Test Data at Output Port 1_64QAM

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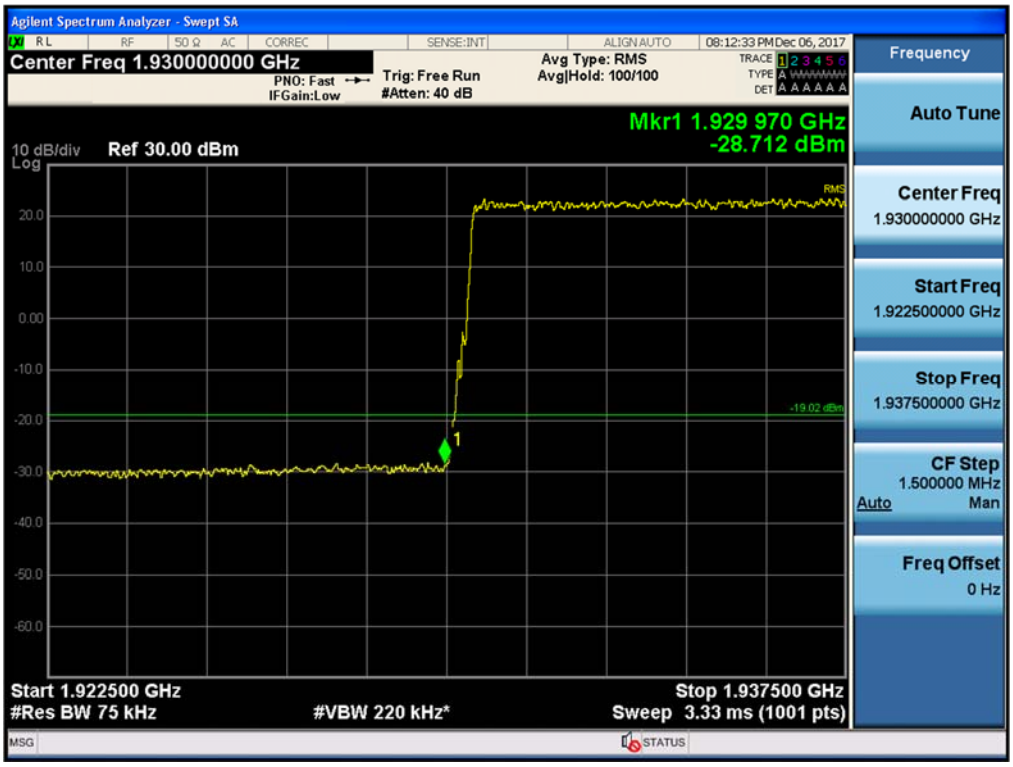

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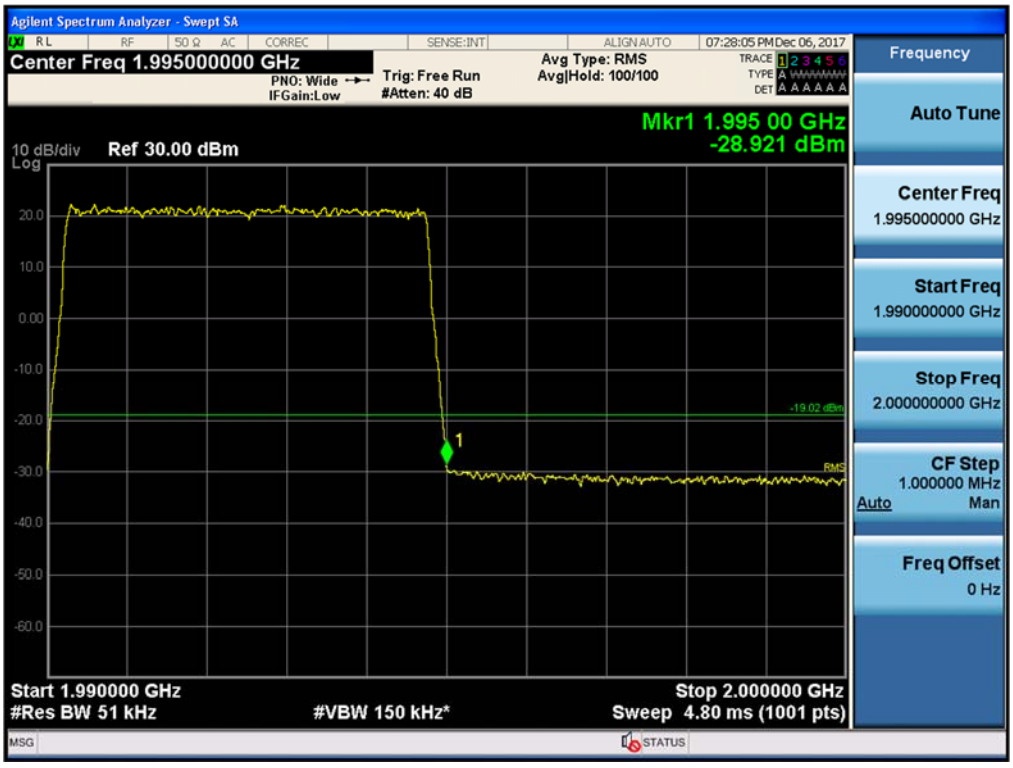

Test Data at Output Port 1_256QAM

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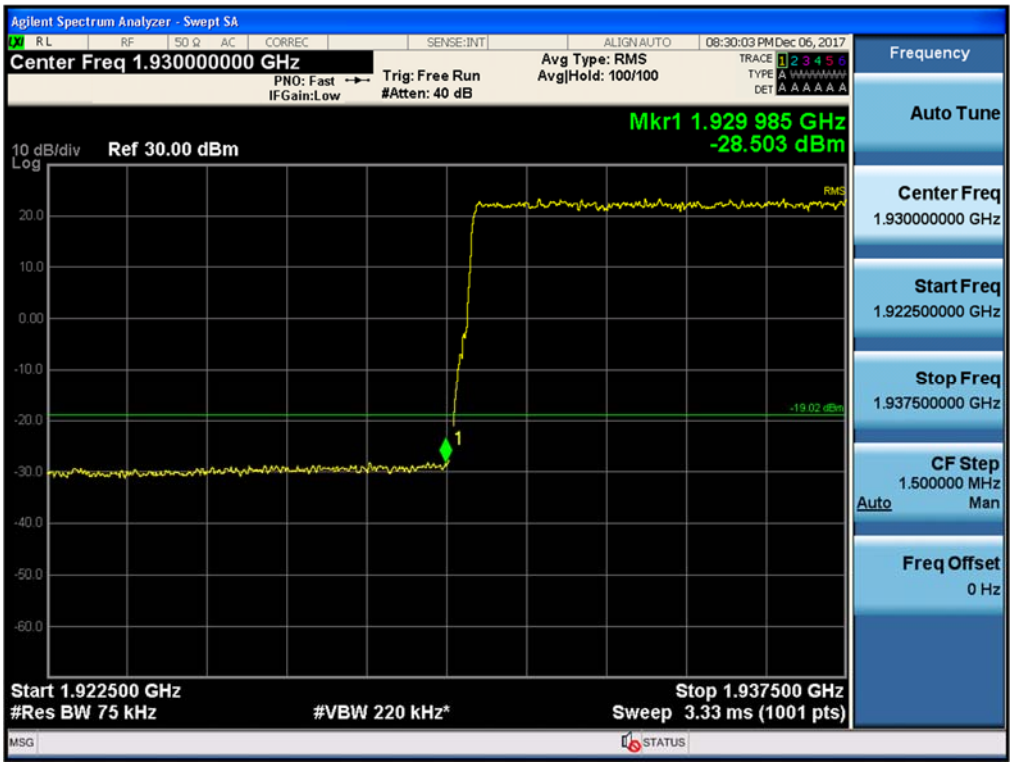

