGRAM OF TEST SETUP



15.2 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

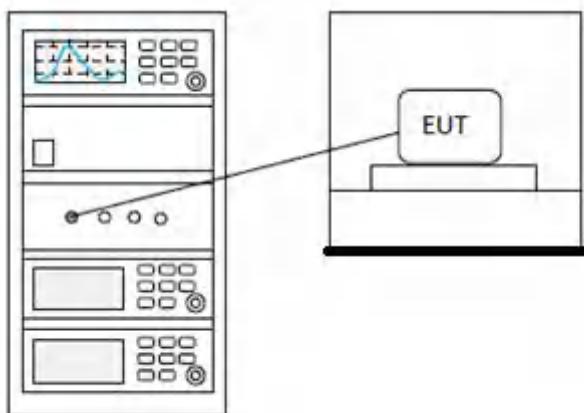
16 CONDUCTED PEAK OUTPUT POWER

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
Tester	Jozu
Temperature	25 °C
Humidity	60%

16.1 LIMITS

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ 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

16.2 BLOCK DIAGRAM OF TEST SETUP



16.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

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17 CONDUCTED EMISSIONS AT AC POWER LINE (150KHZ-30MHZ)

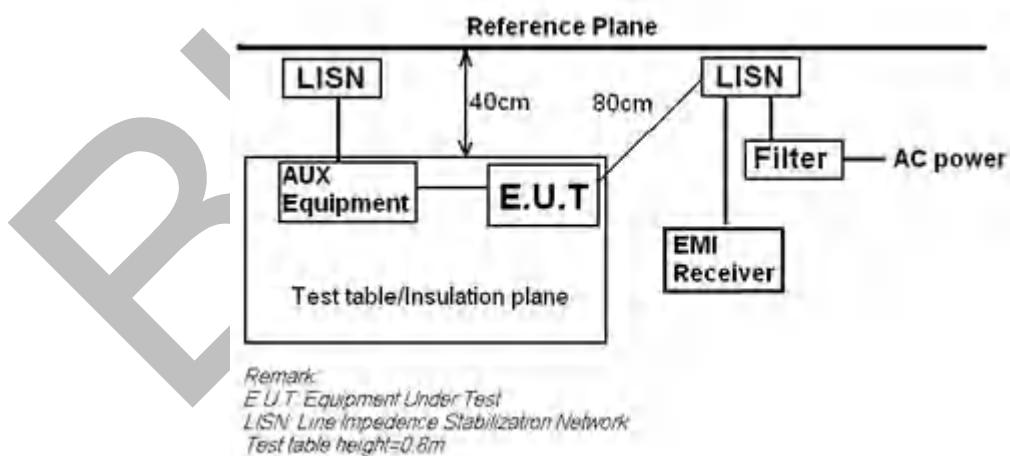
Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.2
Test Mode (Pre-Scan)	BT mode
Test Mode (Final Test)	BT mode
Tester	Jozu
Temperature	25°C
Humidity	60%

17.1 LIMITS

Frequency of emission(MHz)	Conducted limit(dB μ V)	
	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.

17.2 BLOCK DIAGRAM OF TEST SETUP



17.3 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.

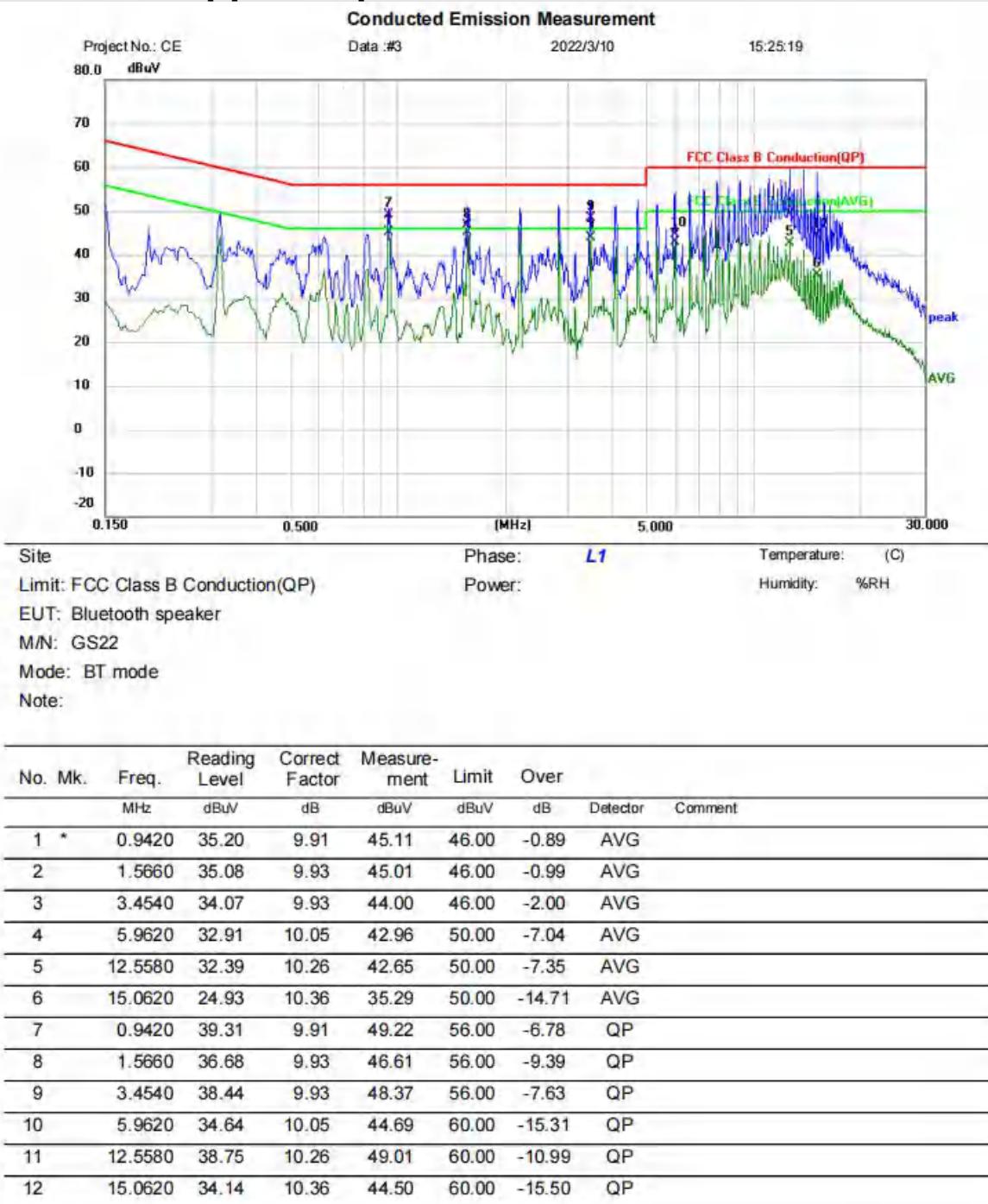
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from 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.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor

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17.4 TEST DATA

[TestMode: BT mode]; [Line: Line]



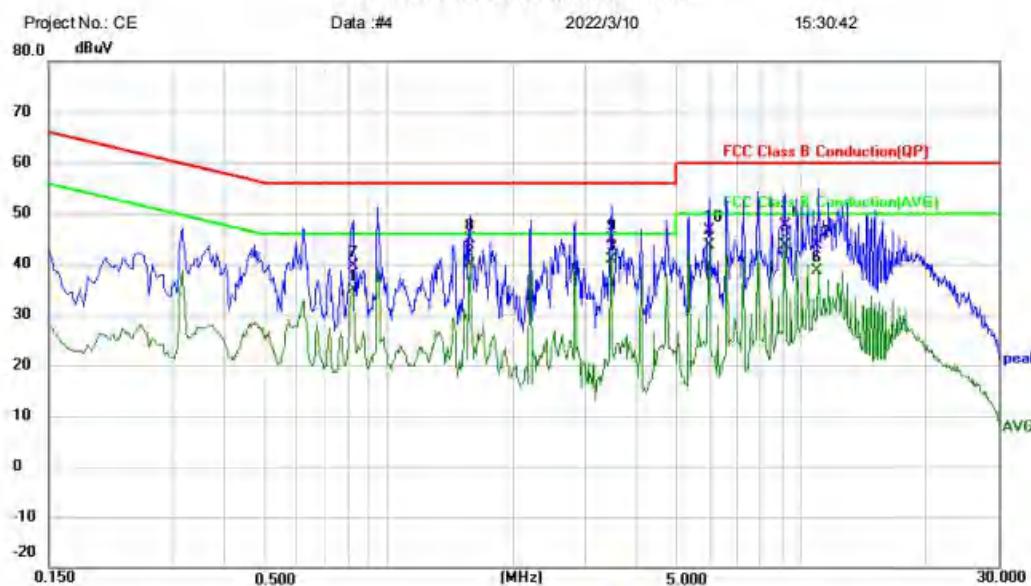
*:Maximum data x:Over limit !:over margin

(Reference Only)

Test Result: Pass

[TestMode: BT mode]; [Line: Nutral]

Conducted Emission Measurement


Site: Phase: **N** Temperature: (C)

Limit: FCC Class B Conduction(QP) Power: Humidity: %RH

EUT: Bluetooth speaker

M/N: GS22

Mode: BT mode

Note:

No.	Mk.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
		Freq.	Level	Factor				
		MHz	dBuV	dB	dBuV	dB		
1		0.8219	24.95	9.83	34.78	46.00	-11.22	AVG
2		1.5700	30.05	9.85	39.90	46.00	-6.10	AVG
3 *		3.4580	30.90	9.90	40.80	46.00	-5.20	AVG
4		5.9660	33.56	9.99	43.55	50.00	-6.45	AVG
5		9.1100	33.54	10.11	43.65	50.00	-6.35	AVG
6		10.9938	28.44	10.19	38.63	50.00	-11.37	AVG
7		0.8219	29.73	9.83	39.56	56.00	-16.44	QP
8		1.5700	35.04	9.85	44.89	56.00	-11.11	QP
9		3.4580	35.01	9.90	44.91	56.00	-11.09	QP
10		5.9660	36.52	9.99	46.51	60.00	-13.49	QP
11		9.1100	37.42	10.11	47.53	60.00	-12.47	QP
12		10.9938	33.53	10.19	43.72	60.00	-16.28	QP

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

(Reference Only)

Test Result: Pass

18 RADIATED SPURIOUS EMISSIONS

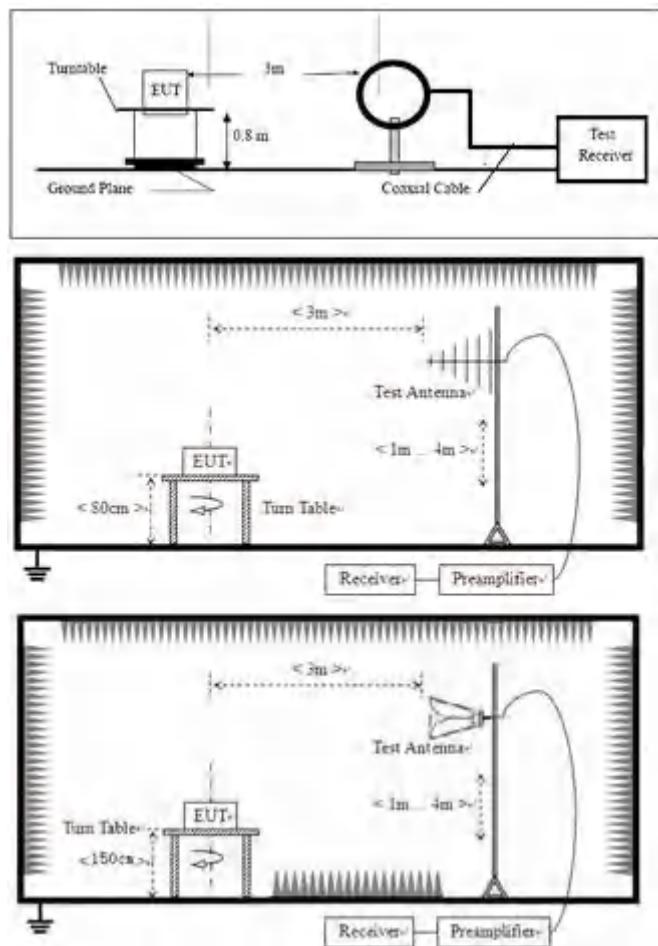
Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.4,6.5,6.6
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25°C
Humidity	60%

18.1 LIMITS

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.

18.2 BLOCK DIAGRAM OF TEST SETUP



18.3 PROCEDURE

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

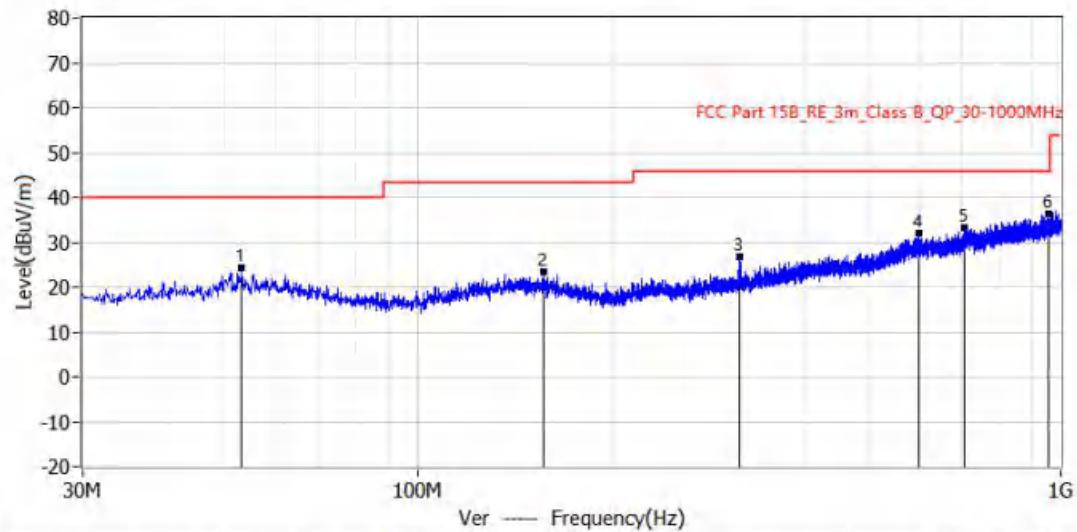
Remark:

- 1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- 3) Scan from 9kHz 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.
- 4) 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.

18.4 TEST DATA

[TestMode: TX below 1G]; [Polarity: Vertical]

Test Lab: BlueAsia EMC Lab (RE #1)	Project: BLA-EMC-202203-A15
EUT: Bluetooth Speaker	Test Engineer: William
M/N: GS22	Temperature:
S/N:	Humidity:
Test Mode: TX Mode	Test Voltage:
Note:	Test Data: 2022-03-21 14:30:43

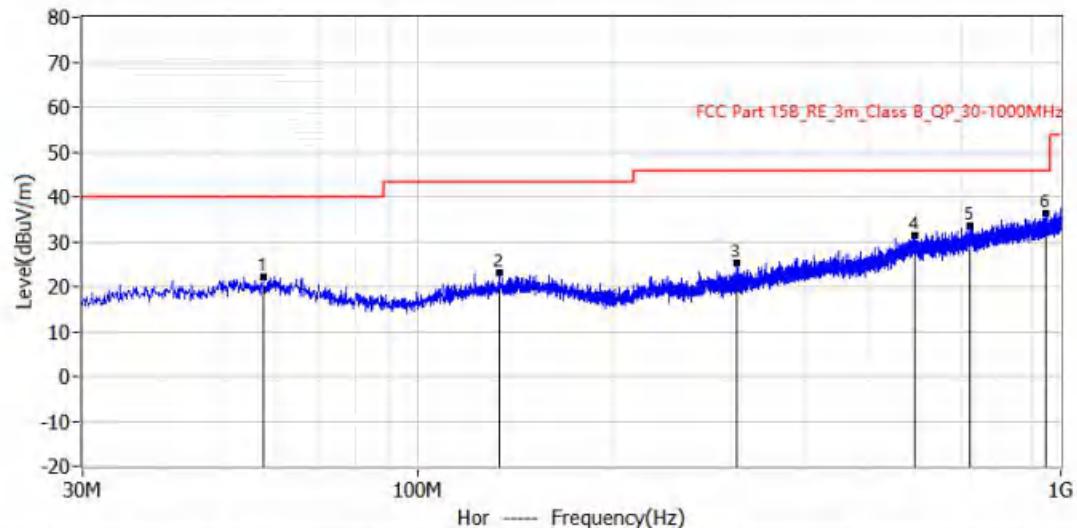


No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	53.038MHz	40.0	24.3	-15.7	0.6	23.7	QP	Ver	100.0	69.0
2*	156.464MHz	43.5	23.4	-20.1	0.0	23.4	QP	Ver	100.0	41.0
3*	315.180MHz	46.0	26.8	-19.2	2.3	24.5	QP	Ver	100.0	248.0
4*	601.936MHz	46.0	31.9	-14.1	0.6	31.3	QP	Ver	100.0	0.0
5*	709.000MHz	46.0	33.1	-12.9	1.0	32.1	QP	Ver	100.0	88.0
6*	954.531MHz	46.0	36.4	-9.6	0.8	35.6	QP	Ver	100.0	0.0

Test Result: Pass

[TestMode: TX below 1G]; [Polarity: Horizontal]

Test Lab: BlueAsia EMC Lab (RE #1)	Project: BLA-EMC-202203-A15
EUT: Bluetooth Speaker	Test Engineer: William
M/N: GS22	Temperature:
S/N:	Humidity:
Test Mode: TX Mode	Test Voltage:
Note:	Test Data: 2022-03-21 14:32:40

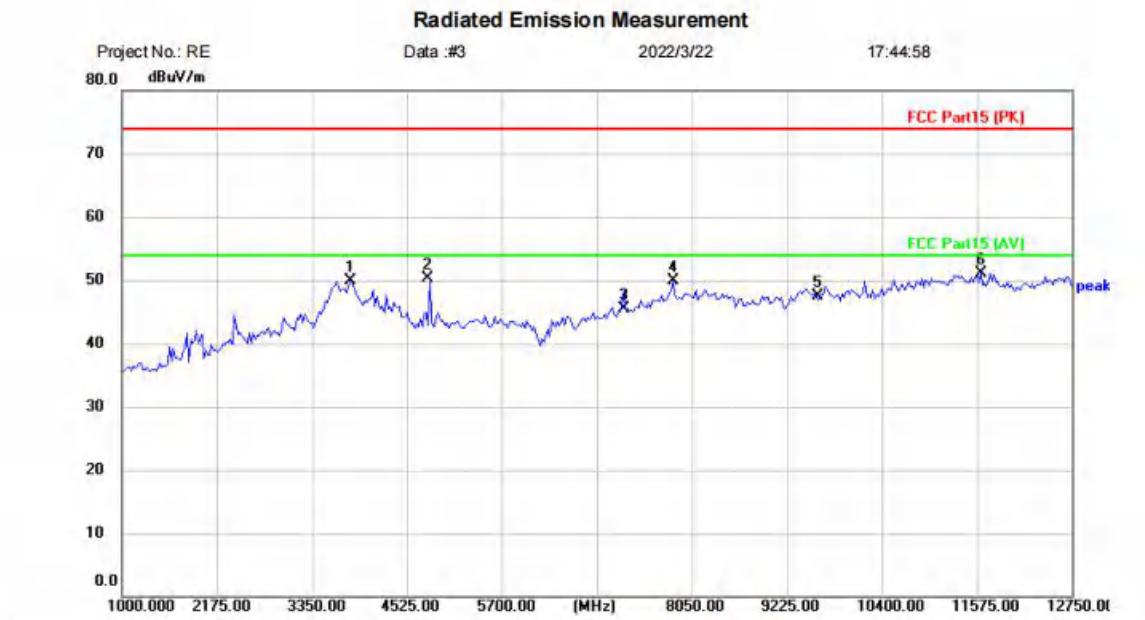


No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	57.403MHz	40.0	22.2	-17.8	-1.4	23.6	QP	Hor	100.0	175.0
2*	133.305MHz	43.5	23.1	-20.4	-0.3	23.4	QP	Hor	100.0	225.0
3*	312.755MHz	46.0	25.3	-20.7	0.8	24.5	QP	Hor	100.0	344.0
4*	590.539MHz	46.0	31.5	-14.5	0.5	31.0	QP	Hor	100.0	188.0
5*	722.338MHz	46.0	33.5	-12.5	1.1	32.4	QP	Hor	100.0	0.0
6*	949.196MHz	46.0	36.2	-9.8	0.6	35.6	QP	Hor	100.0	82.0

Test Result: Pass

Above 1GHz:

[TestMode: TX low channel]; [Polarity: Horizontal]



Site	Polarization: <i>Horizontal</i>	Temperature: (C)
Limit: FCC Part15 (PK)	Power:	Humidity: %RH
EUT: Booth		
M/N: GS22		
Mode: TX-L		
Note:		

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
			Level	Factor	ment				
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3820.000	42.44	7.41	49.85	74.00	-24.15	peak	
2		4804.000	46.60	3.71	50.31	74.00	-23.69	peak	
3		7206.000	39.52	5.96	45.48	74.00	-28.52	peak	
4		7815.000	42.20	7.72	49.92	74.00	-24.08	peak	
5		9608.000	38.29	9.29	47.58	74.00	-26.42	peak	
6	*	11622.000	39.14	12.00	51.14	74.00	-22.86	peak	

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

(Reference Only)

Test Result: Pass

[TestMode: TX low channel]; [Polarity: Vertical]

Radiated Emission Measurement

Project No.: RE

Data :#4

2022/3/22

17:47:31



Site

Polarization: *Vertical*

Temperature: (C)

Limit: FCC Part15 (PK)

Power:

Humidity: %RH

EUT: Booth

M/N: GS22

Mode: TX-L

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment		Detector	Comment
			MHz	dBuV	dB/m	dBuV/m	dB	
1		3796.500	42.34	7.65	49.99	74.00	-24.01	peak
2		4804.000	41.82	3.71	45.53	74.00	-28.47	peak
3		7206.000	40.45	5.96	46.41	74.00	-27.59	peak
4		8473.000	40.24	8.17	48.41	74.00	-25.59	peak
5		9608.000	38.34	9.29	47.63	74.00	-26.37	peak
6	*	11716.000	39.24	11.76	51.00	74.00	-23.00	peak

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

(Reference Only

Test Result: Pass

[TestMode: TX mid channel]; [Polarity: Horizontal]

Radiated Emission Measurement

Project No.: RE

Data :#5

2022/3/22

17:52:24



Site

Polarization: *Horizontal*

Temperature: (C)

Limit: FCC Part15 (PK)

Power:

Humidity: 0%RH

EUT: Booth

M/N: GS22

Mode: TX-M

Not

No.	Mk.	Freq.	Reading	Correc	Measure-	Limit	Over	
			Level	Factor	ment		Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m		
1		3655.500	41.89	7.76	49.65	74.00	-24.35	peak
2		4877.500	47.85	3.37	51.22	74.00	-22.78	peak
3		7321.500	44.14	6.42	50.56	74.00	-23.44	peak
4		8026.500	40.97	7.98	48.95	74.00	-25.05	peak
5		9764.000	39.09	9.63	48.72	74.00	-25.28	peak
6	*	12068.500	40.20	11.30	51.50	74.00	-22.50	peak

