TEST REPORT

CTK Co., Ltd.
(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
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1. Client

◦ Name : Samsung Electronics Co Ltd

◦ Address : 19 Chapin Rd, Building D. Pine Brook, New Jersey, United States

◦ Date of Receipt : 2020-04-13

2. Manufacturer

◦ Name : Samsung Electronics Co., Ltd.

◦ Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea

3. Use of Report : For FCC Certification

4. Test Sample / Model: RF4421d-D1A

5. Date of Test : 2020-06-18 to 2020-07-13

6. Test Standard(method) used : FCC 47 CFR Part 2, 24

7. Testing Environment: Temp.: (23 ± 1) ℃, Humidity: (42 ± 1) % R.H.

8. Test Results : Compliance

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Affirmation	Tested by Bong-jun Jang: (Signature)	Technical Manager Young-taek Lee: (Signature)

2020-07-14

Republic of KOREA **CTK Co., Ltd.**

REPORT REVISION HISTORY

Date	Revision	Page No
2020-05-20	Issued (CTK-2020-01892)	All
2020-07-14	Issued (CTK-2020-01892-1) Addition of bandwidth(Band 25 Multi Carrier)	All

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1. General Information

1.1 Client Information

Company	Samsung Electronics Co., Ltd.
Contact Point	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea
Contact Person	Name : Kim, Jong-in E-mail : jered.kim@samsung.com Tel : +82-31-279-3096

1.2 Product Information

FCC ID	A3LRF4421D-D1A
Product Description	RRU(RF4421d)
Model name	RF4421d-D1A
Power Supply	-48 Vdc
Operating Frequency	- Band 25 DL : 1930 MHz - 1995 MHz, UL : 1850 MHz - 1915 MHz - Band 66 DL : 2110 MHz - 2180 MHz, UL : 1710 MHz - 1760 MHz
RF Output Power	- Band 25 [Multi 2 Carrier] BW 5 MHz+5 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+10 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+15 MHz : 40 W / path(Total 4 path =160 W) BW 10 MHz+10 MHz : 40 W / path(Total 4 path =160 W) BW 10 MHz+15 MHz : 40 W / path(Total 4 path =160 W) BW 10 MHz+20 MHz : 40 W / path(Total 4 path =160 W) [Multi 3 Carrier] BW 5 MHz+5 MHz+5 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+5 MHz+15 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+5 MHz+20 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+10 MHz+10 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+10 MHz+15 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+10 MHz+20 MHz : 40 W / path(Total 4 path =160 W) BW 10 MHz+10 MHz+10 MHz : 40 W / path(Total 4 path =160 W) BW 10 MHz+10 MHz+15 MHz : 40 W / path(Total 4 path =160 W) BW 10 MHz+10 MHz+20 MHz : 40 W / path(Total 4 path =160 W) - Band 66 [Multi 2 Carrier] BW 5 MHz + 5 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz + 10 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz + 15 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz + 20 MHz : 40 W / path(Total 4 path =160 W) BW 10 MHz + 15 MHz : 40 W / path(Total 4 path =160 W) BW 10 MHz + 20 MHz : 40 W / path(Total 4 path =160 W) [Multi 3 Carrier] BW 5 MHz+5 MHz+5 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+5 MHz+10 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+5 MHz+15 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+5 MHz+20 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+10 MHz+15 MHz : 40 W / path(Total 4 path =160 W) BW 5 MHz+10 MHz+20 MHz : 40 W / path(Total 4 path =160 W)

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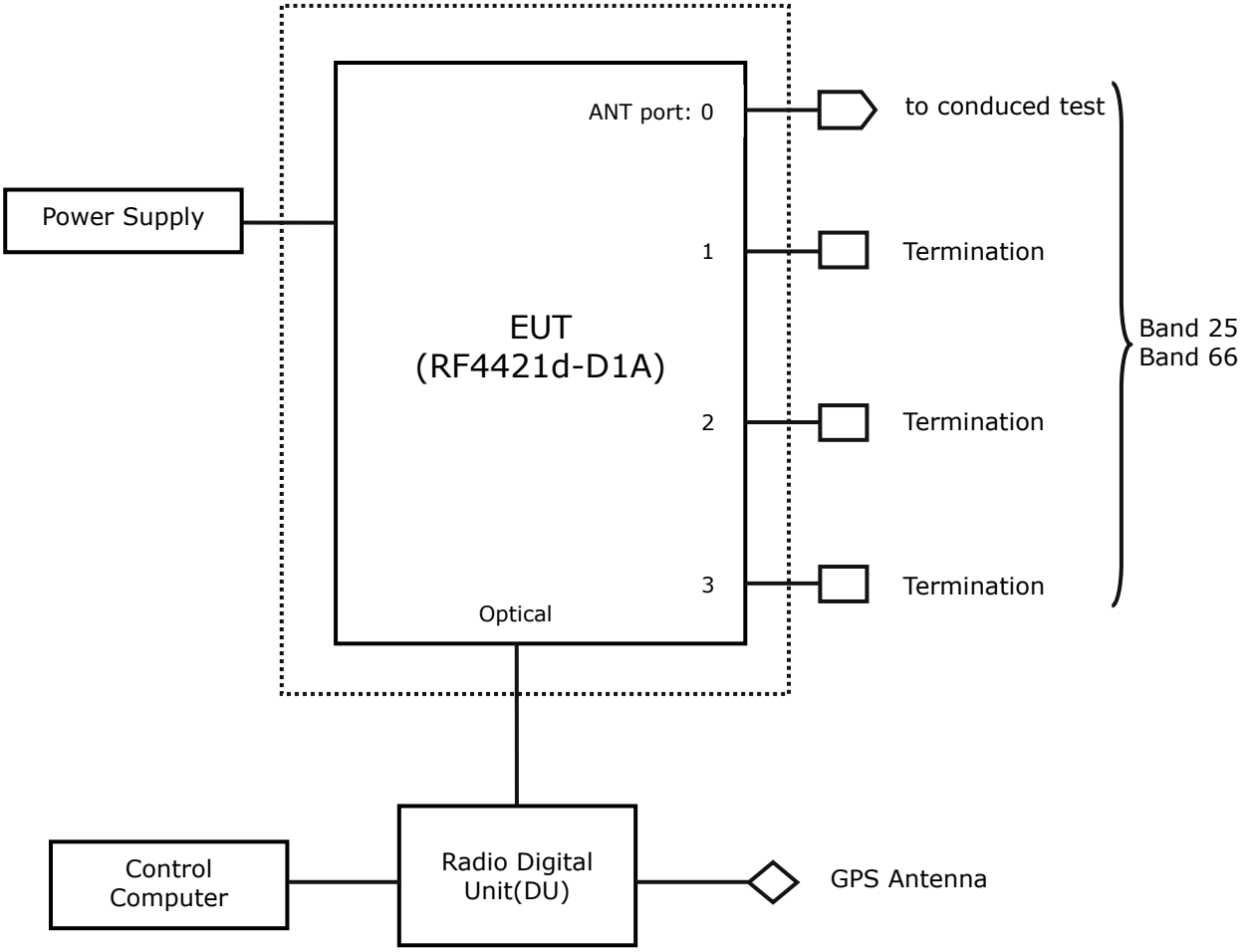
	BW 10 MHz+10 MHz+10 MHz : 40 W / path(Total 4 path =160 W) BW 10 MHz+10 MHz+15 MHz : 40 W / path(Total 4 path =160 W)
Channel Bandwidth	5 MHz, 10 MHz, 15 MHz, 20 MHz
Modulation Type	QPSK, 16QAM, 64QAM, 256QAM
FCC Rule	Part 2 : FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS Part 24 : PERSONAL COMMUNICATIONS SERVICES Part 27 : MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES KDB Publication 662911 D01 Multiple Transmitter Output v02r01

1.3 Configurations



2. Facility and Accreditations

2.1 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yong-in-si, Gyeonggi-do, Korea.

2.2 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	8737A-2
KOREA	NRRA	KR0025

2.3 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

3. Test Specifications

3.1 Standards

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 2, Part 24.

Section	Test Items	Results
§2.1046, §24.232(a)(2)	RF output power	Compliant
§2.1049	Occupied bandwidth	Compliant
§2.1051, §24.238	Spurious Emissions at Antenna Terminals	Compliant
§2.1051, §24.238	Band edge	Compliant
§2.1053, §24.238	Spurious Radiated Emissions	Compliant
§2.1055(a)(1), §24.235	Frequency Stability over Temperature variation	Compliant
§2.1055(d), §24.235	Frequency Stability over Voltage variation	Compliant

3.2 Mode of operation during the test

The EUT is operated in a manner representative of the typical of the equipments.
During at testing, system components were manipulated within the confines of typical usage to maximize each emission. All modulation(QPSK, 16QAM, 64QAM, 256QAM) modes were tests.
The results are only attached worst cases.