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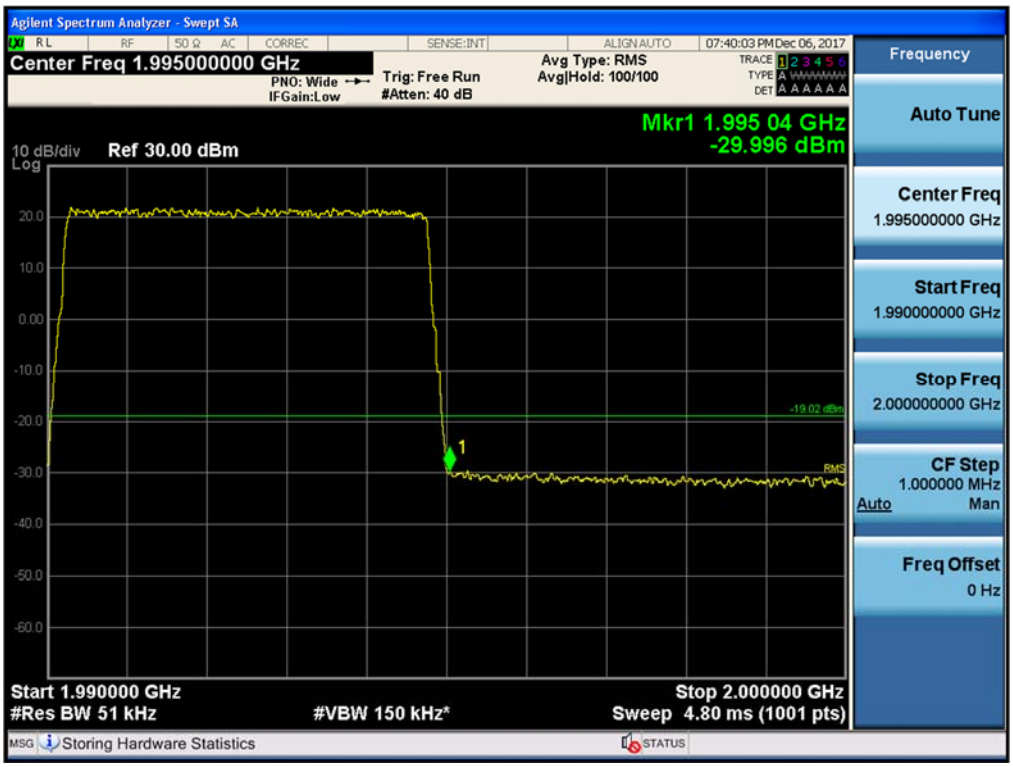

Test Data at Output Port 2_QPSK

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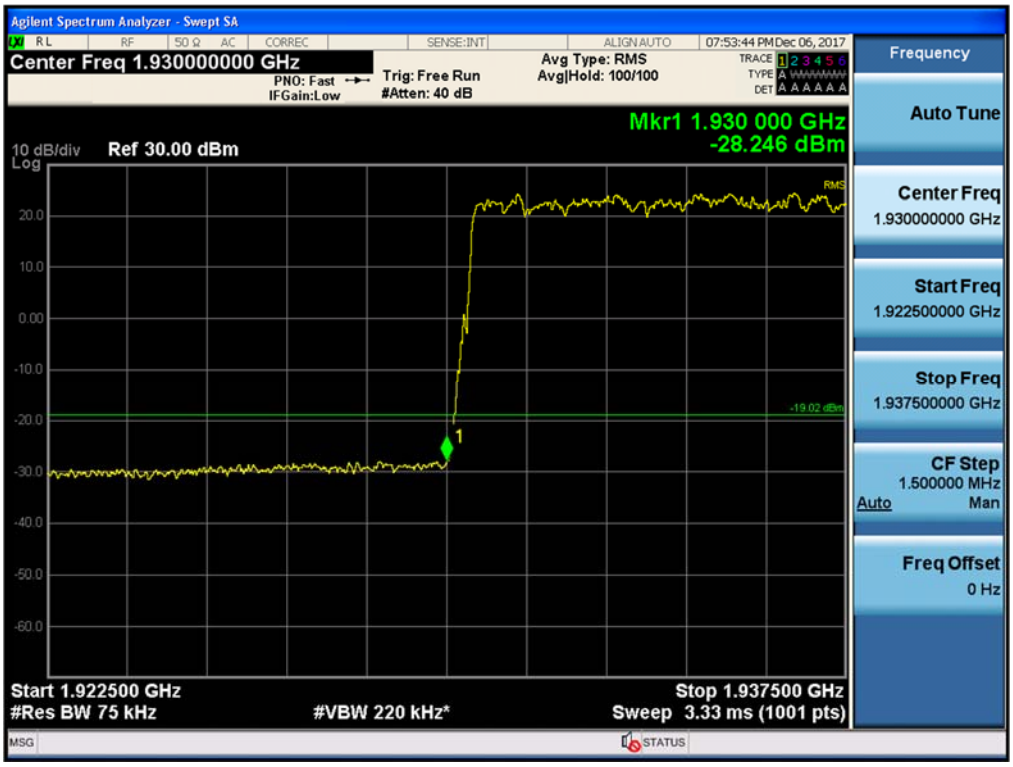

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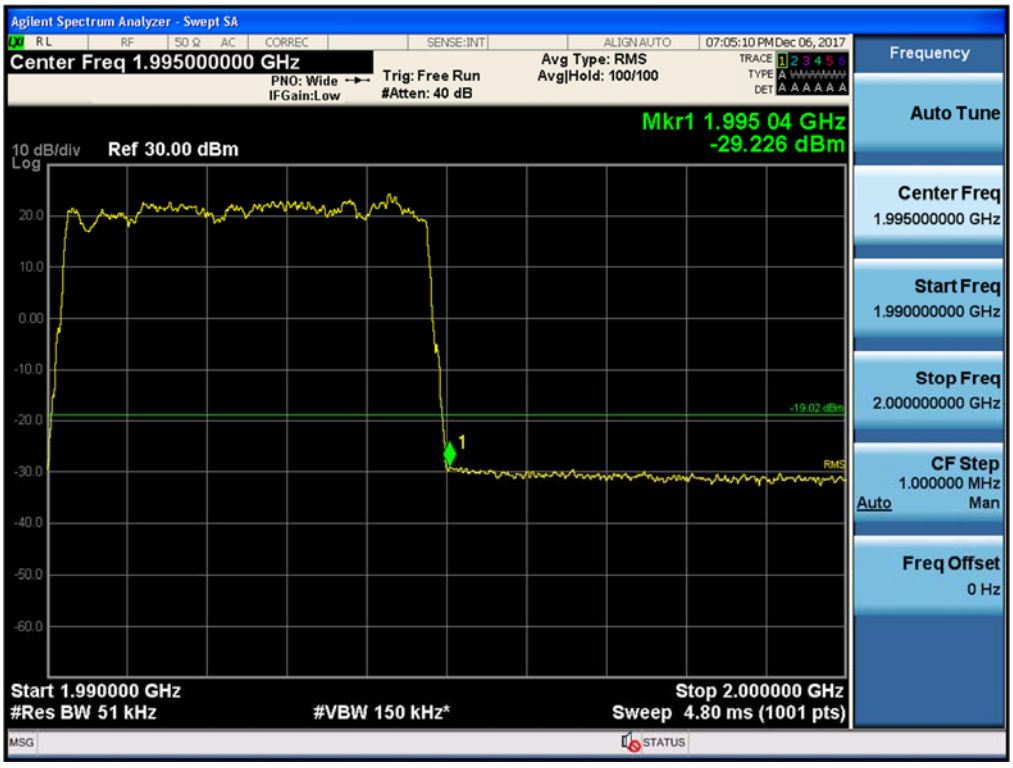

