



PART 2



Test data, continued band edges Inter modulation:

8.1 Clause 27.53 (g) Radiated spurious emissions

For operations in the 1710-1755 MHz and 2110-2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10} (P)$ dB.

(1) Compliance with the provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

(3) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

Special notes

- The spectrum was searched from 30 MHz to the 10th harmonic.
- All measurements were performed using a peak detector.
- The measurements were performed at the distance of 3 m.
- RBW within 30–1000 MHz was 100 kHz and 1 MHz above 1 GHz. VBW was wider than RBW.



The D.U.T. was positioned according to the radiated emissions set-up

The D.U.T. antenna connector was terminated by a 50Ω shielded dummy load.

The spectrum was searched from 30 MHz to 1 GHz (RBW 100 kHz) & 1 GHz (RBW 1 MHz) to the tenth harmonic of the carrier.

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



8.2 Clause 27.53(f) Radiated spurious emissions within 1559–1610 MHz band

(f) For operations in the 746–763 MHz, 775–793 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Special notes

- The spectrum was searched from 1559–1610 MHz.
- All measurements were performed using a peak detector.
- The measurements were performed at the distance of 3 m.
- RBW was set to 1 MHz and VBW was wider than RBW.

Test data

[Insert plots here](#)

Spurious emissions measurement results:

Frequency (MHz)	Polarization. V/H	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Low channel				
Mid channel				
High channel				

Note: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.

[NOT APPLICABLE: AWS band.](#)

8.3 Clause 27.54 Frequency stability

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Special notes

- 26 dBc points including frequency tolerance were assessed to remain within assigned band.
The resolution bandwidth was set to 100 kHz, video bandwidth was set to 100 kHz

Test data

Frequency tolerance measurements:		
Test conditions	Frequency (Hz)	Offset (Hz)
+50 °C, Nominal		
+40 °C, Nominal		
+30 °C, Nominal		
+20 °C, +15 %		
+20 °C, Nominal		Reference
+20 °C, -15 %		
+10 °C, Nominal		
0 °C, Nominal		
-10 °C, Nominal		
-20 °C, Nominal		
-30 °C, Nominal		



8.7 Clause 2.1049 Occupied bandwidth

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.

Special notes

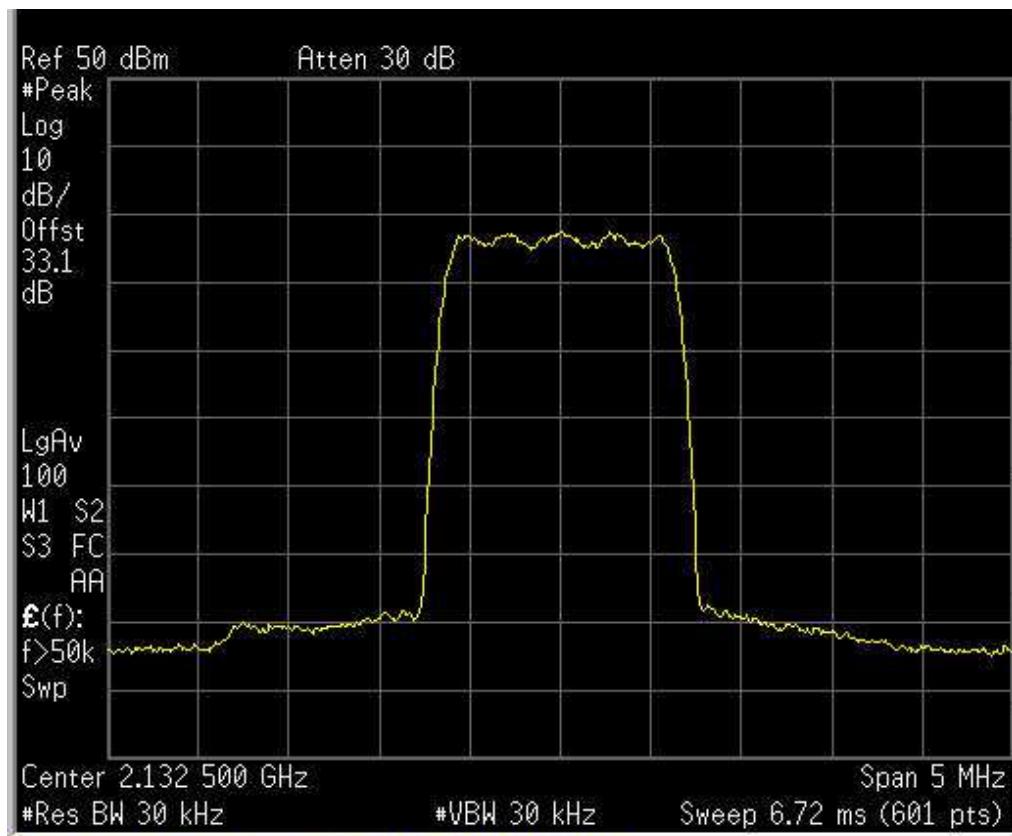
- 26 dBc points provided in terms of attenuation below unmodulated carrier.
- RBW was set to 1 % of emissions bandwidth.

