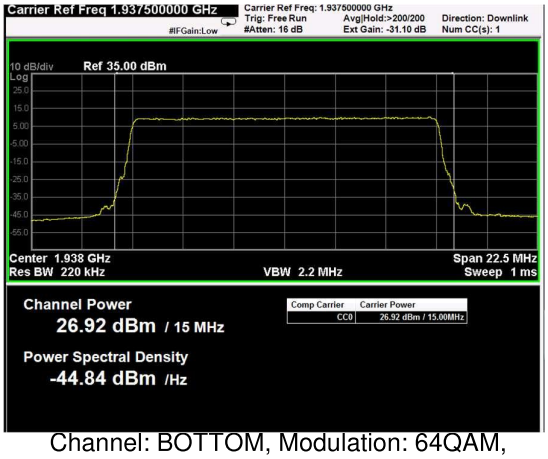
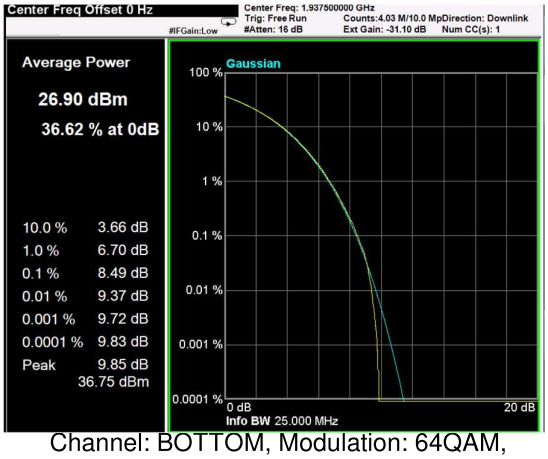
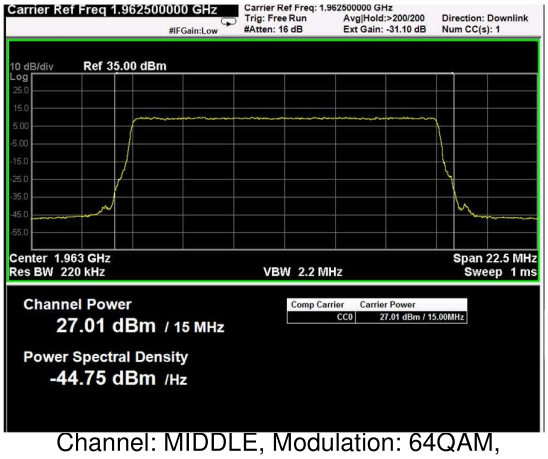


Channel: BOTTOM, Modulation: 64QAM, BW=15MHz, Channel Power

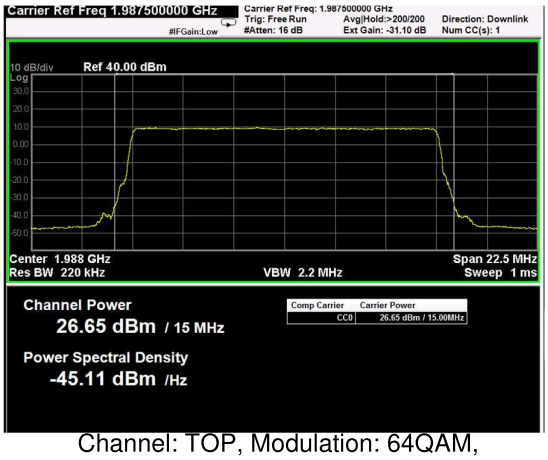


Channel: BOTTOM, Modulation: 64QAM, BW=15MHz, CCDF

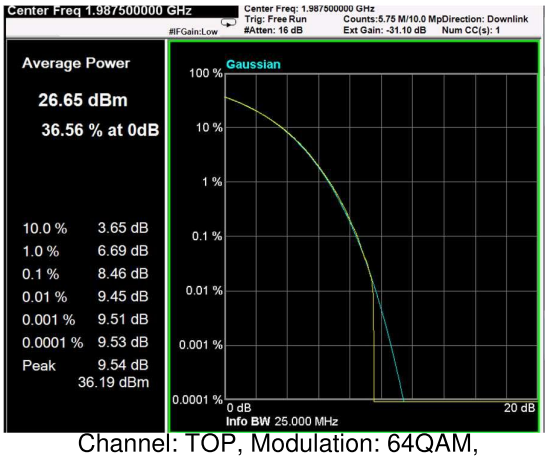


Channel: MIDDLE, Modulation: 64QAM, BW=15MHz, Channel Power

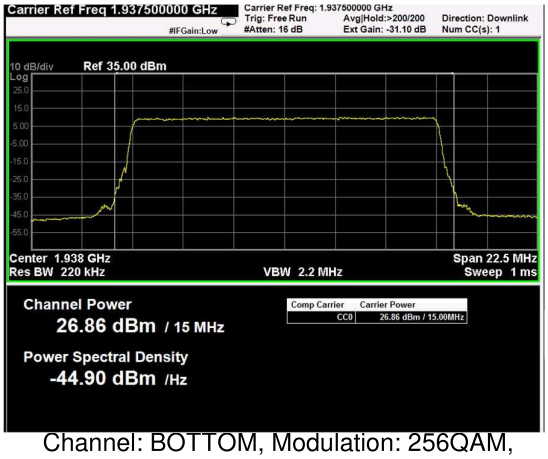
Channel: MIDDLE, Modulation: 64QAM, BW=15MHz, CCDF



Channel: TOP, Modulation: 64QAM, BW=15MHz, Channel Power

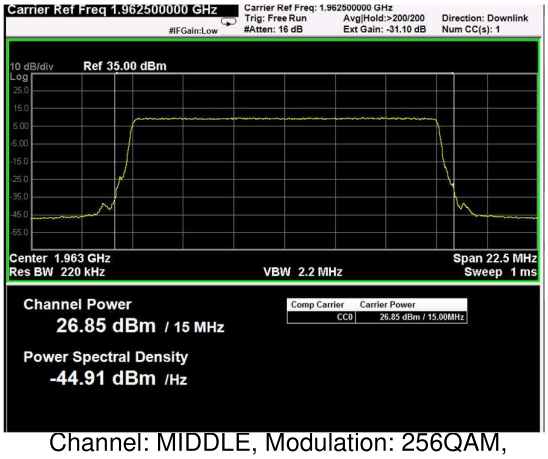


Channel: TOP, Modulation: 64QAM, BW=15MHz, CCDF



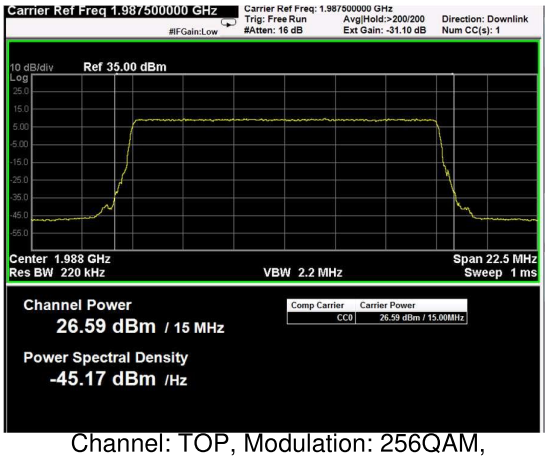
Channel: BOTTOM, Modulation: 256QAM, BW=15MHz, Channel Power

