

Appendix B

RF Test Data for BT V4.2BDR/EDR) (Conducted Measurement)

Product Name: BLUETOOTH SPEAKER

Trade Mark: N/A

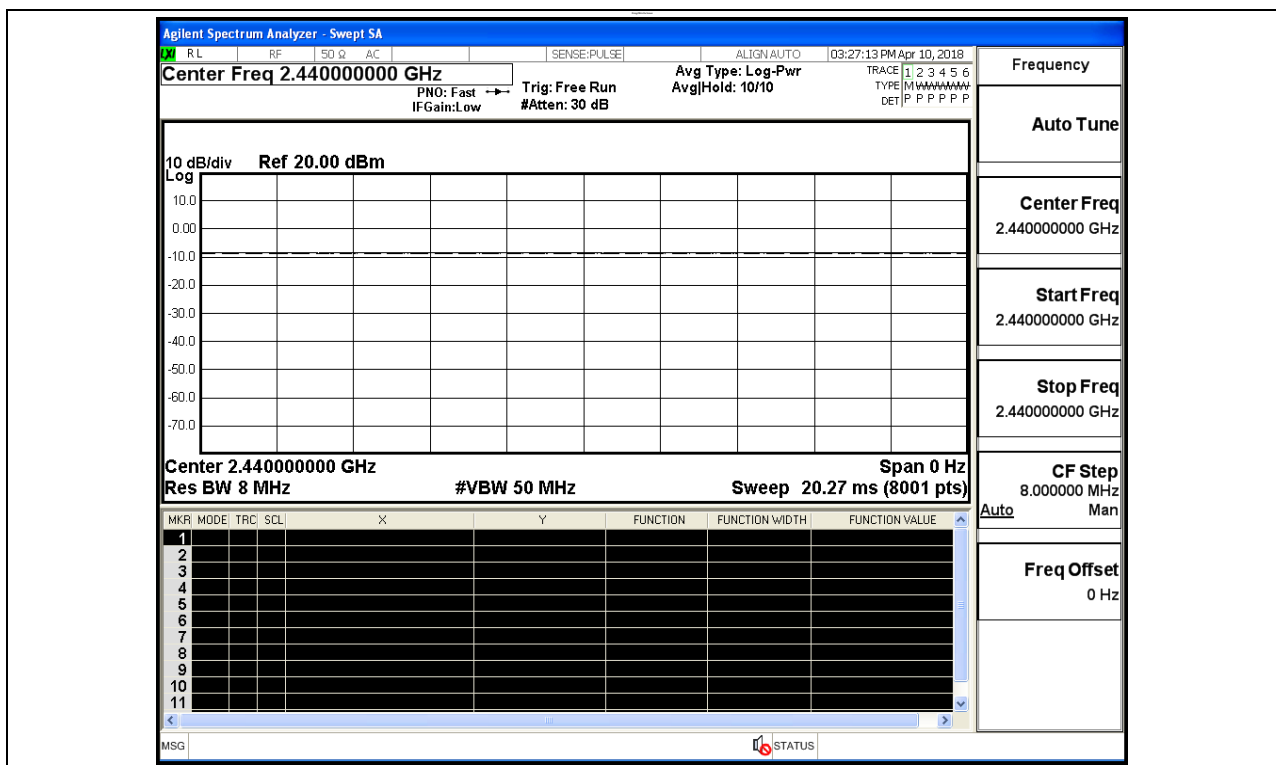
Test Model: M1

Environmental Conditions

| | |
|--------------------|-------------|
| Temperature: | 23.2 ° C |
| Relative Humidity: | 52.3% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Ryan.Hu |
| Supervised by: | Jayden Zhuo |