Test Data – Occupied Bandwidth

CDMA

Downlink

OUTPUT

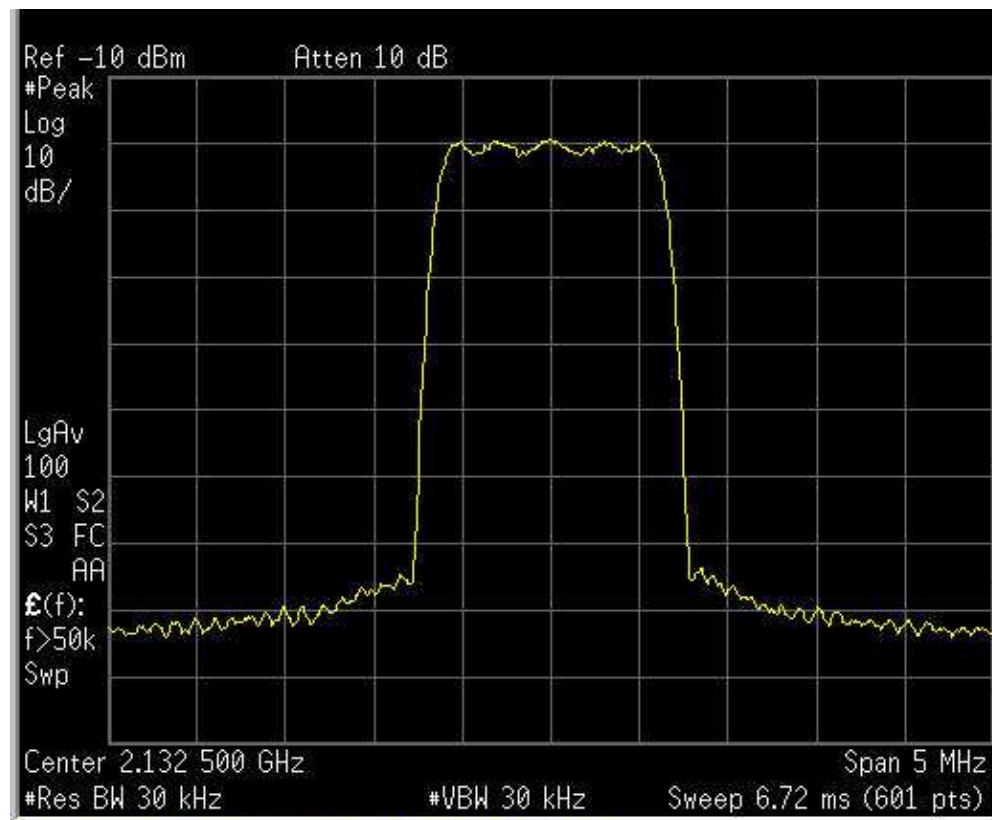


Test Data – Occupied Bandwidth

CDMA

Downlink

INPUT

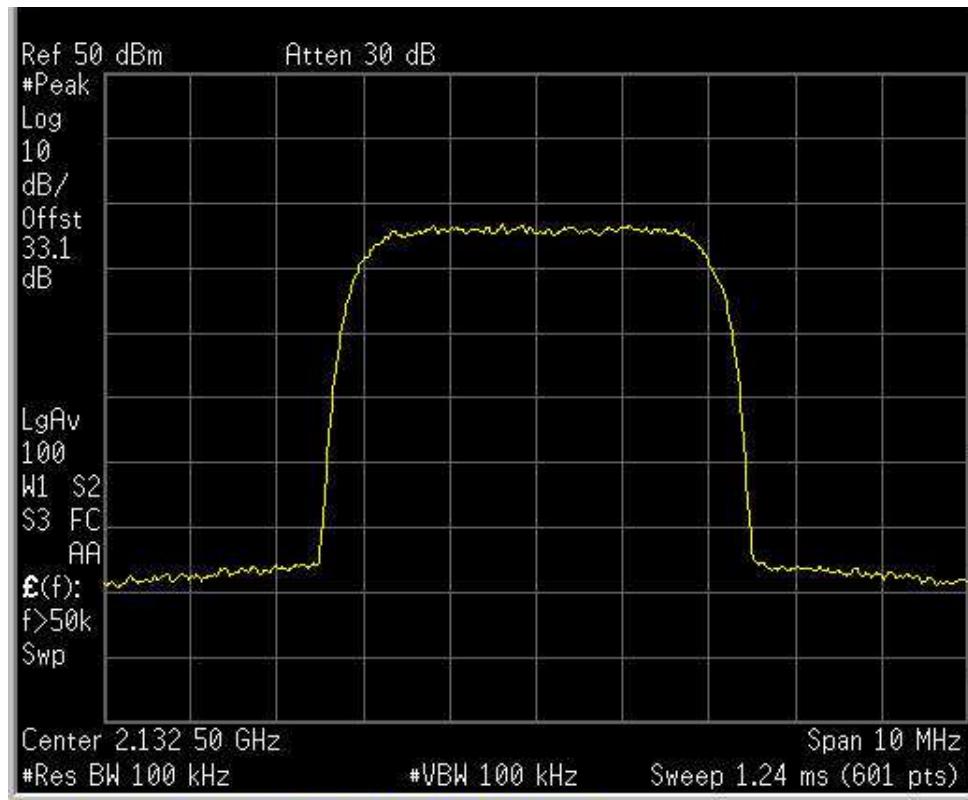


Test Data – Occupied Bandwidth

WCDMA

Downlink

OUTPUT

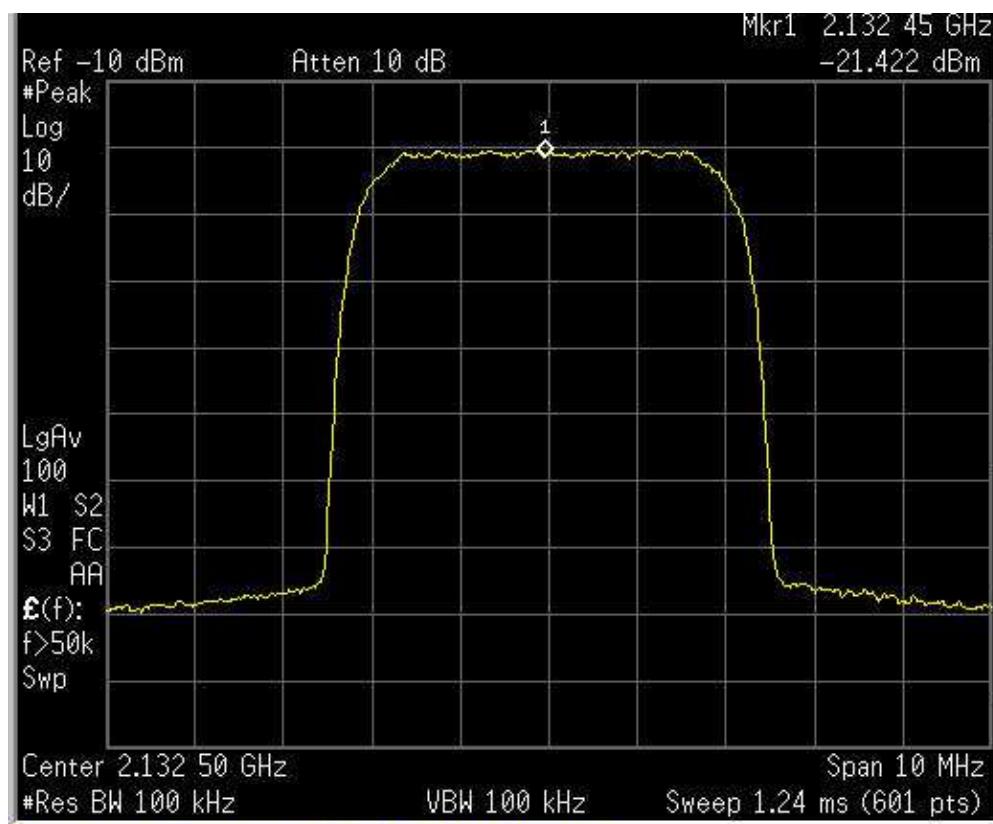


Test Data – Occupied Bandwidth

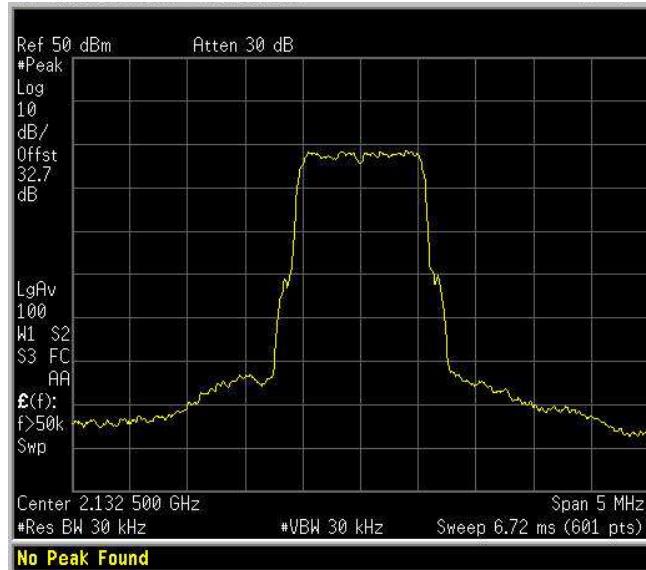
WCDMA

Downlink

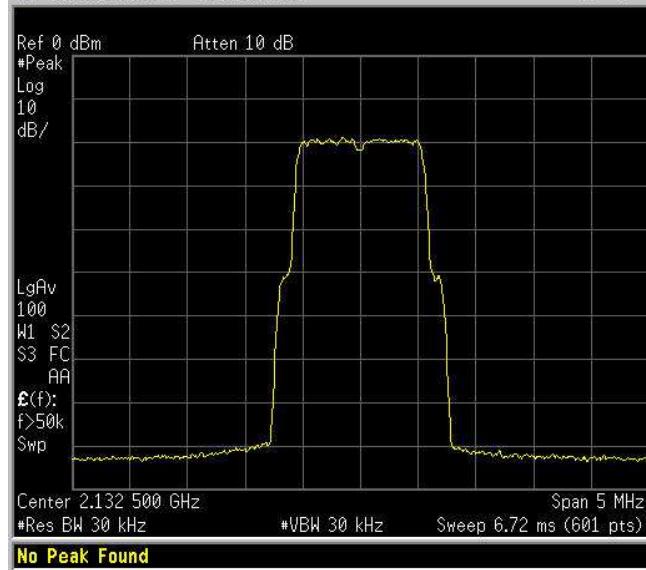
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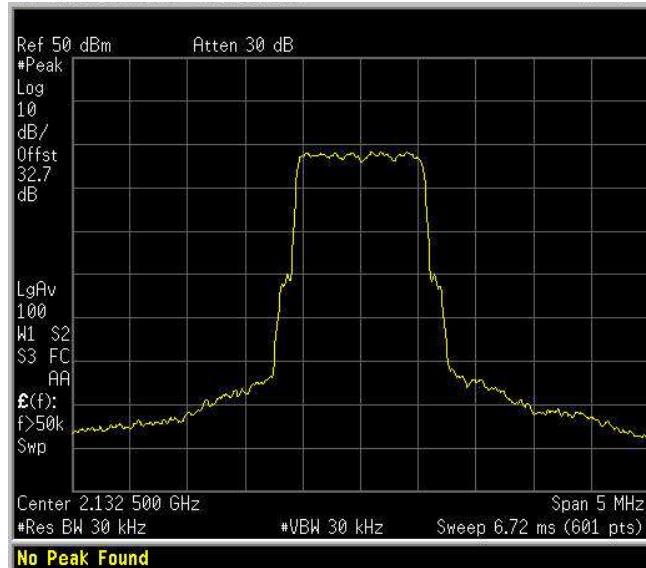
Occupied Bandwidth
Downlink – 1.4 QAM
OUTPUT



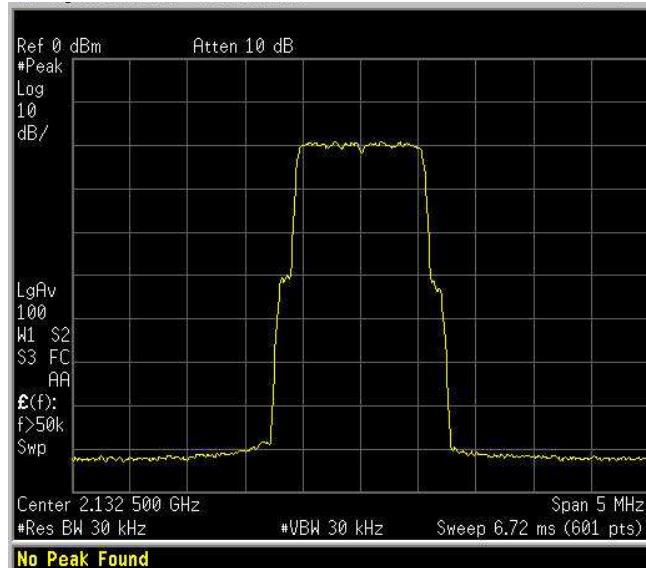
Occupied Bandwidth
Downlink – 1.4 QAM
INPUT



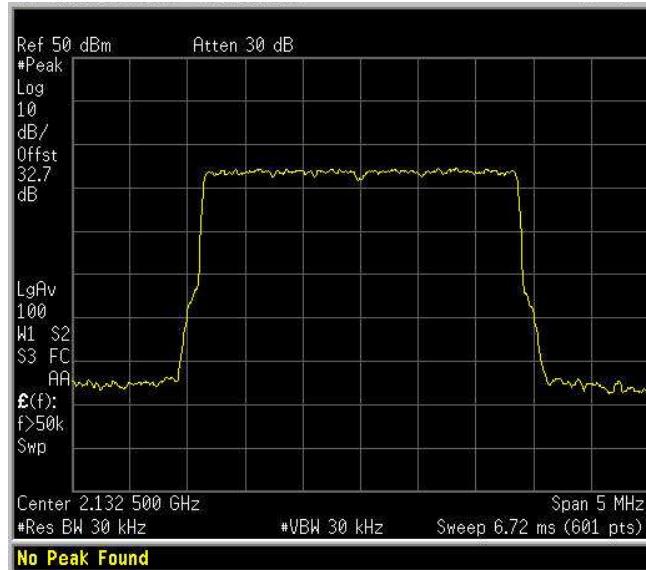
Occupied Bandwidth
Downlink – 1.4 QPSK
OUTPUT



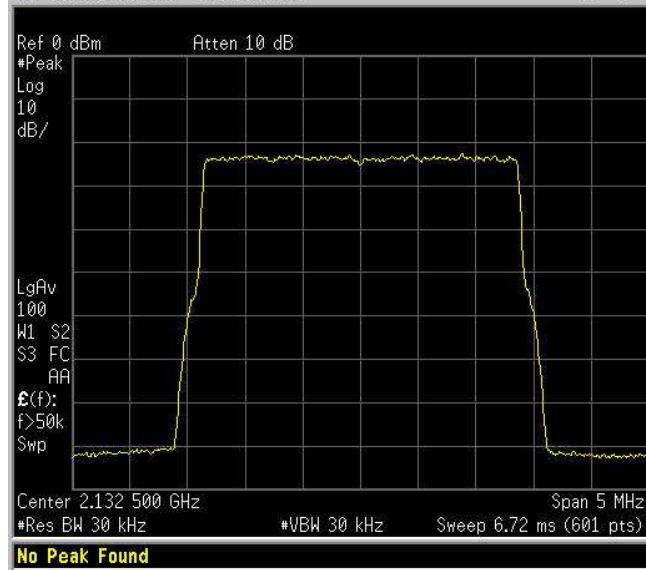
Occupied Bandwidth
Downlink – 1.4 QPSK
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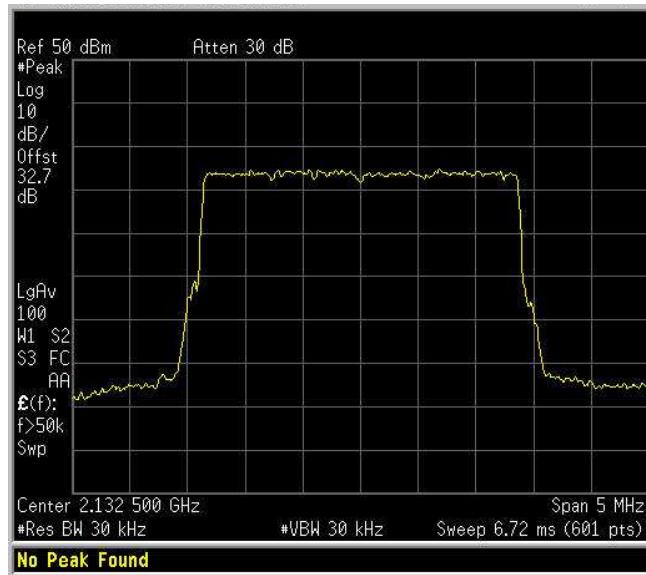
Occupied Bandwidth
Downlink – 3 QAM
OUTPUT



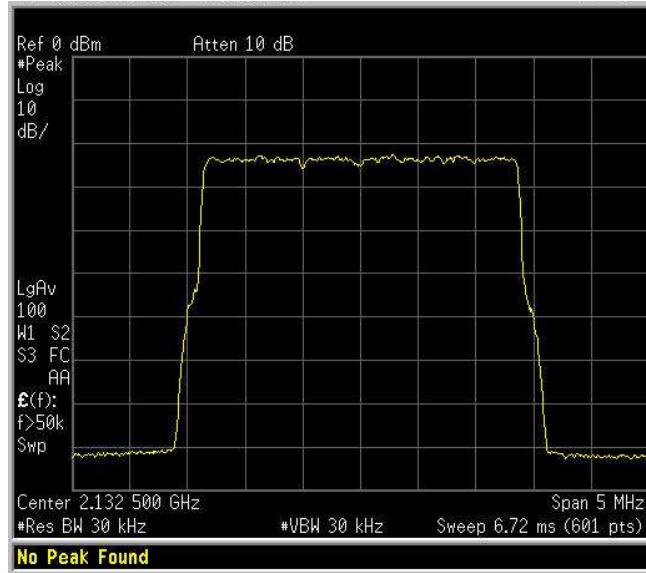
Occupied Bandwidth
Downlink – 3 QAM
INPUT



