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PART 2

	Section 9: Filter Frequency Response	Product: VHPA0001AWS

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.


	Section 9: Filter Frequency Response	Product: VHPA0001AWS

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

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

	Section 9: Filter Frequency Response	Product: VHPA0001AWS

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 (dBμV/m)	Limit (dBμV/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.

	Section 9: Filter Frequency Response	Product: VHPA0001AWS

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		

	Section 9: Filter Frequency Response	Product: VHPA0001AWS

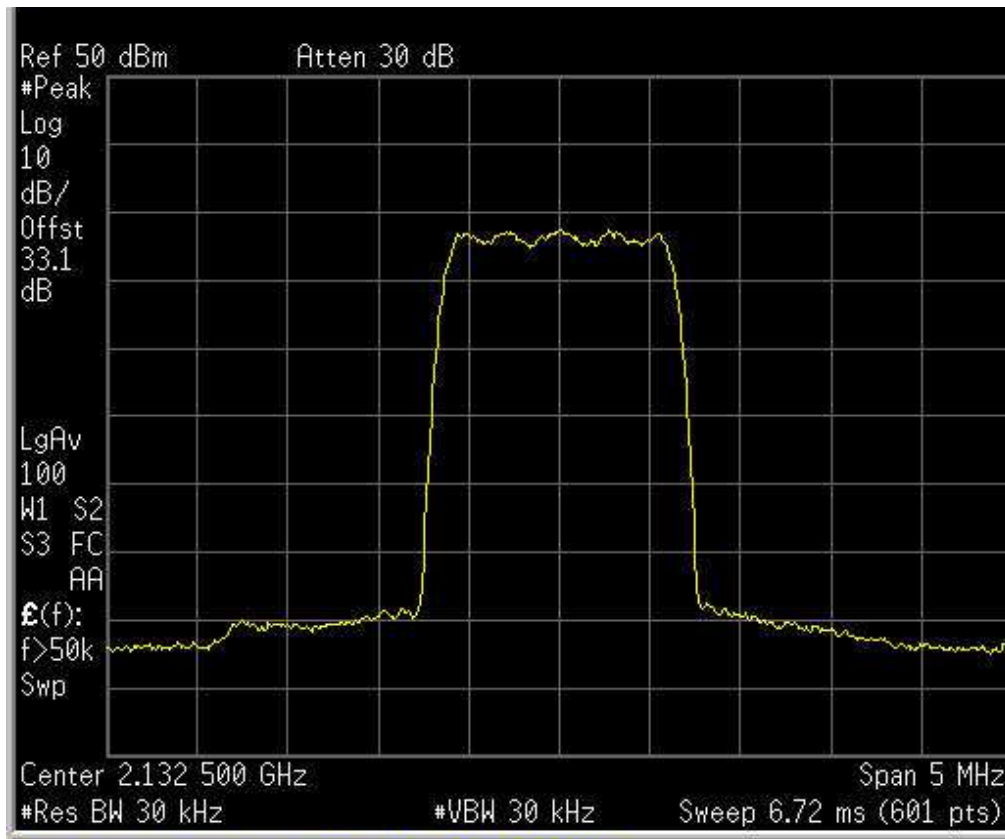
8.7 Clause 2.1049 Occupied bandwidth

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



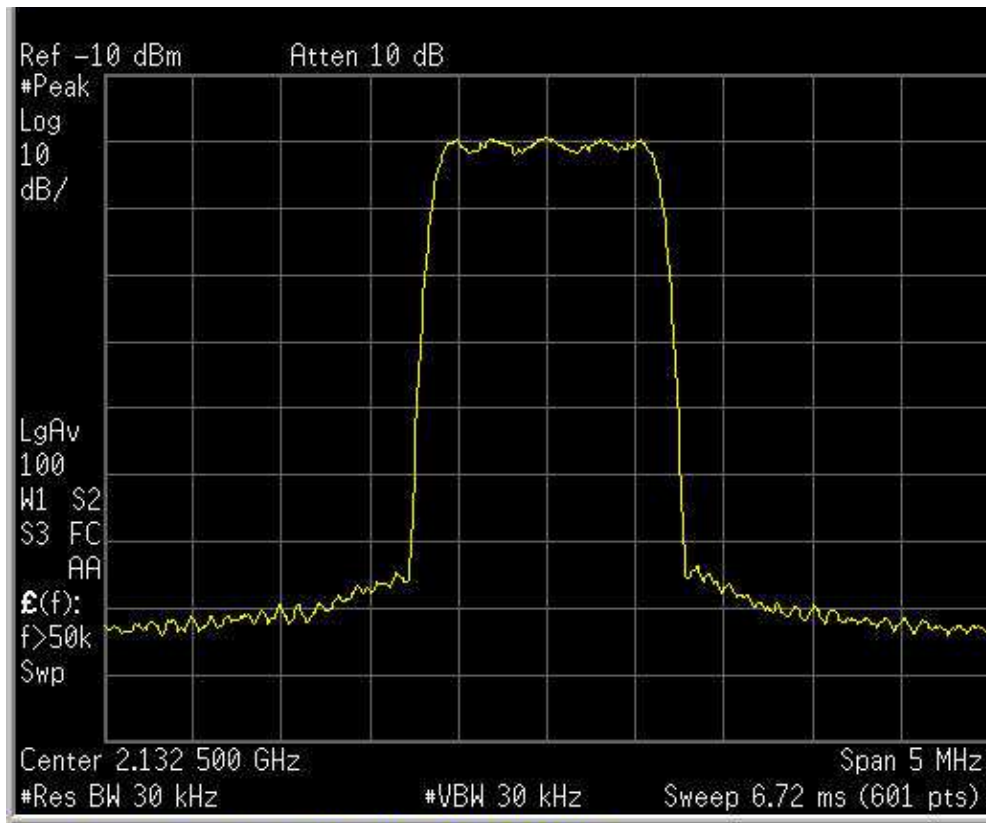


Test Data – Occupied Bandwidth

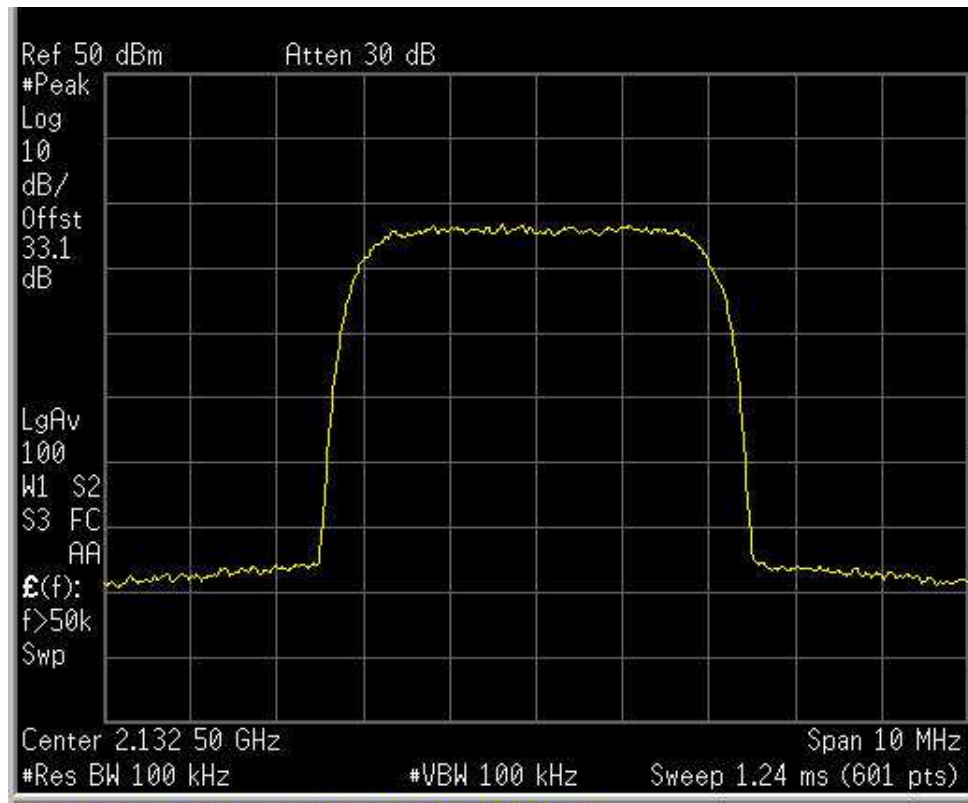
CDMA

Downlink

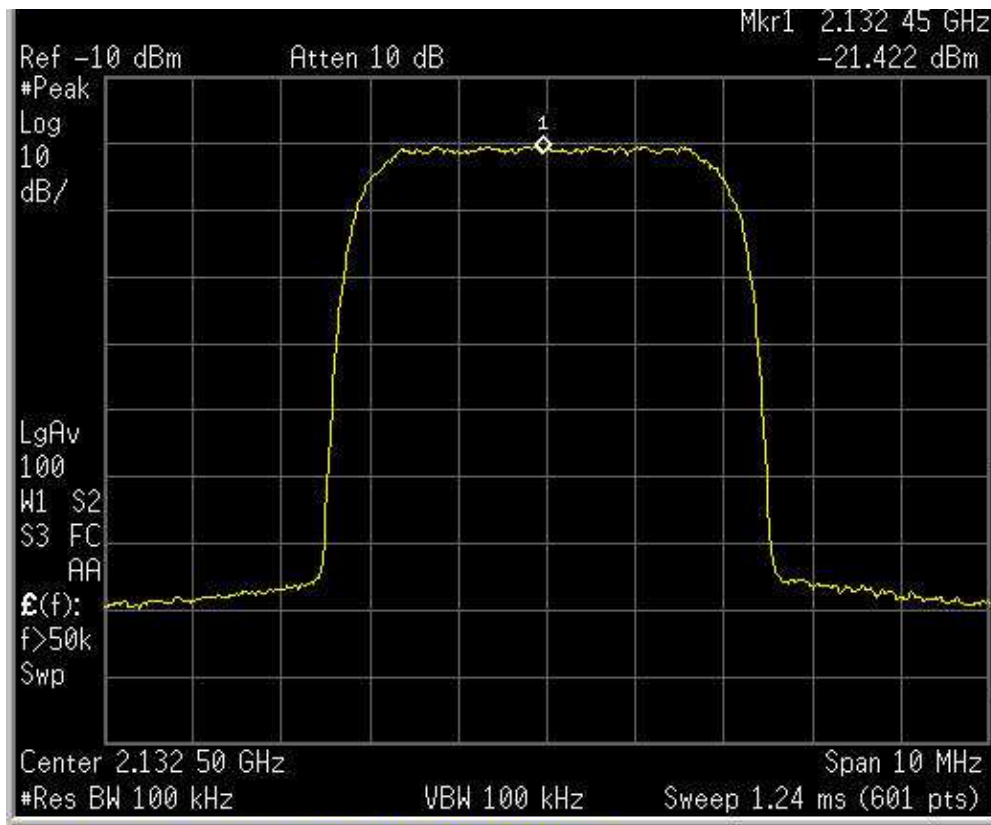
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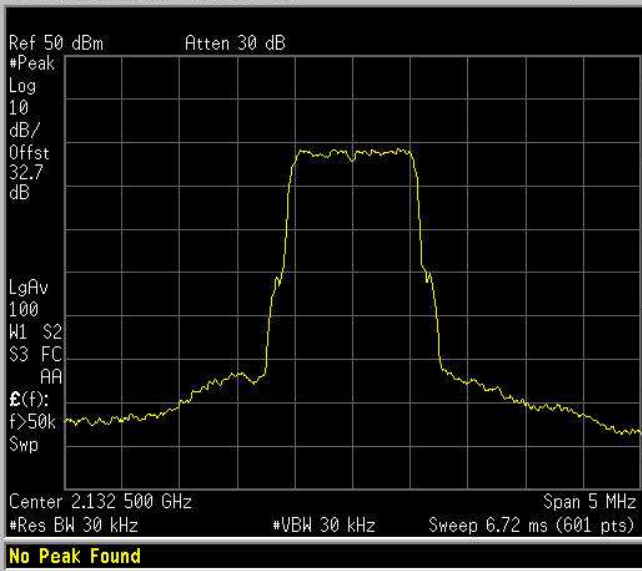
Test Data – Occupied Bandwidth
WCDMA
Downlink
OUTPUT



