

## Appendix B

### RF Test Data for BT V5.0 (BT LE) (Conducted Measurement)

Product Name: Bluetooth speaker

Trade Mark: N/A

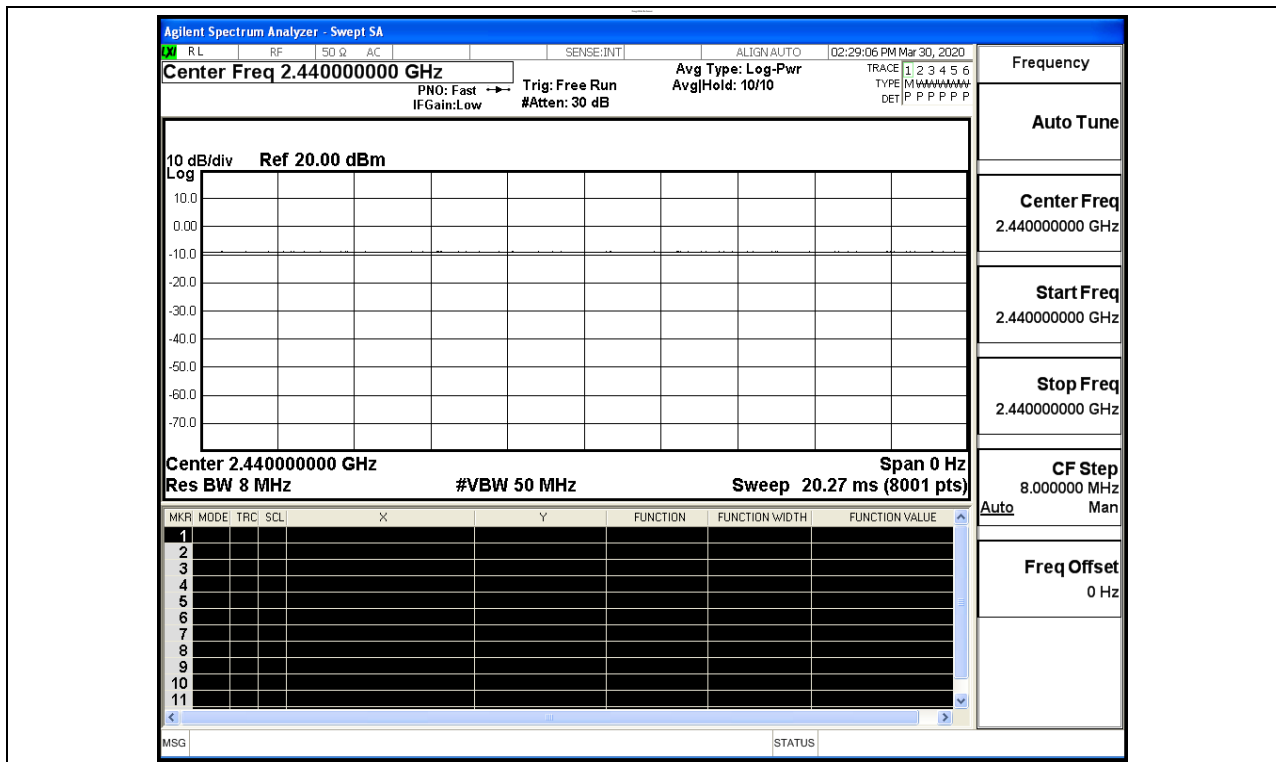
Test Model: XO-9927

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 50%       |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Qu Xin    |
| Supervised by:     | Tom.Liu   |

