



TEST REPORT

| APPLICANT | : | Anker Innovations | Limited |
|-----------|---|-------------------|---------|
| | | | |

- PRODUCT NAME : Nebula Capsule 3 Laser
- MODEL NAME : D2426
- BRAND NAME : NEBULA
- FCC ID : 2AOKB-D2426X
- STANDARD(S) : 47 CFR Part 15 Subpart C
- **RECEIPT DATE** : 2024-02-04
- **TEST DATE** : 2024-02-23 to 2024-03-20
- **ISSUE DATE** : 2024-03-26

ong /Viz Edited by: Peng Mi (Rapporteur) Approved by: Shen Junsheng (Supervisor)

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DIRECTORY

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| Change History | | | | |
|----------------|------------|-------------------|--|--|
| Version | Date | Reason for change | | |
| 1.0 | 2024-03-26 | First edition | | |
| | | | | |



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1. Summary of Test Result

| No. | Section | Description | Test Date | Test Engineer | Result | Method Determination /Remark |
|-----|------------------------|---|------------------------|------------------|--------|------------------------------------|
| 1 | 15.203 | Antenna Requirement | N/A | N/A | PASS | No deviation |
| 2 | 15.247(a) 15.247(h) | Hopping Mechanism | N/A | N/A | PASS | No deviation |
| 3 | 15.247(a) | Number of Hopping Frequency | Feb. 28, 2024 | Su Xiaoxian | PASS | No deviation |
| 4 | ANSI C63.10 | Duty Cycle | Feb. 28, 2024 | Su Xiaoxian | PASS | No deviation |
| 5 | 15.247(b) | Maximum Peak Conducted Output Power | Feb. 28, 2024 | Su Xiaoxian | PASS | No deviation |
| 6 | 15.247(b) | Maximum Average Conducted Output Power | Feb. 28, 2024 | Su Xiaoxian | PASS | No deviation |
| 7 | 15.247(a) | 20dB Bandwidth | Feb. 28, 2024 | Su Xiaoxian | PASS | No deviation |
| 8 | 15.247(a) | Carrier Frequency Separation | Feb. 28, 2024 | Su Xiaoxian | PASS | No deviation |
| 9 | 15.247(a) | Time of Occupancy (Dwell time) | Feb. 28, 2024 | Su Xiaoxian | PASS | No deviation |
| 10 | 15.247(d) | Conducted Spurious Emission | Feb. 28, 2024 | Su Xiaoxian | PASS | No deviation |
| 11 | 15.207 | Conducted Emission | Feb. 23, 2024 | Wang Deyong | PASS | No deviation |
| 12 | 15.247(d) | Restricted Frequency Bands | Mar. 07 to 20, 2023 | Su Zhan | PASS | No deviation |
| 13 | 15.209, | Radiated | Mar. 07 to 20, | Su Zhan | PASS | No deviation |



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| 15.247(d) Emission 2023 |
|-------------------------|
|-------------------------|

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.10-2013, KDB 558074 D01 v05r02 and DA 00-075.

Note 2: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 3: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

1.1. Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

• 47 CFR Part 15 Subpart C Radio Frequency Devices



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1.2. Test Equipment List

1.2.1 Conducted Test Equipment

| Equipment Name | Serial No. | Туре | Manufacturer | Cal. Date | Due Date |
|----------------|------------|---------|--------------|------------|------------|
| EXA Signal | MY53470836 | N9010A | Agilopt | 2024.02.19 | 2025.02.18 |
| Analzyer | MT55470650 | 119010A | Agilent | 2024.02.19 | 2023.02.10 |
| RF Cable | | RF01 | Morlab | N1/A | NI/A |
| (30MHz-26GHz) | CB01 | REUI | INIOLIAD | N/A | N/A |
| Coaxial Cable | CB02 | RF02 | Morlab | N/A | N/A |
| SMA Connector | CN01 | RF03 | HUBER-SUHNER | N/A | N/A |

1.2.2 Conducted Emission Test Equipment

| Equipment Name | Serial No. | Туре | Manufacturer | Cal. Date | Due Date |
|---------------------------------|-----------------------|----------------|--------------|------------|------------|
| Receiver | MY56400093 | N9038A | KEYSIGHT | 2024.01.25 | 2025.01.24 |
| LISN | 8127449 | NSLK 8127 | Schwarzbeck | 2024.02.02 | 2025.02.01 |
| Pulse Limiter (10dB) | VTSD 9561 F-B #206 | VTSD 9561-F | Schwarzbeck | 2023.06.27 | 2024.06.26 |
| RF Coaxial Cable (DC-100MHz) | BNC | MRE04 | Qualwave | N/A | N/A |

1.2.3 List of Software Used

| Description | Manufacturer | Software Version |
|----------------|--------------|------------------|
| Test System | MaiWei | 2.0.0.0 |
| Morlab EMCR | Morlab | V1.2 |
| TS+ -[JS32-CE] | Tonscend | V2.5.0.0 |



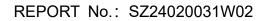


1.2.4 Radiated Test Equipment

| Equipment | Serial No. | Туре | Manufacturer | Cal. Date | Due Date |
|--------------------------------|------------------|---------------------------|--------------|------------|------------|
| Name | Serial NO. | туре | Manufacturer | Gal. Date | Due Date |
| Receiver | MY54130016 | N9038A | Agilent | 2023.06.21 | 2024.06.20 |
| Test Antenna - Bi-Log | 9163-519 | VULB 9163 | Schwarzbeck | 2023.07.01 | 2024.06.30 |
| Test Antenna - Loop | 1519-022 | FMZB1519 | Schwarzbeck | 2023.06.26 | 2024.06.25 |
| Test Antenna – Horn | 01774 | BBHA 9120D | Schwarzbeck | 2023.07.01 | 2024.06.30 |
| Test Antenna – Horn | BBHA9170 #773 | BBHA9170 | Schwarzbeck | 2023.07.01 | 2024.06.30 |
| Preamplifier (10MHz-6GHz) | 46732 | S10M100L38 02 | LUCIX CORP. | 2023.06.27 | 2024.06.26 |
| Preamplifier (2GHz-18GHz) | 61171/61172 | S020180L32 03 | LUCIX CORP. | 2023.06.27 | 2024.06.26 |
| Preamplifier (18GHz-40GHz) | DS77209 | DCLNA0118- 40C-S | Decentest | 2023.07.04 | 2024.07.03 |
| RF Coaxial Cable (DC-18GHz) | MRE001 | PE330 | Pasternack | 2023.06.27 | 2024.06.26 |
| RF Coaxial Cable (DC-18GHz) | MRE002 | CLU18 | Pasternack | 2023.06.27 | 2024.06.26 |
| RF Coaxial Cable (DC-18GHz) | MRE003 | CLU18 | Pasternack | 2023.06.27 | 2024.06.26 |
| RF Coaxial Cable (DC-40GHz) | 22290045 | QA360-40-K K-0.5 | Qualwave | 2023.07.04 | 2024.07.03 |
| RF Coaxial Cable (DC-40GHz) | 22290046 | QA360-40-K KF-2 | Qualwave | 2023.07.04 | 2024.07.03 |
| RF Coaxial Cable (DC-18GHz) | 22120181 | QA500-18-N N-5 | Qualwave | 2023.07.04 | 2024.07.03 |
| Notch Filter | N/A | WRCG-2400- 2483.5-60SS | Wainwright | N/A | N/A |
| Anechoic Chamber | N/A | 9m*6m*6m | CRT | 2022.05.10 | 2025.05.09 |



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1.3. Measurement Uncertainty

| Test Items | Uncertainty | Remark |
|--------------------------------|-------------|--------------------------|
| Number of Hopping Frequency | ±5% | Confidence levels of 95% |
| Peak Output Power | ±2.22dB | Confidence levels of 95% |
| Bandwidth | ±5% | Confidence levels of 95% |
| Carrier Frequency Separation | ±5% | Confidence levels of 95% |
| Time of Occupancy (Dwell time) | ±5% | Confidence levels of 95% |
| Conducted Spurious Emission | ±2.77dB | Confidence levels of 95% |
| Restricted Frequency Bands | ±5% | Confidence levels of 95% |
| Radiated Emission | ±2.95dB | Confidence levels of 95% |
| Conducted Emission | ±2.44dB | Confidence levels of 95% |

1.4. Testing Laboratory

| Laboratory Name | Shenzhen Morlab Communications Technology Co., Ltd. |
|------------------------|---|
| Laboratory Address | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong |
| Laboratory Address | Province, P. R. China |
| Telephone | +86 755 36698555 |
| Facsimile | +86 755 36698525 |
| FCC Designation Number | CN1192 |
| FCC Test Firm | 226174 |
| Registration Number | 220174 |



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2. General Description

2.1. Information of Applicant and Manufacturer

| Applicant | Anker Innovations Limited | |
|----------------------|---|--|
| Applicant Address | Room 1318-19, Hollywood Plaza,610 Nathan Road, Mongkok, | |
| Applicant Address | Kowloon, Hong Kong | |
| Manufacturer | Anker Innovations Limited | |
| | Room 1318-19, Hollywood Plaza,610 Nathan Road, Mongkok, | |
| Manufacturer Address | Kowloon, Hong Kong | |

2.2. Information of EUT

| Product Name: | Nebula Capsule | 3 Laser | | |
|----------------------------|--|--|--|--|
| Sample No.: | 30# | | | |
| Hardware Version: | V02 | | | |
| Software Version: | V11.0.26.3 | | | |
| Equipment Type: | Bluetooth classic | | | |
| Bluetooth Version: | 5.1 | | | |
| Modulation Type: | FHSS (GFSK(1Mbps), π/4-DQPSK(EDR 2Mbps), 8-DPSK(EDR 3Mbps)) | | | |
| Operating Frequency Range: | 2402MHz-2480M | IHz | | |
| Antenna Type: | FPC Antenna | | | |
| Antenna Gain: | 1.54dBi | | | |
| | Battery | | | |
| | Brand Name: | N/A | | |
| | Model No.: | M3 21700M50LT-3S | | |
| Accessory Information: | Serial No.: | N/A | | |
| Accessory mormation. | Capacity: | 4700mAh | | |
| | Rated Voltage: | 11.07V | | |
| | Charge Limit: | 12.6V | | |
| | Manufacturer: | Guangdong Pow-Tech New Power Co., Ltd. | | |





| | AC Adapter | |
|------------------------|---------------|---|
| | Brand Name: | N/A |
| | Model No.: | NSA45EU-20022500 |
| | Serial No.: | N/A |
| Accessory Information: | Rated Output: | 5.0V=3.0A, 9.0V=3.0A, 12.0V=3.0A, 15.0V =3A, 20.0V=2.25A, |
| | Rated Input: | 100-240V~50/60Hz,1.2A |
| | Manufacturer: | Shenzhen JingQuanHua & Everrise Intelligent Electric Co., Ltd. |

Note 1: We use the dedicated software to control the EUT continuous transmission.

Note 2: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



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2.3. Channel List of EUT

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|--------------------|---------|--------------------|---------|--------------------|---------|--------------------|
| 0 | 2402 | 20 | 2422 | 40 | 2442 | 60 | 2462 |
| 1 | 2403 | 21 | 2423 | 41 | 2443 | 61 | 2463 |
| 2 | 2404 | 22 | 2424 | 42 | 2444 | 62 | 2464 |
| 3 | 2405 | 23 | 2425 | 43 | 2445 | 63 | 2465 |
| 4 | 2406 | 24 | 2426 | 44 | 2446 | 64 | 2466 |
| 5 | 2407 | 25 | 2427 | 45 | 2447 | 65 | 2467 |
| 6 | 2408 | 26 | 2428 | 46 | 2448 | 66 | 2468 |
| 7 | 2409 | 27 | 2429 | 47 | 2449 | 67 | 2469 |
| 8 | 2410 | 28 | 2430 | 48 | 2450 | 68 | 2470 |
| 9 | 2411 | 29 | 2431 | 49 | 2451 | 69 | 2471 |
| 10 | 2412 | 30 | 2432 | 50 | 2452 | 70 | 2472 |
| 11 | 2413 | 31 | 2433 | 51 | 2453 | 71 | 2473 |
| 12 | 2414 | 32 | 2434 | 52 | 2454 | 72 | 2474 |
| 13 | 2415 | 33 | 2435 | 53 | 2455 | 73 | 2475 |
| 14 | 2416 | 34 | 2436 | 54 | 2456 | 74 | 2476 |
| 15 | 2417 | 35 | 2437 | 55 | 2457 | 75 | 2477 |
| 16 | 2418 | 36 | 2438 | 56 | 2458 | 76 | 2478 |
| 17 | 2419 | 37 | 2439 | 57 | 2459 | 77 | 2479 |
| 18 | 2420 | 38 | 2440 | 58 | 2460 | 78 | 2480 |
| 19 | 2421 | 39 | 2441 | 59 | 2461 | | |

Note 1: The black bold channels were selected for test.

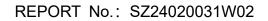


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2.4. Test Configuration of EUT

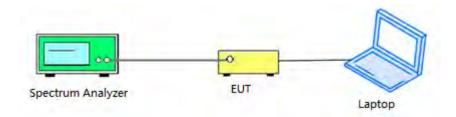
Test mode is used to control the EUT under the maximum power level during test.

2.5. Test Conditions

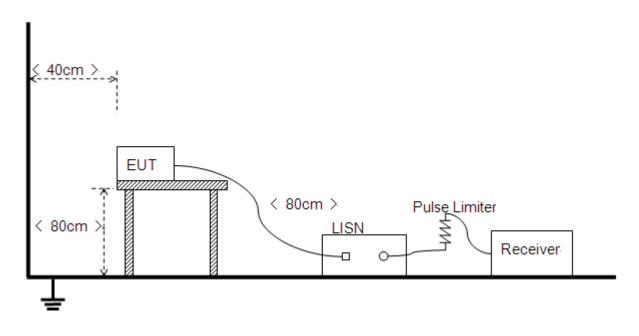
| Temperature (°C) | 15-35 |
|----------------------------|--------|
| Relative Humidity (%) | 30-60 |
| Atmospheric Pressure (kPa) | 86-106 |

2.6. Test Setup Layout Diagram

2.6.1.Conducted Measurement



2.6.2.Conducted Emission Measurement





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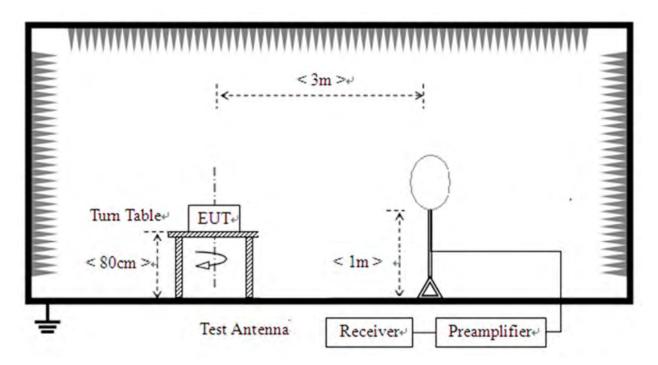
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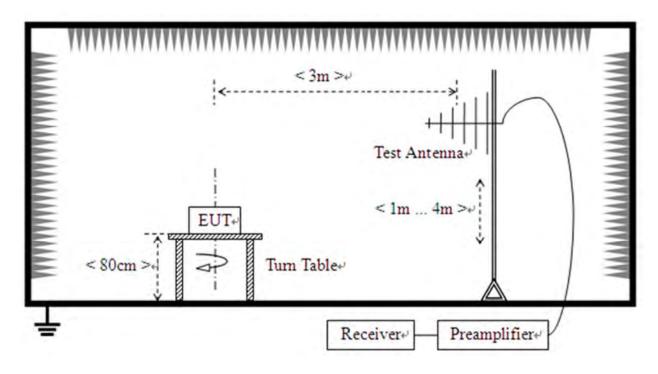


2.6.3.Radiation Measurement

1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz





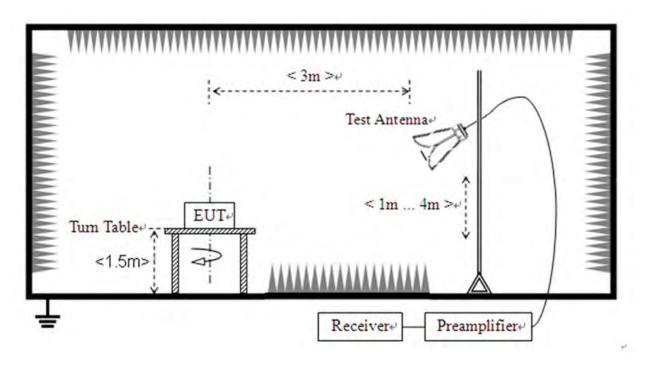
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3) For radiated emissions above 1GHz





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3.1. Antenna Requirement

3.1.1.Requirement

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.1.2.Test Result

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

3.2. Hopping Mechanism

3.2.1.Requirement

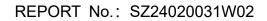
According to FCC section 15.247(a)(1), a frequency hopping spread spectrum system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

According to FCC section 15.247(h), the incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

3.2.2.Test Result

The hopping mechanism of the EUT is in compliance with the document "*Bluetooth core specification v5.1*".







3.3. Number of Hopping Frequency

3.3.1.Requirement

According to FCC section 15.247(a)(1)(iii), frequency hopping systems operating in the 2400MHz to 2483.5MHz bands shall use at least 15 hopping frequencies.

3.3.2.Test Procedures

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings: Span = the frequency band of operation

RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller. $VBW \ge RBW$ Sweep = auto Detector function = peak Trace = max hold Allow the trace to stabilize

3.3.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.3.4.Test Result

Refer to Annex A.1 in this report.



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3.4. Duty Cycle of Test Signal

3.4.1.Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%). When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration(T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e.,no transmitter OFF-time is to be considered).

