# Appendix A

# RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)

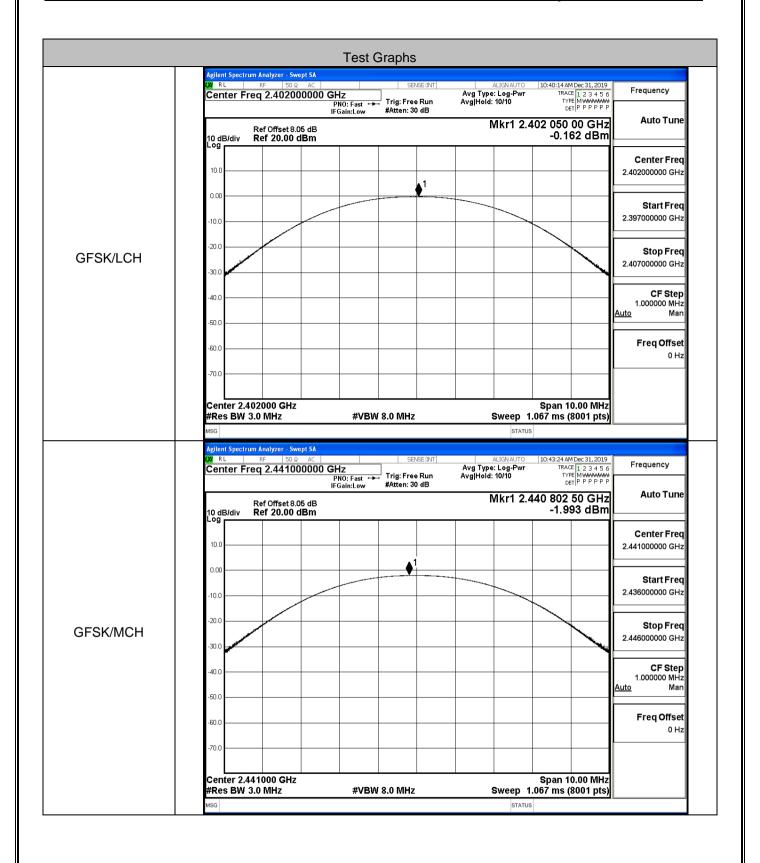
Product Name: TWS earbuds Trade Mark: N/A Test Model: XO-9568-3

## **Environmental Conditions**

| Temperature:       | 24.3 ° C  |
|--------------------|-----------|
| Relative Humidity: | 53.1%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Zhuo Zhuo |
| Supervised by:     | Tom Liu   |

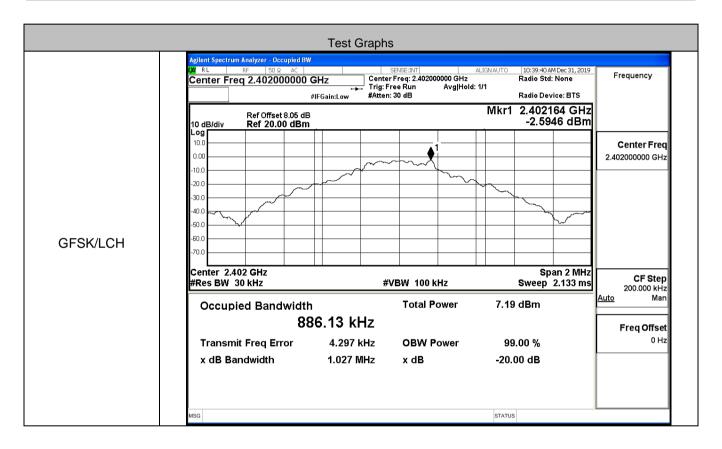
## **A.1 Maxmum Conducted Peak Output Power**

| Mode     | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|----------|----------|---------------------------------|-------------|---------|
|          | LCH      | -0.162                          | 30          | PASS    |
| GFSK     | MCH      | -1.993                          | 30          | PASS    |
|          | НСН      | -0.792                          | 30          | PASS    |
|          | LCH      | -0.919                          | 21          | PASS    |
| π/4DQPSK | МСН      | -2.651                          | 21          | PASS    |
|          | HCH      | -1.598                          | 21          | PASS    |



## A.2 20dB Bandwidth

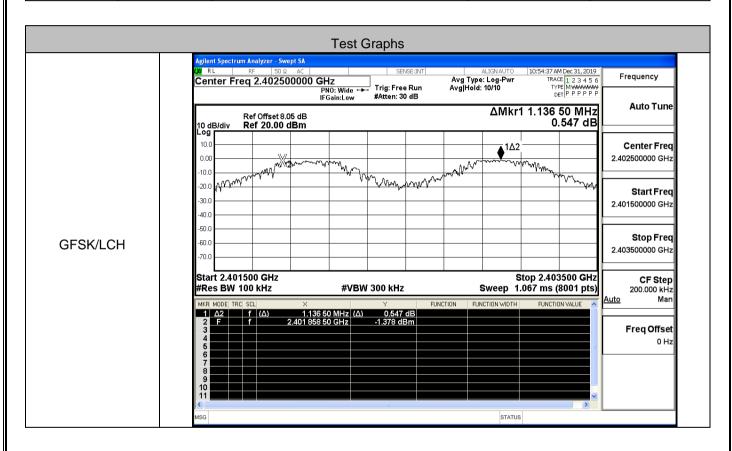
| Mode     | Channel.      | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|----------|---------------|----------------------|---------------|---------|
|          | LCH           | 1.027                | Not Specified | PASS    |
| GFSK     | MCH           | 0.9662               | Not Specified | PASS    |
|          | НСН           | 1.030                | Not Specified | PASS    |
|          | LCH           | 1.289                | Not Specified | PASS    |
| π/4DQPSK | PSK MCH 1.311 |                      | Not Specified | PASS    |
|          | HCH           | 1.314                | Not Specified | PASS    |

