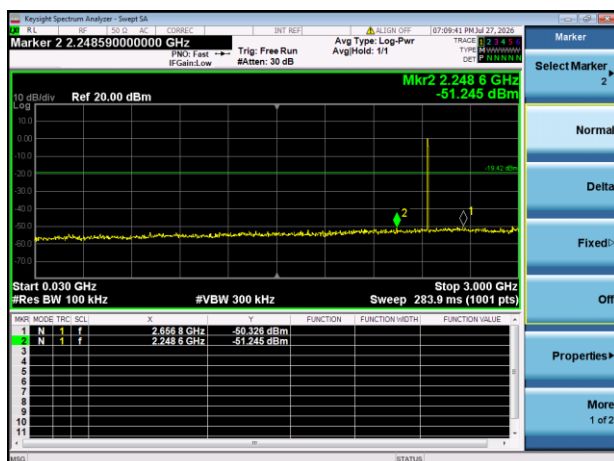
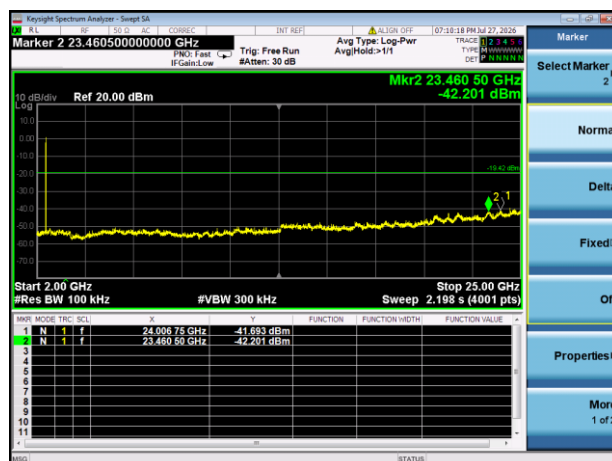


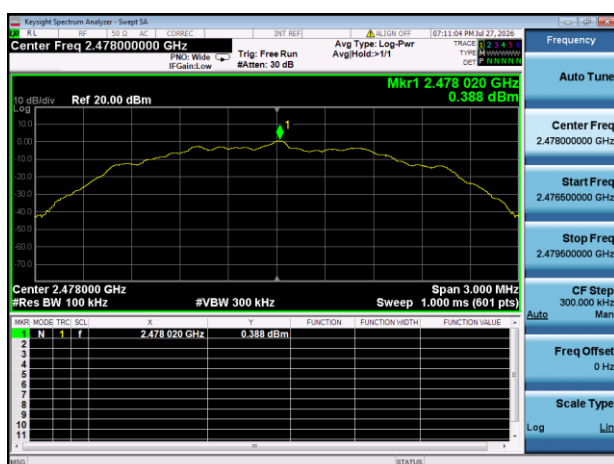
### GFSK (BLE 2Mbps) MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



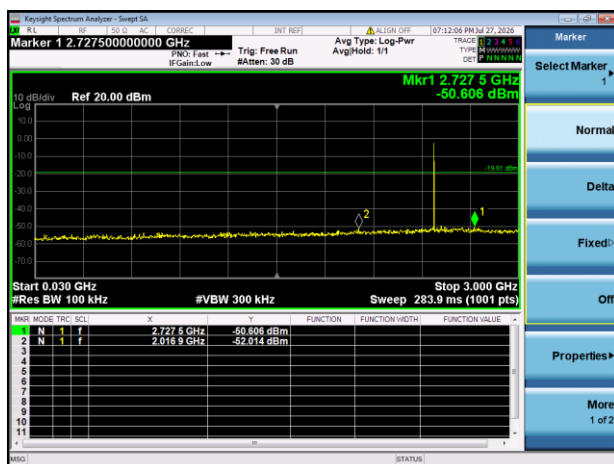
### GFSK (BLE 2Mbps) MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



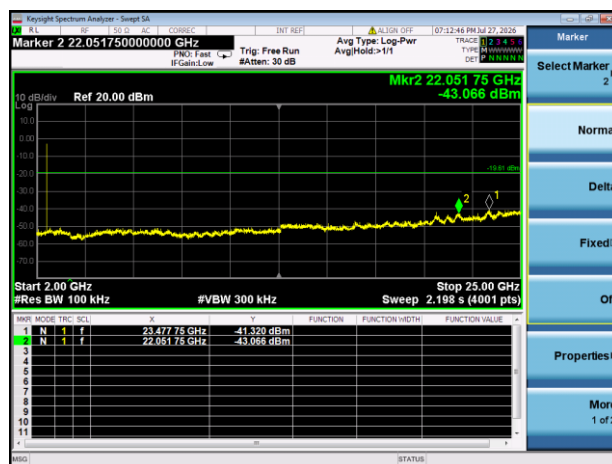
### GFSK (BLE 2Mbps) HIGH CHANNEL, CARRIER LEVEL



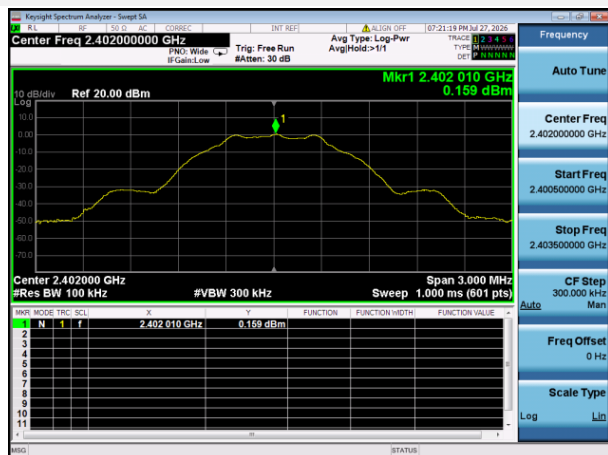
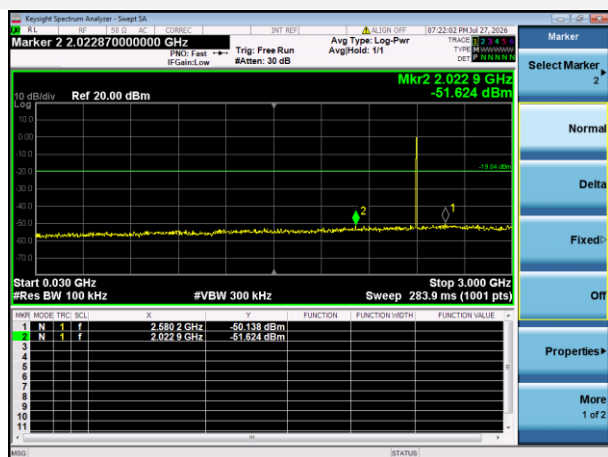
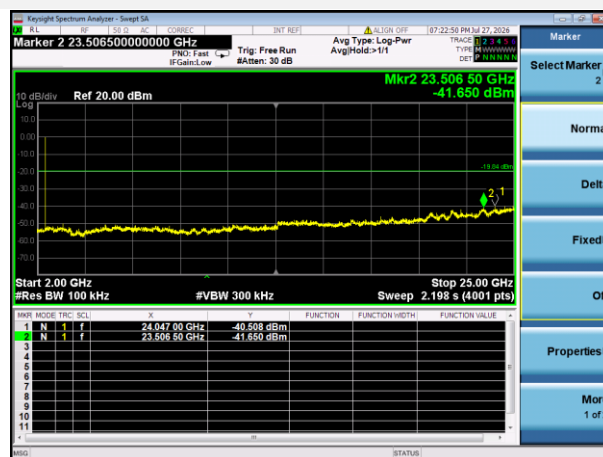
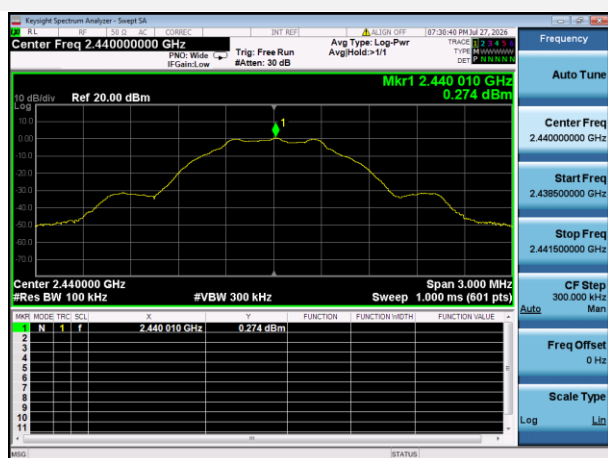
### GFSK (BLE 2Mbps) HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



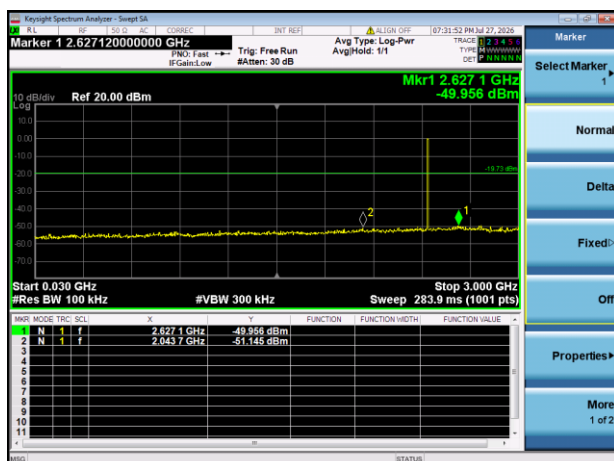
### GFSK (BLE 2Mbps) HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



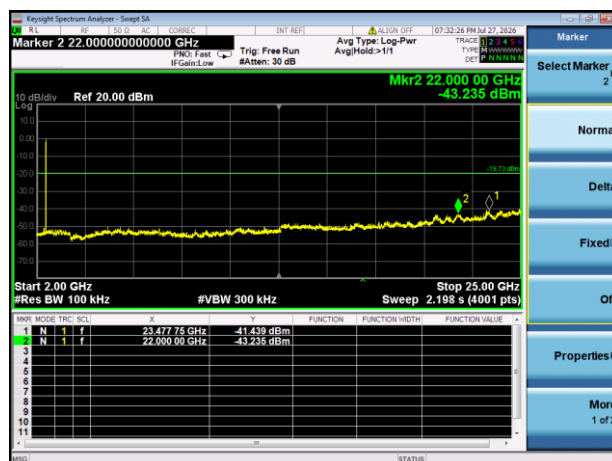
## Aux. Antenna:

GFSK (BLE 1Mbps) LOW CHANNEL,  
CARRIER LEVELGFSK (BLE 1Mbps) LOW CHANNEL,  
SPURIOUS 30 MHz ~ 3 GHzGFSK (BLE 1Mbps) LOW CHANNEL,  
SPURIOUS 2 GHz ~ 25 GHzGFSK (BLE 1Mbps) MIDDLE CHANNEL,  
CARRIER LEVEL

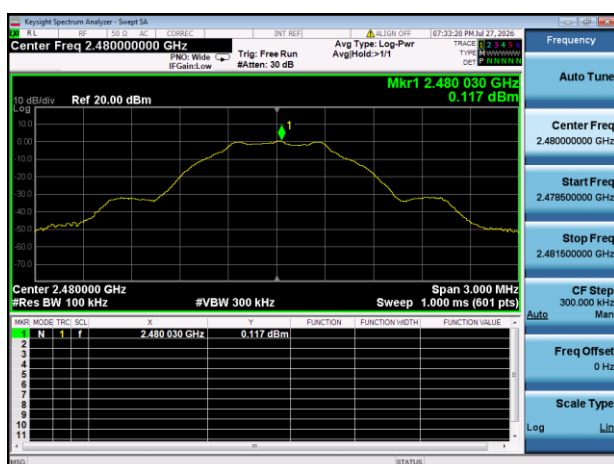
### GFSK (BLE 1Mbps) MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



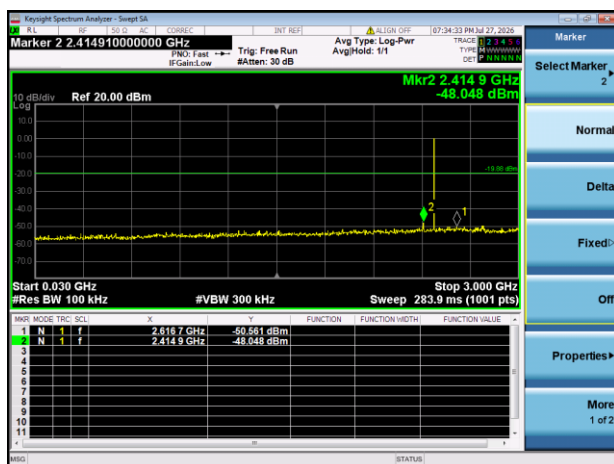
### GFSK (BLE 1Mbps) MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



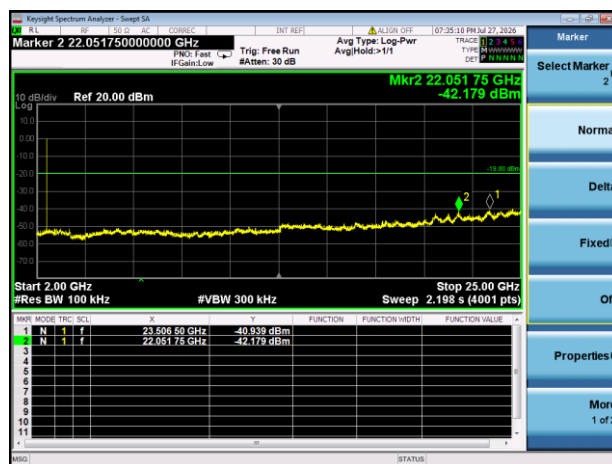
### GFSK (BLE 1Mbps) HIGH CHANNEL, CARRIER LEVEL



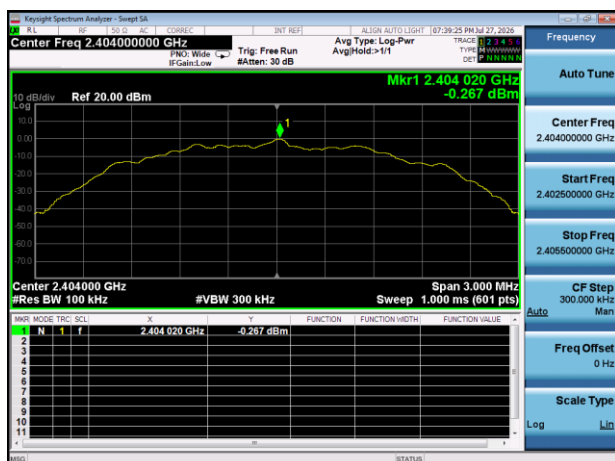
### GFSK (BLE 1Mbps) HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



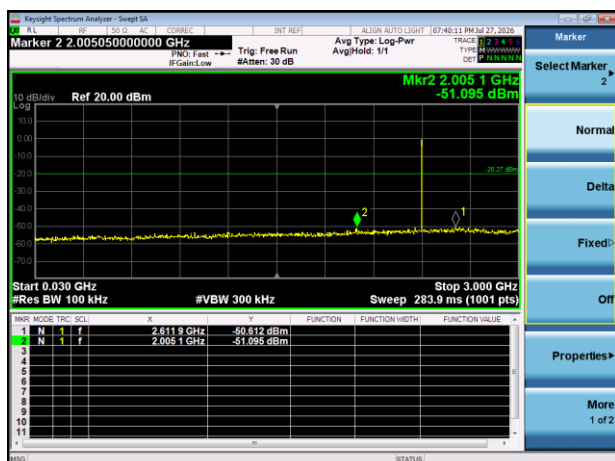
### GFSK (BLE 1Mbps) HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



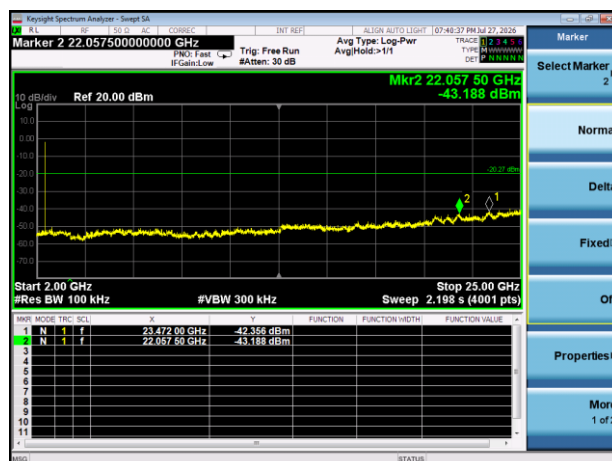
## GFSK (BLE 2Mbps) LOW CHANNEL, CARRIER LEVEL



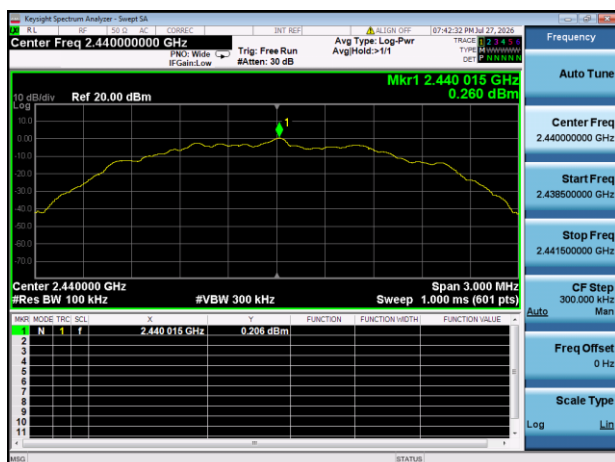
## GFSK (BLE 2Mbps) LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