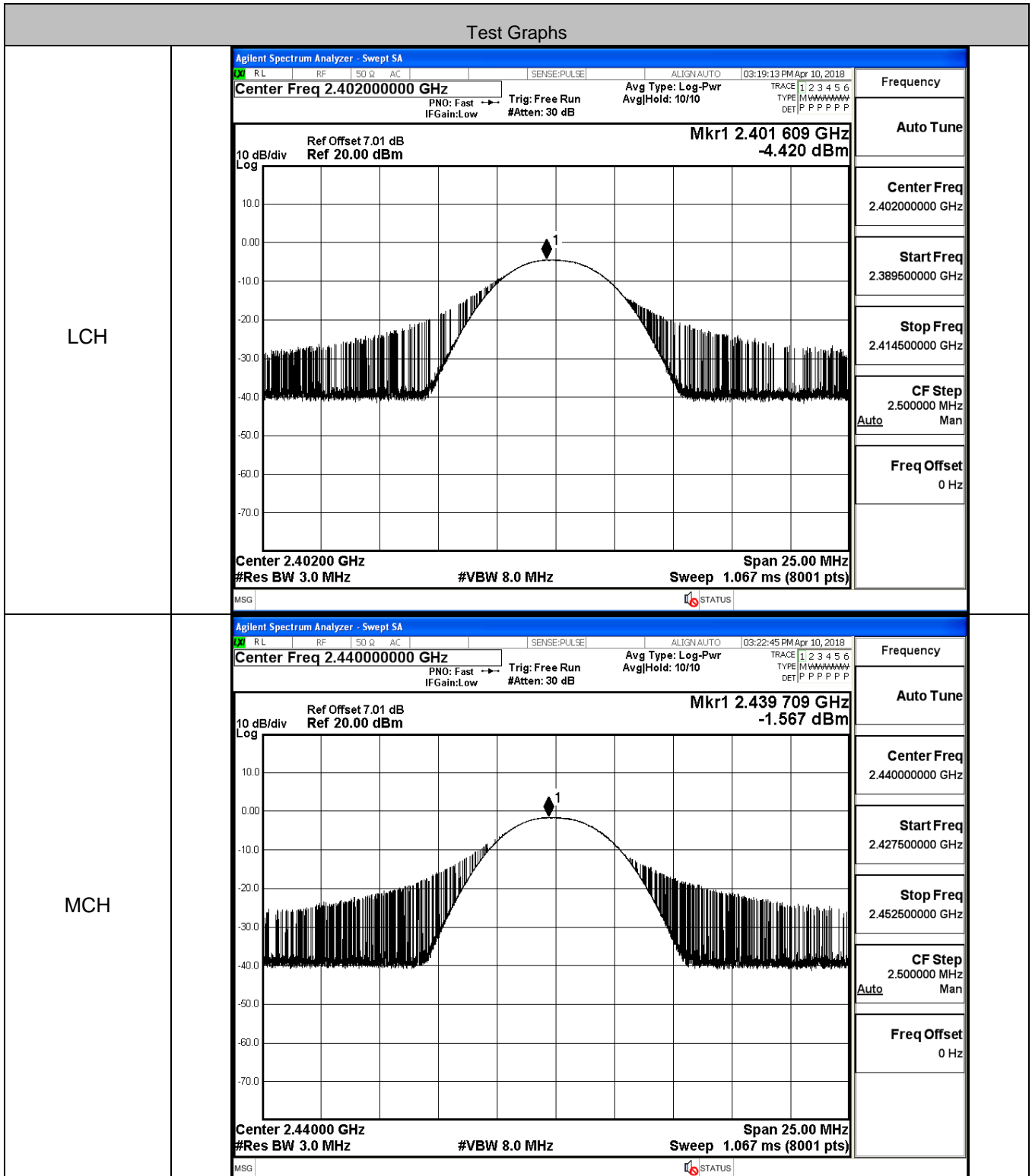
B.1 Duty Cycle

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

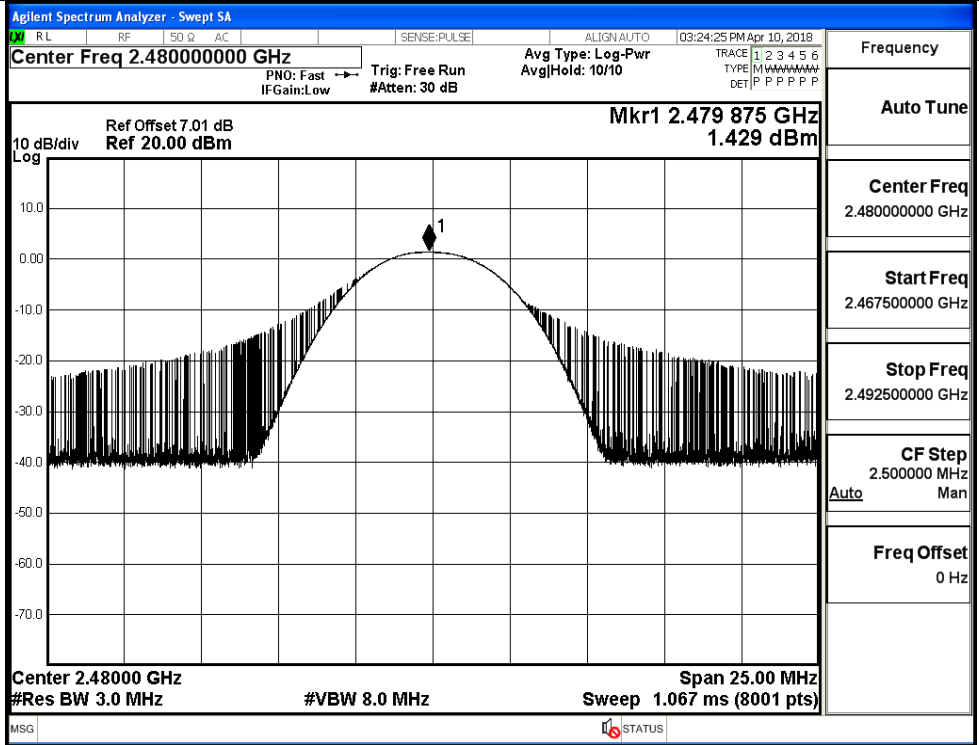


B.2 Maximum Conducted Peak Output Power

| Mode | Channel | Conduct Peak Power[dBm] | Limit [dBm] | Verdict |
|-------|---------|-------------------------|-------------|---------|
| BT LE | LCH | -4.42 | 30 | PASS |
| BT LE | MCH | -1.567 | 30 | PASS |
| BT LE | HCH | 1.429 | 30 | PASS |



