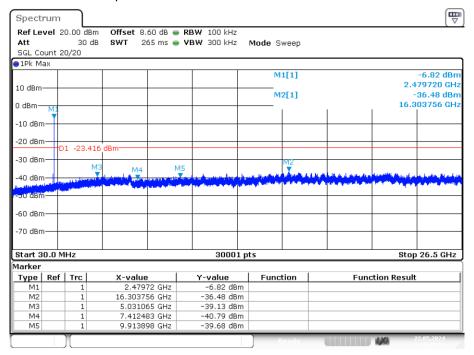


### Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref

Date: 22.MAY.2024 16:39:28

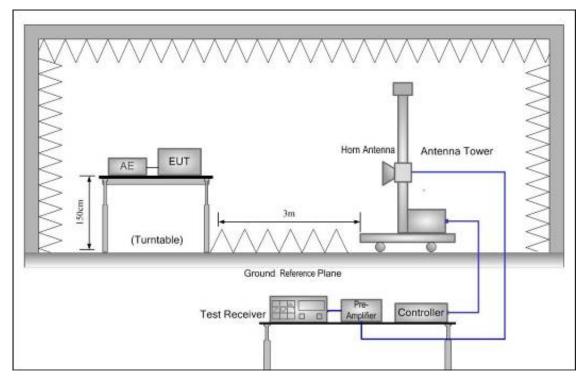


#### Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission

Date: 22.MAY.2024 16:39:53

# 9. BAND EDGE COMPLIANCE

# 9.1. Block Diagram of Test Setup



## 9.2. Limit

All the lower and upper band-edges emissions appearing within restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation shall be at least 20dB below the fundamental emissions, or comply with 15.209 and RSS-GEN limits.

### 9.3. Test Procedure

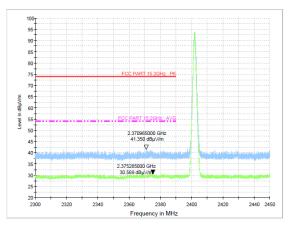
All restriction band and non- restriction band have been tested , only worse case is reported.

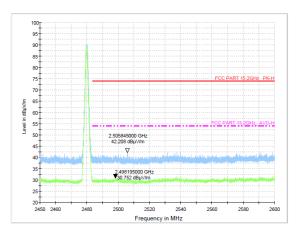
### 9.4. Test Result

PASS. (See below detailed test data)

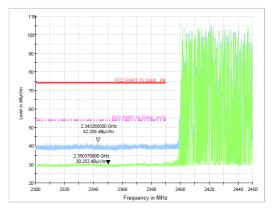
Test Mode: GFSK-Low Hopping-off



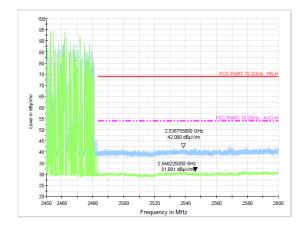




Test Mode: GFSK-Low Hopping-on



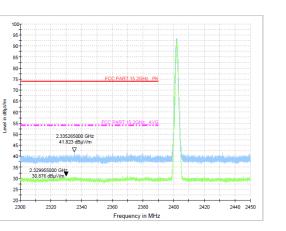
Test Mode: GFSK-High Hopping-on

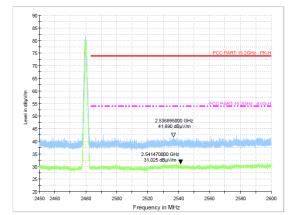


Note: 1. \*:Maximum data; x:Over limit; !:over margin.

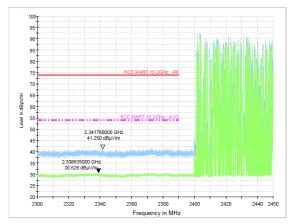
2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Test Mode: π/4 DQPSK-Low Hopping-off

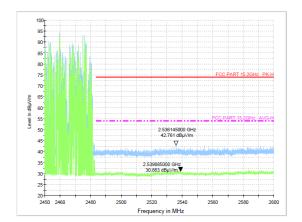




Test Mode:  $\pi/4$  DQPSK-Low Hopping-on



Test Mode: π/4 DQPSK-High Hopping-on

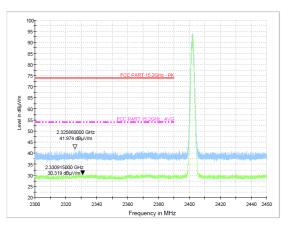


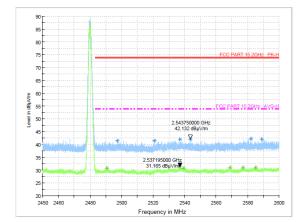
Note: 1. \*: Maximum data; x: Over limit; !: over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