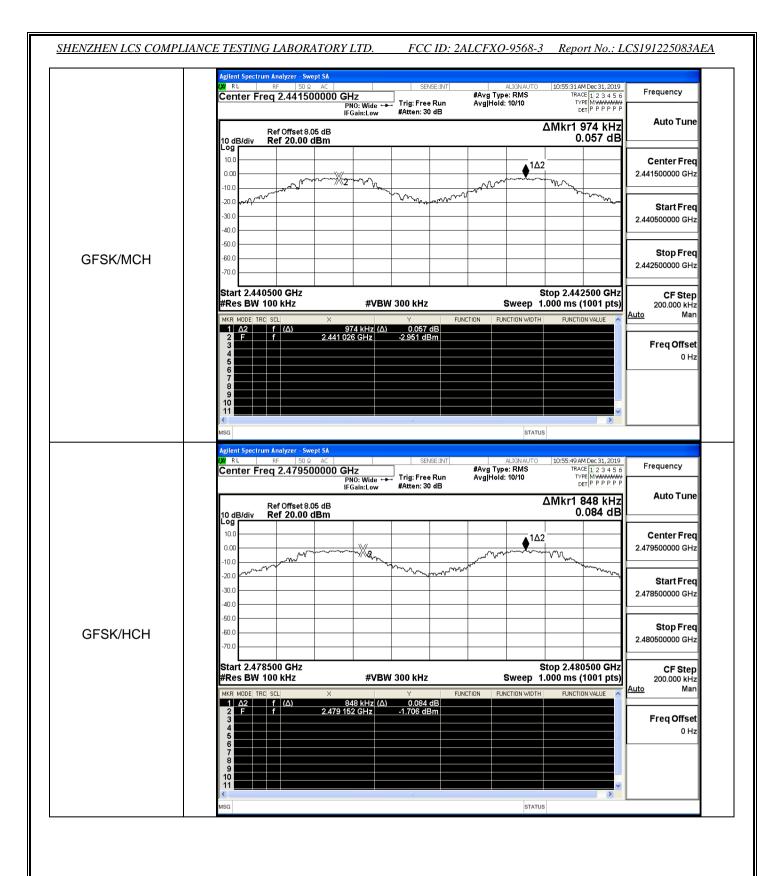


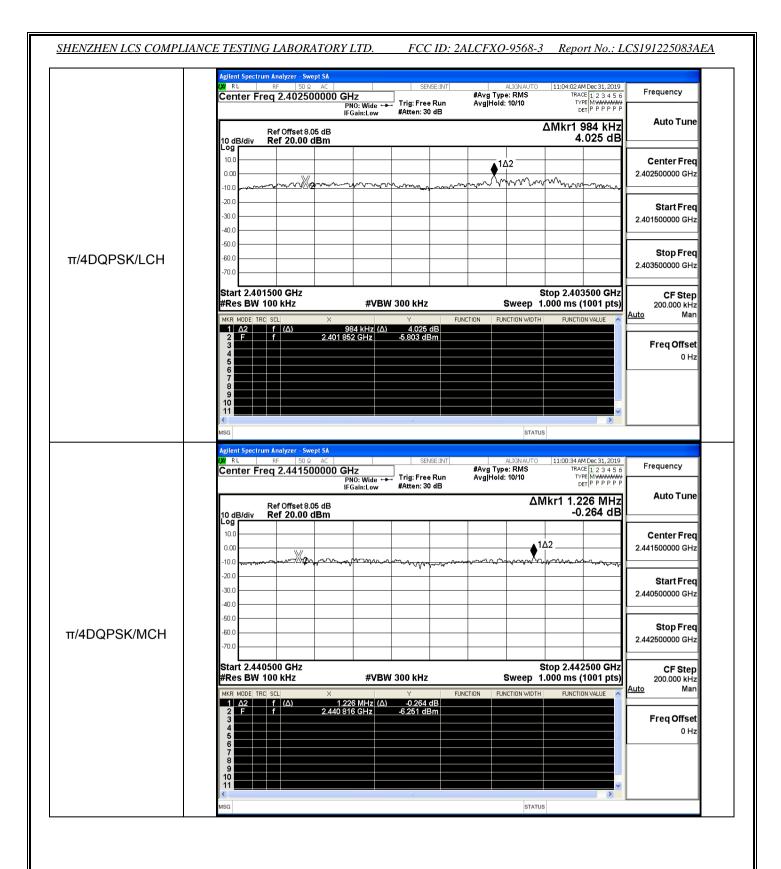
#### SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD. FCC ID: 2ALCFXO-9568-3 Report No.: LCS191225083AEA Agilent Spectrum Analyzer - Occupied BW SENSE:INT ALIGNAUTO Center Freq: 2.480000000 GHz Trig: Free Run Avg|Hold>1/1 #Atten: 30 dB 10:52:04 AM Dec 31, 2019 Radio Std: None Frequency #IFGain:Low Radio Device: BTS Mkr1 2.480162 GHz Ref Offset 8.05 dB Ref 20.00 dBm -5.7438 dBm 10 dB/div Log 10.0 Center Freq 0.00 2.480000000 GHz 10.0 -20.0 -30.0 40.0 -50.0 -60.0 π/4DQPSK/HCH Center 2.48 GHz Span 2 MHz CF Step 200.000 kHz #Res BW 30 kHz **#VBW** 100 kHz Sweep 2.133 ms <u>Auto</u> Occupied Bandwidth **Total Power** 4.74 dBm 1.1709 MHz Freq Offset 0 Hz Transmit Freg Error -2.461 kHz **OBW Power** 99.00 % 1.314 MHz x dB Bandwidth x dB -20.00 dB STATUS

