



# **RADIO TEST REPORT**

## **EN 300 328 V2.2.2 (2019-07)**

**Product :** Smartphone

**Trade Mark :** CUBOT

**Model Name :** J20

**Family Model :** N/A

**Report No. :** S22090900505001

### **Prepared for**

Shenzhen Huafurui Technology Co., Ltd

Unit 1401 &1402, 14/F, Jinqi Zhigu Mansion (No. 4 Building of Chongwen Garden),  
Crossing of the Liuxian Street and Tangling Road, Taoyuan Street, Nanshan District,  
Shenzhen,P.R. China

### **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, 0755-2320 0090

Website:<http://www.ntek.org.cn>

### TEST RESULT CERTIFICATION

**Applicant's name** ..... : Shenzhen Huafurui Technology Co., Ltd  
**Address** ..... : Unit 1401 &1402, 14/F, Jinqi Zhigu Mansion (No. 4 Building of Chongwen Garden), Crossing of the Liuxian Street and Tangling Road, Taoyuan Street, Nanshan District, Shenzhen,P.R. China  
**Manufacturer's Name** ..... : Shenzhen Huafurui Technology Co., Ltd  
**Address** ..... : Unit 1401 &1402, 14/F, Jinqi Zhigu Mansion (No. 4 Building of Chongwen Garden), Crossing of the Liuxian Street and Tangling Road, Taoyuan Street, Nanshan District, Shenzhen,P.R. China

**Product description**

**Product name** ..... : Smartphone  
**Trademark** ..... : CUBOT  
**Model Name** ..... : J20  
**Family Model** ..... : N/A  
**Sample number** ..... : S220909005009

**Standards** ..... : EN 300 328 V2.2.2 (2019-07)

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the of Radio Equipment Regulations (SI 2017/1206) requirements. And it is applicable only to the tested sample identified in the report. This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personnel only, and shall be noted in the revision of the document.

**Date of Test** .....

**Date (s) of performance of tests** ..... Sep 14. 2022 ~ Oct 21. 2022  
**Date of Issue**..... Oct 24. 2022  
**Test Result**..... **Pass**

**Testing Engineer** : Allen Liu  
 (Allen Liu)

**Authorized Signatory** : Alex Li  
 (Alex Li)

**Table of Contents**

**Page**

1 . GENERAL INFORMATION	7
1.1 GENERAL DESCRIPTION OF EUT	7
1.2 INFORMATION ABOUT THE EUT	8
1.3 TEST CONDITIONS	13
1.4 TEST CONFIGURATION OF EUT	13
1.5 DESCRIPTION OF TEST CONDITIONS	14
1.6 DESCRIPTION OF SUPPORT UNITS	15
1.7 EQUIPMENTS LIST FOR ALL TEST ITEMS	16
2 . SUMMARY OF TEST RESULTS	17
2.1 TEST FACILITY	18
3 . RF OUTPUT POWER	19
3.1 LIMITS OF RF OUTPUT POWER	19
3.2 TEST PROCEDURE	19
3.3 DEVIATION FROM TEST STANDARD	19
3.4 TEST SETUP	19
3.5 TEST RESULTS	20
4 . ACCUMULATED TRANSMIT TIME, FREQUENCY OCCUPATION AND HOPPING SEQUENCE	21
4.1 LIMITS OF ACCUMULATED TRANSMIT TIME, FREQUENCY OCCUPATION AND HOPPING SEQUENCE	21
4.2 TEST PROCEDURE	21
4.3 DEVIATION FROM TEST STANDARD	21
4.4 TEST SETUP	22
4.5 TEST RESULTS	22
5 . OCCUPIED CHANNEL BANDWIDTH	23
5.1 LIMITS OF OCCUPIED CHANNEL BANDWIDTH	23
5.2 TEST PROCEDURE	23
5.3 DEVIATION FROM TEST STANDARD	24
5.4 TEST SETUP	24
5.5 TEST RESULTS	24
6 . TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN	25
6.1 LIMITS OF TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND	

**Table of Contents**

**Page**

DOMAIN	25
6.2 TEST PROCEDURE	25
6.3 DEVIATION FROM TEST STANDARD	26
6.4 TEST SETUP	26
6.5 TEST RESULTS	26
7 . HOPPING FREQUENCY SEPARATION	27
7.1 LIMITS OF HOPPING FREQUENCY SEPARATION	27
7.2 TEST PROCEDURE	27
7.3 DEVIATION FROM TEST STANDARD	27
7.4 TEST SETUP	28
7.5 TEST RESULTS	28
8 . TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN	29
8.1 LIMITS OF TRANSMITTER TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN	29
8.2 TEST PROCEDURE	29
8.3 DEVIATION FROM TEST STANDARD	29
8.4 TEST SETUP	30
8.5 TEST RESULTS (Radiated measurement)	31
8.6 TEST RESULTS (Conducted measurement)	32
9 . RECEIVER SPURIOUS EMISSIONS	33
9.1 LIMITS OF RECEIVER SPURIOUS RADIATION	33
9.2 TEST PROCEDURE	33
9.3 DEVIATION FROM TEST STANDARD	33
9.4 TEST SETUP	34
9.5 TEST RESULTS (Radiated measurement)	35
9.6 TEST RESULTS (Conducted measurement)	36
10. RECEIVER BLOCKING	37
10.1 PERFORMANCE CRITERIA	37
10.2 LIMITS OF RECEIVER BLOCKING	37
10.3 TEST PROCEDURE	39
10.4 DEVIATION FROM TEST STANDARD	39
10.5 TEST SETUP	39
10.6 TEST RESULTS	40
11. TEST RESULTS	43

<b>Table of Contents</b>	<b>Page</b>
11.1 ACCUMULATED TRANSMIT TIME	43
11.2 FREQUENCY OCCUPATION	50
11.3 ONE PULSE DWELL TIME	57
11.4 RF OUTPUT POWER	67
11.5 HOPPING FREQUENCY SEPARATION	69
11.6 OCCUPIED CHANNEL BANDWIDTH	73
11.7 TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN	76
11.8 TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN	79
11.9 RECEIVER SPURIOUS EMISSIONS	84
11.10 HOPPING SEQUENCE	88
12. EUT TEST PHOTO	90
SPURIOUS EMISSIONS MEASUREMENT PHOTOS	90



## 1. GENERAL INFORMATION

### 1.1 GENERAL DESCRIPTION OF EUT

Equipment	Smartphone	
Trade Mark	CUBOT	
Model Name.	J20	
Family Model	N/A	
Model Difference	N/A	
Product Description	The EUT is Smartphone	
	Operation Frequency:	2402~2480 MHz
	Modulatin Type:	GFSK,π/4-DQPSK,8-DPSK
	Modulation Technology:	FHSS
	Adaptive/non-adaptive	Adaptive equipment
	Receiver categories	3
	Number Of Channel	79CH
	Antenna Designation:	PIFA Antenna
	Antenna Gain(Peak)	-0.25dBi
	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.	
Channel List	Refer to below Table	
Adapter	Model: HJ-0501000B3-UK Input: 100-240V~50/60Hz, 0.15A Output: 5.0V---1.0A 5.0W	
Battery	DC 3.8V, 2350mAh	
Rating	DC 3.8V from battery or DC 5V from Adapter.	
I/O Ports	Refer to users manual	
Hardware Version	G2241E-MH-V1.1	
Software Version	CUBOT_J20_C041C_V01_20221026	

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

79 channels are provided to (GFSK,  $\pi/4$ -DQPSK, 8-DPSK)

Channel	Frequency (MHz)
00	2402
01	2403
.....	.....
.....	.....
.....	...
.....	.....
77	2479
78	2480

1.2 INFORMATION ABOUT THE EUT

**a) The type of modulation used by the equipment:**

- FHSS
- other forms of modulation

**b) In case of FHSS modulation:**

- In case of non-Adaptive Frequency Hopping equipment:  
The number of Hopping Frequencies: .....
- In case of Adaptive Frequency Hopping Equipment:  
The maximum number of Hopping Frequencies: 79  
The minimum number of Hopping Frequencies: 79
- The (average) Dwell Time: 350.384ms Maximum

**c) Adaptive / non-adaptive equipment:**

- non-adaptive Equipment
- adaptive Equipment without the possibility to switch to a non-adaptive mode
- adaptive Equipment which can also operate in a non-adaptive mode

**d) In case of adaptive equipment:**

The maximum Channel Occupancy Time implemented by the equipment: ..../..... ms

- The equipment has implemented an LBT based DAA mechanism
  - In case of equipment using modulation different from FHSS:
    - The equipment is Frame Based equipment
    - The equipment is Load Based equipment
    - The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment: ...../..  $\mu$ s

- The equipment has implemented a non-LBT based DAA mechanism
- The equipment can operate in more than one adaptive mode

**e) In case of non-adaptive Equipment:**

The maximum RF Output Power (e.i.r.p.):

The maximum (corresponding) Duty Cycle:

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):

**f) The worst case operational mode for each of the following tests:**

- RF Output Power  
GFSK
- Power Spectral Density  
N/A
- Duty cycle, Tx-Sequence, Tx-gap  
N/A
- Accumulated Transmit time, Frequency Occupation & Hopping Sequence (only for FHSS equipment)  
 $\pi/4$ -DQPSK
- Hopping Frequency Separation (only for FHSS equipment)  
8-DPSK
- Medium Utilization  
N/A
- Adaptivity  
N/A
- Receiver Blocking  
GFSK
- Nominal Channel Bandwidth  
8-DPSK
- Transmitter unwanted emissions in the OOB domain  
8-DPSK
- Transmitter unwanted emissions in the spurious domain  
GFSK
- Receiver spurious emissions  
GFSK

**g) The different transmit operating modes (tick all that apply):**

- Operating mode 1: Single Antenna Equipment
- Equipment with only one antenna
- Equipment with two diversity antennas but only one antenna active at any moment in time
- Smart Antenna Systems with two or more antennas, but operating in a (legacy) mode where only one antenna is used (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)
- Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming
- Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)
- High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1
- High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2

NOTE 1: Add more lines if more channel bandwidths are supported.

- Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming
- Single spatial stream / Standard throughput (e.g. IEEE 802.11™ [i.3] legacy mode)
- High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1
- High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2

NOTE 2: Add more lines if more channel bandwidths are supported.

**h) In case of Smart Antenna Systems:**

- The number of Receive chains: .....
- The number of Transmit chains: .....
  - symmetrical power distribution
  - asymmetrical power distribution

In case of beam forming, the maximum (additional) beam forming gain: ..... dB

NOTE: The additional beam forming gain does not include the basic gain of a single antenna.

**i) Operating Frequency Range(s) of the equipment:**

- Operating Frequency Range 1: 2402 MHz to 2480 MHz
  - Operating Frequency Range 2: ..... MHz to ..... MHz
- NOTE: Add more lines if more Frequency Ranges are supported.

**j) Nominal Channel Bandwidth(s):**

- Nominal Channel Bandwidth 1: 1.219MHz
- Nominal Channel Bandwidth 2: ...../..... MHz

NOTE: Add more lines if more channel bandwidths are supported.

**k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):**

- Stand-alone
- Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)
- Plug-in radio device (Equipment intended for a variety of host systems)
- Other

**l) The normal and the extreme operating conditions that apply to the equipment:**

**Normal operating conditions (if applicable):**

Operating temperature: 15°C~35°C

Other (please specify if applicable): .....

**Extreme operating conditions:**

Operating temperature range: Minimum: -10°C Maximum 40°C

Other (please specify if applicable): ..... Minimum: ..... Maximum .....

Details provided are for the:

- stand-alone equipment
- combined (or host) equipment
- test jig

**m) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p. levels:**

- Antenna Type: PIFA Antenna

Integral Antenna (information to be provided in case of conducted measurements)

Antenna Gain: -0.25 dBi

If applicable, additional beamforming gain (excluding basic antenna gain): ...../..... dB

- Temporary RF connector provided
- No temporary RF connector provided
- Dedicated Antennas (equipment with antenna connector)
- Single power level with corresponding antenna(s)
- Multiple power settings and corresponding antenna(s)

Number of different Power Levels: .....

Power Level 1: ..... dBm

Power Level 2: ..... dBm

Power Level 3: ..... dBm

NOTE 1: Add more lines in case the equipment has more power levels.

NOTE 2: These power levels are conducted power levels (at antenna connector).

- For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

**Power Level 1:** ..... dBm

Number of antenna assemblies provided for this power level: .....

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1	-0.25	-0.93	
2			
3			

NOTE 3: Add more rows in case more antenna assemblies are supported for this power level.

**Power Level 2:** ..... dBm

Number of antenna assemblies provided for this power level: .....

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			

NOTE 4: Add more rows in case more antenna assemblies are supported for this power level.

**Power Level 3:** ..... dBm

Number of antenna assemblies provided for this power level: .....

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			

NOTE 5: Add more rows in case more antenna assemblies are supported for this power level.

**n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:**

Details provided are for the:

- stand-alone equipment
- combined (or host) equipment
- test jig

Supply Voltage  AC mains State AC voltage ..... V  
 DC State DC voltage: DC 3.8V

In case of DC, indicate the type of power source

- Internal Power Supply
- External Power Supply or AC/DC adapter: DC 5V
- Battery: DC 3.8V
- Other: .....

**o) Describe the test modes available which can facilitate testing:**

See clause 1.4

**p) The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], IEEE 802.15.4™ [i.4], proprietary, etc.):**

Bluetooth®

**q) If applicable, the statistical analysis referred to in clause 5.4.1 q)**

(to be provided as separate attachment)

**r) If applicable, the statistical analysis referred to in clause 5.4.1 r)**

(to be provided as separate attachment)

**s) Geo-location capability supported by the equipment:**

- Yes
- The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user
- No

**t) Describe the minimum performance criteria that apply to the equipment (see clause 4.3.1.12.3 or clause 4.3.2.11.3):**

**GFSK(CH00) =0.98%**

1.3 TEST CONDITIONS

	Normal Test Conditions	Extreme Test Conditions
Temperature	15°C - 35°C	-10°C ~ 40°C Note: (1)
Relative Humidity	20% - 75%	N/A
Supply Voltage	DC 3.8V	/

Note:

- (1) The HT 40°C and LT -10°C was declared by manufacturer, The EUT couldn't be operate normally with higher or lower temperature.
- (2) The measurements are performed at the highest, middle, lowest available channels.

1.4 TEST CONFIGURATION OF EUT

Modulation Used For Conformance Testing		
Bluetooth mode	Data rate	Modulation type
BR	1Mbps	GFSK
EDR	2Mbps	$\pi/4$ -DQPSK
EDR	3Mbps	8-DPSK

Test Channel Frequencies Configuration		
Test Channel	EUT Channel	Test Frequency (MHz)
Lowest	CH00	2402
Middle	CH39	2441
Highest	CH78	2480

1.5 DESCRIPTION OF TEST CONDITIONS

**E-1**  
**EUT**

1.6 DESCRIPTION OF SUPPORT UNITS

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	Model/Type No.	Series No.	Note
E-1	Smartphone	J20	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (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.

1.7 EQUIPMENTS LIST FOR ALL TEST ITEMS

EQUIPMENT TYPE	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
EMI Test Receiver	R&S	ESPI7	101318	2022.04.06	2023.04.05	1 year
Bilog Antenna	TESEQ	CBL6111D	31216	2022.03.30	2023.03.29	1 year
Turn Table	EM	SC100_1	60531	N/A	N/A	N/A
Antnna Mast	EM	SC100	N/A	N/A	N/A	N/A
Horn Antenna	EM	EM-AH-10180	2011071402	2022.03.31	2023.03.30	1 year
Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2022.04.06	2023.04.05	1 year
Test Cable (30MHz-1GHz)	N/A	R-01	N/A	2020.05.11	2023.05.10	3 year
Test Cable (1-18GHz)	N/A	R-02	N/A	2020.05.11	2023.05.10	3 year
50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
Pre-Amplifier	EMC	EMC051835SE	980246	2022.06.17	2023.06.16	1 year
Spectrum Analyzer	Agilent	E4407B	MY45108040	2022.04.06	2023.04.05	1 year
Filter	TRILTHIC	2400MHz	29	2020.04.07	2023.04.06	3 year
Attenuator	Weinschel	33-10-33	AR4010	2020.04.07	2023.04.06	3 year
Attenuator	Weinschel	24-20-34	BP4485	2020.04.07	2023.04.06	3 year
MXA Signal Analyzer	Agilent	N9020A	MY49100060	2022.06.16	2023.06.15	1 year
ESG VETCTOR SIGNAL GENERAROR	Agilent	E4438C	MY45093347	2022.04.06	2023.04.05	1 year
PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2022.06.16	2023.06.15	1 year
Power Splitter	Mini-Circuits/ USA	ZN2PD-63-S+	SF025101428	2020.04.07	2023.04.06	3 year
Coupler	Mini-Circuits	ZADC-10-63-S +	SF794101410	2020.04.07	2023.04.06	3 year
Directional Coupler	MCLI/USA	CB11-20	0D2L51502	2020.07.17	2023.07.16	3 year
Attenuator	Agilent	8495B	MY42147029	2020.04.13	2023.04.12	3 year
Power Meter	DARE	RPR3006W	15I00041SNO 84	2022.06.16	2023.06.15	1 year
MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2022.04.06	2023.04.05	1 year
Wideband Radio Communication Tester Specifications	R&S	CMW500	148500	2022.04.06	2023.04.05	1 year
temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

EN 300 328 V2.2.2 (2019-07)		
Clause	Test Item	Results
<b>TRANSMITTER PARAMETERS</b>		
4.3.1.2	RF Output Power	Pass
4.3.1.3	Duty cycle, Tx-Sequence, Tx-gap	Not Applicable (See Note 1/2)
4.3.1.4	Accumulated Transmit Time, Frequency Occupation and Hopping Sequence	Pass
4.3.1.5	Hopping Frequency Separation	Pass
4.3.1.6	Medium Utilization (MU) factor	Not Applicable (See Note 1/2)
4.3.1.7	Adaptivity	Not Applicable (See Note 1)
4.3.1.8	Occupied Channel Bandwidth	Pass
4.3.1.9	Transmitter unwanted emission in the OOB domain	Pass
4.3.1.10	Transmitter unwanted emissions in the spurious domain	Pass
<b>RECEIVER PARAMETERS</b>		
4.3.1.11	Receiver Spurious Emissions	Pass
4.3.1.12	Receiver Blocking	Pass

**Note:**

1. These requirements do not apply for equipment with a maximum declared RF output power of less than 10 dBm EIRP or for equipment when operating in a mode where the RF output power is less than 10 dBm EIRP.
2. These requirements apply to non-adaptive frequency hopping equipment or to adaptive frequency hopping equipment operating in a non-adaptive mode
3. The antenna gain provided by customer is used to calculate the EIRP result. NTEK is not responsible for the accuracy of antenna gain parameter.

## 2.1 TEST FACILITY

Shenzhen NTEK Testing Technology Co., Ltd.

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

FCC Registered No.: 463705 IC Registered No.:9270A-1

CNAS Registration No.:L5516

## 2.2 MAXIMUM MEASUREMENT UNCERTAINTY

For the test methods, according to EN 300 328 standard, the measurement uncertainty figures shall be calculated in accordance with ETR 100 028-1[4] and shall correspond to an expansion factor(coverage factor)  $k=1.96$  or  $k=2$  (which provide confidence levels of respectively **95 %** and **95.45 %** in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Maximum measurement uncertainty

No.	Item	Uncertainty
1	Occupied Channel Bandwidth	$\pm 5\%$
2	RF output Power,conducted	$\pm 1.5\text{dB}$
3	Power Spectral Density, conducted	$\pm 3\text{dB}$
4	Unwanted emissions, conducted	$\pm 3\text{dB}$
5	All emissions,radiated	$\pm 6\text{dB}$
6	Temperature	$\pm 3^\circ\text{C}$
7	Humidity	$\pm 3\%$
9	Time	$\pm 5\%$

## TRANSMITTER PARAMETERS

### 3. RF OUTPUT POWER

#### 3.1 LIMITS OF RF OUTPUT POWER

Refer to chapter 4.3.1.2.3 of EN 300 328 V2.2.2 (2019-07)

RF OUTPUT POWER	
Condition	Limit
<input type="checkbox"/> Non-adaptive frequency hopping systems	Equal to or less than the value declared by the supplier. This declared value shall be equal to or less than 20 dBm.
<input checked="" type="checkbox"/> Adaptive frequency hopping systems	equal to or less than 20 dBm.

#### 3.2 TEST PROCEDURE

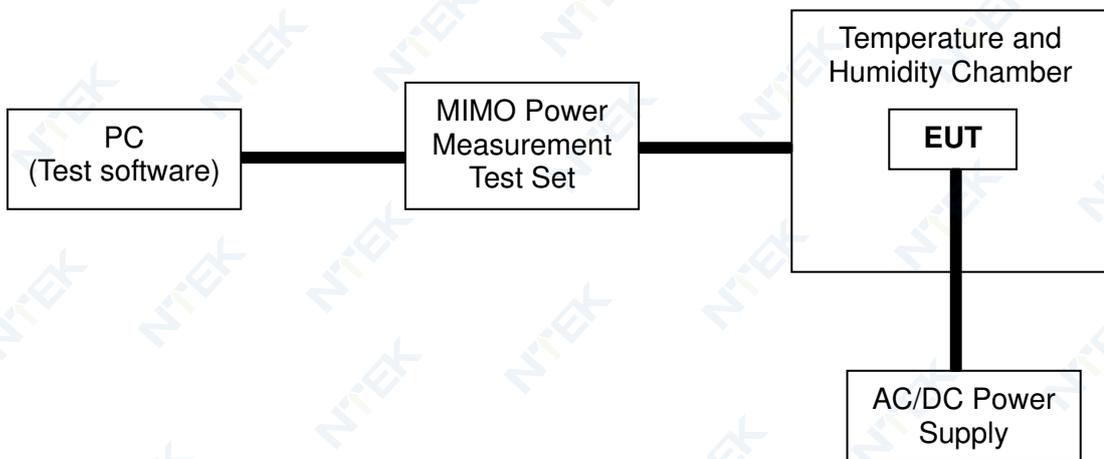
Refer to chapter 5.4.2.2 of EN 300 328 V2.2.2 (2019-07)

Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input type="checkbox"/> Radiated measurement

#### 3.3 DEVIATION FROM TEST STANDARD

No deviation

#### 3.4 TEST SETUP



3.5 TEST RESULTS

EUT :	Smartphone	Model Name :	J20
Temperature :	20°C	Relative Humidity :	55 %
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Test Mode :	BT-GFSK/π/4-DQPSK /8-DPSK		

Test data reference attachment

**4. ACCUMULATED TRANSMIT TIME, FREQUENCY OCCUPATION AND HOPPING SEQUENCE**

**4.1 LIMITS OF ACCUMULATED TRANSMIT TIME, FREQUENCY OCCUPATION AND HOPPING SEQUENCE**

Refer to chapter 4.3.1.4.3 of EN 300 328 V2.2.2 (2019-07)

Accumulated Transmit Time	
Condition	Limit
<input type="checkbox"/> Non-adaptive frequency hopping systems	≤ 15 ms[15 ms * the minimum number of hopping frequencies (N)]
<input checked="" type="checkbox"/> Adaptive frequency hopping systems	≤ 400 ms in [400 ms * the minimum number of hopping frequencies (N)]
MINIMUM FREQUENCY OCCUPATION TIME	
Condition	Limit
<input type="checkbox"/> Non-adaptive frequency hopping systems	Each hopping frequency of the hopping sequence shall be occupied at least once within a period not exceeding four times the product of the dwell time and the number of hopping frequencies in use.
<input checked="" type="checkbox"/> Adaptive frequency hopping systems	
HOPPING SEQUENCE (S)	
Condition	Limit
<input type="checkbox"/> Non-adaptive frequency hopping systems	≥15 hopping frequencies or 15/minimum
<input checked="" type="checkbox"/> Adaptive frequency hopping systems	Operating over a minimum of 70% of the Operating in the band 2.4 GHz to 2.4835 GHz
	≥15 hopping frequencies or 15/minimum

**4.2 TEST PROCEDURE**

Refer to chapter 5.4.4 of EN 300 328 V2.2.2 (2019-07)

Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input type="checkbox"/> Radiated measurement

**4.3 DEVIATION FROM TEST STANDARD**

No deviation

4.4 TEST SETUP



The measurements only were performed at normal test conditions. The equipment was configured to operate at its maximum Dwell time and maximum Duty Cycle. The measurement was performed on a minimum of 2 hopping frequencies chosen arbitrary from the actual hopping sequence. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator. Controlling software (Button Function) has been activated to set the EUT on specific status.

4.5 TEST RESULTS

EUT :	Smartphone	Model Name :	J20
Temperature :	26°C	Relative Humidity	60 %
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Test Mode :	BT-GFSK/π/4-DQPSK /8-DPSK-Hopping Mode		

Test data reference attachment

5. OCCUPIED CHANNEL BANDWIDTH

5.1 LIMITS OF OCCUPIED CHANNEL BANDWIDTH

Refer to chapter 4.3.1.8.3 of EN 300 328 V2.2.2 (2019-07)

OCCUPIED CHANNEL BANDWIDTH		
Condition		Limit
All types of equipment		Shall fall completely within the band 2400 to 2483.5 MHz
Additional requirement	For non-adaptive using wide band modulations other than FHSS system and EIRP >10 dBm	Less than 20 MHz
	For non-adaptive frequency hopping system and EIRP >10 dBm	Less than 5 MHz

5.2 TEST PROCEDURE

Refer to chapter 5.4.7.2 of EN 300 328 V2.2.2 (2019-07)

Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input type="checkbox"/> Radiated measurement

The setting of the Spectrum Analyzer

Center Frequency	The centre frequency of the channel under test
Frequency Span	2 × Nominal Channel Bandwidth
Detector	RMS
RBW	~ 1 % of the span without going below 1 %
VBW	3 × RBW
Trace	Max hold
Sweep time	1s

5.3 DEVIATION FROM TEST STANDARD

No deviation

5.4 TEST SETUP



These measurements only were performed at normal test conditions. The measurement shall be performed only on the lowest and the highest frequency within the ststed frequency range. Using software to force the EUT to hop or transmit on a single Hopping frequency. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator. Controlling software (Button Function) has been activated to set the EUT on specific status.

5.5 TEST RESULTS

EUT :	Smartphone	Model Name :	J20
Temperature :	26°C	Relative Humidity :	60 %
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Test Mode :	BT-GFSK/π/4-DQPSK /8-DPSK-(CH00/CH78)		

Test data reference attachment

6. TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN

6.1 LIMITS OF TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN

Refer to chapter 4.3.1.9.3 of EN 300 328 V2.2.2 (2019-07)

TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN	
Condition	Limit
Under all test conditions	The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in below figure.

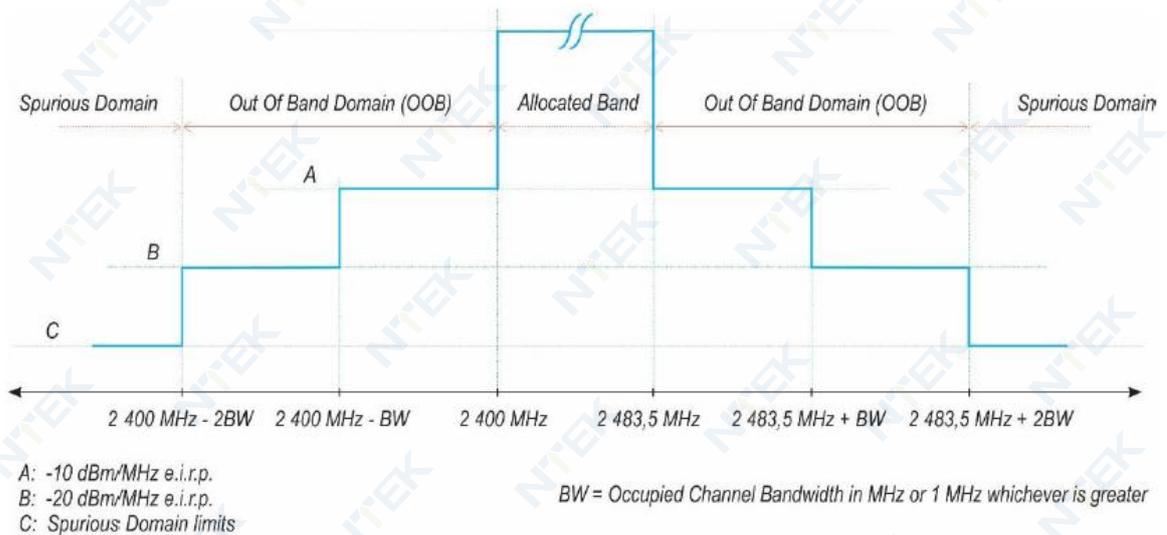


Figure 1: Transmit mask

6.2 TEST PROCEDURE

Refer to chapter 5.4.8.2 of EN 300 328 V2.2.2 (2019-07)

Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input type="checkbox"/> Radiated measurement

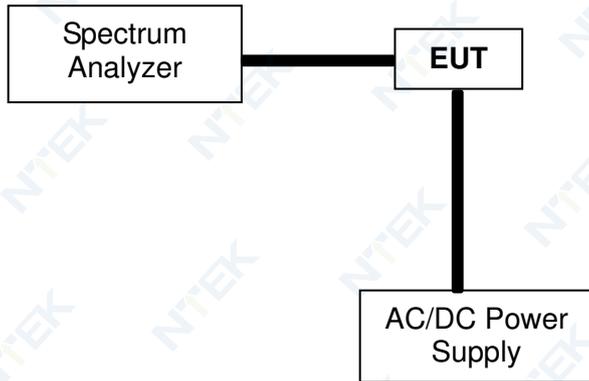
The setting of the Spectrum Analyzer

Span	0Hz
Filter Mode	Channel Filter
Trace Mode	Clear/Write
Trigger Mode	Video Trigger
Detector	RMS
Sweep Point / Sweep Mode	5000 / Continuous
RBW / VBW	1MHz / 3MHz

6.3 DEVIATION FROM TEST STANDARD

No deviation

6.4 TEST SETUP



According to the EN 300328 V2.2.2 clause 5.4.8.1: These measurements shall only be performed at normal test conditions. For equipment using FHSS modulation, the measurements shall be performed during normal operation (hopping).

For equipment using wide band modulations other than FHSS, the measurement shall be performed at the lowest and the highest channel on which the equipment can operate. These operating channels shall be recorded.

The equipment shall be configured to operate under its worst case situation with respect to output power.

If the equipment can operate with different Nominal Channel Bandwidths (e.g. 20 MHz and 40 MHz), then each channel bandwidth shall be tested separately.

6.5 TEST RESULTS

EUT :	Smartphone	Model Name :	J20
Temperature :	26°C	Relative Humidity :	60 %
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Test Mode :	BT-GFSK/π/4-DQPSK /8-DPSK-(CH78)		

Test data reference attachment

**7. HOPPING FREQUENCY SEPARATION**

**7.1 LIMITS OF HOPPING FREQUENCY SEPARATION**

Refer to chapter 4.3.1.5.3 of EN 300 328 V2.2.2 (2019-07)

HOPPING FREQUENCY SEPARATION	
Condition	Limit
<input type="checkbox"/> Non-adaptive frequency hopping systems	The minimum Hopping Frequency Separation shall be equal to or greater than occupied channel bandwidth of a single hop, with a minimum separation of 100 kHz.
<input checked="" type="checkbox"/> Adaptive frequency hopping systems	The minimum Hopping Frequency Separation shall be 100 kHz.

**7.2 TEST PROCEDURE**

Refer to chapter 5.4.5.2 of EN 300 328 V2.2.2 (2019-07)

Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input type="checkbox"/> Radiated measurement

**The setting of the Spectrum Analyzer**

Center Frequency	Centre of the two adjacent hopping frequencies
Frequency Span	Sufficient to see the complete power envelope of both hopping frequencies
Detector	Max Peak
RBW	~ 1 % of the span
VBW	3 × RBW
Trace	Max hold
Sweep Time	Auto

**7.3 DEVIATION FROM TEST STANDARD**

No deviation

7.4 TEST SETUP



The measurements were performed at normal test conditions. The measurement was performed on 2 adjacent hopping frequencies. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator. Controlling software (Button Function) has been activated to set the EUT on specific status.

7.5 TEST RESULTS

EUT :	Smartphone	Model Name :	J20
Temperature :	26°C	Relative Humidity :	60 %
Pressure :	1012 hPa	Test Voltage :	DC 3.8V
Test Mode :	BT-GFSK/π/4-DQPSK /8-DPSK-(CH00/CH39/CH78)		

Test data reference attachment

- Note: 1.The limitation is from OCB of a single hop and this value must greater and equal to 100kHz.  
 2.The device will never “hop” to its neighbour channel, therefore the “effective” channel separation becomes 2x the “normal” channel separation.

**8. TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN**

**8.1 LIMITS OF TRANSMITTER TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN**

Refer to chapter 4.3.1.10.3 of EN 300 328 V2.2.2 (2019-07)

TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN		
Frequency Range	Maximum Power Limit (E.R.P.(≤1 GHz) E.I.R.P.(> 1 GHz))	Bandwidth
30 MHz to 47 MHz	-36dBm	100 kHz
47 MHz to 74 MHz	-54dBm	100 kHz
74 MHz to 87.5 MHz	-36dBm	100 kHz
87.5 MHz to 118 MHz	-54dBm	100 kHz
118 MHz to 174 MHz	-36dBm	100 kHz
174 MHz to 230 MHz	-54dBm	100 kHz
230 MHz to 470 MHz	-36dBm	100 kHz
470 MHz to 694 MHz	-54dBm	100 kHz
694 MHz to 1 GHz	-36dBm	100 kHz
1 GHz ~ 12.75 GHz	-30dBm	1 MHz

**8.2 TEST PROCEDURE**

Refer to chapter 5.4.9.2 of EN 300 328 V2.2.2 (2019-07)

Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input checked="" type="checkbox"/> Radiated measurement

The setting of the Spectrum Analyzer

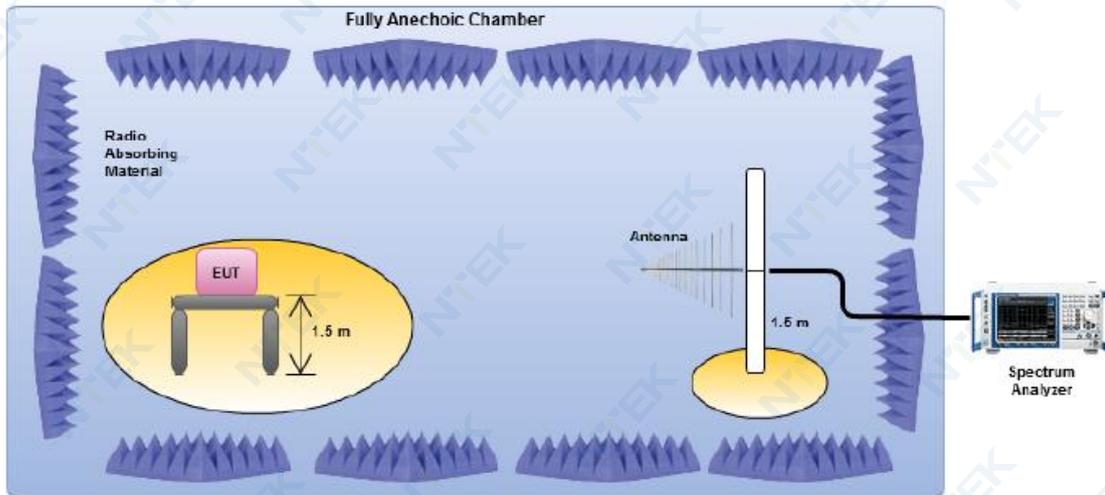
RBW	100K(<1GHz) / 1M(>1GHz)
VBW	300K(<1GHz) / 3M(>1GHz)

**8.3 DEVIATION FROM TEST STANDARD**

No deviation

### 8.4 TEST SETUP

Radiated measurement:



Conducted measurement:



1. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration ).
2. The measurements were performed when normal hopping was disabled. In this case measurements were performed when operating at the lowest and the highest hopping frequency.
3. The equipment was configured to operate under its worst case situation with respect to output power.
4. The test setup has been constructed as the normal use condition. Controlling software (Button Function) has been activated to set the EUT on specific status.

