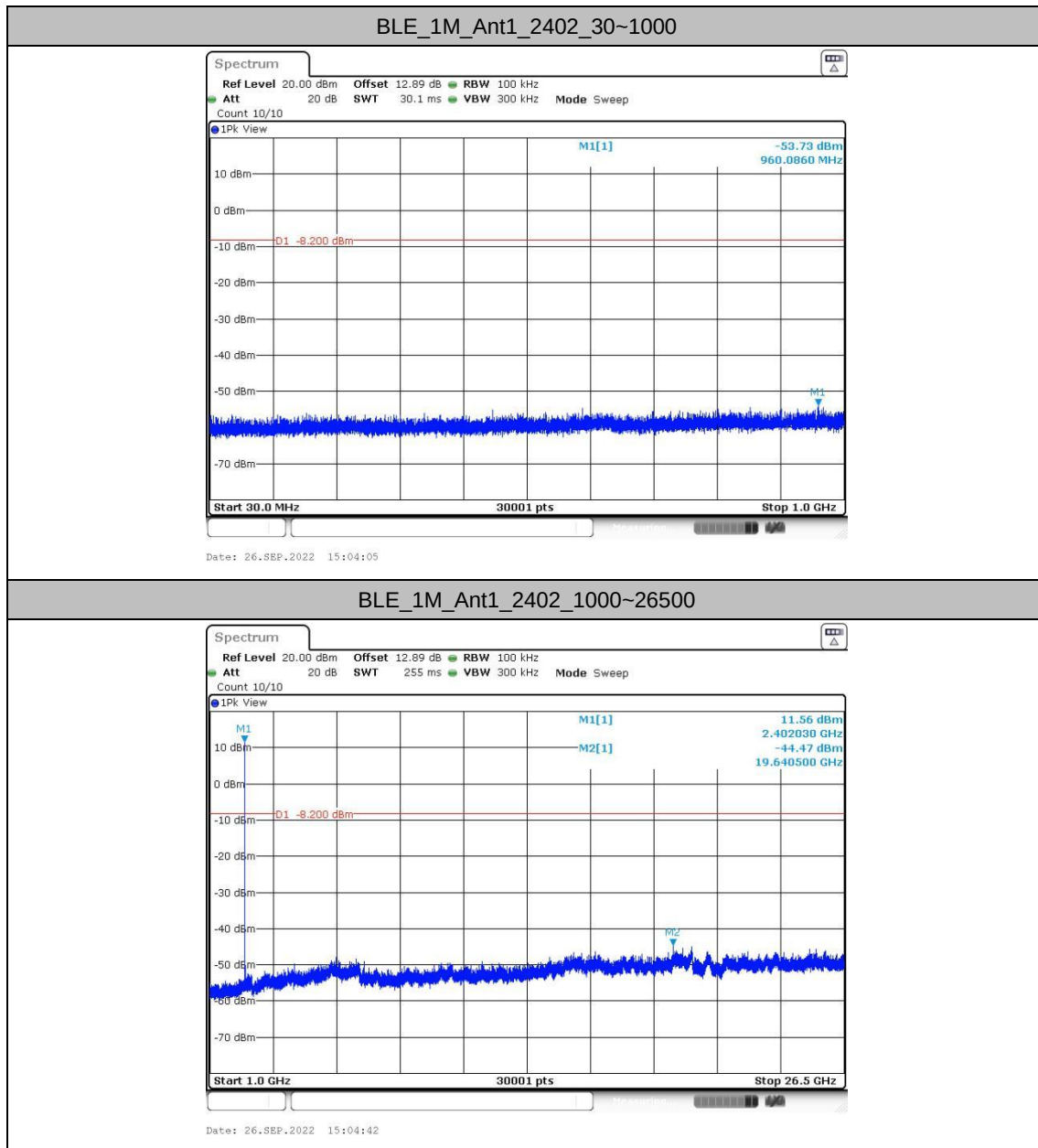
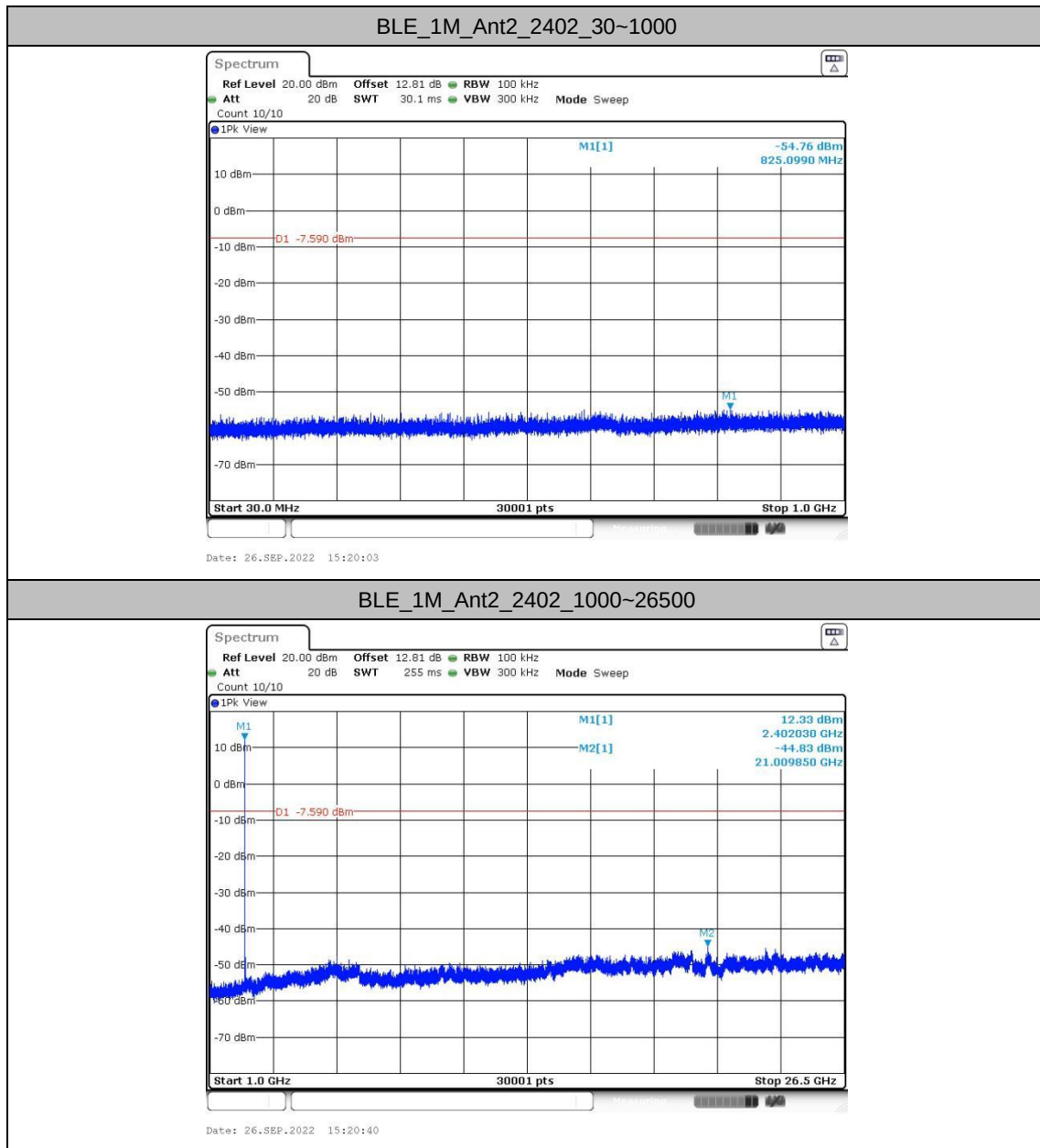
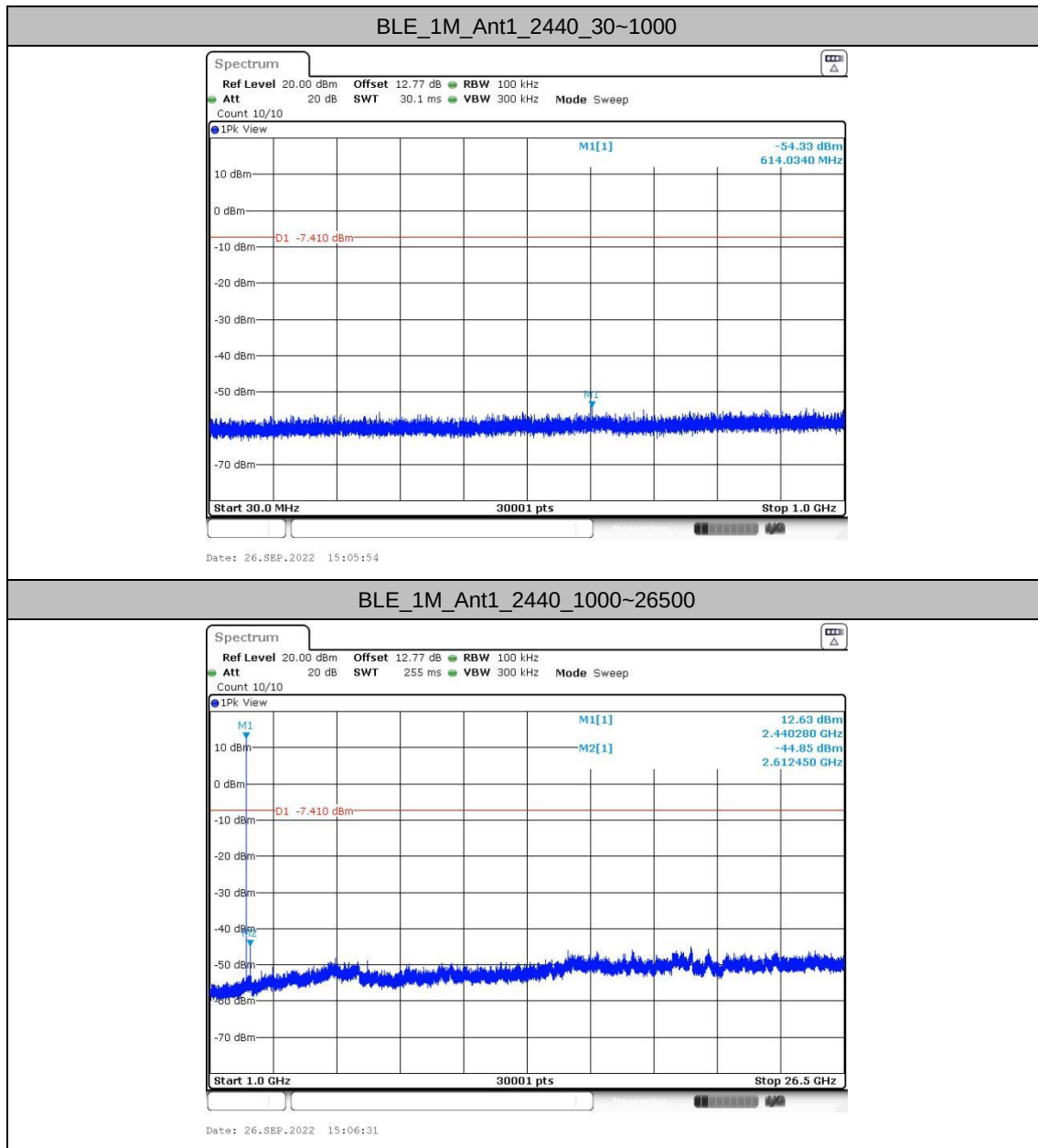