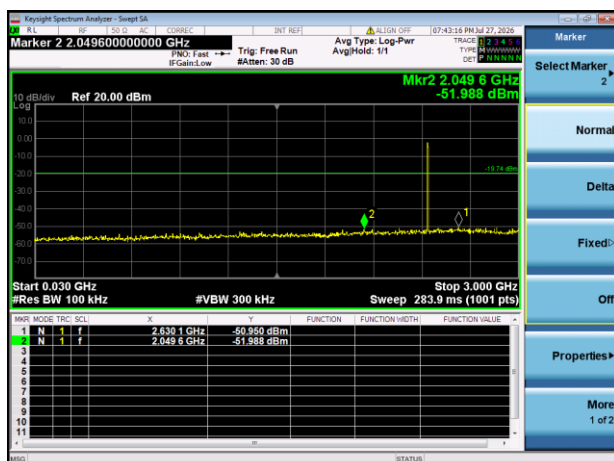
## GFSK (BLE 2Mbps) LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



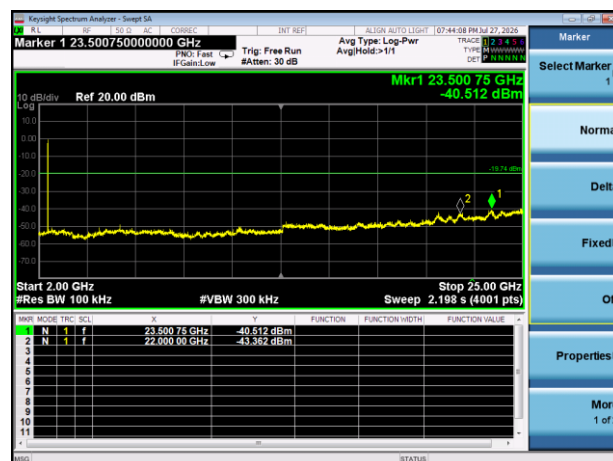
## GFSK (BLE 2Mbps) MIDDLE CHANNEL, CARRIER LEVEL



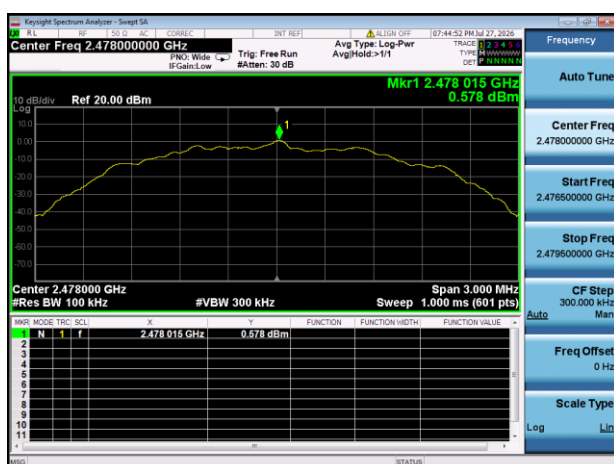
### GFSK (BLE 2Mbps) MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



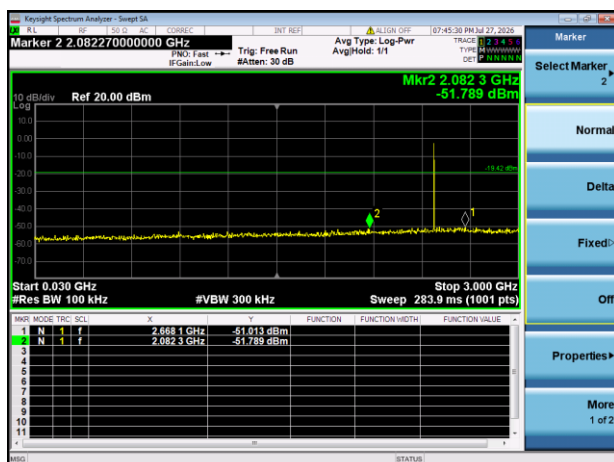
### GFSK (BLE 2Mbps) MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



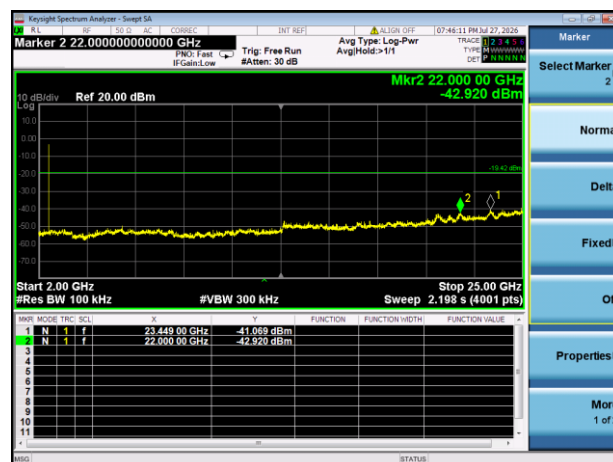
### GFSK (BLE 2Mbps) HIGH CHANNEL, CARRIER LEVEL



### GFSK (BLE 2Mbps) HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



### GFSK (BLE 2Mbps) HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



## A.4 Band Edge (Authorized-band band-edge)

Note: The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

### Test Data

#### Main Antenna:

| GFSK (BLE 1Mbps) |                                        |               |                         |         |
|------------------|----------------------------------------|---------------|-------------------------|---------|
| Channel          | Measured Max. Band Edge Emission (dBm) | Limit (dBm)   |                         | Verdict |
|                  |                                        | Carrier Level | Calculated 20 dBc Limit |         |
| Low              | -51.63                                 | 0.57          | -19.43                  | Pass    |
| High             | -51.92                                 | 0.29          | -19.71                  | Pass    |

| GFSK (BLE 2Mbps) |                                        |               |                         |         |
|------------------|----------------------------------------|---------------|-------------------------|---------|
| Channel          | Measured Max. Band Edge Emission (dBm) | Limit (dBm)   |                         | Verdict |
|                  |                                        | Carrier Level | Calculated 20 dBc Limit |         |
| Low              | -52.13                                 | 0.68          | -19.32                  | Pass    |
| High             | -51.60                                 | 0.39          | -19.61                  | Pass    |

#### Aux. Antenna:

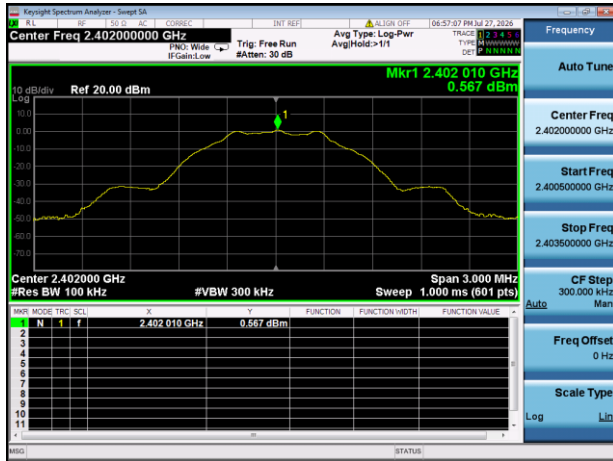
| GFSK (BLE 1Mbps) |                                        |               |                         |         |
|------------------|----------------------------------------|---------------|-------------------------|---------|
| Channel          | Measured Max. Band Edge Emission (dBm) | Limit (dBm)   |                         | Verdict |
|                  |                                        | Carrier Level | Calculated 20 dBc Limit |         |
| Low              | -53.22                                 | 0.16          | -19.84                  | Pass    |
| High             | -52.59                                 | 0.12          | -19.88                  | Pass    |

| GFSK (BLE 2Mbps) |                                        |               |                         |         |
|------------------|----------------------------------------|---------------|-------------------------|---------|
| Channel          | Measured Max. Band Edge Emission (dBm) | Limit (dBm)   |                         | Verdict |
|                  |                                        | Carrier Level | Calculated 20 dBc Limit |         |
| Low              | -52.36                                 | -0.27         | -20.27                  | Pass    |
| High             | -51.94                                 | 0.58          | -19.42                  | Pass    |

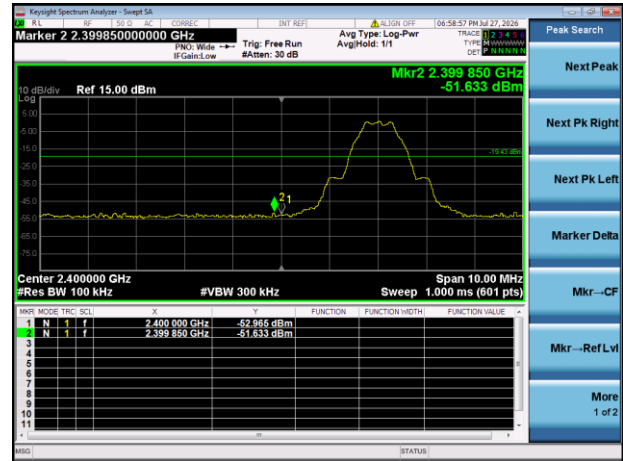
## Test Plots

### Main Antenna:

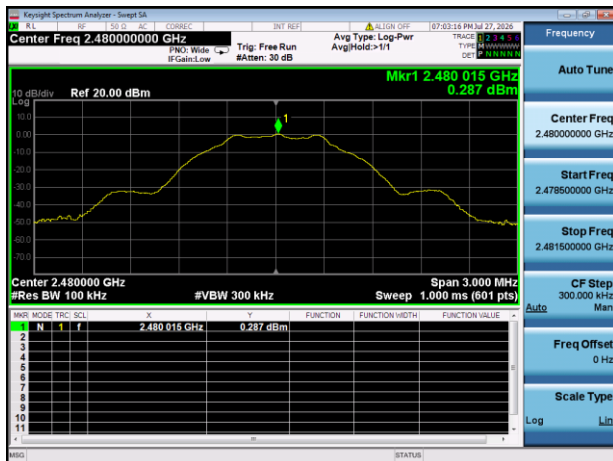
GFSK (BLE 1Mbps) LOW CHANNEL, CARRIER LEVEL



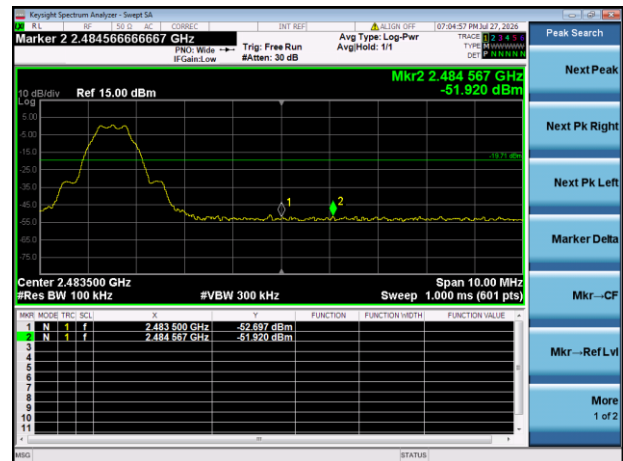
GFSK (BLE 1Mbps) LOW CHANNEL, BAND EDGE



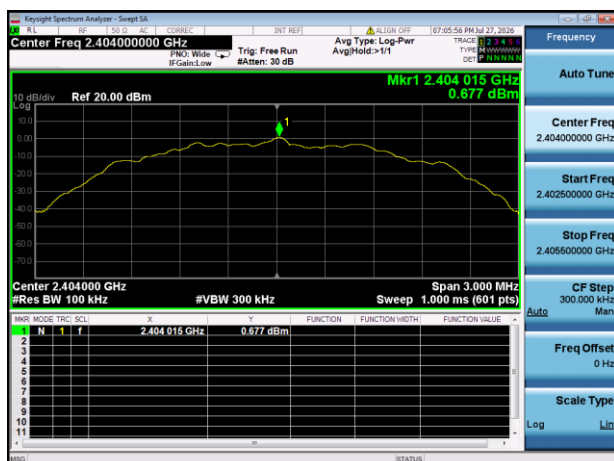
GFSK (BLE 1Mbps) HIGH CHANNEL, CARRIER LEVEL



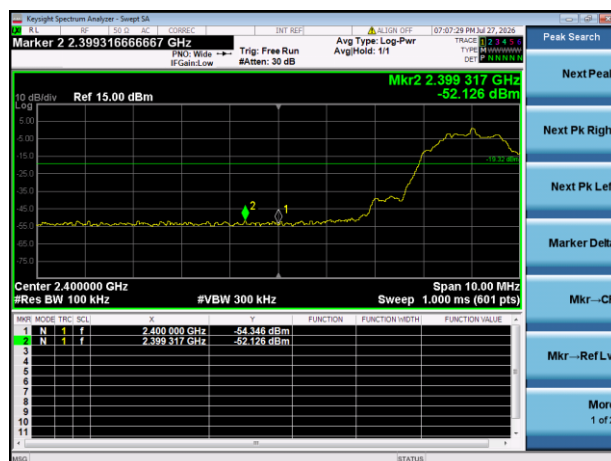
GFSK (BLE 1Mbps) HIGH CHANNEL, BAND EDGE



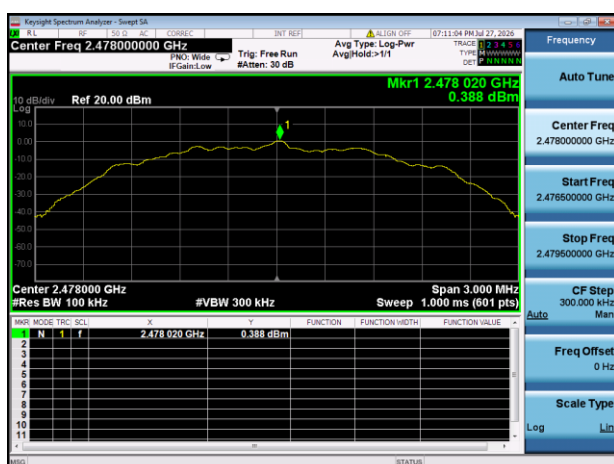
### GFSK (BLE 2Mbps) LOW CHANNEL, CARRIER LEVEL



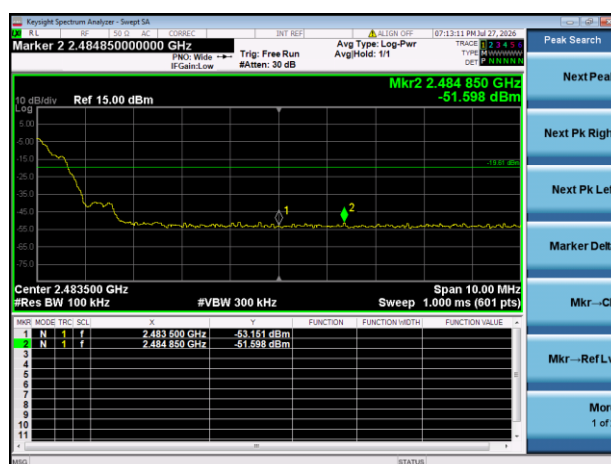
### GFSK (BLE 2Mbps) LOW CHANNEL, BAND EDGE



### GFSK (BLE 2Mbps) HIGH CHANNEL, CARRIER LEVEL

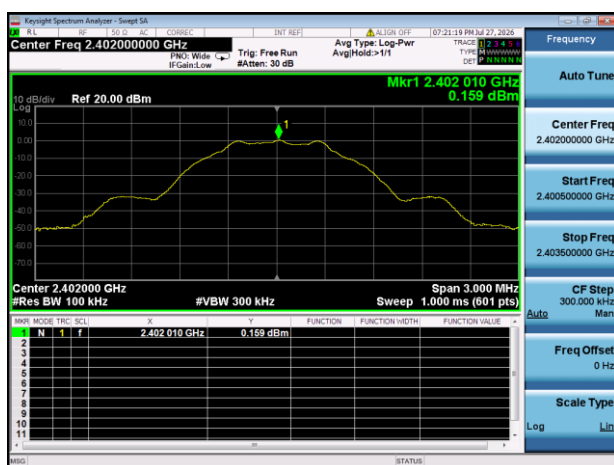


### GFSK (BLE 2Mbps) HIGH CHANNEL, BAND EDGE

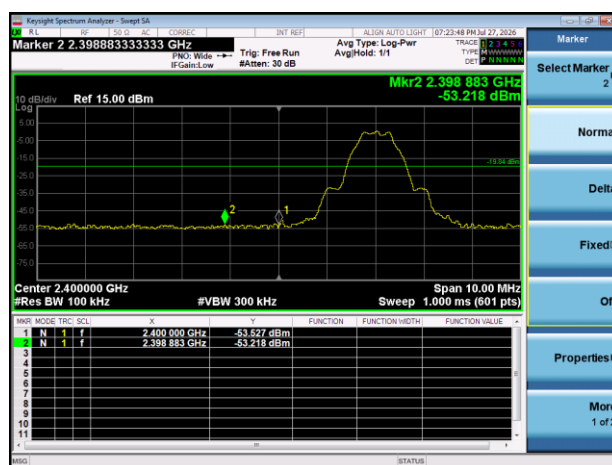


## Aux. Antenna:

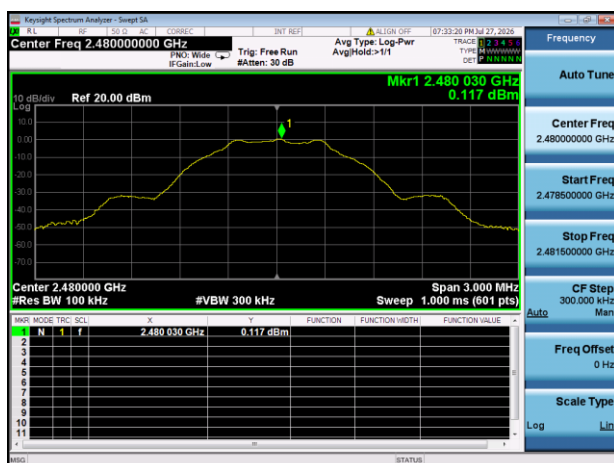
GFSK (BLE 1Mbps) LOW CHANNEL, CARRIER LEVEL



