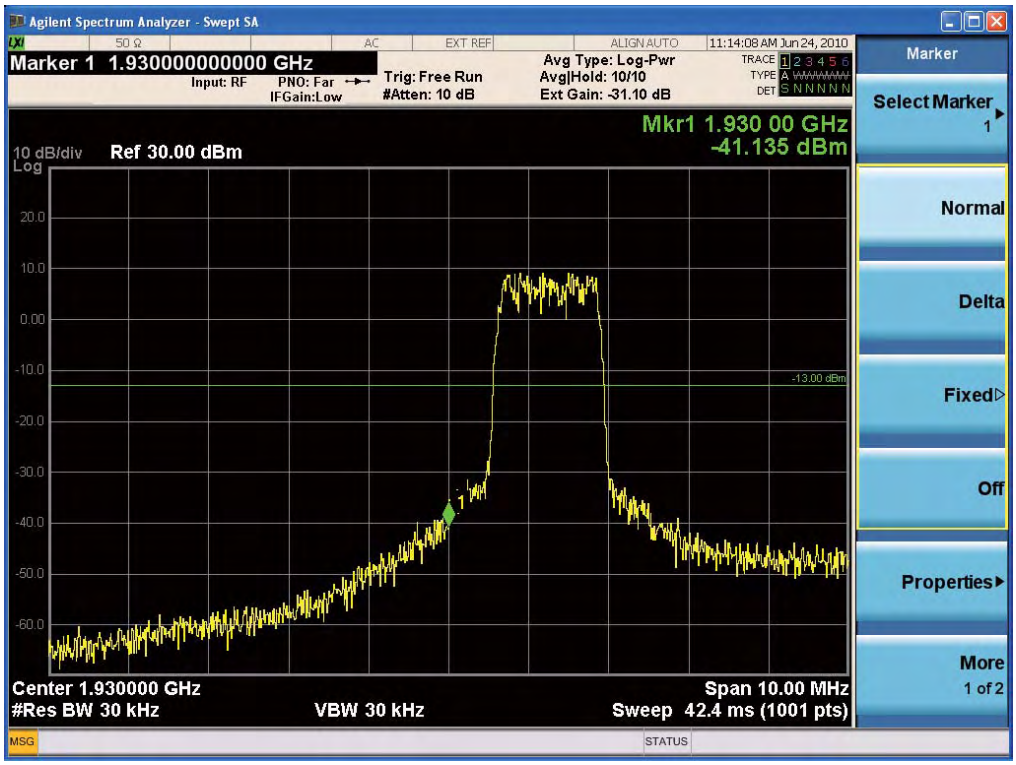
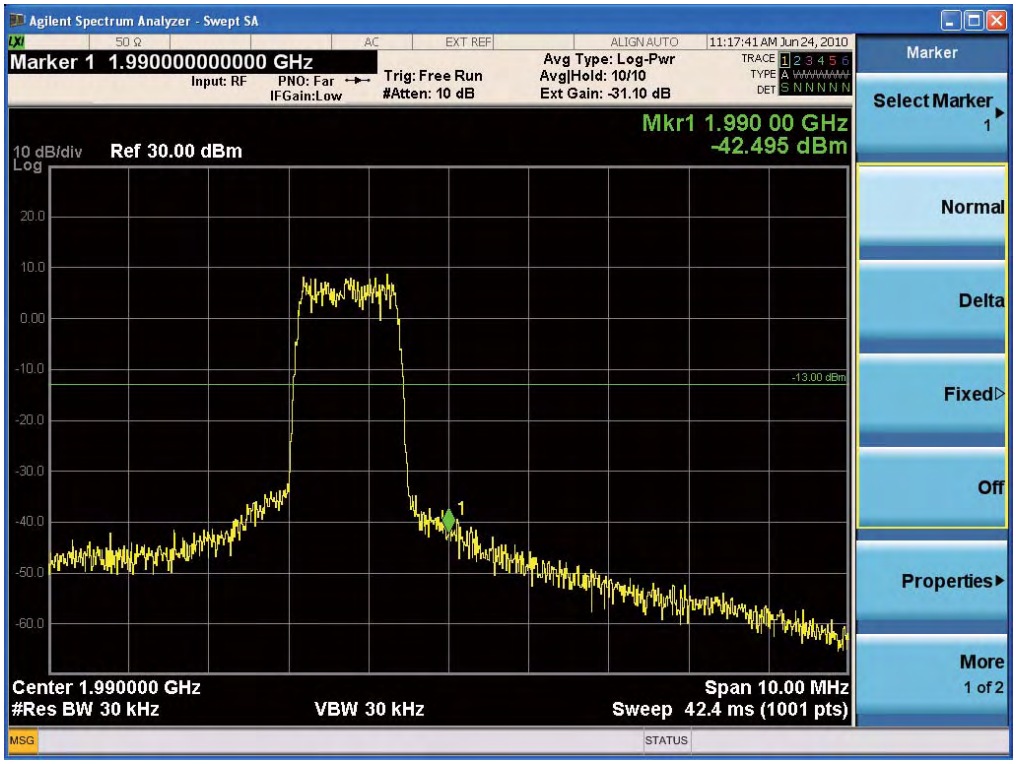
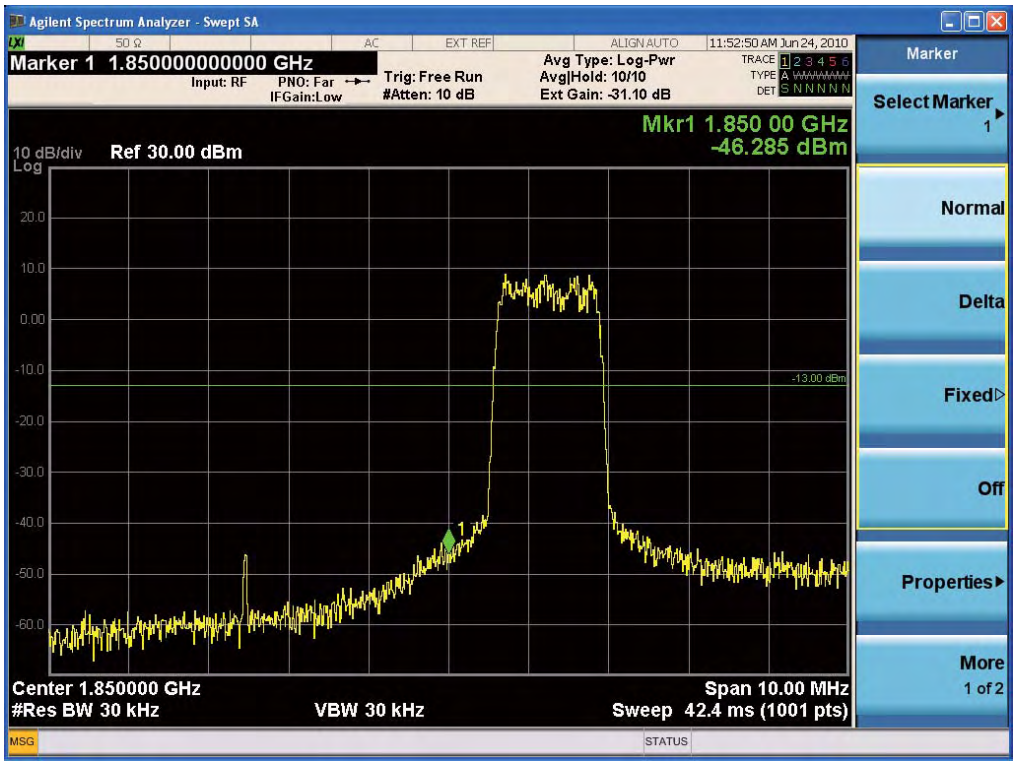


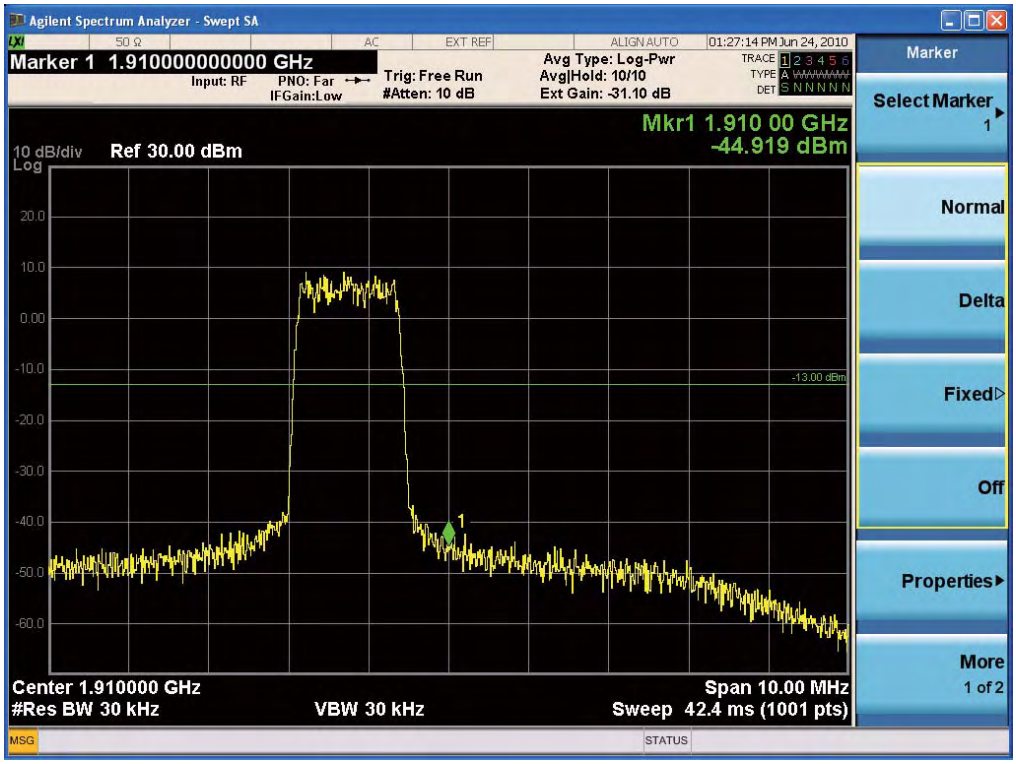
(Downlink Low CH-PCS)



(Downlink High CH-PCS)



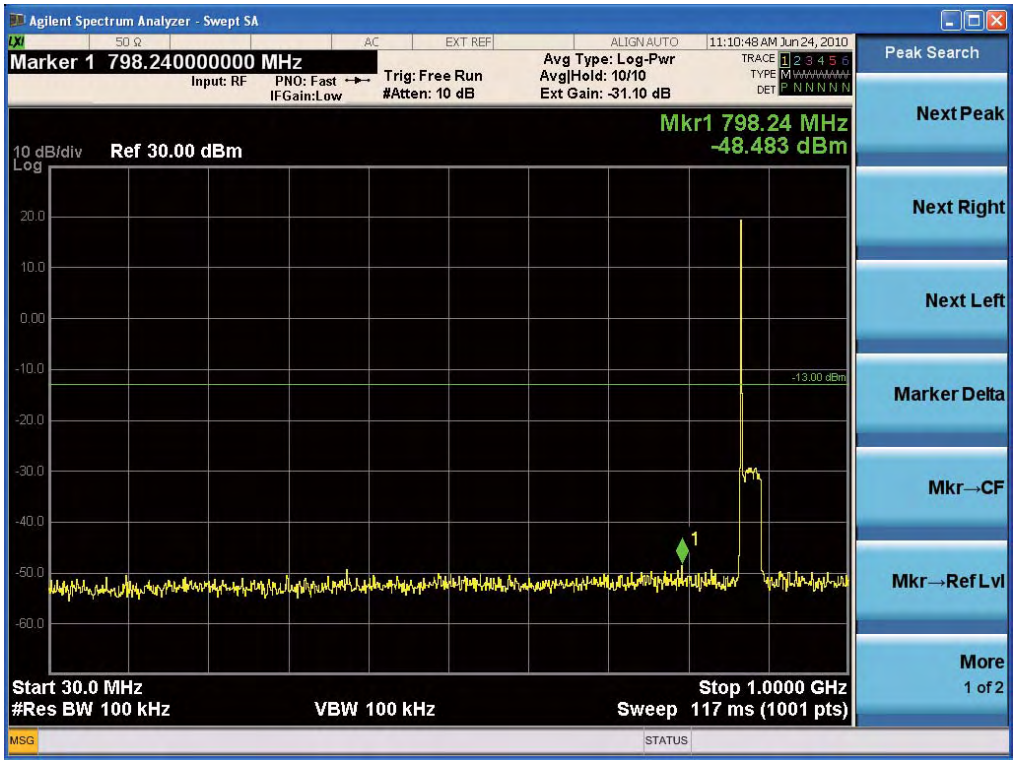
(Uplink Low CH-PCS)



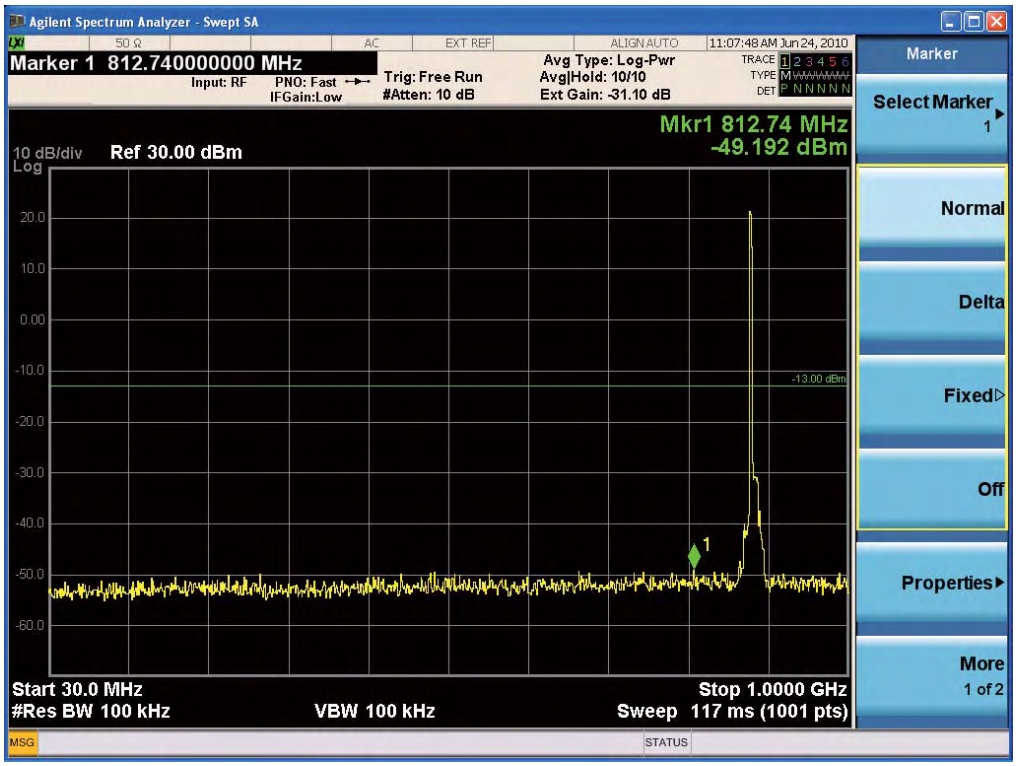
(Uplink High CH-PCS)