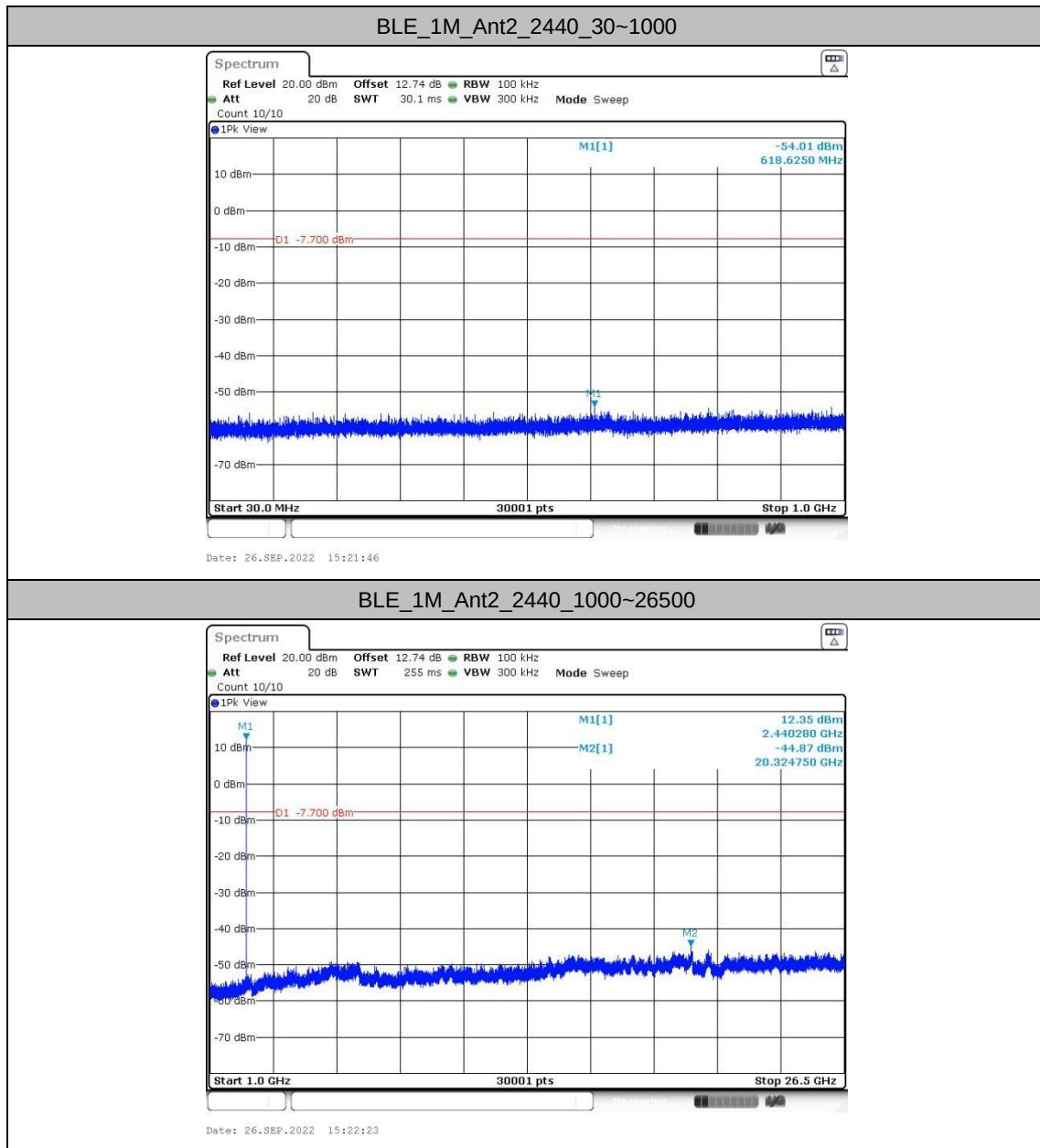


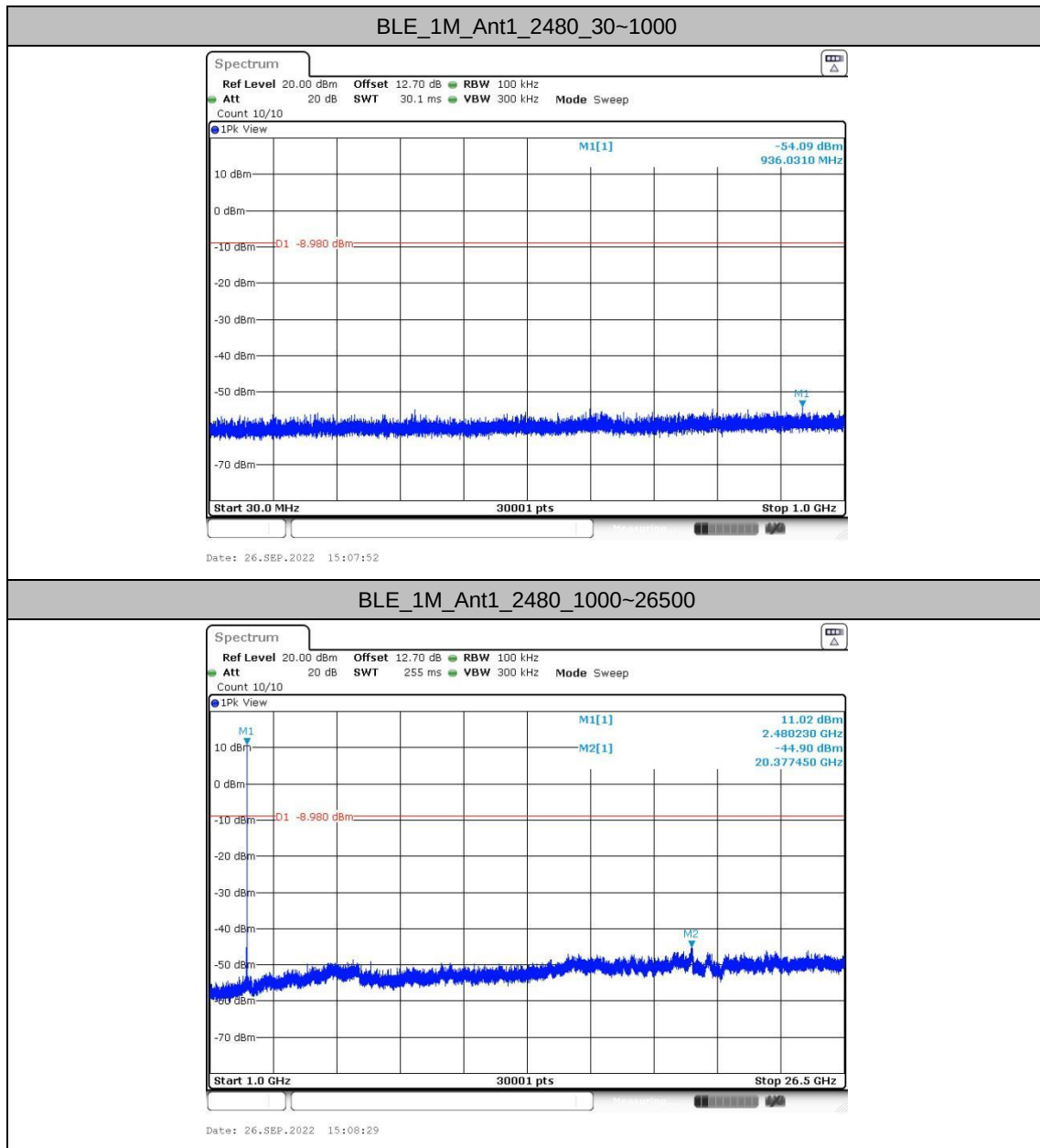
## Test Graphs

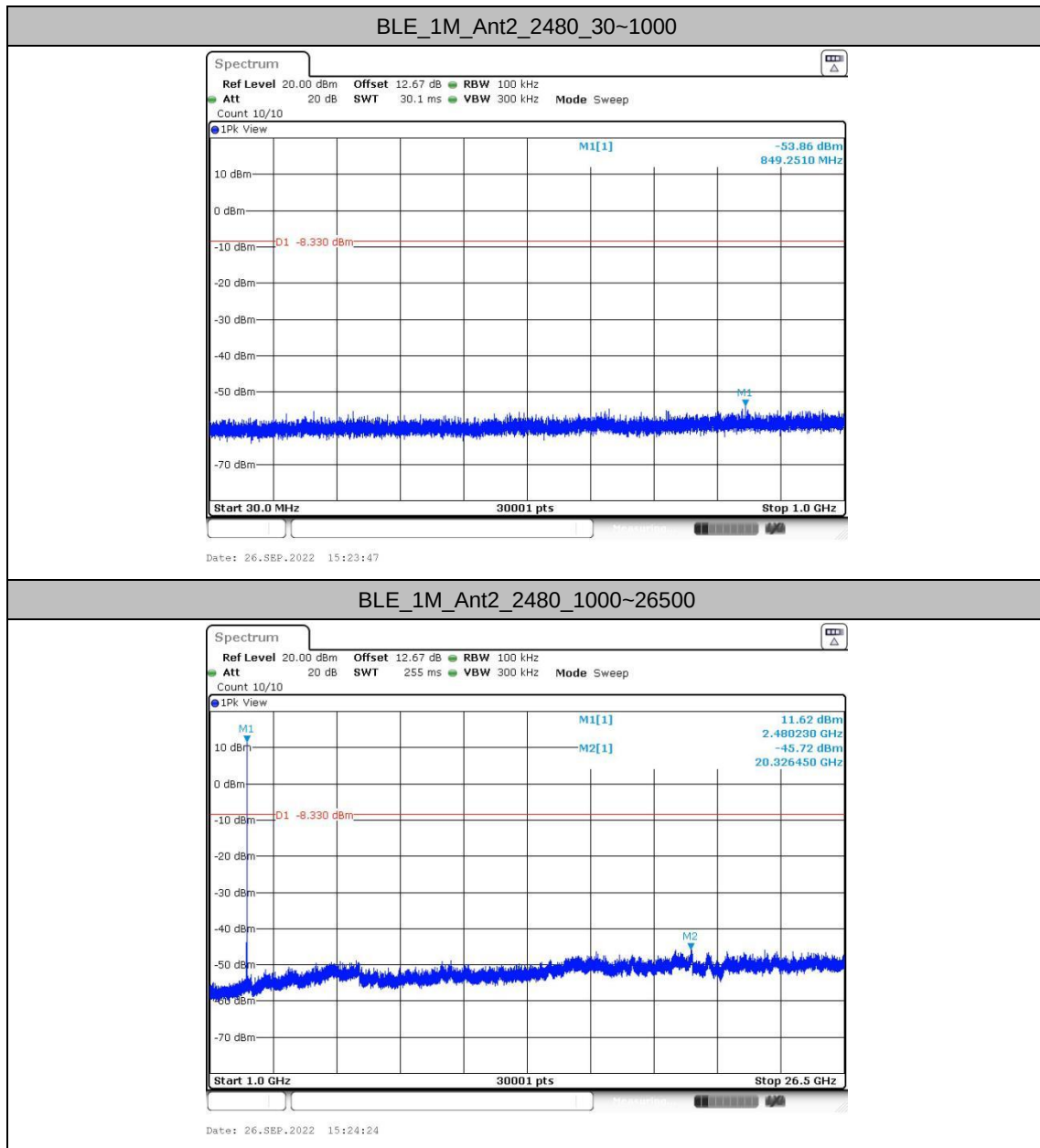


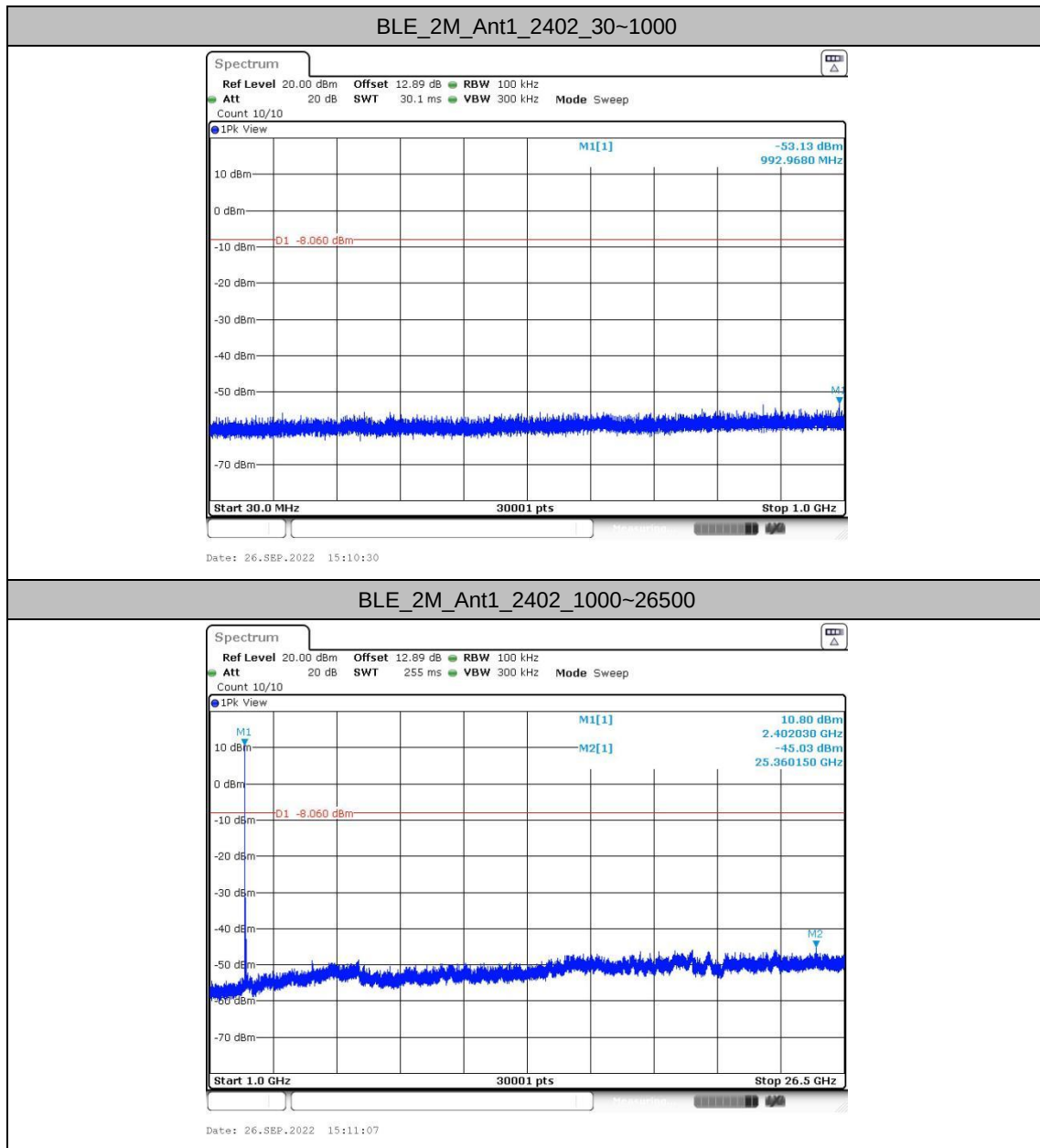


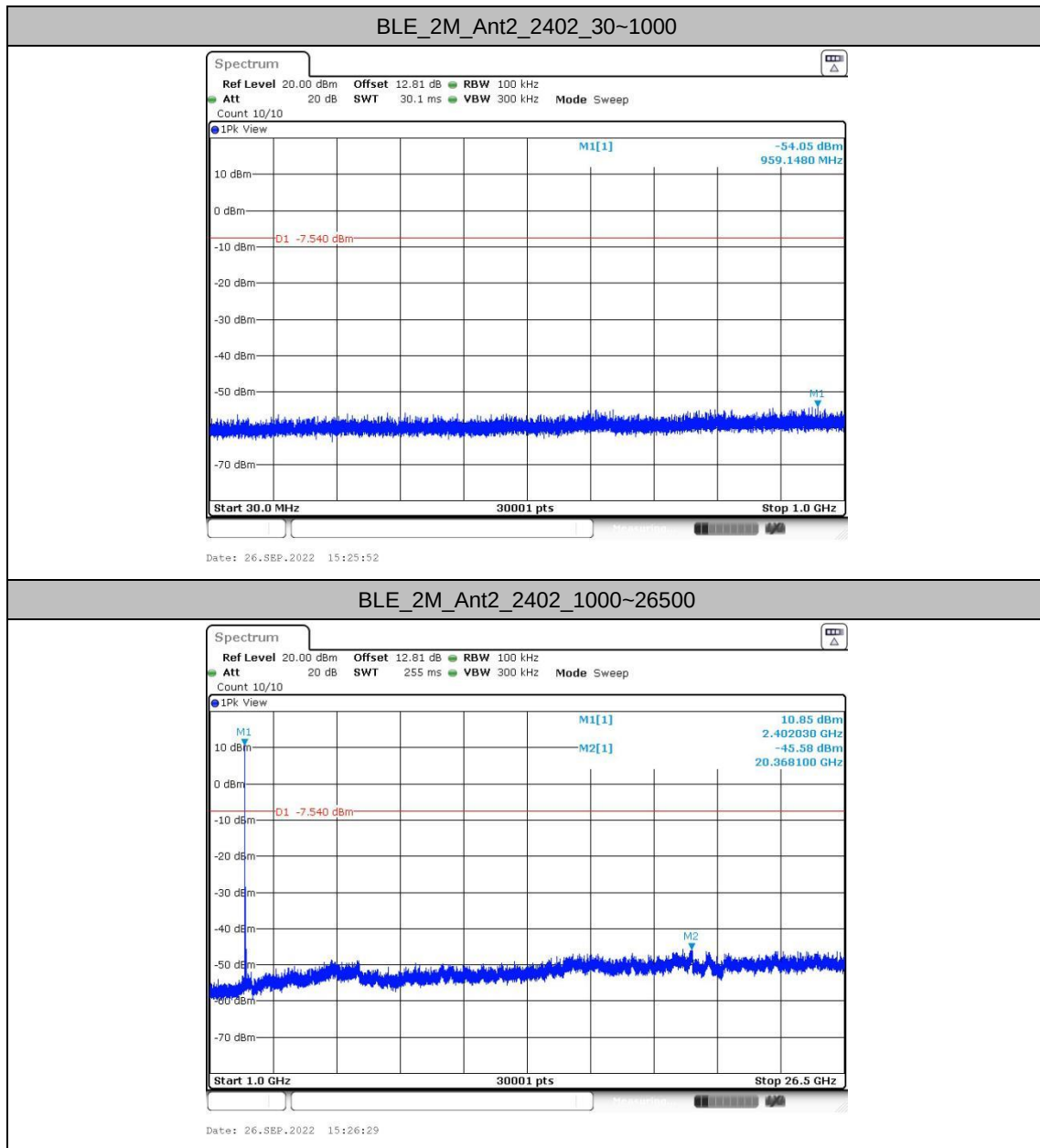


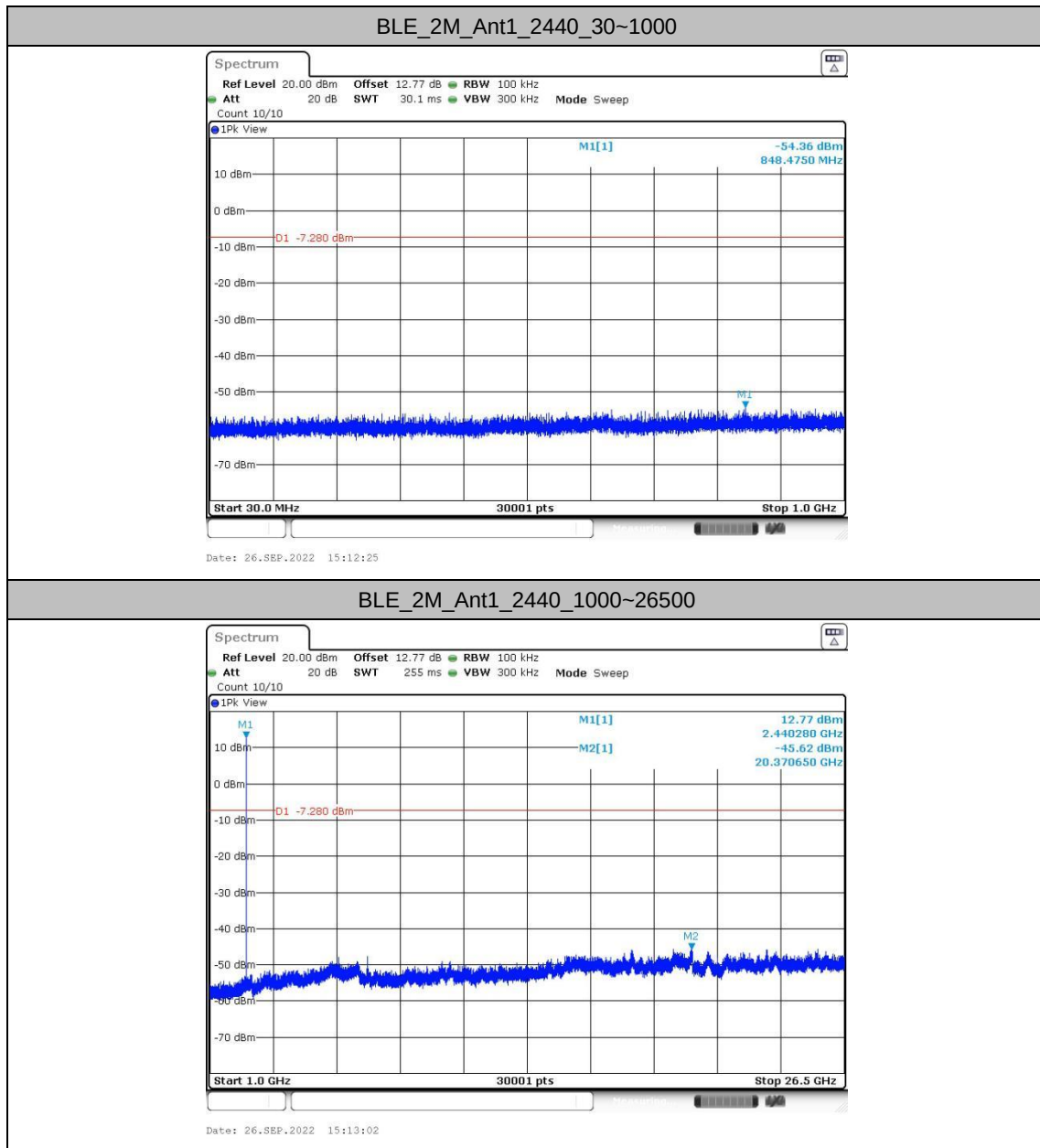


