

## Appendix A for test data:

### 1. Conducted Peak Output Power

Test Result

| Mode   | Channel | Peak Output Power (dBm) | Limit (dBm) | Result |
|--------|---------|-------------------------|-------------|--------|
| BLE 1M | 0       | <b>-0.91</b>            | ≤30         | PASS   |
|        | 19      | -1.93                   | ≤30         | PASS   |
|        | 39      | -1.49                   | ≤30         | PASS   |

## 2.Duty Cycle

### Test Result

| Mode   | Channel | On Time (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle (linear) | Duty Cycle Factor (dB) | 1/T    |
|--------|---------|--------------|-------------|----------------|---------------------|------------------------|--------|
| BLE 1M | 0       | 0.411        | 0.625       | 65.76          | 0.6576              | 1.8204                 | 2.4331 |
|        | 19      | 0.412        | 0.625       | 65.90          | 0.6590              | 1.8111                 | 2.4272 |
|        | 39      | 0.412        | 0.625       | 65.87          | 0.6587              | 1.8131                 | 2.4272 |

### Test Graphs



### 3.6dB Bandwidth and 99% Bandwidth

#### Test Result

| Mode   | Channel | Center Frequency (MHz) | 6 dB Bandwidth (MHz) | Limit (MHz) | Result |
|--------|---------|------------------------|----------------------|-------------|--------|
| BLE 1M | 0       | 2402                   | 0.65                 | ≥0.5        | PASS   |
|        | 19      | 2440                   | 0.65                 |             | PASS   |
|        | 39      | 2480                   | 0.65                 |             | PASS   |

#### Test Graphs



| Mode   | Channel | Center Frequency (MHz) | 99% BW (MHz) |
|--------|---------|------------------------|--------------|
| BLE 1M | 0       | 2402                   | 1.02         |
| BLE 1M | 19      | 2440                   | 1.02         |
| BLE 1M | 39      | 2480                   | 1.01         |

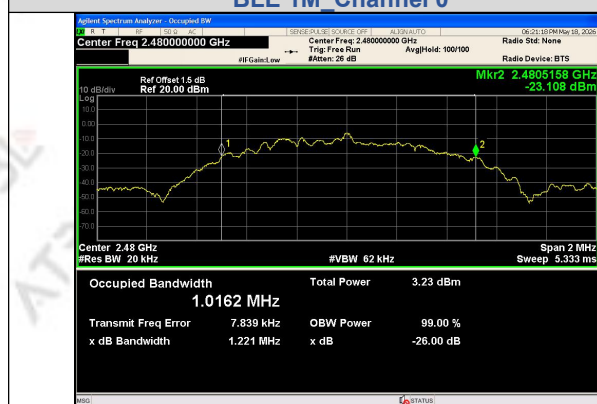
#### Test Graphs



BLE 1M Channel 0



BLE 1M Channel 19



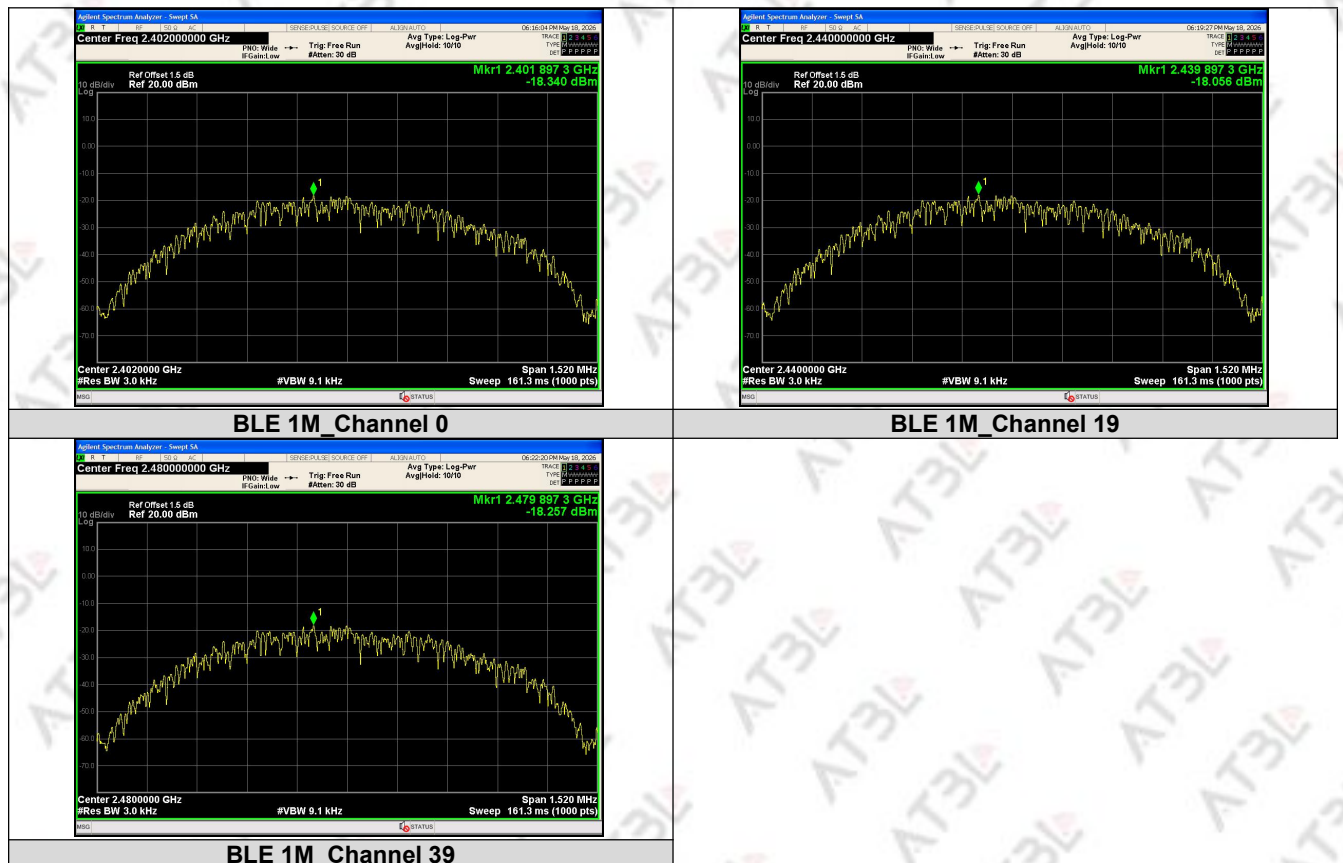
BLE 1M Channel 39

## 4.Power Spectral Density

### Test Result

| Mode   | Channel | PSD (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|--------|---------|----------------|------------------|--------|
| BLE 1M | 0       | -18.340        | ≤8               | PASS   |
| BLE 1M | 19      | -18.060        | ≤8               | PASS   |
| BLE 1M | 39      | -18.260        | ≤8               | PASS   |

### Test Graphs



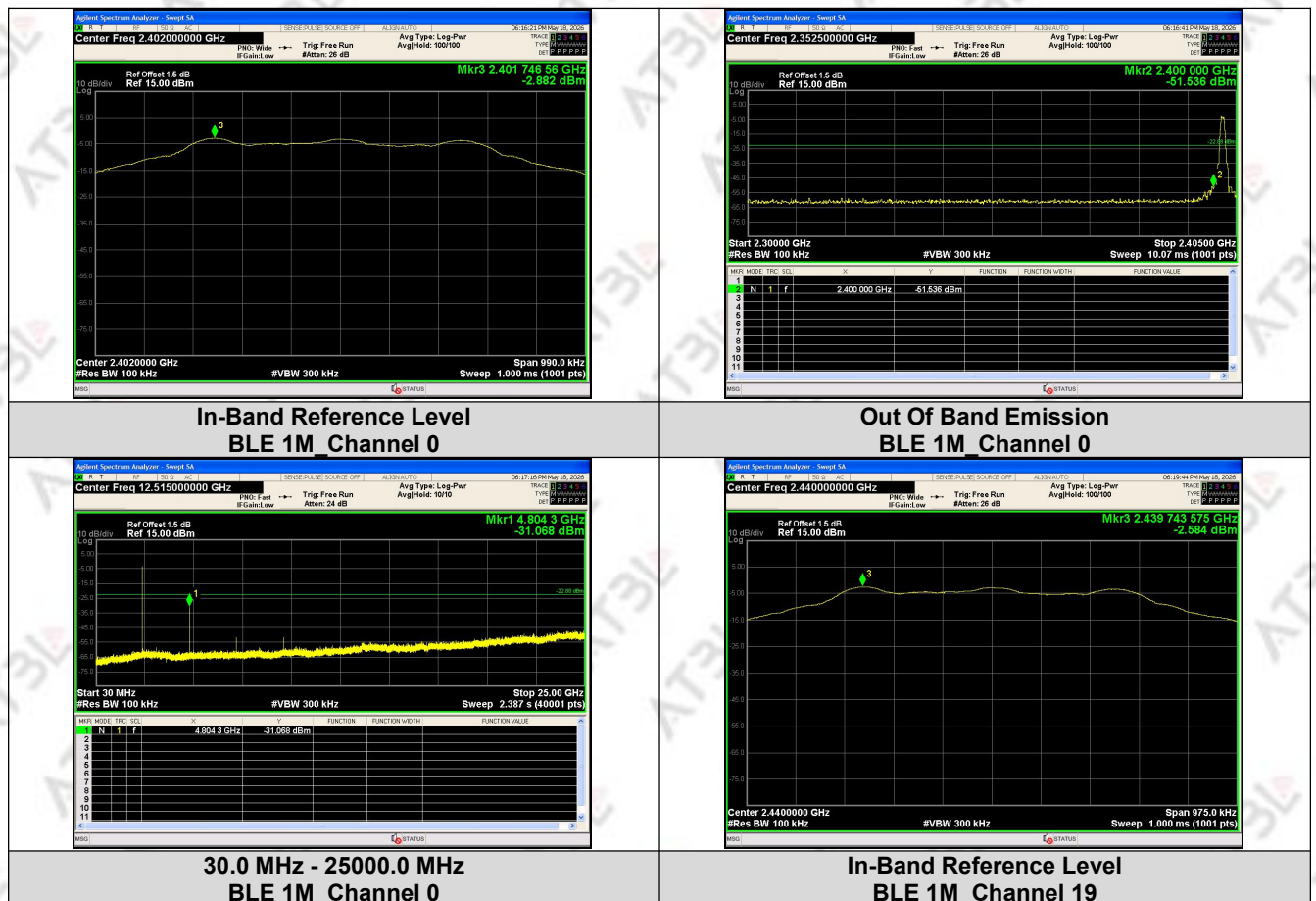
## 5. Conducted Spurious & Band Edge Emission

