



RADIO TEST REPORT

ETSI EN 300 328 V2.2.2 (2019-07)

Product : Smart phone

Trade Mark : Blackview

Model Name : A53

Family Model : N/A

Report No. : STR221216001001E

Prepared for

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TEST RESULT CERTIFICATION

Applicant's name : DOKE COMMUNICATION (HK) LIMITED
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Product description

Product name..... : Smart phone
Trademark : Blackview
Model Name : A53
Family Model : N/A

Standards : ETSI 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 article 3.2 of the Directive 2014/53/EU requirements. And it is applicable only to the tested sample identified in the report.

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Test Sample Number T221216001R0030

Date of Test.....

Date (s) of performance of tests..... Dec 16, 2022 ~ Jan 11, 2023

Date of Issue..... Jan 11, 2023

Test Result..... **Pass**

Testing Engineer : 
 (Mary Hu)

Authorized Signatory : 
 (Alex Li)

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1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

| | | |
|---------------------|--|-----------------------|
| Equipment | Smart phone | |
| Trade Mark | Blackview | |
| Model Name. | A53 | |
| Family Model | N/A | |
| Model Difference | N/A | |
| Product Description | The EUT is Smart phone | |
| | Operation Frequency: | 2402~2480 MHz |
| | Modulatin Type: | GFSK,π/4-DQPSK,8-DPSK |
| | Modulation Technology: | FHSS |
| | Adaptive/non-adaptive | Adaptive equipment |
| | Receiver categories | 2 |
| | Number Of Channel | 79CH |
| | Antenna Designation: | PIFA Antenna |
| | Antenna Gain(Peak) | 1.0 dBi |
| | 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: QZ-01000EA00 Input: 100-240V~50/60Hz 0.3A Output: 5.0V---2.0A (10.0W) | |
| Battery | DC 3.87V, 5080mAh, 19.66Wh | |
| Rating | DC 3.87V from battery or DC 5V from adapter | |
| I/O Ports | Refer to users manual | |
| Hardware Version | HCT-M659MB-A2 | |
| Software Version | A53_EEA_M659_V1.0 | |

Note:

1. 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: 331.351ms 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:/.. μ 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)
GFSK
- Hopping Frequency Separation (only for FHSS equipment)
 $\pi/4$ -DQPSK
- Medium Utilization
N/A
- Adaptivity
N/A
- Receiver Blocking
8-DPSK
- Nominal Channel Bandwidth
8-DPSK
- Transmitter unwanted emissions in the OOB domain
GFSK
- 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: 1.171MHz
- 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: 1.0 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 | 1.0 | 8.73 | |
| 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 3.87V

In case of DC, indicate the type of power source

- Internal Power Supply
- External Power Supply or AC/DC adapter: DC 5V
- Battery: DC 3.87V
- 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):

8-DPSK(CH00) =0.87%

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 3.87V | / |

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 | Smart phone | A53 | 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 | 2022.04.01 | 2023.03.31 | 1 year |
| Test Cable (30MHz-1GHz) | N/A | R-01 | N/A | 2022.06.17 | 2025.06.16 | 3 year |
| Test Cable (1-18GHz) | N/A | R-02 | N/A | 2022.06.17 | 2025.06.16 | 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 | 2022.04.01 | 2023.03.31 | 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 | 2022.06.17 | 2023.06.16 | 1 year |
| ESG VETCTOR SIGNAL GENERAROR | Agilent | E4438C | MY45093347 | 2022.04.01 | 2023.03.31 | 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 | 2022.06.17 | 2023.06.16 | 1 year |
| MXG Vector Signal Generator | Agilent | N5182A | MY47070317 | 2022.06.16 | 2023.06.15 | 1 year |
| Wideband Radio Communication Tester Specifications | R&S | CMW500 | 148500 | 2022.06.16 | 2023.06.15 | 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:

| ETSI EN 300 328 V2.2.2 (2019-07) | | |
|----------------------------------|--|----------------------------------|
| Clause | Test Item | Results |
| TRANSMITTER PARAMETERS | | |
| 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 |
| RECEIVER PARAMETERS | | |
| 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 ETSI 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 ETSI 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

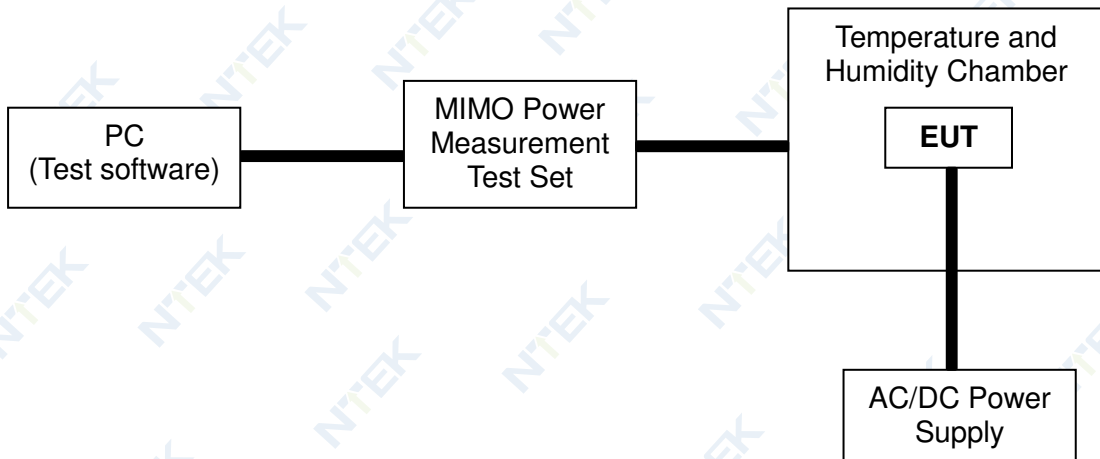
Refer to chapter 5.4.2.2 of ETSI EN 300 328 V2.2.2 (2019-07)

| 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 : | Smart phone | Model Name : | A53 |
| Temperature : | 20°C | Relative Humidity : | 55 % |
| Pressure : | 1012 hPa | Test Voltage : | DC 3.87V |
| 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 ETSI EN 300 328 V2.2.2 (2019-07)

| Accumulated Transmit Time | |
|--|---|
| Condition | Limit |
| <input type="checkbox"/> Non-adaptive frequency hopping systems | $\leq 15 \text{ ms} [15 \text{ ms} * \text{the minimum number of hopping frequencies (N)}]$ |
| <input checked="" type="checkbox"/> Adaptive frequency hopping systems | $\leq 400 \text{ ms in } [400 \text{ ms} * \text{the minimum number of hopping frequencies (N)}]$ |
| 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 ETSI 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 : | Smart phone | Model Name : | A53 |
| Temperature : | 26°C | Relative Humidity | 60 % |
| Pressure : | 1012 hPa | Test Voltage : | DC 3.87V |
| 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 ETSI 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 ETSI 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 : | Smart phone | Model Name : | A53 |
| Temperature : | 26°C | Relative Humidity : | 60 % |
| Pressure : | 1012 hPa | Test Voltage : | DC 3.87V |
| 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 ETSI 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. |

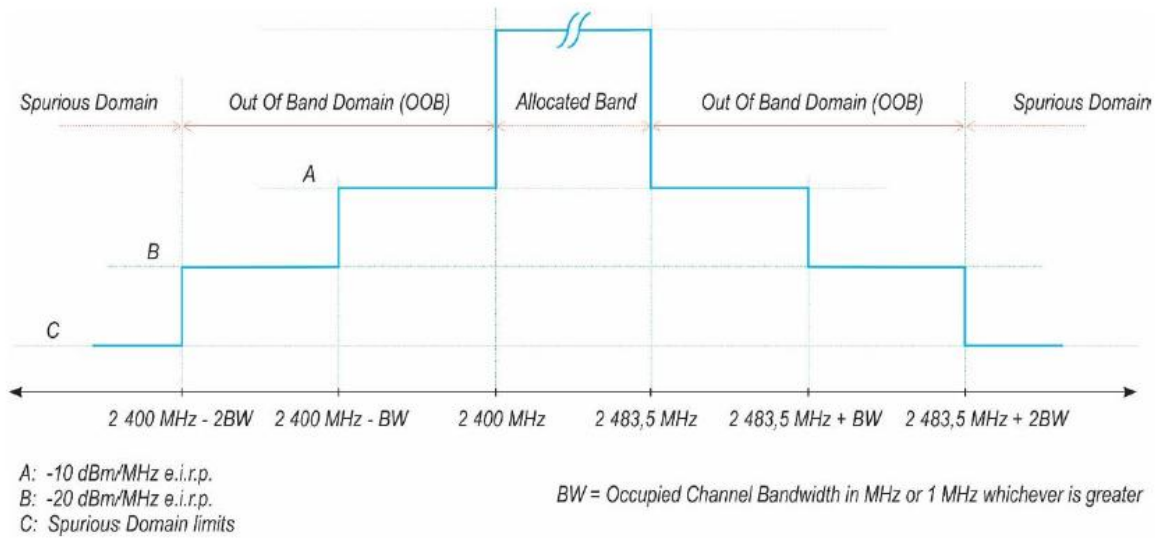


Figure 1: Transmit mask

6.2 TEST PROCEDURE

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

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

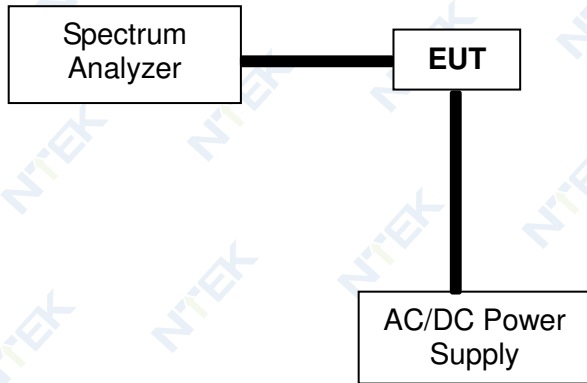
The setting of the Spectrum Analyzer

| | |
|--------------------------|-------------------|
| 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 ETSI 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 : | Smart phone | Model Name : | A53 |
| Temperature : | 26°C | Relative Humidity : | 60 % |
| Pressure : | 1012 hPa | Test Voltage : | DC 3.87V |
| 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 ETSI 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 ETSI 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 : | Smart phone | Model Name : | A53 |
| Temperature : | 26°C | Relative Humidity : | 60 % |
| Pressure : | 1012 hPa | Test Voltage : | DC 3.87V |
| 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 ETSI 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 ETSI 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

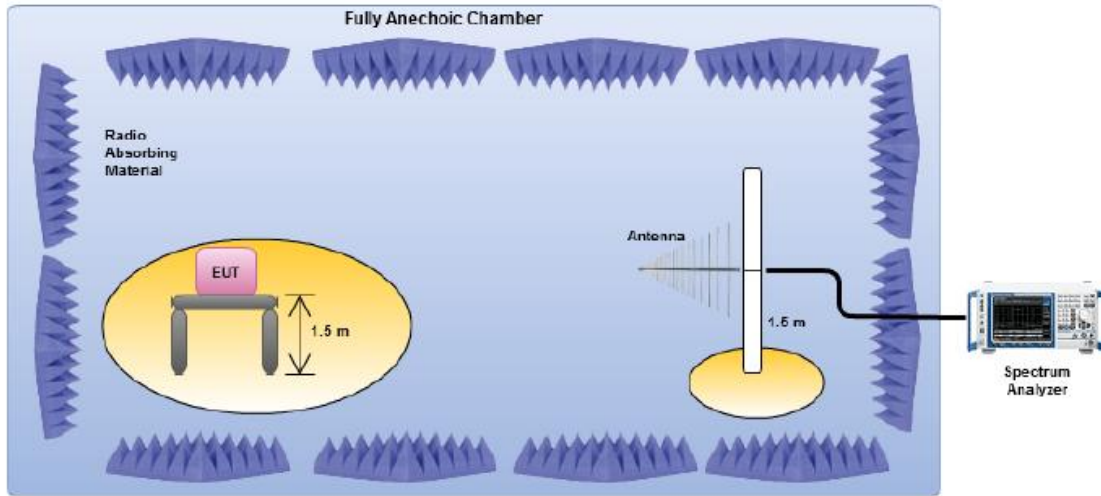
| | |
|-----|-------------------------|
| RBW | 100K(<1GHz) / 1M(>1GHz) |
| VBW | 300K(<1GHz) / 3M(>1GHz) |

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 : | Smart phone | Model Name : | A53 |
| Temperature : | 24 °C | Relative Humidity | 54% |
| Pressure : | 1010 hPa | Test Power : | DC 3.87V |
| Test Mode : | BT-GFSK (CH00) | | |

| Polar (H/V) | Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Remark |
|-------------|-----------|---------------|--------|----------------|--------|--------|--------|
| | (MHz) | (dBm) | (dB) | (dBm) | (dBm) | (dB) | |
| V | 31.622 | -79.47 | 15.77 | -63.70 | -36 | -27.70 | peak |
| V | 116.846 | -87.96 | 16.26 | -71.70 | -54 | -17.70 | peak |
| V | 180.101 | -82.74 | 16.22 | -66.52 | -36 | -30.52 | peak |
| V | 284.175 | -85.61 | 16.19 | -69.42 | -54 | -15.42 | peak |
| V | 624.844 | -80.07 | 14.53 | -65.54 | -36 | -29.54 | peak |
| V | 748.939 | -86.13 | 16.03 | -70.10 | -36 | -34.10 | peak |
| H | 32.007 | -87.29 | 15.45 | -71.84 | -54 | -17.84 | peak |
| H | 117.453 | -78.99 | 15.20 | -63.79 | -54 | -9.79 | peak |
| H | 217.994 | -78.67 | 15.83 | -62.84 | -36 | -26.84 | peak |
| H | 458.064 | -81.41 | 16.11 | -65.30 | -54 | -11.30 | peak |
| H | 275.765 | -78.09 | 17.36 | -60.73 | -36 | -24.73 | peak |
| H | 725.103 | -81.10 | 16.03 | -65.07 | -36 | -29.07 | 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 : | Smart phone | Model Name : | A53 |
| Temperature : | 24 °C | Relative Humidity | 54% |
| Pressure : | 1010 hPa | Test Power : | DC 3.87V |
| Test Mode : | GFSK (CH00/CH39/CH78) | | |

| Polar (H/V) | Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Remark |
|---------------------------------|-----------|---------------|--------|----------------|--------|--------|--------|
| | (MHz) | (dBm) | (dB) | (dBm) | (dBm) | (dB) | |
| operation frequency:2402 | | | | | | | |
| V | 4804.95 | -67.00 | 25.63 | -41.37 | -30 | -11.37 | peak |
| V | 7206.86 | -80.00 | 29.83 | -50.17 | -30 | -20.17 | peak |
| H | 4804.95 | -70.80 | 25.63 | -45.17 | -30 | -15.17 | peak |
| H | 7206.86 | -72.60 | 29.83 | -42.77 | -30 | -12.77 | peak |
| operation frequency:2441 | | | | | | | |
| V | 4882.06 | -65.60 | 26.62 | -38.98 | -30 | -8.98 | peak |
| V | 7324.50 | -78.20 | 29.64 | -48.56 | -30 | -18.56 | peak |
| H | 4882.06 | -69.00 | 26.62 | -42.38 | -30 | -12.38 | peak |
| H | 7324.50 | -69.10 | 29.64 | -39.46 | -30 | -9.46 | peak |
| operation frequency:2480 | | | | | | | |
| V | 4961.06 | -65.60 | 27.49 | -38.11 | -30 | -8.11 | peak |
| V | 7440.25 | -73.70 | 29.82 | -43.88 | -30 | -13.88 | peak |
| H | 4961.06 | -67.60 | 27.49 | -40.11 | -30 | -10.11 | peak |
| H | 7440.25 | -76.50 | 29.82 | -46.68 | -30 | -16.68 | 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 ETSI 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 ETSI 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

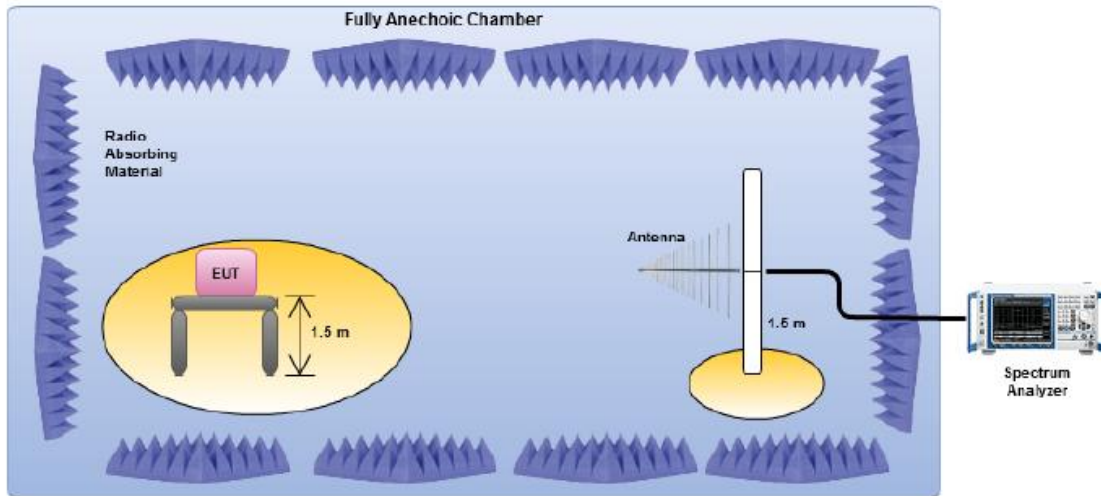
| | |
|-----|-------------------------|
| RBW | 100K(<1GHz) / 1M(>1GHz) |
| VBW | 300K(<1GHz) / 3M(>1GHz) |

9.3 DEVIATION FROM TEST STANDARD

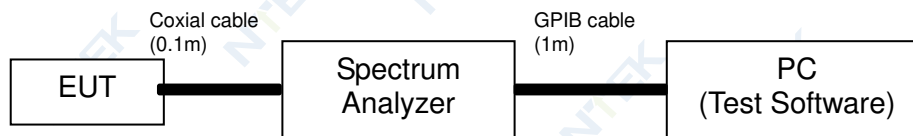
No deviation

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 : | Smart phone | Model Name : | A53 |
| Temperature : | 24 °C | Relative Humidity | 54% |
| Pressure : | 1010 hPa | Test Power : | DC 3.87V |
| Test Mode : | GFSK(CH00) | | |

| Polar (H/V) | Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Remark |
|-------------|-----------|---------------|--------|----------------|--------|--------|--------|
| | (MHz) | (dBm) | (dB) | (dBm) | (dBm) | (dB) | |
| V | 36.242 | -89.05 | 11.98 | -77.07 | -57 | -20.07 | peak |
| V | 117.515 | -85.39 | 12.67 | -72.72 | -57 | -15.72 | peak |
| V | 191.164 | -89.17 | 13.94 | -75.23 | -57 | -18.23 | peak |
| V | 363.75 | -88.40 | 14.65 | -73.75 | -57 | -16.75 | peak |
| V | 554.678 | -85.02 | 16.25 | -68.77 | -57 | -11.77 | peak |
| V | 724.493 | -89.48 | 14.45 | -75.03 | -57 | -18.03 | peak |
| H | 34.491 | -87.95 | 13.60 | -74.35 | -57 | -17.35 | peak |
| H | 95.61 | -83.32 | 15.11 | -68.21 | -57 | -11.21 | peak |
| H | 229.004 | -86.84 | 13.30 | -73.54 | -57 | -16.54 | peak |
| H | 311.559 | -79.07 | 18.00 | -61.07 | -57 | -4.07 | peak |
| H | 618.442 | -79.26 | 16.63 | -62.63 | -57 | -5.63 | peak |
| H | 748.226 | -85.40 | 17.63 | -67.77 | -57 | -10.77 | 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 : | Smart phone | Model Name : | A53 |
| Temperature : | 24 °C | Relative Humidity | 54% |
| Pressure : | 1010 hPa | Test Power : | DC 3.87V |
| Test Mode : | GFSK (CH00) | | |

| Polar (H/V) | Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Remark |
|-------------|-----------|---------------|--------|----------------|--------|--------|--------|
| | (MHz) | (dBm) | (dB) | (dBm) | (dBm) | (dB) | |
| V | 1227.65 | -93.62 | 18.94 | -74.68 | -47 | -27.68 | peak |
| V | 2304.09 | -93.04 | 18.82 | -74.22 | -47 | -27.22 | peak |
| V | 3650.05 | -93.91 | 19.02 | -74.89 | -47 | -27.89 | peak |
| V | 4452.59 | -90.50 | 25.13 | -65.37 | -47 | -18.37 | peak |
| V | 4825.79 | -87.34 | 25.16 | -62.18 | -47 | -15.18 | peak |
| V | 5854.70 | -93.93 | 25.19 | -68.74 | -47 | -21.74 | peak |
| H | 2165.65 | -91.62 | 19.11 | -72.51 | -47 | -25.51 | peak |
| H | 2738.86 | -88.23 | 19.68 | -68.55 | -47 | -21.55 | peak |
| H | 3222.03 | -92.06 | 19.21 | -72.85 | -47 | -25.85 | peak |
| H | 3966.94 | -87.89 | 20.23 | -67.66 | -47 | -20.66 | peak |
| H | 4482.74 | -91.68 | 17.6 | -74.08 | -47 | -27.08 | peak |
| H | 5740.83 | -93.50 | 23.56 | -69.94 | -47 | -22.94 | 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

| Wanted signal mean power from companion device (dBm) (see notes 1 and 4) | Blocking signal Frequency (MHz) | Blocking signal power (dBm) (see note 4) | Type of blocking signal |
|--|---------------------------------------|---|----------------------------|
| (-133 dBm + 10 × log ₁₀ (OCBW)) or -68 dBm whichever is less (see note 2) | 2 380 | -34 | CW |
| | 2 504 | | |
| (-139 dBm + 10 × log ₁₀ (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_{min} + 26 dB where P_{min} 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_{min} + 20 dB where P_{min} 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 ₁₀ (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_{min} + 26 dB where P_{min} 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 ₁₀ (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_{min} + 30 dB where P_{min} 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

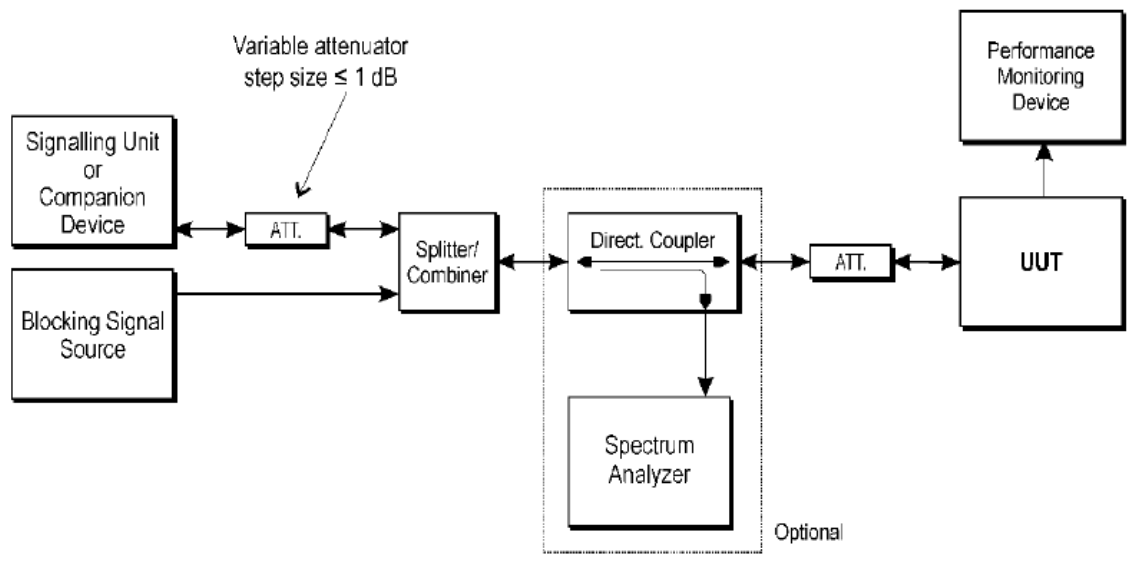
Refer to chapter 5.4.11.2 of ETSI EN 300 328 V2.2.2 (2019-07)

| 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 : | Smart phone | Model Name : | A53 |
| Temperature : | 24 °C | Relative Humidity | 54% |
| Pressure : | 1010 hPa | Test Power : | DC 3.87V |
| Test Mode : | GFSK Hopping mode (RX) | | |

CH00

receiver category 2

| 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 % |
|--|---------------------------------|---|-------|-------------|
| -69.17 | 2 380 | -34 | 0.76% | ≤10 |
| | 2 504 | | 0.67% | |
| | 2 300 | | 0.17% | ≤10 |
| | 2 584 | | 0.72% | |

CH78

receiver category 2

| 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 % |
|--|---------------------------------|---|-------|-------------|
| -69.15 | 2 380 | -34 | 0.06% | ≤10 |
| | 2 504 | | 0.45% | |
| | 2 300 | | 0.09% | ≤10 |
| | 2 584 | | 0.73% | |

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

| | | | |
|---------------|-----------------------------|-------------------|----------|
| EUT : | Smart phone | Model Name : | A53 |
| Temperature : | 24 °C | Relative Humidity | 54% |
| Pressure : | 1010 hPa | Test Power : | DC 3.87V |
| Test Mode : | π/4 DQPSK Hopping mode (RX) | | |

CH00

receiver category 2

| 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 % |
|--|---------------------------------|---|-------|-------------|
| -67.32 | 2 380 | -34 | 0.15% | ≤10 |
| | 2 504 | | 0.03% | |
| | 2 300 | | 0.25% | ≤10 |
| | 2 584 | | 0.59% | |

CH78

receiver category 2

| 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 % |
|--|---------------------------------|---|-------|-------------|
| -67.32 | 2 380 | -34 | 0.23% | ≤10 |
| | 2 504 | | 0.64% | |
| | 2 300 | | 0.68% | ≤10 |
| | 2 584 | | 0.57% | |

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

| | | | |
|---------------|--------------------------|-------------------|----------|
| EUT : | Smart phone | Model Name : | A53 |
| Temperature : | 24 °C | Relative Humidity | 54% |
| Pressure : | 1010 hPa | Test Power : | DC 3.87V |
| Test Mode : | 8-DPSK Hopping mode (RX) | | |

CH00

receiver category 2

| 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 % |
|--|---------------------------------|---|-------|-------------|
| -67.32 | 2 380 | -34 | 0.57% | ≤10 |
| | 2 504 | | 0.30% | |
| | 2 300 | | 0.87% | ≤10 |
| | 2 584 | | 0.26% | |

CH78

receiver category 2

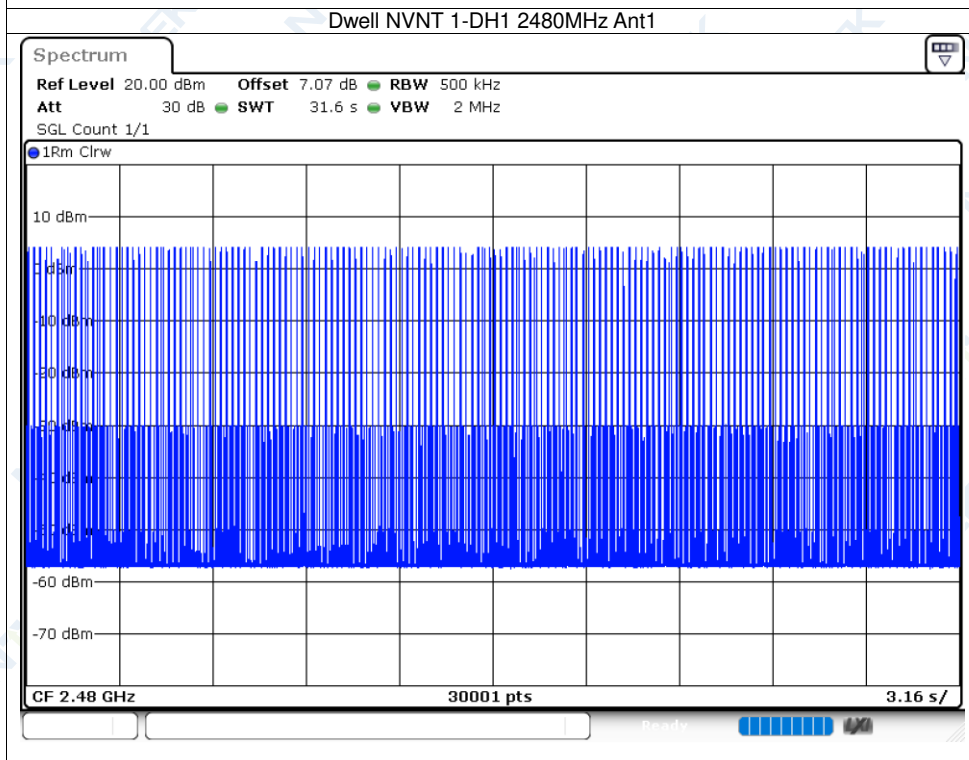
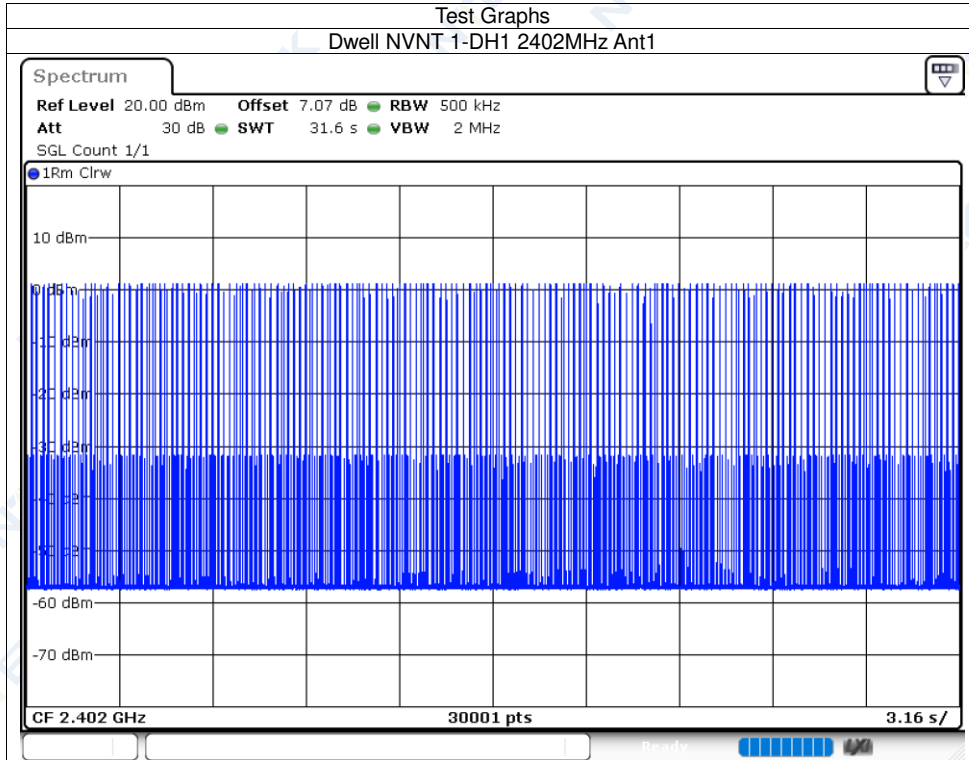
| Wanted signal mean power from companion device (dBm) (see notes 1 and 3) | Blocking signal Frequency (MHz) | Blocking signal power(dBm) (see note 3) | PER % | PER Limit % |
|--|---------------------------------|---|-------|-------------|
| -67.34 | 2 380 | -34 | 0.40% | ≤10 |
| | 2 504 | | 0.77% | |
| | 2 300 | | 0.14% | ≤10 |
| | 2 584 | | 0.51% | |

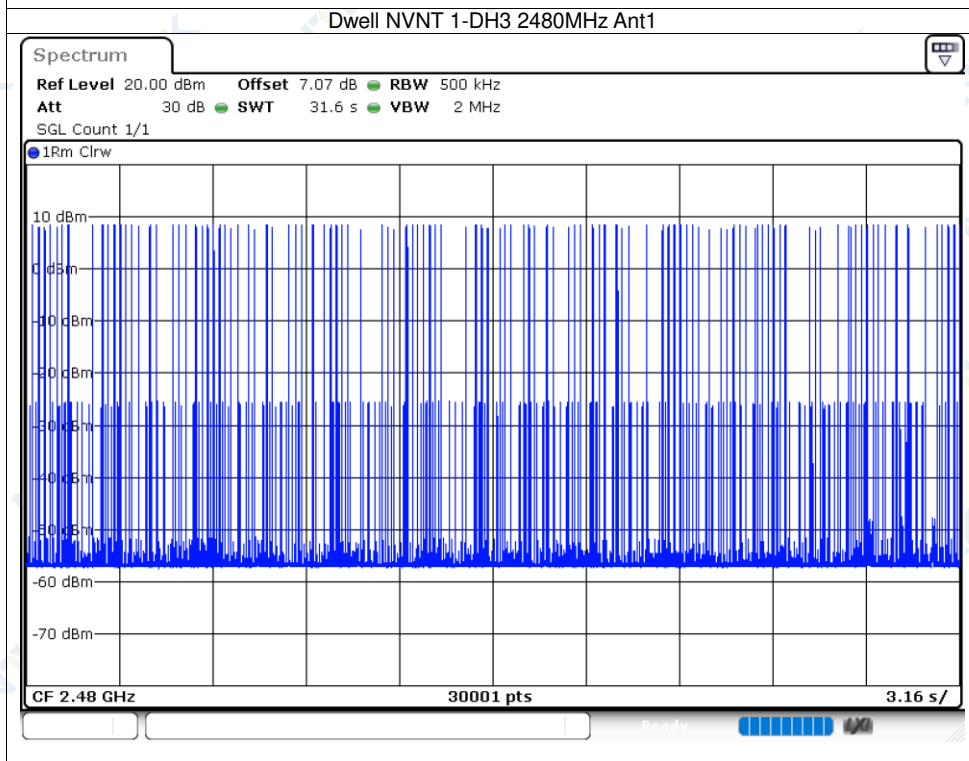
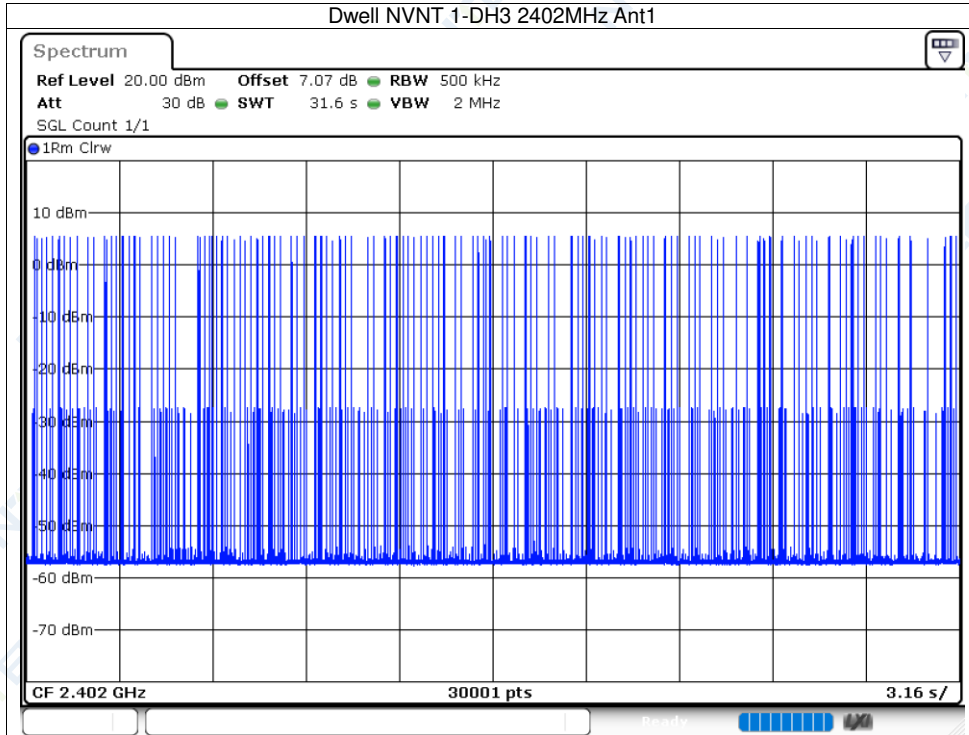
Note: (1) The above results were obtained from laboratory tests.