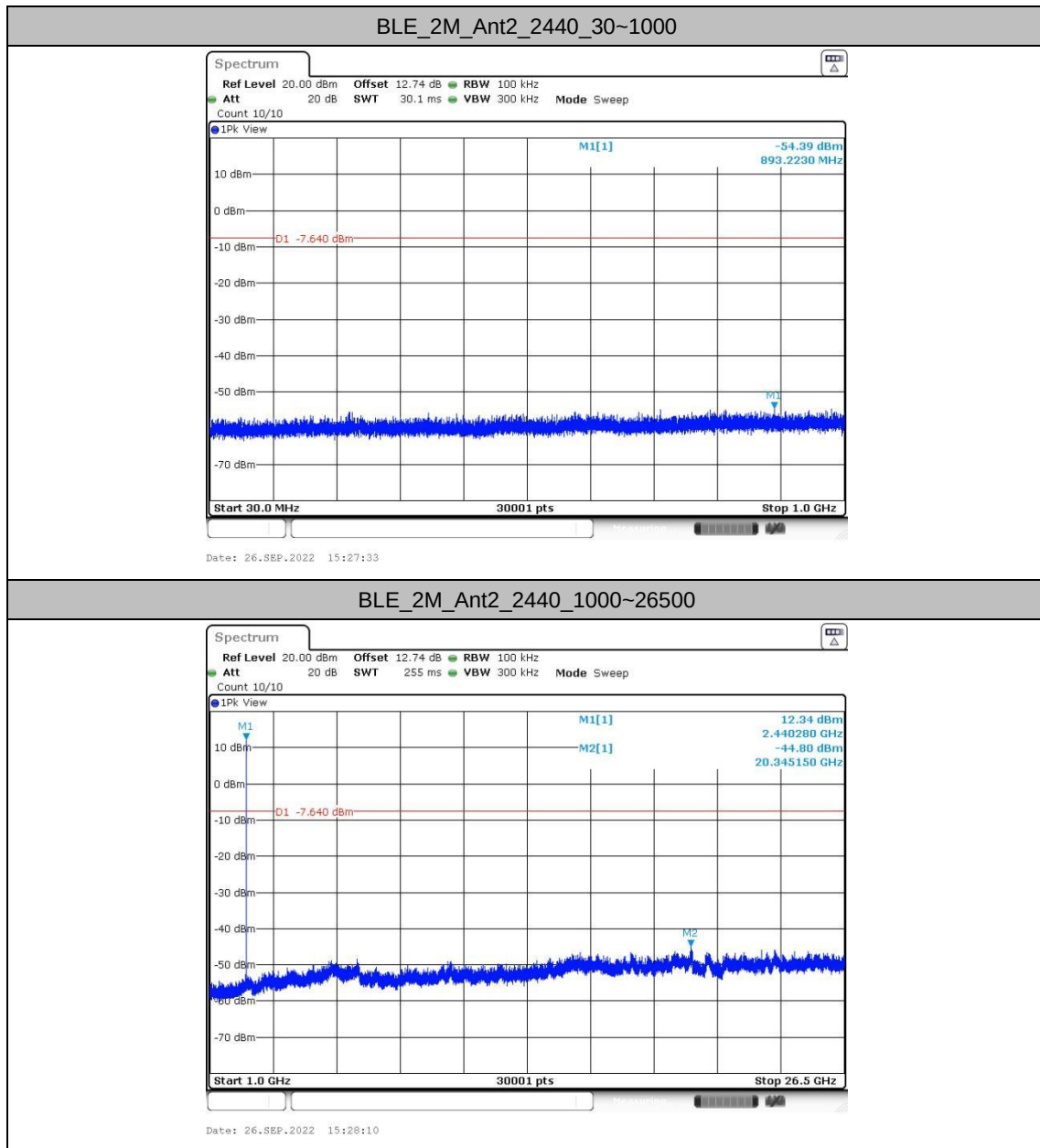


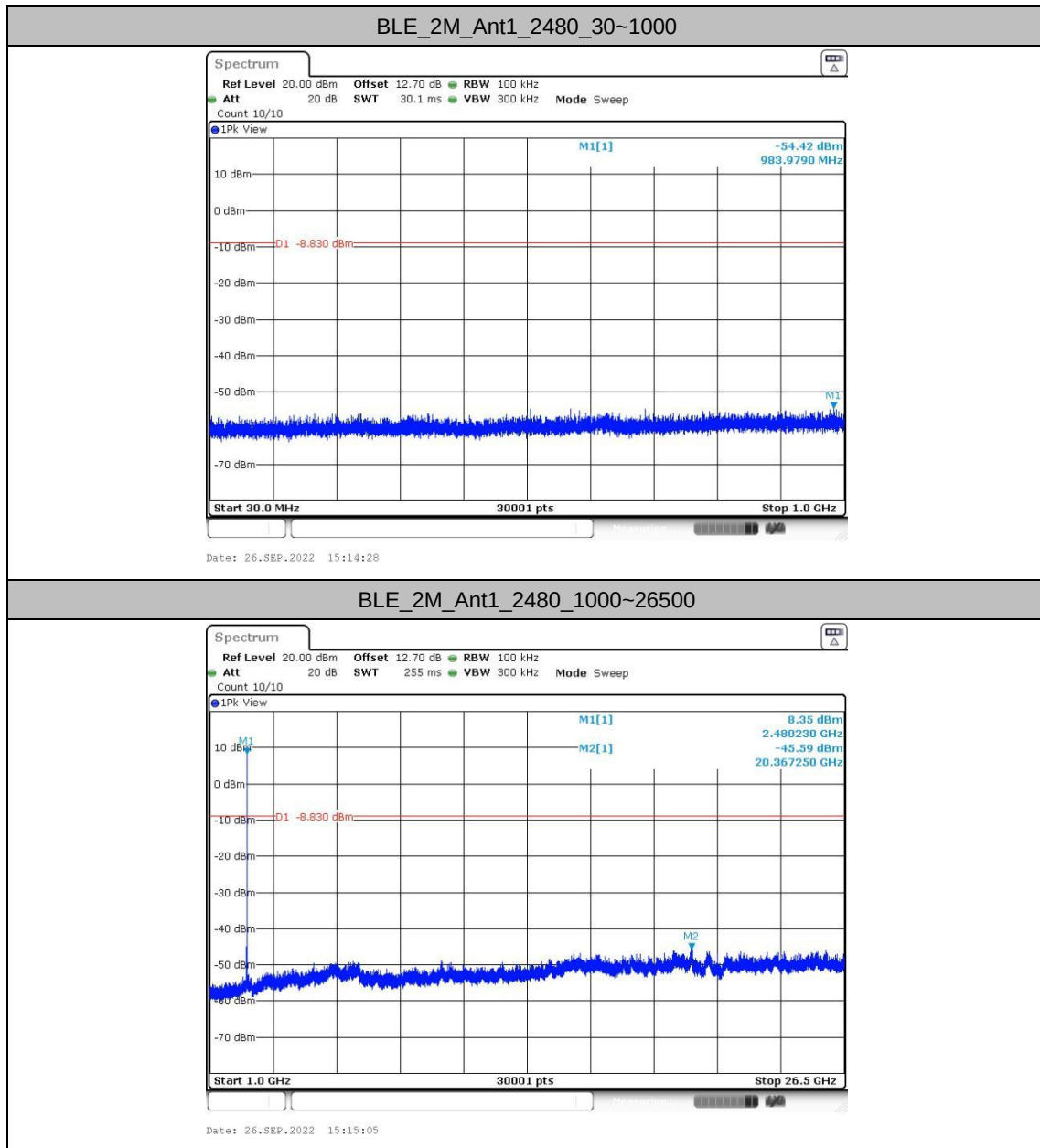


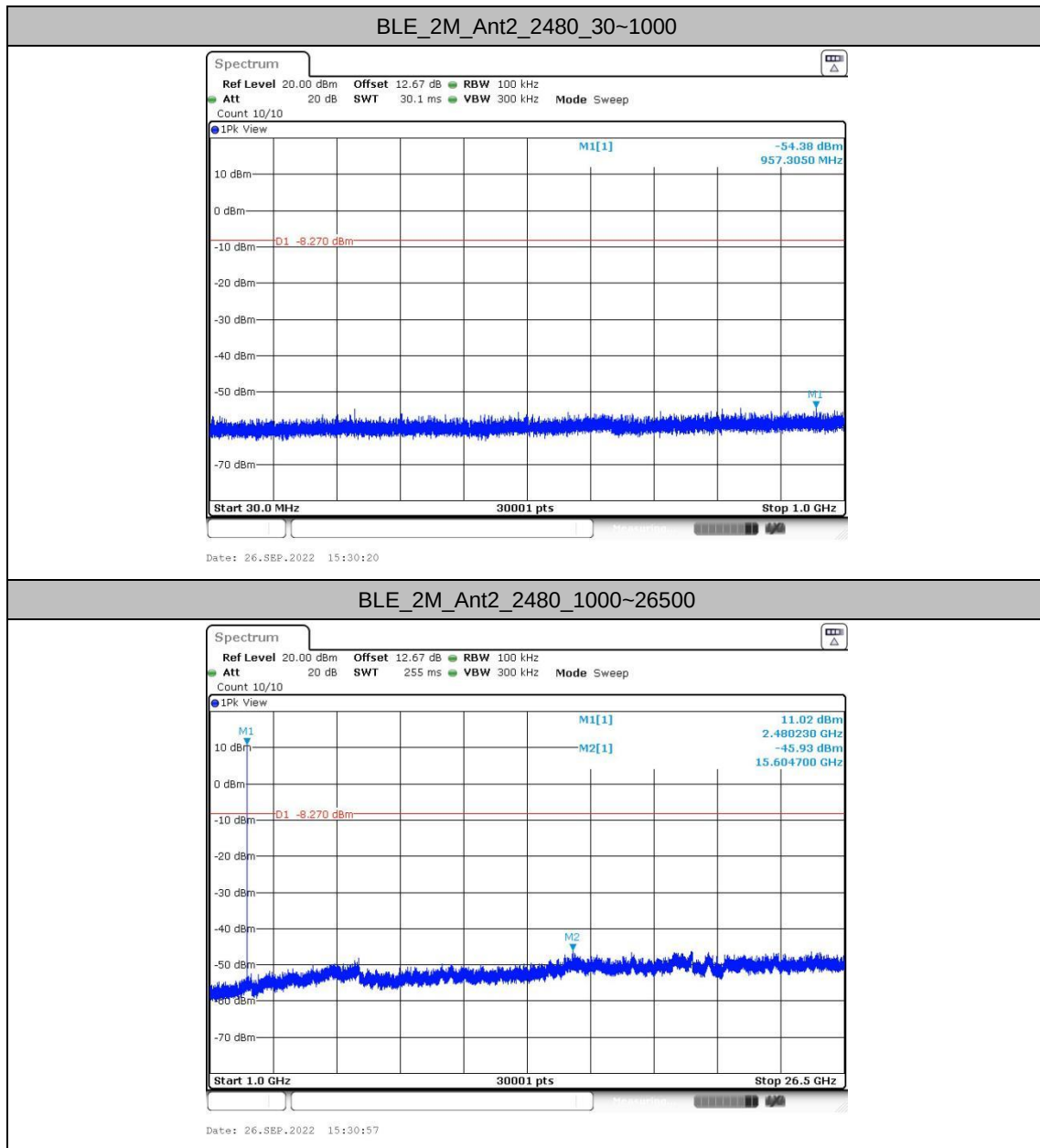








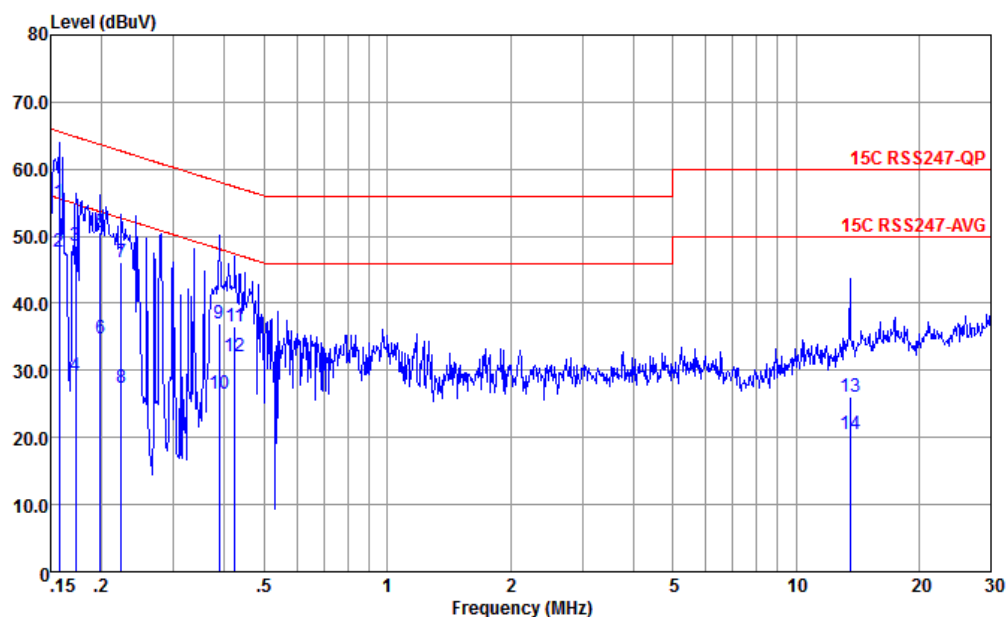






## Appendix B. AC Conducted Emission Test Results

|                 |                                                                                 |                     |             |
|-----------------|---------------------------------------------------------------------------------|---------------------|-------------|
| Test Engineer : | Amos                                                                            | Temperature :       | 25.3~26.2°C |
|                 |                                                                                 | Relative Humidity : | 38~40%      |
| Test Voltage :  | 120Vac / 60Hz                                                                   | Phase :             | Line        |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit. |                     |             |