Channel: BOTTOM, Modulation: 256QAM, BW=15MHz, CCDF

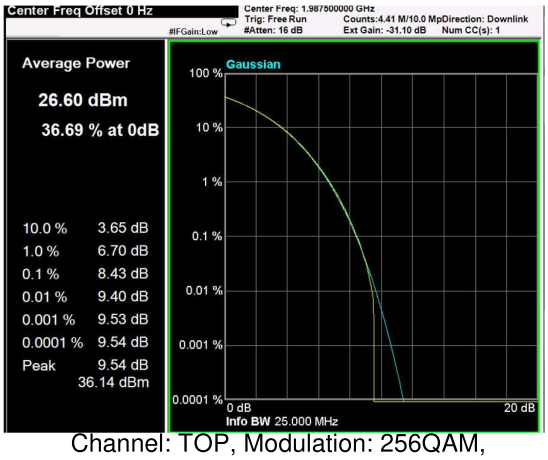


Channel: MIDDLE, Modulation: 256QAM, BW=15MHz, Channel Power

Channel: MIDDLE, Modulation: 256QAM, BW=15MHz, CCDF

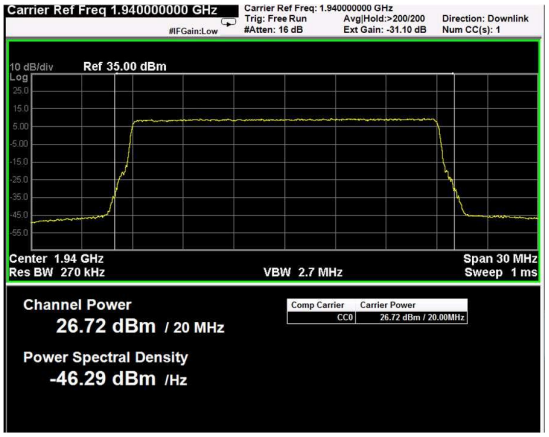


Channel: TOP, Modulation: 256QAM, BW=15MHz, Channel Power



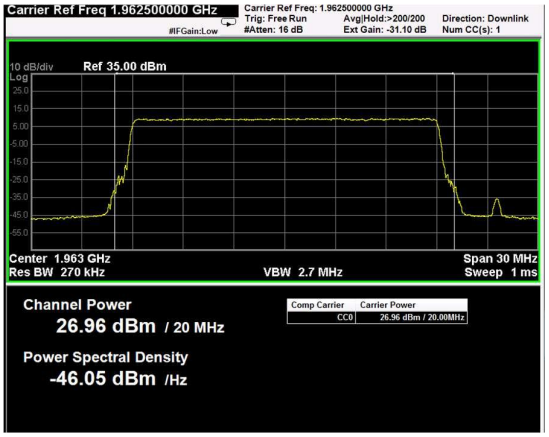
Channel: TOP, Modulation: 256QAM, BW=15MHz, CCDF

Test data					
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	PAR (dB)
Down-link	LTE 20MHz (QPSK)	1940	26.7	0.470	9.7
Down-link	LTE 20MHz (QPSK)	1962.5	27.0	0.497	9.2
Down-link	LTE 20MHz (QPSK)	1985	26.9	0.484	9.1
Down-link	LTE 20MHz (16QAM)	1940	26.7	0.468	9.9
Down-link	LTE 20MHz (16QAM)	1962.5	27.0	0.501	9.2
Down-link	LTE 20MHz (16QAM)	1985	26.7	0.472	9.3
Down-link	LTE 20MHz (64QAM)	1940	26.7	0.468	9.9
Down-link	LTE 20MHz (64QAM)	1962.5	27.0	0.499	9.2
Down-link	LTE 20MHz (64QAM)	1985	26.8	0.483	9.1
Down-link	LTE 20MHz (256QAM)	1940	26.7	0.469	9.8
Down-link	LTE 20MHz (256QAM)	1962.5	27.0	0.497	9.2
Down-link	LTE 20MHz (256QAM)	1985	27.0	0.499	9.3

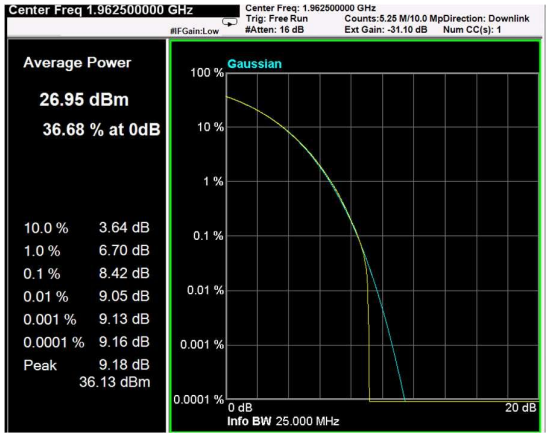


Channel: BOTTOM, Modulation: QPSK, BW=20MHz, Channel Power

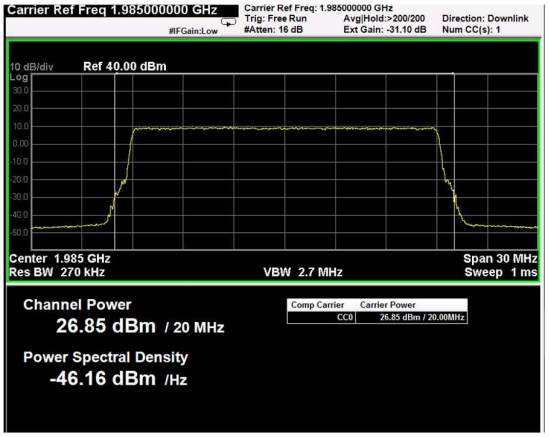
Channel: BOTTOM, Modulation: QPSK, BW=20MHz, CCDF



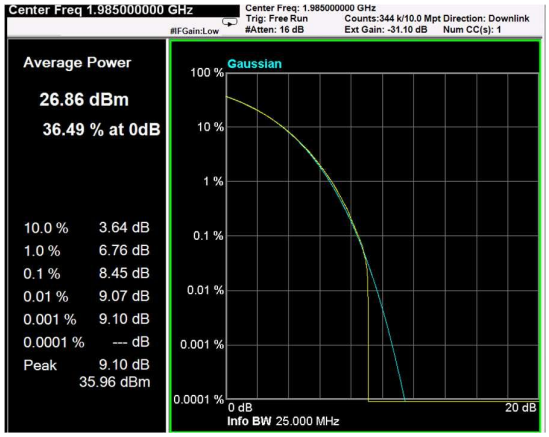
Channel: MIDDLE, Modulation: QPSK, BW=20MHz, Channel Power



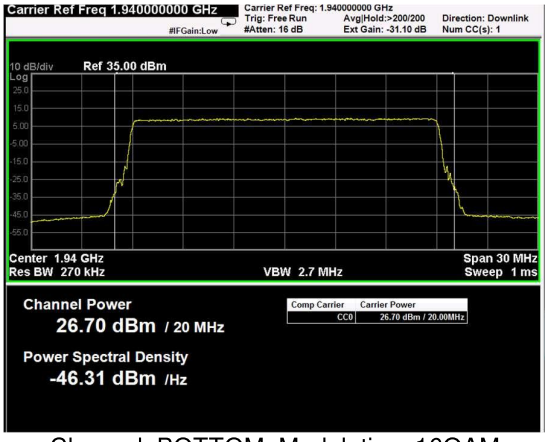
Channel: MIDDLE, Modulation: QPSK, BW=20MHz, CCDF



