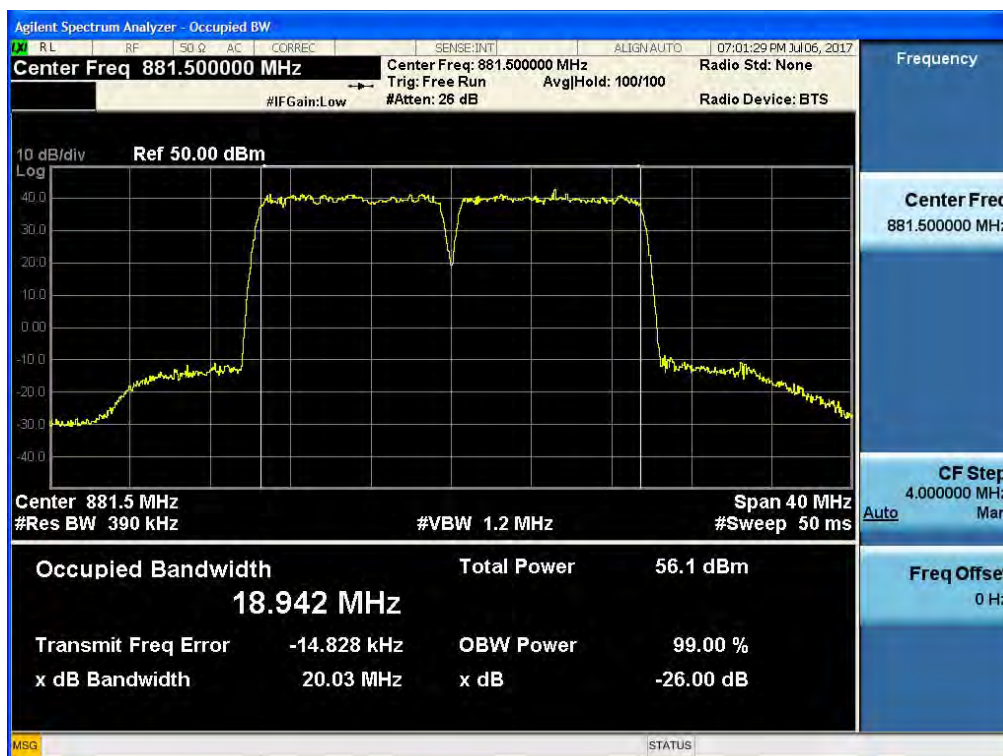
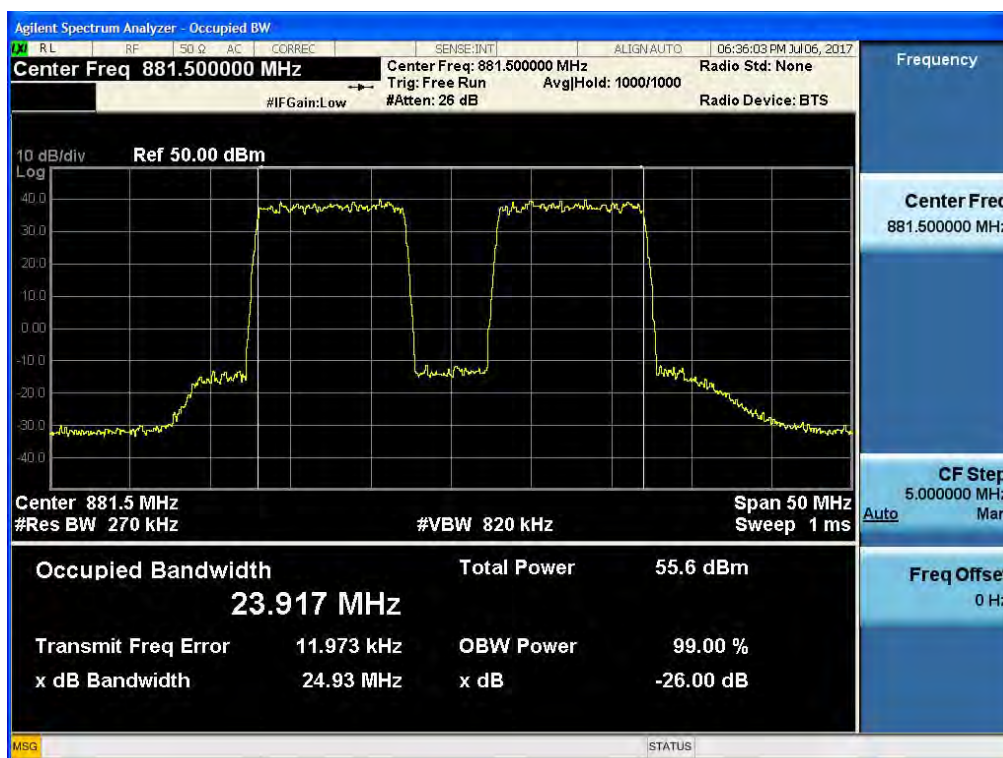


Test Plot at Output Port 4 (4 paths)

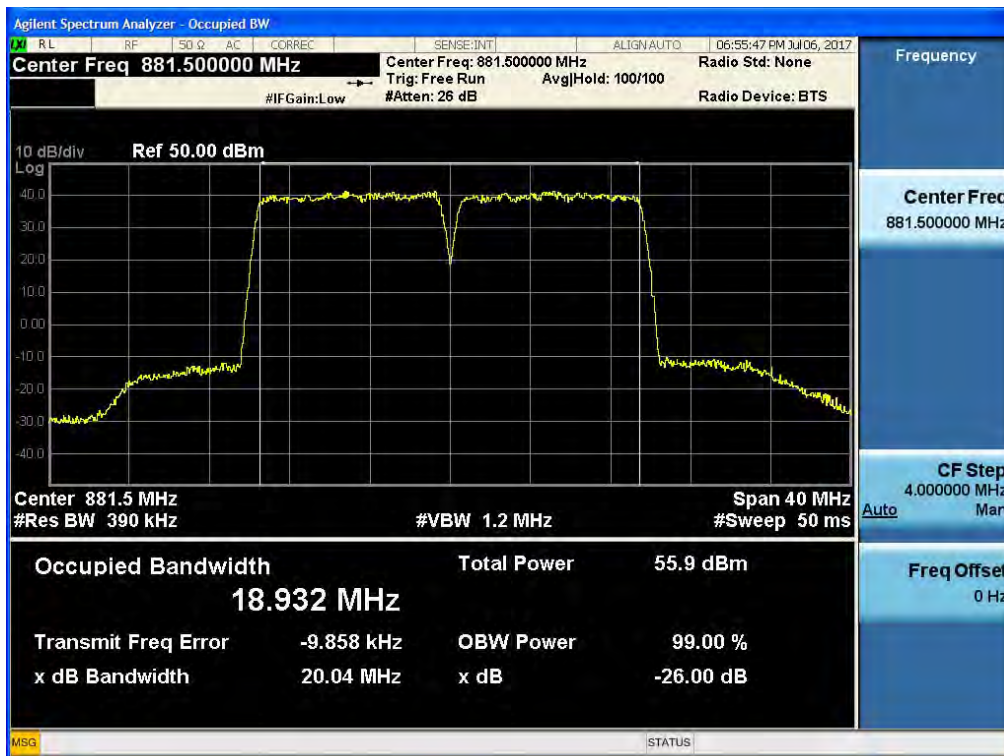
(QPSK Continuous)



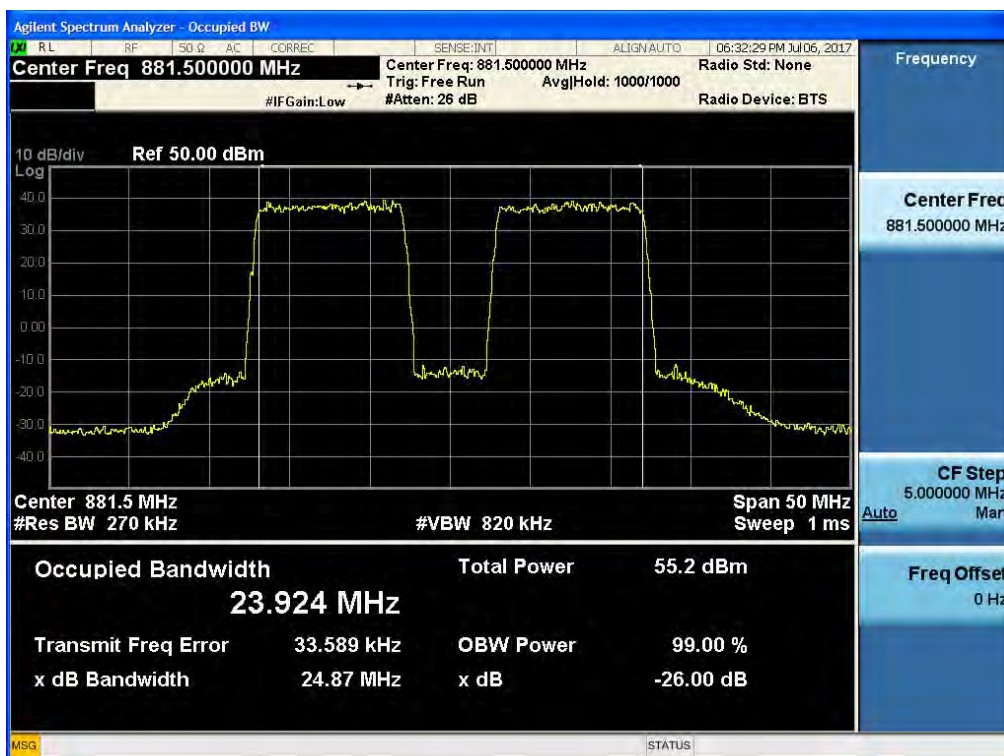
(QPSK Discontinuous)



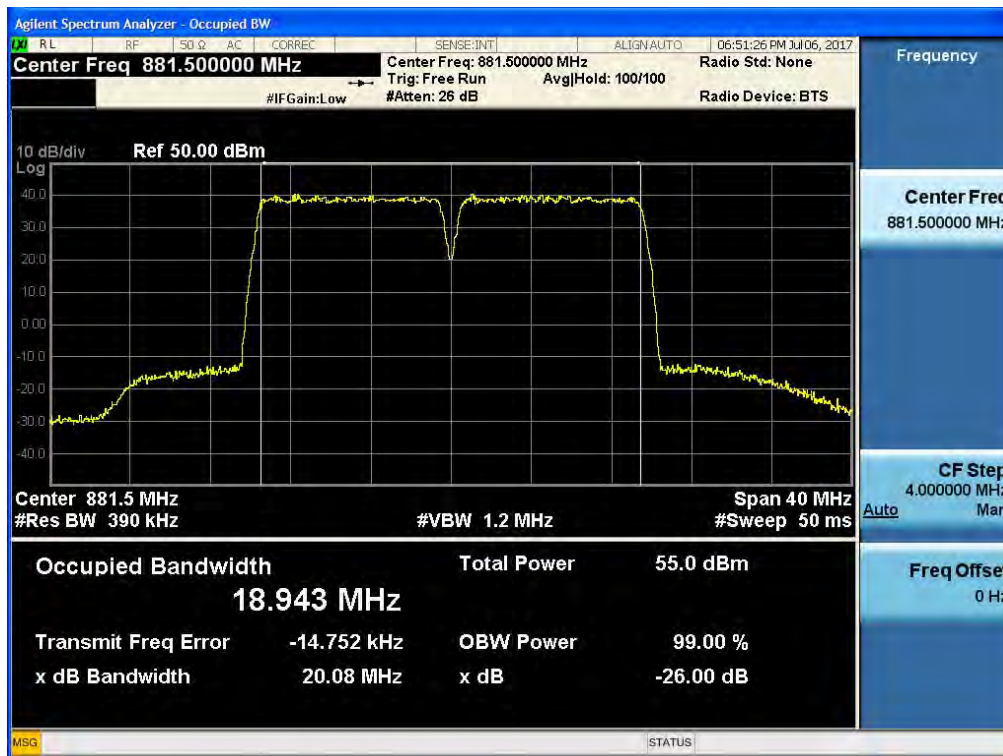
(16QAM Continuous)



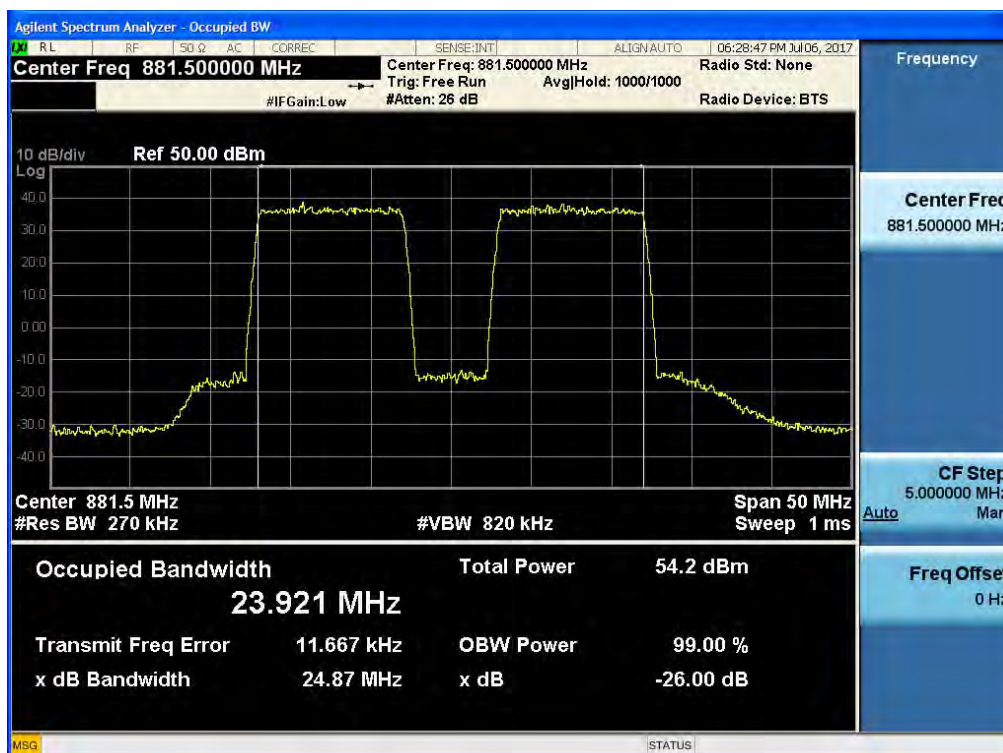
(16QAM Discontinuous)



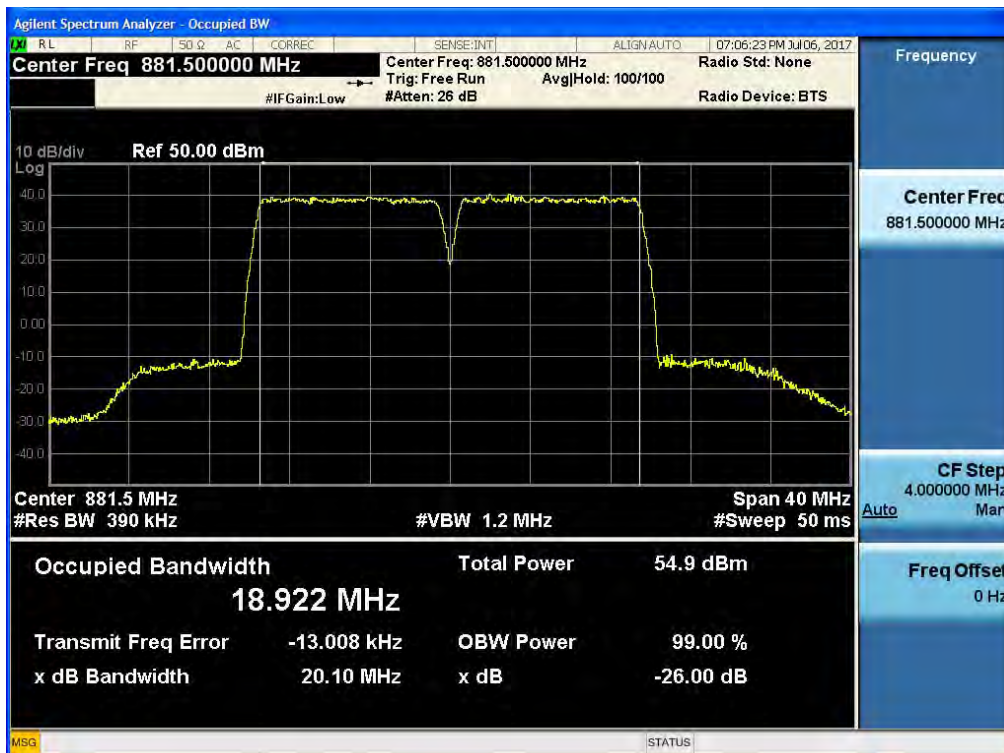
(64QAM Continuous)



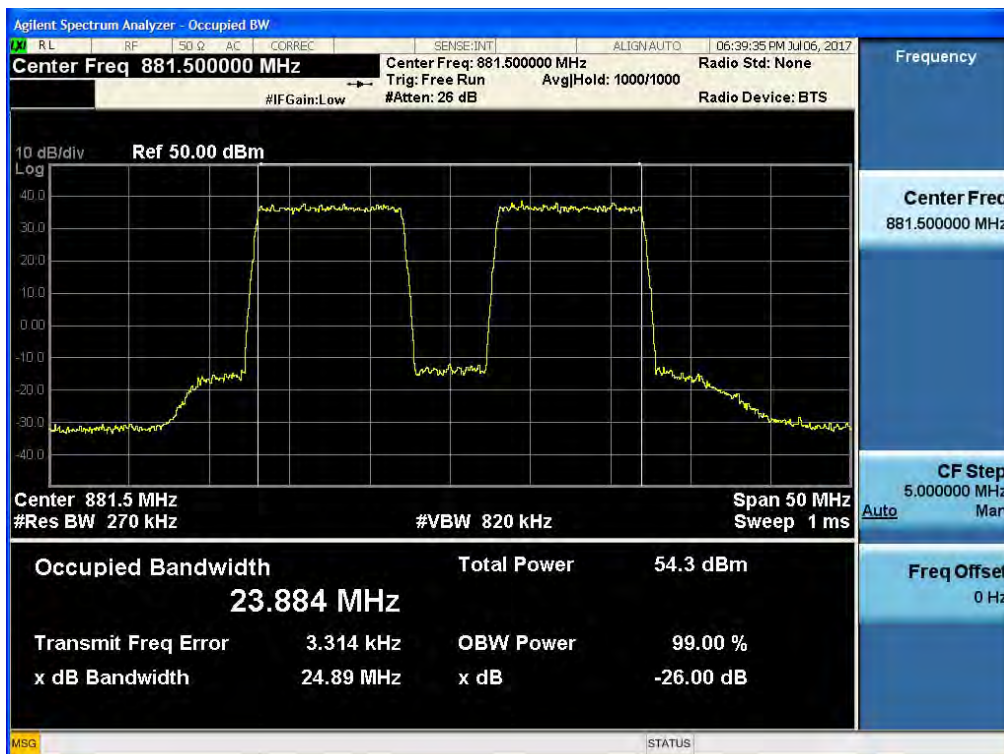
(64QAM Discontinuous)



(256QAM Continuous)



(256QAM Discontinuous)



LTE Band 5_3 Carrier

Test Data at Output Port 1 (2 paths)

