

# RADIO TEST REPORT FCC ID: 2AIIF-09291PG

Product:Pureboom Mini Wireless SpeakerTrade Mark:PureGearModel No.:09291PGFamily Model:N/AReport No.:S21051300705001Issue Date:May 26. 2021

# **Prepared for**

Superior Communications DBA Puregear 5082 4th Street, Irwindale, California. 91706 USA

# Prepared by

Shenzhen NTEK Testing Technology Co., Ltd. 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street Bao'an District, Shenzhen 518126 P.R. China Tel:400-800-6106,0755-2320 0050 / 2320 0090 Website:http://www.ntek.org.cn





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# **1 TEST RESULT CERTIFICATION**

Applicant's name:	Superior Communications DBA Puregear	
Address:	5082 4th Street, Irwindale, California. 91706 USA	
Manufacturer's Name:	HUIZHOU WEIDE ELECTRONICS CO., LTD	
Address:	jimadi Industrial Area, Boluo County, Huizhou, Guangdong, China. 516100	
Product description		
Product name:	Pureboom Mini Wireless Speaker	
Model and/or type reference:	09291PG	
Family Model:	N/A	

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#### Measurement Procedure Used:

APPLICABLE STANDARDS		
STANDARD/ TEST PROCEDURE	TEST RESULT	
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart C ANSI C63.10-2013	Complied	

This device described above has been tested by Shenzhen NTEK Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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The test results of this report relate only to the tested sample identified in this report.

Date of Test	:	May 13. 2021 ~ May 27. 2021	
Testing Engineer	:	Muhri Lee (Mukzi Lee)	
Technical Manager	:	Jasonchen	
		(Jason Chen)	
Authorized Signatory	:	Aller	
		(Alex Li)	

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#### 2 SUMMARY OF TEST RESULTS

FCC Part15 (15.247), Subpart C					
Standard Section Test Item Verdict Remark					
15.207	Conducted Emission	PASS			
15.209 (a) 15.205 (a)	Radiated Spurious Emission	PASS			
15.247(a)(1)	Hopping Channel Separation	PASS			
15.247(b)(1)	Peak Output Power	PASS			
15.247(a)(iii)	Number of Hopping Frequency	PASS			
15.247(a)(iii)	Dwell Time	PASS			
15.247(a)(1)	Bandwidth	PASS			
15.247 (d)	Band Edge Emission	PASS			
15.247 (d)	Spurious RF Conducted Emission	PASS			
15.203	Antenna Requirement	PASS			

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Remark:

 "N/A" denotes test is not applicable in this Test Report.
 All test items were verified and recorded according to the standards and without any deviation during the test.



# **3 FACILITIES AND ACCREDITATIONS**

# 3.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

# 3.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description	
CNAS-Lab.	: The Certificate Registration Number is L5516.
IC-Registration	The Certificate Registration Number is 9270A. CAB identifier:CN0074
FCC- Accredited	Test Firm Registration Number: 463705.
	Designation Number: CN1184
A2LA-Lab.	The Certificate Registration Number is 4298.01
Name of Firm	: Shenzhen NTEK Testing Technology Co., Ltd.
Site Location	: 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

# 3.3 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y\pm U$ , where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	±2.80dB
2	RF power, conducted	±0.16dB
3	Spurious emissions, conducted	±0.21dB
4	All emissions, radiated(30MHz~1GHz)	±2.64dB
5	All emissions, radiated(1GHz~6GHz)	±2.40dB
6	All emissions, radiated(>6GHz)	±2.52dB
7	Temperature	±0.5°C
8	Humidity	±2%

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# 4 GENERAL DESCRIPTION OF EUT

Product Feature and Specification			
Equipment	Pureboom Mini Wireless Speaker		
Trade Mark	PureGear		
FCC ID	2AIIF-09291PG		
Model No.	09291PG		
Family Model	N/A		
Model Difference	N/A		
Operating Frequency	2402MHz~2480MHz		
Modulation	GFSK, π/4-DQPSK		
Number of Channels	79 Channels		
Antenna Type	PCB Antenna		
Antenna Gain	1.2 dBi		
Power supply	⊠DC supply: DC 3.7V from Battery or DC 5V from USB port		
	Adapter supply:		
Battery DC 3.7V, 400mAh, 1.48Wh			
HW Version	N/A		
SW Version N/A			

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Note: Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.



# **Revision History**

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Report No.	Version	Description	Issued Date
S21051300705001	Rev.01	Initial issue of report	May 27, 2021



# **5 DESCRIPTION OF TEST MODES**

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (1Mbps for GFSK modulation; 2Mbps for  $\pi/4$ -DQPSK modulation) were used for all test. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement –X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.

Carrier Frequency and Channel list:

Channel	Frequency(MHz)
0	2402
1	2403
39	2441
40	2442
77	2479
78	2480

Note: fc=2402MHz+k×1MHz k=0 to 78

The following summary table is showing all test modes to demonstrate in compliance with the standard.

For AC Conducted Emission			
Final Test Mode	Description		
Mode 1	normal link mode		

Note: AC power line Conducted Emission was tested under maximum output power.

For Radiated Test Cases		
Final Test Mode	Description	
Mode 1	normal link mode	
Mode 2	CH00(2402MHz)	
Mode 3	CH39(2441MHz)	
Mode 4	CH78(2480MHz)	

Note: For radiated test cases, the worst mode data rate 2Mbps was reported only, because this data rate has the highest RF output power at preliminary tests, and no other significantly frequencies found in conducted spurious emission.

	For Conducted Test Cases				
Final Test Mode	Description				
Mode 2	CH00(2402MHz)				
Mode 3	CH39(2441MHz)				
Mode 4	CH78(2480MHz)				
Mode 5	Hopping mode				

Note: The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.



6 SETUP OF EQUIPMENT UNDER TEST
6.1 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM
For AC Conducted Emission Mode
AC PLUG
EUT C-1 AE-1 Adapter
<b>EUI</b> Adapter
For Radiated Test Cases
EUT
For Conducted Test Cases
C-2
Measurement EUT
Note:The temporary antenna connector is soldered on the PCB board in order to perform conducted
tests and this temporary antenna connector is listed in the equipment list.



# 6.2 SUPPORT EQUIPMENT

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
AE-1	Adapter	N/A	N/A	N/A	Peripherals

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	USB Cable	NO	NO	0.5m
C-2	RF Cable	NO	NO	0.2m

#### Notes:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in [Length] column.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".

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# 6.3 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation& Conducted Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibrati on
1	Spectrum Analyzer	Aglient	E4407B	MY45108040	2021.04.27	2022.04.26	period 1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2020.07.13	2021.07.12	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2020.07.13	2021.07.12	1 year
4	Test Receiver	R&S	ESPI7	101318	2021.04.27	2022.04.26	1 year
5	Bilog Antenna	TESEQ	CBL6111D	31216	2021.03.29	2022.03.28	1 year
6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
7	Horn Antenna	EM	EM-AH-1018 0	2011071402	2021.03.29	2022.03.28	1 year
8	Broadband Horn Antenna	SCHWARZBE CK	BBHA 9170	803	2020.11.20	2021.11.19	1 year
9	Amplifier	EMC	EMC051835 SE	980246	2020.07.13	2021.07.12	1 year
10	Active Loop Antenna	SCHWARZBE CK	FMZB 1519 B	055	2020.11.20	2021.11.19	1 year
11	Power Meter	DARE	RPR3006W	15I00041SN 084	2020.07.13	2021.07.12	1 year
12	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2019.08.06	2022.08.05	3 year
13	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2019.08.06	2022.08.05	3 year
14	High Test Cable(1G-40G Hz)	N/A	R-03	N/A	2020.05.11	2023.05.10	3 year
15	High Test Cable(1G-40G Hz)	N/A	R-04	N/A	2020.05.11	2023.05.10	3 year
16	Filter	TRILTHIC	2400MHz	29	2020.04.07	2023.04.06	1 year
17	temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

Note:

We will use the temporary antenna connector (soldered on the PCB board) When conducted test And this temporary antenna connector is listed within the instrument list



#### AC Conduction Test equipment Kind of Calibration Last Calibrated Manufacturer Type No. Serial No. Item Equipment calibration until period 1 Test Receiver R&S ESCI 101160 2021.04.27 2022.04.26 1 year 2 LISN R&S **ENV216** 101313 2021.04.27 2022.04.26 1 year SCHWARZBE LISN **NNLK 8129** 3 8129245 2021.04.27 2022.04.26 1 year CK 50Ω Coaxial ANRITSU 4 MP59B 6200983704 2020.05.11 2023.05.10 3 year Switch CORP **Test Cable** 5 (9KHz-30MH N/A C01 N/A 2020.05.11 2023.05.10 3 year Z) Test Cable 6 (9KHz-30MH N/A C02 N/A 2020.05.11 2023.05.10 3 year Z) Test Cable C03 N/A 2020.05.11 2023.05.10 7 (9KHz-30MH N/A 3 year Z)

Note: Each piece of equipment is scheduled for calibration once a year except the Aux Equipment & Test Cable which is scheduled for calibration every 2 or 3 years.

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# 7 TEST REQUIREMENTS

# 7.1 CONDUCTED EMISSIONS TEST

# 7.1.1 Applicable Standard

According to FCC Part 15.207(a)

# 7.1.2 Conformance Limit

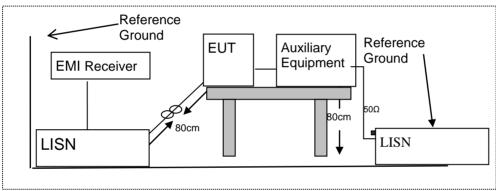
	Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average	
0.15-0.5	66-56*	56-46*	
0.5-5.0	56	46	
5.0-30.0	60	50	

Note: 1. \*Decreases with the logarithm of the frequency

2. The lower limit shall apply at the transition frequencies

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

# 7.1.3 Test Configuration



# 7.1.4 Test Procedure

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room.
- 2. The EUT was placed on a table which is 0.8m above ground plane.
- 3. Connect EUT to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40cm long.
- 5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 6. LISN at least 80 cm from nearest part of EUT chassis.
- 7. The frequency range from 150KHz to 30MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth(IF bandwidth=9KHz) with Maximum Hold Mode
- 9. For the actual test configuration, please refer to the related Item –EUT Test Photos.