Test Data at Output Port 2_16QAM

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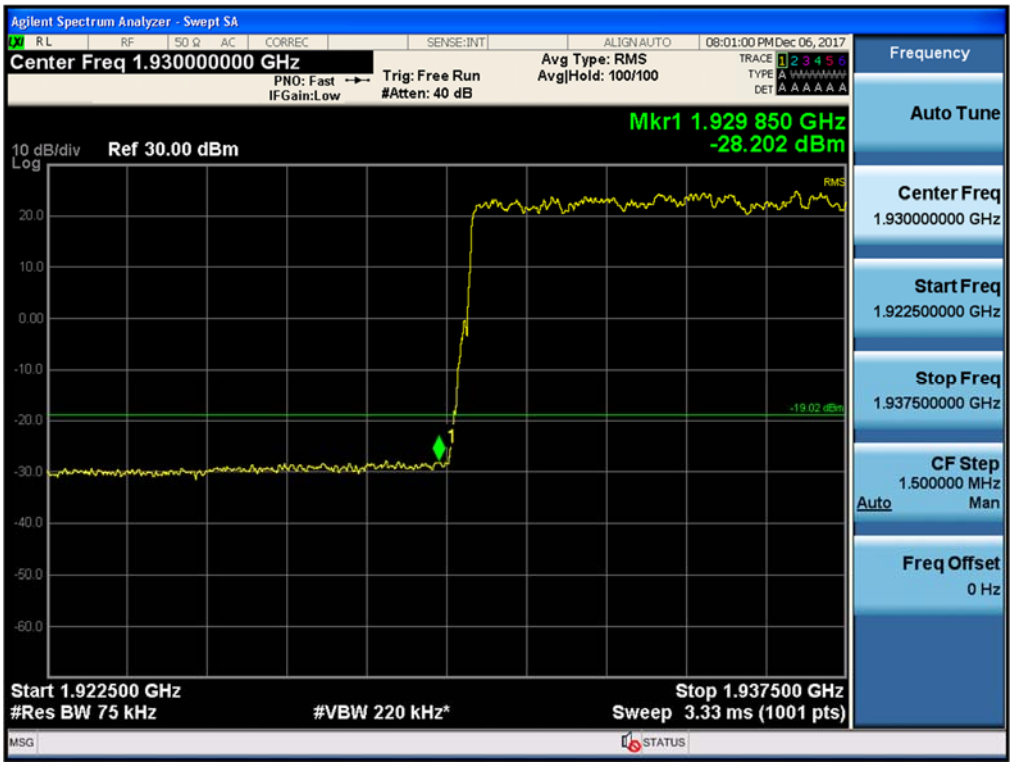

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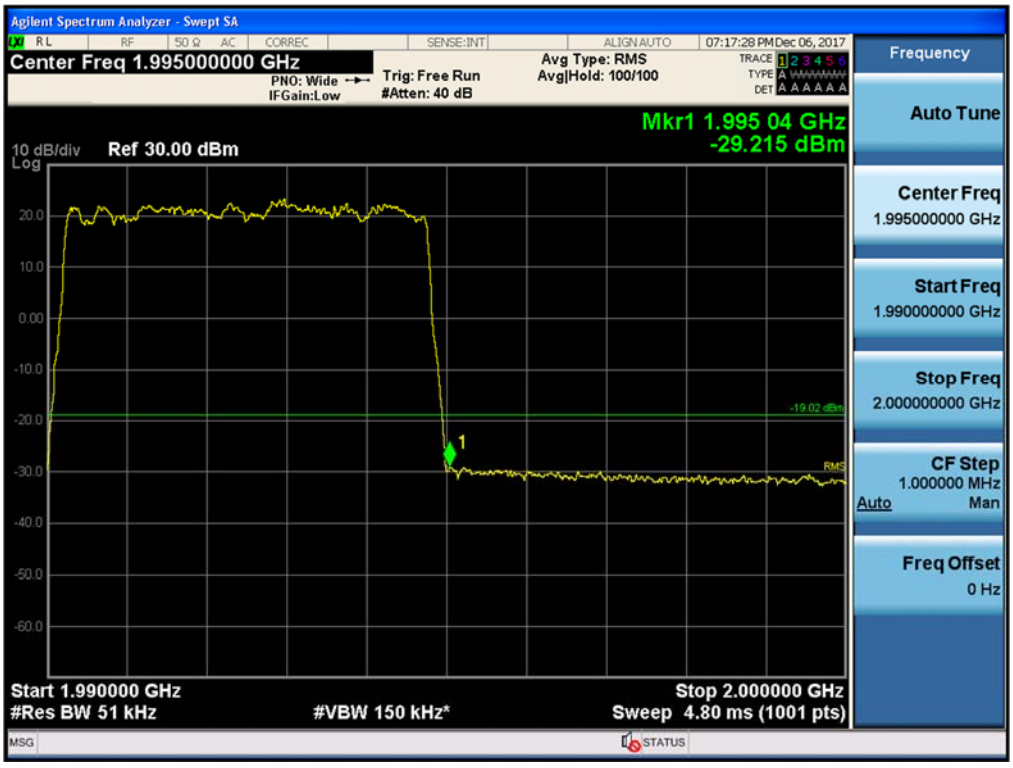

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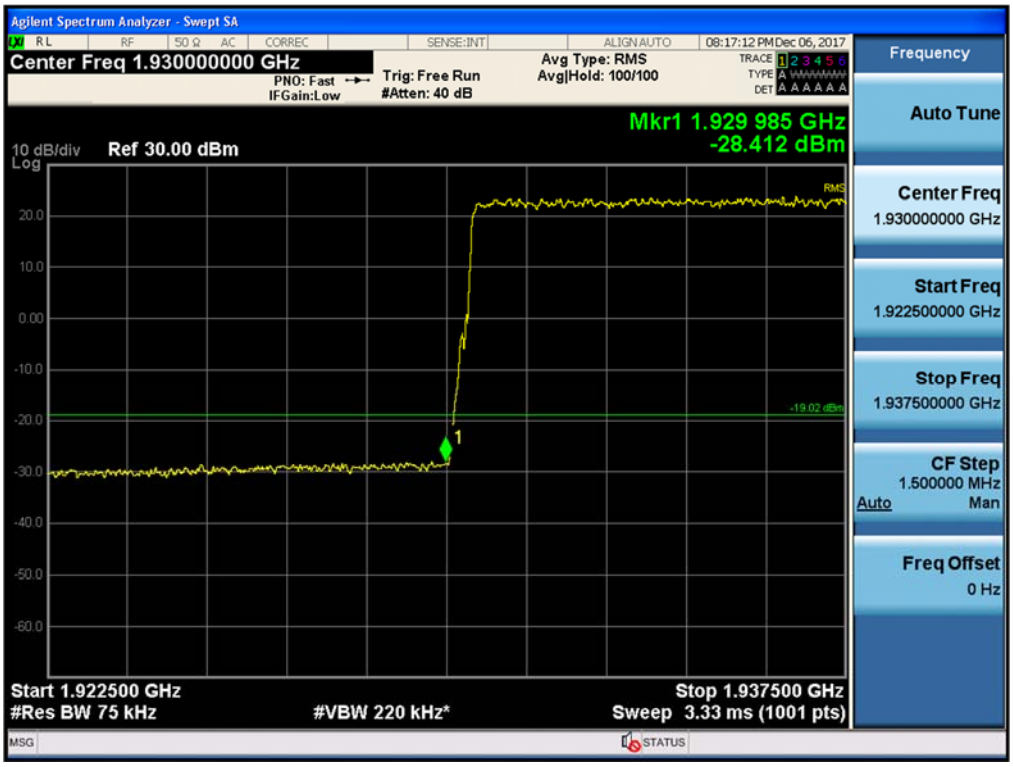

