# Appendix for test report

# 1Appendix_A: Effective (Isotropic) Radiated Power Output Data

**Part I - Test Results**

| Test Band | Test Mode | Test Channel | Measured[dBm] | ERP/EIRP[dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|
| GSM850 | GSM/TM1 | LCH | 33.32 | 32.52 | 38.5 | PASS |
| | | MCH | 33.42 | 32.62 | 38.5 | PASS |
| | | HCH | 33.42 | 32.62 | 38.5 | PASS |
| | GSM/TM2 | LCH | 26.90 | 26.1 | 38.5 | PASS |
| | | MCH | 26.92 | 26.12 | 38.5 | PASS |
| | | HCH | 26.94 | 26.14 | 38.5 | PASS |
| GSM1900 | GSM/TM1 | LCH | 30.79 | 32.59 | 33 | PASS |
| | | MCH | 30.58 | 32.38 | 33 | PASS |
| | | HCH | 30.50 | 32.3 | 33 | PASS |
| | GSM/TM2 | LCH | 26.73 | 28.53 | 33 | PASS |
| | | MCH | 26.77 | 28.57 | 33 | PASS |
| | | HCH | 26.78 | 28.58 | 33 | PASS |

| Test Band | Test Mode | Test Channel | Measured[dBm] | ERP[dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|
| WCDMA850 | UMTS/TM1 | LCH | 23.86 | 23.06 | 38.5 | PASS |
| | | MCH | 23.73 | 22.93 | 38.5 | PASS |
| | | HCH | 23.77 | 22.97 | 38.5 | PASS |
| WCDMA1900 | UMTS/TM1 | LCH | 23.92 | 25.72 | 33 | PASS |
| | | MCH | 23.89 | 25.69 | 33 | PASS |
| | | HCH | 23.98 | 25.78 | 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,

ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]

EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]

b, SGP=Signal Generator Level

Note2:

SET Span=1.5*OBW

SET RBW=1%of the OBW,not to wxceed 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 |
|---|---|---|---|---|---|
| GSM1900 | GSM/TM1 | LCH | 0.24 | 13 | PASS |
| | | MCH | 0.21 | 13 | PASS |
| | | HCH | 0.19 | 13 | PASS |
| | GSM/TM2 | LCH | 2.92 | 13 | PASS |
| | | MCH | 2.97 | 13 | PASS |
| | | HCH | 2.88 | 13 | PASS |

| Test Band | Test Mode | Test Channel | Measured[dB] | Limit [dB] | Verdict |
|---|---|---|---|---|---|
| WCDMA1900 | UMTS/TM1 | LCH | 2.9 | 13 | PASS |
| | | MCH | 3.22 | 13 | PASS |
| | | HCH | 3 | 13 | PASS |

# 3Appendix_C: Modulation Characteristics

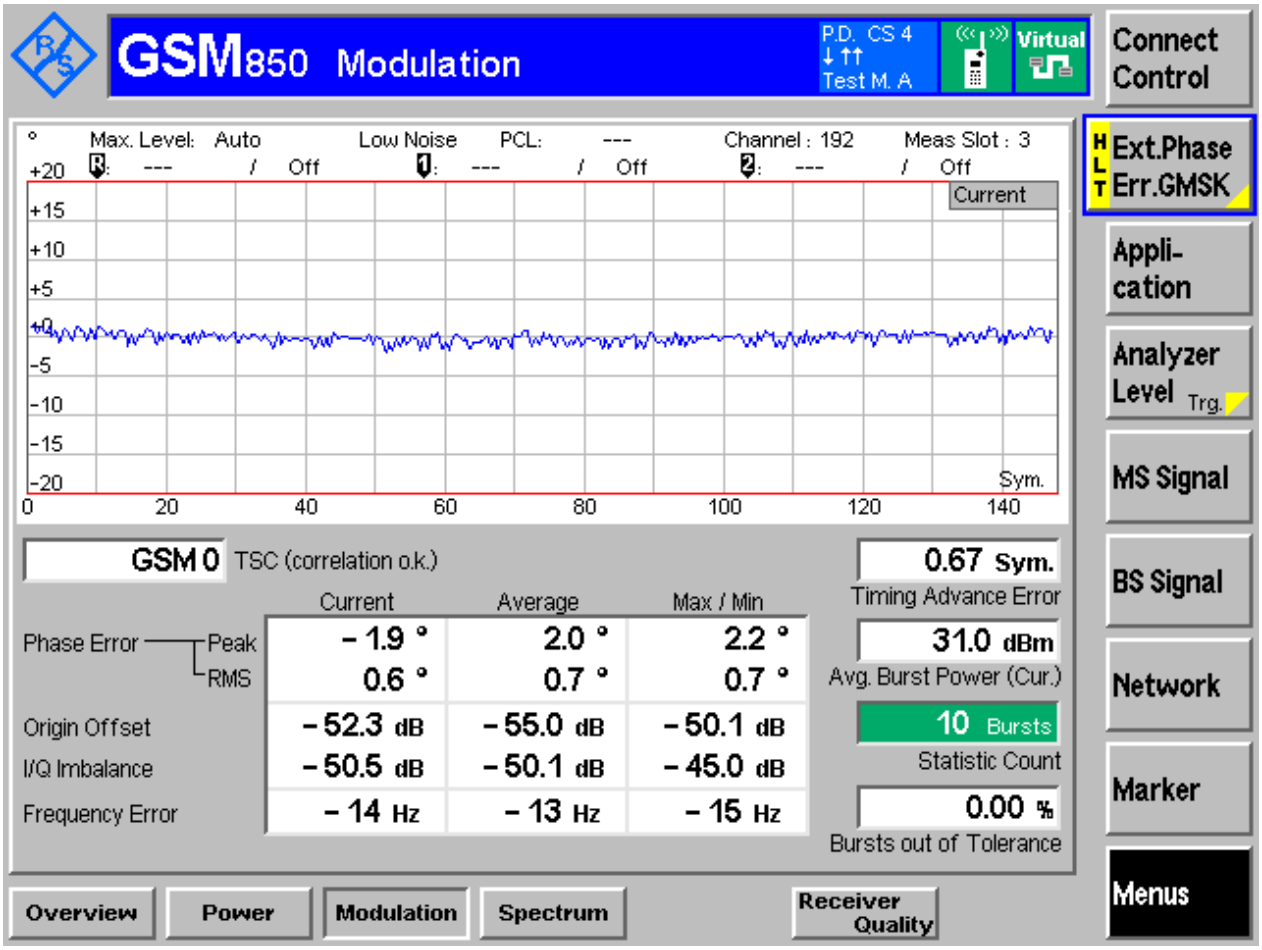
**Part I - Test Plots**

**3.1 For GSM**

**3.1.1 Test Band = GSM850**

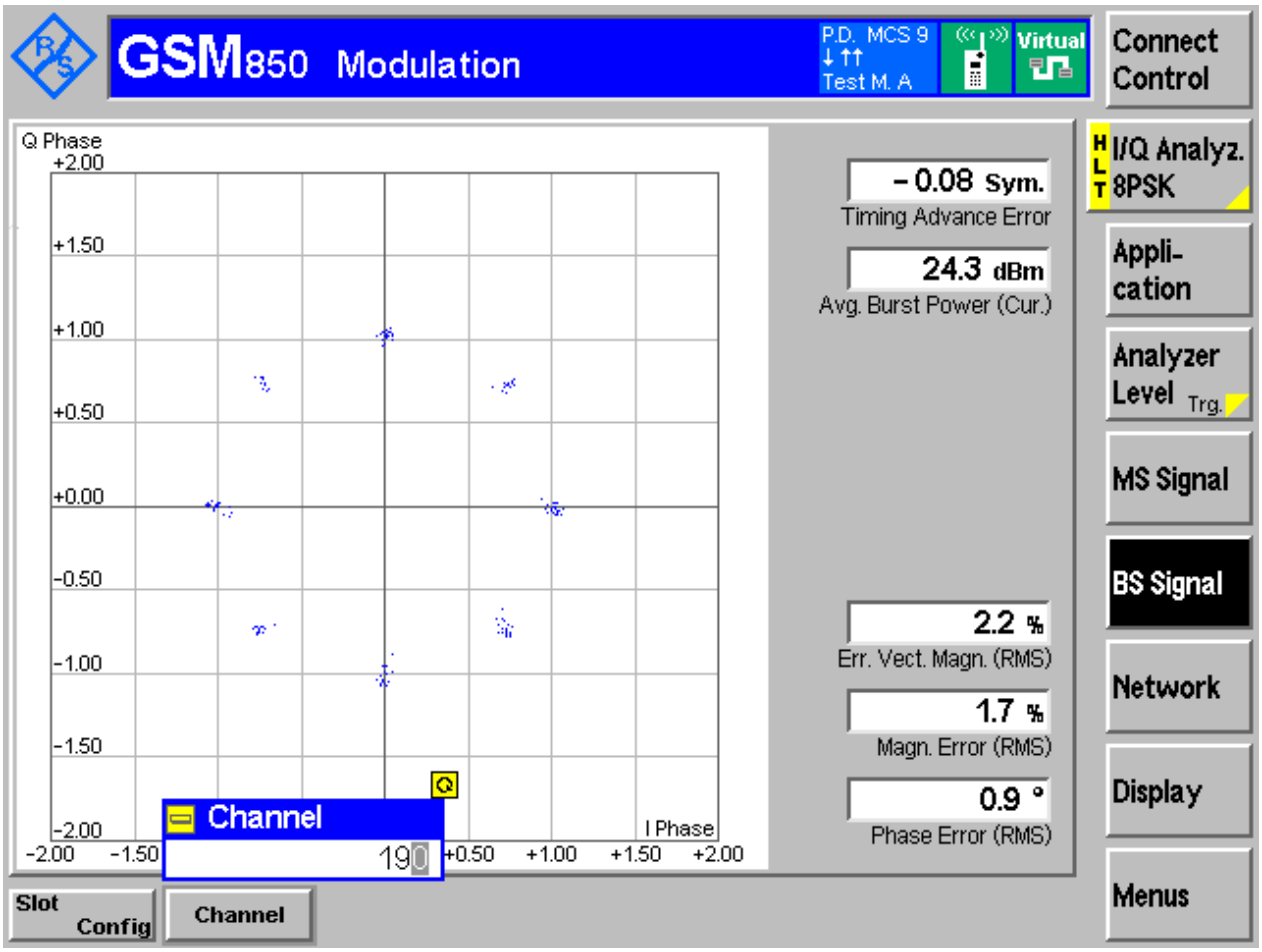
**3.1.1.1 Test Mode = GSM/TM1**

**3.1.1.1.1 Test Channel = MCH**



### 3.1.1.2 Test Mode = GSM/TM2

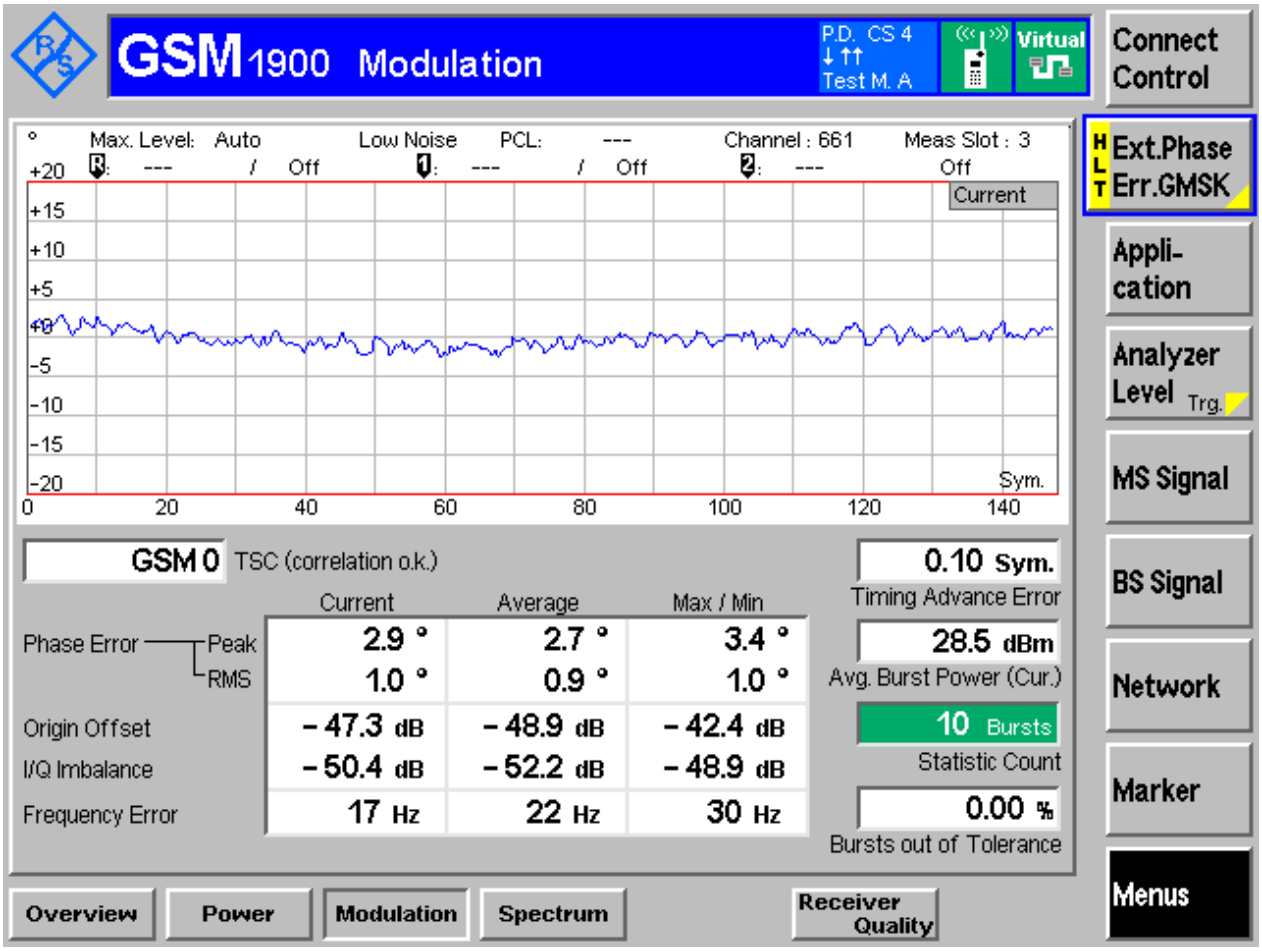
#### 3.1.1.2.1 Test Channel = MCH



### 3.1.2 Test Band = GSM1900

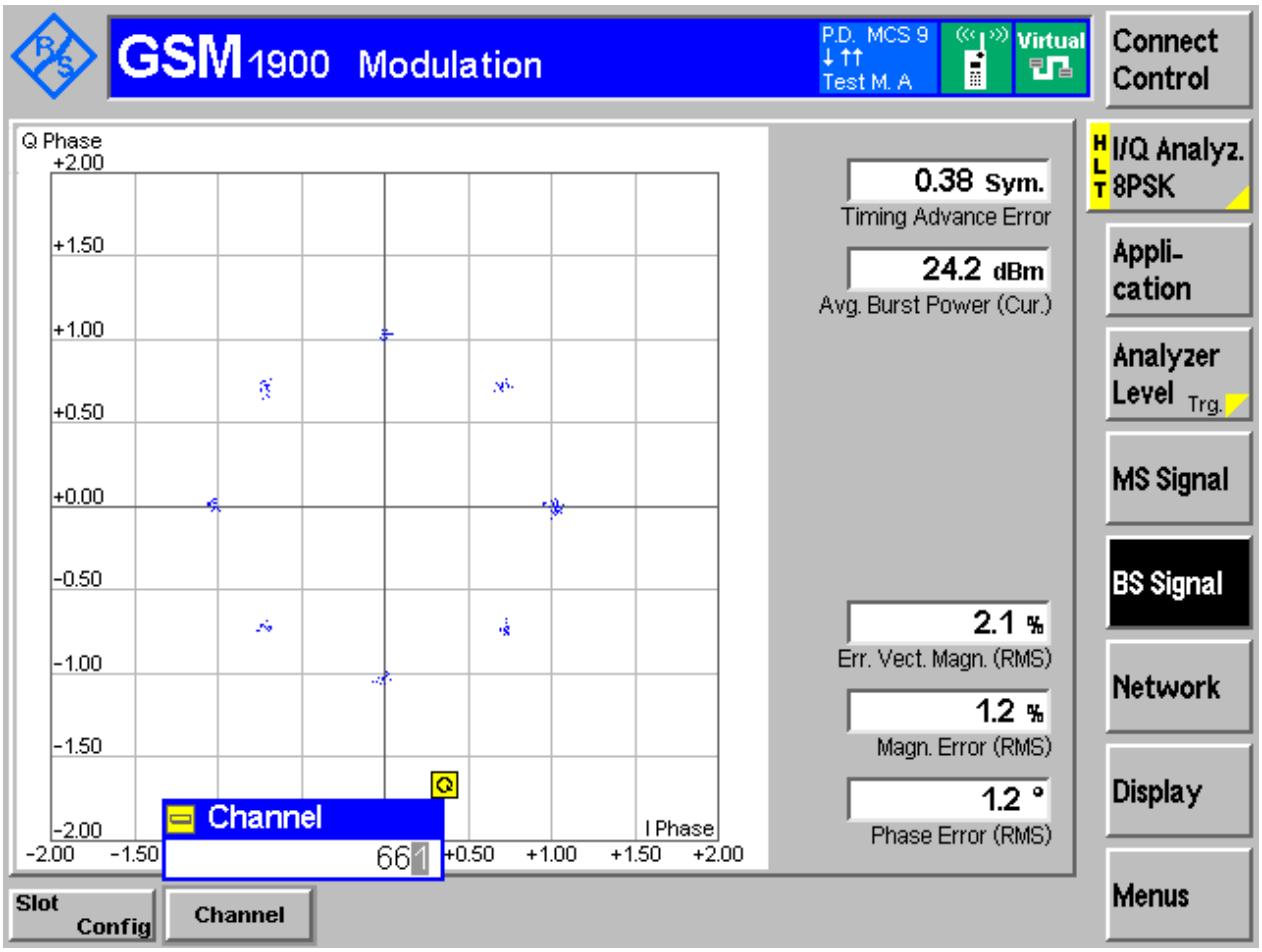
#### 3.1.2.1 Test Mode = GSM/TM1

##### 3.1.2.1.1 Test Channel = MCH



### 3.1.2.2 Test Mode = GSM/TM2

#### 3.1.2.2.1 Test Channel = MCH

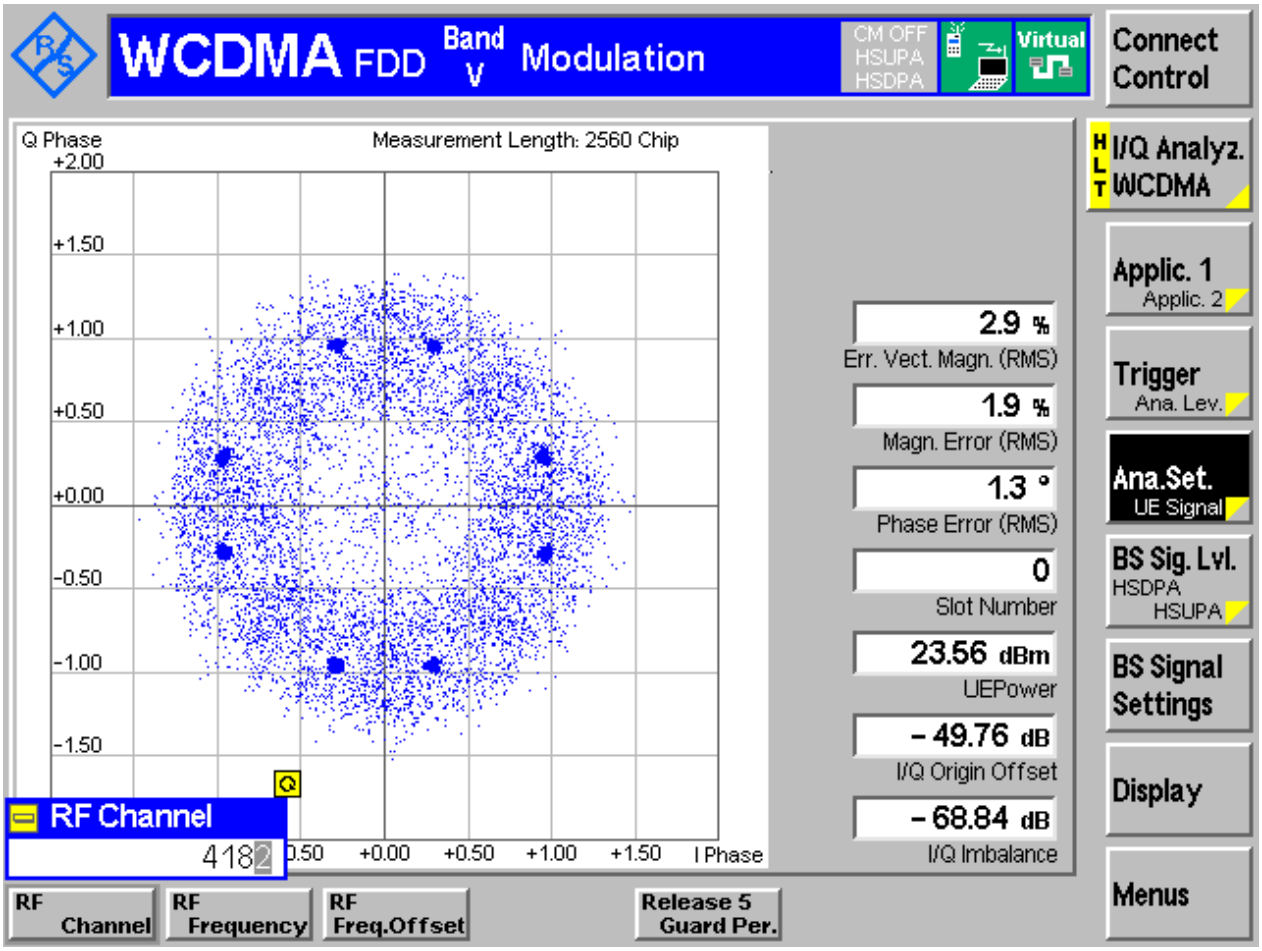


### 3.2 For UMTS

#### 3.2.1 Test Band = WCDMA850

##### 3.2.1.1 Test Mode = UMTS/TM1

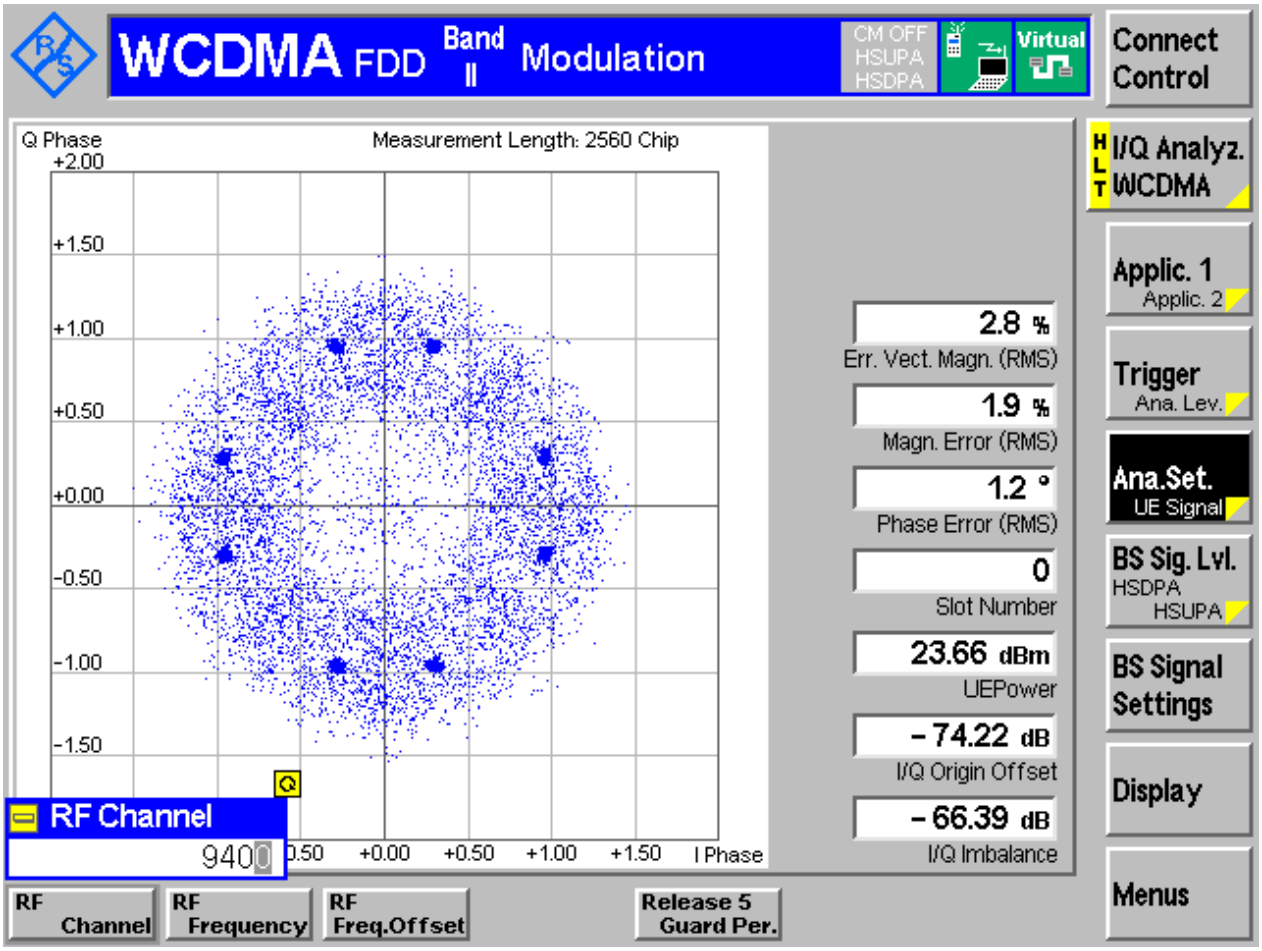
###### 3.2.1.1.1 Test Channel = MCH



### 3.2.2 Test Band = WCDMA1900

#### 3.2.2.1 Test Mode = UMTS/TM1

##### 3.2.2.1.1 Test Channel = MCH



# 4Appendix_D: Bandwidth

**Part I - Test Results**

| Test Band | Test Mode | Test Channel | Occupied Bandwidth [kHz] | Emission Bandwidth [kHz] | Verdict |
|---|---|---|---|---|---|
| GSM850 | GSM/TM1 | LCH | 245.42 | 320.08 | Pass |
| | | MCH | 248.34 | 314.78 | Pass |
| | | HCH | 242.84 | 308.22 | Pass |
| | GSM/TM2 | LCH | 250.94 | 319.34 | Pass |
| | | MCH | 251.34 | 322.24 | Pass |
| | | HCH | 250.76 | 322.76 | Pass |
| GSM1900 | GSM/TM1 | LCH | 240.05 | 308.22 | Pass |
| | | MCH | 243.79 | 314.51 | Pass |
| | | HCH | 245.18 | 315.51 | Pass |
| | GSM/TM2 | LCH | 254.31 | 322.28 | Pass |
| | | MCH | 251.73 | 316.72 | Pass |
| | | HCH | 251.56 | 311.20 | Pass |

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

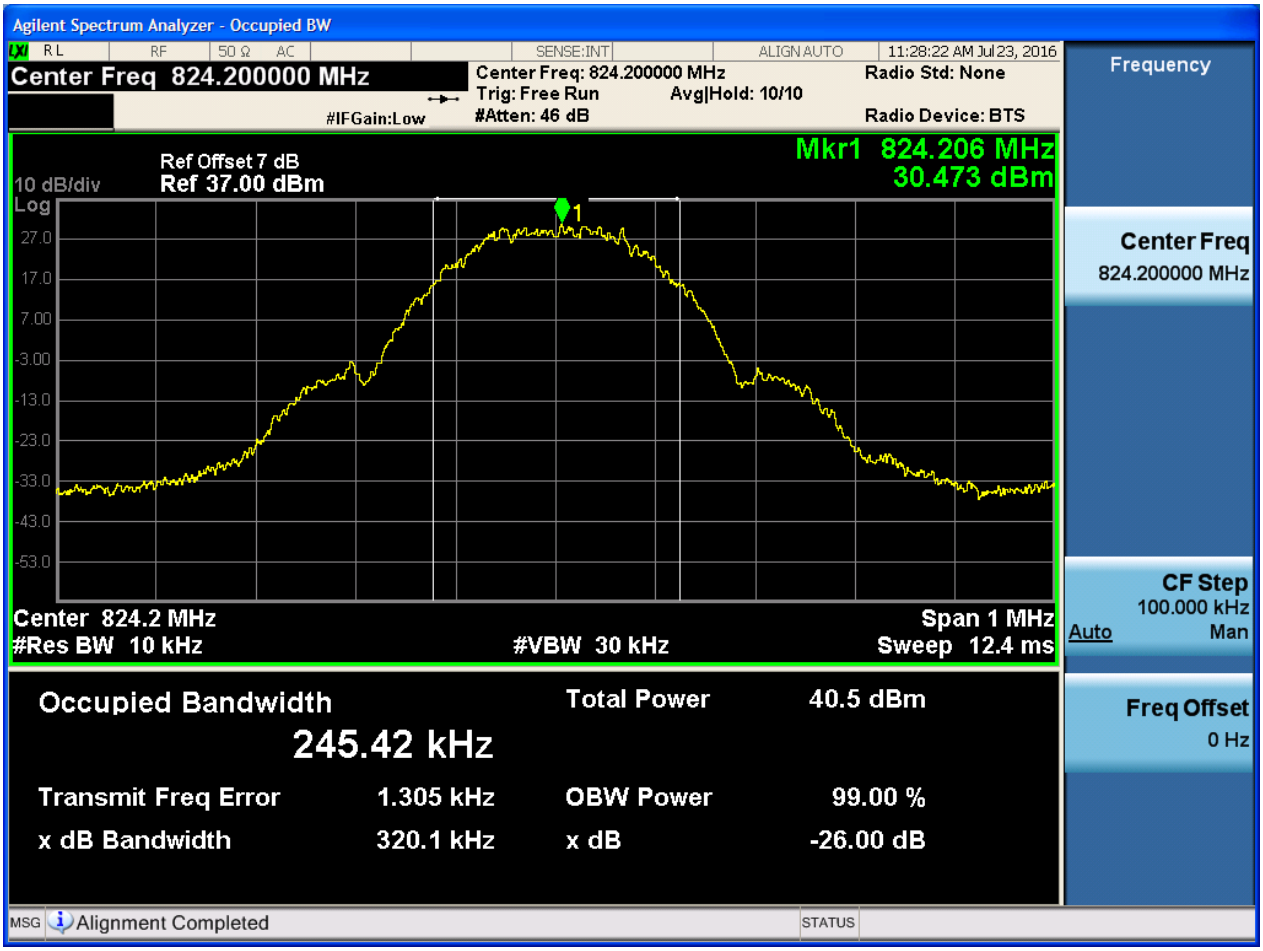
Part II - Test Plots

### 4.1 For GSM

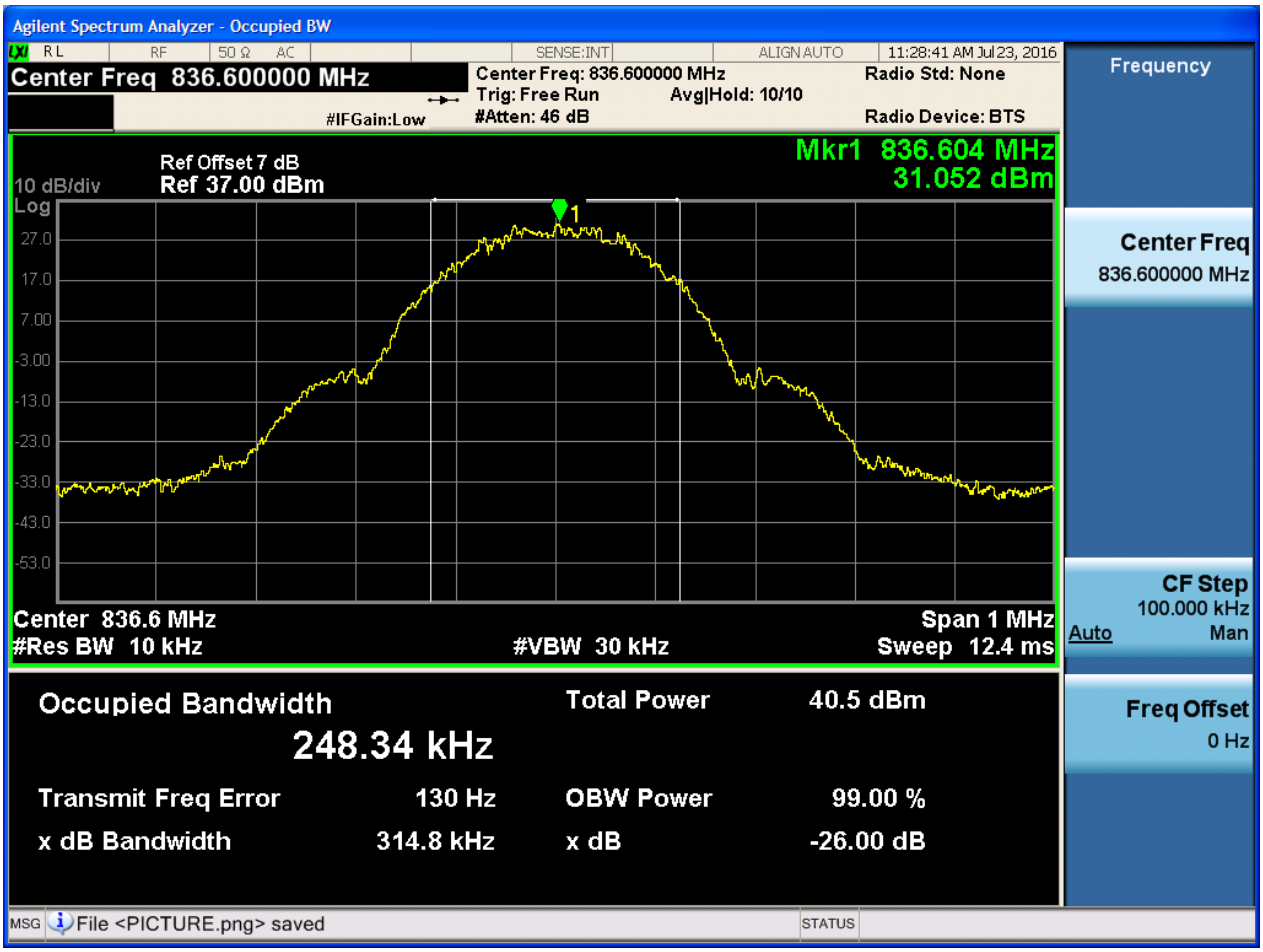
#### 4.1.1 Test Band = GSM850

##### 4.1.1.1 Test Mode = GSM/TM1

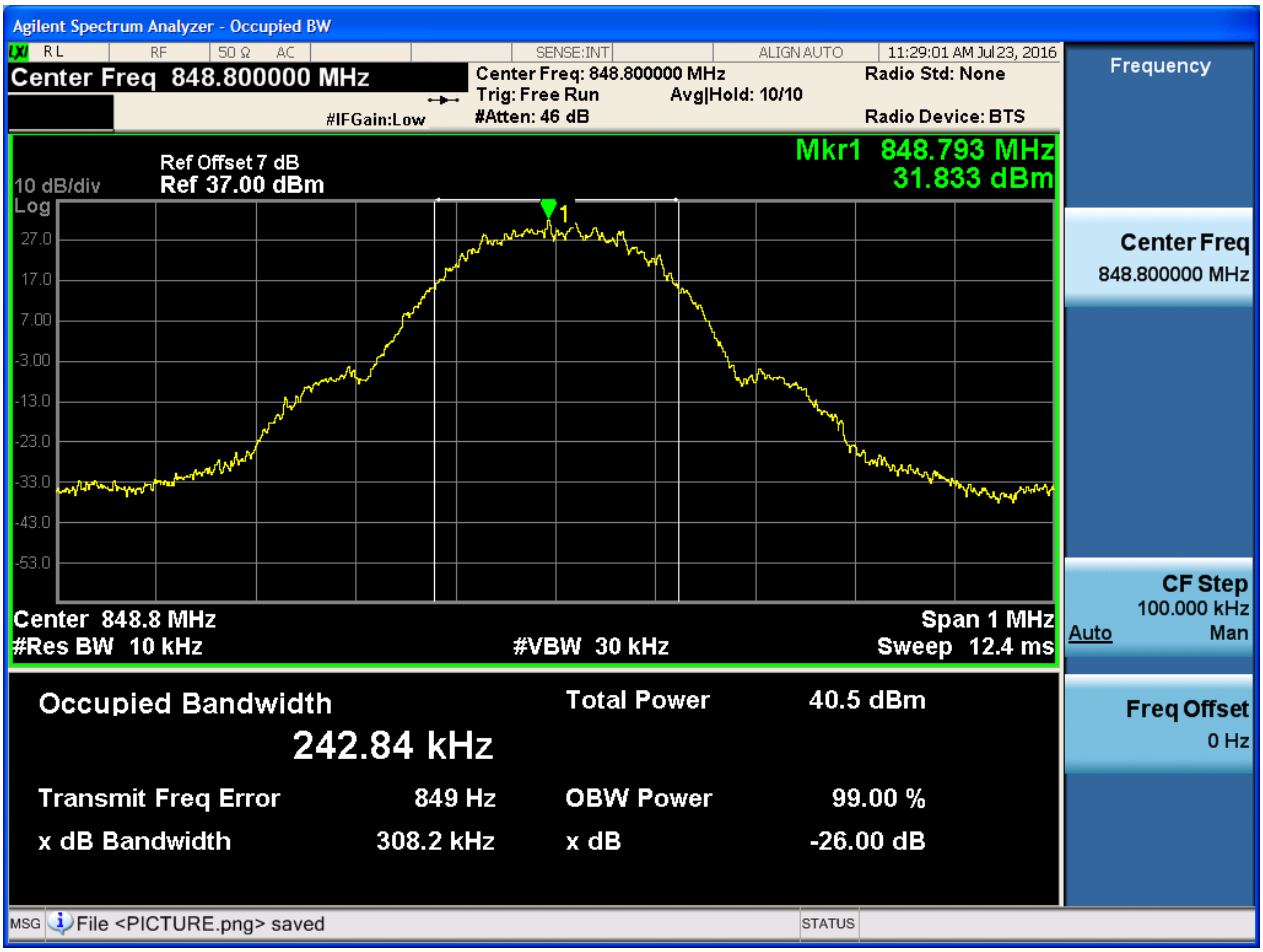
###### 4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH



#### 4.1.1.1.3 Test Channel = HCH

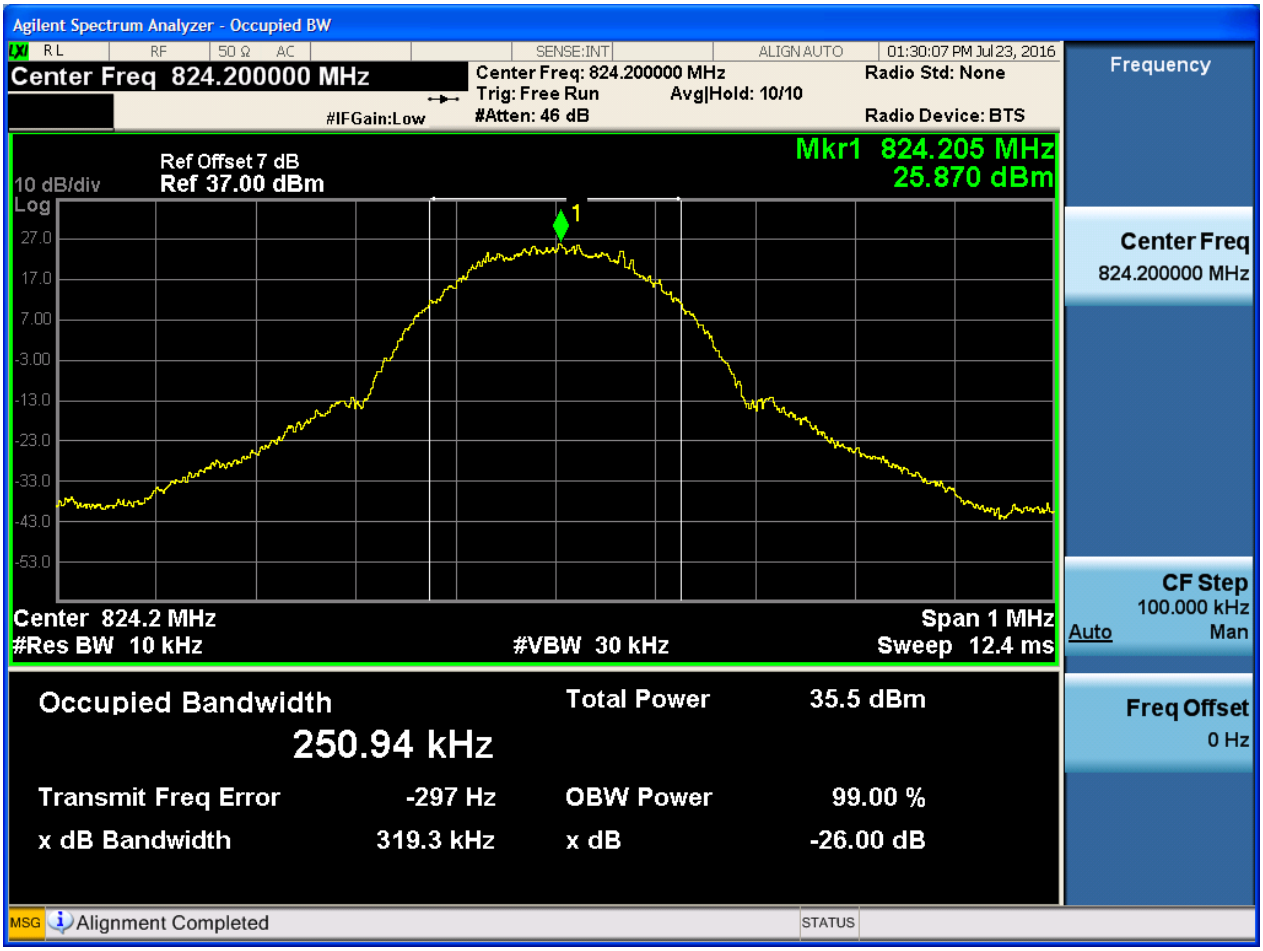


#### 4.1.1.2 Test Mode = GSM/TM2

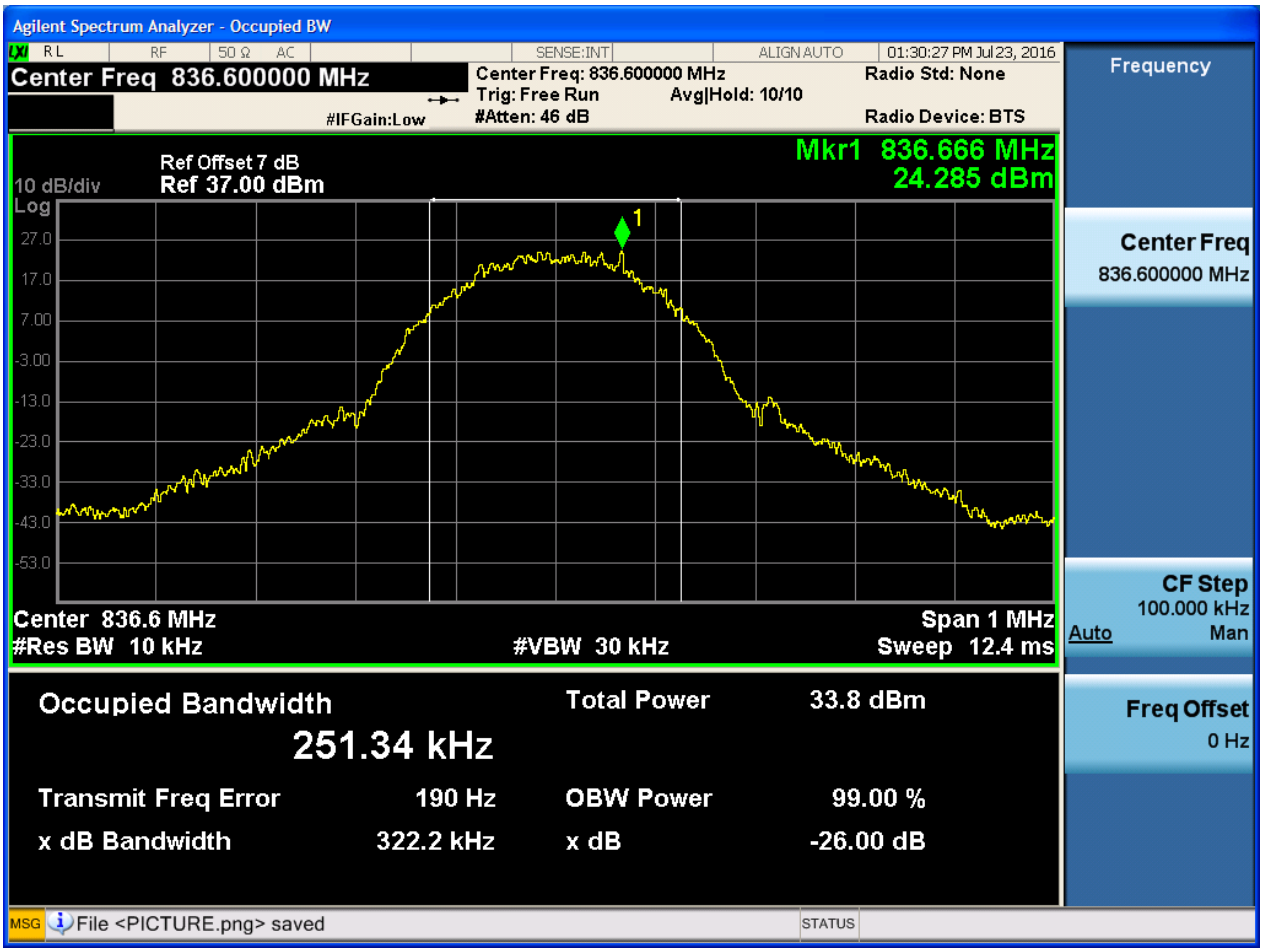
#### 4.1.1.2.1 Test Channel =

#### 4.1.1.3 Test Mode = GSM/TM2

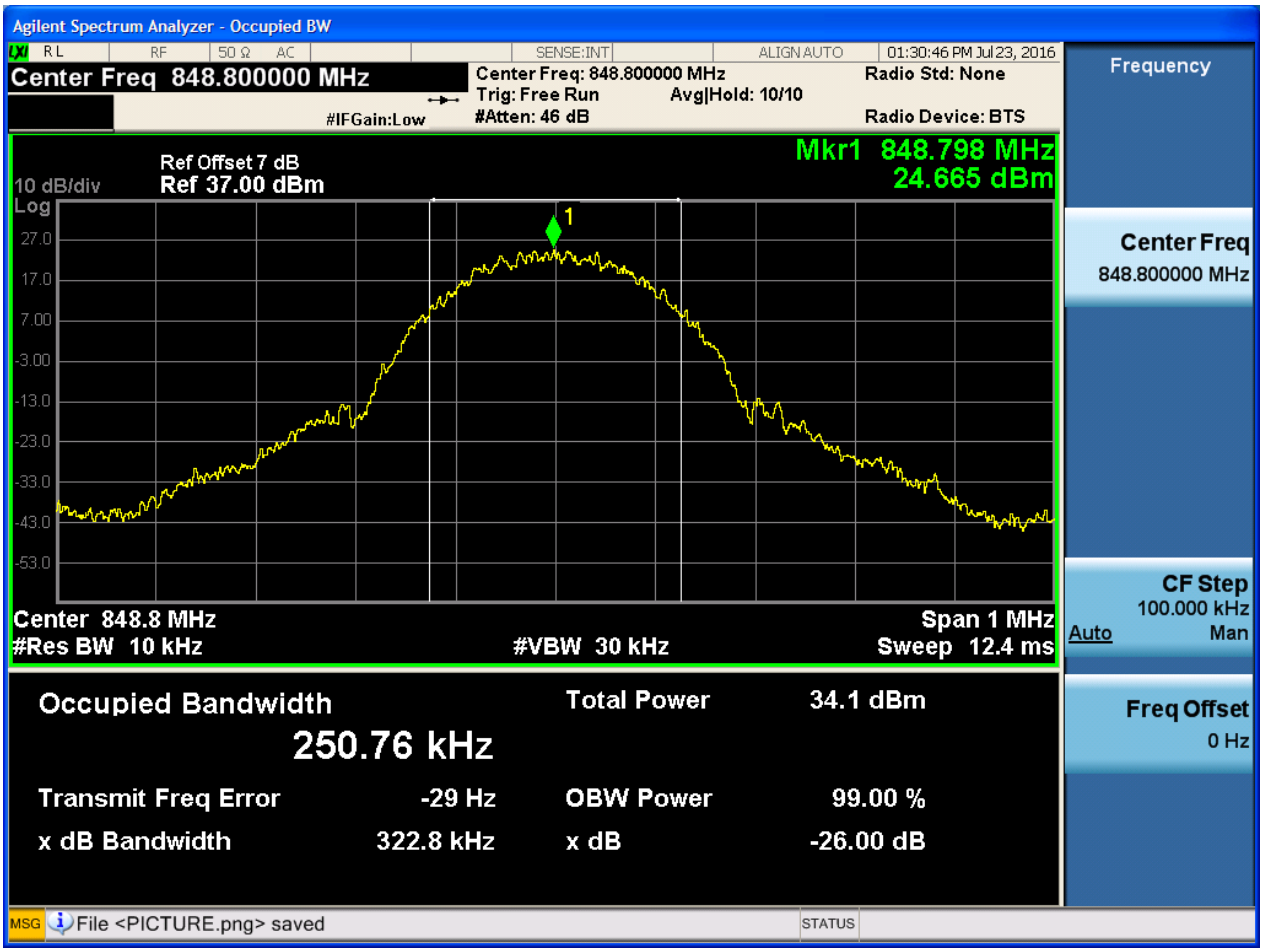
#### 4.1.1.3.1 Test Channel = LCH



#### 4.1.1.3.2 Test Channel = MCH



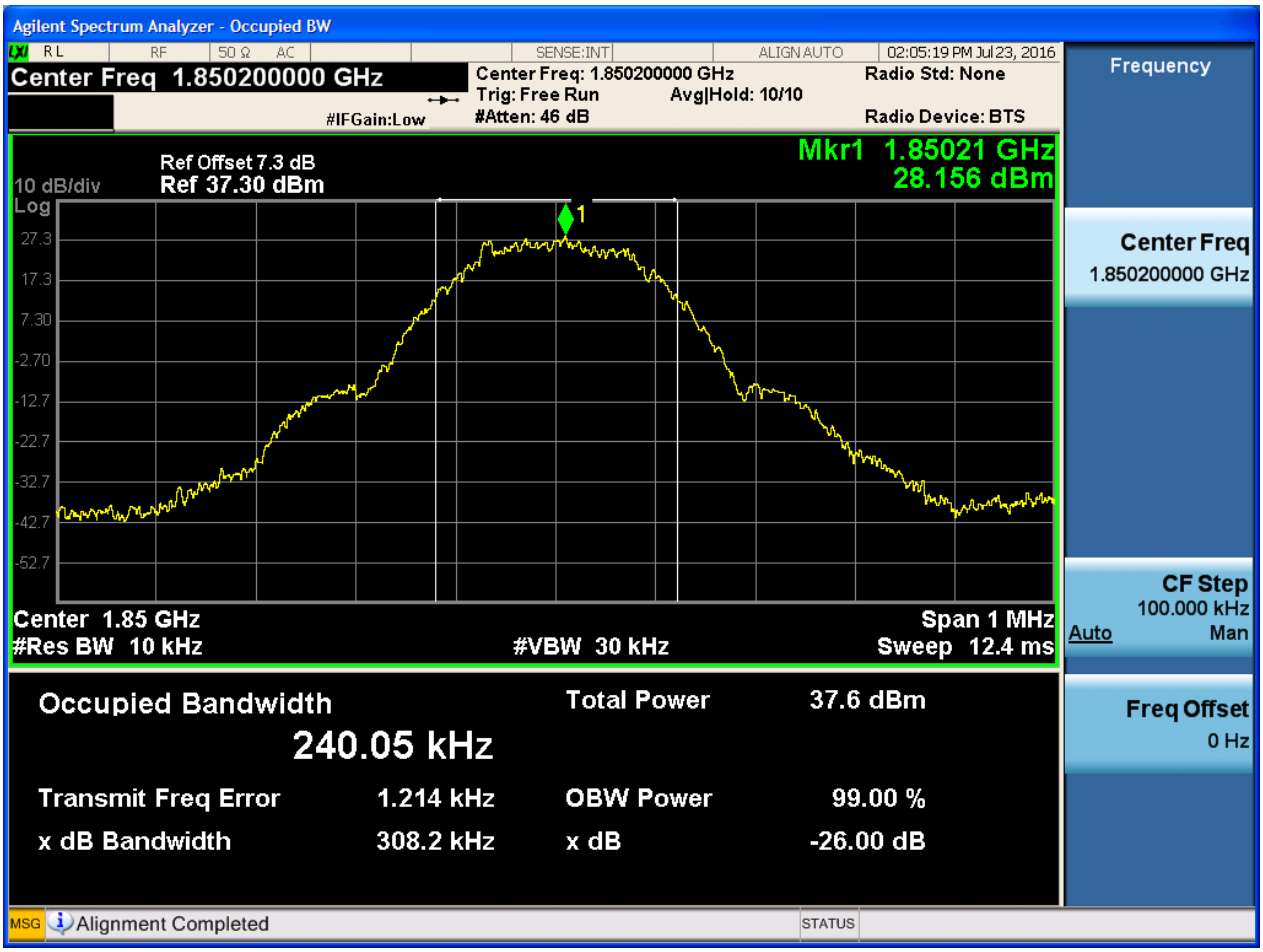
#### 4.1.1.3.3 Test Channel = HCH



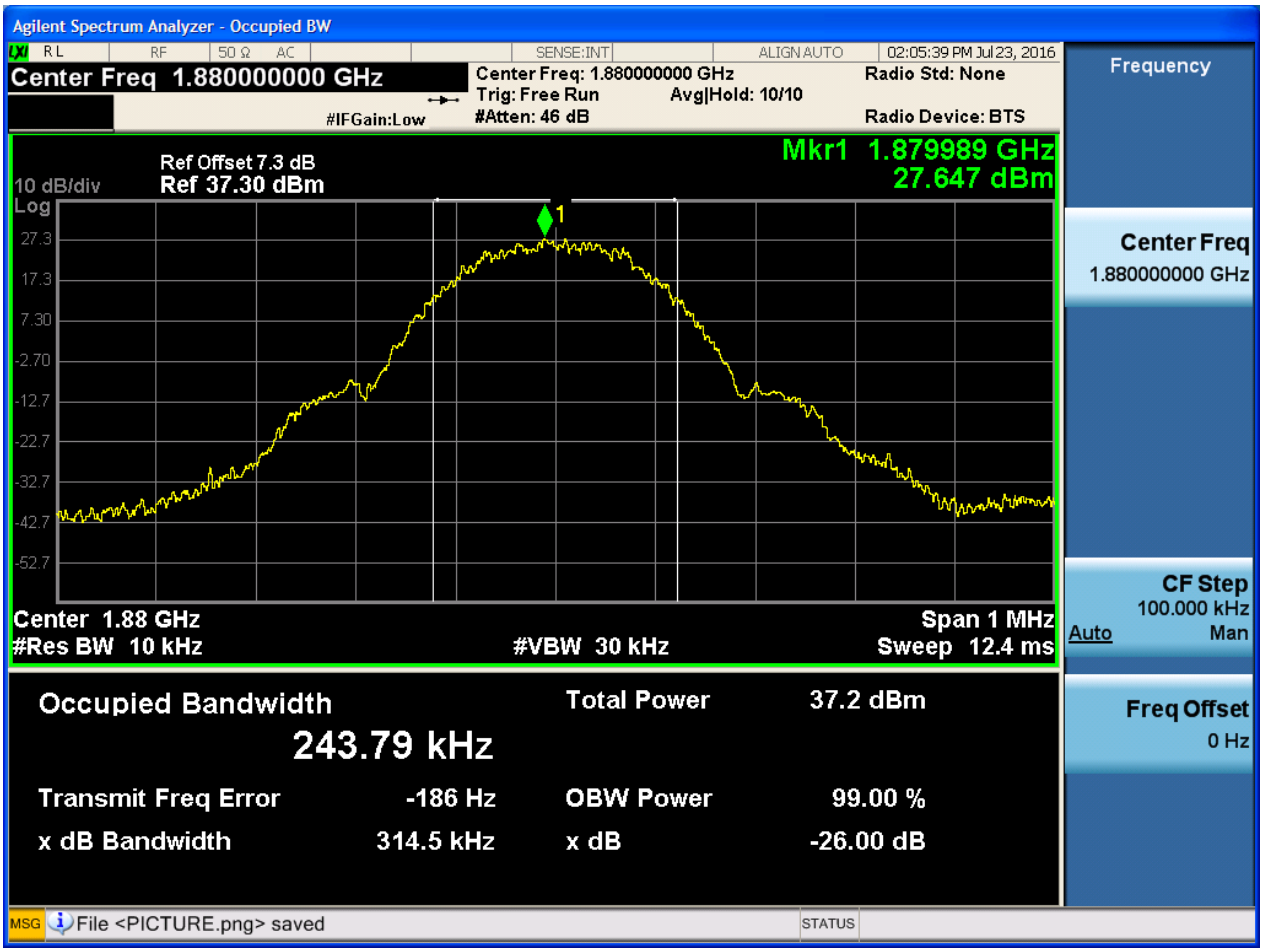
### 4.1.2 Test Band = GSM1900

#### 4.1.2.1 Test Mode = GSM/TM1

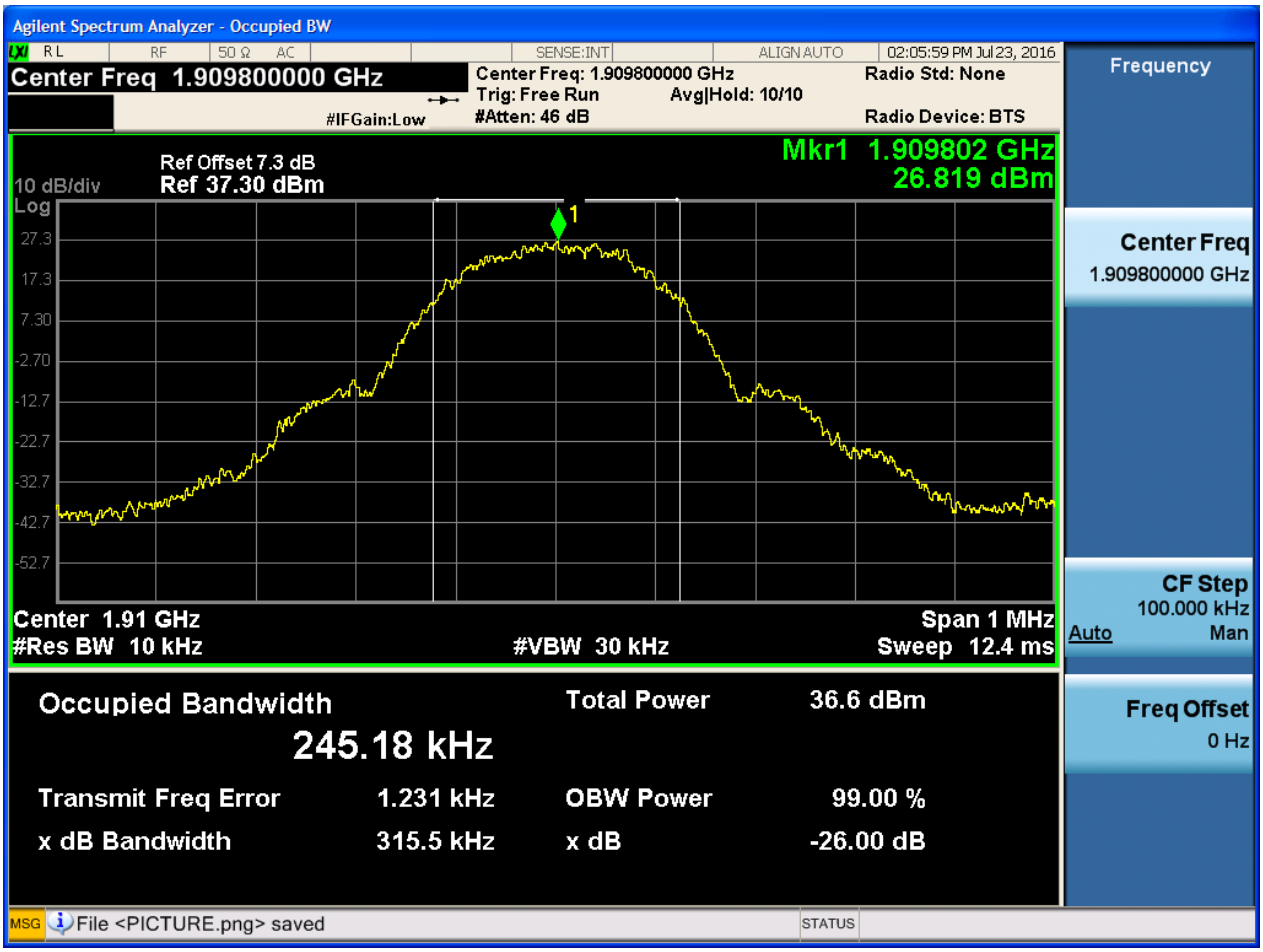
##### 4.1.2.1.1 Test Channel = LCH



#### 4.1.2.1.2 Test Channel = MCH

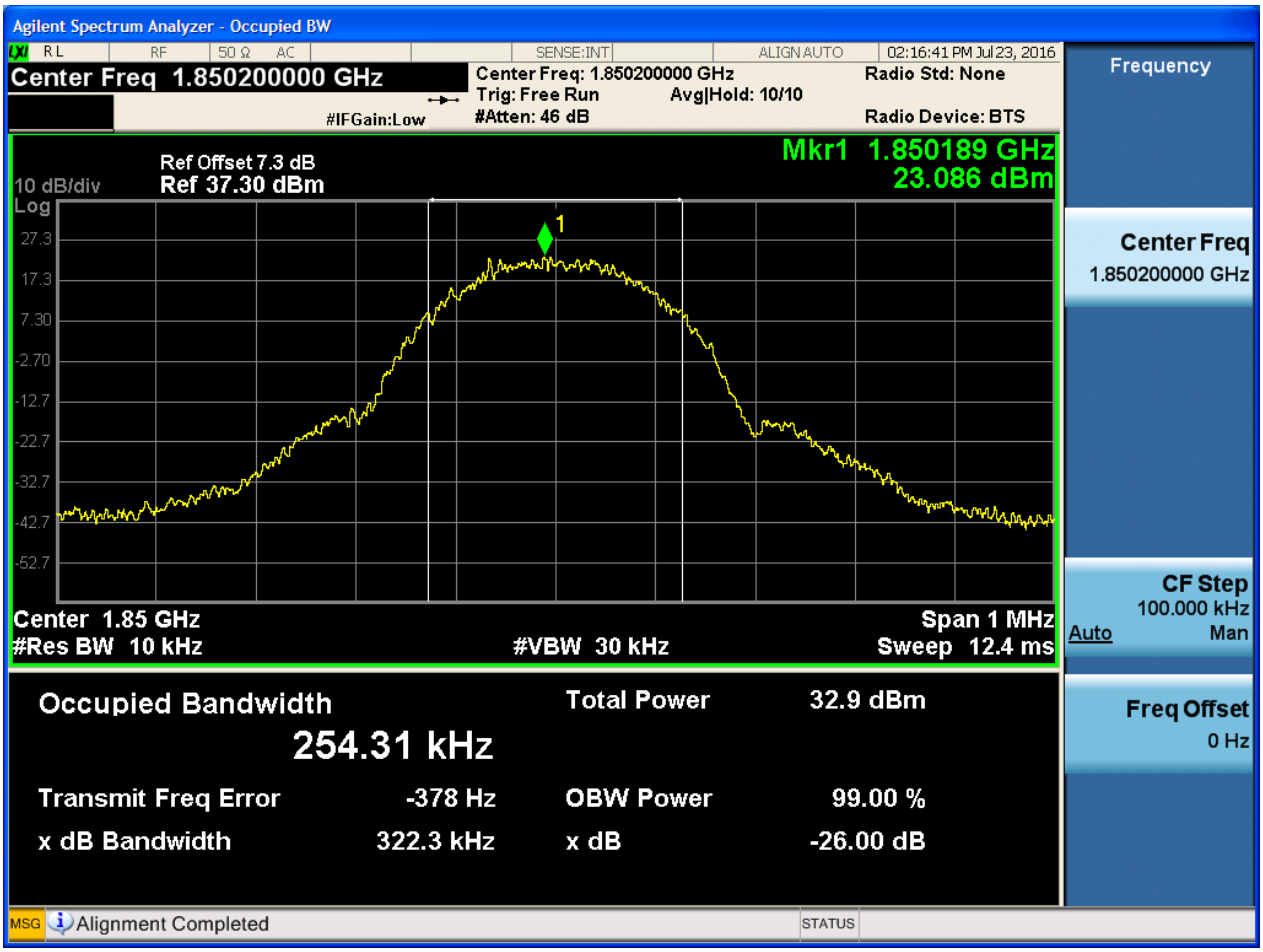


#### 4.1.2.1.3 Test Channel = HCH

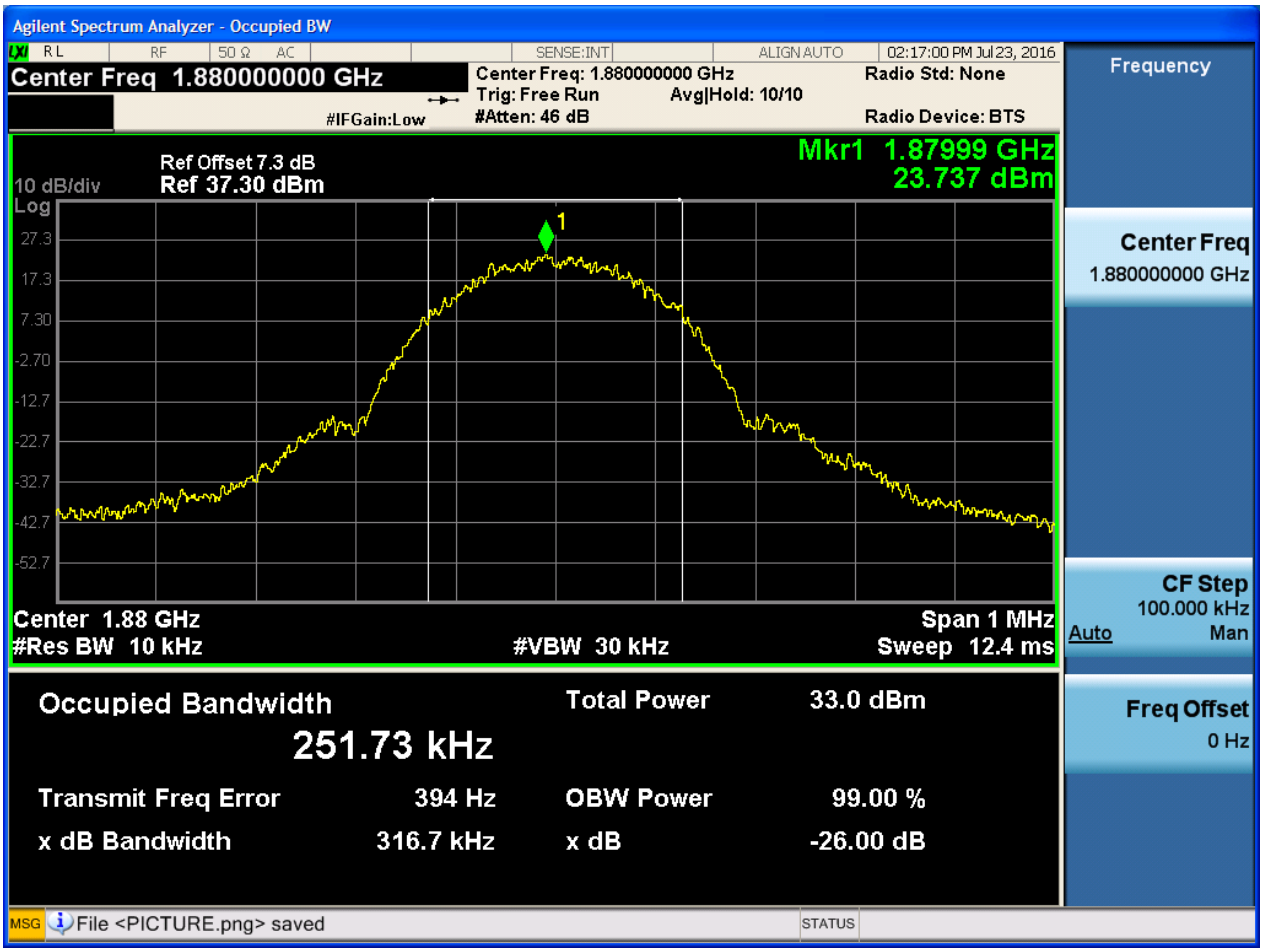


#### 4.1.2.2 Test Mode = GSM/TM2

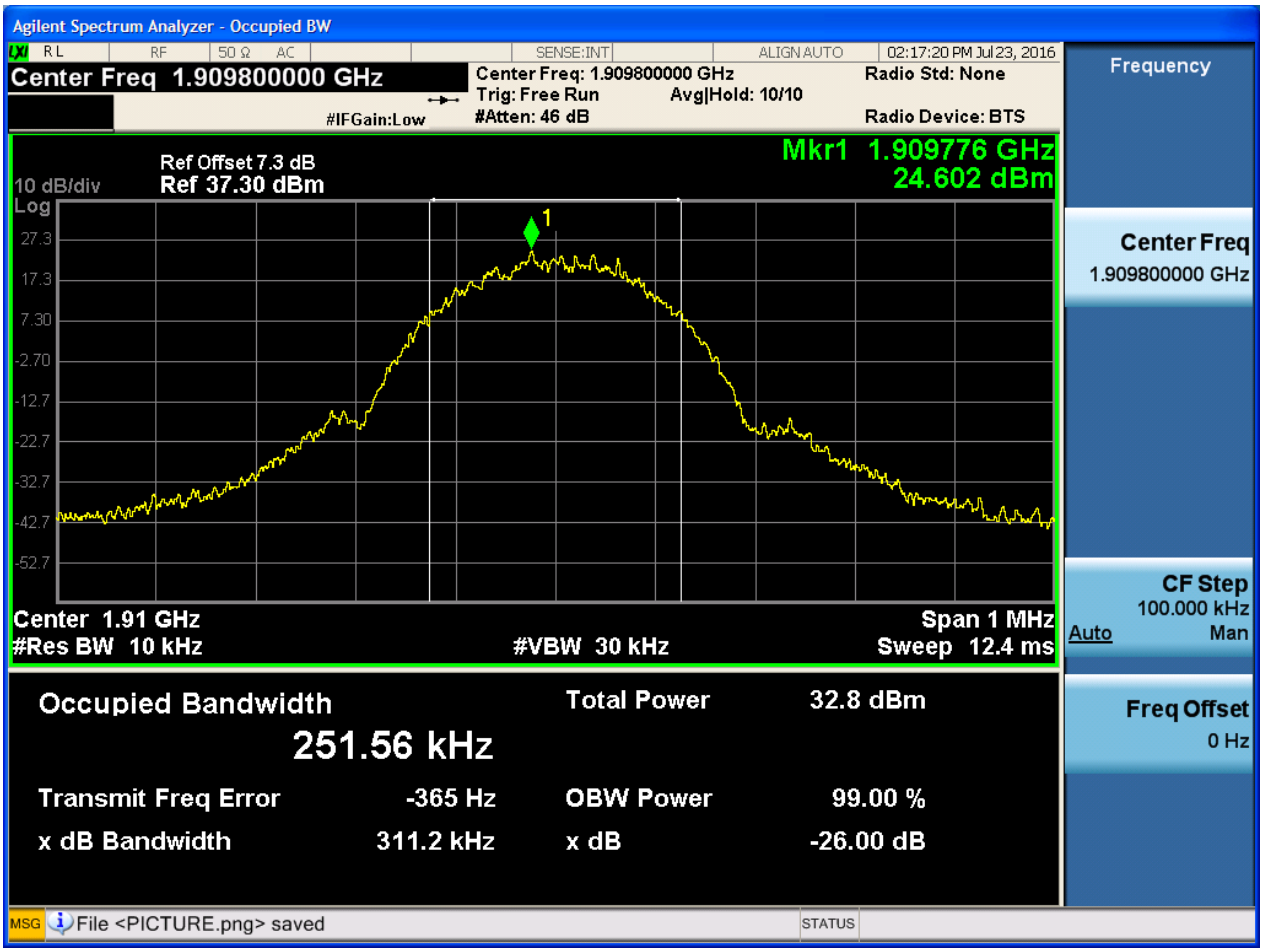
##### 4.1.2.2.1 Test Channel = LCH



#### 4.1.2.2.2 Test Channel = MCH



#### 4.1.2.2.3 Test Channel = HCH

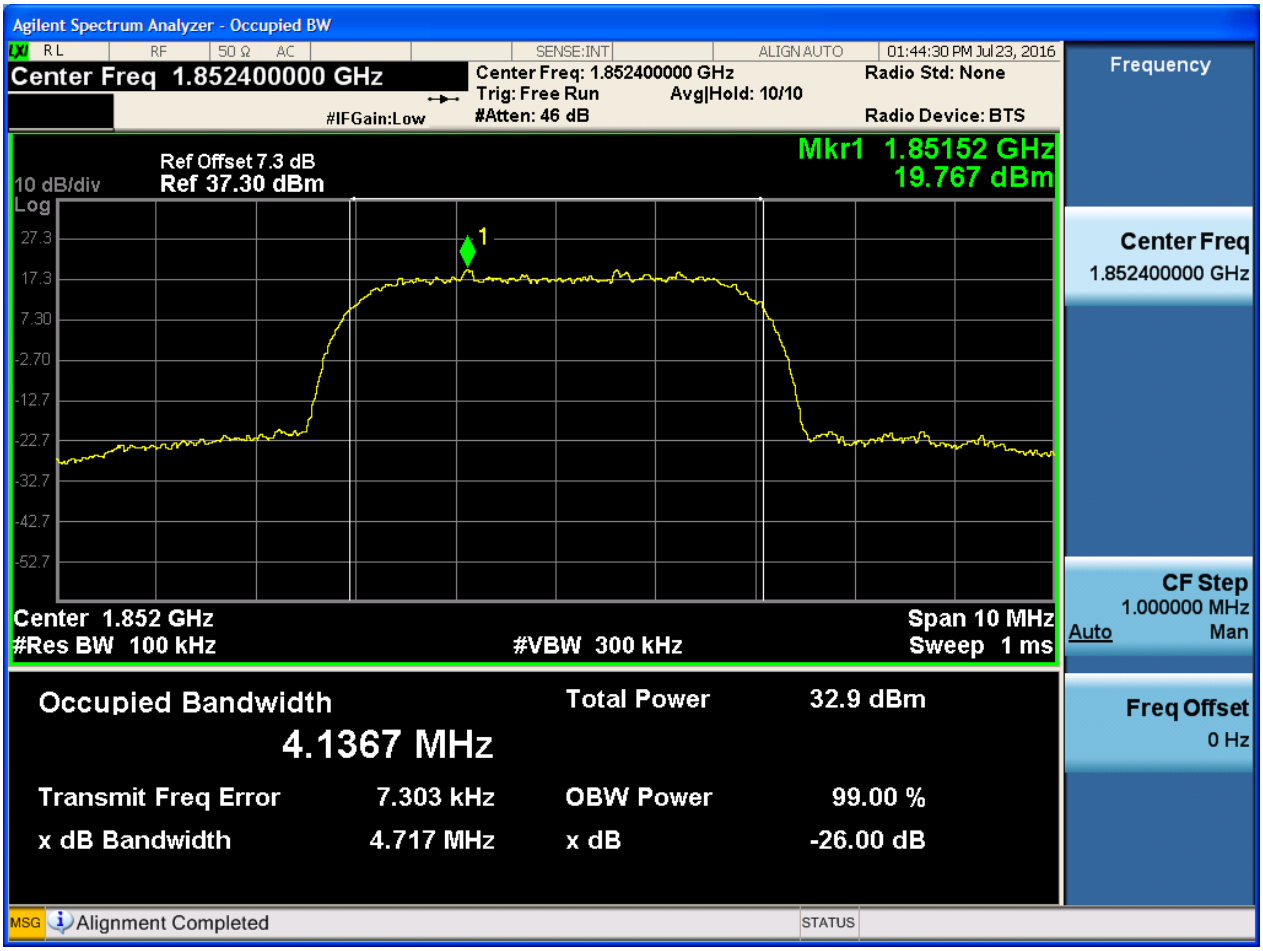


### 4.2 For UMTS

#### 4.2.1 Test Band = WCDMA1900

##### 4.2.1.1 Test Mode = UMTS/TM1

###### 4.2.1.1.1 Test Channel = LCH

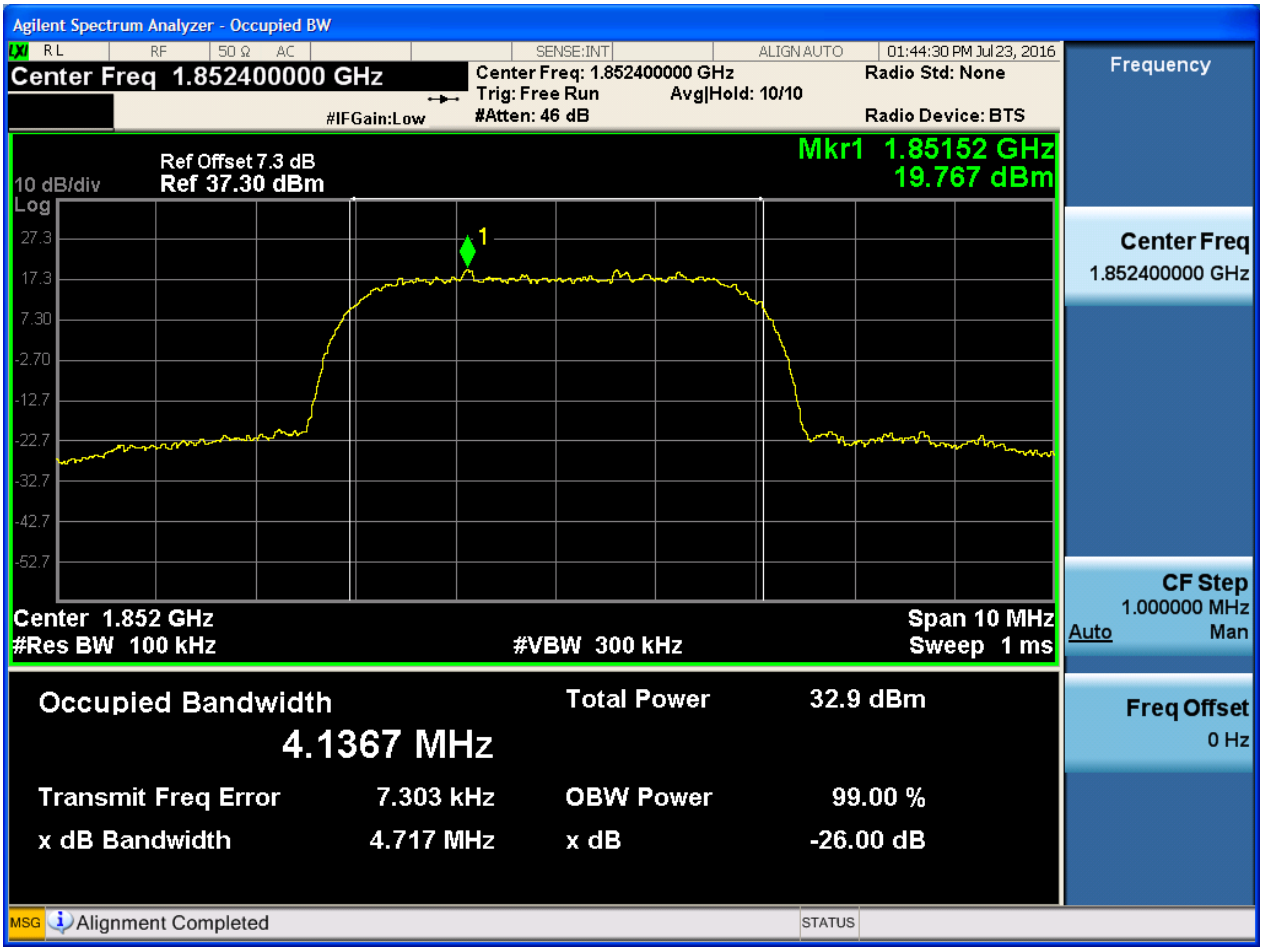


**4.2.1.1.2 Test Channel =**

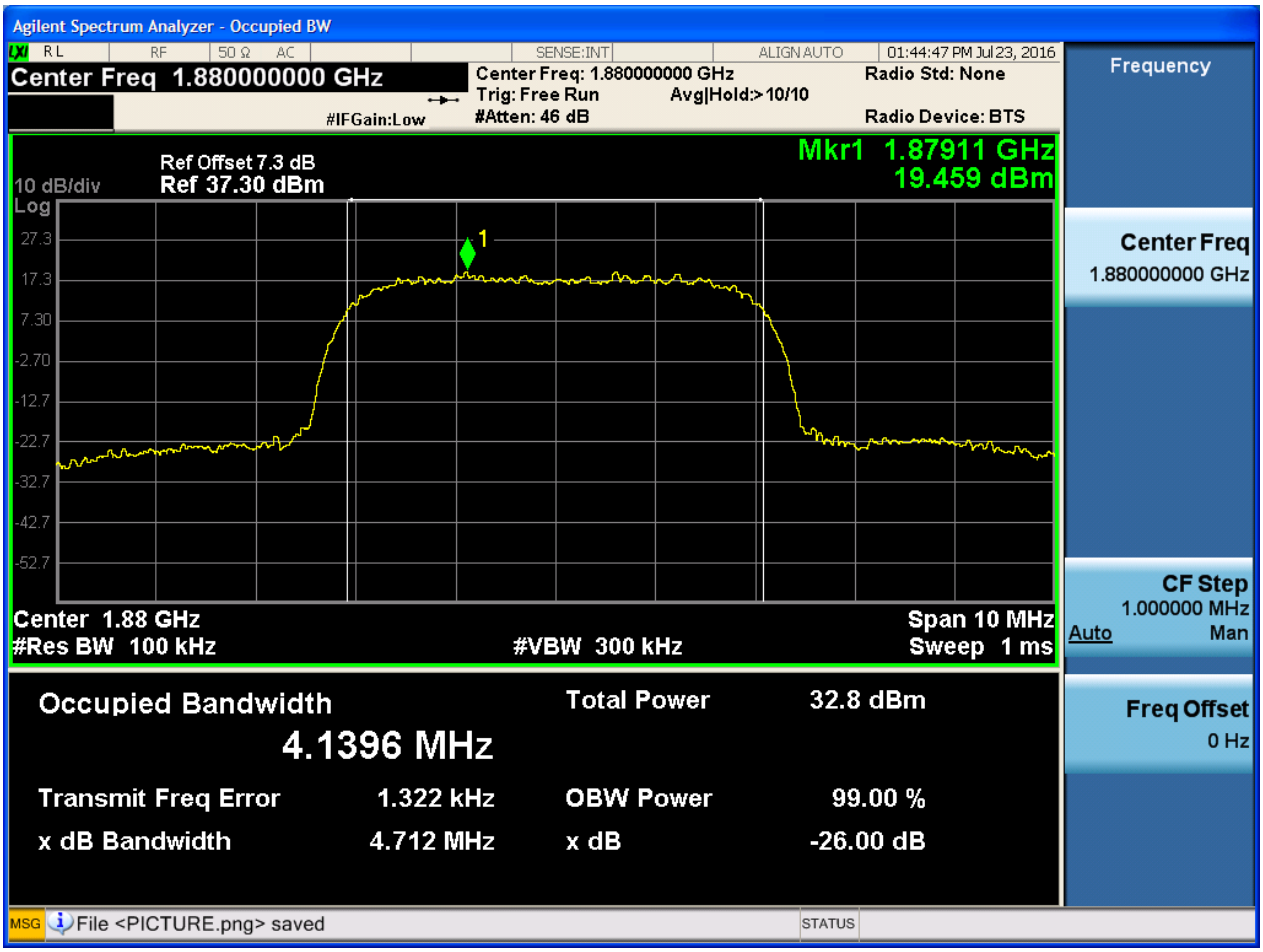
**4.2.2 Test Band = WCDMA1900**

**4.2.2.1 Test Mode = UMTS/TM1**

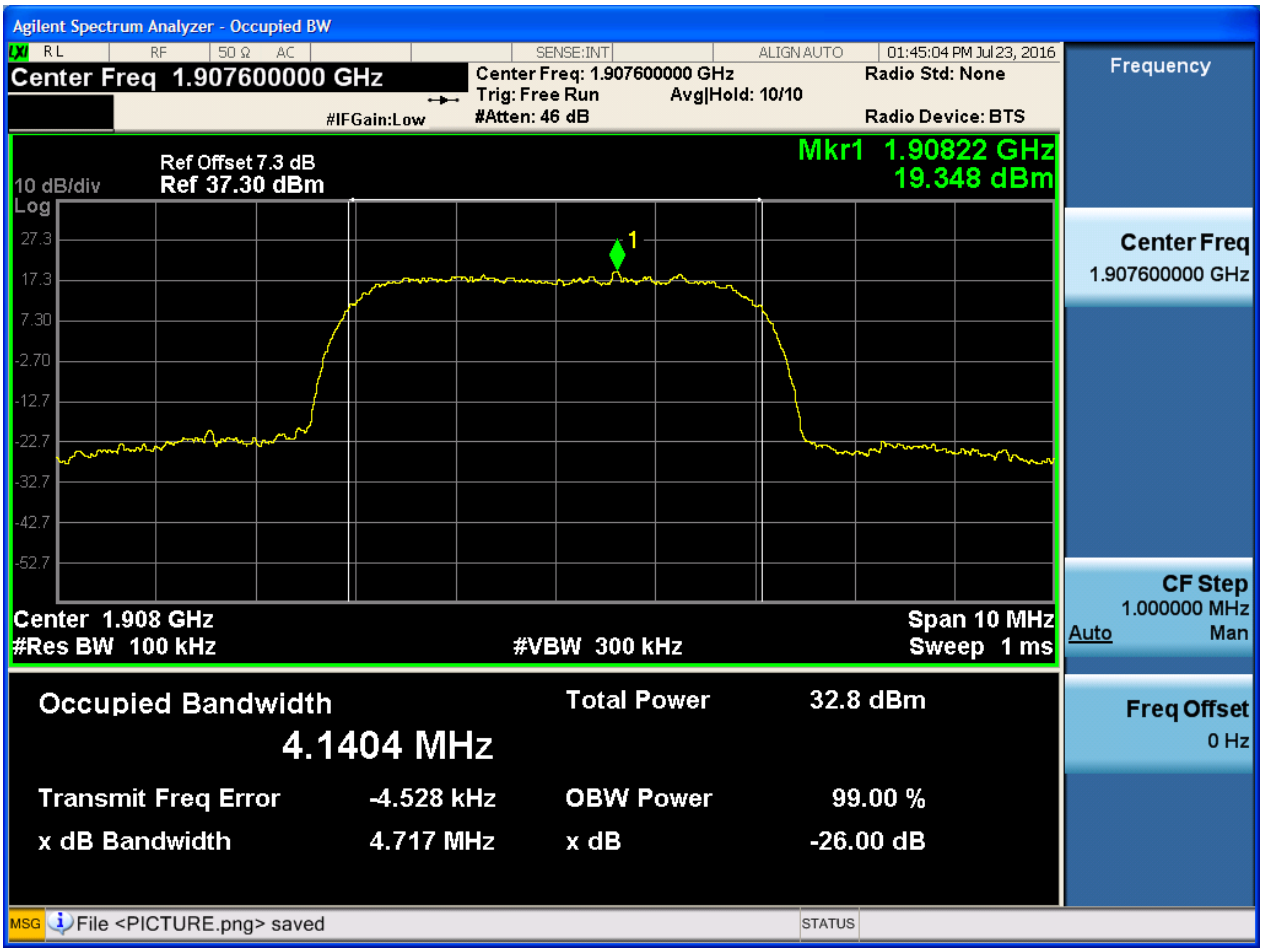
**4.2.2.1.1 Test Channel = LCH**



#### 4.2.2.1.2 Test Channel = MCH



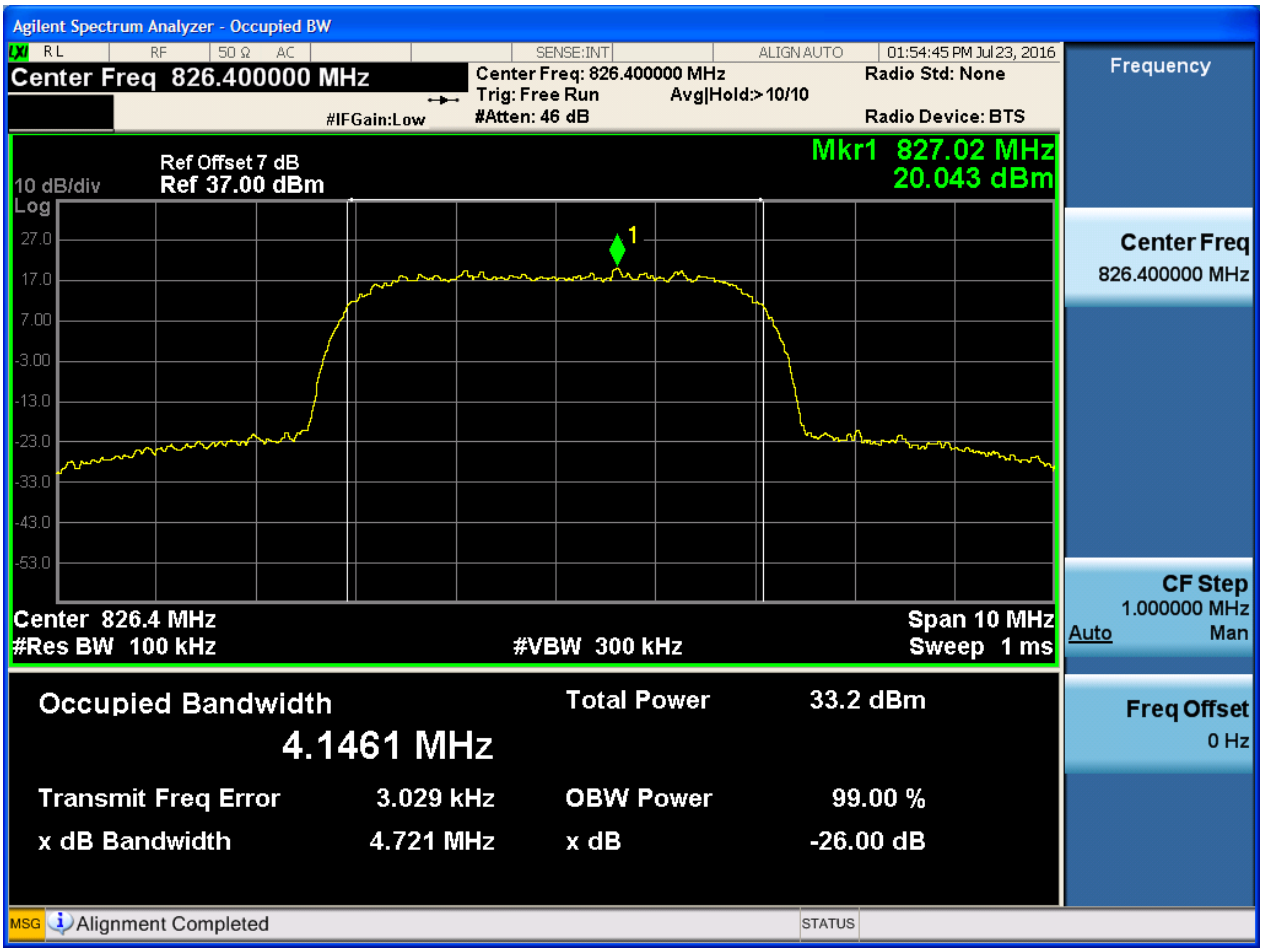
#### 4.2.2.1.3 Test Channel = HCH



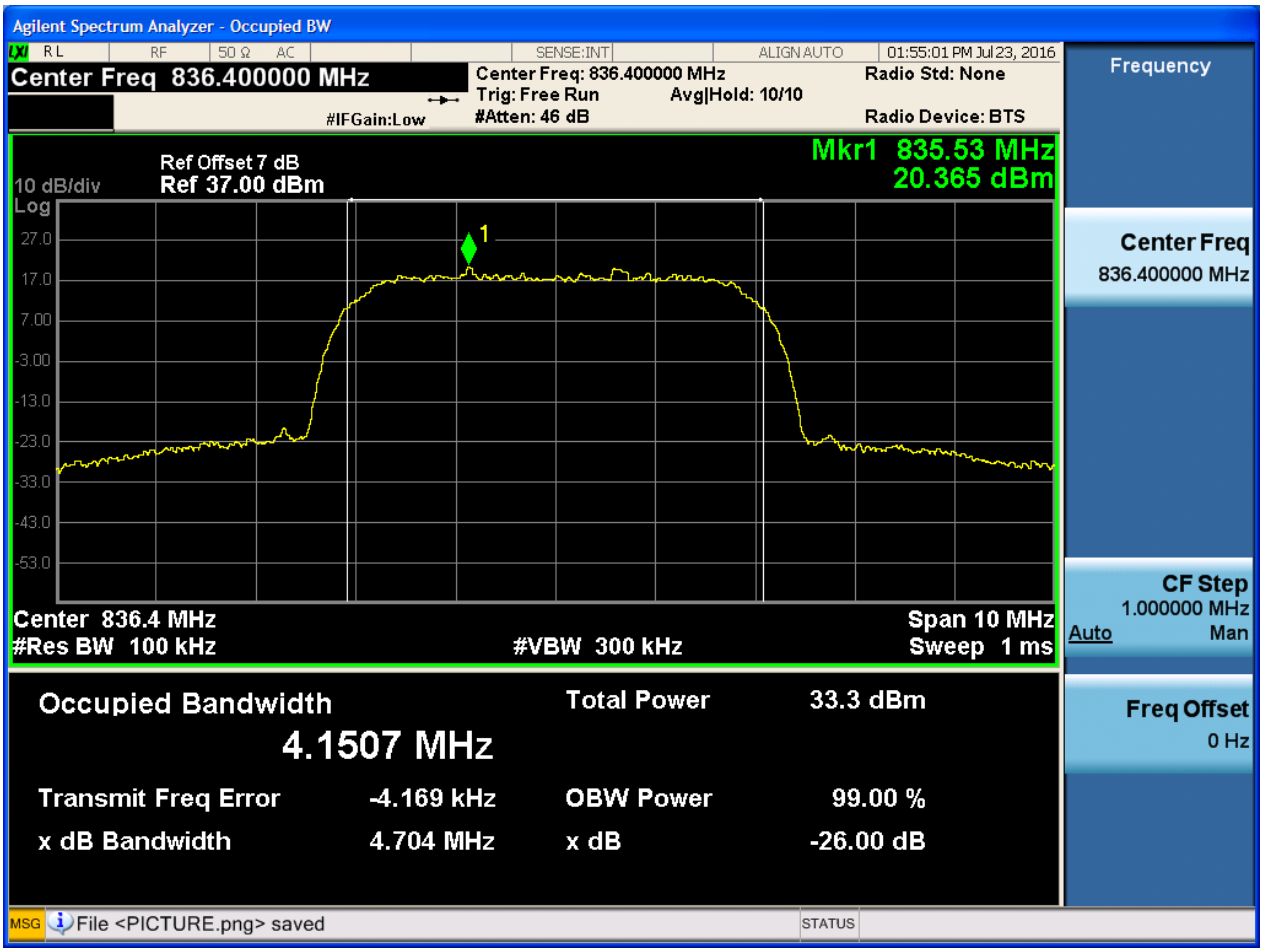
