

Cellular-LTE-16QAM uplink (lowest frequency) 30MHz-1GHz



Cellular-LTE-16QAM uplink (lowest frequency) Above 1GHz



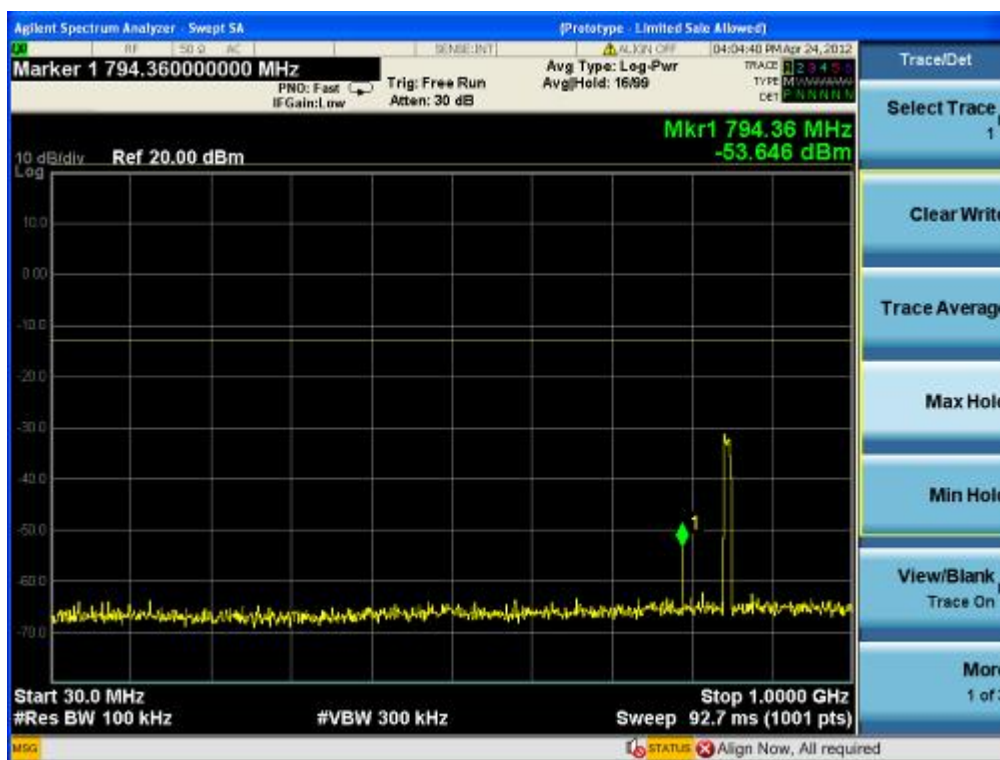
Cellular-LTE-16QAM uplink (middle frequency) 30MHz-1GHz



Cellular-LTE-16QAM uplink(middle frequency) Above 1GHz



Cellular-LTE-16QAM uplink (highest frequency) 30MHz-1GHz



Cellular-LTE-16QAM uplink (highest frequency) Above 1GHz



Cellular-LTE-64QAM downlink (lowest frequency) 30MHz-1GHz



Cellular-LTE-64QAM downlink (lowest frequency) Above 1GHz



Cellular-LTE-64QAM downlink (middle frequency) 30MHz-1GHz



Cellular-LTE-64QAM downlink (middle frequency) Above 1GHz



Cellular-LTE -64QAM downlink (highest frequency) 30MHz-1GHz



Cellular-LTE-64QAM downlink (highest frequency) Above 1GHz



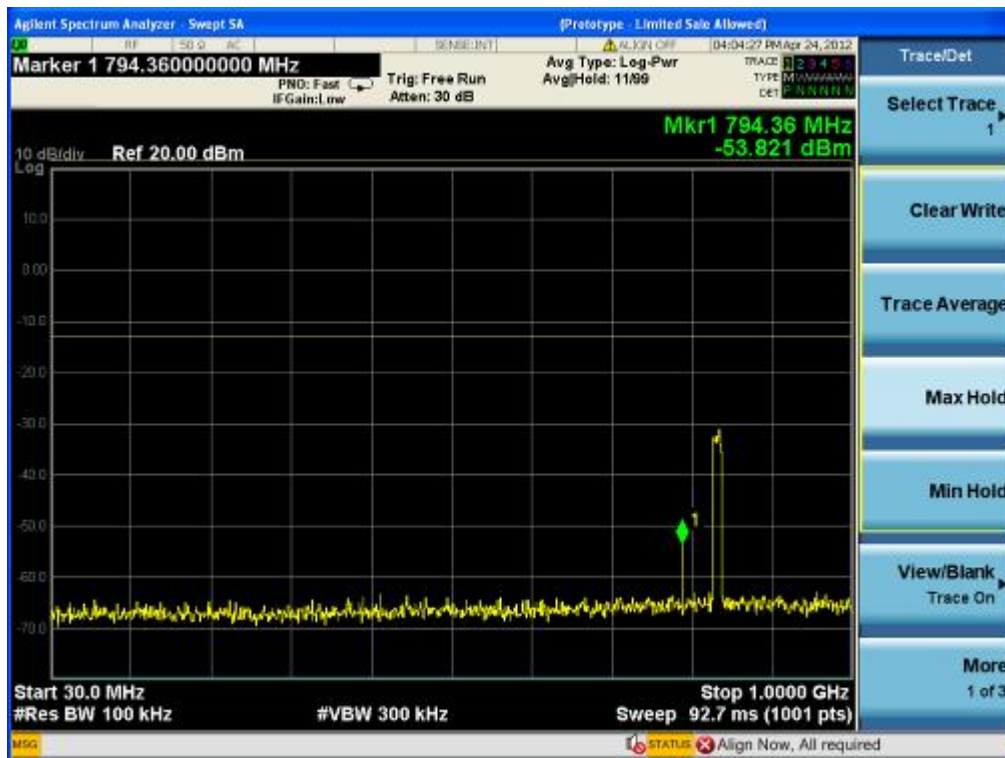
Cellular-LTE-64QAM uplink (lowest frequency) 30MHz-1GHz



Cellular-LTE-64QAM uplink (lowest frequency) Above 1GHz



Cellular-LTE-64QAM uplink (middle frequency) 30MHz-1GHz



Cellular-LTE-64QAM uplink(middle frequency) Above 1GHz

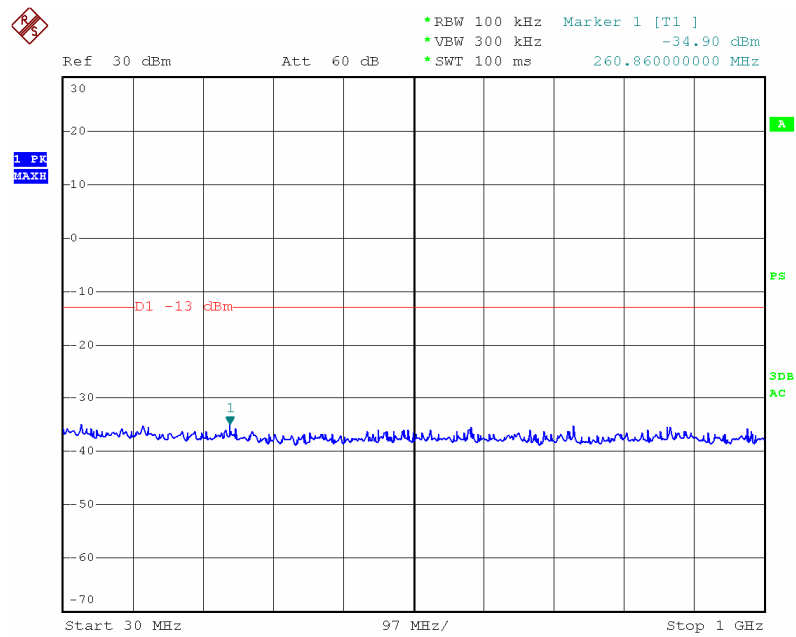
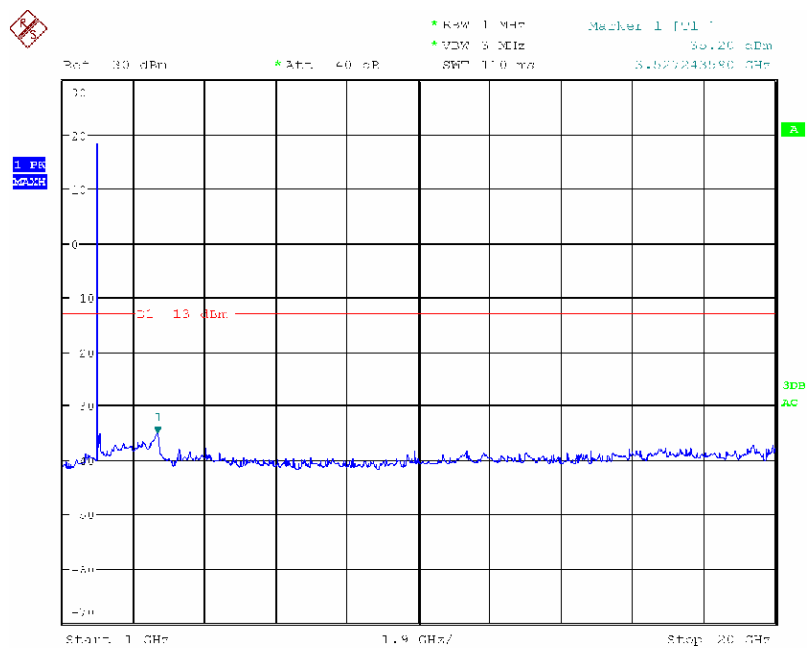


Cellular-LTE-64QAM uplink (highest frequency) 30MHz-1GHz

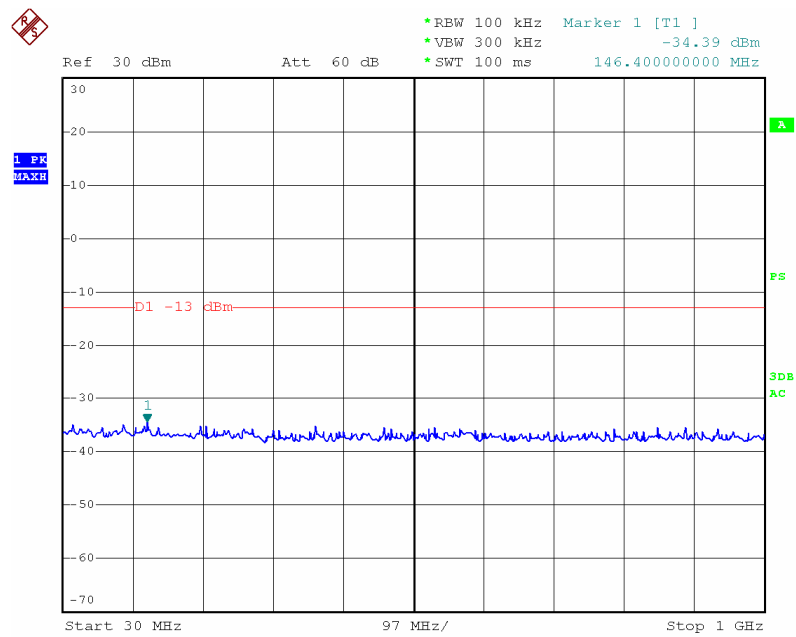


Cellular-LTE-64QAM uplink (highest frequency) Above 1GHz

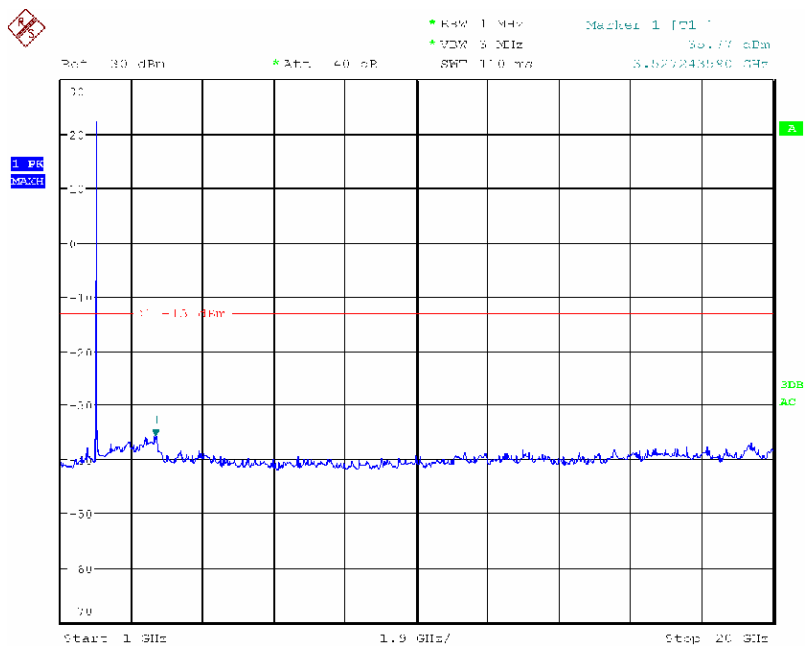


PCS Band**PCS-GSM downlink (lowest frequency) 30MHz-1GHz****PCS-GSM downlink (lowest frequency) Above 1GHz**

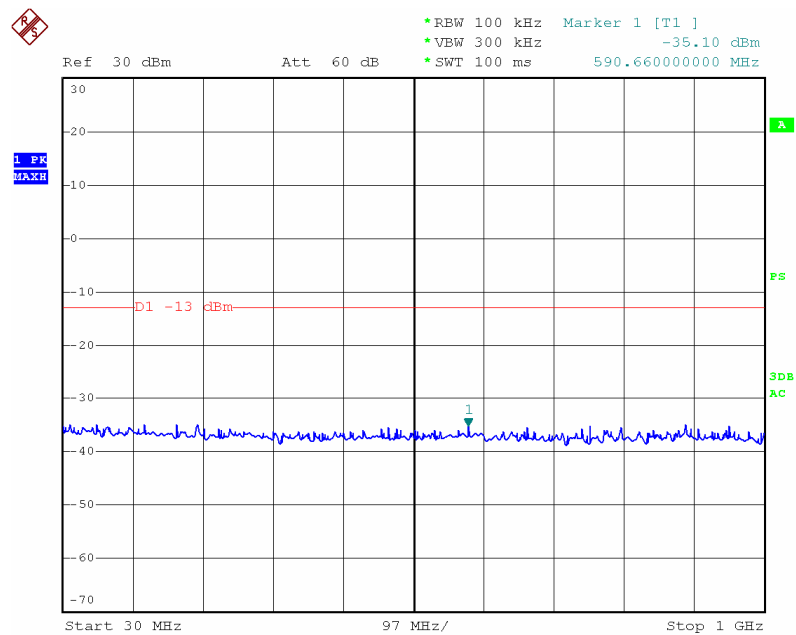
PCS-GSM downlink (middle frequency) 30MHz-1GHz