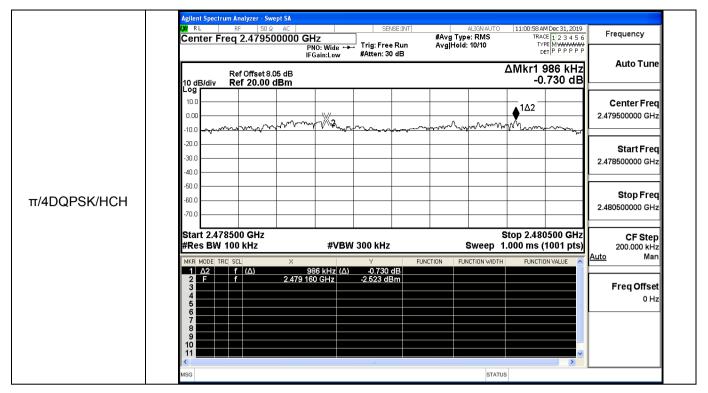
## **A.3 Carrier Frequency Separation**

| Mode     | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|----------|----------|------------------------------------|-------------|---------|
|          | LCH      | 1.137                              | 0.687       | PASS    |
| GFSK     | MCH      | 0.974                              | 0.687       | PASS    |
|          | HCH      | 0.848                              | 0.687       | PASS    |
| π/4DQPSK | LCH      | 0.984                              | 0.876       | PASS    |
|          | MCH      | 1.226                              | 0.876       | PASS    |
|          | НСН      | 0.986                              | 0.876       | PASS    |









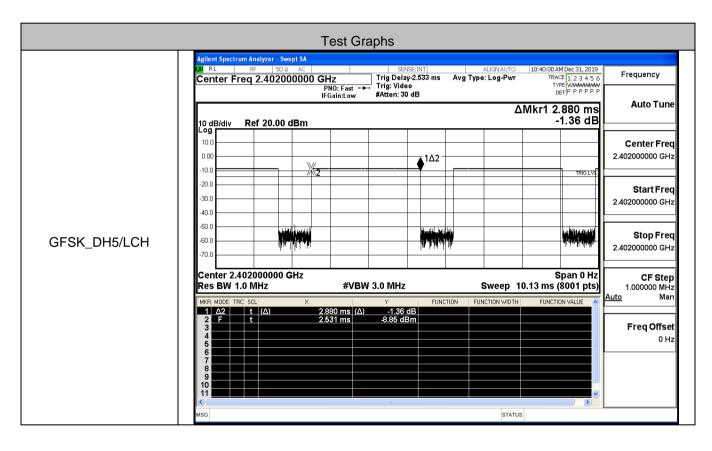
## A.4 Hopping Channel Number

| Mode     | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|----------|----------|-------------------------------|-----------|---------|
| GFSK     | Нор      | 79                            | >=15      | PASS    |
| π/4DQPSK | Нор      | 79                            | >=15      | PASS    |

Test Graphs

## A.5 Dwell Time

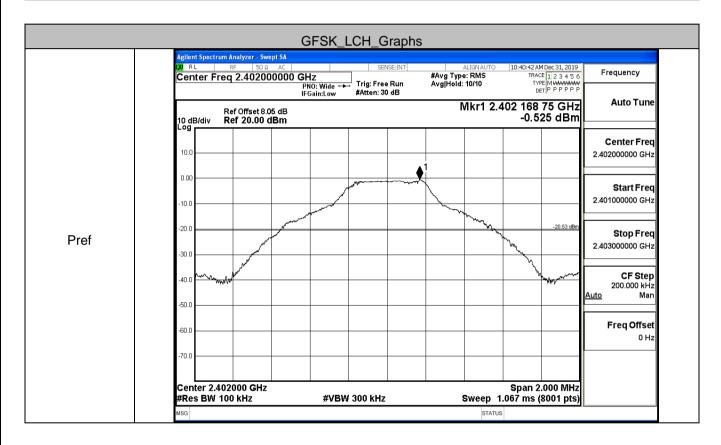
| Mode     | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|----------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
|          | DH5    | LCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
| GFSK     | DH5    | MCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
|          | DH5    | HCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
|          | 2DH5   | LCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
| π/4DQPSK | 2DH5   | MCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
|          | 2DH5   | HCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |



#### SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD. FCC ID: 2ALCFXO-9568-3 Report No.: LCS191225083AEA Agilent Spectrum Analyzer - Swept SA | M | RL | RF | SO Q | AC | | Center Freq 2.480000000 GHz | PNO: Fast | FGain:Low | SENSE:INT | ALIGNAUTO | 10:52:25AM Dec 31, 2019 | | Trig Delay-2.533 ms | Avg Type: Log-Pwr | Trig: Video | Trig: Video | Type | Trig: Video | Type | Trig: Video | Trig Frequency **Auto Tune** ΔMkr1 2.884 ms -0.40 dB 10 dB/div Ref 20.00 dBm 10.0 Center Freq 0.00 2.480000000 GHz -10.0 -20.0 Start Freq -30.0 2.480000000 GHz -40.0 -50.0 π/4DQPSK Stop Freq -60.0 2.480000000 GHz 2DH5/HCH -70.0 Center 2.480000000 GHz Res BW 1.0 MHz Span 0 Hz CF Step 1.000000 MHz Man Sweep 10.13 ms (8001 pts) **#VBW 3.0 MHz** <u>Auto</u> FUNCTION FUNCTION WIDTH FUNCTION VALUE 2.884 ms (Δ) -0.40 dB 767.6 μs -12.19 dBm Freq Offset 0 Hz STATUS

## A.6 RF Conducted Spurious Emissions

| Mode     | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|----------|---------|------------|------------------|-------------|---------|
|          | LCH     | -0.525     | -37.572          | -20.525     | PASS    |
| GFSK     | MCH     | -2.342     | -37.815          | -22.342     | PASS    |
|          | HCH     | -1.168     | -37.708          | -21.168     | PASS    |
|          | LCH     | -2.648     | -37.185          | -22.648     | PASS    |
| π/4DQPSK | MCH     | -3.5       | -37.642          | -23.500     | PASS    |
|          | HCH     | -2.605     | -37.287          | -22.605     | PASS    |



#### SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD. FCC ID: 2ALCFXO-9568-3 Report No.: LCS191225083AEA Agilent Spectrum Analyzer - Swept SA Agilen replace the RF | 50 Ω AC | Center Freq 12.515000000 GHz PNO: Fast → IFGain:Low #Atten: 30 dB 10:40:56 AM Dec 31, 2019 TRACE 1 2 3 4 5 6 TYPE M WWWWWW DET P P P P P P #Avg Type: RMS Avg|Hold: 2/10 Frequency Mkr2 24.647 GHz -37.572 dBm Auto Tune Ref Offset 8.05 dB Ref 20.00 dBm 10 dB/div Log Center Freq 10.0 12.515000000 GHz 0.00 Start Freq 30.000000 MHz -10.0 -20.0 Stop Freq Puw 25.000000000 GHz **CF Step** 2.497000000 GHz <u>Auto</u> Man 40.0 Auto -50.0 Freq Offset -60.0 0 Hz