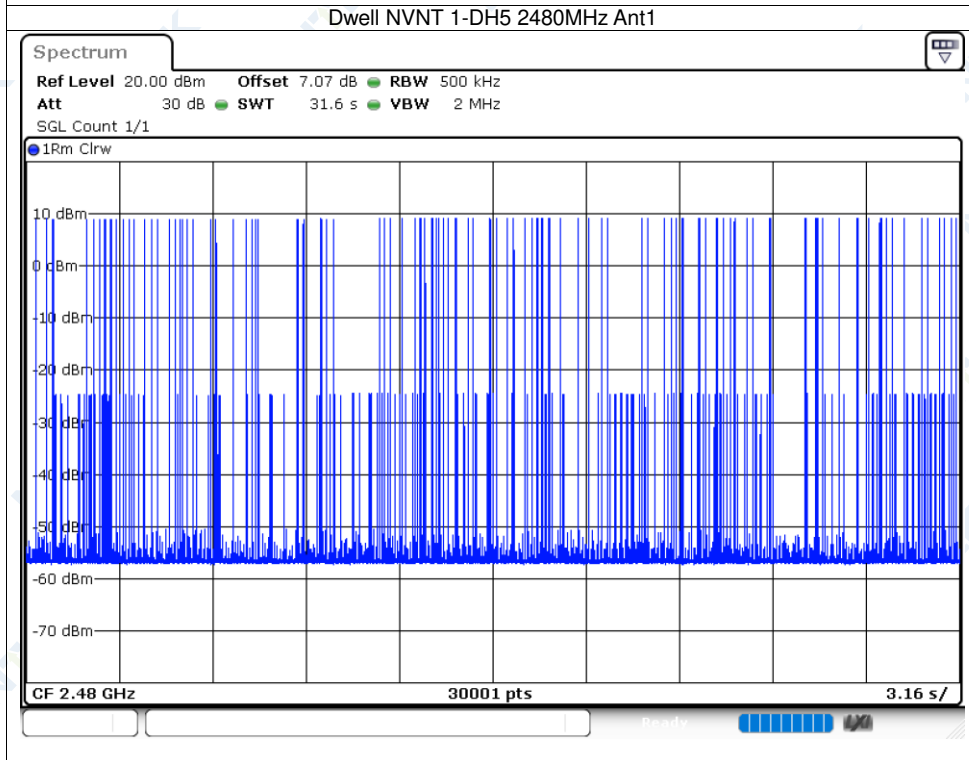
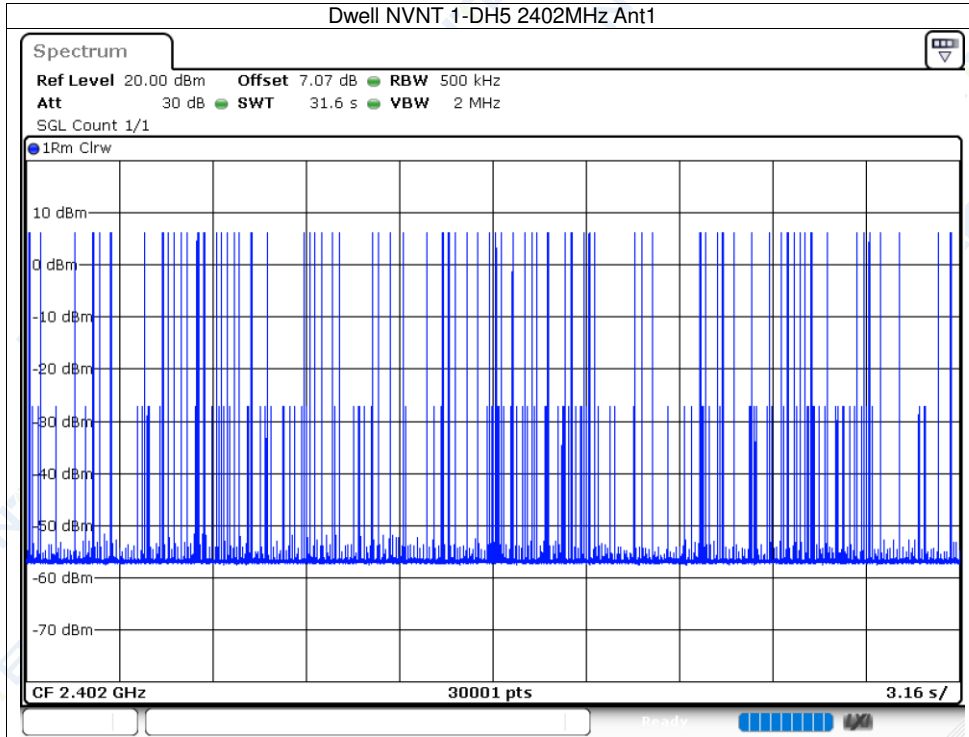
11. TEST RESULTS

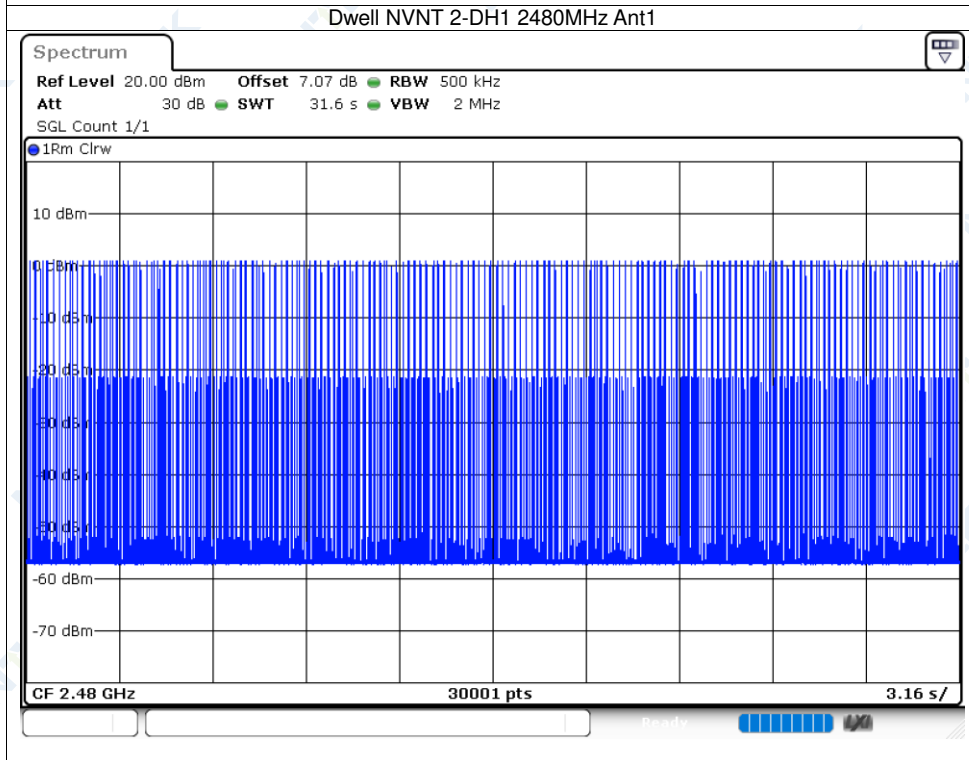
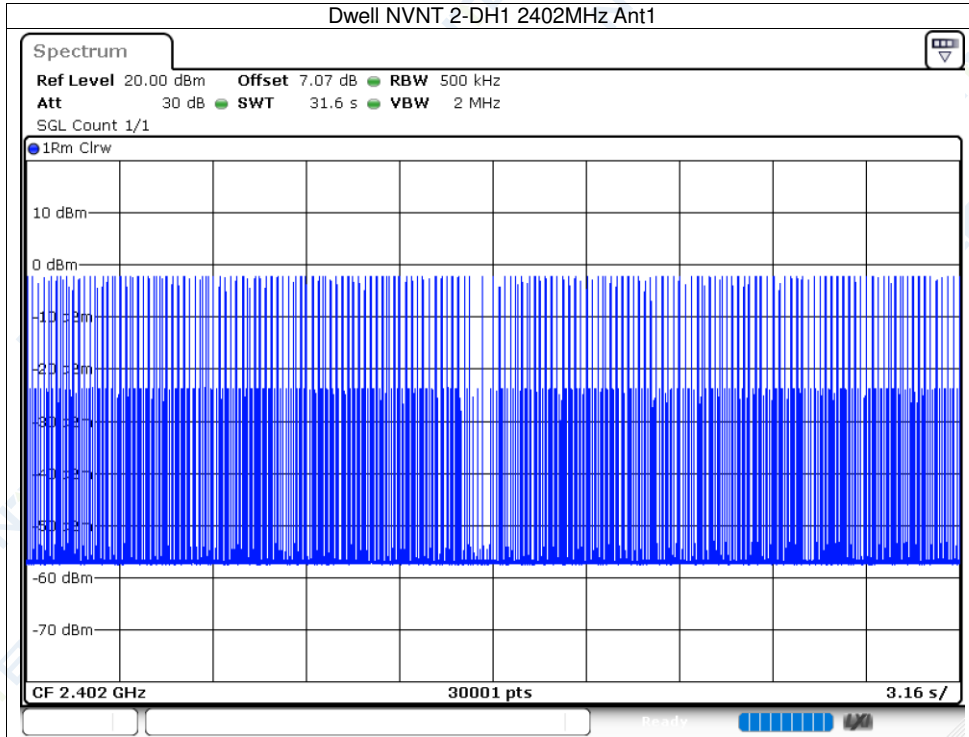
11.1 Accumulated Transmit Time

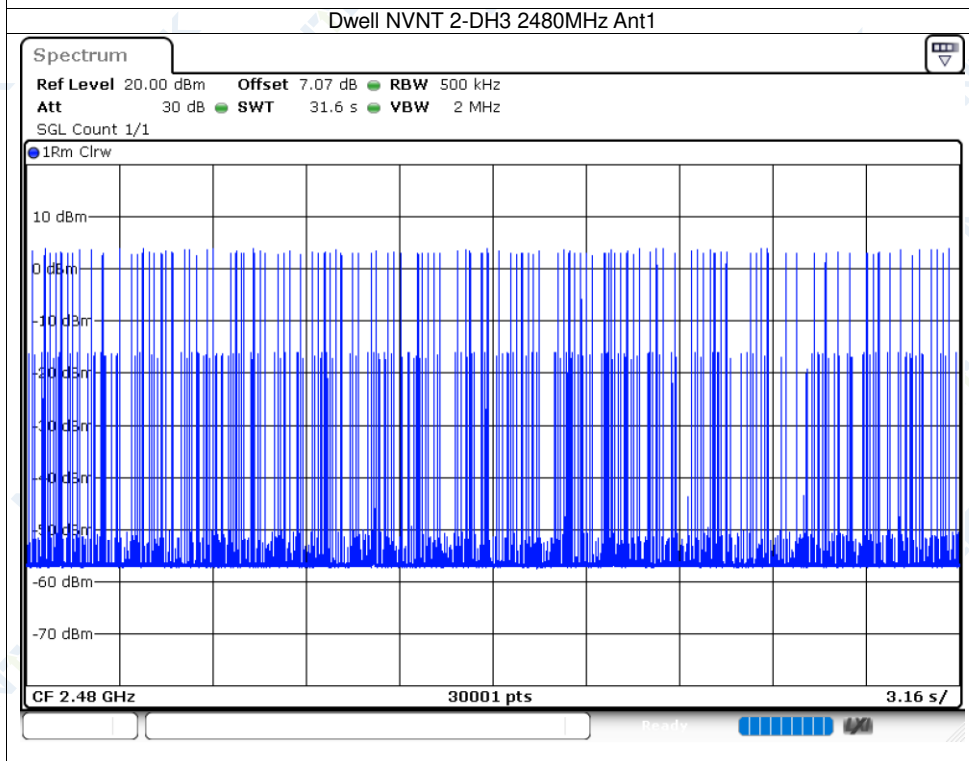
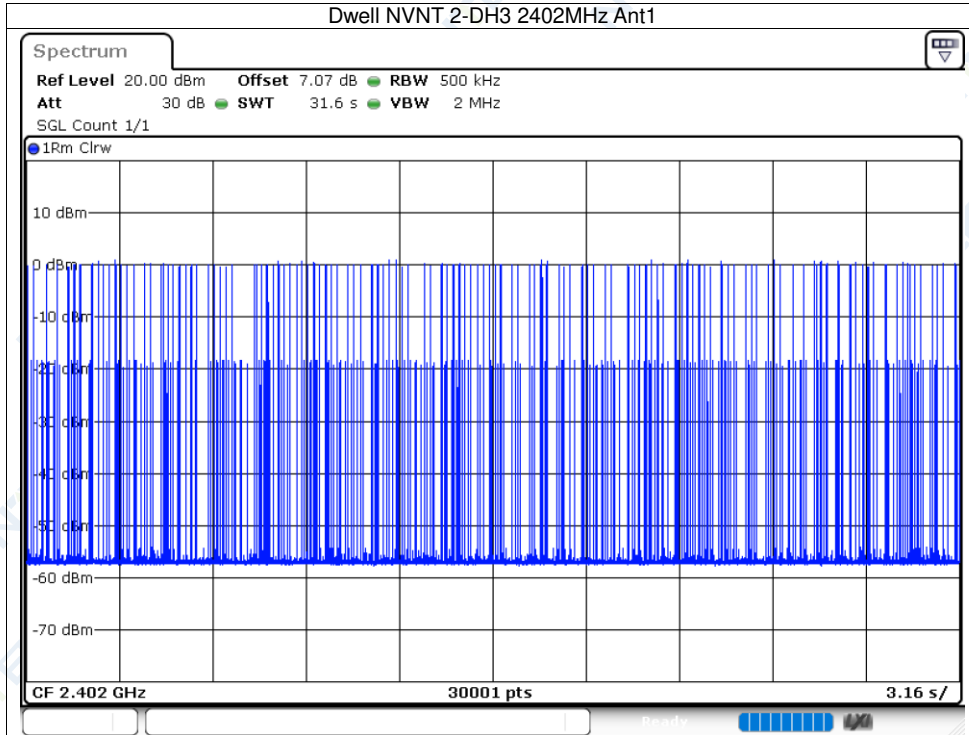
| Condition | Mode | Frequency (MHz) | Antenna | Accumulated Transmit Time (ms) | Limit (ms) | Sweep Time (ms) | Burst Number | Verdict |
|-----------|-------|-----------------|---------|--------------------------------|------------|-----------------|--------------|---------|
| NVNT | 1-DH1 | 2402 | Ant1 | 120.582 | 400 | 31600 | 319 | Pass |
| NVNT | 1-DH1 | 2480 | Ant1 | 119.944 | 400 | 31600 | 319 | Pass |
| NVNT | 1-DH3 | 2402 | Ant1 | 266.342 | 400 | 31600 | 163 | Pass |
| NVNT | 1-DH3 | 2480 | Ant1 | 250.002 | 400 | 31600 | 153 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 253.616 | 400 | 31600 | 88 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 331.315 | 400 | 31600 | 115 | Pass |
| NVNT | 2-DH1 | 2402 | Ant1 | 119.808 | 400 | 31600 | 312 | Pass |
| NVNT | 2-DH1 | 2480 | Ant1 | 122.815 | 400 | 31600 | 319 | Pass |
| NVNT | 2-DH3 | 2402 | Ant1 | 270.105 | 400 | 31600 | 165 | Pass |
| NVNT | 2-DH3 | 2480 | Ant1 | 239.002 | 400 | 31600 | 146 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 320.124 | 400 | 31600 | 111 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 285.516 | 400 | 31600 | 99 | Pass |
| NVNT | 3-DH1 | 2402 | Ant1 | 123.134 | 400 | 31600 | 319 | Pass |
| NVNT | 3-DH1 | 2480 | Ant1 | 123.134 | 400 | 31600 | 319 | Pass |
| NVNT | 3-DH3 | 2402 | Ant1 | 253.58 | 400 | 31600 | 155 | Pass |
| NVNT | 3-DH3 | 2480 | Ant1 | 279.414 | 400 | 31600 | 171 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 308.909 | 400 | 31600 | 107 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 308.909 | 400 | 31600 | 107 | Pass |

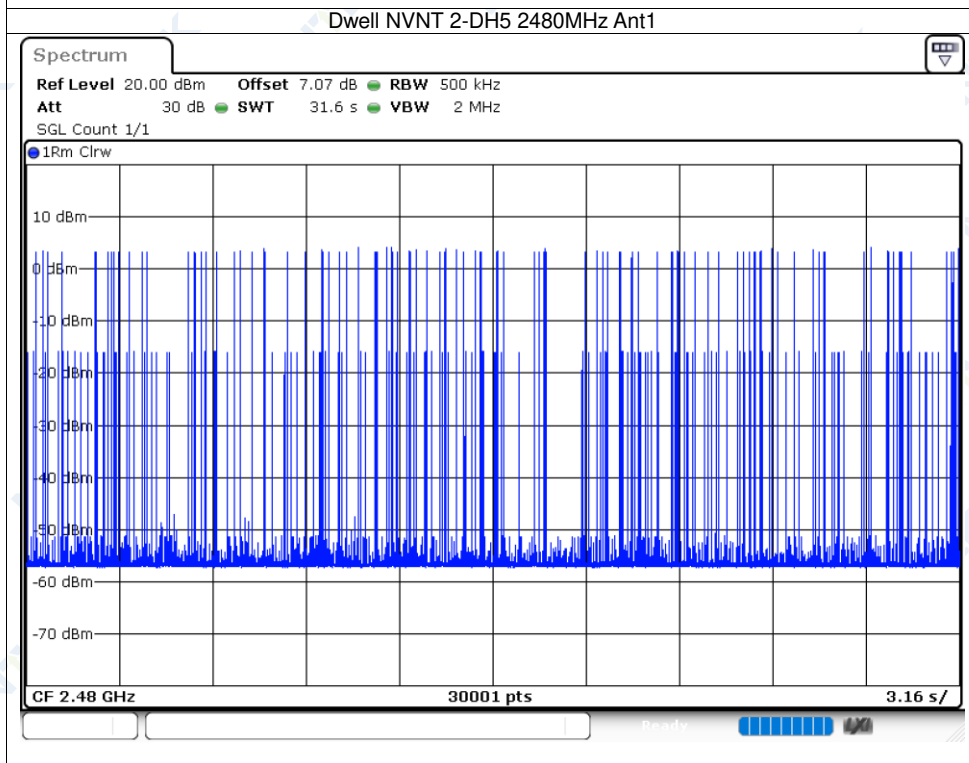
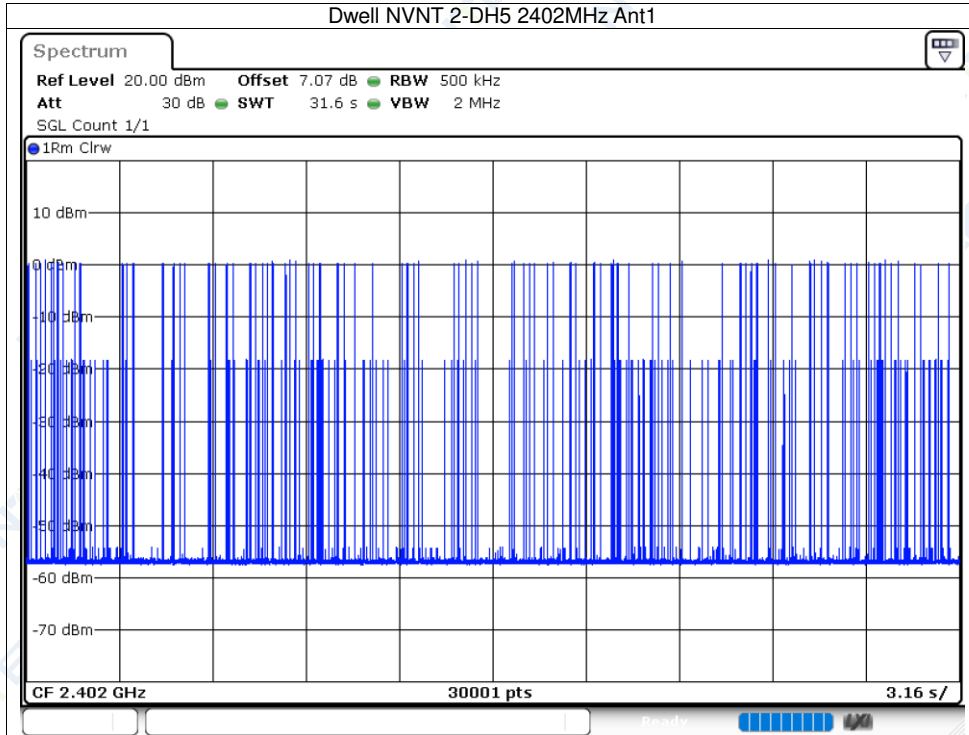


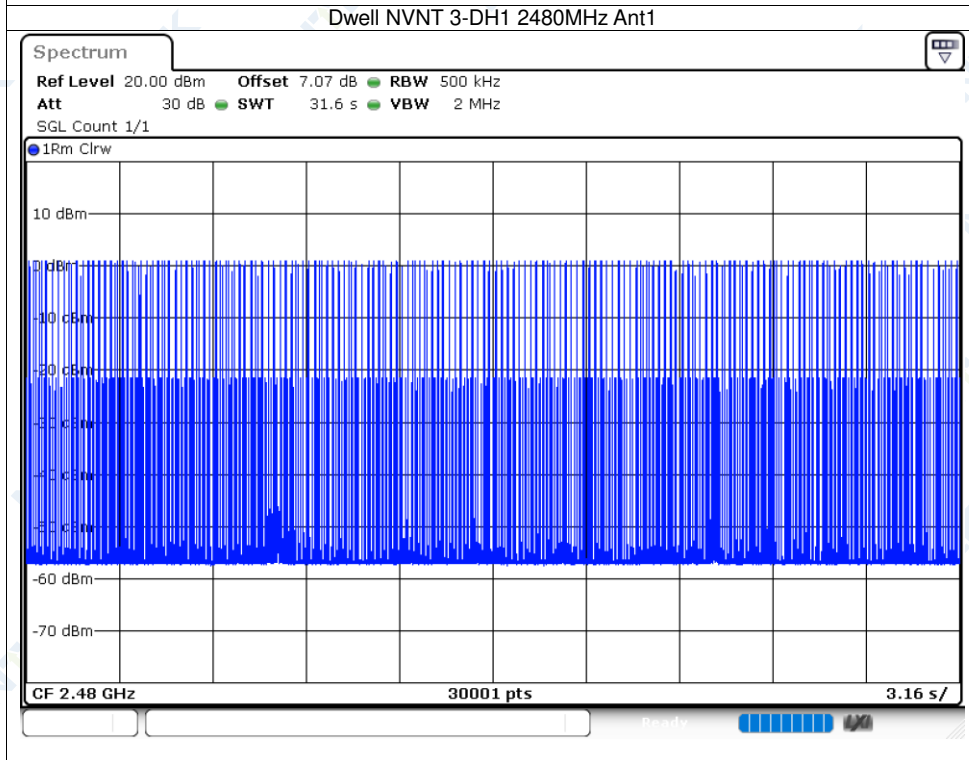
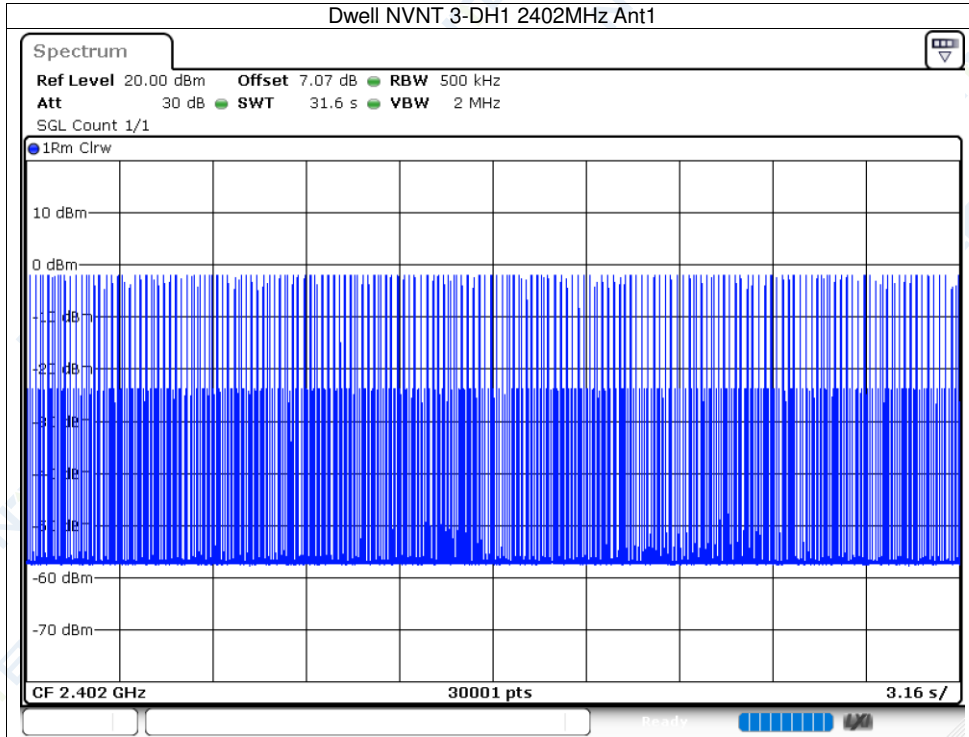


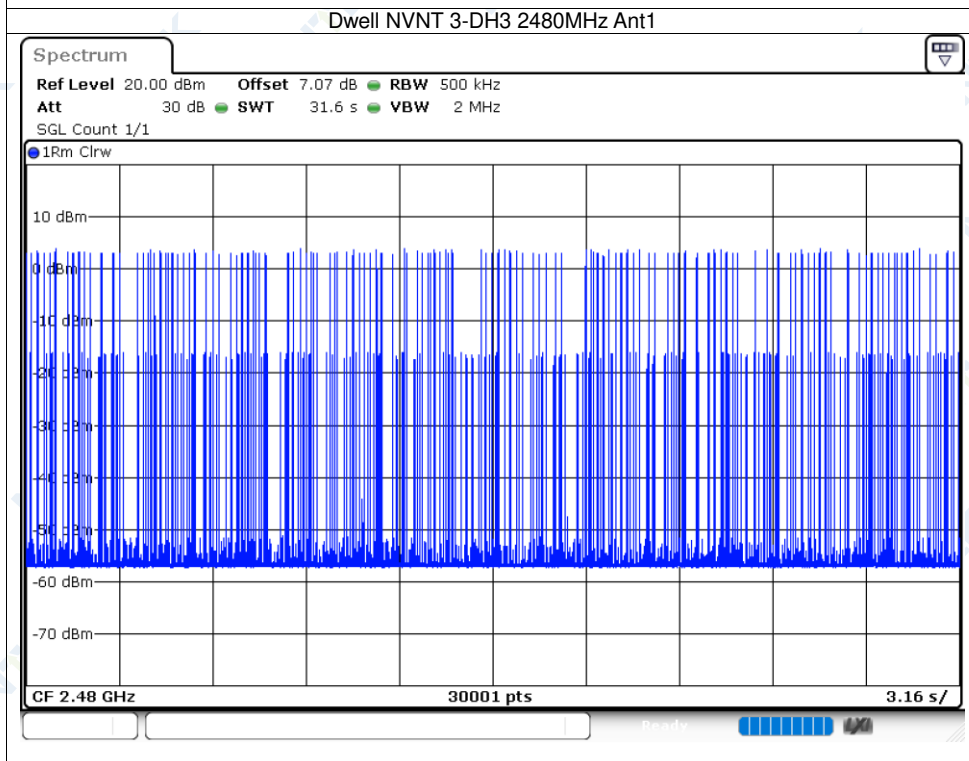
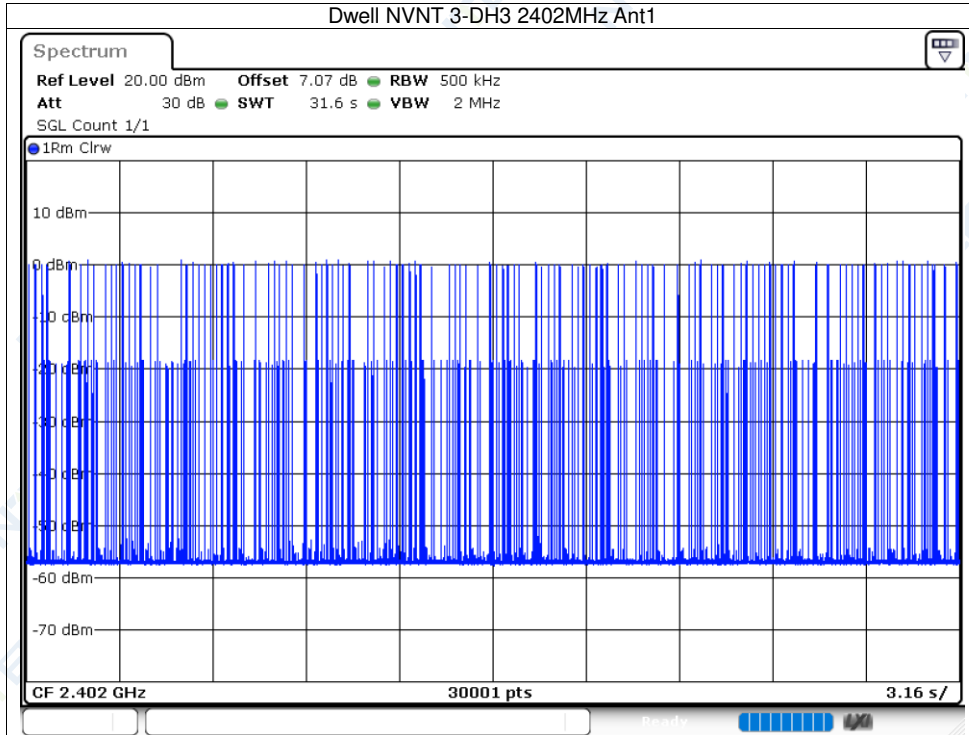


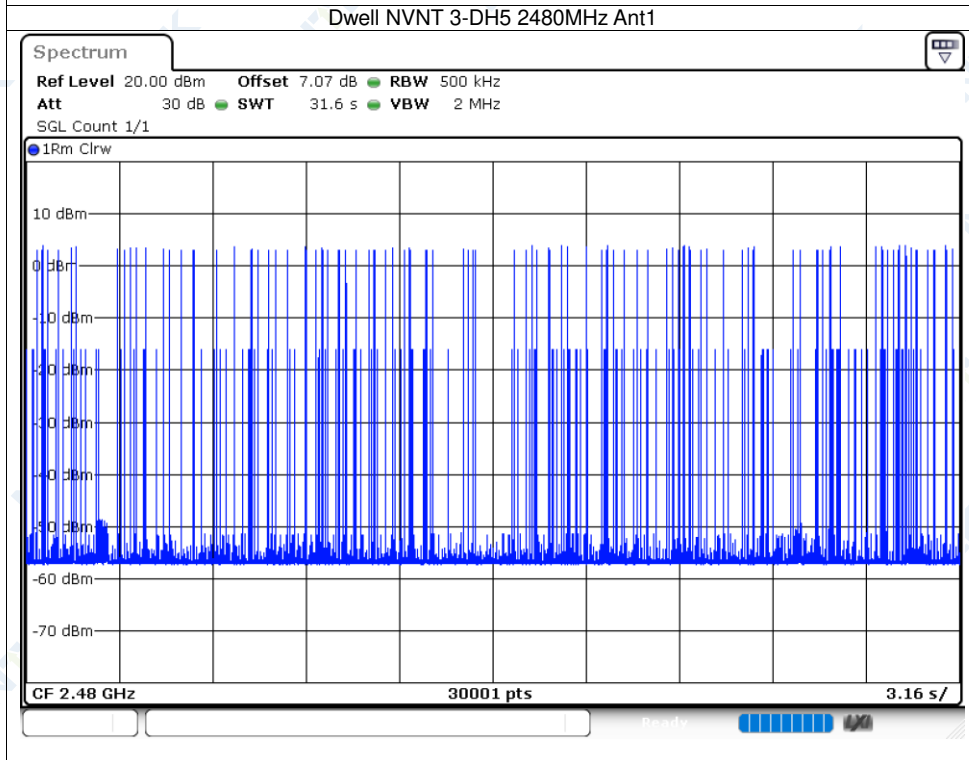
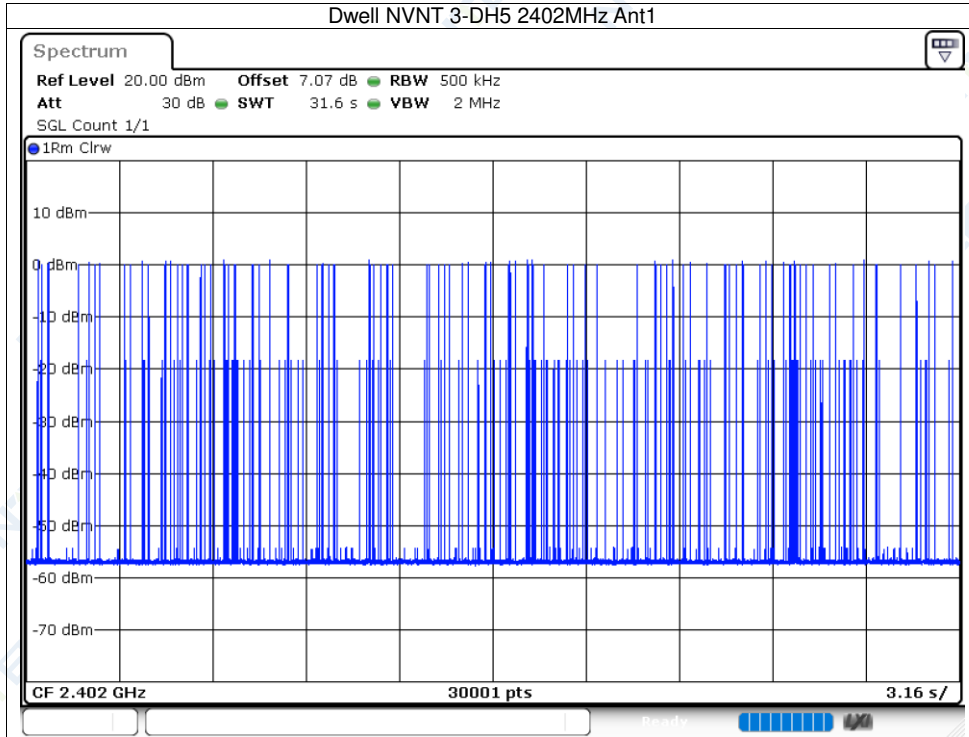