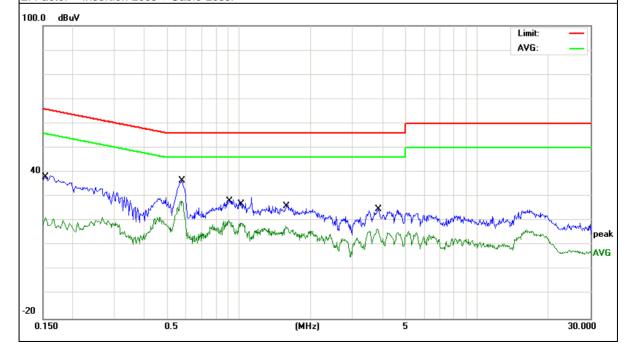
# 7.1.5 Test Results

EUT:	Pureboom Mini Wireless Speaker	Model Name :	09291PG
Temperature:	20.5 °C	Relative Humidity:	52%
Pressure:	1010hPa	Phase :	L
Test Voltage :	DC 5V from Adapter AC 120V/60Hz	Test Mode:	Mode 3

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Demonto
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	- Remark
0.1539	29.02	9.56	38.58	65.78	-27.20	QP
0.1539	11.93	9.56	21.49	55.78	-34.29	AVG
0.5777	27.14	9.55	36.69	56.00	-19.31	QP
0.5777	18.57	9.55	28.12	46.00	-17.88	AVG
0.9060	19.25	9.56	28.81	56.00	-27.19	QP
0.9060	10.80	9.56	20.36	46.00	-25.64	AVG
1.0300	20.23	9.56	29.79	56.00	-26.21	QP
1.0300	9.51	9.56	19.07	46.00	-26.93	AVG
1.5740	16.96	9.58	26.54	56.00	-29.46	QP
1.5740	8.28	9.58	17.86	46.00	-28.14	AVG
3.8300	15.26	9.60	24.86	56.00	-31.14	QP
3.8300	7.11	9.60	16.71	46.00	-29.29	AVG

Remark:

All readings are Quasi-Peak and Average values.
 Factor = Insertion Loss + Cable Loss.





EUT:	Pureboom Mini Wireless Speaker	Model Name :	09291PG
Temperature:	20.5 ℃	Relative Humidity:	52%
Pressure:	1010hPa	Phase :	N
Test Voltage :	DC 5V from Adapter AC 120V/60Hz	Test Mode:	Mode 3

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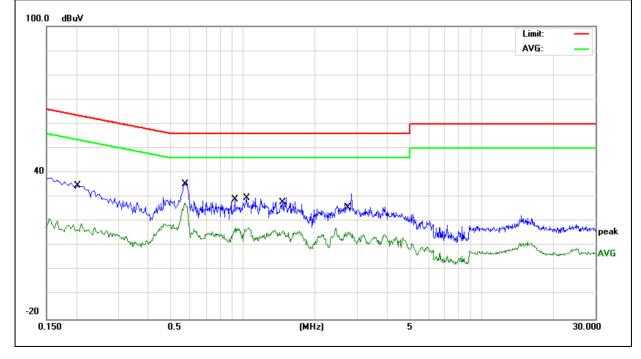
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Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Demark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.2020	25.18	9.54	34.72	63.52	-28.80	QP
0.2020	9.66	9.54	19.20	53.52	-34.32	AVG
0.5697	18.09	9.54	27.63	46.00	-18.37	AVG
0.5697	26.69	9.54	36.23	56.00	-19.77	QP
0.9260	19.42	9.55	28.97	56.00	-27.03	QP
0.9260	8.15	9.55	17.70	46.00	-28.30	AVG
1.0339	20.13	9.55	29.68	56.00	-26.32	QP
1.0339	7.86	9.55	17.41	46.00	-28.59	AVG
1.4778	6.60	9.55	16.15	46.00	-29.85	AVG
1.4778	20.32	9.55	29.87	56.00	-26.13	QP
2.7820	6.33	9.59	15.92	46.00	-30.08	AVG
2.7820	21.86	9.59	31.45	56.00	-24.55	QP

Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.





# 7.2 RADIATED SPURIOUS EMISSION

# 7.2.1 Applicable Standard

#### According to FCC Part 15.247(d) and 15.209 and ANSI C63.10-2013

#### 7.2.2 Conformance Limit

According to FCC Part 15.247(d): 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)). According to FCC Part15.205, Restricted bands

According to 1 CC 1 alt 13.20			
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Restricted Frequency(MHz)	Field Strength (µV/m)	Field Strength (dBµV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	24000/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Frequency(MHz)	Class B (dBuV/	/m) (at 3M)
Frequency(imrz)	PEAK	AVERAGE
Above 1000	74	54

Remark :1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

3. For Frequency 9kHz~30MHz:

Distance extrapolation factor =40log(Specific distance/ test distance)(dB);

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

For Frequency above 30MHz:

Distance extrapolation factor =20log(Specific distance/ test distance)(dB);

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

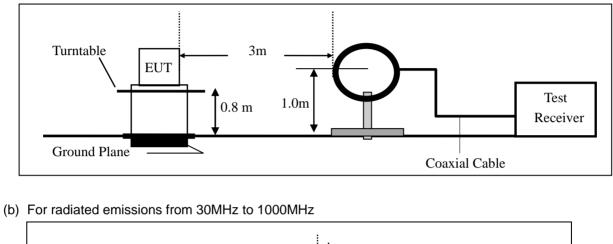


# 7.2.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

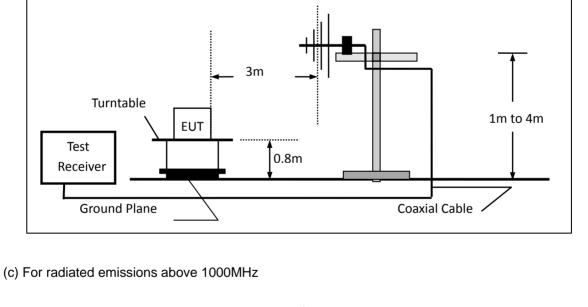
# 7.2.4 Test Configuration

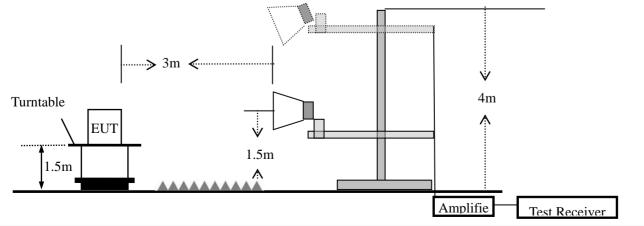
### (a) For radiated emissions below 30MHz



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# 7.2.5 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 1 MHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- e. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- f. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- g. For the actual test configuration, please refer to the related Item -EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported



During the radiated emission test, the S	pectrum Analyzer was set with the following	configurations:
		oornigaradorioi

Frequency Band (MHz)	Function	Function Resolution bandwidth	
30 to 1000	QP	120 kHz	300 kHz
Ab ave 4000	Peak	1 MHz	1 MHz
Above 1000	Average	1 MHz	1 MHz

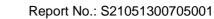
Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where RBWCF [dB] =10\*lg(100 [kHz]/narrower RBW [kHz]). , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

# 7.2.6 Test Results

EUT:	Pureboom Mini Wireless Speaker	Model No.:	09291PG
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Mukzi Lee

Freq.	Ant.Pol.	Emission Level(dBuV/m)		//m) Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.





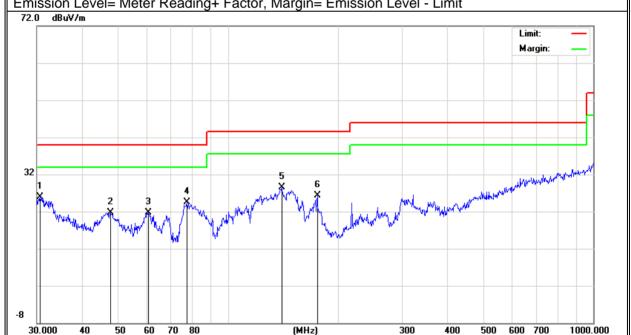
Spurious Emission below 1GHz (30MHz to 1GHz) All the modulation modes have been tested, and the worst result was report as below:

EUT:	Pureboom Mini Wireless Speaker	Model Name :	09291PG
Temperature:	<b>25.2</b> ℃	Relative Humidity:	51%
Pressure:	1010hPa	Test Mode:	Mode 2
Test Voltage :	DC 3.7V		

Polar	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	30.6378	7.15	18.75	25.90	40.00	-14.10	QP
V	47.8260	11.77	10.01	21.78	40.00	-18.22	QP
V	60.4919	16.29	5.44	21.73	40.00	-18.27	QP
V	77.3212	16.89	7.58	24.47	40.00	-15.53	QP
V	140.3420	15.31	13.17	28.48	43.50	-15.02	QP
V	175.6516	15.60	10.80	26.40	43.50	-17.10	QP

# Remark:

Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit





Polar	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark	
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Roman	
Н	32.4059	5.63	17.07	22.70	40.00	-17.30	QP	
Н	49.3594	6.40	9.13	15.53	40.00	-24.47	QP	
Н	89.5899	6.22	10.02	16.24	43.50	-27.26	QP	
Н	140.8351	16.21	13.09	29.30	43.50	-14.20	QP	
Н	152.6639	14.72	12.37	27.09	43.50	-16.41	QP	
Н	345.5951	11.36	16.79	28.15	46.00	-17.85	QP	
						Limit: Margin:		
32	2 1	3	* 5 / *	My watcher	6 WWW.W. Jonash Mayor	Wanton quantumber	hourselow	
.8	Manufactor 2 Marine and 2 Marin	Annon Marry S						
-8 30.000	40 50 60	70 80	 (MH		300 400 5	500 600 700	1000.00	



UT:	-	reboom N eaker	/lini Wireles	s Moc	el No.:		09291	PG					
emperature: 20 °C				Relative Humidity:			48%						
est Mode:		de2/Mod	e3/Mode4		: By:	<u> </u>	Mukzi	Lee	ee				
					e worst resul				/:				
				·									
Frequency	Read Level	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Lir	nits	Margin	Remark	Commen			
(MHz)	(dBµV)	(dB)	dB/m	(dB)	(dBµV/m)	(dBµ	uV/m)	(dB)					
		L	ow Channel	(2402 M	Hz)( π/4-DQPS	SK)A	bove 1	G					
4804	69.76	5.21	35.59	44.30	66.26	74	.00	-7.74	Pk	Vertical			
4804	49.59	5.21	35.59	44.30	46.09	54	.00	-7.91	AV	Vertical			
7206	69.87	6.48	36.27	44.60	68.02	74	.00	-5.98	Pk	Vertical			
7206	50.11	6.48	36.27	44.60	48.26	54	.00	-5.74	AV	Vertical			
4804	70.13	5.21	35.55	44.30	66.59	74	.00	-7.41	Pk	Horizonta			
4804	50.79	5.21	35.55	44.30	47.25	54	.00	-6.75	AV	Horizonta			
7206	69.84	6.48	36.27	44.52	68.07	74	.00	-5.93	Pk	Horizonta			
7206	46.52	6.48	36.27	44.52	44.75	54	.00	-9.25	AV	Horizonta			
		Ν	<b>/lid Channel</b>	(2441 MI	lz)( π/4-DQPS	SK)A	bove 1	G					
4882	68.45	5.21	35.66	44.20	65.12	74	.00	-8.88	Pk	Vertical			
4882	50.17	5.21	35.66	44.20	46.84	54	.00	-7.16	AV	Vertical			
7323	68.27	7.10	36.50	44.43	67.44	74	.00	-6.56	Pk	Vertical			
7323	45.63	7.10	36.50	44.43	44.80	54	.00	-9.20	AV	Vertical			
4882	68.66	5.21	35.66	44.20	65.33	74	.00	-8.67	Pk	Horizonta			
4882	45.82	5.21	35.66	44.20	42.49	54	.00	-11.51	AV	Horizonta			
7323	70.44	7.10	36.50	44.43	69.61	74	.00	-4.39	Pk	Horizonta			
7323	49.46	7.10	36.50	44.43	48.63		.00	-5.37	AV	Horizonta			
	·	Н	<u> </u>	(2480 M	Hz)( π/4-DQPS	SK) A	Above '	1G	r	1			
4960	70.37	5.21	35.52	44.21	66.89	74	.00	-7.11	Pk	Vertical			
4960	50.24	5.21	35.52	44.21	46.76	54	.00	-7.24	AV	Vertical			
7440	69.8	7.10	36.53	44.60	68.83	74	.00	-5.17	Pk	Vertical			
7440	50.03	7.10	36.53	44.60	49.06		.00	-4.94	AV	Vertical			
4960	70.05	5.21	35.52	44.21	66.57	74	.00	-7.43	Pk	Horizonta			
4960	47.55	5.21	35.52	44.21	44.07	54	.00	-9.93	AV	Horizonta			
7440	69.62	7.10	36.53	44.60	68.65	74	.00	-5.35	Pk	Horizonta			
7440	45.86	7.10	36.53	44.60	44.89	54	.00	-9.11	AV	Horizonta			

Note:

(1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor (2)All other emissions more than 20dB below the limit.