When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this sub clause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than $\pm 2\%$; otherwise, the duty cycle is considered to be non constant.

3.4.2.Test Result

Refer to Annex A.2 in this report.





3.5. Maximum Peak Conducted Output Power

3.5.1.Requirement

According to FCC section 15.247(b)(1), for frequency hopping systems that operates in the 2400MHz to 2483.5MHz band employing at least 75 hopping channels, the maximum peak output power of the intentional radiator shall not exceed 1Watt. For all other frequency hopping systems in the 2400MHz to 2483.5MHz band, it is 0.125Watts.

3.5.2.Test Procedures

KDB 558074 Section 8.3.1 was used in order to prove compliance.

3.5.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.5.4.Test Result

Refer to Annex A.3 in this report.



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3.6. Maximum Average Conducted Output Power

3.6.1.Requirement

According to FCC section 15.247(b)(1), for frequency hopping systems that operates in the 2400MHz to 2483.5MHz band employing at least 75 hopping channels, the maximum peak output power of the intentional radiator shall not exceed 1Watt. For all other frequency hopping systems in the 2400MHz to 2483.5MHz band, it is 0.125Watts.

3.6.2.Test Procedures

KDB 558074 Section 8.3.2 was used in order to prove compliance.

3.6.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.6.4.Test Result

Refer to Annex A.4 in this report.



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3.7.1.Requirement

According to FCC section 15.247(a)(1), the 20 dB bandwidth is known as the 99% emission bandwidth, or 20 dB bandwidth ($10*\log 1\% = 20$ dB) taking the total RF output power.

3.7.1.Test Procedures

Use the following spectrum analyzer settings: Span = between 2 to 5 times the OBW, centered on the test channel RBW= 1% to 5% of the OBW VBW \geq 3 x RBW Sweep = auto Detector function = peak Trace = max hold

3.7.2.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.7.3.Test Result

Refer to Annex A.5 in this report.



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3.8. Carried Frequency Separation

3.8.1.Requirement

According to FCC section 15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

3.8.2.Test Procedures

The EUT must have its hopping function enabled. According to DA 00-705, use the following spectrum analyzer settings: Span = wide enough to capture the peaks of two adjacent channels Resolution (or IF) Bandwidth (RBW) \geq 1% of the span Video (or Average) Bandwidth (VBW) \geq RBW Sweep = auto Detector function = peak Trace = max hold Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

3.8.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.8.4.Test Result

Refer to Annex A.6 in this report.



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3.9. Time of Occupancy (Dwell time)

3.9.1.Requirement

According to FCC section 15.247(a) (1) (iii), frequency hopping systems in the 2400 - 2483.5MHz band shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

3.9.2.Test Procedures

Normal Mode:

DH1: Dwell time equal to Pulse time (ms) *(1600 / 2 /79)*31.6 Millisecond DH3: Dwell time equal to Pulse time (ms) * (1600 /4 /79) *31.6 Millisecond DH5: Dwell time equal to Pulse Time (ms)* (1600 / 6 /79) *31.6 Millisecond

AFH Mode:

DH1: Dwell time equal to Pulse time (ms) (800 / 2 / 20)(0.4 + 20) Millisecond DH3: Dwell time equal to Pulse time (ms) (800 / 4 / 20)(0.4 + 20) Millisecond DH5: Dwell time equal to Pulse Time (ms) (800 / 6 / 20)(0.4 + 20) Millisecond.

3.9.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.9.4.Test Result

Refer to Annex A.7 in this report.





3.10. Conducted Spurious Emissions and Band Edge

3.10.1.Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

3.10.2.Test Procedures

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz VBW ≥ RBW Sweep = auto Detector function = peak Trace = max hold Allow the trace to stabilize.

3.10.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.10.4.Test Result

Refer to Annex A.8 and A.9 in this report.





3.11. Conducted Emission

3.11.1.Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μ H/ 50Ω line impedance stabilization network (LISN).

| Frequency Panga (MHz) | Conducted | Limit (dBµV) |
|-----------------------|-----------|--------------|
| Frequency Range (MHz) | Quai-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

Note:

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.11.2.Test Procedures

The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.

3.11.3.Test Setup Layout

Refer to chapter 2.6.2 in this report.

3.11.4.Test Result

Refer to Annex A.10 in this report.



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3.12. Restricted Frequency Bands

3.12.1.Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

3.12.2.Test Procedures

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \ge 1$ GHz, 100 kHz for f < 1GHz

VBW = 3 MHz Sweep = auto

Detector function = peak/average

Trace = max hold

Allow the trace to stabilize

3.12.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.12.4.Test Result

Refer to Annex A.11 in this report.





3.13. Radiated Emission

3.13.1.Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (µV/m) | Measurement Distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.009 - 0.490 | 2400/F(kHz) | 300 |
| 0.490 - 1.705 | 24000/F(kHz) | 30 |
| 1.705 - 30.0 | 30 | 30 |
| 30 - 88 | 100 | 3 |
| 88 - 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

Note1: For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit. **Note2:**For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).





3.13.2.Test Procedures

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz.The antenna to EUT distance is 3meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

3.13.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.13.4.Test Result

Refer to Annex A.12 in this report.



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Annex A Test Data and Result

A.1. Number of Hopping Frequency

| Condition | Mode | Antenna | Hopping Number | Limit | Verdict |
|-----------|-------|---------|----------------|-------|---------|
| NVNT | 1-DH5 | Ant1 | 79 | 15 | Pass |
| NVNT | 2-DH5 | Ant1 | 79 | 15 | Pass |
| NVNT | 3-DH5 | Ant1 | 79 | 15 | Pass |



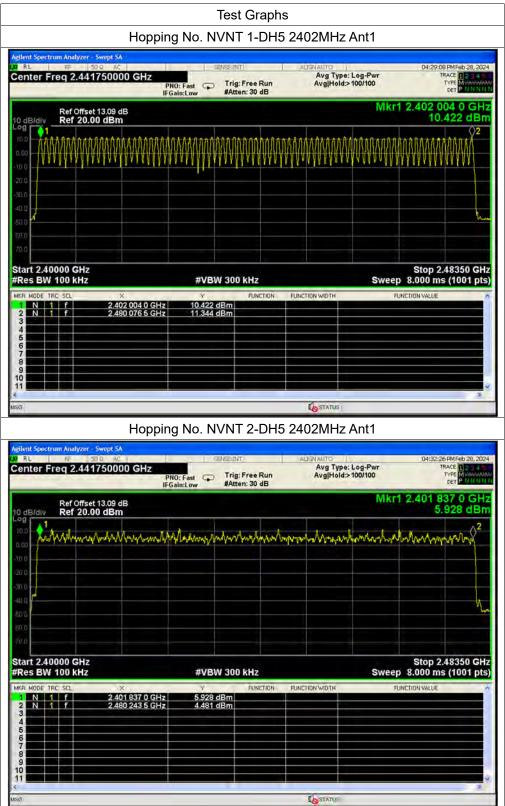
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| RL | 正 | alyzer - Swe | pt SA | | NT 3- | DH5 : | 2402MHz | | 04:41: | 18 PM Feb 28, 202 |
|--------------------|------------|-----------------------|------------------------------------|-----------------------|--------------------------|-----------|----------------------|-----------------------|---------------------|----------------------|
| enter | Freq | 2.44175 | | : Fast 😱 | Trig: Free #Atten: 30 | Run dB | Avg Type Avg Hold | : Log-Pwr >100/100 | | TYPE MUA |
| 0 dB/div | | Offset 13. 20.00 d | | | | | | Mk | 1 2.402 (11 | 004 0 GH .725 dBr |
| | ANN: | WW | www.www | www. | MMM | Maria | AMMANA | WWWW | www | mm 2 |
| 10 0 | | | | | | | | | | |
| 20.0 30.0 | | | | | | | | | | |
| 48.0 | | | | | | | | | | h |
| 50 0 0 00 | | | | | | | | | | |
| 70.0 | | | | | | | | | | |
| tart 2.4 Res BV | | | | #VBW | 300 kHz | | | Swee | Stop 2 p 8.000 m | .48350 GH |
| KR MODE | TRC SCL | | X | Ŷ | FUN | _ | FUNCTION WIDTH | | FUNCTION VALUE | |
| | 1 f 1 f | | 2.402 004 0 GHz 2.480 410 5 GHz | 11.725 dB 5.718 dB | | | | | | |
| 567 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 11 | | | | | | | | | | 3 |



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A.2. Duty Cycle of Test Signal

| Condition | Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|-----------|-------|-----------------|---------|----------------|---------------------------|-----------|
| NVNT | 1-DH5 | 2402 | Ant1 | 57.64 | 2.39 | 0.35 |
| NVNT | 1-DH5 | 2441 | Ant1 | 57.64 | 2.39 | 0.35 |
| NVNT | 1-DH5 | 2480 | Ant1 | 57.68 | 2.39 | 0.35 |
| NVNT | 2-DH5 | 2402 | Ant1 | 57.76 | 2.38 | 0.35 |
| NVNT | 2-DH5 | 2441 | Ant1 | 57.72 | 2.39 | 0.35 |
| NVNT | 2-DH5 | 2480 | Ant1 | 57.76 | 2.38 | 0.35 |
| NVNT | 3-DH5 | 2402 | Ant1 | 57.76 | 2.38 | 0.35 |
| NVNT | 3-DH5 | 2441 | Ant1 | 57.8 | 2.38 | 0.35 |
| NVNT | 3-DH5 | 2480 | Ant1 | 57.76 | 2.38 | 0.35 |



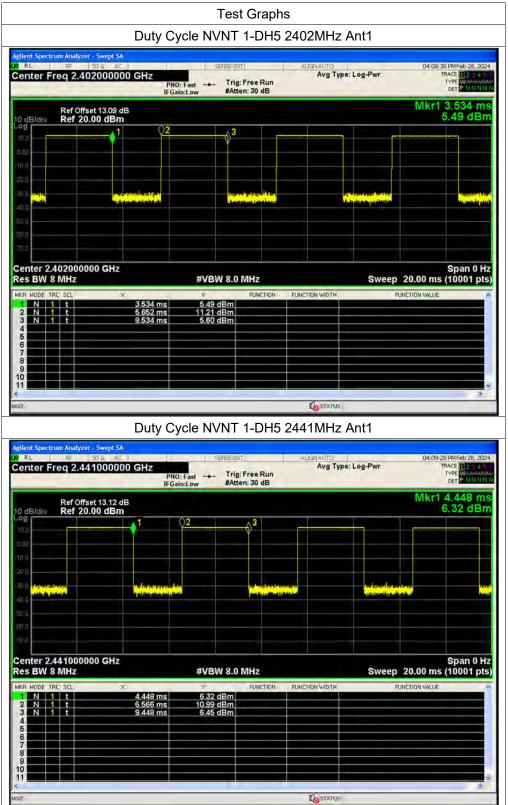
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| | F 50 R AC 2.4800000000 GH: | PNO: Fast ++ Tr | ig: Free Run itten: 30 dB | ALIGNAUTO Avg Type: Log-F | | TRACE |
|---|--|---|--|--|--|--|
| | ef Offset 13.24 dB ef 20.00 dBm | | | | Mkr | 1 2.108 ms 2.13 dBm |
| 0 dB/div Re | 12 | 3 | | | | |
| 10.0 | | | | | | |
| 20.0 90.0 | maduemates | - | | | | letitlet invetigati |
| 10.0 | A CARLER AND A CARLE | | | . Mähinesse andadess wit | | ur saine tainit |
| 900 | | | | | | |
| | 000000 GHz | #\/D\\/ A | | | | Span 0 Hz |
| IN MODE THE SE | i × | #VBW 8. | FUNCTION | FUNCTION WIDTH | Sweep 20.00 m | |
| 1 N 1 t 2 N 1 t 3 N 1 t | 4.22 | 08 ms 2.13 dBm 24 ms -4.24 dBm 08 ms 2.43 dBm | | | | |
| 4 6 | | | | | | |
| 7 8 9 | | | | | | |
| | | | | | | |
| | | | | | | |
| sg | | | | To STATUS | | 2 |
| SG | Du | ity Cycle NVN⁻ | T 2-DH5 2 | | | 1 |
| gilent Spectrum A | nalyzer - Swept SA | | | 402MHz Ant1 | | 2-10 DMEeb 28: 2024 |
| gilent Spectrum A RL R | | Z PNO: Fast Tr | INT | | 04:13 | 3:10 PMFeb 28, 2024 TRACE B 2014 TYPE WHAT |
| gilent Spectrum A RL R Center Freq | nalyzer - Swept SA F 50 2 AC 2.402000000 GH: | Z PNO: Fast Tr | ant | 402MHz Ant1 | 04:13 /wr Mkr | TRACE 12 1 TYPE WHIT DET P NNNN 1 1.676 ms |
| gilent Spectrum A RL R enter Freq 0 dB/dly Re 9 | nalyzer - Swept SA F 50 & AC | Z PNO: Fast Tr | INT | 402MHz Ant1 | 04:13 /wr Mkr | 10PMFeb 28, 2024 TRACE 0.2 TYPE 0.2 TYP |
| gilent Spectrum A RL R enter Freq 0 dB/div Re | nalyzer - Swept SA F 50 Q AC 2.402000000 GH; of Offset 13.09 dB | Z PNO: Fast Tr | INT | 402MHz Ant1 | 04:13 /wr Mkr | TRACE 12 1 TYPE WHEN DET PINNNN 1 1.676 ms |
| gilent Spectrum A RL R enter Freq 0 dB/div Re 0 dB/div Re 0 dB/div Re | natyzer - Swept SA F 50 2 AC 2.402000000 GH: of Offset 13.09 dB off 20.00 dBm | Z PNO: Fast → Tr IFGain:Low #A | INT | 402MHz Ant1 | 04:13 /wr Mkr | TRACE 12 1 TYPE WHEN DET PINNNN 1 1.676 ms |
| gilent Spectrum A RL R enter Freq 0 dB/div Re 0 dB/div Re 0 dB/div Re | natyzet - Swept SA F 50 (2 AC 2.402000000 GH; of Offset 13.09 dB of 20.00 dBm | Z PNO: Fast \rightarrow Tr IFGain:Low #A | INT | 402MHz Ant1 AUXIAITO Avg Type: Log-P | Wr Mkr | 1.676 ms -9.23 dBm |
| gilent Spectrum A RL R enter Freq 0 dB/div Re 0 dB/div Re 0 dB/div Re 0 dB/div Re | natyzer - Swept SA F 50 2 AC 2.402000000 GH: of Offset 13.09 dB off 20.00 dBm | Z PNO: Fast → Tr IFGain:Low #A | INT | 402MHz Ant1 | Wr Mkr | TRACE 12 1 TYPE WHEN DET PINNNN 1 1.676 ms |
| glient Spectrum A RL R enter Freq 0 dB/div R 0 dB/div R 0 dB 10 D 10 D 10 D 10 D 10 D 10 D 10 D 10 D | natyzet - Swept SA F 50 (2 AC 2.402000000 GH; of Offset 13.09 dB of 20.00 dBm | Z PNO: Fast \rightarrow Tr IFGain:Low #A | INT | 402MHz Ant1 AUXIAITO Avg Type: Log-P | Wr Mkr | 1.676 ms -9.23 dBm |
| glient Spectrum A RL R center Freq 0 dB/div Re 0 d Re | natyzer - Swept SA F 50 2 AC 2.402000000 GH: offset 13.09 dB offset 13.09 dB 20.00 dBm | Z PNO: Fast \rightarrow Tr IFGain:Low #A | INT | 402MHz Ant1 AUXIAITO Avg Type: Log-P | Wr Mkr | TRACE DES 4 |
| glient Spectrum A Recenter Freq 0 dB/dlv Re 0 dB/dlv R | nalyzer - Swept SA F 502 AC 2.402000000 GH: of Offset 13.09 dB of Offset 13.09 dB 2. 2. 1. 2. 1. 2. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0 | Z PNO: Fast \rightarrow Tr IFGain:Low #A | INT | 402MHz Ant1 | Wr Mkr | TRACE DISACTORY TYPE WANNEL 1 1.676 ms -9.23 dBm -9.23 dBm -9.24 d |
| glient Spectrum A R0 | natyzet - Swept SA F 50 2 AC 2.402000000 GH: ef Offset 13.09 dB ef 20.00 dBm 2.4020000 GHz 1.22 0000000 GHz 1z 1.67 | Z PNO: Fast Tr IFGain:Low #A | INT ig: Free Run itten: 30 dB 0 MHz FUNCTION | 402MHz Ant1 | Wr Mkr | Trace Distance Tree Distance -9,23 dBm -9,23 d |
| glient Spectrum A RL R center Freq 0 dB/dlv Re 1 dL R 1 dL R | nalyzer - Swept SA F 502 AC 2.402000000 GH: of Offset 13.09 dB of Offset 13.09 dB 2. 1 0000000 GHz 12 2. 1.67 3.78 | Z PHO: Fast IFGain:Low ##A | INT ig: Free Run itten: 30 dB 0 MHz FUNCTION | 402MHz Anti Aug Type: Log-P | 04:13 wr Mkr Cross Sweep 20.00 m | Trace Distance Tree Distance -9,23 dBm -9,23 d |
| glient Spectrum A RC RC Renter Freq 0 dB/dlv RC 0 dB/dlv RC 0 dB/dlv RC 0 dB/dlv RC RC <tr< td=""><td>nalyzer - Swept SA F 502 AC 2.402000000 GH: of Offset 13.09 dB of Offset 13.09 dB 2. 1 0000000 GHz 12 2. 1.67 3.78</td><td>Z PNO: Fast - Tr IFGain:Low #A</td><td>INT ig: Free Run itten: 30 dB 0 MHz FUNCTION</td><td>402MHz Anti Aug Type: Log-P</td><td>04:13 wr Mkr Cross Sweep 20.00 m</td><td>Trace Distance Tree Distance -9,23 dBm -9,23 d</td></tr<> | nalyzer - Swept SA F 502 AC 2.402000000 GH: of Offset 13.09 dB of Offset 13.09 dB 2. 1 0000000 GHz 12 2. 1.67 3.78 | Z PNO: Fast - Tr IFGain:Low #A | INT ig: Free Run itten: 30 dB 0 MHz FUNCTION | 402MHz Anti Aug Type: Log-P | 04:13 wr Mkr Cross Sweep 20.00 m | Trace Distance Tree Distance -9,23 dBm -9,23 d |
| RL Ref Center Freq Ref 0 dB/dlv Ref | nalyzer - Swept SA F 502 AC 2.402000000 GH: of Offset 13.09 dB of Offset 13.09 dB 2. 1 0000000 GHz 12 2. 1.67 3.78 | Z PNO: Fast - Tr IFGain:Low #A | INT ig: Free Run itten: 30 dB 0 MHz FUNCTION | 402MHz Anti Aug Type: Log-P | 04:13 wr Mkr Cross Sweep 20.00 m | Trace Distance Tree Distance -9,23 dBm -9,23 d |