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Operating band and Frequency range		
Band 25	Transmit	1 930 MHz to 1 995 MHz
	Receive	1 850 MHz to 1 915 MHz

Operating Configurations	
Supported configurations	Multi carrier
Spectrum Operation	Contiguous

Multi 2 carrier rated total output power as a sum of all carriers

Band type	Bandwidth Configuration [MHz]	Bandwidth positions		1st FA	2nd FA	Output port	Total Power(sum)[W]
Band 25	5+5	Bottom	Frequency	1 932.5 MHz	1 937.5 MHz	4 TX	160 W
			Output Power	40 W			
		Middle	Frequency	1 960 MHz	1 965 MHz		
			Output Power	40 W			
		Top	Frequency	1 987.5 MHz	1 992.5 MHz		
			Output Power	40 W			
	5+10	Bottom	Frequency	1 932.5 MHz	1 940 MHz	4 TX	160 W
			Output Power	40 W			
		Middle	Frequency	1 957.5 MHz	1 965 MHz		
			Output Power	40 W			
		Top	Frequency	1 982.5 MHz	1 990 MHz		
			Output Power	40 W			
	5+15	Bottom	Frequency	1 932.5 MHz	1 942.5 MHz	4 TX	160 W
			Output Power	40 W			
		Middle	Frequency	1 955 MHz	1 965 MHz		
			Output Power	40 W			
		Top	Frequency	1 977.5 MHz	1 987.5 MHz		
			Output Power	40 W			
	10+10	Bottom	Frequency	1 935 MHz	1 945 MHz	4 TX	160 W
			Output Power	40 W			
		Middle	Frequency	1 957.5 MHz	1 967.5 MHz		
			Output Power	40 W			
		Top	Frequency	1 980 MHz	1 990 MHz		
			Output Power	40 W			
	10+15	Bottom	Frequency	1 935 MHz	1 947.5 MHz	4 TX	160 W
			Output Power	40 W			
		Middle	Frequency	1 955 MHz	1 967.5 MHz		
			Output Power	40 W			
		Top	Frequency	1 975 MHz	1 987.5 MHz		
			Output Power	40 W			
	10+20	Bottom	Frequency	1 935 MHz	1 950 MHz	4 TX	160 W
			Output Power	40 W			
		Middle	Frequency	1 952.5 MHz	1 967.5 MHz		
			Output Power	40 W			
		Top	Frequency	1 970 MHz	1 985 MHz		
			Output Power	40 W			

Multi 3 carrier rated total output power as a sum of all carriers								
Band type	Bandwidth Configuration [MHz]	Bandwidth positions		1st FA	2nd FA	3nd FA	Output port	Total Power (sum)[W]
Band 25	5+5+5	Bottom	Frequency	1 932.5 MHz	1 937.5 MHz	1 942.5 MHz	4 TX	160 W
			Output Power	40 W				
		Middle	Frequency	1 957.5 MHz	1 962.5 MHz	1 967.5 MHz		
			Output Power	40 W				
		Top	Frequency	1 982.5 MHz	1 987.5 MHz	1 992.5 MHz		
			Output Power	40 W				
	5+5+15	Bottom	Frequency	1 932.5 MHz	1 937.5 MHz	1 947.5 MHz	4 TX	160 W
			Output Power	40 W				
		Middle	Frequency	1 952.5 MHz	1 957.5 MHz	1 967.5 MHz		
			Output Power	40 W				
		Top	Frequency	1 972.5 MHz	1 977.5 MHz	1 987.5 MHz		
			Output Power	40 W				
	5+5+20	Bottom	Frequency	1 932.5 MHz	1 937.5 MHz	1 950 MHz	4 TX	160 W
			Output Power	40 W				
		Middle	Frequency	1 950 MHz	1 955 MHz	1 967.5 MHz		
			Output Power	40 W				
		Top	Frequency	1 967.5 MHz	1 972.5 MHz	1 985 MHz		
			Output Power	40 W				
	5+10+10	Bottom	Frequency	1 932.5 MHz	1 940 MHz	1 950 MHz	4 TX	160 W
			Output Power	40 W				
		Middle	Frequency	1 952.5 MHz	1 960 MHz	1 970 MHz		
			Output Power	40 W				
		Top	Frequency	1 972.5 MHz	1 980 MHz	1 990 MHz		
			Output Power	40 W				
	5+10+15	Bottom	Frequency	1 932.5 MHz	1 940 MHz	1 952.5 MHz	4 TX	160 W
			Output Power	40 W				
		Middle	Frequency	1 950 MHz	1 957.5 MHz	1 970 MHz		
			Output Power	40 W				
		Top	Frequency	1 967.5 MHz	1 975 MHz	1 987.5 MHz		
			Output Power	40 W				
	5+10+20	Bottom	Frequency	1 932.5 MHz	1 940 MHz	1 955 MHz	4 TX	160 W
			Output Power	40 W				
		Middle	Frequency	1 947.5 MHz	1 955 MHz	1 970 MHz		
			Output Power	40 W				
		Top	Frequency	1 962.5 MHz	1 970 MHz	1 985 MHz		
			Output Power	40 W				
	10+10+10	Bottom	Frequency	1 935 MHz	1 945 MHz	1 955 MHz	4 TX	160 W
			Output Power	40 W				
		Middle	Frequency	1 952.5 MHz	1 962.5 MHz	1 972.5 MHz		
			Output Power	40 W				
		Top	Frequency	1 970 MHz	1 980 MHz	1 990 MHz		
			Output Power	40 W				
	10+10+15	Bottom	Frequency	1 935 MHz	1 945 MHz	1 957.5 MHz	4 TX	160 W
			Output Power	40 W				
		Middle	Frequency	1 950 MHz	1 960 MHz	1 972.5 MHz		
			Output Power	40 W				
		Top	Frequency	1 965 MHz	1 975 MHz	1 987.5 MHz		
			Output Power	40 W				
	10+10+20	Bottom	Frequency	1 935 MHz	1 945 MHz	1 960 MHz	4 TX	160 W
			Output Power	40 W				
		Middle	Frequency	1 947.5 MHz	1 957.5 MHz	1 972.5 MHz		
			Output Power	40 W				
		Top	Frequency	1 960 MHz	1 970 MHz	1 985 MHz		
			Output Power	40 W				

3.3 Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.
Coverage factor k = 2, Confidence levels of 95 %

Description	Uncertainty
Conducted RF output power	1.5 dB
Occupied bandwidth	0.1 MHz
Spurious emission at antenna terminals	3.0 dB
Radiated spurious emissions (f ≤ 1 GHz)	4.0 dB
Radiated spurious emissions (f > 1 GHz)	5.0 dB
Frequency stability	0.1 kHz

3.4 Standards Environmental Test conditions

Temperature	+ 15 ℃ to + 35 ℃
Relative humidity	30 % to 60 %
Air pressure	860 mbar to 1 060 mbar

4. RF output power

Test Requirements :

§ 2.1046 Measurements required : RF power output :

(a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in §2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.
(b) For single sideband, independent sideband, and single channel, controlled carrier radiotelephone transmitters the procedure specified in paragraph (a) of this section shall be employed and, in addition, the transmitter shall be modulated during the test as follows. In all tests, the input level of the modulating signal shall be such as to develop rated peak envelope power or carrier power, as appropriate, for the transmitter.
(c) For measurements conducted pursuant to paragraphs (a) and (b) of this section, all calculations and methods used by the applicant for determining carrier power or peak envelope power, as appropriate, on the basis of measured power in the radio frequency load attached to the transmitter output terminals shall be shown. Under the test conditions specified, no components of the emission spectrum shall exceed the limits specified in the applicable rule parts as necessary for meeting occupied bandwidth or emission limitations.

§ 24.232 Power and antenna height limits.

(a)(2) Base stations with an emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.
(b)(1) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, with an emission bandwidth of 1 MHz or less are limited to 3280 watts equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Test Procedures :

According to FCC §2.1046 (a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in §2.1033(c). The electrical characteristics of the radio frequency load attached to the output terminals when this is made shall be stated.

1) The radio frequency load attached to the EUT antenna terminal was 50 Ohm. The lost of the cables the test system is calibrated to correct the reading.
2) The spectrum analyzer was set to RMS Detector function and Average mode.
3) The resolution bandwidth of the spectrum analyzer was comparable to the emission bandwidth.
4) The conducted emission level is measured at each antenna port and then summed mathmatically to determine the total emission level from the device.