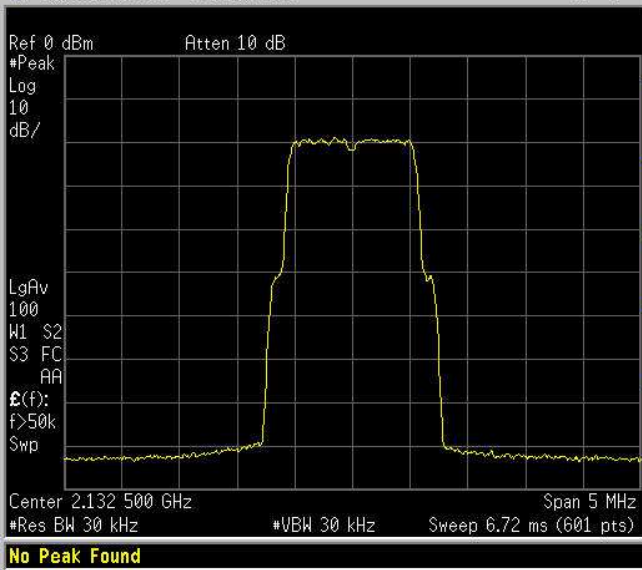
Test Data – Occupied Bandwidth
WCDMA
Downlink
INPUT



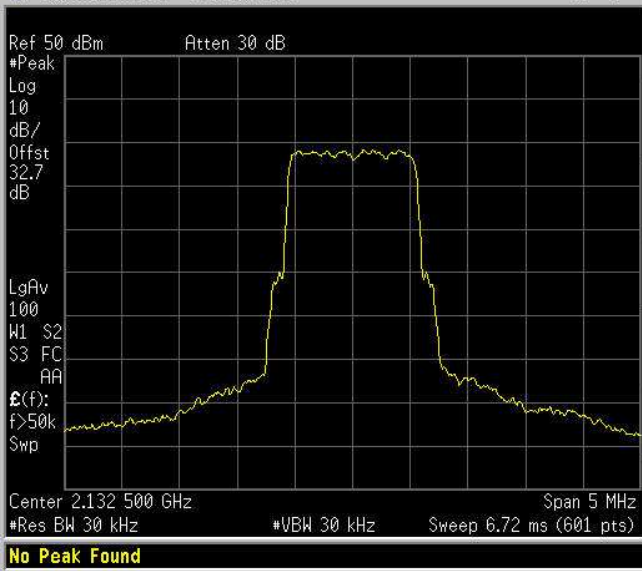
Occupied Bandwidth
Downlink – 1.4 QAM
OUTPUT



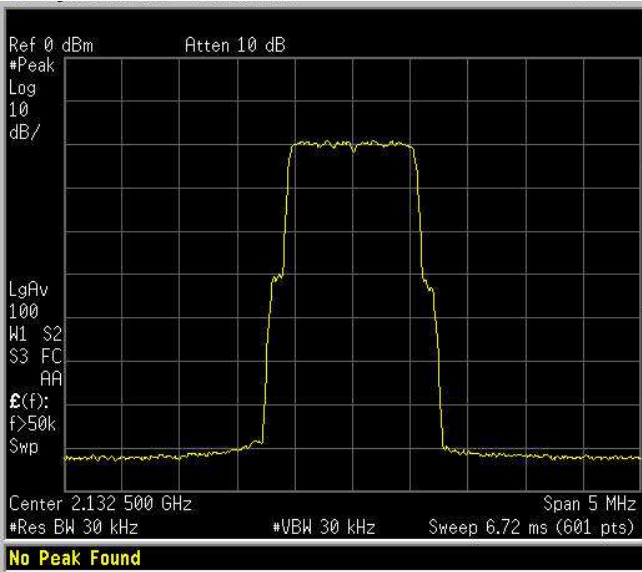
Occupied Bandwidth
Downlink – 1.4 QAM
INPUT



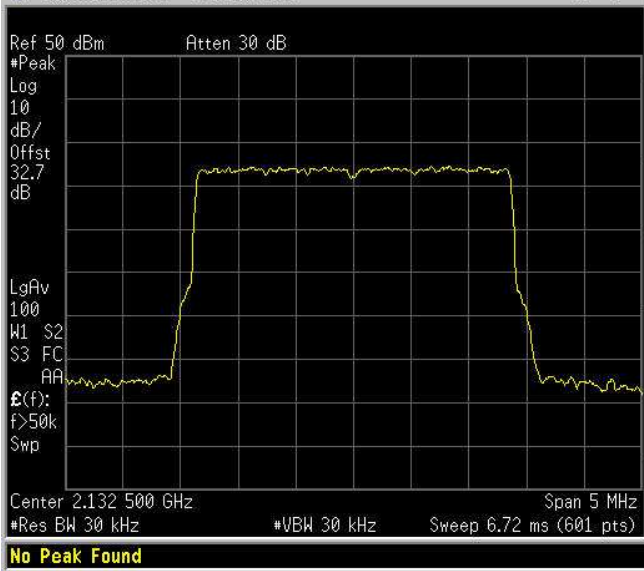
Occupied Bandwidth
Downlink – 1.4 QPSK
OUTPUT



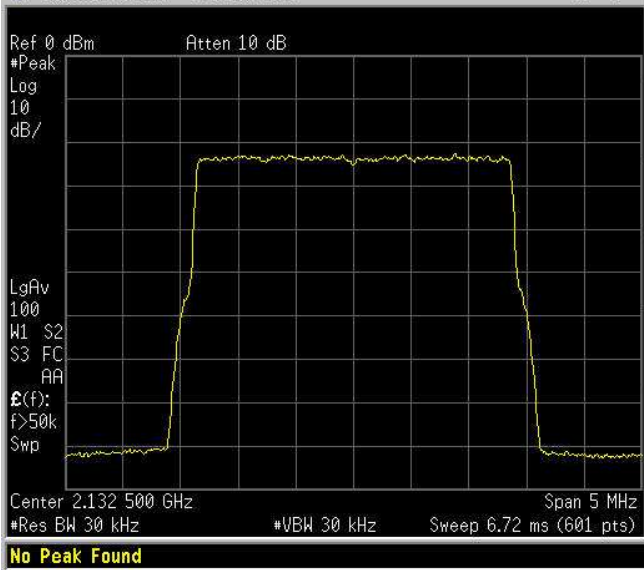
Occupied Bandwidth
Downlink – 1.4 QPSK
INPUT



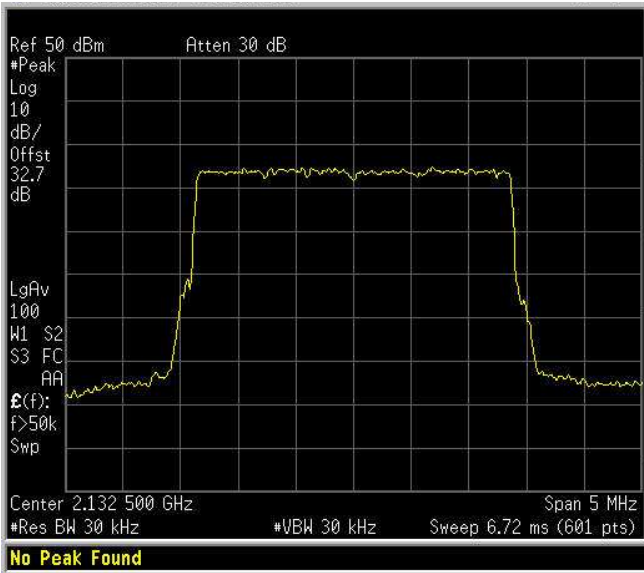
Occupied Bandwidth
Downlink – 3 QAM
OUTPUT



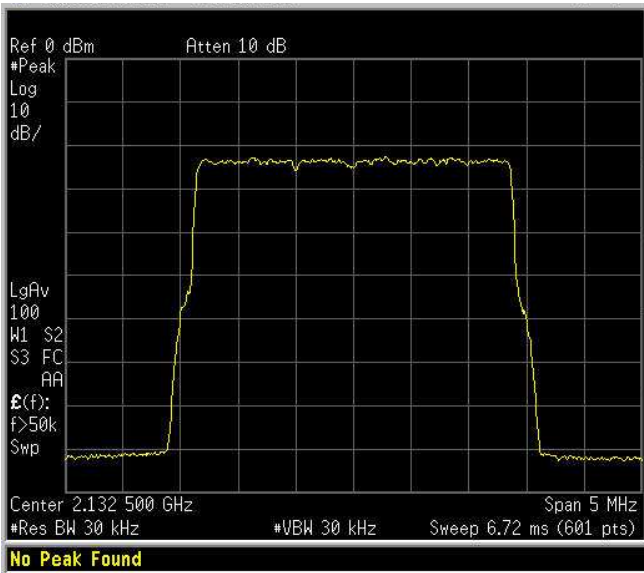
Occupied Bandwidth
Downlink – 3 QAM
INPUT



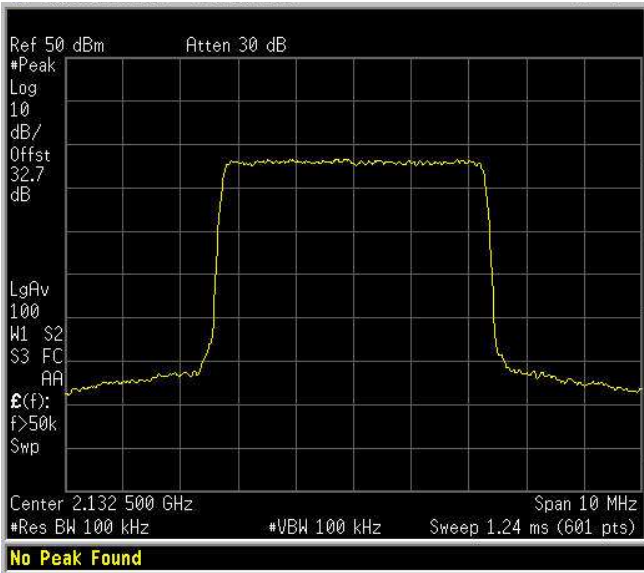
Occupied Bandwidth
Downlink – 3 QPSK
OUTPUT



