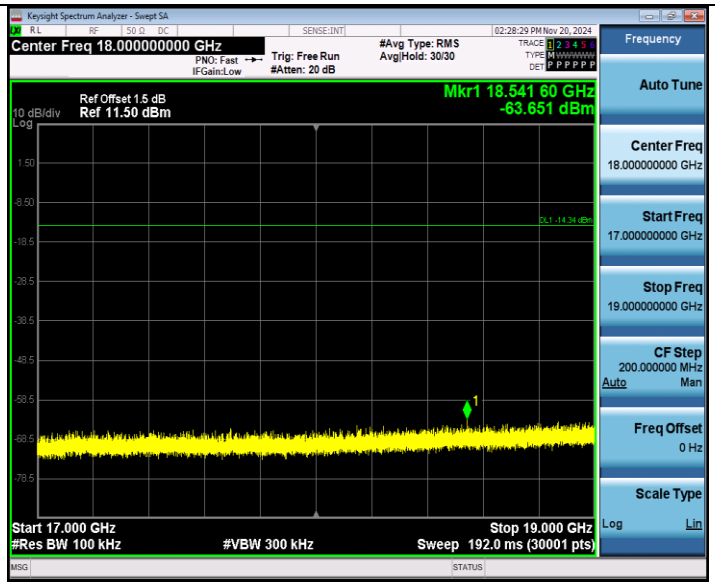
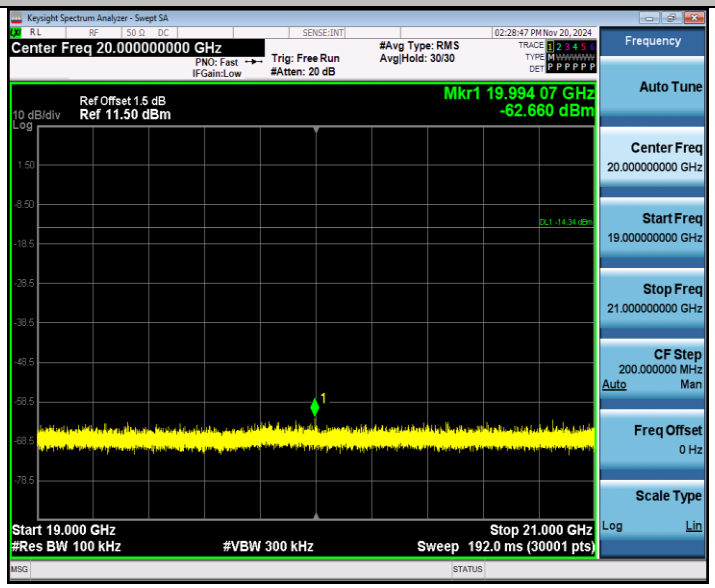
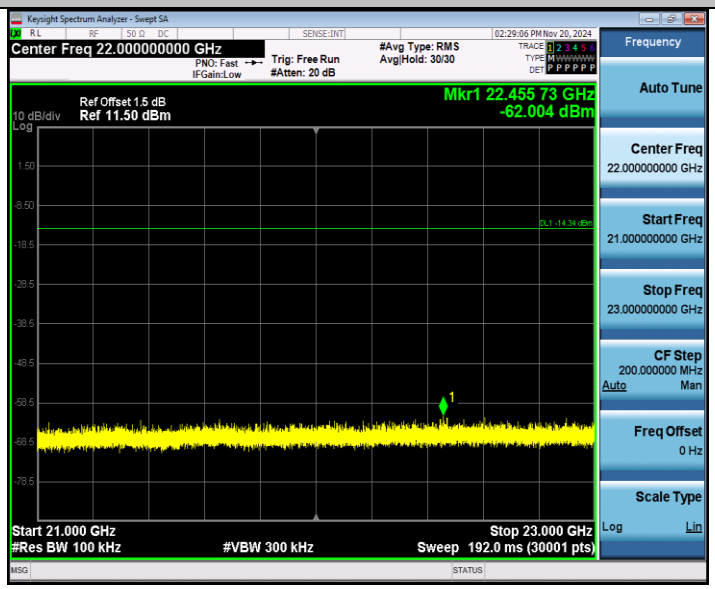