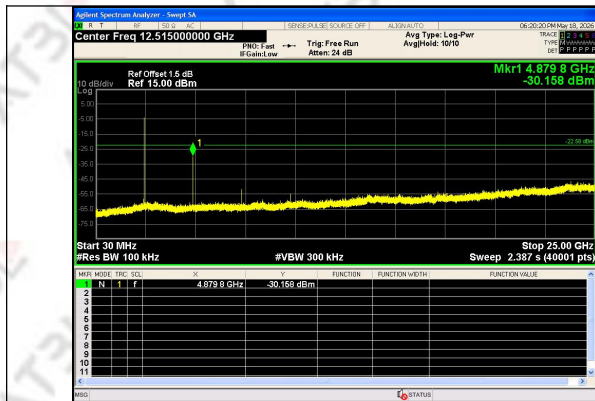
### Test Result

| Mode   | Channel | OOB Emission Frequency (MHz) | OOB Emission Level (dBm) | Limit (dBm) | Over Limit (dB) | Result |
|--------|---------|------------------------------|--------------------------|-------------|-----------------|--------|
| BLE 1M | 0       | 2400.00                      | -51.536                  | -22.88      | -28.656         | PASS   |
|        |         | 4804.26                      | -31.068                  | -22.88      | -8.188          | PASS   |
|        | 19      | 4879.80                      | -30.158                  | -22.58      | -7.578          | PASS   |
|        | 39      | 2483.50                      | -57.391                  | -22.95      | -34.441         | PASS   |
|        |         | 4959.70                      | -33.619                  | -22.95      | -10.669         | PASS   |

Note: input compensation coefficient (dB)= Cable Loss (dB)

### Test Graphs

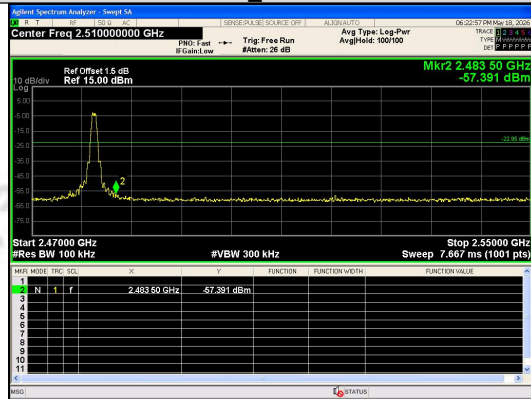




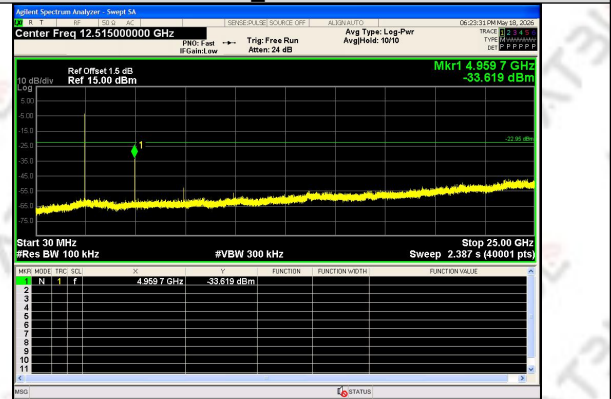
**30.0 MHz - 25000.0 MHz  
BLE 1M\_Channel 19**



**In-Band Reference Level  
BLE 1M\_Channel 39**



**Out Of Band Emission  
BLE 1M\_Channel 39**



**30.0 MHz - 25000.0 MHz  
BLE 1M\_Channel 39**

## **6.Radiated Spurious Emission and Restricted Band**

Test Result

Radiated Spurious Emission:

### **For 9 kHz ~ 30 MHz**

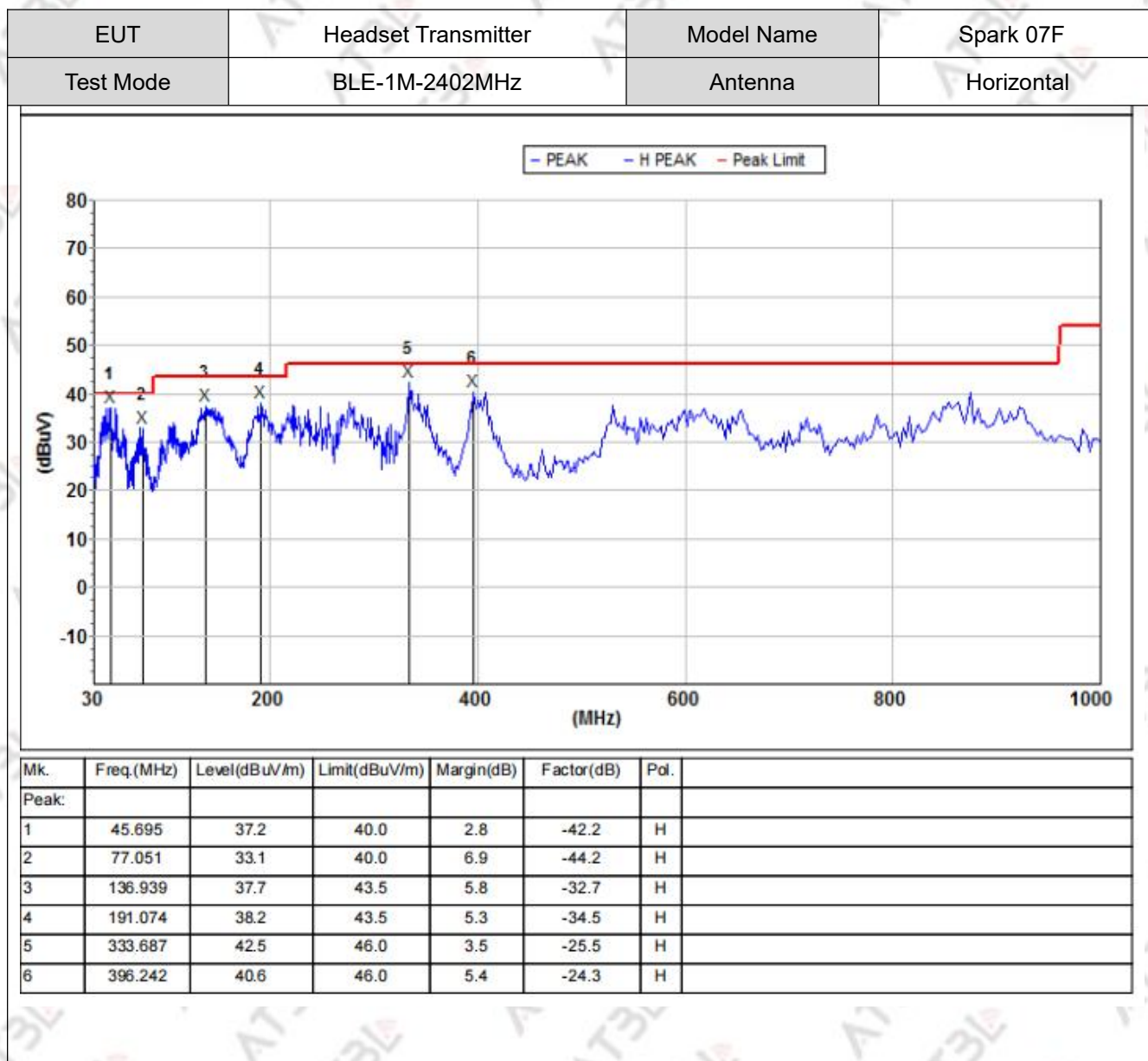
Note:

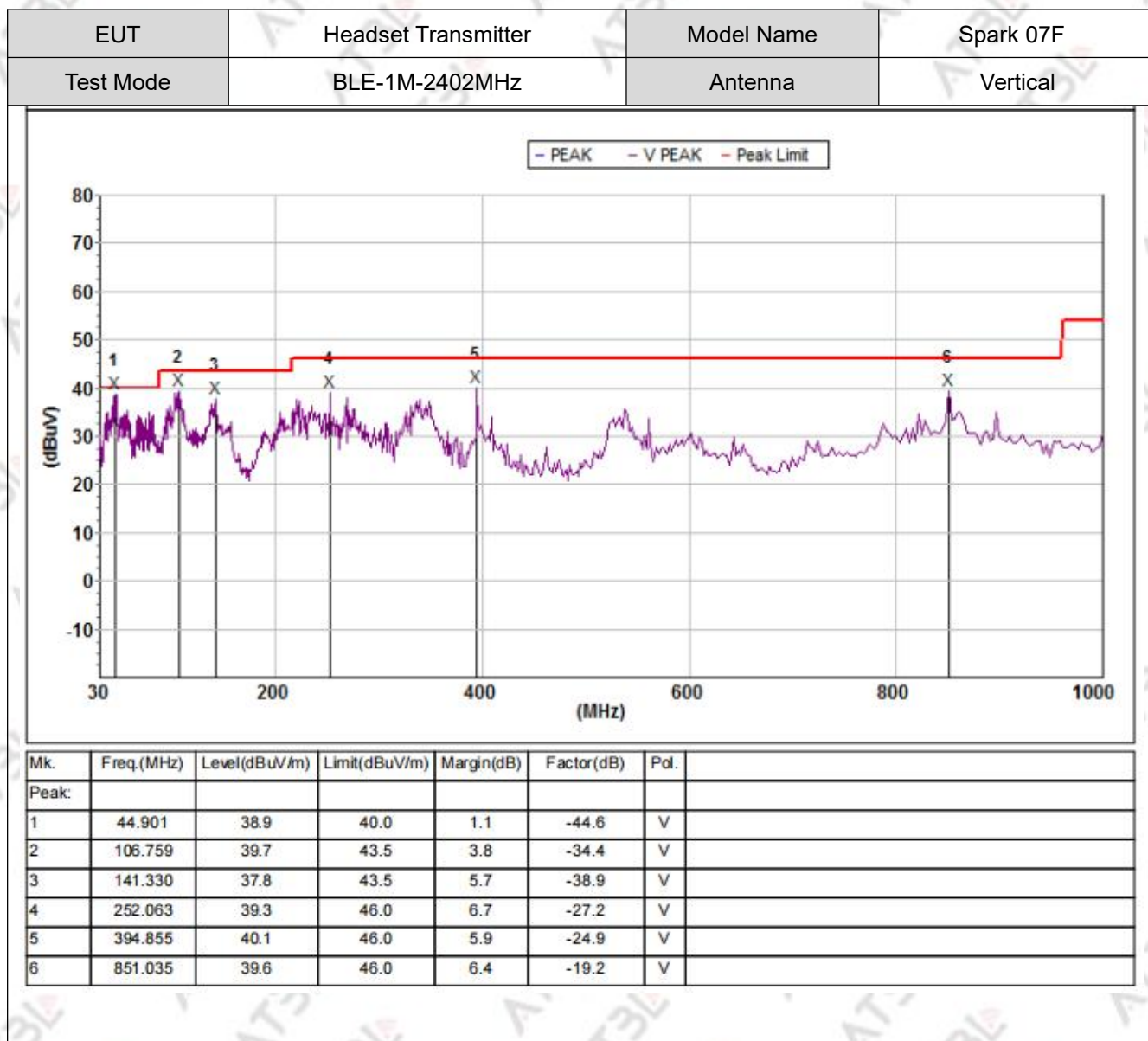
- 1.The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.
- 2.The all data rate modes had been test, but only worse test data was recorded in the test report.

### **Below 1GHz:**

Note:

- 1.All modes have been tested, only worst (BLE\_1M-TX-2402MHz)mode was recorded in the test report.
- 2.Emission Level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
- 3.Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)-Amplifier Gain.
- 4.The emission levels of other frequencies were less than 20dB margin against the limit.
- 5.Margin value = Emission level-Limit value.

