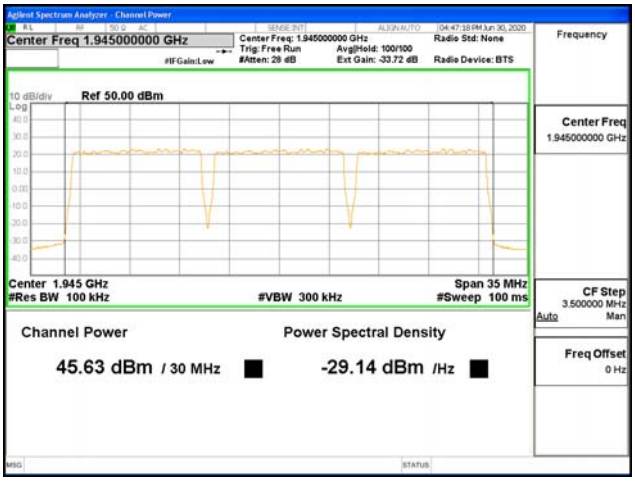
ANT 3

QPSK	16QAM
64QAM	256QAM

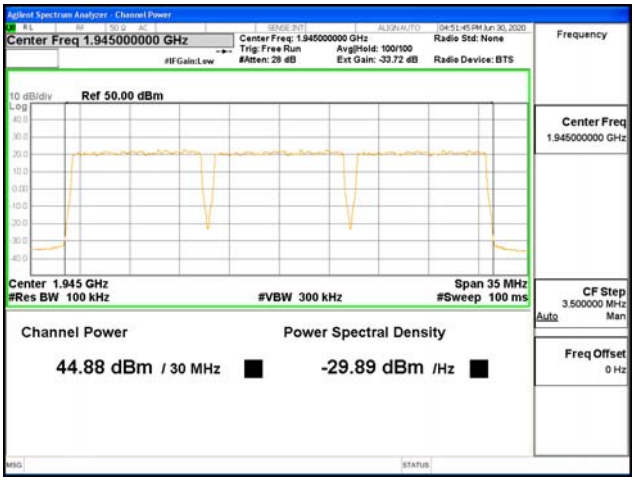
Band 25, BW 10MHz+10MHz+10MHz, Multi 3 carrier, Bottom
ANT 0

QPSK	16QAM
64QAM	256QAM

ANT 1

QPSK	16QAM
	
64QAM	256QAM

ANT 2

QPSK	16QAM
	
64QAM	256QAM

ANT 3

QPSK	16QAM
64QAM	256QAM

Band 25, BW 10MHz+10MHz+10MHz, Multi 3 carrier, Middle
ANT 0

QPSK	16QAM
64QAM	256QAM

ANT 1

QPSK	16QAM
64QAM	256QAM

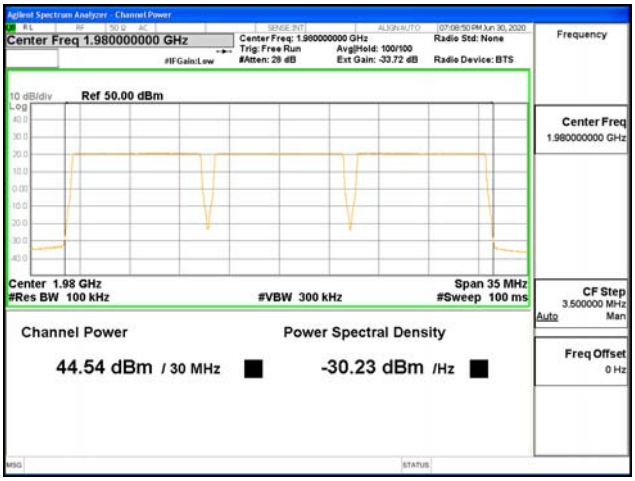
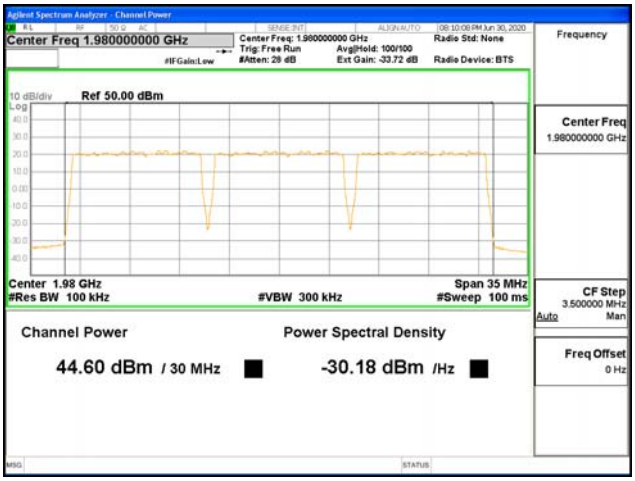
ANT 2

QPSK	16QAM
64QAM	256QAM

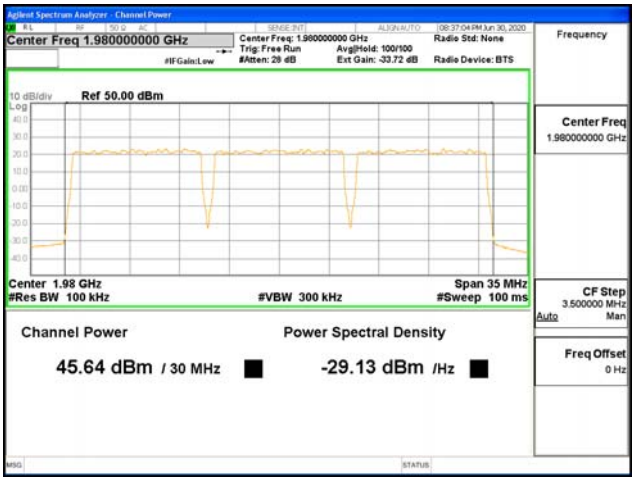
ANT 3

QPSK	16QAM
64QAM	256QAM

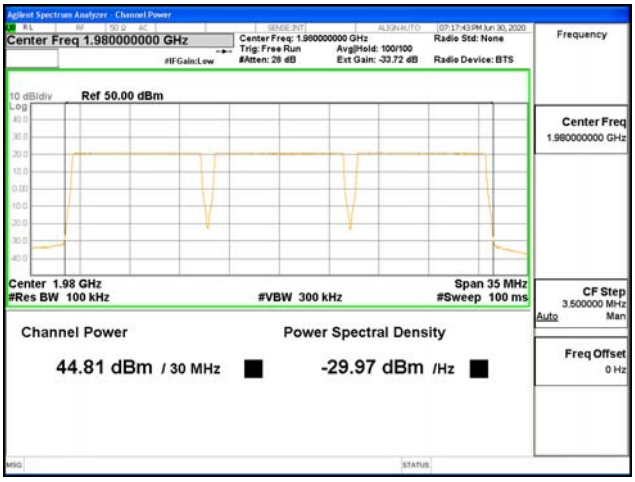
Band 25, BW 10MHz+10MHz+10MHz, Multi 3 carrier, Top
ANT 0

QPSK	16QAM
	
64QAM	256QAM

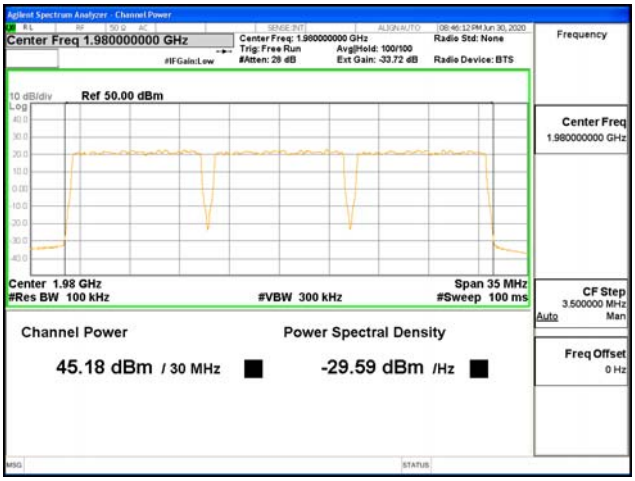
ANT 1

QPSK	16QAM
64QAM	256QAM
	

ANT 2

QPSK	16QAM
	
64QAM	256QAM

ANT 3

QPSK	16QAM
64QAM	256QAM
	

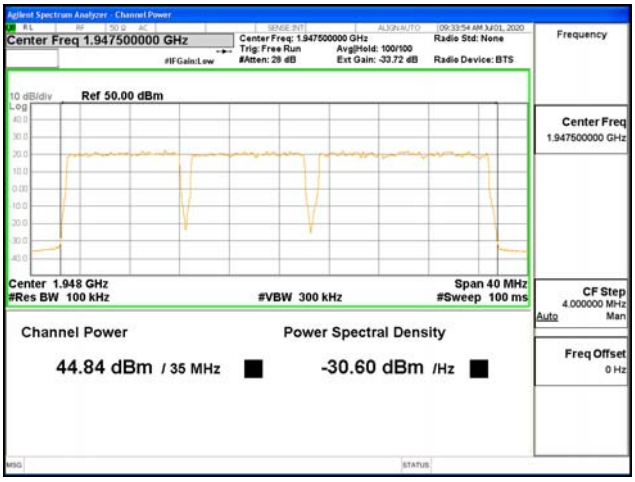
Band 25, BW 10MHz+10MHz+15MHz, Multi 3 carrier, Bottom
ANT 0