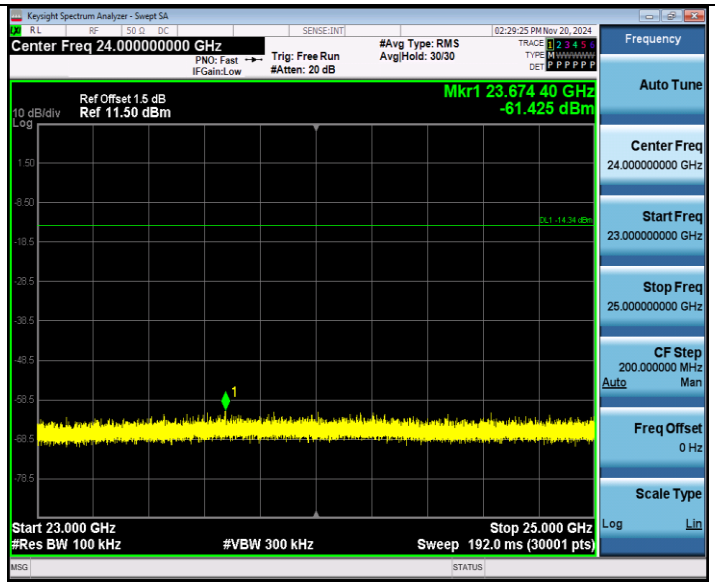

BLE_1M_Ant1_2480_19000~21000




BLE_1M_Ant1_2480_21000~23000




BLE_1M_Ant1_2480_23000~25000

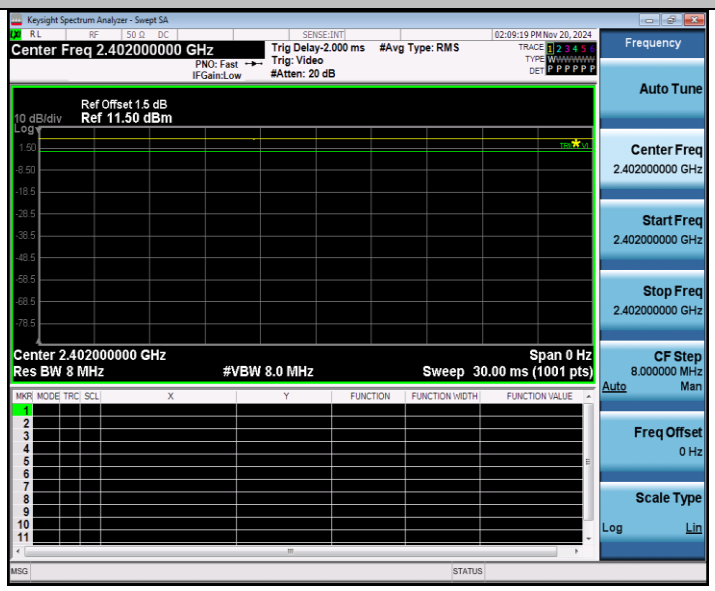

Keysight Spectrum Analyzer - Swept SA
Center Freq 24.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 30/30
02:29:25 PM Nov 20, 2024
Ref Offset 1.5 dB
10 dB/div
Ref 11.50 dBm
Mkr1 23.674 40 GHz
-61.425 dBm
Start 23.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 192.0 ms (30001 pts)
Frequency
Auto Tune
Center Freq
24.000000000 GHz
Start Freq
23.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

## Appendix F: Duty Cycle

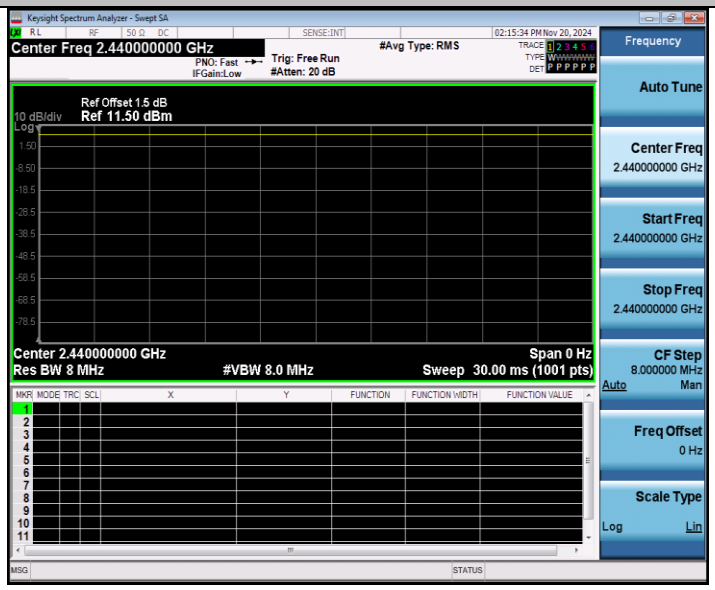
| TestMode | Frequency[MHz] | ON Time [ms] | Period [ms] | Duty Cycle [%] | Duty Cycle Factor[dB] |
|---|---|---|---|---|---|
| BLE_1M | 2402 | 30.00 | 30.00 | 100.00 | 0.00 |
| | 2440 | 10.00 | 10.00 | 100.00 | 0.00 |
| | 2480 | 0.00 | 0.00 | 100.00 | 0.00 |

