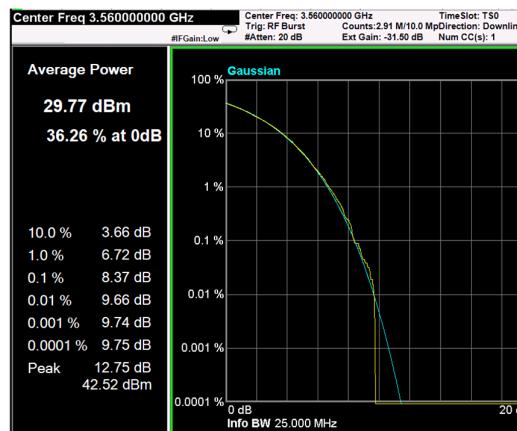
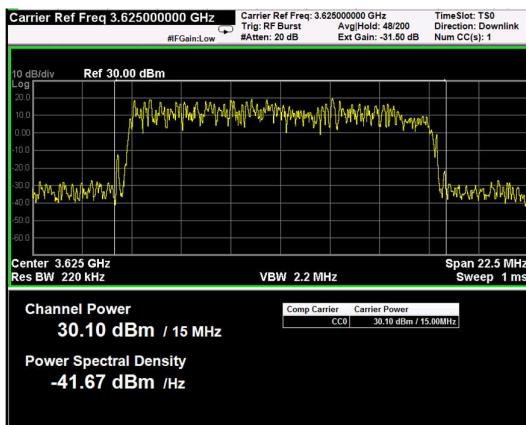


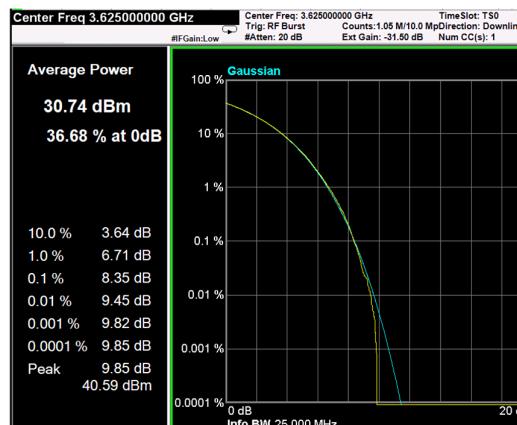
Channel: BOTTOM, Modulation: 16QAM, BW=15MHz, Channel Power



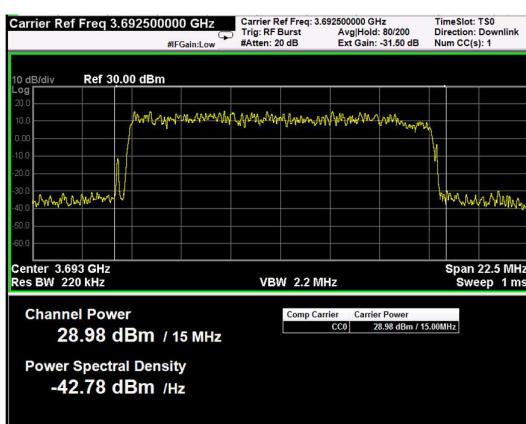
Channel: BOTTOM, Modulation: 16QAM, BW=15MHz, CCDF



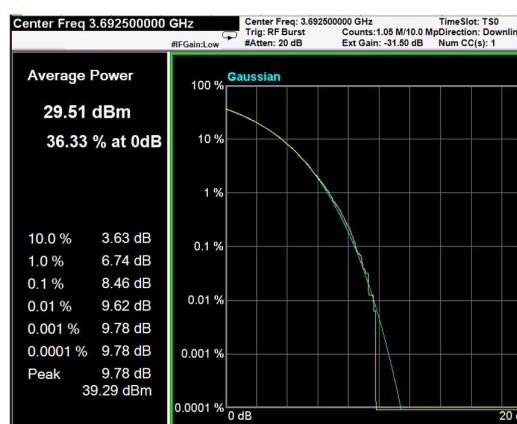
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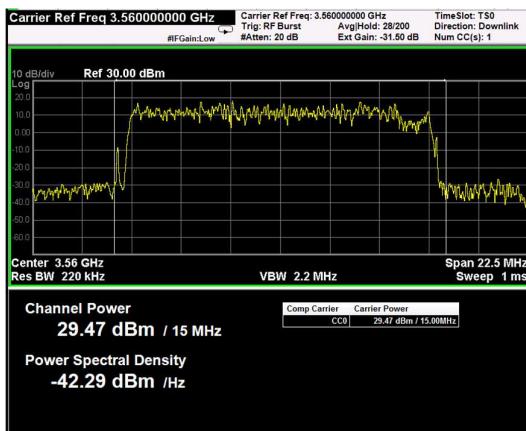
Channel: MIDDLE, Modulation: 16QAM, BW=15MHz, CCDF



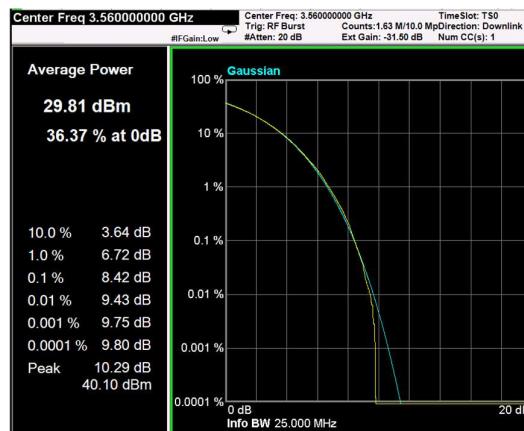
Channel: TOP, Modulation: 16QAM, BW=15MHz, Channel Power



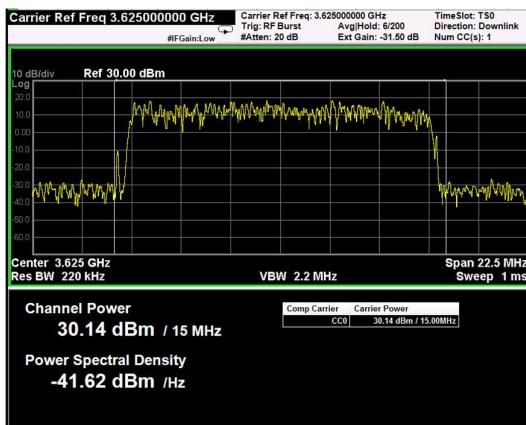
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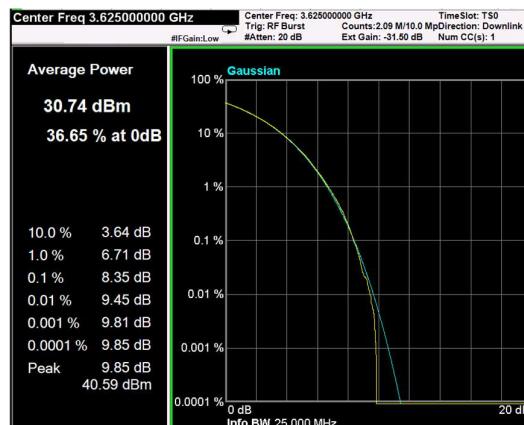
Channel: BOTTOM, Modulation: 64QAM, BW=15MHz, Channel Power