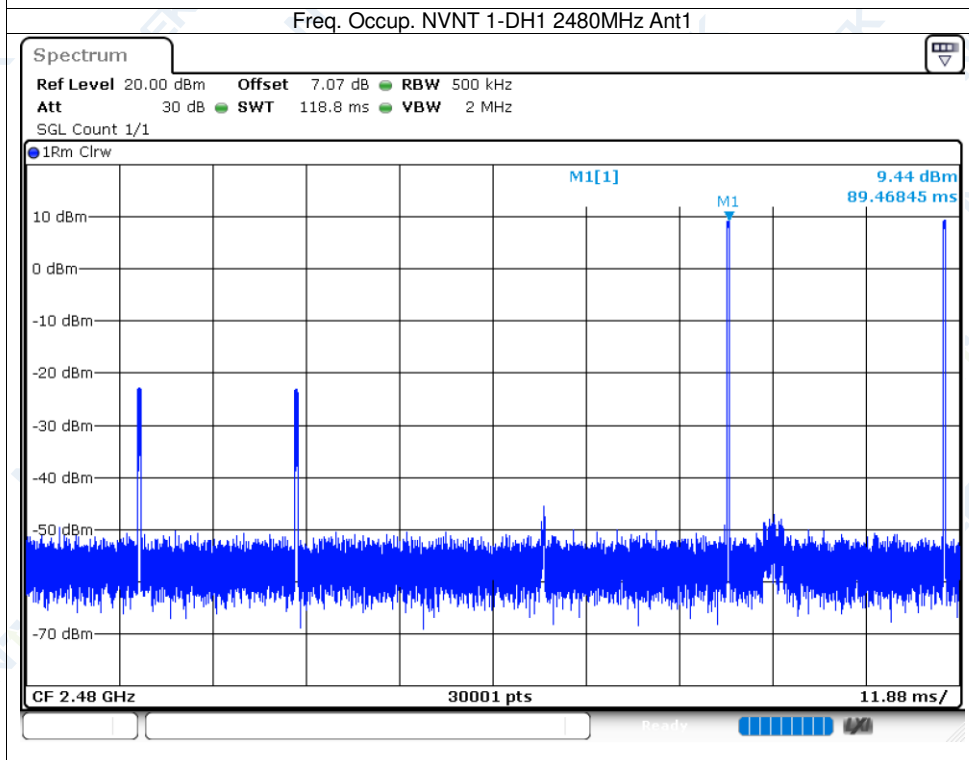
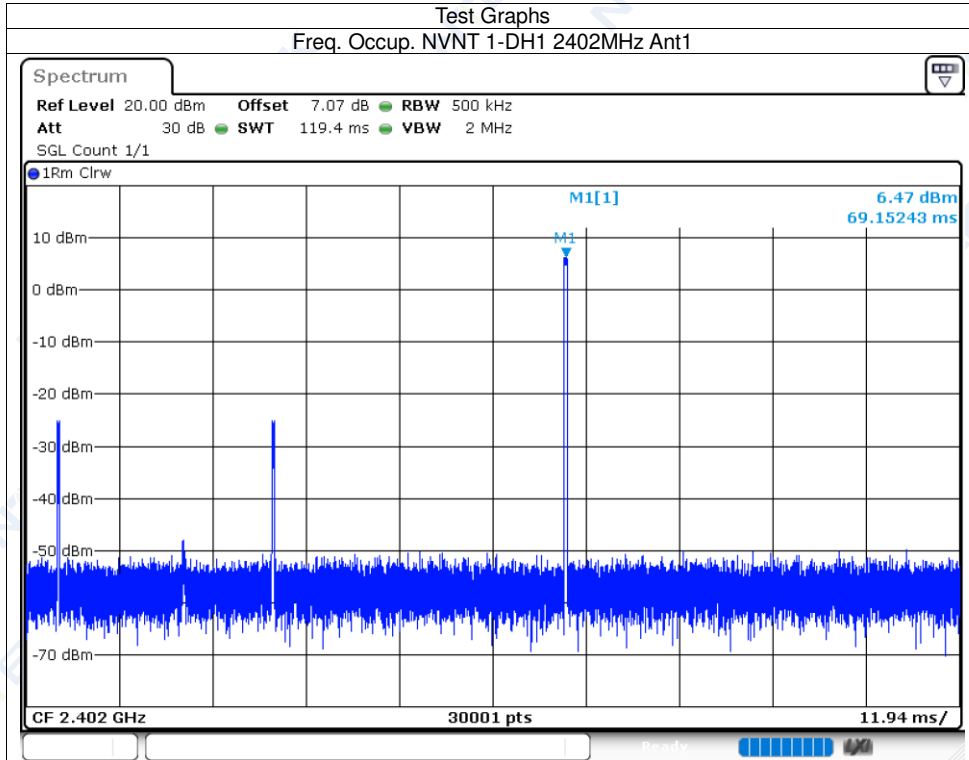


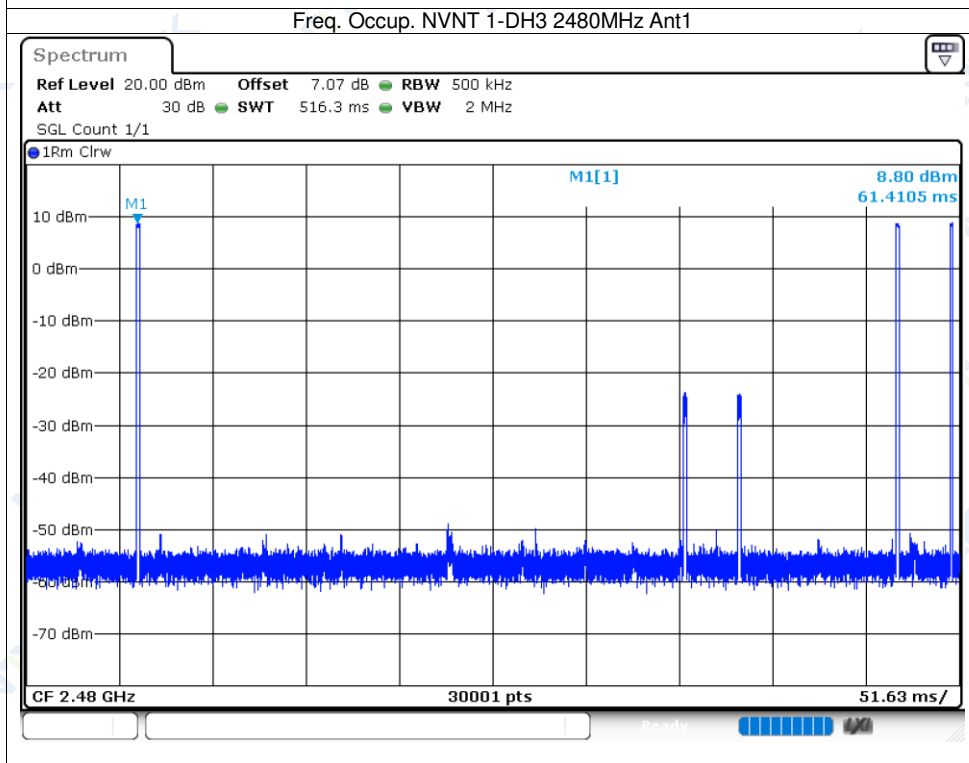
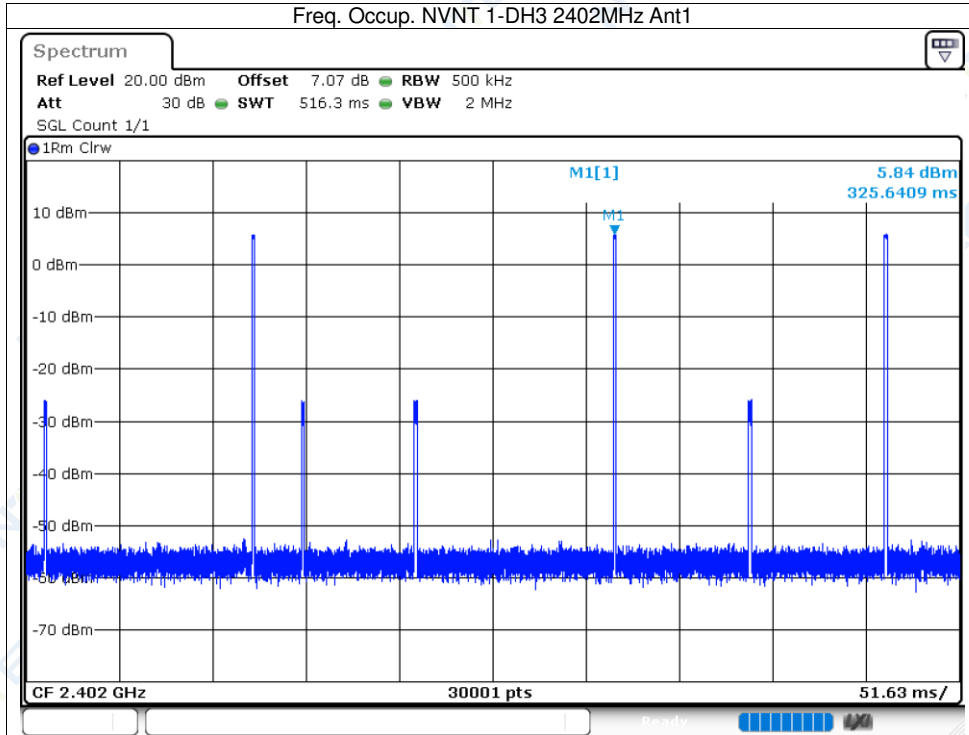


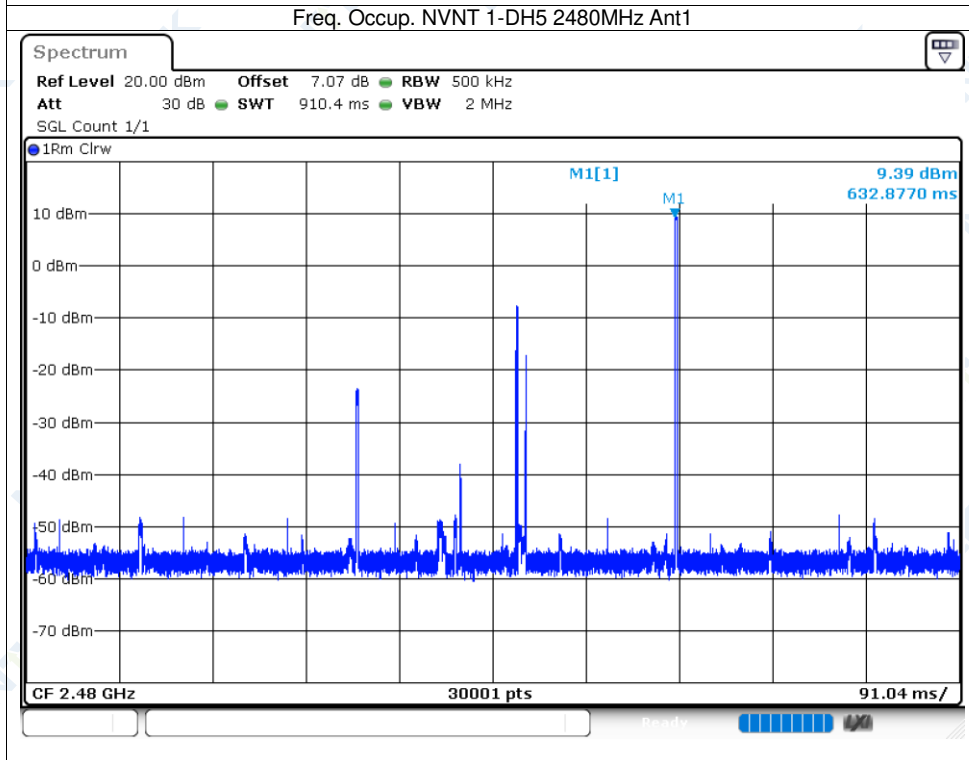
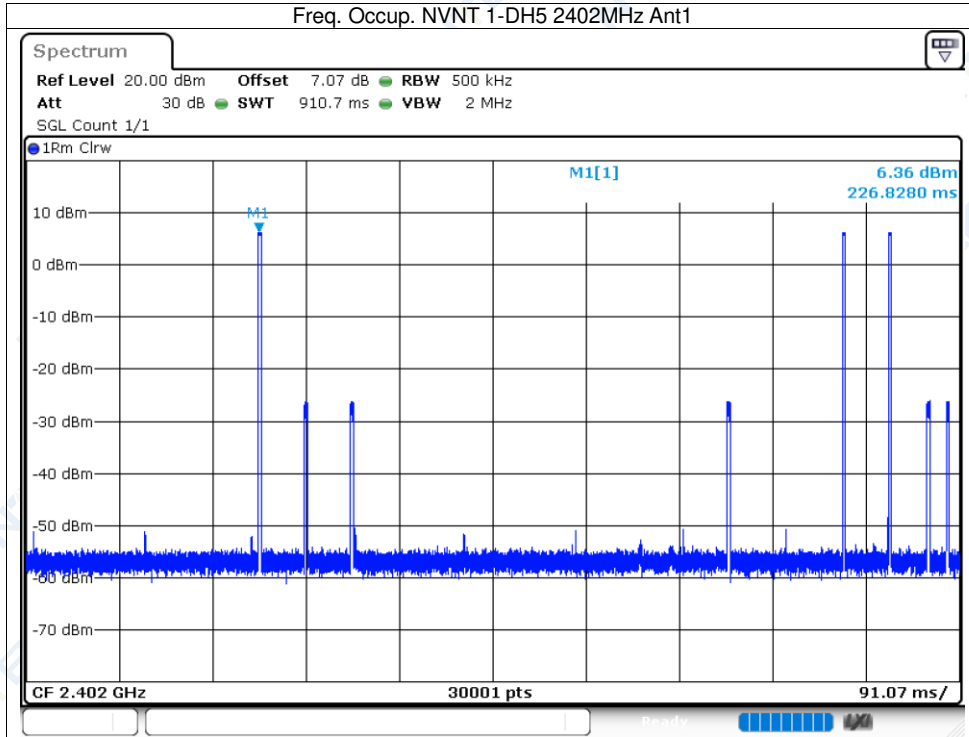


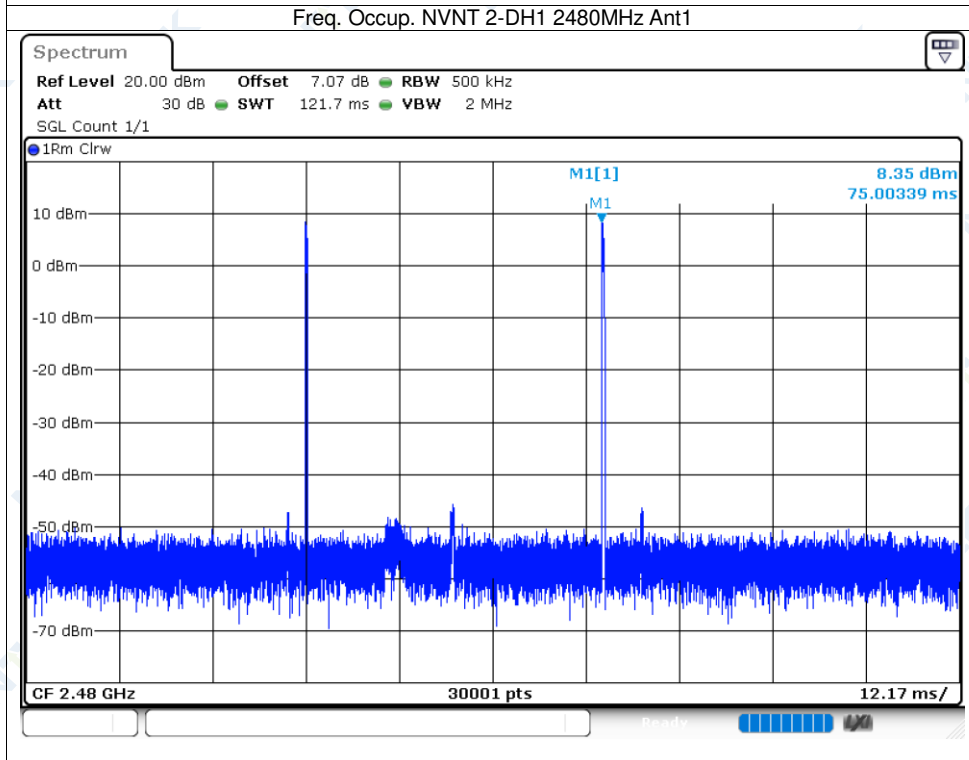
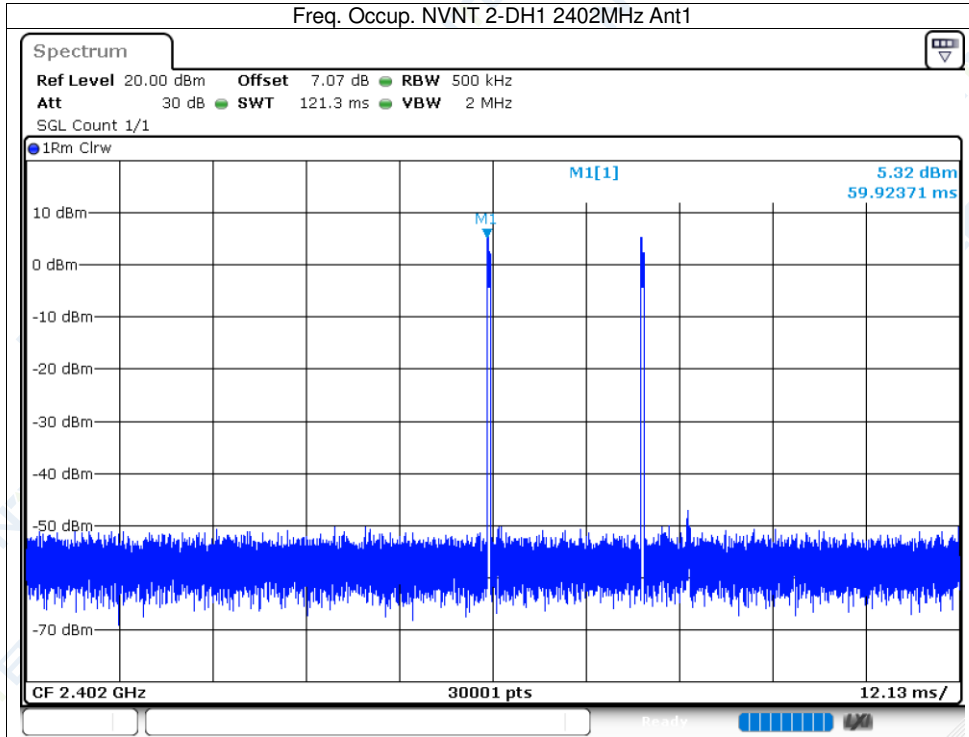
11.2 Frequency Occupation

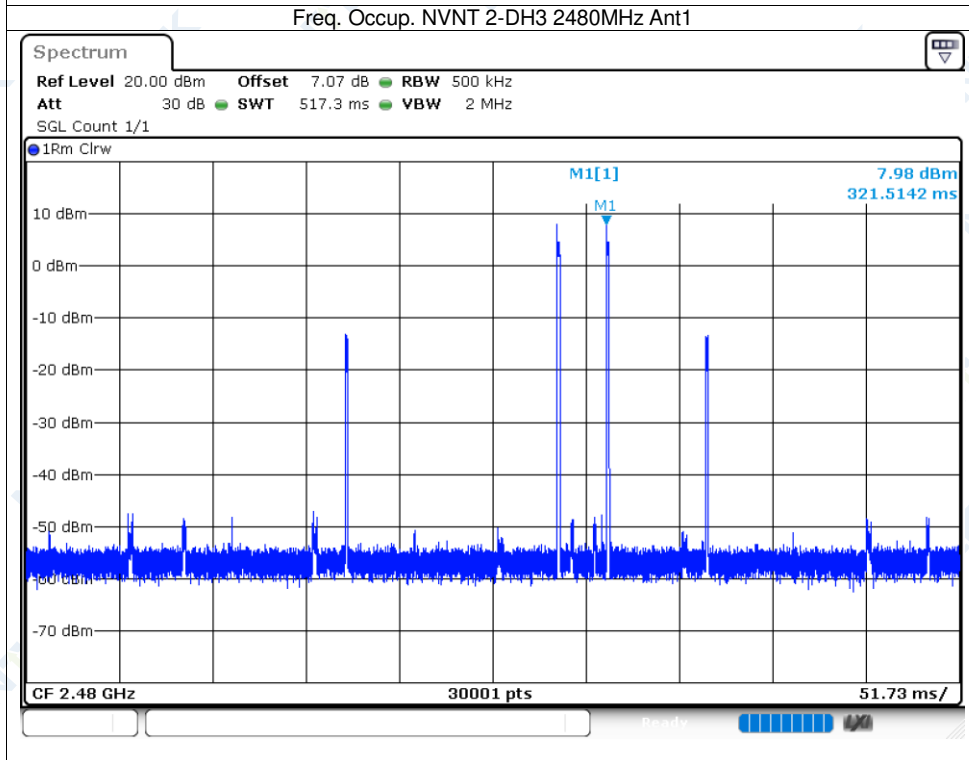
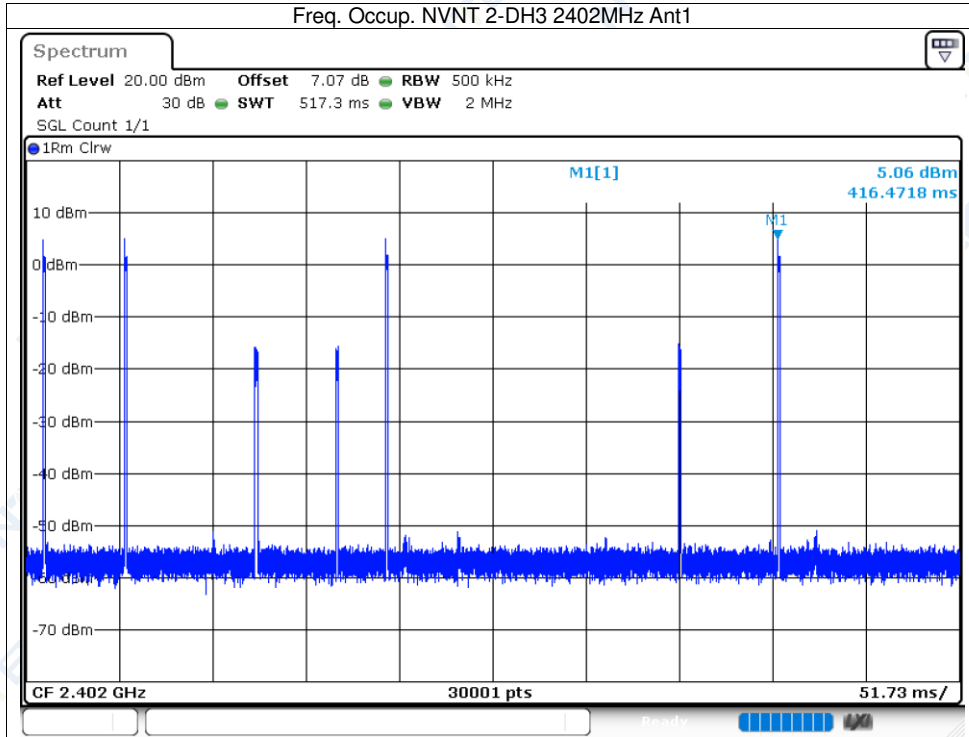
| Condition | Mode | Frequency (MHz) | Antenna | Burst Number | Limit | Sweep Time (ms) | Verdict |
|-----------|-------|-----------------|---------|--------------|-------|-----------------|---------|
| NVNT | 1-DH1 | 2402 | Ant1 | 1 | 1 | 119.448 | Pass |
| NVNT | 1-DH1 | 2480 | Ant1 | 2 | 1 | 118.816 | Pass |
| NVNT | 1-DH3 | 2402 | Ant1 | 3 | 1 | 516.344 | Pass |
| NVNT | 1-DH3 | 2480 | Ant1 | 3 | 1 | 516.344 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 3 | 1 | 910.712 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 4 | 1 | 910.396 | Pass |
| NVNT | 2-DH1 | 2402 | Ant1 | 2 | 1 | 121.344 | Pass |
| NVNT | 2-DH1 | 2480 | Ant1 | 2 | 1 | 121.66 | Pass |
| NVNT | 2-DH3 | 2402 | Ant1 | 4 | 1 | 517.292 | Pass |
| NVNT | 2-DH3 | 2480 | Ant1 | 2 | 1 | 517.292 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 3 | 1 | 911.344 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 2 | 1 | 911.344 | Pass |
| NVNT | 3-DH1 | 2402 | Ant1 | 1 | 1 | 121.976 | Pass |
| NVNT | 3-DH1 | 2480 | Ant1 | 2 | 1 | 121.976 | Pass |
| NVNT | 3-DH3 | 2402 | Ant1 | 2 | 1 | 516.976 | Pass |
| NVNT | 3-DH3 | 2480 | Ant1 | 3 | 1 | 516.344 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 2 | 1 | 912.292 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 8 | 1 | 912.292 | Pass |

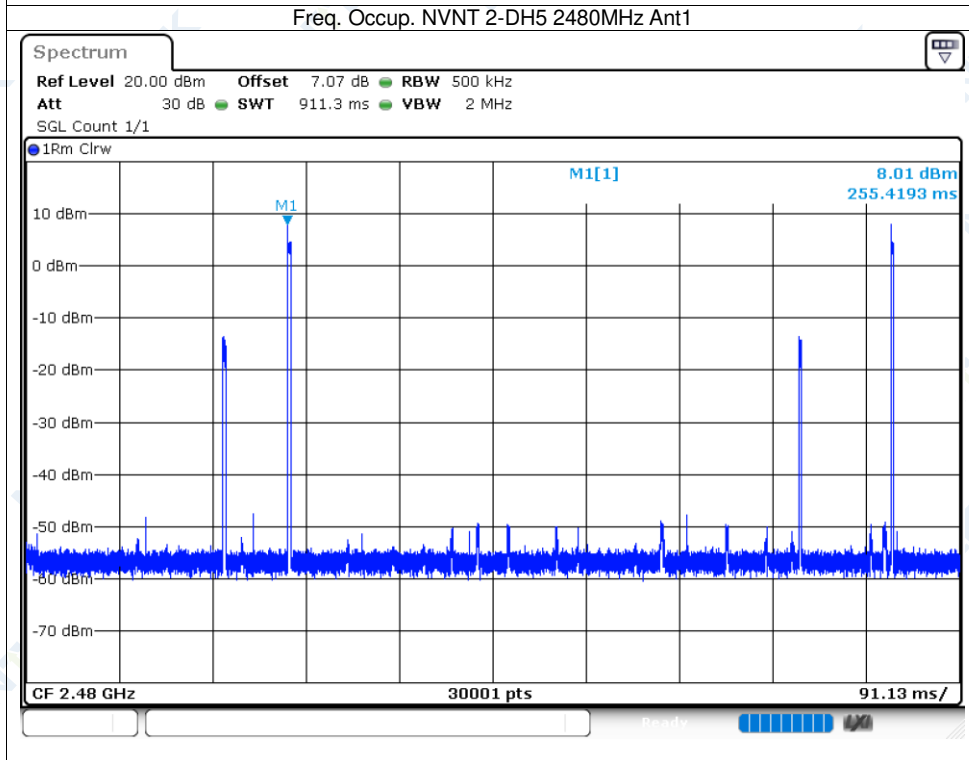
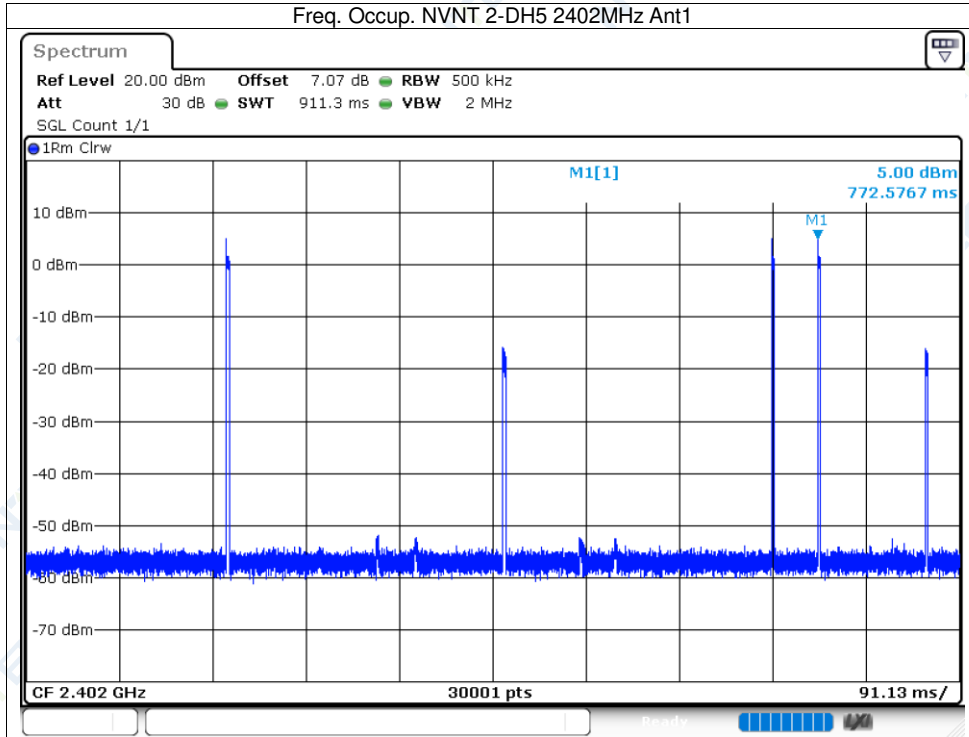


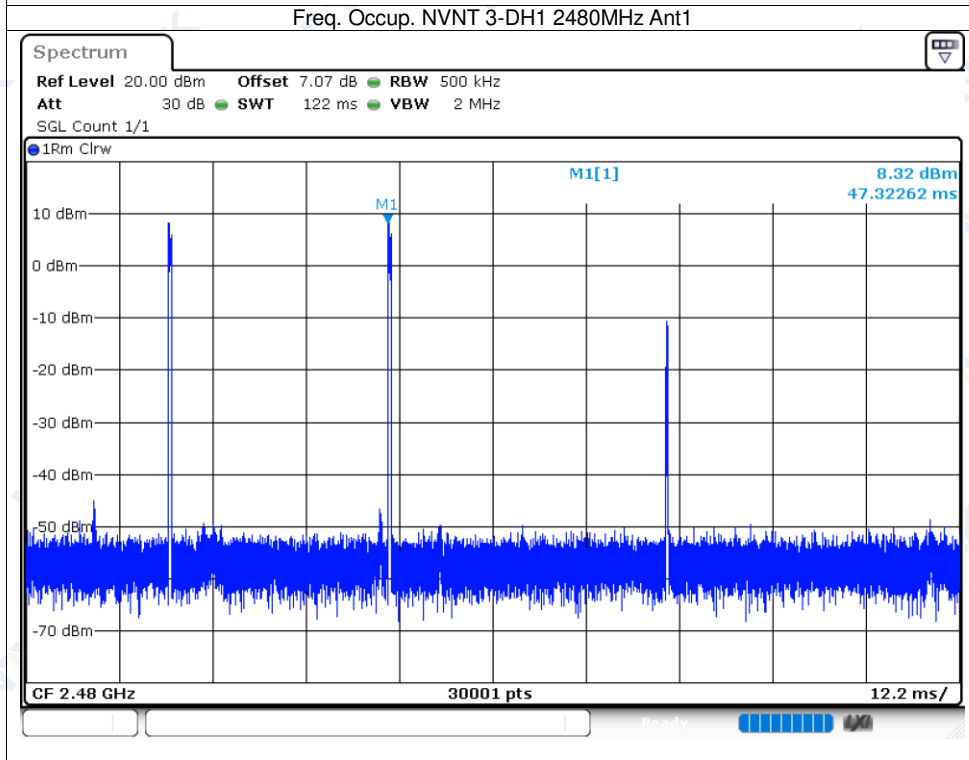
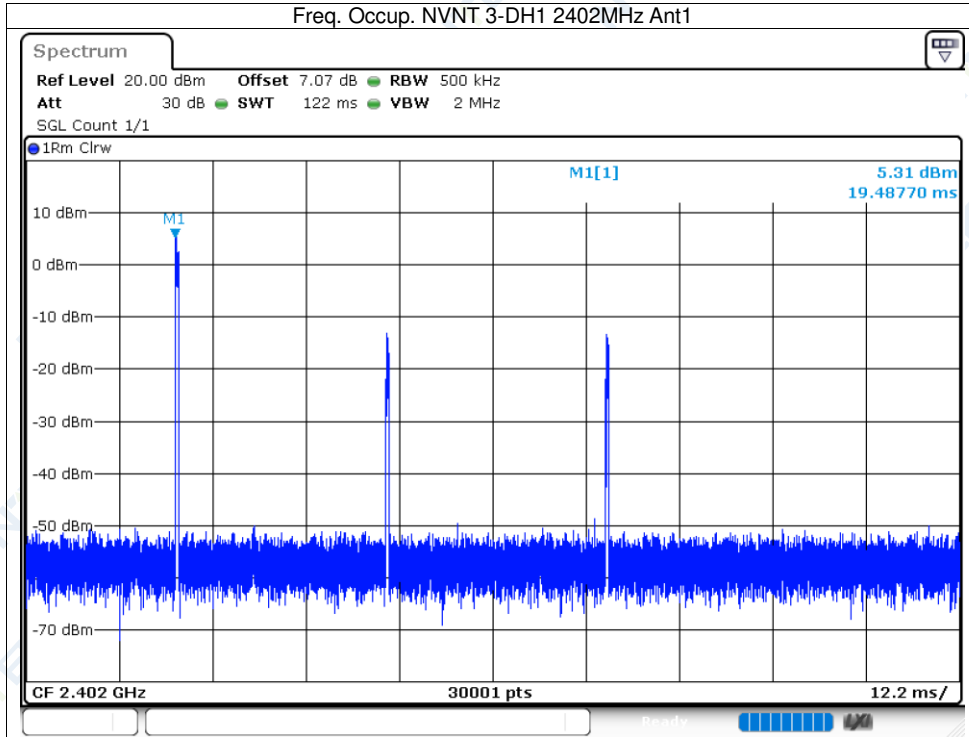


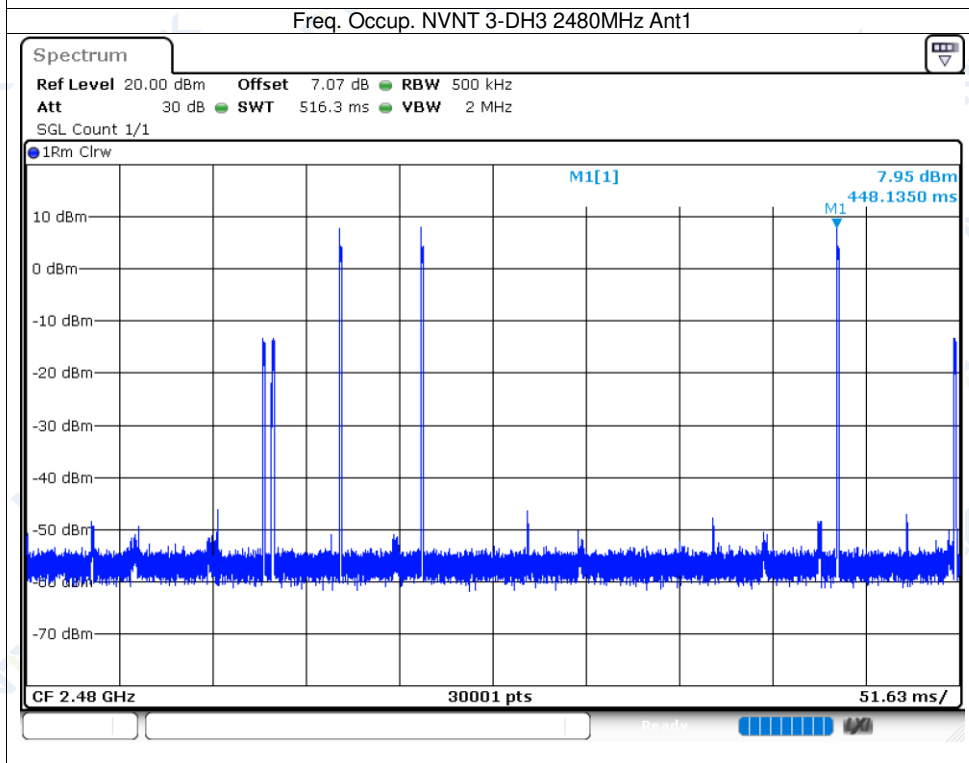
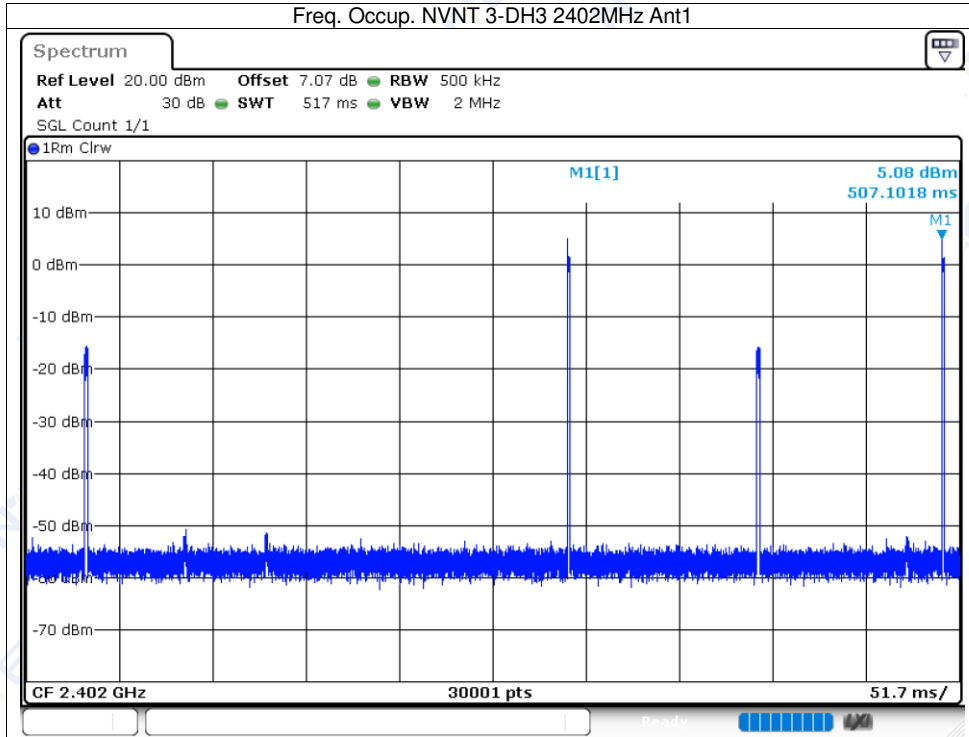