Frequency (MHz)	Occupied Bandwidth (MHz)			
	QPSK	16QAM	64QAM	256QAM
881.50	23.851	23.901	23.840	23.835

Test Data at Output Port 2 (2 paths)

Frequency (MHz)	Occupied Bandwidth (MHz)			
	QPSK	16QAM	64QAM	256QAM
881.50	23.836	23.857	23.820	23.829

Test Data at Output Port 3 (4 paths)

Frequency (MHz)	Occupied Bandwidth (MHz)			
	QPSK	16QAM	64QAM	256QAM
881.50	23.817	23.849	23.850	23.850

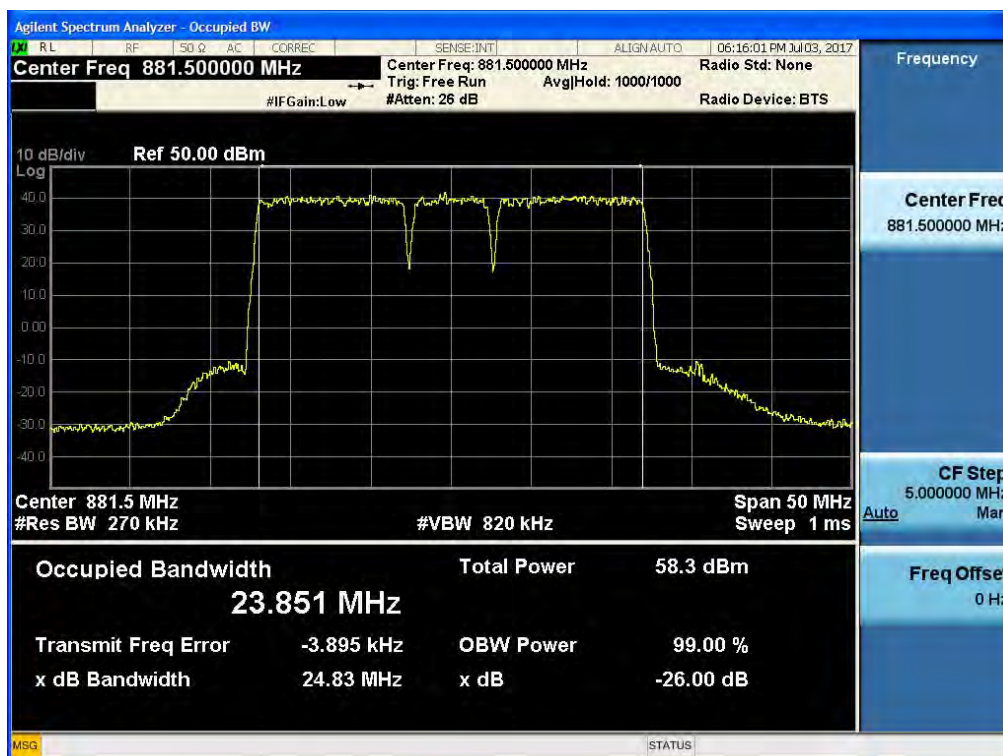
Test Data at Output Port 4 (4 paths)

Frequency (MHz)	Occupied Bandwidth (MHz)			
	QPSK	16QAM	64QAM	256QAM
881.50	23.859	23.849	23.869	23.841

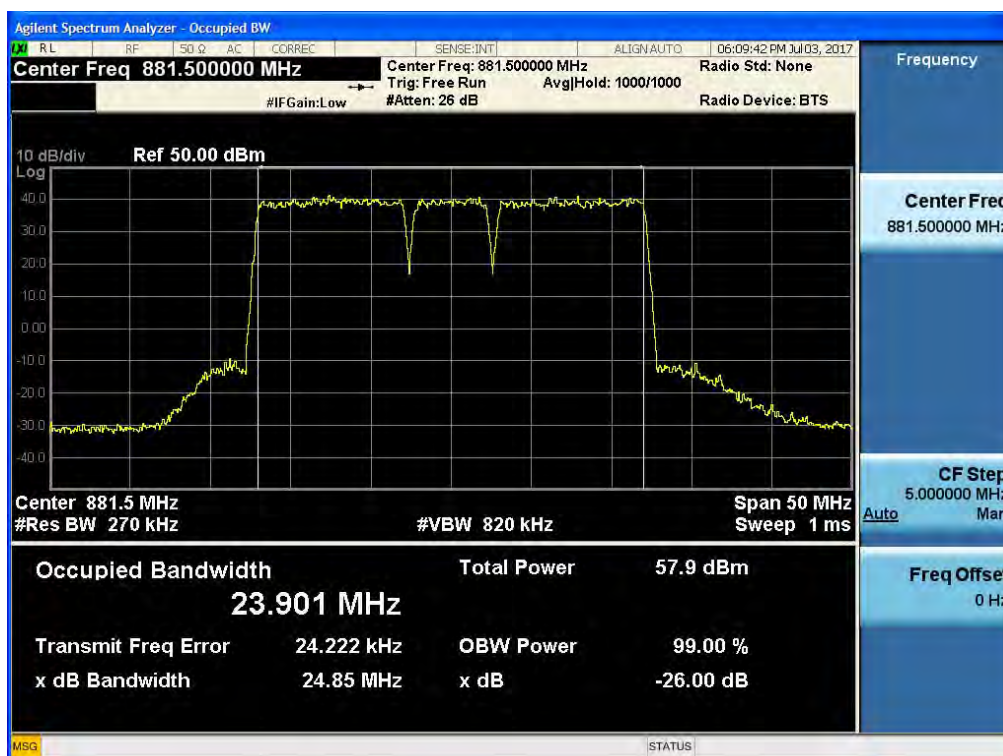
LTE Band 5_3 Carrier

Test Plot at Output Port 1 (2 paths)

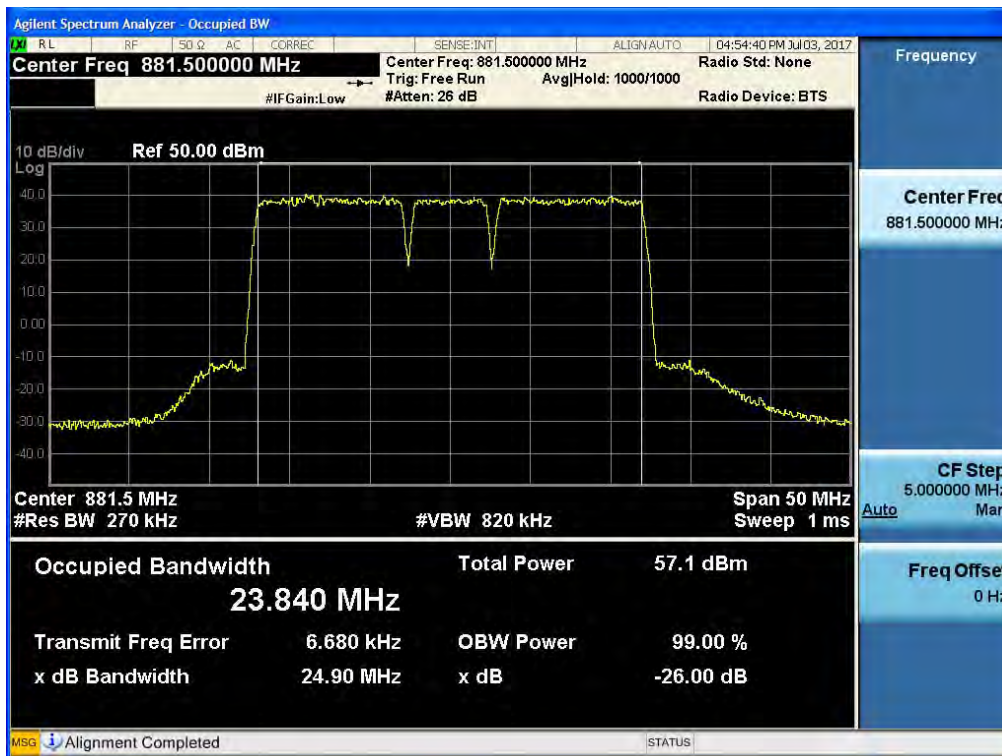
(QPSK)



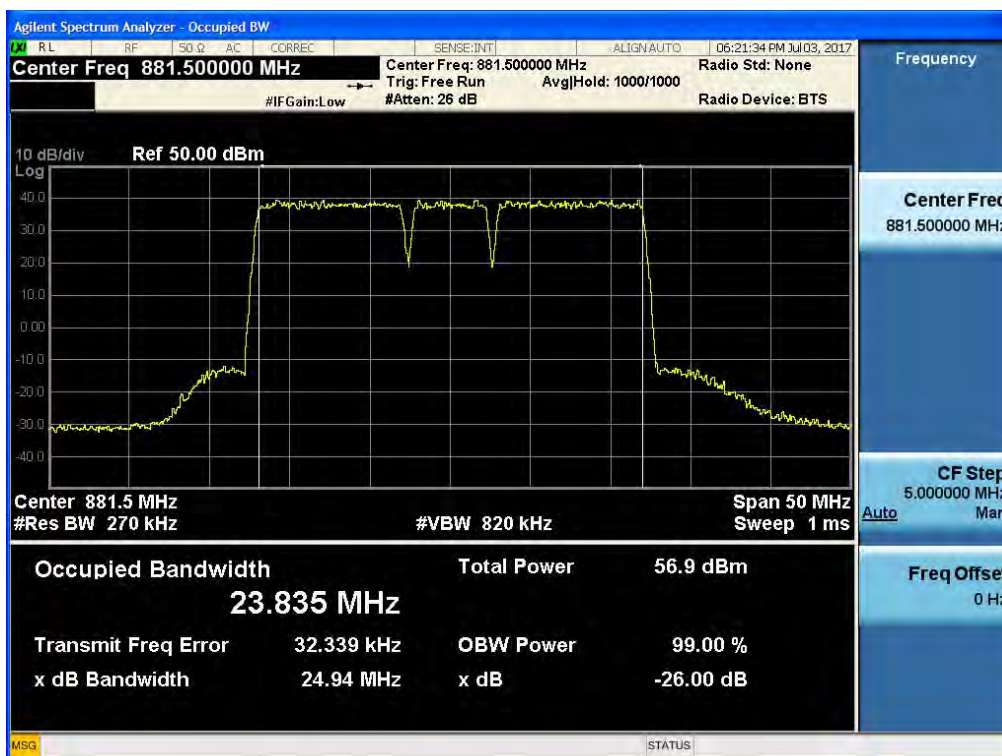
(16QAM)



(64QAM)

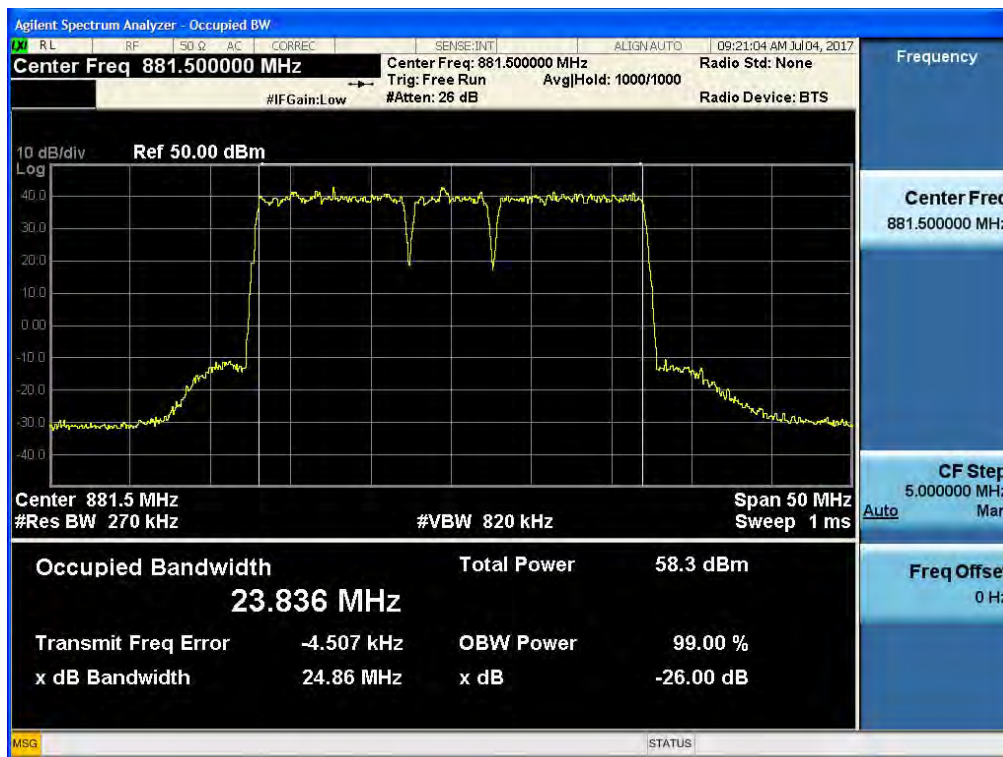


(256QAM)

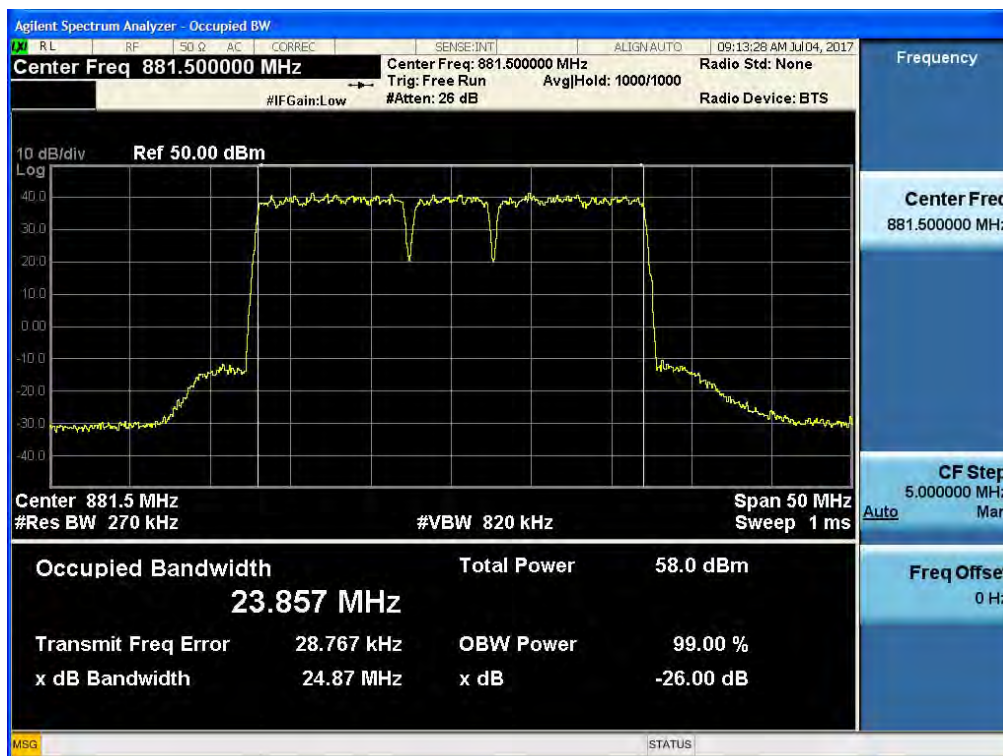


Test Plot at Output Port 2 (2 paths)

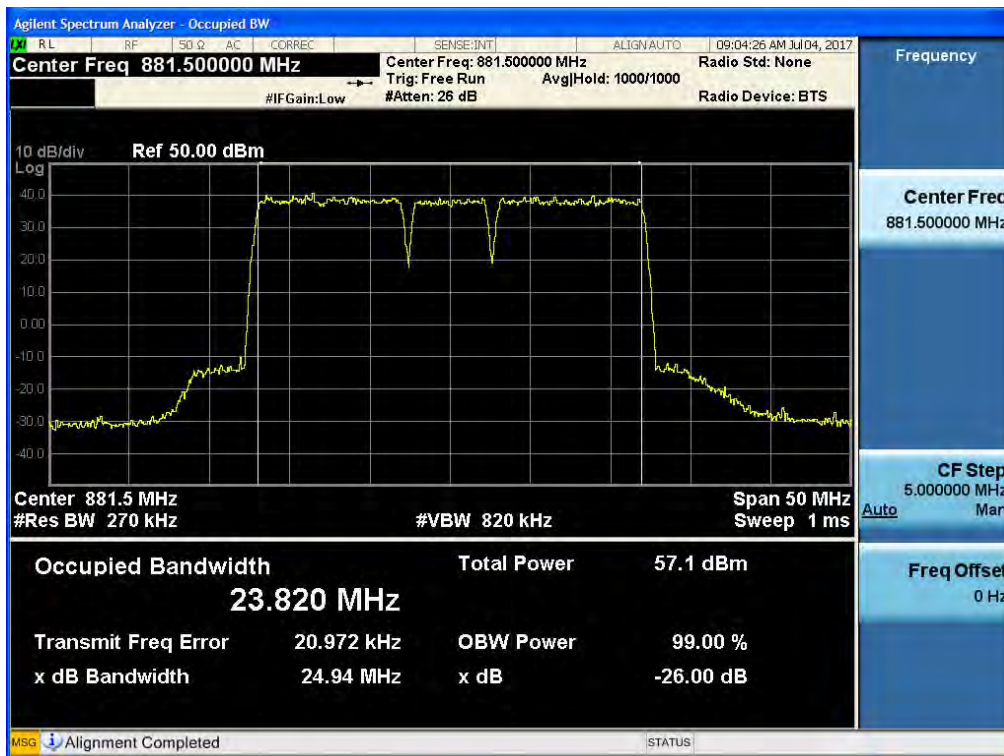
(QPSK)



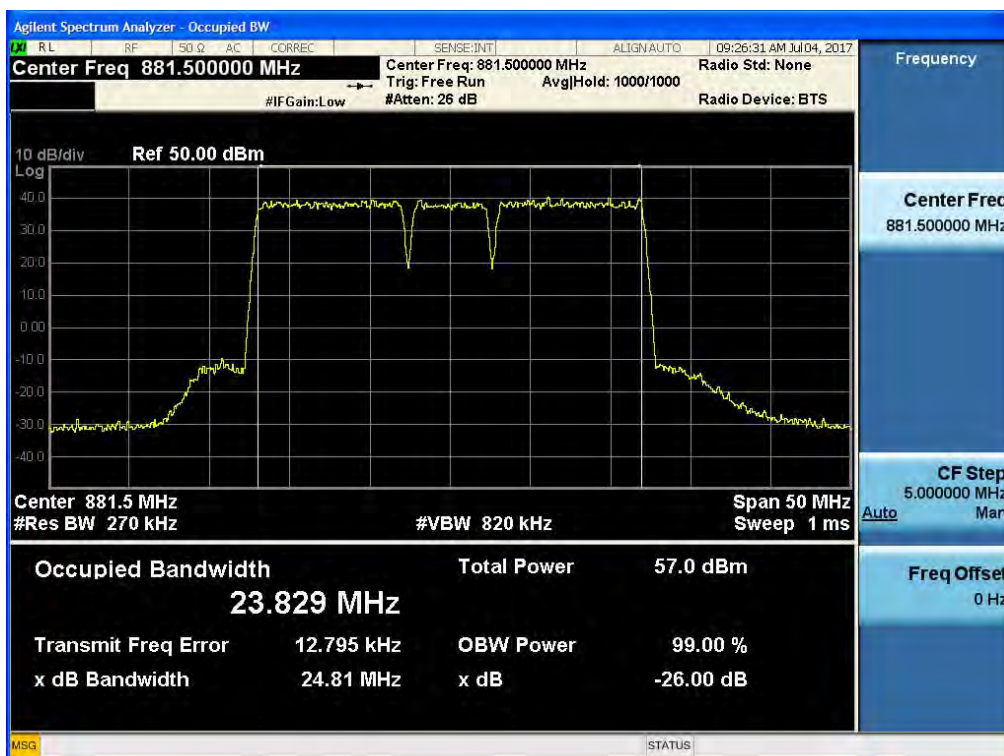
(16QAM)