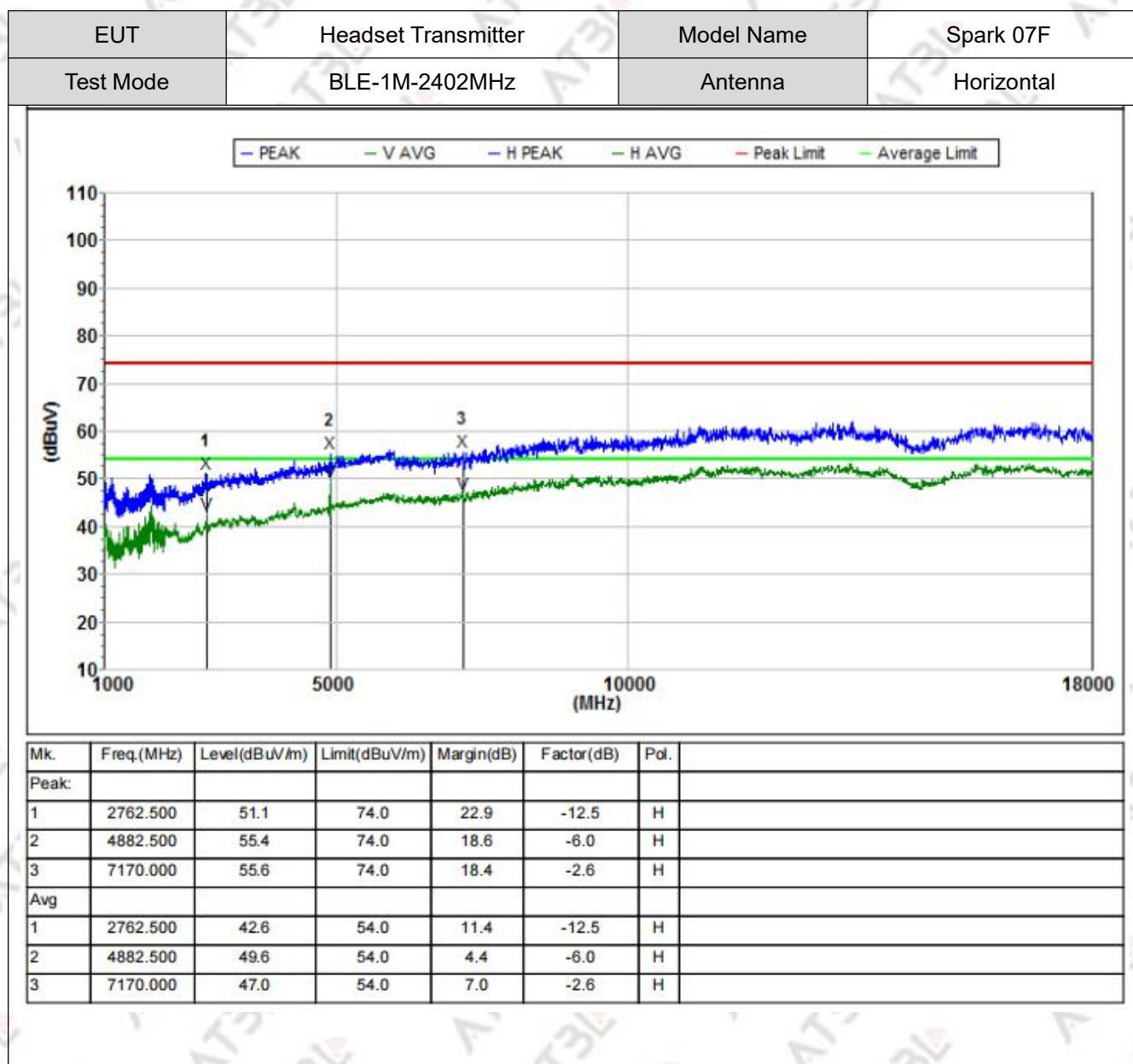




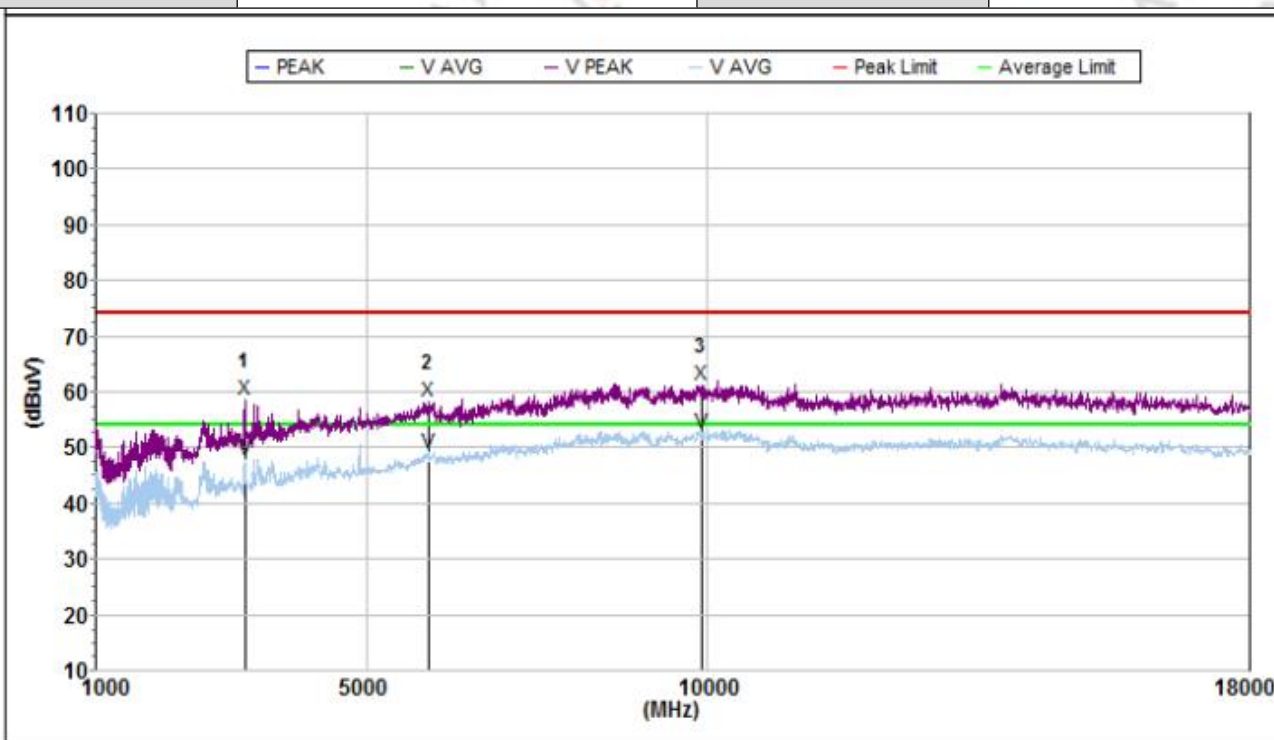
### Above 1GHz:

Note:

- 1.All modes have been tested, only worst (BLE\_1M )mode was recorded in the test report.
- 2.In frequency ranges 18 ~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.
- 3.We used the filter to test and the main frequency was filtered out.
- 4.Emission Level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
5. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)-Amplifier Gain.
6. Margin value = Emission level-Limit value.

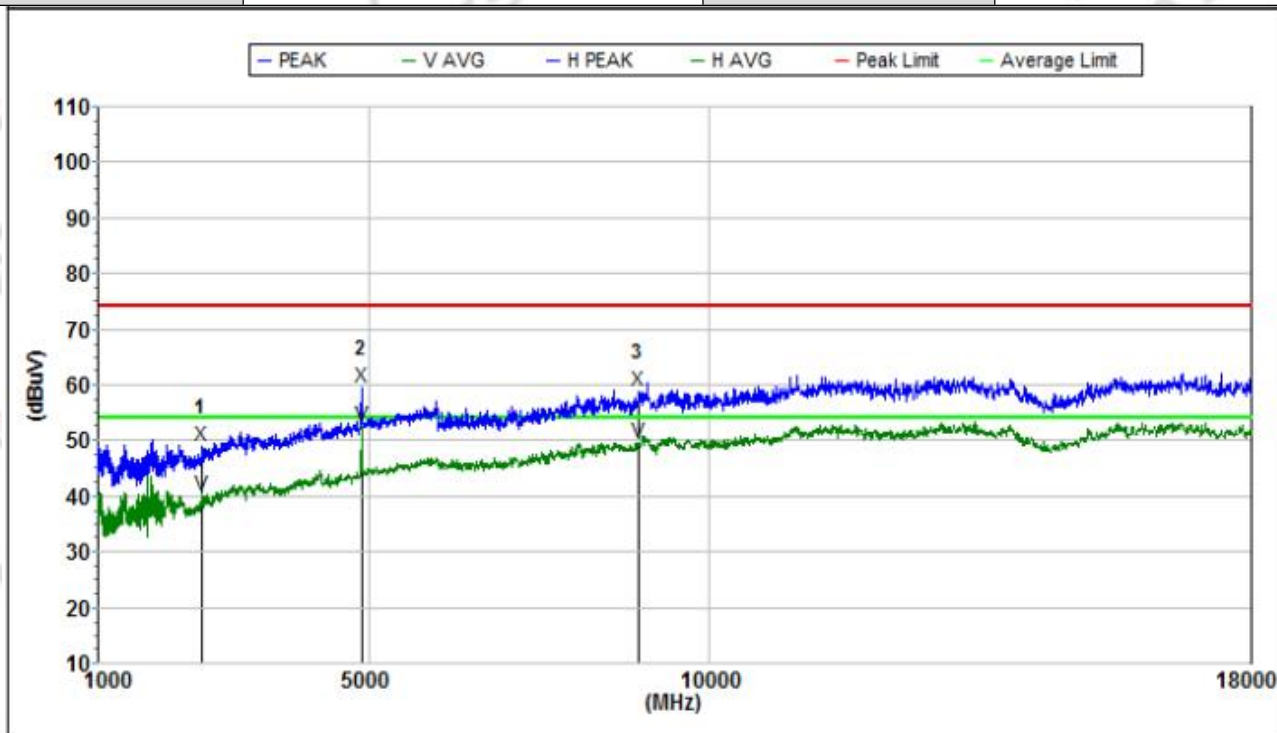


|           |                     |            |           |
|-----------|---------------------|------------|-----------|
| EUT       | Headset Transmitter | Model Name | Spark 07F |
| Test Mode | BLE-1M-2402MHz      | Antenna    | Vertical  |



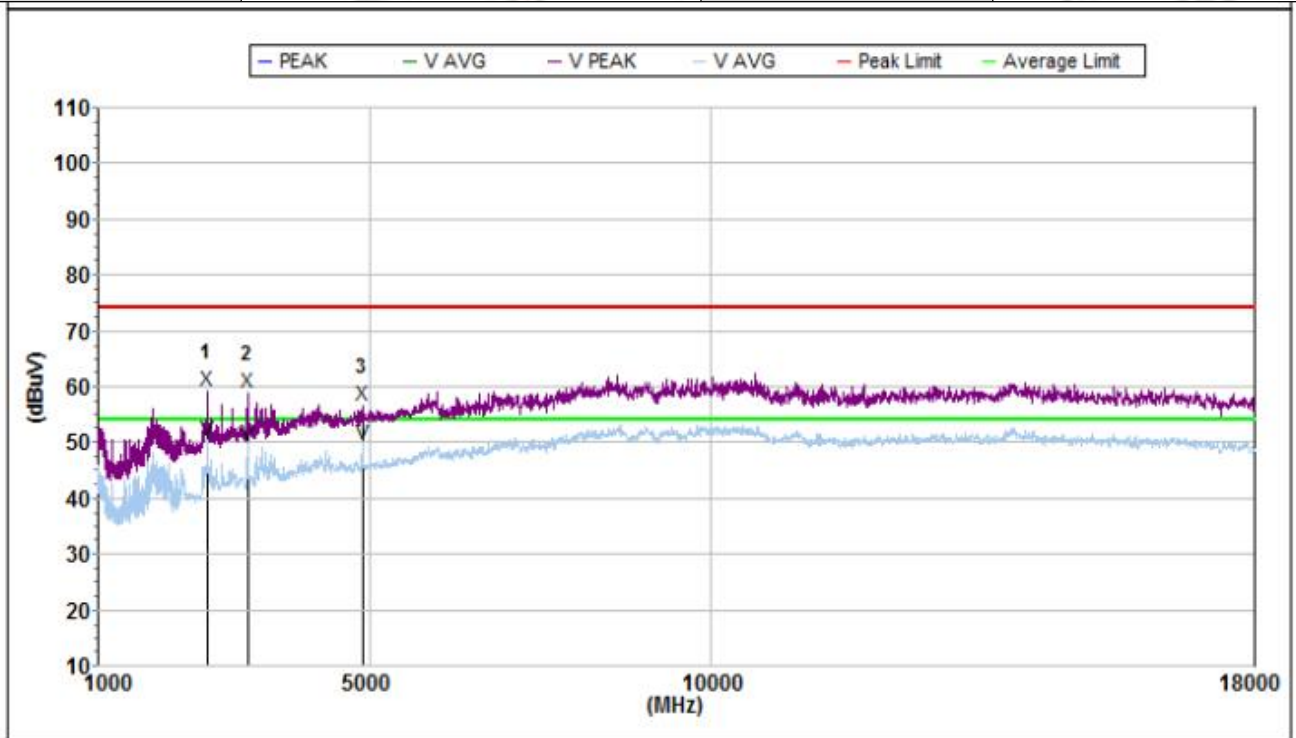
| Mk.   | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Factor(dB) | Pol. |  |
|-------|------------|---------------|---------------|------------|------------|------|--|
| Peak: |            |               |               |            |            |      |  |
| 1     | 3200.000   | 58.8          | 74.0          | 15.2       | -9.0       | V    |  |
| 2     | 5895.000   | 58.5          | 74.0          | 15.5       | -1.6       | V    |  |
| 3     | 9924.000   | 61.4          | 74.0          | 12.6       | 2.9        | V    |  |
| Avg   |            |               |               |            |            |      |  |
| 1     | 3200.000   | 47.8          | 54.0          | 6.2        | -9.0       | V    |  |
| 2     | 5895.000   | 49.0          | 54.0          | 5.0        | -1.6       | V    |  |
| 3     | 9924.000   | 52.6          | 54.0          | 1.4        | 2.9        | V    |  |

|           |                     |            |            |
|-----------|---------------------|------------|------------|
| EUT       | Headset Transmitter | Model Name | Spark 07F  |
| Test Mode | BLE-1MHz2440MHz     | Antenna    | Horizontal |