Channel: TOP, Modulation: QPSK, BW=20MHz, Channel Power

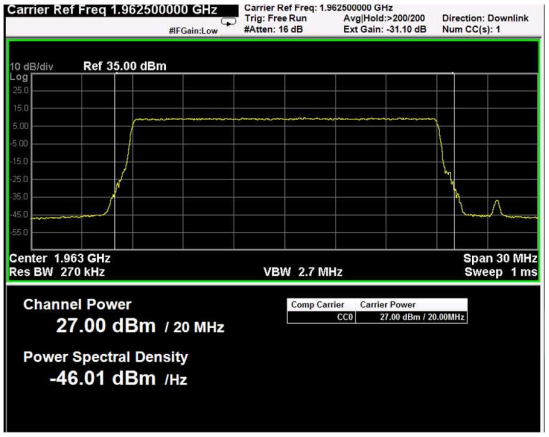


Channel: TOP, Modulation: QPSK, BW=20MHz, CCDF

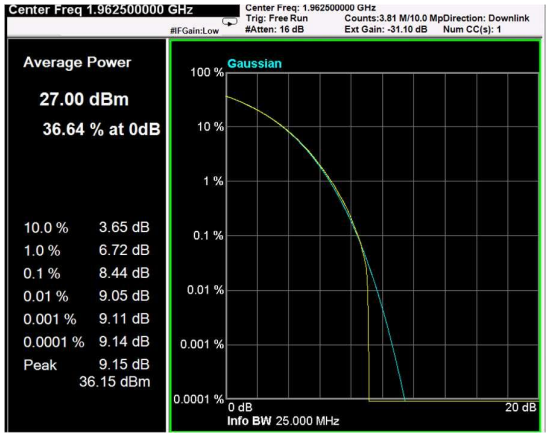


Channel: BOTTOM, Modulation: 16QAM, BW=20MHz, Channel Power

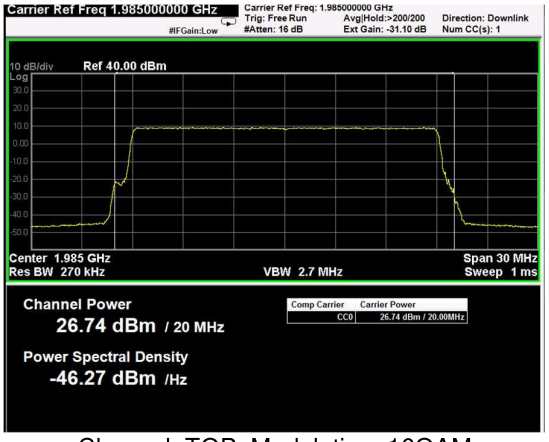
Channel: BOTTOM, Modulation: 16QAM, BW=20MHz, CCDF



Channel: MIDDLE, Modulation: 16QAM, BW=20MHz, Channel Power

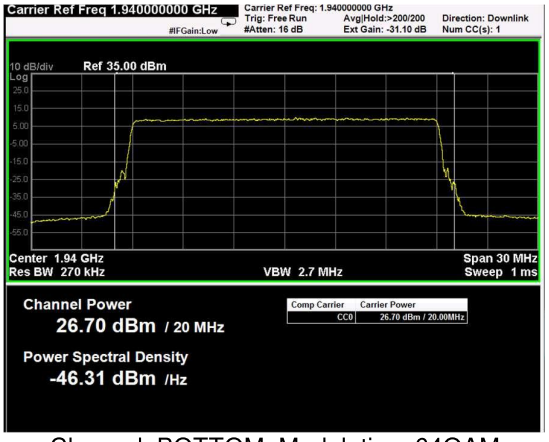


Channel: MIDDLE, Modulation: 16QAM, BW=20MHz, CCDF



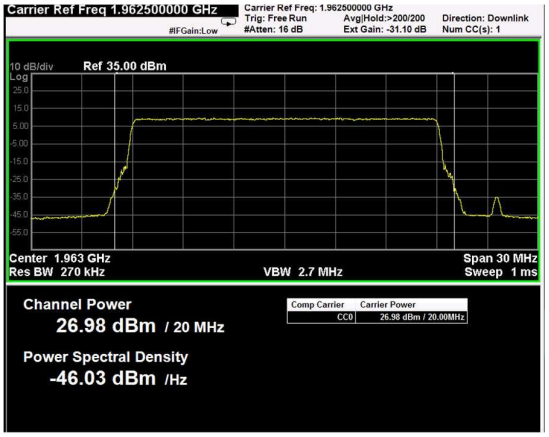
Channel: TOP, Modulation: 16QAM, BW=20MHz, Channel Power

Channel: TOP, Modulation: 16QAM, BW=20MHz, CCDF

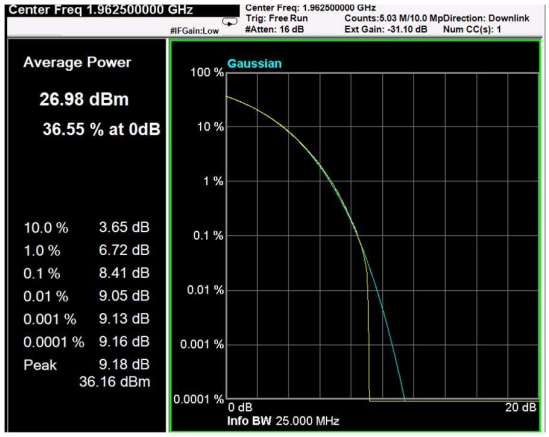


Channel: BOTTOM, Modulation: 64QAM, BW=20MHz, Channel Power

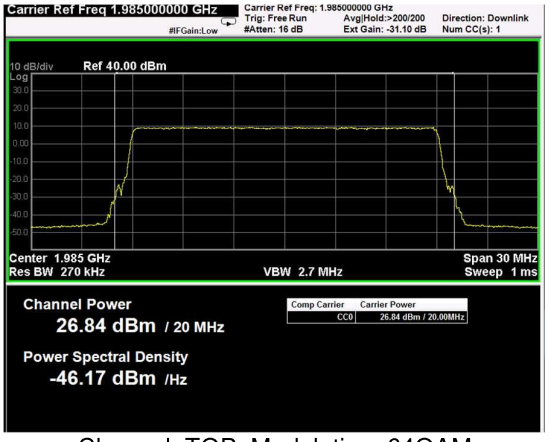
Channel: BOTTOM, Modulation: 64QAM, BW=20MHz, CCDF