(64QAM)

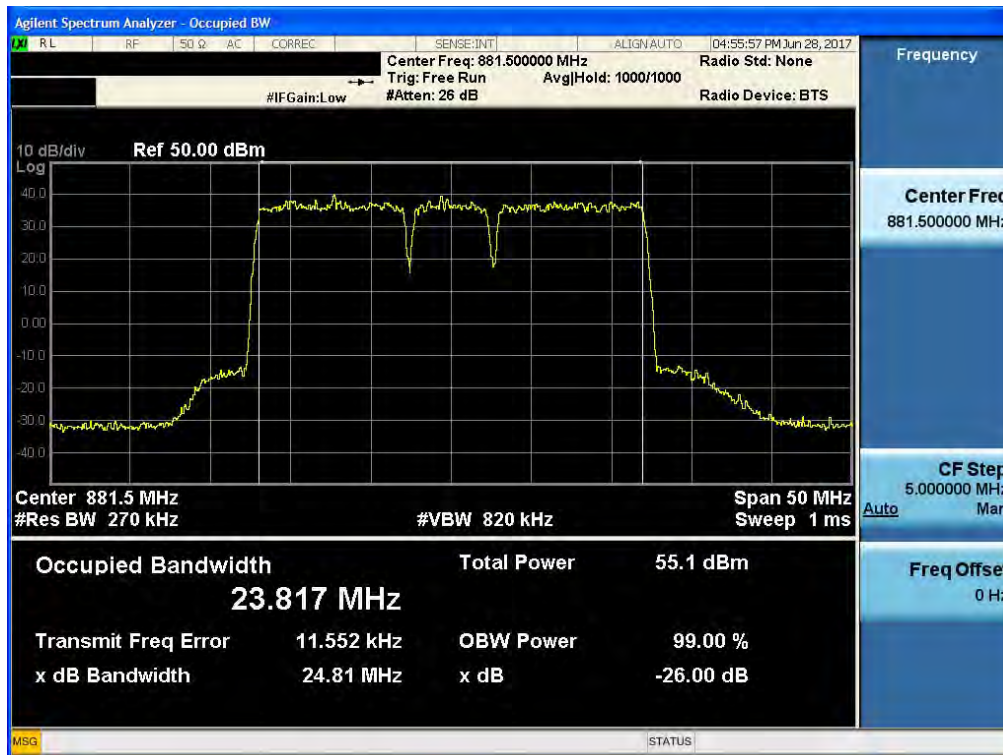


(256QAM)

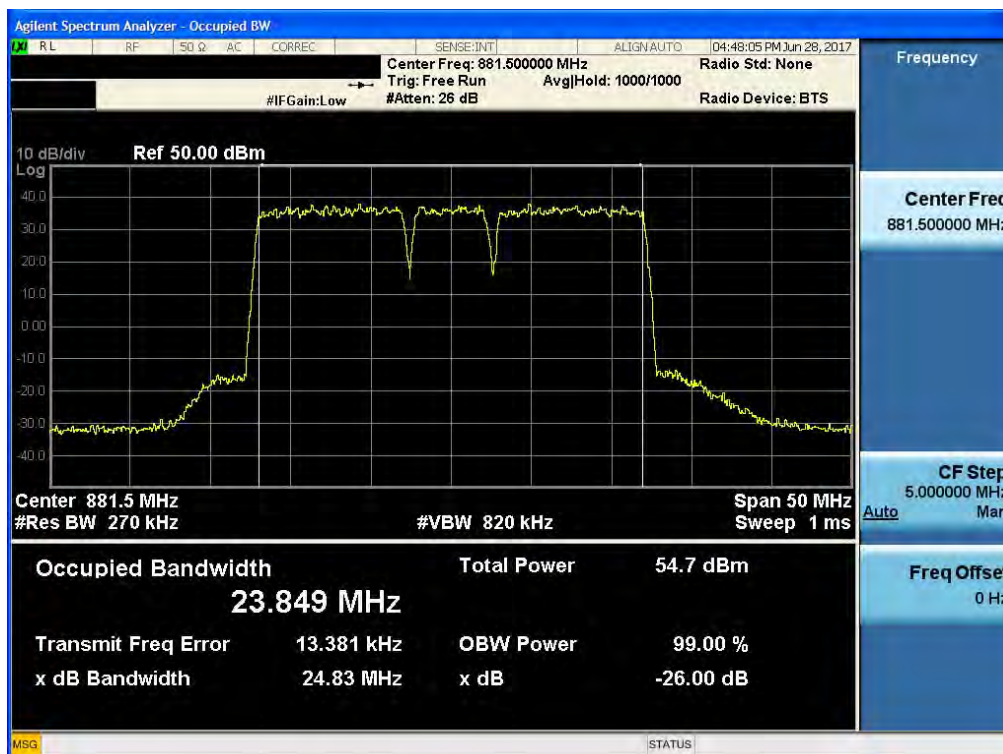


Test Plot at Output Port 3 (4 paths)

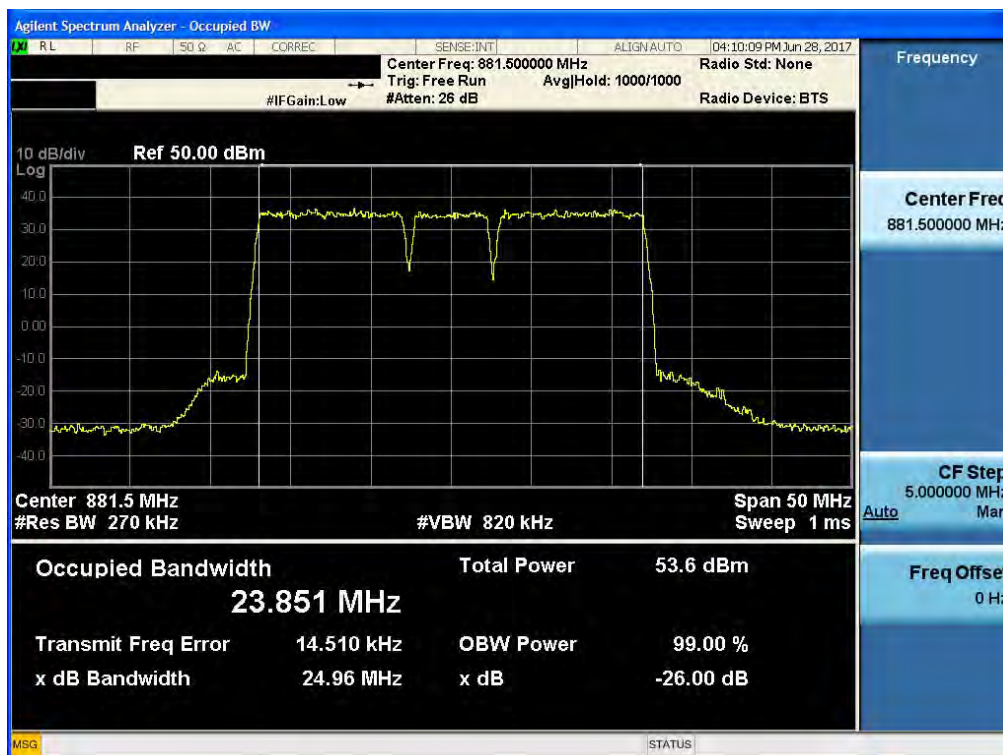
(QPSK)



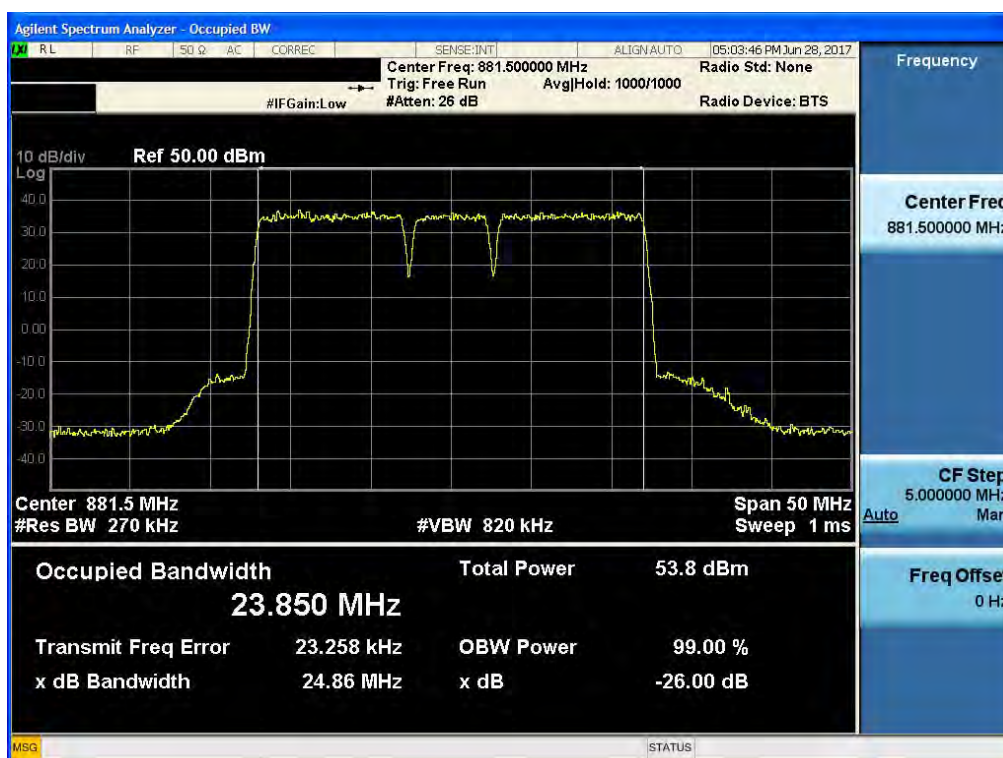
(16QAM)



(64QAM)

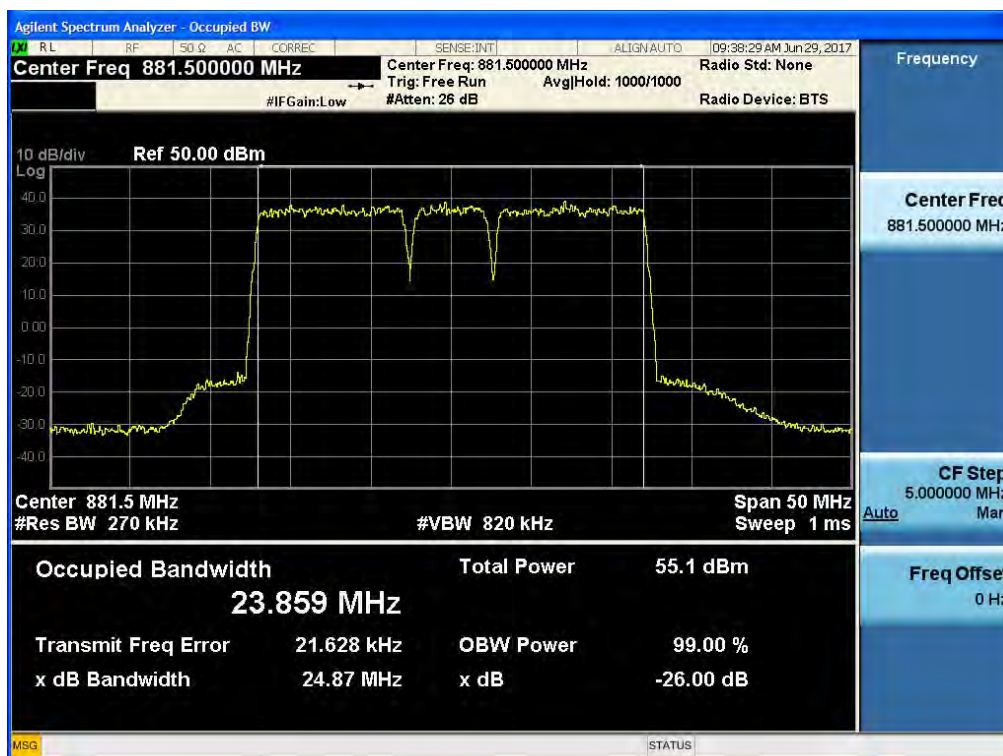


(256QAM)

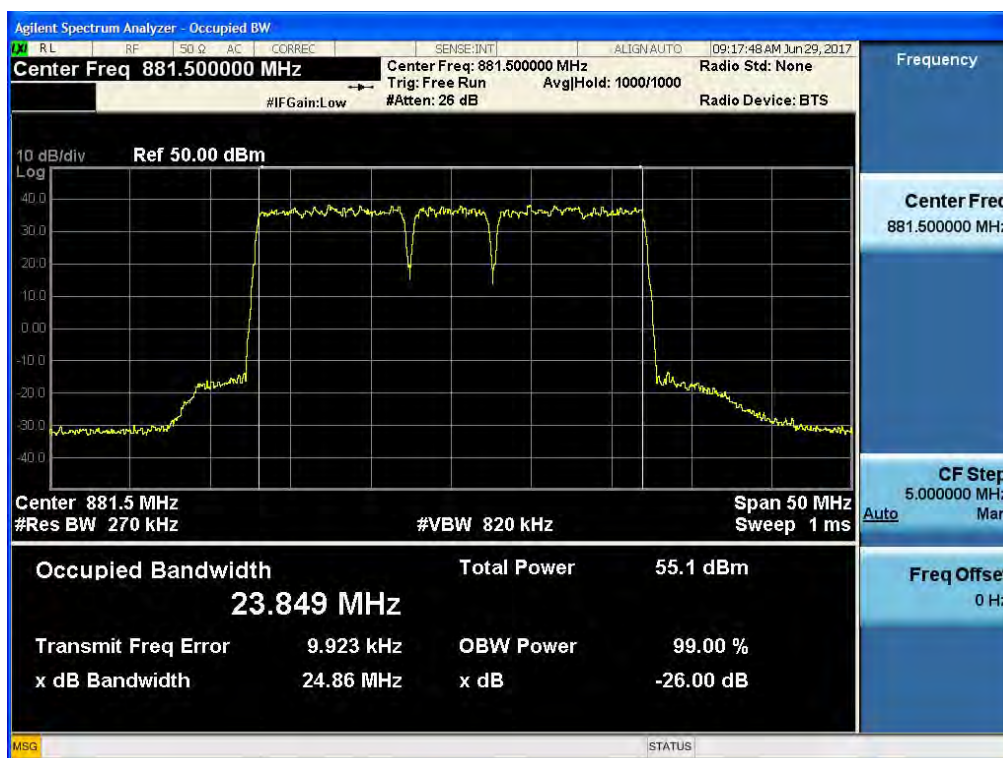


Test Plot at Output Port 4 (4 paths)

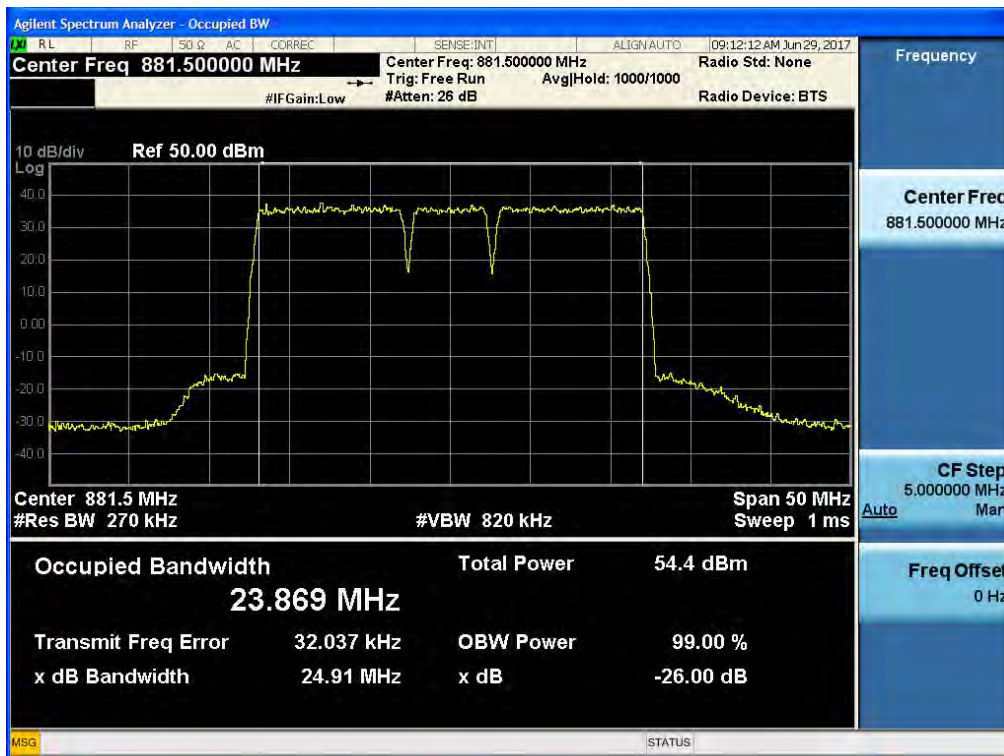
(QPSK)



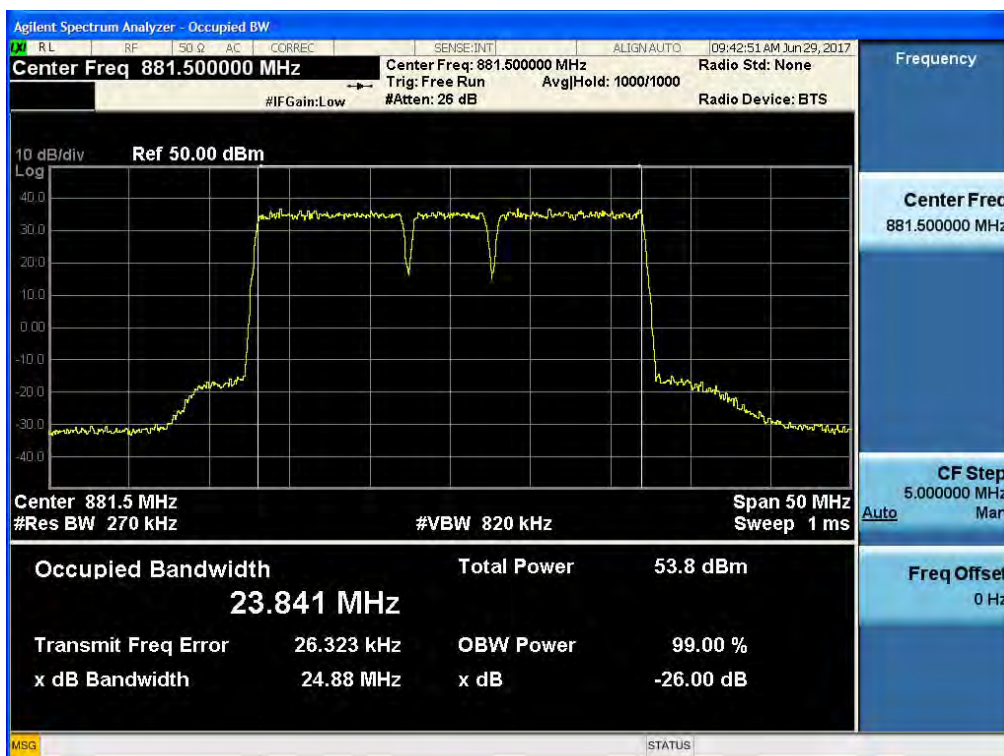
(16QAM)



(64QAM)



(256QAM)



7. SPURIOUS EMISSION AT ANTENNA TERMINAL

Test Requirements:

§22.917 Emission limitations for cellular equipment.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) *Out of band emissions.* 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.