Plots of Spurious Emission

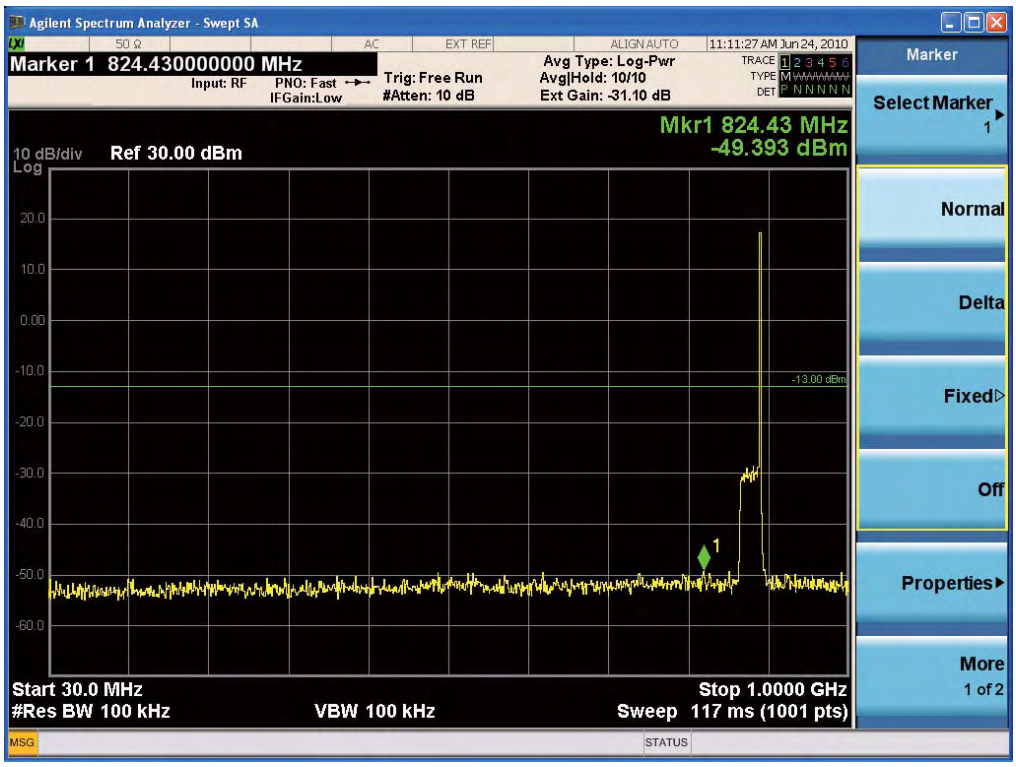
Conducted Spurious Emissions Downlink Low CH (30 MHz – 1 GHz-Cellular)



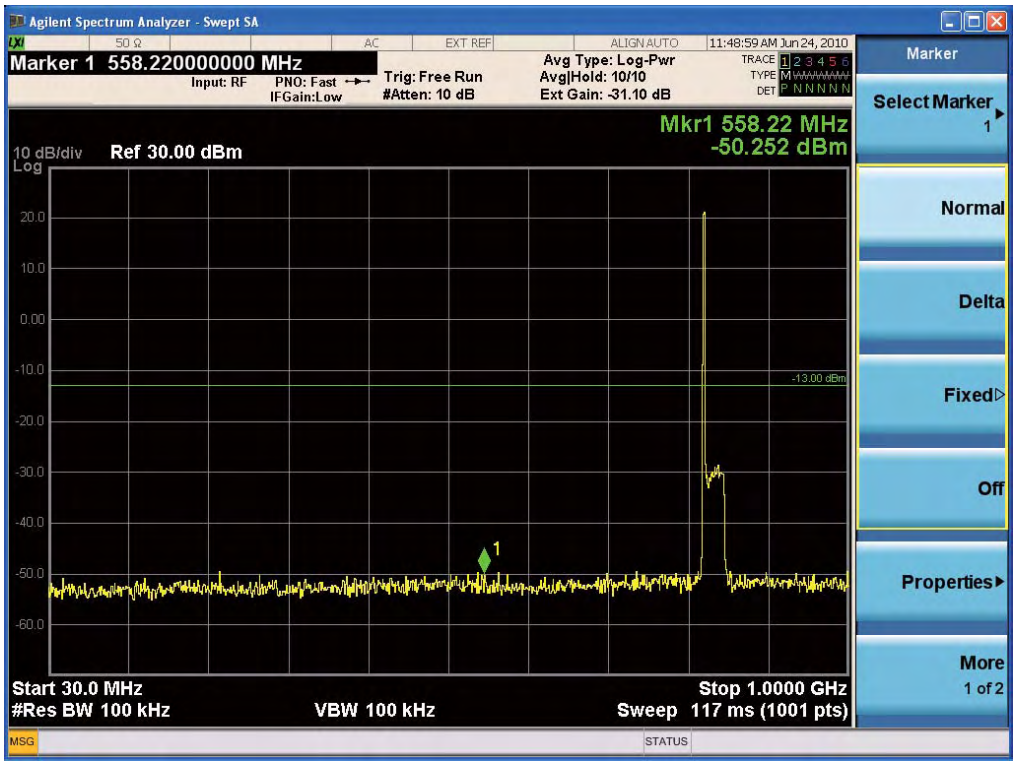
Conducted Spurious Emissions Downlink Mid CH (30 MHz – 1 GHz-Cellular)



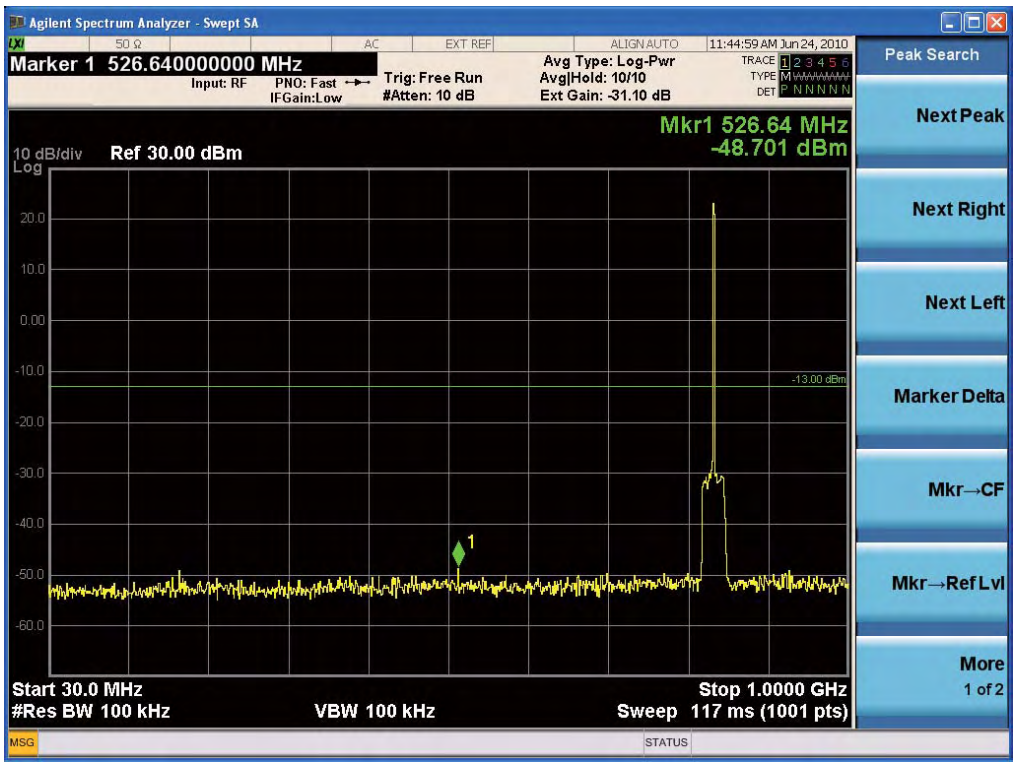
Conducted Spurious Emissions Downlink High CH (30 MHz – 1 GHz-Cellular)



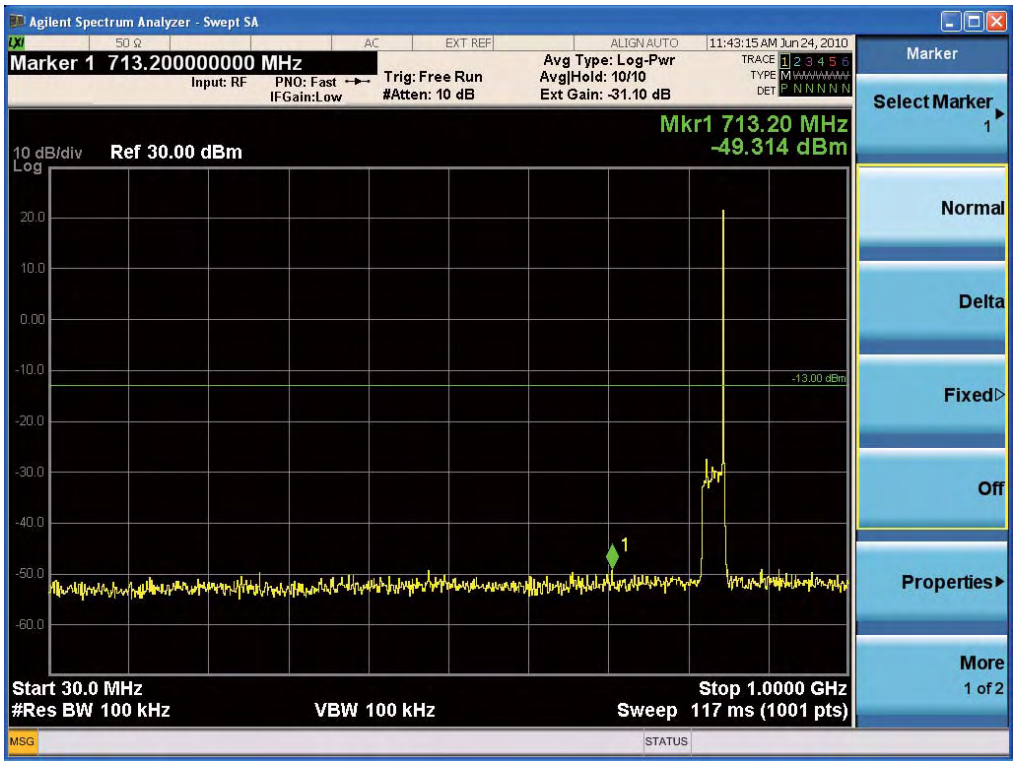
Conducted Spurious Emissions Uplink Low CH (30 MHz – 1 GHz-Cellular)



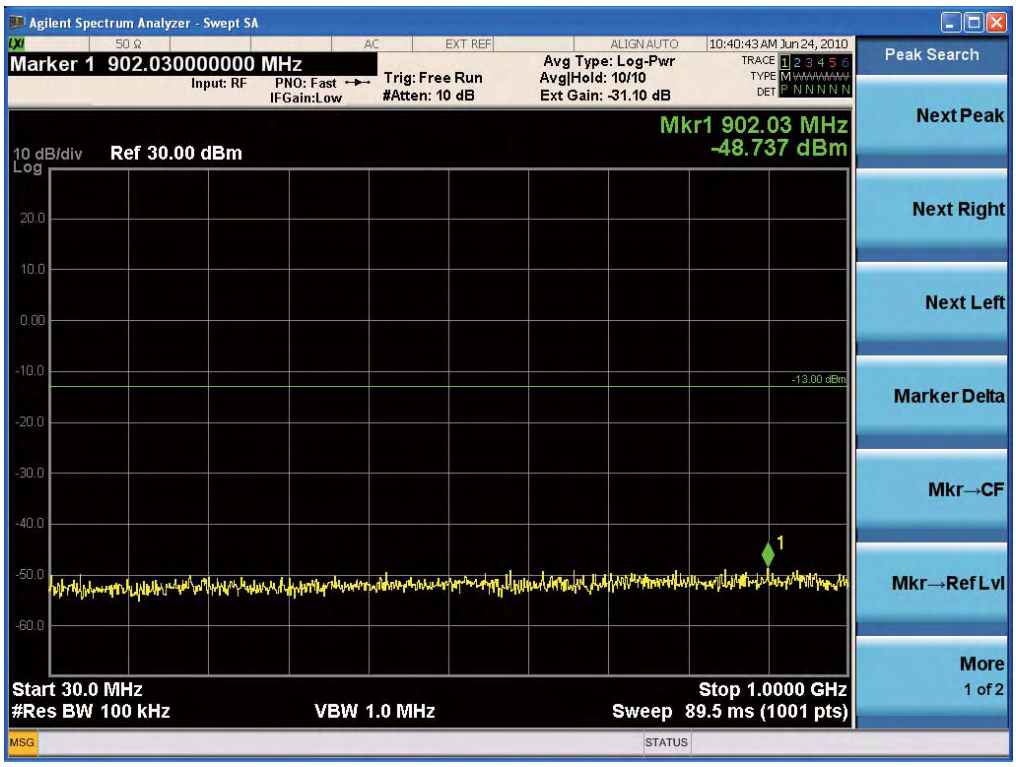
Conducted Spurious Emissions Uplink Mid CH (30 MHz – 1 GHz-Cellular)