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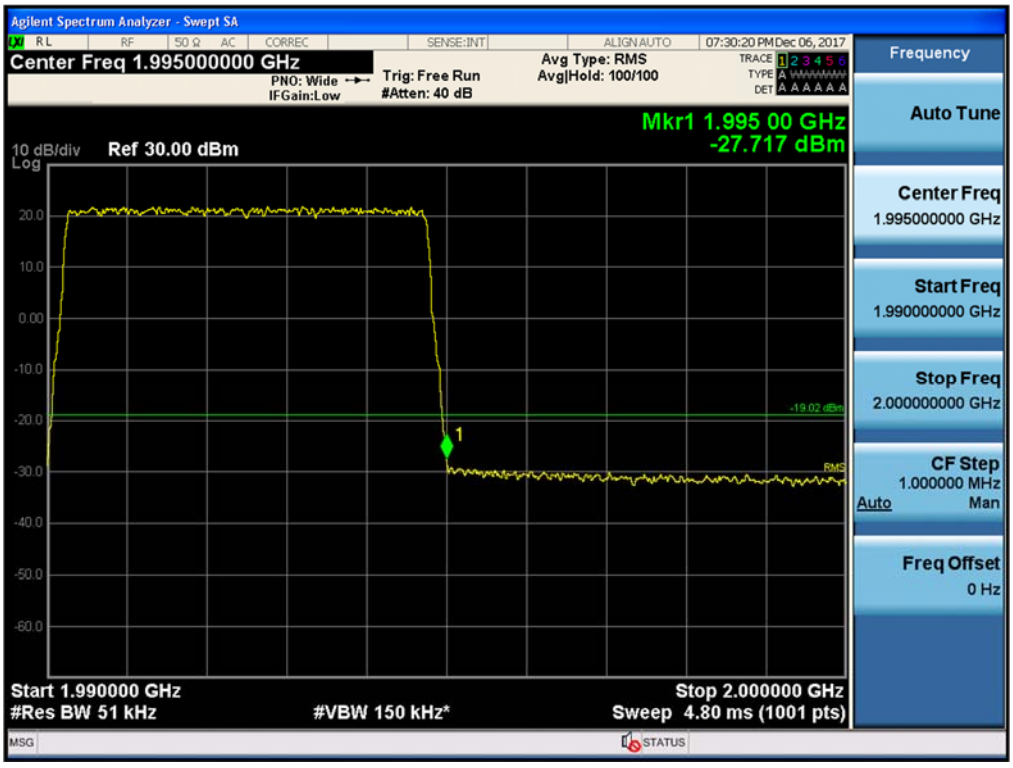

Test Data at Output Port 2_256QAM

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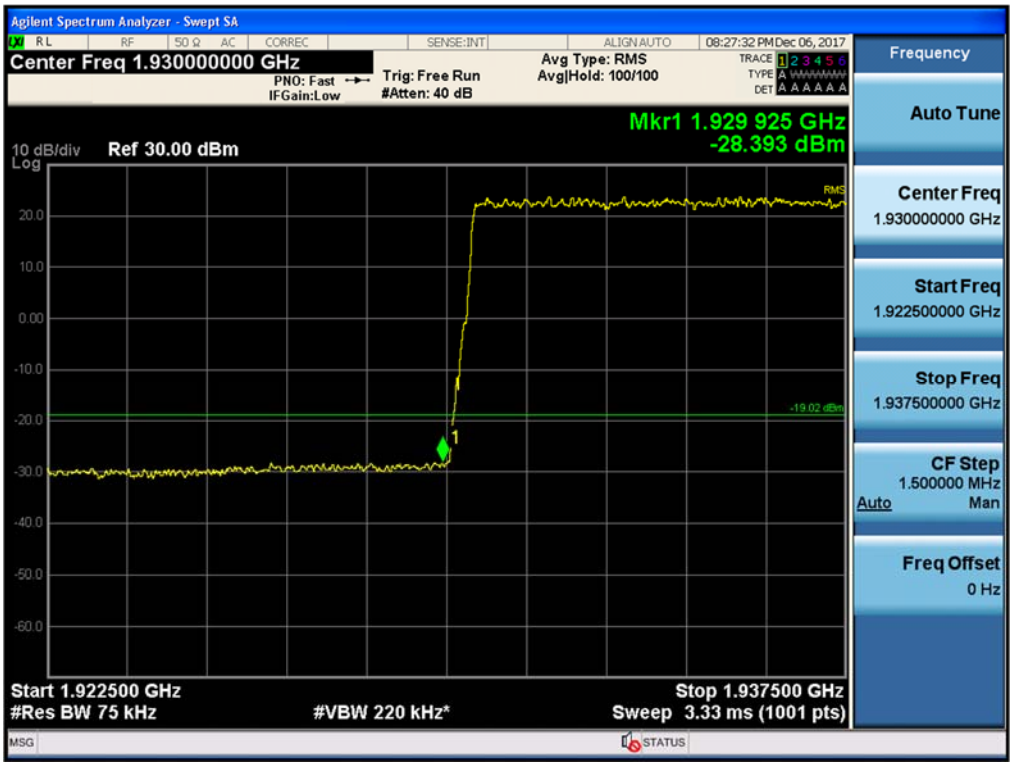