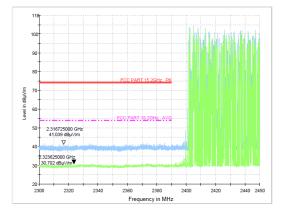
# Test Mode: $\pi/4$ DQPSK-High Hopping-off

### Test Mode: 8DPSK-Low Hopping-off

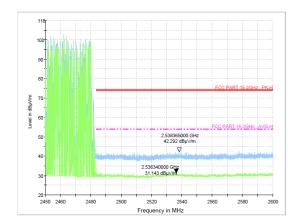




### Test Mode: 8DPSK-Low Hopping-on



### Test Mode: 8DPSK-High Hopping-on



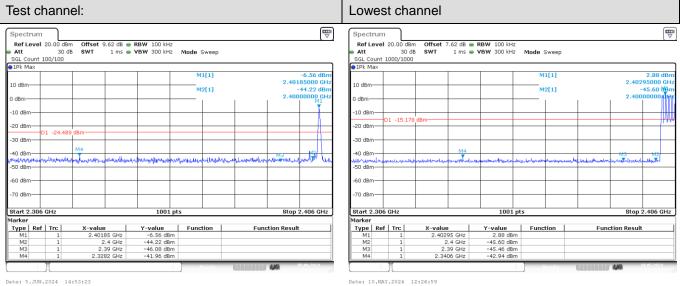
Note: 1. \*: Maximum data; x: Over limit; !: over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

### Test Mode: 8DPSK-High Hopping-off

#### **Conducted Method**

#### **GFSK Mode:**



No-hopping mode

Date: 10.MAY.2024 12:26:59

#### Hopping mode

| Test channel:   |  | Highest channel  |  |  |  |  |
|---|--|--|--|--|--|--|
| Spectrum         Offset         9.60 dB         RBW         100 kHz           Att         30 dB         SWT         1 ms         VBW 300 kHz           SGL Count 100/100           1 ms         VBW 300 kHz | Mode Sweep   | Spectrum         Topological         Topological <thtopological< th=""> <thtopological< th=""> <t< th=""></t<></thtopological<></thtopological<> |  |  |  |  |
| ●1Pk Max  |  | 1Pk Max  |  |  |  |  |
| 10 dBm  | M1[1] -6.76 dBm<br>2.47985000 GHz<br>M2[1] -45.64 dBm  | AQ. dBm M1[1] 4.59 dBm<br>4Q. dBm 2.47785000 GH<br>4X M2[1] -45.27 dBn   |  |  |  |  |
| 0 여용파<br>-10 dBm  | 2.48350000 GHz   | 2.48350000 GH  |  |  |  |  |
| -20 dBm   |  | -20 dBm  |  |  |  |  |
| HA CAN-   | was many for the former of the second s | 40 demis 14 MD war   |  |  |  |  |
| -60 dBm   |  | -50 dBm  |  |  |  |  |
| -70 dBm   |  | -70 dBm  |  |  |  |  |
| Start 2.476 GHz 1001 pt   | ts Stop 2.576 GHz  | Start 2.476 GHz         1001 pts         Stop 2.576 GHz  |  |  |  |  |
| Marker  |  | Marker   |  |  |  |  |
| Type         Ref         Trc         X-value         Y-value           M1         1         2.47985 GHz         -6.76 dBm           M2         1         2.4835 GHz         -45.64 dBm                      | Function Function Result   | Type         Ref         Tro         X-value         Y-value         Function         Function Result           M1         1         2.47785 GHz         4.59 dBn  |  |  |  |  |
| M3         1         2.5 GHz         -44.62 dBm           M4         1         2.4977 GHz         -42.92 dBm  | 05.06.2024   | M3         1         2.5 GHz         -44.80 dBm           M4         1         2.4863 GHz         -42.89 dBm   |  |  |  |  |
| /   | UNARY UNARTS   | Neady Noder  |  |  |  |  |