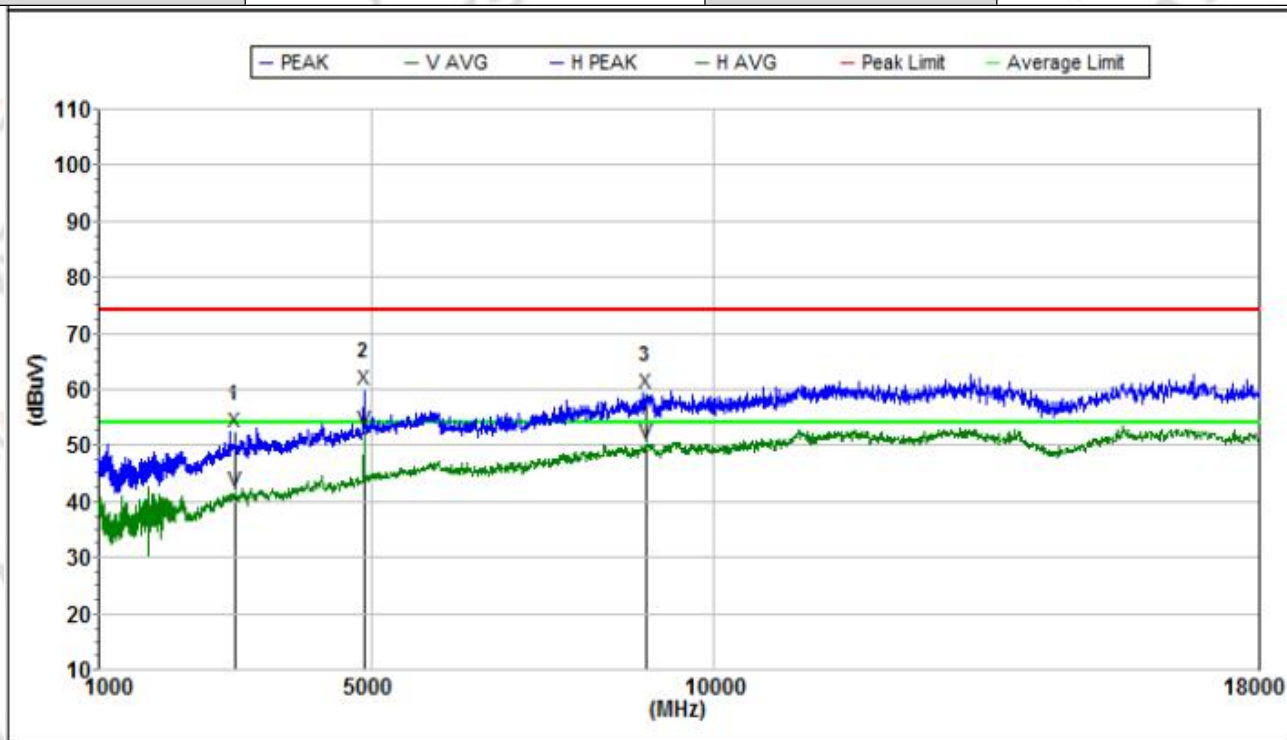
| Mk.   | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Factor(dB) | Pol. |  |
|-------|------------|---------------|---------------|------------|------------|------|--|
| Peak: |            |               |               |            |            |      |  |
| 1     | 2535.000   | 49.0          | 74.0          | 25.0       | -14.0      | H    |  |
| 2     | 4882.500   | 59.7          | 74.0          | 14.3       | -6.0       | H    |  |
| 3     | 8970.000   | 58.9          | 74.0          | 15.1       | -0.2       | H    |  |
| Avg   |            |               |               |            |            |      |  |
| 1     | 2535.000   | 40.2          | 54.0          | 13.8       | -14.0      | H    |  |
| 2     | 4882.500   | 52.6          | 54.0          | 1.4        | -6.0       | H    |  |
| 3     | 8970.000   | 49.8          | 54.0          | 4.2        | -0.2       | H    |  |

|           |                     |            |           |
|-----------|---------------------|------------|-----------|
| EUT       | Headset Transmitter | Model Name | Spark 07F |
| Test Mode | BLE-1MHz2440MHz     | Antenna    | Vertical  |



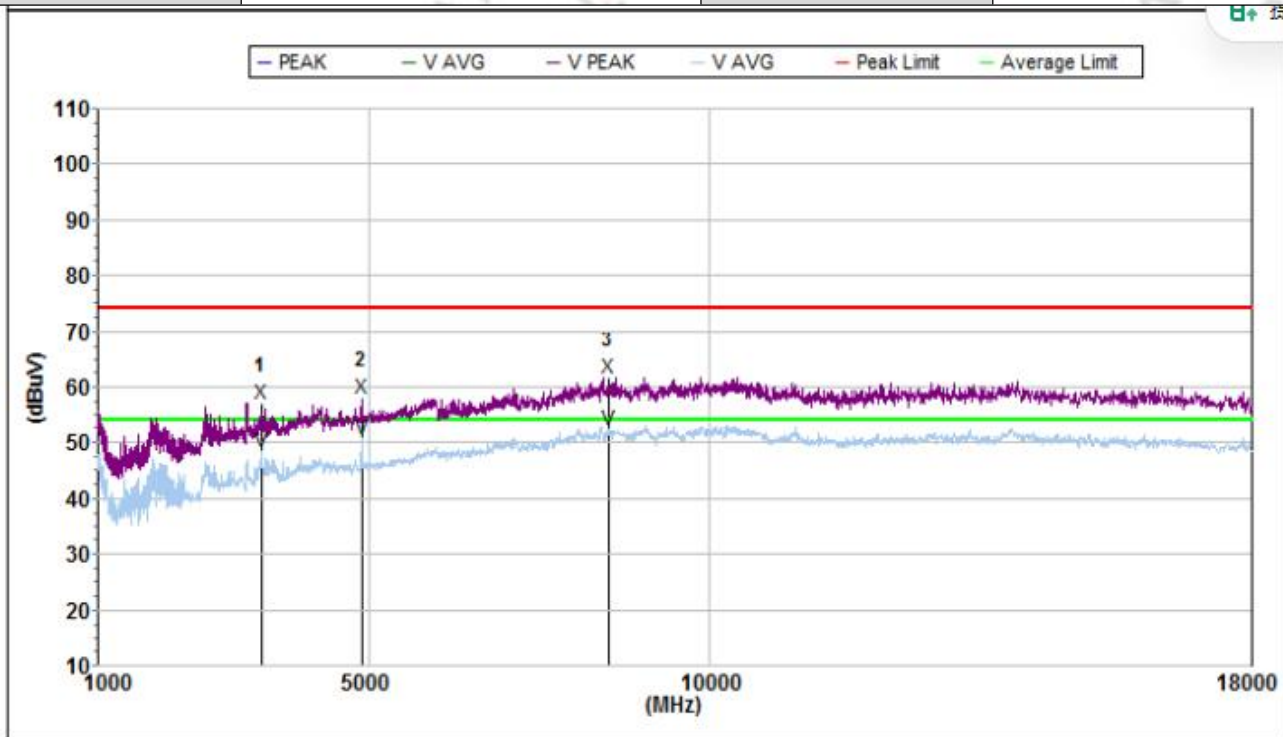
| Mk.   | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Factor(dB) | Pol. |  |
|-------|------------|---------------|---------------|------------|------------|------|--|
| Peak: |            |               |               |            |            |      |  |
| 1     | 2617.500   | 59.5          | 74.0          | 14.5       | -11.1      | V    |  |
| 2     | 3197.500   | 58.9          | 74.0          | 15.1       | -9.0       | V    |  |
| 3     | 4882.500   | 56.8          | 74.0          | 17.2       | -4.3       | V    |  |
| Avg   |            |               |               |            |            |      |  |
| 1     | 2617.500   | 50.4          | 54.0          | 3.6        | -11.1      | V    |  |
| 2     | 3197.500   | 49.8          | 54.0          | 4.2        | -9.0       | V    |  |
| 3     | 4882.500   | 49.8          | 54.0          | 4.2        | -4.3       | V    |  |

|           |                     |            |            |
|-----------|---------------------|------------|------------|
| EUT       | Headset Transmitter | Model Name | Spark 07F  |
| Test Mode | BLE-1MHz2480MHz     | Antenna    | Horizontal |



| Mk.   | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Factor(dB) | Pol. |  |
|-------|------------|---------------|---------------|------------|------------|------|--|
| Peak: |            |               |               |            |            |      |  |
| 1     | 2995.000   | 52.5          | 74.0          | 21.5       | -11.0      | H    |  |
| 2     | 4882.500   | 60.1          | 74.0          | 13.9       | -6.0       | H    |  |
| 3     | 9030.000   | 59.2          | 74.0          | 14.8       | -0.1       | H    |  |
| Avg   |            |               |               |            |            |      |  |
| 1     | 2995.000   | 41.9          | 54.0          | 12.1       | -11.0      | H    |  |
| 2     | 4882.500   | 52.7          | 54.0          | 1.3        | -6.0       | H    |  |
| 3     | 9030.000   | 50.4          | 54.0          | 3.6        | -0.1       | H    |  |

