



Appendix for test report



1 Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

| Test Band | Test Mode | Test Channel | Conducte d Power [dBm] | ERP [dBm] | Limit [dBm] | Verdict |
|-----------|-----------|--------------|------------------------------|-----------|-------------|---------|
| WCDMA850 | UMTS/TM1 | LCH | 23.79 | 18.80 | 38.5 | PASS |
| | | MCH | 23.63 | 18.83 | 38.5 | PASS |
| | | HCH | 23.57 | 18.77 | 38.5 | PASS |

| Test Band | Test Mode | Test Channel | Conducte d Power [dBm] | EIRP [dBm] | Limit [dBm] | Verdict |
|-----------|-----------|--------------|------------------------------|------------|-------------|---------|
| WCDMA1700 | UMTS/TM1 | LCH | 23.34 | 23.76 | 30 | PASS |
| | | MCH | 23.31 | 23.93 | 30 | PASS |
| | | HCH | 23.26 | 23.90 | 30 | PASS |
| WCDMA1900 | UMTS/TM1 | LCH | 23.44 | 24.61 | 33 | PASS |
| | | MCH | 23.33 | 24.70 | 33 | PASS |
| | | HCH | 23.44 | 24.89 | 33 | PASS |

Note1:

a, For getting the ERP (Efficient Radiated Power) or EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b, SGP=Signal Generator Level

Note2:

SET Span=1.5*OBW

SET RBW=1%of the OBW,not to exceed 1MHz

SET VBW>= 3*RBW

SET Sweep time=auto-couple.

Detector:RMS



2Appendix_B: Peak-to-Average Ratio

Part I - Test Results

| Test Band | Test Mode | Test Channel | Measured[dB] | Limit [dB] | Verdict |
|-----------|-----------|--------------|--------------|------------|---------|
| WCDMA850 | UMTS/TM1 | LCH | 2.88 | 13 | PASS |
| | | MCH | 2.53 | 13 | PASS |
| | | HCH | 2.66 | 13 | PASS |
| WCDMA1700 | UMTS/TM1 | LCH | 3.18 | 13 | PASS |
| | | MCH | 2.83 | 13 | PASS |
| | | HCH | 3.21 | 13 | PASS |
| WCDMA1900 | UMTS/TM1 | LCH | 2.46 | 13 | PASS |
| | | MCH | 2.70 | 13 | PASS |
| | | HCH | 2.83 | 13 | PASS |

3Appendix_C: Modulation Characteristics

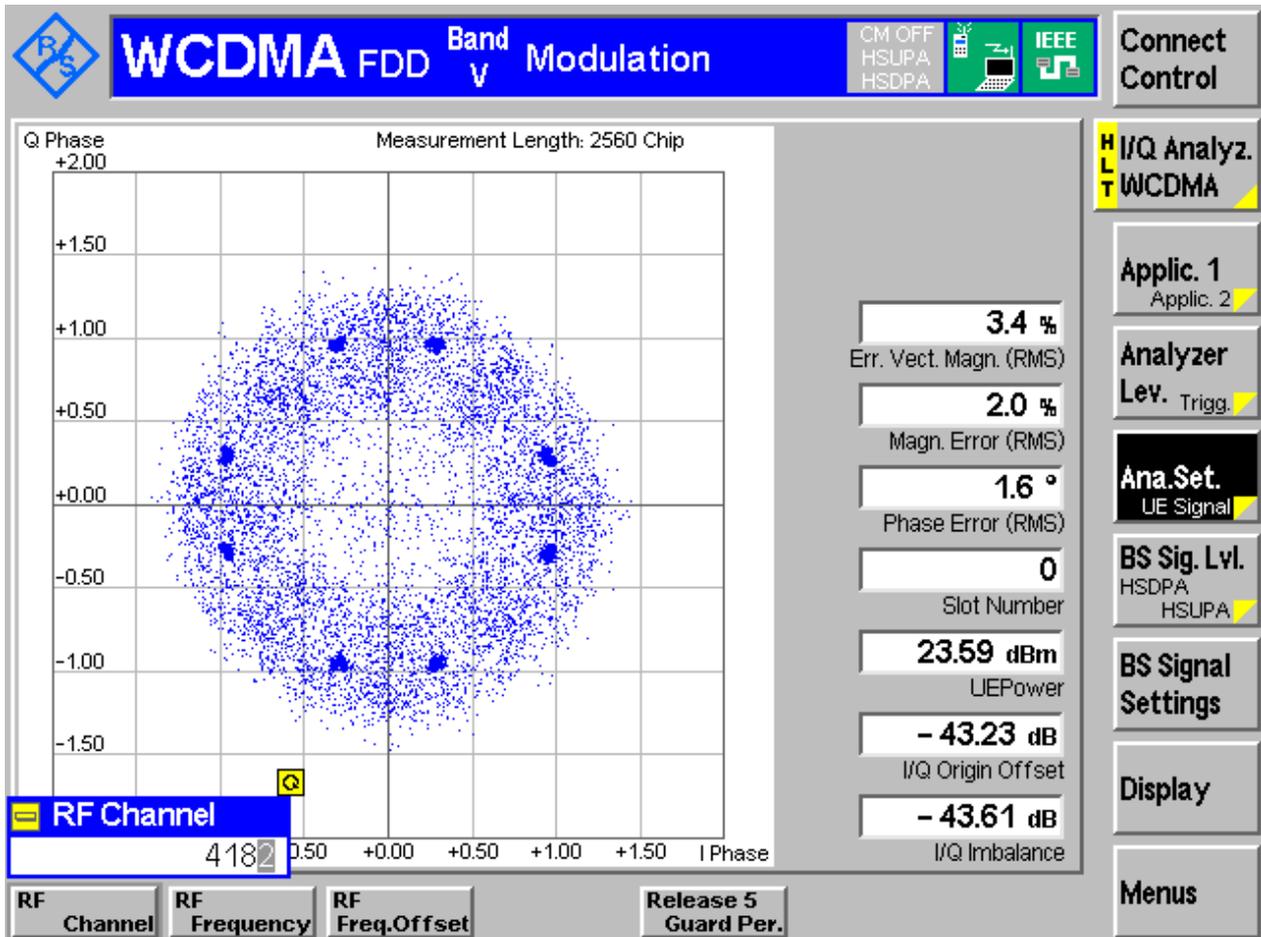
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA850

3.1.1.1 Test Mode = UMTS/TM1

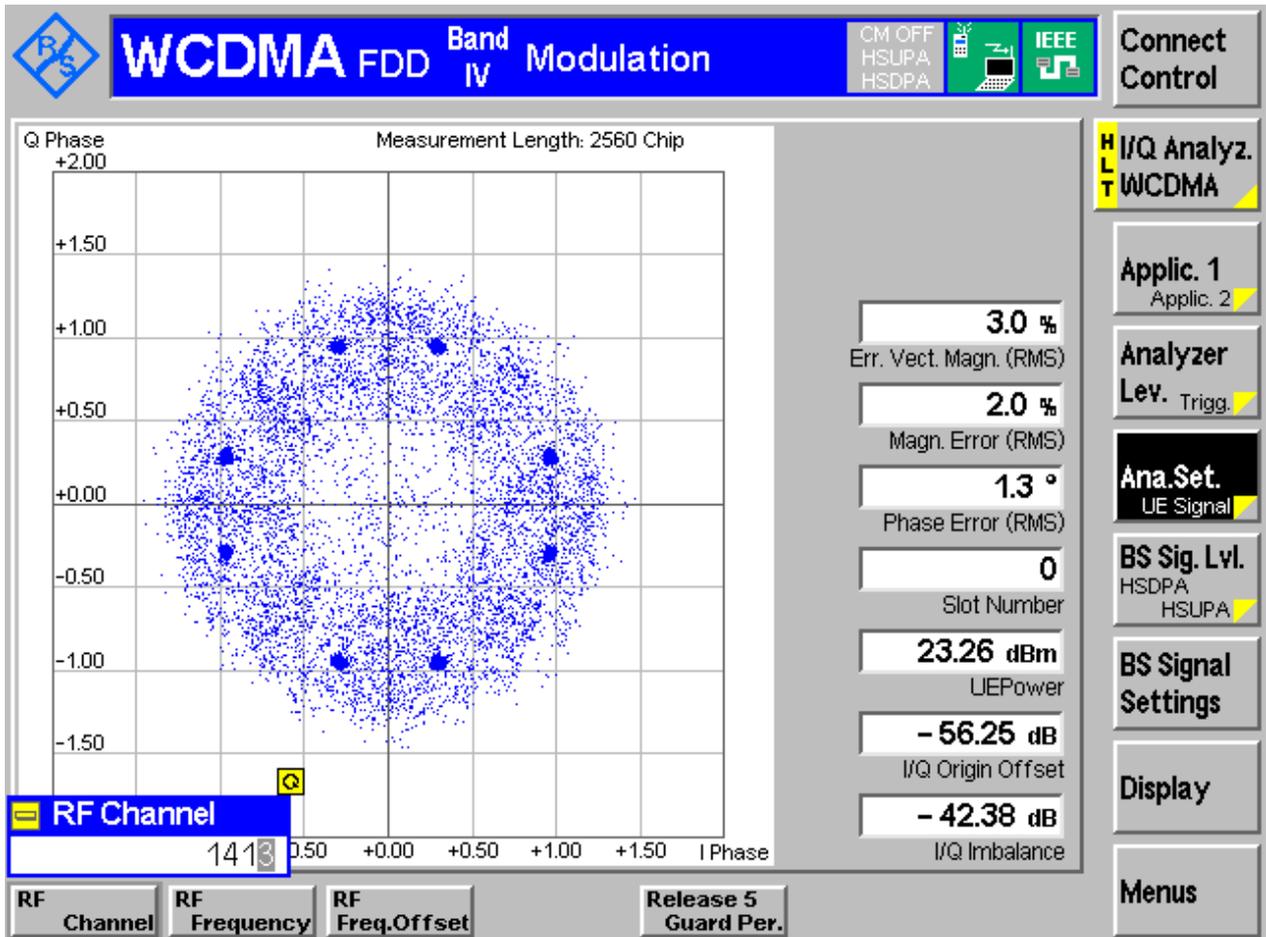
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

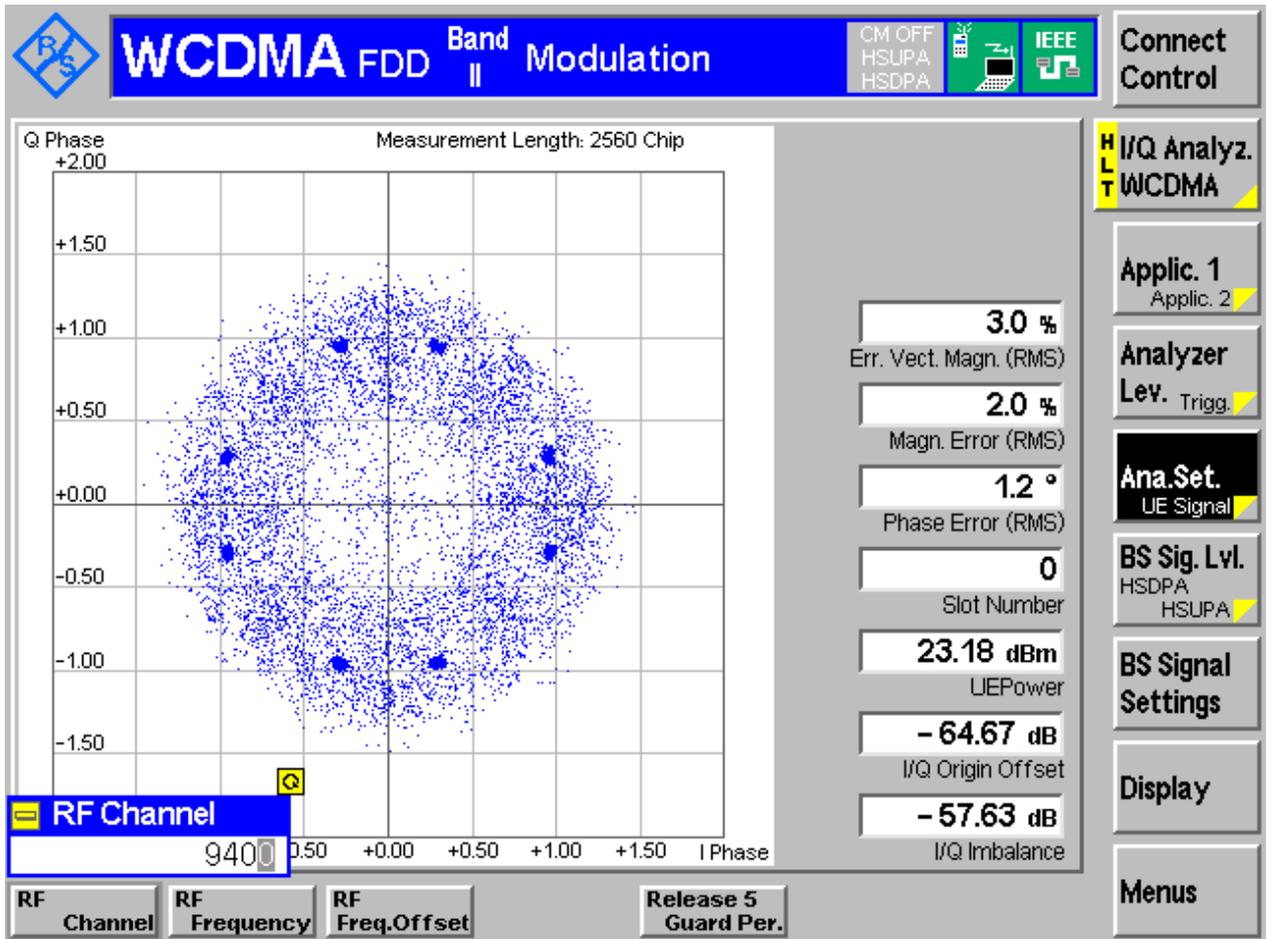
3.1.2.1.1 Test Channel = MCH



3.1.3 Test Band = WCDMA1900

3.1.3.1 Test Mode = UMTS/TM1

3.1.3.1.1 Test Channel = MCH





4Appendix_D: Bandwidth

Part I - Test Results

| Test Band | Test Mode | Test Channel | Occupied Bandwidth [MHz] | Emission Bandwidth [MHz] | Verdict |
|-----------|-----------|--------------|--------------------------|--------------------------|---------|
| WCDMA850 | UMTS/TM1 | LCH | 4.15 | 4.72 | Pass |
| | | MCH | 4.16 | 4.73 | Pass |
| | | HCH | 4.16 | 4.73 | Pass |
| WCDMA1700 | UMTS/TM1 | LCH | 4.14 | 4.70 | Pass |
| | | MCH | 4.15 | 4.74 | Pass |
| | | HCH | 4.15 | 4.70 | Pass |
| WCDMA1900 | UMTS/TM1 | LCH | 4.15 | 4.73 | Pass |
| | | MCH | 4.16 | 4.72 | Pass |
| | | HCH | 4.13 | 4.71 | Pass |

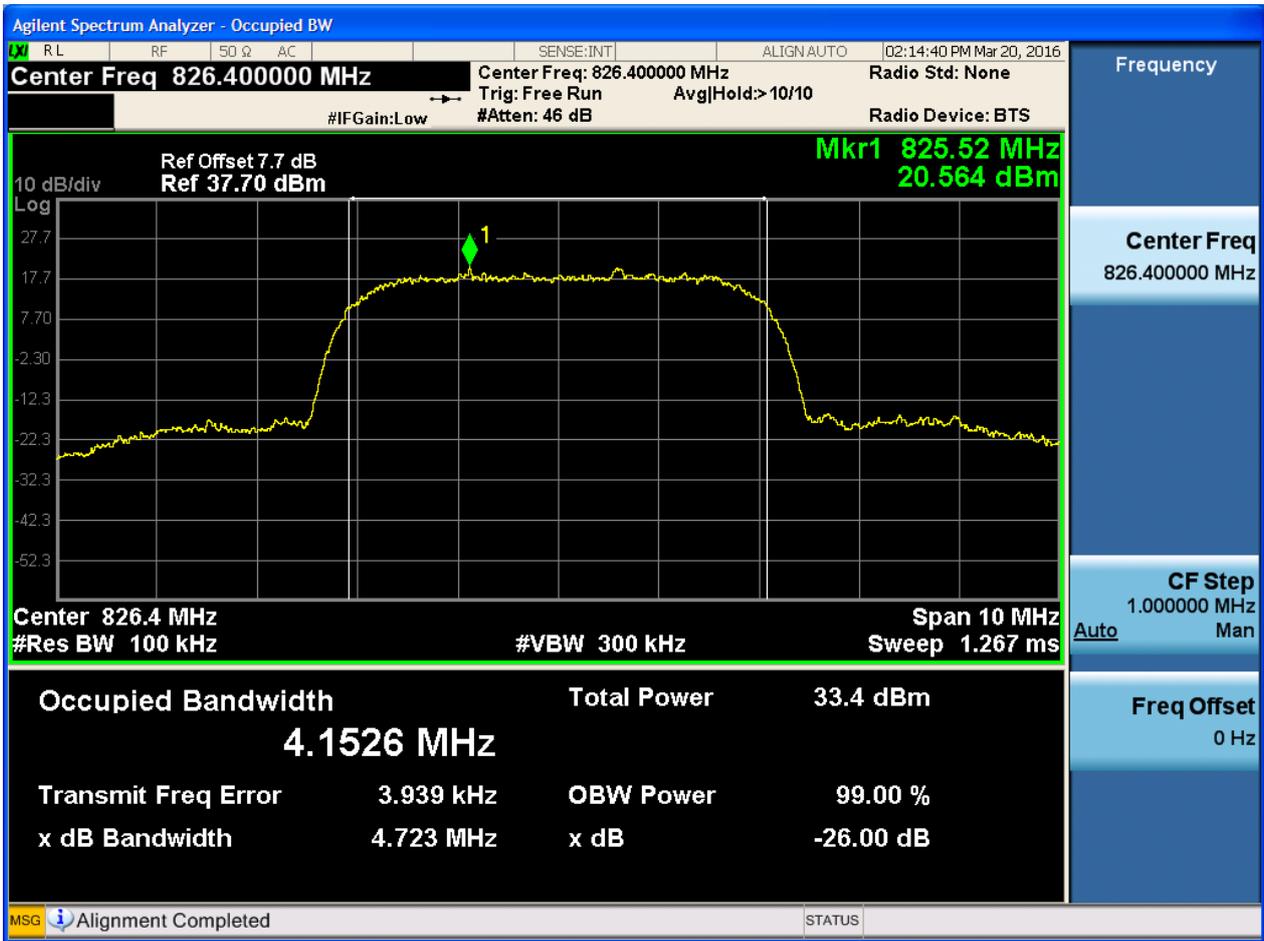
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

