



HERMON LABORATORIES

Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-19

Test specification:		FCC section 15.407(a)(1-3), RSS-247 section 6.2.4.1, 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):			
16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Table 7.5.12 EIRP test results (continue)

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 GHz
 DETECTOR USED: Average
 METHOD OF POWER MEASUREMENTS: PM-G (789033 D02)
 MIMO CONFIGURATION: 2 carrier, 1 sectors (4 ports to 2 dual slant antennas)

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	5730	19.00	0	17.00	36.00	36.00	0.00	Pass
		5788	18.95	0	17.00	35.95	36.00	-0.05	Pass
		5845	19.00	0	17.00	36.00	36.00	0.00	Pass
	16QAM	5730	18.98	0	17.00	35.98	36.00	-0.02	Pass
		5788	18.96	0	17.00	35.96	36.00	-0.04	Pass
		5845	19.00	0	17.00	36.00	36.00	0.00	Pass
	64QAM	5730	18.97	0	17.00	35.97	36.00	-0.03	Pass
		5788	18.94	0	17.00	35.94	36.00	-0.06	Pass
		5845	19.00	0	17.00	36.00	36.00	0.00	Pass
15	QPSK	5732.5	19.00	0	17.00	36.00	36.00	0.00	Pass
		5788	18.97	0	17.00	35.97	36.00	-0.03	Pass
		5842.5	18.94	0	17.00	35.94	36.00	-0.06	Pass
	16QAM	5732.5	19.00	0	17.00	36.00	36.00	0.00	Pass
		5788	18.96	0	17.00	35.96	36.00	-0.04	Pass
		5842.5	18.94	0	17.00	35.94	36.00	-0.06	Pass
	64QAM	5732.5	19.00	0	17.00	36.00	36.00	0.00	Pass
		5788	18.96	0	17.00	35.96	36.00	-0.04	Pass
		5842.5	18.95	0	17.00	35.95	36.00	-0.05	Pass
20	QPSK	5735	18.92	0	17.00	35.92	36.00	-0.08	Pass
		5788	18.82	0	17.00	35.82	36.00	-0.18	Pass
		5840	18.83	0	17.00	35.83	36.00	-0.17	Pass
	16QAM	5735	18.92	0	17.00	35.92	36.00	-0.08	Pass
		5788	18.82	0	17.00	35.82	36.00	-0.18	Pass
		5840	18.84	0	17.00	35.84	36.00	-0.16	Pass
	64QAM	5735	18.91	0	17.00	35.91	36.00	-0.09	Pass
		5788	18.81	0	17.00	35.81	36.00	-0.19	Pass
		5840	18.85	0	17.00	35.85	36.00	-0.15	Pass

* Total EIRP = Output power + Antenna gain array + 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 6.2.4.1, 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): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Table 7.5.13 EIRP test results (continue)

ASSIGNED FREQUENCY RANGE:

5.725 - 5.850 GHz

DETECTOR USED:

Average

METHOD OF POWER MEASUREMENTS:

PM-G (789033 D02)

MIMO CONFIGURATION:

2 carrier, 1 sectors (4 ports to 2 dual slant antennas)

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	5730	18.96	0	17.00	35.96	36.00	-0.04	Pass
		5788	19.00	0	17.00	36.00	36.00	0.00	Pass
		5845	18.92	0	17.00	35.92	36.00	-0.08	Pass
	16QAM	5730	18.93	0	17.00	35.93	36.00	-0.07	Pass
		5788	19.00	0	17.00	36.00	36.00	0.00	Pass
		5845	18.93	0	17.00	35.93	36.00	-0.07	Pass
	64QAM	5730	18.94	0	17.00	35.94	36.00	-0.06	Pass
		5788	19.00	0	17.00	36.00	36.00	0.00	Pass
		5845	18.94	0	17.00	35.94	36.00	-0.06	Pass
15	QPSK	5732.5	18.76	0	17.00	35.76	36.00	-0.24	Pass
		5788	19.00	0	17.00	36.00	36.00	0.00	Pass
		5842.5	18.79	0	17.00	35.79	36.00	-0.21	Pass
	16QAM	5732.5	18.77	0	17.00	35.77	36.00	-0.23	Pass
		5788	19.00	0	17.00	36.00	36.00	0.00	Pass
		5842.5	18.79	0	17.00	35.79	36.00	-0.21	Pass
	64QAM	5732.5	18.76	0	17.00	35.76	36.00	-0.24	Pass
		5788	18.99	0	17.00	35.99	36.00	-0.01	Pass
		5842.5	18.78	0	17.00	35.78	36.00	-0.22	Pass
20	QPSK	5735	18.76	0	17.00	35.76	36.00	-0.24	Pass
		5788	18.84	0	17.00	35.84	36.00	-0.16	Pass
		5840	18.90	0	17.00	35.90	36.00	-0.10	Pass
	16QAM	5735	18.68	0	17.00	35.68	36.00	-0.32	Pass
		5788	18.78	0	17.00	35.78	36.00	-0.22	Pass
		5840	18.89	0	17.00	35.89	36.00	-0.11	Pass
	64QAM	5735	18.68	0	17.00	35.68	36.00	-0.32	Pass
		5788	18.78	0	17.00	35.78	36.00	-0.22	Pass
		5840	18.88	0	17.00	35.88	36.00	-0.12	Pass

* Total EIRP = Output power + Antenna gain array + 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 6.2.1.1, 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:			

7.6 Peak output power at 5150 – 5250 MHz range

7.6.1 General

This test was performed to measure the maximum peak output power at the transmitter RF antenna connector. Specification test limits are given in Table 7.6.1.

Table 7.6.1 Peak output power limits

Assigned frequency range, MHz	Conducted output power limit	EIRP limit
5150 - 5250	1 W (30 dBm)	36 dBm

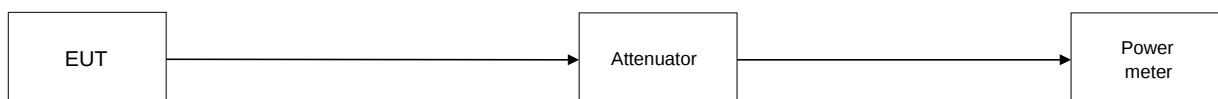
7.6.2 Test procedure

7.6.2.1 The EUT was set up as shown in Figure 7.6.1, energized and its proper operation was checked.

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

7.6.2.3 The measurements were performed in continuous transmission mode of operation for carrier (channel) frequency at low, mid and high edges with a peak detector. The power was computed by integrating the spectrum across the 26 dB bandwidth of the signal as provided in the associated tables and plots.

Figure 7.6.1 Peak output power test setup





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 7.6.2 Peak output power 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), coherent signal

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power per port, dBm				Total output power*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT2	ANT3	ANT4				
10	QPSK	5160	3.68	3.54	3.53	3.63	9.60	30.00	-20.40	Pass
		5200	8.85	8.81	8.84	8.82	14.83	30.00	-15.17	Pass
		5245	8.90	8.89	8.89	8.86	14.89	30.00	-15.11	Pass
	16QAM	5160	3.70	3.53	3.55	3.61	9.60	30.00	-20.40	Pass
		5200	8.85	8.81	8.83	8.81	14.83	30.00	-15.17	Pass
		5245	8.91	8.90	8.89	8.86	14.89	30.00	-15.11	Pass
	64QAM	5160	3.70	3.55	3.56	3.61	9.61	30.00	-20.39	Pass
		5200	8.85	8.81	8.84	8.80	14.83	30.00	-15.17	Pass
		5245	8.90	8.91	8.89	8.86	14.89	30.00	-15.11	Pass
15	QPSK	5165	3.66	3.56	3.58	3.54	9.59	30.00	-20.41	Pass
		5200	10.75	10.74	10.74	10.70	16.73	30.00	-13.27	Pass
		5240	10.81	10.82	10.79	10.81	16.81	30.00	-13.19	Pass
	16QAM	5165	3.66	3.56	3.55	3.54	9.58	30.00	-20.42	Pass
		5200	10.75	10.74	10.74	10.72	16.74	30.00	-13.26	Pass
		5240	10.81	10.80	10.78	10.81	16.80	30.00	-13.20	Pass
	64QAM	5165	3.66	3.56	3.48	3.53	9.56	30.00	-20.44	Pass
		5200	10.74	10.74	10.75	10.72	16.74	30.00	-13.26	Pass
		5240	10.82	10.79	10.79	10.81	16.80	30.00	-13.20	Pass
20	QPSK	5165	2.25	2.14	2.22	2.11	8.18	30.00	-21.82	Pass
		5200	11.78	11.77	11.78	11.75	17.77	30.00	-12.23	Pass
		5240	11.82	11.83	11.80	11.77	17.81	30.00	-12.19	Pass
	16QAM	5165	2.25	2.15	2.23	2.11	8.19	30.00	-21.81	Pass
		5200	11.79	11.77	11.78	11.74	17.77	30.00	-12.23	Pass
		5240	11.83	11.83	11.81	11.79	17.82	30.00	-12.18	Pass
	64QAM	5165	2.25	2.14	2.24	2.11	8.19	30.00	-21.81	Pass
		5200	11.79	11.78	11.78	11.74	17.77	30.00	-12.23	Pass
		5240	11.82	11.83	11.81	11.77	17.81	30.00	-12.19	Pass

* Total output power = (10*LOG (10^(Output power ANT1/10) + 10^(Output power ANT2/10) + 10^(Output power ANT3/10) + 10^(Output power ANT4/10)))

** 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 7.6.3 Peak output power 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	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT2	ANT3	ANT4				
10	QPSK	5160	5.33	5.31	5.24	5.13	11.25	30.00	-18.75	Pass
		5200	12.05	11.99	12.01	12.01	18.02	30.00	-11.98	Pass
		5245	11.98	11.98	12.02	12.03	18.00	30.00	-12.00	Pass
	16QAM	5160	5.33	5.28	5.13	5.24	11.25	30.00	-18.75	Pass
		5200	12.05	11.99	12.01	12.01	18.02	30.00	-11.98	Pass
		5245	11.99	11.98	12.01	12.03	18.00	30.00	-12.00	Pass
	64QAM	5160	5.33	5.26	5.13	5.28	11.25	30.00	-18.75	Pass
		5200	12.04	12.00	12.00	12.01	18.01	30.00	-11.99	Pass
		5245	11.99	12.00	12.01	11.99	18.00	30.00	-12.00	Pass
15	QPSK	5165	6.39	6.33	6.25	6.25	12.31	30.00	-17.69	Pass
		5200	13.95	13.93	13.93	13.92	19.93	30.00	-10.07	Pass
		5240	13.98	13.95	13.92	13.95	19.95	30.00	-10.05	Pass
	16QAM	5165	6.39	6.32	6.25	6.26	12.31	30.00	-17.69	Pass
		5200	13.95	13.92	13.93	13.92	19.93	30.00	-10.07	Pass
		5240	13.99	13.95	13.91	13.94	19.95	30.00	-10.05	Pass
	64QAM	5165	6.39	6.32	6.29	6.26	12.32	30.00	-17.68	Pass
		5200	13.96	13.91	13.94	13.95	19.94	30.00	-10.06	Pass
		5240	13.99	13.94	13.90	13.94	19.94	30.00	-10.06	Pass
20	QPSK	5165	5.23	5.05	5.23	5.14	11.16	30.00	-18.84	Pass
		5200	14.83	14.84	14.80	14.79	20.82	30.00	-9.18	Pass
		5240	14.81	14.80	14.80	14.82	20.81	30.00	-9.19	Pass
	16QAM	5165	5.23	5.04	5.24	5.15	11.17	30.00	-18.83	Pass
		5200	14.82	14.82	14.80	14.81	20.81	30.00	-9.19	Pass
		5240	14.80	14.80	14.80	14.81	20.80	30.00	-9.20	Pass
	64QAM	5165	5.25	5.04	5.25	5.15	11.17	30.00	-18.83	Pass
		5200	14.83	14.85	14.82	14.80	20.83	30.00	-9.17	Pass
		5240	14.81	14.81	14.81	14.82	20.81	30.00	-9.19	Pass

* Total output power = (10*LOG (10^(Output power ANT1/10) + 10^(Output power ANT2/10) + 10^(Output power ANT3/10) + 10^(Output power ANT4/10)))

** 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 7.6.4 Peak output power 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 carrier, 1 sectors (4 ports to 2 dual slant antennas)

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power per port, dBm		Total output power*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT3				
10	QPSK	5160	5.33	5.24	8.29	30.00	-21.71	Pass
		5200	15.01	14.95	17.98	30.00	-12.02	Pass
		5245	14.85	14.80	17.83	30.00	-12.17	Pass
	16QAM	5160	5.33	5.13	8.23	30.00	-21.77	Pass
		5200	15.01	14.95	17.98	30.00	-12.02	Pass
		5245	14.84	14.79	17.82	30.00	-12.18	Pass
	64QAM	5160	5.33	5.13	8.23	30.00	-21.77	Pass
		5200	15.02	14.97	18.00	30.00	-12.00	Pass
		5245	14.84	14.82	17.83	30.00	-12.17	Pass
15	QPSK	5165	6.39	6.25	9.32	30.00	-20.68	Pass
		5200	16.81	16.78	19.80	30.00	-10.20	Pass
		5240	16.74	16.70	19.72	30.00	-10.28	Pass
	16QAM	5165	6.39	6.25	9.32	30.00	-20.68	Pass
		5200	16.80	16.78	19.79	30.00	-10.21	Pass
		5240	16.74	16.71	19.73	30.00	-10.27	Pass
	64QAM	5165	6.39	6.29	9.34	30.00	-20.66	Pass
		5200	16.82	16.78	19.80	30.00	-10.20	Pass
		5240	16.75	16.70	19.73	30.00	-10.27	Pass
20	QPSK	5165	5.23	5.23	8.23	30.00	-21.77	Pass
		5200	14.81	14.81	17.81	30.00	-12.19	Pass
		5240	15.85	15.80	18.83	30.00	-11.17	Pass
	16QAM	5165	5.23	5.24	8.24	30.00	-21.76	Pass
		5200	14.80	14.80	17.80	30.00	-12.20	Pass
		5240	15.85	15.81	18.83	30.00	-11.17	Pass
	64QAM	5165	5.25	5.25	8.25	30.00	-21.75	Pass
		5200	14.82	14.81	17.82	30.00	-12.18	Pass
		5240	15.85	15.84	18.85	30.00	-11.15	Pass

* Total output power = (10*LOG (10^(Output power ANT1/10) + 10^(Output power ANT3/10))

** 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 7.6.5 Peak output power test results (continue)

ASSIGNED FREQUENCY RANGE:

5.15 – 5.25 GHz

DETECTOR USED:

Average

METHOD OF POWER MEASUREMENTS:

PM-G (789033 D02)

MIMO CONFIGURATION:

2 carrier, 1 sectors (4 ports to 2 dual slant antennas)

Channel bandwidth, MHz	Modulation	Frequency, MHz	Output power per port, dBm		Total output power*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT2	ANT4				
10	QPSK	5160	5.31	5.13	8.22	30.00	-21.78	Pass
		5200	14.99	14.99	17.99	30.00	-12.01	Pass
		5245	14.84	14.85	17.85	30.00	-12.15	Pass
	16QAM	5160	5.28	5.24	8.26	30.00	-21.74	Pass
		5200	14.99	14.99	17.99	30.00	-12.01	Pass
		5245	14.84	14.82	17.83	30.00	-12.17	Pass
	64QAM	5160	5.26	5.28	8.27	30.00	-21.73	Pass
		5200	14.99	15.00	18.00	30.00	-12.00	Pass
		5245	14.84	14.82	17.83	30.00	-12.17	Pass
15	QPSK	5165	6.33	6.25	9.29	30.00	-20.71	Pass
		5200	16.80	16.78	19.79	30.00	-10.21	Pass
		5240	16.72	16.69	19.71	30.00	-10.29	Pass
	16QAM	5165	6.32	6.26	9.29	30.00	-20.71	Pass
		5200	16.81	16.78	19.80	30.00	-10.20	Pass
		5240	16.72	16.70	19.71	30.00	-10.29	Pass
	64QAM	5165	6.32	6.26	9.29	30.00	-20.71	Pass
		5200	16.80	16.79	19.80	30.00	-10.20	Pass
		5240	16.73	16.71	19.72	30.00	-10.28	Pass
20	QPSK	5165	5.05	5.14	8.10	30.00	-21.90	Pass
		5200	14.80	14.80	17.80	30.00	-12.20	Pass
		5240	15.84	15.86	18.85	30.00	-11.15	Pass
	16QAM	5165	5.04	5.15	8.10	30.00	-21.90	Pass
		5200	14.80	14.79	17.80	30.00	-12.20	Pass
		5240	15.85	15.83	18.84	30.00	-11.16	Pass
	64QAM	5165	5.04	5.15	8.10	30.00	-21.90	Pass
		5200	14.80	14.81	17.81	30.00	-12.19	Pass
		5240	15.83	15.85	18.84	30.00	-11.16	Pass