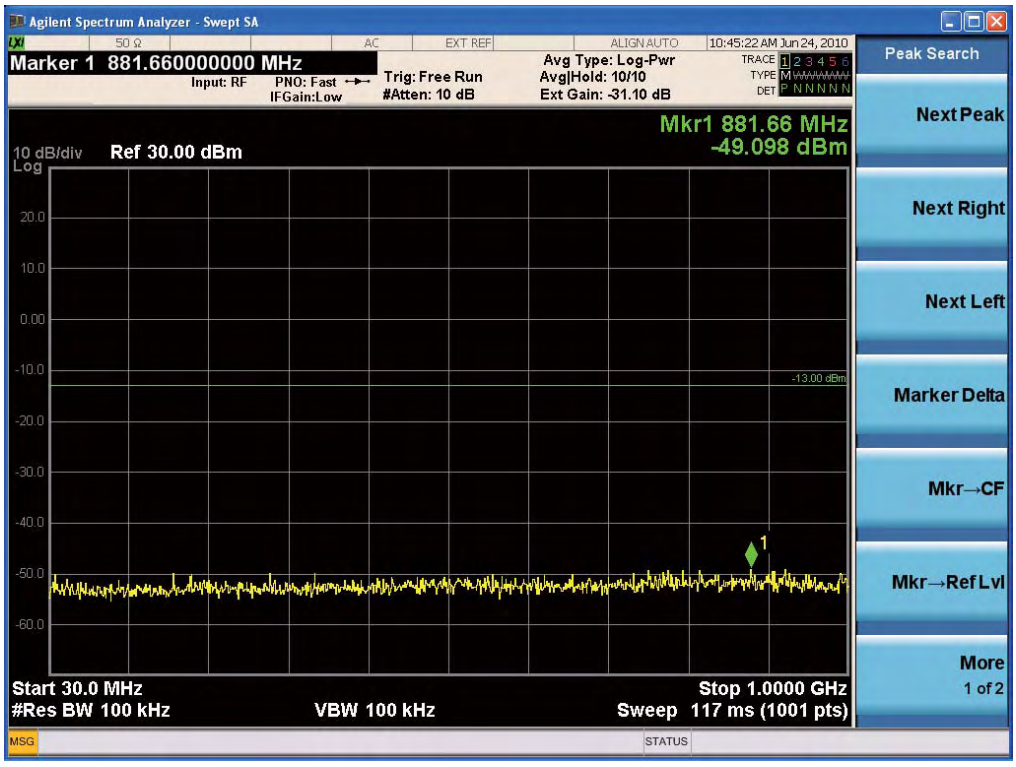
Conducted Spurious Emissions Uplink HighCH (30 MHz – 1 GHz-Cellular)



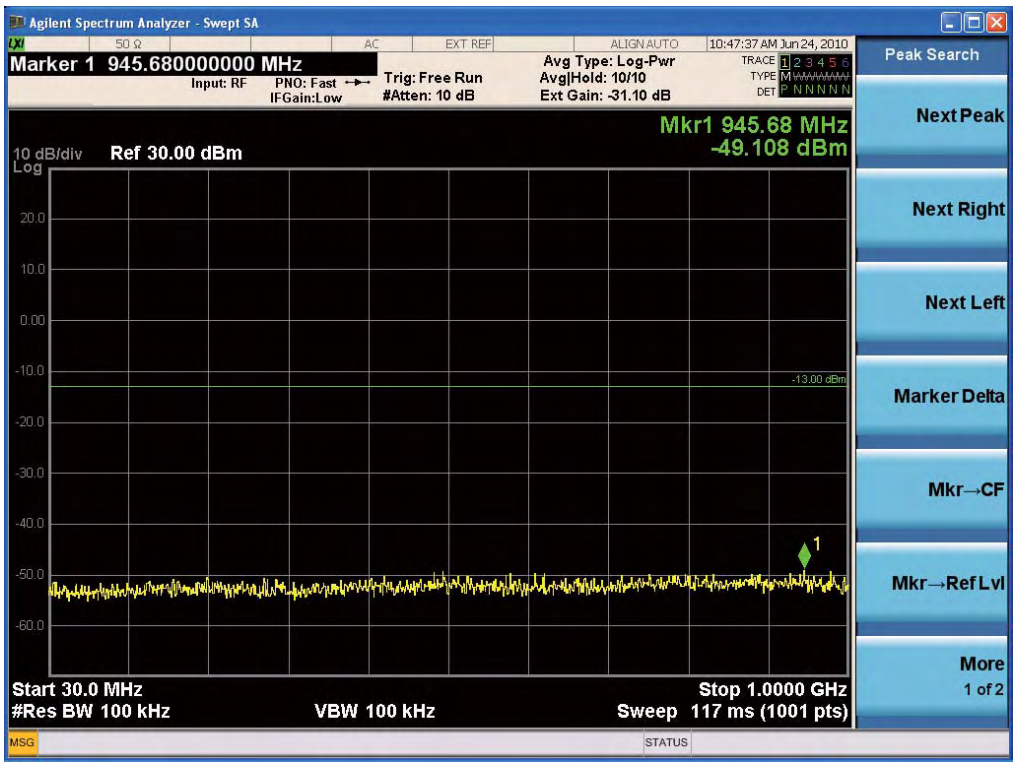
Conducted Spurious Emissions Downlink Low CH (30 MHz – 1 GHz-PCS)



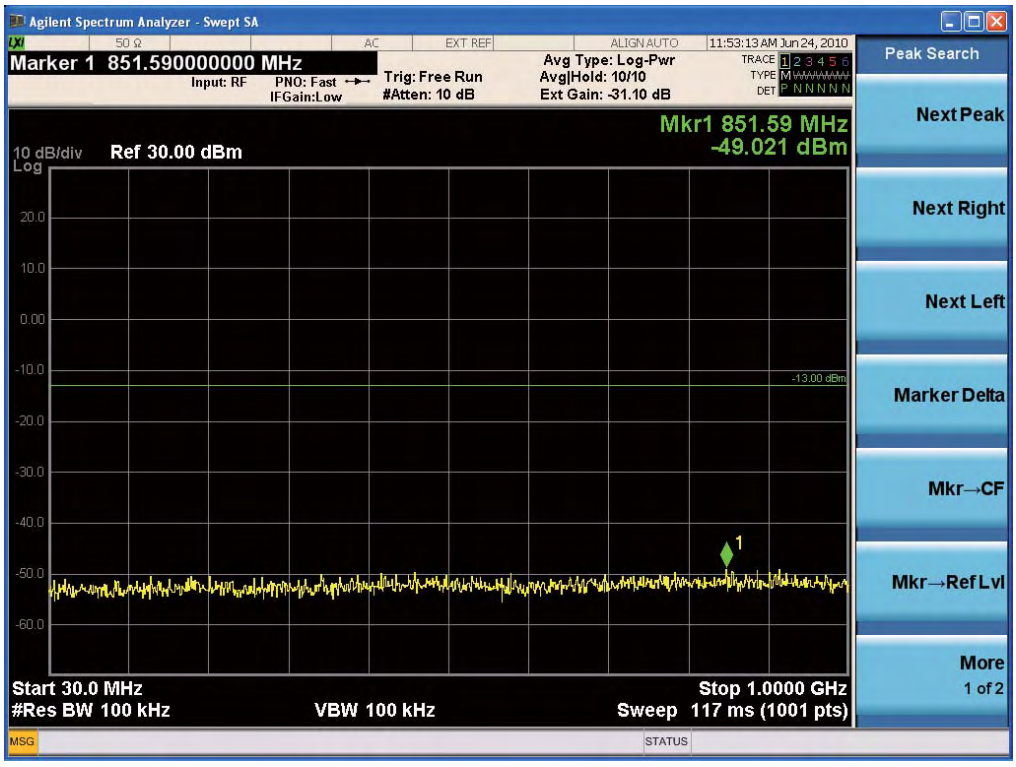
Conducted Spurious Emissions Downlink Mid CH(30 MHz – 1 GHz-PCS)



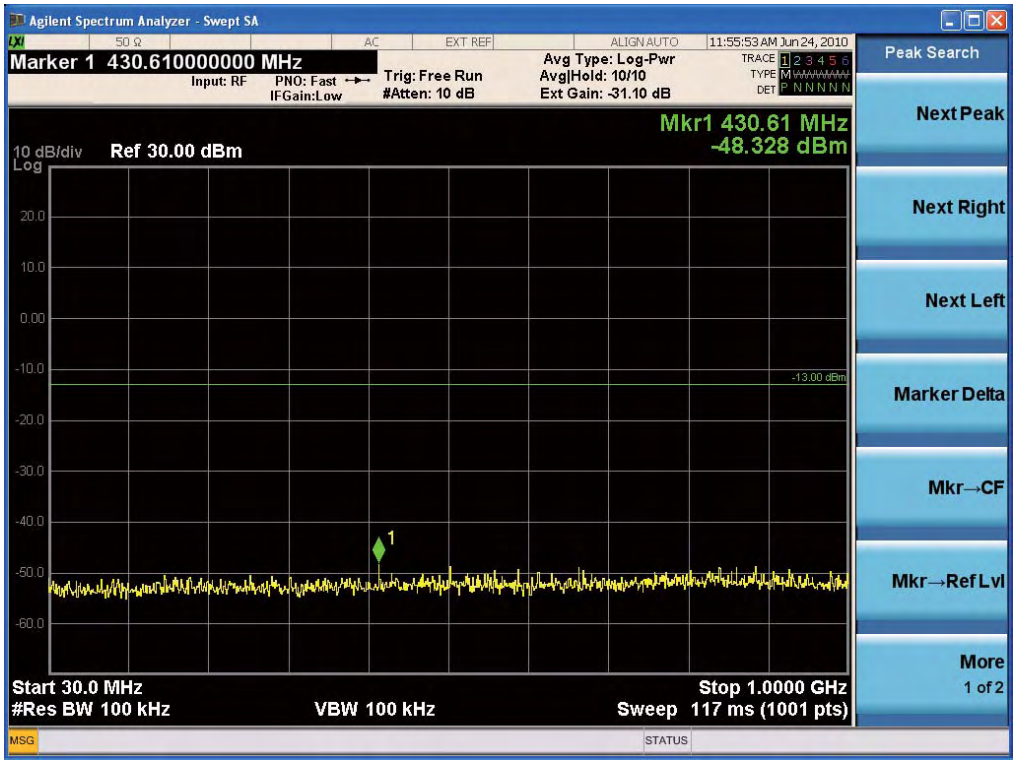
Conducted Spurious Emissions Downlink High CH (30 MHz – 1 GHz-PCS)



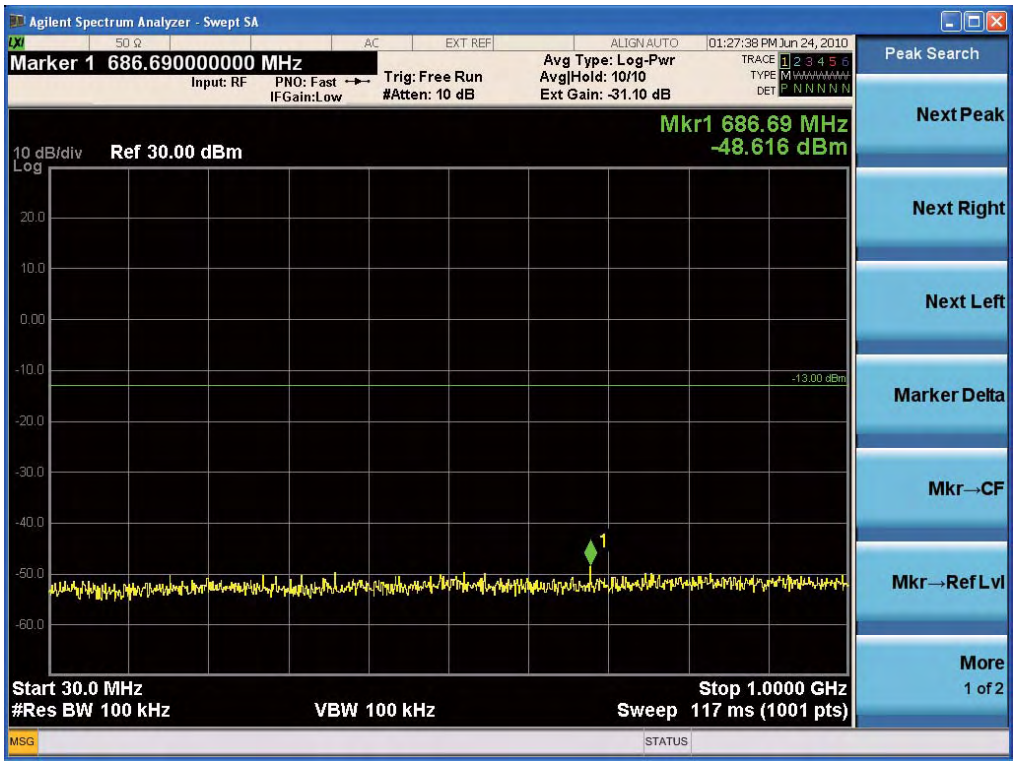
Conducted Spurious Emissions Uplink Low CH(30 MHz – 1 GHz-PCS)



Conducted Spurious Emissions Uplink Mid CH (30 MHz – 1 GHz-PCS)



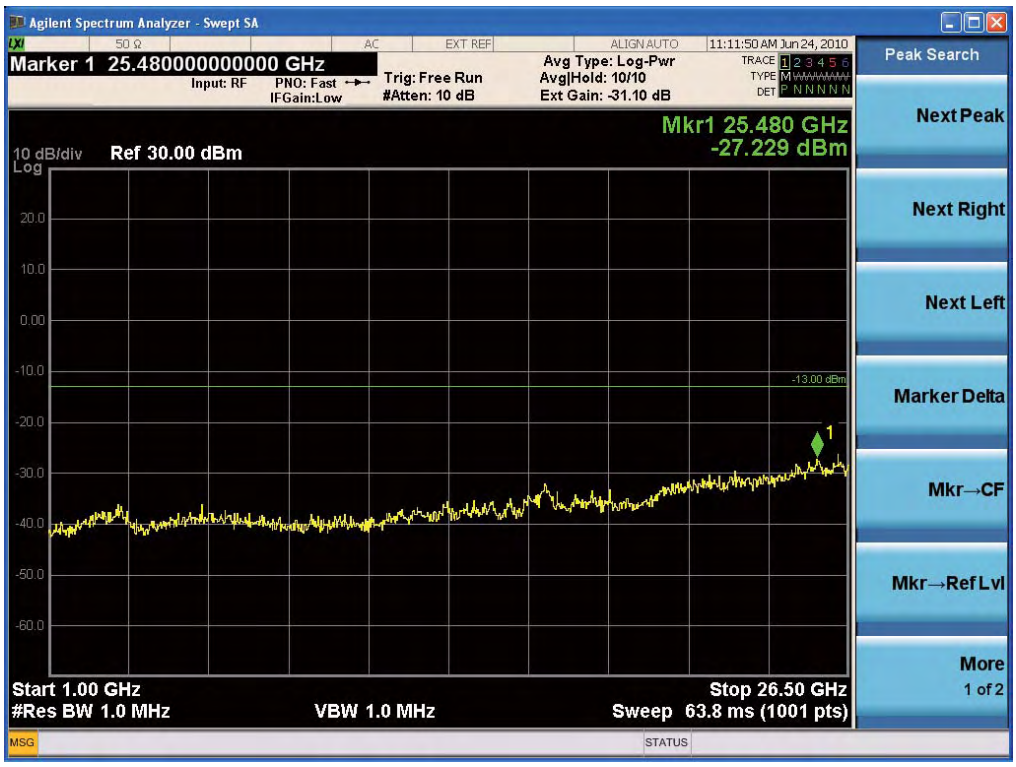
Conducted Spurious Emissions Uplink High CH (30 MHz – 1 GHz-PCS)