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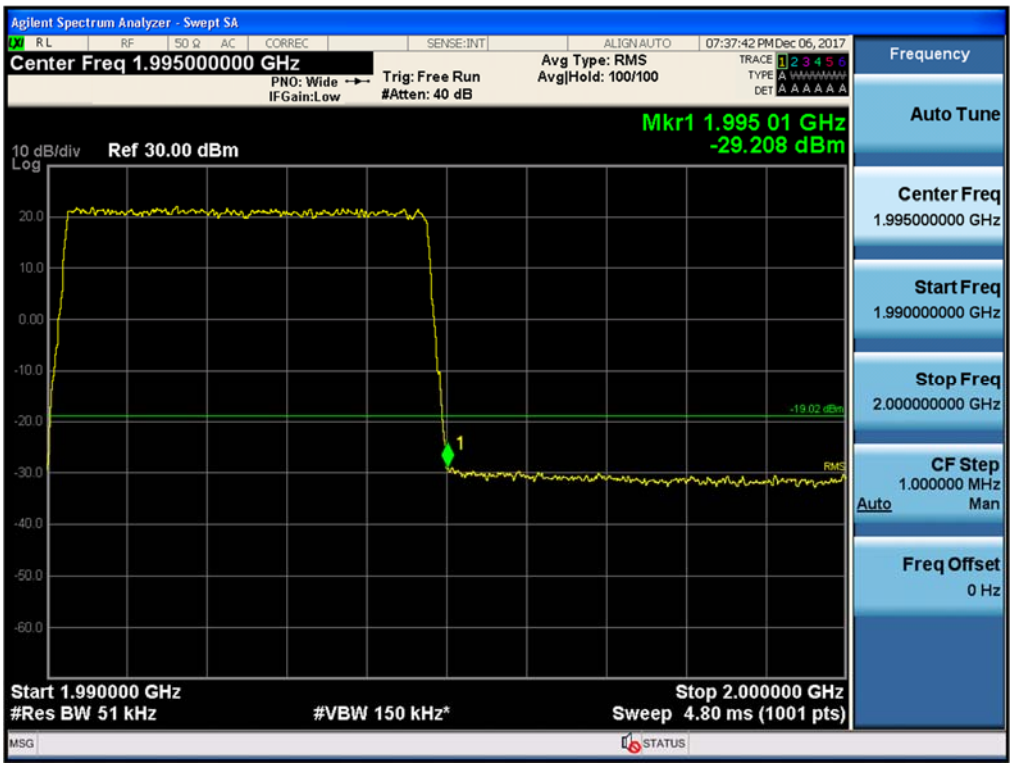

Test Data at Output Port 3_QPSK

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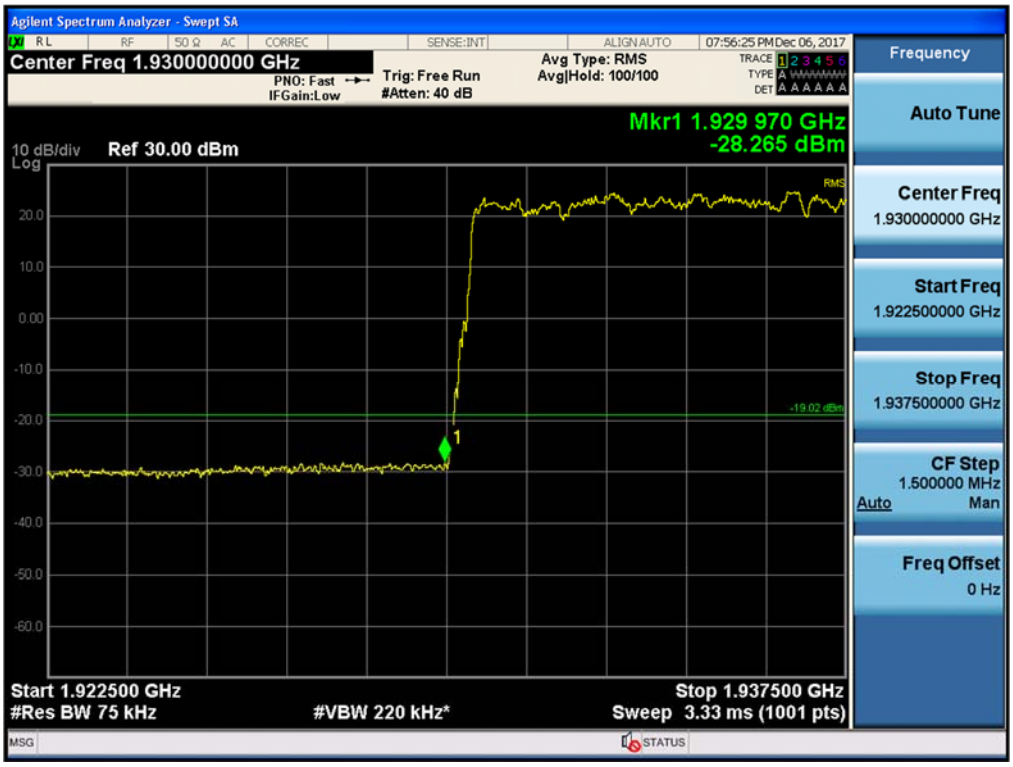

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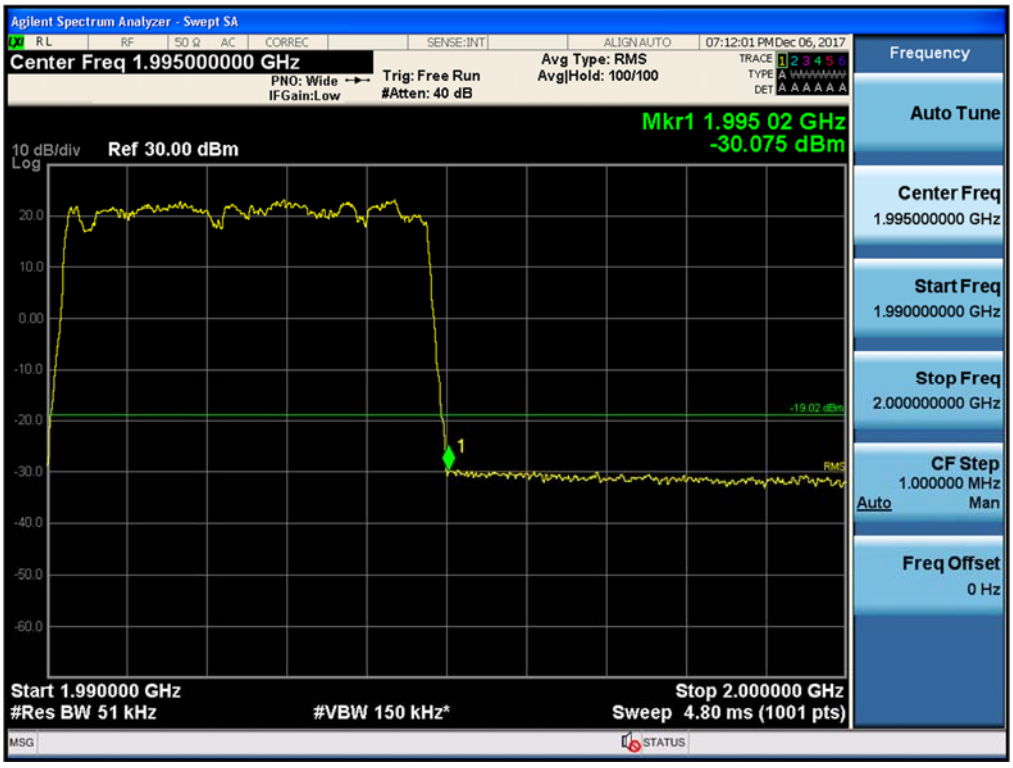