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

(Reference Only)

Test Result: Pass

[TestMode: TX mid channel]; [Polarity: Vertical]

Radiated Emission Measurement

Project No.: RE

Data :#6

2022/3/22

17:55:42



Site

Polarization: **Vertical**

Temperature: (C)

Limit: FCC Part15 (PK)

Power:

Humidity: %RH

EUT: Booth

M/N: GS22

Mode: TX-M

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over							
							MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3655.500	41.93	7.76	49.69	74.00	-24.31	peak						
2		4877.500	44.48	3.37	47.85	74.00	-26.15	peak						
3		7321.500	42.10	6.42	48.52	74.00	-25.48	peak						
4		8238.000	40.92	8.22	49.14	74.00	-24.86	peak						
5		9764.000	38.02	9.63	47.65	74.00	-26.35	peak						
6	*	11410.500	39.77	11.78	51.55	74.00	-22.45	peak						

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

(Reference Only

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Horizontal]

Radiated Emission Measurement

Project No.: RE

Data :#7

2022/3/22

17:59:09



Site

Polarization: *Horizontal*

Temperature: (C)

Limit: FCC Part15 (PK)

Power:

Humidity: %RH

EUT: Booth

M/N: GS22

Mode: TX-H

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment		Detector	Comment
1		3843.500	42.56	7.12	49.68	74.00	-24.32	peak
2	*	4948.000	47.20	3.65	50.85	74.00	-23.15	peak
3		7440.000	38.88	6.86	45.74	74.00	-28.26	peak
4		8285.000	41.00	8.24	49.24	74.00	-24.76	peak
5		9920.000	36.91	10.16	47.07	74.00	-26.93	peak
6		11763.000	39.03	11.63	50.66	74.00	-23.34	peak

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

(Reference Only

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Vertical]

Radiated Emission Measurement

Project No.: RE

Data 標

2022/3/22

18:01:37



Site

Polarization: **Vertical**

Temperature: (C)

Limit: FCC Part15 (PK)

Power:

Humidity: %RH

EUT: Booth

M/N: GS22

Mode: TX-H

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
			Level	Factor	ment		Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dB		
1		3796.500	42.36	7.65	50.01	74.00	-23.99	peak
2		4948.000	44.57	3.65	48.22	74.00	-25.78	peak
3		7440.000	39.37	6.86	46.23	74.00	-27.77	peak
4		8473.000	40.33	8.17	48.50	74.00	-25.50	peak
5		9920.000	37.11	10.16	47.27	74.00	-26.73	peak
6	*	11434.000	39.18	11.81	50.99	74.00	-23.01	peak

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

(Reference Only

Test Result: Pass

19 RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS

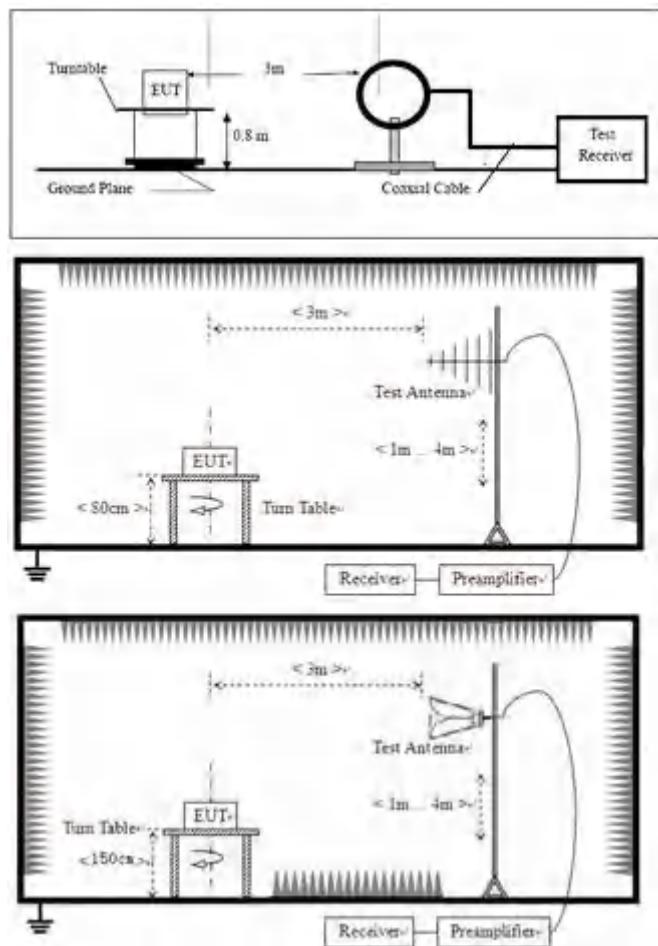
Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.10.5
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25°C
Humidity	60%

19.1 LIMITS

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.

19.2 BLOCK DIAGRAM OF TEST SETUP



19.3 PROCEDURE

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

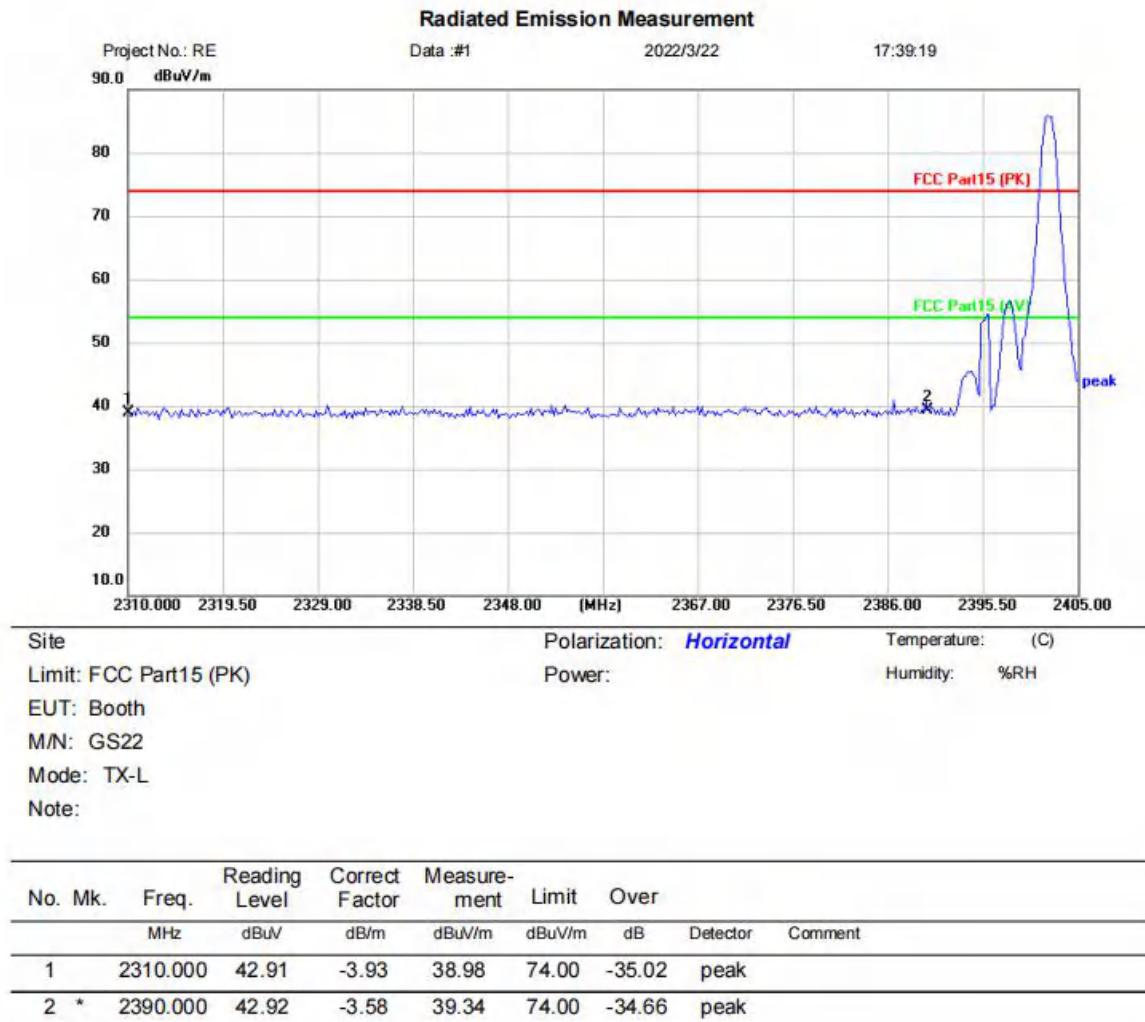
Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 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.

BlueAsia

19.4 TEST DATA

[TestMode: TX low channel]; [Polarity: Horizontal]

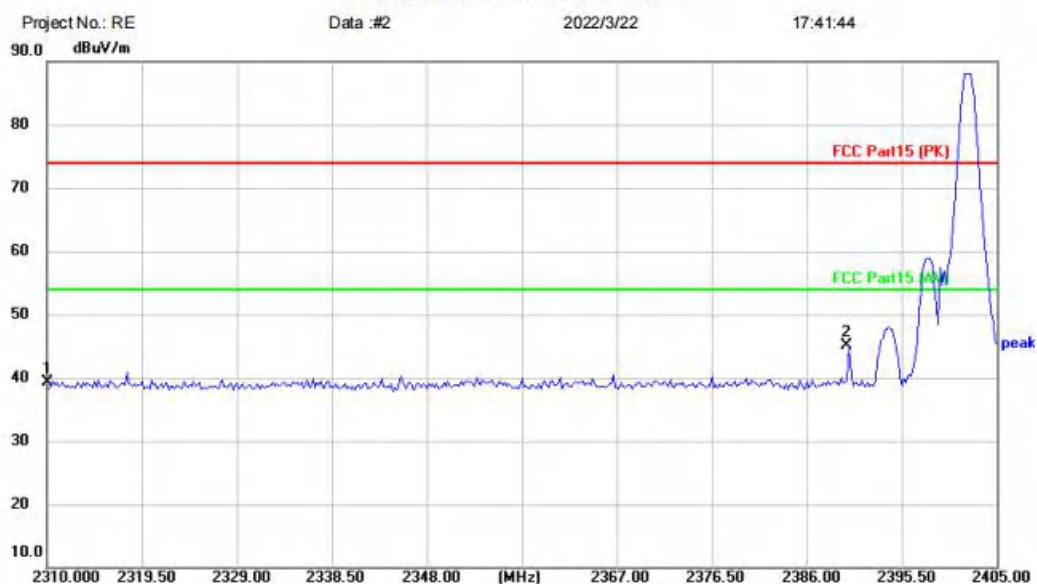


*:Maximum data x:Over limit !:over margin

(Reference Only)

Test Result: Pass

[TestMode: TX low channel]; [Polarity: Vertical]

Radiated Emission Measurement

Site Polarization: **Vertical** Temperature: (C)

Limit: FCC Part15 (PK) Power: Humidity: %RH

EUT: Booth

M/N: GS22

Mode: TX-L

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dB	Detector	Comment
1		2310.000	43.18	-3.93	39.25	74.00	-34.75	peak
2	*	2390.000	48.64	-3.58	45.06	74.00	-28.94	peak

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

(Reference Only)

Test Result: Pass

[TestMethod: TX high channel]; [Polarity: Horizontal]

Radiated Emission Measurement


Site

Polarization: **Horizontal**

Temperature: (C)

Limit: FCC Part15 (PK)

Power:

Humidity: %RH

EUT: Booth

M/N: GS22

Mode: TX-H

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	53.10	-3.14	49.96	74.00	-24.04	peak	
2		2500.000	42.07	-3.08	38.99	74.00	-35.01	peak	

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

(Reference Only)

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Vertical]

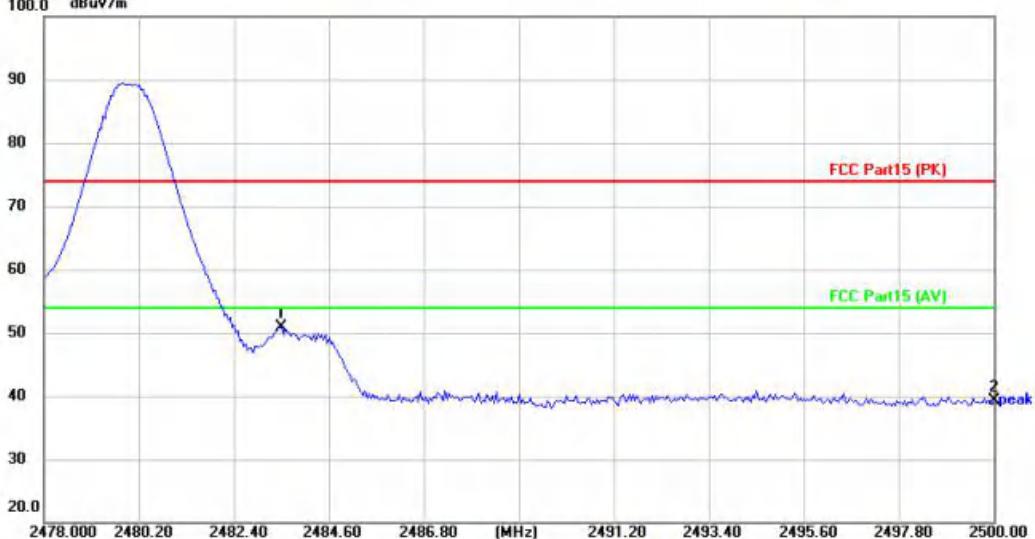
Radiated Emission Measurement

Project No.: RE

Data :#10

2022/3/22

18:07:17



Site

Polarization: **Vertical**

Temperature: (C)

Limit: FCC Part15 (PK)

Power:

Humidity: 0%RH

EUT: Booth

M/N: GS22

Mode: TX-H

Note:

No. Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		Level	Factor	ment		Detector	Comment	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1 *	2483.500	53.96	-3.14	50.82	74.00	-23.18	peak	
2	2500.000	42.44	-3.08	39.36	74.00	-34.64	peak	

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

(Reference Only

Test Result: Pass

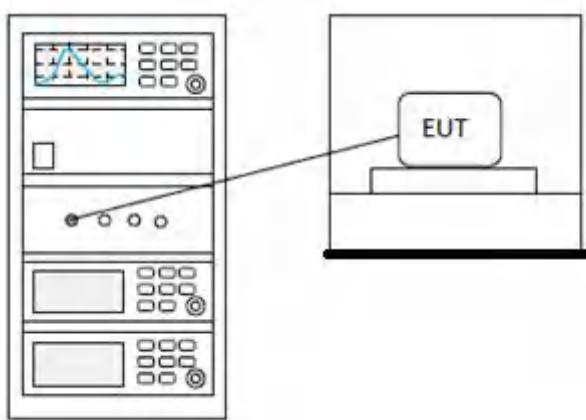
20 CONDUCTED BAND EDGES MEASUREMENT

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
Tester	Jozu
Temperature	25 °C
Humidity	60%

20.1 LIMITS

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 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
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20.2 BLOCK DIAGRAM OF TEST SETUP



20.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

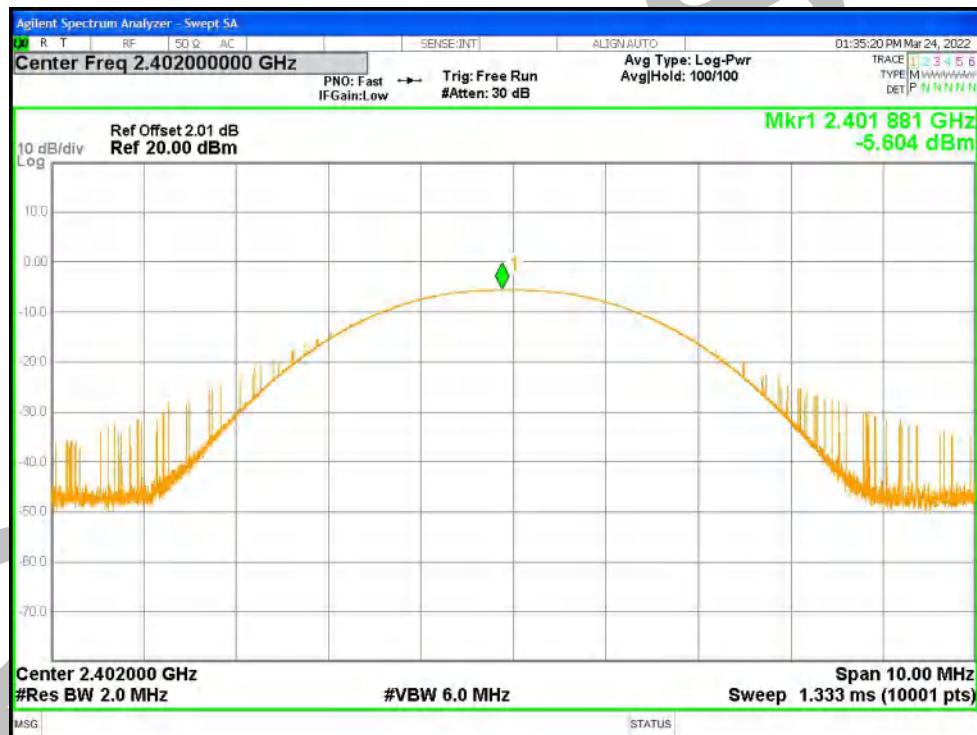
BlueAsia

21 APPENDIX

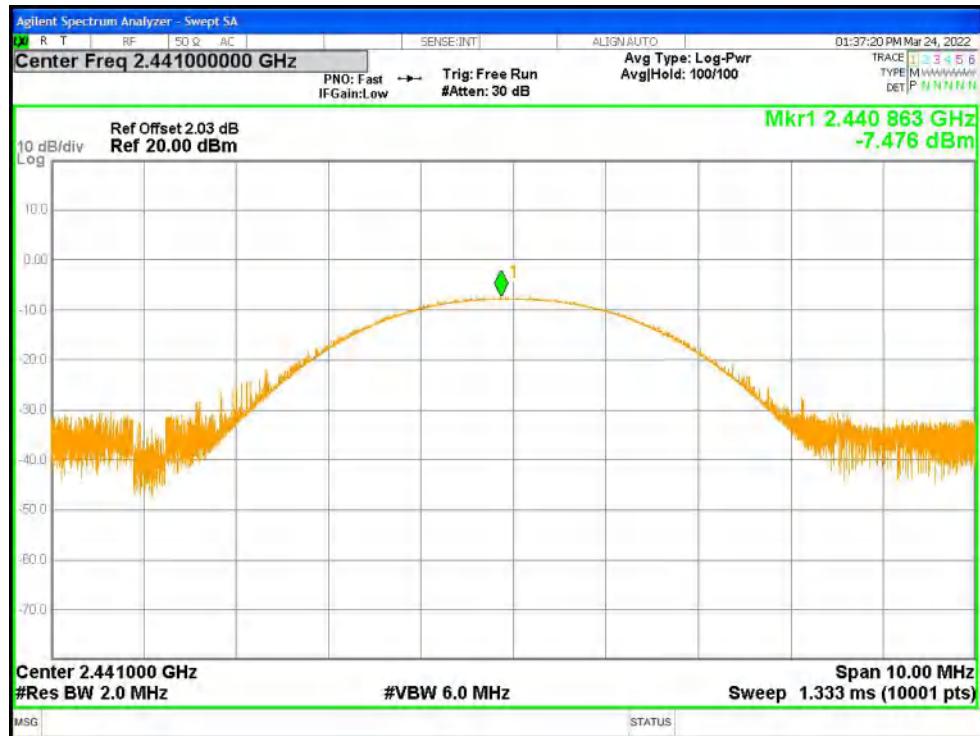
Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	-5.604	21	Pass
NVNT	1-DH1	2441	Ant1	-7.476	21	Pass
NVNT	1-DH1	2480	Ant1	-8.47	21	Pass
NVNT	2-DH1	2402	Ant1	-4.01	21	Pass
NVNT	2-DH1	2441	Ant1	-5.984	21	Pass
NVNT	2-DH1	2480	Ant1	-4.979	21	Pass
NVNT	3-DH1	2402	Ant1	-1.993	21	Pass
NVNT	3-DH1	2441	Ant1	-3.775	21	Pass
NVNT	3-DH1	2480	Ant1	-4.727	21	Pass