Conducted Spurious Emissions Downlink Low CH (1 GHz – 26.5 GHz-Cellular)

Conducted Spurious Emissions Downlink Low CH (1 GHz – 26.5 GHz-Cellular)

Conducted Spurious Emissions Downlink High CH (1 GHz – 26.5 GHz-Cellular)

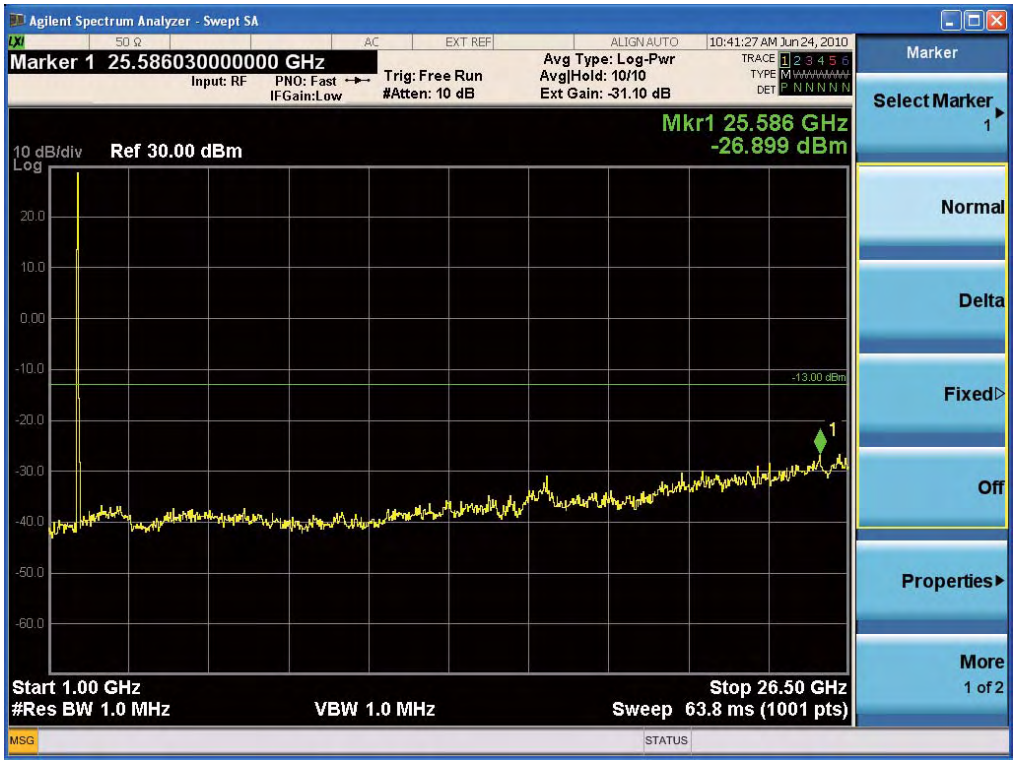


Conducted Spurious Emissions Uplink Low CH (1 GHz – 26.5 GHz-Cellular)

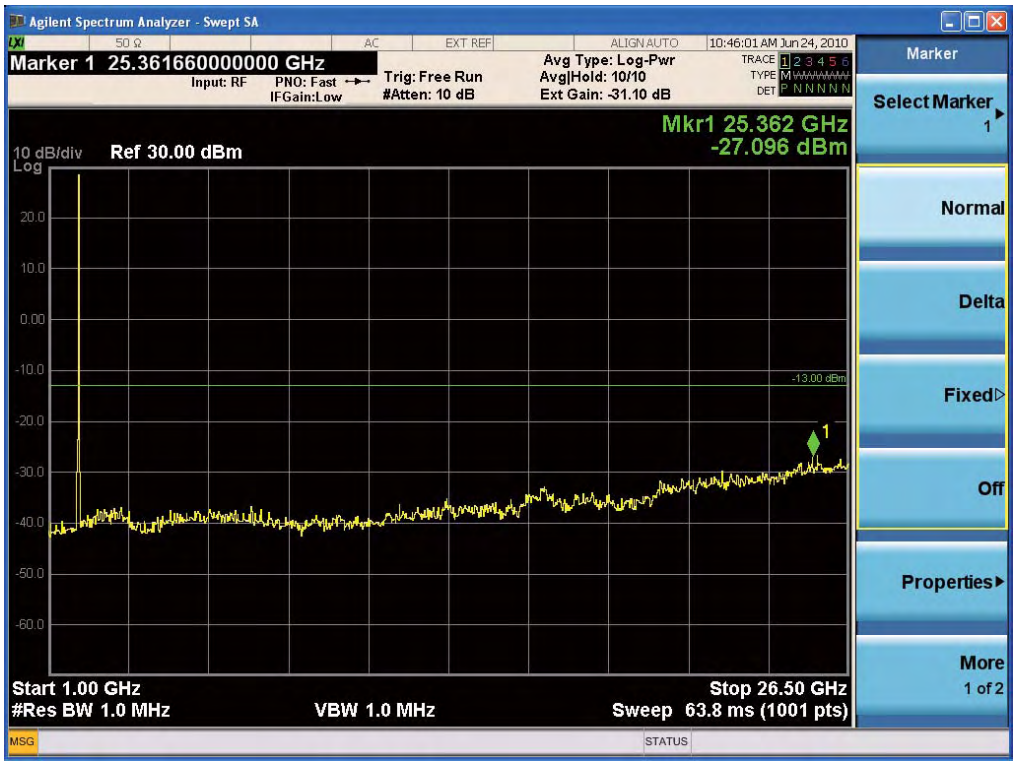
Conducted Spurious Emissions Uplink Mid CH (1 GHz – 26.5 GHz-Cellular)

Conducted Spurious Emissions Uplink High CH (1 GHz – 26.5 GHz-Cellular)

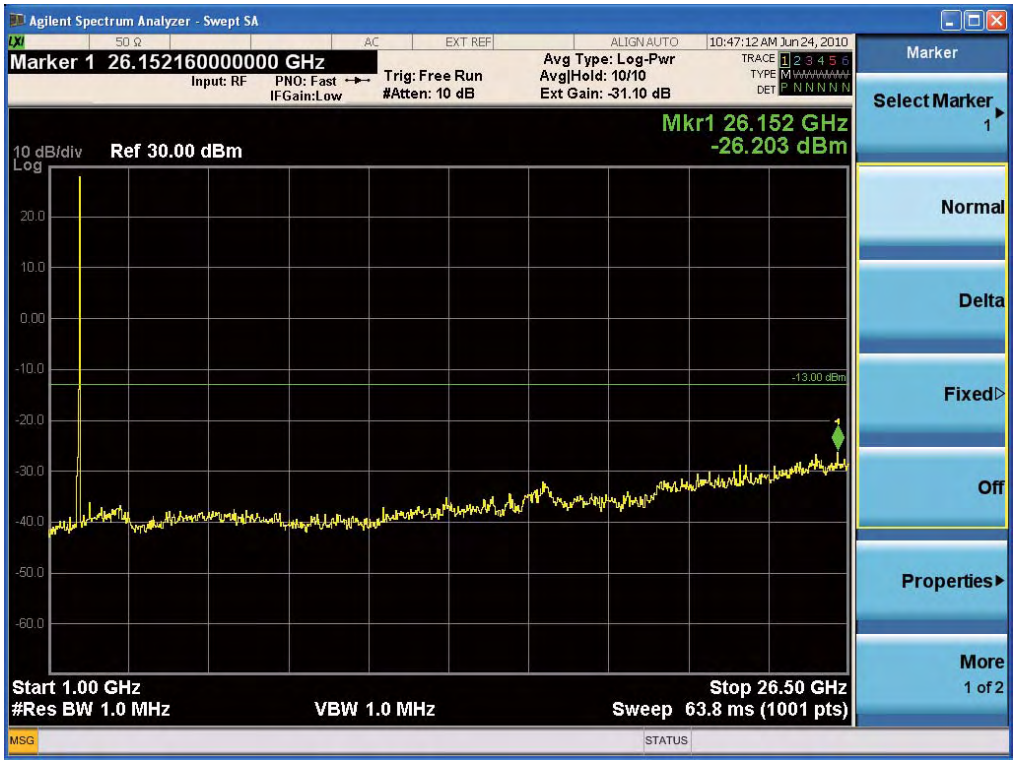
Conducted Spurious Emissions Downlink Low CH (1 GHz – 26.5 GHz-PCS)



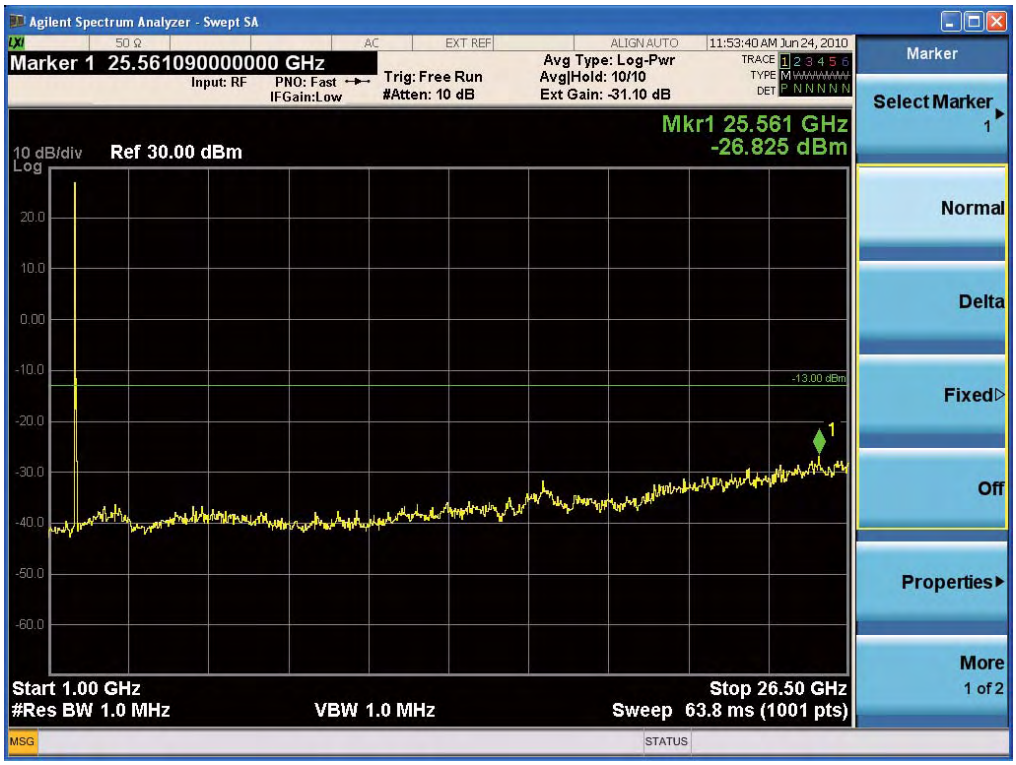
Conducted Spurious Emissions Downlink Mid CH(1 GHz – 26.5 GHz-PCS)



Conducted Spurious Emissions Downlink High CH (1 GHz – 26.5 GHz-PCS)

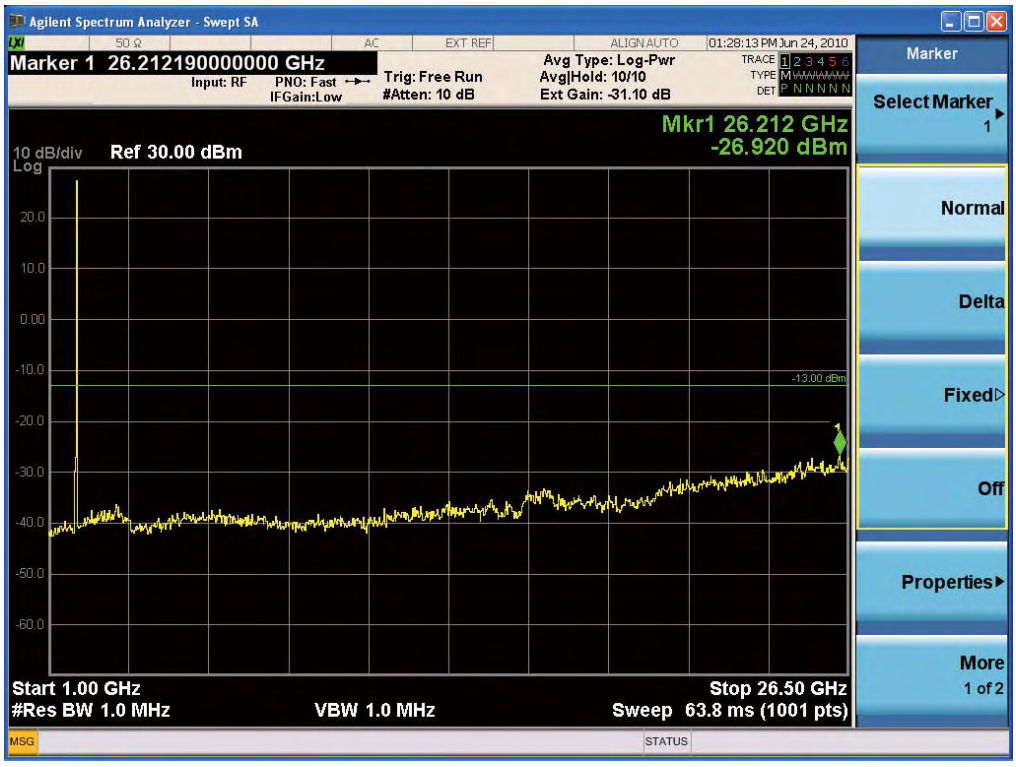


Conducted Spurious Emissions Uplink Low CH(1 GHz – 26.5 GHz-PCS)