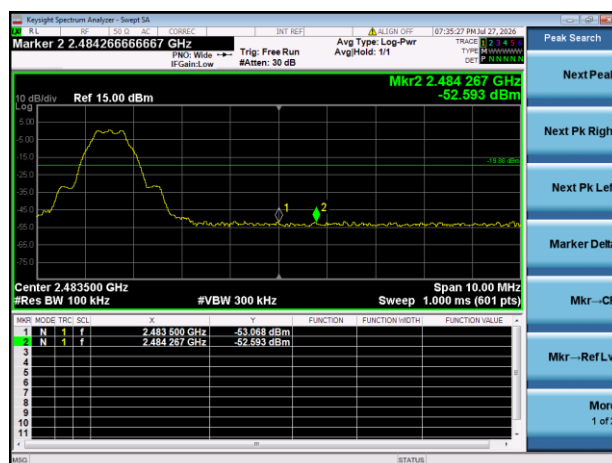
GFSK (BLE 1Mbps) LOW CHANNEL, BAND EDGE



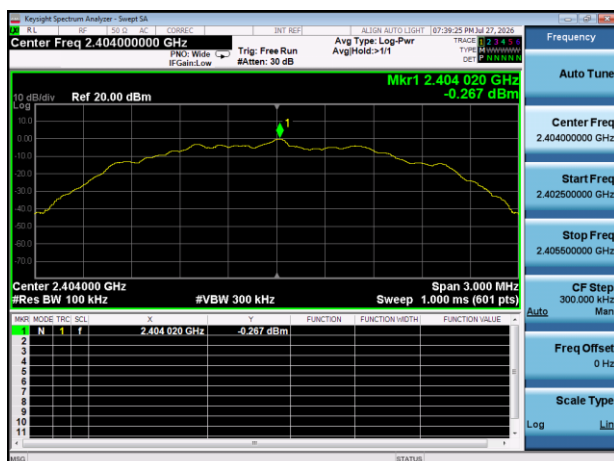
GFSK (BLE 1Mbps) HIGH CHANNEL, CARRIER LEVEL



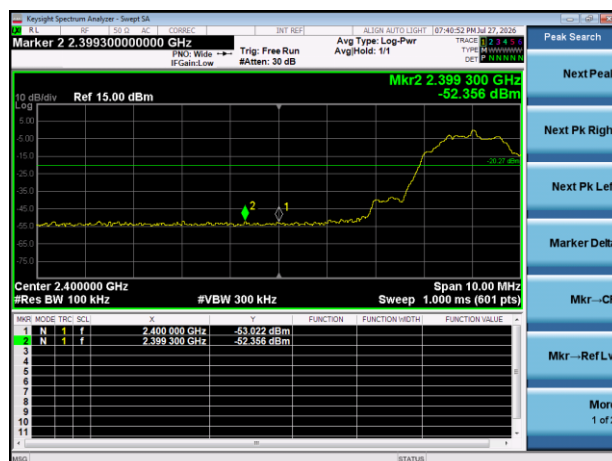
GFSK (BLE 1Mbps) HIGH CHANNEL, BAND EDGE



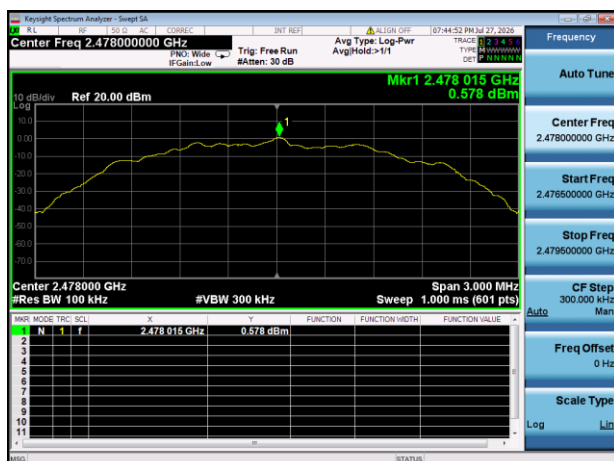
### GFSK (BLE 2Mbps) LOW CHANNEL, CARRIER LEVEL



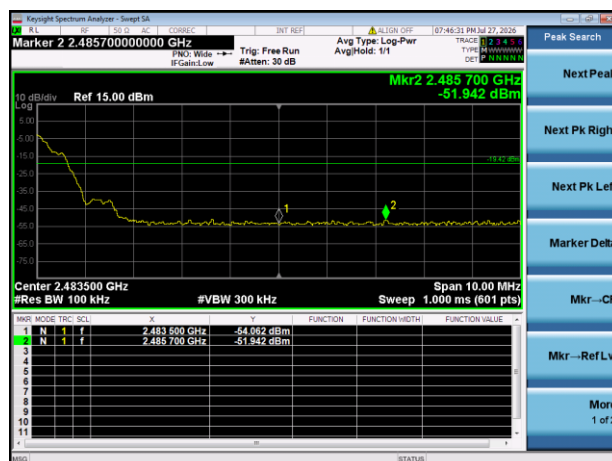
### GFSK (BLE 2Mbps) LOW CHANNEL, BAND EDGE



### GFSK (BLE 2Mbps) HIGH CHANNEL, CARRIER LEVEL



### GFSK (BLE 2Mbps) HIGH CHANNEL, BAND EDGE



## A.5 Conducted Emission

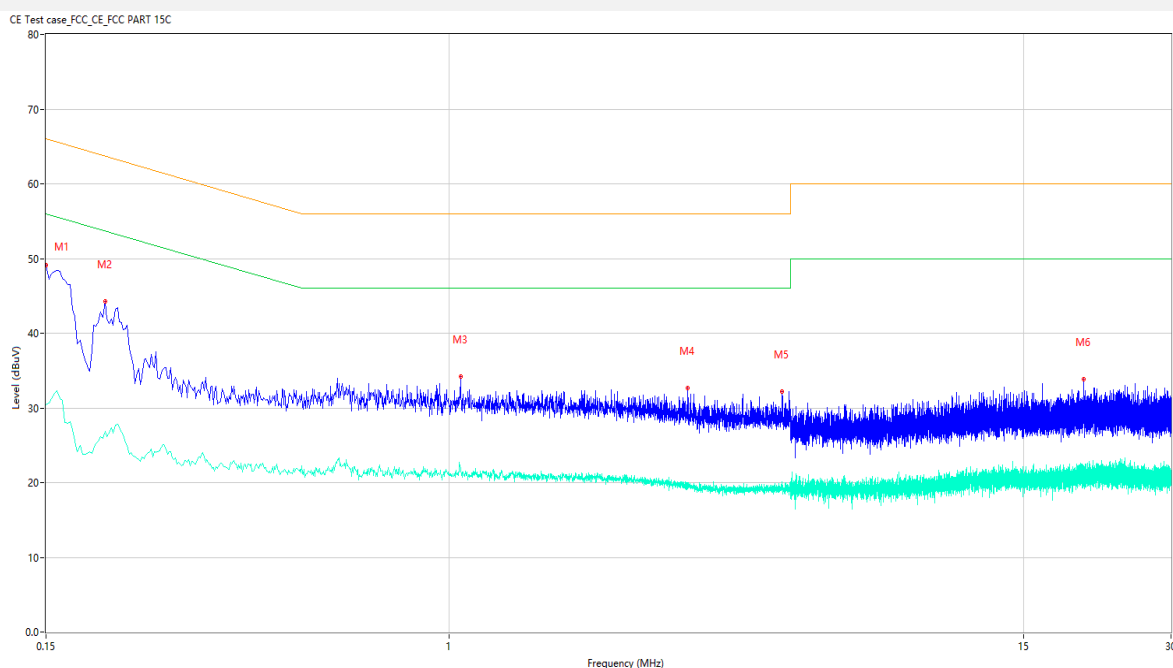
Note 1: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

Note 2: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz ) shown here.

Note 3: Results (dBuV) = Original reading level of Spectrum Analyzer (dBuV) + Factor (dB)

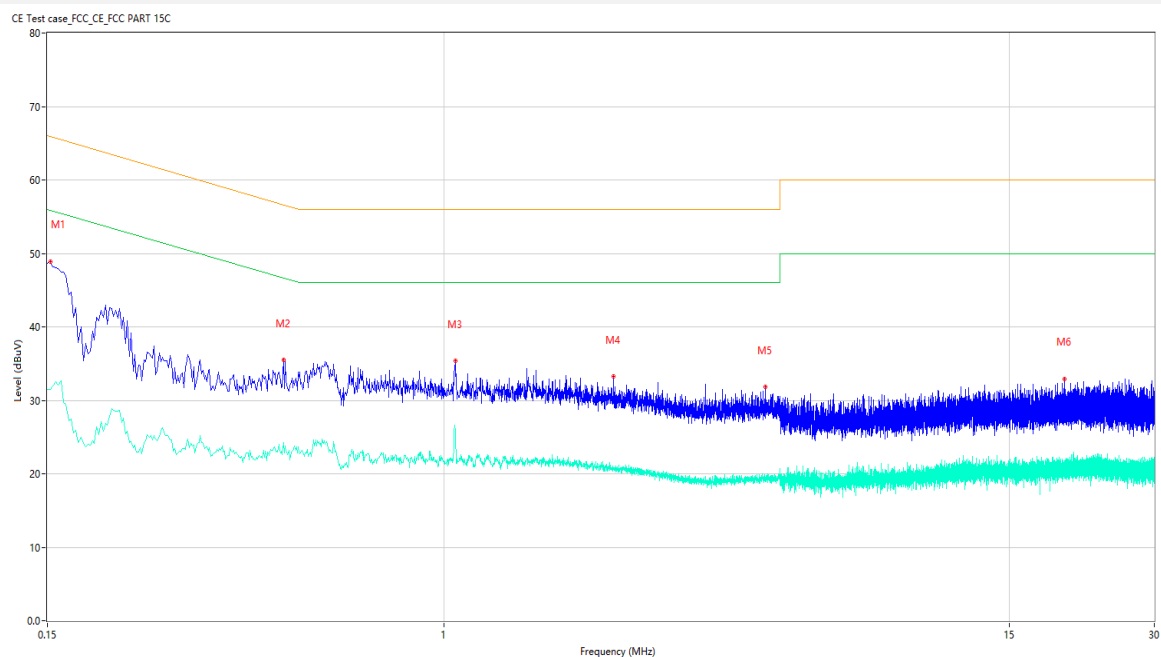
### Test Data and Plots

#### PHASE L



| No. | Frequency (MHz) | Results (dBuV) | Factor (dB) | Limit (dBuV) | Margin (dB) | Detector | Line | Verdict |
|-----|-----------------|----------------|-------------|--------------|-------------|----------|------|---------|
| 1   | 0.150           | 49.06          | 10.21       | 66.00        | 16.94       | Peak     | L    | Pass    |
| 1** | 0.150           | 30.46          | 10.21       | 56.00        | 25.54       | AV       | L    | Pass    |
| 2   | 0.198           | 44.28          | 10.21       | 63.69        | 19.41       | Peak     | L    | Pass    |
| 2** | 0.198           | 26.83          | 10.21       | 53.69        | 26.86       | AV       | L    | Pass    |
| 3   | 1.056           | 34.15          | 10.28       | 56.00        | 21.85       | Peak     | L    | Pass    |
| 3** | 1.056           | 21.97          | 10.28       | 46.00        | 24.03       | AV       | L    | Pass    |
| 4   | 3.084           | 32.65          | 10.32       | 56.00        | 23.35       | Peak     | L    | Pass    |
| 4** | 3.084           | 20.06          | 10.32       | 46.00        | 25.94       | AV       | L    | Pass    |
| 5   | 4.808           | 32.20          | 10.35       | 56.00        | 23.80       | Peak     | L    | Pass    |
| 5** | 4.808           | 20.13          | 10.35       | 46.00        | 25.87       | AV       | L    | Pass    |
| 6   | 19.886          | 33.81          | 11.40       | 60.00        | 26.19       | Peak     | L    | Pass    |
| 6** | 19.886          | 21.58          | 11.40       | 50.00        | 28.42       | AV       | L    | Pass    |

## PHASE N



| No. | Frequency (MHz) | Results (dBuV) | Factor (dB) | Limit (dBuV) | Margin (dB) | Detector | Line | Verdict |
|-----|-----------------|----------------|-------------|--------------|-------------|----------|------|---------|
| 1   | 0.152           | 48.91          | 10.22       | 65.89        | 16.98       | Peak     | N    | Pass    |
| 1** | 0.152           | 31.42          | 10.22       | 55.89        | 24.47       | AV       | N    | Pass    |
| 2   | 0.464           | 35.48          | 10.14       | 56.62        | 21.14       | Peak     | N    | Pass    |
| 2** | 0.464           | 24.25          | 10.14       | 46.62        | 22.37       | AV       | N    | Pass    |
| 3   | 1.056           | 35.35          | 10.14       | 56.00        | 20.65       | Peak     | N    | Pass    |
| 3** | 1.056           | 25.74          | 10.14       | 46.00        | 20.26       | AV       | N    | Pass    |
| 4   | 2.252           | 33.22          | 10.16       | 56.00        | 22.78       | Peak     | N    | Pass    |
| 4** | 2.252           | 20.55          | 10.16       | 46.00        | 25.45       | AV       | N    | Pass    |
| 5   | 4.656           | 31.85          | 10.19       | 56.00        | 24.15       | Peak     | N    | Pass    |
| 5** | 4.656           | 19.11          | 10.19       | 46.00        | 26.89       | AV       | N    | Pass    |
| 6   | 19.516          | 32.96          | 11.16       | 60.00        | 27.04       | Peak     | N    | Pass    |
| 6** | 19.516          | 21.06          | 11.16       | 50.00        | 28.94       | AV       | N    | Pass    |

## A.6 Radiated Spurious Emission

Note 1: The symbol of "--" in the table which means not application.

Note 2: For the test data above 1 GHz, according the ANSI C63.10, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

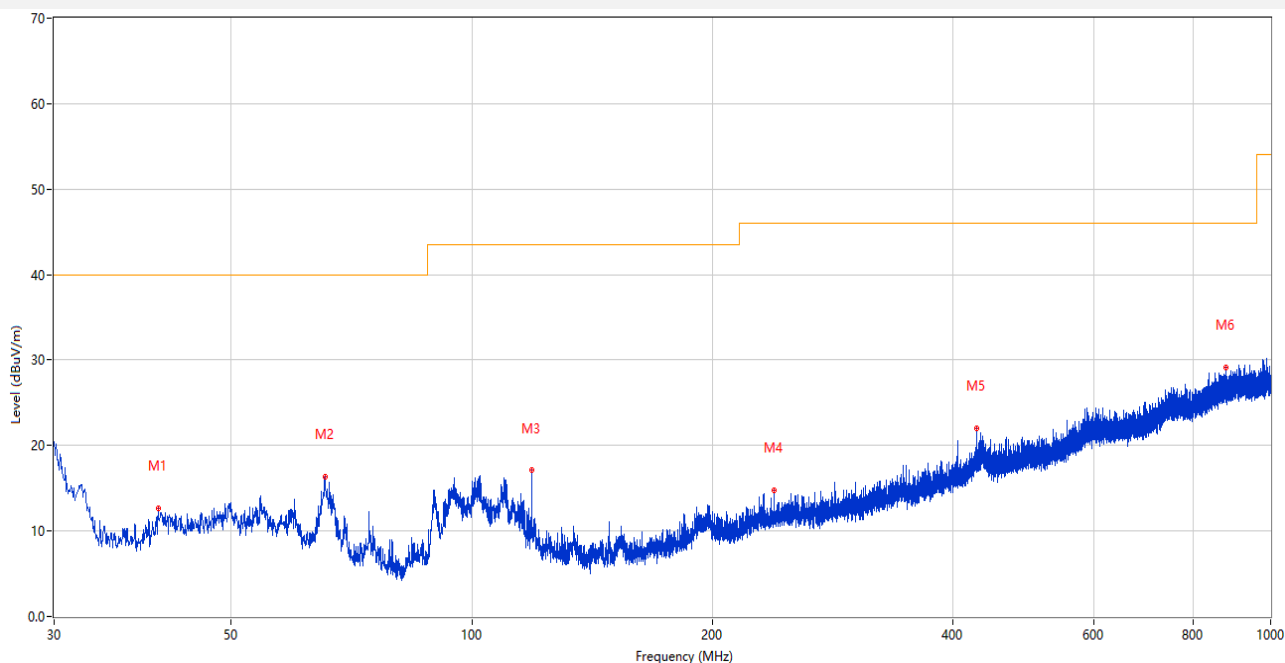
Note 4: The EUT is working in the Normal link mode below 1 GHz. All modes have been tested.