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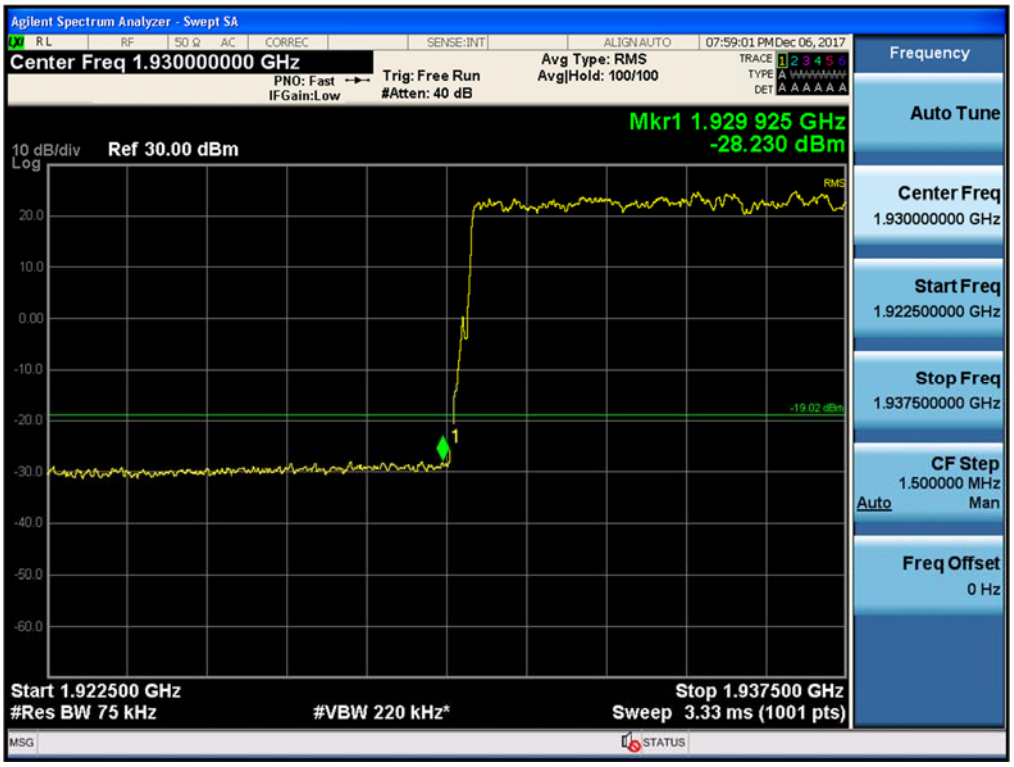

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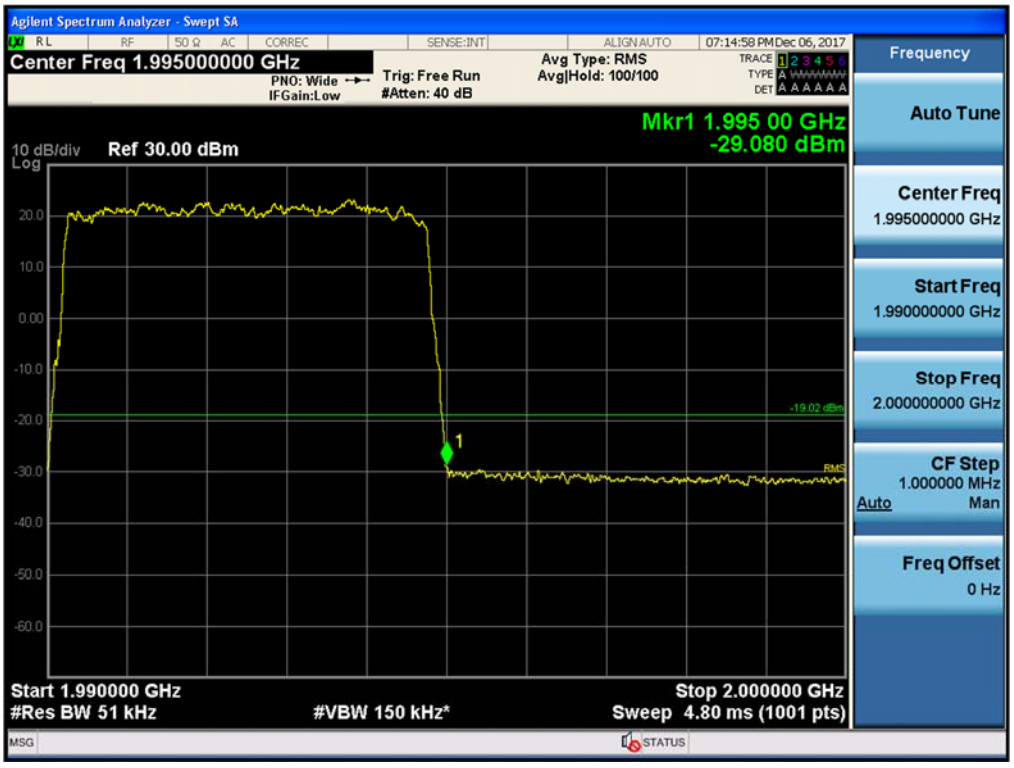

Test Data at Output Port 3_64QAM

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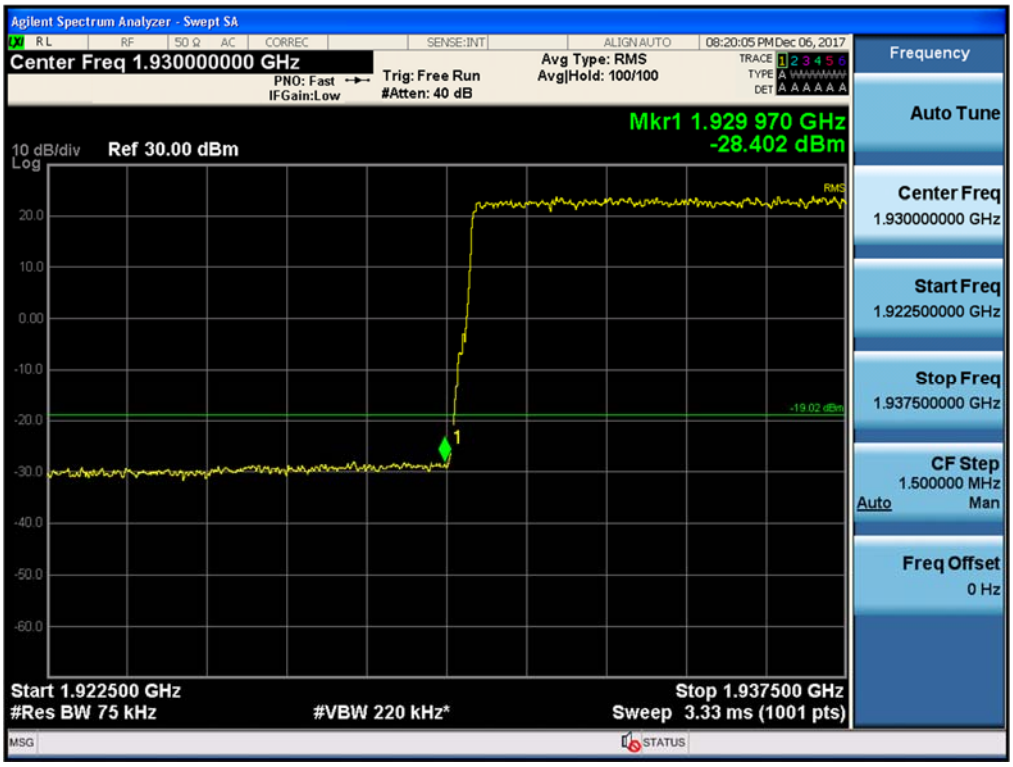

