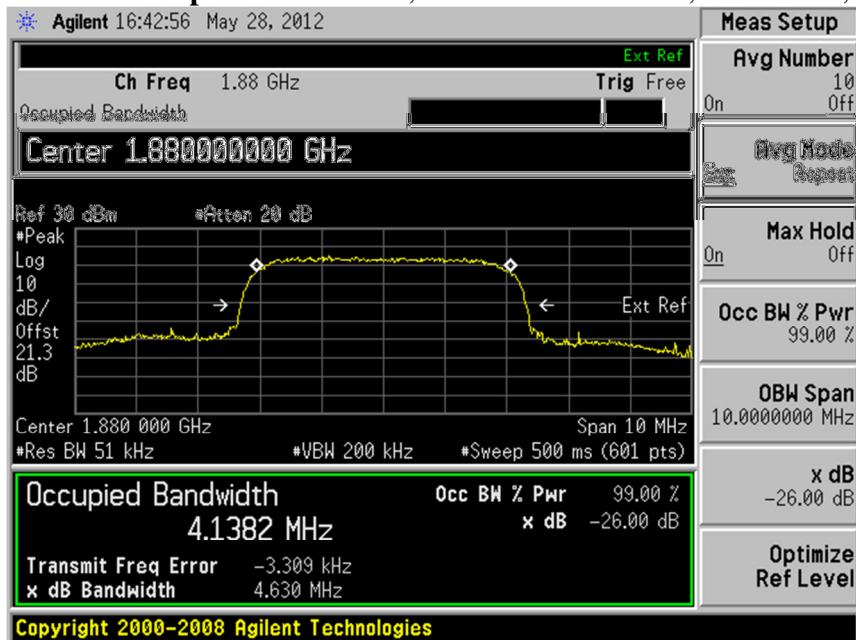
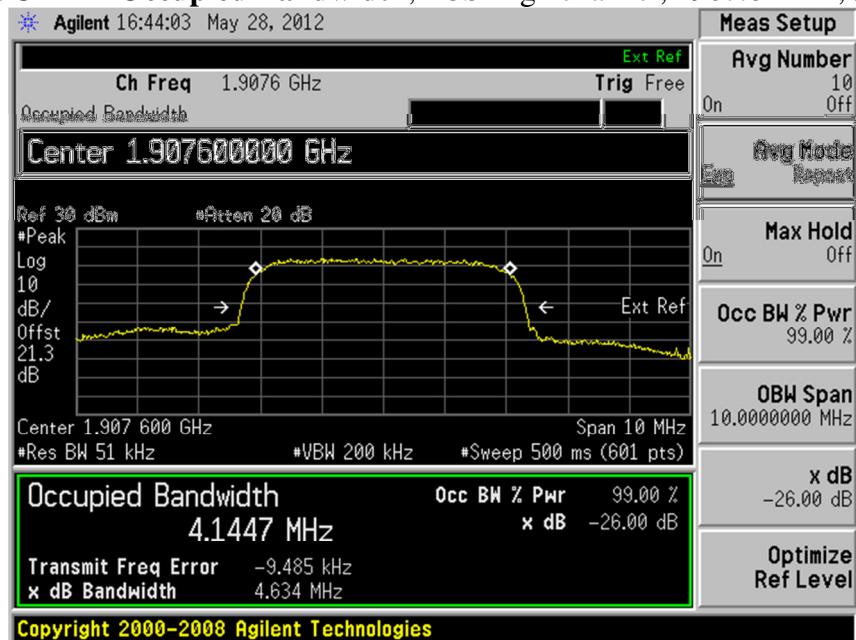


5.3.17) WCDMA Occupied Bandwidth, PCS Middle channel, 1880 MHz, 99% BW



5.3.18) WCDMA Occupied Bandwidth, PCS High channel, 1907.6 MHz, 99% BW



6 Out of Band Emissions at Antenna Terminals

FCC 22.901(d), 22.917, 24.238(a)

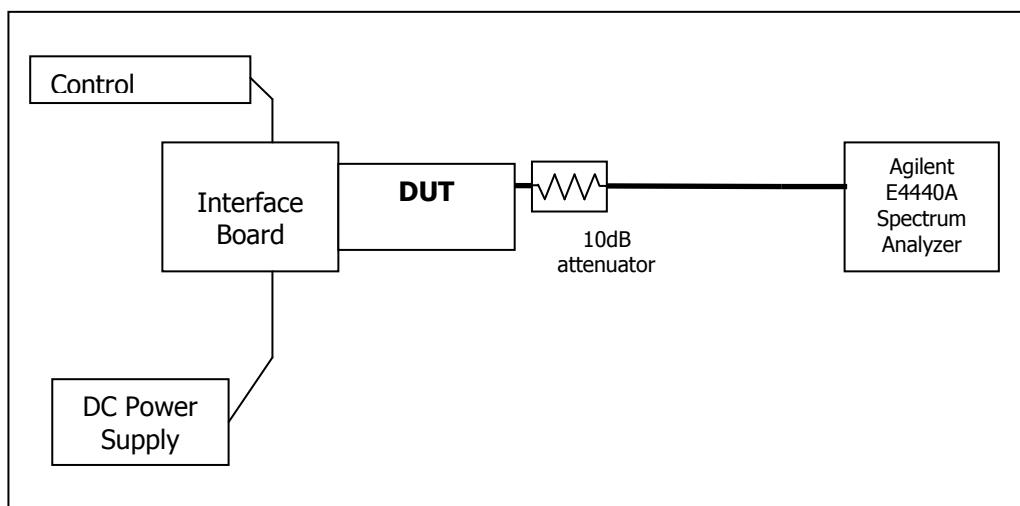
Out of Band Emissions:

The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency outside the frequency band by at least $(43 + 10 \log P)$ dB. The out of band emission limit translates to a worst case absolute limit of -13dBm in this case.