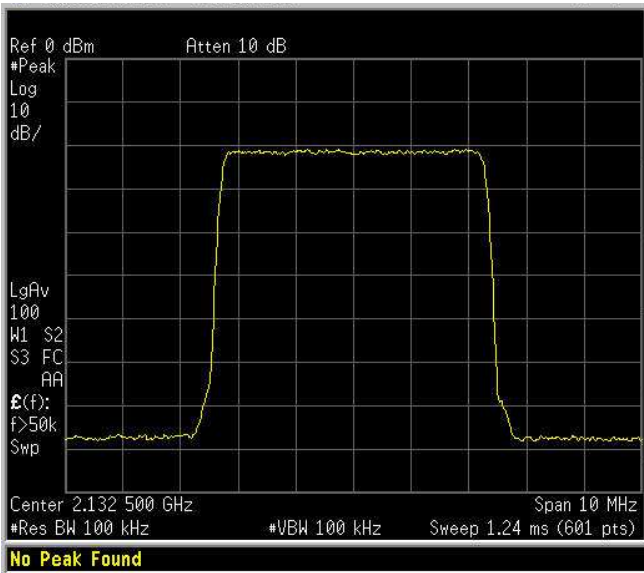
Occupied Bandwidth
Downlink – 3 QPSK
INPUT



Occupied Bandwidth
Downlink – 5 QAM
OUTPUT

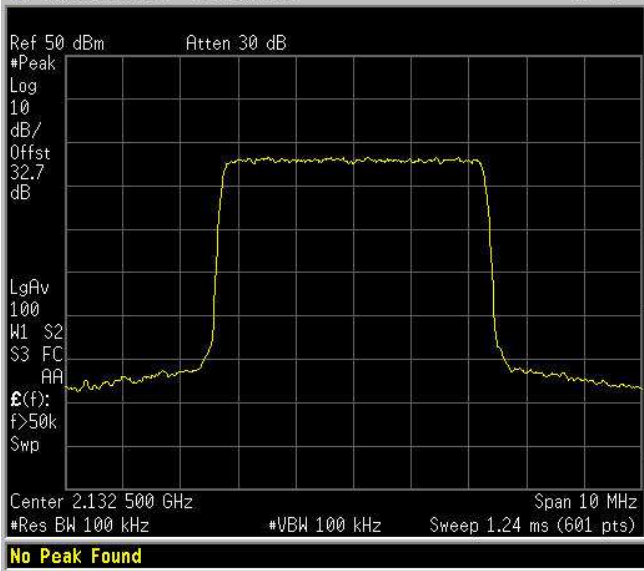


Occupied Bandwidth
Downlink – 5 QAM
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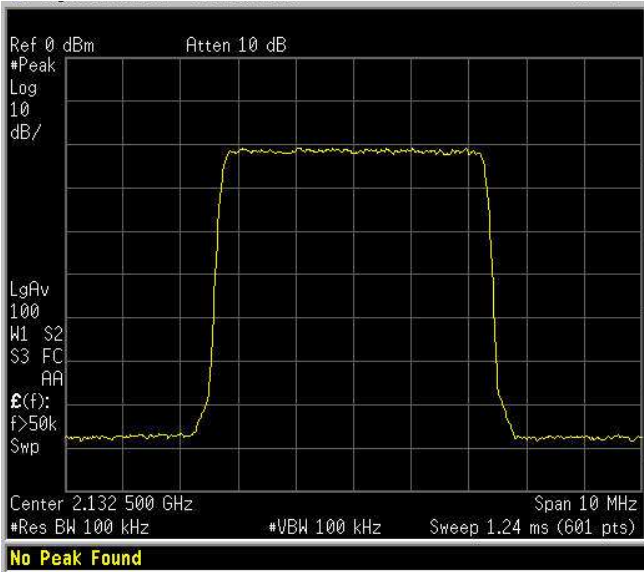




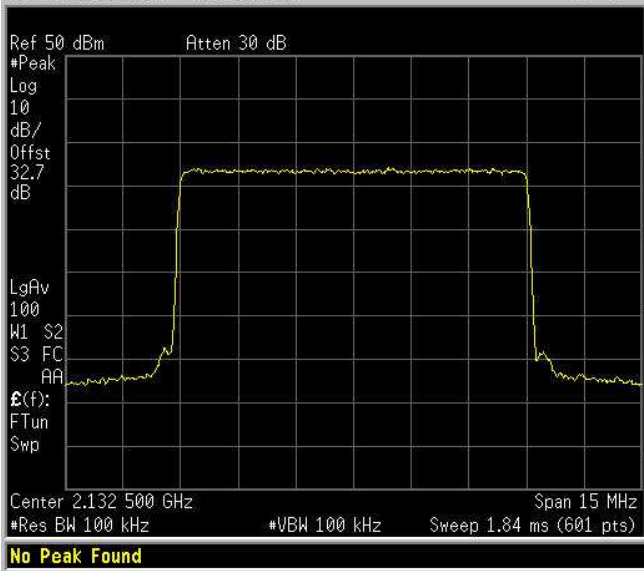
Occupied Bandwidth
Downlink – 5 QPSK
OUTPUT



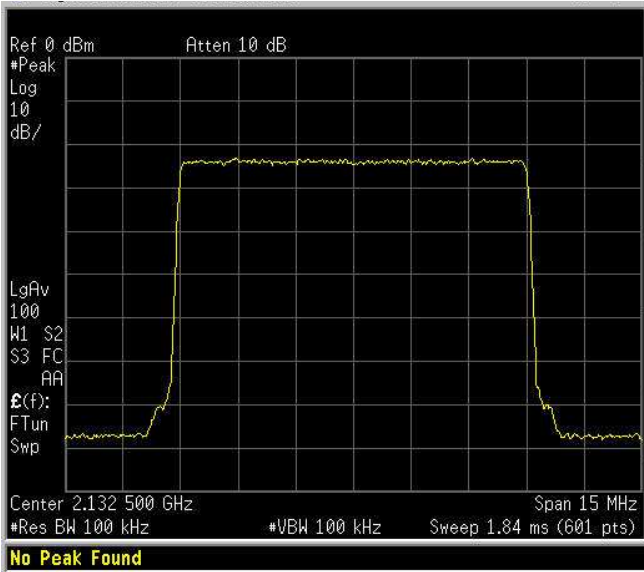
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Downlink – 5 QPSK
INPUT



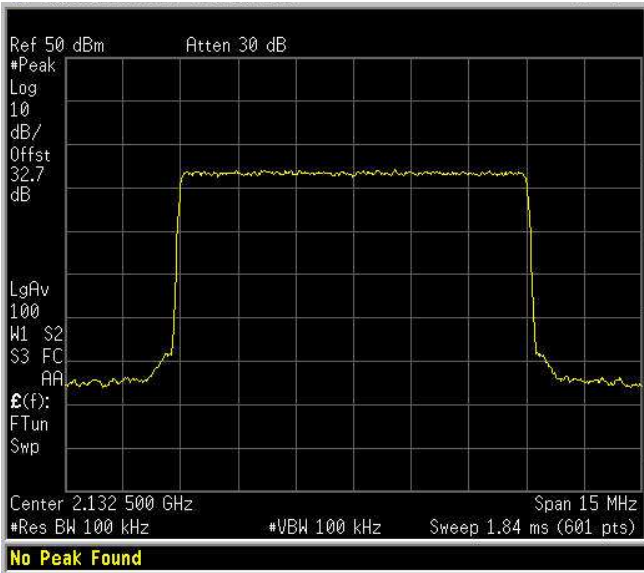
Occupied Bandwidth
Downlink – 10 QAM
OUTPUT



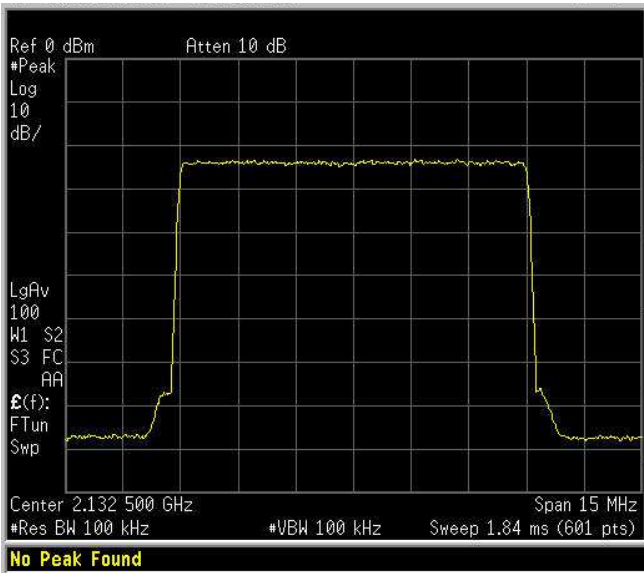
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Downlink – 10 QAM
INPUT



Occupied Bandwidth
Downlink – 10 QPSK
OUTPUT

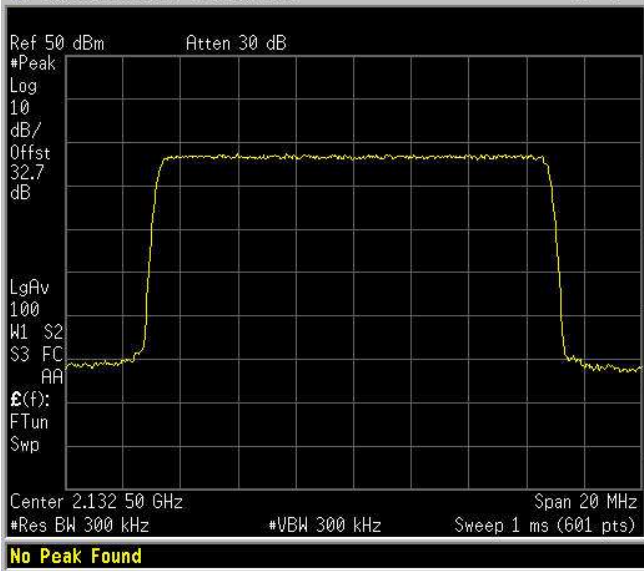


Occupied Bandwidth
Downlink – 10 QPSK
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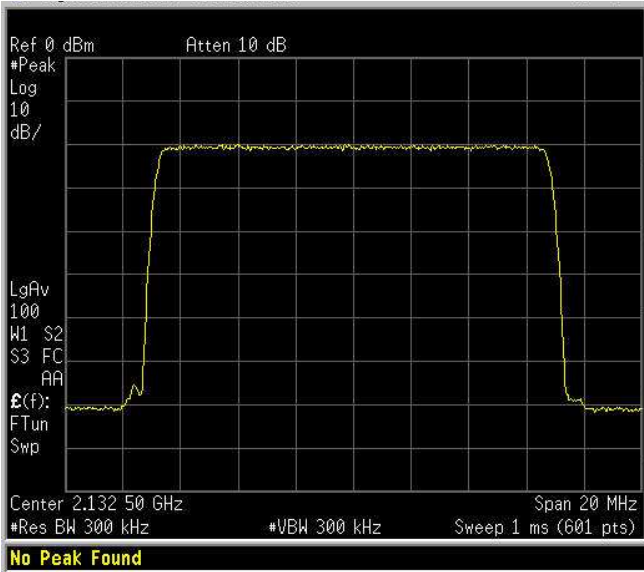




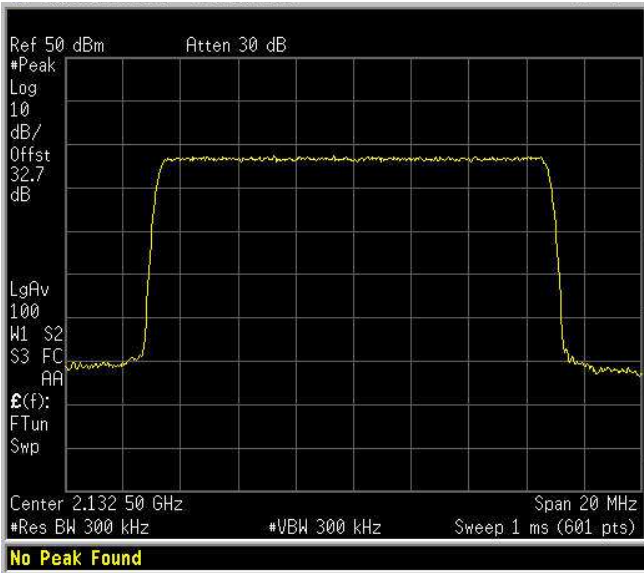
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OUTPUT