Channel: MIDDLE, Modulation: 64QAM, BW=20MHz, Channel Power

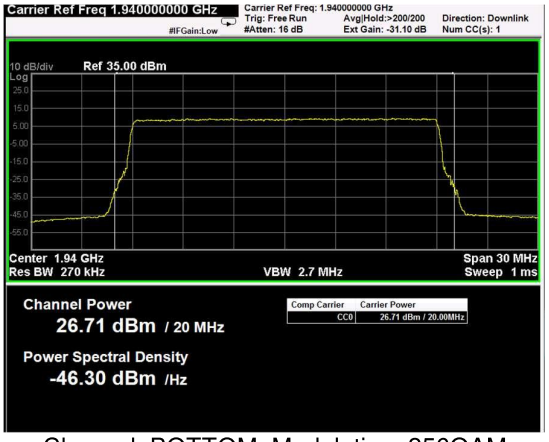


Channel: MIDDLE, Modulation: 64QAM, BW=20MHz, CCDF



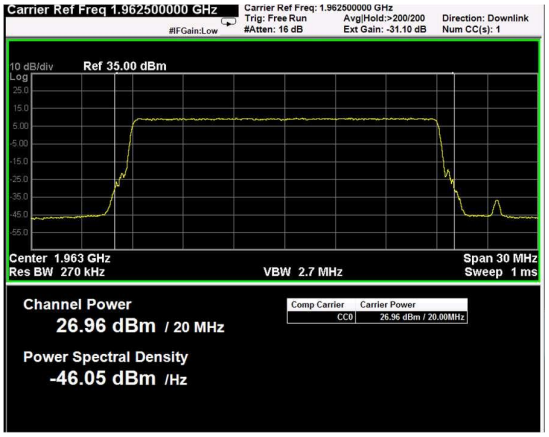
Channel: TOP, Modulation: 64QAM, BW=20MHz, Channel Power

Channel: TOP, Modulation: 64QAM, BW=20MHz, CCDF

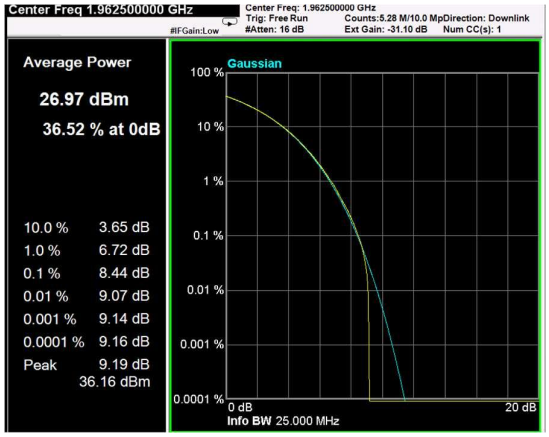


Channel: BOTTOM, Modulation: 256QAM, BW=20MHz, Channel Power

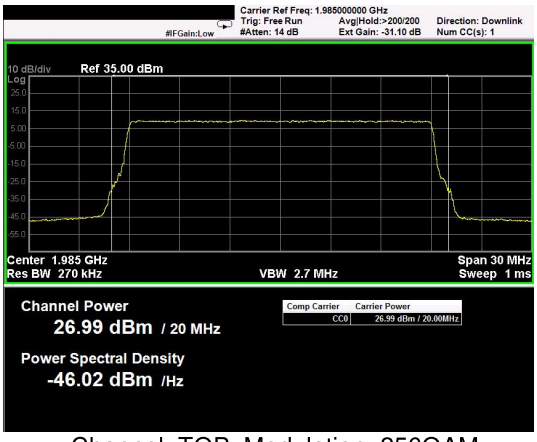
Channel: BOTTOM, Modulation: 256QAM, BW=20MHz, CCDF



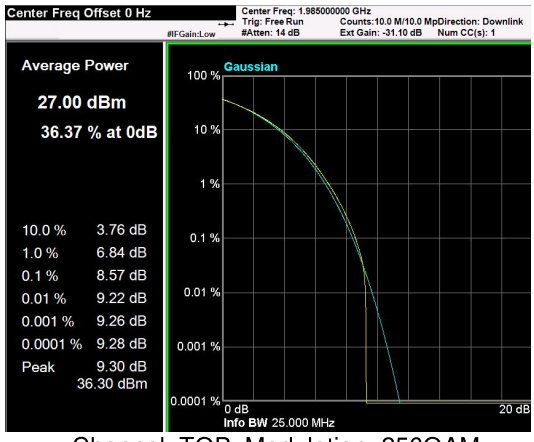
Channel: MIDDLE, Modulation: 256QAM, BW=20MHz, Channel Power



Channel: MIDDLE, Modulation: 256QAM, BW=20MHz, CCDF



Channel: TOP, Modulation: 256QAM, BW=20MHz, Channel Power



Channel: TOP, Modulation: 256QAM, BW=20MHz, CCDF

Clause 24.238(a)(b) Spurious emissions at RF antenna connector

(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 1 MHz 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.

Test date: 10/21/2019 to 12/13/2019

Test results: Pass

Special notes

1) Limit of spurious emission at RF connector has been calculated following the indication in the "662911 D01 Multiple Transmitter Output v02r01" Clause 3) a) iii) with $N_{Ant} = 2$.

$10\text{Log}(N_{Ant}) = 10\text{Log}(2) = 3$ dB
Limit= -13dBm - 3dBm=-16dBm

2) Limit of band edges Inter modulation has been calculated following the indication in the "662911 D01 Multiple Transmitter Output v02r01" Clause 3) a) iii) with $N_{Ant} = 2$ considering RBW=100kHz.

Limit(RBW=1MHz) = -13dBm ➔ Limit(RBW=100kHz) = -23dBm
$10\text{Log}(N_{Ant}) = 10\text{Log}(2) = 3$ dB
Limit= -23dBm - 3dBm=-26dBm

Clause 24.238(a)(b) Spurious emissions at RF antenna connector, continued

Test data

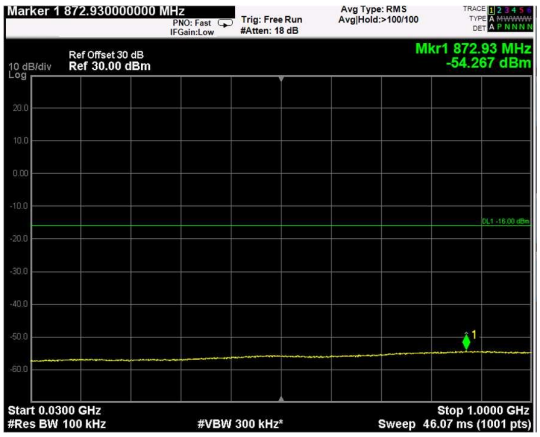
See Plots below

Spurious emissions measurement results:

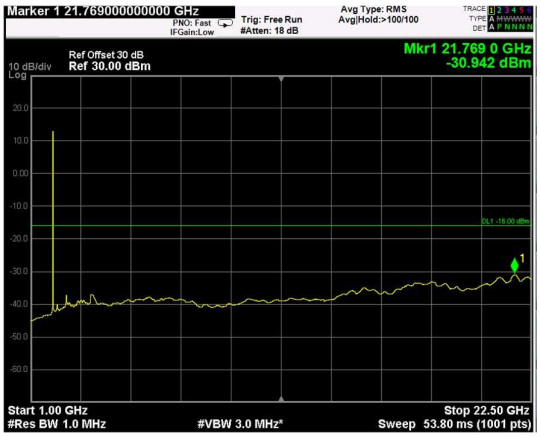
Frequency (MHz)	Spurious emission (dBm)	Limit (dBm)	Margin (dB)
Low channel			
First channel	Negligible	-13	
Mid channel			
1962,5 MHz	Negligible	-13	
High channel			
Last channel	Negligible	-13	