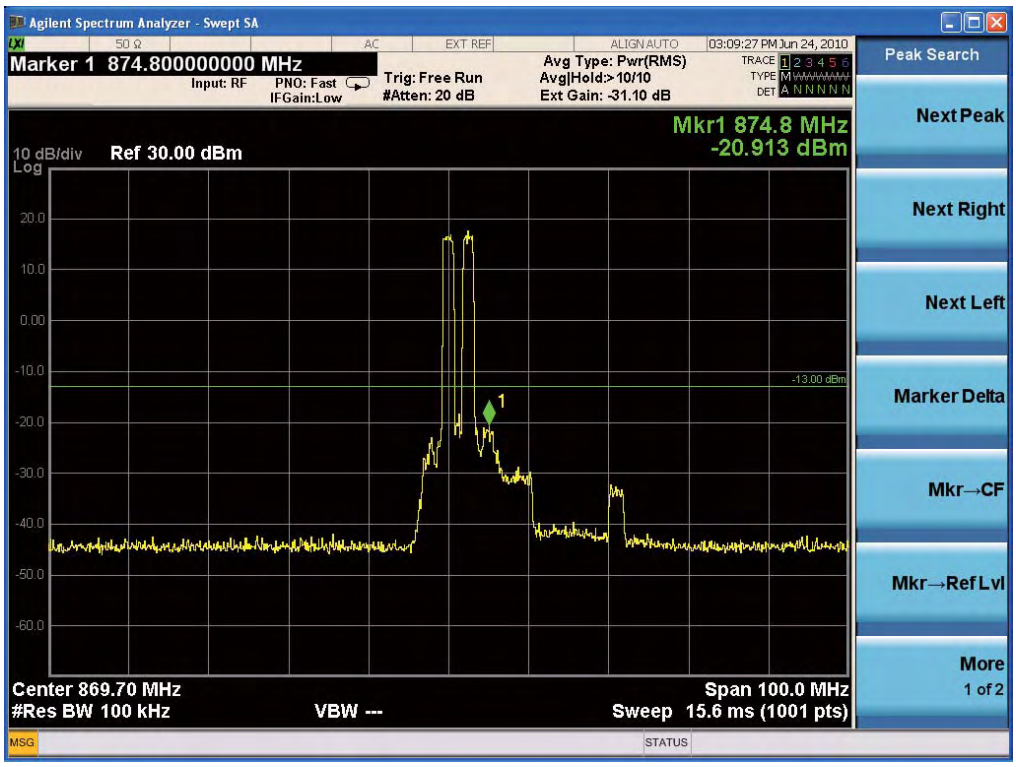


Conducted Spurious Emissions Uplink Mid CH (1 GHz – 26.5 GHz-PCS)

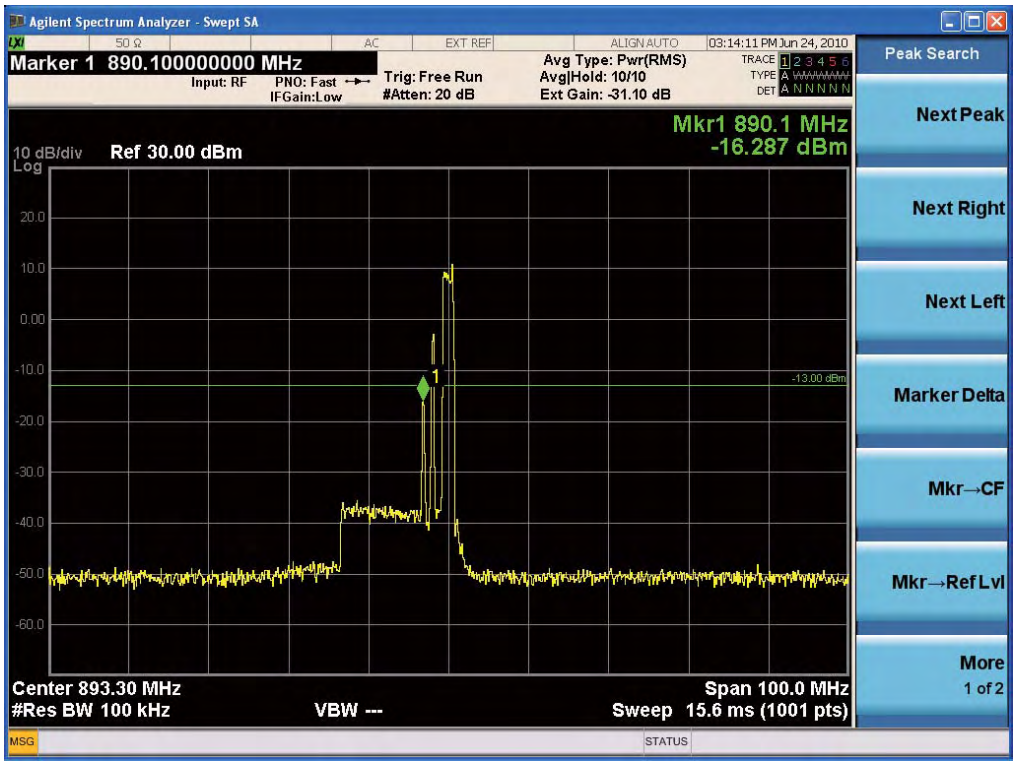
Conducted Spurious Emissions Uplink High CH (1 GHz – 26.5 GHz-PCS)



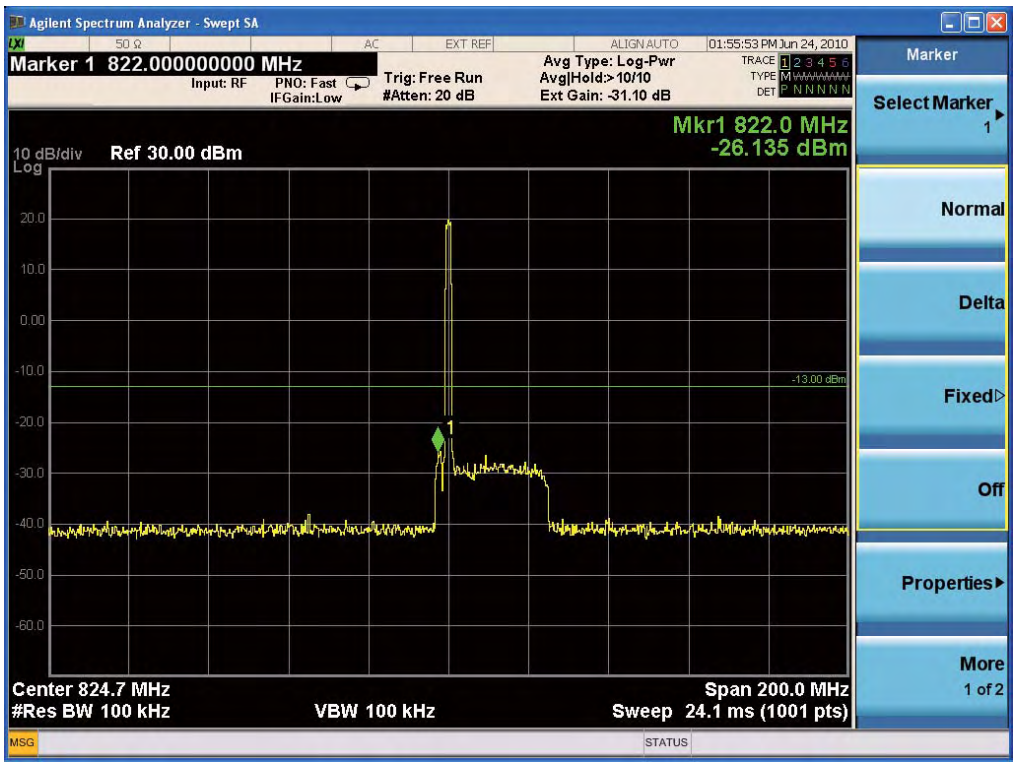
Intermodulation Downlink Low CH (Cellular)



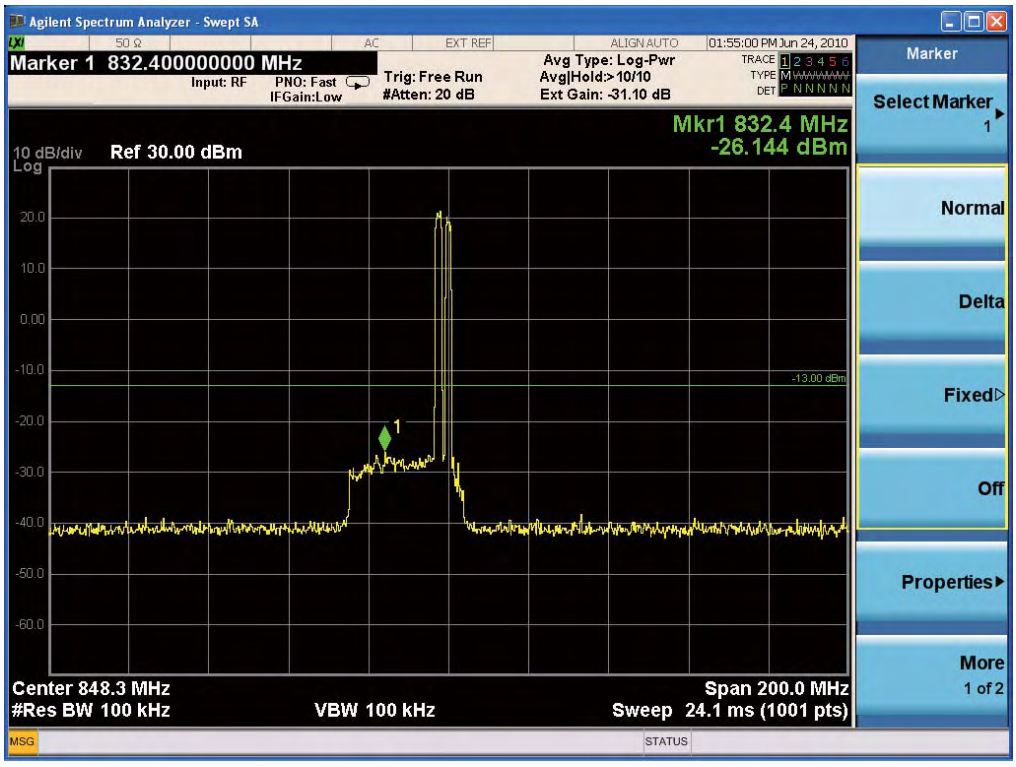
Intermodulation Downlink High CH (Cellular)



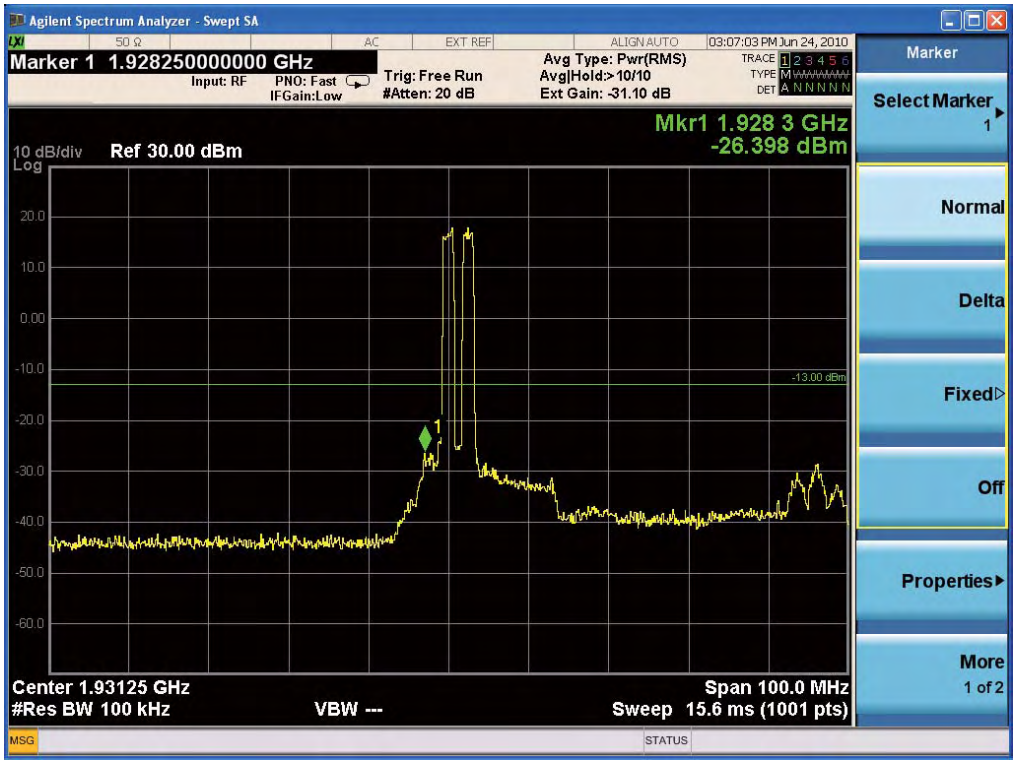
Intermodulation Uplink Low CH (Cellular)



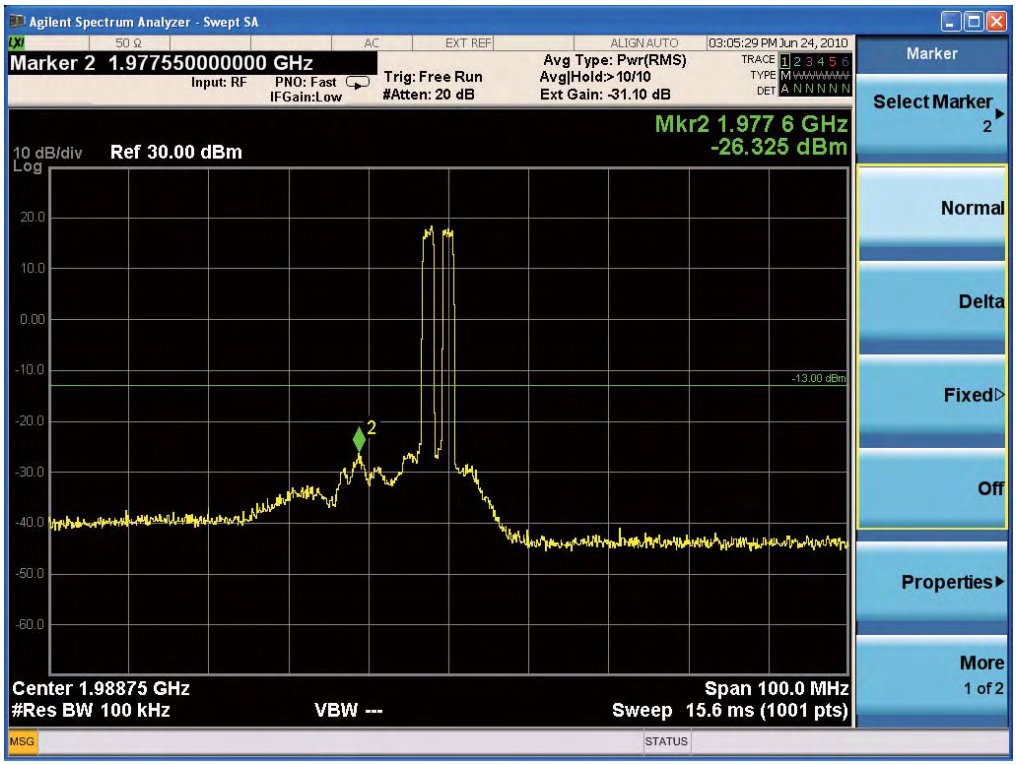
Intermodulation Uplink High CH (Cellular)