## Test Graphs

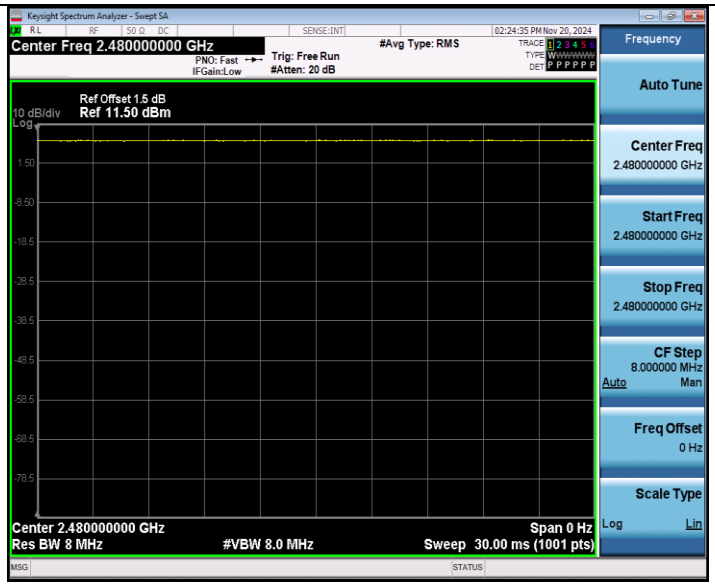
BLE_1M_Ant1_2402




BLE_1M_Ant1_2440

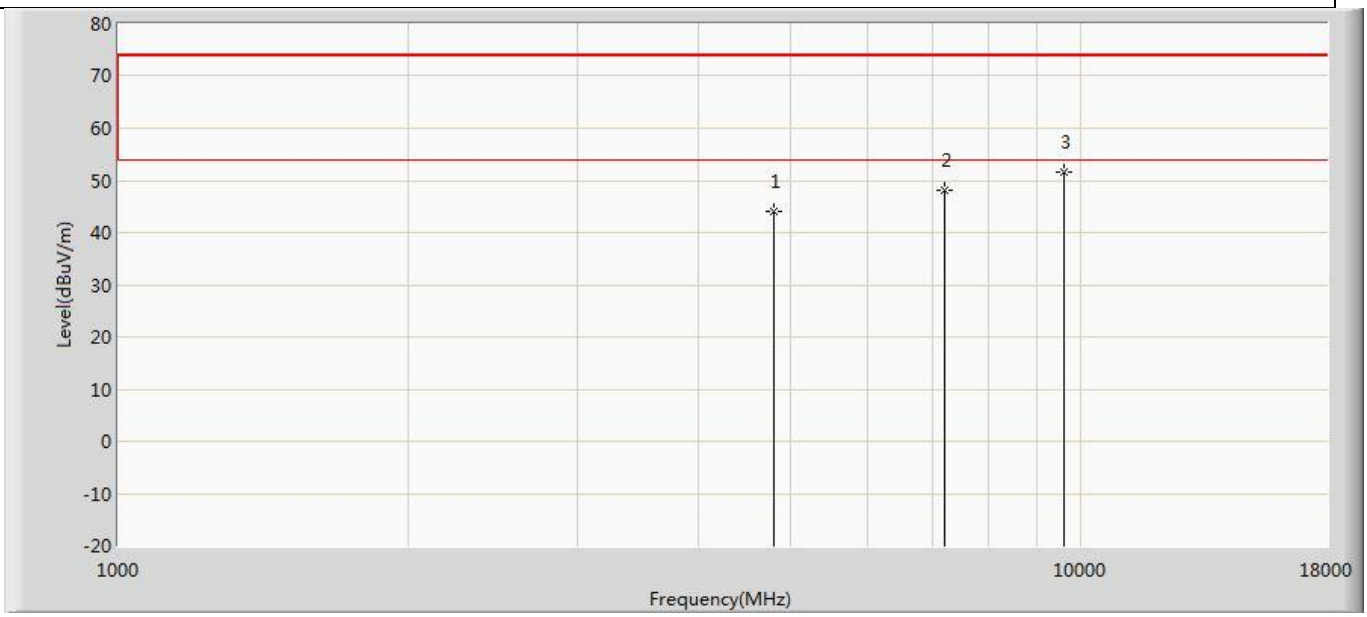



BLE_1M_Ant1_2480


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
02:24:35 PM Nov 20, 2024
Ref Offset 1.5 dB
10 dB/div
Ref 11.50 dBm
Log
1.50
-8.50
-18.5
-28.5
-38.5
-48.5
-58.5
-68.5
-78.5
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 30.00 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.480000000 GHz
Stop Freq
2.480000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

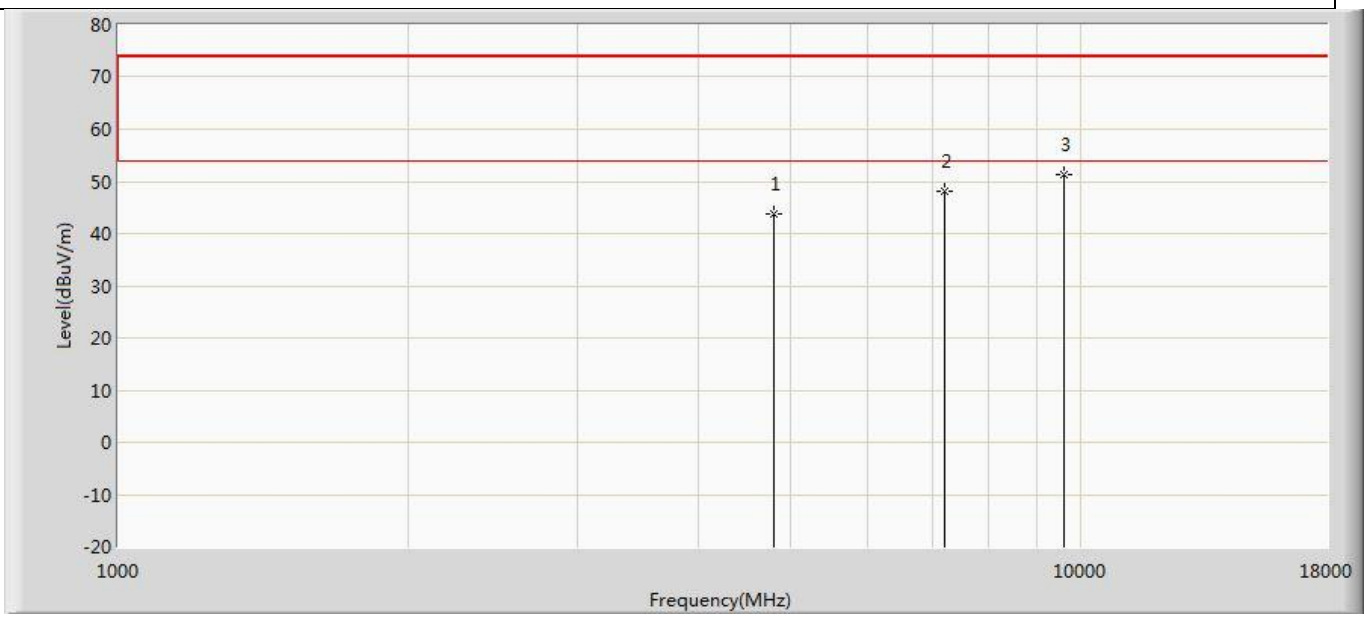
## Appendix G: Emissions in Restricted Bands