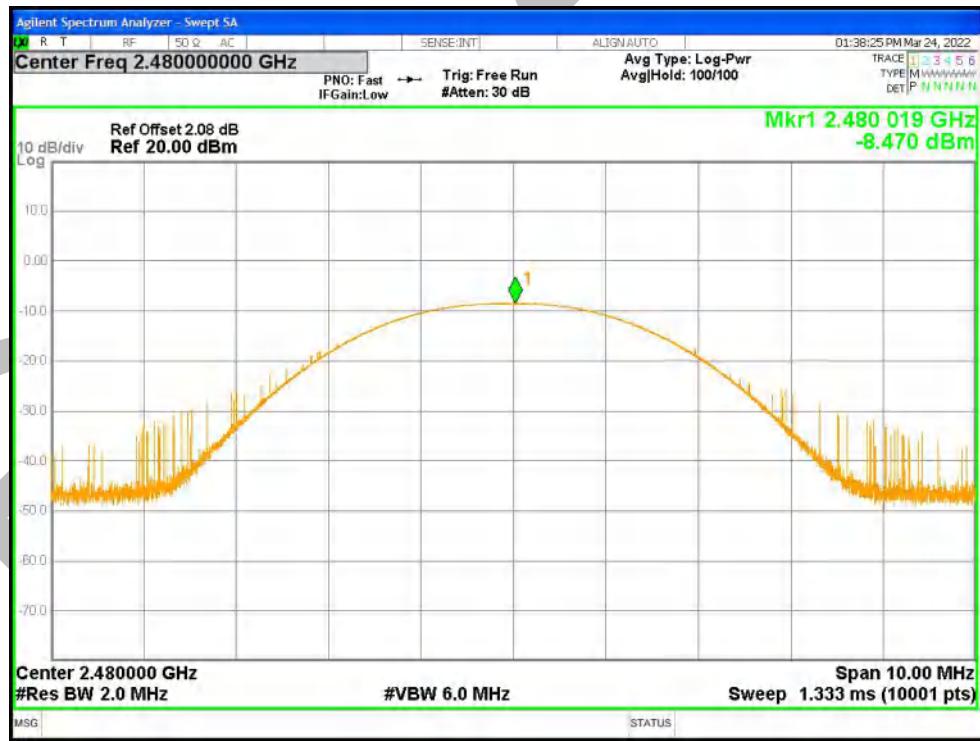
Power NVNT 1-DH1 2402MHz Ant1



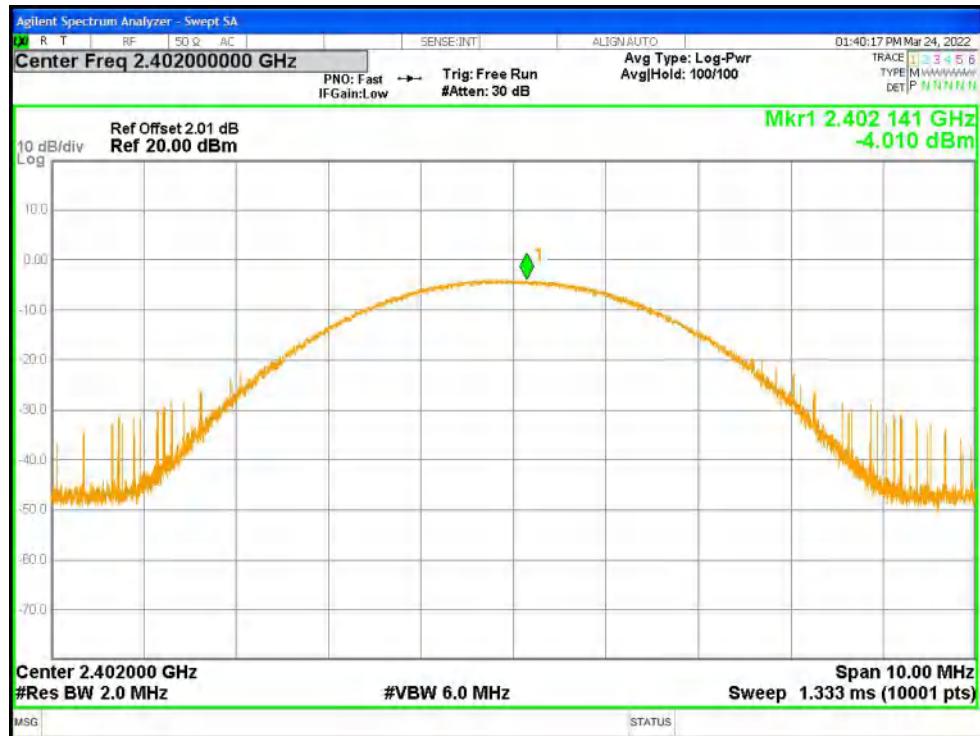
Power NVNT 1-DH1 2441MHz Ant1



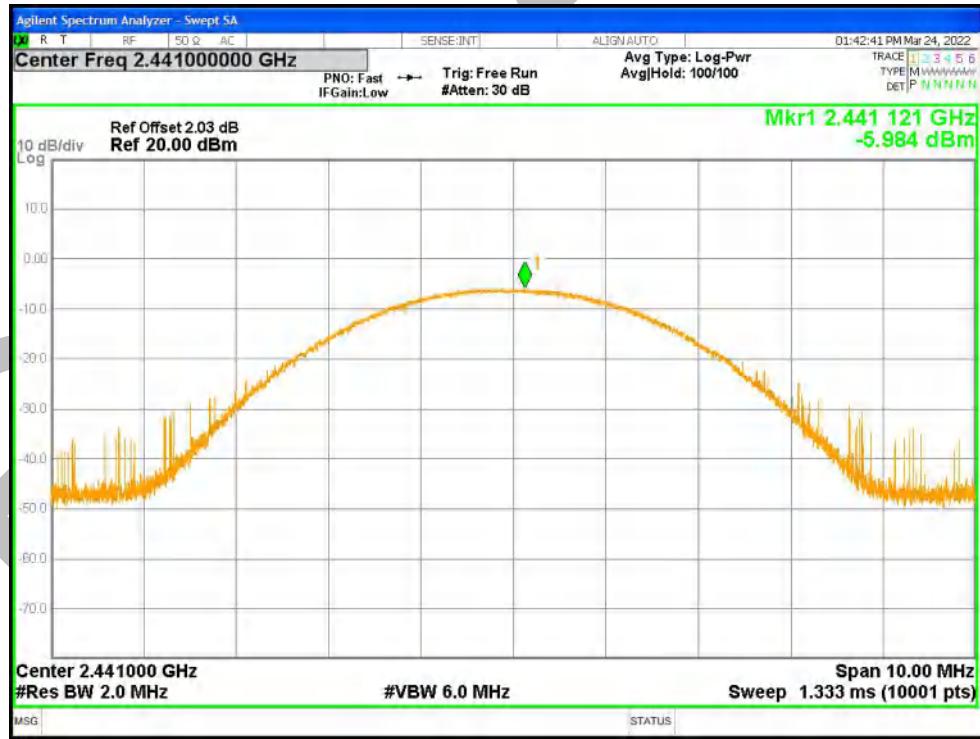
Power NVNT 1-DH1 2480MHz Ant1



Power NVNT 2-DH1 2402MHz Ant1



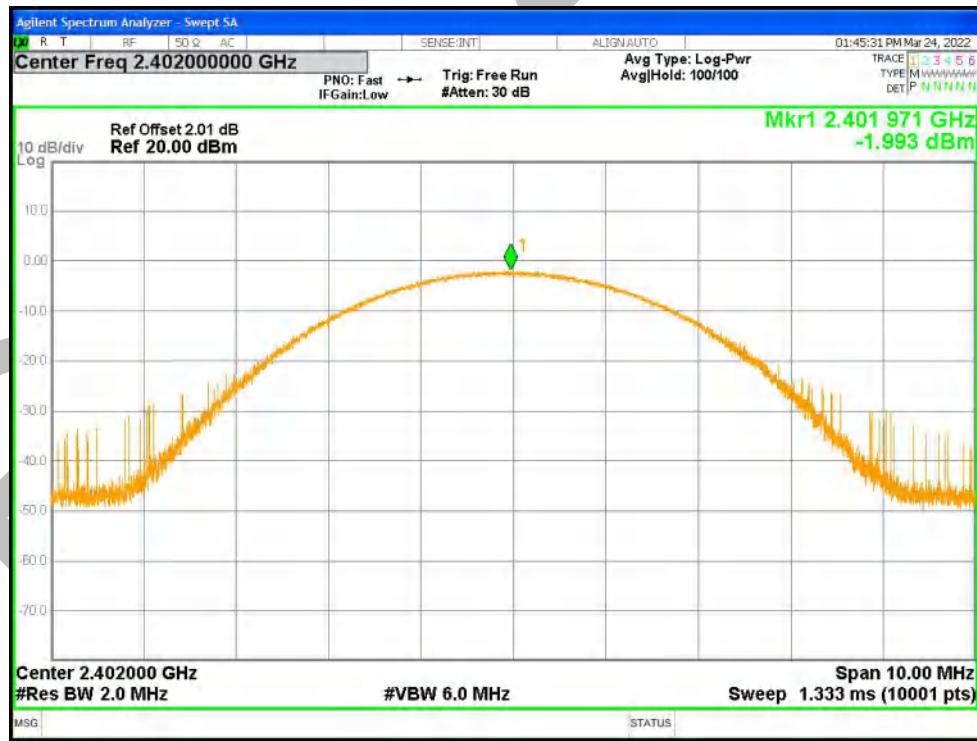
Power NVNT 2-DH1 2441MHz Ant1



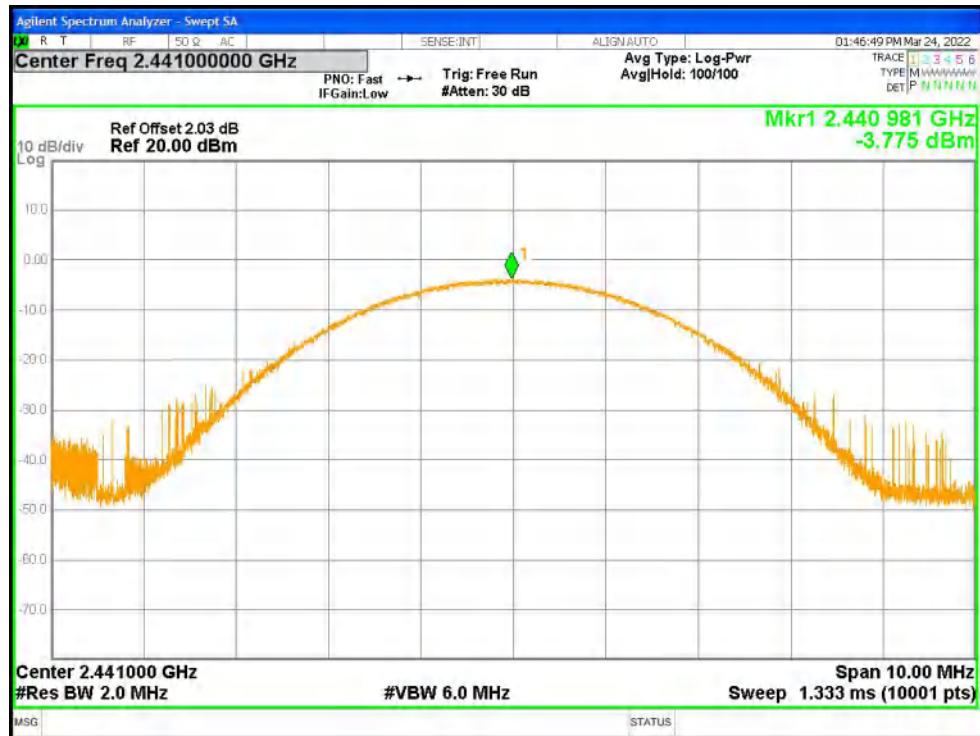
Power NVNT 2-DH1 2480MHz Ant1



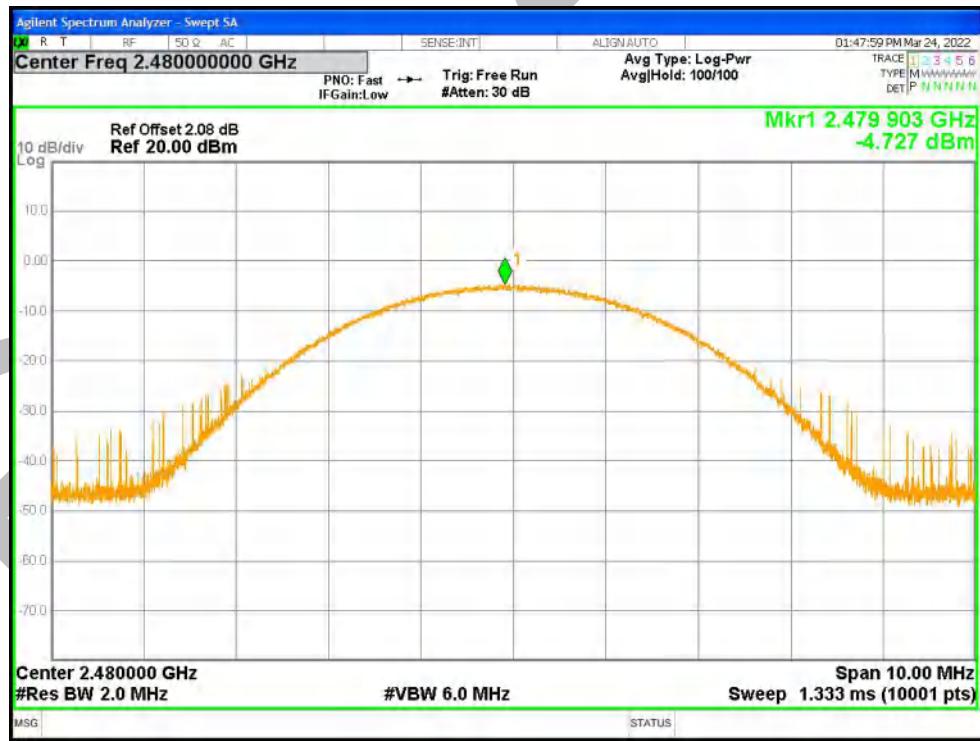
Power NVNT 3-DH1 2402MHz Ant1



Power NVNT 3-DH1 2441MHz Ant1

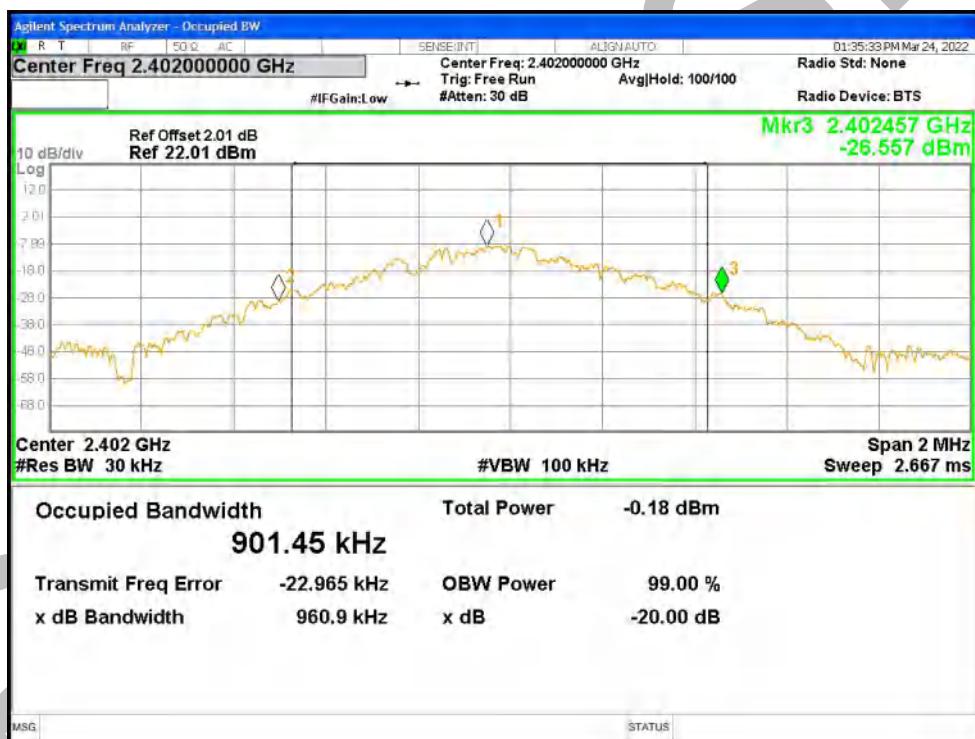


Power NVNT 3-DH1 2480MHz Ant1



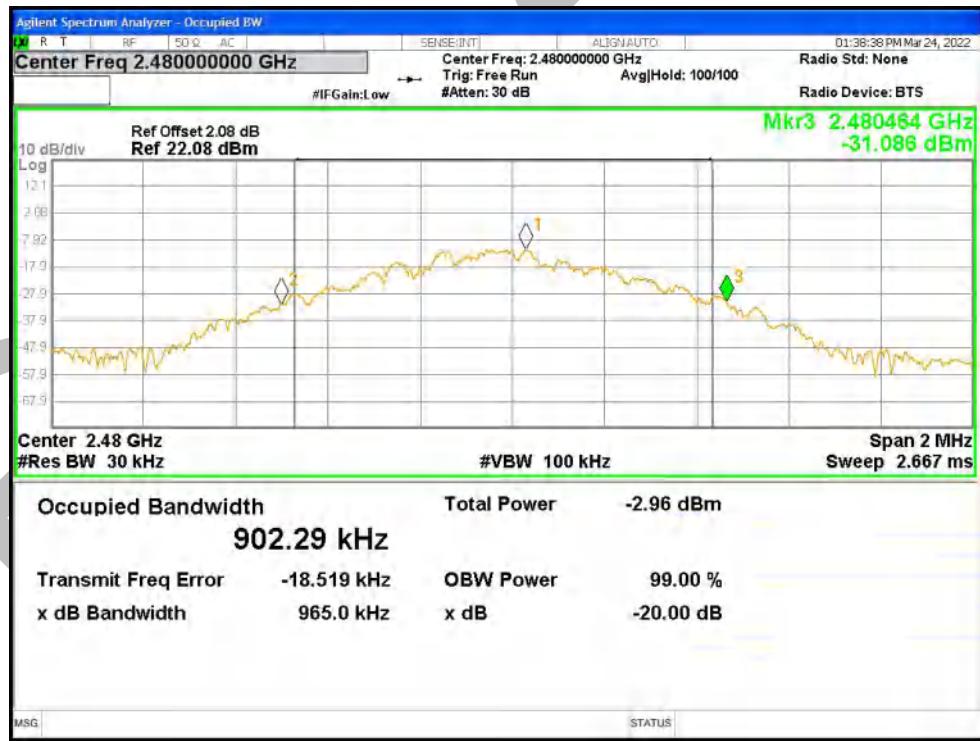
-20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	Ant1	0.961	0	Pass
NVNT	1-DH1	2441	Ant1	1.023	0	Pass
NVNT	1-DH1	2480	Ant1	0.965	0	Pass
NVNT	2-DH1	2402	Ant1	1.361	0	Pass
NVNT	2-DH1	2441	Ant1	1.348	0	Pass
NVNT	2-DH1	2480	Ant1	1.357	0	Pass
NVNT	3-DH1	2402	Ant1	1.352	0	Pass
NVNT	3-DH1	2441	Ant1	1.353	0	Pass
NVNT	3-DH1	2480	Ant1	1.345	0	Pass

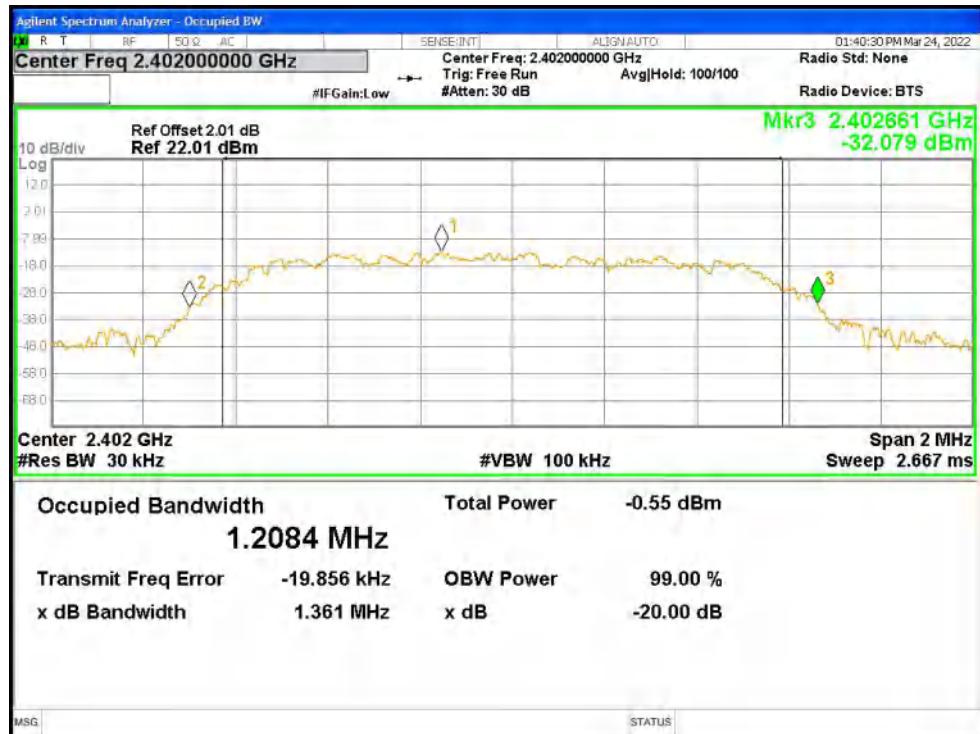
-20dB Bandwidth NVNT 1-DH1 2402MHz Ant1

-20dB Bandwidth NVNT 1-DH1 2441MHz Ant1



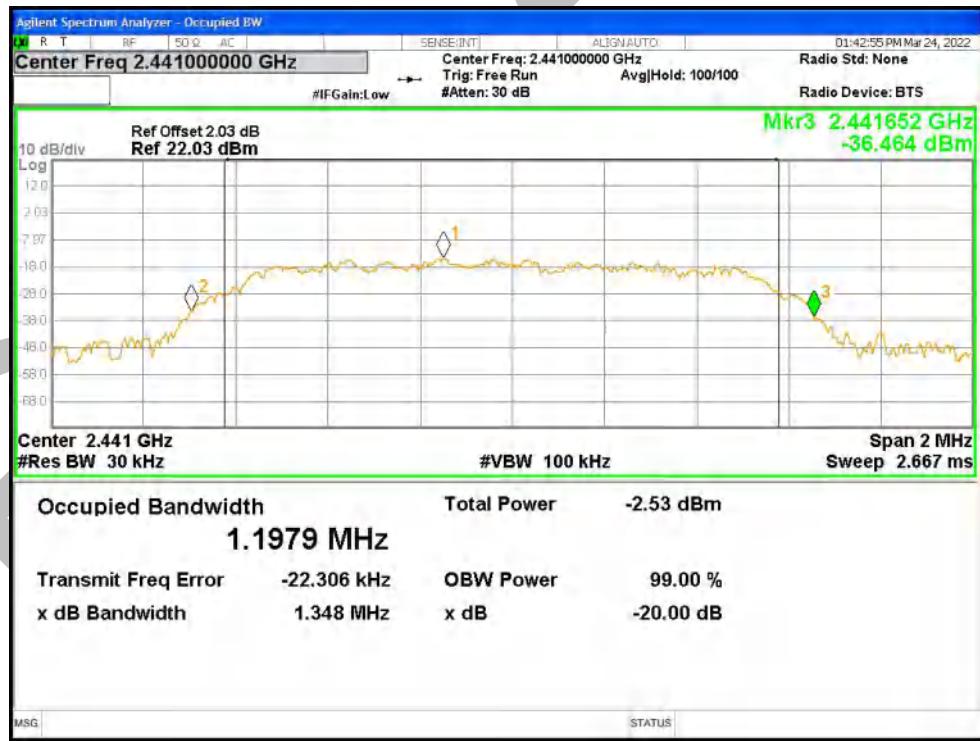
-20dB Bandwidth NVNT 1-DH1 2480MHz Ant1



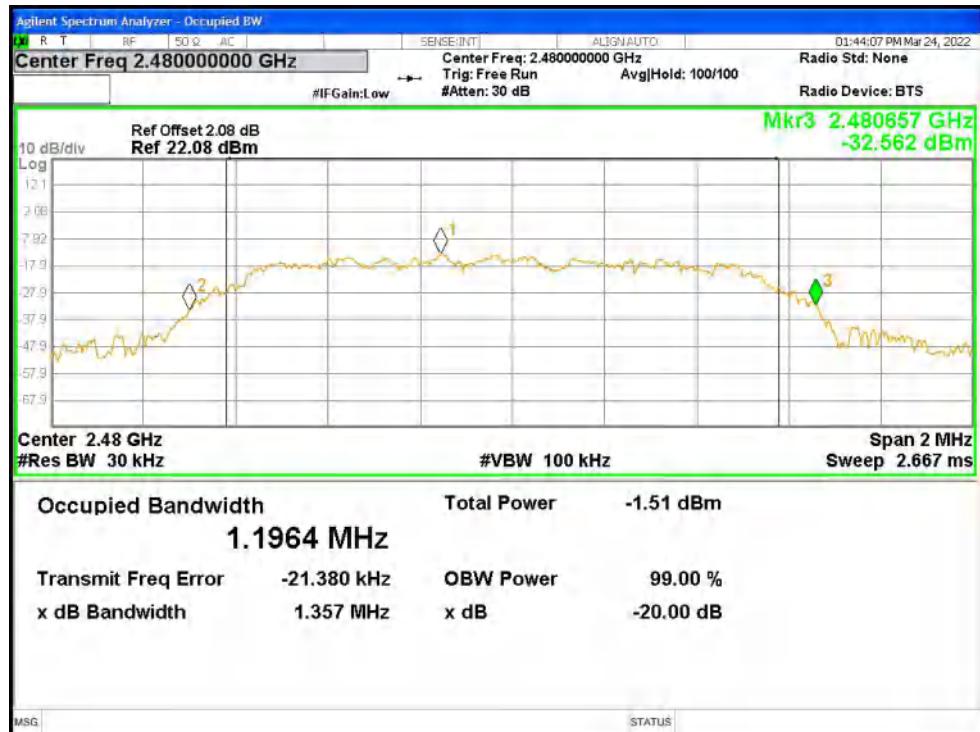
-20dB Bandwidth NVNT 2-DH1 2402MHz Ant1



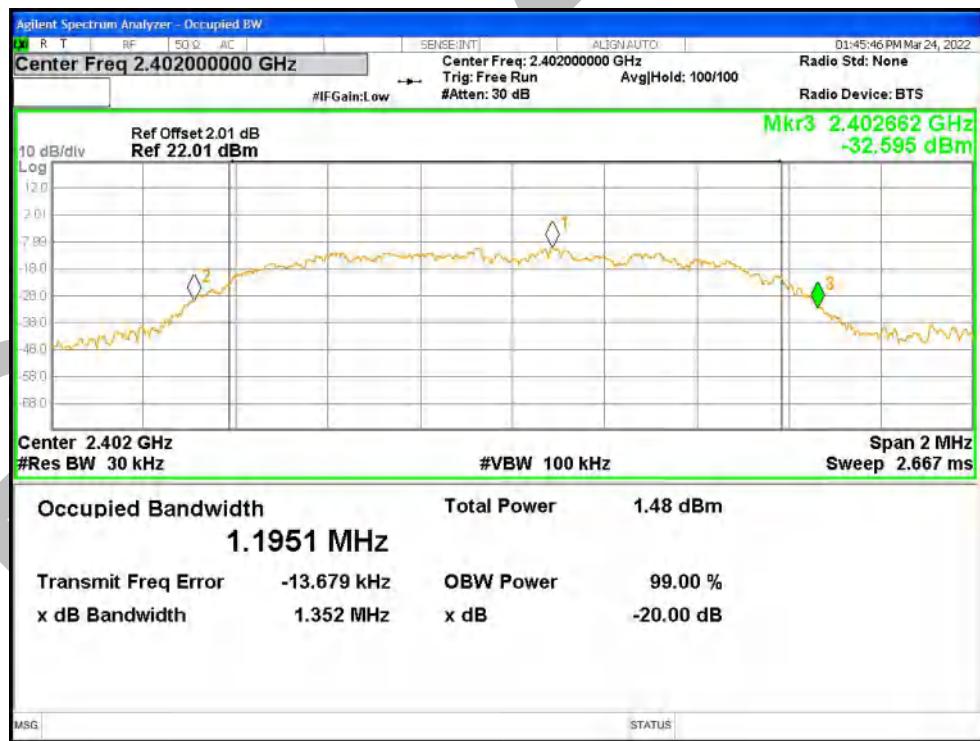
-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