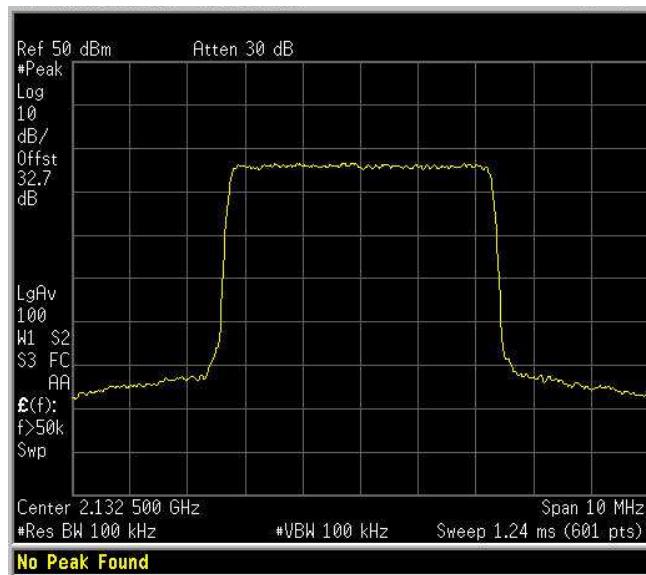
Occupied Bandwidth
Downlink – 3 QPSK
OUTPUT



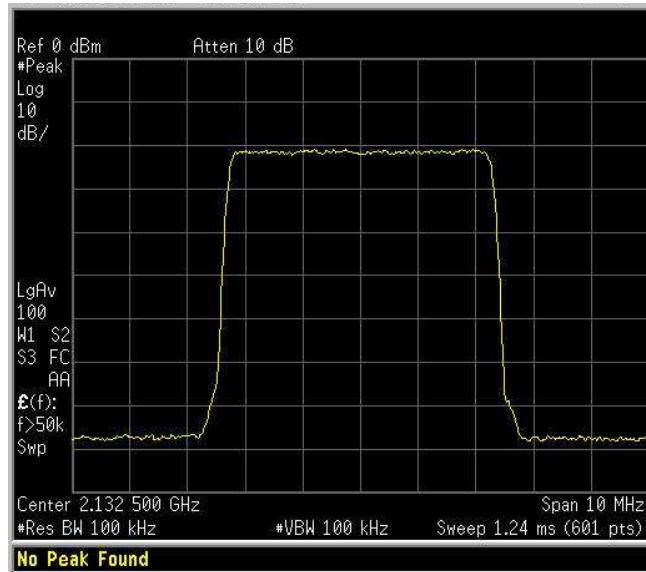
Occupied Bandwidth
Downlink – 3 QPSK
INPUT



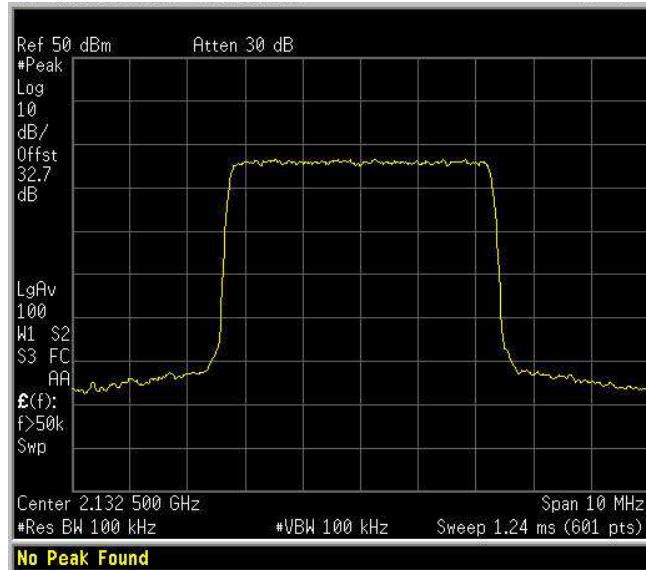
Occupied Bandwidth
Downlink – 5 QAM
OUTPUT



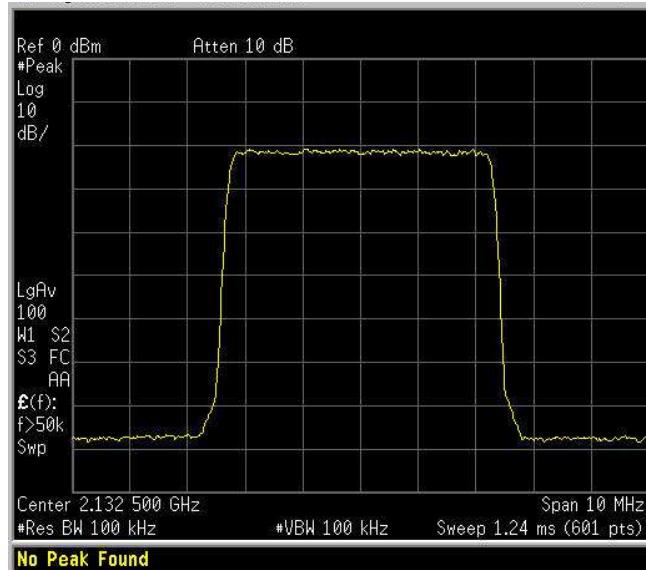
Occupied Bandwidth
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INPUT



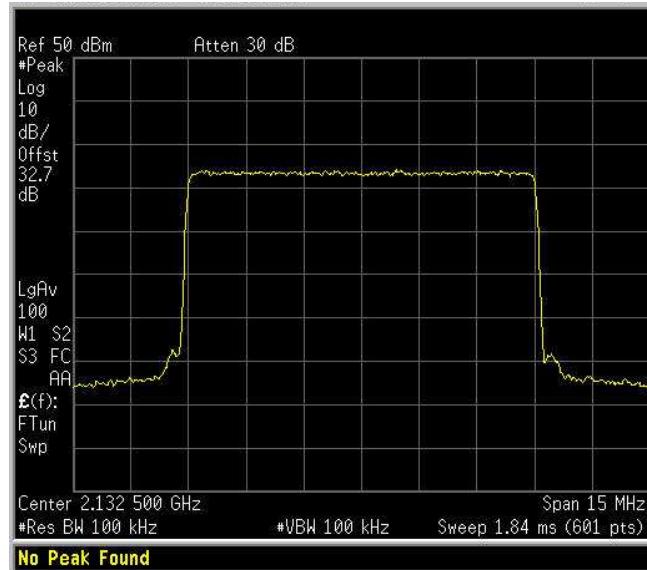
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Downlink – 5 QPSK
OUTPUT



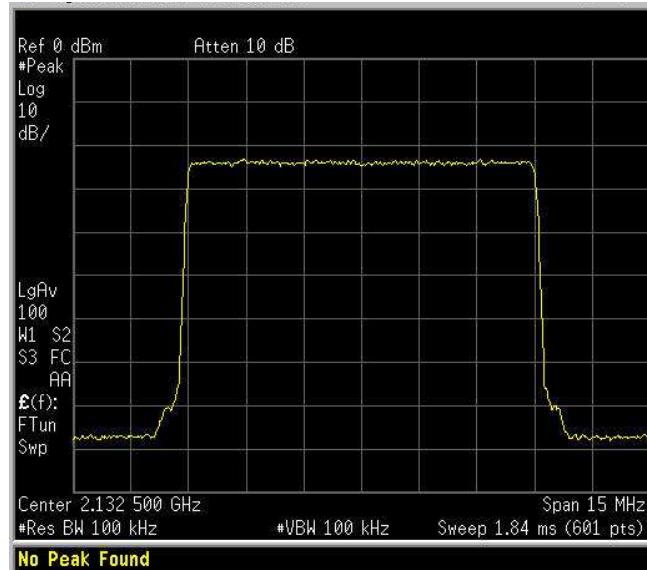
Occupied Bandwidth
Downlink – 5 QPSK
INPUT



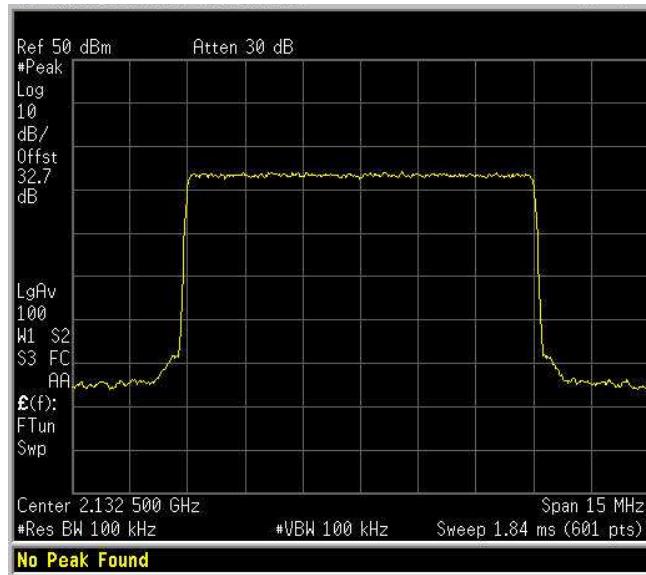
Occupied Bandwidth
Downlink – 10 QAM
OUTPUT



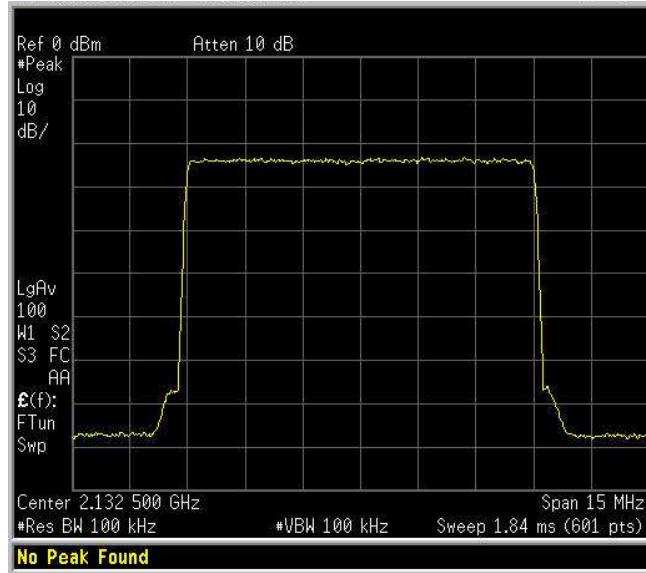
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Downlink – 10 QAM
INPUT



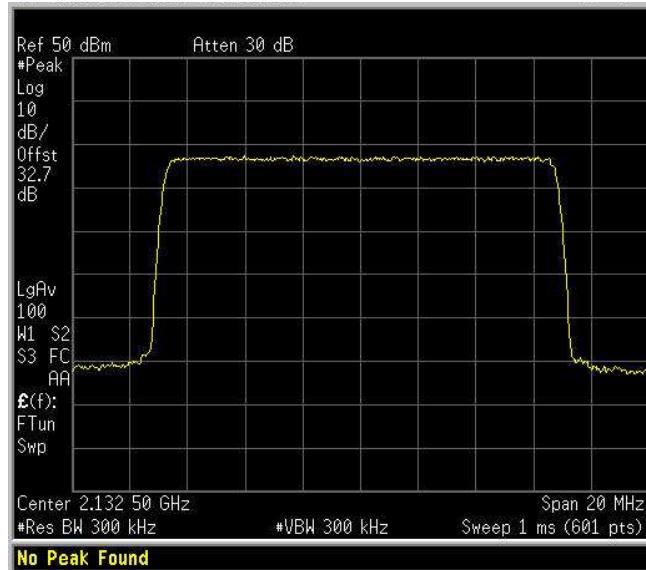
Occupied Bandwidth
Downlink – 10 QPSK
OUTPUT