| | |
|---|---|
| Profile: 24B0486R | Page No.: 7 |
| Engineer: Yu Liu | |
| Site: AC5 | Time: 2024/12/01 - 19:13 |
| Limit: FCC_Part15.209_RE(3m) | Margin: 0 |
| Probe: Horn_3117_00167055_(1-18GHz) | Polarity: Horizontal |
| EUT: Wi-Fi and Bluetooth Module | Power: 3.3 Vdc |
| Note: Mode 1：Transmit at 2402MHz by LE_1Mbps | |



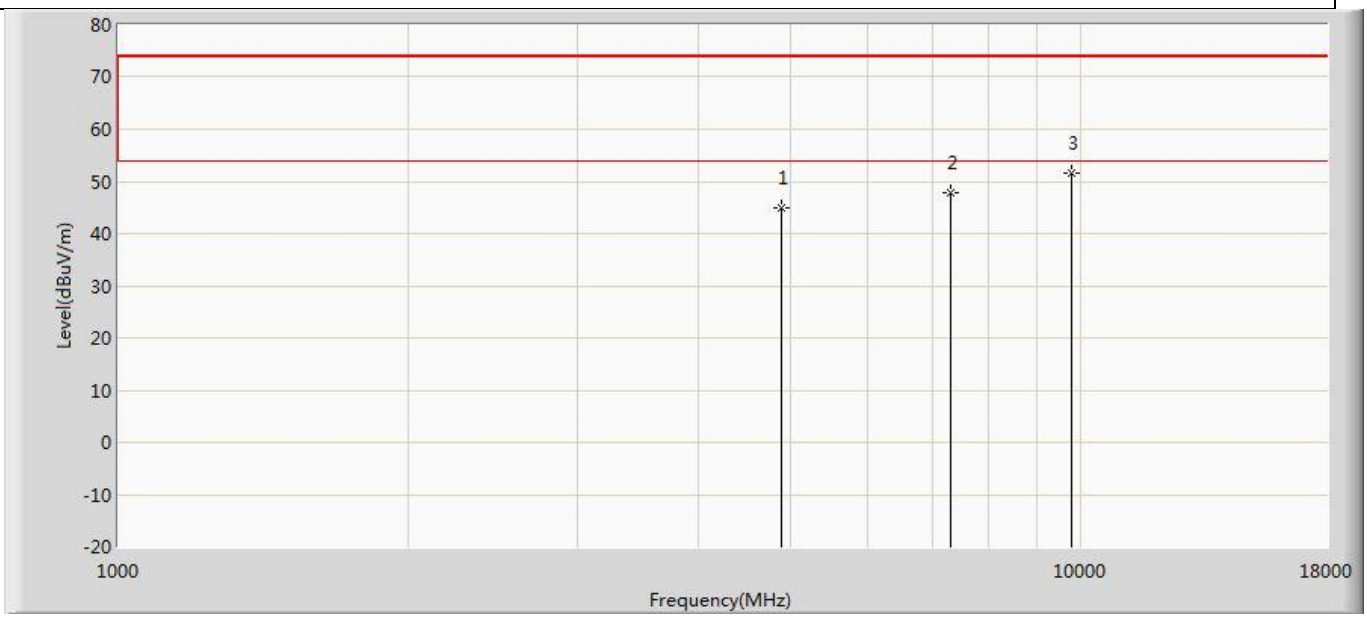

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 4804.000 | 43.978 | 56.033 | -30.022 | 74.000 | -12.055 | PK |
| 2 | | 7206.000 | 48.251 | 54.811 | -25.749 | 74.000 | -6.560 | PK |
| 3 | * | 9608.000 | 51.462 | 54.630 | -22.538 | 74.000 | -3.167 | PK |

| | |
|---|---|
| Profile: 24B0486R | Page No.: 8 |
| Engineer: Yu Liu | |
| Site: AC5 | Time: 2024/12/01 - 19:13 |
| Limit: FCC_Part15.209_RE(3m) | Margin: 0 |
| Probe: Horn_3117_00167055_(1-18GHz) | Polarity: Vertical |
| EUT: Wi-Fi and Bluetooth Module | Power: 3.3 Vdc |
| Note: Mode 1：Transmit at 2402MHz by LE_1Mbps | |