(b) *Measurement procedure.* 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.

(c) *Alternative out of band emission limit.* Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

§27.53 Emission limits.

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;

- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

Test Procedures:

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.

The resolution bandwidth of the spectrum analyzer was set at 100 KHz (Under 1 GHz), 1MHz (Above 1 GHz). Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

Notes:

1. In 9 KHz-150 KHz and 150 KHz-30 MHz bands, RBW was reduced to 1% and 10% of the reference bandwidth for measuring unwanted emission level (typically, 100KHz if the authorized frequency band is below 1GHz) and power was integrated. (1% = +20 dB, 10% = +10 dB)
2. Because the test results are similar trend value for each port, attached plots were only the worst case test results.

Conducted Spurious Emissions

LTE Band 13_1 Carrier

Test Data at Output Port 1 (2 paths)

(QPSK)

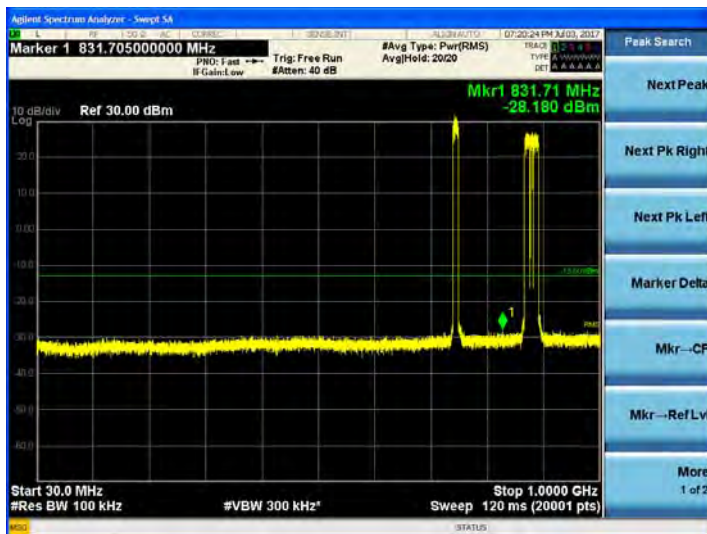
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



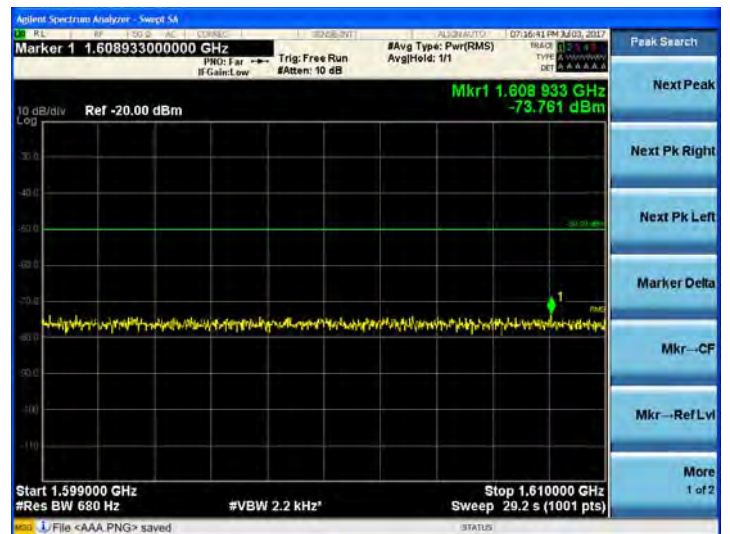
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)



(16QAM)

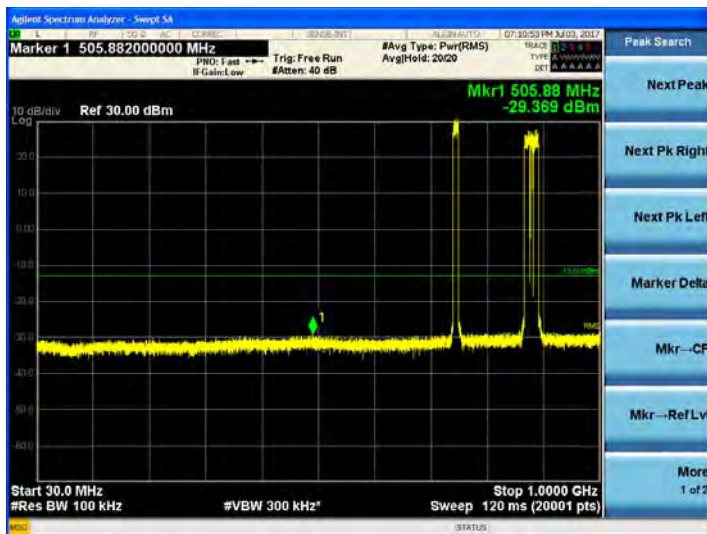
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



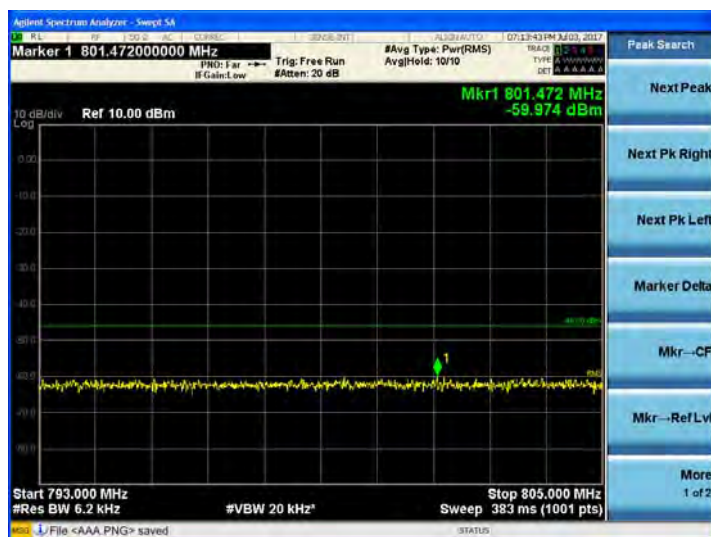
1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



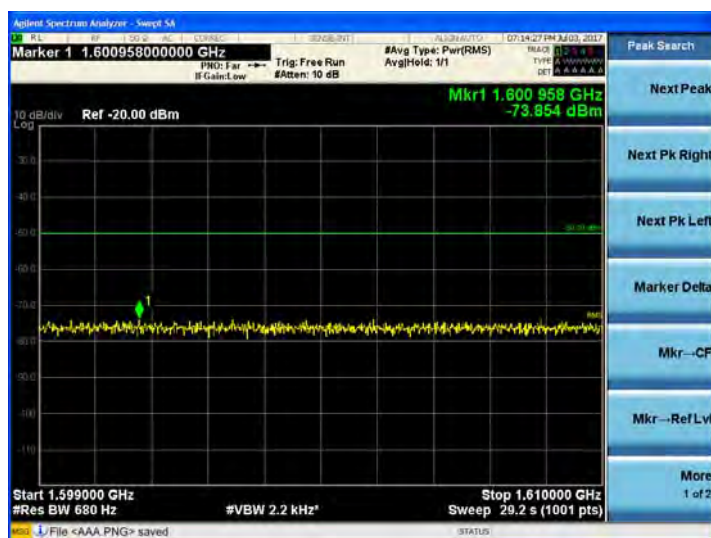
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)

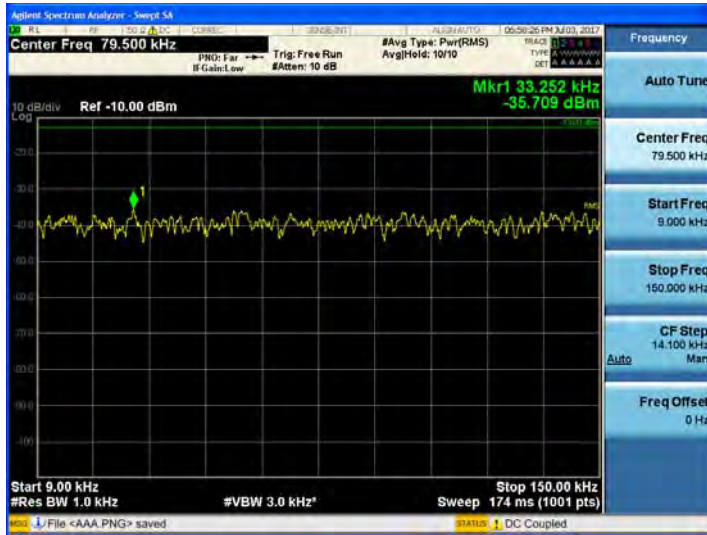


1 599 MHz ~ 1 610 MHz (2)



(64QAM)

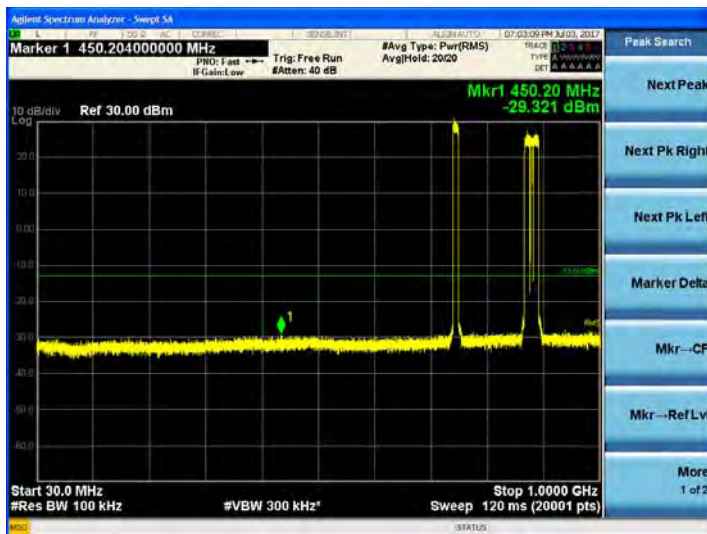
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)



(256QAM)

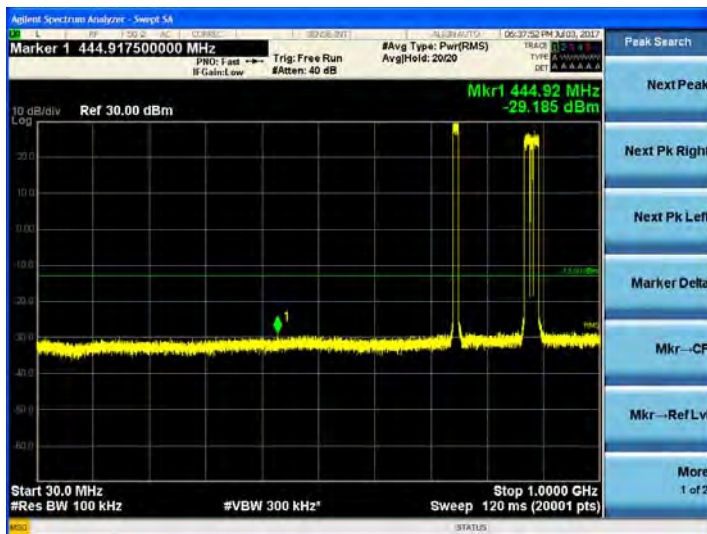
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



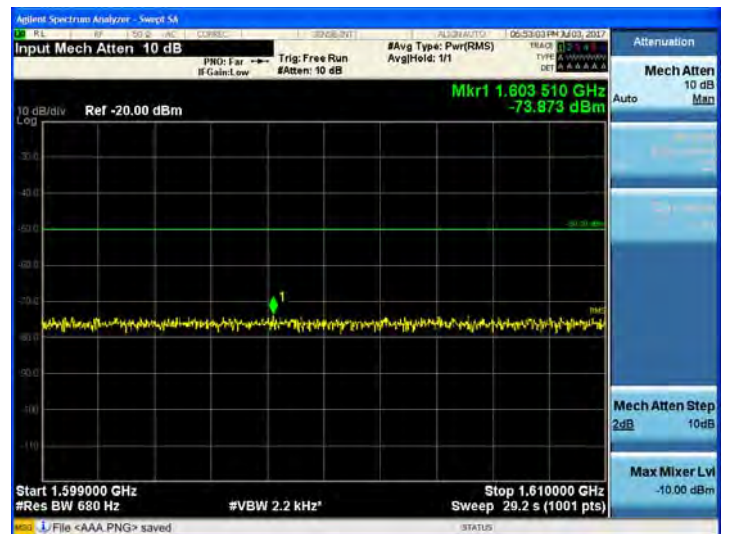
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)

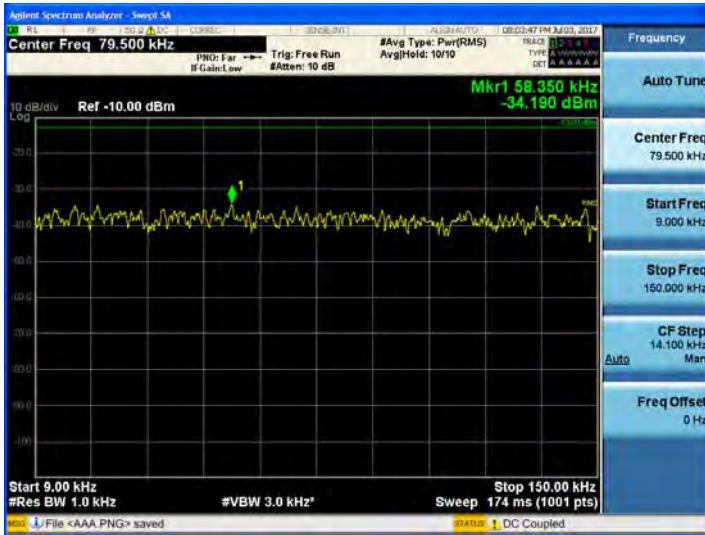


1 599 MHz ~ 1 610 MHz (2)



Test Data at Output Port 2 (2 paths)
(QPSK)

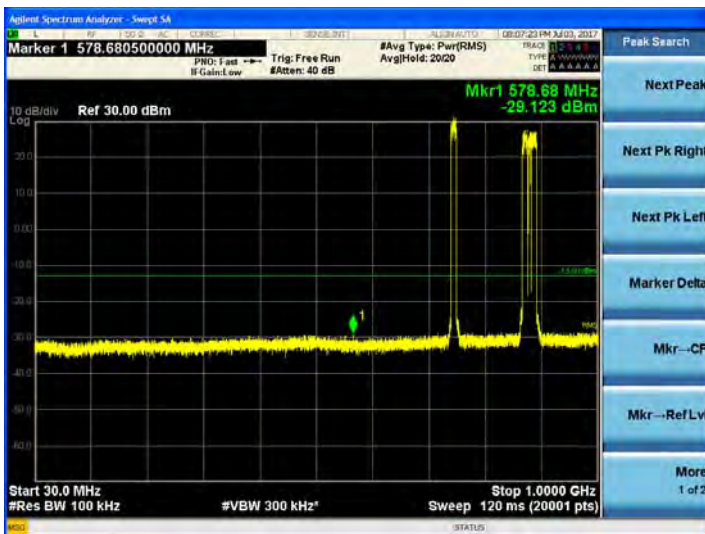
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



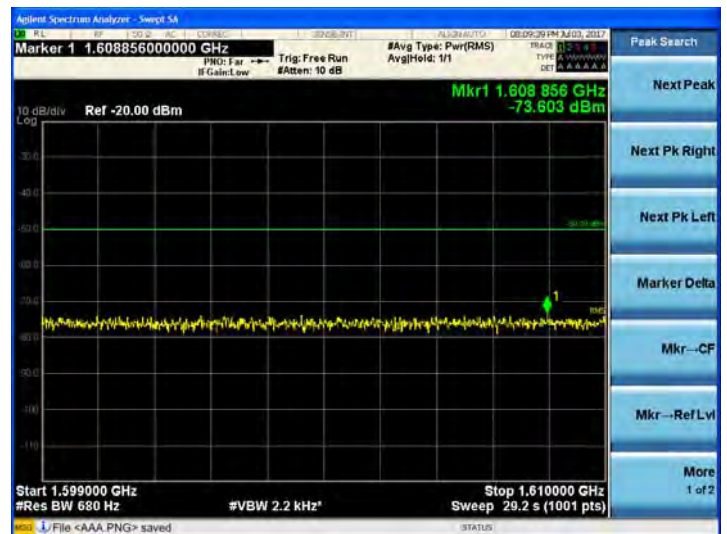
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)

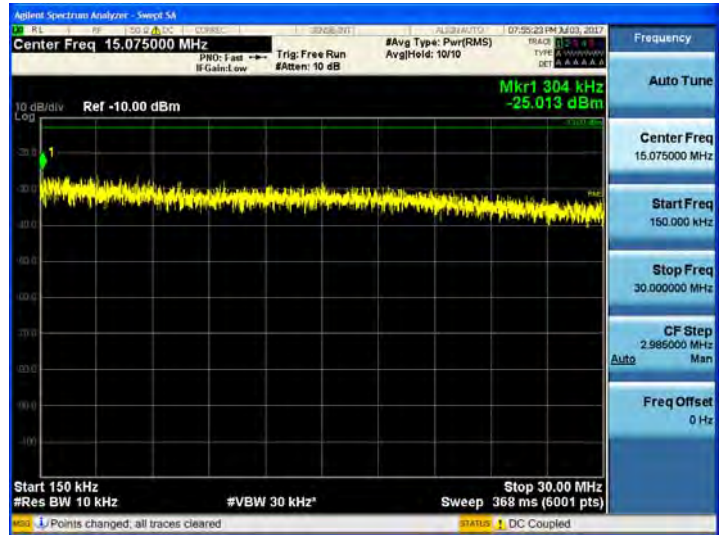


(16QAM)

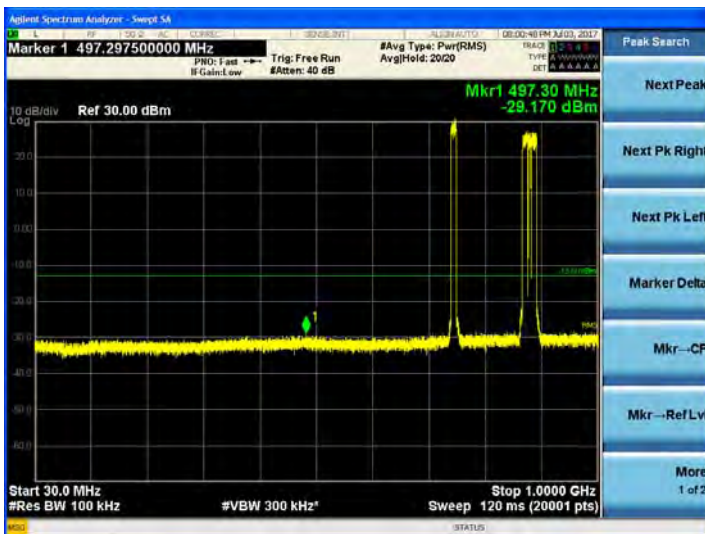
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