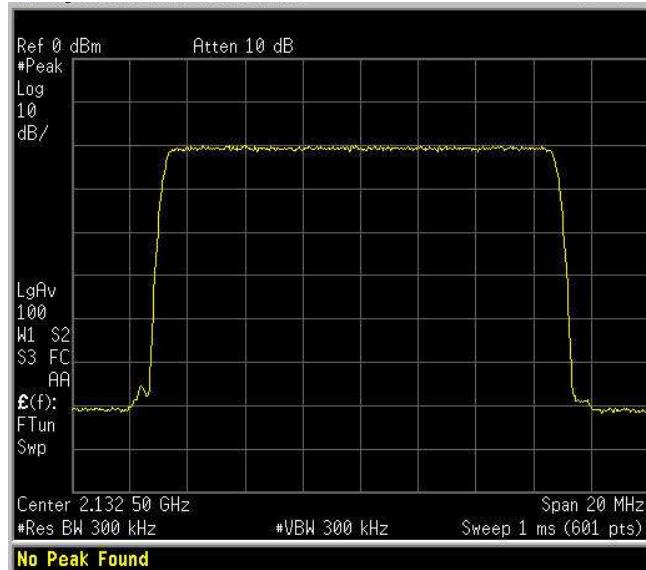
Occupied Bandwidth
Downlink – 10 QPSK
INPUT



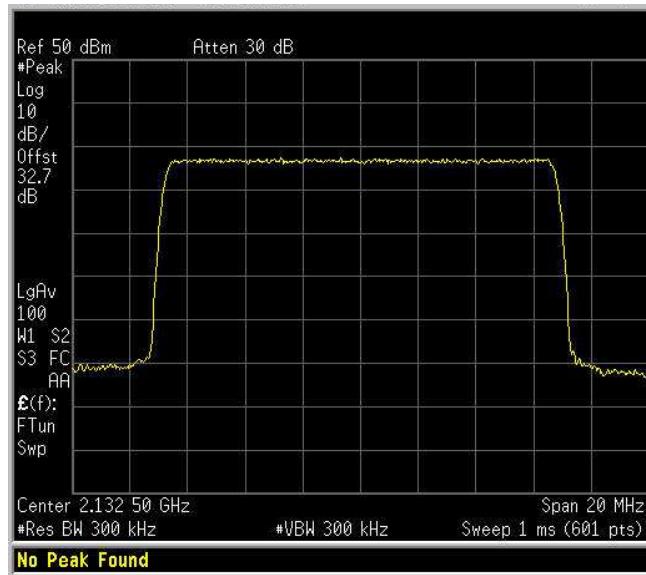
Occupied Bandwidth
Downlink – 15 QAM
OUTPUT



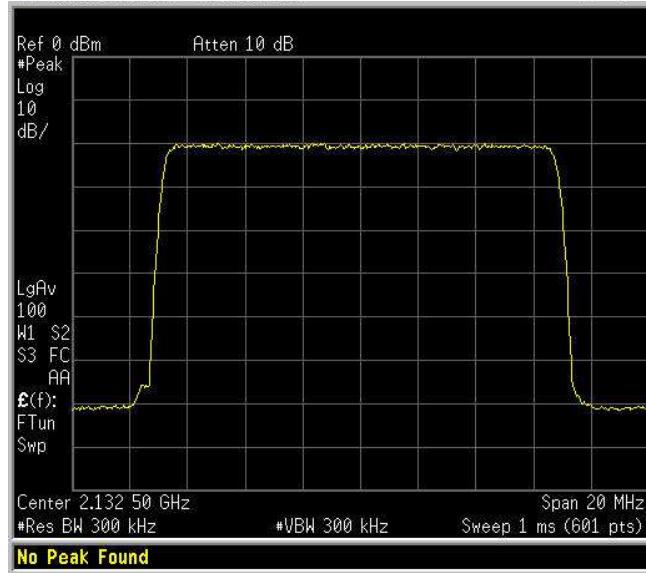
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Downlink – 15 QAM
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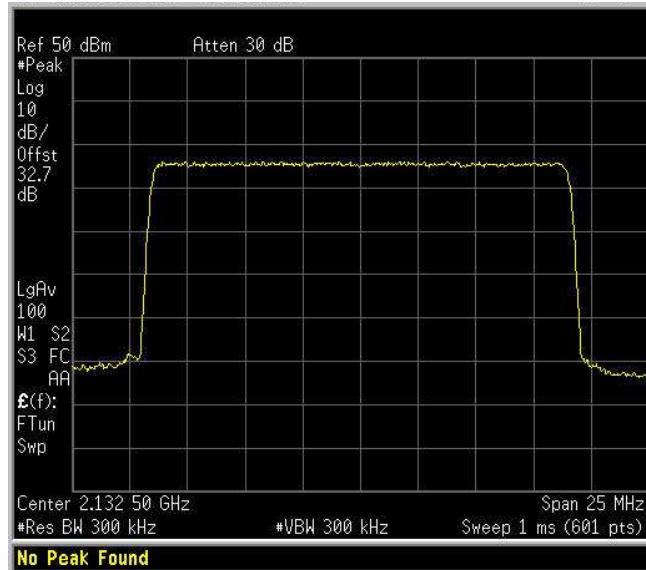
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Downlink – 15 QPSK
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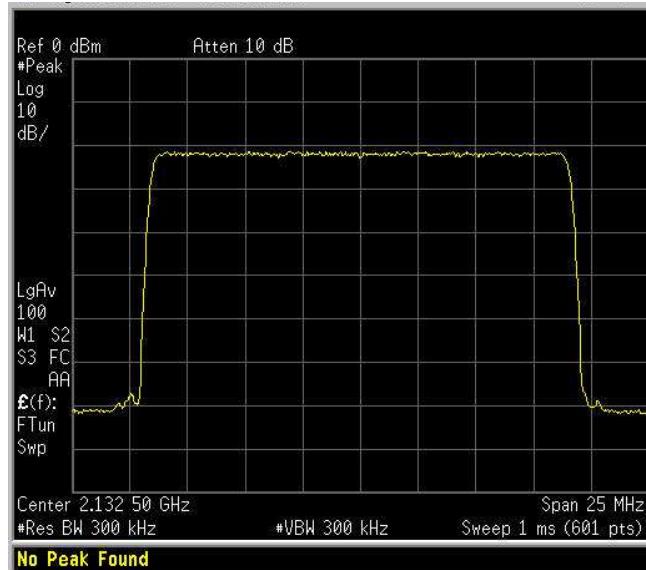
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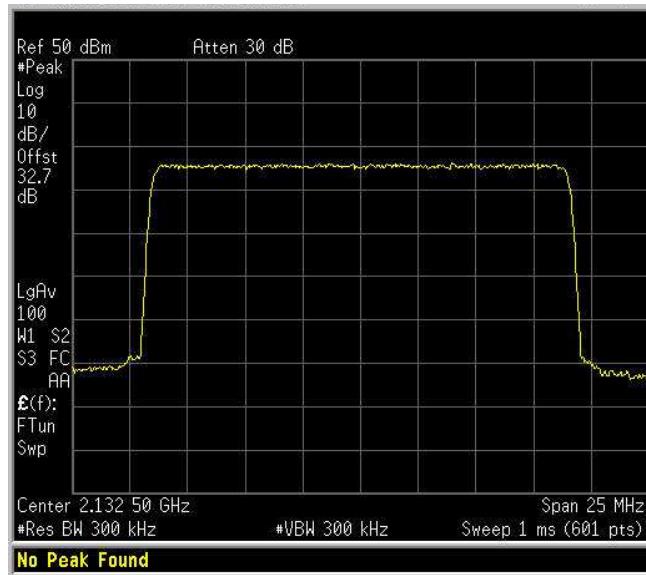
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Downlink – 20 QAM
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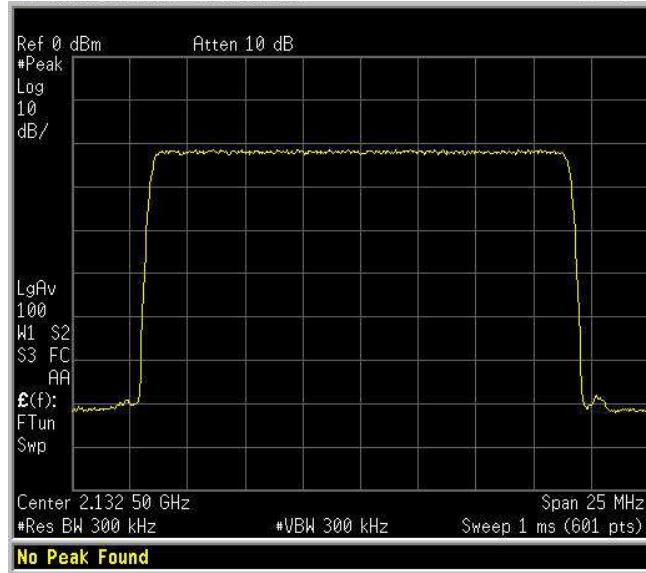
Occupied Bandwidth
Downlink – 20 QAM
INPUT