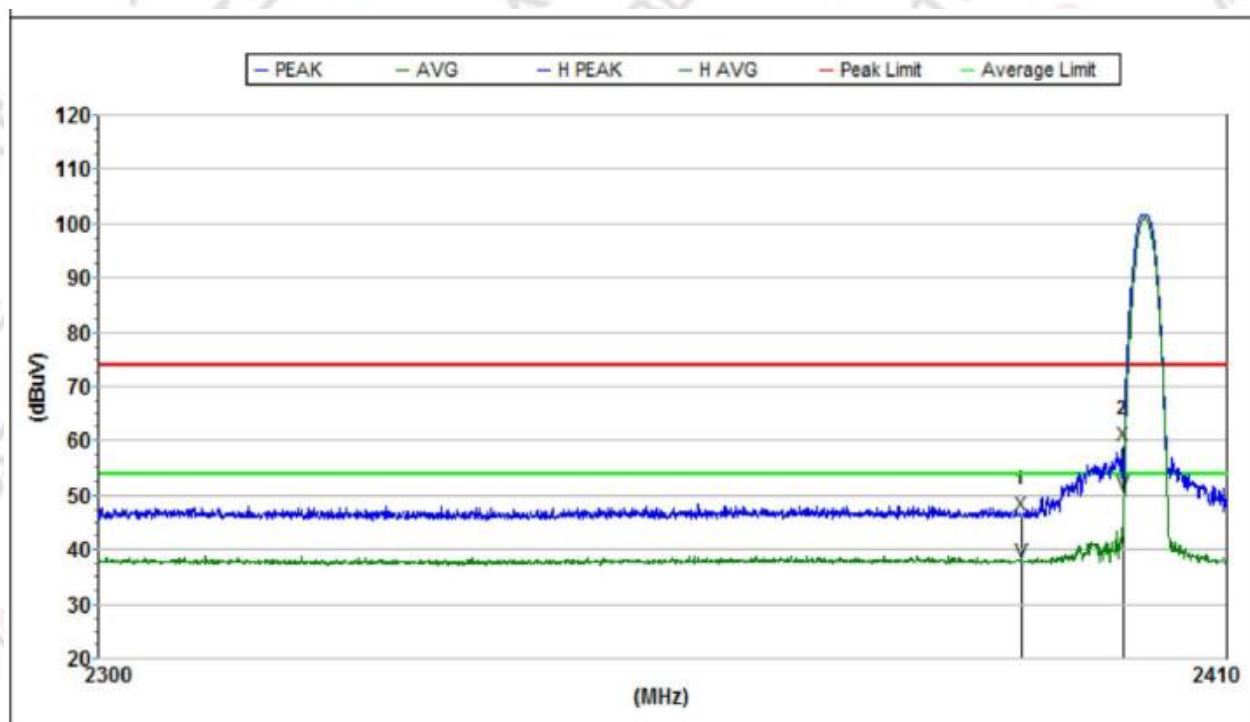
|           |                     |            |           |
|-----------|---------------------|------------|-----------|
| EUT       | Headset Transmitter | Model Name | Spark 07F |
| Test Mode | BLE-1MHz2480MHz     | Antenna    | Vertical  |



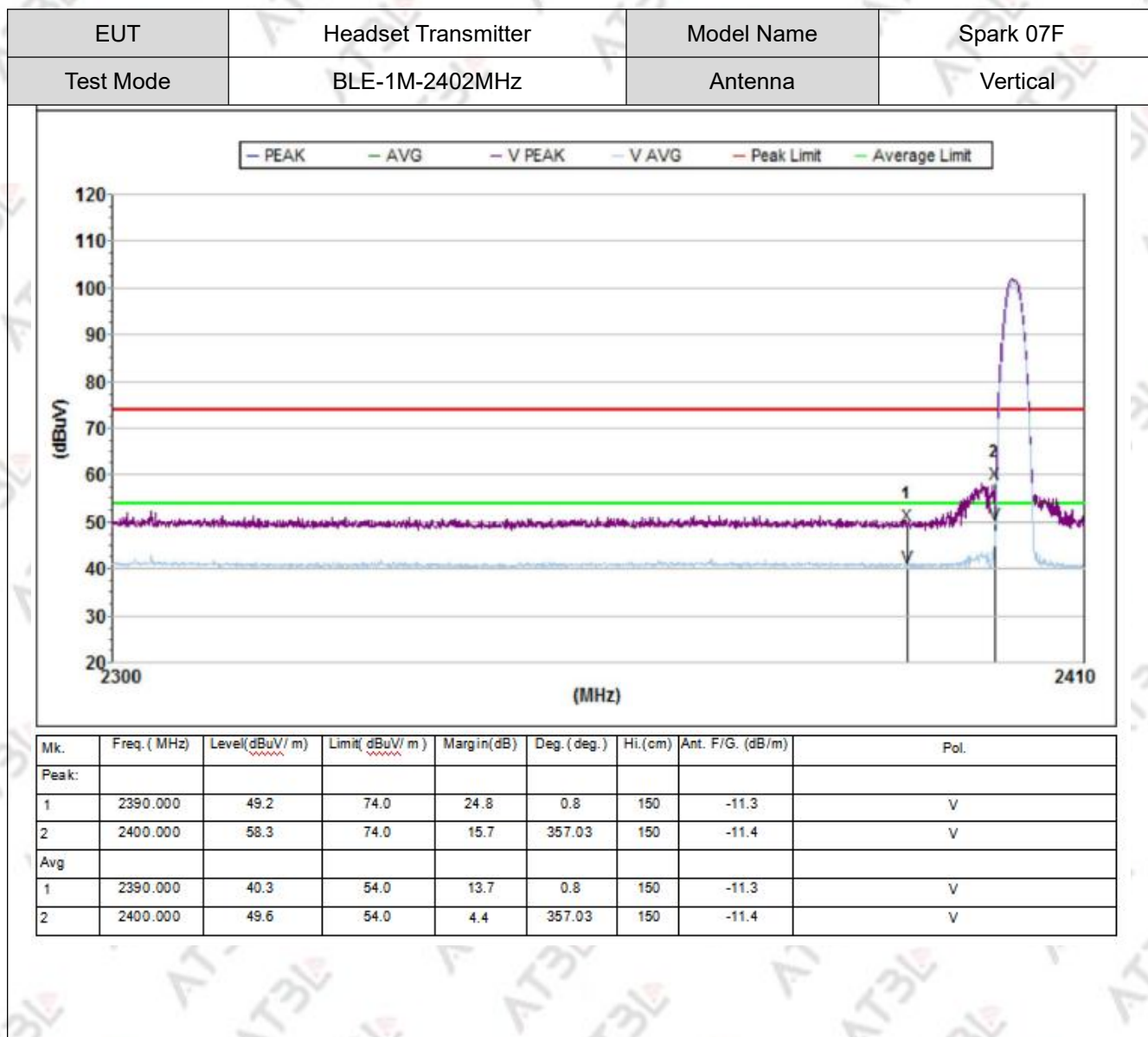
| Mk.   | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Factor(dB) | Pol. |  |
|-------|------------|---------------|---------------|------------|------------|------|--|
| Peak: |            |               |               |            |            |      |  |
| 1     | 3417.500   | 57.2          | 74.0          | 16.8       | -9.0       | V    |  |
| 2     | 4882.500   | 58.1          | 74.0          | 15.9       | -4.3       | V    |  |
| 3     | 8526.000   | 61.5          | 74.0          | 12.5       | 2.4        | V    |  |
| Avg   |            |               |               |            |            |      |  |
| 1     | 3417.500   | 48.4          | 54.0          | 5.6        | -9.0       | V    |  |
| 2     | 4882.500   | 50.7          | 54.0          | 3.3        | -4.3       | V    |  |
| 3     | 8526.000   | 52.3          | 54.0          | 1.7        | 2.4        | V    |  |

Restricted Band:

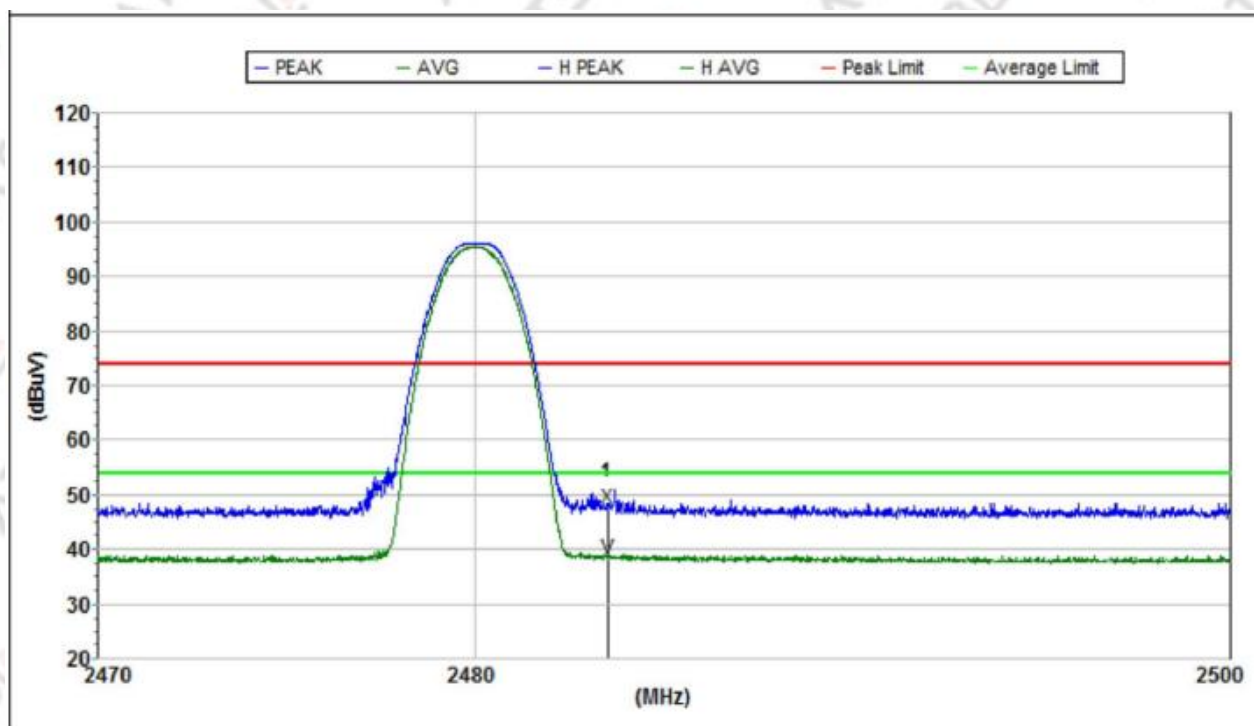
|           |                     |            |            |
|-----------|---------------------|------------|------------|
| EUT       | Headset Transmitter | Model Name | Spark 07F  |
| Test Mode | BLE-1M-2402MHz      | Antenna    | Horizontal |



| Mk.   | Freq. (MHz) | Level(dBuV/ m) | Limit(dBuV/ m) | Margin(dB) | Deg. (deg.) | Hi.(cm) | Ant. F/G. (dB/m) | Pol. |
|-------|-------------|----------------|----------------|------------|-------------|---------|------------------|------|
| Peak: |             |                |                |            |             |         |                  |      |
| 1     | 2390.000    | 46.4           | 74.0           | 27.6       | 261.77      | 150     | -14.2            | H    |
| 2     | 2400.000    | 59.1           | 74.0           | 14.9       | 38.87       | 150     | -14.2            | H    |
| Avg   |             |                |                |            |             |         |                  |      |
| 1     | 2390.000    | 37.9           | 54.0           | 16.1       | 261.77      | 150     | -14.2            | H    |
| 2     | 2400.000    | 50.4           | 54.0           | 3.6        | 38.87       | 150     | -14.2            | H    |

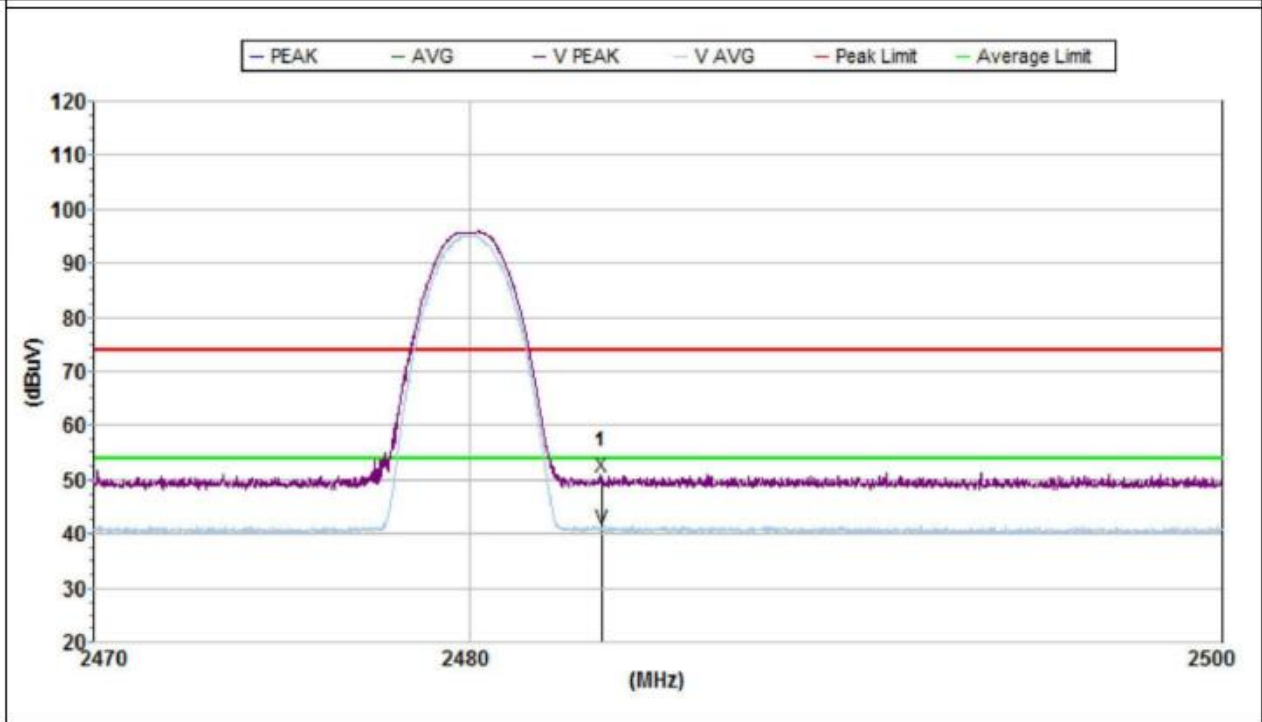


|           |                     |            |            |
|-----------|---------------------|------------|------------|
| EUT       | Headset Transmitter | Model Name | Spark 07F  |
| Test Mode | BLE-1M-2480MHz      | Antenna    | Horizontal |



| Mk.   | Freq. ( MHz) | Level(dBuV/ m) | Limit( dBuV/ m) | Margin(dB) | Deg.( deg.) | Hi.(cm) | Ant. F/G. (dB/m) | Pol. |
|-------|--------------|----------------|-----------------|------------|-------------|---------|------------------|------|
| Peak: |              |                |                 |            |             |         |                  |      |
| 1     | 2483.500     | 47.7           | 74.0            | 26.3       | 203.92      | 150     | -14.3            | H    |
| Avg   |              |                |                 |            |             |         |                  |      |
| 1     | 2483.500     | 38.5           | 54.0            | 15.5       | 203.92      | 150     | -14.3            | H    |

|           |                     |            |           |
|-----------|---------------------|------------|-----------|
| EUT       | Headset Transmitter | Model Name | Spark 07F |
| Test Mode | BLE-1M-2480MHz      | Antenna    | Vertical  |