Note 1 : The conducted emission level is measured at each antenna port and then summed mathematically to determine the total emission level from the device.

Note 2: Maximun ERP is sufficient level to pass the limit.

Note 3 : Sum data is in a tolerance of specification provided from manufacturer.

Maximum output power for one port :
Multi 2 Carrier, 3 Carrier : **46.02 dBm (40 W)**

Maximum output sum power :
Multi 2 Carrier, 3 Carrier : 40 W *Antenna port (4) = **52.04 dBm (160 W)**

Measured sum maximum power : **51.63 dBm (145.55 W)**

Test Results :

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 5+5MHz	Bottom	QPSK	45.30	46.05	45.31	45.75	51.63	145.55
		16QAM	45.09	45.90	45.04	45.56	51.43	139.00
		64QAM	45.23	46.00	45.18	45.59	51.53	142.23
		256QAM	45.08	45.89	45.07	45.65	51.46	139.96
	Middle	QPSK	45.08	46.02	45.24	45.74	51.56	143.22
		16QAM	44.99	45.95	45.14	45.64	51.47	140.28
		64QAM	45.09	46.07	45.26	45.79	51.59	144.21
		256QAM	44.95	45.90	45.19	45.64	51.46	139.96
	Top	QPSK	44.72	45.75	45.04	45.39	51.26	133.66
		16QAM	44.92	45.89	45.09	45.45	51.37	137.09
		64QAM	44.86	45.82	45.05	45.39	51.32	135.52
		256QAM	44.86	45.84	45.07	45.41	51.33	135.83

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 5+10MHz	Bottom	QPSK	45.14	45.89	45.01	45.47	51.41	138.36
		16QAM	45.12	45.88	45.06	45.55	51.44	139.32
		64QAM	45.14	46.02	45.10	45.55	51.49	140.93
		256QAM	45.24	45.92	45.06	45.54	51.47	140.28
	Middle	QPSK	44.96	45.77	45.02	45.53	51.35	136.46
		16QAM	45.01	45.94	45.03	45.57	51.43	139.00
		64QAM	44.84	45.78	45.03	45.60	51.35	136.46
		256QAM	45.00	46.00	45.06	45.60	51.46	139.96
	Top	QPSK	45.08	46.02	44.98	45.39	51.41	138.36
		16QAM	45.00	45.90	45.08	45.42	51.39	137.72
		64QAM	44.96	45.88	45.08	45.46	51.38	137.40
		256QAM	44.95	45.85	45.01	45.37	51.33	135.83

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 5+15MHz	Bottom	QPSK	45.21	46.08	45.11	45.60	51.54	142.56
		16QAM	45.23	46.05	45.24	45.72	51.59	144.21
		64QAM	45.26	46.07	45.19	45.64	51.57	143.55
		256QAM	45.28	45.99	45.09	45.52	51.50	141.25
	Middle	QPSK	44.91	45.90	45.06	45.55	51.39	137.72
		16QAM	45.13	46.11	45.13	45.62	51.54	142.56
		64QAM	45.02	45.96	45.03	45.51	51.42	138.68
		256QAM	45.10	46.06	45.15	45.66	51.53	142.23
	Top	QPSK	44.89	45.81	45.04	45.44	51.33	135.83
		16QAM	45.18	46.00	45.16	45.58	51.51	141.58
		64QAM	45.18	46.08	45.19	45.58	51.54	142.56
		256QAM	44.98	45.90	45.03	45.39	51.36	136.77

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 10+10MHz	Bottom	QPSK	45.00	45.83	44.79	45.31	51.27	133.97
		16QAM	45.09	45.88	44.76	45.31	51.30	134.90
		64QAM	45.06	45.88	44.82	45.36	51.32	135.52
		256QAM	45.02	45.81	44.77	45.31	51.27	133.97
	Middle	QPSK	44.70	45.53	44.71	45.28	51.09	128.53
		16QAM	44.79	45.75	44.71	45.30	51.18	131.22
		64QAM	44.82	45.66	44.68	45.27	51.15	130.32
		256QAM	44.82	45.75	44.71	45.31	51.19	131.52
	Top	QPSK	44.67	45.65	44.70	45.18	51.09	128.53
		16QAM	44.75	45.72	44.79	45.27	51.17	130.92
		64QAM	45.73	44.75	44.83	45.24	51.18	131.22
		256QAM	44.79	45.78	44.75	45.32	51.20	131.83

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 10+15MHz	Bottom	QPSK	45.02	45.80	44.91	45.46	51.33	135.83
		16QAM	45.12	45.94	45.04	45.56	51.45	139.64
		64QAM	45.12	45.89	45.03	45.53	51.43	139.00
		256QAM	45.18	45.86	44.96	45.50	51.41	138.36
	Middle	QPSK	45.00	45.85	44.96	45.44	51.35	136.46
		16QAM	44.93	45.85	44.93	45.47	51.33	135.83
		64QAM	45.07	45.96	44.98	45.50	51.42	138.68
		256QAM	44.97	45.85	44.89	45.37	51.31	135.21
	Top	QPSK	44.89	45.84	44.95	45.41	51.31	135.21
		16QAM	44.87	45.83	44.98	45.93	51.45	139.64
		64QAM	44.91	45.90	45.00	45.37	51.33	135.83
		256QAM	44.99	45.88	45.03	45.38	51.36	136.77

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 10+20MHz	Bottom	QPSK	45.02	45.87	44.98	45.57	51.40	138.04
		16QAM	45.06	45.91	45.00	45.59	51.43	139.00
		64QAM	45.17	45.94	44.97	45.46	51.42	138.68
		256QAM	45.15	45.93	44.99	45.61	51.46	139.96
	Middle	QPSK	44.91	45.78	44.96	45.43	51.31	135.21
		16QAM	44.93	45.88	45.05	45.60	51.40	138.04
		64QAM	44.93	45.75	44.93	45.46	51.30	134.90
		256QAM	44.97	45.89	44.95	45.43	51.35	136.46
	Top	QPSK	44.92	45.84	44.98	45.42	51.33	135.83
		16QAM	45.06	45.96	44.97	45.46	51.40	138.04
		64QAM	45.09	46.01	44.99	45.44	51.42	138.68
		256QAM	44.97	45.76	44.97	45.40	51.31	135.21

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 5+5+5MHz	Bottom	QPSK	44.98	45.73	44.88	45.48	51.30	134.90
		16QAM	45.02	45.75	44.83	45.30	51.26	133.66
		64QAM	44.79	45.64	44.90	45.47	51.24	133.05
		256QAM	44.84	45.74	44.83	45.42	51.25	133.35
	Middle	QPSK	44.66	45.64	44.81	45.38	51.16	130.62
		16QAM	44.86	45.81	44.81	45.33	51.24	133.05
		64QAM	44.54	45.55	44.84	45.38	51.12	129.42
		256QAM	44.84	45.78	44.78	45.35	51.23	132.74
	Top	QPSK	44.57	45.69	44.77	45.25	51.11	129.12
		16QAM	44.72	45.72	44.81	45.30	51.18	131.22
		64QAM	44.60	45.65	44.74	45.22	51.09	128.53
		256QAM	44.62	45.60	44.79	45.29	51.11	129.12

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 5+5+15MHz	Bottom	QPSK	44.85	45.69	44.68	45.25	51.16	130.62
		16QAM	44.86	45.74	44.71	45.28	51.19	131.52
		64QAM	44.81	45.68	44.70	45.26	51.15	130.32
		256QAM	44.84	45.72	44.69	45.25	51.16	130.62
	Middle	QPSK	44.73	45.64	44.75	45.29	51.14	130.02
		16QAM	44.75	45.72	44.68	45.30	51.15	130.32
		64QAM	44.80	45.75	44.72	45.27	51.18	131.22
		256QAM	44.69	45.70	44.71	45.30	51.14	130.02
	Top	QPSK	44.77	45.75	44.78	45.25	51.18	131.22
		16QAM	44.82	45.85	44.79	45.23	51.21	132.13
		64QAM	44.73	45.79	44.79	45.26	51.18	131.22
		256QAM	44.79	45.83	44.84	45.28	51.23	132.74