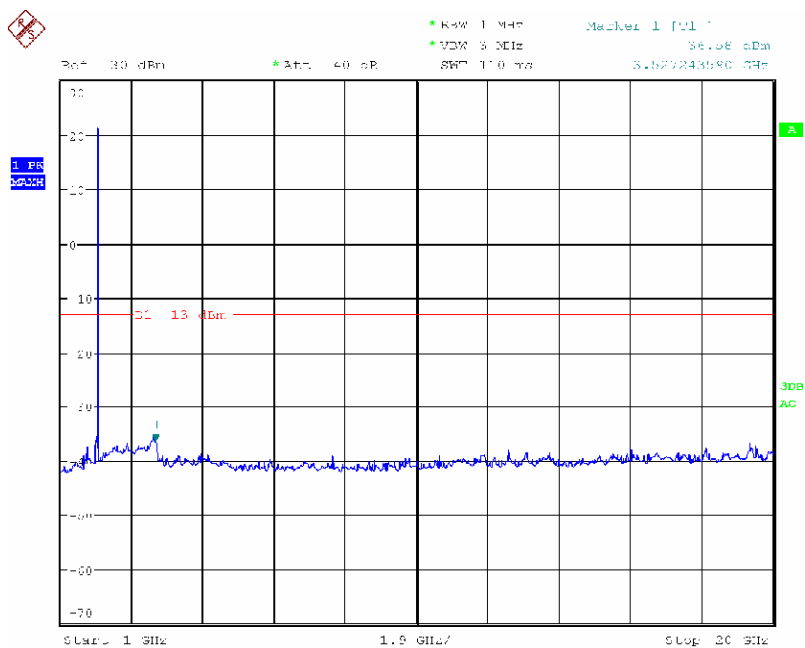
PCS-GSM downlink (middle frequency) Above 1GHz



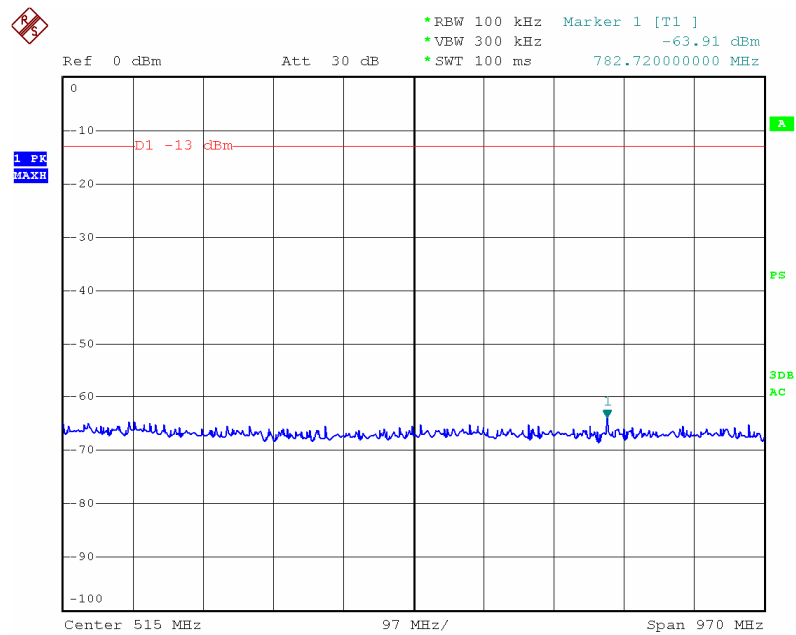
PCS-GSM downlink (highest frequency) 30MHz-1GHz



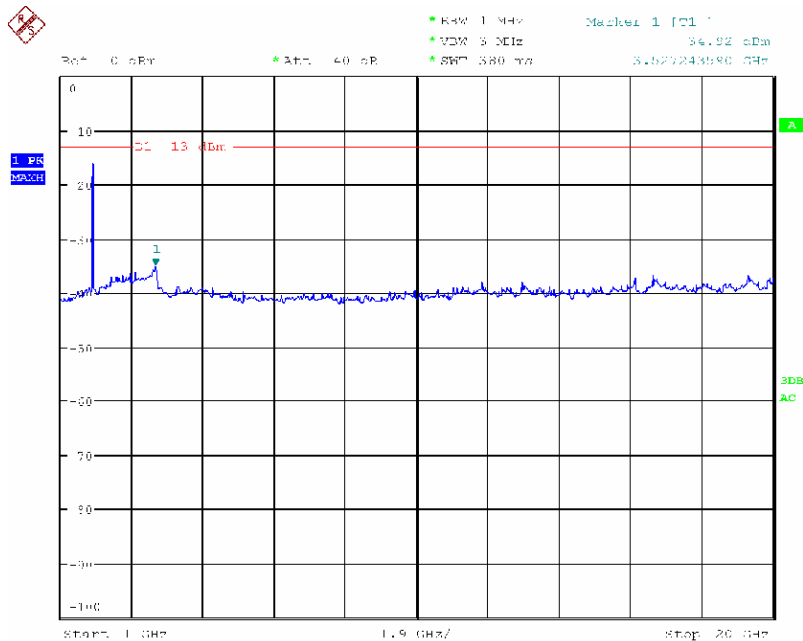
PCS-GSM downlink (highest frequency) Above 1GHz



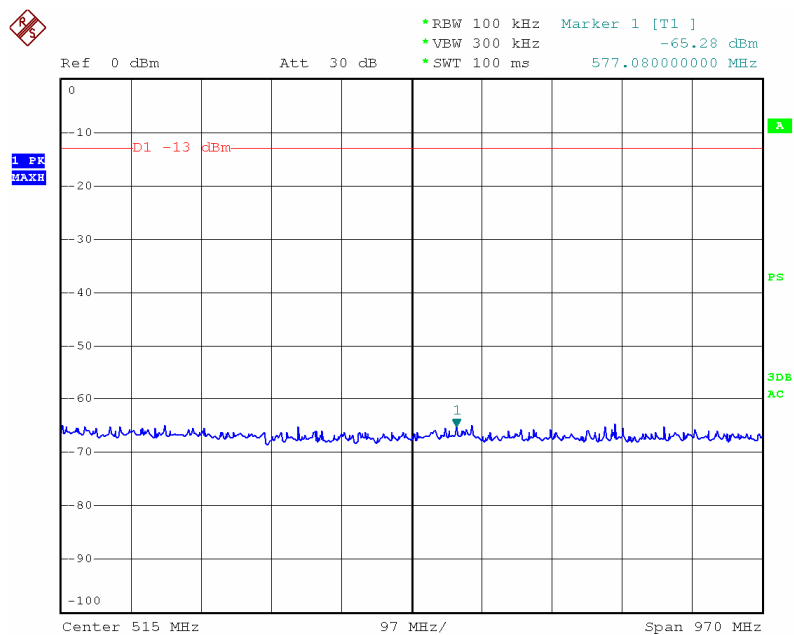
PCS-GSM uplink (lowest frequency) 30MHz-1GHz



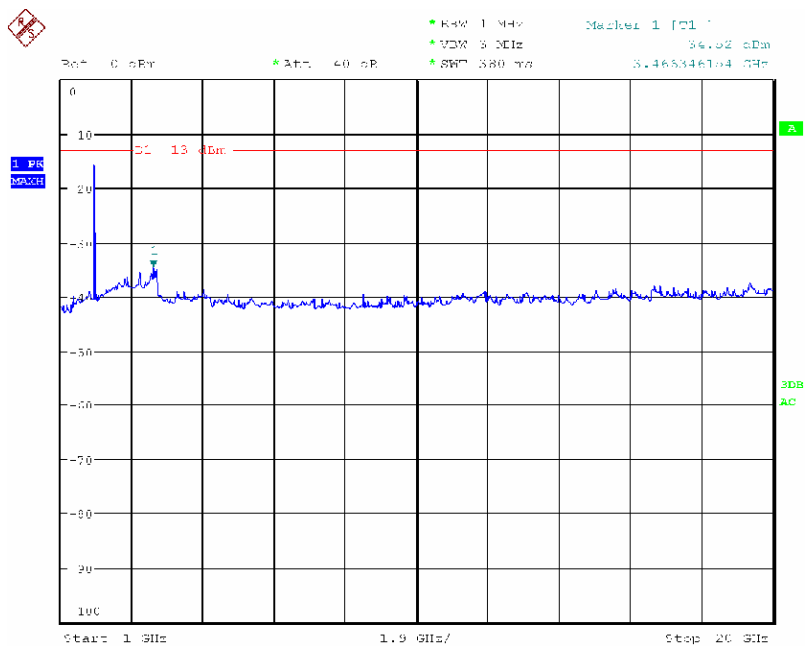
PCS-GSM uplink (lowest frequency) Above 1GHz



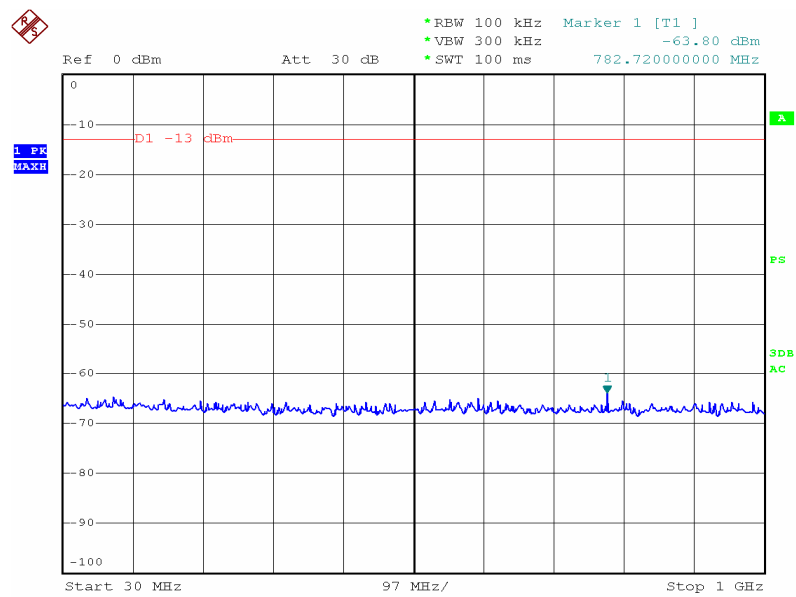
PCS-GSM uplink (middle frequency) 30MHz-1GHz



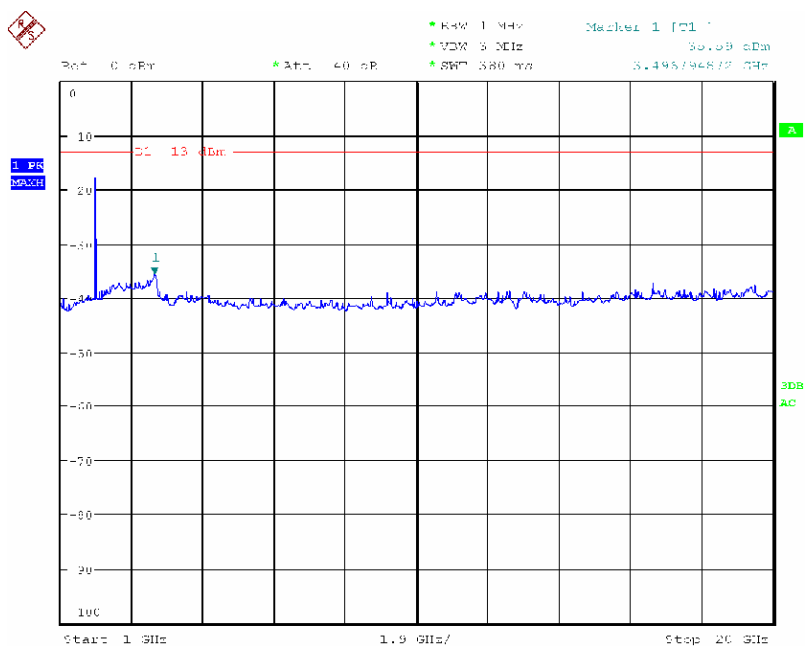
PCS-GSM uplink(middle frequency) Above 1GHz



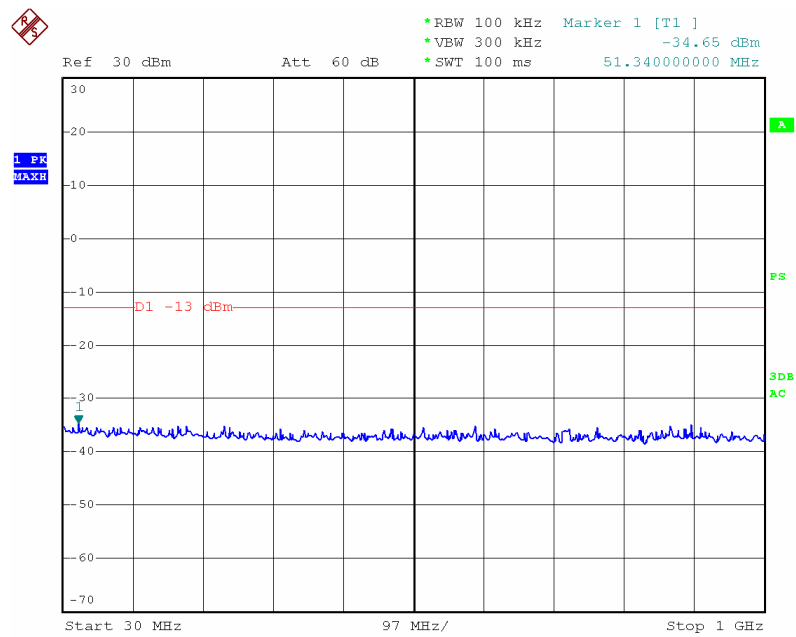
PCS-GSM uplink (highest frequency) 30MHz-1GHz