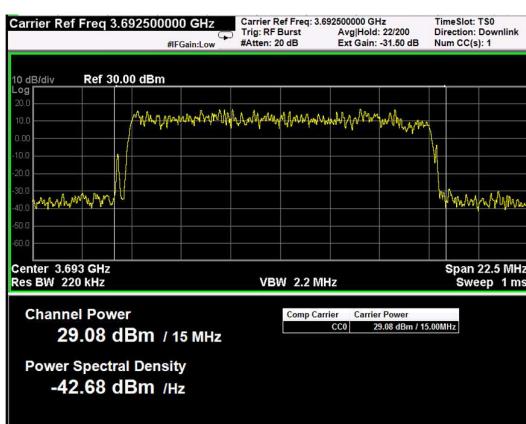
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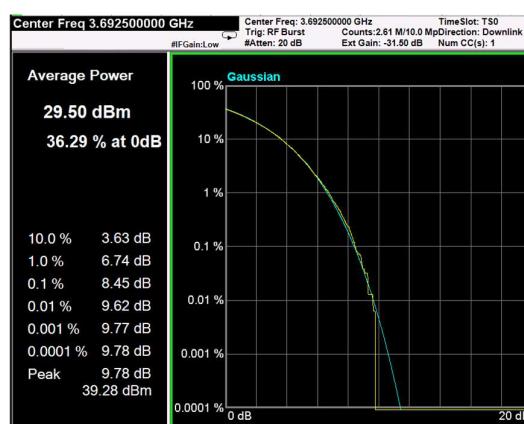
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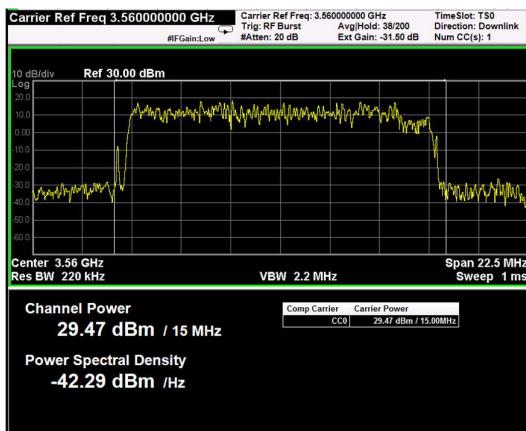
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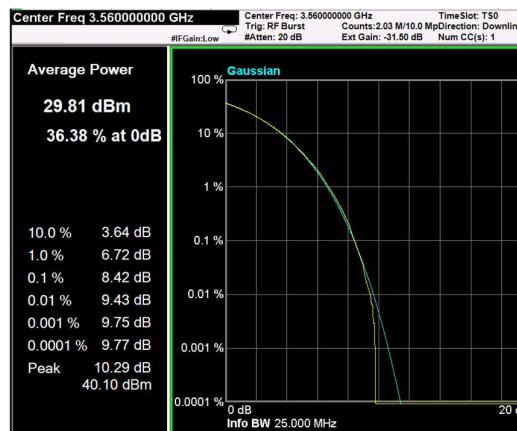
Channel: TOP, Modulation: 64QAM, BW=15MHz, Channel Power



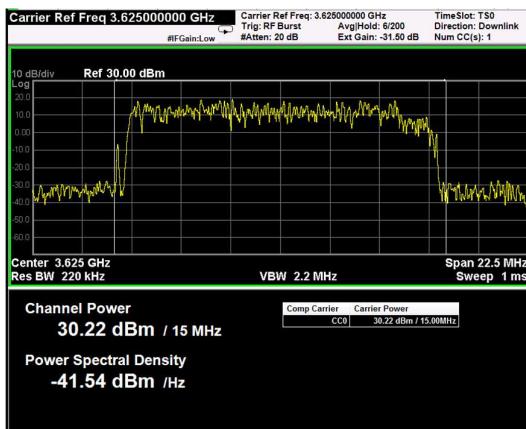
Channel: TOP, Modulation: 64QAM, BW=15MHz, CCDF



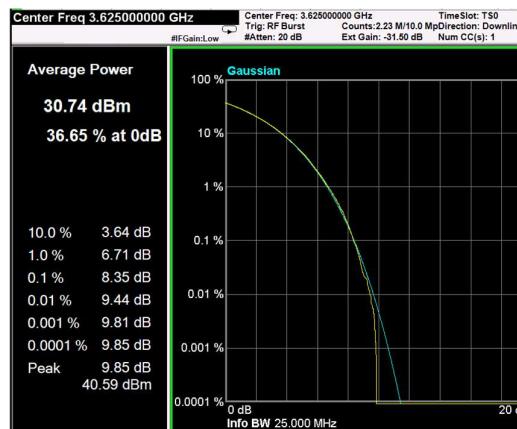
Channel: BOTTOM, Modulation: 256QAM, BW=15MHz, Channel Power



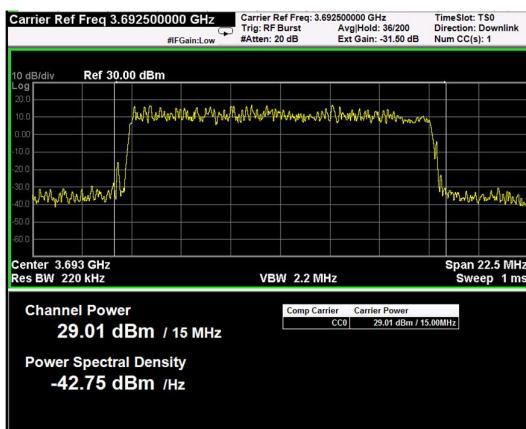
Channel: BOTTOM, Modulation: 256QAM, BW=15MHz, CCDF



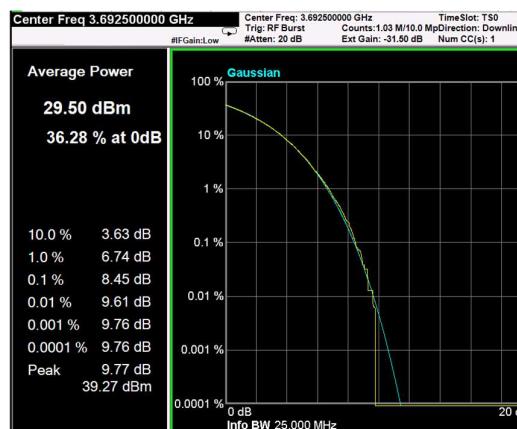
Channel: MIDDLE, Modulation: 256QAM, BW=15MHz, Channel Power



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



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



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

**RF PORT 1**

Test data							
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	PSD (dBm/Hz)	PSD (dBm/MHz)	PAR (dB)
Down-link	LTE 20MHz (QPSK)	3560	29.33	0.857	-43.68	16.32	9.08
Down-link	LTE 20MHz (QPSK)	3625	29.8	0.955	-43.21	16.79	9.48
Down-link	LTE 20MHz (QPSK)	3690	29.91	0.981	-43.10	16.90	9.07
Down-link	LTE 20MHz (16QAM)	3560	29.5	0.891	-43.51	16.49	9.17
Down-link	LTE 20MHz (16QAM)	3625	29.51	0.893	-43.50	16.5	9.42
Down-link	LTE 20MHz (16QAM)	3690	29.92	0.982	-43.09	16.91	9.42
Down-link	LTE 20MHz (64QAM)	3560	29.39	0.869	-43.62	16.38	9.42
Down-link	LTE 20MHz (64QAM)	3625	29.47	0.885	-43.54	16.46	9.45
Down-link	LTE 20MHz (64QAM)	3690	29.76	0.946	-43.25	16.75	9.47
Down-link	LTE 20MHz (256QAM)	3560	29.09	0.811	-43.92	16.08	9.54
Down-link	LTE 20MHz (256QAM)	3625	29.38	0.867	-43.63	16.37	9.31
Down-link	LTE 20MHz (256QAM)	3560	30.04	1.009	-43.97	16.03	9.06



## RF PORT 2

Test data							
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	PSD (dBm/Hz)	PSD (dBm/MHz)	PAR (dB)
Down-link	LTE 20MHz (QPSK)	3560	29.86	0.968	-43.15	16.85	9.39
Down-link	LTE 20MHz (QPSK)	3625	29.95	0.989	-43.06	16.94	9.41
Down-link	LTE 20MHz (QPSK)	3690	29.47	0.885	-43.54	16.46	9.42
Down-link	LTE 20MHz (16QAM)	3560	29.96	0.991	-43.05	16.95	9.39
Down-link	LTE 20MHz (16QAM)	3625	30.01	1.002	-43	17	9.38
Down-link	LTE 20MHz (16QAM)	3690	29.36	0.863	-43.65	16.35	9.41
Down-link	LTE 20MHz (64QAM)	3560	29.79	0.953	-43.22	16.78	9.39
Down-link	LTE 20MHz (64QAM)	3625	29.95	0.989	-43.06	16.94	9.41
Down-link	LTE 20MHz (64QAM)	3690	29.47	0.885	-43.54	16.46	9.42
Down-link	LTE 20MHz (256QAM)	3560	29.83	0.962	-43.18	16.82	9.39
Down-link	LTE 20MHz (256QAM)	3625	29.95	0.989	-43.06	16.94	9.41
Down-link	LTE 20MHz (256QAM)	3690	29.45	0.881	-43.56	16.44	9.42