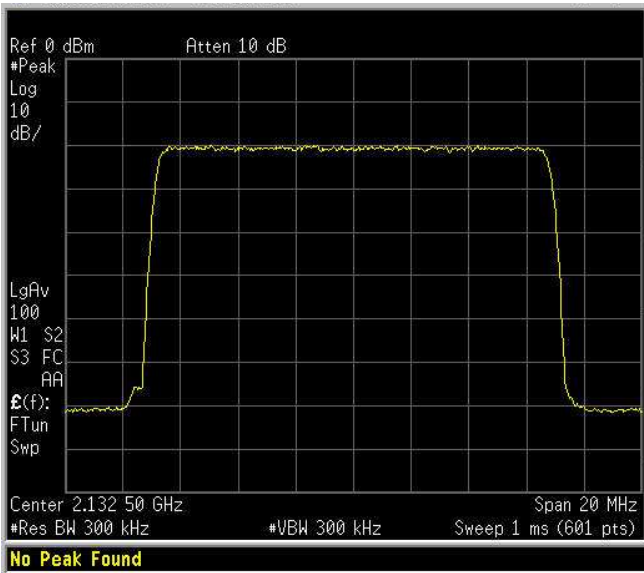
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Downlink – 15 QAM
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Occupied Bandwidth
Downlink – 15 QPSK
OUTPUT

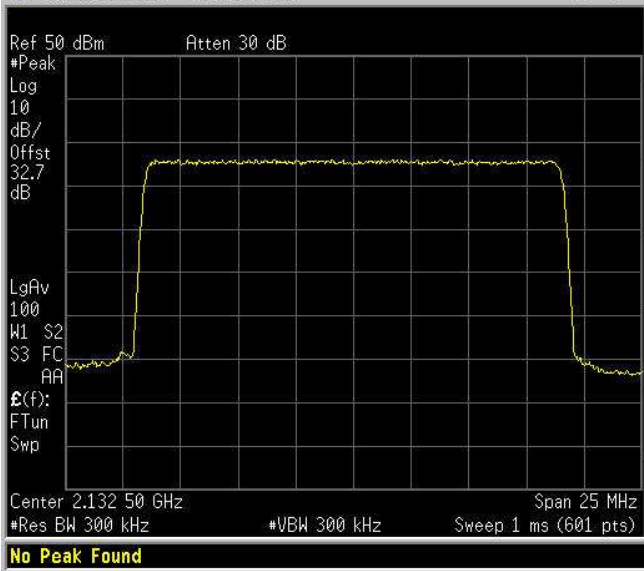


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Downlink – 15 QPSK
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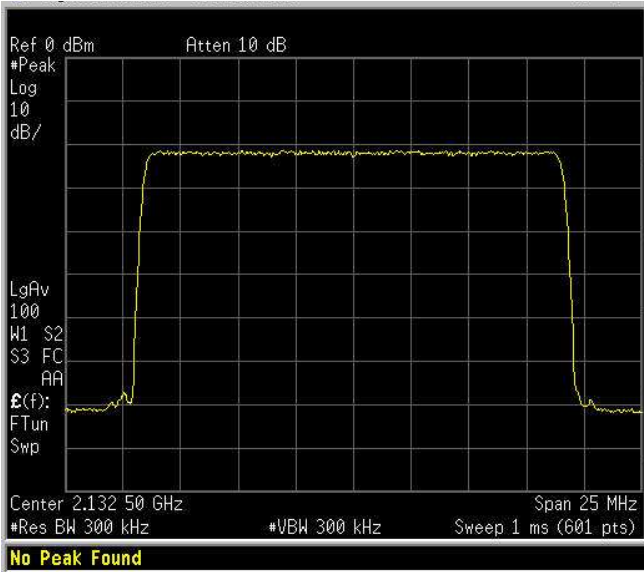




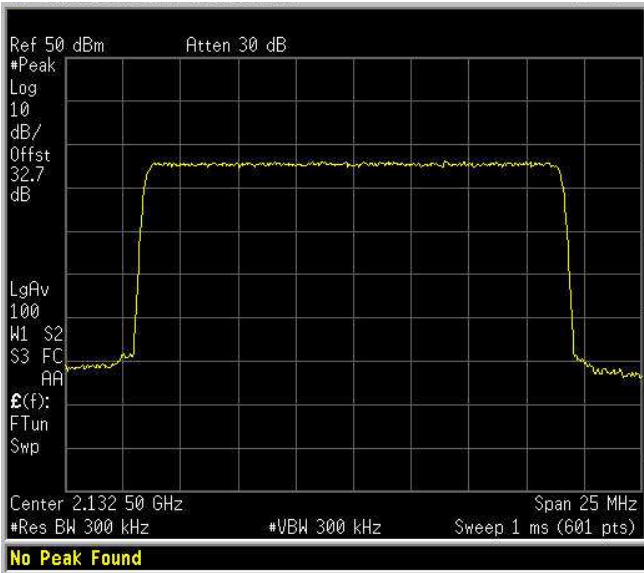
Occupied Bandwidth
Downlink – 20 QAM
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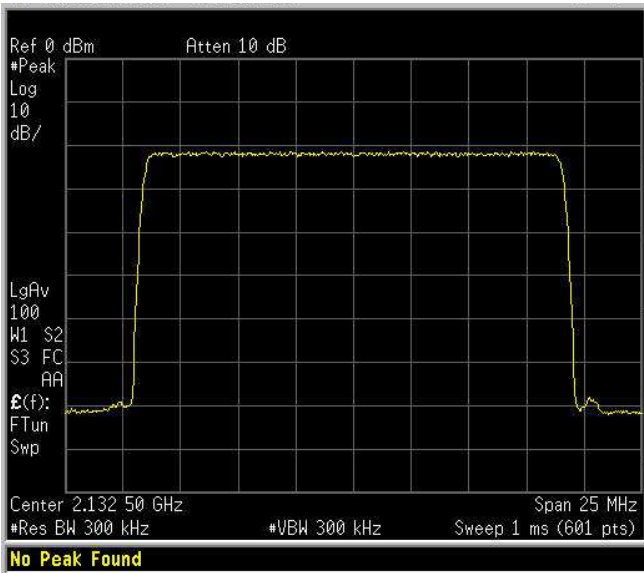
Occupied Bandwidth
Downlink – 20 QAM
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Occupied Bandwidth
Downlink – 20 QPSK
OUTPUT