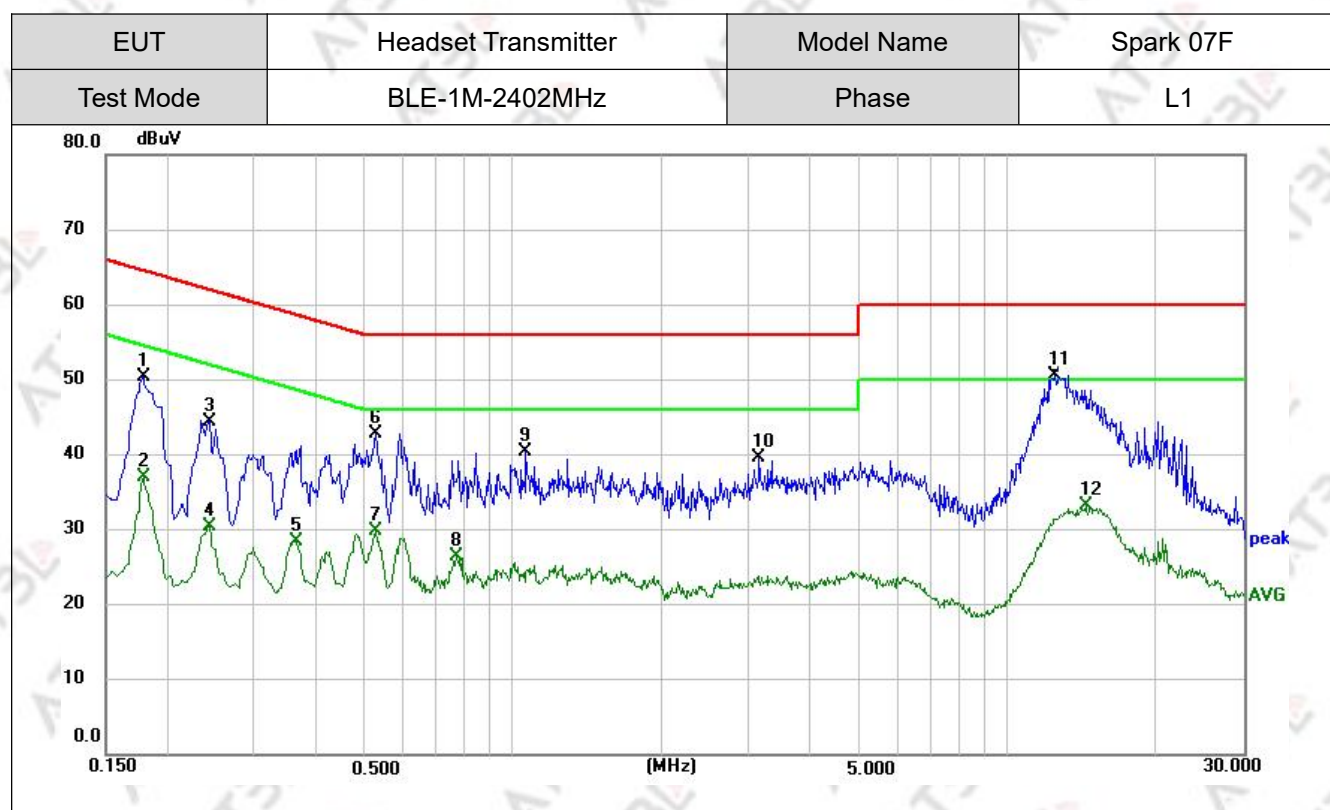
| Mk.   | Freq. ( MHz) | Level(dBuV/ m) | Limit( dBuV/ m) | Margin(dB) | De<br>+ | Hi.(cm) | Ant. F/G. (dB/m) | Pol. |
|-------|--------------|----------------|-----------------|------------|---------|---------|------------------|------|
| Peak: |              |                |                 |            |         |         |                  |      |
| 1     | 2483.500     | 50.5           | 74.0            | 23.5       | 317.37  | 150     | -11.6            | V    |
| Avg   |              |                |                 |            |         |         |                  |      |
| 1     | 2483.500     | 41.0           | 54.0            | 13.0       | 317.37  | 150     | -11.6            | V    |

## 7.AC Power-Line Conducted Emission

### Test Result

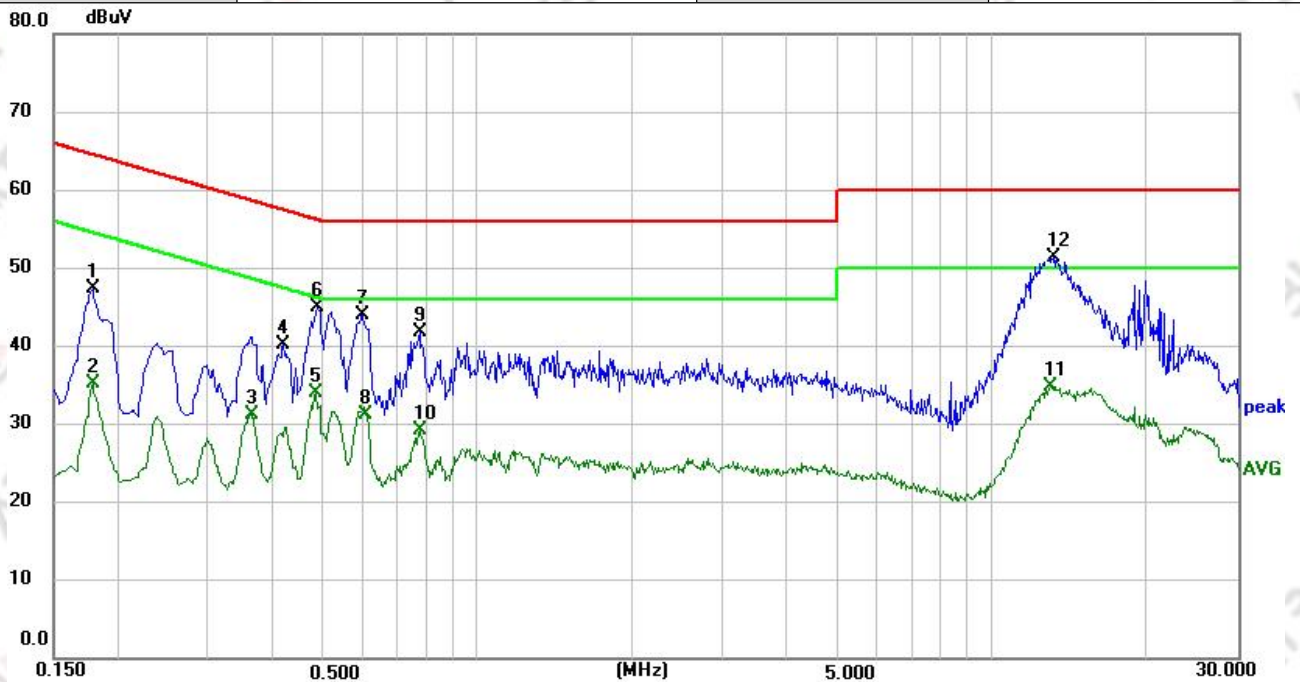
#### Note:

- 1.All modes have been tested, only worst mode(BLE-1M-2402MHz) was recorded in the test report.
- 2.Emission Level = Reading Value + Correction Factor .
3. Correction Factor = Insertion loss + Cable loss.
4. The emission levels of other frequencies were less than 20dB margin against the limit.
5. Margin value = Emission level-Limit value.



| No.  | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|------|-----------------|---------------------|-------------|--------------------|--------------|-------------|----------|
| 1    | 0.1780          | 30.70               | 19.73       | 50.43              | 64.58        | -14.15      | peak     |
| 2    | 0.1780          | 17.37               | 19.73       | 37.10              | 54.58        | -17.48      | AVG      |
| 3    | 0.2420          | 24.74               | 19.73       | 44.47              | 62.03        | -17.56      | peak     |
| 4    | 0.2420          | 10.74               | 19.73       | 30.47              | 52.03        | -21.56      | AVG      |
| 5    | 0.3620          | 8.56                | 19.81       | 28.37              | 48.68        | -20.31      | AVG      |
| 6    | 0.5260          | 23.02               | 19.86       | 42.88              | 56.00        | -13.12      | peak     |
| 7    | 0.5260          | 9.90                | 19.86       | 29.76              | 46.00        | -16.24      | AVG      |
| 8    | 0.7700          | 6.62                | 19.90       | 26.52              | 46.00        | -19.48      | AVG      |
| 9    | 1.0620          | 20.65               | 19.78       | 40.43              | 56.00        | -15.57      | peak     |
| 10   | 3.1420          | 19.40               | 20.24       | 39.64              | 56.00        | -16.36      | peak     |
| 11 * | 12.4700         | 29.19               | 21.32       | 50.51              | 60.00        | -9.49       | peak     |
| 12   | 14.4100         | 11.33               | 21.86       | 33.19              | 50.00        | -16.81      | AVG      |

|           |                     |            |           |
|-----------|---------------------|------------|-----------|
| EUT       | Headset Transmitter | Model Name | Spark 07F |
| Test Mode | BLE-1M-2402MHz      | Phase      | N         |



| No.  | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measurement(dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|------|-----------------|---------------------|-------------|-------------------|--------------|-------------|----------|
| 1    | 0.1780          | 27.62               | 19.73       | 47.35             | 64.58        | -17.23      | peak     |
| 2    | 0.1780          | 15.50               | 19.73       | 35.23             | 54.58        | -19.35      | AVG      |
| 3    | 0.3620          | 11.39               | 19.81       | 31.20             | 48.68        | -17.48      | AVG      |
| 4    | 0.4180          | 20.43               | 19.82       | 40.25             | 57.49        | -17.24      | peak     |
| 5    | 0.4860          | 14.08               | 19.85       | 33.93             | 46.24        | -12.31      | AVG      |
| 6    | 0.4900          | 25.09               | 19.85       | 44.94             | 56.17        | -11.23      | peak     |
| 7    | 0.5980          | 24.18               | 19.90       | 44.08             | 56.00        | -11.92      | peak     |
| 8    | 0.6075          | 11.34               | 19.90       | 31.24             | 46.00        | -14.76      | AVG      |
| 9    | 0.7740          | 21.96               | 19.90       | 41.86             | 56.00        | -14.14      | peak     |
| 10   | 0.7740          | 9.29                | 19.90       | 29.19             | 46.00        | -16.81      | AVG      |
| 11   | 13.0460         | 13.34               | 21.48       | 34.82             | 50.00        | -15.18      | AVG      |
| 12 * | 13.1820         | 29.90               | 21.52       | 51.42             | 60.00        | -8.58       | peak     |