Occupied Bandwidth
Downlink – 20 QPSK
OUTPUT



Occupied Bandwidth
Downlink – 20 QPSK
INPUT

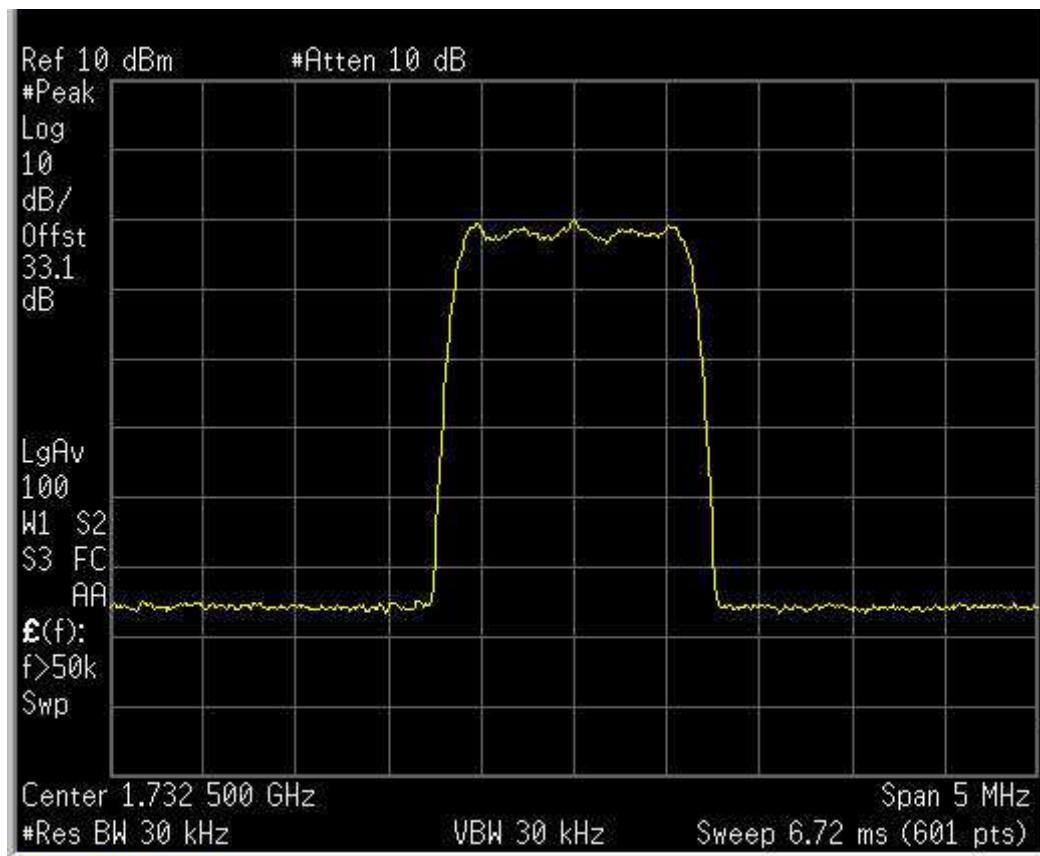


Test Data – Occupied Bandwidth

CDMA

Uplink

OUTPUT

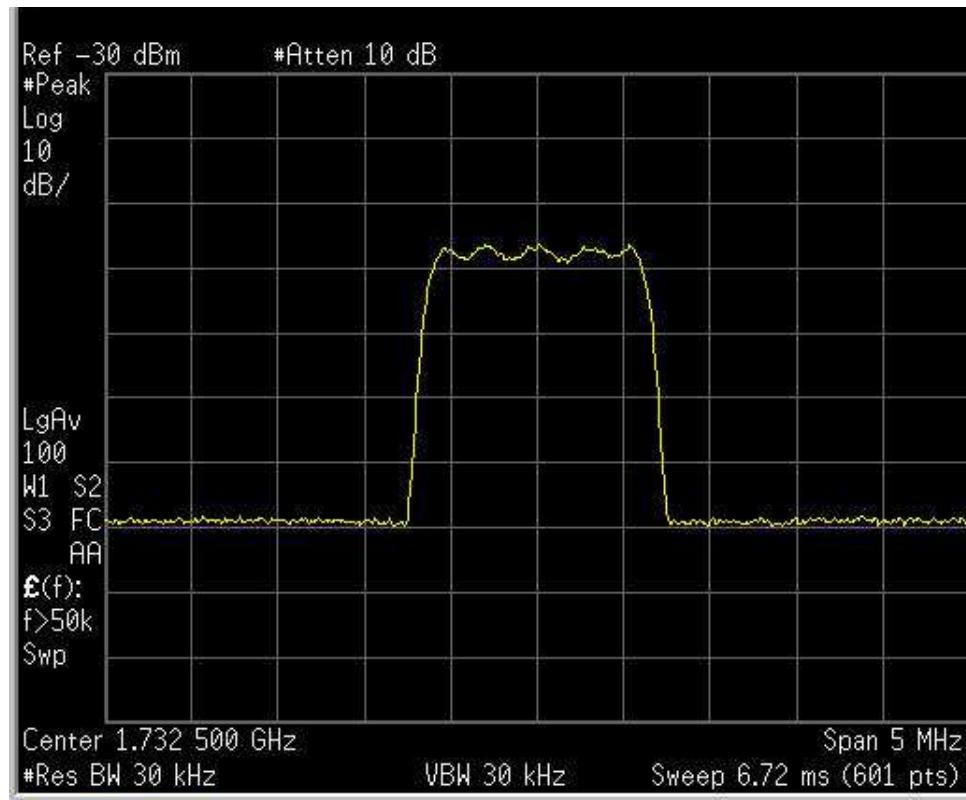


Test Data – Occupied Bandwidth

CDMA

Uplink

INPUT

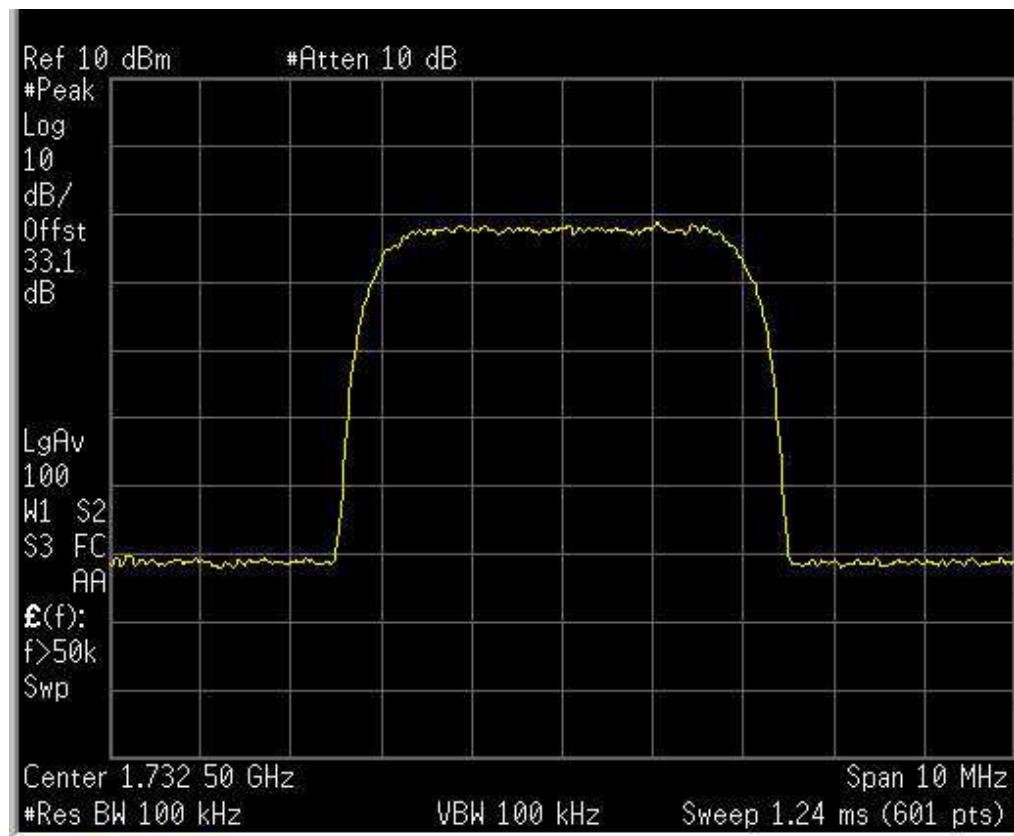


Test Data – Occupied Bandwidth

WCDMA

Uplink

OUTPUT

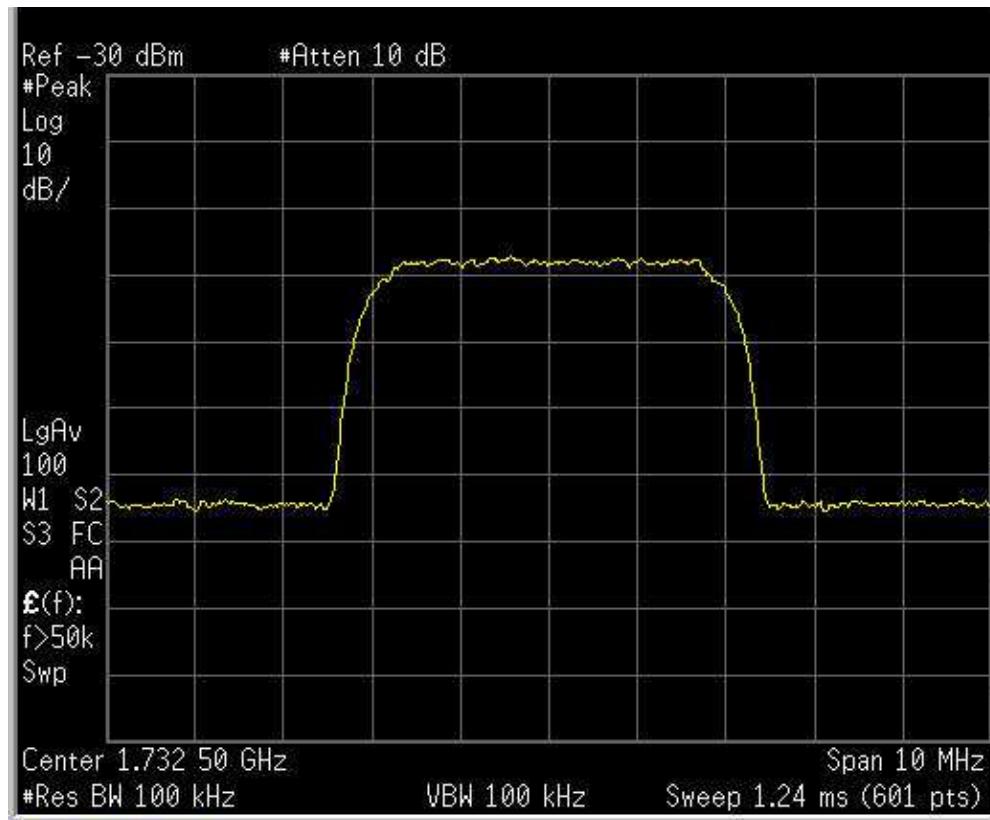


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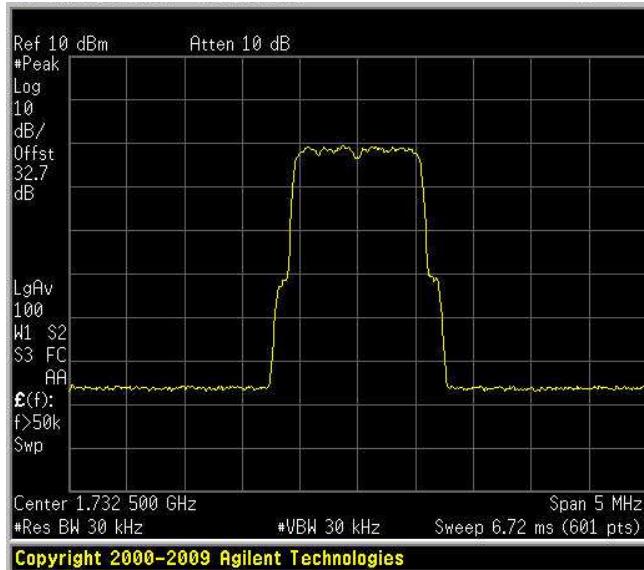
WCDMA