### Special notes

Maximum EIRP ≤ 30dBm/10MHz

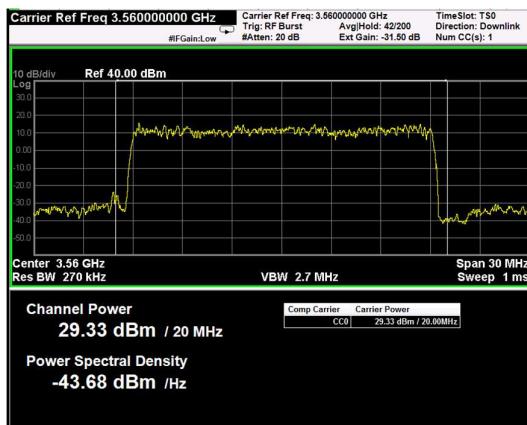
Maximum PSD eirp ≤ 20dBm/1MHz

$$\text{PSD eirp (in 1 MHz)} = \text{PSD}_{\max} - N + G_{\max} = 17 - N + G_{\max} \leq 20$$
$$G_{\max} \leq (20 - 17 + N) = N + 3$$

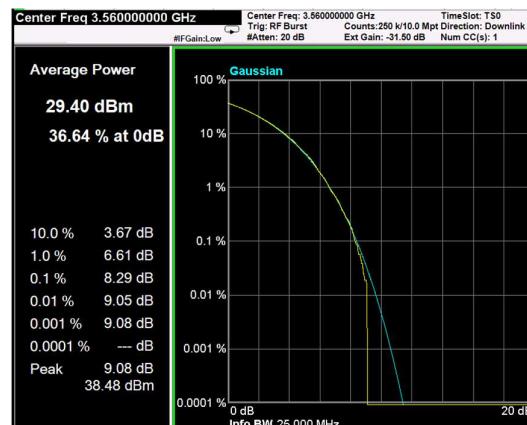
Where:

- PSD<sub>max</sub> is the maximum PSD value measured on the antenna connector of the equipment and it depends on the LTE bandwidth signal
- N is system path loss (in dB) due to cable insertion, splitter, etc....
- G<sub>max</sub> is the maximum antenna gain (in dBi)
- Therefore:
- Maximum antenna gain Gmax = N+3 dBi and Output power setting = 30 dBm

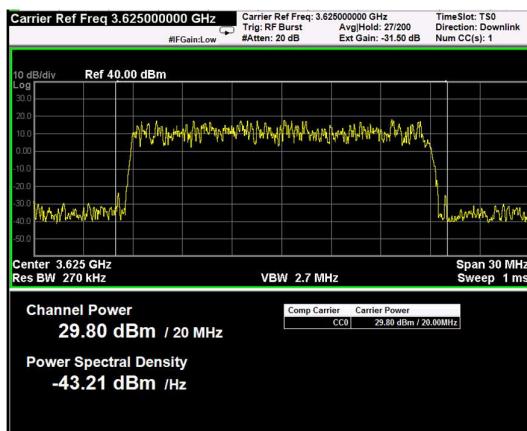
## RF PORT 1 plots



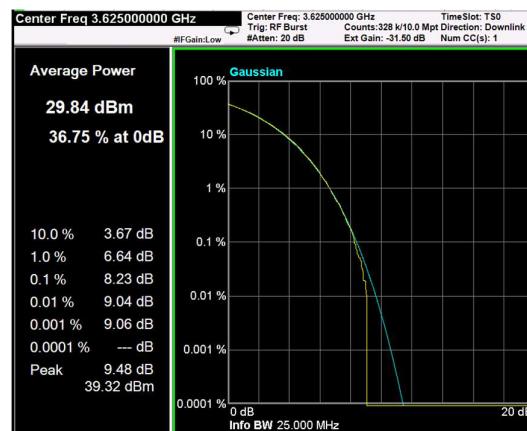
Channel: BOTTOM, Modulation: QPSK,  
BW=20MHz, Channel Power



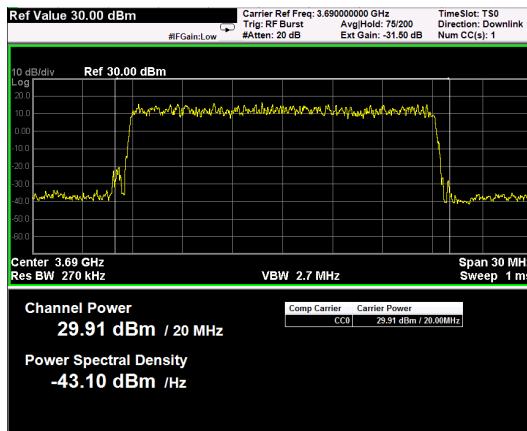
Channel: BOTTOM, Modulation: QPSK,  
BW=20MHz, CCDF



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



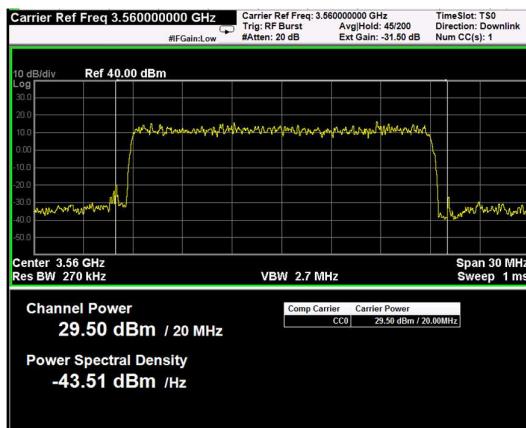
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BW=20MHz, CCDF



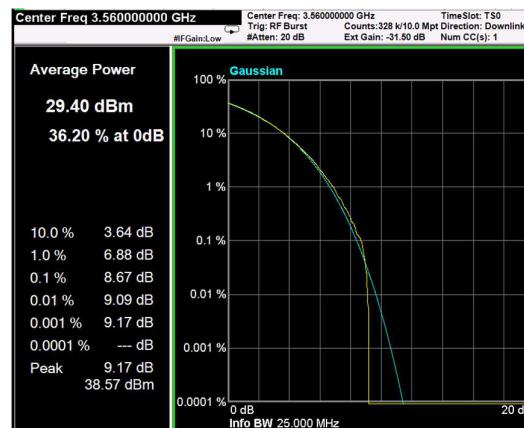
Channel: TOP, Modulation: QPSK,  
BW=20MHz, Channel Power



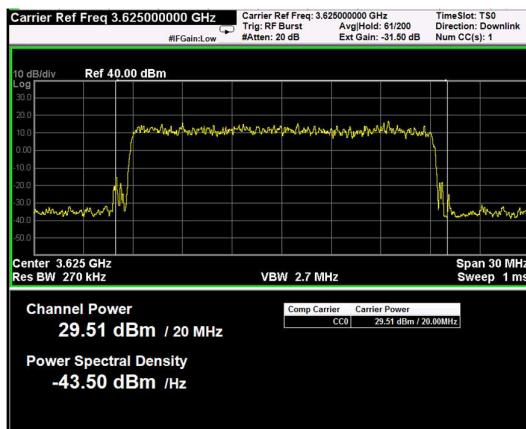
Channel: TOP, Modulation: QPSK,  
BW=20MHz, CCDF



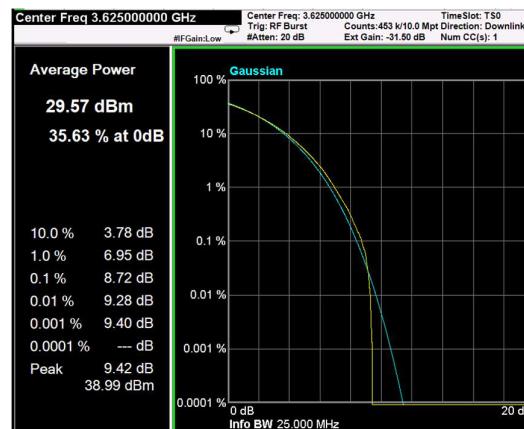
Channel: BOTTOM, Modulation: 16QAM, BW=20MHz, Channel Power



