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Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(1-3), RSS-247 section 6.2.1.1 Peak output power			
Test procedure: FCC section 15.407(a)(4); KDB 662911, KDB 789033, ANSI C63.10, section 12.3.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.6.7 EIRP test results

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
DETECTOR USED: Average
METHOD OF POWER MEASUREMENTS: PM-G (789033 D02)
MIMO CONFIGURATION: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power per port, dBm		Total output power*, dBm	Antenna gain array, dB	Single antenna gain, dBi	Total EIRP**, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT3	ANT4							
10	QPSK	5160	4.24	4.30	7.27	3.00	16.50	26.77	36.00	-9.23	Pass
		5200	9.29	9.29	12.29	3.00	16.50	31.79	36.00	-4.21	Pass
		5245	8.01	7.95	10.98	3.00	16.50	30.48	36.00	-5.52	Pass
	16QAM	5160	4.25	4.31	7.28	3.00	16.50	26.78	36.00	-9.22	Pass
		5200	9.29	9.29	12.29	3.00	16.50	31.79	36.00	-4.21	Pass
		5245	8.01	7.93	10.97	3.00	16.50	30.47	36.00	-5.53	Pass
	64QAM	5160	4.25	4.30	7.28	3.00	16.50	26.78	36.00	-9.22	Pass
		5200	9.29	9.30	12.30	3.00	16.50	31.80	36.00	-4.20	Pass
		5245	7.99	7.92	10.96	3.00	16.50	30.46	36.00	-5.54	Pass
15	QPSK	5165	4.18	4.19	7.19	3.00	16.50	26.69	36.00	-9.31	Pass
		5200	11.24	11.21	14.23	3.00	16.50	33.73	36.00	-2.27	Pass
		5240	11.29	11.31	14.30	3.00	16.50	33.80	36.00	-2.20	Pass
	16QAM	5165	4.15	4.18	7.17	3.00	16.50	26.67	36.00	-9.33	Pass
		5200	11.24	11.22	14.23	3.00	16.50	33.73	36.00	-2.27	Pass
		5240	11.29	11.30	14.30	3.00	16.50	33.80	36.00	-2.2	Pass
	64QAM	5165	4.15	4.17	7.16	3.00	16.50	26.66	36.00	-9.34	Pass
		5200	11.26	11.20	14.23	3.00	16.50	33.73	36.00	-2.27	Pass
		5240	11.29	11.31	14.30	3.00	16.50	33.80	36.00	-2.20	Pass
20	QPSK	5165	3.16	3.18	6.17	3.00	16.50	25.67	36.00	-10.33	Pass
		5200	10.69	10.64	13.67	3.00	16.50	33.17	36.00	-2.83	Pass
		5240	10.40	10.36	13.38	3.00	16.50	32.88	36.00	-3.12	Pass
	16QAM	5165	3.17	3.17	6.17	3.00	16.50	25.67	36.00	-10.33	Pass
		5200	10.68	10.65	13.67	3.00	16.50	33.17	36.00	-2.83	Pass
		5240	10.39	10.36	13.38	3.00	16.50	32.88	36.00	-3.12	Pass
	64QAM	5165	3.17	3.20	6.19	3.00	16.50	25.69	36.00	-10.31	Pass
		5200	10.70	10.65	13.68	3.00	16.50	33.18	36.00	-2.82	Pass
		5240	10.41	10.36	13.39	3.00	16.50	32.89	36.00	-3.11	Pass

* Total output power = (10*LOG (10^(Output power ANT3/10) + 10^(Output power ANT4/10)))

** Total EIRP = Total output power + Antenna array gain + Single antenna gain

*** Margin = Total output power – specification limit



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Test specification: FCC section 15.407(a)(1-3), RSS-247 section 6.2.1.1 Peak output power			
Test procedure: FCC section 15.407(a)(4); KDB 662911, KDB 789033, ANSI C63.10, section 12.3.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.6.8 EIRP test results

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
DETECTOR USED: Average
METHOD OF POWER MEASUREMENTS: PM-G (789033 D02)
MIMO CONFIGURATION: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power per port, dBm		Total output power*, dBm	Antenna gain array, dB	Single antenna gain, dBi	Total EIRP**, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT2							
10	QPSK	5160	4.31	4.29	7.30	0.00	16.50	23.80	36.00	-12.20	Pass
		5200	9.30	9.26	12.28	0.00	16.50	28.78	36.00	-7.22	Pass
		5245	8.00	8.00	11.00	0.00	16.50	27.50	36.00	-8.50	Pass
	16QAM	5160	4.31	4.28	7.30	0.00	16.50	23.80	36.00	-12.2	Pass
		5200	9.30	9.25	12.28	0.00	16.50	28.78	36.00	-7.22	Pass
		5245	7.99	7.98	10.99	0.00	16.50	27.49	36.00	-8.51	Pass
	64QAM	5160	4.30	4.29	7.30	0.00	16.50	23.80	36.00	-12.20	Pass
		5200	9.30	9.26	12.28	0.00	16.50	28.78	36.00	-7.22	Pass
		5245	7.98	7.99	10.99	0.00	16.50	27.49	36.00	-8.51	Pass
15	QPSK	5165	4.20	4.18	7.19	0.00	16.50	23.69	36.00	-12.31	Pass
		5200	11.25	11.24	14.25	0.00	16.50	30.75	36.00	-5.25	Pass
		5240	11.30	11.31	14.31	0.00	16.50	30.81	36.00	-5.19	Pass
	16QAM	5165	4.18	4.17	7.18	0.00	16.50	23.68	36.00	-12.32	Pass
		5200	11.26	11.24	14.25	0.00	16.50	30.75	36.00	-5.25	Pass
		5240	11.31	11.32	14.32	0.00	16.50	30.82	36.00	-5.18	Pass
	64QAM	5165	4.19	4.19	7.19	0.00	16.50	23.69	36.00	-12.31	Pass
		5200	11.26	11.24	14.25	0.00	16.50	30.75	36.00	-5.25	Pass
		5240	11.31	11.32	14.32	0.00	16.50	30.82	36.00	-5.18	Pass
20	QPSK	5165	3.19	3.15	6.17	0.00	16.50	22.67	36.00	-13.33	Pass
		5200	10.69	10.68	13.69	0.00	16.50	30.19	36.00	-5.81	Pass
		5240	10.41	10.42	13.42	0.00	16.50	29.92	36.00	-6.08	Pass
	16QAM	5165	3.19	3.13	6.16	0.00	16.50	22.66	36.00	-13.34	Pass
		5200	10.69	10.68	13.69	0.00	16.50	30.19	36.00	-5.81	Pass
		5240	10.42	10.42	13.42	0.00	16.50	29.92	36.00	-6.08	Pass
	64QAM	5165	3.20	3.15	6.18	0.00	16.50	22.68	36.00	-13.32	Pass
		5200	10.70	10.67	13.69	0.00	16.50	30.19	36.00	-5.81	Pass
		5240	10.41	10.43	13.42	0.00	16.50	29.92	36.00	-6.08	Pass

* Total output power = (10*LOG (10^(Output power ANT1/10) + 10^(Output power ANT2/10)))

** Total EIRP = Total output power + Antenna array gain + Single antenna gain

** Margin = Total output power – specification limit



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Test specification: FCC section 15.407(a)(1-3), RSS-247 section 6.2.1.1 Peak output power			
Test procedure: FCC section 15.407(a)(4); KDB 662911, KDB 789033, ANSI C63.10, section 12.3.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.6.9 EIRP test results

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
DETECTOR USED: Average
METHOD OF POWER MEASUREMENTS: PM-G (789033 D02)
MIMO CONFIGURATION: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power per port, dBm		Total output power*, dBm	Antenna gain array, dB	Single antenna gain, dBi	Total EIRP**, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT3	ANT4							
10	QPSK	5160	4.24	4.30	7.27	0.00	16.50	23.77	36.00	-12.23	Pass
		5200	9.29	9.29	12.29	0.00	16.50	28.79	36.00	-7.21	Pass
		5245	8.01	7.95	10.98	0.00	16.50	27.48	36.00	-8.52	Pass
	16QAM	5160	4.25	4.31	7.28	0.00	16.50	23.78	36.00	-12.22	Pass
		5200	9.29	9.29	12.29	0.00	16.50	28.79	36.00	-7.21	Pass
		5245	8.01	7.93	10.97	0.00	16.50	27.47	36.00	-8.53	Pass
	64QAM	5160	4.25	4.30	7.28	0.00	16.50	23.78	36.00	-12.22	Pass
		5200	9.29	9.30	12.30	0.00	16.50	28.80	36.00	-7.20	Pass
		5245	7.99	7.92	10.96	0.00	16.50	27.46	36.00	-8.54	Pass
15	QPSK	5165	4.18	4.19	7.19	0.00	16.50	23.69	36.00	-12.31	Pass
		5200	11.24	11.21	14.23	0.00	16.50	30.73	36.00	-5.27	Pass
		5240	11.29	11.31	14.30	0.00	16.50	30.80	36.00	-5.20	Pass
	16QAM	5165	4.15	4.18	7.17	0.00	16.50	23.67	36.00	-12.33	Pass
		5200	11.24	11.22	14.23	0.00	16.50	30.73	36.00	-5.27	Pass
		5240	11.29	11.30	14.30	0.00	16.50	30.80	36.00	-5.20	Pass
	64QAM	5165	4.15	4.17	7.16	0.00	16.50	23.66	36.00	-12.34	Pass
		5200	11.26	11.20	14.23	0.00	16.50	30.73	36.00	-5.27	Pass
		5240	11.29	11.31	14.30	0.00	16.50	30.80	36.00	-5.20	Pass
20	QPSK	5165	3.16	3.18	6.17	0.00	16.50	22.67	36.00	-13.33	Pass
		5200	10.69	10.64	13.67	0.00	16.50	30.17	36.00	-5.83	Pass
		5240	10.40	10.36	13.38	0.00	16.50	29.88	36.00	-6.12	Pass
	16QAM	5165	3.17	3.17	6.17	0.00	16.50	22.67	36.00	-13.33	Pass
		5200	10.68	10.65	13.67	0.00	16.50	30.17	36.00	-5.83	Pass
		5240	10.39	10.36	13.38	0.00	16.50	29.88	36.00	-6.12	Pass
	64QAM	5165	3.17	3.20	6.19	0.00	16.50	22.69	36.00	-13.31	Pass
		5200	10.70	10.65	13.68	0.00	16.50	30.18	36.00	-5.82	Pass
		5240	10.41	10.36	13.39	0.00	16.50	29.89	36.00	-6.11	Pass

* Total output power = (10*LOG (10^(Output power ANT3/10) + 10^(Output power ANT4/10)))

** Total EIRP = Total output power + Antenna array gain + Single antenna gain

*** Margin = Total output power – specification limit



Test specification: FCC section 15.407(a)(1-3), RSS-247 section 6.2.1.1 Peak output power			
Test procedure: FCC section 15.407(a)(4); KDB 662911, KDB 789033, ANSI C63.10, section 12.3.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.6.10 EIRP test results

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
 DETECTOR USED: Average
 METHOD OF POWER MEASUREMENTS: PM-G (789033 D02)
 MIMO CONFIGURATION: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power, dBm	Antenna gain array, dB	Single antenna gain, dBi	Total EIRP*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT1						
10	QPSK	5160	6.20	0	16.50	22.70	36.00	-13.30	Pass
		5200	15.50	0	16.50	32.00	36.00	-4.00	Pass
		5245	15.35	0	16.50	31.85	36.00	-4.15	Pass
	16QAM	5160	6.19	0	16.50	22.69	36.00	-13.31	Pass
		5200	15.51	0	16.50	32.01	36.00	-3.99	Pass
		5245	15.35	0	16.50	31.85	36.00	-4.15	Pass
	64QAM	5160	6.18	0	16.50	22.68	36.00	-13.32	Pass
		5200	15.51	0	16.50	32.01	36.00	-3.99	Pass
		5245	15.36	0	16.50	31.86	36.00	-4.14	Pass
15	QPSK	5165	7.59	0	16.50	24.09	36.00	-11.91	Pass
		5200	14.46	0	16.50	30.96	36.00	-5.04	Pass
		5240	14.48	0	16.50	30.98	36.00	-5.02	Pass
	16QAM	5165	7.60	0	16.50	24.10	36.00	-11.90	Pass
		5200	14.46	0	16.50	30.96	36.00	-5.04	Pass
		5240	14.48	0	16.50	30.98	36.00	-5.02	Pass
	64QAM	5165	7.59	0	16.50	24.09	36.00	-11.91	Pass
		5200	14.46	0	16.50	30.96	36.00	-5.04	Pass
		5240	14.47	0	16.50	30.97	36.00	-5.03	Pass
20	QPSK	5165	5.58	0	16.50	22.08	36.00	-13.92	Pass
		5200	15.31	0	16.50	31.81	36.00	-4.19	Pass
		5240	16.35	0	16.50	32.85	36.00	-3.15	Pass
	16QAM	5165	5.58	0	16.50	22.08	36.00	-13.92	Pass
		5200	15.31	0	16.50	31.81	36.00	-4.19	Pass
		5240	16.35	0	16.50	32.85	36.00	-3.15	Pass
	64QAM	5165	5.58	0	16.50	22.08	36.00	-13.92	Pass
		5200	15.31	0	16.50	31.81	36.00	-4.19	Pass
		5240	16.34	0	16.50	32.84	36.00	-3.16	Pass

* Total EIRP = Output power + Antenna array gain + Single antenna gain

** Margin = Total output power – specification limit



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Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(1-3), RSS-247 section 6.2.1.1 Peak output power			
Test procedure: FCC section 15.407(a)(4); KDB 662911, KDB 789033, ANSI C63.10, section 12.3.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.6.11 EIRP test results (continued)

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
DETECTOR USED: Average
METHOD OF POWER MEASUREMENTS: PM-G (789033 D02)
MIMO CONFIGURATION: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power, dBm	Antenna gain array, dB	Single antenna gain, dBi	Total EIRP*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT2						
10	QPSK	5160	6.20	0	16.50	22.70	36.00	-13.30	Pass
		5200	15.50	0	16.50	32.00	36.00	-4.21	Pass
		5245	15.33	0	16.50	31.83	36.00	-5.52	Pass
	16QAM	5160	6.18	0	16.50	22.68	36.00	-9.22	Pass
		5200	15.48	0	16.50	31.98	36.00	-4.21	Pass
		5245	15.32	0	16.50	31.82	36.00	-5.53	Pass
	64QAM	5160	6.18	0	16.50	22.68	36.00	-9.22	Pass
		5200	15.49	0	16.50	31.99	36.00	-4.20	Pass
		5245	15.32	0	16.50	31.82	36.00	-5.54	Pass
15	QPSK	5165	7.55	0	16.50	24.05	36.00	-9.31	Pass
		5200	14.43	0	16.50	30.93	36.00	-2.27	Pass
		5240	14.45	0	16.50	30.95	36.00	-2.2	Pass
	16QAM	5165	7.59	0	16.50	24.09	36.00	-9.33	Pass
		5200	14.44	0	16.50	30.94	36.00	-2.27	Pass
		5240	14.45	0	16.50	30.95	36.00	-2.2	Pass
	64QAM	5165	7.59	0	16.50	24.09	36.00	-9.34	Pass
		5200	14.43	0	16.50	30.93	36.00	-2.27	Pass
		5240	14.45	0	16.50	30.95	36.00	-2.20	Pass
20	QPSK	5165	5.59	0	16.50	22.09	36.00	-10.33	Pass
		5200	15.30	0	16.50	31.8	36.00	-2.83	Pass
		5240	16.35	0	16.50	32.85	36.00	-3.12	Pass
	16QAM	5165	5.60	0	16.50	22.10	36.00	-10.33	Pass
		5200	15.30	0	16.50	31.80	36.00	-2.83	Pass
		5240	16.35	0	16.50	32.85	36.00	-3.12	Pass
	64QAM	5165	5.60	0	16.50	22.10	36.00	-10.31	Pass
		5200	15.30	0	16.50	31.80	36.00	-2.82	Pass
		5240	16.36	0	16.50	32.86	36.00	-3.11	Pass

* Total EIRP = Output power + Antenna array gain + Single antenna gain

** Margin = Total output power – specification limit



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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.1.1 Peak output power	
Test procedure:		FCC section 15.407(a)(4); KDB 662911, KDB 789033, ANSI C63.10, section 12.3.3	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.6.12 EIRP test results (continued)

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
 DETECTOR USED: Average
 METHOD OF POWER MEASUREMENTS: PM-G (789033 D02)
 MIMO CONFIGURATION: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power, dBm	Antenna gain array, dB	Single antenna gain, dBi	Total EIRP*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT3						
10	QPSK	5160	6.15	0	16.50	22.65	36.00	-9.23	Pass
		5200	15.47	0	16.50	31.97	36.00	-4.21	Pass
		5245	15.31	0	16.50	31.81	36.00	-5.52	Pass
	16QAM	5160	6.16	0	16.50	22.66	36.00	-9.22	Pass
		5200	15.46	0	16.50	31.96	36.00	-4.21	Pass
		5245	15.32	0	16.50	31.82	36.00	-5.53	Pass
	64QAM	5160	6.15	0	16.50	22.65	36.00	-9.22	Pass
		5200	15.47	0	16.50	31.97	36.00	-4.20	Pass
		5245	15.32	0	16.50	31.82	36.00	-5.54	Pass
15	QPSK	5165	7.50	0	16.50	24.00	36.00	-9.31	Pass
		5200	14.45	0	16.50	30.95	36.00	-2.27	Pass
		5240	14.44	0	16.50	30.94	36.00	-2.2	Pass
	16QAM	5165	7.57	0	16.50	24.07	36.00	-9.33	Pass
		5200	14.45	0	16.50	30.95	36.00	-2.27	Pass
		5240	14.44	0	16.50	30.94	36.00	-2.20	Pass
	64QAM	5165	7.59	0	16.50	24.09	36.00	-9.34	Pass
		5200	14.43	0	16.50	30.93	36.00	-2.27	Pass
		5240	14.42	0	16.50	30.92	36.00	-2.20	Pass
20	QPSK	5165	5.56	0	16.50	22.06	36.00	-10.33	Pass
		5200	15.32	0	16.50	31.82	36.00	-2.83	Pass
		5240	16.30	0	16.50	32.80	36.00	-3.12	Pass
	16QAM	5165	5.54	0	16.50	22.04	36.00	-10.33	Pass
		5200	15.33	0	16.50	31.83	36.00	-2.83	Pass
		5240	16.28	0	16.50	32.78	36.00	-3.12	Pass
	64QAM	5165	5.57	0	16.50	22.07	36.00	-10.31	Pass
		5200	15.31	0	16.50	31.81	36.00	-2.82	Pass
		5240	16.29	0	16.50	32.79	36.00	-3.11	Pass

* Total EIRP = Output power + Antenna array gain + Single antenna gain

** Margin = Total output power – specification limit



HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(1-3), RSS-247 section 6.2.1.1 Peak output power			
Test procedure: FCC section 15.407(a)(4); KDB 662911, KDB 789033, ANSI C63.10, section 12.3.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.6.13 EIRP test results (continued)

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
 DETECTOR USED: Average
 METHOD OF POWER MEASUREMENTS: PM-G (789033 D02)
 MIMO CONFIGURATION: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power, dBm	Antenna gain array, dB	Single antenna gain, dBi	Total EIRP*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT4						
10	QPSK	5160	6.18	0	16.50	22.68	36.00	-13.32	Pass
		5200	15.48	0	16.50	31.98	36.00	-4.02	Pass
		5245	15.35	0	16.50	31.85	36.00	-4.15	Pass
	16QAM	5160	6.18	0	16.50	22.68	36.00	-13.32	Pass
		5200	15.47	0	16.50	31.97	36.00	-4.03	Pass
		5245	15.33	0	16.50	31.83	36.00	-4.17	Pass
	64QAM	5160	6.19	0	16.50	22.69	36.00	-13.31	Pass
		5200	15.48	0	16.50	31.98	36.00	-4.02	Pass
		5245	15.35	0	16.50	31.85	36.00	-4.15	Pass
15	QPSK	5165	7.56	0	16.50	24.06	36.00	-11.94	Pass
		5200	14.43	0	16.50	30.93	36.00	-5.07	Pass
		5240	14.44	0	16.50	30.94	36.00	-5.06	Pass
	16QAM	5165	7.58	0	16.50	24.08	36.00	-11.92	Pass
		5200	14.44	0	16.50	30.94	36.00	-5.06	Pass
		5240	14.43	0	16.50	30.93	36.00	-5.07	Pass
	64QAM	5165	7.58	0	16.50	24.08	36.00	-11.92	Pass
		5200	14.43	0	16.50	30.93	36.00	-5.07	Pass
		5240	14.43	0	16.50	30.93	36.00	-5.07	Pass
20	QPSK	5165	5.56	0	16.50	22.06	36.00	-13.94	Pass
		5200	15.29	0	16.50	31.79	36.00	-4.21	Pass
		5240	16.36	0	16.50	32.86	36.00	-3.14	Pass
	16QAM	5165	5.55	0	16.50	22.05	36.00	-13.95	Pass
		5200	15.28	0	16.50	31.78	36.00	-4.22	Pass
		5240	16.37	0	16.50	32.87	36.00	-3.13	Pass
	64QAM	5165	5.58	0	16.50	22.08	36.00	-13.92	Pass
		5200	15.29	0	16.50	31.79	36.00	-4.21	Pass
		5240	16.36	0	16.50	32.86	36.00	-3.14	Pass

* Total EIRP = Output power + Antenna array gain + Single antenna gain

** Margin = Total output power – specification limit

Reference numbers of test equipment used

HL 3301	HL 3901						
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Full description is given in Appendix A.



Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

7.7 Peak spectral power density at 5150 – 5250 MHz range

7.7.1 General

This test was performed to measure the peak spectral power density at the transmitter RF antenna connector. Specification test limits are given in Table 7.7.1.

Table 7.7.1 Peak spectral power density limits

Assigned frequency range, MHz	Peak power spectral density, dBm/MHz	EIRP spectral density, dBm/MHz
5150 - 5250	17	23.0

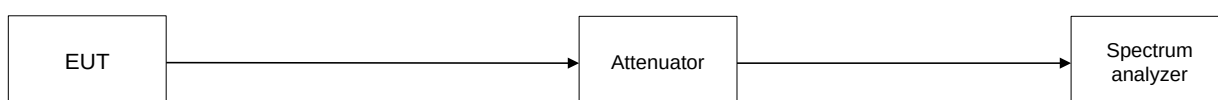
7.7.2 Test procedure

7.7.2.1 The EUT was set up as shown in Figure 7.7.1, energized and its proper operation was checked.

7.7.2.2 The EUT was adjusted to produce maximum available to end user RF output power.

7.7.2.3 The peak power spectral density was measured using a average detector and power averaging mode to find the highest level across the emission in any 1-MHz band more than 100 sweeps of averaging. The worst cased antennas output are provided in the associated tables and plots.

Figure 7.7.1 Peak spectral power density test setup





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Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.7.2 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
DETECTOR USED: RMS
METHOD OF POWER MEASUREMENTS: SA-2 (789033 D02)
MIMO CONFIGURATION: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna array gain, dB	Total power spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5160	-6.99	6.00	1.48	6.50	-5.02	Pass
		5200	-2.05	6.00	6.42	6.50	-0.08	Pass
		5245	-3.09	6.00	5.38	6.50	-1.12	Pass
	16QAM	5160	-6.87	6.00	1.60	6.50	-4.90	Pass
		5200	-2.07	6.00	6.40	6.50	-0.10	Pass
		5245	-3.25	6.00	5.22	6.50	-1.28	Pass
	64QAM	5160	-6.84	6.00	1.63	6.50	-4.87	Pass
		5200	-2.19	6.00	6.28	6.50	-0.22	Pass
		5245	-4.24	6.00	4.23	6.50	-2.27	Pass
15	QPSK	5165	-9.02	6.00	-0.55	6.50	-7.05	Pass
		5200	-2.05	6.00	6.42	6.50	-0.08	Pass
		5240	-2.03	6.00	6.44	6.50	-0.06	Pass
	16QAM	5165	-9.00	6.00	-0.53	6.50	-7.03	Pass
		5200	-2.02	6.00	6.45	6.50	-0.05	Pass
		5240	-2.03	6.00	6.44	6.50	-0.06	Pass
	64QAM	5165	-8.97	6.00	-0.50	6.50	-7.00	Pass
		5200	-2.03	6.00	6.44	6.50	-0.06	Pass
		5240	-2.02	6.00	6.45	6.50	-0.05	Pass
20	QPSK	5165	-11.10	6.00	-2.63	6.50	-9.13	Pass
		5200	-3.38	6.00	5.09	6.50	-1.41	Pass
		5240	-3.71	6.00	4.76	6.50	-1.74	Pass
	16QAM	5165	-11.06	6.00	-2.59	6.50	-9.09	Pass
		5200	-2.97	6.00	5.50	6.50	-1.00	Pass
		5240	-3.71	6.00	4.76	6.50	-1.74	Pass
	64QAM	5165	-10.64	6.00	-2.17	6.50	-8.67	Pass
		5200	-2.51	6.00	5.96	6.50	-0.54	Pass
		5240	-3.57	6.00	4.90	6.50	-1.60	Pass

* Antenna gain array = $10 \cdot \log(N_{ant})$, where $N_{ant} = 4$

* Total power spectral density = SA reading + Antenna array gain + Duty cycle factor (2.49 dB)

** Margin = Total power spectral density – specification limit



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Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:	Compliance	Verdict: PASS	
Date(s):	12-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.7.3 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
DETECTOR USED: RMS
METHOD OF POWER MEASUREMENTS: SA-2 (789033 D02)
MIMO CONFIGURATION: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna array gain*, dB	Total power spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5160	-6.99	3.00	-1.52	6.50	-8.02	Pass
		5200	-2.05	3.00	3.42	6.50	-3.08	Pass
		5245	-3.09	3.00	2.38	6.50	-4.12	Pass
	16QAM	5160	-6.87	3.00	-1.40	6.50	-7.90	Pass
		5200	-2.07	3.00	3.40	6.50	-3.10	Pass
		5245	-3.25	3.00	2.22	6.50	-4.28	Pass
	64QAM	5160	-6.84	3.00	-1.37	6.50	-7.87	Pass
		5200	-2.19	3.00	3.28	6.50	-3.22	Pass
		5245	-4.24	3.00	1.23	6.50	-5.27	Pass
15	QPSK	5165	-9.02	3.00	-3.55	6.50	-10.05	Pass
		5200	-2.05	3.00	3.42	6.50	-3.08	Pass
		5240	-2.03	3.00	3.44	6.50	-3.06	Pass
	16QAM	5165	-9.00	3.00	-3.53	6.50	-10.03	Pass
		5200	-2.02	3.00	3.45	6.50	-3.05	Pass
		5240	-2.03	3.00	3.44	6.50	-3.06	Pass
	64QAM	5165	-8.97	3.00	-3.50	6.50	-10.00	Pass
		5200	-2.03	3.00	3.44	6.50	-3.06	Pass
		5240	-2.02	3.00	3.45	6.50	-3.05	Pass
20	QPSK	5165	-11.10	3.00	-5.63	6.50	-12.13	Pass
		5200	-3.38	3.00	2.09	6.50	-4.41	Pass
		5240	-3.71	3.00	1.76	6.50	-4.74	Pass
	16QAM	5165	-11.06	3.00	-5.59	6.50	-12.09	Pass
		5200	-2.97	3.00	2.50	6.50	-4.00	Pass
		5240	-3.71	3.00	1.76	6.50	-4.74	Pass
	64QAM	5165	-10.64	3.00	-5.17	6.50	-11.67	Pass
		5200	-2.51	3.00	2.96	6.50	-3.54	Pass
		5240	-3.57	3.00	1.90	6.50	-4.60	Pass

* Antenna gain array = $10 \cdot \log(N_{ant})$, where $N_{ant} = 4$

* Total power spectral density = SA reading + Antenna array gain + Duty cycle factor (2.49 dB)

** Margin = Total power spectral density – specification limit



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Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.7.4 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
DETECTOR USED: RMS
METHOD OF POWER MEASUREMENTS: SA-2 (789033 D02)
MIMO CONFIGURATION: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna array gain*, dB	Total power spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5160	-5.17	3.00	0.30	6.50	-6.20	Pass
		5200	1.00	3.00	6.47	6.50	-0.03	Pass
		5245	0.99	3.00	6.46	6.50	-0.04	Pass
	16QAM	5160	-5.10	3.00	0.37	6.50	-6.13	Pass
		5200	0.98	3.00	6.45	6.50	-0.05	Pass
		5245	0.90	3.00	6.37	6.50	-0.13	Pass
	64QAM	5160	-5.15	3.00	0.32	6.50	-6.18	Pass
		5200	0.97	3.00	6.44	6.50	-0.06	Pass
		5245	0.87	3.00	6.34	6.50	-0.16	Pass
15	QPSK	5165	-6.88	3.00	-1.41	6.50	-7.91	Pass
		5200	0.99	3.00	6.46	6.50	-0.04	Pass
		5240	0.94	3.00	6.41	6.50	-0.09	Pass
	16QAM	5165	-6.97	3.00	-1.50	6.50	-8.00	Pass
		5200	0.98	3.00	6.45	6.50	-0.05	Pass
		5240	0.95	3.00	6.42	6.50	-0.08	Pass
	64QAM	5165	-7.00	3.00	-1.53	6.50	-8.03	Pass
		5200	1.00	3.00	6.47	6.50	-0.03	Pass
		5240	0.91	3.00	6.38	6.50	-0.12	Pass
20	QPSK	5165	-8.10	3.00	-2.63	6.50	-9.13	Pass
		5200	0.98	3.00	6.45	6.50	-0.05	Pass
		5240	0.94	3.00	6.41	6.50	-0.09	Pass
	16QAM	5165	-7.97	3.00	-2.50	6.50	-9.00	Pass
		5200	0.95	3.00	6.42	6.50	-0.08	Pass
		5240	0.92	3.00	6.39	6.50	-0.11	Pass
	64QAM	5165	-8.07	3.00	-2.60	6.50	-9.10	Pass
		5200	0.99	3.00	6.46	6.50	-0.04	Pass
		5240	0.92	3.00	6.39	6.50	-0.11	Pass

* Antenna gain array = $10 \cdot \log(N_{ant})$, where $N_{ant} = 4$

* Total power spectral density = SA reading + Antenna array gain + Duty cycle factor (2.49 dB)

** Margin = Total power spectral density – specification limit



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Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.7.5 Duty cycle factor calculation

Burst duration, ms	Burst period, ms	Duty cycle*	Duty cycle factor**, dB
2.83	5.00	0.566	2.47

* - Duty cycle = Burst duration / Burst period

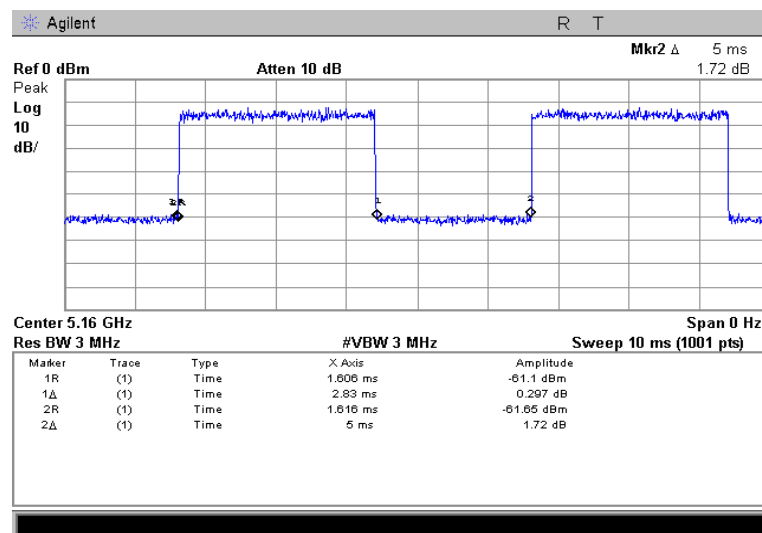
** - Duty cycle factor = $10\log(1/\text{Duty cycle})$

Reference numbers of test equipment used

HL 3901	HL 3818	HL 4355					
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Full description is given in Appendix A.