Uplink

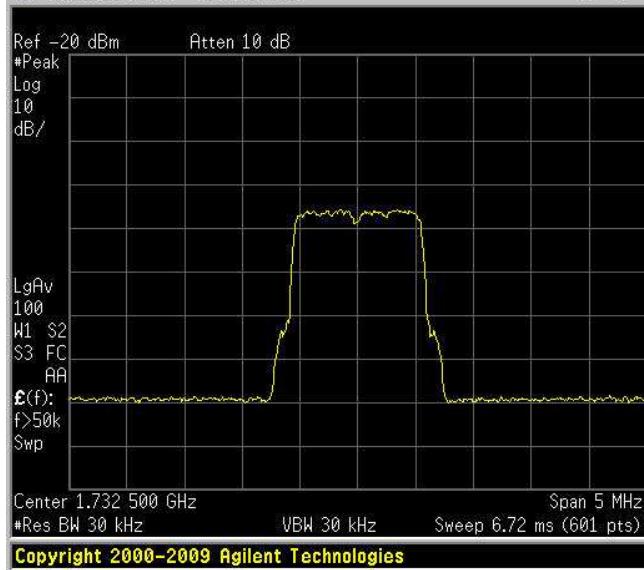
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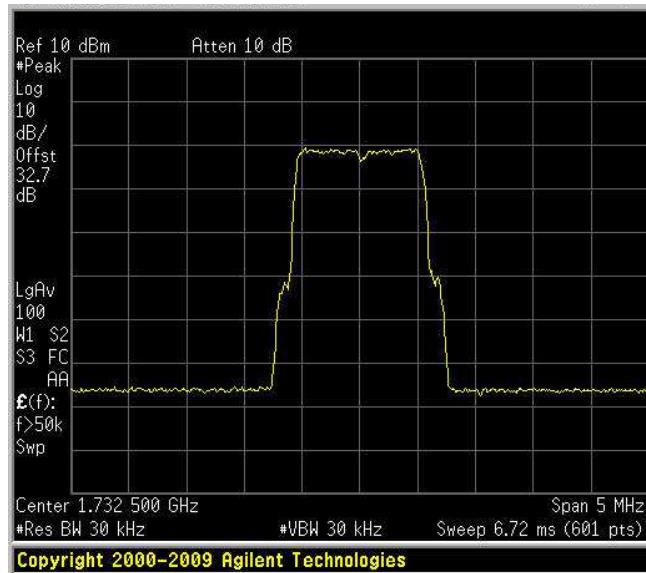
Occupied Bandwidth
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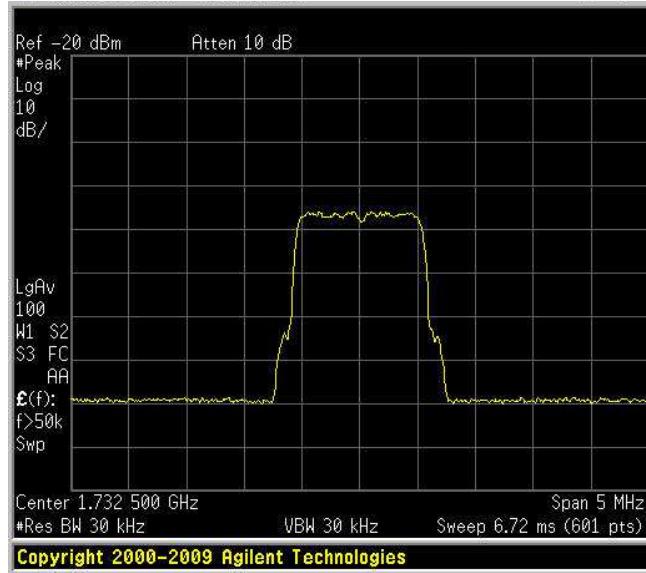
Occupied Bandwidth
Uplink – 1,4 QAM
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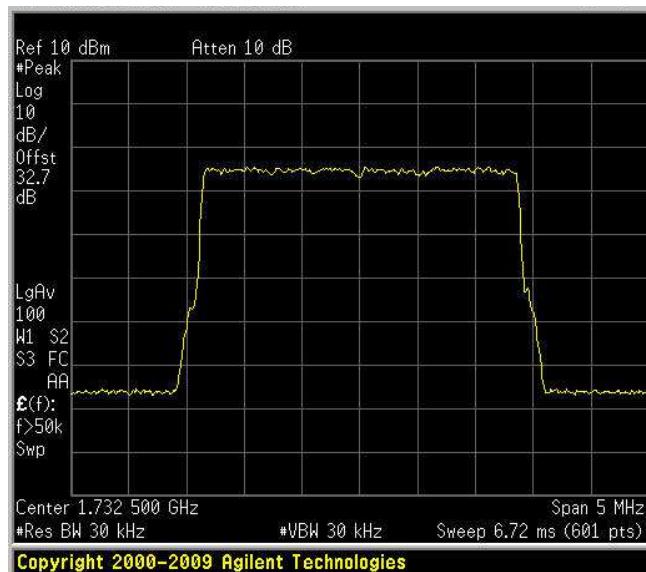
Occupied Bandwidth
Uplink – 1,4 QPSK
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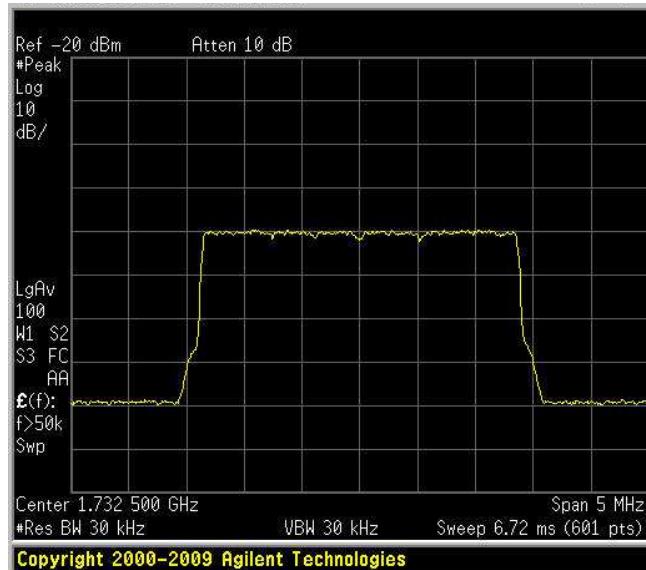
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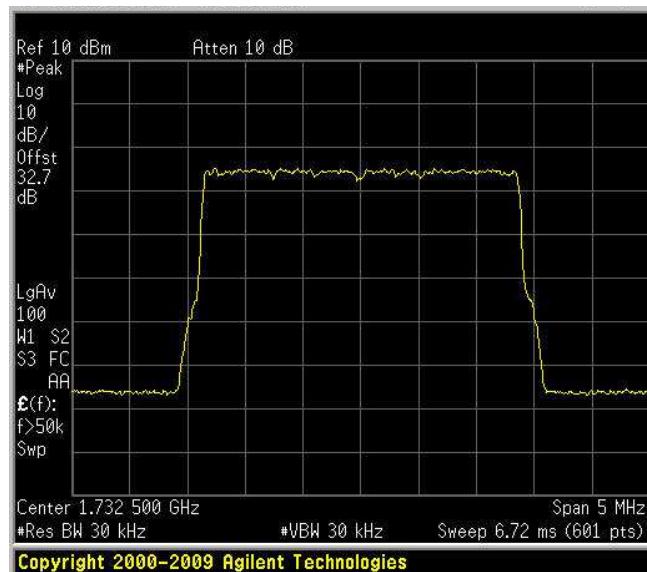
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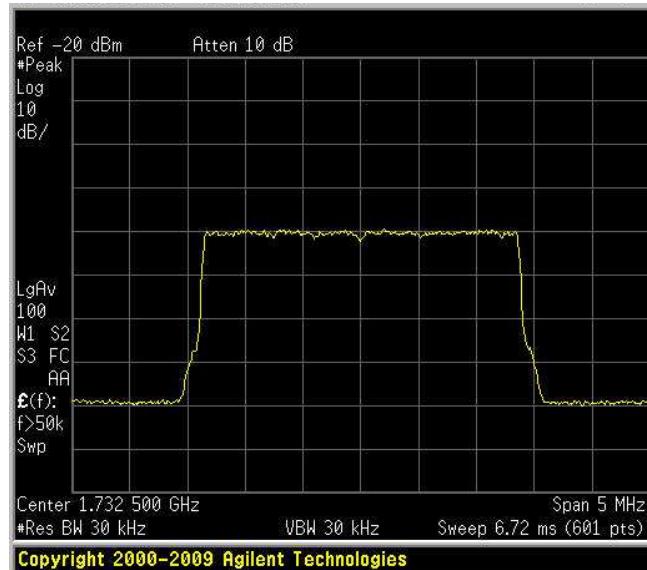
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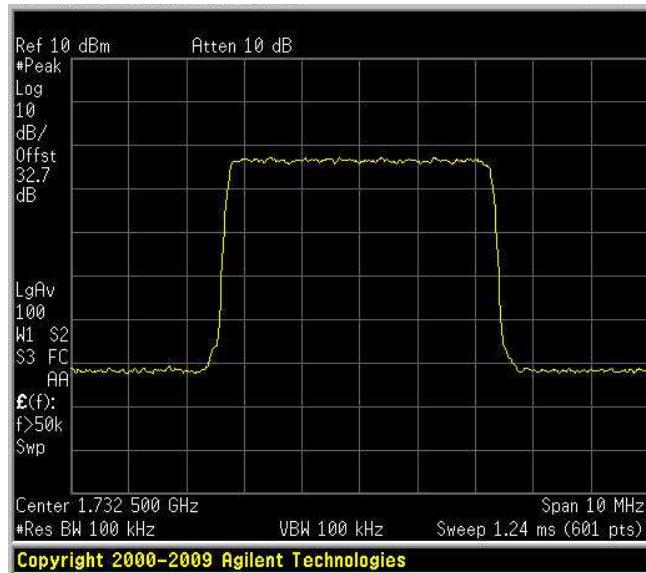
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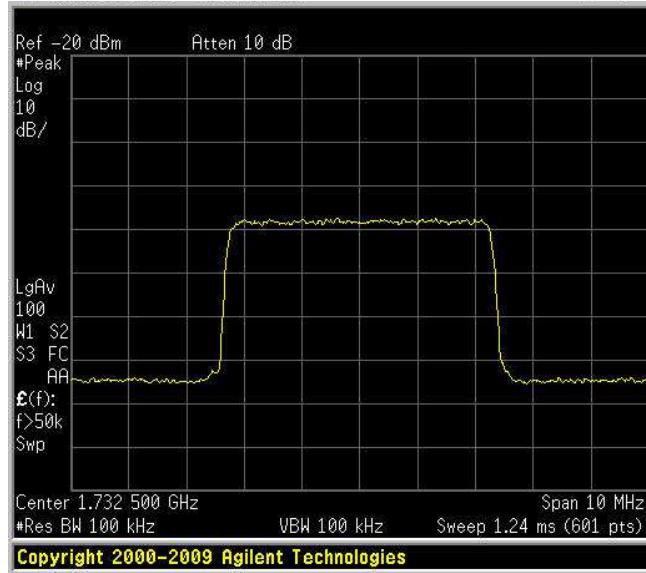
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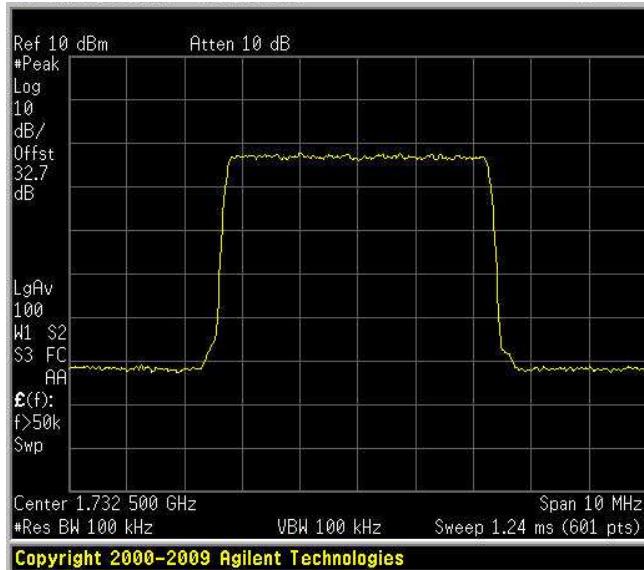
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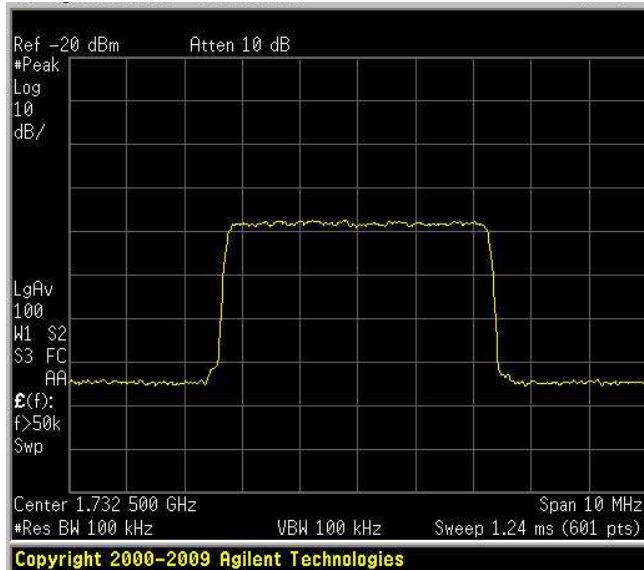
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Uplink – 5 QAM
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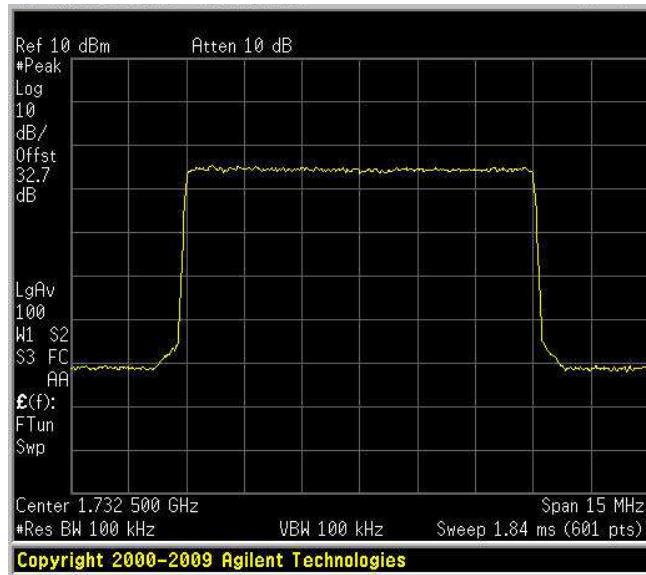