6.1 Test Procedure

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band emissions, if any, up to 10th harmonic. The EUT was scanned for spurious emissions from 1MHz to 20GHz with sufficient bandwidth and video resolution. Data plots are included. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were captured.

Test Setup



6.2 Test Equipment

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE
Control Computer	TC	Generic PC	100488	N/A
Wireless Test Set	Rohde & Schwarz	CMU200	110520	November 17, 2011
Spectrum Analyzer	Rohde & Schwarz	FSP	100714	November 15, 2011
Spectrum Analyzer	Rohde & Schwarz	FSQ	200428	March 03, 2008
DC Power Supply	HP	6632A	3530A	N/A
Interface Board	Shop built	ATEMux	N/A	N/A
Directional Coupler	Pasternack	PE2209-10	N/A	N/A

6.3 Test Results

Refer to the following plots.

• Cellular Band

Plot Number	Description
6.4.1 – 6.4.3	GMSK Mode, Low channel, 824.20 MHz
6.4.4 – 6.4.6	GMSK Mode, Middle Channel, 836.6 MHz
6.4.7 – 6.4.9	GMSK Mode, High Channel, 848.8 MHz
6.4.10 – 6.4.12	8-PSK Mode, Low channel, 824.20 MHz
6.4.13 – 6.4.15	8-PSK Mode, Middle Channel, 836.6 MHz
6.4.16 – 6.4.18	8-PSK Mode, High Channel, 848.8 MHz

• PCS Band

Plot Number	Description
6.4.19 – 6.4.21	GMSK Mode, Low Channel, 1850.2 MHz
6.4.22 – 6.4.24	GMSK Mode, Middle Channel, 1880.0 MHz
6.4.25 – 6.4.27	GMSK Mode, High Channel, 1909.8 MHz
6.4.28 – 6.4.30	8-PSK, Mode, Low Channel, 1850.2 MHz
6.4.31 – 6.4.33	8-PSK Mode, Middle Channel, 1880.0 MHz
6.4.34 – 6.4.36	8-PSK Mode, High Channel, 1909.8 MHz

• UMTS Cellular Band

Plot Number	Description
6.4.37 – 6.4.39	WCDMA Mode, Low Channel, 826.4 MHz
6.4.40 – 6.4.42	WCDMA Mode, Middle Channel, 836.4 MHz
6.4.43 – 6.4.45	WCDMA Mode, High Channel, 846.6 MHz

• UMTS PCS Band

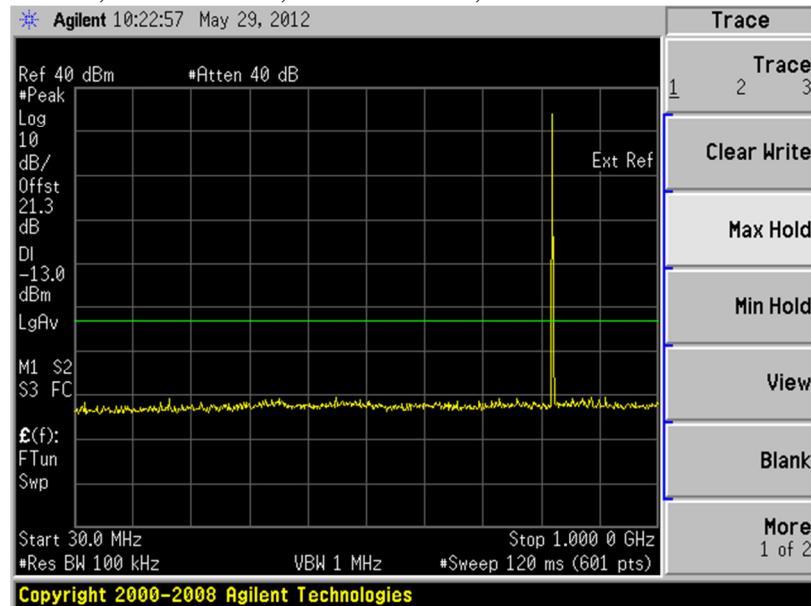
Plot Number	Description
6.4.46 – 6.4.48	WCDMA Mode, Low Channel, 1852.4 MHz
6.4.49 – 6.4.51	WCDMA Mode, Middle Channel, 1880.0 MHz
6.4.52 – 6.4.54	WCDMA Mode, High Channel, 1907.6 MHz

The plots below show that the conducted emission limits requirements are met.

6.4 Test Plots

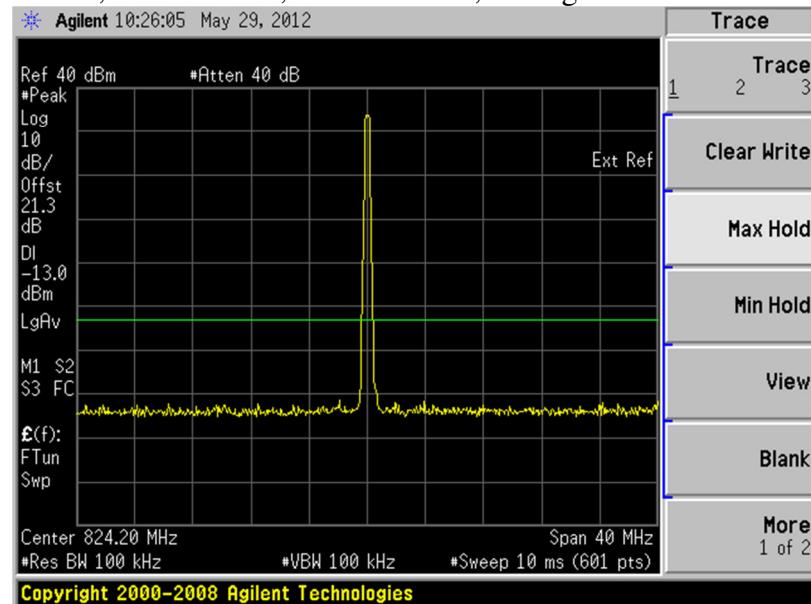
Plot 6.4.1) Out of Band Emissions at Antenna Terminals

