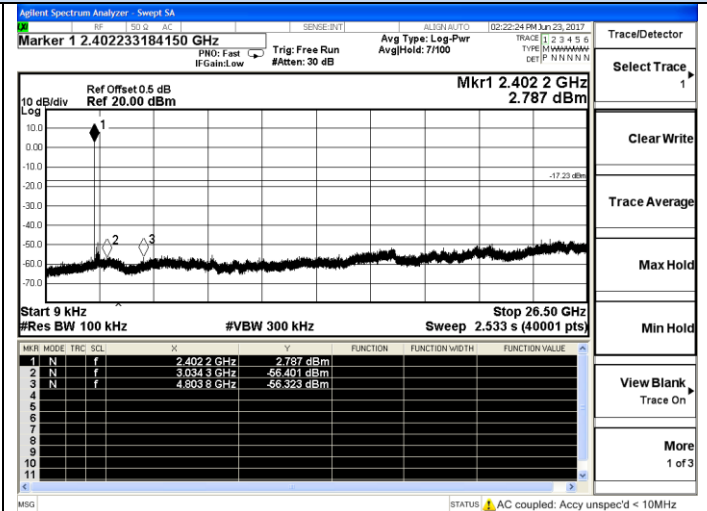
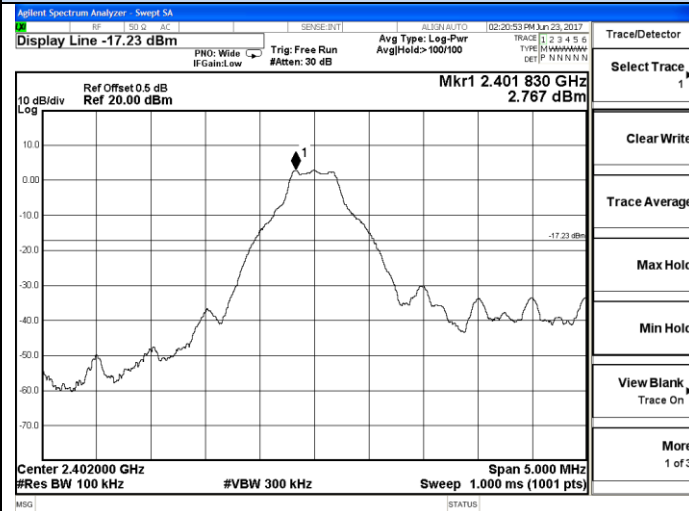


RF Conducted Spurious Emissions

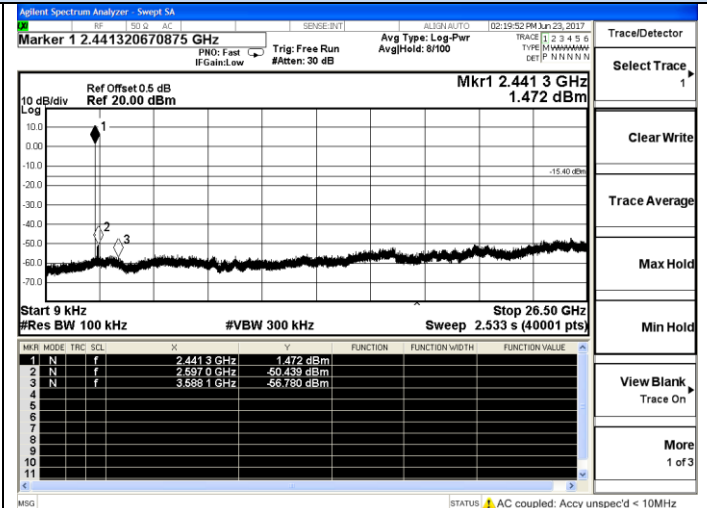
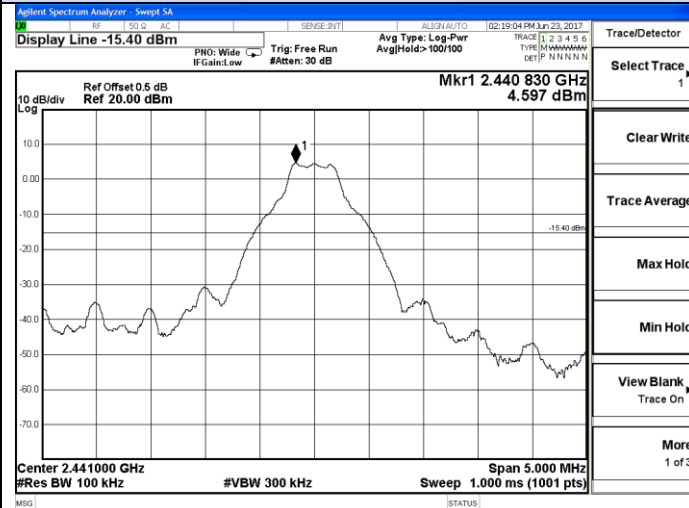
8-DPSK - Channel 0 / 2402 MHz



2399.5 – 2404.5 MHz

9 KHz – 26.5 GHz

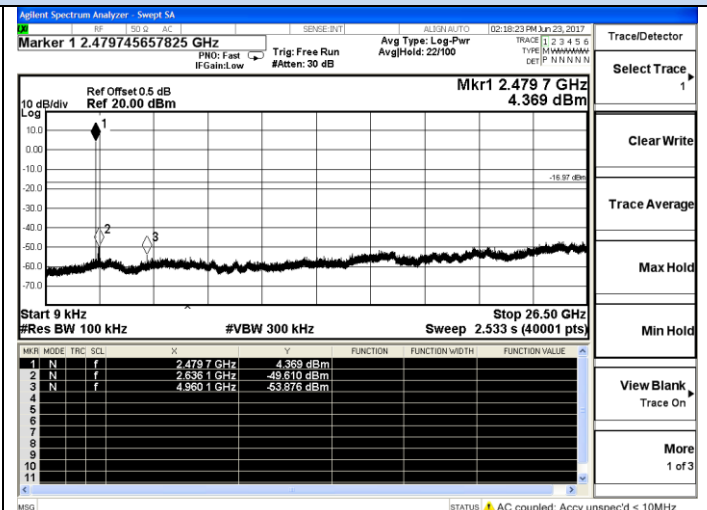
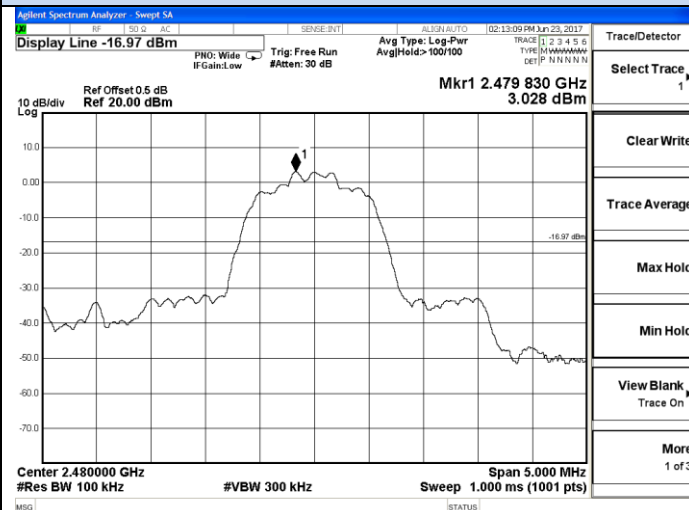
8-DPSK - Channel 39 / 2441 MHz