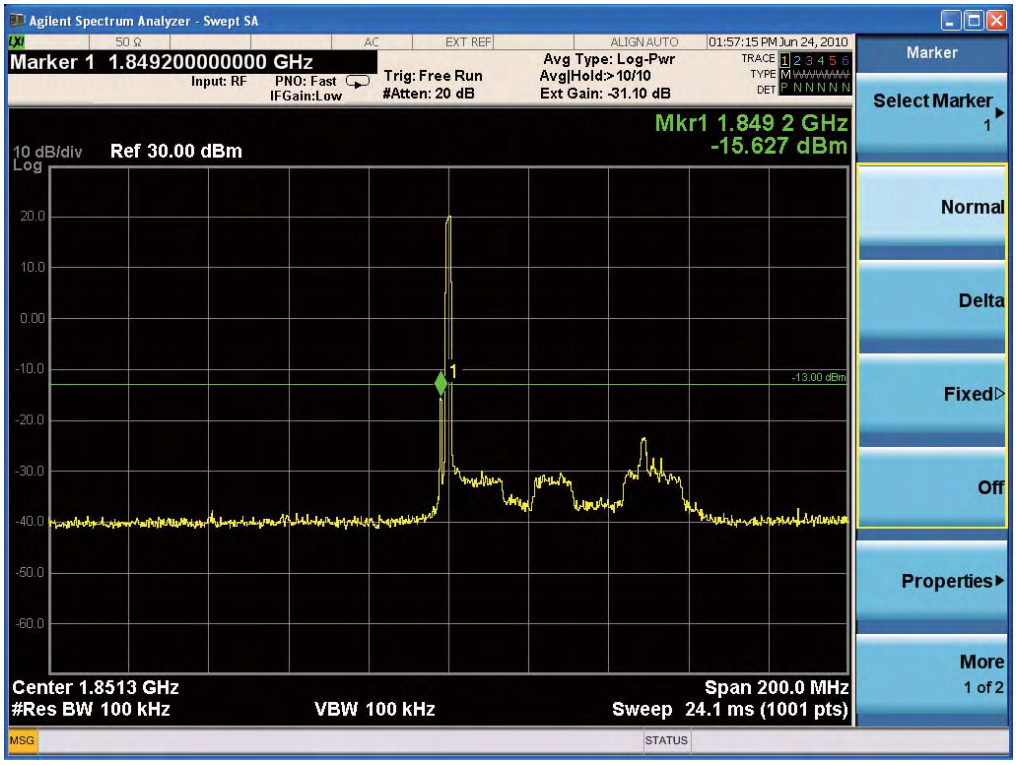
Intermodulation Downlink Low CH (PCS)



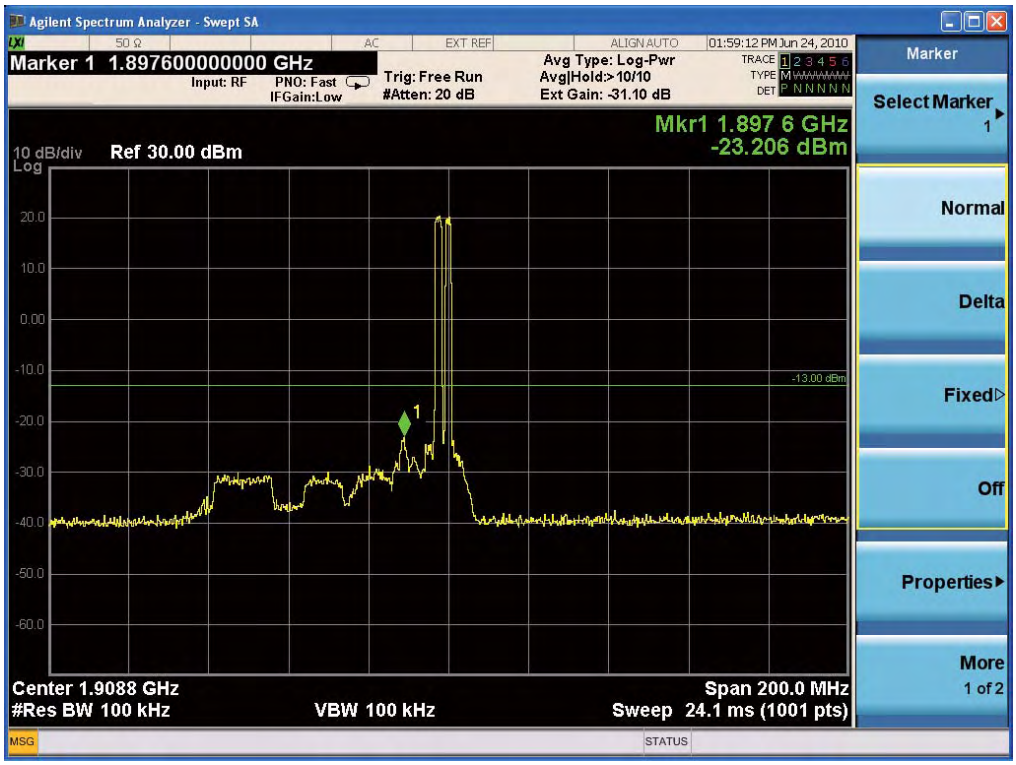
Intermodulation Downlink High CH (PCS)



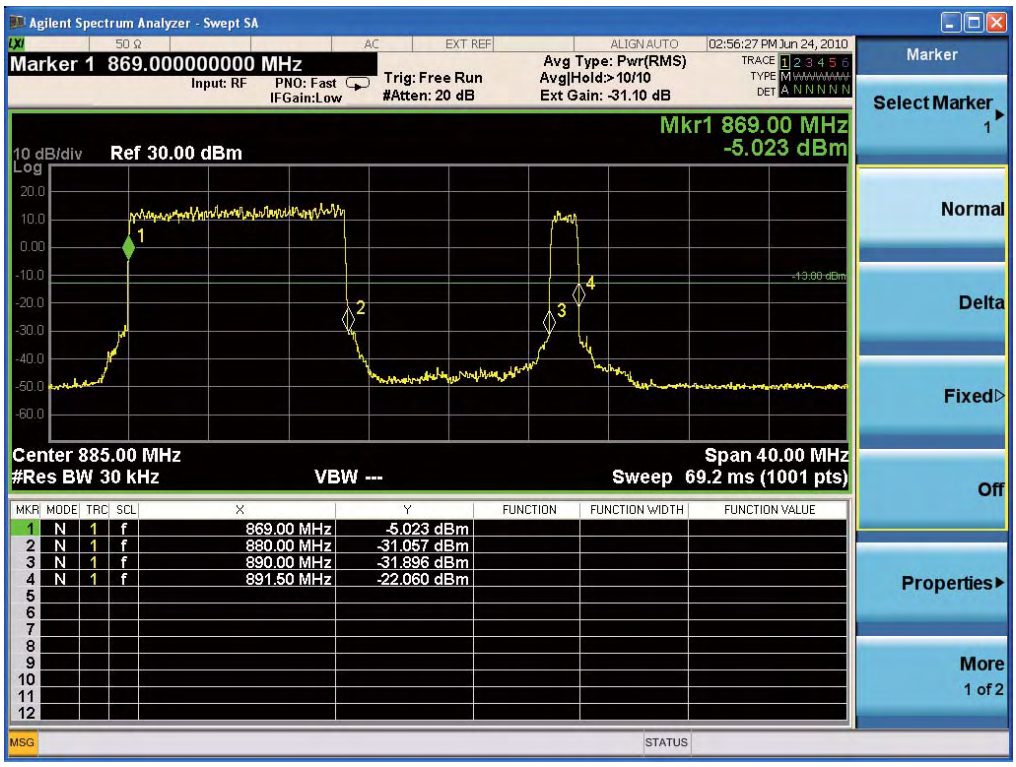
Intermodulation Uplink Low CH (PCS)



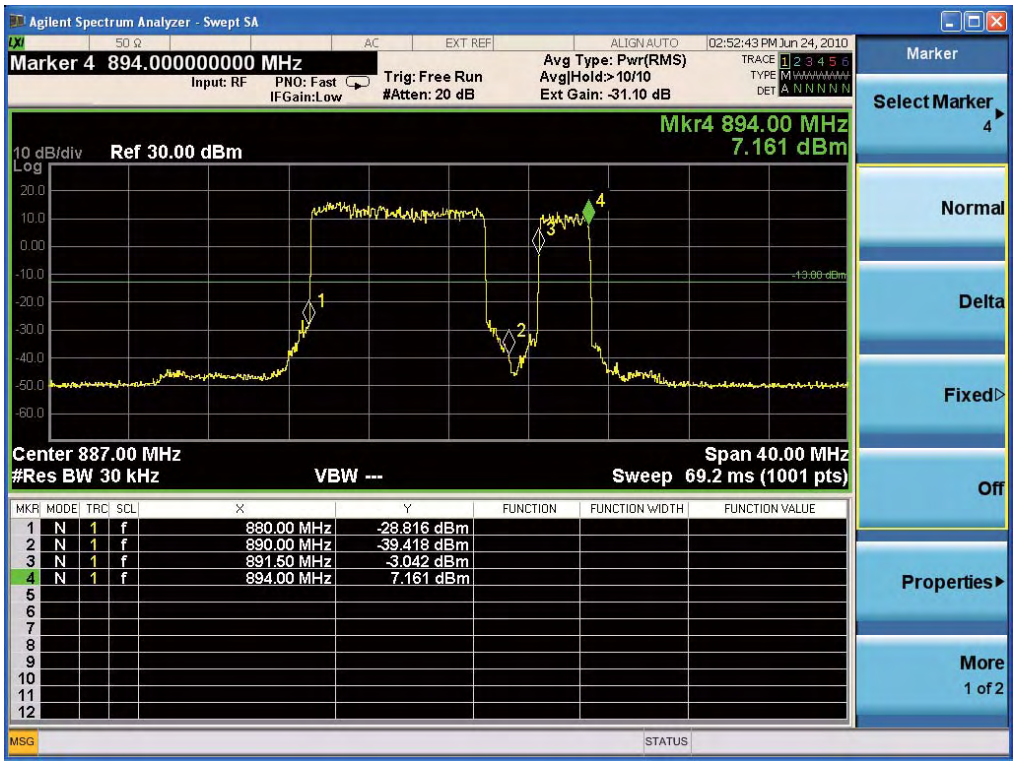
Intermodulation Uplink High CH (PCS)



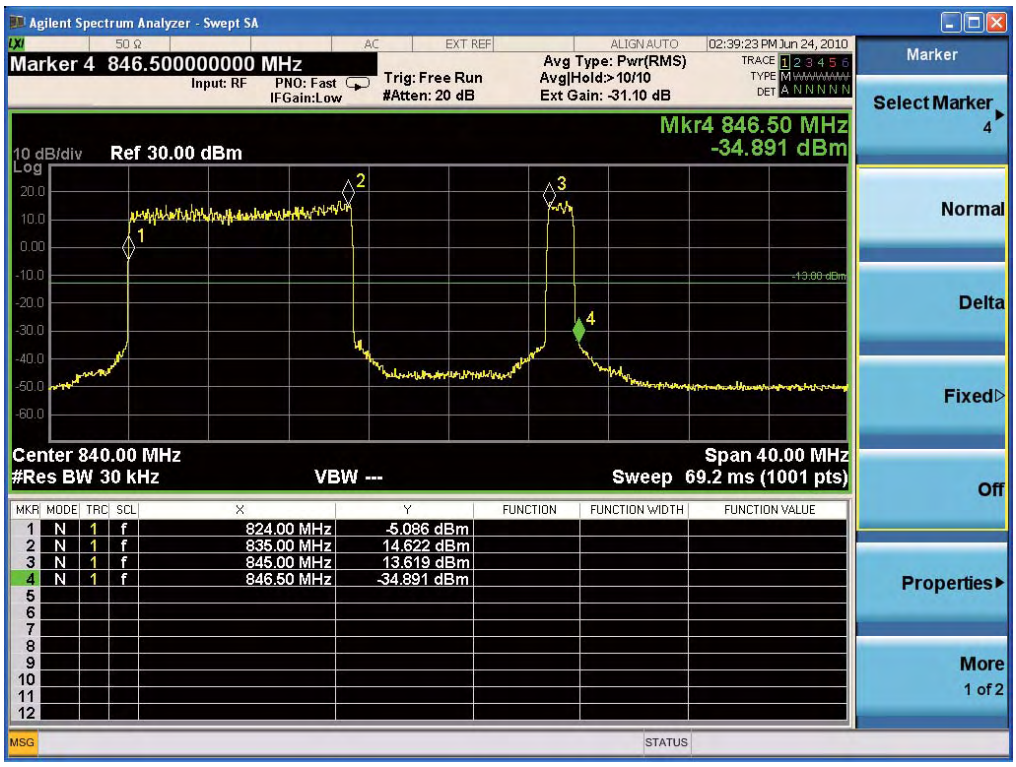
Out of Band Rejection Downlink (Cellular A Band)