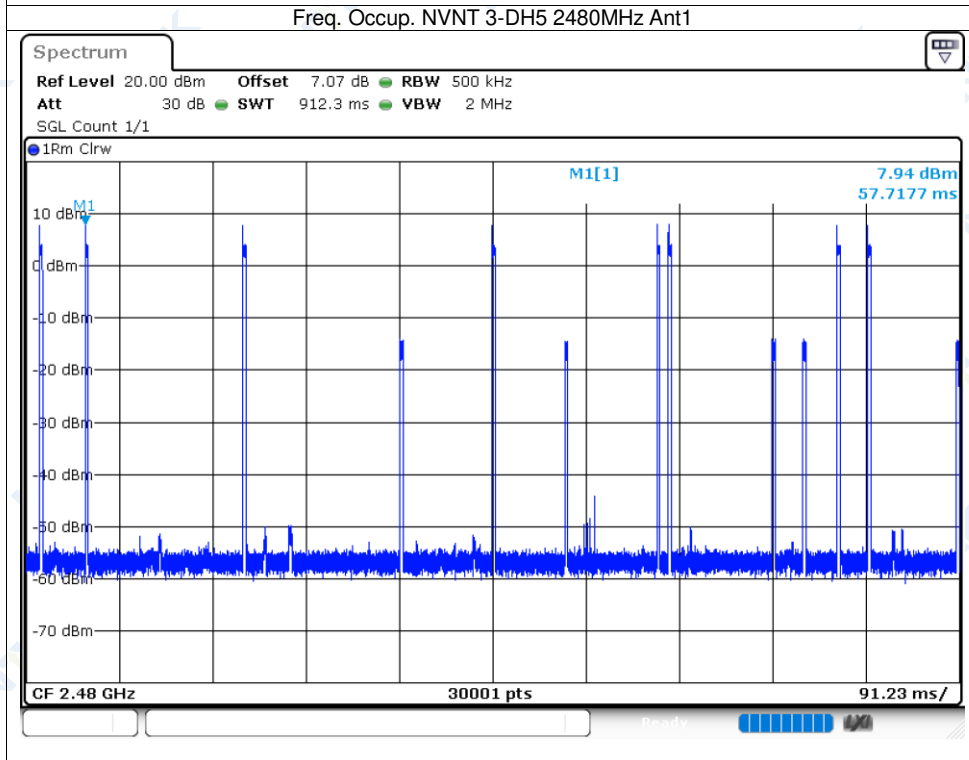
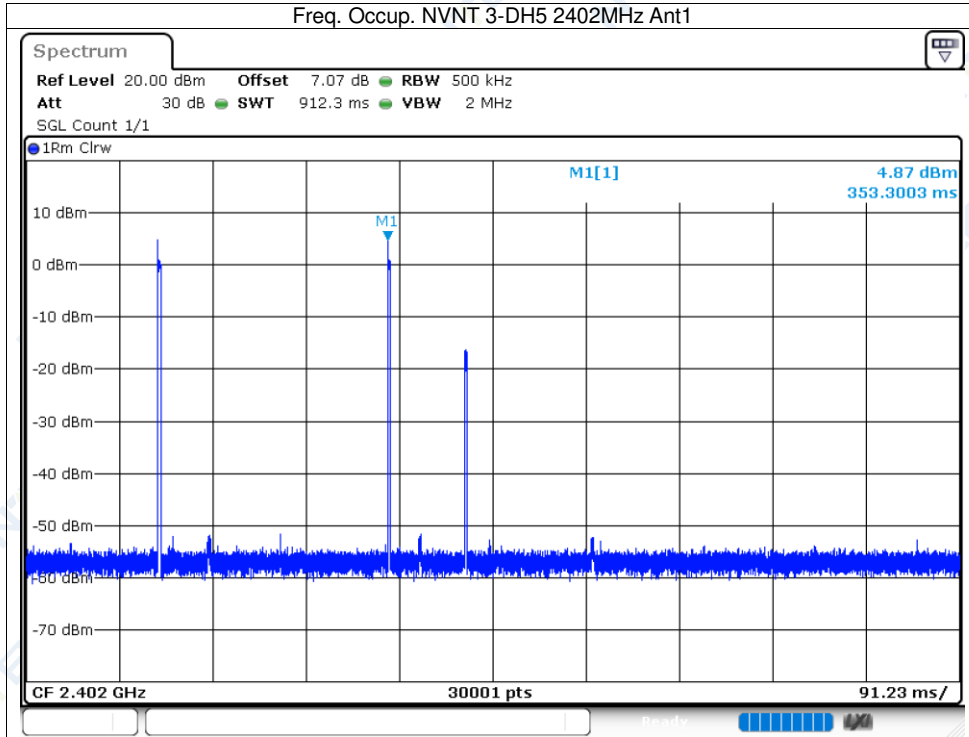






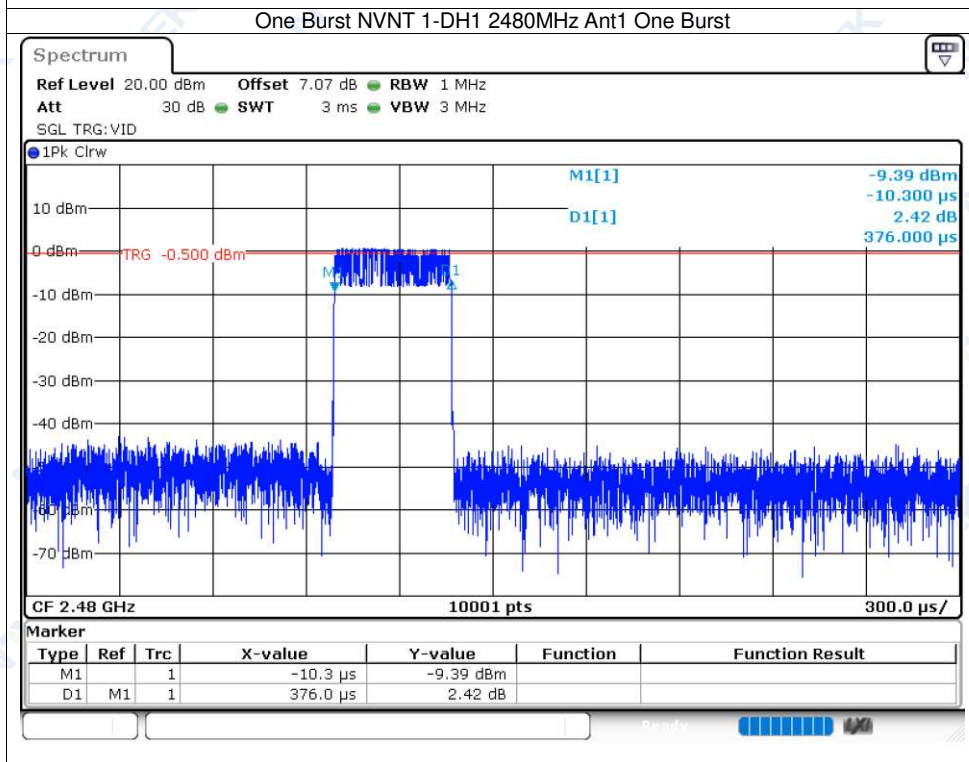
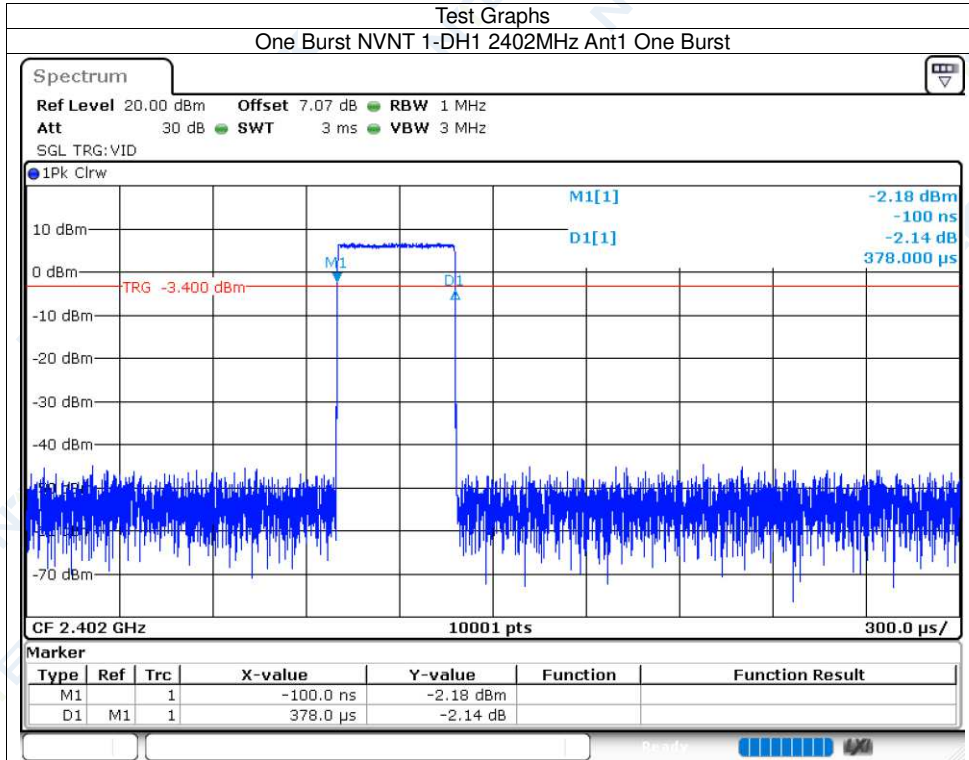


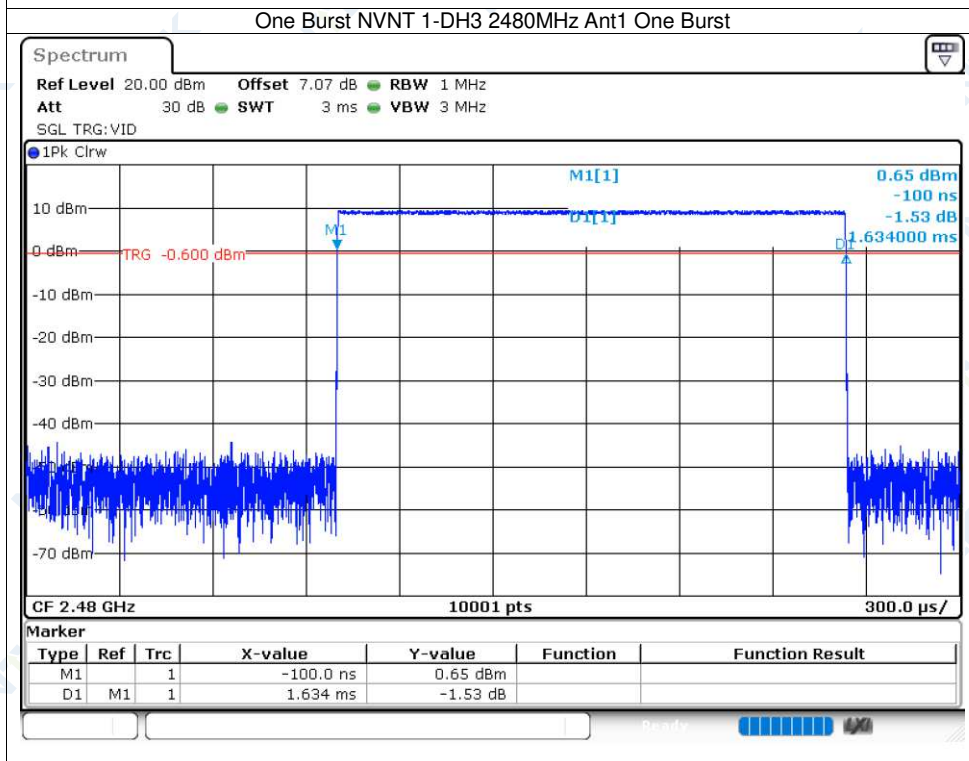
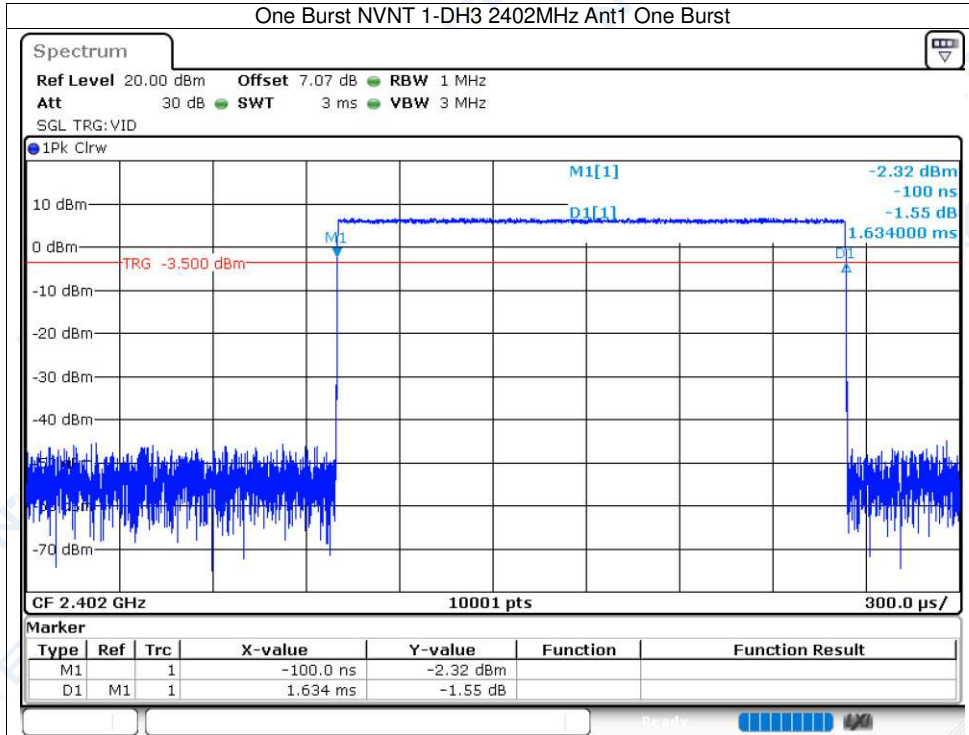


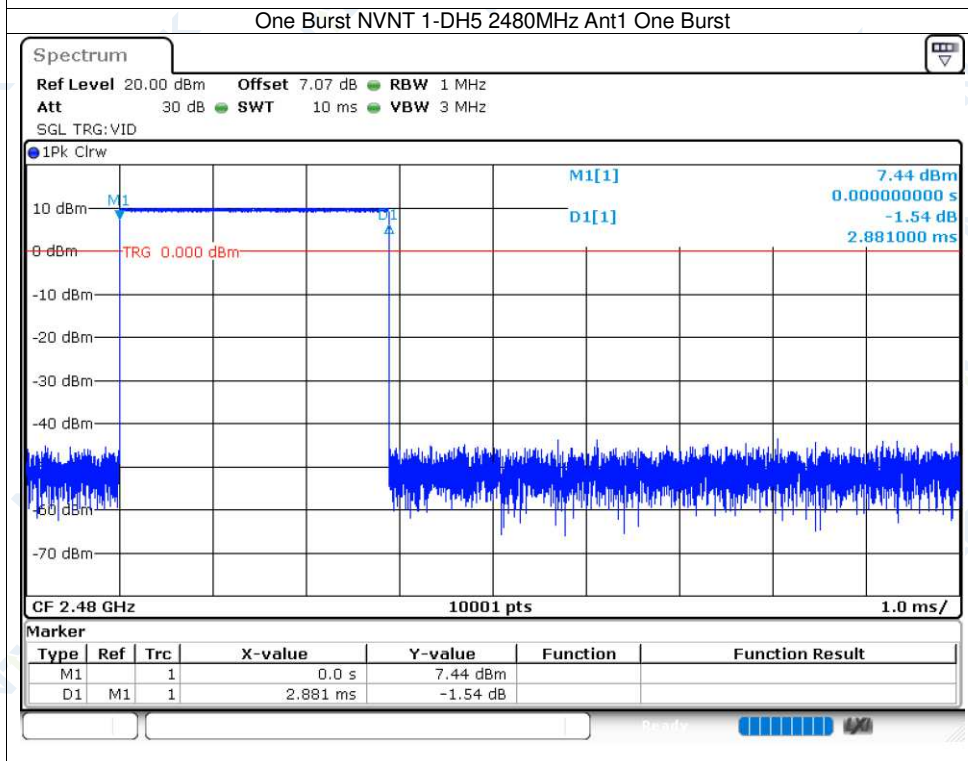
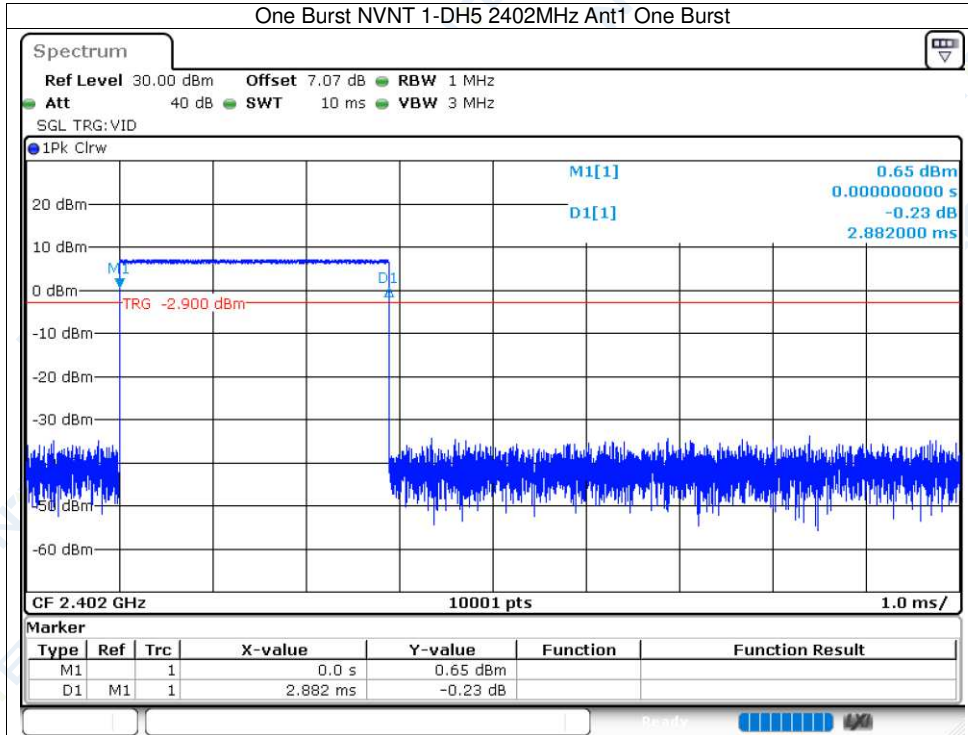


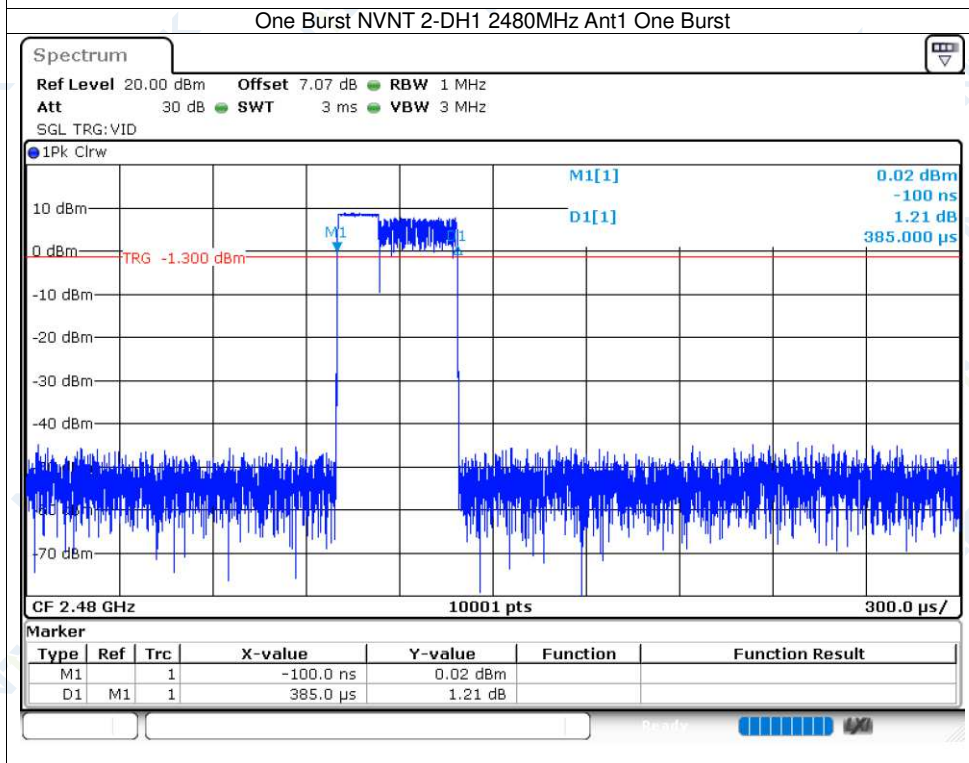
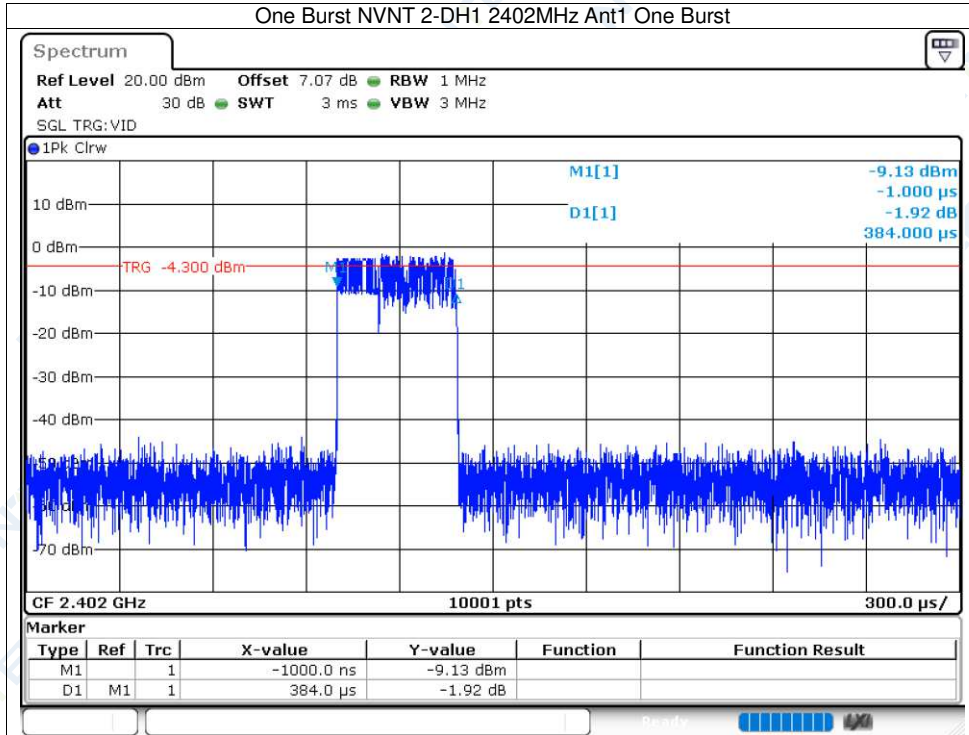
11.3 Dwell Time One Burst

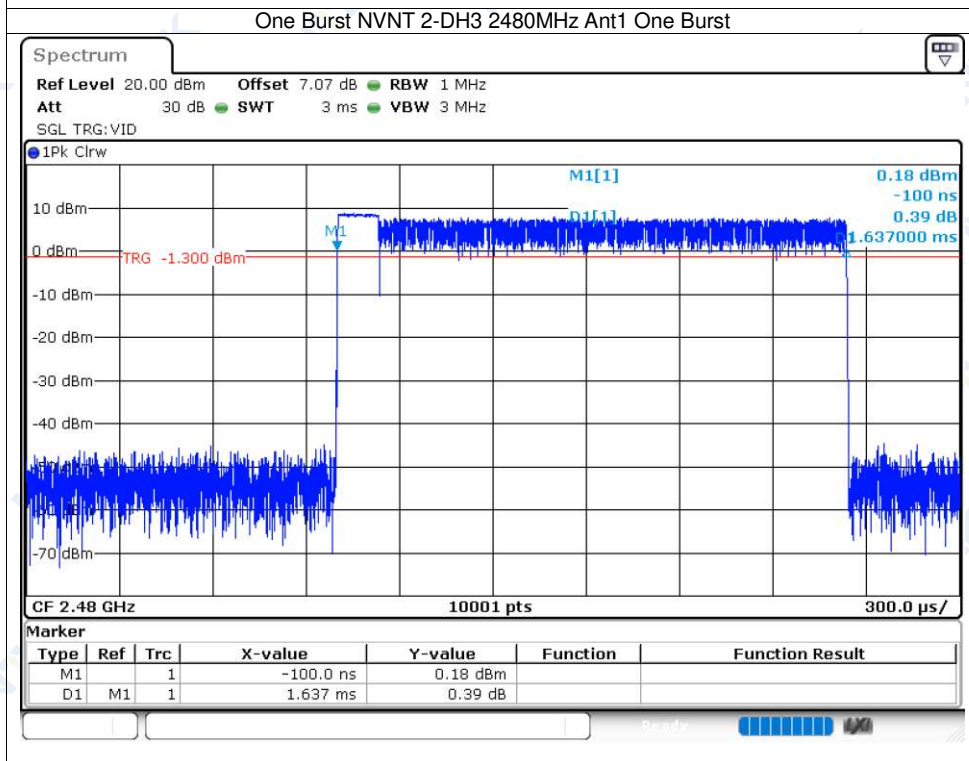
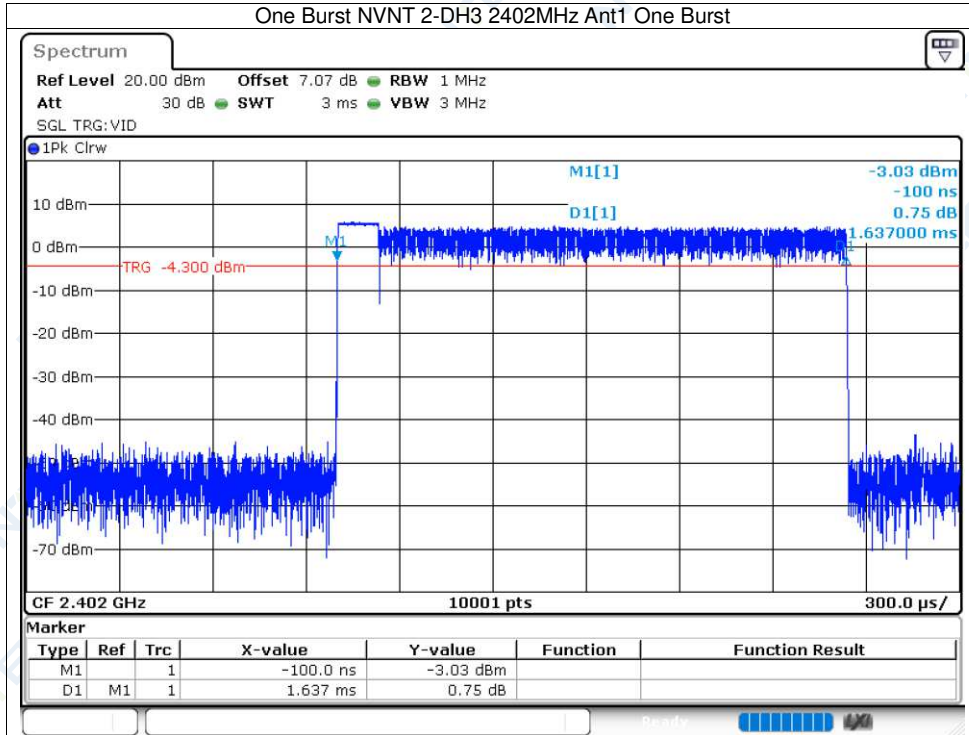
| Condition | Mode | Frequency (MHz) | Antenna | Pulse Time (ms) |
|-----------|-------|-----------------|---------|-----------------|
| NVNT | 1-DH1 | 2402 | Ant1 | 0.378 |
| NVNT | 1-DH1 | 2480 | Ant1 | 0.376 |
| NVNT | 1-DH3 | 2402 | Ant1 | 1.634 |
| NVNT | 1-DH3 | 2480 | Ant1 | 1.634 |
| NVNT | 1-DH5 | 2402 | Ant1 | 2.882 |
| NVNT | 1-DH5 | 2480 | Ant1 | 2.881 |
| NVNT | 2-DH1 | 2402 | Ant1 | 0.384 |
| NVNT | 2-DH1 | 2480 | Ant1 | 0.385 |
| NVNT | 2-DH3 | 2402 | Ant1 | 1.637 |
| NVNT | 2-DH3 | 2480 | Ant1 | 1.637 |
| NVNT | 2-DH5 | 2402 | Ant1 | 2.884 |
| NVNT | 2-DH5 | 2480 | Ant1 | 2.884 |
| NVNT | 3-DH1 | 2402 | Ant1 | 0.386 |
| NVNT | 3-DH1 | 2480 | Ant1 | 0.386 |
| NVNT | 3-DH3 | 2402 | Ant1 | 1.636 |
| NVNT | 3-DH3 | 2480 | Ant1 | 1.634 |
| NVNT | 3-DH5 | 2402 | Ant1 | 2.887 |
| NVNT | 3-DH5 | 2480 | Ant1 | 2.887 |

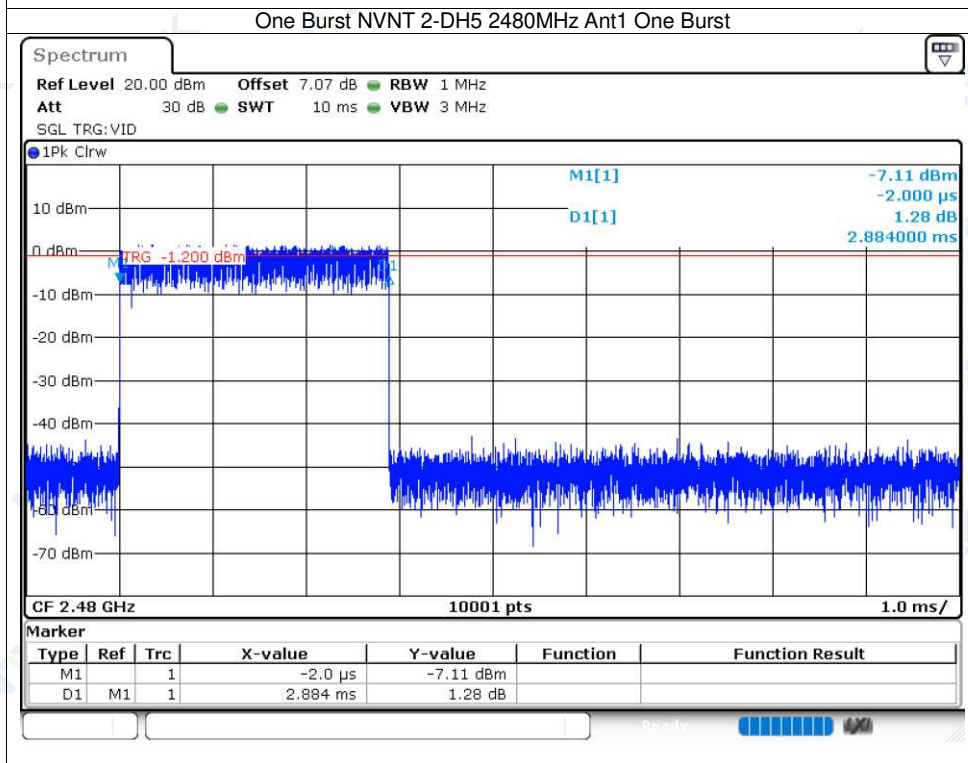
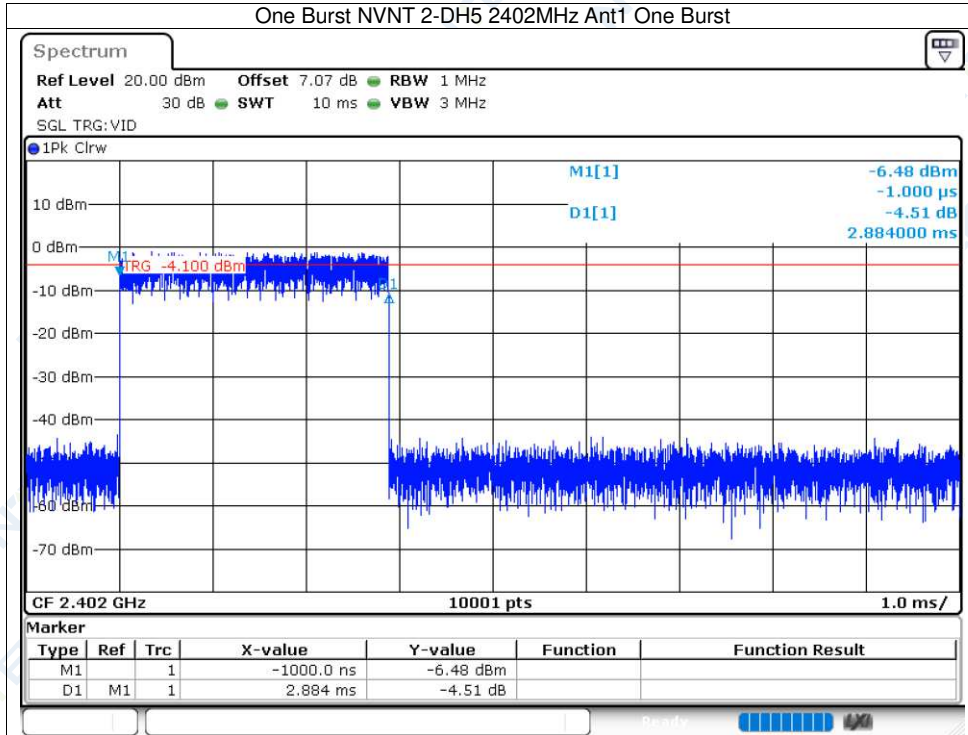