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 5+5+20MHz	Bottom	QPSK	44.96	45.66	44.76	45.32	51.21	132.13
		16QAM	44.98	45.72	44.79	45.31	51.24	133.05
		64QAM	44.93	45.69	44.79	45.31	51.21	132.13
		256QAM	44.97	45.67	44.77	45.32	51.22	132.43
	Middle	QPSK	44.74	45.51	44.78	45.36	51.13	129.72
		16QAM	44.93	45.81	44.90	45.42	51.30	134.90
		64QAM	44.91	45.83	44.84	45.42	51.29	134.59
		256QAM	44.89	45.81	44.89	45.40	51.29	134.59
	Top	QPSK	44.80	45.72	44.98	45.40	51.26	133.66
		16QAM	45.02	45.92	45.01	45.44	51.38	137.40
		64QAM	44.99	45.84	44.90	45.34	51.30	134.90
		256QAM	44.93	45.74	44.87	45.36	51.26	133.66

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 5+10+10MHz	Bottom	QPSK	44.95	45.69	44.80	45.37	51.24	133.05
		16QAM	44.98	45.72	44.81	45.34	51.25	133.35
		64QAM	45.01	45.73	44.81	45.34	51.26	133.66
		256QAM	44.95	45.67	44.79	45.35	51.22	132.43
	Middle	QPSK	44.48	45.56	44.73	45.27	51.05	127.35
		16QAM	44.85	45.70	44.79	45.35	51.21	132.13
		64QAM	44.88	45.73	44.80	45.33	51.22	132.43
		256QAM	44.82	45.68	44.77	45.31	51.18	131.22
	Top	QPSK	44.82	45.74	44.88	45.26	51.21	132.13
		16QAM	44.78	45.66	44.86	45.32	51.19	131.52
		64QAM	44.86	45.79	44.92	45.30	51.25	133.35
		256QAM	44.87	45.76	44.83	45.34	51.24	133.05

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 5+10+15MHz	Bottom	QPSK	44.91	45.74	44.81	45.40	51.25	133.35
		16QAM	44.88	45.67	44.69	45.43	51.21	132.13
		64QAM	44.87	45.69	44.79	45.38	51.22	132.43
		256QAM	44.94	45.74	44.80	45.38	51.25	133.35
	Middle	QPSK	44.93	45.74	44.87	45.48	51.29	134.59
		16QAM	44.92	45.75	44.82	45.31	51.24	133.05
		64QAM	44.82	45.68	44.73	45.39	51.19	131.52
		256QAM	44.85	45.75	44.76	45.34	51.21	132.13
	Top	QPSK	44.72	45.60	44.83	45.31	51.15	130.32
		16QAM	45.02	45.79	44.88	45.29	51.28	134.28
		64QAM	45.05	45.95	44.87	45.36	51.35	136.46
		256QAM	44.84	45.70	44.77	45.25	51.18	131.22

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 5+10+20MHz	Bottom	QPSK	44.78	45.56	44.67	45.25	51.10	128.82
		16QAM	44.85	45.73	44.79	45.38	51.23	132.74
		64QAM	44.95	45.72	44.67	45.33	51.21	132.13
		256QAM	44.83	45.64	44.76	45.36	51.18	131.22
	Middle	QPSK	44.98	45.63	44.70	45.34	51.20	131.83
		16QAM	44.82	45.72	44.78	45.33	51.20	131.83
		64QAM	44.91	45.74	44.81	45.38	51.25	133.35
		256QAM	44.77	45.66	44.70	45.30	51.15	130.32
	Top	QPSK	44.69	45.59	44.81	45.32	51.14	130.02
		16QAM	44.83	45.72	44.82	45.23	51.19	131.52
		64QAM	44.83	45.77	44.74	45.26	51.19	131.52
		256QAM	44.82	45.77	44.91	45.36	51.25	133.35

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 10+10+10 MHz	Bottom	QPSK	44.88	45.61	44.81	45.32	51.19	131.52
		16QAM	44.90	45.63	44.88	45.42	51.24	133.05
		64QAM	44.89	45.70	44.84	45.40	51.24	133.05
		256QAM	44.89	45.66	44.91	45.39	51.25	133.35
	Middle	QPSK	44.87	45.55	44.73	45.22	51.12	129.42
		16QAM	44.77	45.65	44.75	45.32	51.16	130.62
		64QAM	44.71	45.50	44.70	45.28	51.08	128.23
		256QAM	44.72	45.63	44.85	45.40	51.19	131.52
	Top	QPSK	44.54	45.44	44.81	45.20	51.03	126.77
		16QAM	44.60	45.61	44.84	45.32	51.13	129.72
		64QAM	44.70	45.60	44.79	45.18	51.10	128.82
		256QAM	44.70	45.64	44.81	45.18	51.12	129.42

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

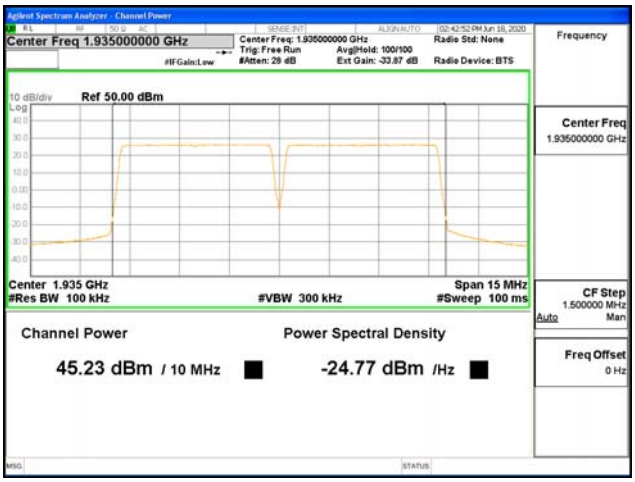
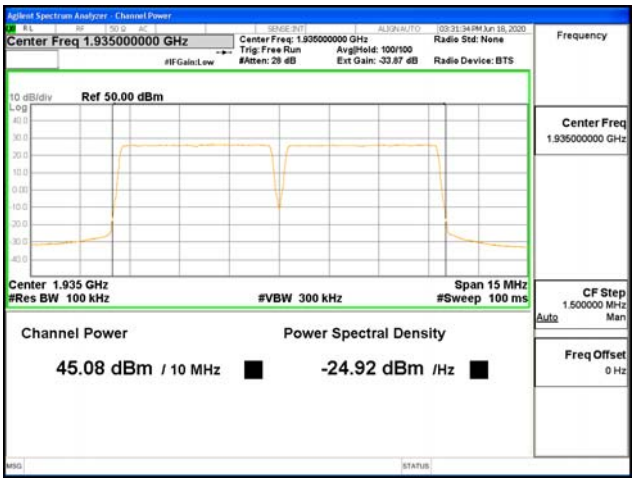
Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 10+10+15 MHz	Bottom	QPSK	44.89	45.76	44.89	45.41	51.27	133.97
		16QAM	45.02	45.79	44.84	45.35	51.29	134.59
		64QAM	44.37	45.78	44.79	45.30	51.11	129.12
		256QAM	44.92	45.75	44.85	45.41	51.27	133.97
	Middle	QPSK	44.89	45.68	44.85	45.30	51.21	132.13
		16QAM	44.85	45.76	44.87	45.29	51.23	132.74
		64QAM	44.85	45.76	44.95	45.36	51.27	133.97
		256QAM	44.71	45.68	44.87	45.32	51.18	131.22
	Top	QPSK	44.69	45.64	44.84	45.28	51.15	130.32
		16QAM	44.84	45.70	44.81	45.29	51.20	131.83
		64QAM	44.84	45.69	44.81	45.28	51.19	131.52
		256QAM	44.82	45.72	44.80	45.24	51.18	131.22

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

Type	Channel	Modulation	Output Power [dBm]				Total Power	
			Test antenna port				[dBm]	[W]
			0	1	2	3		
Band 25 BW 10+10+20 MHz	Bottom	QPSK	44.72	45.53	44.69	45.19	51.07	127.94
		16QAM	44.84	45.71	44.77	45.26	51.18	131.22
		64QAM	44.86	45.61	44.70	45.17	51.12	129.42
		256QAM	44.92	45.67	44.77	45.24	51.18	131.22
	Middle	QPSK	44.62	45.45	44.75	45.17	51.03	126.77
		16QAM	44.74	45.56	44.75	45.20	51.10	128.82
		64QAM	44.74	45.54	44.76	45.20	51.09	128.53
		256QAM	44.79	45.67	44.76	45.20	51.14	130.02
	Top	QPSK	44.80	45.67	44.66	45.12	51.10	128.82
		16QAM	44.78	45.64	44.72	45.16	51.11	129.12
		64QAM	44.85	45.68	44.79	45.19	51.16	130.62
		256QAM	44.71	45.68	44.81	45.27	51.16	130.62