8.5 TEST RESULTS (Radiated measurement)  
BELOW 1 GHz WORST- CASE DATA (30 MHz ~ 1GHz)

EUT :	Smartphone	Model Name :	J20
Temperature :	24 °C	Relative Humidity	54%
Pressure :	1010 hPa	Test Power :	DC 3.8V
Test Mode :	BT-GFSK (CH00)		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
V	38.183	-68.34	10.77	-57.57	-36	-21.57	peak
V	97.14	-76.51	11.26	-65.25	-54	-11.25	peak
V	204.668	-72.82	11.22	-61.60	-54	-7.60	peak
V	274.516	-67.58	11.19	-56.39	-36	-20.39	peak
V	599.25	-73.77	9.53	-64.24	-54	-10.24	peak
H	38.872	-72.95	10.45	-62.50	-36	-26.50	peak
H	101.314	-75.35	10.20	-65.15	-54	-11.15	peak
H	177.485	-72.11	10.83	-61.28	-54	-7.28	peak
H	356.642	-67.84	11.11	-56.73	-36	-20.73	peak
H	631.916	-69.75	11.03	-58.72	-54	-4.72	peak

**Remark:**

1. Emission Level= Meter Reading+ Factor, Margin= Limit- Emission Level.
2. All the modes had been tested, but only the worst data recorded in the report.

ABOVE 1 GHz WORST- CASE DATA (1GHz ~ 12.75GHz)

EUT :	Smartphone	Model Name :	J20
Temperature :	24 °C	Relative Humidity	54%
Pressure :	1010 hPa	Test Power :	DC 3.8V
Test Mode :	GFSK (CH00/CH39/CH78)		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
<b>operation frequency:2402</b>							
V	2109.307	-57.57	10.22	-47.35	-30	-17.35	peak
V	4059.367	-57.58	9.68	-47.90	-30	-17.90	peak
V	2567.57	-55.67	10.95	-44.72	-30	-14.72	peak
V	3790.932	-56.02	9.85	-46.17	-30	-16.17	peak
H	2210.186	-54.17	10.50	-43.67	-30	-13.67	peak
H	3561.917	-53.7	11.22	-42.48	-30	-12.48	peak
H	2658.831	-57.16	10.13	-47.03	-30	-17.03	peak
H	3731.055	-56.1	10.38	-45.72	-30	-15.72	peak
<b>operation frequency:2441</b>							
V	2975.938	-57.6	10.17	-47.43	-30	-17.43	peak
V	3778.934	-56.26	10.22	-46.04	-30	-16.04	peak
V	2229.215	-55.15	10.42	-44.73	-30	-14.73	peak
V	5990.26	-57.3	10.79	-46.51	-30	-16.51	peak
H	2460.147	-54.93	9.82	-45.11	-30	-15.11	peak
H	5686.998	-56.84	9.57	-47.27	-30	-17.27	peak
H	2632.708	-55.76	9.66	-46.10	-30	-16.10	peak
H	3040.699	-56.06	11.33	-44.73	-30	-14.73	peak
<b>operation frequency:2480</b>							
V	2313.792	-52.4	10.13	-42.27	-30	-12.27	peak
V	5624.463	-56.14	9.68	-46.46	-30	-16.46	peak
V	2091.77	-55.36	10.78	-44.58	-30	-14.58	peak
V	5848.676	-54.62	10.82	-43.80	-30	-13.80	peak
H	2863.624	-56.03	11.38	-44.65	-30	-14.65	peak
H	5478.05	-54.58	10.36	-44.22	-30	-14.22	peak
H	2596.395	-57.95	10.60	-47.35	-30	-17.35	peak
H	5018.557	-53.2	10.51	-42.69	-30	-12.69	peak

**Remark:**

1. Emission Level= Meter Reading+ Factor, Margin= Limit- Emission Level.
2. All the modes had been tested, but only the worst data recorded in the report.

8.6 TEST RESULTS (Conducted measurement)

Test data reference attachment

**9. RECEIVER SPURIOUS EMISSIONS**

**9.1 LIMITS OF RECEIVER SPURIOUS RADIATION**

Refer to chapter 4.3.1.11.3 of EN 300 328 V2.2.2 (2019-07)

RECEIVER SPURIOUS EMISSIONS		
Frequency Range	Maximum Power Limit (E.R.P.(≤1 GHz) E.I.R.P.(> 1 GHz))	Measurement Bandwidth
30 MHz ~ 1 GHz	-57dBm	100KHz
1 GHz ~ 12.75 GHz	-47dBm	1MHz

**9.2 TEST PROCEDURE**

Refer to chapter 5.4.10.2 of EN 300 328 V2.2.2 (2019-07)

Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input checked="" type="checkbox"/> Radiated measurement

The setting of the Spectrum Analyzer

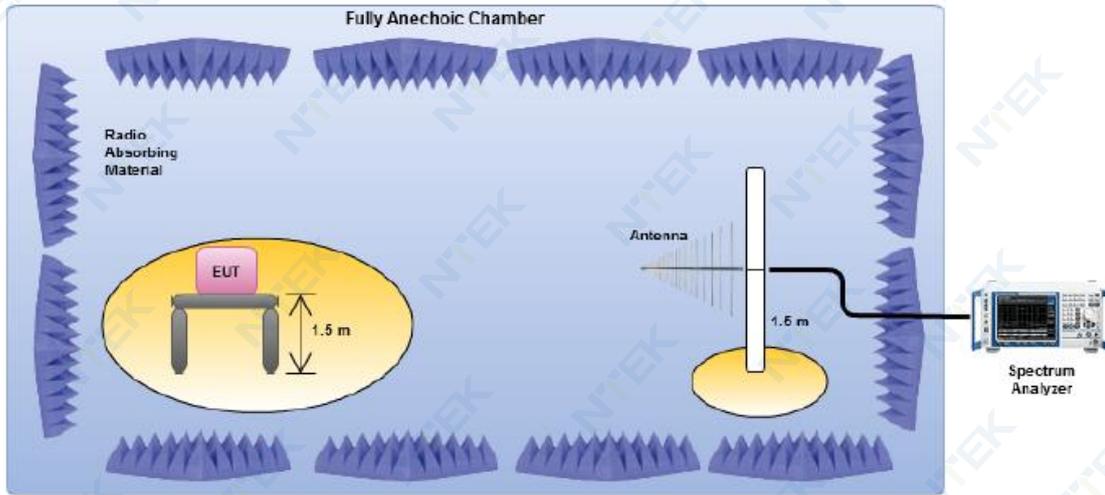
RBW	100K(<1GHz) / 1M(>1GHz)
VBW	300K(<1GHz) / 3M(>1GHz)

**9.3 DEVIATION FROM TEST STANDARD**

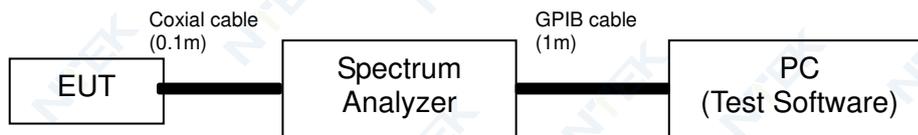
No deviation

### 9.4 TEST SETUP

Radiated measurement:



Conducted measurement:



1. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration ).
2. Testing was performed when the equipment was in a receive-only mode.
3. The measurements were performed when normal hopping was disabled. In this case measurements were performed when operating at the lowest and the highest hopping frequency.
4. The test setup has been constructed as the normal use condition. Controlling software (Button Function) has been activated to set the EUT on specific status.

9.5 TEST RESULTS (Radiated measurement)

RX BELOW 1 GHz WORST- CASE DATA (30 MHz ~ 1GHz)

EUT :	Smartphone	Model Name :	J20
Temperature :	24 °C	Relative Humidity	54%
Pressure :	1010 hPa	Test Power :	DC 3.8V
Test Mode :	GFSK (CH00)		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
V	46.933	-83.02	12.25	-70.77	-57	-13.77	peak
V	113.176	-81.29	16.13	-65.16	-57	-8.16	peak
V	226.615	-84.38	14.05	-70.33	-57	-13.33	peak
V	350.754	-84.01	17.01	-67.00	-57	-10.00	peak
V	608.905	-79.27	15.51	-63.76	-57	-6.76	peak
H	45.717	-77.5	14.62	-62.88	-57	-5.88	peak
H	111.191	-80.14	17.87	-62.27	-57	-5.27	peak
H	223.648	-81.38	16.70	-64.68	-57	-7.68	peak
H	294.549	-81.67	15.79	-65.88	-57	-8.88	peak
H	643.368	-79.36	17.54	-61.82	-57	-4.82	peak

**Remark:**

1. Emission Level= Meter Reading+ Factor, Margin= Limit- Emission Level.
2. All the modes had been tested, but only the worst data recorded in the report.

RX ABOVE 1 GHz WORST- CASE DATA (1GHz ~ 12.75GHz)

EUT :	Smartphone	Model Name :	J20
Temperature :	24 °C	Relative Humidity	54%
Pressure :	1010 hPa	Test Power :	DC 3.8V
Test Mode :	GFSK (CH00)		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
V	2403.485	-79.37	10.46	-68.91	-47	-21.91	peak
V	3458.653	-80.99	10.21	-70.78	-47	-23.78	peak
V	2639.117	-83.02	10.57	-72.45	-47	-25.45	peak
V	4873.879	-83.7	16.88	-66.82	-47	-19.82	peak
H	2550.013	-84.4	10.29	-74.11	-47	-27.11	peak
H	5325.342	-81.04	11.29	-69.75	-47	-22.75	peak
H	2489.733	-77.23	6.79	-70.44	-47	-23.44	peak
H	4252.573	-83.64	15.06	-68.58	-47	-21.58	peak

1. Emission Level= Meter Reading+ Factor, Margin= Limit- Emission Level.
2. All the modes had been tested, but only the worst data recorded in the report.

9.6 TEST RESULTS (Conducted measurement)

Test data reference attachment

**10. RECEIVER BLOCKING**

**10.1 PERFORMANCE CRITERIA**

The minimum performance criterion shall be a PER less than or equal to 10 %. The manufacturer may declare alternative performance criteria as long as that is appropriate for the intended use of the equipment (see clause 5.4.1.t)).

**10.2 LIMITS OF RECEIVER BLOCKING**

While maintaining the minimum performance criteria as defined in clause 4.3.1.12.3, the blocking levels at specified frequency offsets shall be equal to or greater than the limits defined for the applicable receiver category provided in table 6, table 7 or table 8.

**Table 6: Receiver Blocking parameters for Receiver Category 1 equipment**

<b>Wanted signal mean power from companion device (dBm) (see notes 1 and 4)</b>	<b>Blocking signal Frequency (MHz)</b>	<b>Blocking signal power (dBm) (see note 4)</b>	<b>Type of blocking signal</b>
(-133 dBm + 10 × log <sub>10</sub> (OCBW)) or -68 dBm whichever is less (see note 2)	2 380	-34	CW
	2 504		
(-139 dBm + 10 × log <sub>10</sub> (OCBW)) or -74 dBm whichever is less (see note 3)	2 300		
	2 330		
	2 360		
	2524		
	2584		
	2674		

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P<sub>min</sub> + 26 dB where P<sub>min</sub> is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P<sub>min</sub> + 20 dB where P<sub>min</sub> is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

**Table 7: Receiver Blocking parameters receiver category 2 equipment**

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal Frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × log <sub>10</sub> (OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less (see note 2)	2 380	-34	CW
	2 504		
	2 300		
	2 584		

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P<sub>min</sub> + 26 dB where P<sub>min</sub> is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

**Table 8: Receiver Blocking parameters receiver category 3 equipment**

Wanted signal mean power from companion device (dBm)	Blocking signal Frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
(-139 dBm + 10 × log <sub>10</sub> (OCBW) + 20 dB) or (-74 dBm + 20 dB) whichever is less (see note 2)	2 380	-34	CW
	2 504		
	2 300		
	2 584		

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative the test may be performed using a wanted signal up to P<sub>min</sub> + 30 dB where P<sub>min</sub> is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

10.3 TEST PROCEDURE

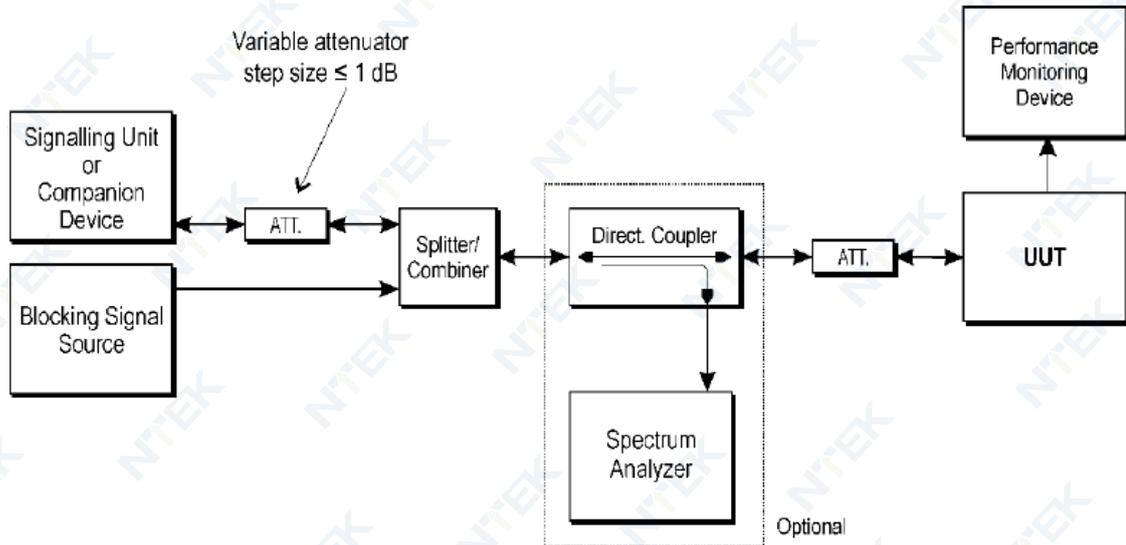
Refer to chapter 5.4.11.2 of EN 300 328 V2.2.2 (2019-07)

Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input type="checkbox"/> Radiated measurement

10.4 DEVIATION FROM TEST STANDARD

No deviation

10.5 TEST SETUP



10.6 TEST RESULTS

EUT :	Smartphone	Model Name :	J20
Temperature :	24 °C	Relative Humidity	54%
Pressure :	1010 hPa	Test Power :	DC 3.8V
Test Mode :	GFSK Hopping mode (RX)		

CH00

receiver category 3

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal Frequency (MHz)	Blocking signal power(dBm) (see note 3)	PER %	PER Limit %
-59.45	2 380	-34	0.98%	≤10
	2 504		0.77%	
	2 300		0.36%	≤10
	2 584		0.58%	

CH78

receiver category 3

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal Frequency (MHz)	Blocking signal power(dBm) (see note 3)	PER %	PER Limit %
-59.44	2 380	-34	0.69%	≤10
	2 504		0.70%	
	2 300		0.73%	≤10
	2 584		0.52%	

Note: (1) The above results were obtained from laboratory tests.

EUT :	Smartphone	Model Name :	J20
Temperature :	24 °C	Relative Humidity	54%
Pressure :	1010 hPa	Test Power :	DC 3.8V
Test Mode :	□/4-DQPSK Hopping mode (RX)		

CH00

receiver category 3

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal Frequency (MHz)	Blocking signal power(dBm) (see note 3)	PER %	PER Limit %
-58.16	2 380	-34	0.66%	≤10
	2 504		0.77%	
	2 300		0.85%	≤10
	2 584		0.91%	

CH78

receiver category 3

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal Frequency (MHz)	Blocking signal power(dBm) (see note 3)	PER %	PER Limit %
-58.27	2 380	-34	0.61%	≤10
	2 504		0.57%	
	2 300		0.68%	≤10
	2 584		0.33%	

Note: (1) The above results were obtained from laboratory tests.

EUT :	Smartphone	Model Name :	J20
Temperature :	24 °C	Relative Humidity	54%
Pressure :	1010 hPa	Test Power :	DC 3.8V
Test Mode :	8-DPSK Hopping mode (RX)		

CH00

receiver category 3

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal Frequency (MHz)	Blocking signal power(dBm) (see note 3)	PER %	PER Limit %
-58.14	2 380	-34	0.79%	≤10
	2 504		0.66%	
	2 300		0.58%	≤10
	2 584		0.69%	

CH78

receiver category 3

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal Frequency (MHz)	Blocking signal power(dBm) (see note 3)	PER %	PER Limit %
-58.18	2 380	-34	0.91%	≤10
	2 504		0.51%	
	2 300		0.38%	≤10
	2 584		0.63%	

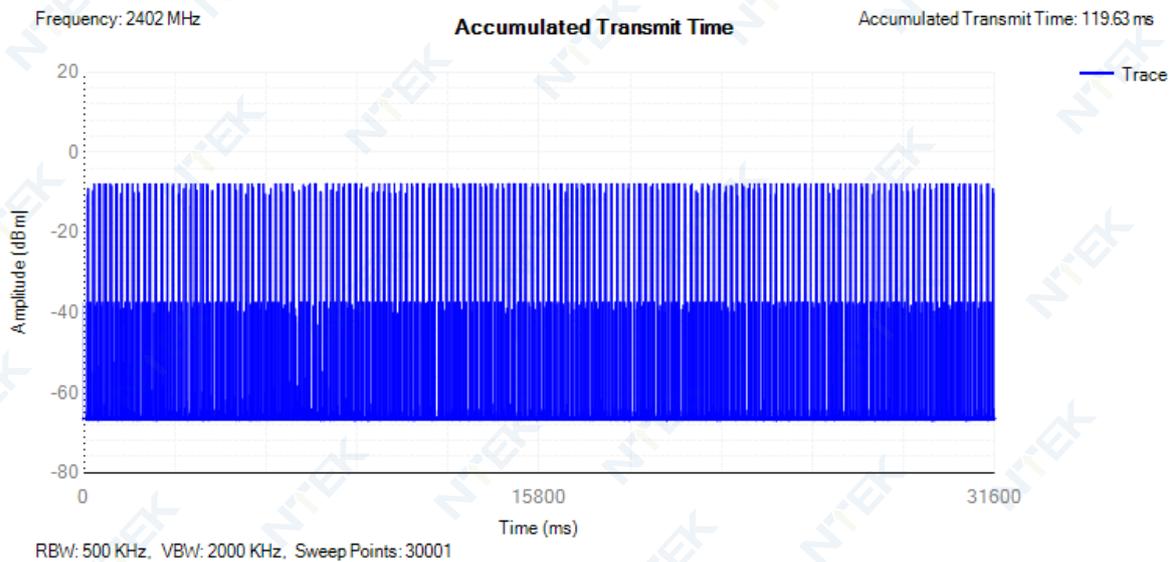
Note: (1) The above results were obtained from laboratory tests.

### 11. TEST RESULTS

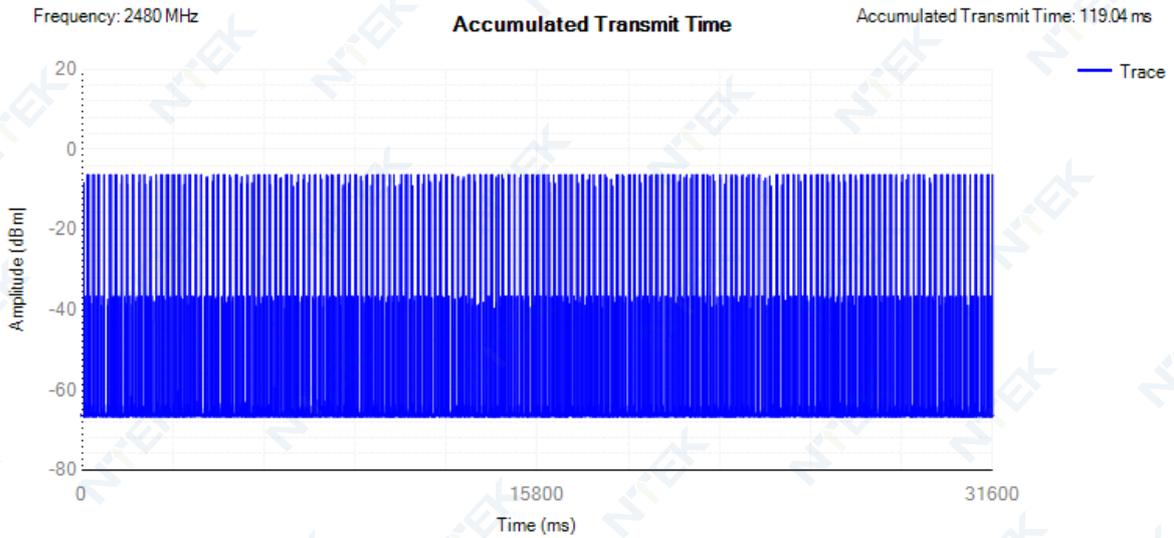
#### 11.1 ACCUMULATED TRANSMIT TIME

Condition	Mode	Frequency (MHz)	Accumulated Transmit Time (ms)	Limit (ms)	Sweep Time (ms)	Burst Number	Verdict
NVNT	1-DH1	2402	119.625	400	31600	319	Pass
NVNT	1-DH1	2480	119.04	400	31600	320	Pass
NVNT	1-DH3	2402	266.016	400	31600	163	Pass
NVNT	1-DH3	2480	275.91	400	31600	170	Pass
NVNT	1-DH5	2402	250.56	400	31600	87	Pass
NVNT	1-DH5	2480	296.64	400	31600	103	Pass
NVNT	2-DH1	2402	120.777	400	31600	317	Pass
NVNT	2-DH1	2480	121.92	400	31600	320	Pass
NVNT	2-DH3	2402	238.71	400	31600	146	Pass
NVNT	2-DH3	2480	275.301	400	31600	169	Pass
NVNT	2-DH5	2402	350.384	400	31600	122	Pass
NVNT	2-DH5	2480	328.32	400	31600	114	Pass
NVNT	3-DH1	2402	121.92	400	31600	320	Pass
NVNT	3-DH1	2480	120	400	31600	320	Pass
NVNT	3-DH3	2402	275.808	400	31600	169	Pass
NVNT	3-DH3	2480	252.96	400	31600	155	Pass
NVNT	3-DH5	2402	255.608	400	31600	89	Pass
NVNT	3-DH5	2480	328.32	400	31600	114	Pass

Dwell NVNT 1-DH1 2402MHz

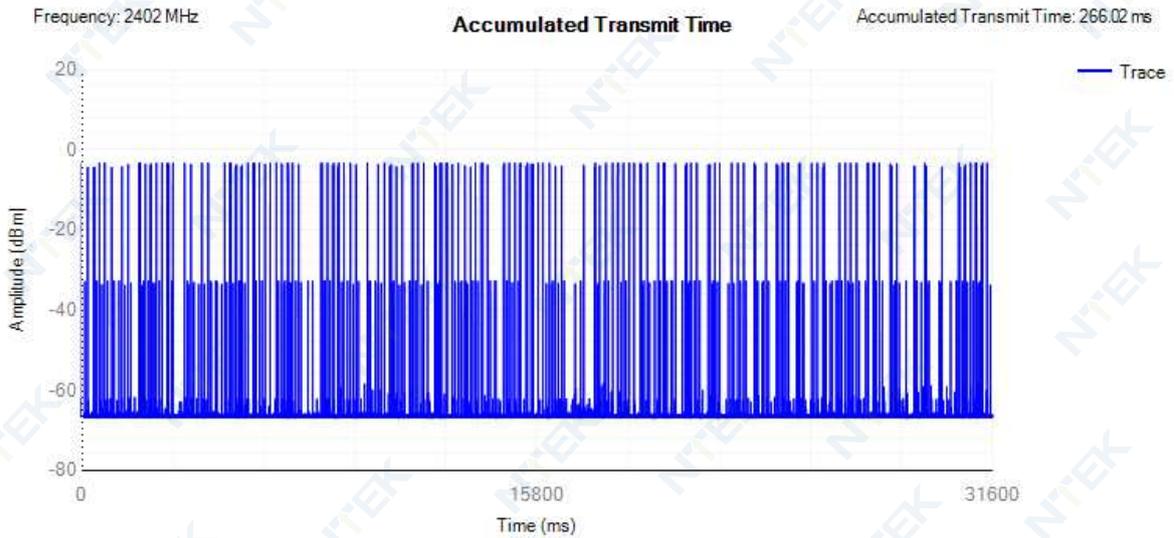


### Dwell NVNT 1-DH1 2480MHz



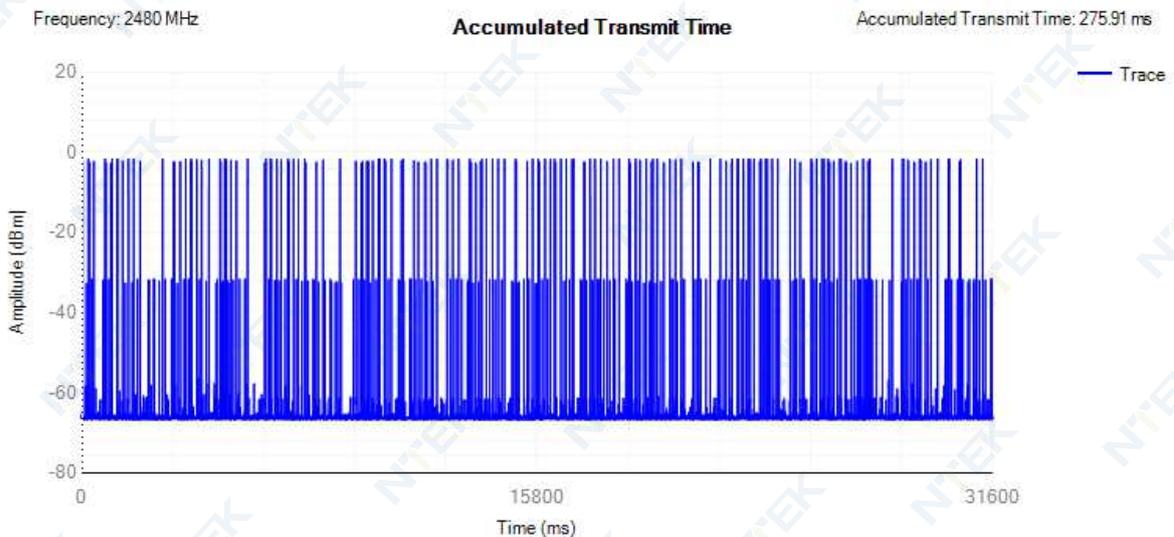
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 1-DH3 2402MHz



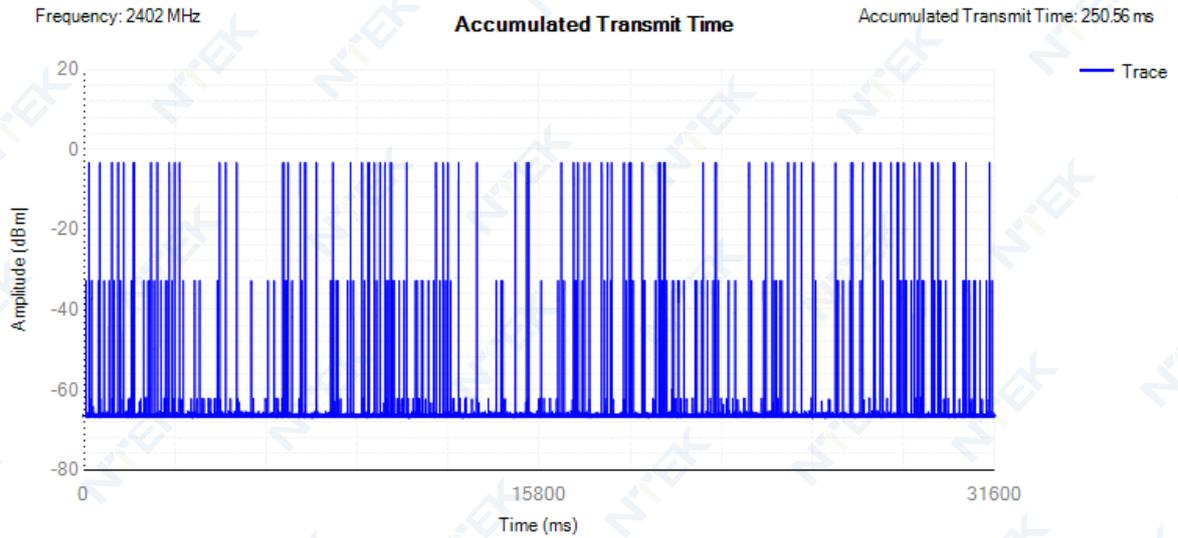
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 1-DH3 2480MHz



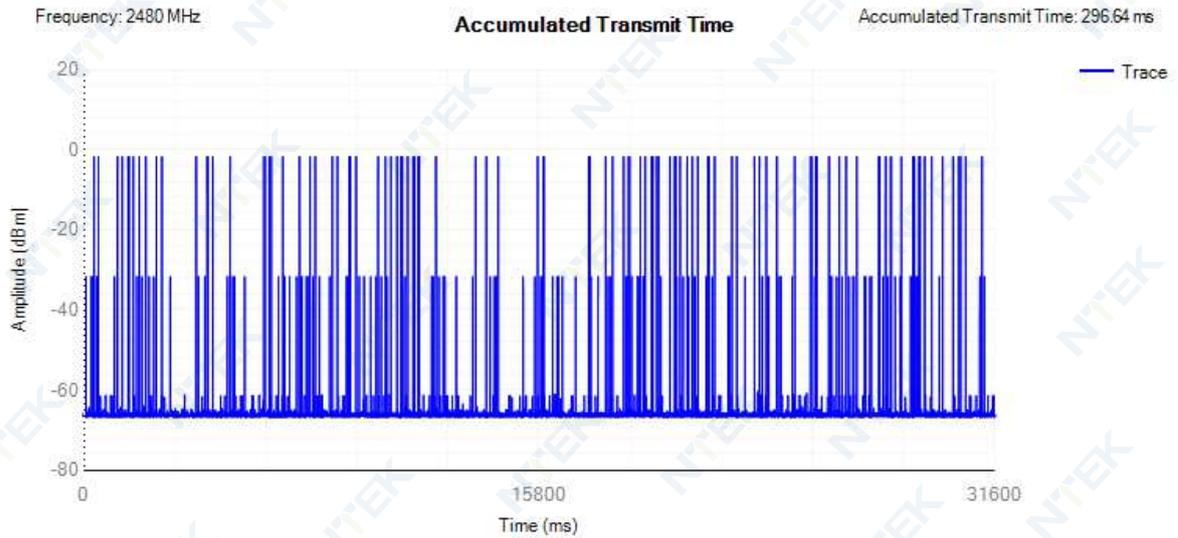
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 1-DH5 2402MHz



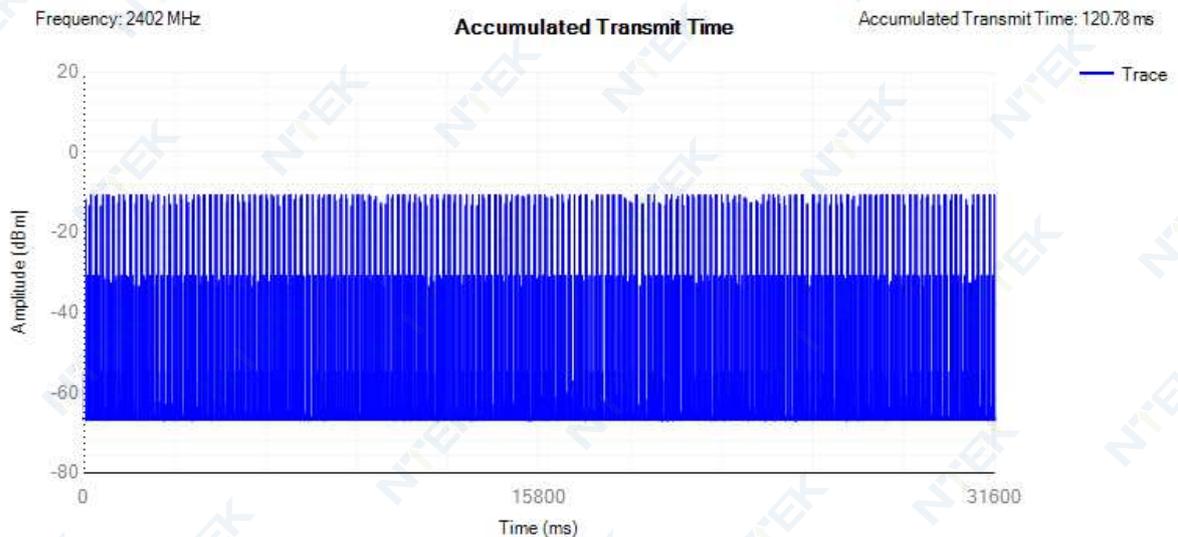
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 1-DH5 2480MHz



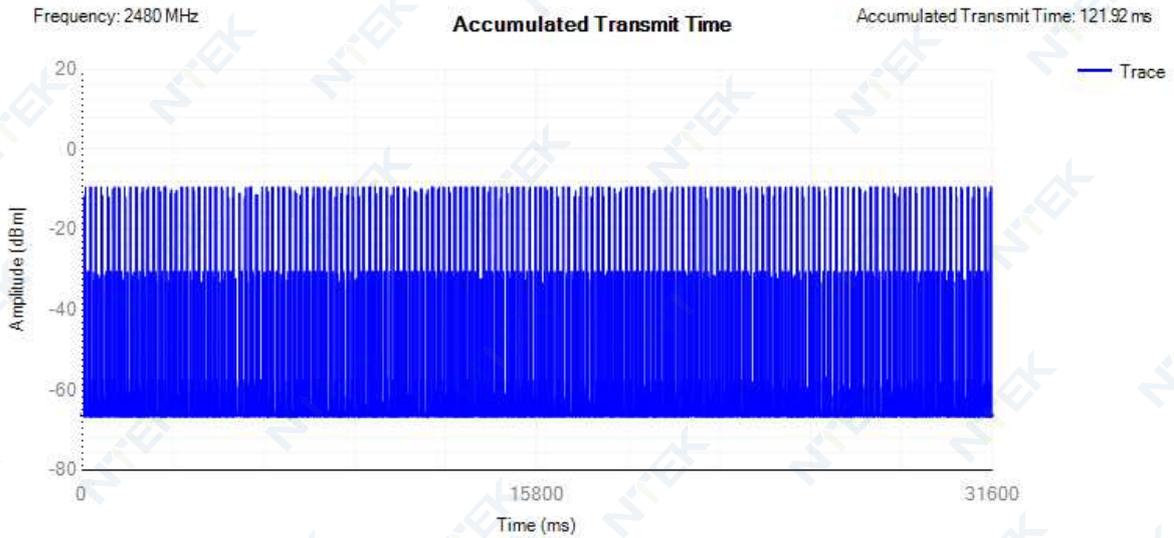
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 2-DH1 2402MHz



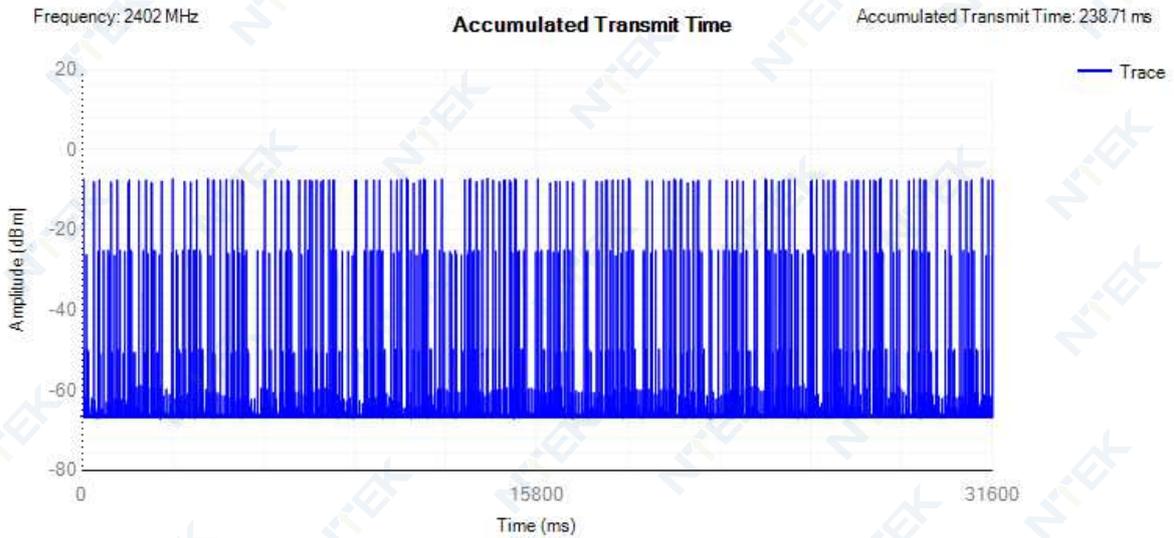
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 2-DH1 2480MHz