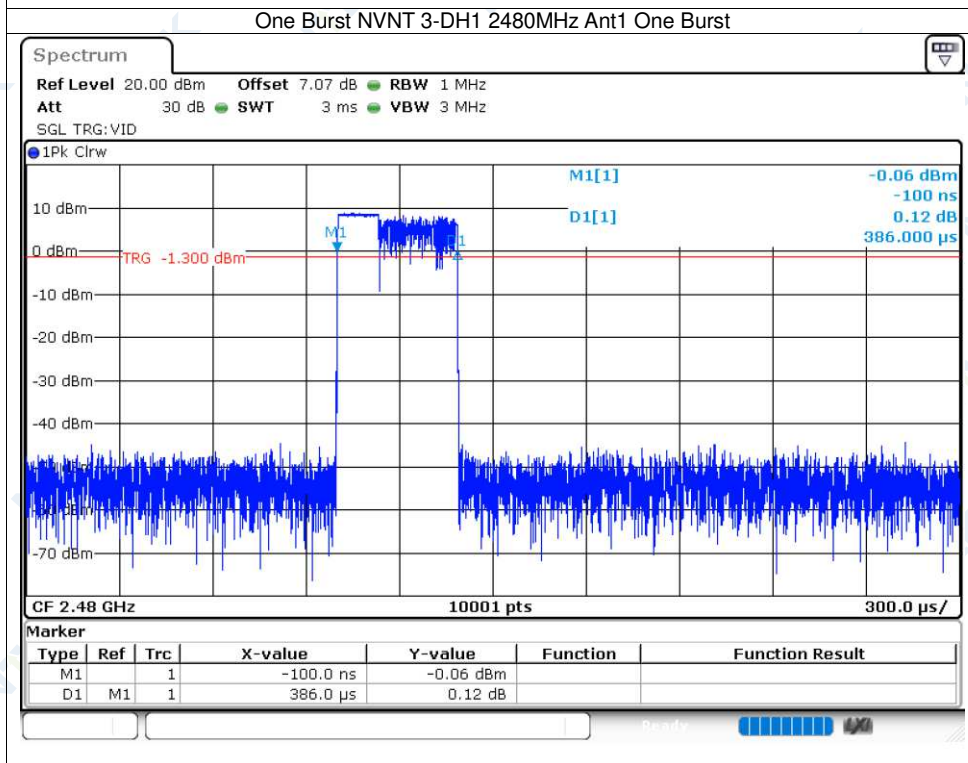
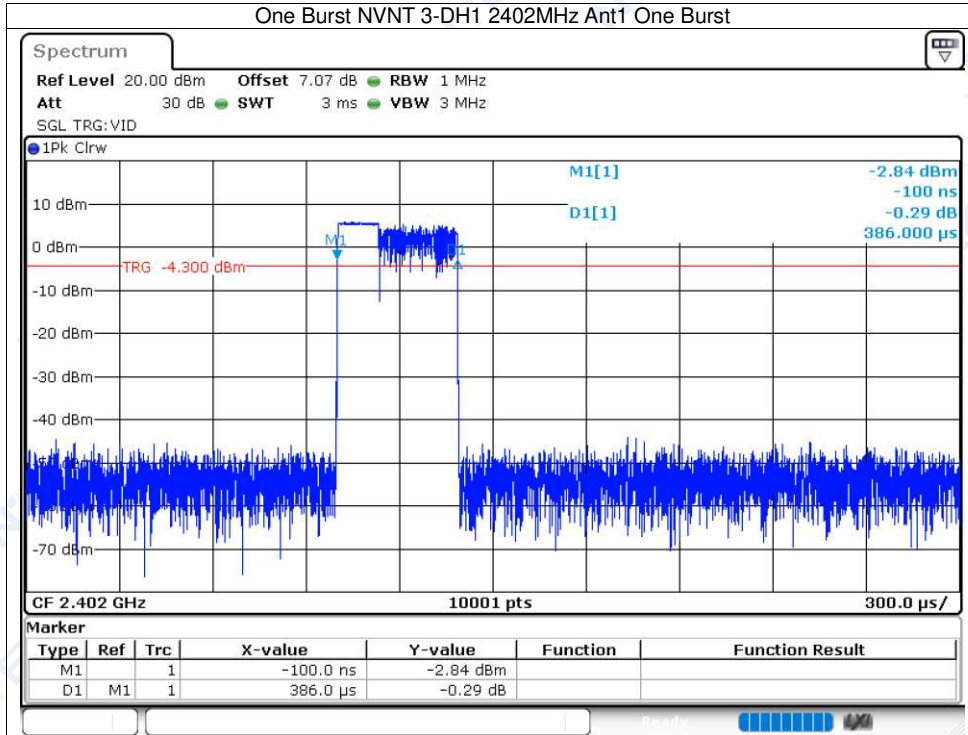


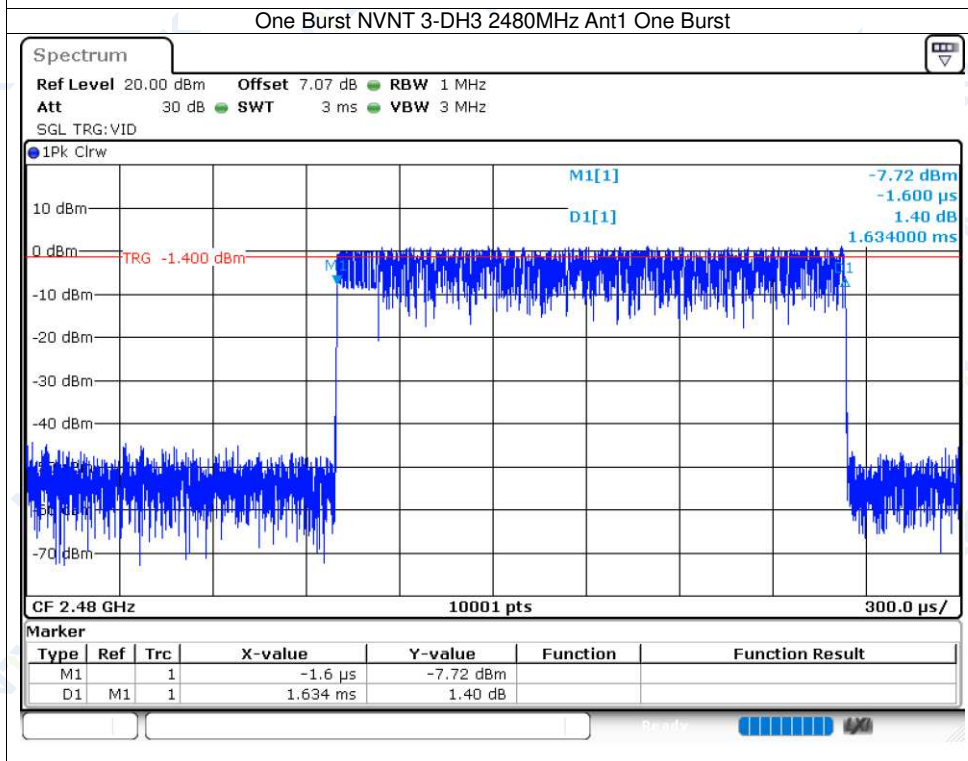
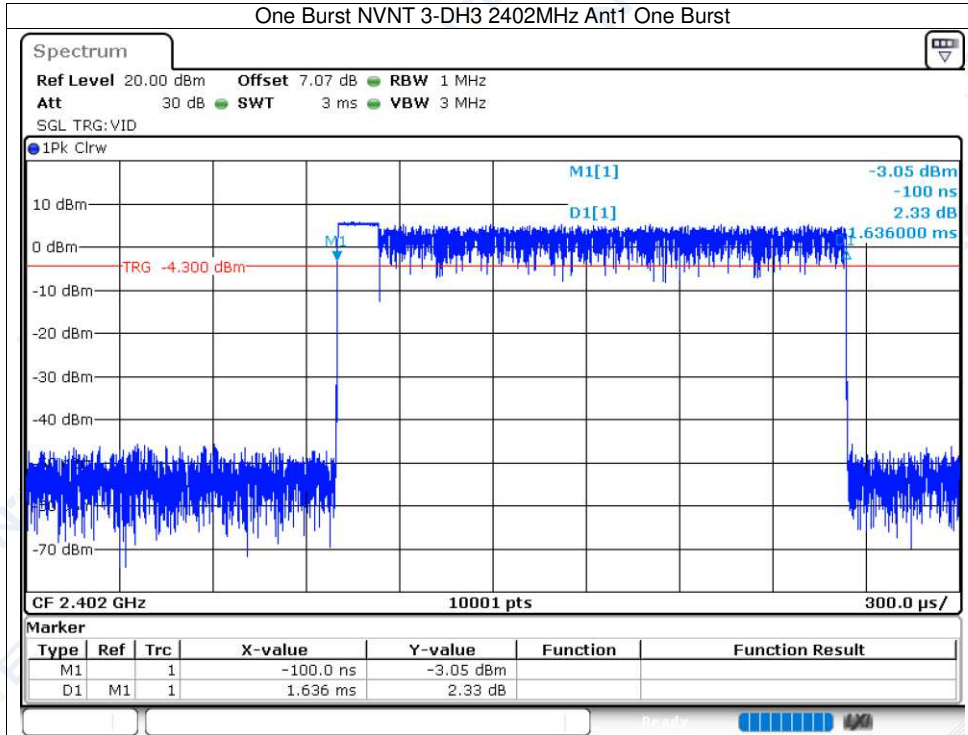


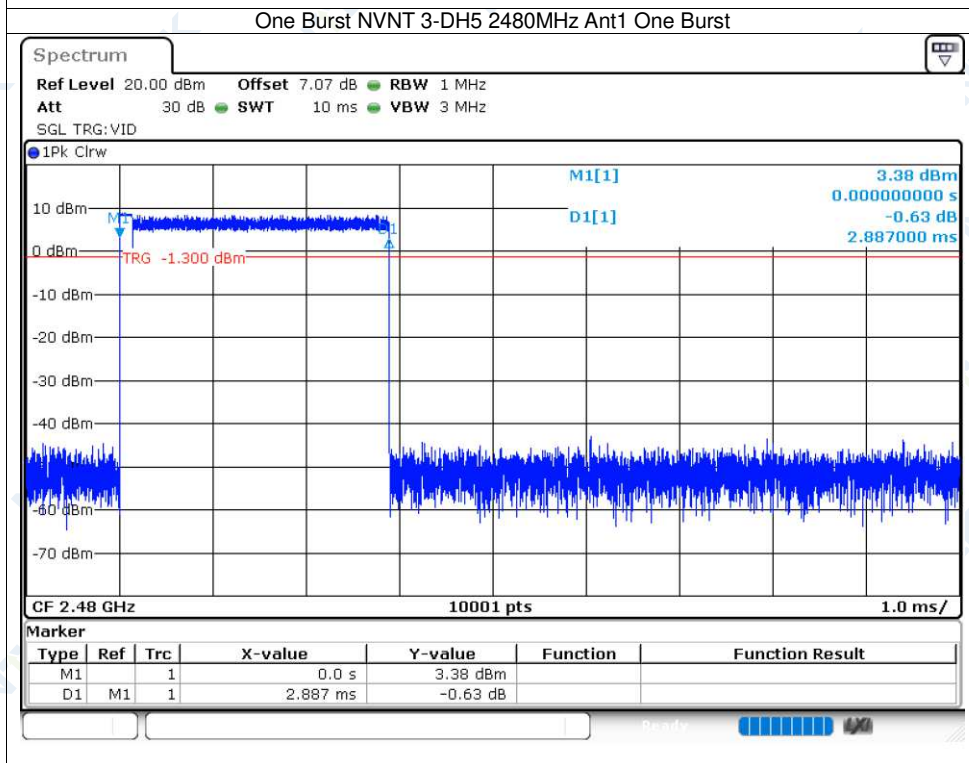
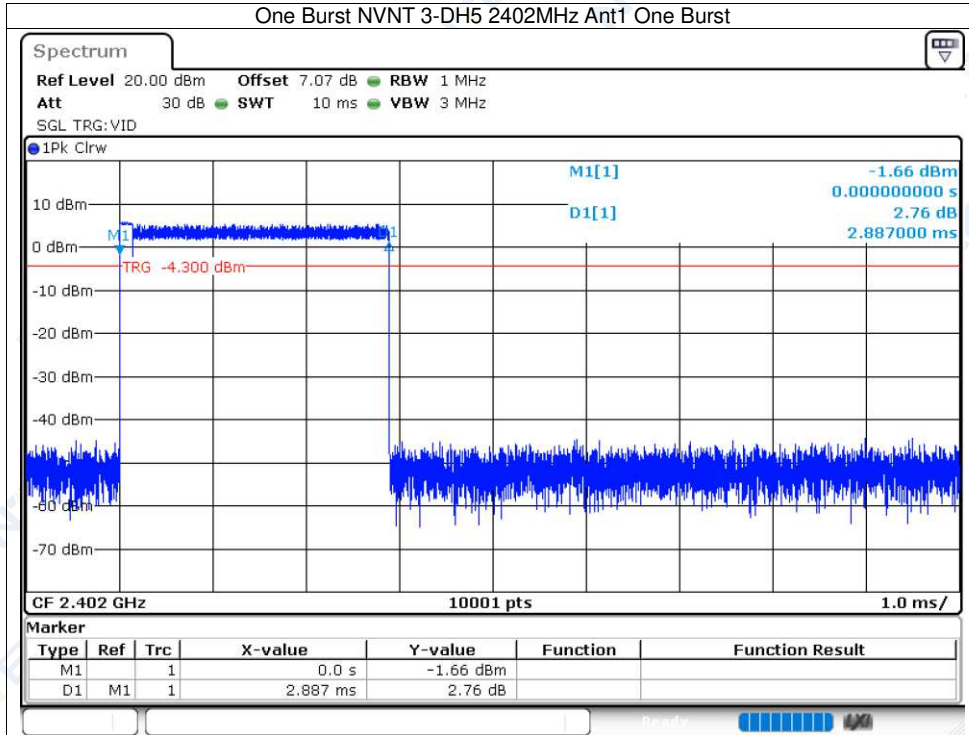












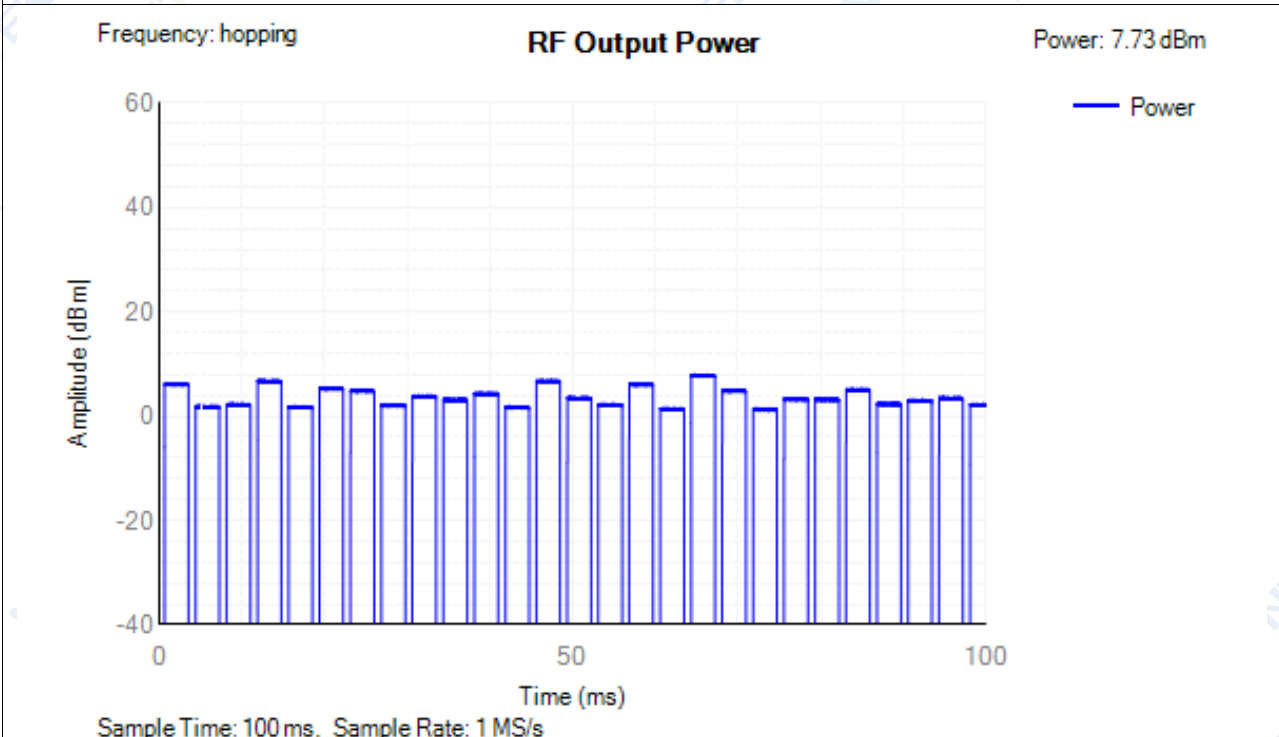


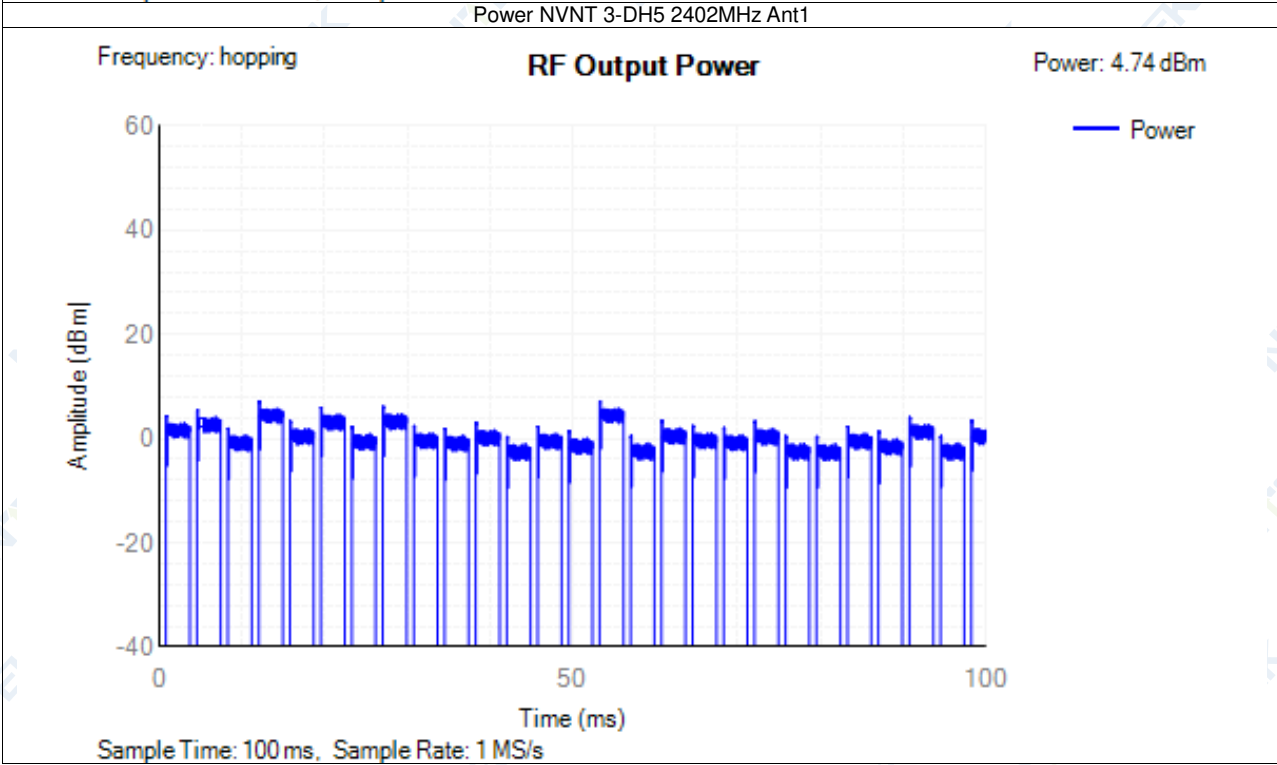
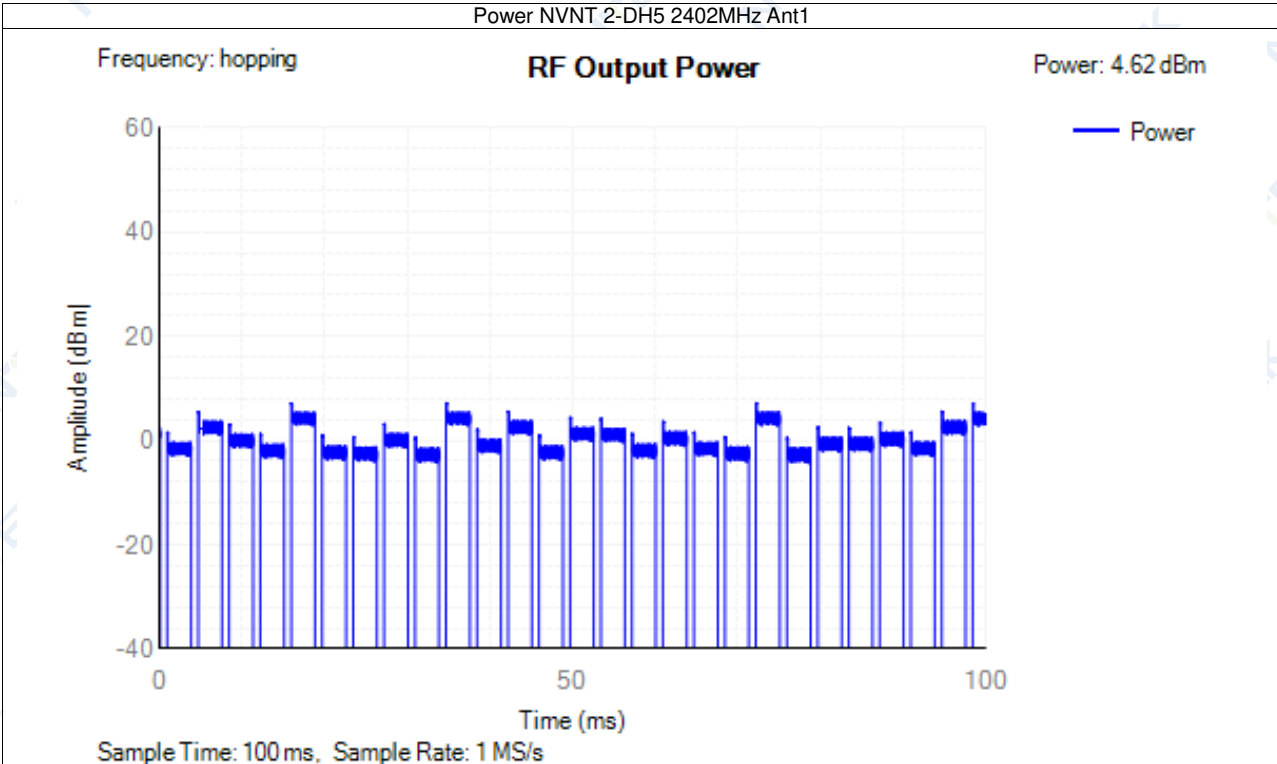
11.4 RF Output Power

| Condition | Mode | Frequency (MHz) | Antenna | Max Burst RMS Power (dBm) | Burst Number | Max EIRP (dBm) | Limit (dBm) | Verdict |
|-----------|-------|-----------------|---------|---------------------------|--------------|----------------|-------------|---------|
| NVNT | 1-DH5 | hopping | Ant1 | 7.73 | 27 | 8.73 | 20 | Pass |
| NVNT | 2-DH5 | hopping | Ant1 | 4.62 | 28 | 5.62 | 20 | Pass |
| NVNT | 3-DH5 | hopping | Ant1 | 4.74 | 27 | 5.74 | 20 | Pass |
| NVLT | 1-DH5 | hopping | Ant1 | 7.05 | 27 | 8.05 | 20 | Pass |
| NVLT | 2-DH5 | hopping | Ant1 | 4.03 | 28 | 5.03 | 20 | Pass |
| NVLT | 3-DH5 | hopping | Ant1 | 4.17 | 27 | 5.17 | 20 | Pass |
| NVHT | 1-DH5 | hopping | Ant1 | 7.02 | 27 | 8.02 | 20 | Pass |
| NVHT | 2-DH5 | hopping | Ant1 | 3.93 | 28 | 4.93 | 20 | Pass |
| NVHT | 3-DH5 | hopping | Ant1 | 3.97 | 27 | 4.97 | 20 | Pass |

Test Graphs

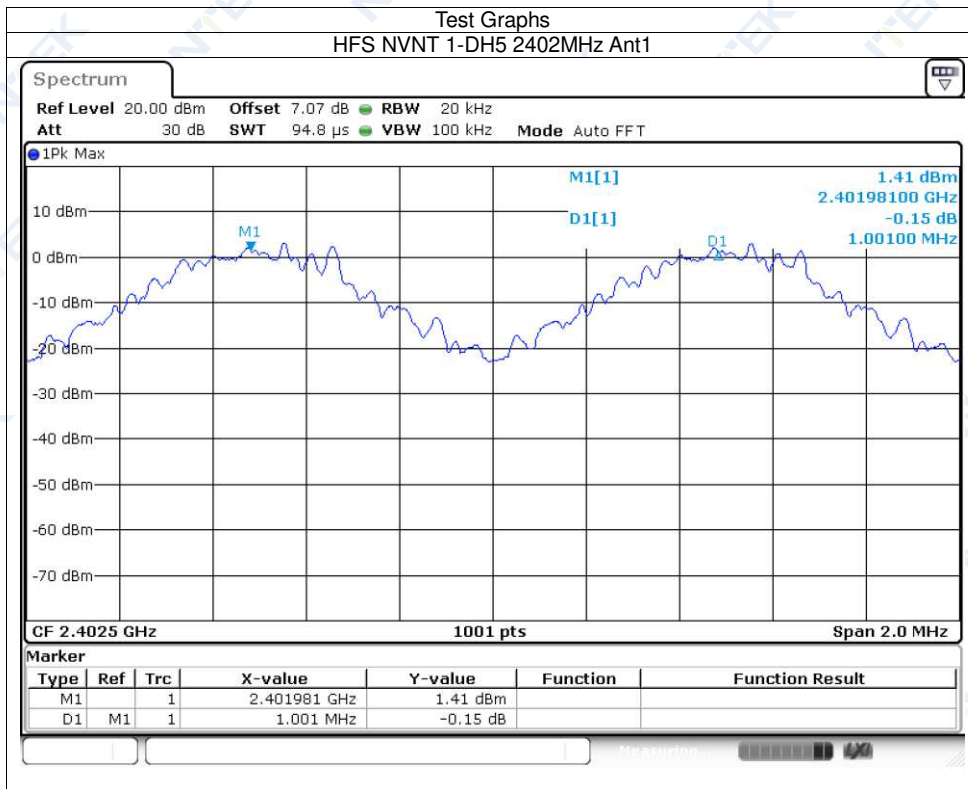
Power NVNT 1-DH5 2402MHz Ant1

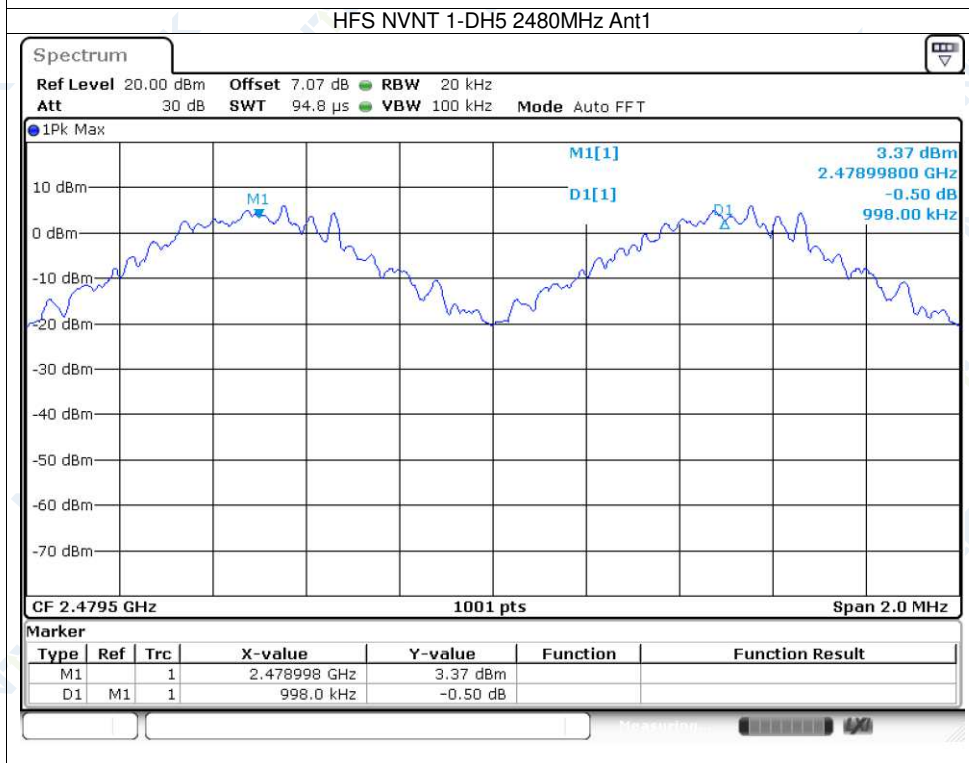
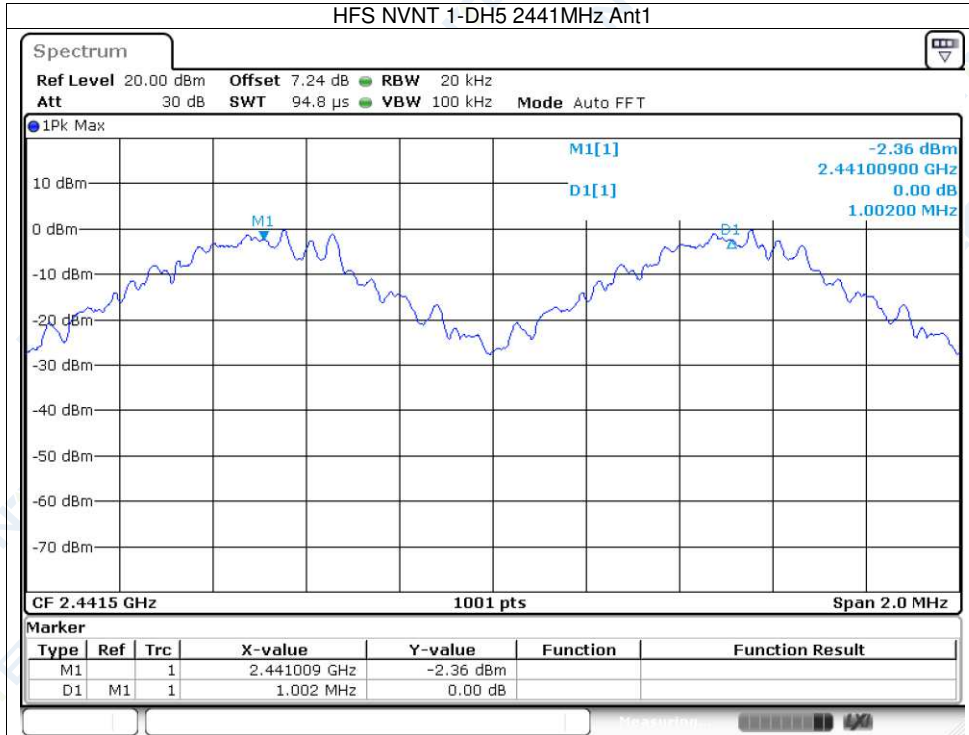


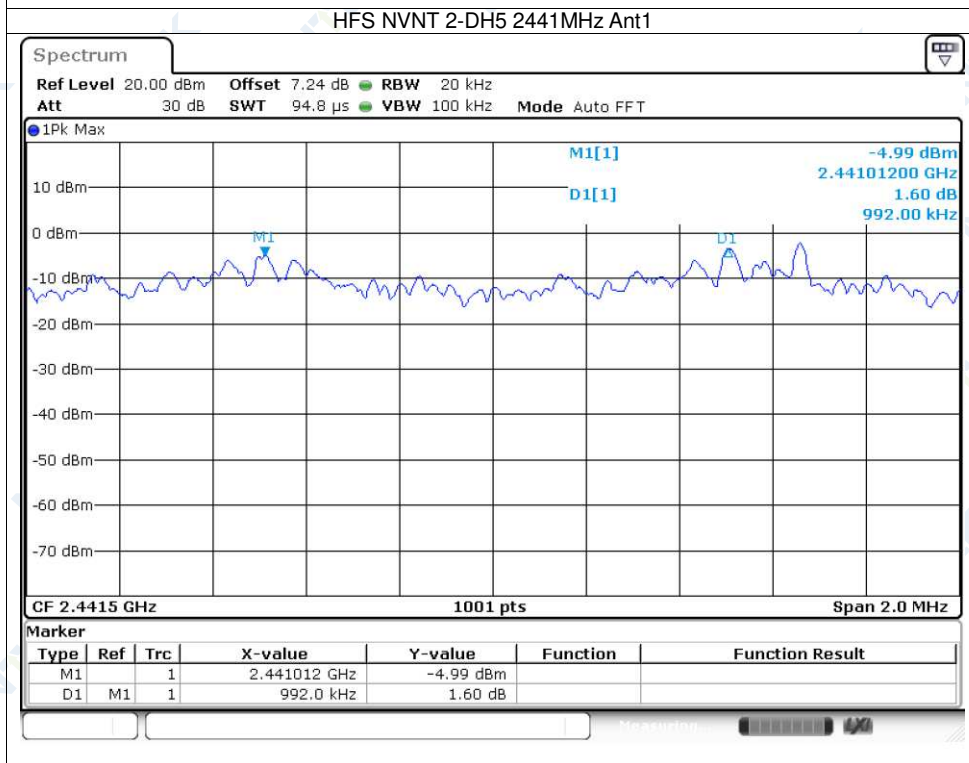
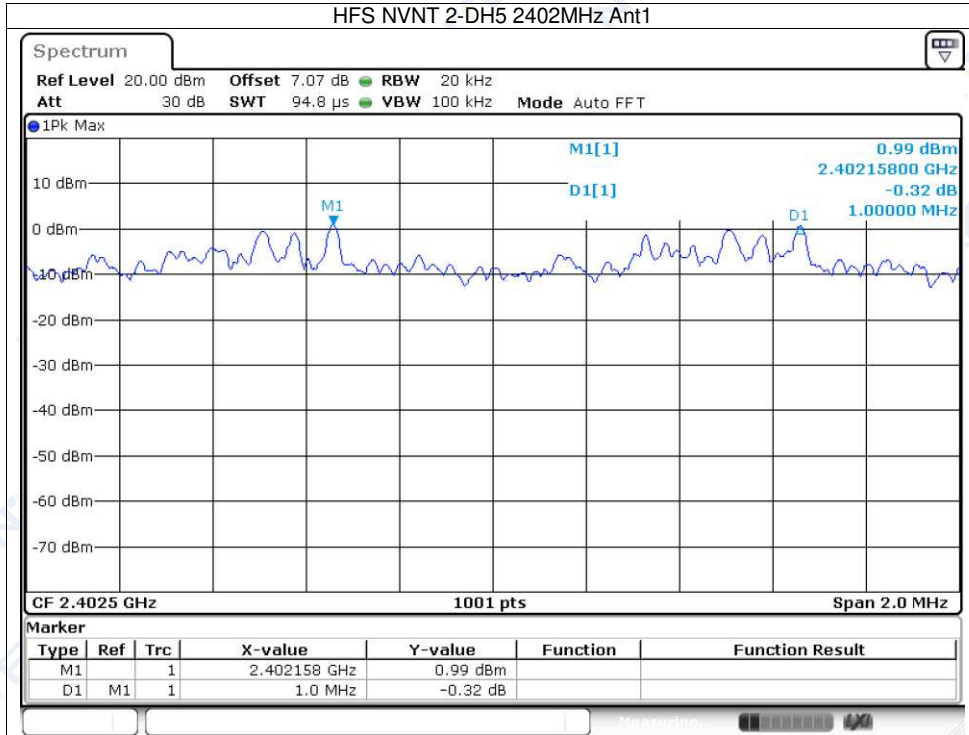