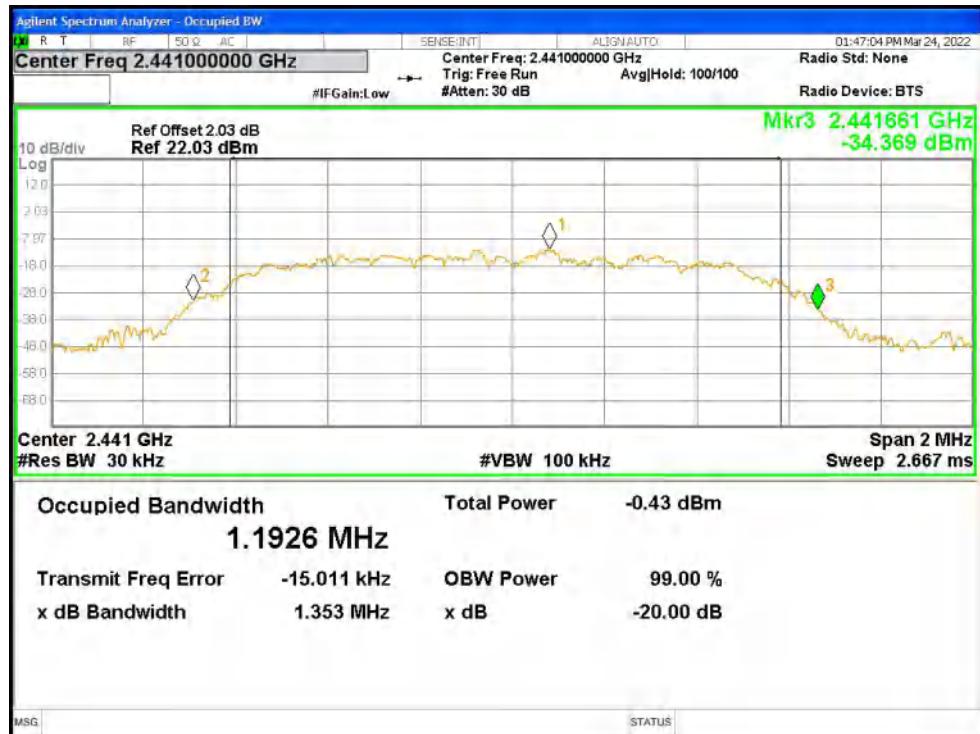
-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1



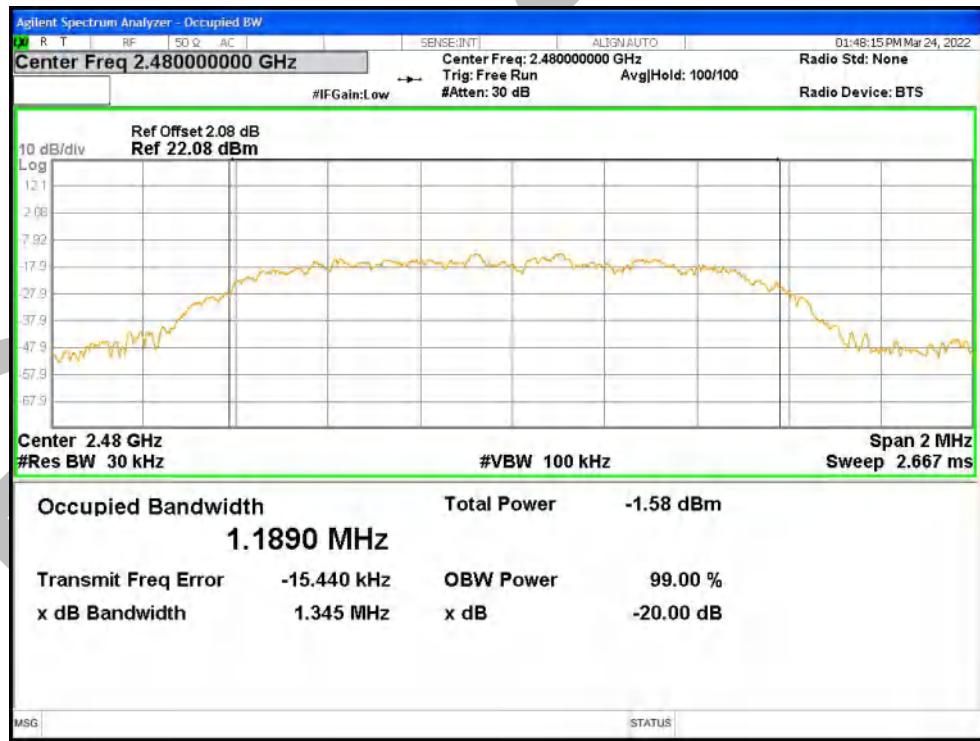
-20dB Bandwidth NVNT 3-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2480MHz Ant1



Occupied Channel Bandwidth

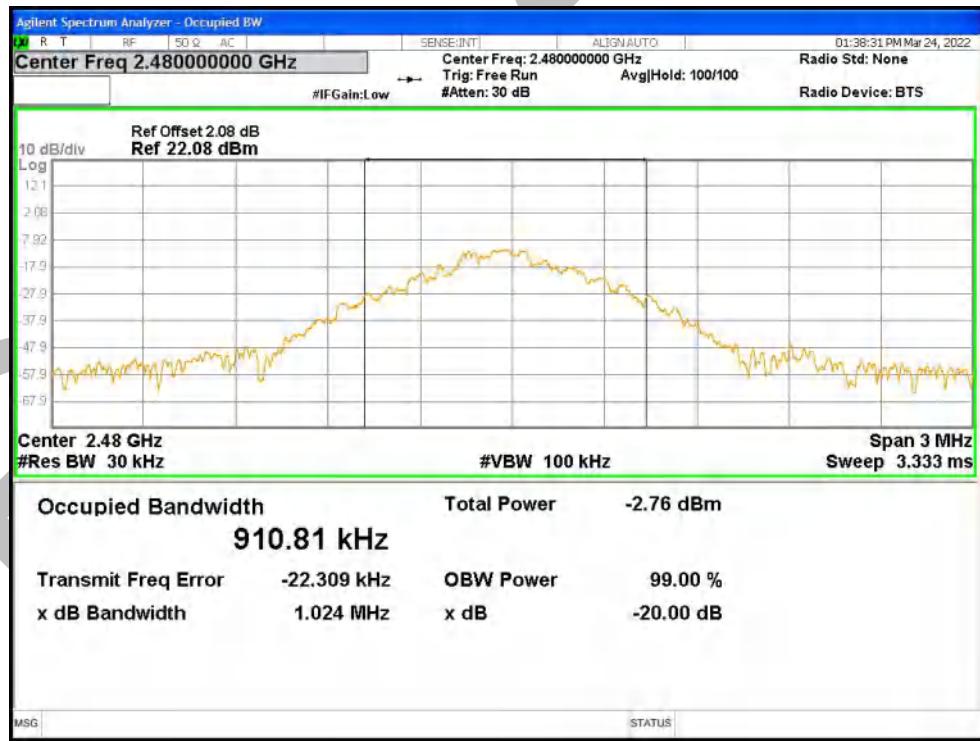
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH1	2402	Ant1	0.9030840652
NVNT	1-DH1	2441	Ant1	0.9151992826
NVNT	1-DH1	2480	Ant1	0.9108066571
NVNT	2-DH1	2402	Ant1	1.215179045
NVNT	2-DH1	2441	Ant1	1.197337876
NVNT	2-DH1	2480	Ant1	1.19651179
NVNT	3-DH1	2402	Ant1	1.208182465
NVNT	3-DH1	2441	Ant1	1.20161107
NVNT	3-DH1	2480	Ant1	1.197602345

OBW NVNT 1-DH1 2402MHz Ant1

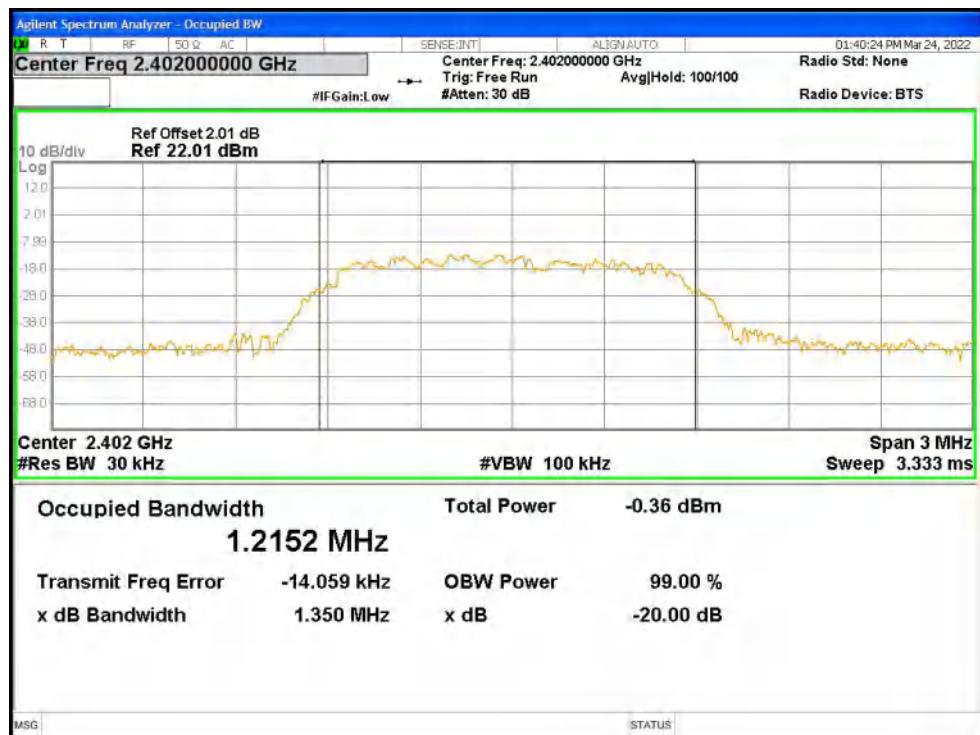
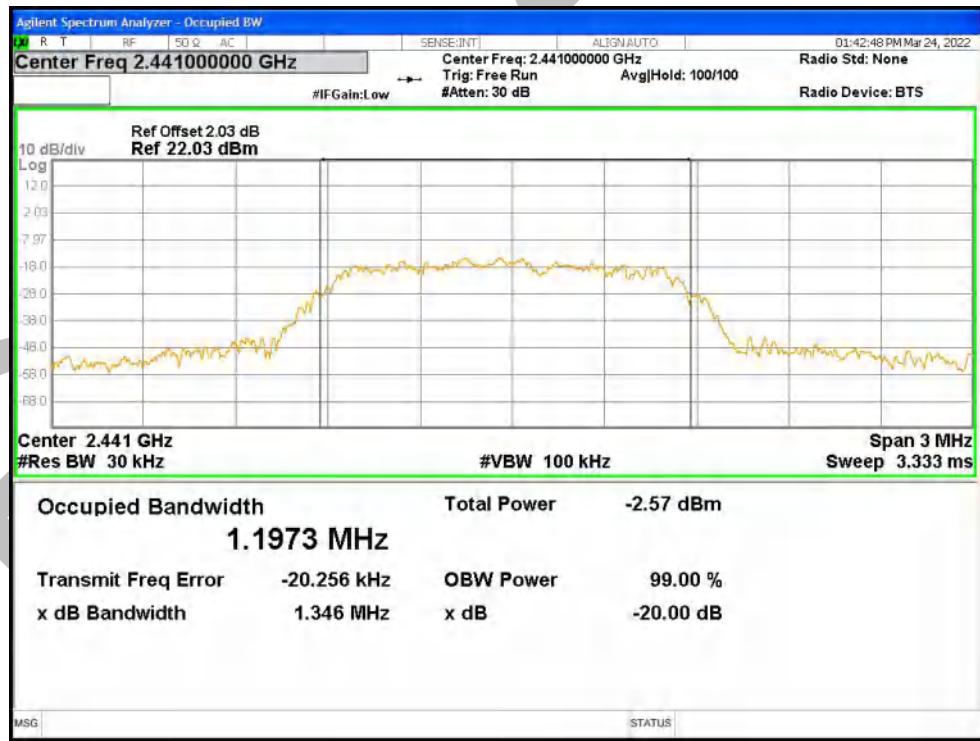
OBW NVNT 1-DH1 2441MHz Ant1

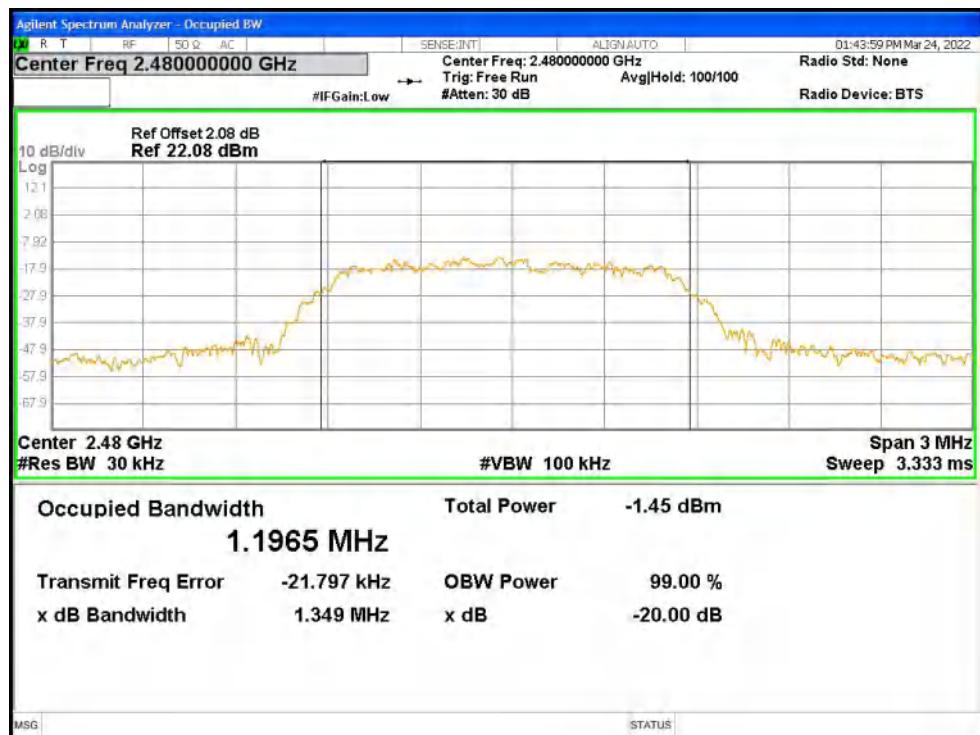
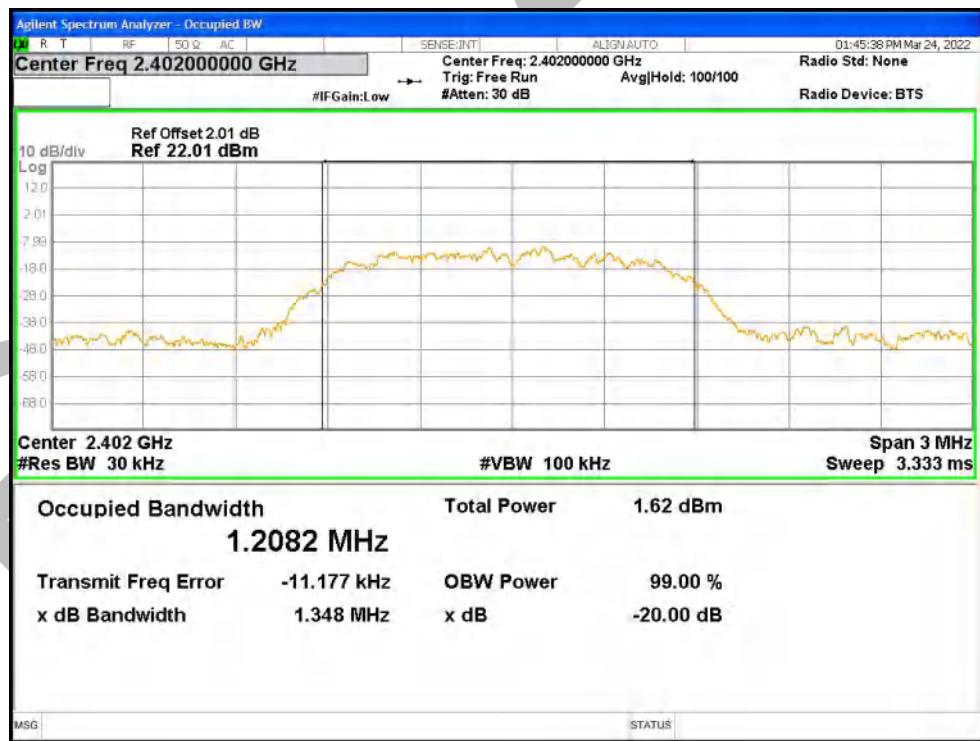