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| RL INF enter Freq 2.4 | 441000000 GHz | SENSEIINT Fast Trig: Free Run in:Low #Atten: 30 dB | ALIGNAUTO Avg Type: Log-Pwr | 04:15:02 PMFeb 28, 20 TRACE 2 2 3 TYPE Webbon DET P N.N.N |
|--|---|--|--|--|
| | ffset 13.12 dB 20.00 dBm | | | Mkr1 2.736 m 3.39 dB |
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| enter 2.441000 | 0000 GHz | | | Span 0 I |
| R MODE TRC SCL | × | #VBW 8.0 MHz | | 20.00 ms (10001 pt |
| N 1 t | 2.736 ms 4.850 ms | 3.39 dBm 9.50 dBm | | UNCTION VALUE |
| N 1 t | 7.736 ms | 3.44 dBm | | |
| | | | | |
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| | | | Co STATUS | 1 |
| | Duty Cy | /cle NVNT 2-DH5 | | |
| fent Spestrum Analy RL RF | zer - Swept SA | /cle NVNT 2-DH5 | 2480MHz Ant1 | 04:17;32 PM Feb 28, X |
| fent Spestrum Analy RL RF | zer - Swept SA 50 Ω AC 480000000 GHz PN0 | SENSE:INT | 2480MHz Ant1 | 04:17:32 PMFeb 28, 20 TRACE 12 TYPE W |
| tent Spectrum Analy RL NF enter Freq 2.4 Ref O | 2er Swept SA 50 9 AC 480000000 GHz PNO IFGal ffset 13.24 dB | SENSE(INT | 2480MHz Ant1 | TRACE 225 TYPE WHANN DET P NNN Mkr1 1.970 m |
| lent Spectrum Analy RL RF enter Freq 2.4 BB/div Ref 2 | zer Swept SA 50 g. AC 480000000 GHz IFGal | SENSE:INT | 2480MHz Ant1 | TRACE |
| ent Spectrum Analy RL RF enter Freq 2.4 dB/div Ref 2 | zer Swept SA 1509 AC 480000000 GHz PHO IFGal ffset 13.24 dB 20.00 dBm | SENSE:INT | 2480MHz Ant1 | TRACE 225 TYPE WHANN DET P NNN Mkr1 1.970 m |
| ent Spectrum Analy RL 0F enter Freq 2.4 dB/div Ref 2 | zer Swept SA 1509 AC 480000000 GHz PHO IFGal ffset 13.24 dB 20.00 dBm | SENSE:IMT : Fast → Trig: Free Run in:Low #Atten: 30 dB | 2480MHz Ant1 | TRACE 225 TYPE WHANN DET P NNN Mkr1 1.970 m |
| ent Spectrum Analy RL RF enter Freq 2.4 dB/div Ref 2 | zer Swept SA 1509 AC 480000000 GHz PHO IFGal ffset 13.24 dB 20.00 dBm | SENSEINT : Fast → Trig: Free Run #Atten: 30 dB | 2480MHz Ant1 | Mkr1 1.970 m -0.16 dB |
| ent Spectrum Analy RL RF enter Freq 2.4 BB/div Ref 2 | zer Swept SA 1509 AC 480000000 GHz PHO IFGal ffset 13.24 dB 20.00 dBm | SENSE:IMT : Fast → Trig: Free Run in:Low #Atten: 30 dB | 2480MHz Ant1 | TRACE 225 TYPE WHANN DET P NNN Mkr1 1.970 m |
| ent Spectrum Analy RL 0F enter Freq 2.4 dB/div Ref 2 | zer Swept SA 1509 AC 480000000 GHz PHO IFGal ffset 13.24 dB 20.00 dBm | SENSEINT : Fast → Trig: Free Run #Atten: 30 dB | 2480MHz Ant1 | Mkr1 1.970 m -0.16 dB |
| ent Spectrum Analy RL RF enter Freq 2.4 dB/div Ref 2 g | zer Swept SA 1509 AC 480000000 GHz PHO IFGal ffset 13.24 dB 20.00 dBm | SENSEINT : Fast → Trig: Free Run #Atten: 30 dB | 2480MHz Ant1 | Mkr1 1.970 m -0.16 dB |
| tent Spectrum Analy RL NF enter Freq 2.4 | zer - Swept SA 50 g AC 480000000 GHz PNO IFGal ffset 13.24 dB 20.00 dBm 2 1 2 1 4 4 4 4 4 4 4 4 4 4 4 4 4 | SENSEINT : Fast Trig: Frée Run #Atten: 30 dB | 2480MHz Ant1 | Mkr1 1.970 m -0.16 dB |
| tent Spectrum Analy RL 0F enter Freq 2.4 dB/div Ref 2 | zer - Swept SA 50 g AC 480000000 GHz PNO IFGal ffset 13.24 dB 20.00 dBm 2 1 2 1 4 4 4 4 4 4 4 4 4 4 4 4 4 | SENSEINT : Fast → Trig: Free Run #Atten: 30 dB | 2480MHz Ant1 | Mkr1 1.970 m -0.16 dB |
| enter 2.480000 es BW 8 MHz noter Tree 2.4 | zer - Swept SA 50 g AC 480000000 GHz PNO IFGal ffset 13.24 dB 20.00 dBm 22 1 21 22 20 22 20 22 20 22 20 20 20 | CENSCINT C Fast → Trig: Frée Run #Atten: 30 dB | 2480MHz Ant1 | Mkr1 1.970 m -0.16 dB |
| RL Ref O dB/div Ref O dB/div Ref 2 RE RE RE RE RE RE RE RE RE RE | zer Swept SA 50 g AC 480000000 GHz ffset 13.24 dB 20.00 dBm 2 1 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 | SENSERNT : Fast → Trig: Free Run #Atten: 30 dB | 2480MHz Ant1 | Mkr1 1.970 m -0.16 dB |
| ent Spectrum Analy RL RF enter Freq 2.4 dB/div Ref 2 dB/div Ref 2 d | zer - Swept SA 50 g AC 480000000 GHz PNO IFGal ffset 13.24 dB 20.00 dBm 22 1 21 22 20 22 20 22 20 22 20 20 20 | CENSCINT C Fast → Trig: Frée Run #Atten: 30 dB | 2480MHz Ant1 | Mkr1 1.970 m -0.16 dB |





| ilent Spectrum Analyzer - RL IIF 5 | | SENSEIINT ALIG | NAUTO | 04:20:42 PM Feb 28, 202 |
|--|---|---|--|--|
| enter Freq 2.402 | 2000000 GHz PNO: Fast IFGain:Lov | | Avg Type: Log-Pwr | TRACE |
| Ref Offset | t 13.09 dB | | N | lkr1 4.224 m 6.64 dBn |
| 0 dB/div Ref 20.0 | 1 ¢ ² | 3 | | |
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| 8.0 | i i a gio a fia. E doi rito | () () () () () () () () () () | Could deadly in the | |
| 0.0 | | | | |
| enter 2.40200000 es BW 8 MHz | | #\/B)// 8.0 M/J- | Swoon 20.0 | Span 0 H |
| KR MODE THE SEL | × | #VBW 8.0 MHz | | 0 ms (10001 pts VALUE |
| 1 N 1 t 2 N 1 t 3 N 1 t | 4,224 ms 6,336 ms 9,224 ms | 6.64 dBm 6.25 dBm 6.76 dBm | | |
| | | | | |
| 8 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | | | |
| | | | | |
| R. | | r. | STATUS | |
| G | Duty Cycle | | MHz Ant1 | |
| jilent Spectrum Analyzer - | Swept SA | NVNT 3-DH5 2441 | MHz Ant1 | 114-22-28 DM Eeb 28: 202 |
| jient Spectrum Analyzer - R L RF S | Swept SA 0.92 AC 0000000 GHz PNO: Fast | | MHz Ant1 | TRACE |
| ilent Spectrum Analyzer RL RF S enter Freq 2.441 | Swept SA OR AC 0000000 GHz PNO: Fast IFGain:Lov | | MHz Ant1 NAUTO Avg Type: Log-Pwr | TRACE 12 4 TYPE WHANNE DET PININN |
| jient Spectrum Analyzer - | Swept SA 00 AC 0000000 GHz PNO: Fast IFGain:Lov 13.12 dB 00 dBm | NVNT 3-DH5 2441 | MHz Ant1 NAUTO Avg Type: Log-Pwr | TRACE 12 4 TYPE WHANNE DET PININN |
| ilent Spectrum Analyzer RL RF S enter Freq 2.441 D dB/div Ref 20.0 0 D dB/div Ref 20.0 | Swept SA OR AC 0000000 GHz PNO: Fast IFGain:Lov | | MHz Ant1 NAUTO Avg Type: Log-Pwr | TRACE 12 4 TYPE WHANNE DET PININN |
| Silent Spectrum Analyzer RL RF S enter Freq 2.441 Ref Offset 0 dB/div Ref 20.0 0 0 0 0 0 0 | Swept SA 00 AC PNO: Fast IFGain:Lov 113.12 dB 10 dBm | NVNT 3-DH5 2441 | MHz Ant1 NAUTO Avg Type: Log-Pwr | TRACE 12 4 TYPE WHANNE DET PININN |
| Sient Spectrum Analyzer - RL RF S enter Freq 2.441 Ref Offset 0 dB/div Ref 20.0 0 dB | Swept SA O Q AC PNO: Fast IFGain:Lov t 13.12 dB 0 dBm | NVNT 3-DH5 2441 | MHz Ant1 NAUTO Avg Type: Log-Pwr | TRACE 12 4 TYPE WHANNE DET PININN |
| Sient Spectrum Analyzer - RL RF S enter Freq 2.441 Ref Offset 0 dB/div Ref 20.0 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 | Swept SA 00 AC PNO: Fast IFGain:Lov 113.12 dB 10 dBm | NVNT 3-DH5 2441 | MHz Ant1 Avg Type: Log-Pwr | TRACE 12 4 TYPE WHANNE DET PININN |
| Sient Spectrum Analyzer - RL RF S enter Freq 2.441 Ref Offset 0 dB/div Ref 20.0 0 db | Swept SA 0 Q AC PNO: Fast IFGaint.ov t 13.12 dB 0 dBm 2 2 4 0 dBm 0 dBm 0 dBm 0 dBm 0 dBm | NVNT 3-DH5 2441 | MHz Ant1 | Ikr1 3.714 m -6.51 dBn |
| Sient Spectrum Analyzer - RL RF S enter Freq 2.441 Ref Offset 0 dB/div Ref 20.0 0 dB | Swept SA DQ AC PNO: Fast IFGaint.ov 10000000 GHz PNO: Fast IFGaint.ov 2 2 0 GHz X | NVNT 3-DH5 2441 SENSEINT ALLS Trig: Free Run #Atten: 30 dB #Atten: 40 dB #Atten: 40 dB | MHz Ant1 | Span 0 H 0 ms (10001 pts |
| Pilent Spectrum Analyzer Rt | Swept SA 02 AC 10000000 GHz PNO: Fast IFGain:Lov 13.12 dB 00 dBm 0 dBm | * NVNT 3-DH5 2441 | MHz Ant1 Avg Type: Log-Pwr | Ikr1 3.714 m -6.51 dBn -8.51 dBn -9.51 dBn -9. |
| Sient Spectrum Analyzer - RL RF S enter Freq 2.441 Ref Offset 0 dB/div Ref 20.0 0 dB/di Ref 20.0 0 dB/di Ref 20.0 0 dB/div Ref 20.0 0 dB/d | Swept SA 00 AC 10000000 GHz PNO: Fast ISGain: ov 13.12 dB 0 dBm 0 dBm 1 2 2 4 4 5.824 ms - | NVNT 3-DH5 2441 SENSEINT ALICE Trig: Free Run #Atten: 30 dB #UBU Run Bookte alice | MHz Ant1 Avg Type: Log-Pwr | Ikr1 3.714 m -6.51 dBn -8.51 dBn -9.51 dBn -9. |
| Ref Offset RL RF S enter Freq 2.441 Ref Offset S od5/div Ref 20.00 S od5/div Ref 20.00 S od5/div Ref 20.00 S od5/div Ref 20.00 S od5 S S od6 S S od6 S S od7 S S | Swept SA 00 AC 10000000 GHz PNO: Fast ISGain: ov 13.12 dB 0 dBm 0 dBm 1 2 2 4 4 5.824 ms - | NVNT 3-DH5 2441 SENSEINT ALICE Trig: Free Run #Atten: 30 dB #UBU Run Bookte alice | MHz Ant1 Avg Type: Log-Pwr | Ikr1 3.714 m -6.51 dBn -8.51 dBn -9.51 dBn -9. |

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| RL ente | | 正 | lyzer - Swept SA 50 Ω AC .4800000000 GHz | PNO: Fas | | ig: Free | | AU | GNAUTO Avg Type: | | T | PMFeb 28, 202 RACE 2 3 4 TYPE WHANN |
|------------|-------|--------------|--|------------|----------------------|---------------|------------|--------|---------------------|-------------------------|--------------------------|---|
| dB/d | div. | Ref (Ref | Offset 13.24 dB 20.00 dBm | Ir Gain.Lu | | | | | | | | 3.722 m 7.39 dBr |
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| | | 8000 MHz | 00000 GHz | | #VBW 8. | .0 MHz | | | | Sweep | 20.00 ms | Span 0 H (10001 pt |
| KR MOI | DE TR | 0.50 | × | _ | 4 | 20 | ICTION | EUNCT | ON WIDTH | | UNCTION VALUE | |
| | - | | 3.722 r | | 7,39 dBm | | 1011011 | 1 SHCH | Net True (1) | | THE TOT THE OF | |
| 2 N 3 N | _ | t | 5.834 r 8.722 r | ns | 3.80 dBm 7.56 dBm | | | | | | | |
| 4 | | | 8,7221 | 115 | 7.56 GBH | | | | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | - | | - | | | | |
| | | | | | | | | | | | | |



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A.3. Maximum Peak Conducted Output Power

| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Conducted Power (dBm) | Total Conducted Power (W) | Limit Conducted (dBm) | Verdict |
|-----------|-------|--------------------|---------|-----------------------------|------------------------|--------------------------------------|---------------------------------|-----------------------------|---------|
| NVNT | 1-DH5 | 2402 | Ant1 | 11.9 | 0 | 11.9 | 0.01549 | 30 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 11.89 | 0 | 11.89 | 0.01545 | 30 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 11.87 | 0 | 11.87 | 0.01538 | 30 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 11.69 | 0 | 11.69 | 0.01476 | 30 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 11.79 | 0 | 11.79 | 0.0151 | 30 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 11.76 | 0 | 11.76 | 0.015 | 30 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 11.99 | 0 | 11.99 | 0.01581 | 30 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 11.98 | 0 | 11.98 | 0.01578 | 30 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 11.64 | 0 | 11.64 | 0.01459 | 30 | Pass |



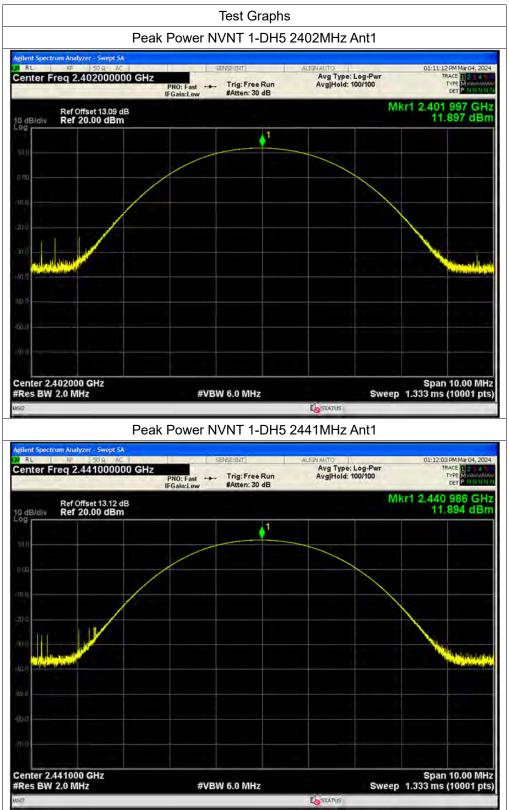
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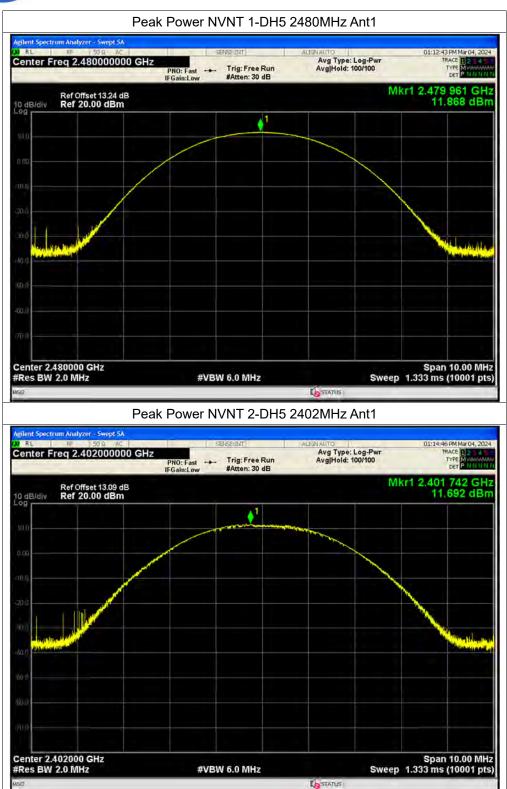