2438.5 – 2443.5 MHz

9 KHz – 26.5 GHz

8-DPSK - Channel 78 / 2480 MHz

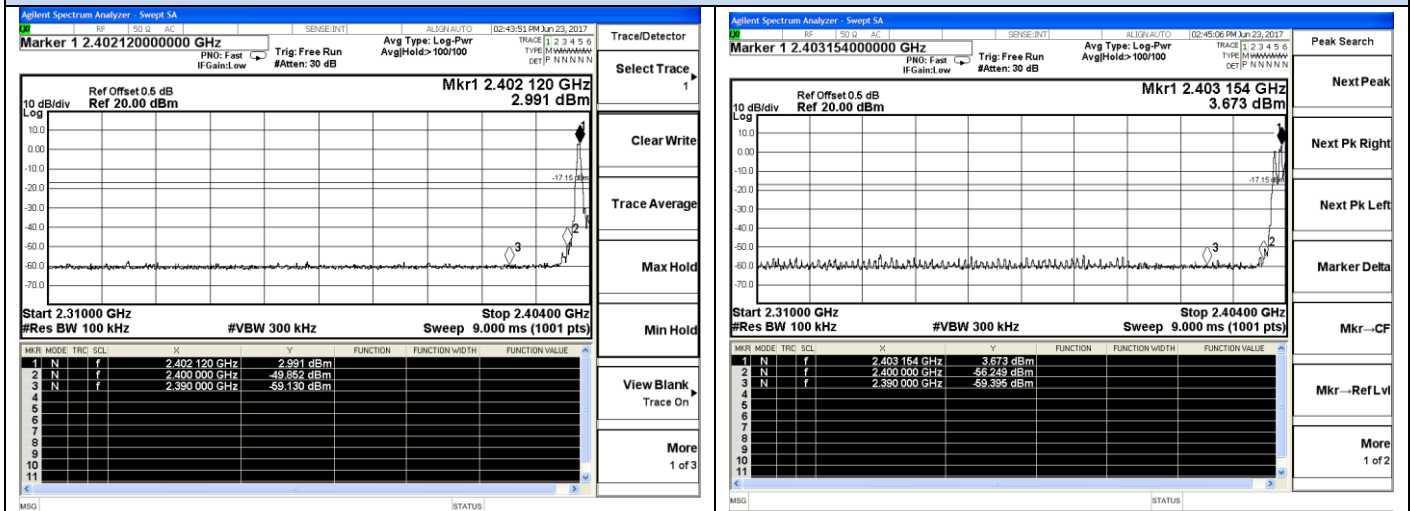


2477.5 – 2482.5 MHz

9 KHz – 26.5 GHz

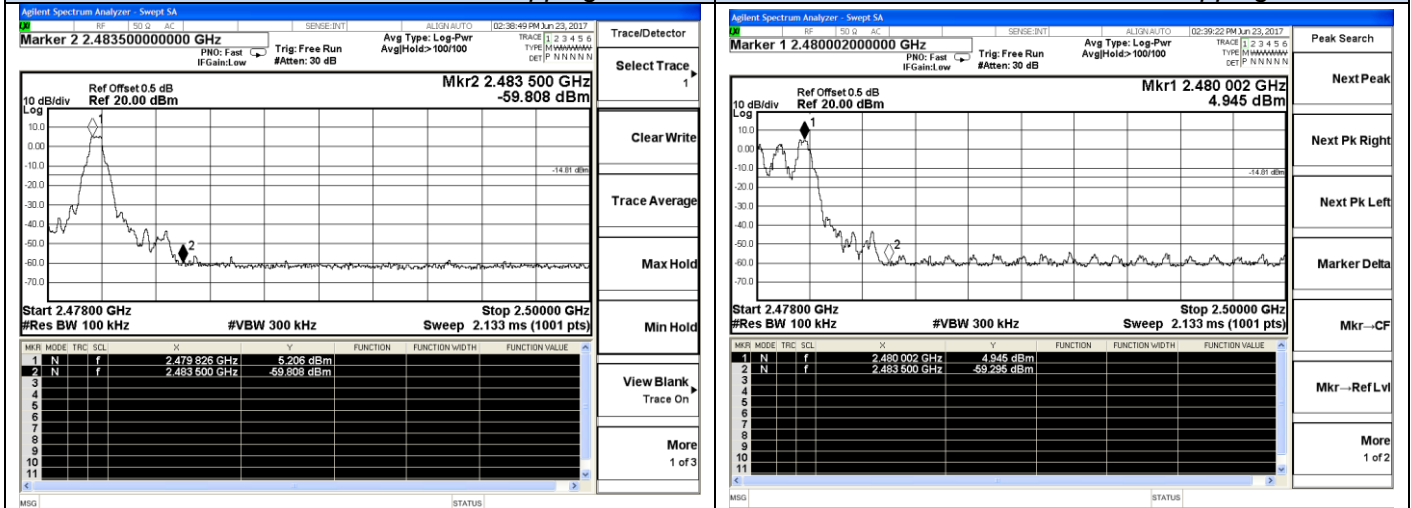
Band-edge for RF conducted emissions

GFSK



Channel 0 / 2402 MHz – Non-Hopping

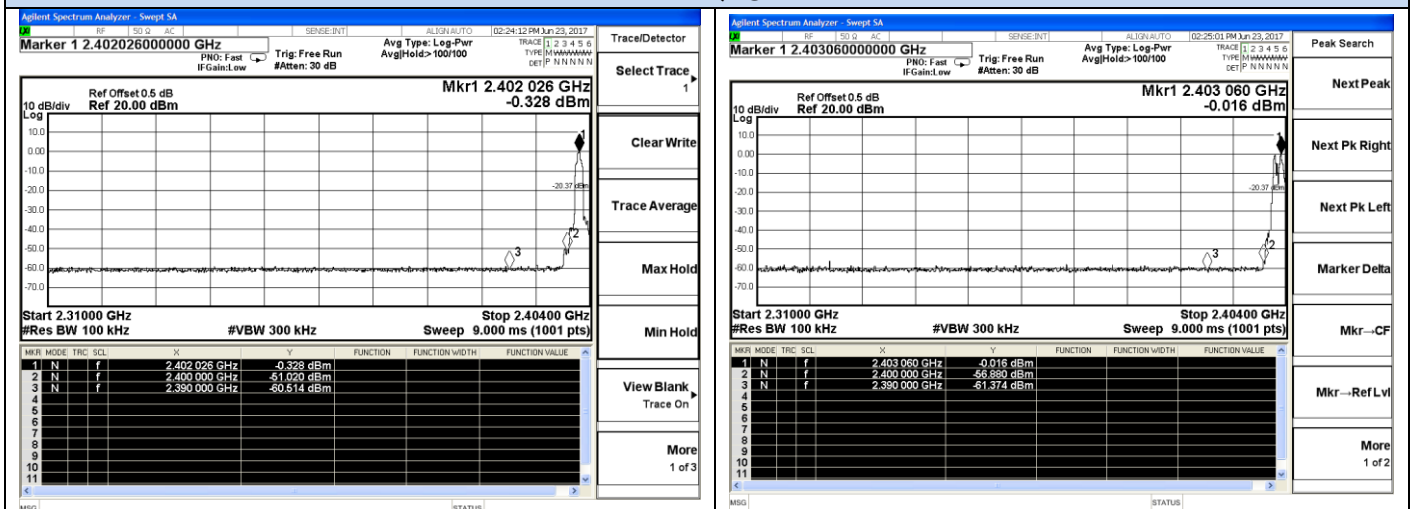
Channel 0 / 2402 MHz – Hopping



Channel 78 / 2480 MHz – Non-Hopping

Channel 78 / 2480 MHz – Hopping

$\pi/4$ -DQPSK

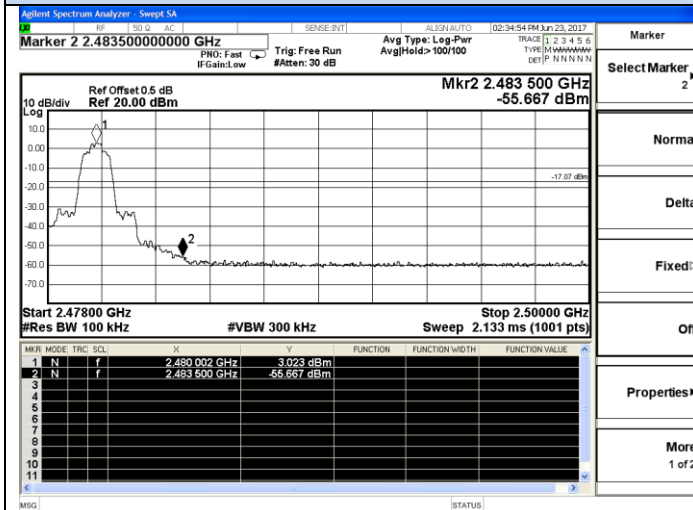


Channel 0 / 2402 MHz – Non-Hopping

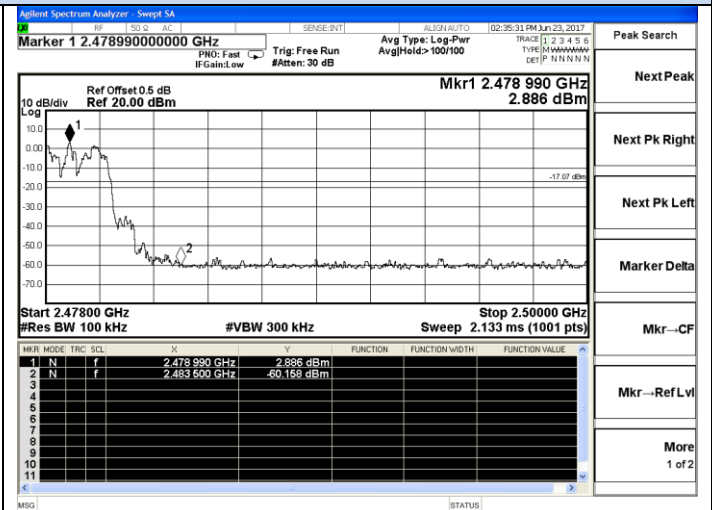
Channel 0 / 2402 MHz – Hopping

Band-edge for RF conducted emissions

$\pi/4$ -DQPSK

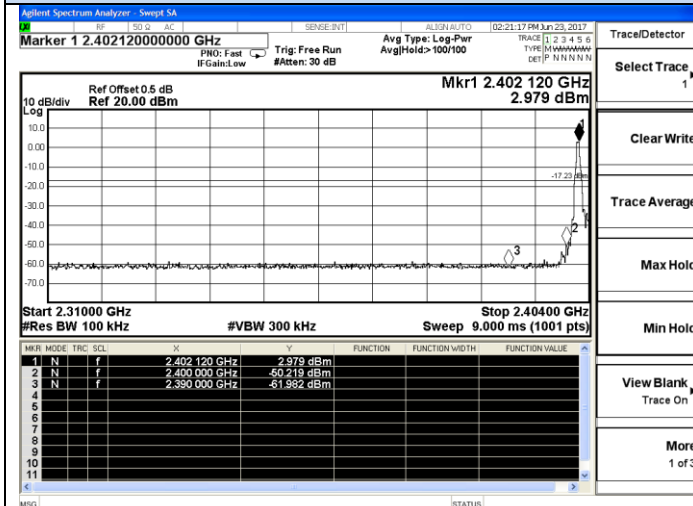


Channel 78 / 2480 MHz – Non-Hopping

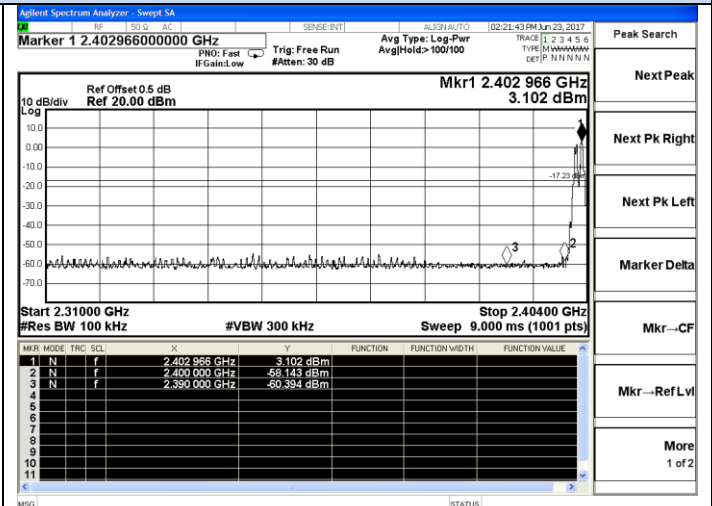


Channel 78 / 2480 MHz – Hopping

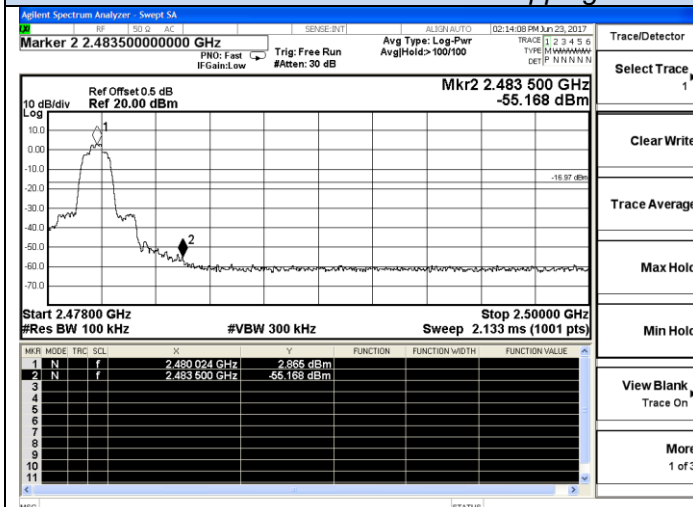
8-DPSK



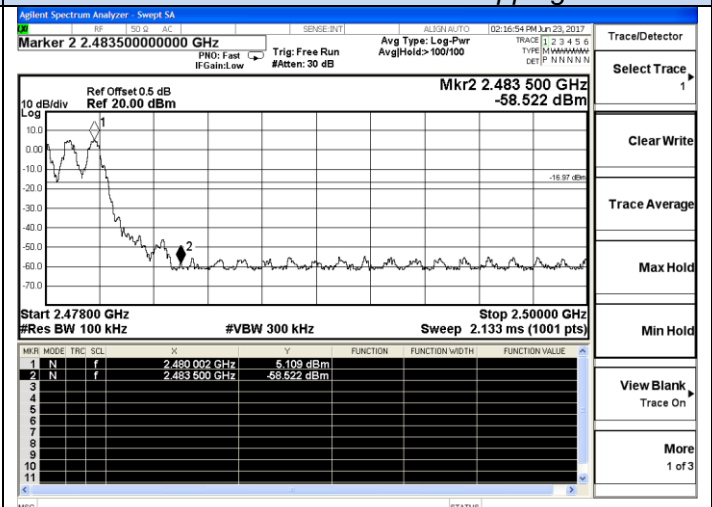
Channel 0 / 2402 MHz – Non-Hopping



Channel 0 / 2402 MHz – Hopping



Channel 78 / 2480 MHz – Non-Hopping



Channel 78 / 2480 MHz – Hopping

6.6 Restricted Band Emission Limit

6.6.1. Standard Applicable

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| \1\ 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293. | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (2\) |
| 13.36-13.41 | | | |