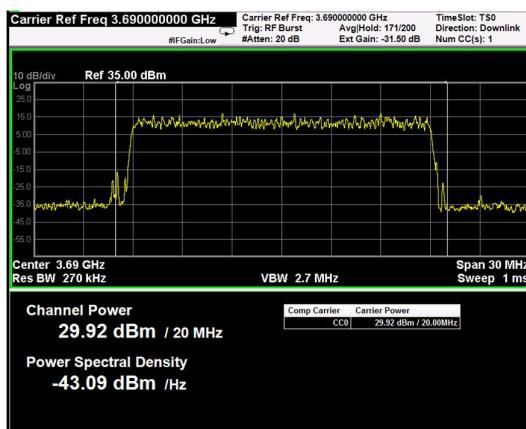
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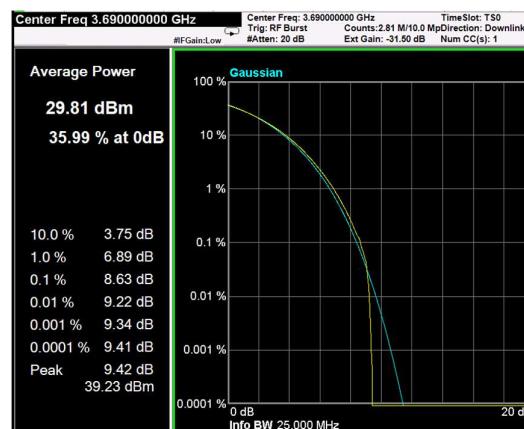
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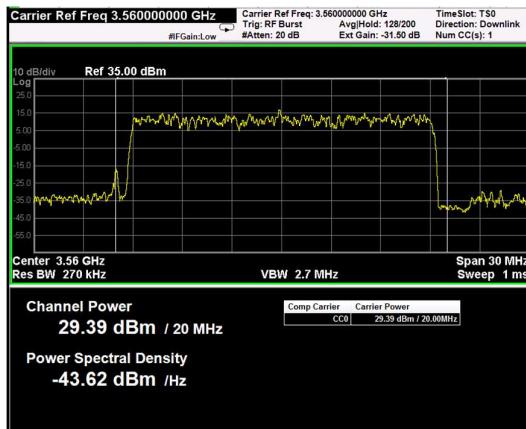
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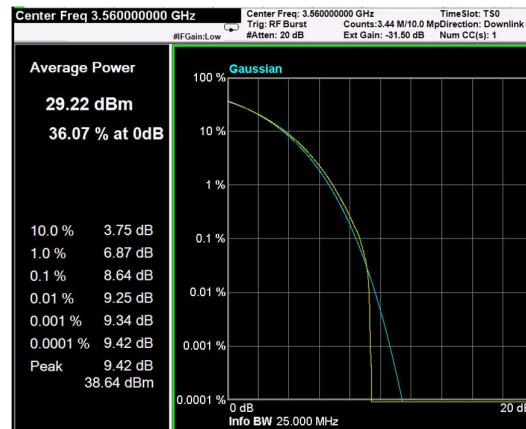
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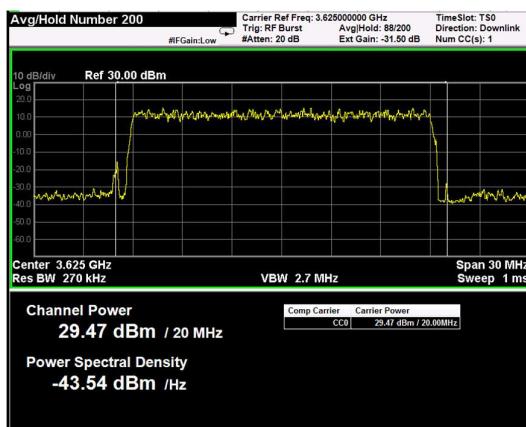
Channel: TOP, Modulation: 16QAM, BW=20MHz, CCDF



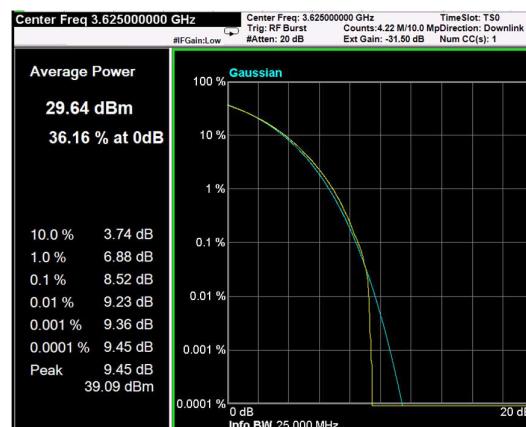
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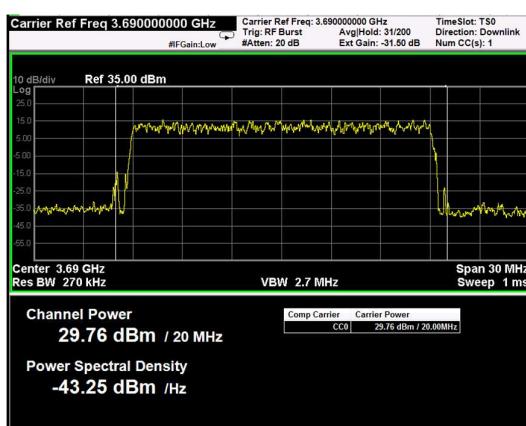
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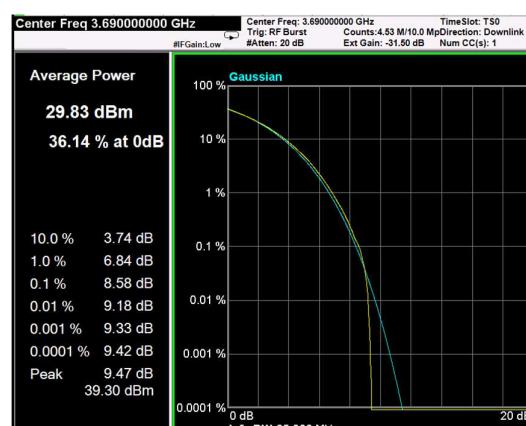
Channel: MIDDLE, Modulation: 64QAM, BW=20MHz, Channel Power



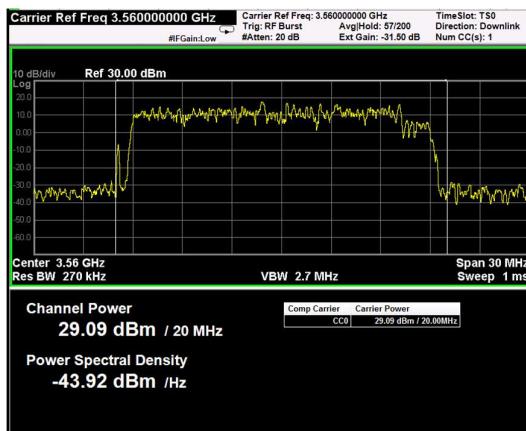
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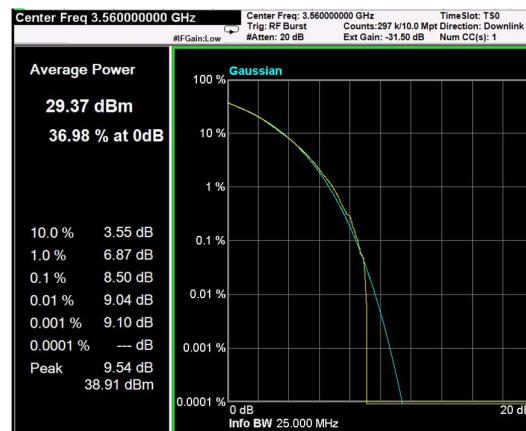
Channel: TOP, Modulation: 64QAM, BW=20MHz, Channel Power



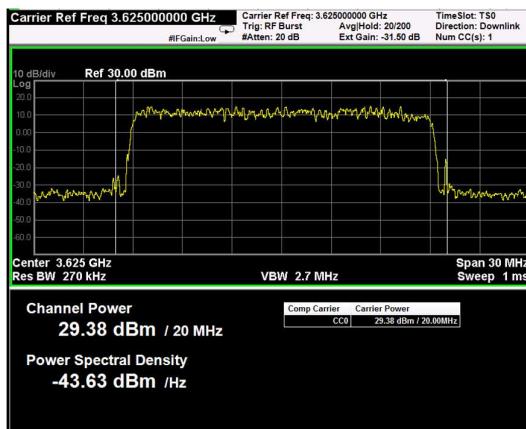
Channel: TOP, Modulation: 64QAM, BW=20MHz, CCDF