Note 5: Results (dBuV/m) = Original reading level of Spectrum Analyzer (dBuV) + Factor (dB)

### Test Data and Plots

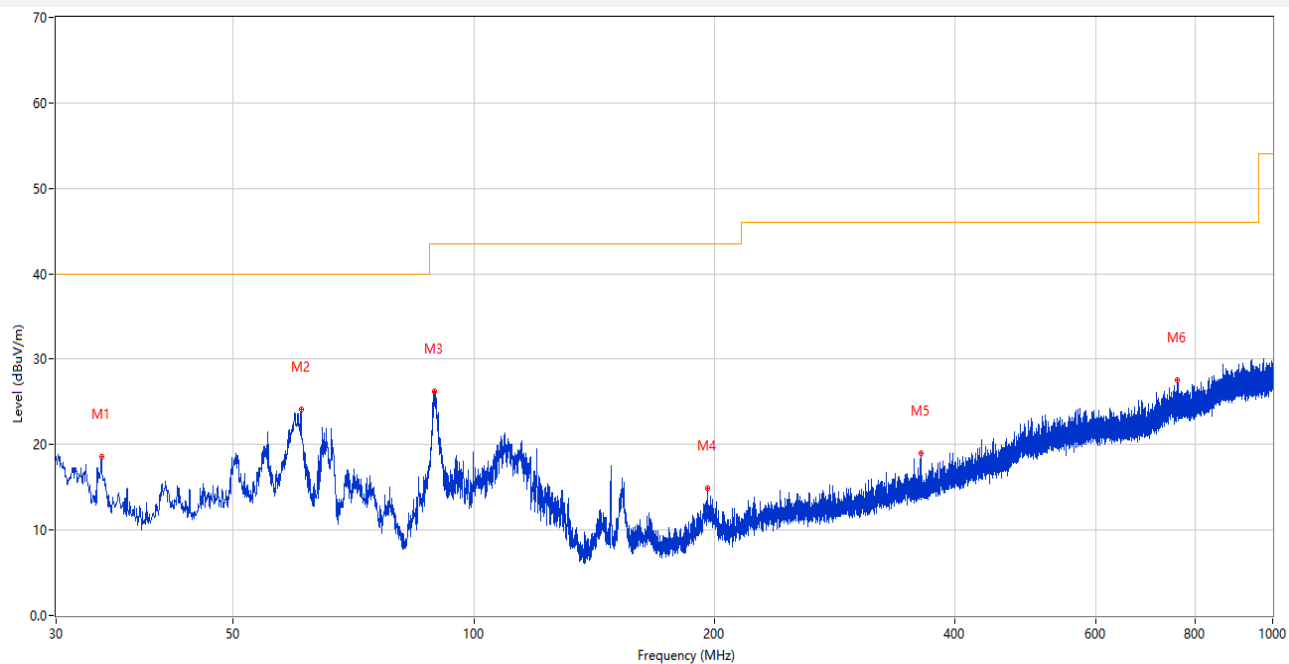
#### Main Antenna:

30 MHz to 1 GHz, ANT H



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 40.476          | 12.70            | -25.87      | 40.0           | 27.30       | Peak     | 224.00         | 100         | Horizontal | Pass    |
| 2   | 65.454          | 16.33            | -27.64      | 40.0           | 23.67       | Peak     | 323.00         | 200         | Horizontal | Pass    |
| 3   | 118.949         | 17.07            | -28.25      | 43.5           | 26.43       | Peak     | 224.00         | 100         | Horizontal | Pass    |
| 4   | 238.841         | 14.75            | -24.79      | 46.0           | 31.25       | Peak     | 249.00         | 100         | Horizontal | Pass    |
| 5   | 428.913         | 21.97            | -20.17      | 46.0           | 24.03       | Peak     | 112.00         | 200         | Horizontal | Pass    |
| 6   | 877.974         | 29.15            | -10.59      | 46.0           | 16.85       | Peak     | 184.00         | 100         | Horizontal | Pass    |

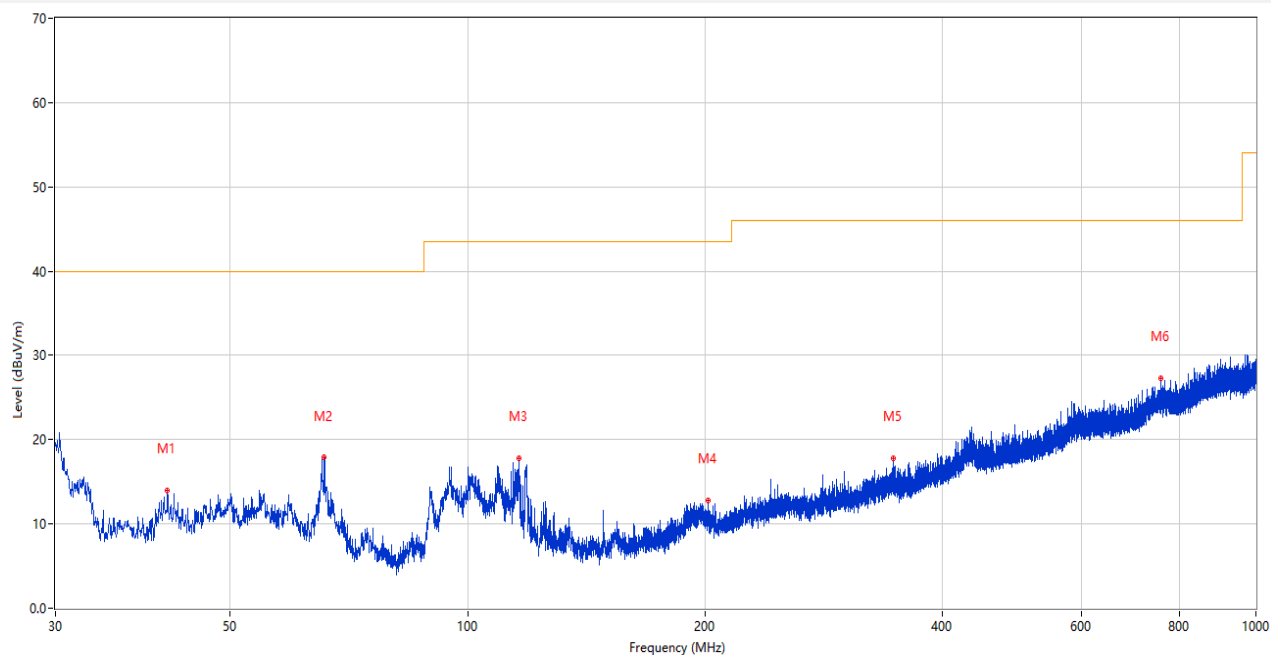
## 30 MHz to 1 GHz, ANT V



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna  | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|----------|---------|
| 1   | 34.219          | 18.64            | -28.12      | 40.0           | 21.36       | Peak     | 70.00          | 200         | Vertical | Pass    |
| 2   | 60.797          | 24.14            | -26.39      | 40.0           | 15.86       | Peak     | 179.00         | 100         | Vertical | Pass    |
| 3   | 89.364          | 26.28            | -28.44      | 43.5           | 17.22       | Peak     | 35.00          | 100         | Vertical | Pass    |
| 4   | 196.404         | 14.95            | -25.94      | 43.5           | 28.55       | Peak     | 179.00         | 200         | Vertical | Pass    |
| 5   | 362.565         | 19.01            | -22.15      | 46.0           | 26.99       | Peak     | 328.00         | 100         | Vertical | Pass    |
| 6   | 759.101         | 27.53            | -12.61      | 46.0           | 18.47       | Peak     | 191.00         | 100         | Vertical | Pass    |

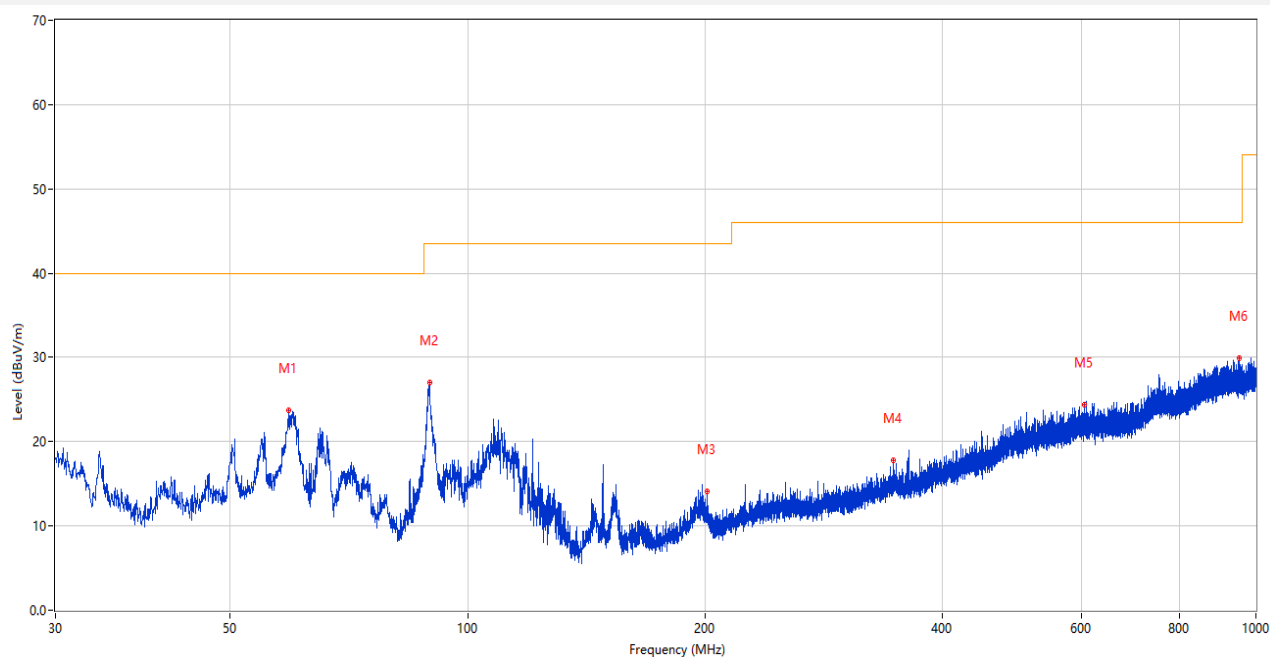
Aux. Antenna:

30 MHz to 1 GHz, ANT H



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 41.592          | 13.97            | -25.52      | 40.0           | 26.03       | Peak     | 346.00         | 100         | Horizontal | Pass    |
| 2   | 65.793          | 17.87            | -27.74      | 40.0           | 22.13       | Peak     | 254.00         | 100         | Horizontal | Pass    |
| 3   | 116.185         | 17.86            | -27.73      | 43.5           | 25.64       | Peak     | 273.00         | 100         | Horizontal | Pass    |
| 4   | 202.078         | 12.83            | -26.47      | 43.5           | 30.67       | Peak     | 338.00         | 100         | Horizontal | Pass    |
| 5   | 346.511         | 17.81            | -21.84      | 46.0           | 28.19       | Peak     | 0.00           | 200         | Horizontal | Pass    |
| 6   | 757.112         | 27.31            | -12.63      | 46.0           | 18.69       | Peak     | 0.00           | 200         | Horizontal | Pass    |

## 30 MHz to 1 GHz, ANT V



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna  | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|----------|---------|
| 1   | 59.343          | 23.68            | -26.03      | 40.0           | 16.32       | Peak     | 335.00         | 100         | Vertical | Pass    |
| 2   | 89.606          | 26.97            | -28.36      | 43.5           | 16.53       | Peak     | 137.00         | 200         | Vertical | Pass    |
| 3   | 201.108         | 14.06            | -26.36      | 43.5           | 29.44       | Peak     | 357.00         | 100         | Vertical | Pass    |
| 4   | 346.462         | 17.75            | -21.84      | 46.0           | 28.25       | Peak     | 235.00         | 200         | Vertical | Pass    |
| 5   | 605.937         | 24.43            | -15.55      | 46.0           | 21.57       | Peak     | 360.00         | 100         | Vertical | Pass    |
| 6   | 952.518         | 29.96            | -9.64       | 46.0           | 16.04       | Peak     | 197.00         | 100         | Vertical | Pass    |

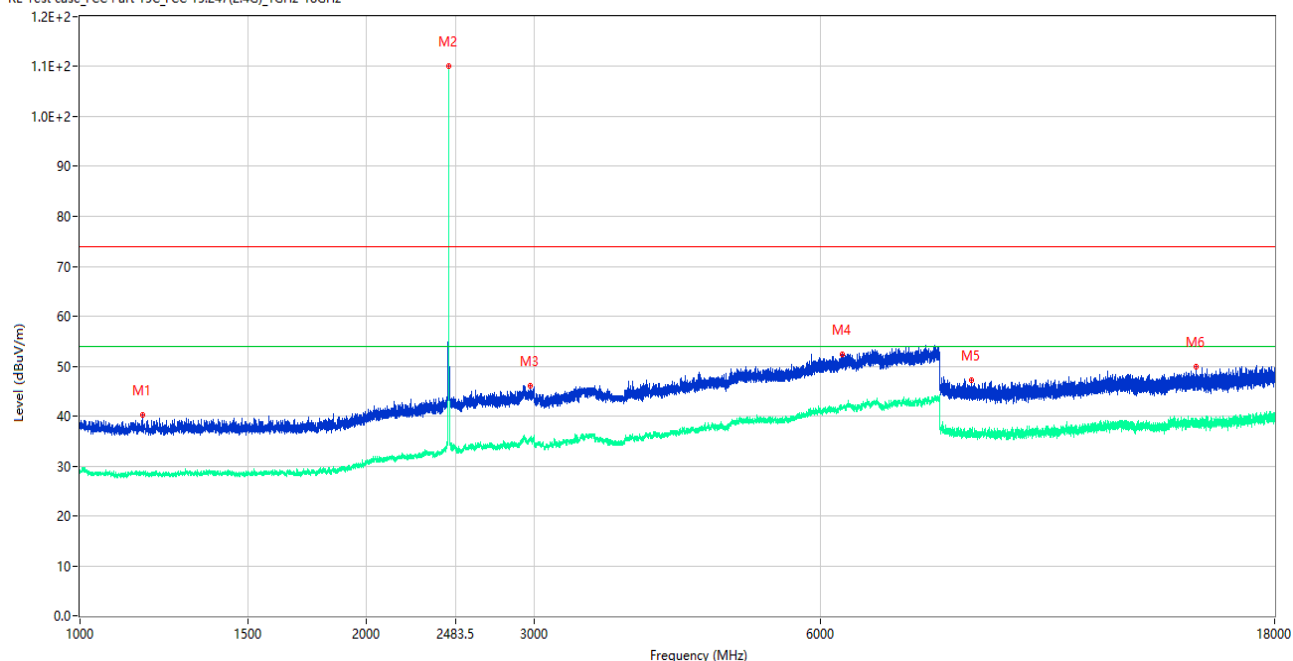
Note 1: The marked spikes near 2400 MHz with circle should be ignored because they are Fundamental signal.

Note 2: The spurious from 18GHz-25GHz is noise only, do not show on the report.

#### Main Antenna:

#### GFSK (BLE 1Mbps) MIDDLE CHANNEL 1 GHz to 18 GHz, ANT H

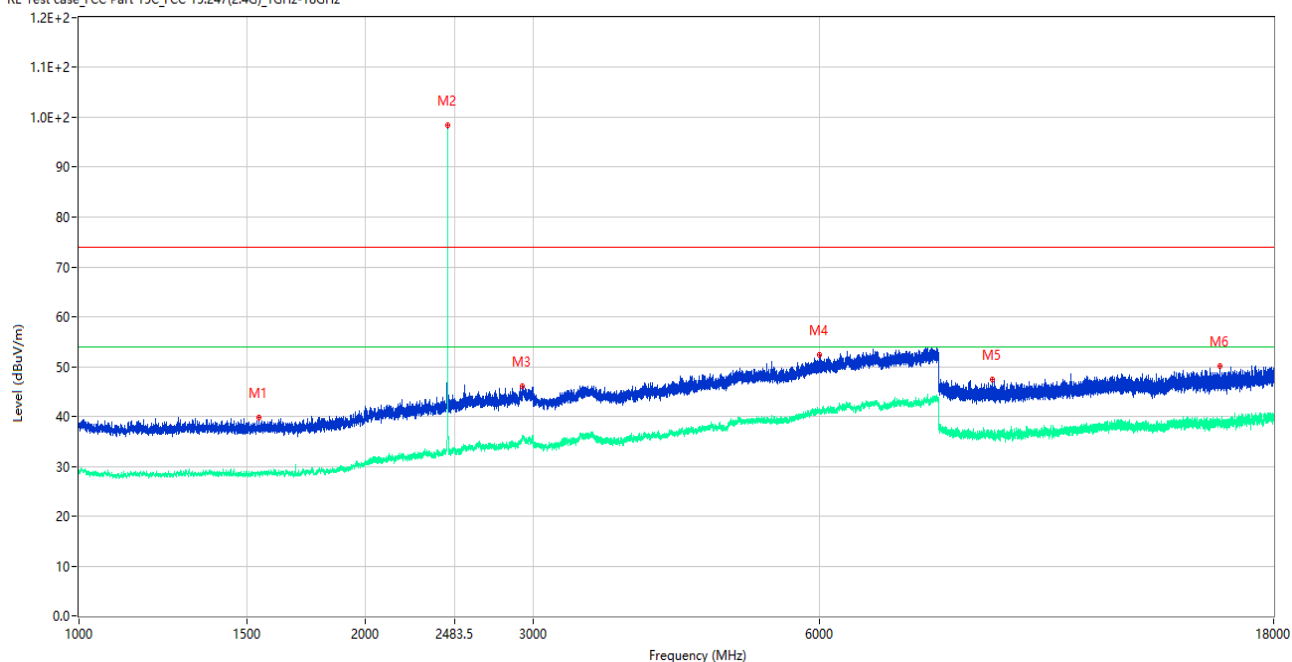
RE Test case\_FCC Part 15C\_FCC 15.247(2.4G)\_1GHz-18GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 1163.500        | 40.18            | -15.47      | 74.0           | 33.82       | Peak     | 360.00         | 150         | Horizontal | Pass    |
| 1** | 1163.500        | 28.42            | -15.47      | 54.0           | 25.58       | AV       | 360.00         | 150         | Horizontal | Pass    |
| 2   | 2439.750        | 110.13           | -12.37      | 74.0           | -36.13      | Peak     | 18.00          | 150         | Horizontal | N/A     |
| 2** | 2439.750        | 106.94           | -12.37      | 54.0           | -52.94      | AV       | 18.00          | 150         | Horizontal | N/A     |
| 3   | 2969.000        | 46.03            | -8.40       | 74.0           | 27.97       | Peak     | 27.00          | 150         | Horizontal | Pass    |
| 3** | 2969.000        | 35.10            | -8.40       | 54.0           | 18.90       | AV       | 27.00          | 150         | Horizontal | Pass    |
| 4   | 6320.500        | 52.38            | -0.44       | 74.0           | 21.62       | Peak     | 228.00         | 150         | Horizontal | Pass    |
| 4** | 6320.500        | 41.84            | -0.44       | 54.0           | 12.16       | AV       | 228.00         | 150         | Horizontal | Pass    |
| 5   | 8650.500        | 47.13            | -5.64       | 74.0           | 26.87       | Peak     | 120.00         | 150         | Horizontal | Pass    |
| 5** | 8650.500        | 36.40            | -5.64       | 54.0           | 17.60       | AV       | 120.00         | 150         | Horizontal | Pass    |
| 6   | 14869.000       | 49.89            | -1.51       | 74.0           | 24.11       | Peak     | 64.00          | 150         | Horizontal | Pass    |
| 6** | 14869.000       | 38.99            | -1.51       | 54.0           | 15.01       | AV       | 64.00          | 150         | Horizontal | Pass    |