QPSK	16QAM
64QAM	256QAM

ANT 1

QPSK	16QAM
64QAM	256QAM

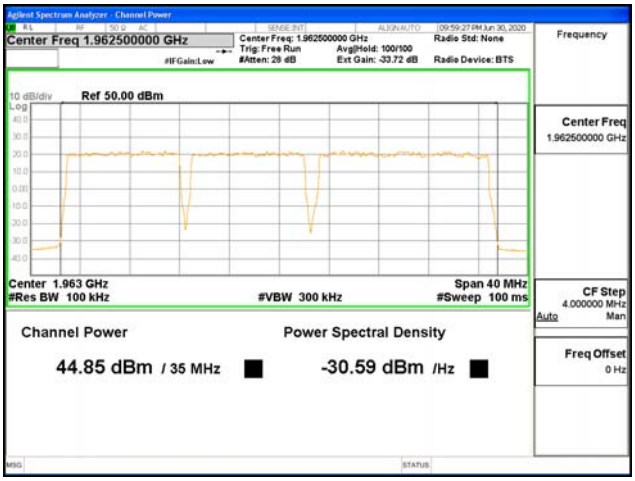
ANT 2

QPSK	16QAM
	
64QAM	256QAM

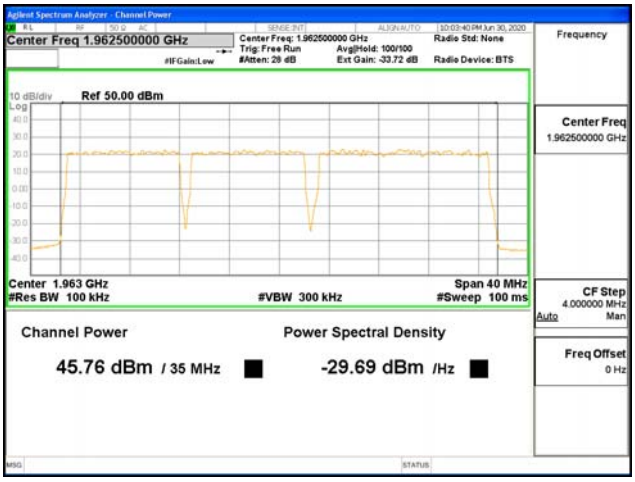
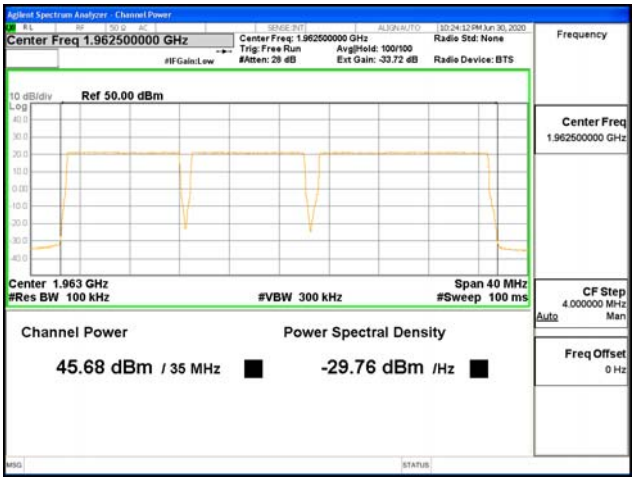
ANT 3