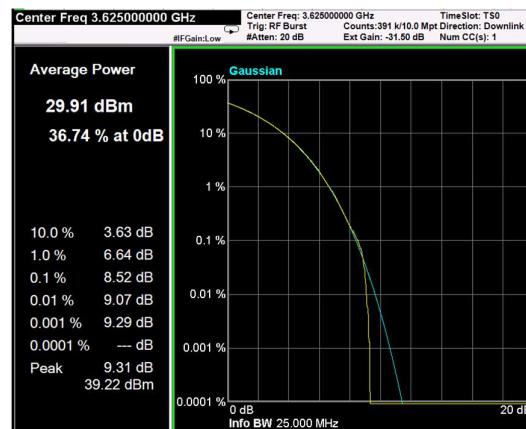
Channel: BOTTOM, Modulation: 256QAM, BW=20MHz, Channel Power



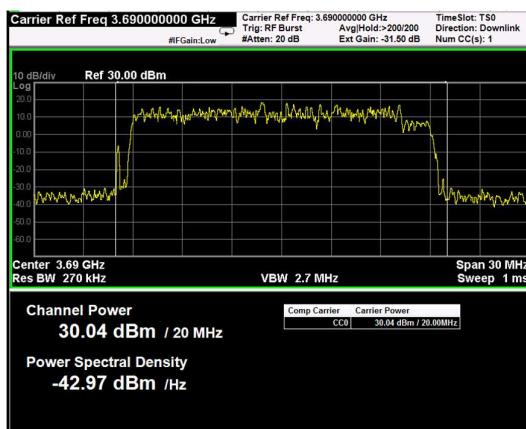
Channel: BOTTOM, Modulation: 256QAM, BW=20MHz, CCDF



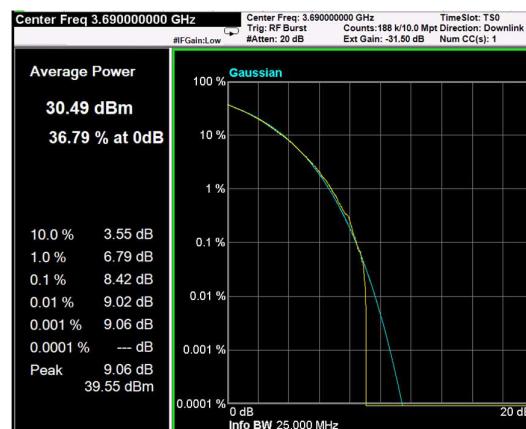
Channel: MIDDLE, Modulation: 256QAM, BW=20MHz, Channel Power



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

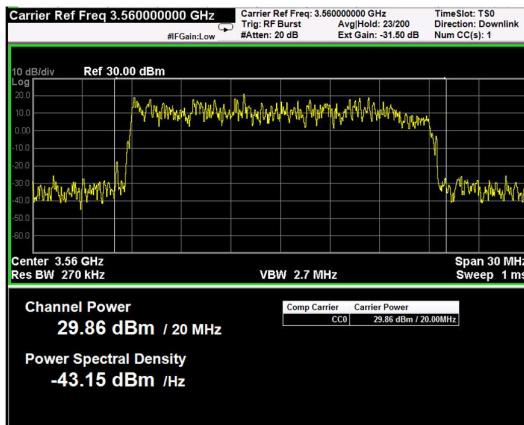


Channel: TOP, Modulation: 256QAM, BW=20MHz, Channel Power

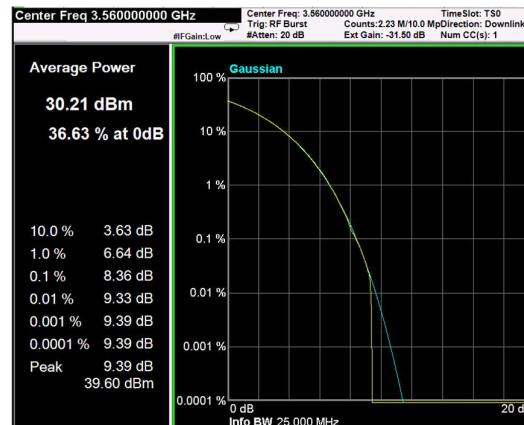


Channel: TOP, Modulation: 256QAM, BW=20MHz, CCDF

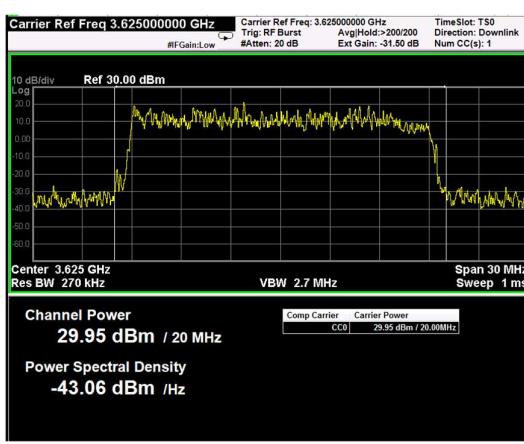
## RF PORT 2 plots



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



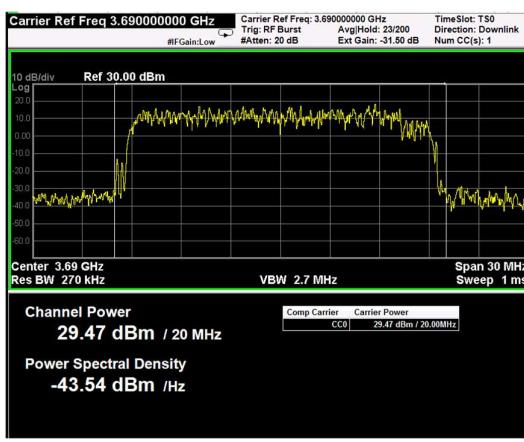
Channel: BOTTOM, Modulation: QPSK,  
BW=20MHz, CCDF



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



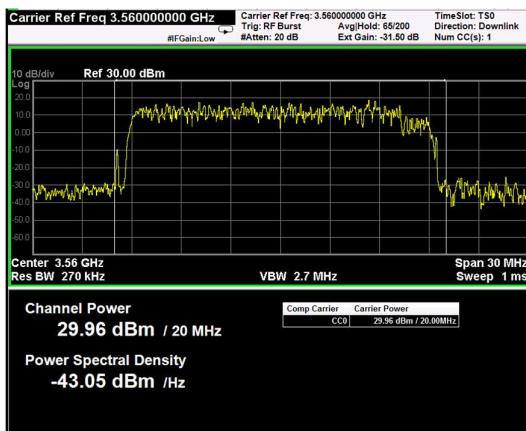
Channel: MIDDLE, Modulation: QPSK,  
BW=20MHz, CCDF



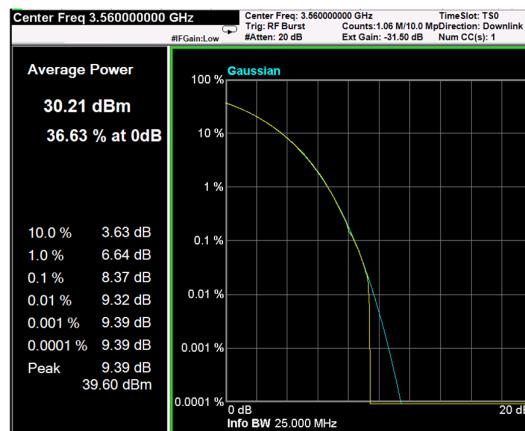
Channel: TOP, Modulation: QPSK,  
BW=20MHz, Channel Power



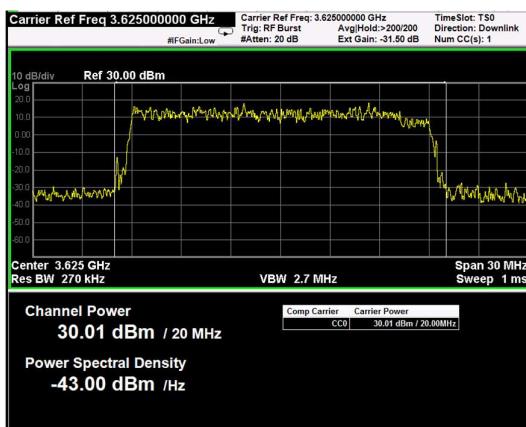
Channel: TOP, Modulation: QPSK,  
BW=20MHz, CCDF