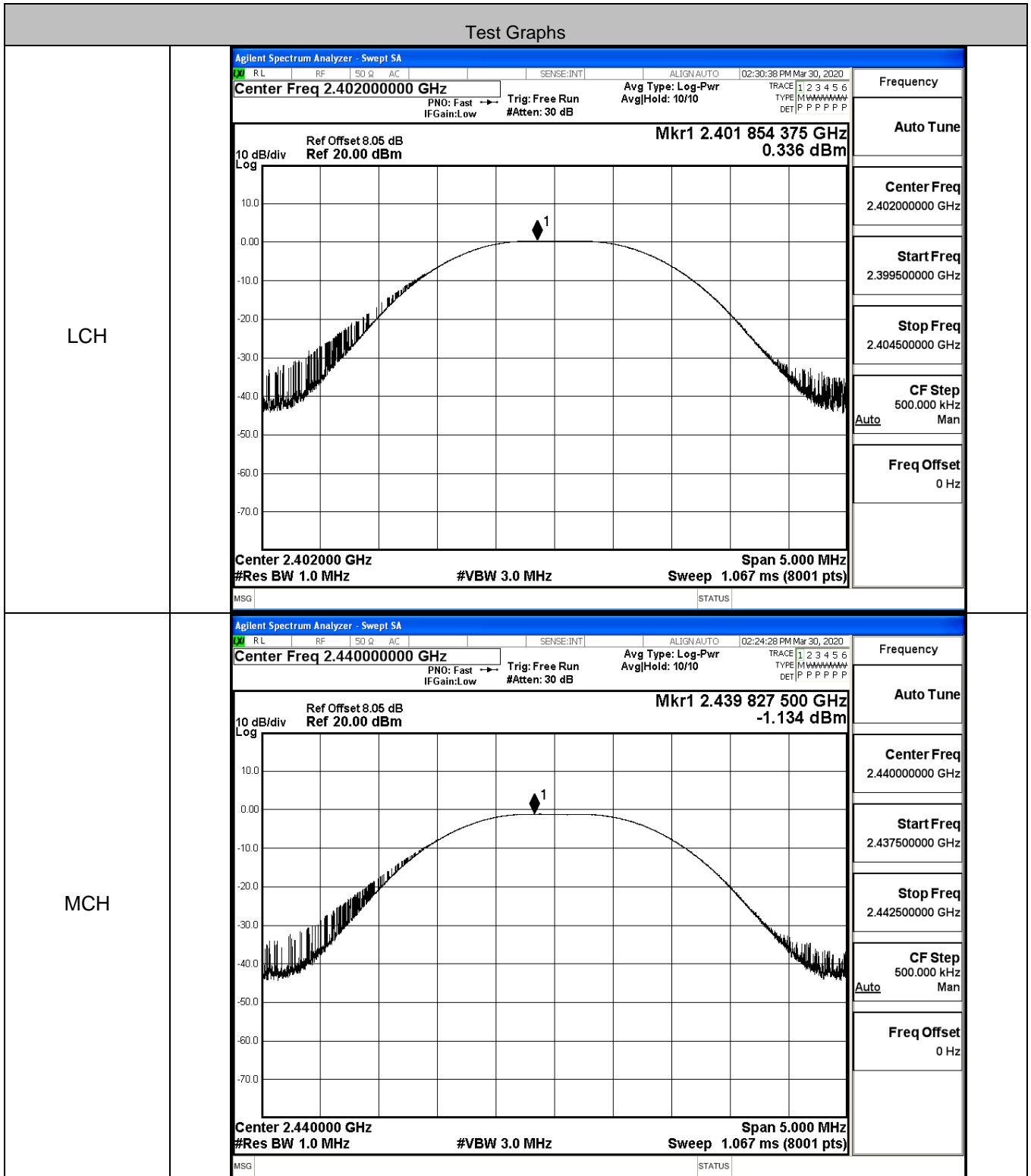
#### B.1 Duty Cycle

| Test Mode | Test Channel | Ant  | Duty Cycle[%] | Verdict |
|-----------|--------------|------|---------------|---------|
| BT LE     | 2440         | Ant1 | 100           | PASS    |

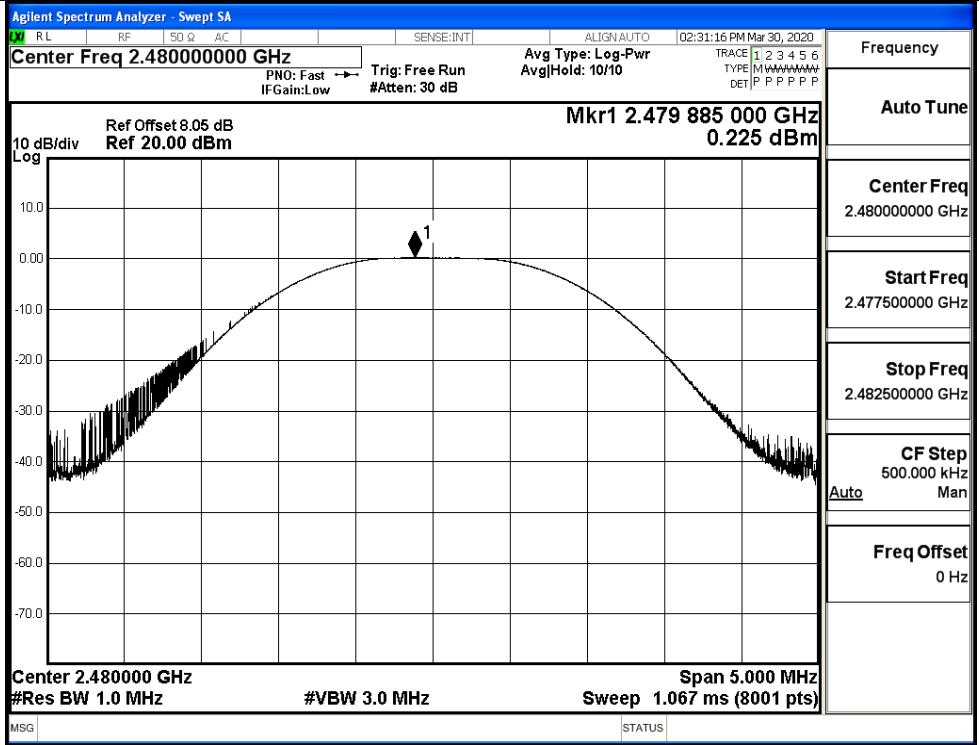


### B.2 Maximum Conducted Peak Output Power

| Mode  | Channel | Conduct Peak Power[dBm] | Limit [dBm] | Verdict |
|-------|---------|-------------------------|-------------|---------|
| BT LE | LCH     | 0.336                   | 30          | PASS    |
| BT LE | MCH     | -1.134                  | 30          | PASS    |
| BT LE | HCH     | 0.225                   | 30          | PASS    |