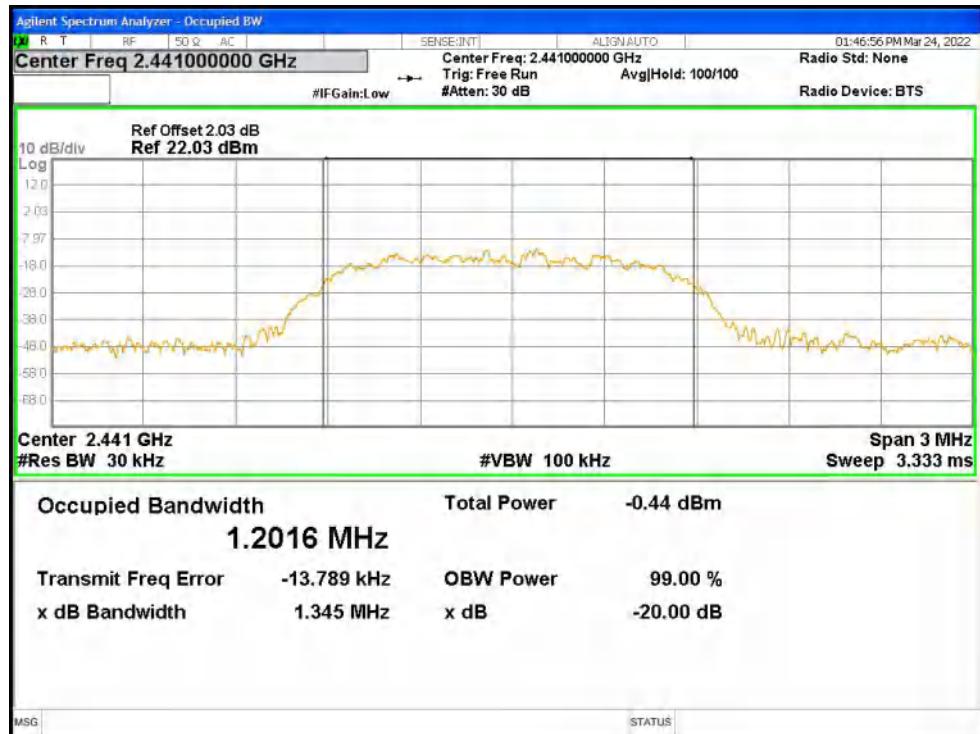
OBW NVNT 1-DH1 2480MHz Ant1



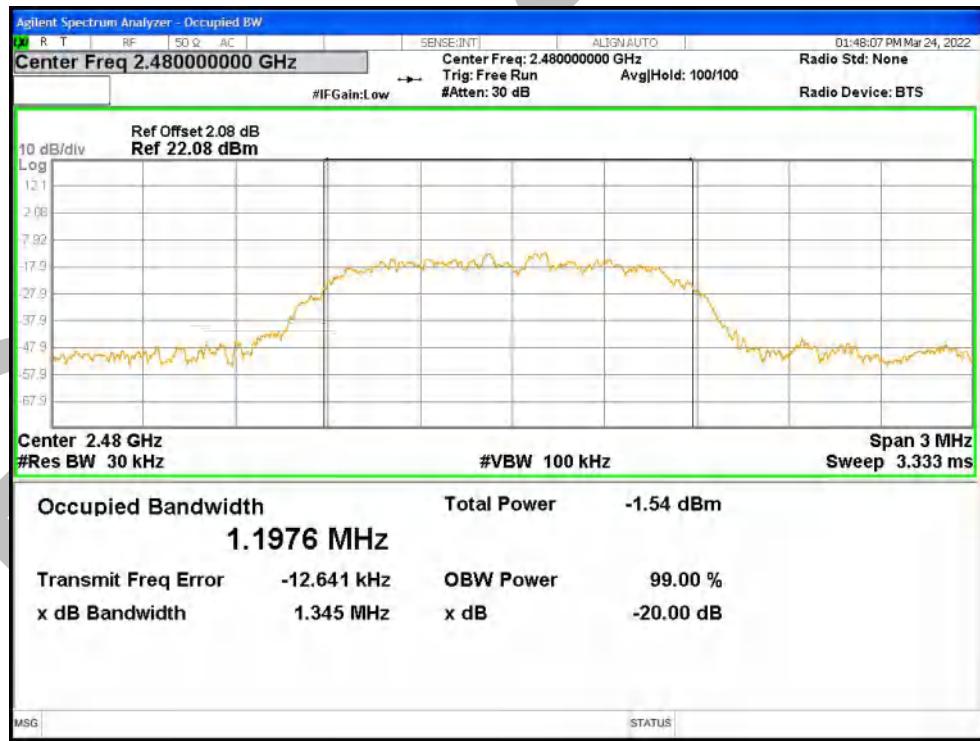
OBW NVNT 2-DH1 2402MHz Ant1


OBW NVNT 2-DH1 2441MHz Ant1

OBW NVNT 2-DH1 2480MHz Ant1


OBW NVNT 3-DH1 2402MHz Ant1

OBW NVNT 3-DH1 2441MHz Ant1

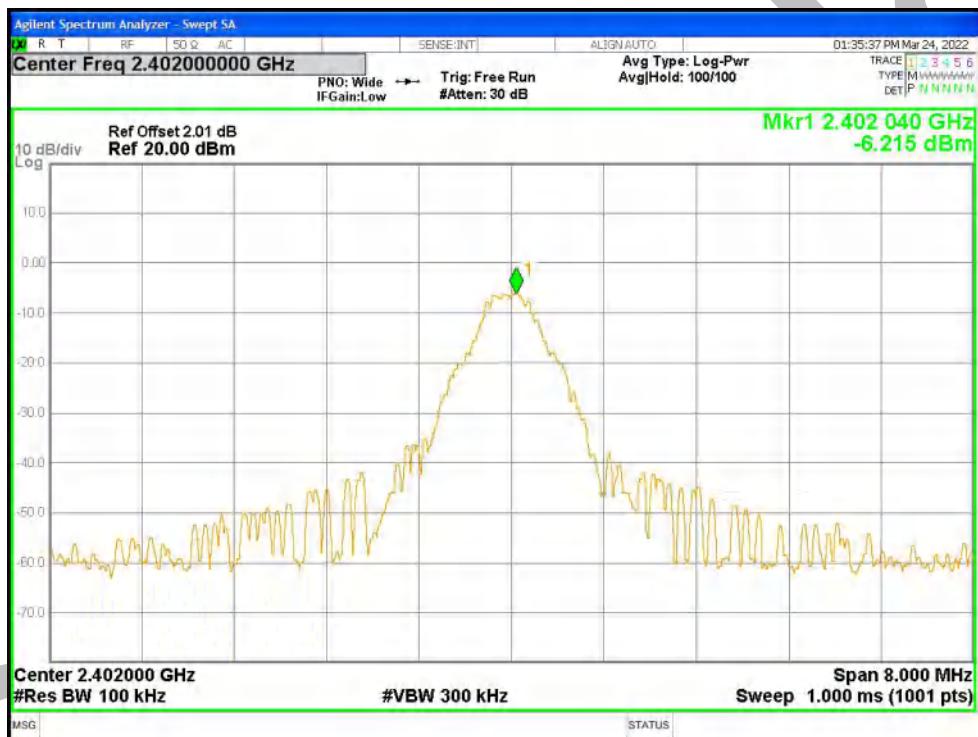


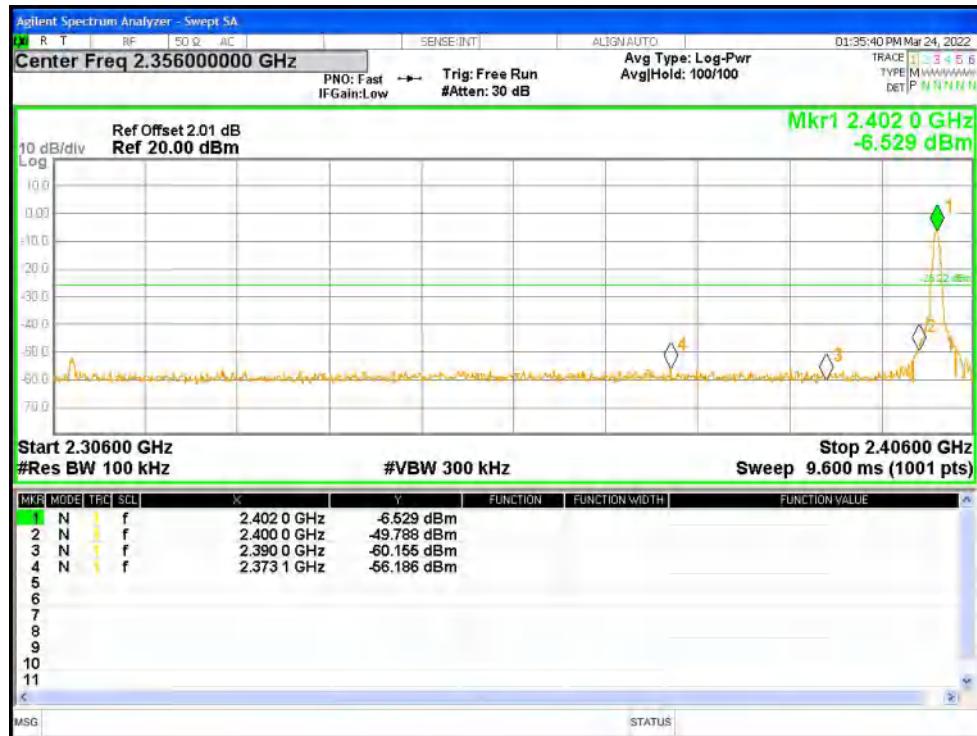
OBW NVNT 3-DH1 2480MHz Ant1



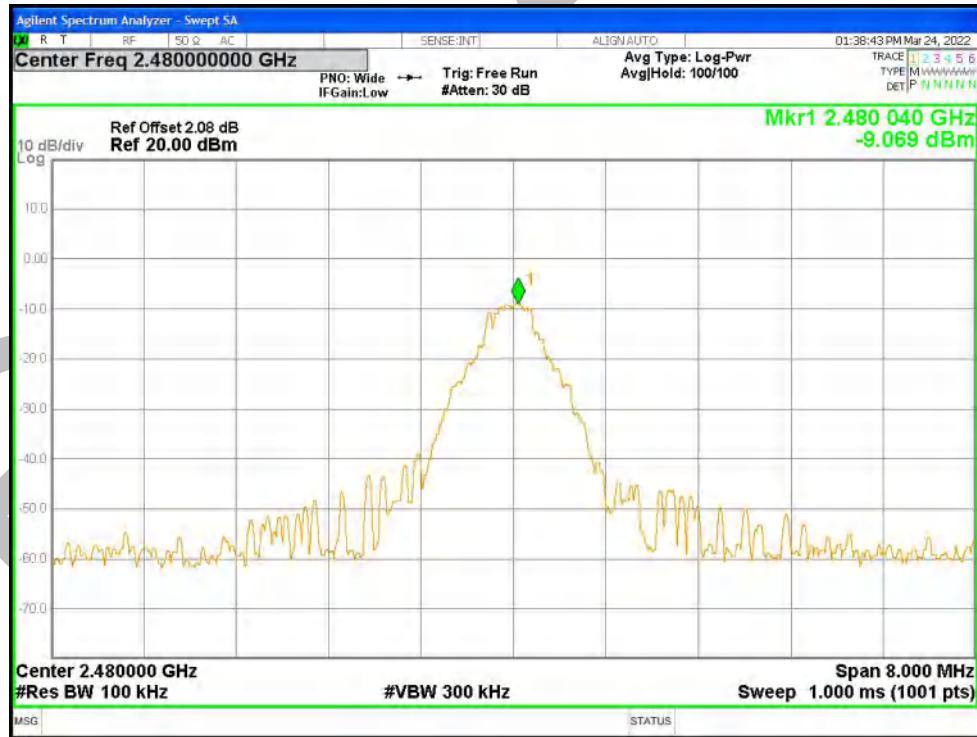
Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	-49.97	-20	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	-46.18	-20	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	-47.66	-20	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	-45.12	-20	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	-50.22	-20	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	-46.89	-20	Pass

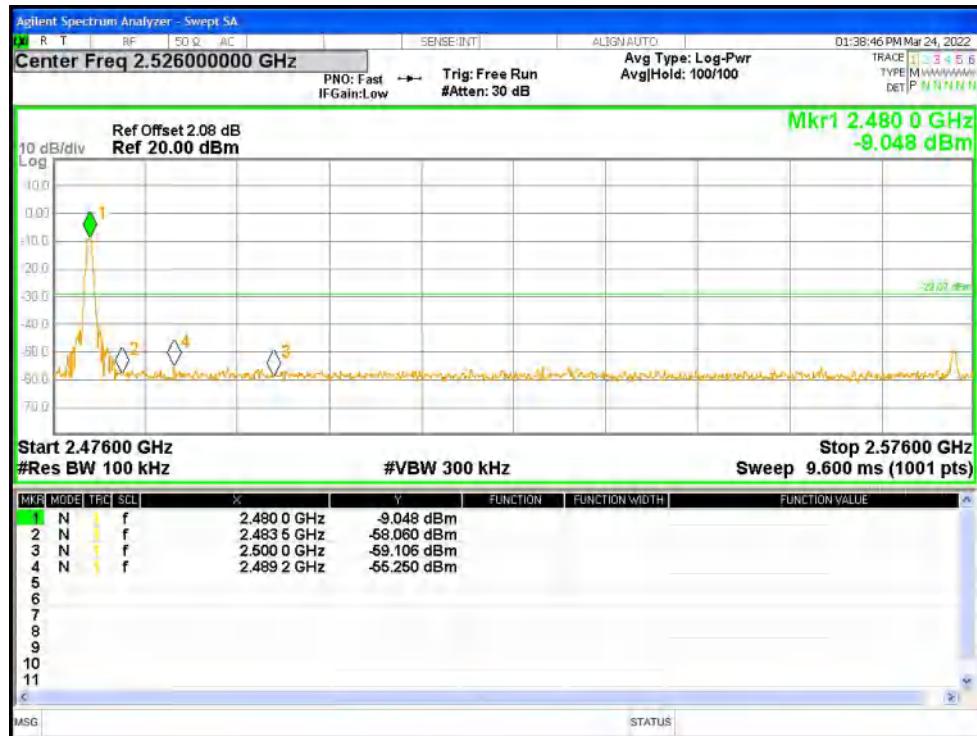
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Ref

Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission



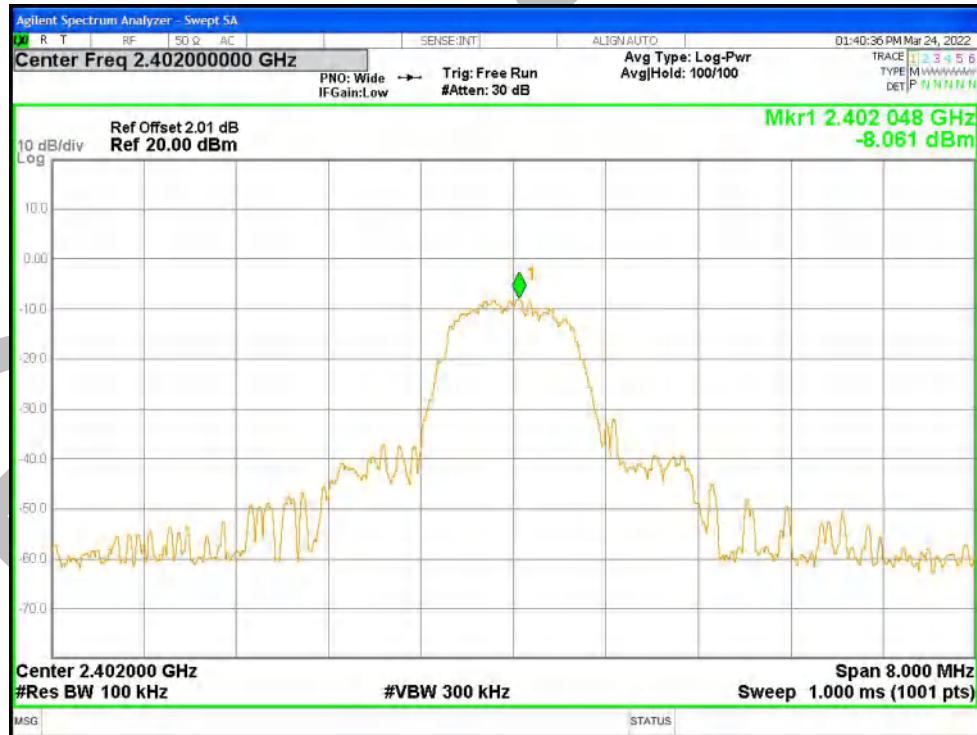
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Ref



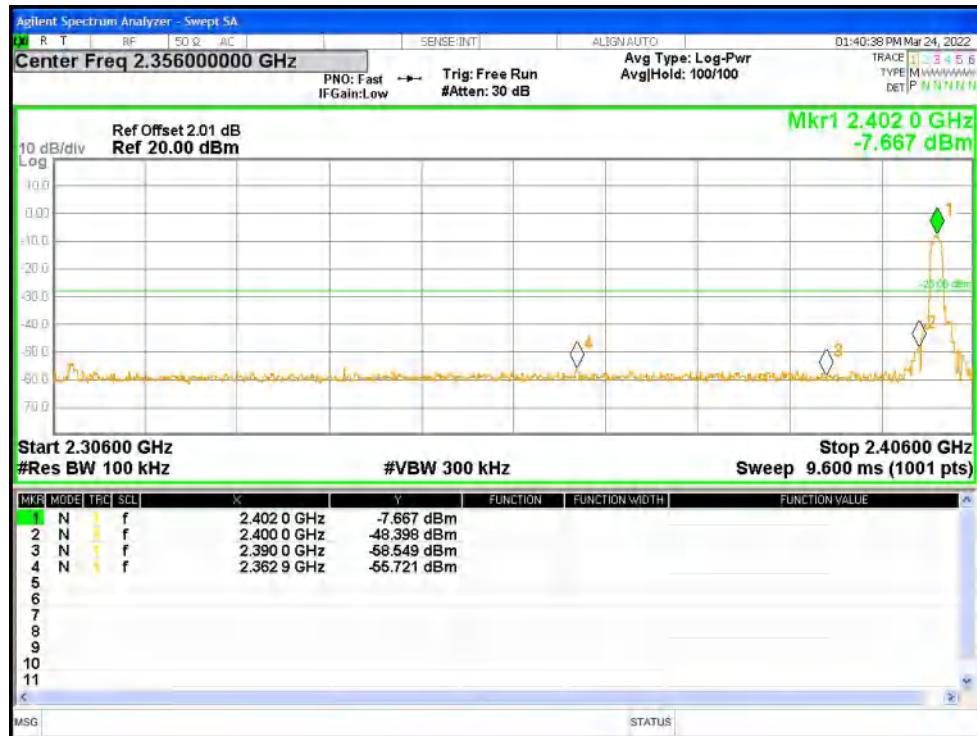
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Emission



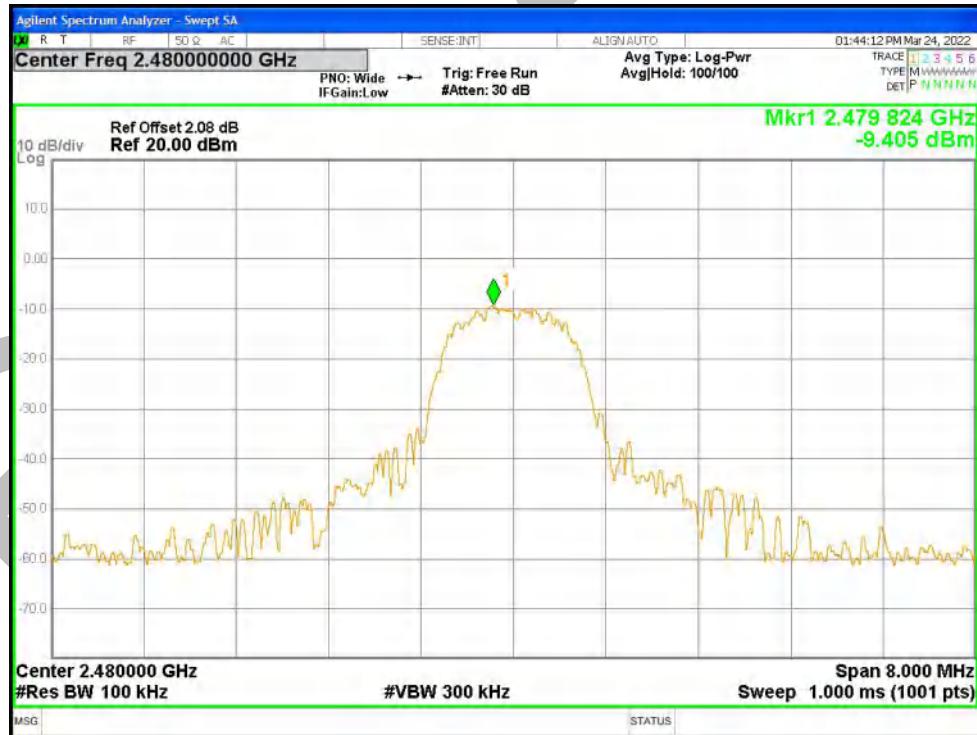
Band Edge NVNT 2-DH1 2402MHz Ant1 No-Hopping Ref



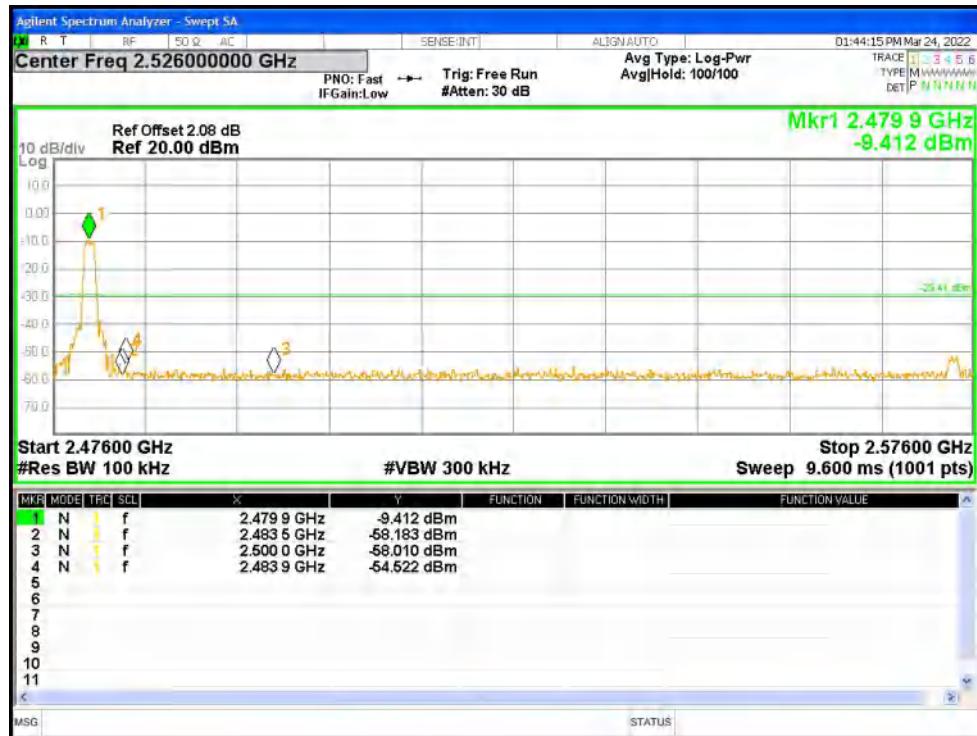
Band Edge NVNT 2-DH1 2402MHz Ant1 No-Hopping Emission



Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Ref



Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Emission



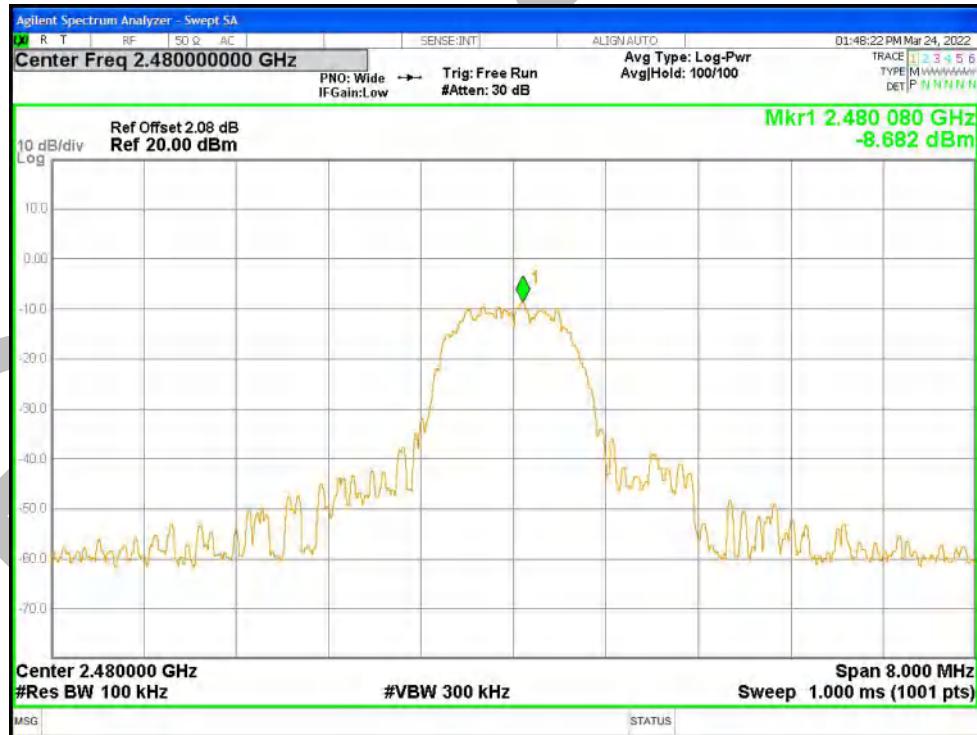
Band Edge NVNT 3-DH1 2402MHz Ant1 No-Hopping Ref