Occupied Bandwidth
Downlink – 20 QPSK
INPUT



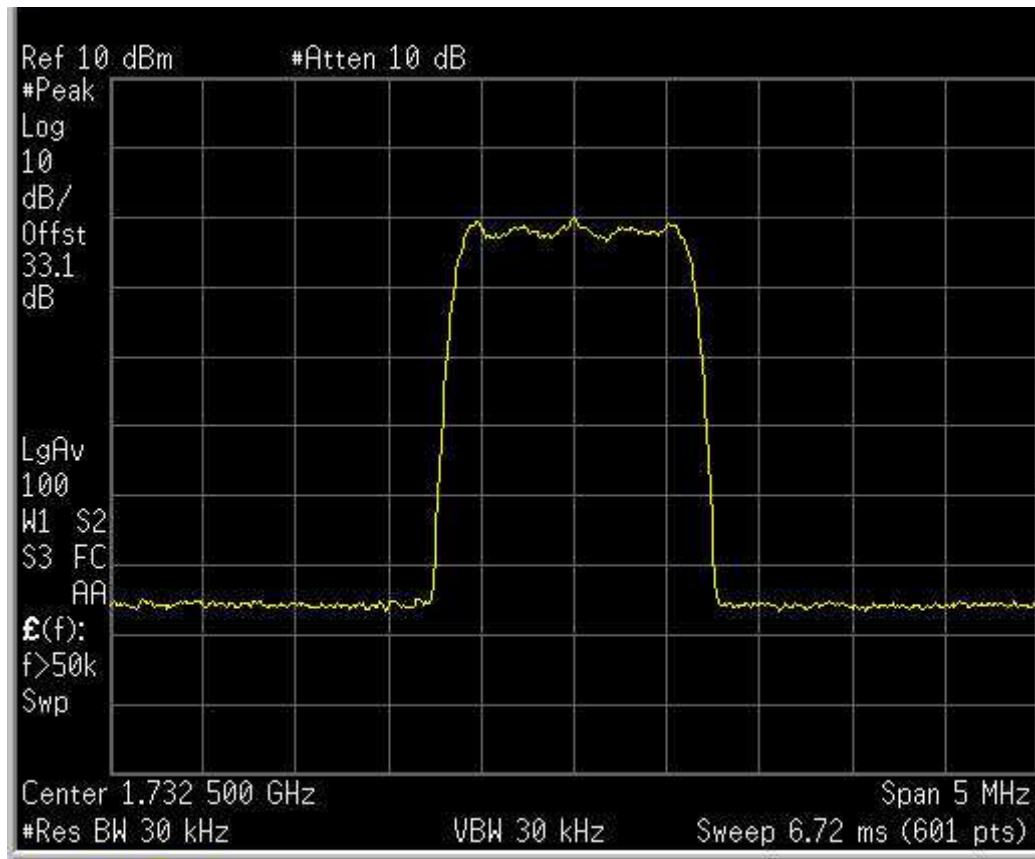


Test Data – Occupied Bandwidth

CDMA

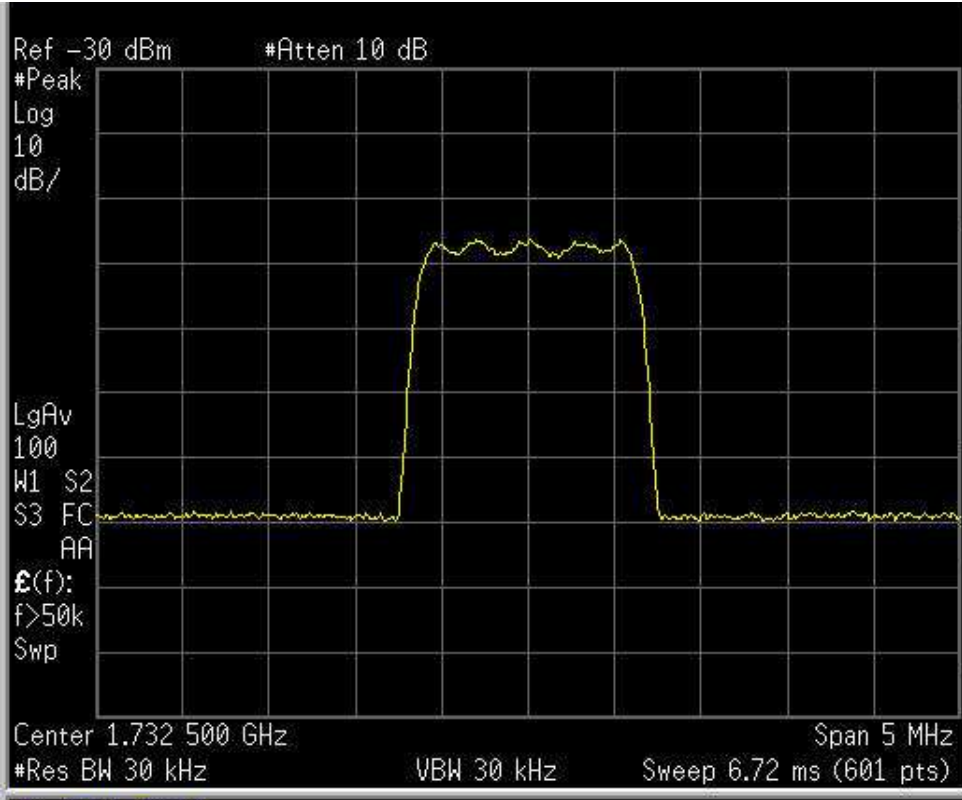
Uplink

OUTPUT

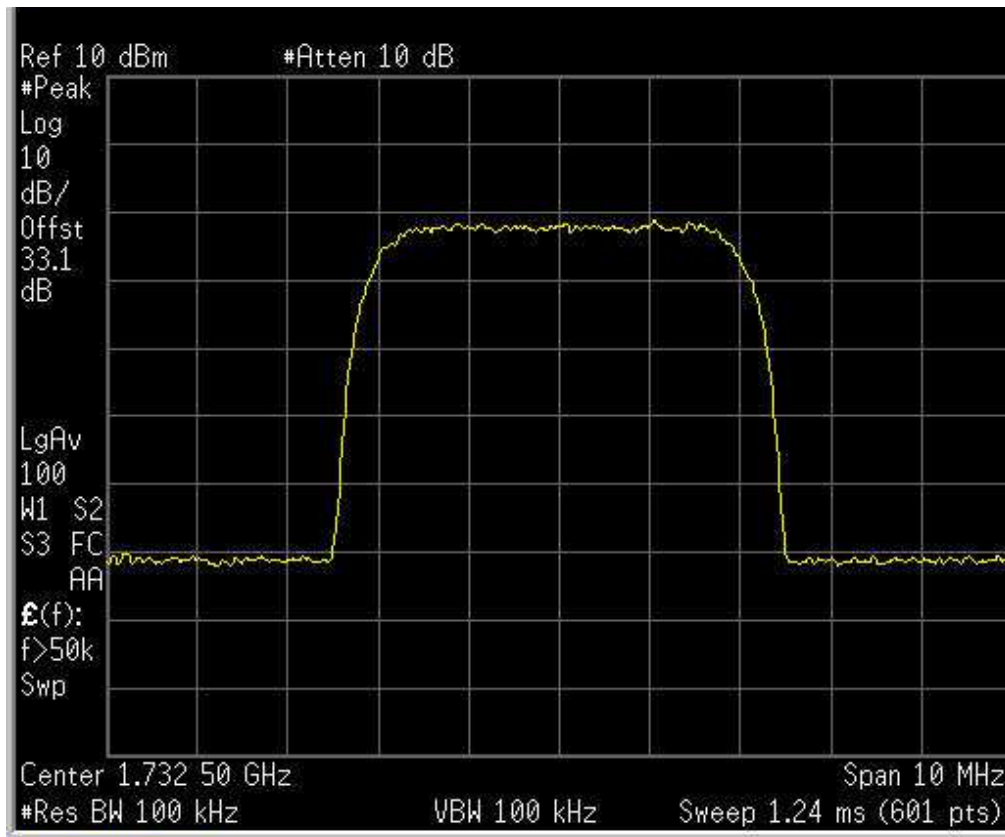




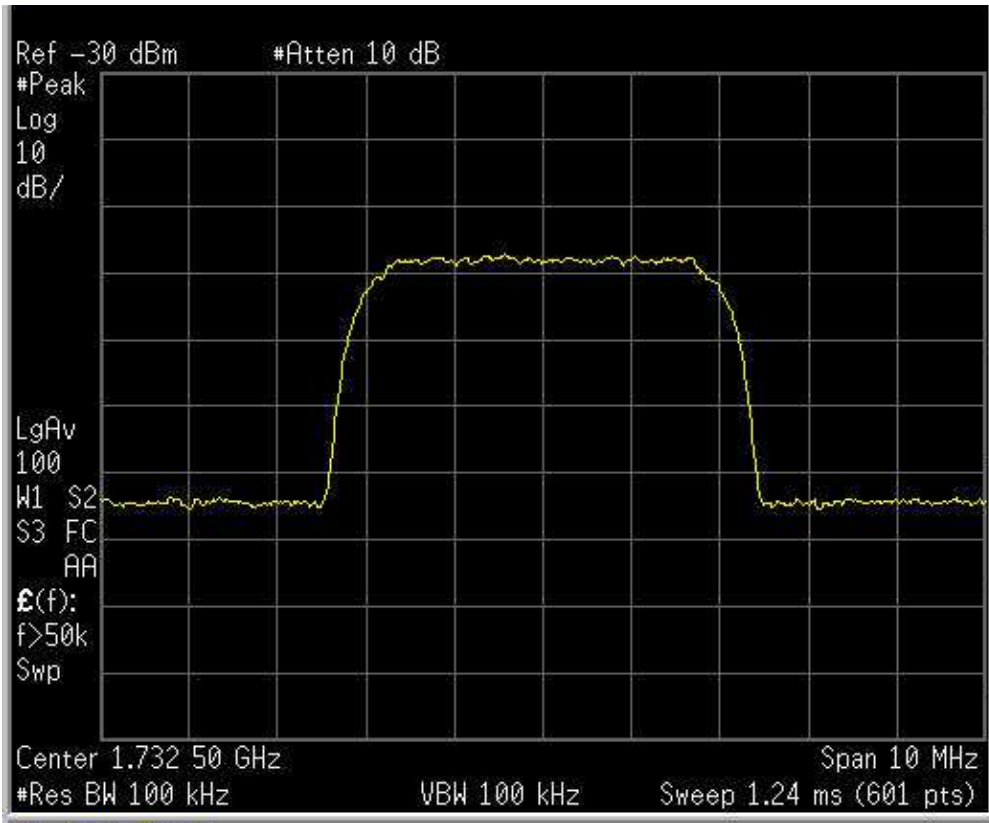
Test Data – Occupied Bandwidth
CDMA
Uplink
INPUT



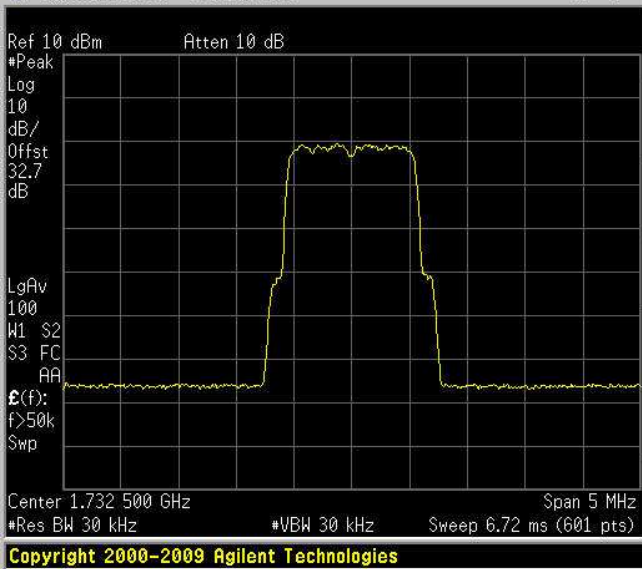
Test Data – Occupied Bandwidth
WCDMA
Uplink
OUTPUT



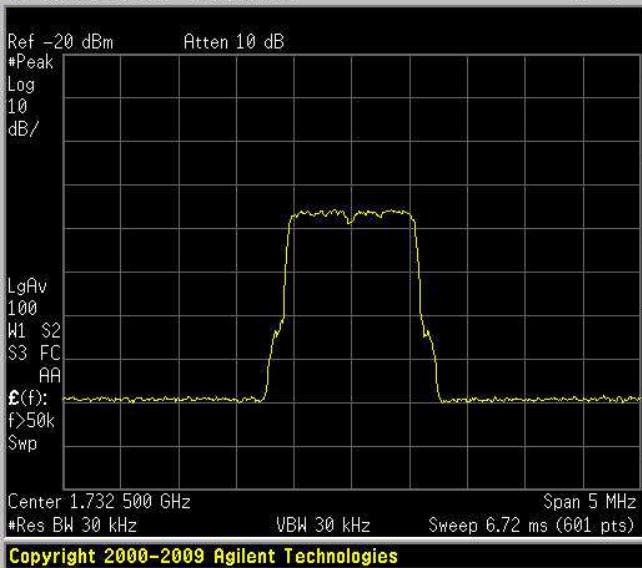
Test Data – Occupied Bandwidth
WCDMA
Uplink
INPUT



Occupied Bandwidth
Uplink – 1,4 QAM
OUTPUT

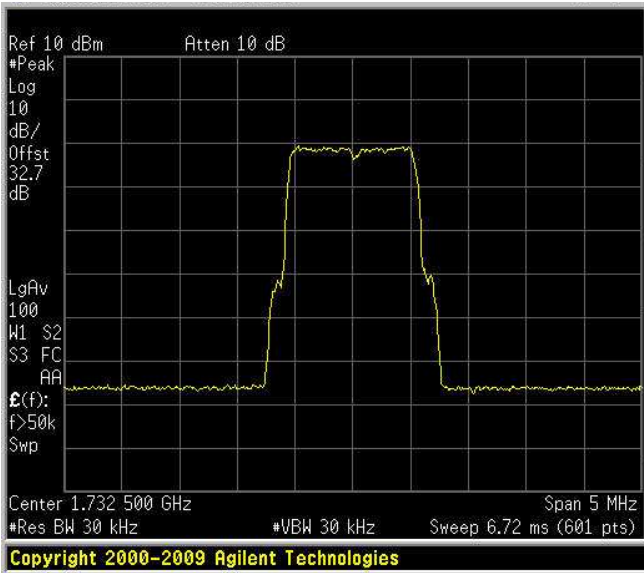


Occupied Bandwidth
Uplink – 1,4 QAM
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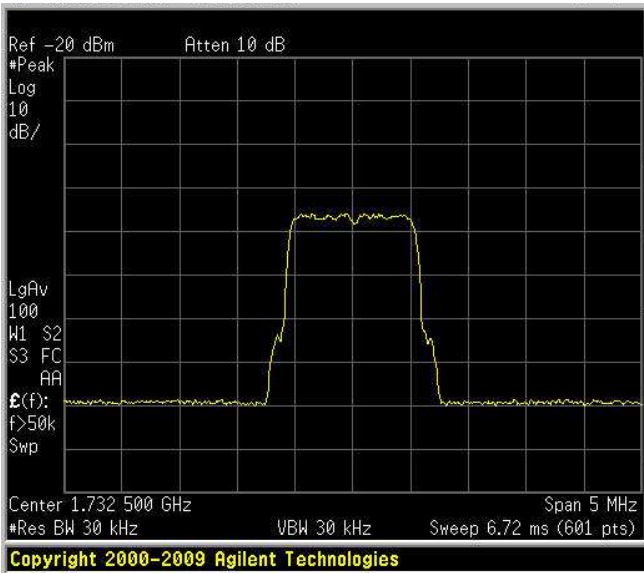