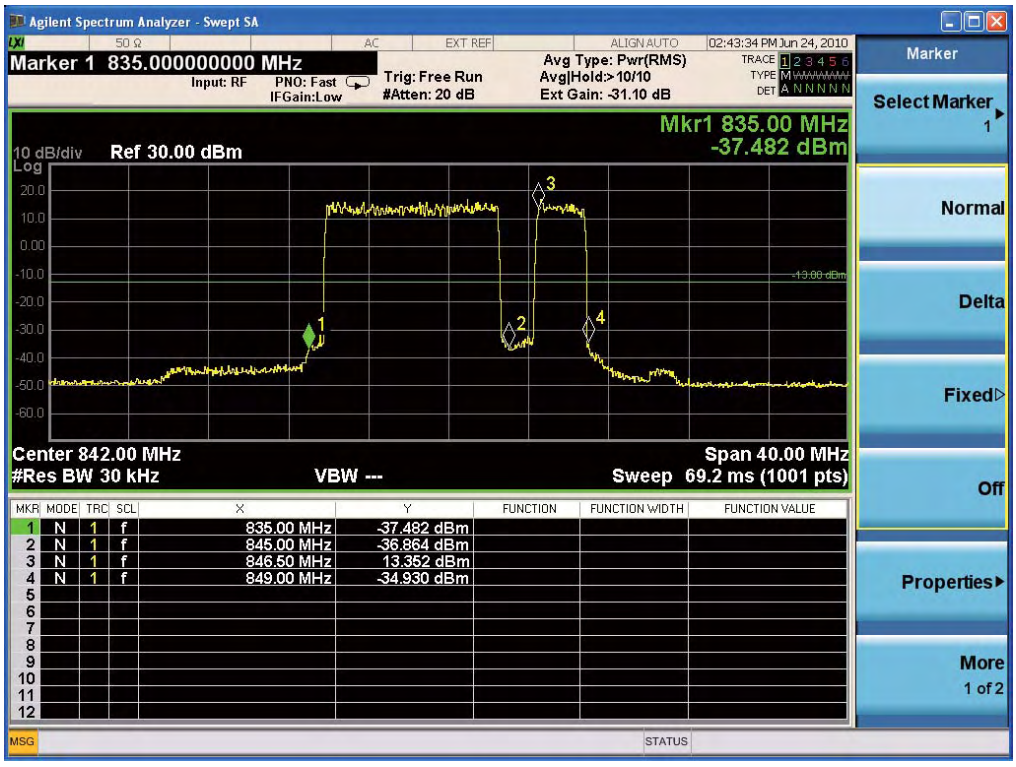
Out of Band Rejection Downlink (Cellular B Band)



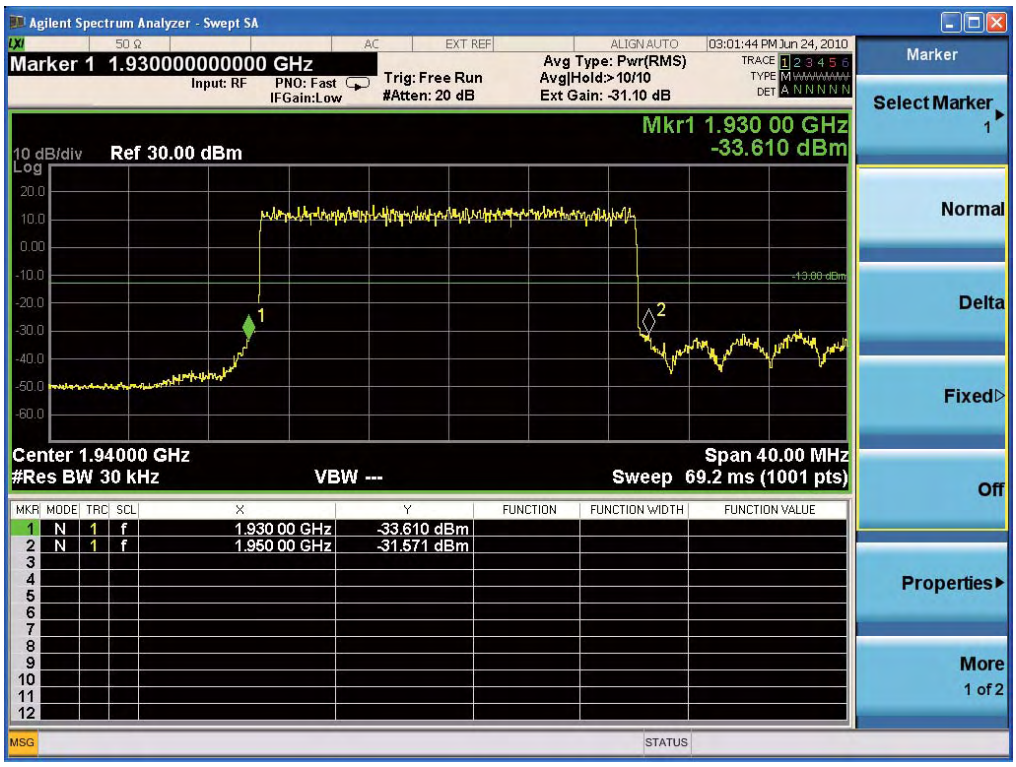
Out of Band Rejection Uplink (Cellular A Band)



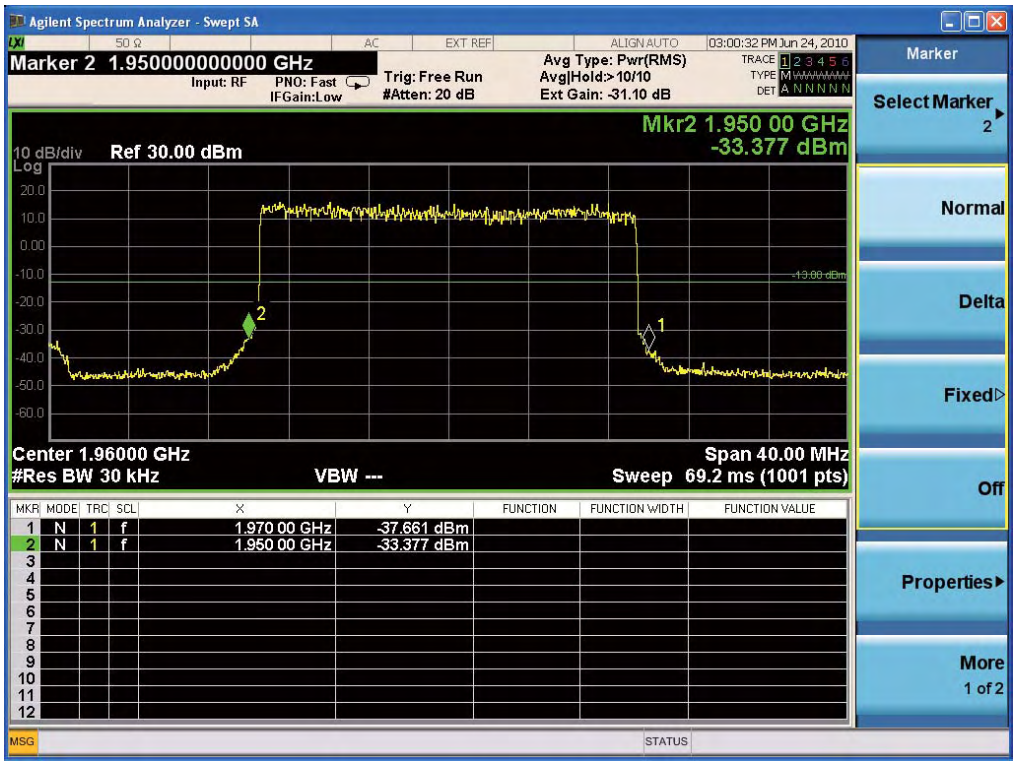
Out of Band Rejection Uplink (Cellular B Band)



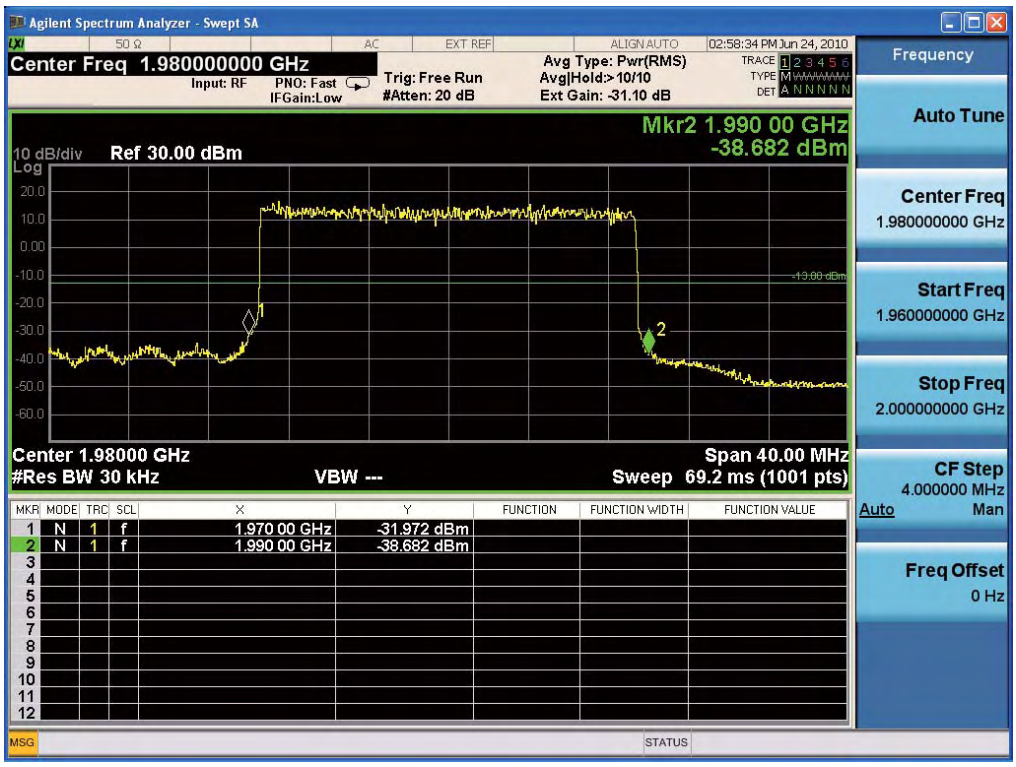
Out of Band Rejection Downlink (PCS A Band)



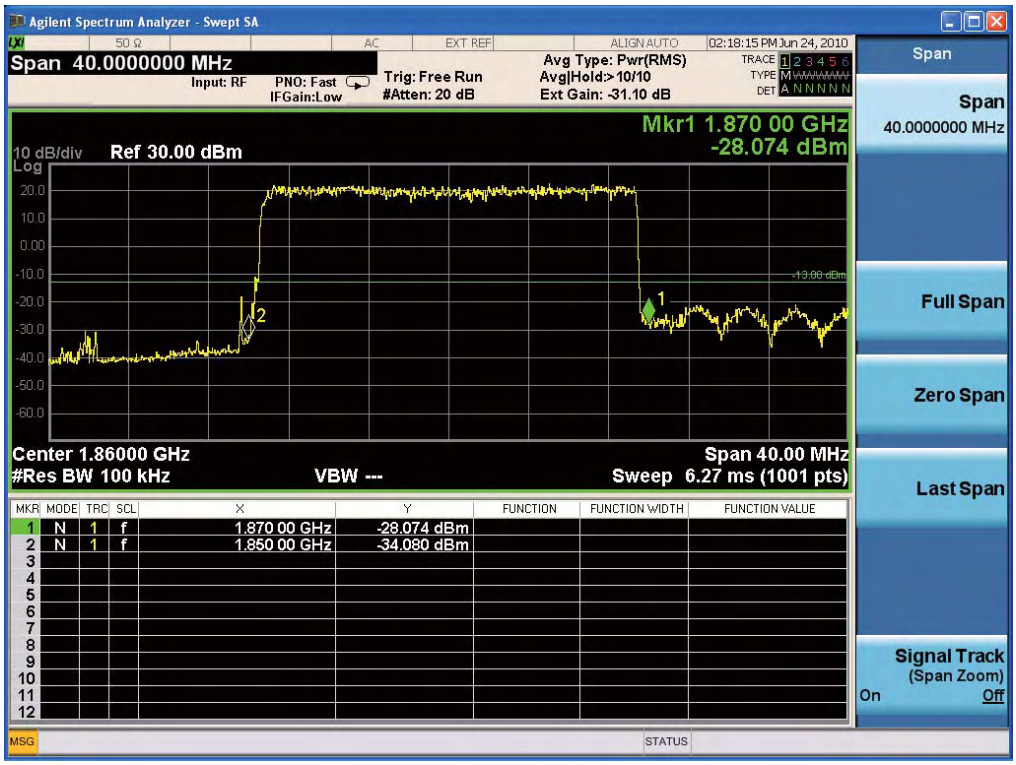
Out of Band Rejection Downlink (PCS B Band)



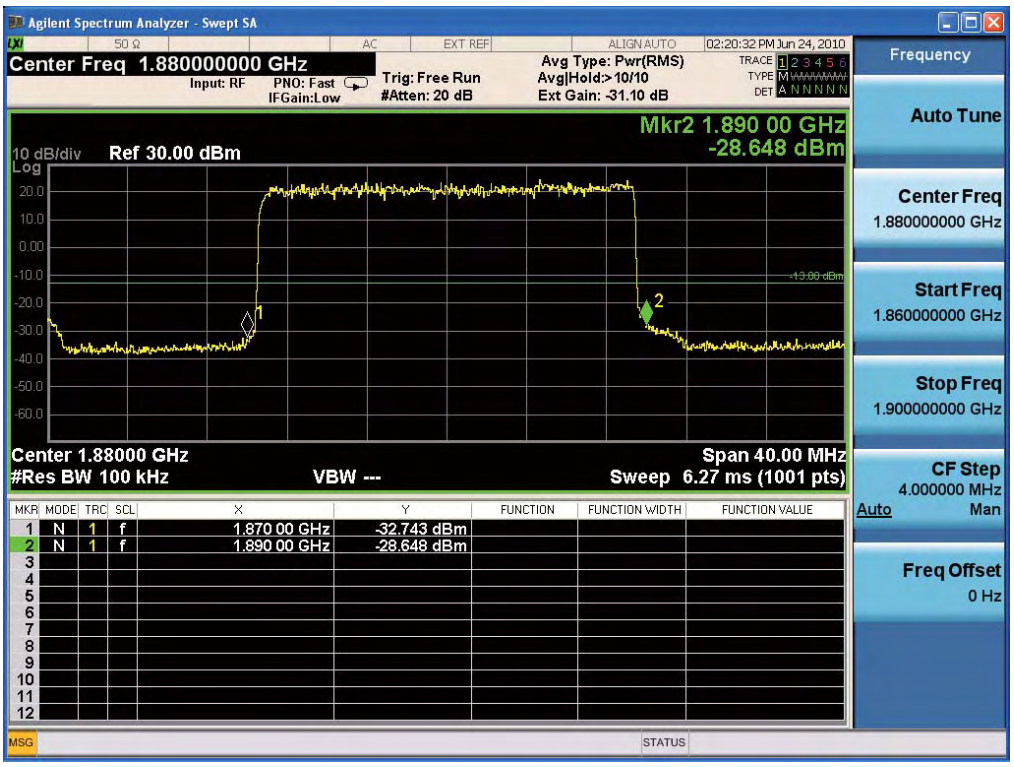
Out of Band Rejection Downlink (PCS C Band)