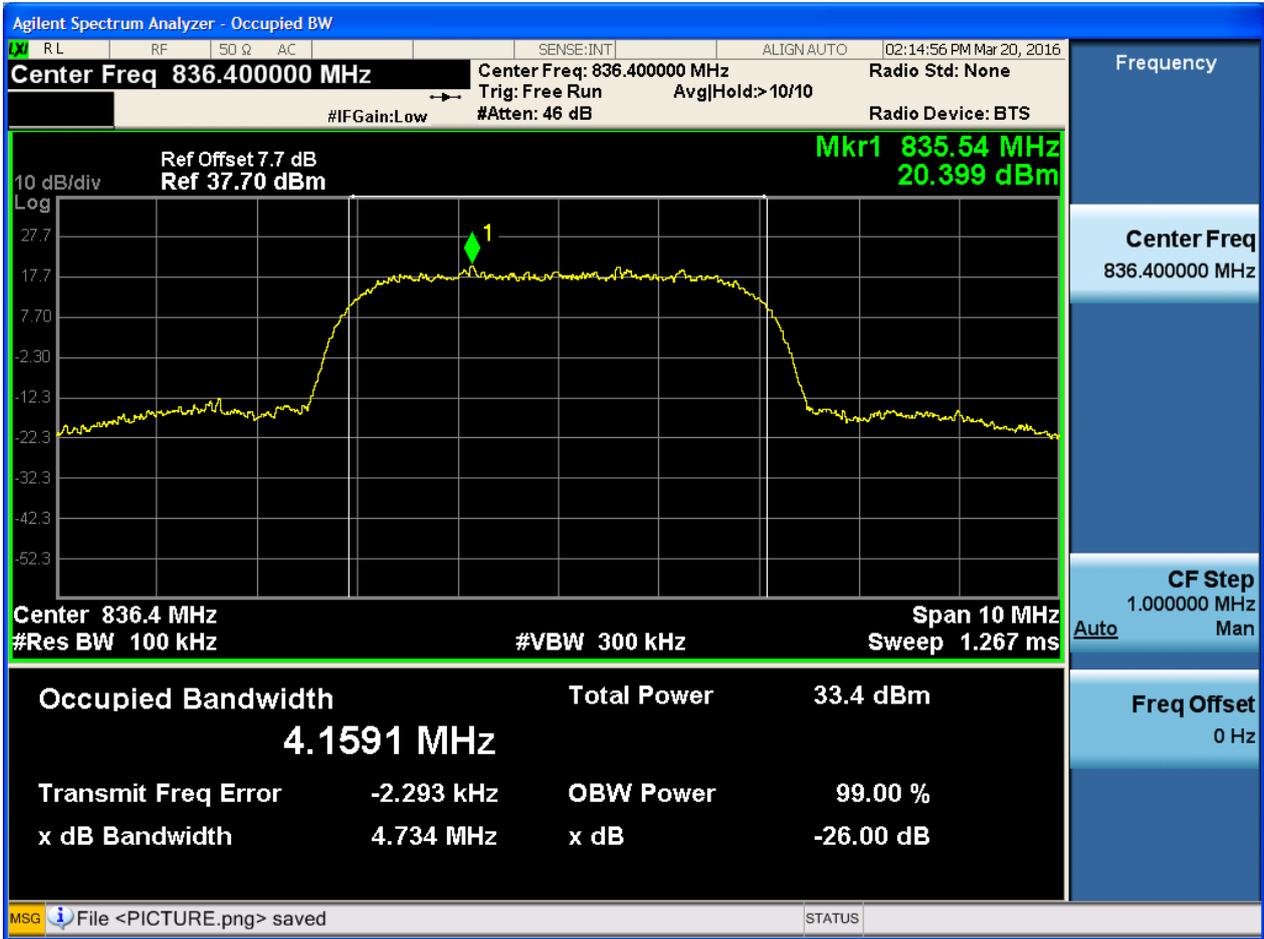
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



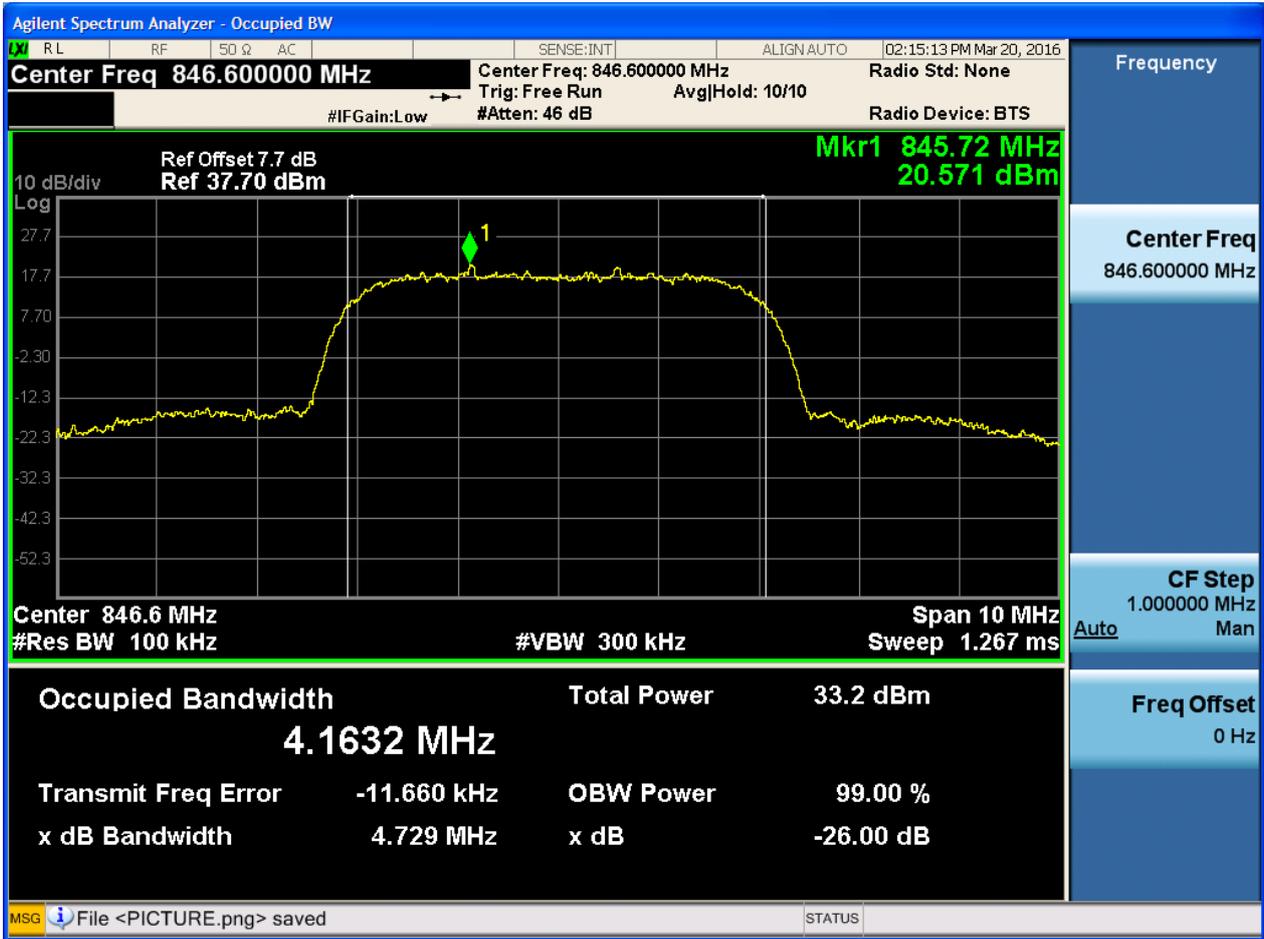


4.1.1.1.2 Test Channel = MCH





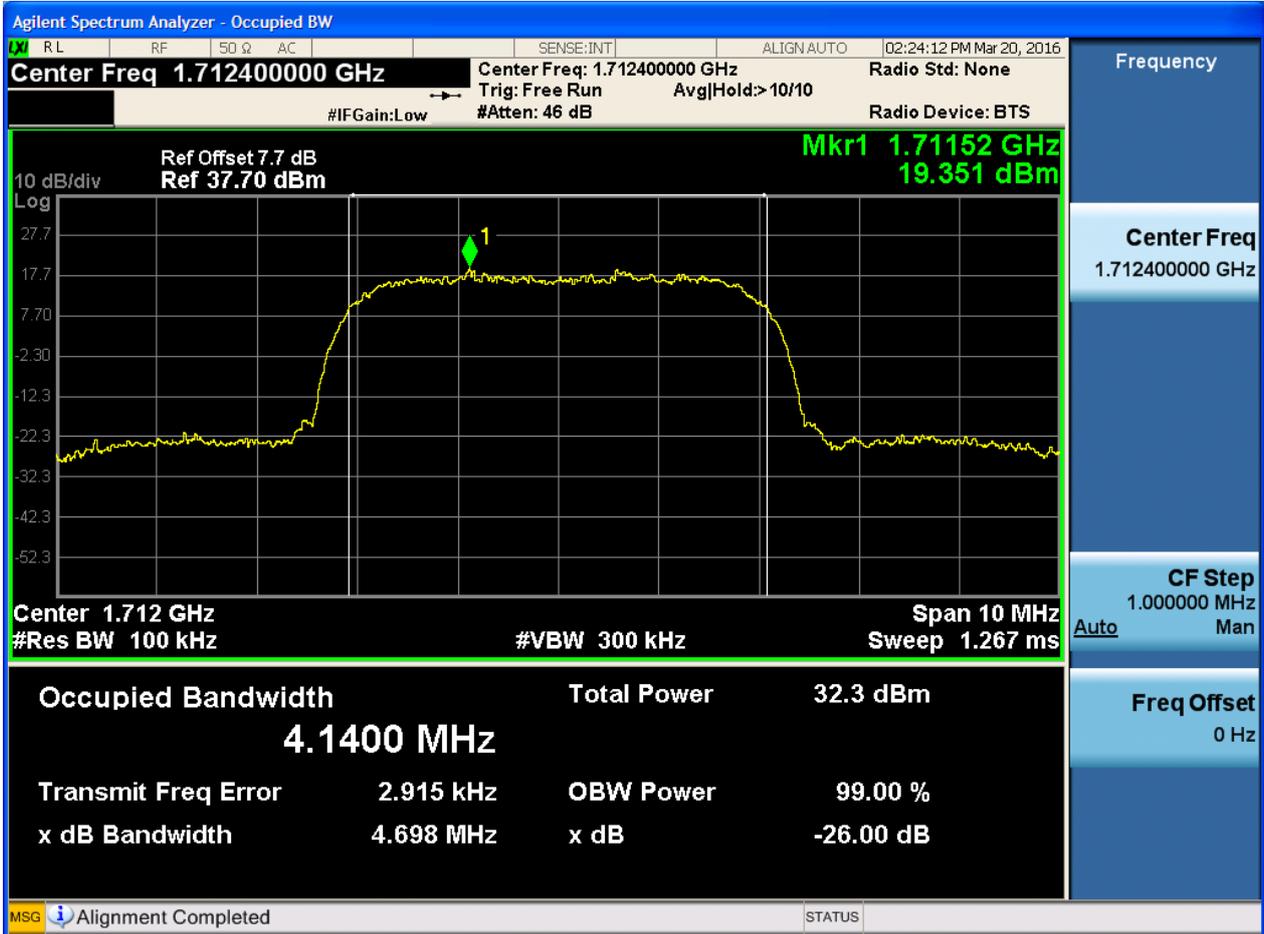
4.1.1.1.3 Test Channel = HCH



4.1.2 Test Band = WCDMA1700

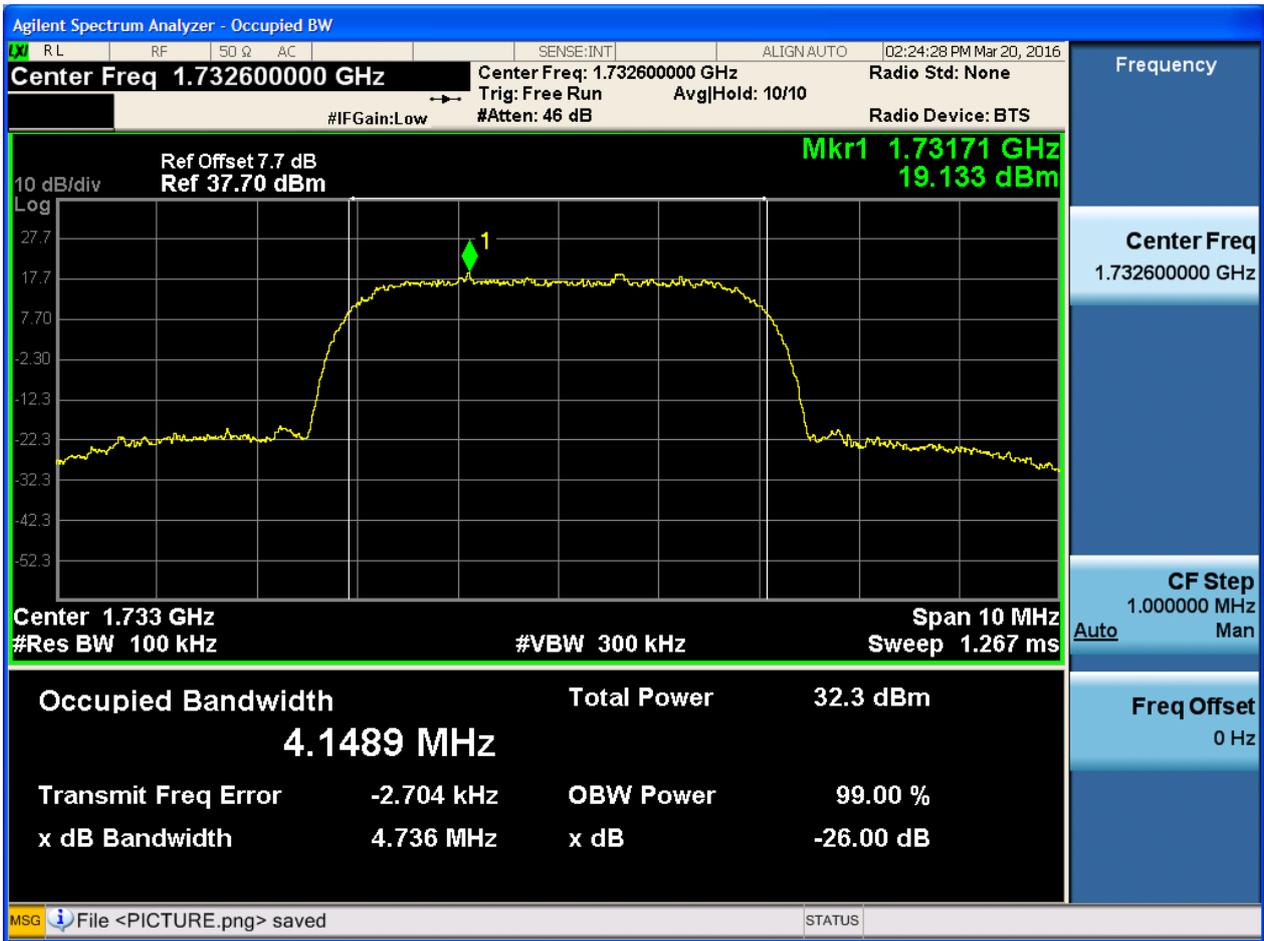
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