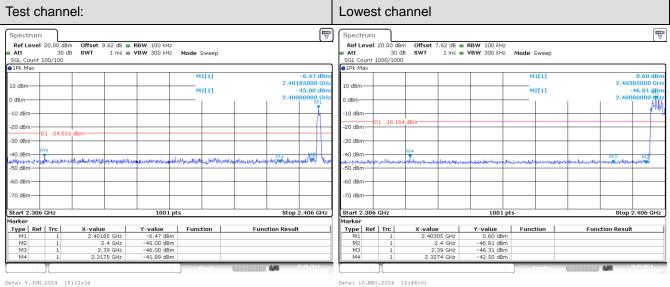
Date: 5.JUN.2024 14:56:15

No-hopping mode

Date: 10.MAY.2024 12:30:58

### Hopping mode

### π/4DQPSK Mode:



Date: 5.JUN.2024 15:12:34

No-hopping mode

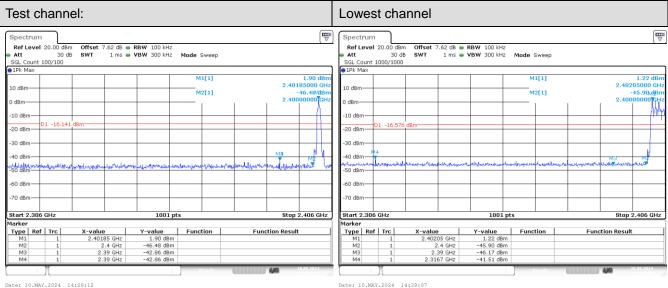
#### Hopping mode

| Test channel:  |  |                                   |                             | Highest channel                      |                                       |  |   |  |  |
|--|--|-----------------------------------|-----------------------------|--------------------------------------|---------------------------------------|--|---|--|--|
| Bpectrum<br>RefLevel 20.00 dBm Offset 9.60 dB ● RBW 100 kHz<br>Att 30 dB SWT 1 ms ● VBW 300 kHz              |  |                                   | Spectrum<br>Ref Level 20.00 |                                      | RBW 100 kHz                           | Mada Curra   | T<br>7  |  |  |
| SGL Count 100/100  | Mode Sweep   |                                   | SGL Count 1000/10           |                                      | • • • • • • • • • • • • • • • • • • • | Mode Sweep   |   |  |  |
| 1Pk Max  |  |                                   | 1Pk Max                     |                                      |                                       |  |   |  |  |
| 0 dBm  | M1[1]  | -6.78 dBm<br>2.47985000 GHz       | 10, dBm                     |                                      |                                       | M1[1]  | 3.22 dB<br>2.47885000 GF                                  |  |  |
| dBm-   | M2[1]  | -44.15 dBm<br>2.48350000 GHz      |                             |                                      |                                       | M2[1]  | -44.84 dB<br>2.48350000 GF                                |  |  |
|  |  |                                   | -10 dBm                     |                                      |                                       |  |   |  |  |
| 20 gBm   |  |                                   | -20 cBm                     | 627 dBm                              |                                       |  |   |  |  |
| 01 -24.997 dBm   |  |                                   | -30 cBm                     |                                      |                                       |  |   |  |  |
| 10 CBM2 MAS  | an an an an an an Arban Ara an an Arban an Arban an  | the second billion on a station   | -40 dBrittle                |                                      |                                       | and the second   | ward and a second and a second and a second               |  |  |
| 50 dBm   | and the statement of the second statement of the secon | al and a can an an an an an an an | -50 dBm                     |                                      |                                       | and the second | rents grifterbrank providition Alter and the second fully |  |  |
| 50 dBm   |  |                                   | -60 dBm                     |                                      |                                       |  |   |  |  |
| 70 dBm   |  |                                   | -70 dBm                     |                                      |                                       |  |   |  |  |
| tart 2.476 GHz 1001  | pts  | Stop 2.576 GHz                    | Start 2.476 GHz             |                                      | 1001 pt                               | ts   | Stop 2.576 GHz  |  |  |
| arker  | •  |                                   | Marker                      |                                      |                                       |  |   |  |  |
| Ref         Trc         X-value         Y-value           M1         1         2.47985 GHz         -6.78 dBr |  | nction Result                     | Type Ref Trc                | X-value<br>2.47885 GHz               | Y-value<br>3.22 dBm                   | Function   | Function Result   |  |  |
| M2 1 2.4795 GHz -44.15 dBr<br>M3 1 2.5 GHz -44.15 dBr  | n  |                                   | M2 1<br>M3 1                | 2.47665 GHz<br>2.4835 GHz<br>2.5 GHz | -44.84 dBm<br>-45.60 dBm              |  |   |  |  |
| M3 1 2.5 GHz -44.71 db<br>M4 1 2.4991 GHz -42.01 dBr   |  |                                   | M4 1                        | 2.5 GHz<br>2.492 GHz                 | -43.43 dBm                            |  |   |  |  |
| M  | Ready  | 4/0 05.05.2024                    |                             |                                      |                                       | Ready  | 10.05.2024  |  |  |

### Hopping mode

No-hopping mode

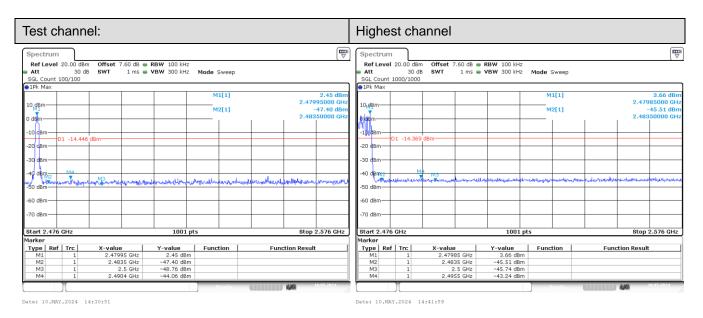
#### 8DPSK Mode:



#### No-hopping mode

Date: 10.MAY.2024 14:39:07

#### Hopping mode

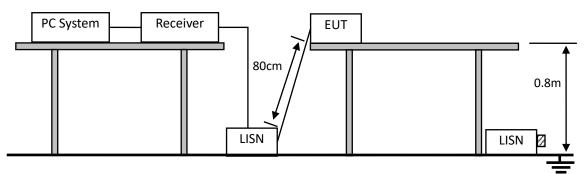


No-hopping mode

Hopping mode

# **10. POWER LINE CONDUCTED EMISSIONS**

10.1.Block Diagram of Test Setup



 $\blacksquare$  :50 $\Omega$  Terminator

## 10.2.Limit

|                 | Maximum RF Line Voltage |               |  |  |  |
|-----------------|-------------------------|---------------|--|--|--|
| Frequency       | Quasi-Peak Level        | Average Level |  |  |  |
|                 | dB(µV)                  | dB(μV)        |  |  |  |
| 150kHz ~ 500kHz | 66 ~ 56*                | 56 ~ 46*      |  |  |  |
| 500kHz ~ 5MHz   | 56                      | 46            |  |  |  |
| 5MHz ~ 30MHz    | 60                      | 50            |  |  |  |

Notes: 1. \* Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

# 10.3.Test Procedure

(1) The EUT was placed on a non-metallic table, 80cm above the ground plane.

(2) Setup the EUT and simulator as shown in 10.1

(3) The EUT Power connected to the power mains through a power adapter and a line impedance stabilization network (L.I.S.N1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N2), this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 :2013on conducted Emission test.

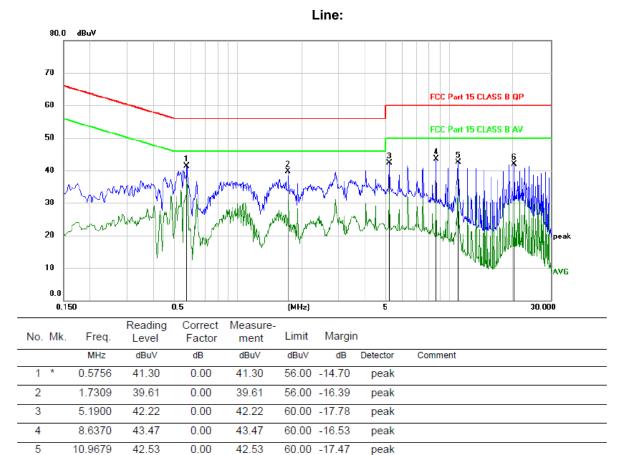
(4) The bandwidth of test receiver is set at 10KHz.

(5) The frequency range from 150 KHz to 30MHz is checked.

# 10.4.Test Result

PASS. (See below detailed test data)

Note: If peak Result comply with AV limit, QP and AV Result is deemed to comply with AV limit



60.00 -18.08

peak

peak

\*:Maximum data x:Over limit I:over margin

41.92

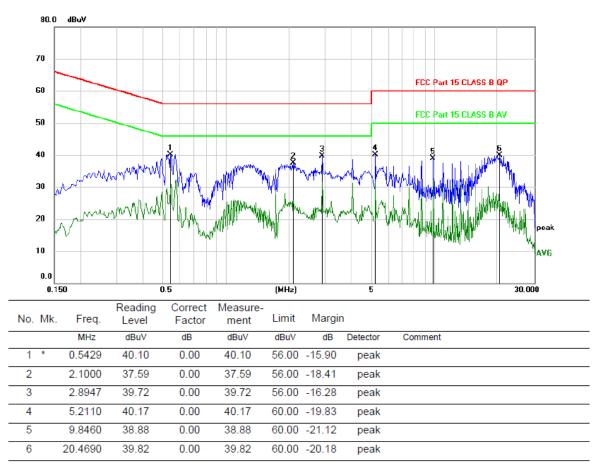
0.00

41.92

6

20.2408

Reference Only Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable



Neutral:

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

(Reference Only

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Note: All modes and channels have been tested and only the GFSK 2402MHz mode with the worst data is listed.

# 11. ANTENNA REQUIREMENTS

# 11.1.Limit

For intentional device, according to FCC 47 CFR Section 15.203 and RSS-GEN, 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi..

# 11.2.Result

The EUT antenna is Internal Antenna. It complies with the standard requirement.

# **12. TEST SETUP PHOTO**

12.1.Photo of Radiated Emission test





12.2.Photo of Conducted Emission test

# **13. PHOTOS OF EUT**