* Total output power = (10*LOG (10^(Output power ANT2/10) + 10^(Output power ANT4/10))

** Margin = Total output power – specification limit



HERMON LABORATORIES

Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-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 7.6.6 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: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), 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
			ANT1	ANT2							
10	QPSK	5160	3.68	3.54	6.61	3.00	17.00	26.61	36.00	-9.39	Pass
		5200	8.85	8.81	11.83	3.00	17.00	31.83	36.00	-4.17	Pass
		5245	8.90	8.89	11.90	3.00	17.00	31.90	36.00	-4.10	Pass
	16QAM	5160	3.70	3.53	6.62	3.00	17.00	26.62	36.00	-9.38	Pass
		5200	8.85	8.81	11.83	3.00	17.00	31.83	36.00	-4.17	Pass
		5245	8.91	8.90	11.91	3.00	17.00	31.91	36.00	-4.09	Pass
	64QAM	5160	3.70	3.55	6.63	3.00	17.00	26.63	36.00	-9.37	Pass
		5200	8.85	8.81	11.83	3.00	17.00	31.83	36.00	-4.17	Pass
		5245	8.90	8.91	11.91	3.00	17.00	31.91	36.00	-4.09	Pass
15	QPSK	5165	3.66	3.56	6.61	3.00	17.00	26.61	36.00	-9.39	Pass
		5200	10.75	10.74	13.75	3.00	17.00	33.75	36.00	-2.25	Pass
		5240	10.81	10.82	13.82	3.00	17.00	33.82	36.00	-2.18	Pass
	16QAM	5165	3.66	3.56	6.61	3.00	17.00	26.61	36.00	-9.39	Pass
		5200	10.75	10.74	13.75	3.00	17.00	33.75	36.00	-2.25	Pass
		5240	10.81	10.80	13.81	3.00	17.00	33.81	36.00	-2.19	Pass
	64QAM	5165	3.66	3.56	6.61	3.00	17.00	26.61	36.00	-9.39	Pass
		5200	10.74	10.74	13.74	3.00	17.00	33.74	36.00	-2.26	Pass
		5240	10.82	10.79	13.81	3.00	17.00	33.81	36.00	-2.19	Pass
20	QPSK	5165	2.25	2.14	5.20	3.00	17.00	25.20	36.00	-10.80	Pass
		5200	11.78	11.77	14.78	3.00	17.00	34.78	36.00	-1.22	Pass
		5240	11.82	11.83	14.83	3.00	17.00	34.83	36.00	-1.17	Pass
	16QAM	5165	2.25	2.15	5.20	3.00	17.00	25.20	36.00	-10.80	Pass
		5200	11.79	11.77	14.78	3.00	17.00	34.78	36.00	-1.22	Pass
		5240	11.83	11.83	14.83	3.00	17.00	34.83	36.00	-1.17	Pass
	64QAM	5165	2.25	2.14	5.20	3.00	17.00	25.20	36.00	-10.80	Pass
		5200	11.79	11.78	14.79	3.00	17.00	34.79	36.00	-1.21	Pass
		5240	11.82	11.83	14.83	3.00	17.00	34.83	36.00	-1.17	Pass

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

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

** Margin = Total output power – specification limit



HERMON LABORATORIES

Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-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 (continue)

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), 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	3.53	3.63	6.58	3.00	17.00	26.58	36.00	-9.42	Pass
		5200	8.84	8.82	11.83	3.00	17.00	31.83	36.00	-4.17	Pass
		5245	8.89	8.86	11.88	3.00	17.00	31.88	36.00	-4.12	Pass
	16QAM	5160	3.55	3.61	6.58	3.00	17.00	26.58	36.00	-9.42	Pass
		5200	8.83	8.81	11.82	3.00	17.00	31.82	36.00	-4.18	Pass
		5245	8.89	8.86	11.88	3.00	17.00	31.88	36.00	-4.12	Pass
	64QAM	5160	3.56	3.61	6.59	3.00	17.00	26.59	36.00	-9.41	Pass
		5200	8.84	8.80	11.82	3.00	17.00	31.82	36.00	-4.18	Pass
		5245	8.89	8.86	11.88	3.00	17.00	31.88	36.00	-4.12	Pass
15	QPSK	5165	3.58	3.54	6.56	3.00	17.00	26.56	36.00	-9.44	Pass
		5200	10.74	10.70	13.72	3.00	17.00	33.72	36.00	-2.28	Pass
		5240	10.79	10.81	13.80	3.00	17.00	33.80	36.00	-2.20	Pass
	16QAM	5165	3.55	3.54	6.55	3.00	17.00	26.55	36.00	-9.45	Pass
		5200	10.74	10.72	13.73	3.00	17.00	33.73	36.00	-2.27	Pass
		5240	10.78	10.81	13.80	3.00	17.00	33.80	36.00	-2.20	Pass
	64QAM	5165	3.48	3.53	6.51	3.00	17.00	26.51	36.00	-9.49	Pass
		5200	10.75	10.72	13.74	3.00	17.00	33.74	36.00	-2.26	Pass
		5240	10.79	10.81	13.80	3.00	17.00	33.80	36.00	-2.20	Pass
20	QPSK	5165	2.22	2.11	5.17	3.00	17.00	25.17	36.00	-10.83	Pass
		5200	11.78	11.75	14.77	3.00	17.00	34.77	36.00	-1.23	Pass
		5240	11.80	11.77	14.79	3.00	17.00	34.79	36.00	-1.21	Pass
	16QAM	5165	2.23	2.11	5.17	3.00	17.00	25.17	36.00	-10.83	Pass
		5200	11.78	11.74	14.76	3.00	17.00	34.76	36.00	-1.24	Pass
		5240	11.81	11.79	14.80	3.00	17.00	34.80	36.00	-1.20	Pass
	64QAM	5165	2.24	2.11	5.18	3.00	17.00	25.18	36.00	-10.82	Pass
		5200	11.78	11.74	14.76	3.00	17.00	34.76	36.00	-1.24	Pass
		5240	11.81	11.77	14.79	3.00	17.00	34.79	36.00	-1.21	Pass

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

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

** Margin = Total output power – specification limit



HERMON LABORATORIES

Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-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 7.6.8 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: 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
			ANT1	ANT2							
10	QPSK	QPSK	5.33	5.31	8.32	0	17.00	25.32	36.00	-10.68	Pass
			12.05	11.99	15.02	0	17.00	32.02	36.00	-3.98	Pass
			11.98	11.98	14.98	0	17.00	31.98	36.00	-4.02	Pass
	16QAM	16QAM	5.33	5.28	8.31	0	17.00	25.31	36.00	-10.69	Pass
			12.05	11.99	15.02	0	17.00	32.02	36.00	-3.98	Pass
			11.99	11.98	14.99	0	17.00	31.99	36.00	-4.01	Pass
	64QAM	64QAM	5.33	5.26	8.30	0	17.00	25.30	36.00	-10.70	Pass
			12.04	12.00	15.02	0	17.00	32.02	36.00	-3.98	Pass
			11.99	12.00	15.00	0	17.00	32.00	36.00	-4.00	Pass
15	QPSK	QPSK	6.39	6.33	9.36	0	17.00	26.36	36.00	-9.64	Pass
			13.95	13.93	16.94	0	17.00	33.94	36.00	-2.06	Pass
			13.98	13.95	16.97	0	17.00	33.97	36.00	-2.03	Pass
	16QAM	16QAM	6.39	6.32	9.36	0	17.00	26.36	36.00	-9.64	Pass
			13.95	13.92	16.94	0	17.00	33.94	36.00	-2.06	Pass
			13.99	13.95	16.97	0	17.00	33.97	36.00	-2.03	Pass
	64QAM	64QAM	6.39	6.32	9.36	0	17.00	26.36	36.00	-9.64	Pass
			13.96	13.91	16.94	0	17.00	33.94	36.00	-2.06	Pass
			13.99	13.94	16.97	0	17.00	33.97	36.00	-2.03	Pass
20	QPSK	QPSK	5.23	5.05	8.14	0	17.00	25.14	36.00	-10.86	Pass
			14.83	14.84	17.84	0	17.00	34.84	36.00	-1.16	Pass
			14.81	14.80	17.81	0	17.00	34.81	36.00	-1.19	Pass
	16QAM	16QAM	5.23	5.04	8.14	0	17.00	25.14	36.00	-10.86	Pass
			14.82	14.82	17.82	0	17.00	34.82	36.00	-1.18	Pass
			14.80	14.80	17.80	0	17.00	34.80	36.00	-1.20	Pass
	64QAM	64QAM	5.25	5.04	8.15	0	17.00	25.15	36.00	-10.85	Pass
			14.83	14.85	17.84	0	17.00	34.84	36.00	-1.16	Pass
			14.81	14.81	17.81	0	17.00	34.81	36.00	-1.19	Pass

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

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

** Margin = Total output power – specification limit



HERMON LABORATORIES

Report ID: TELRAD_FCC.31830
Date of Issue: 28-May-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 7.6.9 EIRP test results (continue)

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	5.24	5.13	8.19	0	17.00	25.19	36.00	-10.81	Pass
		5200	12.01	12.01	15.01	0	17.00	32.01	36.00	-3.99	Pass
		5245	12.02	12.03	15.03	0	17.00	32.03	36.00	-3.97	Pass
	16QAM	5160	5.13	5.24	8.19	0	17.00	25.19	36.00	-10.81	Pass
		5200	12.01	12.01	15.01	0	17.00	32.01	36.00	-3.99	Pass
		5245	12.01	12.03	15.02	0	17.00	32.02	36.00	-3.98	Pass
	64QAM	5160	5.13	5.28	8.21	0	17.00	25.21	36.00	-10.79	Pass
		5200	12.00	12.01	15.01	0	17.00	32.01	36.00	-3.99	Pass
		5245	12.01	11.99	15.00	0	17.00	32.00	36.00	-4.00	Pass
15	QPSK	5165	6.25	6.25	9.25	0	17.00	26.25	36.00	-9.75	Pass
		5200	13.93	13.92	16.93	0	17.00	33.93	36.00	-2.07	Pass
		5240	13.92	13.95	16.94	0	17.00	33.94	36.00	-2.06	Pass
	16QAM	5165	6.25	6.26	9.26	0	17.00	26.26	36.00	-9.74	Pass
		5200	13.93	13.92	16.93	0	17.00	33.93	36.00	-2.07	Pass
		5240	13.91	13.94	16.93	0	17.00	33.93	36.00	-2.07	Pass
	64QAM	5165	6.29	6.26	9.28	0	17.00	26.28	36.00	-9.72	Pass
		5200	13.94	13.95	16.95	0	17.00	33.95	36.00	-2.05	Pass
		5240	13.90	13.94	16.92	0	17.00	33.92	36.00	-2.08	Pass
20	QPSK	5165	5.23	5.14	8.19	0	17.00	25.19	36.00	-10.81	Pass
		5200	14.80	14.79	17.80	0	17.00	34.80	36.00	-1.20	Pass
		5240	14.80	14.82	17.81	0	17.00	34.81	36.00	-1.19	Pass
	16QAM	5165	5.24	5.15	8.20	0	17.00	25.20	36.00	-10.80	Pass
		5200	14.80	14.81	17.81	0	17.00	34.81	36.00	-1.19	Pass
		5240	14.80	14.81	17.81	0	17.00	34.81	36.00	-1.19	Pass
	64QAM	5165	5.25	5.15	8.20	0	17.00	25.20	36.00	-10.80	Pass
		5200	14.82	14.80	17.81	0	17.00	34.81	36.00	-1.19	Pass
		5240	14.81	14.82	17.82	0	17.00	34.82	36.00	-1.18	Pass

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

** Total EIRP = Total output power + Antenna gain array + 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 (continued)

ASSIGNED FREQUENCY RANGE:

5.15 – 5.25 GHz

DETECTOR USED:

Average

METHOD OF POWER MEASUREMENTS:

PM-G (789033 D02)

MIMO CONFIGURATION:

2 carrier, 1 sectors (4 ports to 2 dual slant antennas)

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	5.33	0	17.00	22.33	36.00	-13.67	Pass
		5200	15.01	0	17.00	32.01	36.00	-3.99	Pass
		5245	14.85	0	17.00	31.85	36.00	-4.15	Pass
	16QAM	5160	5.33	0	17.00	22.33	36.00	-13.67	Pass
		5200	15.01	0	17.00	32.01	36.00	-3.99	Pass
		5245	14.84	0	17.00	31.84	36.00	-4.16	Pass
	64QAM	5160	5.33	0	17.00	22.33	36.00	-13.67	Pass
		5200	15.02	0	17.00	32.02	36.00	-3.98	Pass
		5245	14.84	0	17.00	31.84	36.00	-4.16	Pass
15	QPSK	5165	6.39	0	17.00	23.39	36.00	-12.61	Pass
		5200	16.81	0	17.00	33.81	36.00	-2.19	Pass
		5240	16.74	0	17.00	33.74	36.00	-2.26	Pass
	16QAM	5165	6.39	0	17.00	23.39	36.00	-12.61	Pass
		5200	16.80	0	17.00	33.80	36.00	-2.20	Pass
		5240	16.74	0	17.00	33.74	36.00	-2.26	Pass
	64QAM	5165	6.39	0	17.00	23.39	36.00	-12.61	Pass
		5200	16.82	0	17.00	33.82	36.00	-2.18	Pass
		5240	16.75	0	17.00	33.75	36.00	-2.25	Pass
20	QPSK	5165	5.23	0	17.00	22.23	36.00	-13.77	Pass
		5200	14.81	0	17.00	31.81	36.00	-4.19	Pass
		5240	15.85	0	17.00	32.85	36.00	-3.15	Pass
	16QAM	5165	5.23	0	17.00	22.23	36.00	-13.77	Pass
		5200	14.80	0	17.00	31.80	36.00	-4.20	Pass
		5240	15.85	0	17.00	32.85	36.00	-3.15	Pass
	64QAM	5165	5.25	0	17.00	22.25	36.00	-13.75	Pass
		5200	14.82	0	17.00	31.82	36.00	-4.18	Pass
		5240	15.85	0	17.00	32.85	36.00	-3.15	Pass

* Total EIRP = Output power + Antenna gain array + 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 7.6.11 EIRP test results (continue)

ASSIGNED FREQUENCY RANGE:

5.15 – 5.25 GHz

DETECTOR USED:

Average

METHOD OF POWER MEASUREMENTS:

PM-G (789033 D02)

MIMO CONFIGURATION:

2 carrier, 1 sectors (4 ports to 2 dual slant antennas)

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	5.31	0	17.00	22.31	36.00	-13.69	Pass
		5200	14.99	0	17.00	31.99	36.00	-4.01	Pass
		5245	14.84	0	17.00	31.84	36.00	-4.16	Pass
	16QAM	5160	5.28	0	17.00	22.28	36.00	-13.72	Pass
		5200	14.99	0	17.00	31.99	36.00	-4.01	Pass
		5245	14.84	0	17.00	31.84	36.00	-4.16	Pass
	64QAM	5160	5.26	0	17.00	22.26	36.00	-13.74	Pass
		5200	14.99	0	17.00	31.99	36.00	-4.01	Pass
		5245	14.84	0	17.00	31.84	36.00	-4.16	Pass
15	QPSK	5165	6.33	0	17.00	23.33	36.00	-12.67	Pass
		5200	16.80	0	17.00	33.80	36.00	-2.20	Pass
		5240	16.72	0	17.00	33.72	36.00	-2.28	Pass
	16QAM	5165	6.32	0	17.00	23.32	36.00	-12.68	Pass
		5200	16.81	0	17.00	33.81	36.00	-2.19	Pass
		5240	16.72	0	17.00	33.72	36.00	-2.28	Pass
	64QAM	5165	6.32	0	17.00	23.32	36.00	-12.68	Pass
		5200	16.80	0	17.00	33.80	36.00	-2.20	Pass
		5240	16.73	0	17.00	33.73	36.00	-2.27	Pass
20	QPSK	5165	5.05	0	17.00	22.05	36.00	-13.95	Pass
		5200	14.80	0	17.00	31.80	36.00	-4.20	Pass
		5240	15.84	0	17.00	32.84	36.00	-3.16	Pass
	16QAM	5165	5.04	0	17.00	22.04	36.00	-13.96	Pass
		5200	14.80	0	17.00	31.80	36.00	-4.20	Pass
		5240	15.85	0	17.00	32.85	36.00	-3.15	Pass
	64QAM	5165	5.04	0	17.00	22.04	36.00	-13.96	Pass
		5200	14.80	0	17.00	31.80	36.00	-4.20	Pass
		5240	15.83	0	17.00	32.83	36.00	-3.17	Pass