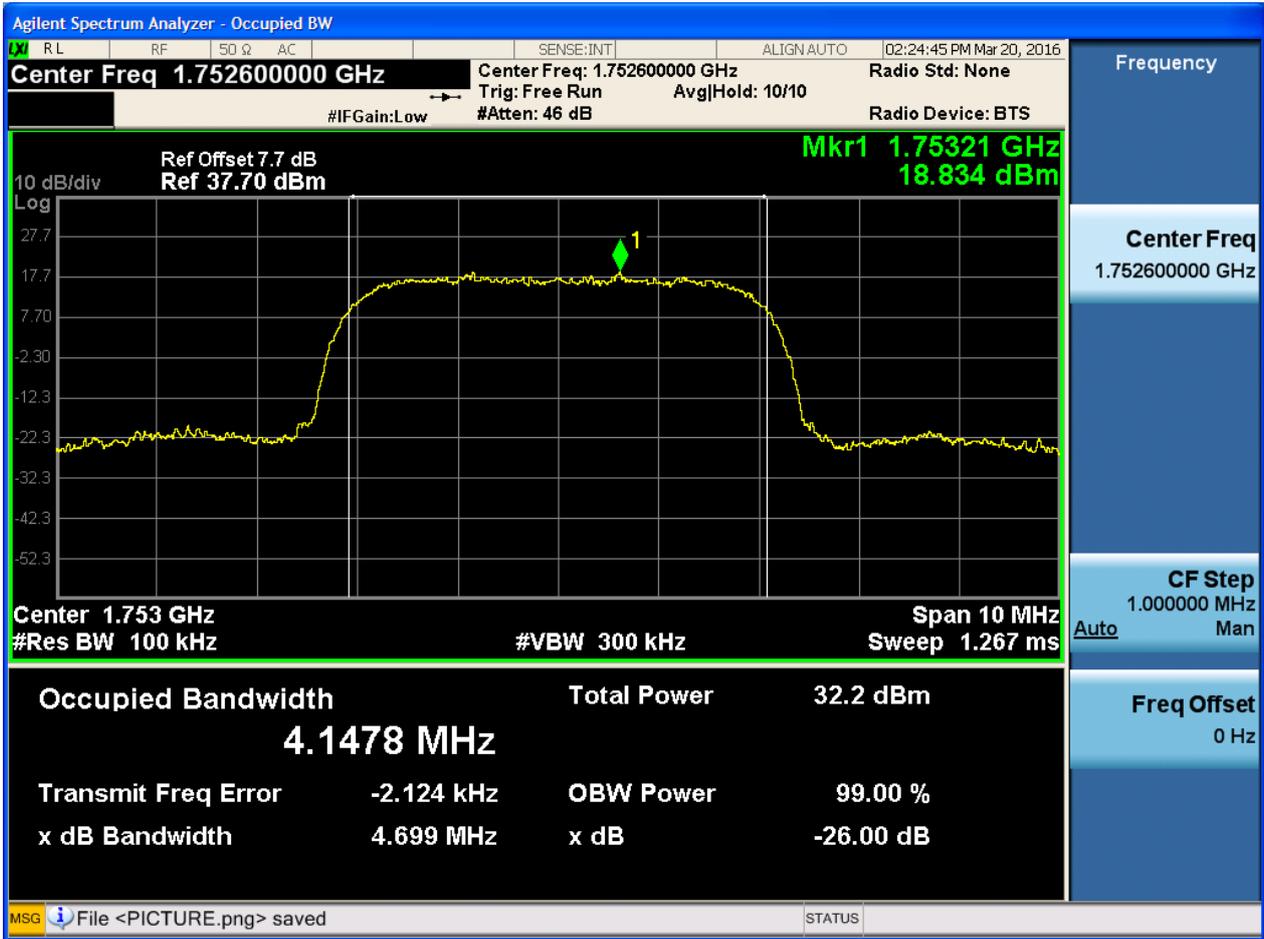


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

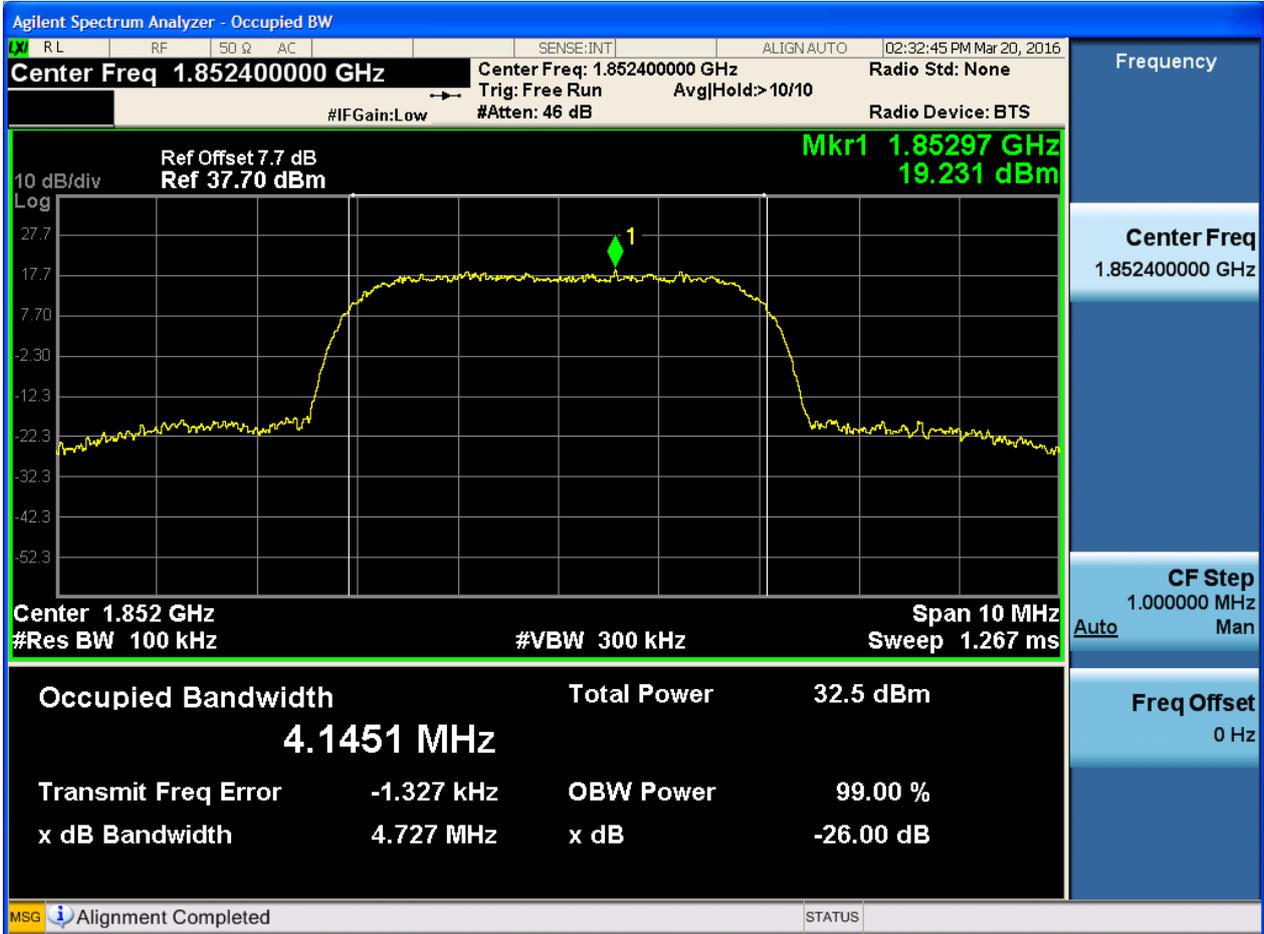




4.1.3 Test Band = WCDMA1900

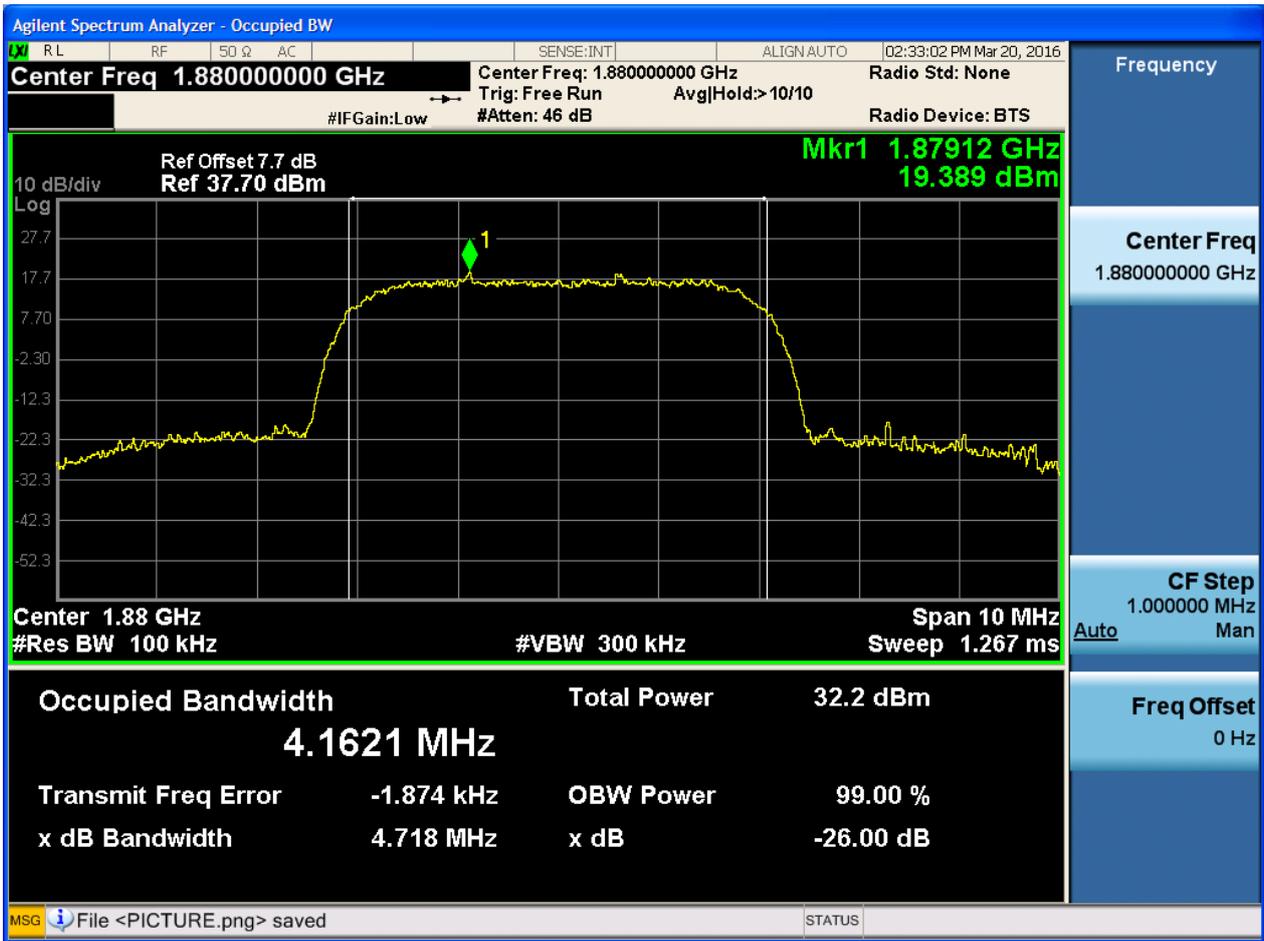
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH

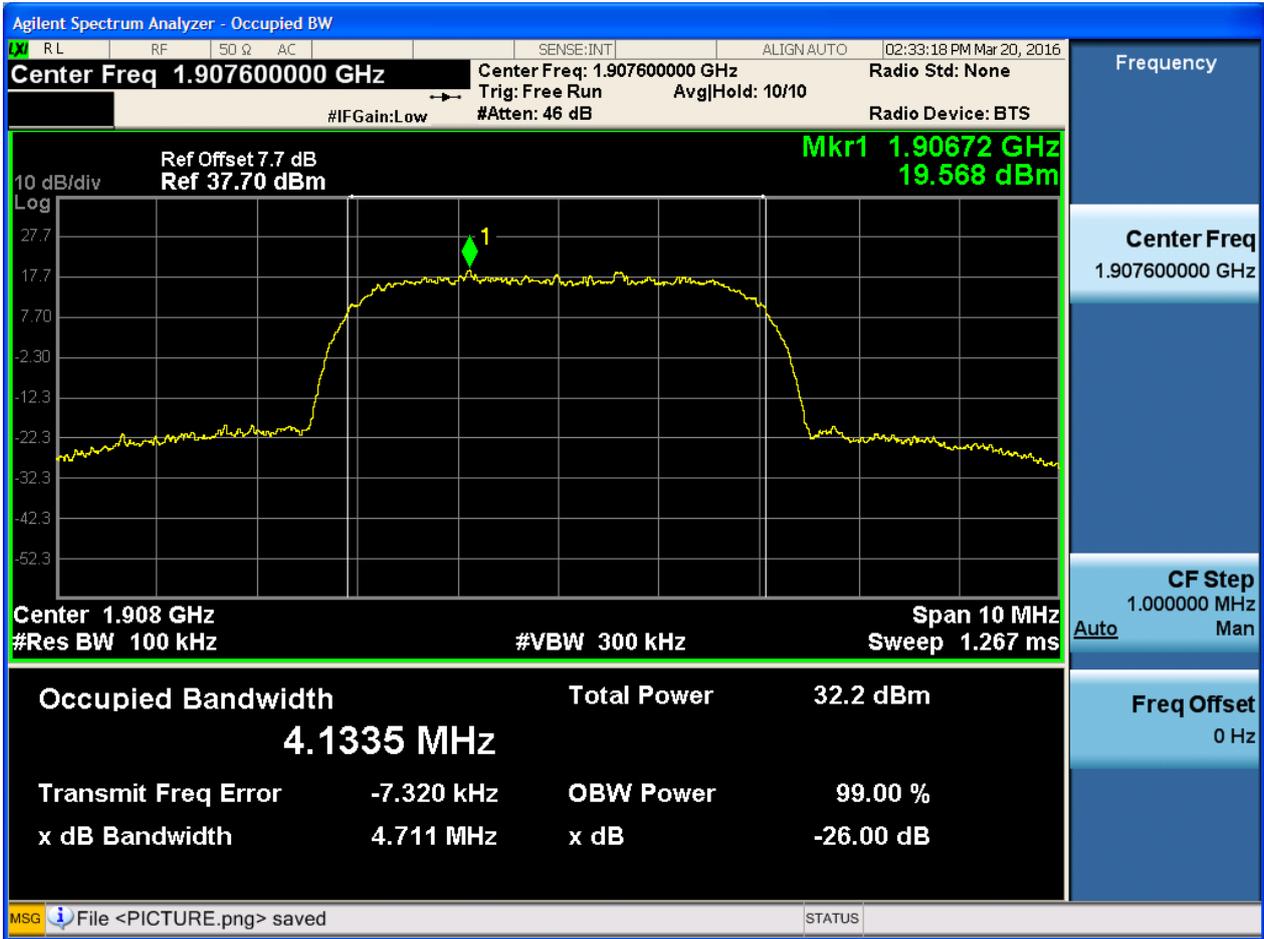




4.1.3.1.2 Test Channel = MCH



4.1.3.1.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

Part I - Test Plots

5.1 For UMTS

5.1.1 Test Band = WCDMA850

5.1.1.1 Test Mode = UMTS/TM1

5.1.1.1.1 Test Channel = LCH



5.1.1.1.2 Test Channel = HCH





5.1.2 Test Band = WCDMA1700

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH



5.1.2.1.2 Test Channel = HCH





5.1.3 Test Band = WCDMA1900

5.1.3.1 Test Mode = UMTS/TM1

5.1.3.1.1 Test Channel = LCH



5.1.3.1.2 Test Channel = HCH





6Appendix_F: Spurious Emission at Antenna Terminal

NOTE: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of $< RBW/2$ so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = $k * (Span / RBW)$ " with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