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 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 |

6.6.2. Measuring Instruments and Setting

Please refer to section 6 of equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10 th carrier harmonic |
| RB / VB (Emission in restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average |
| RB / VB (Emission in non-restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average |

| Receiver Parameter | Setting |
|------------------------|--|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG |
| Start ~ Stop Frequency | 150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB/VB 120kHz/1MHz for QP |

6.6.3. Test Procedures

1) Sequence of testing 9 kHz to 30 MHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 0.8 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 18 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 2.5 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 1 meter.
- The EUT was set into operation.

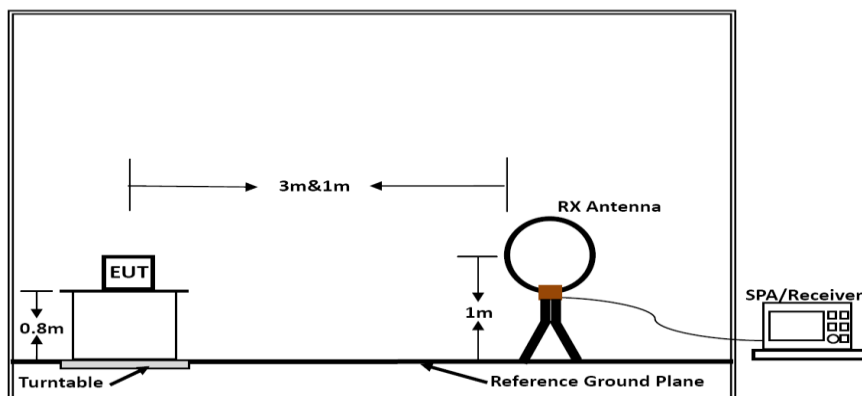
Premeasurement:

- The antenna is moved spherical over the EUT in different polarizations of the antenna.

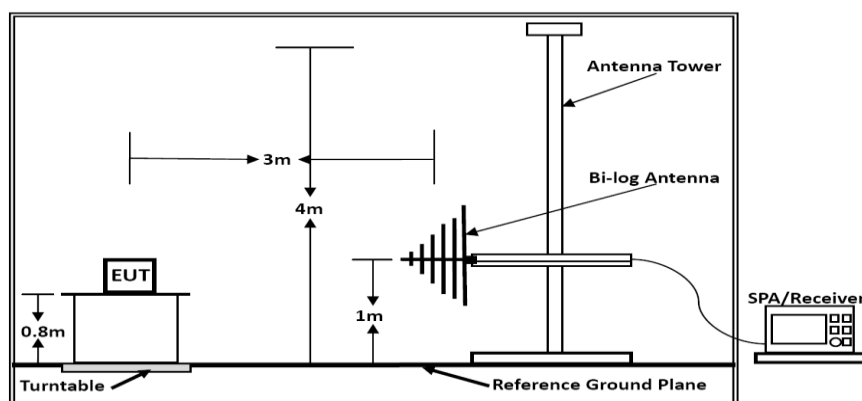
Final measurement:

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

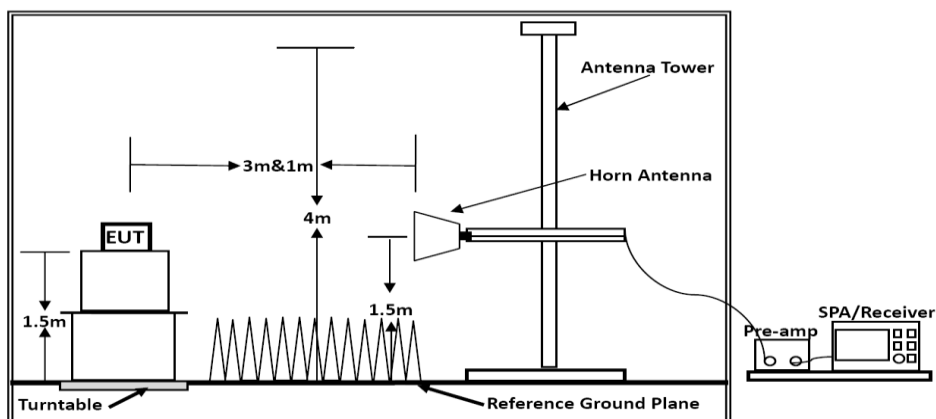
6.6.4. Test Setup Layout



Below 30MHz



Below 1GHz



Above 1GHz

Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = $20 \log (\text{specific distance [3m]} / \text{test distance [1.5m]})$ (dB);
 Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

6.6.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

6.6.6. Results of Radiated Emissions (9 kHz~30MHz)

| | | | |
|---------------|-------------|----------------|-----|
| Temperature | 24℃ | Humidity | 52% |
| Test Engineer | Jayden Zhuo | Configurations | BT |

| Freq. (MHz) | Level (dBuV) | Over Limit (dB) | Over Limit (dBuV) | Remark |
|----------------|-----------------|--------------------|----------------------|----------|
| - | - | - | - | See Note |

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

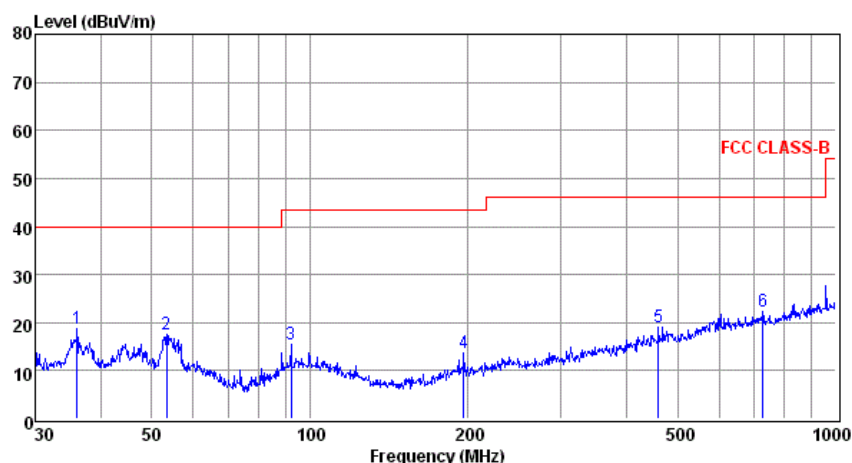
Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

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

PASS.

Only record the worst test result in this report.

The test data please refer to following page.

Below 1GHz (Worst case: GFSK, Low Channel)

pol:

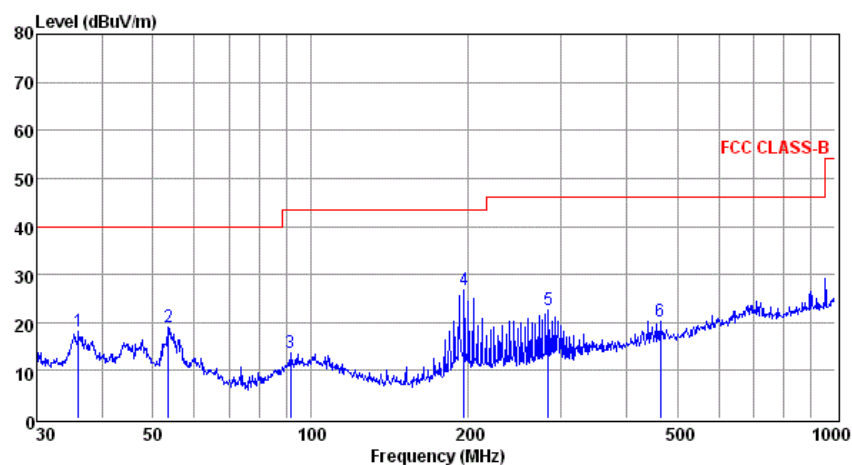
VERTICAL

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|--------|---------|--------|--------|----------|--------|--------|--------|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 36.00 | 5.81 | 0.41 | 12.56 | 18.78 | 40.00 | -21.22 | QP |
| 2 | 53.32 | 4.04 | 0.46 | 13.10 | 17.60 | 40.00 | -22.40 | QP |
| 3 | 92.14 | 2.56 | 0.56 | 12.30 | 15.42 | 43.50 | -28.08 | QP |
| 4 | 195.82 | 2.11 | 0.96 | 10.57 | 13.64 | 43.50 | -29.86 | QP |
| 5 | 460.73 | 2.15 | 1.36 | 15.61 | 19.12 | 46.00 | -26.88 | QP |
| 6 | 726.81 | 1.39 | 1.70 | 19.15 | 22.24 | 46.00 | -23.76 | QP |

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that at 20db blow the official limit are not reported



pol:

HORIZONTAL

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|--------|---------|--------|--------|----------|--------|--------|--------|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 36.00 | 5.22 | 0.41 | 12.56 | 18.19 | 40.00 | -21.81 | QP |
| 2 | 53.51 | 5.34 | 0.46 | 13.09 | 18.89 | 40.00 | -21.11 | QP |
| 3 | 91.49 | 0.90 | 0.56 | 12.18 | 13.64 | 43.50 | -29.86 | QP |
| 4 | 195.82 | 15.23 | 0.96 | 10.57 | 26.76 | 43.50 | -16.74 | QP |
| 5 | 283.98 | 8.75 | 1.00 | 12.75 | 22.50 | 46.00 | -23.50 | QP |
| 6 | 463.97 | 3.15 | 1.36 | 15.69 | 20.20 | 46.00 | -25.80 | QP |