* Total EIRP = Output power + Antenna gain array + 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 7.6.12 EIRP test results (continue)

ASSIGNED FREQUENCY RANGE:

5.15 – 5.25 GHz

DETECTOR USED:

Average

METHOD OF POWER MEASUREMENTS:

PM-G (789033 D02)

MIMO CONFIGURATION:

2 carrier, 1 sectors (4 ports to 2 dual slant antennas)

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	5.24	0	17.00	22.24	36.00	-13.76	Pass
		5200	14.95	0	17.00	31.95	36.00	-4.05	Pass
		5245	14.80	0	17.00	31.80	36.00	-4.20	Pass
	16QAM	5160	5.13	0	17.00	22.13	36.00	-13.87	Pass
		5200	14.95	0	17.00	31.95	36.00	-4.05	Pass
		5245	14.79	0	17.00	31.79	36.00	-4.21	Pass
	64QAM	5160	5.13	0	17.00	22.13	36.00	-13.87	Pass
		5200	14.97	0	17.00	31.97	36.00	-4.03	Pass
		5245	14.82	0	17.00	31.82	36.00	-4.18	Pass
15	QPSK	5165	6.25	0	17.00	23.25	36.00	-12.75	Pass
		5200	16.78	0	17.00	33.78	36.00	-2.22	Pass
		5240	16.70	0	17.00	33.70	36.00	-2.30	Pass
	16QAM	5165	6.25	0	17.00	23.25	36.00	-12.75	Pass
		5200	16.78	0	17.00	33.78	36.00	-2.22	Pass
		5240	16.71	0	17.00	33.71	36.00	-2.29	Pass
	64QAM	5165	6.29	0	17.00	23.29	36.00	-12.71	Pass
		5200	16.78	0	17.00	33.78	36.00	-2.22	Pass
		5240	16.70	0	17.00	33.70	36.00	-2.30	Pass
20	QPSK	5165	5.23	0	17.00	22.23	36.00	-13.77	Pass
		5200	14.81	0	17.00	31.81	36.00	-4.19	Pass
		5240	15.80	0	17.00	32.80	36.00	-3.20	Pass
	16QAM	5165	5.24	0	17.00	22.24	36.00	-13.76	Pass
		5200	14.80	0	17.00	31.80	36.00	-4.20	Pass
		5240	15.81	0	17.00	32.81	36.00	-3.19	Pass
	64QAM	5165	5.25	0	17.00	22.25	36.00	-13.75	Pass
		5200	14.81	0	17.00	31.81	36.00	-4.19	Pass
		5240	15.84	0	17.00	32.84	36.00	-3.16	Pass

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

** Margin = Total output power – specification limit



HERMON LABORATORIES

Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-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 (continue)

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

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	5.13	0	17.00	22.13	36.00	-13.87	Pass
		5200	14.99	0	17.00	31.99	36.00	-4.01	Pass
		5245	14.85	0	17.00	31.85	36.00	-4.15	Pass
	16QAM	5160	5.24	0	17.00	22.24	36.00	-13.76	Pass
		5200	14.99	0	17.00	31.99	36.00	-4.01	Pass
		5245	14.82	0	17.00	31.82	36.00	-4.18	Pass
	64QAM	5160	5.28	0	17.00	22.28	36.00	-13.72	Pass
		5200	15.00	0	17.00	32.00	36.00	-4.00	Pass
		5245	14.82	0	17.00	31.82	36.00	-4.18	Pass
15	QPSK	5165	6.25	0	17.00	23.25	36.00	-12.75	Pass
		5200	16.78	0	17.00	33.78	36.00	-2.22	Pass
		5240	16.69	0	17.00	33.69	36.00	-2.31	Pass
	16QAM	5165	6.26	0	17.00	23.26	36.00	-12.74	Pass
		5200	16.78	0	17.00	33.78	36.00	-2.22	Pass
		5240	16.70	0	17.00	33.70	36.00	-2.30	Pass
	64QAM	5165	6.26	0	17.00	23.26	36.00	-12.74	Pass
		5200	16.79	0	17.00	33.79	36.00	-2.21	Pass
		5240	16.71	0	17.00	33.71	36.00	-2.29	Pass
20	QPSK	5165	5.14	0	17.00	22.14	36.00	-13.86	Pass
		5200	14.80	0	17.00	31.80	36.00	-4.20	Pass
		5240	15.86	0	17.00	32.86	36.00	-3.14	Pass
	16QAM	5165	5.15	0	17.00	22.15	36.00	-13.85	Pass
		5200	14.79	0	17.00	31.79	36.00	-4.21	Pass
		5240	15.83	0	17.00	32.83	36.00	-3.17	Pass
	64QAM	5165	5.15	0	17.00	22.15	36.00	-13.85	Pass
		5200	14.81	0	17.00	31.81	36.00	-4.19	Pass
		5240	15.85	0	17.00	32.85	36.00	-3.15	Pass

* Total EIRP = Output power + Antenna gain array + 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:		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.

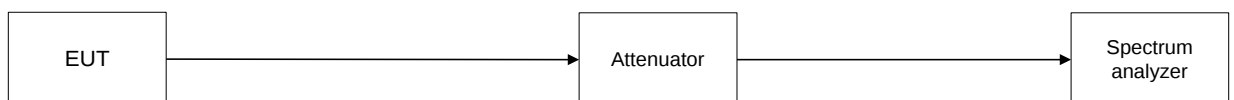
Table 7.7.1 Peak spectral power density limits

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 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.
- 7.7.2.2** Figure 7.7.1, energized and its proper operation was checked.
- 7.7.2.3** The EUT was adjusted to produce maximum available to end user RF output power.
- 7.7.2.4** 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





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), coherent signal

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna gain array*, dB	Total power spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5160	-6.23	6.00	2.24	17.00	-14.76	Pass
		5200	-2.50	6.00	5.97	17.00	-11.03	Pass
		5245	-2.64	6.00	5.83	17.00	-11.17	Pass
	16QAM	5160	-6.93	6.00	1.54	17.00	-15.46	Pass
		5200	-2.51	6.00	5.96	17.00	-11.04	Pass
		5245	-2.58	6.00	5.89	17.00	-11.11	Pass
	64QAM	5160	-6.54	6.00	1.93	17.00	-15.07	Pass
		5200	-2.57	6.00	5.90	17.00	-11.10	Pass
		5245	-2.56	6.00	5.91	17.00	-11.09	Pass
15	QPSK	5165	-6.90	6.00	1.57	17.00	-15.43	Pass
		5200	-2.68	6.00	5.79	17.00	-11.21	Pass
		5240	-2.55	6.00	5.92	17.00	-11.08	Pass
	16QAM	5165	-6.61	6.00	1.86	17.00	-15.14	Pass
		5200	-2.54	6.00	5.93	17.00	-11.07	Pass
		5240	-2.69	6.00	5.78	17.00	-11.22	Pass
	64QAM	5165	-6.68	6.00	1.79	17.00	-15.21	Pass
		5200	-2.59	6.00	5.88	17.00	-11.12	Pass
		5240	-2.66	6.00	5.81	17.00	-11.19	Pass
20	QPSK	5165	-9.56	6.00	-1.09	17.00	-18.09	Pass
		5200	-2.65	6.00	5.82	17.00	-11.18	Pass
		5240	-2.64	6.00	5.83	17.00	-11.17	Pass
	16QAM	5165	-9.49	6.00	-1.02	17.00	-18.02	Pass
		5200	-2.57	6.00	5.90	17.00	-11.10	Pass
		5240	-2.70	6.00	5.77	17.00	-11.23	Pass
	64QAM	5165	-9.72	6.00	-1.25	17.00	-18.25	Pass
		5200	-2.58	6.00	5.89	17.00	-11.11	Pass
		5240	-2.71	6.00	5.76	17.00	-11.24	Pass

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

* Total power spectral density = SA reading + Antenna gain array + Duty cycle factor (2.49 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):			
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: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna gain array*, dB	Total power spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5160	-5.17	6.00	3.30	17.00	-13.70	Pass
		5200	0.47	6.00	8.94	17.00	-8.06	Pass
		5245	0.47	6.00	8.94	17.00	-8.06	Pass
	16QAM	5160	-5.07	6.00	3.40	17.00	-13.60	Pass
		5200	0.42	6.00	8.89	17.00	-8.11	Pass
		5245	0.44	6.00	8.91	17.00	-8.09	Pass
	64QAM	5160	-5.28	6.00	3.19	17.00	-13.81	Pass
		5200	0.39	6.00	8.86	17.00	-8.14	Pass
		5245	0.46	6.00	8.93	17.00	-8.07	Pass
15	QPSK	5165	-4.27	6.00	4.20	17.00	-12.80	Pass
		5200	0.45	6.00	8.92	17.00	-8.08	Pass
		5240	0.49	6.00	8.96	17.00	-8.04	Pass
	16QAM	5165	-4.41	6.00	4.06	17.00	-12.94	Pass
		5200	0.42	6.00	8.89	17.00	-8.11	Pass
		5240	0.48	6.00	8.95	17.00	-8.05	Pass
	64QAM	5165	-4.13	6.00	4.34	17.00	-12.66	Pass
		5200	0.48	6.00	8.95	17.00	-8.05	Pass
		5240	0.47	6.00	8.94	17.00	-8.06	Pass
20	QPSK	5165	-7.25	6.00	1.22	17.00	-15.78	Pass
		5200	0.50	6.00	8.97	17.00	-8.03	Pass
		5240	0.45	6.00	8.92	17.00	-8.08	Pass
	16QAM	5165	-7.46	6.00	1.01	17.00	-15.99	Pass
		5200	0.42	6.00	8.89	17.00	-8.11	Pass
		5240	0.50	6.00	8.97	17.00	-8.03	Pass
	64QAM	5165	-7.36	6.00	1.11	17.00	-15.89	Pass
		5200	0.49	6.00	8.96	17.00	-8.04	Pass
		5240	0.45	6.00	8.92	17.00	-8.08	Pass

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

* Total power spectral density = SA reading + Antenna gain array + Duty cycle factor (2.49 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):			
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 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna gain array*, dB	Total power spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5160	-5.17	6.00	3.30	17.00	-13.70	Pass
		5200	3.44	6.00	11.91	17.00	-5.09	Pass
		5245	3.41	6.00	11.88	17.00	-5.12	Pass
	16QAM	5160	-5.07	6.00	3.40	17.00	-13.60	Pass
		5200	3.38	6.00	11.85	17.00	-5.15	Pass
		5245	3.48	6.00	11.95	17.00	-5.05	Pass
	64QAM	5160	-5.28	6.00	3.19	17.00	-13.81	Pass
		5200	3.49	6.00	11.96	17.00	-5.04	Pass
		5245	3.28	6.00	11.75	17.00	-5.25	Pass
15	QPSK	5165	-4.28	6.00	4.19	17.00	-12.81	Pass
		5200	3.38	6.00	11.85	17.00	-5.15	Pass
		5240	3.36	6.00	11.83	17.00	-5.17	Pass
	16QAM	5165	-4.41	6.00	4.06	17.00	-12.94	Pass
		5200	3.44	6.00	11.91	17.00	-5.09	Pass
		5240	3.41	6.00	11.88	17.00	-5.12	Pass
	64QAM	5165	-4.13	6.00	4.34	17.00	-12.66	Pass
		5200	3.34	6.00	11.81	17.00	-5.19	Pass
		5240	3.39	6.00	11.86	17.00	-5.14	Pass
20	QPSK	5165	-7.25	6.00	1.22	17.00	-15.78	Pass
		5200	3.31	6.00	11.78	17.00	-5.22	Pass
		5240	3.32	6.00	11.79	17.00	-5.21	Pass
	16QAM	5165	-7.46	6.00	1.01	17.00	-15.99	Pass
		5200	3.37	6.00	11.84	17.00	-5.16	Pass
		5240	3.31	6.00	11.78	17.00	-5.22	Pass
	64QAM	5165	-7.36	6.00	1.11	17.00	-15.89	Pass
		5200	3.35	6.00	11.82	17.00	-5.18	Pass
		5240	3.40	6.00	11.87	17.00	-5.13	Pass

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

* Total power spectral density = SA reading + Antenna gain array + Duty cycle factor (2.49 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): 12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.7.5 EIRP 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), coherent signal

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna gain array*, dB	Single antenna gain, dBi	EIRP spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5160	-6.23	6.00	17.00	19.24	23.00	-3.76	Pass
		5200	-2.50	6.00	17.00	22.97	23.00	-0.03	Pass
		5245	-2.64	6.00	17.00	22.83	23.00	-0.17	Pass
	16QAM	5160	-6.93	6.00	17.00	18.54	23.00	-4.46	Pass
		5200	-2.51	6.00	17.00	22.96	23.00	-0.04	Pass
		5245	-2.58	6.00	17.00	22.89	23.00	-0.11	Pass
	64QAM	5160	-6.54	6.00	17.00	18.93	23.00	-4.07	Pass
		5200	-2.57	6.00	17.00	22.90	23.00	-0.10	Pass
		5245	-2.56	6.00	17.00	22.91	23.00	-0.09	Pass
15	QPSK	5165	-6.90	6.00	17.00	18.57	23.00	-4.43	Pass
		5200	-2.68	6.00	17.00	22.79	23.00	-0.21	Pass
		5240	-2.55	6.00	17.00	22.92	23.00	-0.08	Pass
	16QAM	5165	-6.61	6.00	17.00	18.86	23.00	-4.14	Pass
		5200	-2.54	6.00	17.00	22.93	23.00	-0.07	Pass
		5240	-2.69	6.00	17.00	22.78	23.00	-0.22	Pass
	64QAM	5165	-6.68	6.00	17.00	18.79	23.00	-4.21	Pass
		5200	-2.59	6.00	17.00	22.88	23.00	-0.12	Pass
		5240	-2.66	6.00	17.00	22.81	23.00	-0.19	Pass
20	QPSK	5165	-9.56	6.00	17.00	15.91	23.00	-7.09	Pass
		5200	-2.65	6.00	17.00	22.82	23.00	-0.18	Pass
		5240	-2.64	6.00	17.00	22.83	23.00	-0.17	Pass
	16QAM	5165	-9.49	6.00	17.00	15.98	23.00	-7.02	Pass
		5200	-2.57	6.00	17.00	22.90	23.00	-0.10	Pass
		5240	-2.70	6.00	17.00	22.77	23.00	-0.23	Pass
	64QAM	5165	-9.72	6.00	17.00	15.75	23.00	-7.25	Pass
		5200	-2.58	6.00	17.00	22.89	23.00	-0.11	Pass
		5240	-2.71	6.00	17.00	22.76	23.00	-0.24	Pass

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

** EIRP spectral density = SA reading + Antenna gain array + Single antenna gain + Duty cycle factor (2.49 dB)

*** Margin = EIRP 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):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Table 7.7.6 EIRP 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 gain array*, dB	Single antenna gain, dBi	EIRP spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5160	-5.17	3	17.00	17.30	23.00	-5.70	Pass
		5200	0.47	3	17.00	22.94	23.00	-0.06	Pass
		5245	0.47	3	17.00	22.94	23.00	-0.06	Pass
	16QAM	5160	-5.07	3	17.00	17.40	23.00	-5.60	Pass
		5200	0.42	3	17.00	22.89	23.00	-0.11	Pass
		5245	0.44	3	17.00	22.91	23.00	-0.09	Pass
	64QAM	5160	-5.28	3	17.00	17.19	23.00	-5.81	Pass
		5200	0.39	3	17.00	22.86	23.00	-0.14	Pass
		5245	0.46	3	17.00	22.93	23.00	-0.07	Pass
15	QPSK	5165	-4.27	3	17.00	18.20	23.00	-4.80	Pass
		5200	0.45	3	17.00	22.92	23.00	-0.08	Pass
		5240	0.49	3	17.00	22.96	23.00	-0.04	Pass
	16QAM	5165	-4.41	3	17.00	18.06	23.00	-4.94	Pass
		5200	0.42	3	17.00	22.89	23.00	-0.11	Pass
		5240	0.48	3	17.00	22.95	23.00	-0.05	Pass
	64QAM	5165	-4.13	3	17.00	18.34	23.00	-4.66	Pass
		5200	0.48	3	17.00	22.95	23.00	-0.05	Pass
		5240	0.47	3	17.00	22.94	23.00	-0.06	Pass
20	QPSK	5165	-7.25	3	17.00	15.22	23.00	-7.78	Pass
		5200	0.50	3	17.00	22.97	23.00	-0.03	Pass
		5240	0.45	3	17.00	22.92	23.00	-0.08	Pass
	16QAM	5165	-7.46	3	17.00	15.01	23.00	-7.99	Pass
		5200	0.42	3	17.00	22.89	23.00	-0.11	Pass
		5240	0.50	3	17.00	22.97	23.00	-0.03	Pass
	64QAM	5165	-7.36	3	17.00	15.11	23.00	-7.89	Pass
		5200	0.49	3	17.00	22.96	23.00	-0.04	Pass
		5240	0.45	3	17.00	22.92	23.00	-0.08	Pass