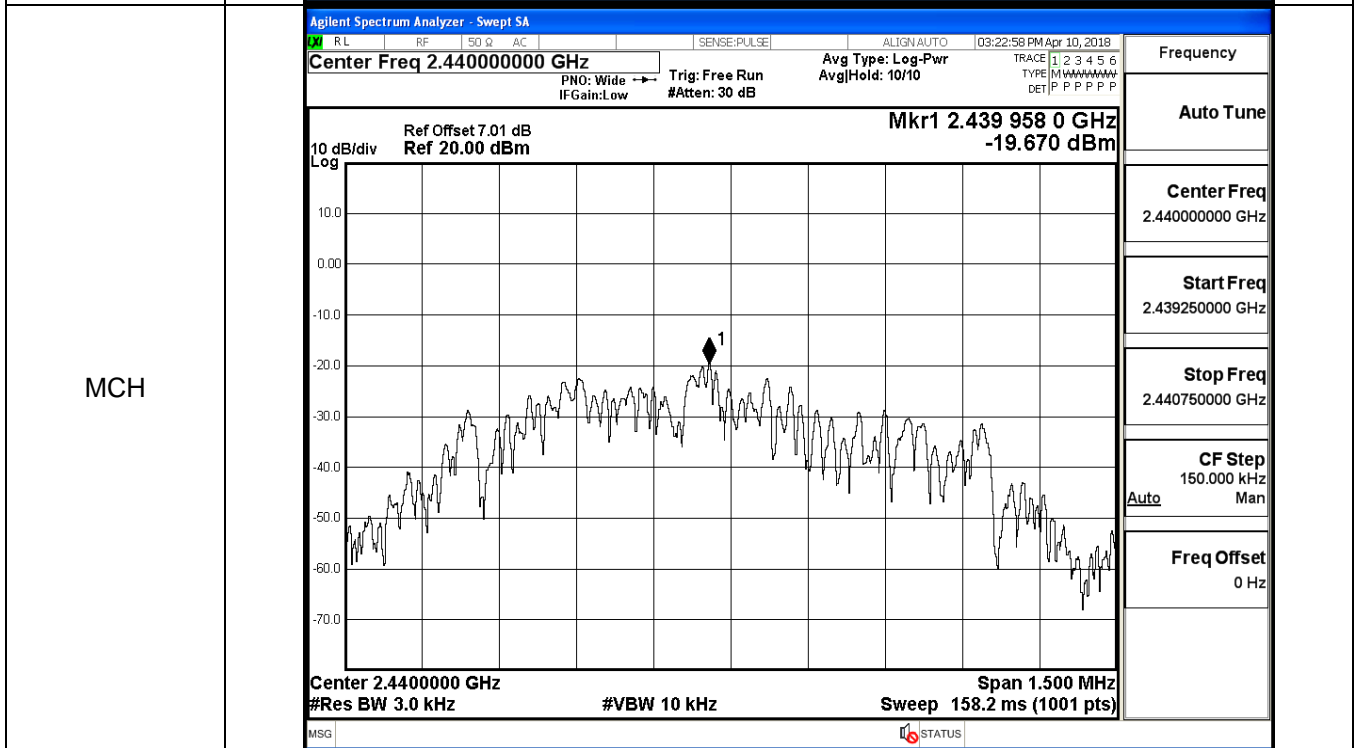
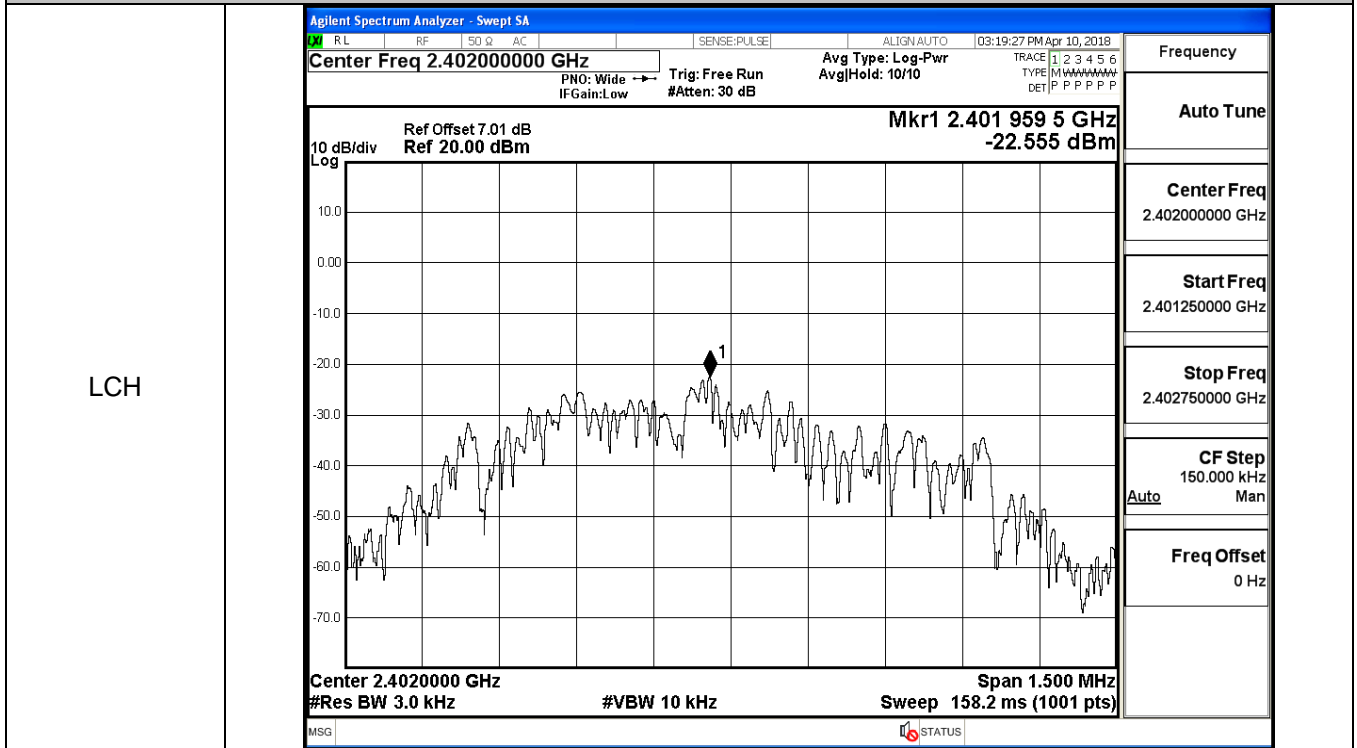
HCH