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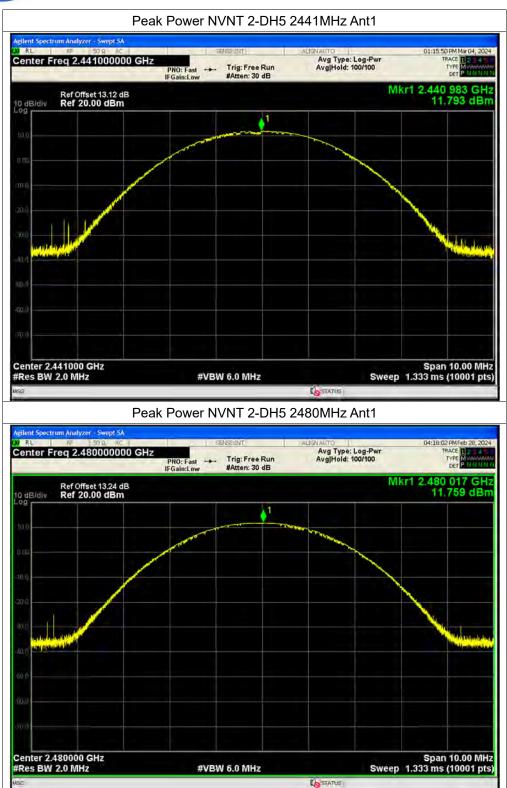




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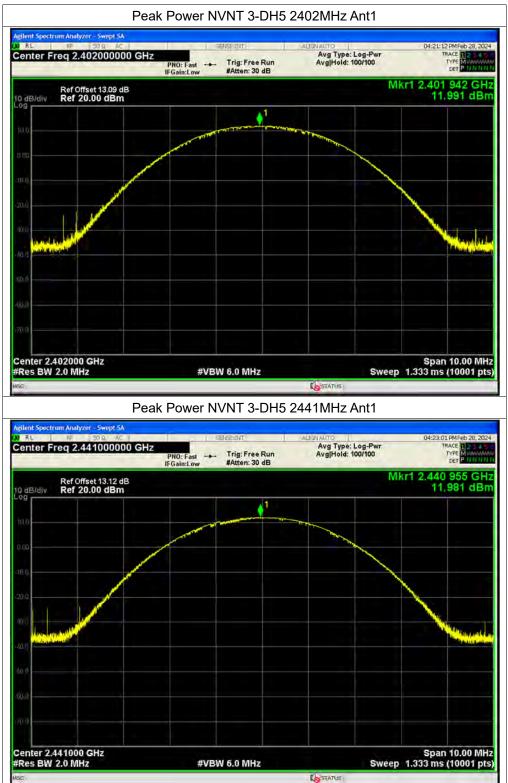




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A.4. Maximum Average Conducted Output Power

| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Conducted Power (dBm) | Total Conducted Power (W) | Limit Conducted (dBm) | Verdict |
|-----------|-------|--------------------|---------|-----------------------------|------------------------|--------------------------------------|---------------------------------|-----------------------------|---------|
| NVNT | 1-DH5 | 2402 | Ant1 | 9.01 | 2.39 | 11.4 | 0.0138 | 30 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 9.4 | 2.39 | 11.79 | 0.0151 | 30 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 8.92 | 2.39 | 11.31 | 0.01352 | 30 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 6.61 | 2.38 | 8.99 | 0.00793 | 30 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 6.52 | 2.39 | 8.91 | 0.00778 | 30 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 6.52 | 2.38 | 8.9 | 0.00776 | 30 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 6.89 | 2.38 | 9.27 | 0.00845 | 30 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 6.69 | 2.38 | 9.07 | 0.00807 | 30 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 6.38 | 2.38 | 8.76 | 0.00752 | 30 | Pass |



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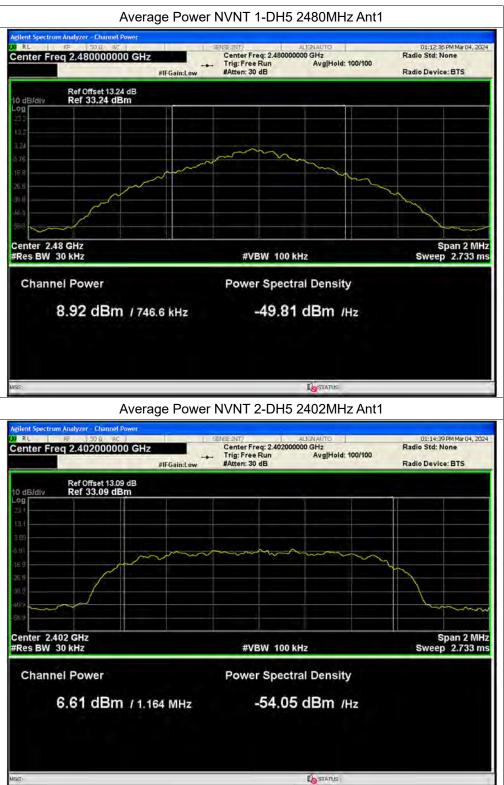




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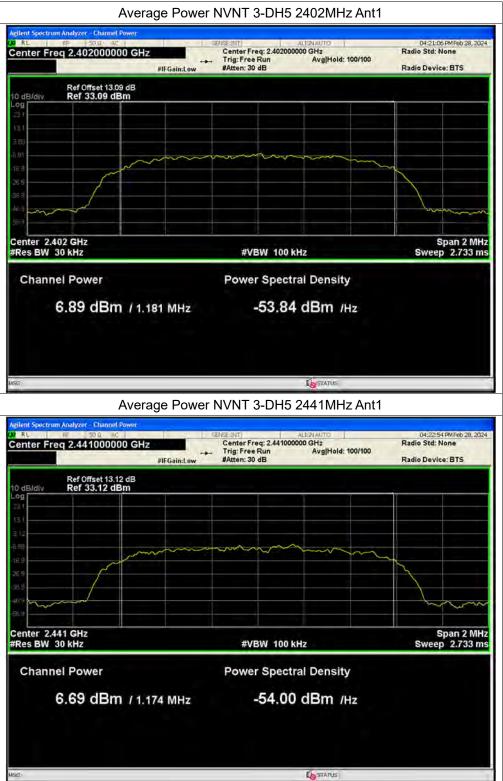




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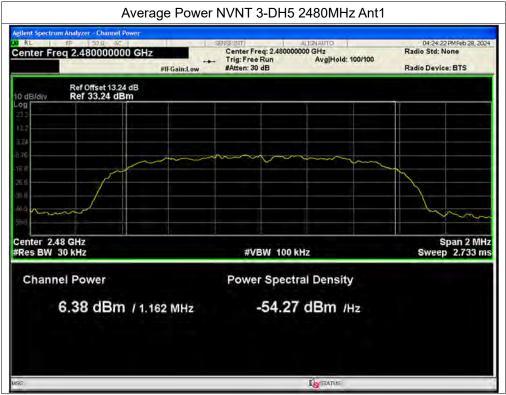




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A.5. 20 dB Bandwidth

| Condition | Mode | Frequency (MHz) | Antenna | -20 dB Bandwidth (MHz) |
|-----------|-------|-----------------|---------|------------------------|
| NVNT | 1-DH5 | 2402 | Ant1 | 0.806 |
| NVNT | 1-DH5 | 2441 | Ant1 | 0.813 |
| NVNT | 1-DH5 | 2480 | Ant1 | 0.838 |
| NVNT | 2-DH5 | 2402 | Ant1 | 1.272 |
| NVNT | 2-DH5 | 2441 | Ant1 | 1.249 |
| NVNT | 2-DH5 | 2480 | Ant1 | 1.275 |
| NVNT | 3-DH5 | 2402 | Ant1 | 1.287 |
| NVNT | 3-DH5 | 2441 | Ant1 | 1.278 |
| NVNT | 3-DH5 | 2480 | Ant1 | 1.244 |



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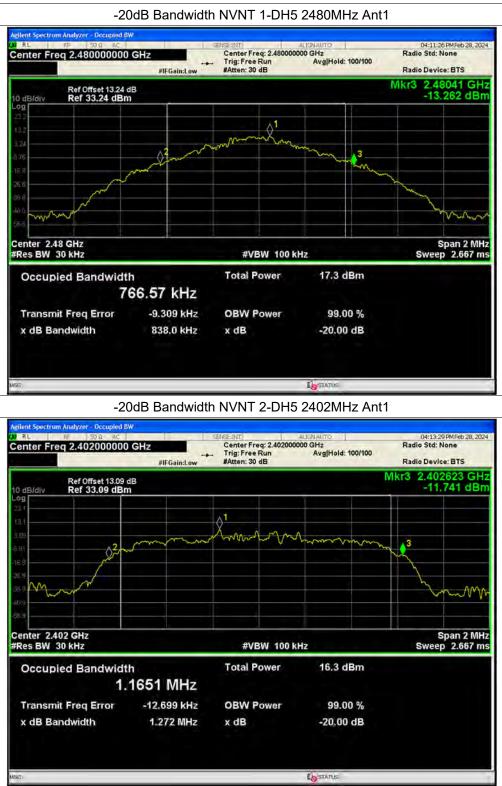


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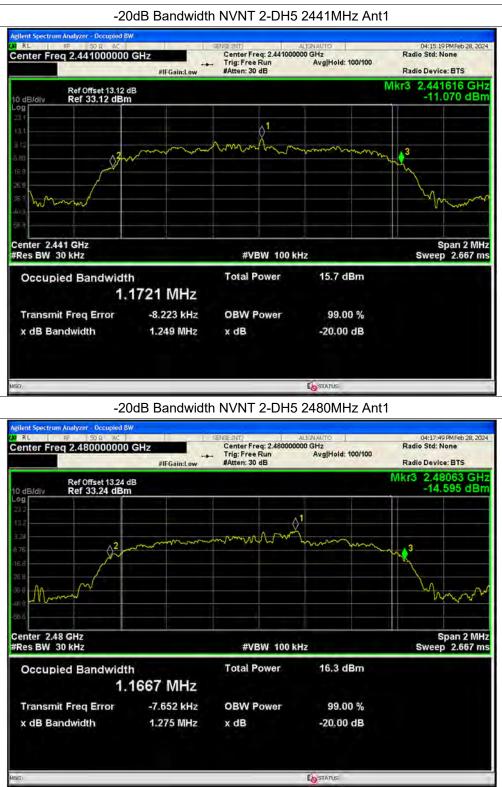






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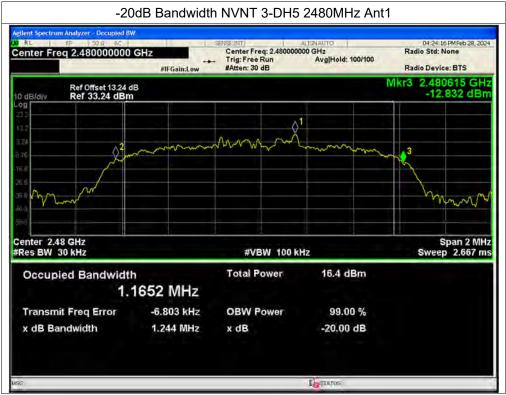






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A.6. Carried Frequency Separation

| Condition | Mode | Antenna | Hopping Freq1 (MHz) | Hopping Freq2 (MHz) | HFS (MHz) | Limit (MHz) | Verdict |
|-----------|-------|---------|------------------------|------------------------|--------------|----------------|---------|
| NVNT | 1-DH5 | Ant1 | 2401.986 | 2402.992 | 1.006 | 0.537 | Pass |
| NVNT | 2-DH5 | Ant1 | 2401.944 | 2403.15 | 1.206 | 0.848 | Pass |
| NVNT | 3-DH5 | Ant1 | 2402.148 | 2403.15 | 1.002 | 0.858 | Pass |





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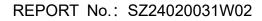


| | CFS | NVNT 2-DH5 24 | 02MHz Ant1 | |
|---|------------------------------------|---|--|---|
| | D R AC | SENSEIINT | ALIGNAUTO | 04:31:50 PM Feb 28, |
| enter Freq 2.402 | 2500000 GHz PNO: Wi IFGain:L | ide 开 Trig: Free Run aw #Atten: 30 dB | Avg Type: Log-Pwr Avg Hold>100/100 | TRACE |
| Ref Offset | 13.09 dB 0 dBm | | | Mkr1 2.401 944 G 5.235 dE |
| | man hours | www. | man | manny |
| 0.0 D.0 | | | | |
| 70 | | | | |
| enter 2.402500 GF | Hz | | | Span 2.000 N |
| Res BW 30 KHz | x | #VBW 100 kHz | FUNCTION WIDTH | FUNCTION VALUE |
| N 1 F 2 N 1 F 4 | 2,401 944 GHz 2,403 150 GHz | 5.235 dBm 6.142 dBm | | |
| | | | | |
| | | | | |
| ł | | | STATUS | |
| | | NVNT 3-DH5 24 | 02MHz Ant1 | |
| ient Spectrum Analyzer RL RF S enter Freq 2.402 | 0 9 AC 2500000 GHz PNO: W | SENSE:INT ide - Trig: Frée Run ow #Atten: 30 dB | ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100 | 04:37:53 PM Feb 28, TRACE 2 2 TYPE M WW DET P NN |
| Ref Offset | IFGain:L | ow water of th | | Mkr1 2.402 148 G 9.354 dB |
| Rei 20.0 | U UBIII | | | |
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| | ~~~^^ | | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |
| | | | | 2 |
| 000 000 000 000 000 000 000 000 000 00 | ^ +z | #VBW 100 kHz | Sw | Span 2.000 M reep 2.133 ms (1001 p |
| enter 2.402500 Gł Res BW 30 kHz (A MODE TRC SCL 1 N 1 f | × 2.402 148 GHz | Y FUNCTION 9.354 dBm | | Span 2.000 ft reep 2.133 ms (1001 p |
| enter 2.402500 GH Res BW 30 kHz III III III III III III III III III I | × | Y FUNCTION | | veep 2.133 ms (1001 p |
| P2 P2 P2 P2 P2 P2 P2 P2 P2 P2 | × 2.402 148 GHz | Y FUNCTION 9.354 dBm | | veep 2.133 ms (1001 p |
| enter 2.402500 GH Res BW 30 kHz KR MODE TRC SCL 1 N 1 f 3 S S S S S S S S S S S S S S S S S S S | × 2.402 148 GHz | Y FUNCTION 9.354 dBm | | veep 2.133 ms (1001 p |
| CD C | × 2.402 148 GHz | Y FUNCTION 9.354 dBm | | veep 2.133 ms (1001 p |

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A.7. Time of Occupancy (Dwell time)

| Condition | Condition Mode | Frequency | Antenna | Pulse Time | Total Dwell | Burst | Period | Limit | Verdict |
|-----------|----------------|-----------|---------|------------|-------------|-------|-----------|-------|---------|
| Condition | woue | (MHz) | Antenna | (ms) | Time (ms) | Count | Time (ms) | (ms) | vertici |
| NVNT | 1-DH1 | 2402 | Ant1 | 0.378 | 59.346 | 157 | 31600 | 400 | Pass |
| NVNT | 1-DH3 | 2402 | Ant1 | 1.633 | 271.078 | 166 | 31600 | 400 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | 2.881 | 218.956 | 76 | 31600 | 400 | Pass |
| NVNT | 2-DH1 | 2402 | Ant1 | 0.385 | 60.06 | 156 | 31600 | 400 | Pass |
| NVNT | 2-DH3 | 2402 | Ant1 | 1.637 | 253.735 | 155 | 31600 | 400 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 2.881 | 247.766 | 86 | 31600 | 400 | Pass |
| NVNT | 3-DH1 | 2402 | Ant1 | 0.386 | 59.83 | 155 | 31600 | 400 | Pass |
| NVNT | 3-DH3 | 2402 | Ant1 | 1.636 | 265.032 | 162 | 31600 | 400 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 2.887 | 233.847 | 81 | 31600 | 400 | Pass |