Test Plot at Output Power

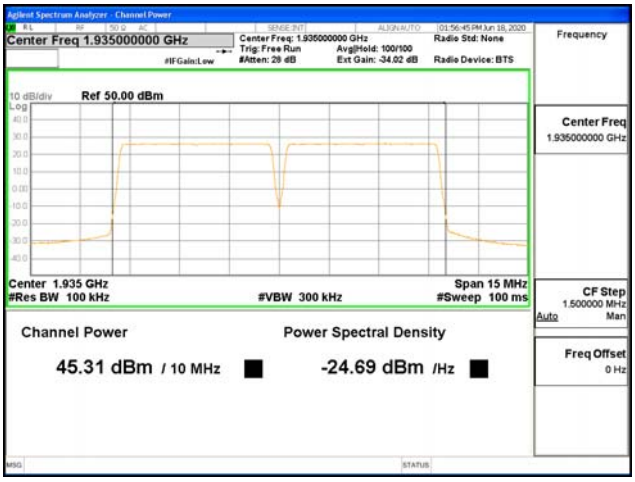
Band 25, BW 5MHz+5MHz, Multi 2 carrier, Bottom
ANT 0

QPSK	16QAM
64QAM	**256QAM**
	

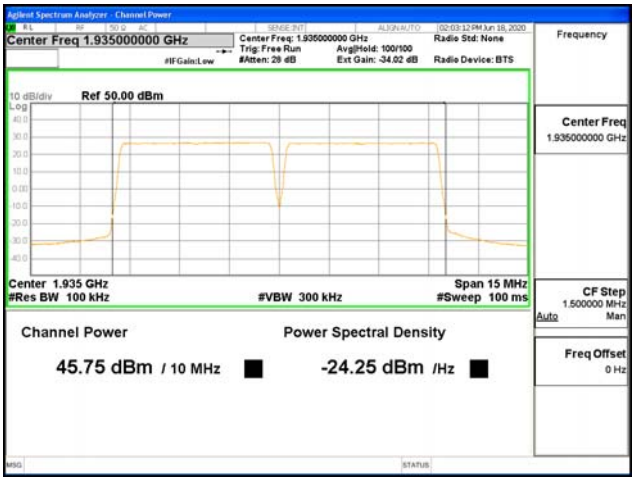
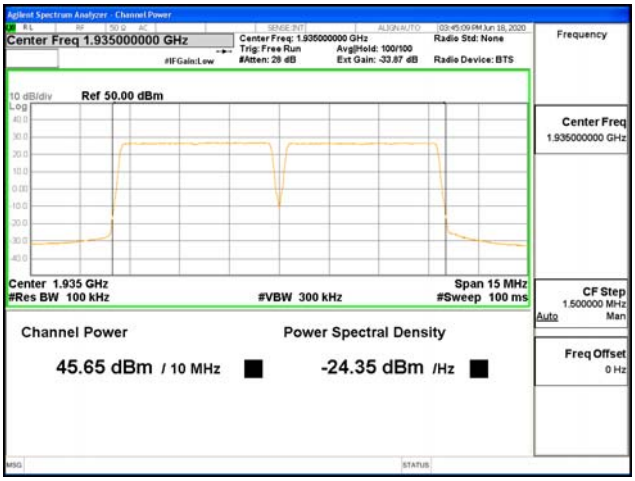
ANT 1

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

ANT 2

QPSK	16QAM
64QAM	256QAM

ANT 3

QPSK	16QAM
64QAM	**256QAM**

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

QPSK	16QAM
64QAM	256QAM

ANT 1

QPSK	16QAM
64QAM	256QAM

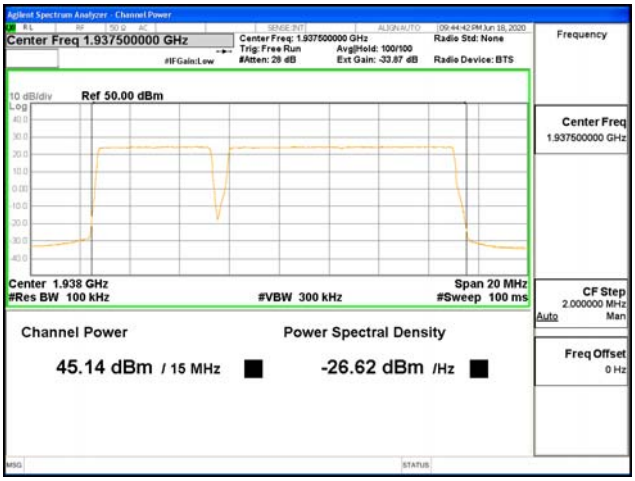
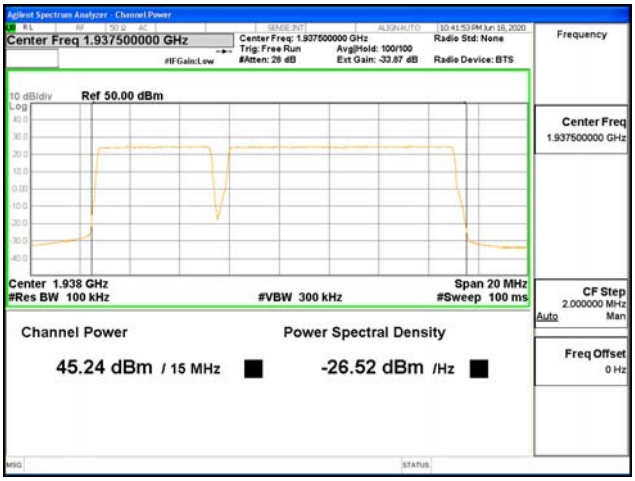
ANT 2

QPSK	16QAM
64QAM	**256QAM**

ANT 3

QPSK	16QAM
64QAM	256QAM

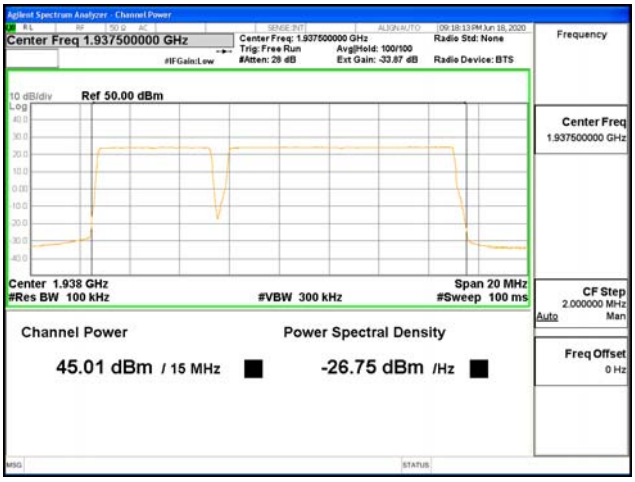
Band 25, BW 5MHz+10MHz, Multi 2 carrier, Bottom
ANT 0

QPSK	16QAM
64QAM	256QAM
	

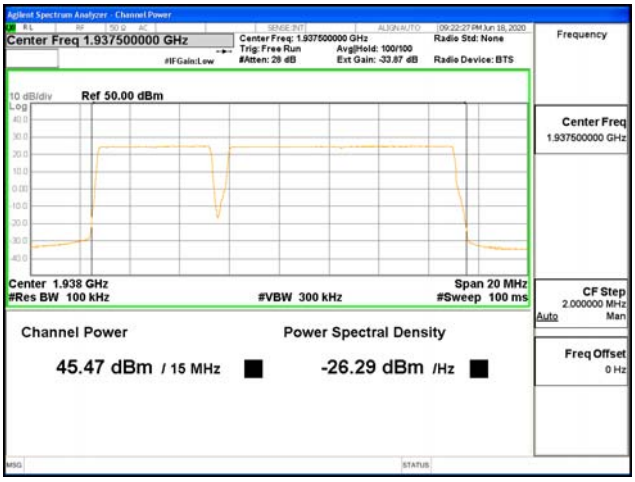
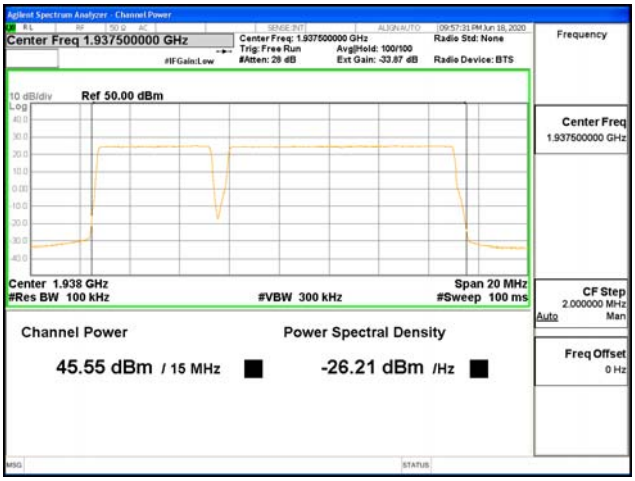
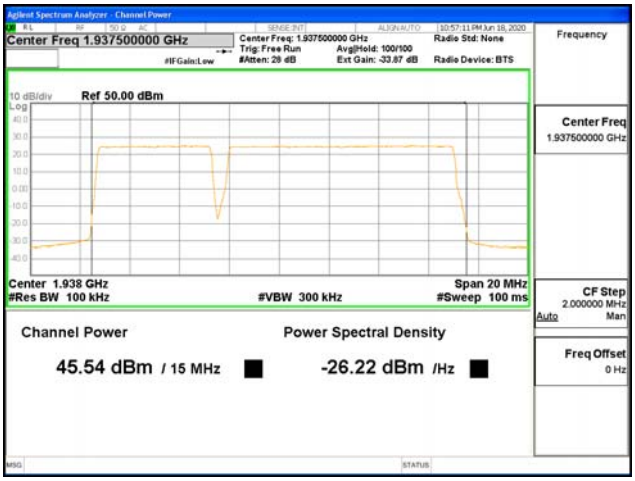
ANT 1