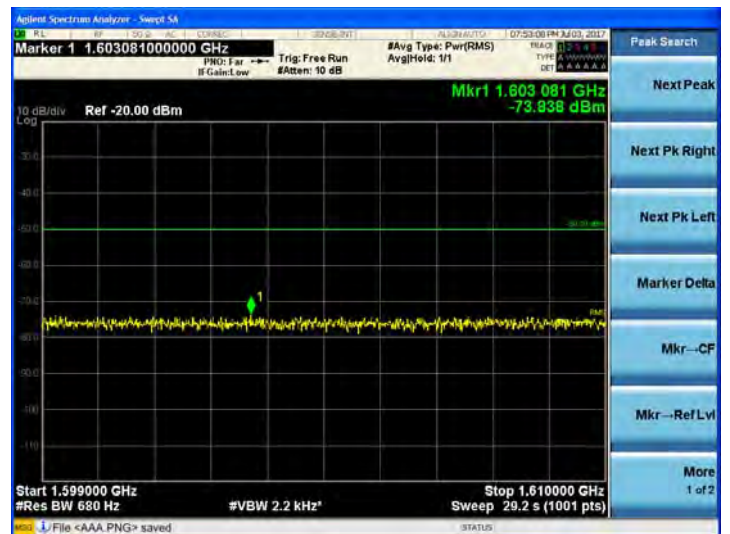
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)

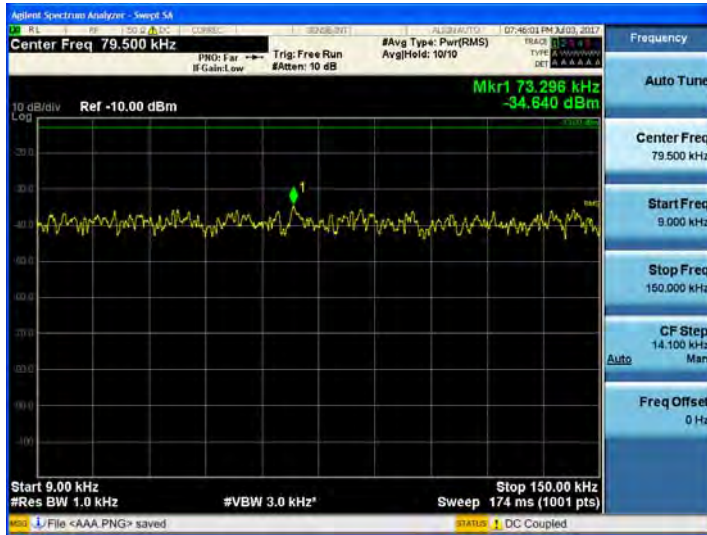


1 599 MHz ~ 1 610 MHz (2)



(64QAM)

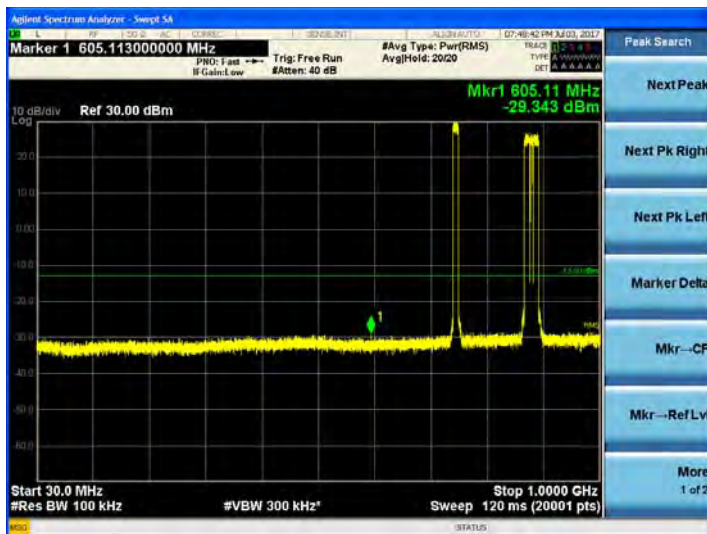
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



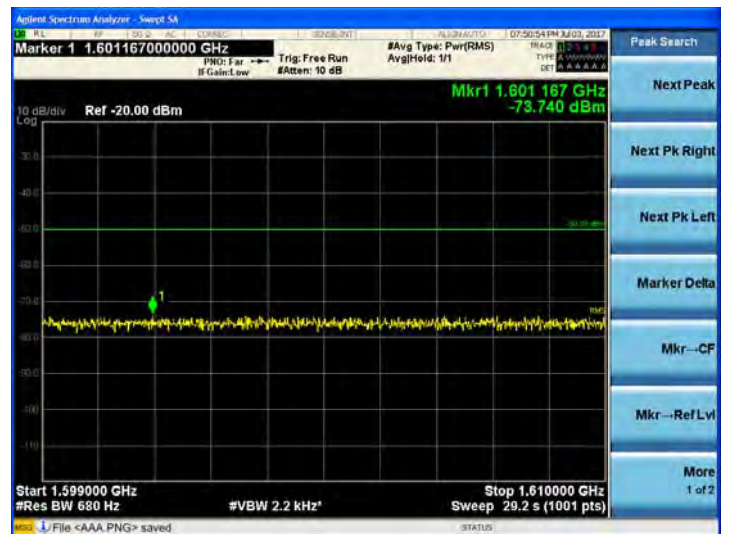
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)

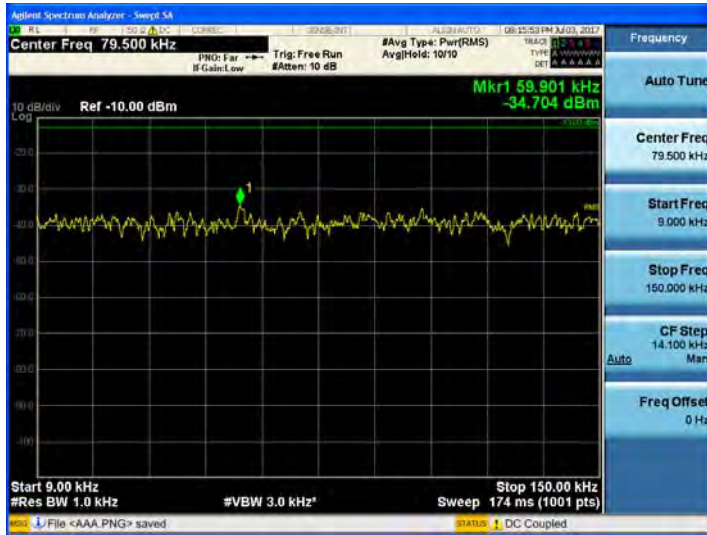


1 599 MHz ~ 1 610 MHz (2)



(256QAM)

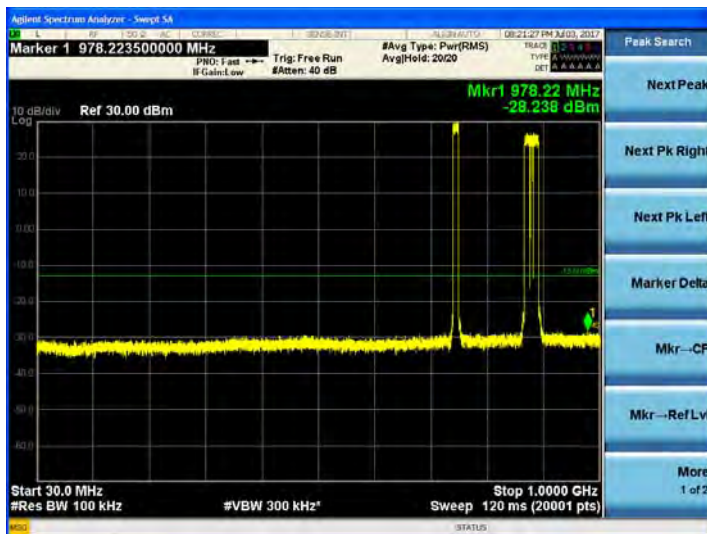
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



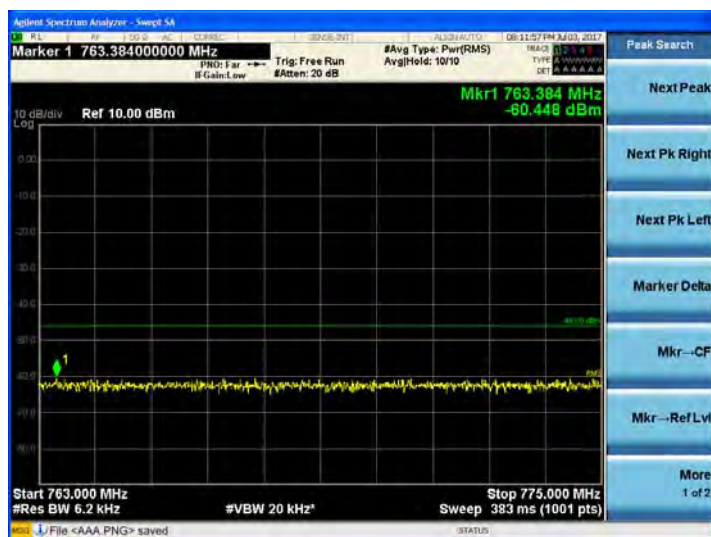
30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



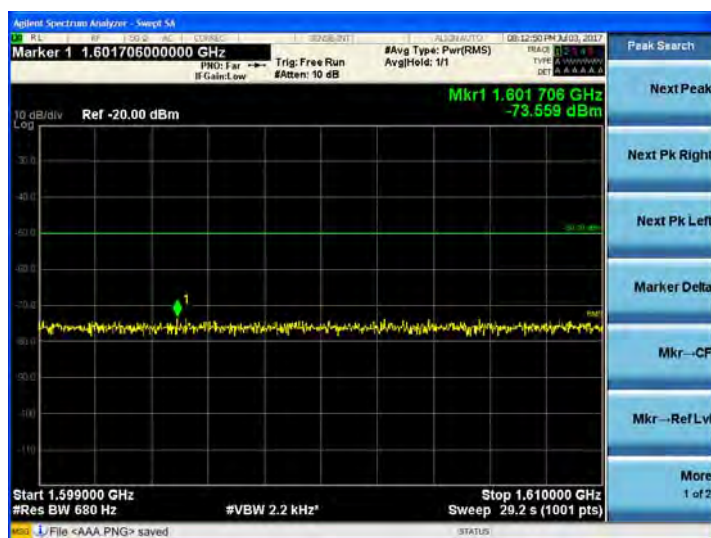
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)

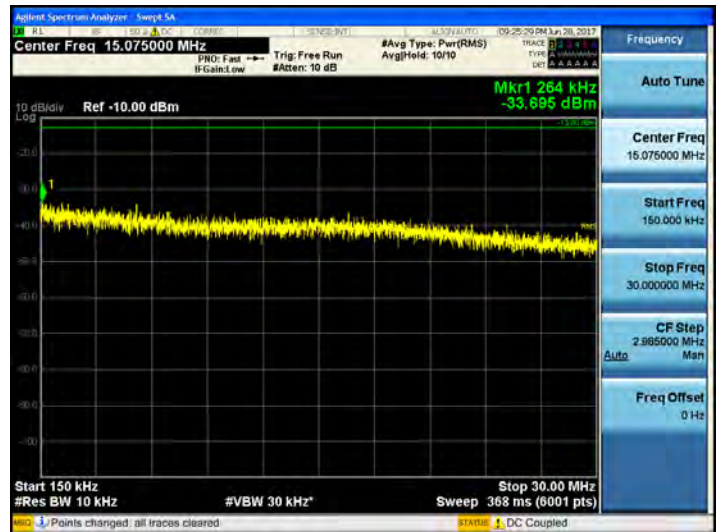


Test Data at Output Port 3 (4 paths)
(QPSK)

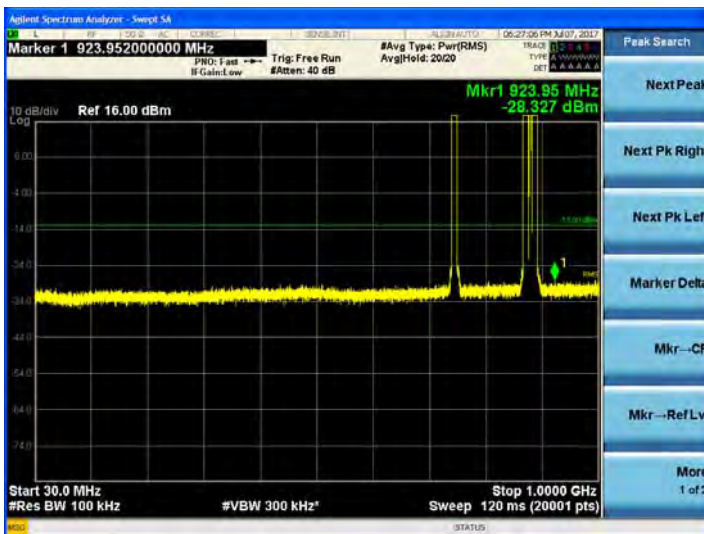
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



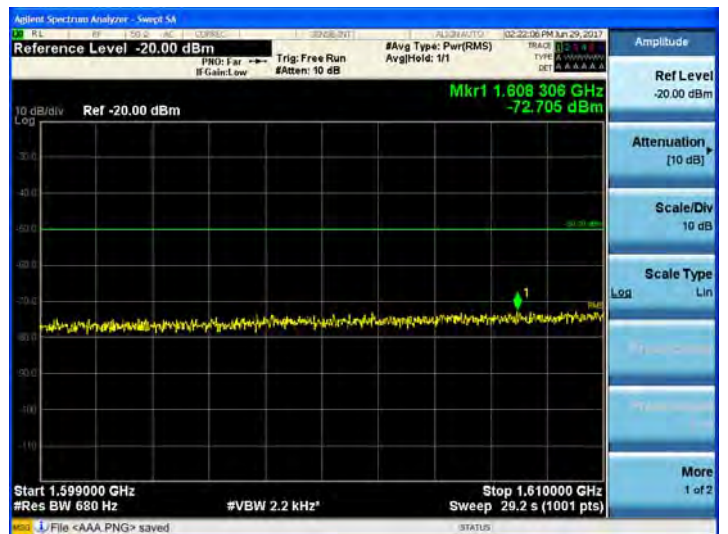
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)



(16QAM)

9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



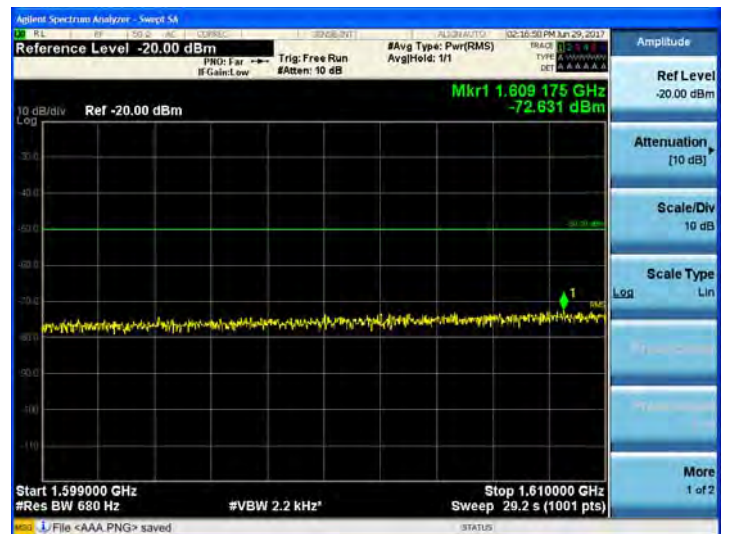
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)

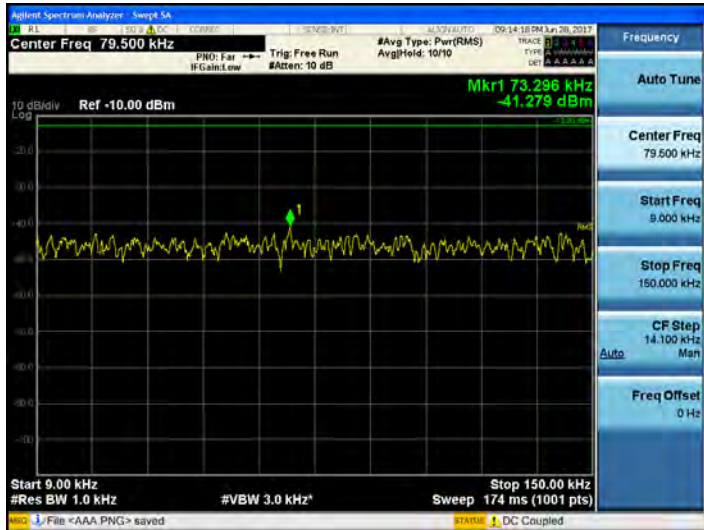


1 599 MHz ~ 1 610 MHz (2)

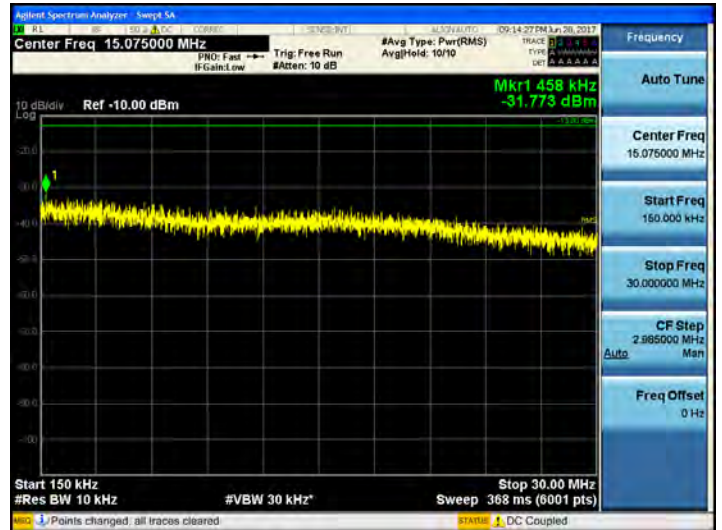


(64QAM)

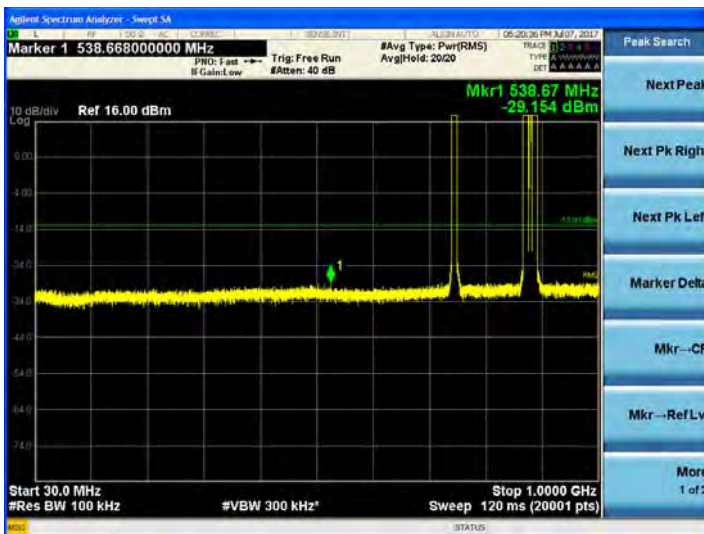
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)