### 4.2.3 Test Band = WCDMA850

#### 4.2.3.1 Test Mode = UMTS/TM1

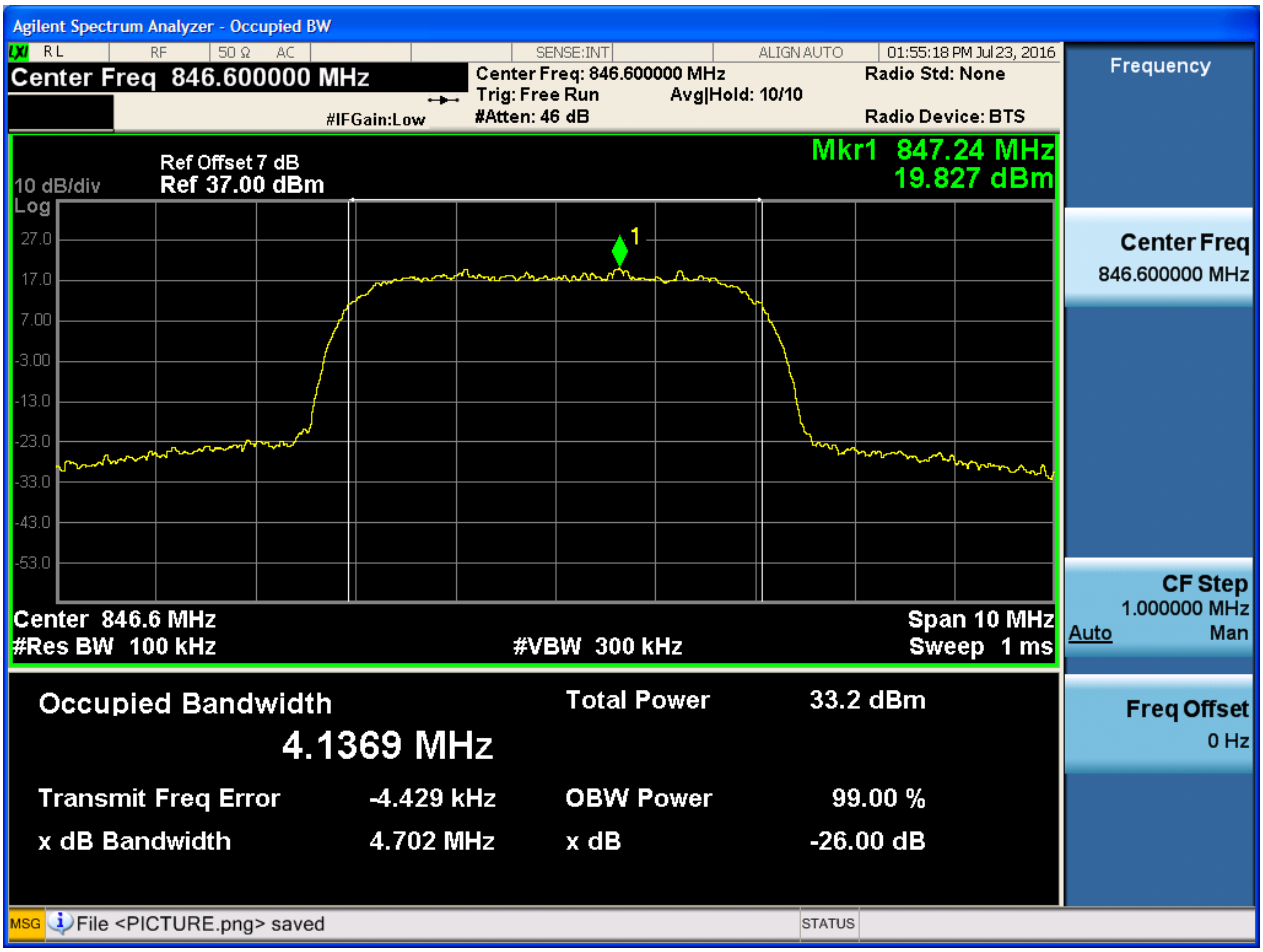
##### 4.2.3.1.1 Test Channel = LCH



#### 4.2.3.1.2 Test Channel = MCH



#### 4.2.3.1.3 Test Channel = HCH



# 5Appendix_E: Band Edges Compliance

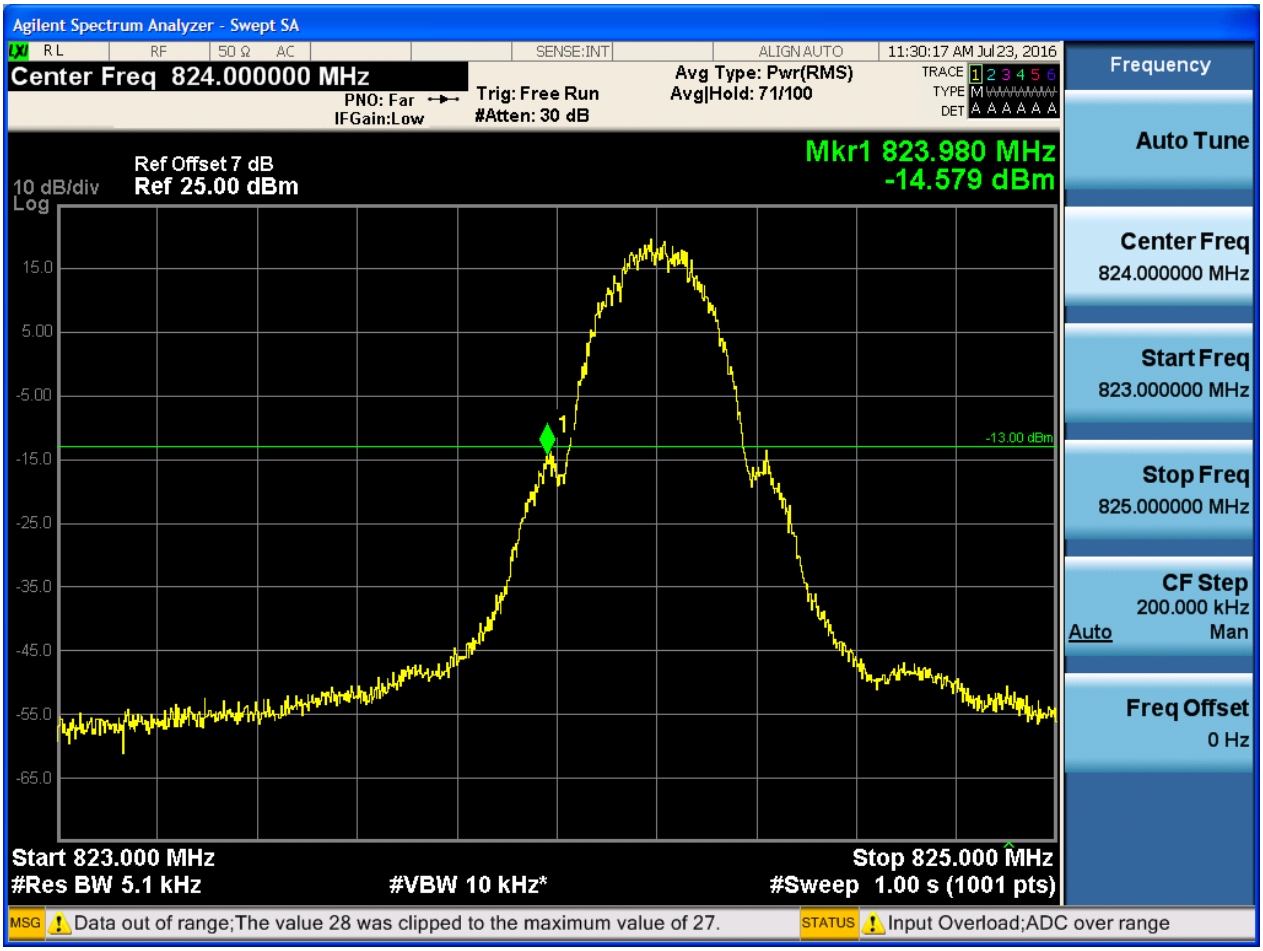
**Part I - Test Plots**

**5.1 For GSM**

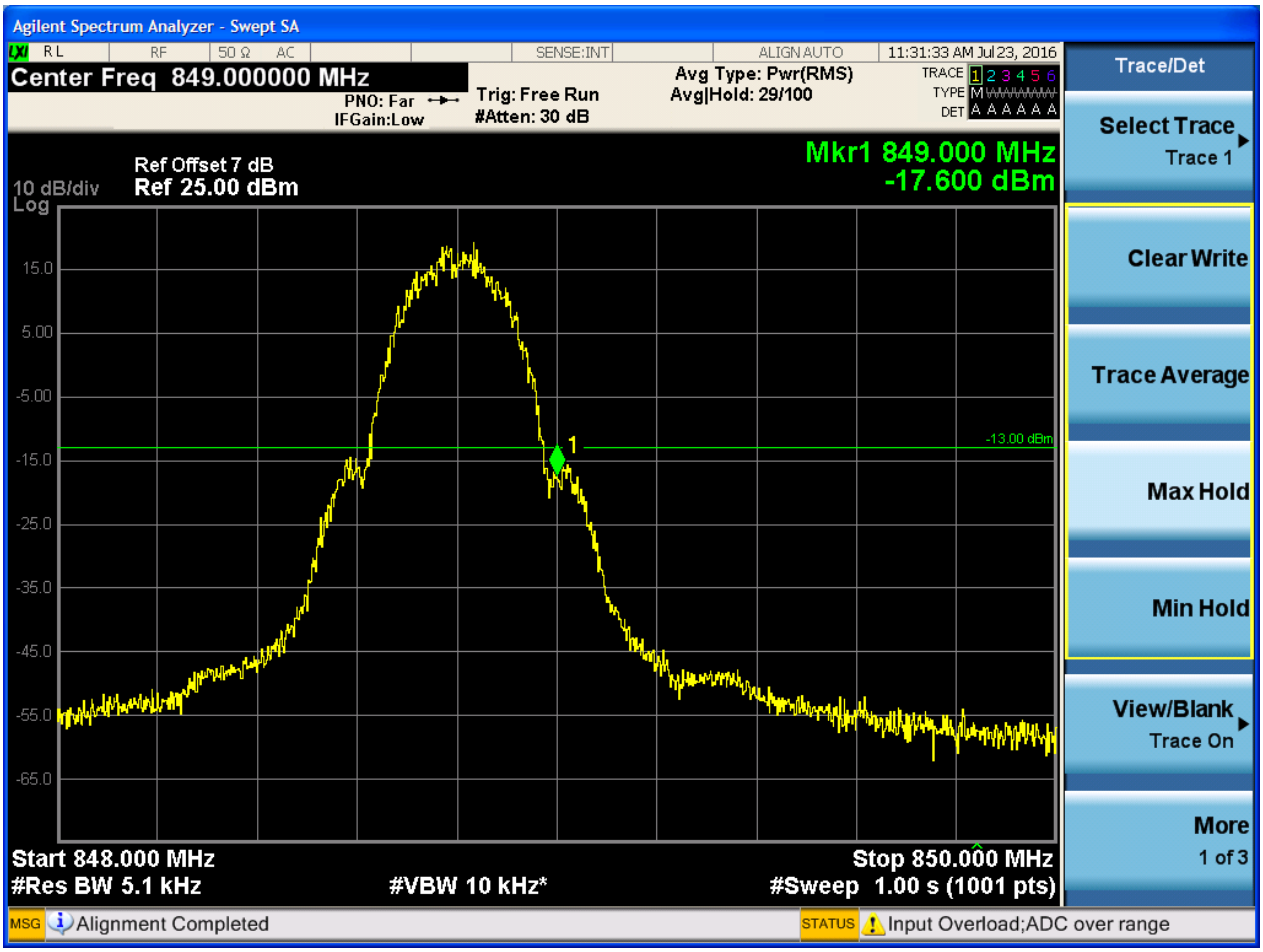
**5.1.1 Test Band = GSM850**

**5.1.1.1 Test Mode = GSM/TM1**

**5.1.1.1.1 Test Channel = LCH**

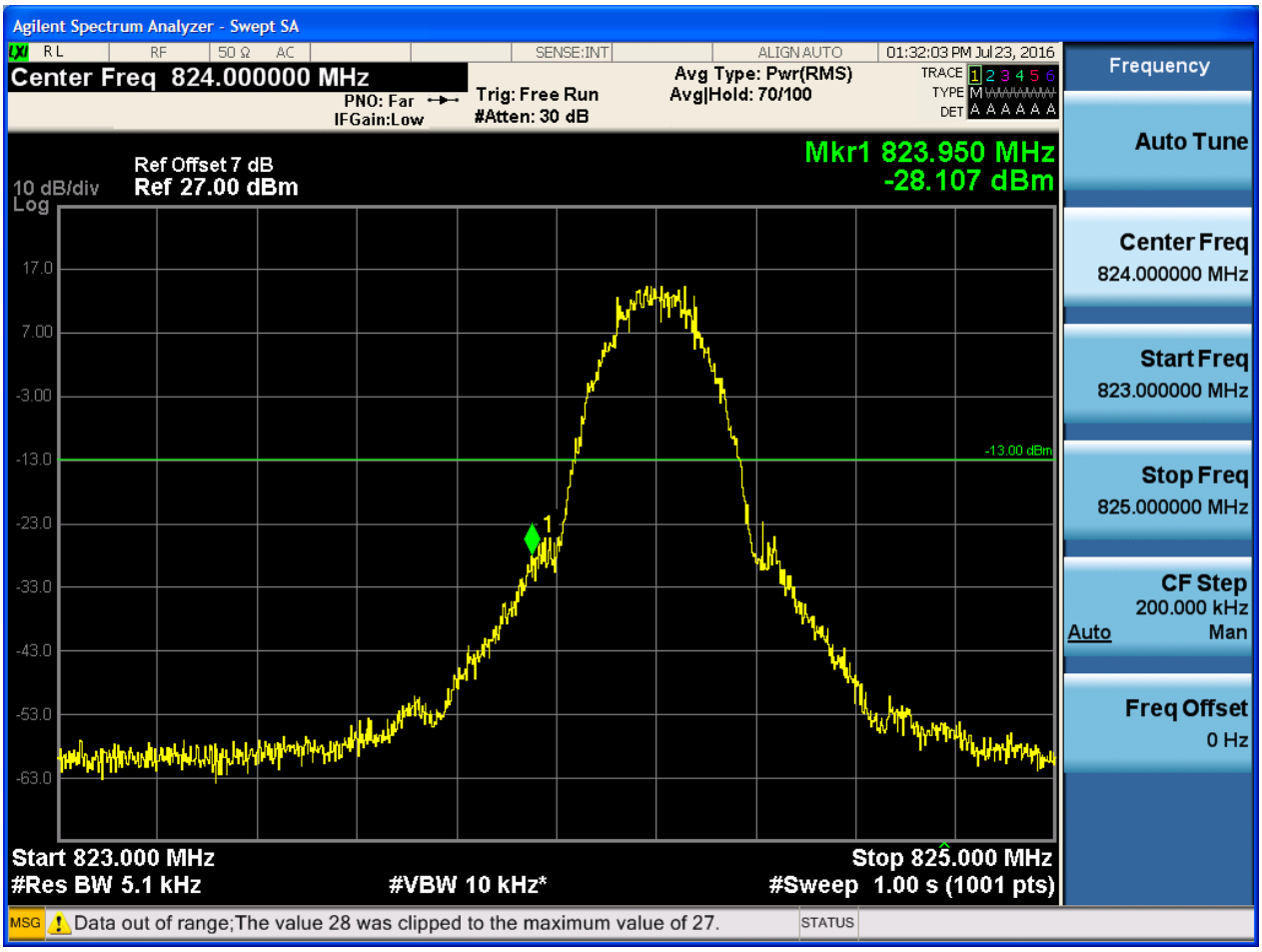


#### 5.1.1.1.2 Test Channel = HCH

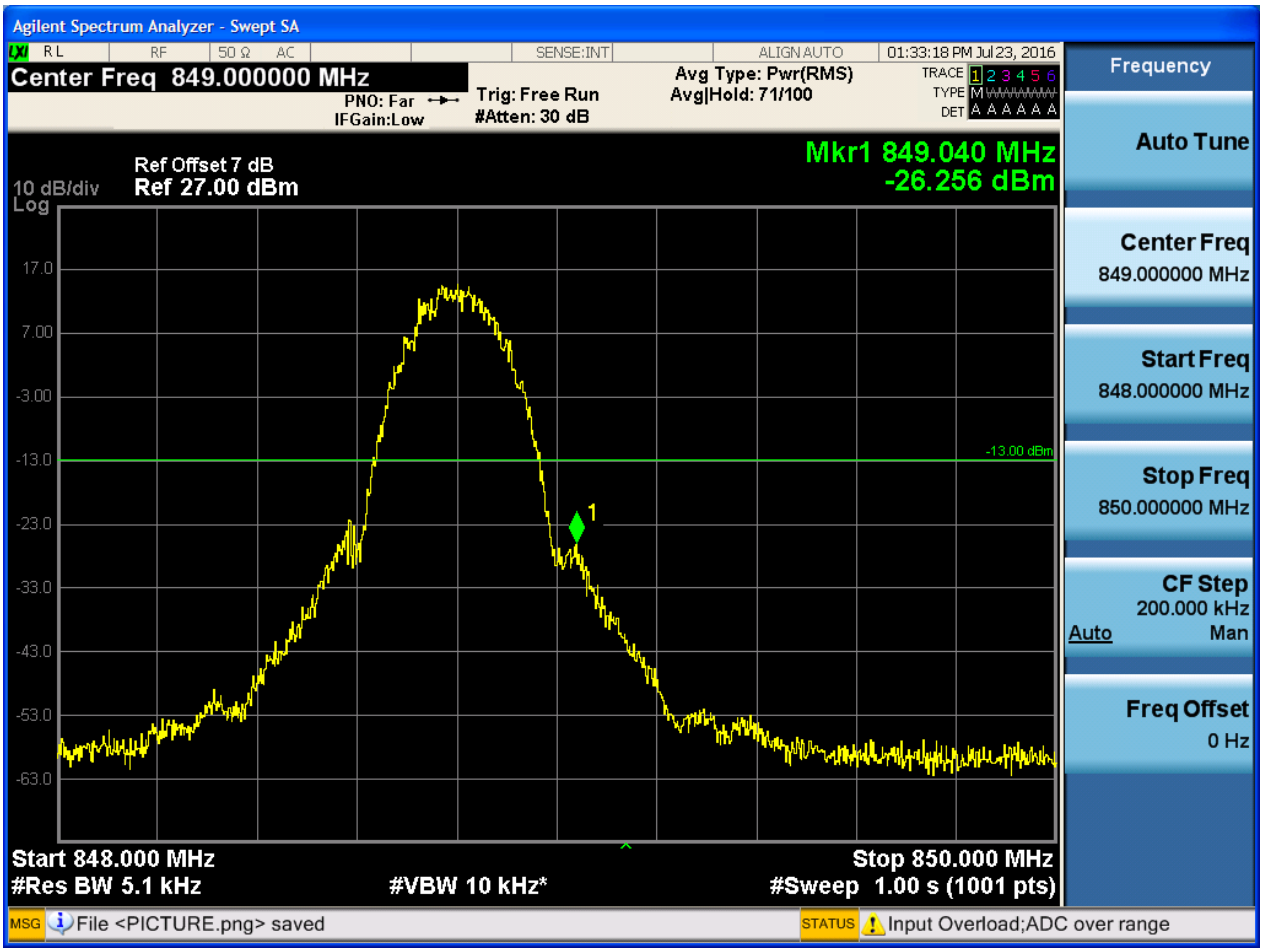


### 5.1.1.2 Test Mode = GSM/TM2

#### 5.1.1.2.1 Test Channel = LCH



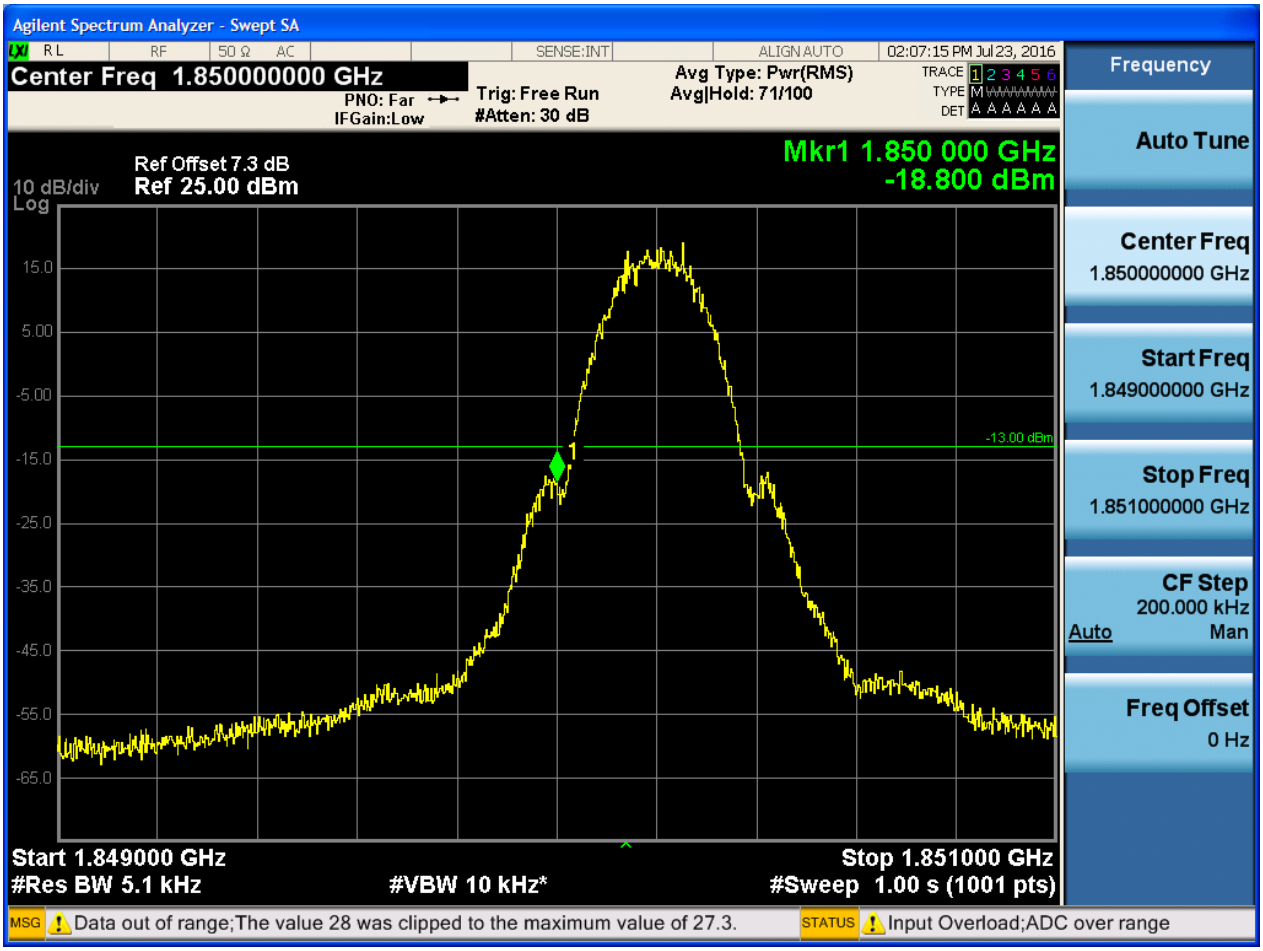
#### 5.1.1.2.2 Test Channel = HCH



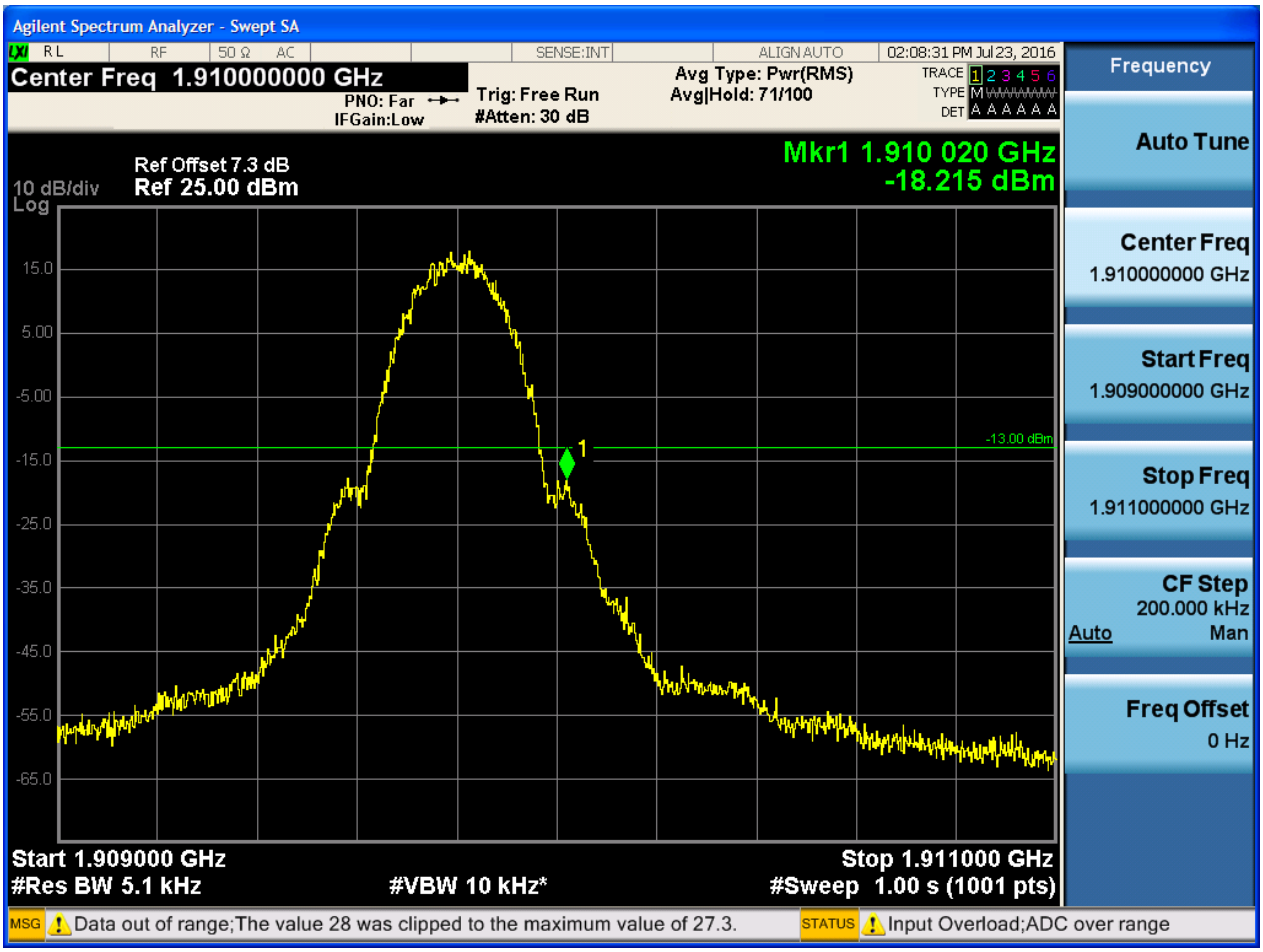
### 5.1.2 Test Band = GSM1900

#### 5.1.2.1 Test Mode = GSM/TM1

##### 5.1.2.1.1 Test Channel = LCH

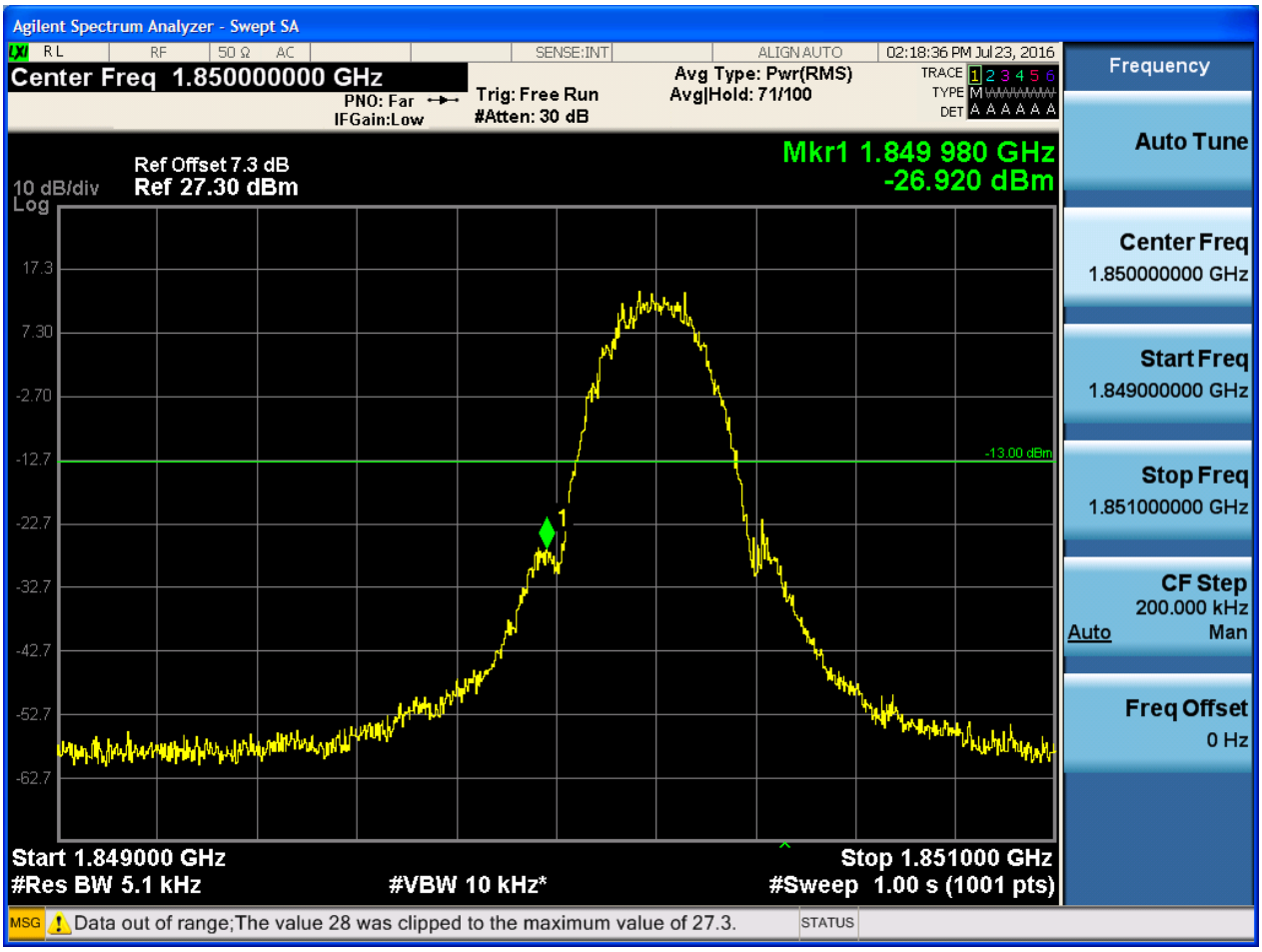


#### 5.1.2.1.2 Test Channel = HCH

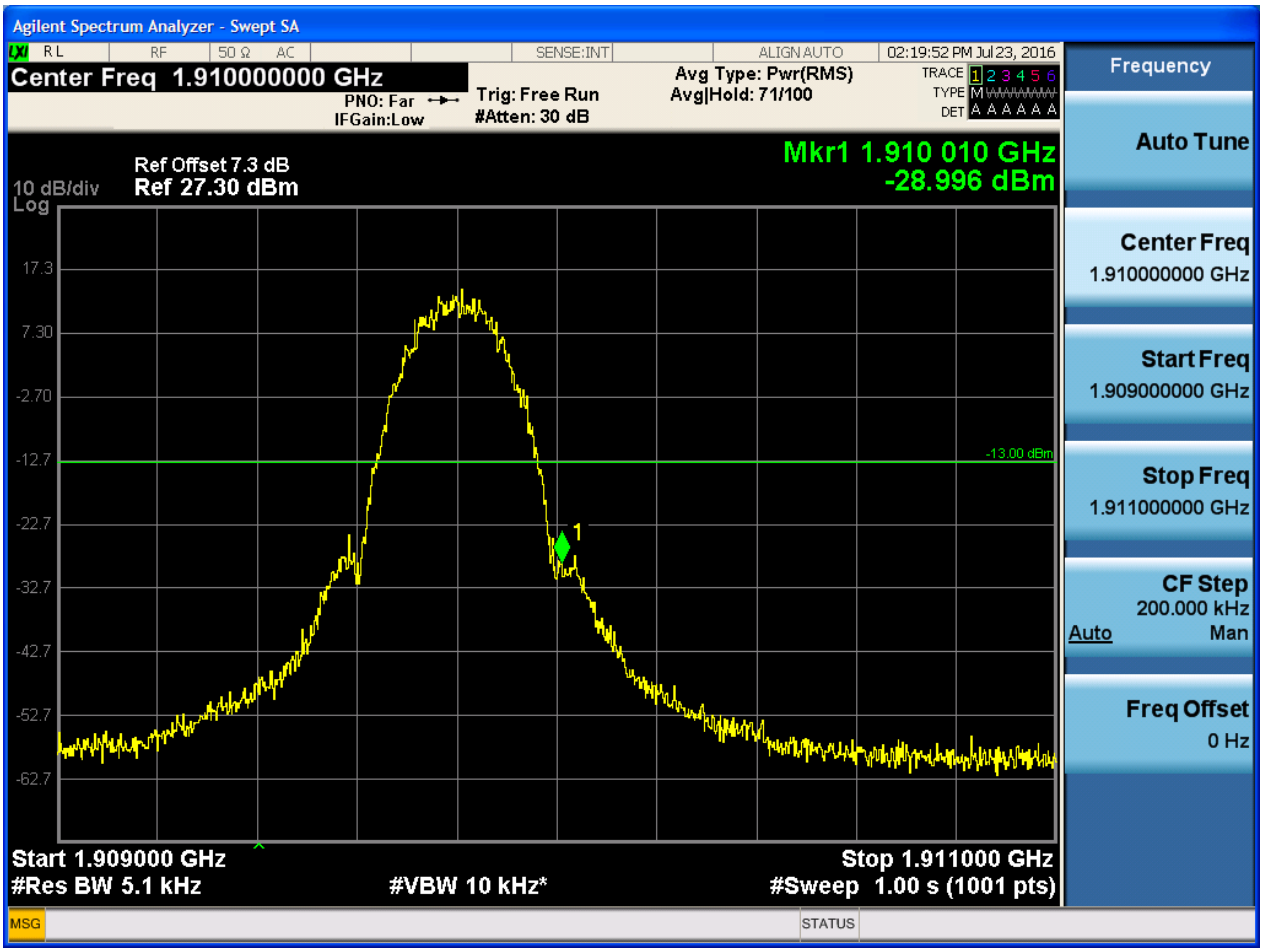


### 5.1.2.2 Test Mode = GSM/TM2

#### 5.1.2.2.1 Test Channel = LCH



#### 5.1.2.2.2 Test Channel = HCH

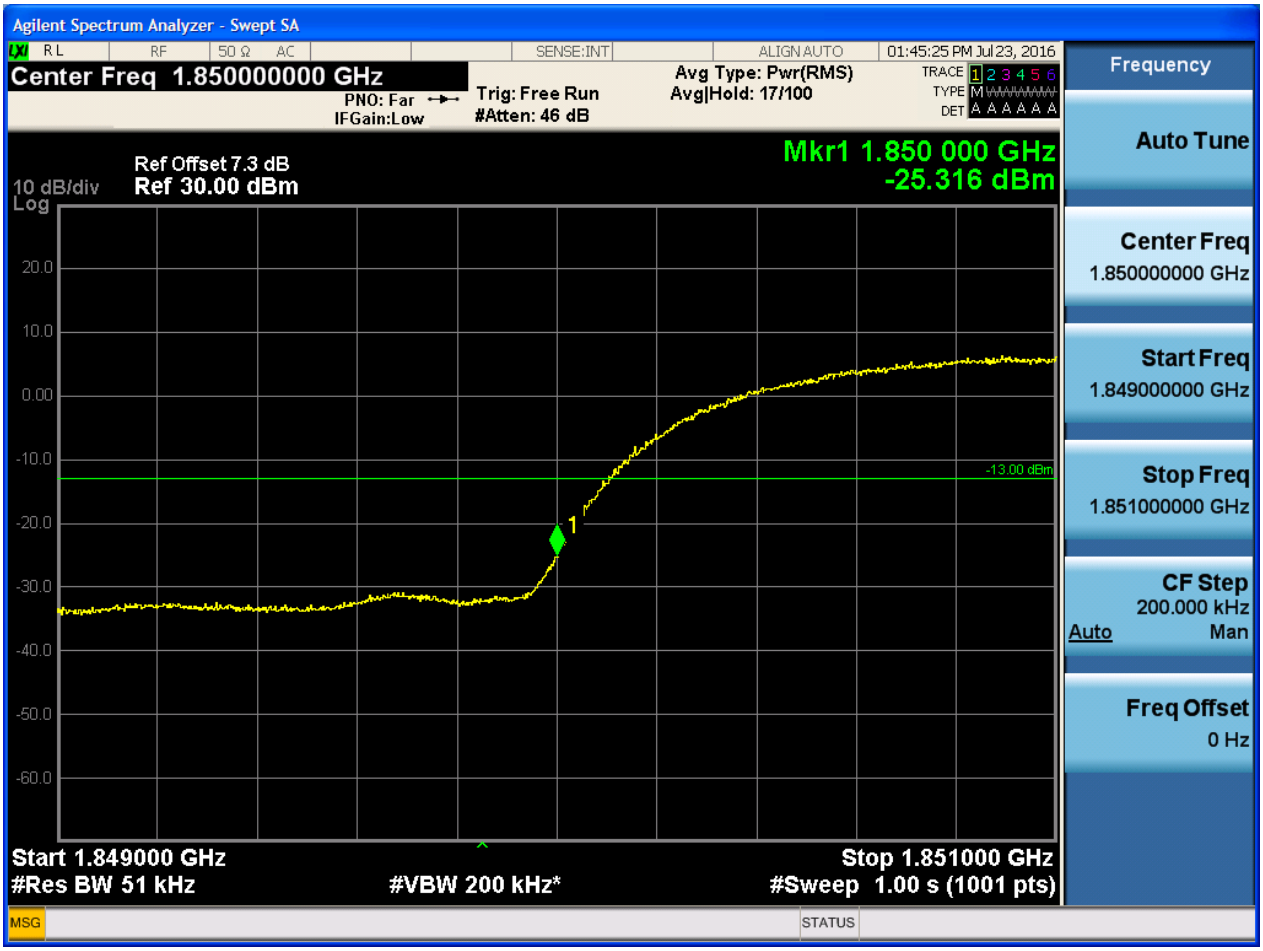


## 5.2 For UMTS

### 5.2.1 Test Band = WCDMA1900

#### 5.2.1.1 Test Mode = UMTS/TM1

##### 5.2.1.1.1 Test Channel = LCH

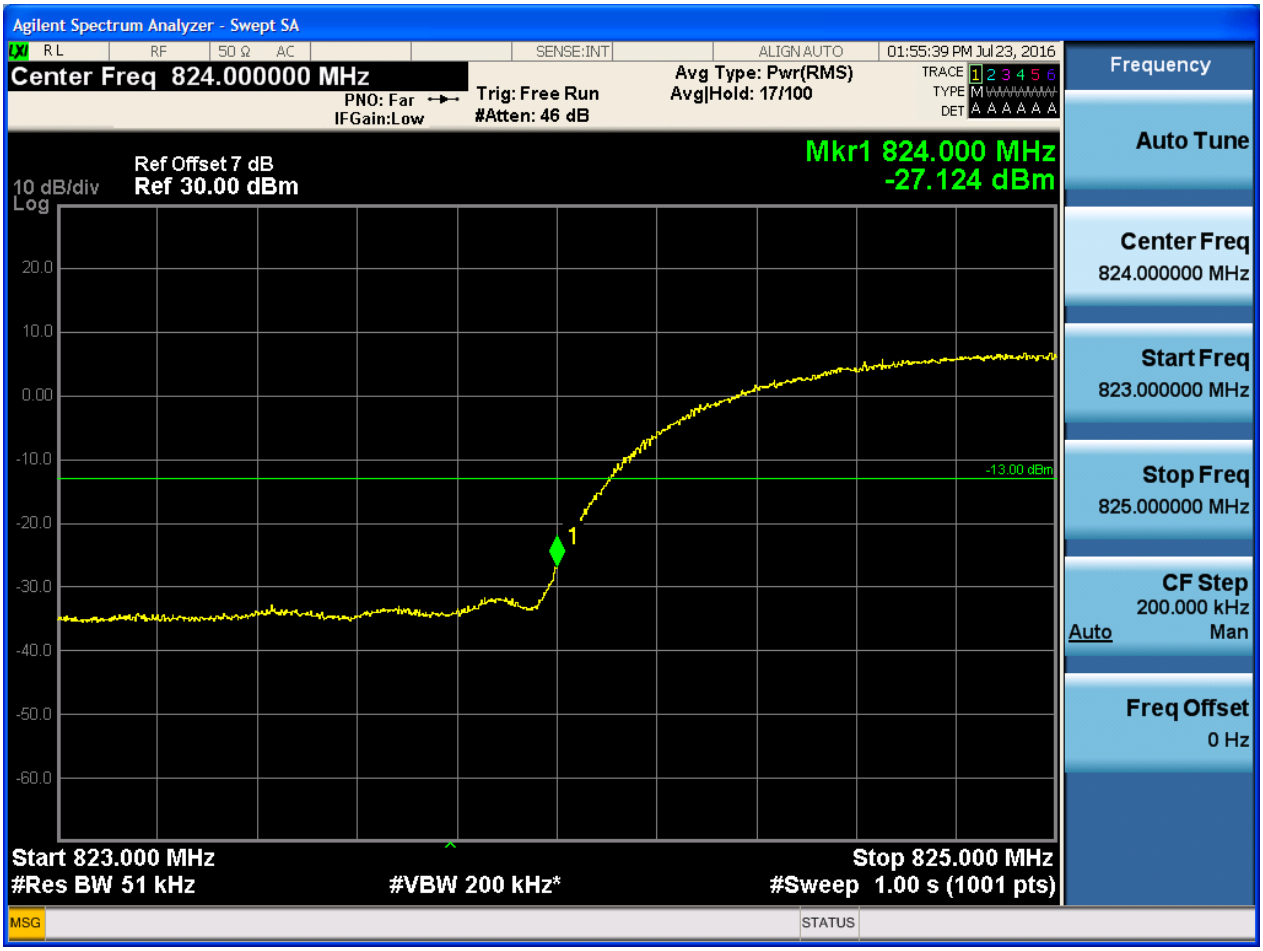


#### 5.2.1.1.2 Test Channel = HCH

### 5.2.2 Test Band = WCDMA850

#### 5.2.2.1 Test Mode = UMTS/TM1

##### 5.2.2.1.1 Test Channel = LCH



#### 5.2.2.1.2 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.

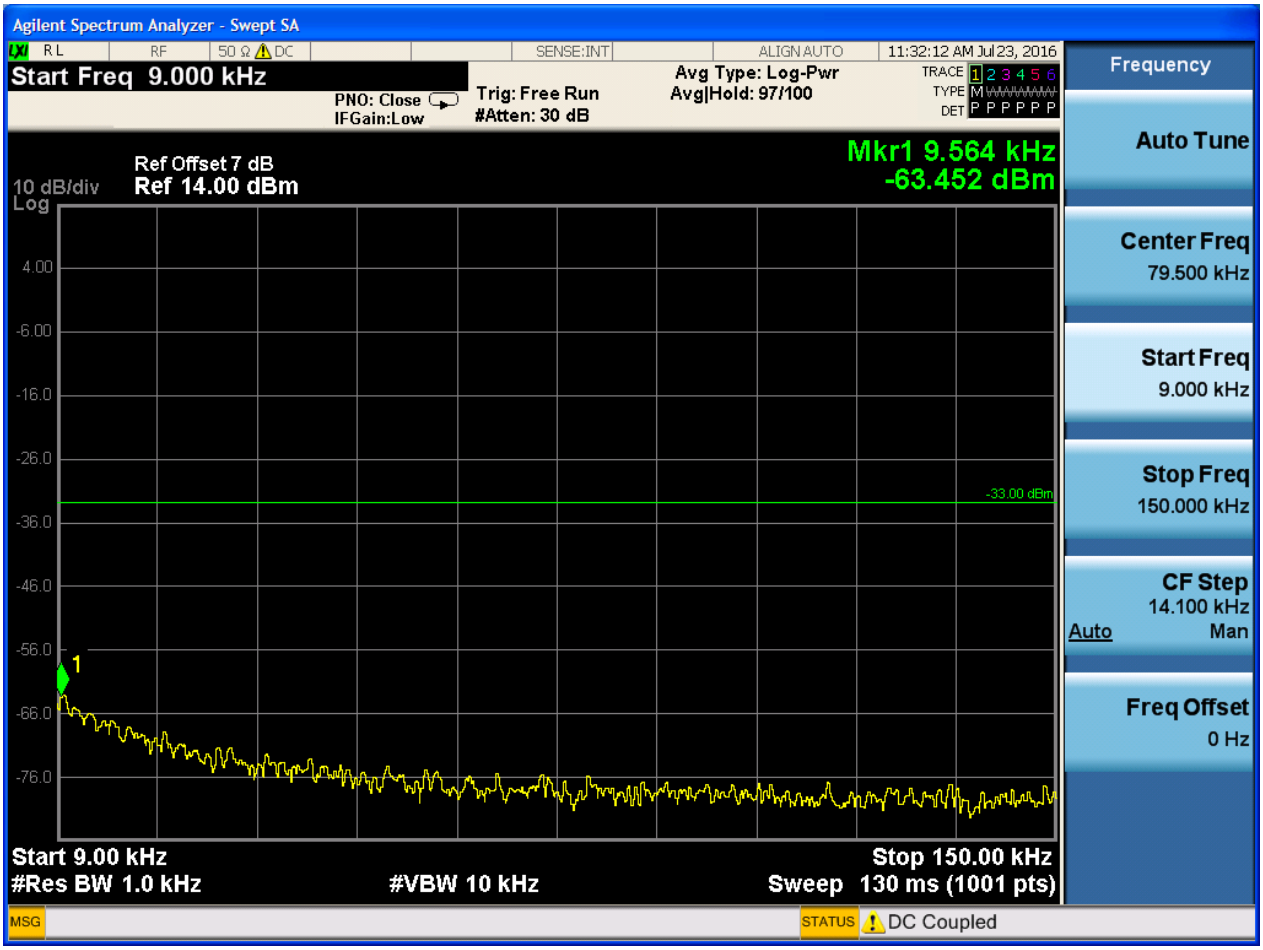
**Part I - Test Plots**

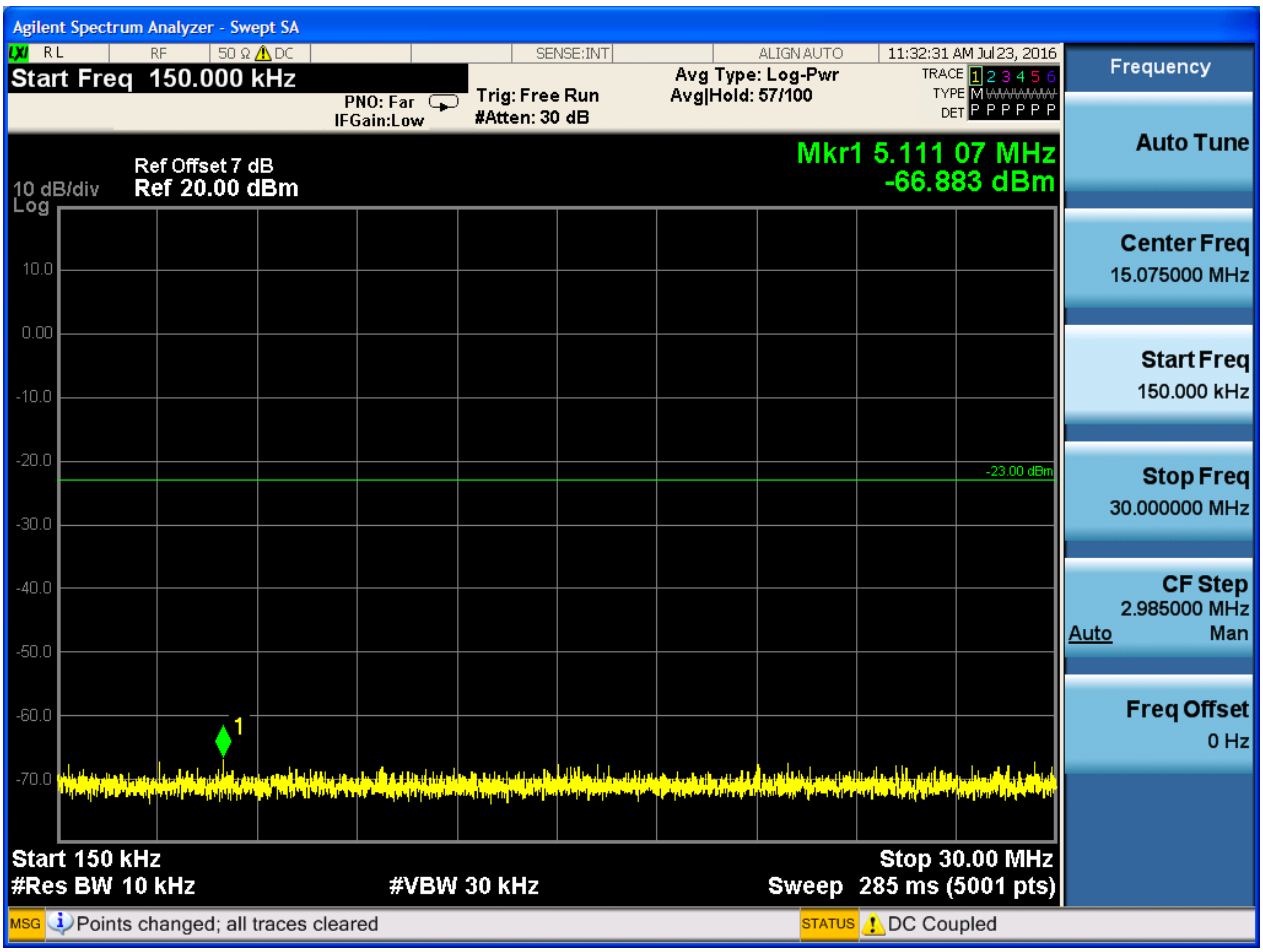