Test data: spurious emissions at antenna terminal

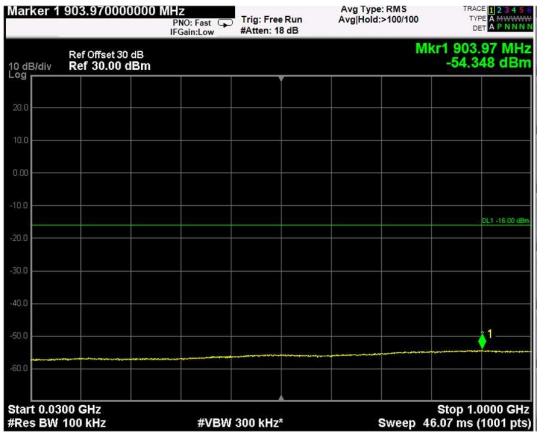
RF PORT 1



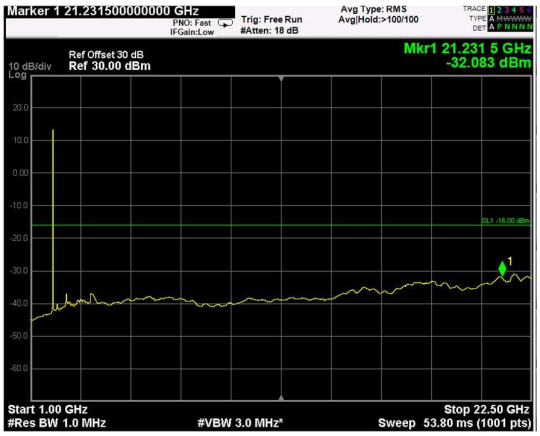
Channel: BOTTOM, Modulation: QPSK, BW=5MHz, Range: Lower



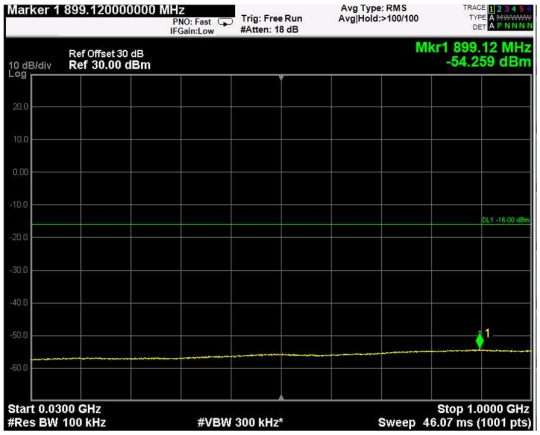
Channel: BOTTOM, Modulation: QPSK, BW=5MHz, Range: Upper



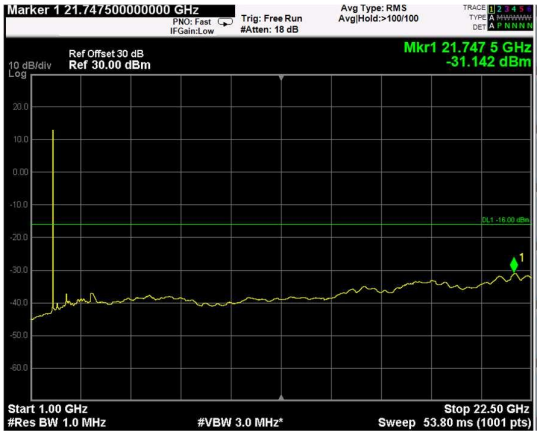
Channel: MIDDLE, Modulation: QPSK, BW=5MHz, Range: Lower



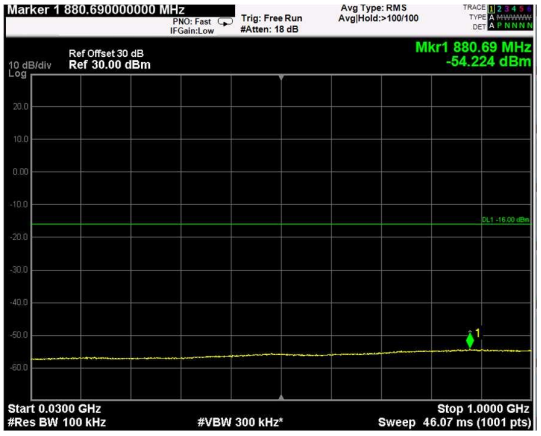
Channel: MIDDLE, Modulation: QPSK, BW=5MHz, Range: Upper



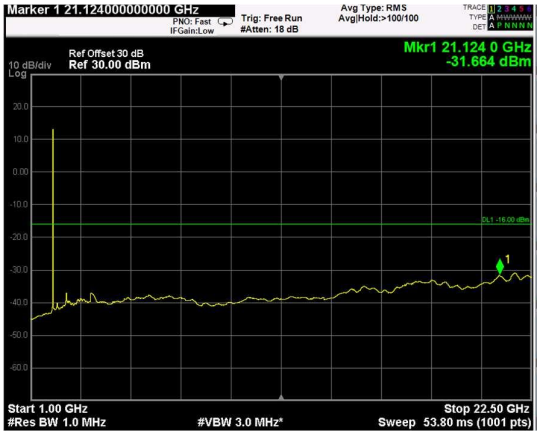
Channel: TOP, Modulation: QPSK, BW=5MHz, Range: Lower



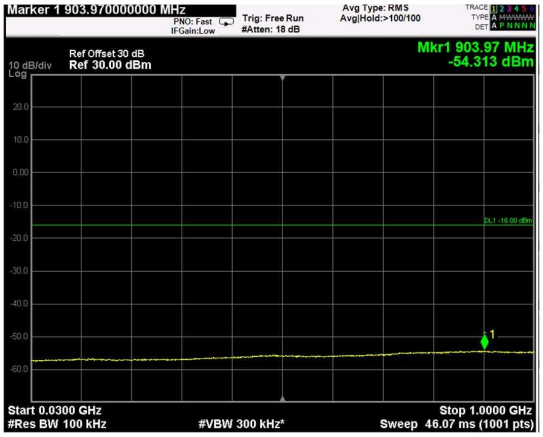
Channel: TOP, Modulation: QPSK, BW=5MHz, Range: Upper



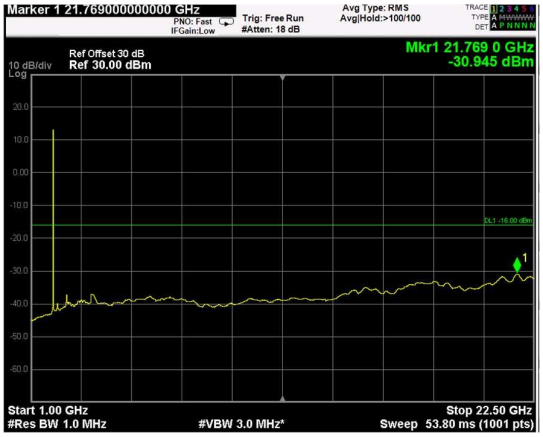
Channel: BOTTOM, Modulation: 16QAM, BW=5MHz, Range: Lower



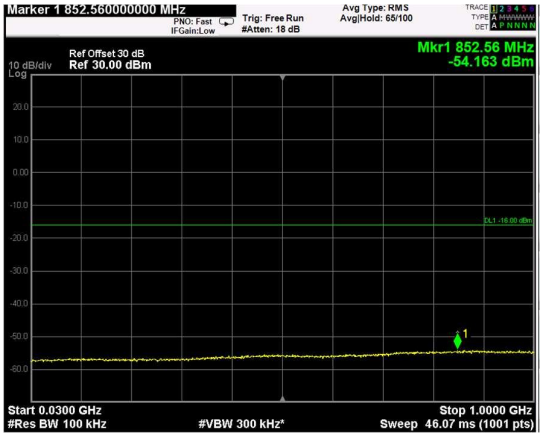
Channel: BOTTOM, Modulation: 16QAM, BW=5MHz, Range: Upper