QPSK	16QAM
64QAM	256QAM

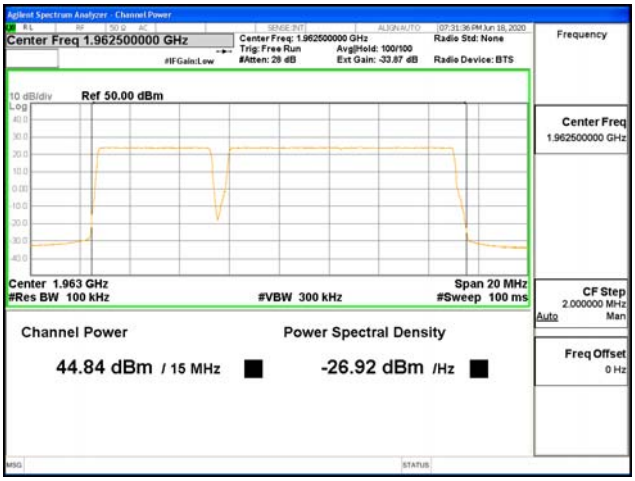
ANT 2

QPSK	16QAM
	
64QAM	256QAM

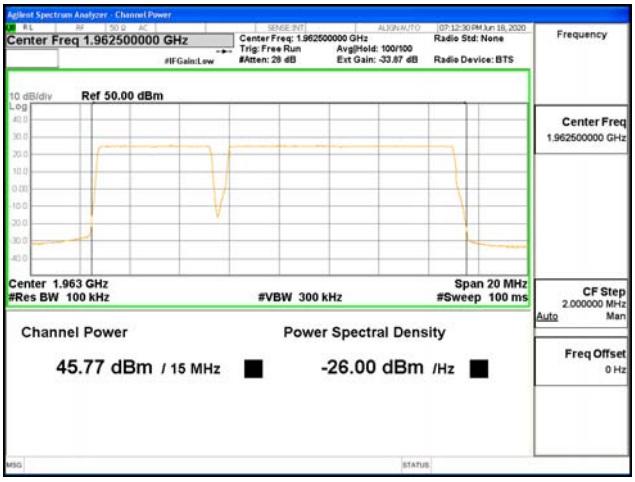
ANT 3

QPSK	16QAM
	
64QAM	256QAM
	

Band 25, BW 5MHz+10MHz, Multi 2 carrier, Middle
ANT 0

QPSK	16QAM
64QAM	**256QAM**
	

ANT 1

QPSK	16QAM
	
64QAM	256QAM

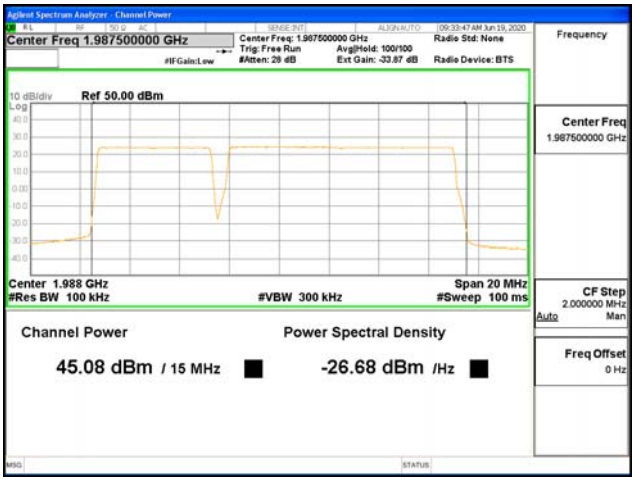
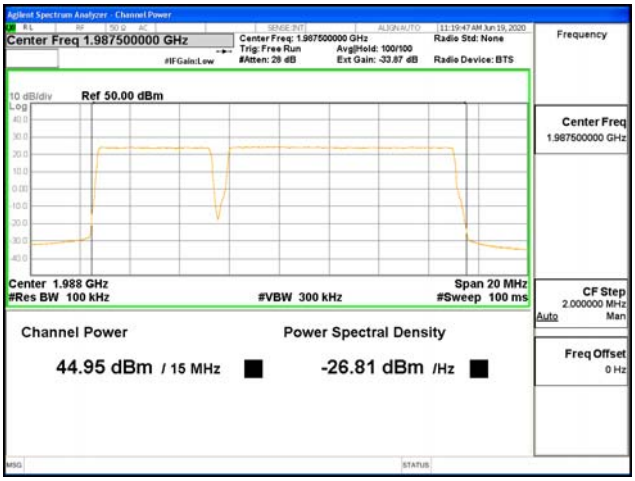
ANT 2

QPSK	16QAM
64QAM	256QAM

ANT 3

QPSK	16QAM
64QAM	256QAM

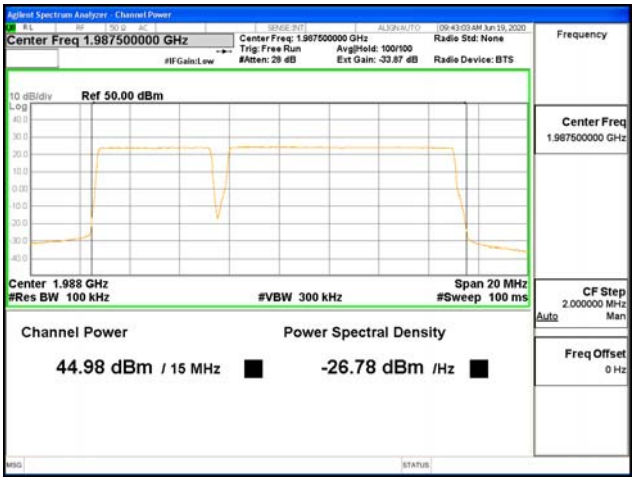
Band 25, BW 5MHz+10MHz, Multi 2 carrier, Top
ANT 0