**6.1 For GSM**

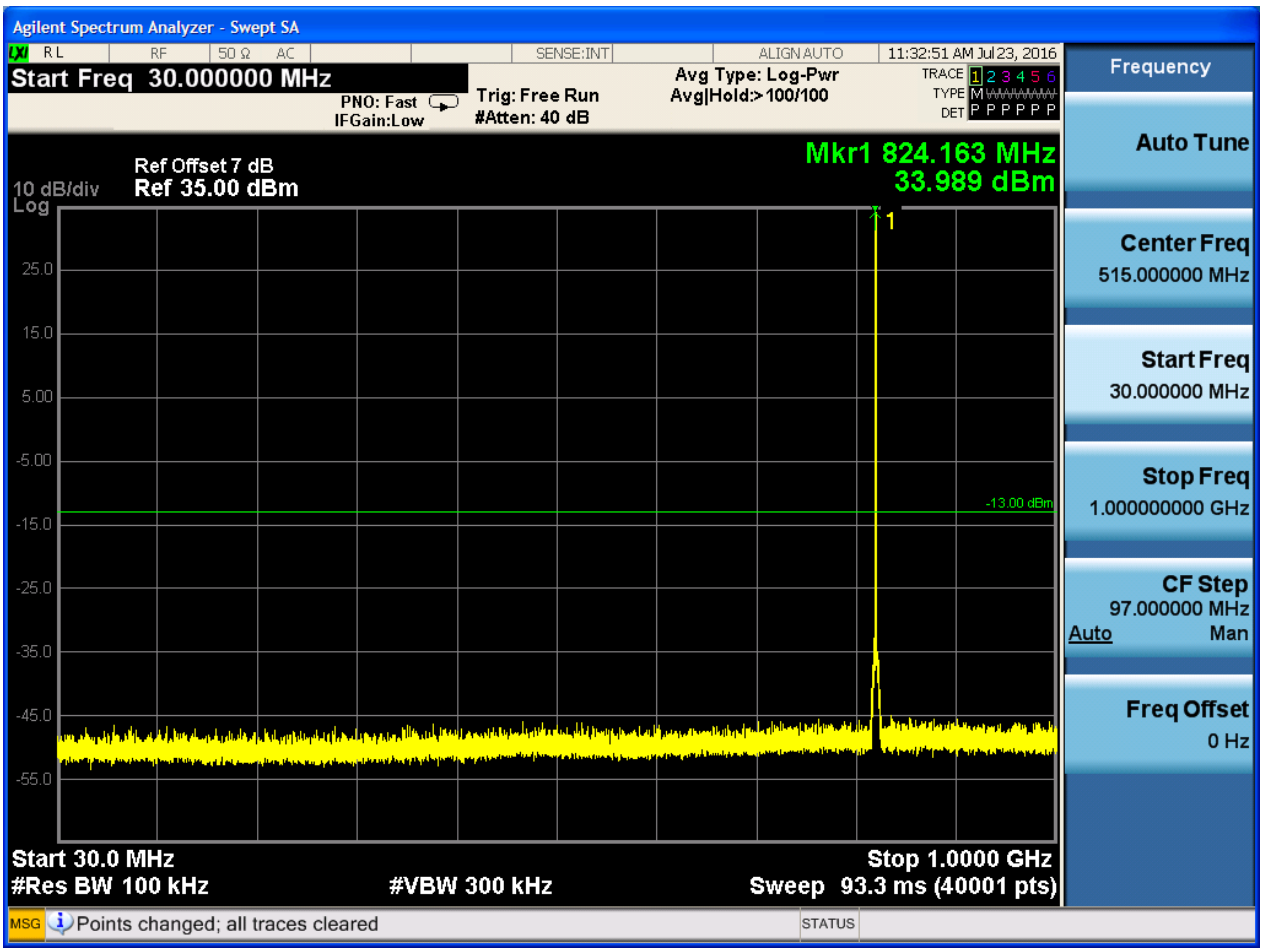
**6.1.1 Test Band = GSM850**

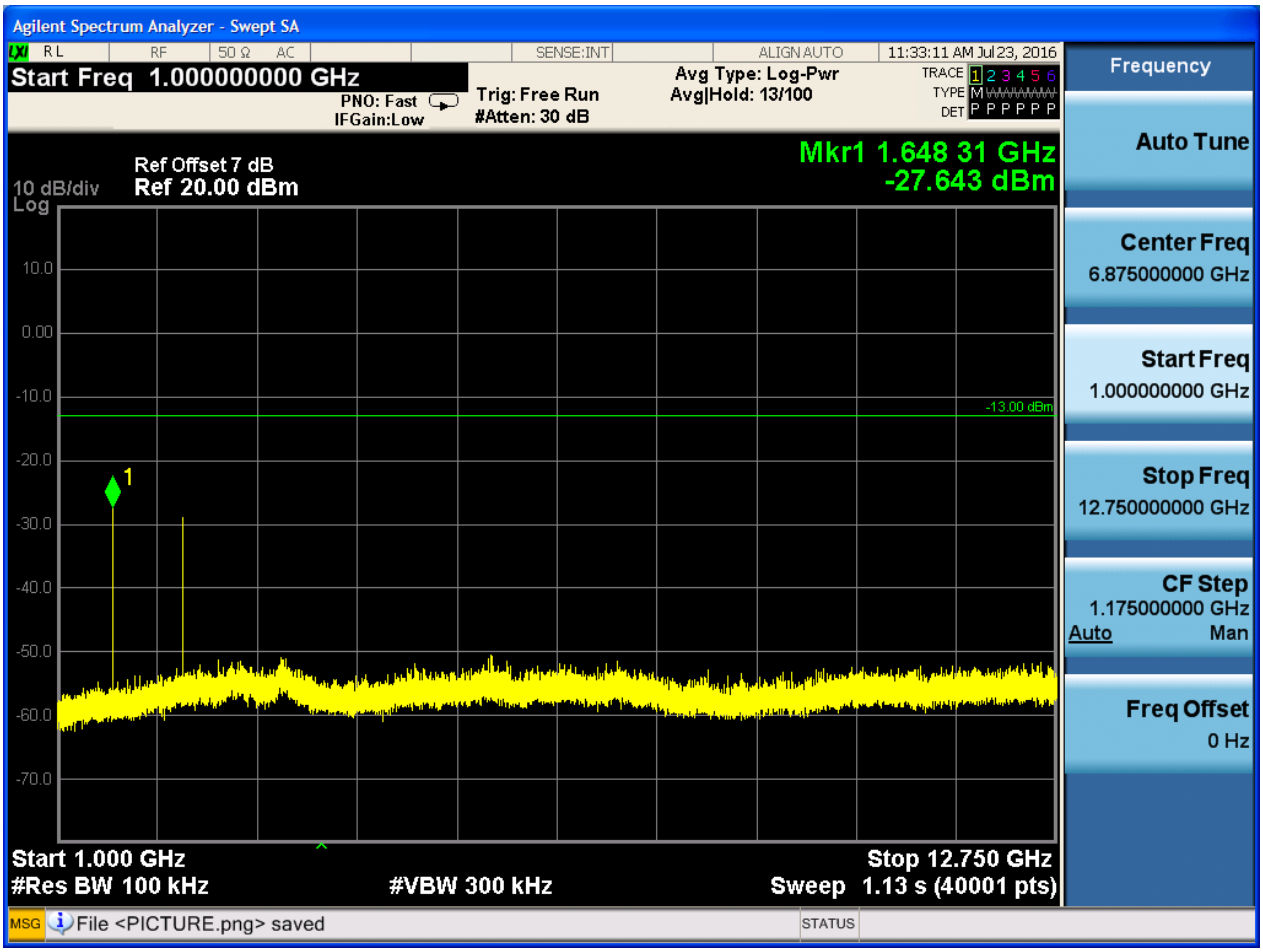
**6.1.1.1 Test Mode = GSM/TM1**

**6.1.1.1.1 Test Channel = LCH**

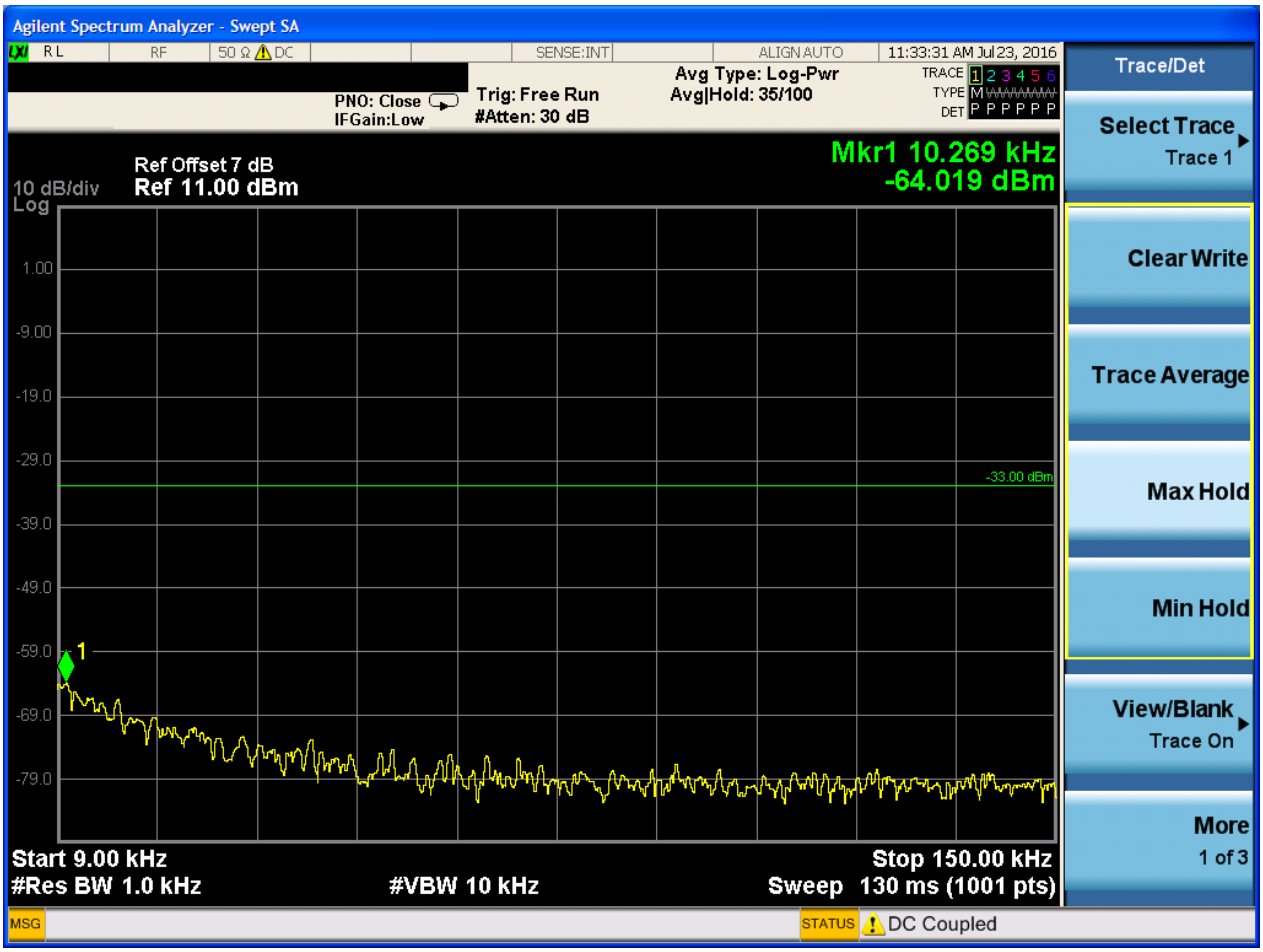


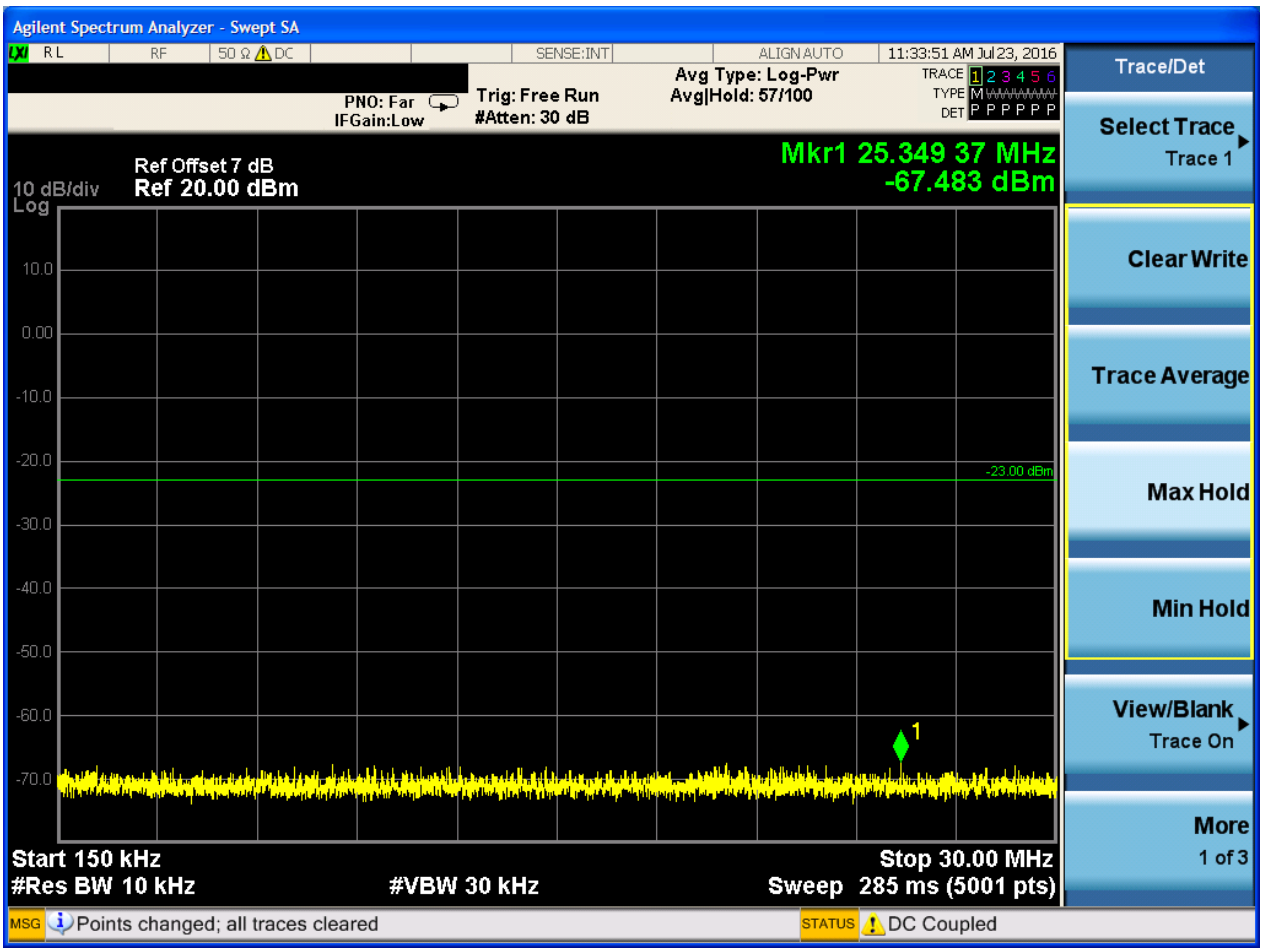


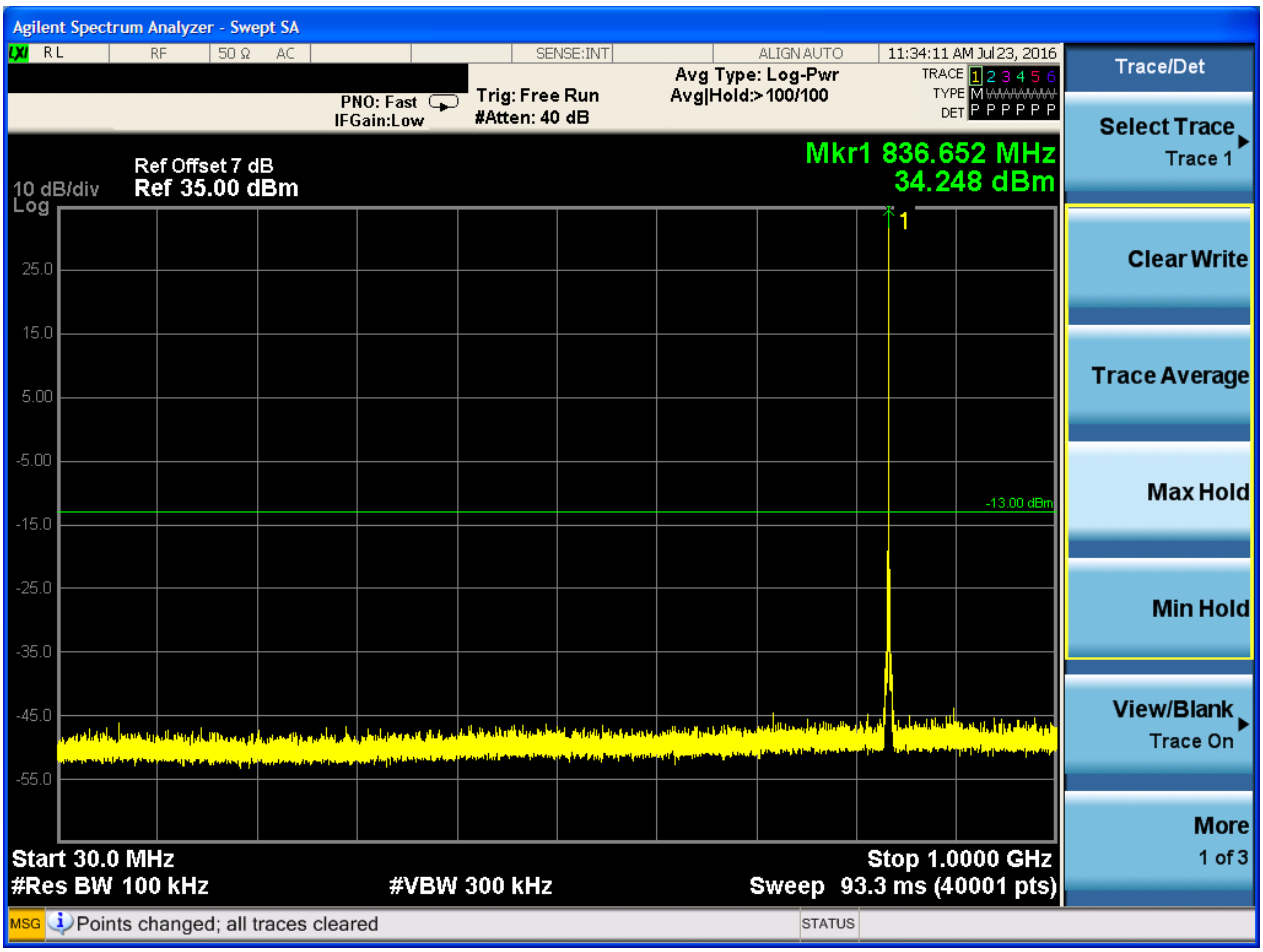


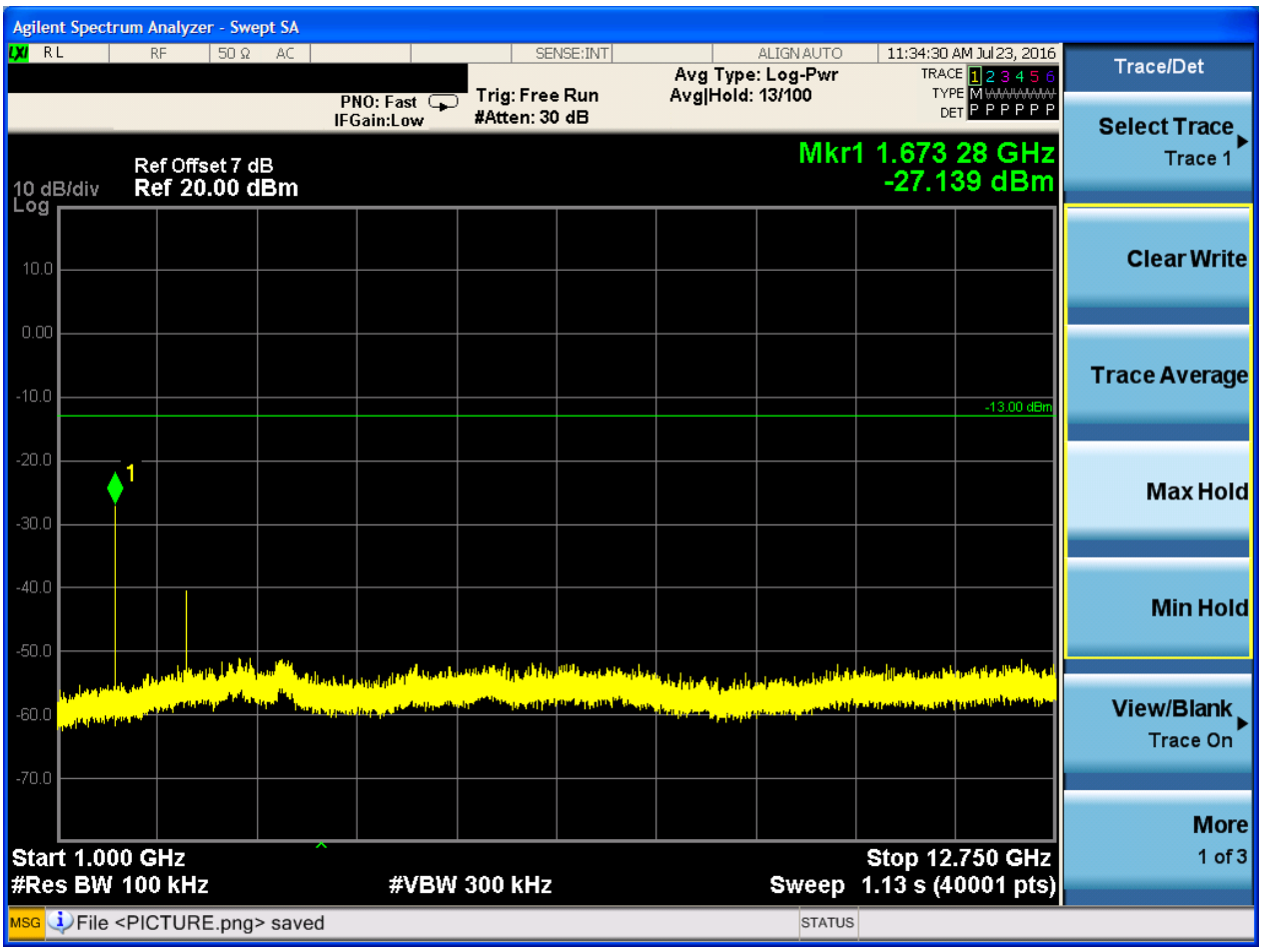


#### 6.1.1.1.2 Test Channel = MCH

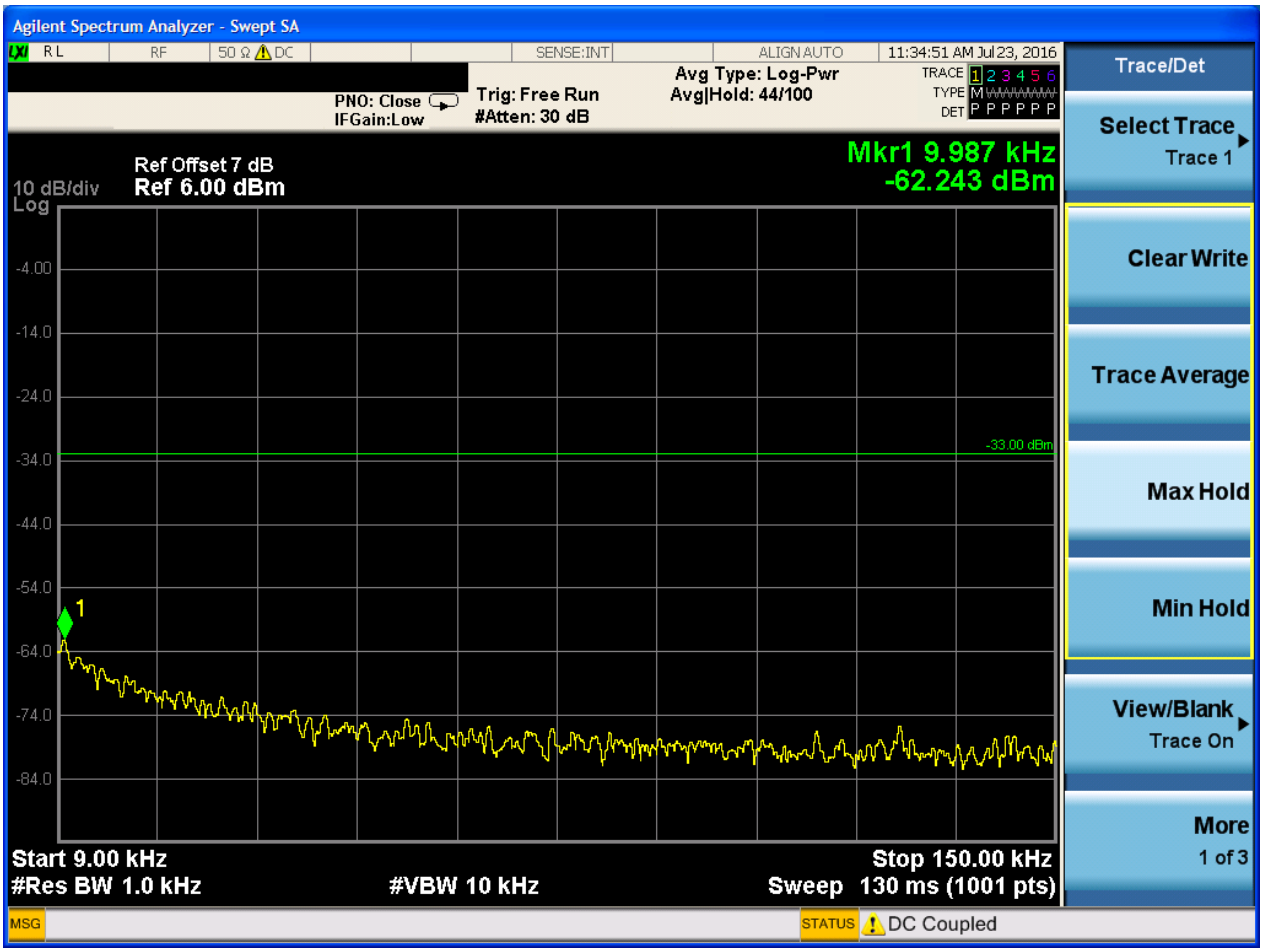


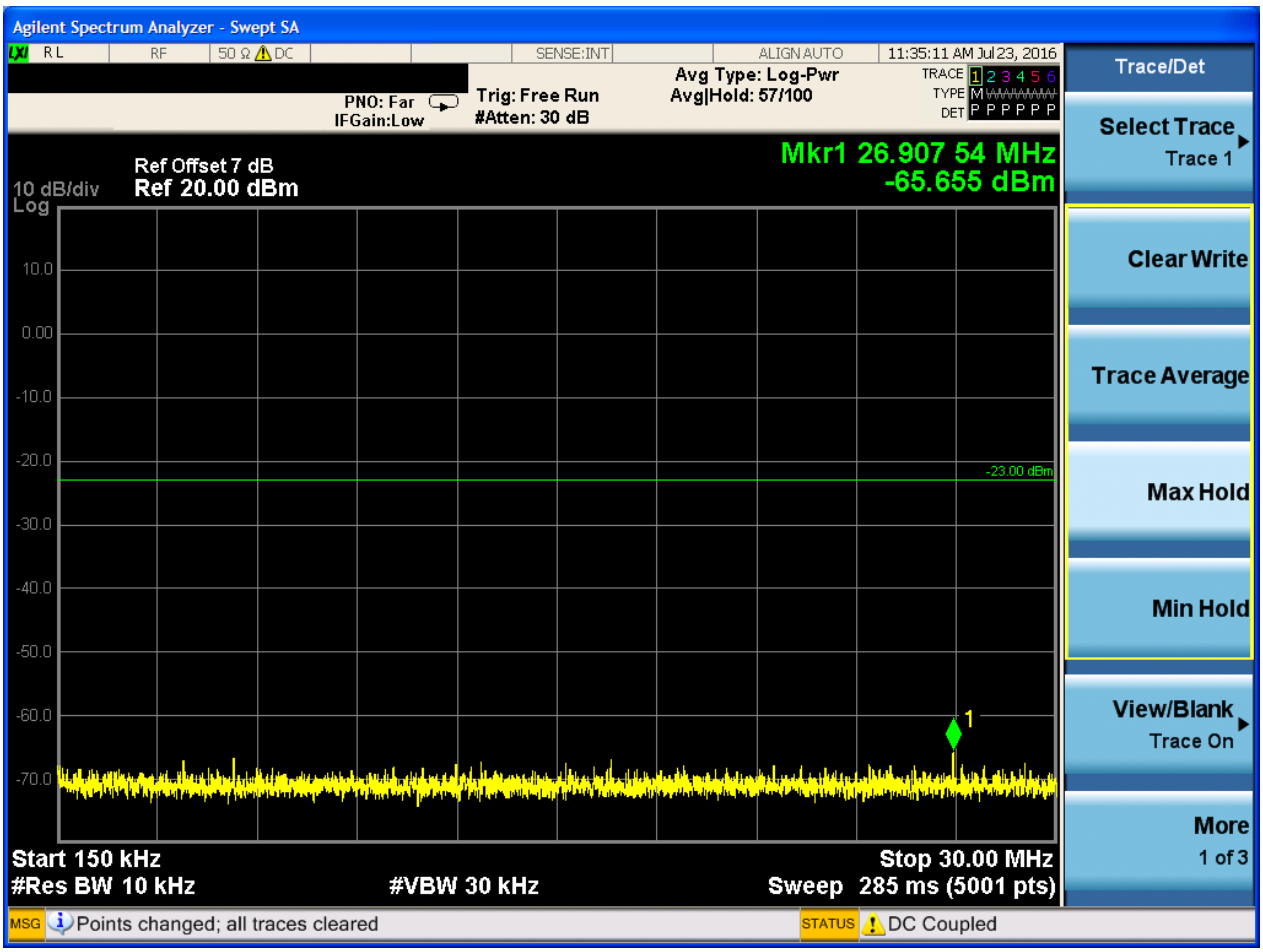


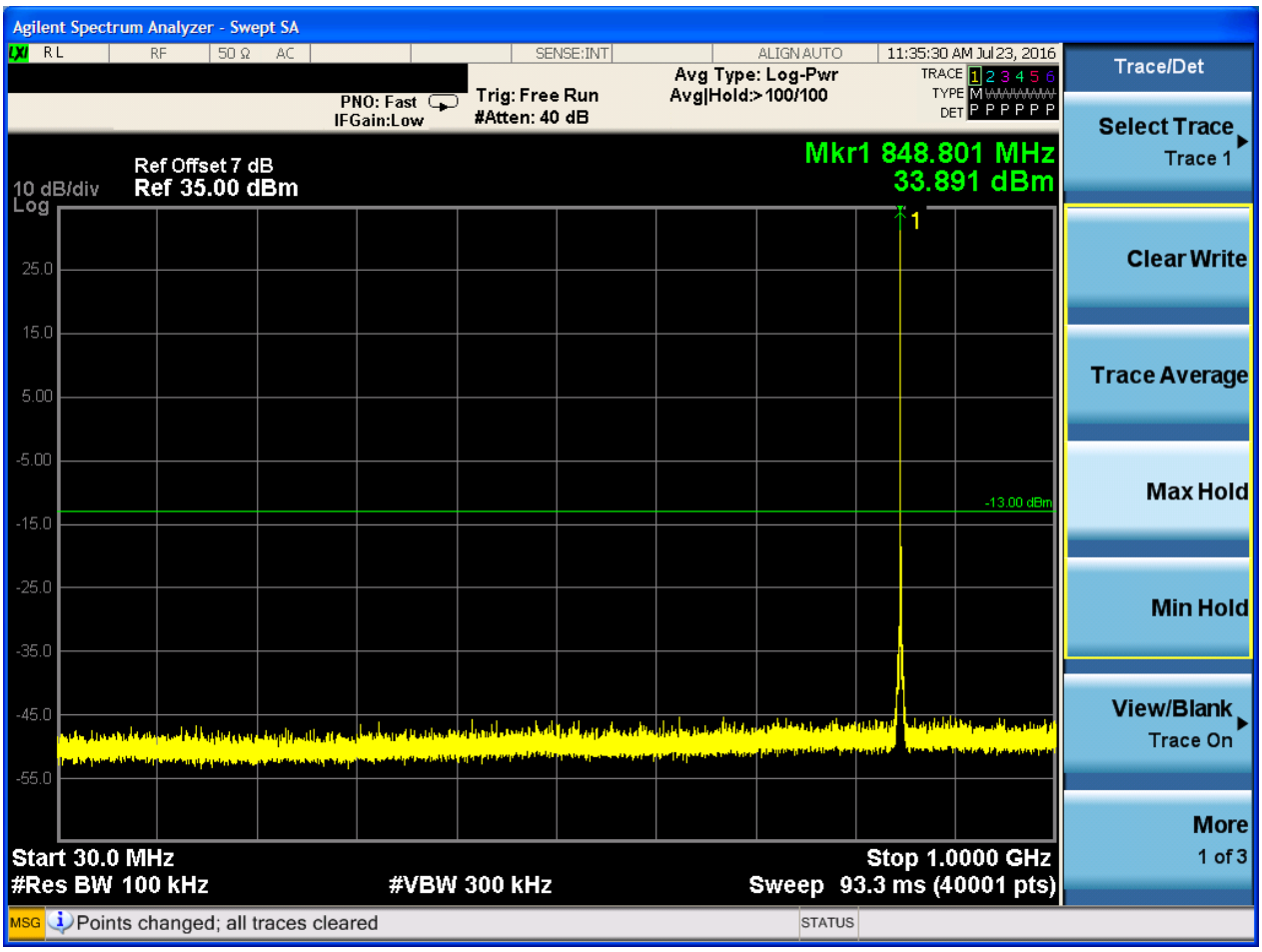


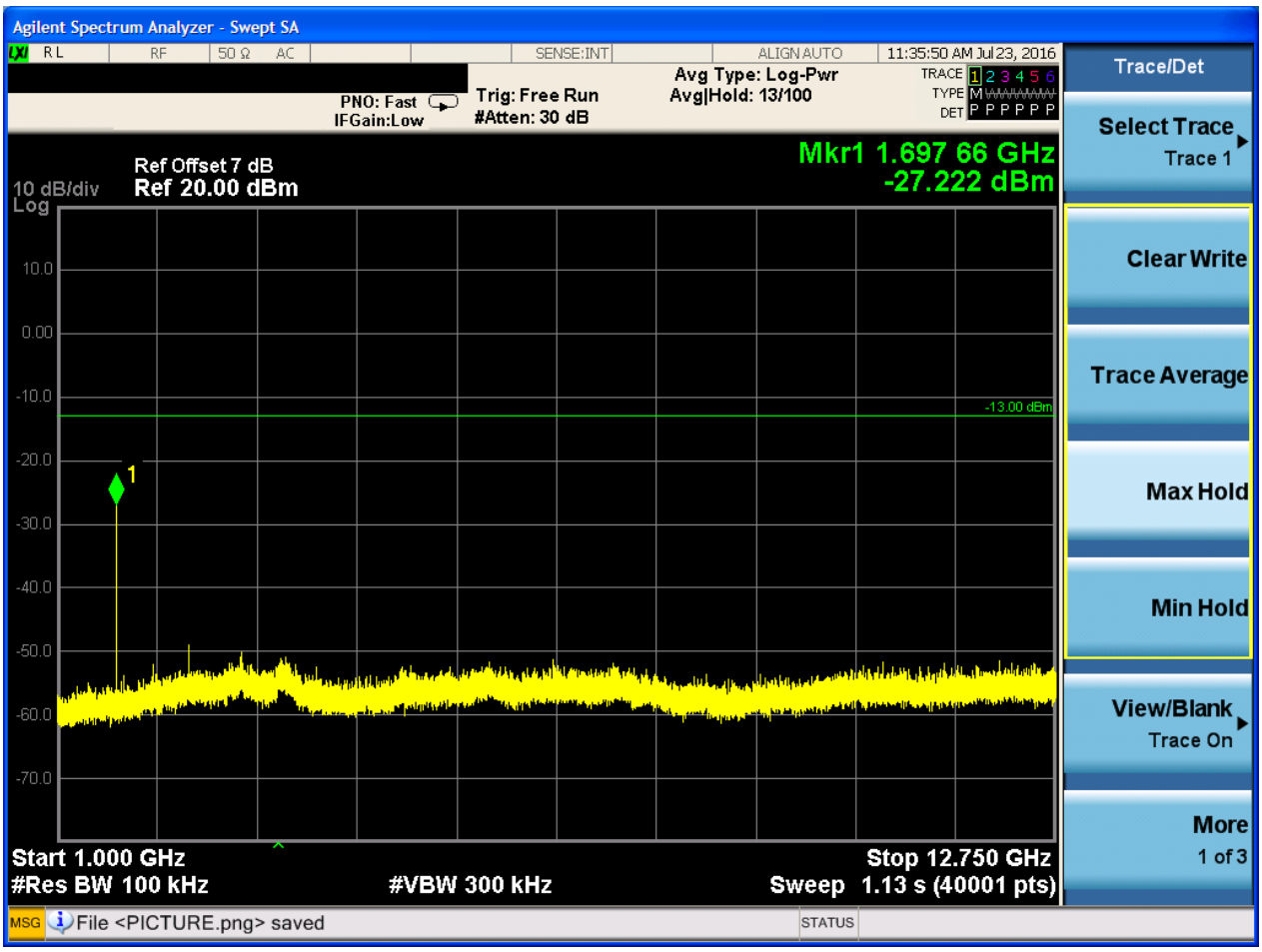


### 6.1.1.1.3 Test Channel = HCH



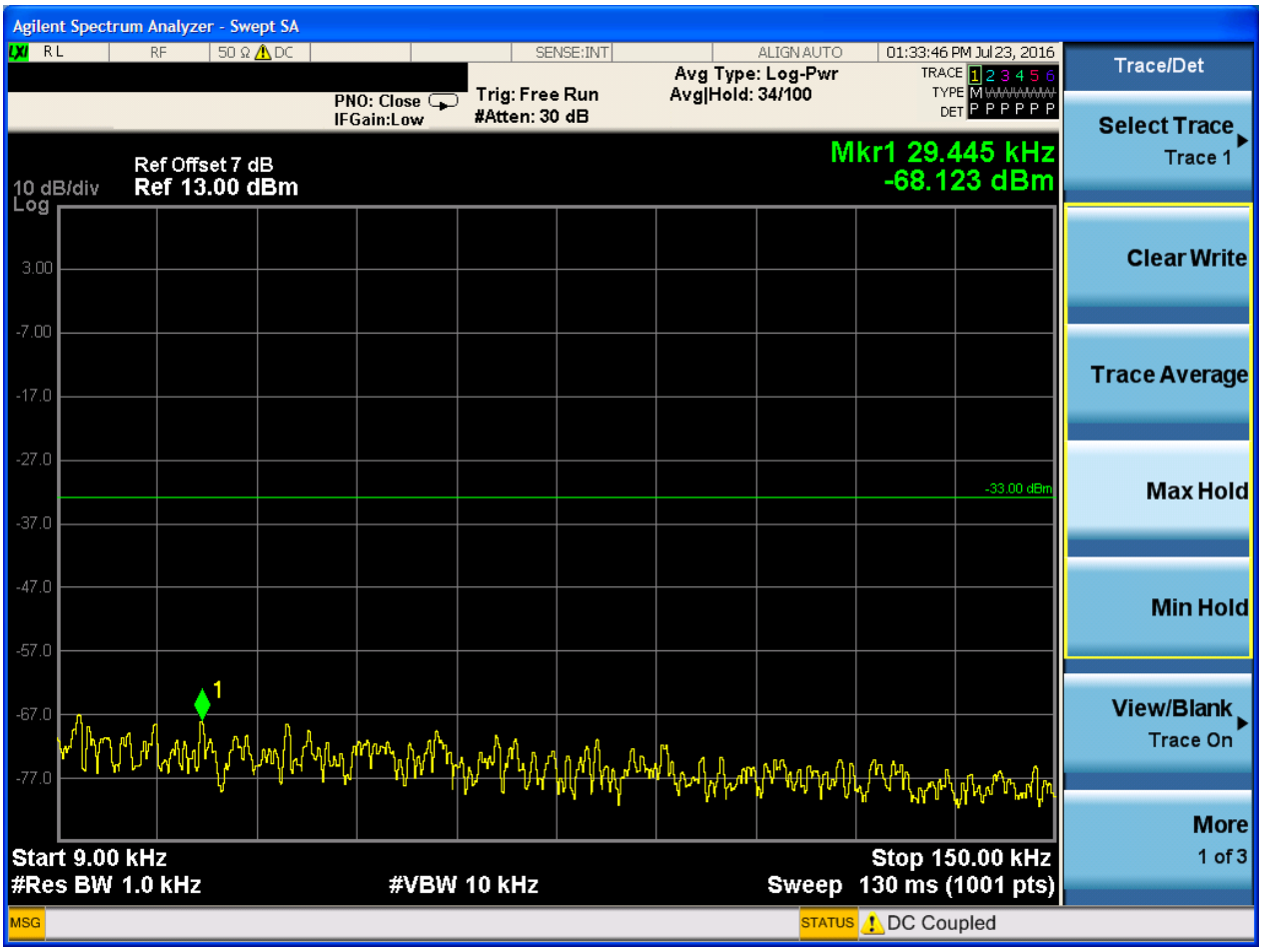


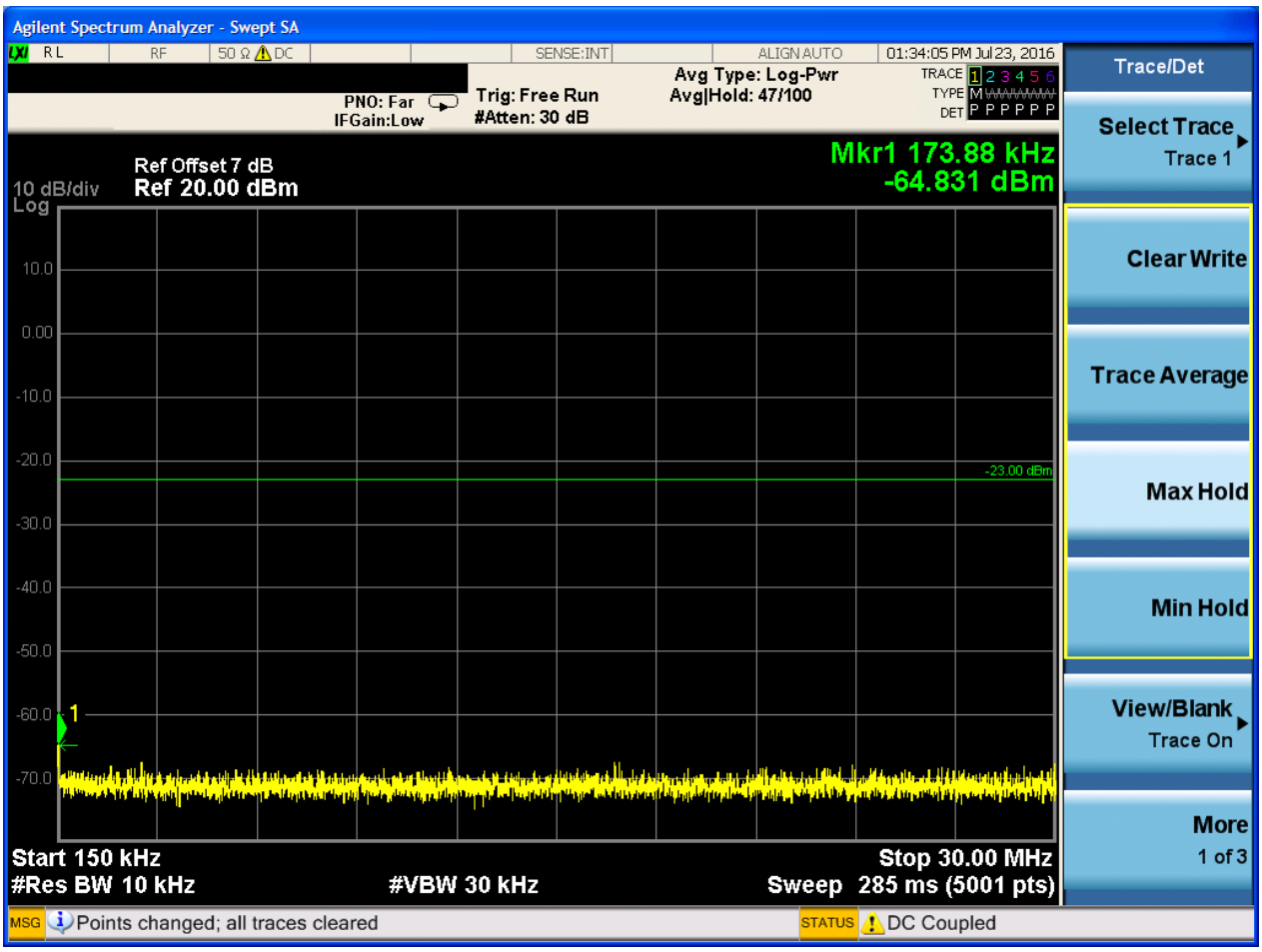


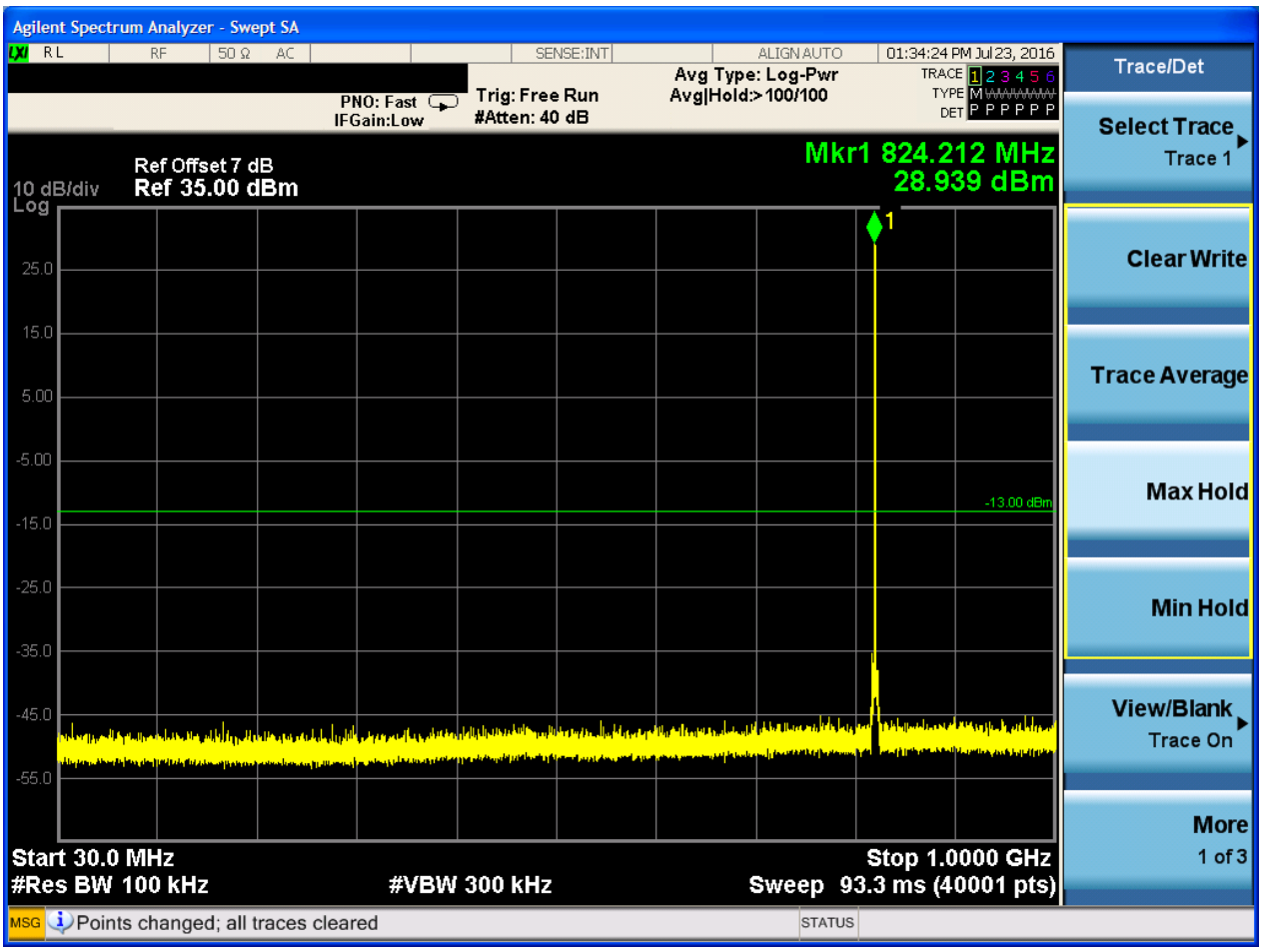


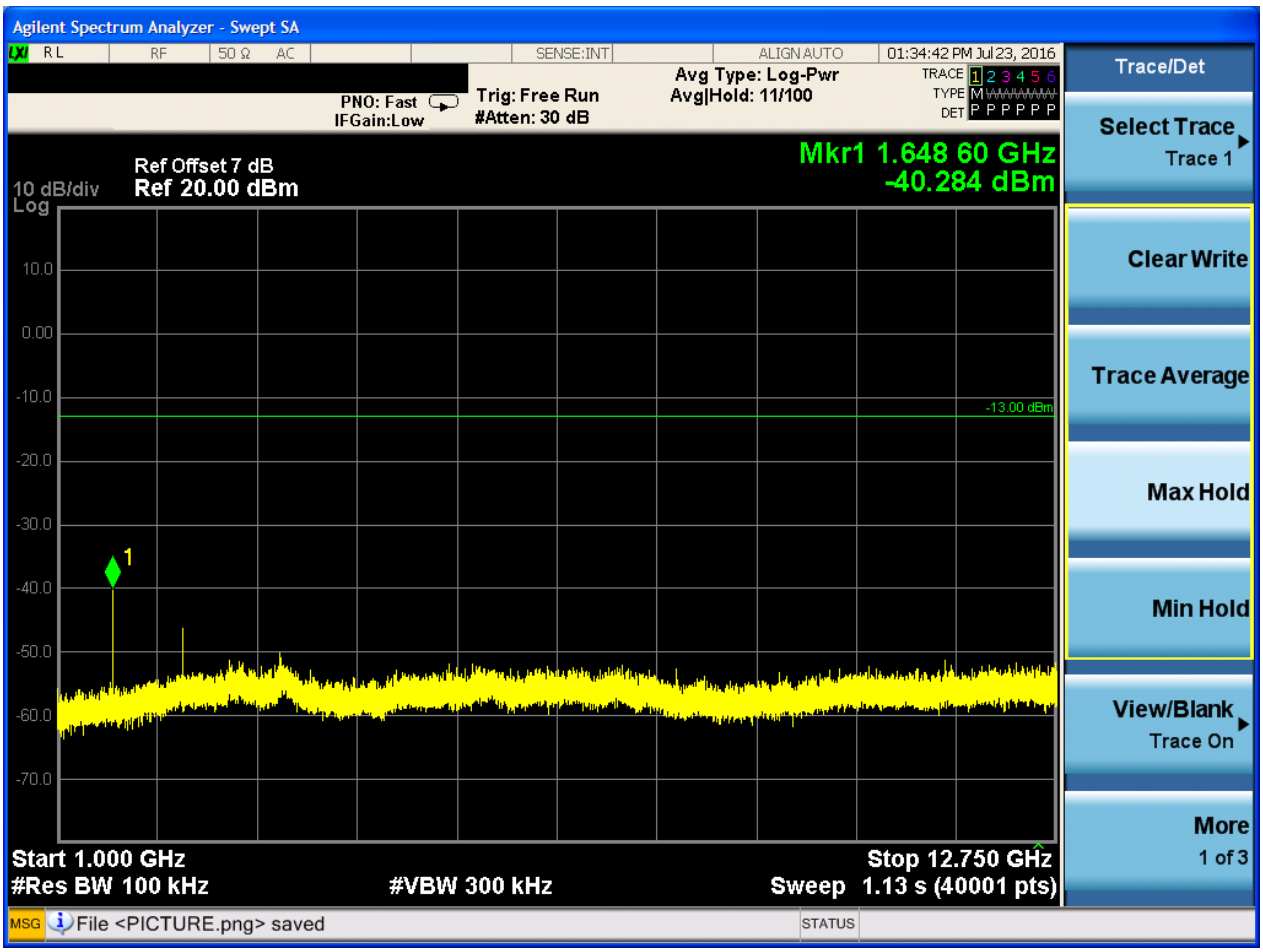
### 6.1.1.2 Test Mode = GSM/TM2

#### 6.1.1.2.1 Test Channel = LCH

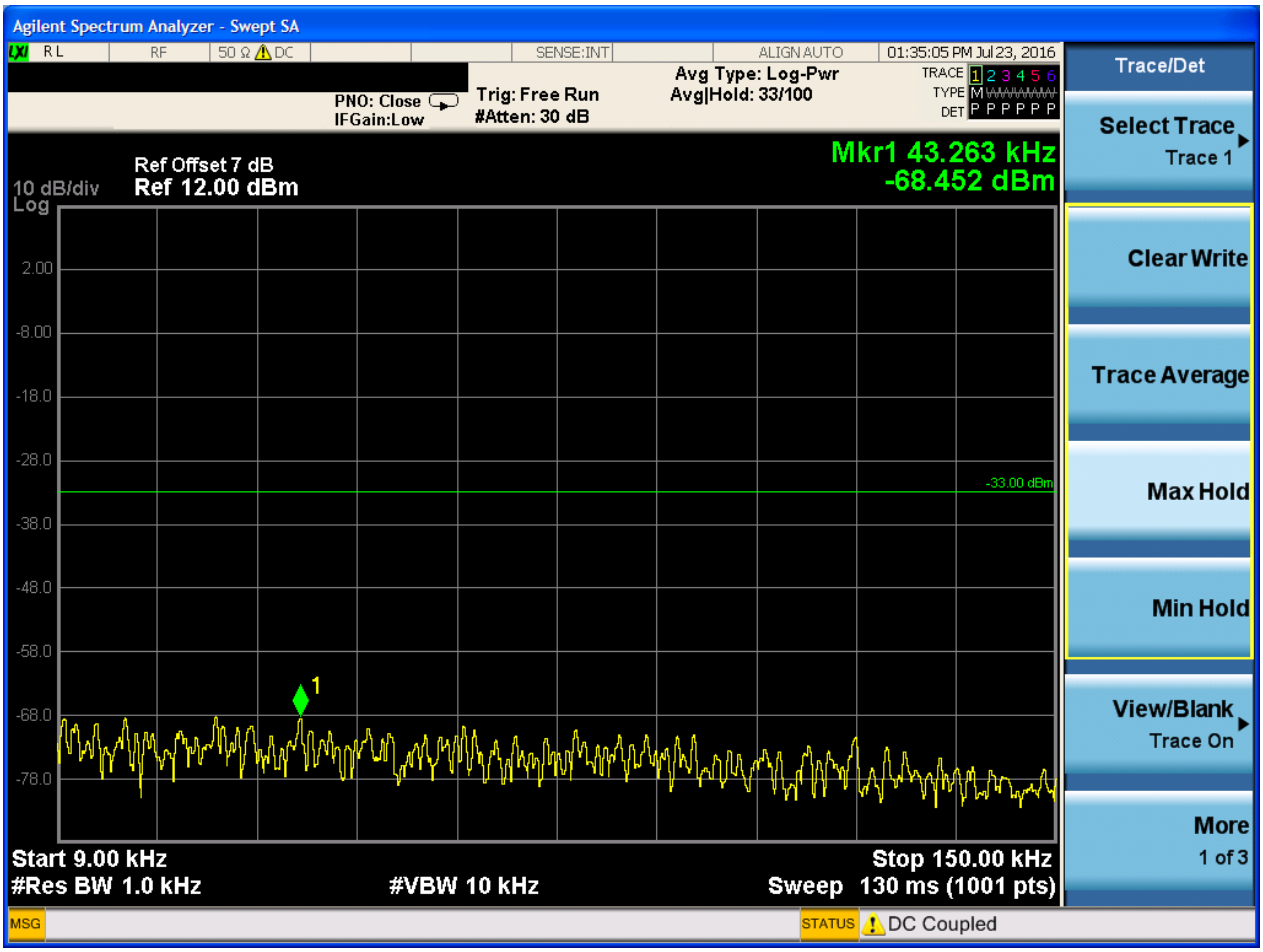


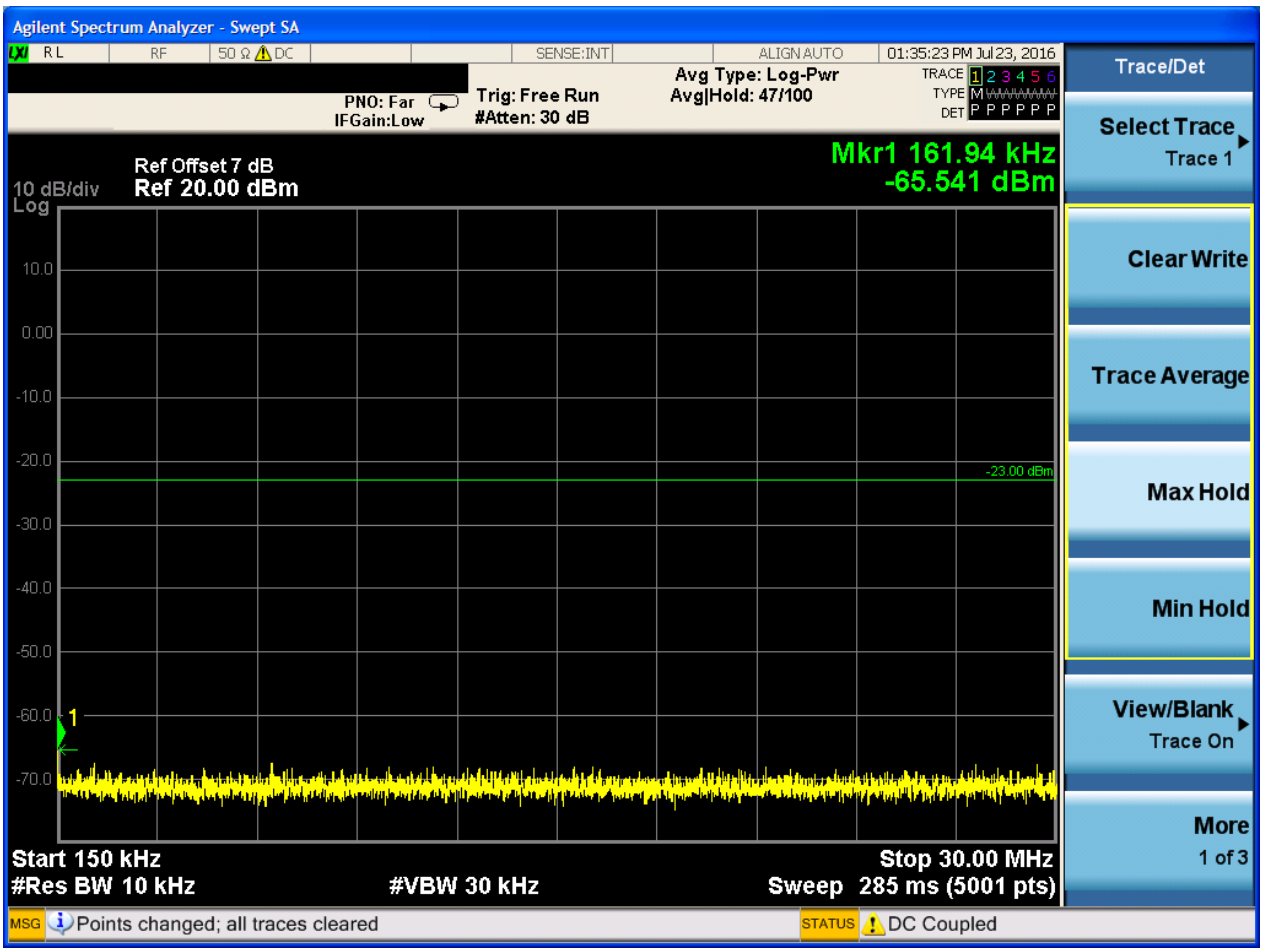

Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
01:34:05 PM Jul 23, 2016
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 47/100
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P P
Ref Offset 7 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 173.88 kHz
-64.831 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-23.00 dBm
1
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz
Stop 30.00 MHz
Sweep 285 ms (5001 pts)
MSG
Points changed; all traces cleared
STATUS
DC Coupled
Trace/Det
Select Trace
Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View/Blank
Trace On
More
1 of 3