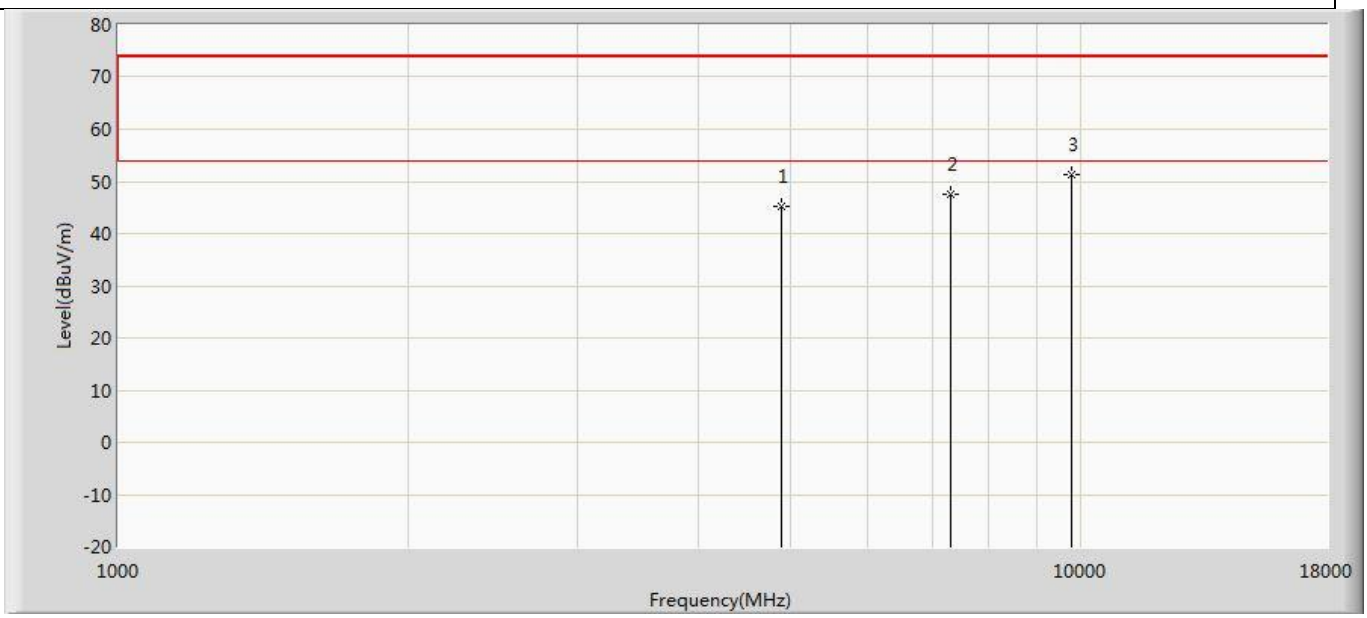

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 4804.000 | 43.726 | 55.781 | -30.274 | 74.000 | -12.055 | PK |
| 2 | | 7206.000 | 48.108 | 54.668 | -25.892 | 74.000 | -6.560 | PK |
| 3 | * | 9608.000 | 51.426 | 54.594 | -22.574 | 74.000 | -3.167 | PK |

| | |
|---|---|
| Profile: 24B0486R | Page No.: 9 |
| Engineer: Yu Liu | |
| Site: AC5 | Time: 2024/12/01 - 19:13 |
| Limit: FCC_Part15.209_RE(3m) | Margin: 0 |
| Probe: Horn_3117_00167055_(1-18GHz) | Polarity: Horizontal |
| EUT: Wi-Fi and Bluetooth Module | Power: 3.3 Vdc |
| Note: Mode 1：Transmit at 2440MHz by LE_1Mbps | |