Plot 7.7.1 Duty cycle





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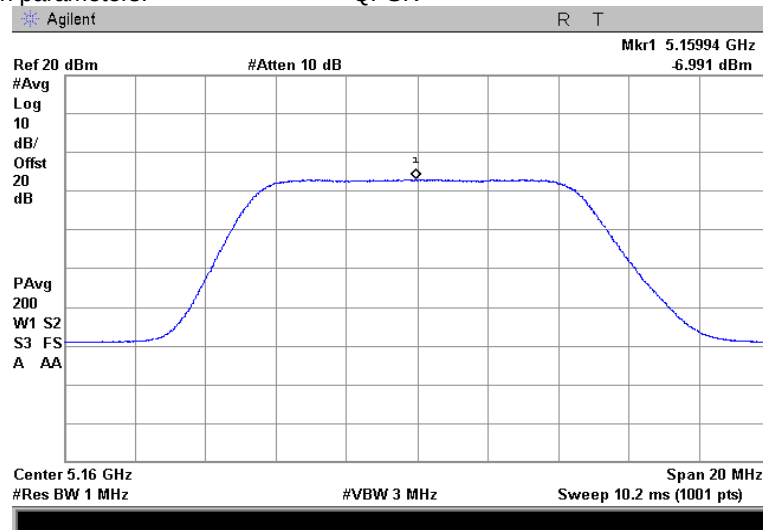
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Date of Issue: 25-Jun-19

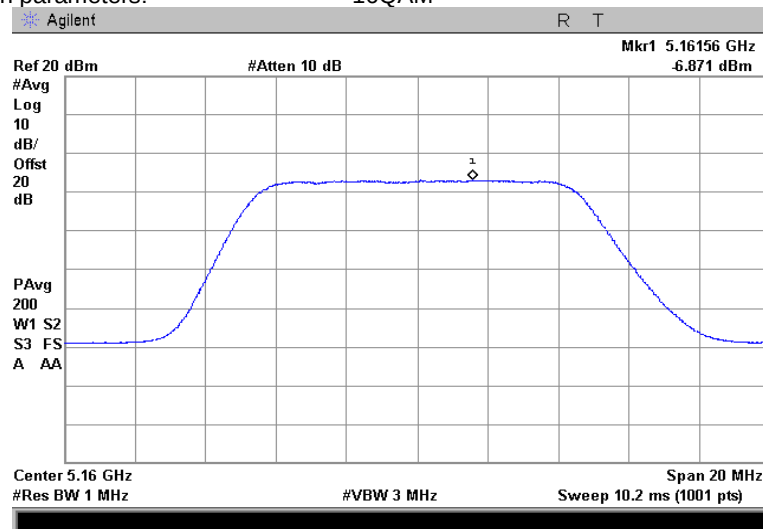
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.2 Peak power spectral density test results

Frequency: 5.160 GHz
Channel BW: 10 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antenna)
non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM



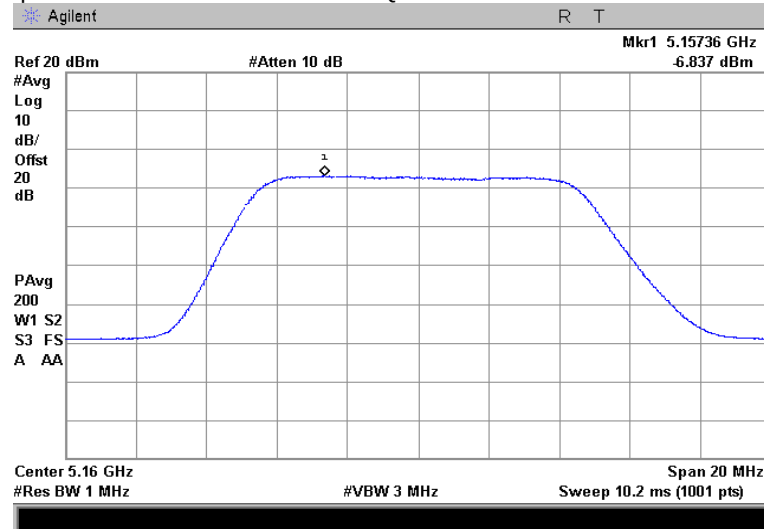


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Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





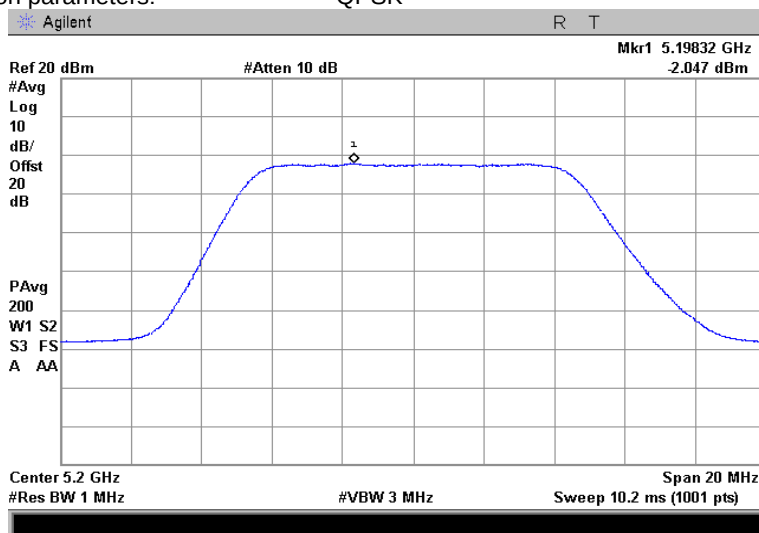
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Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

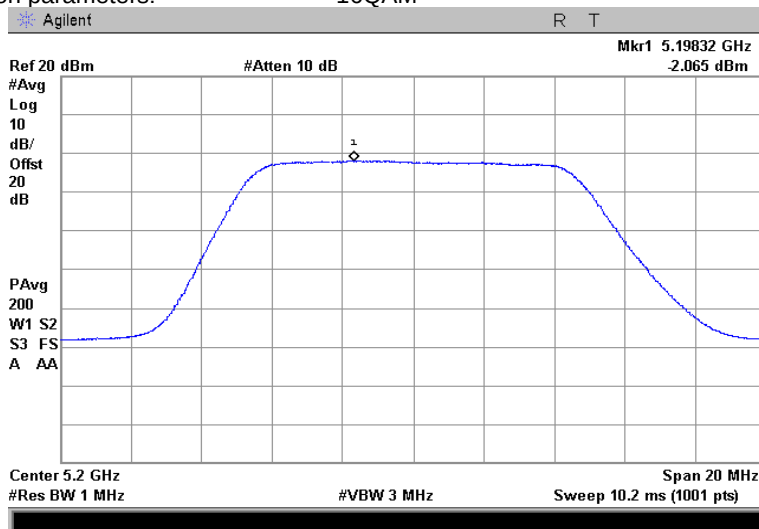
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Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	12-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.3 Peak power spectral density test results

Frequency: 5.200 GHz
Channel BW: 10 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antenna)
non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





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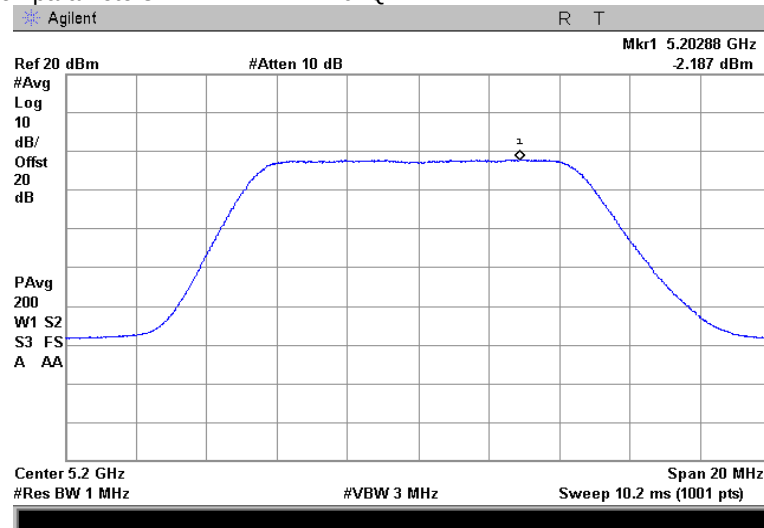
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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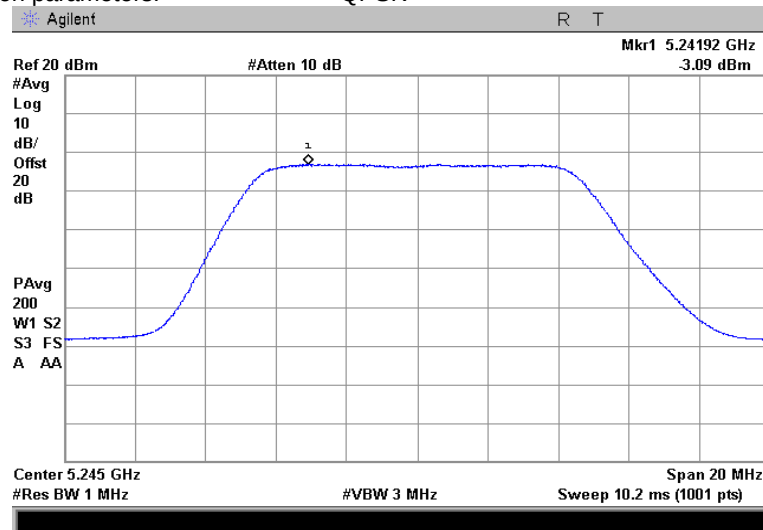
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Date of Issue: 25-Jun-19

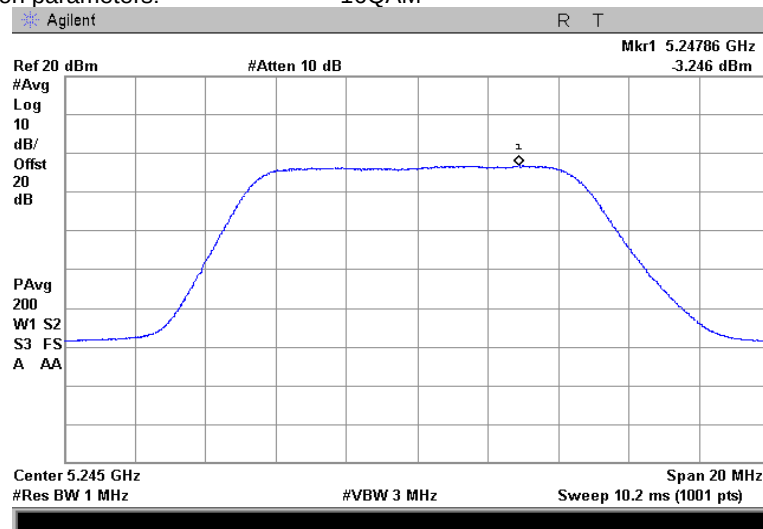
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Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	12-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.4 Peak power spectral density test results

Frequency: 5.245 GHz
Channel BW: 10 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antenna)
non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





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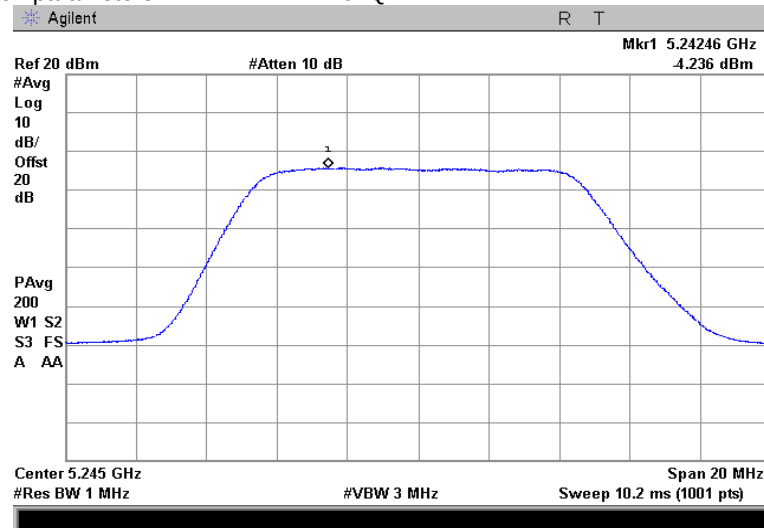
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM

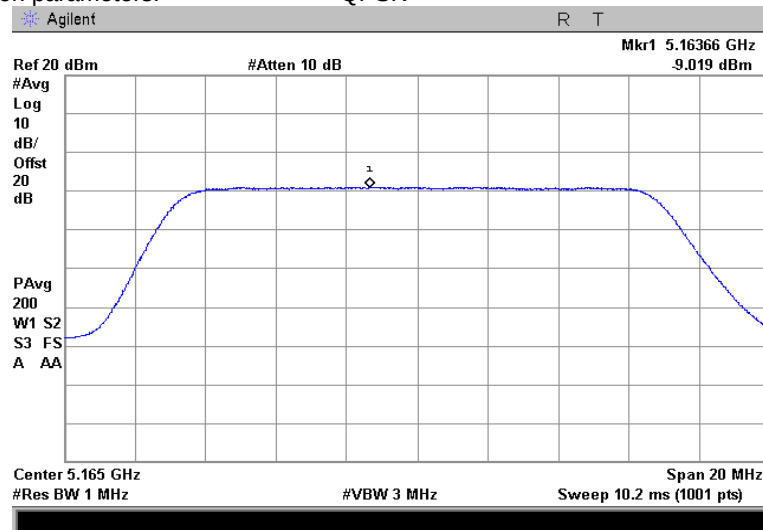




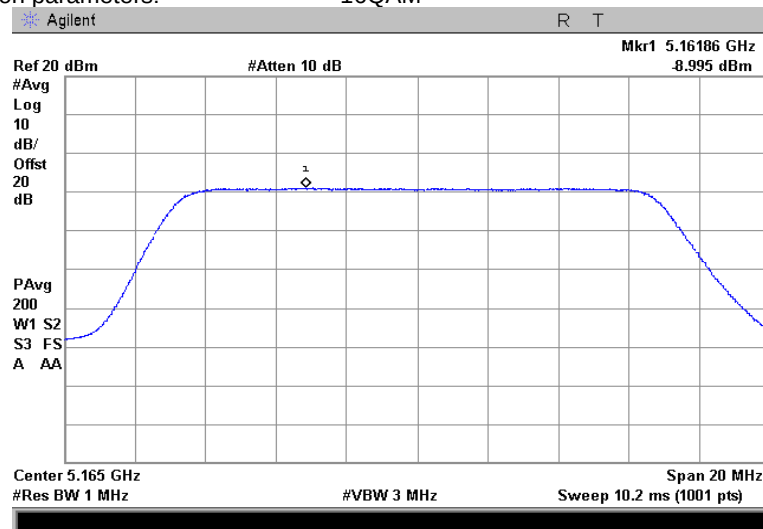
Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.5 Peak power spectral density test results

Frequency: 5.165 GHz
Channel BW: 15 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antenna)
non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





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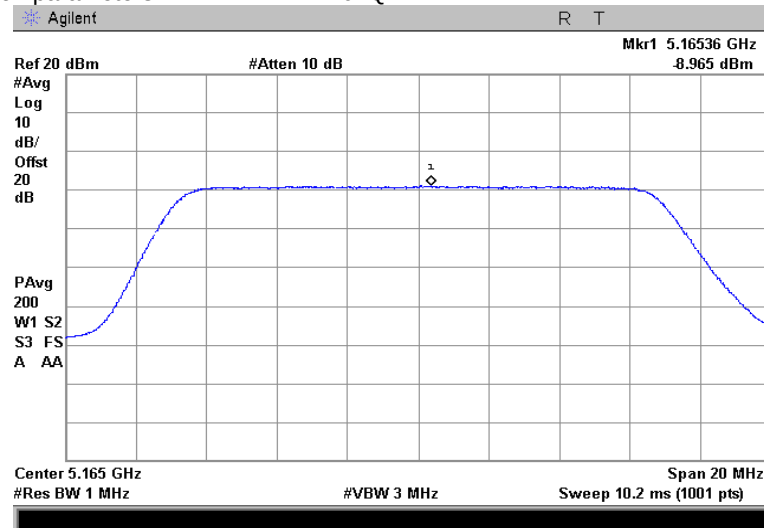
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM

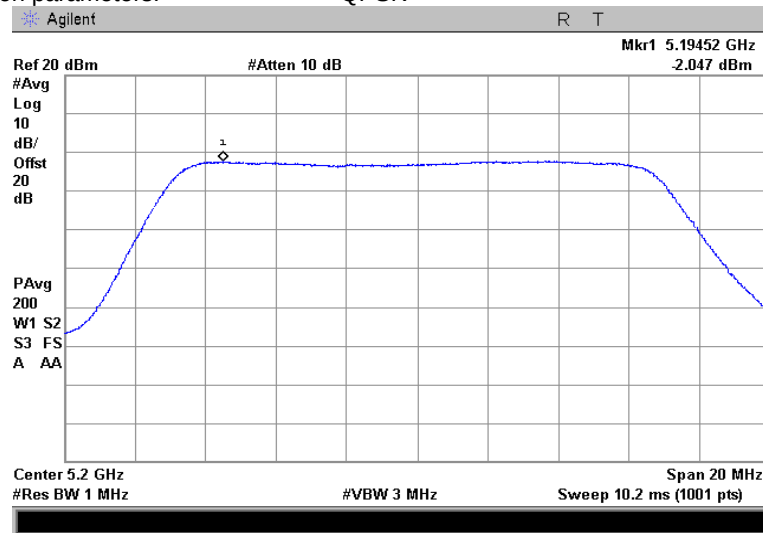




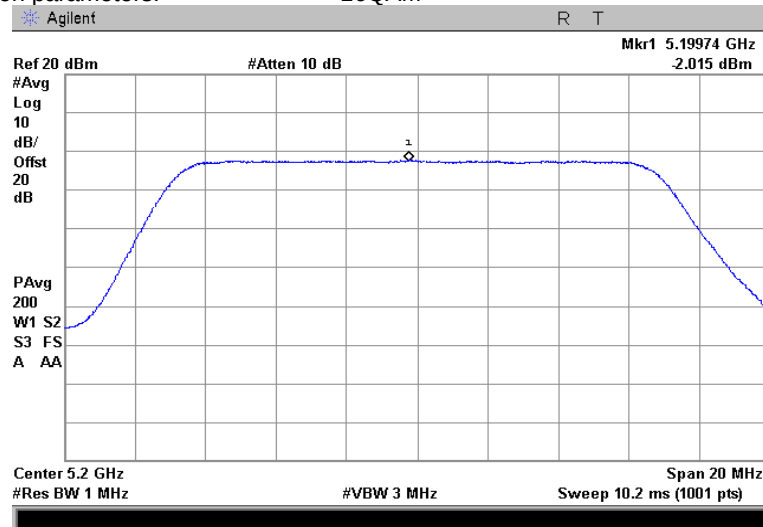
Test specification:	FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density		
Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	12-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.6 Peak power spectral density test results

Frequency: 5.200 GHz
Channel BW: 15 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antenna)
non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM

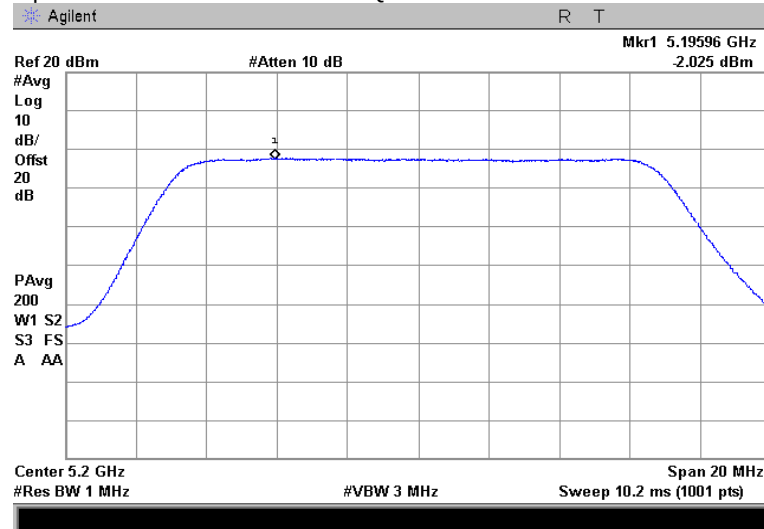




Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM

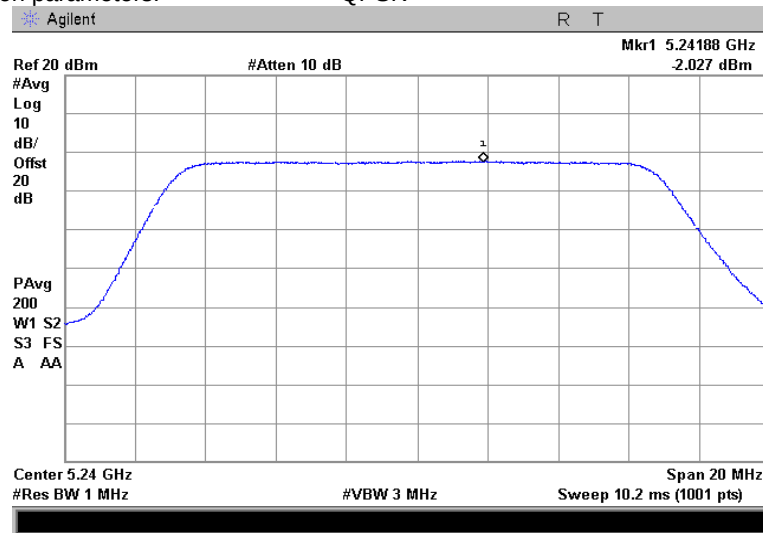




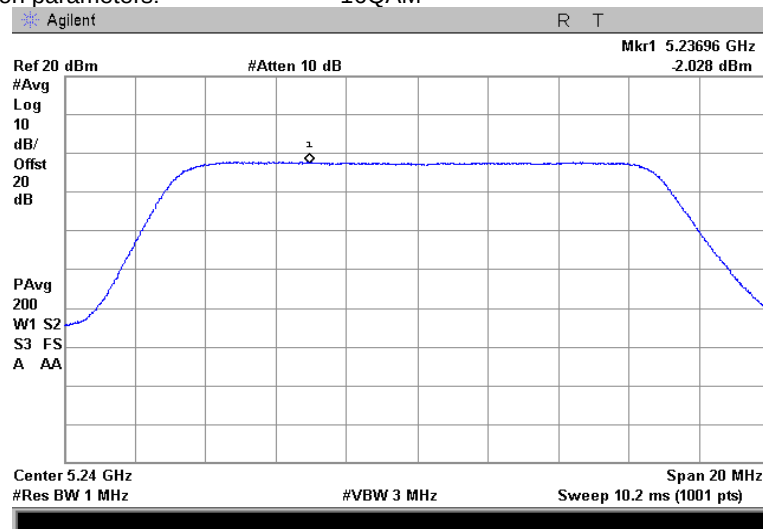
Test specification:	FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density		
Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	12-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.7 Peak power spectral density test results

Frequency: 5.240 GHz
Channel BW: 15 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antenna)
non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

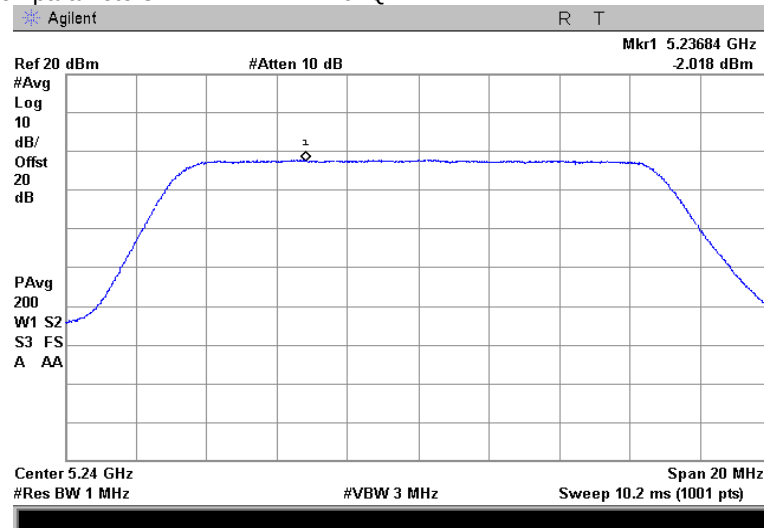
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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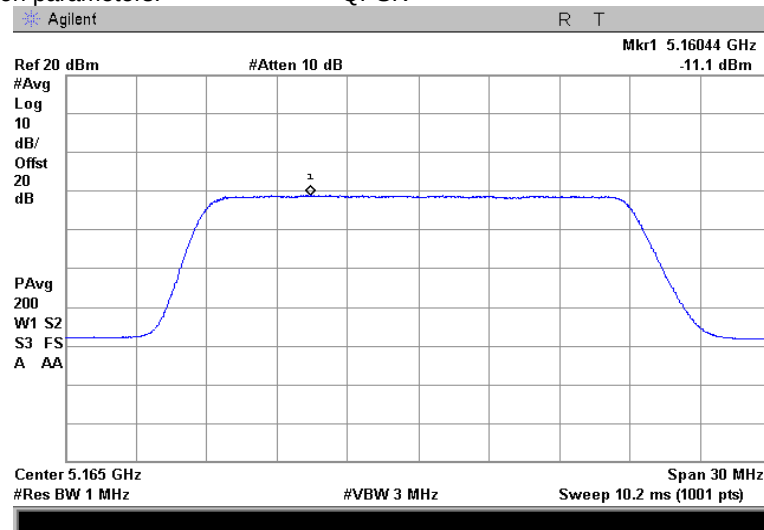
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Date of Issue: 25-Jun-19

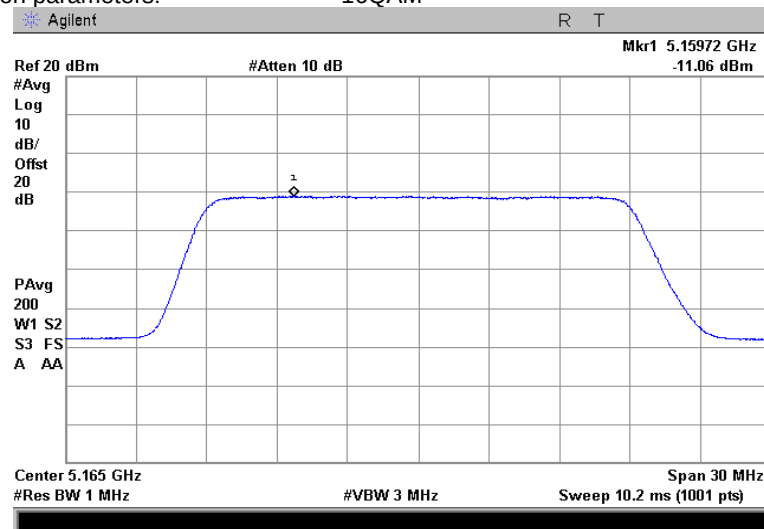
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.8 Peak power spectral density test results

Frequency: 5.165 GHz
Channel BW: 20 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antenna)
non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

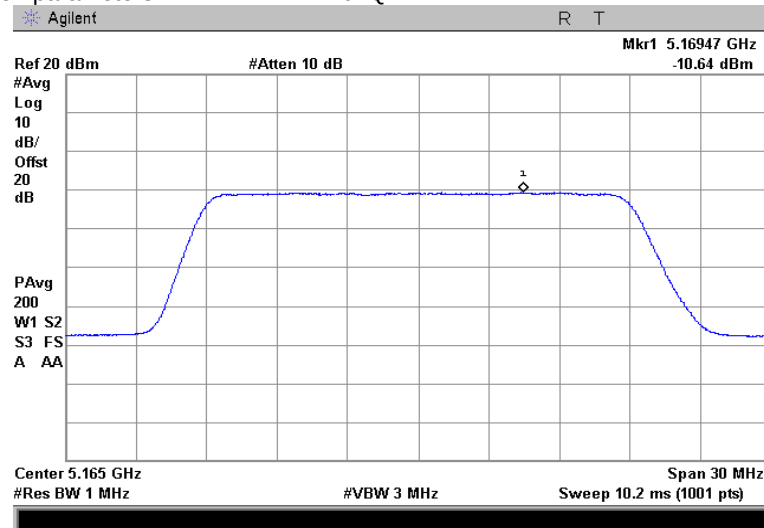
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM

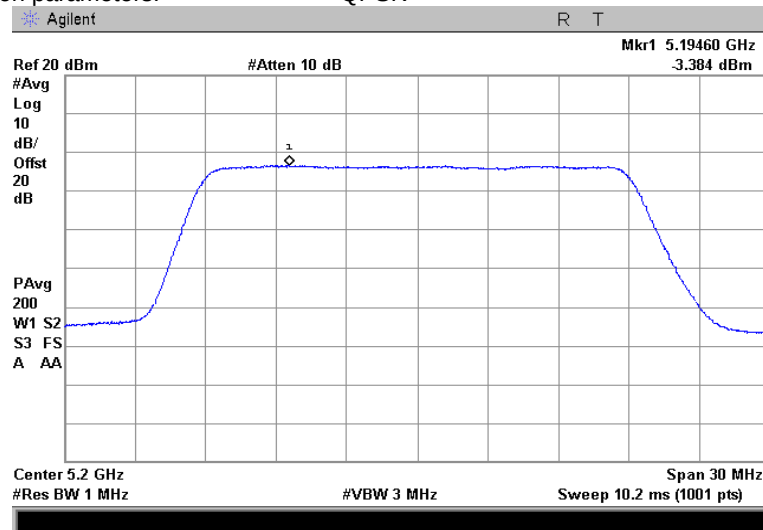




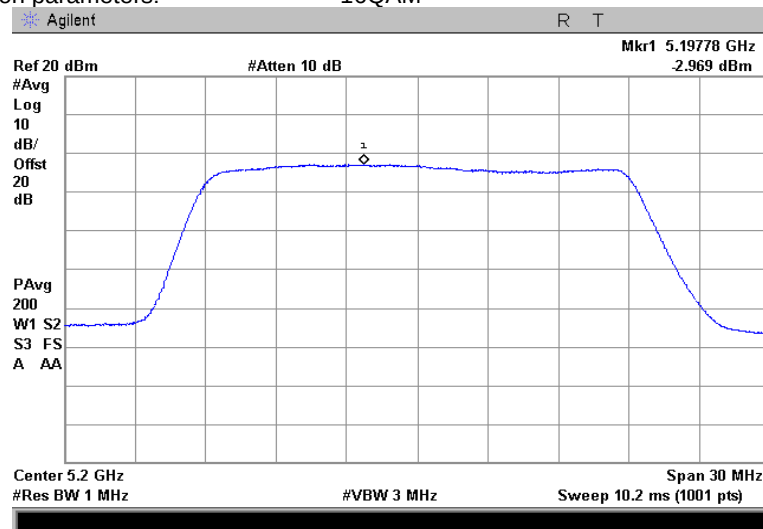
Test specification:	FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density		
Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	12-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.9 Peak power spectral density test results

Frequency: 5.200 GHz
Channel BW: 20 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antenna)
non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





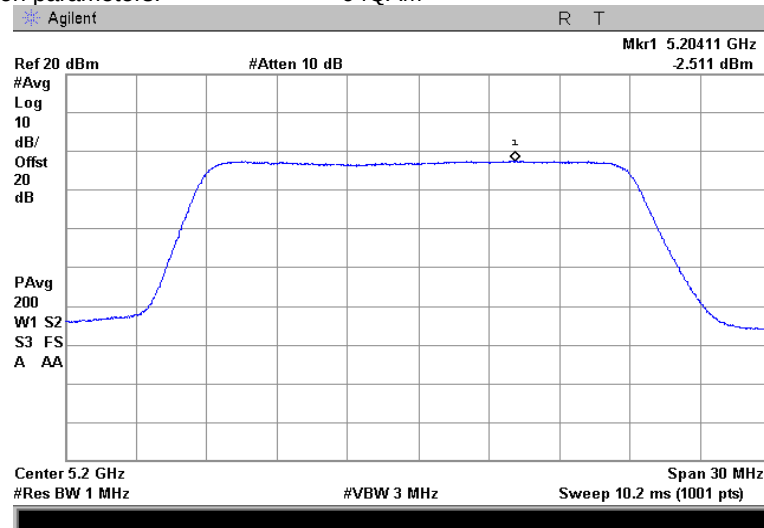
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM

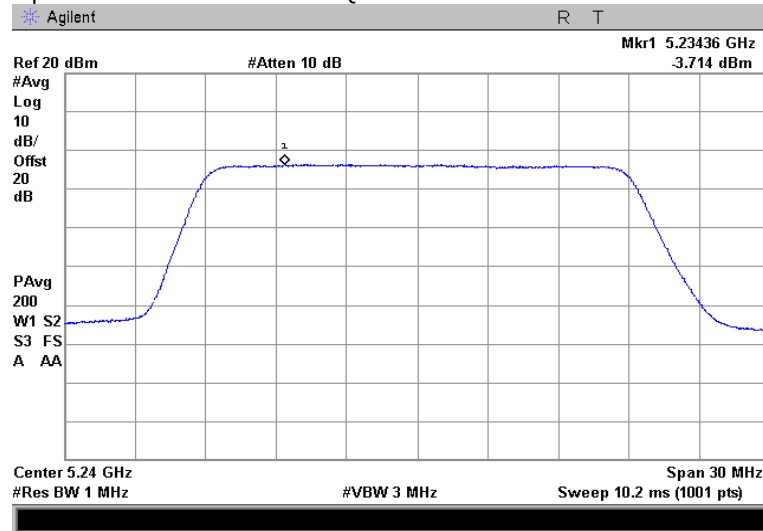




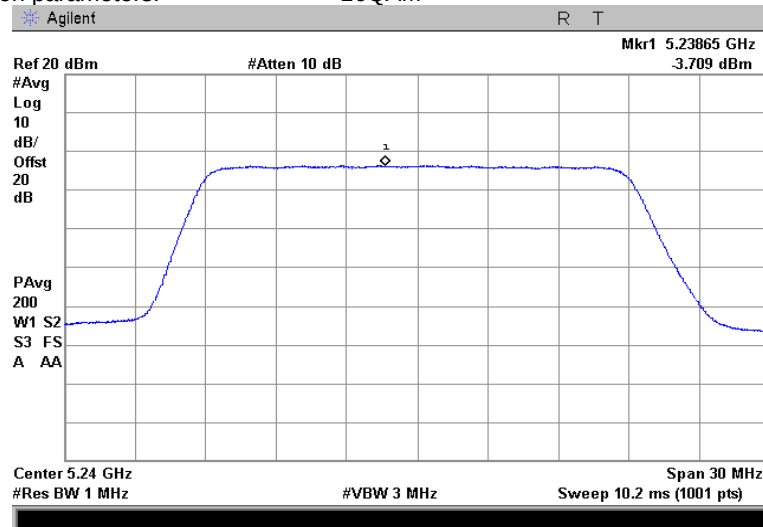
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.10 Peak power spectral density test results

Frequency: 5.240 GHz
Channel BW: 20 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antenna)
non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





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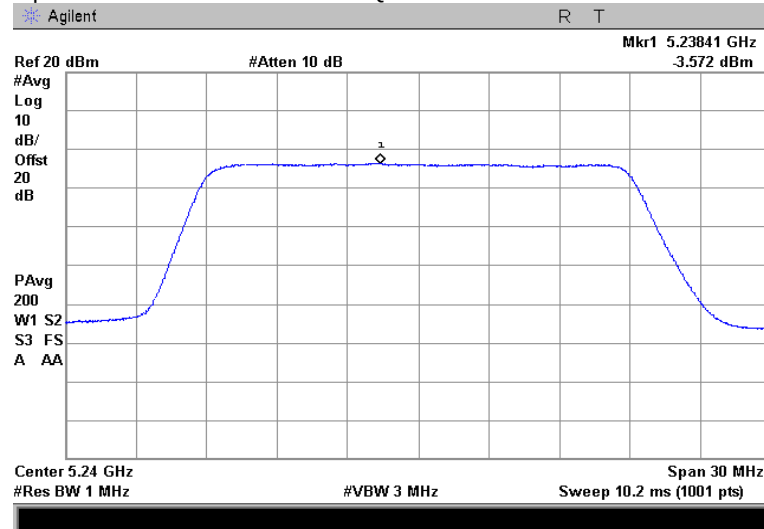
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM



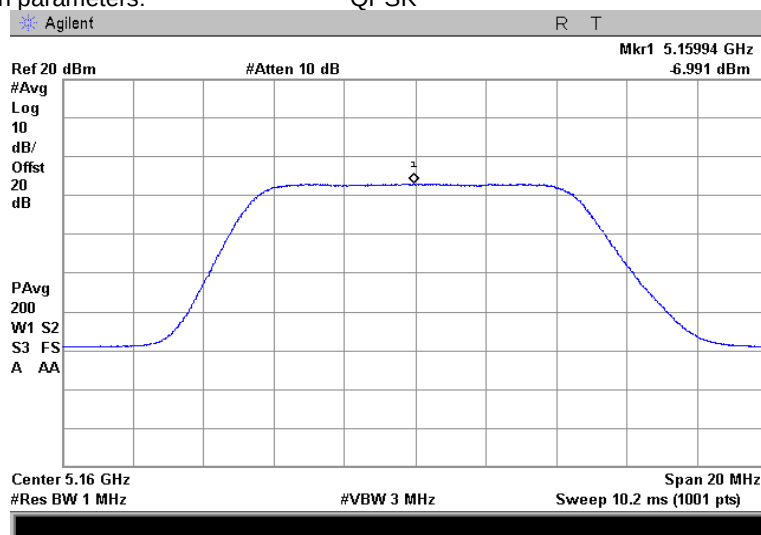


HERMON LABORATORIES

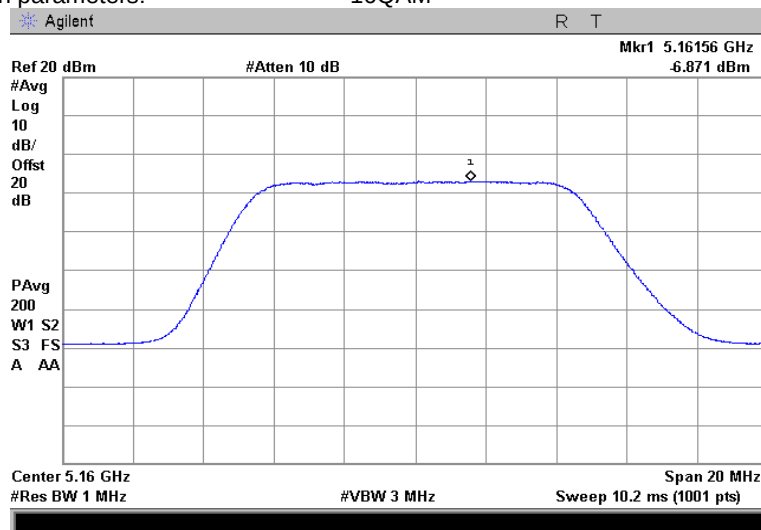
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.11 Peak power spectral density test results

Frequency: 5.160 GHz
Channel BW: 10 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