QPSK	16QAM
	
64QAM	256QAM
	

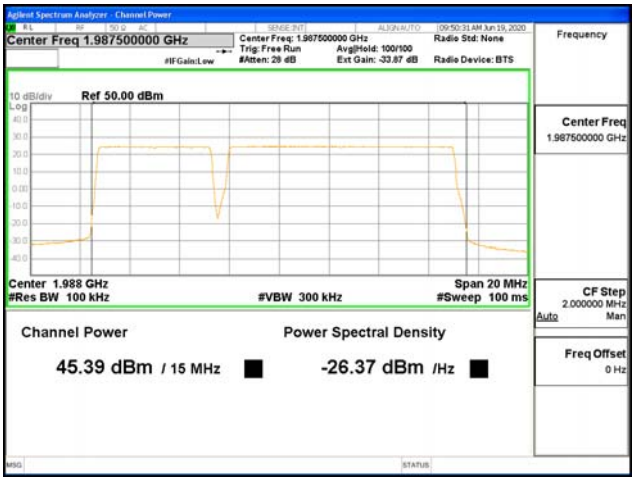
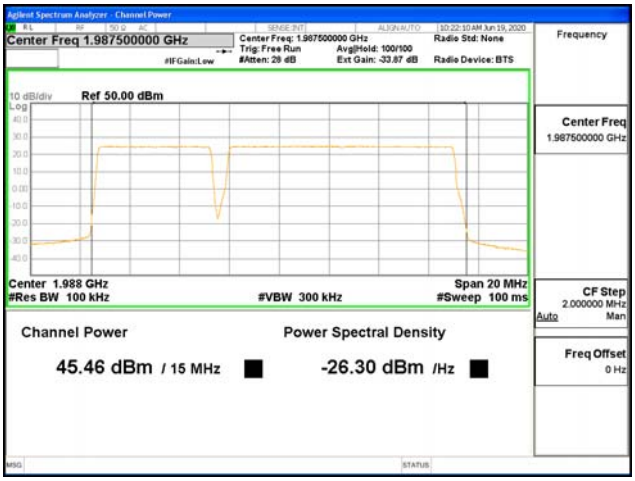
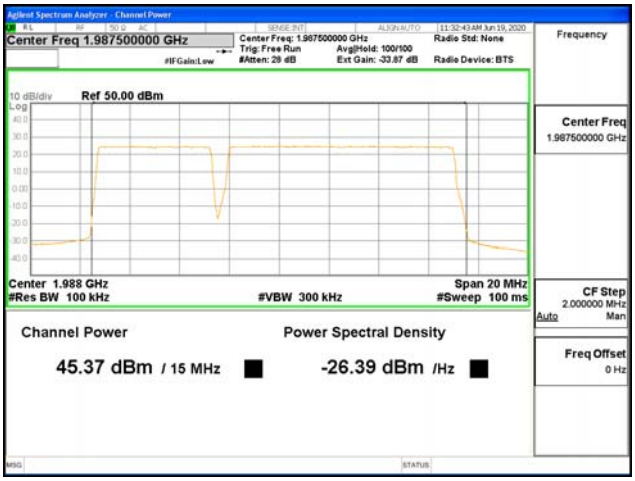
ANT 1

QPSK	16QAM
64QAM	**256QAM**

ANT 2

QPSK	16QAM
	
64QAM	256QAM

ANT 3

QPSK	16QAM
	
64QAM	256QAM
	

Band 25, BW 5MHz+15MHz, Multi 2 carrier, Bottom
ANT 0

QPSK	16QAM
64QAM	256QAM

ANT 1

QPSK	16QAM
64QAM	256QAM

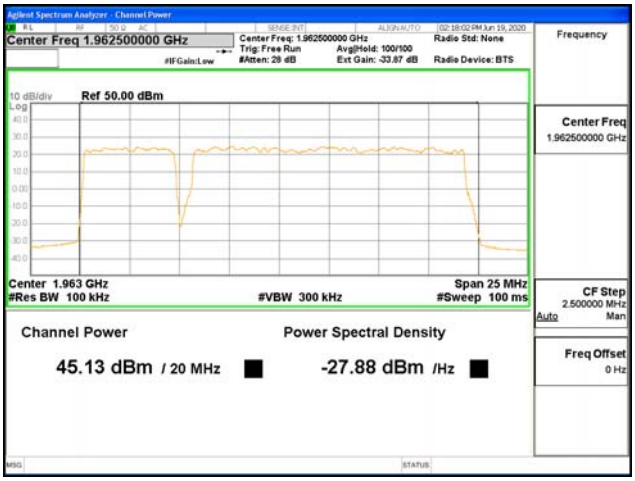
ANT 2

QPSK	16QAM
64QAM	256QAM

ANT 3

QPSK	16QAM
64QAM	256QAM

Band 25, BW 5MHz+15MHz, Multi 2 carrier, Middle
ANT 0

QPSK	16QAM
	
64QAM	**256QAM**

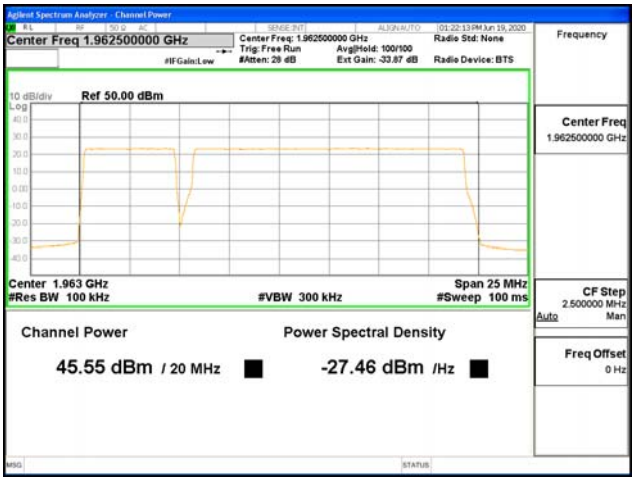
ANT 1

QPSK	16QAM
64QAM	256QAM

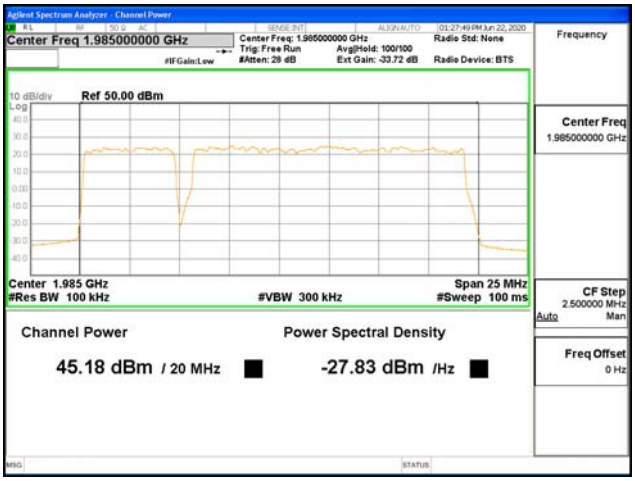
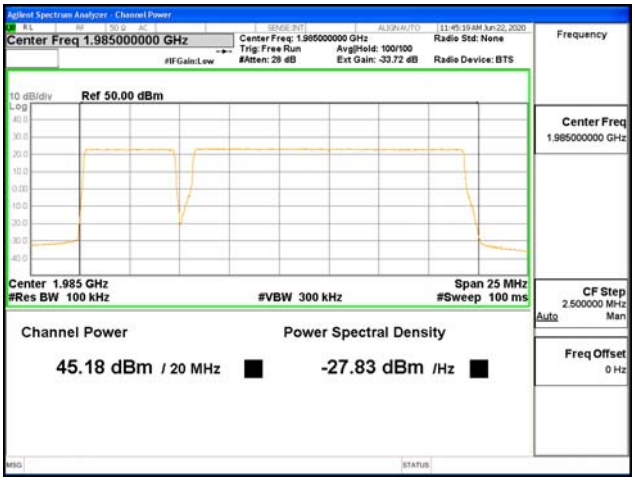
ANT 2

QPSK	16QAM
64QAM	256QAM

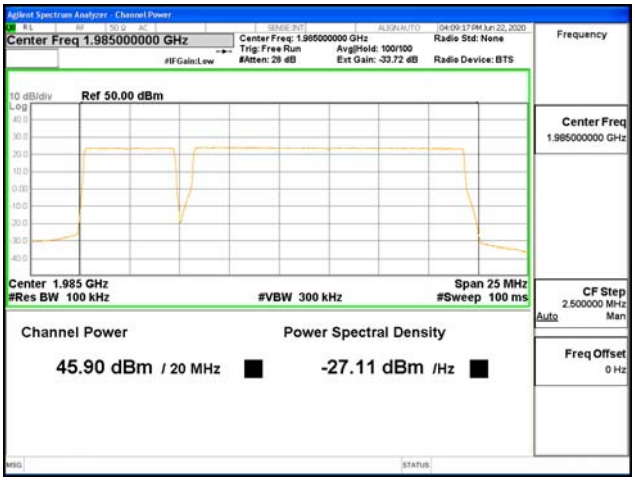
ANT 3

QPSK	16QAM
	
64QAM	256QAM

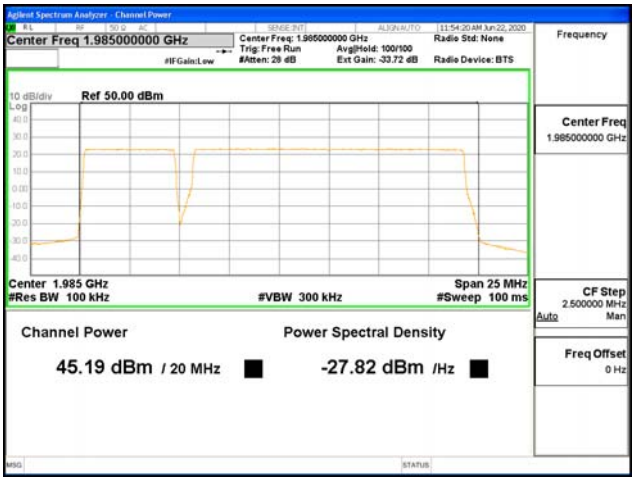
Band 25, BW 5MHz+15MHz, Multi 2 carrier, Top
ANT 0