GMSK, Low channel, 824.200 MHz, 30 MHz to 1 GHz



Plot 6.4.2) Out of Band Emissions at Antenna Terminals

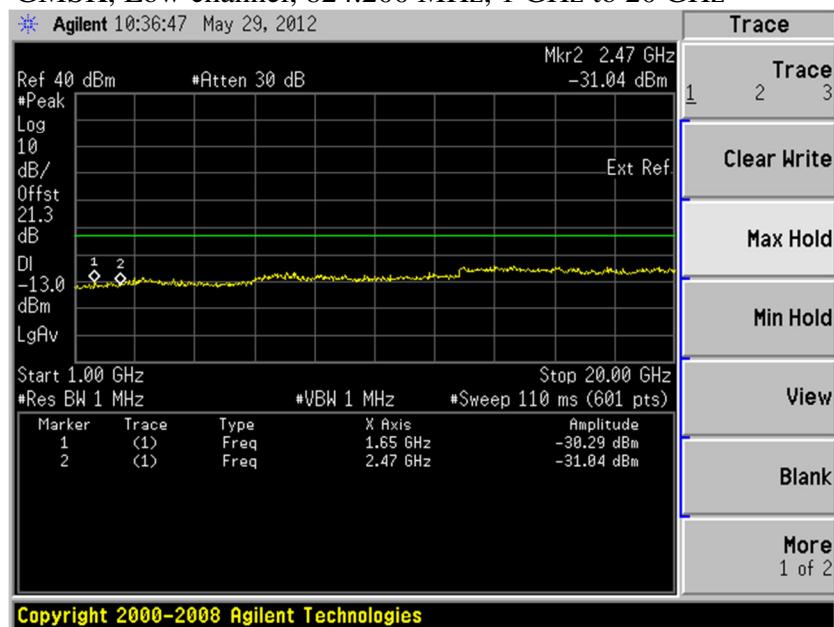
GMSK, Low channel, 824.200 MHz, TX signal +/- 20 MHz



The strong emission shown in each case is the carrier signal.

Plot 6.4.3) Out of Band Emissions at Antenna Terminals

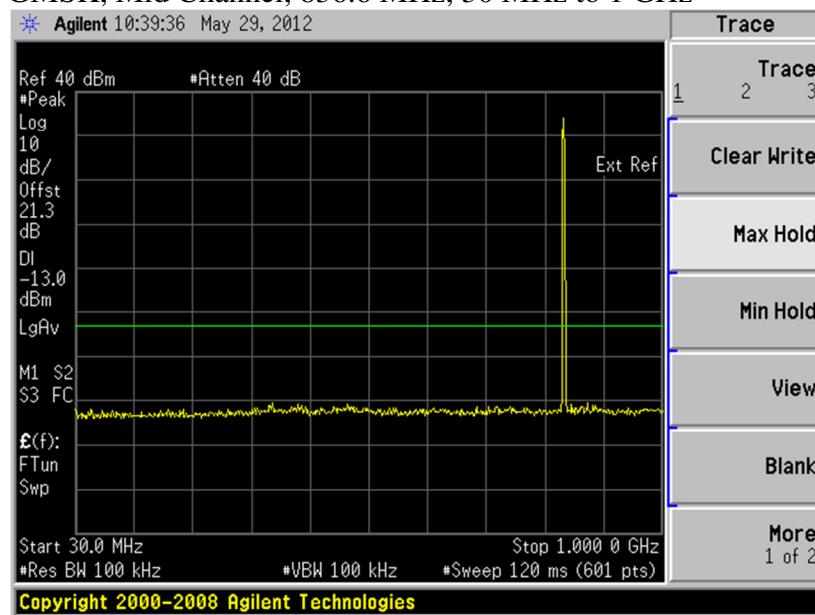
GMSK, Low channel, 824.200 MHz, 1 GHz to 20 GHz



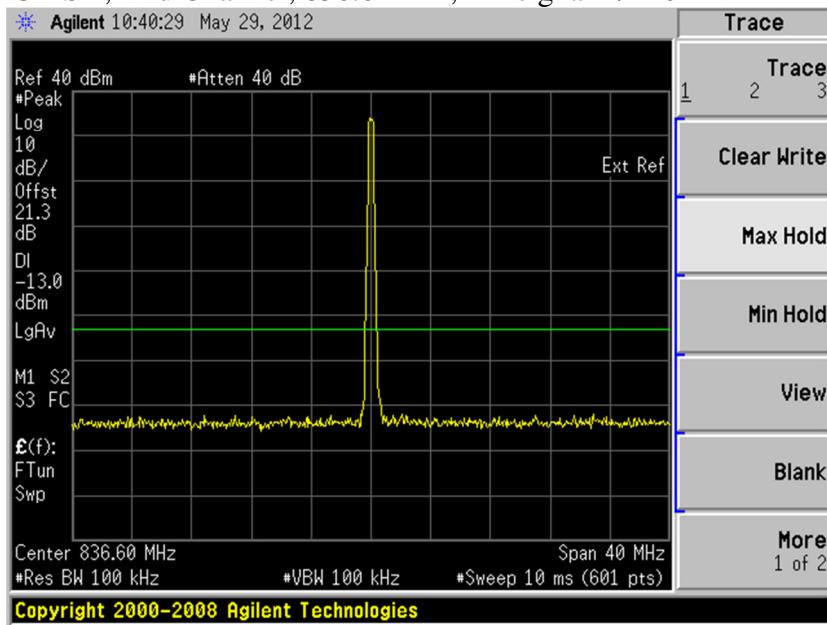
Cellular Harmonics for Ch. 128 (824.2 MHz)	Level (dBm)
Second	-30.29 dBm
Third	-31.04 dBm
Others	----