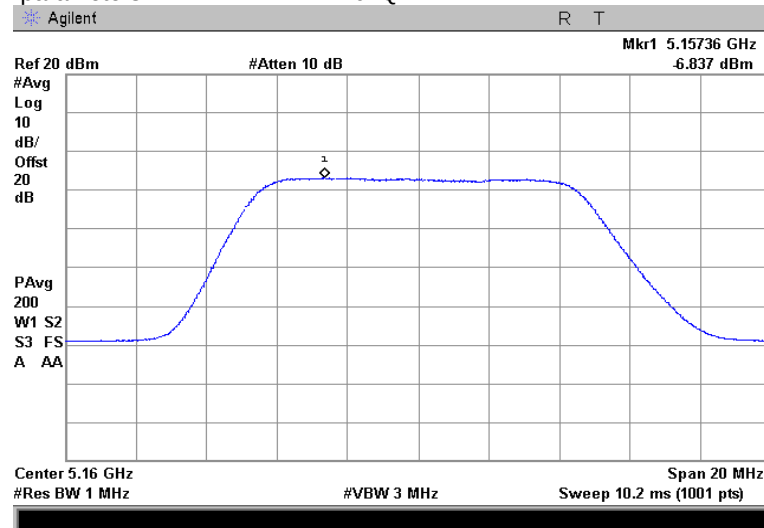
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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Report ID: TelRad_FCC_31832_rev2

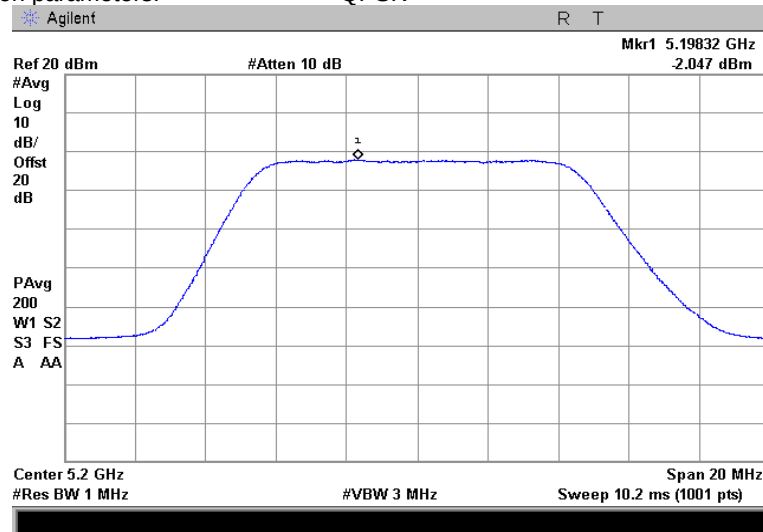
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

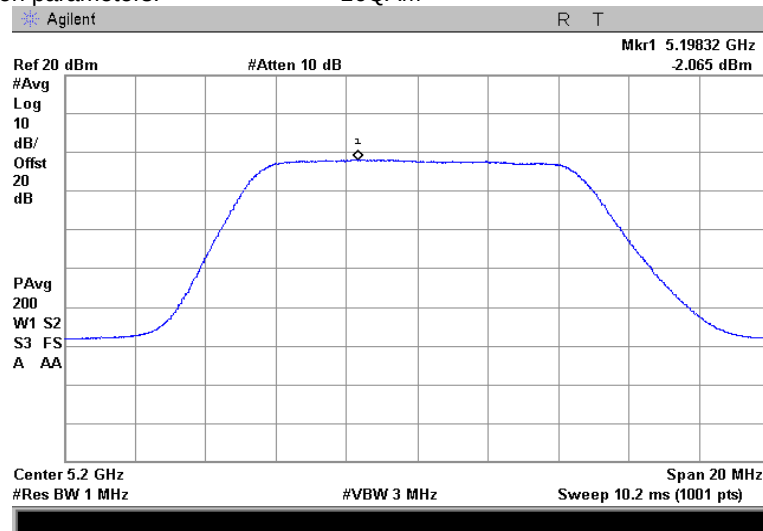
Plot 7.7.12 Peak power spectral density test results

Frequency: 5.200 GHz
Channel BW: 10 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM



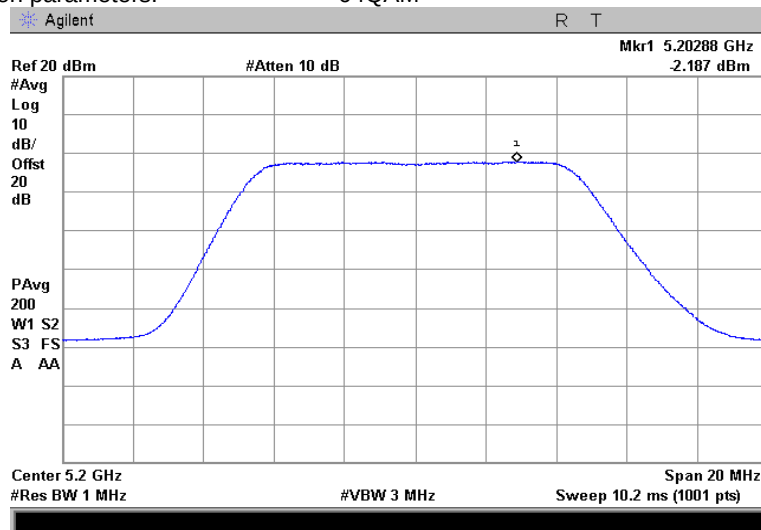


HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

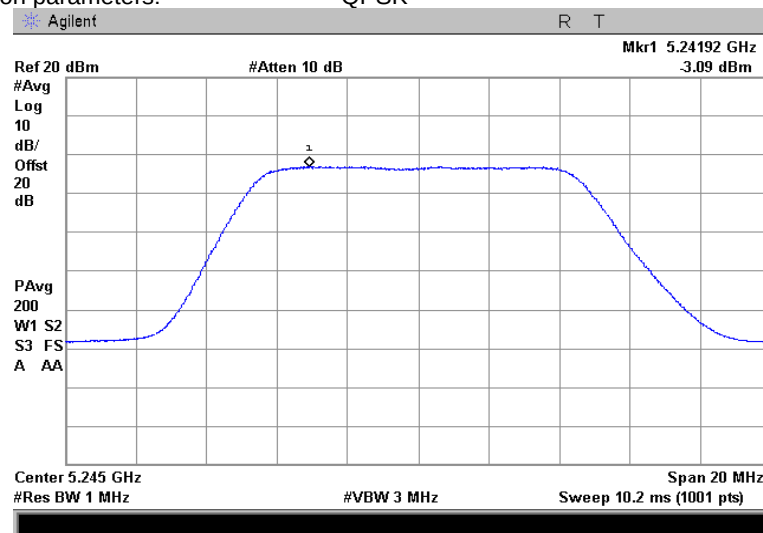
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

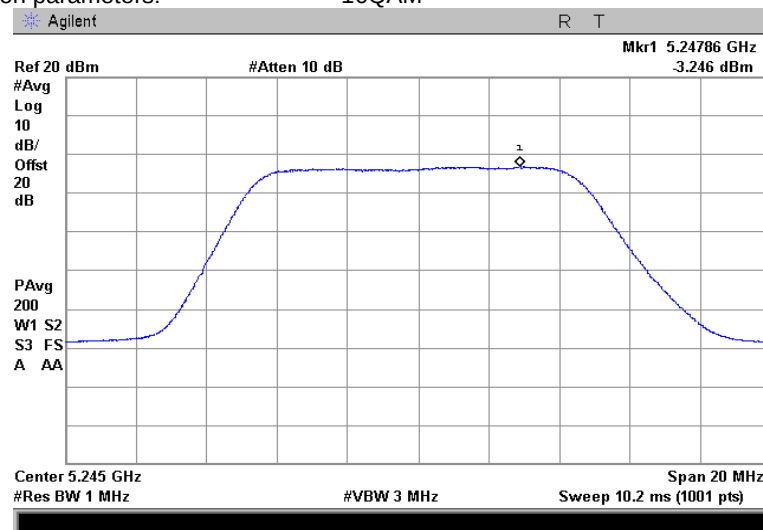
Plot 7.7.13 Peak power spectral density test results

Frequency: 5.245 GHz
Channel BW: 10 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

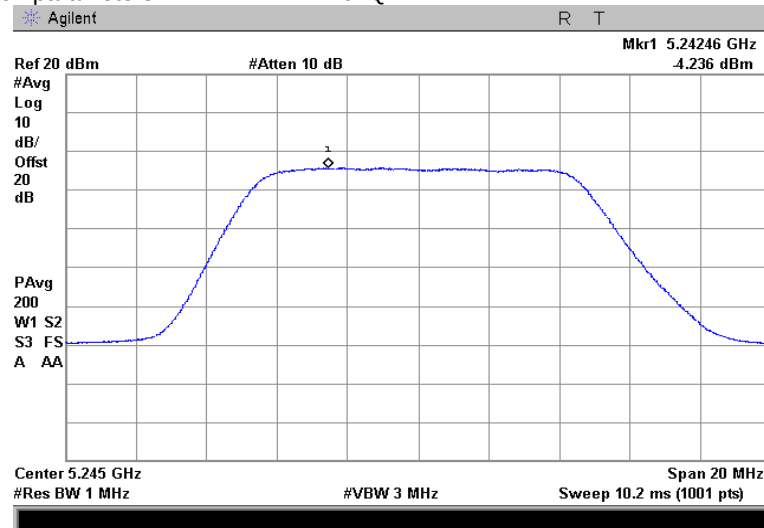
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

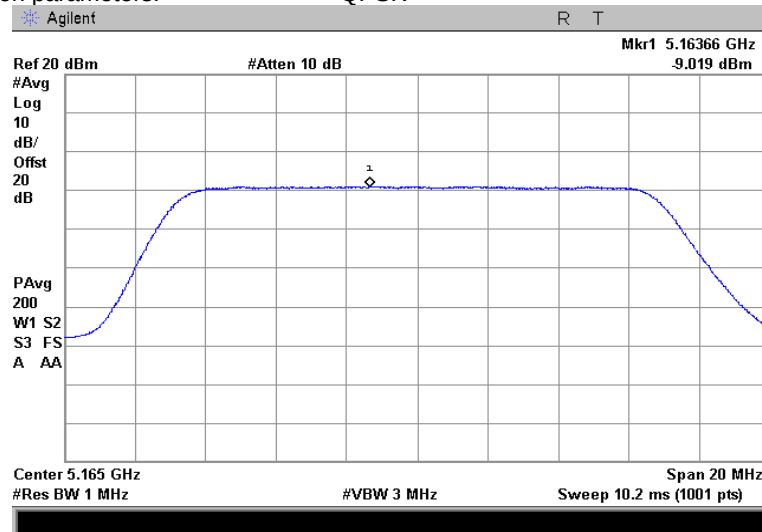
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Date of Issue: 25-Jun-19

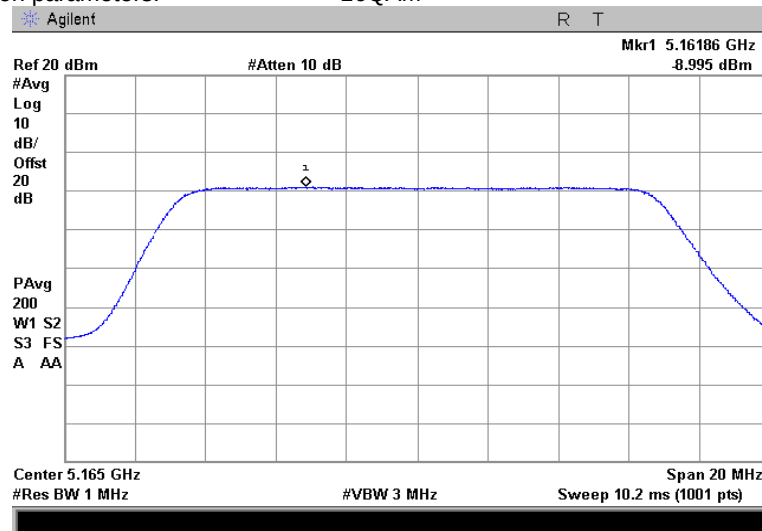
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.14 Peak power spectral density test results

Frequency: 5.165 GHz
Channel BW: 15 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

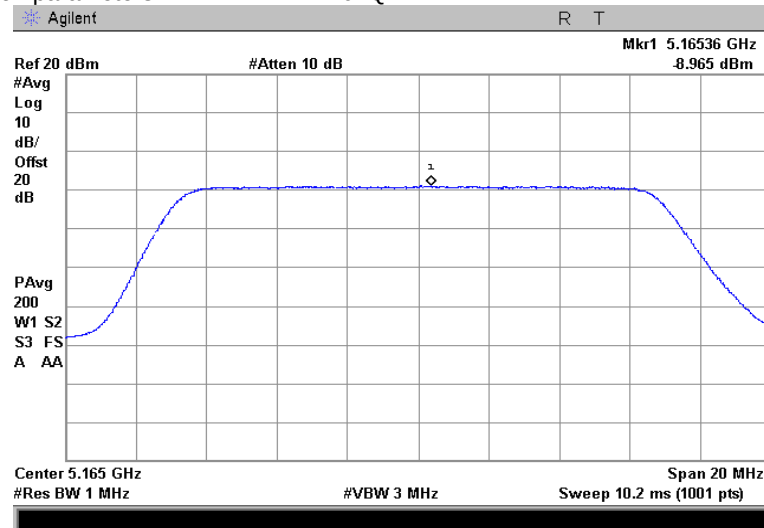
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

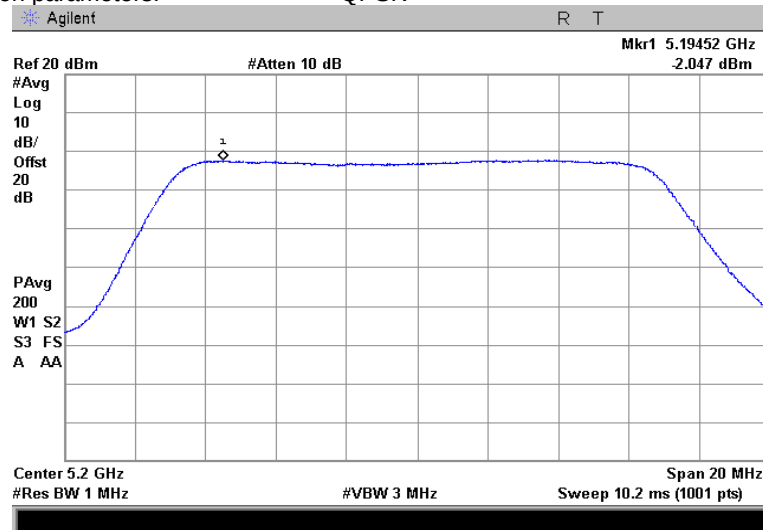
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Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

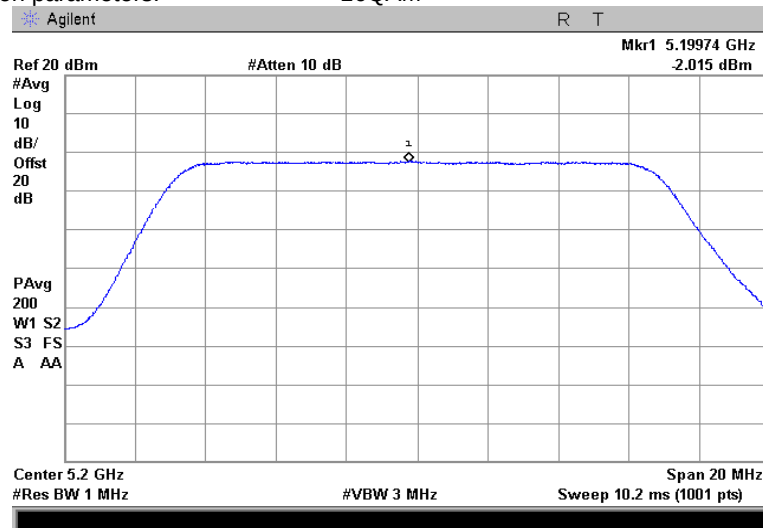
Plot 7.7.15 Peak power spectral density test results

Frequency: 5.200 GHz
Channel BW: 15 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM





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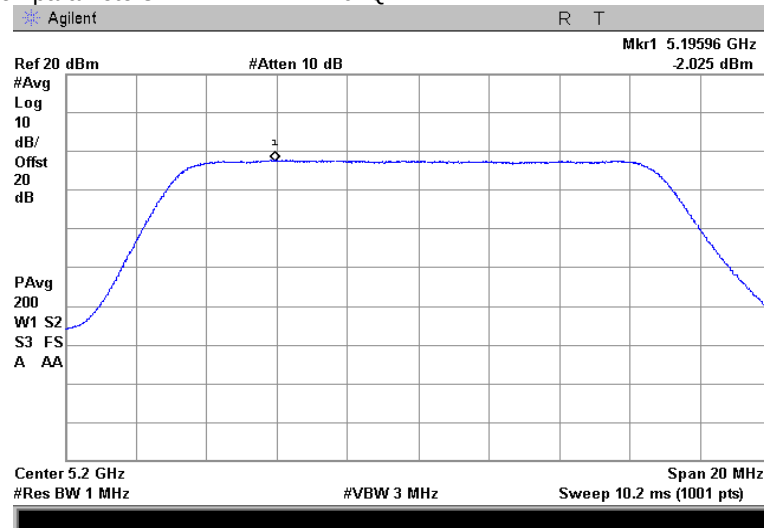
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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Report ID: TelRad_FCC_31832_rev2

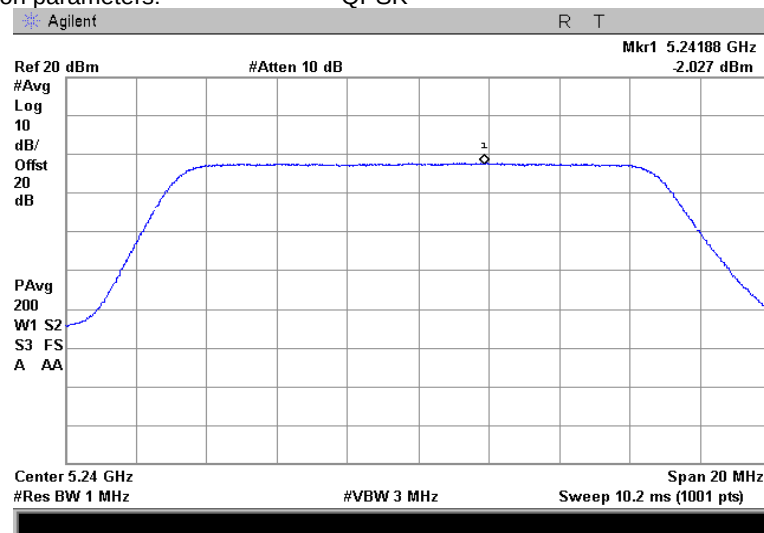
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

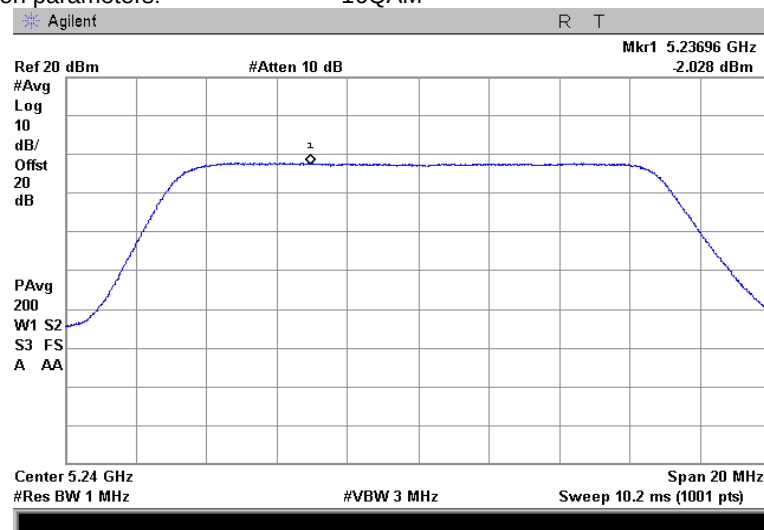
Plot 7.7.16 Peak power spectral density test results

Frequency: 5.240 GHz
Channel BW: 15 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM





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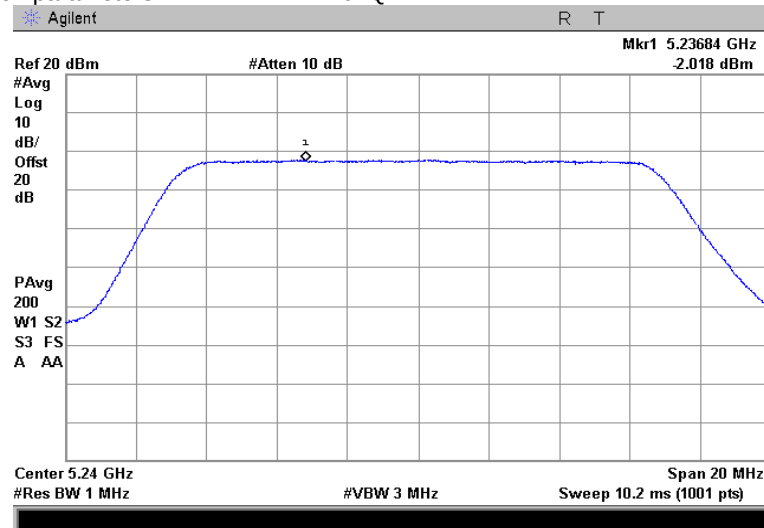
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

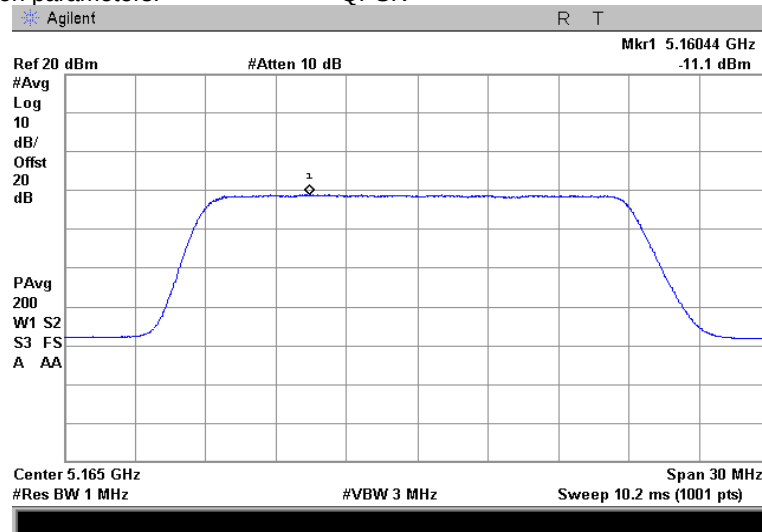
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

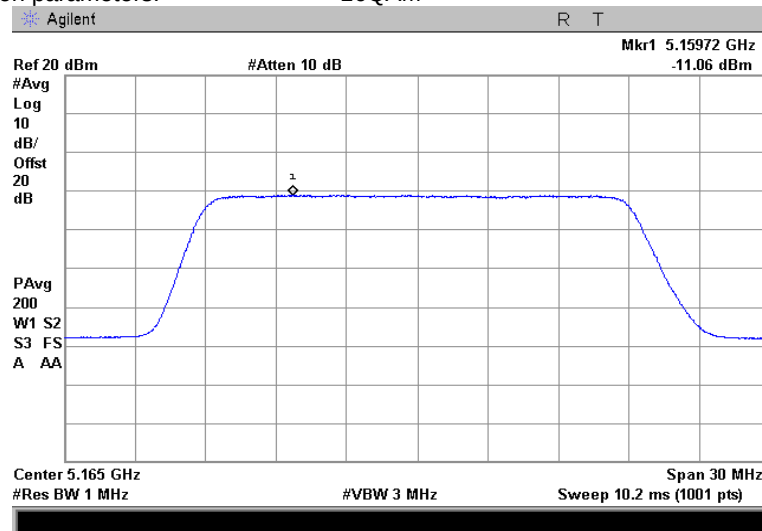
Plot 7.7.17 Peak power spectral density test results

Frequency: 5.165 GHz
Channel BW: 20 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM





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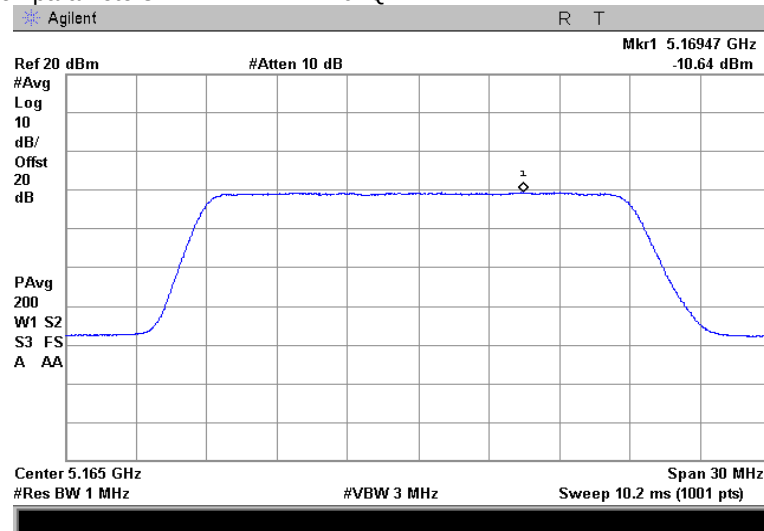
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
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Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

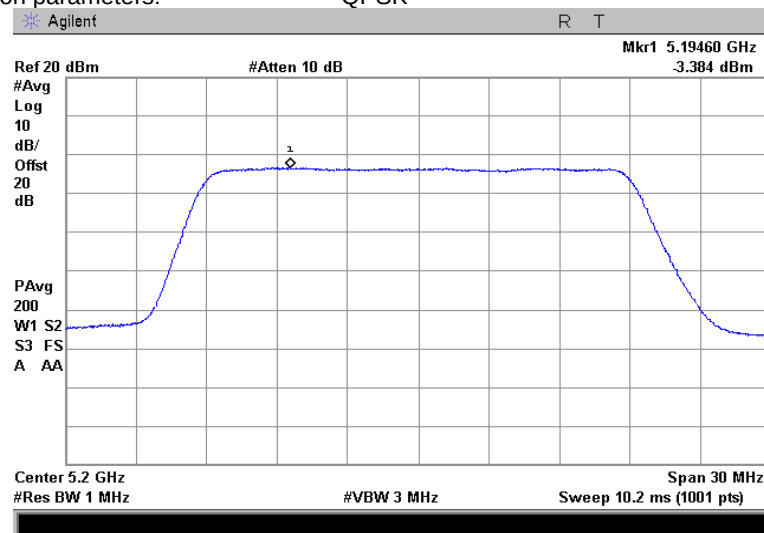
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Date of Issue: 25-Jun-19

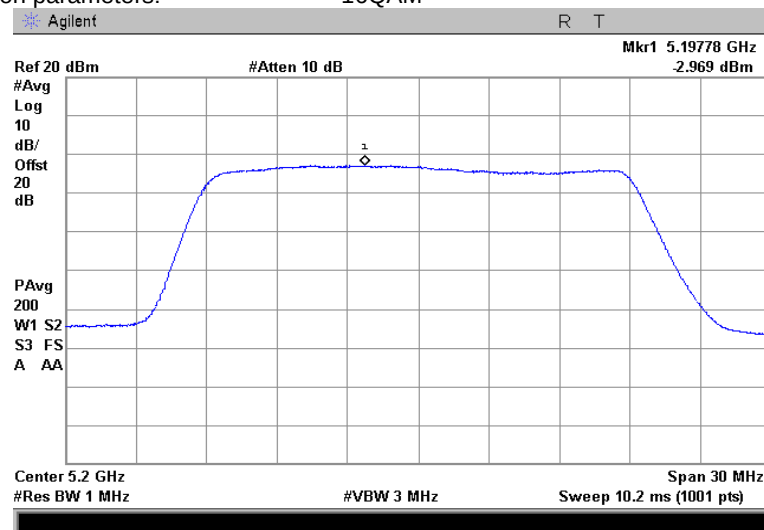
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.18 Peak power spectral density test results

Frequency: 5.200 GHz
Channel BW: 20 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





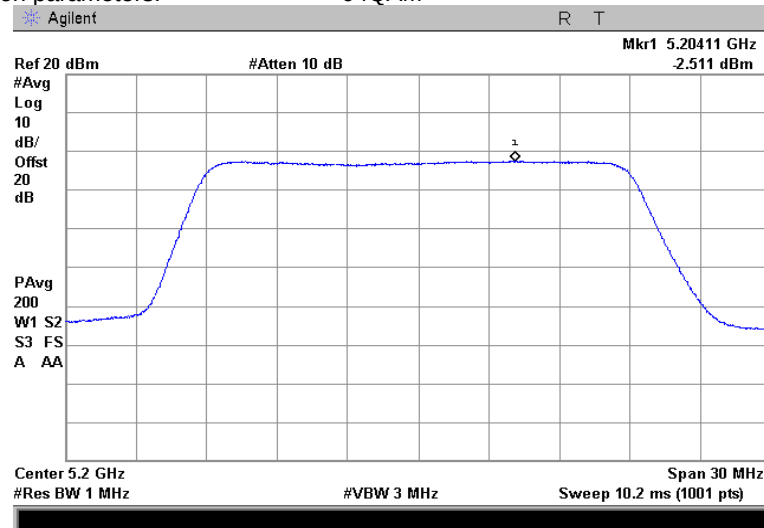
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





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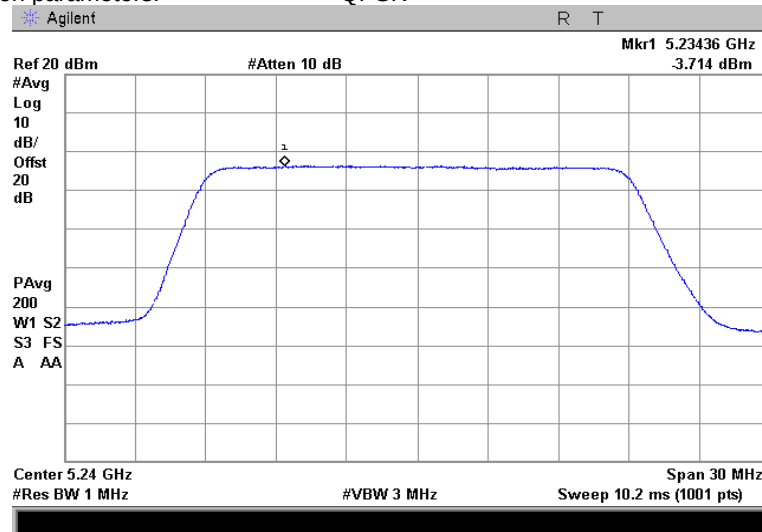
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Date of Issue: 25-Jun-19

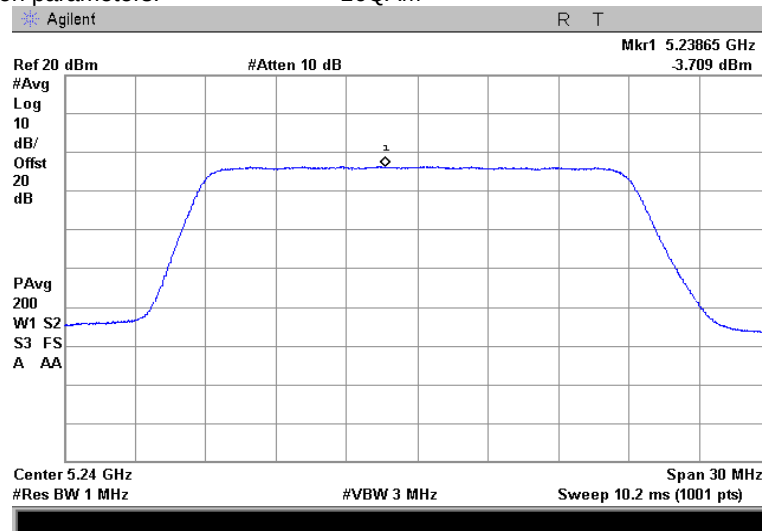
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.19 Peak power spectral density test results

Frequency: 5.240 GHz
Channel BW: 20 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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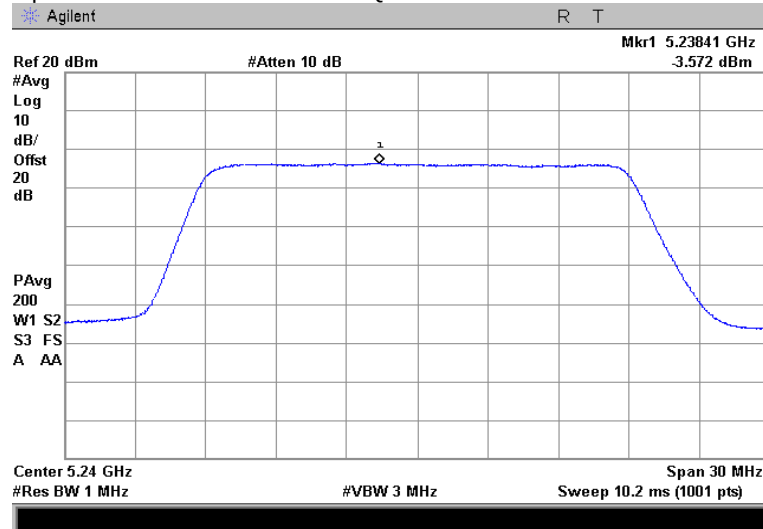
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Date of Issue: 25-Jun-19

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Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
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Remarks:			

Modulation parameters:

64QAM





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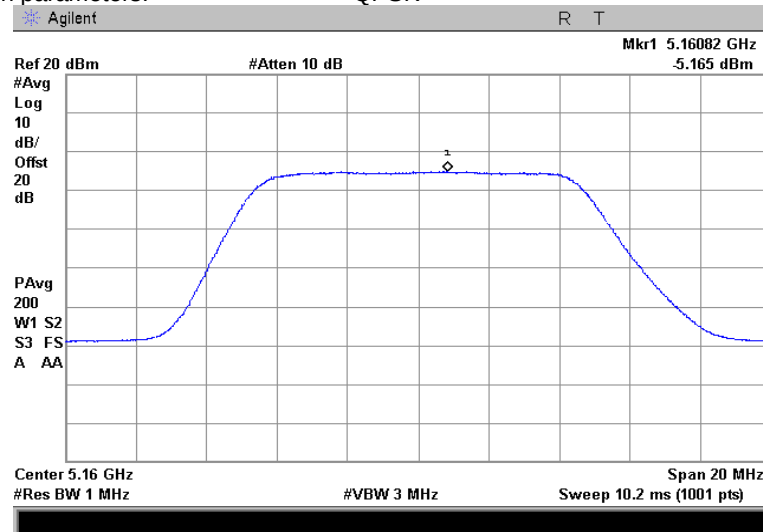
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Date of Issue: 25-Jun-19

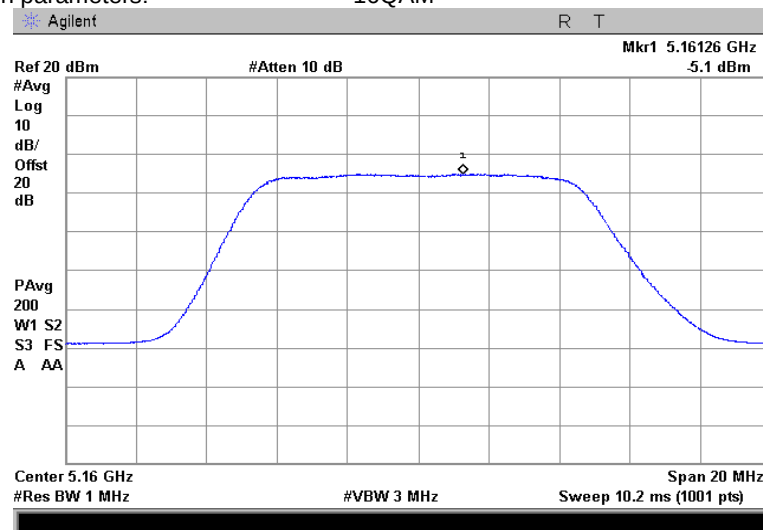
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.20 Peak power spectral density test results