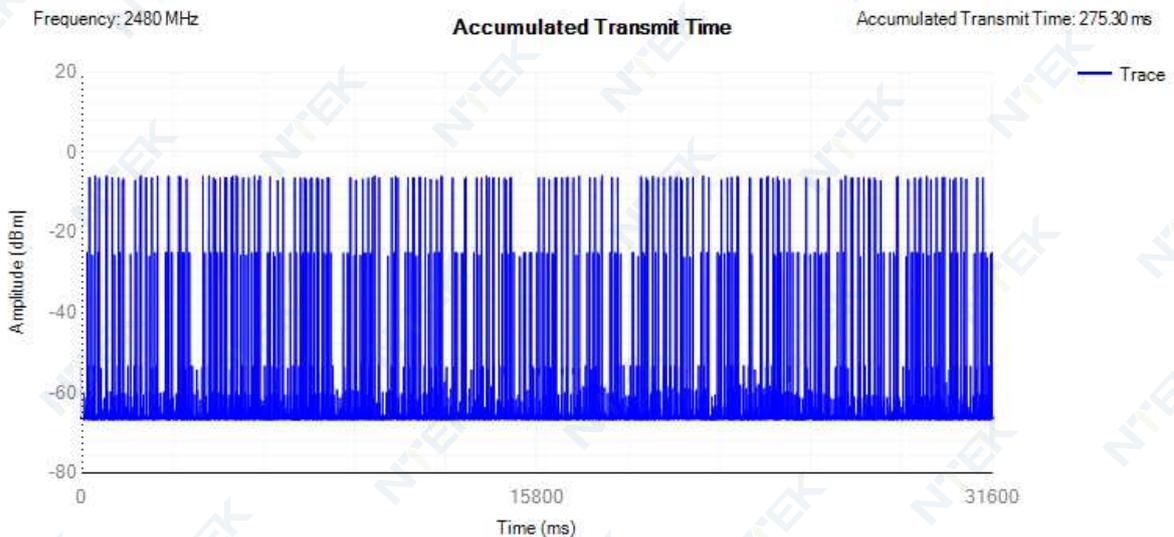
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 2-DH3 2402MHz



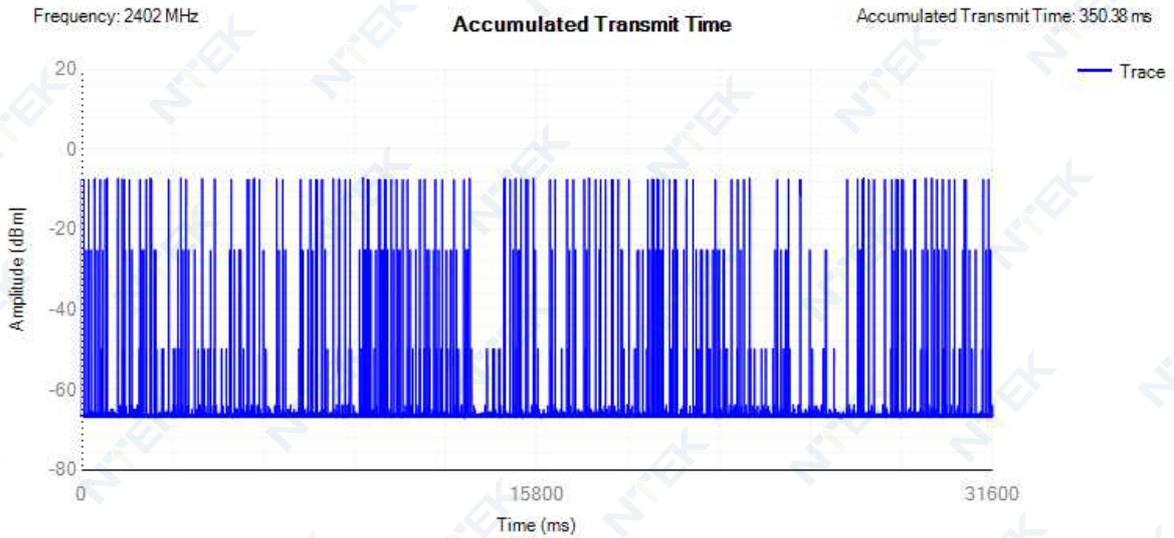
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 2-DH3 2480MHz

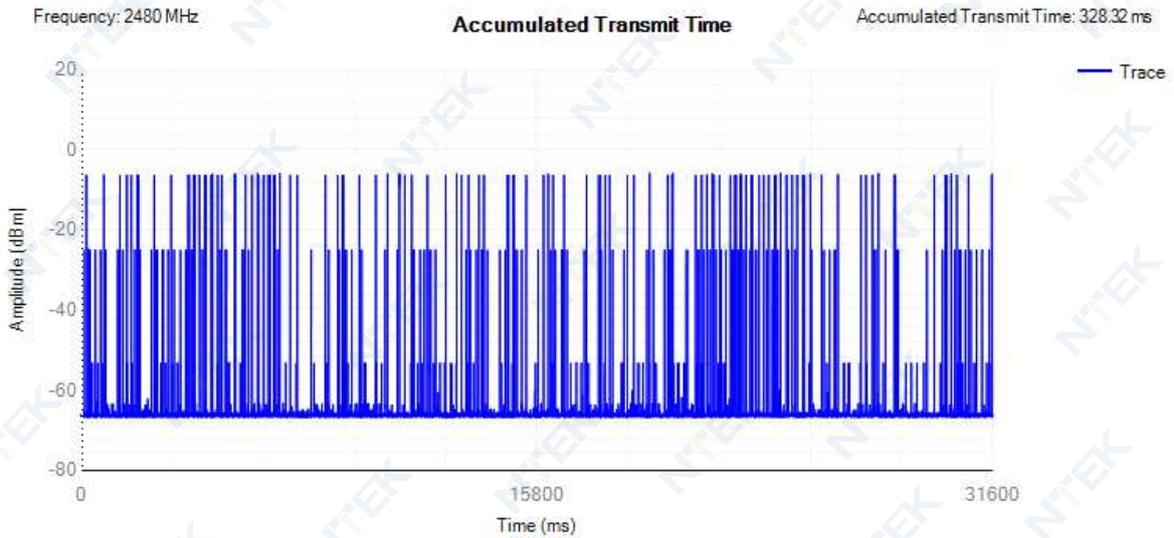


RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

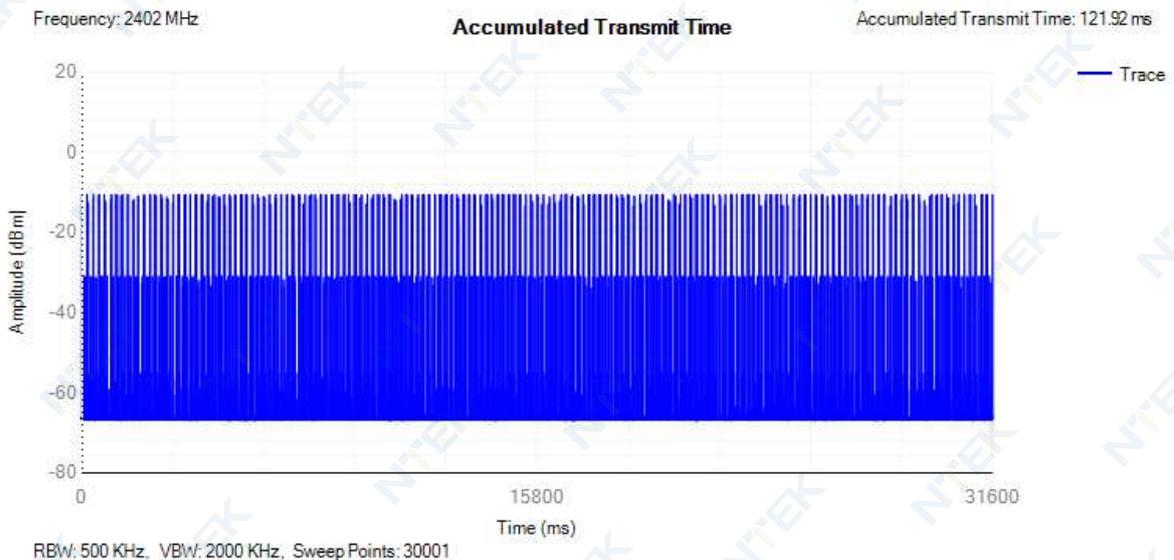
### Dwell NVNT 2-DH5 2402MHz



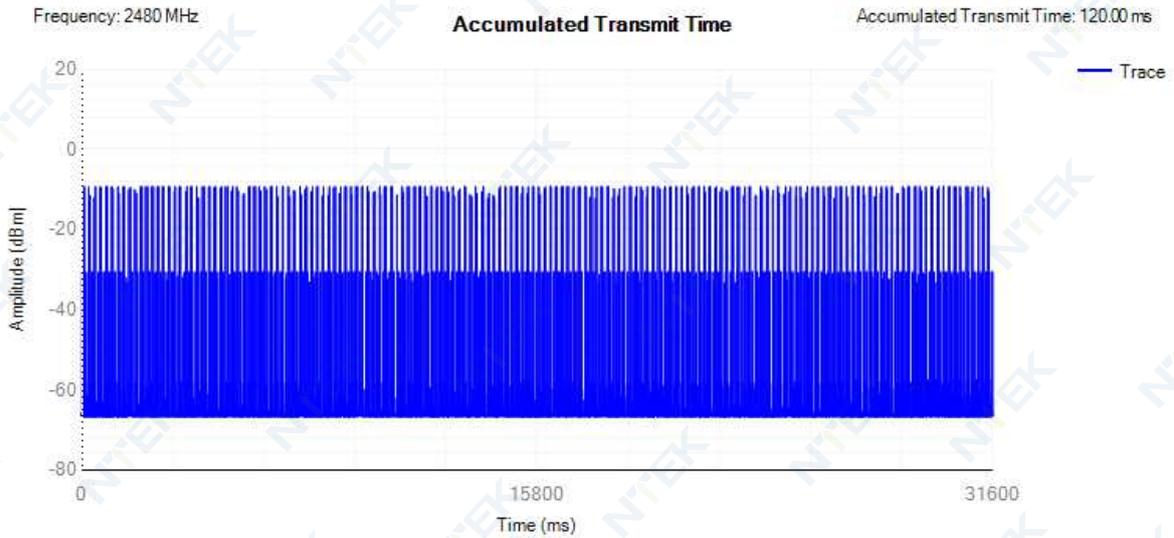
### Dwell NVNT 2-DH5 2480MHz



### Dwell NVNT 3-DH1 2402MHz

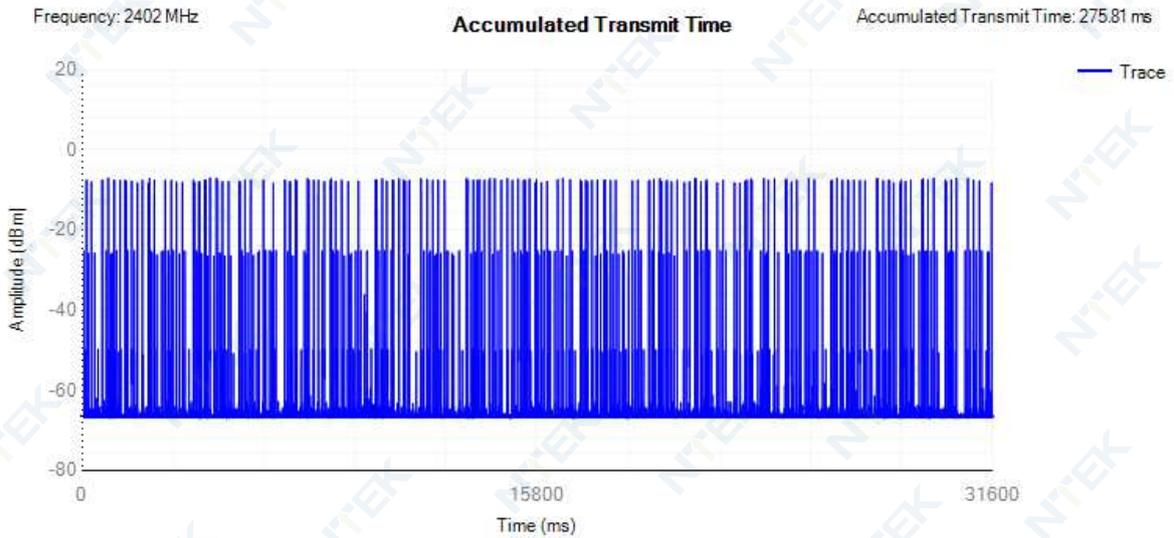


### Dwell NVNT 3-DH1 2480MHz



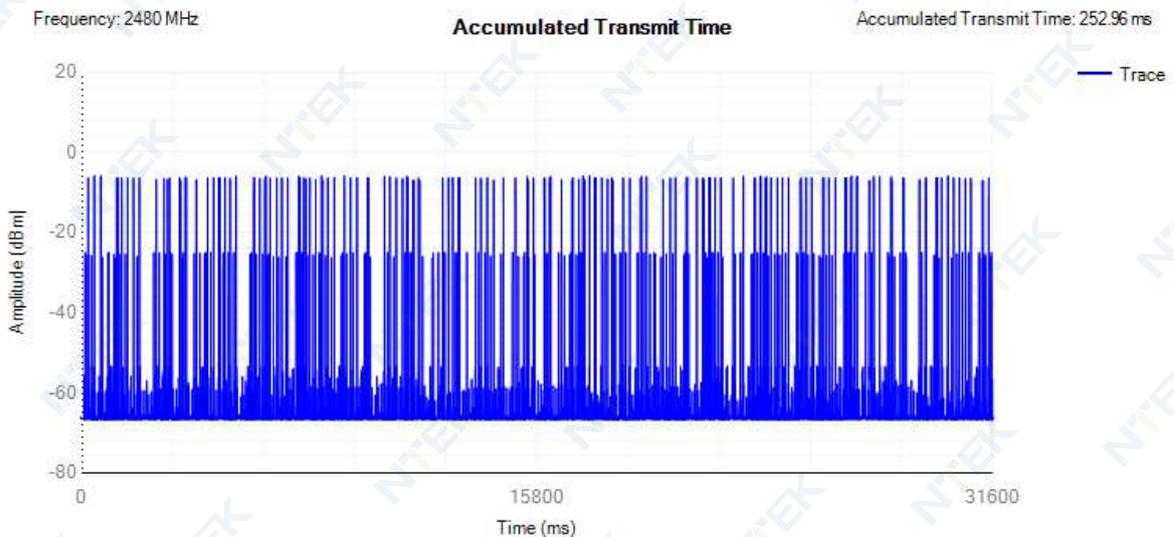
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 3-DH3 2402MHz



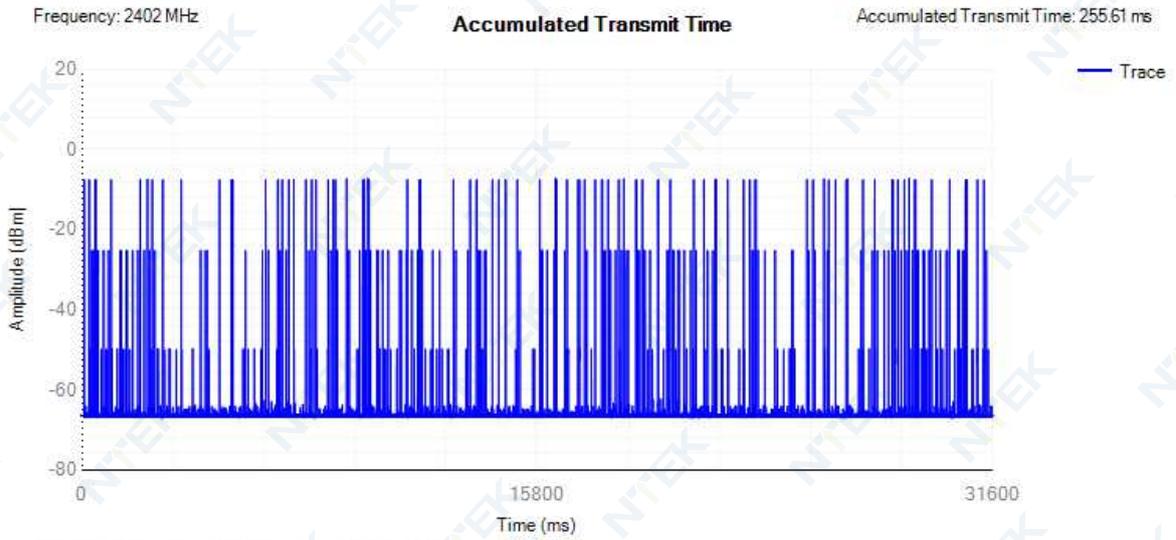
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

### Dwell NVNT 3-DH3 2480MHz



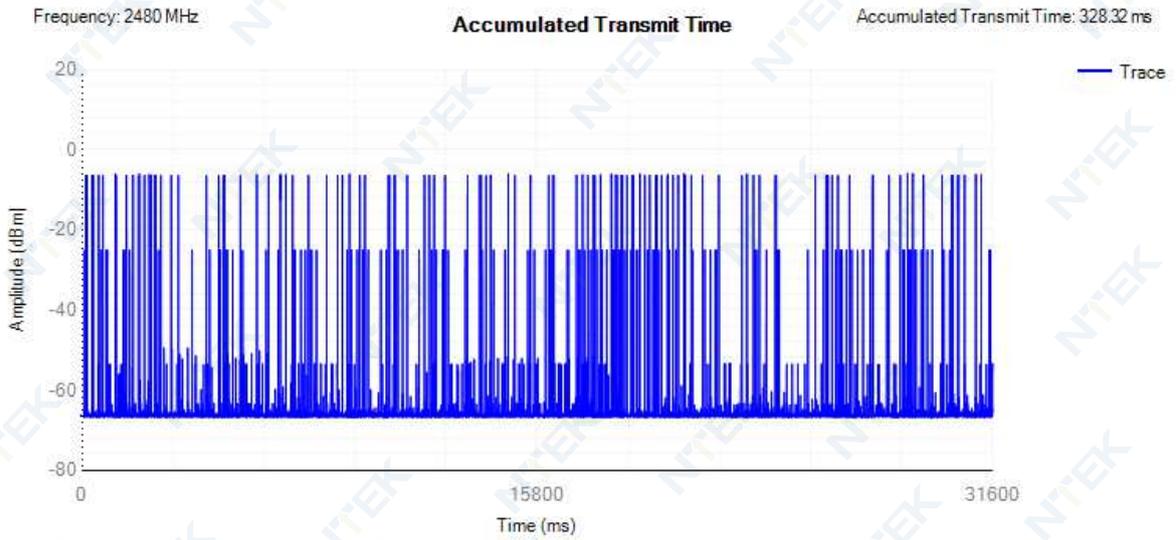
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

Dwell NVNT 3-DH5 2402MHz



RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

Dwell NVNT 3-DH5 2480MHz

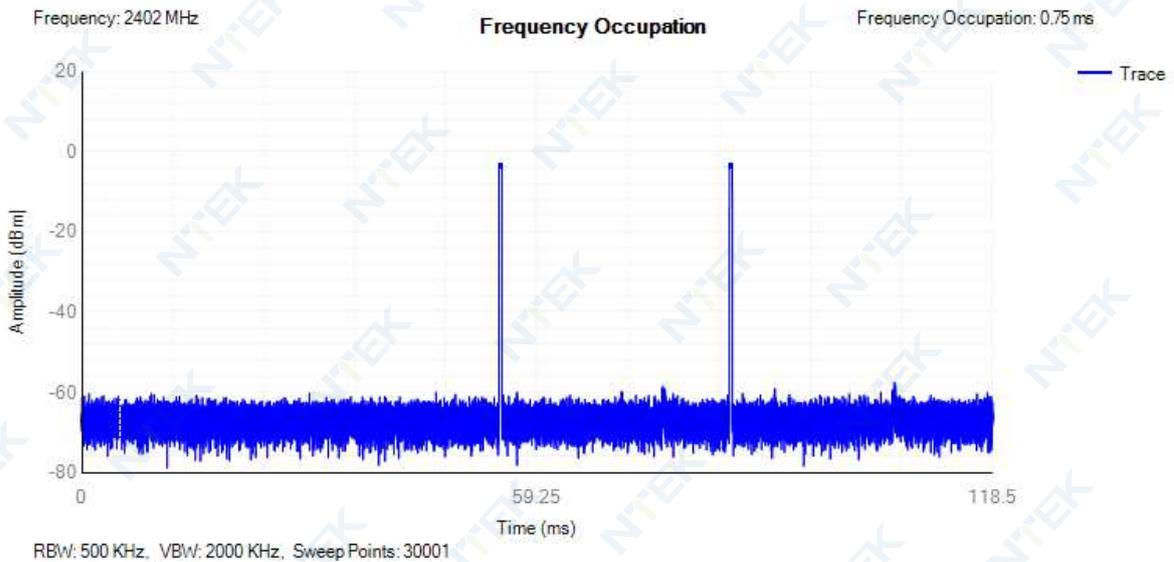


RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

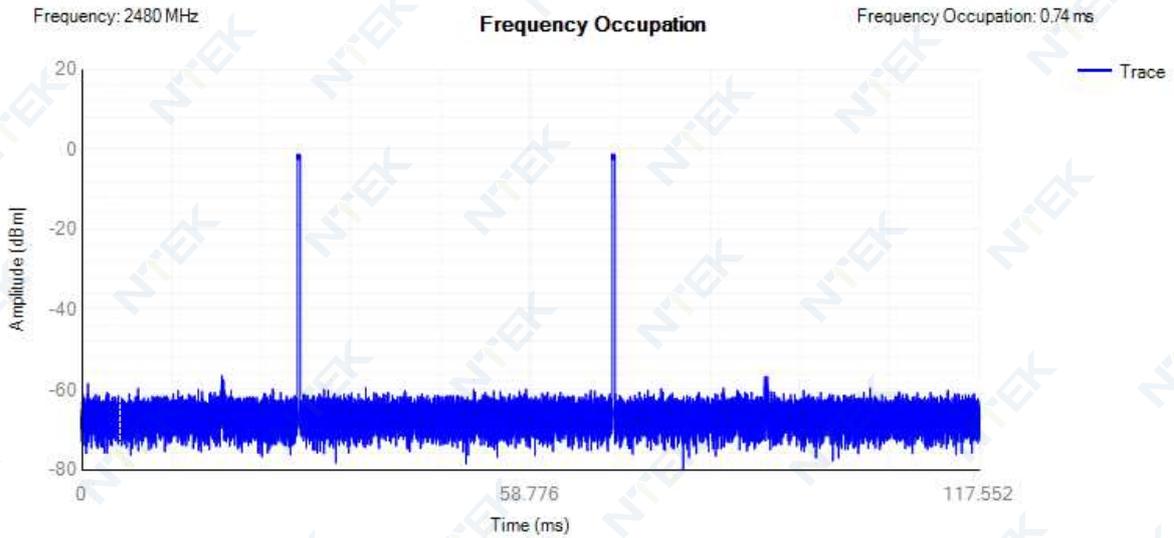
**11.2 FREQUENCY OCCUPATION**

Condition	Mode	Frequency (MHz)	Frequency Occupation (ms)	Limit (ms)	Sweep Time (ms)	Burst Number	Verdict
NVNT	1-DH1	2402	0.75	0	118.5	2	Pass
NVNT	1-DH1	2480	0.744	0	117.552	2	Pass
NVNT	1-DH3	2402	1.632	0	515.712	1	Pass
NVNT	1-DH3	2480	6.492	0	512.868	4	Pass
NVNT	1-DH5	2402	8.64	0	910.08	3	Pass
NVNT	1-DH5	2480	14.4	0	910.08	5	Pass
NVNT	2-DH1	2402	0.381	0	120.396	1	Pass
NVNT	2-DH1	2480	0.381	0	120.396	1	Pass
NVNT	2-DH3	2402	3.27	0	516.66	2	Pass
NVNT	2-DH3	2480	3.258	0	514.764	2	Pass
NVNT	2-DH5	2402	8.616	0	907.552	3	Pass
NVNT	2-DH5	2480	5.76	0	910.08	2	Pass
NVNT	3-DH1	2402	0.381	0	120.396	1	Pass
NVNT	3-DH1	2480	0.75	0	118.5	2	Pass
NVNT	3-DH3	2402	3.264	0	515.712	2	Pass
NVNT	3-DH3	2480	3.264	0	515.712	2	Pass
NVNT	3-DH5	2402	8.616	0	907.552	3	Pass
NVNT	3-DH5	2480	8.64	0	910.08	3	Pass

Freq. Occup. NVNT 1-DH1 2402MHz

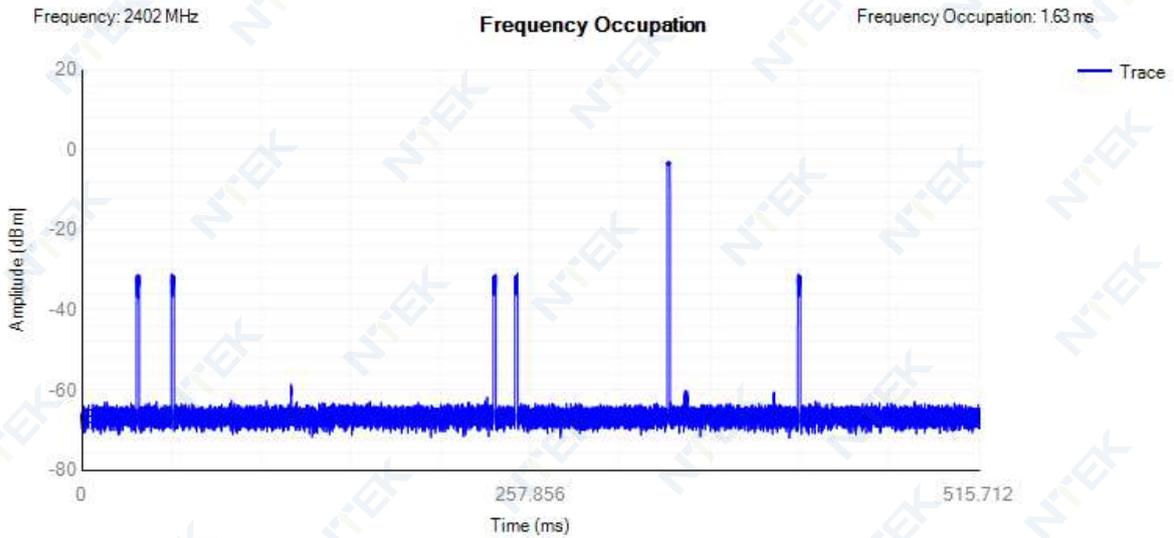


Freq. Occup. NVNT 1-DH1 2480MHz



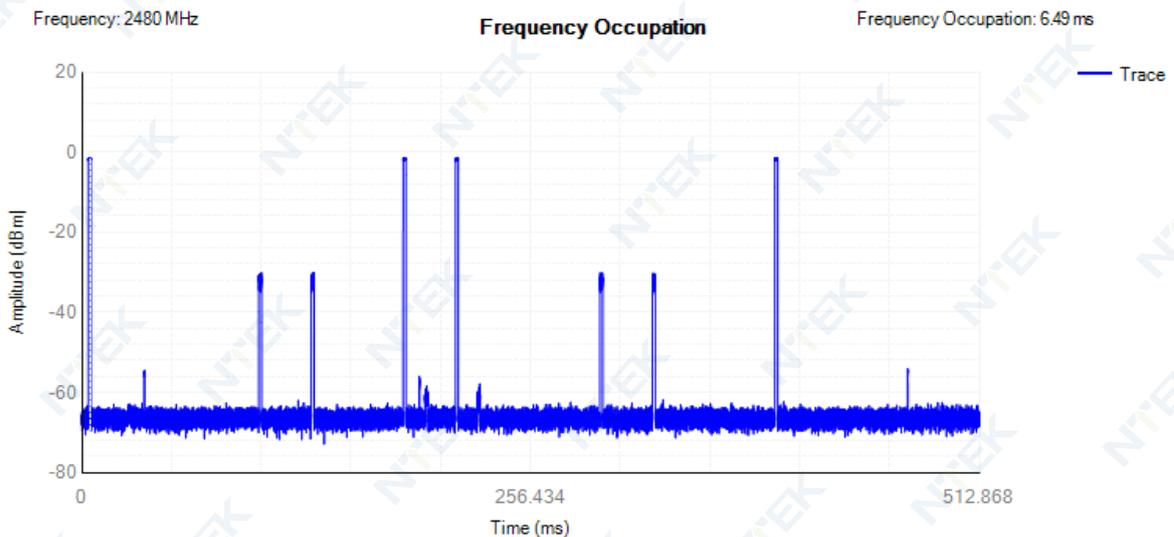
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

Freq. Occup. NVNT 1-DH3 2402MHz



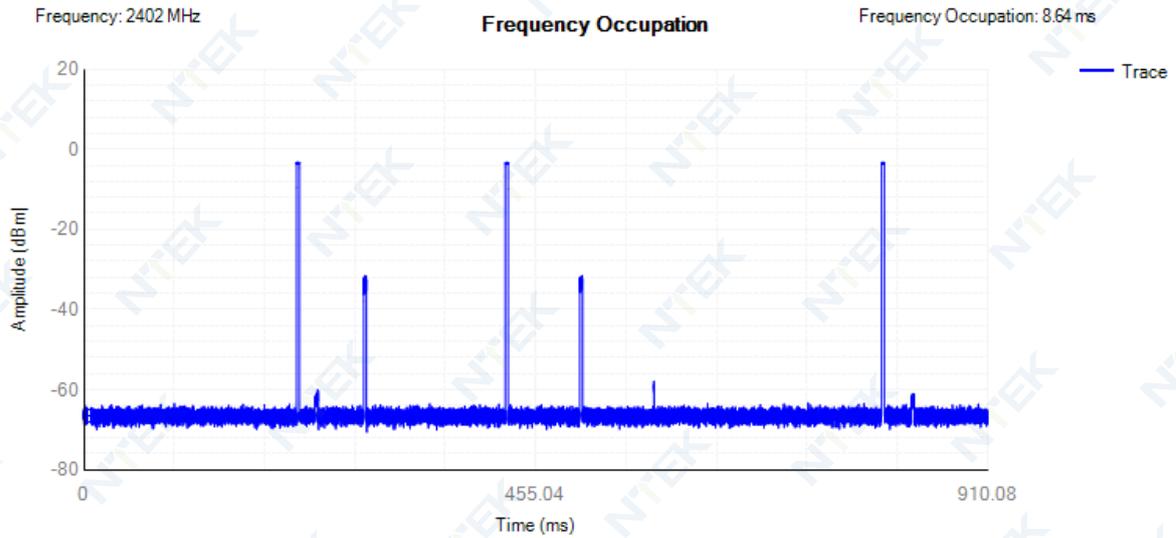
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