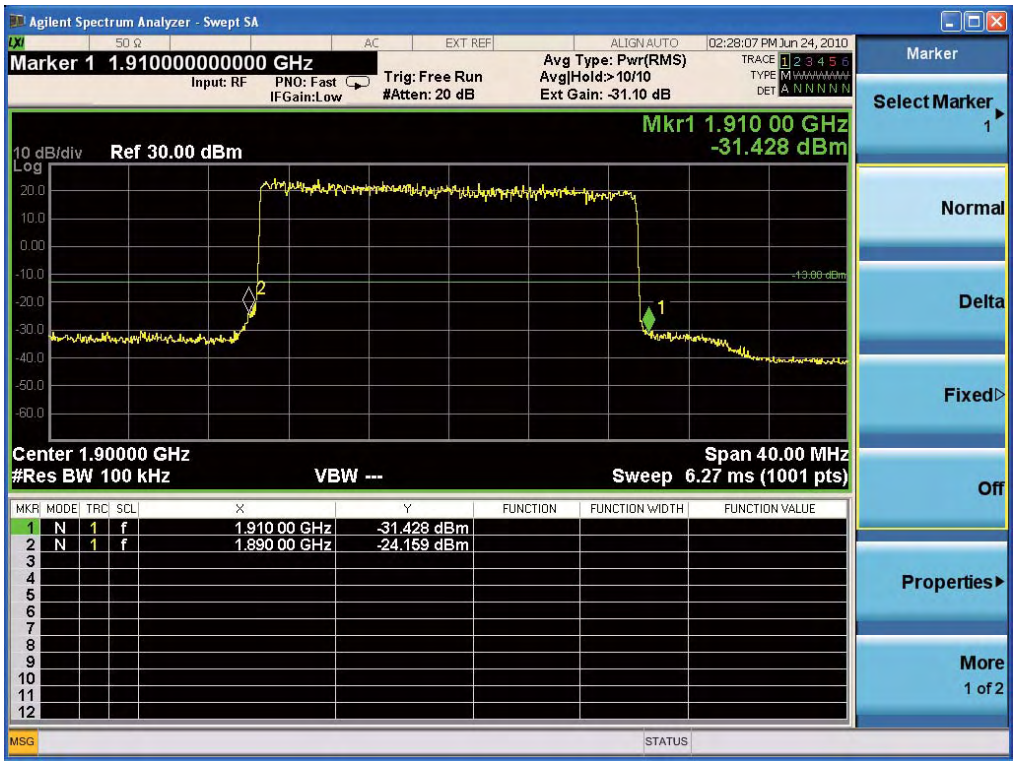
Out of Band Rejection Uplink (PCS A Band)



Out of Band Rejection Uplink (PCS B Band)



Out of Band Rejection Uplink (PCS C Band)



8. FIELD STRENGTH OF SPURIOUS RADIATION

Test Requirement(s): § 2.1053 Measurements required: Field strength of spurious radiation.

§ 2.1053 (a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of § 2.1049, as appropriate. For equipment operating on frequencies below 890 MHz, an open field test is normally required with the measuring instrument antenna located in the far-field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurements will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from half-wave dipole antennas.

§ 2.1053 (b): The measurements specified in paragraph (a) of this section shall be made for the following equipment:

(1) Those in which the spurious emissions are required to be 60 dB or more below the mean power of the transmitter.

(2) All equipment operating on frequencies higher than 25 MHz.

(3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.

(4) Other types of equipment as required, when deemed necessary by the Commission.

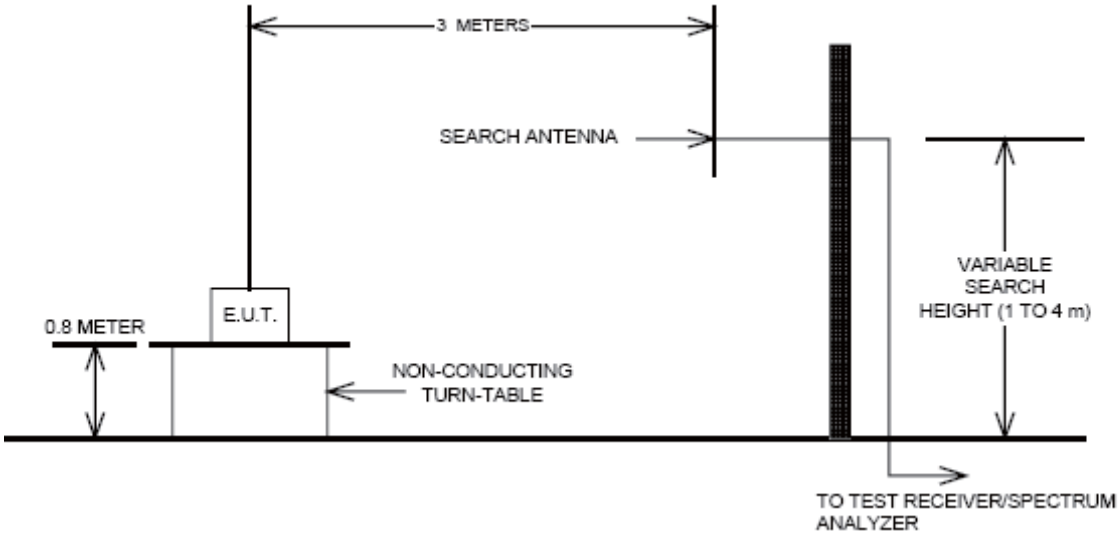
Test Procedures: As required by 47 CFR 2.1053, *field strength of radiated spurious measurements* were made in accordance with the procedures of TIA/EIA-603-C-2004 "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards".

Radiated emission measurements were performed inside a 3 meter semi-anechoic chamber. The EUT was set at a distance of 3m from the receiving antenna. The EUT's RF ports were terminated to 50ohm load. The EUT was set to transmit at the low, mid and high channels of the transmitter frequency range at its maximum power level. The EUT was rotated about 360 and the receiving antenna scanned from 1-3m in order to capture the maximum emission. A

calibrated antenna source was positioned in place of the EUT and the previously recorded signal was duplicated. The maximum EIRP of the emission was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried. out with the receiving antenna in both vertical and horizontal polarization. Harmonic emissions up to the 10th or 40GHz, whichever was the lesser, were investigated.

Test Results: There were no emissions detected above the noise floor which was at least 20 dB below the limit.

Radiated Spurious Emissions Test Setup



9. FREQUENCY STABILITY OVER TEMPERATURE AND VOLTAGE VARIATIONS

Test Requirement(s):

§2.1055(a)(1) §22.355, §24.235

Test Procedures:

As required by 47 CFR 2.1055, *Frequency Stability measurements* were made at the RF output terminals using a Spectrum Analyzer.

The EUT was placed in the Environmental Chamber.

A CW signal was injected into the EUT at the appropriate RF level. The frequency counter option

on the Spectrum Analyzer was used to measure frequency deviations.

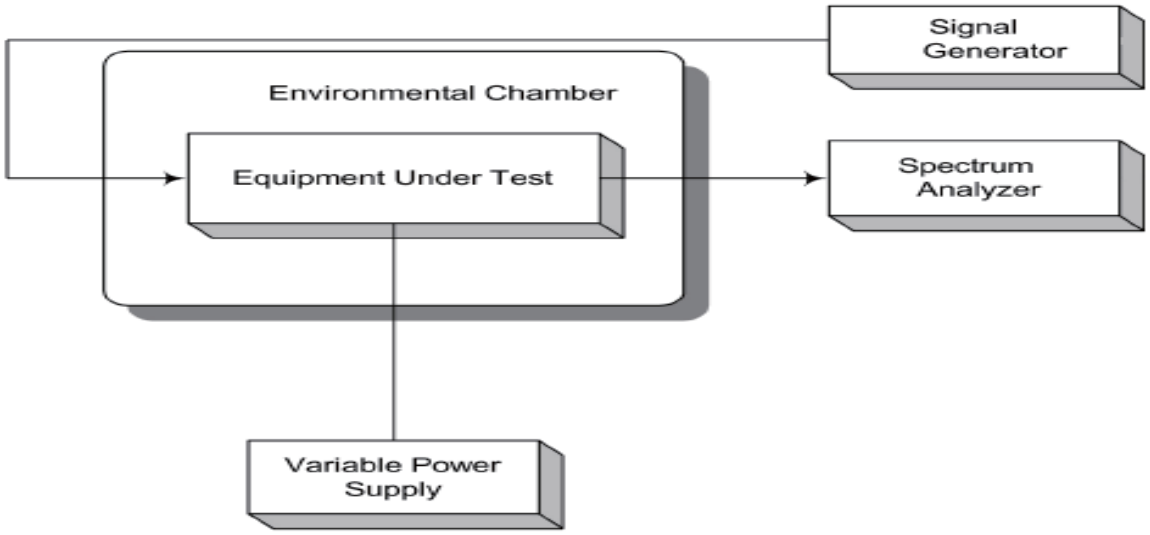
The frequency drift was investigated for every 10 ℃ increment until the unit is stabilized then recorded the reading in tabular format with the temperature range of -30 to 50 ℃.

Voltage supplied to EUT is 120 Vac reference temperature was done at 20℃. The voltage was varied by ± 15 % of nominal

Test Results:

The E.U.T was found in compliance for Frequency Stability and Voltage Test

Test Setup:



Frequency Stability and Voltage Test Results

Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	+20(Ref)	881 500 020	0	0.000 000	0.0000
100%	-30	881 500 051	51	0.000 006	0.0610
100%	-20	881 500 042	42	0.000 005	0.0502
100%	-10	881 500 045	45	0.000 005	0.0538
100%	0	881 500 027	27	0.000 003	0.0323
100%	+10	881 500 030	30	0.000 003	0.0359
100%	+30	881 500 020	20	0.000 002	0.0239
100%	+40	881 500 060	60	0.000 007	0.0717
100%	+50	881 500 031	31	0.000 003	0.0371
115%	+20	881 500 041	41	0.000 004	0.0490
85%	+20	881 500 037	37	0.000 004	0.0442

(Cellular Downlink Mid CH)

Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	+20(Ref)	1960 000 032	0	0.000 000	0.000
100%	-30	1960 000 047	47	0.000 003	0.025
100%	-20	1960 000 029	29	0.000 002	0.015
100%	-10	1960 000 025	25	0.000 001	0.013
100%	0	1960 000 021	21	0.000 001	0.011
100%	+10	1960 000 033	33	0.000 002	0.018
100%	+30	1960 000 053	53	0.000 003	0.028
100%	+40	1960 000 036	36	0.000 002	0.019
100%	+50	1960 000 068	68	0.000 004	0.036
115%	+20	1960 000 042	42	0.000 002	0.022
85%	+20	1960 000 061	61	0.000 003	0.032

(PCS Downlink Mid CH)

Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	+20(Ref)	836 500 084	0	0.000 000	0.000
100%	-30	836 500 072	72	0.000 086	0.086
100%	-20	836 500 062	62	0.000 074	0.074
100%	-10	836 500 080	80	0.000 096	0.096
100%	0	836 500 057	57	0.000 068	0.068
100%	+10	836 500 078	78	0.000 093	0.093
100%	+30	836 500 066	66	0.000 079	0.079
100%	+40	836 500 055	55	0.000 066	0.066
100%	+50	836 500 030	30	0.000 036	0.036
115%	+20	836 500 028	28	0.000 033	0.033
85%	+20	836 500 047	47	0.000 056	0.056

(Cellular Uplink Mid CH)

Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	+20(Ref)	1880 000 048	0	0.000000	0.000
100%	-30	1880 000 072	72	0.000004	0.038
100%	-20	1880 000 066	66	0.000004	0.035
100%	-10	1880 000 057	57	0.000003	0.030
100%	0	1880 000 022	22	0.000001	0.012
100%	+10	1880 000 039	39	0.000002	0.021
100%	+30	1880 000 054	54	0.000003	0.029
100%	+40	1880 000 058	58	0.000003	0.031
100%	+50	1880 000 045	45	0.000002	0.024
115%	+20	1880 000 049	49	0.000003	0.026
85%	+20	1880 000 079	79	0.000004	0.042

(PCS Uplink Mid CH)

10. RF EXPOSURE STATEMENT

1. LIMITS

According to §1.1310 and §2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

Frequency range (MHz)	Electric field Strength (V/m)	Magnetic field Strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
0.3 - 1.34.....	614	1.63	*(100)	30
1.34 - 30.....	824/f	2.19/f	*(180/ f^2)	30
30 - 300.....	27.5	0.073	0.2	30
300 - 1500.....	.....	.....	f/1500	30
1500 - 100.000.....	.....	.....	1.0	30

F = frequency in MHz

* = Plane-wave equivalent power density

2. MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

S = Power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

2-1. Cellular Downlink

Max Peak output Power at antenna input terminal	23.98	dBm
Max Peak output Power at antenna input terminal	250.035	mW
Prediction distance	20.000	cm
Prediction frequency	869.700	MHz
Antenna Gain(typical)	7.000	dBi
Antenna Gain(numeric)	5.012	-
Power density at prediction frequency(S)	0.249	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.580	mW/cm^2

2-2. PCS Downlink

Max Peak output Power at antenna input terminal	23.95000	dBm
Max Peak output Power at antenna input terminal	248.31331	mW
Prediction distance	20.00000	cm
Prediction frequency	1931.25000	MHz
Antenna Gain(typical)	12.00000	dBi
Antenna Gain(numeric)	15.84893	-
Power density at prediction frequency (S)	0.78294	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.00000	mW/cm^2

2-3. Cellular Uplink

Max Peak output Power at antenna input terminal	24.100	dBm
Max Peak output Power at antenna input terminal	257.040	mW
Prediction distance	20.000	cm
Prediction frequency	824.700	MHz
Antenna Gain(typical)	2.000	dBi
Antenna Gain(numeric)	1.585	-
Power density at prediction frequency(S)	0.081	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.550	mW/cm^2

2-4. PCS Uplink

Max Peak output Power at antenna input terminal	23.95	dBm
Max Peak output Power at antenna input terminal	248.31331	mW
Prediction distance	20.00000	cm
Prediction frequency	1851.25000	MHz
Antenna Gain(typical)	2.00000	dBi
Antenna Gain(numeric)	1.58489	-
Power density at prediction frequency (S)	0.07829	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.00000	mW/cm^2

3. RESULTS

The power density level at 20 cm is 0.081 mW/cm²(Cellular UpLink), 0.249 mW/cm²(Cellular DownLink), 0.078294 mW/cm²(PCS UpLink), 0.7829 mW/cm²(PCS DownLink), which is below the uncontrolled exposure limit for Cellular & PCS band.

Warning: In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, it must also have a minimum distance of 20 cm from the body during normal operation.