Frequency: 5.160 GHz
Channel BW: 10 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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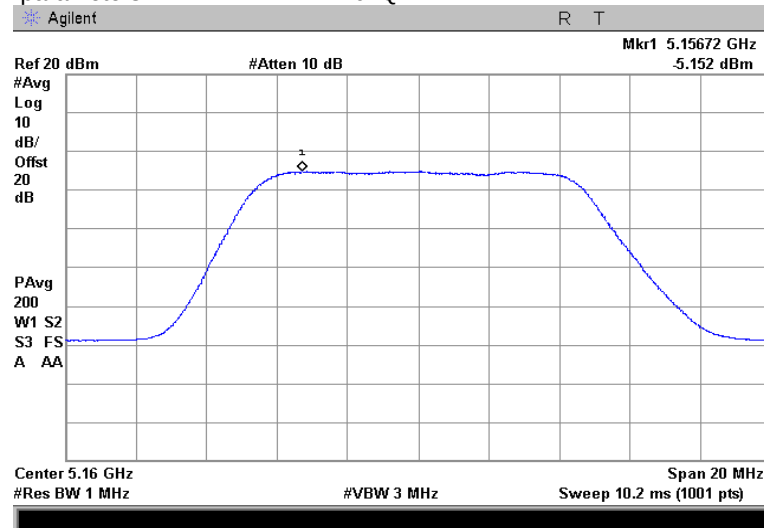
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Date of Issue: 25-Jun-19

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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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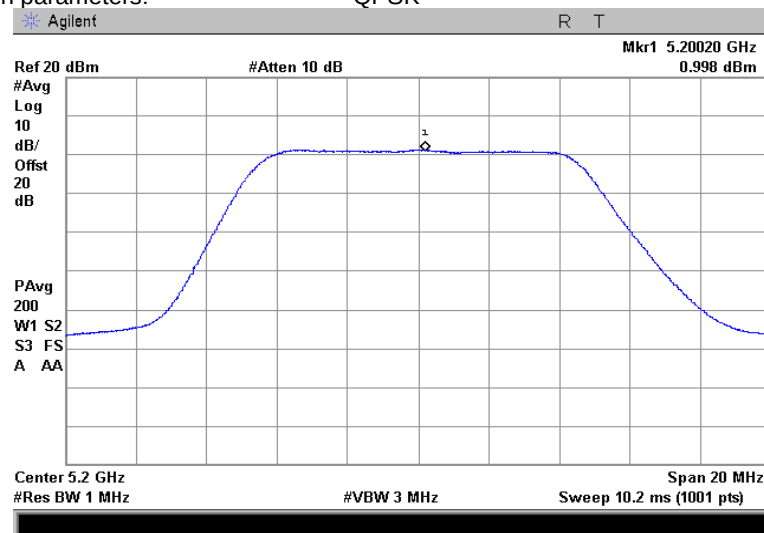
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Date of Issue: 25-Jun-19

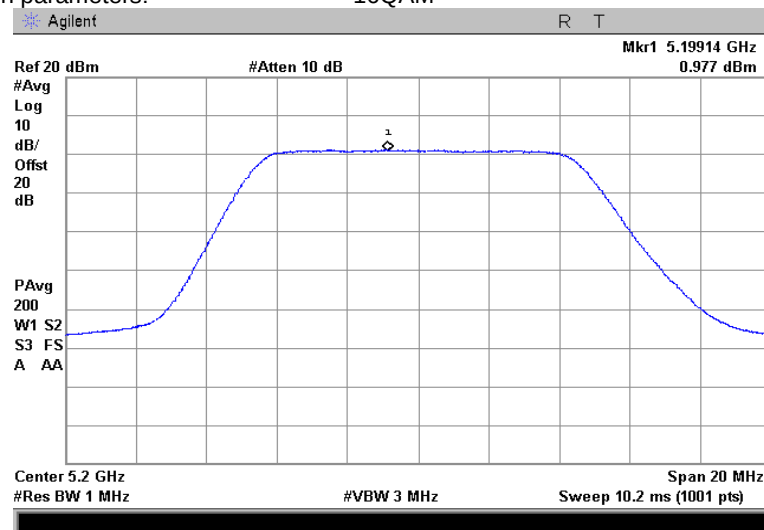
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.21 Peak power spectral density test results

Frequency: 5.200 GHz
Channel BW: 10 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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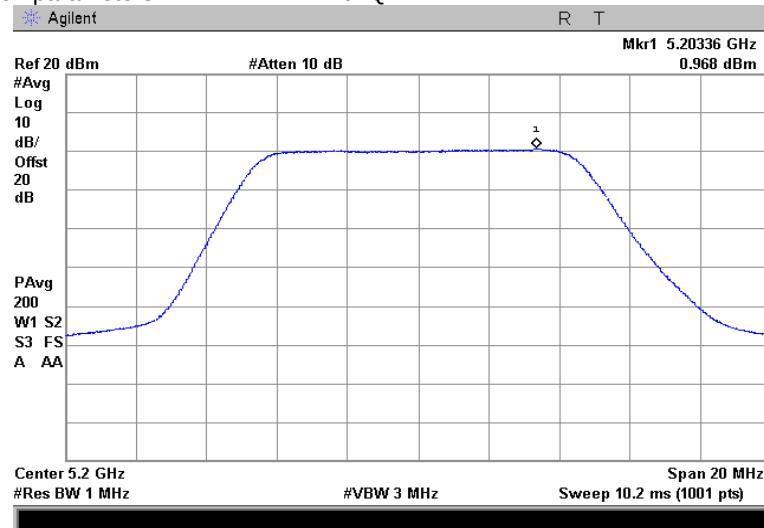
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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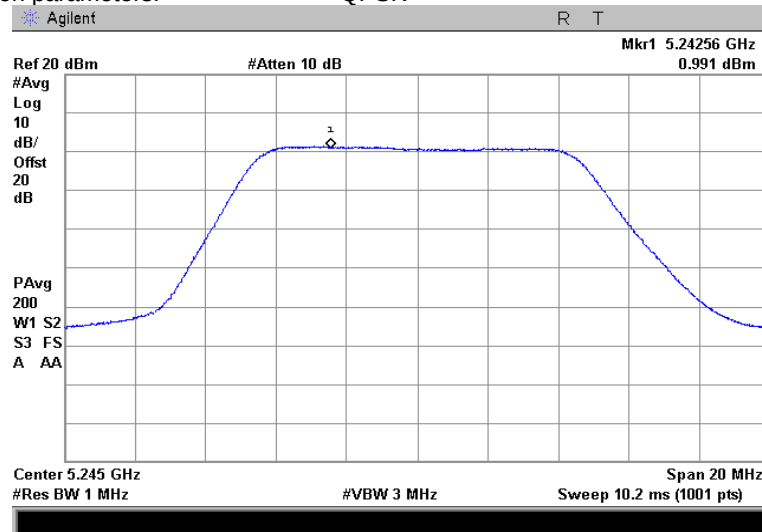
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Date of Issue: 25-Jun-19

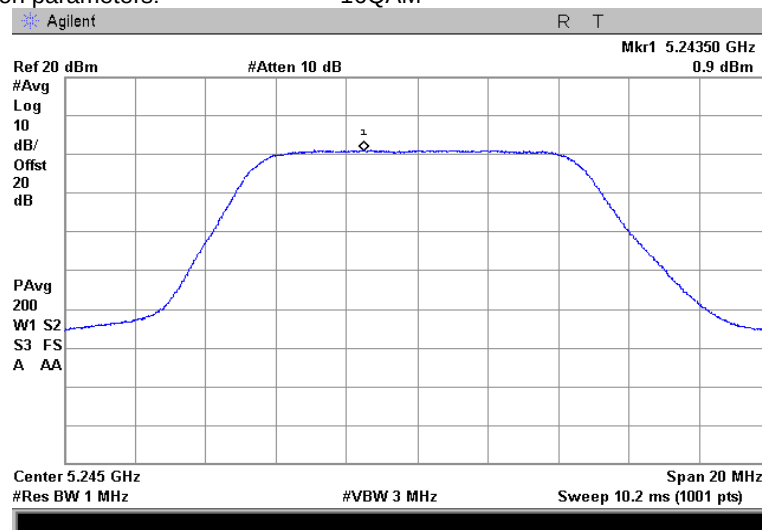
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.22 Peak power spectral density test results

Frequency: 5.245 GHz
Channel BW: 10 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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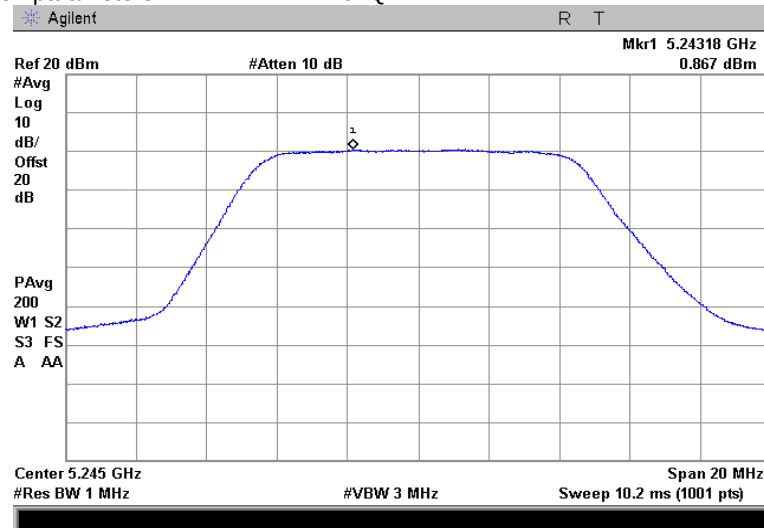
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

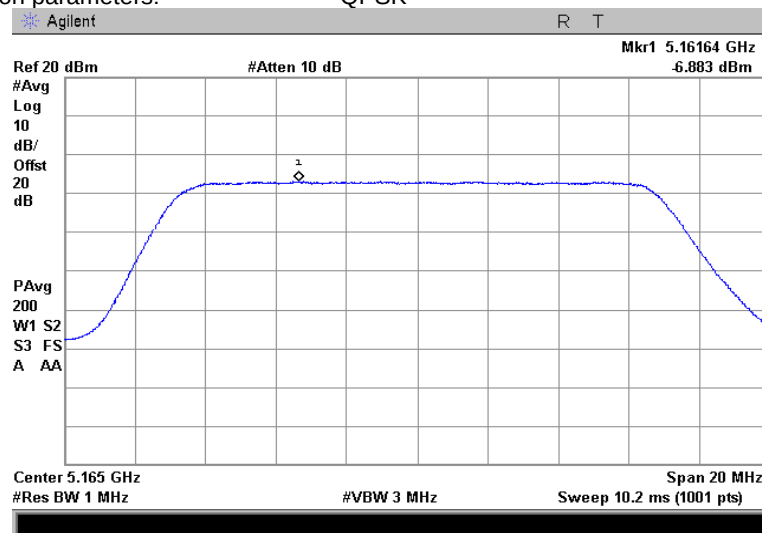
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Date of Issue: 25-Jun-19

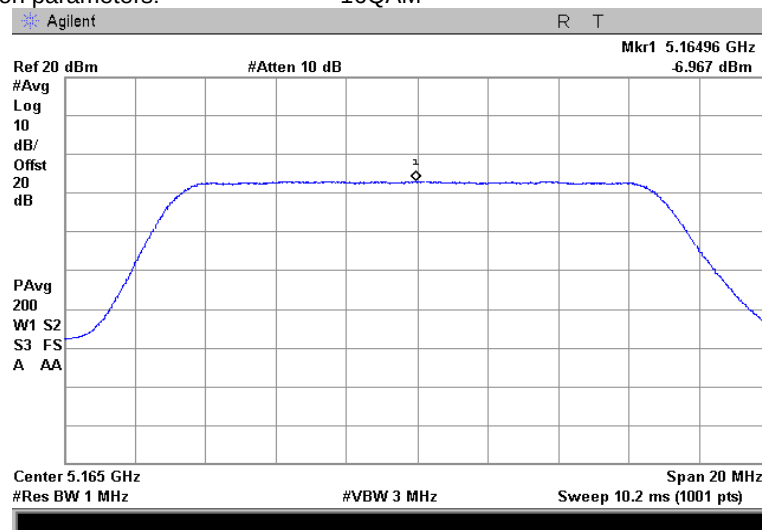
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.23 Peak power spectral density test results

Frequency: 5.165 GHz
Channel BW: 15 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

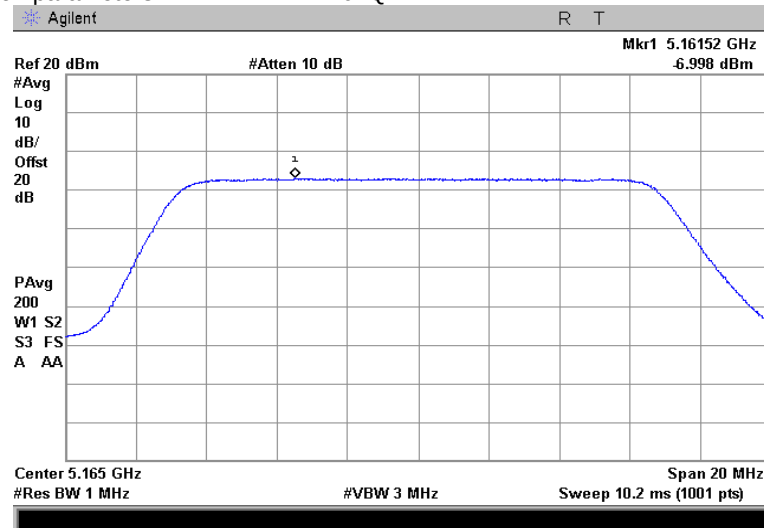
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

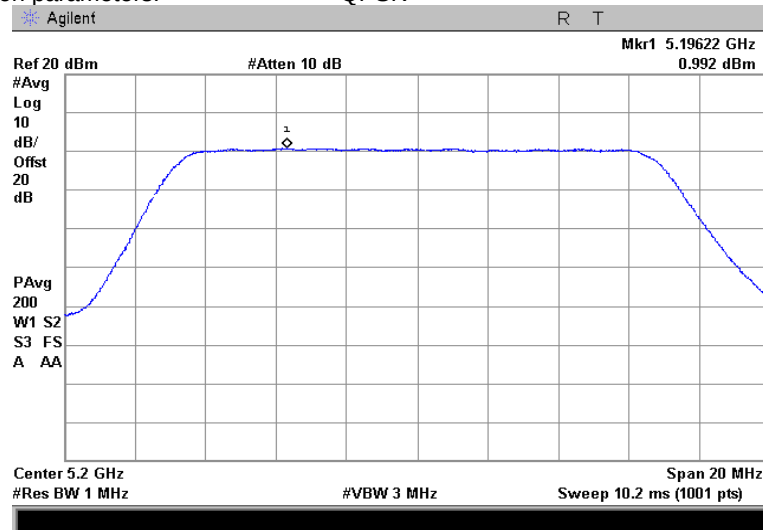
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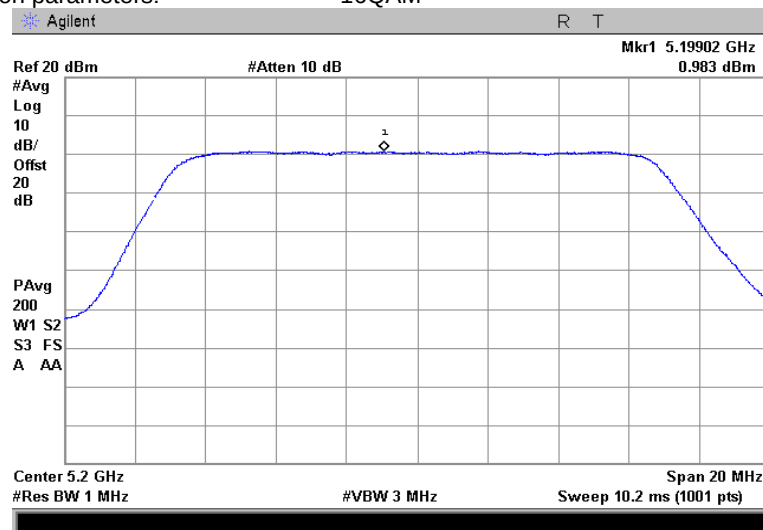
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.24 Peak power spectral density test results

Frequency: 5.200 GHz
Channel BW: 15 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

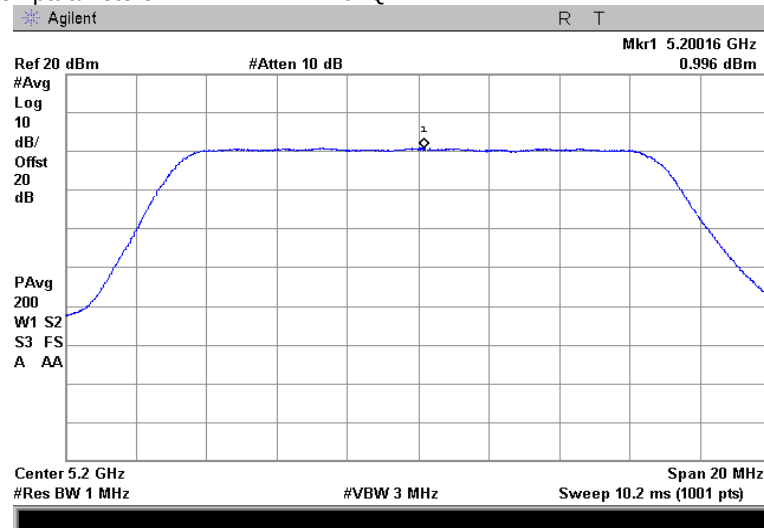
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
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Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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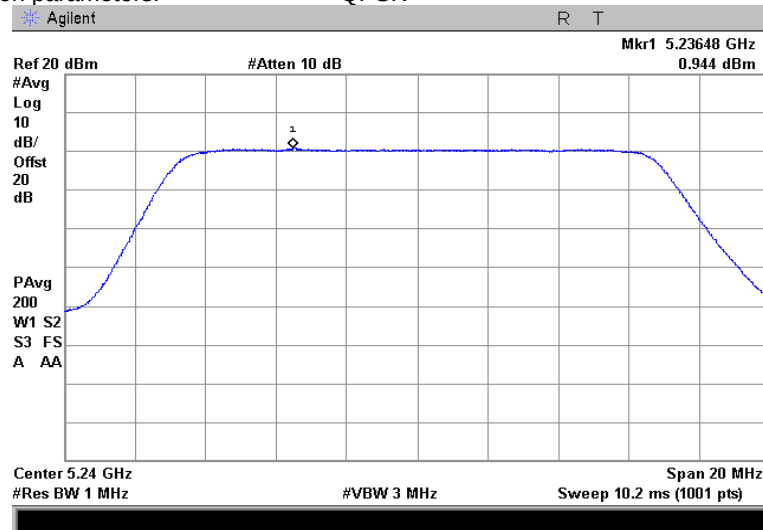
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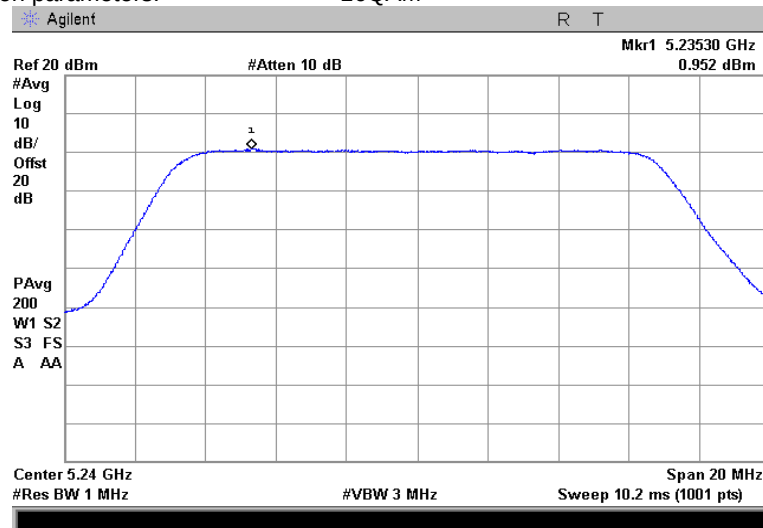
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.25 Peak power spectral density test results

Frequency: 5.240 GHz
Channel BW: 15 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

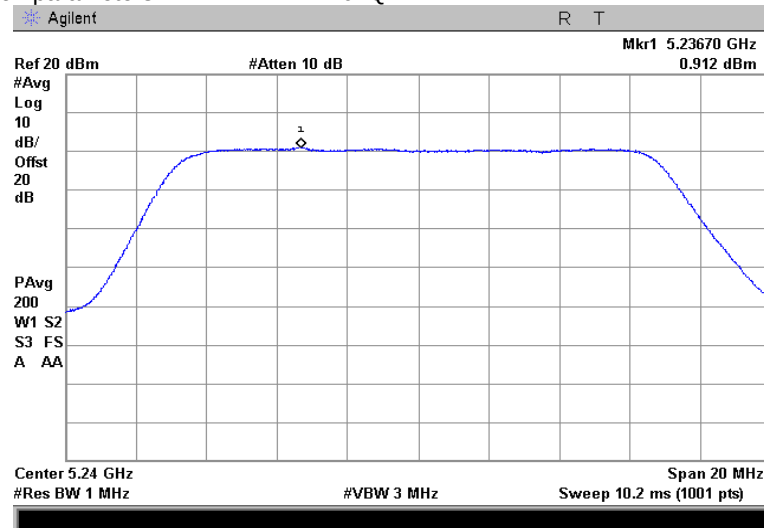
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Date of Issue: 25-Jun-19

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Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
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Remarks:			

Modulation parameters:

64QAM





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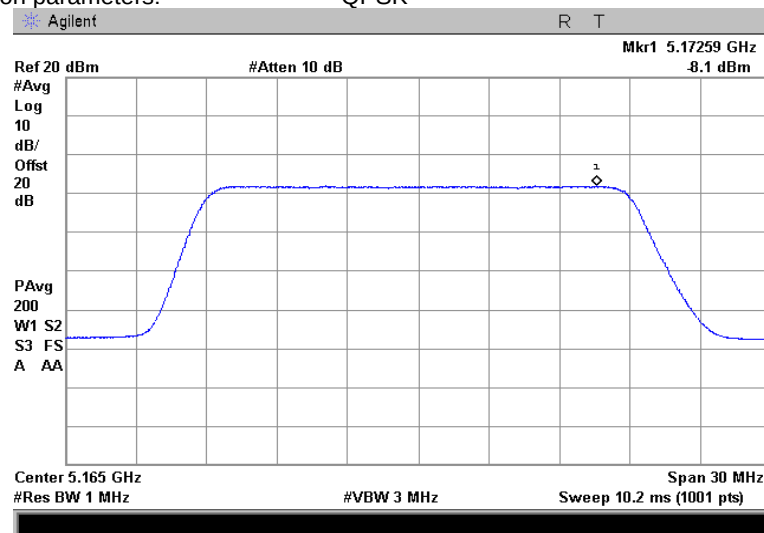
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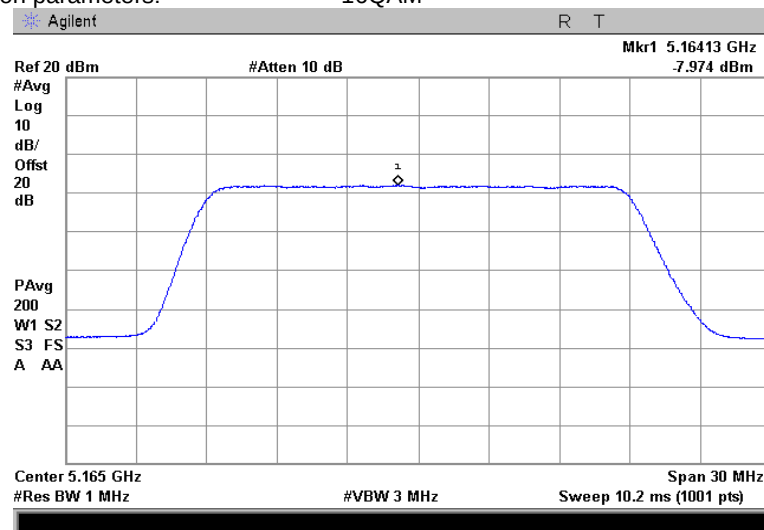
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.26 Peak power spectral density test results

Frequency: 5.165 GHz
Channel BW: 20 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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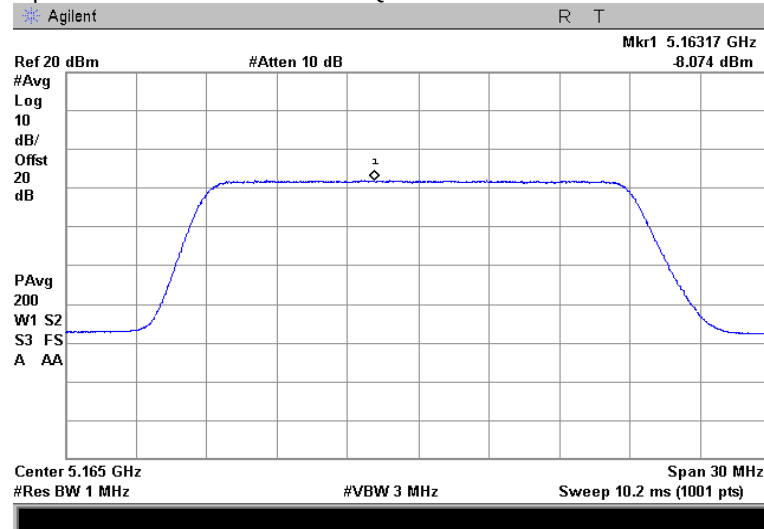
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Date of Issue: 25-Jun-19

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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
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Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

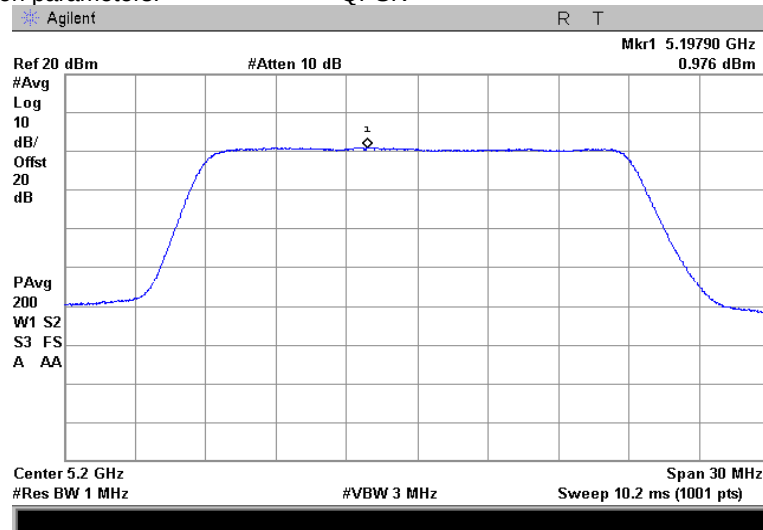
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Date of Issue: 25-Jun-19

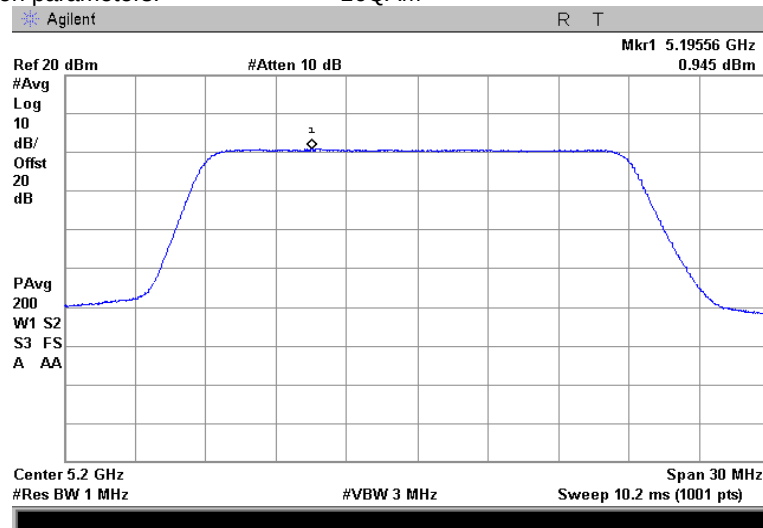
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Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.27 Peak power spectral density test results

Frequency: 5.200 GHz
Channel BW: 20 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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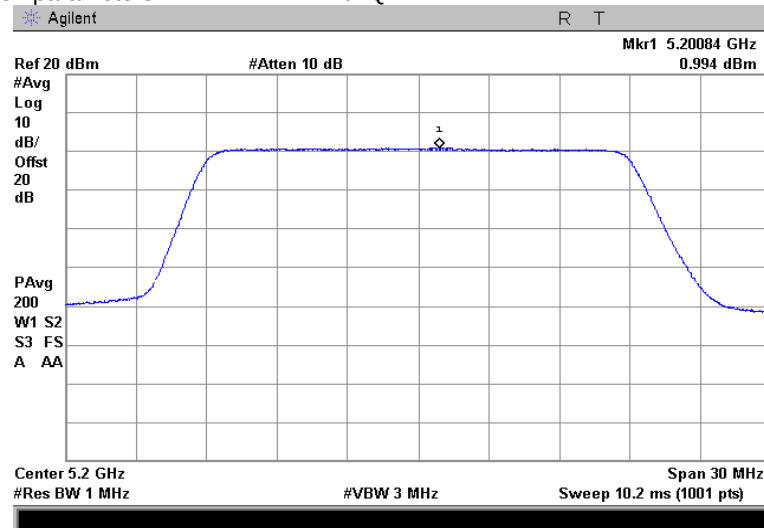
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
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Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

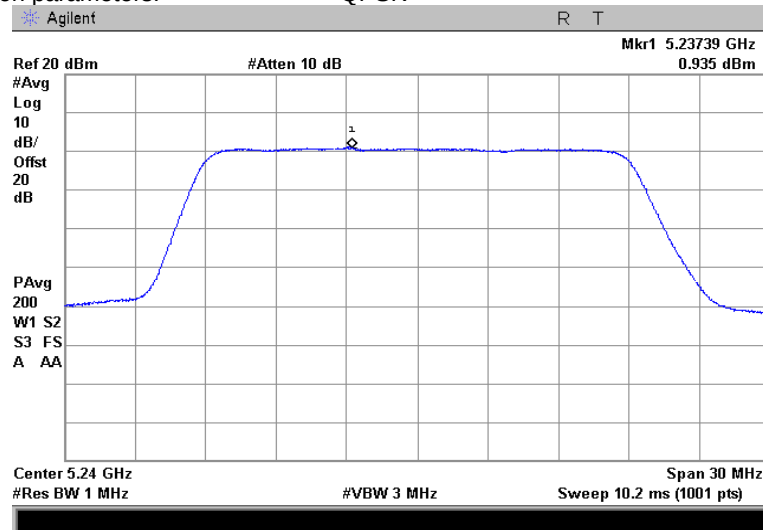
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Date of Issue: 25-Jun-19

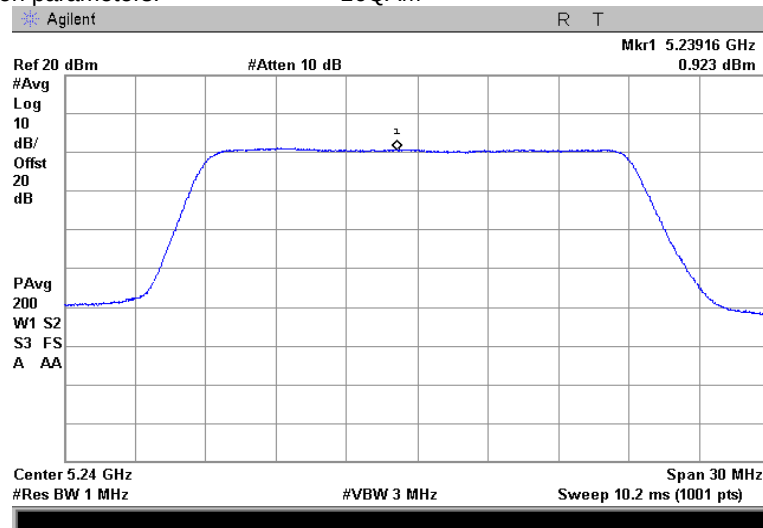
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Test mode:		Verdict: PASS	
Date(s):			
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Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.28 Peak power spectral density test results

Frequency: 5.240 GHz
Channel BW: 20 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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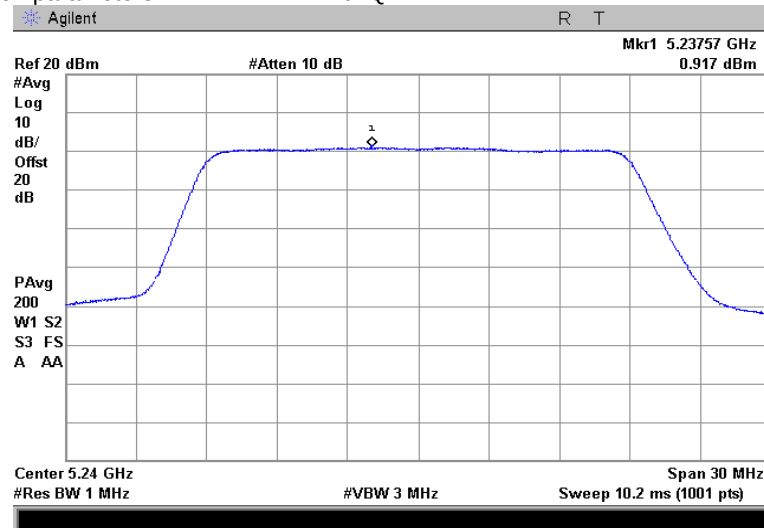
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2 Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

7.8 Peak spectral power density at 5725 – 5850 MHz range

7.8.1 General

This test was performed to measure the peak spectral power density at the transmitter RF antenna connector. Specification test limits are given in Table 7.8.1.

Table 7.8.1 Peak spectral power density limits

Assigned frequency range, MHz	Peak power spectral density, dBm/500kHz	EIRP spectral density, dBm/500kHz
5725 - 5850	30	36

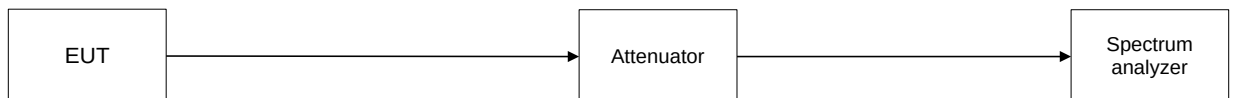
7.8.2 Test procedure

7.8.2.1 The EUT was set up as shown in Figure 7.8.1, energized and its proper operation was checked.

7.8.2.2 The EUT was adjusted to produce maximum available to end user RF output power.

7.8.2.3 The peak power spectral density was measured using a average detector and power averaging mode to find the highest level across the emission in any 1-MHz band more than 100 sweeps of averaging. The worst cased antennas output are provided in the associated tables and plots.