Plot 6.4.4) Out of Band Emissions at Antenna Terminals

GMSK, Mid Channel, 836.6 MHz, 30 MHz to 1 GHz

**Plot 6.4.5) Out of Band Emissions at Antenna Terminals**

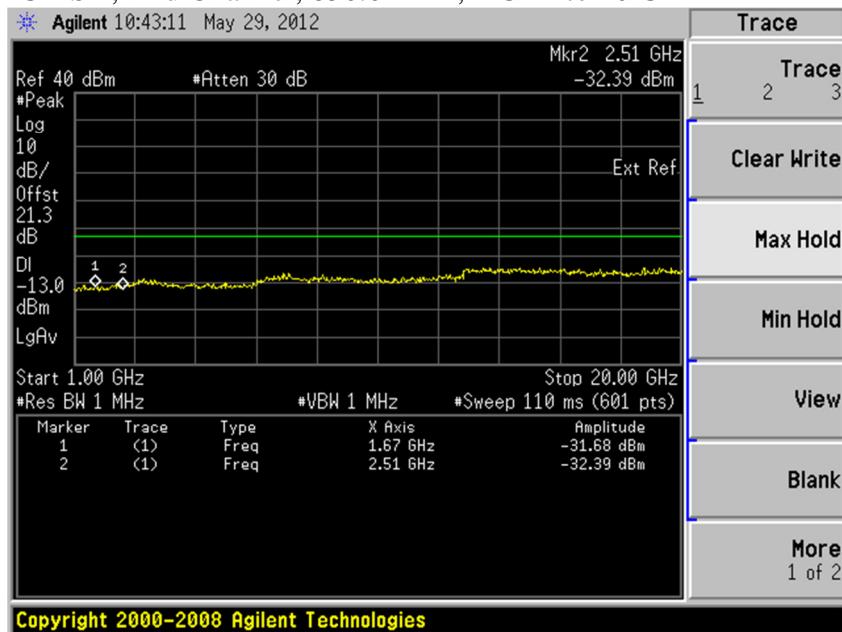
GMSK, Mid Channel, 836.6 MHz, TX signal +/- 20 MHz



The strong emission shown in each case is the carrier signal.

Plot 6.4.6) Out of Band Emissions at Antenna Terminals

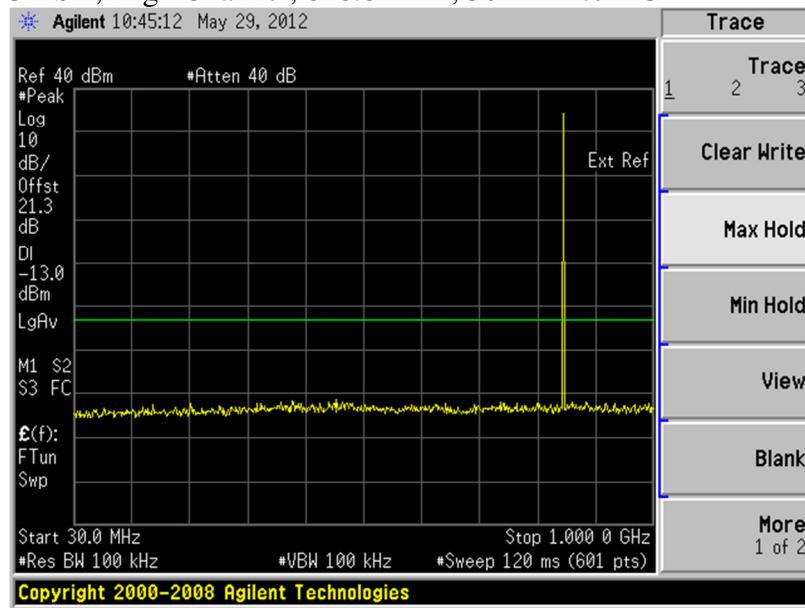
GMSK, Mid Channel, 836.6 MHz, 1 GHz to 20 GHz



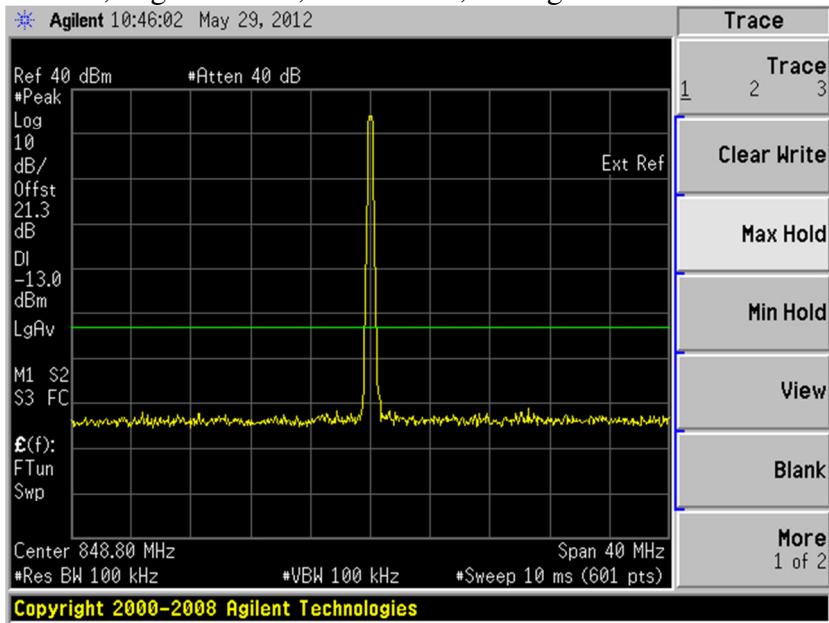
Cellular Harmonics for Ch. 190 (836.6 MHz)	Level (dBm)
Second	-31.68 dBm
Third	-32.39 dBm
Others	----