EUT:	Pureboom Speaker	n Mini W	ireless	Mod	el No.:		0929	1PG		
Femperature:				Rela	tive Humidit	v:	48%			
Fest Mode:	Mode2/ M	ode4		Test		,	Mukz	ri Lee		
All the modul			been teste			ult wa			low:	
					-					
Frequency	Meter Reading	Cable Loss	Antenna Factor	Preamp Factor	Emission Level	Lin	nits	Margin	Detector	Comment
(MHz)	(dBµV)	(dB)	dB/m	(dB)	(dBµV/m)	(dBµ	ıV/m)	(dB)	Туре	
			2Mb	ps(π/4-D0	QPSK)-Non-h	opping	]			
2310.00	70.58	2.97	27.80	43.80	57.55	7	'4	-16.45	Pk	Horizontal
2310.00	50.45	2.97	27.80	43.80	37.42	5	54	-16.58	AV	Horizontal
2310.00	68.82	2.97	27.80	43.80	55.79	7	'4	-18.21	Pk	Vertical
2310.00	48.34	2.97	27.80	43.80	35.31	5	64	-18.69	AV	Vertical
2390.00	70.51	3.14	27.21	43.80	57.06	7	'4	-16.94	Pk	Vertical
2390.00	46.91	3.14	27.21	43.80	33.46	5	64	-20.54	AV	Vertical
2390.00	70.42	3.14	27.21	43.80	56.97	7	'4	-17.03	Pk	Horizontal
2390.00	46.7	3.14	27.21	43.80	33.25	5	64	-20.75	AV	Horizontal
2483.50	68.43	3.58	27.70	44.00	55.71	7	'4	-18.29	Pk	Vertical
2483.50	48.17	3.58	27.70	44.00	35.45	5	64	-18.55	AV	Vertical
2483.50	68.5	3.58	27.70	44.00	55.78	7	'4	-18.22	Pk	Horizontal
2483.50	48.52	3.58	27.70	44.00	35.80	5	64	-18.20	AV	Horizontal
			21	/bps(π/4·	DQPSK)-hop	ping				
2310.00	70.82	2.97	27.80	43.80	57.79		'4	-16.21	Pk	Vertical
2310.00	48.61	2.97	27.80	43.80	35.58	5	64	-18.42	AV	Vertical
2310.00	70.25	2.97	27.80	43.80	57.22	7	'4	-16.78	Pk	Horizontal
2310.00	46.19	2.97	27.80	43.80	33.16	5	64	-20.84	AV	Horizontal
2390.00	70.21	3.14	27.21	43.80	56.76	7	'4	-17.24	Pk	Vertical
2390.00	49.37	3.14	27.21	43.80	35.92	5	64	-18.08	AV	Vertical
2390.00	68.2	3.14	27.21	43.80	54.75	7	'4	-19.25	Pk	Horizontal
2390.00	47.68	3.14	27.21	43.80	34.23	5	64	-19.77	AV	Horizontal
2483.50	68.31	3.58	27.70	44.00	55.59	7	'4	-18.41	Pk	Vertical
2483.50	48.53	3.58	27.70	44.00	35.81	5	64	-18.19	AV	Vertical
2483.50	70.25	3.58	27.70	44.00	57.53	7	'4	-16.47	Pk	Horizontal
2483.50	50.5	3.58	27.70	44.00	37.78	5	64	-16.22	AV	Horizontal

Note: (1) All other emissions more than 20dB below the limit.



	•				ni Wireles	9	Iz-18000MH						
EUT	T:		peaker			Mo	Model No.:			09291PG			
Ten	nperature:	20	0 ℃			Rel	Relative Humidity:			48%			
Tes	st Mode: Mode2/ Mode4			Tes	Fest By: Mukzi Lee								
All	All the modulation modes have been tested,			ed, and	he worst res	ult wa	is repo	ort as be	ow:				
	Frequency	Readi Leve	3	Cable Loss	Antenna Factor	Pream Factor	Emission Level	Lin	nits	Margin	Detector	Comment	
	(MHz)	(dBµ\	V) (	(dB)	dB/m	(dB)	(dBµV/m)	(dBµ	V/m)	(dB)	Туре		
	3260	69.3	5 4	4.04	29.57	44.70	58.26	7	4	-15.74	Pk	Vertical	
	3260	48.0	8 4	4.04	29.57	44.70	36.99	5	4	-17.01	AV	Vertical	
	3260	68.5	7 4	4.04	29.57	44.70	57.48	7	4	-16.52	Pk	Horizontal	
	3260	49.0	1 4	4.04	29.57	44.70	37.92	5	4	-16.08	AV	Horizontal	
	3332	70.6	6 4	4.26	29.87	44.40	60.39	7	4	-13.61	Pk	Vertical	
	3332	49.0	6 4	4.26	29.87	44.40	38.79	5	4	-15.21	AV	Vertical	
	3332	70.7	7 4	4.26	29.87	44.40	60.43	7	4	-13.57	Pk	Horizontal	
	3332	49.4	1 4	4.26	29.87	44.40	39.14	5	4	-14.86	AV	Horizontal	
	17797	54.1	3 1	0.99	43.95	43.50	65.57	7	4	-8.43	Pk	Vertical	
	17797	40.6	1 1	0.99	43.95	43.50	52.05	5	4	-1.95	AV	Vertical	
	17788	51.8	9 1	1.81	43.69	44.60	62.79	7	4	-11.21	Pk	Horizontal	
	17788	36.6	7 1	1.81	43.69	44.60	47.57	5	4	-6.43	AV	Horizontal	

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Certificate #4298.01

Note: (1) All other emissions more than 20dB below the limit.



# 7.3 NUMBER OF HOPPING CHANNEL

# 7.3.1 Applicable Standard

According to FCC Part 15.247(a)(1) (iii)and ANSI C63.10-2013

# 7.3.2 Conformance Limit

Frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

# 7.3.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

# 7.3.4 Test Setup

Please refer to Section 6.1 of this test report.

# 7.3.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.3

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW : To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.

VBW ≥ RBW

Sweep = auto

Detector function = peak Trace = max hold

# 7.3.6 Test Results

	Pureboom Mini Wireless Speaker	Model No.:	09291PG
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Test Mode:	Mode 5(1Mbps)	Test By:	Mukzi Lee



# 7.4 HOPPING CHANNEL SEPARATION MEASUREMENT

# 7.4.1 Applicable Standard

According to FCC Part 15.247(a)(1) and ANSI C63.10-2013

# 7.4.2 Conformance Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band shall have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

#### 7.4.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

#### 7.4.4 Test Setup

Please refer to Section 6.1 of this test report.

#### 7.4.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.2 The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. The EUT was operating in controlled its channel. Use the following spectrum analyzer settings: Span = Measurement Bandwidth or Channel Separation RBW: Start with the RBW set to approximately 3% of the channel spacing; adjust as necessary to best identify the center of each individual channel. VBW  $\geq$  RBW Sweep = auto Detector function = peak Trace = max hold

#### 7.4.6 Test Results

EUT:	Pureboom Mini Wireless Speaker	Model No.:	09291PG
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Mukzi Lee



# 7.5 AVERAGE TIME OF OCCUPANCY (DWELL TIME)

# 7.5.1 Applicable Standard

According to FCC Part 15.247(a)(1)(iii) and ANSI C63.10-2013

# 7.5.2 Conformance Limit

The average time of occupancy on any channel shall not be greater than 0.4s within a period of 0.4s multiplied by the number of hopping channels employed.

# 7.5.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

# 7.5.4 Test Setup

Please refer to Section 6.1 of this test report.

# 7.5.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.4 The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel RBW  $\geq$  1MHz VBW  $\geq$  RBW Sweep = as necessary to capture the entire dwell time per hopping channel Detector function = peak Trace = max hold Measure the maximum time duration of one single pulse. Set the EUT for DH5, DH3 and DH1 packet transmitting. Measure the maximum time duration of one single pulse.



# 7.5.6 Test Results

EUT:	Pureboom Mini Wireless Speaker	Model No.:	09291PG
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Mukzi Lee

Test data reference attachment.

Note:

A Period Time = (channel number)\*0.4 DH1 Dwell time: Reading \* (1600/2)\*31.6/(channel number) DH3 Dwell time: Reading \* (1600/4)\*31.6/(channel number) DH5 Dwell time: Reading \* (1600/6)\*31.6/(channel number)

For Example:

- 1. In normal mode, hopping rate is 1600 hops/s with 6 slots in 79 hopping channels. With channel hopping rate (1600 / 6 / 79) in Occupancy Time Limit  $(0.4 \times 79)$  (s), Hops Over Occupancy Time comes to  $(1600 / 6 / 79) \times (0.4 \times 79) = 106.67$  hops.
- 2. In AFH mode, hopping rate is 800 hops/s with 6 slots in 20 hopping channels. With channel hopping rate (800 / 6 / 20) in Occupancy Time Limit (0.4 x 20) (s), Hops Over Occupancy Time comes to (800 / 6 / 20) x (0.4 x 20) = 53.33 hops.
- 3. Dwell Time(s) = Hops Over Occupancy Time (hops) x Package Transfer Time



# 7.6 20DB BANDWIDTH TEST

# 7.6.1 Applicable Standard

According to FCC Part 15.247(a)(1) and ANSI C63.10-2013

# 7.6.2 Conformance Limit

No limit requirement.

#### 7.6.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

#### 7.6.4 Test Setup

Please refer to Section 6.1 of this test report.

#### 7.6.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 6.9.2 The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. The EUT was operating in controlled its channel. Use the following spectrum analyzer settings: Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel RBW  $\geq$  1% of the 20 dB bandwidth VBW  $\geq$  RBW Sweep = auto Detector function = peak Trace = max hold

# 7.6.6 Test Results

EUT:	Pureboom Mini Wireless Speaker	Model No.:	09291PG
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Mukzi Lee



# 7.7 PEAK OUTPUT POWER

# 7.7.1 Applicable Standard

According to FCC Part 15.247(b)(1) and ANSI C63.10-2013

# 7.7.2 Conformance Limit

The maximum peak conducted output power of the intentional radiator shall not exceed the following: (1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts.