Figure 7.8.1 Peak spectral power density test setup





Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:	Compliance	Verdict: PASS	
Date(s):	04-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.8.2 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 5.725 -5.850 GHz
DETECTOR USED: RMS
METHOD OF POWER MEASUREMENTS: SA-2 (789033 D02)
MIMO CONFIGURATION: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna array gain*, dB	Total power spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5730	-1.61	6.00	9.10	19.50	-10.4	Pass
		5788	-0.88	6.00	9.83	19.50	-9.67	Pass
		5845	-2.31	6.00	8.40	19.50	-11.10	Pass
	16QAM	5730	-1.86	6.00	8.85	19.50	-10.65	Pass
		5788	-0.51	6.00	10.20	19.50	-9.30	Pass
		5845	-3.38	6.00	7.33	19.50	-12.17	Pass
	64QAM	5730	-2.07	6.00	8.64	19.50	-10.86	Pass
		5788	-1.93	6.00	8.78	19.50	-10.72	Pass
		5845	-2.60	6.00	8.11	19.50	-11.39	Pass
15	QPSK	5733	-4.46	6.00	6.25	19.50	-13.25	Pass
		5788	-3.66	6.00	7.05	19.50	-12.45	Pass
		5843	-3.73	6.00	6.98	19.50	-12.52	Pass
	16QAM	5733	-4.40	6.00	6.31	19.50	-13.19	Pass
		5788	-3.99	6.00	6.72	19.50	-12.78	Pass
		5843	-3.68	6.00	7.03	19.50	-12.47	Pass
	64QAM	5733	-4.42	6.00	6.29	19.50	-13.21	Pass
		5788	-3.58	6.00	7.13	19.50	-12.37	Pass
		5843	-4.01	6.00	6.70	19.50	-12.80	Pass
20	QPSK	5735	-5.40	6.00	5.31	19.50	-14.19	Pass
		5788	-4.10	6.00	6.61	19.50	-12.89	Pass
		5840	-3.14	6.00	7.57	19.50	-11.93	Pass
	16QAM	5735	-4.60	6.00	6.11	19.50	-13.39	Pass
		5788	-5.06	6.00	5.65	19.50	-13.85	Pass
		5840	-3.87	6.00	6.84	19.50	-12.66	Pass
	64QAM	5735	-4.52	6.00	6.19	19.50	-13.31	Pass
		5788	-4.64	6.00	6.07	19.50	-13.43	Pass
		5840	-3.11	6.00	7.60	19.50	-11.90	Pass

* Antenna gain array = $10 \cdot \log(N_{ant})$, where $N_{ant} = 4$

** Total power spectral density = SA reading + Antenna array gain + Duty cycle factor (2.49 dB) + RBW correction factor, where RBW correction factor = $10 \cdot \log(500 \text{ kHz} / \text{RBW})$ $10 \cdot \log(500/300) = 2.22 \text{ dB}$

*** Margin = Total power spectral density – specification limit



Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.8.3 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 5.725 -5.850 GHz
DETECTOR USED: RMS
METHOD OF POWER MEASUREMENTS: SA-2 (789033 D02)
MIMO CONFIGURATION: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna array gain*, dB	Total power spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5730	-1.61	3.00	6.10	19.50	-13.40	Pass
		5788	-0.88	3.00	6.83	19.50	-12.67	Pass
		5845	-2.31	3.00	5.40	19.50	-14.10	Pass
	16QAM	5730	-1.86	3.00	5.85	19.50	-13.65	Pass
		5788	-0.51	3.00	7.20	19.50	-12.30	Pass
		5845	-3.38	3.00	4.33	19.50	-15.17	Pass
	64QAM	5730	-2.07	3.00	5.64	19.50	-13.86	Pass
		5788	-1.93	3.00	5.78	19.50	-13.72	Pass
		5845	-2.60	3.00	5.11	19.50	-14.39	Pass
15	QPSK	5733	-4.46	3.00	3.25	19.50	-16.25	Pass
		5788	-3.66	3.00	4.05	19.50	-15.45	Pass
		5843	-3.73	3.00	3.98	19.50	-15.52	Pass
	16QAM	5733	-4.40	3.00	3.31	19.50	-16.19	Pass
		5788	-3.99	3.00	3.72	19.50	-15.78	Pass
		5843	-3.68	3.00	4.03	19.50	-15.47	Pass
	64QAM	5733	-4.42	3.00	3.29	19.50	-16.21	Pass
		5788	-3.58	3.00	4.13	19.50	-15.37	Pass
		5843	-4.01	3.00	3.70	19.50	-15.80	Pass
20	QPSK	5735	-5.40	3.00	2.31	19.50	-17.19	Pass
		5788	-4.10	3.00	3.61	19.50	-15.89	Pass
		5840	-3.14	3.00	4.57	19.50	-14.93	Pass
	16QAM	5735	-4.60	3.00	3.11	19.50	-16.39	Pass
		5788	-5.06	3.00	2.65	19.50	-16.85	Pass
		5840	-3.87	3.00	3.84	19.50	-15.66	Pass
	64QAM	5735	-4.52	3.00	3.19	19.50	-16.31	Pass
		5788	-4.64	3.00	3.07	19.50	-16.43	Pass
		5840	-3.11	3.00	4.60	19.50	-14.90	Pass

* Antenna gain array = $10 \cdot \log(N_{ant})$, where $N_{ant} = 4$

** Total power spectral density = SA reading + Antenna array gain + Duty cycle factor (2.49 dB) + RBW correction factor, where RBW correction factor = $10 \cdot \log(500 \text{ kHz} / \text{RBW})$ $10 \cdot \log(500/300) = 2.22 \text{ dB}$

*** Margin = Total power spectral density – specification limit



Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:	Compliance	Verdict: PASS	
Date(s):	04-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.8.4 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 5.725 -5.850 GHz
DETECTOR USED: RMS
METHOD OF POWER MEASUREMENTS: SA-2 (789033 D02)
MIMO CONFIGURATION: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna array gain*, dB	Total power spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5730	1.43	3.00	9.14	19.50	-10.36	Pass
		5788	2.47	3.00	10.18	19.50	-9.32	Pass
		5845	-0.23	3.00	7.48	19.50	-12.02	Pass
	16QAM	5730	1.55	3.00	9.26	19.50	-10.24	Pass
		5788	0.30	3.00	8.01	19.50	-11.49	Pass
		5845	-0.08	3.00	7.63	19.50	-11.87	Pass
	64QAM	5730	0.27	3.00	7.98	19.50	-11.52	Pass
		5788	1.19	3.00	8.90	19.50	-10.60	Pass
		5845	0.03	3.00	7.74	19.50	-11.76	Pass
15	QPSK	5733	-1.69	3.00	6.02	19.50	-13.48	Pass
		5788	-0.79	3.00	6.92	19.50	-12.58	Pass
		5843	-0.81	3.00	6.90	19.50	-12.60	Pass
	16QAM	5733	-1.49	3.00	6.22	19.50	-13.28	Pass
		5788	-0.92	3.00	6.79	19.50	-12.71	Pass
		5843	-0.87	3.00	6.84	19.50	-12.66	Pass
	64QAM	5733	-1.17	3.00	6.54	19.50	-12.96	Pass
		5788	-0.91	3.00	6.80	19.50	-12.70	Pass
		5843	-0.86	3.00	6.85	19.50	-12.65	Pass
20	QPSK	5735	-2.41	3.00	5.30	19.50	-14.20	Pass
		5788	-1.58	3.00	6.13	19.50	-13.37	Pass
		5840	-2.61	3.00	5.10	19.50	-14.40	Pass
	16QAM	5735	-2.50	3.00	5.21	19.50	-14.29	Pass
		5788	-2.07	3.00	5.64	19.50	-13.86	Pass
		5840	-2.81	3.00	4.90	19.50	-14.60	Pass
	64QAM	5735	-2.75	3.00	4.96	19.50	-14.54	Pass
		5788	-1.63	3.00	6.08	19.50	-13.42	Pass
		5840	-1.92	3.00	5.79	19.50	-13.71	Pass

* Antenna gain array = $10 \cdot \log(N_{ant})$, where $N_{ant} = 4$

** Total power spectral density = SA reading + Antenna array gain + Duty cycle factor (2.49 dB) + RBW correction factor, where RBW correction factor = $10 \cdot \log(500 \text{ kHz} / \text{RBW})$ $10 \cdot \log(500/300) = 2.22 \text{ dB}$

*** Margin = Total power spectral density – specification limit



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Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		04-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.8.5 Duty cycle factor calculation

Burst dration, ms	Burst period, ms	Duty cycle*	Duty cycle factor**, dB
2.82	5.00	0.564	2.49

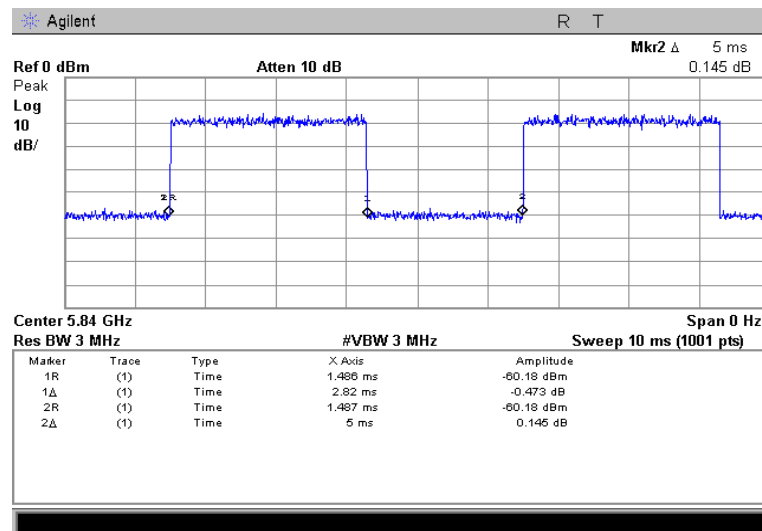
*- Duty cycle = *Burst duration / Burst period***- Duty cycle factor = $10\log(1/\text{Duty cycle})$

Reference numbers of test equipment used

HL 2909	HL 3901						
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Full description is given in Appendix A.

Plot 7.8.1 Duty cycle





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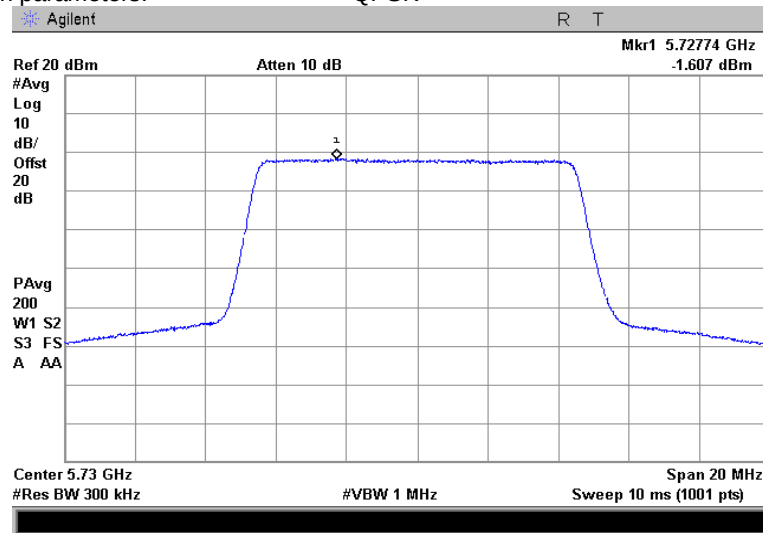
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Date of Issue: 25-Jun-19

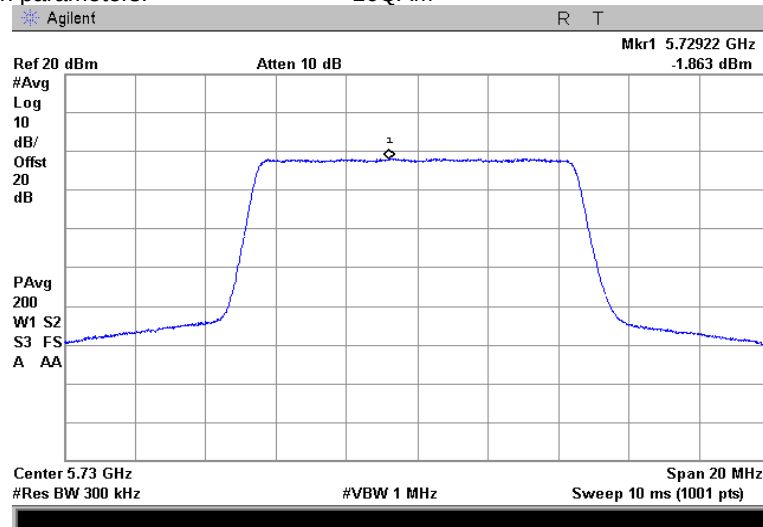
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.2 Peak power spectral density test results

Frequency: 5.730 GHz
Channel BW: 10 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antennas) non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM



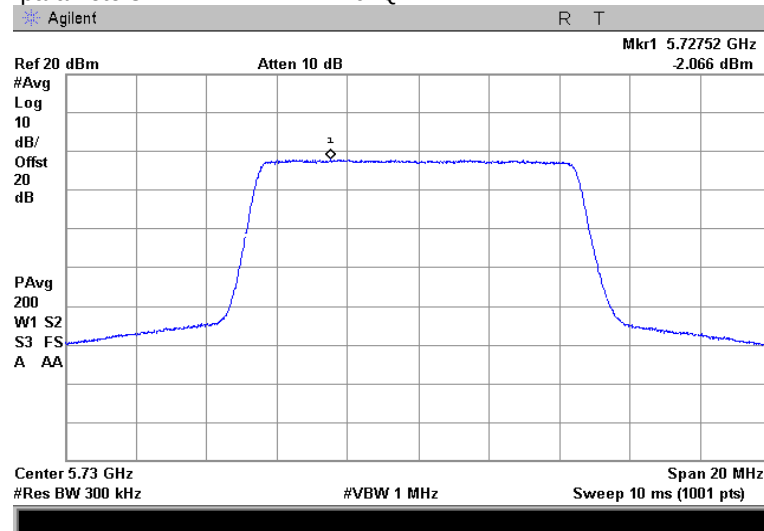


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Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





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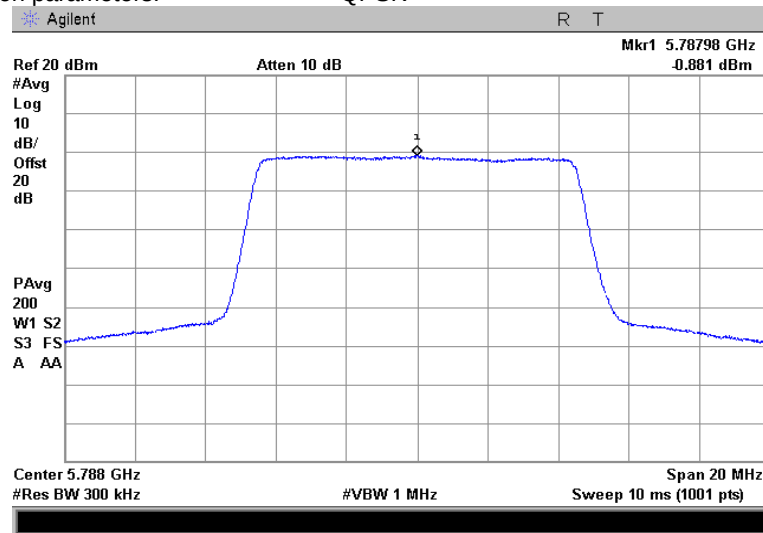
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Date of Issue: 25-Jun-19

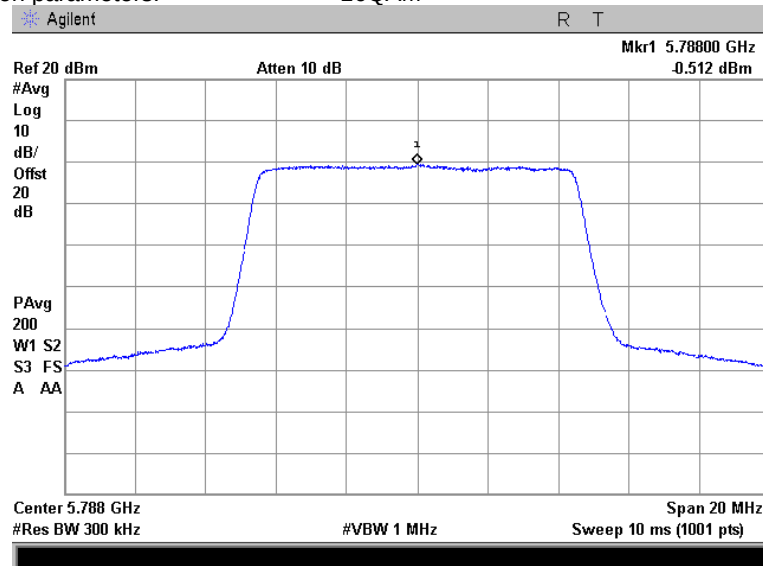
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.3 Peak power spectral density test results

Frequency: 5.788 GHz
Channel BW: 10 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antennas) non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





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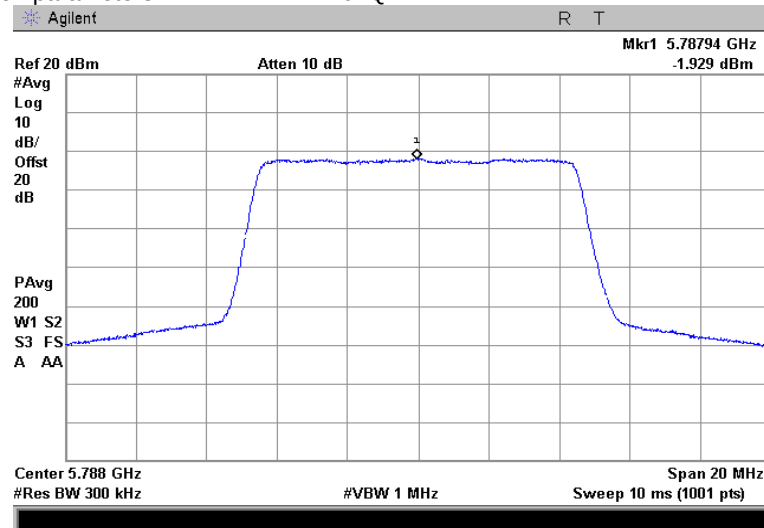
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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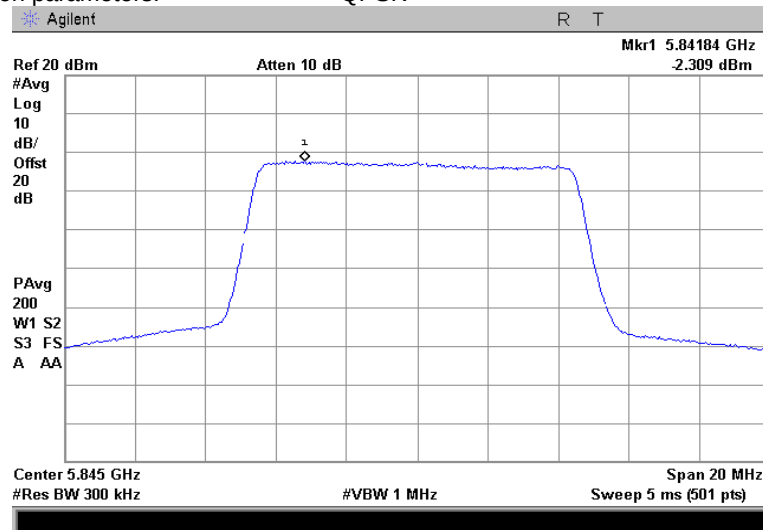
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Date of Issue: 25-Jun-19

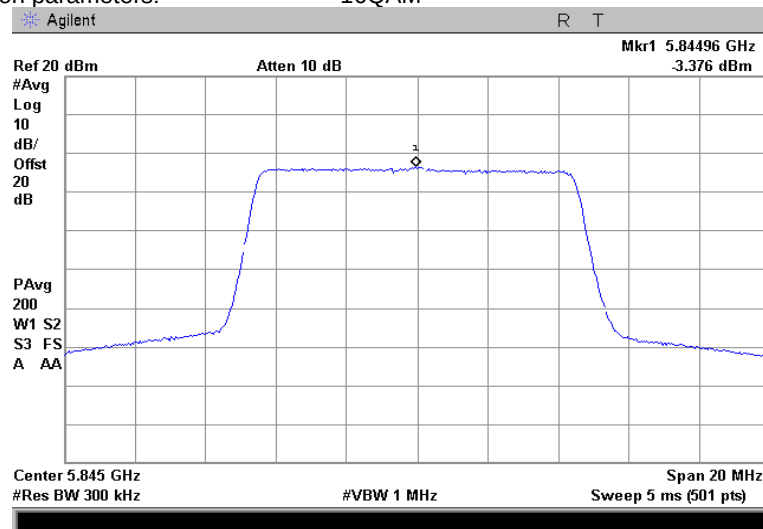
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.4 Peak power spectral density test results

Frequency: 5.845 GHz
Channel BW: 10 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antennas) non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





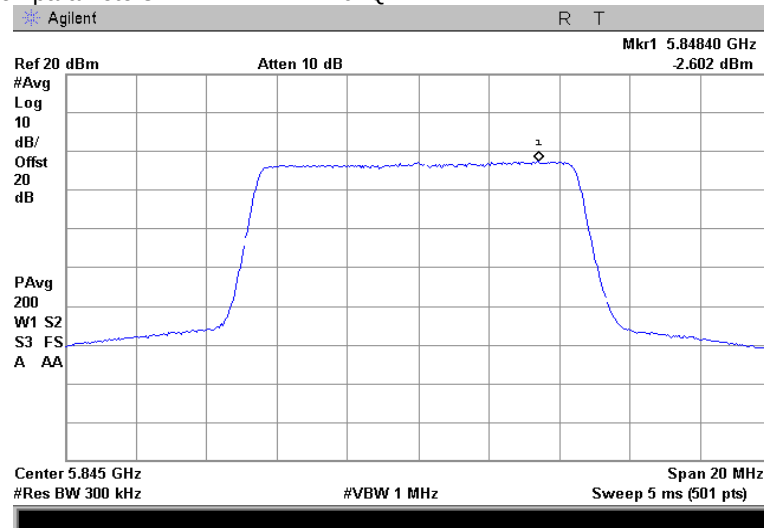
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Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





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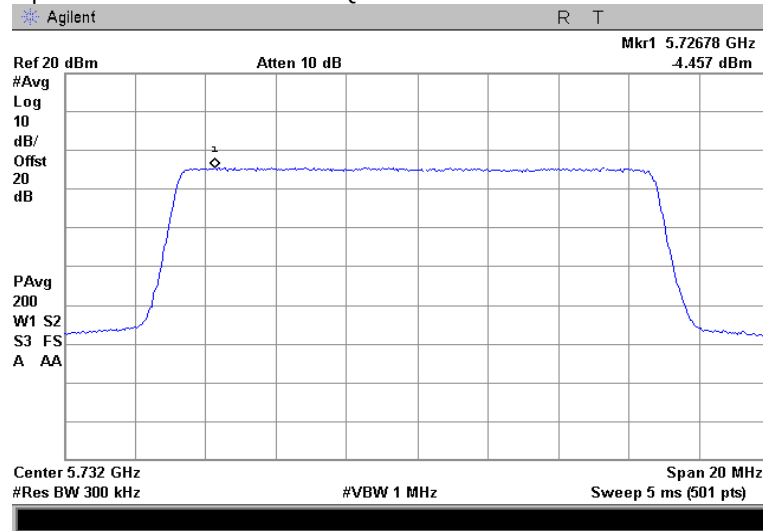
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Date of Issue: 25-Jun-19

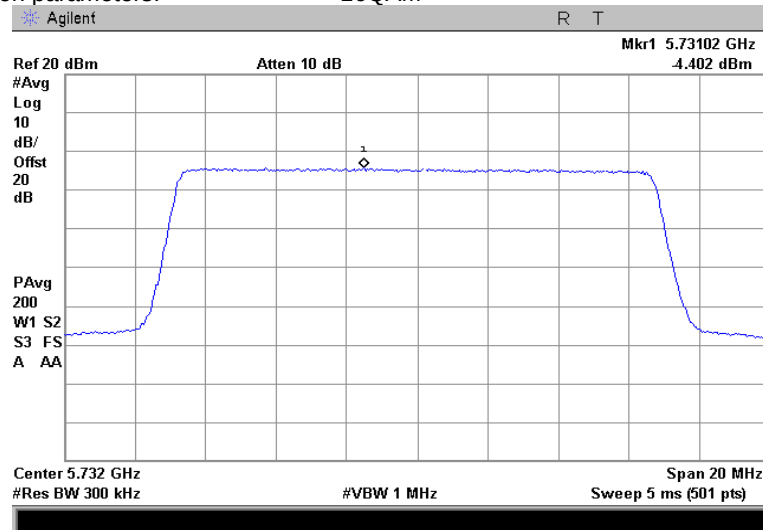
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.5 Peak power spectral density test results

Frequency: 5.7325 GHz
Channel BW: 15 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antennas) non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





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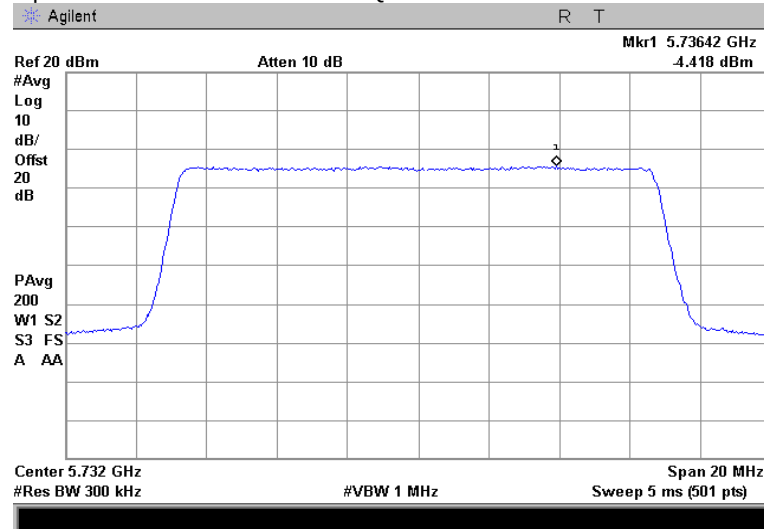
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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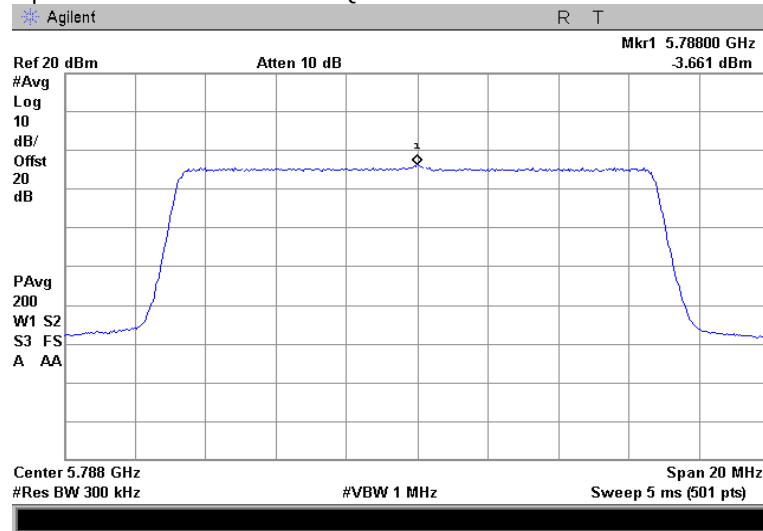
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Date of Issue: 25-Jun-19

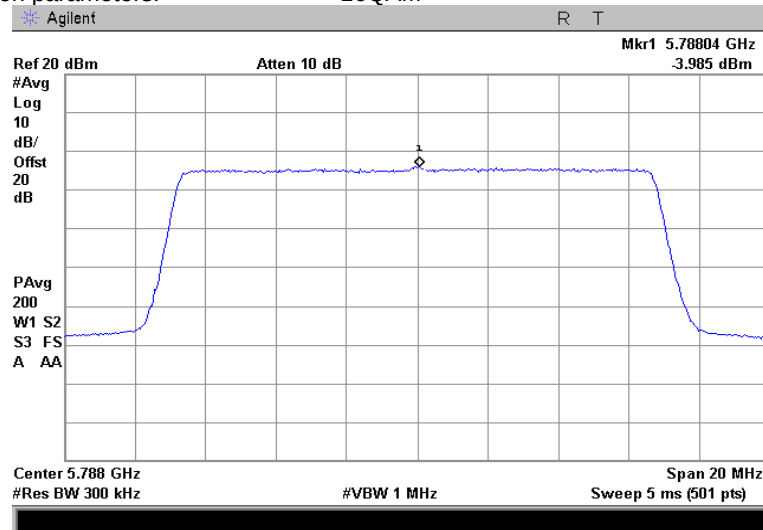
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.6 Peak power spectral density test results

Frequency: 5.788 GHz
Channel BW: 15 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antennas) non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





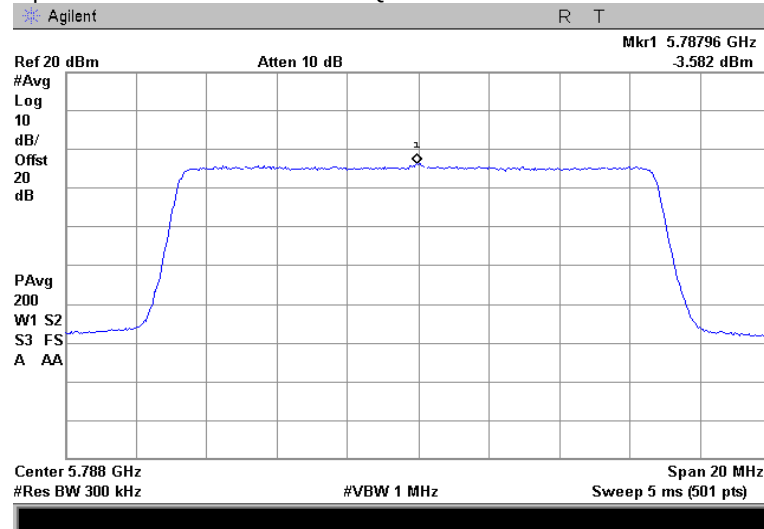
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

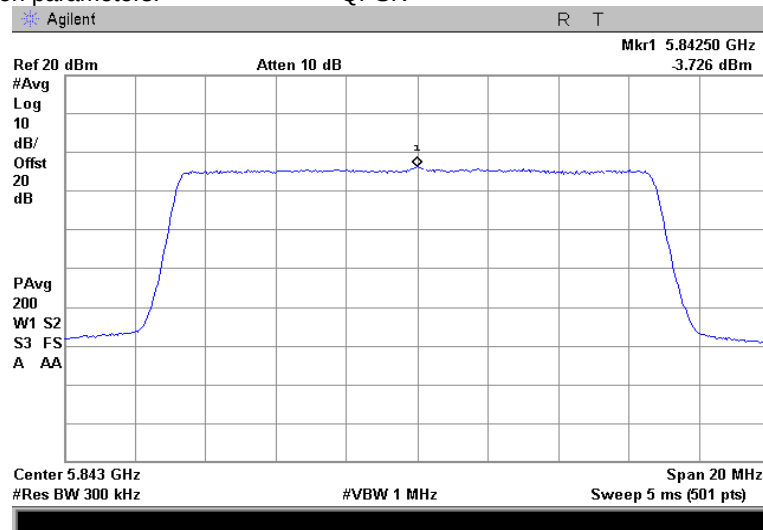
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

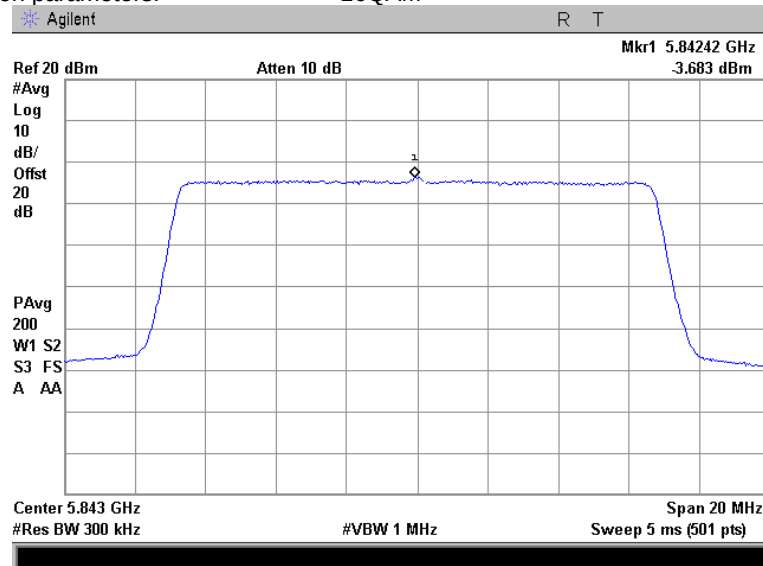
Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.7 Peak power spectral density test results

Frequency: 5.8425 GHz
Channel BW: 15 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antennas) non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

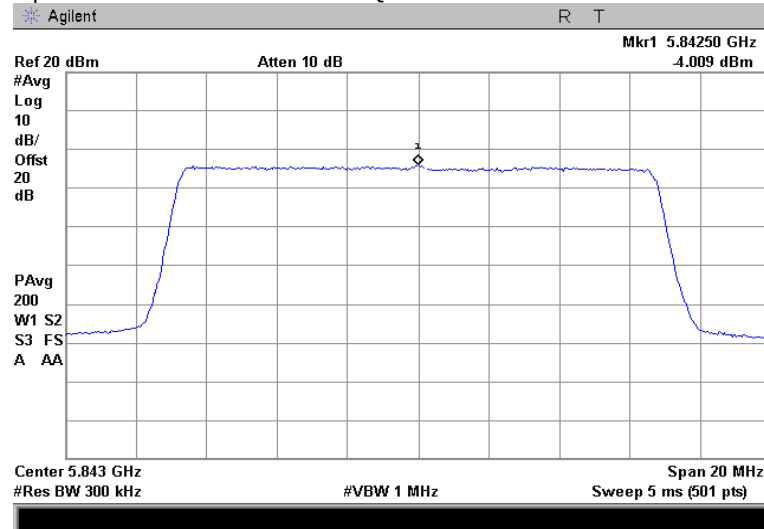
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		04-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

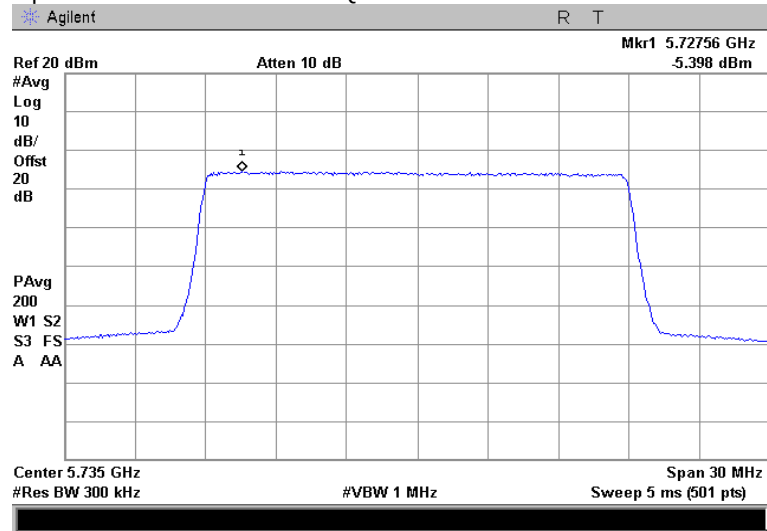
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Date of Issue: 25-Jun-19