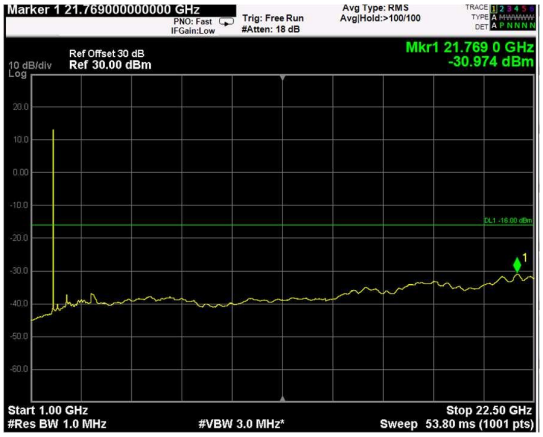
Channel: MIDDLE, Modulation: 16QAM, BW=5MHz, Range: Lower



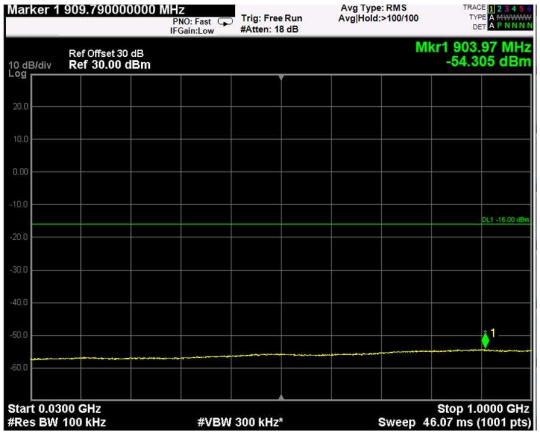
Channel: MIDDLE, Modulation: 16QAM, BW=5MHz, Range: Upper



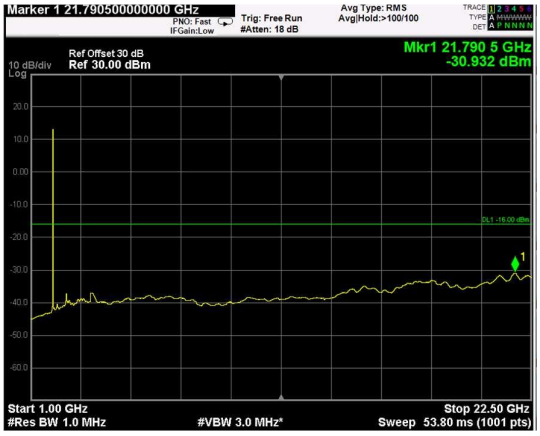
Channel: TOP, Modulation: 16QAM, BW=5MHz, Range: Lower



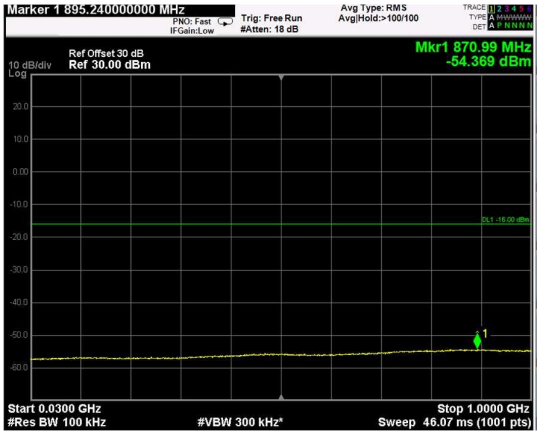
Channel: TOP, Modulation: 16QAM, BW=5MHz, Range: Upper



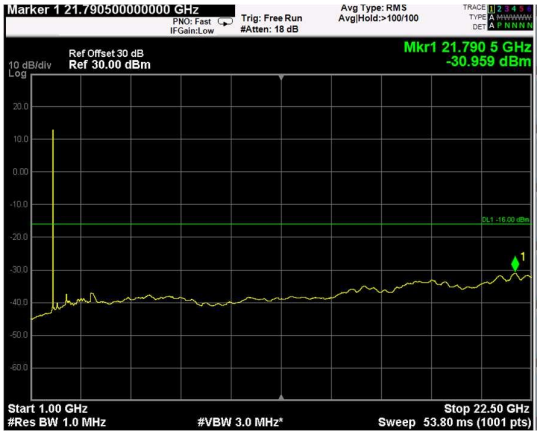
Channel: BOTTOM, Modulation: 64QAM, BW=5MHz, Range: Lower



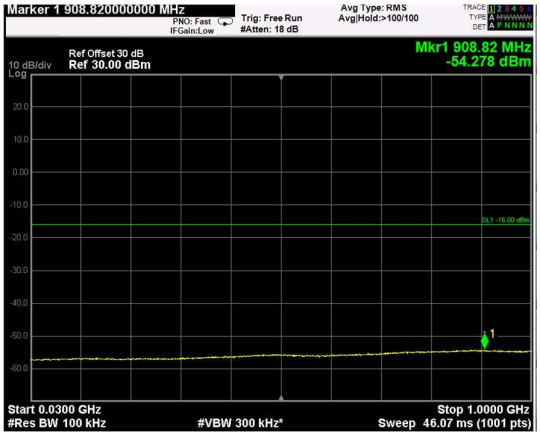
Channel: BOTTOM, Modulation: 64QAM, BW=5MHz, Range: Upper



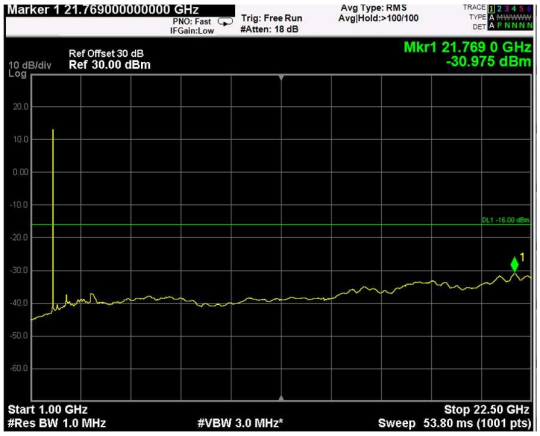
Channel: MIDDLE, Modulation: 64QAM, BW=5MHz, Range: Lower



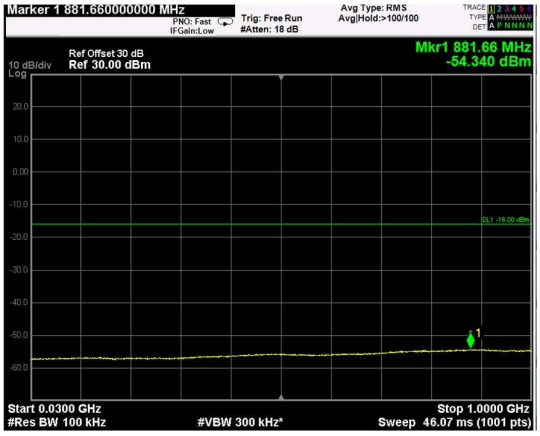
Channel: MIDDLE, Modulation: 64QAM, BW=5MHz, Range: Upper