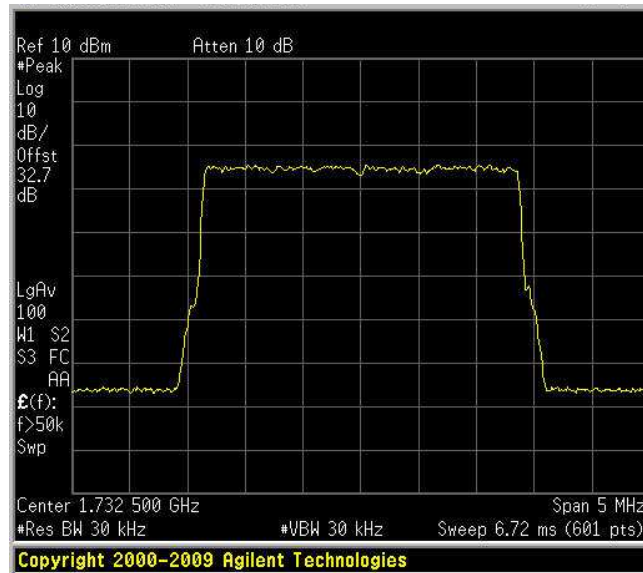
Occupied Bandwidth
Uplink – 1,4 QPSK
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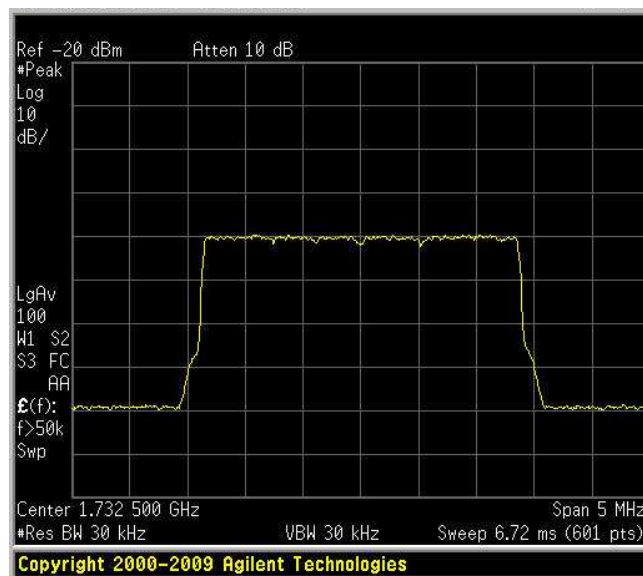
Occupied Bandwidth
Uplink – 1,4 QPSK
INPUT



Occupied Bandwidth
Uplink – 3 QAM
OUTPUT

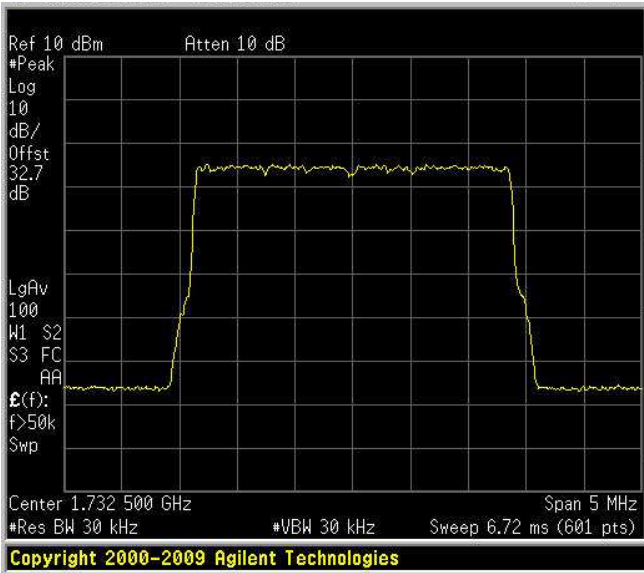


Occupied Bandwidth
Uplink – 3 QAM
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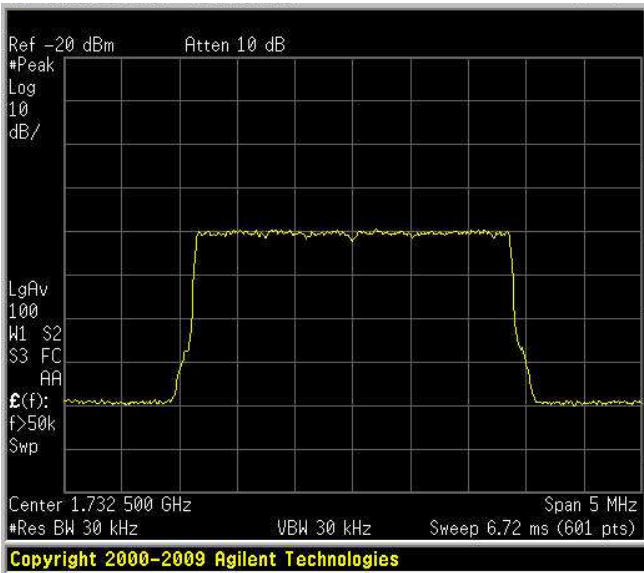




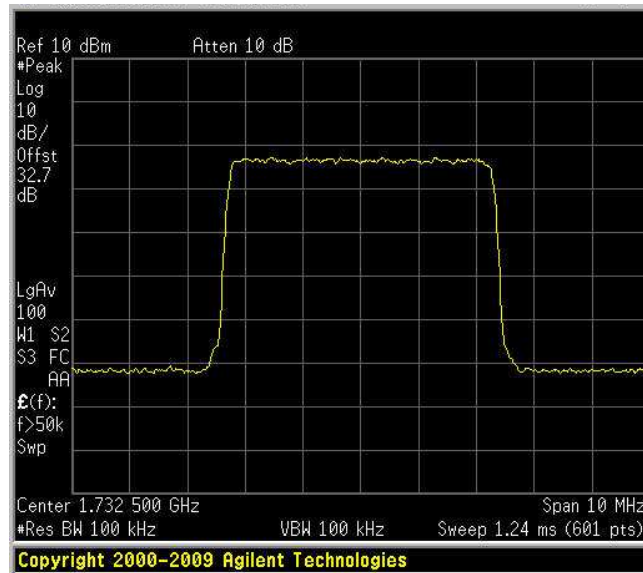
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Uplink – 3 QPSK
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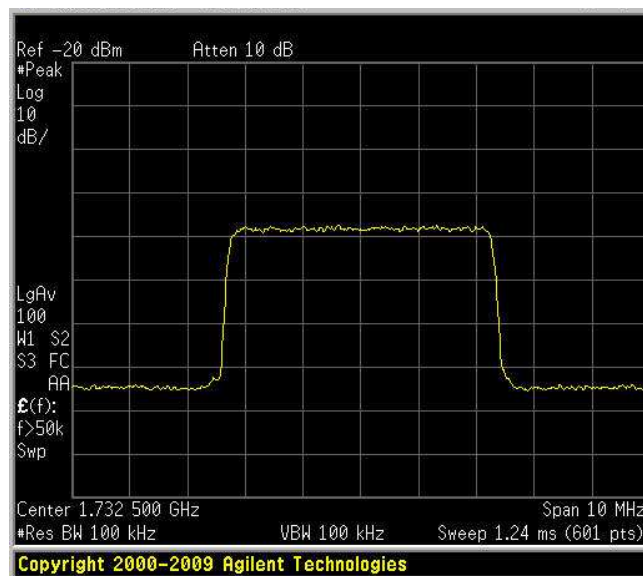
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Uplink – 3 QPSK
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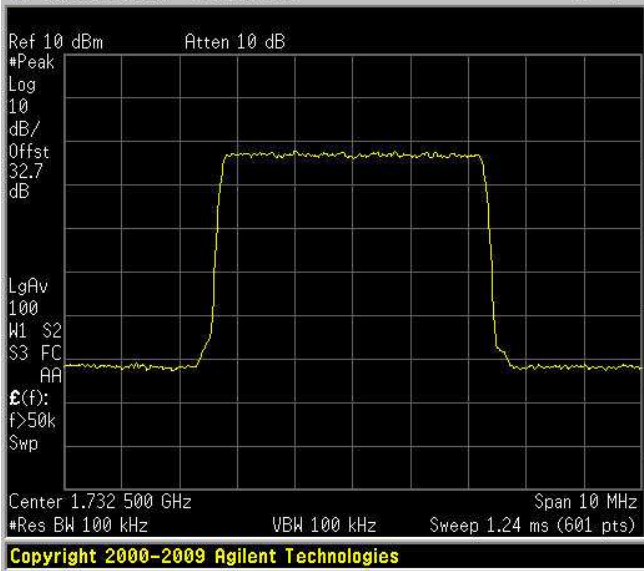
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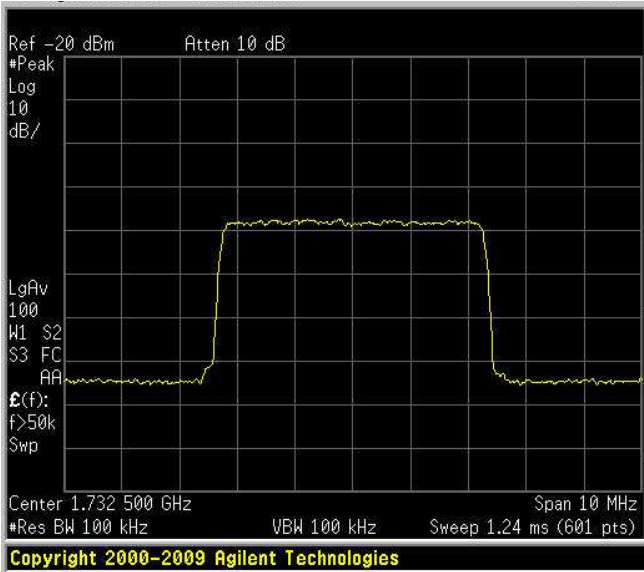
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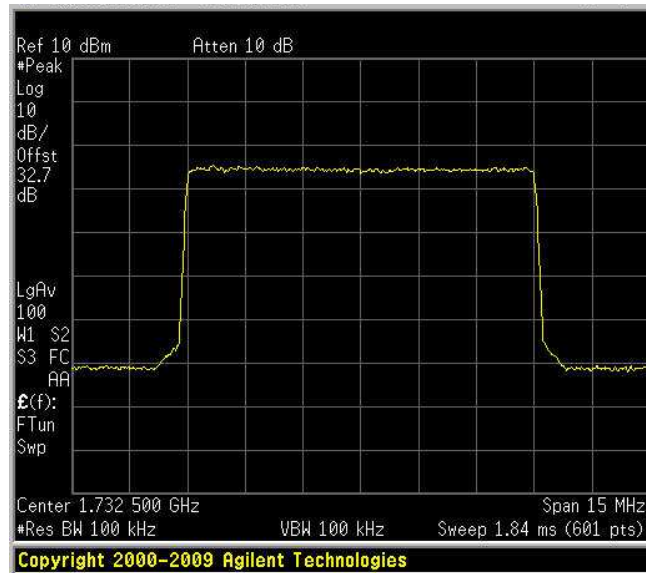
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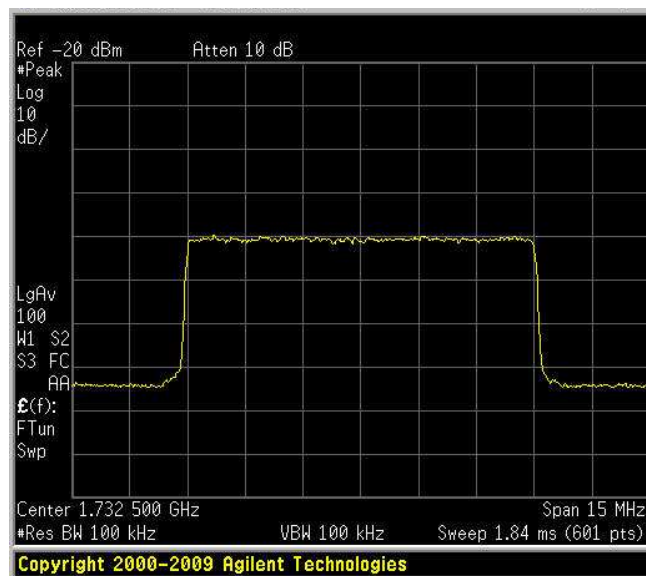
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Uplink – 5 QPSK
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Occupied Bandwidth
Uplink – 10 QAM
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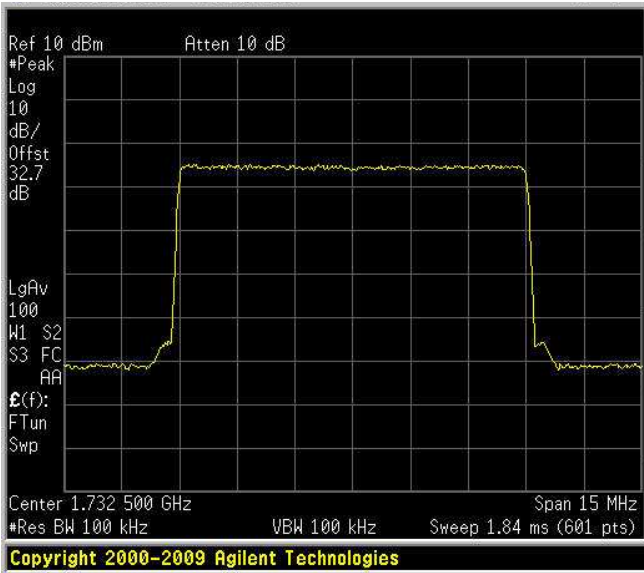