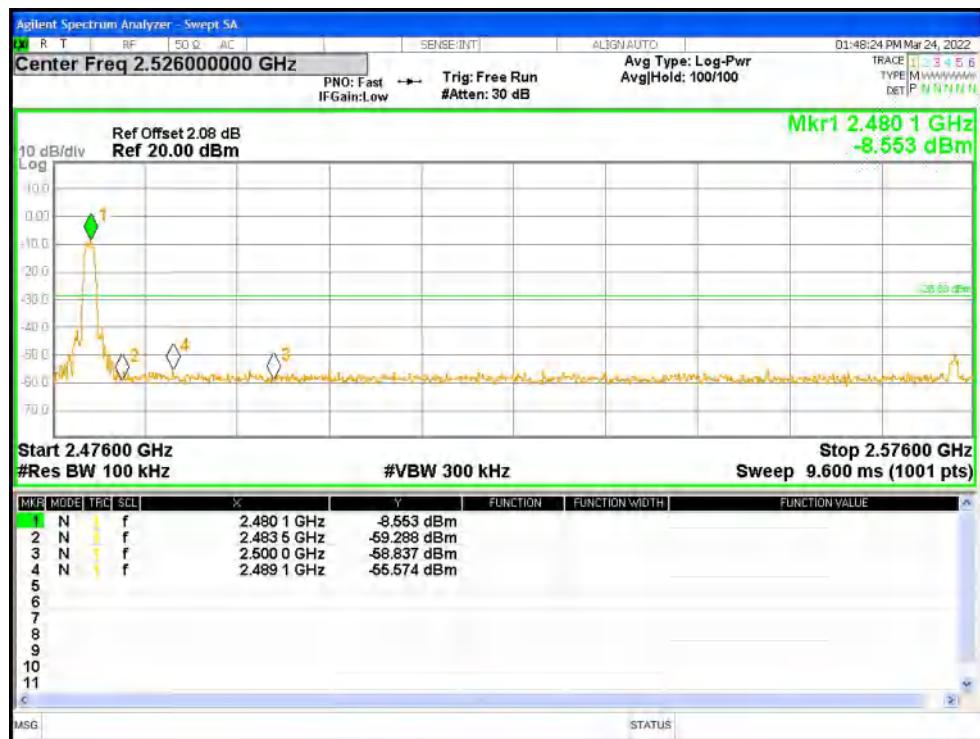
Band Edge NVNT 3-DH1 2402MHz Ant1 No-Hopping Emission



Band Edge NVNT 3-DH1 2480MHz Ant1 No-Hopping Ref



Band Edge NVNT 3-DH1 2480MHz Ant1 No-Hopping Emission

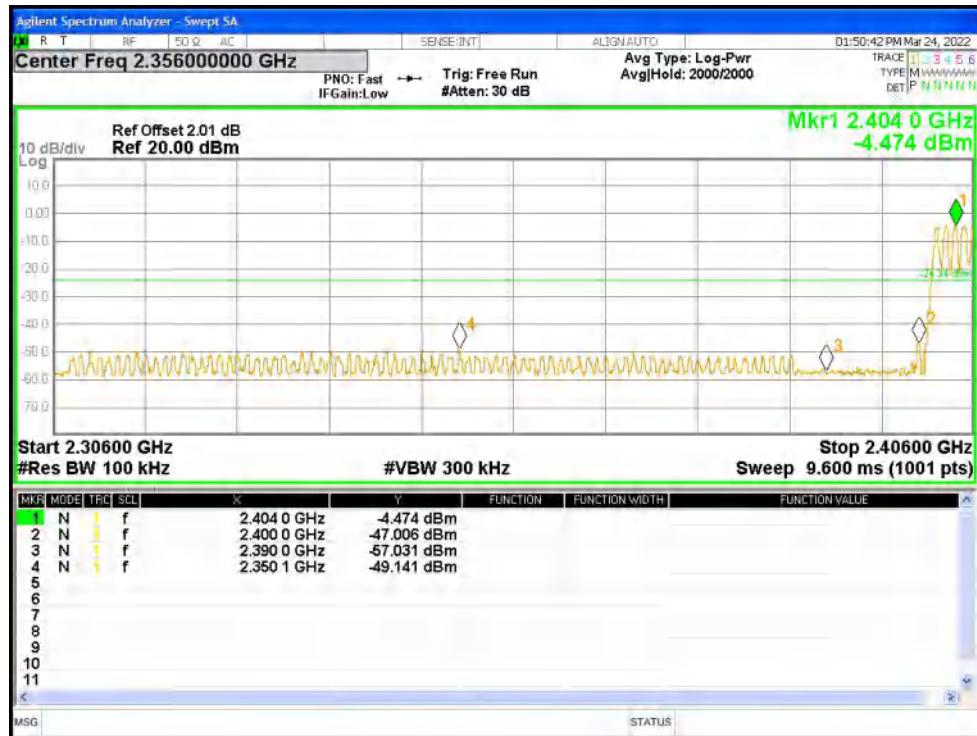


Band Edge(Hopping)

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	Hopping	-44.8	-20	Pass
NVNT	1-DH1	2480	Ant1	Hopping	-42.33	-20	Pass
NVNT	2-DH1	2402	Ant1	Hopping	-45.23	-20	Pass
NVNT	2-DH1	2480	Ant1	Hopping	-42.3	-20	Pass
NVNT	3-DH1	2402	Ant1	Hopping	-45.23	-20	Pass
NVNT	3-DH1	2480	Ant1	Hopping	-42.24	-20	Pass

Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Ref

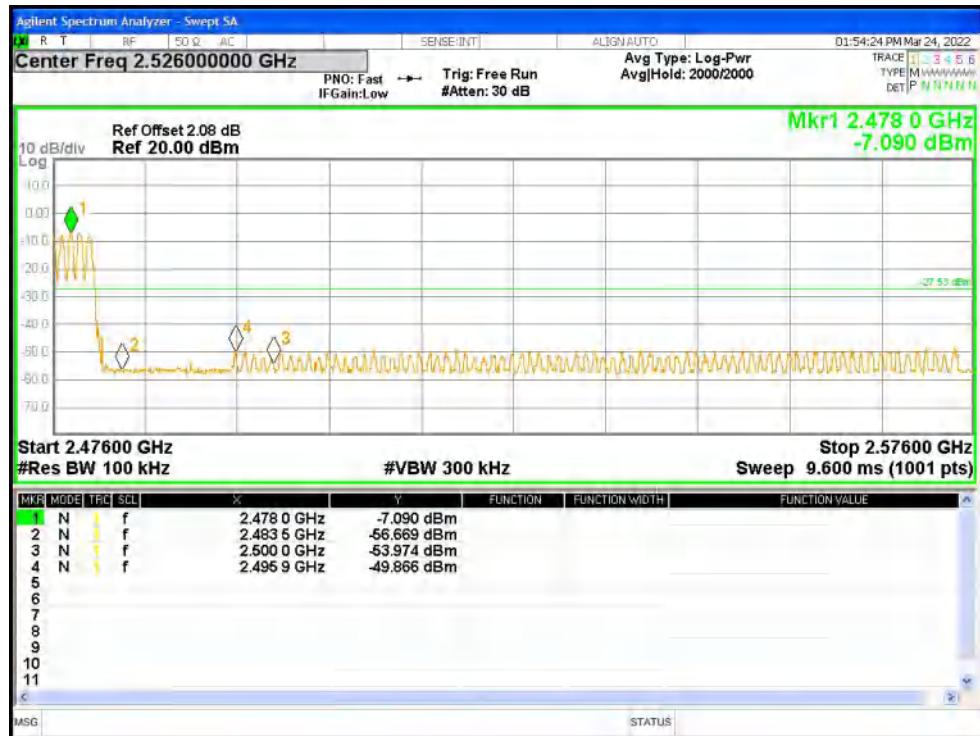
Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 1-DH1 2480MHz Ant1 Hopping Ref



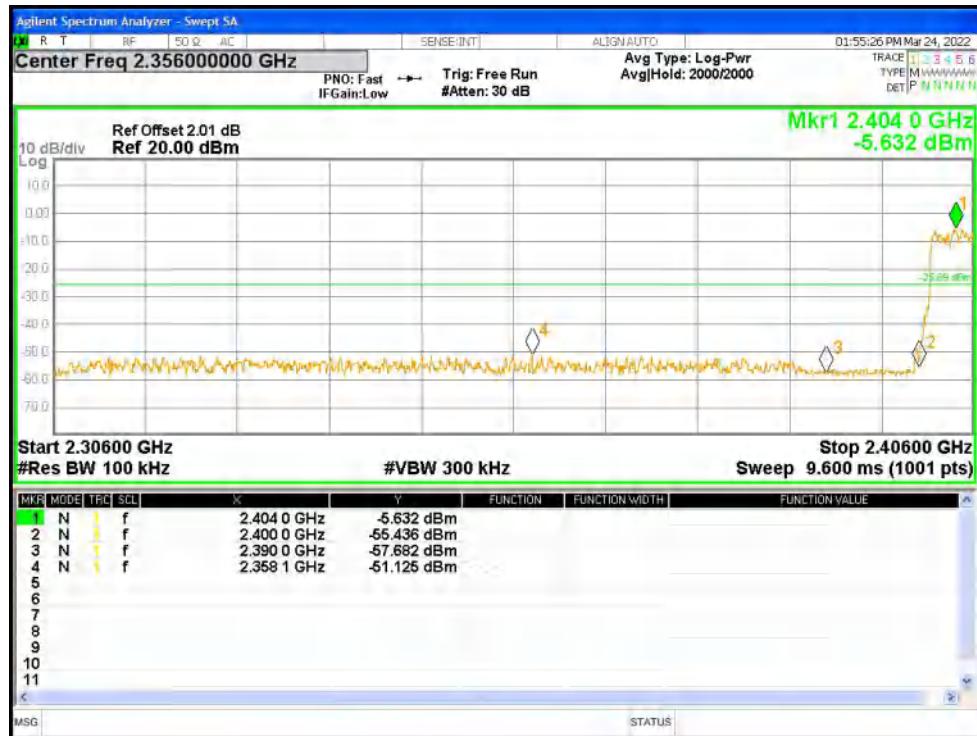
Band Edge(Hopping) NVNT 1-DH1 2480MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 2-DH1 2402MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 2-DH1 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 2-DH1 2480MHz Ant1 Hopping Ref



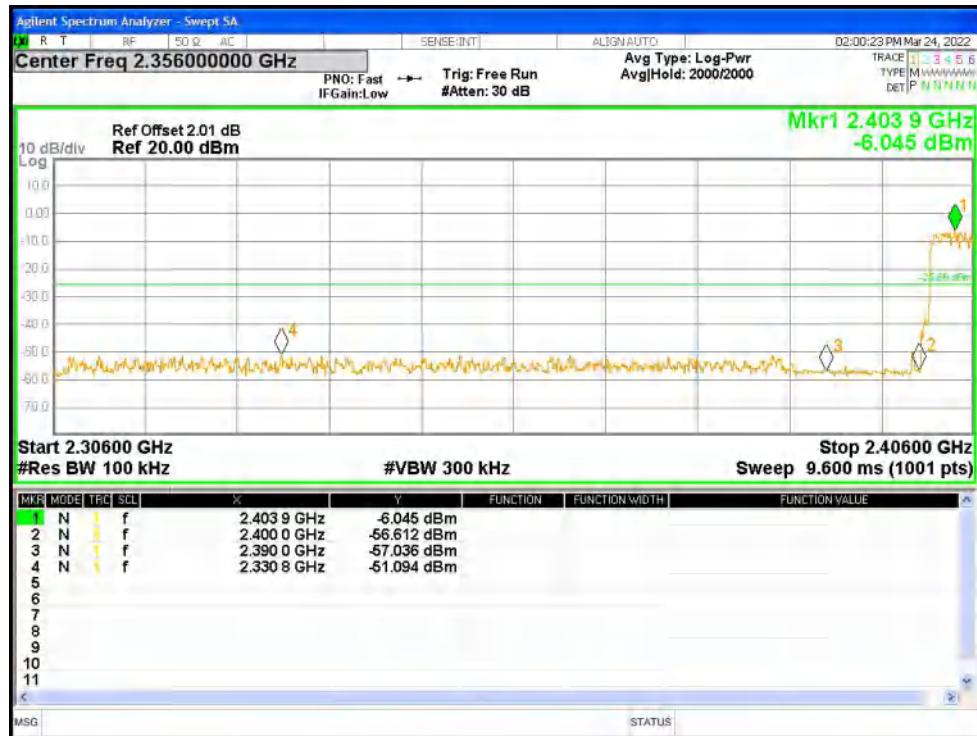
Band Edge(Hopping) NVNT 2-DH1 2480MHz Ant1 Hopping Emission



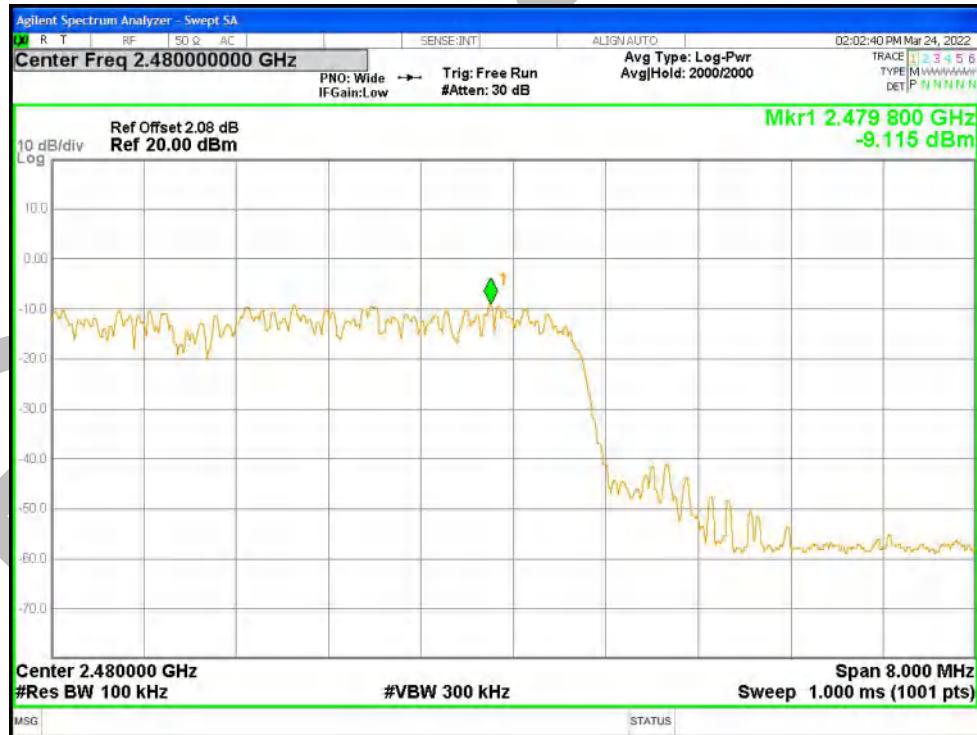
Band Edge(Hopping) NVNT 3-DH1 2402MHz Ant1 Hopping Ref



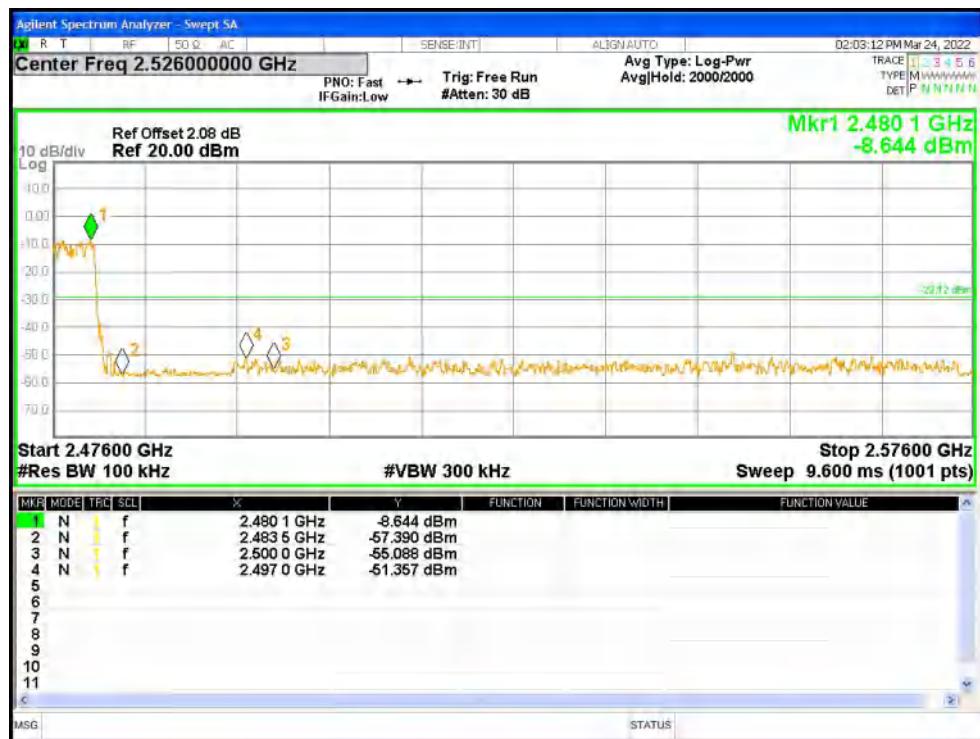
Band Edge(Hopping) NVNT 3-DH1 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 3-DH1 2480MHz Ant1 Hopping Ref



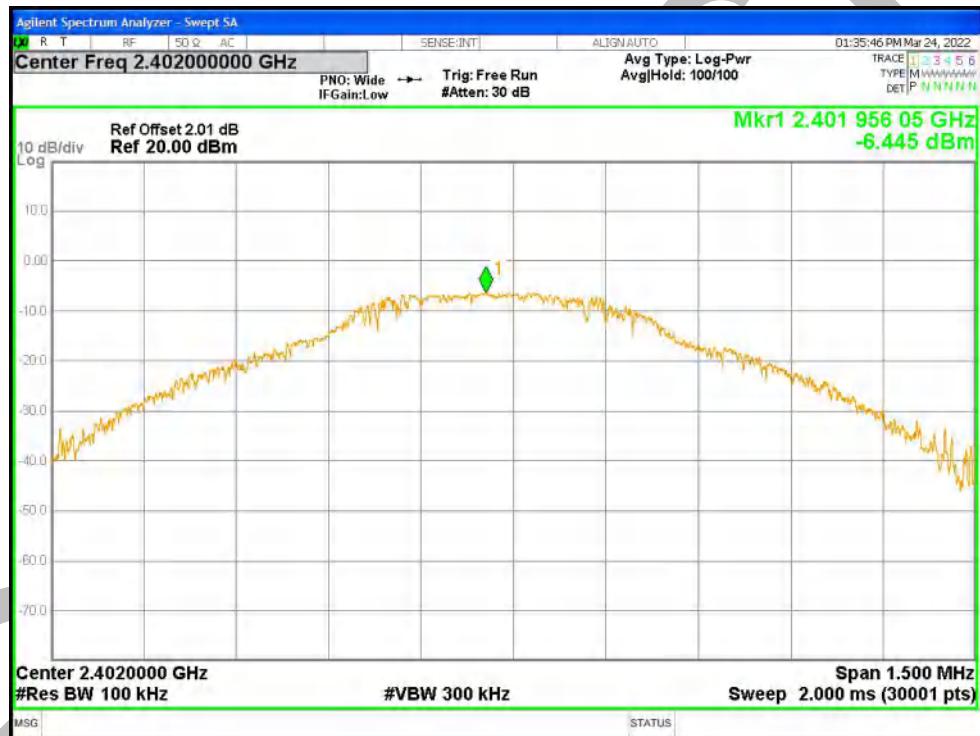
Band Edge(Hopping) NVNT 3-DH1 2480MHz Ant1 Hopping Emission



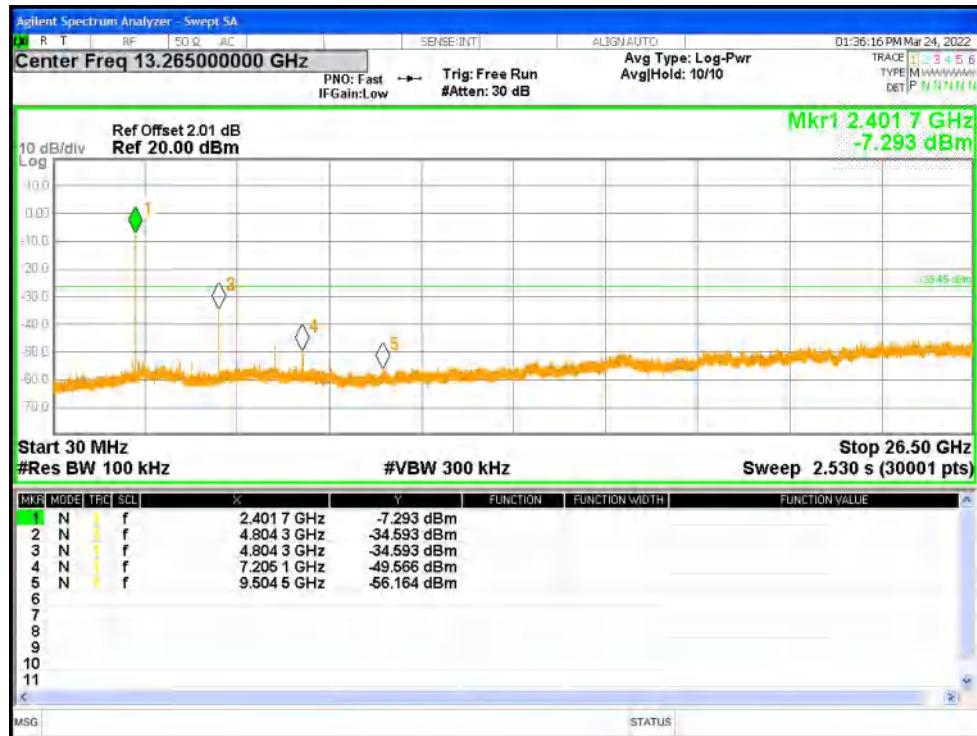
Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	-28.15	-20	Pass
NVNT	1-DH1	2441	Ant1	-25.29	-20	Pass
NVNT	1-DH1	2480	Ant1	-26.85	-20	Pass
NVNT	2-DH1	2402	Ant1	-23.79	-20	Pass
NVNT	2-DH1	2441	Ant1	-25.52	-20	Pass
NVNT	2-DH1	2480	Ant1	-27.21	-20	Pass
NVNT	3-DH1	2402	Ant1	-27.08	-20	Pass
NVNT	3-DH1	2441	Ant1	-26.95	-20	Pass
NVNT	3-DH1	2480	Ant1	-25.17	-20	Pass

Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



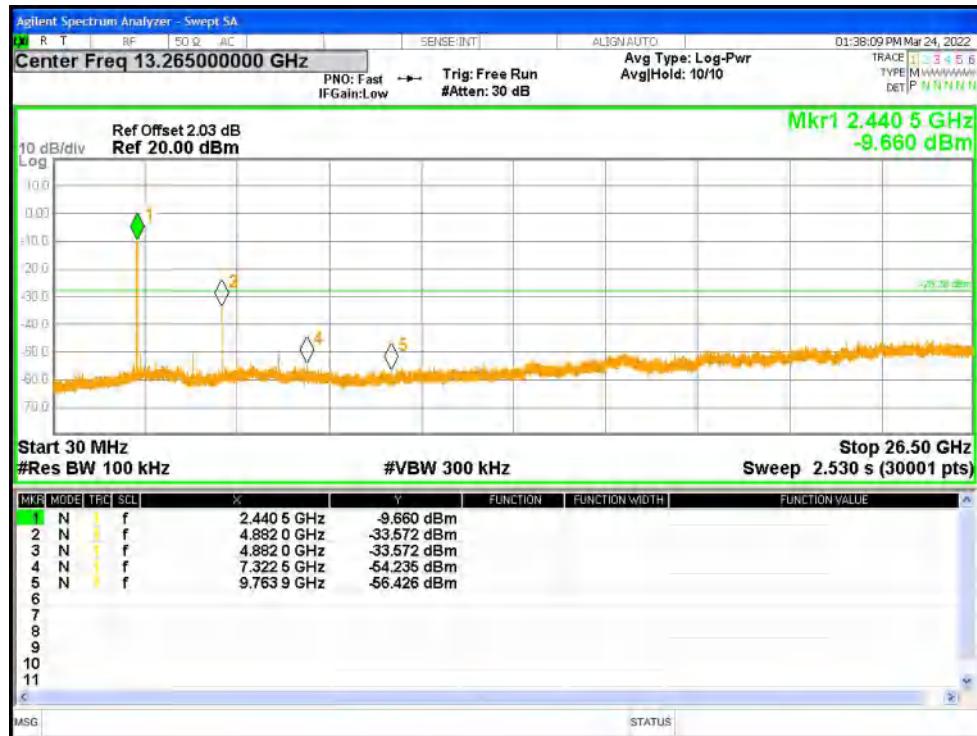
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission