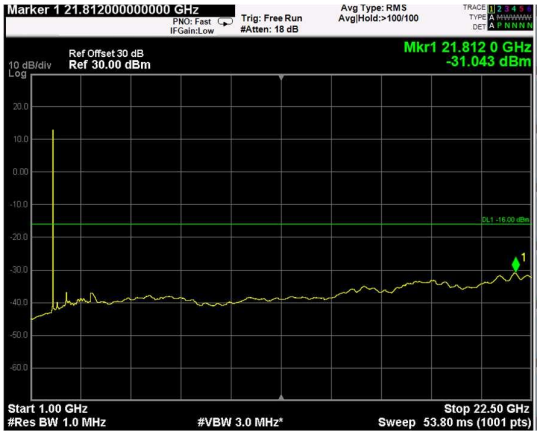
Channel: TOP, Modulation: 64QAM, BW=5MHz, Range: Lower



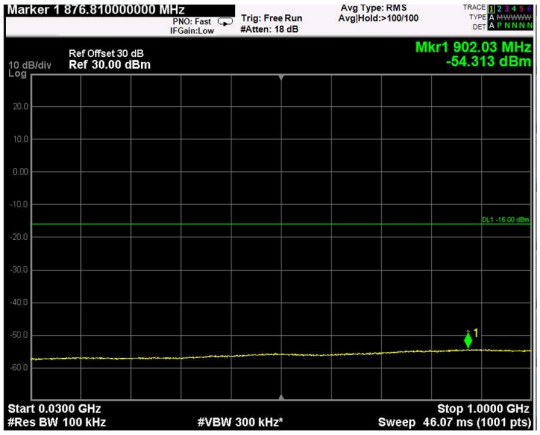
Channel: TOP, Modulation: 64QAM, BW=5MHz, Range: Upper



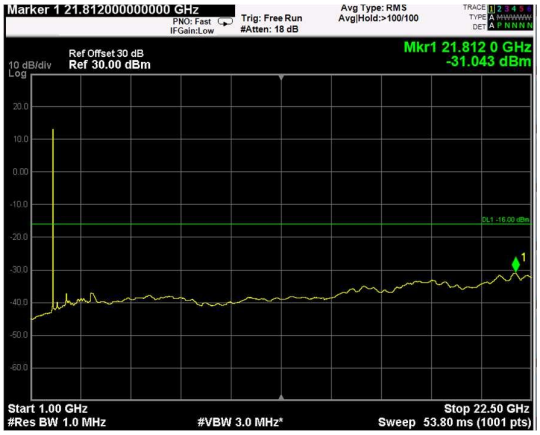
Channel: BOTTOM, Modulation: 256QAM, BW=5MHz, Range: Lower



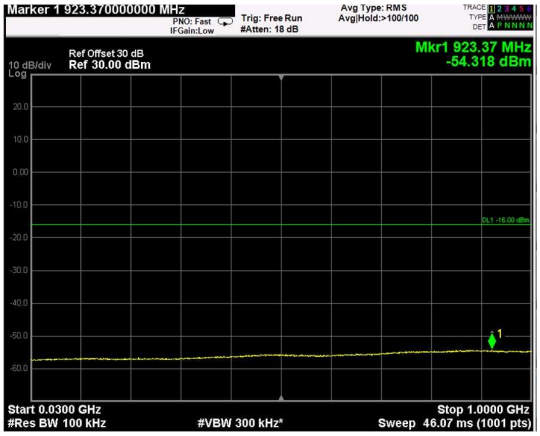
Channel: BOTTOM, Modulation: 256QAM, BW=5MHz, Range: Upper



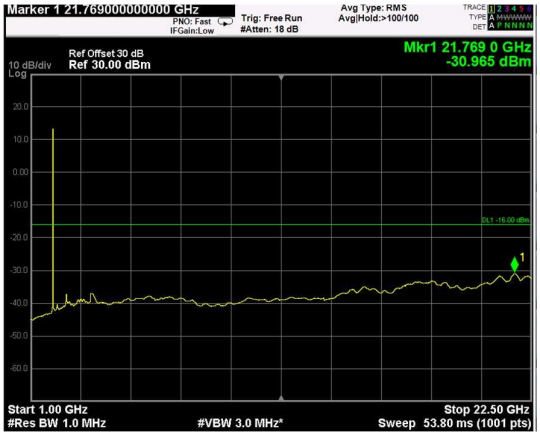
Channel: MIDDLE, Modulation: 256QAM, BW=5MHz, Range: Lower



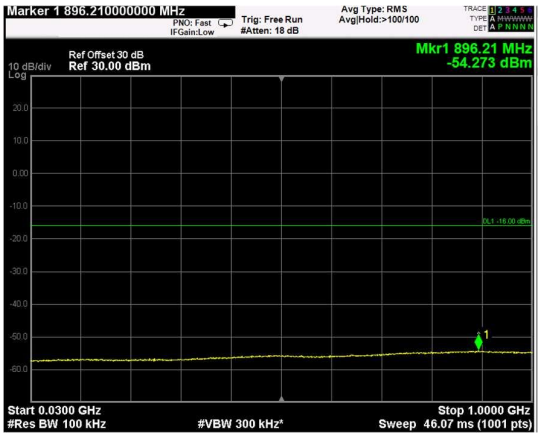
Channel: MIDDLE, Modulation: 256QAM, BW=5MHz, Range: Upper



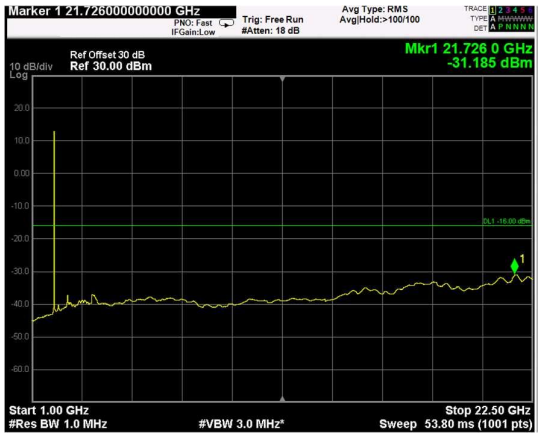
Channel: TOP, Modulation: 256QAM, BW=5MHz, Range: Lower



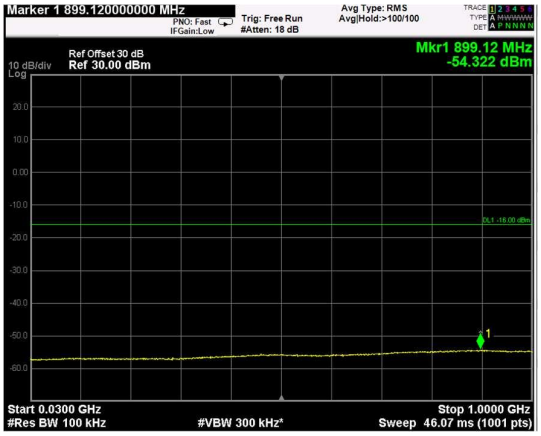
Channel: TOP, Modulation: 256QAM, BW=5MHz, Range: Upper