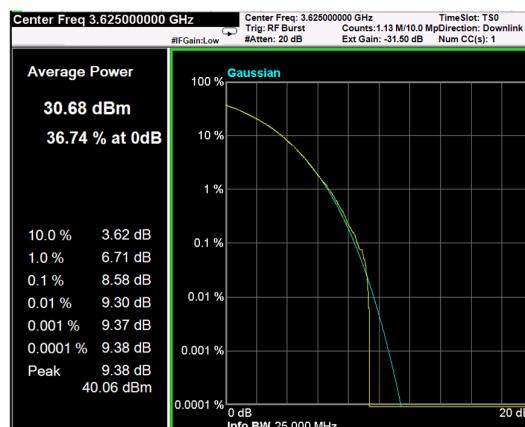
Channel: BOTTOM, Modulation: 16QAM, BW=20MHz, Channel Power



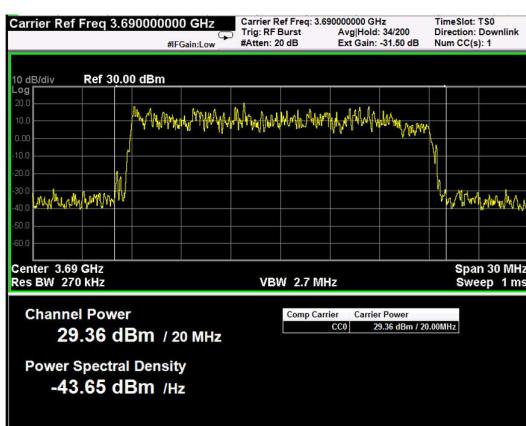
Channel: BOTTOM, Modulation: 16QAM, BW=20MHz, CCDF



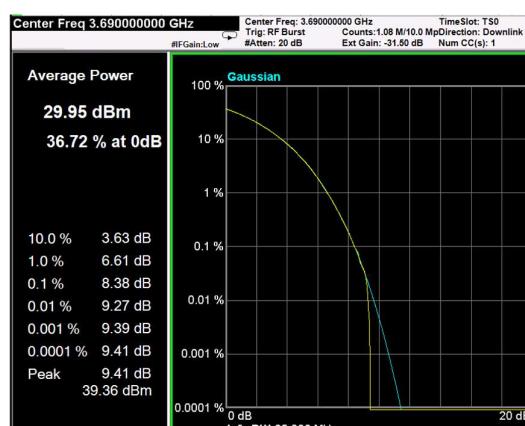
Channel: MIDDLE, Modulation: 16QAM, BW=20MHz, Channel Power



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



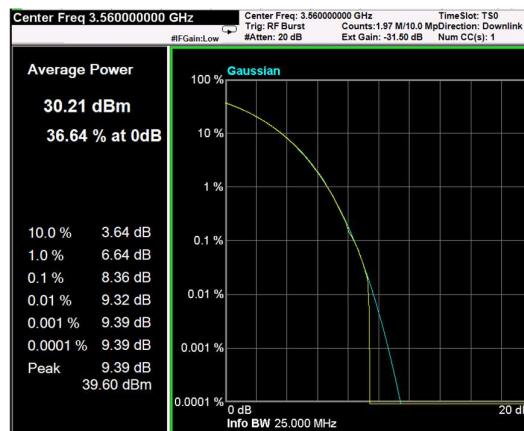
Channel: TOP, Modulation: 16QAM, BW=20MHz, Channel Power



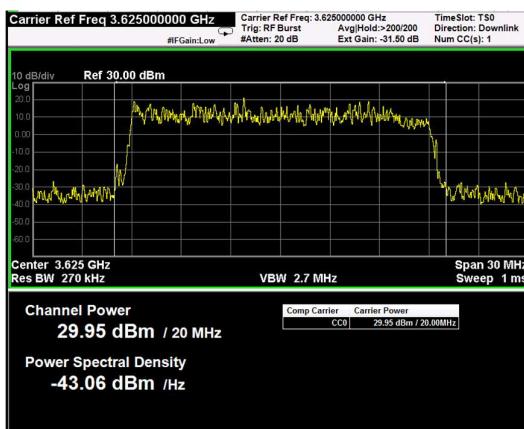
Channel: TOP, Modulation: 16QAM, BW=20MHz, CCDF



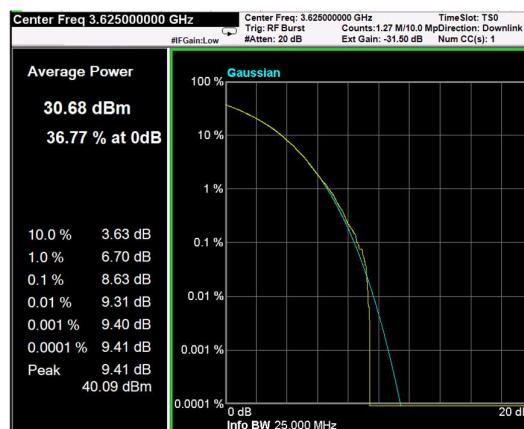
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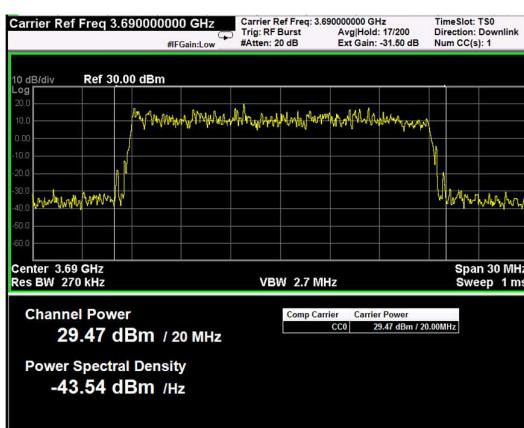
Channel: BOTTOM, Modulation: 64QAM, BW=20MHz, CCDF



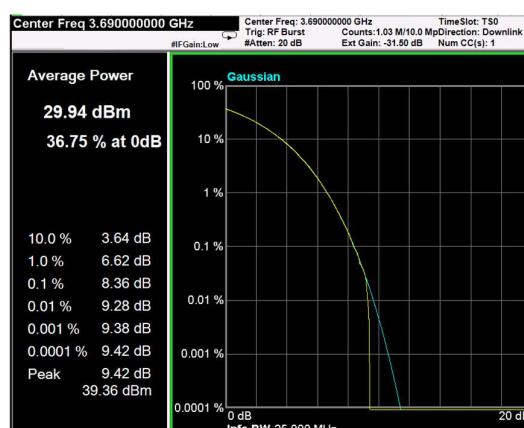
Channel: MIDDLE, Modulation: 64QAM, BW=20MHz, Channel Power



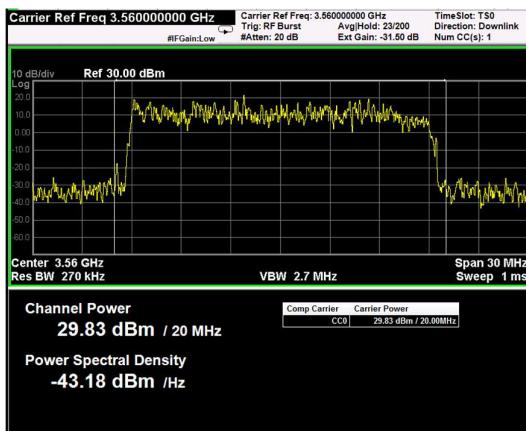
Channel: MIDDLE, Modulation: 64QAM, BW=20MHz, CCDF



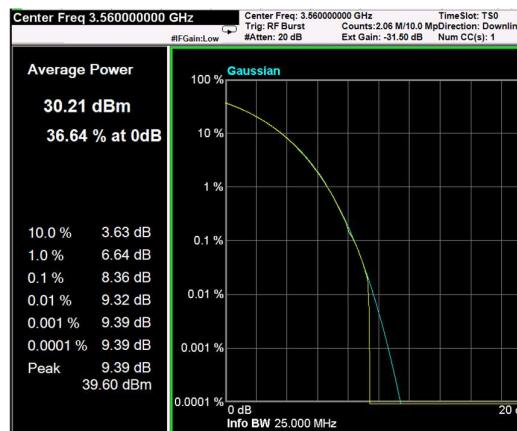
Channel: TOP, Modulation: 64QAM, BW=20MHz, Channel Power