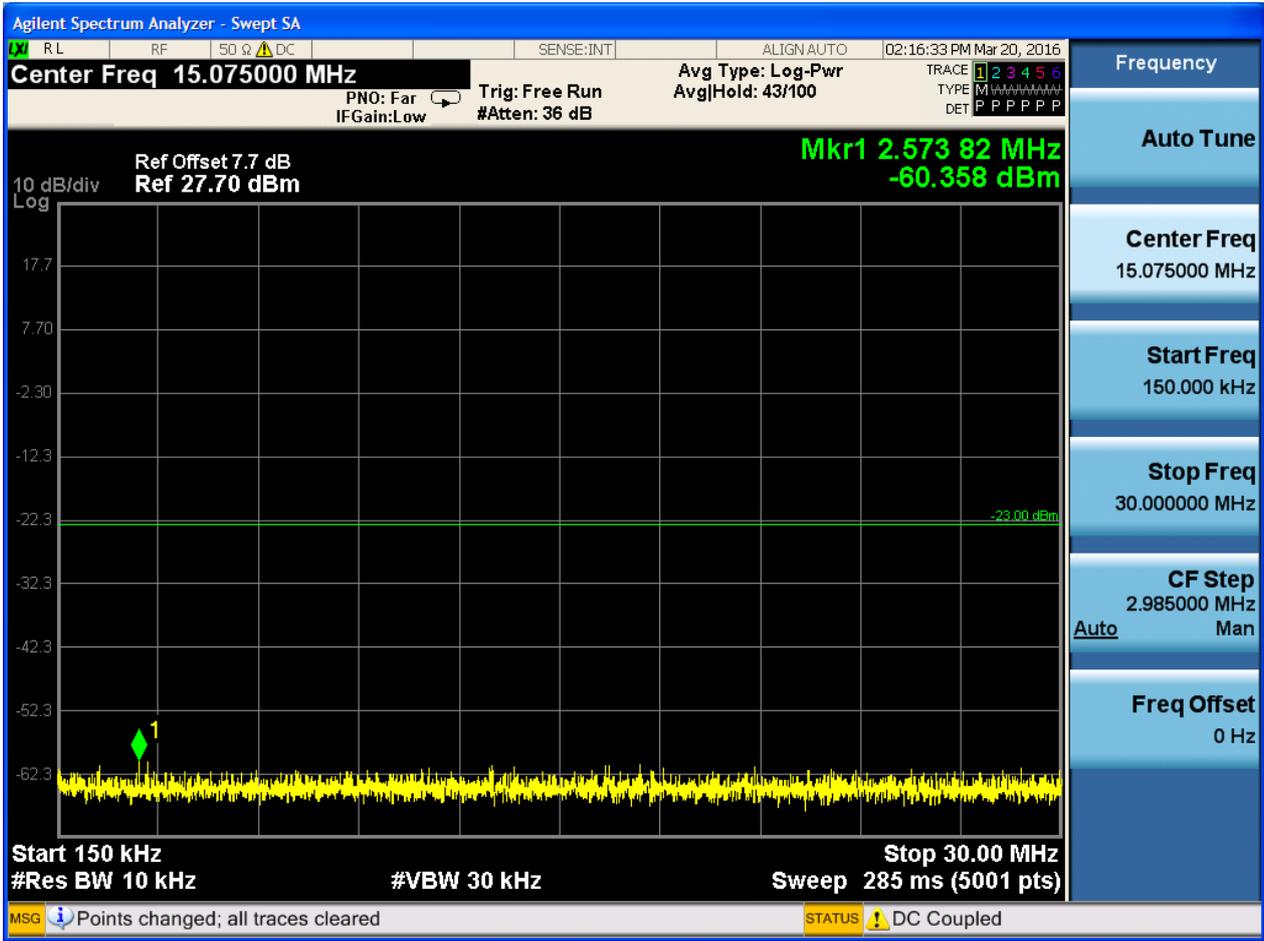
Part I - Test Plots

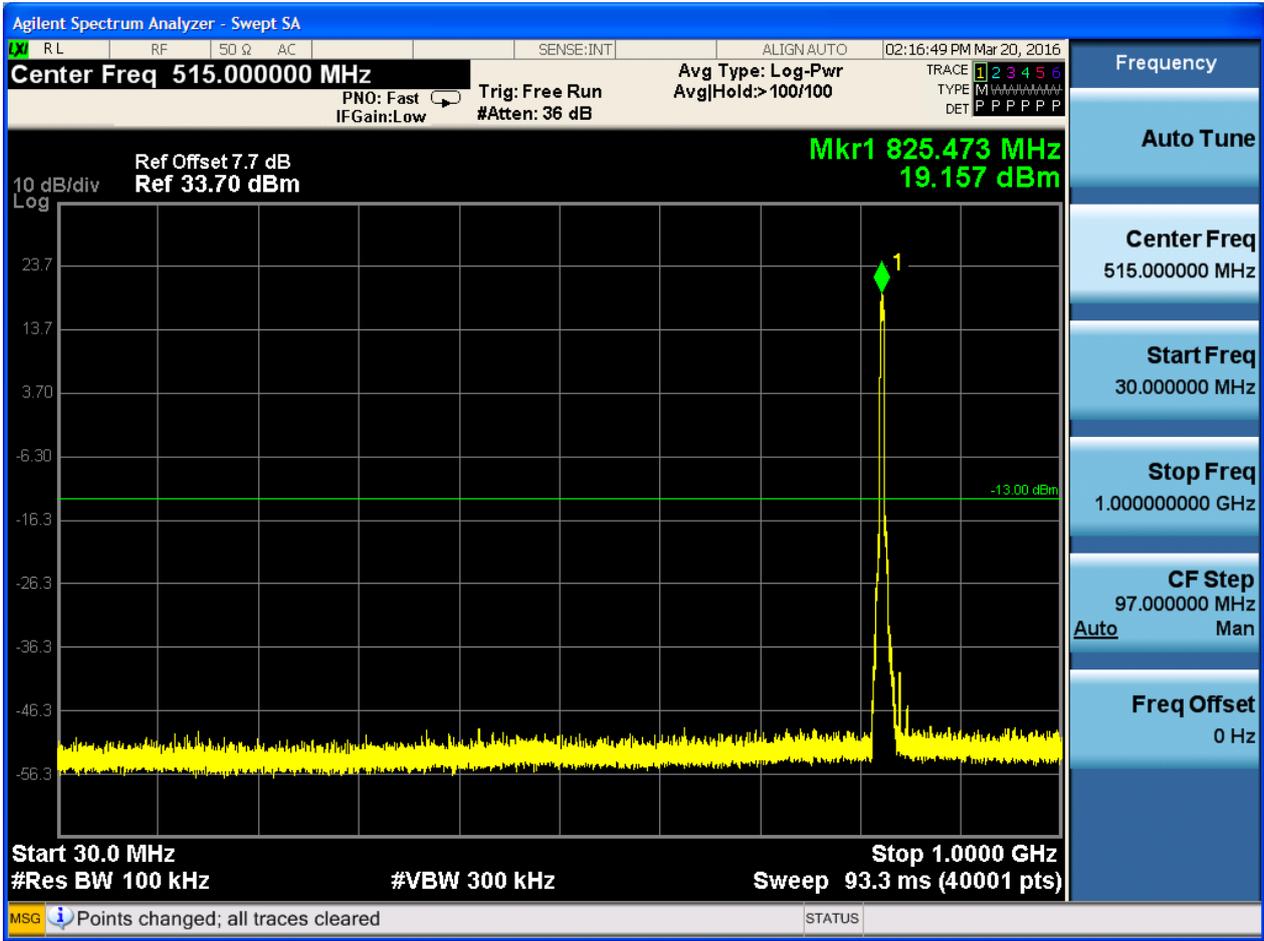
6.1 For UMTS

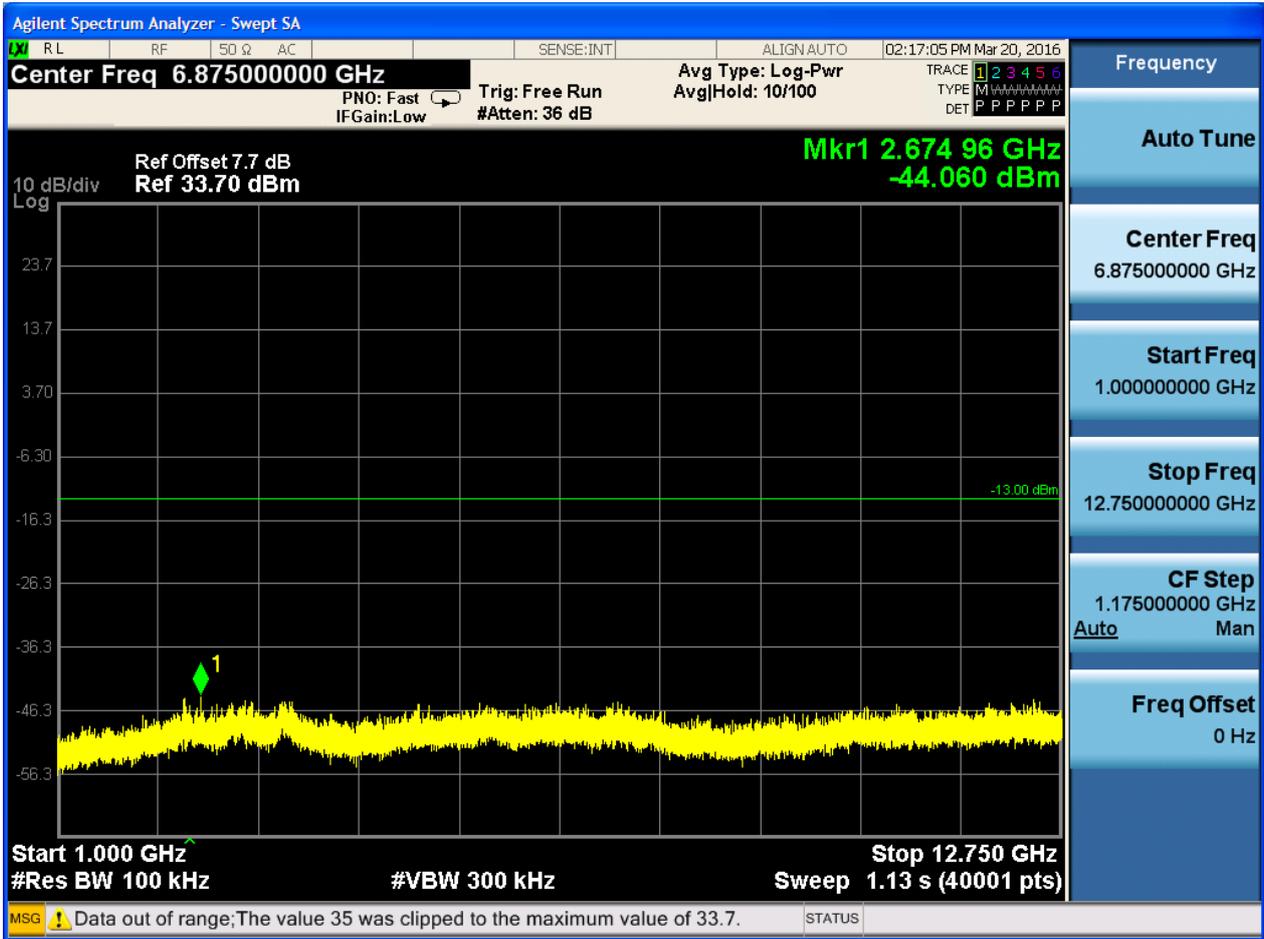
6.1.1 Test Band = WCDMA850

6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH

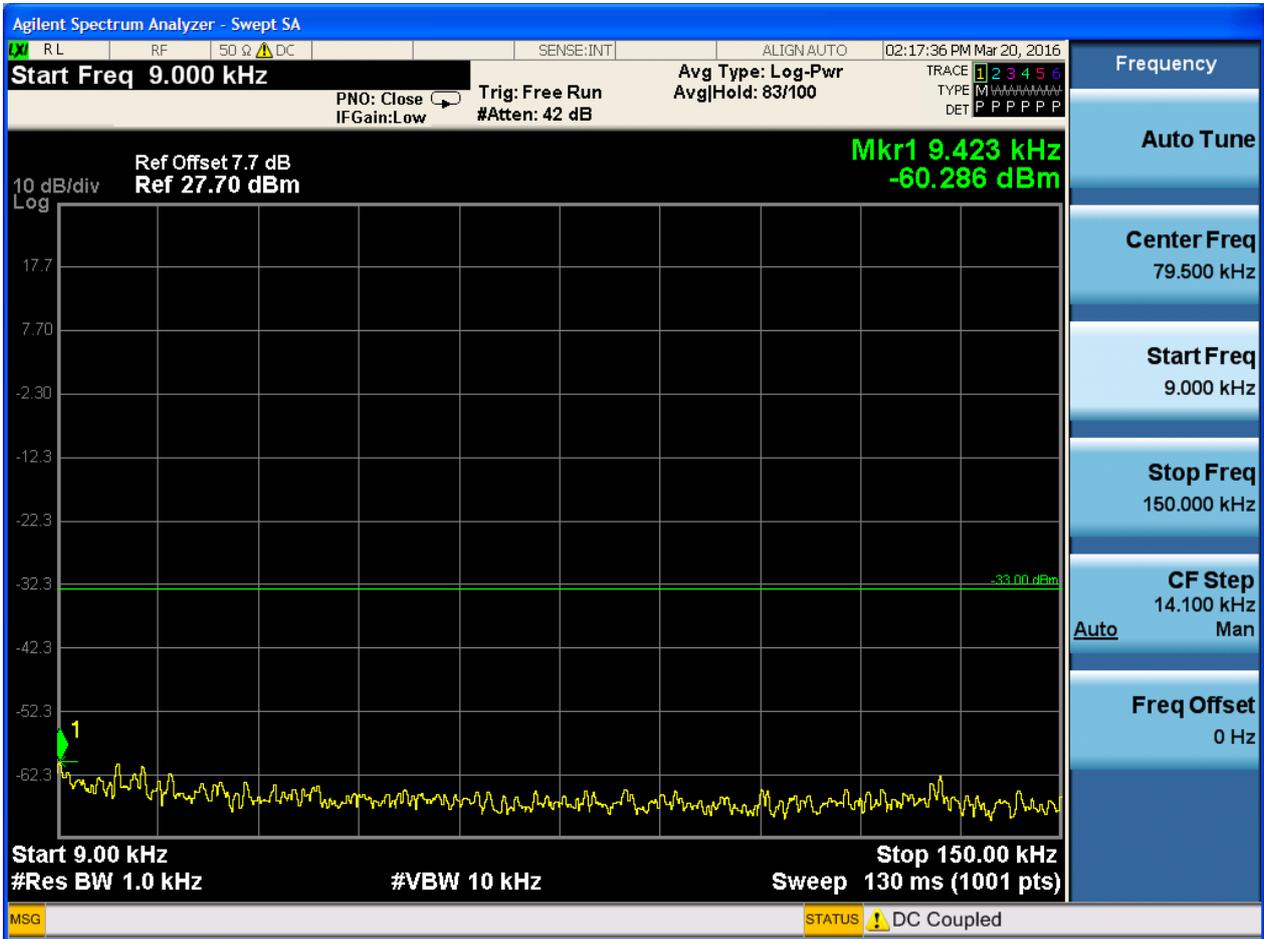


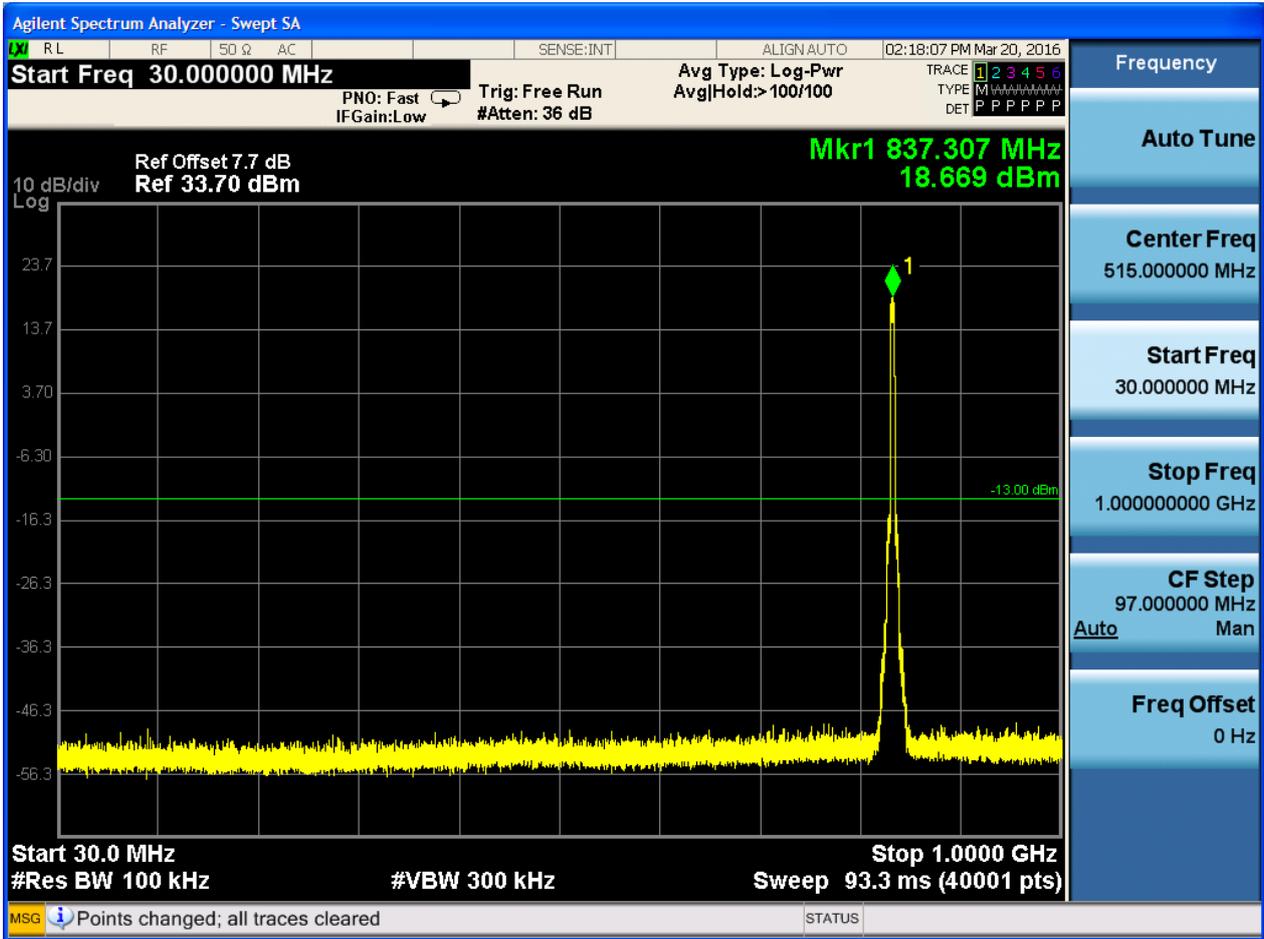


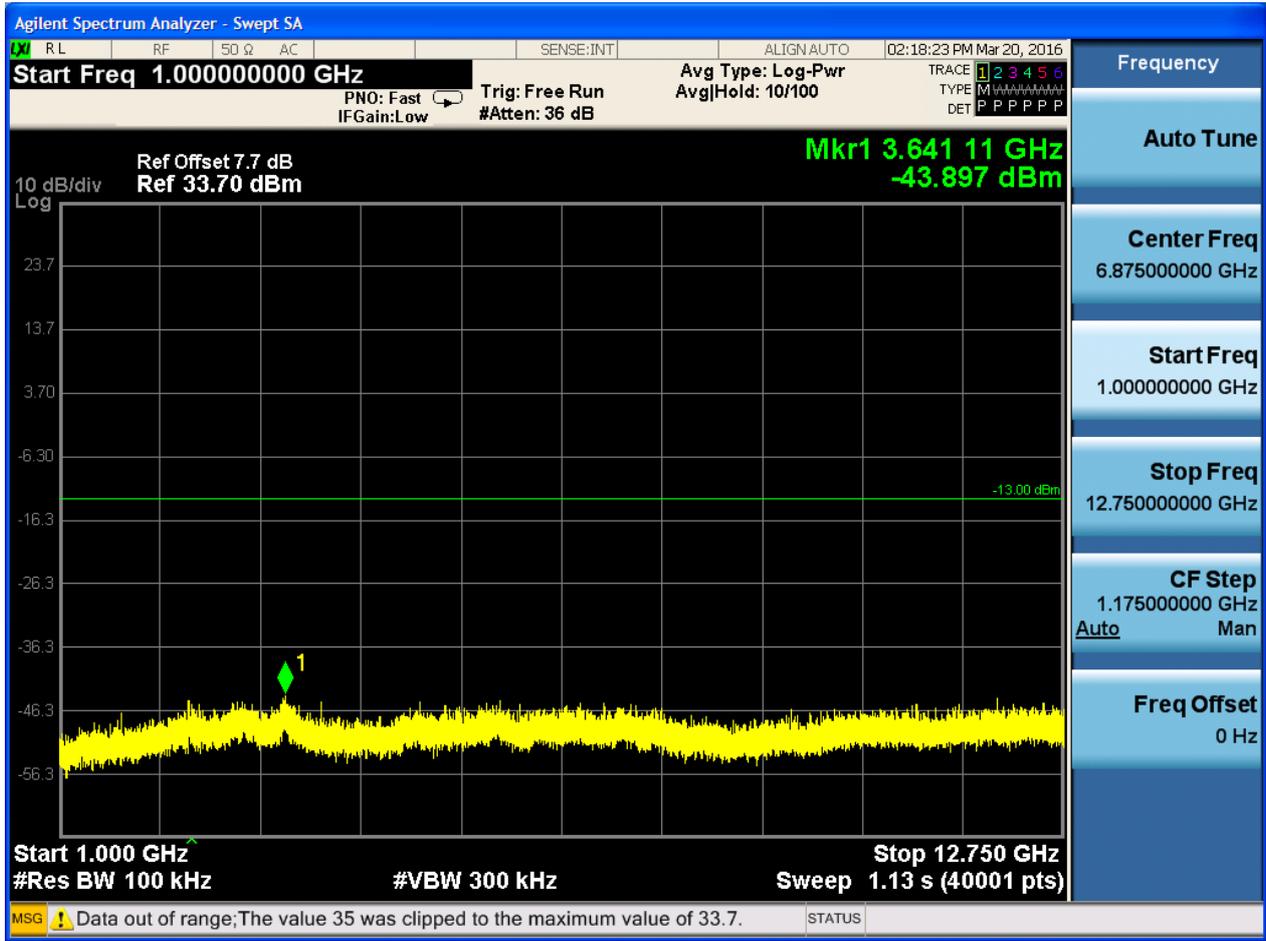




6.1.1.1.2 Test Channel = MCH

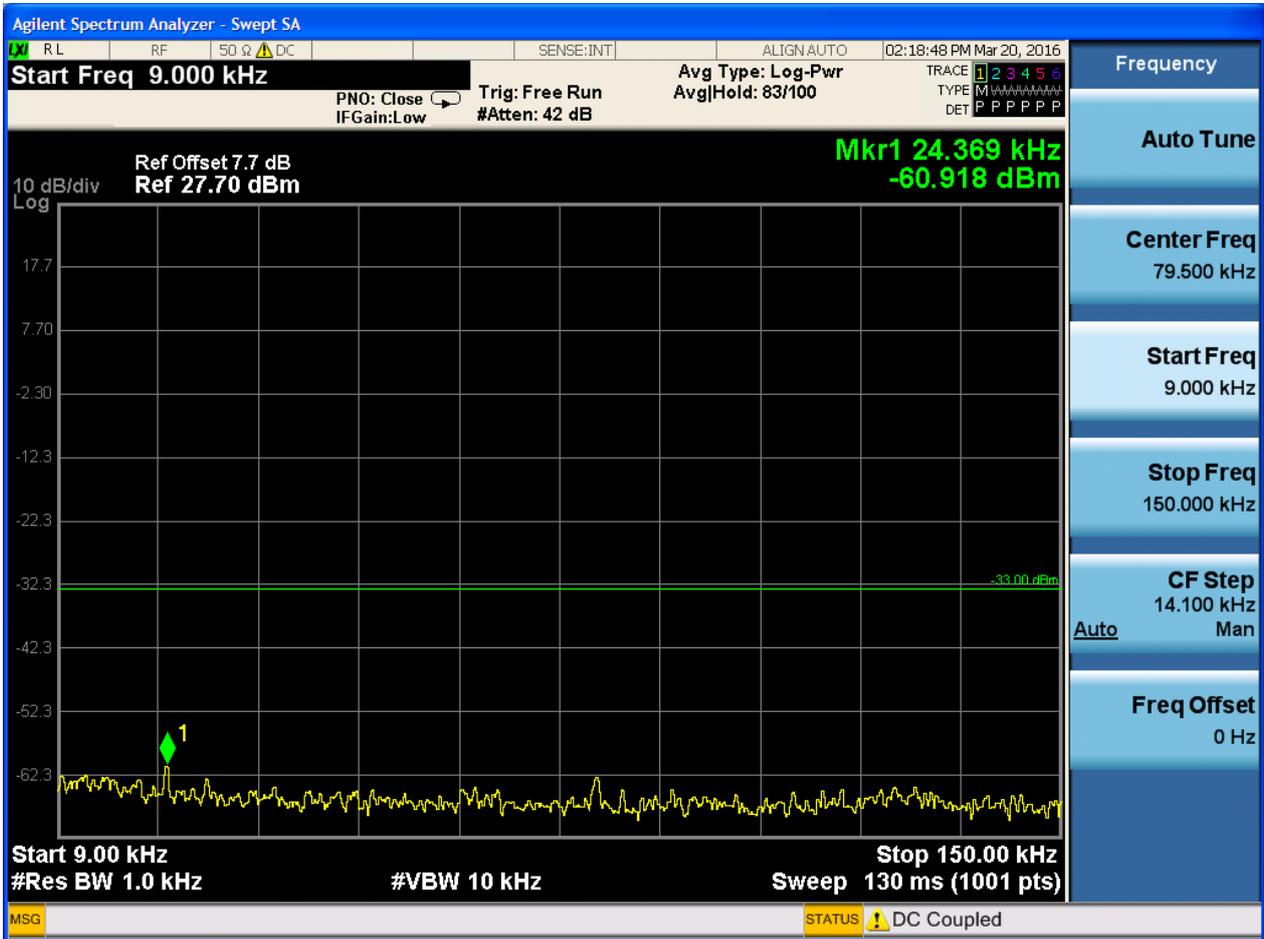


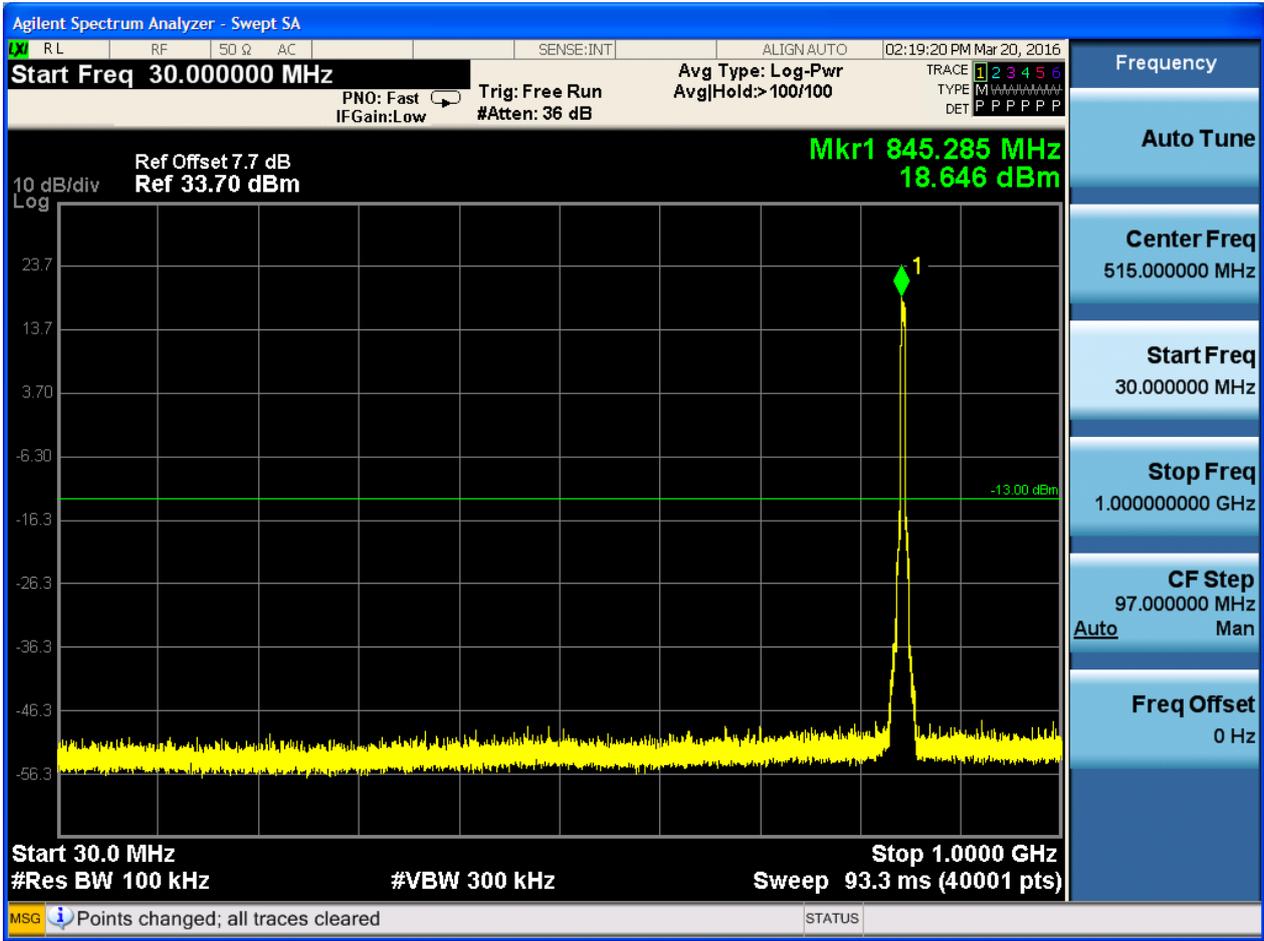


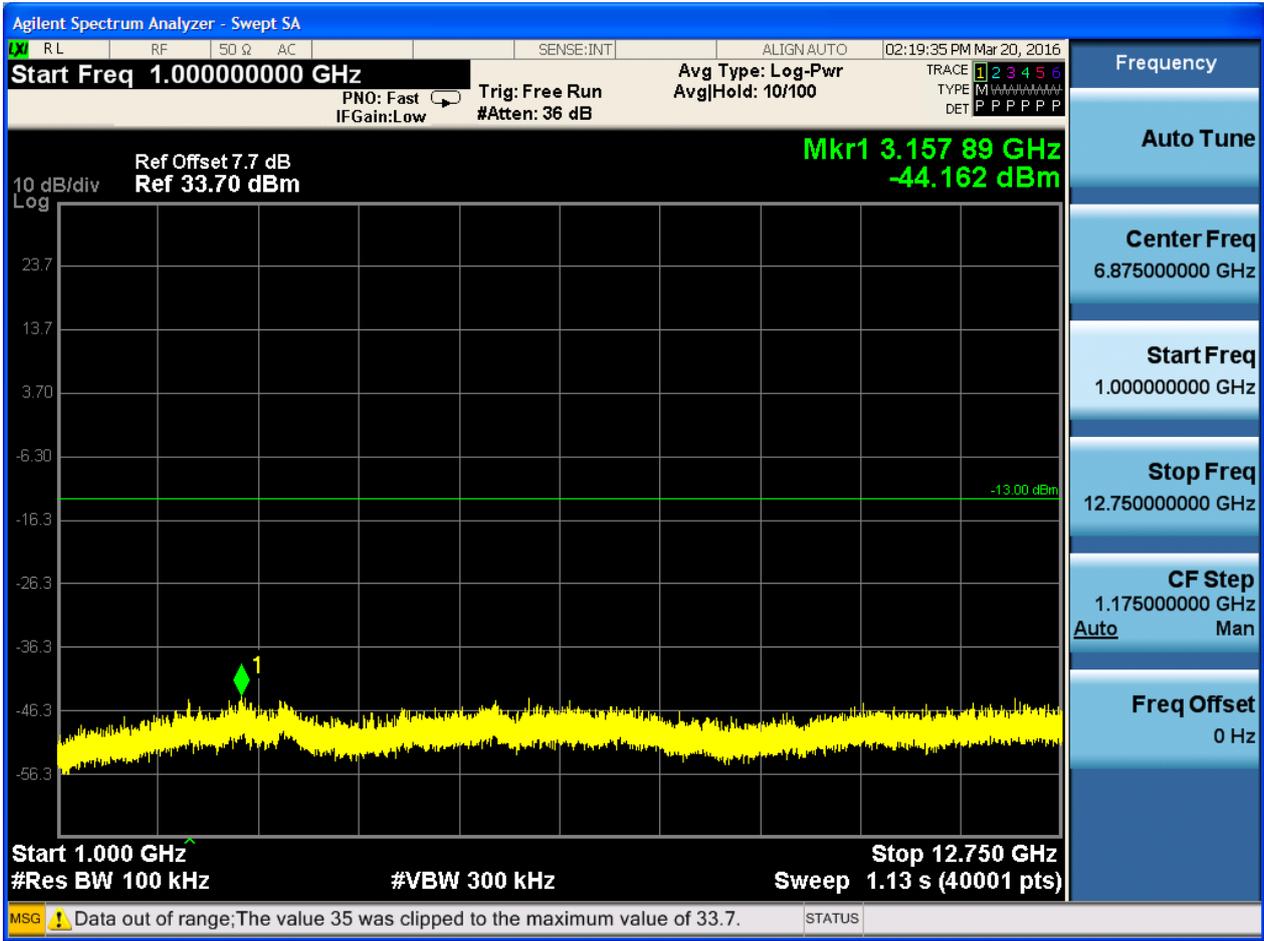