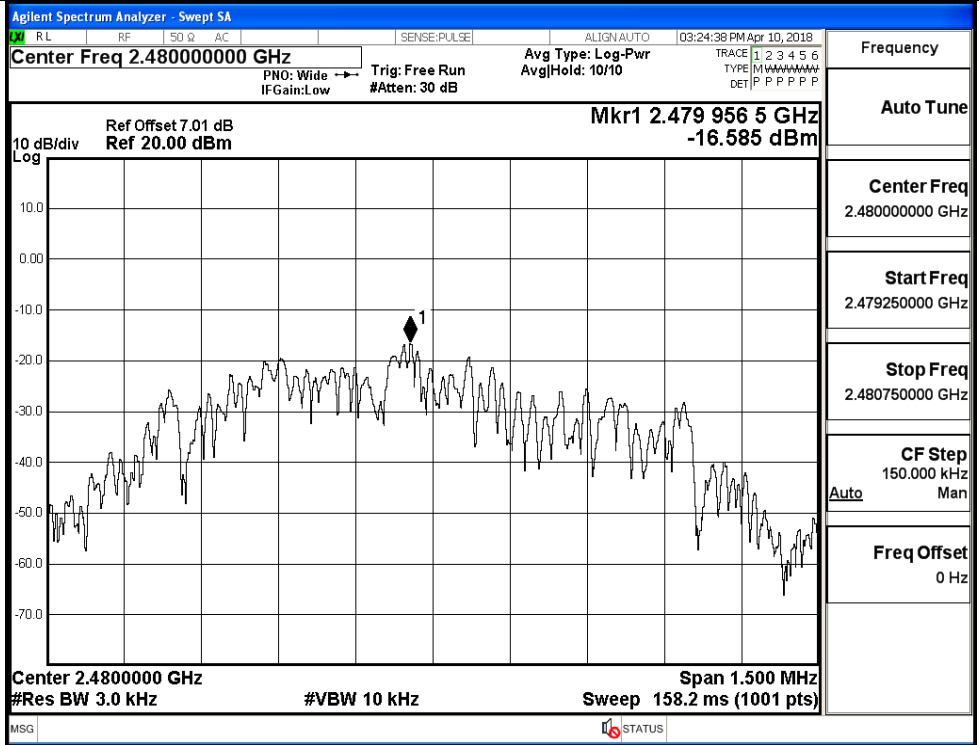
B.3 Maximum Power Spectral Density

| Mode | Channel | PSD [dBm/3KHz] | Limit [dBm/3KHz] | Verdict |
|-------|---------|----------------|------------------|---------|
| BT LE | LCH | -22.555 | 8 | PASS |
| BT LE | MCH | -19.670 | 8 | PASS |
| BT LE | HCH | -16.585 | 8 | PASS |

Test Graphs

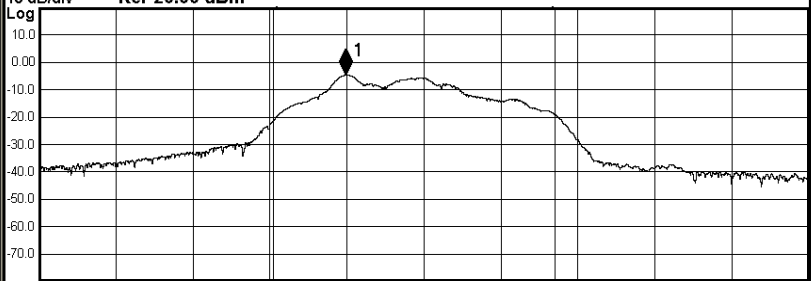
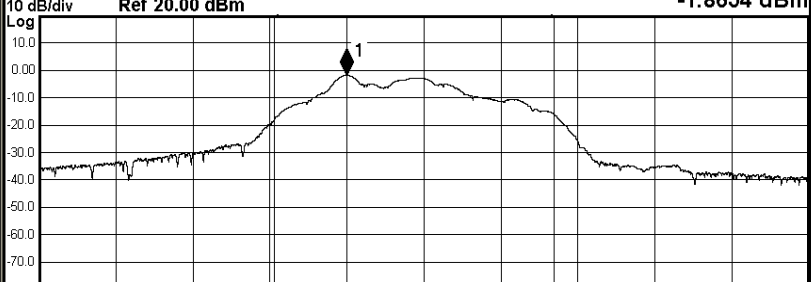


HCH



B.4 6dB Bandwidth

| Mode | Channel | 6dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|-------|---------|---------------------|-------------|---------|
| BT LE | LCH | 0.5230 | ≥0.5 | PASS |
| BT LE | MCH | 0.5328 | ≥0.5 | PASS |
| BT LE | HCH | 0.5290 | ≥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:PULSE ALIGN:AUTO 03:19:03 PM Apr 10, 2018</p> <p style="margin: 0;">Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None</p> <p style="margin: 0;">Trig: Free Run AvgHold: 1/1</p> <p style="margin: 0;">#IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <p style="font-size: x-small; margin: 0;">10 dB/div Ref Offset 7.01 dB Mkr1 2.401697 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm -4.7238 dBm</p>  </div> <p style="font-size: x-small; margin: 0;">Center 2.402 GHz Span 3 MHz</p> <p style="font-size: x-small; margin: 0;">#Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <table style="width: 100%; font-size: x-small; border-collapse: collapse;"> <tr> <td style="width: 50%;">Occupied Bandwidth</td> <td style="width: 50%;">Total Power</td> <td style="width: 50%;">0.73 dBm</td> </tr> <tr> <td style="text-align: center;">1.0933 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div> | Occupied Bandwidth | Total Power | 0.73 dBm | 1.0933 MHz | | | Transmit Freq Error | OBW Power | 99.00 % | x dB Bandwidth | x dB | -6.00 dB |
| Occupied Bandwidth | Total Power | 0.73 dBm | | | | | | | | | | | |
| 1.0933 MHz | | | | | | | | | | | | | |
| Transmit Freq Error | OBW Power | 99.00 % | | | | | | | | | | | |
| x dB Bandwidth | 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:PULSE ALIGN:AUTO 03:22:34 PM Apr 10, 2018</p> <p style="margin: 0;">Center Freq 2.440000000 GHz Center Freq: 2.440000000 GHz Radio Std: None</p> <p style="margin: 0;">Trig: Free Run AvgHold: 1/1</p> <p style="margin: 0;">#IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <p style="font-size: x-small; margin: 0;">10 dB/div Ref Offset 7.01 dB Mkr1 2.4396985 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm -1.8654 dBm</p>  </div> <p style="font-size: x-small; margin: 0;">Center 2.44 GHz Span 3 MHz</p> <p style="font-size: x-small; margin: 0;">#Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <table style="width: 100%; font-size: x-small; border-collapse: collapse;"> <tr> <td style="width: 50%;">Occupied Bandwidth</td> <td style="width: 50%;">Total Power</td> <td style="width: 50%;">3.65 dBm</td> </tr> <tr> <td style="text-align: center;">1.0892 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div> | Occupied Bandwidth | Total Power | 3.65 dBm | 1.0892 MHz | | | Transmit Freq Error | OBW Power | 99.00 % | x dB Bandwidth | x dB | -6.00 dB |
| Occupied Bandwidth | Total Power | 3.65 dBm | | | | | | | | | | | |
| 1.0892 MHz | | | | | | | | | | | | | |
| Transmit Freq Error | OBW Power | 99.00 % | | | | | | | | | | | |
| x dB Bandwidth | x dB | -6.00 dB | | | | | | | | | | | |