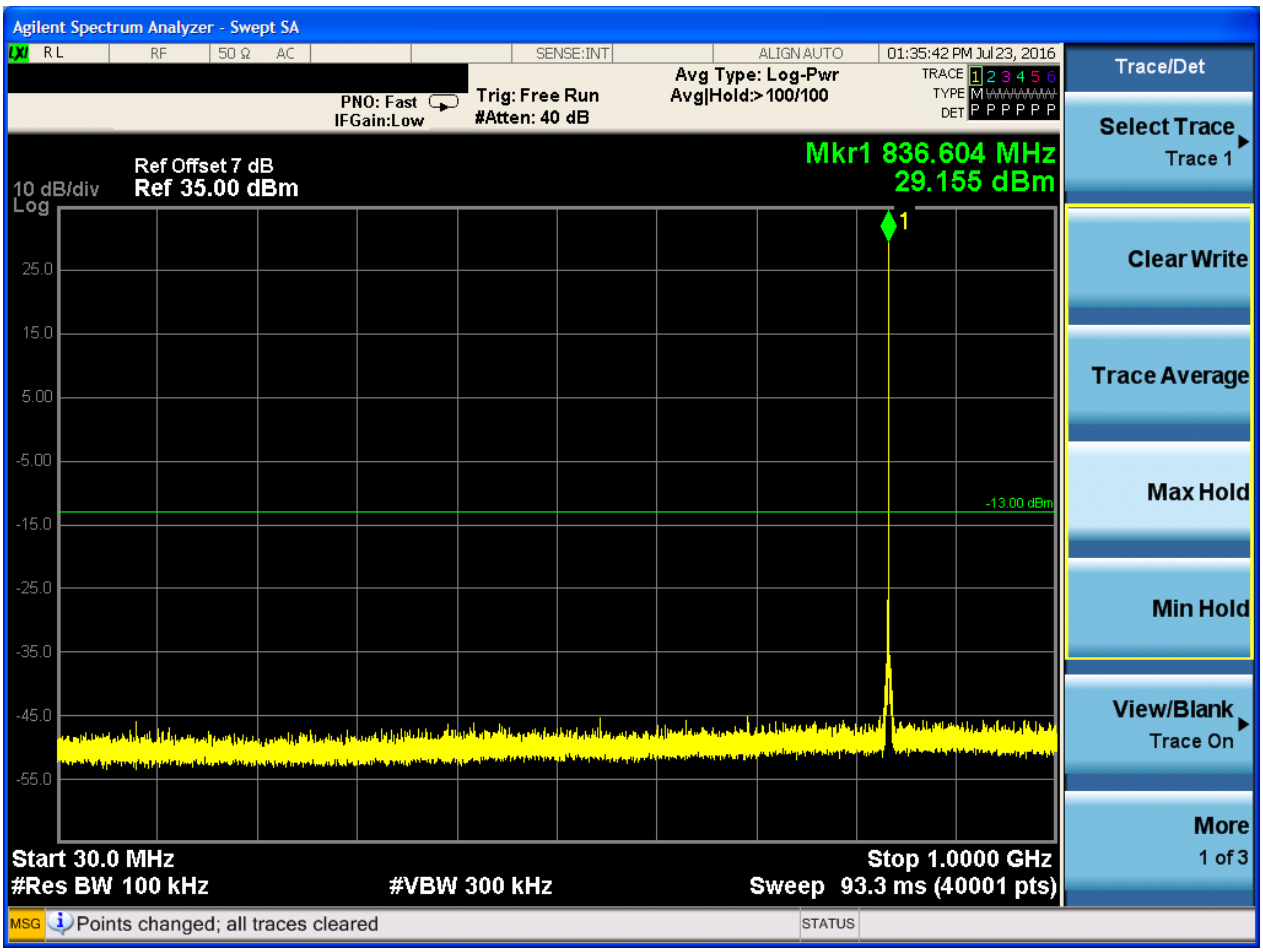


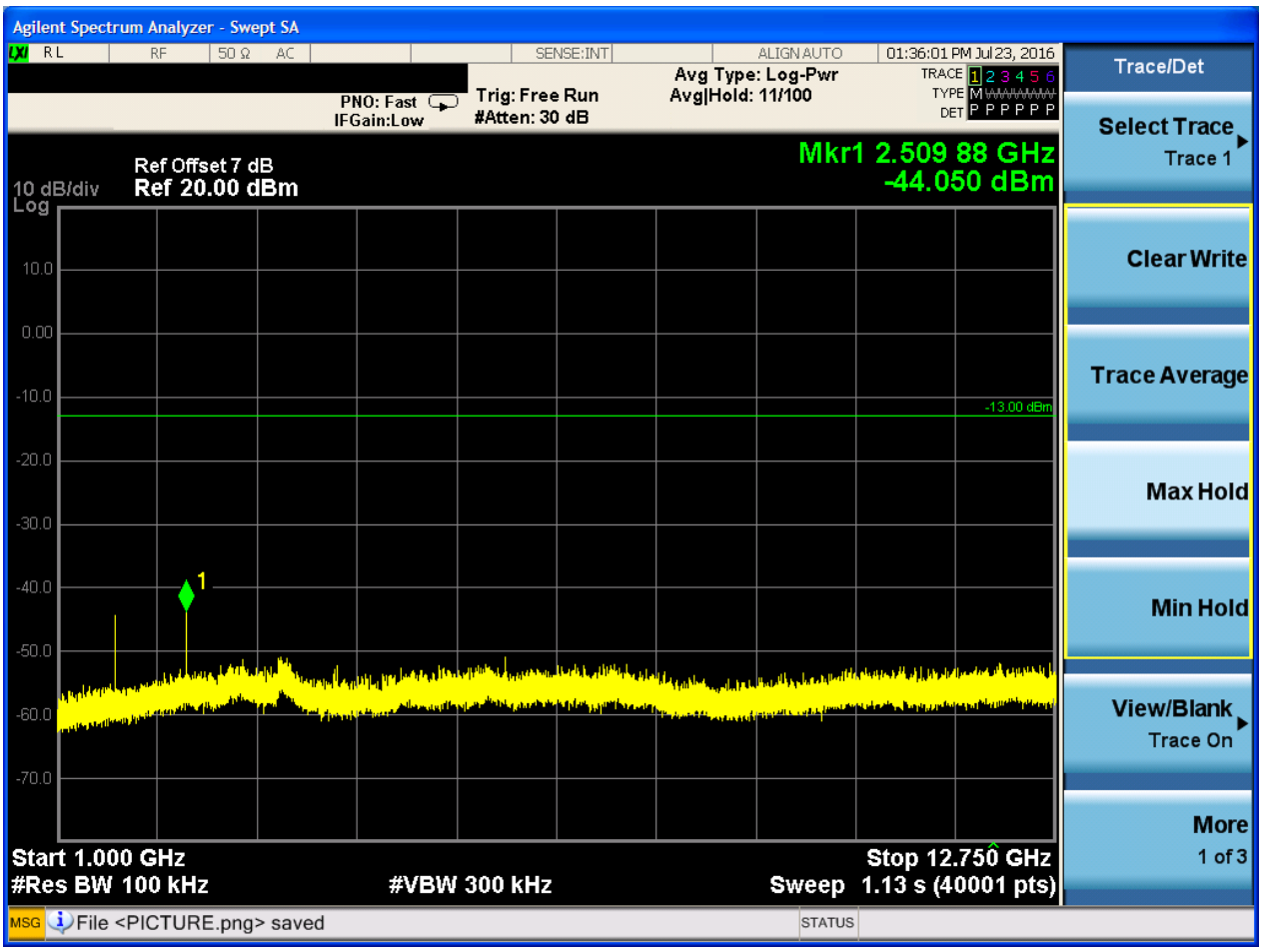


#### 6.1.1.2.2 Test Channel = MCH

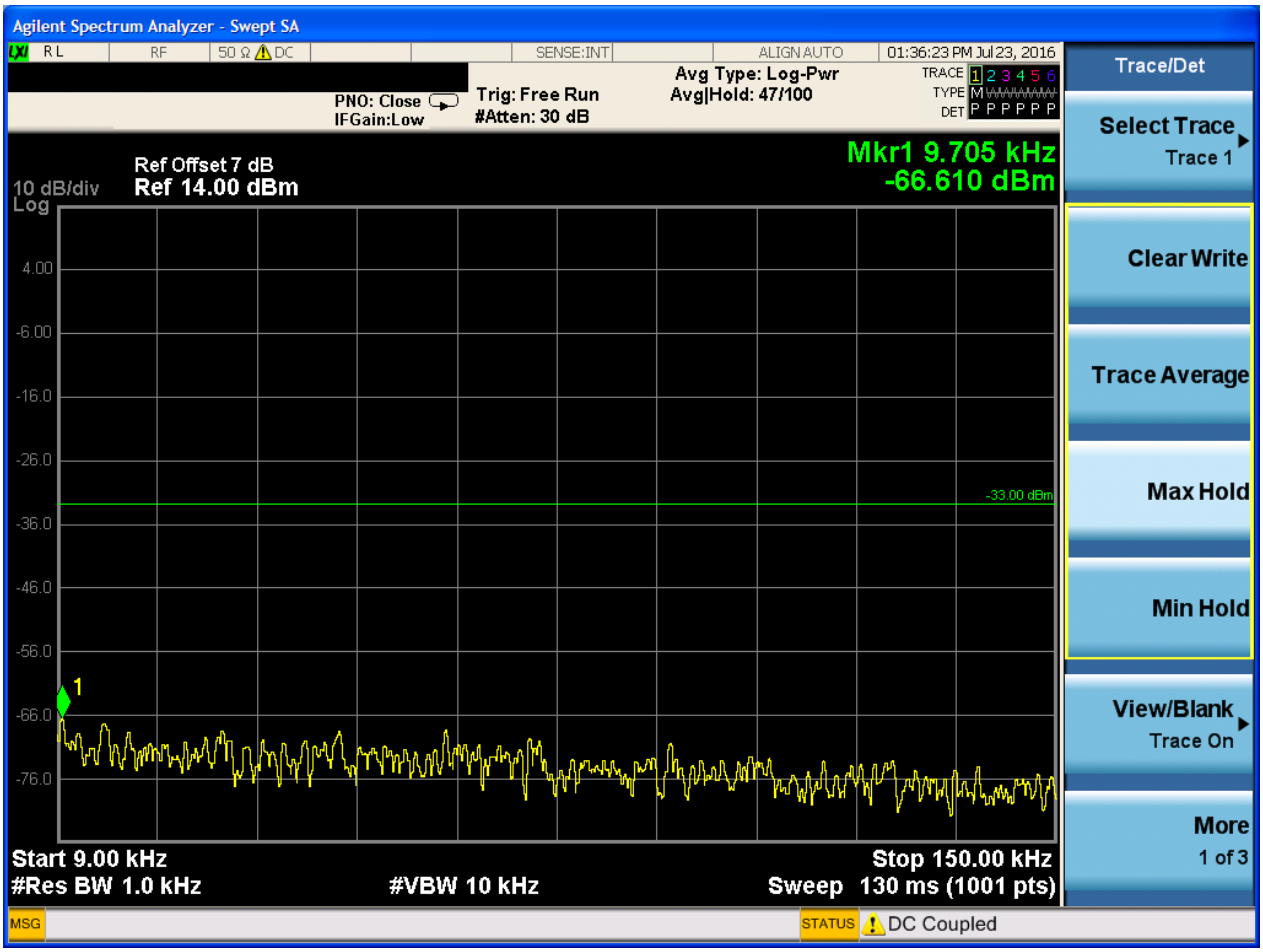


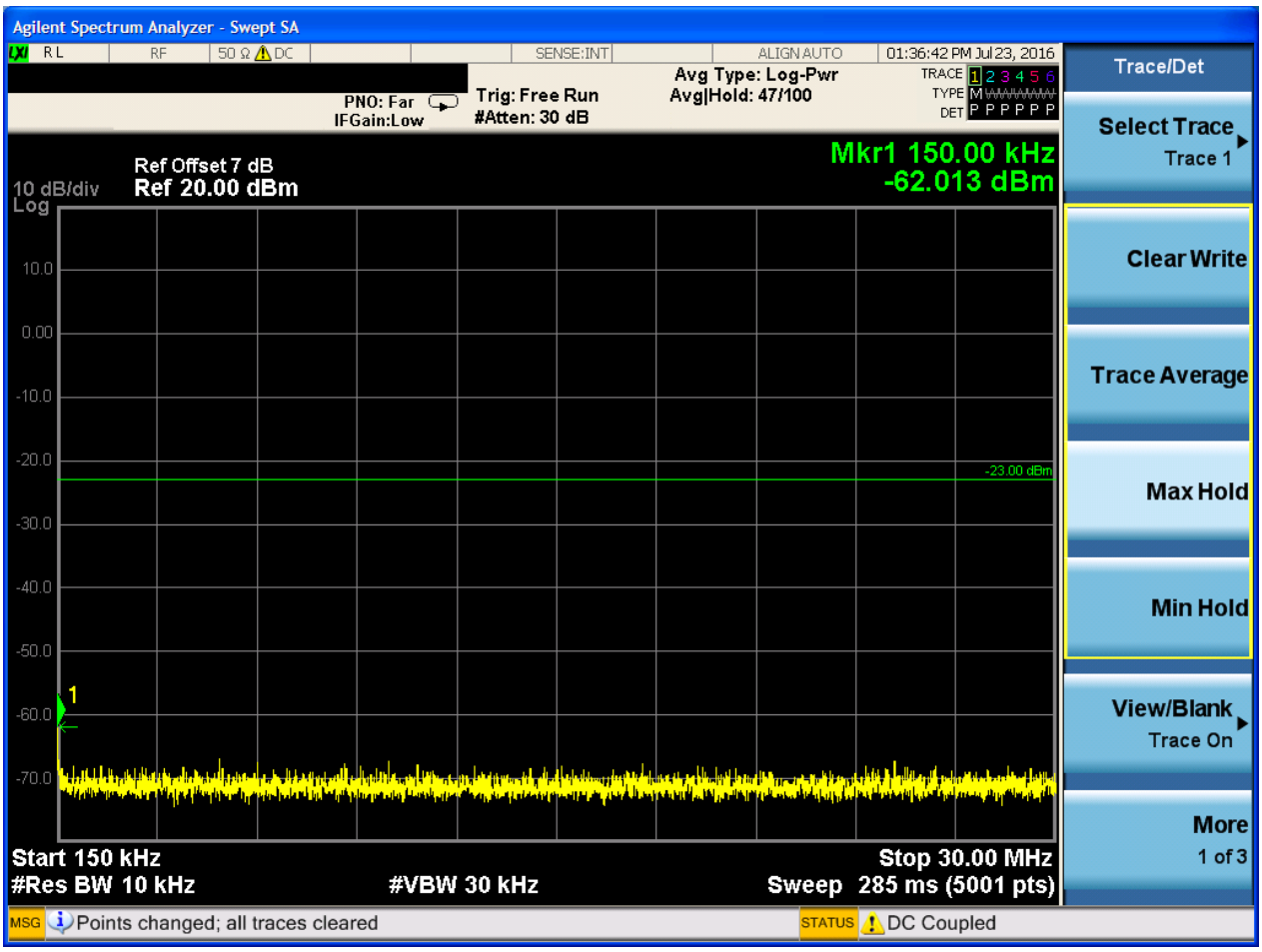


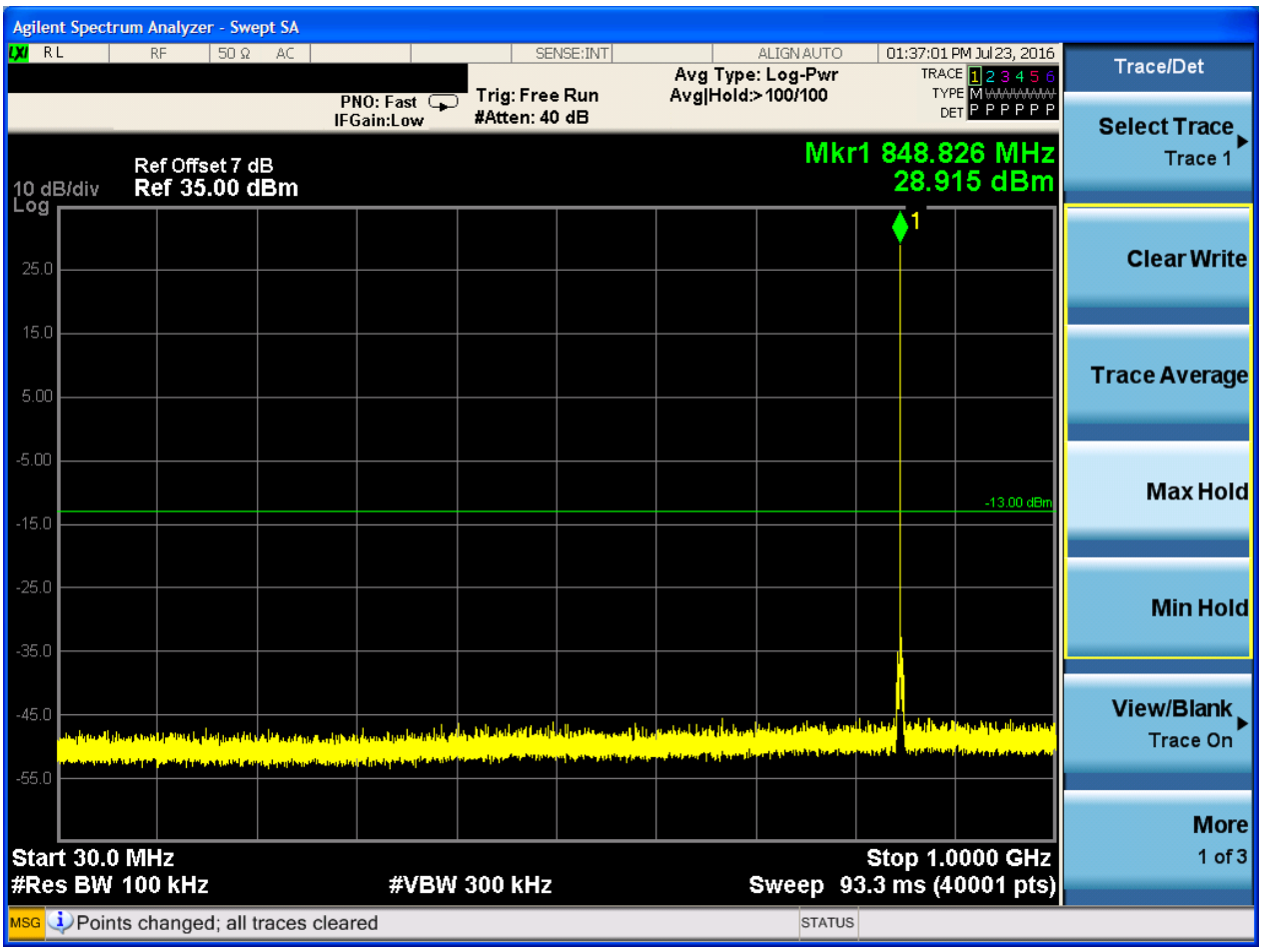


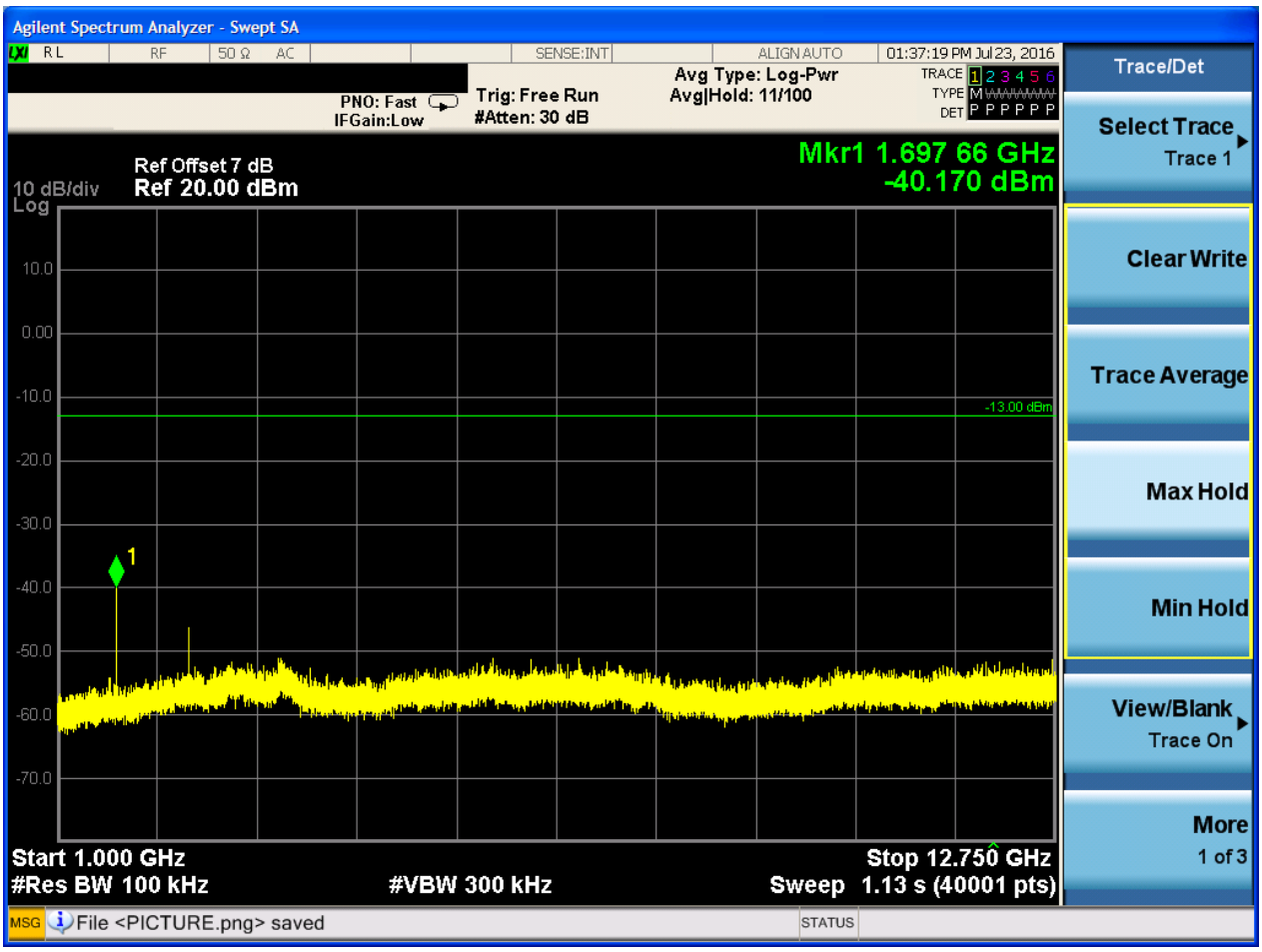


### 6.1.1.2.3 Test Channel = HCH





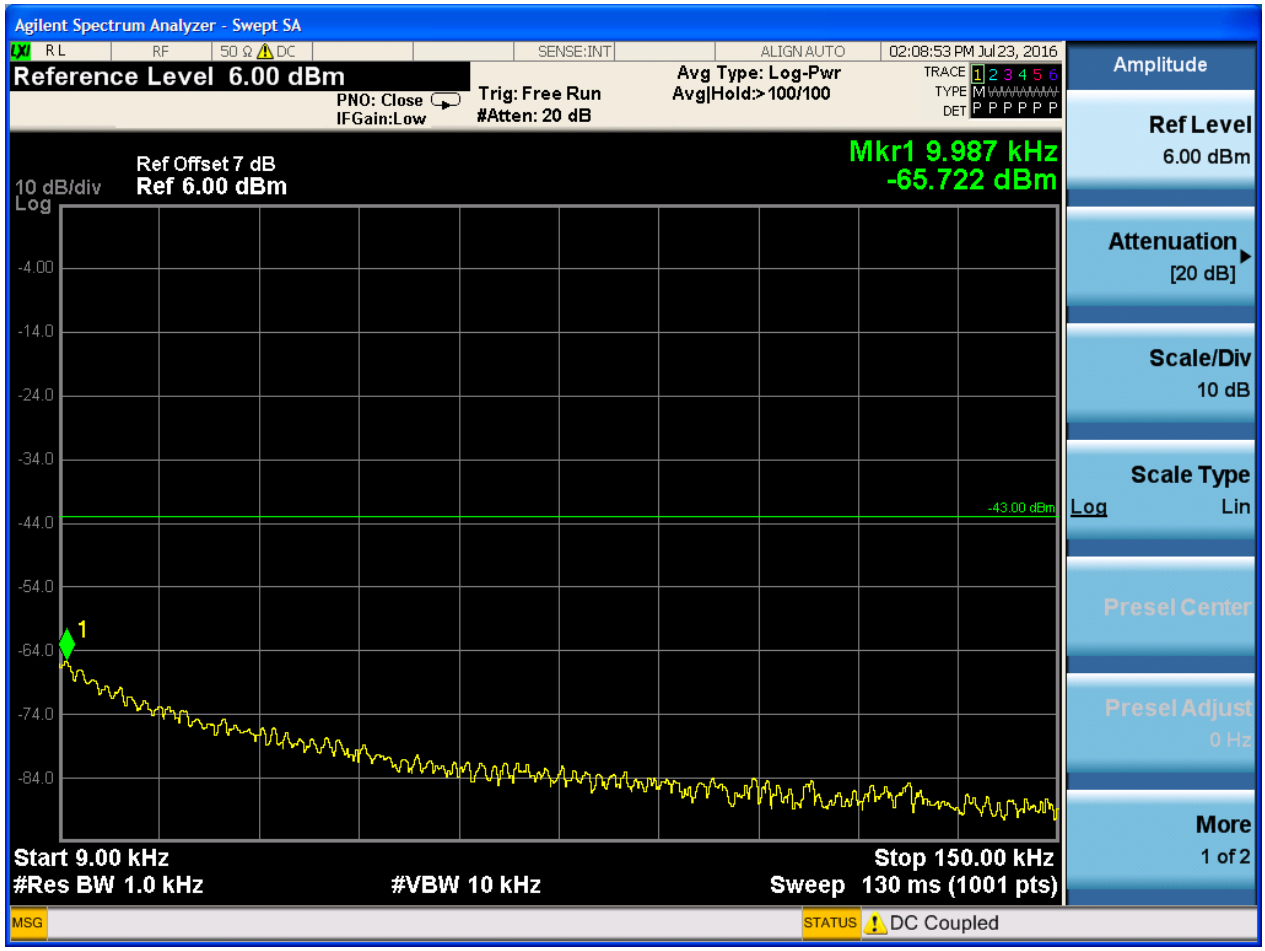


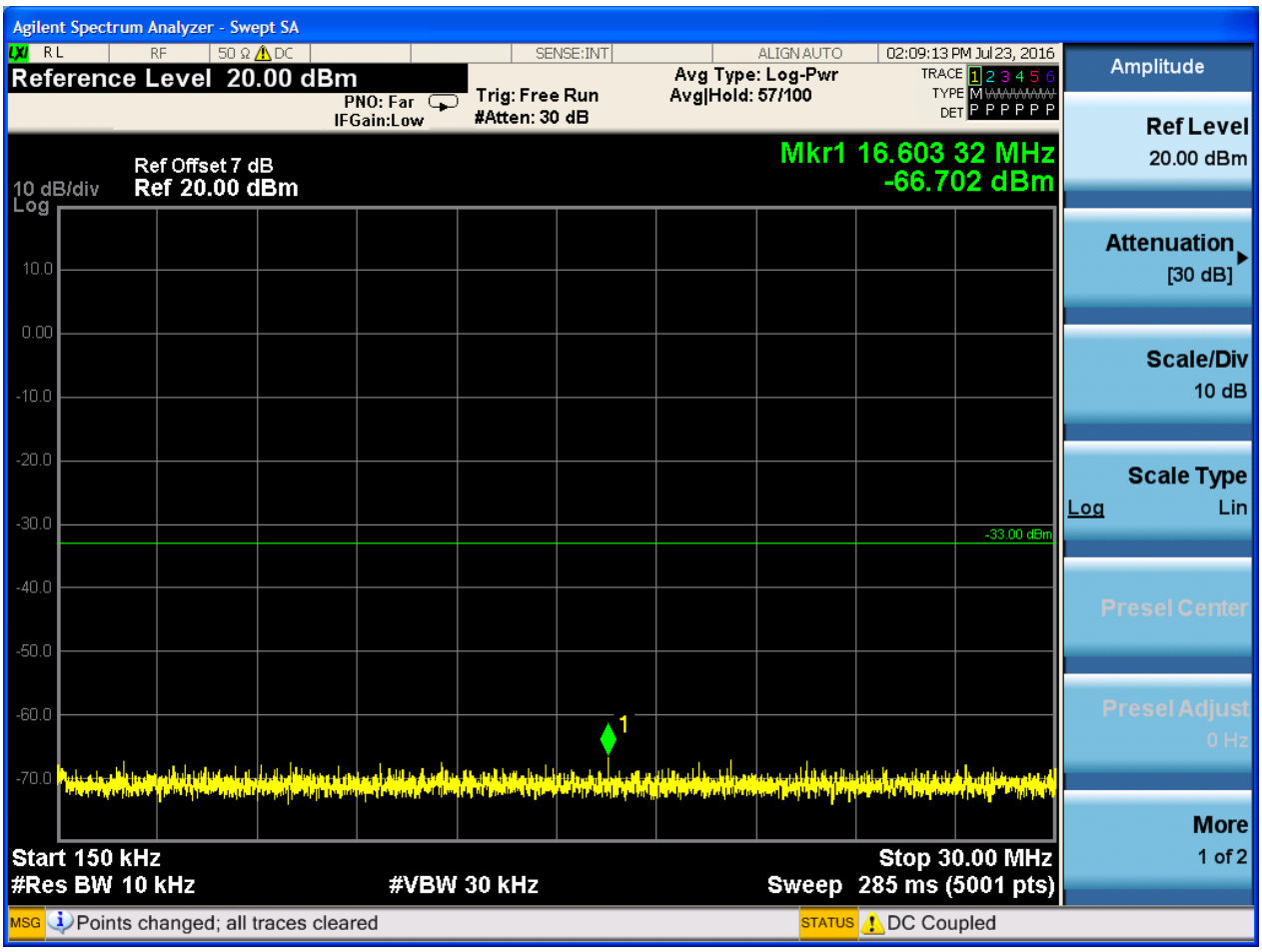


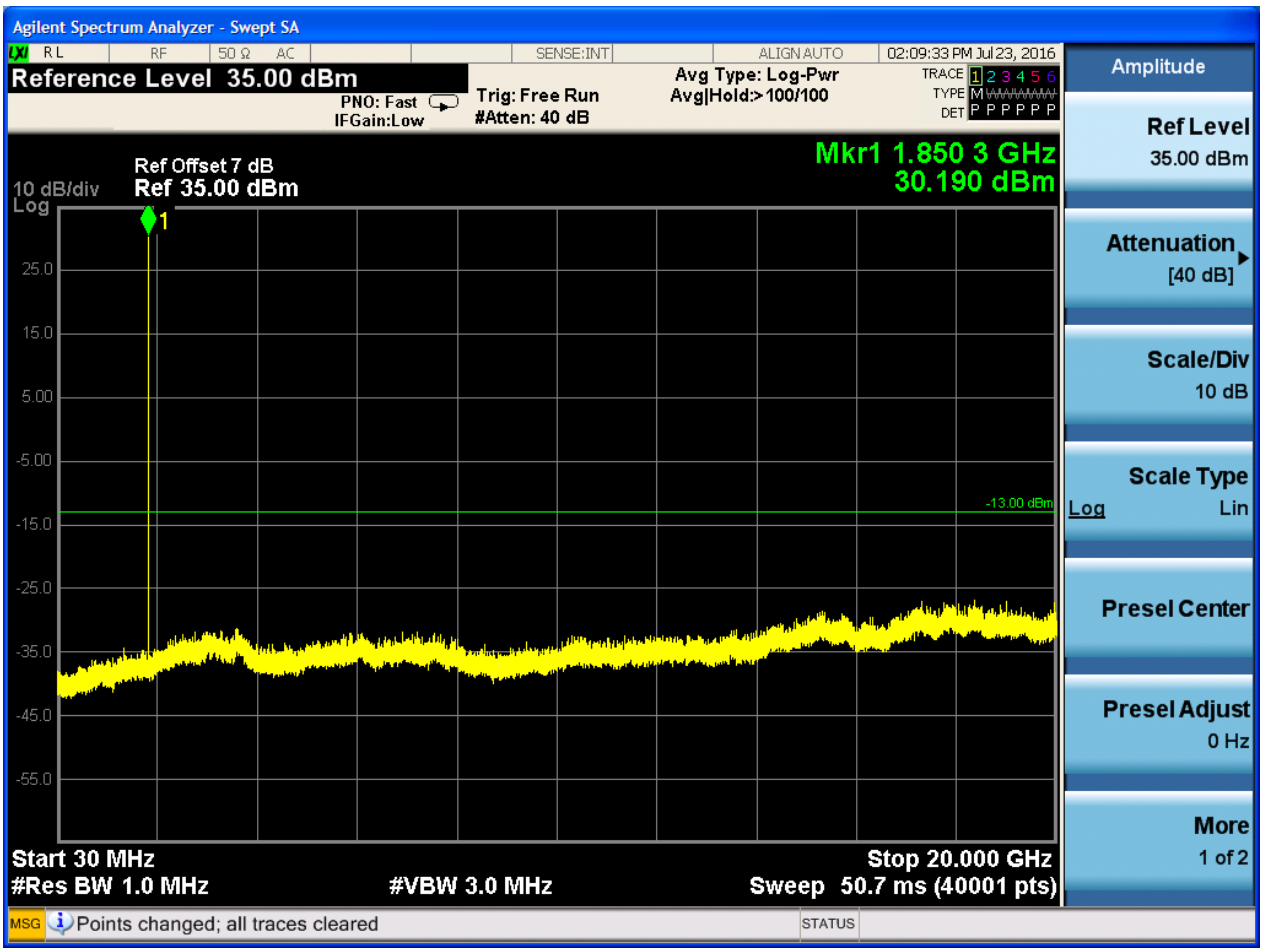
### 6.1.2 Test Band = GSM1900

#### 6.1.2.1 Test Mode = GSM/TM1

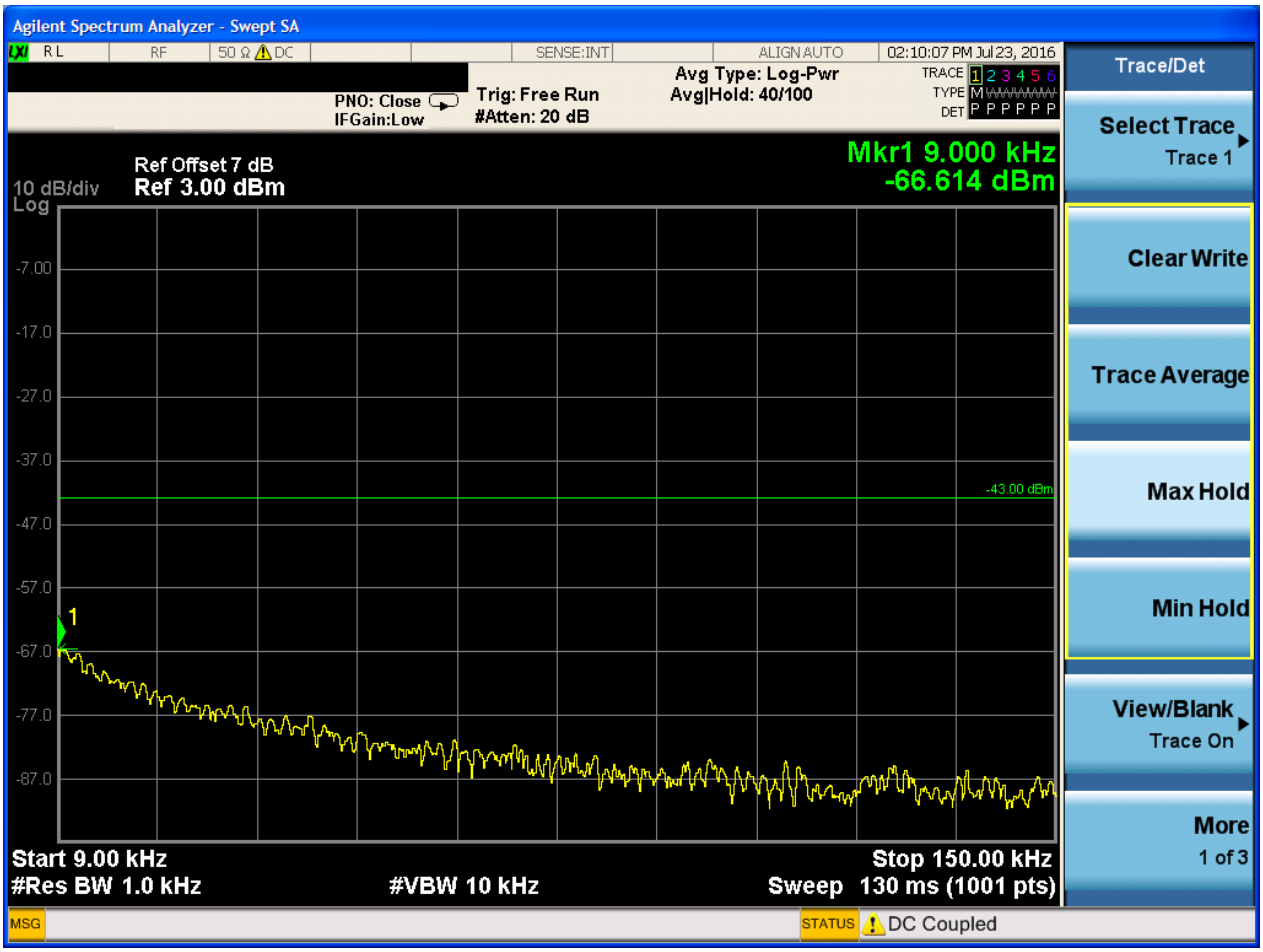
##### 6.1.2.1.1 Test Channel = LCH

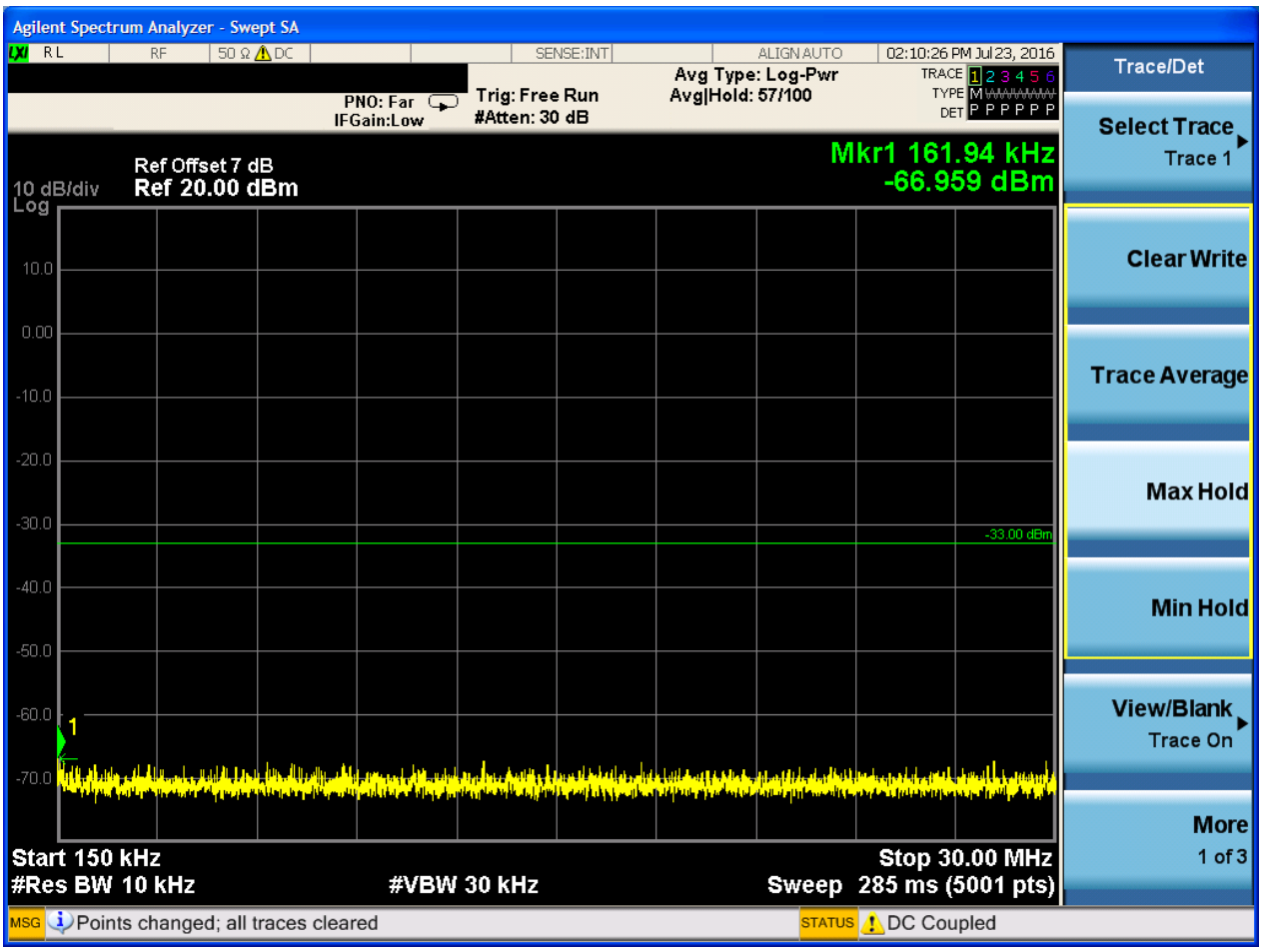


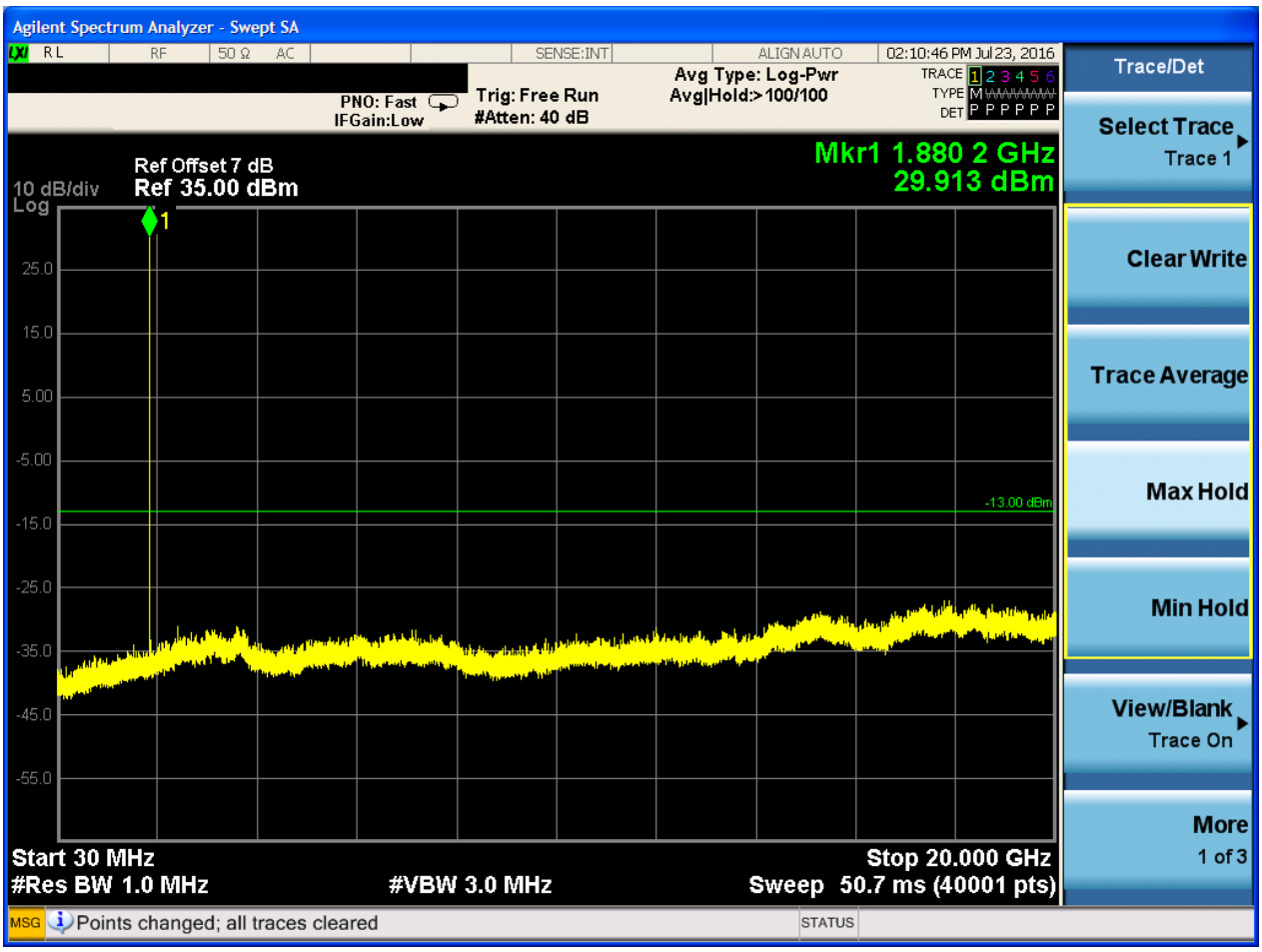




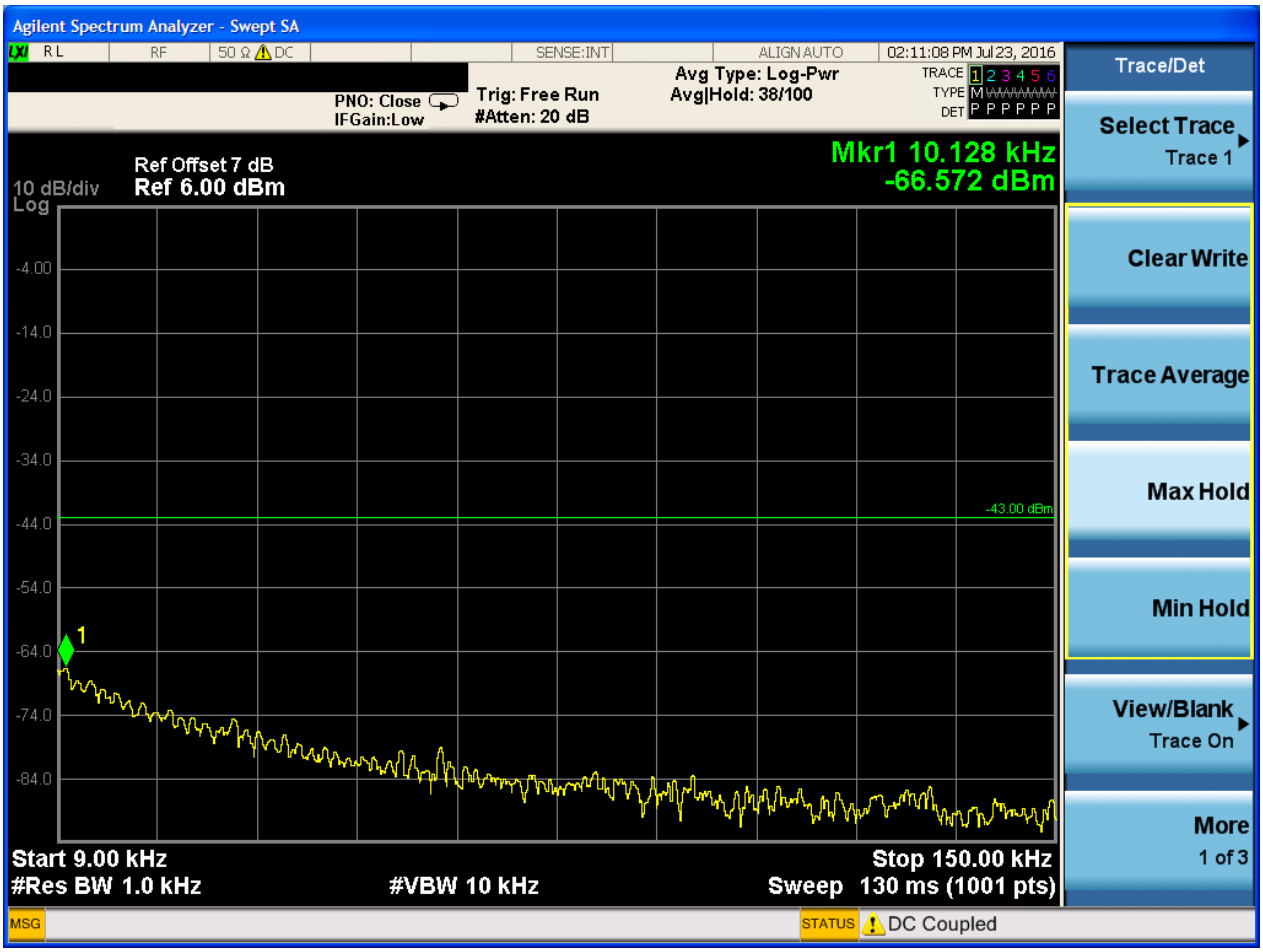
#### 6.1.2.1.2 Test Channel = MCH

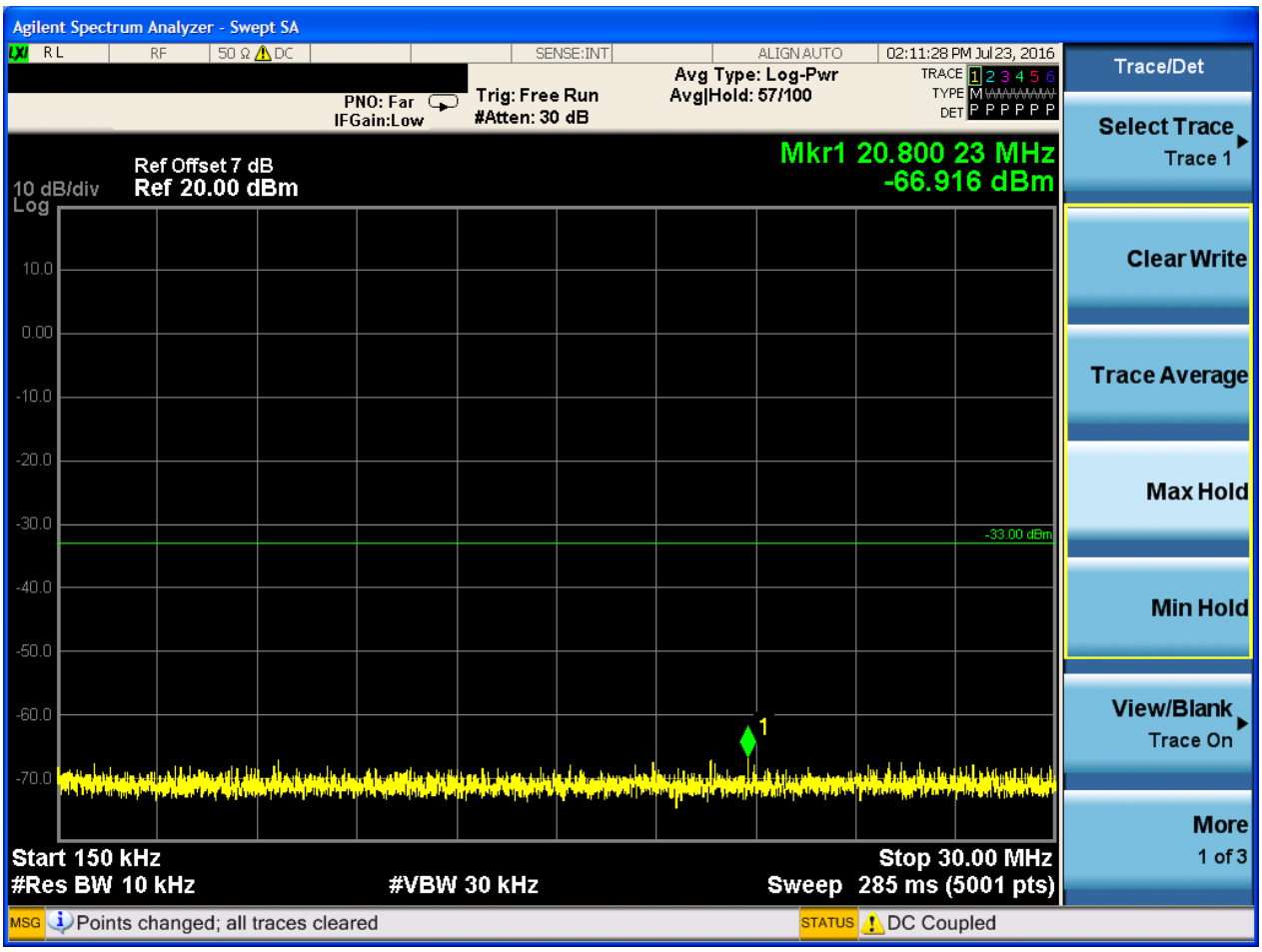


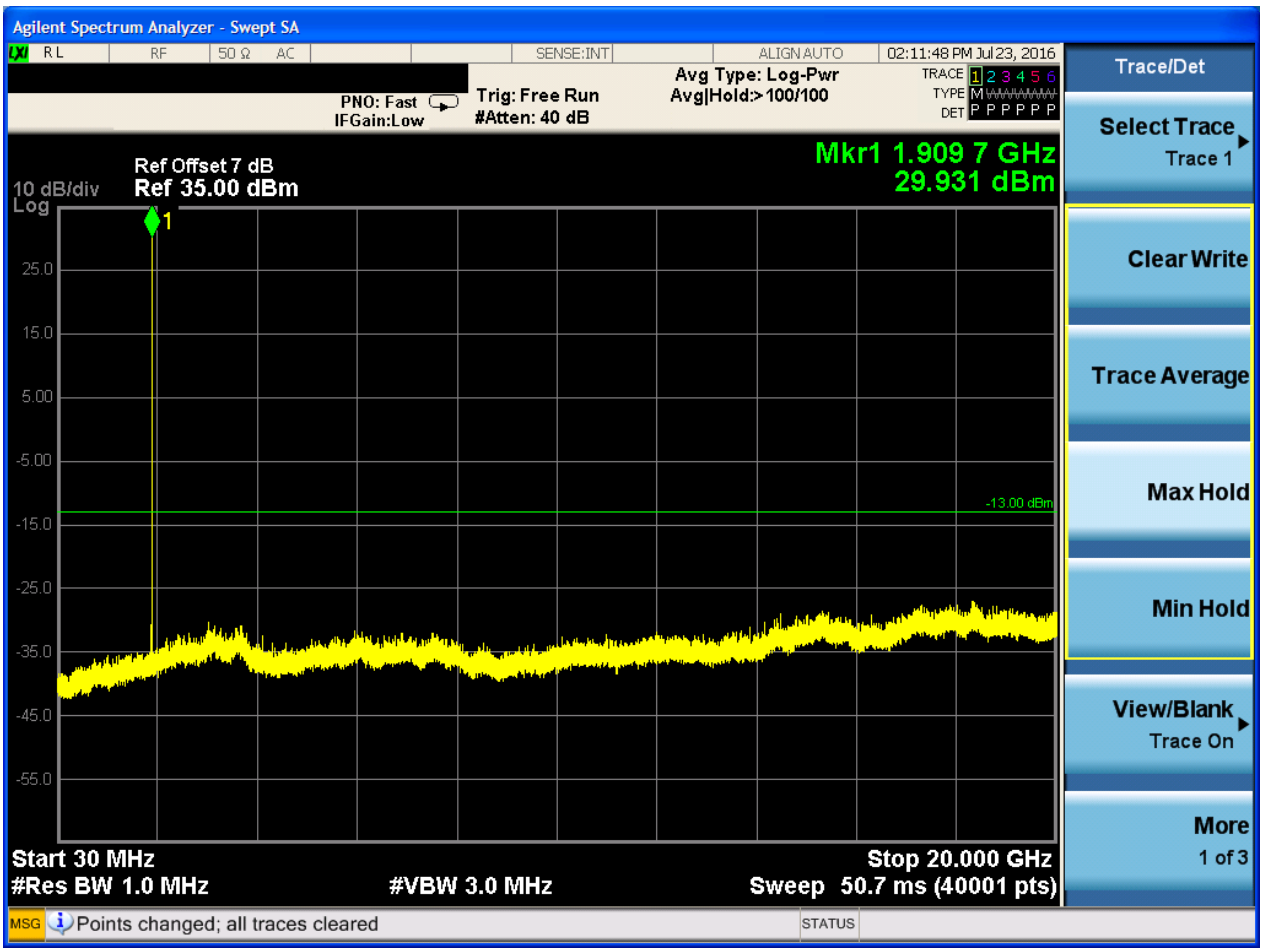




#### 6.1.2.1.3 Test Channel = HCH

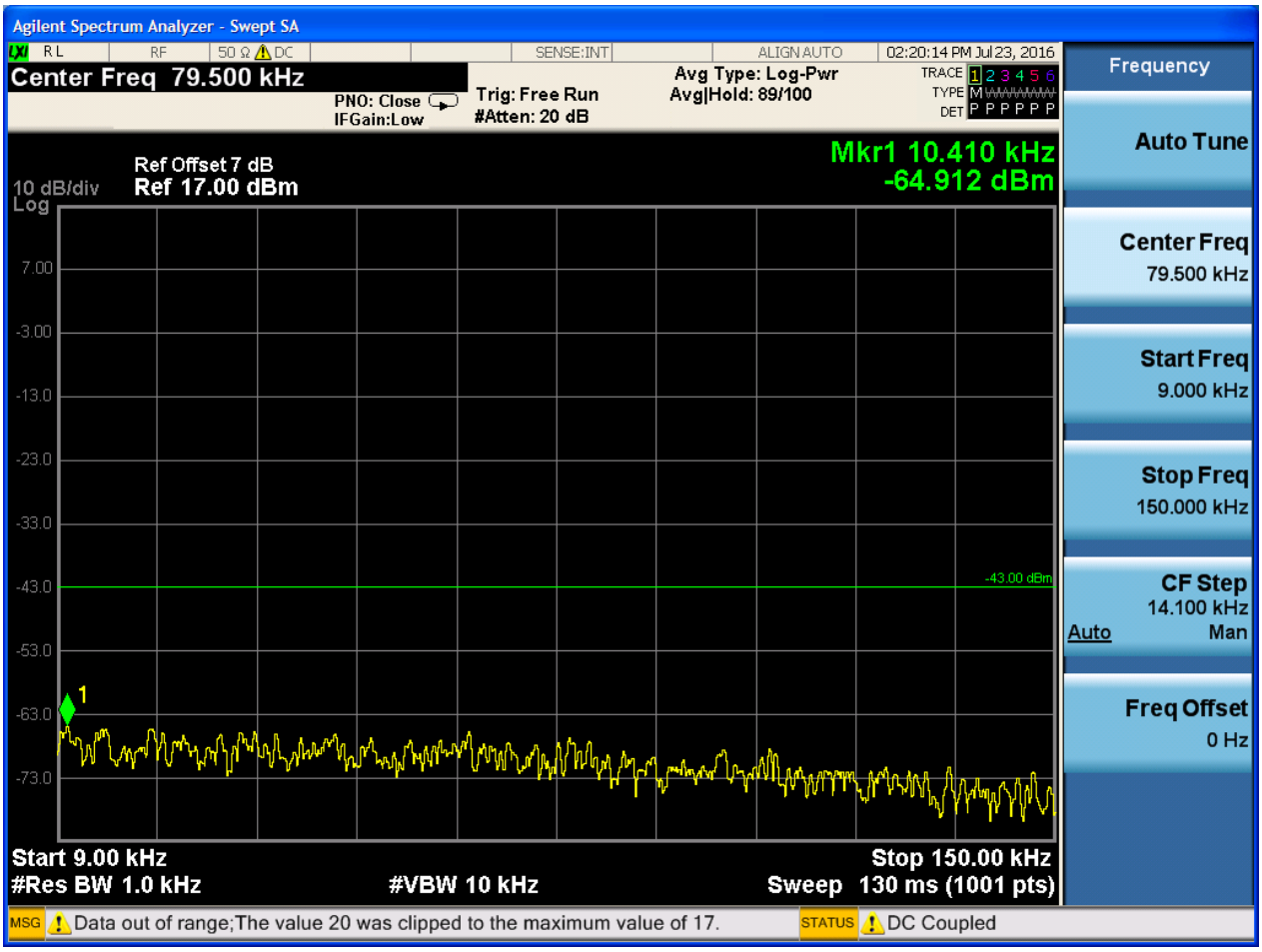


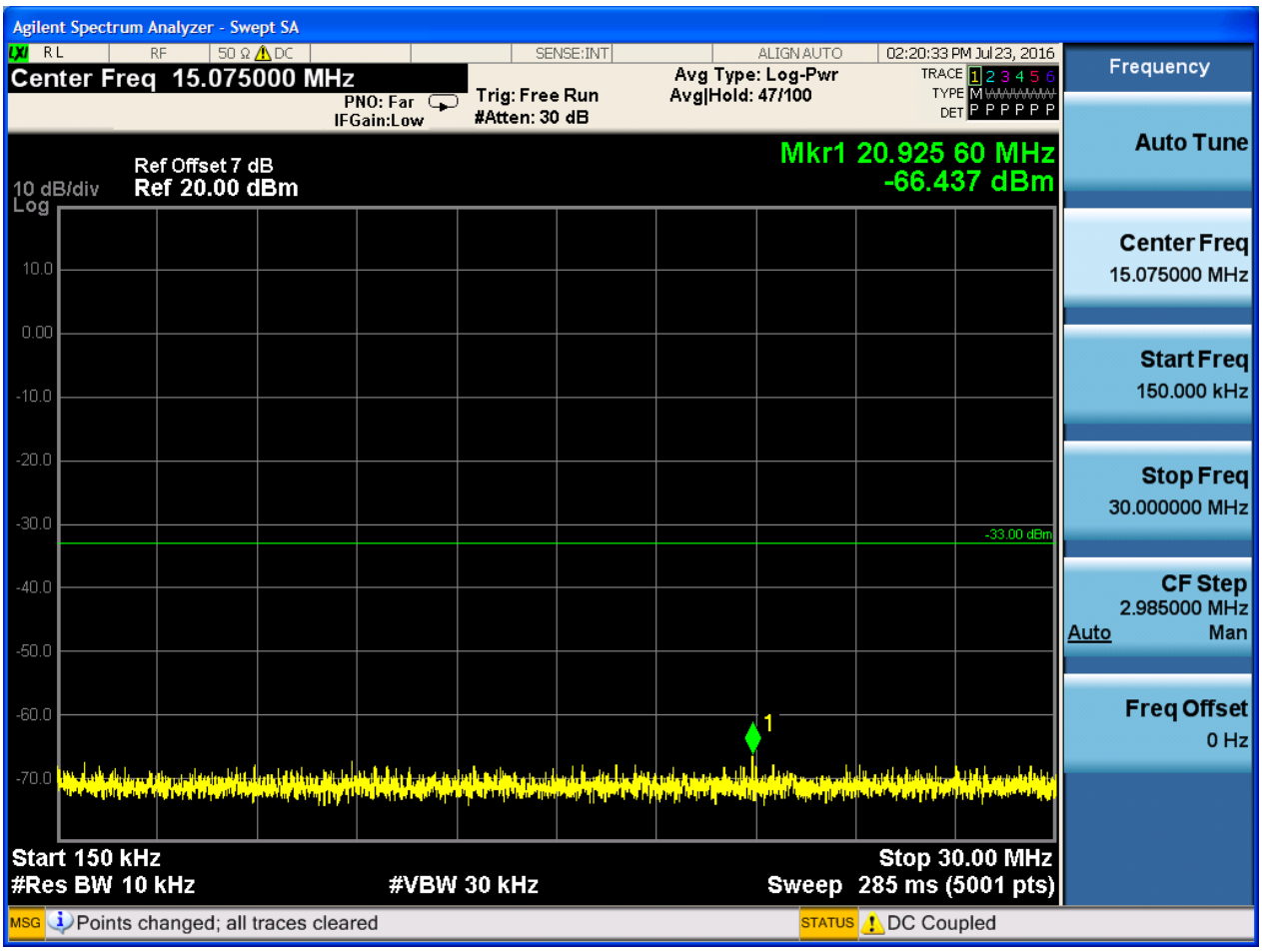


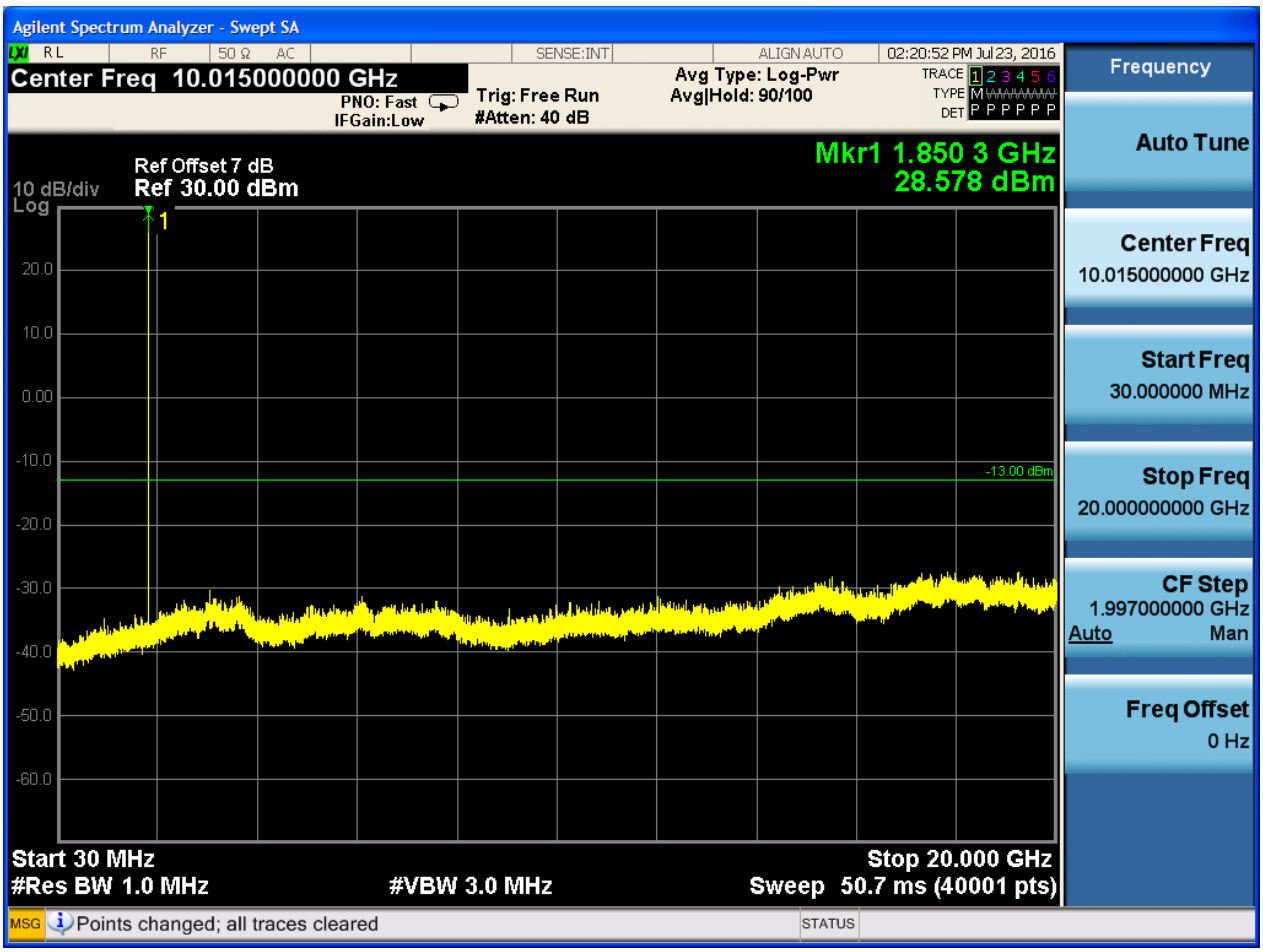


### 6.1.2.2 Test Mode = GSM/TM2

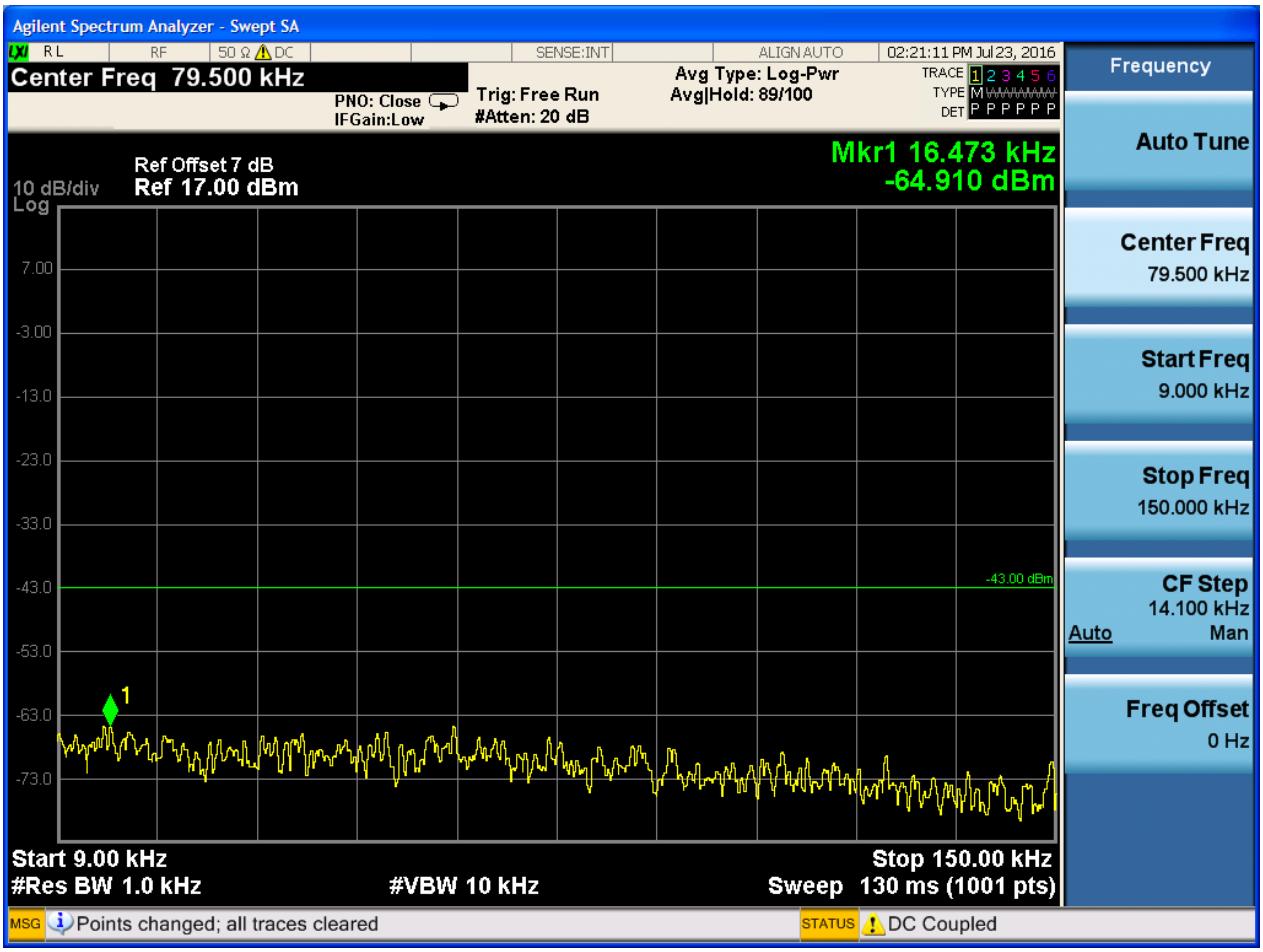
#### 6.1.2.2.1 Test Channel = LCH

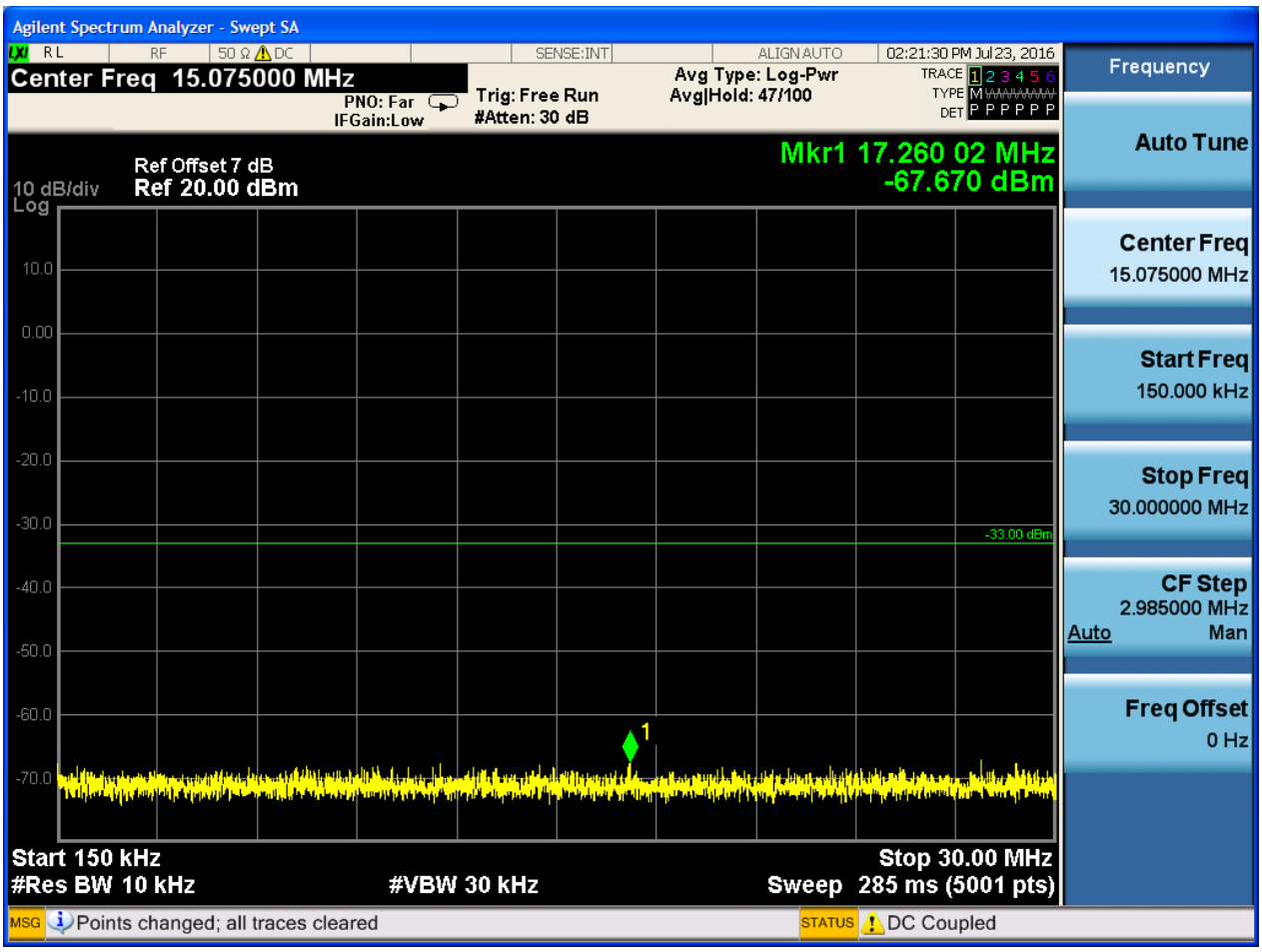