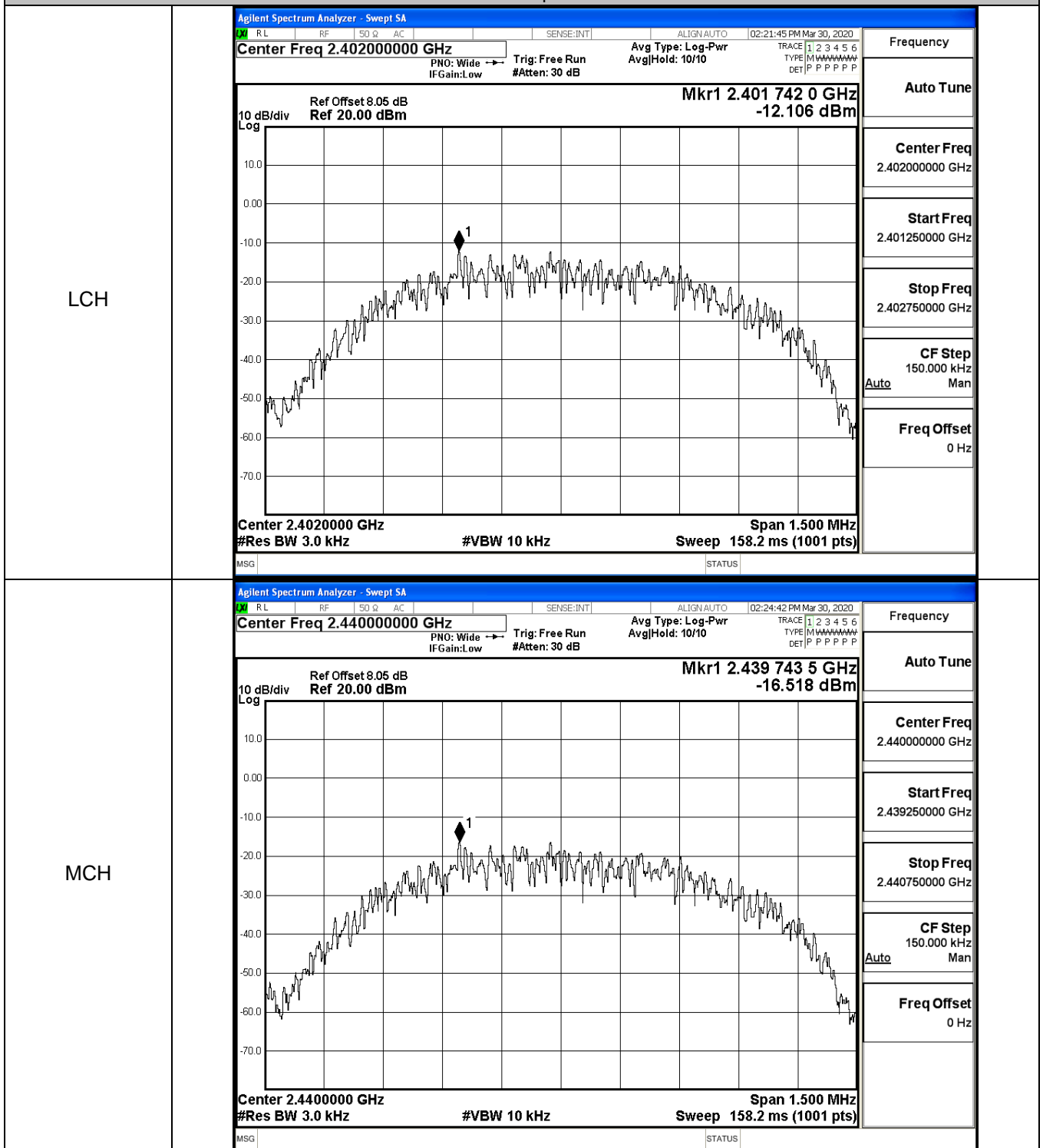
HCH



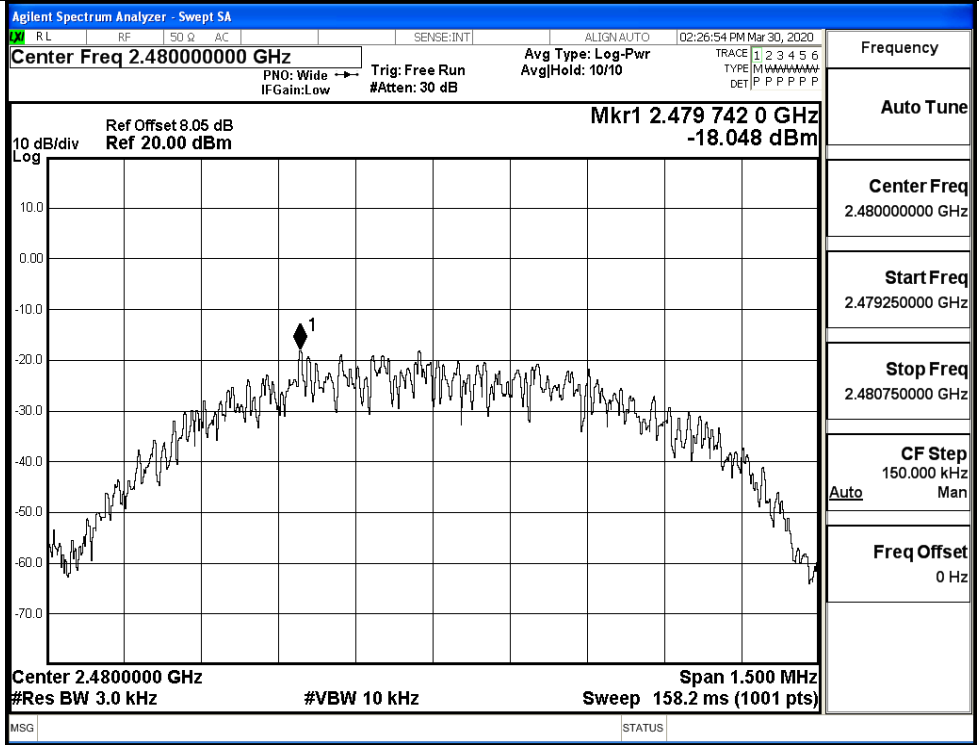
### B.3 Maximum Power Spectral Density

| Mode  | Channel | PSD [dBm/3KHz] | Limit [dBm/3KHz] | Verdict |
|-------|---------|----------------|------------------|---------|
| BT LE | LCH     | -12.106        | 8                | PASS    |
| BT LE | MCH     | -16.518        | 8                | PASS    |
| BT LE | HCH     | -18.048        | 8                | PASS    |