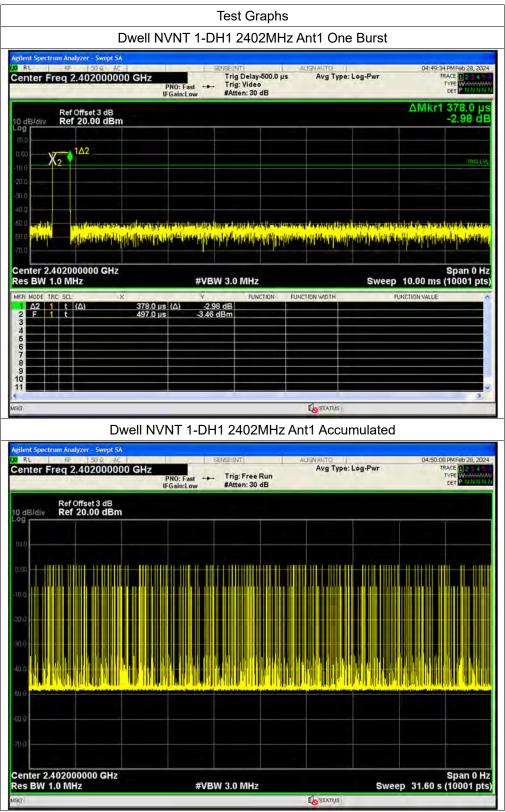
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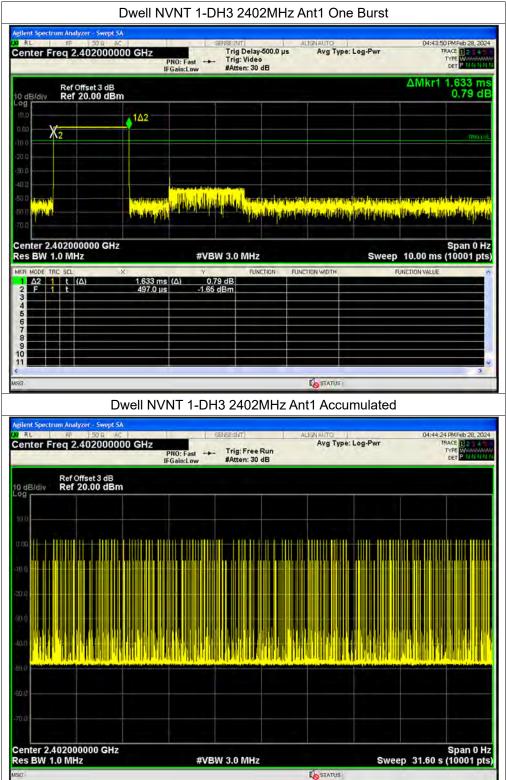






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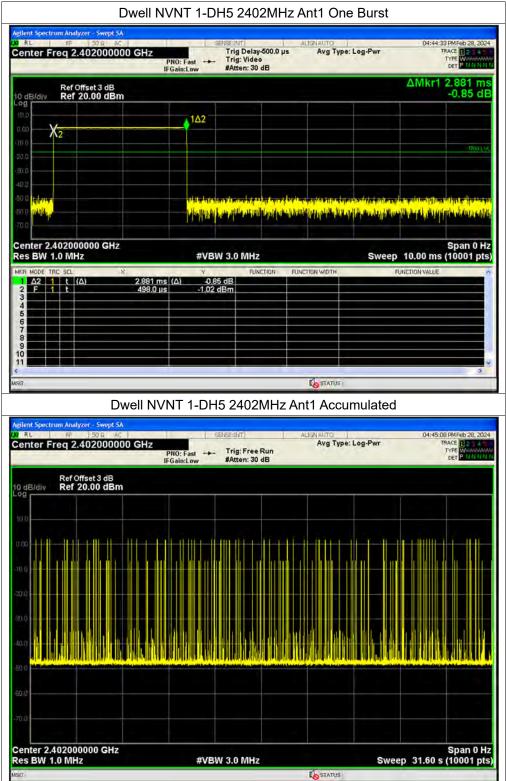






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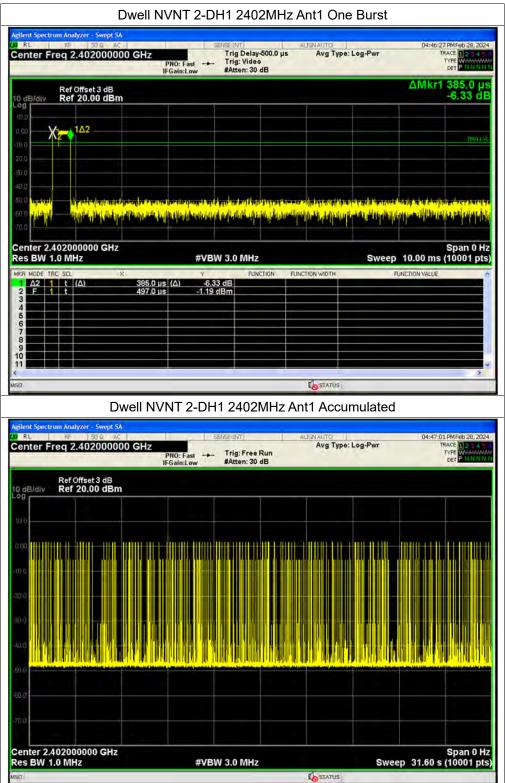






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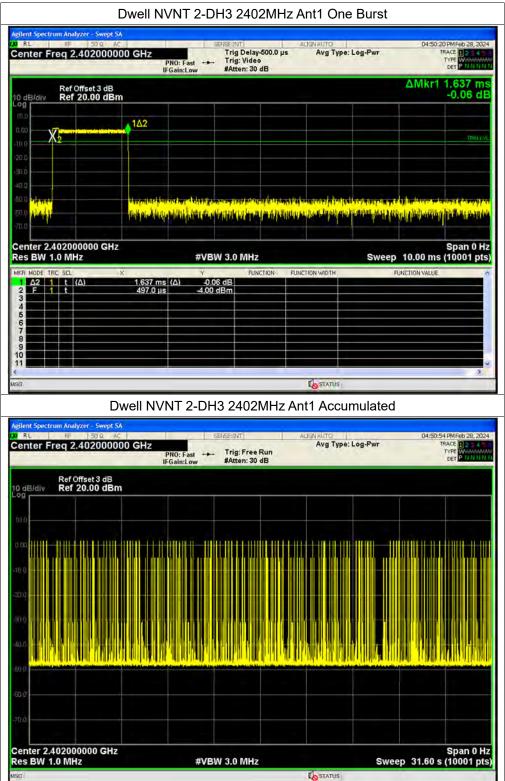






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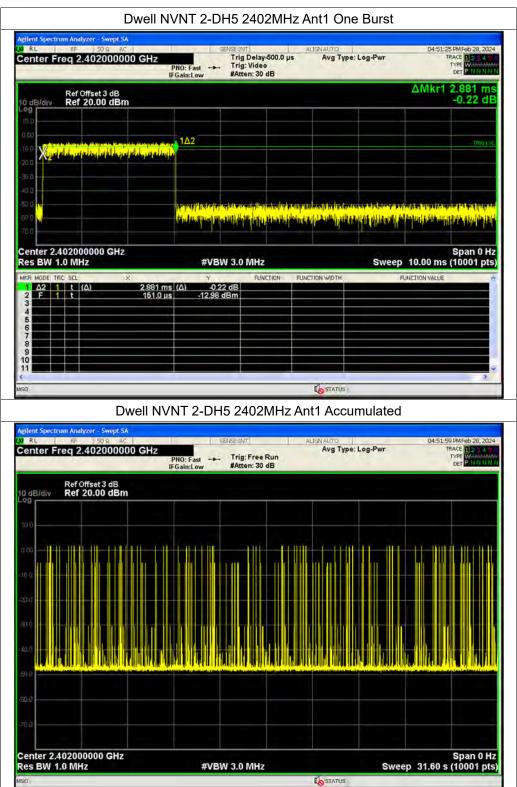






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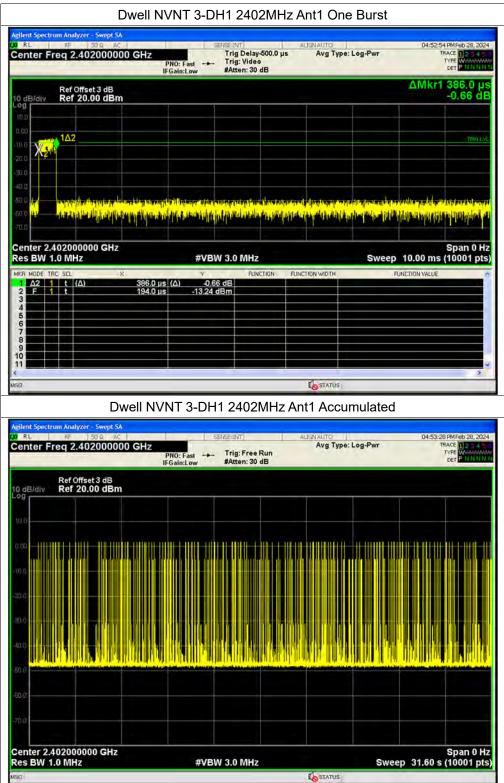
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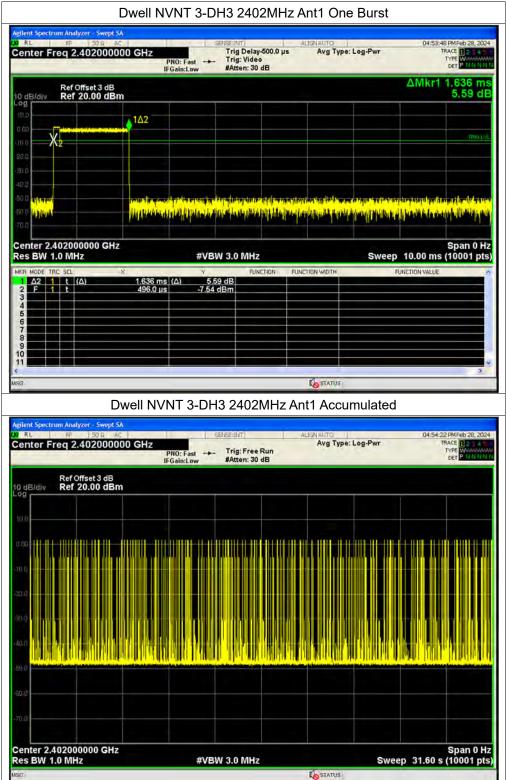






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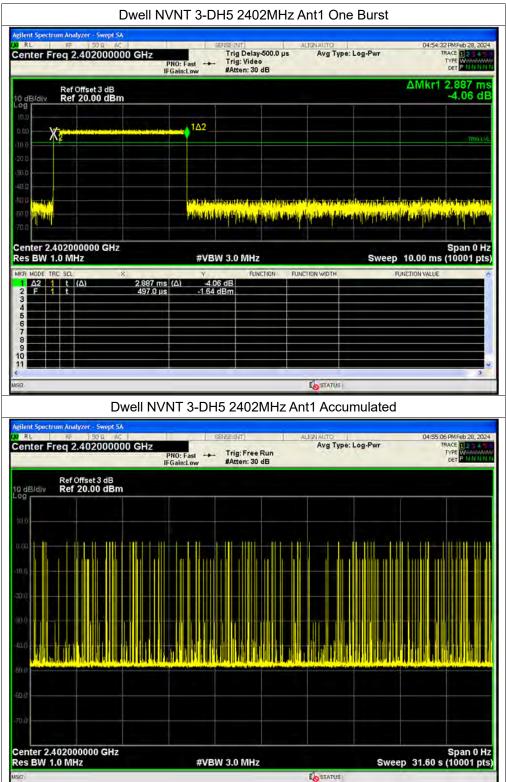




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A.8. Conducted Spurious Emissions

| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|-------|-----------------|---------|-----------------|-------------|---------|
| NVNT | 1-DH5 | 2402 | Ant1 | -50.92 | -20 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | -50.33 | -20 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | -49.95 | -20 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | -49.64 | -20 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | -50.83 | -20 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | -48.47 | -20 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | -50.35 | -20 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | -50.26 | -20 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | -49.88 | -20 | Pass |



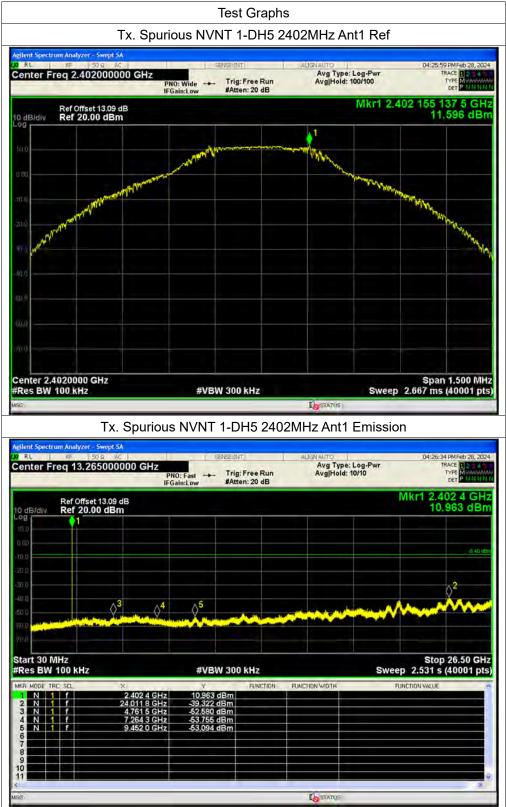
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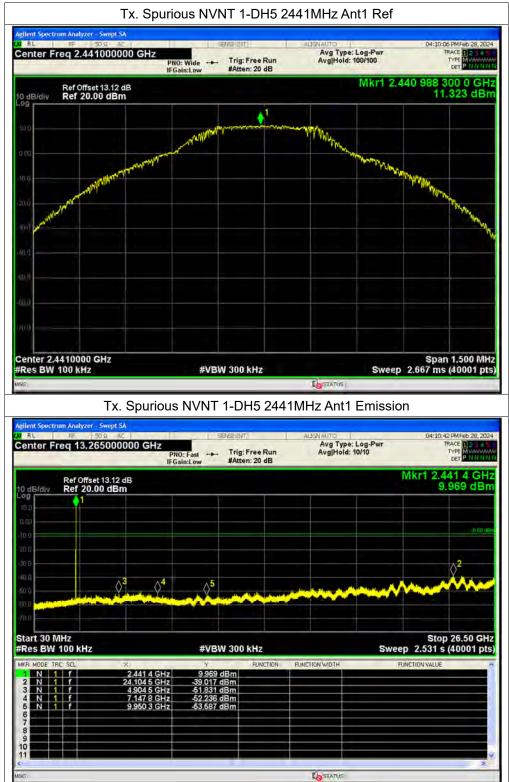


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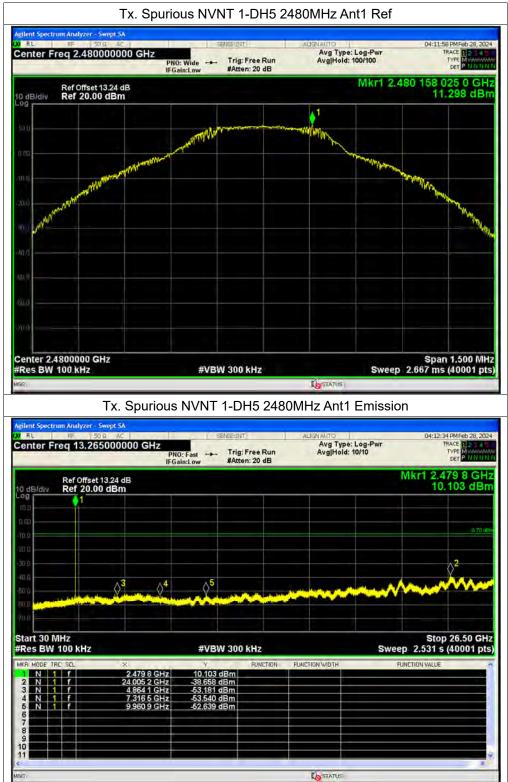






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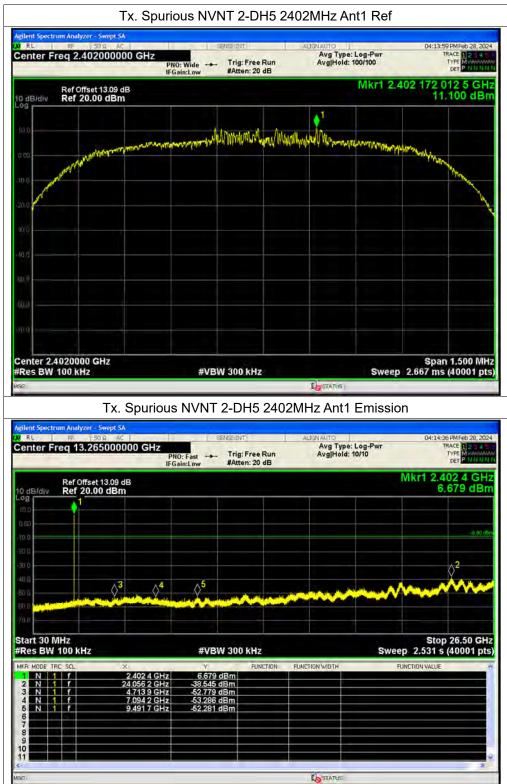






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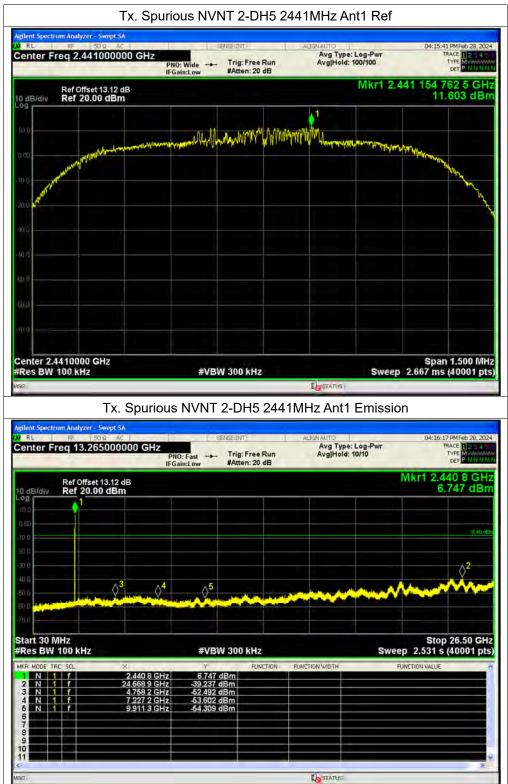