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

** EIRP spectral density = SA reading + Antenna gain array + Single antenna gain + Duty cycle factor (2.49 dB)

*** Margin = EIRP spectral density – specification limit



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Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-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 7.7.7 EIRP 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 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal

Channel bandwidth, MHz	Modulation	Frequency, MHz	SA reading, dBm	Antenna gain array*, dB	Single antenna gain, dBi	EIRP spectral density**, dBm	Limit, dBm	Margin***, dB	Verdict
10	QPSK	5160	-5.17	0	17.00	14.30	23.00	-8.70	Pass
		5200	3.44	0	17.00	22.91	23.00	-0.09	Pass
		5245	3.41	0	17.00	22.88	23.00	-0.12	Pass
	16QAM	5160	-5.07	0	17.00	14.40	23.00	-8.60	Pass
		5200	3.38	0	17.00	22.85	23.00	-0.15	Pass
		5245	3.48	0	17.00	22.95	23.00	-0.05	Pass
	64QAM	5160	-5.28	0	17.00	14.19	23.00	-8.81	Pass
		5200	3.49	0	17.00	22.96	23.00	-0.04	Pass
		5245	3.28	0	17.00	22.75	23.00	-0.25	Pass
15	QPSK	5165	-4.28	0	17.00	15.19	23.00	-7.81	Pass
		5200	3.38	0	17.00	22.85	23.00	-0.15	Pass
		5240	3.36	0	17.00	22.83	23.00	-0.17	Pass
	16QAM	5165	-4.41	0	17.00	15.06	23.00	-7.94	Pass
		5200	3.44	0	17.00	22.91	23.00	-0.09	Pass
		5240	3.41	0	17.00	22.88	23.00	-0.12	Pass
	64QAM	5165	-4.13	0	17.00	15.34	23.00	-7.66	Pass
		5200	3.34	0	17.00	22.81	23.00	-0.19	Pass
		5240	3.39	0	17.00	22.86	23.00	-0.14	Pass
20	QPSK	5165	-7.25	0	17.00	12.22	23.00	-10.78	Pass
		5200	3.31	0	17.00	22.78	23.00	-0.22	Pass
		5240	3.32	0	17.00	22.79	23.00	-0.21	Pass
	16QAM	5165	-7.46	0	17.00	12.01	23.00	-10.99	Pass
		5200	3.37	0	17.00	22.84	23.00	-0.16	Pass
		5240	3.31	0	17.00	22.78	23.00	-0.22	Pass
	64QAM	5165	-7.36	0	17.00	12.11	23.00	-10.89	Pass
		5200	3.35	0	17.00	22.82	23.00	-0.18	Pass
		5240	3.40	0	17.00	22.87	23.00	-0.13	Pass

** EIRP spectral density = SA reading + Antenna gain array + Single antenna gain + Duty cycle factor (2.49 dB)

** Margin = EIRP spectral density – specification limit

Table 7.7.8 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.



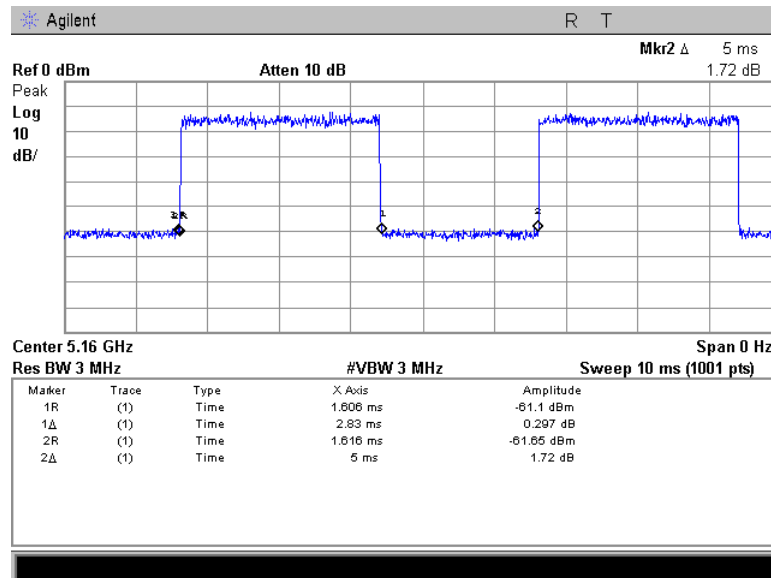
HERMON LABORATORIES

Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-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 7.7.1 Duty cycle





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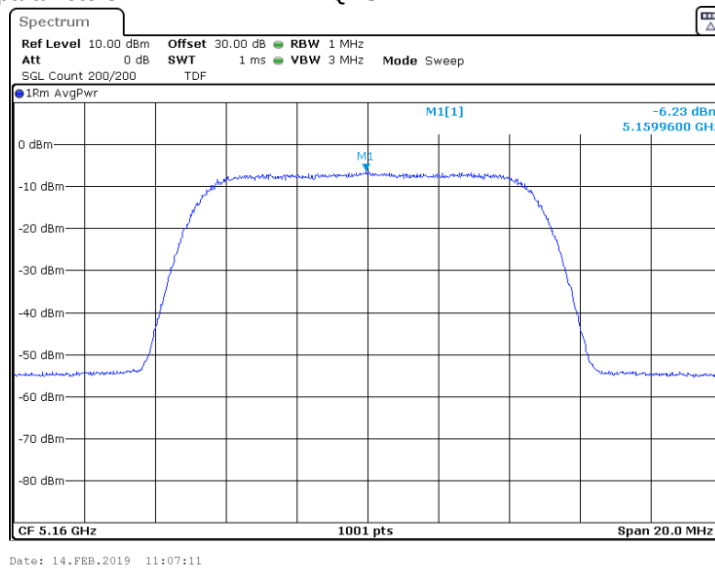
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Date of Issue: 28-May-19

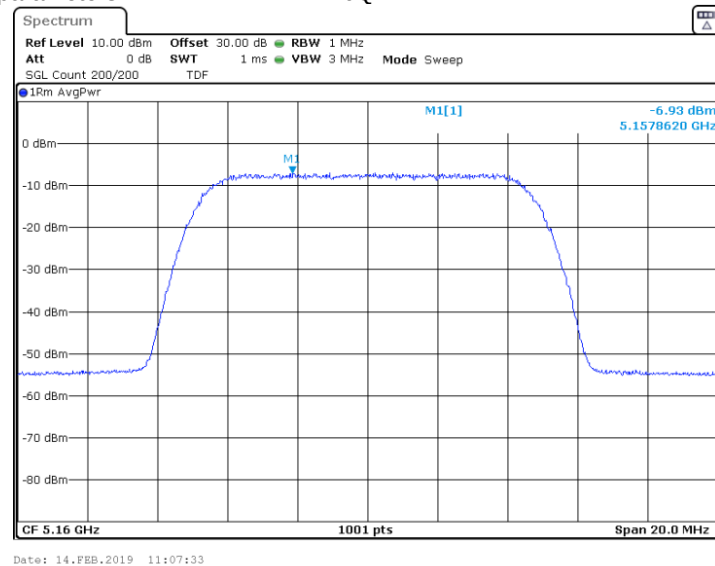
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

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)
coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





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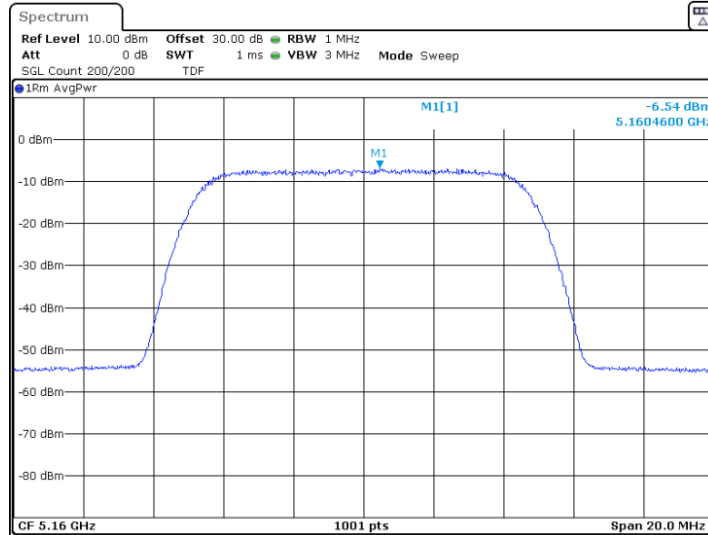
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Date of Issue: 28-May-19

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



Date: 14.FEB.2019 11:07:54



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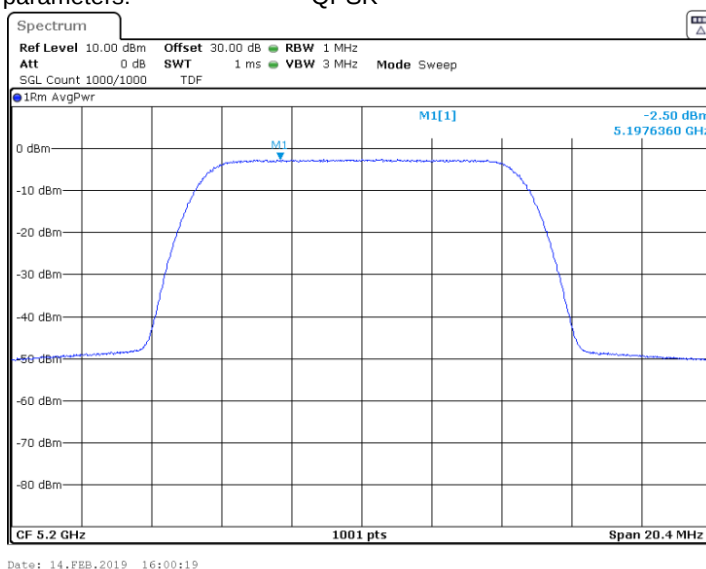
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Date of Issue: 28-May-19

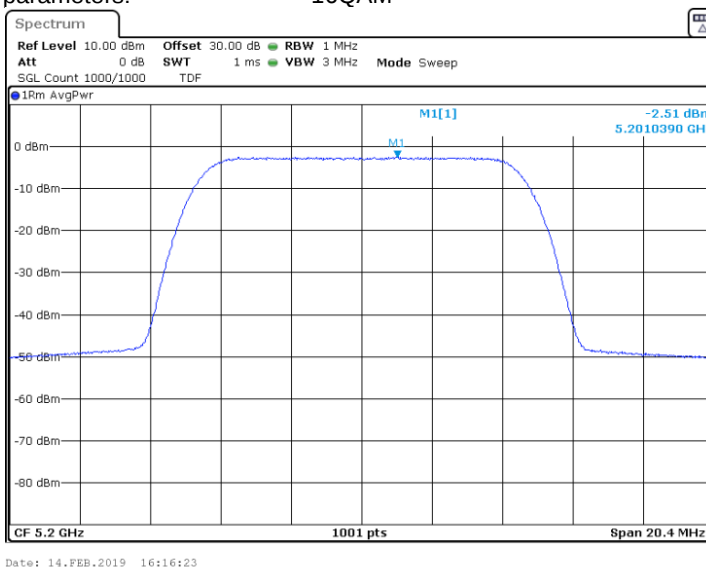
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.3 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)
coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM



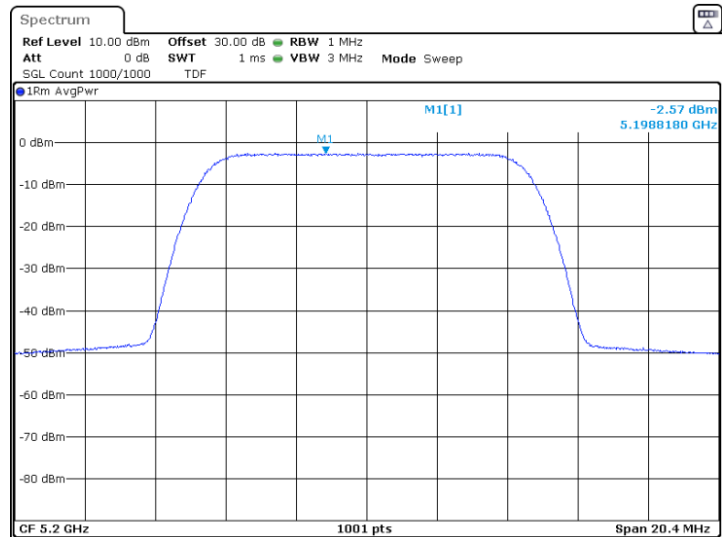


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Report ID: TELRAD_FCC.31830
Date of Issue: 28-May-19

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



Date: 14.FEB.2019 16:17:09



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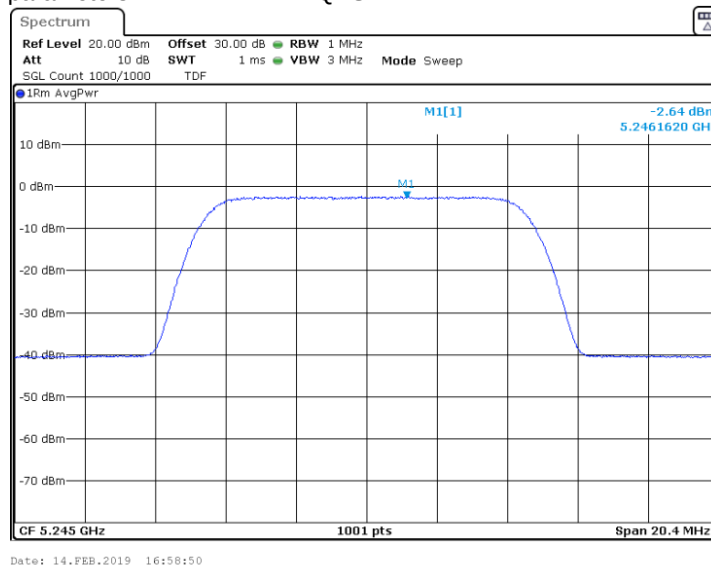
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Date of Issue: 28-May-19

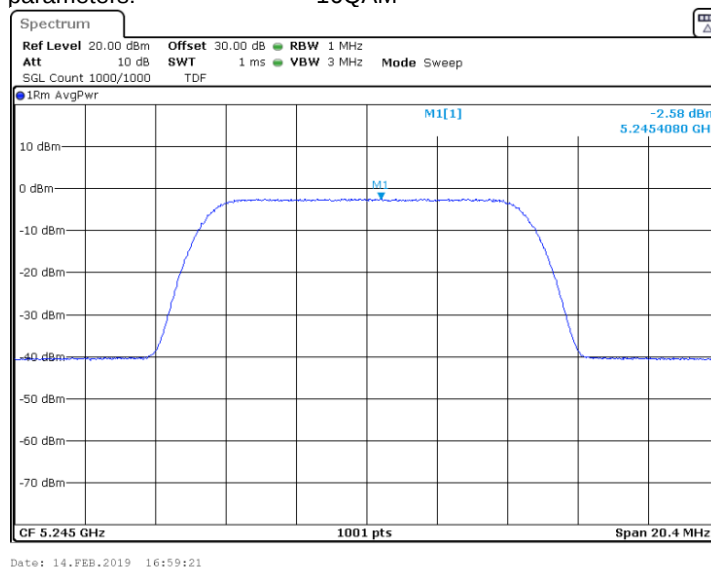
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.4 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)
coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