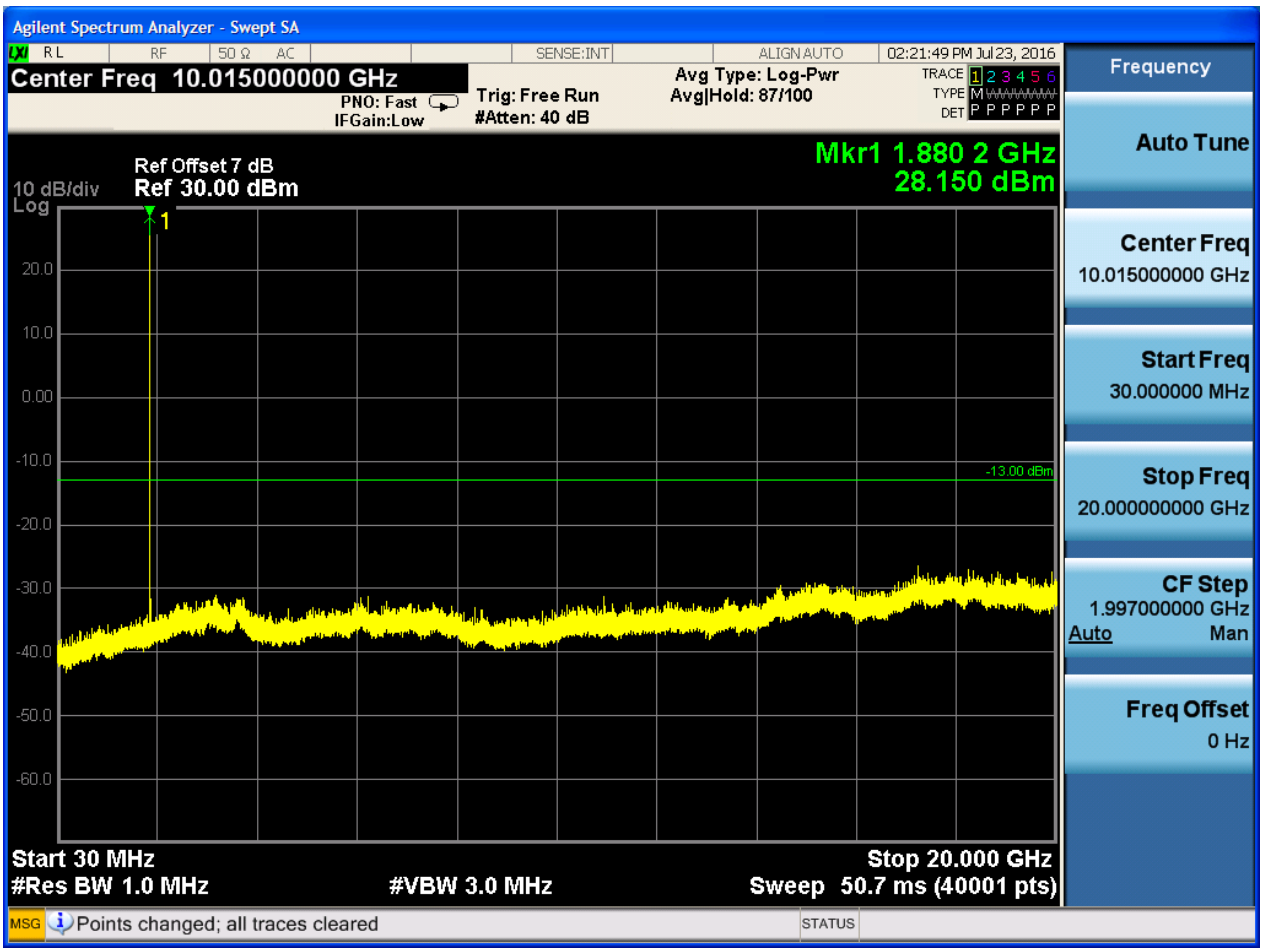




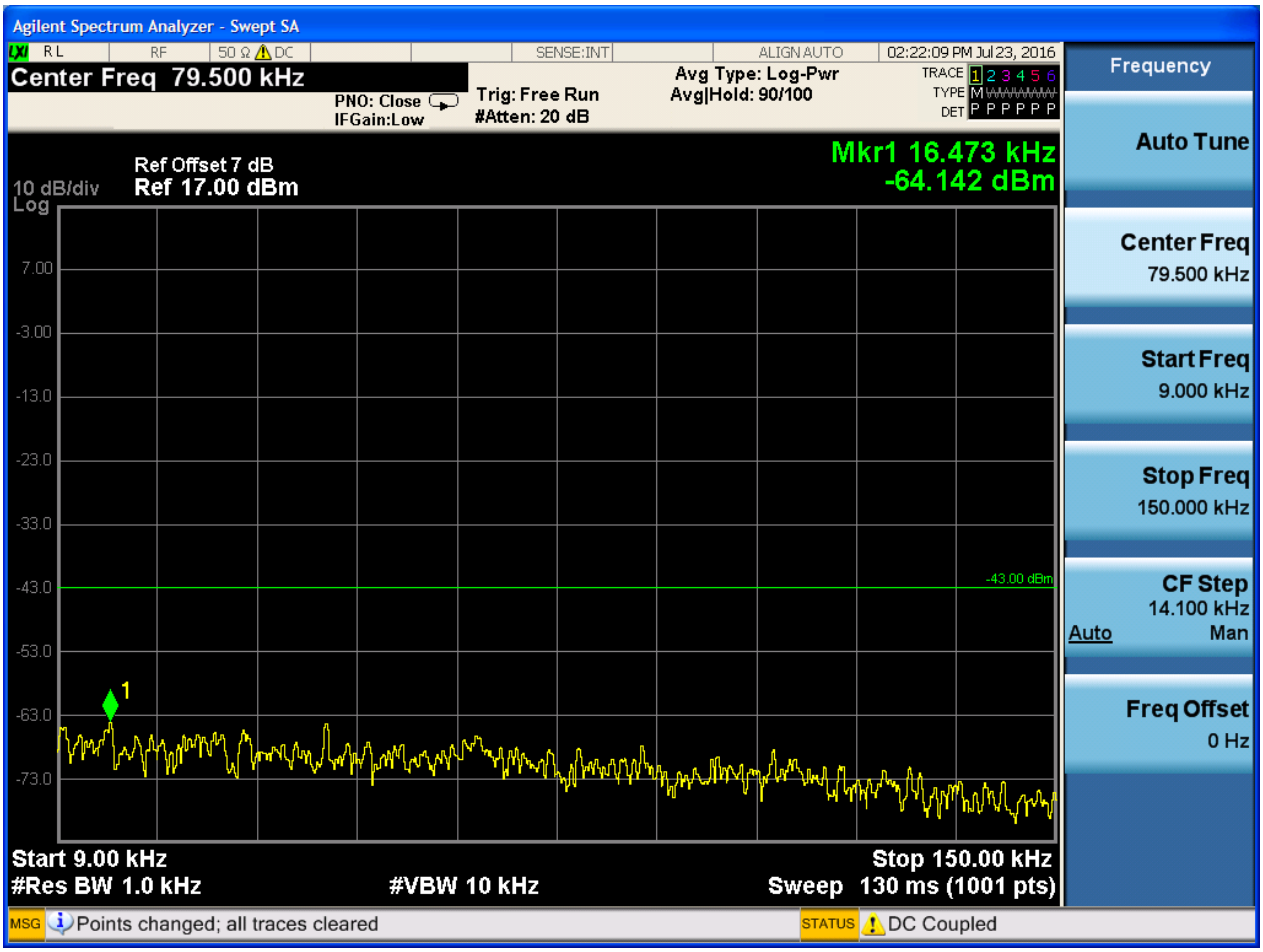
#### 6.1.2.2.2 Test Channel = MCH

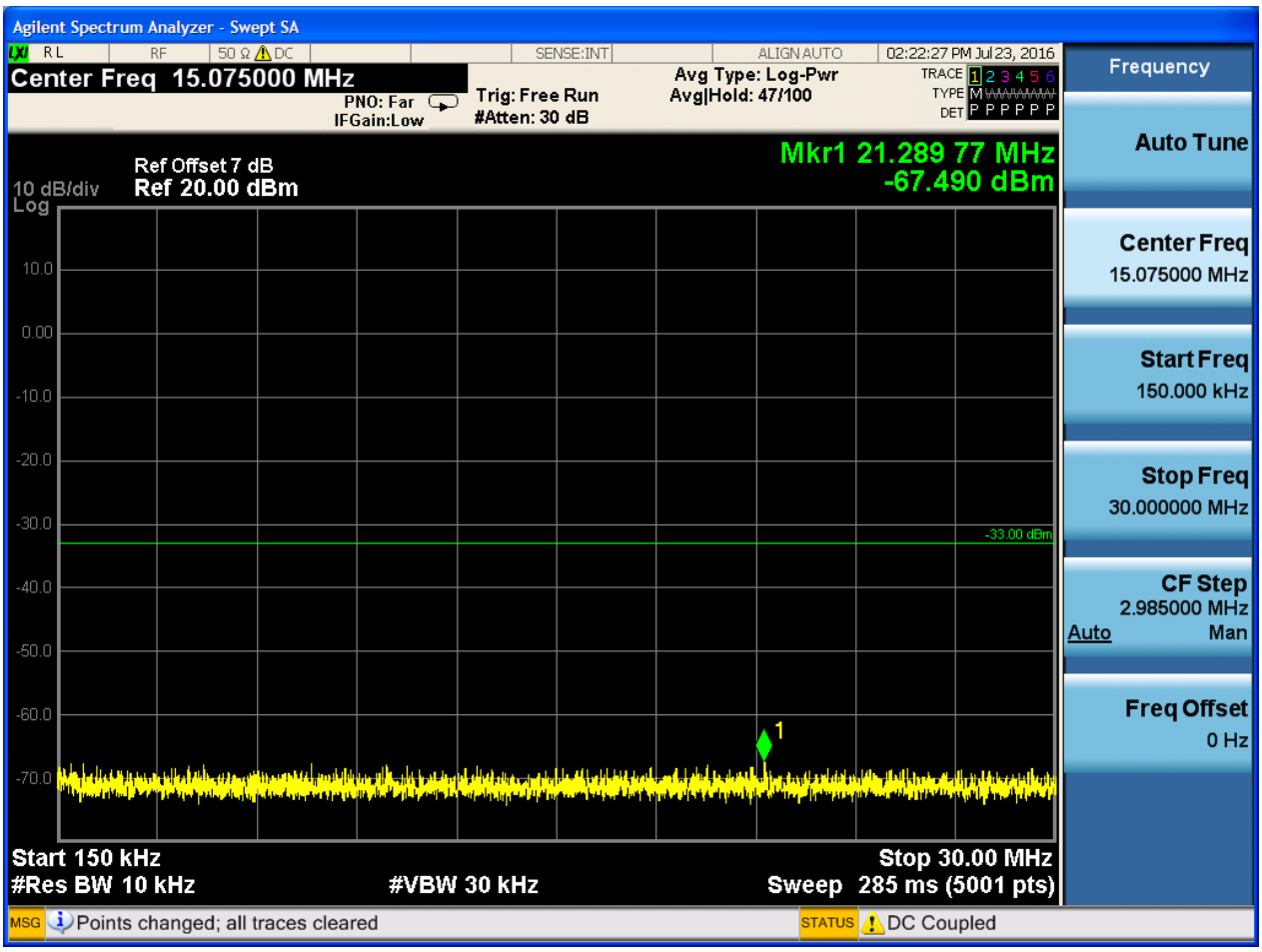


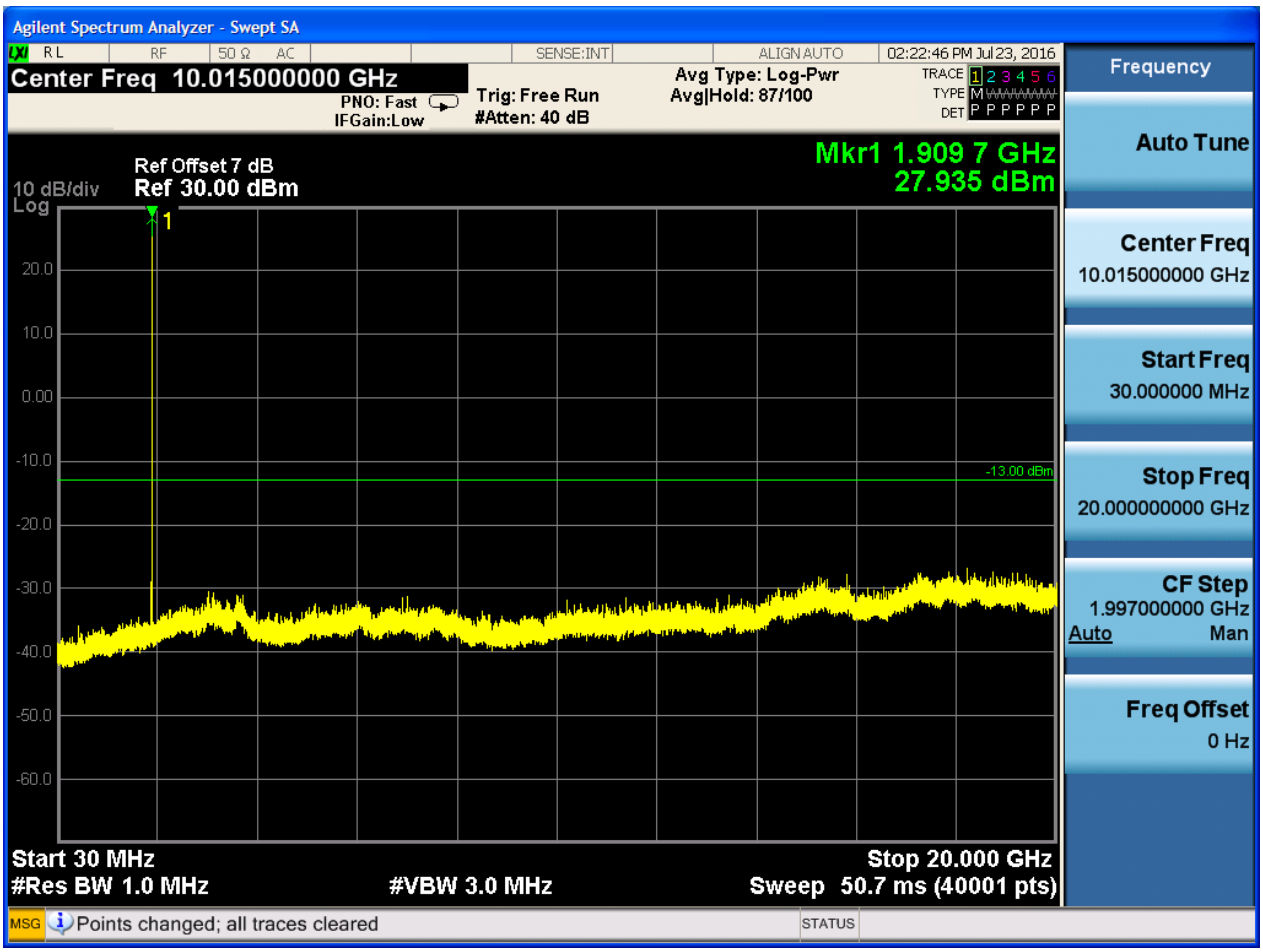




### 6.1.2.2.3 Test Channel = HCH





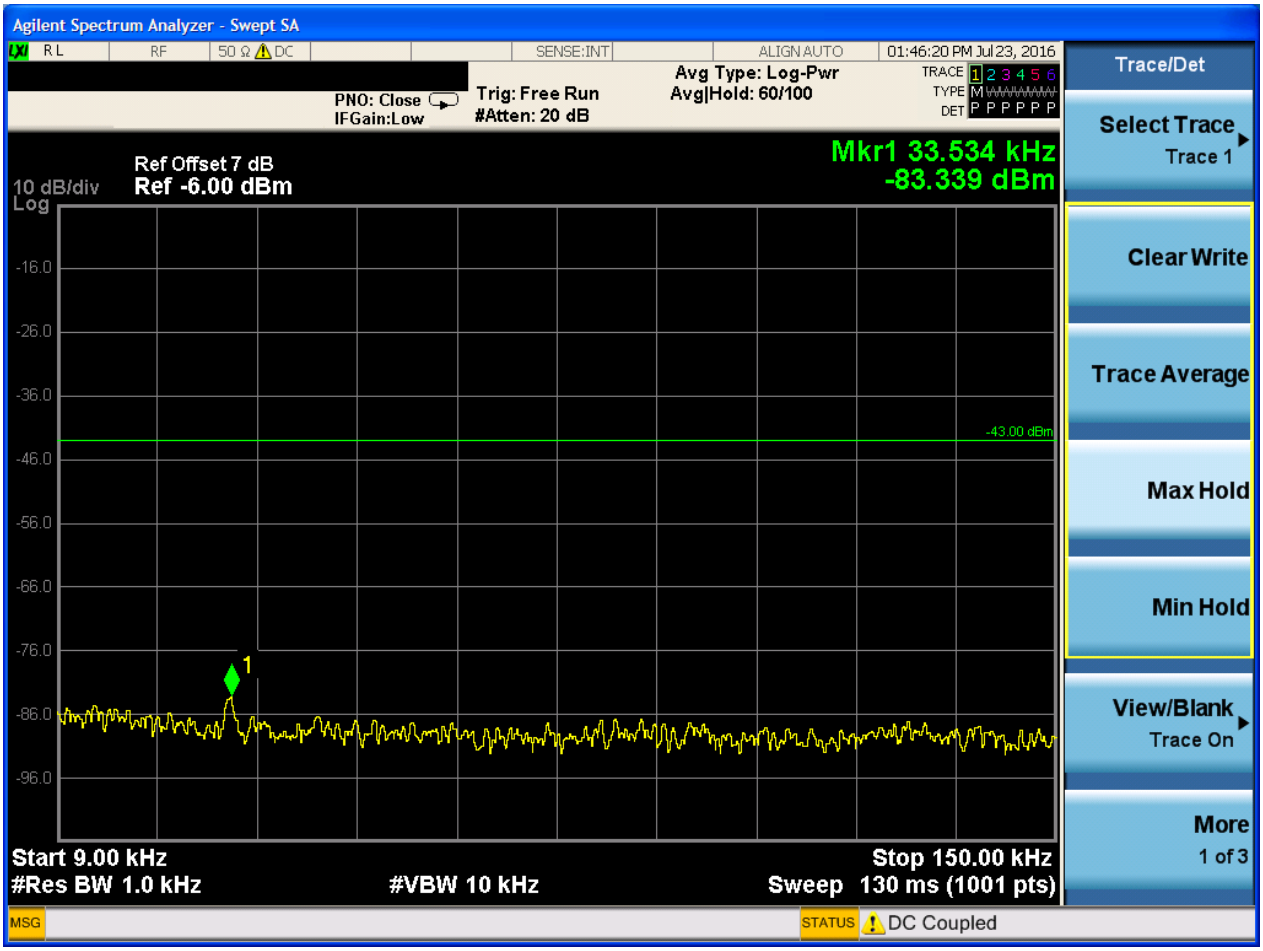


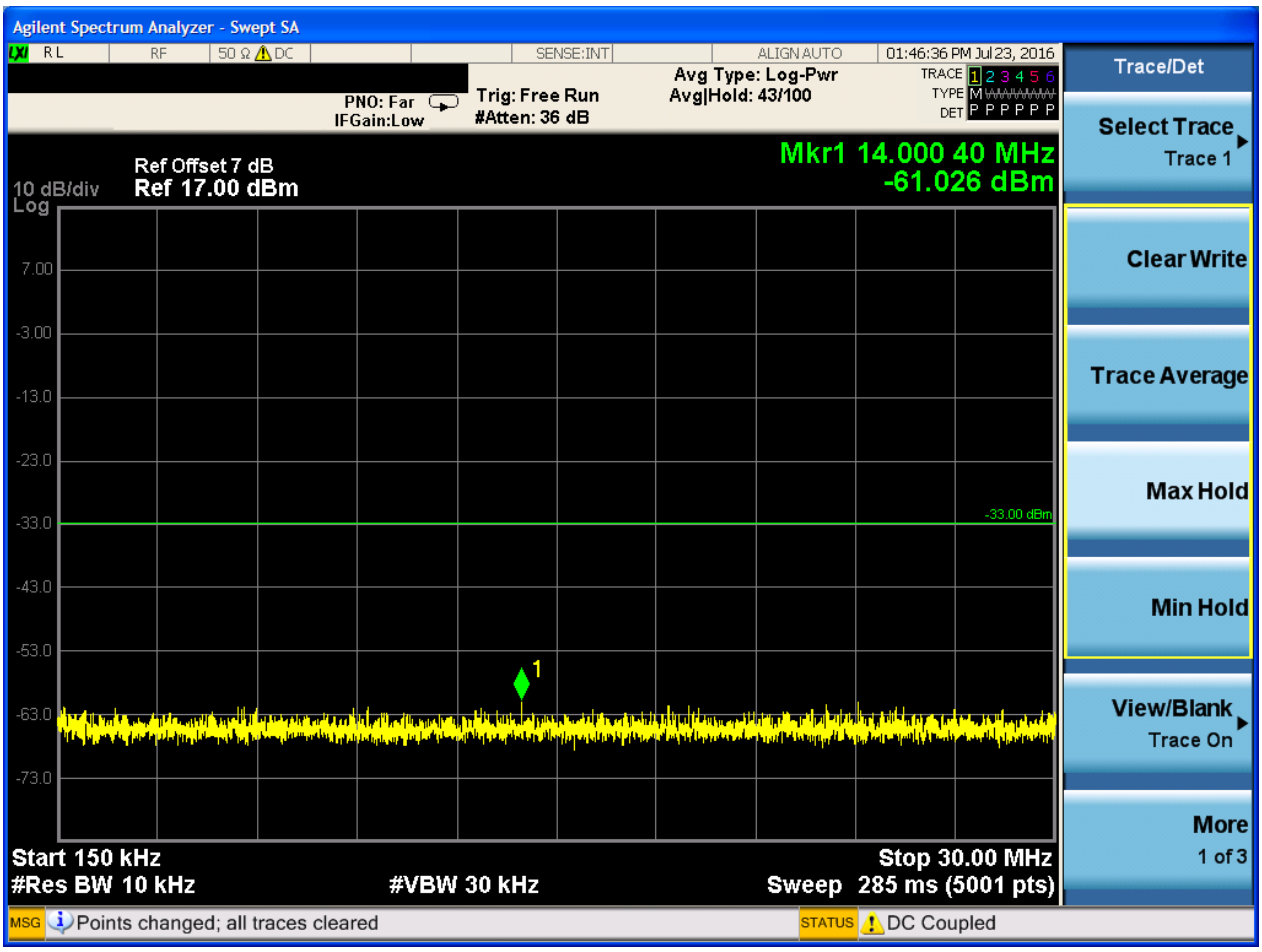
### 6.2 For UMTS

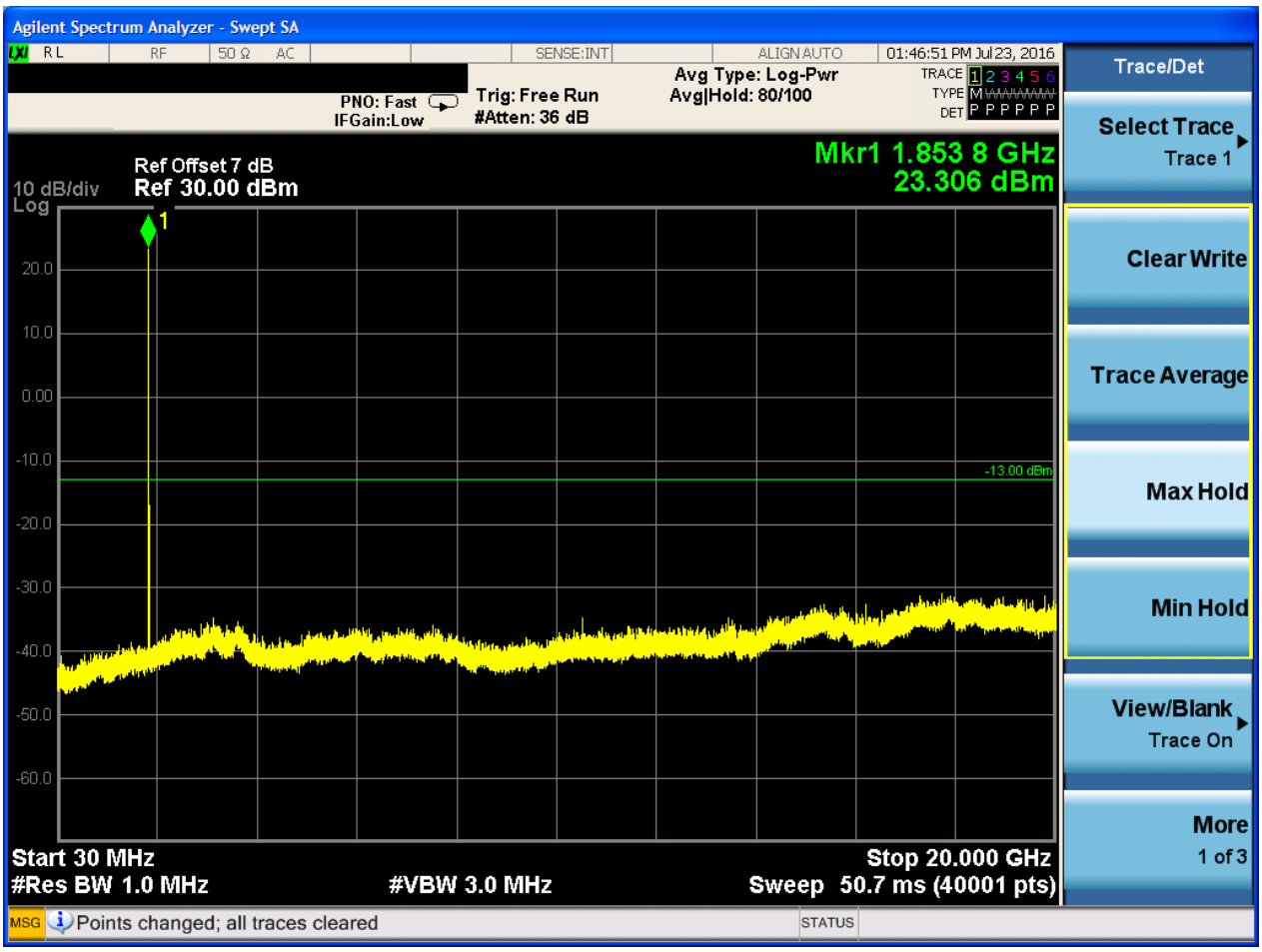
### 6.2.1 Test Band = WCDMA1900

#### 6.2.1.1 Test Mode = UMTS/TM1

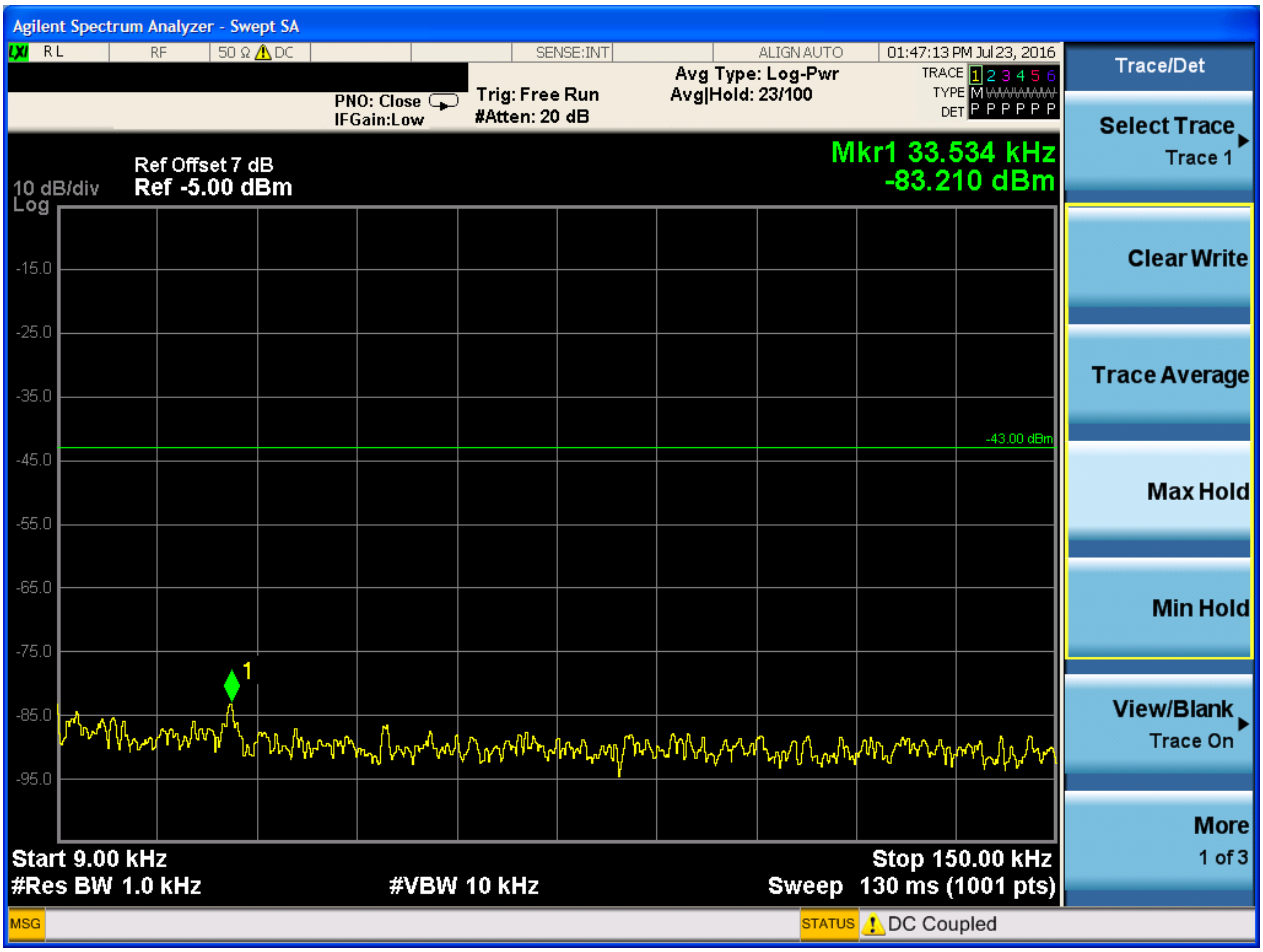
##### 6.2.1.1.1 Test Channel = LCH

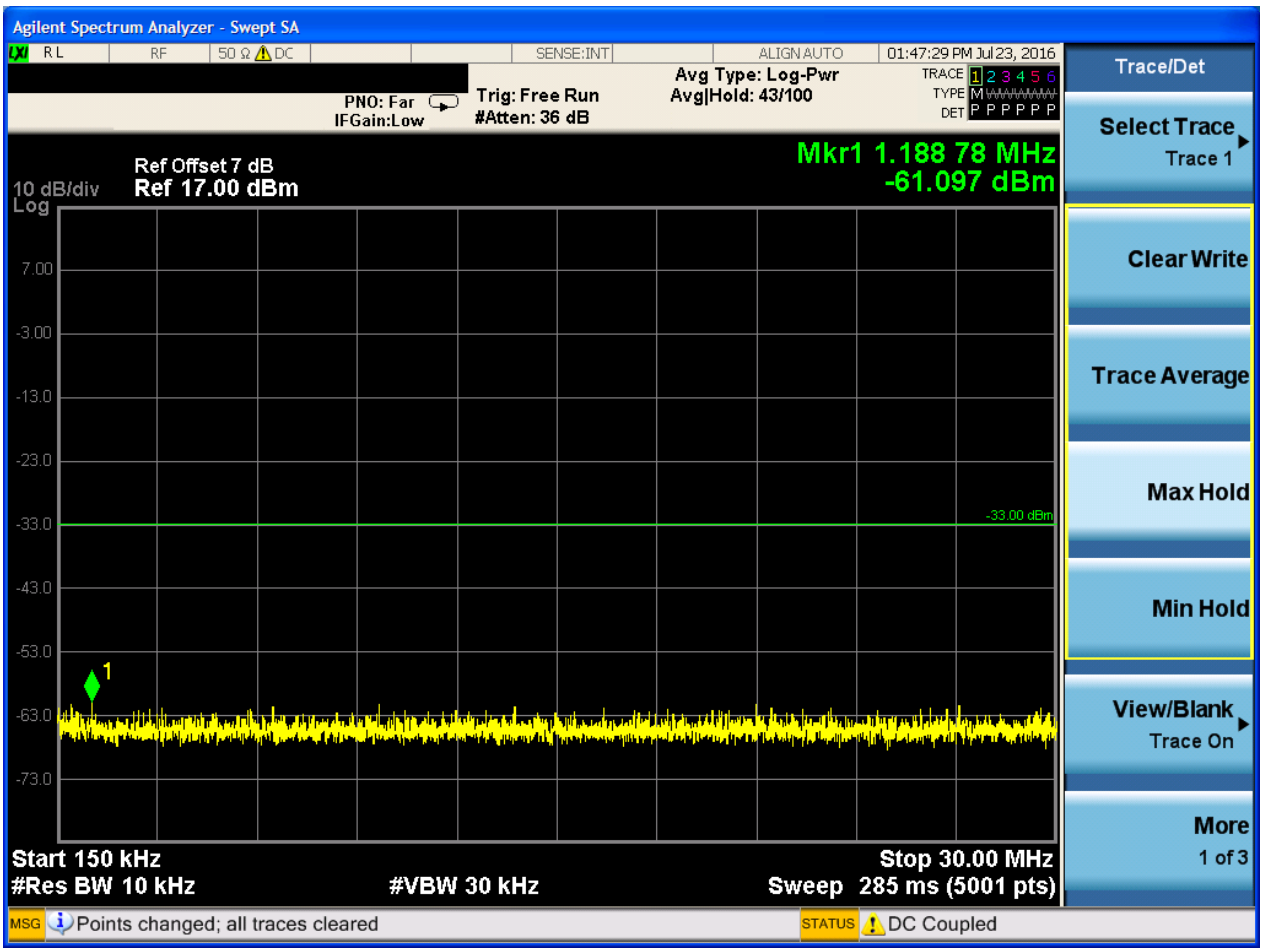


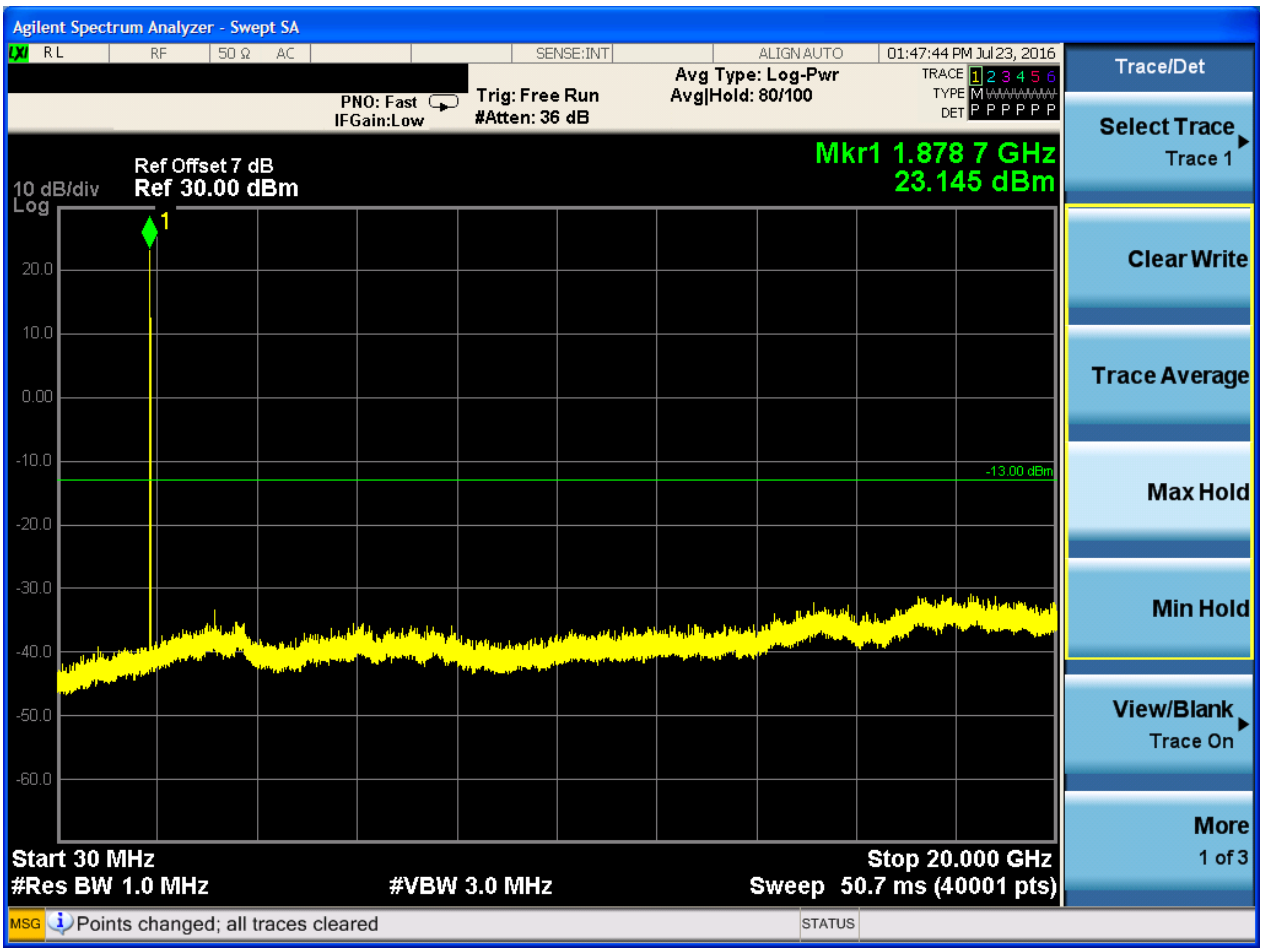




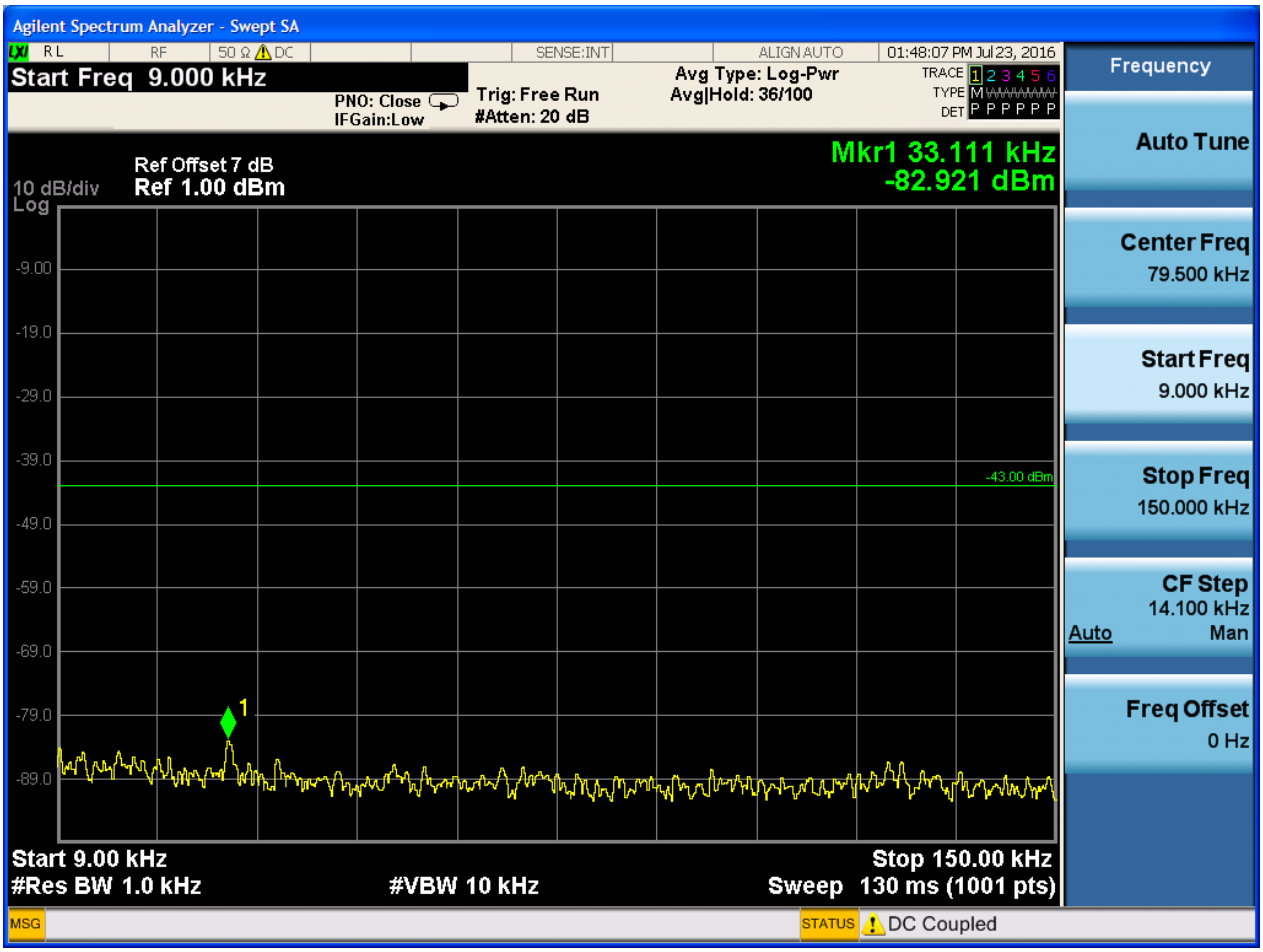
#### 6.2.1.1.2 Test Channel = MCH

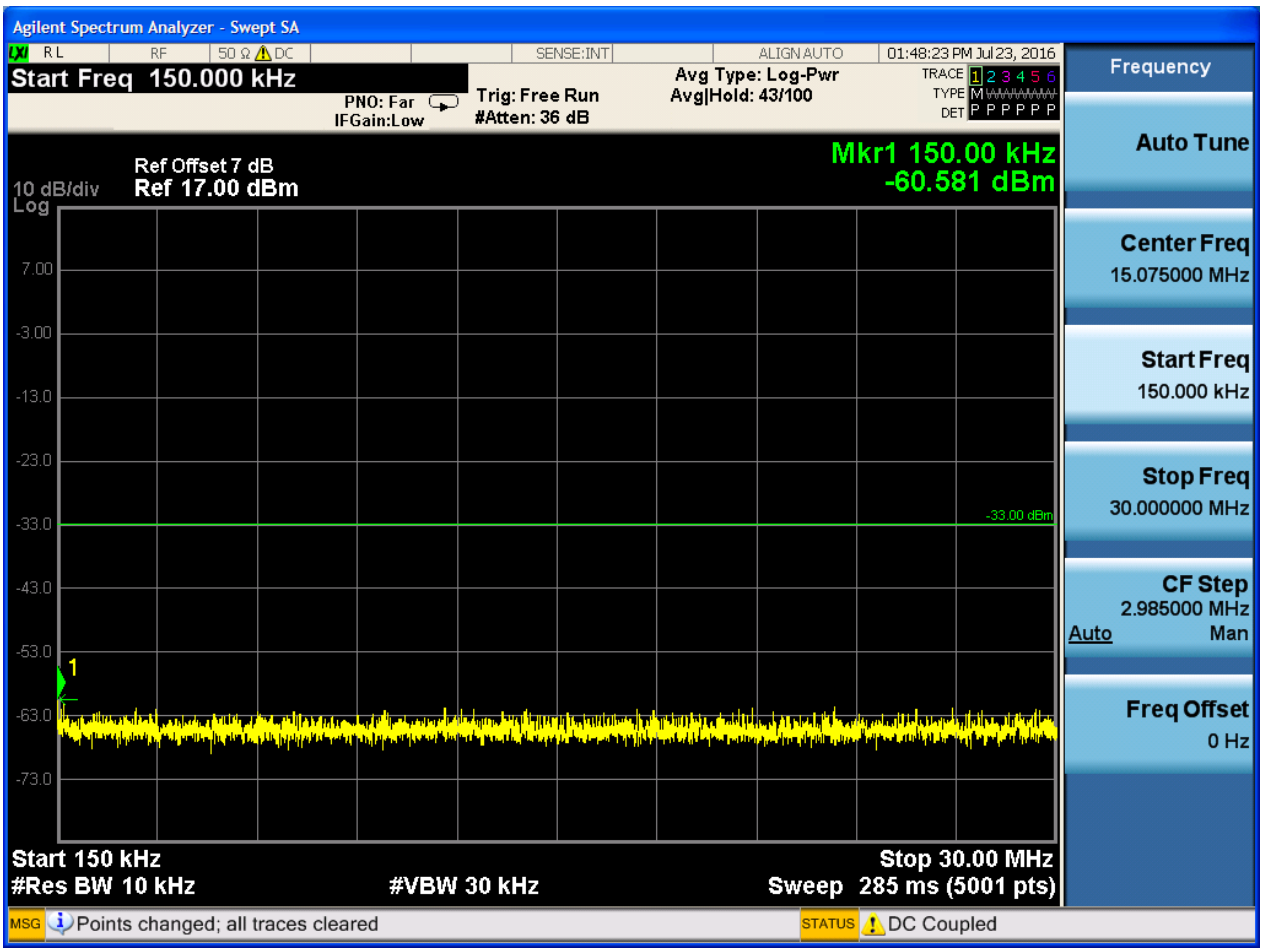


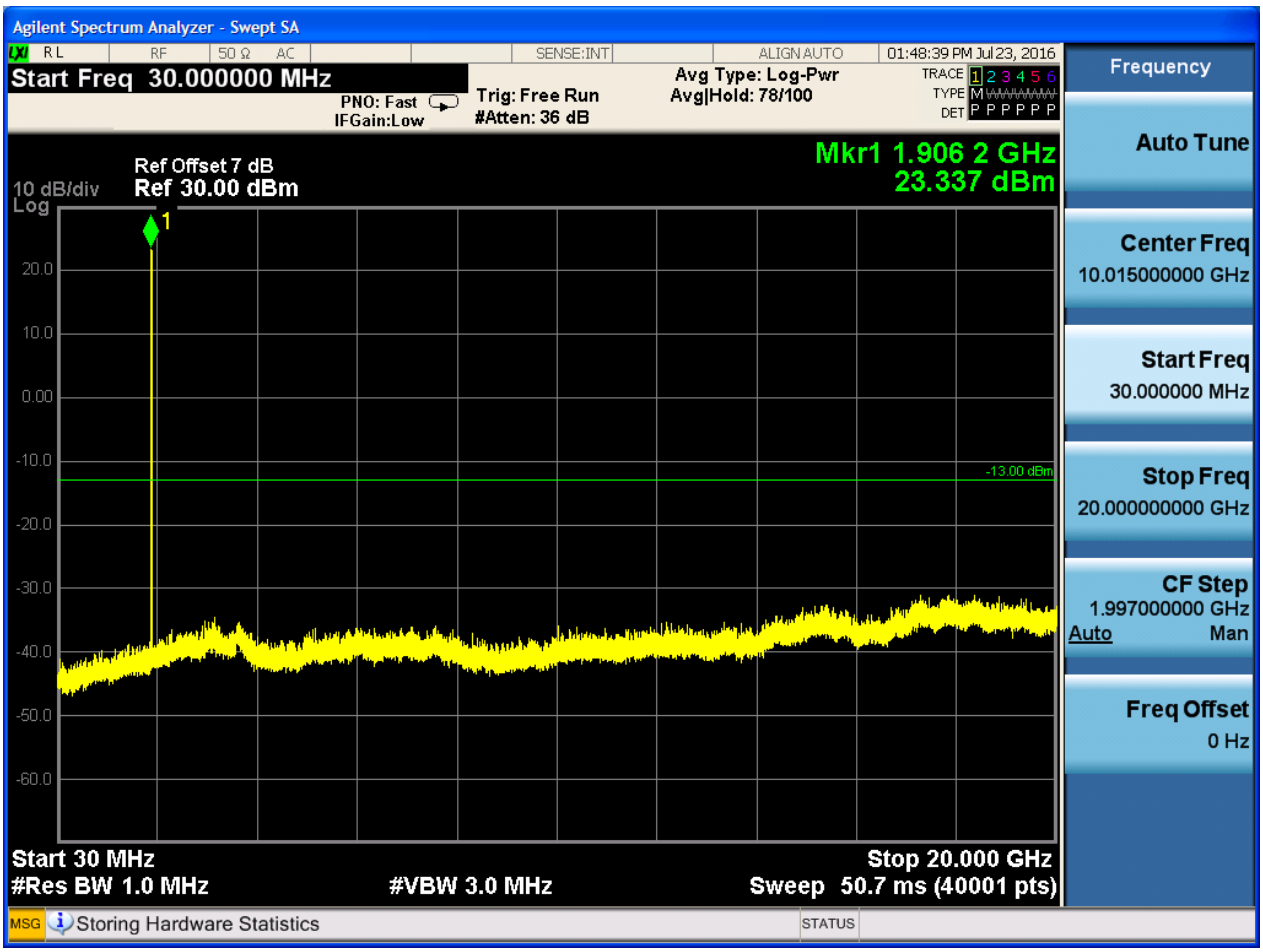



Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
01:47:44 PM Jul 23, 2016
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 36 dB
Avg Type: Log-Pwr
Avg|Hold: 80/100
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P P
Ref Offset 7 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr1 1.878 7 GHz
23.145 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-13.00 dBm
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