# 7.7.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

# 7.7.4 Test Setup

Please refer to Section 6.1 of this test report.

# 7.7.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.5.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

 $RBW \ge the 20 dB$  bandwidth of the emission being measured

 $VBW \ge RBW$ 

Sweep = auto

Detector function = peak Trace = max hold

# 7.7.6 Test Results

EUT:	Pureboom Mini Wireless Speaker	Model No.:	09291PG
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Test Mode:	Mode2/Mode3/Mode4	Test By:	Mukzi Lee



# 7.8 CONDUCTED BAND EDGE MEASUREMENT

# 7.8.1 Applicable Standard

According to FCC Part 15.247(d) and ANSI C63.10-2013

# 7.8.2 Conformance 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)).

#### 7.8.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

#### 7.8.4 Test Setup

Please refer to Section 6.1 of this test report.

### 7.8.5 Test Procedure

The testing follows ANSI C63.10-2013 clause 7.8.6.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW = 100KHz

VBW = 300KHz

Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.

Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

Repeat above procedures until all measured frequencies were complete.

# 7.8.6 Test Results

EUT:	Pureboom Mini Wireless Speaker	Model No.:	09291PG
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Test Mode:	Mode2 /Mode4/ Mode 5	Test By:	Mukzi Lee



# 7.9 SPURIOUS RF CONDUCTED EMISSION

# 7.9.1 Applicable Standard

According to FCC Part 15.247(d) and ANSI C63.10-2013.

# 7.9.2 Conformance 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)).

#### 7.9.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

# 7.9.4 Test Setup

Please refer to Section 6.1 of this test report.

#### 7.9.5 Test Procedure

Establish an emission level by using the following procedure:

a) Set the center frequency and span to encompass frequency range to be measured.

- b) Set the RBW = 100 kHz.
- c) Set the VBW  $\geq$  [3 × RBW].
- d) Detector = peak.
- e) Sweep time = auto couple.

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use the peak marker function to determine the maximum amplitude level. Then the limit shall be attenuated by at least 20 dB relative to the maximum

amplitude level in 100 kHz.

# 7.9.6 Test Results

Remark: The measurement frequency range is from 30MHzHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.



# 7.10 ANTENNA APPLICATION

#### 7.10.1 Antenna Requirement

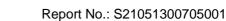
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible partyshall be used with the device.

ACCREDIT

### 7.10.2 Result

The EUT antenna is permanent attached PCB Antenna (Gain: 2 dBi). It comply with the standard requirement.

# **NTEK北测**



#### 7.11 FREQUENCY HOPPING SYSTEM (FHSS) EQUIPMENT REQUIREMENTS 7.11.1 Standard Applicable

According to FCC Part 15.247(a)(1), The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals. (g) Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section. (h) The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Certificate #4298 01

# 7.11.2 Frequency Hopping System

This transmitter device is frequency hopping device, and complies with FCC part 15.247 rule. This device uses Bluetooth radio which operates in 2400-2483.5 MHz band. Bluetooth uses a radio technology called frequency-hopping spread spectrum, which chops up the data being sent and transmits chunks of it on up to 79 bands (1 MHz each; centred from 2402 to 2480 MHz) in the range 2,400-2,483.5 MHz. The transmitter switches hop frequencies 1,600 times per second to assure a high degree of data security. All Bluetooth devices participating in a given piconet are synchronized to the frequency-hopping channel for the piconet. The frequency hopping sequence is determined by the master's device address and the phase of the hopping sequence (the frequency to hop at a specific time) is determined by the master's internal clock. Therefore, all slaves in a piconet must know the master's device address and must synchronize their clocks with the master's clock. Adaptive Frequency Hopping (AFH) was introduced in the Bluetooth specification to provide an effective way for a Bluetooth radio to counteract normal interference. AFH identifies "bad" channels, where either other wireless devices are interfering with the Bluetooth signal or the Bluetooth signal is interfering with another device. The AFH-enabled Bluetooth device will then communicate with other devices within its piconet to share details of any identified bad channels. The devices will then switch to alternative available "good" channels, away from the areas of interference, thus having no impact on the bandwidth used.

This device was tested with an bluetooth system receiver to check that the device maintained hopping synchronization, and the device complied with these requirements for FCC Part 15.247 rule.

# 7.11.3 EUT Pseudorandom Frequency Hopping Sequence

Pseudorandom Frequency Hopping Sequence Table as below: Channel: 08, 24, 40, 56, 40, 56, 72, 09, 01, 09, 33, 41, 33, 41, 65, 73, 53, 69, 06, 22, 04, 20, 36, 52, 38, 46, 70, 78, 68, 76, 21, 29, 10, 26, 42, 58, 44, 60, 76, 13, 03, 11, 35, 43, 37, 45, 69, 77, 55, 71, 08, 24, 08, 24, 40, 56, 40, 48, 72, 01, 72, 01, 25, 33, 12, 28, 44, 60, 42, 58, 74, 11, 05, 13, 37, 45 etc.

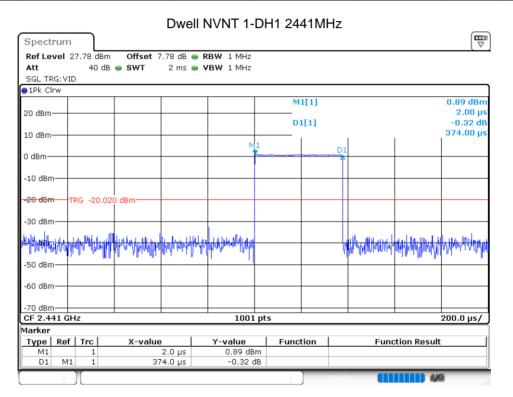
The system receiver have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.



# 8 TEST RESULTS

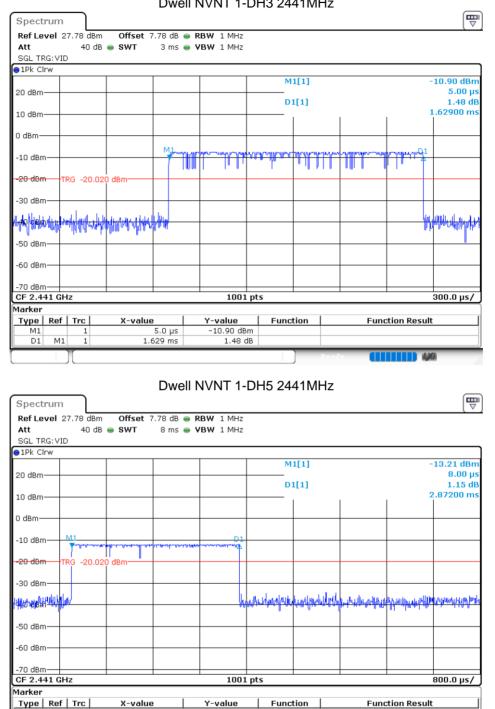
#### 8.1 DWELL TIME

Condition	Mode	Frequency	Pulse Time	Total Dwell	Period Time	Limit	Verdict
		(MHz)	(ms)	Time (ms)	(ms)	(ms)	
NVNT	1-DH1	2441	0.374	119.68	31600	400	Pass
NVNT	1-DH3	2441	1.629	260.64	31600	400	Pass
NVNT	1-DH5	2441	2.872	306.347	31600	400	Pass
NVNT	2-DH1	2441	0.384	122.88	31600	400	Pass
NVNT	2-DH3	2441	1.638	262.08	31600	400	Pass
NVNT	2-DH5	2441	2.864	305.493	31600	400	Pass





#### Dwell NVNT 1-DH3 2441MHz



Μ1

D1 M1 1 8.0 µs

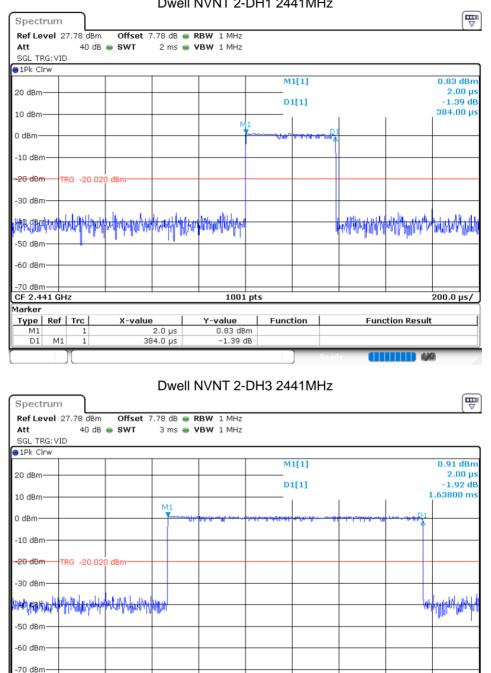
2.872 ms

-13.21 dBm

1.15 dB



#### Dwell NVNT 2-DH1 2441MHz



1001 pts

Function

Y-value

0.91 dBm

-1.92 dB

CF 2.441 GHz

Type | Ref | Trc |

X-value

2.0 µs

1.638 ms

Marker

Μ1

D1 M1 1 300.0 µs/

Function Result



Dwell NVNT 2-DH5 2441MHz

ACCREDITED

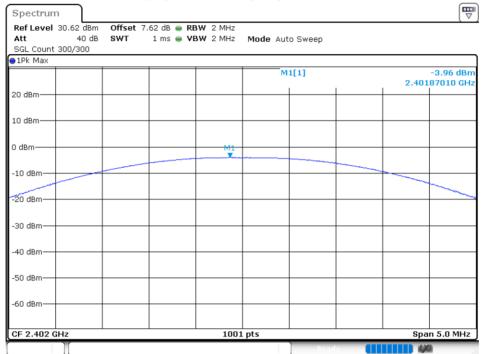
Spectrum					
Ref Level 27.78 dBm	Offset 7.78 dB	🖷 RBW 1 MHz			
	🖷 SWT 8 ms (	🔵 VBW 1 MHz			
SGL TRG: VID					
1Pk Clrw					
			M1[1]		-12.37 dBm
20 dBm			D1[1]		16.00 µs 1.61 dB
LO dBm			DI[I]		2.86400 ms
				1	
) dBm					
10 dBm	and and the state of the state	A MANA MANA ANA DI			
<del>20 dBm  </del> TRG -20.02	0 dBm				
-30 dBm					
-30 UBIII					
48K884 H444 404		بانبابها المستعمل ال	us, day, a day, a day a day a day	մին ներկերություն	աների կանական առողություն հայտարական
					and the second
-50 dBm					
-60 dBm					
70 dBm					
CF 2.441 GHz		1001 pt:	5		800.0 µs/
larker		1001 pt			00010 p37
Type   Ref   Trc	X-value	Y-value	Function	Fund	ction Result
M1 1	16.0 µs	-12.37 dBm			
D1 M1 1	2.864 ms	1.61 dB			
				Ready	