QPSK	16QAM
64QAM	256QAM

Band 25, BW 10MHz+10MHz+15MHz, Multi 3 carrier, Middle
ANT 0

QPSK	16QAM
	
64QAM	256QAM

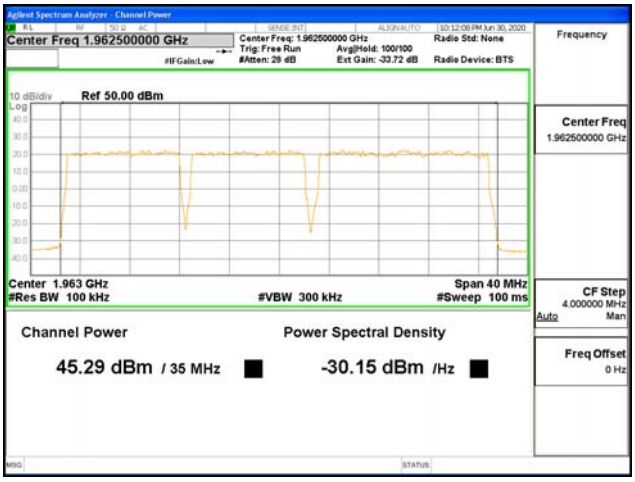
ANT 1

QPSK	16QAM
	
64QAM	256QAM
	

ANT 2

QPSK	16QAM
64QAM	256QAM

ANT 3

QPSK	16QAM
	
64QAM	256QAM

Band 25, BW 10MHz+10MHz+15MHz, Multi 3 carrier, Top
ANT 0

QPSK	16QAM
64QAM	256QAM

ANT 1

QPSK	16QAM
64QAM	256QAM

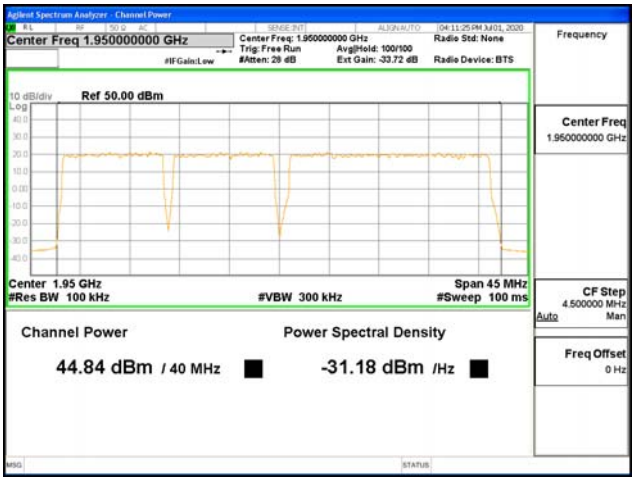
ANT 2

QPSK	16QAM
64QAM	256QAM

ANT 3

QPSK	16QAM
64QAM	256QAM

Band 25, BW 10MHz+10MHz+20MHz, Multi 3 carrier, Bottom
ANT 0

QPSK	16QAM
	
64QAM	256QAM

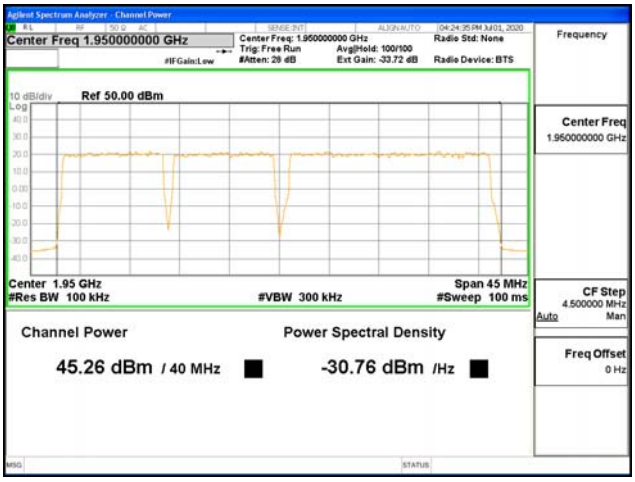
ANT 1

QPSK	16QAM
64QAM	256QAM

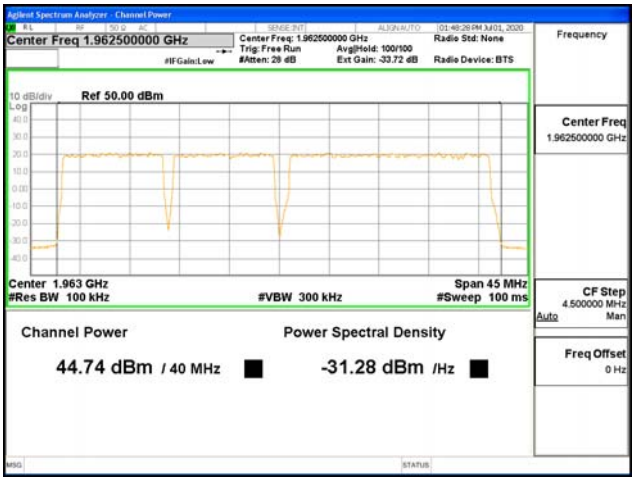
ANT 2

QPSK	16QAM
64QAM	256QAM

ANT 3

QPSK	16QAM
	
64QAM	256QAM

Band 25, BW 10MHz+10MHz+20MHz, Multi 3 carrier, Middle
ANT 0

QPSK	16QAM
	
64QAM	256QAM

ANT 1

QPSK	16QAM
64QAM	256QAM

ANT 2

QPSK	16QAM
64QAM	256QAM

ANT 3

QPSK	16QAM
64QAM	256QAM

Band 25, BW 10MHz+10MHz+20MHz, Multi 3 carrier, Top
ANT 0

QPSK	16QAM
64QAM	256QAM

ANT 1

QPSK	16QAM
64QAM	256QAM

ANT 2

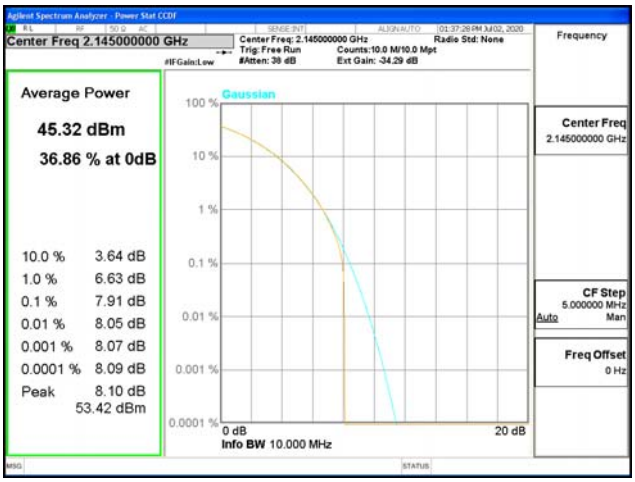
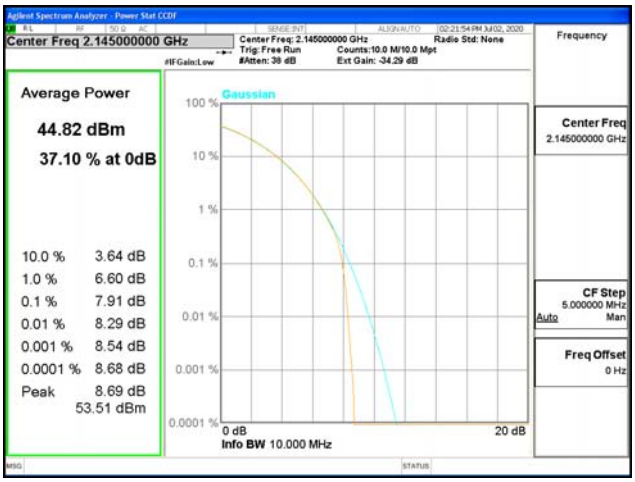
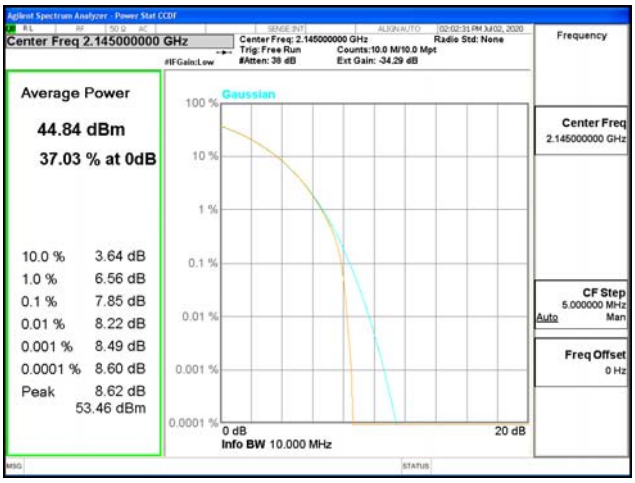
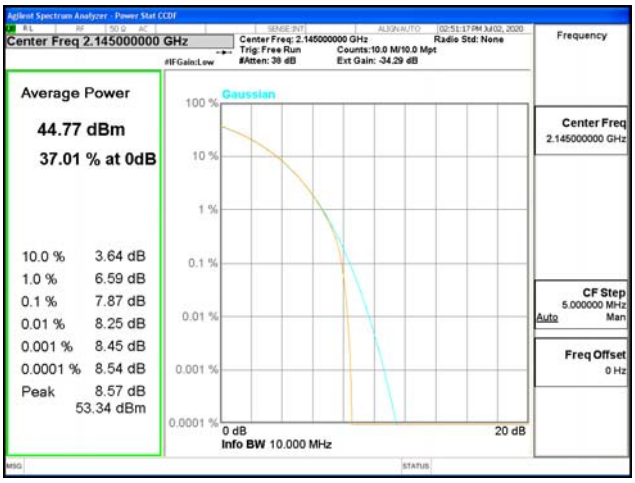
QPSK	16QAM
64QAM	256QAM

ANT 3

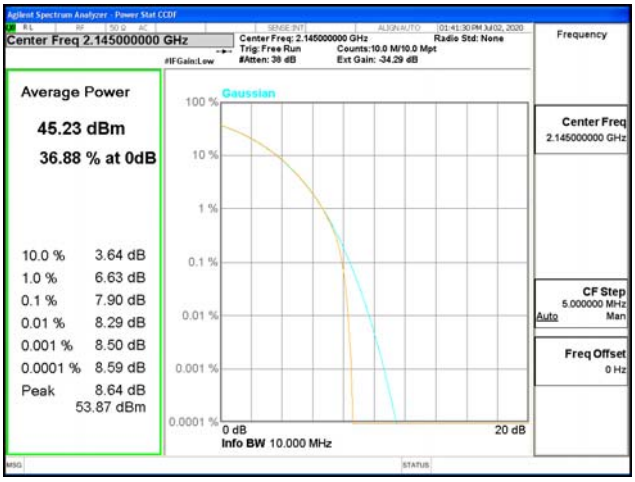
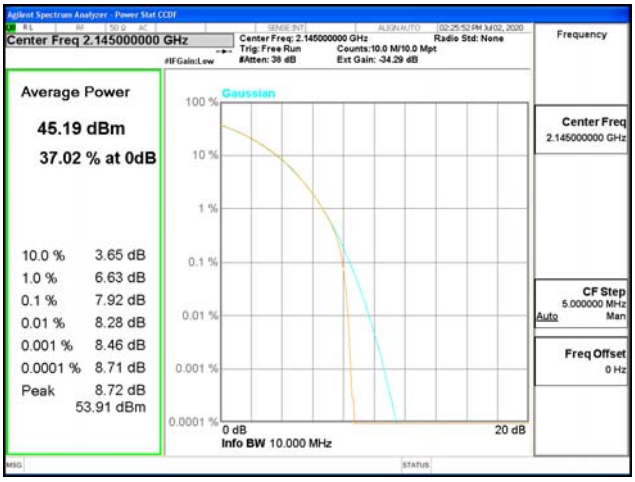
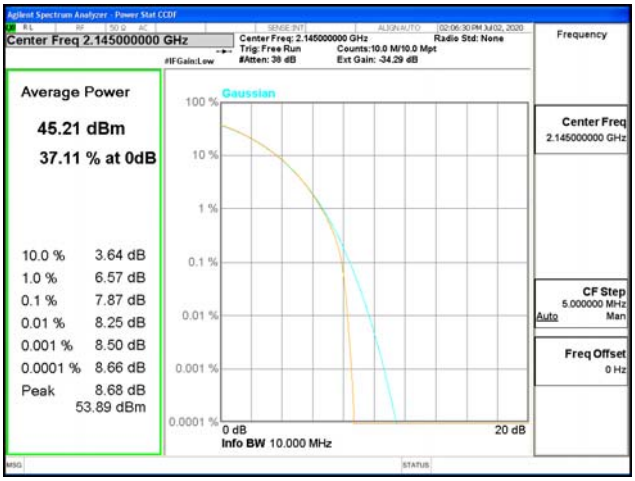
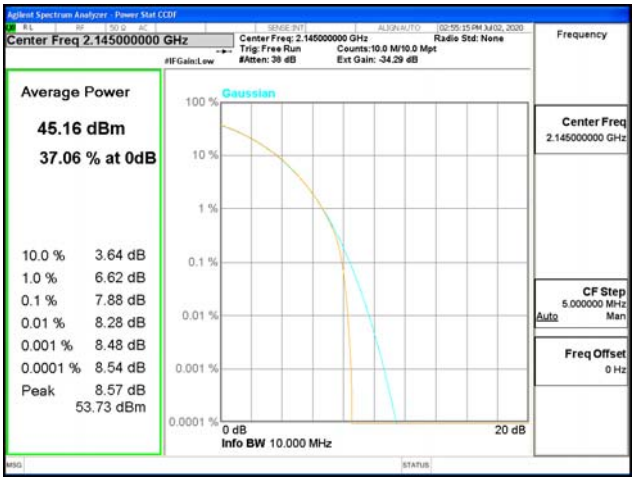
QPSK	16QAM
64QAM	256QAM