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that at 20db blow the official limit are not reported

Above 1GHz*The worst test result for GFSK, Channel 0 / 2402 MHz*

| Freq. MHz | Reading dBuv | Ant. Fac dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuv/m | Limit dBuv/m | Margin dB | Remark | Pol. |
|-----------|--------------|---------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4804.00 | 55.19 | 33.06 | 35.04 | 3.94 | 57.15 | 74.00 | -16.85 | Peak | Horizontal |
| 4804.00 | 39.92 | 33.06 | 35.04 | 3.94 | 41.88 | 54.00 | -12.12 | Average | Horizontal |
| 12010.00 | 53.01 | 33.16 | 35.06 | 3.96 | 55.07 | 74.00 | -18.93 | Peak | Horizontal |
| 12010.00 | 41.82 | 33.16 | 35.06 | 3.96 | 43.88 | 54.00 | -10.12 | Average | Horizontal |
| 4804.00 | 59.01 | 33.06 | 35.04 | 3.94 | 60.97 | 74.00 | -13.03 | Peak | Vertical |
| 4804.00 | 41.95 | 33.06 | 35.04 | 3.94 | 43.91 | 54.00 | -10.09 | Average | Vertical |
| 12010.00 | 55.31 | 33.16 | 35.06 | 3.96 | 57.37 | 74.00 | -16.63 | Peak | Vertical |
| 12010.00 | 40.73 | 33.16 | 35.06 | 3.96 | 42.79 | 54.00 | -11.21 | Average | Vertical |

The worst test result for $\pi/4$ -DQPSK, Channel 0 / 2402 MHz

| Freq. MHz | Reading dBuv | Ant. Fac dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuv/m | Limit dBuv/m | Margin dB | Remark | Pol. |
|-----------|--------------|---------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4804.00 | 54.89 | 33.06 | 35.04 | 3.94 | 56.85 | 74.00 | -17.15 | Peak | Horizontal |
| 4804.00 | 39.72 | 33.06 | 35.04 | 3.94 | 41.68 | 54.00 | -12.32 | Average | Horizontal |
| 12010.00 | 53.05 | 33.16 | 35.06 | 3.96 | 55.11 | 74.00 | -18.89 | Peak | Horizontal |
| 12010.00 | 42.00 | 33.16 | 35.06 | 3.96 | 44.06 | 54.00 | -9.94 | Average | Horizontal |
| 4804.00 | 59.01 | 33.06 | 35.04 | 3.94 | 60.97 | 74.00 | -13.03 | Peak | Vertical |
| 4804.00 | 41.73 | 33.06 | 35.04 | 3.94 | 43.69 | 54.00 | -10.31 | Average | Vertical |
| 12010.00 | 54.85 | 33.16 | 35.06 | 3.96 | 56.91 | 74.00 | -17.09 | Peak | Vertical |
| 12010.00 | 40.91 | 33.16 | 35.06 | 3.96 | 42.97 | 54.00 | -11.03 | Average | Vertical |

The worst test result for 8-DPSK, Channel 0 / 2402 MHz

| Freq. MHz | Reading dBuv | Ant. Fac dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuv/m | Limit dBuv/m | Margin dB | Remark | Pol. |
|-----------|--------------|---------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4804.00 | 54.62 | 33.06 | 35.04 | 3.94 | 56.58 | 74.00 | -17.42 | Peak | Horizontal |
| 4804.00 | 40.26 | 33.06 | 35.04 | 3.94 | 42.22 | 54.00 | -11.78 | Average | Horizontal |
| 12010.00 | 53.25 | 33.16 | 35.06 | 3.96 | 55.31 | 74.00 | -18.69 | Peak | Horizontal |
| 12010.00 | 42.38 | 33.16 | 35.06 | 3.96 | 44.44 | 54.00 | -9.56 | Average | Horizontal |
| 4804.00 | 59.25 | 33.06 | 35.04 | 3.94 | 61.21 | 74.00 | -12.79 | Peak | Vertical |
| 4804.00 | 41.71 | 33.06 | 35.04 | 3.94 | 43.67 | 54.00 | -10.33 | Average | Vertical |
| 12010.00 | 55.30 | 33.16 | 35.06 | 3.96 | 57.36 | 74.00 | -16.64 | Peak | Vertical |
| 12010.00 | 40.84 | 33.16 | 35.06 | 3.96 | 42.90 | 54.00 | -11.10 | Average | Vertical |

The worst test result for GFSK, Channel 39 / 2441 MHz

| Freq. MHz | Reading dBuV | Ant. Fac dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|-----------|--------------|---------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4882.00 | 54.68 | 33.16 | 35.15 | 3.96 | 56.65 | 74.00 | -17.35 | Peak | Horizontal |
| 4882.00 | 44.37 | 33.16 | 35.15 | 3.96 | 46.34 | 54.00 | -7.66 | Average | Horizontal |
| 12205.00 | 52.94 | 33.26 | 35.17 | 3.98 | 55.01 | 74.00 | -18.99 | Peak | Horizontal |
| 12205.00 | 41.03 | 33.26 | 35.17 | 3.98 | 43.10 | 54.00 | -10.90 | Average | Horizontal |
| 4882.00 | 58.89 | 33.16 | 35.15 | 3.96 | 60.86 | 74.00 | -13.14 | Peak | Vertical |
| 4882.00 | 42.27 | 33.16 | 35.15 | 3.96 | 44.24 | 54.00 | -9.76 | Average | Vertical |
| 12205.00 | 55.37 | 33.26 | 35.17 | 3.98 | 57.44 | 74.00 | -16.56 | Peak | Vertical |
| 12205.00 | 44.26 | 33.26 | 35.17 | 3.98 | 46.33 | 54.00 | -7.67 | Average | Vertical |

The worst test result for $\pi/4$ -DQPSK, Channel 39 / 2441 MHz

| Freq. MHz | Reading dBuV | Ant. Fac dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|-----------|--------------|---------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4882.00 | 55.00 | 33.16 | 35.15 | 3.96 | 56.97 | 74.00 | -17.03 | Peak | Horizontal |
| 4882.00 | 44.23 | 33.16 | 35.15 | 3.96 | 46.20 | 54.00 | -7.80 | Average | Horizontal |
| 12205.00 | 52.78 | 33.26 | 35.17 | 3.98 | 54.85 | 74.00 | -19.15 | Peak | Horizontal |
| 12205.00 | 40.67 | 33.26 | 35.17 | 3.98 | 42.74 | 54.00 | -11.26 | Average | Horizontal |
| 4882.00 | 58.70 | 33.16 | 35.15 | 3.96 | 60.67 | 74.00 | -13.33 | Peak | Vertical |
| 4882.00 | 41.66 | 33.16 | 35.15 | 3.96 | 43.63 | 54.00 | -10.37 | Average | Vertical |
| 12205.00 | 55.32 | 33.26 | 35.17 | 3.98 | 57.39 | 74.00 | -16.61 | Peak | Vertical |
| 12205.00 | 44.09 | 33.26 | 35.17 | 3.98 | 46.16 | 54.00 | -7.84 | Average | Vertical |

The worst test result for 8-DPSK, Channel 39 / 2441 MHz

| Freq. MHz | Reading dBuV | Ant. Fac dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|-----------|--------------|---------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 4882.00 | 54.76 | 33.16 | 35.15 | 3.96 | 56.73 | 74.00 | -17.27 | Peak | Horizontal |
| 4882.00 | 43.93 | 33.16 | 35.15 | 3.96 | 45.90 | 54.00 | -8.10 | Average | Horizontal |
| 12205.00 | 53.27 | 33.26 | 35.17 | 3.98 | 55.34 | 74.00 | -18.66 | Peak | Horizontal |
| 12205.00 | 41.21 | 33.26 | 35.17 | 3.98 | 43.28 | 54.00 | -10.72 | Average | Horizontal |
| 4882.00 | 59.32 | 33.16 | 35.15 | 3.96 | 61.29 | 74.00 | -12.71 | Peak | Vertical |
| 4882.00 | 42.14 | 33.16 | 35.15 | 3.96 | 44.11 | 54.00 | -9.89 | Average | Vertical |
| 12205.00 | 55.05 | 33.26 | 35.17 | 3.98 | 57.12 | 74.00 | -16.88 | Peak | Vertical |
| 12205.00 | 44.07 | 33.26 | 35.17 | 3.98 | 46.14 | 54.00 | -7.86 | Average | Vertical |

The worst test result for GFSK, Channel 78 / 2480 MHz

| Freq. MHz | Reading dBuv | Ant. Fac dB/m | Pre. Fac dB | Cab. Los dB | Measured dBuv/m | Limit dBuv/m | Margin dB | Remark | Pol. |
|-----------|--------------|---------------|-------------|-------------|-----------------|--------------|-----------|---------|------------|
| 4960.00 | 55.20 | 33.26 | 35.14 | 3.98 | 57.30 | 74.00 | -16.70 | Peak | Horizontal |
| 4960.00 | 43.11 | 33.26 | 35.14 | 3.98 | 45.21 | 54.00 | -8.79 | Average | Horizontal |
| 12400.00 | 50.87 | 33.36 | 35.16 | 4.00 | 53.07 | 74.00 | -20.93 | Peak | Horizontal |
| 12400.00 | 42.05 | 33.36 | 35.16 | 4.00 | 44.25 | 54.00 | -9.75 | Average | Horizontal |
| 4960.00 | 59.16 | 33.26 | 35.14 | 3.98 | 61.26 | 74.00 | -12.74 | Peak | Vertical |
| 4960.00 | 42.20 | 33.26 | 35.14 | 3.98 | 44.30 | 54.00 | -9.70 | Average | Vertical |
| 12400.00 | 57.07 | 33.36 | 35.16 | 4.00 | 59.27 | 74.00 | -14.73 | Peak | Vertical |
| 12400.00 | 42.76 | 33.36 | 35.16 | 4.00 | 44.96 | 54.00 | -9.04 | Average | Vertical |