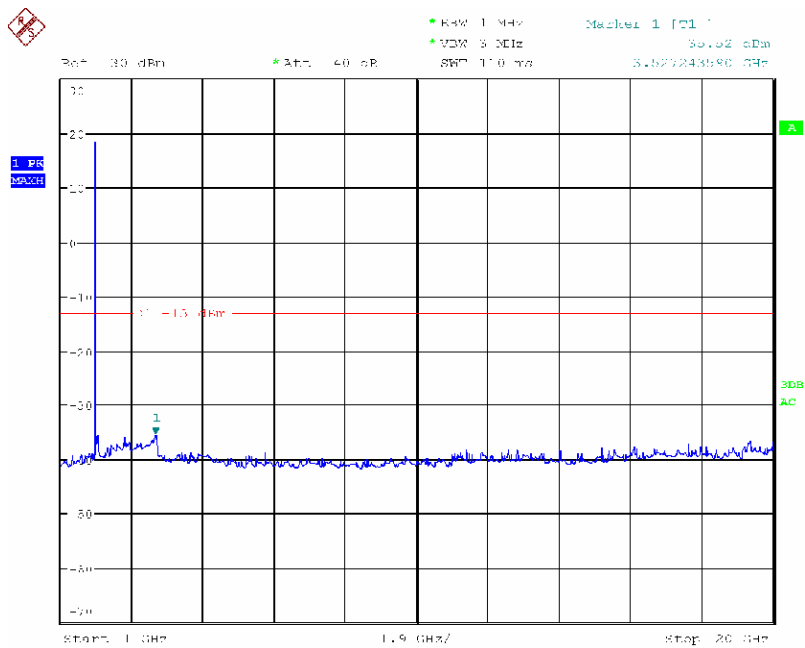
PCS-GSM uplink (highest frequency) Above 1GHz



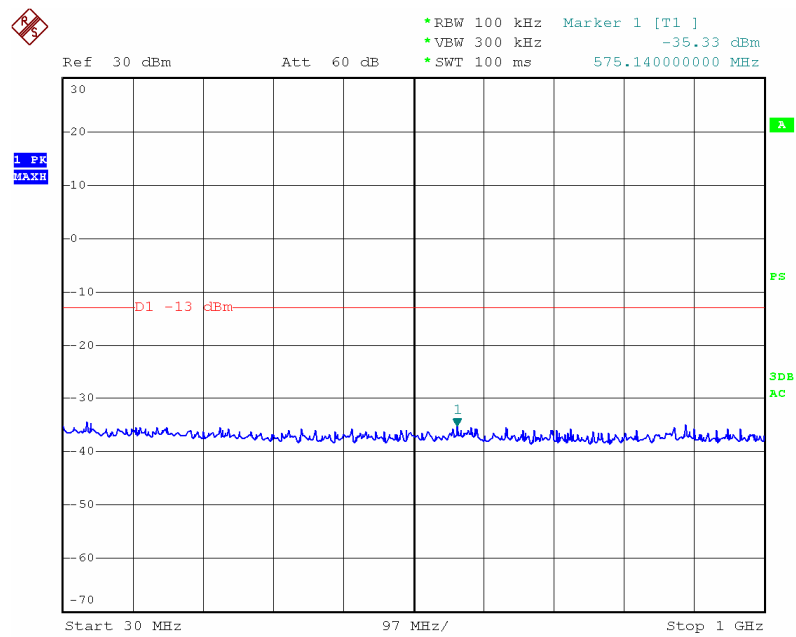
PCS-EDGE downlink (lowest frequency) 30MHz-1GHz



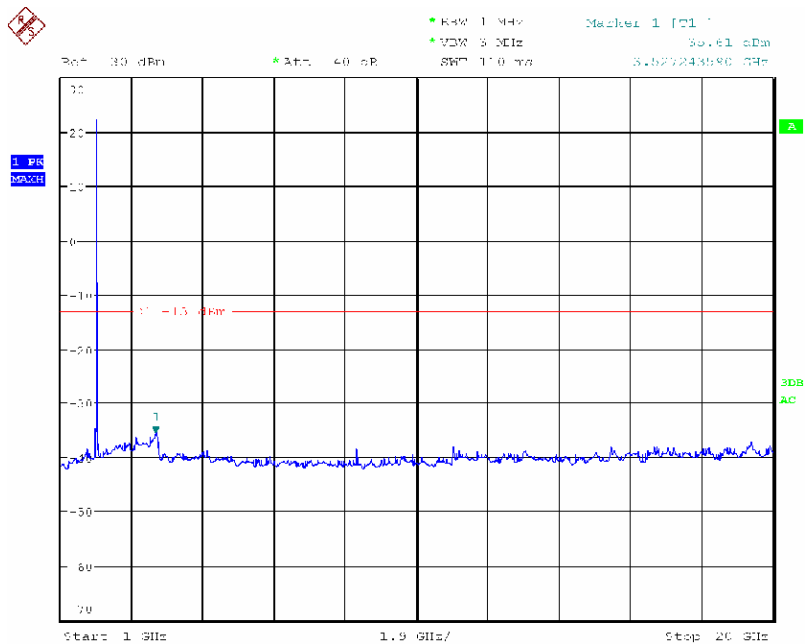
PCS-EDGE downlink (lowest frequency) Above 1GHz



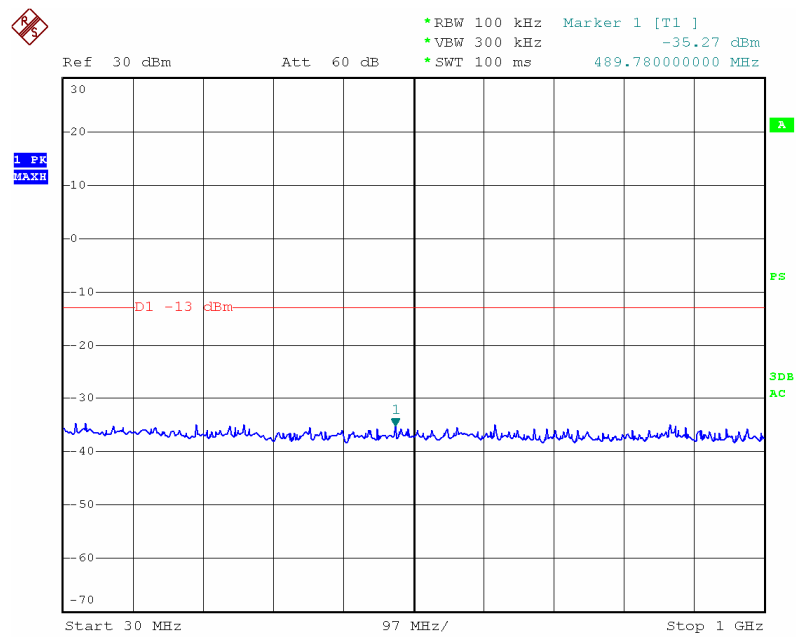
PCS-EDGE downlink (middle frequency) 30MHz-1GHz



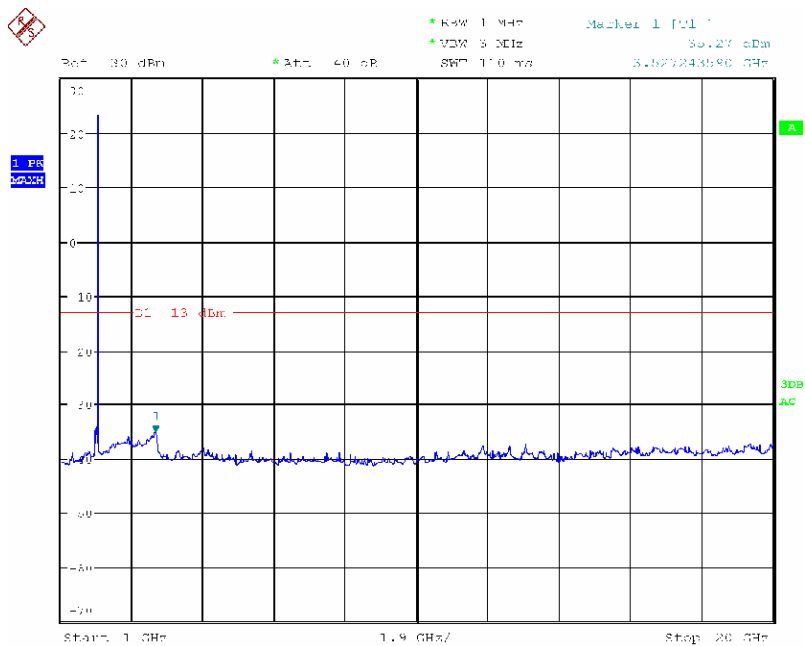
PCS-EDGE downlink (middle frequency) Above 1GHz



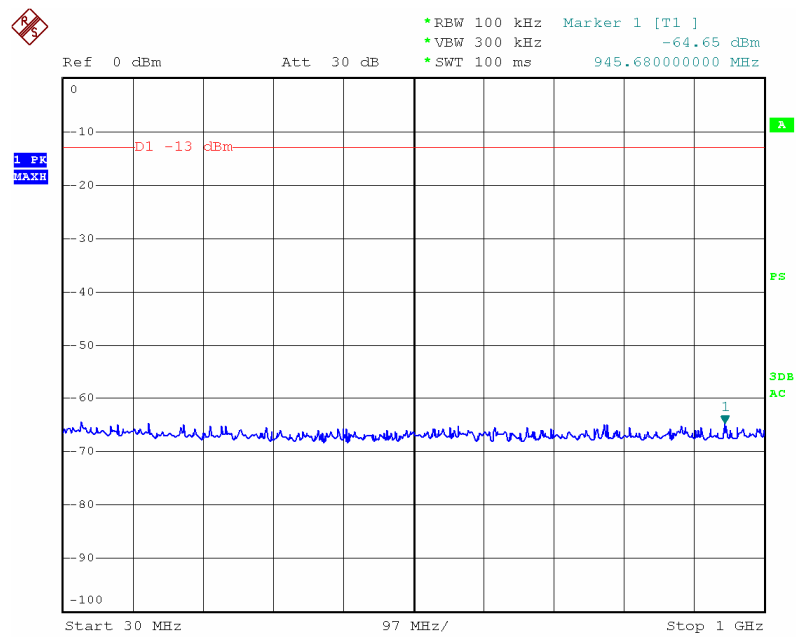
PCS-EDGE downlink (highest frequency) 30MHz-1GHz



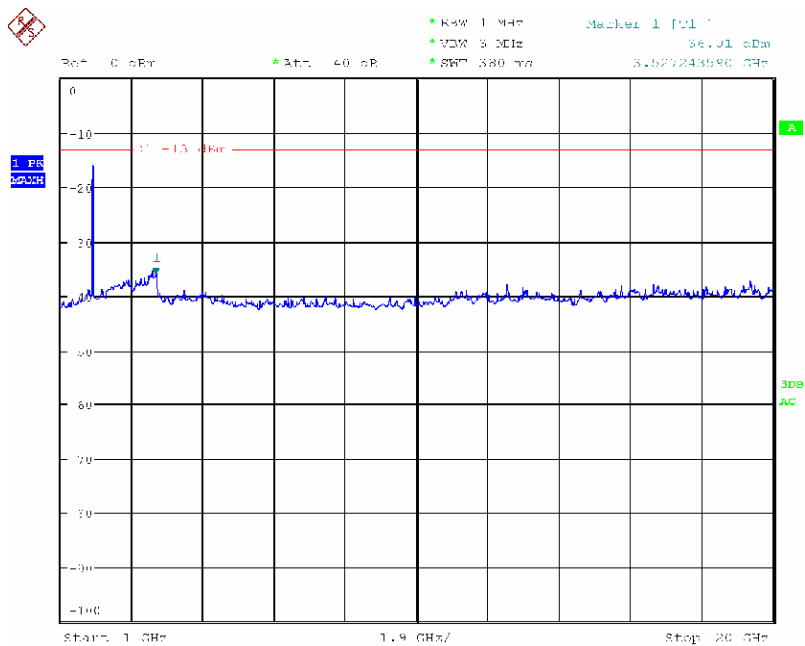
PCS-EDGE downlink (highest frequency) Above 1GHz



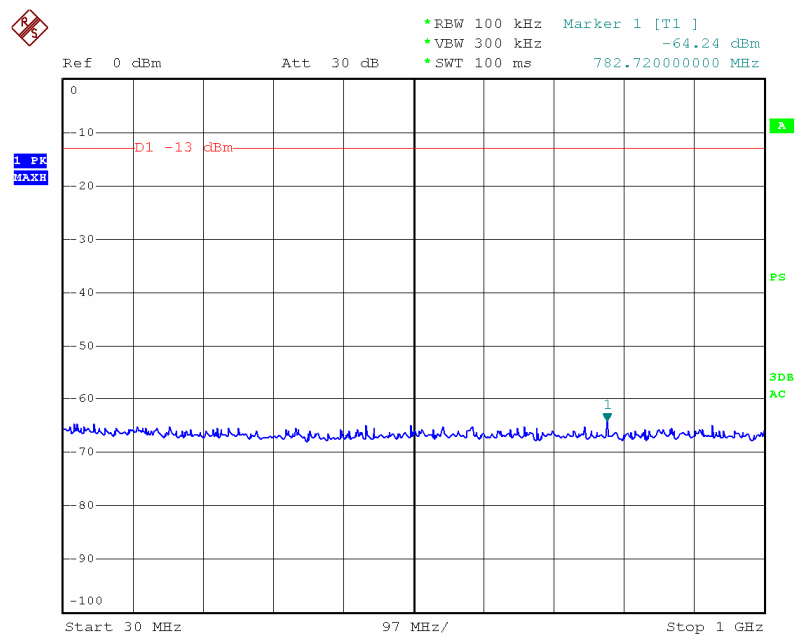
PCS-EDGE uplink (lowest frequency) 30MHz-1GHz



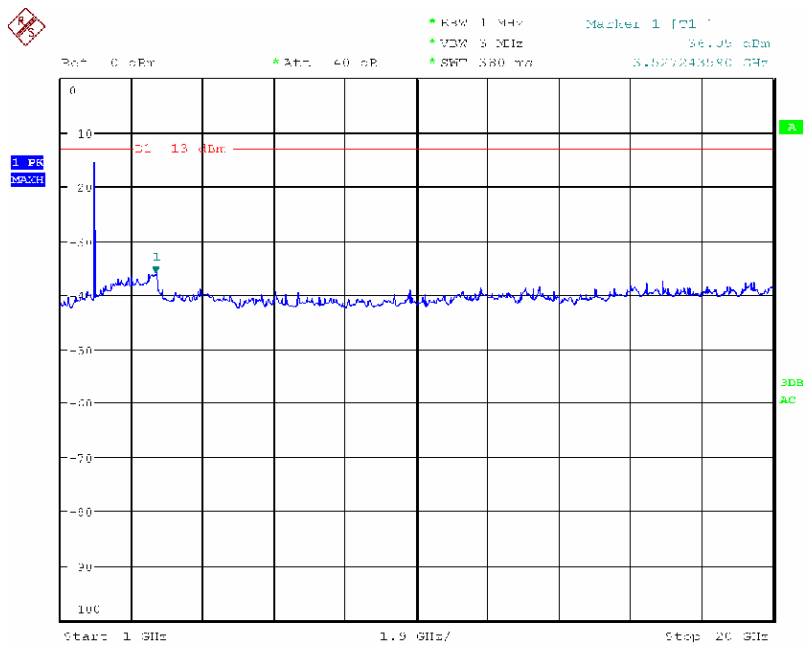
PCS-EDGE uplink (lowest frequency) Above 1GHz