## GFSK (BLE 1Mbps) MIDDLE CHANNEL 1 GHz to 18 GHz, ANT V

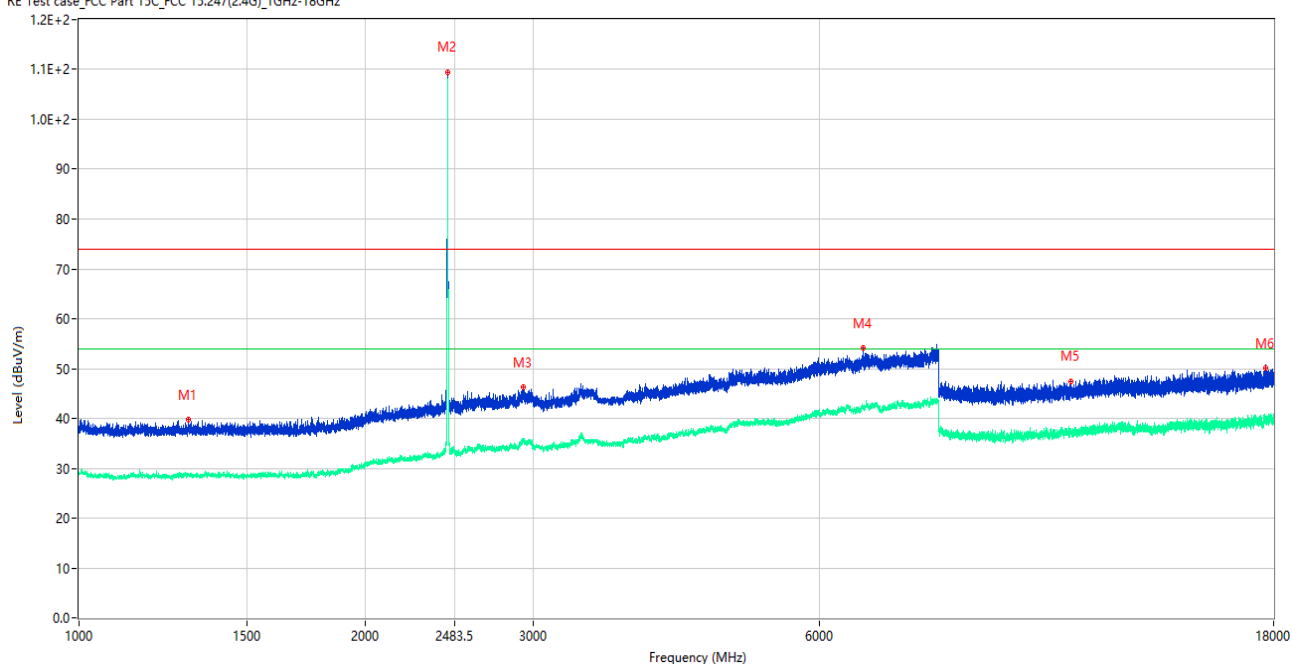
RE Test case\_FCC Part 15C\_FCC 15.247(2.4G)\_1GHz-18GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna  | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|----------|---------|
| 1   | 1546.250        | 39.74            | -16.07      | 74.0           | 34.26       | Peak     | 200.00         | 150         | Vertical | Pass    |
| 1** | 1546.250        | 28.64            | -16.07      | 54.0           | 25.36       | AV       | 200.00         | 150         | Vertical | Pass    |
| 2   | 2440.250        | 98.33            | -12.37      | 74.0           | -24.33      | Peak     | 13.00          | 150         | Vertical | N/A     |
| 2** | 2440.250        | 97.59            | -12.37      | 54.0           | -43.59      | AV       | 13.00          | 150         | Vertical | N/A     |
| 3   | 2922.750        | 46.08            | -8.37       | 74.0           | 27.92       | Peak     | 210.00         | 150         | Vertical | Pass    |
| 3** | 2922.750        | 35.34            | -8.37       | 54.0           | 18.66       | AV       | 210.00         | 150         | Vertical | Pass    |
| 4   | 5994.500        | 52.35            | -0.07       | 74.0           | 21.65       | Peak     | 76.00          | 150         | Vertical | Pass    |
| 4** | 5994.500        | 41.39            | -0.07       | 54.0           | 12.61       | AV       | 76.00          | 150         | Vertical | Pass    |
| 5   | 9105.500        | 47.47            | -4.94       | 74.0           | 26.53       | Peak     | 212.00         | 150         | Vertical | Pass    |
| 5** | 9105.500        | 36.26            | -4.94       | 54.0           | 17.74       | AV       | 212.00         | 150         | Vertical | Pass    |
| 6   | 15809.500       | 50.00            | -1.66       | 74.0           | 24.00       | Peak     | 0.00           | 150         | Vertical | Pass    |
| 6** | 15809.500       | 38.66            | -1.66       | 54.0           | 15.34       | AV       | 0.00           | 150         | Vertical | Pass    |

# GFSK (BLE 2Mbps) MIDDLE CHANNEL 1 GHz to 18 GHz, ANT H

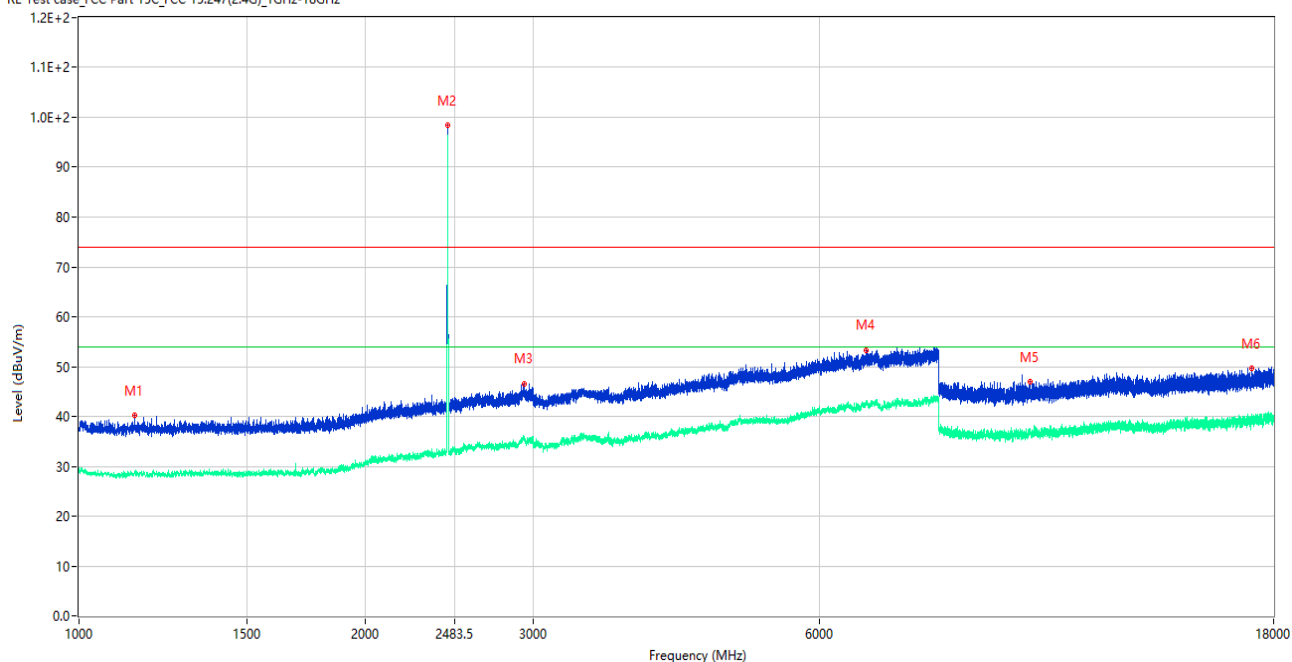
RE Test case\_FCC Part 15C\_FCC 15.247(2.4G)\_1GHz-18GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 1303.000        | 39.73            | -15.59      | 74.0           | 34.27       | Peak     | 157.00         | 150         | Horizontal | Pass    |
| 1** | 1303.000        | 28.80            | -15.59      | 54.0           | 25.20       | AV       | 157.00         | 150         | Horizontal | Pass    |
| 2   | 2439.500        | 109.53           | -12.37      | 74.0           | -35.53      | Peak     | 21.00          | 150         | Horizontal | N/A     |
| 2** | 2439.500        | 104.20           | -12.37      | 54.0           | -50.20      | AV       | 21.00          | 150         | Horizontal | N/A     |
| 3   | 2928.000        | 46.28            | -8.02       | 74.0           | 27.72       | Peak     | 203.00         | 150         | Horizontal | Pass    |
| 3** | 2928.000        | 35.48            | -8.02       | 54.0           | 18.52       | AV       | 203.00         | 150         | Horizontal | Pass    |
| 4   | 6663.000        | 54.15            | 0.02        | 74.0           | 19.85       | Peak     | 2.00           | 150         | Horizontal | Pass    |
| 4** | 6663.000        | 42.25            | 0.02        | 54.0           | 11.75       | AV       | 2.00           | 150         | Horizontal | Pass    |
| 5   | 11015.000       | 47.49            | -3.18       | 74.0           | 26.51       | Peak     | 39.00          | 150         | Horizontal | Pass    |
| 5** | 11015.000       | 37.00            | -3.18       | 54.0           | 17.00       | AV       | 39.00          | 150         | Horizontal | Pass    |
| 6   | 17653.000       | 50.10            | 0.19        | 74.0           | 23.90       | Peak     | 0.00           | 150         | Horizontal | Pass    |
| 6** | 17653.000       | 39.07            | 0.19        | 54.0           | 14.93       | AV       | 0.00           | 150         | Horizontal | Pass    |

## GFSK (BLE 2Mbps) MIDDLE CHANNEL 1 GHz to 18 GHz, ANT V

RE Test case\_FCC Part 15C\_FCC 15.247(2.4G)\_1GHz-18GHz

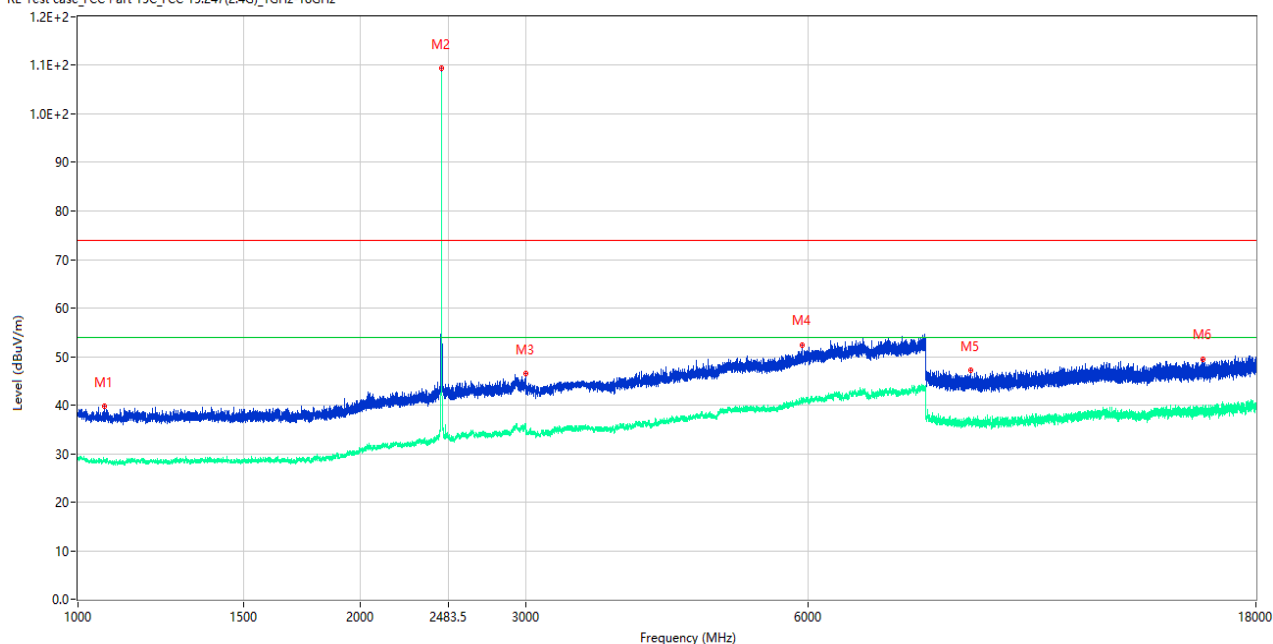


| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna  | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|----------|---------|
| 1   | 1143.750        | 40.21            | -15.61      | 74.0           | 33.79       | Peak     | 60.00          | 150         | Vertical | Pass    |
| 1** | 1143.750        | 28.58            | -15.61      | 54.0           | 25.42       | AV       | 60.00          | 150         | Vertical | Pass    |
| 2   | 2440.500        | 98.45            | -12.38      | 74.0           | -24.45      | Peak     | 8.00           | 150         | Vertical | N/A     |
| 2** | 2440.500        | 96.17            | -12.38      | 54.0           | -42.17      | AV       | 8.00           | 150         | Vertical | N/A     |
| 3   | 2939.000        | 46.61            | -8.41       | 74.0           | 27.39       | Peak     | 41.00          | 150         | Vertical | Pass    |
| 3** | 2939.000        | 35.62            | -8.41       | 54.0           | 18.38       | AV       | 41.00          | 150         | Vertical | Pass    |
| 4   | 6716.000        | 53.32            | 0.41        | 74.0           | 20.68       | Peak     | 127.00         | 150         | Vertical | Pass    |
| 4** | 6716.000        | 43.00            | 0.41        | 54.0           | 11.00       | AV       | 127.00         | 150         | Vertical | Pass    |
| 5   | 9994.500        | 46.94            | -3.85       | 74.0           | 27.06       | Peak     | 236.00         | 150         | Vertical | Pass    |
| 5** | 9994.500        | 36.89            | -3.85       | 54.0           | 17.11       | AV       | 236.00         | 150         | Vertical | Pass    |
| 6   | 17074.000       | 49.69            | -0.72       | 74.0           | 24.31       | Peak     | 360.00         | 150         | Vertical | Pass    |
| 6** | 17074.000       | 40.38            | -0.72       | 54.0           | 13.62       | AV       | 360.00         | 150         | Vertical | Pass    |