The worst test result for $\pi/4$ -DQPSK, Channel 78 / 2480 MHz

| Freq. MHz | Reading dBuv | Ant. Fac dB/m | Pre. Fac dB | Cab. Los dB | Measured dBuv/m | Limit dBuv/m | Margin dB | Remark | Pol. |
|-----------|--------------|---------------|-------------|-------------|-----------------|--------------|-----------|---------|------------|
| 4960.00 | 54.79 | 33.26 | 35.14 | 3.98 | 56.89 | 74.00 | -17.11 | Peak | Horizontal |
| 4960.00 | 42.61 | 33.26 | 35.14 | 3.98 | 44.71 | 54.00 | -9.29 | Average | Horizontal |
| 12400.00 | 50.62 | 33.36 | 35.16 | 4.00 | 52.82 | 74.00 | -21.18 | Peak | Horizontal |
| 12400.00 | 42.10 | 33.36 | 35.16 | 4.00 | 44.30 | 54.00 | -9.70 | Average | Horizontal |
| 4960.00 | 59.12 | 33.26 | 35.14 | 3.98 | 61.22 | 74.00 | -12.78 | Peak | Vertical |
| 4960.00 | 41.73 | 33.26 | 35.14 | 3.98 | 43.83 | 54.00 | -10.17 | Average | Vertical |
| 12400.00 | 57.02 | 33.36 | 35.16 | 4.00 | 59.22 | 74.00 | -14.78 | Peak | Vertical |
| 12400.00 | 42.96 | 33.36 | 35.16 | 4.00 | 45.16 | 54.00 | -8.84 | Average | Vertical |

The worst test result for 8-DPSK,, Channel 78 / 2480 MHz

| Freq. MHz | Reading dBuv | Ant. Fac dB/m | Pre. Fac dB | Cab. Los dB | Measured dBuv/m | Limit dBuv/m | Margin dB | Remark | Pol. |
|-----------|--------------|---------------|-------------|-------------|-----------------|--------------|-----------|---------|------------|
| 4960.00 | 54.89 | 33.26 | 35.14 | 3.98 | 56.99 | 74.00 | -17.01 | Peak | Horizontal |
| 4960.00 | 42.73 | 33.26 | 35.14 | 3.98 | 44.83 | 54.00 | -9.17 | Average | Horizontal |
| 12400.00 | 50.77 | 33.36 | 35.16 | 4.00 | 52.97 | 74.00 | -21.03 | Peak | Horizontal |
| 12400.00 | 42.15 | 33.36 | 35.16 | 4.00 | 44.35 | 54.00 | -9.65 | Average | Horizontal |
| 4960.00 | 59.07 | 33.26 | 35.14 | 3.98 | 61.17 | 74.00 | -12.83 | Peak | Vertical |
| 4960.00 | 41.83 | 33.26 | 35.14 | 3.98 | 43.93 | 54.00 | -10.07 | Average | Vertical |
| 12400.00 | 57.19 | 33.36 | 35.16 | 4.00 | 59.39 | 74.00 | -14.61 | Peak | Vertical |
| 12400.00 | 43.11 | 33.36 | 35.16 | 4.00 | 45.31 | 54.00 | -8.69 | Average | Vertical |

Notes:

- 1). Measuring frequencies from 9k~10th harmonic (ex. 26GHz), No emission found between lowest internal used/generated frequency to 30 MHz.
- 2). Radiated emissions measured in frequency range from 9k~10th harmonic (ex. 26GHz) were made with an instrument using Peak detector mode.
- 3). 18~25GHz at least have 20dB margin. No recording in the test report.

6.7. AC Power line conducted emissions

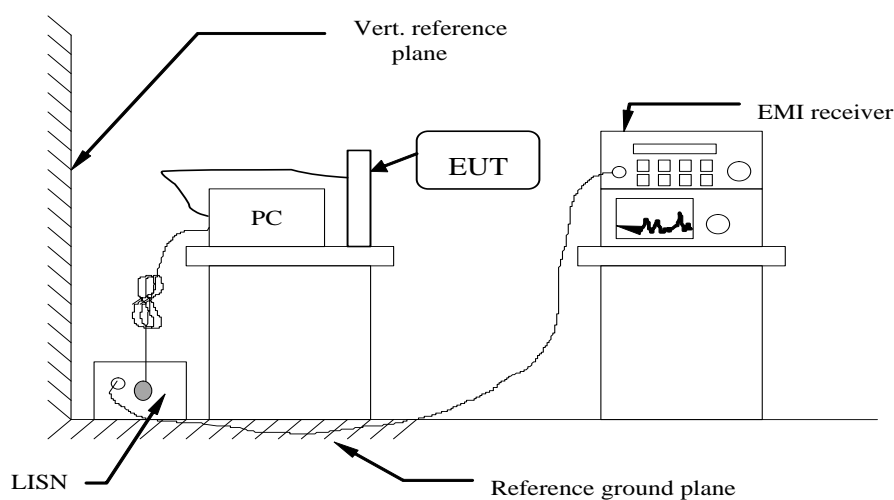
6.7.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which 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 or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

| Frequency Range (MHz) | Limits (dB μ V) | |
|-----------------------|---------------------|----------|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56 | 56 to 46 |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

* Decreasing linearly with the logarithm of the frequency

6.7.2 Block Diagram of Test Setup



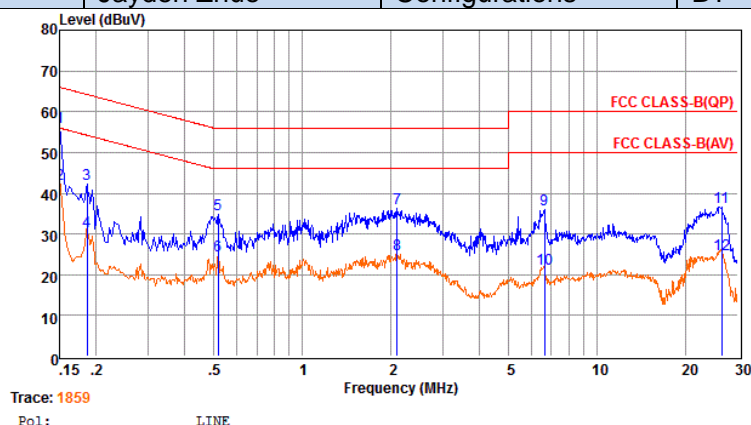
6.7.3 Test Results

PASS.

The test data please refer to following page.

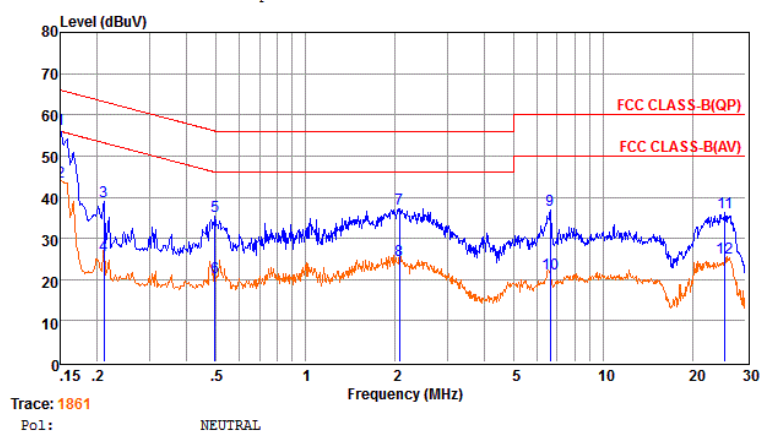
Test Results for AC 120V/60Hz @ GFSK (worst case)

| | | | |
|---------------|-------------|----------------|-------|
| Temperature | 25.3°C | Humidity | 52.1% |
| Test Engineer | Jayden Zhuo | Configurations | BT |



| | Freq | Reading | LISNFac | CabLos | Aux2Fac | Measured | Limit | Over | Remark |
|----|-------|---------|---------|--------|---------|----------|-------|--------|---------|
| | MHz | dBuV | dB | dB | dB | dB | dBuV | dBuV | dB |
| 1 | 0.15 | 36.50 | 9.57 | 0.02 | 10.00 | 56.09 | 66.00 | -9.91 | QP |
| 2 | 0.15 | 22.65 | 9.57 | 0.02 | 10.00 | 42.24 | 55.99 | -13.75 | Average |
| 3 | 0.19 | 22.67 | 9.62 | 0.02 | 10.00 | 42.31 | 64.20 | -21.89 | QP |
| 4 | 0.19 | 10.97 | 9.62 | 0.02 | 10.00 | 30.61 | 54.19 | -23.58 | Average |
| 5 | 0.52 | 15.06 | 9.62 | 0.04 | 10.00 | 34.72 | 56.00 | -21.28 | QP |
| 6 | 0.52 | 4.99 | 9.62 | 0.04 | 10.00 | 24.65 | 46.00 | -21.35 | Average |
| 7 | 2.10 | 16.47 | 9.64 | 0.05 | 10.00 | 36.16 | 56.00 | -19.84 | QP |
| 8 | 2.10 | 5.43 | 9.64 | 0.05 | 10.00 | 25.12 | 46.00 | -20.88 | Average |
| 9 | 6.63 | 16.26 | 9.68 | 0.07 | 10.00 | 36.01 | 60.00 | -23.99 | QP |
| 10 | 6.63 | 1.78 | 9.68 | 0.07 | 10.00 | 21.53 | 50.00 | -28.47 | Average |
| 11 | 26.42 | 16.85 | 9.71 | 0.13 | 10.00 | 36.69 | 60.00 | -23.31 | QP |
| 12 | 26.42 | 5.10 | 9.71 | 0.13 | 10.00 | 24.94 | 50.00 | -25.06 | Average |

Remarks: 1. Measured = Reading +Cable Loss +Aux2 Fac.
2. The emission levels that are 20dB below the official limit are not reported.