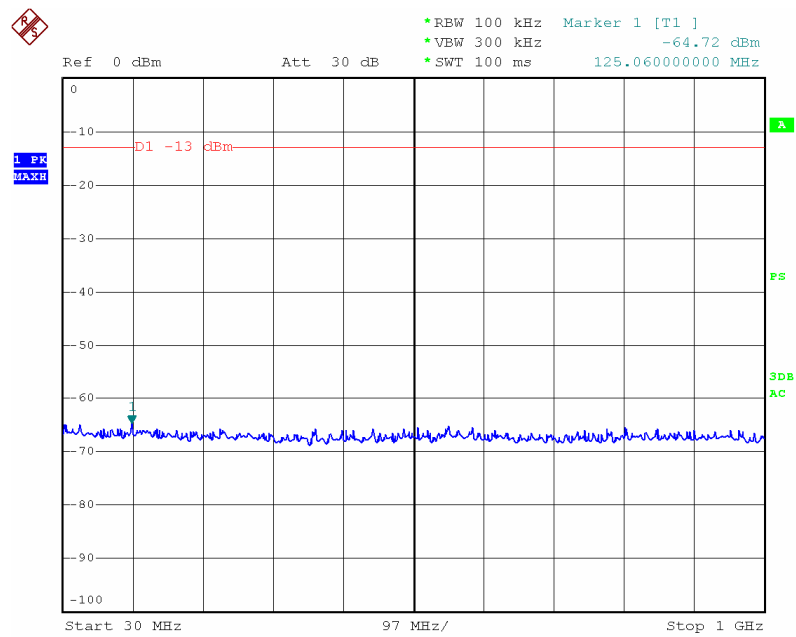
PCS-EDGE uplink (middle frequency) 30MHz-1GHz



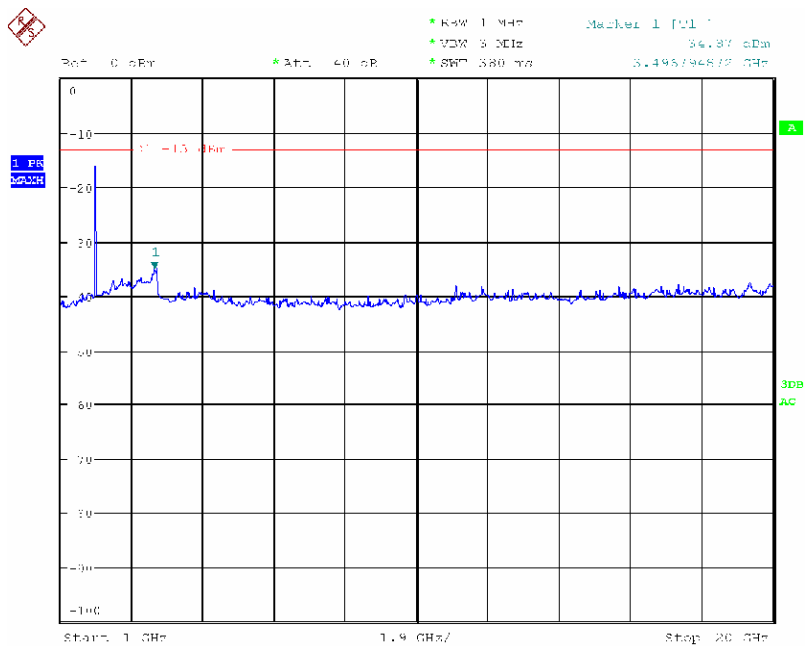
PCS-EDGE uplink(middle frequency) Above 1GHz



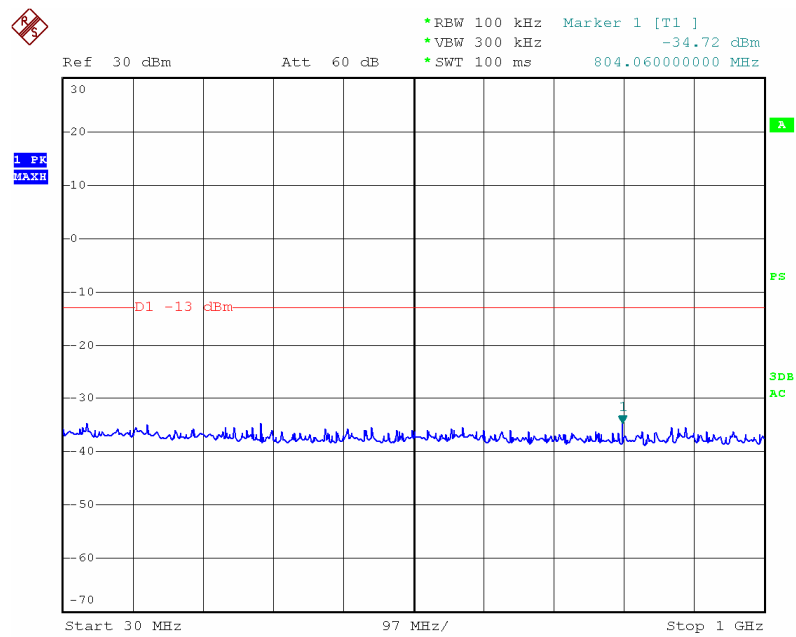
PCS-EDGE uplink (highest frequency) 30MHz-1GHz



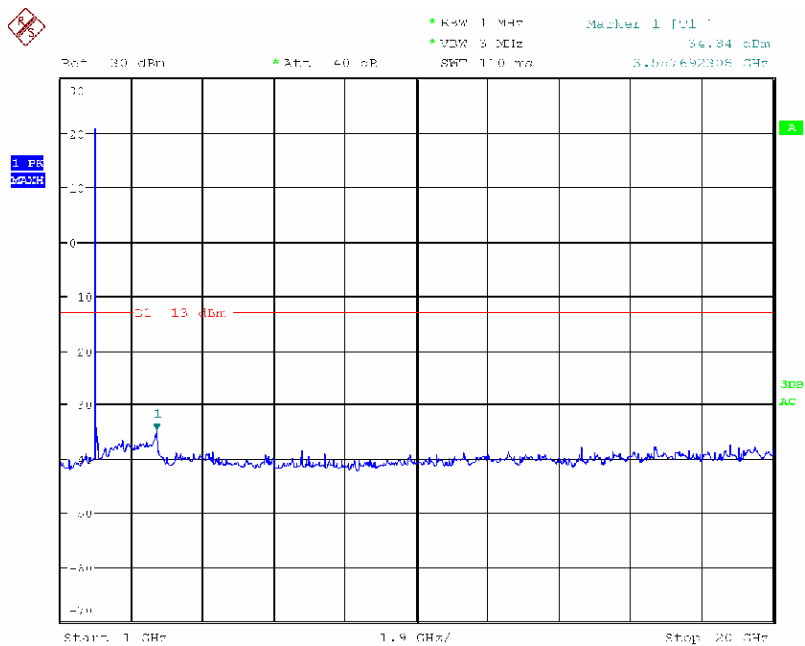
PCS-EDGE uplink (highest frequency) Above 1GHz



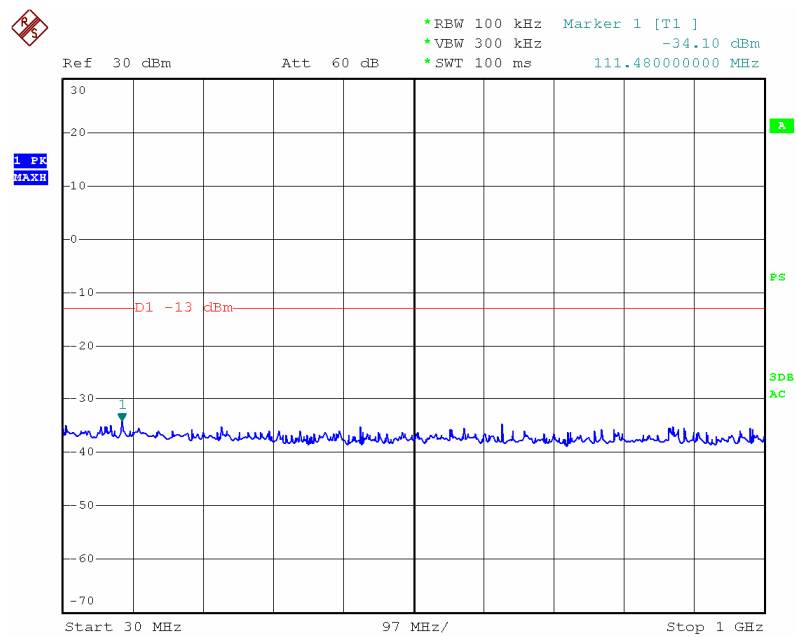
PCS-CDMA2000 downlink (lowest frequency) 30MHz-1GHz



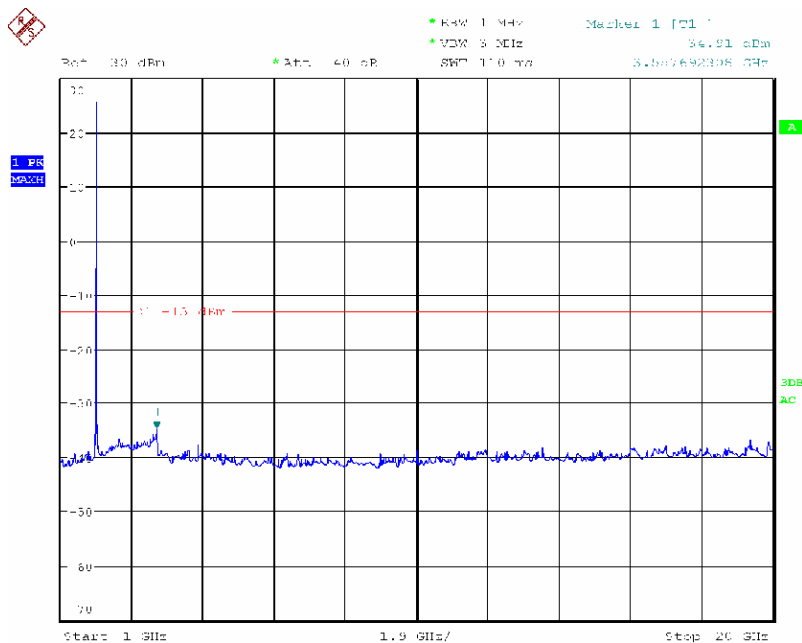
PCS-CDMA2000 downlink (lowest frequency) Above 1GHz



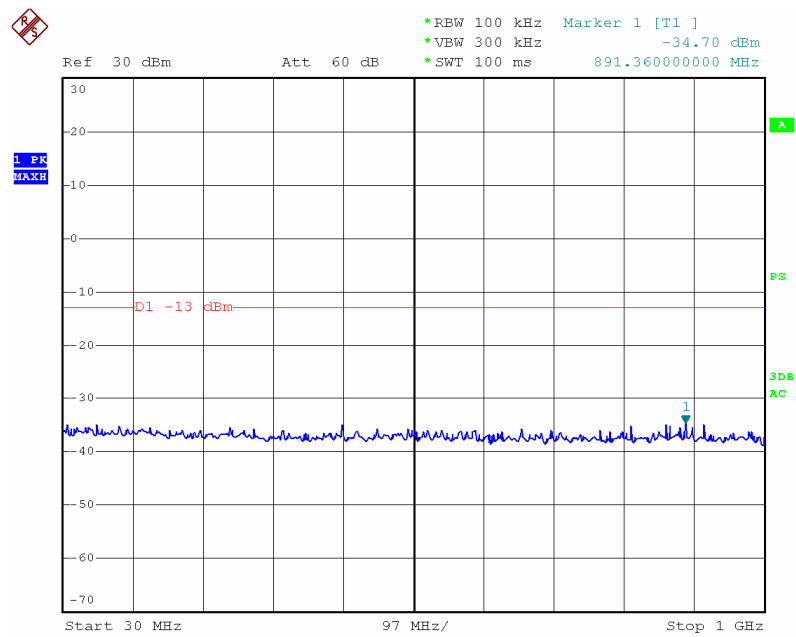
PCS-CDMA2000 downlink (middle frequency) 30MHz-1GHz



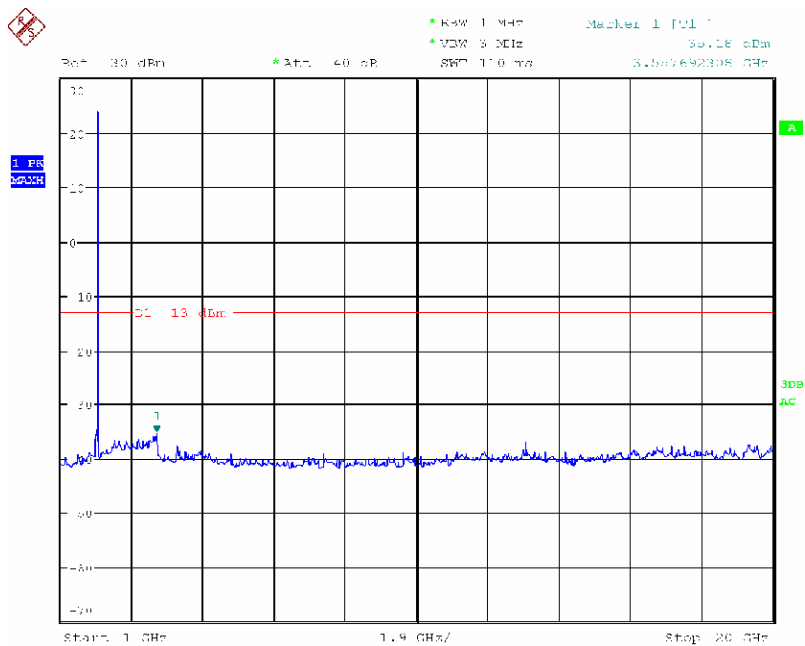
PCS-CDMA2000 downlink (middle frequency) Above 1GHz