Freq. Occup. NVNT 1-DH3 2480MHz

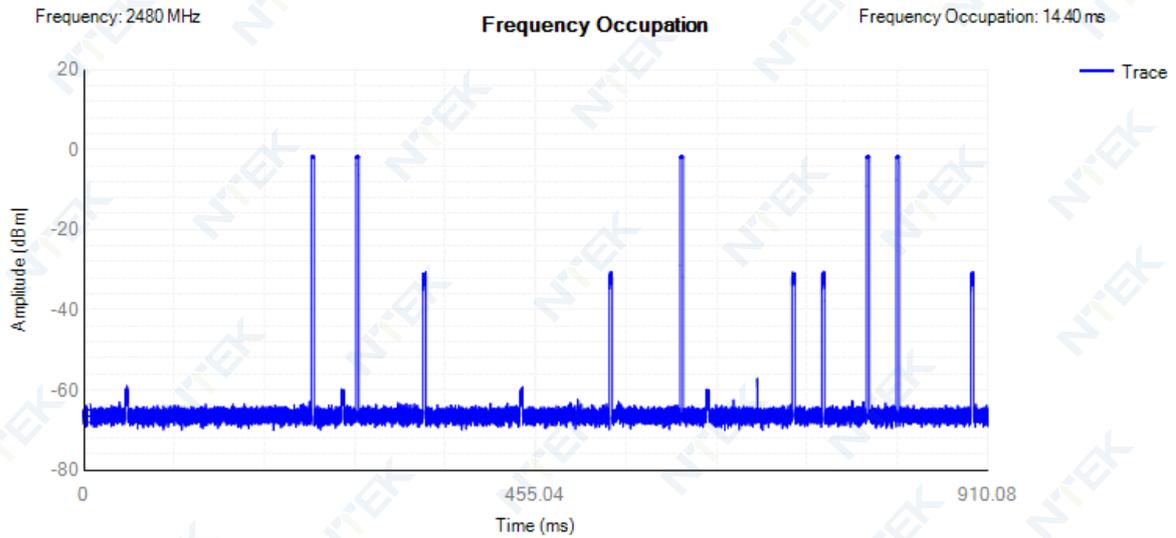


RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

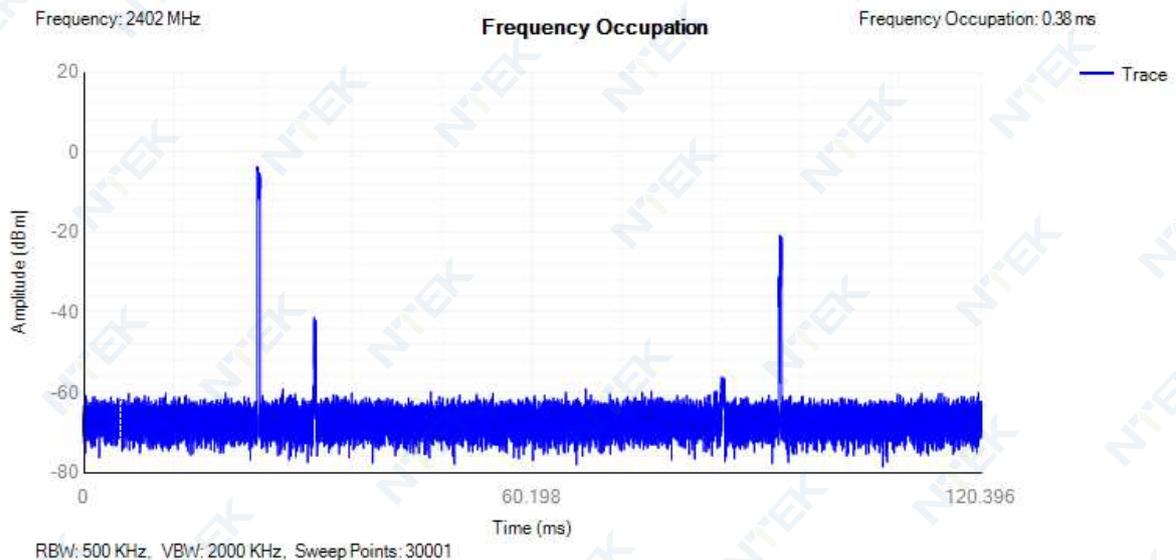
Freq. Occup. NVNT 1-DH5 2402MHz



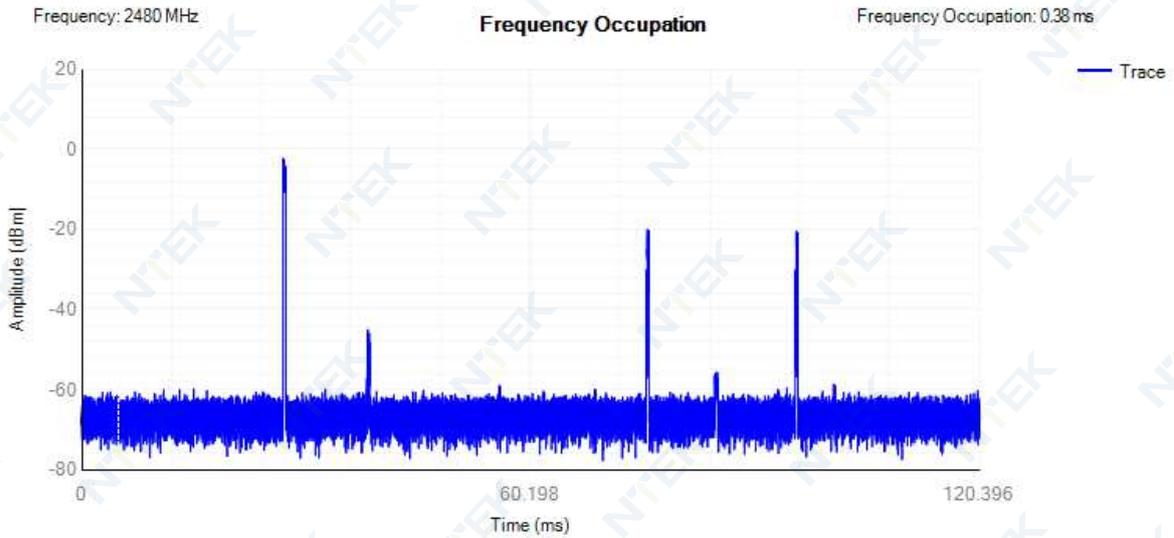
Freq. Occup. NVNT 1-DH5 2480MHz



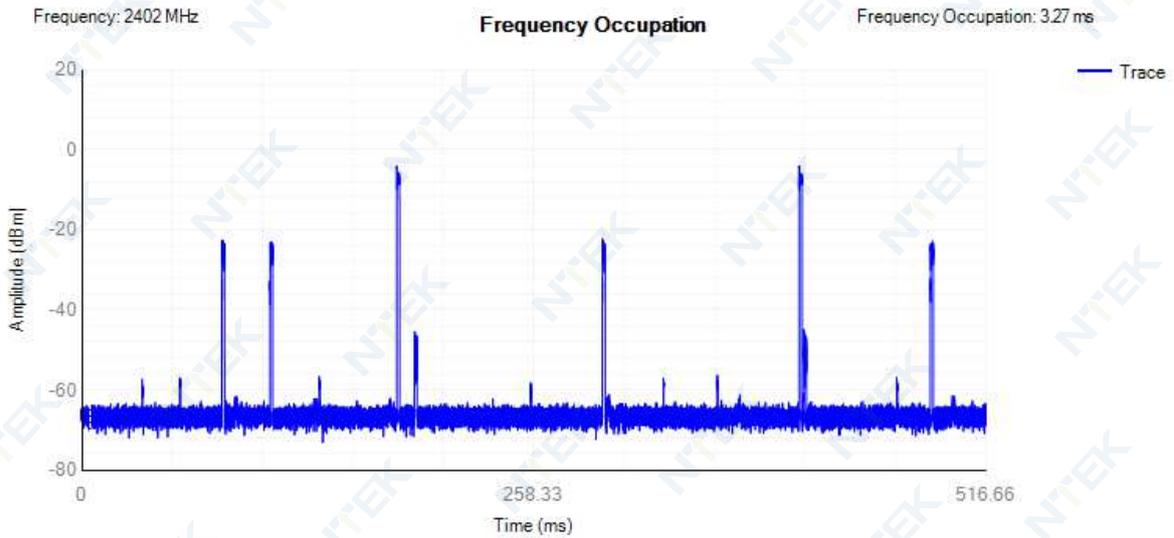
Freq. Occup. NVNT 2-DH1 2402MHz



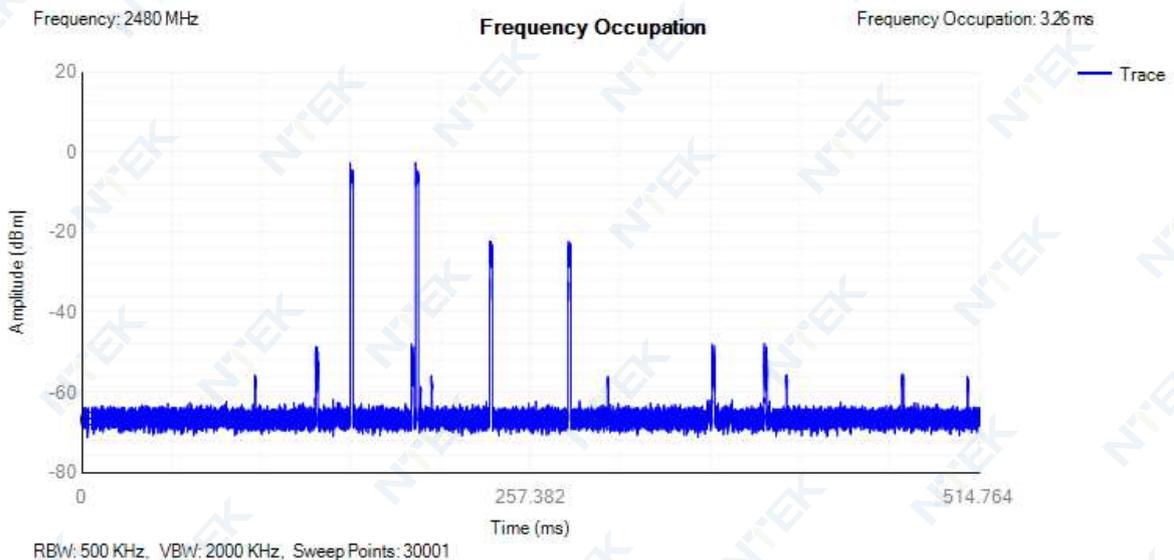
Freq. Occup. NVNT 2-DH1 2480MHz



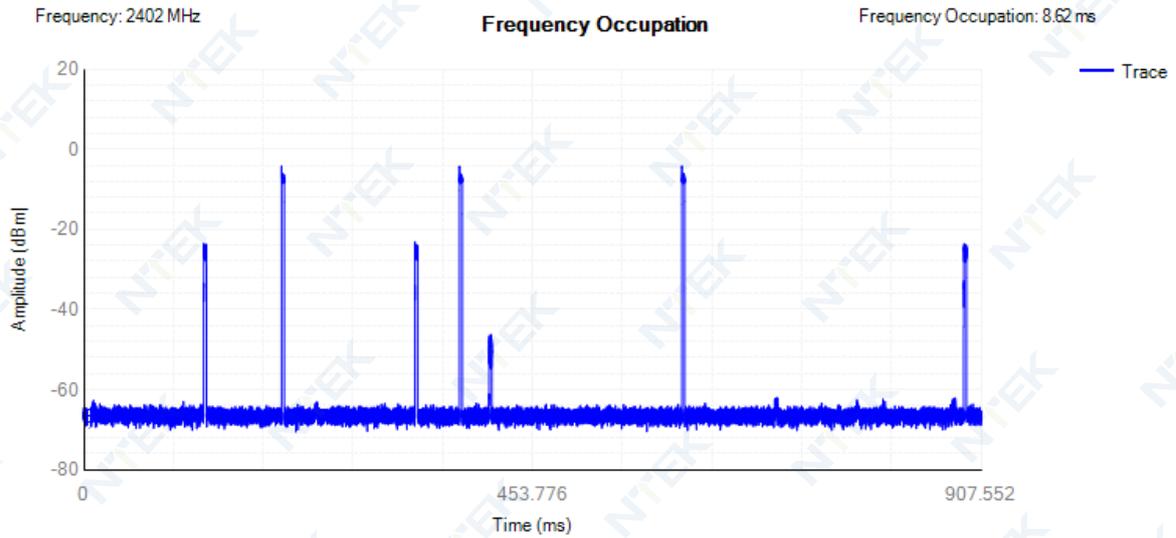
Freq. Occup. NVNT 2-DH3 2402MHz



Freq. Occup. NVNT 2-DH3 2480MHz

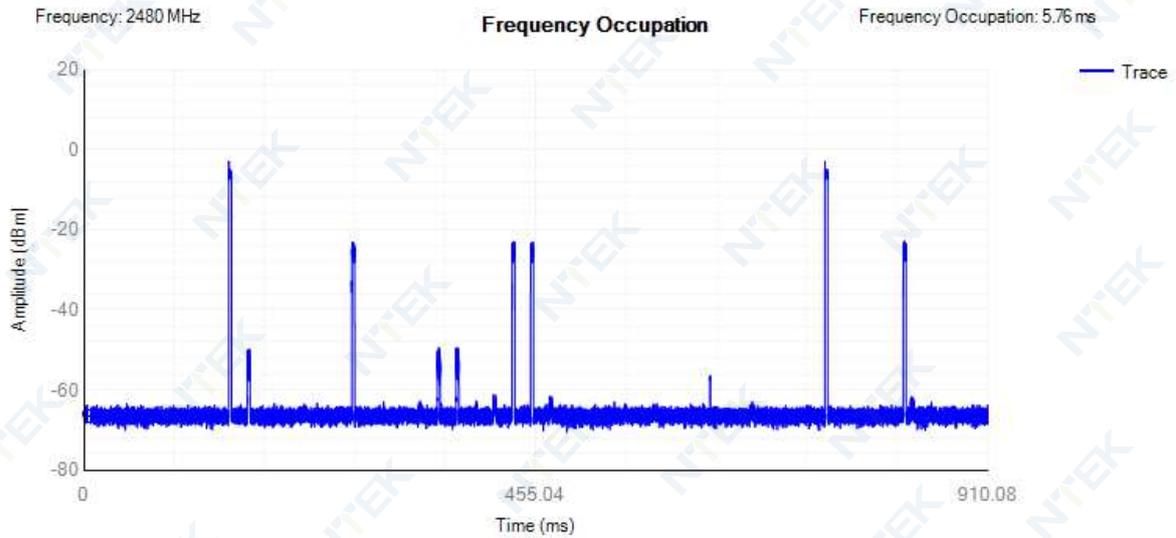


Freq. Occup. NVNT 2-DH5 2402MHz



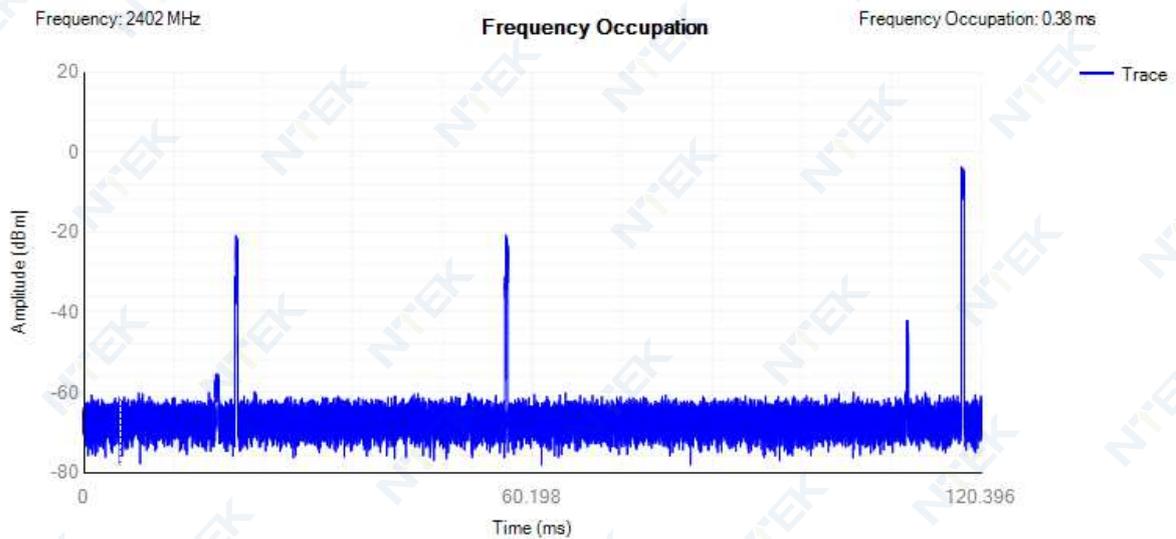
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

Freq. Occup. NVNT 2-DH5 2480MHz



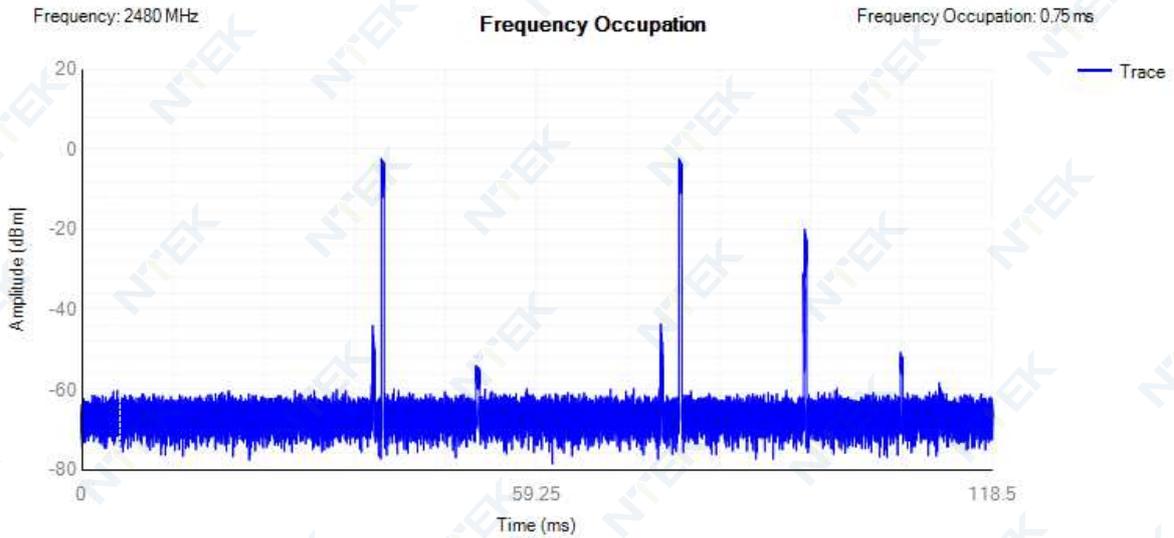
RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

Freq. Occup. NVNT 3-DH1 2402MHz

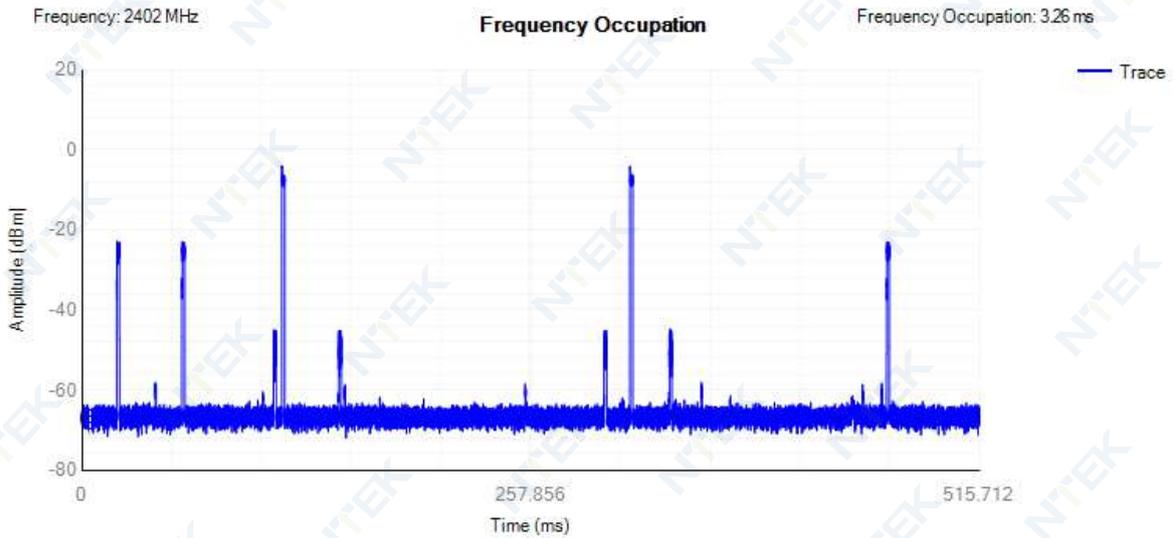


RBW: 500 KHz, VBW: 2000 KHz, Sweep Points: 30001

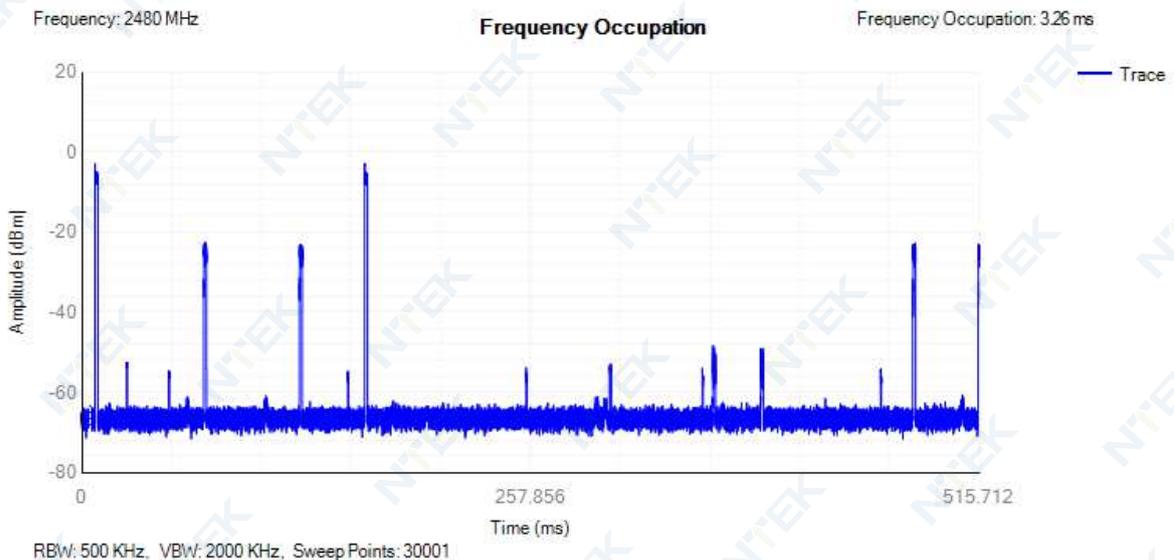
Freq. Occup. NVNT 3-DH1 2480MHz



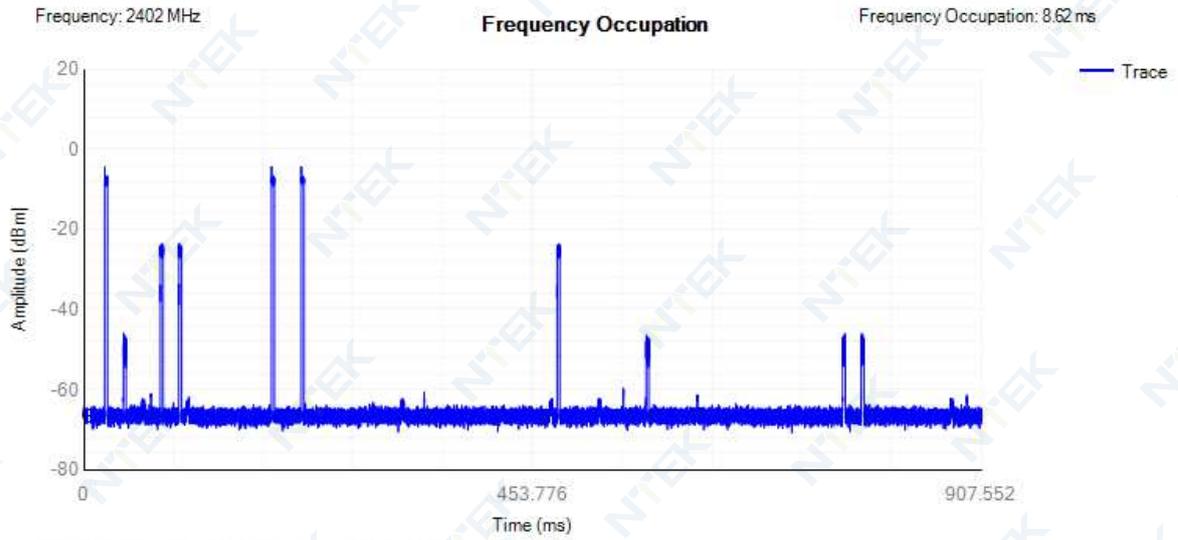
Freq. Occup. NVNT 3-DH3 2402MHz



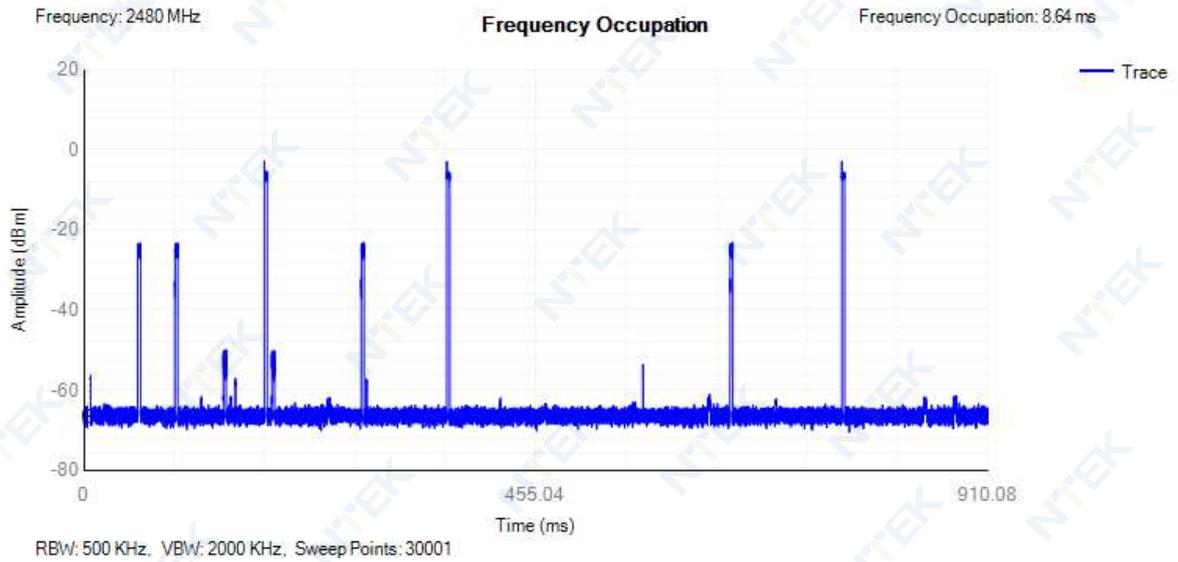
Freq. Occup. NVNT 3-DH3 2480MHz



Freq. Occup. NVNT 3-DH5 2402MHz



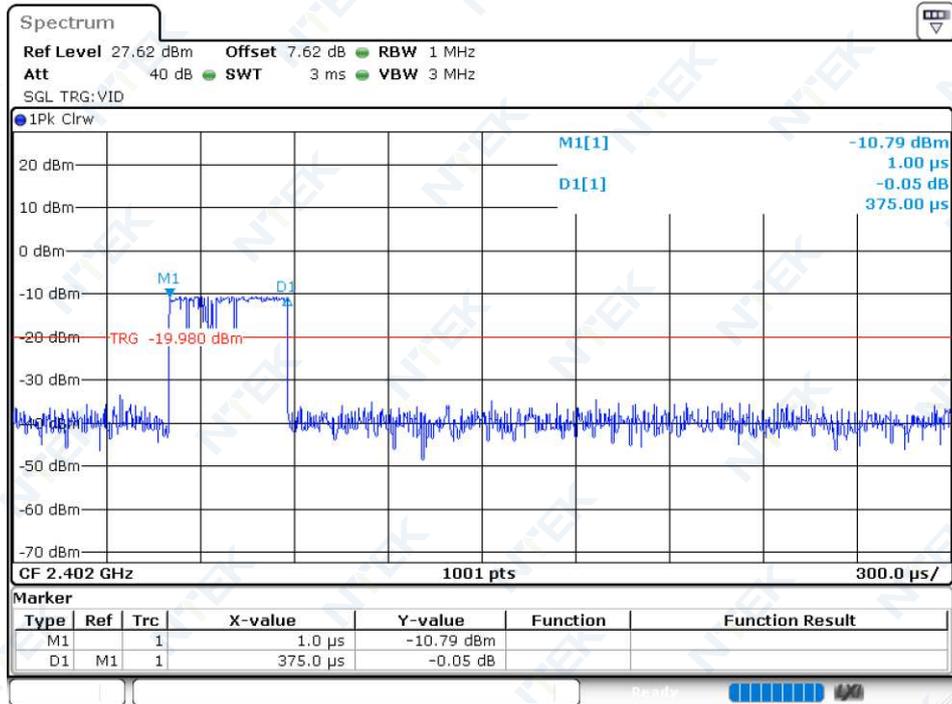
Freq. Occup. NVNT 3-DH5 2480MHz



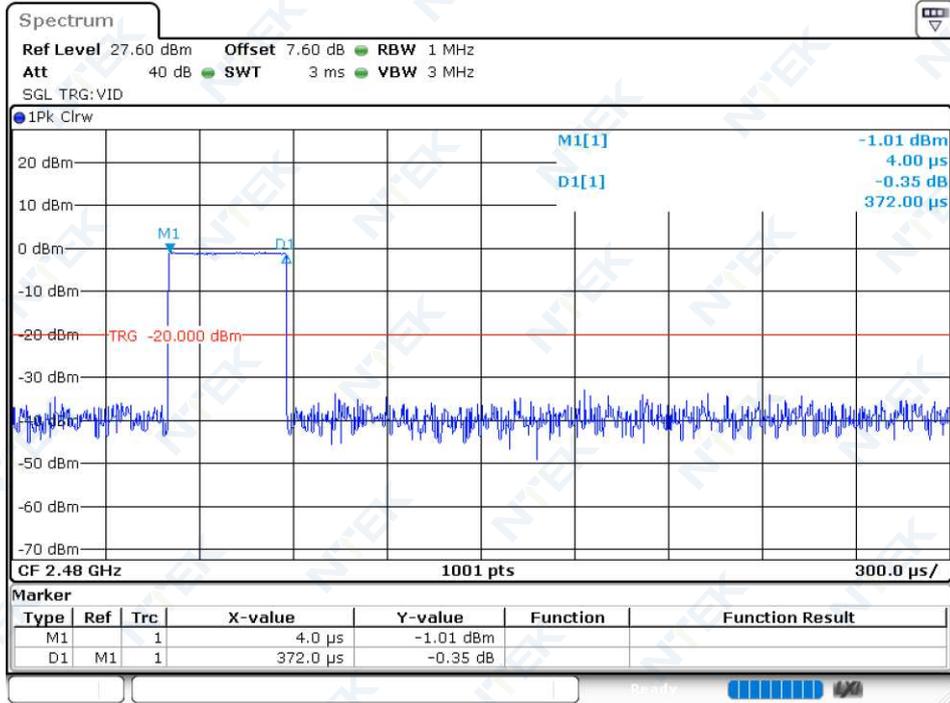
11.3 ONE PULSE DWELL TIME

Condition	Mode	Frequency (MHz)	Pulse Time (ms)
NVNT	1-DH1	2402	0.375
NVNT	1-DH1	2480	0.372
NVNT	1-DH3	2402	1.632
NVNT	1-DH3	2480	1.623
NVNT	1-DH5	2402	2.88
NVNT	1-DH5	2480	2.88
NVNT	2-DH1	2402	0.381
NVNT	2-DH1	2480	0.381
NVNT	2-DH3	2402	1.635
NVNT	2-DH3	2480	1.629
NVNT	2-DH5	2402	2.872
NVNT	2-DH5	2480	2.88
NVNT	3-DH1	2402	0.381
NVNT	3-DH1	2480	0.375
NVNT	3-DH3	2402	1.632
NVNT	3-DH3	2480	1.632
NVNT	3-DH5	2402	2.872
NVNT	3-DH5	2480	2.88