Plot 6.4.7) Out of Band Emissions at Antenna Terminals

GMSK, High Channel, 848.8 MHz, 30 MHz to 1 GHz

**Plot 6.4.8) Out of Band Emissions at Antenna Terminals**

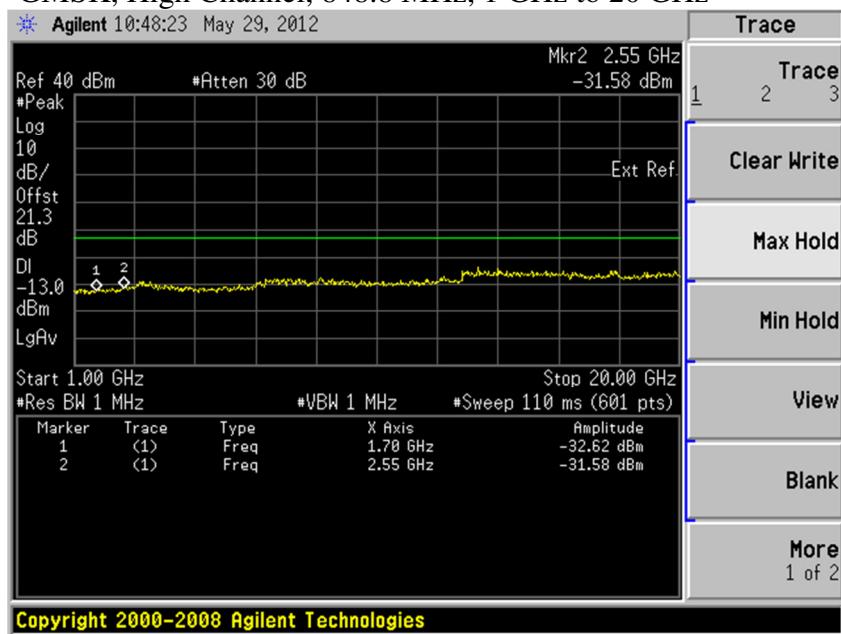
GMSK, High Channel, 848.8 MHz, TX signal +/- 20 MHz



The strong emission shown in each case is the carrier signal.

Plot 6.4.9) Out of Band Emissions at Antenna Terminals

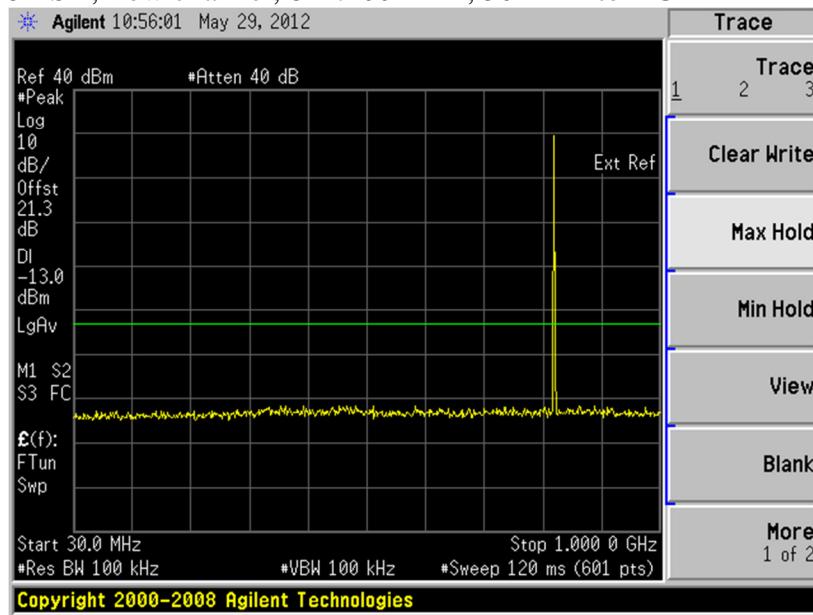
GMSK, High Channel, 848.8 MHz, 1 GHz to 20 GHz



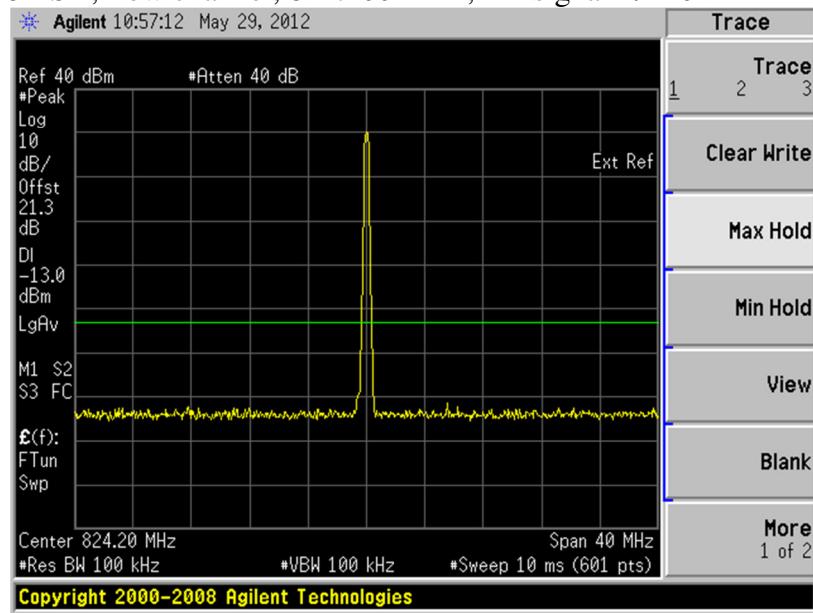
Cellular Harmonics for Ch. 251 (848.8 MHz)	Level (dBm)
Second	-22.62 dBm
Third	-31.58 dBm
Others	----