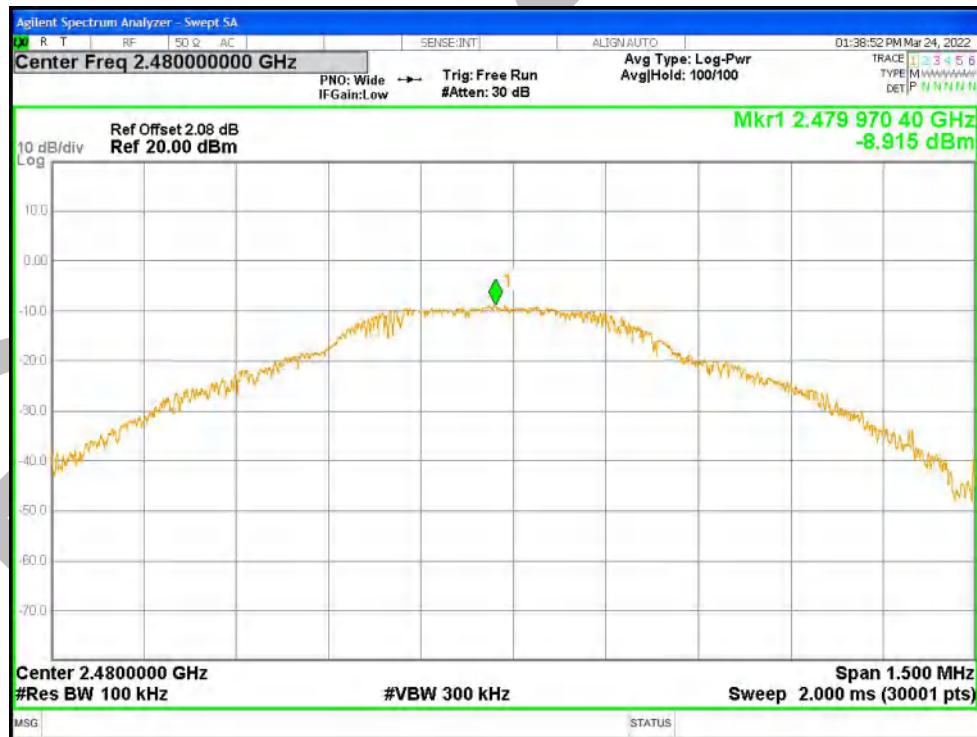
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref



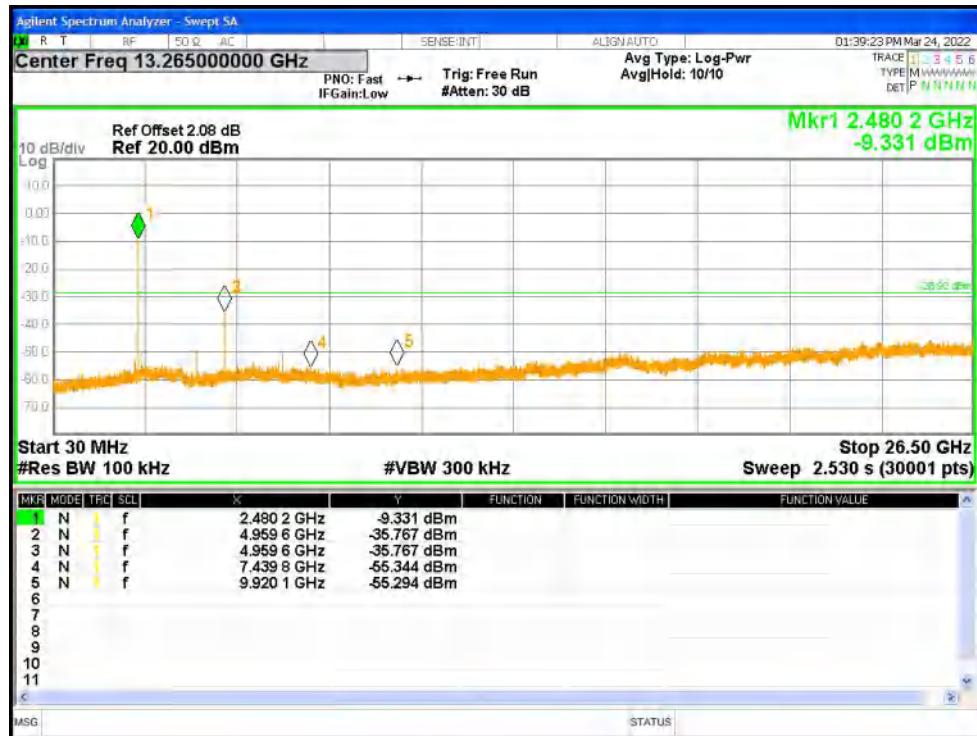
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission



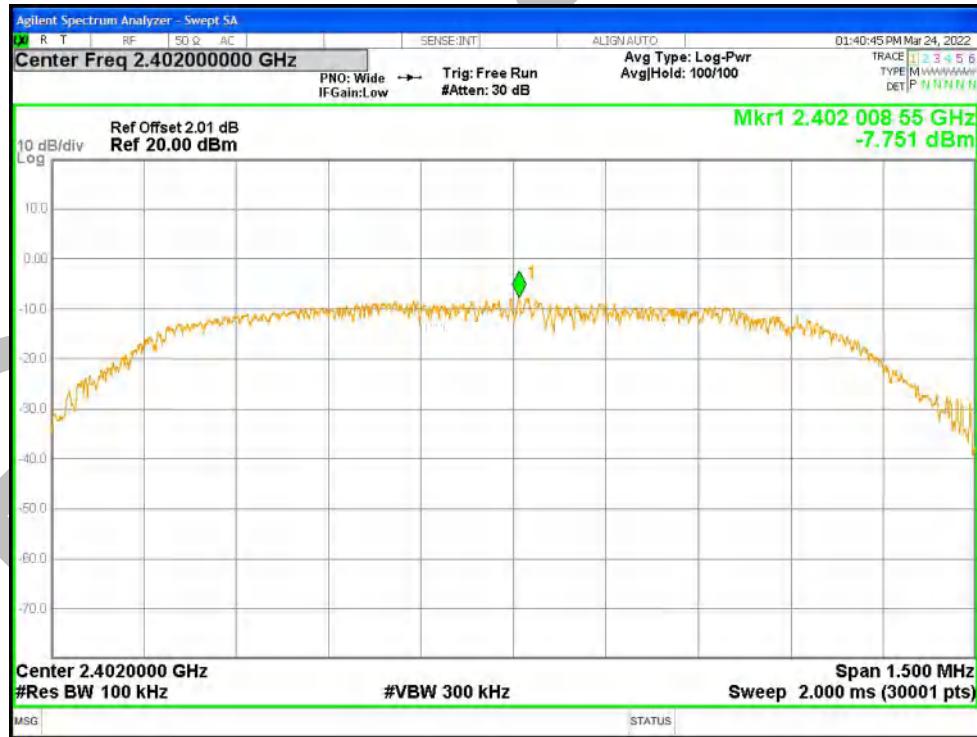
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Ref



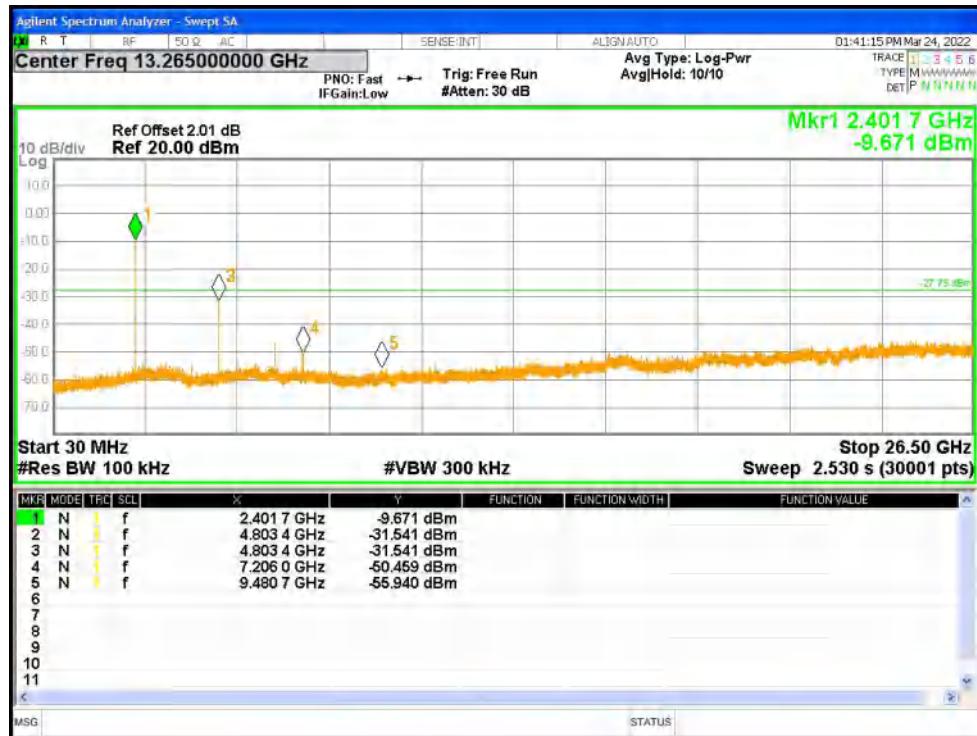
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Emission



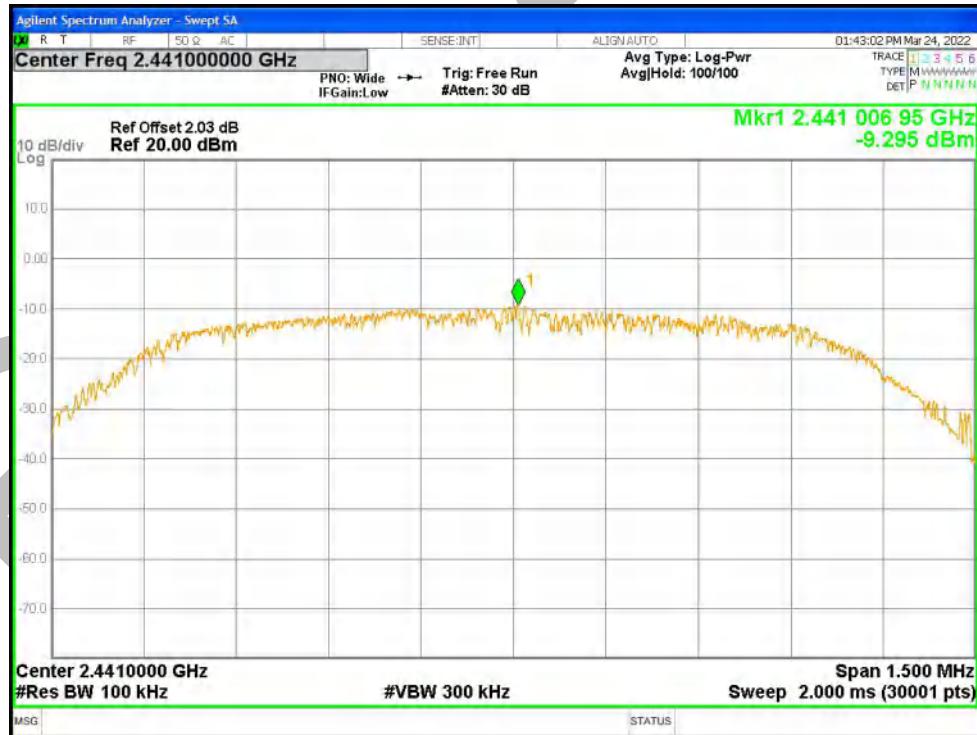
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



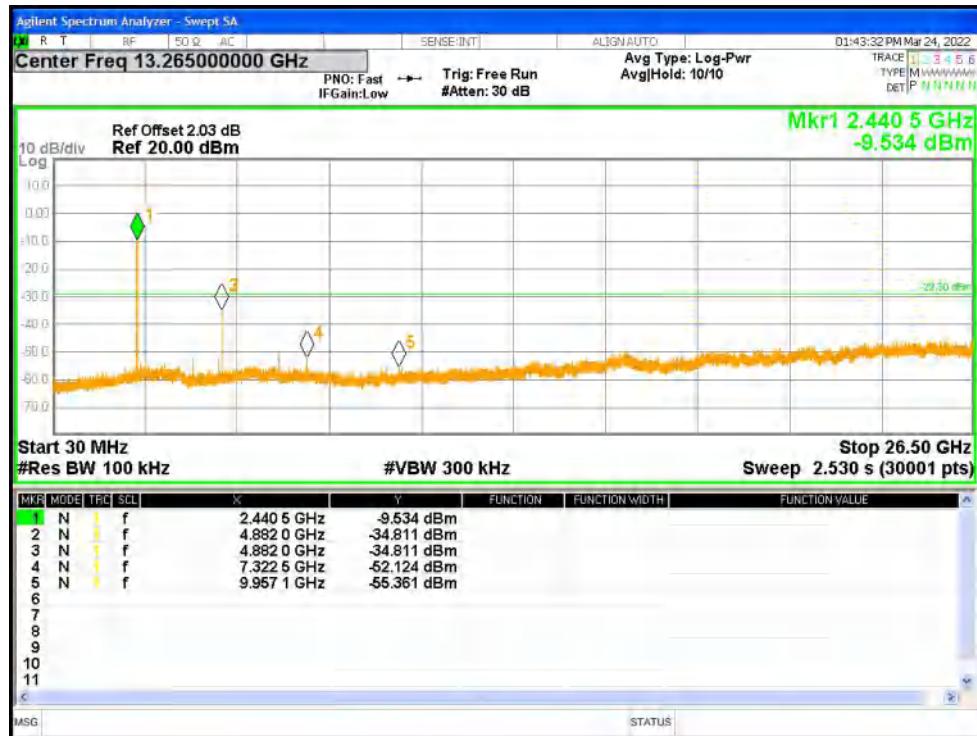
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission



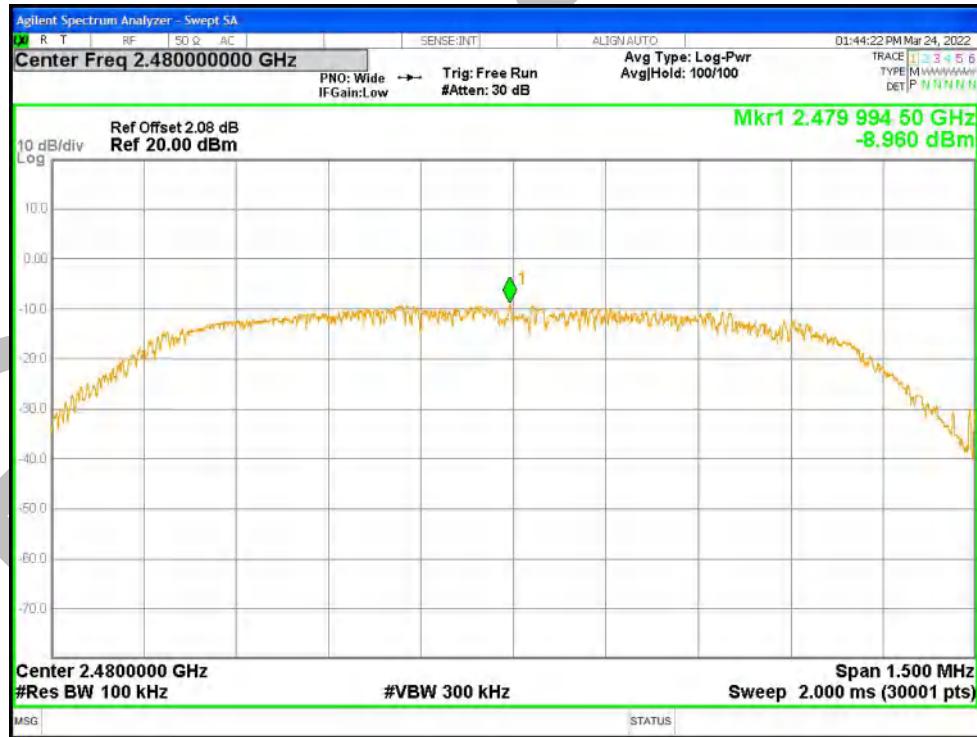
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Ref



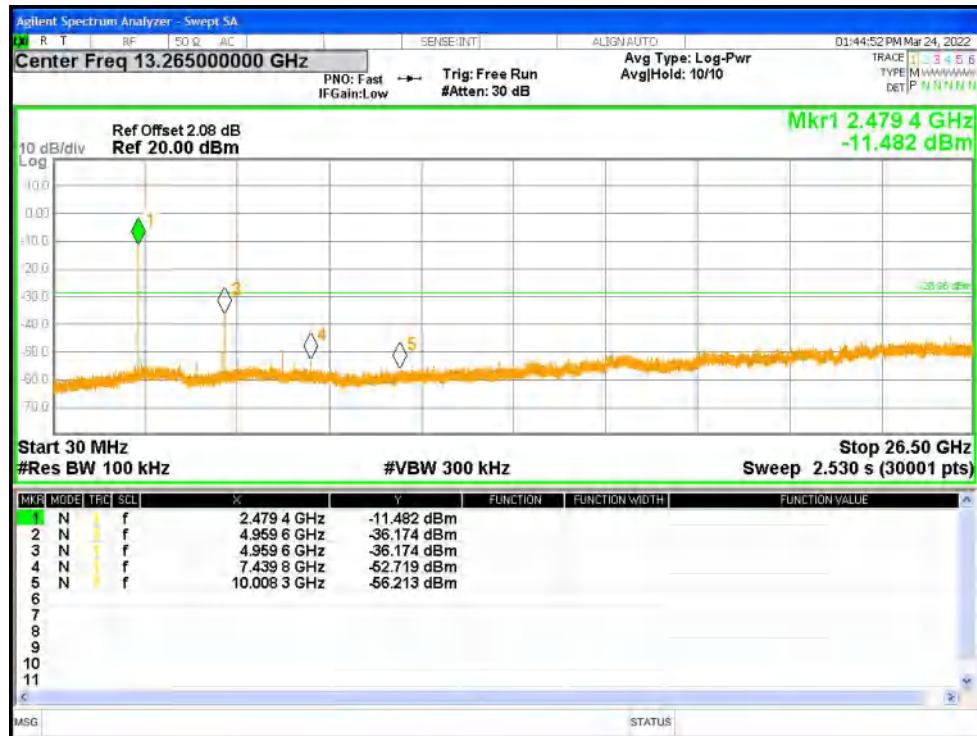
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Ref



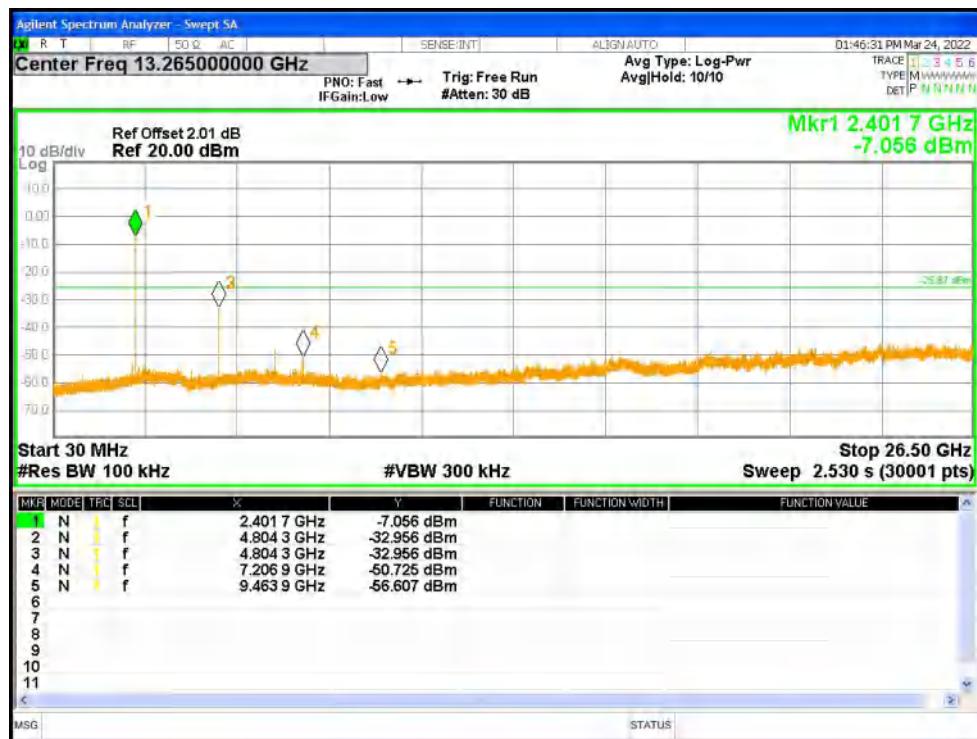
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref



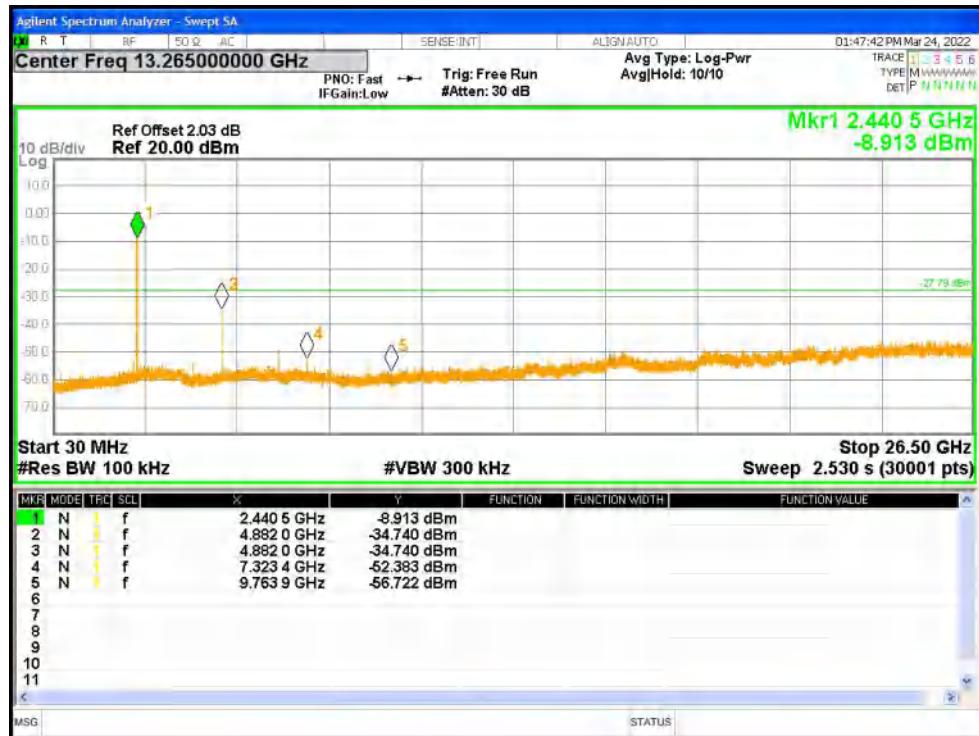
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Emission