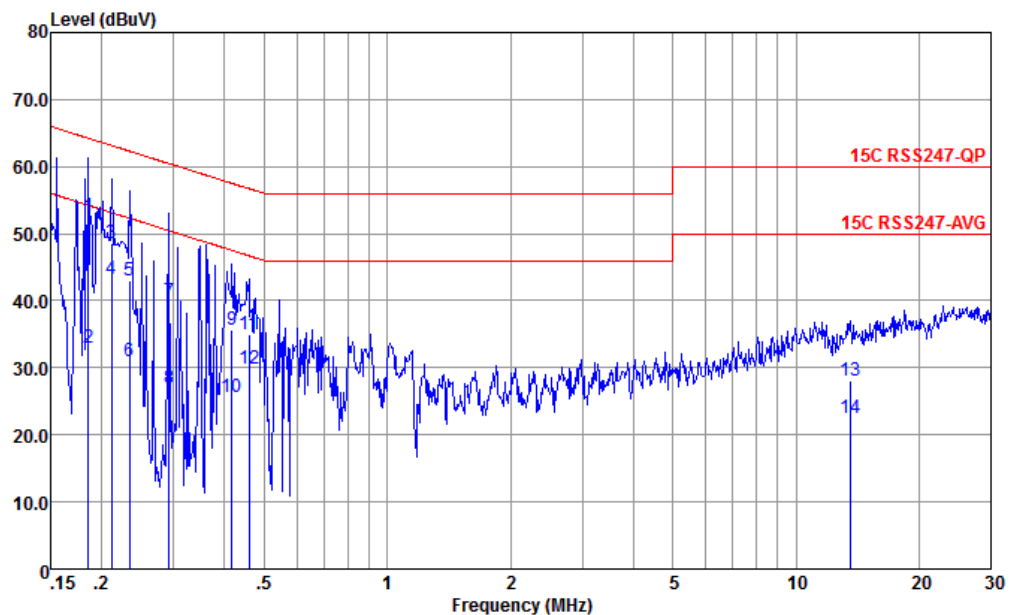


Site : CO01-KS  
Condition : 15C RSS247-QP LISN-060105-LINE LINE

|     | Freq   | Level | Over   | Limit | Read  | LISN   | Cable |         |
|-----|--------|-------|--------|-------|-------|--------|-------|---------|
|     | MHz    | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|     |        |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1   | 0.157  | 55.09 | -10.51 | 65.60 | 44.60 | 0.06   | 10.43 | QP      |
| 2 * | 0.157  | 47.59 | -8.01  | 55.60 | 37.10 | 0.06   | 10.43 | Average |
| 3   | 0.173  | 48.67 | -16.14 | 64.81 | 38.19 | 0.05   | 10.43 | QP      |
| 4   | 0.173  | 29.27 | -25.54 | 54.81 | 18.79 | 0.05   | 10.43 | Average |
| 5   | 0.199  | 50.64 | -13.03 | 63.67 | 40.20 | 0.02   | 10.42 | QP      |
| 6   | 0.199  | 34.74 | -18.93 | 53.67 | 24.30 | 0.02   | 10.42 | Average |
| 7   | 0.223  | 46.23 | -16.47 | 62.70 | 35.80 | 0.03   | 10.40 | QP      |
| 8   | 0.223  | 27.33 | -25.37 | 52.70 | 16.90 | 0.03   | 10.40 | Average |
| 9   | 0.387  | 36.92 | -21.20 | 58.12 | 26.60 | 0.01   | 10.31 | QP      |
| 10  | 0.387  | 26.62 | -21.50 | 48.12 | 16.30 | 0.01   | 10.31 | Average |
| 11  | 0.424  | 36.48 | -20.89 | 57.37 | 26.20 | 0.00   | 10.28 | QP      |
| 12  | 0.424  | 32.17 | -15.20 | 47.37 | 21.89 | 0.00   | 10.28 | Average |
| 13  | 13.560 | 26.12 | -33.88 | 60.00 | 15.20 | -0.20  | 11.12 | QP      |
| 14  | 13.560 | 20.52 | -29.48 | 50.00 | 9.60  | -0.20  | 11.12 | Average |



|                 |                                                                                 |                     |             |
|-----------------|---------------------------------------------------------------------------------|---------------------|-------------|
| Test Engineer : | Amos                                                                            | Temperature :       | 25.3~26.2°C |
|                 |                                                                                 | Relative Humidity : | 38~40%      |
| Test Voltage :  | 120Vac / 60Hz                                                                   | Phase :             | Neutral     |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit. |                     |             |



Site : CO01-KS  
Condition : 15C RSS247-QP LISN-060105-NEUTRAL NEUTRAL

|     | Freq   | Level | Over   | Limit | Read  | LISN   | Cable |         |
|-----|--------|-------|--------|-------|-------|--------|-------|---------|
|     | MHz    | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|     |        |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1   | 0.185  | 52.67 | -11.57 | 64.24 | 42.21 | 0.04   | 10.42 | QP      |
| 2   | 0.185  | 33.07 | -21.17 | 54.24 | 22.61 | 0.04   | 10.42 | Average |
| 3   | 0.212  | 48.65 | -14.49 | 63.14 | 38.20 | 0.04   | 10.41 | QP      |
| 4 * | 0.212  | 43.15 | -9.99  | 53.14 | 32.70 | 0.04   | 10.41 | Average |
| 5   | 0.234  | 42.90 | -19.40 | 62.30 | 32.50 | 0.01   | 10.39 | QP      |
| 6   | 0.234  | 31.00 | -21.30 | 52.30 | 20.60 | 0.01   | 10.39 | Average |
| 7   | 0.292  | 39.91 | -20.55 | 60.46 | 29.60 | -0.04  | 10.35 | QP      |
| 8   | 0.292  | 26.91 | -23.55 | 50.46 | 16.60 | -0.04  | 10.35 | Average |
| 9   | 0.417  | 35.71 | -21.80 | 57.51 | 25.50 | -0.07  | 10.28 | QP      |
| 10  | 0.417  | 25.71 | -21.80 | 47.51 | 15.50 | -0.07  | 10.28 | Average |
| 11  | 0.459  | 34.97 | -21.74 | 56.71 | 24.81 | -0.08  | 10.24 | QP      |
| 12  | 0.459  | 29.87 | -16.84 | 46.71 | 19.71 | -0.08  | 10.24 | Average |
| 13  | 13.560 | 28.14 | -31.86 | 60.00 | 17.20 | -0.18  | 11.12 | QP      |
| 14  | 13.560 | 22.44 | -27.56 | 50.00 | 11.50 | -0.18  | 11.12 | Average |

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)



## AppendixC. Radiated Spurious Emission

|                 |          |                     |         |
|-----------------|----------|---------------------|---------|
| Test Engineer : | Carry Xu | Temperature :       | 22~23°C |
|                 |          | Relative Humidity : | 41~42%  |

Note: All modes had been tested and only the worst channel test data shown in the report

### 2.4GHz 2400~2483.5MHz

#### BLE (Band Edge @ 3m)

| BLE                     | Note                                                                                        | Frequency | Level      | Over Limit | Limit Line | Read Level | Antenna Factor | Path Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol.    |
|-------------------------|---------------------------------------------------------------------------------------------|-----------|------------|------------|------------|------------|----------------|-----------|---------------|---------|-----------|-----------|---------|
|                         |                                                                                             | ( MHz )   | ( dBμV/m ) | ( dB )     | ( dBμV/m ) | ( dBμV )   | ( dB/m )       | ( dB )    | ( dB )        | ( cm )  | ( deg )   | ( P/A )   | ( H/V ) |
| BLE<br>CH 39<br>2480MHz | *                                                                                           | 2480      | 102.51     | -          | -          | 95.99      | 32.43          | 6.73      | 32.64         | 299     | 303       | P         | H       |
|                         | *                                                                                           | 2480      | 100.78     | -          | -          | 94.26      | 32.43          | 6.73      | 32.64         | 299     | 303       | A         | H       |
|                         |                                                                                             | 2483.5    | 58.35      | -15.65     | 74         | 51.83      | 32.43          | 6.73      | 32.64         | 299     | 303       | P         | H       |
|                         |                                                                                             | 2483.56   | 46.32      | -7.68      | 54         | 39.8       | 32.43          | 6.73      | 32.64         | 299     | 303       | A         | H       |
|                         | *                                                                                           | 2480      | 109.1      | -          | -          | 102.58     | 32.43          | 6.73      | 32.64         | 127     | 112       | P         | V       |
|                         | *                                                                                           | 2480      | 107.12     | -          | -          | 100.6      | 32.43          | 6.73      | 32.64         | 127     | 112       | A         | V       |
|                         |                                                                                             | 2483.56   | 65.07      | -8.93      | 74         | 58.55      | 32.43          | 6.73      | 32.64         | 127     | 112       | P         | V       |
|                         |                                                                                             | 2483.5    | 50.31      | -3.69      | 54         | 43.79      | 32.43          | 6.73      | 32.64         | 127     | 112       | A         | V       |
| Remark                  | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |           |            |            |            |            |                |           |               |         |           |           |         |