# <u>NTEK北测</u>

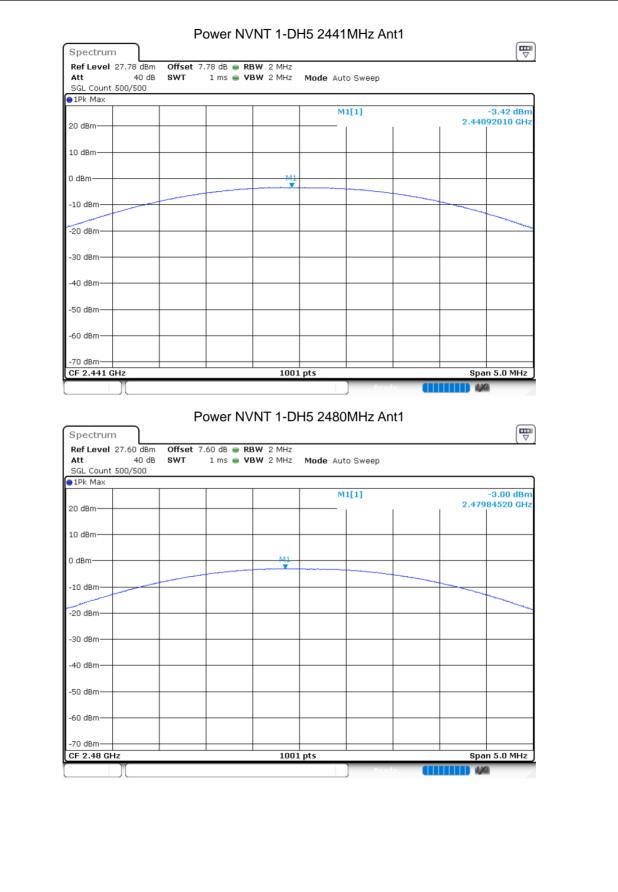
### 8.2 MAXIMUM CONDUCTED OUTPUT POWER

Condition	Mode	Frequency (MHz)	Antenna	Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant 1	-3.958	30	Pass
NVNT	1-DH5	2441	Ant 1	-3.424	30	Pass
NVNT	1-DH5	2480	Ant 1	-2.997	30	Pass
NVNT	2-DH5	2402	Ant 1	-3.373	21	Pass
NVNT	2-DH5	2441	Ant 1	-2.788	21	Pass
NVNT	2-DH5	2480	Ant 1	-2.479	21	Pass



#### Power NVNT 1-DH5 2402MHz Ant1

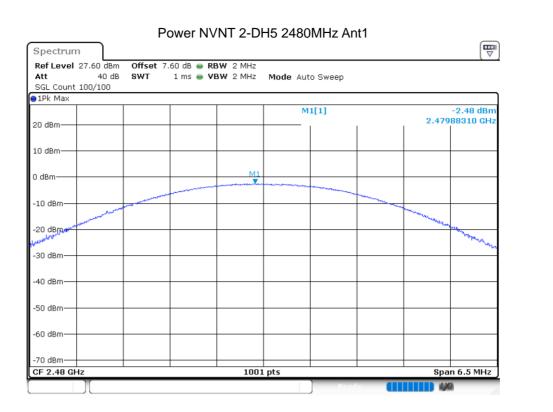














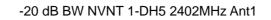
#### 8.3 OCCUPIED CHANNEL BANDWIDTH

0							
	Condition	Mode	Frequency	Antenna	99%	-20 dB	Verdict
			(MHz)		OBW	Bandwidth	
					(MHz)	(MHz)	
	NVNT	1-DH5	2402	Ant 1	0.8691	0.894	Pass
	NVNT	1-DH5	2441	Ant 1	0.8472	0.944	Pass
	NVNT	1-DH5	2480	Ant 1	0.8751	0.918	Pass
	NVNT	2-DH5	2402	Ant 1	1.1728	1.278	Pass
	NVNT	2-DH5	2441	Ant 1	1.1728	1.302	Pass
	NVNT	2-DH5	2480	Ant 1	1.1748	1.312	Pass