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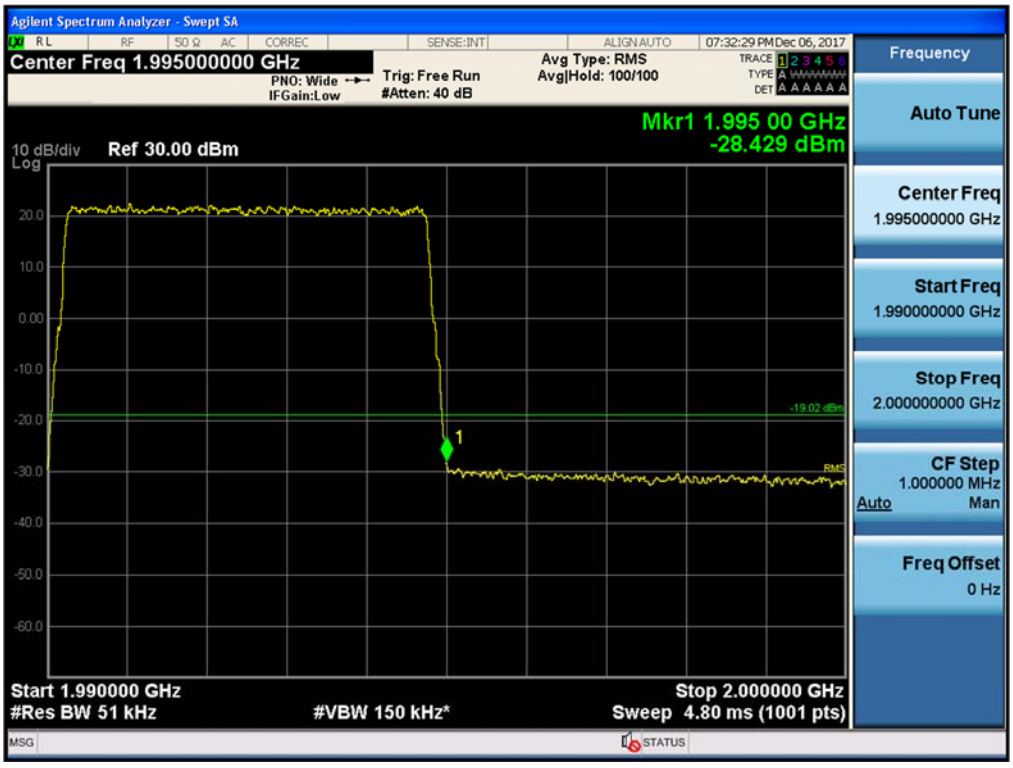

Test Data at Output Port 3_256QAM

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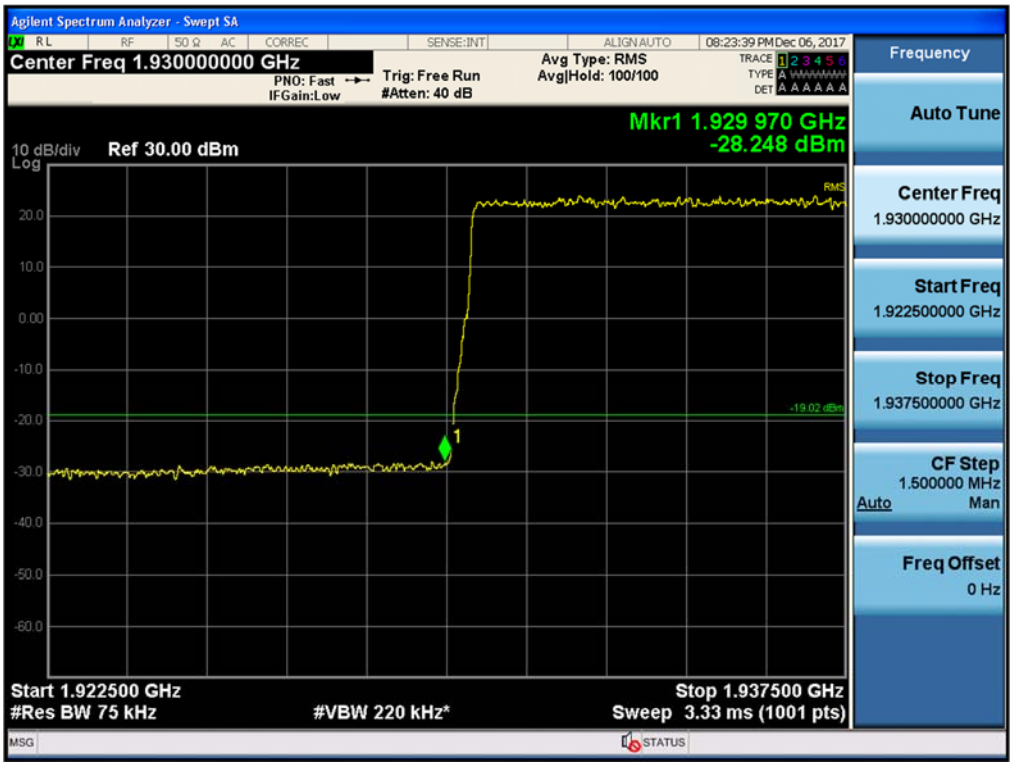

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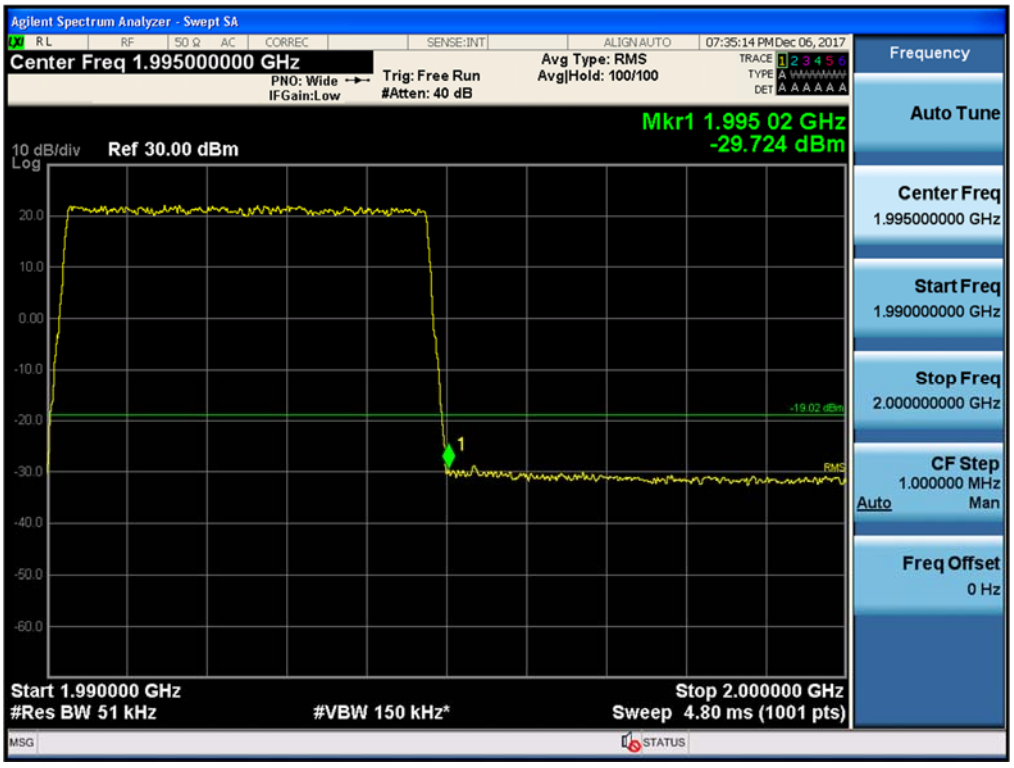


8. RADIATED SPURIOUS EMISSION

Test Requirements:

§ 2.1053 Measurements required: Field strength of spurious radiation.