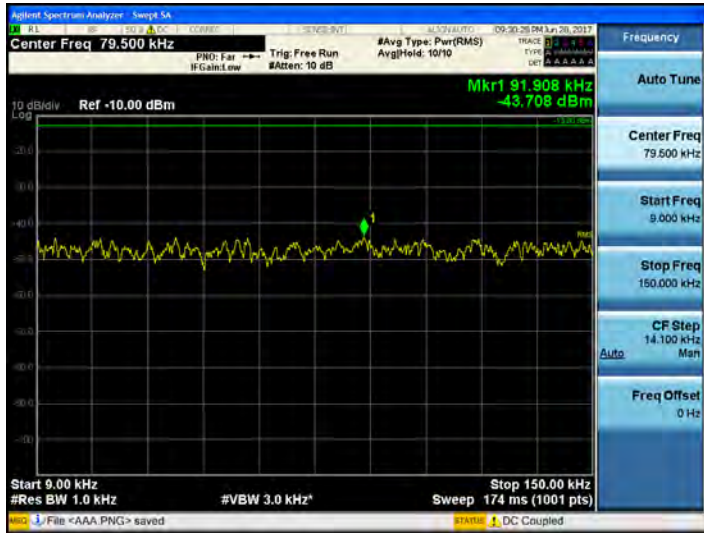


1 599 MHz ~ 1 610 MHz (2)

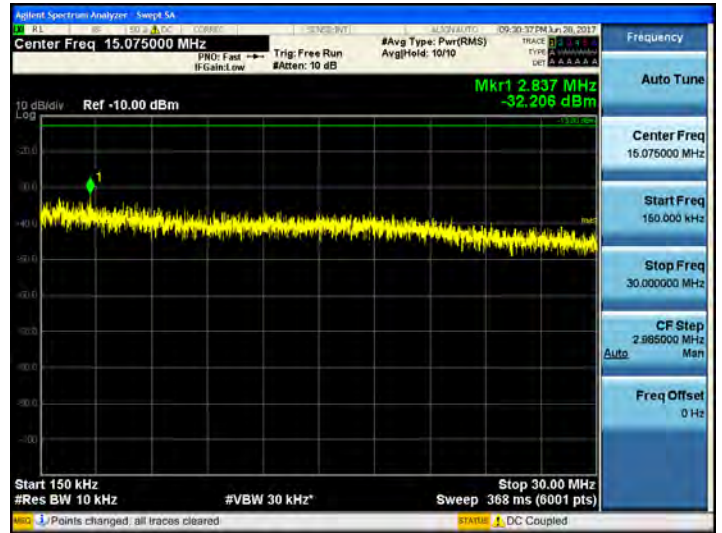


(256QAM)

9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



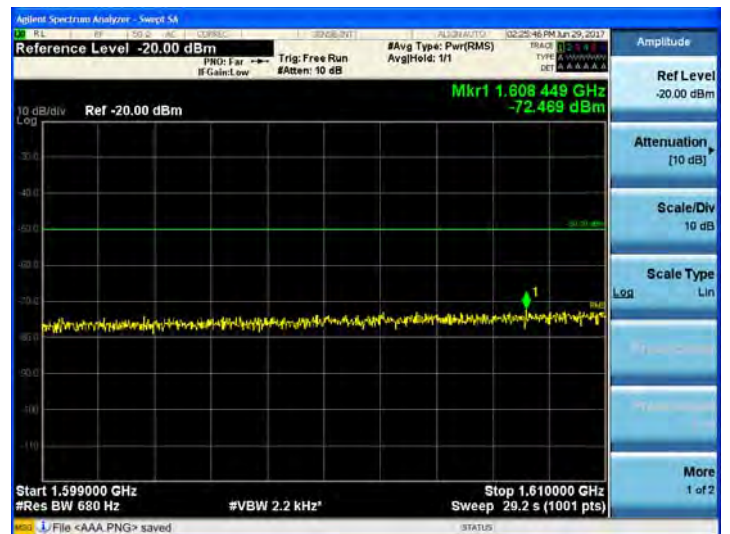
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)

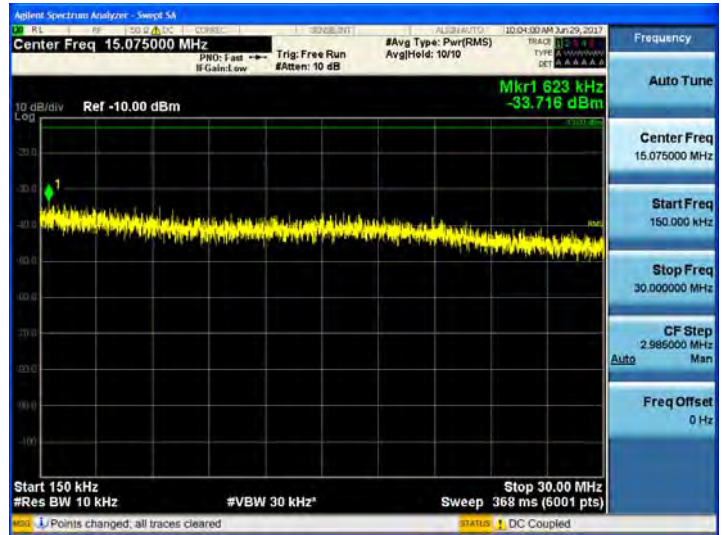


Test Data at Output Port 4 (4 paths)
(QPSK)

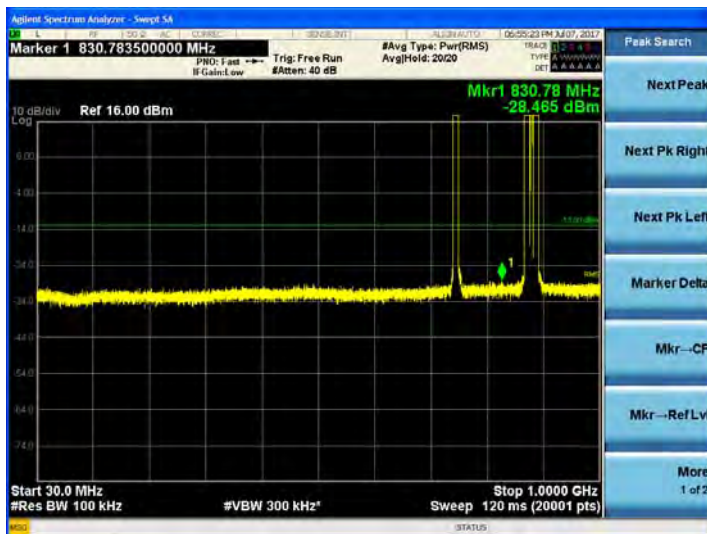
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



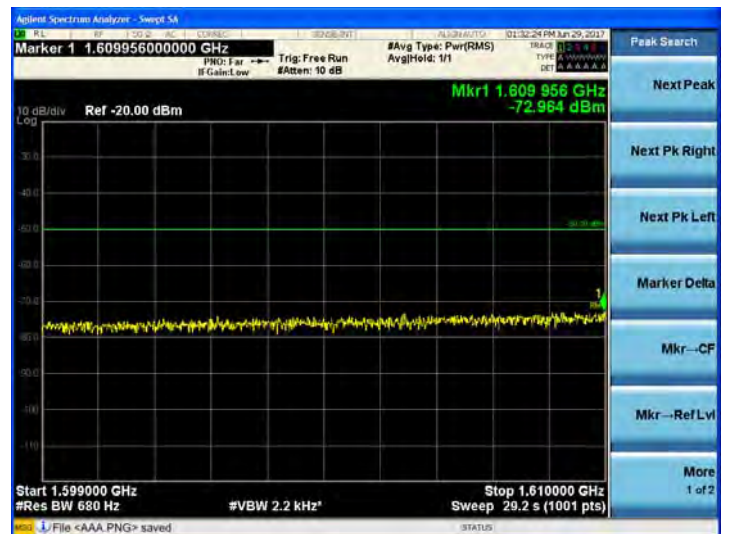
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)



(16QAM)

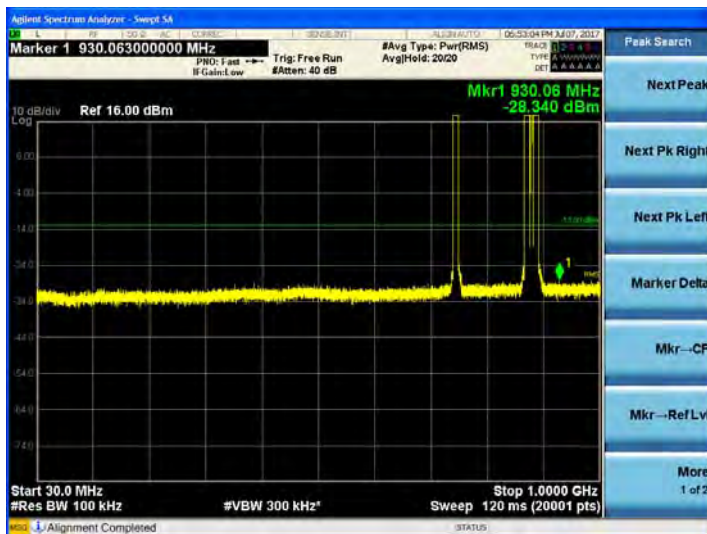
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



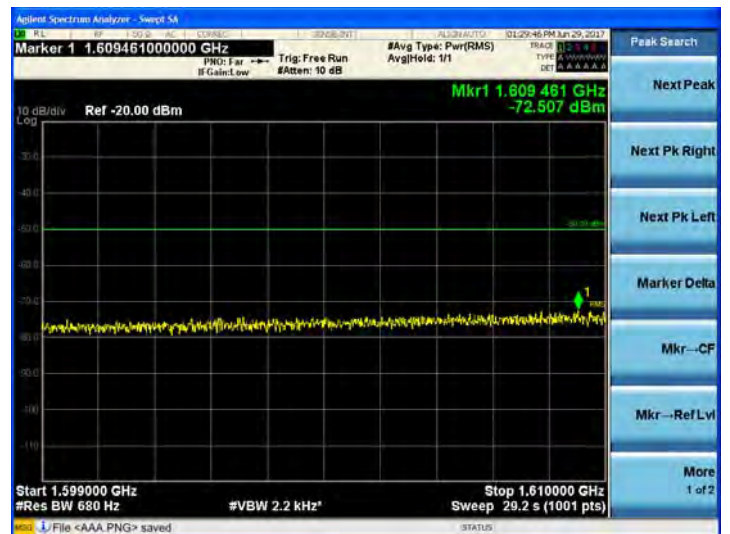
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)

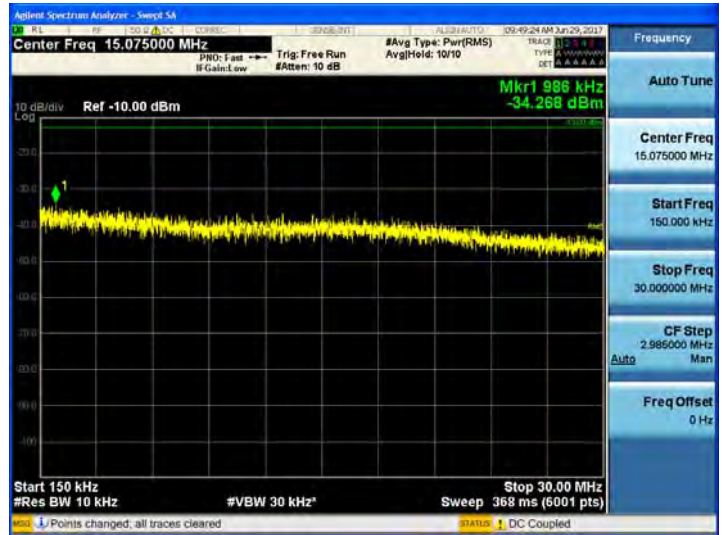


(64QAM)

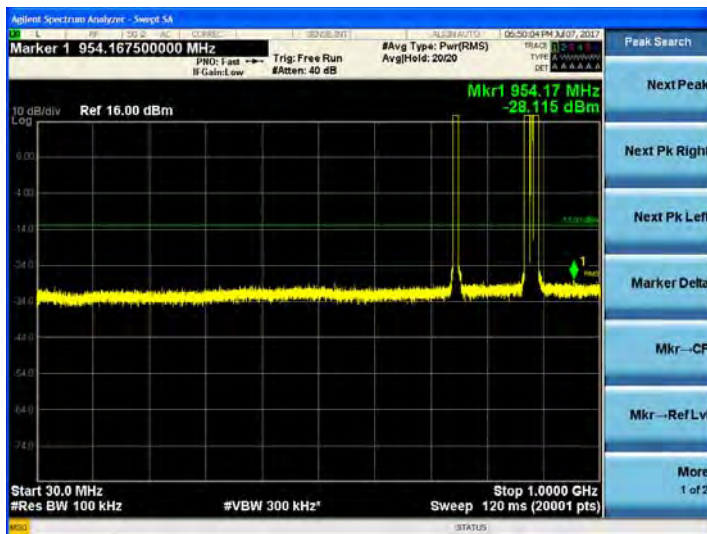
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



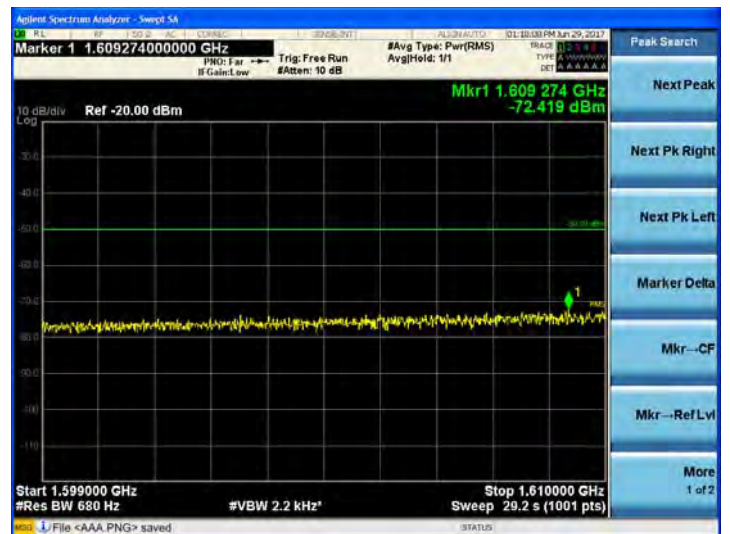
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)

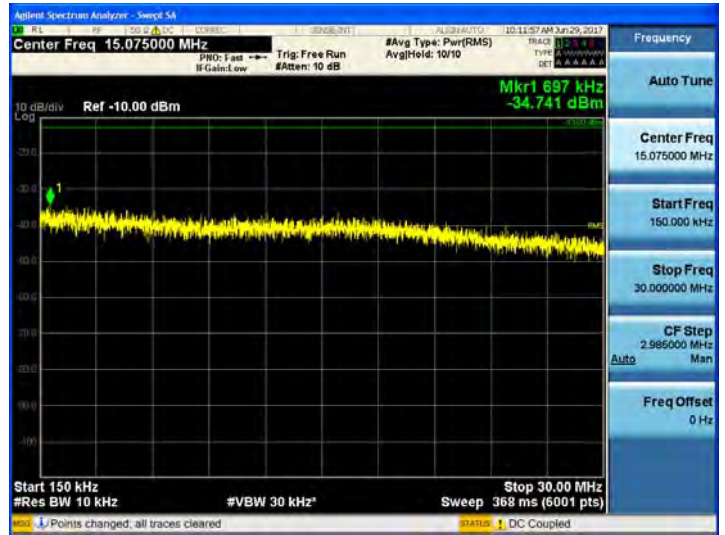


(256QAM)

9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



763 MHz ~ 775 MHz



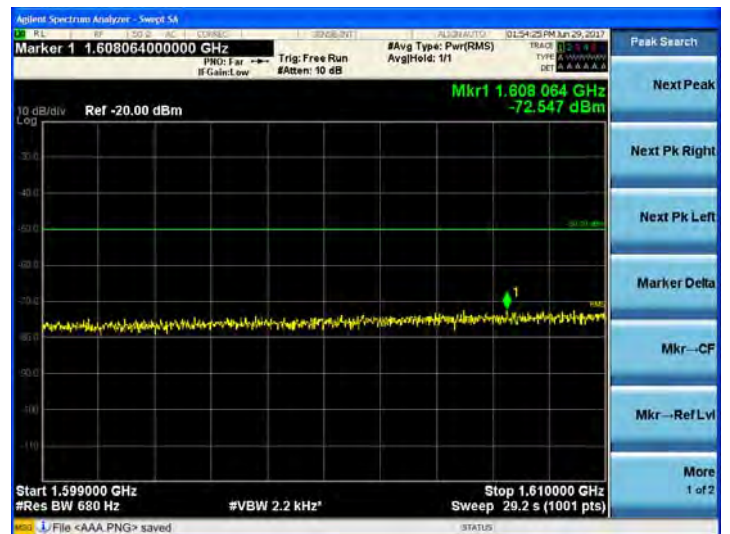
793 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)

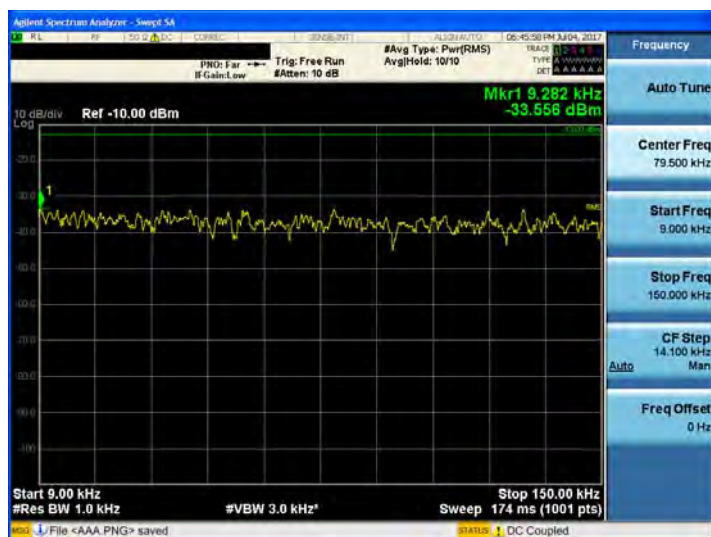


LTE Band 5_1 Carrier (5 MHz)