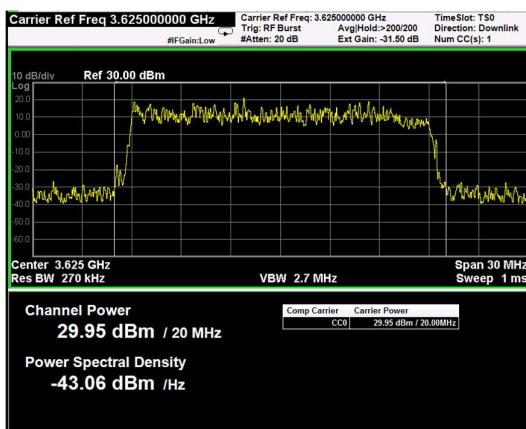
Channel: TOP, Modulation: 64QAM, BW=20MHz, CCDF



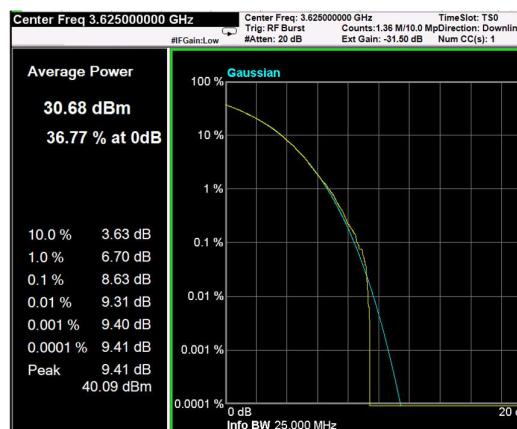
Channel: BOTTOM, Modulation: 256QAM, BW=20MHz, Channel Power



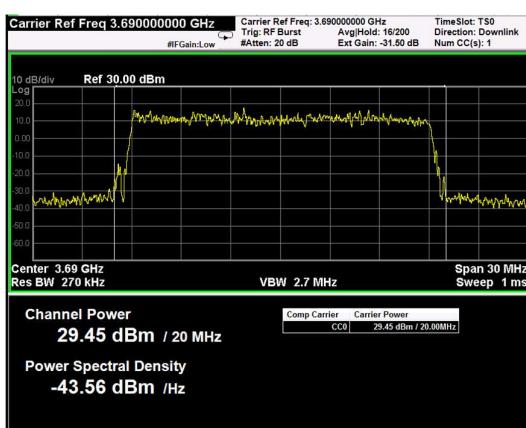
Channel: BOTTOM, Modulation: 256QAM, BW=20MHz, CCDF



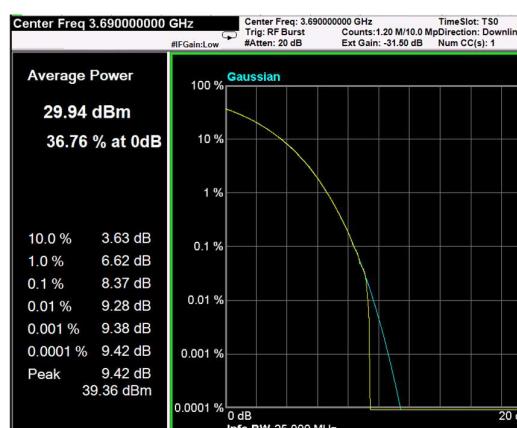
Channel: MIDDLE, Modulation: 256QAM, BW=20MHz, Channel Power



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



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



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



## Clause 96.41(e)(1)(2)(3) Spurious emissions at RF antenna connector

### (e) 3.5 GHz Emissions and Interference Limits—

- (1) *General protection levels.* Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed –13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed –25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.
- (2) *Additional protection levels.* Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed –40dBm/MHz.
- (3) *Measurement procedure.* (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's authorized frequency channel, a resolution bandwidth of no less than one percent of the fundamental emission bandwidth 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 reference 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: 04/03/2019 to 05/10/2019

Test results: Pass

### Special notes

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.

$$10\log(N_{Ant}) = 10\log(2) = 3 \text{ dB}$$

Limit= -40dBm - 3dBm=-43dBm



## Clause 96.41(e)(1)(2)(3) Spurious emissions at RF antenna connector

## Test data

**See Plots below**

## Spurious emissions measurement results:

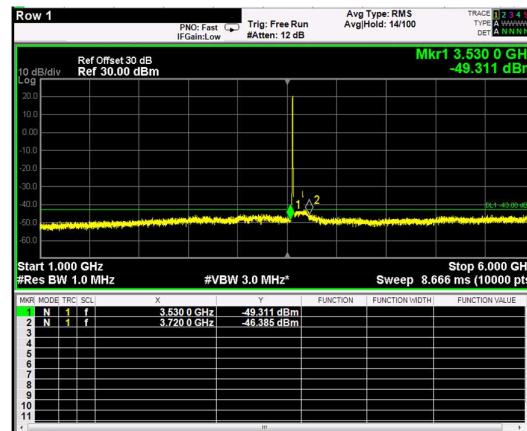
Frequency (MHz)	Spurious emission (dBm)	Limit (dBm)	Margin (dB)
Low channel			
First channel	Negligible	-43	
Mid channel			
3625 MHz	Negligible	-43	
High channel			
Last channel	Negligible	-43	

## Test data: Spurious Emissions at antenna terminal

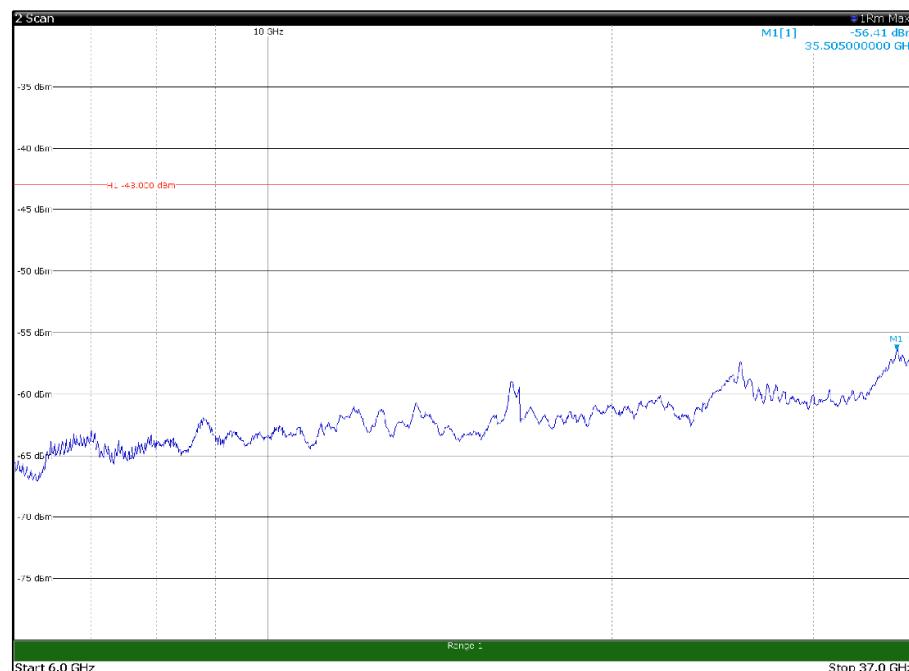
## RF PORT 1



Channel: BOTTOM, Modulation: QPSK,  
BW=5MHz, Range: 30MHz - 1GHz



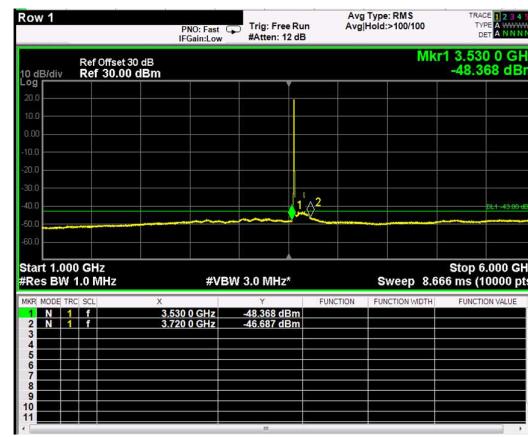
Channel: BOTTOM, Modulation: QPSK,  
BW=5MHz, Range: 1GHz - 6GHz