(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 halfwave dipole antennas.

(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:

Radiated emission measurements were performed at an semi-anechoic chamber.

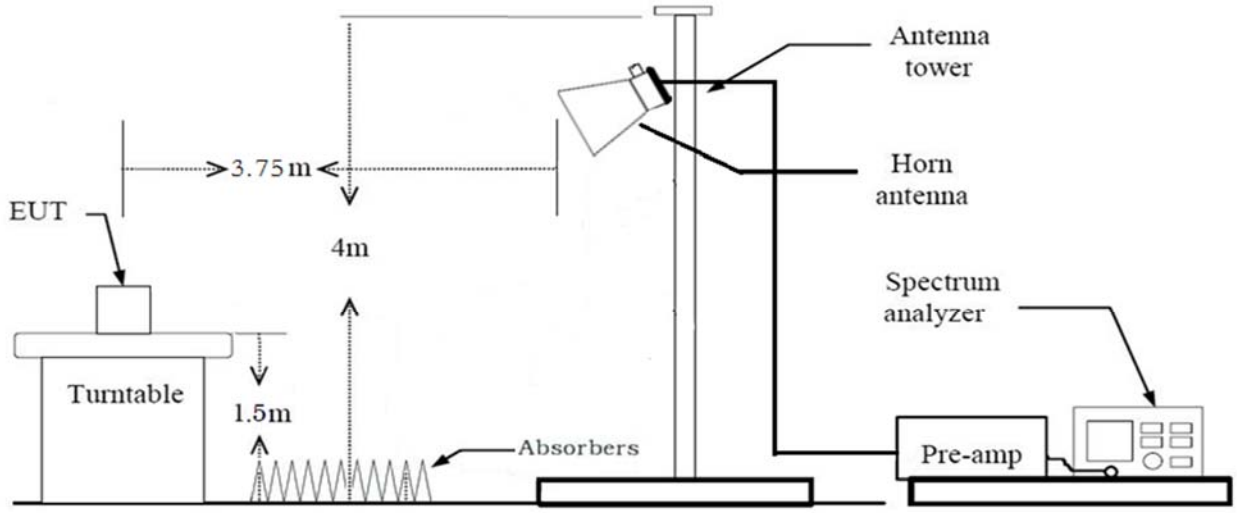
The EUT was set at a distance of 3m from the receiving antenna. The EUT's RF ports were terminated to 50ohm load. The EUT was set to transmit at the low, mid and high channels of the transmitter frequency range at its maximum power level. The EUT was rotated about 360^0 and the receiving antenna scanned from 1-4m 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.

Radiated Spurious Emissions Test Setup



Note :

1. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor(reference distance : 3 m).
2. Distance extrapolation factor = 20 log (test distance / specific distance) (dB)

Test Results:

We have done horizontal and vertical polarization in detecting antenna, but harmonics were not found.

Ch.	Freq.(MHz)	Measured Level [dBuV/m]	Measured Power [dBm]	Ant. Factor [dB/m]	C.L [dB]	A.G. [dB]	H.P.F.. [dB]	D.F. [dB]	Pol.	Result [dBm]
No critical peaks found.										

* C.L.: Cable Loss / A.G.: Amp Gain / H.P.F.: High Pass Filter / D.F.: Distance Factor (3.75 m)

9. FREQUECNY STABILITY

Test Requirements:

§ 2.1055 Measurements required: Frequency stability.

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

(1) From −30° to + 50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

§ 24.235 Frequency stability.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedures:

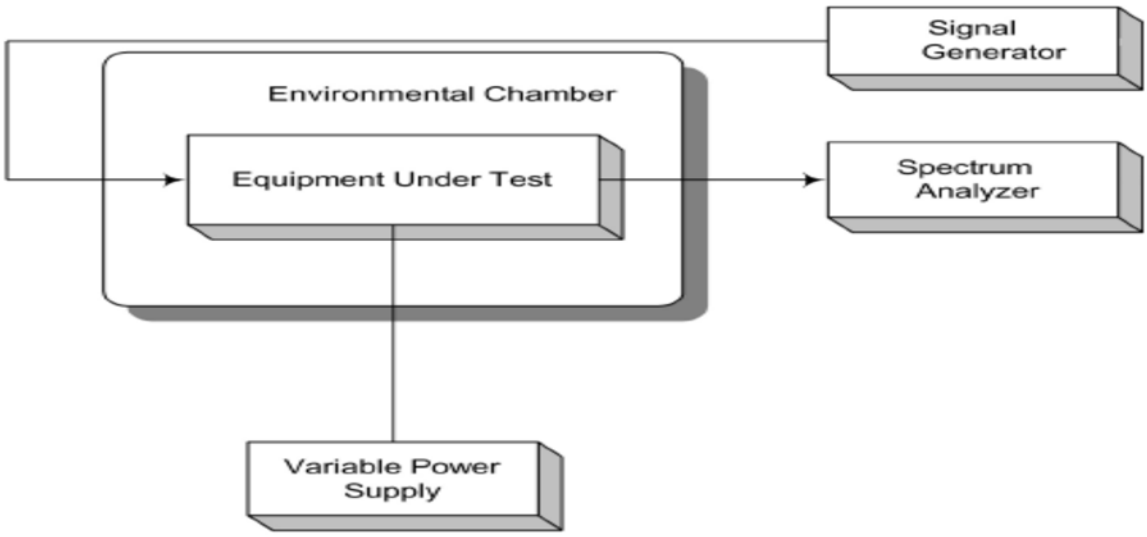
Frequency Stability over Temperature variation:

The equipment under test was connected to an external DC power supply and the RF output was connected to a Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. RF output cable exited the chamber through an opening made for the purpose. After the temperature stabilized for approximately 30 minutes, the frequency output was recorded from the Signal Analyzer.

Frequency stability over Voltage variation:

An external variable DC power supply Source. The voltage was set to 85% and 115% of the nominal value. The output frequency was recorded for each voltage.

Test Setup:



Test Results:

Reference: - 48 Vdc at 20 ℃ **Freq.** = 1,962,500,000 Hz

Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (Hz)	ppm
100%	+20(Ref)	1962 500 001	0.728	0.000	0.00000
	-30	1962 500 001	0.719	-0.009	0.00000
	-20	1962 500 000	-0.113	-0.841	-0.00043
	-10	1962 500 000	0.312	-0.416	-0.00021
	0	1962 500 001	0.577	-0.151	-0.00008
	+10	1962 500 000	-0.130	-0.858	-0.00044
	+30	1962 500 001	0.953	0.225	0.00011
	+40	1962 500 001	0.669	-0.059	-0.00003
	+50	1962 500 001	0.567	-0.161	-0.00008
115%	+20	1962 500 000	-0.124	-0.852	-0.00043
85%	+20	1962 500 000	0.074	-0.654	-0.00033

Note:

The results of the frequency stability test shown above the frequency deviation measured values are very small and similar trend for each port, so we are attached only the worst case data.