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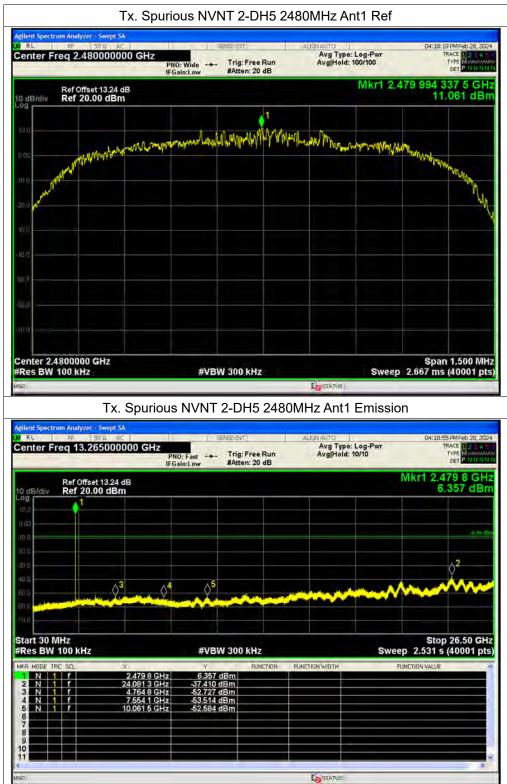




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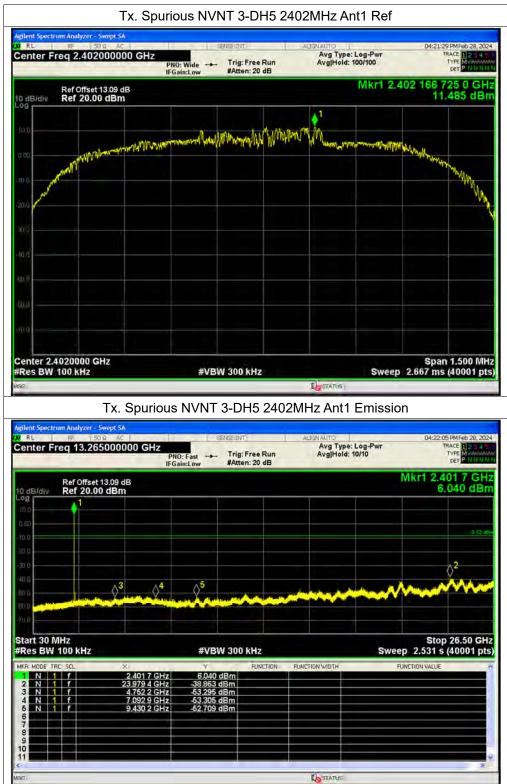
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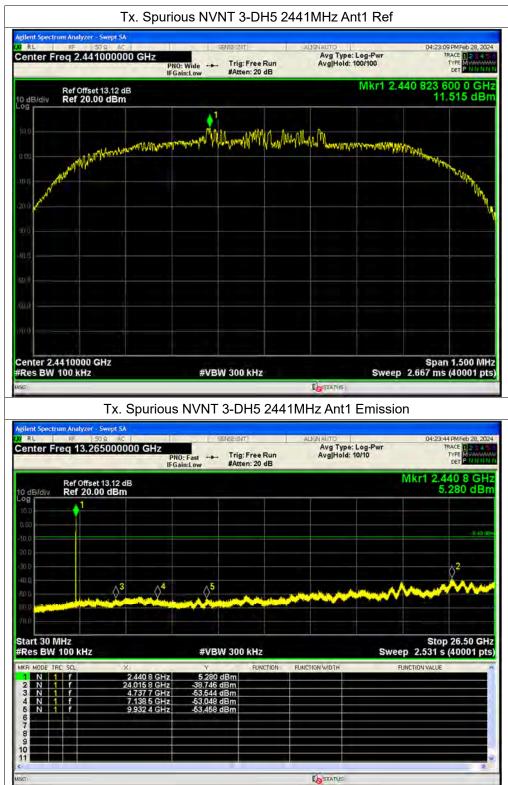




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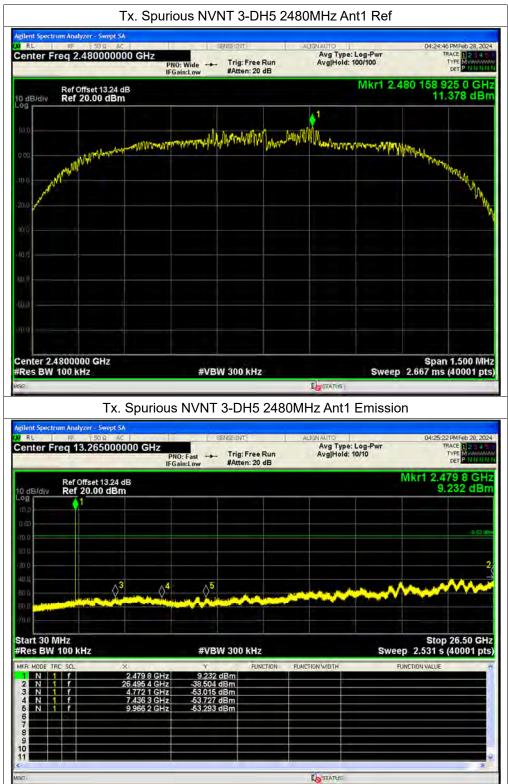
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A.9. Band Edge

| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|-------|-----------------|---------|--------------|-----------------|-------------|---------|
| NVNT | 1-DH5 | 2402 | Ant1 | No-Hopping | -53.78 | -20 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | No-Hopping | -57.21 | -20 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | No-Hopping | -53.02 | -20 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | No-Hopping | -55.66 | -20 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | No-Hopping | -56.86 | -20 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | No-Hopping | -56.71 | -20 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | Hopping | -56.28 | -20 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | Hopping | -55.78 | -20 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | Hopping | -56.48 | -20 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | Hopping | -54.45 | -20 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | Hopping | -56.56 | -20 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | Hopping | -56.18 | -20 | Pass |



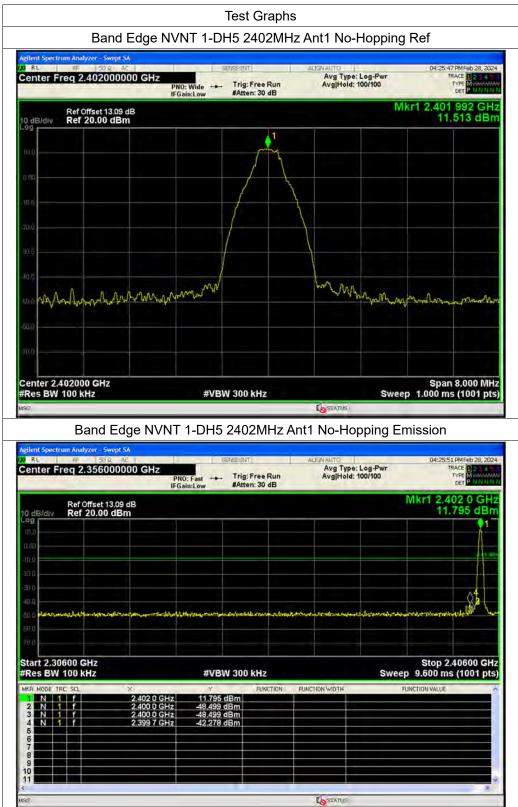
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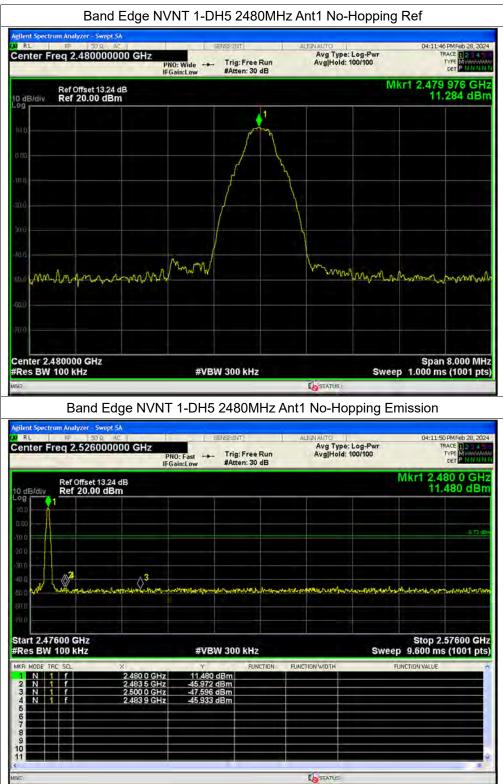
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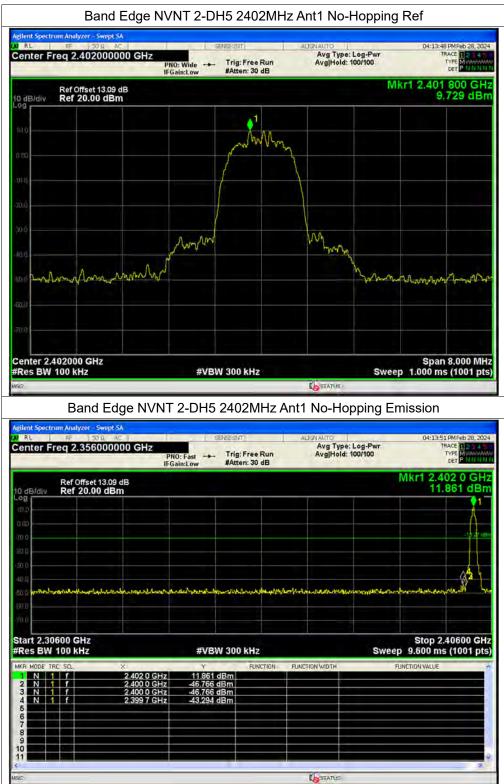
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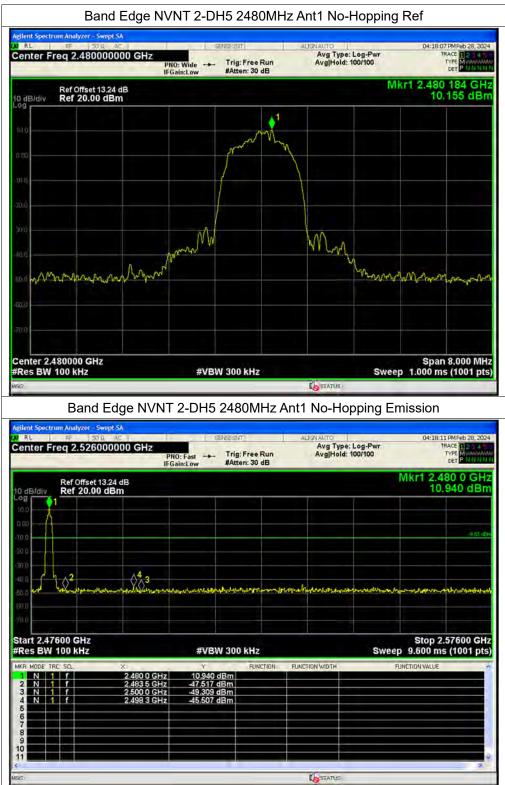




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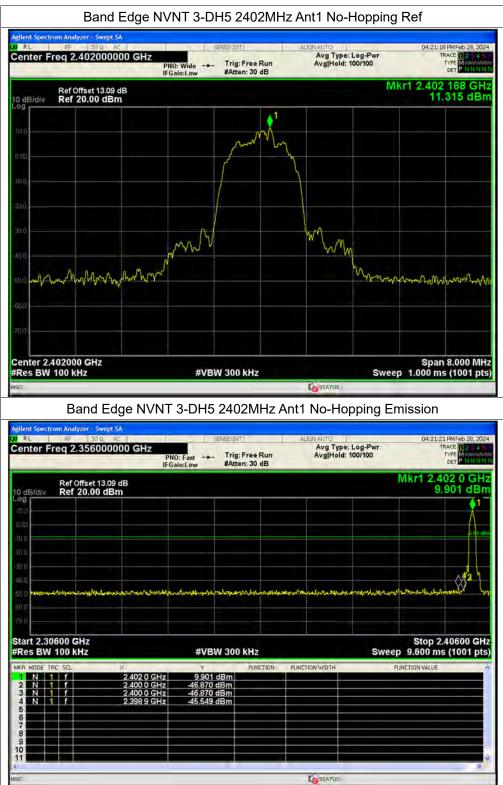


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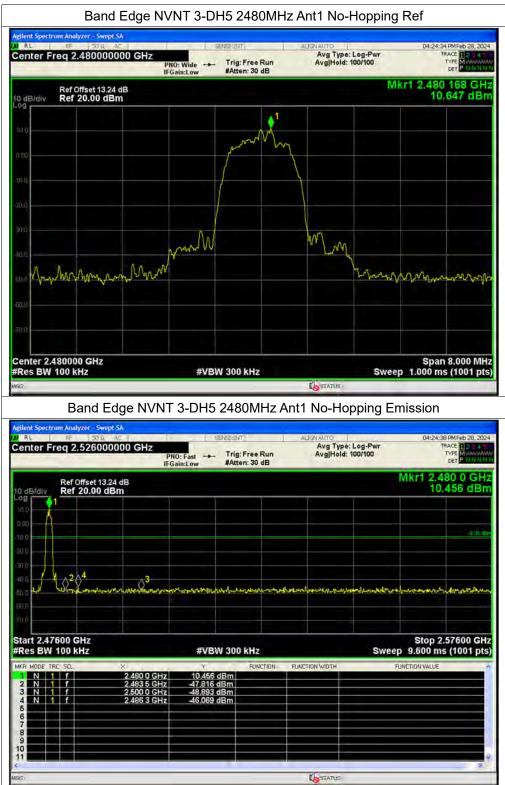


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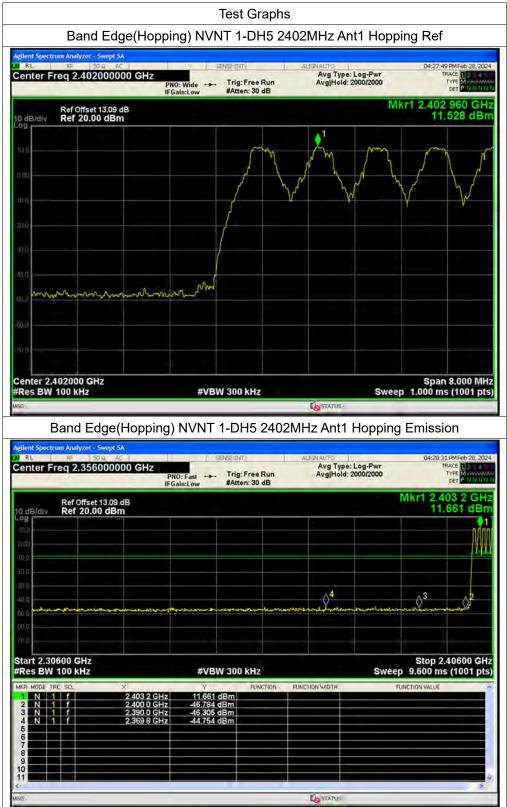




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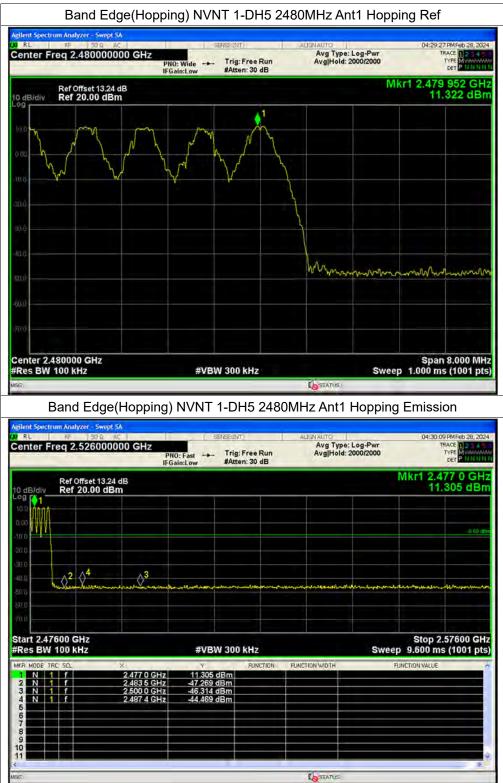
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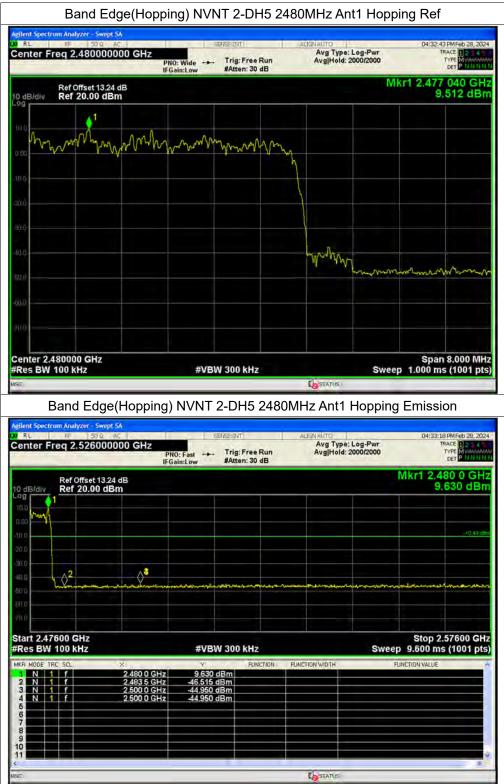
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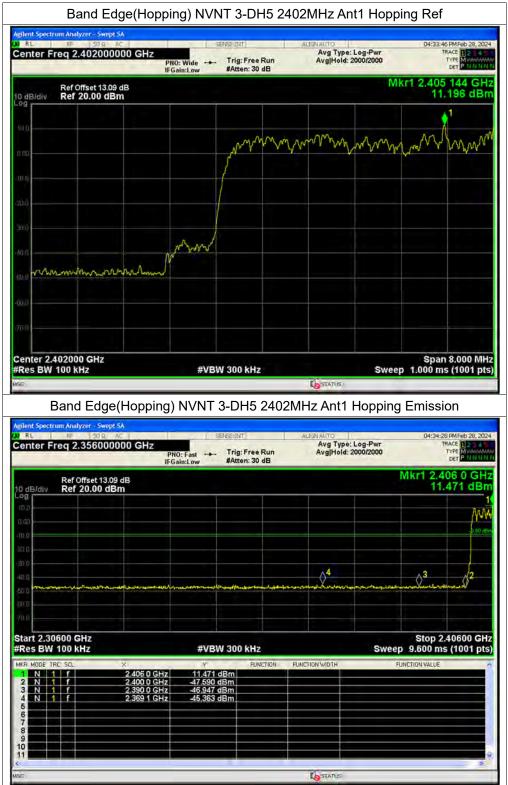
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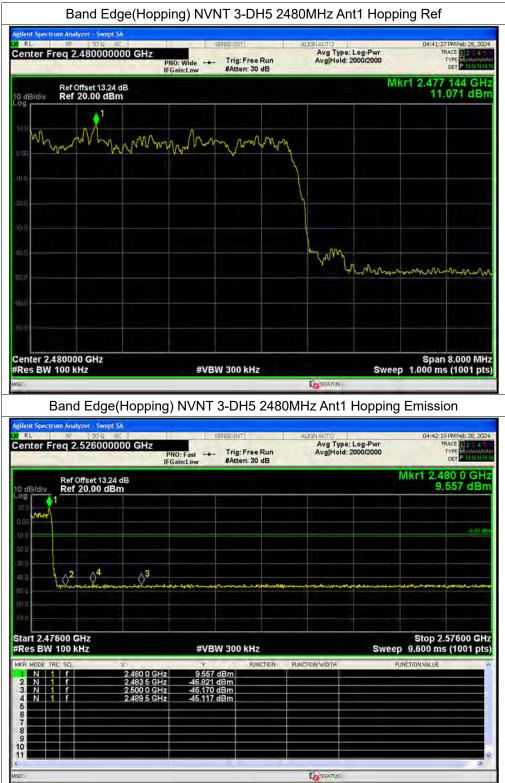