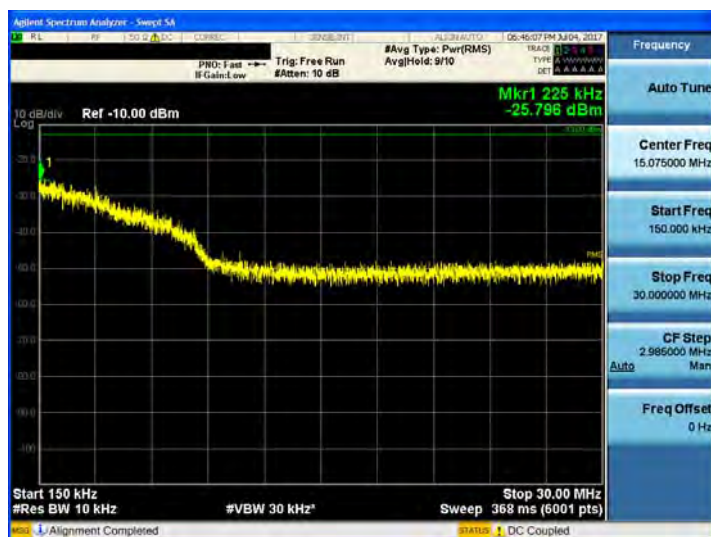
Test Data at Output Port 1 (2 paths)

(QPSK Low channel)

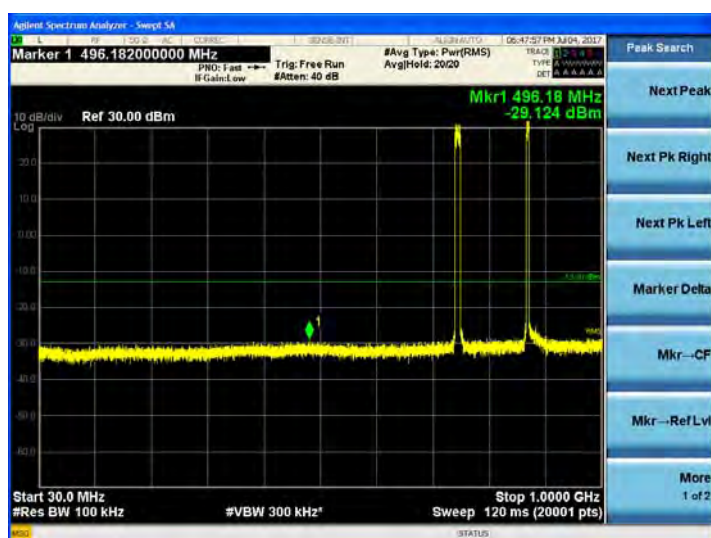
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



(QPSK Middle channel)

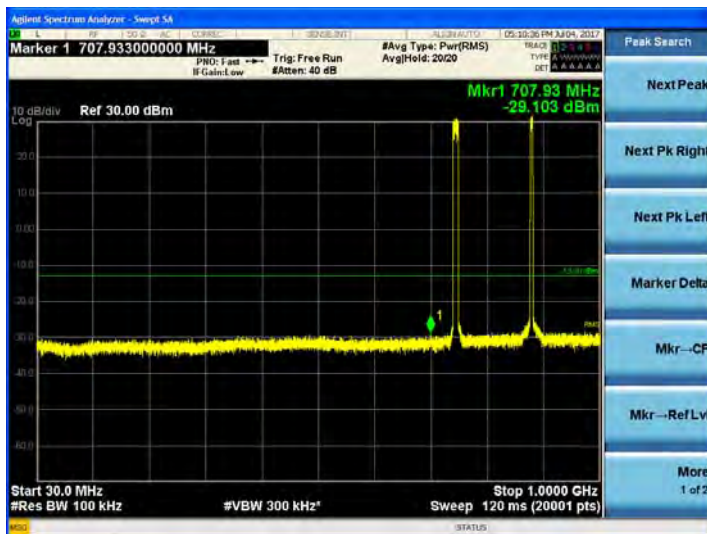
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz

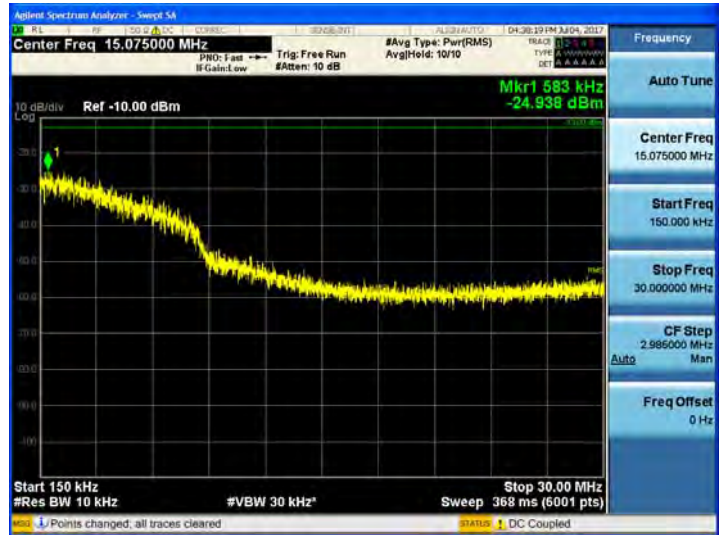


(QPSK High channel)

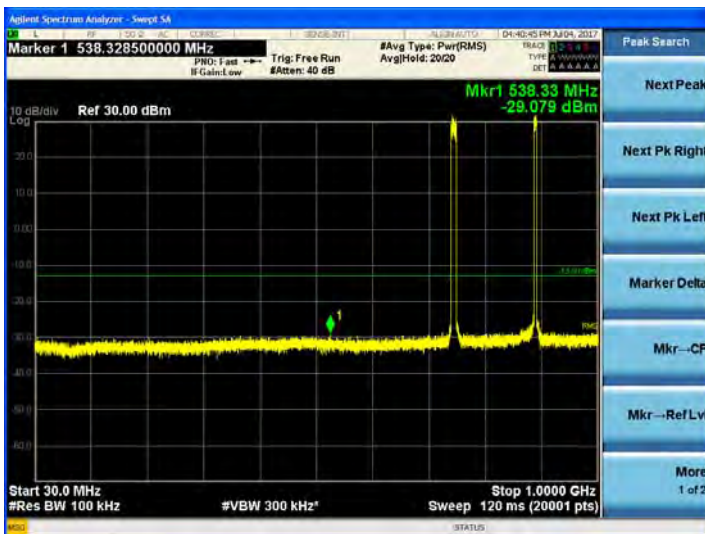
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



(16QAM Low channel)

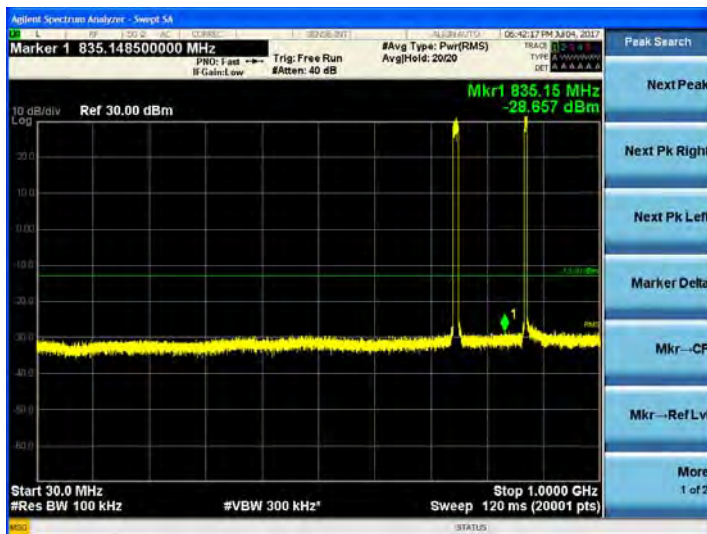
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



(16QAM Middle channel)

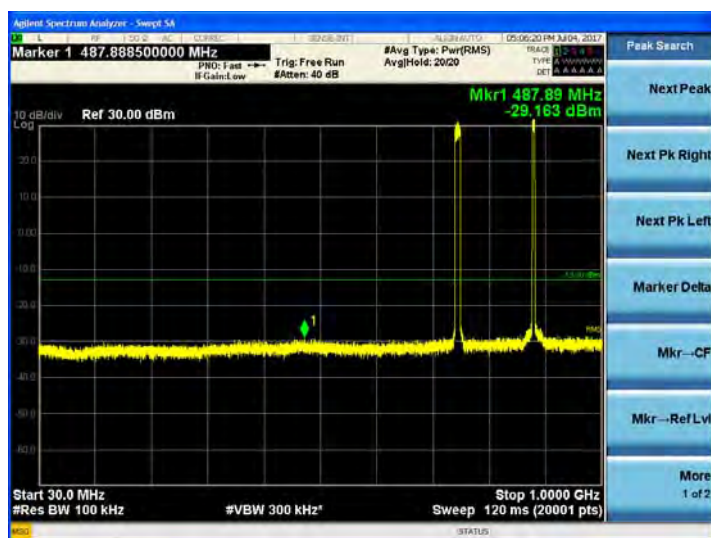
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz

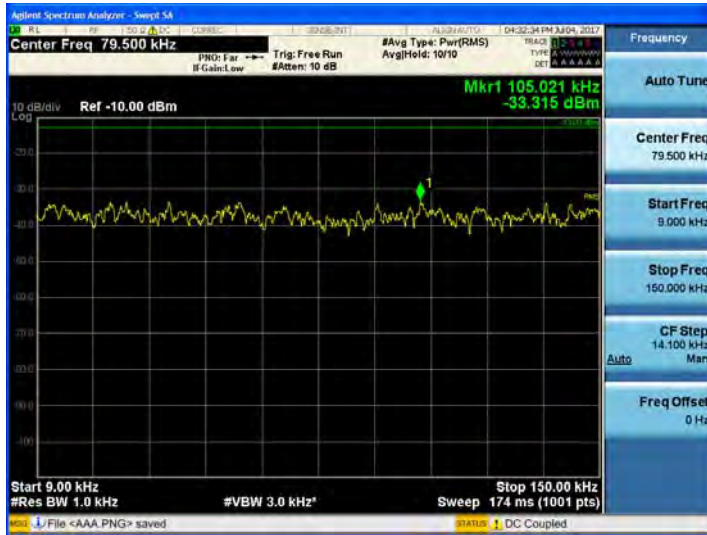


1 GHz ~ 12.75 GHz



(16QAM High channel)

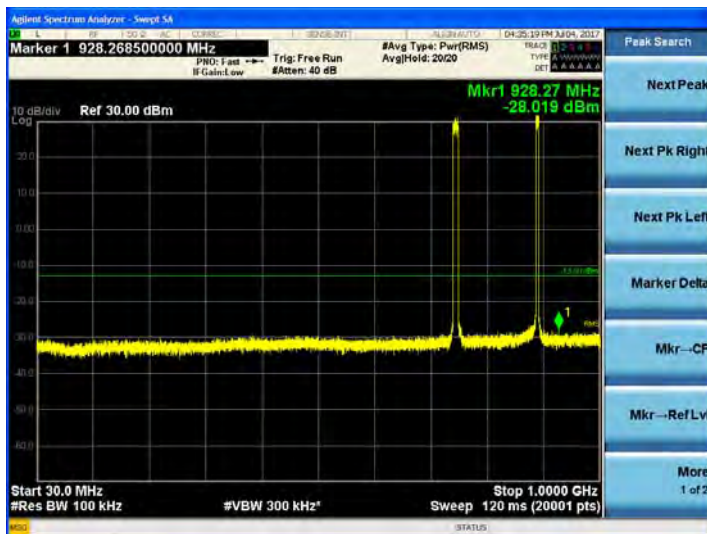
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz

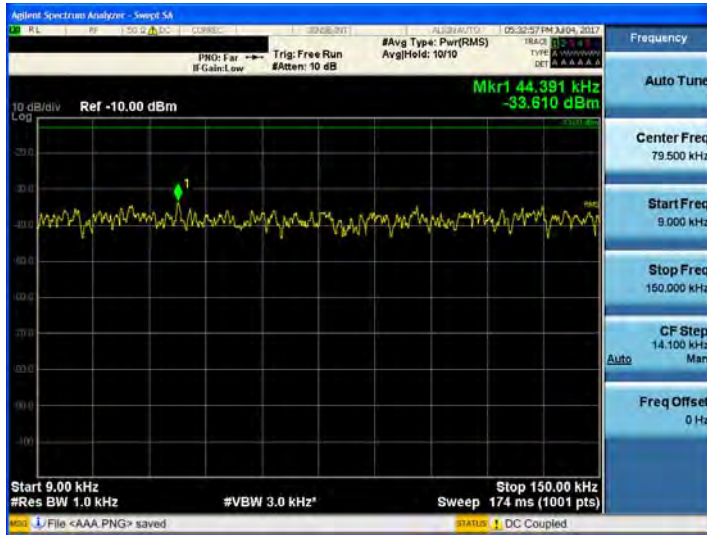


1 GHz ~ 12.75 GHz



(64QAM Low channel)

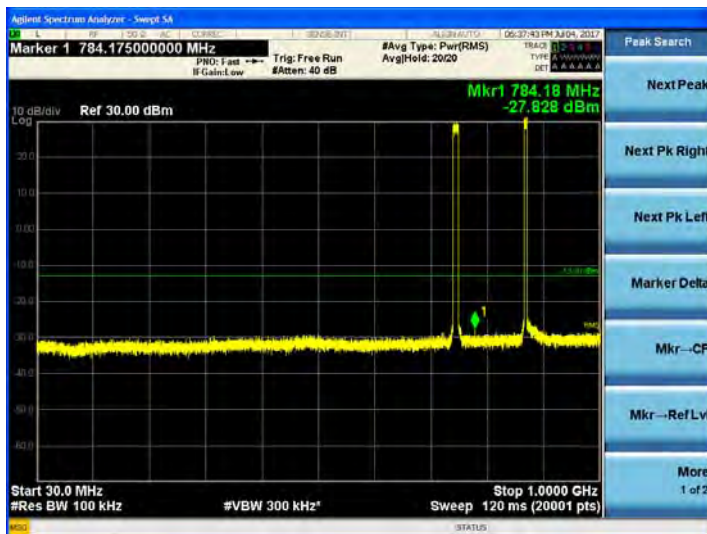
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz

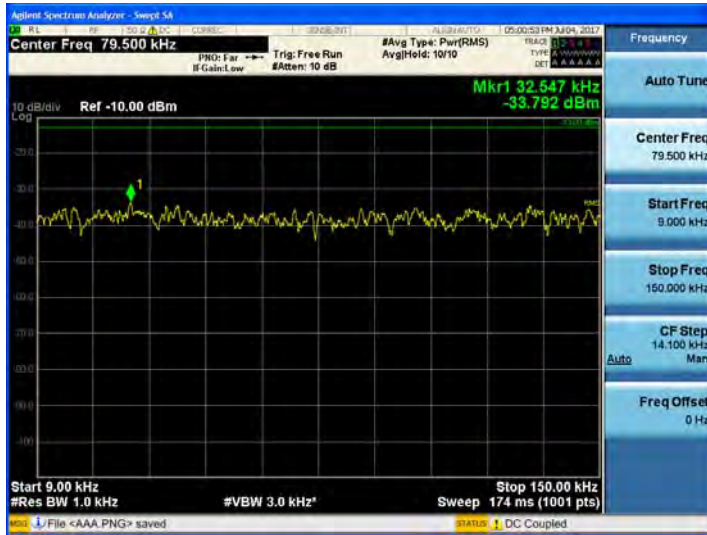


1 GHz ~ 12.75 GHz



(64QAM Middle channel)

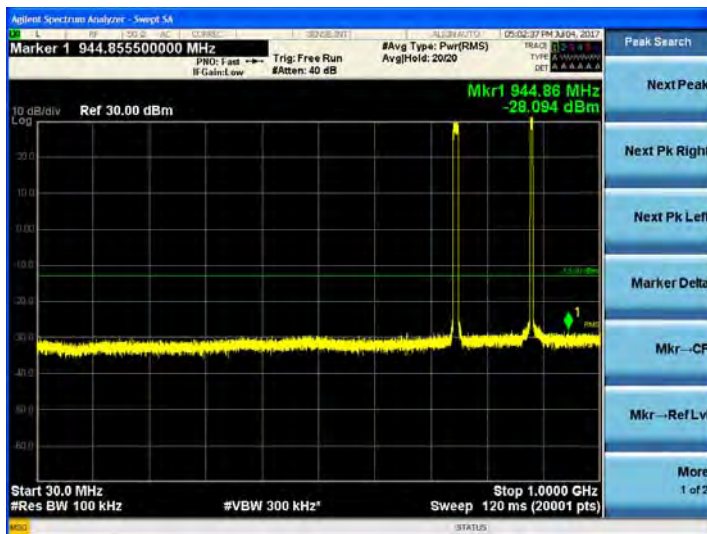
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz

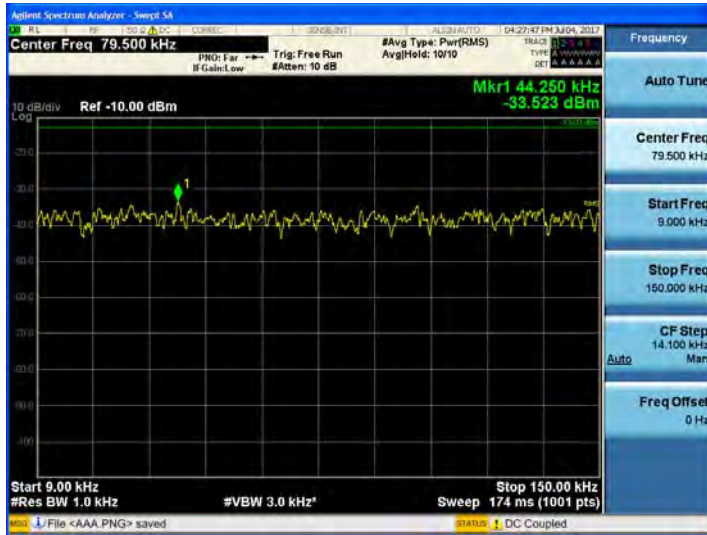


1 GHz ~ 12.75 GHz



(64QAM High channel)

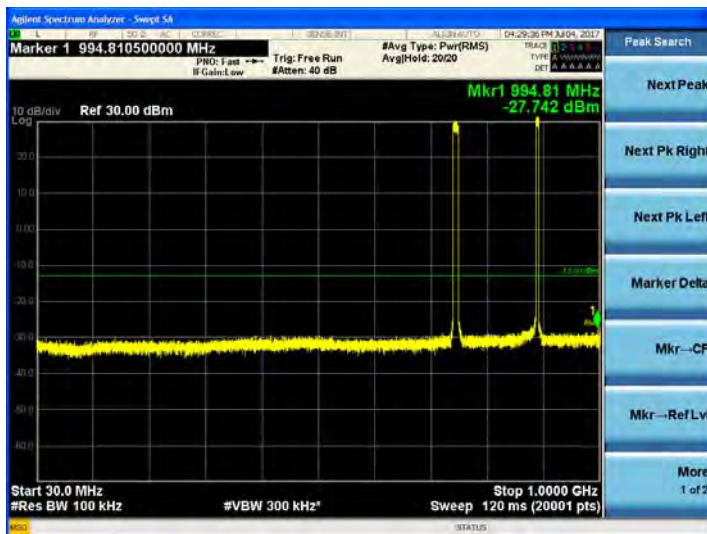
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



(256QAM Low channel)