6.1.1.1.3 Test Channel = HCH





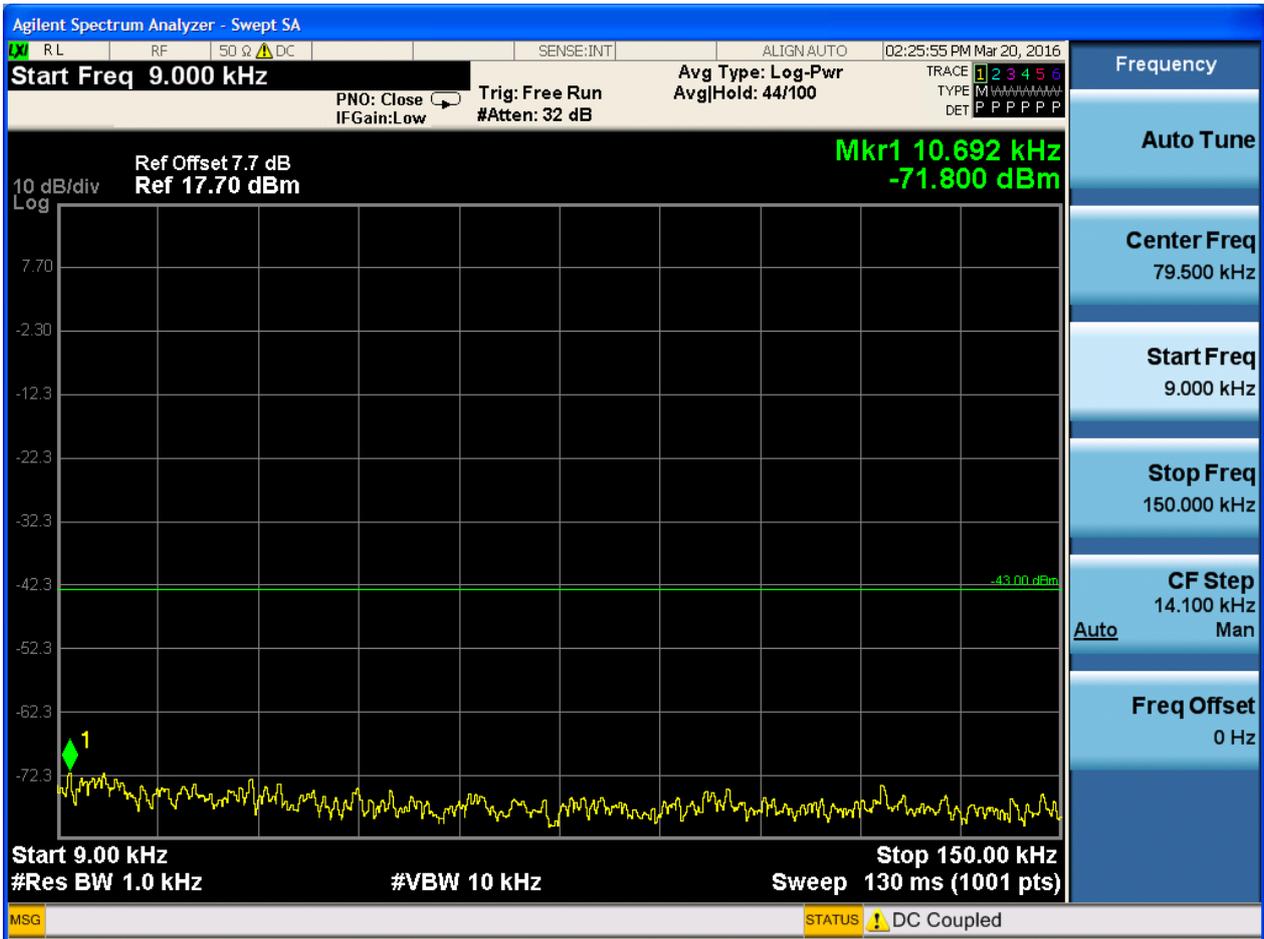




6.1.2 Test Band = WCDMA1700

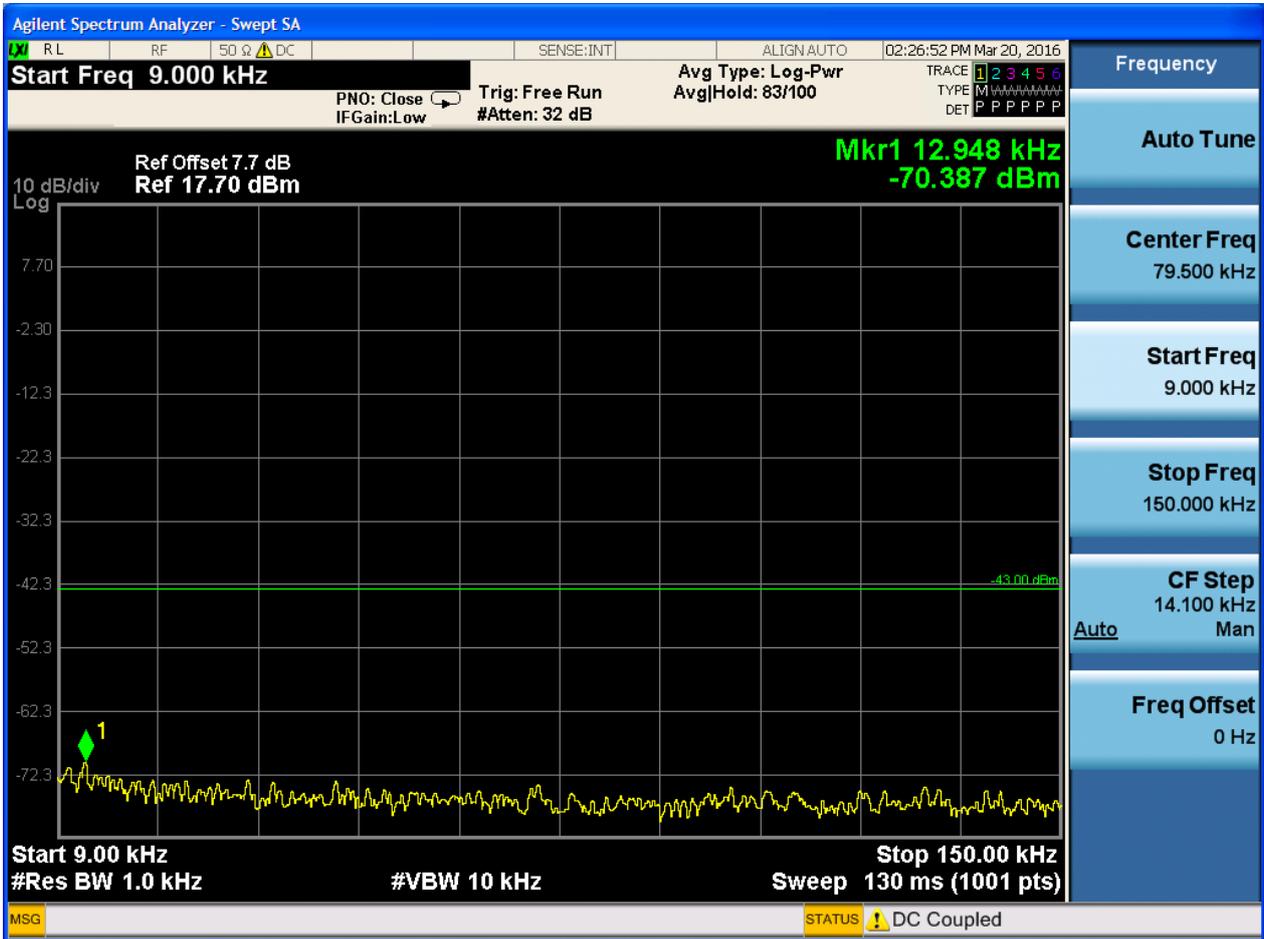
6.1.2.1 Test Mode = UMTS/TM1

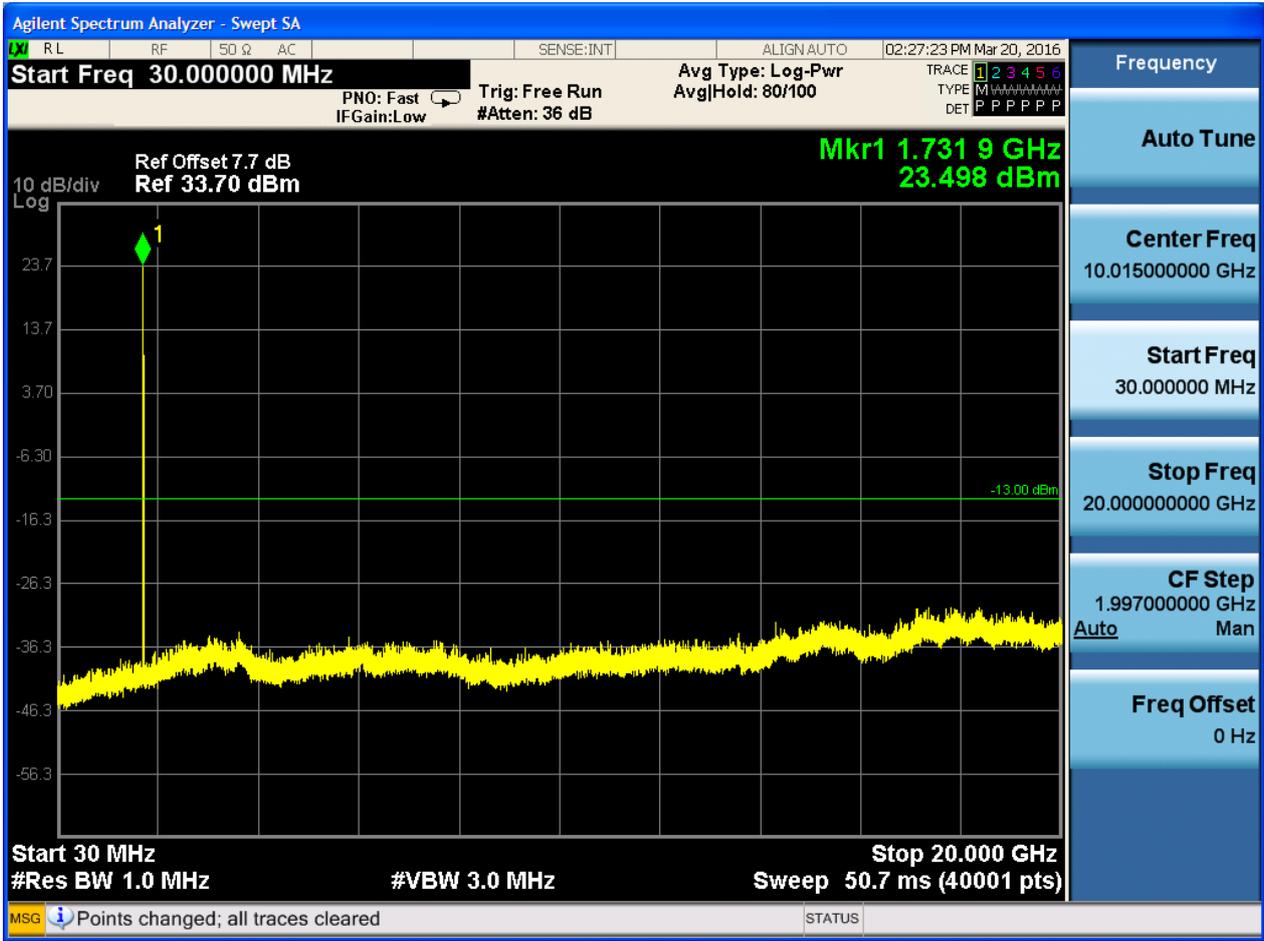
6.1.2.1.1 Test Channel = LCH



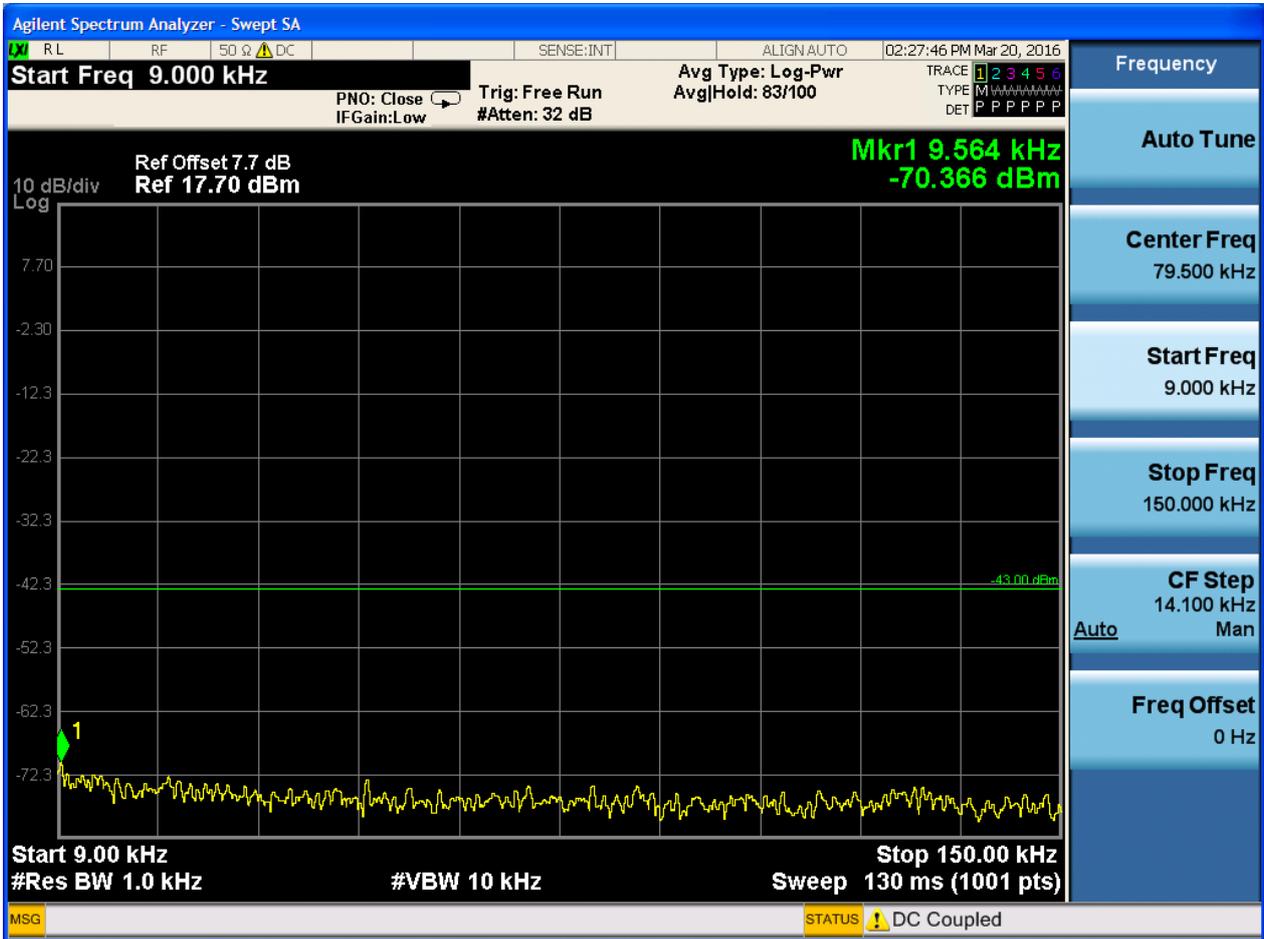


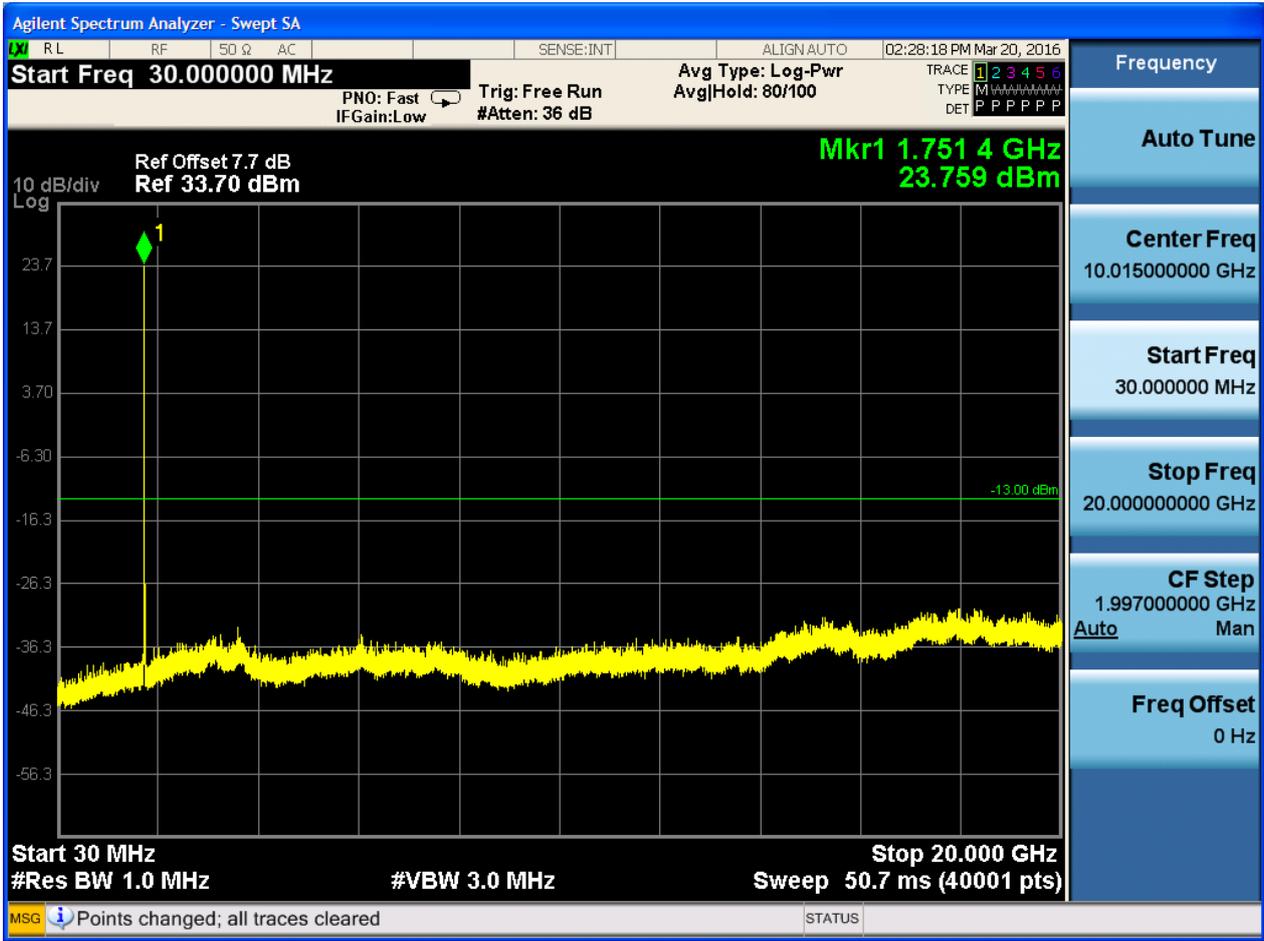
6.1.2.1.2 Test Channel = MCH





6.1.2.1.3 Test Channel = HCH



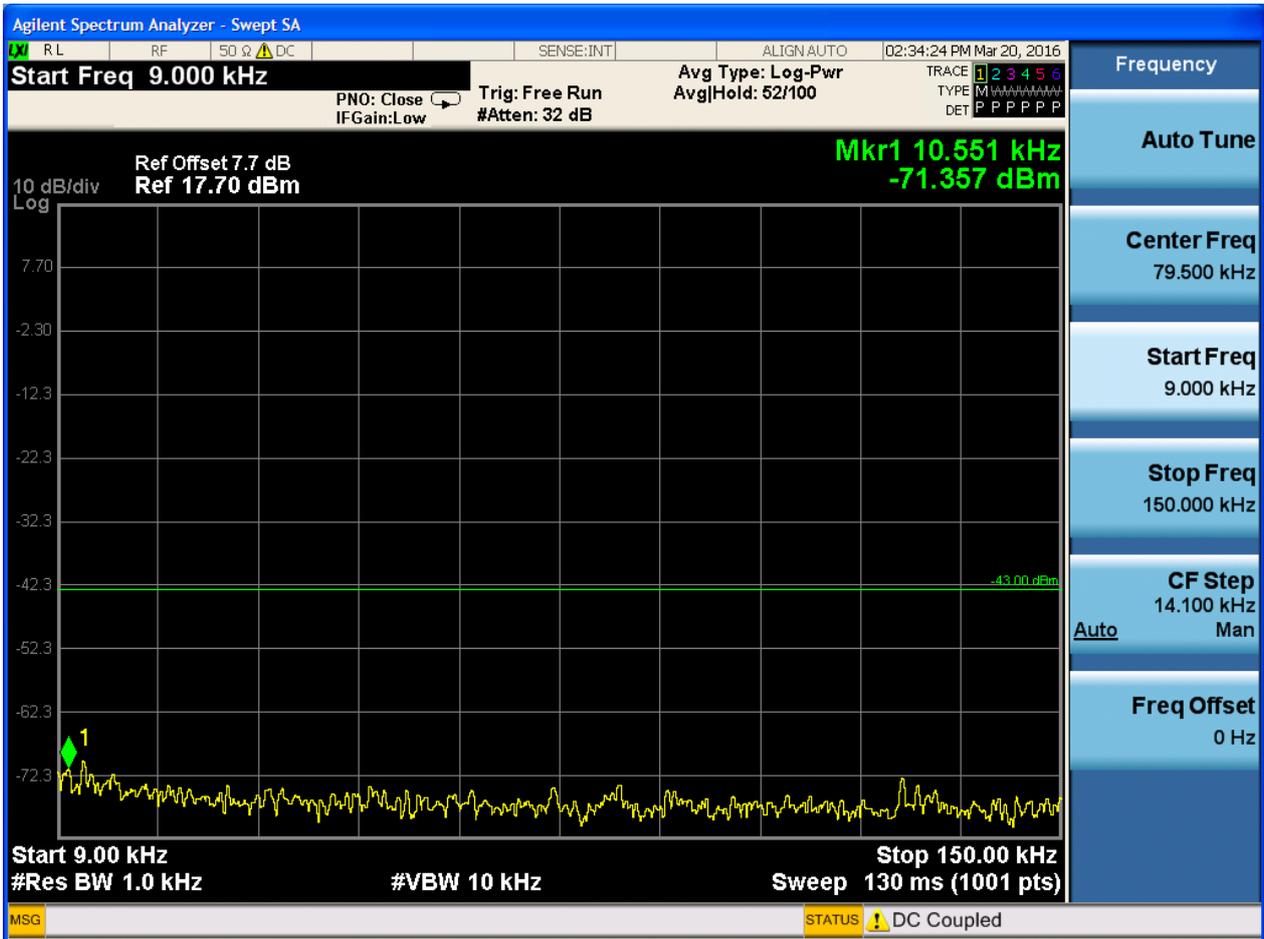


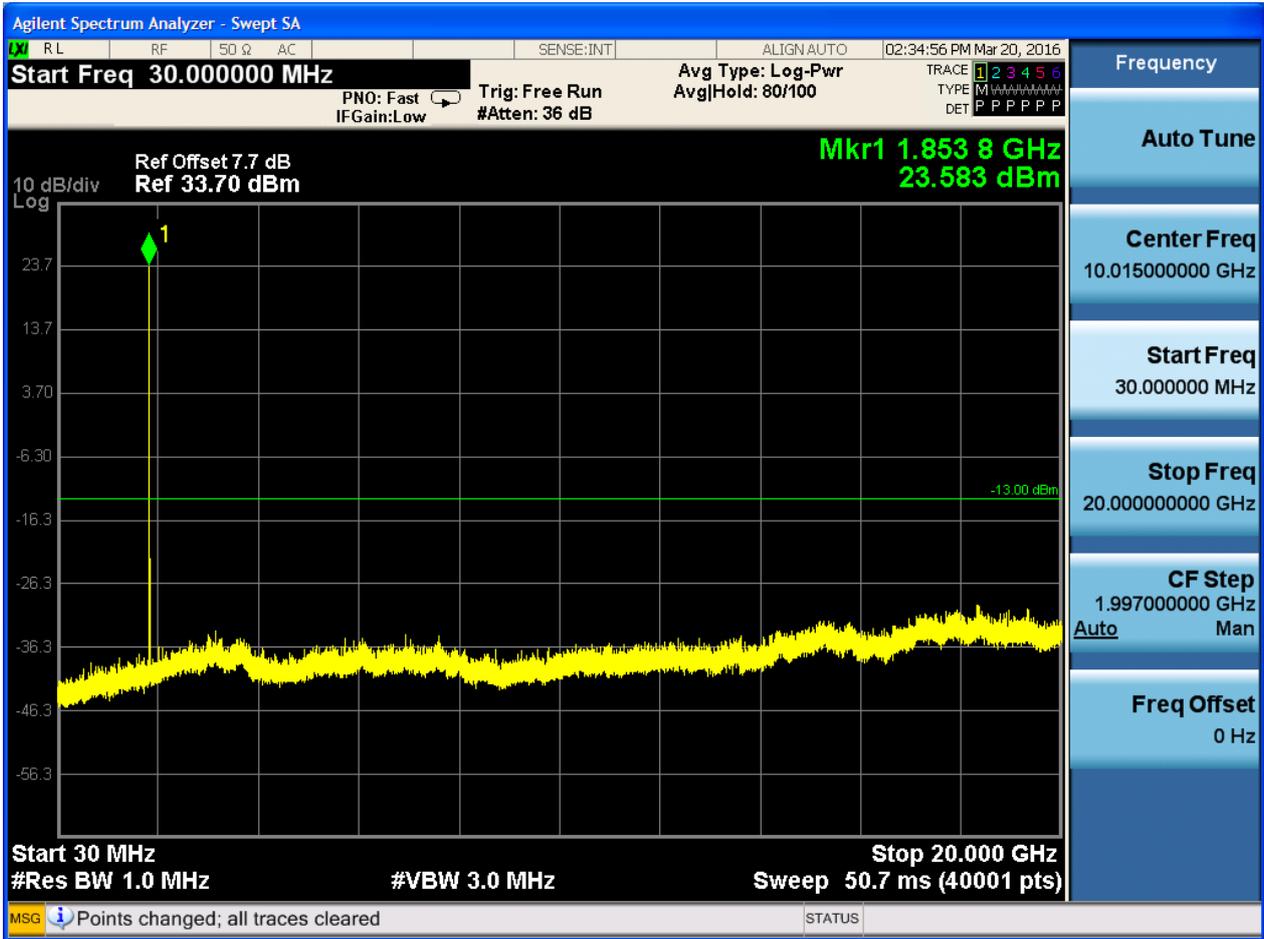


6.1.3 Test Band = WCDMA1900