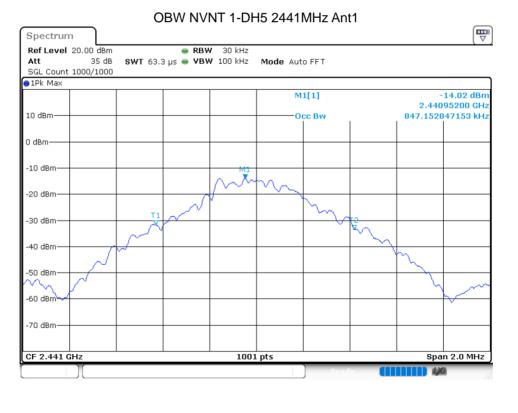


#### OBW NVNT 1-DH5 2402MHz Ant1

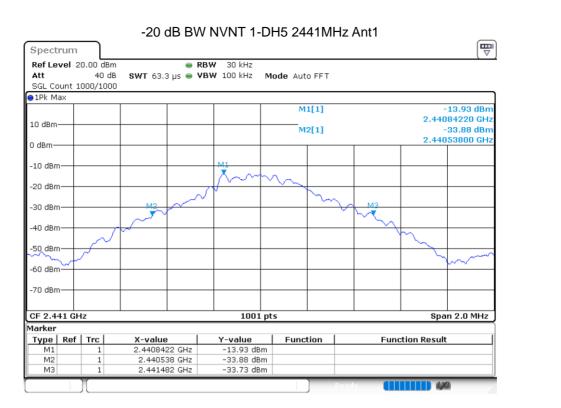


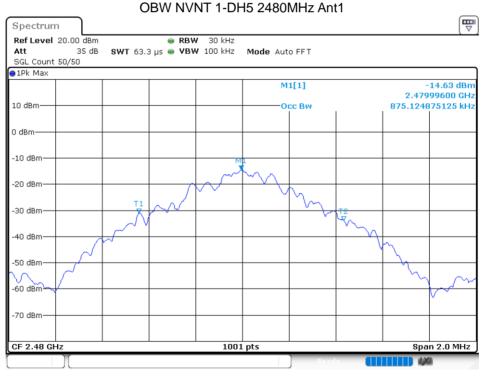




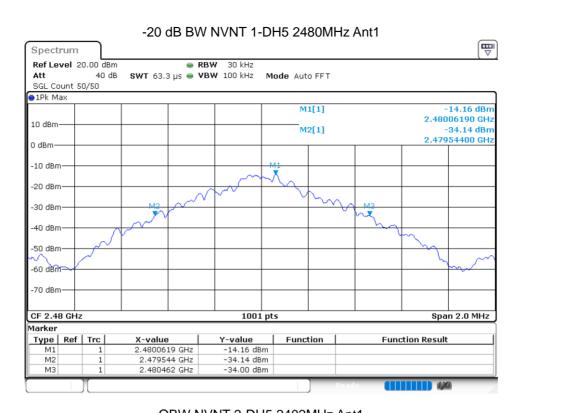


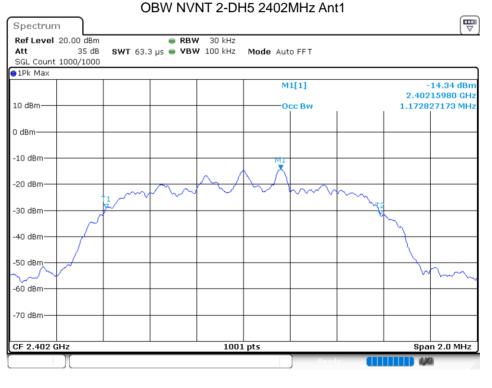




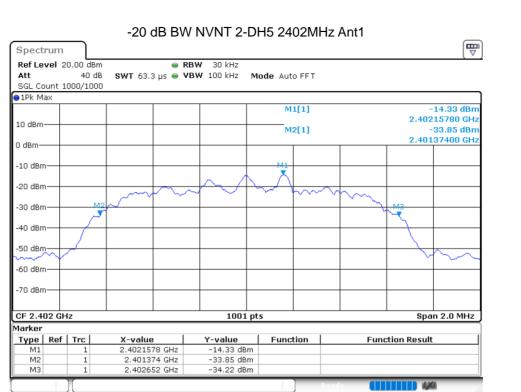


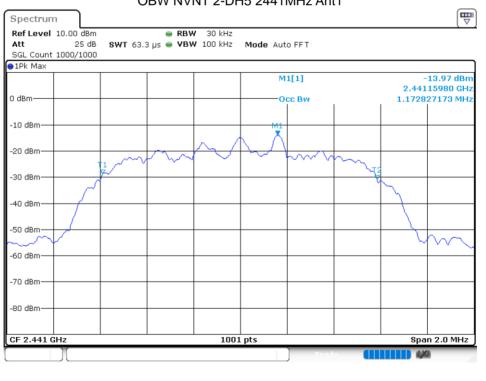






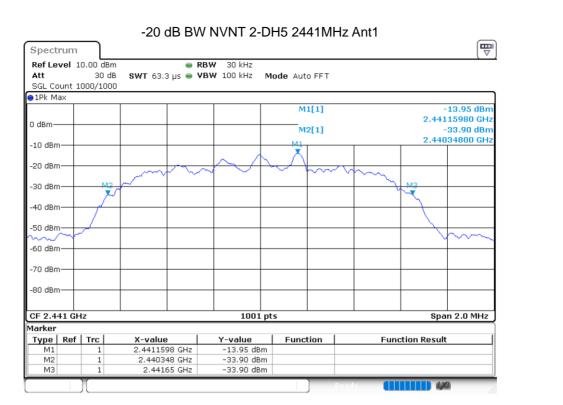


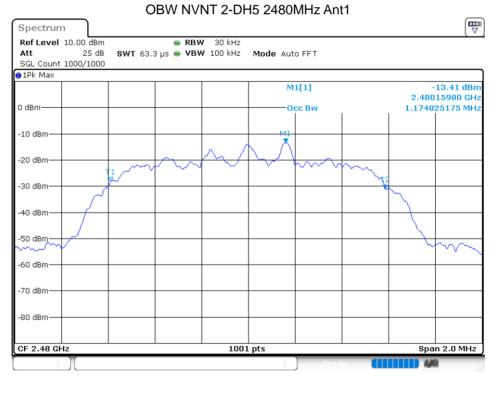




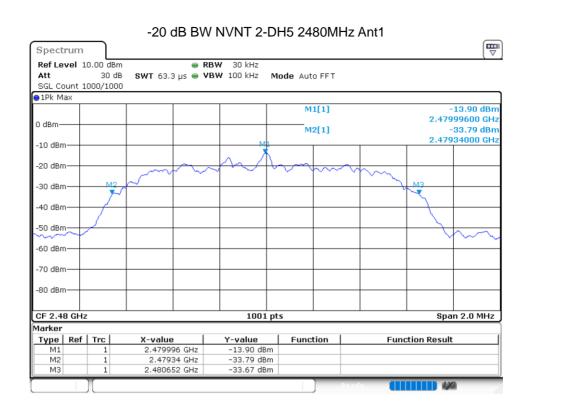
#### OBW NVNT 2-DH5 2441MHz Ant1







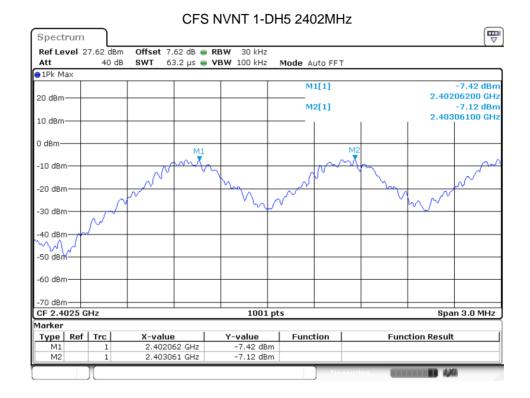




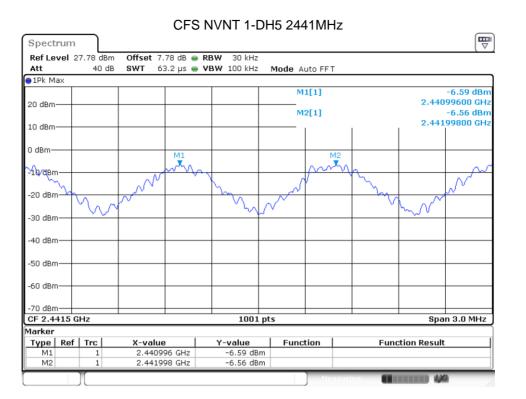


#### 8.4 CARRIER FREQUENCIES SEPARATION

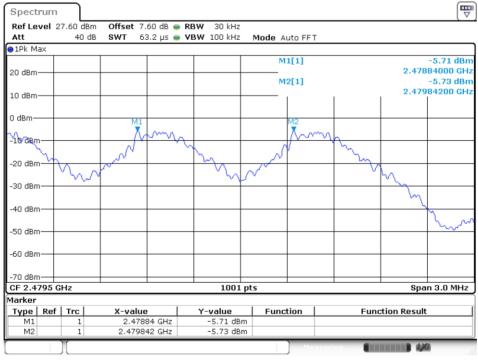
Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	2402.062	2403.061	0.999	0.894	Pass
NVNT	1-DH5	2440.996	2441.998	1.002	0.944	Pass
NVNT	1-DH5	2478.84	2479.842	1.002	0.918	Pass
NVNT	2-DH5	2401.996	2403.004	1.008	0.852	Pass
NVNT	2-DH5	2441.158	2442.163	1.005	0.868	Pass
NVNT	2-DH5	2478.996	2480.004	1.008	0.875	Pass



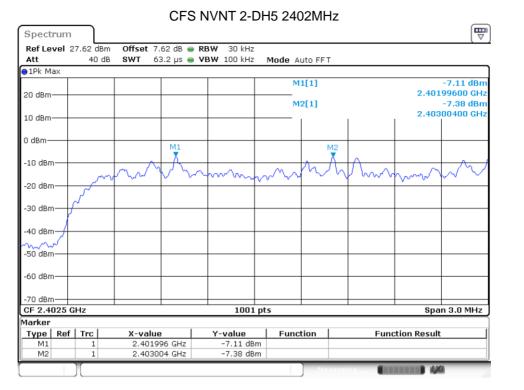




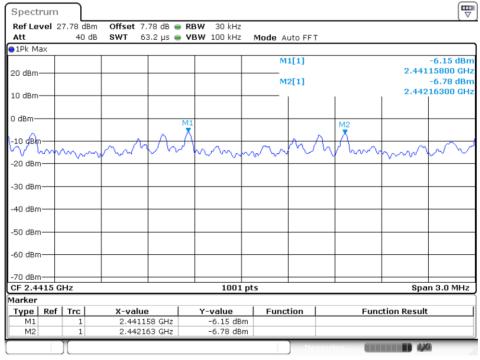
#### CFS NVNT 1-DH5 2480MHz







#### CFS NVNT 2-DH5 2441MHz





Ref Level 2	7.60 dBm	Offset 7.60 dB 👄	RBW 30 kHz		
Att	40 dB	_		Mode Auto FFT	
∋1Pk Max			-		
				M1[1]	-6.17 dB
20 dBm					2.47899600 G
				M2[1]	-6.81 dB
10 dBm					2.48000400 GI
0 dBm		M1		M	
		X			
-10 dBm				$\sim \Lambda$	
w wr	mon		man por por	n mar V	A market
-20 dBm					
-30 dBm					
-40 dBm					
-50 dBm					
60 d0					
-60 dBm					
-70 dBm					
CF 2.4795 G	Hz		1001 pt:	5	Span 3.0 MH
Marker			1001 pt.		opan dio Min
	Trc	X-value	Y-value	Function	Function Result
M1 M1	1	2.478996 GHz	-6.17 dBm		
M2	1	2.480004 GHz	-6.81 dBm		



	Condition	Mode	Hoppin	g Number	Limit	Verdict	
	NVNT	1-DH5		79	15	Pass	
						1	1
	_ н	opping N	lo. NVNT	1-DH5 24	02MHz		G
Spectrum							
Ref Level 27		7.62 dB 👄 RI			_		
Att SGL Count 70	40 dB <b>SWT</b>	1 ms 🖷 V	<b>BW</b> 300 kHz	Mode Auto 9	Sweep		
IPk Max	00/1000						
				M1[1]			-4.55 dB
20 dBm			++				2.4018370 GH
10 dBm				M2[1]			-4.04 dB
TO dBm						1	
©/dBm			AAAAAAAAAA		Dobah		M2
Тапаланой	aaaaaa maadd d d d d d d d d d d d d d d	TMAABADD	MAAAAAA	NAKAKABANA	UNDADAAA	DADAGBARAA	NAAAAAAA 🕺
-10/CB//++/////	MANNINUUUU	WWWWW	<u> 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</u>	YUYUVUYUVV		MUURUURU	010/0000
-20 08 M 11 1	<u>AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA</u>	naho III k. i	heille eie	TOTALOUNA	1.419.618.81	<u>N a R A R A R A N A N</u>	<u> </u>
-30 dBm							
410 dBm							
							k.
-50 dBm							
-60 dBm							
-70 dBm							
Start 2.4 GHz			1001	ots		St	op 2.4835 GH
Marker							•
Type   Ref			Y-value	Function		Function R	esult
M1 M2		837 GHz 765 GHz	-4.55 dBm -4.04 dBm				

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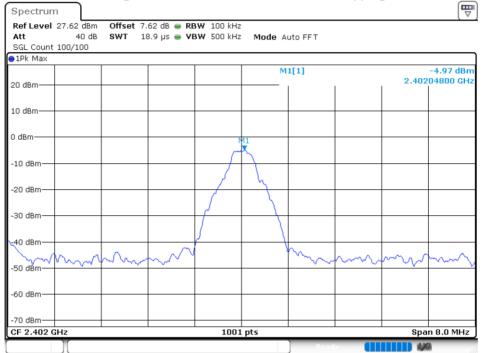
Certificate #4298.01

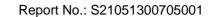


#### 8.6 BAND EDGE

	DGL						
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant 1	No-Hopping	-36.83	-20	Pass
NVNT	1-DH5	2402	Ant 1	Hopping	-36.33	-20	Pass
NVNT	1-DH5	2480	Ant 1	No-Hopping	-38.56	-20	Pass
NVNT	1-DH5	2480	Ant 1	Hopping	-39.08	-20	Pass
NVNT	2-DH5	2402	Ant 1	No-Hopping	-35.79	-20	Pass
NVNT	2-DH5	2402	Ant 1	Hopping	-36.94	-20	Pass
NVNT	2-DH5	2480	Ant 1	No-Hopping	-38.33	-20	Pass
NVNT	2-DH5	2480	Ant 1	Hopping	-39.29	-20	Pass

#### Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref

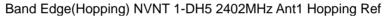






Band Edge NVNT 1-DH5 2402MHz Ant1	No-Hopping Emission
-----------------------------------	---------------------

Spectrum	ı )									[₩
Ref Level	27.62 dB	m Offset	7.62 dB 📢	● RBW 100 kHz						
Att	40 d	B SWT :	227.5 µs (	● <b>VBW</b> 500 kHz	Mode .	Auto FF	Т			
SGL Count	100/100									
⊜1Pk Max										
0.0 10					M	1[1]				-4.33 dBm
20 dBm-										185000 GHz
10 dBm-					W	2[1]				-46.71 dBm 000000 GHz
10 dbill						1	1		2.40	
0 dBm										M1
										I X
-10 dBm			-							
0.0 10										1 //
-20 dBm	D1 -24.9	74 d8 m								
-30 dBm	DI -24.9.	/4 ubm								
				M4						1 11
-40 dBm				1914					140	IM2
amplesion the	weeks photon of the	mapatened	and the way	mouthermuting	way who are shy top	Almonth	work	workdrukan	Un Mumural My	under break your
-50 dBm							-			· · · ·
-60 dBm										
-60 uBm										
-70 dBm										
Start 2.306	5 GHz			1001 p	ots				Stop	2.406 GHz
Marker										
Type   Ref	f   Trc	X-valı	1e	Y-value	Func	tion	1	Fund	tion Resul	t
M1	1	2.40	185 GHz	-4.33 dBm						
M2	1		2.4 GHz	-46.71 dBm						
MЗ	1		2.39 GHz	-47.32 dBm						
M4	1	2.3	516 GHz	-41.81 dBm						
							Read			0





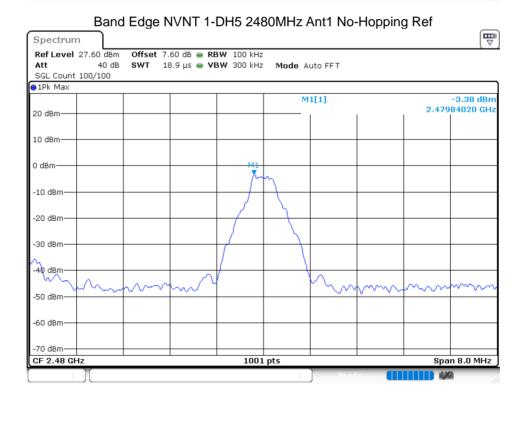


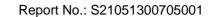


ſ

Band E	dge(Hopp	ing) NVNT 1	-DH5 2402MHz Ant1	Hopping Emission	
Spectrum					<b>P</b>
Ref Level 27.62	dBm Offset	7.62 dB 🔵 RBW	100 kHz		

20 dBm				M1[1]		-3.76 dBr
20 UBIII-				M2[1]	2	.40585000 GH -42.34 dBr
10 dBm					2	.40000000 GH
				1		
0 dBm——						
-10 dBm						A14
-10 000						
-20 dBm—		_				/¥W
	D1 -24.16	50 dBm				
-30 dBm						
-40 dBm			M4		43	M2,
muchanner	amerilyr	have where you all we are all got the the	whenter Munning men	municipation parapartan	Agraman and man the second	unnelle
-50 dBm						
-60 dBm—						
-70 dBm—						
Start 2.30	6 GHz		1001 pt	s	S	top 2.406 GHz
Marker						
TUIKO	f   Trc	X-value	Y-value	Function	Function Re	esult
Type   Re		2.40585 GHz	-3.76 dBm			
Type Re M1	1					
Type   Re	1	2.4 GHz 2.387 GHz	-42.34 dBm -44.03 dBm			