Plot 6.4.10) Out of Band Emissions at Antenna Terminals

8-PSK, Low channel, 824.200 MHz, 30 MHz to 1 GHz

**Plot 6.4.11) Out of Band Emissions at Antenna Terminals**

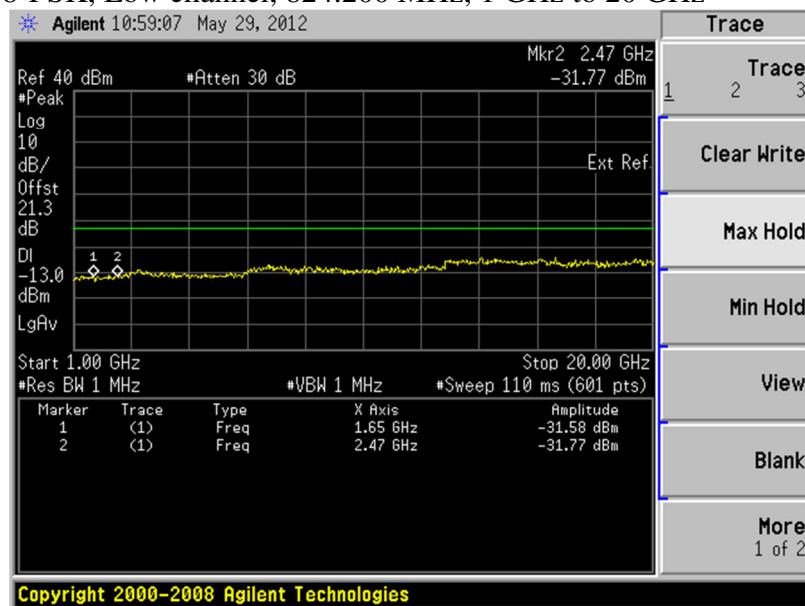
8-PSK, Low channel, 824.200 MHz, TX signal +/- 20 MHz



The strong emission shown in each case is the carrier signal.

Plot 6.4.12) Out of Band Emissions at Antenna Terminals

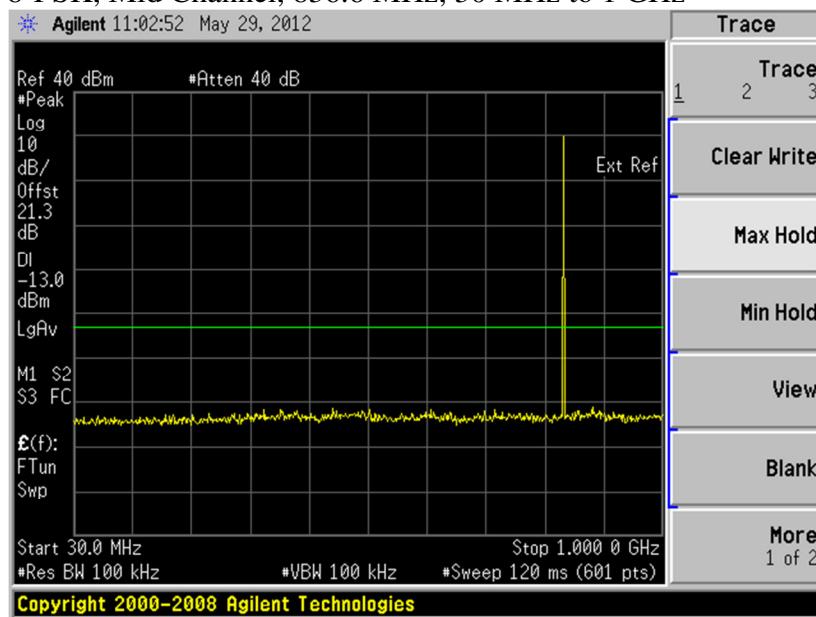
8-PSK, Low channel, 824.200 MHz, 1 GHz to 20 GHz



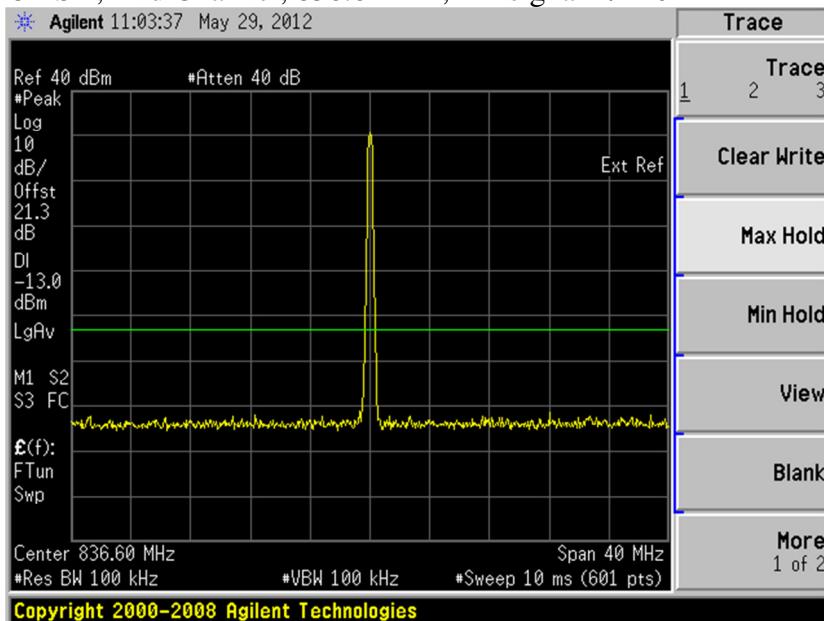
Cellular Harmonics for Ch. 128 (824.2 MHz)	Level (dBm)
Second	-31.58 dBm
Third	-31.77 dBm
Others	----