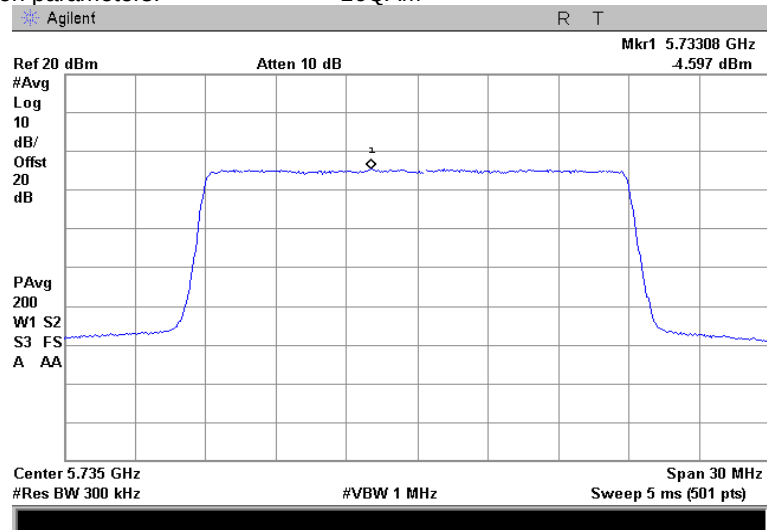
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.8 Peak power spectral density test results

Frequency: 5.735 GHz
Channel BW: 20 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antennas) non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM



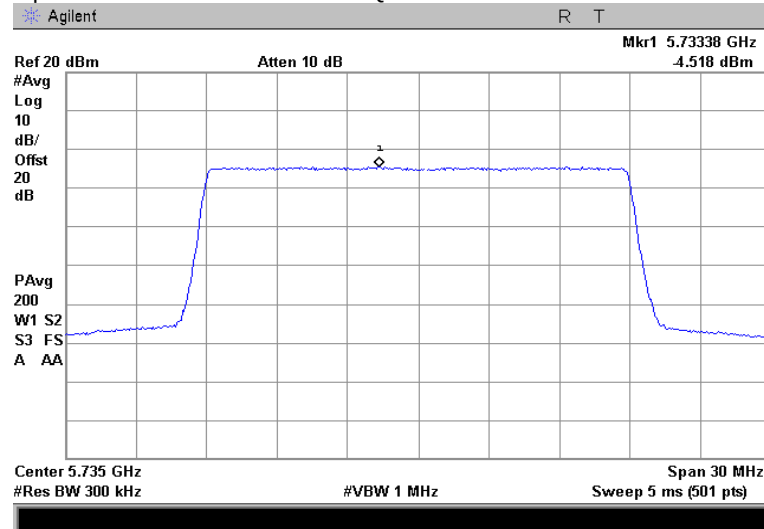


HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





HERMON LABORATORIES

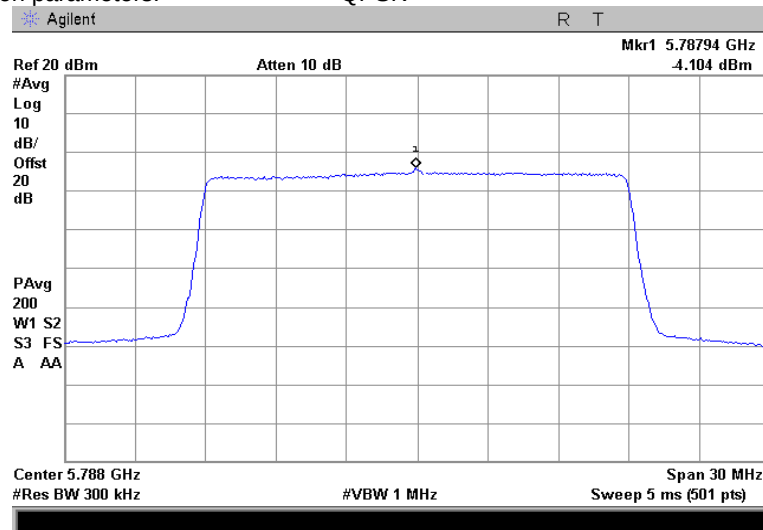
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Date of Issue: 25-Jun-19

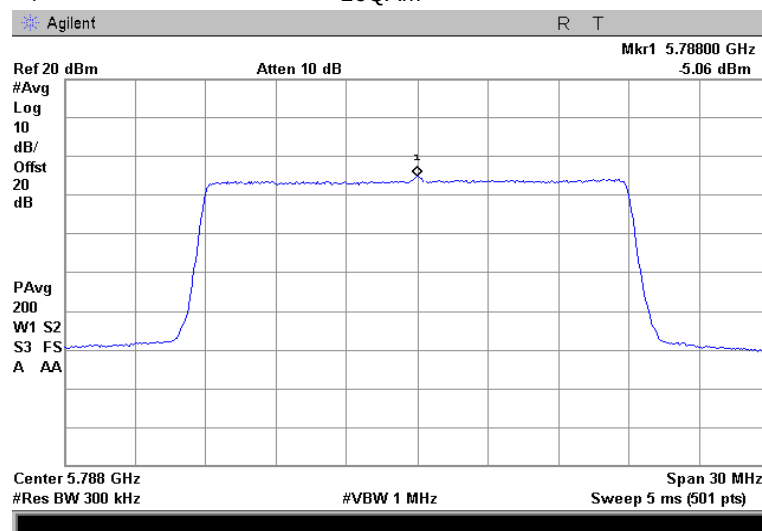
Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.9 Peak power spectral density test results

Frequency: 5.788 GHz
Channel BW: 20 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antennas) non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

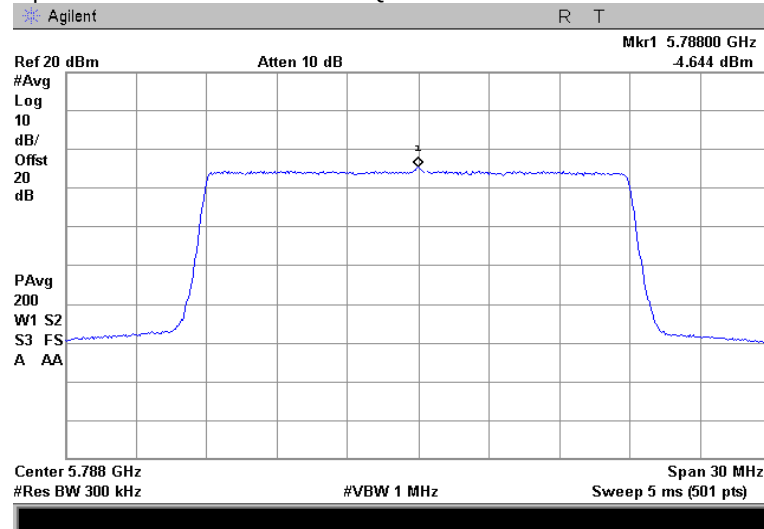
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Date of Issue: 25-Jun-19

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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

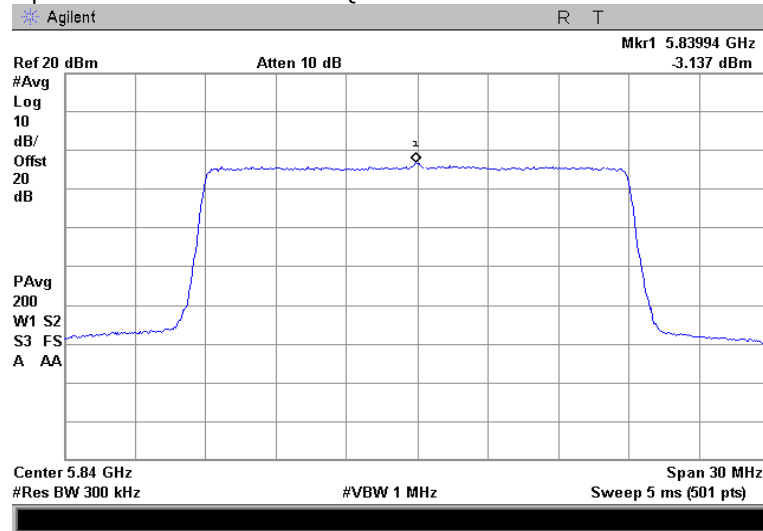
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Date of Issue: 25-Jun-19

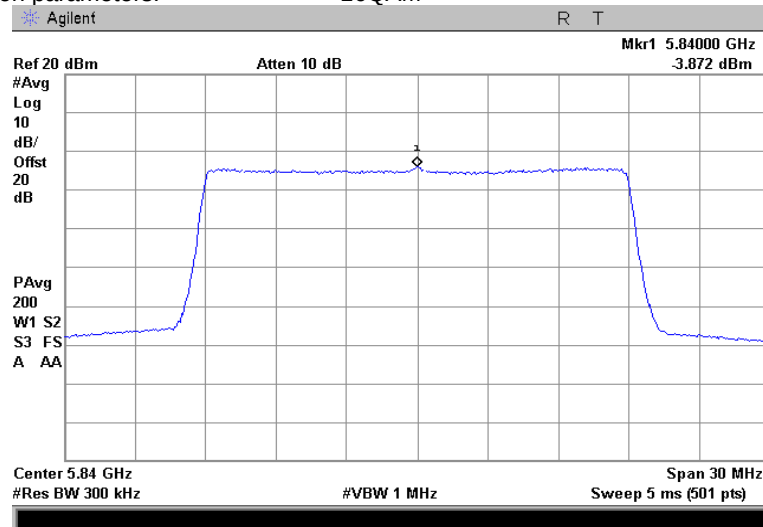
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.10 Peak power spectral density test results

Frequency: 5.840 GHz
Channel BW: 20 MHz
EUT configuration: 1 carrier 1 sector (4 ports to 2 dual slant antennas) non-coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

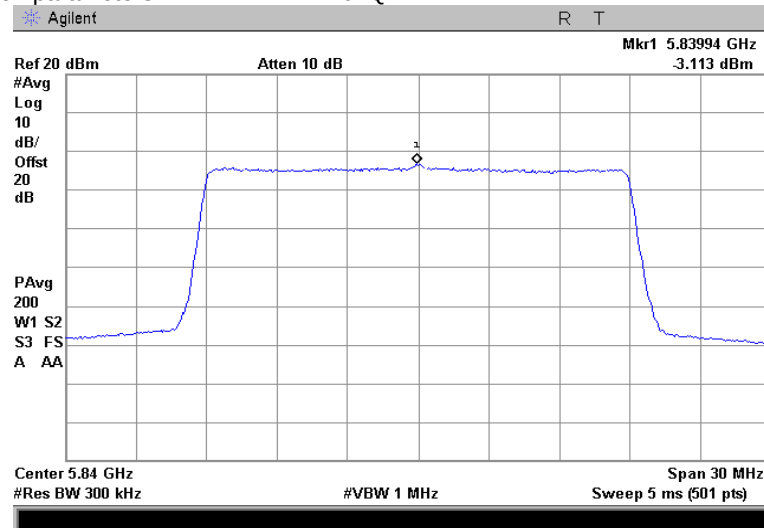
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

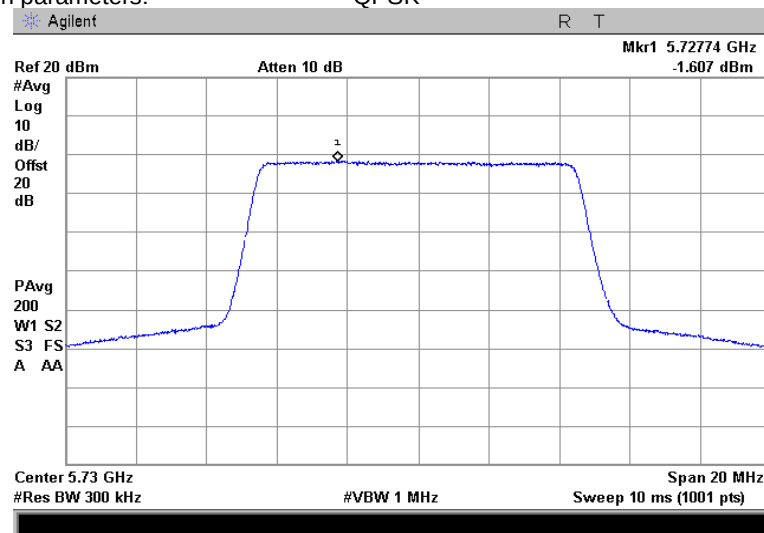
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Date of Issue: 25-Jun-19

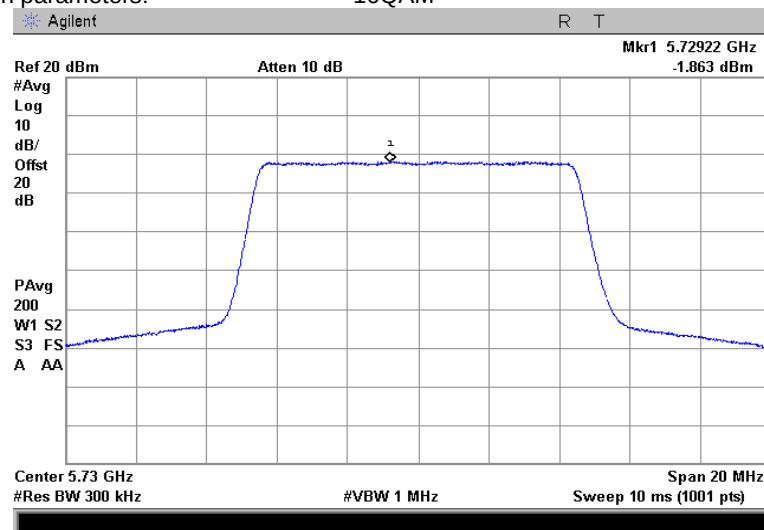
Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.11 Peak power spectral density test results

Frequency: 5.730 GHz
Channel BW: 10 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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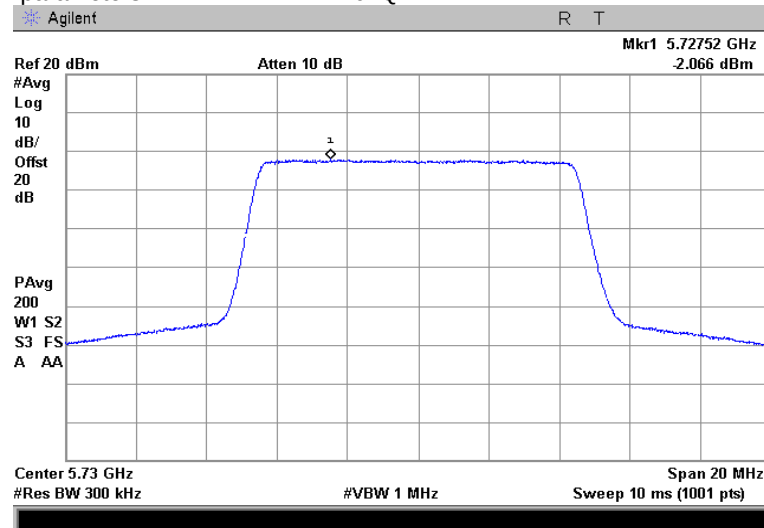
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
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Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM



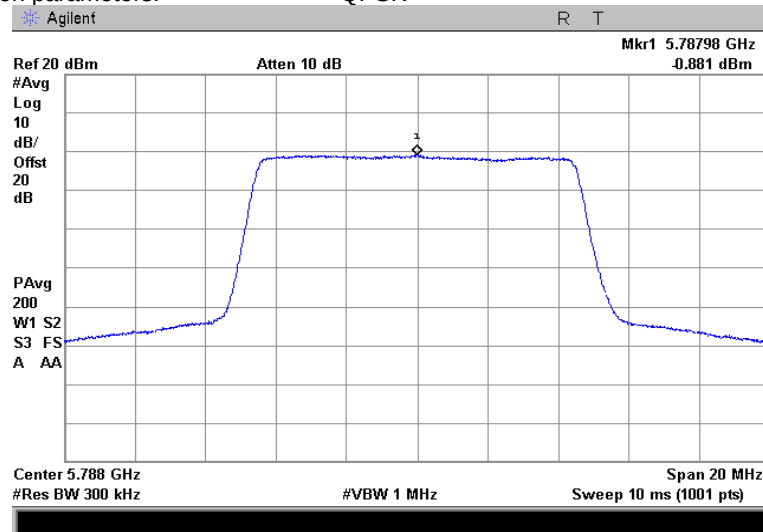


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Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	04-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

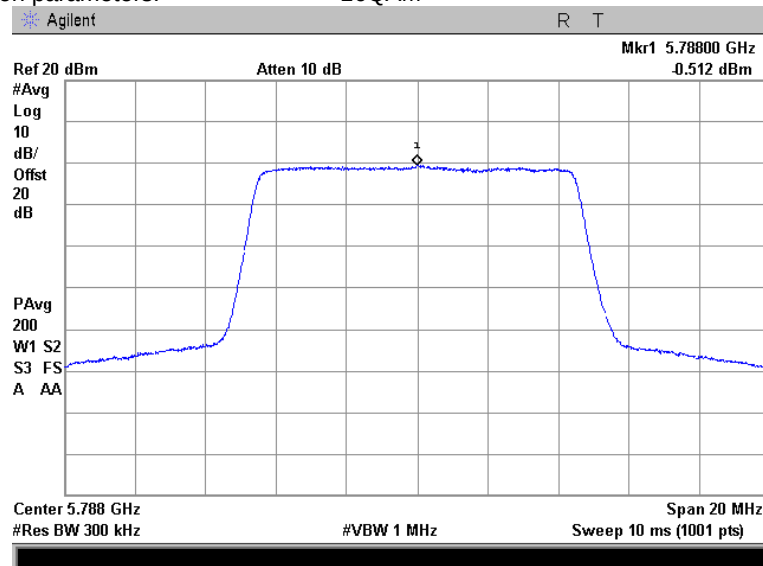
Plot 7.8.12 Peak power spectral density test results

Frequency: 5.788 GHz
Channel BW: 10 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM





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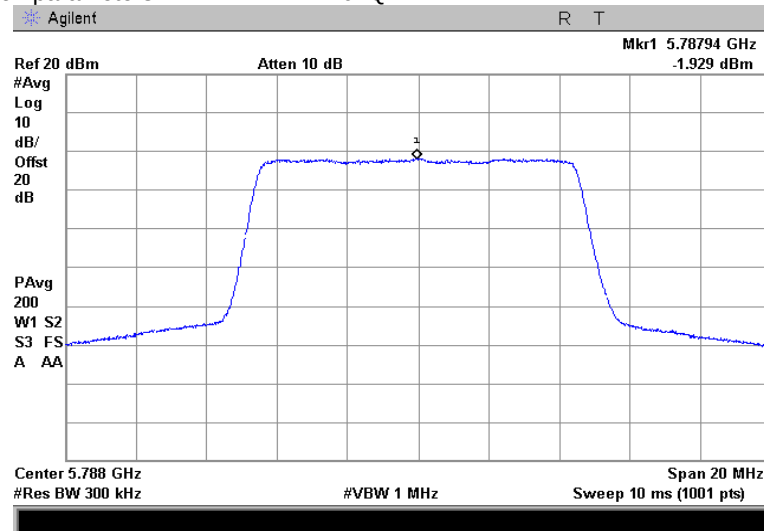
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		04-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

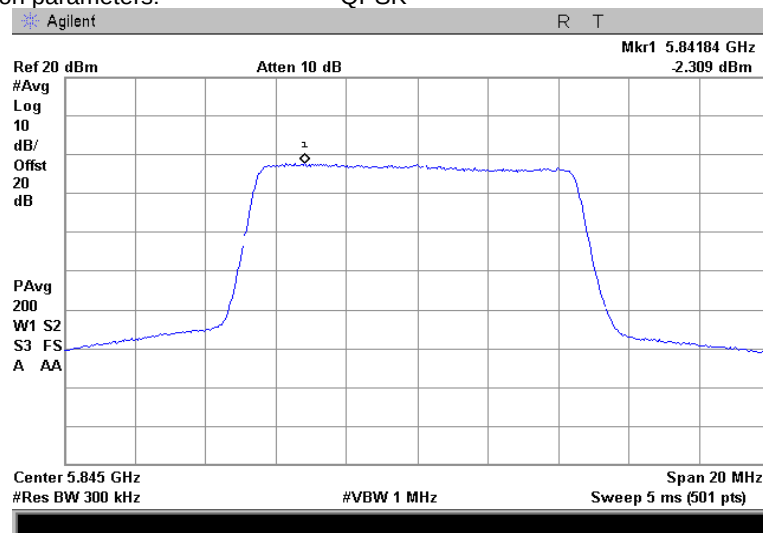
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Date of Issue: 25-Jun-19

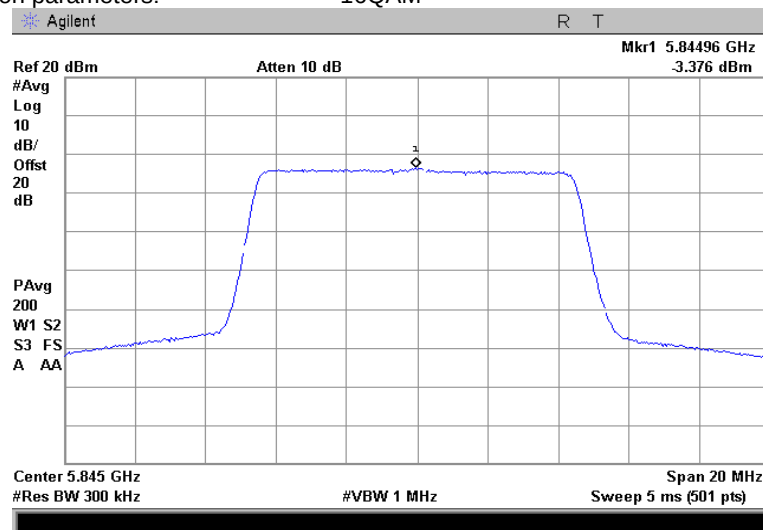
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.13 Peak power spectral density test results

Frequency: 5.845 GHz
Channel BW: 10 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





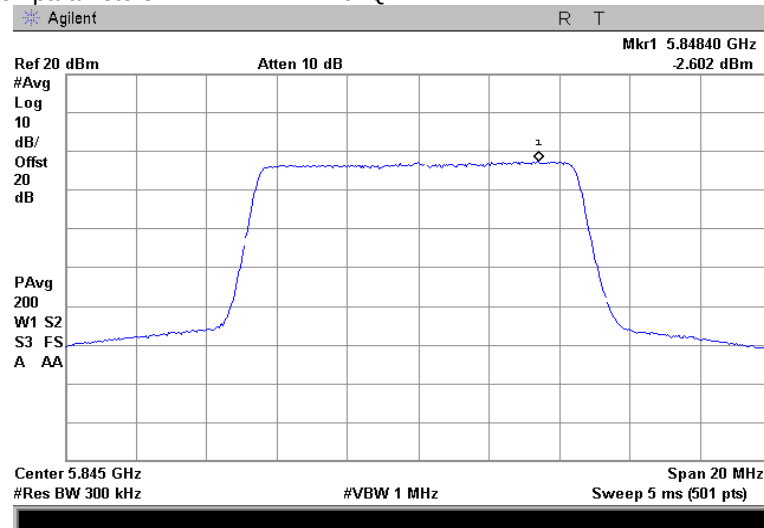
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





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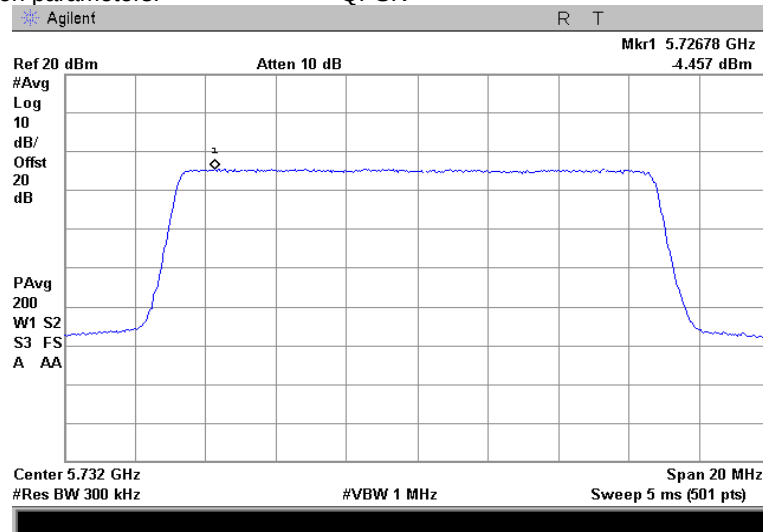
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Date of Issue: 25-Jun-19

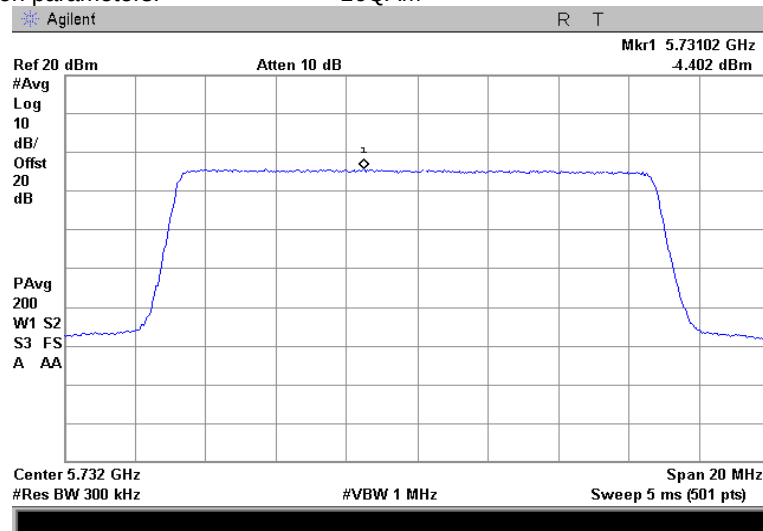
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Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.14 Peak power spectral density test results

Frequency: 5.7325 GHz
Channel BW: 15 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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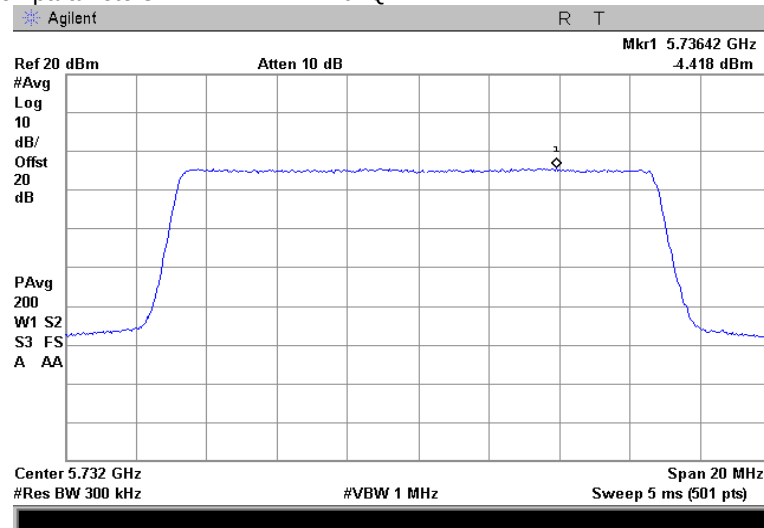
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

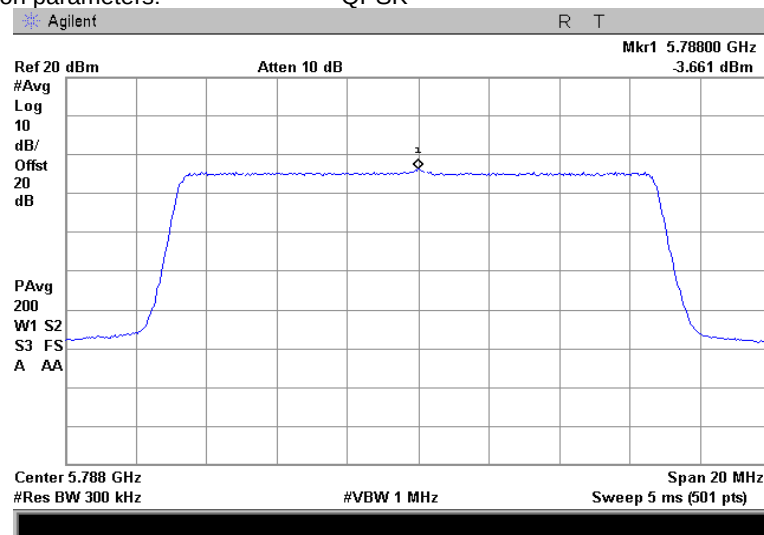
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

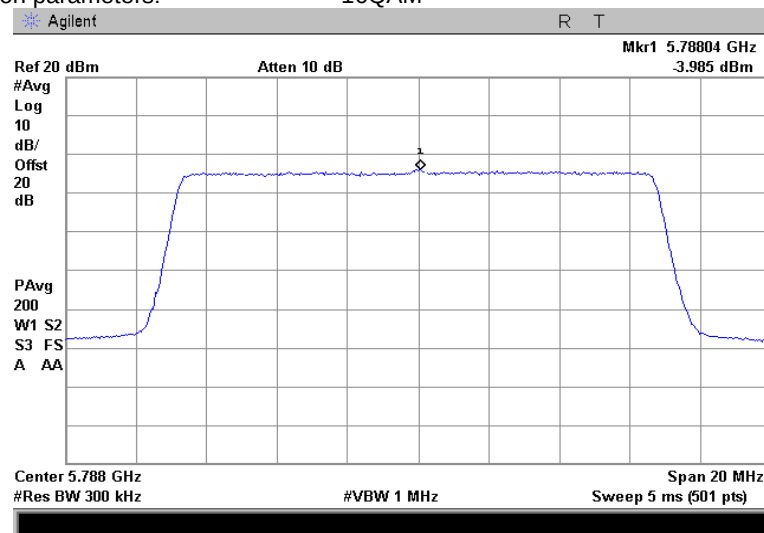
Plot 7.8.15 Peak power spectral density test results

Frequency: 5.788 GHz
Channel BW: 15 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM





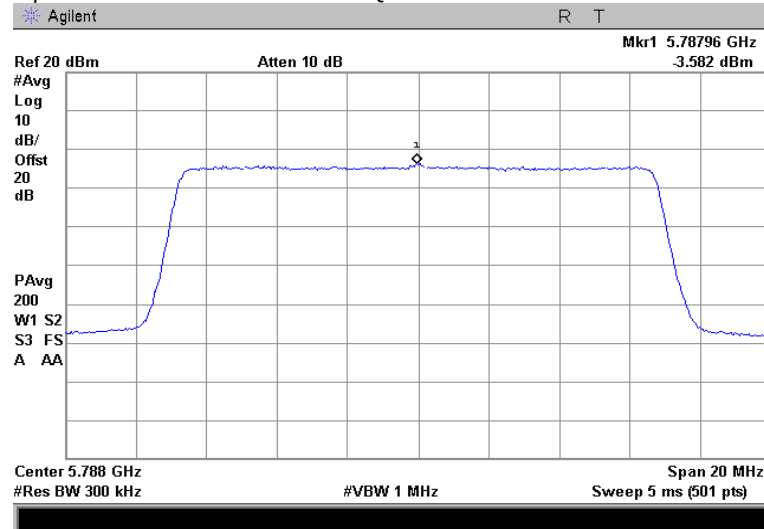
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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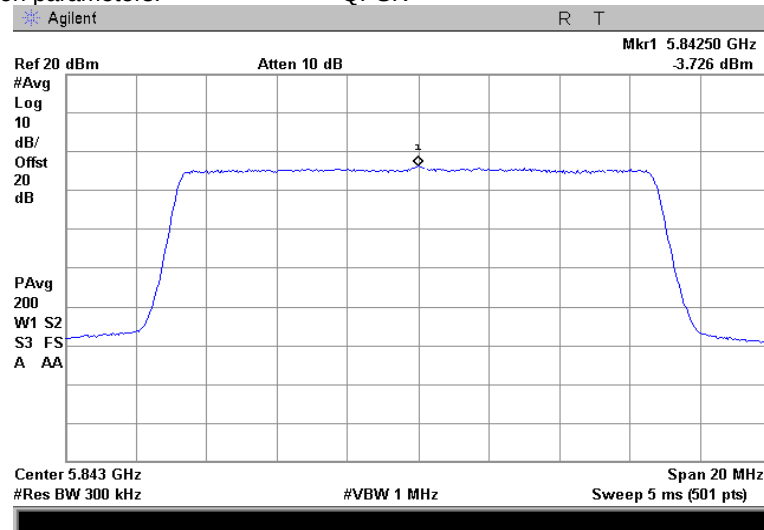
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Date of Issue: 25-Jun-19

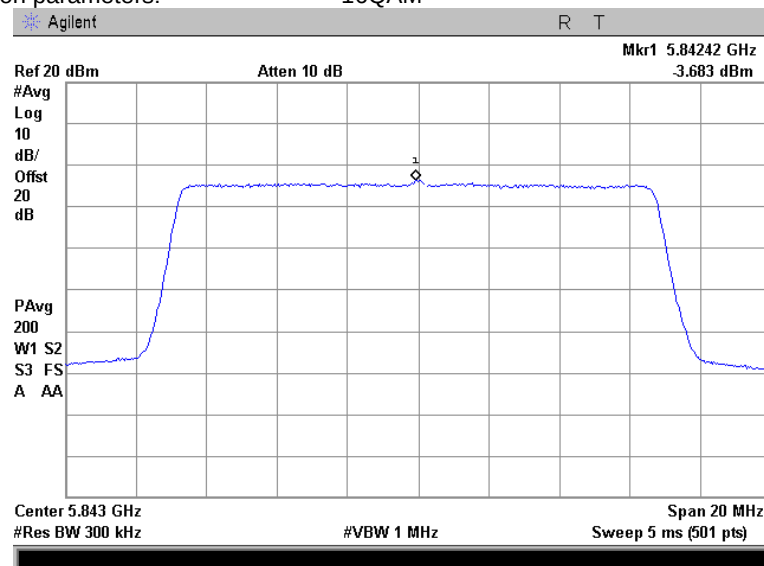
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Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	04-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.16 Peak power spectral density test results

Frequency: 5.8425 GHz
Channel BW: 15 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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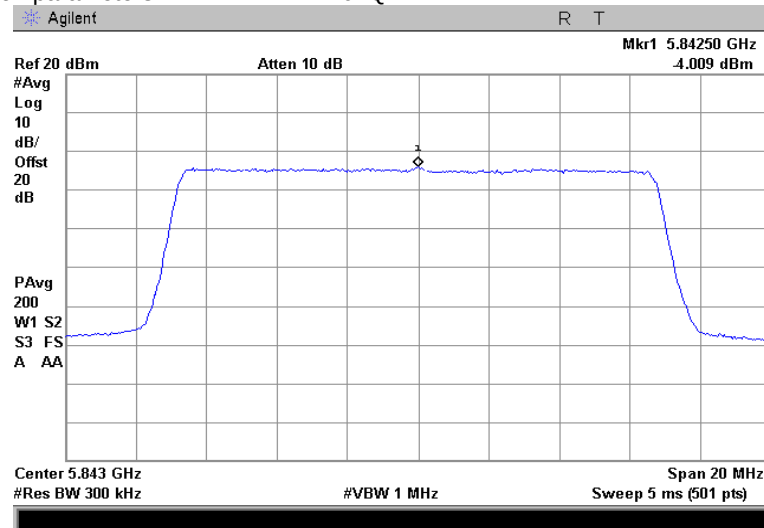
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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Report ID: TelRad_FCC_31832_rev2