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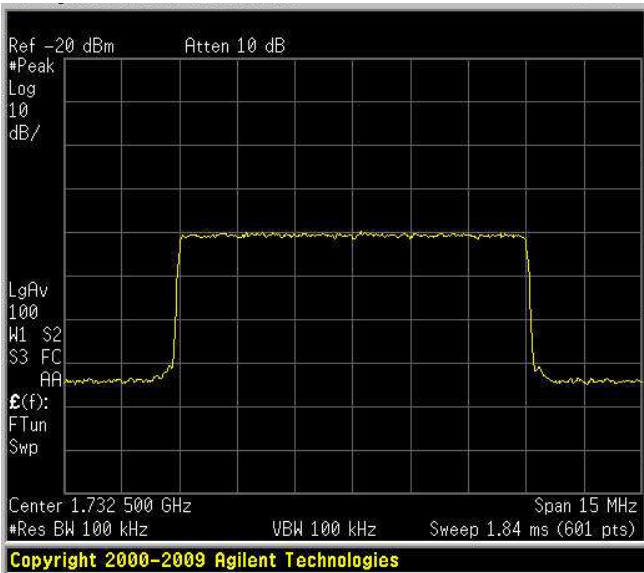




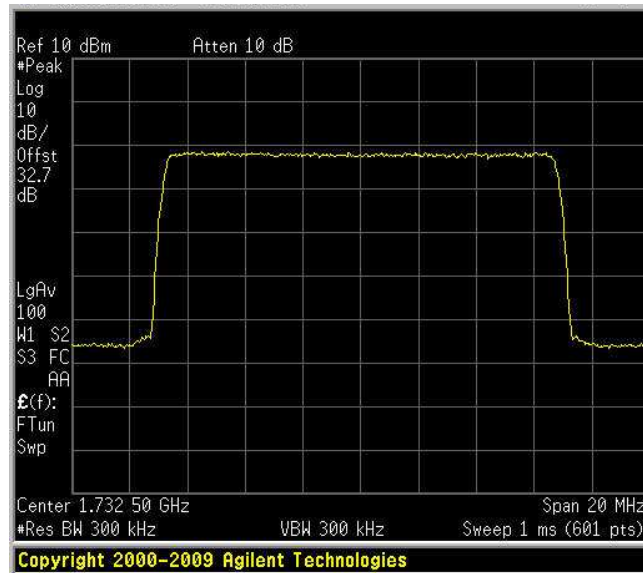
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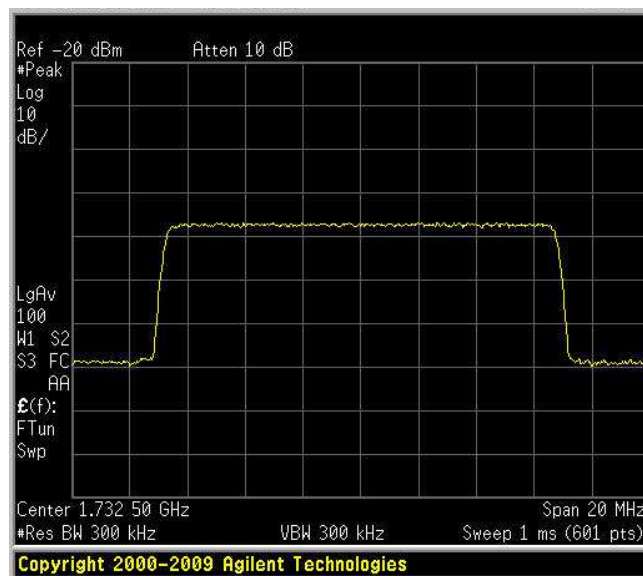
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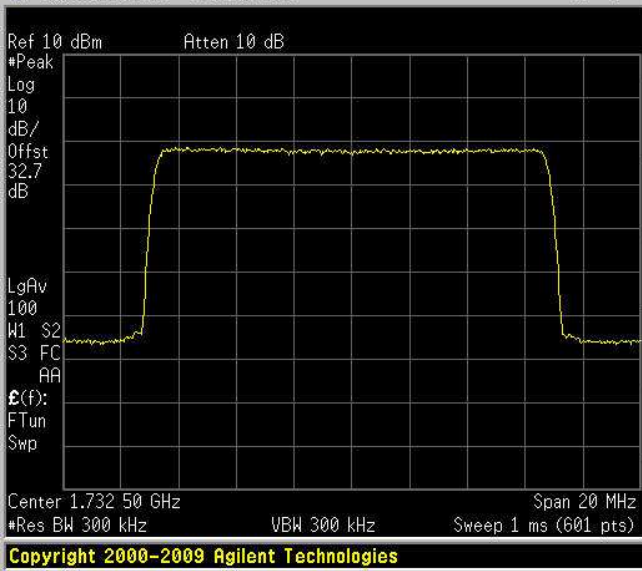
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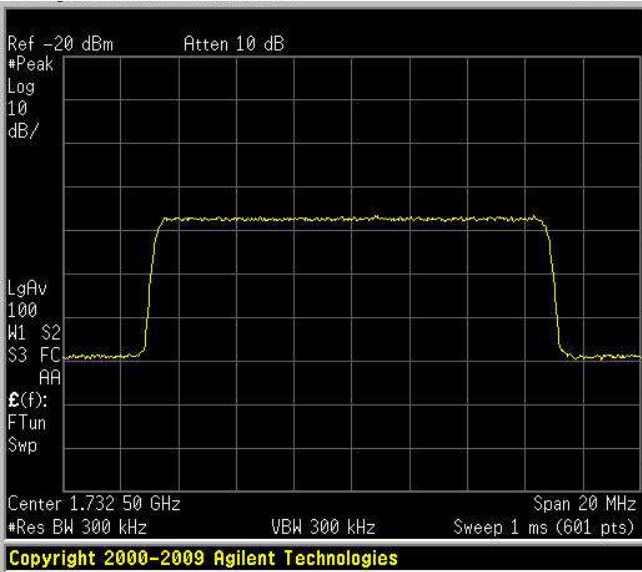
Occupied Bandwidth
Uplink – 15 QAM
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Occupied Bandwidth
Uplink – 15 QPSK
OUTPUT

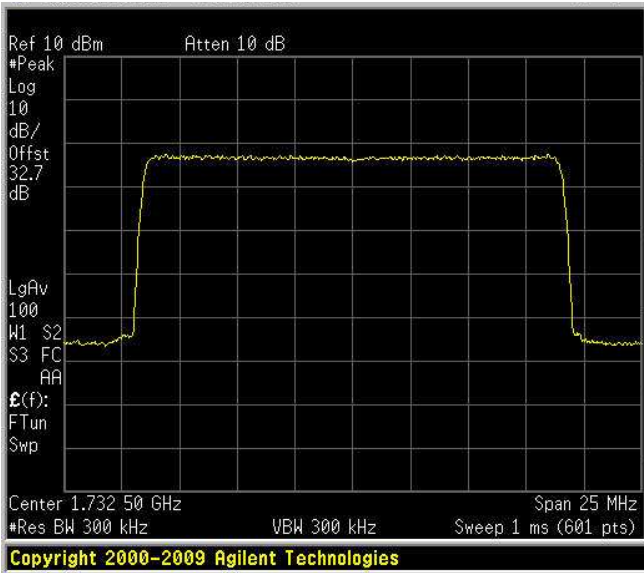


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Uplink – 15 QPSK
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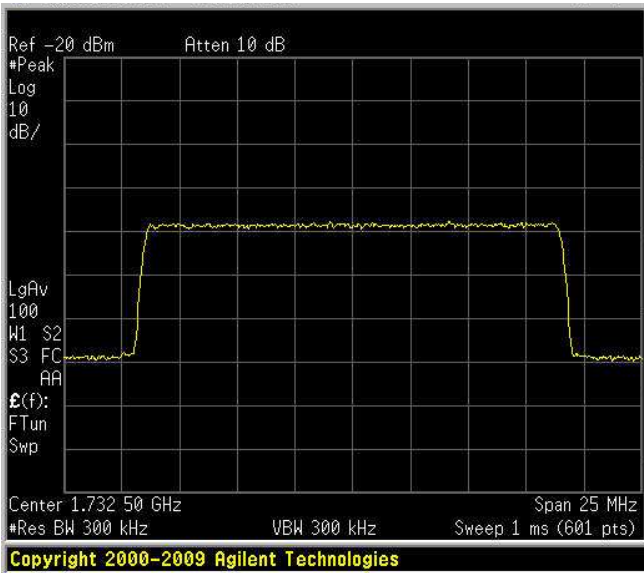




Occupied Bandwidth
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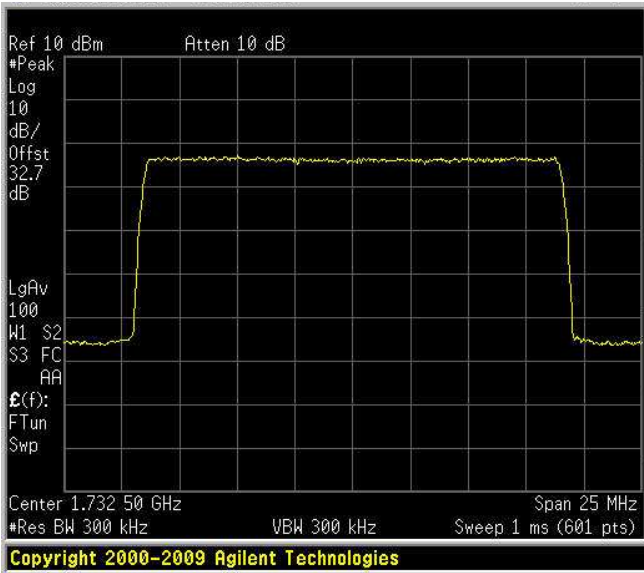