Test Plot at Peak-to-Average Ratio

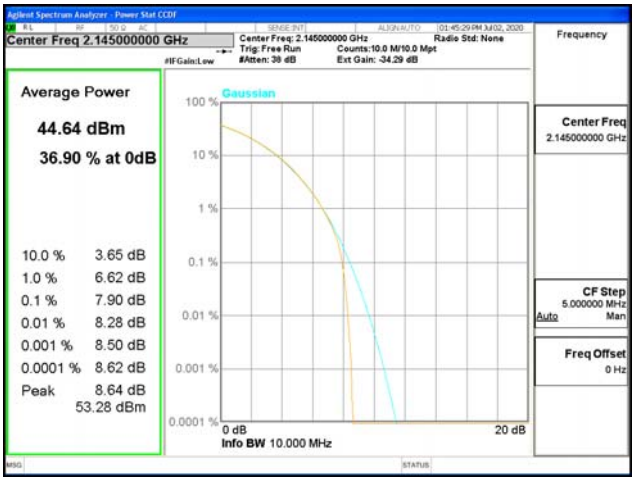
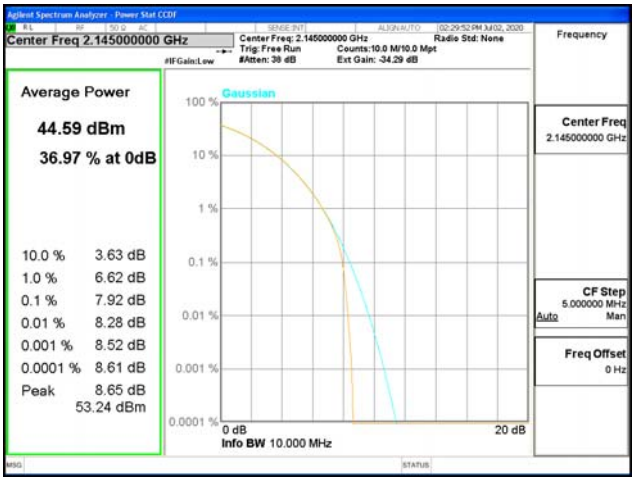
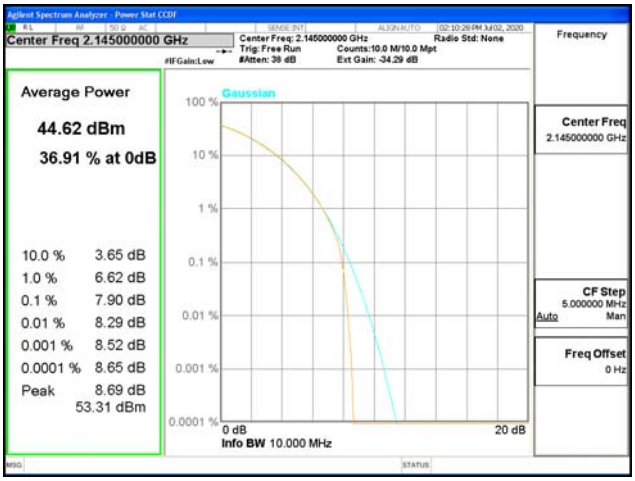
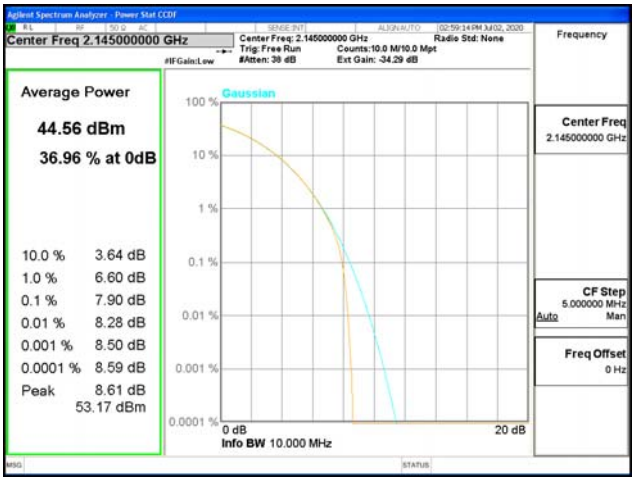
Band 25, BW 5+5MHz, Multi carrier, Middle
ANT0

QPSK	16QAM
	
64QAM	256QAM
	

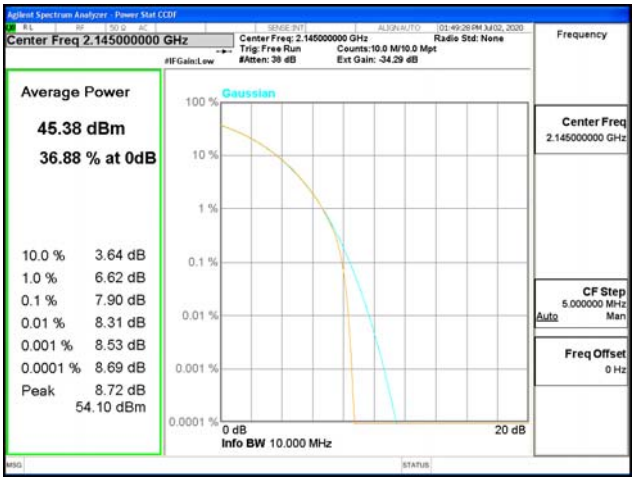
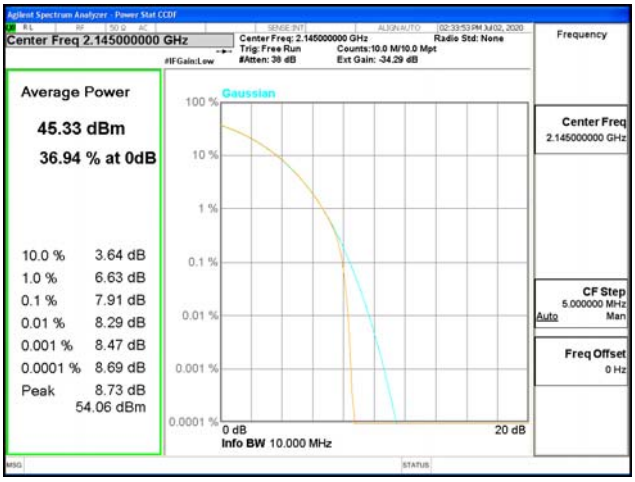
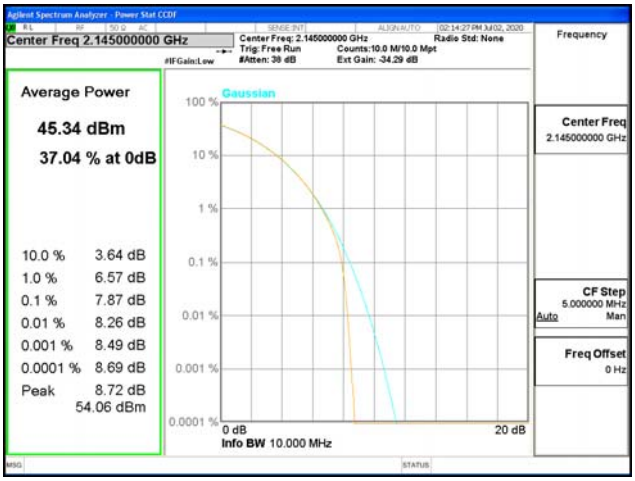
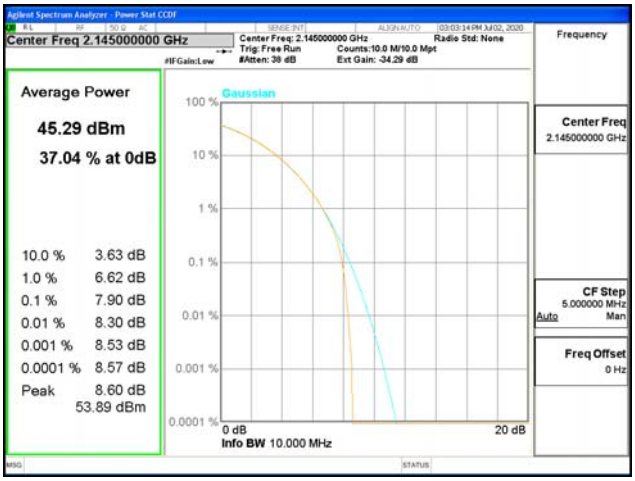
ANT1

QPSK	16QAM
	
64QAM	256QAM
	

ANT2

QPSK	16QAM
	
64QAM	256QAM
	

ANT3

QPSK	16QAM
	
64QAM	**256QAM**
	

5. Occupied Bandwidth

Test Requirements :

§ 2.1049 Measurements required : Occupied bandwidth

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the specified conditions of § 2.1049(a) through (i) as applicable.

Test Procedures :

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The EUT was connected to a spectrum analyzer enabled with an occupied bandwidth in accordance with FCC Part 2.1049. The occupied bandwidth was measured from the fundamental emission at the bottom, middle and top channels. The occupied bandwidth was measured using the built in occupied bandwidth function of the spectrum analyzer. It was set to measure the bandwidth where 99% of the signal power was contained. The analyzer automatically configures the measurement bandwidths to make an accurate measurement based on the channel bandwidth and channel spacing of the EUT.