## Aux. Antenna:

## GFSK (BLE 1Mbps) MIDDLE CHANNEL 1 GHz to 18 GHz, ANT H

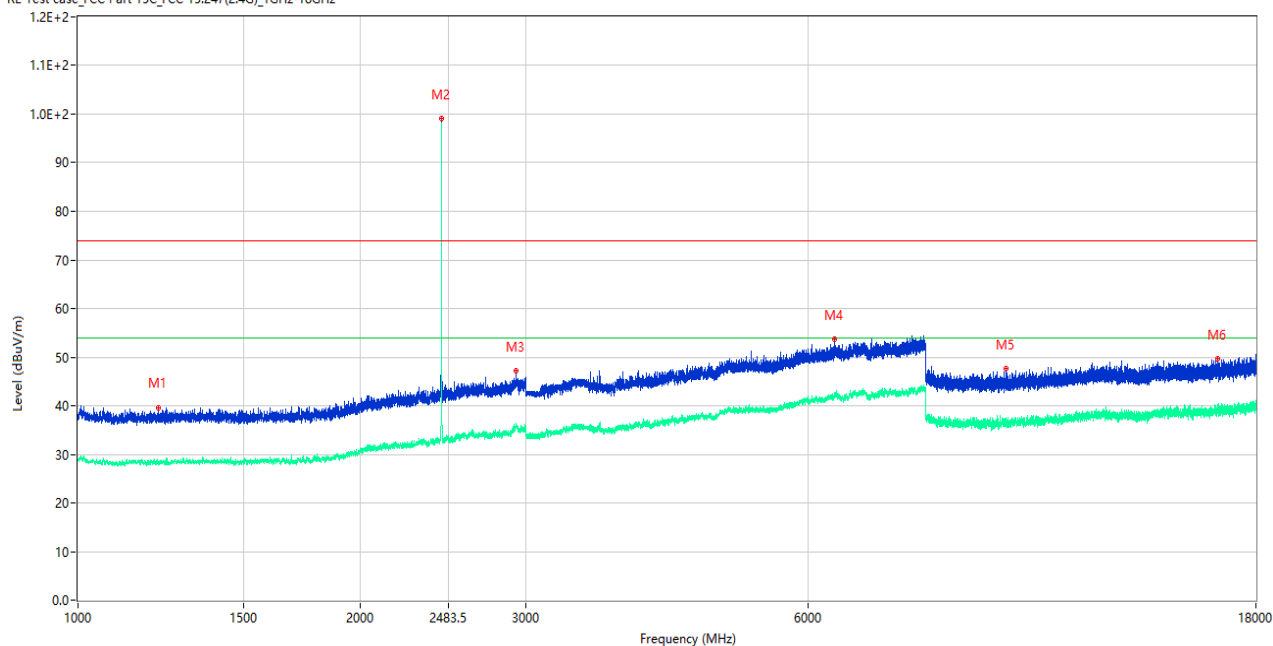
RE Test case\_FCC Part 15C\_FCC 15.247(2.4G)\_1GHz-18GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 1066.000        | 39.68            | -15.14      | 74.0           | 34.32       | Peak     | 146.00         | 150         | Horizontal | Pass    |
| 1** | 1066.000        | 28.53            | -15.14      | 54.0           | 25.47       | AV       | 146.00         | 150         | Horizontal | Pass    |
| 2   | 2440.000        | 109.34           | -12.37      | 74.0           | -35.34      | Peak     | 20.00          | 150         | Horizontal | N/A     |
| 2** | 2440.000        | 108.06           | -12.37      | 54.0           | -54.06      | AV       | 20.00          | 150         | Horizontal | N/A     |
| 3   | 2997.500        | 46.50            | -8.80       | 74.0           | 27.50       | Peak     | 54.00          | 150         | Horizontal | Pass    |
| 3** | 2997.500        | 35.58            | -8.80       | 54.0           | 18.42       | AV       | 54.00          | 150         | Horizontal | Pass    |
| 4   | 5917.500        | 52.45            | -0.42       | 74.0           | 21.55       | Peak     | 173.00         | 150         | Horizontal | Pass    |
| 4** | 5917.500        | 40.56            | -0.42       | 54.0           | 13.44       | AV       | 173.00         | 150         | Horizontal | Pass    |
| 5   | 8933.000        | 47.20            | -4.23       | 74.0           | 26.80       | Peak     | 241.00         | 150         | Horizontal | Pass    |
| 5** | 8933.000        | 37.06            | -4.23       | 54.0           | 16.94       | AV       | 241.00         | 150         | Horizontal | Pass    |
| 6   | 15819.500       | 49.50            | -1.72       | 74.0           | 24.50       | Peak     | 39.00          | 150         | Horizontal | Pass    |
| 6** | 15819.500       | 38.33            | -1.72       | 54.0           | 15.67       | AV       | 39.00          | 150         | Horizontal | Pass    |

## GFSK (BLE 1Mbps) MIDDLE CHANNEL 1 GHz to 18 GHz, ANT V

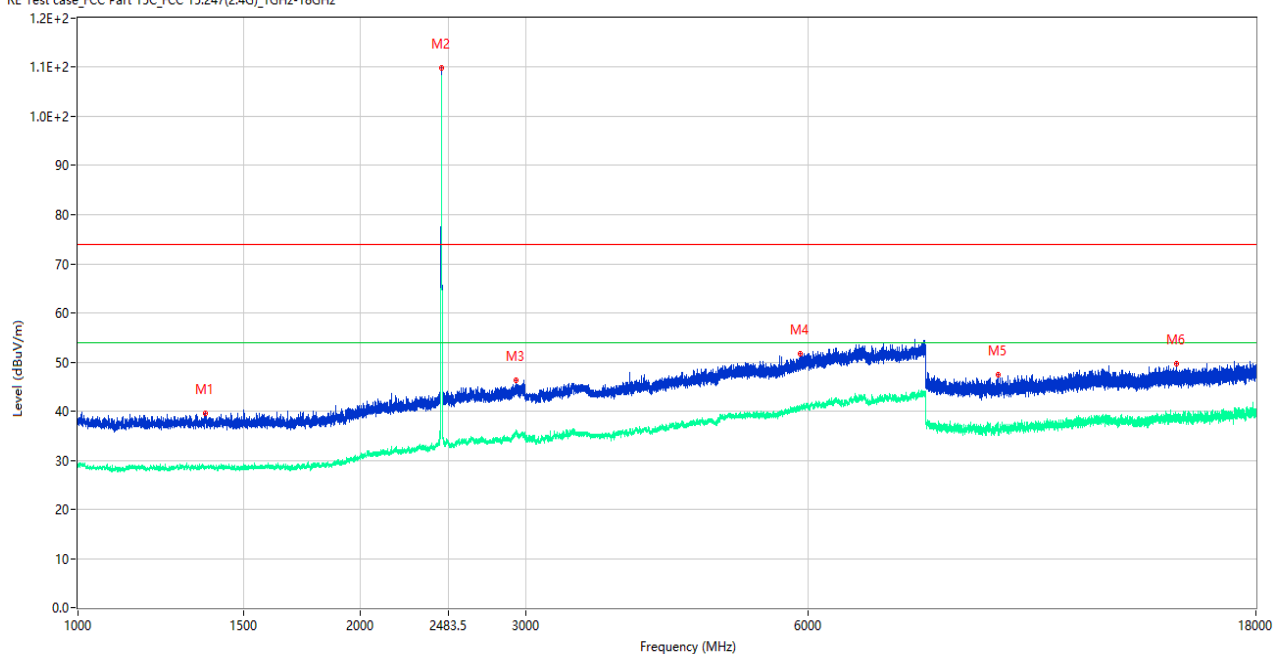
RE Test case\_FCC Part 15C\_FCC 15.247(2.4G)\_1GHz-18GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna  | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|----------|---------|
| 1   | 1219.250        | 39.63            | -15.96      | 74.0           | 34.37       | Peak     | 225.00         | 150         | Vertical | Pass    |
| 1** | 1219.250        | 28.21            | -15.96      | 54.0           | 25.79       | AV       | 225.00         | 150         | Vertical | Pass    |
| 2   | 2440.250        | 98.99            | -12.37      | 74.0           | -24.99      | Peak     | 8.00           | 150         | Vertical | N/A     |
| 2** | 2440.250        | 98.22            | -12.37      | 54.0           | -44.22      | AV       | 8.00           | 150         | Vertical | N/A     |
| 3   | 2930.250        | 47.12            | -7.95       | 74.0           | 26.88       | Peak     | 1.00           | 150         | Vertical | Pass    |
| 3** | 2930.250        | 35.86            | -7.95       | 54.0           | 18.14       | AV       | 1.00           | 150         | Vertical | Pass    |
| 4   | 6403.000        | 53.63            | 0.41        | 74.0           | 20.37       | Peak     | 284.00         | 150         | Vertical | Pass    |
| 4** | 6403.000        | 42.12            | 0.41        | 54.0           | 11.88       | AV       | 284.00         | 150         | Vertical | Pass    |
| 5   | 9747.500        | 47.60            | -3.81       | 74.0           | 26.40       | Peak     | 0.00           | 150         | Vertical | Pass    |
| 5** | 9747.500        | 37.06            | -3.81       | 54.0           | 16.94       | AV       | 0.00           | 150         | Vertical | Pass    |
| 6   | 16393.500       | 49.68            | -1.12       | 74.0           | 24.32       | Peak     | 150.00         | 150         | Vertical | Pass    |
| 6** | 16393.500       | 39.93            | -1.12       | 54.0           | 14.07       | AV       | 150.00         | 150         | Vertical | Pass    |

**GFSK (BLE 2Mbps) MIDDLE CHANNEL 1 GHz to 18 GHz, ANT H**

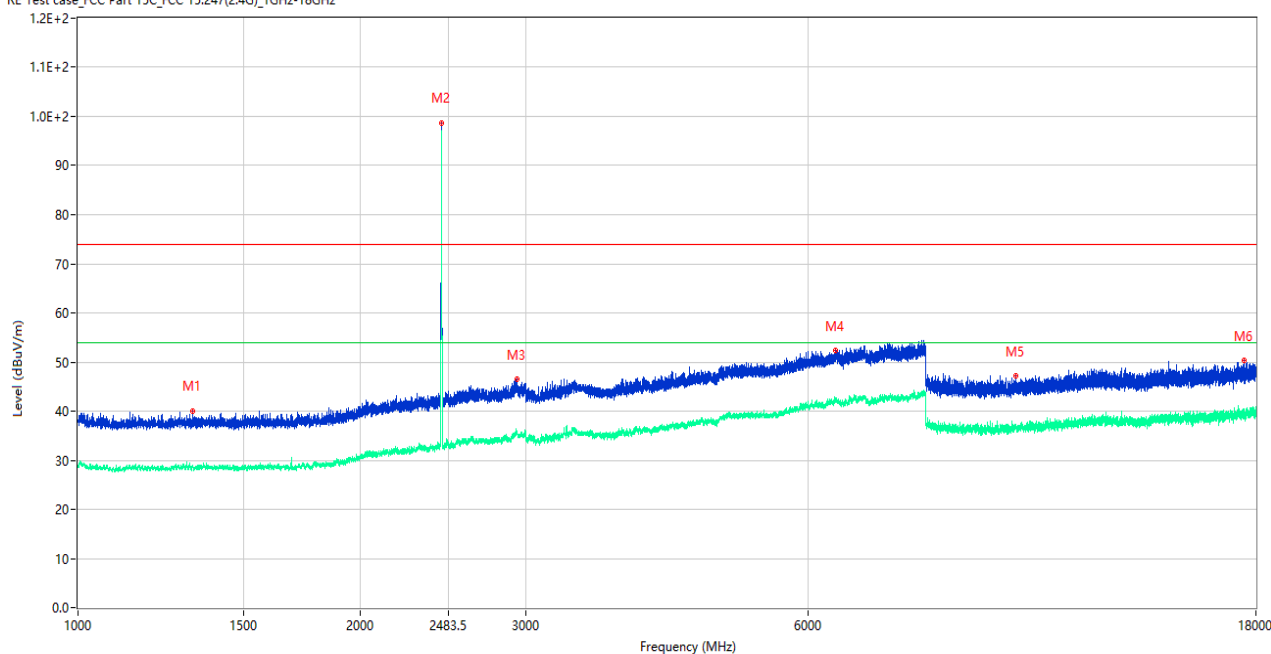
RE Test case\_FCC Part 15C\_FCC 15.247(2.4G)\_1GHz-18GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 1367.750        | 39.50            | -15.88      | 74.0           | 34.50       | Peak     | 21.00          | 150         | Horizontal | Pass    |
| 1** | 1367.750        | 28.67            | -15.88      | 54.0           | 25.33       | AV       | 21.00          | 150         | Horizontal | Pass    |
| 2   | 2439.500        | 109.83           | -12.37      | 74.0           | -35.83      | Peak     | 21.00          | 150         | Horizontal | N/A     |
| 2** | 2439.500        | 104.47           | -12.37      | 54.0           | -50.47      | AV       | 21.00          | 150         | Horizontal | N/A     |
| 3   | 2929.000        | 46.25            | -7.96       | 74.0           | 27.75       | Peak     | 84.00          | 150         | Horizontal | Pass    |
| 3** | 2929.000        | 35.43            | -7.96       | 54.0           | 18.57       | AV       | 84.00          | 150         | Horizontal | Pass    |
| 4   | 5880.500        | 51.71            | -1.00       | 74.0           | 22.29       | Peak     | 207.00         | 150         | Horizontal | Pass    |
| 4** | 5880.500        | 40.61            | -1.00       | 54.0           | 13.39       | AV       | 207.00         | 150         | Horizontal | Pass    |
| 5   | 9553.000        | 47.34            | -2.56       | 74.0           | 26.66       | Peak     | 321.00         | 150         | Horizontal | Pass    |
| 5** | 9553.000        | 37.04            | -2.56       | 54.0           | 16.96       | AV       | 321.00         | 150         | Horizontal | Pass    |
| 6   | 14807.500       | 49.62            | -0.04       | 74.0           | 24.38       | Peak     | 0.00           | 150         | Horizontal | Pass    |
| 6** | 14807.500       | 38.40            | -0.04       | 54.0           | 15.60       | AV       | 0.00           | 150         | Horizontal | Pass    |

# GFSK (BLE 2Mbps) MIDDLE CHANNEL 1 GHz to 18 GHz, ANT V

RE Test case\_FCC Part 15C\_FCC 15.247(2.4G)\_1GHz-18GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna  | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|----------|---------|
| 1   | 1326.250        | 40.07            | -15.89      | 74.0           | 33.93       | Peak     | 233.00         | 150         | Vertical | Pass    |
| 1** | 1326.250        | 28.69            | -15.89      | 54.0           | 25.31       | AV       | 233.00         | 150         | Vertical | Pass    |
| 2   | 2440.500        | 98.75            | -12.38      | 74.0           | -24.75      | Peak     | 13.00          | 150         | Vertical | N/A     |
| 2** | 2440.500        | 96.84            | -12.38      | 54.0           | -42.84      | AV       | 13.00          | 150         | Vertical | N/A     |
| 3   | 2935.750        | 46.56            | -8.14       | 74.0           | 27.44       | Peak     | 95.00          | 150         | Vertical | Pass    |
| 3** | 2935.750        | 36.01            | -8.14       | 54.0           | 17.99       | AV       | 95.00          | 150         | Vertical | Pass    |
| 4   | 6417.000        | 52.40            | 0.17        | 74.0           | 21.60       | Peak     | 95.00          | 150         | Vertical | Pass    |
| 4** | 6417.000        | 42.54            | 0.17        | 54.0           | 11.46       | AV       | 95.00          | 150         | Vertical | Pass    |
| 5   | 9986.000        | 47.23            | -3.72       | 74.0           | 26.77       | Peak     | 0.00           | 150         | Vertical | Pass    |
| 5** | 9986.000        | 36.98            | -3.72       | 54.0           | 17.02       | AV       | 0.00           | 150         | Vertical | Pass    |
| 6   | 17475.000       | 50.28            | 0.25        | 74.0           | 23.72       | Peak     | 270.00         | 150         | Vertical | Pass    |
| 6** | 17475.000       | 40.52            | 0.25        | 54.0           | 13.48       | AV       | 270.00         | 150         | Vertical | Pass    |

## A.7 Band Edge (Restricted-band band-edge)

Note 1: The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

Note 2: The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.

Note 3: According the ANSI C63.10, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 4: The Level (dBuV/m) has been corrected by factor.