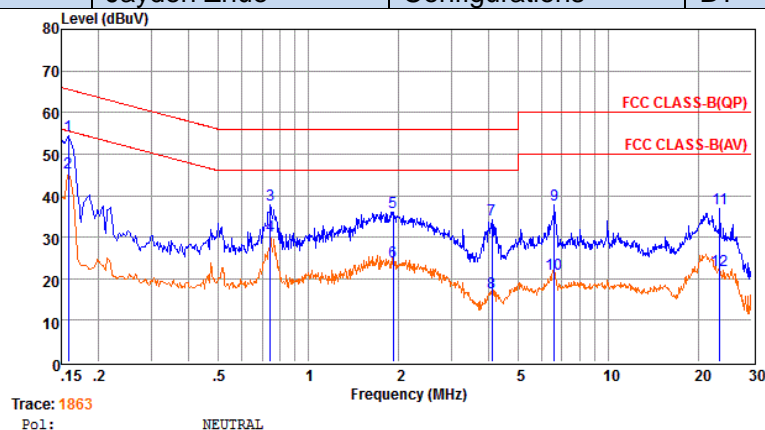


| | Freq | Reading | LISNFac | CabLos | Aux2Fac | Measured | Limit | Over | Remark |
|----|-------|---------|---------|--------|---------|----------|-------|--------|---------|
| | MHz | dBuV | dB | dB | dB | dB | dBuV | dBuV | dB |
| 1 | 0.15 | 36.91 | 9.70 | 0.02 | 10.00 | 56.63 | 66.00 | -9.37 | QP |
| 2 | 0.15 | 24.03 | 9.70 | 0.02 | 10.00 | 43.75 | 55.99 | -12.24 | Average |
| 3 | 0.21 | 19.25 | 9.59 | 0.03 | 10.00 | 38.87 | 63.18 | -24.31 | QP |
| 4 | 0.21 | 6.40 | 9.59 | 0.03 | 10.00 | 26.02 | 53.18 | -27.16 | Average |
| 5 | 0.50 | 15.68 | 9.62 | 0.04 | 10.00 | 35.34 | 56.05 | -20.71 | QP |
| 6 | 0.50 | 0.87 | 9.62 | 0.04 | 10.00 | 20.53 | 46.05 | -25.52 | Average |
| 7 | 2.07 | 17.58 | 9.63 | 0.05 | 10.00 | 37.26 | 56.00 | -18.74 | QP |
| 8 | 2.07 | 5.15 | 9.63 | 0.05 | 10.00 | 24.83 | 46.00 | -21.17 | Average |
| 9 | 6.63 | 17.00 | 9.69 | 0.07 | 10.00 | 36.76 | 60.00 | -23.24 | QP |
| 10 | 6.63 | 1.74 | 9.69 | 0.07 | 10.00 | 21.50 | 50.00 | -28.50 | Average |
| 11 | 25.59 | 16.42 | 9.83 | 0.13 | 10.00 | 36.38 | 60.00 | -23.62 | QP |
| 12 | 25.59 | 5.20 | 9.83 | 0.13 | 10.00 | 25.16 | 50.00 | -24.84 | Average |

Remarks: 1. Measured = Reading +Cable Loss +Aux2 Fac.
2. The emission levels that are 20dB below the official limit are not reported.

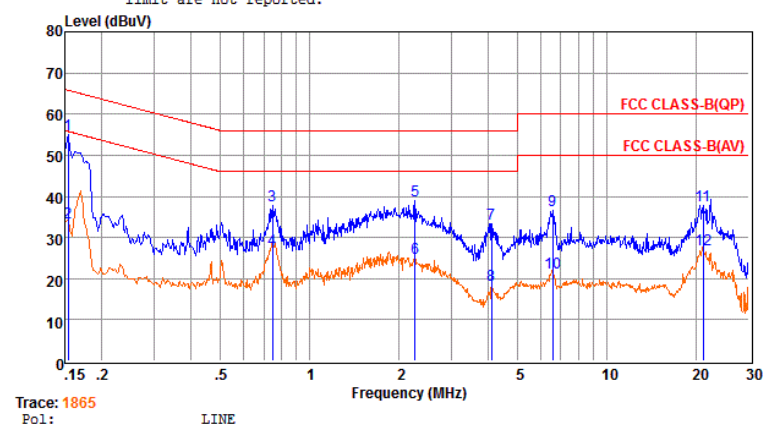
Test Results for AC 240V/50Hz @ GFSK (worst case)

| | | | |
|---------------|-------------|----------------|-------|
| Temperature | 25.3℃ | Humidity | 52.1% |
| Test Engineer | Jayden Zhuo | Configurations | BT |



| | Freq | Reading | LISNFac | CabLos | Aux2Fac | Measured | Limit | Over | Remark |
|----|-------|---------|---------|--------|---------|----------|-------|--------|---------|
| | MHz | dBuV | dB | dB | dB | dB | dBuV | dBuV | dB |
| 1 | 0.16 | 34.60 | 9.68 | 0.02 | 10.00 | 54.30 | 65.56 | -11.26 | QP |
| 2 | 0.16 | 25.76 | 9.68 | 0.02 | 10.00 | 45.46 | 55.55 | -10.09 | Average |
| 3 | 0.75 | 17.98 | 9.63 | 0.04 | 10.00 | 37.65 | 56.00 | -18.35 | QP |
| 4 | 0.75 | 10.73 | 9.63 | 0.04 | 10.00 | 30.40 | 46.00 | -15.60 | Average |
| 5 | 1.92 | 16.35 | 9.63 | 0.05 | 10.00 | 36.03 | 56.00 | -19.97 | QP |
| 6 | 1.92 | 4.55 | 9.63 | 0.05 | 10.00 | 24.23 | 46.00 | -21.77 | Average |
| 7 | 4.09 | 14.37 | 9.65 | 0.06 | 10.00 | 34.08 | 56.00 | -21.92 | QP |
| 8 | 4.09 | -2.99 | 9.65 | 0.06 | 10.00 | 16.72 | 46.00 | -29.28 | Average |
| 9 | 6.59 | 18.09 | 9.68 | 0.07 | 10.00 | 37.84 | 60.00 | -22.16 | QP |
| 10 | 6.59 | 1.39 | 9.68 | 0.07 | 10.00 | 21.14 | 50.00 | -28.86 | Average |
| 11 | 23.51 | 17.05 | 9.82 | 0.13 | 10.00 | 37.00 | 60.00 | -23.00 | QP |
| 12 | 23.51 | 2.08 | 9.82 | 0.13 | 10.00 | 22.03 | 50.00 | -27.97 | Average |

Remarks: 1. Measured = Reading +Cable Loss +Aux2 Fac.
2. The emission levels that are 20dB below the official limit are not reported.



| | Freq | Reading | LISNFac | CabLos | Aux2Fac | Measured | Limit | Over | Remark |
|----|-------|---------|---------|--------|---------|----------|-------|--------|---------|
| | MHz | dBuV | dB | dB | dB | dB | dBuV | dBuV | dB |
| 1 | 0.15 | 35.34 | 9.58 | 0.02 | 10.00 | 54.94 | 65.78 | -10.84 | QP |
| 2 | 0.15 | 13.90 | 9.58 | 0.02 | 10.00 | 33.50 | 55.77 | -22.27 | Average |
| 3 | 0.75 | 18.21 | 9.64 | 0.04 | 10.00 | 37.89 | 56.00 | -18.11 | QP |
| 4 | 0.75 | 7.50 | 9.64 | 0.04 | 10.00 | 27.18 | 46.00 | -18.82 | Average |
| 5 | 2.26 | 19.16 | 9.64 | 0.05 | 10.00 | 38.85 | 56.00 | -17.15 | QP |
| 6 | 2.26 | 5.38 | 9.64 | 0.05 | 10.00 | 25.07 | 46.00 | -20.93 | Average |
| 7 | 4.09 | 13.73 | 9.65 | 0.06 | 10.00 | 33.44 | 56.00 | -22.56 | QP |
| 8 | 4.09 | -1.30 | 9.65 | 0.06 | 10.00 | 18.41 | 46.00 | -27.59 | Average |
| 9 | 6.56 | 16.82 | 9.67 | 0.07 | 10.00 | 36.56 | 60.00 | -23.44 | QP |
| 10 | 6.56 | 1.80 | 9.67 | 0.07 | 10.00 | 21.54 | 50.00 | -28.46 | Average |
| 11 | 21.04 | 18.00 | 9.73 | 0.12 | 10.00 | 37.85 | 60.00 | -22.15 | QP |
| 12 | 21.04 | 7.34 | 9.73 | 0.12 | 10.00 | 27.19 | 50.00 | -22.81 | Average |

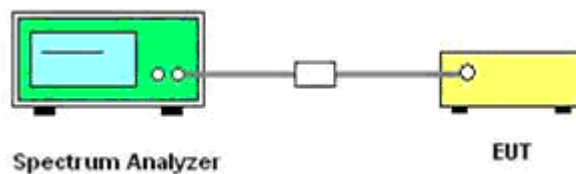
Remarks: 1. Measured = Reading +Cable Loss +Aux2 Fac.
2. The emission levels that are 20dB below the official limit are not reported.

6.8. Band-edge measurements for radiated emissions

6.8.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

6.8.2. Test Setup Layout



6.8.3. Measuring Instruments and Setting

Please refer to section 6 of equipment list in this report. The following table is the setting of Spectrum Analyzer.

6.8.4. Test Procedures

According to KDB 412172 section 1.1 Field Strength Approach (linear terms):

$$\text{eirp} = p_t \times g_t = (E \times d)^2 / 30$$

Where:

p_t = transmitter output power in watts, □

g_t = numeric gain of the transmitting antenna (unitless), □

E = electric field strength in V/m, □

d = measurement distance in meters (m).

$$\text{erp} = \text{eirp} / 1.64 = (E \times d)^2 / (30 \times 1.64)$$

Where all terms are as previously defined.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz for peak detector and RBW=1MHz, VBW=1/B for Peak detector.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.
6. Measure the conducted output power (in dBm) using the detector specified by the appropriate regulatory agency for guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
7. Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)

8. Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
9. For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
10. Compare the resultant electric field strength level to the applicable regulatory limit.
11. Perform radiated spurious emission test duress until all measured frequencies were complete.

6.8.5. Test Results

| | | | |
|---------------|-------------|----------------|-------|
| Temperature | 26.6°C | Humidity | 52.3% |
| Test Engineer | Jayden Zhuo | Configurations | BT |

| GFSK – Non-Hopping | | | | | | | |
|---------------------------|-----------------------|--------------------|-------------------------------|--|----------|----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | Ground Reflection Factor (dB) | Covert Radiated E Level At 3m (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
| 2310.000 | -51.491 | 2.0 | 0.0 | 45.769 | Peak | 74.00 | PASS |
| 2310.000 | -62.378 | 2.0 | 0.0 | 34.882 | AV | 54.00 | PASS |
| 2390.000 | -50.953 | 2.0 | 0.0 | 46.307 | Peak | 74.00 | PASS |
| 2390.000 | -61.966 | 2.0 | 0.0 | 35.294 | AV | 54.00 | PASS |
| 2483.500 | -45.847 | 2.0 | 0.0 | 51.413 | Peak | 74.00 | PASS |
| 2483.500 | -58.187 | 2.0 | 0.0 | 39.073 | AV | 54.00 | PASS |
| 2500.000 | -52.785 | 2.0 | 0.0 | 44.475 | Peak | 74.00 | PASS |
| 2500.000 | -61.944 | 2.0 | 0.0 | 35.316 | AV | 54.00 | PASS |

| $\pi/4$-DQPSK – Non-Hopping | | | | | | | |
|---|-----------------------|--------------------|-------------------------------|--|----------|----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | Ground Reflection Factor (dB) | Covert Radiated E Level At 3m (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
| 2310.000 | -51.695 | 2.0 | 0.0 | 45.565 | Peak | 74.00 | PASS |
| 2310.000 | -62.365 | 2.0 | 0.0 | 34.895 | AV | 54.00 | PASS |
| 2390.000 | -51.658 | 2.0 | 0.0 | 45.602 | Peak | 74.00 | PASS |
| 2390.000 | -61.844 | 2.0 | 0.0 | 35.416 | AV | 54.00 | PASS |
| 2483.500 | -44.729 | 2.0 | 0.0 | 52.531 | Peak | 74.00 | PASS |
| 2483.500 | -59.928 | 2.0 | 0.0 | 37.332 | AV | 54.00 | PASS |
| 2500.000 | -51.309 | 2.0 | 0.0 | 45.951 | Peak | 74.00 | PASS |
| 2500.000 | -61.890 | 2.0 | 0.0 | 35.370 | AV | 54.00 | PASS |