Sweep 50.7 ms (40001 pts)
Points changed; all traces cleared
MSG
STATUS
Trace/Det
Select Trace
Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View/Blank
Trace On
More
1 of 3

#### 6.2.1.1.3 Test Channel = HCH



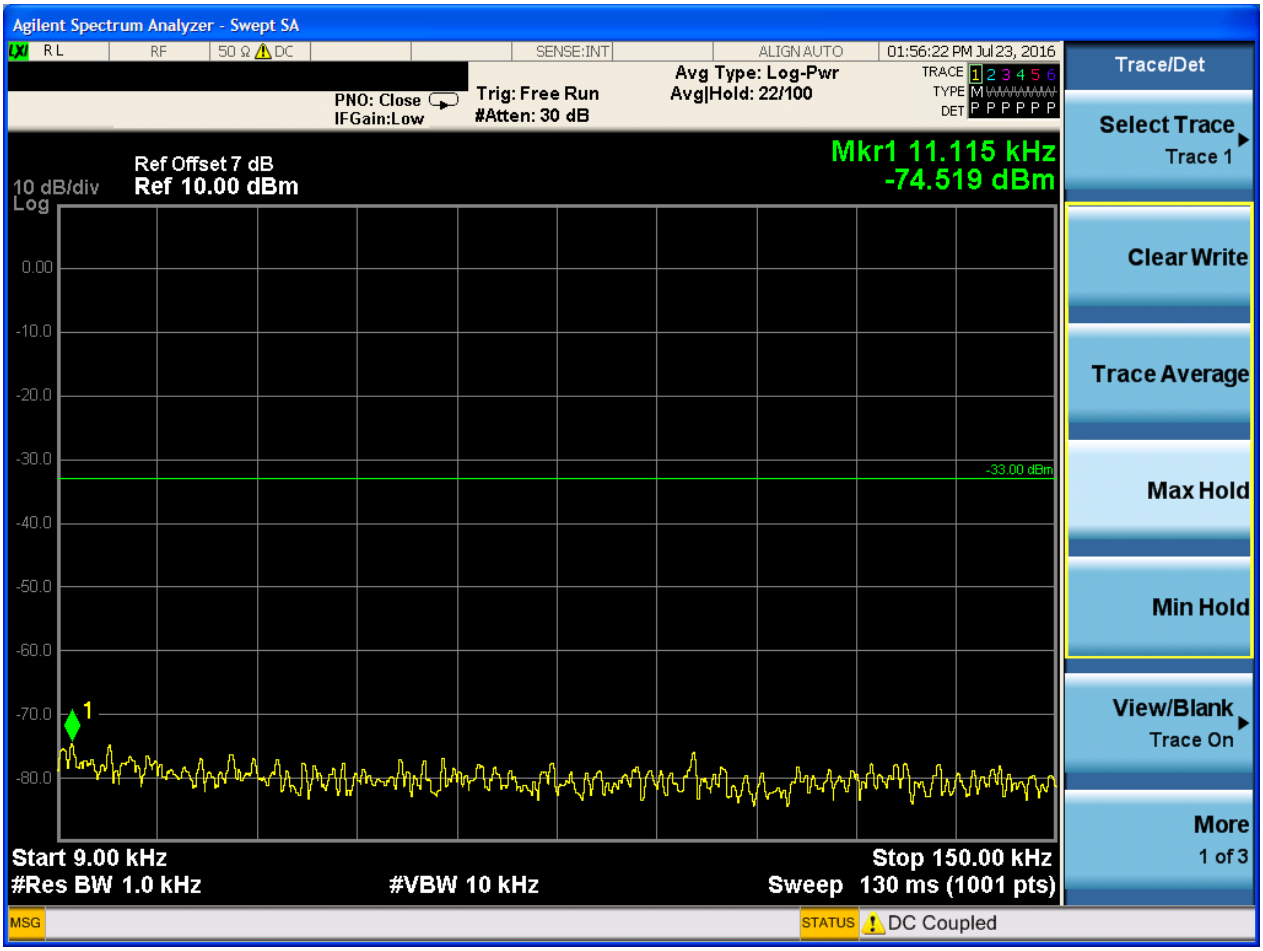


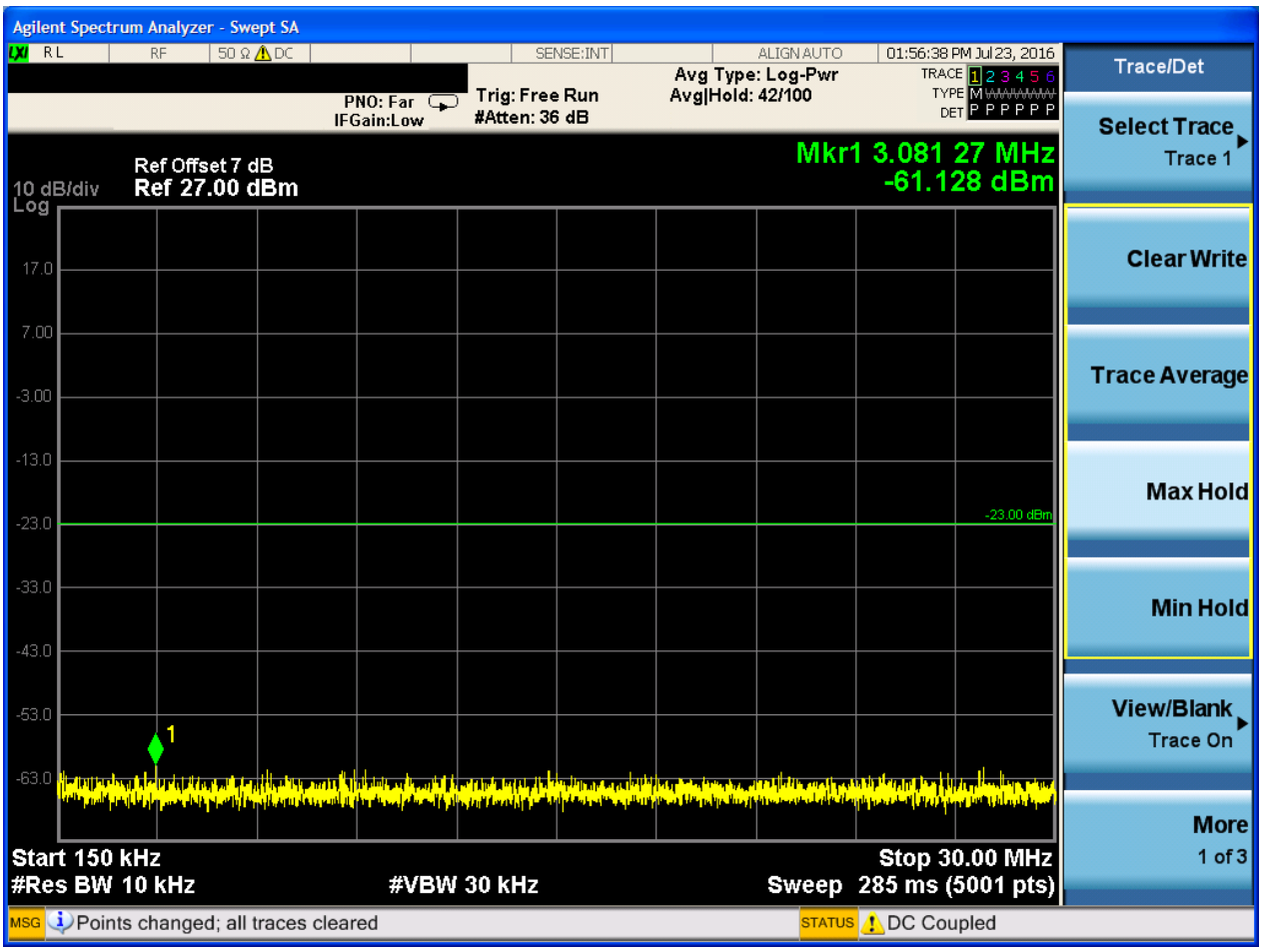


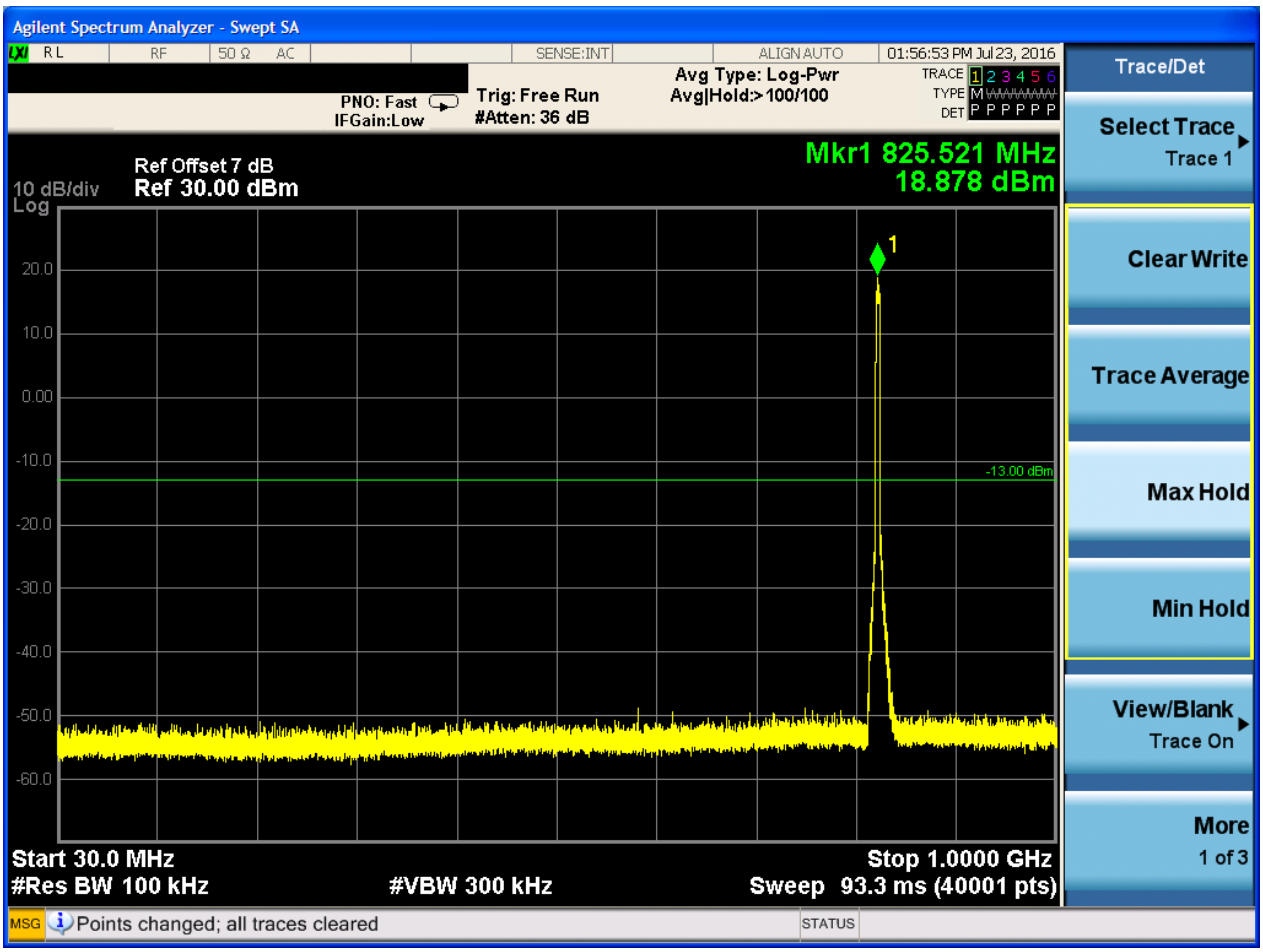
### 6.2.2 Test Band = WCDMA850

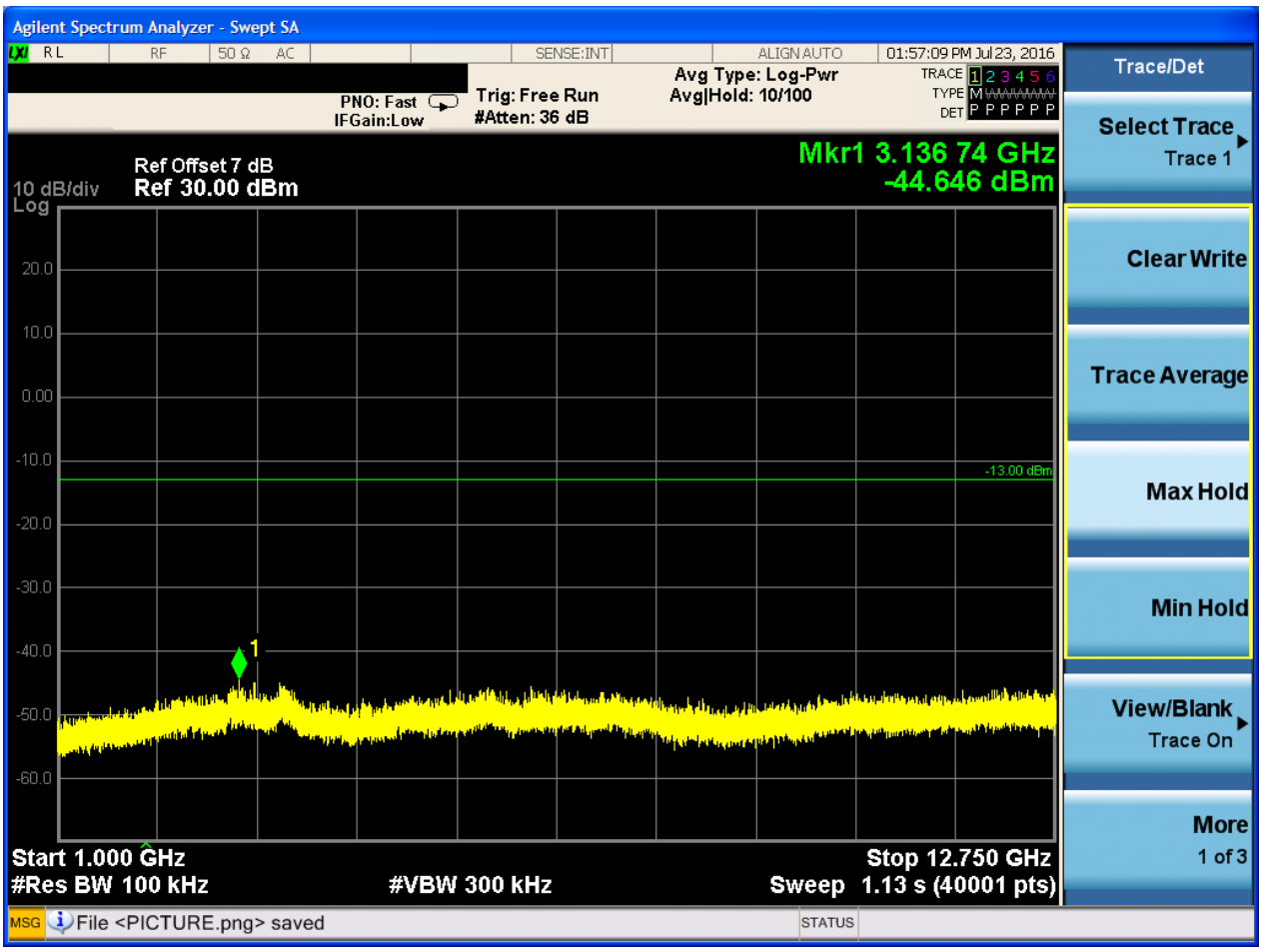
#### 6.2.2.1 Test Mode = UMTS/TM1

##### 6.2.2.1.1 Test Channel = LCH

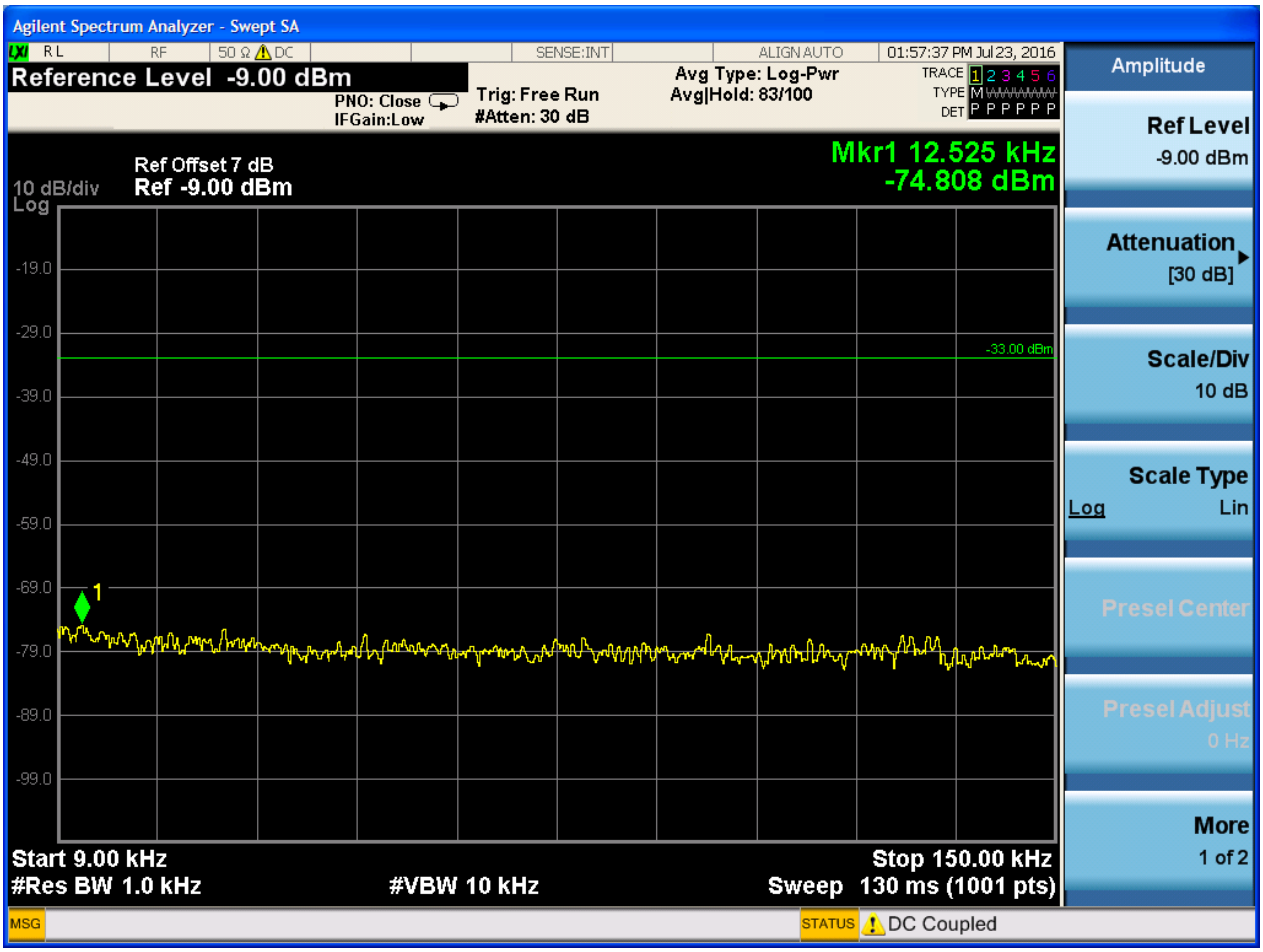


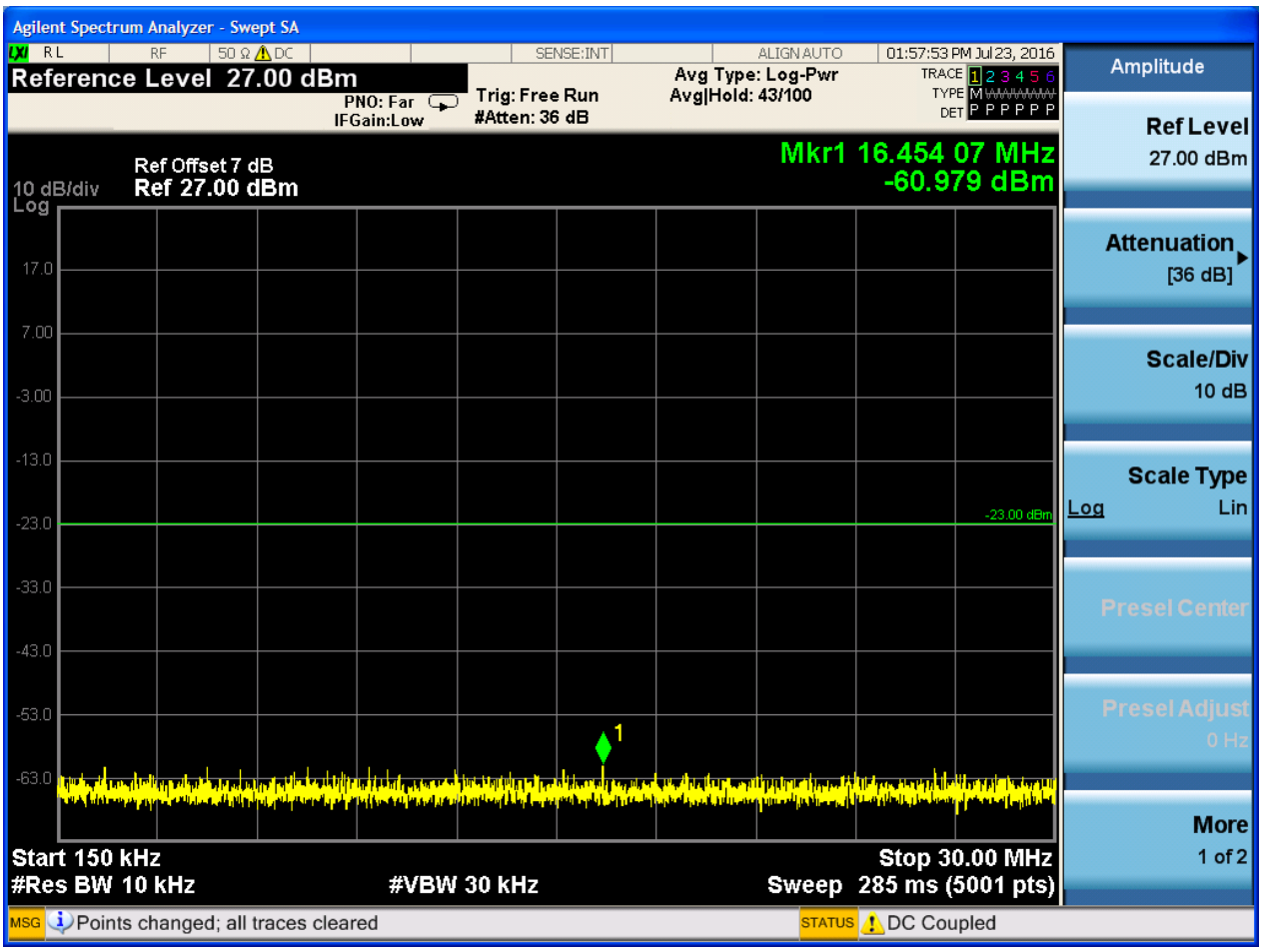


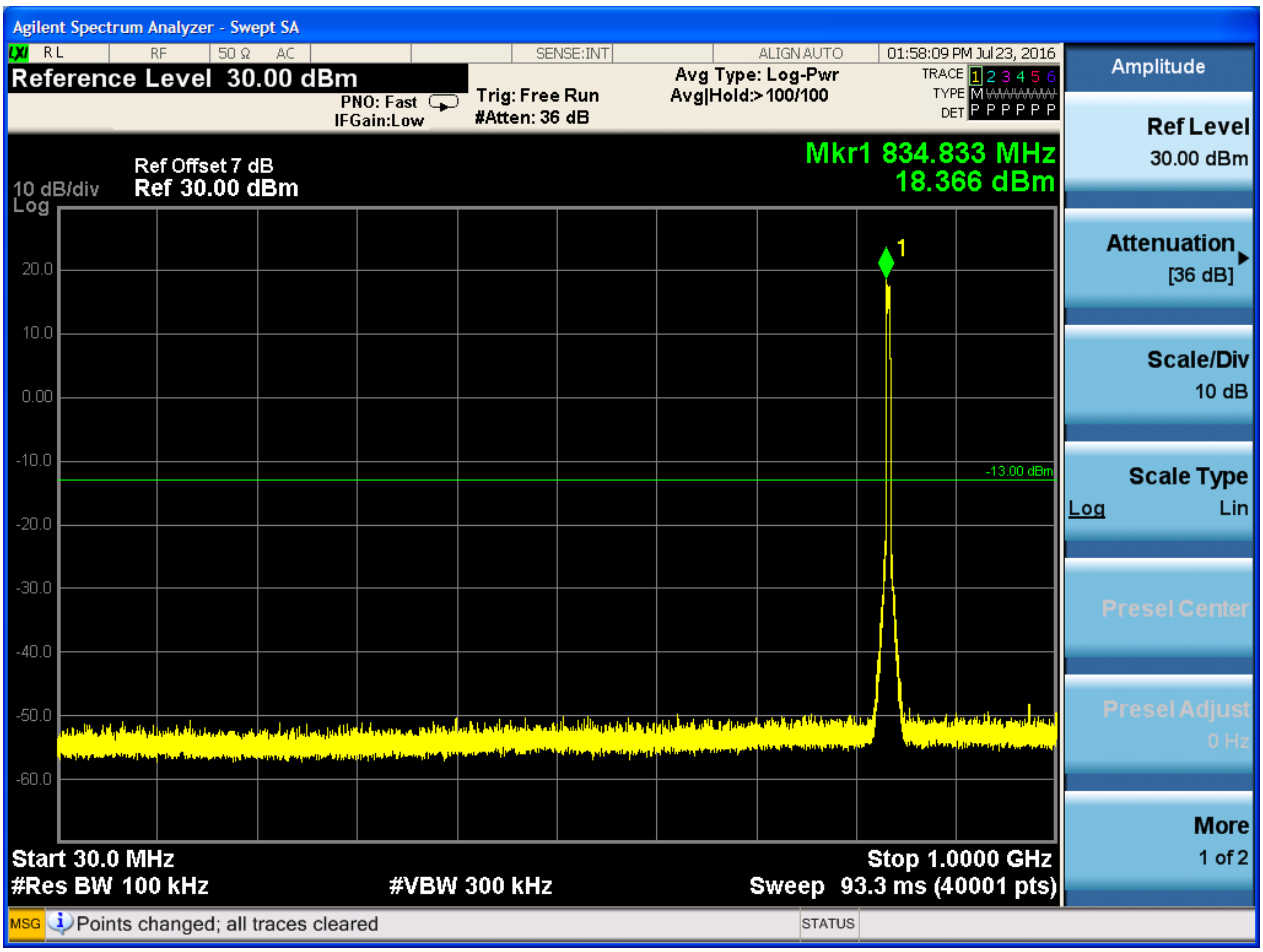


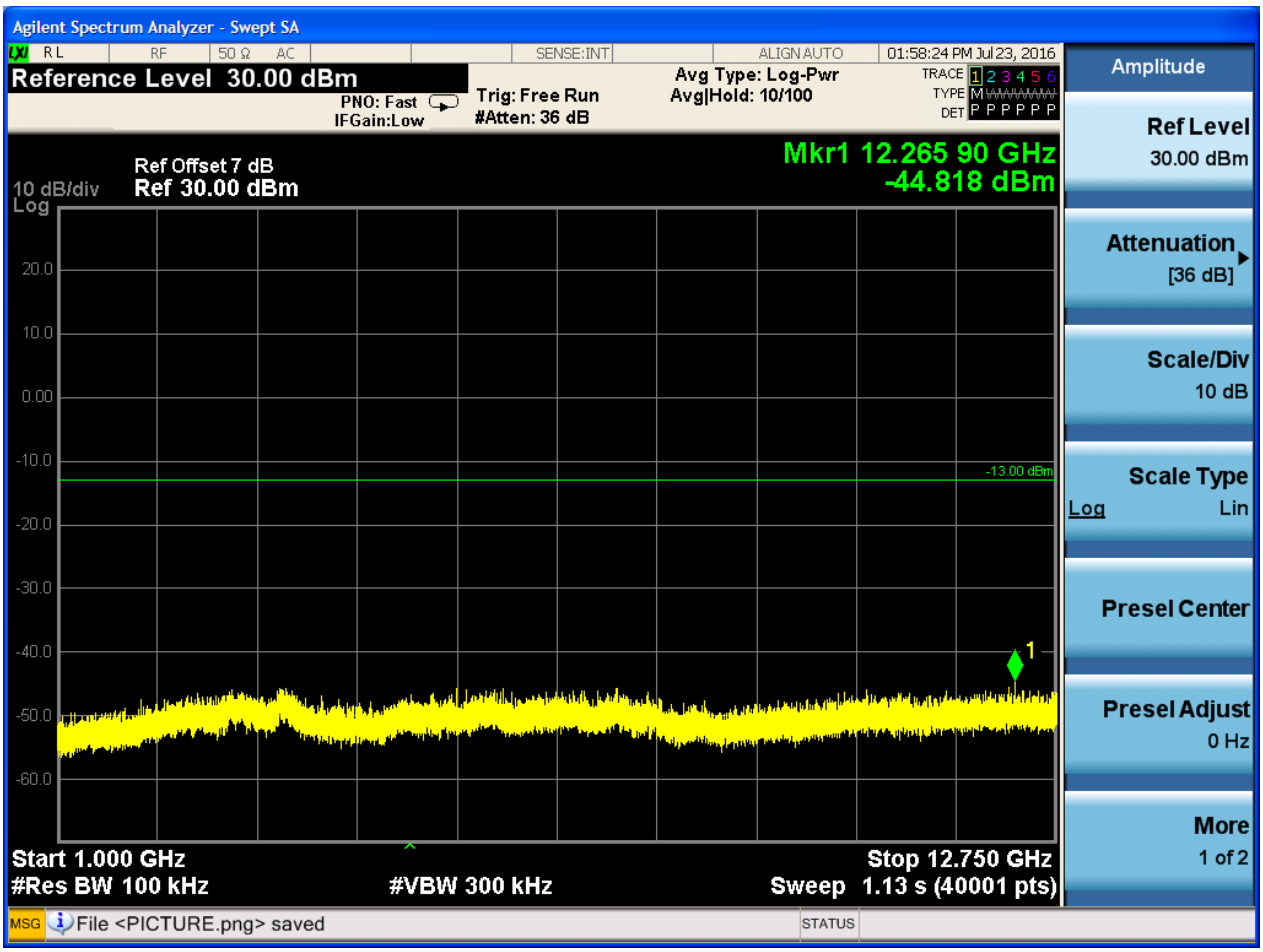


#### 6.2.2.1.2 Test Channel = MCH

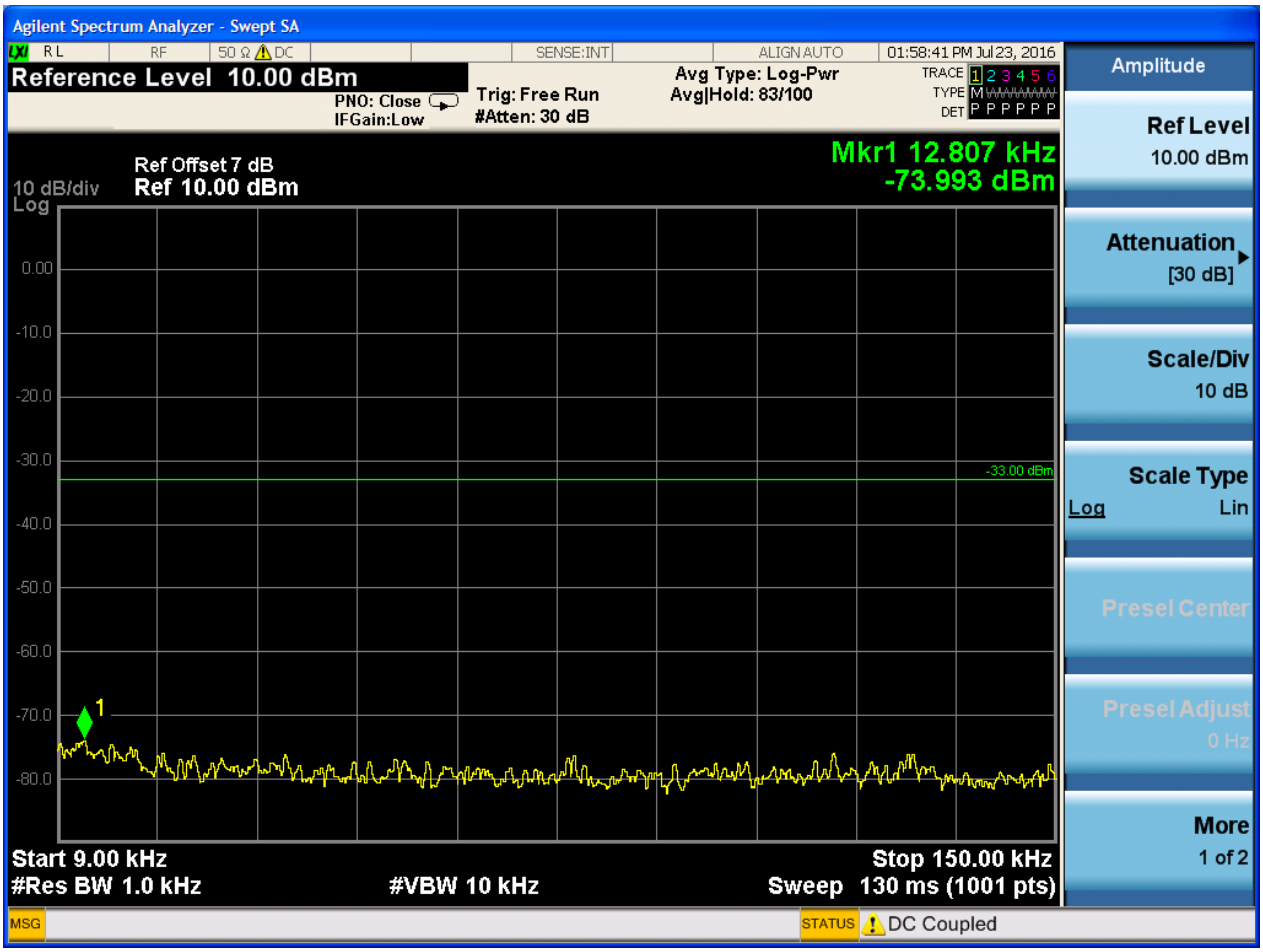


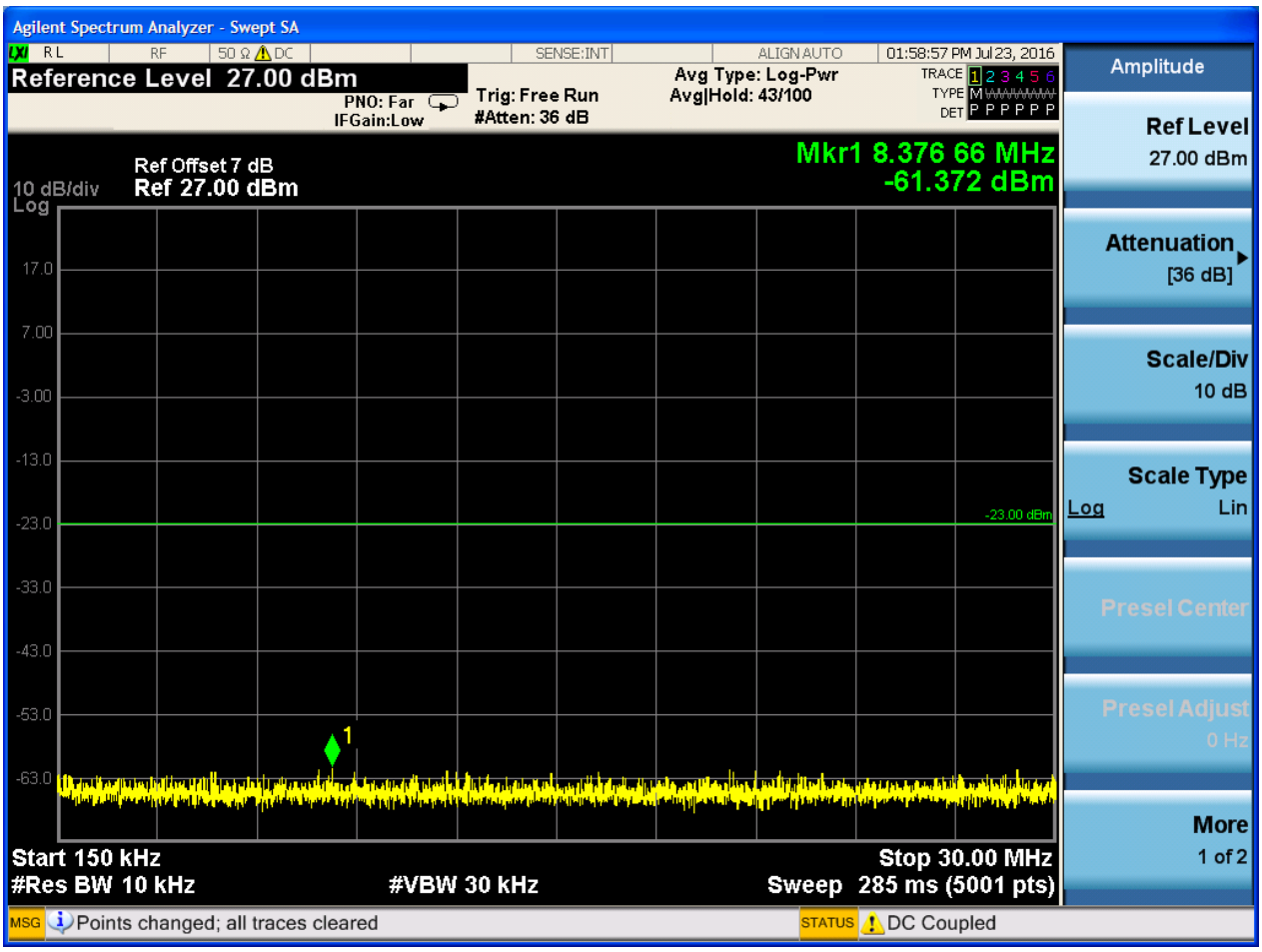


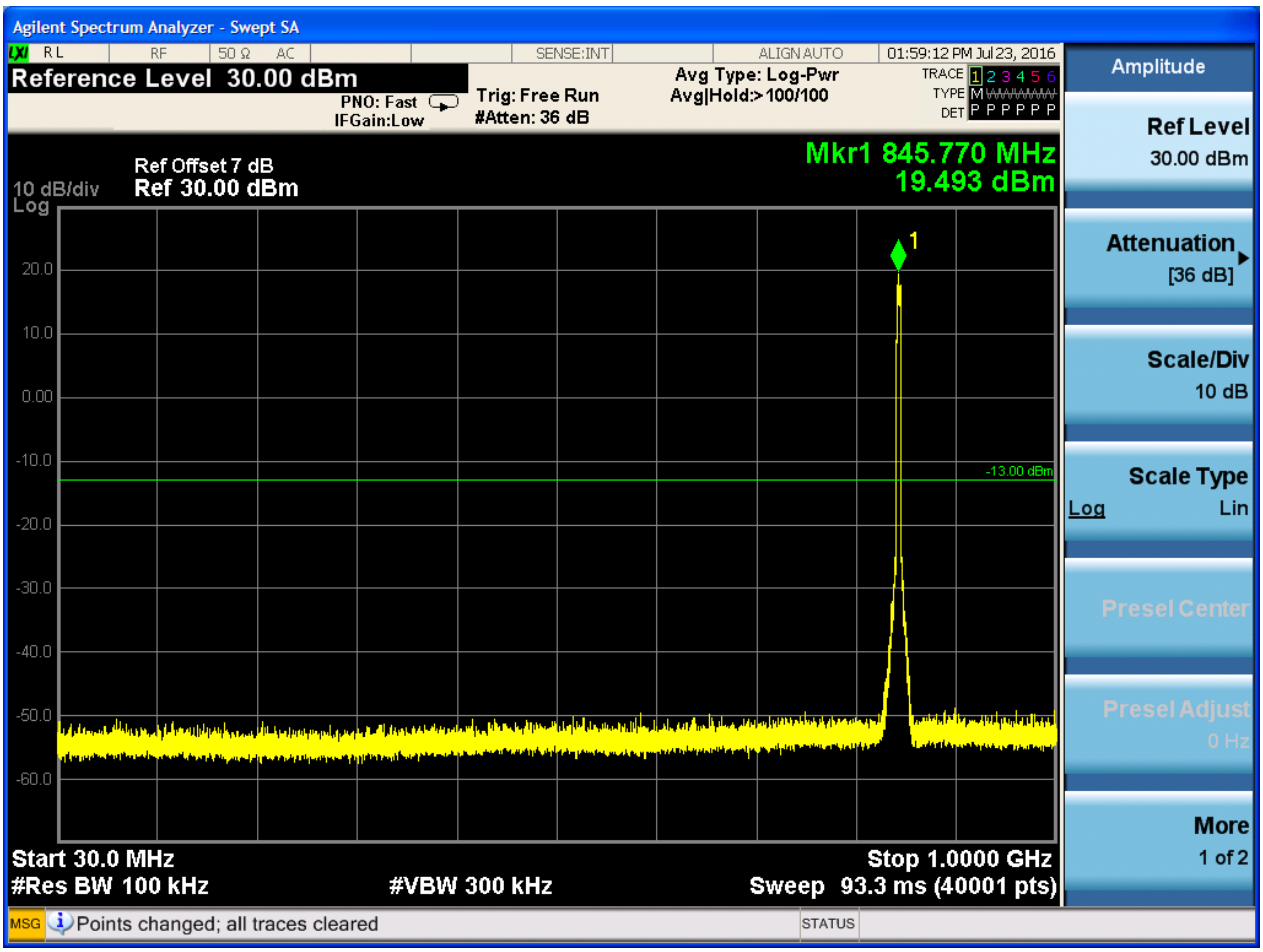


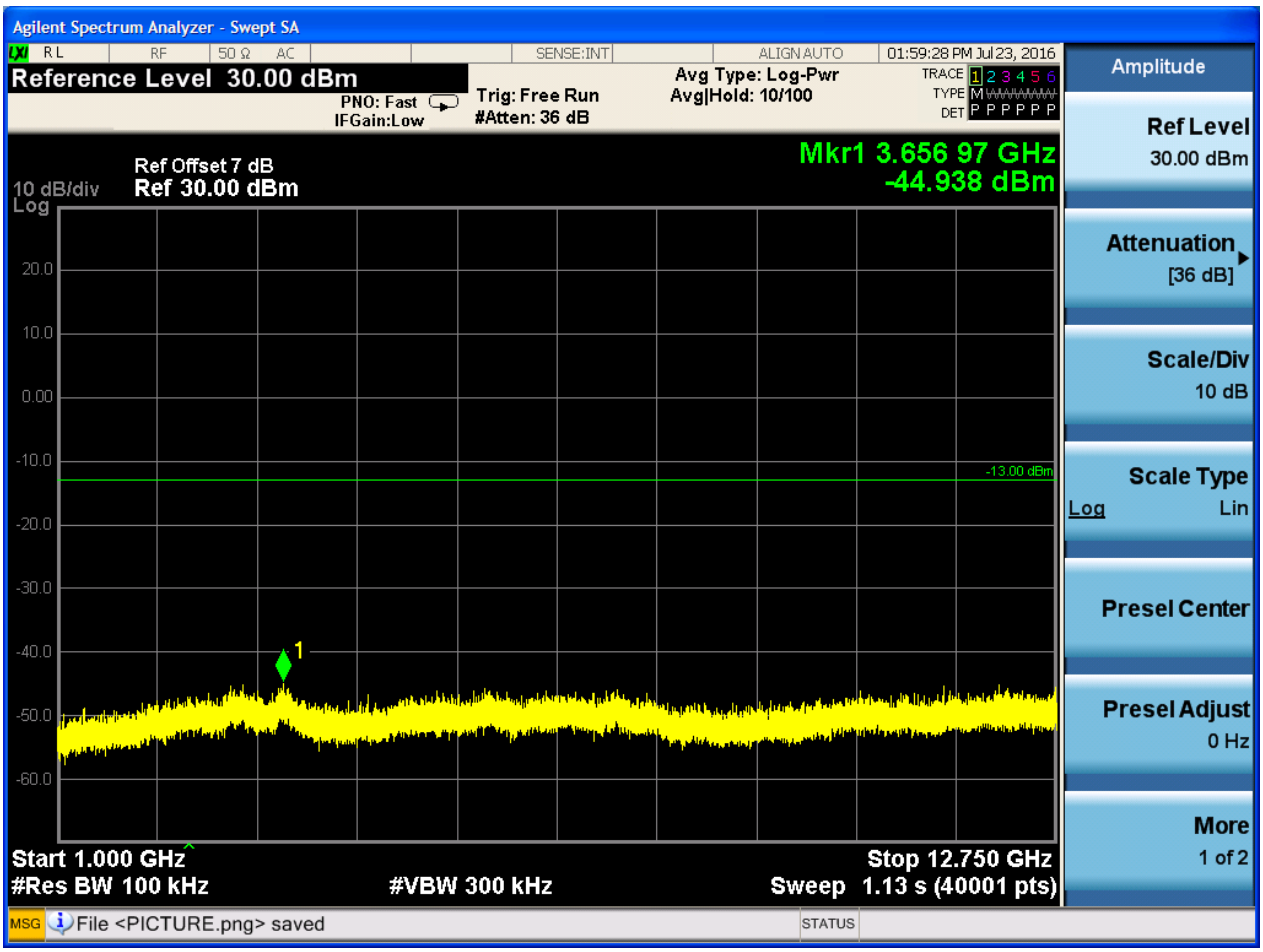


### 6.2.2.1.3 Test Channel = HCH









# 7Appendix_G: Field Strength of Spurious Radiation

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

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

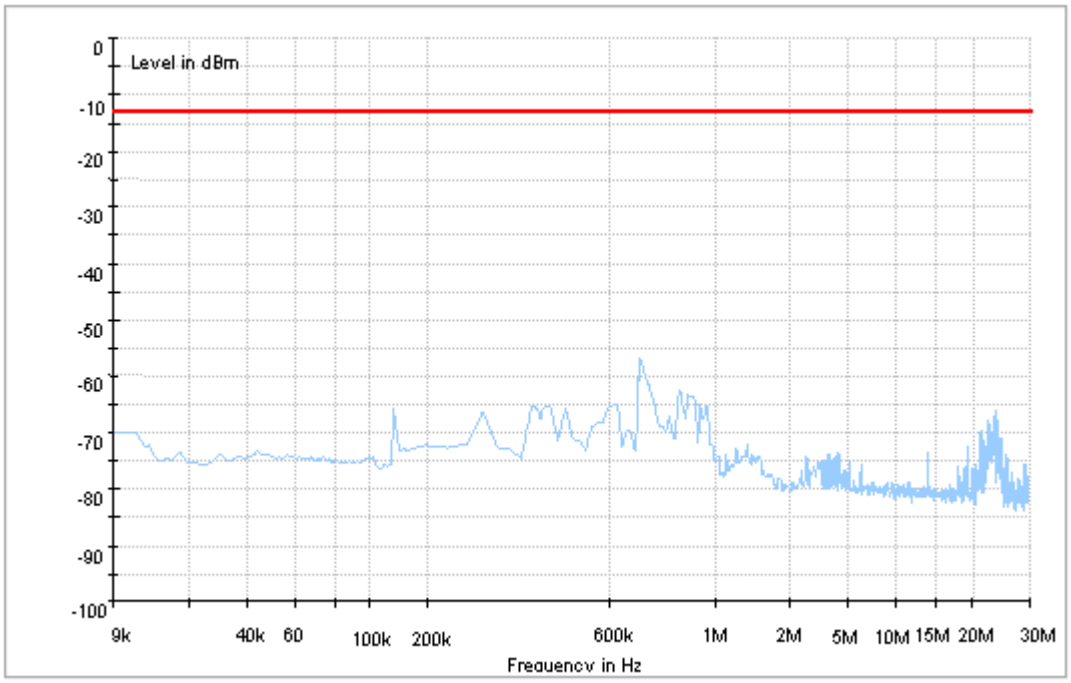
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