### Test Data and Plots

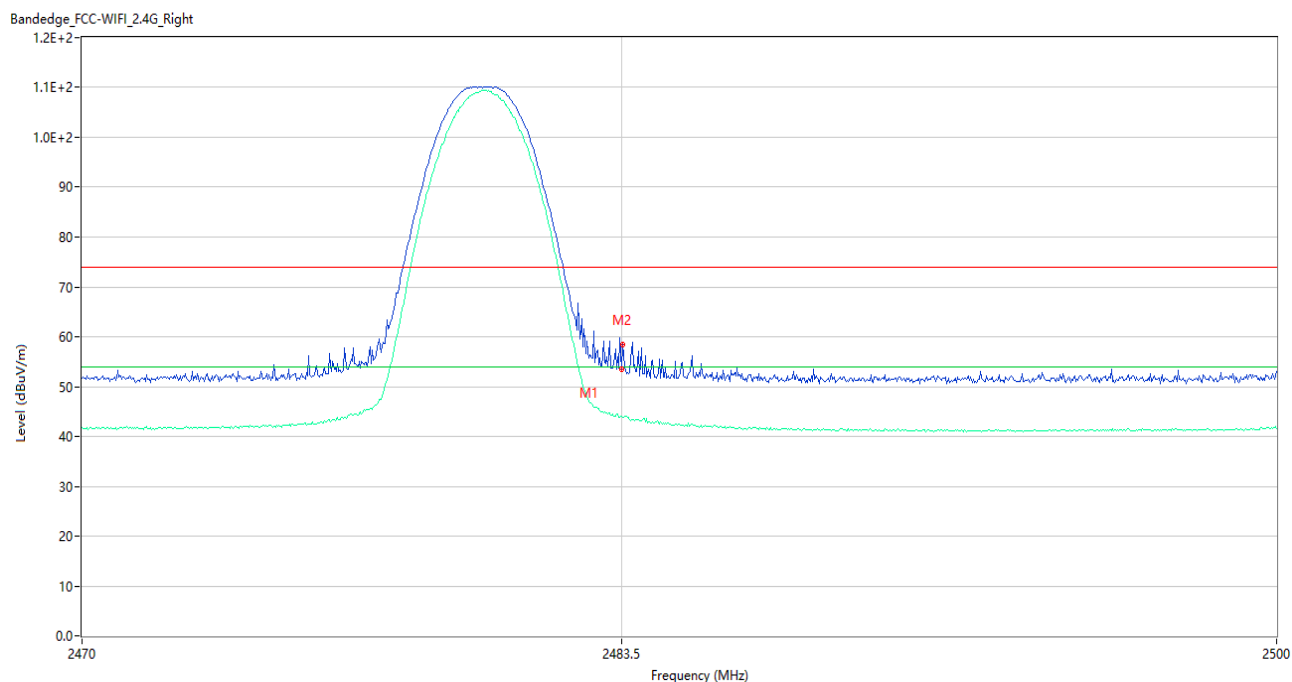
#### Main Antenna:

#### GFSK (BLE 1Mbps) LOW CHANNEL



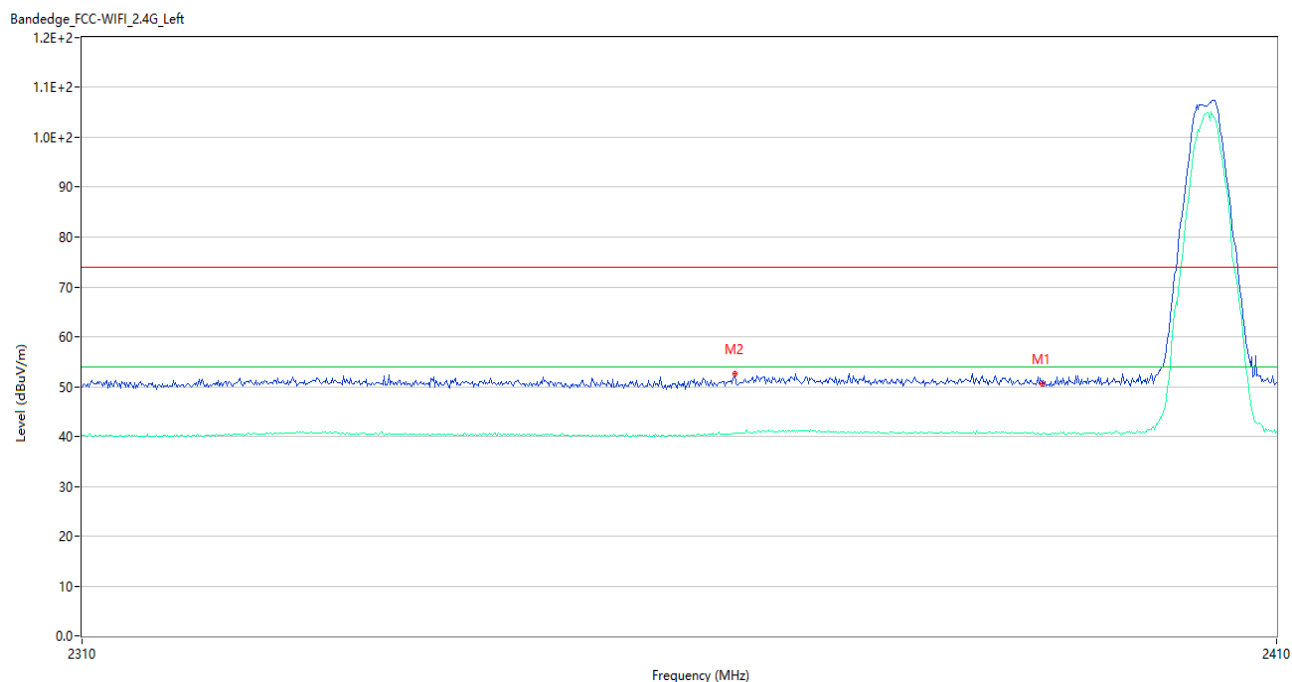
| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 2390.000        | 50.36            | -4.87       | 74.0           | 23.64       | Peak     | 295.87         | 150         | Horizontal | Pass    |
| 1** | 2390.000        | 40.81            | -4.87       | 54.0           | 13.19       | AV       | 295.87         | 150         | Horizontal | Pass    |
| 2   | 2350.600        | 51.93            | -5.04       | 74.0           | 22.07       | Peak     | 327.00         | 150         | Horizontal | Pass    |
| 2** | 2350.600        | 40.16            | -5.04       | 54.0           | 13.84       | AV       | 327.00         | 150         | Horizontal | Pass    |

## GFSK (BLE 1Mbps) HIGH CHANNEL



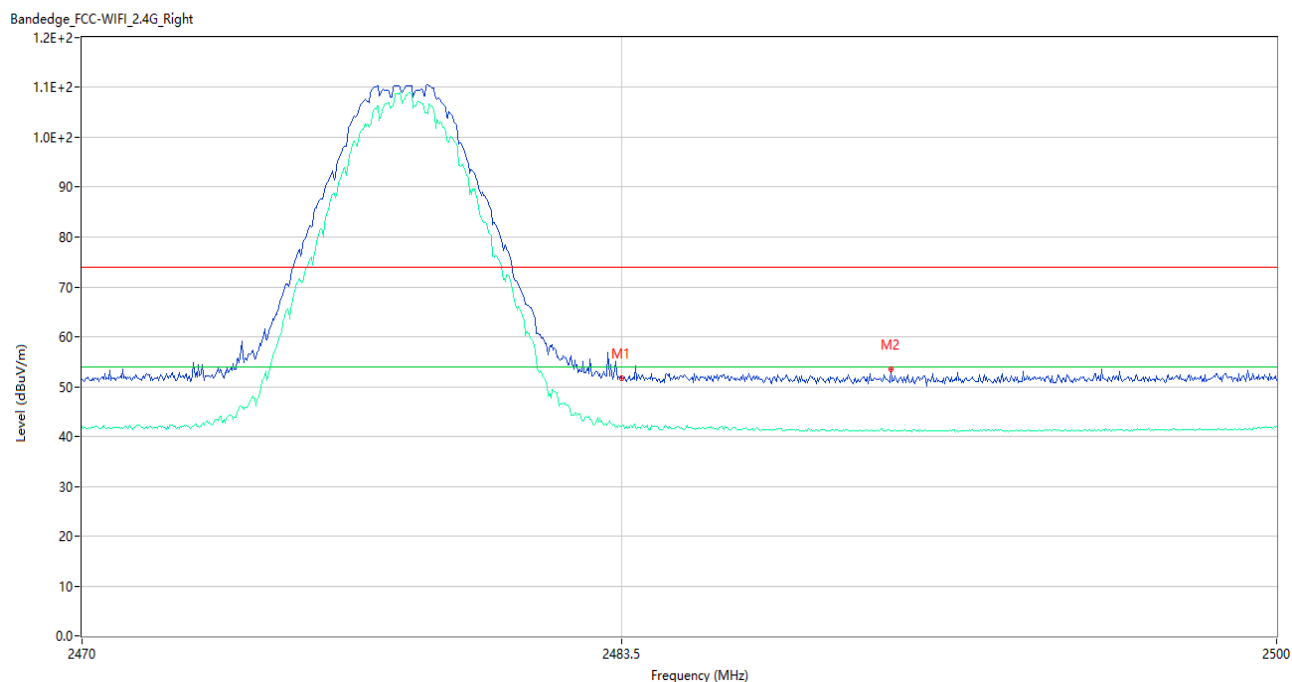
| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 2483.500        | 53.57            | -3.78       | 74.0           | 20.43       | Peak     | 17.00          | 150         | Horizontal | Pass    |
| 1** | 2483.500        | 43.94            | -3.78       | 54.0           | 10.06       | AV       | 17.00          | 150         | Horizontal | Pass    |
| 2   | 2483.530        | 58.32            | -3.78       | 74.0           | 15.68       | Peak     | 352.00         | 150         | Horizontal | Pass    |
| 2** | 2483.530        | 43.78            | -3.78       | 54.0           | 10.22       | AV       | 352.00         | 150         | Horizontal | Pass    |

## GFSK (BLE 2Mbps) LOW CHANNEL



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 2390.000        | 50.46            | -4.87       | 74.0           | 23.54       | Peak     | 110.14         | 150         | Horizontal | Pass    |
| 1** | 2390.000        | 40.53            | -4.87       | 54.0           | 13.47       | AV       | 110.14         | 150         | Horizontal | Pass    |
| 2   | 2364.100        | 52.66            | -4.66       | 74.0           | 21.34       | Peak     | 3.00           | 150         | Horizontal | Pass    |
| 2** | 2364.100        | 40.67            | -4.66       | 54.0           | 13.33       | AV       | 3.00           | 150         | Horizontal | Pass    |

## GFSK (BLE 2Mbps) HIGH CHANNEL

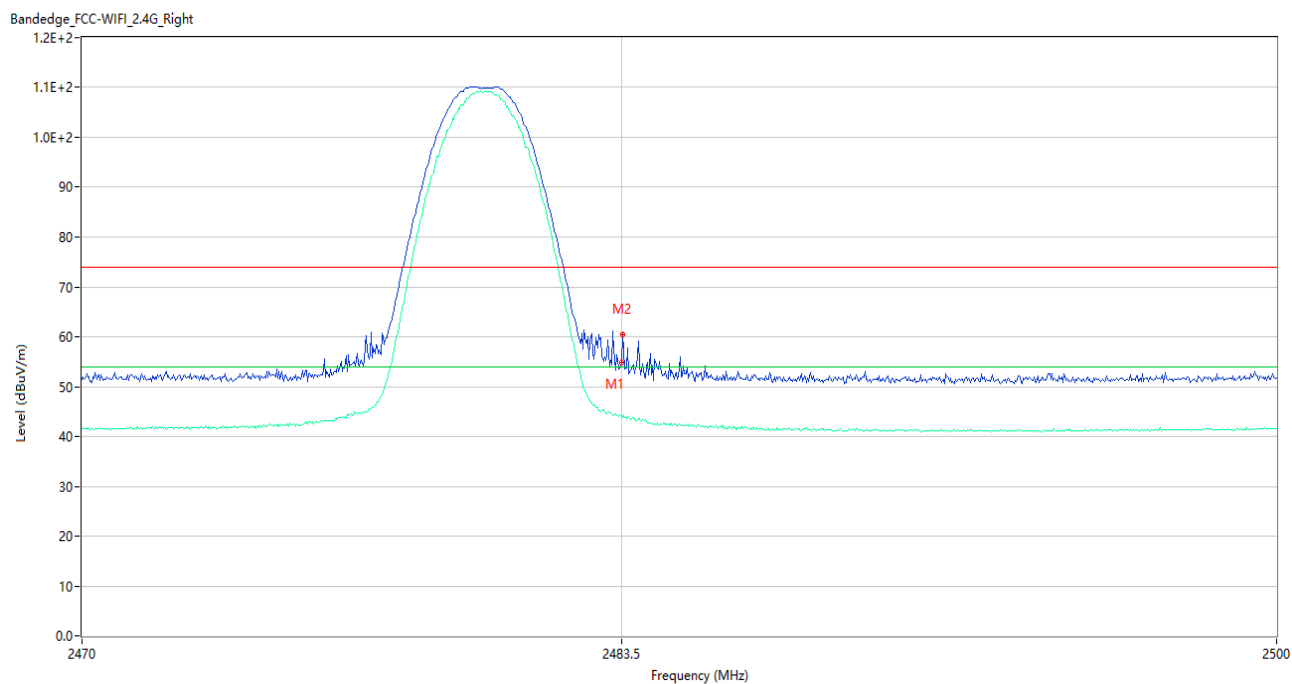


| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 2483.500        | 51.63            | -3.78       | 74.0           | 22.37       | Peak     | 0.00           | 150         | Horizontal | Pass    |
| 1** | 2483.500        | 42.07            | -3.78       | 54.0           | 11.93       | AV       | 0.00           | 150         | Horizontal | Pass    |
| 2   | 2490.280        | 53.58            | -3.83       | 74.0           | 20.42       | Peak     | 313.00         | 150         | Horizontal | Pass    |
| 2** | 2490.280        | 41.18            | -3.83       | 54.0           | 12.82       | AV       | 313.00         | 150         | Horizontal | Pass    |

**Aux. Antenna:****GFSK (BLE 1Mbps) LOW CHANNEL**

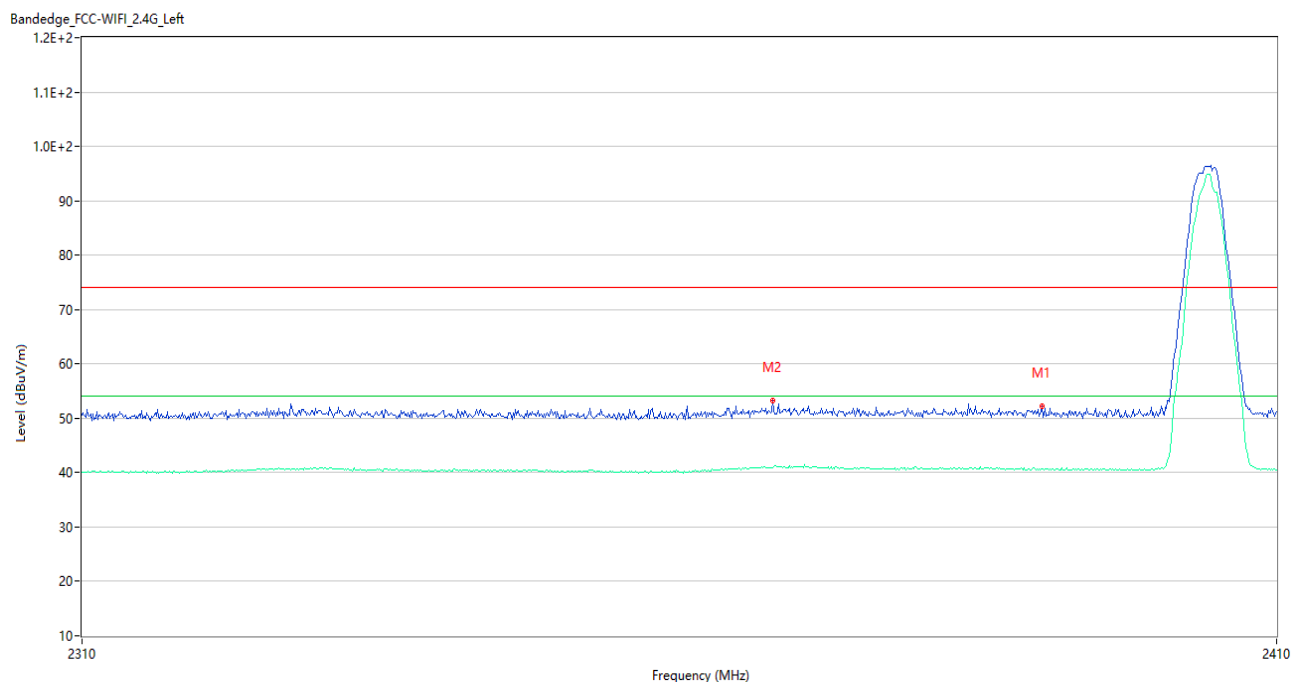
| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna  | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|----------|---------|
| 1   | 2390.000        | 50.47            | -4.87       | 74.0           | 23.53       | Peak     | 313.61         | 150         | Vertical | Pass    |
| 1** | 2390.000        | 40.66            | -4.87       | 54.0           | 13.34       | AV       | 313.61         | 150         | Vertical | Pass    |
| 2   | 2321.600        | 52.50            | -4.94       | 74.0           | 21.50       | Peak     | 265.00         | 150         | Vertical | Pass    |
| 2** | 2321.600        | 40.17            | -4.94       | 54.0           | 13.83       | AV       | 265.00         | 150         | Vertical | Pass    |

## GFSK (BLE 1Mbps) HIGH CHANNEL



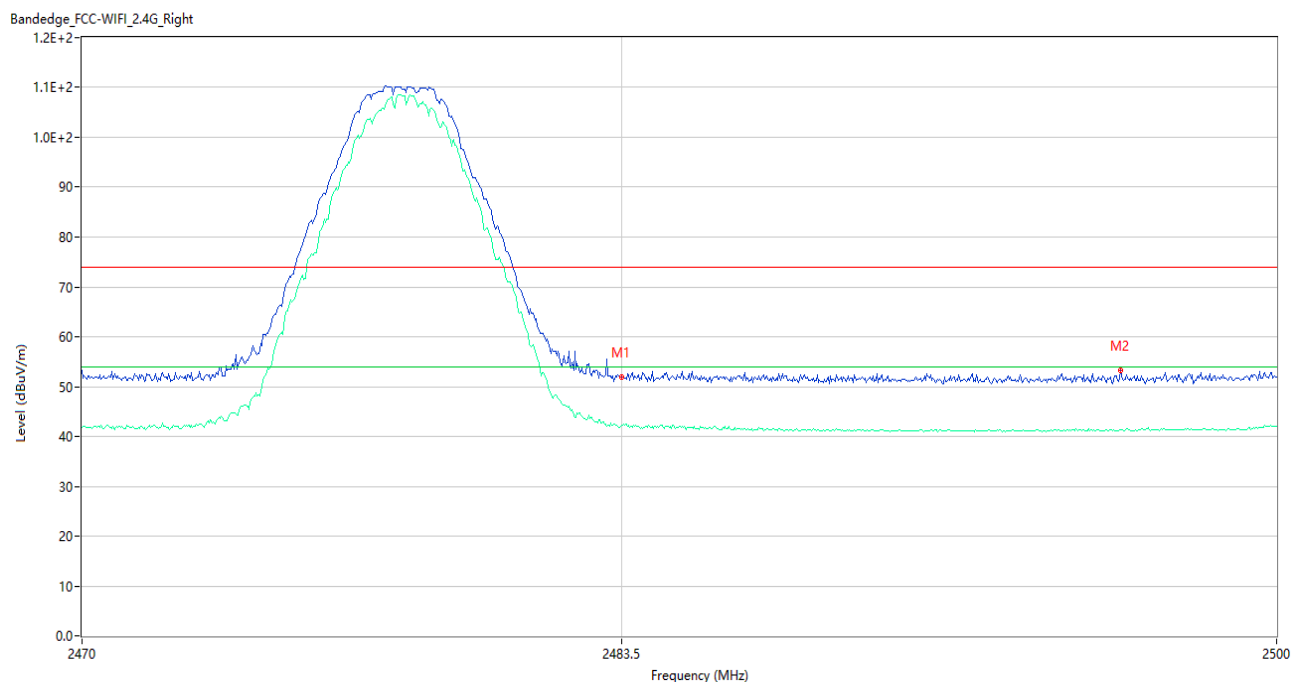
| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 2483.500        | 54.89            | -3.78       | 74.0           | 19.11       | Peak     | 21.00          | 150         | Horizontal | Pass    |
| 1** | 2483.500        | 43.99            | -3.78       | 54.0           | 10.01       | AV       | 21.00          | 150         | Horizontal | Pass    |
| 2   | 2483.530        | 60.56            | -3.78       | 74.0           | 13.44       | Peak     | 0.00           | 150         | Horizontal | Pass    |
| 2** | 2483.530        | 43.92            | -3.78       | 54.0           | 10.08       | AV       | 0.00           | 150         | Horizontal | Pass    |