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Uplink – 5 QPSK
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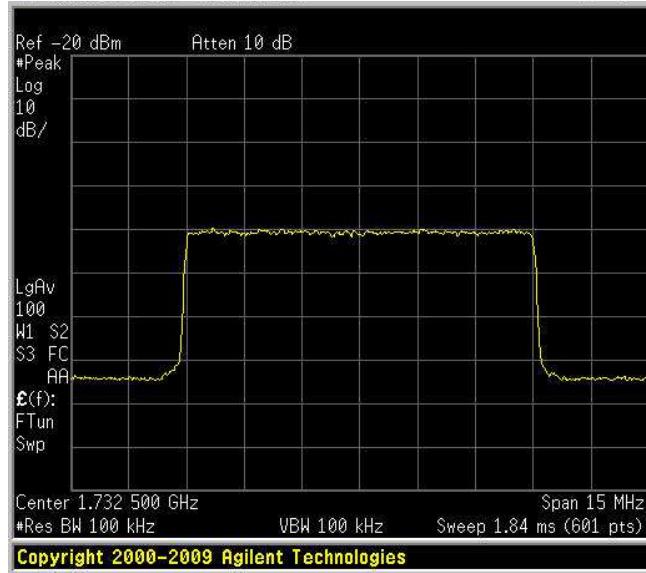
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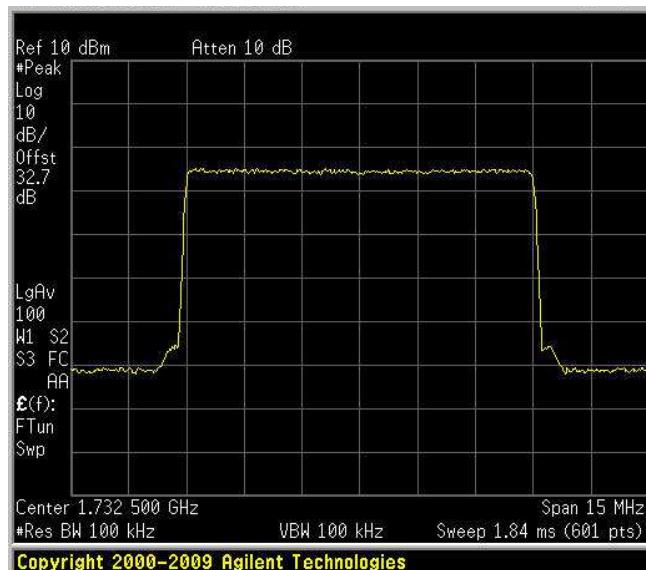
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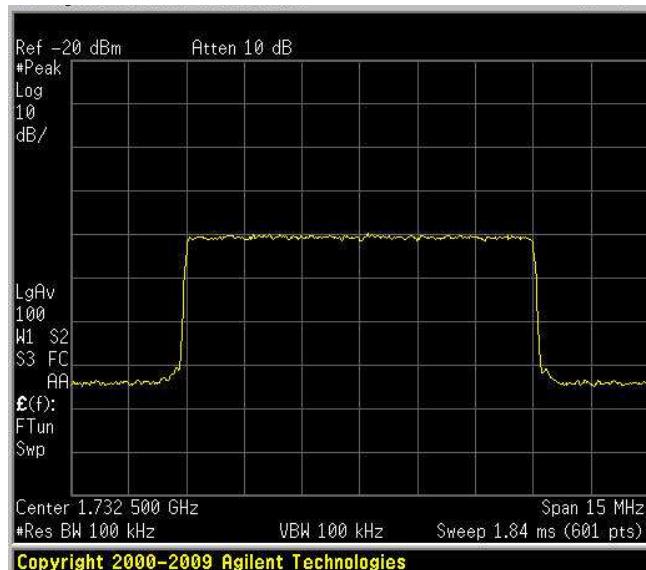
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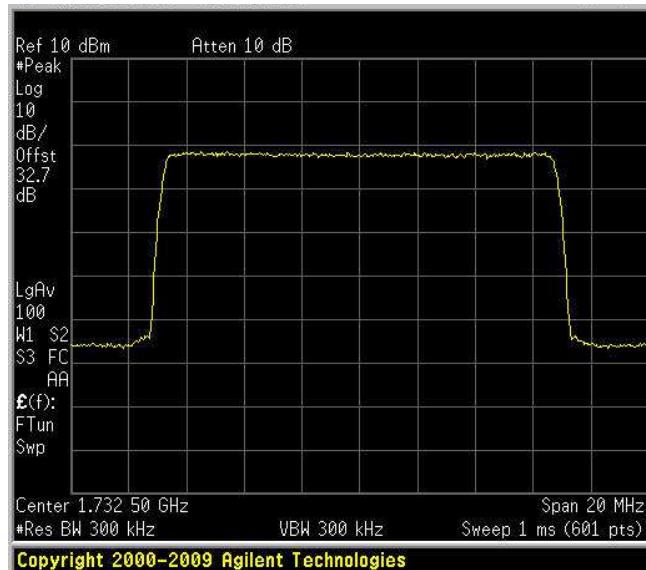
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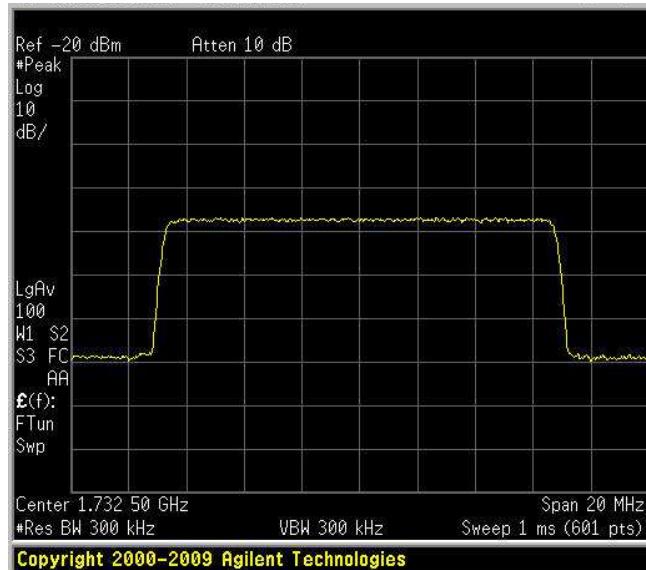
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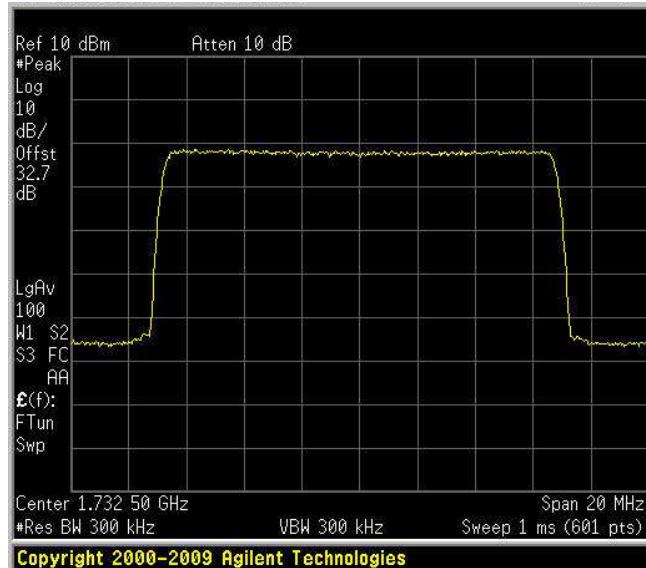
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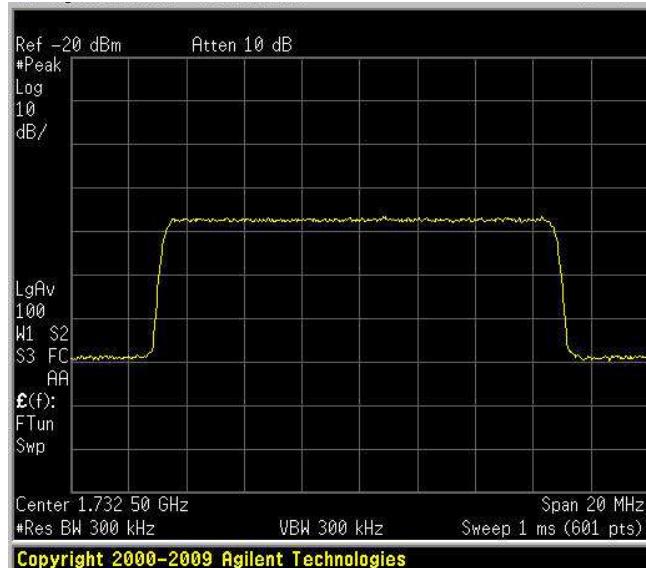
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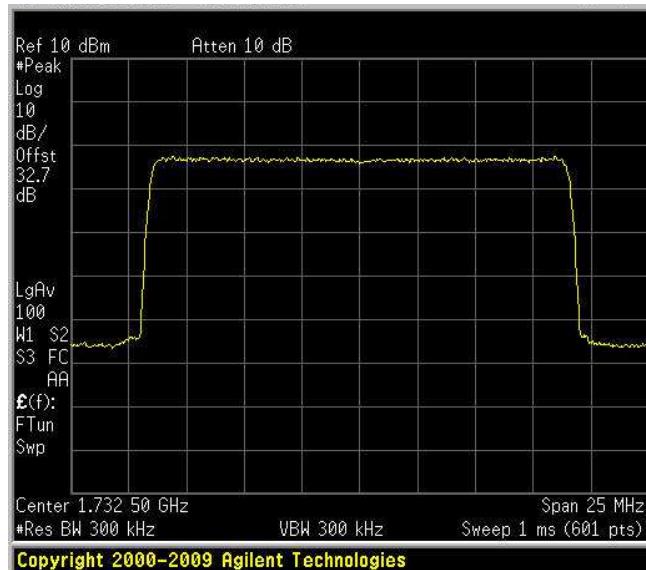
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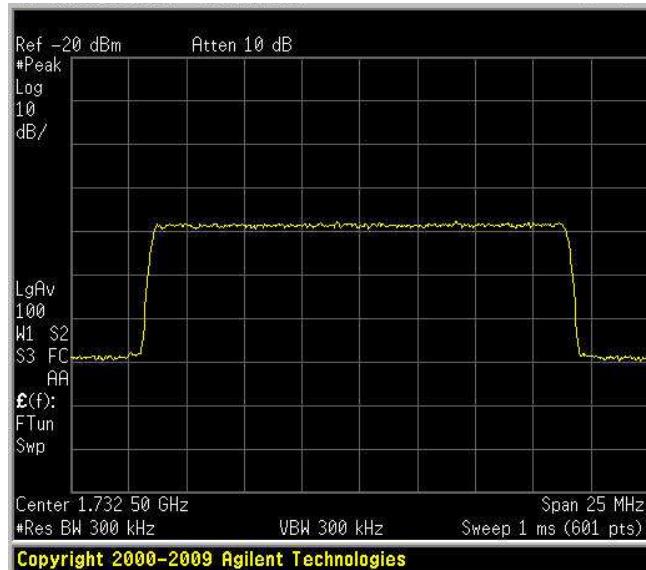
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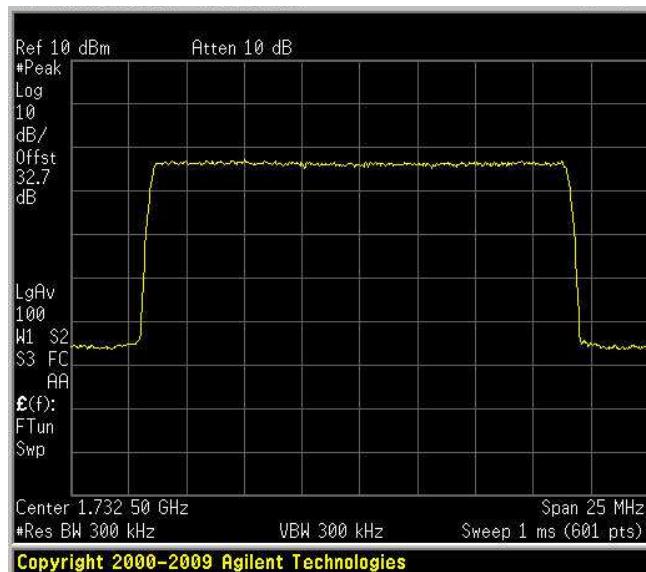
Occupied Bandwidth
Uplink – 20 QAM
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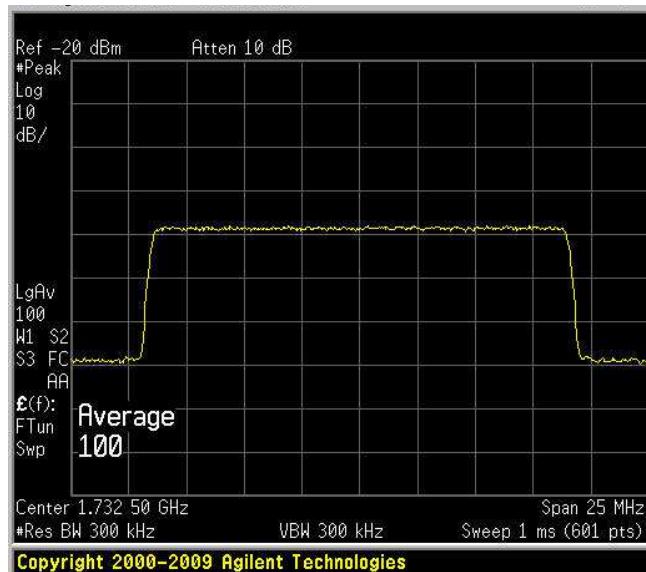
Occupied Bandwidth
Uplink – 20 QAM
INPUT