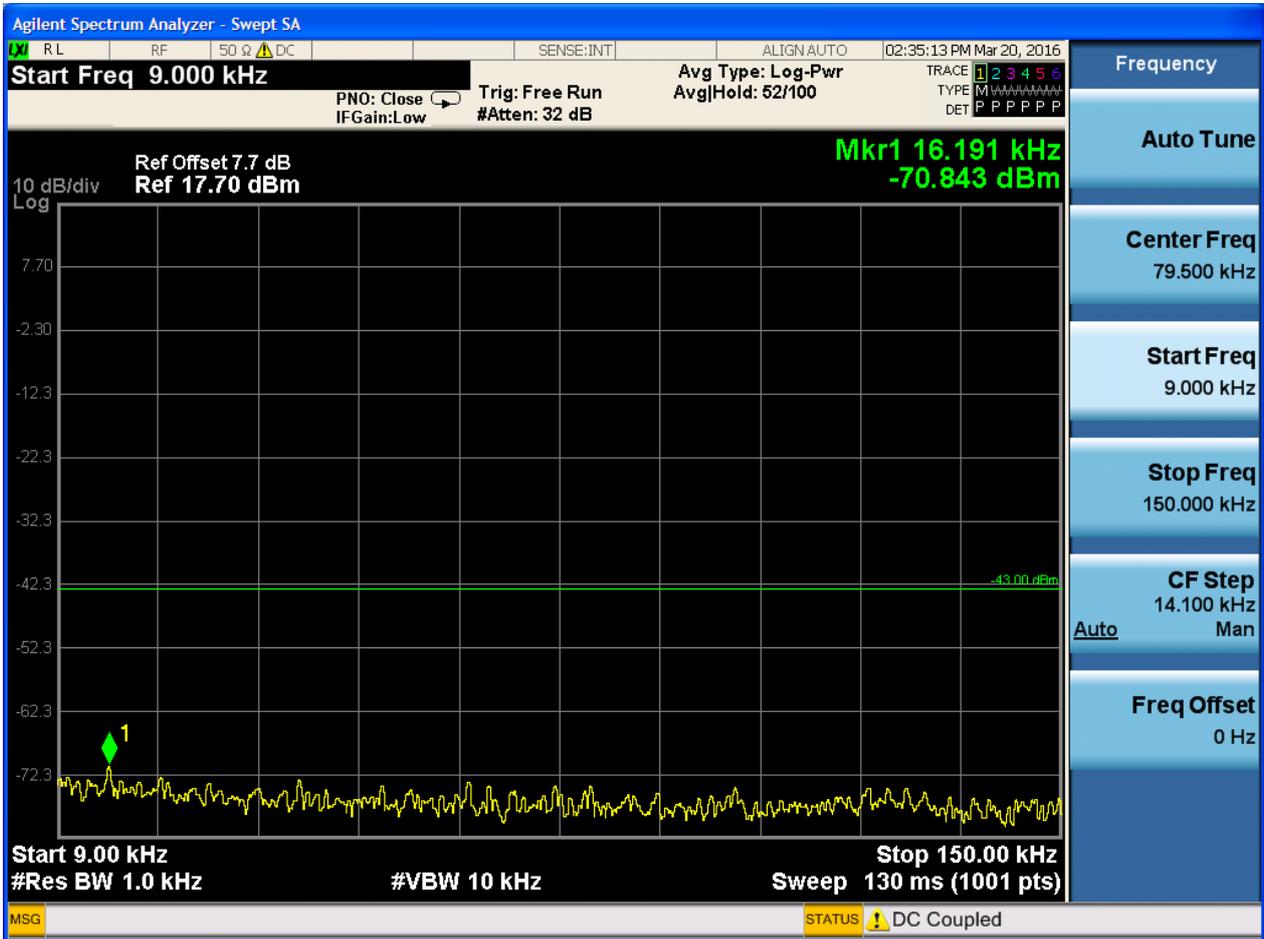
6.1.3.1 Test Mode = UMTS/TM1

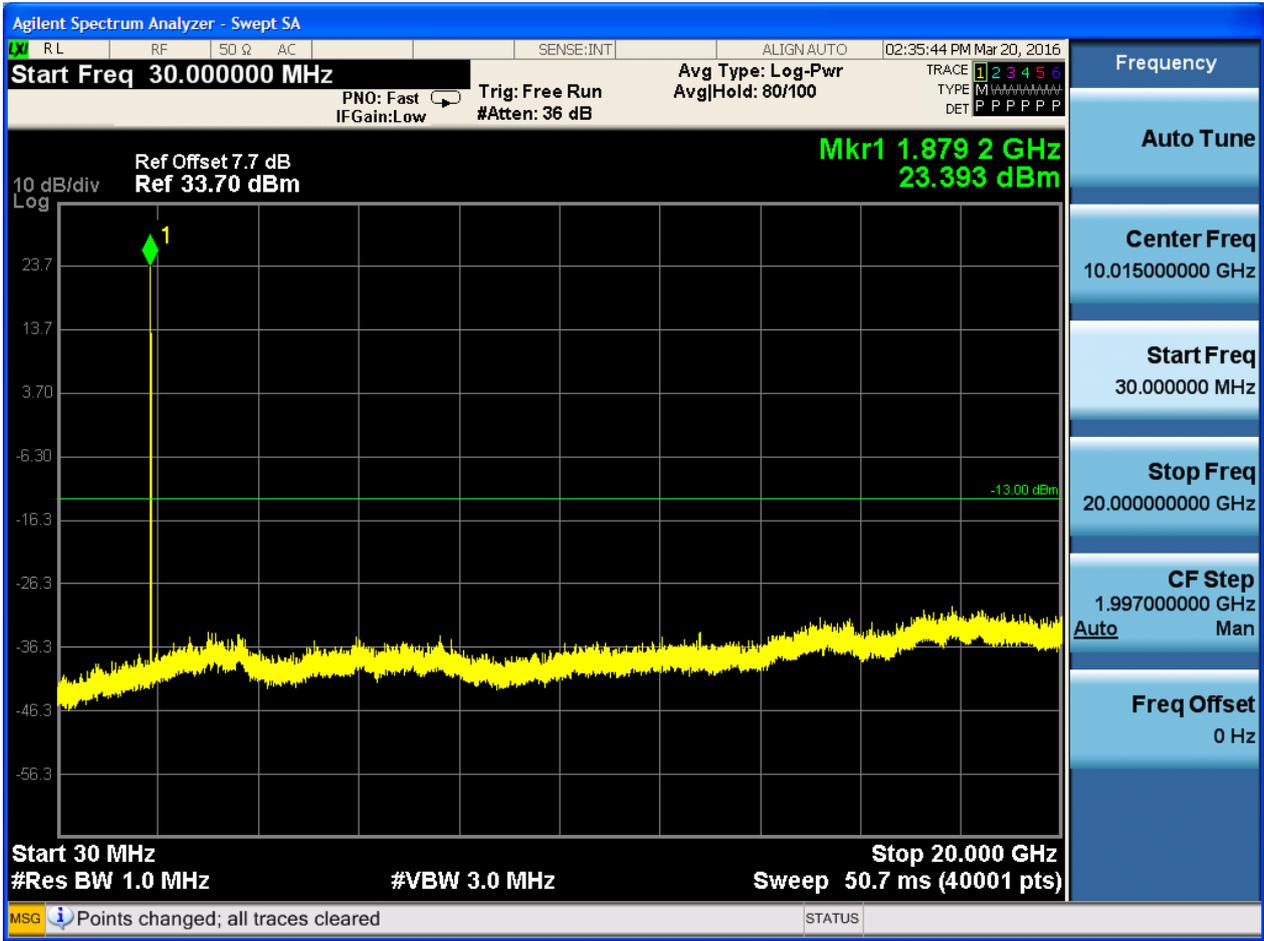
6.1.3.1.1 Test Channel = LCH



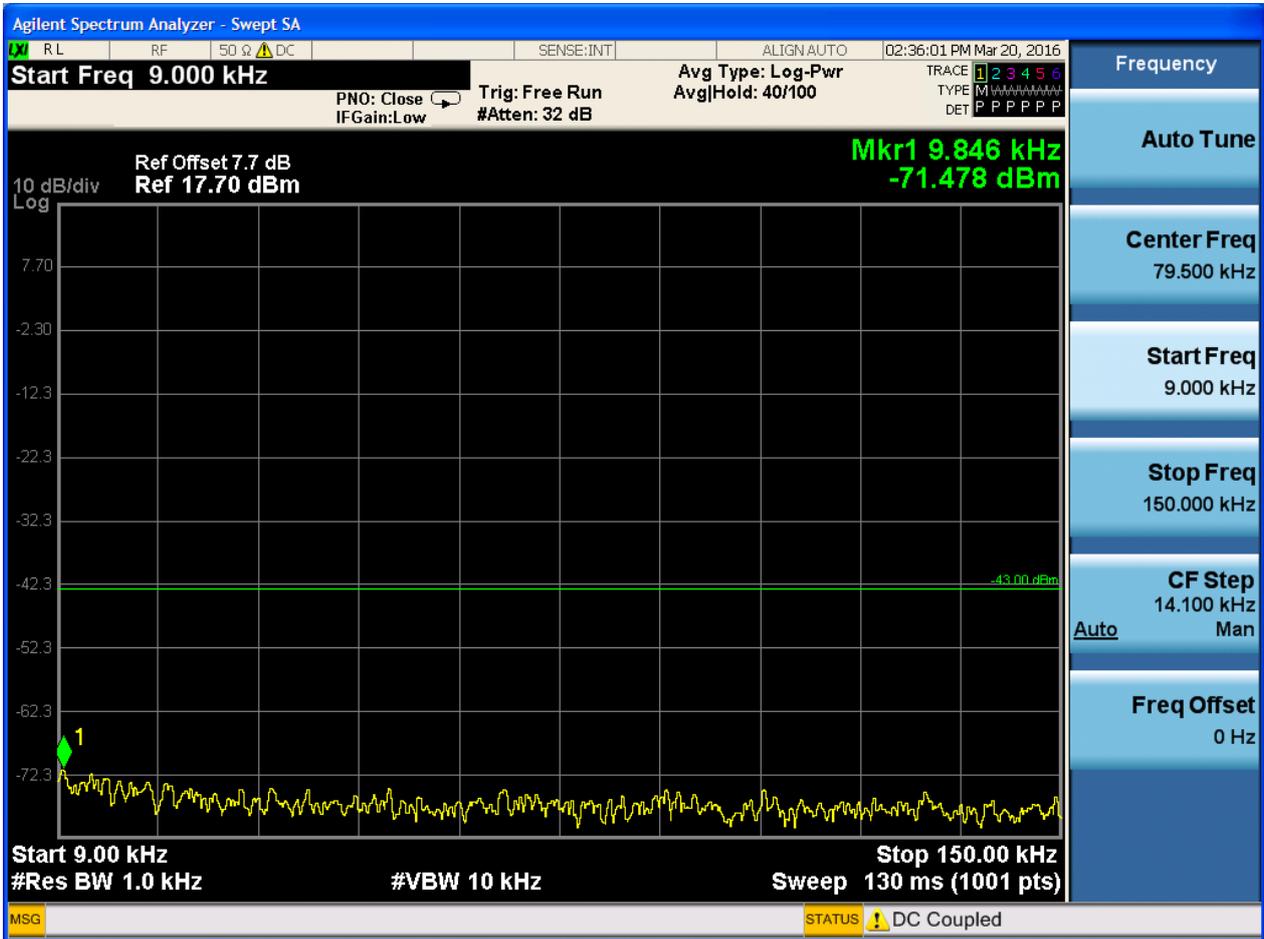


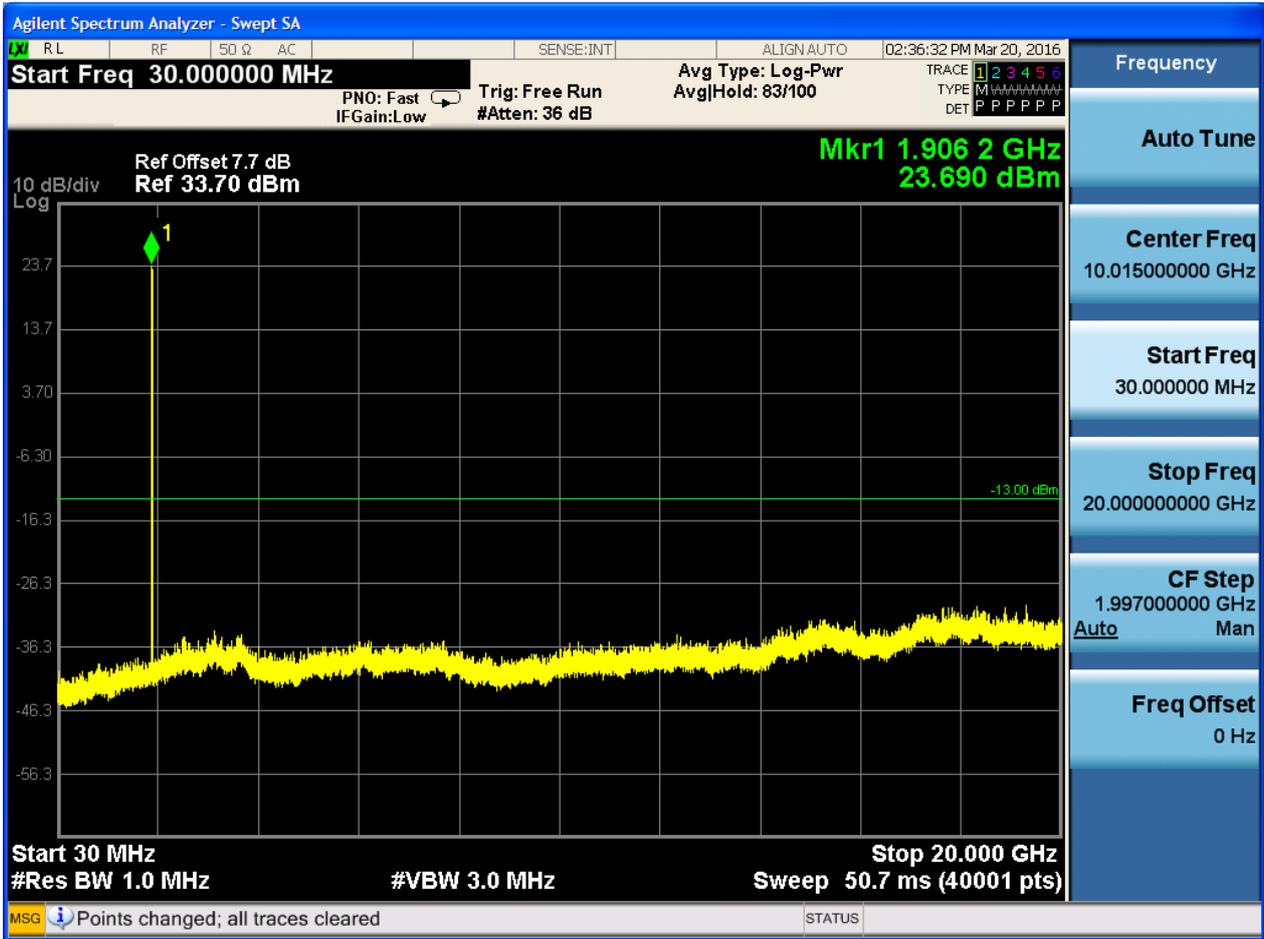
6.1.3.1.2 Test Channel = MCH





6.1.3.1.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

Note:

9kHz~150kHz, VBW = 200Hz, VBW = 600 Hz, Detector: PK

150kHz~30MHz, VBW = 9kHz, VBW = 30k Hz, Detector: PK

30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

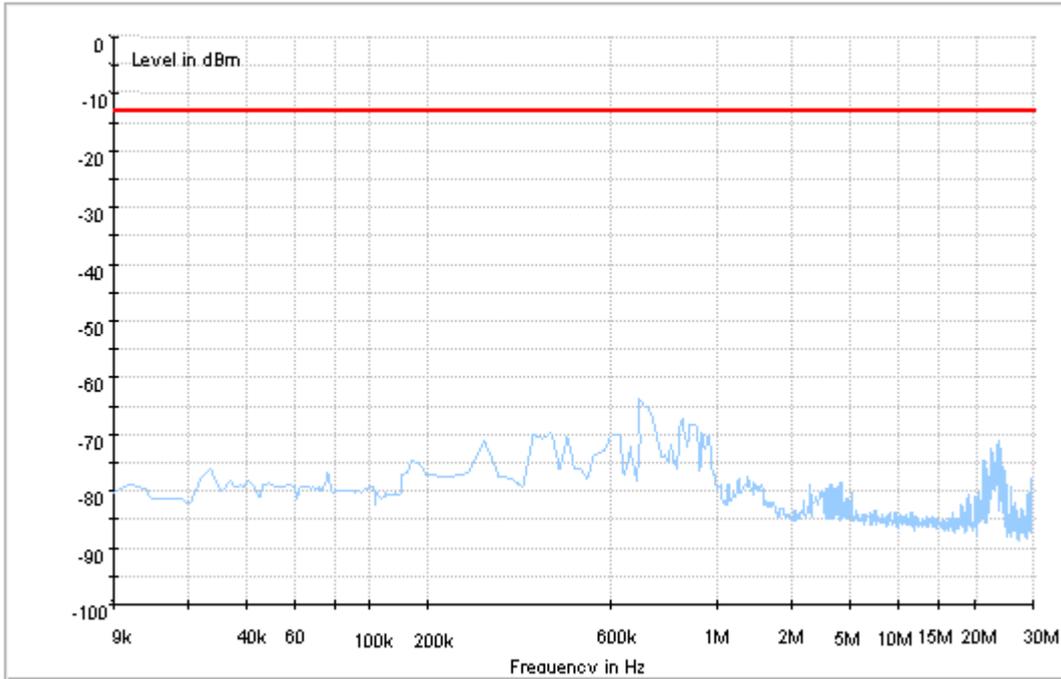