## Part I - Test Plots

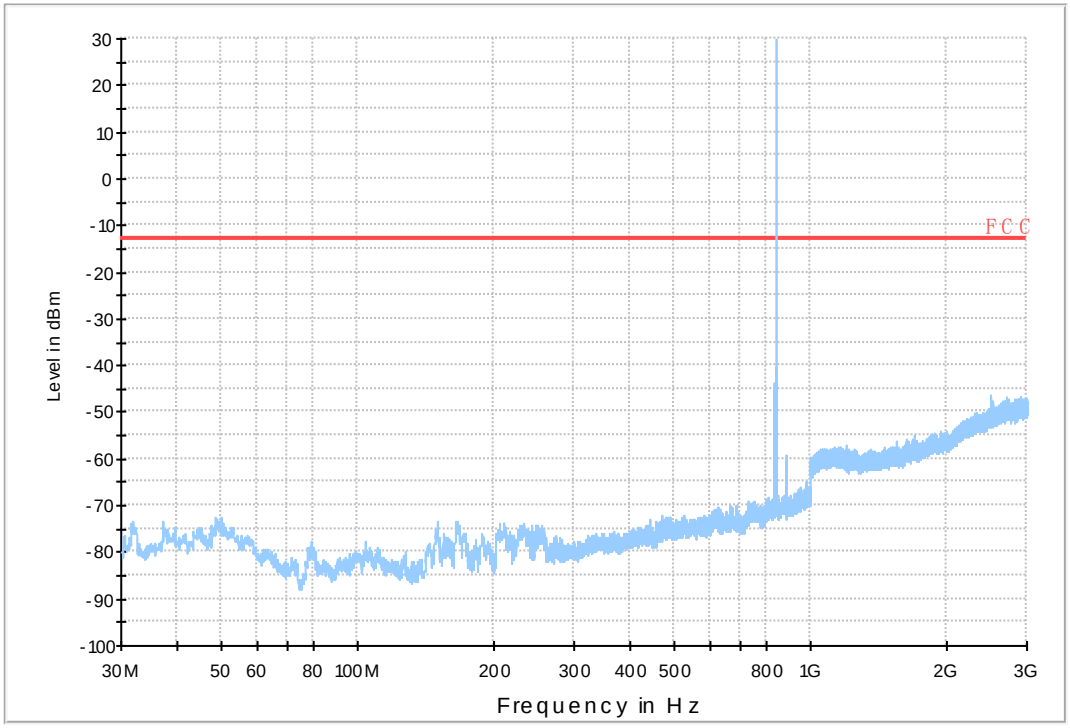
### 7.1 For GSM

#### 7.1.1 Test Band = GSM850

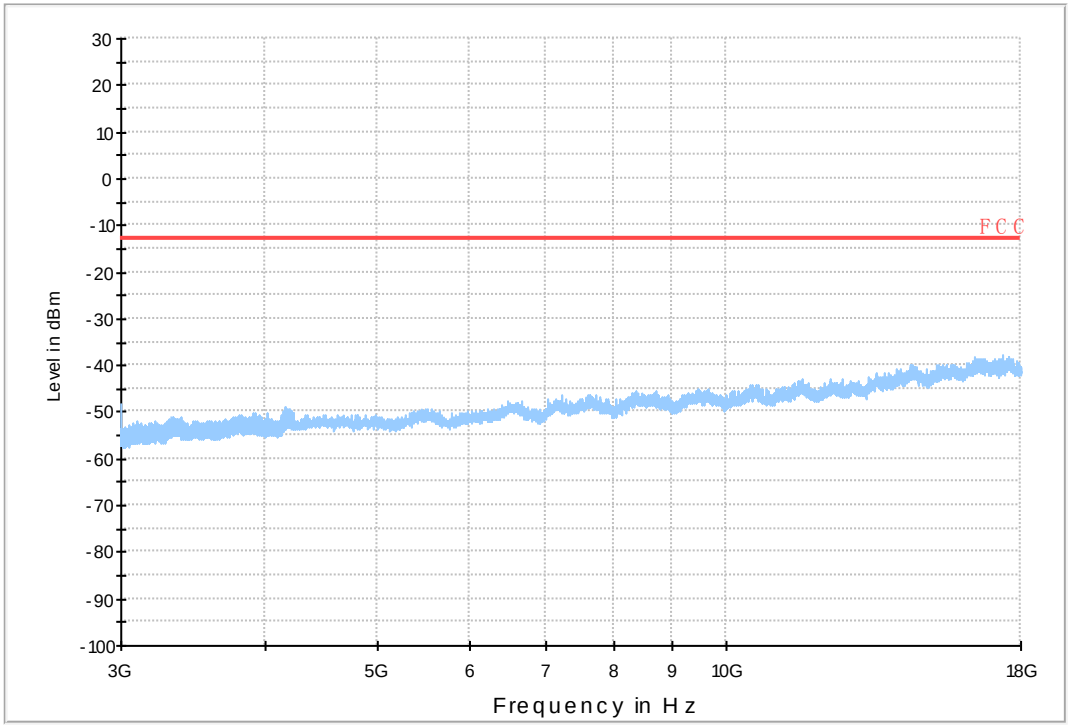
##### 7.1.1.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

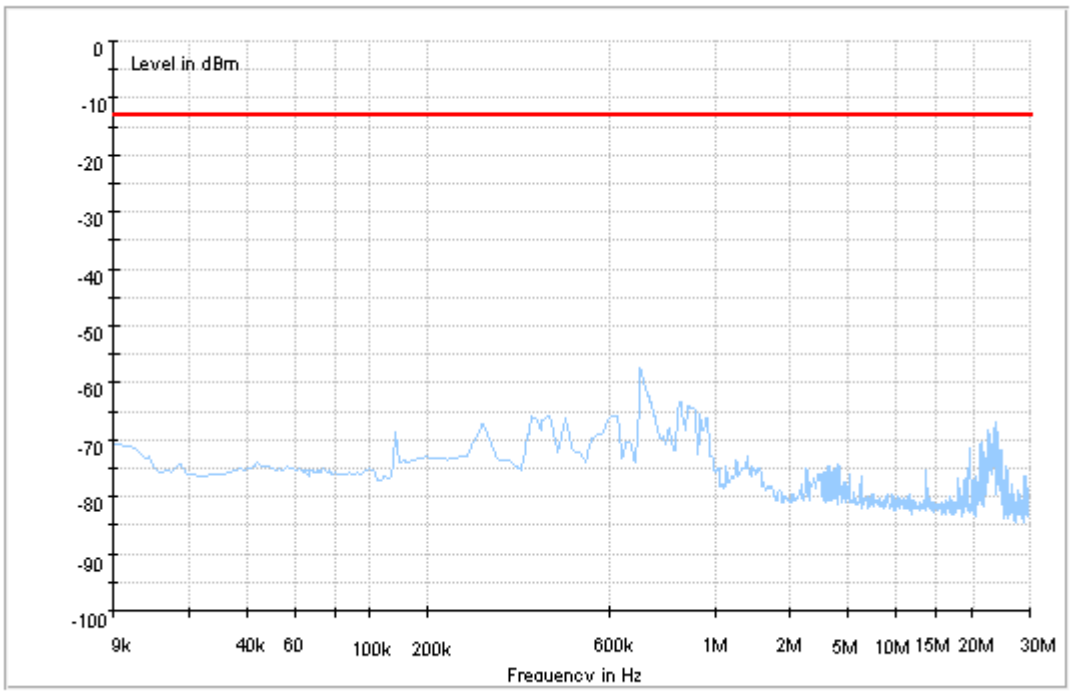



Copy of FCC PART22 GSM850_H

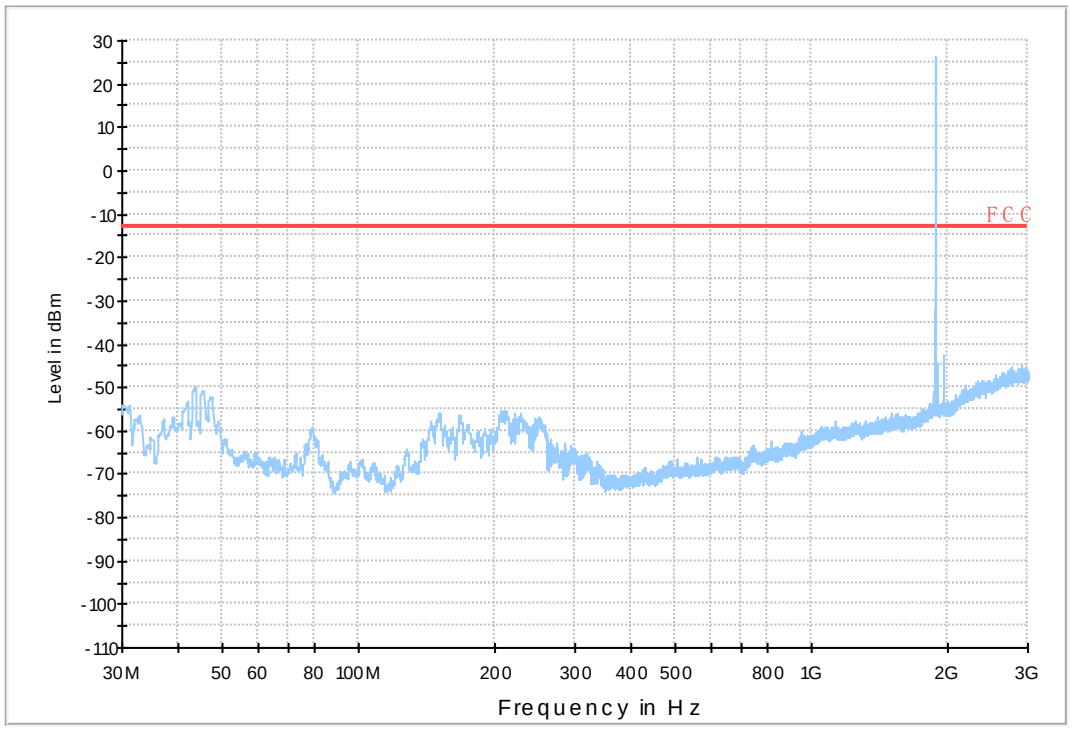


### 7.1.2 Test Band = GSM1900

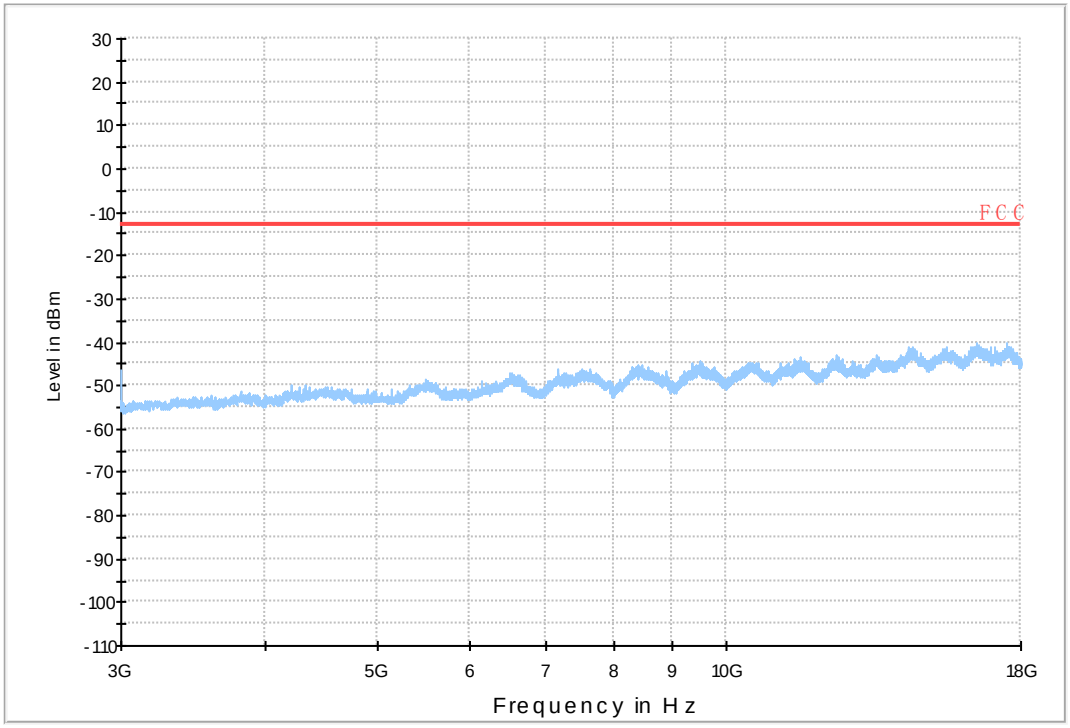
#### 7.1.2.1 Test Mode = GSM/TM1

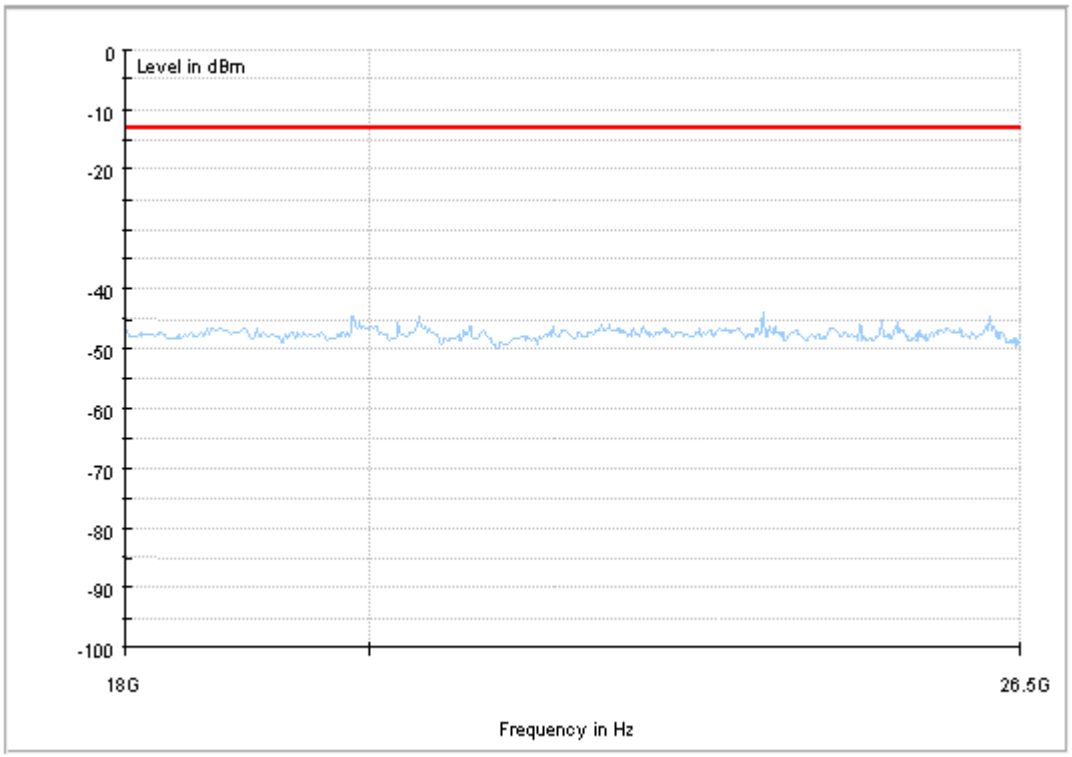



Copy of FCC PART24 GSM1900_L



Copy of FCC PART24 GSM1900_H

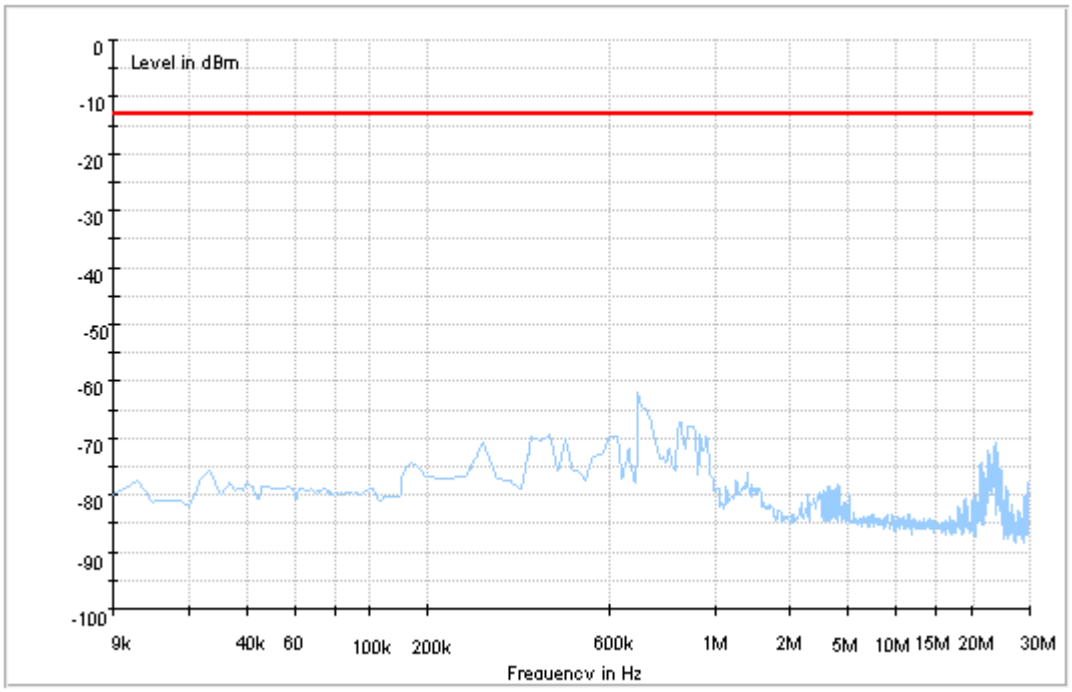




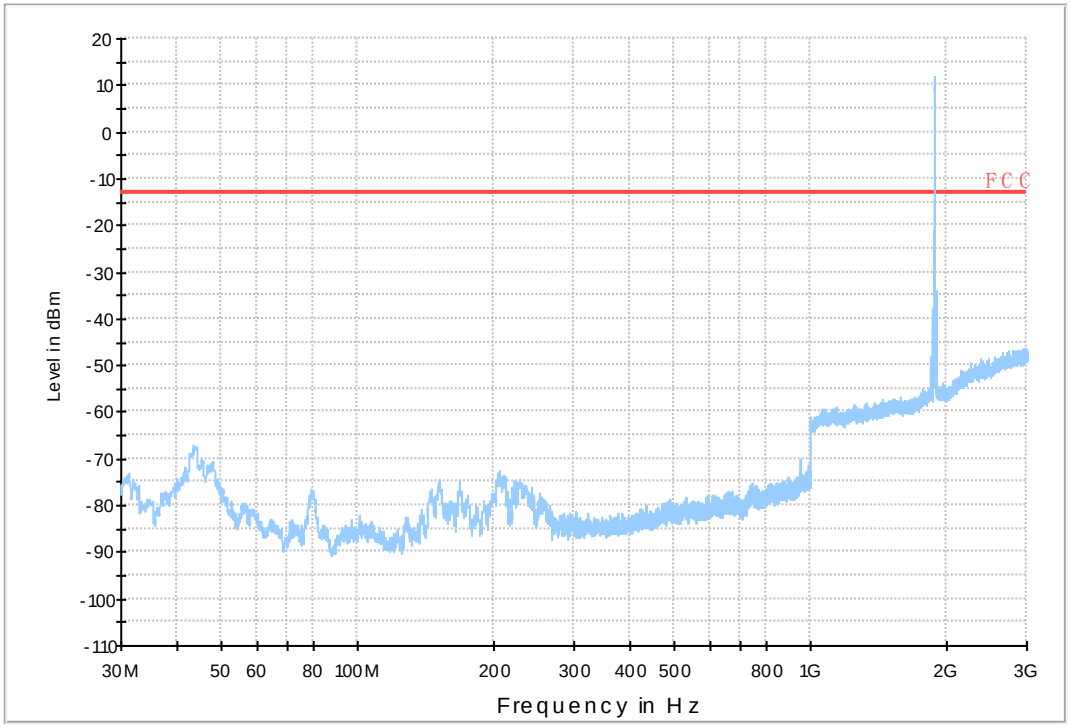
## 7.2 For UMTS

### 7.2.1 Test Band = WCDMA1900

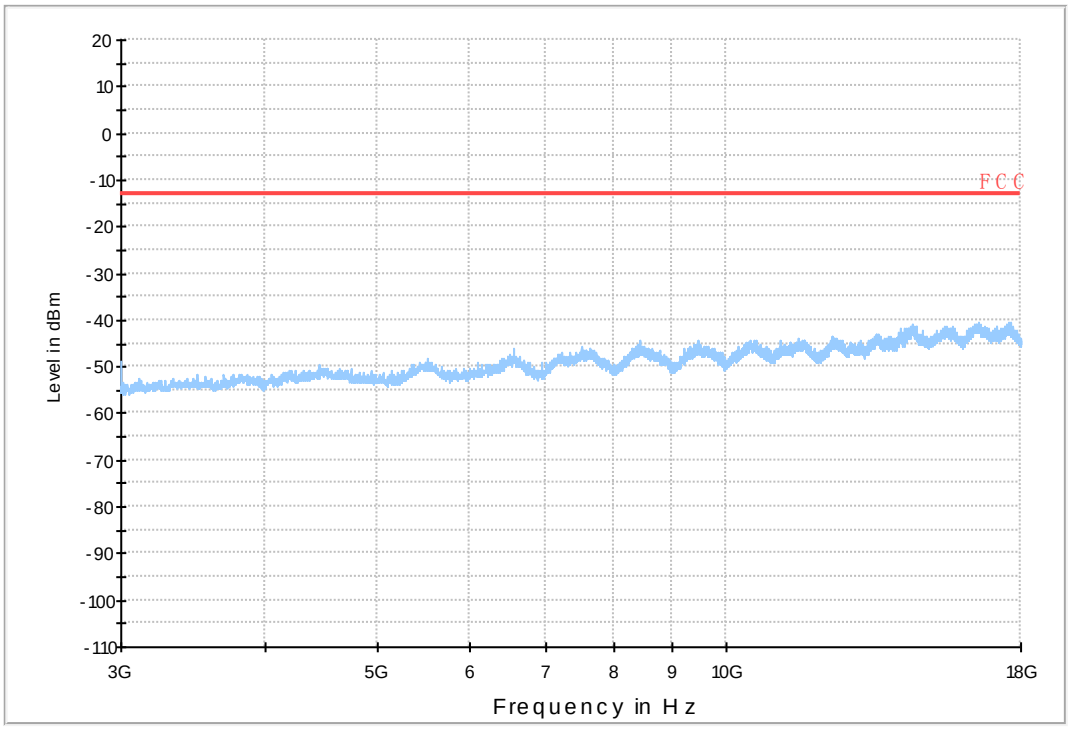
#### 7.2.1.1 Test Mode = UMTS/TM1

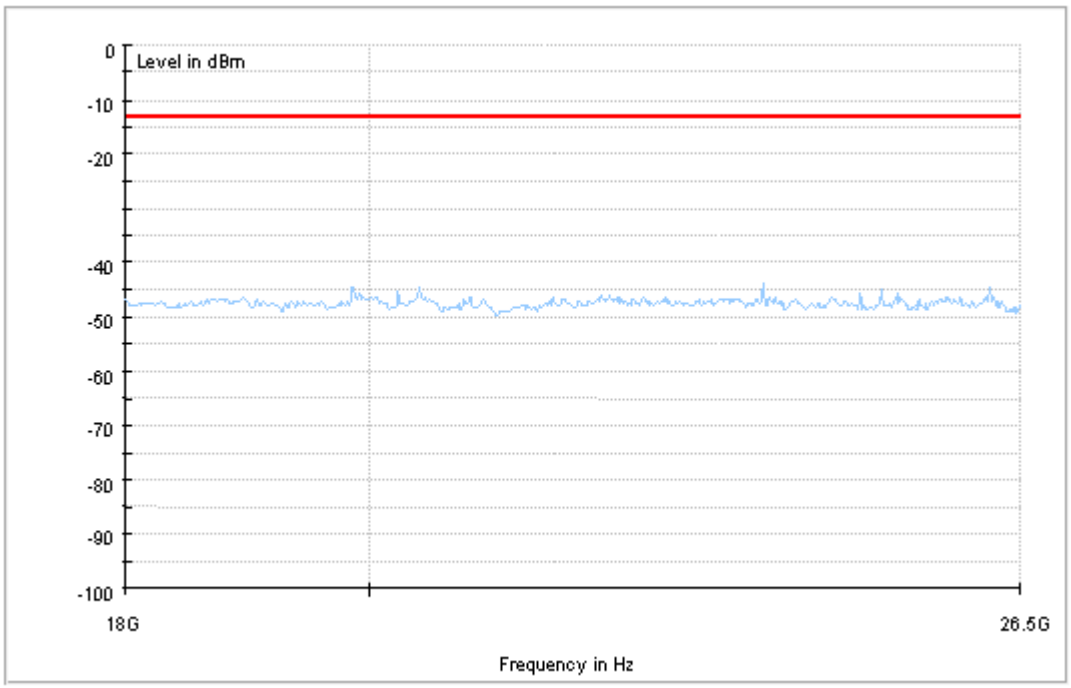


Copy of FCC PART24 WCDMA1900_L



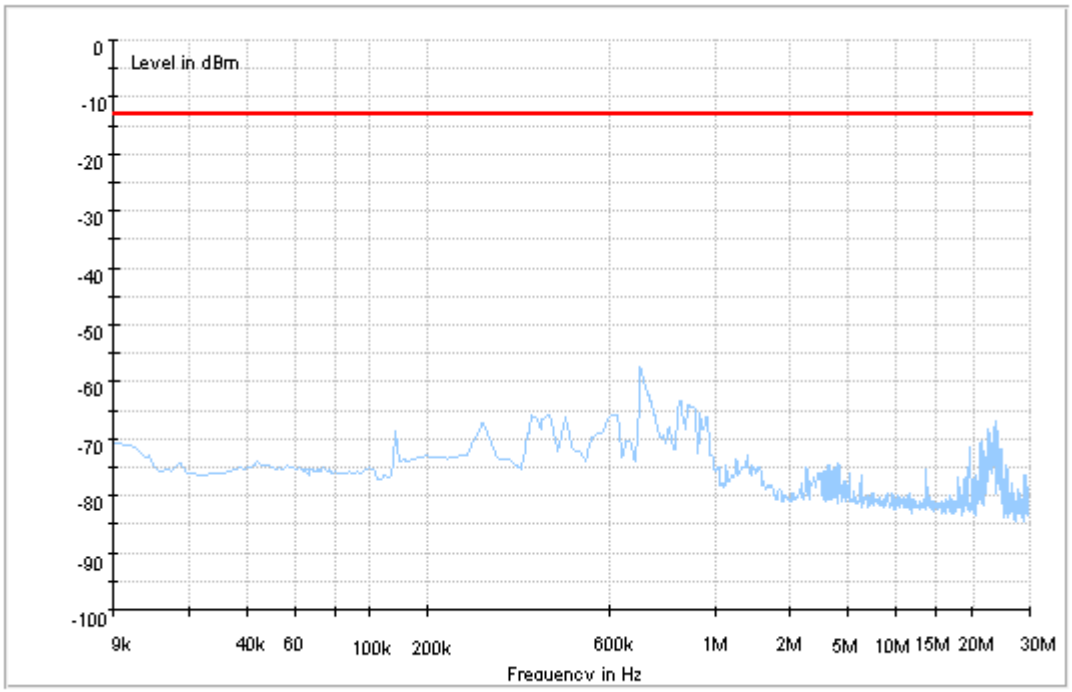

Copy of FCC PART24 WCDMA1900_H



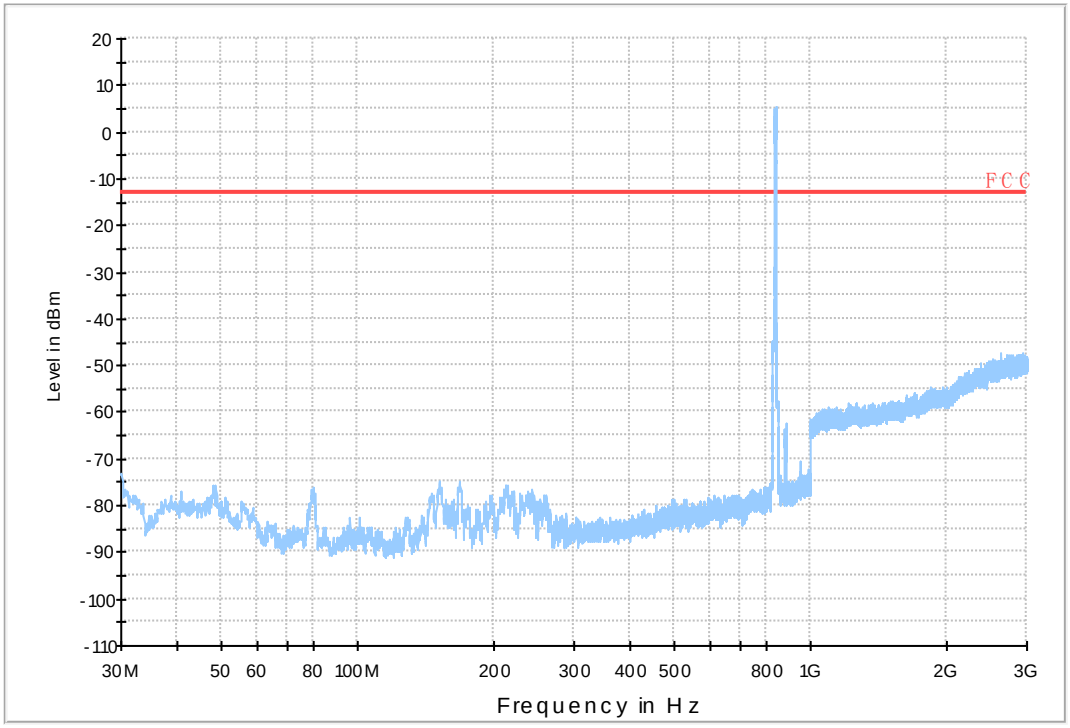



### 7.2.2 Test Band = WCDMA850

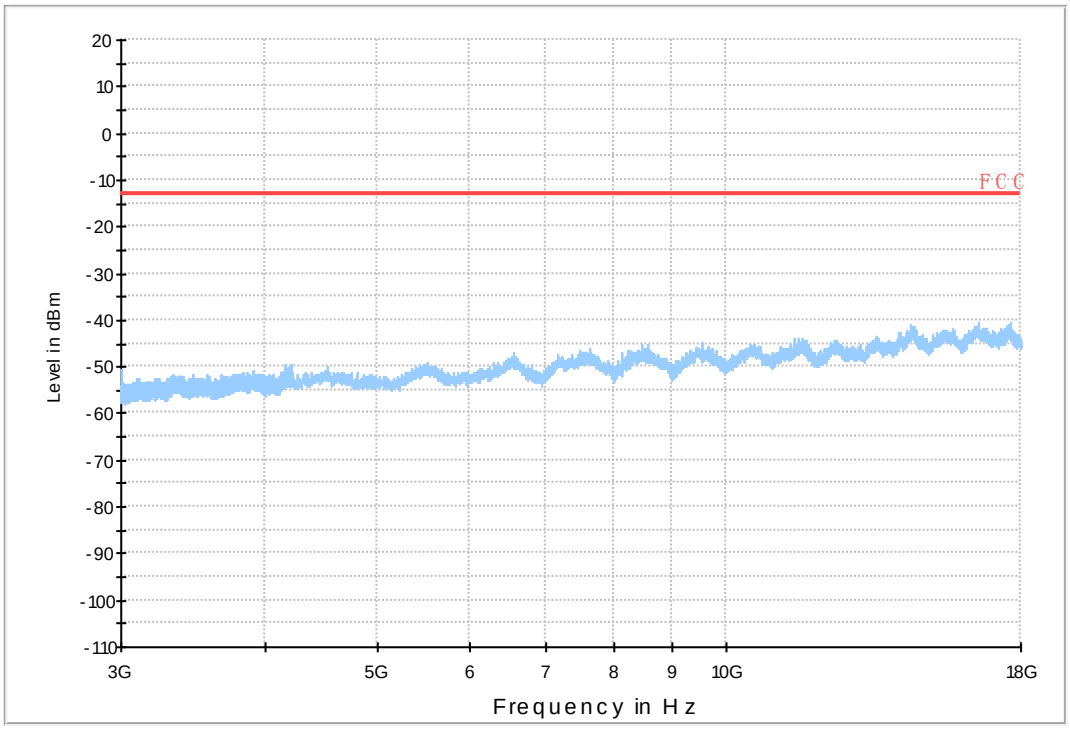
#### 7.2.2.1 Test Mode = UMTS/TM1



Copy of FCC PART22 WCDMA850_L




Copy of FCC PART22 WCDMA850_H



# 8Appendix_H: Frequency Stability

### 8.1 For GSM

#### 8.1.1Frequency Error vs. Voltage:

| Test Band | Test Mode | Test Channel | Test Temp. | Test Volt. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|---|---|---|---|---|---|---|---|
| GSM850 | GSM/TM1 | LCH | TN | VL | -14.53 | -0.01763 | PASS |
| | | | | VN | -10.78 | -0.01308 | PASS |
| | | | | VH | -15.05 | -0.01826 | PASS |
| | | MCH | TN | VL | -12.27 | -0.01467 | PASS |
| | | | | VN | -15.37 | -0.01837 | PASS |
| | | | | VH | -14.98 | -0.01791 | PASS |
| | | HCH | TN | VL | -17.56 | -0.02069 | PASS |
| | | | | VN | -11.11 | -0.01309 | PASS |
| | | | | VH | -11.04 | -0.01301 | PASS |
| | GSM/TM2 | LCH | TN | VL | -19.27 | -0.02338 | PASS |
| | | | | VN | -16.85 | -0.02044 | PASS |
| | | | | VH | -18.08 | -0.02194 | PASS |
| | | MCH | TN | VL | -19.69 | -0.02354 | PASS |
| | | | | VN | -20.40 | -0.02438 | PASS |
| | | | | VH | -24.09 | -0.0288 | PASS |
| | | HCH | TN | VL | -13.69 | -0.01613 | PASS |
| | | | | VN | -12.95 | -0.01526 | PASS |
| | | | | VH | -15.46 | -0.01821 | PASS |
| GSM1900 | GSM/TM1 | LCH | TN | VL | 14.85 | 0.00803 | PASS |
| | | | | VN | 15.17 | 0.0082 | PASS |
| | | | | VH | 13.75 | 0.00743 | PASS |
| | | MCH | TN | VL | 14.98 | 0.00797 | PASS |
| | | | | VN | 24.09 | 0.01281 | PASS |
| | | | | VH | 26.80 | 0.01426 | PASS |
| | | HCH | TN | VL | 21.18 | 0.01109 | PASS |
| | | | | VN | 27.44 | 0.01437 | PASS |
| | | | | VH | 19.44 | 0.01018 | PASS |
| | GSM/TM2 | LCH | TN | VL | 14.24 | 0.0077 | PASS |
| | | | | VN | 4.84 | 0.00262 | PASS |
| | | | | VH | 12.46 | 0.00673 | PASS |
| | | MCH | TN | VL | 14.46 | 0.00769 | PASS |
| | | | | VN | 19.15 | 0.01019 | PASS |

| Test Band | Test Mode | Test Channel | Test Temp. | Test Volt. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|---|---|---|---|---|---|---|---|
| | | | | VH | 15.53 | 0.00826 | PASS |
| | | HCH | TN | VL | 18.92 | 0.00991 | PASS |
| | | | | VN | 18.85 | 0.00987 | PASS |
| | | | | VH | 19.21 | 0.01006 | PASS |

**8.1.2Frequency Error vs. Temperature:**

| Test Band | Test Mode | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|---|---|---|---|---|---|---|---|
| GSM850 | GSM/TM1 | LCH | VN | -30 | -15.76 | -0.01912 | PASS |
| | | | | -20 | -15.37 | -0.01865 | PASS |
| | | | | -10 | -13.04 | -0.01582 | PASS |
| | | | | 0 | -13.69 | -0.01661 | PASS |
| | | | | 10 | -11.95 | -0.0145 | PASS |
| | | | | 20 | -19.50 | -0.02366 | PASS |
| | | | | 30 | -14.27 | -0.01731 | PASS |
| | | | | 40 | -13.30 | -0.01614 | PASS |
| | | | | 50 | -14.79 | -0.01794 | PASS |
| | | MCH | VN | -30 | -14.53 | -0.01737 | PASS |
| | | | | -20 | -13.69 | -0.01636 | PASS |
| | | | | -10 | -17.37 | -0.02076 | PASS |
| | | | | 0 | -17.56 | -0.02099 | PASS |
| | | | | 10 | -14.72 | -0.0176 | PASS |
| | | | | 20 | -18.47 | -0.02208 | PASS |
| | | | | 30 | -15.24 | -0.01822 | PASS |
| | | | | 40 | -12.33 | -0.01474 | PASS |
| | | | | 50 | -13.95 | -0.01667 | PASS |
| | | HCH | VN | -30 | -16.47 | -0.0194 | PASS |
| | | | | -20 | -9.36 | -0.01103 | PASS |
| | | | | -10 | -16.21 | -0.0191 | PASS |
| | | | | 0 | -11.95 | -0.01408 | PASS |
| | | | | 10 | -13.43 | -0.01582 | PASS |
| | | | | 20 | -18.53 | -0.02183 | PASS |
| | | | | 30 | -14.98 | -0.01765 | PASS |
| | | | | 40 | -11.24 | -0.01324 | PASS |
| | | | | 50 | -16.72 | -0.0197 | PASS |
| | GSM/TM2 | LCH | VN | -30 | -18.53 | -0.02248 | PASS |
| | | | | -20 | -21.41 | -0.02598 | PASS |
| | | | | -10 | -15.98 | -0.01939 | PASS |
| | | | | 0 | -20.95 | -0.02542 | PASS |

| Test Band | Test Mode | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|---|---|---|---|---|---|---|---|
| | | | | 10 | -16.63 | -0.02018 | PASS |
| | | | | 20 | -24.54 | -0.02977 | PASS |
| | | | | 30 | -20.11 | -0.0244 | PASS |
| | | | | 40 | -19.95 | -0.02421 | PASS |
| | | | | 50 | -17.21 | -0.02088 | PASS |
| | | MCH | VN | -30 | -16.11 | -0.01926 | PASS |
| | | | | -20 | -14.69 | -0.01756 | PASS |
| | | | | -10 | -21.21 | -0.02535 | PASS |
| | | | | 0 | -19.18 | -0.02293 | PASS |
| | | | | 10 | -27.02 | -0.0323 | PASS |
| | | | | 20 | -21.41 | -0.02559 | PASS |
| | | | | 30 | -23.47 | -0.02805 | PASS |
| | | | | 40 | -24.83 | -0.02968 | PASS |
| | | | | 50 | -19.24 | -0.023 | PASS |
| | | HCH | VN | -30 | -25.99 | -0.03062 | PASS |
| | | | | -20 | -22.24 | -0.0262 | PASS |
| | | | | -10 | -21.47 | -0.02529 | PASS |
| | | | | 0 | -24.34 | -0.02868 | PASS |
| | | | | 10 | -13.53 | -0.01594 | PASS |
| | | | | 20 | -20.50 | -0.02415 | PASS |
| | | | | 30 | -20.53 | -0.02419 | PASS |
| | | | | 40 | -19.50 | -0.02297 | PASS |
| | | | | 50 | -17.89 | -0.02108 | PASS |
| GSM1900 | GSM/TM1 | LCH | VN | -30 | 23.50 | 0.0127 | PASS |
| | | | | -20 | 10.85 | 0.00586 | PASS |
| | | | | -10 | 16.92 | 0.00914 | PASS |
| | | | | 0 | 17.95 | 0.0097 | PASS |
| | | | | 10 | 17.18 | 0.00929 | PASS |
| | | | | 20 | 10.72 | 0.00579 | PASS |
| | | | | 30 | 18.73 | 0.01012 | PASS |
| | | | | 40 | 21.31 | 0.01152 | PASS |
| | | | | 50 | 19.76 | 0.01068 | PASS |
| | | MCH | VN | -30 | 20.34 | 0.01082 | PASS |
| | | | | -20 | 15.50 | 0.00824 | PASS |
| | | | | -10 | 12.27 | 0.00653 | PASS |
| | | | | 0 | 19.18 | 0.0102 | PASS |
| | | | | 10 | 19.11 | 0.01016 | PASS |
| | | | | 20 | 15.05 | 0.00801 | PASS |
| | | | | 30 | 26.09 | 0.01388 | PASS |
| | | | | 40 | 9.81 | 0.00522 | PASS |

| Test Band | Test Mode | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|---|---|---|---|---|---|---|---|
| | | | | 50 | 17.43 | 0.00927 | PASS |
| | | HCH | VN | -30 | 16.98 | 0.00889 | PASS |
| | | | | -20 | 27.77 | 0.01454 | PASS |
| | | | | -10 | 22.54 | 0.0118 | PASS |
| | | | | 0 | 25.70 | 0.01346 | PASS |
| | | | | 10 | 18.66 | 0.00977 | PASS |
| | | | | 20 | 19.05 | 0.00997 | PASS |
| | | | | 30 | 15.17 | 0.00794 | PASS |
| | | | | 40 | 2.78 | 0.00146 | PASS |
| | | | | 50 | 20.02 | 0.01048 | PASS |
| | GSM/TM2 | LCH | VN | -30 | 15.98 | 0.00864 | PASS |
| | | | | -20 | 16.34 | 0.00883 | PASS |
| | | | | -10 | 12.98 | 0.00702 | PASS |
| | | | | 0 | 14.53 | 0.00785 | PASS |
| | | | | 10 | 16.82 | 0.00909 | PASS |
| | | | | 20 | 10.23 | 0.00553 | PASS |
| | | | | 30 | 16.30 | 0.00881 | PASS |
| | | | | 40 | 12.56 | 0.00679 | PASS |
| | | | | 50 | 9.78 | 0.00529 | PASS |
| | | MCH | VN | -30 | 8.43 | 0.00448 | PASS |
| | | | | -20 | 29.86 | 0.01588 | PASS |
| | | | | -10 | 18.69 | 0.00994 | PASS |
| | | | | 0 | 8.43 | 0.00448 | PASS |
| | | | | 10 | 18.92 | 0.01006 | PASS |
| | | | | 20 | 13.33 | 0.00709 | PASS |
| | | | | 30 | 13.66 | 0.00727 | PASS |
| | | | | 40 | 8.33 | 0.00443 | PASS |
| | | | | 50 | 18.53 | 0.00986 | PASS |
| | | HCH | VN | -30 | 15.14 | 0.00793 | PASS |
| | | | | -20 | 23.83 | 0.01248 | PASS |
| | | | | -10 | 29.77 | 0.01559 | PASS |
| | | | | 0 | 19.24 | 0.01007 | PASS |
| | | | | 10 | 24.28 | 0.01271 | PASS |
| | | | | 20 | 17.53 | 0.00918 | PASS |
| | | | | 30 | 26.44 | 0.01384 | PASS |
| | | | | 40 | 9.78 | 0.00512 | PASS |
| | | | | 50 | 18.31 | 0.00959 | PASS |

## 8.2 For UMTS

### 8.2.1Frequency Error vs. Voltage:

| Test Band | Test Mode | Test Channel | Test Temp. | Test Volt. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|---|---|---|---|---|---|---|---|
| WCDMA1900 | UMTS/TM1 | LCH | TN | VL | -0.44 | -0.00024 | PASS |
| | | | | VN | -2.53 | -0.00137 | PASS |
| | | | | VH | -3.10 | -0.00167 | PASS |
| | | MCH | TN | VL | 9.51 | 0.00506 | PASS |
| | | | | VN | 1.65 | 0.00088 | PASS |
| | | | | VH | 7.23 | 0.00385 | PASS |
| | | HCH | TN | VL | -5.74 | -0.00301 | PASS |
| | | | | VN | 4.91 | 0.00257 | PASS |
| | | | | VH | 0.93 | 0.00049 | PASS |
| WCDMA850 | UMTS/TM1 | LCH | TN | VL | -6.74 | -0.00816 | PASS |
| | | | | VN | 0.85 | 0.00103 | PASS |
| | | | | VH | 7.32 | 0.00886 | PASS |
| | | MCH | TN | VL | 4.39 | 0.00525 | PASS |
| | | | | VN | 1.72 | 0.00206 | PASS |
| | | | | VH | 3.78 | 0.00452 | PASS |
| | | HCH | TN | VL | 3.13 | 0.0037 | PASS |
| | | | | VN | 0.89 | 0.00105 | PASS |
| | | | | VH | 6.35 | 0.0075 | PASS |

### 8.2.2Frequency Error vs. Temperature:

| Test Band | Test Mode | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|---|---|---|---|---|---|---|---|
| WCDMA1900 | UMTS/TM1 | LCH | VN | -30 | -14.74 | -0.00796 | PASS |
| | | | | -20 | -1.39 | -0.00075 | PASS |
| | | | | -10 | -2.78 | -0.0015 | PASS |
| | | | | 0 | -5.49 | -0.00296 | PASS |
| | | | | 10 | -1.68 | -0.00091 | PASS |
| | | | | 20 | 0.17 | 0.00009 | PASS |
| | | | | 30 | -5.37 | -0.0029 | PASS |
| | | | | 40 | -1.69 | -0.00091 | PASS |
| | | | | 50 | 6.68 | 0.00361 | PASS |
| | | MCH | VN | -30 | -11.69 | -0.00622 | PASS |
| | | | | -20 | -9.99 | -0.00531 | PASS |
| | | | | -10 | -4.97 | -0.00264 | PASS |
| | | | | 0 | -9.78 | -0.0052 | PASS |
| | | | | 10 | -4.70 | -0.0025 | PASS |

| Test Band | Test Mode | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|---|---|---|---|---|---|---|---|
| | | | | 20 | 1.36 | 0.00072 | PASS |
| | | | | 30 | -3.86 | -0.00205 | PASS |
| | | | | 40 | 7.49 | 0.00398 | PASS |
| | | | | 50 | -1.28 | -0.00068 | PASS |
| | | HCH | VN | -30 | 0.47 | 0.00025 | PASS |
| | | | | -20 | 0.29 | 0.00015 | PASS |
| | | | | -10 | 7.19 | 0.00377 | PASS |
| | | | | 0 | 6.39 | 0.00335 | PASS |
| | | | | 10 | -3.28 | -0.00172 | PASS |
| | | | | 20 | -3.23 | -0.00169 | PASS |
| | | | | 30 | -0.56 | -0.00029 | PASS |
| | | | | 40 | -3.92 | -0.00205 | PASS |
| | | | | 50 | -0.69 | -0.00036 | PASS |
| WCDMA850 | UMTS/TM1 | LCH | VN | -30 | 6.82 | 0.00825 | PASS |
| | | | | -20 | 4.47 | 0.00541 | PASS |
| | | | | -10 | -1.39 | -0.00168 | PASS |
| | | | | 0 | 1.10 | 0.00133 | PASS |
| | | | | 10 | 4.99 | 0.00604 | PASS |
| | | | | 20 | 3.16 | 0.00382 | PASS |
| | | | | 30 | 0.14 | 0.00017 | PASS |
| | | | | 40 | 8.04 | 0.00973 | PASS |
| | | | | 50 | 4.06 | 0.00491 | PASS |
| | | MCH | VN | -30 | 5.97 | 0.00714 | PASS |
| | | | | -20 | 4.84 | 0.00579 | PASS |
| | | | | -10 | 2.84 | 0.0034 | PASS |
| | | | | 0 | -1.88 | -0.00225 | PASS |
| | | | | 10 | 5.13 | 0.00613 | PASS |
| | | | | 20 | 0.00 | 0.00 | PASS |
| | | | | 30 | 0.56 | 0.00067 | PASS |
| | | | | 40 | 1.08 | 0.00129 | PASS |
| | | | | 50 | 5.52 | 0.0066 | PASS |
| | | HCH | VN | -30 | 6.97 | 0.00823 | PASS |
| | | | | -20 | 3.71 | 0.00438 | PASS |
| | | | | -10 | 3.66 | 0.00432 | PASS |
| | | | | 0 | 3.28 | 0.00387 | PASS |
| | | | | 10 | 4.06 | 0.0048 | PASS |
| | | | | 20 | 3.63 | 0.00429 | PASS |
| | | | | 30 | 6.73 | 0.00795 | PASS |
| | | | | 40 | 3.60 | 0.00425 | PASS |
| | | | | 50 | 0.02 | 0.00002 | PASS |

END