#### Test Graphs



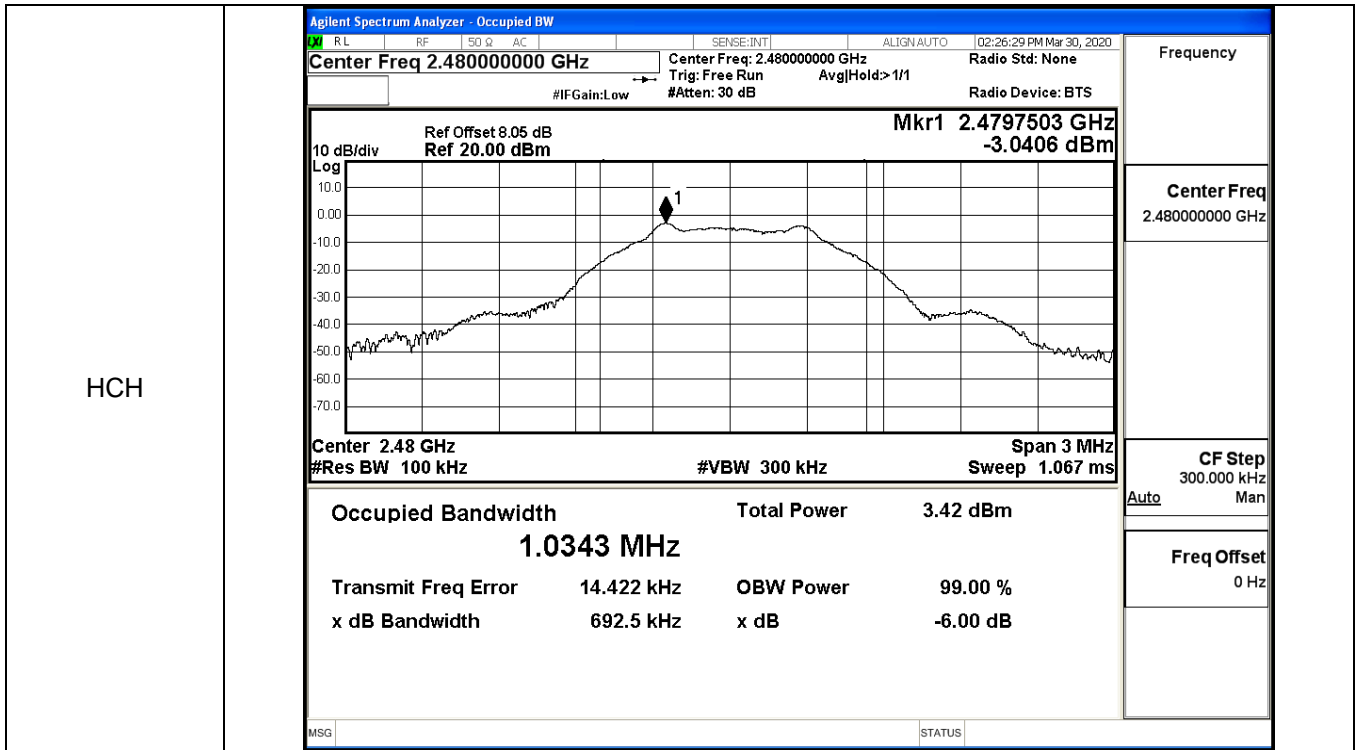
HCH



**B.4 6dB Bandwidth**

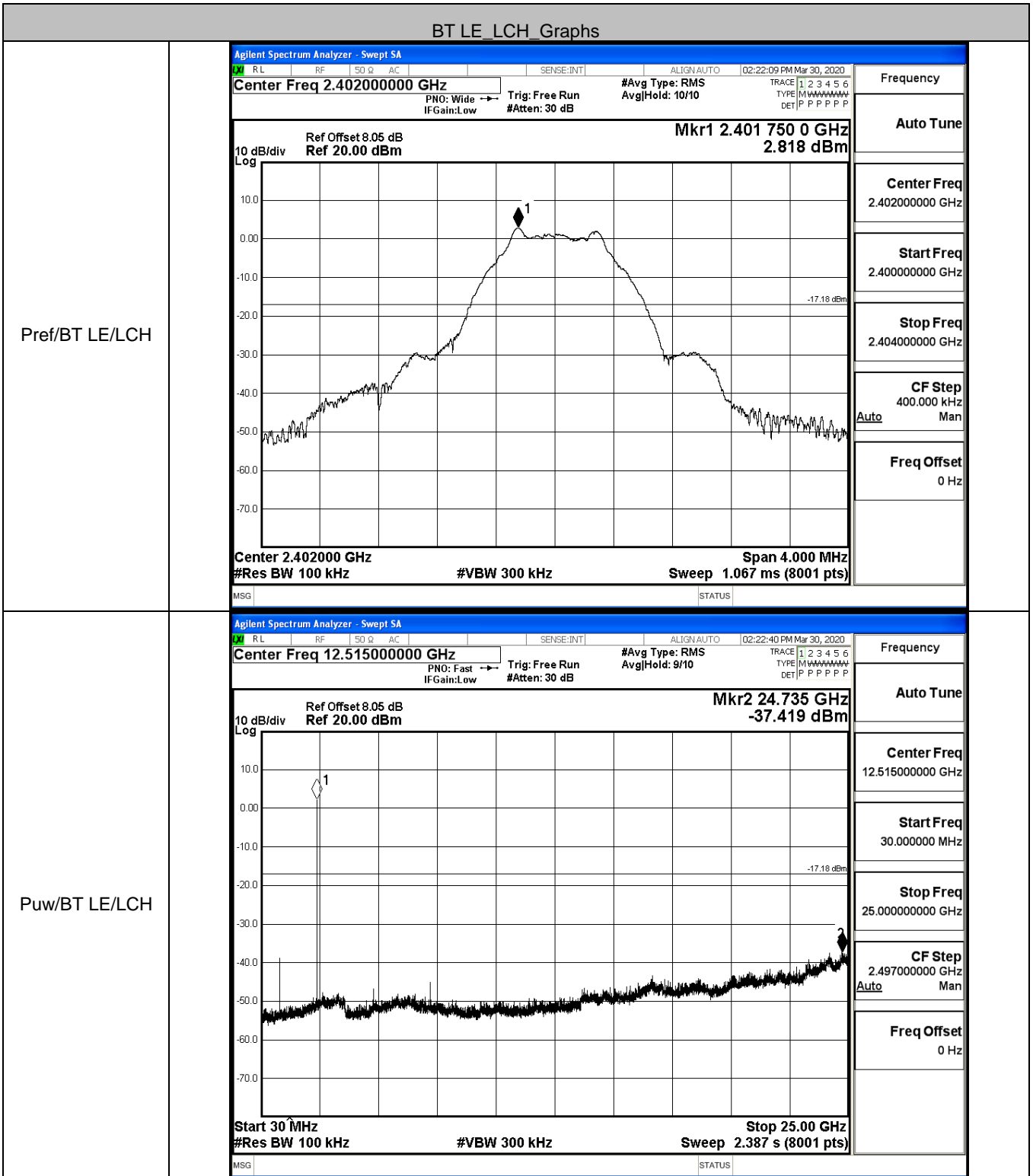
| Mode  | Channel | 6dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|-------|---------|---------------------|-------------|---------|
| BT LE | LCH     | 0.6916              | ≥0.5        | PASS    |
| BT LE | MCH     | 0.6898              | ≥0.5        | PASS    |
| BT LE | HCH     | 0.6925              | ≥0.5        | PASS    |