Channel: BOTTOM, Modulation: QPSK, BW=10MHz, Range: Lower

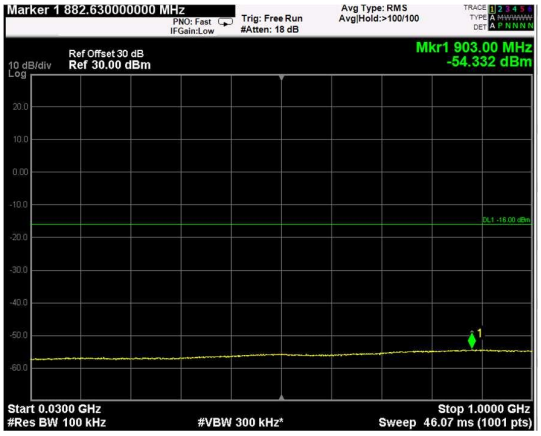


Channel: BOTTOM, Modulation: QPSK, BW=10MHz, Range: Upper

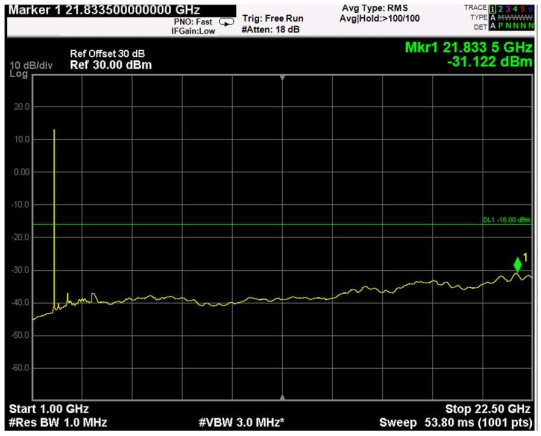


Channel: MIDDLE, Modulation: QPSK, BW=10MHz, Range: Lower

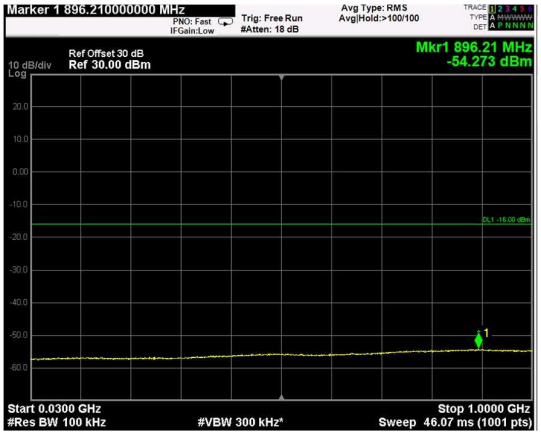
Channel: MIDDLE, Modulation: QPSK, BW=10MHz, Range: Upper



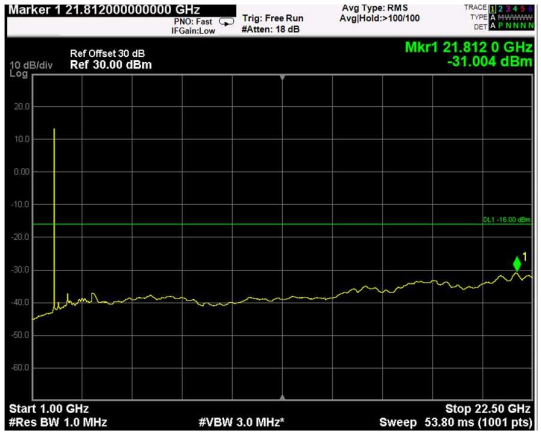
Channel: TOP, Modulation: QPSK, BW=10MHz, Range: Lower



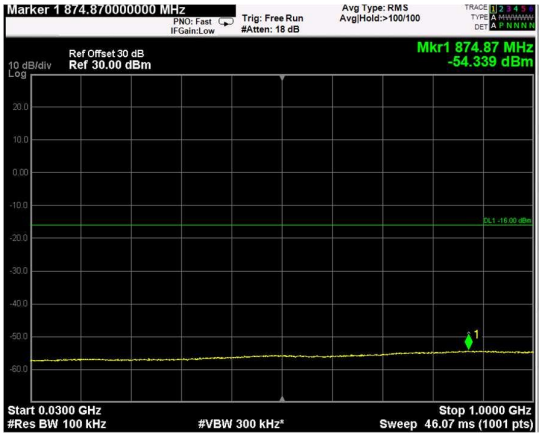
Channel: TOP, Modulation: QPSK, BW=10MHz, Range: Upper



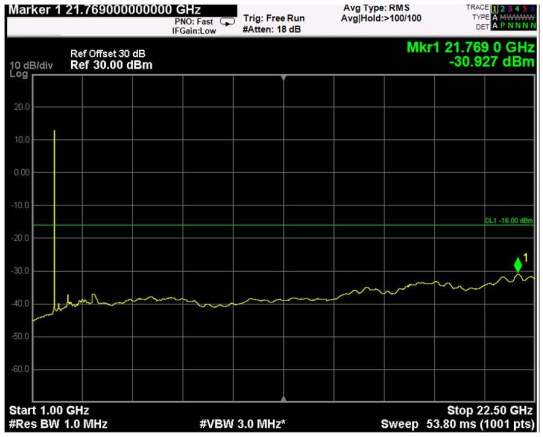
Channel: BOTTOM, Modulation: 16QAM, BW=10MHz, Range: Lower



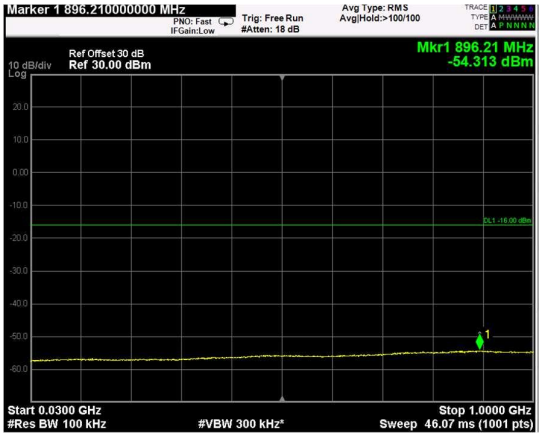
Channel: BOTTOM, Modulation: 16QAM, BW=10MHz, Range: Upper



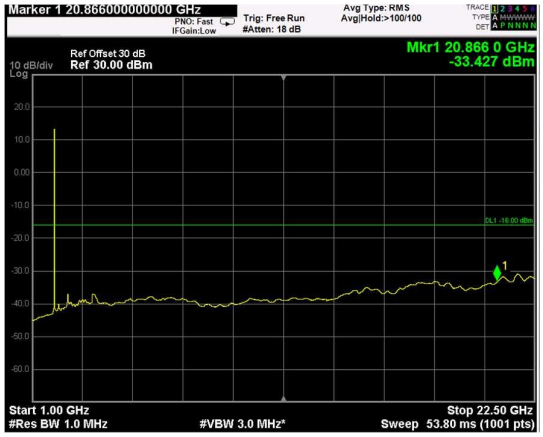
Channel: MIDDLE, Modulation: 16QAM, BW=10MHz, Range: Lower



Channel: MIDDLE, Modulation: 16QAM, BW=10MHz, Range: Upper



Channel: TOP, Modulation: 16QAM, BW=10MHz, Range: Lower



Channel: TOP, Modulation: 16QAM, BW=10MHz, Range: Upper