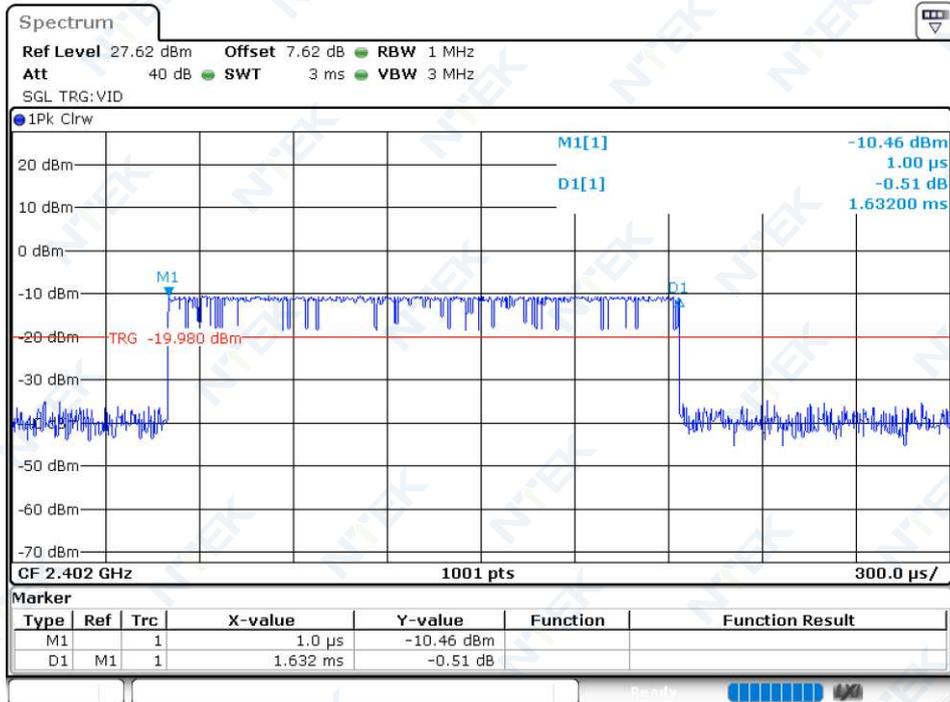
One Pulse NVNT 1-DH1 2402MHz



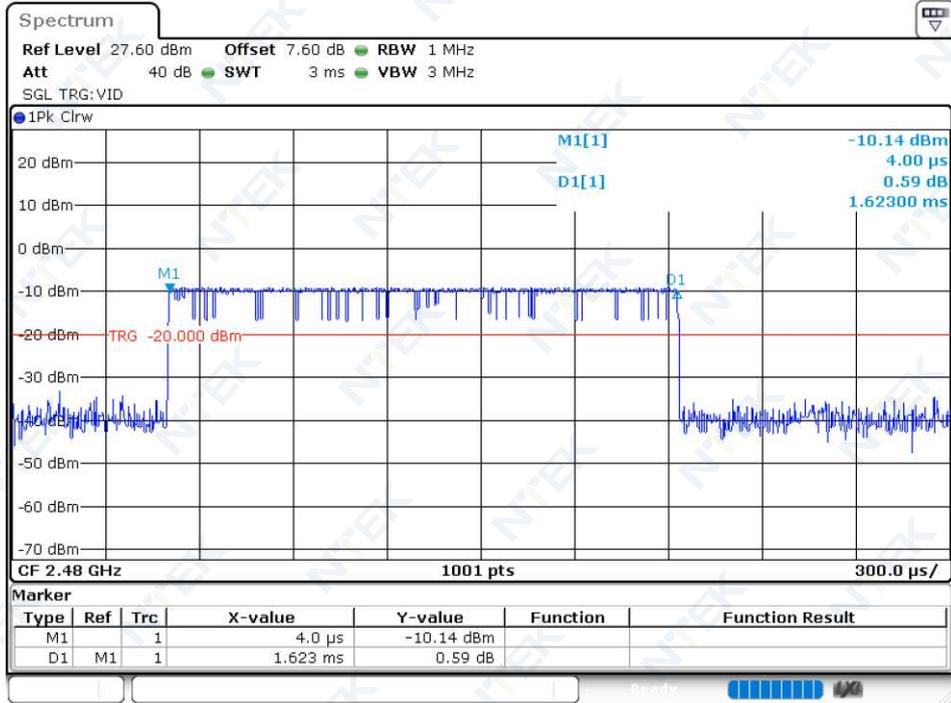
One Pulse NVNT 1-DH1 2480MHz



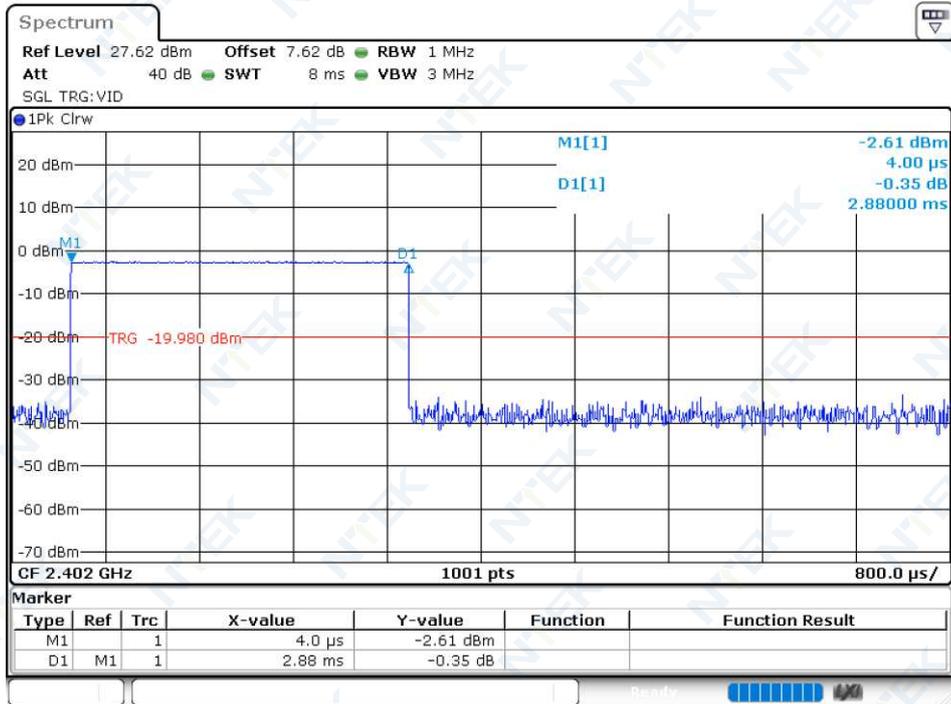
One Pulse NVNT 1-DH3 2402MHz



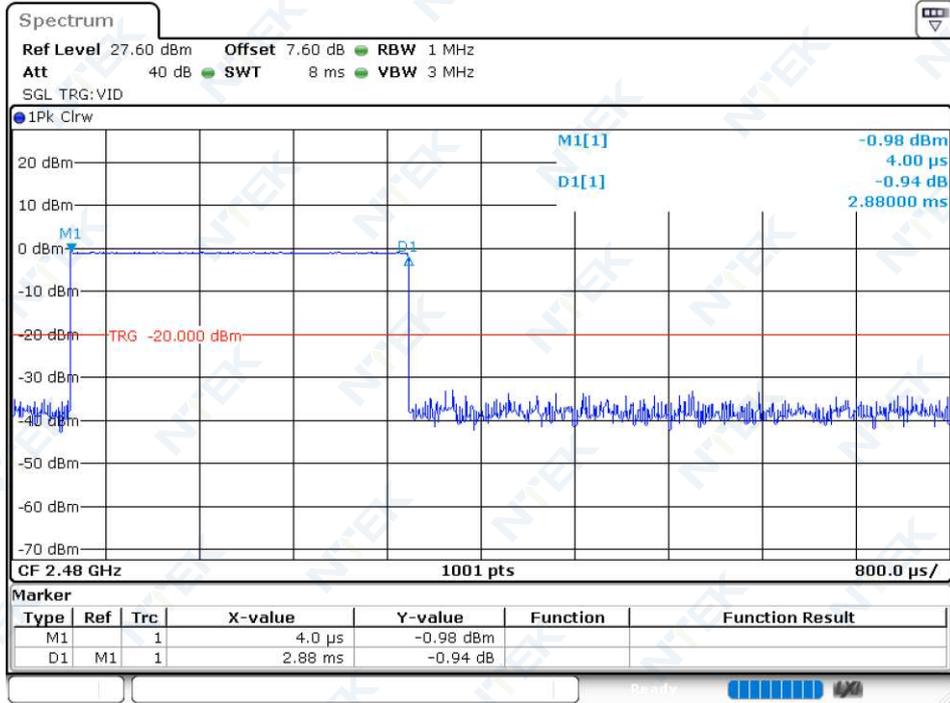
One Pulse NVNT 1-DH3 2480MHz



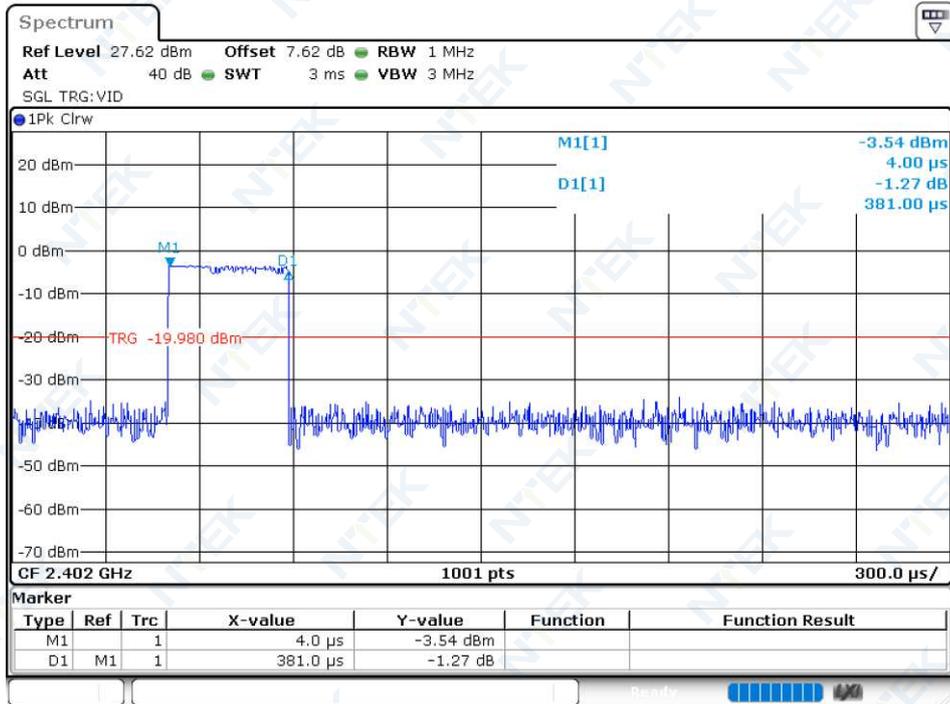
One Pulse NVNT 1-DH5 2402MHz



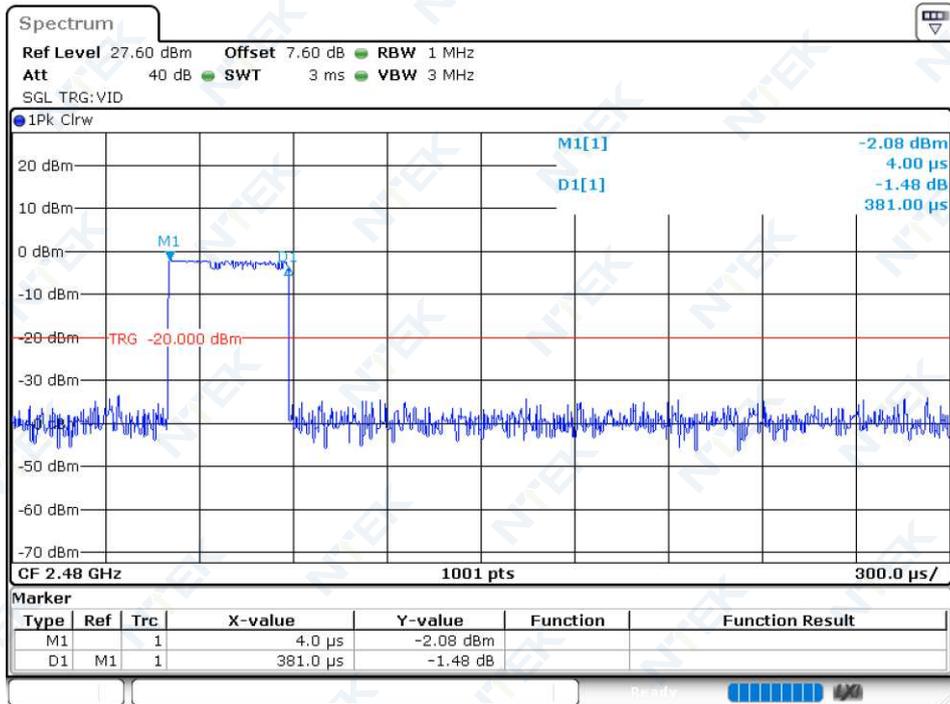
One Pulse NVNT 1-DH5 2480MHz



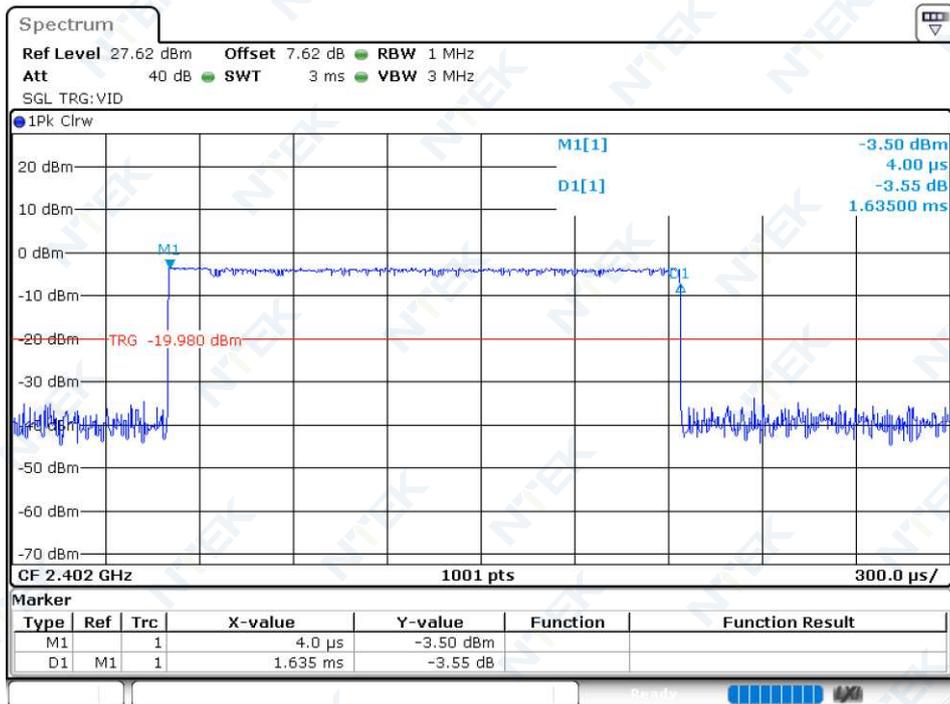
One Pulse NVNT 2-DH1 2402MHz



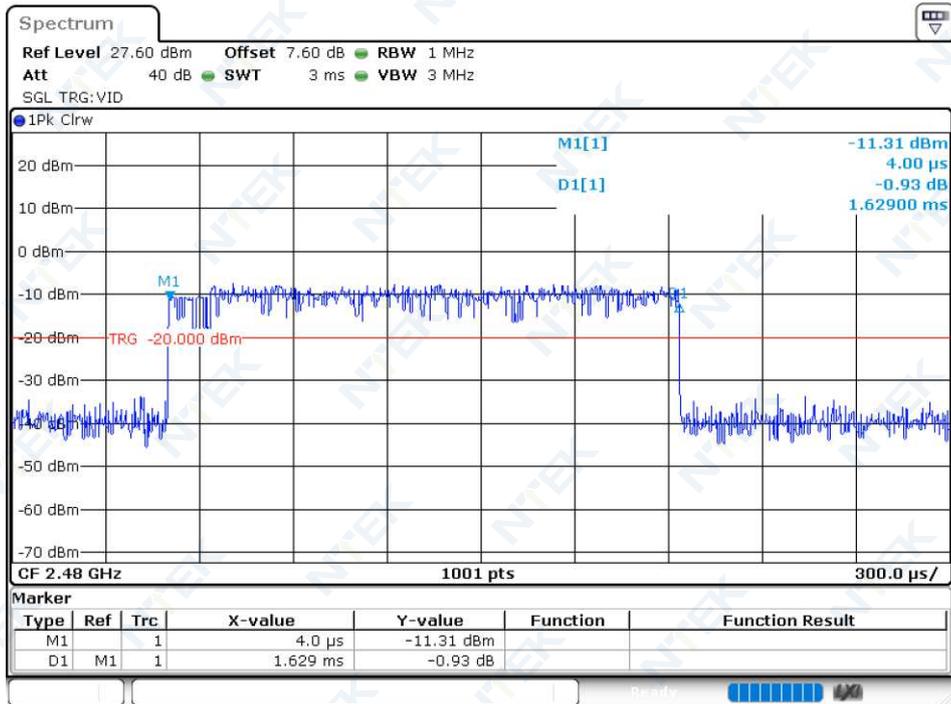
One Pulse NVNT 2-DH1 2480MHz



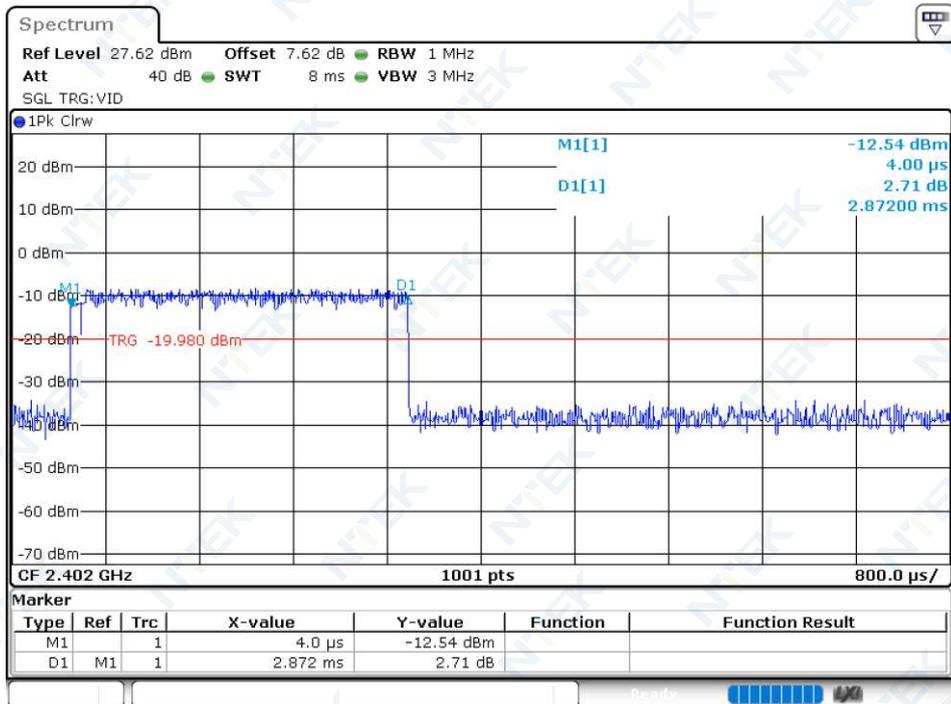
One Pulse NVNT 2-DH3 2402MHz



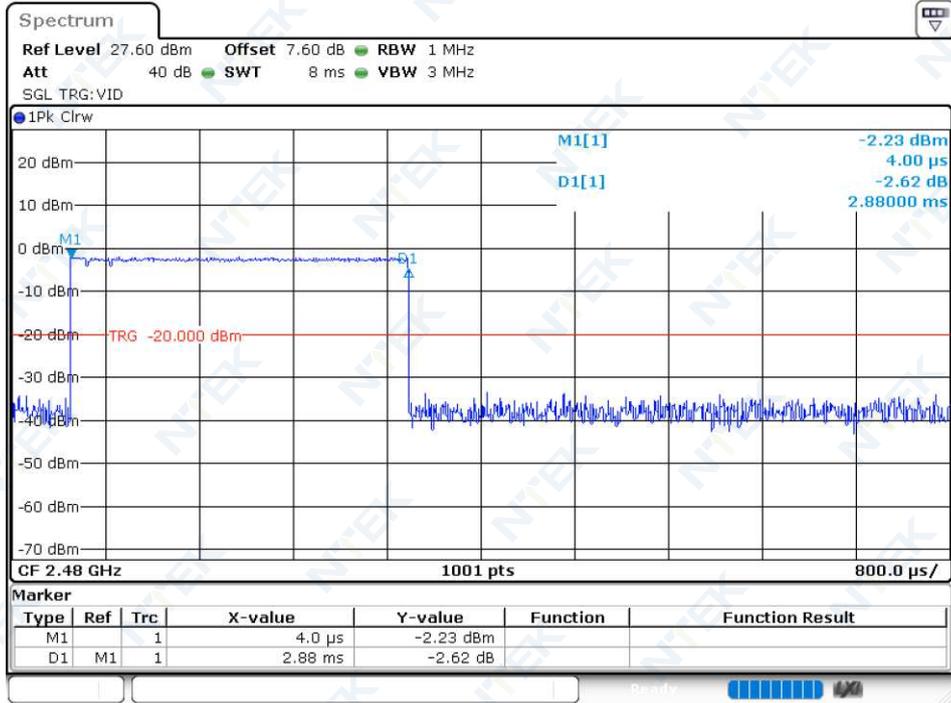
One Pulse NVNT 2-DH3 2480MHz



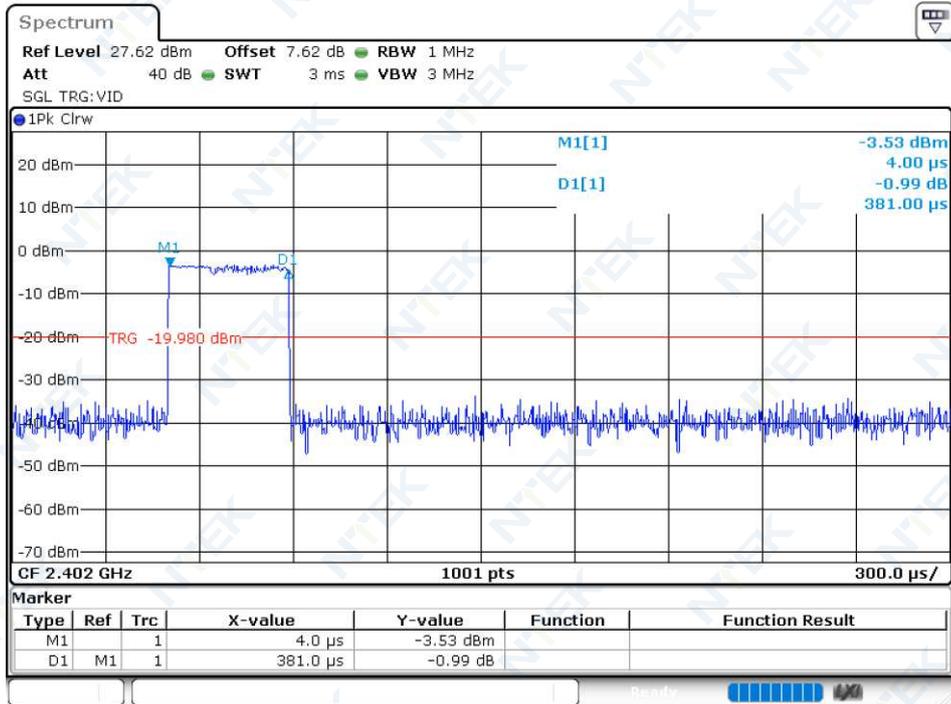
One Pulse NVNT 2-DH5 2402MHz



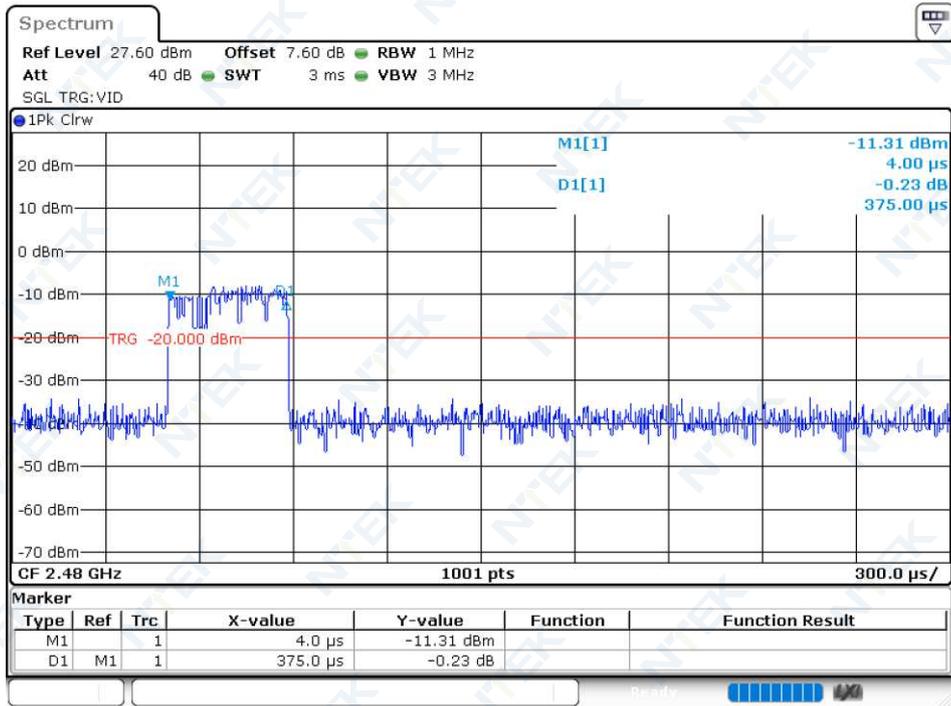
One Pulse NVNT 2-DH5 2480MHz



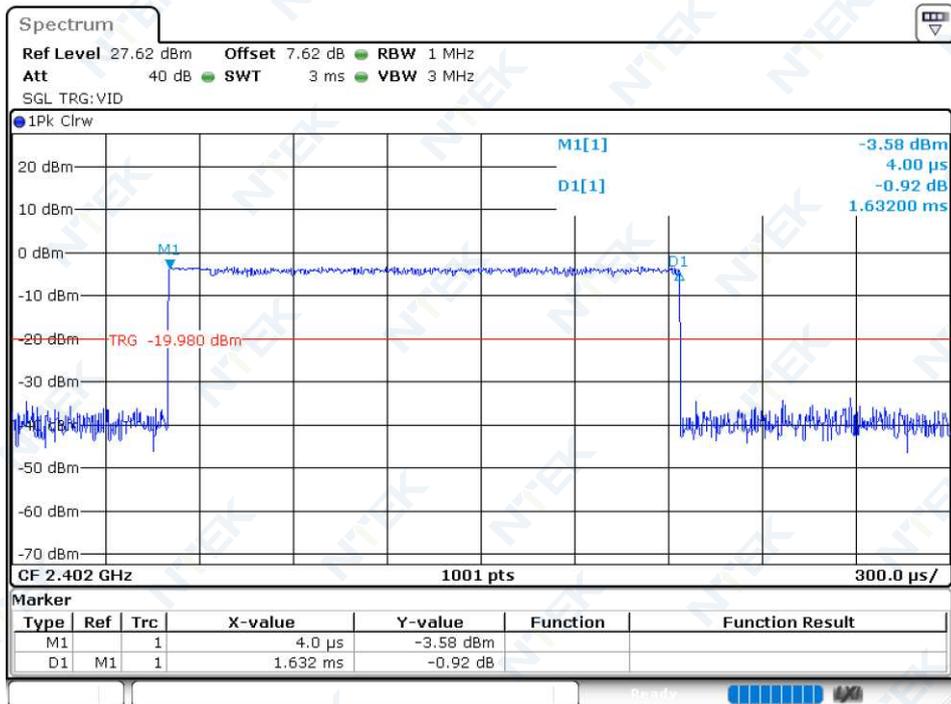
One Pulse NVNT 3-DH1 2402MHz



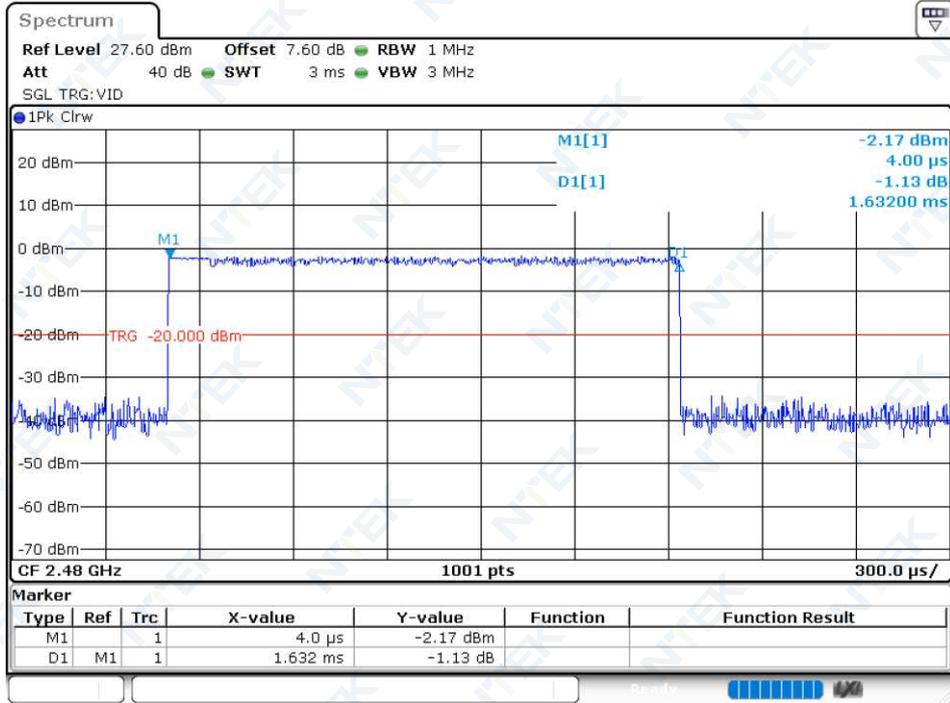
One Pulse NVNT 3-DH1 2480MHz



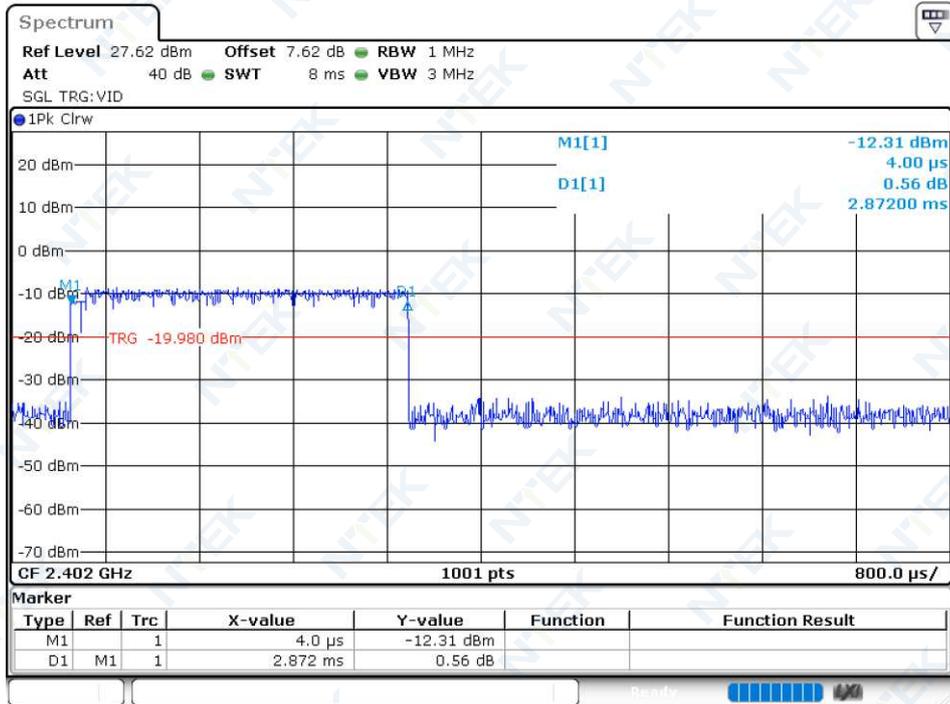
One Pulse NVNT 3-DH3 2402MHz



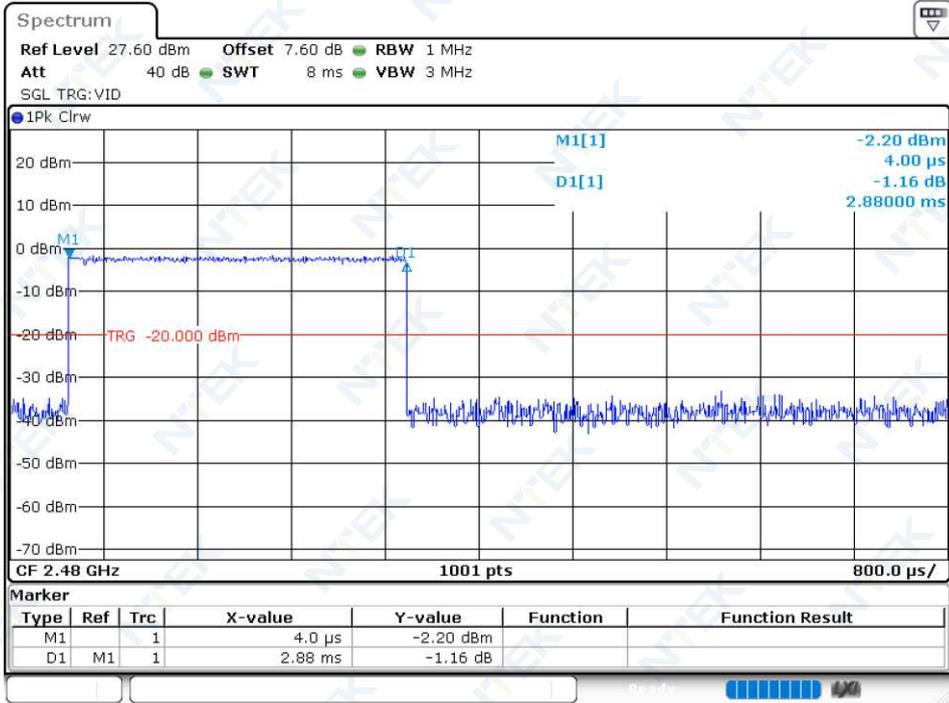
One Pulse NVNT 3-DH3 2480MHz



One Pulse NVNT 3-DH5 2402MHz



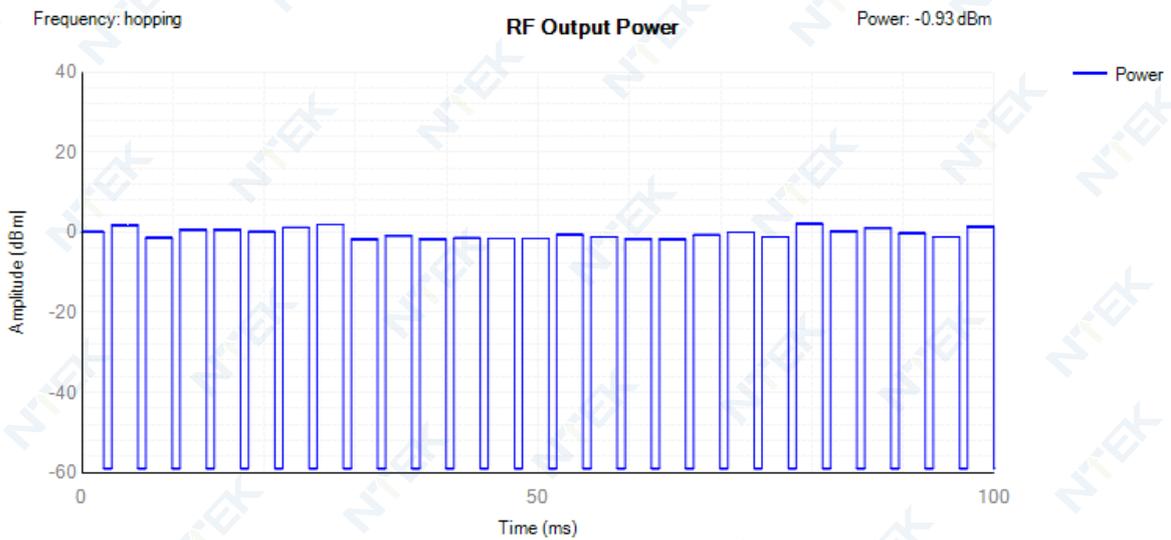
One Pulse NVNT 3-DH5 2480MHz



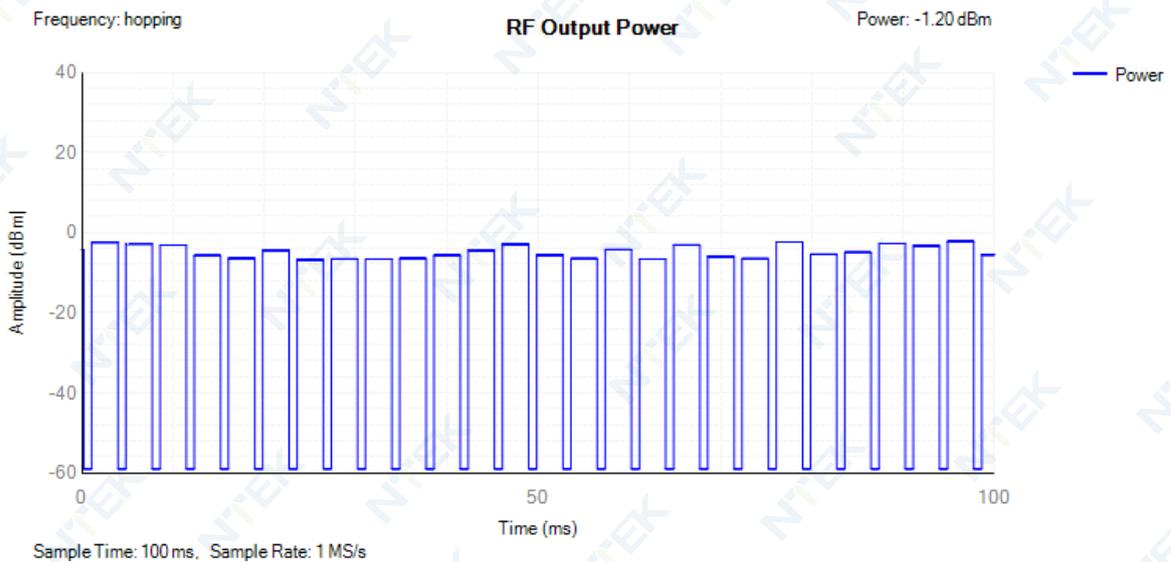
11.4 RF OUTPUT POWER

Condition	Mode	Frequency (MHz)	Max Burst RMS Power (dBm)	Burst Number	Max EIRP (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	hopping	-0.68	27	-0.93	20	Pass
NVNT	2-DH5	hopping	-4.95	28	-5.2	20	Pass
NVNT	3-DH5	hopping	-4.95	27	-5.2	20	Pass
NVLT	1-DH5	hopping	-1.36	28	-1.61	20	Pass
NVLT	2-DH5	hopping	-5.54	27	-5.79	20	Pass
NVLT	3-DH5	hopping	-5.52	27	-5.77	20	Pass
NVHT	1-DH5	hopping	-1.39	28	-1.64	20	Pass
NVHT	2-DH5	hopping	-5.64	27	-5.89	20	Pass
NVHT	3-DH5	hopping	-5.72	27	-5.97	20	Pass

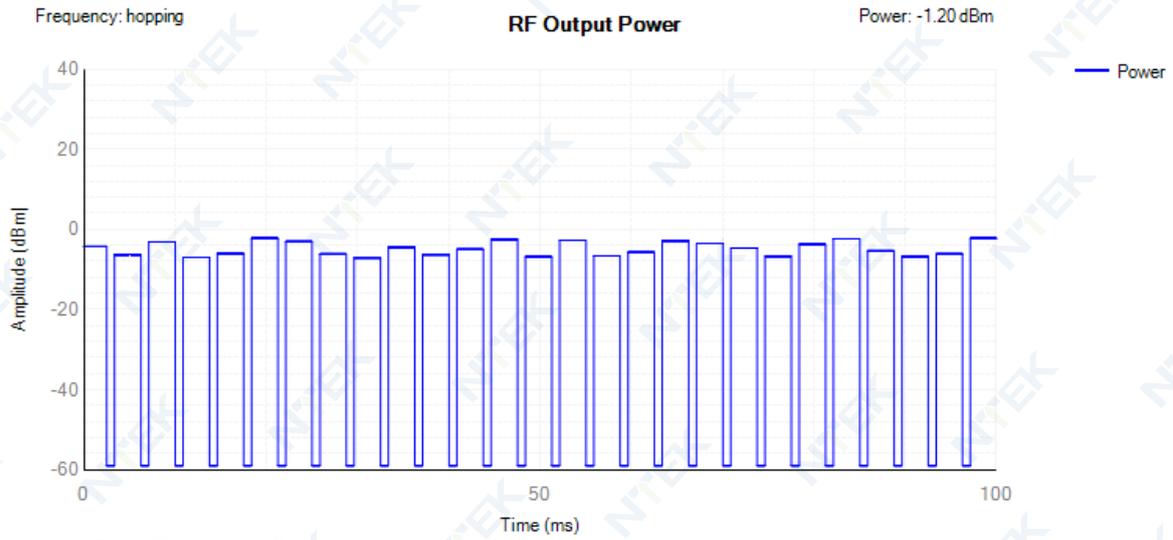
Power NVNT 1-DH5 2402MHz



Power NVNT 2-DH5 2402MHz



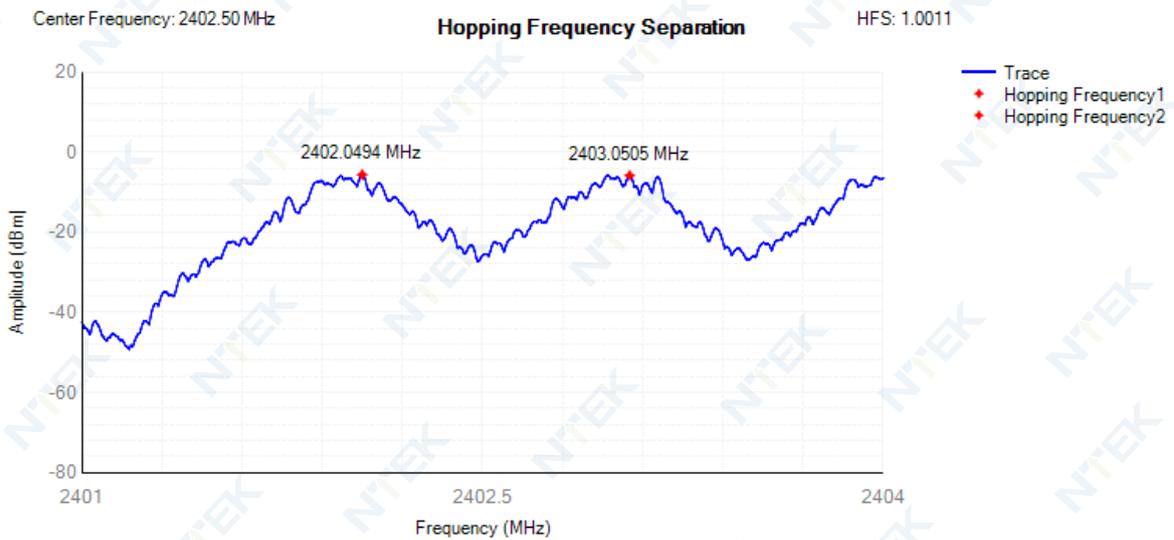
Power NVNT 3-DH5 2402MHz



**11.5 HOPPING FREQUENCY SEPARATION**

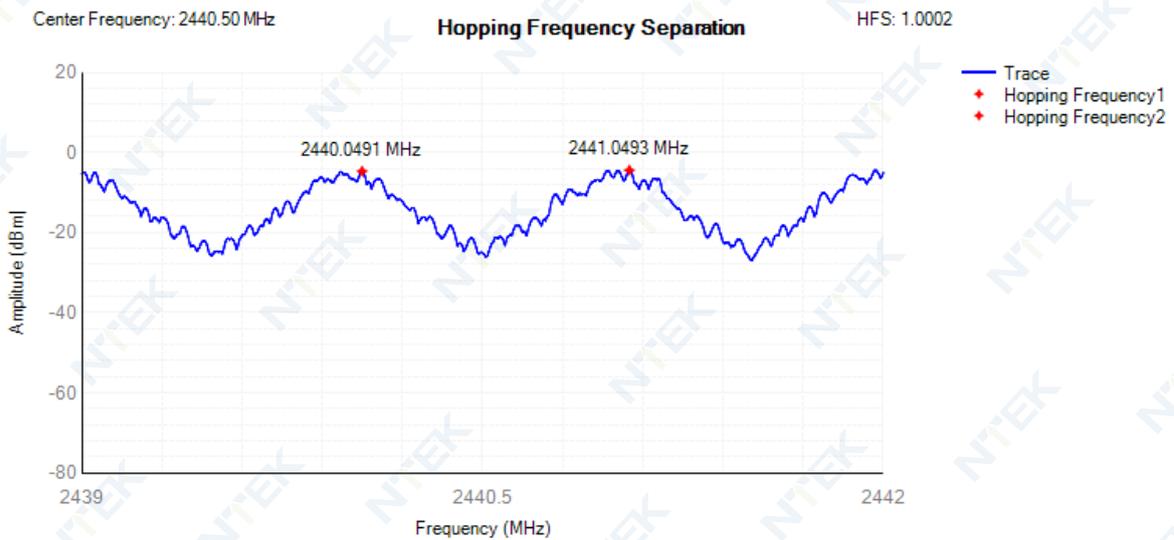
Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	2402.0494	2403.0505	1.0011	0.1	Pass
NVNT	1-DH5	2440.0491	2441.0493	1.0002	0.1	Pass
NVNT	1-DH5	2479.1541	2480.1543	1.0002	0.1	Pass
NVNT	2-DH5	2402.1544	2403.1546	1.0002	0.1	Pass
NVNT	2-DH5	2441.1526	2442.1543	1.0017	0.1	Pass
NVNT	2-DH5	2479.0041	2480.0043	1.0002	0.1	Pass
NVNT	3-DH5	2402.1526	2403.1522	0.9996	0.1	Pass
NVNT	3-DH5	2441.1517	2442.1537	1.002	0.1	Pass
NVNT	3-DH5	2479.1523	2480.1528	1.0005	0.1	Pass