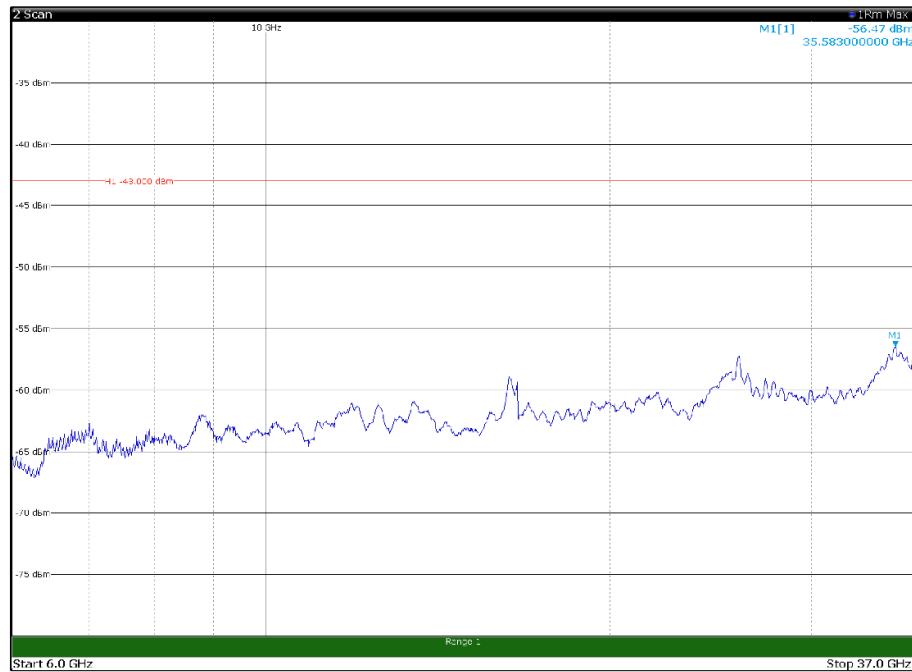
Channel: BOTTOM, Modulation: QPSK,  
BW=5MHz, Range: 6GHz - 37GHz



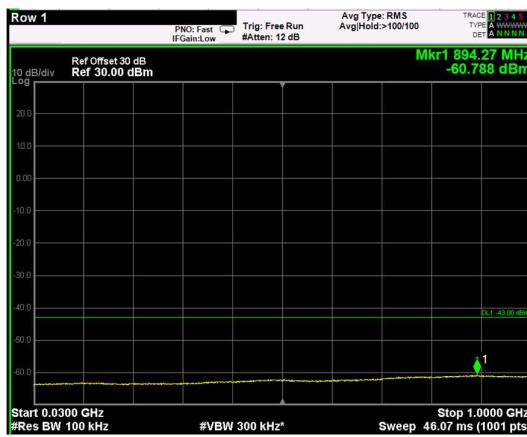
Channel: BOTTOM, Modulation: 16QAM,  
BW=5MHz, Range: 30MHz - 1GHz



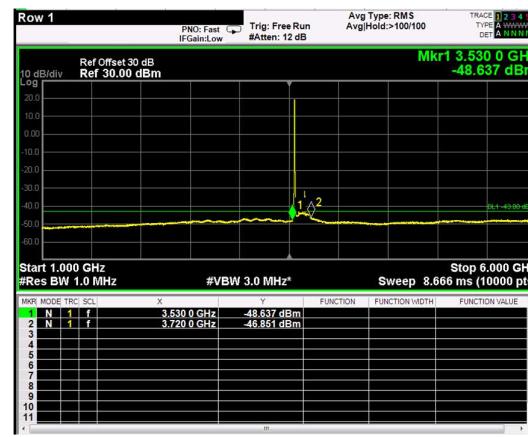
Channel: BOTTOM, Modulation: 16QAM,  
BW=5MHz, Range: 1GHz - 6GHz



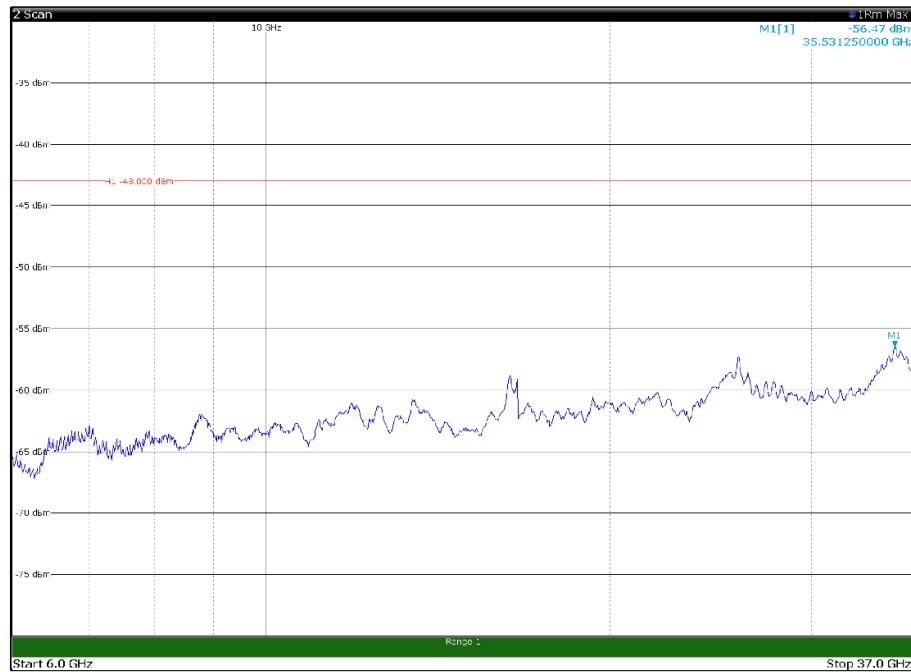
Channel: BOTTOM, Modulation: 16QAM,  
BW=5MHz, Range: 6GHz - 37GHz



Channel: BOTTOM, Modulation: 64QAM,  
BW=5MHz, Range: 30MHz - 1GHz



Channel: BOTTOM, Modulation: 64QAM,  
BW=5MHz, Range: 1GHz - 6GHz



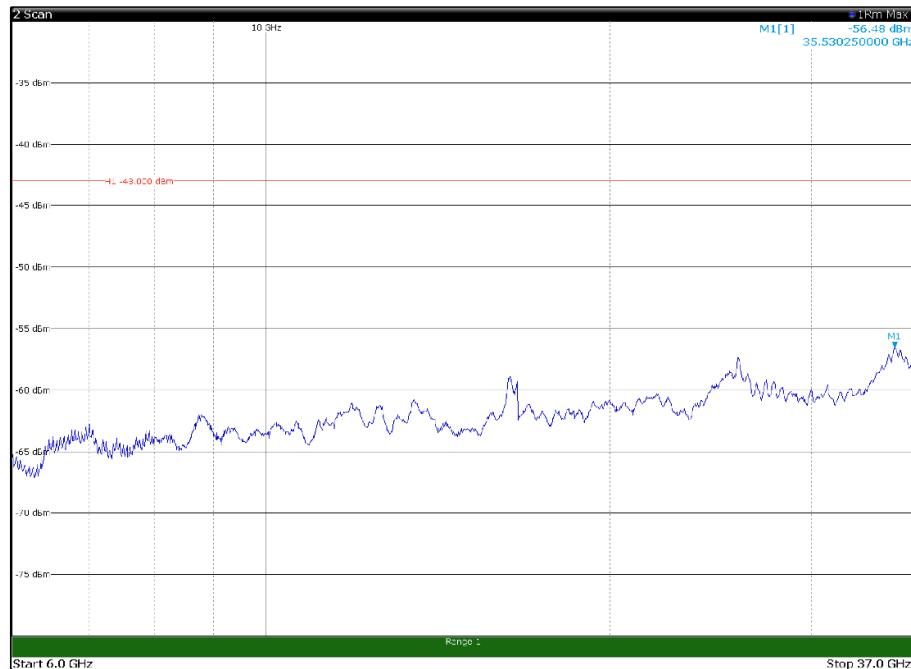
Channel: BOTTOM, Modulation: 64QAM,  
BW=5MHz, Range: 6GHz - 37GHz



Channel: BOTTOM, Modulation: 256QAM,  
BW=5MHz, Range: 30MHz - 1GHz



Channel: BOTTOM, Modulation: 256QAM,  
BW=5MHz, Range: 1GHz - 6GHz



Channel: BOTTOM, Modulation: 256QAM,  
BW=5MHz, Range: 6GHz - 37GHz