1Pk Ma							
					M1[1]		-4.22 dBm
20 dBm·					M2[1]		2.48005000 GHz -44.83 dBm
0 dBm					[H2[1]		2.48350000 GHz
Jel 1							
dem-							
10 dBm	∩						
11							
20 dBm	D1 -	23.382	dBm				
30 dBm	)						
11		M4					
40 dBn			M3 M3	ada	- <b>6</b> 4	wind warmon the warder the	Allering
50 dBm	Knowlind	e warden ward	Musical and a construction of the second	"" " " mound	Pro cher and and a second	and colle-spectropolylopolylopolylopoly	. Preventeriore
60 dBm	<u>ا</u>						
70 - 40							
		'	I	1001 pts	5		Stop 2.576 GHz
	.470 GH						
tart 2	.470 GH						
tart 2 arker		c	X-value	Y-value	Function	Function F	tesult
itart 2 arker Type M1		1	2.48005 GHz	-4.22 dBm	Function	Function F	tesult
70 dBm Start 2 arker Type M1 M2 M3					Function	Function F	tesult

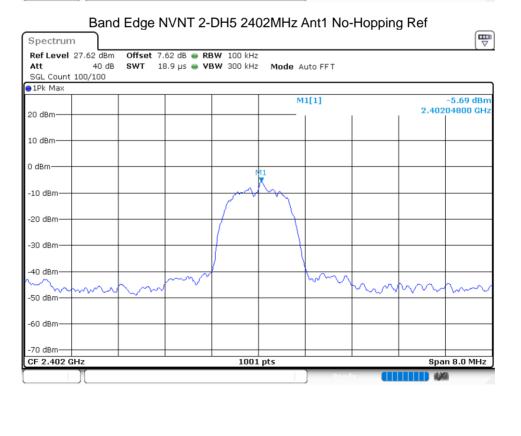


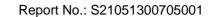




	Band E	dge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission	1
ſ	Spectrum		E

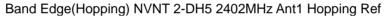
Ref Level 27.	60 dBm	Offset 7.	60 dB (	• RBW 100 kHz					( \
Att	40 dB		7.5µs (	● <b>VBW</b> 300 kHz	Mode Au	to FFT			
SGL Count 120	00/1200	)							
1Pk Max									
					M1[	1]			-4.17 dBr
20 dBm									995000 GH
10 dBm					M2[	1]			-44.96 dBr 350000 GH
					1		1	1 2.40	
D d <mark>iš</mark> in —									
MAT.									
10 dBm									
-20 dBm									
D1	-23.49	4 dBm							
-30 cBm		-		_					
	M4	M3							
-40 dBmi <del>2</del>	Sale an	Automation and a second	un pation	4 march and and and a march and and a march and and a march	h.M. marken and	a stady of	e and the literation	1 marter and the states	M. unmitak ma
-50 dBm	· · · · ·			· · · · · · · · · · · · · · · · · · ·		1840 C - UN			Andre dans a -
oo abiii									
-60 dBm				_					
-70 dBm	-			1001					0.536.00
Start 2.476 G	IZ			1001	pts			stop	2.576 GHz
1arker	- 1		- 1		1	1			
Type Ref 1 M1	1	X-value 2,4799	E CUE	<u>Y-value</u> -4.17 dBm	Functio	on	Fu	nction Resu	τ
M1 M2	1	2.4799		-44.17 dBm					
M3	1		5 GHz	-43.69 dBm					
M4	1	2.491		-42.57 dBm					
	_								MA.

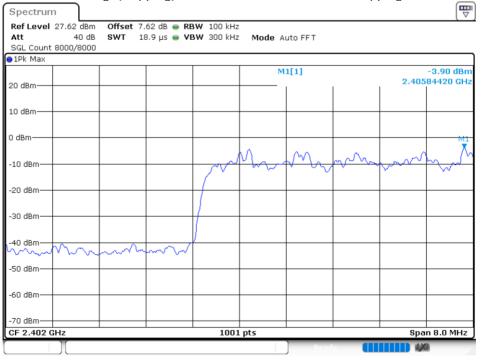






Spectrum	ı ]									
Ref Level	27.62 dBr	n Offset	7.62 dB (	● RBW 100 kH	lz					
Att	40 d	B <b>SWT</b> 23	27.5 µs (	📄 <b>VBW</b> 300 kH	lz Mode	Auto Fi	FΤ			
SGL Count	100/100									
●1Pk Max										
					M	1[1]				-4.37 dBm
20 dBm-										15000 GHz
10 dBm					M	2[1]				-44.05 dBm
TO UBIII						1	1		2.400	100000 GHz
0 dBm										M1
										T 1
-10 dBm										<u>⊢                                    </u>
										I II
-20 dBm		-								
-30 dBm	D1 -25.68	38 dBm								
-30 UBIII										
-40 dBm			M	4						. M2
undi undini an	holy and the second	a area here bara	humantial	: hundungtituatuatude h	Louister American		d and	Mand L Marked	W13	What he
-50 dBm		000				- 000 · · ·	00-01		1.00	
-60 dBm										
-70 dBm										
Start 2.306	CH <sub>2</sub>			100	L pts				Ston	2.406 GHz
Marker				100.	r prs				5000	2.400 0112
	Trc	X-value	<b>,</b> 1	Y-value	Fund	tion	1	Eupo	tion Result	. 1
M1	1		= 15 GHz	-4.37 dE		auon		Fund	cion Resul	-
M2	1		2.4 GHz	-44.05 de						
M3	1		39 GHz	-46.57 dB						
M4	1		23 GHz	-41.49 dE						
	11				1	1	Baselo			74



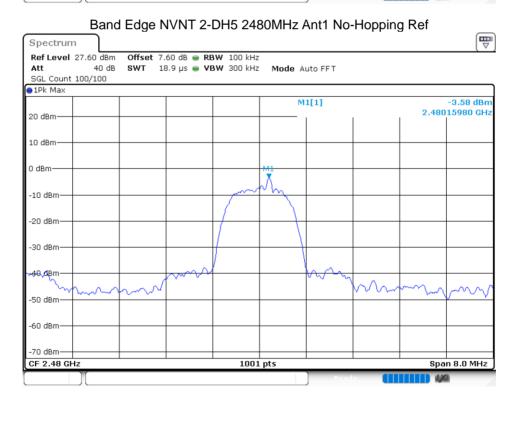


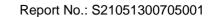




## Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission

Spectrum	ı ]								
Ref Level			_	RBW 100 kHz					
Att	40		27.5 µs 🧉	• VBW 300 kHz	Mode Au	to FFT			
SGL Count	1200/12	:00							
😑 1Pk Max			_						
					M1[	1]			-4.81 dBm
20 dBm									.85000 GHz
					M2[	1]			45.34 dBm
10 dBm								2.400	00000 GHz
0 dBm									M1
o ubili									▼
-10 dBm									d un d
									1 12101
-20 dBm				_					
	D1 -23.9	903 dBm							
-30 dBm								+	
-40 dBm			M4					МЗ	
-40 aBm	montant	une menular	manne	ter un the second for	LAND ST.	hillion and	A mar of arms	Harrison V a sub-	1012 11-11-11-11-11-11-11-11-11-11-11-11-11-
-50 dBm		and the second s			of the second se		- an or grand	V	0
00 00									
-60 dBm									
-70 dBm									
Start 2.306	5 GHz			1001 p	ts			Stop	2.406 GHz
Marker									
Type   Ref	f   Trc	X-value		Y-value	Functio	n	Fun	iction Result	
M1	1	2.401	35 GHz	-4.81 dBm					
M2	1		.4 GHz	-45.34 dBm					
M3	1		39 GHz	-43.23 dBm					
M4	1	2.34	D6 GHz	-40.85 dBm					
						Re	ady 🚺		(A)



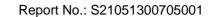




Att	m I 27.60 dBm 40 dB		<ul> <li>RBW 100 kHz</li> <li>VBW 300 kHz</li> </ul>	Mode Auto FR	τ		
1Pk Max							
				M1[1]			-6.26 dBm
20 dBm—							95000 GHz
10 dBm—				M2[1]			45.90 dBm
10 UBIII—					1	2.483	50000 GHz
0 dBm							
T							
-10 dBm—							
-20 dBm—	D1 -23.579	9 dBm					
-30 dBm—							
		M4					
-40 dBmrz		1 N 2				make a se	
w/ un	publican	Morristenature transformer	marge bule horn where the set of	sed have also all all and a set the	mphase was warable	photo and a second a	www.lowww.d
-50 dBm—							
-60 dBm—							
oo abiii							
-70 dBm—							
Start 2.4	76 GHz		1001 pt	s		Stop 2	2.576 GHz
1arker							
	ef Trc	X-value	Y-value	Function	Fun	ction Result	
M1	1	2.47995 GHz	-6.26 dBm				
M2	1	2.4835 GHz	-45.90 dBm				
M3 M4	1	2.5 GHz 2.4995 GHz	-45.42 dBm -41.91 dBm				









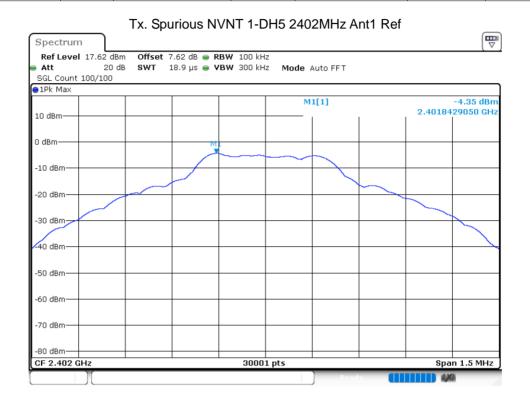
# Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission

20 dBm       2.47735000         10 dBm       M2[1]         -45.00 d         0 dBm       -45.00 d         0 dBm       -45.00 d         0 dBm       -40 dBm         -20 dBm       -40 dBm         -40 dBm2       -40 dBm2	Spectrum										0
SGL Count 1000/1000       IPk Max     M1[1]     -7.460       20 dBm											
1Pk Max       M1[1]       -7.46 d         20 dBm       M2[1]       -45.00 d         10 dBm       M2[1]       -45.00 d         0 dBm       0       2.4835000 d         0 dBm       0       0         40 dBm       0       0         -20 dBm       0       0         -30 dBm       0       0         -40 dBm       0       0         -50 dBm       0       0         -50 dBm       0       0         -70 dBm       0       0         1 <th></th> <th></th> <th></th> <th>27.5 µs 🧉</th> <th>• <b>VBW</b> 300 kHz</th> <th>Mode A</th> <th>uto FF</th> <th>Т</th> <th></th> <th></th> <th></th>				27.5 µs 🧉	• <b>VBW</b> 300 kHz	Mode A	uto FF	Т			
20 dBm		1000/10	00								
20 dBm 2.47735000 4.45.00 0 10 dBm 2.48350000 0 0 dBm 2.48350000 0 0 dBm 2.4835000 0 2.48350000 0 2.4835000 0 0 dBm 2.4835000 0 0 dBm 2.483	1Pk Max										
10 dBm     M2[1]     -45.00 d       0 dBm     2.48350000 f       0 dBm     2.4835000 f       11 dBm     1       -20 cBm     1       -20 cBm     1       -30 dBm     1						M1	L[1]				-7.46 dBr
10 dBm     2.48350000       0 dBm     2.48350000       0 dBm     1       20 cBm     1       2.0 cBm     1	20 dBm — -						_			2.4	
0 dBm       01	10 40					M	2[1]				-45.00 dBr
40 dpmi2     M4     M3     M4     M3       40 dpmi2     M4     M3     M4     M3       50 dbm     M4     M3     M4     M3       40 dpmi2     M4     M3     M4     M3       50 dbm     M4     M3     M4     M3       60 dbm     M4     M3     M4     M3       70 dbm     M4     M3     M4     M4       60 dbm     M4     M3     M4     M4       70 dbm     M1     M1     1     2.47735 GHz       77.46 dbm     M1     1     2.4835 GHz     -7.46 dbm	10 aBm							1		2.4	8350000 GH
40 dpm     M4     M3     M4     M3       40 dpm     M4     M3     M4     M3       50 dbm     M4     M3     M4     M3       40 dpm     M4     M3     M4     M3       50 dbm     M4     M3     M4     M4       50 dbm     M4     M3     M4     M3       50 dbm     M1     M1     1     2.47735 GHz     T7.46 dbm       M1     1     2.4835 GHz     -74.60 dbm     M1	0 dBm										
20 cBm     D1 -23.280 dBm     D1 -23.280 dBm     D1 -23.280 dBm       30 cBm     40 cBm2     M4     M3       40 cBm2     M4     M3       50 dBm     50 dBm     50 dBm       50 dBm     50 dBm     50 dBm       60 dBm     1     1       70 dBm     1     2.4735 GHz       70 dBm     1     2.4735 GHz       71 dBm     1	11										
-20 cBm     D1 -23.280 dBm     D1 -23.280 dBm     D1 -23.280 dBm       -30 cBm     -30 cBm     -30 cBm     -30 cBm       -40 cBm:2     M4     M3       -50 dBm     -30 cBm     -30 cBm       -70 dBm     -30 cBm     -30 cBm       -70 dBm     -30 cBm     -30 cBm       -70 dBm     -30 cBm     -30 cBm	¶⊈tų dBm——										
M4     M3       40 dpm?     M4       40 dpm?     M4       50 dBm     M4       50 dBm     M4       60 dBm     M4       60 dBm     M4       70 dBm     M4       60 dBm     M4       60 dBm     M4       70 dBm     M1       1     2.47735 GHz       77.46 dBm       M2     1       2.4835 GHz     -7.46 dBm	° 10										
30 dBm     M4     M3     M4     M3       40 dBmi2     M4     M3     M4     M3       50 dBm     M4     M3     M4     M3       50 dBm     M4     M3     M4     M3       60 dBm     M3     M4     M3     M4       60 dBm     M3     M3     M3     M3       70 dBm     M1     M1     1     2.47735 GHz     T7.46 dBm       M1     1     2.4835 GHz     -7.46 dBm     M1	-20 dBm	11 .92.9									
40 dpmi2     M4     M3       50 dbm		/1 -20.2									
40 demit:         113         113         113         113         114         1	-30 aBm										
Number of the second		<u>M4</u>	M3								
-60 dBm -70 dBm Start 2.476 GHz Type Ref Trc X-value Y-value Function Function Result M1 1 2.4835 GHz -7.46 dBm M2 1 2.4835 GHz -45.00 dBm	With Barry	atranya	mouthinguner	yndur maring	where he have been all and a second	- hardter gara	where have	month	munghing	and man	manyworker
To dBm         Image: Constraint of the state of th	-50 dBm								-		
To dBm         Image: Constraint of the state of th											
Start 2.476 GHz         1001 pts         Stop 2.576 G           Iarker         Type         Ref         Trc         X-value         Y-value         Function         Function Result           M1         1         2.47735 GHz         -7.46 dBm	-60 dBm			-						+	
Start 2.476 GHz         Stop 2.576 G           Jarker         Stop 2.576 G           Jarker         Stop 2.576 G           Type Ref Trc X-value         Function         Function Result           M1         1         2.47735 GHz         -7.46 dBm         Function Result           M2         1         2.4835 GHz         -45.00 dBm         Function Result	70 40										
M1         1         2.47735 GHz         -7.46 dBm           M2         1         2.4835 GHz         -45.00 dBm		CH2			1001 pt	·c				Sto	n 2 576 CHz
Type         Ref         Trc         X-value         Y-value         Function         Function Result           M1         1         2.47735 GHz         -7.46 dBm              M2         1         2.4835 GHz         -45.00 dBm		GIL			1001 p					0.0	p 2.070 di 12
M1         1         2.47735 GHz         -7.46 dBm           M2         1         2.4835 GHz         -45.00 dBm		Trc	¥-valu	o	Y-valuo	Eunet	ion	1	Eun	ction Ros	ult
M2 1 2.4835 GHz -45.00 dBm						runci	1011		Fui	ICCIOIL KES	uit
	M3	1									
M4 1 2.4884 GHz -42.57 dBm	M4	1	2.48	84 GHz	-42.57 dBm						



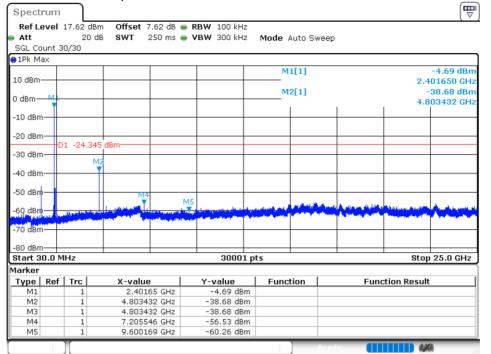
#### 8.7 CONDUCTED RF SPURIOUS EMISSION

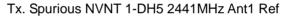
~							
	Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
	NVNT	1-DH5	2402	Ant 1	-34.32	-20	Pass
	NVNT	1-DH5	2441	Ant 1	-39.31	-20	Pass
	NVNT	1-DH5	2480	Ant 1	-41.68	-20	Pass
	NVNT	2-DH5	2402	Ant 1	-35.04	-20	Pass
	NVNT	2-DH5	2441	Ant 1	-41.97	-20	Pass
	NVNT	2-DH5	2480	Ant 1	-45.98	-20	Pass





#### Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission

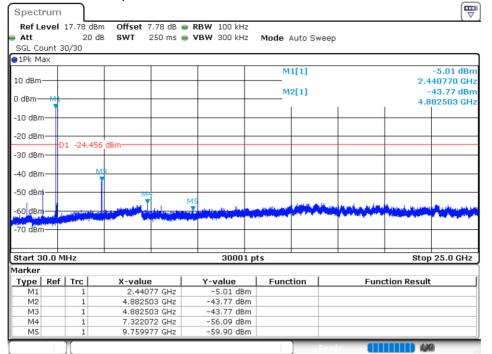


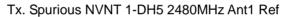






#### Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission

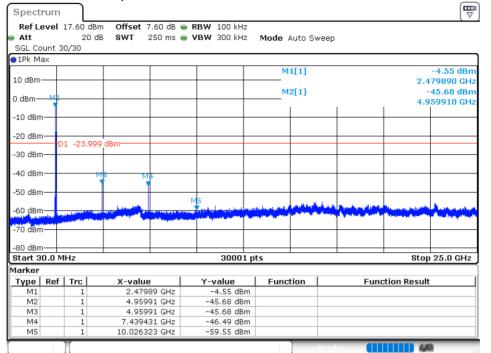


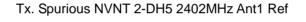


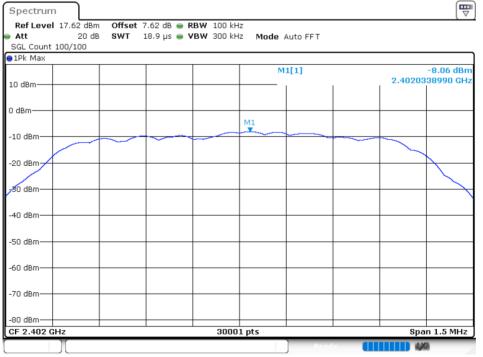




#### Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission

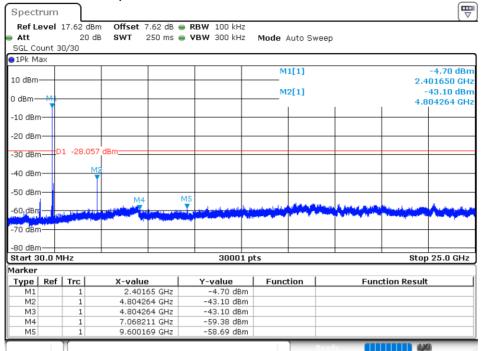




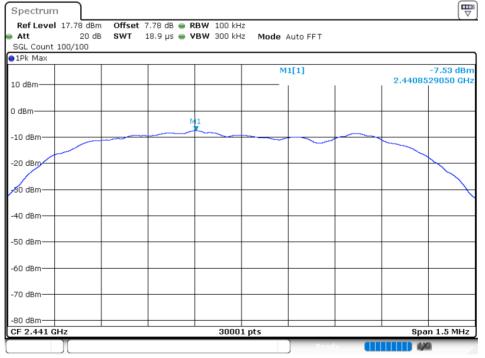




#### Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission

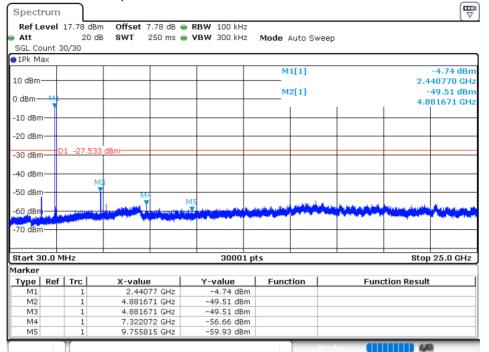


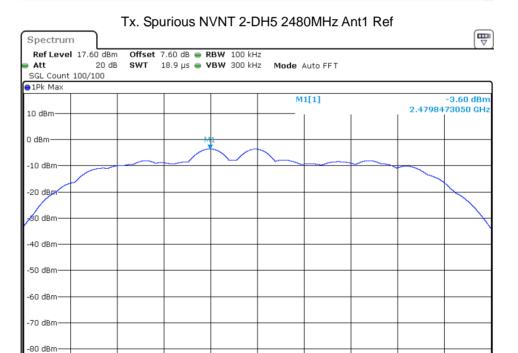






#### Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission





30001 pts

CF 2.48 GHz

Span 1.5 MHz



Stop 25.0 GHz

**Function Result** 

l IXI

#### Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission Spectrum Ref Level 17.60 dBm Offset 7.60 dB 👄 RBW 100 kHz 20 dB SWT 250 ms 🖷 VBW 300 kHz Att Mode Auto Sweep SGL Count 10/10 ⊖1Pk Max M1[1] -8.54 dBn 10 dBm· 2.479890 GHz M2[1] -49.59 dBm 0 dBm 4.960743 GHz -10 dBm -20 dBm-01 -23.599 dBm -30 dBm -40 dBm М -50 dBm-

M

X-value

2.47989 GHz 4.960743 GHz

4.960743 GHz

7.439431 GHz

9.912294 GHz

-60 dBm

-80 dBm

M1 M2

ΜЗ

M4

M5

Start 30.0 MHz Marker

Type | Ref | Trc

1

1

1

1

END	OF	REF	PORT

30001 pts

Y-value

-8.54 dBm -49.59 dBm

-49.59 dBm

-51.96 dBm

-59.55 dBm

Function

Version.1.3