**HFS NVNT 1-DH5 2402MHz**

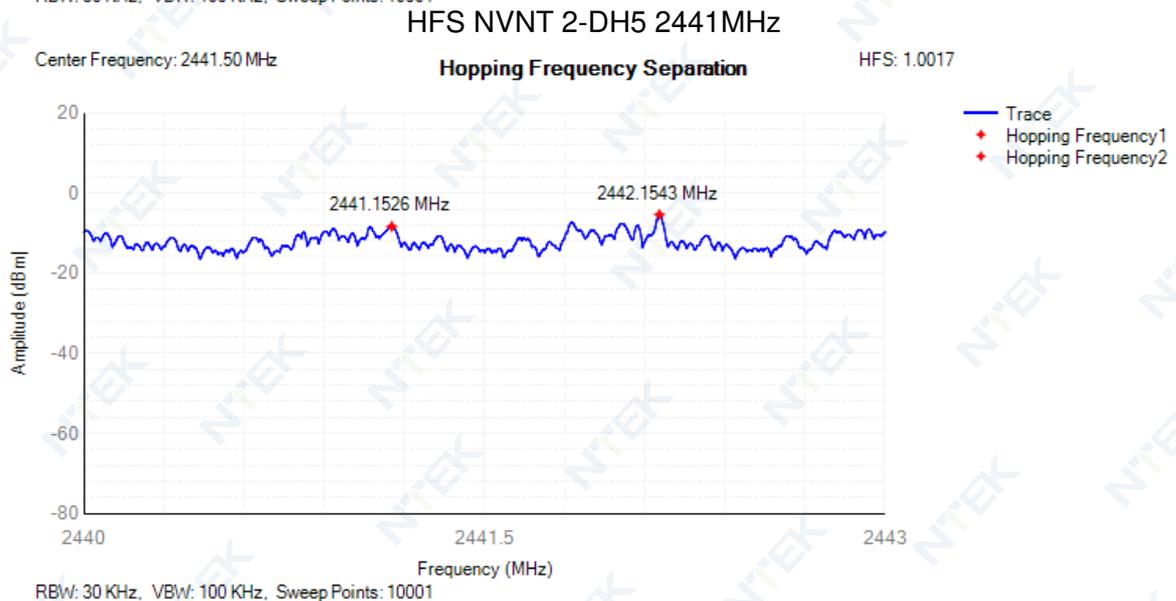
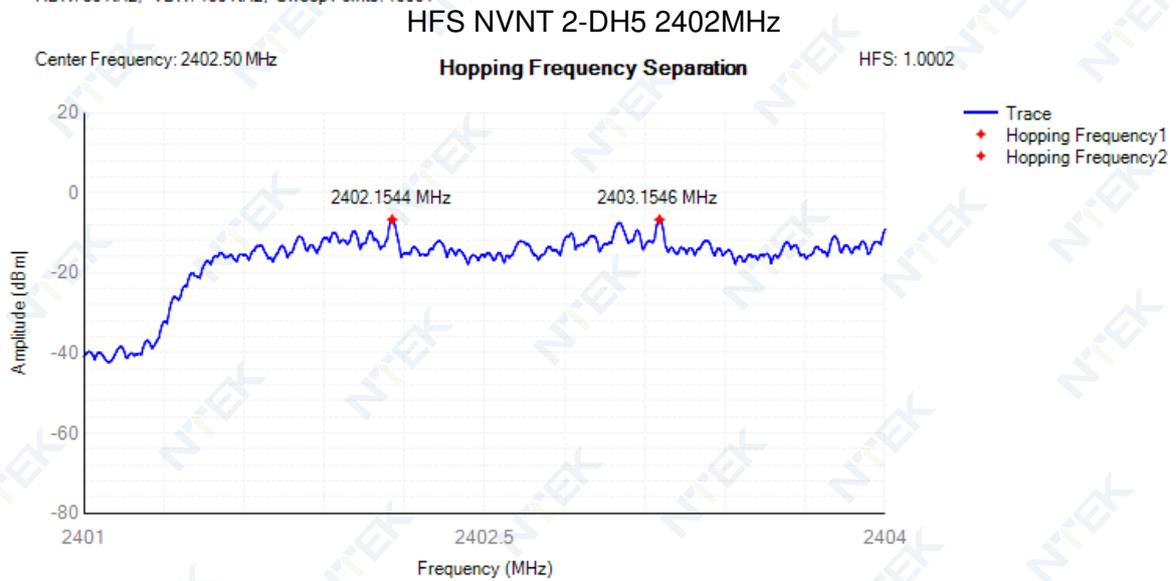
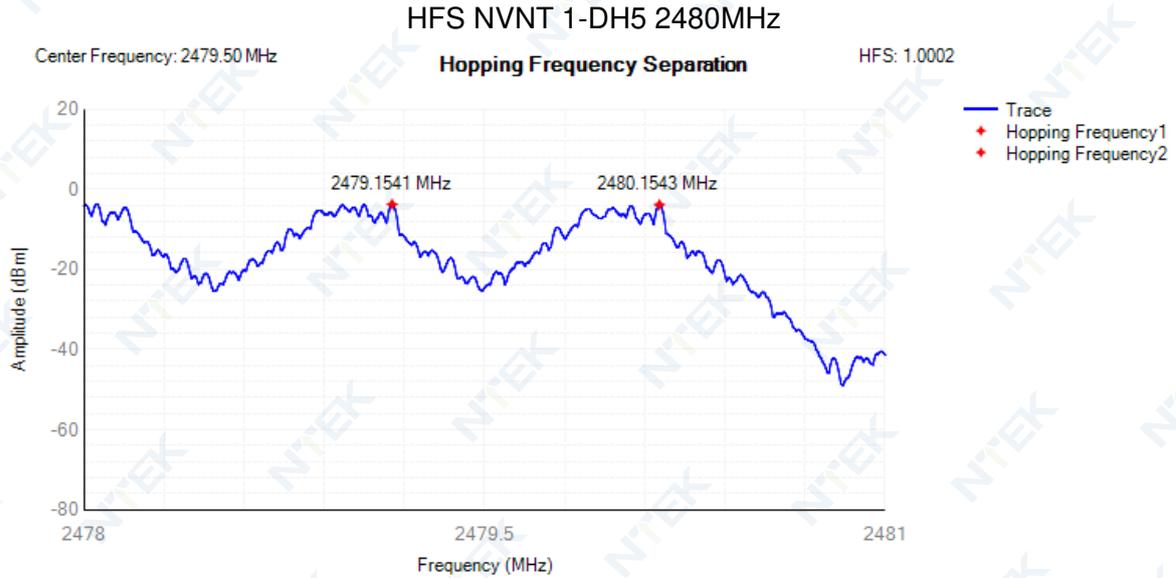


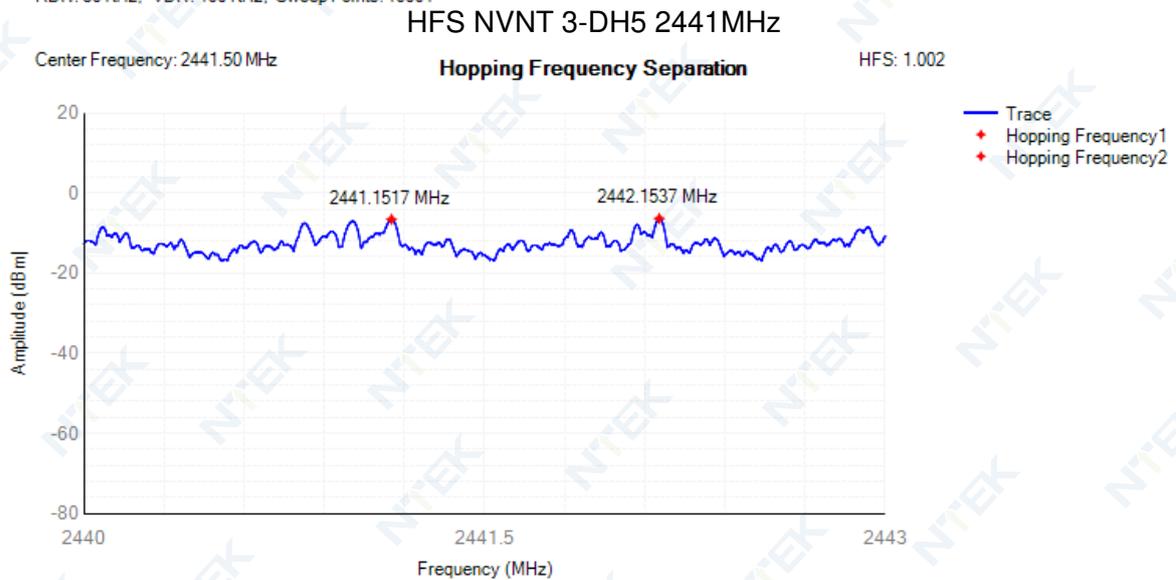
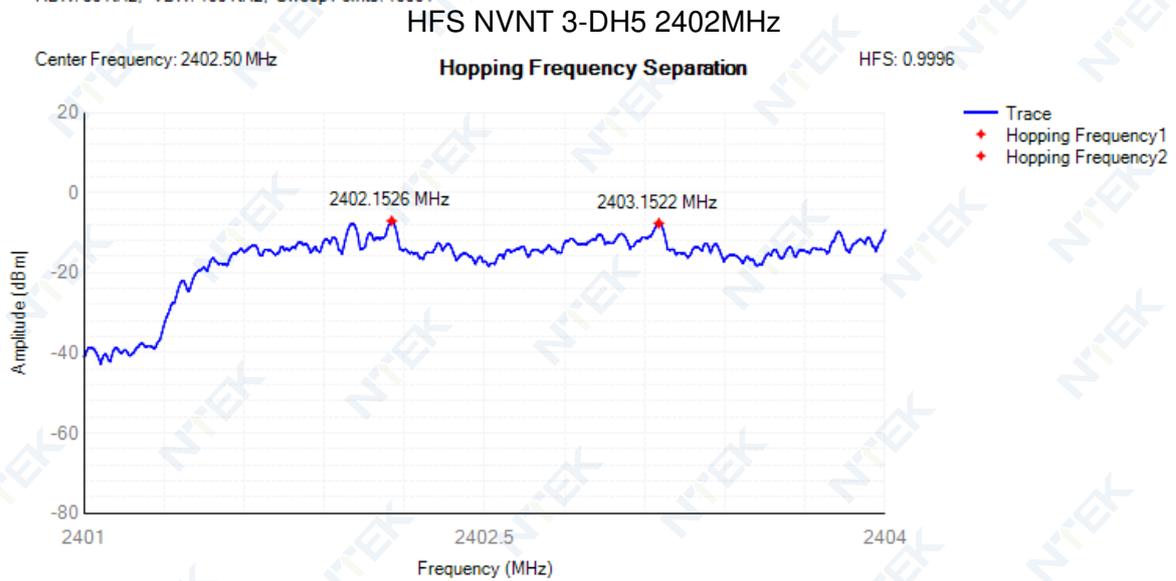
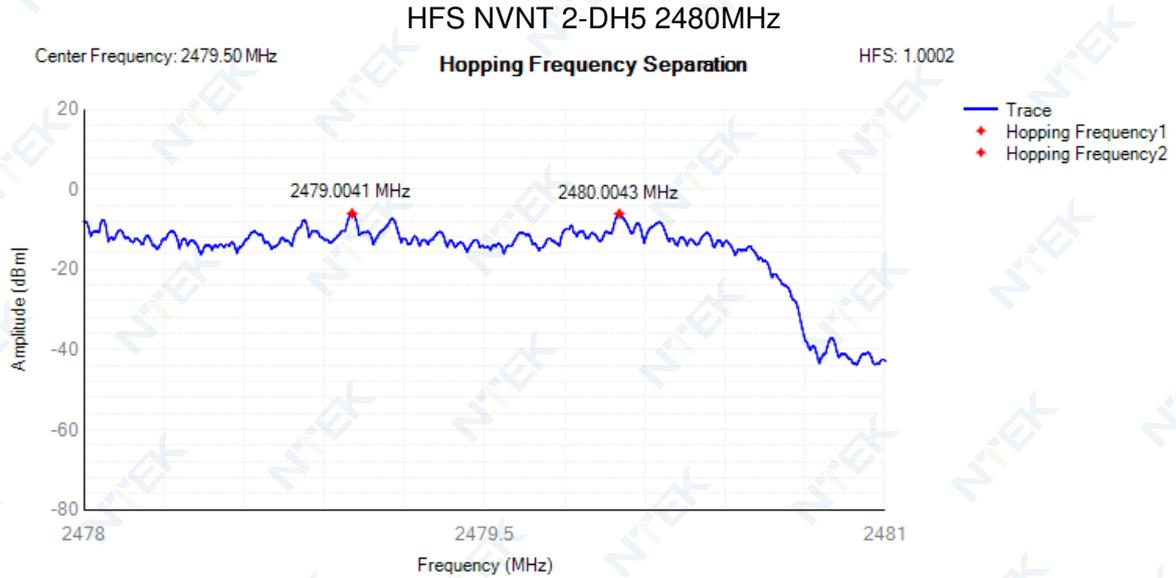
RBW: 30 KHz, VBW: 100 KHz, Sweep Points: 10001

**HFS NVNT 1-DH5 2441MHz**



RBW: 30 KHz, VBW: 100 KHz, Sweep Points: 10001



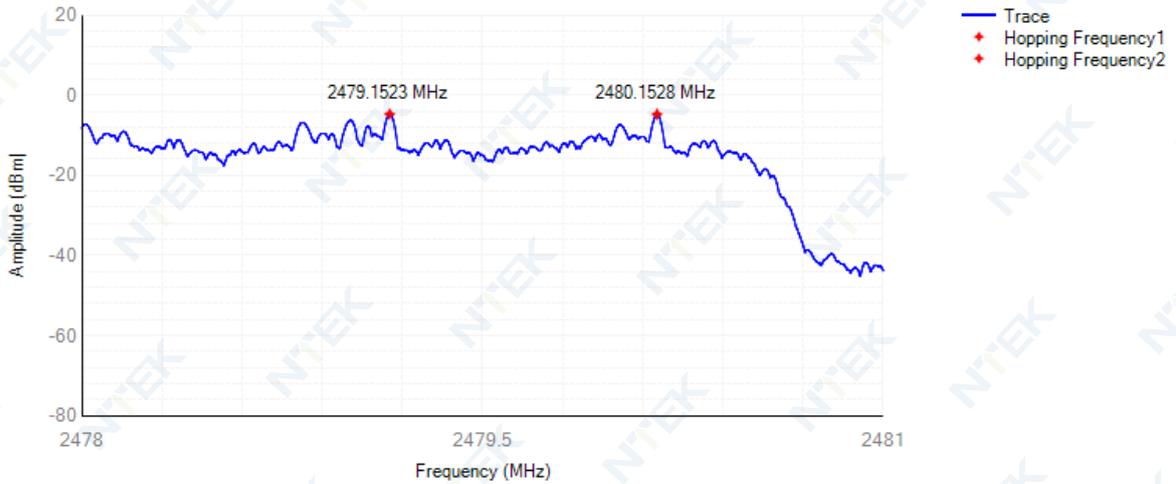


### HFS NVNT 3-DH5 2480MHz

Center Frequency: 2479.50 MHz

#### Hopping Frequency Separation

HFS: 1.0005

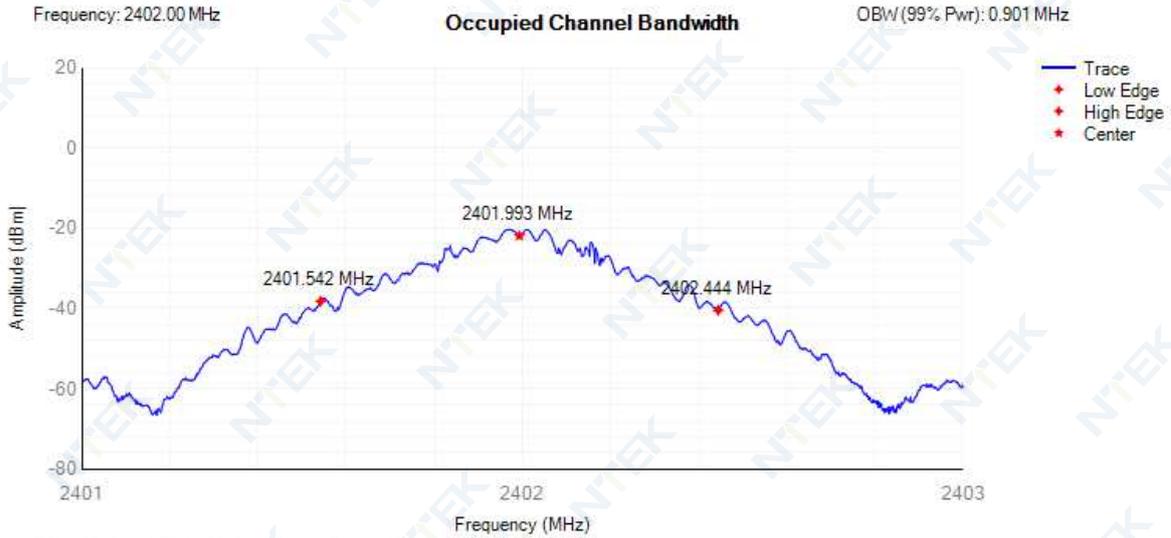


RBW: 30 KHz, VBW: 100 KHz, Sweep Points: 10001

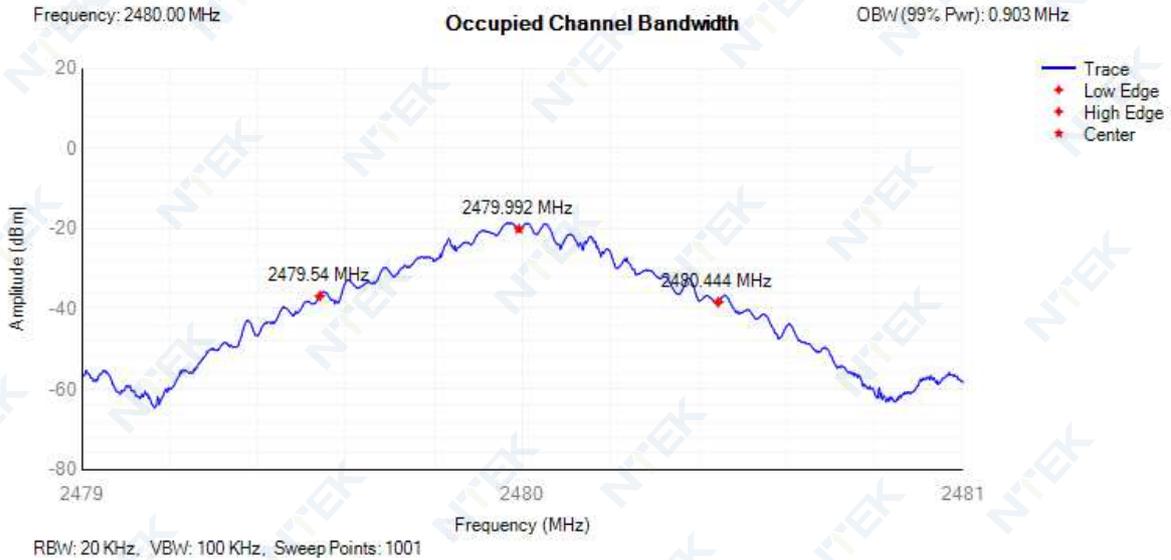
11.6 OCCUPIED CHANNEL BANDWIDTH

Condition	Mode	Frequency (MHz)	Center Frequency (MHz)	OBW (MHz)	Lower Edge (MHz)	Upper Edge (MHz)	Limit OBW (MHz)	Verdict
NVNT	1-DH5	2402	2401.993	0.901	2401.542	2402.444	2400 - 2483.5MHz	Pass
NVNT	1-DH5	2480	2479.992	0.903	2479.54	2480.444	2400 - 2483.5MHz	Pass
NVNT	2-DH5	2402	2401.995	1.213	2401.389	2402.601	2400 - 2483.5MHz	Pass
NVNT	2-DH5	2480	2479.989	1.183	2479.398	2480.58	2400 - 2483.5MHz	Pass
NVNT	3-DH5	2402	2401.986	1.219	2401.377	2402.595	2400 - 2483.5MHz	Pass
NVNT	3-DH5	2480	2479.986	1.207	2479.383	2480.589	2400 - 2483.5MHz	Pass

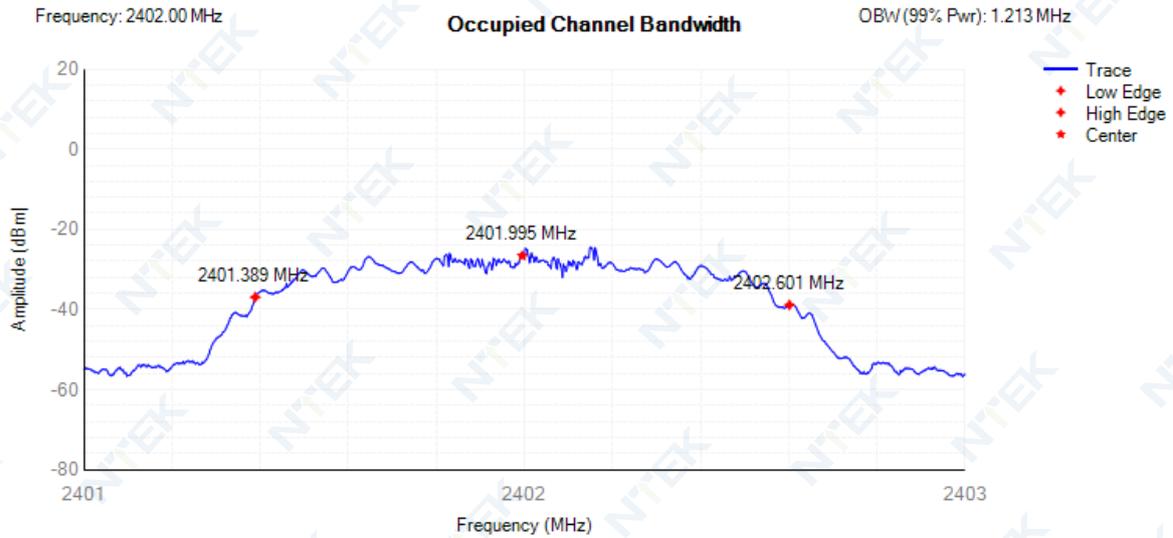
OBW NVNT 1-DH5 2402MHz



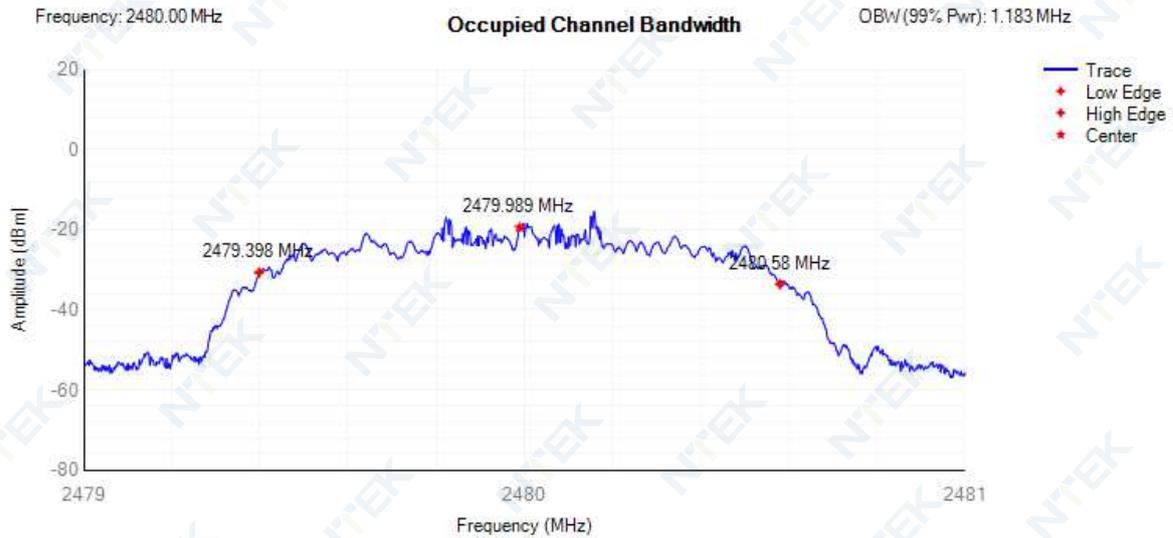
OBW NVNT 1-DH5 2480MHz



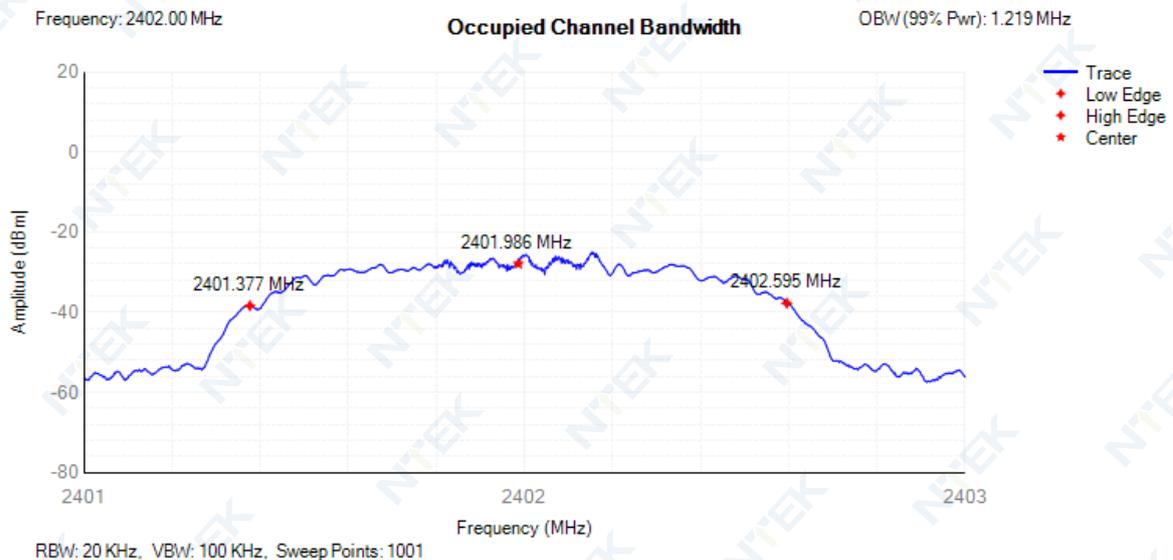
### OBW NVNT 2-DH5 2402MHz



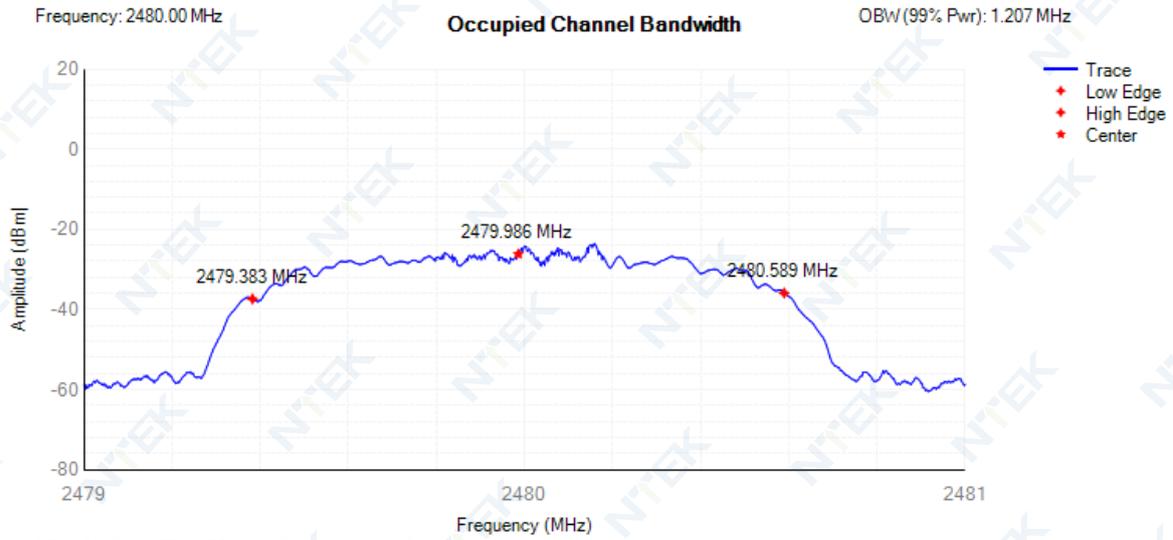
### OBW NVNT 2-DH5 2480MHz



### OBW NVNT 3-DH5 2402MHz

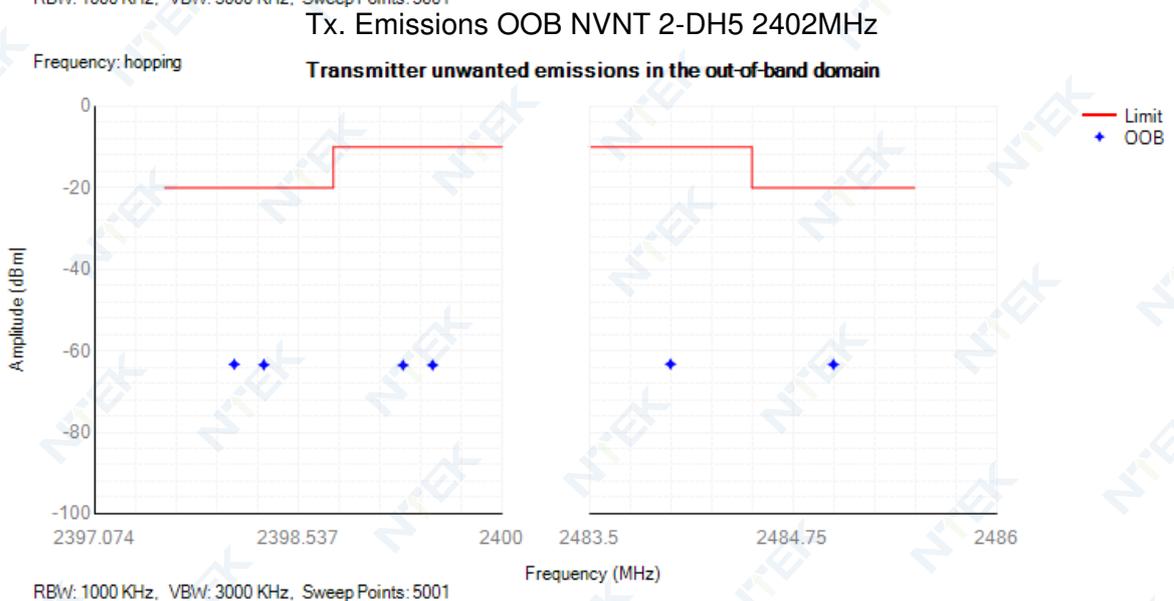
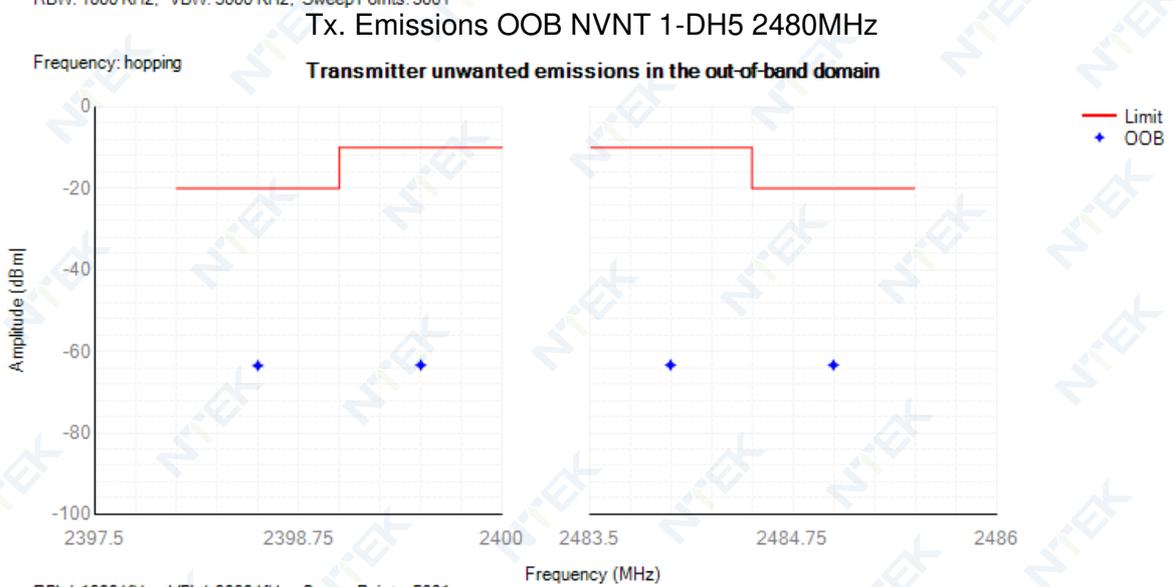
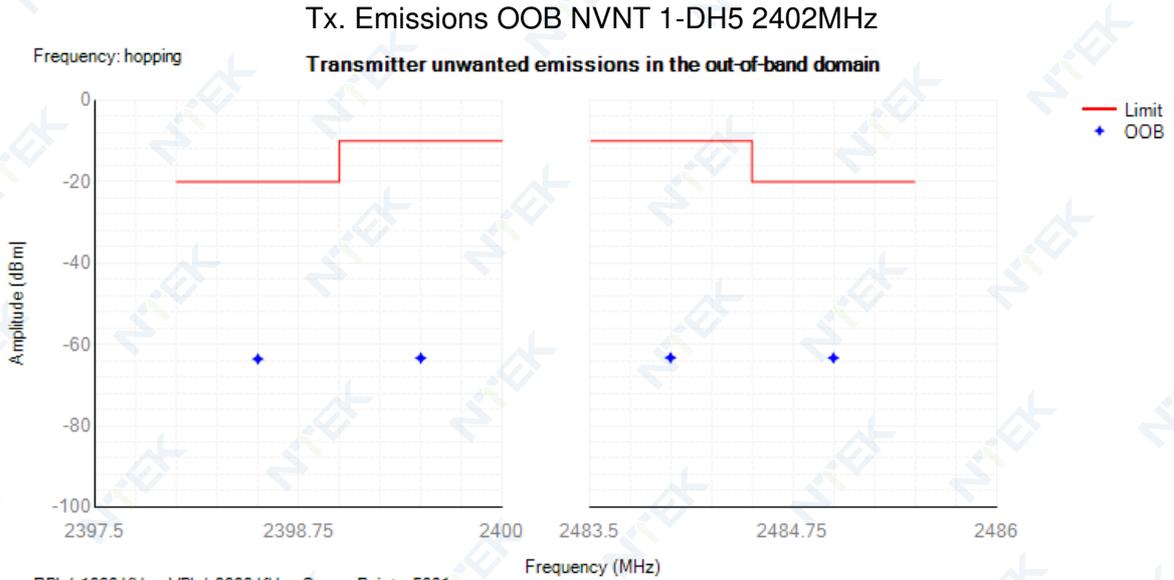