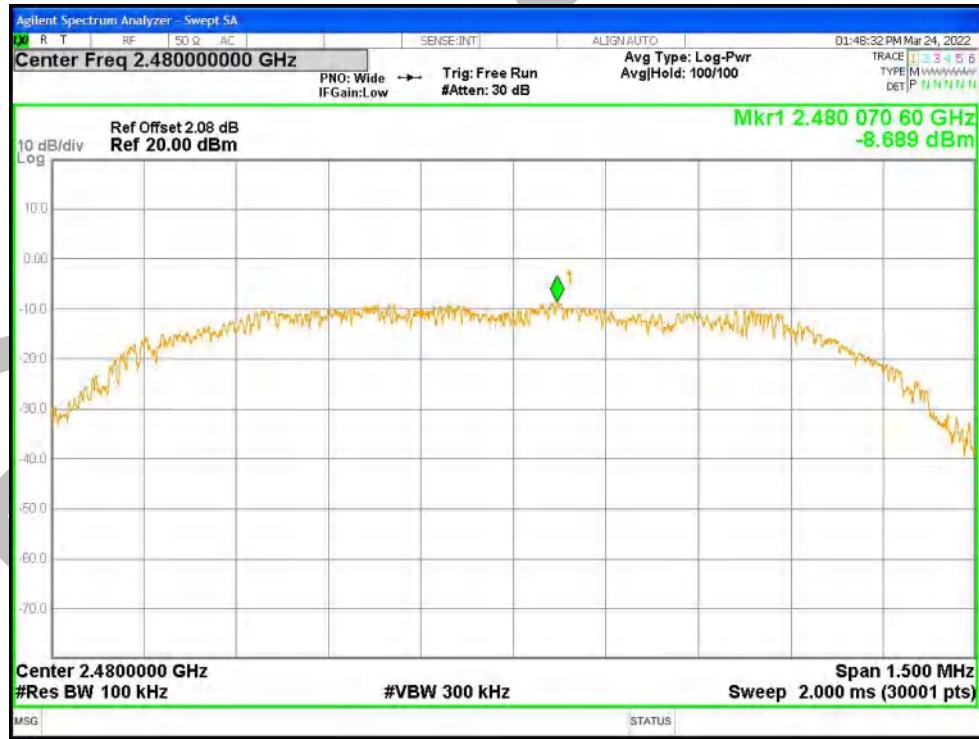
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Ref



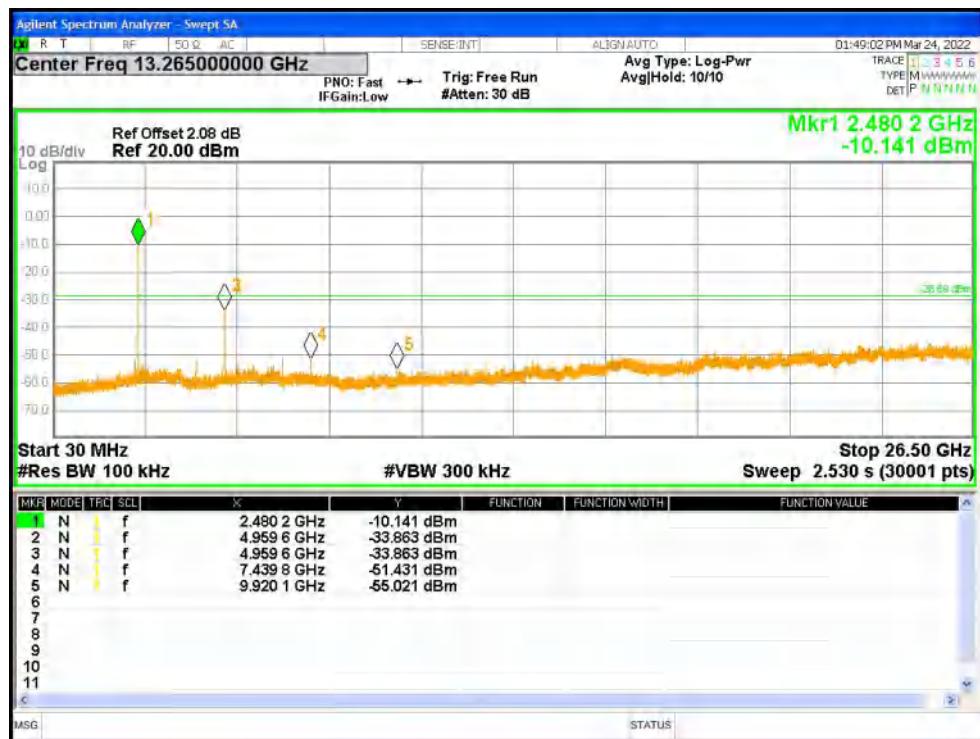
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission

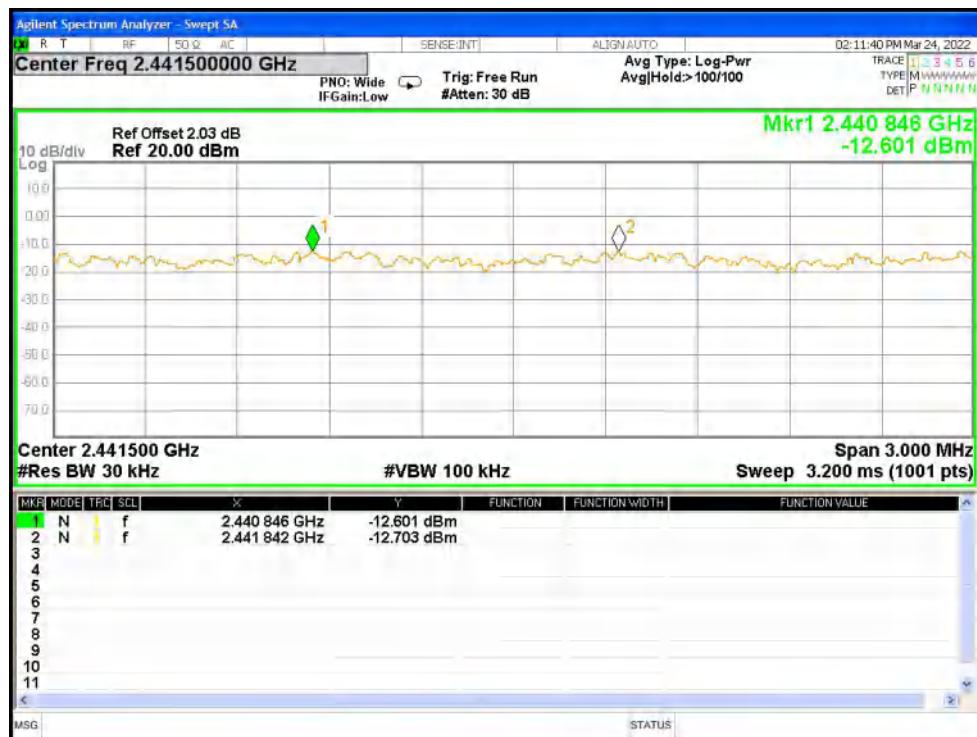


Carrier Frequencies Separation

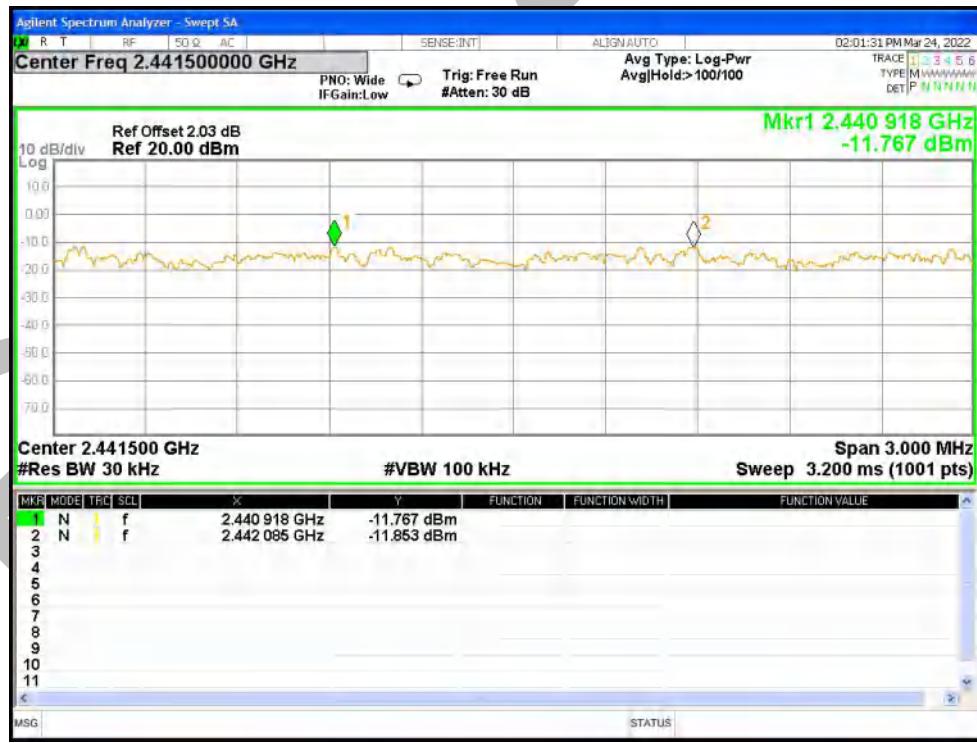
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	Ant1	2440.957	2442.013	1.056	1.023	Pass
NVNT	2-DH1	Ant1	2440.846	2441.842	0.996	0.899	Pass
NVNT	3-DH1	Ant1	2440.918	2442.085	1.167	0.902	Pass

CFS NVNT 1-DH1 2441MHz Ant1

CFS NVNT 2-DH1 2441MHz Ant1



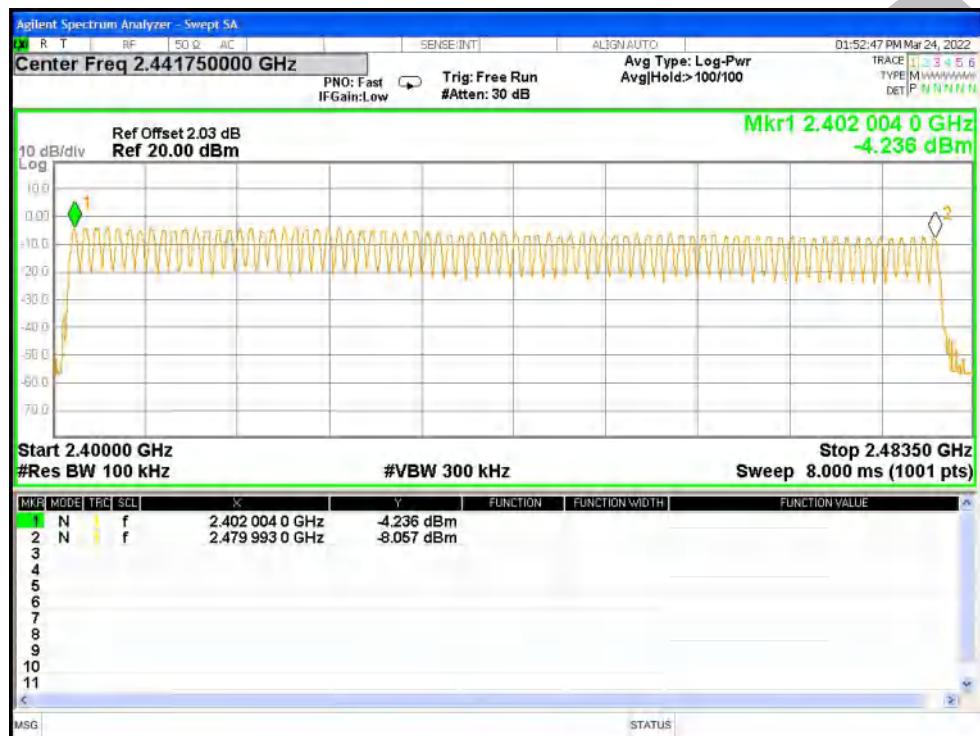
CFS NVNT 3-DH1 2441MHz Ant1



Number of Hopping Channel

Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH1	Ant1	79	15	Pass
NVNT	2-DH1	Ant1	79	15	Pass
NVNT	3-DH1	Ant1	79	15	Pass

Hopping No. NVNT 1-DH1 2441MHz Ant1



Hopping No. NVNT 2-DH1 2441MHz Ant1

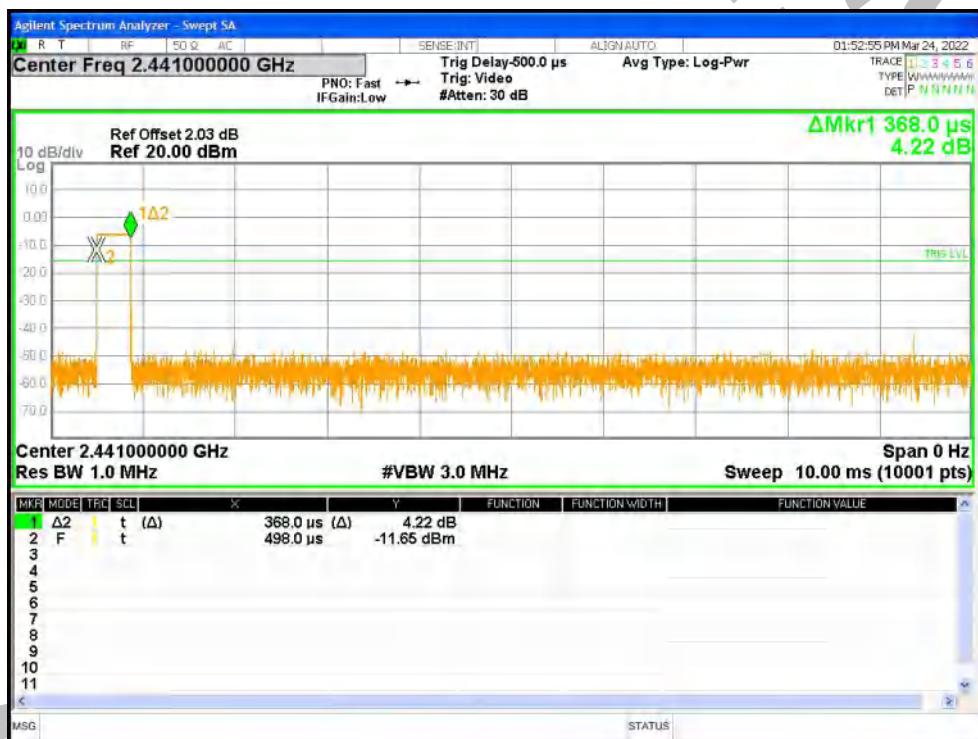


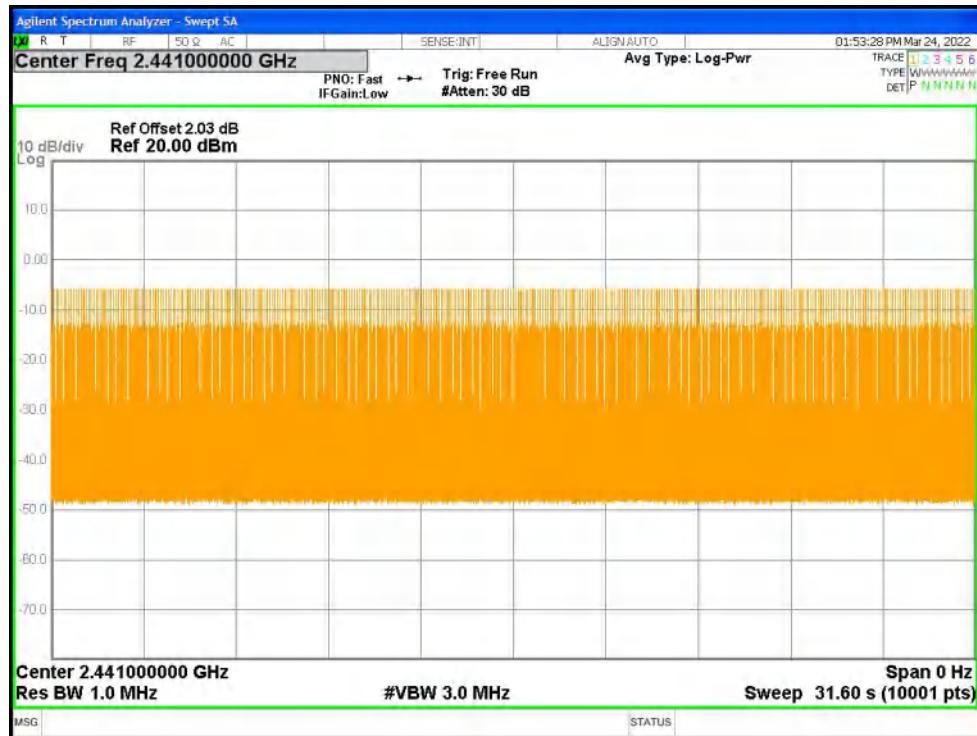
Hopping No. NVNT 3-DH1 2441MHz Ant1



Dwell Time

Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.368	136.896	372	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.668	280.224	168	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.941	323.51	110	31600	400	Pass

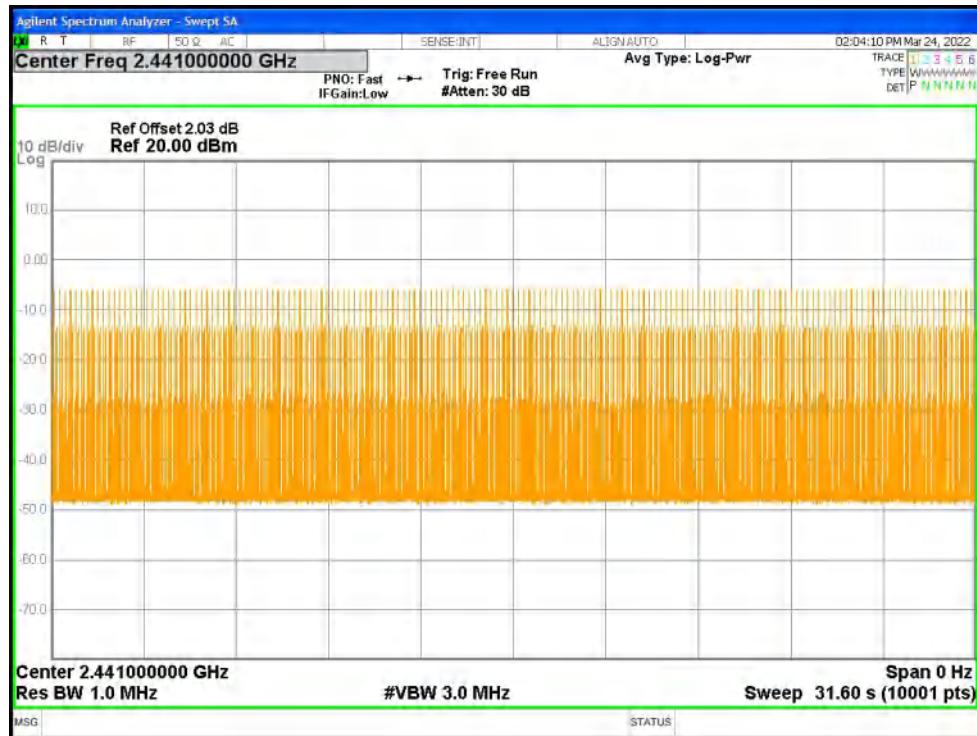
Dwell NVNT 1-DH1 2441MHz Ant1 One Burst

Dwell NVNT 1-DH1 2441MHz Ant1 Accumulated



Dwell NVNT 1-DH3 2441MHz Ant1 One Burst



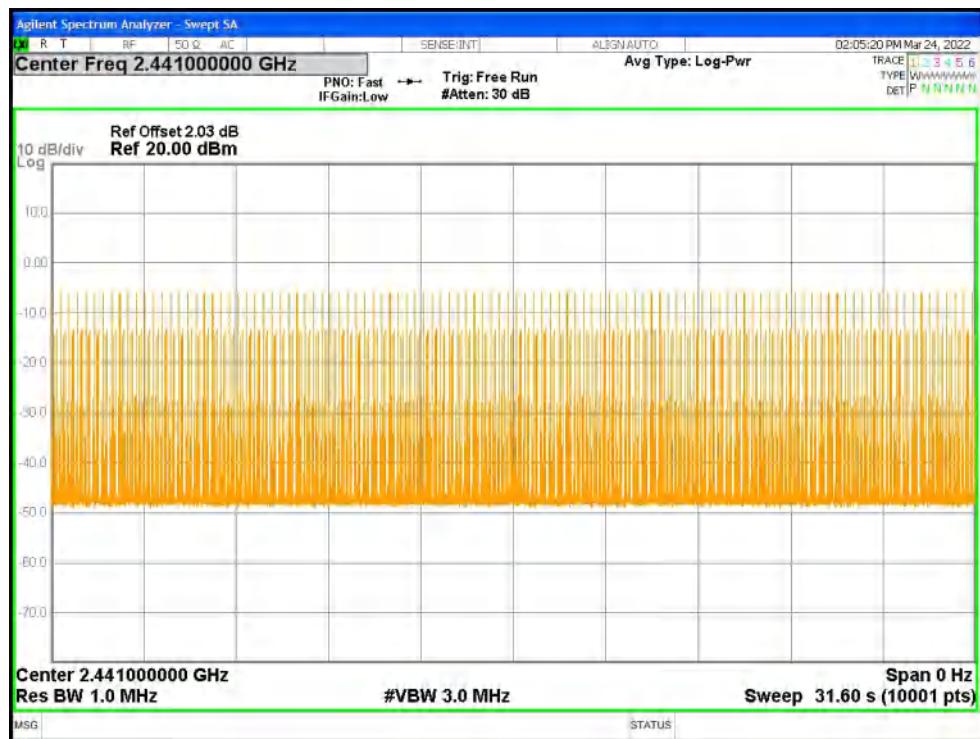
Dwell NVNT 1-DH3 2441MHz Ant1 Accumulated



Dwell NVNT 1-DH5 2441MHz Ant1 One Burst



Dwell NVNT 1-DH5 2441MHz Ant1 Accumulated



APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Conducted Emissions at AC Power Line (150kHz-30MHz)



Radiated Spurious Emissions





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APPENDIX B: PHOTOGRAPHS OF EUT

Reference to the test report No. BLA-EMC-202203-A1501

----END OF REPORT----

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of BlueAsia, this report can't be reproduced except in full.

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