Test Results :

Test Data : Band 25, BW 5+5MHz, Multi 2carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 5+5MHz	Bottom	QPSK	9.43	9.43	9.43	9.43
		16QAM	9.40	9.40	9.41	9.40
		64QAM	9.43	9.43	9.43	9.43
		256QAM	9.43	9.43	9.43	9.43
	Middle	QPSK	9.44	9.44	9.44	9.44
		16QAM	9.40	9.40	9.40	9.41
		64QAM	9.43	9.43	9.43	9.43
		256QAM	9.43	9.43	9.43	9.44
	Top	QPSK	9.44	9.43	9.43	9.43
		16QAM	9.44	9.43	9.43	9.43
		64QAM	9.43	9.43	9.43	9.43
		256QAM	9.43	9.43	9.43	9.43

Test Data : Band 25, BW 5+10MHz, Multi 2carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 5+10MHz	Bottom	QPSK	14.13	14.13	14.13	14.13
		16QAM	14.12	14.12	14.13	14.13
		64QAM	14.13	14.13	14.13	14.13
		256QAM	14.13	14.13	14.13	14.13
	Middle	QPSK	14.14	14.13	14.13	14.14
		16QAM	14.13	14.12	14.13	14.12
		64QAM	14.14	14.13	14.13	14.14
		256QAM	14.14	14.13	14.14	14.13
	Top	QPSK	14.13	14.13	14.13	14.13
		16QAM	14.13	14.13	14.12	14.12
		64QAM	14.13	14.13	14.13	14.14
		256QAM	14.13	14.13	14.13	14.13

Test Data : Band 25, BW 5+15MHz, Multi 2carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 5+15MHz	Bottom	QPSK	18.83	18.84	18.84	18.84
		16QAM	18.83	18.83	18.83	18.83
		64QAM	18.84	18.84	18.84	18.84
		256QAM	18.84	18.84	18.84	18.84
	Middle	QPSK	18.84	18.83	18.84	18.84
		16QAM	18.84	18.83	18.84	18.83
		64QAM	18.84	18.84	18.84	18.84
		256QAM	18.84	18.84	18.84	18.84
	Top	QPSK	18.83	18.83	18.83	18.83
		16QAM	18.83	18.83	18.82	18.83
		64QAM	18.83	18.83	18.83	18.83
		256QAM	18.84	18.83	18.83	18.84

Test Data : Band 25, BW 10+10MHz, Multi 2carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 10+10MHz	Bottom	QPSK	18.83	18.84	18.84	18.84
		16QAM	18.82	18.83	18.83	18.82
		64QAM	18.83	18.83	18.84	18.83
		256QAM	18.84	18.84	18.84	18.84
	Middle	QPSK	18.84	18.83	18.84	18.84
		16QAM	18.81	18.83	18.82	18.81
		64QAM	18.84	18.83	18.84	18.84
		256QAM	18.85	18.84	18.84	18.84
	Top	QPSK	18.84	18.83	18.84	18.84
		16QAM	18.82	18.83	18.84	18.82
		64QAM	18.83	18.83	18.83	18.83
		256QAM	18.84	18.83	18.83	18.83

Test Data : Band 25, BW 10+15MHz, Multi 2carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 10+15MHz	Bottom	QPSK	23.54	23.54	23.54	23.54
		16QAM	23.53	23.54	23.53	23.54
		64QAM	23.53	23.53	23.53	23.53
		256QAM	23.54	23.54	23.54	23.54
	Middle	QPSK	23.54	23.54	23.54	23.54
		16QAM	23.54	23.54	23.55	23.54
		64QAM	23.54	23.54	23.54	23.54
		256QAM	23.54	23.54	23.55	23.54
	Top	QPSK	23.54	23.53	23.53	23.54
		16QAM	23.53	23.53	23.53	23.54
		64QAM	23.53	23.53	23.53	23.53
		256QAM	23.54	23.53	23.54	23.54

Test Data : Band 25, BW 10+20MHz, Multi 2carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 10+20MHz	Bottom	QPSK	28.23	28.24	28.24	28.23
		16QAM	28.19	28.20	28.19	28.18
		64QAM	28.23	28.24	28.24	28.24
		256QAM	28.23	28.24	28.24	28.24
	Middle	QPSK	28.24	28.25	28.25	28.25
		16QAM	28.18	28.20	28.20	28.22
		64QAM	28.25	28.25	28.25	28.25
		256QAM	28.25	28.25	28.25	28.25
	Top	QPSK	28.24	28.23	28.23	28.24
		16QAM	28.19	28.18	28.17	28.18
		64QAM	28.24	28.23	28.23	28.24
		256QAM	28.18	28.18	28.17	28.19

Test Data : Band 25, BW 5+5+5MHz, Multi 3carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 5+5+5MHz	Bottom	QPSK	14.38	14.39	14.38	14.38
		16QAM	14.35	14.34	14.34	14.35
		64QAM	14.38	14.38	14.38	14.38
		256QAM	14.38	14.38	14.38	14.38
	Middle	QPSK	14.39	14.39	14.39	14.39
		16QAM	14.34	14.34	14.34	14.35
		64QAM	14.39	14.39	14.38	14.39
		256QAM	14.39	14.39	14.39	14.38
	Top	QPSK	14.39	14.38	14.38	14.39
		16QAM	14.39	14.38	14.38	14.38
		64QAM	14.39	14.38	14.38	14.39
		256QAM	14.39	14.38	14.38	14.38

Test Data : Band 25, BW 5+5+15MHz, Multi 3carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 5+5+15MHz	Bottom	QPSK	23.79	23.79	23.78	23.79
		16QAM	23.79	23.78	23.77	23.78
		64QAM	23.79	23.79	23.79	23.79
		256QAM	23.79	23.79	23.79	23.79
	Middle	QPSK	23.79	23.79	23.80	23.79
		16QAM	23.79	23.78	23.79	23.80
		64QAM	23.79	23.79	23.80	23.80
		256QAM	23.80	23.80	23.80	23.80
	Top	QPSK	23.79	23.78	23.79	23.78
		16QAM	23.78	23.78	23.78	23.78
		64QAM	23.79	23.78	23.78	23.79
		256QAM	23.78	23.76	23.78	23.78

Test Data : Band 25, BW 5+5+20MHz, Multi 3carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 5+5+20MHz	Bottom	QPSK	28.49	28.50	28.49	28.49
		16QAM	28.44	28.44	28.45	28.43
		64QAM	28.49	28.50	28.49	28.50
		256QAM	28.49	28.50	28.49	28.49
	Middle	QPSK	28.49	28.50	28.50	28.50
		16QAM	28.44	28.45	28.46	28.44
		64QAM	28.50	28.50	28.50	28.50
		256QAM	28.50	28.50	28.50	28.50
	Top	QPSK	28.49	28.48	28.48	28.49
		16QAM	28.49	28.49	28.48	28.49
		64QAM	28.49	28.48	28.49	28.49
		256QAM	28.49	28.49	28.49	28.49

Test Data : Band 25, BW 5+10+10MHz, Multi 3carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 5+10+10MHz	Bottom	QPSK	24.04	24.04	24.04	24.04
		16QAM	24.02	24.03	24.02	24.02
		64QAM	24.03	24.04	24.03	24.04
		256QAM	24.04	24.05	24.04	24.04
	Middle	QPSK	24.04	24.05	24.05	24.05
		16QAM	24.02	24.04	24.03	24.04
		64QAM	24.04	24.04	24.04	24.04
		256QAM	24.05	24.04	24.05	24.05
	Top	QPSK	24.04	24.03	24.04	24.04
		16QAM	24.03	24.02	24.04	24.03
		64QAM	24.04	24.03	24.04	24.03
		256QAM	24.03	24.03	24.03	24.01

Test Data : Band 25, BW 5+10+15MHz, Multi 3carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 5+10+15MHz	Bottom	QPSK	28.74	28.74	28.74	28.74
		16QAM	28.74	28.74	28.73	28.73
		64QAM	28.74	28.74	28.74	28.74
		256QAM	28.74	28.75	28.75	28.74
	Middle	QPSK	28.74	28.75	28.75	28.75
		16QAM	28.76	28.75	28.75	28.75
		64QAM	28.74	28.75	28.75	28.74
		256QAM	28.75	28.75	28.75	28.75
	Top	QPSK	28.74	28.73	28.74	28.74
		16QAM	28.72	28.71	28.72	28.73
		64QAM	28.74	28.73	28.74	28.74
		256QAM	28.75	28.74	28.74	28.75

Test Data : Band 25, BW 5+10+20MHz, Multi 3carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 5+10+20MHz	Bottom	QPSK	33.44	33.45	33.44	33.45
		16QAM	33.40	33.38	33.38	33.40
		64QAM	33.45	33.45	33.45	33.45
		256QAM	33.44	33.45	33.45	33.46
	Middle	QPSK	33.45	33.45	33.45	33.45
		16QAM	33.40	33.39	33.39	33.40
		64QAM	33.45	33.45	33.45	33.45
		256QAM	33.45	33.45	33.45	33.45
	Top	QPSK	33.45	33.44	33.44	33.44
		16QAM	33.37	33.39	33.38	33.38
		64QAM	33.45	33.44	33.45	33.45
		256QAM	33.38	33.37	33.38	33.38