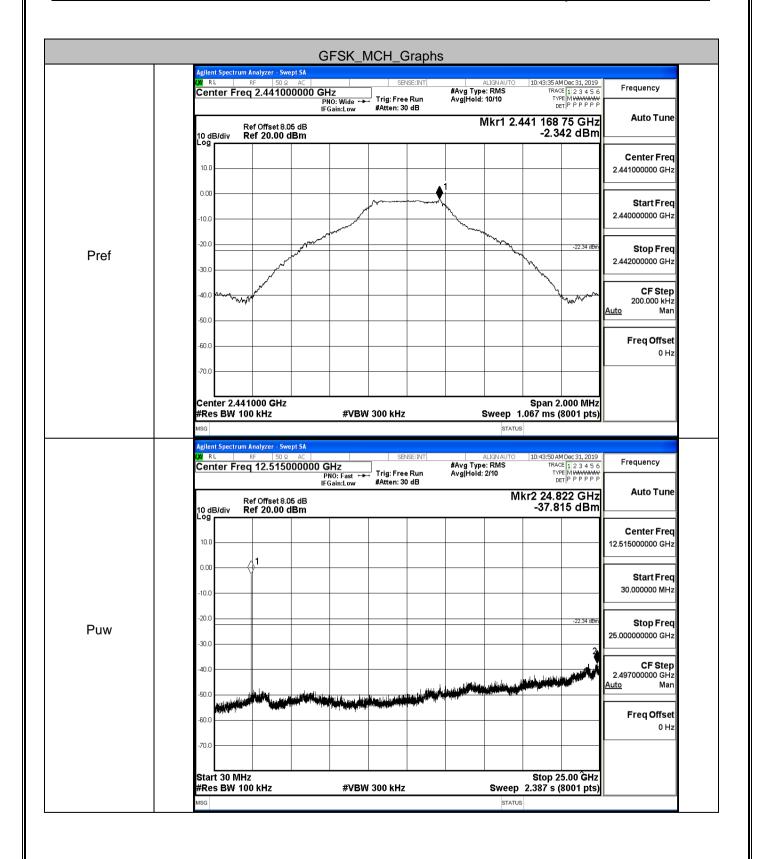
**#VBW** 300 kHz

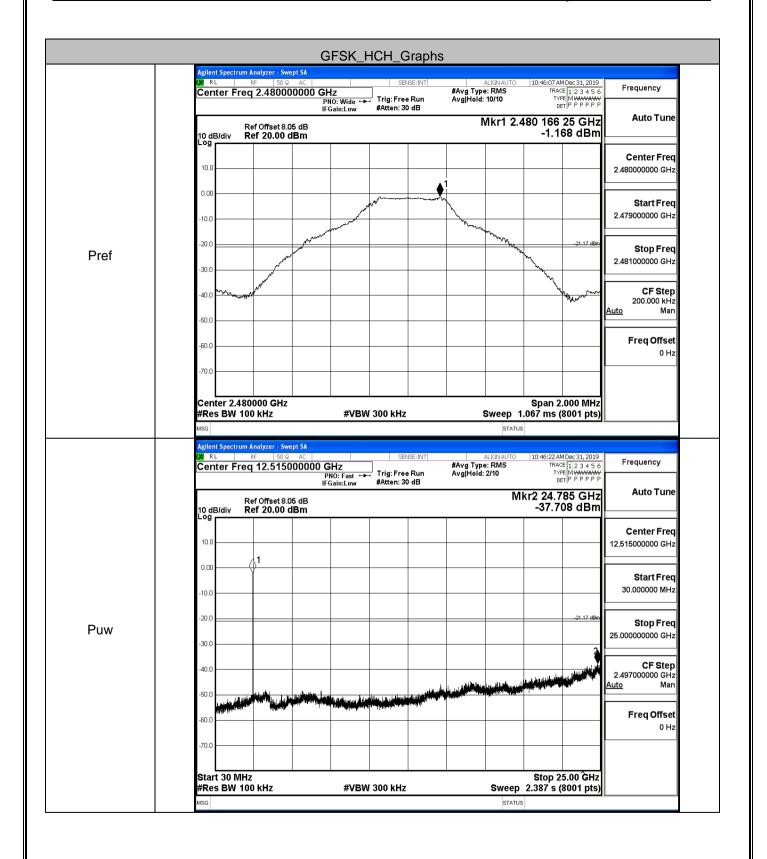
Stop 25.00 GHz Sweep 2.387 s (8001 pts)