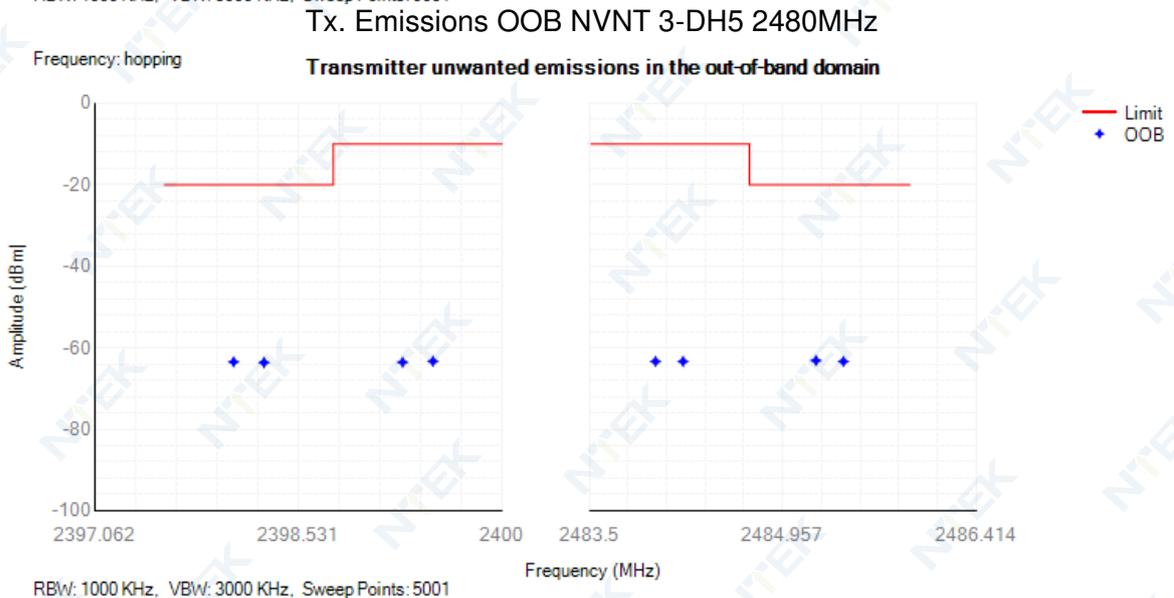
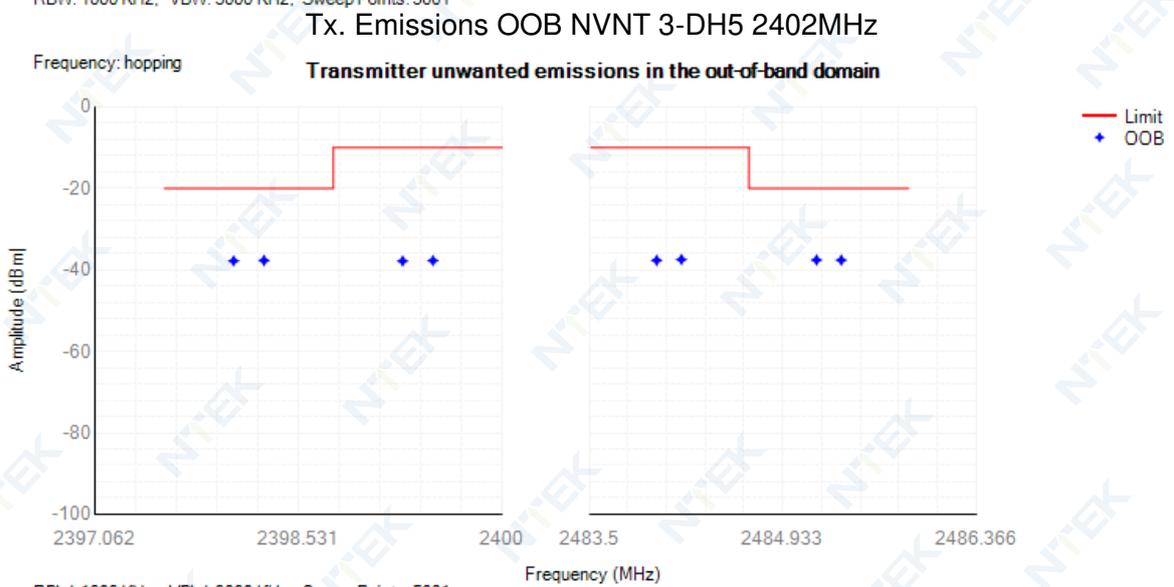
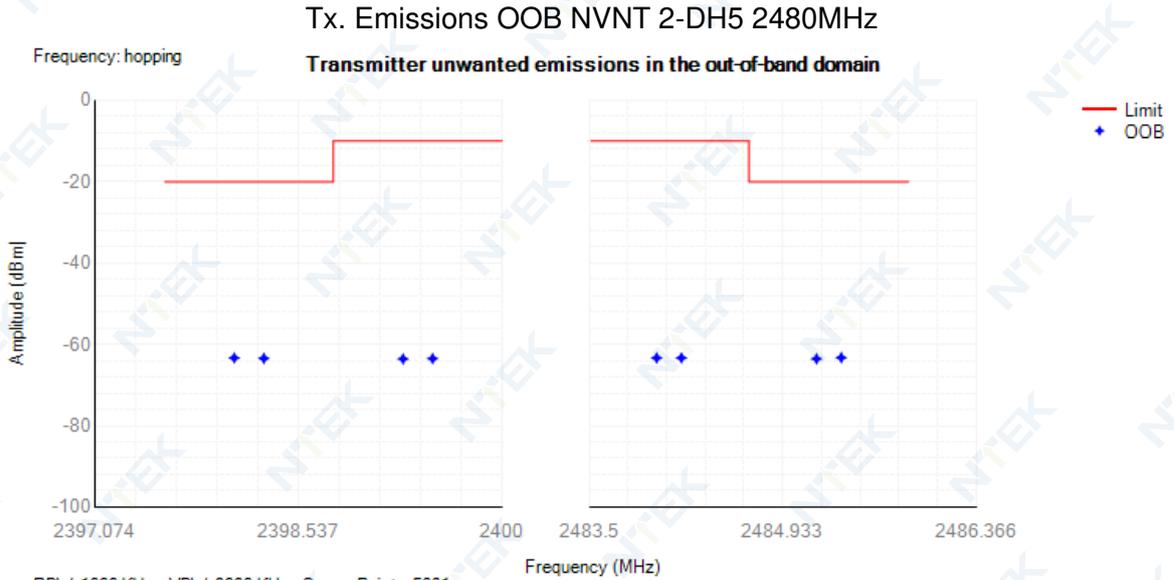
### OBW NVNT 3-DH5 2480MHz



**11.7 TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN**

Condition	Mode	Frequency (MHz)	OOB Frequency (MHz)	Level (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	1-DH5	hopping	2399.5	-63.36	-10	Pass
NVNT	1-DH5	hopping	2398.5	-63.58	-20	Pass
NVNT	1-DH5	hopping	2484	-63.26	-10	Pass
NVNT	1-DH5	hopping	2485	-63.32	-20	Pass
NVNT	1-DH5	hopping	2399.5	-63.37	-10	Pass
NVNT	1-DH5	hopping	2398.5	-63.49	-20	Pass
NVNT	1-DH5	hopping	2484	-63.34	-10	Pass
NVNT	1-DH5	hopping	2485	-63.35	-20	Pass
NVNT	2-DH5	hopping	2399.5	-63.5	-10	Pass
NVNT	2-DH5	hopping	2399.287	-63.53	-10	Pass
NVNT	2-DH5	hopping	2398.287	-63.44	-20	Pass
NVNT	2-DH5	hopping	2398.074	-63.31	-20	Pass
NVNT	2-DH5	hopping	2484	-63.27	-10	Pass
NVNT	2-DH5	hopping	2485	-63.37	-20	Pass
NVNT	2-DH5	hopping	2399.5	-63.49	-10	Pass
NVNT	2-DH5	hopping	2399.287	-63.57	-10	Pass
NVNT	2-DH5	hopping	2398.287	-63.43	-20	Pass
NVNT	2-DH5	hopping	2398.074	-63.32	-20	Pass
NVNT	2-DH5	hopping	2484	-63.32	-10	Pass
NVNT	2-DH5	hopping	2484.183	-63.31	-10	Pass
NVNT	2-DH5	hopping	2485.183	-63.54	-20	Pass
NVNT	2-DH5	hopping	2485.366	-63.25	-20	Pass
NVNT	3-DH5	hopping	2399.5	-37.73	-10	Pass
NVNT	3-DH5	hopping	2399.281	-37.84	-10	Pass
NVNT	3-DH5	hopping	2398.281	-37.7	-20	Pass
NVNT	3-DH5	hopping	2398.062	-37.81	-20	Pass
NVNT	3-DH5	hopping	2484	-37.67	-10	Pass
NVNT	3-DH5	hopping	2484.183	-37.47	-10	Pass
NVNT	3-DH5	hopping	2485.183	-37.58	-20	Pass
NVNT	3-DH5	hopping	2485.366	-37.61	-20	Pass
NVNT	3-DH5	hopping	2399.5	-63.31	-10	Pass
NVNT	3-DH5	hopping	2399.281	-63.55	-10	Pass
NVNT	3-DH5	hopping	2398.281	-63.62	-20	Pass
NVNT	3-DH5	hopping	2398.062	-63.46	-20	Pass
NVNT	3-DH5	hopping	2484	-63.34	-10	Pass
NVNT	3-DH5	hopping	2484.207	-63.35	-10	Pass
NVNT	3-DH5	hopping	2485.207	-63.13	-20	Pass
NVNT	3-DH5	hopping	2485.414	-63.35	-20	Pass



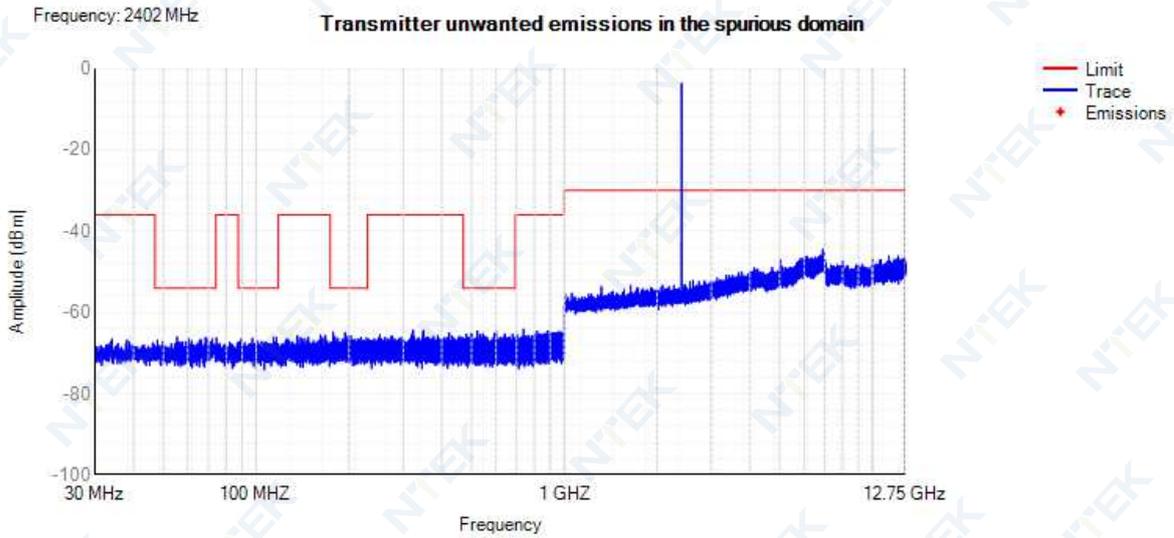


**11.8 TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN**

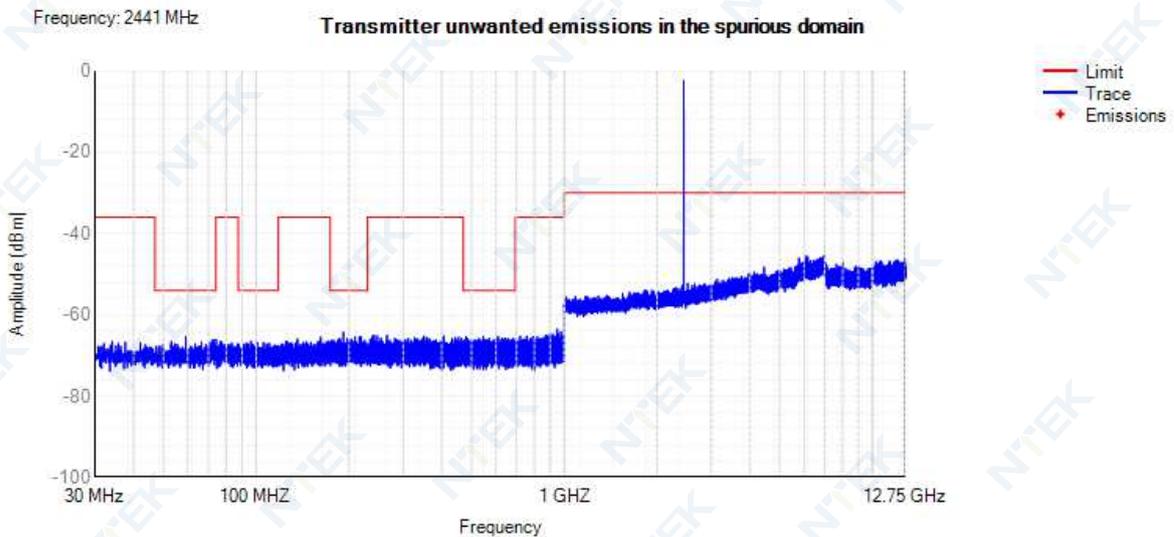
Condition	Mode	Frequency (MHz)	Range	Spur Freq (MHz)	Spur Level Peak (dBm)	Spur Level RMS (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	30 MHz -47 MHz	34.05	-66.52	NA	-36	Pass
NVNT	1-DH5	2402	47 MHz -74 MHz	55.45	-66.01	NA	-54	Pass
NVNT	1-DH5	2402	74 MHz -87.5 MHz	74.35	-66.26	NA	-36	Pass
NVNT	1-DH5	2402	87.5 MHz -118 MHz	113.85	-66.09	NA	-54	Pass
NVNT	1-DH5	2402	118 MHz -174 MHz	161.75	-65.55	NA	-36	Pass
NVNT	1-DH5	2402	174 MHz -230 MHz	177.7	-64.79	NA	-54	Pass
NVNT	1-DH5	2402	230 MHz -470 MHz	323.25	-64.34	NA	-36	Pass
NVNT	1-DH5	2402	470 MHz -694 MHz	600.65	-64.52	NA	-54	Pass
NVNT	1-DH5	2402	694 MHz -1000 MHz	737.15	-64.07	NA	-36	Pass
NVNT	1-DH5	2402	1000 MHz -2398 MHz	1642.5	-53.31	NA	-30	Pass
NVNT	1-DH5	2402	2485.5 MHz -12750 MHz	6907	-44.48	NA	-30	Pass
NVNT	1-DH5	2441	30 MHz -47 MHz	34.1	-66.55	NA	-36	Pass
NVNT	1-DH5	2441	47 MHz -74 MHz	59.05	-65.4	NA	-54	Pass
NVNT	1-DH5	2441	74 MHz -87.5 MHz	74.15	-66.09	NA	-36	Pass
NVNT	1-DH5	2441	87.5 MHz -118 MHz	96.15	-66.48	NA	-54	Pass
NVNT	1-DH5	2441	118 MHz -174 MHz	162.15	-65.49	NA	-36	Pass
NVNT	1-DH5	2441	174 MHz -230 MHz	191.9	-64.26	NA	-54	Pass
NVNT	1-DH5	2441	230 MHz -470 MHz	241.55	-65.01	NA	-36	Pass
NVNT	1-DH5	2441	470 MHz -694 MHz	609.7	-65.3	NA	-54	Pass
NVNT	1-DH5	2441	694 MHz -1000 MHz	948.9	-63.51	NA	-36	Pass
NVNT	1-DH5	2441	1000 MHz -2398 MHz	2299.5	-53.33	NA	-30	Pass
NVNT	1-DH5	2441	2485.5 MHz -12750 MHz	6990.5	-45.41	NA	-30	Pass
NVNT	1-DH5	2480	30 MHz -47 MHz	33.6011976047904	-66.49	NA	-36	Pass
NVNT	1-DH5	2480	47 MHz -74 MHz	72.2850299401198	-64.9	NA	-54	Pass
NVNT	1-DH5	2480	74 MHz -87.5 MHz	76.0023952095808	-66.71	NA	-36	Pass
NVNT	1-DH5	2480	87.5 MHz -118 MHz	113.292215568862	-66.02	NA	-54	Pass
NVNT	1-DH5	2480	118 MHz -174 MHz	124.792814371257	-65.12	NA	-36	Pass
NVNT	1-DH5	2480	174 MHz -230 MHz	215.519760479042	-65.62	NA	-54	Pass
NVNT	1-DH5	2480	230 MHz -470 MHz	432.520958083832	-65.01	NA	-36	Pass
NVNT	1-DH5	2480	470 MHz -694 MHz	685.069461077844	-64.64	NA	-54	Pass
NVNT	1-DH5	2480	694 MHz -1000 MHz	948.770059880239	-62.59	NA	-36	Pass
NVNT	1-DH5	2480	1000 MHz -2398 MHz	1731.73652694611	-53.04	NA	-30	Pass
NVNT	1-DH5	2480	2485.5 MHz -12750 MHz	6973.50299401198	-44.83	NA	-30	Pass
NVNT	2-DH5	2402	30 MHz -47 MHz	30.85	-65.97	NA	-36	Pass
NVNT	2-DH5	2402	47 MHz -74 MHz	73.4	-65.3	NA	-54	Pass
NVNT	2-DH5	2402	74 MHz -87.5 MHz	87.25	-66.02	NA	-36	Pass
NVNT	2-DH5	2402	87.5 MHz -118 MHz	91.35	-65.83	NA	-54	Pass
NVNT	2-DH5	2402	118 MHz -174 MHz	127.5	-65.37	NA	-36	Pass
NVNT	2-DH5	2402	174 MHz -230 MHz	204.3	-65.28	NA	-54	Pass
NVNT	2-DH5	2402	230 MHz -470 MHz	276.35	-63.68	NA	-36	Pass
NVNT	2-DH5	2402	470 MHz -694 MHz	547.35	-65.26	NA	-54	Pass
NVNT	2-DH5	2402	694 MHz -1000 MHz	948.2	-63.36	NA	-36	Pass
NVNT	2-DH5	2402	1000 MHz -2398 MHz	2328	-53.22	NA	-30	Pass
NVNT	2-DH5	2402	2485.5 MHz -12750 MHz	6975	-45.29	NA	-30	Pass
NVNT	2-DH5	2441	30 MHz -47 MHz	46.9	-65.98	NA	-36	Pass
NVNT	2-DH5	2441	47 MHz -74 MHz	69.25	-66.54	NA	-54	Pass
NVNT	2-DH5	2441	74 MHz -87.5 MHz	74.85	-66.16	NA	-36	Pass
NVNT	2-DH5	2441	87.5 MHz -118 MHz	88.55	-66.1	NA	-54	Pass
NVNT	2-DH5	2441	118 MHz -174 MHz	126.65	-66.24	NA	-36	Pass
NVNT	2-DH5	2441	174 MHz -230 MHz	193.2	-65.39	NA	-54	Pass
NVNT	2-DH5	2441	230 MHz -470 MHz	394.1	-64.2	NA	-36	Pass
NVNT	2-DH5	2441	470 MHz -694 MHz	576.8	-64.78	NA	-54	Pass
NVNT	2-DH5	2441	694 MHz -1000 MHz	948.85	-62.89	NA	-36	Pass
NVNT	2-DH5	2441	1000 MHz -2398 MHz	2397.5	-53.53	NA	-30	Pass
NVNT	2-DH5	2441	2485.5 MHz -12750 MHz	6875	-44.47	NA	-30	Pass
NVNT	2-DH5	2480	30 MHz -47 MHz	35.5760479041916	-66.16	NA	-36	Pass
NVNT	2-DH5	2480	47 MHz -74 MHz	72.5173652694611	-65.7	NA	-54	Pass
NVNT	2-DH5	2480	74 MHz -87.5 MHz	85.8766467065868	-65.47	NA	-36	Pass
NVNT	2-DH5	2480	87.5 MHz -118 MHz	95.0538922155689	-65.92	NA	-54	Pass
NVNT	2-DH5	2480	118 MHz -174 MHz	169.28502994012	-65.14	NA	-36	Pass
NVNT	2-DH5	2480	174 MHz -230 MHz	195.190419161677	-65.55	NA	-54	Pass
NVNT	2-DH5	2480	230 MHz -470 MHz	386.983233532934	-64.95	NA	-36	Pass
NVNT	2-DH5	2480	470 MHz -694 MHz	616.182035928144	-64.91	NA	-54	Pass
NVNT	2-DH5	2480	694 MHz -1000 MHz	946.446706586826	-64.03	NA	-36	Pass
NVNT	2-DH5	2480	1000 MHz -2398 MHz	1876.67664670659	-50.11	NA	-30	Pass
NVNT	2-DH5	2480	2485.5 MHz -12750 MHz	2590.11976047904	-43.9	NA	-30	Pass
NVNT	3-DH5	2402	30 MHz -47 MHz	30.8	-65.89	NA	-36	Pass
NVNT	3-DH5	2402	47 MHz -74 MHz	51.3	-66.87	NA	-54	Pass
NVNT	3-DH5	2402	74 MHz -87.5 MHz	74.15	-66.62	NA	-36	Pass
NVNT	3-DH5	2402	87.5 MHz -118 MHz	97.35	-65.06	NA	-54	Pass
NVNT	3-DH5	2402	118 MHz -174 MHz	152.1	-66.01	NA	-36	Pass
NVNT	3-DH5	2402	174 MHz -230 MHz	203.7	-65.19	NA	-54	Pass
NVNT	3-DH5	2402	230 MHz -470 MHz	389.9	-64.75	NA	-36	Pass
NVNT	3-DH5	2402	470 MHz -694 MHz	492.9	-64.76	NA	-54	Pass
NVNT	3-DH5	2402	694 MHz -1000 MHz	944.2	-61.43	NA	-36	Pass
NVNT	3-DH5	2402	1000 MHz -2398 MHz	2206.5	-53.13	NA	-30	Pass
NVNT	3-DH5	2402	2485.5 MHz -12750 MHz	6882	-45.08	NA	-30	Pass
NVNT	3-DH5	2441	30 MHz -47 MHz	46.55	-65.93	NA	-36	Pass
NVNT	3-DH5	2441	47 MHz -74 MHz	55.2	-65.11	NA	-54	Pass
NVNT	3-DH5	2441	74 MHz -87.5 MHz	78.8	-66.31	NA	-36	Pass
NVNT	3-DH5	2441	87.5 MHz -118 MHz	89.65	-66.29	NA	-54	Pass
NVNT	3-DH5	2441	118 MHz -174 MHz	122.1	-65.71	NA	-36	Pass
NVNT	3-DH5	2441	174 MHz -230 MHz	221	-65.51	NA	-54	Pass
NVNT	3-DH5	2441	230 MHz -470 MHz	402.8	-64.18	NA	-36	Pass
NVNT	3-DH5	2441	470 MHz -694 MHz	563.55	-64.44	NA	-54	Pass
NVNT	3-DH5	2441	694 MHz -1000 MHz	948.9	-61.69	NA	-36	Pass
NVNT	3-DH5	2441	1000 MHz -2398 MHz	2381.5	-52.81	NA	-30	Pass
NVNT	3-DH5	2441	2485.5 MHz -12750 MHz	6925.5	-44.11	NA	-30	Pass

NVNT	3-DH5	2480	30 MHz -47 MHz	31.95	-66.17	NA	-36	Pass
NVNT	3-DH5	2480	47 MHz -74 MHz	73.05	-64.57	NA	-54	Pass
NVNT	3-DH5	2480	74 MHz -87.5 MHz	84.4	-66.08	NA	-36	Pass
NVNT	3-DH5	2480	87.5 MHz -118 MHz	105.65	-66.07	NA	-54	Pass
NVNT	3-DH5	2480	118 MHz -174 MHz	164.6	-65.15	NA	-36	Pass
NVNT	3-DH5	2480	174 MHz -230 MHz	219.2	-65.41	NA	-54	Pass
NVNT	3-DH5	2480	230 MHz -470 MHz	370.1	-64.65	NA	-36	Pass
NVNT	3-DH5	2480	470 MHz -694 MHz	625.6	-65.02	NA	-54	Pass
NVNT	3-DH5	2480	694 MHz -1000 MHz	944.25	-63.2	NA	-36	Pass
NVNT	3-DH5	2480	1000 MHz -2398 MHz	2249	-53	NA	-30	Pass
NVNT	3-DH5	2480	2485.5 MHz -12750 MHz	6993.5	-45.05	NA	-30	Pass