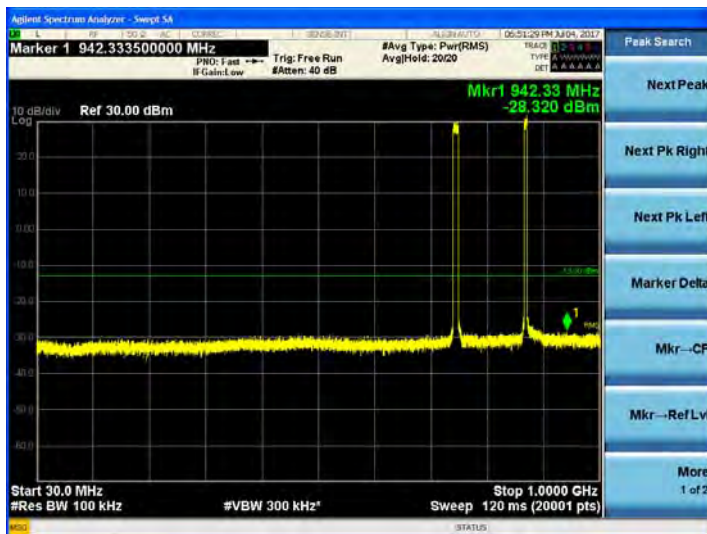
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz

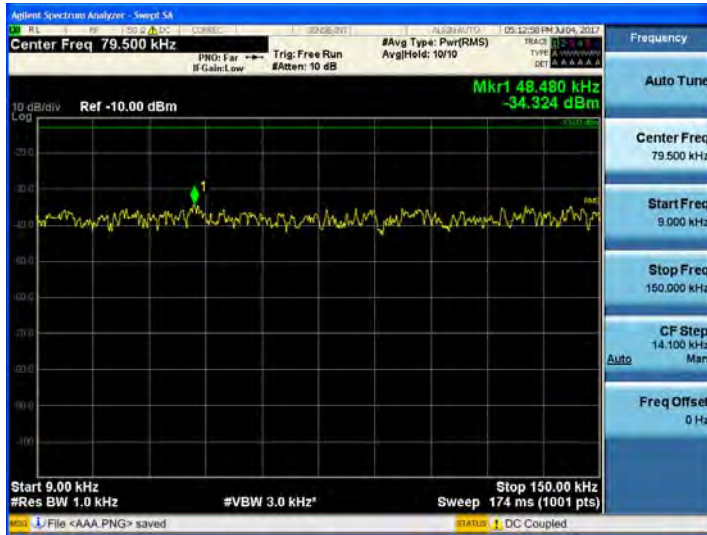


1 GHz ~ 12.75 GHz



(256QAM Middle channel)

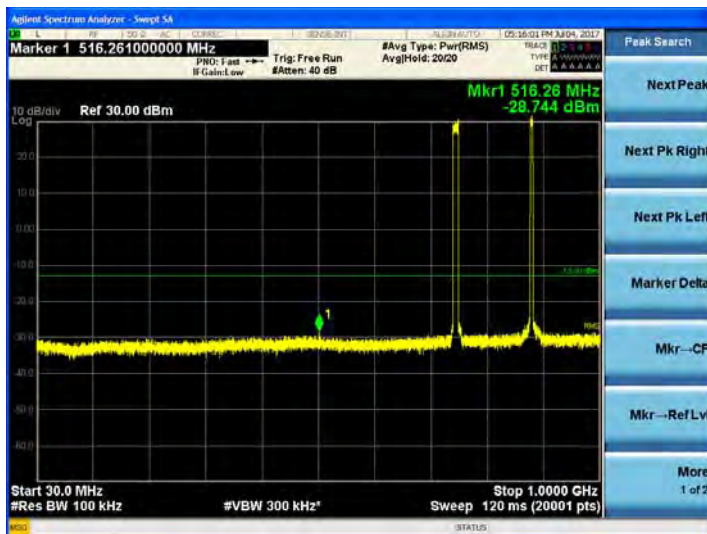
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz

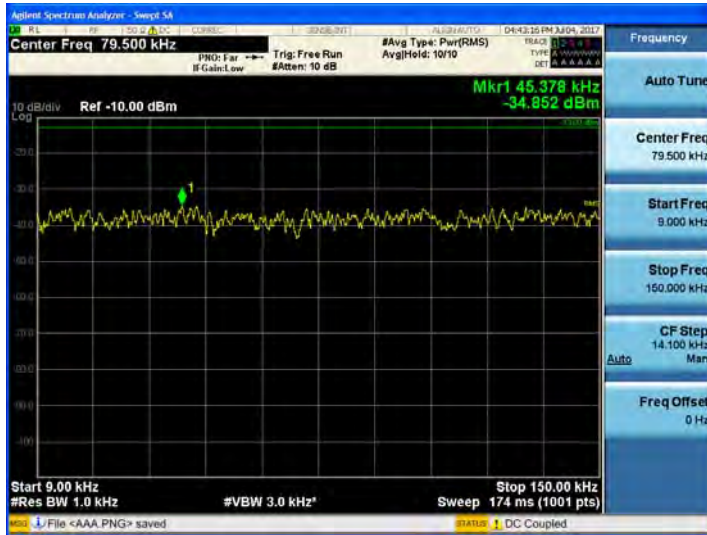


1 GHz ~ 12.75 GHz

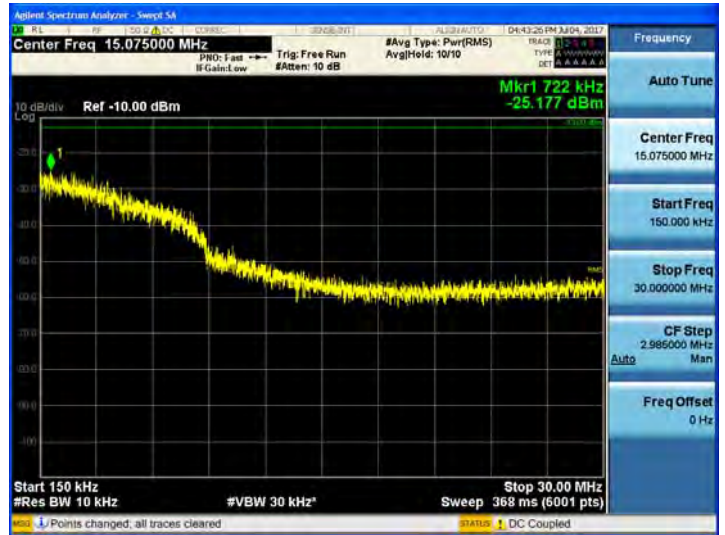


(256QAM High channel)

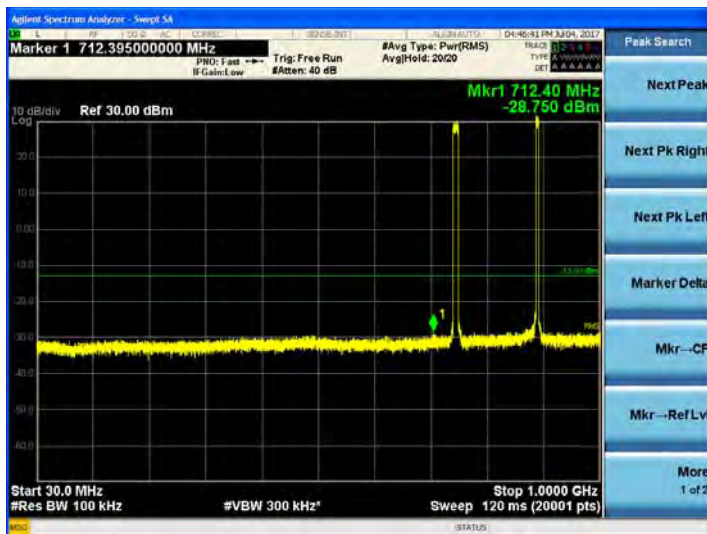
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz

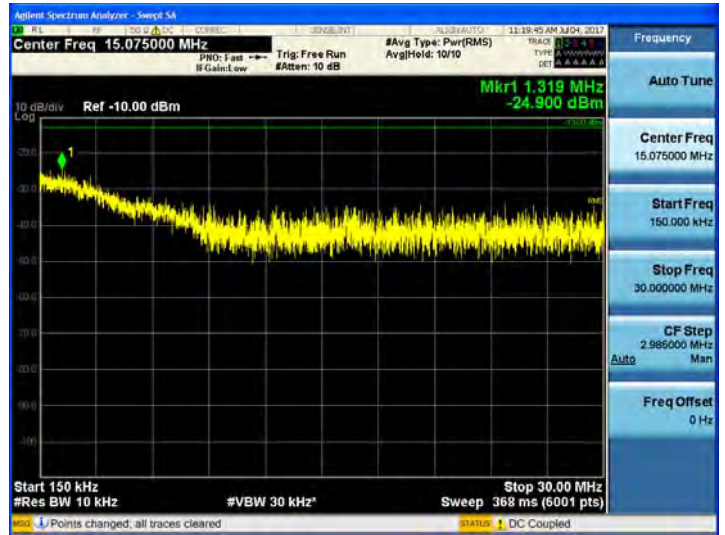


Test Data at Output Port 2 (2 paths)
(QPSK Low channel)

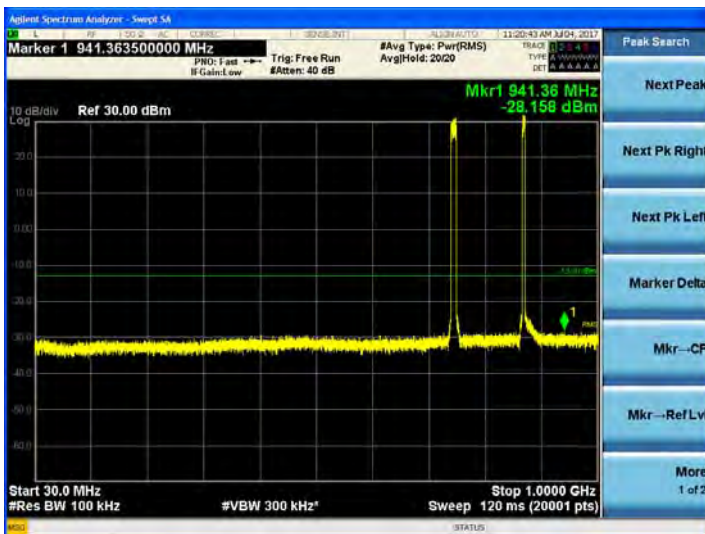
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



(QPSK Middle channel)

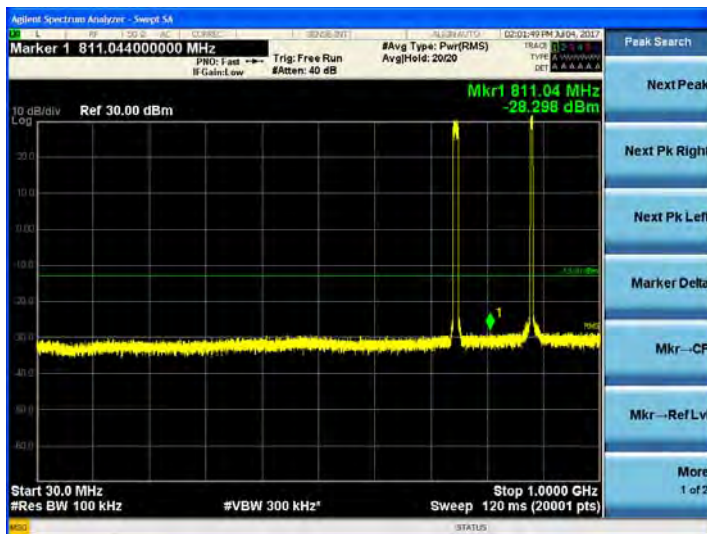
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz

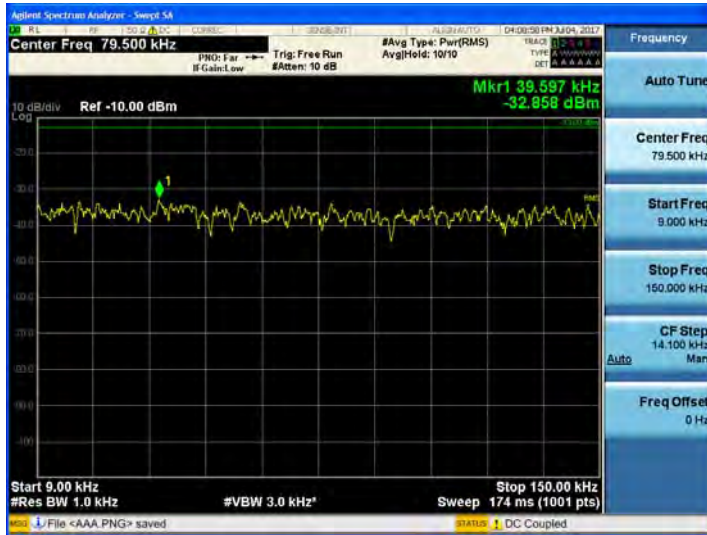


1 GHz ~ 12.75 GHz

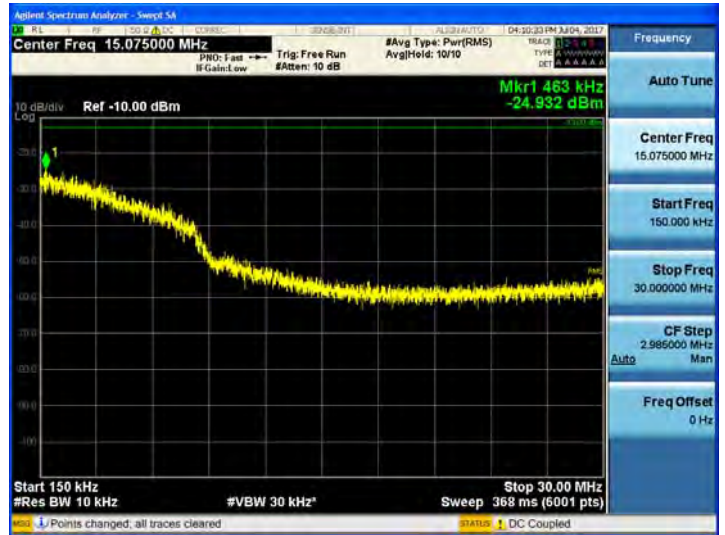


(QPSK High channel)

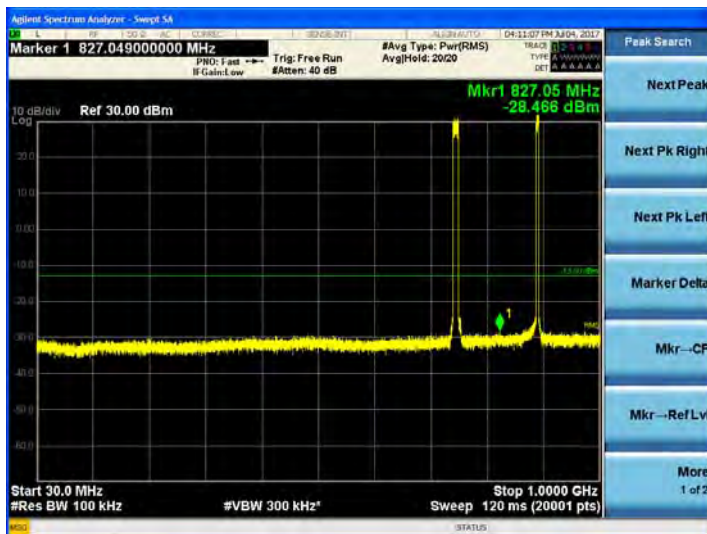
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz

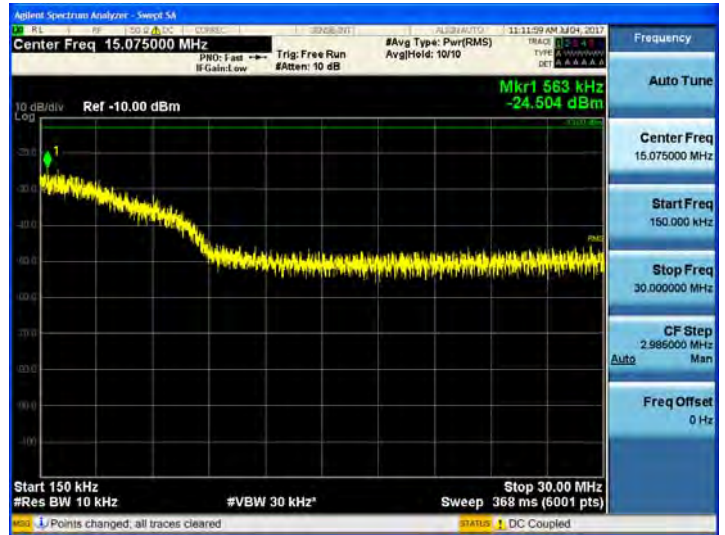


(16QAM Low channel)

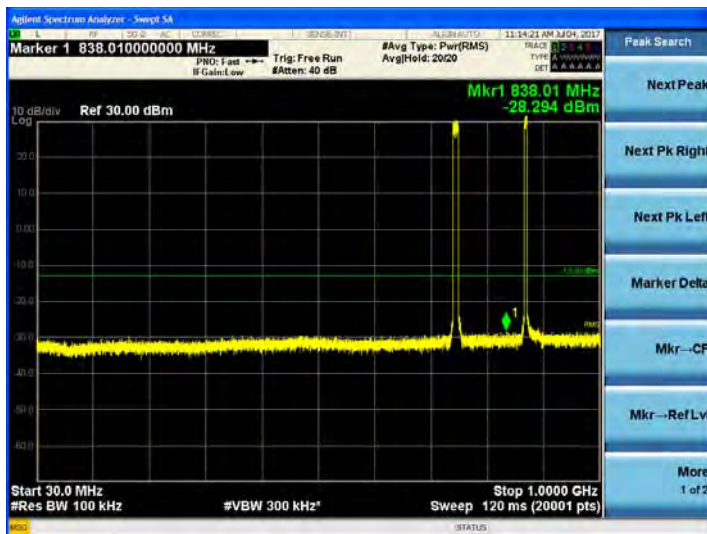
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz



(16QAM Middle channel)

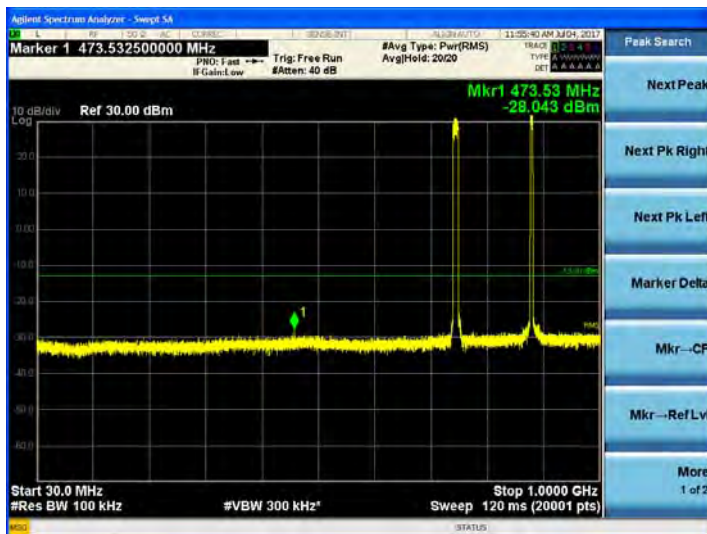
9 kHz ~ 150 kHz



150 kHz ~ 30 MHz



30 MHz ~ 1 GHz



1 GHz ~ 12.75 GHz