Plot 6.4.13) Out of Band Emissions at Antenna Terminals

8-PSK, Mid Channel, 836.6 MHz, 30 MHz to 1 GHz

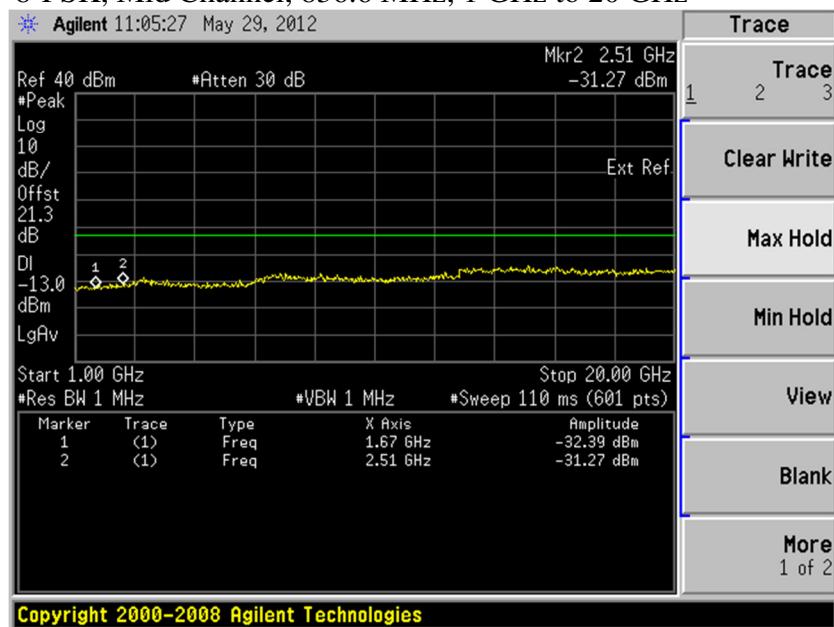
**Plot 6.4.14) Out of Band Emissions at Antenna Terminals**

8-PSK, Mid Channel, 836.6 MHz, TX signal +/- 20 MHz

**The strong emission shown in each case is the carrier signal.**

Plot 6.4.15) Out of Band Emissions at Antenna Terminals

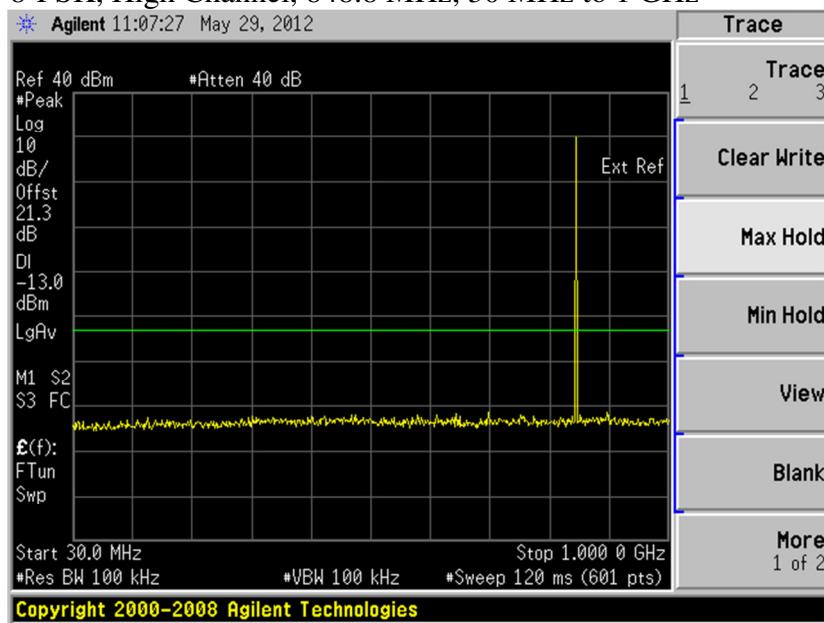
8-PSK, Mid Channel, 836.6 MHz, 1 GHz to 20 GHz



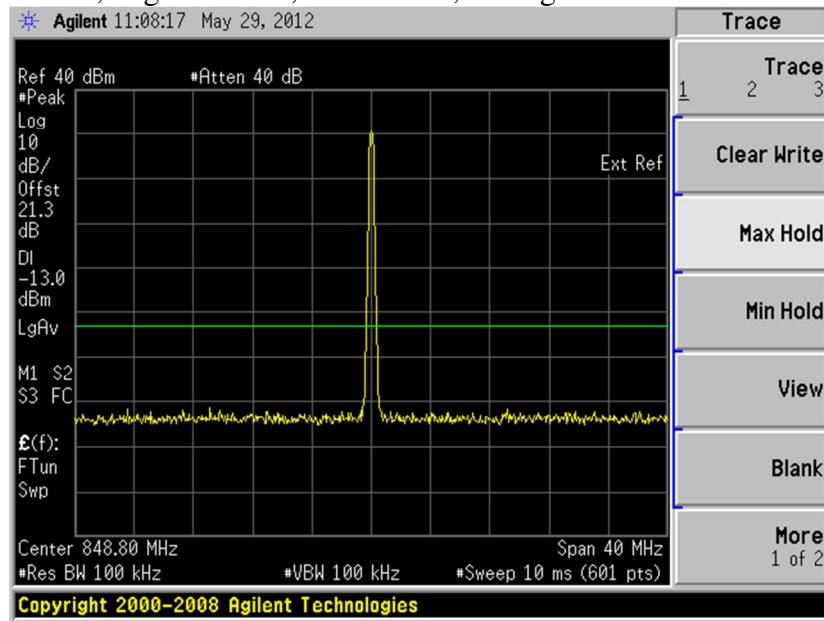
Cellular Harmonics for Ch. 190 (836.6 MHz)	Level (dBm)
Second	-32.39 dBm
Third	-31.27 dBm
Others	----