HCH

Agilent Spectrum Analyzer - Occupied BW

| | | | | | | |
|------------------------------------|----|------|------------------------------|-------------|-------------------|--------------------------|
| RL | RF | 50 Ω | AC | SENSE:PULSE | ALIGN:AUTO | 03:24:15 PM Apr 10, 2018 |
| Center Freq 2.480000000 GHz | | | Center Freq: 2.480000000 GHz | | Radio Std: None | |
| | | | Trig: Free Run | | AvgHold: 1/1 | |
| #IFGain:Low | | | #Atten: 30 dB | | Radio Device: BTS | |

| | | |
|-----------|--------------------|---------------------------|
| 10 dB/div | Ref Offset 7.01 dB | Mkr1 2.4796978 GHz |
| Log | Ref 20.00 dBm | 1.2114 dBm |

| | | |
|-----------------|----------------|------------|
| Center 2.48 GHz | #VBW 300 kHz | Span 3 MHz |
| #Res BW 100 kHz | Sweep 1.067 ms | |

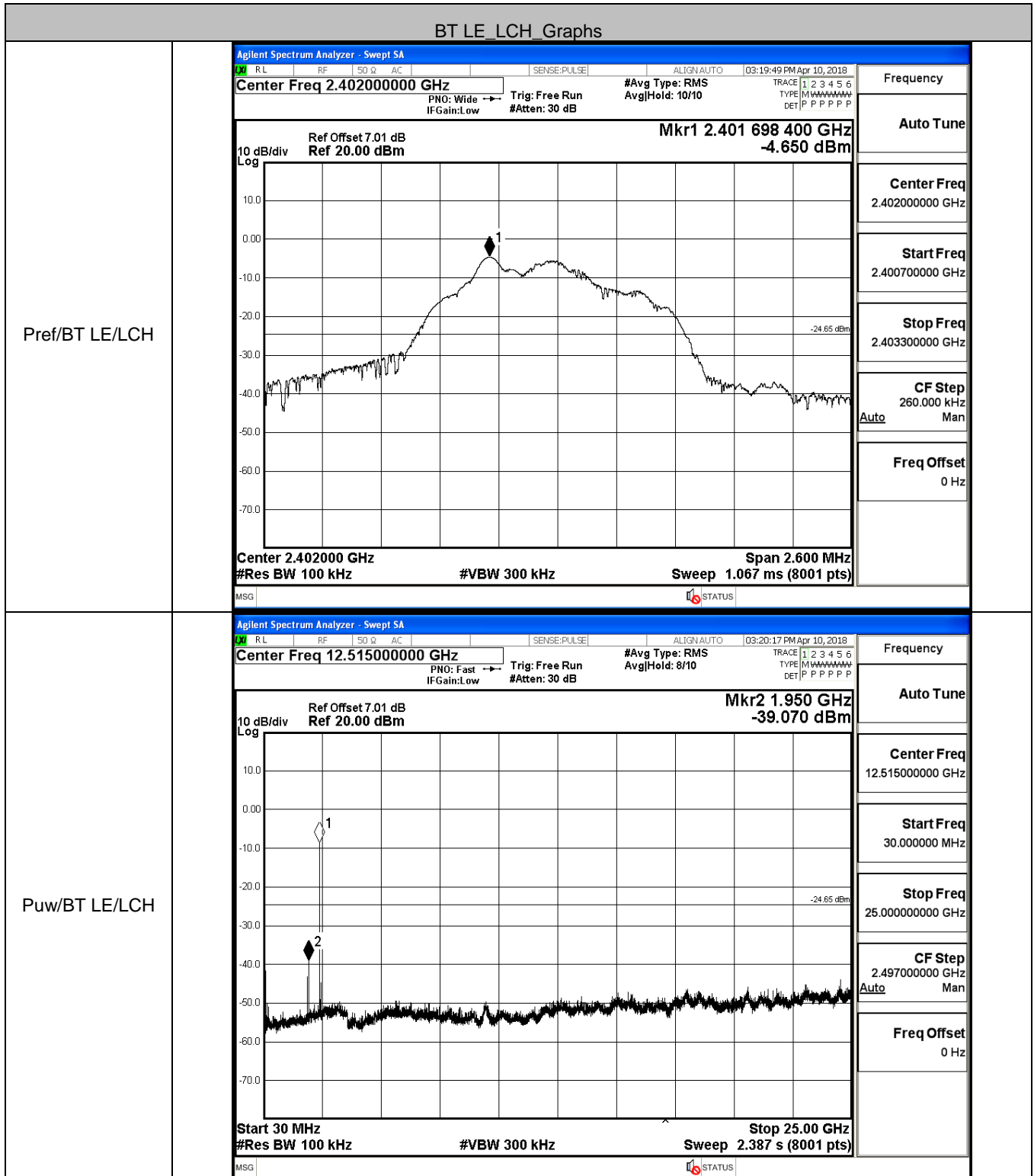
| | | |
|---------------------------|-------------|-------------------|
| Occupied Bandwidth | Total Power | 6.69 dBm |
| 1.0929 MHz | | |
| Transmit Freq Error | -39.776 kHz | OBW Power 99.00 % |
| x dB Bandwidth | 529.0 kHz | x dB -6.00 dB |

| | |
|-------------|-----------------|
| Frequency | 2.480000000 GHz |
| Center Freq | 2.480000000 GHz |
| CF Step | 300.000 kHz |
| Auto | Man |
| Freq Offset | 0 Hz |