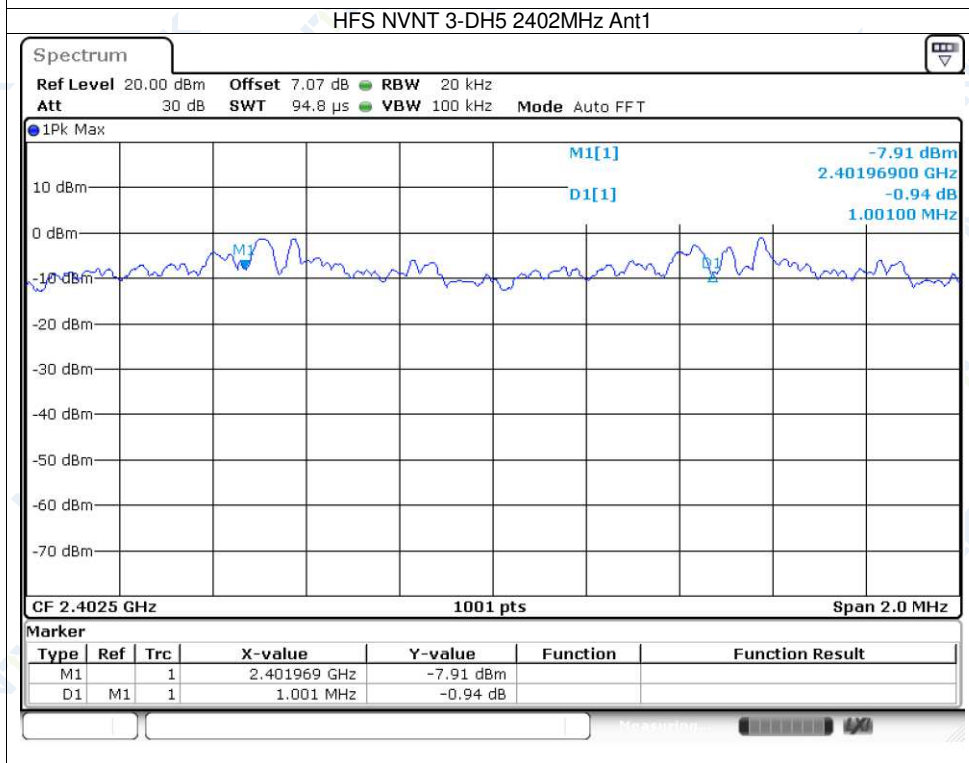
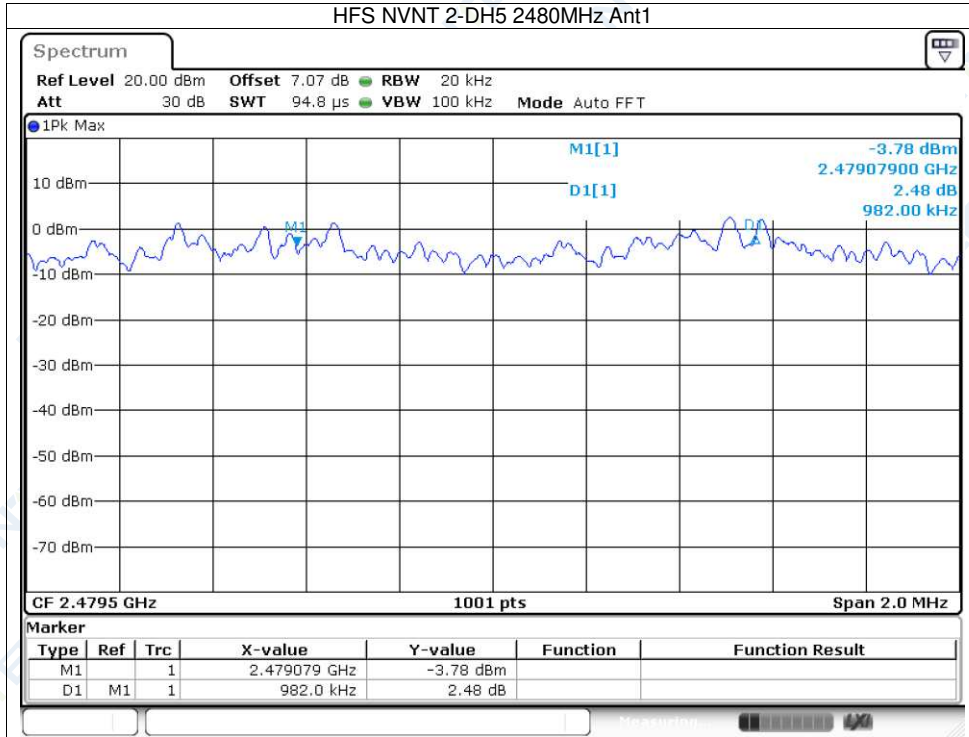
11.5 Hopping Frequency Separation

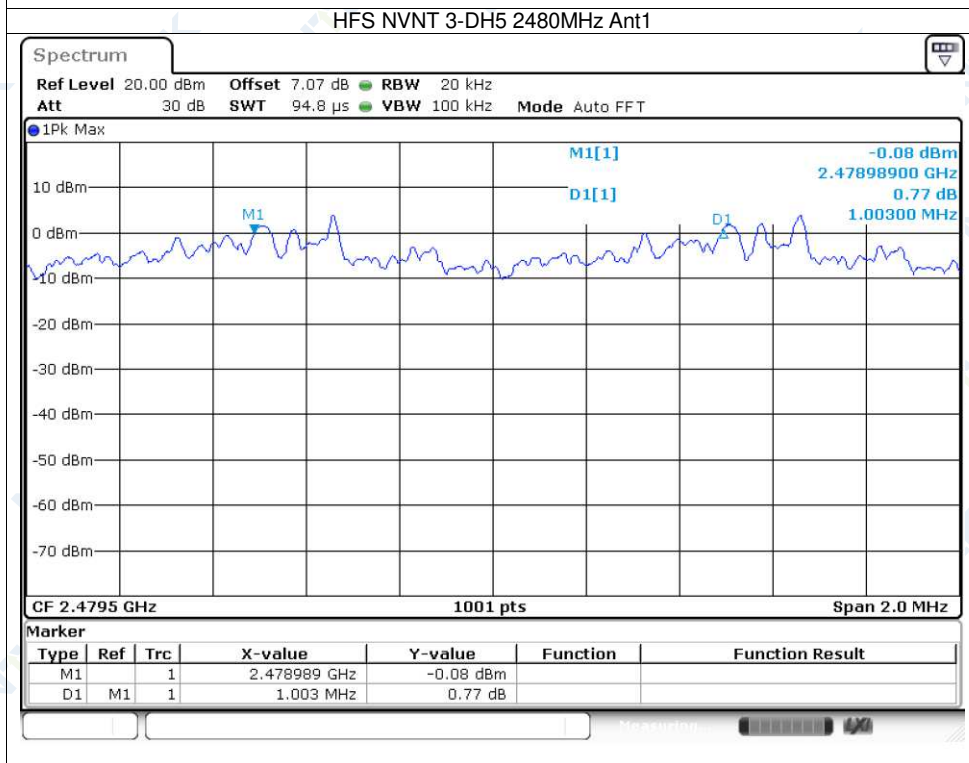
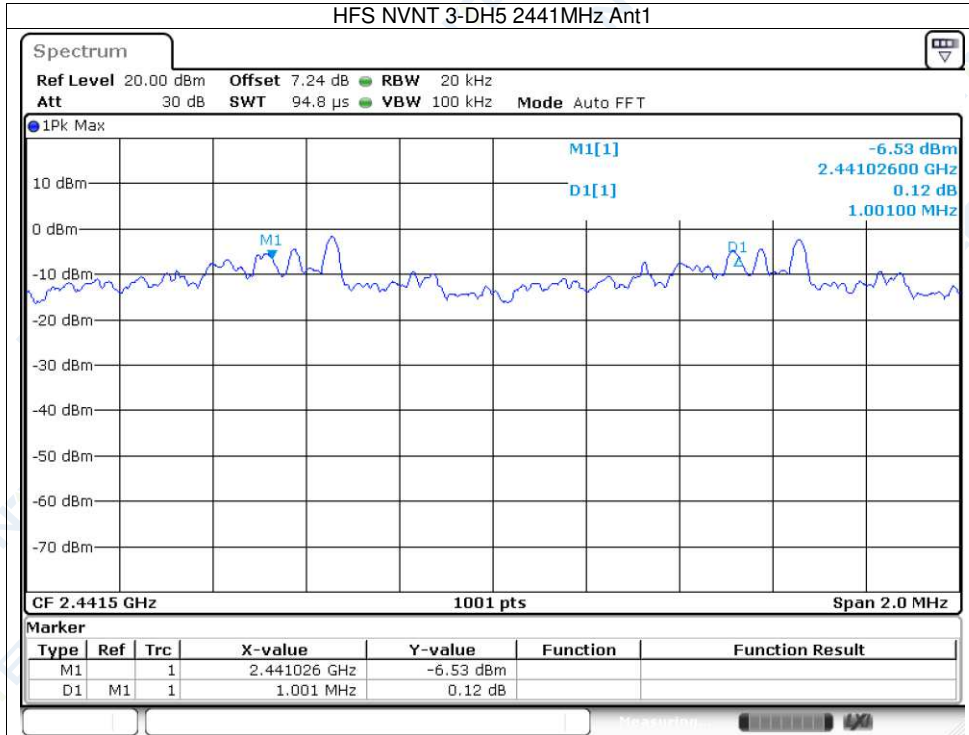
| Condition | Mode | Antenna | Hopping Freq1 (MHz) | Hopping Freq2 (MHz) | HFS (MHz) | Limit (MHz) | Verdict |
|-----------|-------|---------|---------------------|---------------------|-----------|-------------|---------|
| NVNT | 1-DH5 | Ant1 | 2401.981 | 2402.982 | 1.001 | 0.1 | Pass |
| NVNT | 1-DH5 | Ant1 | 2441.009 | 2442.011 | 1.002 | 0.1 | Pass |
| NVNT | 1-DH5 | Ant1 | 2478.998 | 2479.996 | 0.998 | 0.1 | Pass |
| NVNT | 2-DH5 | Ant1 | 2402.158 | 2403.158 | 1 | 0.1 | Pass |
| NVNT | 2-DH5 | Ant1 | 2441.012 | 2442.004 | 0.992 | 0.1 | Pass |
| NVNT | 2-DH5 | Ant1 | 2479.079 | 2480.061 | 0.982 | 0.1 | Pass |
| NVNT | 3-DH5 | Ant1 | 2401.969 | 2402.97 | 1.001 | 0.1 | Pass |
| NVNT | 3-DH5 | Ant1 | 2441.026 | 2442.027 | 1.001 | 0.1 | Pass |
| NVNT | 3-DH5 | Ant1 | 2478.989 | 2479.992 | 1.003 | 0.1 | Pass |





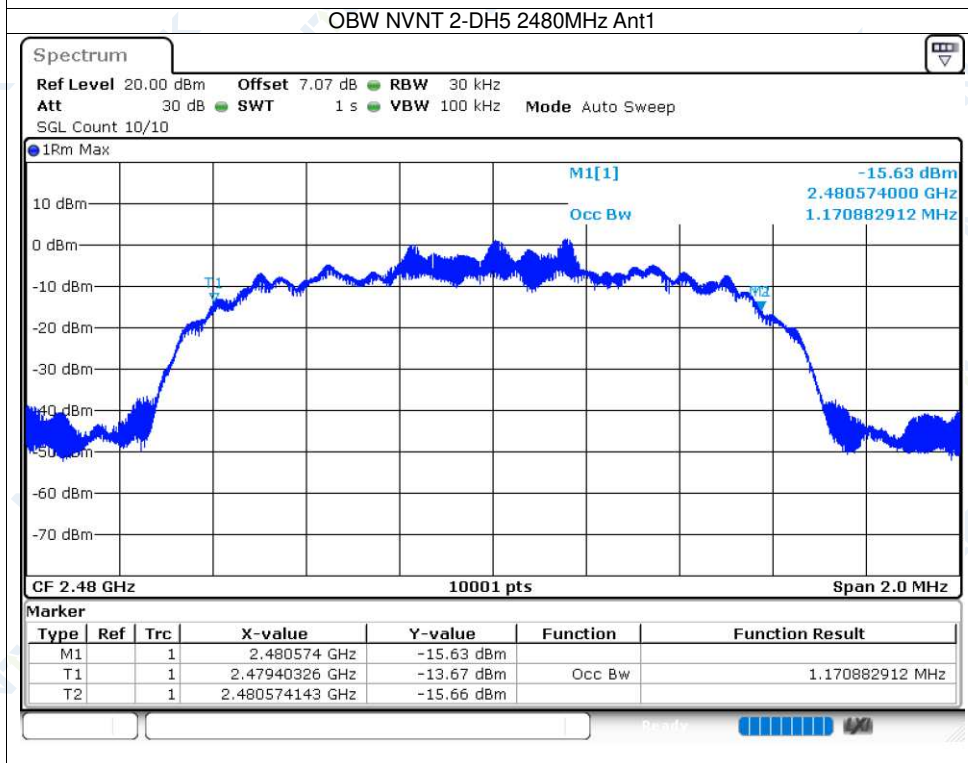
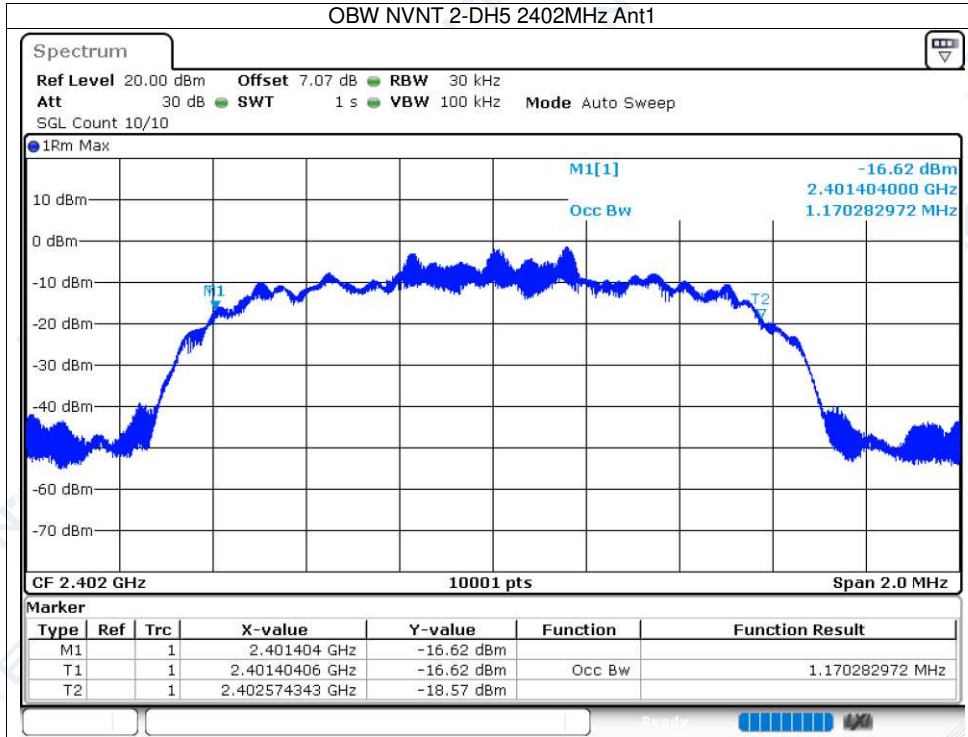


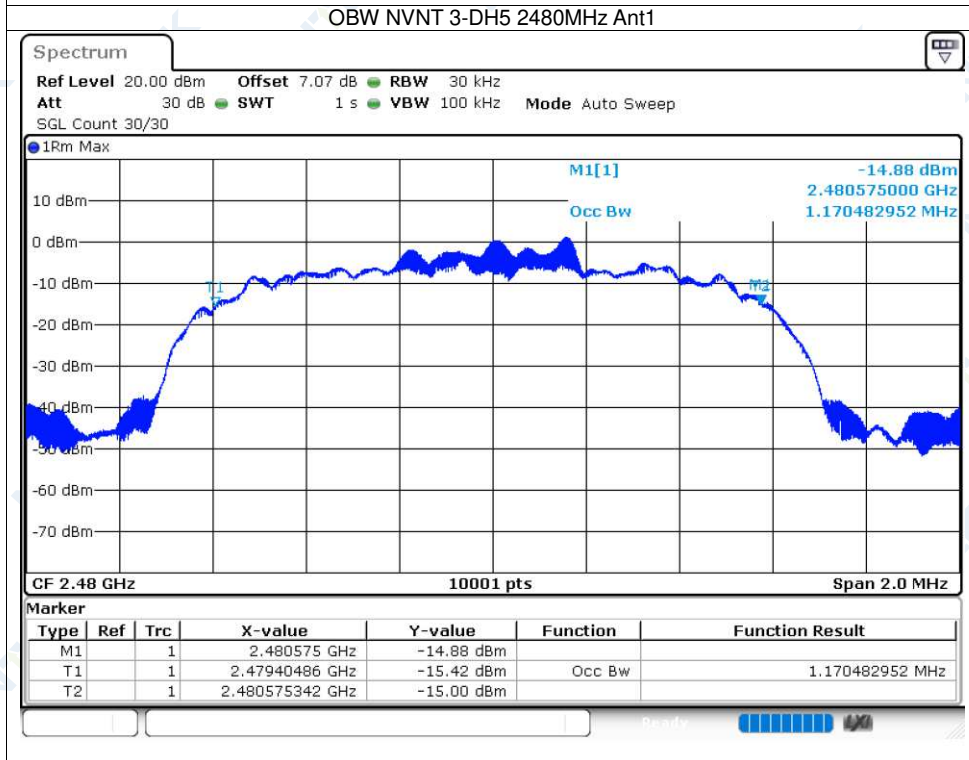
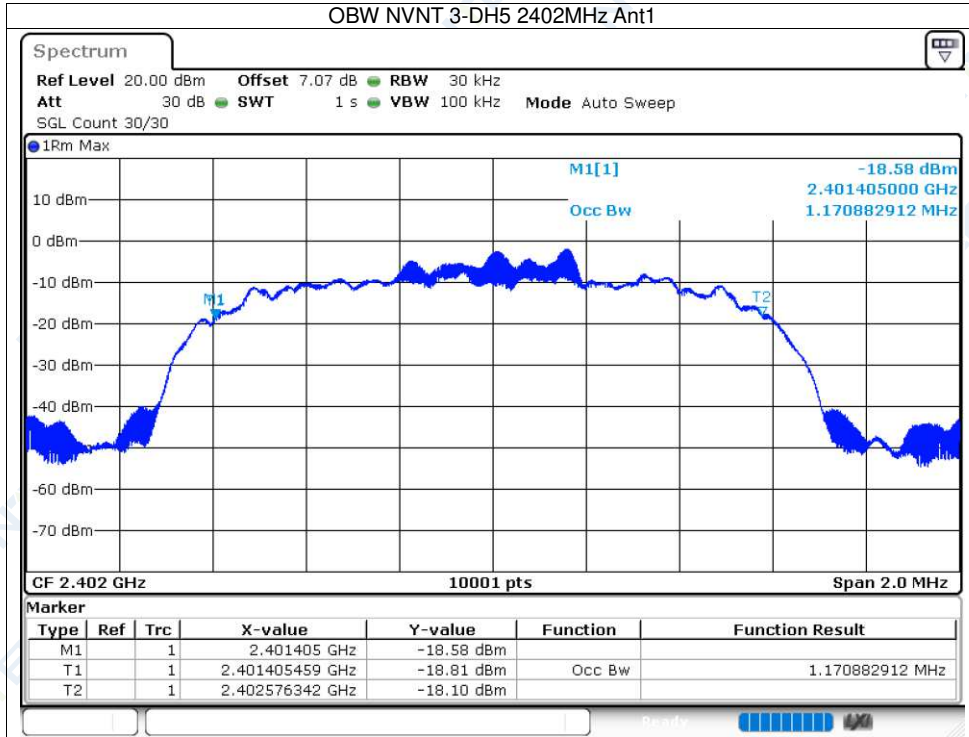




11.6 Occupied Channel Bandwidth

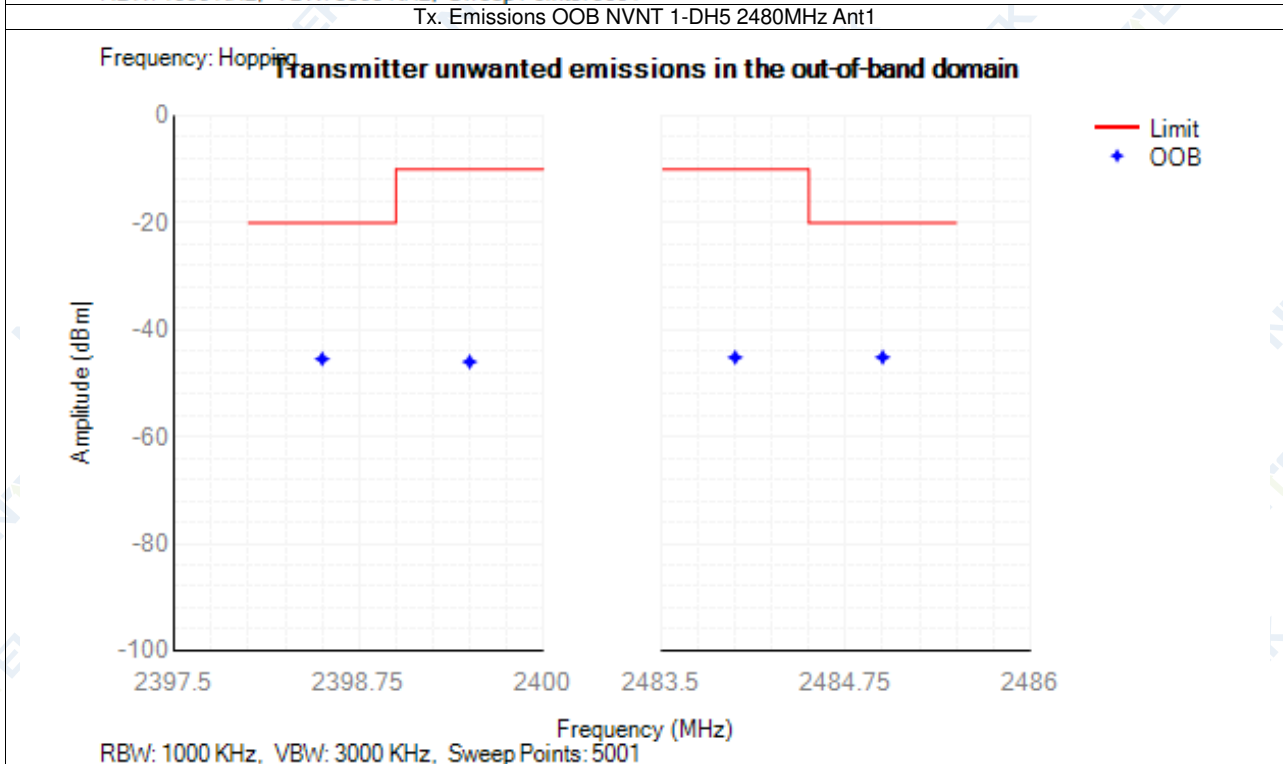
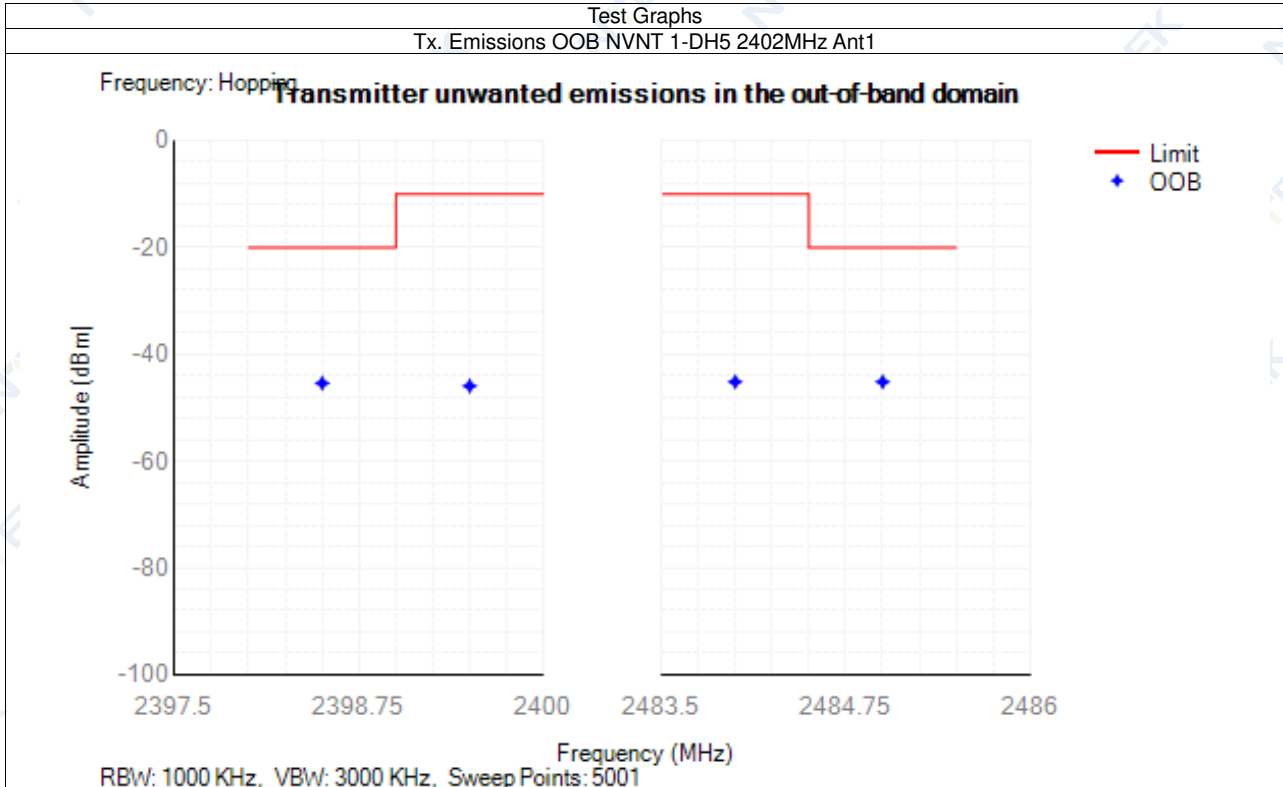
| Condition | Mode | Frequency (MHz) | Antenna | Center Frequency (MHz) | OBW (MHz) | Lower Edge (MHz) | Upper Edge (MHz) | Limit OBW (MHz) | Verdict |
|-----------|-------|-----------------|---------|------------------------|-----------|------------------|------------------|------------------|---------|
| NVNT | 1-DH5 | 2402 | Ant1 | 2402 | 0.765 | 2401.618 | 2402.383 | 2400 - 2483.5MHz | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 2479.999 | 0.765 | 2479.617 | 2480.382 | 2400 - 2483.5MHz | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 2401.989 | 1.17 | 2401.404 | 2402.574 | 2400 - 2483.5MHz | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 2479.989 | 1.171 | 2479.403 | 2480.574 | 2400 - 2483.5MHz | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 2401.991 | 1.171 | 2401.405 | 2402.576 | 2400 - 2483.5MHz | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 2479.99 | 1.17 | 2479.405 | 2480.575 | 2400 - 2483.5MHz | Pass |

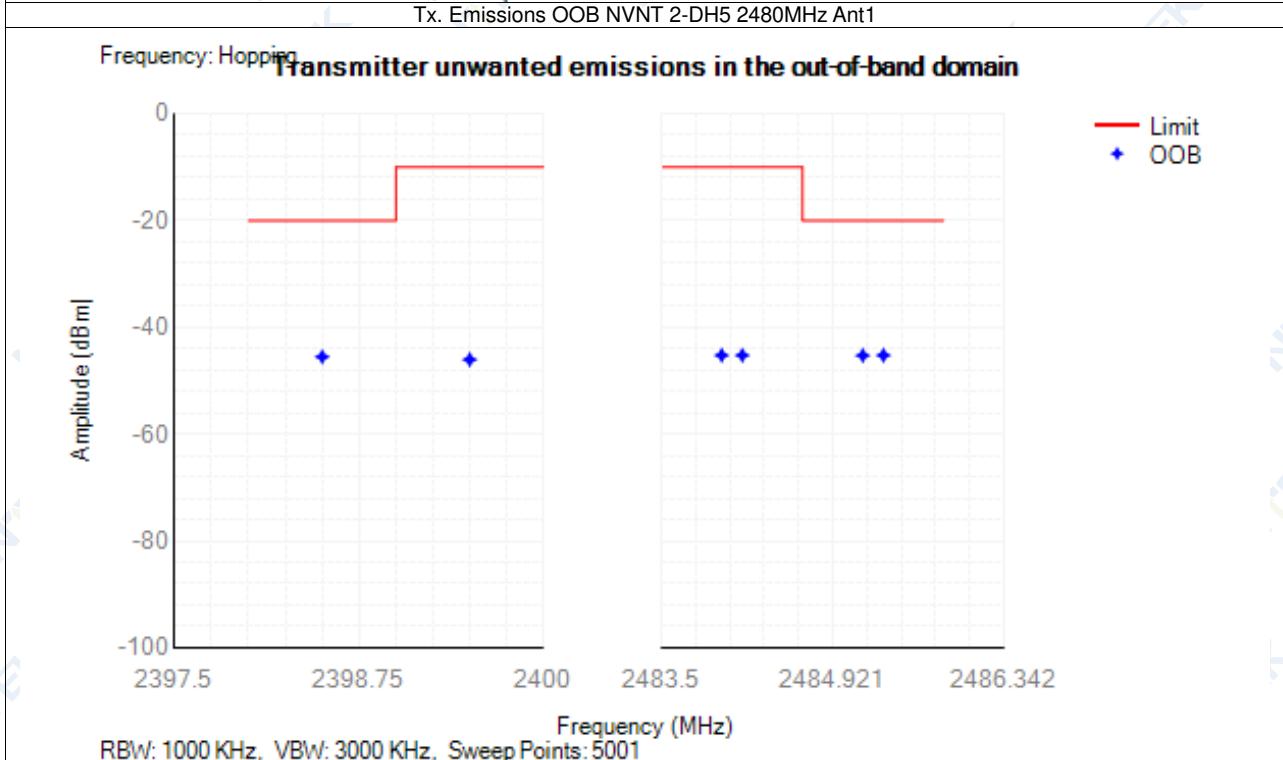
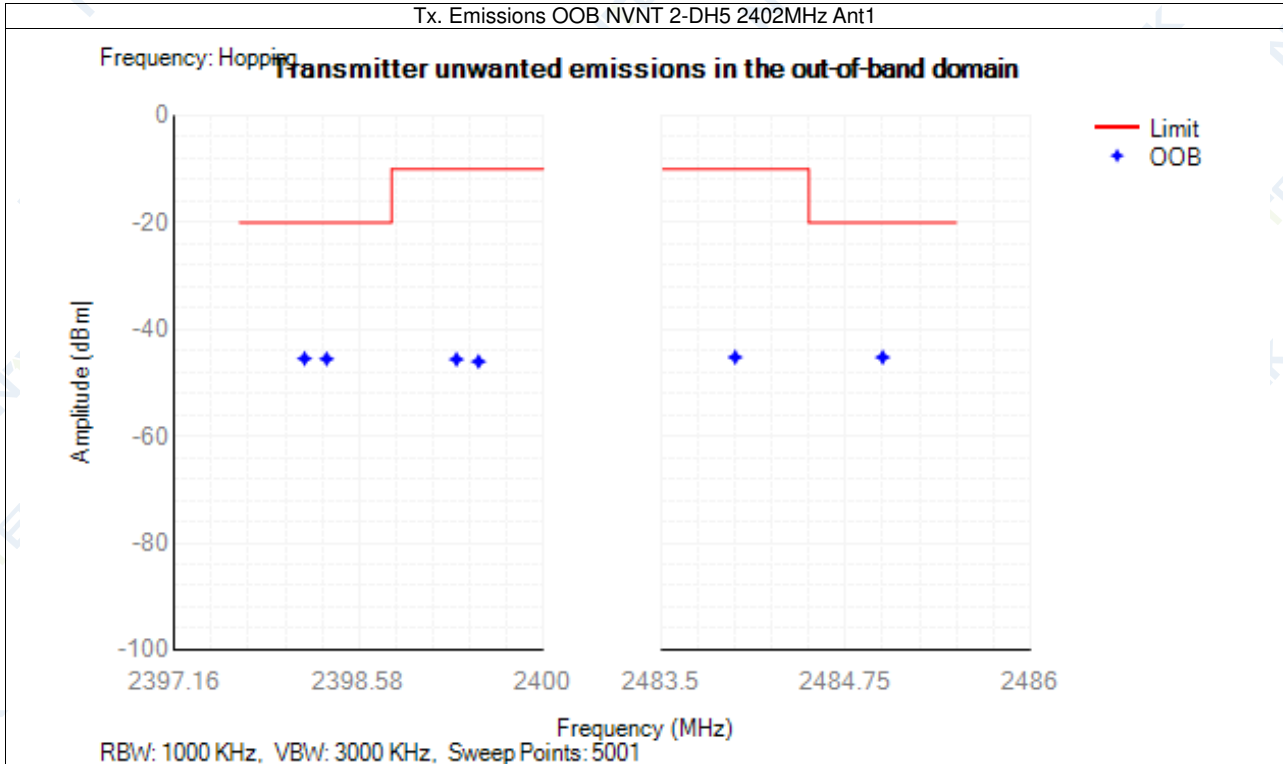


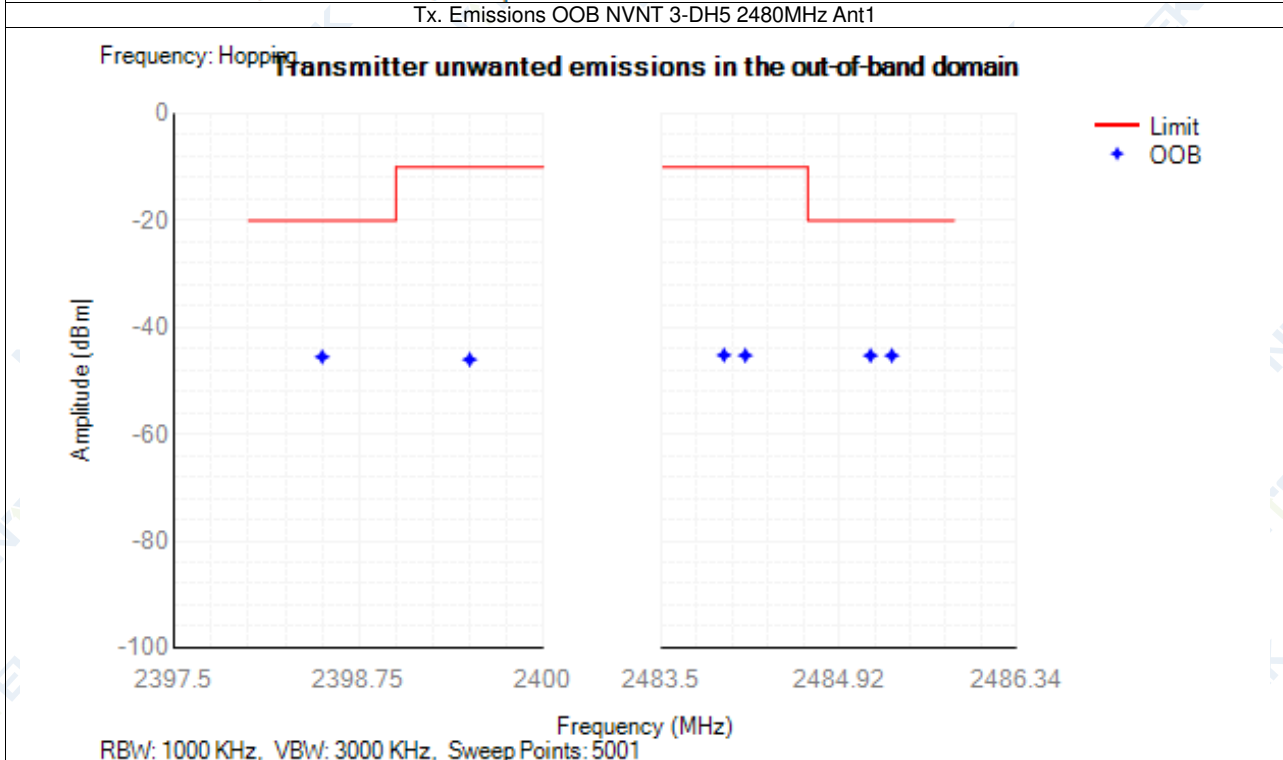
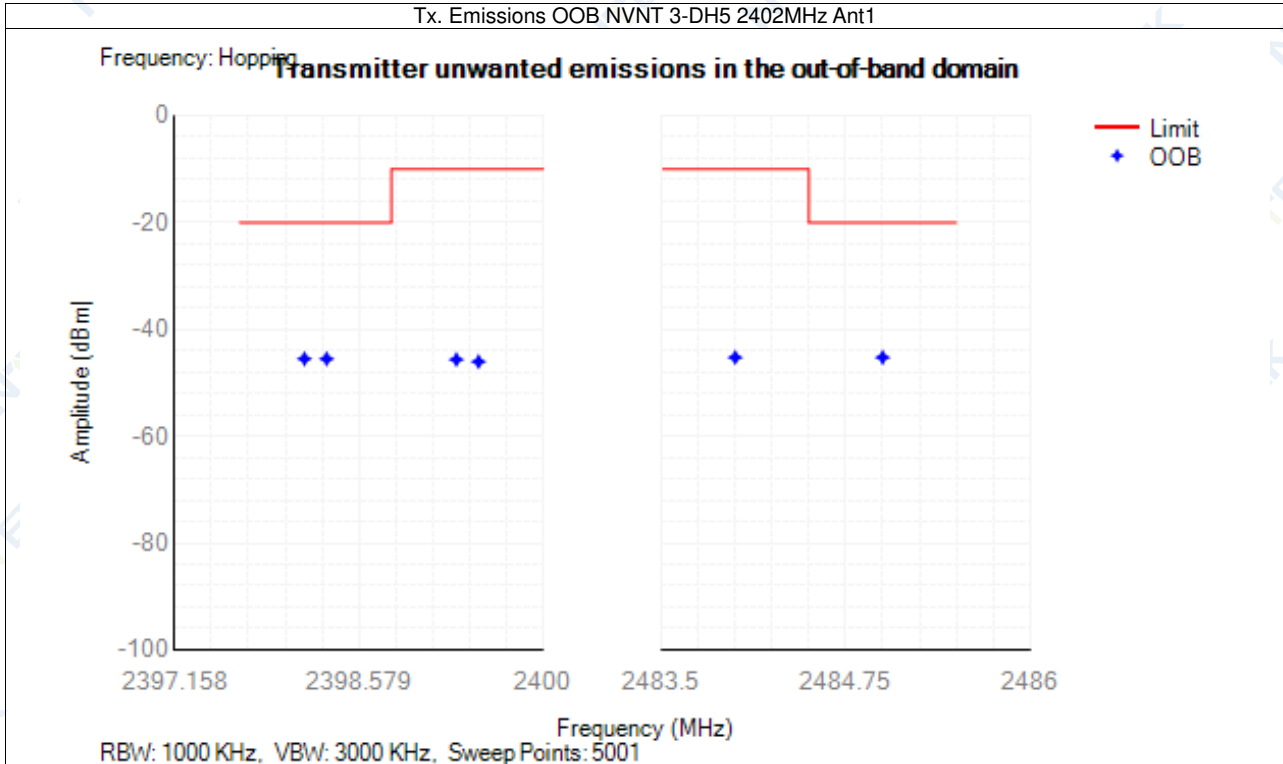