Test Data : Band 25, BW 10+10+10MHz, Multi 3carrier

Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 10+10+10MHz	Bottom	QPSK	28.74	28.74	28.74	28.74
		16QAM	28.72	28.73	28.72	28.71
		64QAM	28.73	28.74	28.74	28.73
		256QAM	28.74	28.75	28.75	28.74
	Middle	QPSK	28.75	28.75	28.75	28.75
		16QAM	28.73	28.73	28.73	28.73
		64QAM	28.74	28.75	28.75	28.74
		256QAM	28.75	28.75	28.76	28.75
	Top	QPSK	28.74	28.74	28.74	28.75
		16QAM	28.73	28.72	28.73	28.73
		64QAM	28.74	28.73	28.74	28.74
		256QAM	28.72	28.71	28.72	28.71

Test Data : Band 25, BW 10+10+15MHz, Multi 3carrier

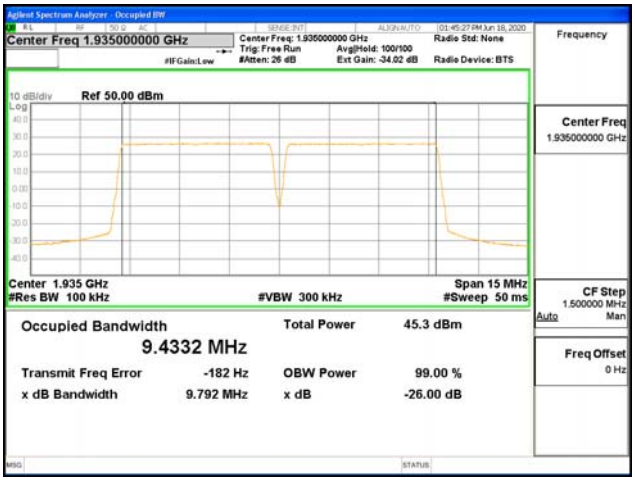
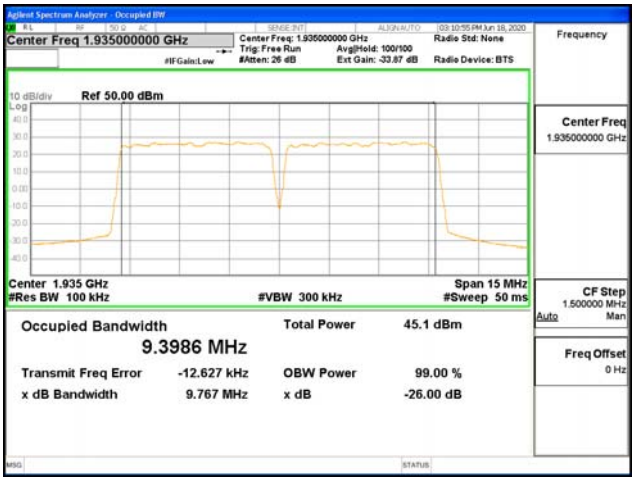
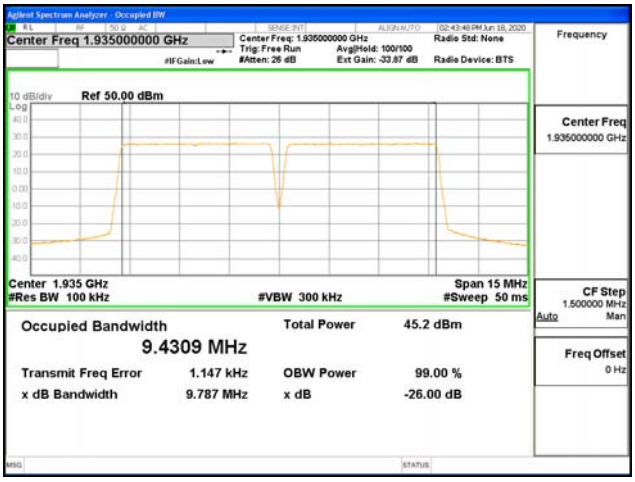
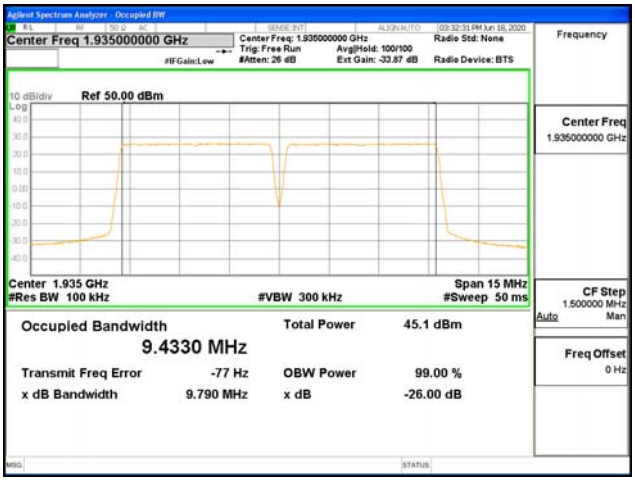
Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 10+10+15MHz	Bottom	QPSK	33.44	33.45	33.44	33.44
		16QAM	33.42	33.45	33.43	33.43
		64QAM	33.44	33.45	33.44	33.44
		256QAM	33.45	33.45	33.44	33.45
	Middle	QPSK	33.45	33.45	33.45	33.45
		16QAM	33.45	33.44	33.45	33.45
		64QAM	33.44	33.45	33.45	33.45
		256QAM	33.46	33.45	33.46	33.45
	Top	QPSK	33.44	33.44	33.44	33.44
		16QAM	33.44	33.43	33.44	33.44
		64QAM	33.44	33.44	33.44	33.44
		256QAM	33.44	33.43	33.44	33.44

Test Data : Band 25, BW 10+10+20MHz, Multi 3carrier

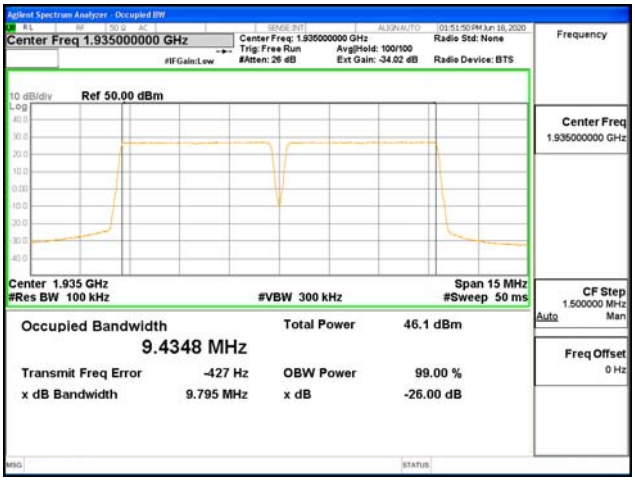
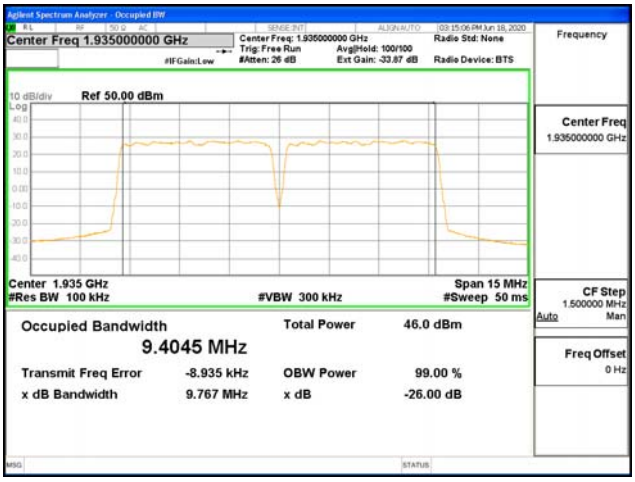
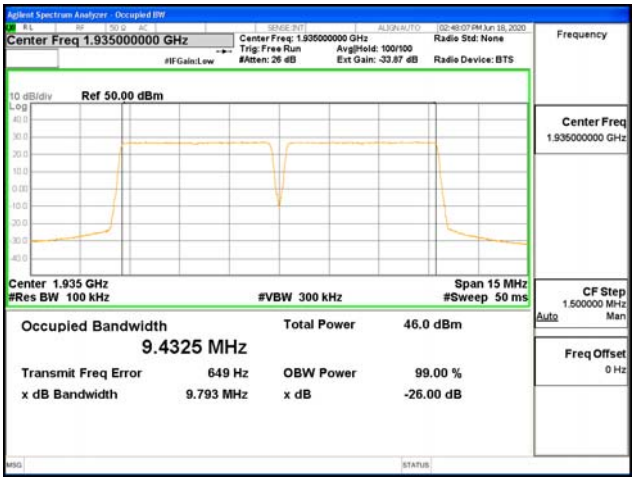
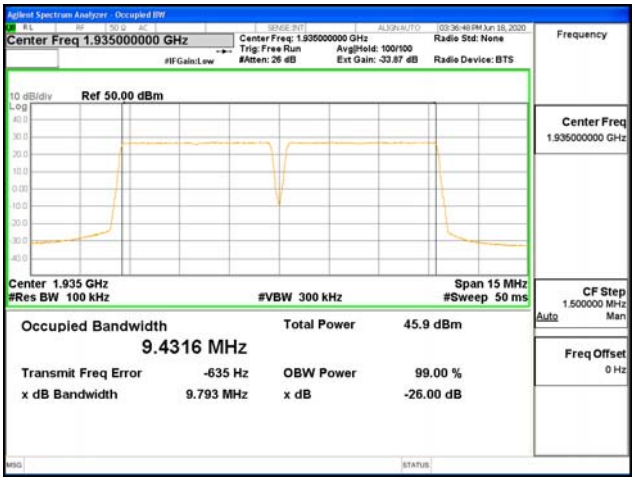
Type	Channel	Modulation	Occupied Bandwidth(MHz)			
			Test antenna port			
			0	1	2	3
Band 25 BW 10+10+20MHz	Bottom	QPSK	38.14	38.15	38.15	38.14
		16QAM	38.08	38.09	38.09	38.09
		64QAM	38.15	38.15	38.16	38.15
		256QAM	38.14	38.14	38.15	38.15
	Middle	QPSK	38.15	38.15	38.15	38.15
		16QAM	38.09	38.09	38.09	38.09
		64QAM	38.15	38.15	38.15	38.16
		256QAM	38.16	38.15	38.15	38.15
	Top	QPSK	38.15	38.14	38.13	38.15
		16QAM	38.15	38.14	38.14	38.15
		64QAM	38.15	38.14	38.14	38.16
		256QAM	38.16	38.14	38.14	38.15