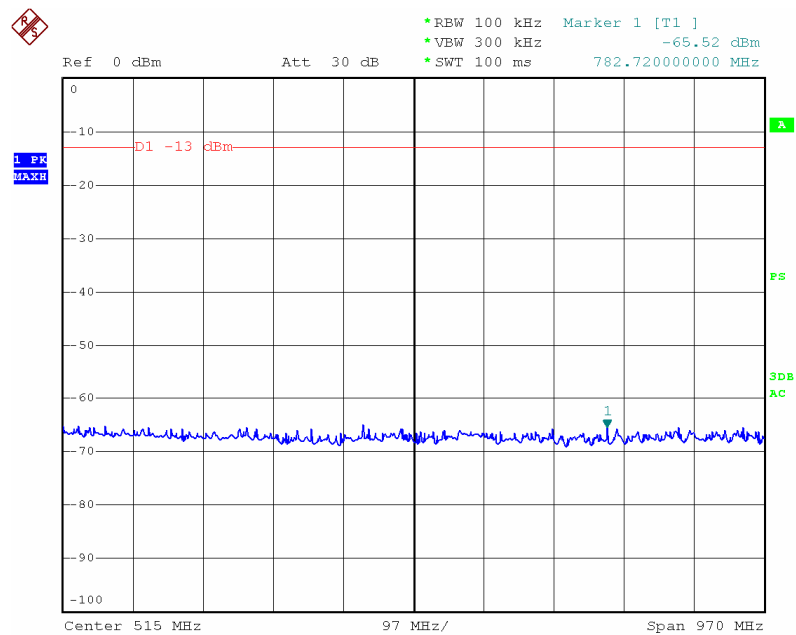
PCS-CDMA2000 downlink (highest frequency) 30MHz-1GHz



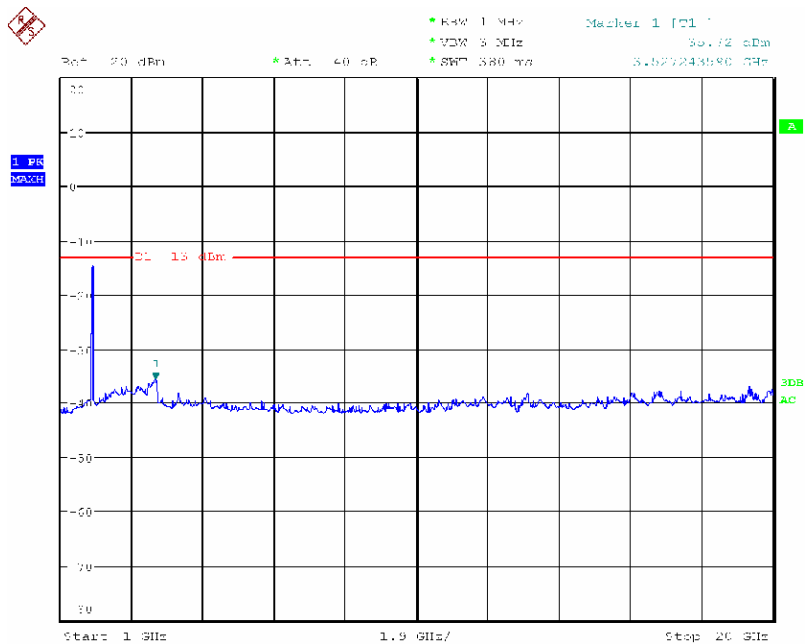
PCS-CDMA2000 downlink (highest frequency) Above 1GHz



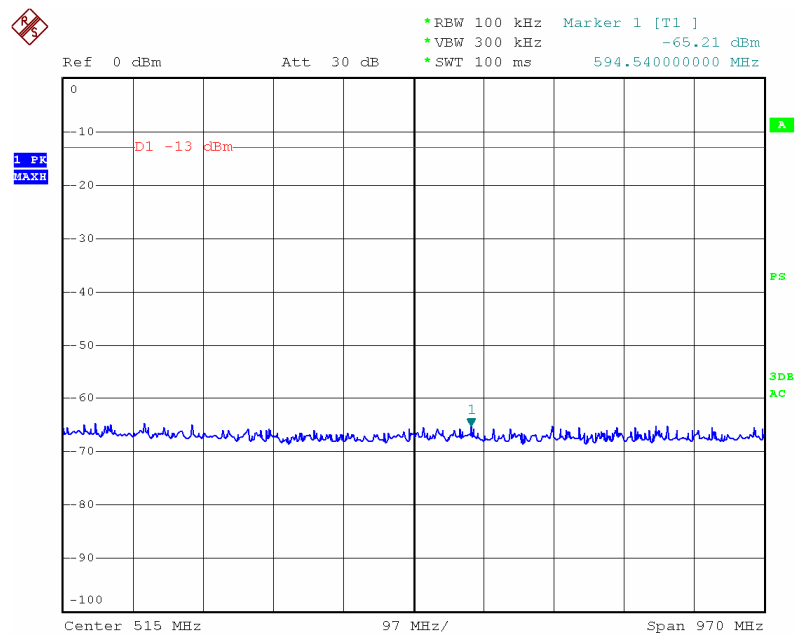
PCS-CDMA2000 uplink (lowest frequency) 30MHz-1GHz



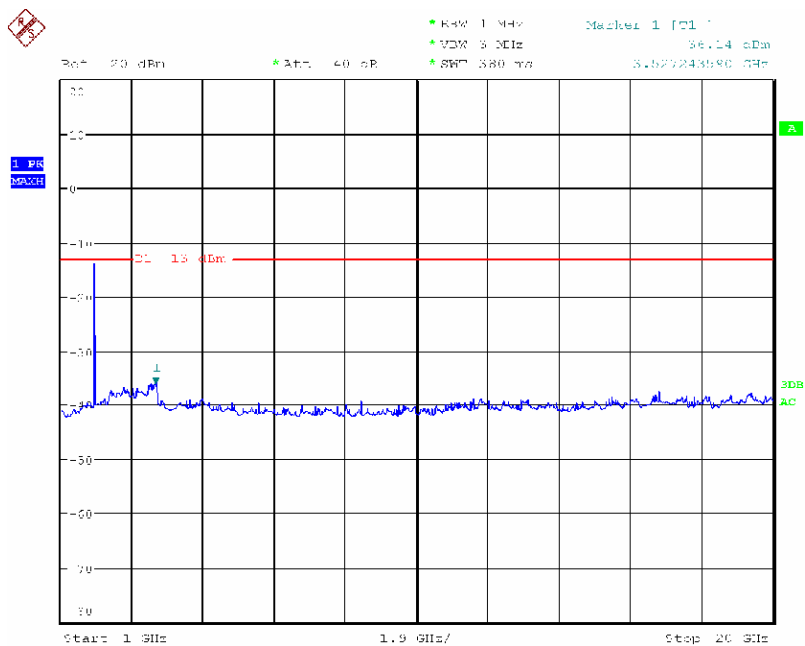
PCS-CDMA2000 uplink (lowest frequency) Above 1GHz



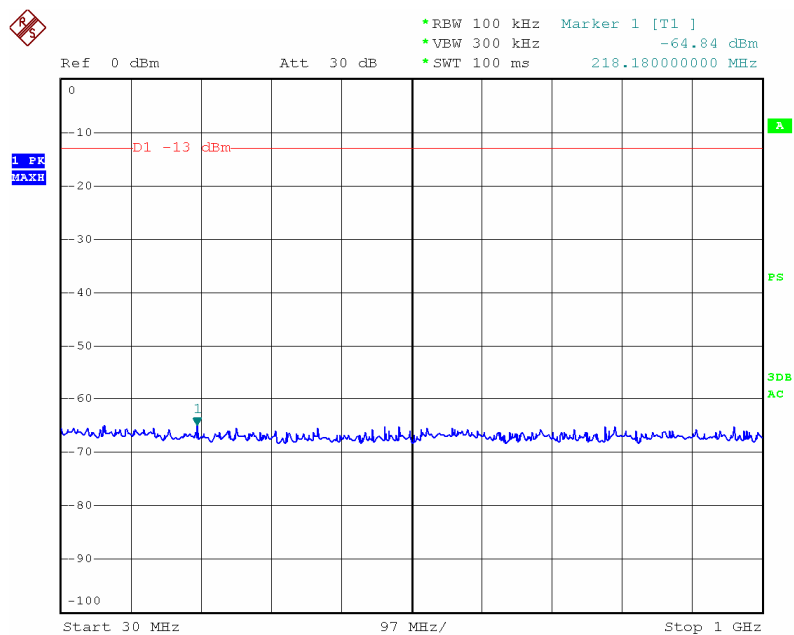
PCS-CDMA2000 uplink (middle frequency) 30MHz-1GHz



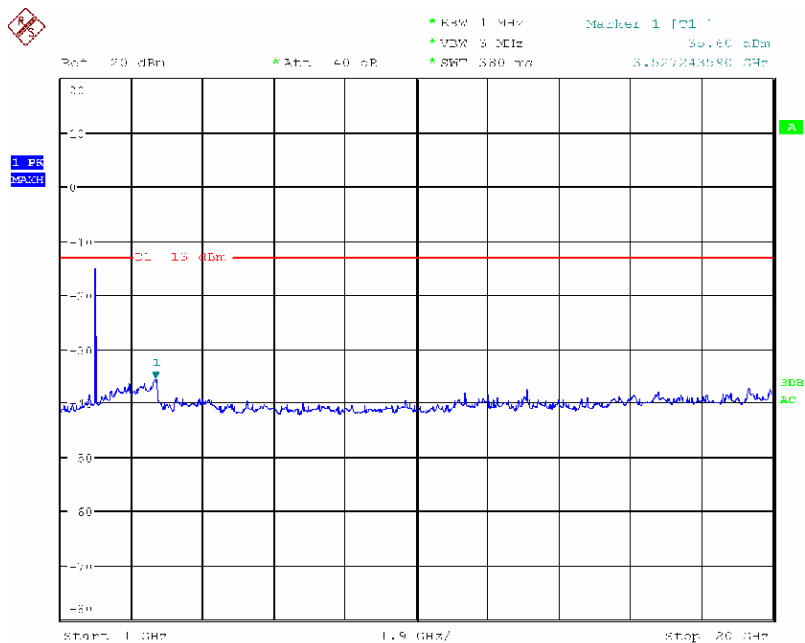
PCS-CDMA2000 uplink(middle frequency) Above 1GHz



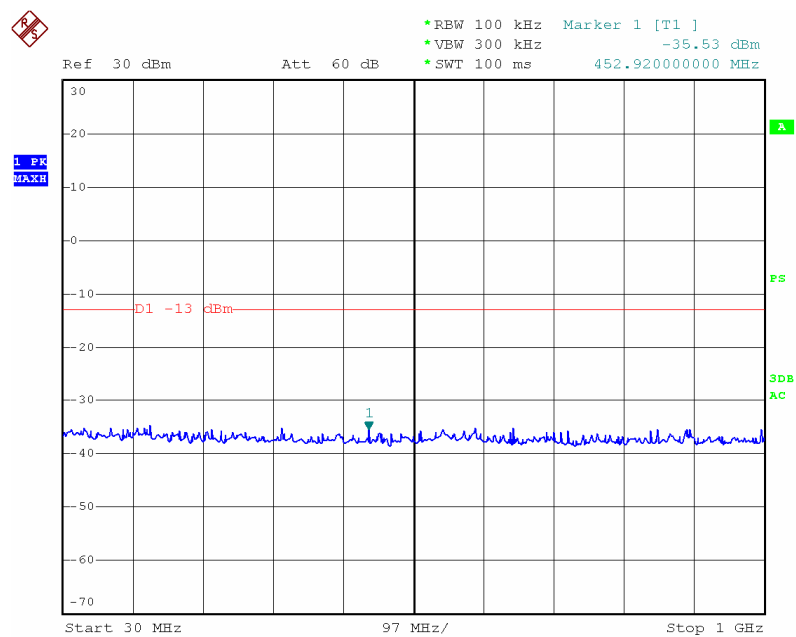
PCS-CDMA2000 uplink (highest frequency) 30MHz-1GHz



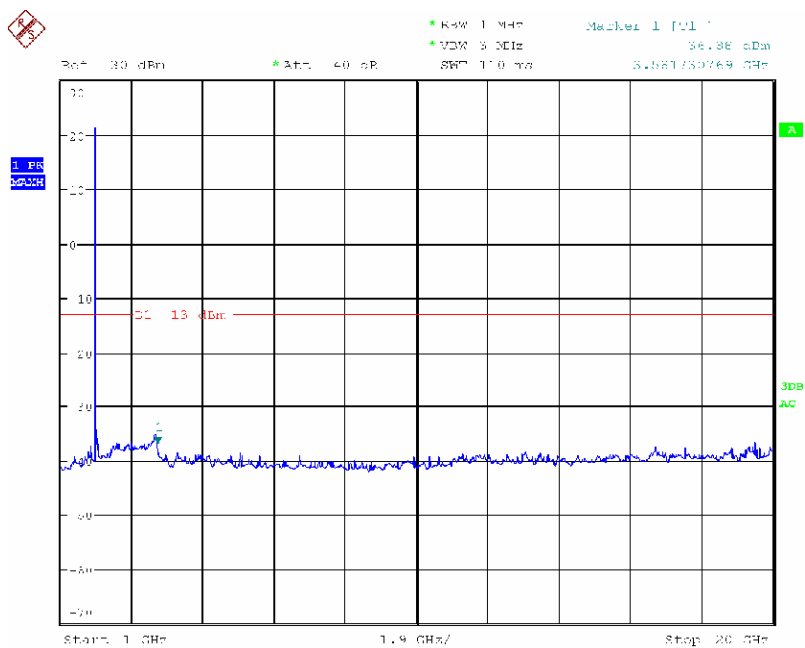
PCS-CDMA2000 uplink (highest frequency) Above 1GHz



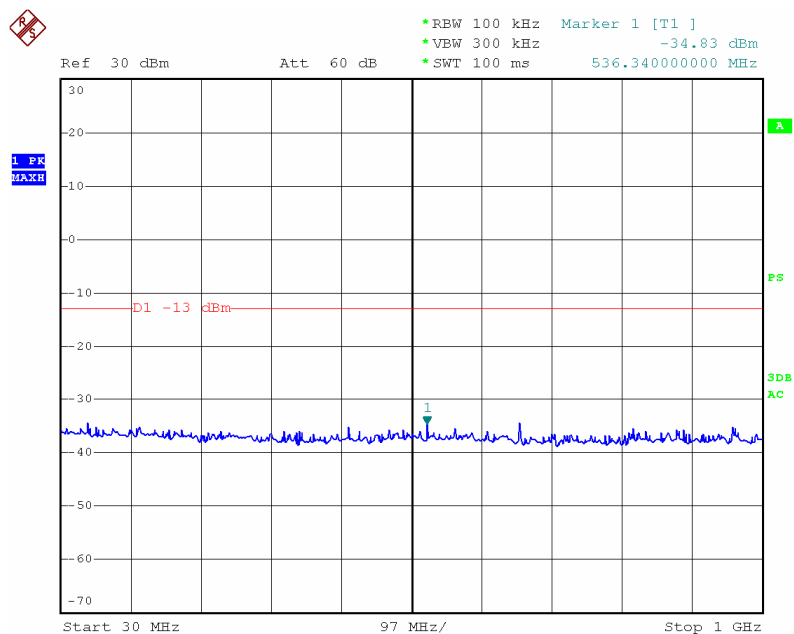
PCS-WCDMA downlink (lowest frequency)30MHz-1GHz