11.7 Transmitter unwanted emissions in the out-of-band domain

| Condition | Mode | Frequency (MHz) | Antenna | OOB Frequency (MHz) | Level (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|-----------|-------|-----------------|---------|---------------------|-----------------|-----------------|---------|
| NVNT | 1-DH5 | Hopping | Ant1 | 2399.5 | -45.92 | -10 | Pass |
| NVNT | 1-DH5 | Hopping | Ant1 | 2398.5 | -45.4 | -20 | Pass |
| NVNT | 1-DH5 | Hopping | Ant1 | 2484 | -45.14 | -10 | Pass |
| NVNT | 1-DH5 | Hopping | Ant1 | 2485 | -45.15 | -20 | Pass |
| NVNT | 1-DH5 | Hopping | Ant1 | 2399.5 | -45.99 | -10 | Pass |
| NVNT | 1-DH5 | Hopping | Ant1 | 2398.5 | -45.46 | -20 | Pass |
| NVNT | 1-DH5 | Hopping | Ant1 | 2484 | -45.17 | -10 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2399.5 | -46.02 | -10 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2399.33 | -45.61 | -10 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2398.33 | -45.53 | -20 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2398.16 | -45.47 | -20 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2484 | -45.22 | -10 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2485 | -45.23 | -20 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2399.5 | -46.03 | -10 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2398.5 | -45.51 | -20 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2484 | -45.23 | -10 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2484.171 | -45.23 | -10 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2485.171 | -45.27 | -20 | Pass |
| NVNT | 2-DH5 | Hopping | Ant1 | 2485.342 | -45.23 | -20 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2399.5 | -46.04 | -10 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2399.329 | -45.65 | -10 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2398.329 | -45.52 | -20 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2398.158 | -45.51 | -20 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2484 | -45.26 | -10 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2485 | -45.25 | -20 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2399.5 | -46.03 | -10 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2398.5 | -45.52 | -20 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2484 | -45.2 | -10 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2484.17 | -45.25 | -10 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2485.17 | -45.28 | -20 | Pass |
| NVNT | 3-DH5 | Hopping | Ant1 | 2485.34 | -45.28 | -20 | Pass |







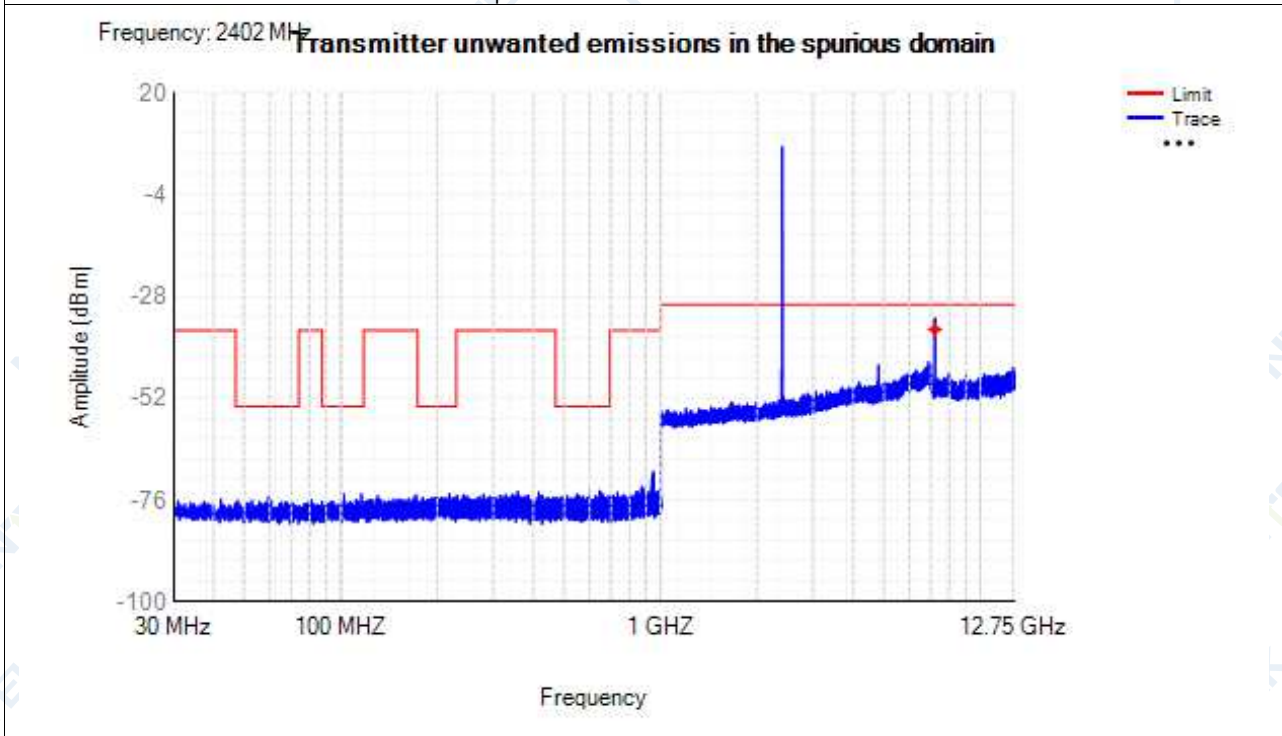
11.8 Transmitter unwanted emissions in the spurious domain

| Condition | Mode | Frequency (MHz) | Antenna | Range (MHz) | Spur Freq (MHz) | Peak (dBm) | RMS (dBm) | Limit (dBm) | Verdict |
|-----------|-------|-----------------|---------|---------------|-----------------|------------|-----------|-------------|---------|
| NVNT | 1-DH5 | 2402 | Ant1 | 30 -47 | 42.15 | -75.74 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 47 -74 | 59.45 | -75.23 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 74 -87.5 | 81.10 | -75.99 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 87.5 -118 | 116.10 | -74.59 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 118 -174 | 172.00 | -74.77 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 174 -230 | 218.55 | -74.53 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 230 -470 | 357.15 | -74.00 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 470 -694 | 598.40 | -73.79 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 694 -1000 | 948.85 | -69.29 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 1000 -2398 | 2389.50 | -45.33 | NA | -30 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 2485.5 -12750 | 7206.00 | -33.15 | -35.79 | -30 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 30 -47 | 34.95 | -74.95 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 47 -74 | 69.80 | -75.81 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 74 -87.5 | 75.20 | -75.79 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 87.5 -118 | 90.30 | -74.93 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 118 -174 | 143.35 | -74.61 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 174 -230 | 205.55 | -74.03 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 230 -470 | 286.95 | -74.46 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 470 -694 | 500.95 | -74.30 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 694 -1000 | 944.25 | -69.17 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 1000 -2398 | 2246.00 | -52.83 | NA | -30 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 2485.5 -12750 | 5182.50 | -40.18 | NA | -30 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 30 -47 | 37.30 | -74.47 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 47 -74 | 65.30 | -75.49 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 74 -87.5 | 86.60 | -76.10 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 87.5 -118 | 100.15 | -75.71 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 118 -174 | 150.85 | -74.84 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 174 -230 | 225.05 | -74.58 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 230 -470 | 304.85 | -74.13 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 470 -694 | 531.80 | -74.45 | NA | -54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 694 -1000 | 946.50 | -71.57 | NA | -36 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 1000 -2398 | 2102.00 | -53.24 | NA | -30 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 2485.5 -12750 | 7440.00 | -32.11 | -32.92 | -30 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 30 -47 | 45.60 | -76.02 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 47 -74 | 67.90 | -76.13 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 74 -87.5 | 79.80 | -75.79 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 87.5 -118 | 114.60 | -75.27 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 118 -174 | 160.80 | -75.16 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 174 -230 | 185.35 | -75.35 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 230 -470 | 357.60 | -74.31 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 470 -694 | 478.05 | -74.45 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 694 -1000 | 948.85 | -70.34 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 1000 -2398 | 2268.50 | -52.65 | NA | -30 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 2485.5 -12750 | 7206.00 | -33.93 | -35.1 | -30 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 30 -47 | 41.15 | -75.84 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 47 -74 | 64.80 | -75.61 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 74 -87.5 | 78.50 | -75.92 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 87.5 -118 | 114.10 | -74.82 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 118 -174 | 125.00 | -75.04 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 174 -230 | 198.35 | -73.70 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 230 -470 | 343.85 | -73.99 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 470 -694 | 682.40 | -74.37 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 694 -1000 | 945.00 | -70.86 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 1000 -2398 | 2187.50 | -52.72 | NA | -30 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 2485.5 -12750 | 7323.50 | -41.50 | NA | -30 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 30 -47 | 36.15 | -75.77 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 47 -74 | 67.55 | -75.81 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 74 -87.5 | 79.65 | -75.27 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 87.5 -118 | 103.30 | -74.65 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 118 -174 | 144.55 | -74.63 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 174 -230 | 198.00 | -73.26 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 230 -470 | 386.00 | -74.13 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 470 -694 | 478.30 | -74.64 | NA | -54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 694 -1000 | 948.80 | -70.95 | NA | -36 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 1000 -2398 | 2239.50 | -51.68 | NA | -30 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 2485.5 -12750 | 7440.00 | -33.66 | -31.66 | -30 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 30 -47 | 30.15 | -76.37 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 47 -74 | 58.20 | -75.10 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 74 -87.5 | 81.30 | -75.57 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 87.5 -118 | 97.50 | -75.73 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 118 -174 | 158.65 | -75.34 | NA | -36 | Pass |

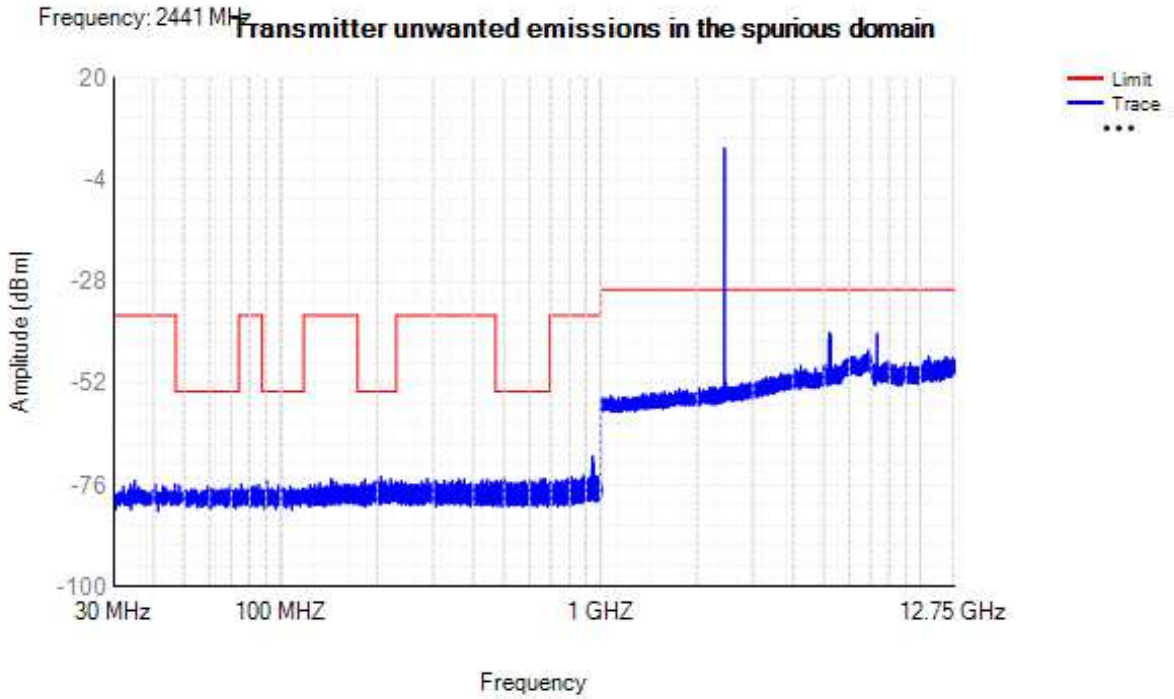
| | | | | | | | | | |
|------|-------|------|------|---------------|---------|--------|--------|-----|------|
| NVNT | 3-DH5 | 2402 | Ant1 | 174 -230 | 192.75 | -74.27 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 230 -470 | 262.35 | -74.06 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 470 -694 | 535.40 | -73.28 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 694 -1000 | 945.10 | -70.77 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 1000 -2398 | 2396.00 | -51.84 | NA | -30 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 2485.5 -12750 | 7207.00 | -34.97 | -39.47 | -30 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 30 -47 | 43.30 | -75.42 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 47 -74 | 53.15 | -75.95 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 74 -87.5 | 86.15 | -76.44 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 87.5 -118 | 106.00 | -75.38 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 118 -174 | 151.20 | -74.99 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 174 -230 | 200.10 | -75.13 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 230 -470 | 444.05 | -74.45 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 470 -694 | 539.30 | -74.54 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 694 -1000 | 897.50 | -51.40 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 1000 -2398 | 2310.00 | -52.82 | NA | -30 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 2485.5 -12750 | 7323.50 | -40.51 | NA | -30 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 30 -47 | 40.50 | -75.63 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 47 -74 | 53.55 | -75.91 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 74 -87.5 | 75.05 | -75.73 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 87.5 -118 | 98.45 | -75.19 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 118 -174 | 146.05 | -74.90 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 174 -230 | 210.65 | -75.25 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 230 -470 | 421.80 | -73.99 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 470 -694 | 491.05 | -73.97 | NA | -54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 694 -1000 | 948.25 | -68.50 | NA | -36 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 1000 -2398 | 2178.50 | -53.09 | NA | -30 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 2485.5 -12750 | 7440.00 | -32.61 | -32.09 | -30 | Pass |