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A.10. Conducted Emission

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

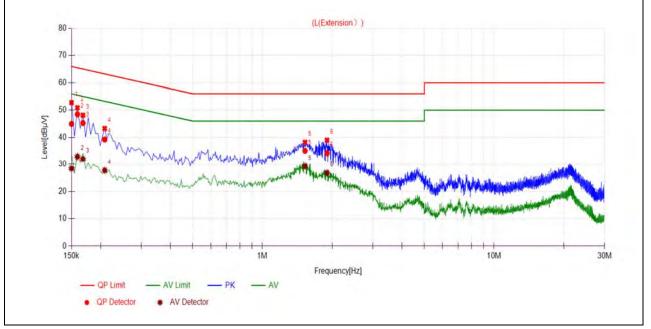
A. Test Setup:

Test Mode: <u>EUT + PC + PC Adapter + BT TX</u> Test voltage: <u>AC 120V/60Hz</u> The measurement results are obtained as below: E [dB μ V] =U_R + L_{Cable loss} [dB] + A_{Factor} U_R: Receiver Reading A_{Factor}: Voltage division factor of LISN





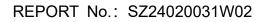
B. Test Plot:



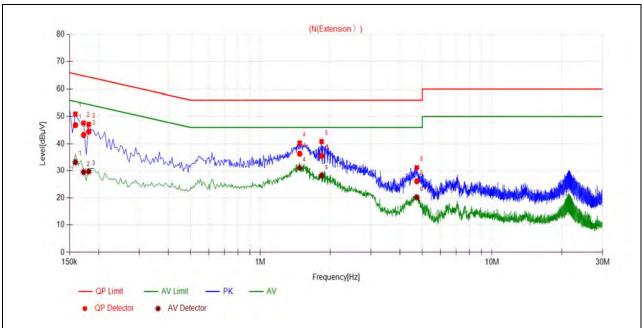
(L Phase)

| No. | Fre. | Emission L | .evel (dBµV) | Limit (| dBµV) | Power-line | Verdict |
|-----|--------|------------|--------------|-----------|---------|------------|---------|
| | (MHz) | Quai-peak | Average | Quai-peak | Average | | voruiot |
| 1 | 0.1500 | 44.97 | 28.38 | 66.00 | 56.00 | | PASS |
| 2 | 0.1590 | 48.52 | 32.88 | 65.52 | 55.52 | | PASS |
| 3 | 0.1680 | 45.27 | 31.97 | 65.06 | 55.06 | Line | PASS |
| 4 | 0.2085 | 39.20 | 27.71 | 63.26 | 53.26 | Line | PASS |
| 5 | 1.5270 | 35.04 | 29.26 | 56.00 | 46.00 | | PASS |
| 6 | 1.9006 | 34.16 | 26.73 | 56.00 | 46.00 | | PASS |









| (N Phase) |
|-----------|
|-----------|

| No. | Fre. | Emission L | .evel (dBµV) | Limit (| dBµV) | Power-line | Verdict |
|-----|--------|------------|--------------|-----------|---------|------------|---------|
| | (MHz) | Quai-peak | Average | Quai-peak | Average | | |
| 1 | 0.1590 | 46.85 | 33.27 | 65.52 | 55.52 | | PASS |
| 2 | 0.1725 | 43.26 | 29.45 | 64.84 | 54.84 | | PASS |
| 3 | 0.1815 | 44.47 | 29.67 | 64.42 | 54.42 | Noutrol | PASS |
| 4 | 1.4775 | 36.38 | 31.12 | 56.00 | 46.00 | Neutral | PASS |
| 5 | 1.8375 | 35.60 | 28.15 | 56.00 | 46.00 | | PASS |
| 6 | 4.7352 | 26.06 | 20.11 | 56.00 | 46.00 | | PASS |



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A.11. Restricted Frequency Bands

The lowest and highest channels are tested to verify the Restricted Frequency Bands.

The measurement results are obtained as below:

 $E [dB\mu V/m] = U_R + A_T + A_{Factor} [dB]; A_T = L_{Cable loss} [dB] - G_{preamp} [dB]$

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

Note: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

Receiver Max. Detector Frequency Reading AT Emission Limit A_{Factor} Channel Verdict (MHz) UR (dB) (dB@3m) Е (dBµV/m) PK/AV (dBµV) $(dB\mu V/m)$ 0 PΚ 74 PASS 2371.24 23.58 6.74 27.20 57.52 0 2390.00 AV 10.81 6.74 27.20 44.75 54 PASS 78 2389.81 ΡK 23.77 6.74 27.20 57.71 74 PASS AV 6.74 PASS 78 2483.81 10.84 27.20 44.78 54

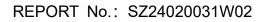
GFSK Mode



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| Marker Select Marker | PM Mar 12, 2024 ACE 123450 YPE MWWWWWW DET PPNNNN | TRAC | ALIGN OFF Type: Voltage fold:>100/100 | Avg | SENSE:INT Trig: Free Run #Atten: 6 dB | IZ | α DC 0000000 (| trum Analyzer - F PRESEL 5 2.371240 PREAMP | IL T |
|-------------------------|--|------------------|---|----------|---|------------|-------------------------|---|---------|
| 2 | 240 GHz 81 dBµV | 2.371 2 23.58 | Mkr2 | | | | dBµV | Ref 82.9 | B/div |
| Norma | A | | | | | | | |) |
| Delt | moor | \$¹. | 2 | | rant mark in a market | noneontres | | | |
| Fixed | | | | | | | | |) |
| o | 40400 GHz (1001 pts) | 000 ms (| Sweep 1. | | .0 MHz | #VBW | | 000 GHz CISPR) 1 | es BW |
| Properties | TION VALUE | FUNCTR | FUNCTION WIDTH | FUNCTION | ¥ 1,849 dBµV 3,581 dBµV | | × 2.390 (2.371 2 | f | NODE TR |
| Mor 1 of | | | | | | | | | |

(PEAK, Channel 0, GFSK)



(AVERAGE, Channel 0, GFSK)

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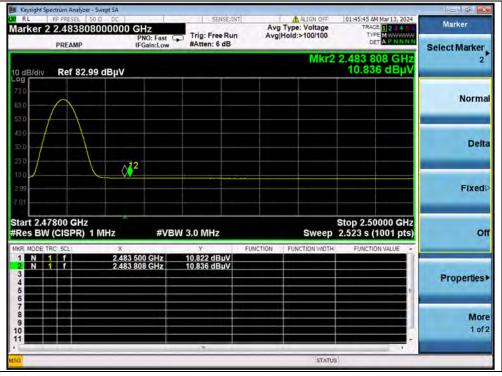
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| Marker | 12:49:18 AM Mar 13, 2024 TRACE 123450 TVPE | ALIGN OFF Type: Voltage Hold:>100/100 | Av | SENSE: | | 00000 G | ESEL 50 9 8981400 | |
|---------------|--|---|----------|----------------------------|----------------------------|---------------------------|----------------------|---------|
| Select Marker | DET P P N N N N | Hold.>100/100 | - AV8 | #Atten: 6 dB | PNO: Fast G FGain:Low | IF | AMP | PR |
| 2 | 2.489 814 GHz 23.772 dBµV | Mkr2 | | | | ΙΒμν | ef 82.99 c | iv R |
| Norma | | | | | | | | ~ |
| Delt | | | 2 | | and the state of the state | | | |
| Fixed | | | | | | | | |
| o | Stop 2.50000 GHz .000 ms (1001 pts) | Sweep 1. | | 3.0 MHz | #VBW | | SPR) 1 M | _ |
| Properties | FUNCTION VALUE | FUNCTION WDTH | FUNCTION | 22.535 dBµV 23.772 dBµV | 00 GHz 14 GHz | × 2,483 50 2,489 81 | | E TRC S |
| Mor | E | | | | | | | |
| 1 of 2 | - | | | | | | | |

(PEAK, Channel 78, GFSK)



(AVERAGE, Channel 78, GFSK)

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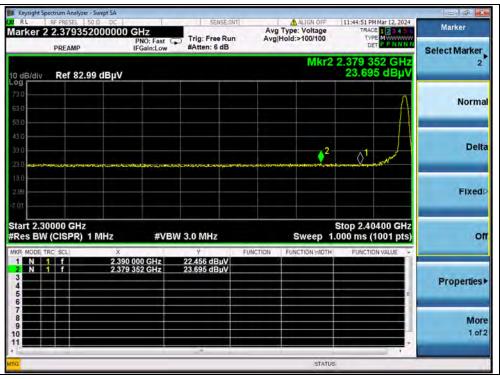
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_ ._ .



π/4-DQPSK Mode

| Channel | Frequency | Detector | Receiver Reading | A _T | A _{Factor} | Max. Emission | Limit | Verdict |
|---------|-----------|----------|--------------------------|----------------|---------------------|------------------|----------|---------|
| | (MHz) | PK/ AV | U _R (dBµV) | (dB) | (dB@3m) | E (dBµV/m) | (dBµV/m) | Verdiet |
| 0 | 2379.35 | PK | 23.70 | 6.74 | 27.20 | 57.64 | 74 | PASS |
| 0 | 2389.65 | AV | 10.80 | 6.74 | 27.20 | 44.74 | 54 | PASS |
| 78 | 2386.47 | PK | 23.68 | 6.74 | 27.20 | 57.62 | 74 | PASS |
| 78 | 2483.50 | AV | 10.92 | 6.74 | 27.20 | 44.86 | 54 | PASS |

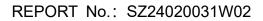


(PEAK, Channel 0,π/4-DQPSK)



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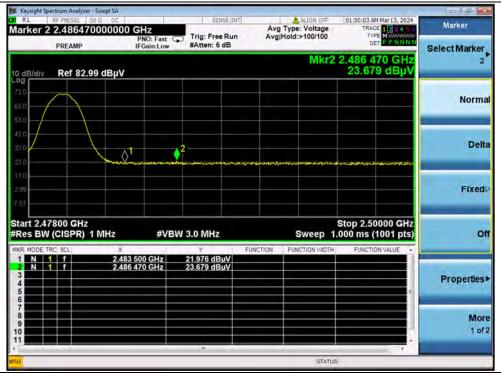
Fax: 86-755-36698525





| Marker Select Marker | Mar 12, 2024 E 1 2 3 4 5 0 E MUMBAAAA T A P. N N N N | 11:46:15 PM TRACI TVP DE | ALIGN OFF Type: Voltage Hold:>100/100 | Avg | SENSE:INT Trig: Free Run #Atten: 6 dB | GHz PNO: Fast | 50 g DC 548000000 | | |
|-------------------------|---|-----------------------------------|---|----------|---|--------------------|----------------------|--------|------------|
| 2 | 48 GHz 3 dBµV | 2.389 6 10.80 | Mkr2 | | | | 2.99 dBµV | Ref 82 | 3/div |
| Norm | Λ | | | | | | | | |
| Del | | | | | | | | | |
| Fixed | | ¢ ² | | | | | | | |
| c | 1001 pts) | Stop 2.40 11.93 s (1 | Sweep | | 3.0 MHz | #VBW |) 1 MHz | | s BW |
| Properties | IN VALUE | FUNCTIO | FUNCTION WIDTH | FUNCTION | 10.779 dBµV 10.803 dBµV | 000 GHz 648 GHz | | _ | N 1 N 1 |
| Mo 1 of | | | | | | | | | |

(AVERAGE, Channel 0, π/4-DQPSK)



(PEAK, Channel 78, π/4-DQPSK)

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| Marker | 5 AM Mar 13, 2024 RACE 1 2 3 4 5 0 TYPE MWWWWW DET A P N N N N | TRA | ALIGN OFF Type: Voltage old:>100/100 | Avg | SENSE: | Hz NO: Fast | 0000 G | Analyzer - Swep TESEL 50 มี 8356600 | REF |
|------------------|---|---------|--|----------|----------------------------|------------------|----------------------|---|------------------|
| Select Marke | 566 GHz | 2.483 | Mkr2 | | #Atten: 6 dB | Gain:Low | IF | EAMP | |
| Norm | | 10.5 | | | | | ВµV | ef 82.99 d | /div R |
| Del | | | | | | | | | / |
| Fixed | | | | | | | | | |
| c | 50000 GHz (1001 pts) | 2.523 s | Sweep | FUNCTION | 3.0 MHz Y | | x | SPR) 1 MI | 2.4780 BW (Cl |
| Properties | | | | | 10.924 dBµV 10.901 dBµV | 10 GHz 16 GHz | 2.483 50 2.483 56 | | N 1 N 1 |
| Мо 1 о | | | | | | | | | |
| | 1.1.1 | | STATUS | | | | | | |

(AVERAGE, Channel 78, π/4-DQPSK)



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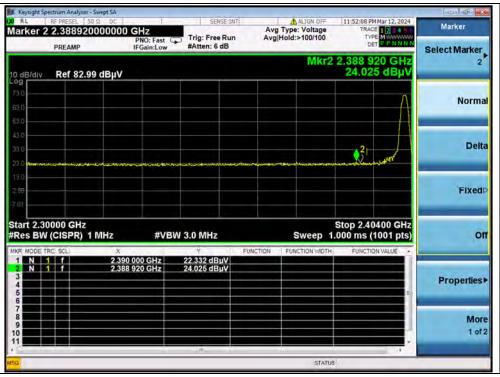
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8-DPSK Mode

| Channel | Frequency | Detector | Receiver Reading | A _T | A _{Factor} | Max. Emission | Limit | Verdict |
|---------|-----------|----------|--------------------------|----------------|---------------------|------------------|----------|---------|
| | (MHz) | PK/ AV | U _R (dBµV) | (dB) | (dB@3m) | E (dBµV/m) | (dBµV/m) | Voraiot |
| 0 | 2388.92 | PK | 24.03 | 6.74 | 27.20 | 57.97 | 74 | PASS |
| 0 | 2389.86 | AV | 10.80 | 6.74 | 27.20 | 44.74 | 54 | PASS |
| 78 | 2488.10 | PK | 23.80 | 6.74 | 27.20 | 57.74 | 74 | PASS |
| 78 | 2483.50 | AV | 10.88 | 6.74 | 27.20 | 44.82 | 54 | PASS |



(PEAK, Channel 0, 8-DPSK)



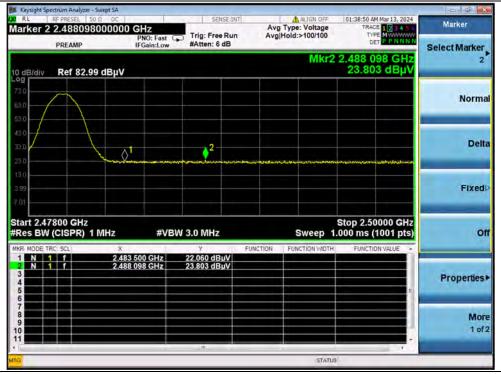
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| Marker | Mar 12, 2024 | 11:54:01 PM TRACE TYPE | ALIGN OFF Type: Voltage Hold:>100/100 | Avg | SENSE: | GHz PNO: Fast | rzer - Swept SA 50 ฉ DC | RF PRESEL | RL |
|--------------------|--------------|--------------------------------------|---|----------|----------------------------|--------------------|------------------------------------|-----------|-------------|
| Select Marker 2 | | 2.389 85 | Mkr2 | | #Atten: 6 dB | IFGain:Low | 2.99 dBµV | PREAMP | dB/div |
| Norma | Λ | | | | | | | KCI 02 | i 0 0 |
| Dell | | | | | | | | | D D D |
| Fixed | | ¢ ² | | | | | | | 9 |
| c | 001 pts) | Stop 2.404 11.93 s (1 FUNCTION | Sweep | FUNCTION | 3.0 MHz | #VBW | lz) 1 MHz × | | art 2.30 |
| Properties | | (ONLIN) | | Ponchon | 10.784 dBµV 10.800 dBµV | 000 GHz 856 GHz | 2.390 | | N 1 |
| Mo 1 of | | | | | | | | | |
| | | 1 | STATUS | | | | | | |

(AVERAGE, Channel 0, 8-DPSK)



(PEAK, Channel 78, 8-DPSK)

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| Marker | 01:42:00 AM Mar 13, 2024 TRACE 2 3 4 5 0 TYPE MWWWWW DET A P N N N N | ALIGN OFF e: Voltage d:>100/100 | | SENSE:IN Trig: Free Run #Atten: 6 dB | IZ NO: Fast G | 0000 GH | | |
|------------------------------|---|---------------------------------------|----------|--|------------------|-----------------------------|-----------------|---------|
| Select Marker 2 | .483 610 GHz 10.875 dBµV | Mkr2 | | | | | 82.99 d | |
| Norm | | | | | | | | |
| Del | | | | | | | | |
| Fixe | | | | | | _ </td <td></td> <td></td> | | |
| | top 2.50000 GHz .523 s (1001 pts) | Sweep | | .0 MHz | #VBW | | GHz PR) 1 Mi | _ |
| Propertie | FUNCTION VALUE | NCTION WIDTH | FUNCTION | ¥ 0.883 dBµV 0.875 dBµV | | × 2.483 500 2.483 610 | | TRC SCL |
| | | | | | | | | |
| Properties More 1 of 2 | | | | | | | | |

(AVERAGE, Channel 78, 8-DPSK)



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A.12. Radiated Emission

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

 $E [dB\mu V/m] = U_R + A_T + A_{Factor} [dB]; A_T = L_{Cable loss} [dB] - G_{preamp} [dB]$

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note3: For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.