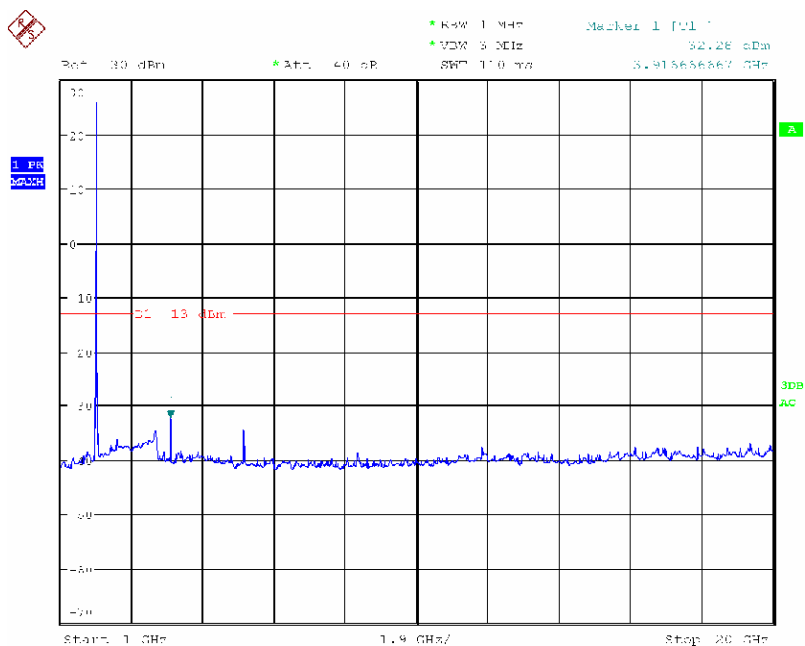
PCS-WCDMA downlink (lowest frequency) Above 1GHz



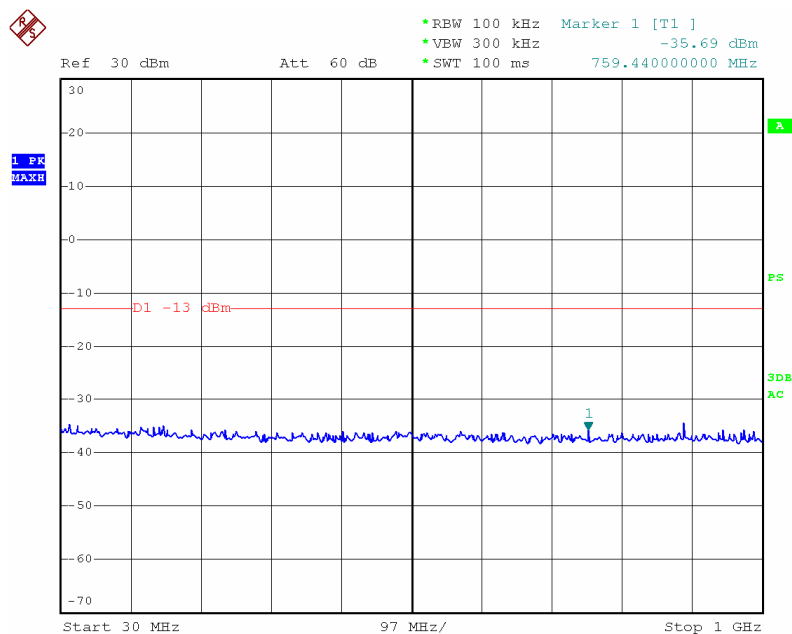
PCS-WCDMA downlink (middle frequency)30MHz-1GHz



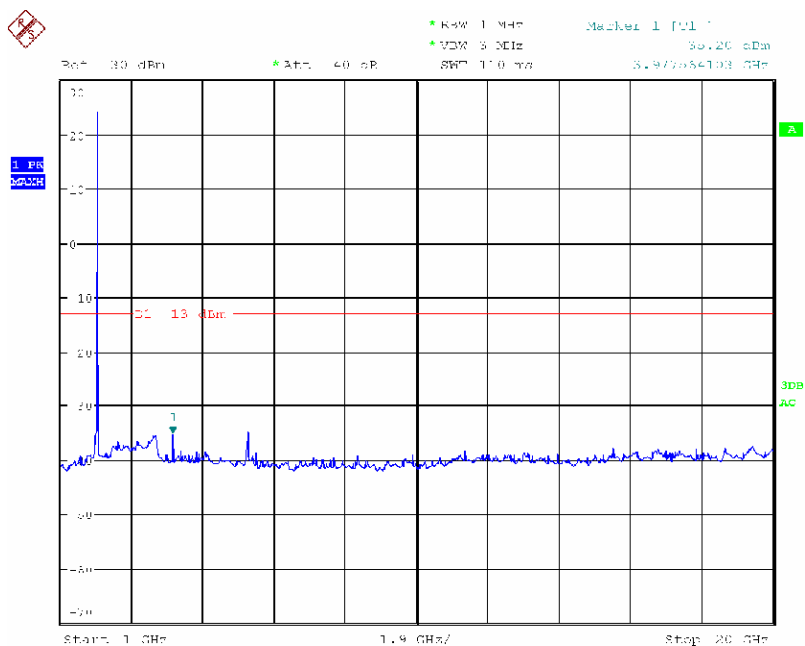
PCS-WCDMA downlink (middle frequency) Above 1GHz



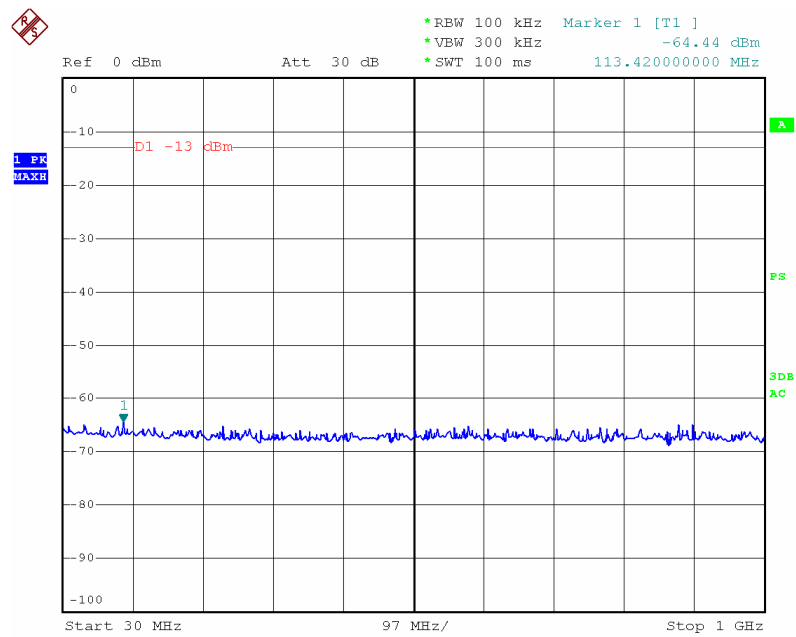
PCS-WCDMA downlink (highest frequency)30MHz-1GHz



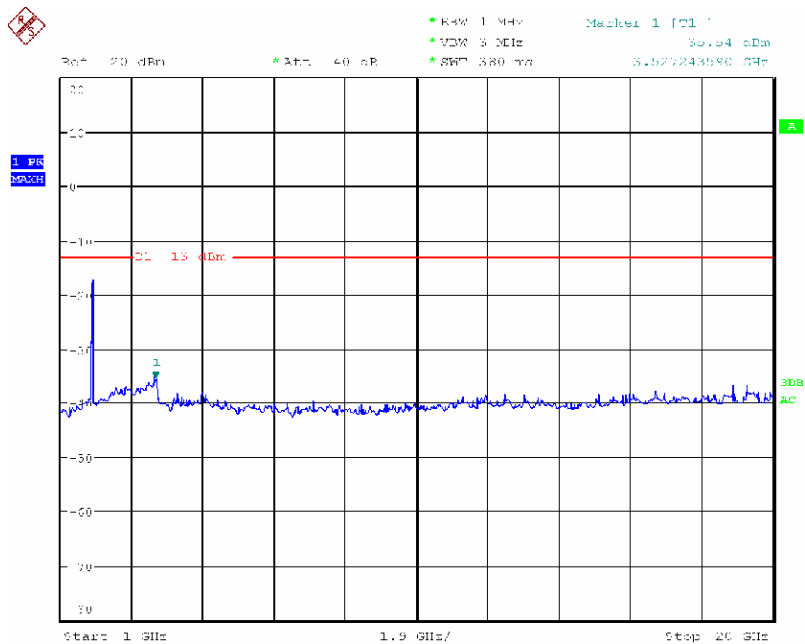
PCS-WCDMA downlink (highest frequency) Above 1GHz



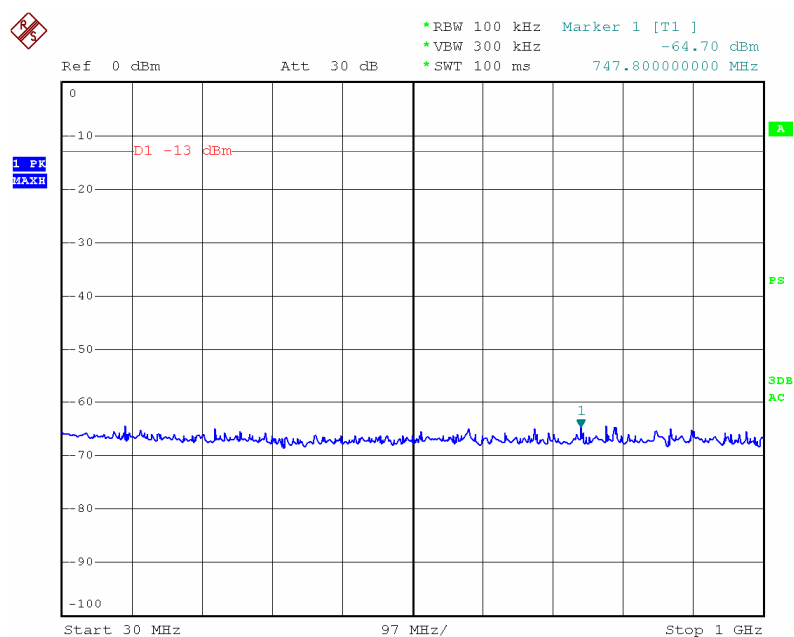
PCS-WCDMA uplink (lowest frequency) 30MHz-1GHz



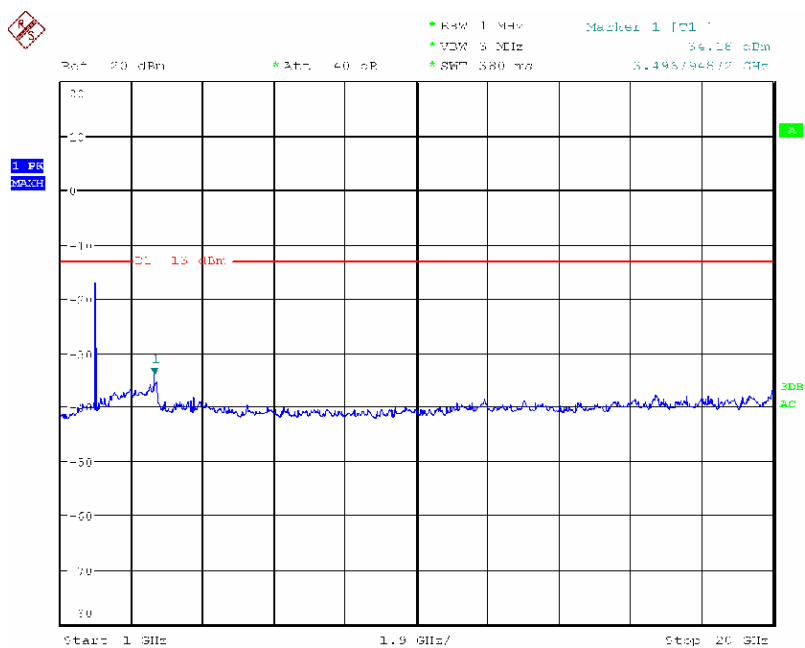
PCS-WCDMA uplink (lowest frequency) Above 1GHz



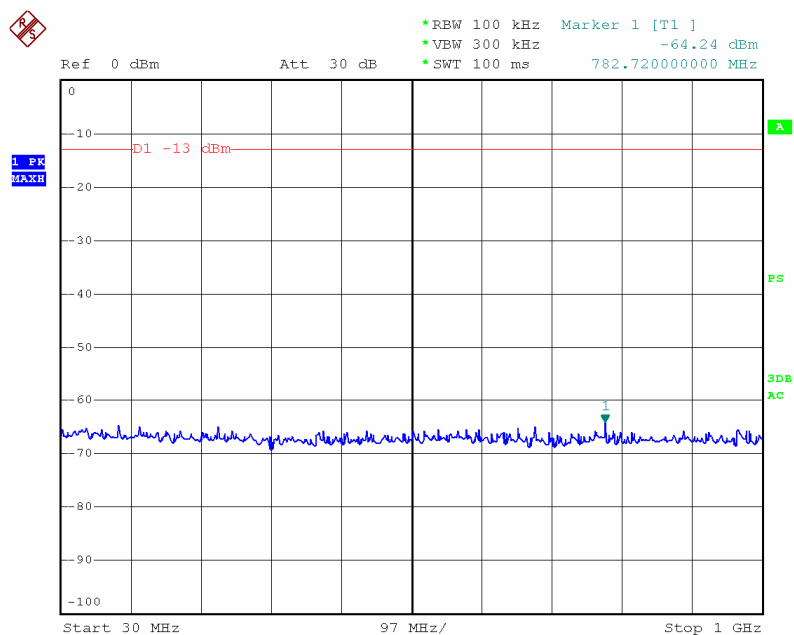
PCS-WCDMA uplink (middle frequency) 30MHz-1GHz



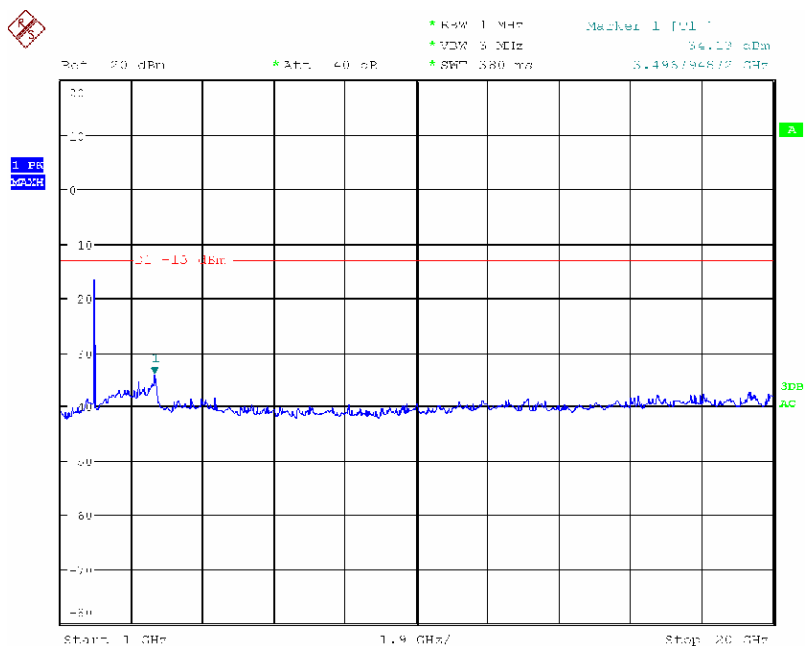
PCS-WCDMA uplink(middle frequency) Above 1GHz