Test Plot at Occupied Bandwidth

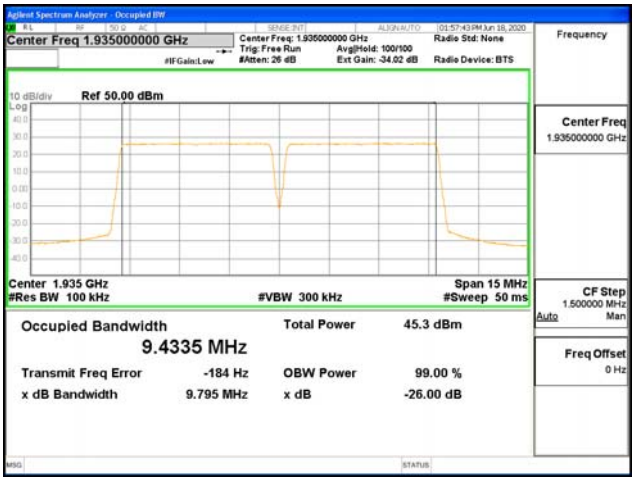
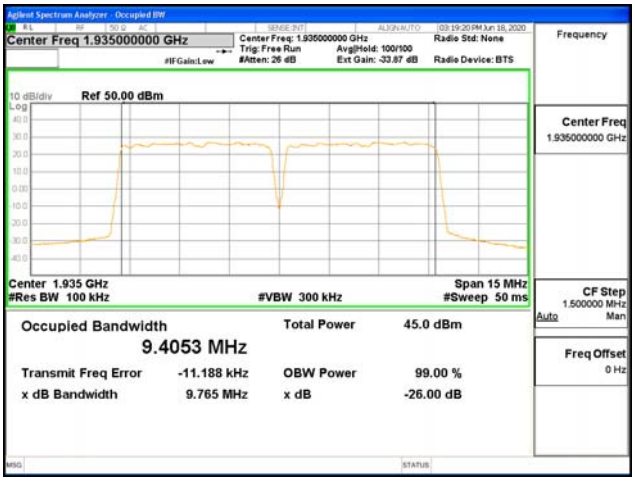
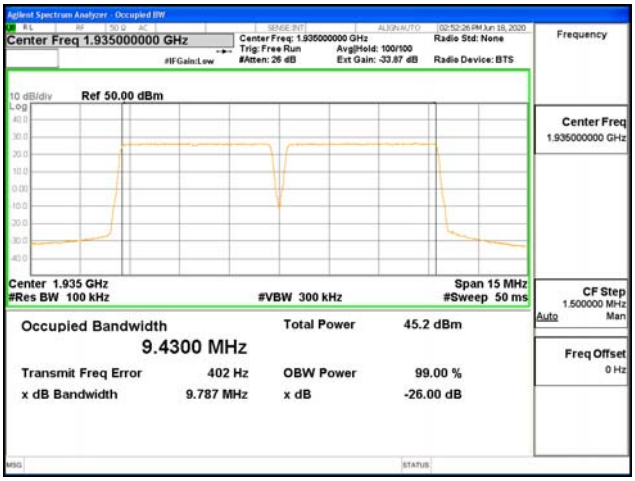
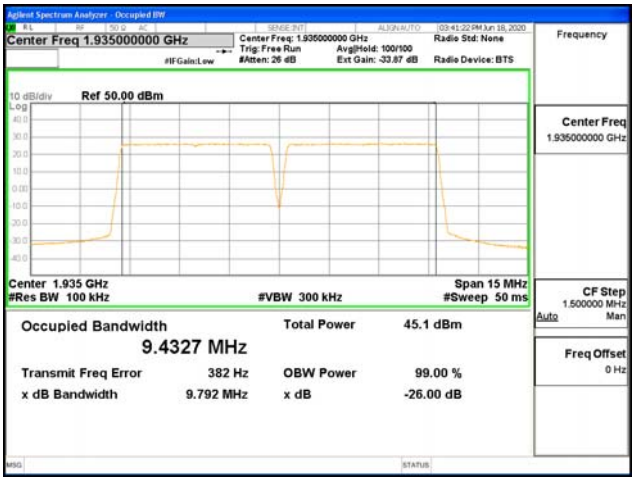
Band 25, BW 5MHz+5MHz, Multi 2 carrier, Bottom
ANT 0

QPSK	16QAM
	
64QAM	**256QAM**
	

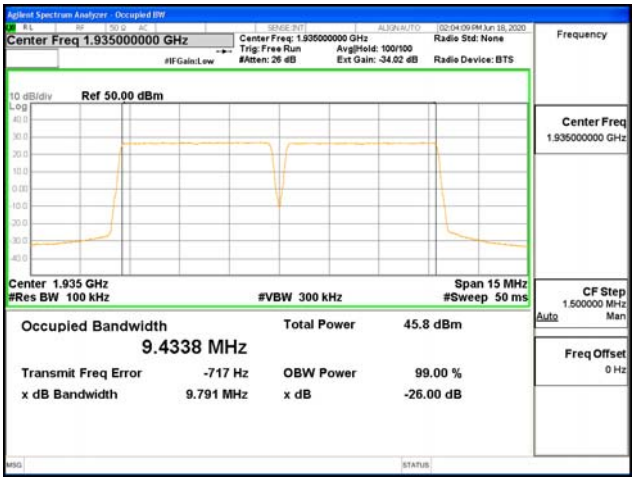
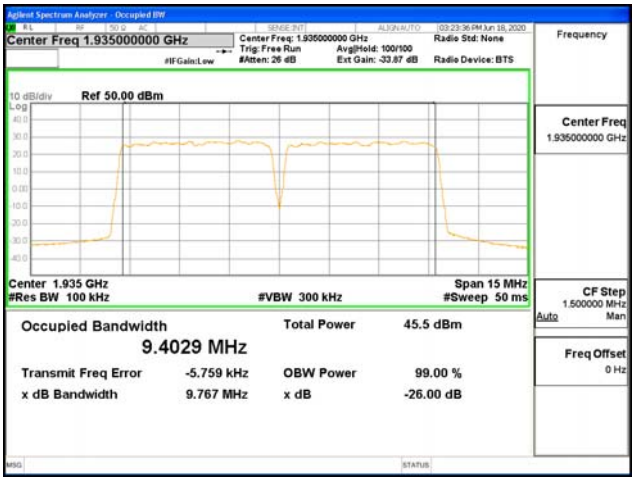
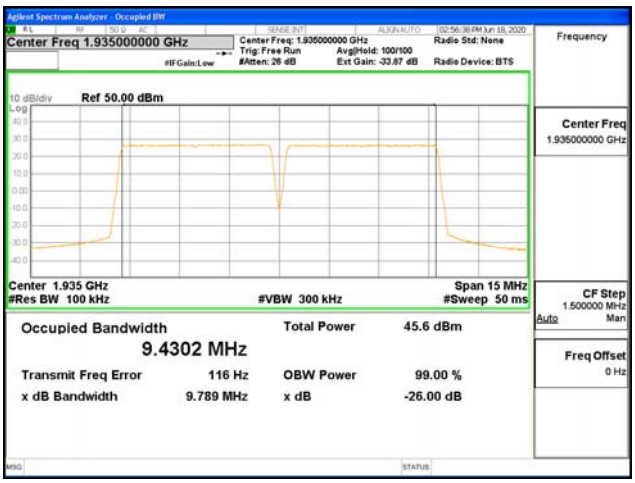
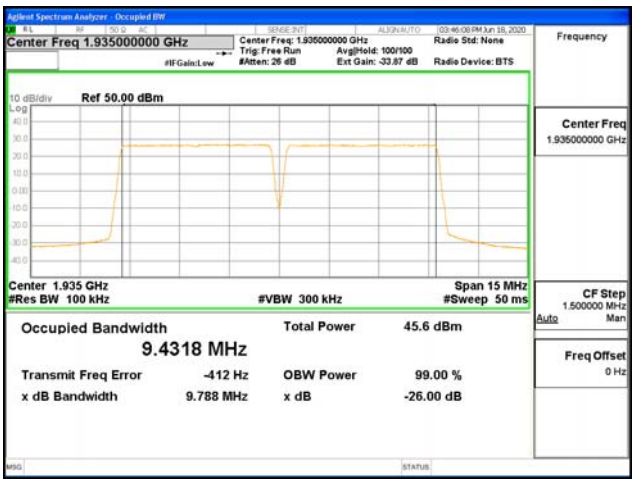
ANT 1