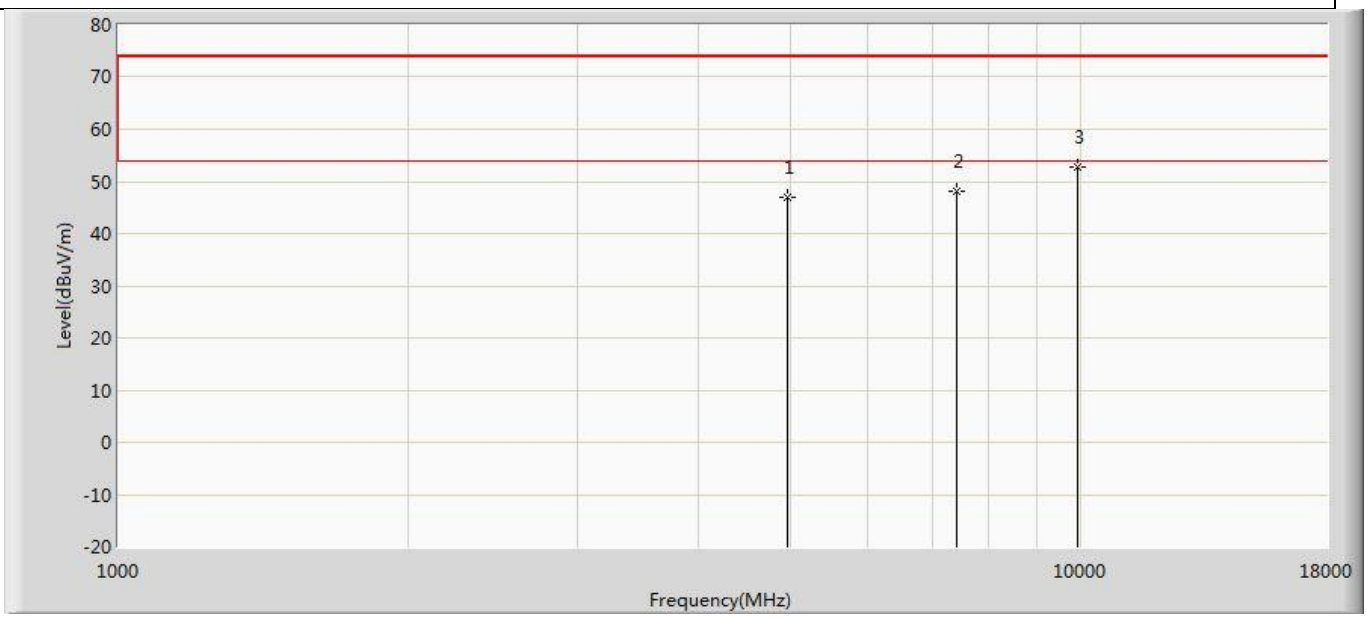

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 4880.000 | 44.783 | 55.560 | -29.217 | 74.000 | -10.777 | PK |
| 2 | | 7320.000 | 47.835 | 55.126 | -26.165 | 74.000 | -7.291 | PK |
| 3 | * | 9760.000 | 51.599 | 54.466 | -22.401 | 74.000 | -2.867 | PK |

| | |
|---|---|
| Profile: 24B0486R | Page No.: 10 |
| Engineer: Yu Liu | |
| Site: AC5 | Time: 2024/12/01 - 19:13 |
| Limit: FCC_Part15.209_RE(3m) | Margin: 0 |
| Probe: Horn_3117_00167055_(1-18GHz) | Polarity: Vertical |
| EUT: Wi-Fi and Bluetooth Module | Power: 3.3 Vdc |
| Note: Mode 1：Transmit at 2440MHz by LE_1Mbps | |



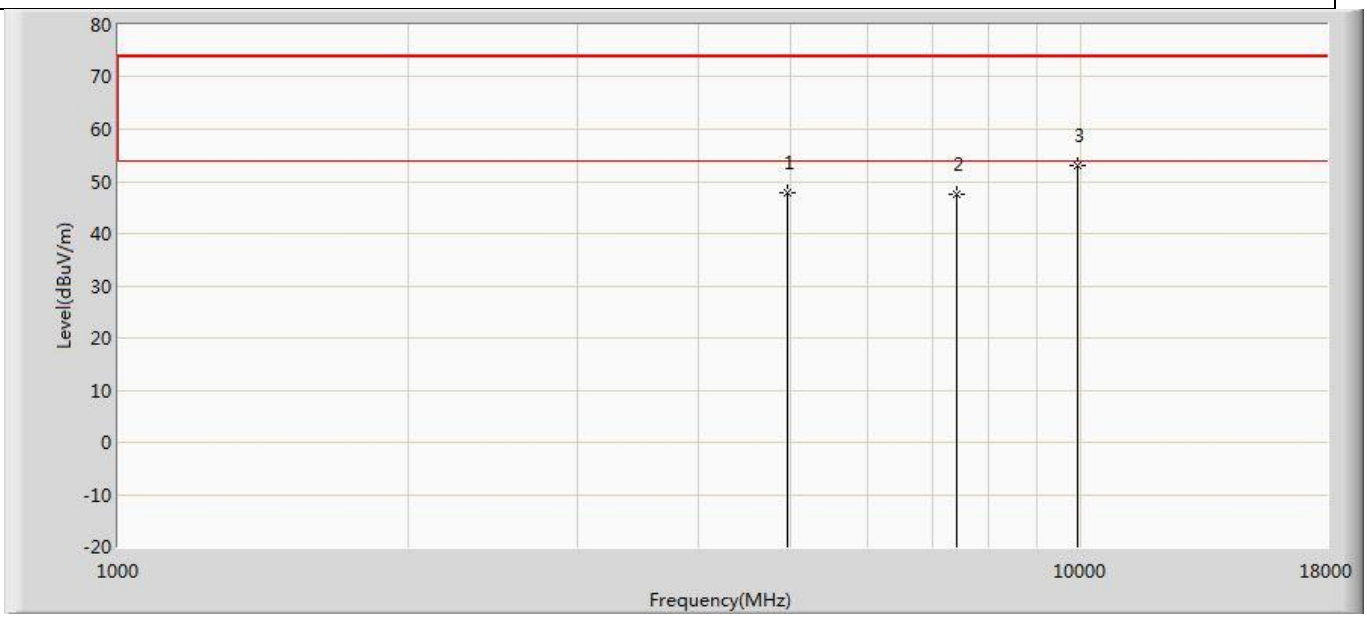

| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 4880.000 | 45.360 | 56.137 | -28.640 | 74.000 | -10.777 | PK |
| 2 | | 7320.000 | 47.392 | 54.683 | -26.608 | 74.000 | -7.291 | PK |
| 3 | * | 9760.000 | 51.360 | 54.227 | -22.640 | 74.000 | -2.867 | PK |