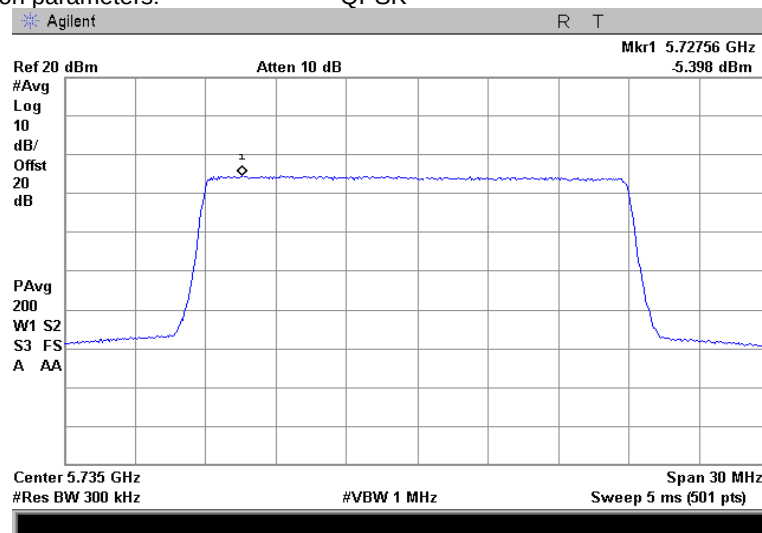
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
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Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

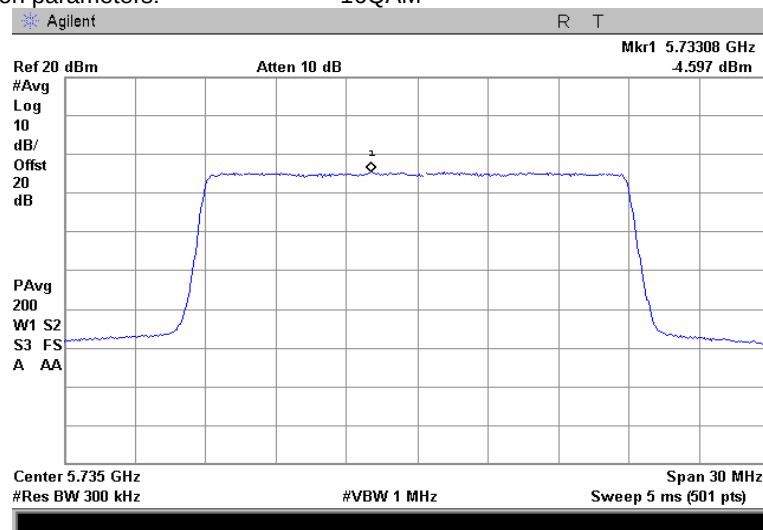
Plot 7.8.17 Peak power spectral density test results

Frequency: 5.735 GHz
Channel BW: 20 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM





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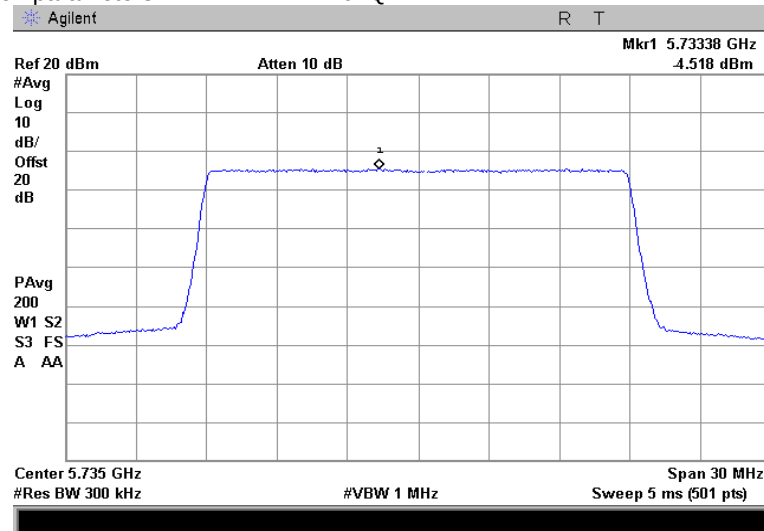
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

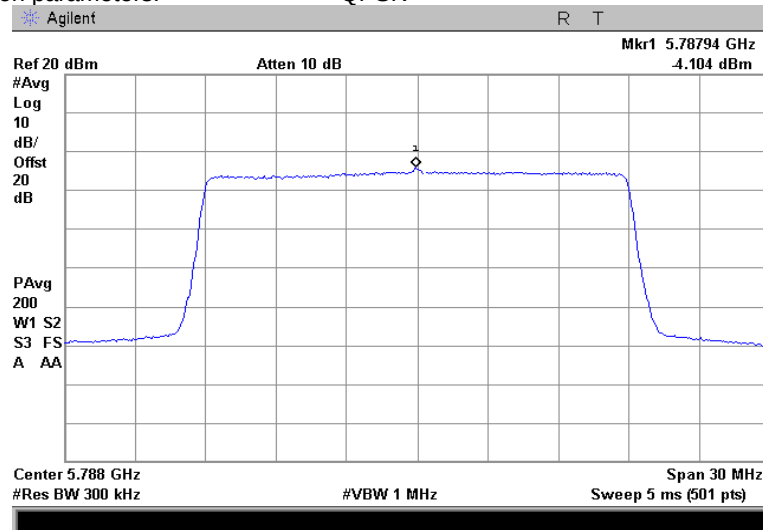
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

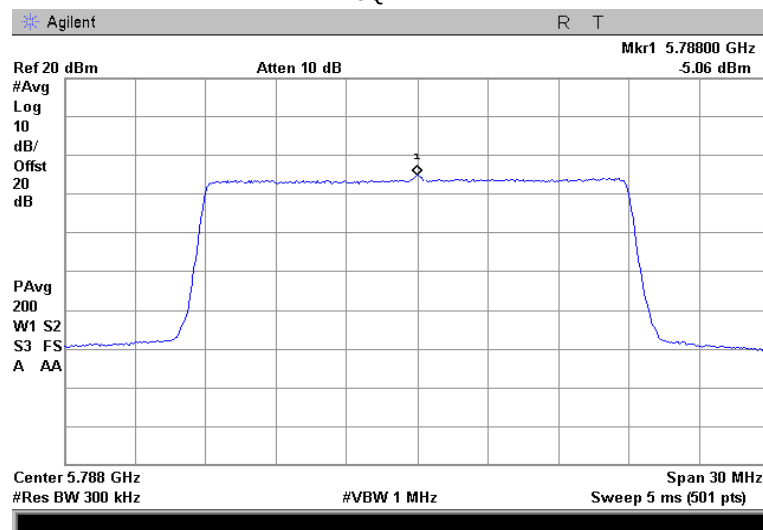
Plot 7.8.18 Peak power spectral density test results

Frequency: 5.788 GHz
Channel BW: 20 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM





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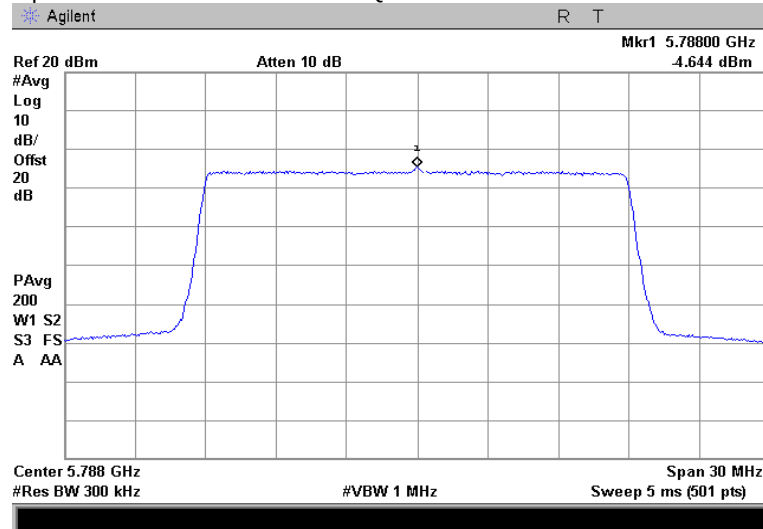
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

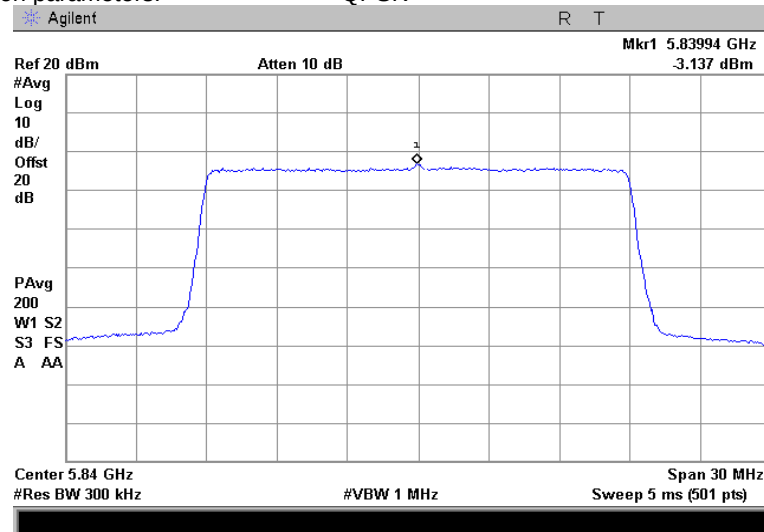
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

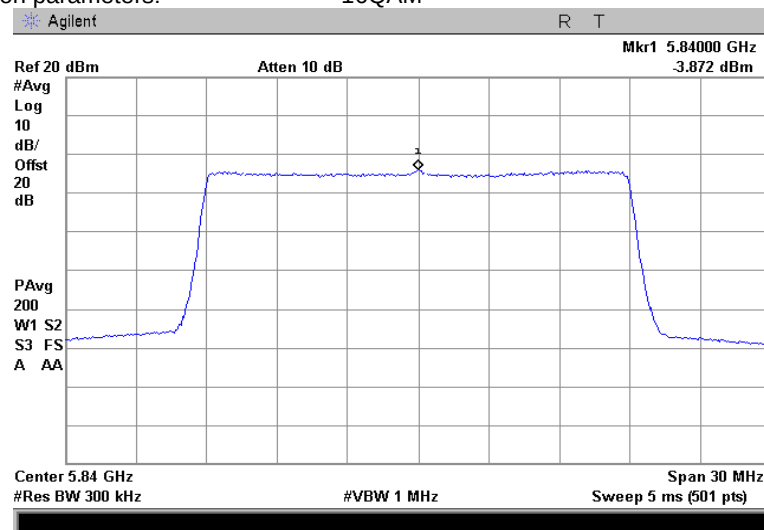
Plot 7.8.19 Peak power spectral density test results

Frequency: 5.840 GHz
Channel BW: 20 MHz
EUT configuration: (2carriers 2sectors) – isolated sectors, therefore the carriers may use similar or different frequencies (4 ports: 2 sectors x 2 dual slant antenna, no carrier aggregation and no antenna gain aggregation)

Modulation parameters: QPSK



Modulation parameters: 16QAM





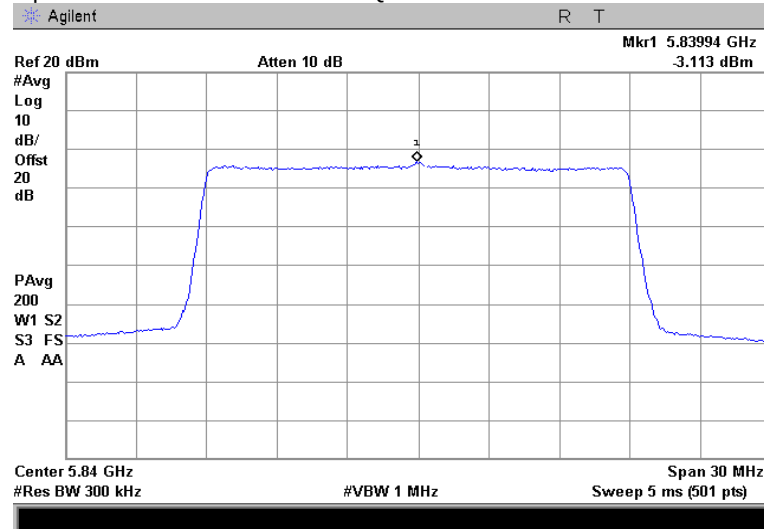
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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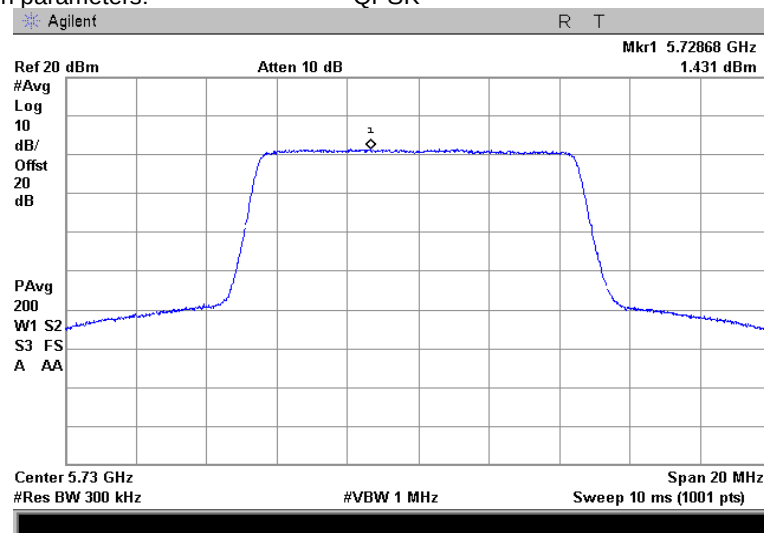
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

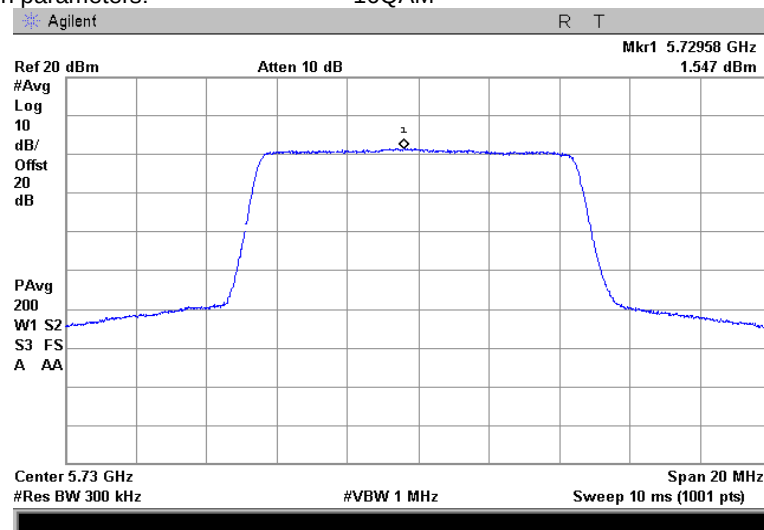
Test specification:	FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density		
Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	04-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.20 Peak power spectral density test results

Frequency: 5.730 GHz
Channel BW: 10 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM



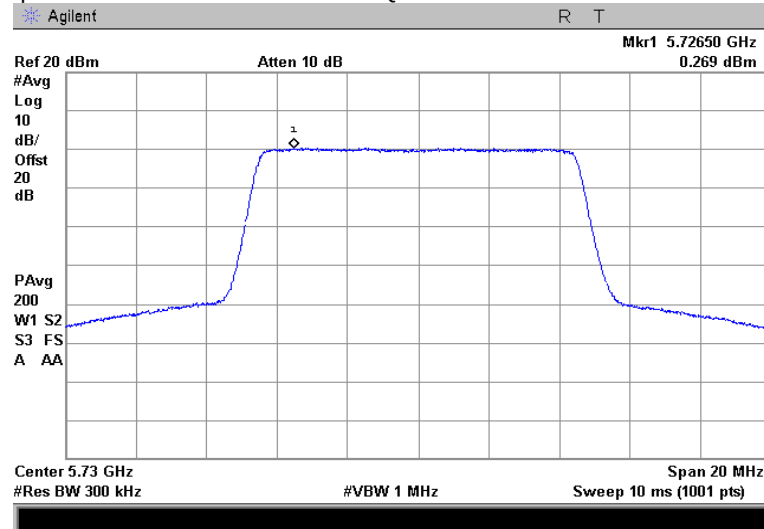


HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





HERMON LABORATORIES

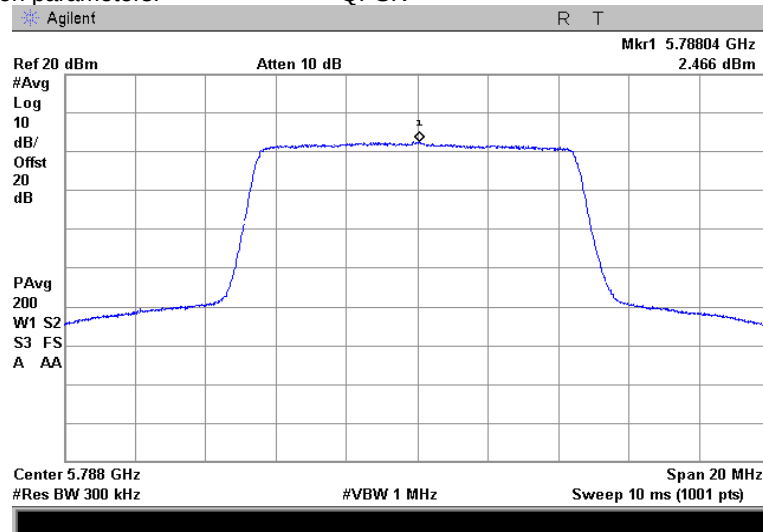
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Date of Issue: 25-Jun-19

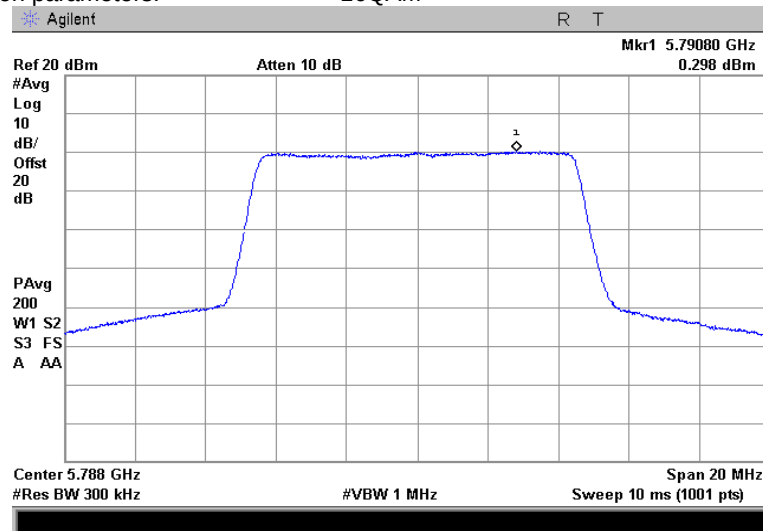
Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.21 Peak power spectral density test results

Frequency: 5.788 GHz
Channel BW: 10 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

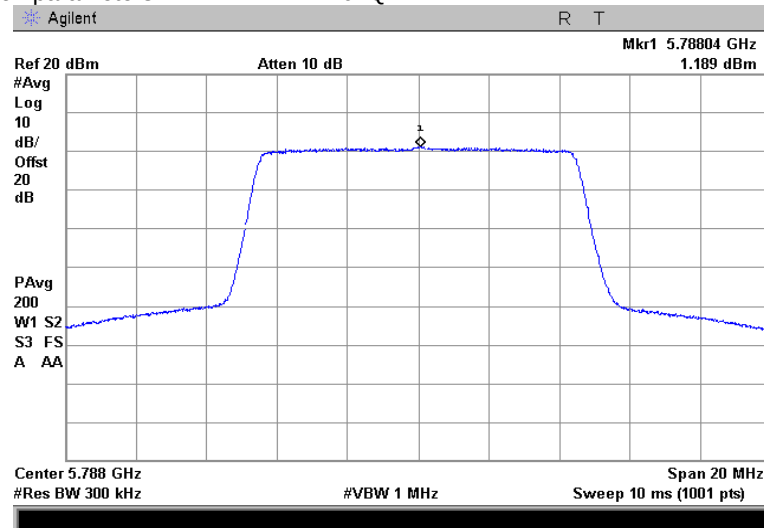
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

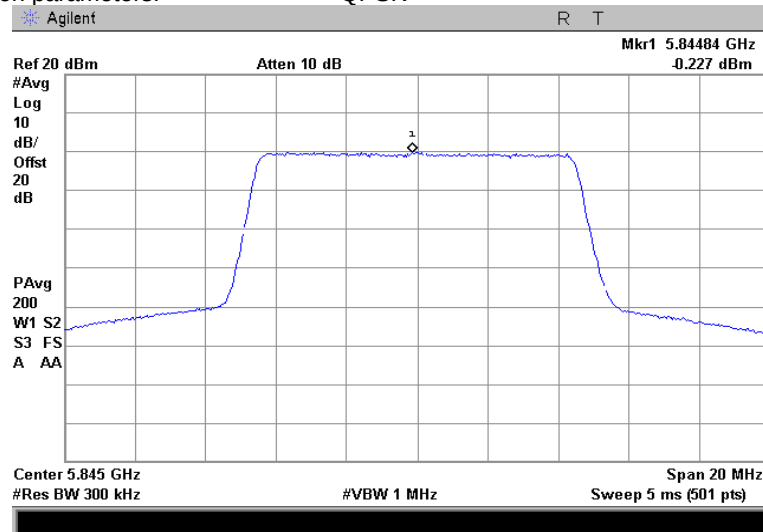
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Date of Issue: 25-Jun-19

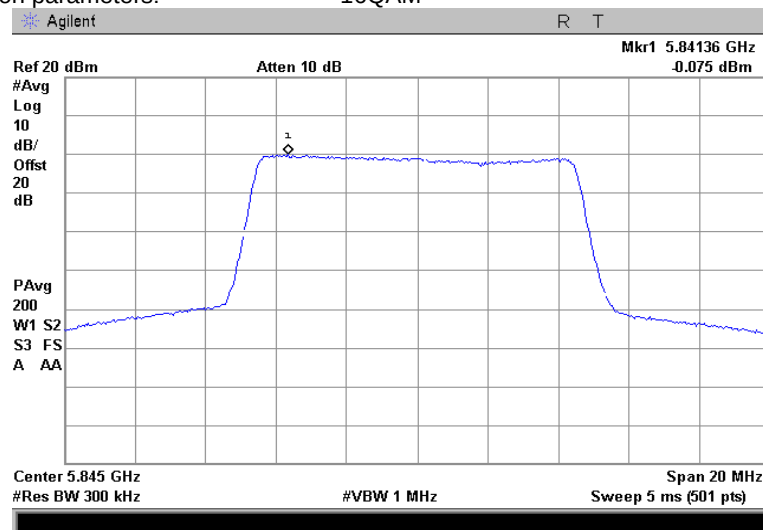
Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.22 Peak power spectral density test results

Frequency: 5.845 GHz
Channel BW: 10 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

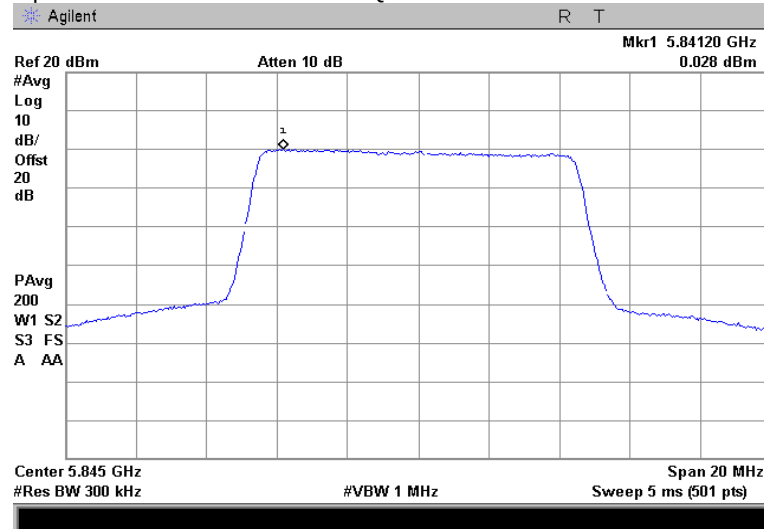
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

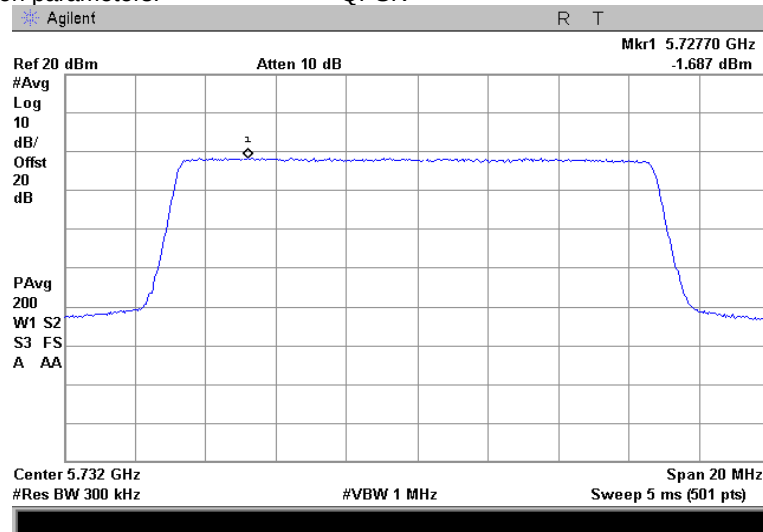
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Date of Issue: 25-Jun-19

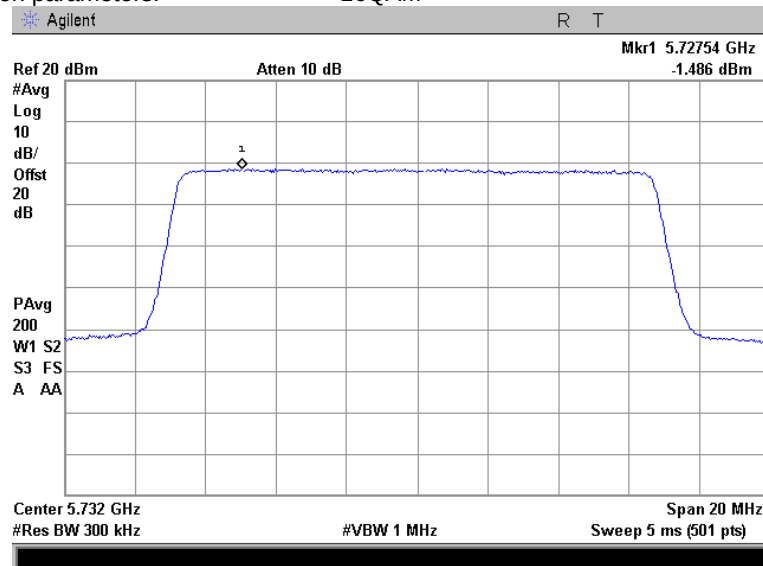
Test specification:	FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density		
Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	04-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.23 Peak power spectral density test results

Frequency: 5.7325 GHz
Channel BW: 15 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM



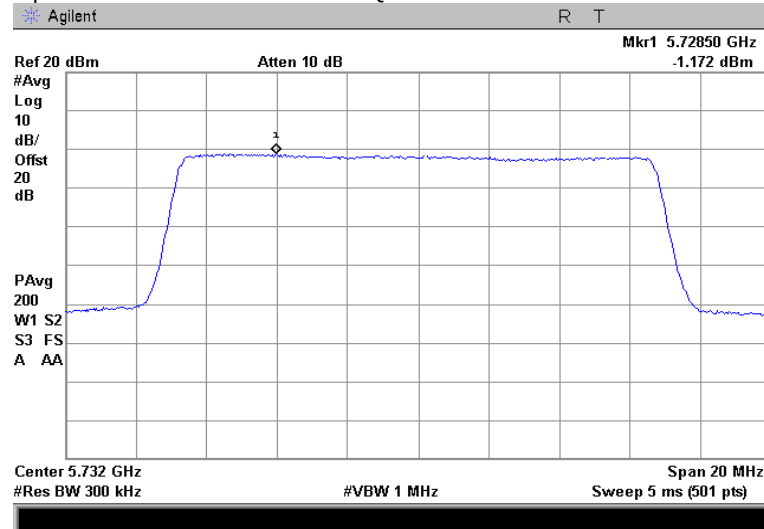


HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





HERMON LABORATORIES

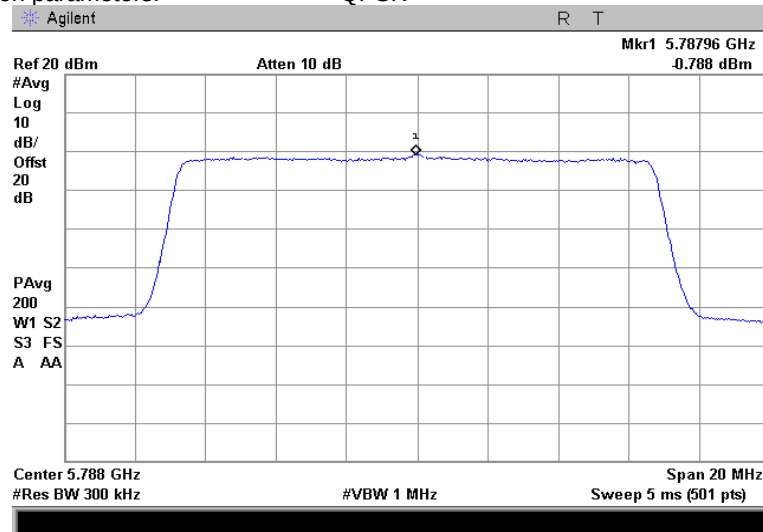
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Date of Issue: 25-Jun-19

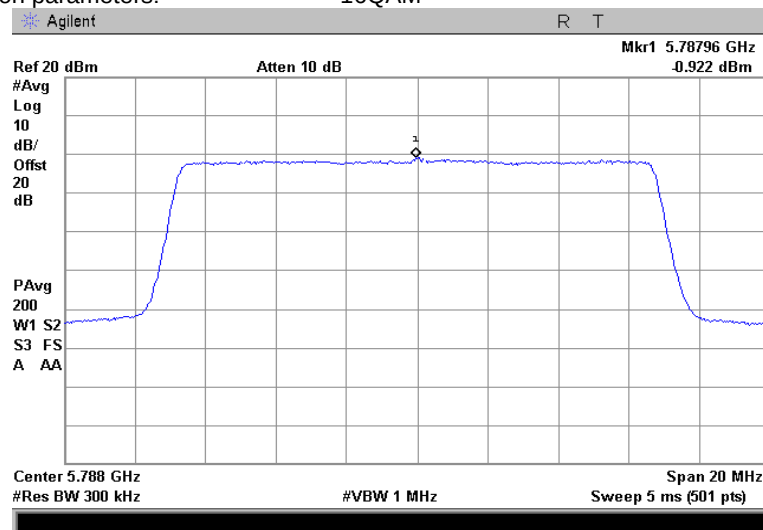
Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.24 Peak power spectral density test results

Frequency: 5.788 GHz
Channel BW: 15 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





HERMON LABORATORIES

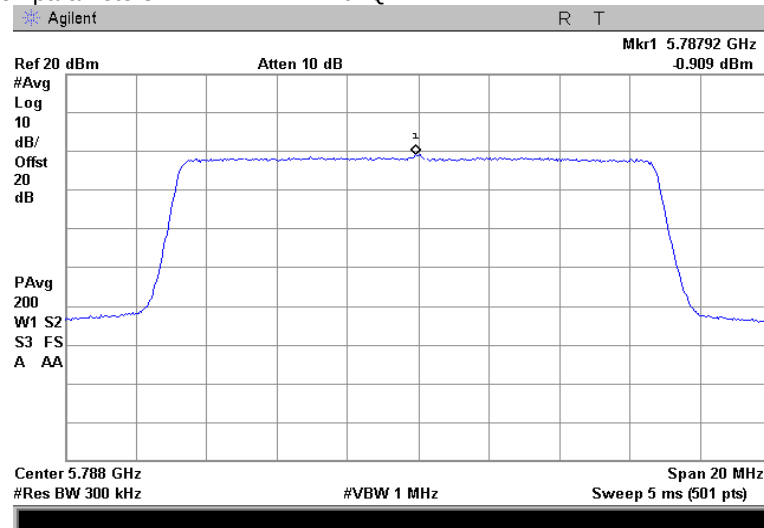
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





HERMON LABORATORIES

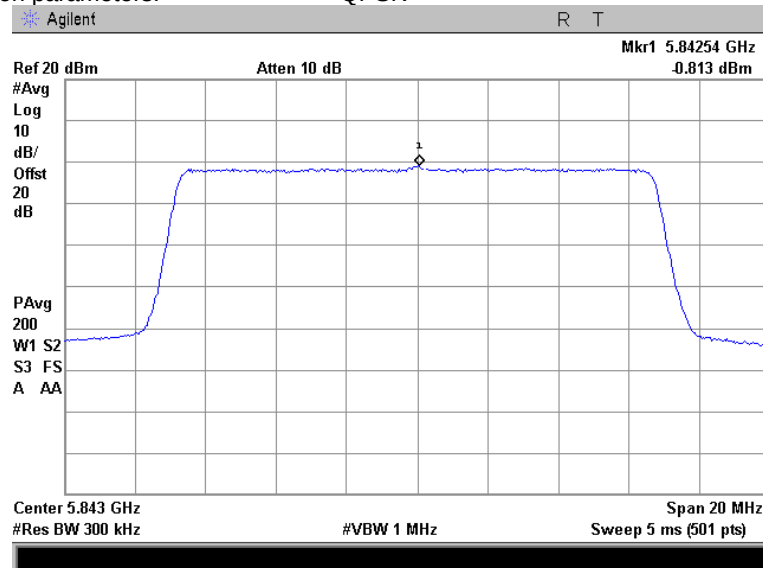
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Date of Issue: 25-Jun-19

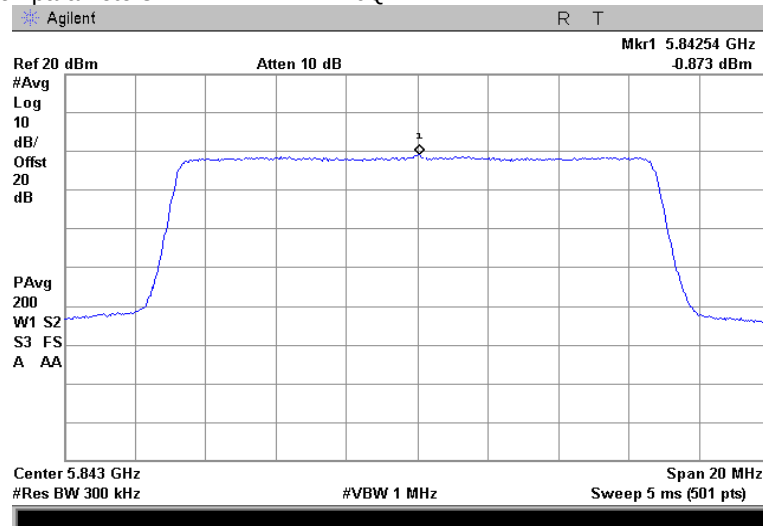
Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.25 Peak power spectral density test results

Frequency: 5.8425 GHz
Channel BW: 15 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





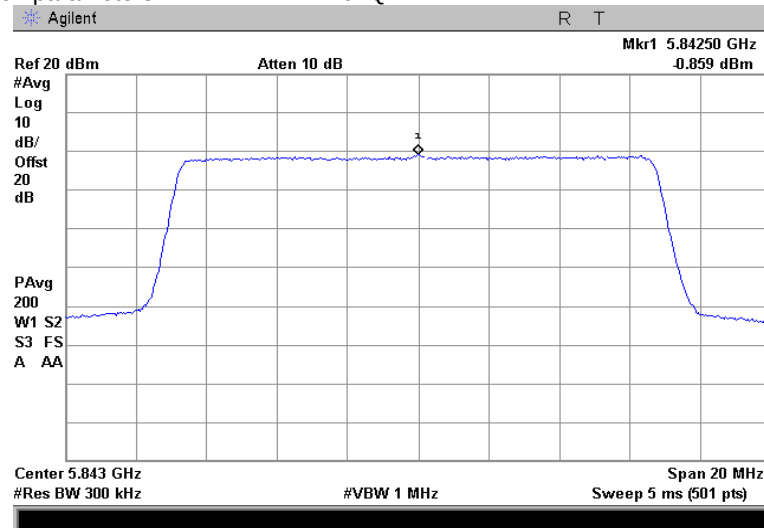
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