Occupied Bandwidth
Uplink – 20 QAM
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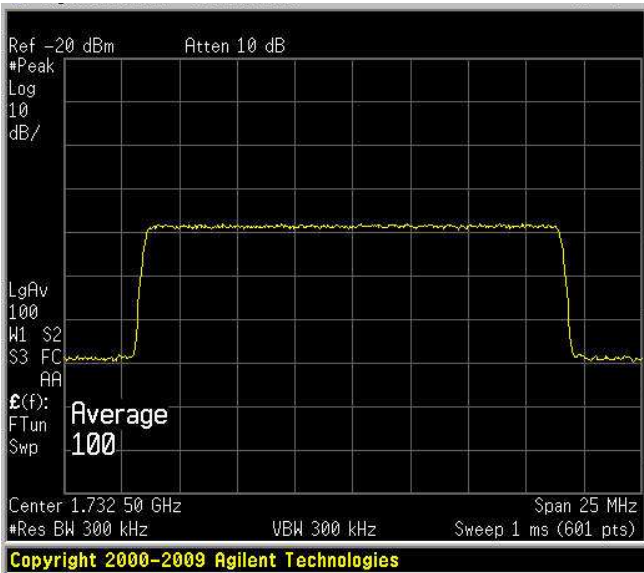





Occupied Bandwidth
Uplink – 20 QPSK
OUTPUT



Occupied Bandwidth
Uplink – 20 QPSK
INPUT



	Section 9: Filter Frequency Response	Product: VHPA0001AWS
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8.8 Clause 2.1047 Modulation characteristics
<p>Unless specified elsewhere in this part, stations will be authorized emissions as provided for in paragraphs (b) through (n) of this section.</p> <p>§ 2.1047 Measurements required: Modulation characteristics.</p> <p>(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.</p> <p>(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.</p> <p>(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.</p> <p>(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.</p>

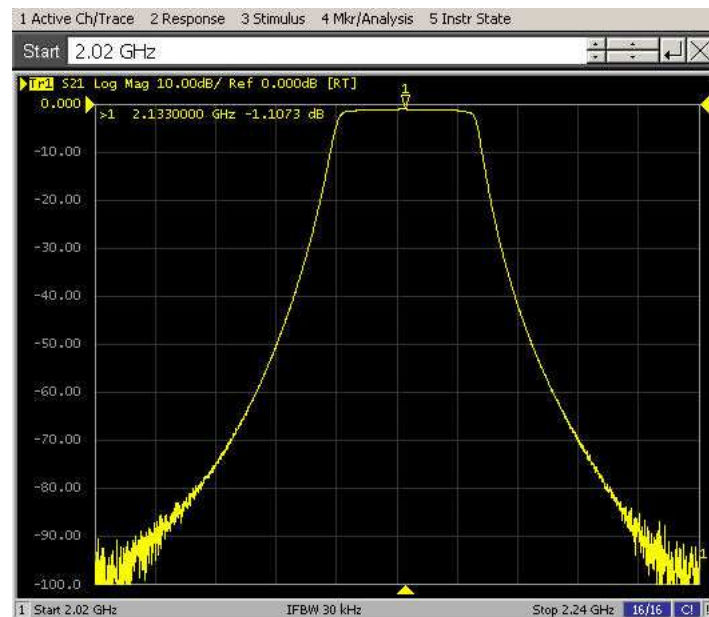
Test date:
Test results:
<div> Test data </div> <div> None </div>

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

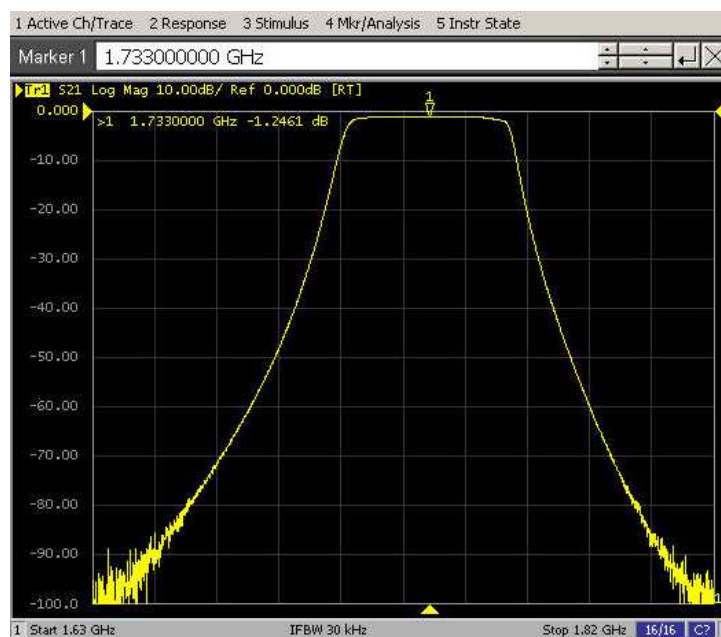
Section 9: Filter Frequency Response

Test date: 2012-06-04

Test results: Pass



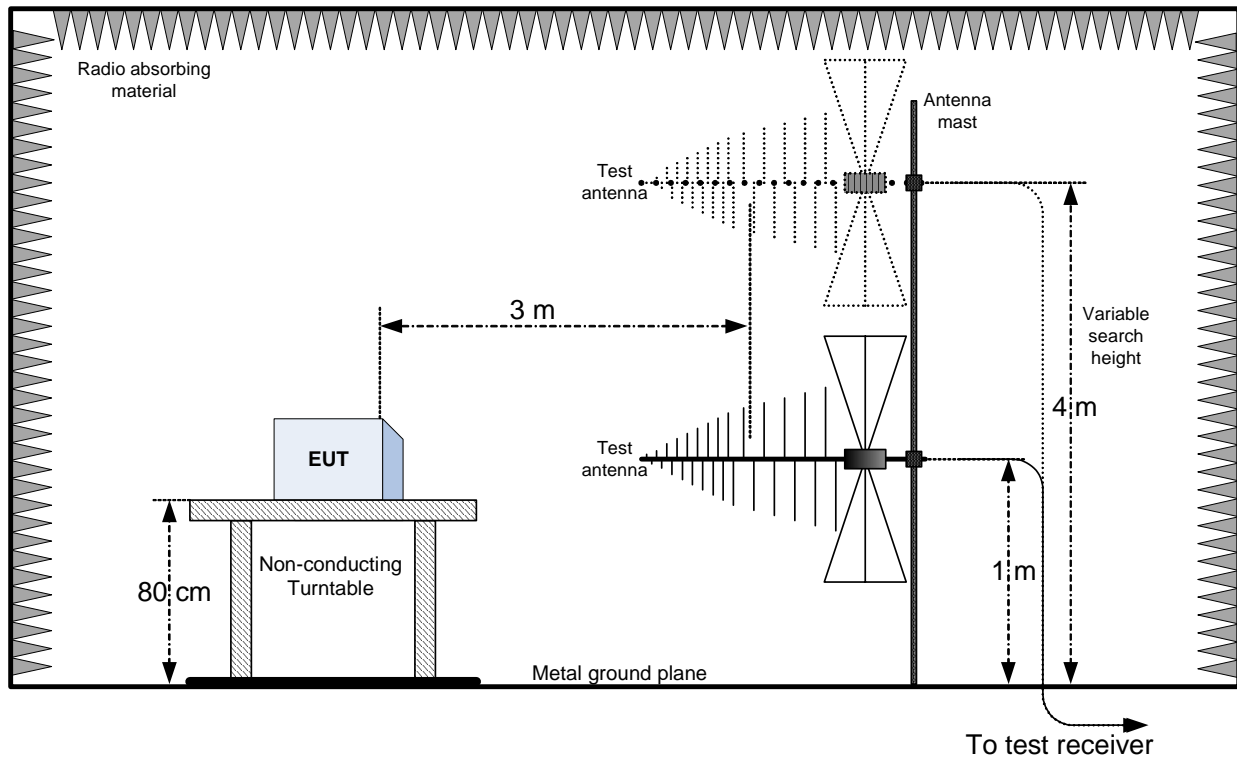
Down-link



Up-link

Section 10: Block diagrams of test set-ups

Radiated emissions set-up



Section 11: EUT photos

Photo Set up

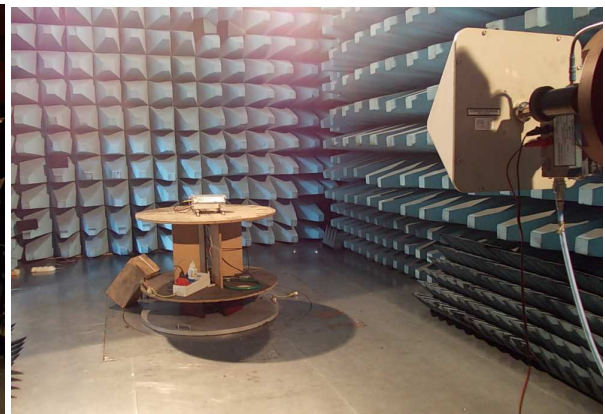
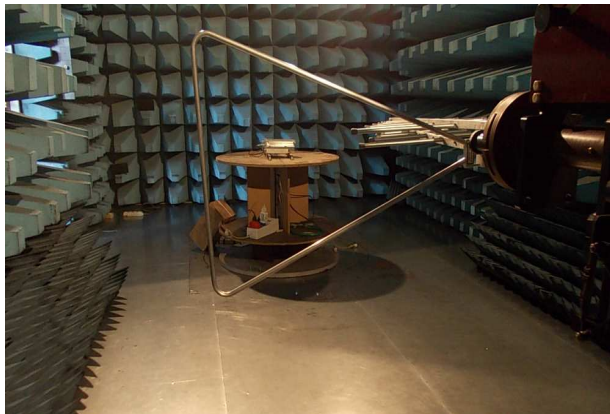
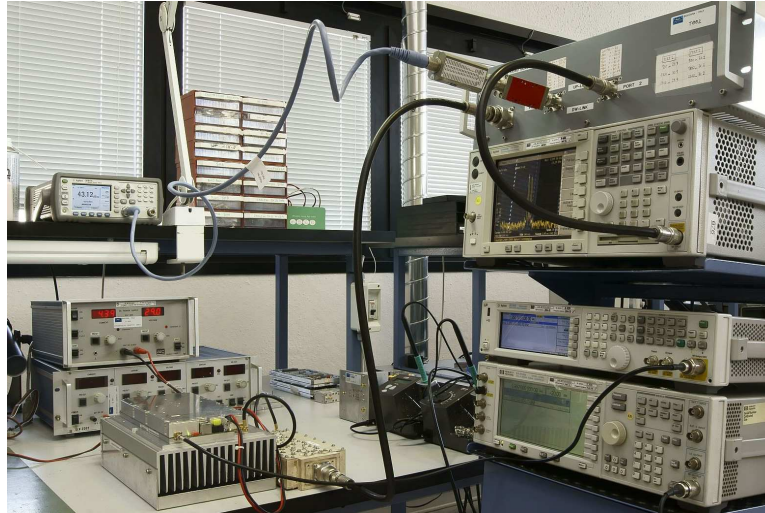




Photo EUT