| Test Graphs         |   |                    |             |          |  |                   |  |  |  |                     |            |           |         |                |           |      |          |
|---------------------|---|--------------------|-------------|----------|--|-------------------|--|--|--|---------------------|------------|-----------|---------|----------------|-----------|------|----------|
| LCH                 | <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 02:21:20 PM Mar 30, 2020</p> <p style="margin: 0;">Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None<br/>                     Trig: Free Run AvgHold: &gt;1/1<br/>                     #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="display: flex; justify-content: space-between;"> <div style="font-size: x-small;">                         10 dB/div<br/>                         Log<br/>                         Ref Offset 8.05 dB<br/>                         Ref 20.00 dBm                     </div> <div style="text-align: right;">                         Mkr1 2.4017488 GHz<br/>                         2.8009 dBm                     </div> </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <div>Center 2.402 GHz<br/>#Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 3 MHz<br/>Sweep 1.067 ms</div> </div> <table style="width: 100%; font-size: x-small; margin-top: 5px;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td colspan="2">9.25 dBm</td> </tr> <tr> <td colspan="4" style="text-align: center;"><b>1.0341 MHz</b></td> </tr> <tr> <td>Transmit Freq Error</td> <td>14.063 kHz</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>691.6 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div> | Occupied Bandwidth | Total Power | 9.25 dBm |  | <b>1.0341 MHz</b> |  |  |  | Transmit Freq Error | 14.063 kHz | OBW Power | 99.00 % | x dB Bandwidth | 691.6 kHz | x dB | -6.00 dB |
| Occupied Bandwidth  | Total Power   | 9.25 dBm           |             |          |  |                   |  |  |  |                     |            |           |         |                |           |      |          |
| <b>1.0341 MHz</b>   |   |                    |             |          |  |                   |  |  |  |                     |            |           |         |                |           |      |          |
| Transmit Freq Error | 14.063 kHz  | OBW Power          | 99.00 %     |          |  |                   |  |  |  |                     |            |           |         |                |           |      |          |
| x dB Bandwidth      | 691.6 kHz   | x dB               | -6.00 dB    |          |  |                   |  |  |  |                     |            |           |         |                |           |      |          |
| MCH                 | <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 02:24:17 PM Mar 30, 2020</p> <p style="margin: 0;">Center Freq 2.440000000 GHz Center Freq: 2.440000000 GHz Radio Std: None<br/>                     Trig: Free Run AvgHold: 1/1<br/>                     #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="display: flex; justify-content: space-between;"> <div style="font-size: x-small;">                         10 dB/div<br/>                         Log<br/>                         Ref Offset 8.05 dB<br/>                         Ref 20.00 dBm                     </div> <div style="text-align: right;">                         Mkr1 2.4397484 GHz<br/>                         -1.5298 dBm                     </div> </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <div>Center 2.44 GHz<br/>#Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 3 MHz<br/>Sweep 1.067 ms</div> </div> <table style="width: 100%; font-size: x-small; margin-top: 5px;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td colspan="2">4.93 dBm</td> </tr> <tr> <td colspan="4" style="text-align: center;"><b>1.0354 MHz</b></td> </tr> <tr> <td>Transmit Freq Error</td> <td>14.322 kHz</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>689.8 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div>     | Occupied Bandwidth | Total Power | 4.93 dBm |  | <b>1.0354 MHz</b> |  |  |  | Transmit Freq Error | 14.322 kHz | OBW Power | 99.00 % | x dB Bandwidth | 689.8 kHz | x dB | -6.00 dB |
| Occupied Bandwidth  | Total Power   | 4.93 dBm           |             |          |  |                   |  |  |  |                     |            |           |         |                |           |      |          |
| <b>1.0354 MHz</b>   |   |                    |             |          |  |                   |  |  |  |                     |            |           |         |                |           |      |          |
| Transmit Freq Error | 14.322 kHz  | OBW Power          | 99.00 %     |          |  |                   |  |  |  |                     |            |           |         |                |           |      |          |
| x dB Bandwidth      | 689.8 kHz   | x dB               | -6.00 dB    |          |  |                   |  |  |  |                     |            |           |         |                |           |      |          |



### B.5 RF Conducted Spurious Emissions

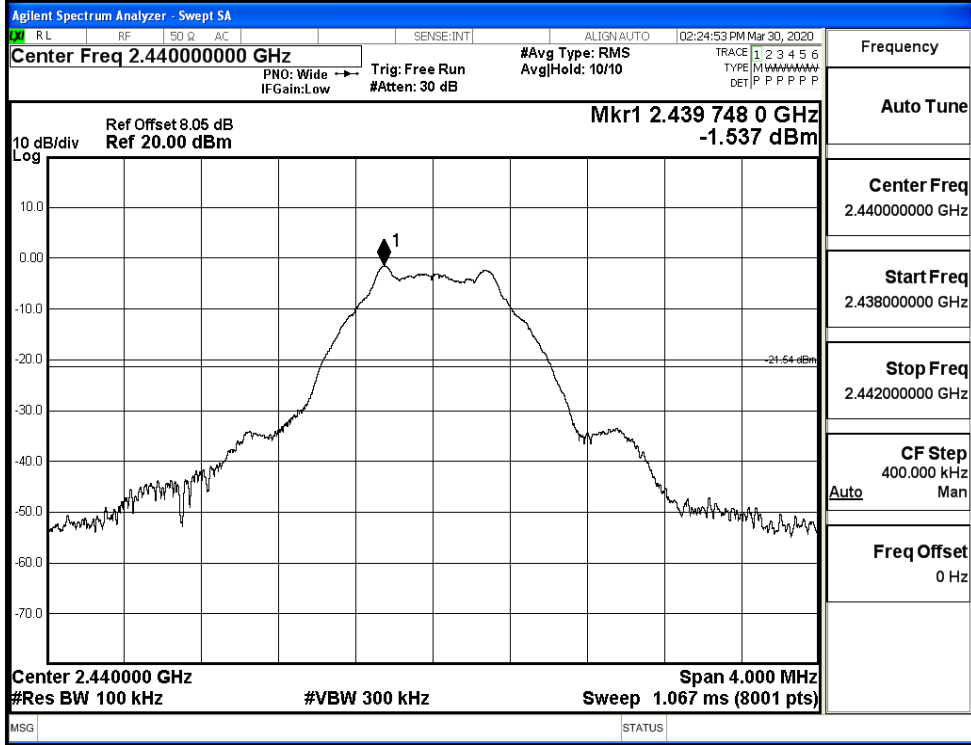
| Mode  | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|-------|---------|------------|------------------|-------------|---------|
| BT LE | LCH     | 2.818      | -37.419          | -17.182     | PASS    |
| BT LE | MCH     | -1.537     | -36.970          | -21.537     | PASS    |
| BT LE | HCH     | -3.052     | -37.495          | -23.052     | PASS    |