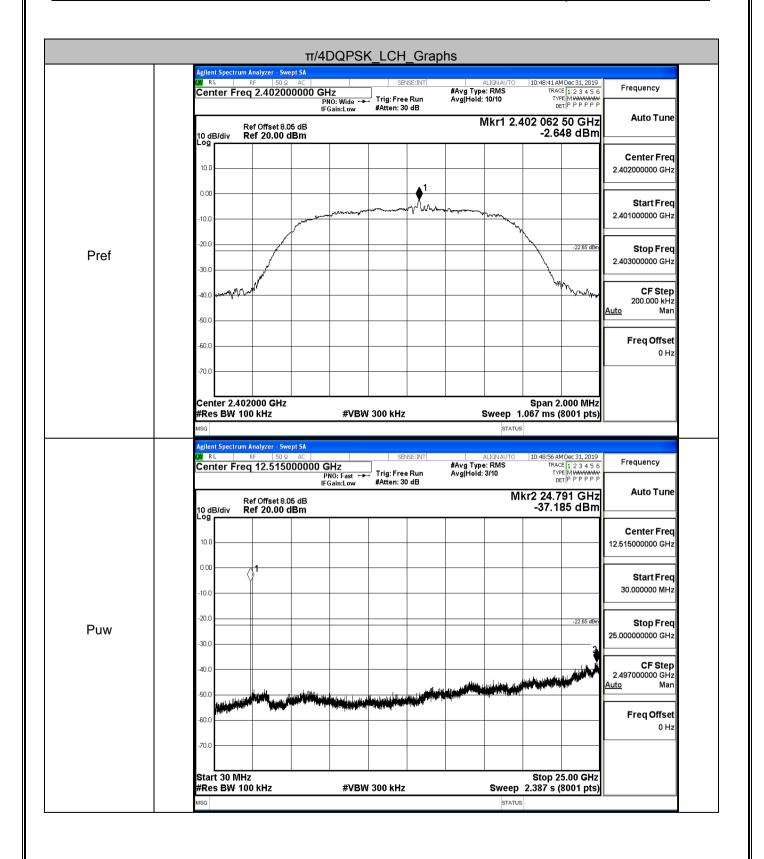
STATUS

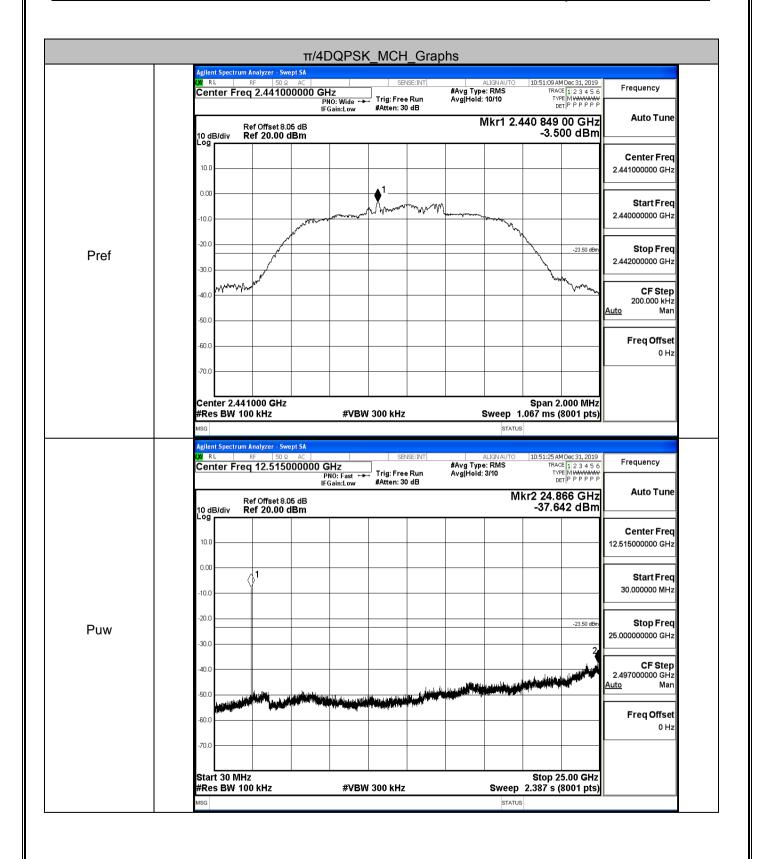
-70.0

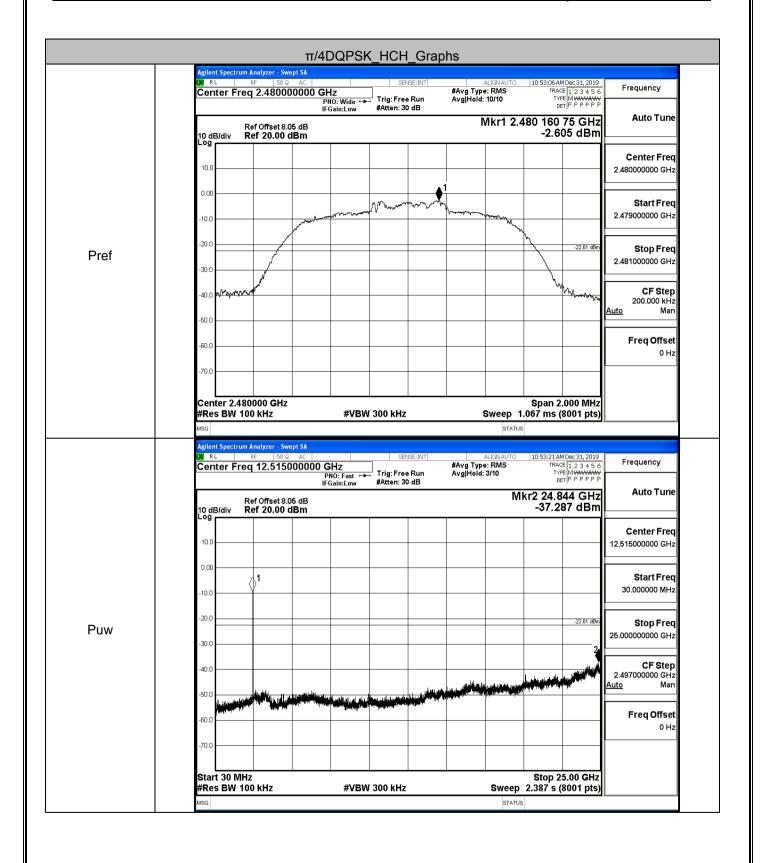
Start 30 MHz #Res BW 100 kHz





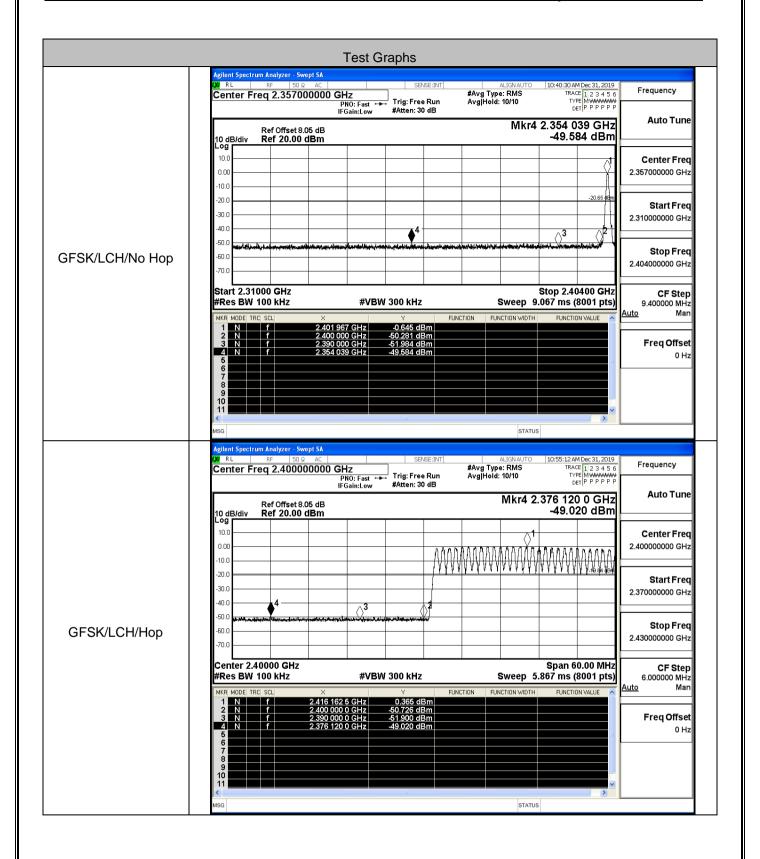


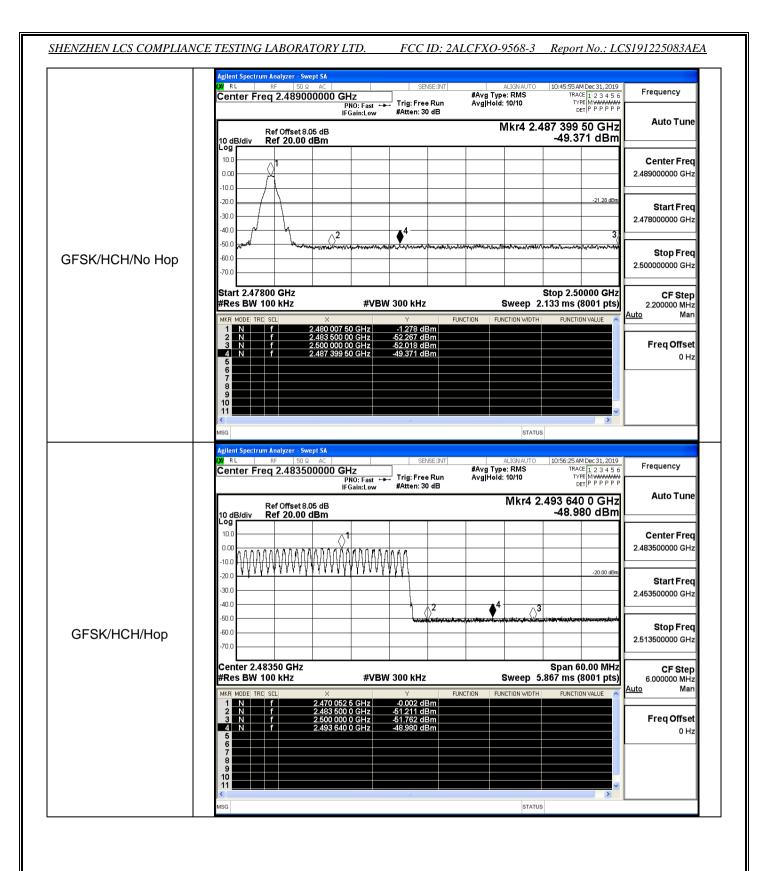




# A.7 Band-edge for RF Conducted Emissions

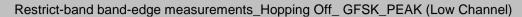
| Mode     | Channel | Carrier<br>Frequency<br>[MHz] | Carrier<br>Power<br>[dBm] | Frequency<br>Hopping | Max<br>Spurious<br>Level<br>[dBm] | Limit<br>[dBm] | Verdict |        |      |
|----------|---------|-------------------------------|---------------------------|----------------------|-----------------------------------|----------------|---------|--------|------|
|          | LCH     | 0.400                         | -0.645                    | Off                  | -49.584                           | -20.65         | PASS    |        |      |
| 0.5014   |         | 2402                          | 0.365                     | On                   | -49.020                           | -19.64         | PASS    |        |      |