MSG
STATUS

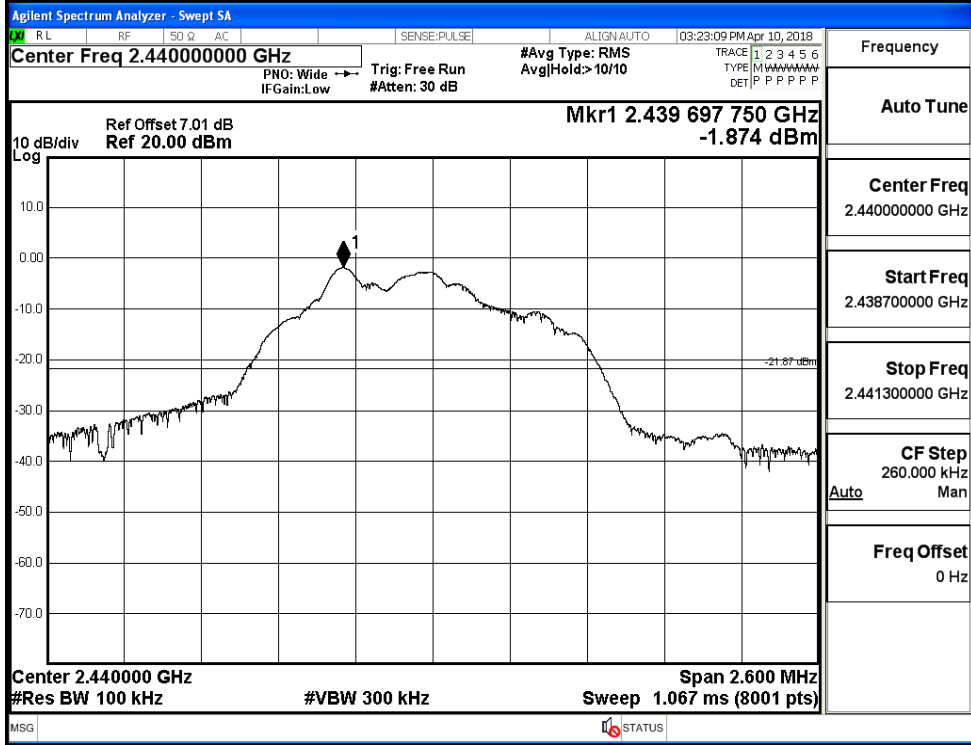
B.5 RF Conducted Spurious Emissions

| Mode | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|-------|---------|------------|------------------|-------------|---------|
| BT LE | LCH | -4.65 | -39.070 | -24.650 | PASS |
| BT LE | MCH | -1.874 | -42.107 | -21.874 | PASS |
| BT LE | HCH | 1.19 | -39.468 | -18.810 | PASS |