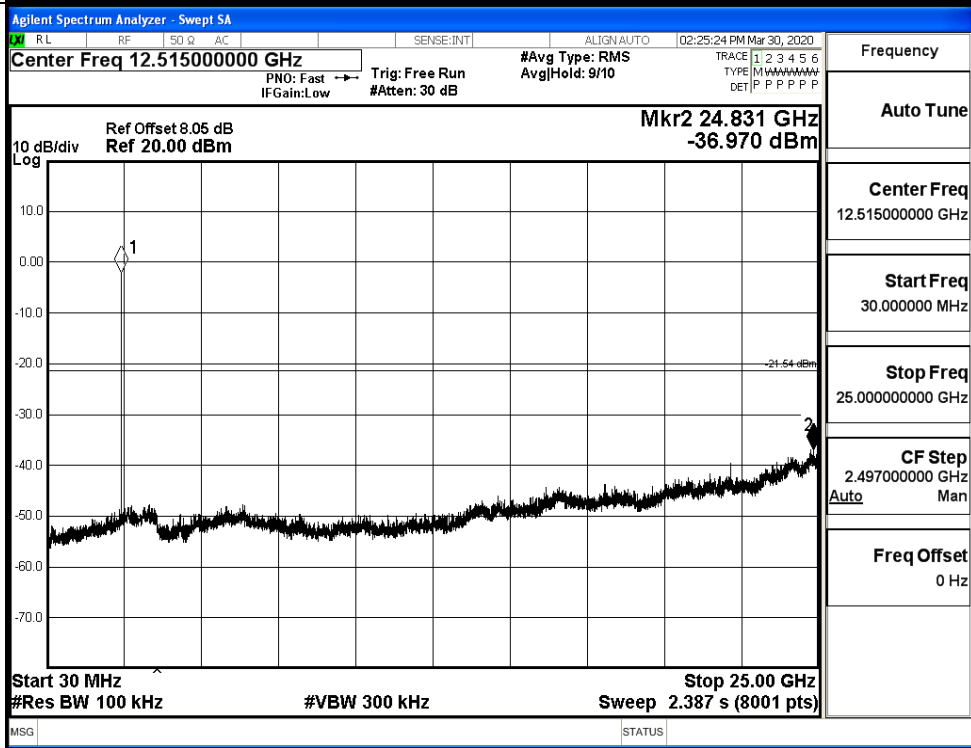


BT LE\_MCH\_Graphs

Pref/BT LE/MCH

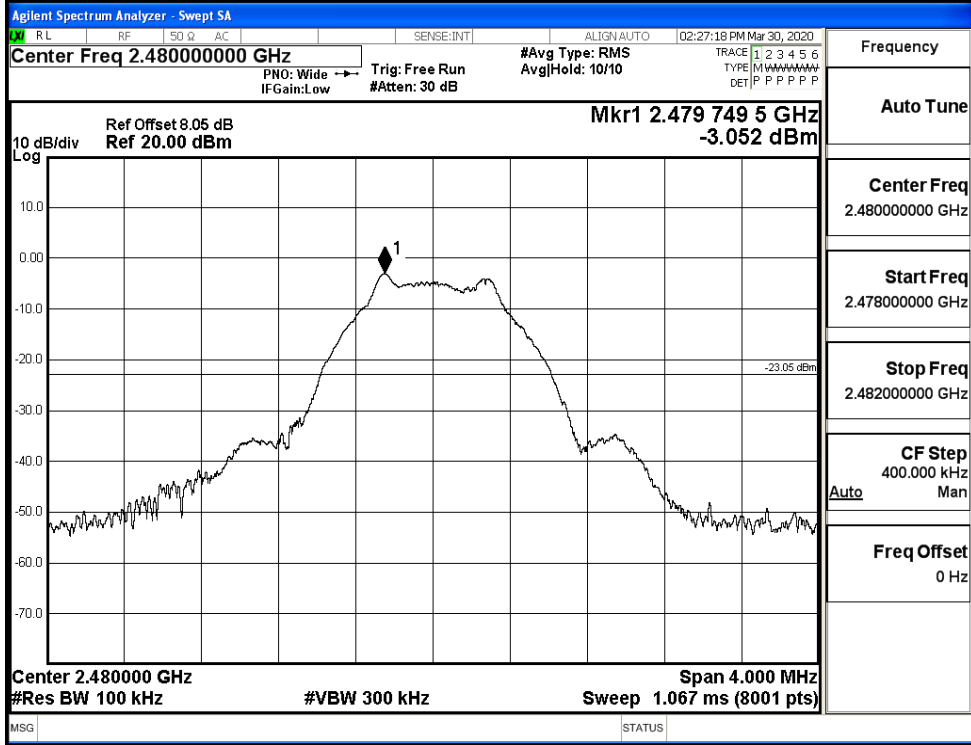


Puw/BT LE/MCH

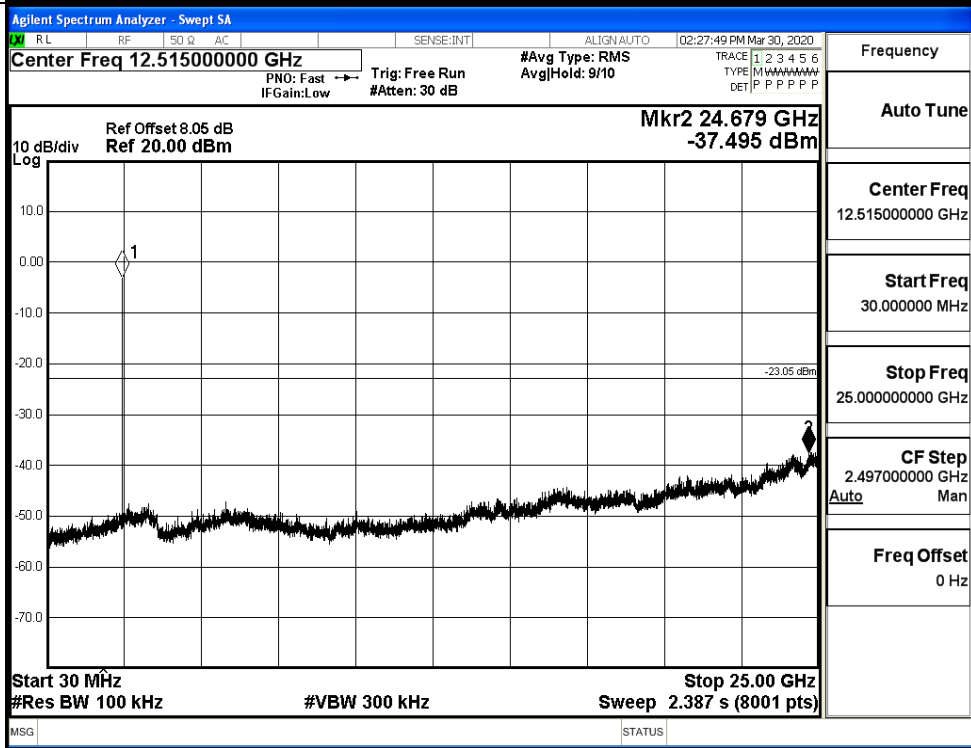


BT LE\_HCH\_Graphs

Pref/BT LE/HCH



Puw/BT LE/HCH



### B.6 Band-edge for RF Conducted Emissions

| Mode  | Channel | Carrier Power[dBm] | Max.Spurious Level [dBm] | Limit [dBm] | Verdict |
|-------|---------|--------------------|--------------------------|-------------|---------|
| BT LE | LCH     | 2.834              | -49.785                  | -17.17      | PASS    |
| BT LE | HCH     | -3.030             | -48.688                  | -23.03      | PASS    |

Test Graphs

LCH

Agilent Spectrum Analyzer - Swept SA  
 Center Freq 2.35700000 GHz  
 #Ave Type: RMS  
 AvgHold: 10/10  
 Mkr4 2.315 299 GHz  
 -49.785 dBm  
 Start 2.31000 GHz  
 Stop 2.40400 GHz  
 #Res BW 100 kHz  
 #VBW 300 kHz  
 Sweep 9.067 ms (8001 pts)

| MKR | MODE | TRC | SCL | X             | Y           | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE |
|-----|------|-----|-----|---------------|-------------|----------|----------------|----------------|
| 1   | N    | f   |     | 2.401 756 GHz | 2.834 dBm   |          |                |                |
| 2   | N    | f   |     | 2.400 000 GHz | -50.085 dBm |          |                |                |