| | |
|---|---|
| Profile: 24B0486R | Page No.: 11 |
| Engineer: Yu Liu | |
| Site: AC5 | Time: 2024/12/01 - 19:13 |
| Limit: FCC_Part15.209_RE(3m) | Margin: 0 |
| Probe: Horn_3117_00167055_(1-18GHz) | Polarity: Horizontal |
| EUT: Wi-Fi and Bluetooth Module | Power: 3.3 Vdc |
| Note: Mode 1：Transmit at 2480MHz by LE_1Mbps | |




| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 4961.000 | 47.022 | 57.874 | -26.978 | 74.000 | -10.852 | PK |
| 2 | | 7440.000 | 48.237 | 55.347 | -25.763 | 74.000 | -7.110 | PK |
| 3 | * | 9920.000 | 52.877 | 54.742 | -21.123 | 74.000 | -1.865 | PK |

| | |
|---|---|
| Profile: 24B0486R | Page No.: 12 |
| Engineer: Yu Liu | |
| Site: AC5 | Time: 2024/12/01 - 19:13 |
| Limit: FCC_Part15.209_RE(3m) | Margin: 0 |
| Probe: Horn_3117_00167055_(1-18GHz) | Polarity: Vertical |
| EUT: Wi-Fi and Bluetooth Module | Power: 3.3 Vdc |
| Note: Mode 1：Transmit at 2480MHz by LE_1Mbps | |

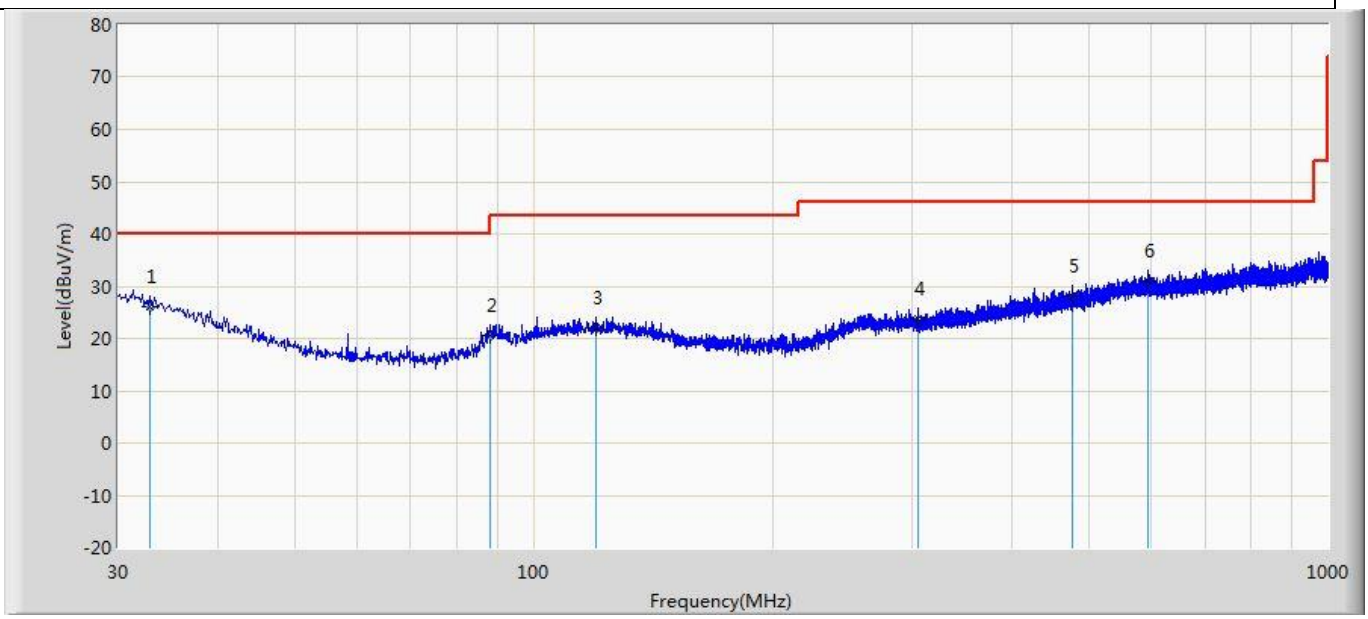



| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | | 4961.000 | 47.892 | 58.744 | -26.108 | 74.000 | -10.852 | PK |
| 2 | | 7440.000 | 47.582 | 54.692 | -26.418 | 74.000 | -7.110 | PK |
| 3 | * | 9920.000 | 53.085 | 54.950 | -20.915 | 74.000 | -1.865 | PK |

Note:
1. Measured Level = Reading Level + Factor.
2. The test frequency range, 9kHz~30MHz, worst case are at least 20dB below the limits, therefore no data appear in the report.
3. The test frequency range, 18GHz~26GHz test result on peak is lower than average limit, all is the noise base, therefore no data appear in the report.
4. If the test result on peak is lower than average limit, then average measurement needn't be performed.