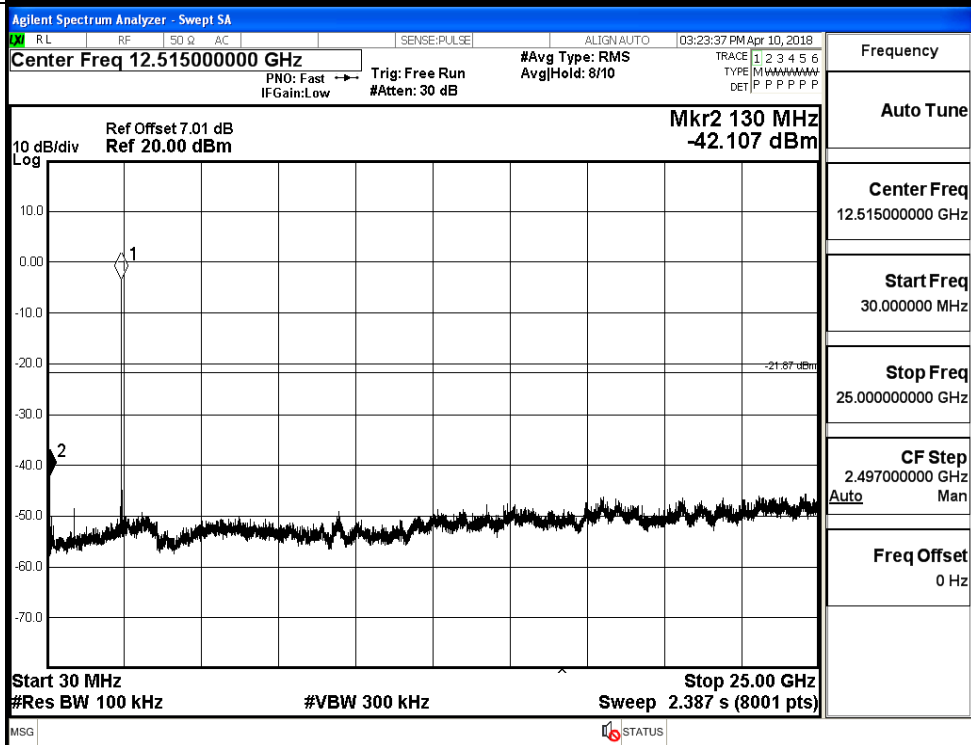


BT LE_MCH_Graphs

Pref/BT LE/MCH

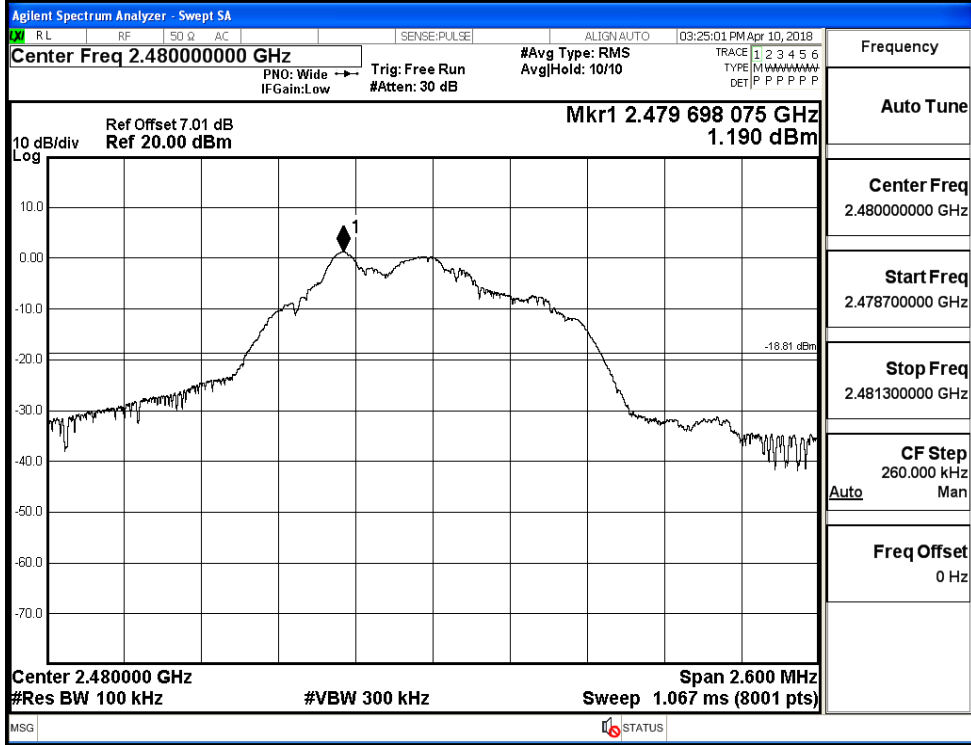


Puw/BT LE/MCH

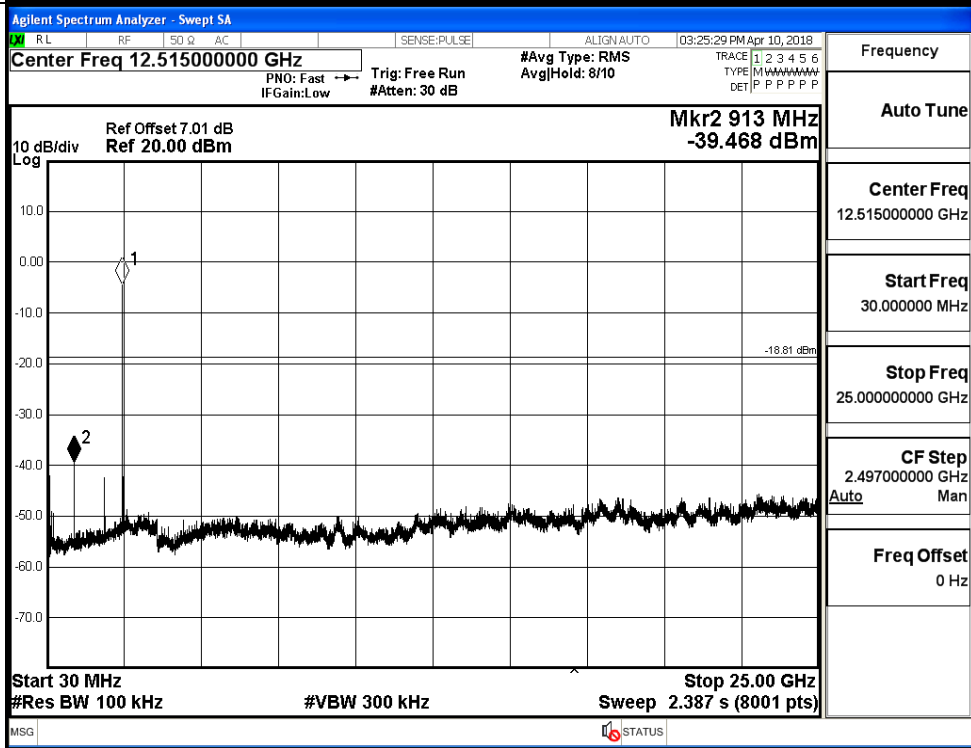


BT LE_HCH_Graphs

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 | -4.668 | -48.779 | -24.67 | PASS |
| BT LE | HCH | 1.115 | -41.303 | -18.89 | PASS |