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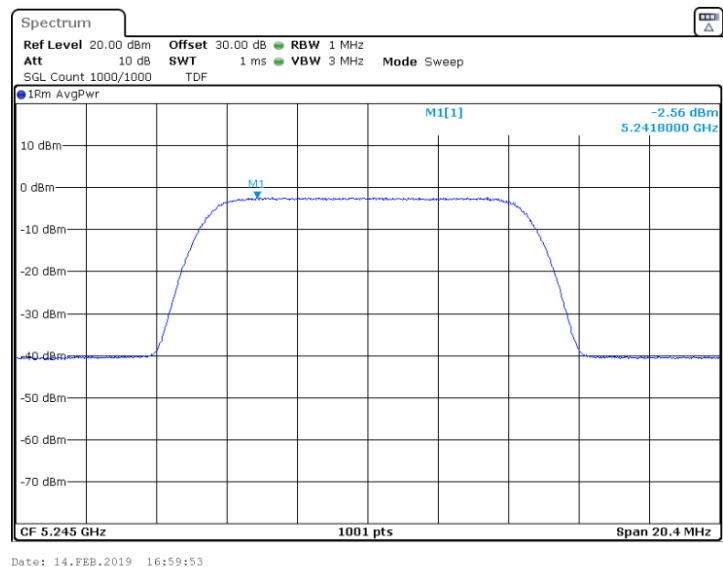
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Date of Issue: 28-May-19

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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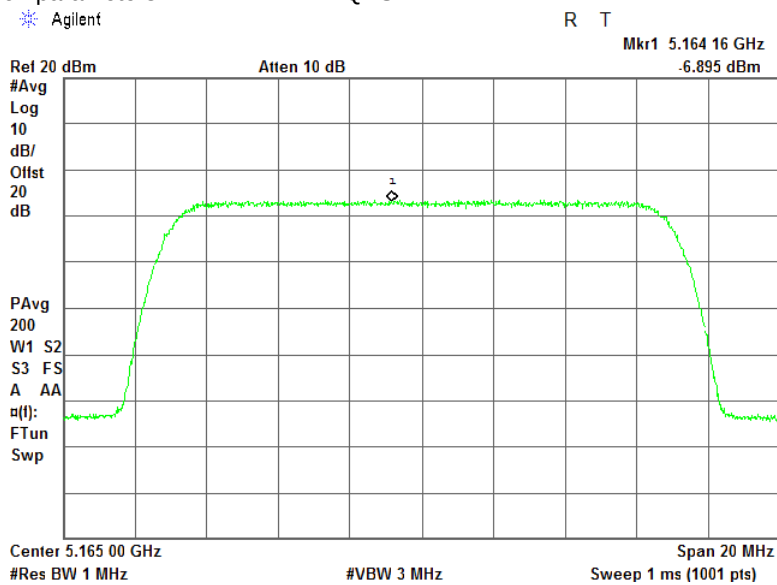
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Date of Issue: 28-May-19

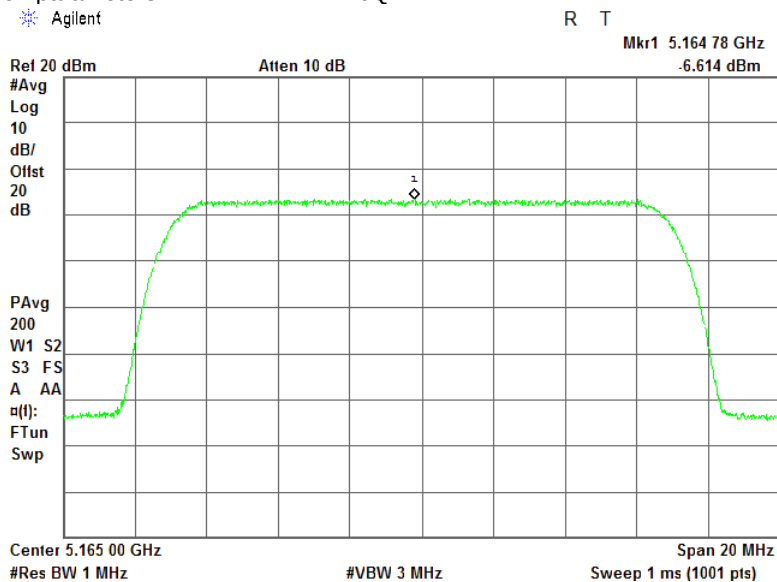
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.5 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)
coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





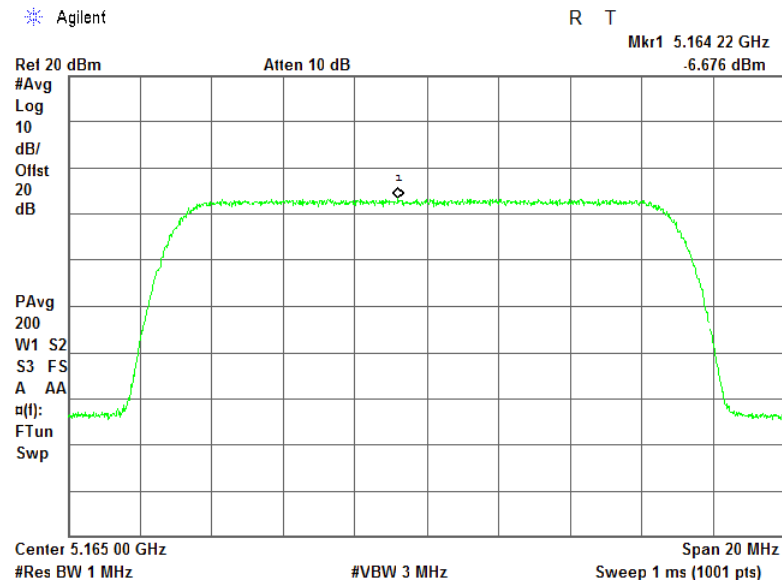
HERMON LABORATORIES

Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-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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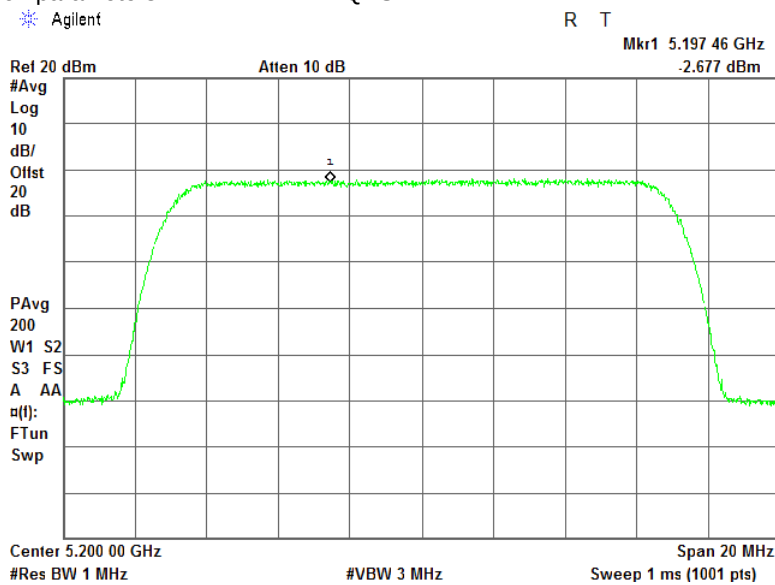
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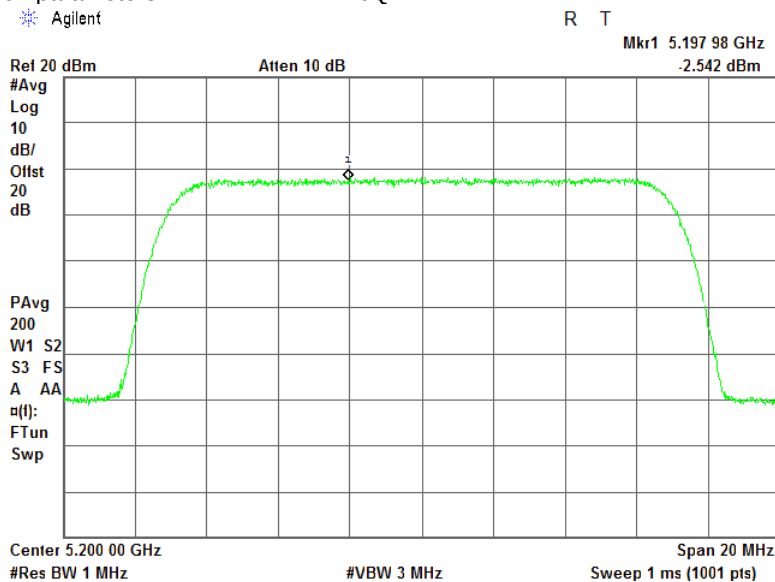
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.6 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)
coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM



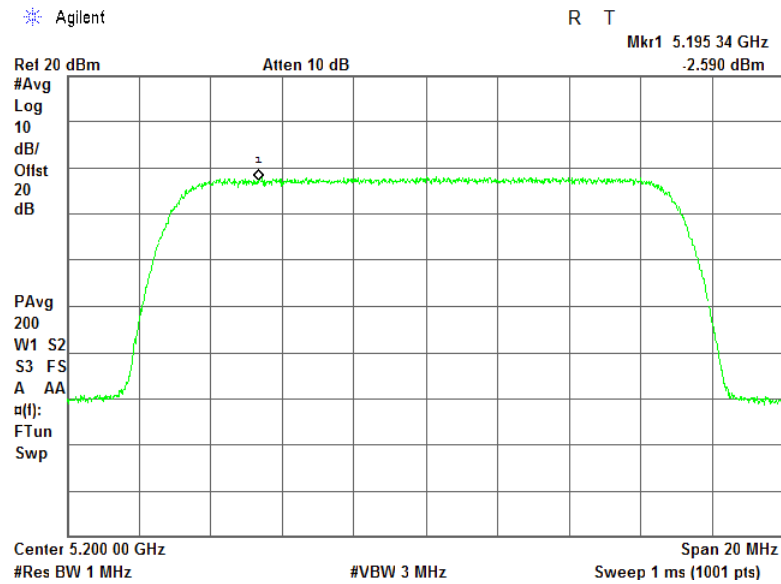


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Report ID: TELRAD_FCC.31830
Date of Issue: 28-May-19

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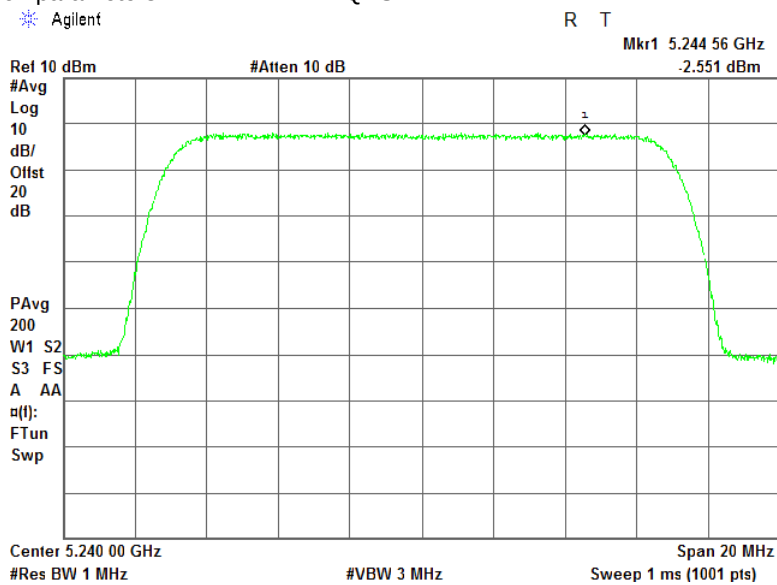
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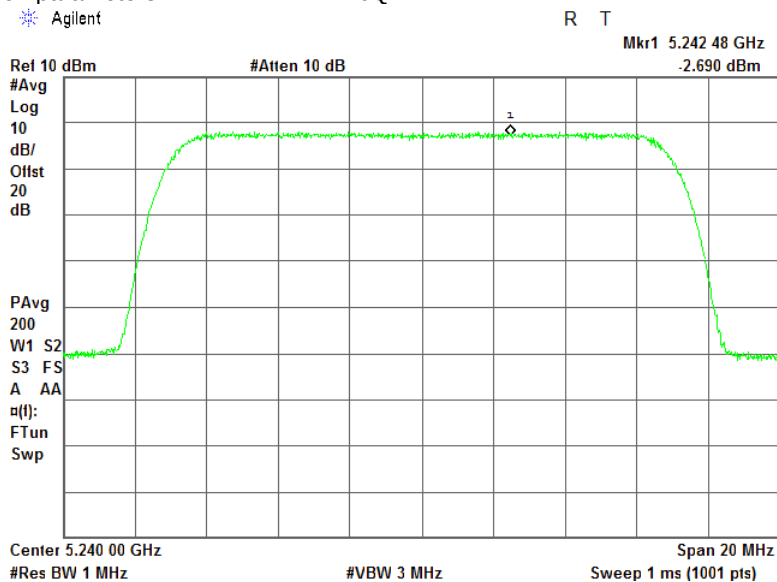
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Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.7 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)
coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





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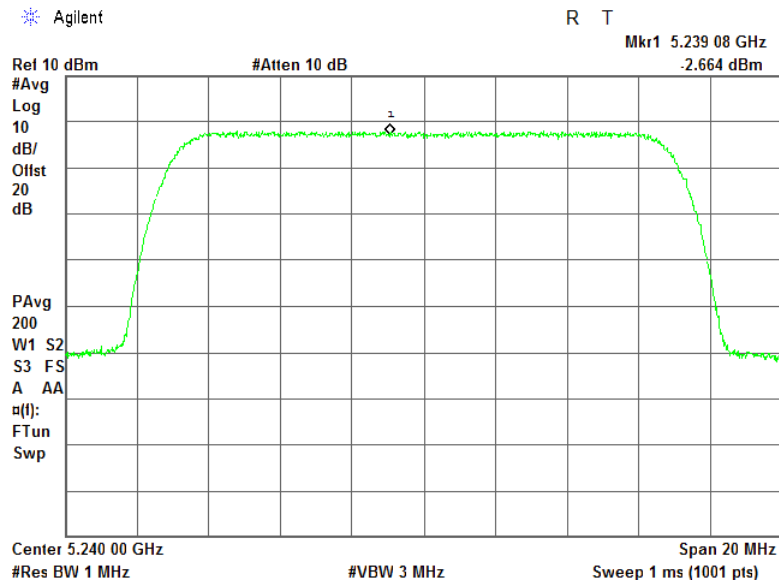
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Date of Issue: 28-May-19

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

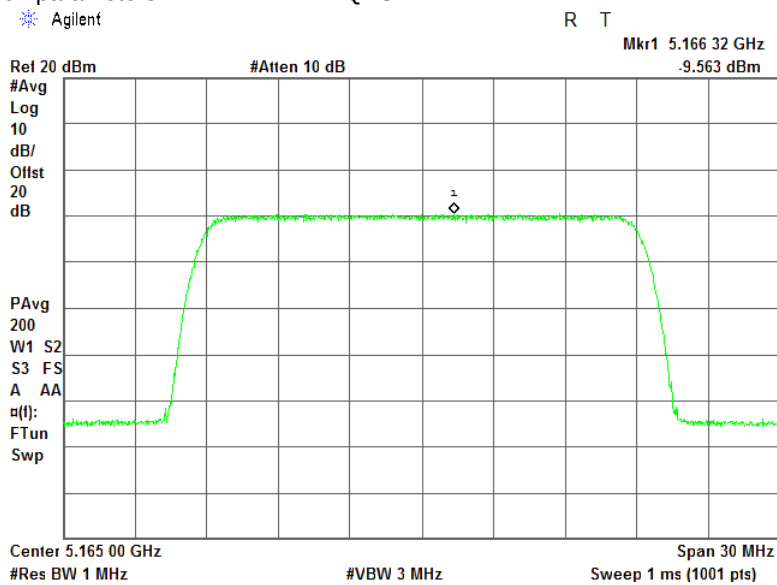
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Date of Issue: 28-May-19

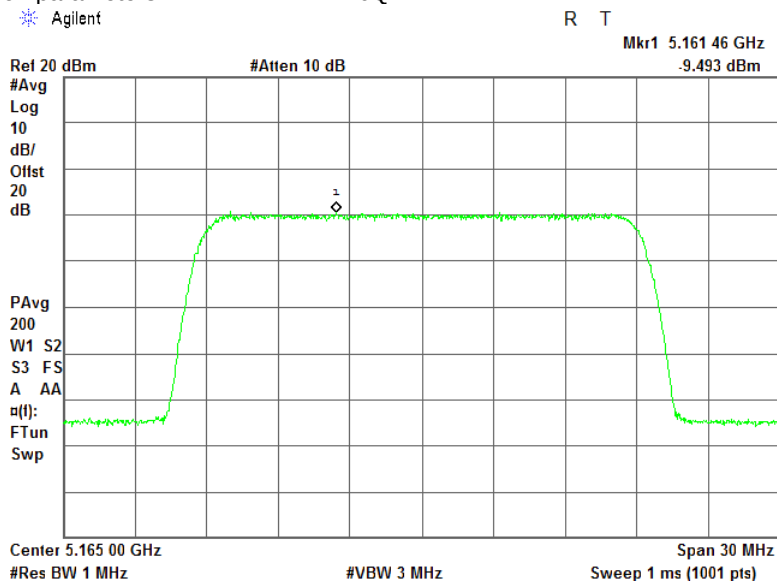
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.8 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)
coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM



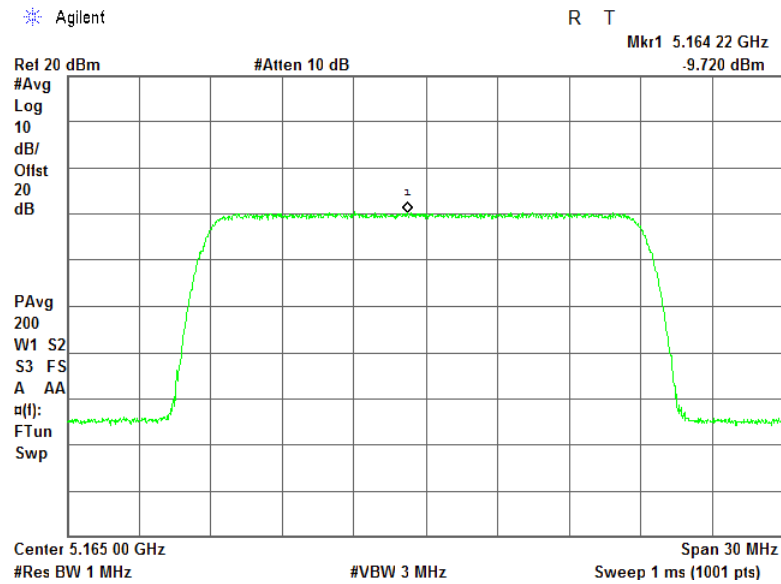


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Report ID: TELRAD_FCC.31830
Date of Issue: 28-May-19

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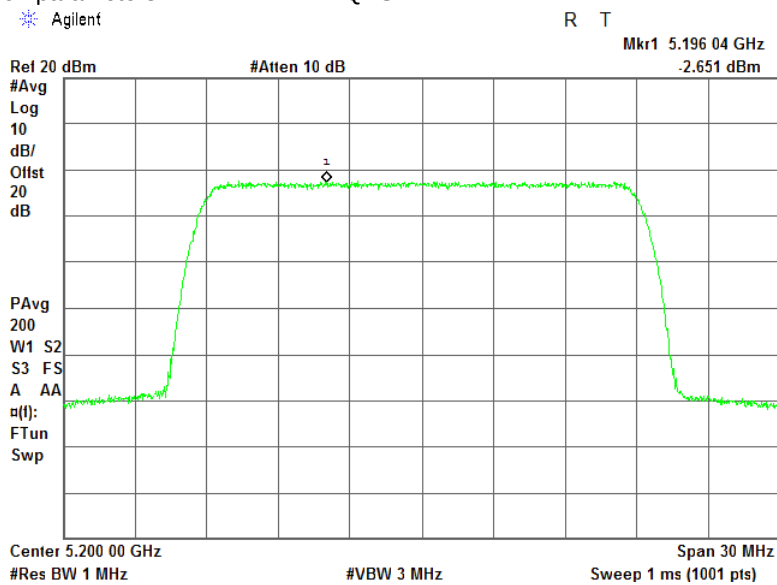
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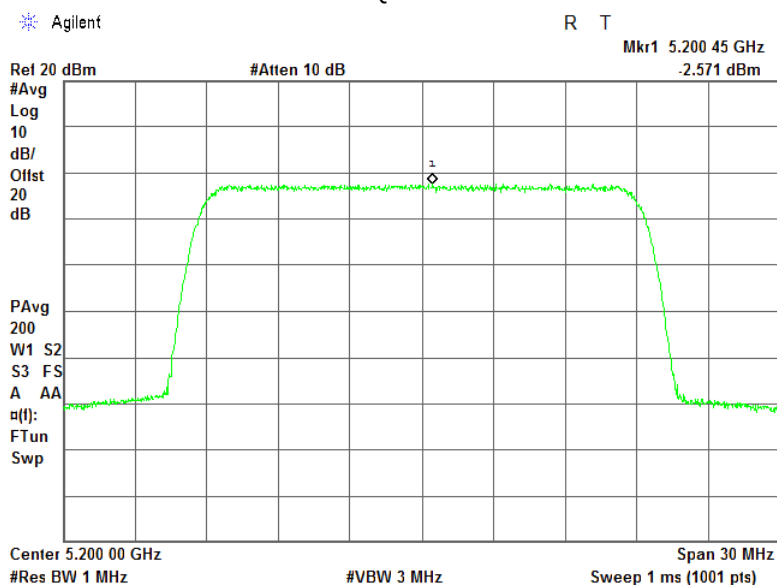
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.9 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)
coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM



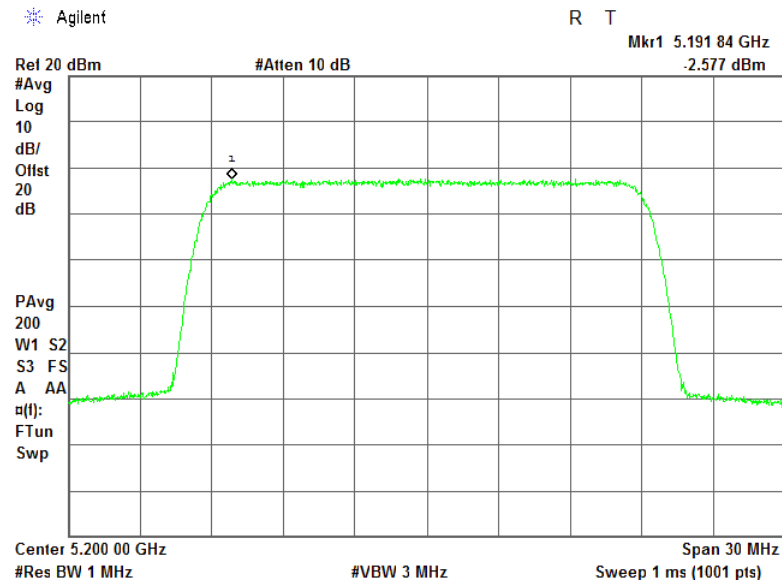


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Report ID: TELRAD_FCC.31830
Date of Issue: 28-May-19

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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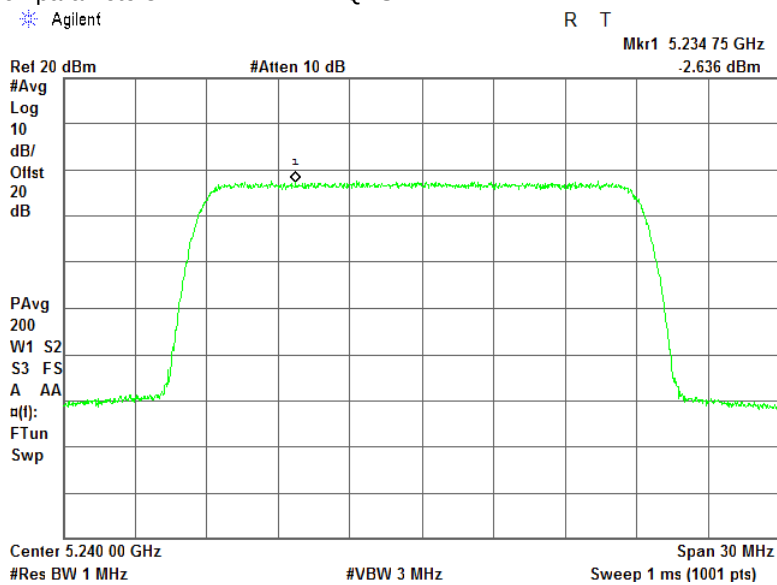
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Date of Issue: 28-May-19

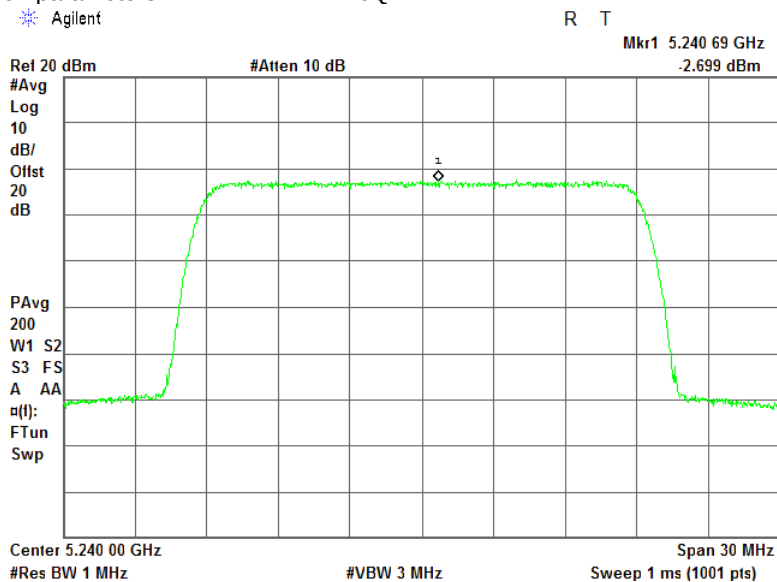
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.10 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)
coherent signal
Modulation parameters: QPSK



Modulation parameters: 16QAM





64QAM

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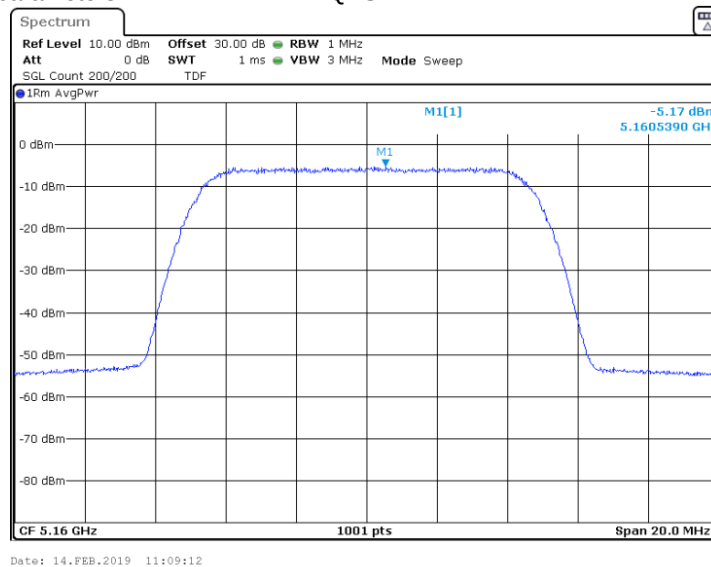
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Date of Issue: 28-May-19

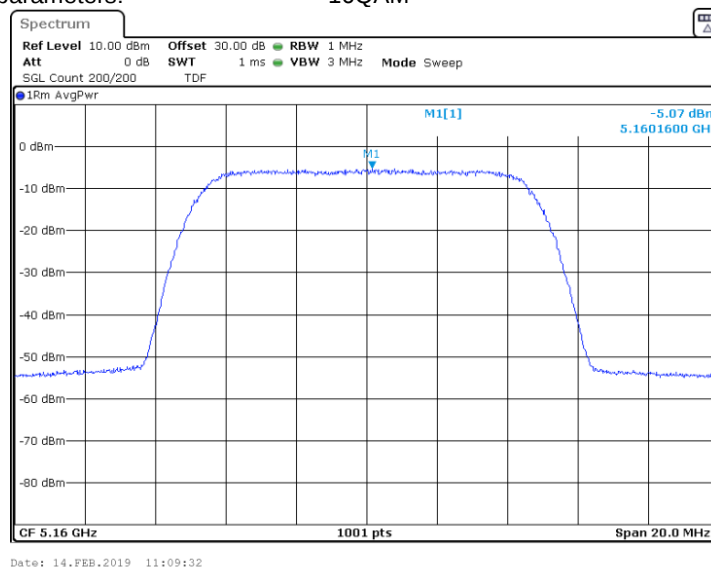
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.11 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





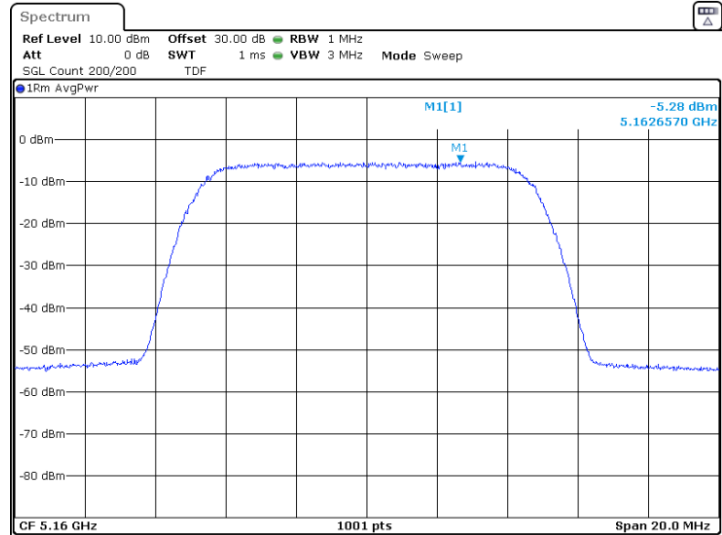
HERMON LABORATORIES

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Date of Issue: 28-May-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:			

Modulation parameters:

64QAM



Date: 14.FEB.2019 11:09:54



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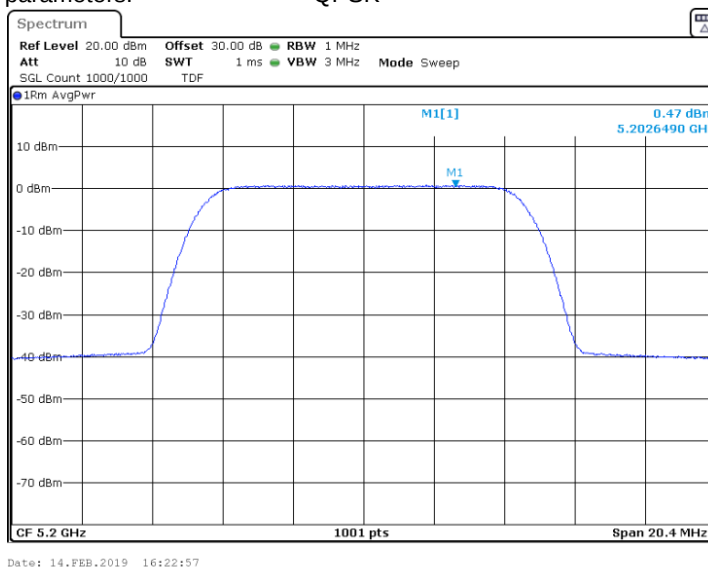
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Date of Issue: 28-May-19

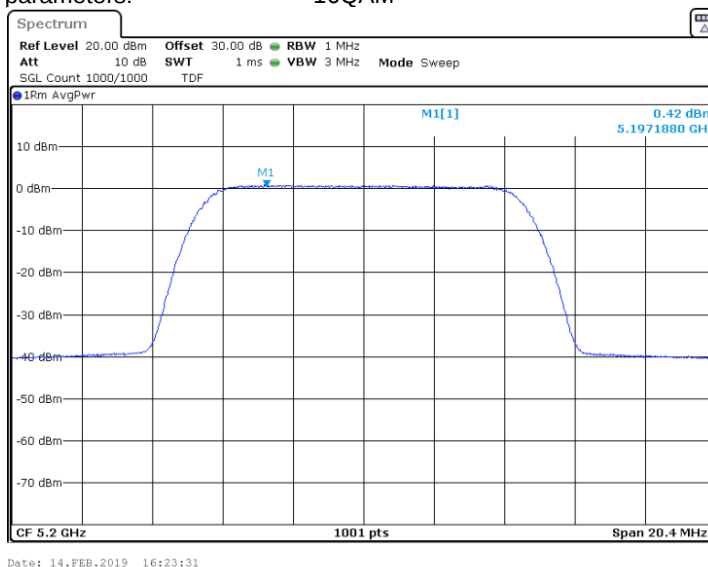
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Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.12 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