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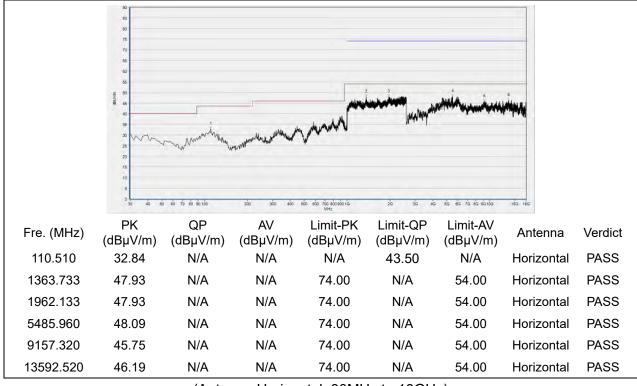
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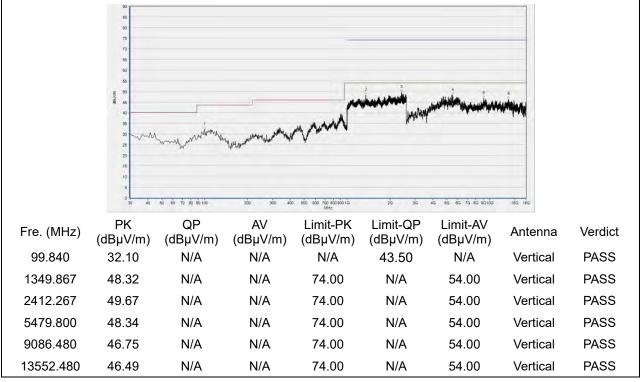


GFSK Mode

Plots for Channel 0



(Antenna Horizontal, 30MHz to 18GHz)



(Antenna Vertical, 30MHz to 18GHz)



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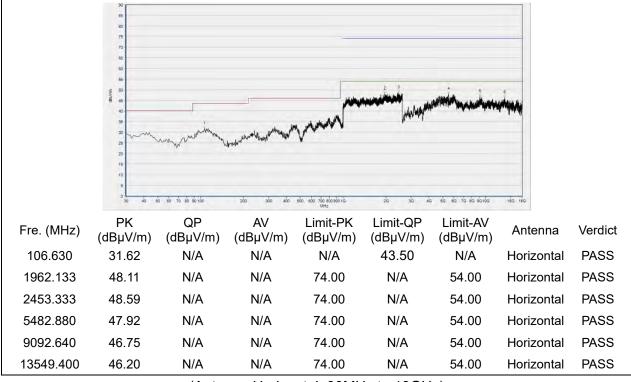
Fax: 86-755-36698525

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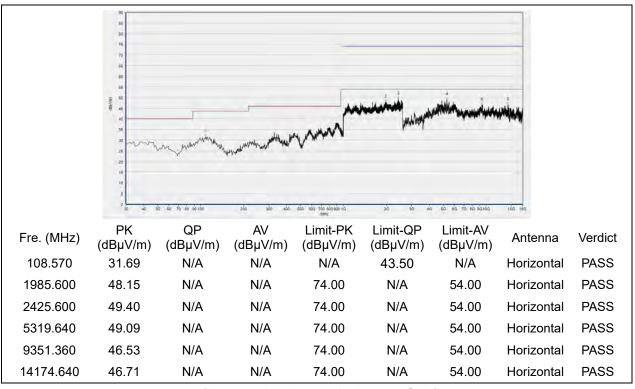




Plot for Channel 39



(Antenna Horizontal, 30MHz to 18GHz)



(Antenna Vertical, 30MHz to 18GHz)



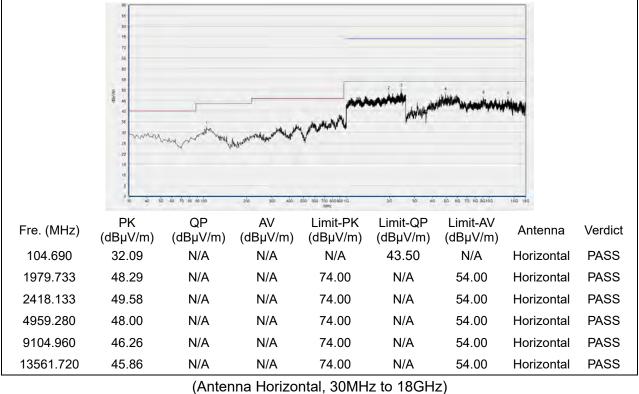
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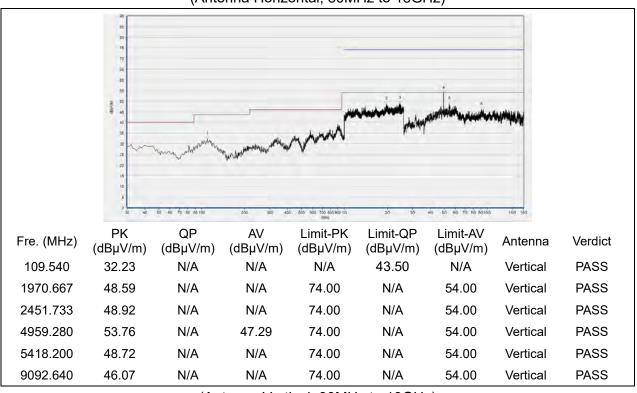
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Plot for Channel 78





(Antenna Vertical, 30MHz to 18GHz)



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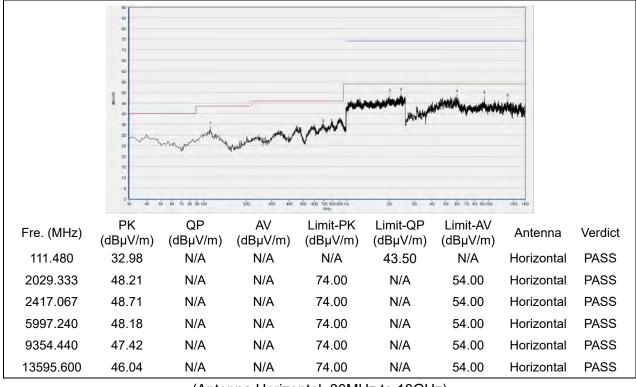
Fax: 86-755-36698525

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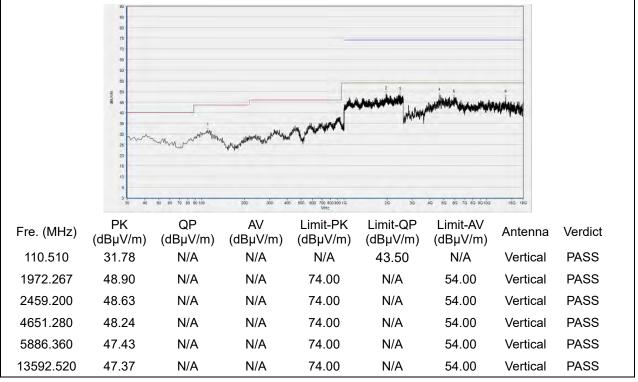


π/4-DQPSK Mode

Plots for Channel 0



(Antenna Horizontal, 30MHz to 18GHz)



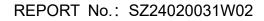
(Antenna Vertical, 30MHz to 18GHz)



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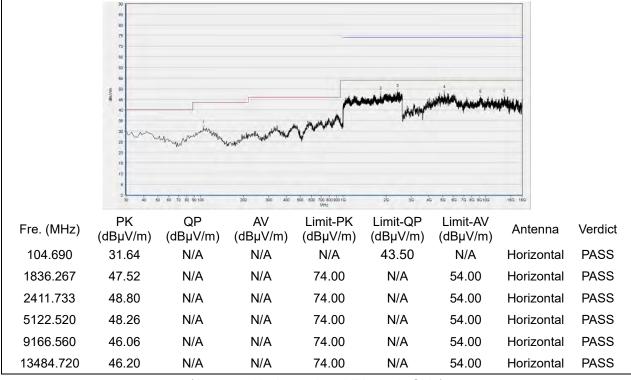
Fax: 86-755-36698525

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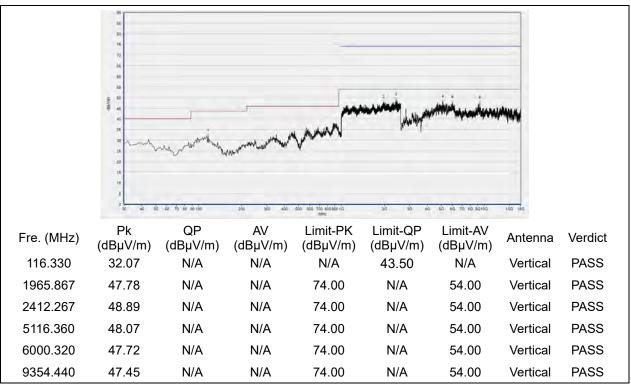




Plot for Channel 39



(Antenna Horizontal, 30MHz to 18GHz)



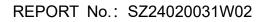
(Antenna Vertical, 30MHz to 18GHz)



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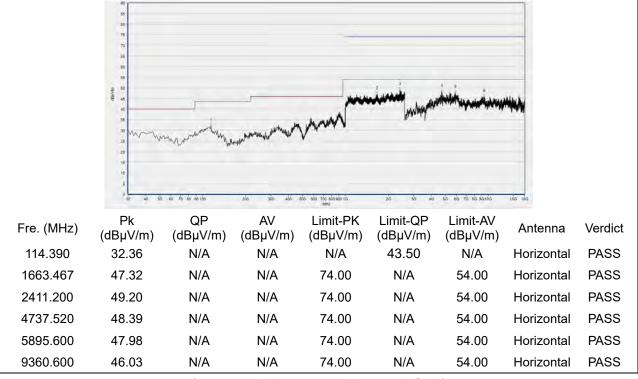
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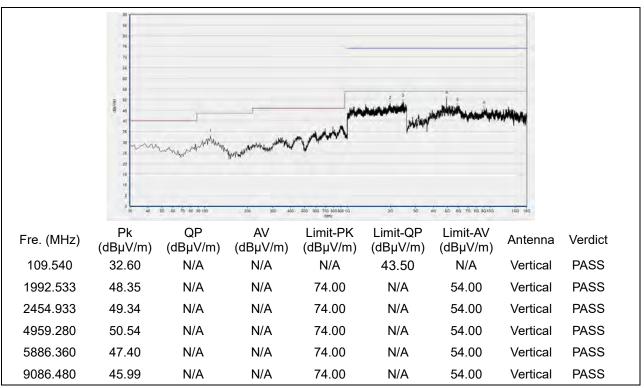




Plot for Channel 78



(Antenna Horizontal, 30MHz to 18GHz)



(Antenna Vertical, 30MHz to 18GHz)



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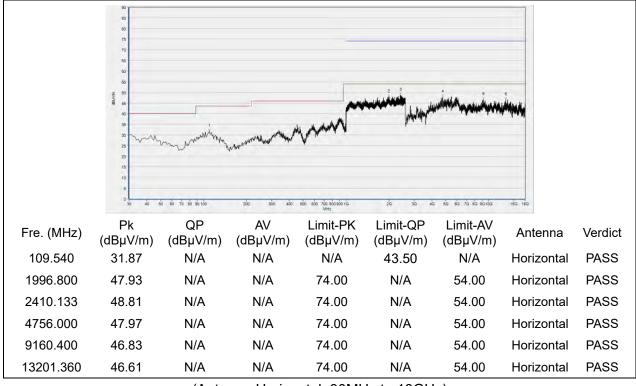
Fax: 86-755-36698525

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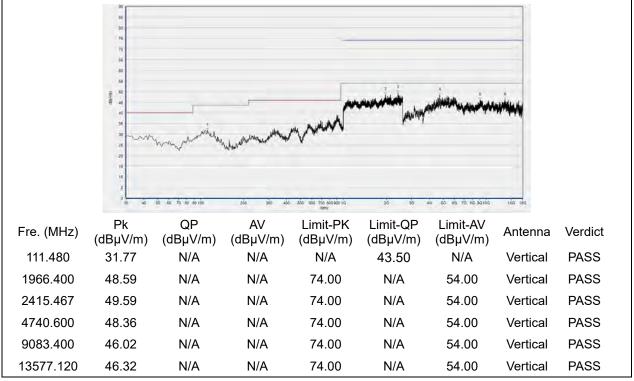


8-DPSK Mode

Plots for Channel 0



(Antenna Horizontal, 30MHz to 18GHz)



(Antenna Vertical, 30MHz to 18GHz)



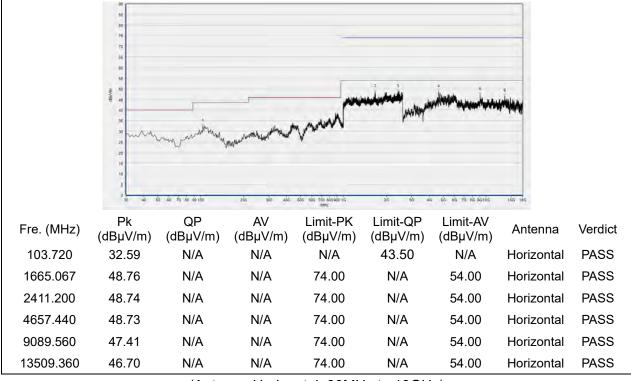
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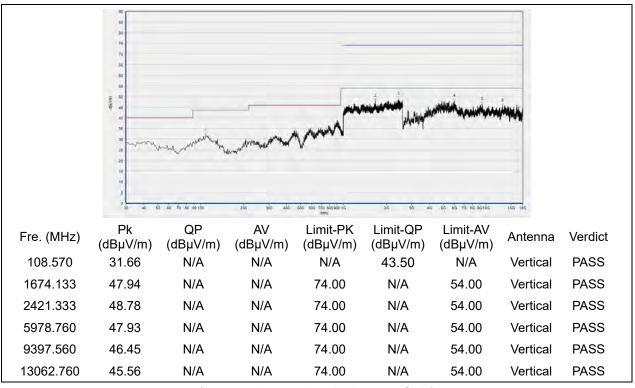
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Plot for Channel 39



(Antenna Horizontal, 30MHz to 18GHz)



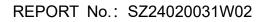
(Antenna Vertical, 30MHz to 18GHz)



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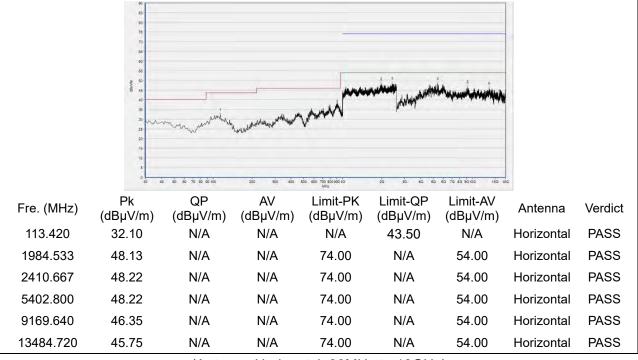
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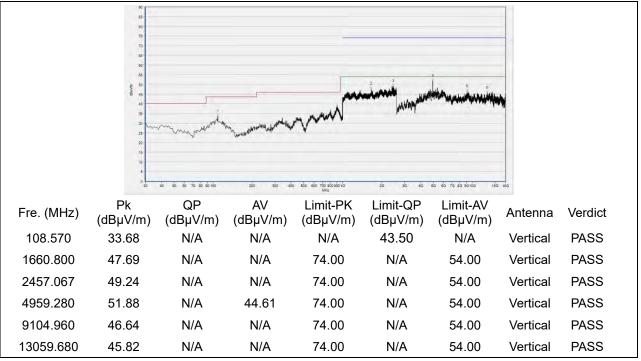




Plot for Channel 78



(Antenna Horizontal, 30MHz to 18GHz)



(Antenna Vertical, 30MHz to 18GHz)

END OF REPORT



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