Test Graphs

LCH

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

HCH

Frequency

Auto Tune

Center Freq
2.48900000 GHz

Start Freq
2.47800000 GHz

Stop Freq
2.50000000 GHz

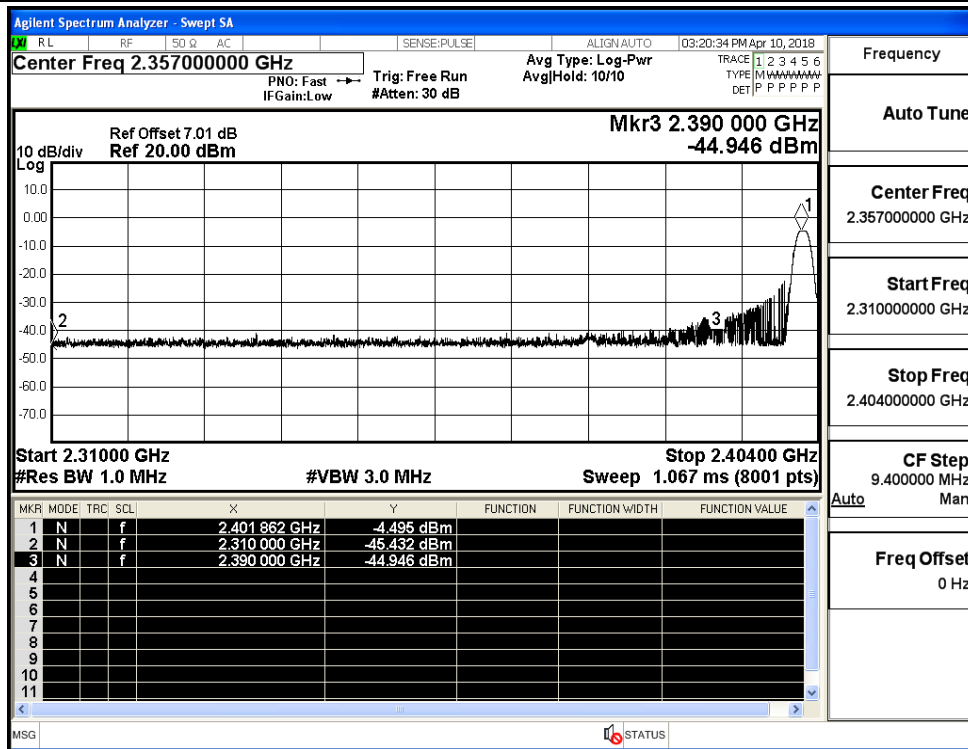
CF Step
2.200000 MHz

Freq Offset
0 Hz

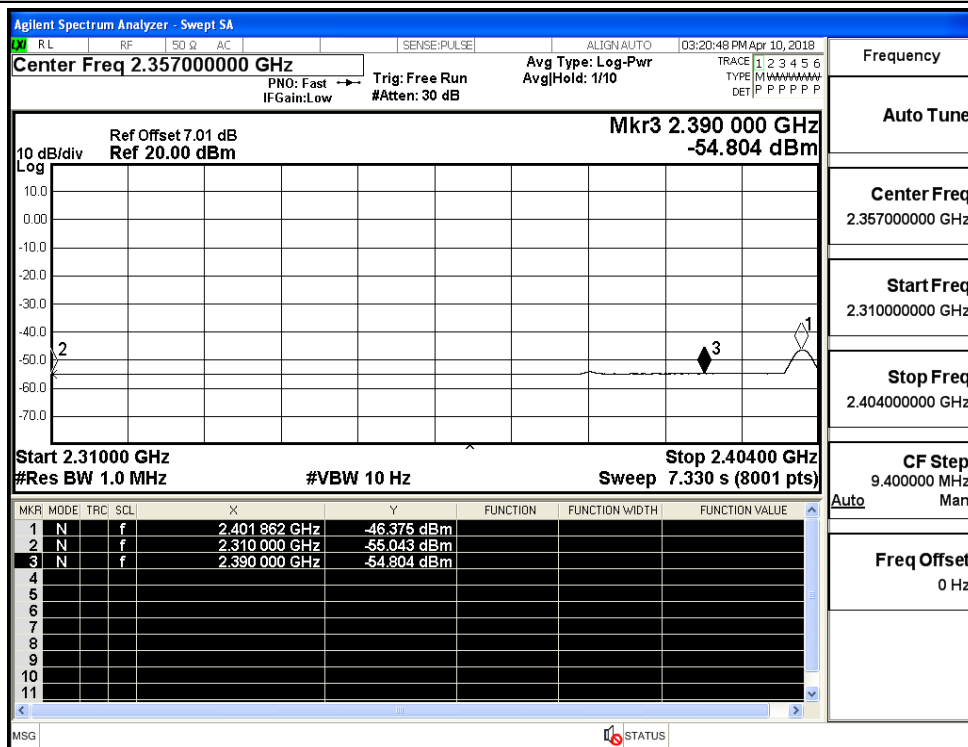
B.7 Restrict-band band-edge measurements

| 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 | -45.43 | 2.0 | 0 | 51.83 | PEAK | 74 | PASS |
| | | Ant1 | 2310.0 | -55.04 | 2.0 | 0 | 42.21 | AV | 54 | PASS |
| | | Ant1 | 2390.0 | -44.95 | 2.0 | 0 | 52.31 | PEAK | 74 | PASS |
| | | Ant1 | 2390.0 | -54.80 | 2.0 | 0 | 42.45 | AV | 54 | PASS |
| | 2480 | Ant1 | 2483.5 | -24.96 | 2.0 | 0 | 72.30 | PEAK | 74 | PASS |
| | | Ant1 | 2483.5 | -54.52 | 2.0 | 0 | 42.74 | AV | 54 | PASS |
| | | Ant1 | 2500.0 | -42.68 | 2.0 | 0 | 54.58 | PEAK | 74 | PASS |
| | | Ant1 | 2500.0 | -54.39 | 2.0 | 0 | 42.87 | AV | 54 | PASS |

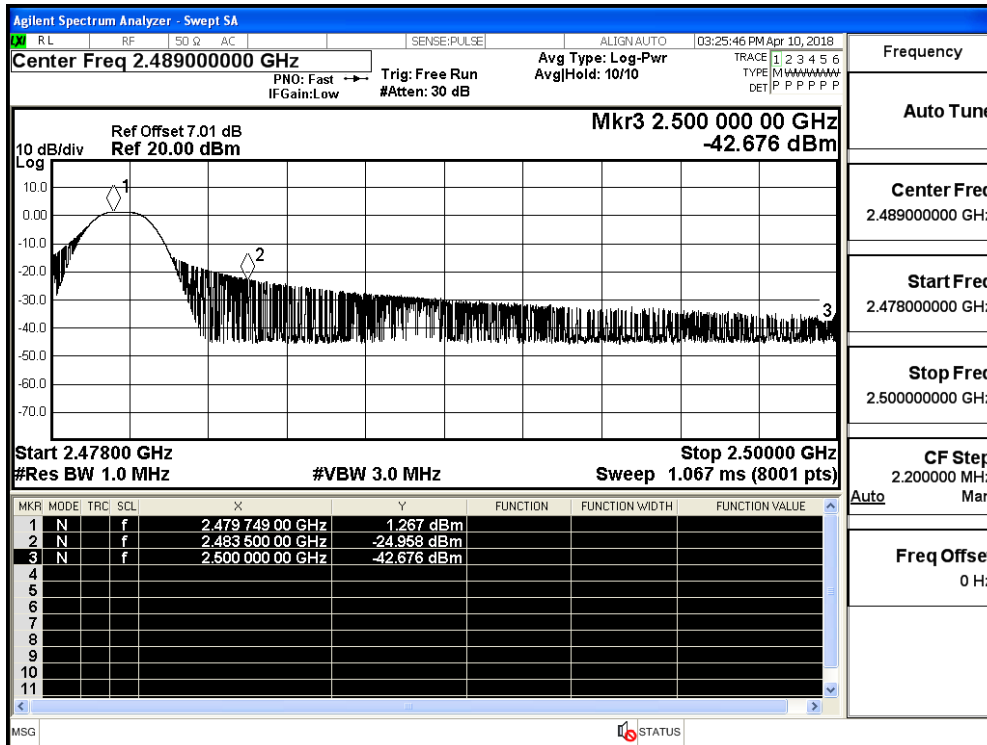
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