| 3   | N    | f   |     | 2.390 000 GHz | -53.940 dBm |          |                |                |
| 4   | N    | f   |     | 2.315 299 GHz | -49.785 dBm |          |                |                |

Frequency

Auto Tune

Center Freq  
2.35700000 GHz

Start Freq  
2.31000000 GHz

Stop Freq  
2.40400000 GHz

CF Step  
9.400000 MHz

Freq Offset  
0 Hz

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HCH

Agilent Spectrum Analyzer - Swept SA  
 Center Freq 2.48900000 GHz  
 #Ave Type: RMS  
 AvgHold: 10/10  
 Mkr4 2.479 761 75 GHz  
 -48.688 dBm  
 Start 2.47800 GHz  
 Stop 2.50000 GHz  
 #Res BW 100 kHz  
 #VBW 300 kHz  
 Sweep 2.133 ms (8001 pts)

| MKR | MODE | TRC | SCL | X                | Y           | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE |
|-----|------|-----|-----|------------------|-------------|----------|----------------|----------------|
| 1   | N    | f   |     | 2.479 761 75 GHz | -3.030 dBm  |          |                |                |
| 2   | N    | f   |     | 2.483 500 00 GHz | -52.464 dBm |          |                |                |
| 3   | N    | f   |     | 2.500 000 00 GHz | -52.449 dBm |          |                |                |
| 4   | N    | f   |     | 2.492 806 00 GHz | -48.688 dBm |          |                |                |