Plot 6.4.16) Out of Band Emissions at Antenna Terminals

8-PSK, High Channel, 848.8 MHz, 30 MHz to 1 GHz

**Plot 6.4.17) Out of Band Emissions at Antenna Terminals**

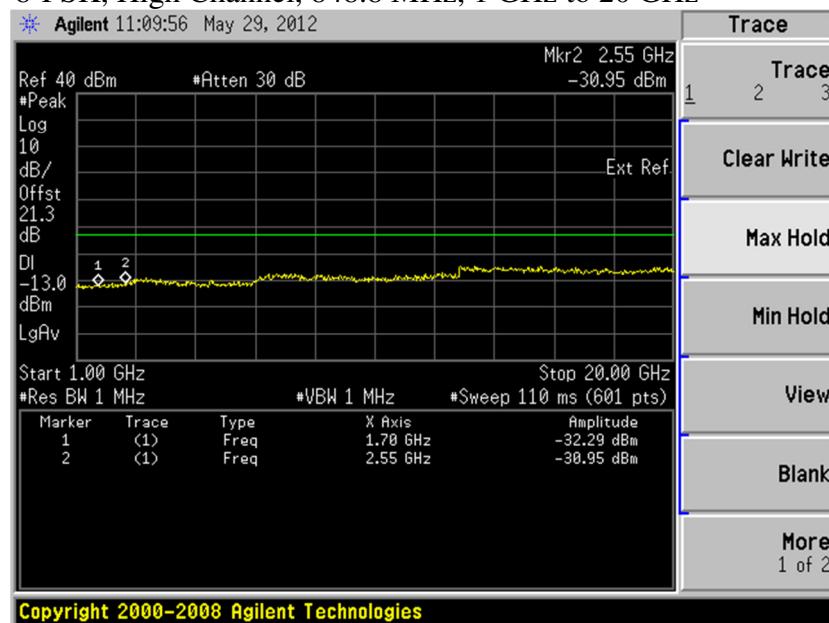
8-PSK, High Channel, 848.8 MHz, TX signal +/- 20 MHz



The strong emission shown in each case is the carrier signal.

Plot 6.4.18) Out of Band Emissions at Antenna Terminals

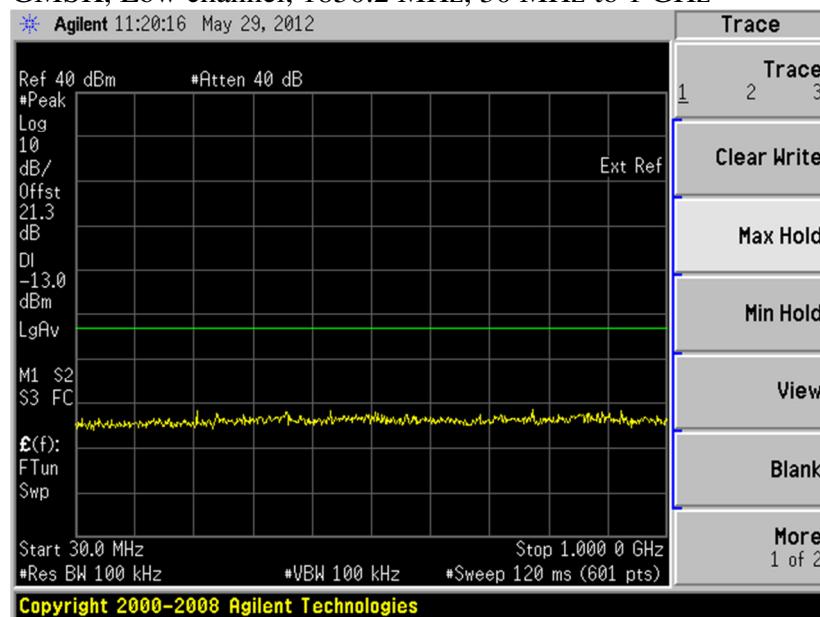
8-PSK, High Channel, 848.8 MHz, 1 GHz to 20 GHz



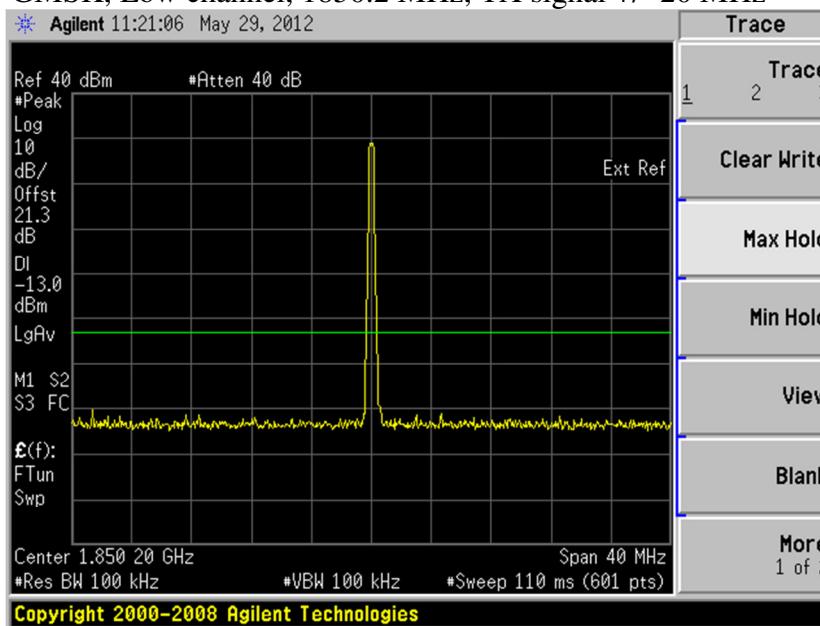
Cellular Harmonics for Ch. 251 (848.8 MHz)	Level (dBm)
Second	-32.29 dBm
Third	-30.95 dBm
Others	----

Plot 6.4.19) Out of Band Emissions at Antenna Terminals

GMSK, Low channel, 1850.2 MHz, 30 MHz to 1 GHz

**Plot 6.4.20) Out of Band Emissions at Antenna Terminals**

GMSK, Low channel, 1850.2 MHz, TX signal +/- 20 MHz



The strong emission shown is the carrier signal.