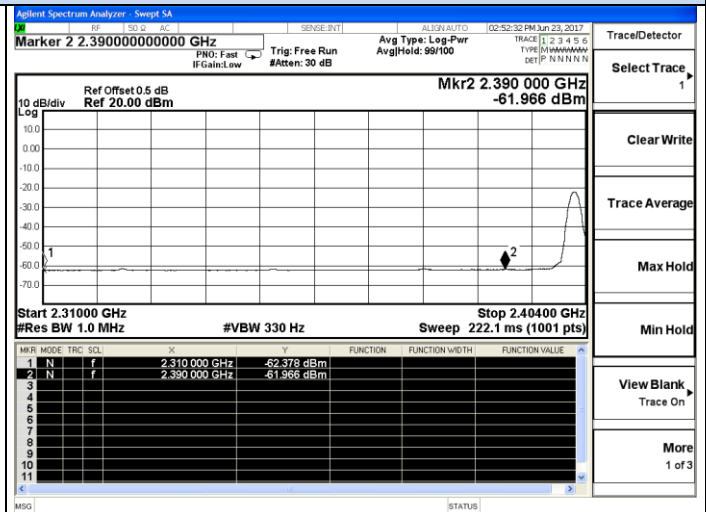
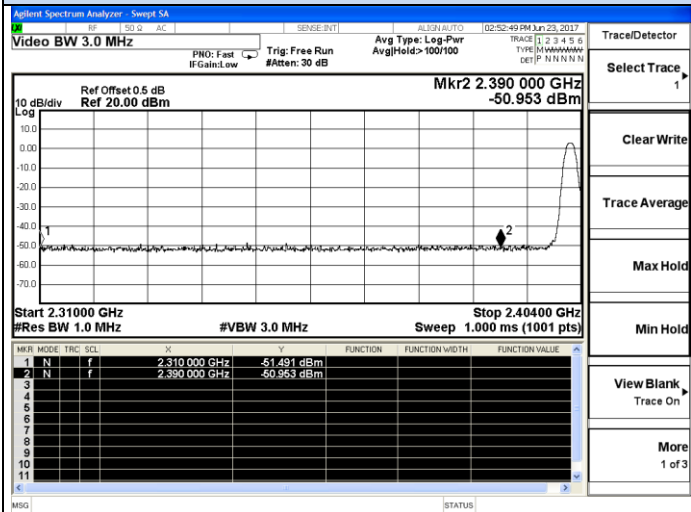
| 8-DPSK – Non-Hopping | | | | | | | |
|-----------------------------|-----------------------|--------------------|-------------------------------|--|----------|----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | Ground Reflection Factor (dB) | Covert Radiated E Level At 3m (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
| 2310.000 | -52.266 | 2.0 | 0.0 | 44.994 | Peak | 74.00 | PASS |
| 2310.000 | -62.424 | 2.0 | 0.0 | 34.836 | AV | 54.00 | PASS |
| 2390.000 | -51.543 | 2.0 | 0.0 | 45.717 | Peak | 74.00 | PASS |
| 2390.000 | -62.094 | 2.0 | 0.0 | 35.166 | AV | 54.00 | PASS |
| 2483.500 | -44.362 | 2.0 | 0.0 | 52.898 | Peak | 74.00 | PASS |
| 2483.500 | -60.167 | 2.0 | 0.0 | 37.093 | AV | 54.00 | PASS |
| 2500.000 | -51.695 | 2.0 | 0.0 | 45.565 | Peak | 74.00 | PASS |
| 2500.000 | -62.044 | 2.0 | 0.0 | 35.216 | AV | 54.00 | PASS |

Remark:

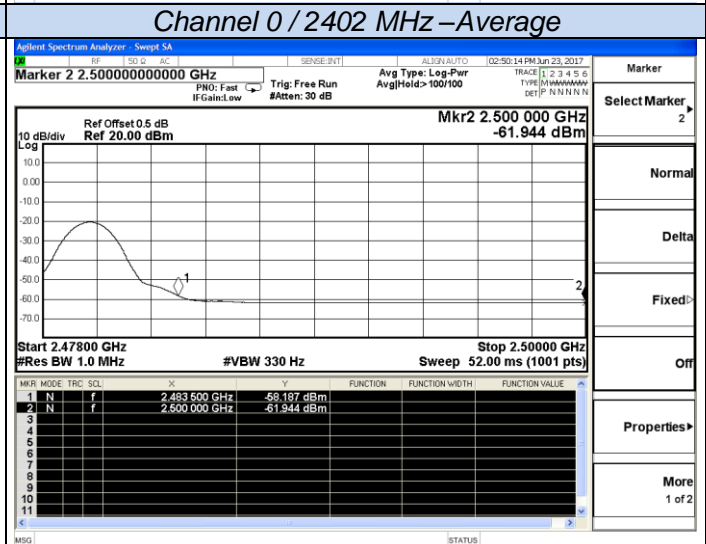
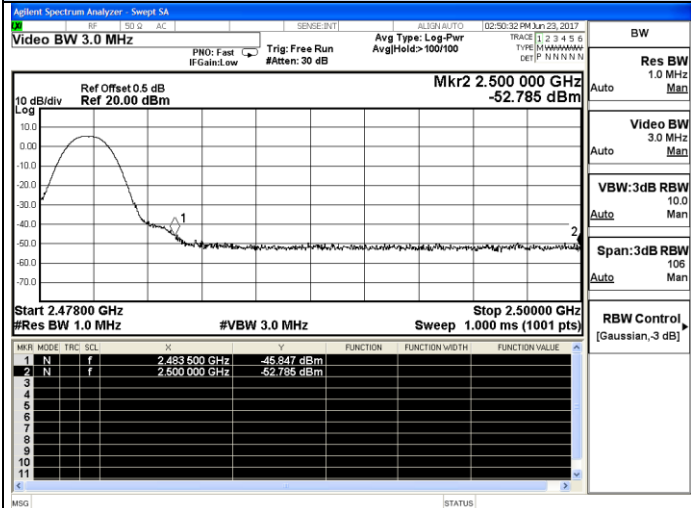
1. Measured at difference Packet Type for each mode and recorded worst case for each mode.
2. Measured at Hopping and Non-Hopping mode, recorded worst at Non-Hopping mode.
3. The other emission levels were very low against the limit.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. Detector AV is setting spectrum/receiver. RBW=1MHz/VBW=330Hz/Sweep time=Auto/Detector=Peak;
6. Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

Band-edge measurements for radiated emissions

GFSK



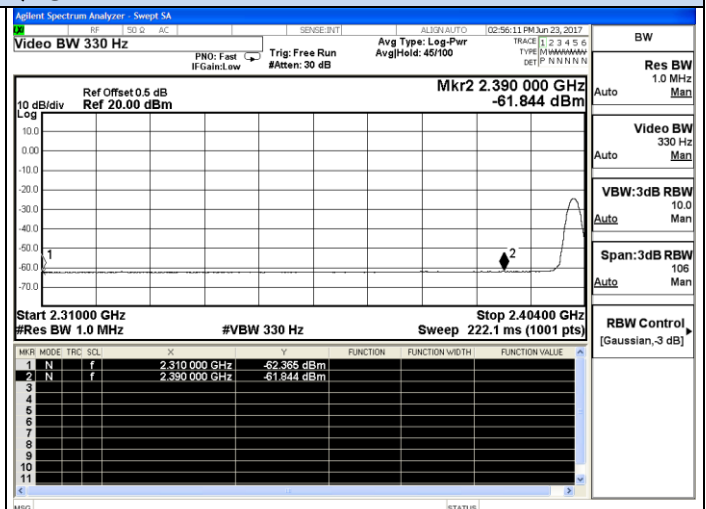
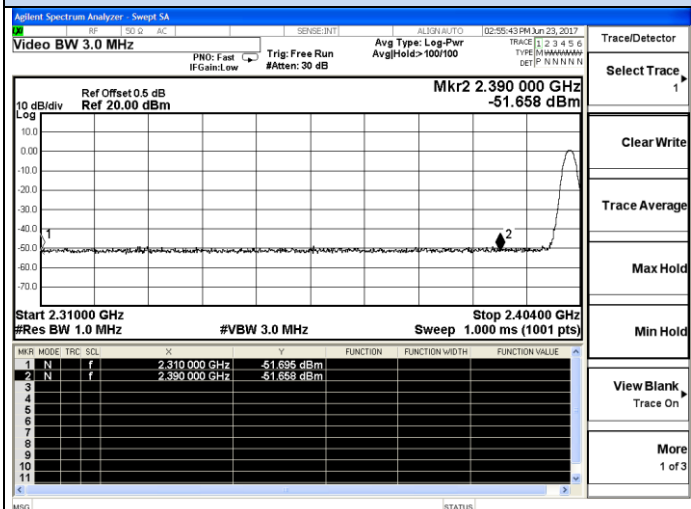
Channel 0 / 2402 MHz – Peak