| GFSK     |         |                               |                           |                      | -1.278                            | Off            | -49.371 | -21.28 | PASS |
| HCH      | HCH     | 2480                          | -0.002                    | On                   | -48.980                           | -20            | PASS    |        |      |
|          |         |                               | -4.040                    | Off                  | -49.567                           | -24.04         | PASS    |        |      |
| π/4DQPSK | LCH     | 2402                          | -1.101                    | On                   | -49.265                           | -21.1          | PASS    |        |      |
|          |         |                               | -2.960                    | Off                  | -49.830                           | -22.96         | PASS    |        |      |
|          | HCH     | 2480                          | -1.683                    | On                   | -47.889                           | -21.68         | PASS    |        |      |

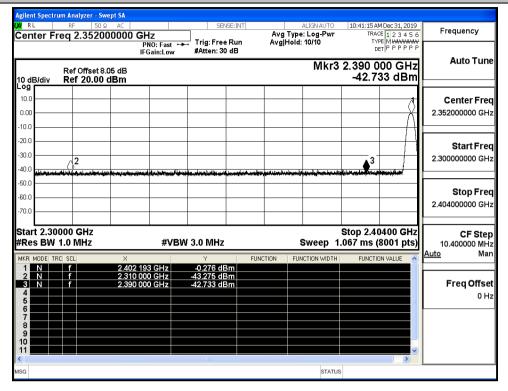




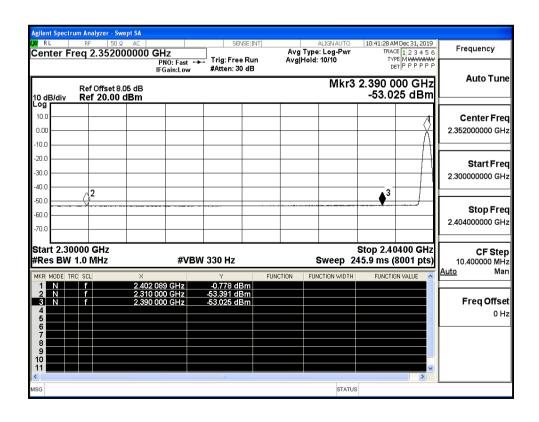
# A.8 Restrict-band band-edge measurements