We tested all modes, but the data presented below is the worst case.

Part I - Test Plots

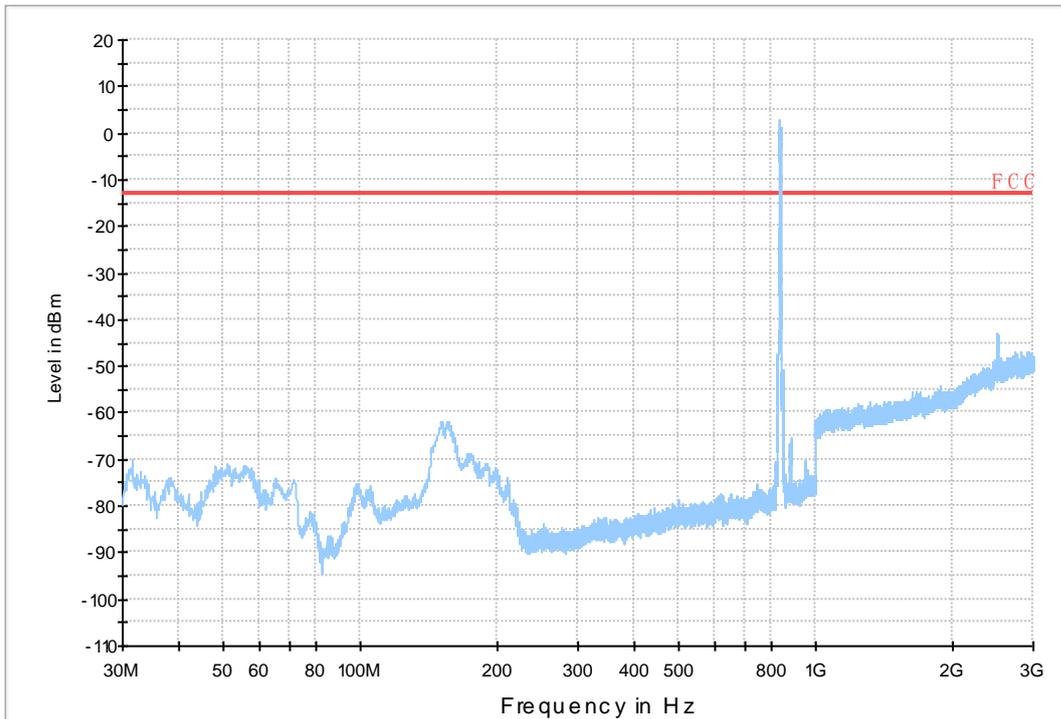
7.1 For UMTS

7.1.1 Test Band = WCDMA850

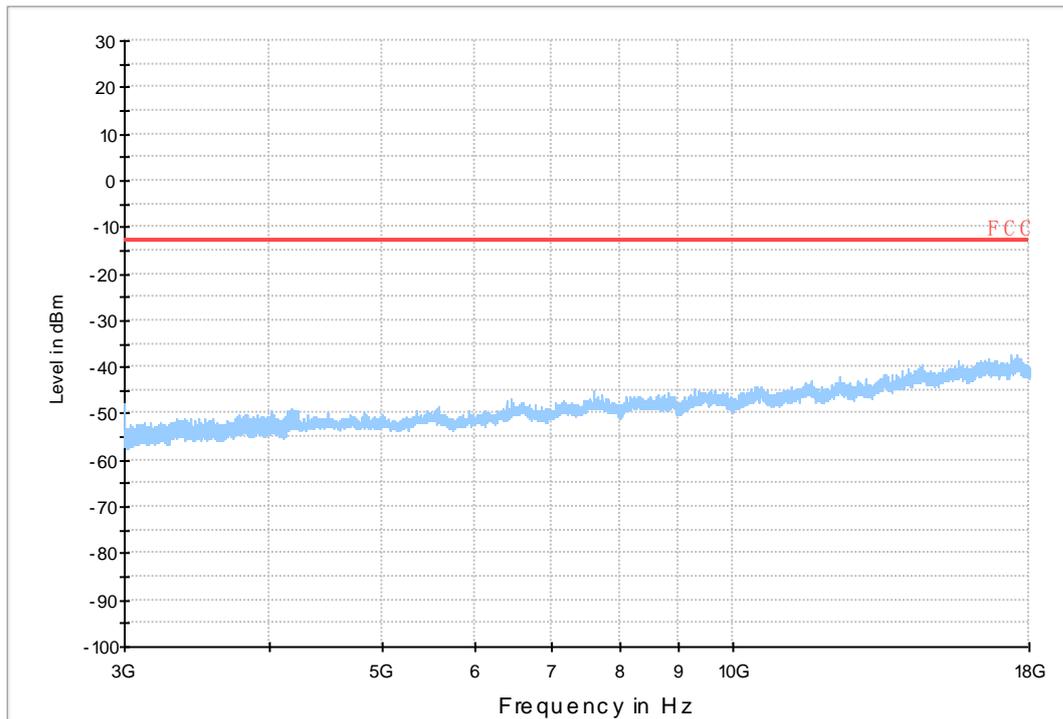
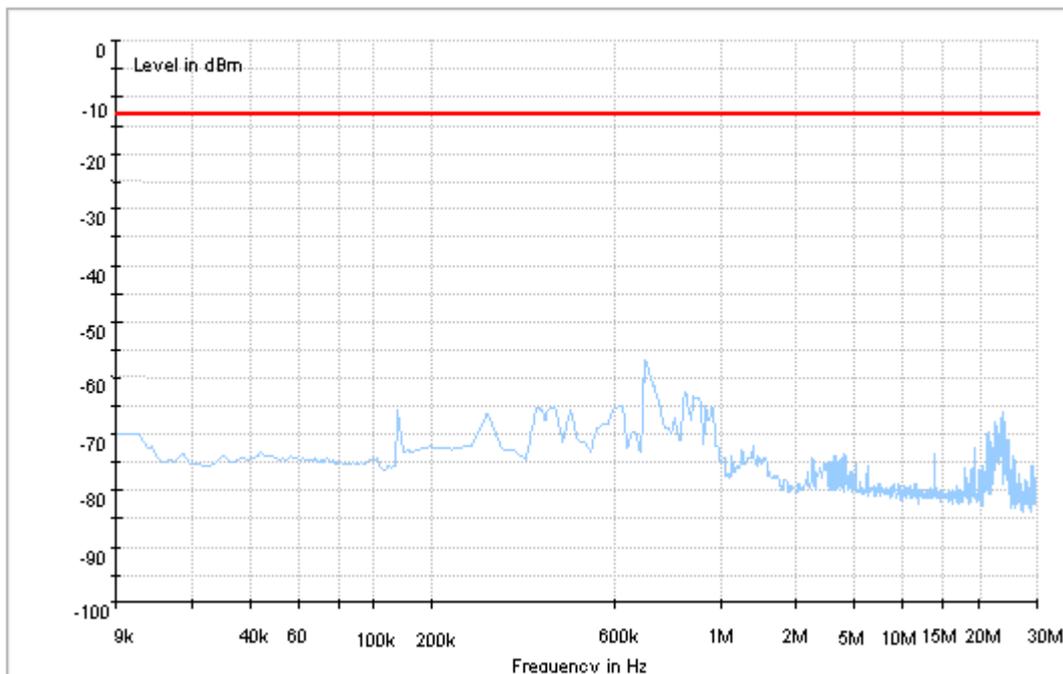
7.1.1.1 Test Mode = UMTS/TM1



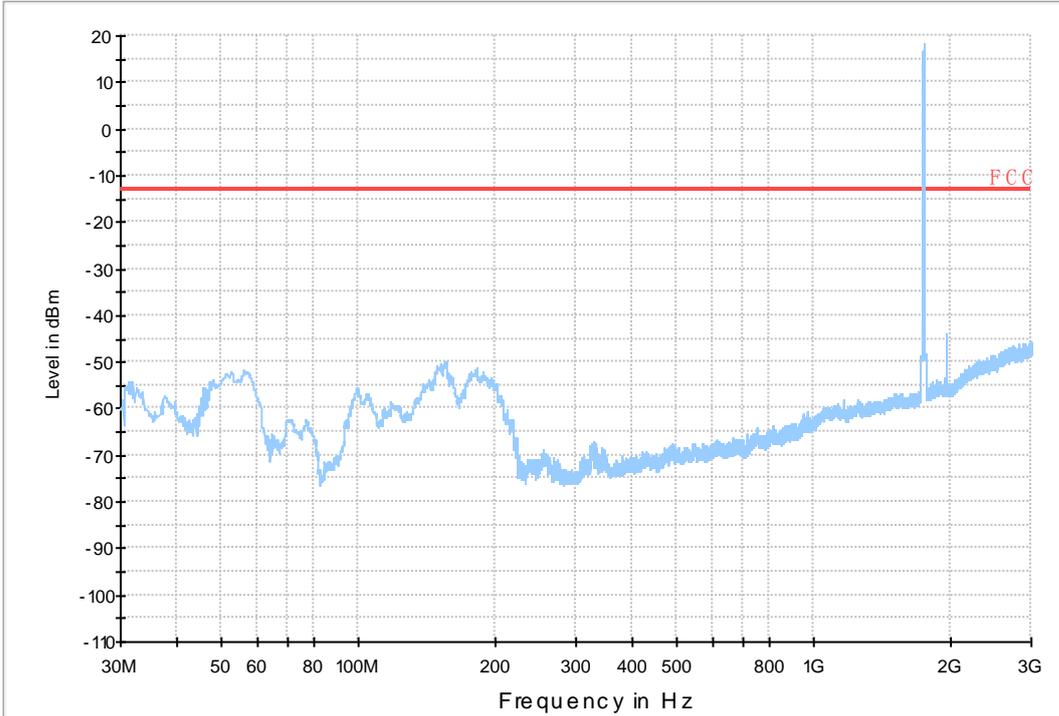
Copy of FCC PART22 W CDMA850_L



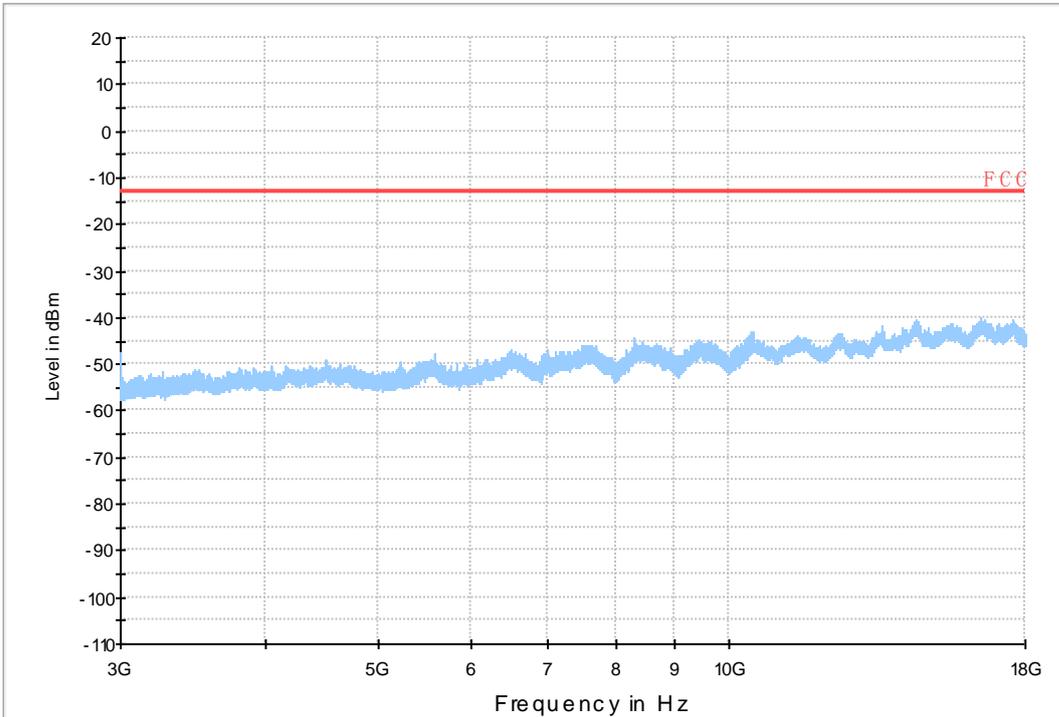
Copy of FCC PART22 GSM 850_H

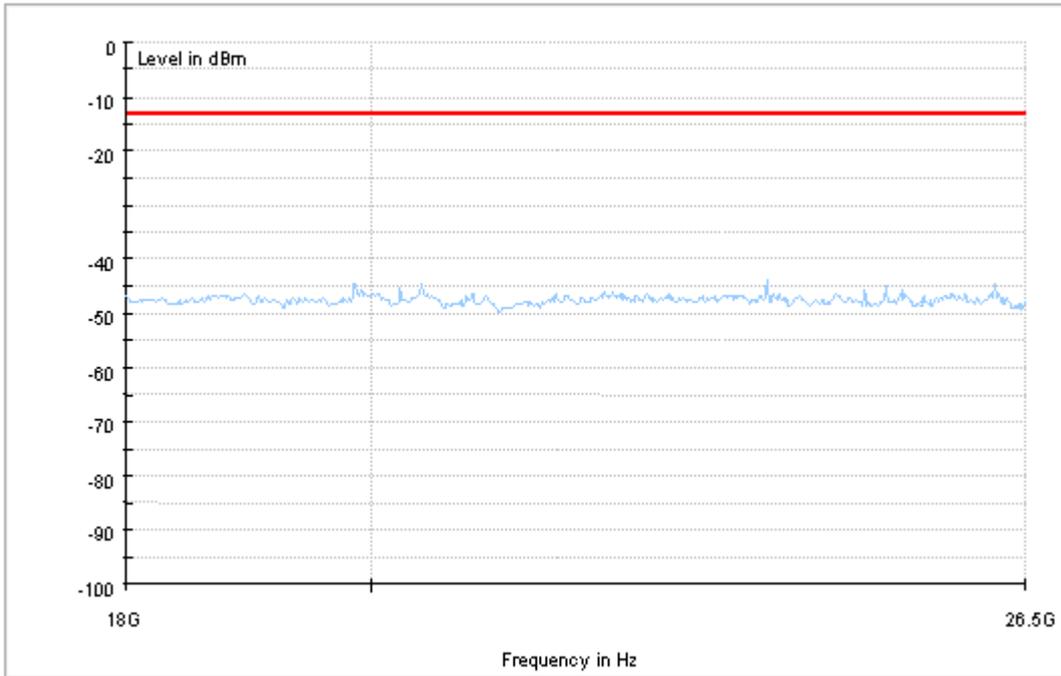
**7.1.2 Test Band = WCDMA1700****7.1.2.1 Test Mode = UMTS/TM1**