QPSK	16QAM
	
64QAM	256QAM
	

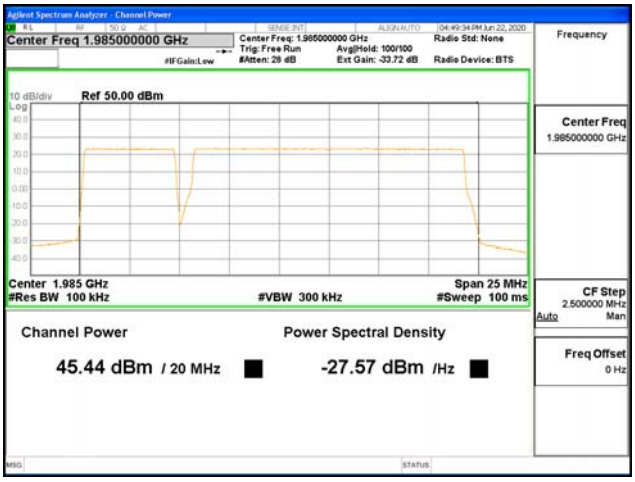
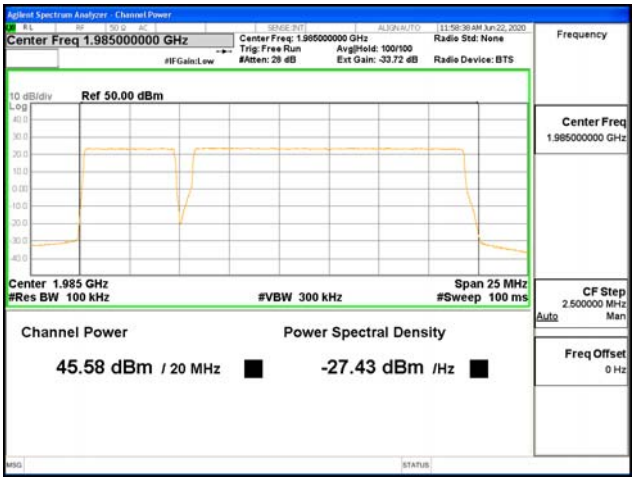
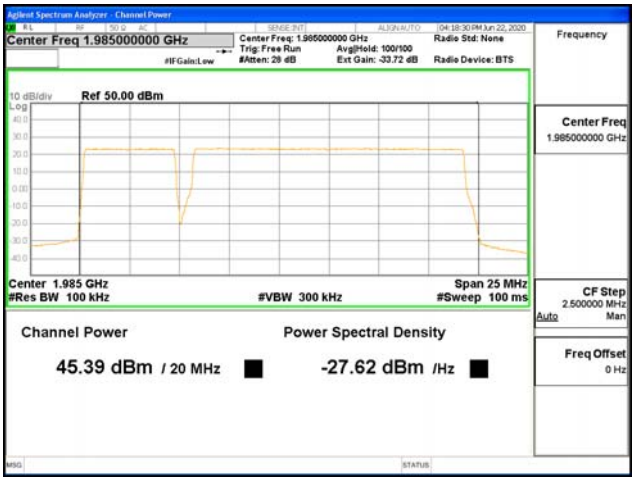
ANT 1

QPSK	16QAM
64QAM	256QAM
	

ANT 2

QPSK	16QAM
64QAM	256QAM
	

ANT 3

QPSK	16QAM
	
64QAM	256QAM
	

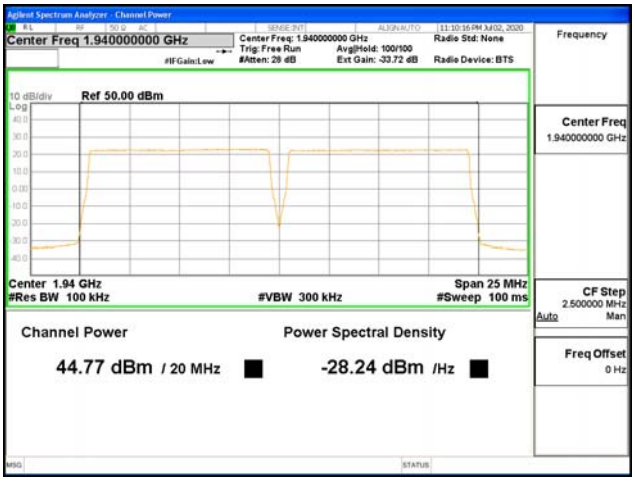
Band 25, BW 10MHz+10MHz, Multi 2 carrier, Bottom
ANT 0

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 10MHz+10MHz, Multi 2 carrier, Middle
ANT 0

QPSK	16QAM
64QAM	256QAM

ANT 1

QPSK	16QAM
64QAM	256QAM

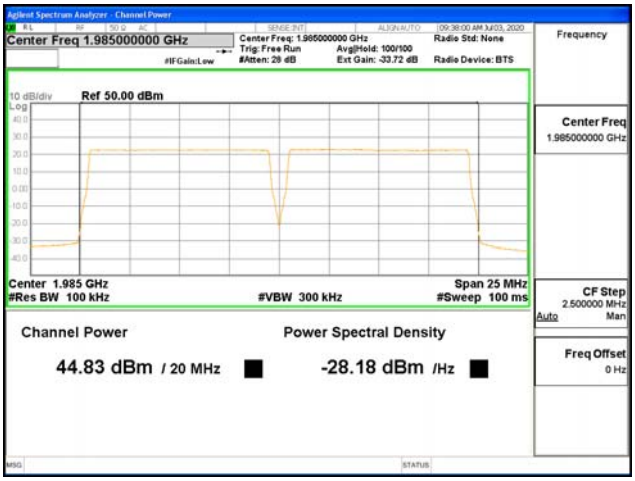
ANT 2

QPSK	16QAM
64QAM	256QAM

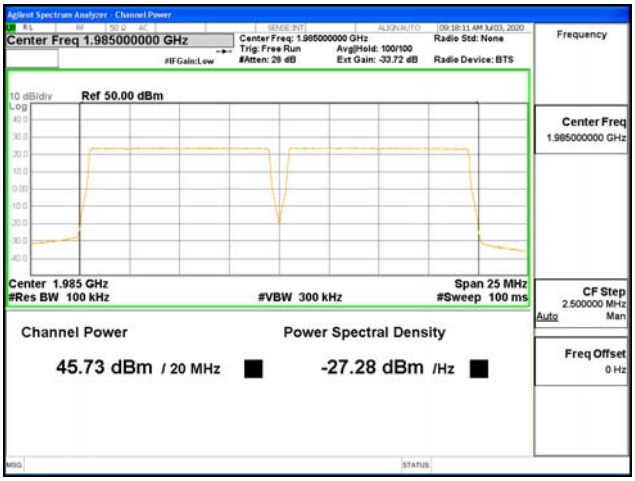
ANT 3

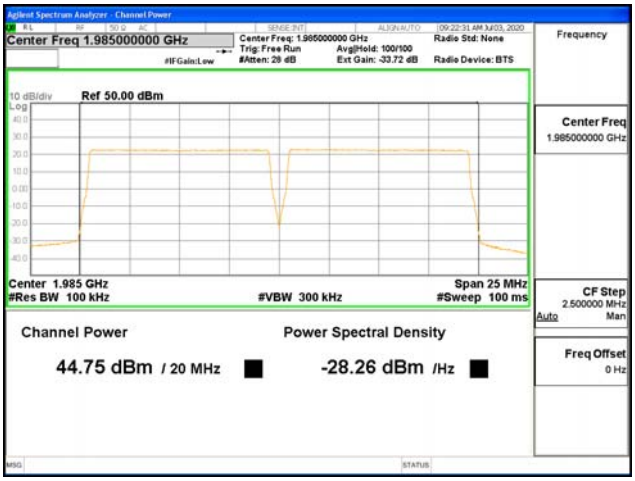
QPSK	16QAM
64QAM	256QAM

Band 25, BW 10MHz+10MHz, Multi 2 carrier, Top
ANT 0

QPSK	16QAM
64QAM	256QAM
	

ANT 1

QPSK	16QAM
64QAM	256QAM
	

ANT 2

QPSK	16QAM
64QAM	256QAM