**2.4GHz 2400~2483.5MHz****BLE (Harmonic @ 3m)**

| BLE                              | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Path<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|----------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| <b>BLE<br/>CH 39<br/>2480MHz</b> |                                                                                             | 4965                 | 41.15               | -32.85                  | 74                          | 59.01                     | 34.1                          | 9.61                   | 61.57                      | 300                  | 0                       | P                       | H               |
|                                  |                                                                                             | 7440                 | 43.23               | -30.77                  | 74                          | 57.45                     | 35.7                          | 11.78                  | 61.7                       | 300                  | 0                       | P                       | H               |
|                                  |                                                                                             | 4965                 | 41.11               | -32.89                  | 74                          | 58.97                     | 34.1                          | 9.61                   | 61.57                      | 100                  | 0                       | P                       | V               |
|                                  |                                                                                             | 7440                 | 43.15               | -30.85                  | 74                          | 57.37                     | 35.7                          | 11.78                  | 61.7                       | 100                  | 0                       | P                       | V               |
| <b>Remark</b>                    | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |



## Emission below 1GHz

## 2.4GHz BLE (LF)

| BLE                 | Note                                                                       | Frequency | Level      | Over   | Limit      | Read   | Antenna  | Path   | Preamp | Ant    | Table   | Peak  | Pol.  |
|---------------------|----------------------------------------------------------------------------|-----------|------------|--------|------------|--------|----------|--------|--------|--------|---------|-------|-------|
|                     |                                                                            |           |            | Limit  | Line       | Level  | Factor   | Loss   | Factor | Pos    | Pos     | Avg.  |       |
|                     |                                                                            | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | (dBμV) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 2.4GHz<br>BLE<br>LF |                                                                            | 68.8      | 14.96      | -25.04 | 40         | 30.95  | 15.24    | 1.17   | 32.4   | -      | -       | P     | H     |
|                     |                                                                            | 94.02     | 15.76      | -27.74 | 43.5       | 31.48  | 15.32    | 1.36   | 32.4   | -      | -       | P     | H     |
|                     |                                                                            | 187.14    | 19.94      | -23.56 | 43.5       | 35.27  | 15.06    | 2.01   | 32.4   | -      | -       | P     | H     |
|                     |                                                                            | 265.71    | 17.84      | -28.16 | 46         | 28.56  | 19.45    | 2.23   | 32.4   | -      | -       | P     | H     |
|                     |                                                                            | 350.1     | 21.5       | -24.5  | 46         | 30.53  | 20.61    | 2.76   | 32.4   | -      | -       | P     | H     |
|                     |                                                                            | 691.54    | 26.91      | -19.09 | 46         | 28.73  | 26.67    | 3.91   | 32.4   | -      | -       | P     | H     |
|                     |                                                                            | 67.83     | 27.48      | -12.52 | 40         | 47.03  | 12.36    | 0.93   | 32.84  | -      | -       | P     | V     |
|                     |                                                                            | 98.87     | 23.56      | -19.94 | 43.5       | 39.16  | 15.93    | 1.34   | 32.87  | -      | -       | P     | V     |
|                     |                                                                            | 250.19    | 18.76      | -27.24 | 46         | 30.75  | 18.65    | 2.13   | 32.77  | -      | -       | P     | V     |
|                     |                                                                            | 323.91    | 21.53      | -24.47 | 46         | 32.28  | 19.68    | 2.43   | 32.86  | -      | -       | P     | V     |
|                     |                                                                            | 518.88    | 25.33      | -20.67 | 46         | 30.98  | 24.27    | 3.07   | 32.99  | -      | -       | P     | V     |
|                     |                                                                            | 690.57    | 28.02      | -17.98 | 46         | 30.75  | 26.77    | 3.55   | 33.05  | -      | -       | P     | V     |
| Remark              | 1. No other spurious found.<br>2. All results are PASS against limit line. |           |            |        |            |        |          |        |        |        |         |       |       |



**Note symbol**

|     |                                                                                                                                                          |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| *   | <b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. |
| !   | Test result is <b>over limit</b> line.                                                                                                                   |
| P/A | <b>Peak</b> or <b>Average</b>                                                                                                                            |
| H/V | <b>H</b> orizontal or <b>V</b> ertical                                                                                                                   |



A calculation example for radiated spurious emission is shown as below:

| BLE                     | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | Preamp | Ant    | Table   | Peak    | Pol.    |
|-------------------------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
|                         |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
|                         |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| BLE<br>CH 00<br>2402MHz |      | 2390      | 55.45      | -18.55 | 74         | 54.51    | 32.22    | 4.58   | 35.86  | 103    | 308     | P       | H       |
|                         |      | 2390      | 43.54      | -10.46 | 54         | 42.6     | 32.22    | 4.58   | 35.86  | 103    | 308     | A       | H       |

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =  
Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)  
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)  
= 55.45 (dBμV/m)
2. Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)  
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)  
= 43.54 (dBμV/m)
2. Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 43.54(dBμV/m) – 54(dBμV/m)  
= -10.46(dB)

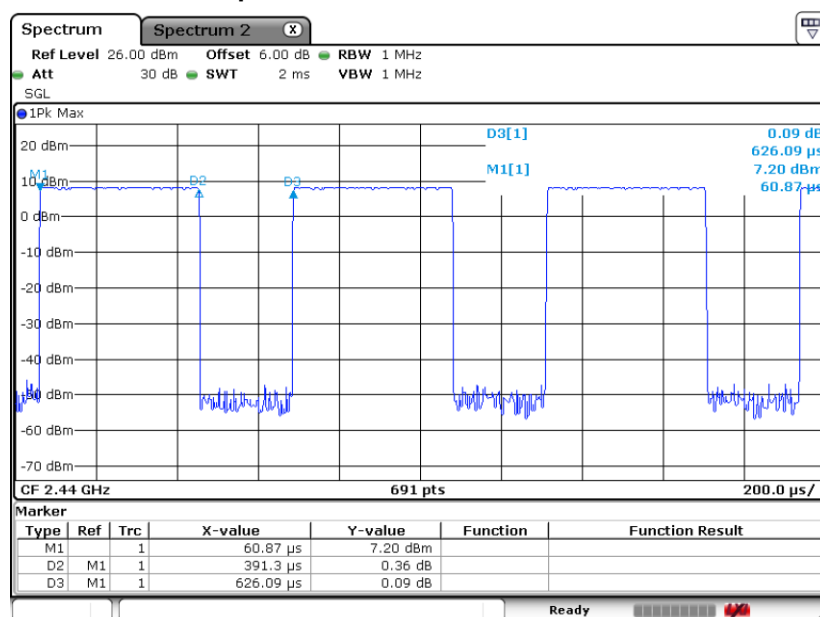
Both peak and average measured complies with the limit line, so test result is “PASS”.



## Appendix D. Duty Cycle Plots

| Band               | Duty Cycle(%) | T(ms) | 1/T(kHz) | VBW Setting |
|--------------------|---------------|-------|----------|-------------|
| Bluetooth LE 1Mbps | 62.50         | 0.391 | 2.556    | 2.7KHz      |
| Bluetooth LE 2Mbps | 33.33         | 0.209 | 4.792    | 5.1KHz      |

### Bluetooth LE 1Mbps





## Bluetooth LE 2Mbps