Channel 78 / 2480 MHz – Peak

Channel 78 / 2480 MHz – Average

$\pi/4$ -DQPSK

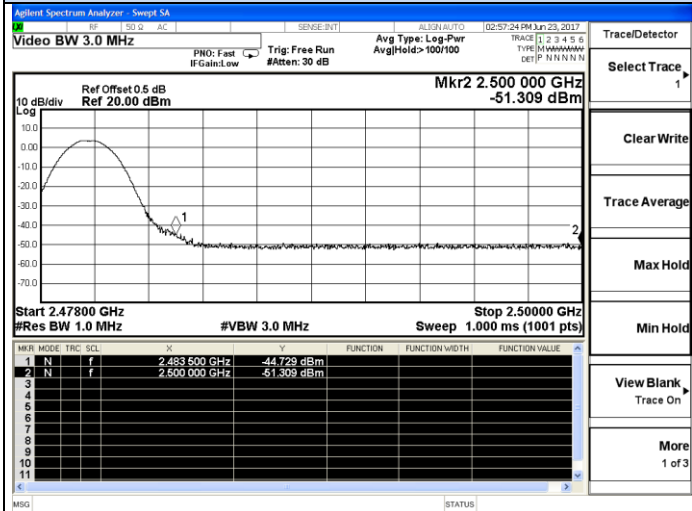


Channel 0 / 2402 MHz – Peak

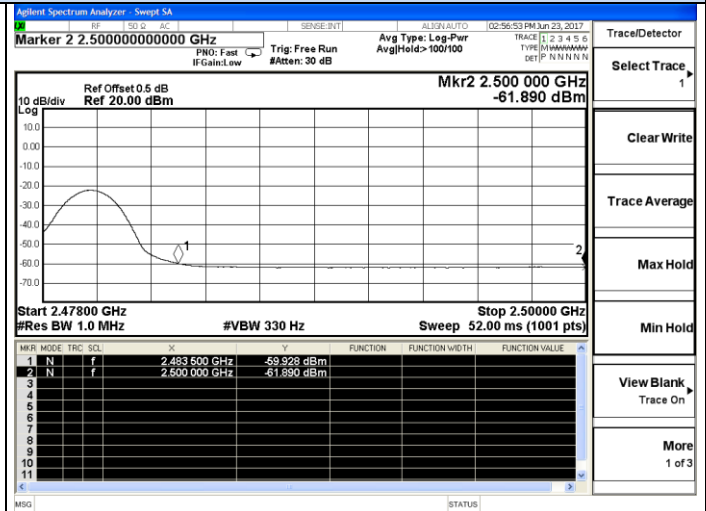
Channel 0 / 2402 MHz – Average

Band-edge measurements for radiated emissions

$\pi/4$ -DQPSK

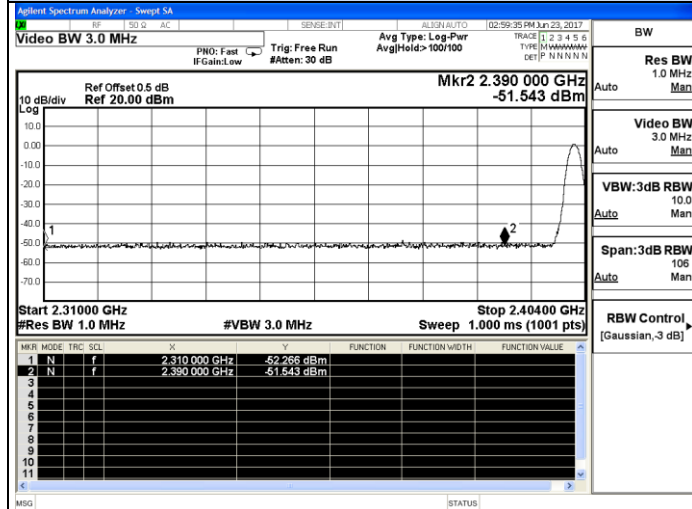


Channel 0 / 2402 MHz – Peak

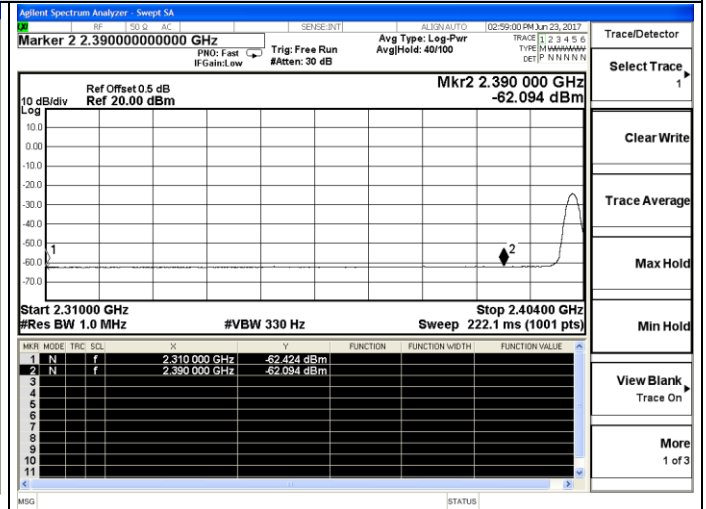


Channel 0 / 2402 MHz – Average

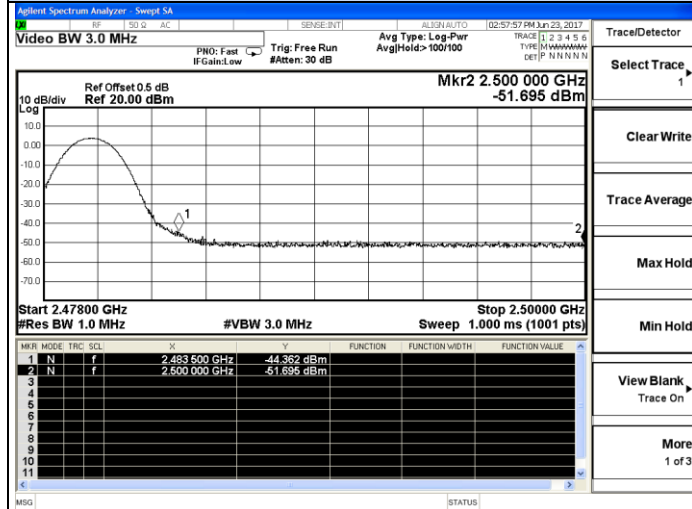
8-DPSK



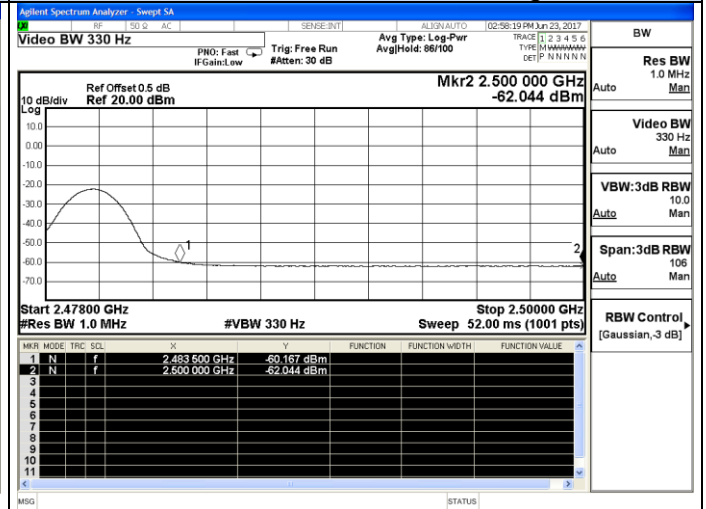
Channel 0 / 2402 MHz – Peak



Channel 0 / 2480 MHz – Average



Channel 78 / 2480 MHz – Peak



Channel 78 / 2480 MHz – Average

6.9. Pseudorandom frequency hopping sequence

6.9.1 Standard Applicable

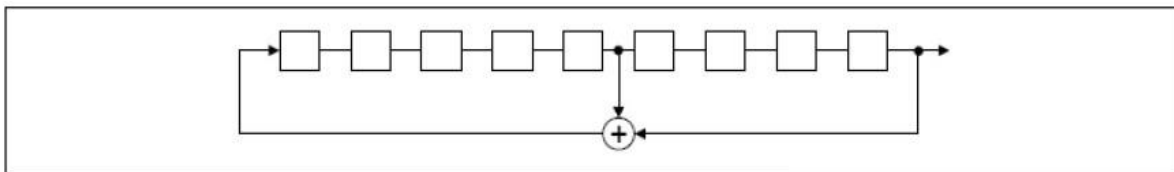
For 47 CFR Part 15C sections 15.247 (a) (1) requirement:

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hop-ping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hop-ping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

6.9.2 EUT Pseudorandom Frequency Hopping Sequence Requirement

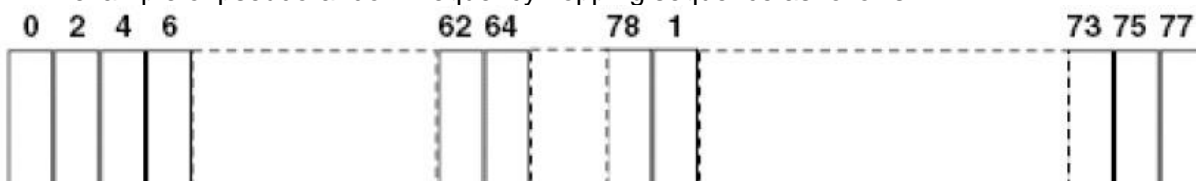
The pseudorandom frequency hopping sequence may be generated in a nine-stage shift register whose 5th first stage. The sequence begins with the first one of 9 consecutive ones, for example: the shift register is initialized with nine ones.

- Number of shift register stages:9
- Length of pseudo-random sequence:29-1=511 bits
- Longest sequence of zeros:8(non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of pseudorandom frequency hopping sequence as follows:



Each frequency used equally one the average by each transmitter.
The system receiver have input bandwidths that match the hopping channel bandwidths of their corresponding transmitter and shift frequencies in synchronization with the transmitted signals.

6.10. Antenna requirement

6.10.1 Standard Applicable

According to antenna requirement of §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. The manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

And according to §15.247(4)(1), system operating in the 2400-2483.5MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

6.10.2 Antenna Connected Construction

6.10.2.1. Standard Applicable

According to § 15.203 & 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.

6.10.2.2. Antenna Connector Construction

The directional gains of antenna used for transmitting is 2.0 dBi, and the antenna is an internal antenna connect to PCB board and no consideration of replacement. Please see EUT photo for details.

6.10.2.3. Results: Compliance.

Measurement

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal BT devices, the GFSK mode is used.

Conducted power refer ANSI C63.10:2013 Section 7.8.5 Output power test procedure for frequency-hopping spread-spectrum (FHSS) devices

Radiated power refers to ANSI C63.10:2013 Section 6.6.4 Radiated emissions tests.

Measurement parameters

| Measurement parameter | |
|-----------------------|----------|
| Detector: | Peak |
| Sweep Time: | Auto |
| Resolution bandwidth: | 1MHz |
| Video bandwidth: | 3MHz |
| Trace-Mode: | Max hold |

Limits

| FCC | IC |
|--------------|----|
| Antenna Gain | |
| 6 dBi | |

Note: The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For BT V3.0 devices, the GFSK mode is used;

| T _{nom} | V _{nom} | Lowest Channel 2402 MHz | Middle Channel 2441 MHz | Highest Channel 2480 MHz |
|---|------------------|----------------------------|------------------------------------|-----------------------------|
| Conducted power [dBm] Measured with GFSK modulation | | 3.152 | 2.928 | 3.612 |
| Radiated power [dBm] Measured with GFSK modulation | | 3.308 | 4.52 | 4.675 |
| Gain [dBi] Calculated | | 0.156 | 1.592 | 1.063 |
| Measurement uncertainty | | | ± 1.6 dB (cond.) / ± 3.8 dB (rad.) | |

7. TEST SETUP PHOTOGRAPHS

Please refer to separated files for Test Setup Photos of the EUT.

8.EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Please refer to separated files for External Photos & Internal Photos of the EUT.

-----THE END OF REPORT-----