PCS-WCDMA uplink (highest frequency) 30MHz-1GHz



PCS-WCDMA uplink (highest frequency) Above 1GHz



PCS-LTE-QPSK downlink (lowest frequency) 30MHz-1GHz



PCS -LTE-QPSK downlink (lowest frequency) Above 1GHz



PCS -LTE-QPSK downlink (middle frequency) 30MHz-1GHz



PCS -LTE-QPSK downlink (middle frequency) Above 1GHz



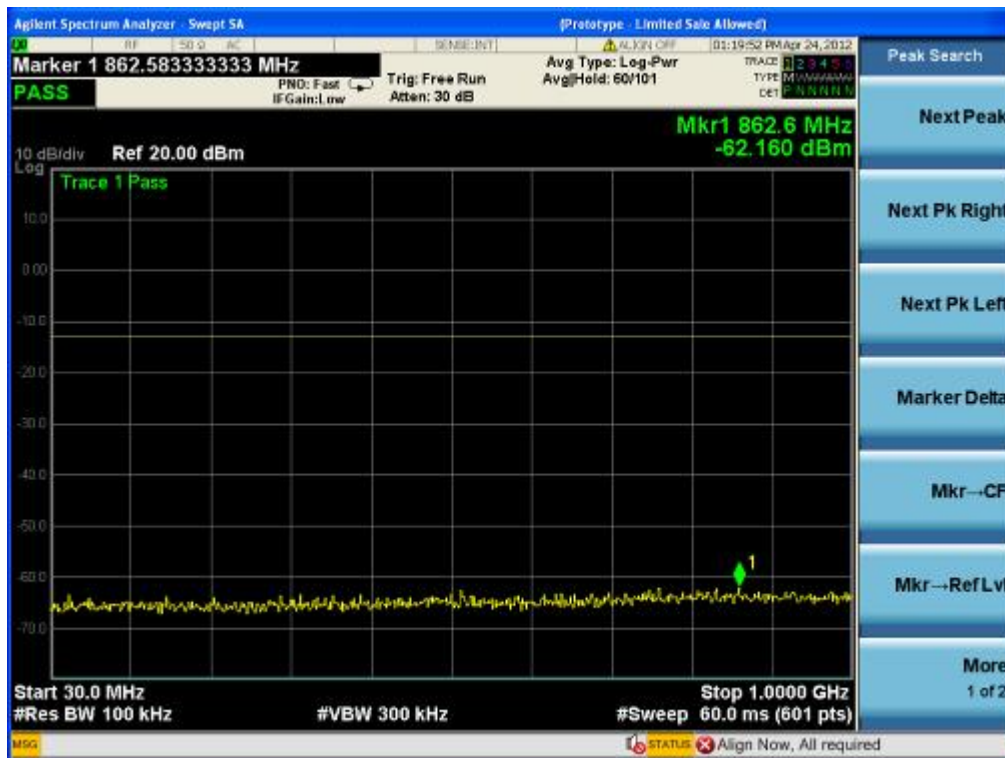
PCS -LTE-QPSK downlink (highest frequency) 30MHz-1GHz



PCS -LTE-QPSK downlink (highest frequency) Above 1GHz



PCS -LTE-QPSK uplink (lowest frequency) 30MHz-1GHz



PCS -LTE-QPSK uplink (lowest frequency) Above 1GHz



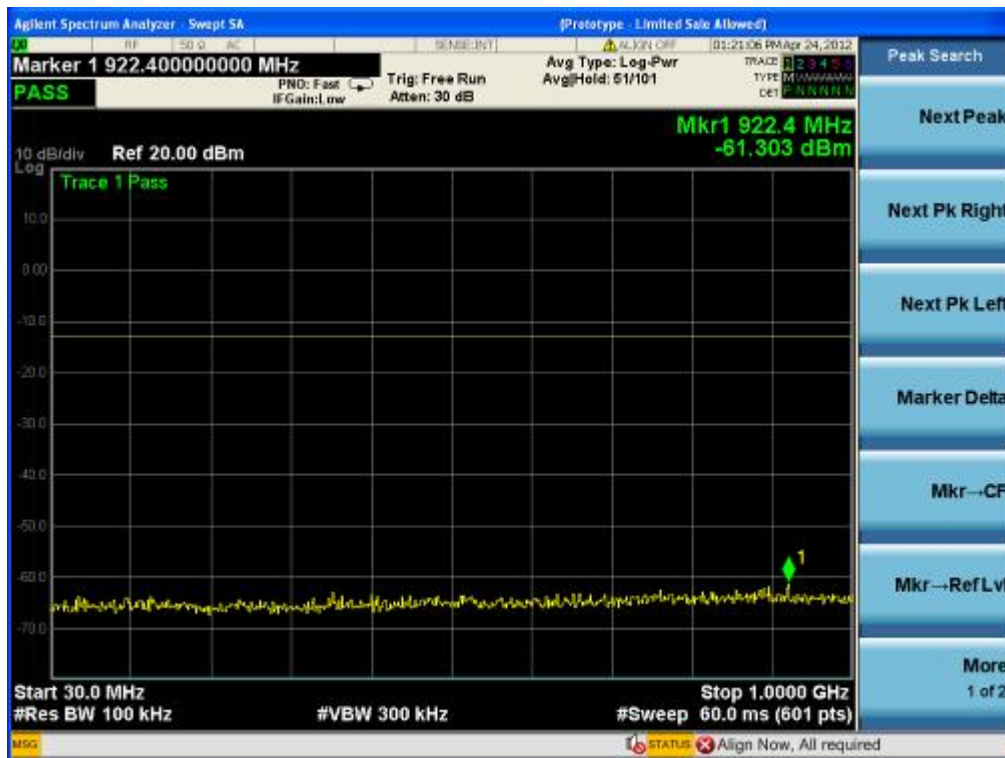
PCS -LTE-QPSK uplink (middle frequency) 30MHz-1GHz



PCS -LTE-QPSK uplink(middle frequency) Above 1GHz



PCS -LTE-QPSK uplink (highest frequency) 30MHz-1GHz



PCS -LTE-QPSK uplink (highest frequency) Above 1GHz



PCS-LTE-16QAM downlink (lowest frequency) 30MHz-1GHz



PCS -LTE-16QAM downlink (lowest frequency) Above 1GHz



PCS -LTE-16QAM downlink (middle frequency) 30MHz-1GHz



PCS -LTE-16QAM downlink (middle frequency) Above 1GHz



PCS -LTE-16QAM downlink (highest frequency) 30MHz-1GHz



PCS -LTE-16QAM downlink (highest frequency) Above 1GHz



PCS -LTE-16QAM uplink (lowest frequency) 30MHz-1GHz



PCS -LTE-16QAM uplink (lowest frequency) Above 1GHz



Agilent Spectrum Analyzer - Swept SA (Prototype - Limited Sale Allowed)

RF 150.0 MHz SENSE: INT ALY: F1 OFF 04:31:43 PM Apr 24, 2012

Reference Level 10.00 dBm

PND: Fast IF Gain: Low Trig: Free Run Att: 20 dB

Avg Type: Log-Pwr Avg/Hold: 32/99

TRACE 1 2 3 4 5 TYPE Min-Max Hold DET P-N-N-N-N-N

10 dB/div Ref 10.00 dBm

Log

Mkr1 782.72 MHz -69.340 dBm

Start 30.0 MHz Stop 1.0000 GHz

#Res BW 100 kHz #VBW 300 kHz Sweep 92.7 ms (1001 pts)

MSG STATUS Align Now, All required

Trace/Det

Select Trace

Clear Write

Trace Average

Max Hold

Min Hold

View/Blank Trace On

More 1 of 3

Agilent Spectrum Analyzer - Swept SA (Prototype - Limited Sale Allowed)

RF 50.0 MHz BANDWIDTH ALYSE OFF 03:58:59 PM Apr 24, 2012

Marker 1 7.239000000000 GHz Avg Type: Log-Pwr Avg Hold: 48/99

PND: Fast Trig: Free Run IF Gain: Low Atten: 30 dB

TRACE 1 2 3 4 5 TYPE MIN MAX DET 2 30.000

10 dB/div Ref 20.00 dBm

Log

Mkr1 7.239 GHz -50.032 dBm

Start 1.000 GHz Stop 20.000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 47.5 ms (1001 pts)

Properties

Agilent Spectrum Analyzer - Swept SA (Prototype - Limited Sale Allowed) 04:02:18 PM Apr 24, 2012

Reference Level 10.00 dBm

PNO: Fast IF Gain: Low Trig: Free Run Atten: 20 dB

Avg Type: Log-Pwr Avg Hold: 1699

TRADE 2 3 4 5 TYPE Min-Max-Min DET P-P-P-P-P

10 dB/div Ref 10.00 dBm

Mkr1 782.72 MHz -69.198 dBm

Start 30.0 MHz Stop 1.0000 GHz

#Res BW 100 kHz #VBW 300 kHz Sweep 92.7 ms (1001 pts)

MSG STATUS Align Now, All required

Agilent Spectrum Analyzer - Swept SA (Prototype - Limited Sale Allowed)

Marker 1 5.909000000000 GHz

PNO: Fast IF Gain: Low Trig: Free Run Atten: 30 dB

Avg Type: Log-Pwr AvgHold>99.99

Trace 1 2 3 4 5 TYPE MINMAX DET 2 0.000 0.000

10 dB/div Ref 20.00 dBm

Mkr1 5.909 GHz -49.308 dBm

Start 1.000 GHz Stop 20.000 GHz

#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 47.5 ms (1001 pts)

MSG STATUS Align Now, All required

PCS-LTE-64QAM downlink (lowest frequency) 30MHz-1GHz



PCS -LTE-64QAM downlink (lowest frequency) Above 1GHz



PCS -LTE-64QAM downlink (middle frequency) 30MHz-1GHz



PCS -LTE-64QAM downlink (middle frequency) Above 1GHz



PCS -LTE-64QAM downlink (highest frequency) 30MHz-1GHz



PCS -LTE-64QAM downlink (highest frequency) Above 1GHz



The screenshot displays a spectrum analyzer interface with the following details:

- Header:** Agilent Spectrum Analyzer - Swept SA (Prototype - Limited Sale Allowed)
- Top Bar:** Includes various status indicators like 'REF', '50.0', 'AC', 'SENSE:INT', 'ALY:OFF', and a date/time stamp '04:31:28 PM Apr 24, 2012'.
- Measurement Settings:**
 - Reference Level: 10.00 dBm
 - PNO: Fast, IF Gain: Low
 - Trig: Free Run, Atten: 20 dB
 - Avg Type: Log-Pwr, Avg/Hold: 22/99
 - Trace: 2 3 4 5, Type: Min/Max, Det: P N N N N
- Plot Area:**
 - Vertical axis: 10 dB/div, Log scale, ranging from 0.00 to -80.0.
 - Horizontal axis: Frequency sweep from 30.0 MHz to 1.0000 GHz.
 - Resolution: #Res BW 100 kHz, #VBW 300 kHz, Sweep 92.7 ms (1001 pts).
 - A signal peak is identified at **Mkr1 782.72 MHz -69.612 dBm**.
- Right Panel:** Contains controls for 'Trace/Det', 'Select Trace', 'Clear Write', 'Trace Average', 'Max Hold', 'Min Hold', 'View/Blank Trace On', and 'More 1 of 3'.
- Footer:** Includes a 'MSG' indicator and a status bar with 'STATUS' and 'Align Now, All required'.

Agilent Spectrum Analyzer - Swept SA (Prototype - Limited Sale Allowed) ALY31 OFF 04:00:04 PM Apr 24, 2012

Marker 1 7.581000000000 GHz PNO: Fast IF Gain: Low Trig: Free Run Atten: 30 dB Avg Type: Log-Pwr Avg Hold: 43/99 TRACE 1 2 3 4 5 TYPE MIN MAX DET 2.00000

10 dB/div Ref 20.00 dBm

Mkr1 7.581 GHz -49.605 dBm

Start 1.000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 20.000 GHz Sweep 47.5 ms (1001 pts)

MSG STATUS Align Now, All required

Agilent Spectrum Analyzer - Swept SA

[Prototype - Limited Sale Allowed]

04:01:57 PM Apr 24, 2012

Reference Level 10.00 dBm

PND: Fast Trig: Free Run

IF Gain: Low Atten: 20 dB

Avg Type: Log-Pwr

Avg Hold: 2099

Trace 1 2 3 4 5 6

Type Main

Det S R N R N R

10 dB/div Ref 10.00 dBm

Log

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

-80.0

Start 30.0 MHz

Stop 1.0000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 92.7 ms (1001 pts)

Mkr1 782.72 MHz

-70.168 dBm

Trace/Det

Select Trace

Clear

Trace Average

Max Hold

Min Hold

View/Blank

Trace On

More

1 of 3

MSG STATUS Align Now, All required

The screenshot shows a Vector Signal Analyzer (VSA) interface with the following details:

- Top Bar:**
 - Agilent Spectrum Analyzer - Swept SA
 - (Prototype - Limited Sale Allowed)
- Marker 1:**
 - 5.871000000000 GHz
 - PND: Fast
 - IF Gain: Low
 - Trig: Free Run
 - Atten: 30 dB
 - Avg Type: Log-Pwr
 - Avg/Hold: 5599
 - Trace: 1 2 3 4 5
 - Type: M (Mag/Phase)
 - Det: S (RMS)
- Plot Area:**
 - 10 dB/div
 - Ref 20.00 dBm
 - Log
 - Marker 1: 5.871 GHz, -50.114 dBm
 - Start: 1.000 GHz
 - Stop: 20.000 GHz
 - #Res BW: 1.0 MHz
 - #VBW: 3.0 MHz
 - Sweep: 47.5 ms (1001 pts)
- Right Panel:**
 - Marker
 - Select Marker
 - Normal
 - Delta
 - Fixed
 - On
 - Properties
 - More
 - 1 of 1
- Bottom Bar:**
 - MSG
 - STATUS
 - Align Now, All required

FCC ID: NOO-F0697-011



PCS -LTE-64QAM uplink (highest frequency) Above 1GHz



4.2.3 BAND EDGE

Test Date: 16 April, 2012

Test Method: FCC part 2.1051

Test Requirement: FCC part 22.917(b)& FCC part 24.238(b)&FCC 27.53

22.917(b): Emission limitations for cellular equipment: Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

24.238(b): Emission limitations for
Broadband PCS equipment.

Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power

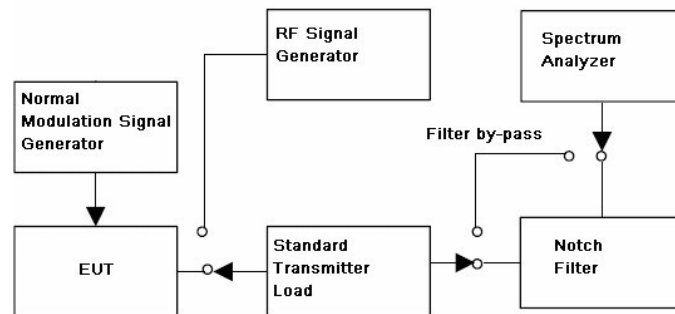
27.53 The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

Status The output power of EUT be set to maximum value, the gain of EUT be set to maximum value by software through the manufacture

Conditions Normal

Application 700MHz DL and UL ports,
850MHz DL and UL ports,
1900MHz DL and UL ports

Test configuration



Test
Procedure:

Conducted Emission test procedure:

- Connect the equipment as illustrated, when the output power is over the max value of the Spectrum Analyzer ,add the attenuator to avoid destroying the facility.
- Set the center frequency of the Spectrum Analyzer to the assigned transmitter frequency ,key the transmitter ,and set the level of the carrier to the full scale reference line.
- Do not apply any tone to modulate the EUT
- Adjust the Spectrum Analyzer for the following setting :
 - Resolution Bandwidth,(base the standard, apply the different set).her is 100KHZ for frequency band less than1GHZ ,1MHz for frequency over 1GHz;
 - Video Bandwidth refer to standard requirement
- Adjust the center frequency of the spectrum analyzer for incremental coverage of the range from:
Use spectrum analyzer channel power measurement
 - the lowest radio frequency generated in the equipment ,it can be 9KHZ base the test method ,here select 30MHz as lowest frequency start point;
 - the highest radio frequency shall higher than 10 times of carrier frequency.
- Record the frequencies and levels of carrier power

Remark

The notch filter is used for avoid the EUT fundamental carrier output power making the spectrum overload and the harmonic spurious brought it.
When the EUT fundamental carrier is not enough to make the status ,the notch filter could be not used.

700MHz-LTE-16QAM one signal input down link-Lower Edge



700MHz- LTE-16QAM one signal input down link-Upper Edge



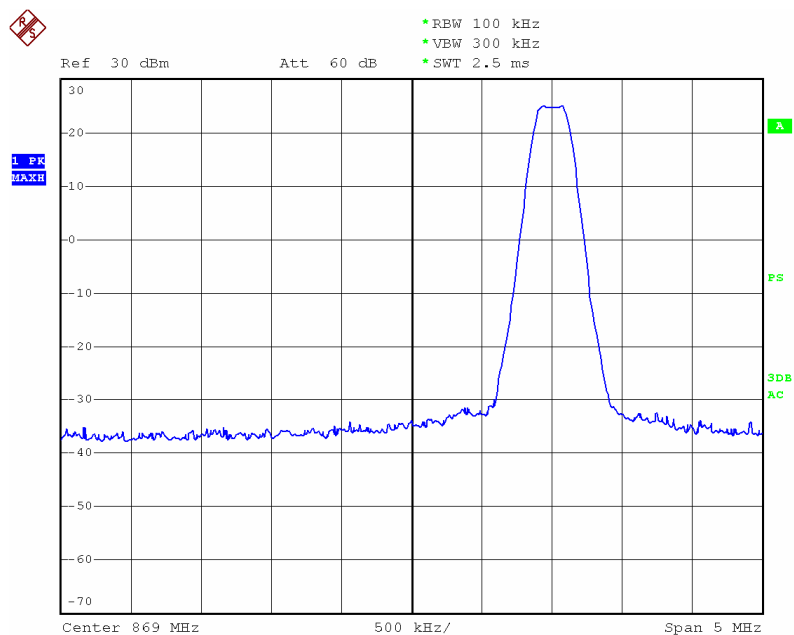
700MHz-LTE-64QAM one signal input down link-Lower Edge



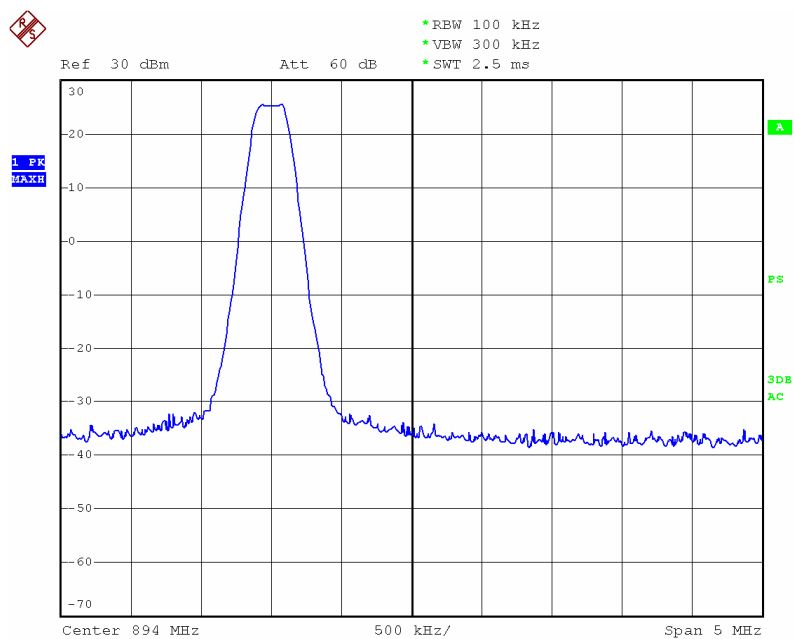
700MHz- LTE-64QAM one signal input down link-Upper Edge



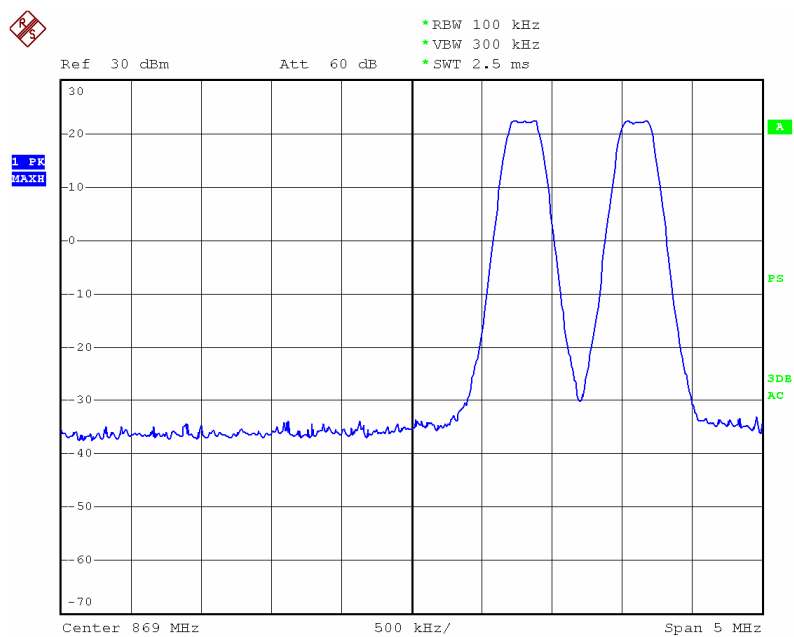
850MHz-GSM one signal input down link-Lower Edge



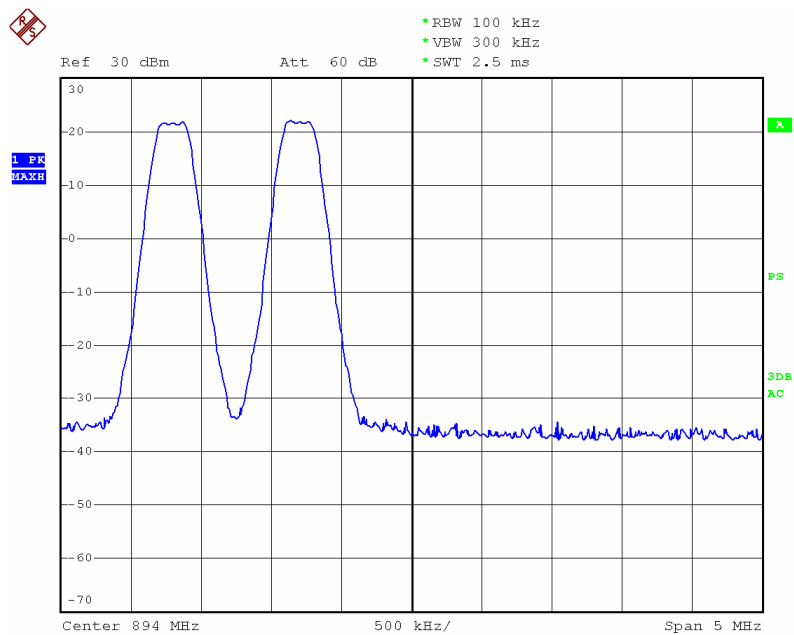
850MHz-GSM one signal input down link-Upper Edge



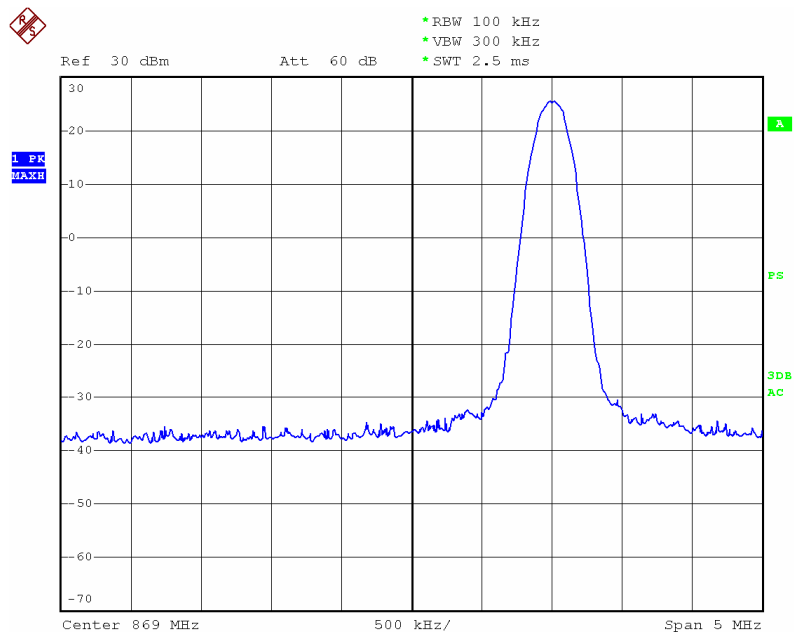
850MHz-GSM two signal input down link-Lower Edge



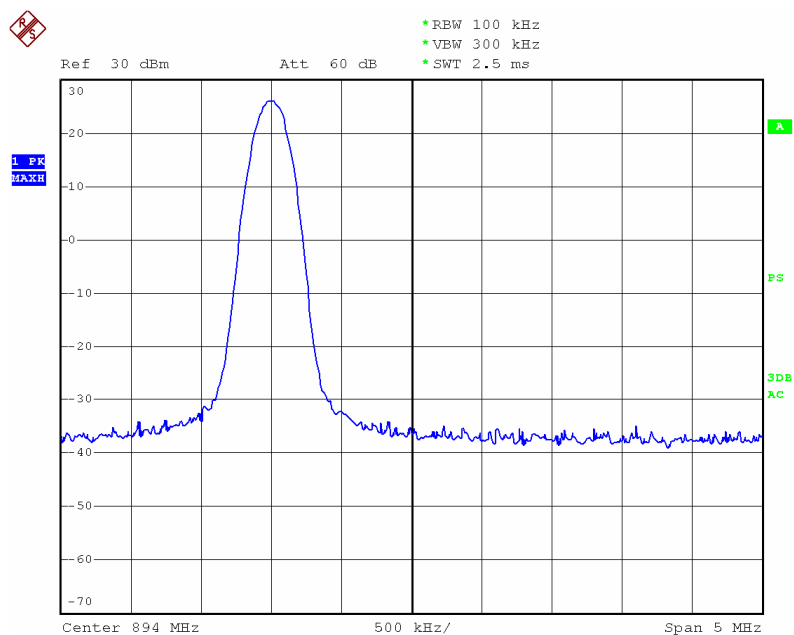
850MHz-GSM two signal input down link-Upper Edge



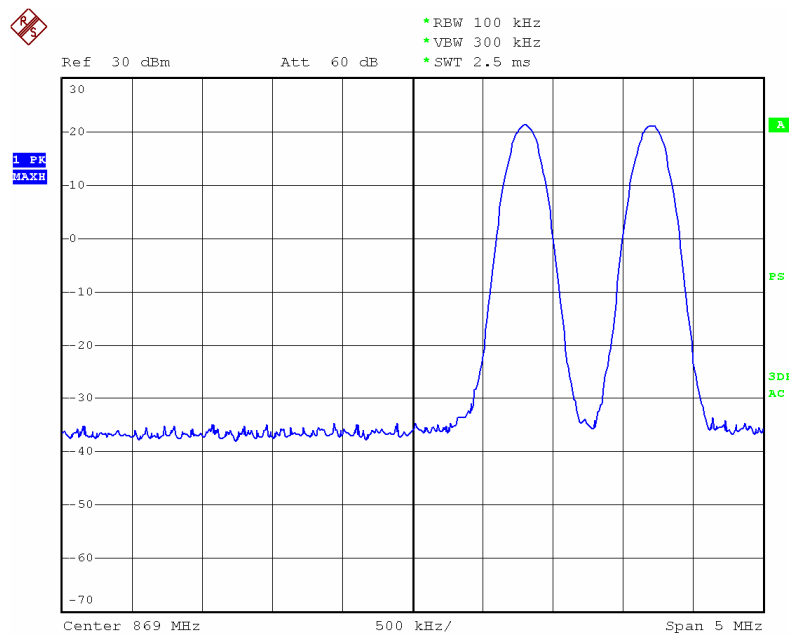
850MHz-EDGE one signal input down link-Lower Edge



850MHz-EDGE one signal input down link-Upper Edge



850MHz-EDGE two signal input down link-Lower Edge



850MHz-EDGE two signal input down link-Upper Edge