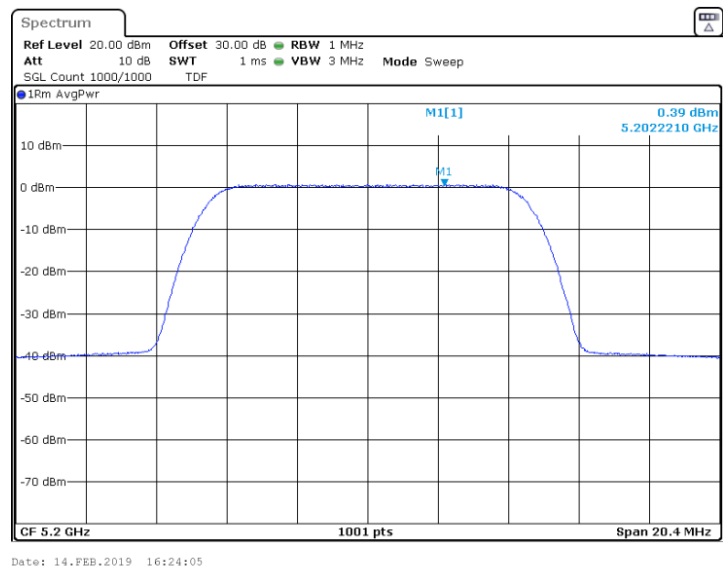


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Report ID: TELRAD_FCC.31830
Date of Issue: 28-May-19

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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





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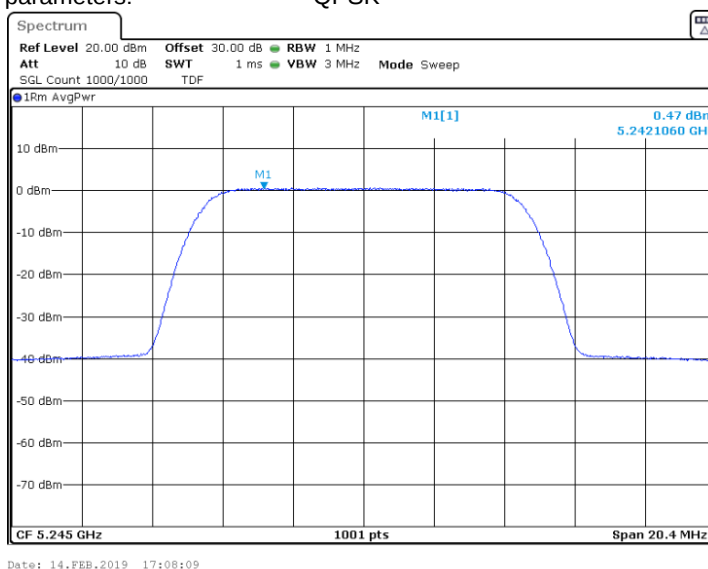
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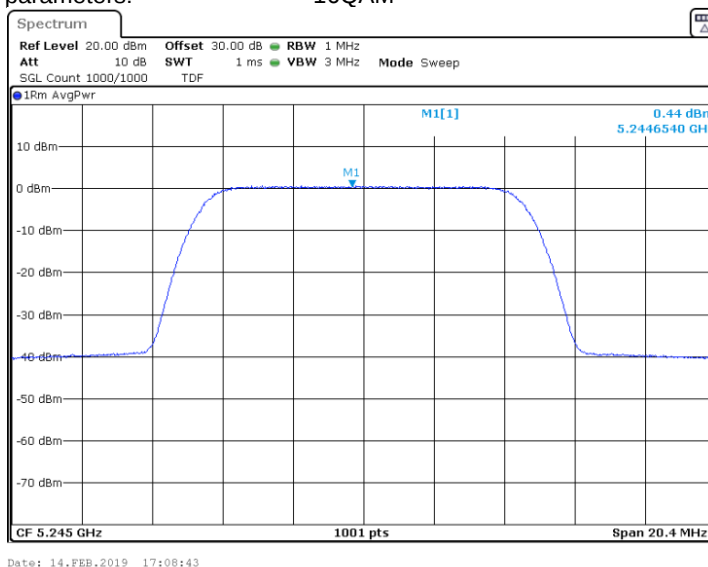
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Test mode:	Compliance	Verdict: PASS	
Date(s):	12-Marc-19		
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.13 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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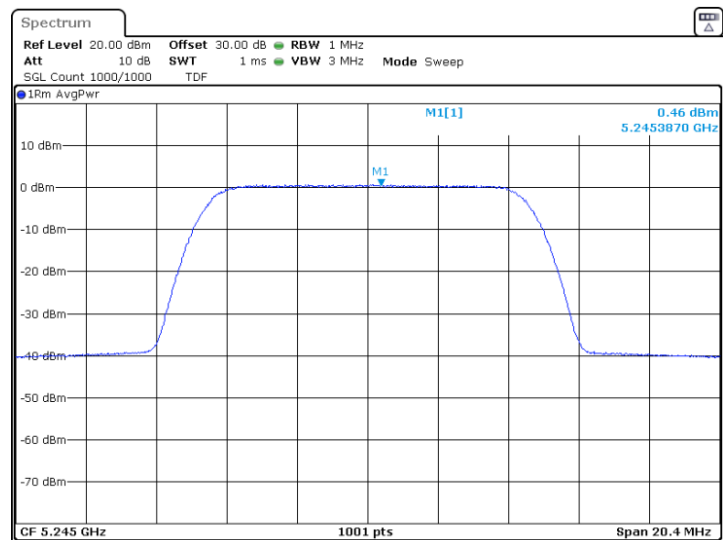
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Date of Issue: 28-May-19

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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:			

Modulation parameters:

64QAM



Date: 14.FEB.2019 17:09:16



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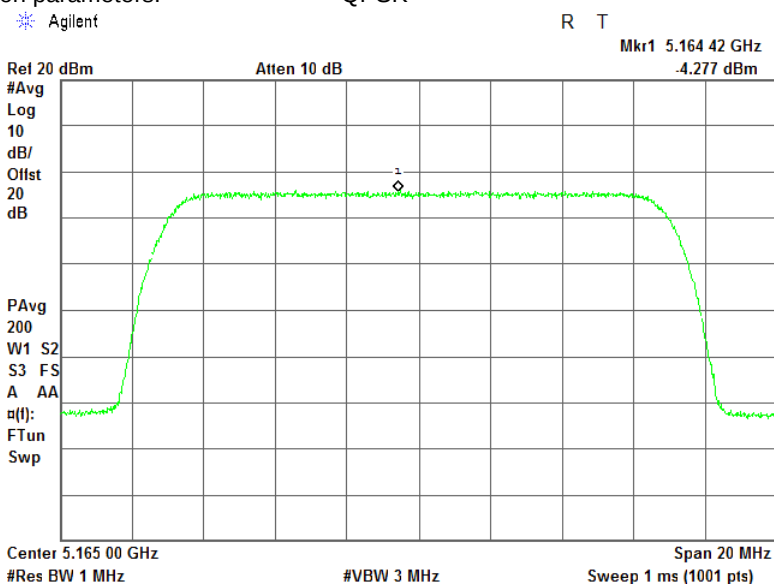
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Date of Issue: 28-May-19

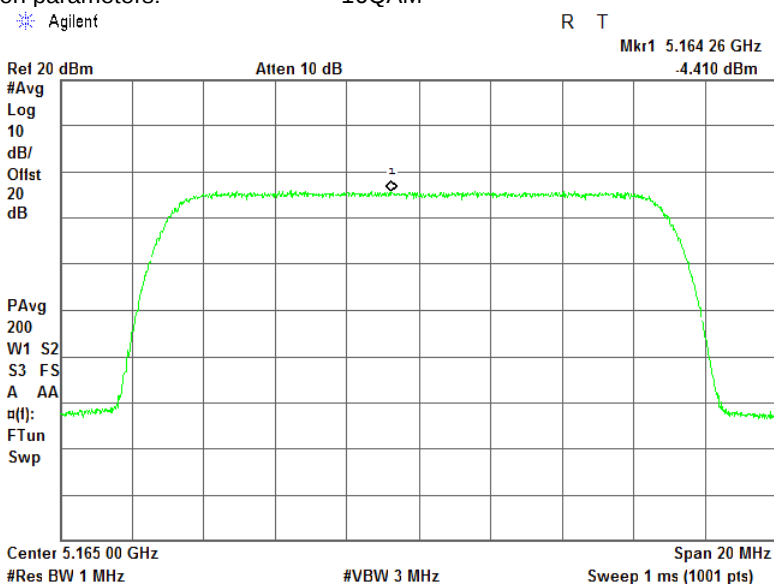
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Test procedure:		FCC section 15.407(a)(5); KDB 662911, KDB 789033, ANSI C63.10, section 12.5	
Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.14 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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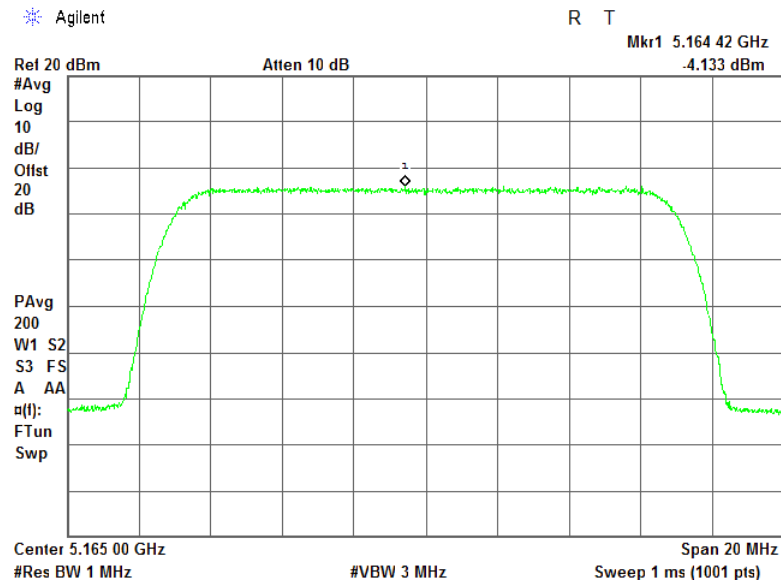
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Date of Issue: 28-May-19

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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:			

Modulation parameters:

64QAM





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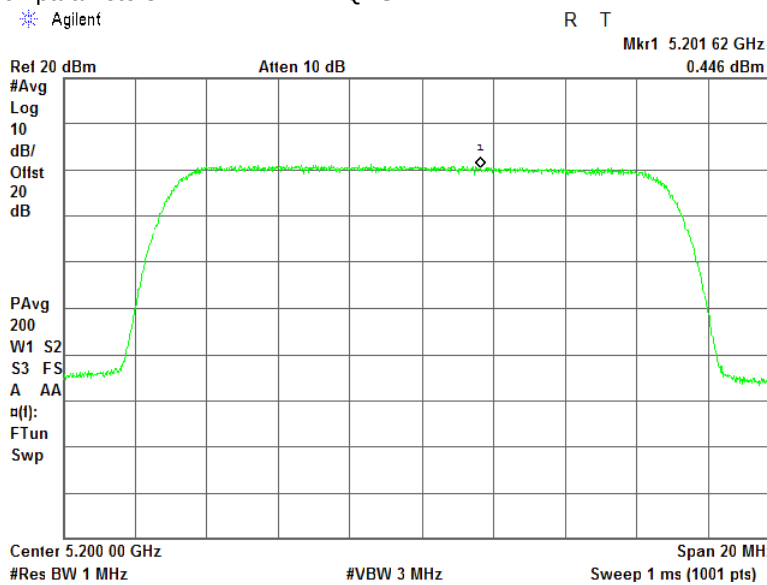
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Date of Issue: 28-May-19

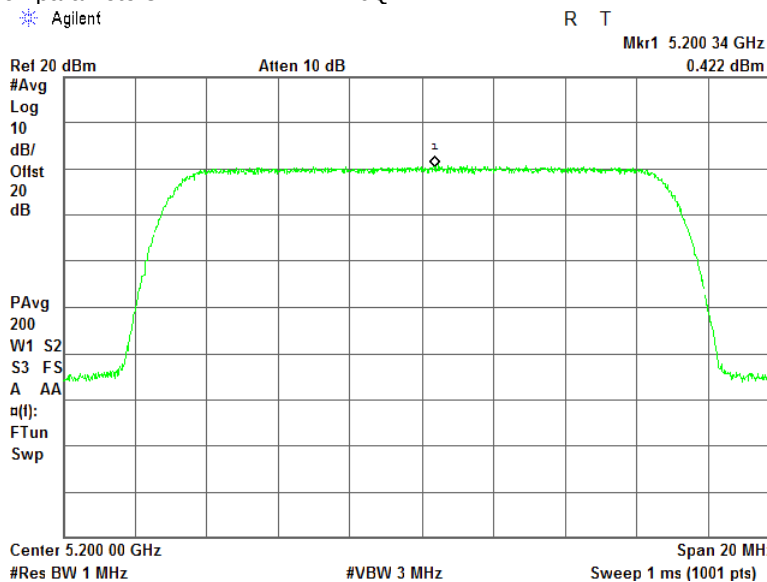
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.15 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



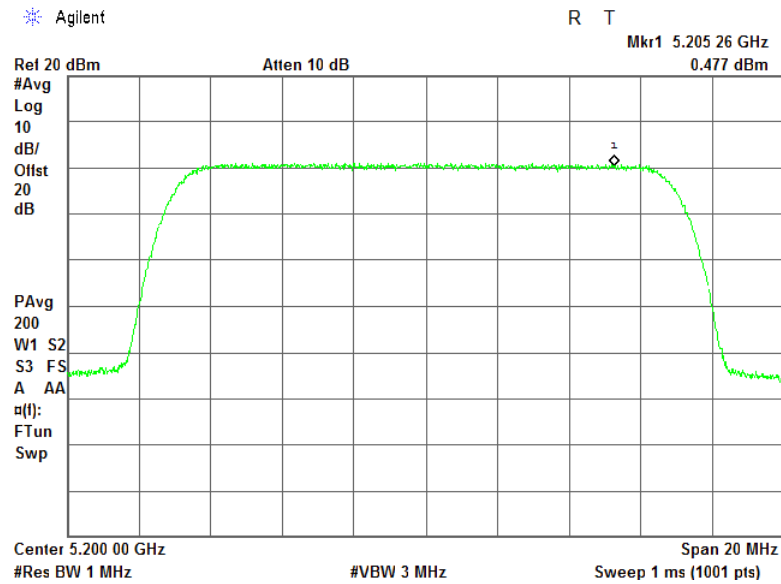


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Report ID: TELRAD_FCC.31830
Date of Issue: 28-May-19

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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:			

Modulation parameters: 64QAM





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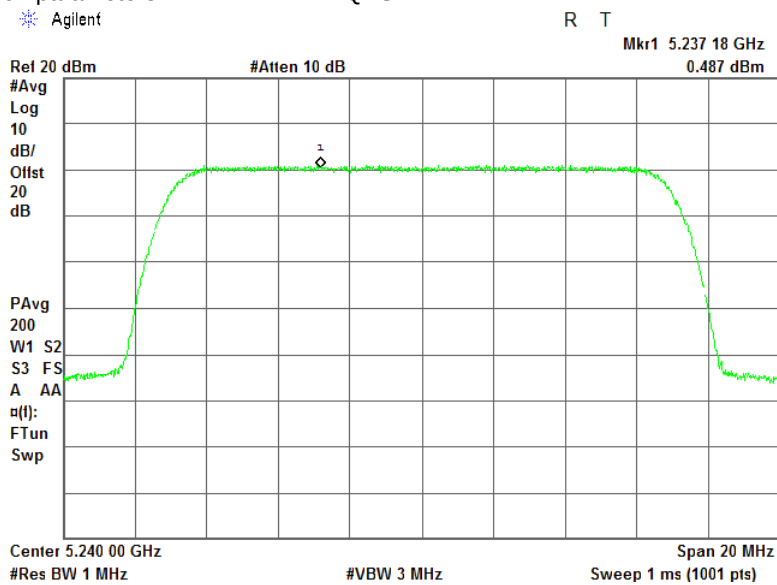
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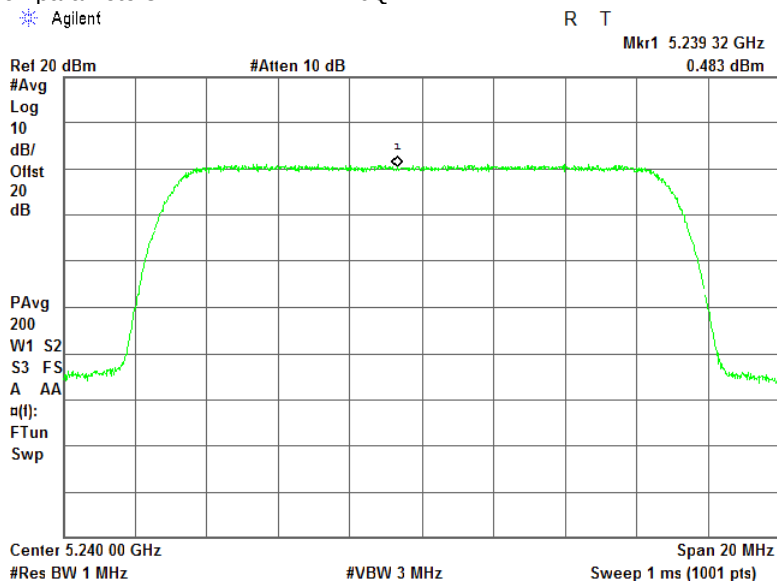
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.16 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