Test Graphs

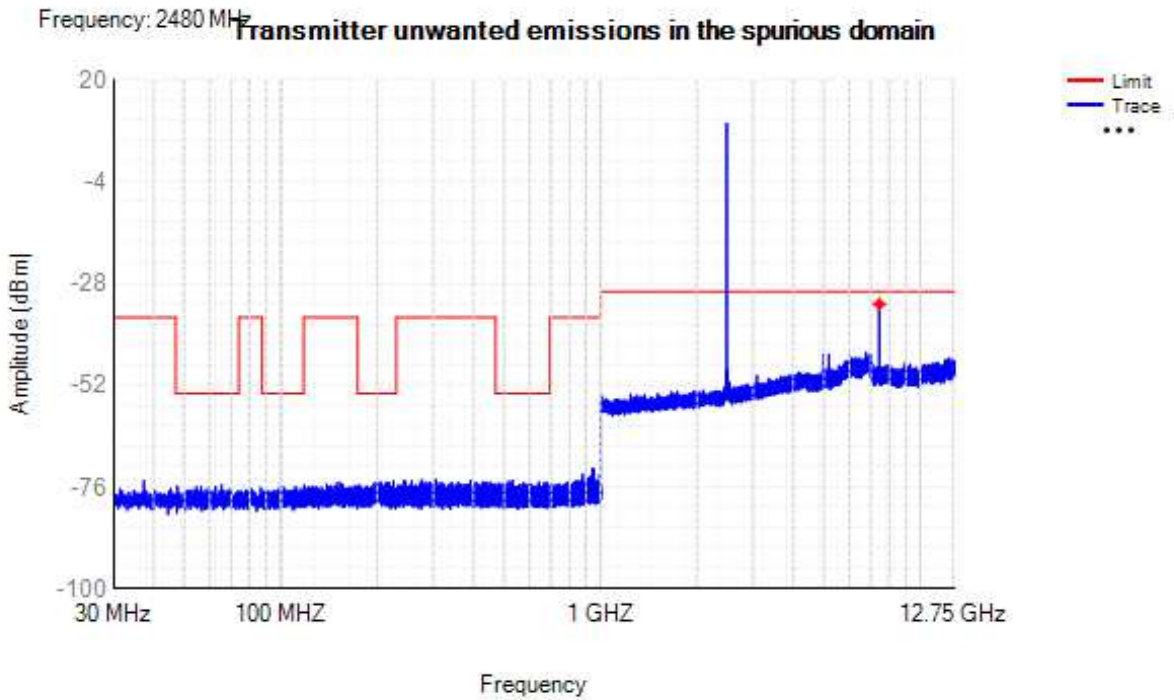
Tx. Spurious NVNT 1-DH5 2402MHz Ant1



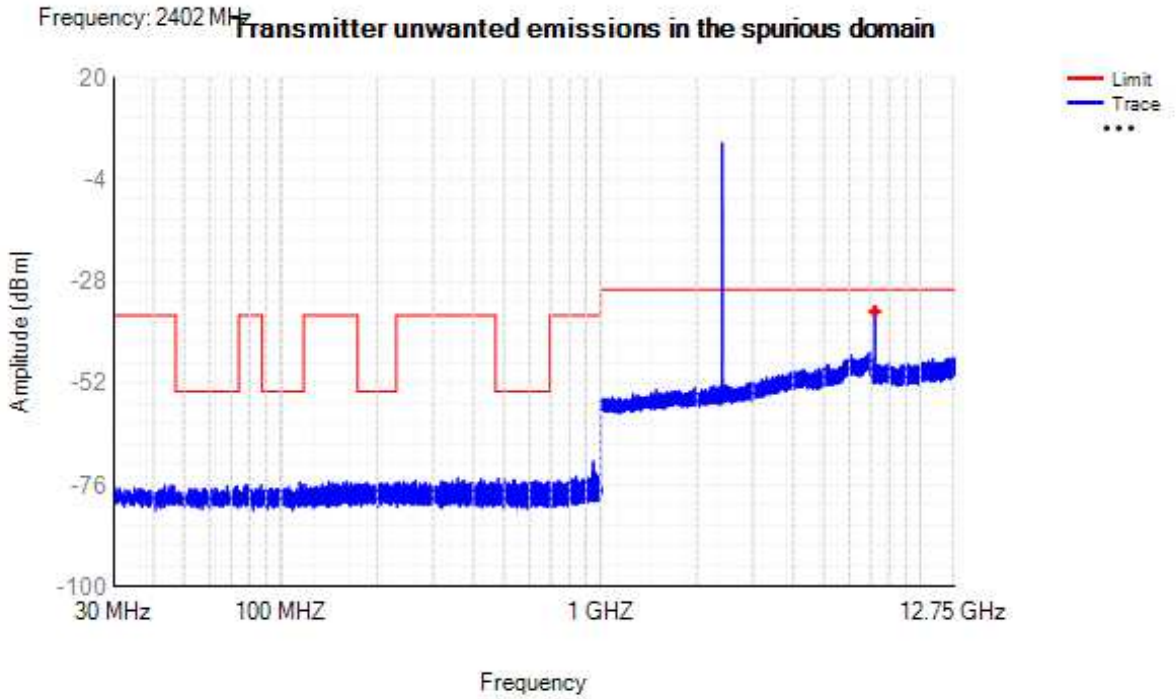
Tx. Spurious NVNT 1-DH5 2441MHz Ant1



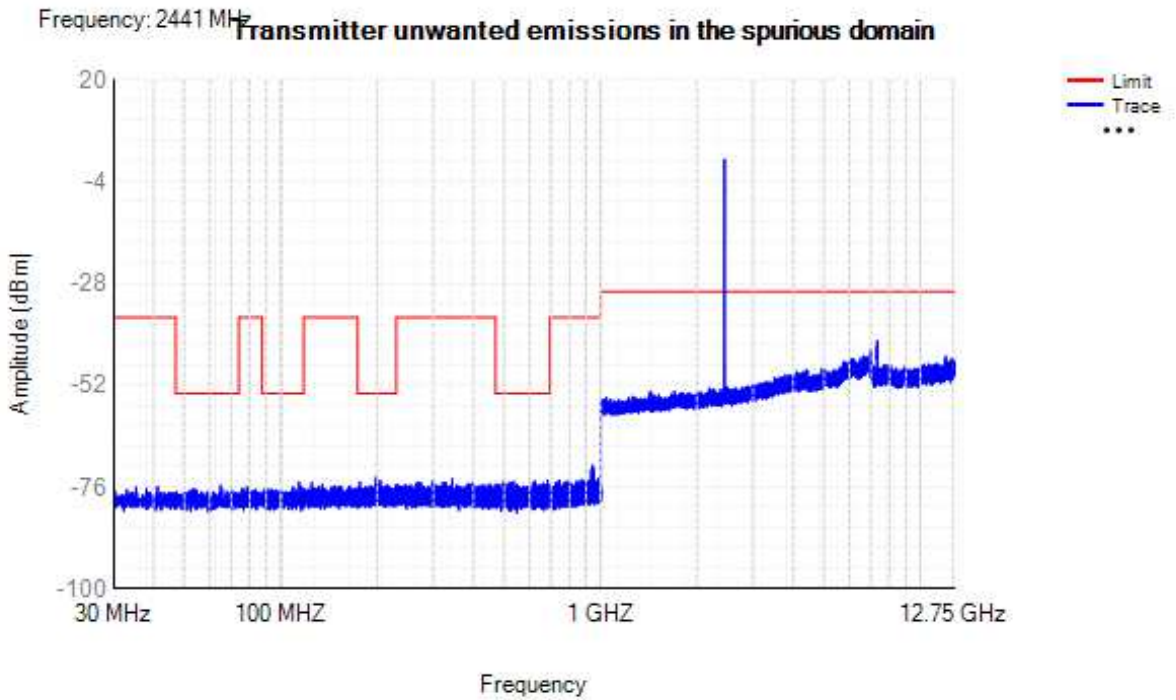
Tx. Spurious NVNT 1-DH5 2480MHz Ant1



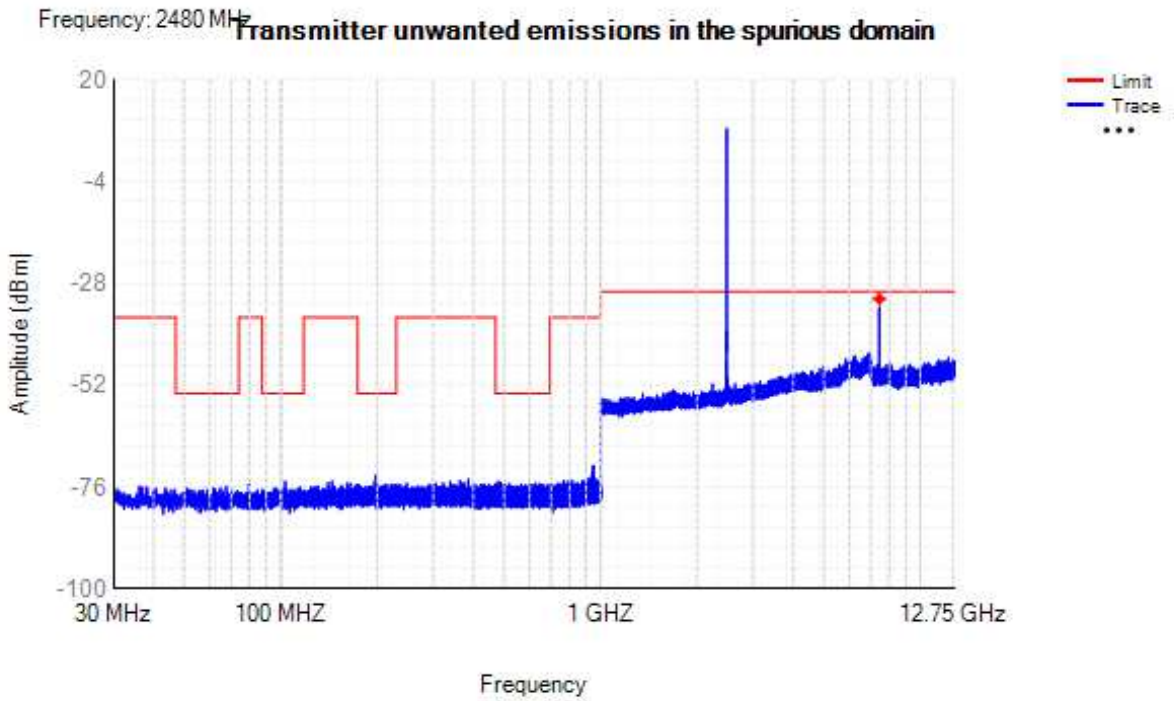
Tx. Spurious NVNT 2-DH5 2402MHz Ant1



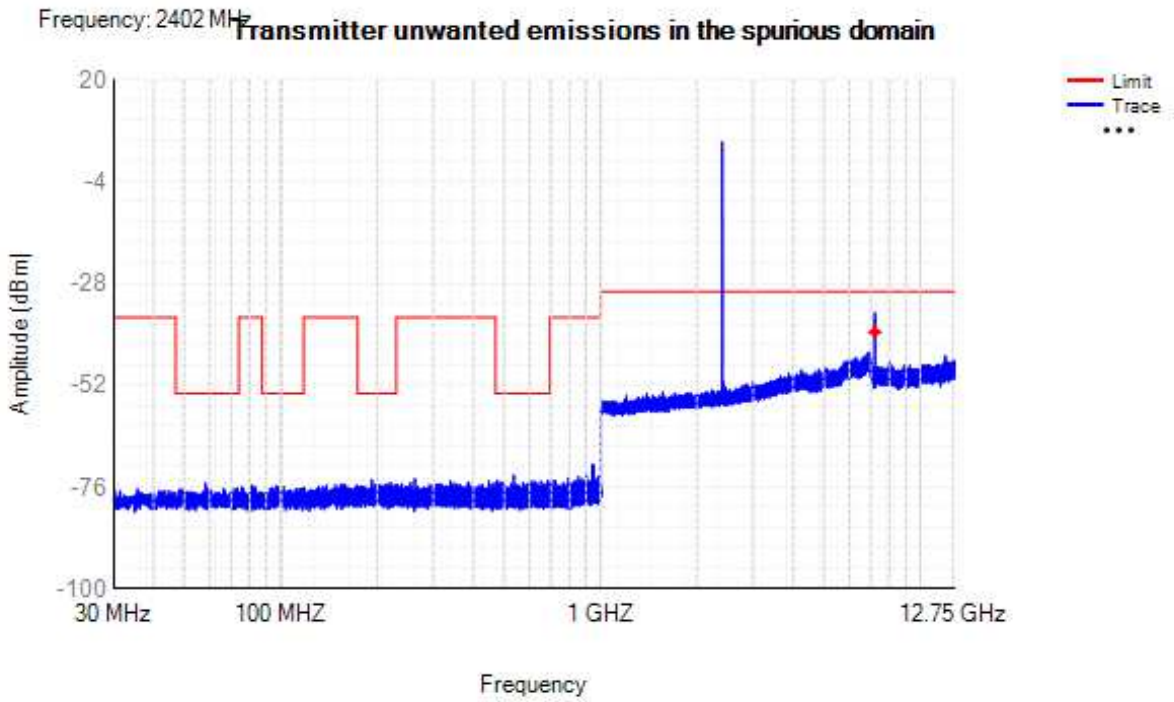
Tx. Spurious NVNT 2-DH5 2441MHz Ant1



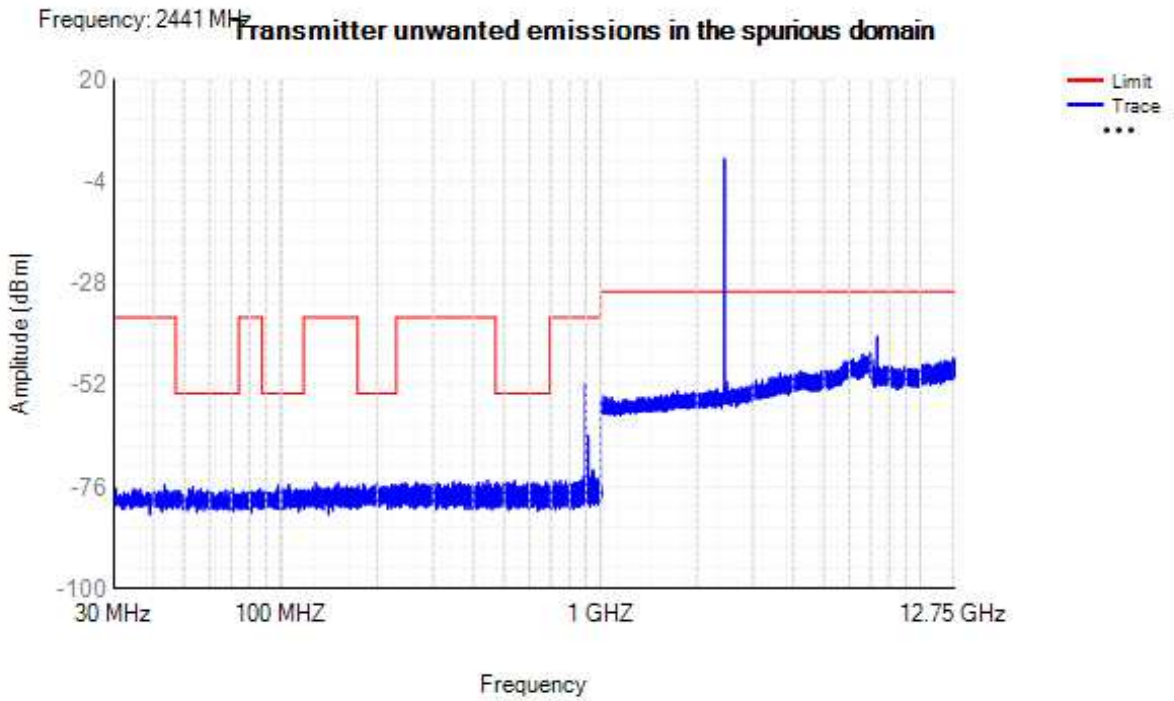
Tx. Spurious NVNT 2-DH5 2480MHz Ant1



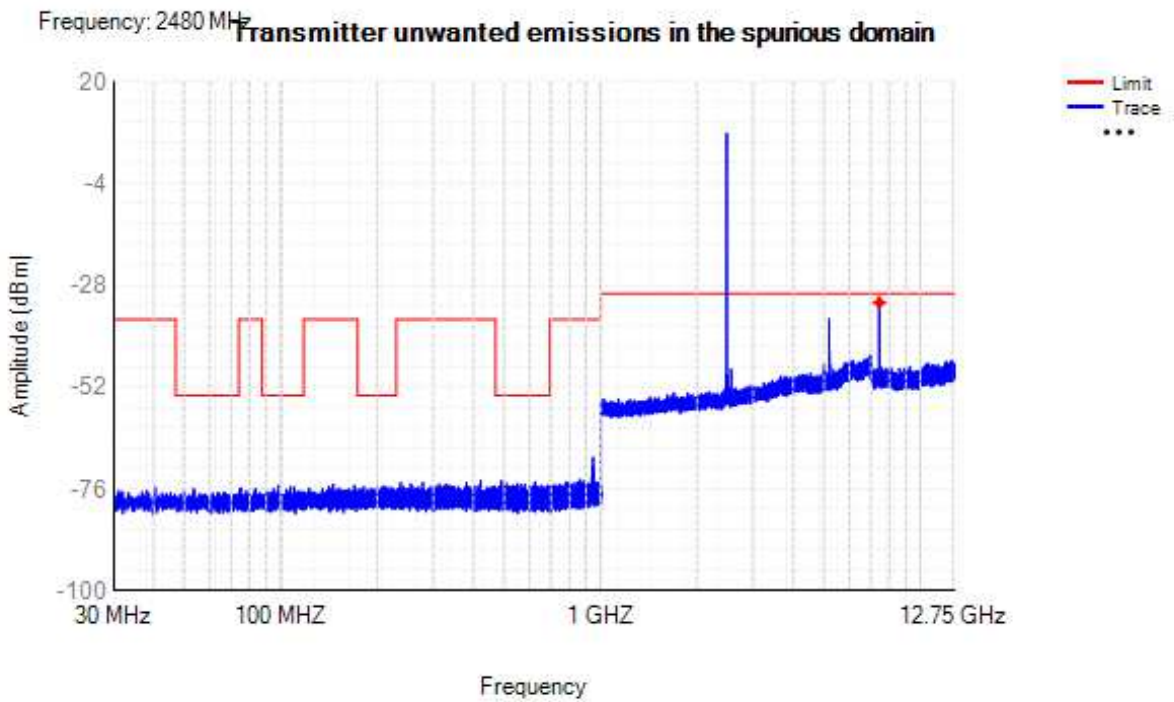
Tx. Spurious NVNT 3-DH5 2402MHz Ant1



Tx. Spurious NVNT 3-DH5 2441MHz Ant1

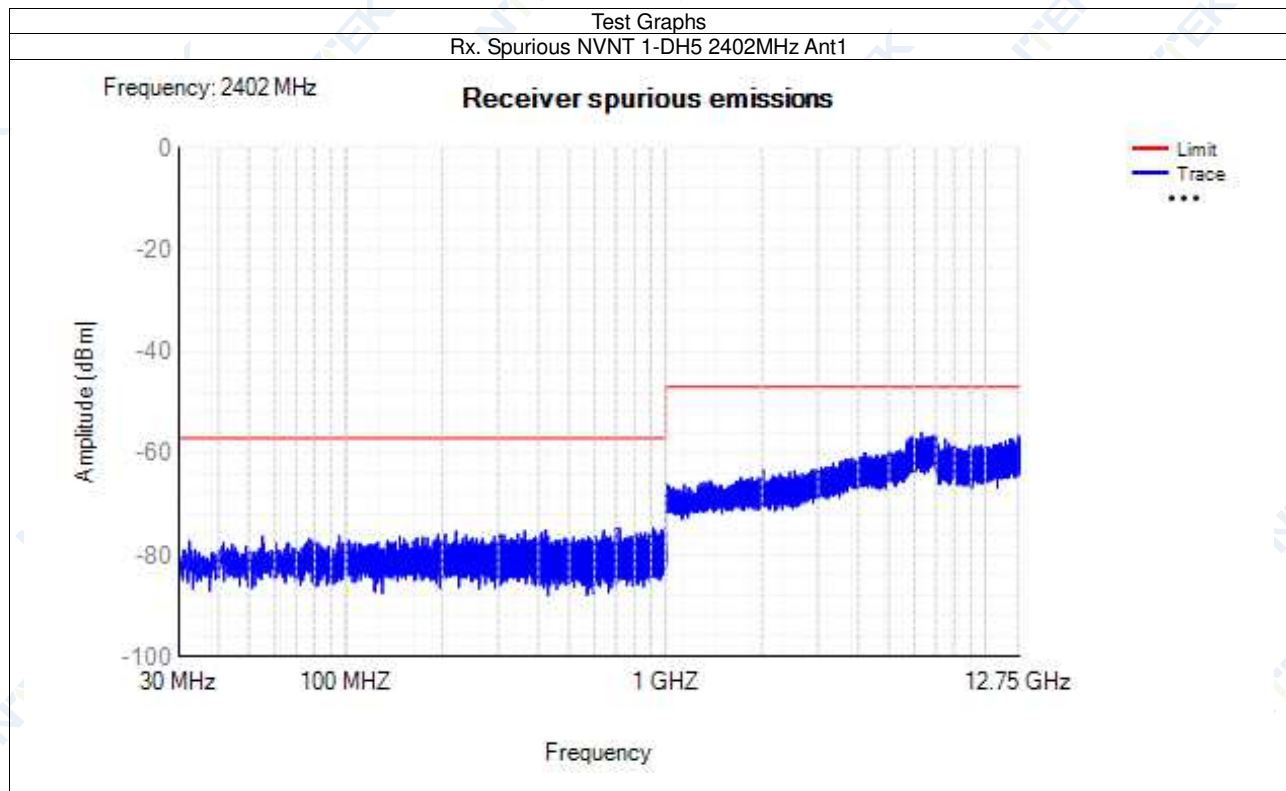


Tx. Spurious NVNT 3-DH5 2480MHz Ant1

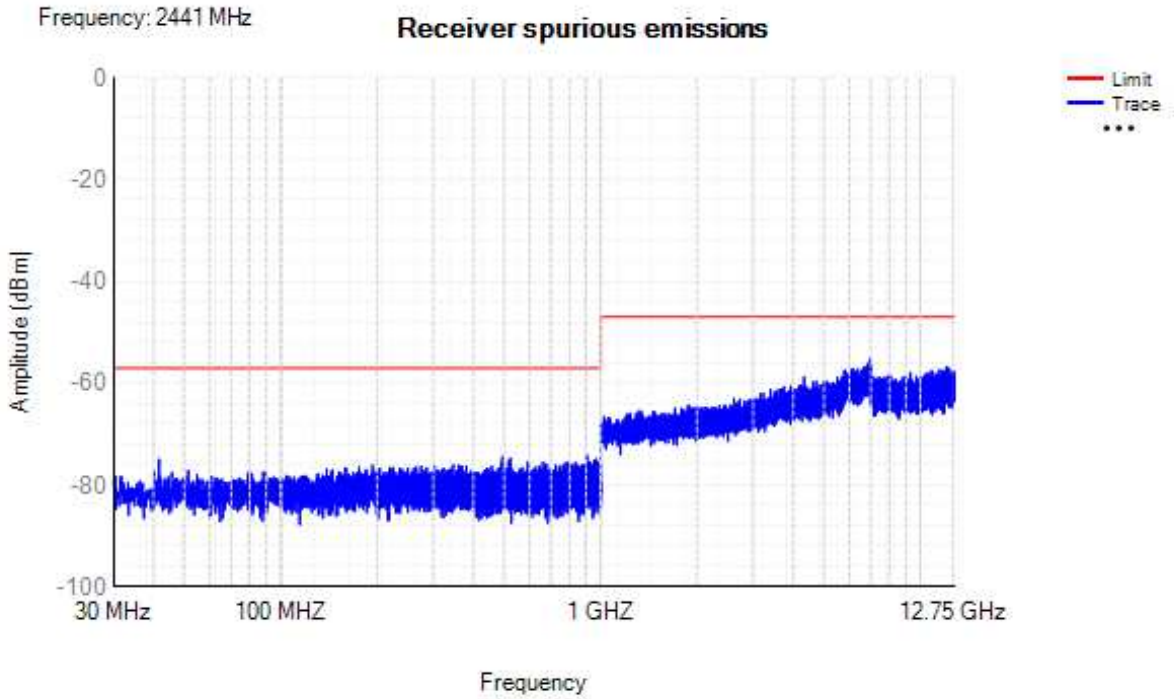


11.9 Receiver spurious emissions

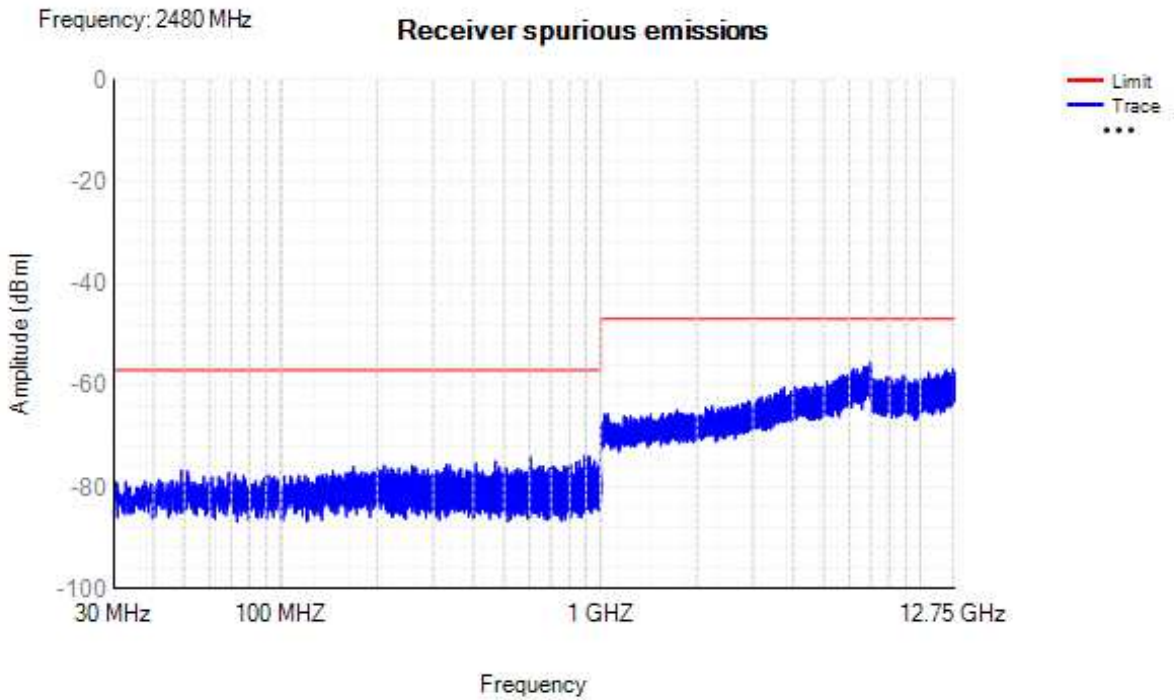
| Condition | Mode | Frequency (MHz) | Antenna | Range (MHz) | Spur Freq (MHz) | Peak (dBm) | RMS (dBm) | Limit (dBm) | Verdict |
|-----------|-------|-----------------|---------|-------------|-----------------|------------|-----------|-------------|---------|
| NVNT | 1-DH5 | 2402 | Ant1 | 30 -1000 | 915.9 | -74.65 | NA | -57 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 1000 -12750 | 6316 | -55.91 | NA | -47 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 30 -1000 | 906.2 | -74.01 | NA | -57 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 1000 -12750 | 6952 | -55.26 | NA | -47 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 30 -1000 | 892.55 | -73.79 | NA | -57 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 1000 -12750 | 6964.5 | -55.55 | NA | -47 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 30 -1000 | 971.45 | -73.91 | NA | -57 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 1000 -12750 | 6905.5 | -55.54 | NA | -47 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 30 -1000 | 793.45 | -74.13 | NA | -57 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 1000 -12750 | 6969 | -55.87 | NA | -47 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 30 -1000 | 673.2 | -74.03 | NA | -57 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 1000 -12750 | 6793.5 | -56.09 | NA | -47 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 30 -1000 | 923.2 | -73.04 | NA | -57 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 1000 -12750 | 6806.5 | -55.77 | NA | -47 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 30 -1000 | 872 | -73.97 | NA | -57 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 1000 -12750 | 6807.5 | -55.61 | NA | -47 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 30 -1000 | 937.6 | -74.02 | NA | -57 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 1000 -12750 | 6698 | -56.01 | NA | -47 | Pass |



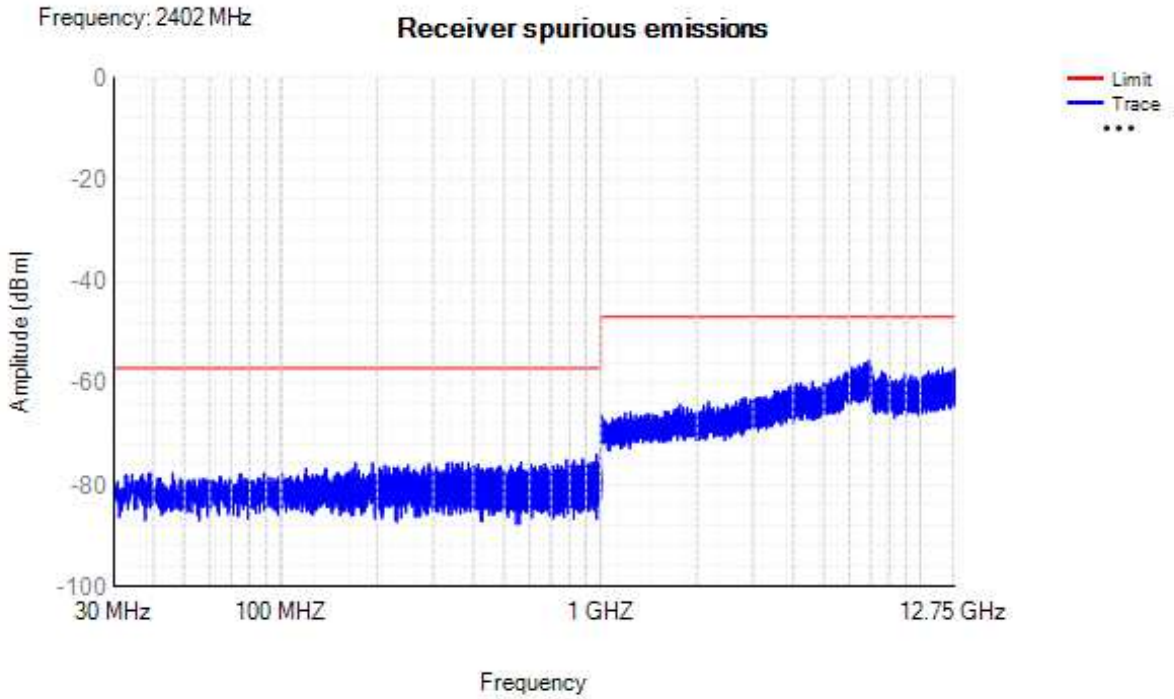
Rx. Spurious NVNT 1-DH5 2441MHz Ant1



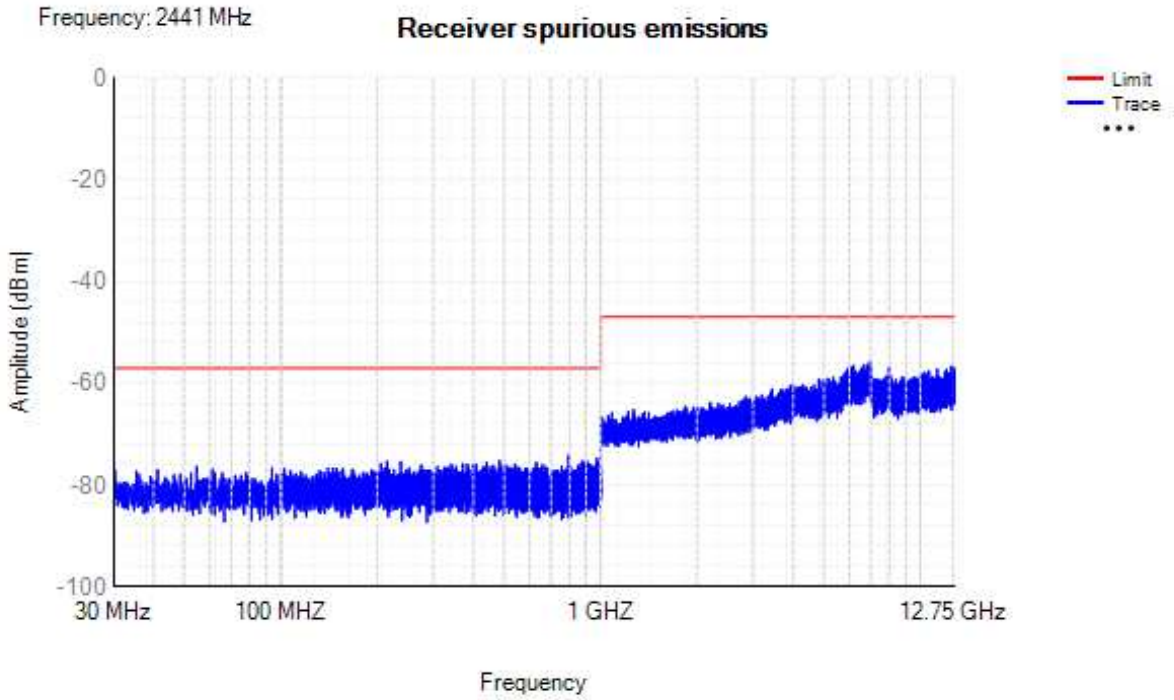
Rx. Spurious NVNT 1-DH5 2480MHz Ant1



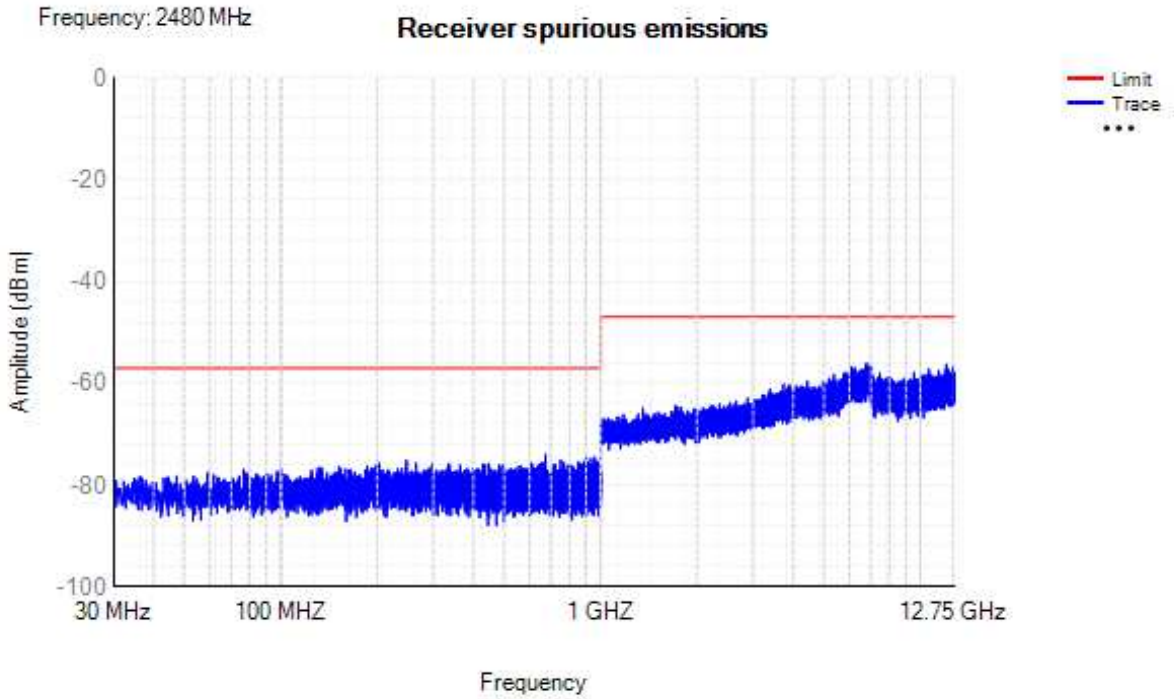
Rx. Spurious NVNT 2-DH5 2402MHz Ant1



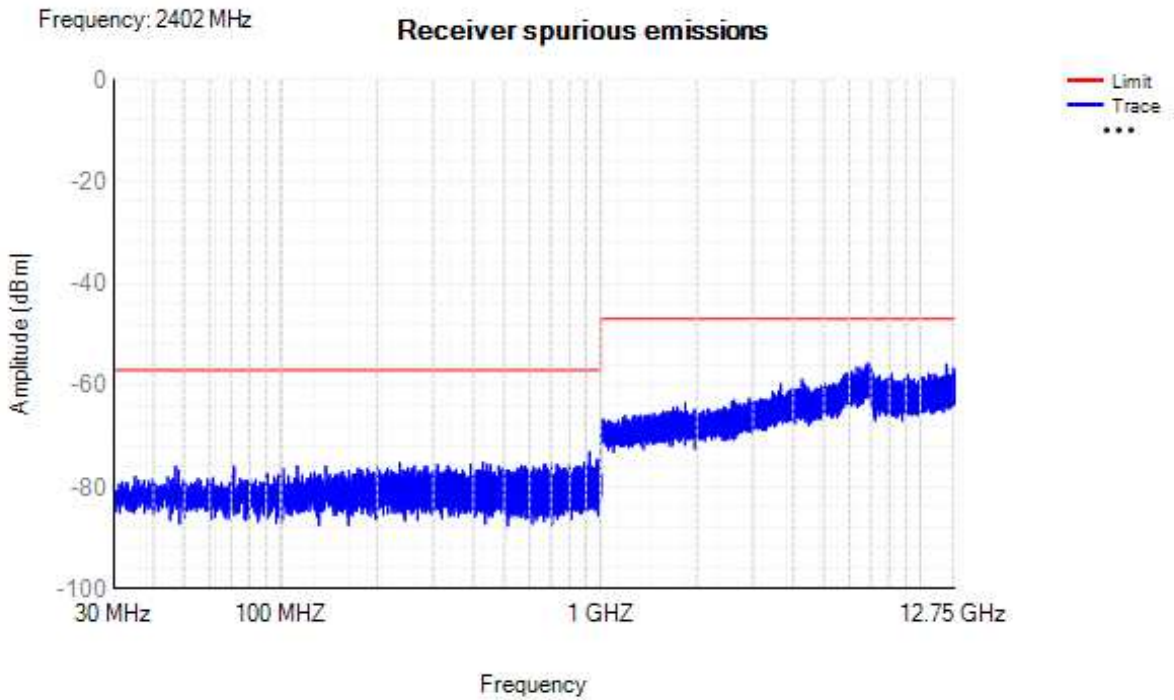
Rx. Spurious NVNT 2-DH5 2441MHz Ant1



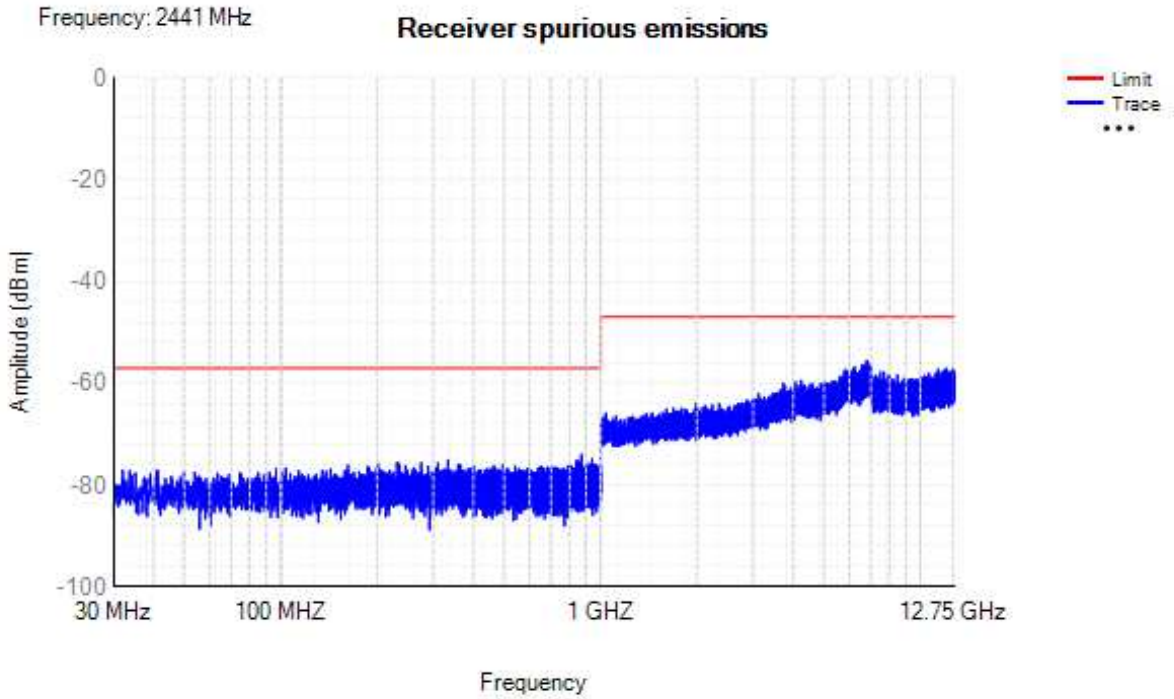
Rx. Spurious NVNT 2-DH5 2480MHz Ant1



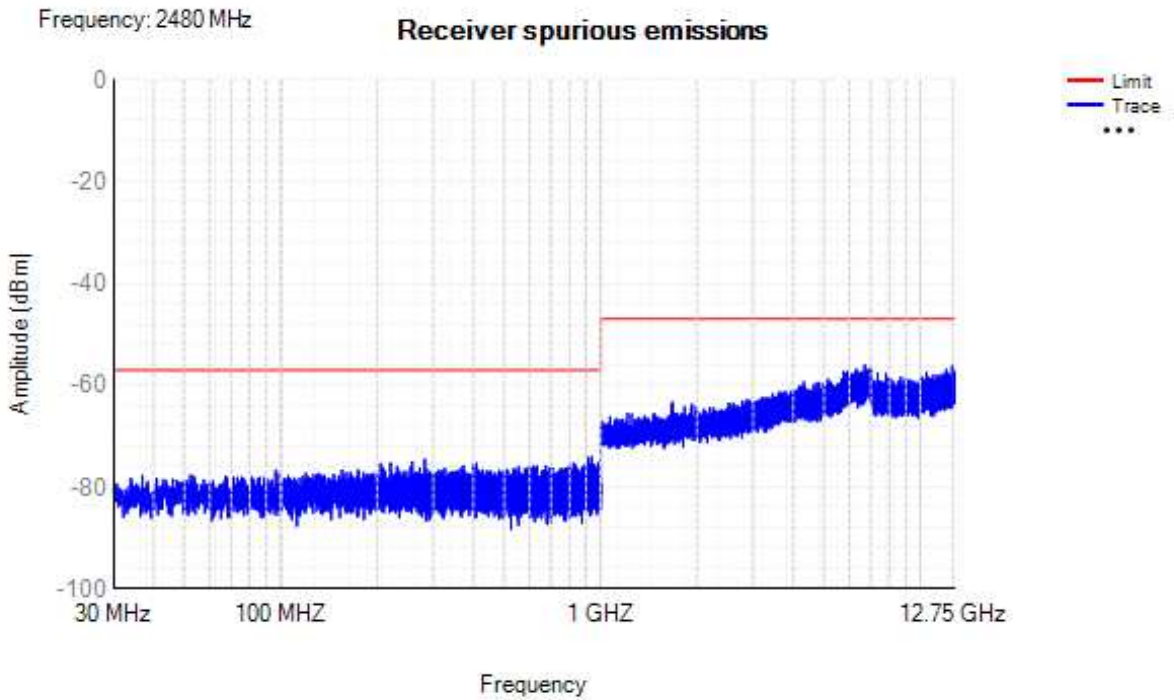
Rx. Spurious NVNT 3-DH5 2402MHz Ant1



Rx. Spurious NVNT 3-DH5 2441MHz Ant1

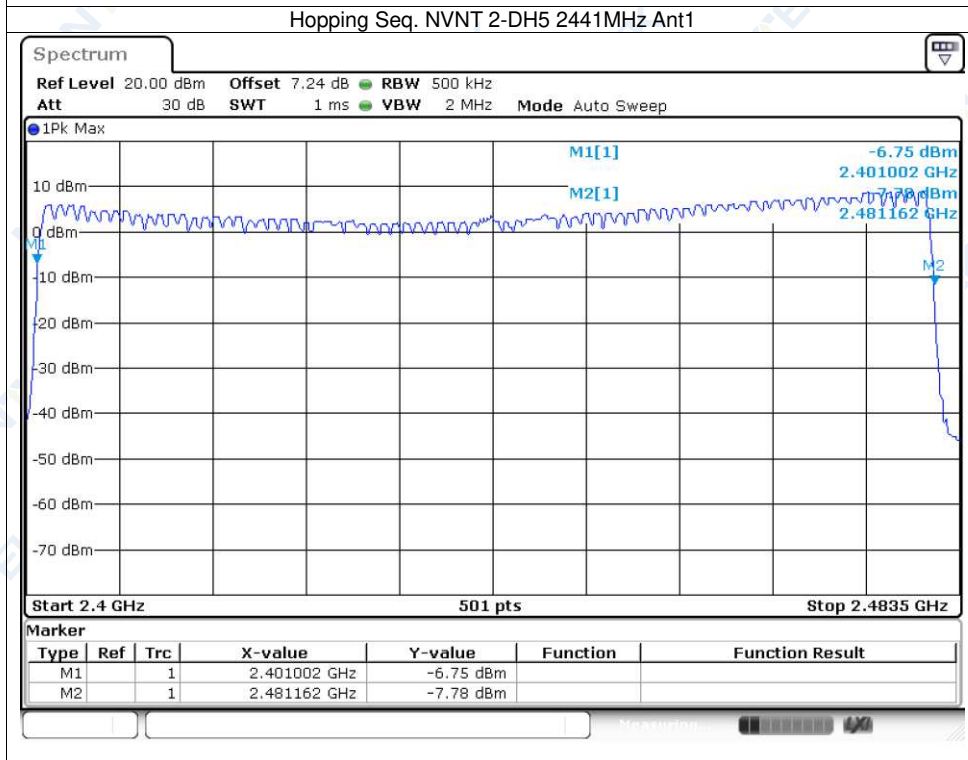
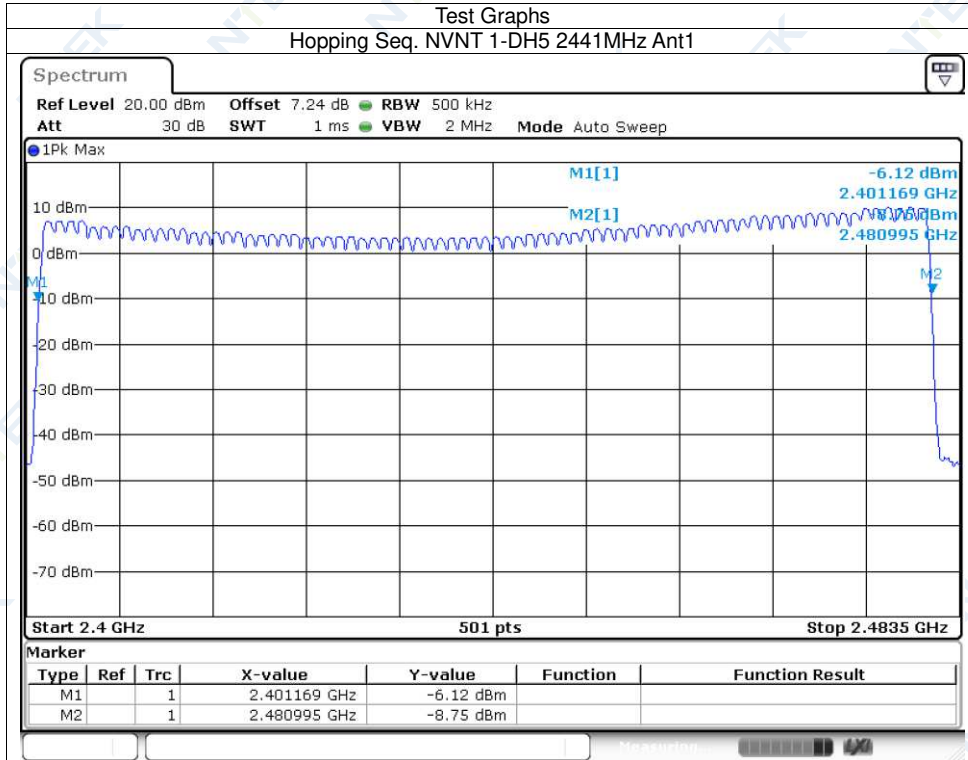


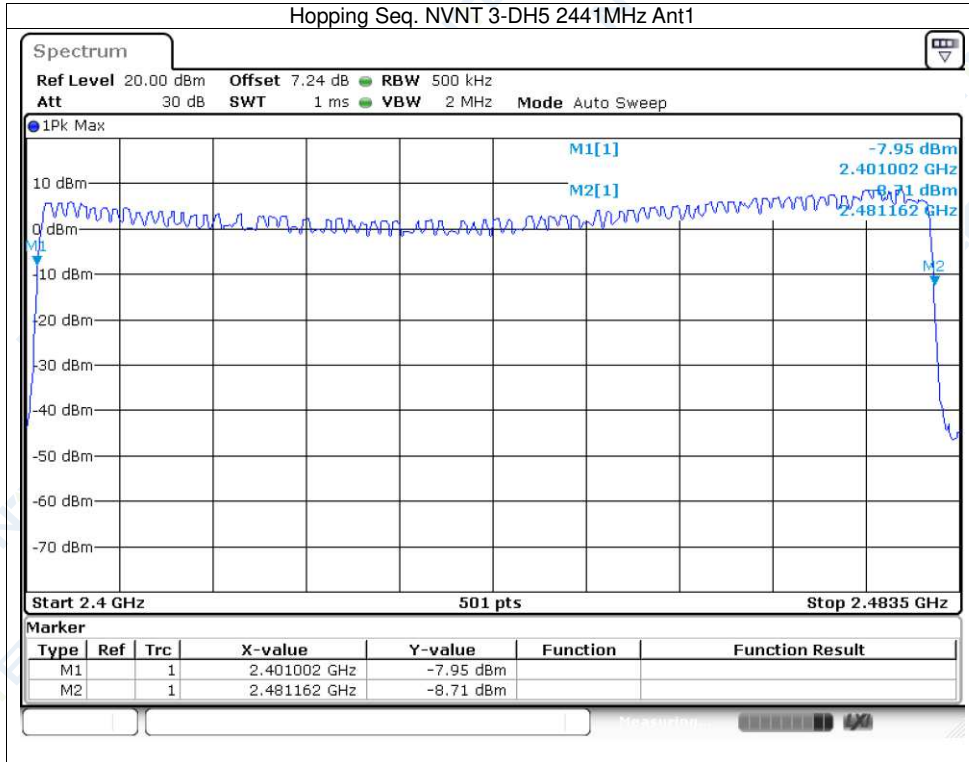
Rx. Spurious NVNT 3-DH5 2480MHz Ant1



11.10 Hopping Sequence

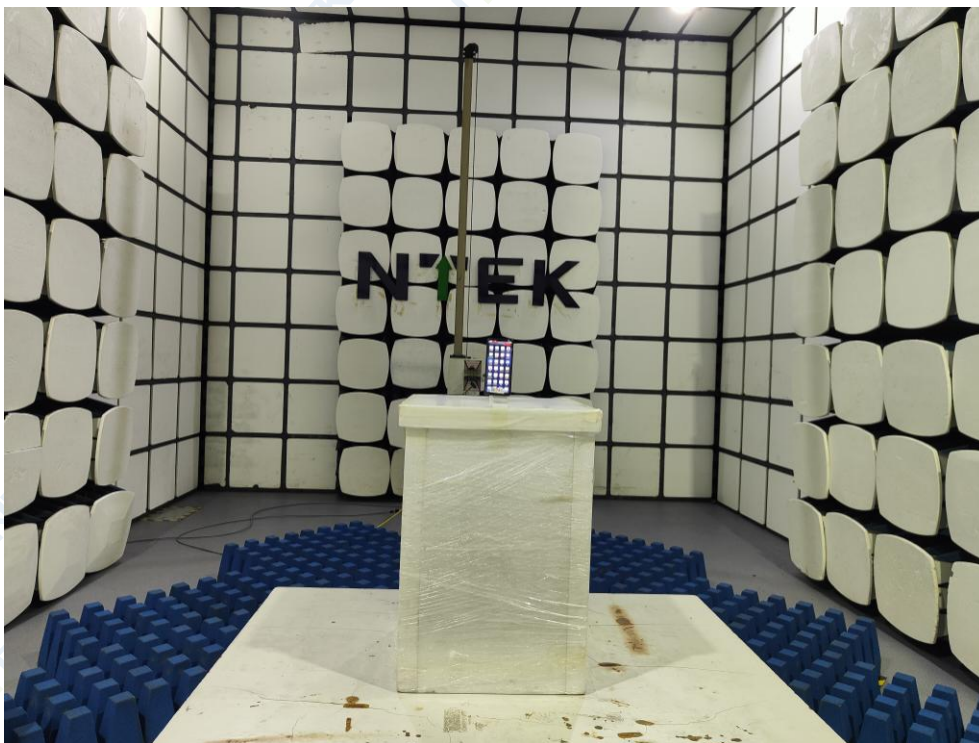
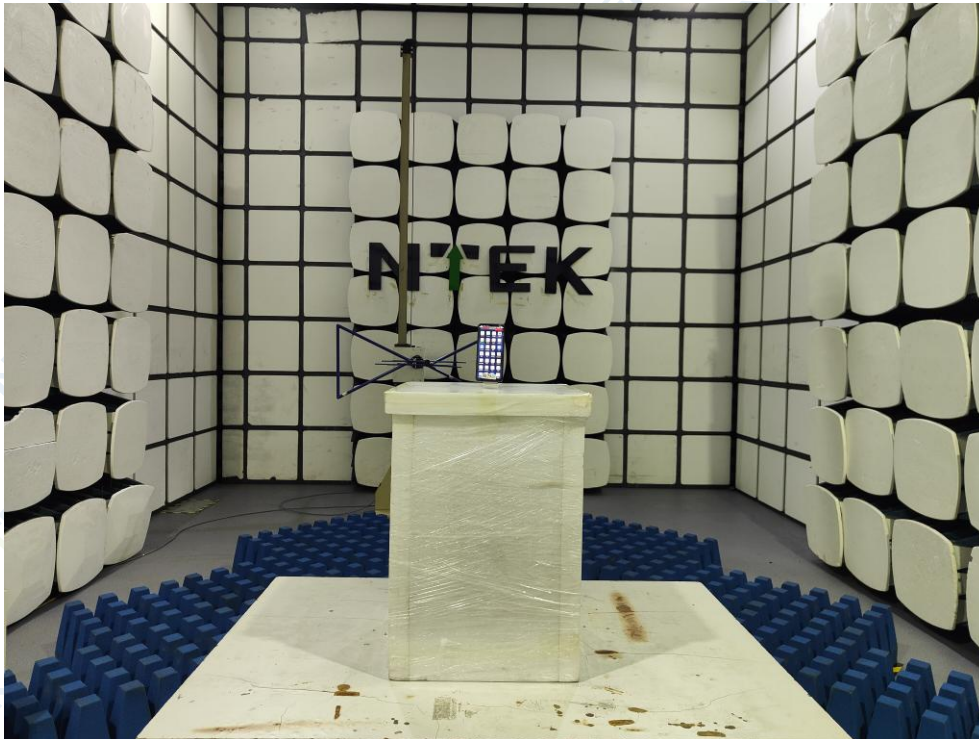
| Condition | Mode | Antenna | Hopping Number | Limit | Band Allocation (%) | Limit Band Allocation (%) | Verdict |
|-----------|-------|---------|----------------|-------|---------------------|---------------------------|---------|
| NVNT | 1-DH5 | Ant1 | 79 | 15 | 95.6 | 70 | Pass |
| NVNT | 2-DH5 | Ant1 | 79 | 15 | 96 | 70 | Pass |
| NVNT | 3-DH5 | Ant1 | 79 | 15 | 96 | 70 | Pass |





12. EUT TEST PHOTO

SPURIOUS EMISSIONS MEASUREMENT PHOTOS



END OF REPORT