HERMON LABORATORIES

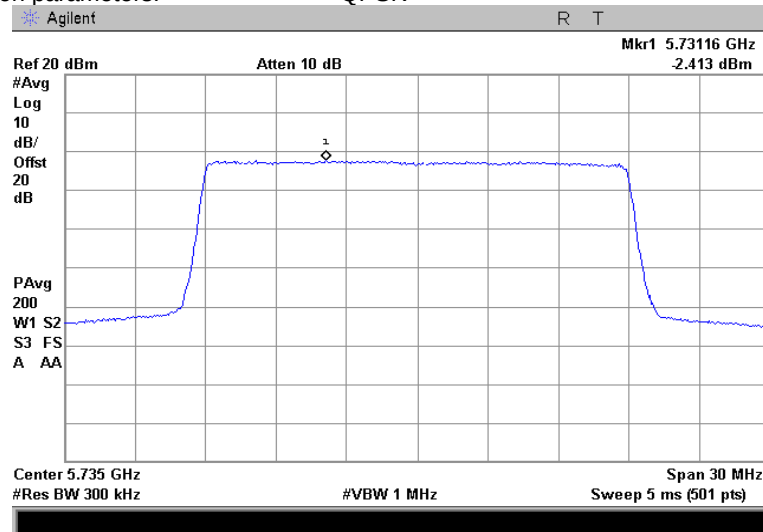
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Date of Issue: 25-Jun-19

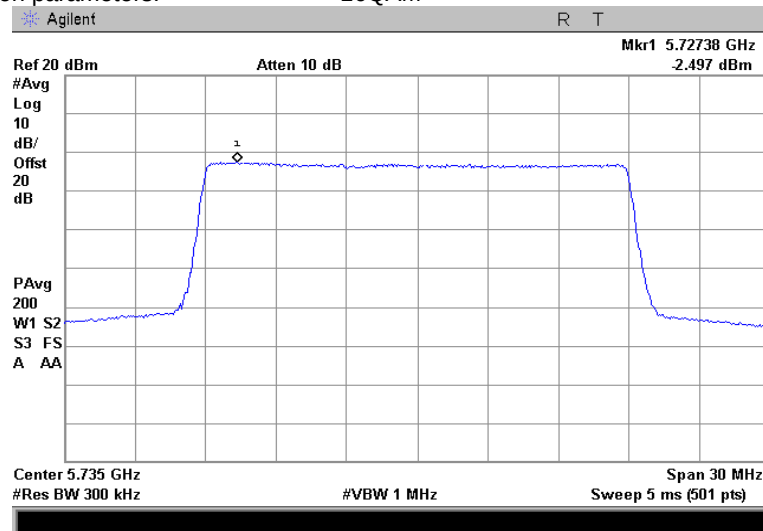
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.26 Peak power spectral density test results

Frequency: 5.735 GHz
Channel BW: 20 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





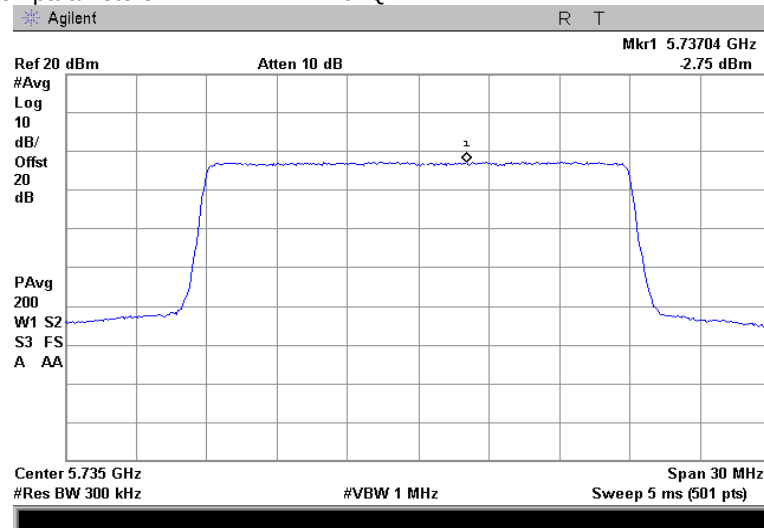
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		04-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters: 64QAM





HERMON LABORATORIES

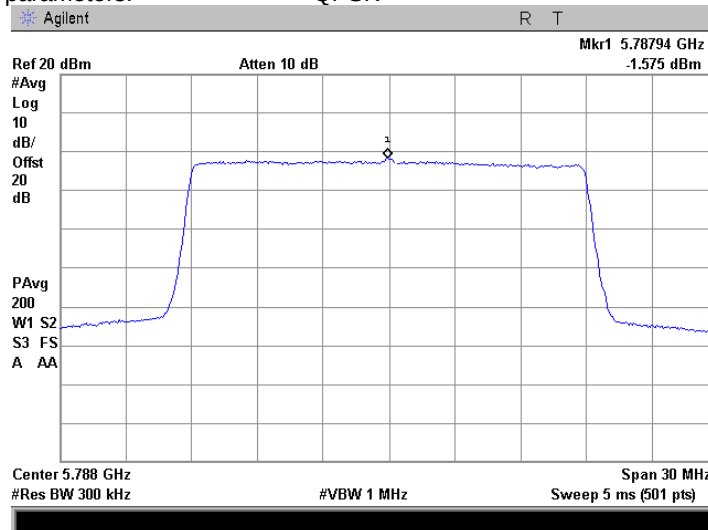
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Date of Issue: 25-Jun-19

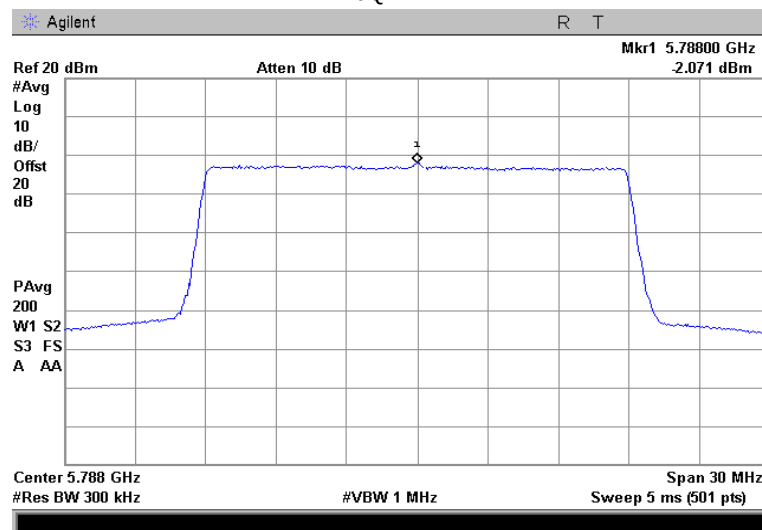
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.27 Peak power spectral density test results

Frequency: 5.788 GHz
Channel BW: 20 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





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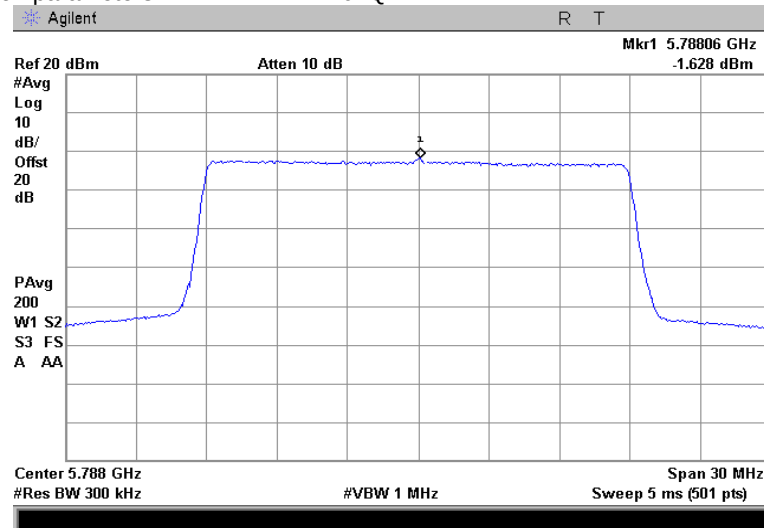
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Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





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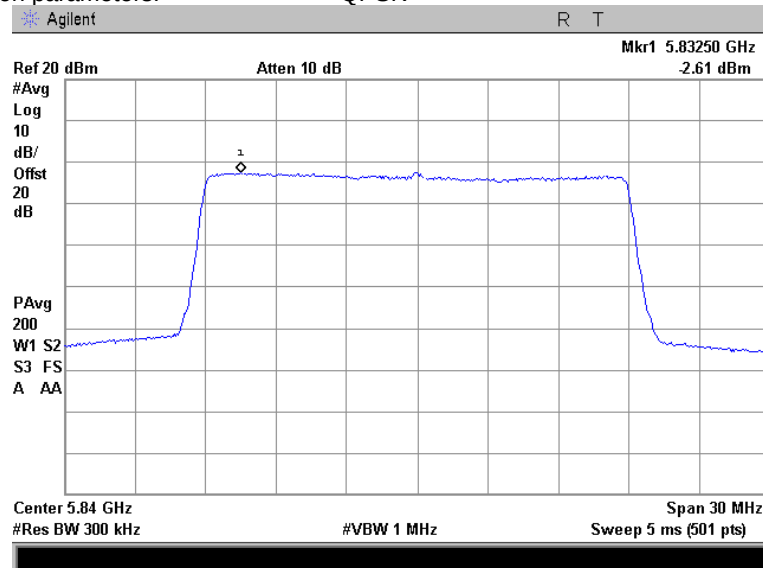
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Date of Issue: 25-Jun-19

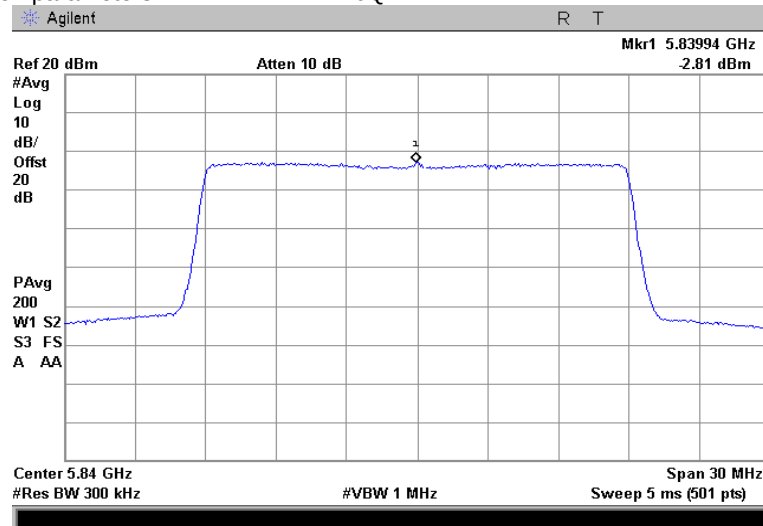
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Test procedure:	FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5		
Test mode:	Compliance	Verdict:	PASS
Date(s):	04-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.8.28 Peak power spectral density test results

Frequency: 5.840 GHz
Channel BW: 20 MHz
EUT configuration: 2 Bands 2carriers 1sector- different frequencies and different Bands(4 ports: 2 dual slant antennas- no power aggregation as 2 carriers are in different bands and 2 Bands, no antenna gains aggregation)
Modulation parameters: QPSK



Modulation parameters: 16QAM





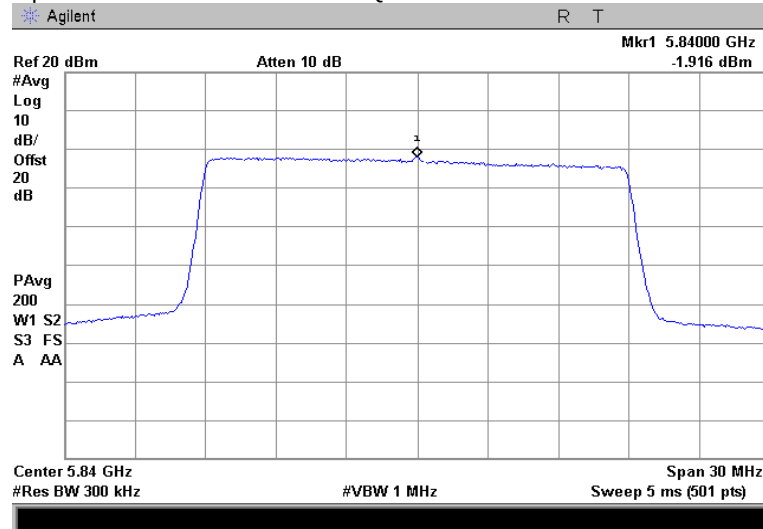
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.2, Peak spectral power density	
Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
04-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM





Test specification:		FCC section 15.407(b), RSS-247 section 6.2.4.2, Conducted out of band emissions	
Test procedure:		KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7	
Test mode:		Verdict: PASS	
Date(s):			
11-Feb-19			
Temperature: 26 °C	Relative Humidity: 45 %	Air Pressure: 1020 hPa	Power: 48 VDC
Remarks:			

7.9 Conducted out of band emissions at 5725 – 5850 MHz range

7.9.1 General

This test was performed to measure spurious emissions from the EUT near the band edges and within the pass band of the antenna. Specification test limits are given in Table 7.9.1 & EIRP of undesirable emission limits are given in Table 7.9.2

Table 7.9.1 Unwanted emissions limit within restricted bands above 1 GHz

Frequency, MHz	Field strength at 3 m, dB(μV/m)*		Equivalent EIRP*, dBm	
	Peak	Average	Peak	Average
1000 – 40000	74.0	54.0	-21.2	-41.2

* Equivalent EIRP was calculated as follow: Field strength – 95.2

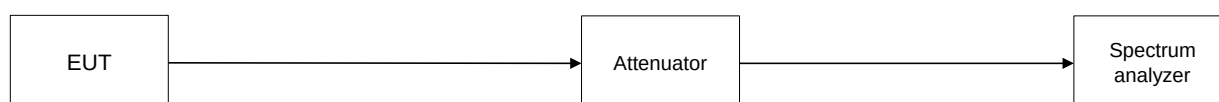
Table 7.9.2 EIRP of undesirable emission limits outside restricted bands above 1 GHz

Frequency, MHz	EIRP of spurious, dBm/MHz
Outside 5725-5850 band	-27 (below 5.650 GHz and above 5.925 GHz)
	-27 increasing linearly to 10 (in 5.650 - 5.700 GHz and 5.925 – 5.875 GHz)
	10 increasing linearly to 15.6 (in 5.700 - 5.720 GHz and 5.875 - 5.855 GHz)
	15.6 increasing linearly to 27 (in 5.720 - 5.725 GHz and 5.855 – 5.850 GHz)

7.9.2 Test procedure

- 7.9.2.1** The EUT was set up as shown in Figure 7.9.1, energized and the performance check was conducted.
- 7.9.2.2** The EUT was adjusted to produce maximum available to end user RF output power at the lowest carrier frequency.
- 7.9.2.3** The spectrum analyzer span was set to capture the carrier frequency and associated modulation products. The resolution bandwidth was set to 1 MHz.
- 7.9.2.4** The spectrum analyzer was set in max hold mode and allowed trace to stabilize. The highest emission level within the authorized band was measured.
- 7.9.2.5** The maximum band edge emission and modulation product outside of the band were measured as provided in the associated tables and plots.
- 7.9.2.6** The above procedure was repeated with the EUT adjusted to produce maximum RF output power at the mid and highest carrier frequencies.
- 7.9.2.7** Test results are shown in the Table 7.9.3, Table 7.9.4, Table 7.9.5 and the associated plots.

Figure 7.9.1 Setup for conducted spurious emissions





Test specification: FCC section 15.407(b), RSS-247 section 6.2.4.2, Conducted out of band emissions			
Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7			
Test mode: Compliance		Verdict: PASS	
Date(s): 11-Feb-19			
Temperature: 26 °C	Relative Humidity: 45 %	Air Pressure: 1020 hPa	Power: 48 VDC
Remarks:			

Table 7.9.3 Conducted spurious emission within restricted band test results

ASSIGNED FREQUENCY: 5.725 – 5.850 GHz
 INVESTIGATED FREQUENCY RANGE: 4500 - 6400 MHz
 MODULATION: QPSK
 DETECTOR USED: Peak/Average
 RESOLUTION BANDWIDTH: 1000 kHz
 EUT CONFIGURATION: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal
 CHANNEL BANWIDTH: 10 MHz

CHANNEL BANDWIDTH:			10 MHz								
Frequency, MHz	Antenna gain, dBi	Antenna gain array*, dB	Peak				Average				Verdict
			SA reading, dBm	EIRP**, dBm/MHz	Limit, dBm	Margin***, dB	SA reading, dBm	EIRP**, dBm/MHz	Limit, dBm	Margin***, dB	
Low carrier frequency											
5063.000	16.5	3.0	-59.15	-39.65	-21.2	-18.45	-71.66	-49.67	-41.2	-8.47	Pass
Mid carrier frequency											
5048.130	16.5	3.0	-58.67	-39.17	-21.2	-17.97	-70.71	-48.72	-41.2	-7.52	Pass
High carrier frequency											
5350.850	16.5	3.0	-58.62	-39.12	-21.2	-17.92	-70.81	-48.82	-41.2	-7.62	Pass

CHANNEL BANWIDTH: 15 MHz

			15 MHz								
Frequency, MHz	Antenna gain, dBi	Antenna gain array*, dB	Peak				Average				Verdict
			SA reading, dBm	EIRP**, dBm/MHz	Limit, dBm	Margin***, dB	SA reading, dBm	EIRP**, dBm/MHz	Limit, dBm	Margin***, dB	
Low carrier frequency											
5352.770	16.5	3.0	-58.73	-39.23	-21.2	-18.03	-73.29	-51.30	-41.2	-10.10	Pass
Mid carrier frequency											
5358.530	16.5	3.0	-58.79	-39.29	-21.2	-18.09	-70.73	-48.74	-41.2	-7.54	Pass
High carrier frequency											
5030.370	16.5	3.0	-58.56	-39.06	-21.2	-17.86	-72.11	-50.12	-41.2	-8.92	Pass

CHANNEL BANWIDTH: 20 MHz

CHANNEL BANDWIDTH:			20 MHz								
Frequency, MHz	Antenna gain, dBi	Antenna gain array*, dB	Peak				Average				Verdict
			SA reading, dBm	Peak EIRP**, dBm/MHz	Limit, dBm	Margin***, dB	SA reading, dBm	Average EIRP****, dBm/MHz	Limit, dBm	Margin***, dB	
Low carrier frequency											
5350.370	16.5	3.0	-58.45	-38.95	-21.2	-17.75	-70.81	-48.82	-41.2	-7.62	Pass
Mid carrier frequency											
5056.760	16.5	3.0	-59.16	-39.66	-21.2	-18.46	-72.76	-50.77	-41.2	-9.57	Pass
High carrier frequency											
5045.730	16.5	3.0	-56.84	-37.34	-21.2	-16.14	-71.03	-49.04	-41.2	-7.84	Pass

* - Antenna gain array = $10\log(N_{ant})$, where $N_{ant} = 4$ (two cross-polarized antennas with coherent signals)

** - Peak EIRP = SA reading + Antenna gain + Antenna gain array

*** - Margin = EIRP – specified limit.

**** - Average EIRP = SA reading + Antenna gain + Antenna gain array + Duty cycle factor

Table 7.9.4 Duty cycle factor calculation

Burst duration, ms	Burst period, ms	Duty cycle*	Duty cycle factor**, dB
2.82	5.00	0.564	2.49

*- Duty cycle = Burst duration / Burst period

**- Duty cycle factor = $10\log(1/\text{Duty cycle})$



Test specification:		FCC section 15.407(b), RSS-247 section 6.2.4.2, Conducted out of band emissions	
Test procedure:		KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7	
Test mode:		Verdict: PASS	
Date(s):			
11-Feb-19			
Temperature: 26 °C	Relative Humidity: 45 %	Air Pressure: 1020 hPa	Power: 48 VDC
Remarks:			

Table 7.9.5 Conducted spurious emission outside restricted band test results

ASSIGNED FREQUENCY RANGE: 5.725 – 5.850 GHz
 INVESTIGATED FREQUENCY RANGE: 4500 - 6400 MHz
 MODULATION: QPSK
 DETECTOR USED: Peak
 RESOLUTION BANDWIDTH: 1000 kHz
 EUT CONFIGURATION: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal
 CHANNEL BANDWIDTH: 10 MHz

Frequency, MHz	SA reading, dBm	Antenna gain, dBi	Antenna gain array*, dB	EIRP**, dBm/MHz	Limit, dBm/MHz	Margin***, dB	Verdict
Low carrier frequency							
5244.350	-57.87	16.5	3.0	-38.37	-27.0	-11.37	Pass
5719.680	-23.06	16.5	3.0	-3.56	15.5	-19.07	Pass
5724.996	2.44	16.5	3.0	21.94	27.0	-5.05	Pass
Mid carrier frequency							
5295.680	-59.27	16.5	3.0	-39.77	-27.0	-12.77	Pass
High carrier frequency							
5157.030	-57.47	16.5	3.0	-37.97	-27.0	-10.97	Pass

CHANNEL BANDWIDTH: 15 MHz

Frequency, MHz	SA reading, dBm	Antenna gain, dBi	Antenna gain array*, dB	EIRP**, dBm/MHz	Limit, dBm/MHz	Margin***, dB	Verdict
Low carrier frequency							
5274.090	-57.56	16.5	3.0	-38.06	-27.0	-11.06	Pass
5718.510	-22.36	16.5	3.0	-2.86	15.2	-18.04	Pass
5724.974	-2.74	16.5	3.0	16.76	26.9	-10.18	Pass
Mid carrier frequency							
5297.600	-58.44	16.5	3.0	-38.94	-27.0	-11.94	Pass
High carrier frequency							
5278.410	-58.01	16.5	3.0	-38.51	-27.0	-11.51	Pass



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Report ID: TelRad_FCC_31832_rev2
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(b), RSS-247 section 6.2.4.2, Conducted out of band emissions	
Test procedure:		KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7	
Test mode:		Verdict: PASS	
Date(s):			
11-Feb-19			
Temperature: 26 °C	Relative Humidity: 45 %	Air Pressure: 1020 hPa	Power: 48 VDC
Remarks:			

Table 7.9.5 Conducted spurious emission outside restricted band test results

ASSIGNED FREQUENCY RANGE: 5.725 – 5.850 GHz
 INVESTIGATED FREQUENCY RANGE: 4500 - 6400 MHz
 MODULATION: QPSK
 DETECTOR USED: Peak
 RESOLUTION BANDWIDTH: 1000 kHz
 EUT CONFIGURATION: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal
 CHANNEL BANDWIDTH: 20 MHz

Frequency, MHz	SA reading, dBm	Antenna gain, dBi	Antenna gain array*, dB	EIRP**, dBm/MHz	Limit, dBm/MHz	Margin***, dB	Verdict
Low carrier frequency							
5262.100	-58.33	16.5	3.0	-38.83	-27.0	-11.83	Pass
5719.550	-23.04	16.5	3.0	-3.54	15.5	-19.01	Pass
5724.981	-6.48	16.5	3.0	13.02	27.0	-13.94	Pass
Mid carrier frequency							
5310.550	-58.55	16.5	3.0	-39.05	-27.0	-12.05	Pass
High carrier frequency							
5168.070	-57.50	16.5	3.0	-38.00	-27.0	-11.00	Pass
5850.049	-3.85	16.5	3.0	15.65	26.9	-11.24	Pass
5855.140	-24.75	16.5	3.0	-5.25	15.6	-20.81	Pass

* - Antenna gain array = $10\log(N_{ant})$, where $N_{ant} = 2$ (two cross-polarized antennas)

** - EIRP = SA reading + Antenna gain + Antenna gain array

*** - Margin = EIRP – specified limit.

Reference numbers of test equipment used

HL 3901	HL 4355						
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Full description is given in Appendix A.



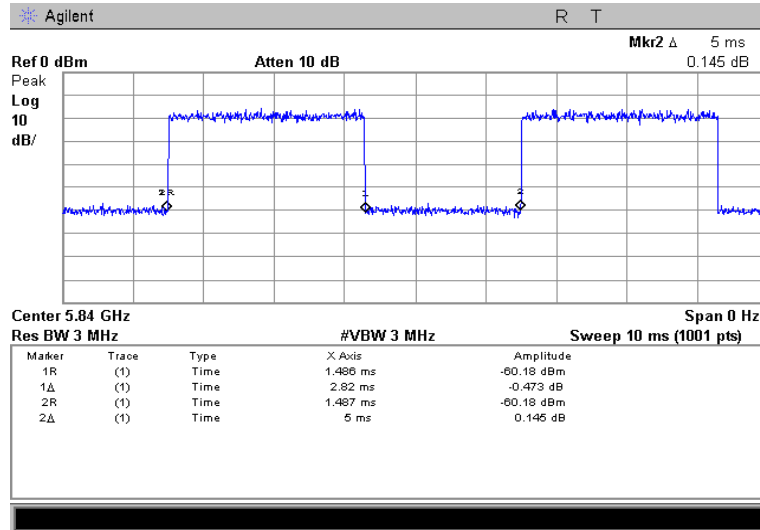
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Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(b), RSS-247 section 6.2.4.2, Conducted out of band emissions	
Test procedure:		KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7	
Test mode:		Verdict: PASS	
Date(s):			
11-Feb-19			
Temperature: 26 °C	Relative Humidity: 45 %	Air Pressure: 1020 hPa	Power: 48 VDC
Remarks:			

Plot 7.9.1 Duty cycle





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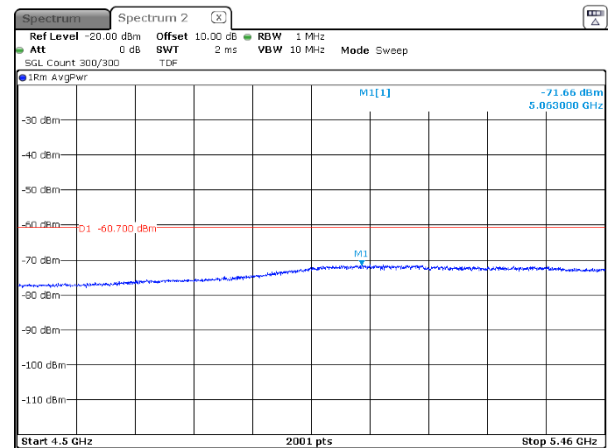
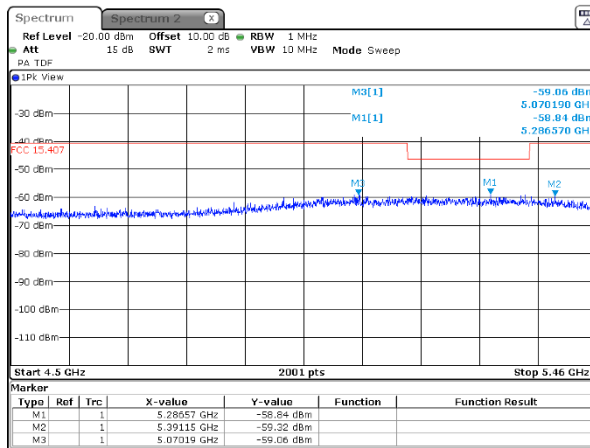
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(b), RSS-247 section 6.2.4.2, Conducted out of band emissions	
Test procedure:		KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7	
Test mode:		Compliance	Verdict: PASS
Date(s):		11-Feb-19	
Temperature: 26 °C	Relative Humidity: 45 %	Air Pressure: 1020 hPa	Power: 48 VDC
Remarks:			

Plot 7.9.2 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

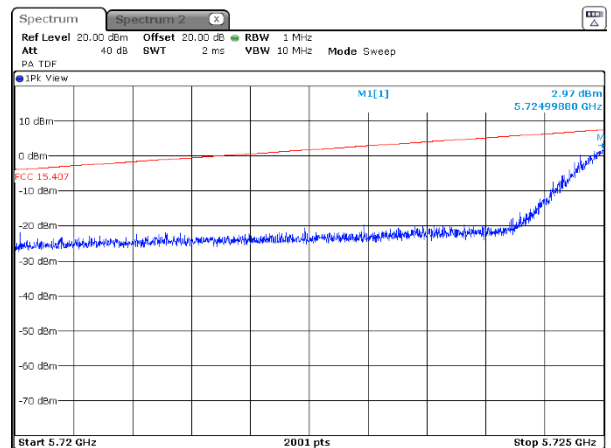
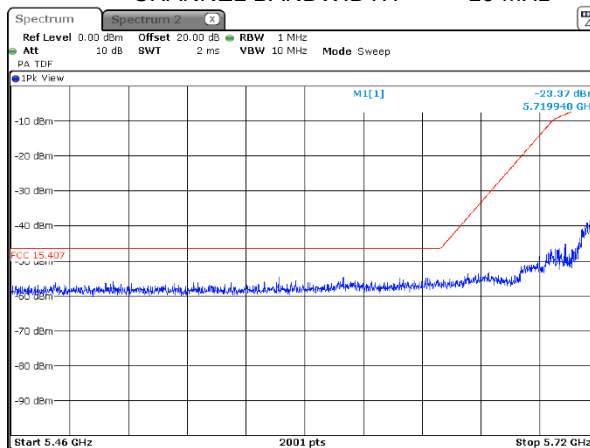
CARRIER FREQUENCY 5730 MHz
CHANNEL BANDWIDTH 10 MHz



*Applied Limit = Specification limit – Antenna Gain – Antenna Array gain

Plot 7.9.3 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5730 MHz
CHANNEL BANDWIDTH 10 MHz





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Report ID: TelRad_FCC_31832_rev2

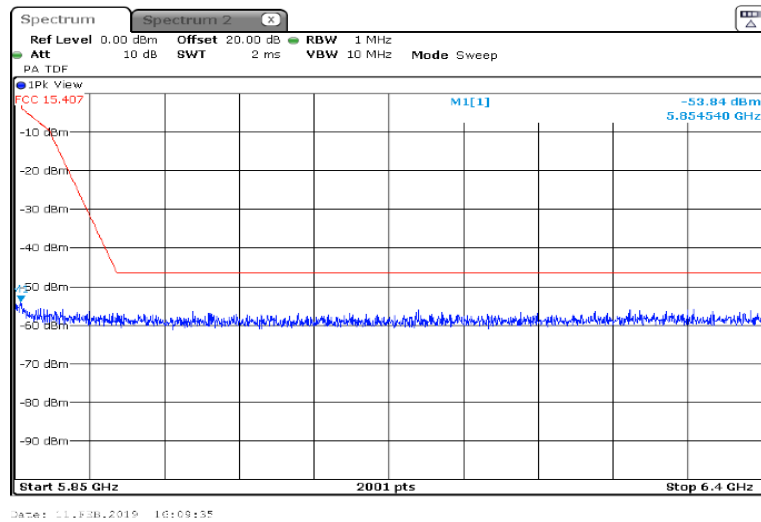
Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(b), RSS-247 section 6.2.4.2, Conducted out of band emissions	
Test procedure:		KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7	
Test mode:		Verdict: PASS	
Date(s):			
11-Feb-19			
Temperature: 26 °C	Relative Humidity: 45 %	Air Pressure: 1020 hPa	Power: 48 VDC
Remarks:			

Plot 7.9.4 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5730 MHz

CHANNEL BANDWIDTH 10 MHz





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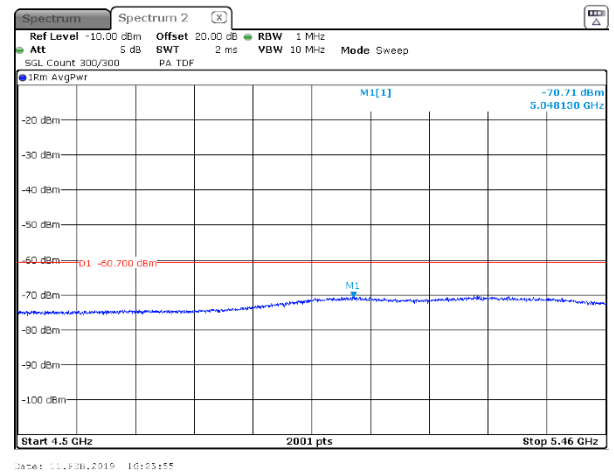
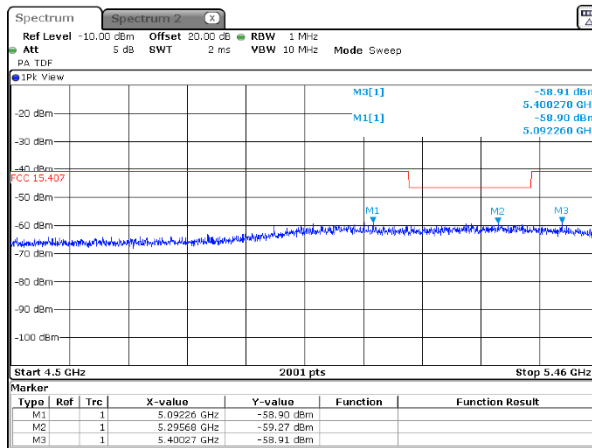
Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(b), RSS-247 section 6.2.4.2, Conducted out of band emissions	
Test procedure:		KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7	
Test mode:		Compliance	Verdict: PASS
Date(s):		11-Feb-19	
Temperature: 26 °C	Relative Humidity: 45 %	Air Pressure: 1020 hPa	Power: 48 VDC
Remarks:			

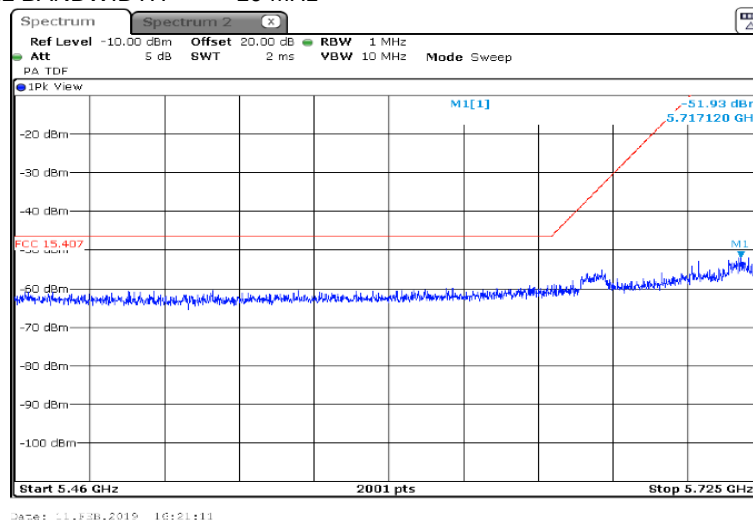
Plot 7.9.5 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 10 MHz



Plot 7.9.6 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 10 MHz





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Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification:		FCC section 15.407(b), RSS-247 section 6.2.4.2, Conducted out of band emissions	
Test procedure:		KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7	
Test mode:		Verdict: PASS	
Date(s):			
11-Feb-19			
Temperature: 26 °C	Relative Humidity: 45 %	Air Pressure: 1020 hPa	Power: 48 VDC
Remarks:			

Plot 7.9.7 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5788 MHz

CHANNEL BANDWIDTH 10 MHz