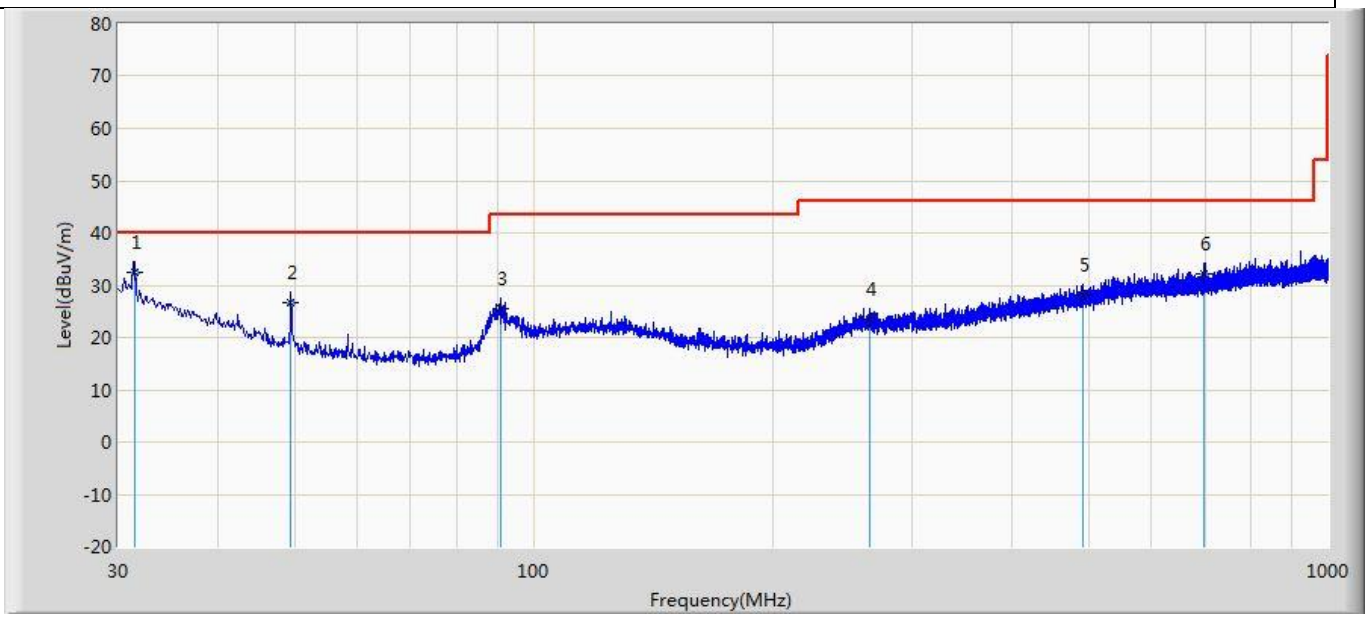
## The worst case of Radiated Emission below 1GHz :

| | |
|---|---|
| Profile: 24B0486R | Page No.: 1 |
| Engineer: Yu Liu | |
| Site: AC2 | Time: 2024/11/23 - 19:29 |
| Limit: FCC_Part 15.109_RE (3m)_Class B | Margin: 0 |
| Probe: CBL6112D_27613(30-1000MHz) | Polarity: Horizontal |
| EUT: Wi-Fi and Bluetooth Module | Power: 3.3 Vdc |
| Note: mode 1:Transmit at 2402MHz by LE_1Mbps | |




| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 32.910 | 26.005 | 2.457 | -13.995 | 40.000 | 23.548 | QP |
| 2 | | 88.200 | 20.500 | 5.027 | -23.000 | 43.500 | 15.473 | QP |
| 3 | | 119.725 | 22.002 | 2.669 | -21.498 | 43.500 | 19.333 | QP |
| 4 | | 305.480 | 23.891 | 2.896 | -22.109 | 46.000 | 20.995 | QP |
| 5 | | 477.170 | 28.181 | 3.016 | -17.819 | 46.000 | 25.165 | QP |
| 6 | | 594.055 | 30.904 | 3.748 | -15.096 | 46.000 | 27.156 | QP |

| | |
|---|---|
| Profile: 24B0486R | Page No.: 2 |
| Engineer: Yu Liu | |
| Site: AC2 | Time: 2024/11/23 - 19:29 |
| Limit: FCC_Part 15.109_RE (3m)_Class B | Margin: 0 |
| Probe: CBL6112D_27613(30-1000MHz) | Polarity: Vertical |
| EUT: Wi-Fi and Bluetooth Module | Power: 3.3 Vdc |
| Note: mode 1:Transmit at 2402MHz by LE_1Mbps | |




| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|---|---|---|---|---|---|---|---|---|
| 1 | * | 31.455 | 32.544 | 8.345 | -7.456 | 40.000 | 24.199 | QP |
| 2 | | 49.521 | 26.741 | 11.652 | -13.259 | 40.000 | 15.089 | QP |
| 3 | | 90.868 | 25.406 | 9.320 | -18.094 | 43.500 | 16.087 | QP |
| 4 | | 264.497 | 23.515 | 2.888 | -22.485 | 46.000 | 20.627 | QP |
| 5 | | 492.084 | 28.159 | 2.703 | -17.841 | 46.000 | 25.456 | QP |
| 6 | | 698.209 | 32.314 | 4.576 | -13.686 | 46.000 | 27.739 | QP |

Note:
1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp)

The End