Copy of FCC PART27 W CDMA1700_L



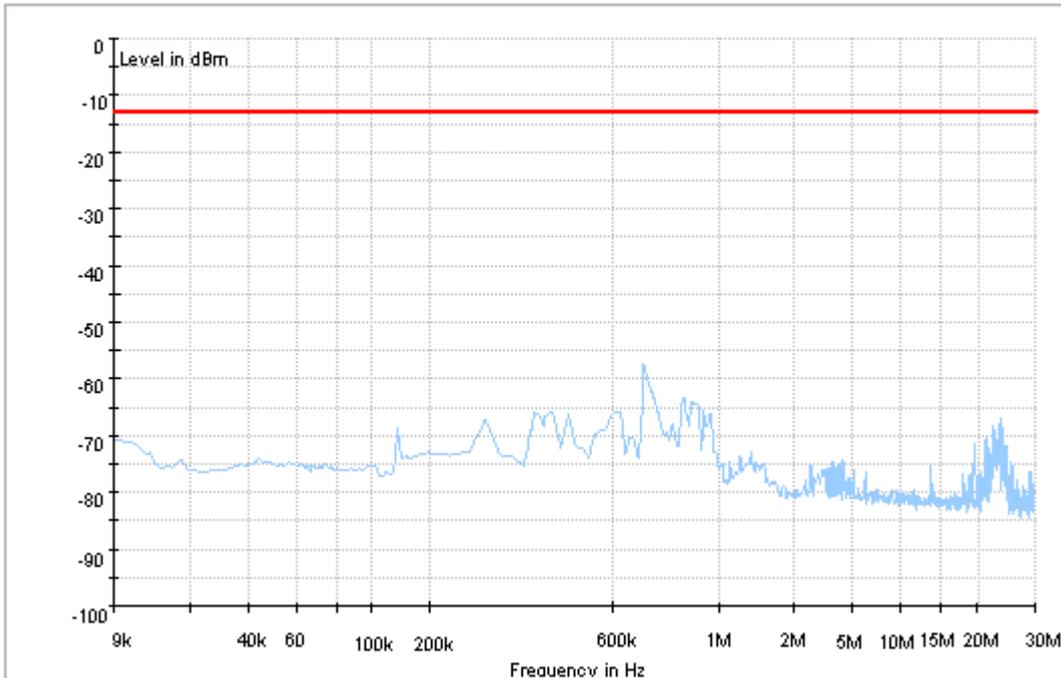
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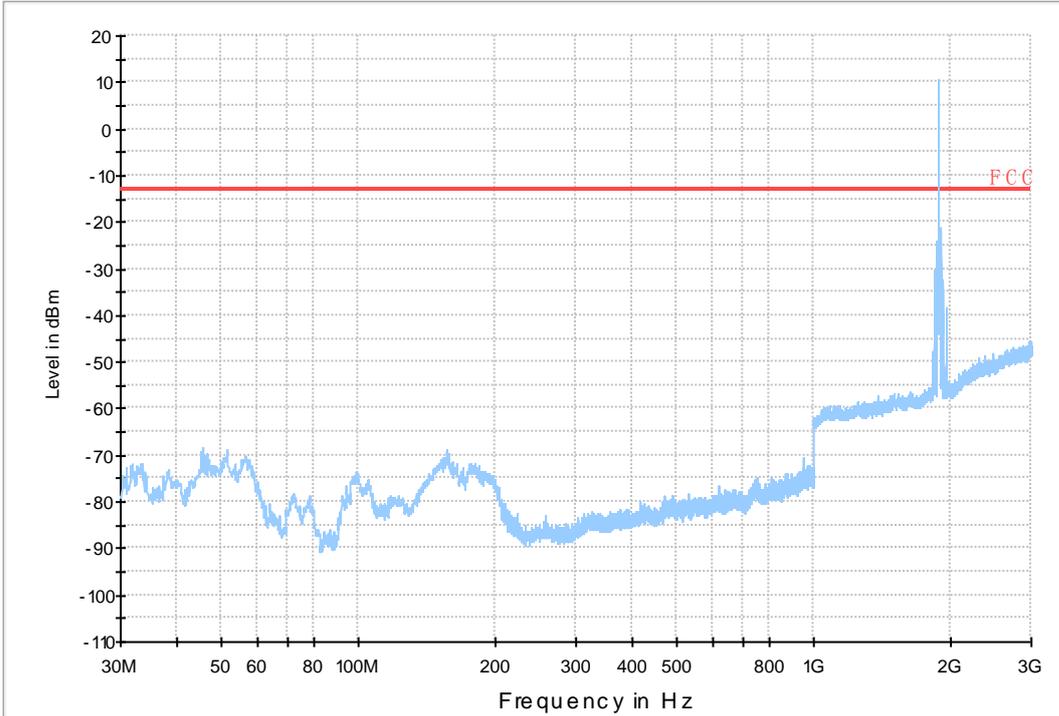


7.1.3 Test Band = WCDMA1900

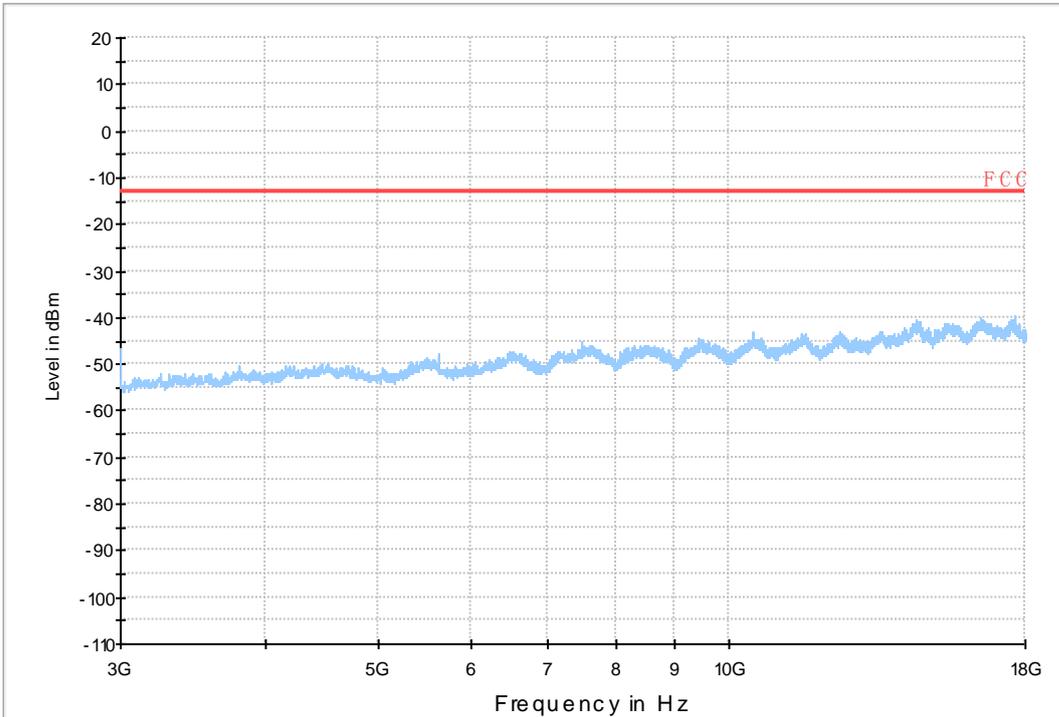
7.1.3.1 Test Mode = UMTS/TM1

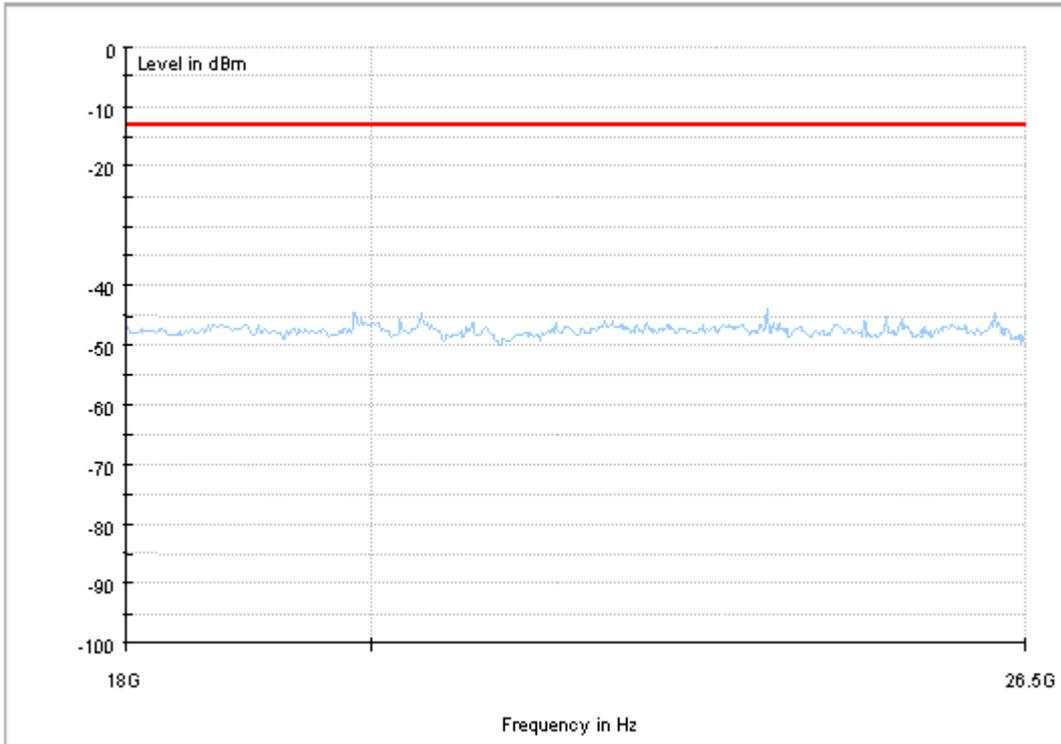


Copy of FCC PART24 W CDMA1900_L



Copy of FCC PART24 W CDMA1900_H





8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1Frequency Error vs. Voltage:

| Test Band | Test Mode | Test Channel | Test Temp. | Test Volt. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|-----------|-----------|--------------|------------|------------|------------------|-----------------------|---------|
| WCDMA850 | UMTS/TM1 | LCH | TN | VL | -4.67 | -0.00565 | PASS |
| | | | | VN | 4.44 | 0.00537 | PASS |
| | | | | VH | -7.42 | -0.00898 | PASS |
| | | MCH | TN | VL | -3.13 | -0.00374 | PASS |
| | | | | VN | -5.94 | -0.0071 | PASS |
| | | | | VH | -1.31 | -0.00157 | PASS |
| | | HCH | TN | VL | -0.43 | -0.00051 | PASS |
| | | | | VN | -9.93 | -0.01173 | PASS |
| | | | | VH | -6.76 | -0.00798 | PASS |
| WCDMA1700 | UMTS/TM1 | LCH | TN | VL | -4.27 | -0.00249 | PASS |
| | | | | VN | -1.19 | -0.00069 | PASS |
| | | | | VH | -11.52 | -0.00673 | PASS |
| | | MCH | TN | VL | 3.8 | 0.00219 | PASS |
| | | | | VN | 3.04 | 0.00175 | PASS |
| | | | | VH | 7.49 | 0.00432 | PASS |
| | | HCH | TN | VL | 10.74 | 0.00613 | PASS |
| | | | | VN | 3.22 | 0.00184 | PASS |
| | | | | VH | 3.78 | 0.00216 | PASS |
| WCDMA1900 | UMTS/TM1 | LCH | TN | VL | 5.8 | 0.00313 | PASS |
| | | | | VN | -6.91 | -0.00373 | PASS |
| | | | | VH | 3.54 | 0.00191 | PASS |
| | | MCH | TN | VL | 2.24 | 0.00119 | PASS |
| | | | | VN | 0.08 | 0.00004 | PASS |
| | | | | VH | -8.24 | -0.00438 | PASS |
| | | HCH | TN | VL | 3.75 | 0.00197 | PASS |
| | | | | VN | -0.14 | -0.00007 | PASS |
| | | | | VH | 4.91 | 0.00257 | PASS |

8.1.2 Frequency Error vs. Temperature:

| Test Band | Test Mode | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict | |
|-----------|-----------|--------------|------------|------------|------------------|-----------------------|----------|------|
| WCDMA850 | UMTS/TM1 | LCH | VN | -30 | 3.34 | 0.00404 | PASS | |
| | | | | -20 | -4.59 | -0.00555 | PASS | |
| | | | | -10 | -2.76 | -0.00334 | PASS | |
| | | | | 0 | -9.87 | -0.01194 | PASS | |
| | | | | 10 | -11.11 | -0.01344 | PASS | |
| | | | | 20 | -0.63 | -0.00076 | PASS | |
| | | | | 30 | 7.22 | 0.00874 | PASS | |
| | | | | 40 | -3.45 | -0.00417 | PASS | |
| | | | | 50 | -12.19 | -0.01475 | PASS | |
| | | MCH | VN | VN | -30 | -6.59 | -0.00788 | PASS |
| | | | | | -20 | 4.29 | 0.00513 | PASS |
| | | | | | -10 | -7.55 | -0.00903 | PASS |
| | | | | | 0 | -2.93 | -0.0035 | PASS |
| | | | | | 10 | -9.03 | -0.0108 | PASS |
| | | | | | 20 | -6.16 | -0.00736 | PASS |
| | | | | | 30 | 1.71 | 0.00204 | PASS |
| | | | | | 40 | -6.91 | -0.00826 | PASS |
| | | | | | 50 | -0.64 | -0.00077 | PASS |
| | | HCH | VN | VN | -30 | -3.36 | -0.00397 | PASS |
| | | | | | -20 | -2.96 | -0.0035 | PASS |
| | | | | | -10 | -6.21 | -0.00734 | PASS |
| | | | | | 0 | -4.56 | -0.00539 | PASS |
| | | | | | 10 | 2.99 | 0.00353 | PASS |
| | | | | | 20 | -4.07 | -0.00481 | PASS |
| | | | | | 30 | -7.92 | -0.00936 | PASS |
| | | | | | 40 | -3.14 | -0.00371 | PASS |
| | | | | | 50 | -4.17 | -0.00493 | PASS |
| WCDMA1700 | UMTS/TM1 | LCH | VN | -30 | -6.5 | -0.0038 | PASS | |
| | | | | -20 | 15.34 | 0.00896 | PASS | |
| | | | | -10 | 7.77 | 0.00454 | PASS | |
| | | | | 0 | -7.23 | -0.00422 | PASS | |
| | | | | 10 | 3.4 | 0.00199 | PASS | |
| | | | | 20 | -5.39 | -0.00315 | PASS | |
| | | | | 30 | -14.28 | -0.00834 | PASS | |
| | | | | 40 | -10.74 | -0.00627 | PASS | |
| | | | | 50 | 0.79 | 0.00046 | PASS | |
| | | MCH | VN | -30 | 0.43 | 0.00025 | PASS | |

| Test Band | Test Mode | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|-----------|-----------|--------------|------------|------------|------------------|-----------------------|---------|
| | | | | -20 | 7.78 | 0.00449 | PASS |
| | | | | -10 | 0.67 | 0.00039 | PASS |
| | | | | 0 | 16.1 | 0.00929 | PASS |
| | | | | 10 | 17.58 | 0.01015 | PASS |
| | | | | 20 | -19.49 | -0.01125 | PASS |
| | | | | 30 | -3.01 | -0.00174 | PASS |
| | | | | 40 | 7.42 | 0.00428 | PASS |
| | | | | 50 | 1.31 | 0.00076 | PASS |
| | | HCH | VN | -30 | 5.25 | 0.003 | PASS |
| | | | | -20 | 7.75 | 0.00442 | PASS |
| | | | | -10 | 4.91 | 0.0028 | PASS |
| | | | | 0 | -6.23 | -0.00355 | PASS |
| | | | | 10 | 4.03 | 0.0023 | PASS |
| | | | | 20 | 2.78 | 0.00159 | PASS |
| | | | | 30 | 6.64 | 0.00379 | PASS |
| | | | | 40 | -5.86 | -0.00334 | PASS |
| | | | | 50 | -0.78 | -0.00045 | PASS |
| | | | | WCDMA1900 | UMTS/TM1 | LCH | VN |
| -20 | -1.53 | -0.00083 | PASS | | | | |
| -10 | -1.05 | -0.00057 | PASS | | | | |
| 0 | 1.46 | 0.00079 | PASS | | | | |
| 10 | 11.7 | 0.00632 | PASS | | | | |
| 20 | -1.22 | -0.00066 | PASS | | | | |
| 30 | -0.38 | -0.00021 | PASS | | | | |
| 40 | -7.58 | -0.00409 | PASS | | | | |
| 50 | 4.39 | 0.00237 | PASS | | | | |
| MCH | VN | -30 | 3.42 | | | 0.00182 | PASS |
| | | -20 | -6.18 | | | -0.00329 | PASS |
| | | -10 | 4.26 | | | 0.00227 | PASS |
| | | 0 | -0.58 | | | -0.00031 | PASS |
| | | 10 | 7.81 | | | 0.00415 | PASS |
| | | 20 | 4.55 | | | 0.00242 | PASS |
| | | 30 | 2.23 | | | 0.00119 | PASS |
| | | 40 | -3.2 | | | -0.0017 | PASS |
| HCH | VN | -30 | -6.2 | | | -0.0033 | PASS |
| | | -30 | -11.51 | | | -0.00603 | PASS |
| | | -20 | -7.05 | | | -0.0037 | PASS |
| | | -10 | 5.45 | | | 0.00286 | PASS |
| | | 0 | 10.99 | | | 0.00576 | PASS |
| | | 10 | 7.16 | | | 0.00375 | PASS |



| Test Band | Test Mode | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|-----------|-----------|--------------|------------|------------|------------------|-----------------------|---------|
| | | | | 20 | -8.74 | -0.00458 | PASS |
| | | | | 30 | -2.12 | -0.00111 | PASS |
| | | | | 40 | -2.79 | -0.00146 | PASS |
| | | | | 50 | 0.84 | 0.00044 | PASS |

END