Frequency

Auto Tune

Center Freq  
2.48900000 GHz

Start Freq  
2.47800000 GHz

Stop Freq  
2.50000000 GHz

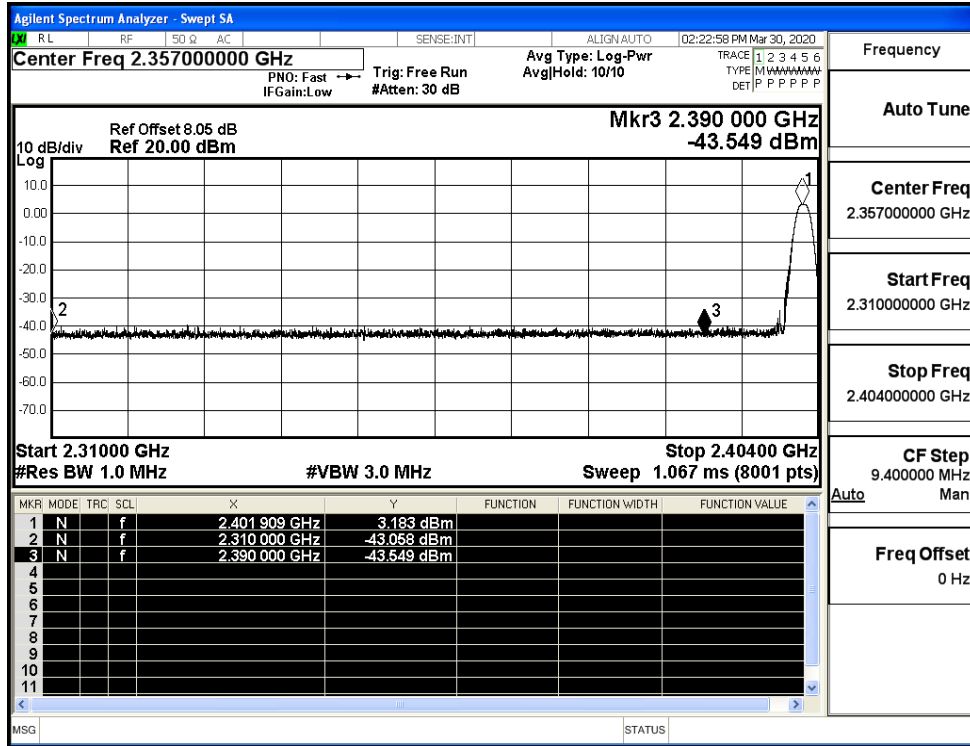
CF Step  
2.200000 MHz

Freq Offset  
0 Hz

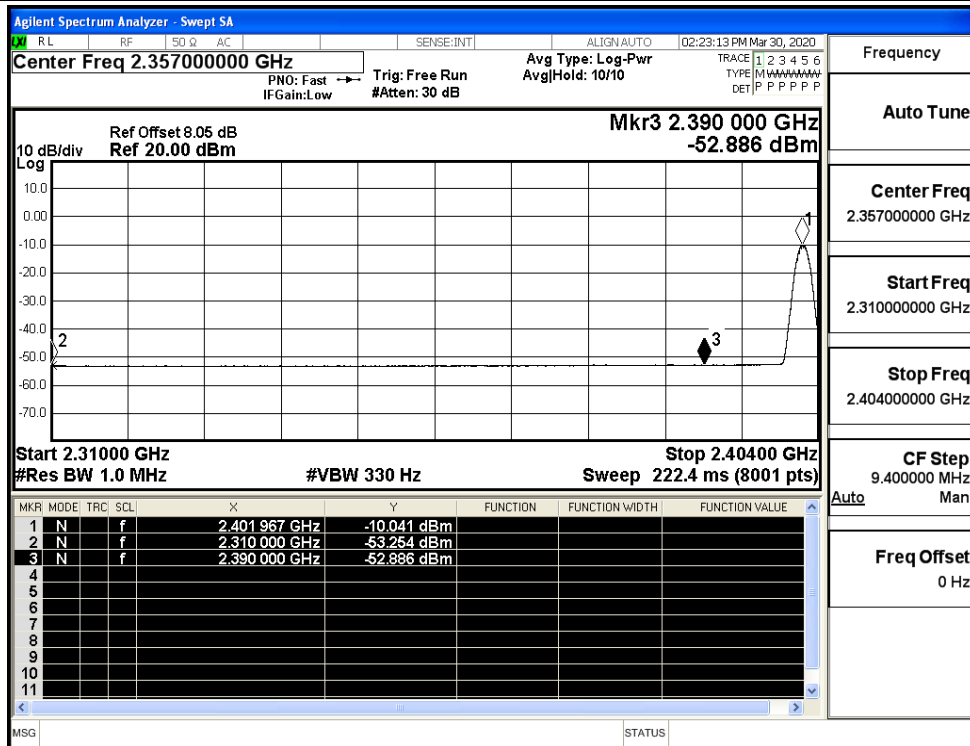
## B.7 Restrict-band band-edge measurements

| Test Mode | Test Channel | Ant  | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdi |
|-----------|--------------|------|--------|-------------|------|---------------|------------|----------|----------------|-------|
| BT LE     | 2402         | Ant1 | 2310.0 | -43.06      | 2.0  | 0             | 54.2       | PEAK     | 74             | PASS  |
|           |              | Ant1 | 2310.0 | -53.25      | 2.0  | 0             | 44.01      | AV       | 54             | PASS  |
|           |              | Ant1 | 2390.0 | -43.55      | 2.0  | 0             | 53.71      | PEAK     | 74             | PASS  |
|           |              | Ant1 | 2390.0 | -52.89      | 2.0  | 0             | 44.37      | AV       | 54             | PASS  |
|           | 2480         | Ant1 | 2483.5 | -41.80      | 2.0  | 0             | 55.46      | PEAK     | 74             | PASS  |
|           |              | Ant1 | 2483.5 | -52.39      | 2.0  | 0             | 44.87      | AV       | 54             | PASS  |
|           |              | Ant1 | 2500.0 | -42.23      | 2.0  | 0             | 55.03      | PEAK     | 74             | PASS  |
|           |              | Ant1 | 2500.0 | -52.21      | 2.0  | 0             | 45.05      | AV       | 54             | PASS  |

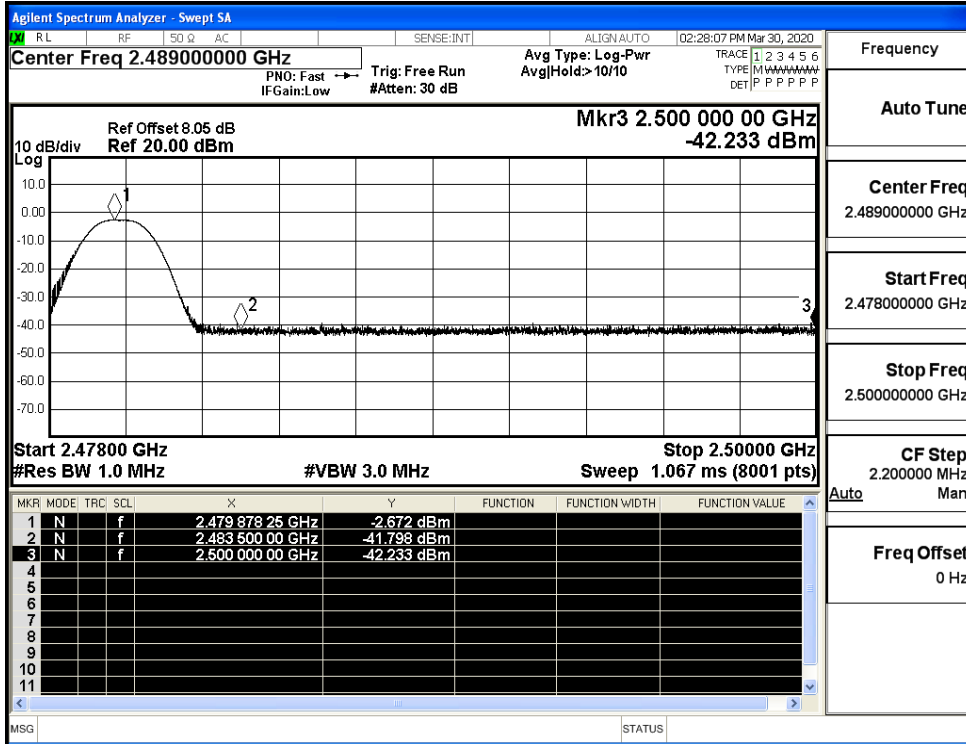
Restrict-band band-edge measurements\_BT LE\_2402\_Ant1\_PEAK



Restrict-band band-edge measurements\_BT LE\_2402\_Ant1\_AV



Restrict-band band-edge measurements\_BT LE\_2480\_Ant1\_PEAK



Restrict-band band-edge measurements\_BT LE\_2480\_Ant1\_AV