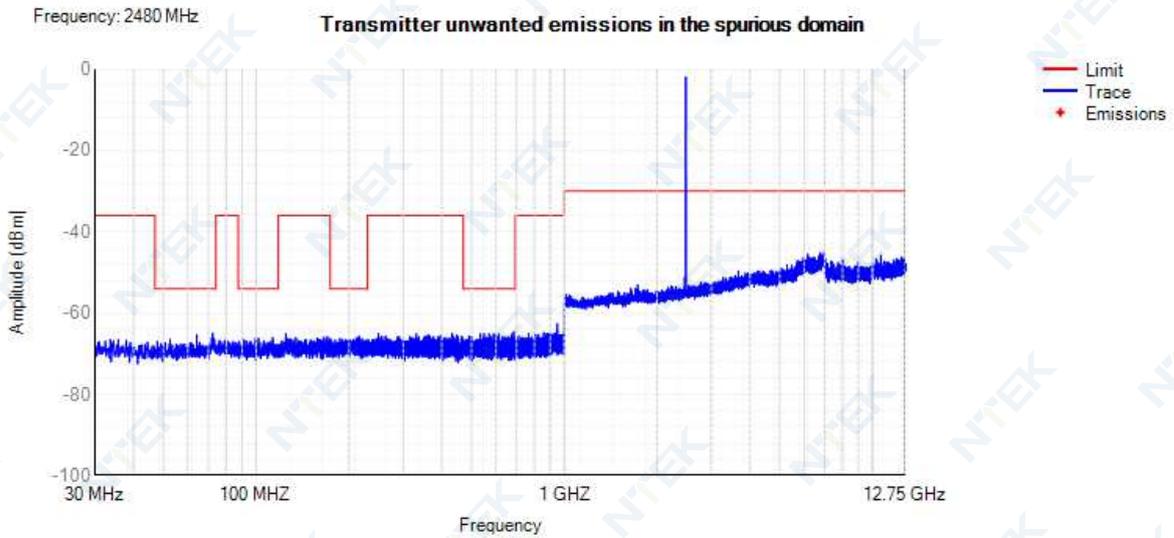
Tx. Spurious NVNT 1-DH5 2402MHz



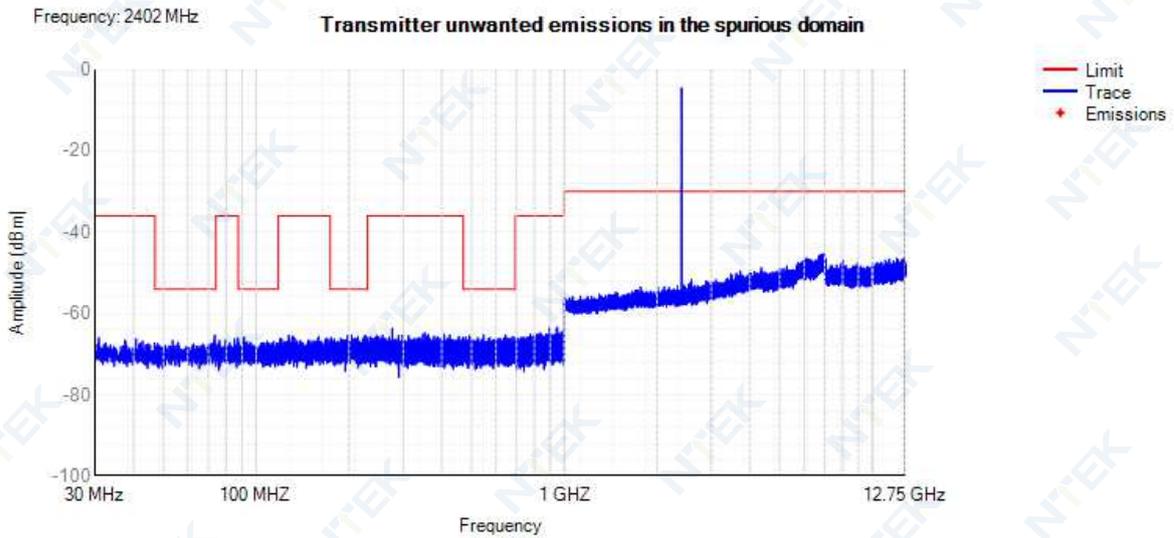
Tx. Spurious NVNT 1-DH5 2441MHz



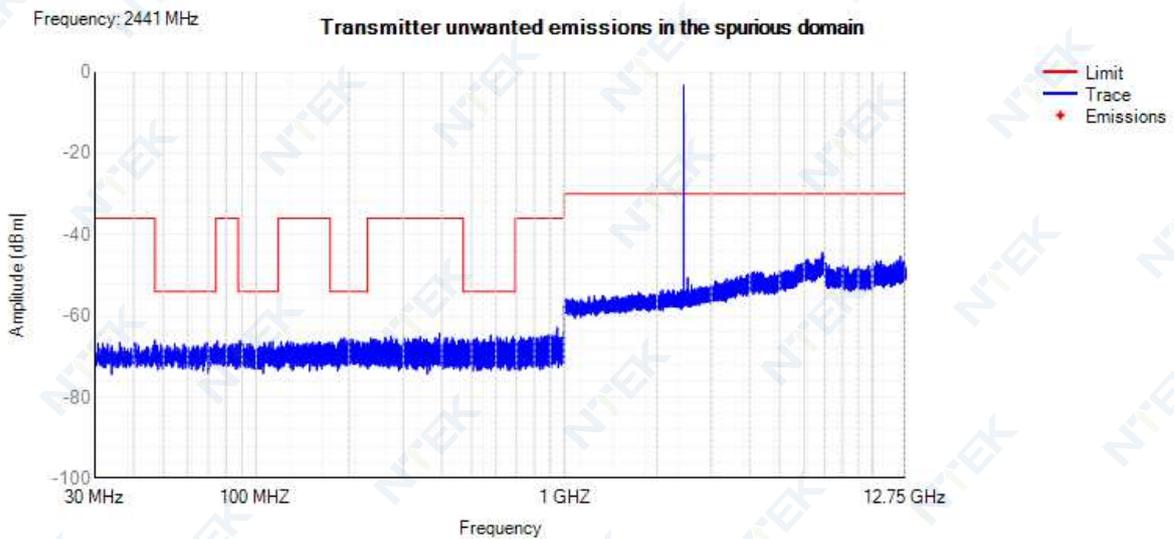
Tx. Spurious NVNT 1-DH5 2480MHz



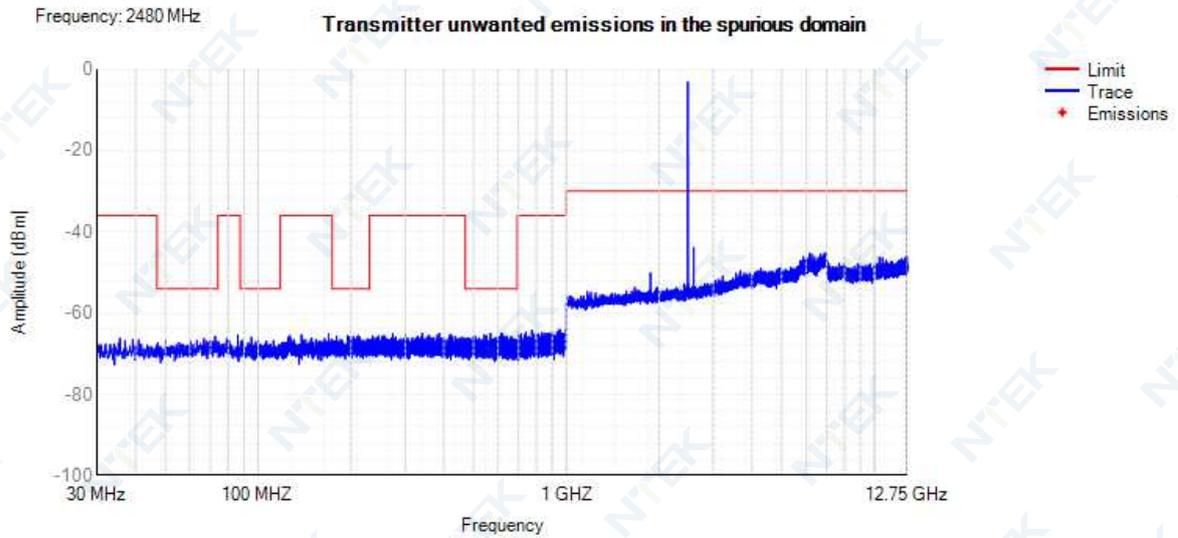
Tx. Spurious NVNT 2-DH5 2402MHz



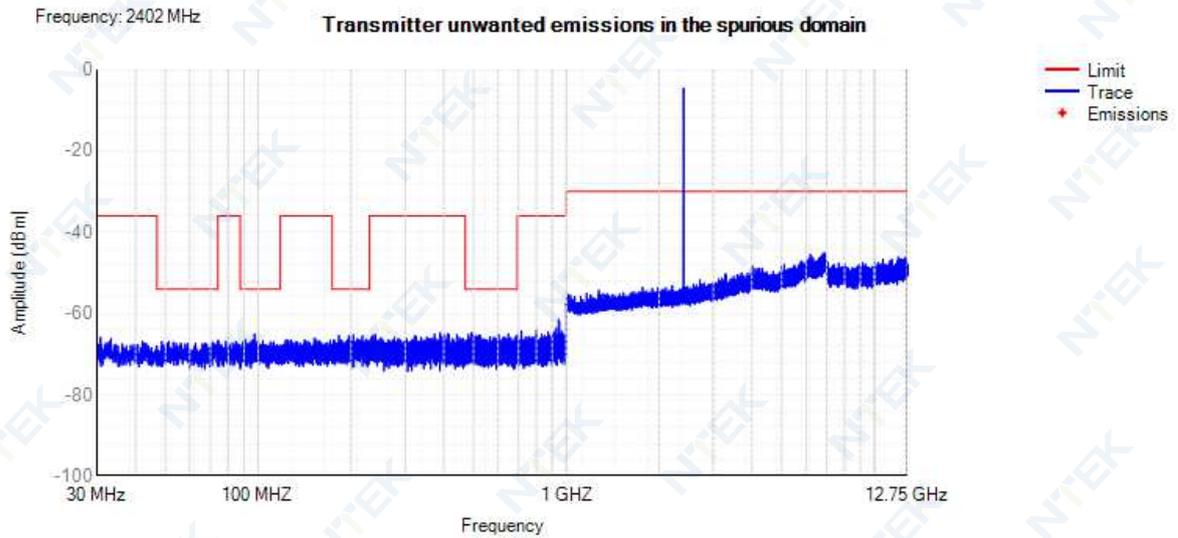
Tx. Spurious NVNT 2-DH5 2441MHz



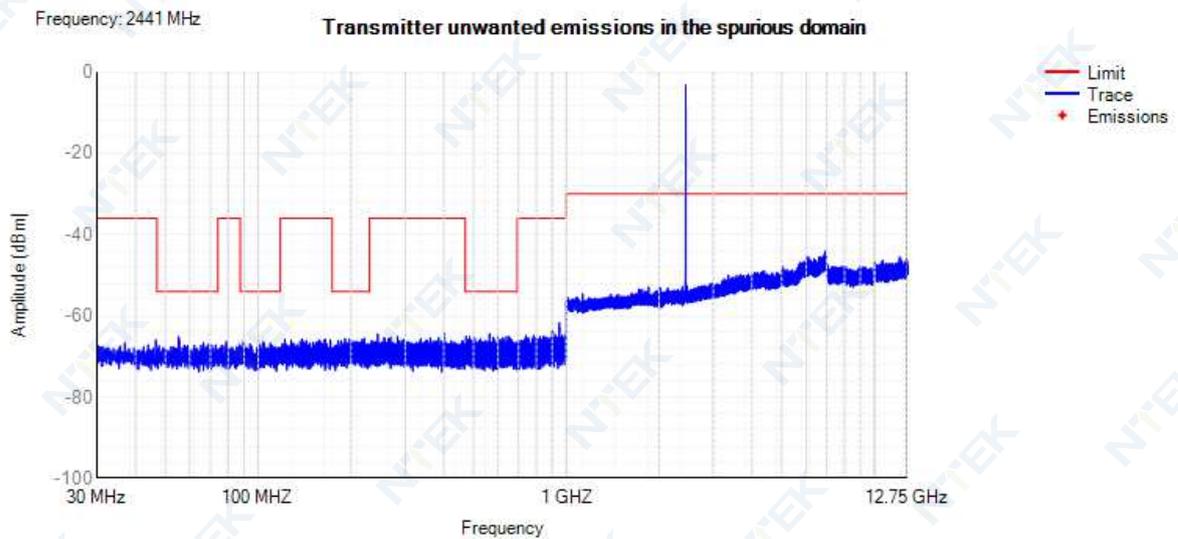
### Tx. Spurious NVNT 2-DH5 2480MHz



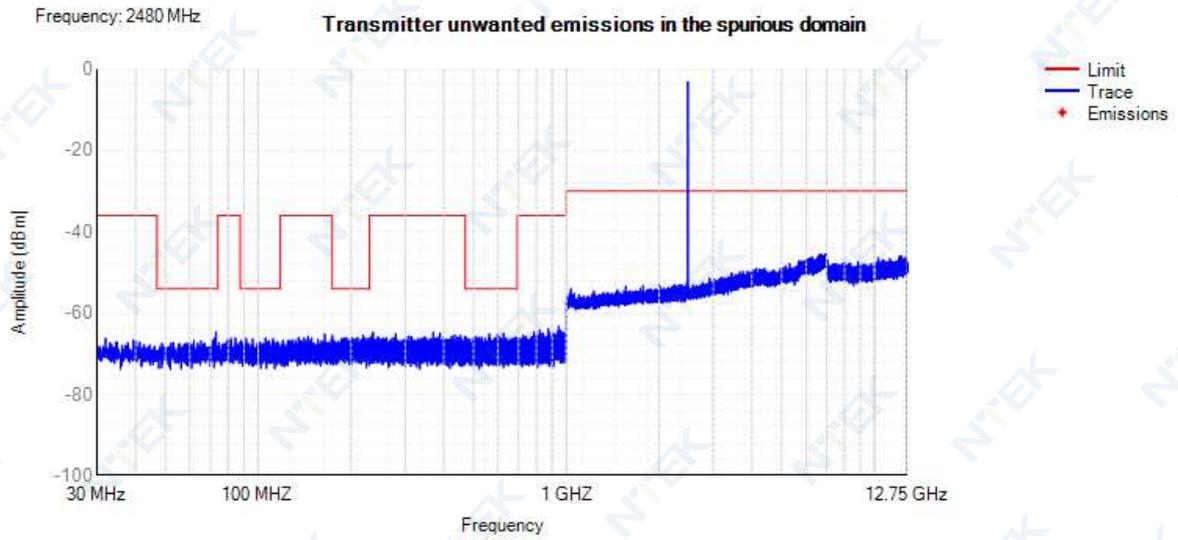
### Tx. Spurious NVNT 3-DH5 2402MHz



### Tx. Spurious NVNT 3-DH5 2441MHz



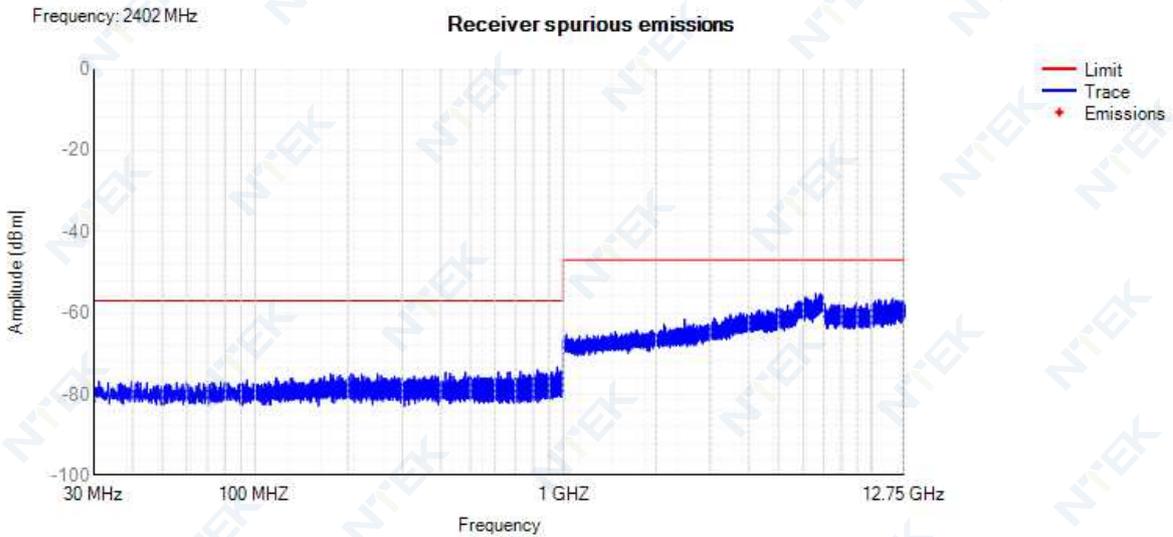
Tx. Spurious NVNT 3-DH5 2480MHz



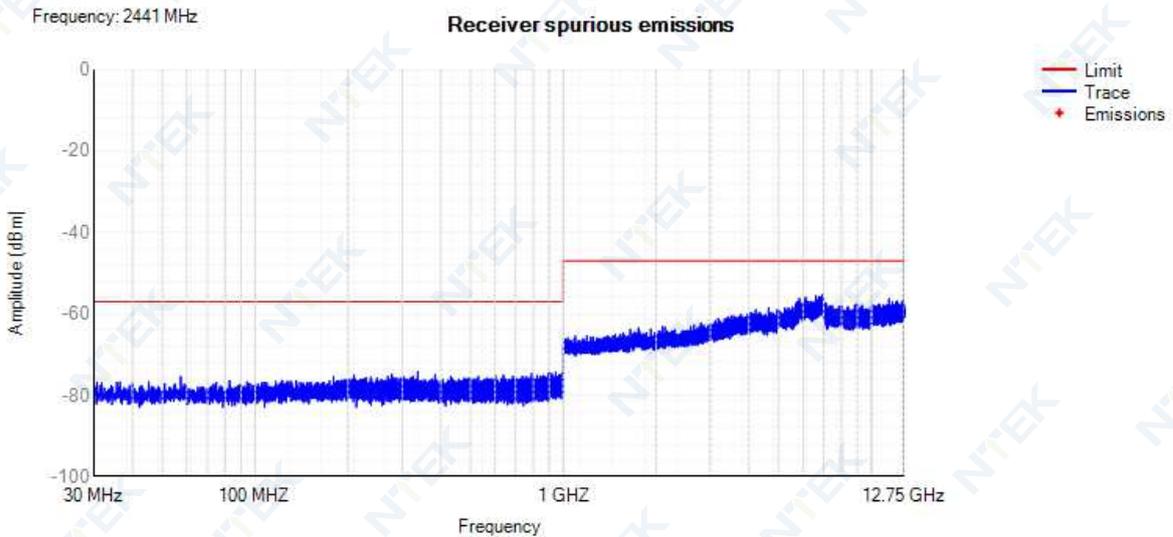
11.9 RECEIVER SPURIOUS EMISSIONS

Condition	Mode	Frequency (MHz)	Range	Spur Freq (MHz)	Spur Level Peak(dBm)	Spur Level RMS(dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	30 MHz -1000 MHz	956.00680307169	-73.26	NA	-57	Pass
NVNT	1-DH5	2402	1000 MHz -12750 MHz	6588.78653788878	-55.23	NA	-47	Pass
NVNT	1-DH5	2441	30 MHz -1000 MHz	337.45	-74.18	NA	-57	Pass
NVNT	1-DH5	2441	1000 MHz -12750 MHz	6977	-55.03	NA	-47	Pass
NVNT	1-DH5	2480	30 MHz -1000 MHz	627.35	-73.25	NA	-57	Pass
NVNT	1-DH5	2480	1000 MHz -12750 MHz	6923	-55.32	NA	-47	Pass
NVNT	2-DH5	2402	30 MHz -1000 MHz	557.9	-72.81	NA	-57	Pass
NVNT	2-DH5	2402	1000 MHz -12750 MHz	6956.5	-54.81	NA	-47	Pass
NVNT	2-DH5	2441	30 MHz -1000 MHz	995.8	-73.59	NA	-57	Pass
NVNT	2-DH5	2441	1000 MHz -12750 MHz	6974	-55.18	NA	-47	Pass
NVNT	2-DH5	2480	30 MHz -1000 MHz	970.4	-73.81	NA	-57	Pass
NVNT	2-DH5	2480	1000 MHz -12750 MHz	6951	-54.71	NA	-47	Pass
NVNT	3-DH5	2402	30 MHz -1000 MHz	998.8	-74.42	NA	-57	Pass
NVNT	3-DH5	2402	1000 MHz -12750 MHz	6896	-53.92	NA	-47	Pass
NVNT	3-DH5	2441	30 MHz -1000 MHz	101.75	-74.05	NA	-57	Pass
NVNT	3-DH5	2441	1000 MHz -12750 MHz	6805	-54.02	NA	-47	Pass
NVNT	3-DH5	2480	30 MHz -1000 MHz	893.45	-73.18	NA	-57	Pass
NVNT	3-DH5	2480	1000 MHz -12750 MHz	6997.5	-54.83	NA	-47	Pass

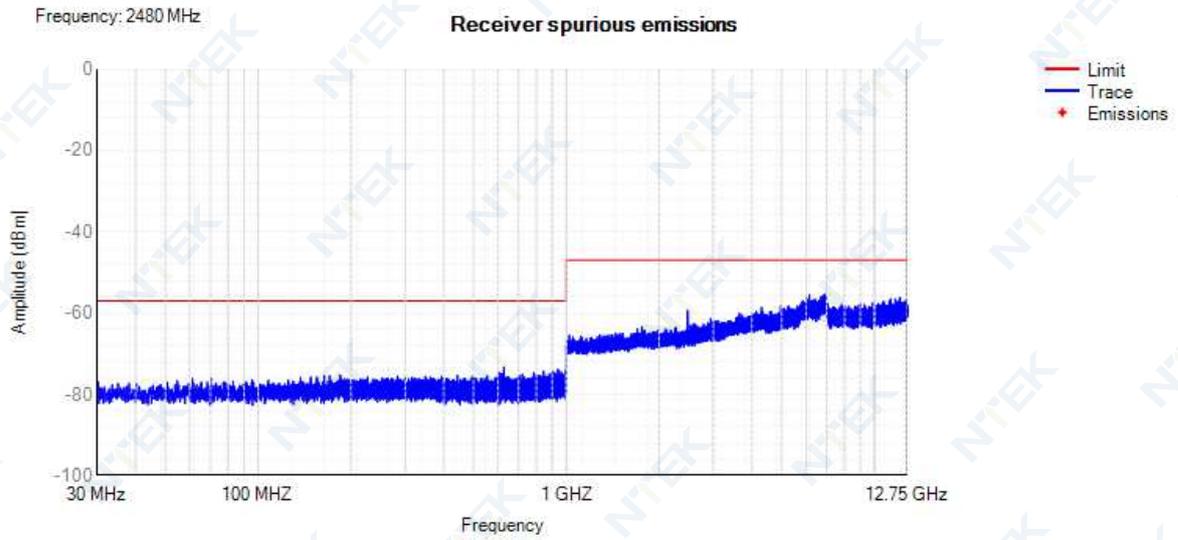
Rx. Spurious NVNT 1-DH5 2402MHz



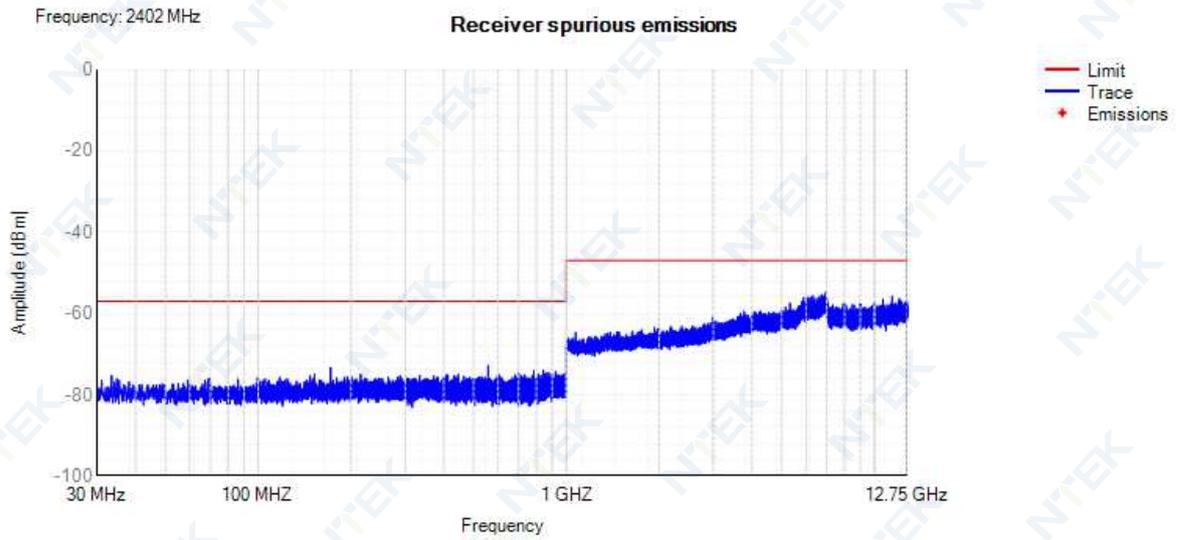
Rx. Spurious NVNT 1-DH5 2441MHz



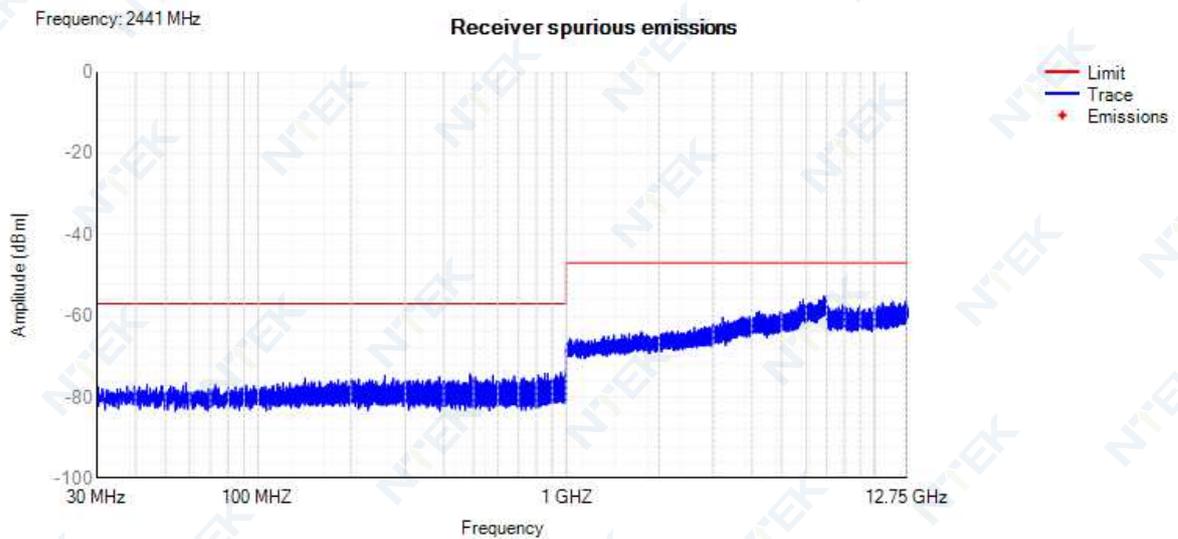
Rx. Spurious NVNT 1-DH5 2480MHz



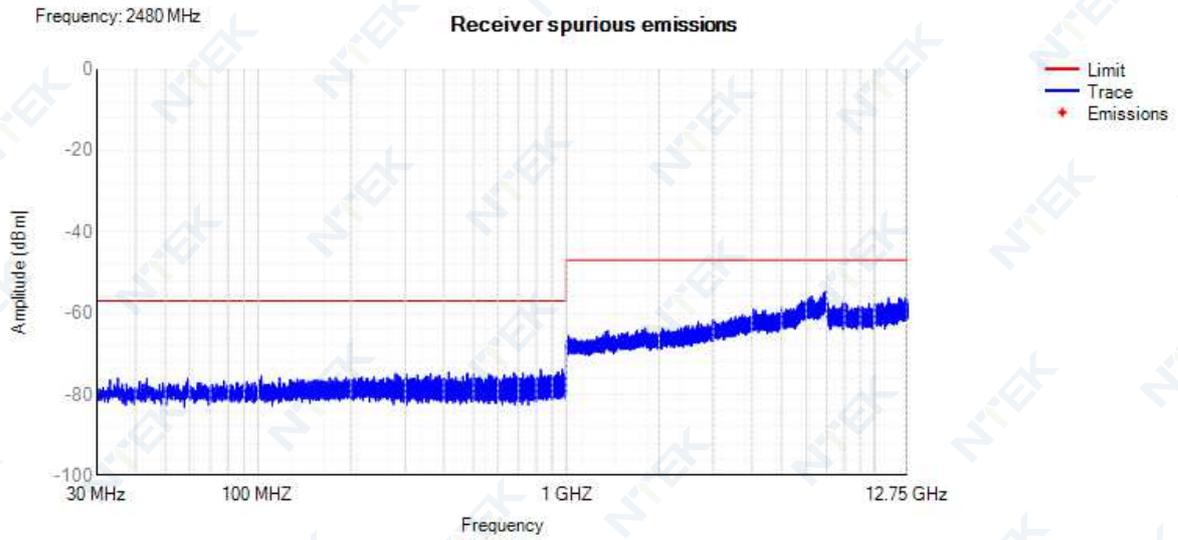
Rx. Spurious NVNT 2-DH5 2402MHz



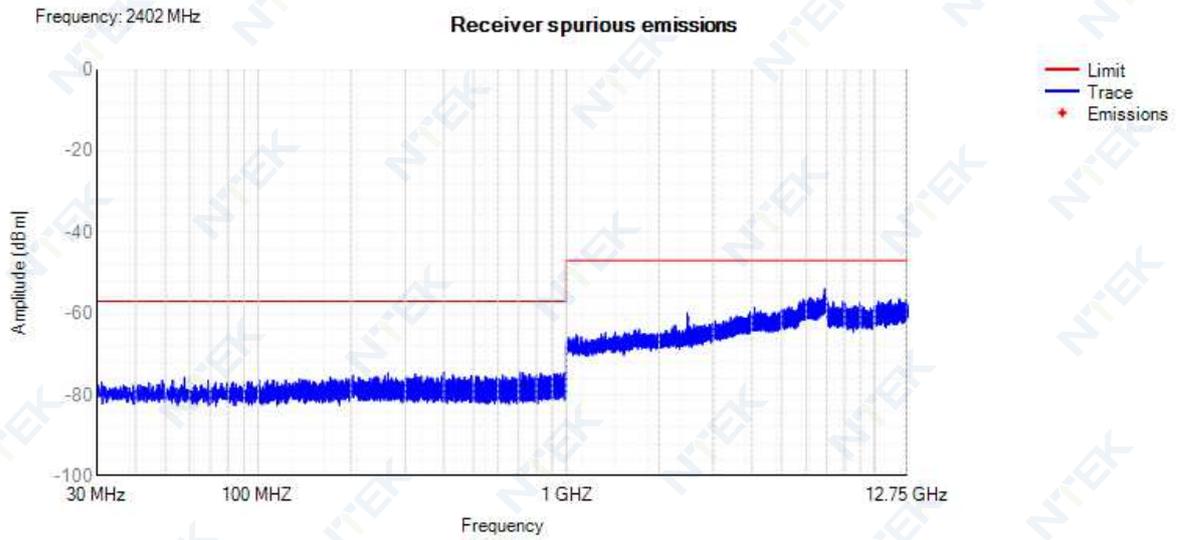
Rx. Spurious NVNT 2-DH5 2441MHz



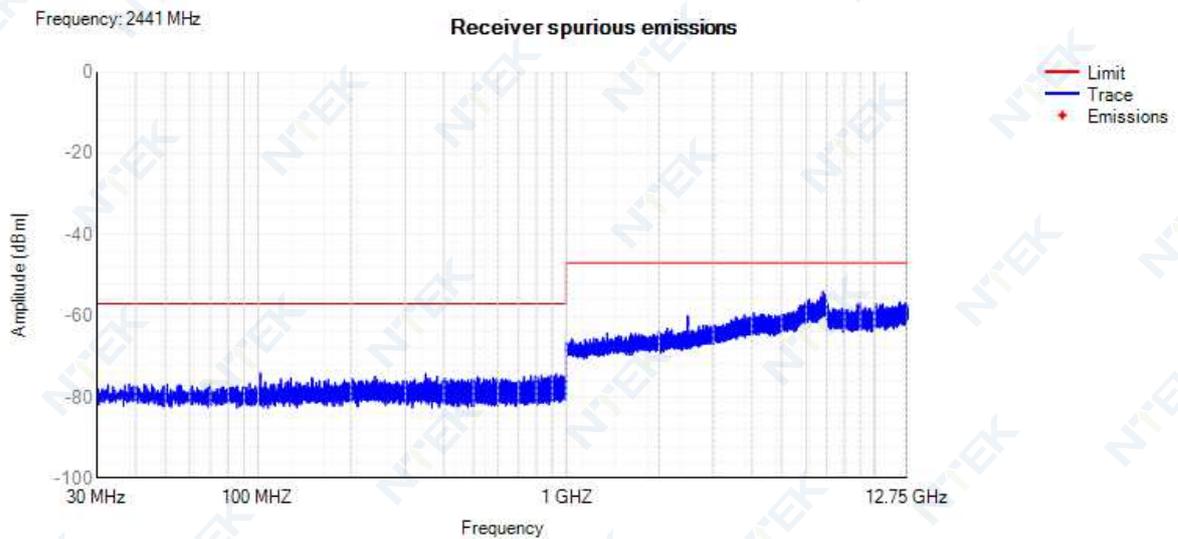
Rx. Spurious NVNT 2-DH5 2480MHz



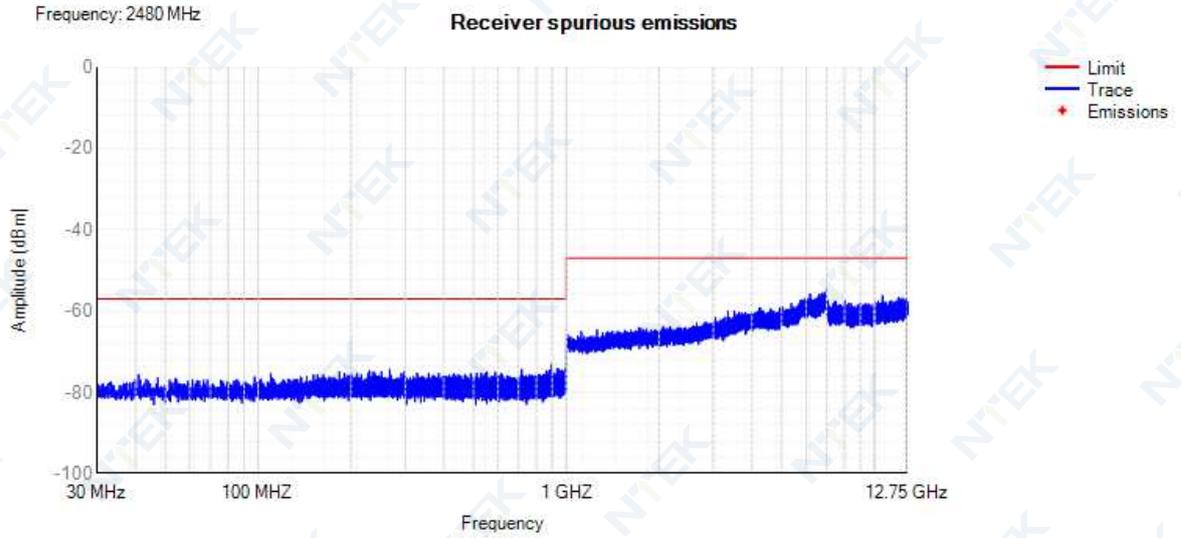
Rx. Spurious NVNT 3-DH5 2402MHz



Rx. Spurious NVNT 3-DH5 2441MHz



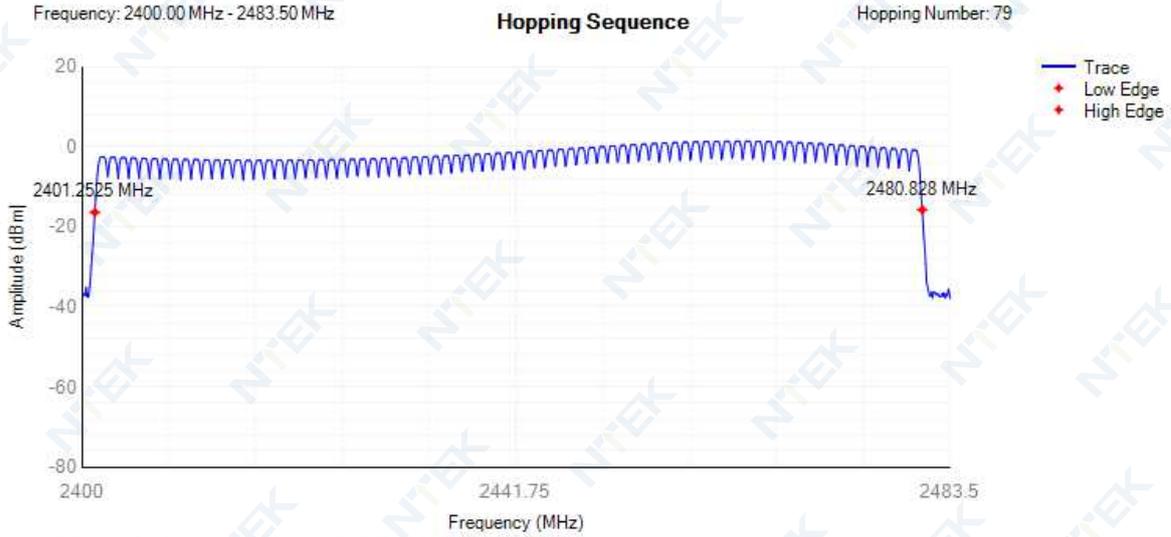
Rx. Spurious NVNT 3-DH5 2480MHz



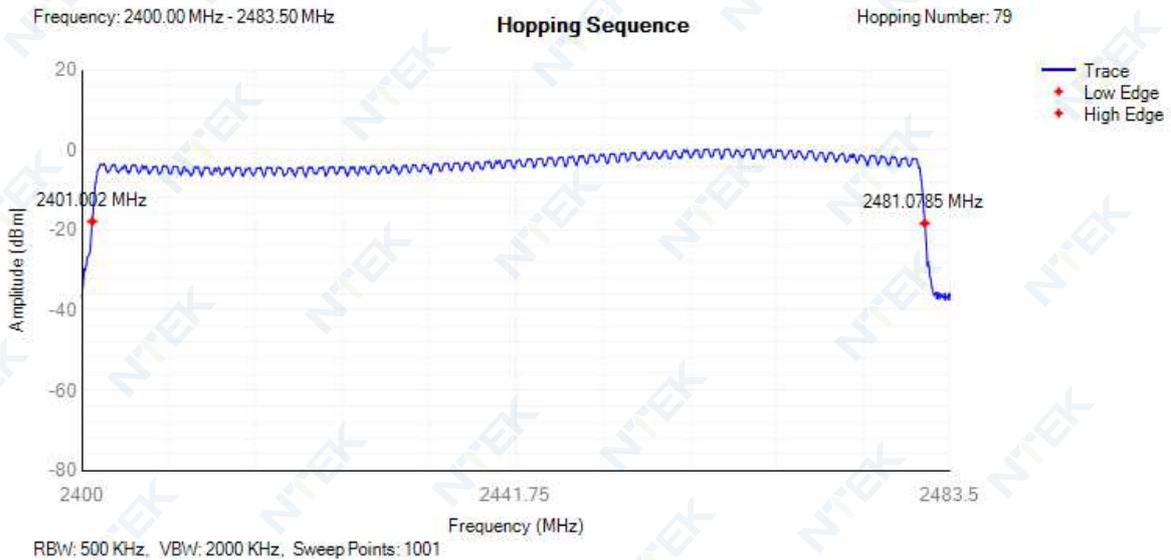
11.10 HOPPING SEQUENCE

Condition	Mode	Hopping Number	Limit	Band Allocation (%)	Limit Band Allocation (%)	Verdict
NVNT	1-DH5	79	15	95.3	70	Pass
NVNT	2-DH5	79	15	95.9	70	Pass
NVNT	3-DH5	79	15	95.9	70	Pass

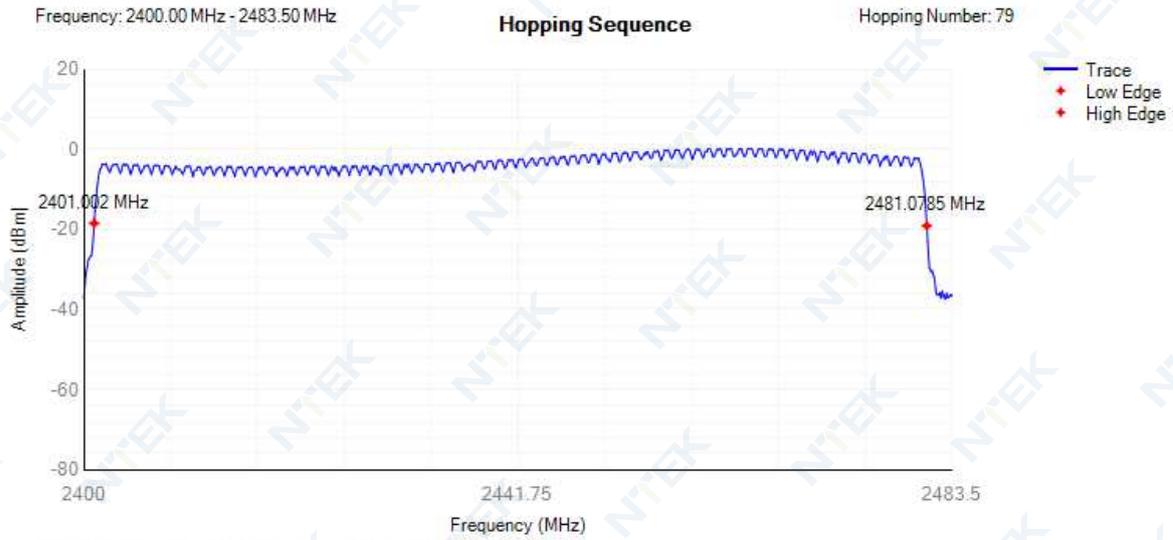
Hopping Seq. NVNT 1-DH5 2441MHz



Hopping Seq. NVNT 2-DH5 2441MHz

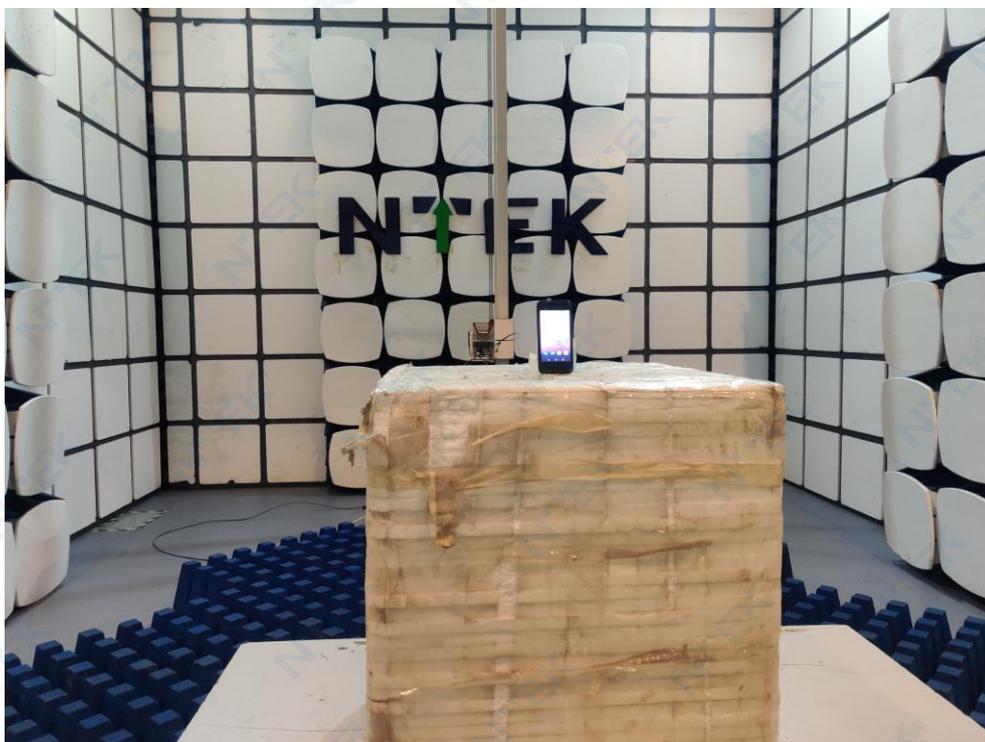
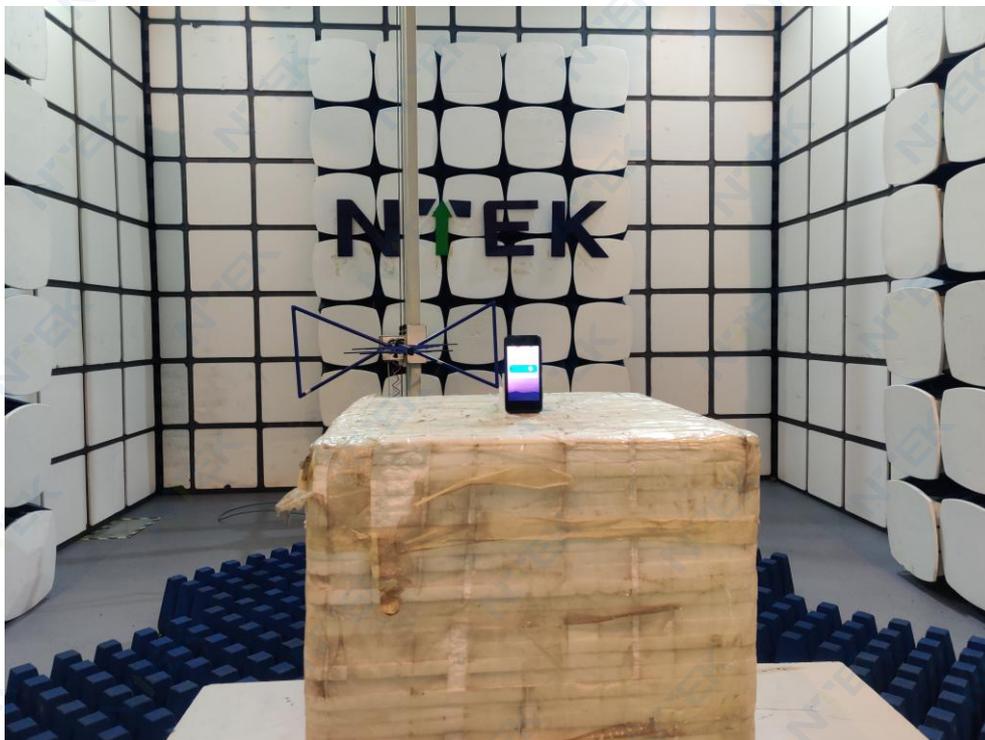


### Hopping Seq. NVNT 3-DH5 2441MHz



**12. EUT TEST PHOTO**

**SPURIOUS EMISSIONS MEASUREMENT PHOTOS**



END OF REPORT