## GFSK (BLE 2Mbps) LOW CHANNEL



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna  | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|----------|---------|
| 1   | 2390.000        | 52.18            | -4.87       | 74.0           | 21.82       | Peak     | 0.01           | 150         | Vertical | Pass    |
| 1** | 2390.000        | 40.70            | -4.87       | 54.0           | 13.30       | AV       | 0.01           | 150         | Vertical | Pass    |
| 2   | 2367.300        | 53.18            | -4.30       | 74.0           | 20.82       | Peak     | 356.00         | 150         | Vertical | Pass    |
| 2** | 2367.300        | 40.98            | -4.30       | 54.0           | 13.02       | AV       | 356.00         | 150         | Vertical | Pass    |

## GFSK (BLE 2Mbps) HIGH CHANNEL



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Margin (dB) | Detector | Table (Degree) | Height (cm) | Antenna    | Verdict |
|-----|-----------------|------------------|-------------|----------------|-------------|----------|----------------|-------------|------------|---------|
| 1   | 2483.500        | 51.89            | -3.78       | 74.0           | 22.11       | Peak     | 303.00         | 150         | Horizontal | Pass    |
| 1** | 2483.500        | 42.16            | -3.78       | 54.0           | 11.84       | AV       | 303.00         | 150         | Horizontal | Pass    |
| 2   | 2496.070        | 53.30            | -3.94       | 74.0           | 20.70       | Peak     | 224.00         | 150         | Horizontal | Pass    |
| 2** | 2496.070        | 41.28            | -3.94       | 54.0           | 12.72       | AV       | 224.00         | 150         | Horizontal | Pass    |

## A.8 Power Spectral Density (PSD)

### Test Data

#### Main Antenna:

| GFSK (BLE 1Mbps) |                                      |                     |         |
|------------------|--------------------------------------|---------------------|---------|
| Channel          | Spectral power density<br>(dBm/3kHz) | Limit<br>(dBm/3kHz) | Verdict |
| Low              | -13.68                               | 8                   | Pass    |
| Middle           | -13.83                               | 8                   | Pass    |
| High             | -14.05                               | 8                   | Pass    |

| GFSK (BLE 2Mbps) |                                      |                     |         |
|------------------|--------------------------------------|---------------------|---------|
| Channel          | Spectral power density<br>(dBm/3kHz) | Limit<br>(dBm/3kHz) | Verdict |
| Low              | -16.56                               | 8                   | Pass    |
| Middle           | -16.74                               | 8                   | Pass    |
| High             | -16.92                               | 8                   | Pass    |

#### Aux. Antenna:

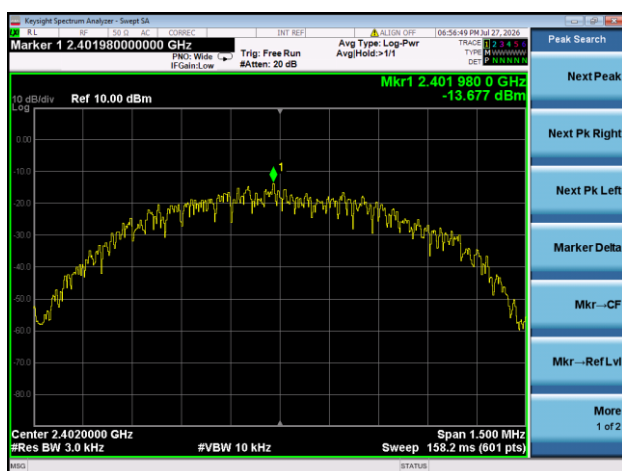
| GFSK (BLE 1Mbps) |                                      |                     |         |
|------------------|--------------------------------------|---------------------|---------|
| Channel          | Spectral power density<br>(dBm/3kHz) | Limit<br>(dBm/3kHz) | Verdict |
| Low              | -14.04                               | 8                   | Pass    |
| Middle           | -14.14                               | 8                   | Pass    |
| High             | -13.95                               | 8                   | Pass    |

| GFSK (BLE 2Mbps) |                                      |                     |         |
|------------------|--------------------------------------|---------------------|---------|
| Channel          | Spectral power density<br>(dBm/3kHz) | Limit<br>(dBm/3kHz) | Verdict |
| Low              | -17.47                               | 8                   | Pass    |
| Middle           | -17.18                               | 8                   | Pass    |
| High             | -16.79                               | 8                   | Pass    |

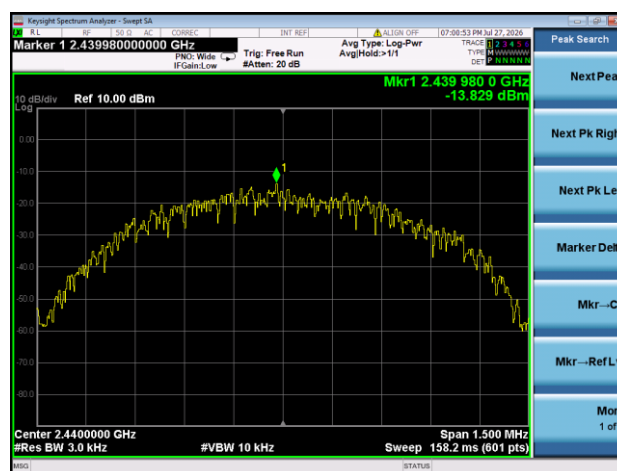
## Test Plots

### Main Antenna:

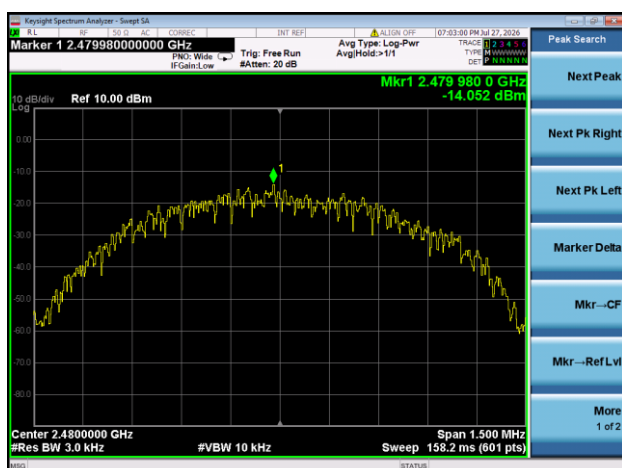
#### GFSK (BLE 1Mbps) LOW CHANNEL



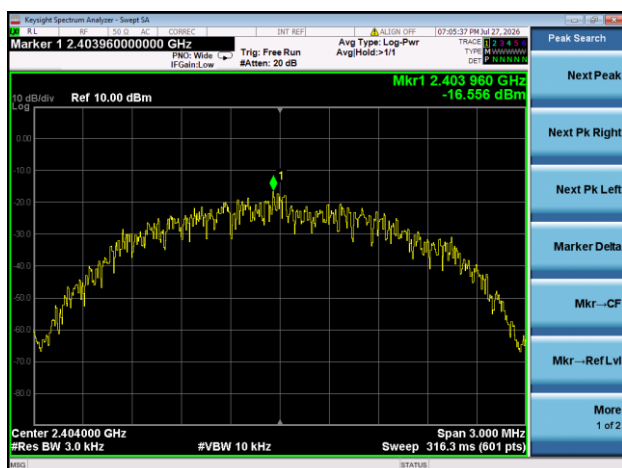
#### GFSK (BLE 1Mbps) MIDDLE CHANNEL



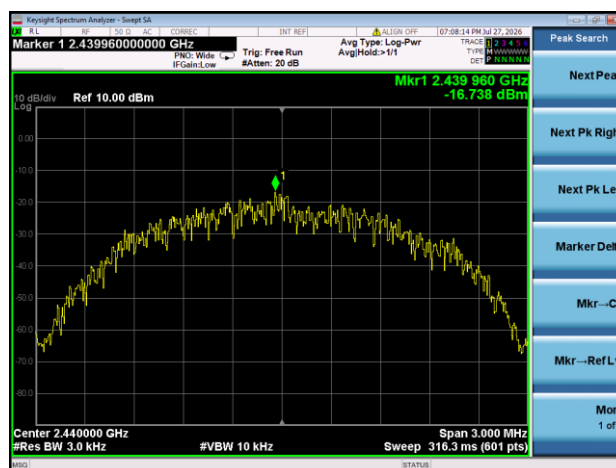
#### GFSK (BLE 1Mbps) HIGH CHANNEL



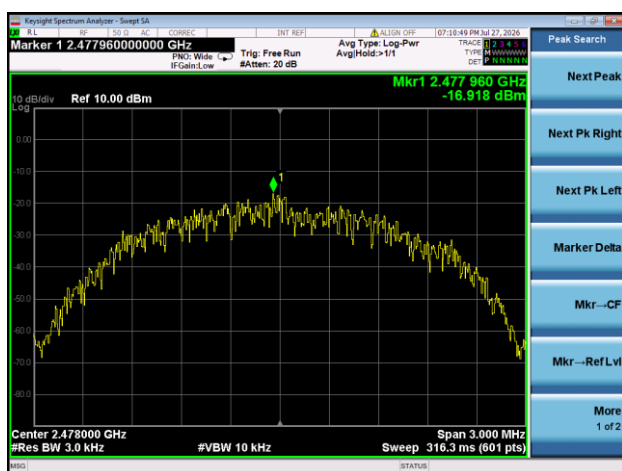
## GFSK (BLE 2Mbps) LOW CHANNEL



## GFSK (BLE 2Mbps) MIDDLE CHANNEL

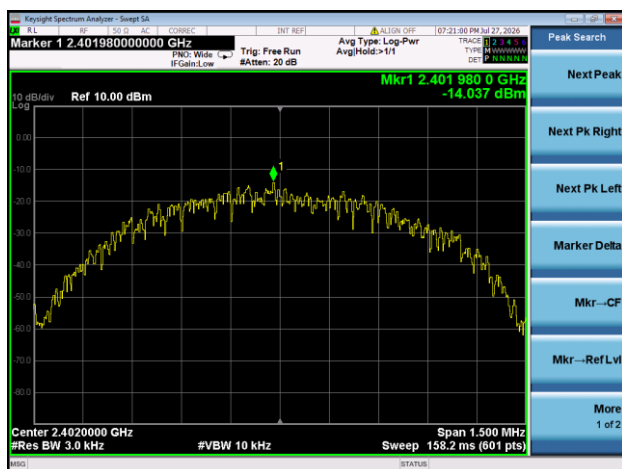


## GFSK (BLE 2Mbps) HIGH CHANNEL

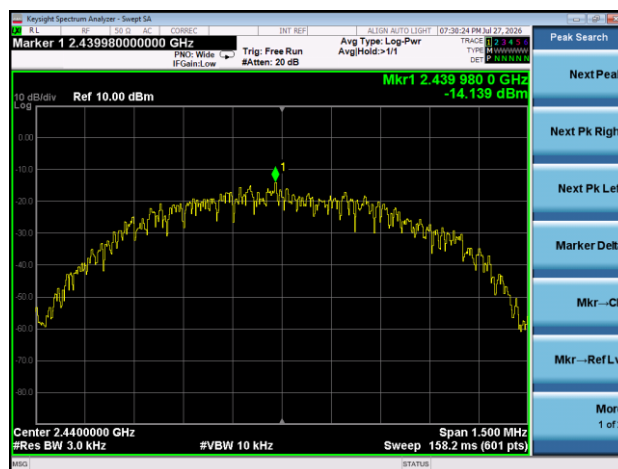


Aux. Antenna:

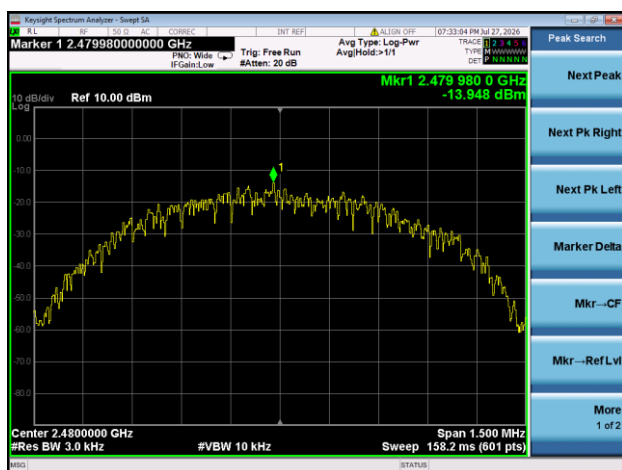
## GFSK (BLE 1Mbps) LOW CHANNEL



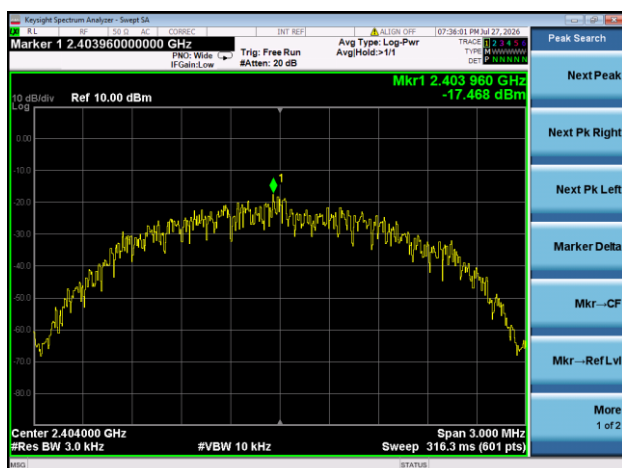
## GFSK (BLE 1Mbps) MIDDLE CHANNEL



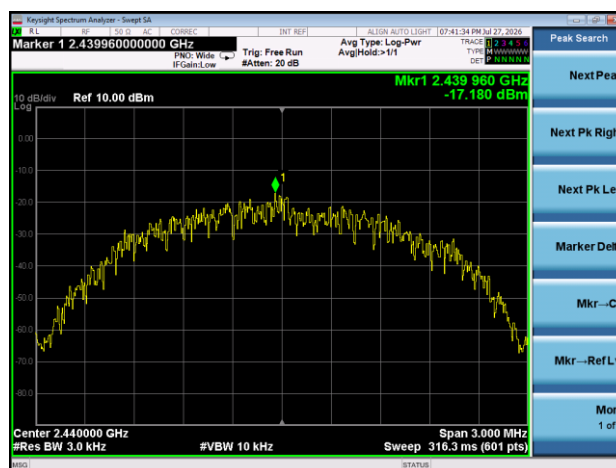
## GFSK (BLE 1Mbps) HIGH CHANNEL



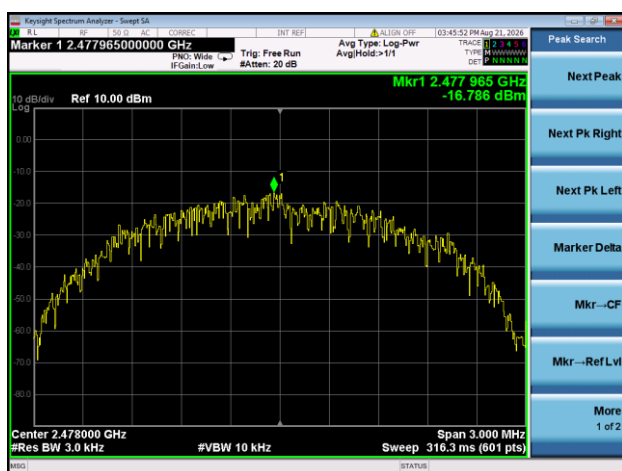
## GFSK (BLE 2Mbps) LOW CHANNEL



## GFSK (BLE 2Mbps) MIDDLE CHANNEL



## GFSK (BLE 2Mbps) HIGH CHANNEL



## **ANNEX B TEST SETUP PHOTOS**

Please refer the document “Ti-EE26060694-AR-1.PDF”.

## **ANNEX C EUT EXTERNAL PHOTOS**

Please refer the document “Ti-EE26060694-AW.PDF”.

## **ANNEX D EUT INTERNAL PHOTOS**

Please refer the document “Ti-EE26060694-AI.PDF”.

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