QPSK	16QAM
	
64QAM	256QAM
	

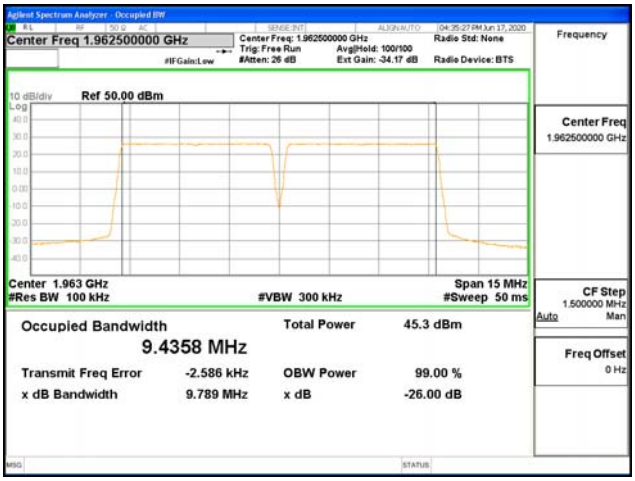
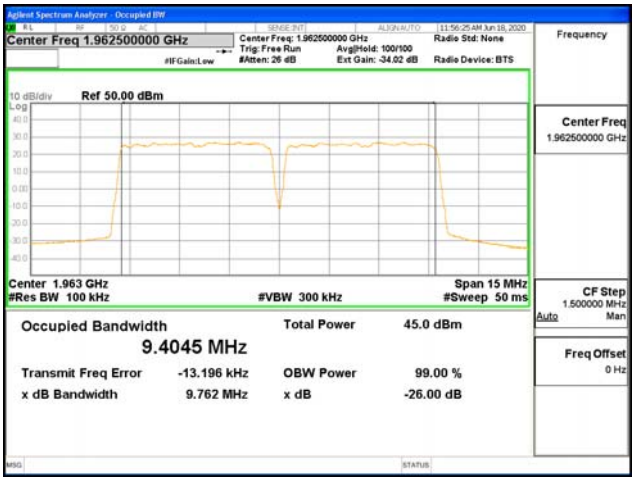
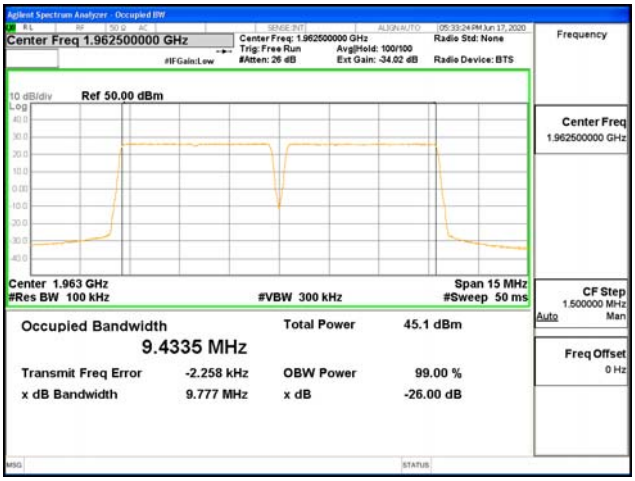
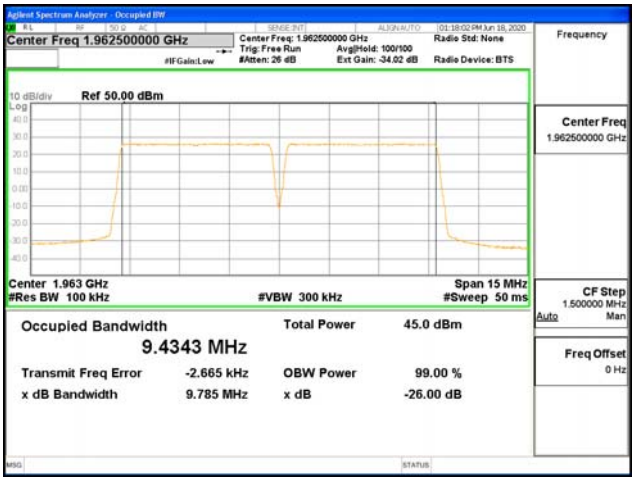
ANT 2

QPSK	16QAM
	
64QAM	**256QAM**
	

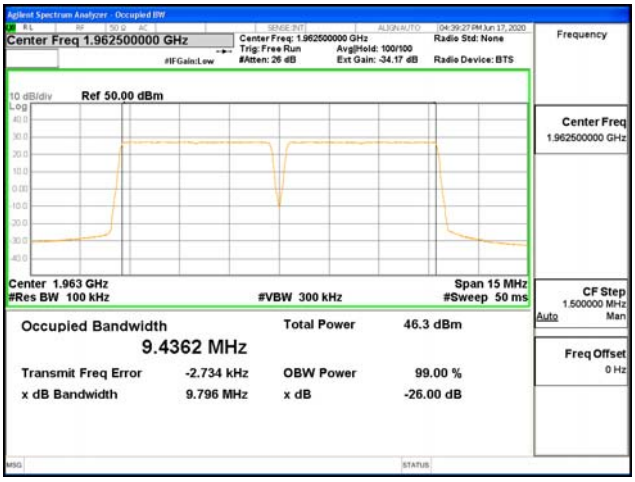
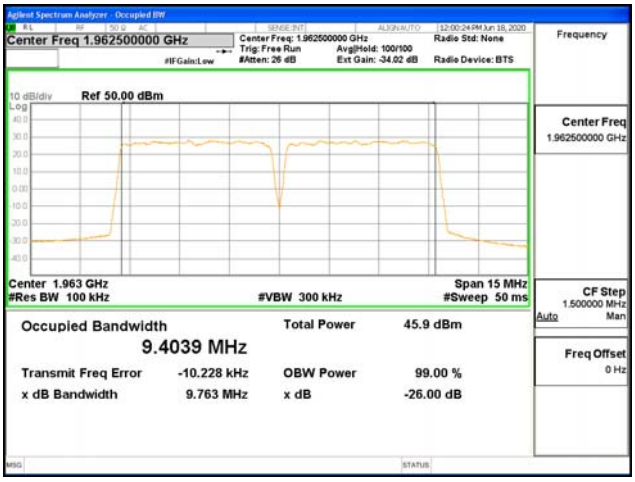
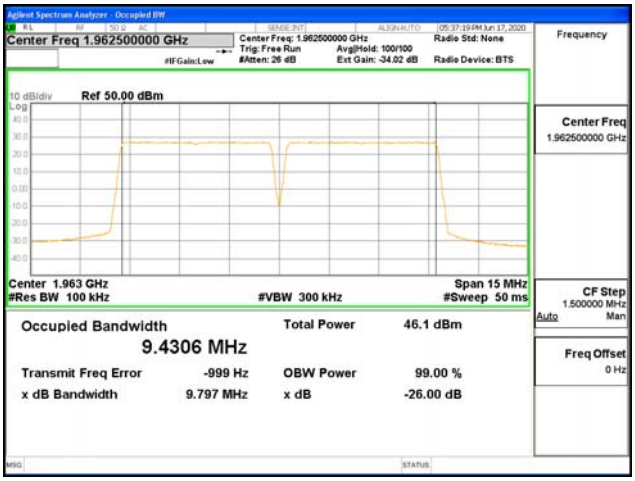
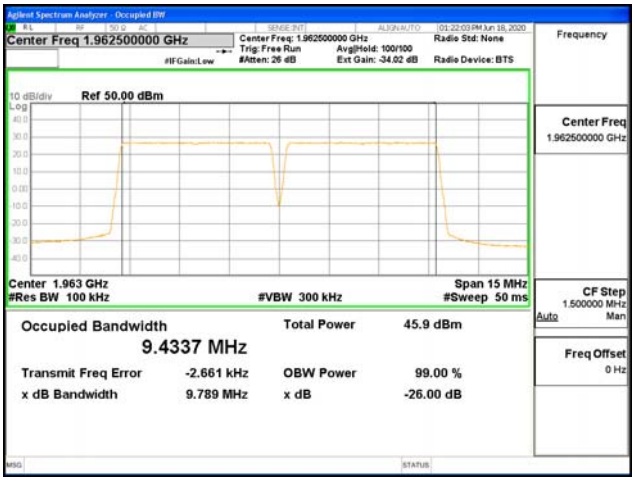
ANT 3

QPSK	16QAM
	
64QAM	**256QAM**
	

Band 25, BW 5MHz+5MHz, Multi 2 carrier, Middle
ANT 0

QPSK	16QAM
	
64QAM	256QAM
	

ANT 1

QPSK	16QAM
	
64QAM	256QAM