| Test<br>Mode | Hopping | Freq.  | Power<br>[dBm] | Gain | Ground<br>Factor | E<br>[dBuV/m] | Detector | Limit<br>[dBuV/m] | Verdict |
|--------------|---------|--------|----------------|------|------------------|---------------|----------|-------------------|---------|
|              | Off     | 2310.0 | -43.28         | 2.0  | 0                | 53.98         | PEAK     | 74                | PASS    |
|              | Off     | 2310.0 | -53.39         | 2.0  | 0                | 43.87         | AV       | 54                | PASS    |
|              | Off     | 2390.0 | -42.73         | 2.0  | 0                | 54.52         | PEAK     | 74                | PASS    |
|              | Off     | 2390.0 | -53.03         | 2.0  | 0                | 44.23         | AV       | 54                | PASS    |
| GFSK         | Off     | 2483.5 | -41.38         | 2.0  | 0                | 55.87         | PEAK     | 74                | PASS    |
|              | Off     | 2483.5 | -52.50         | 2.0  | 0                | 44.75         | AV       | 54                | PASS    |
|              | Off     | 2500.0 | -43.29         | 2.0  | 0                | 53.96         | PEAK     | 74                | PASS    |
|              | Off     | 2500.0 | -52.41         | 2.0  | 0                | 44.85         | AV       | 54                | PASS    |
|              | Off     | 2310.0 | -42.26         | 2.0  | 0                | 55.00         | PEAK     | 74                | PASS    |
|              | Off     | 2310.0 | -53.36         | 2.0  | 0                | 43.90         | AV       | 54                | PASS    |
|              | Off     | 2390.0 | -43.02         | 2.0  | 0                | 54.24         | PEAK     | 74                | PASS    |
|              | Off     | 2390.0 | -53.06         | 2.0  | 0                | 44.20         | AV       | 54                | PASS    |
| π/4DQPSK     | Off     | 2483.5 | -42.69         | 2.0  | 0                | 54.57         | PEAK     | 74                | PASS    |
|              | Off     | 2483.5 | -52.52         | 2.0  | 0                | 44.74         | AV       | 54                | PASS    |
|              | Off     | 2500.0 | -41.74         | 2.0  | 0                | 55.51         | PEAK     | 74                | PASS    |
|              | Off     | 2500.0 | -52.35         | 2.0  | 0                | 44.91         | AV       | 54                | PASS    |

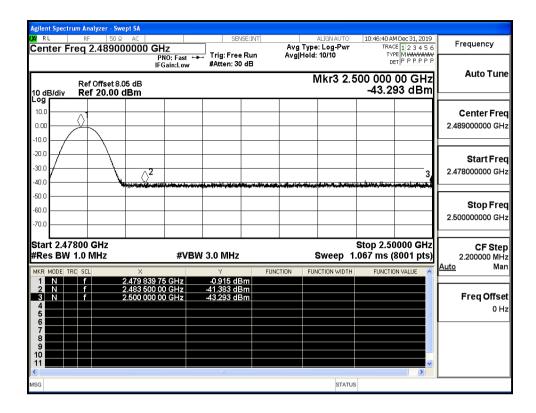




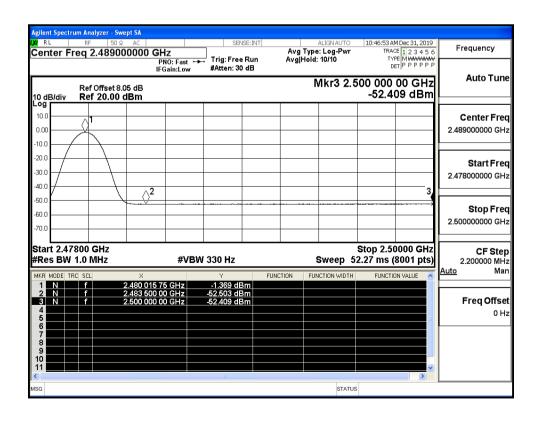
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (Low Channel)



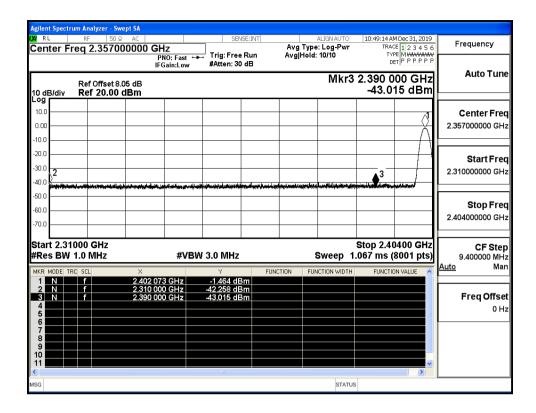
### Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



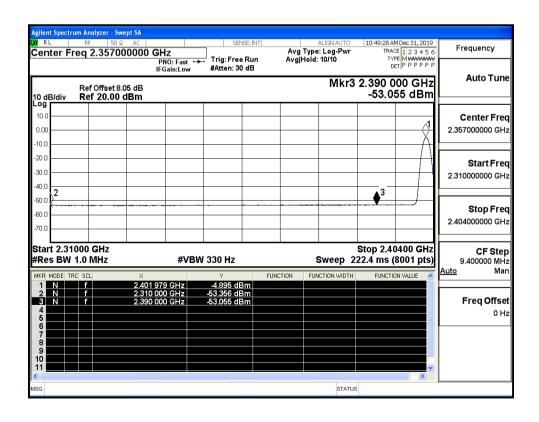
### Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)



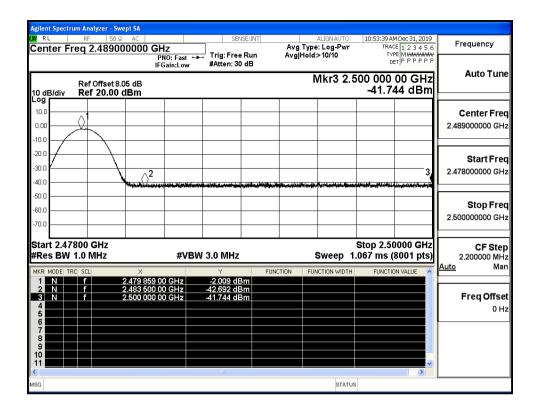
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



### Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (Low Channel)



## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)