Occupied Bandwidth
Uplink – 20 QPSK
OUTPUT



Occupied Bandwidth
Uplink – 20 QPSK
INPUT



 Nemko	Section 9: Filter Frequency Response	Product: VHPA0001AWS

8.8 Clause 2.1047 Modulation characteristics

Unless specified elsewhere in this part, stations will be authorized emissions as provided for in paragraphs (b) through (n) of this section.

§ 2.1047 Measurements required: Modulation characteristics.

- (a) Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.
- (b) Equipment which employs modulation limiting. A curve or family of curves showing the percentage of modulation versus the modulation input voltage shall be supplied. The information submitted shall be sufficient to show modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.
- (c) Single sideband and independent sideband radiotelephone transmitters which employ a device or circuit to limit peak envelope power. A curve showing the peak envelope power output versus the modulation input voltage shall be supplied. The modulating signals shall be the same in frequency as specified in paragraph (c) of §2.1049 for the occupied bandwidth tests.
- (d) Other types of equipment. A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

Test date:

Test results:

Test data

None

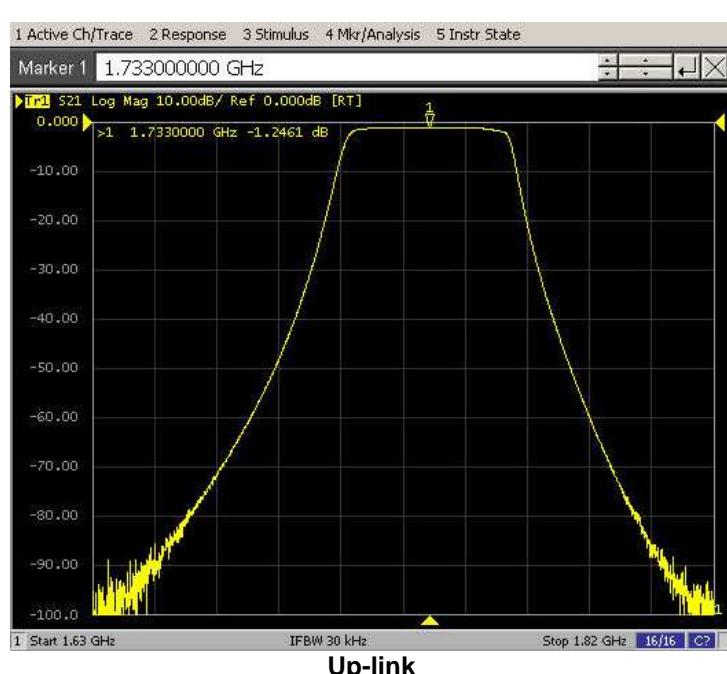
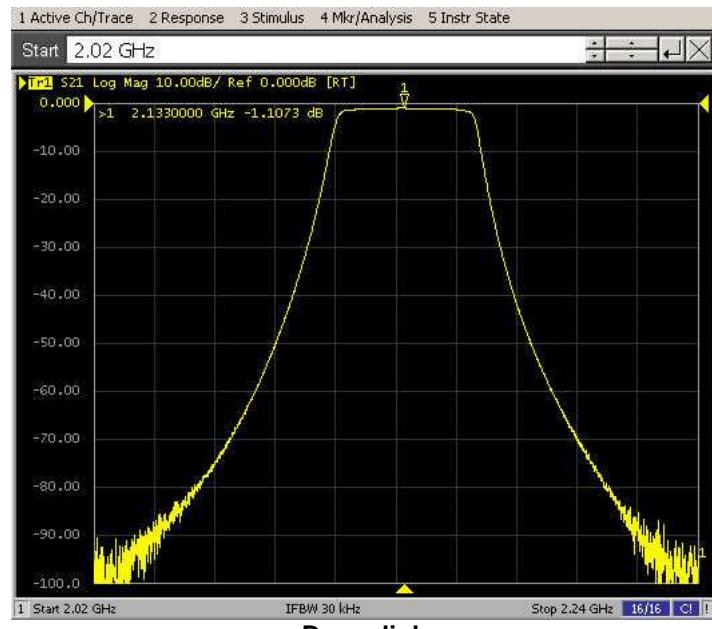
NOT APPLICABLE; E.U.T. does not contain modulation circuitry



Section 9: Filter Frequency Response

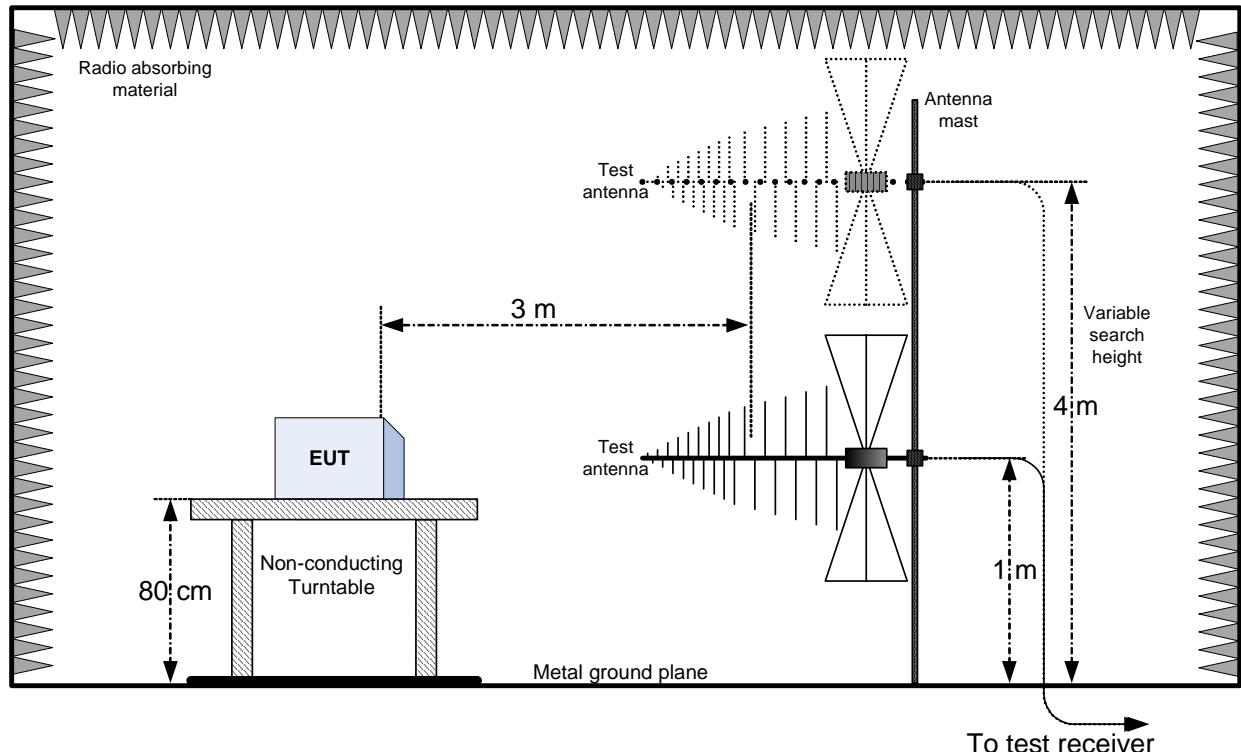
Test date: 2012-06-04

Test results: Pass



Section 10: Block diagrams of test set-ups

Radiated emissions set-up



Section 11: EUT photos

Photo Set up

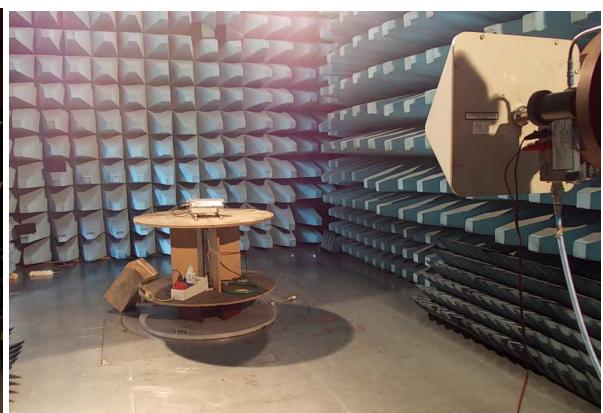


Photo EUT