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Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-19

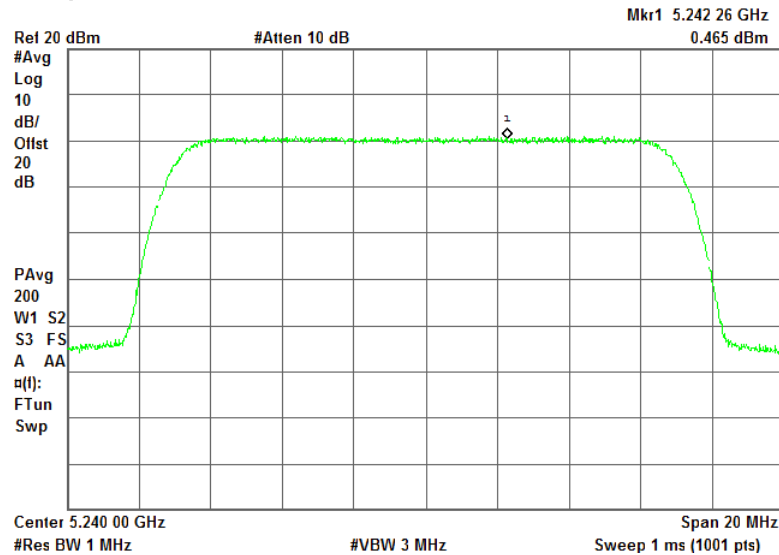
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

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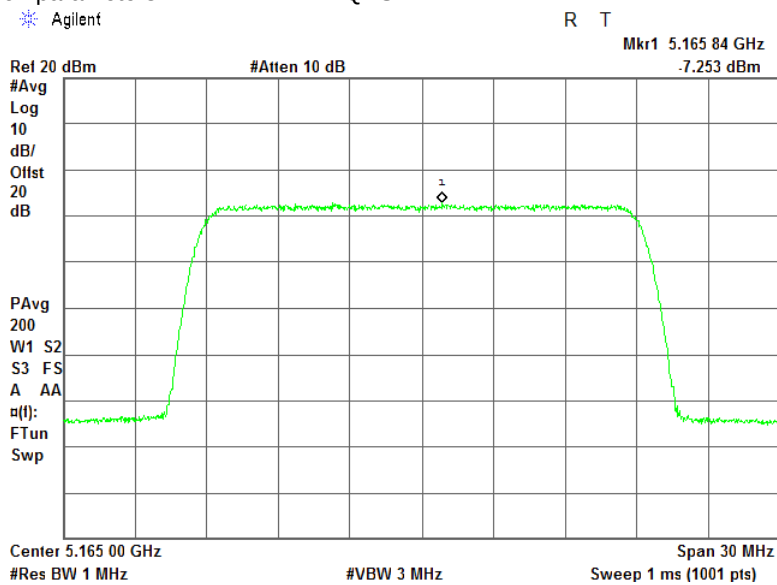
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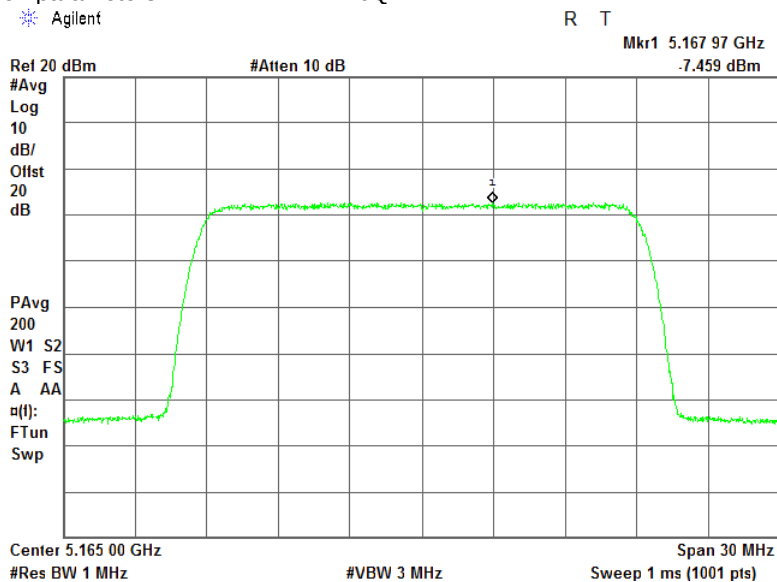
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.17 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





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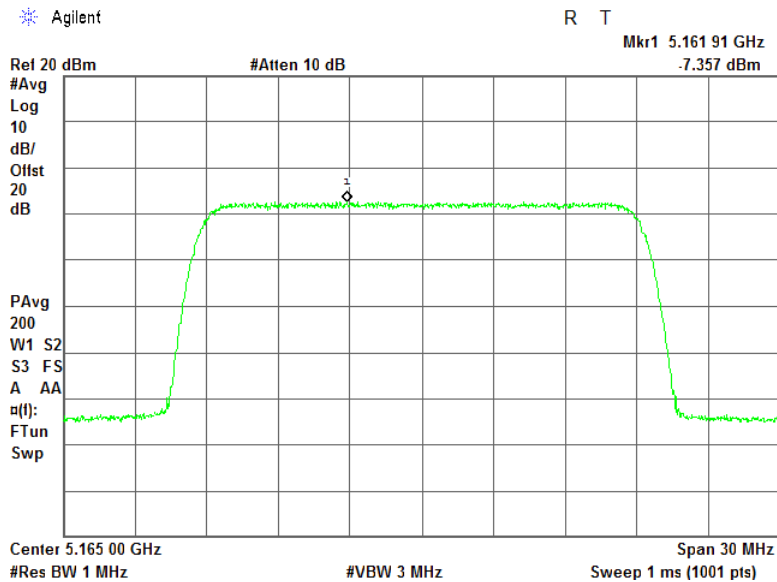
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Test mode:		Verdict: PASS	
Date(s):			
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Remarks:			

Modulation parameters:

64QAM





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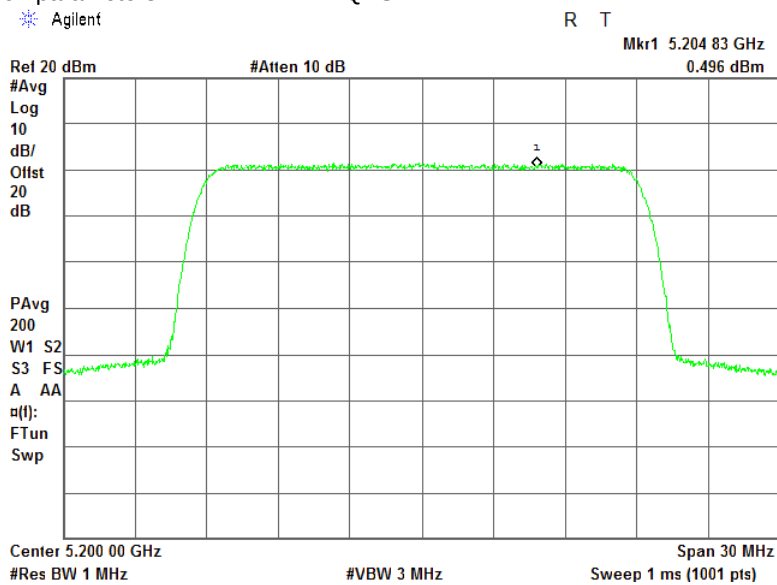
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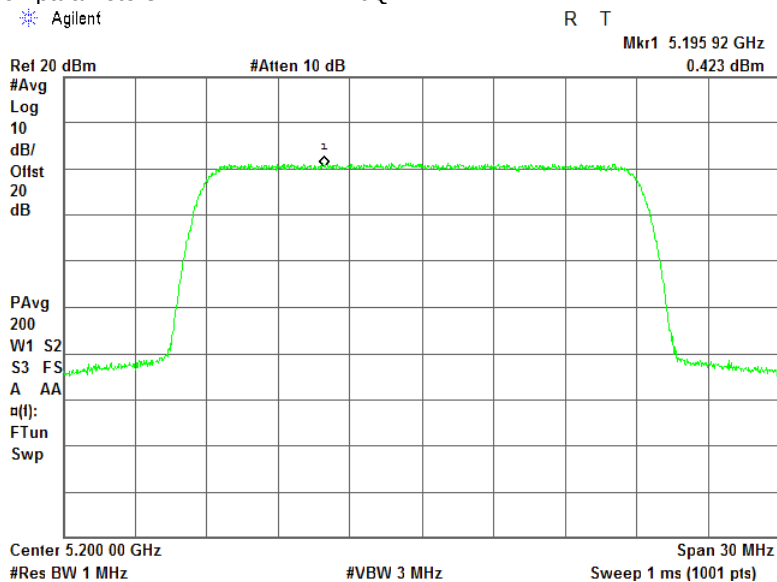
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.18 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





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Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-19

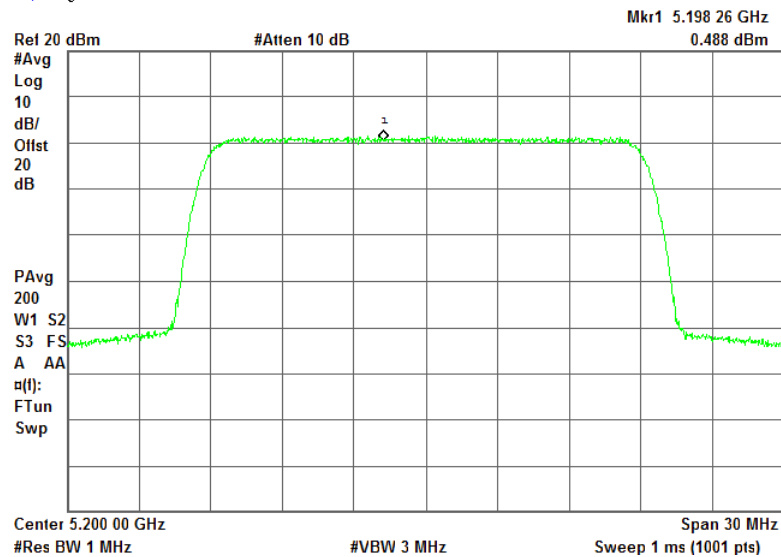
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM

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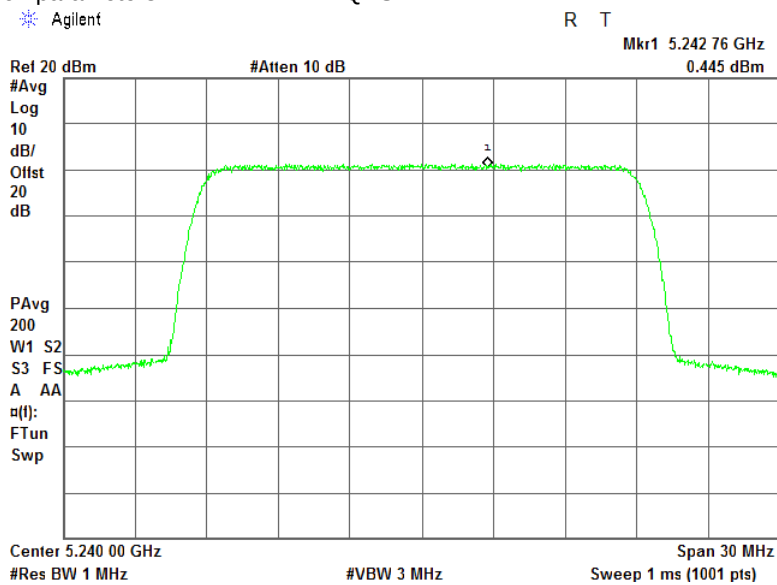
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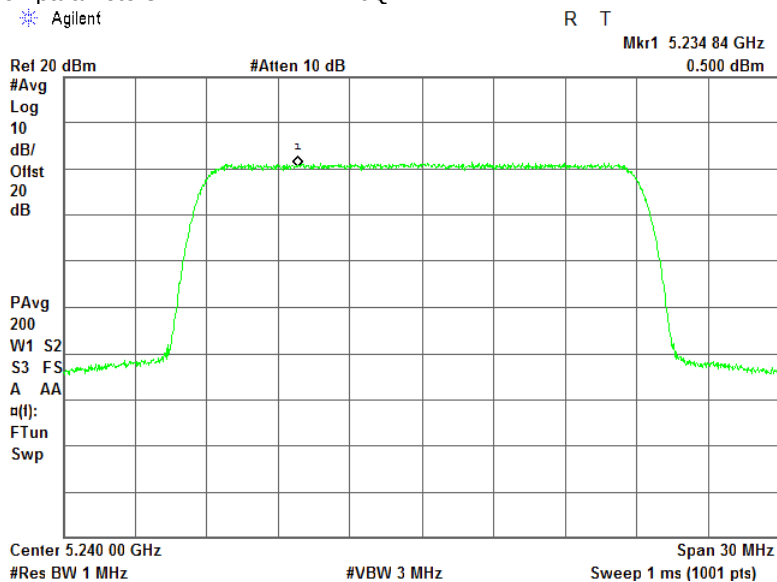
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.19 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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Report ID: TELRAD_FCC.31830

Date of Issue: 28-May-19

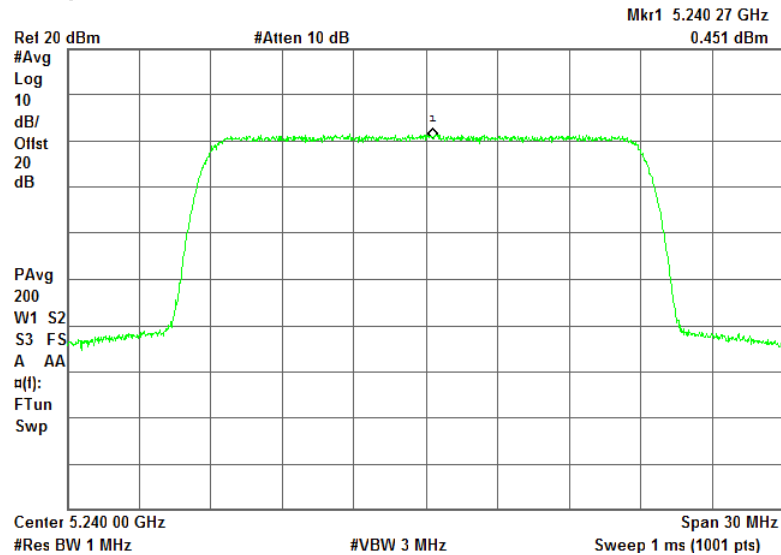
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Test mode:		Verdict: PASS	
Date(s):			
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Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM

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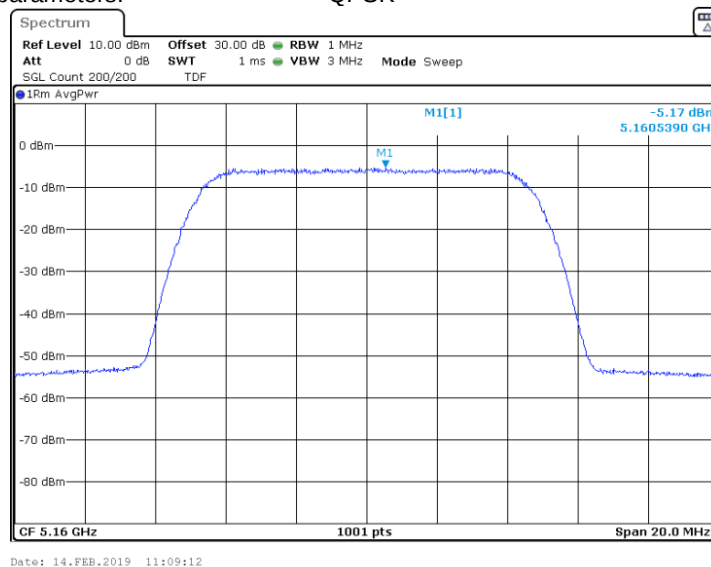
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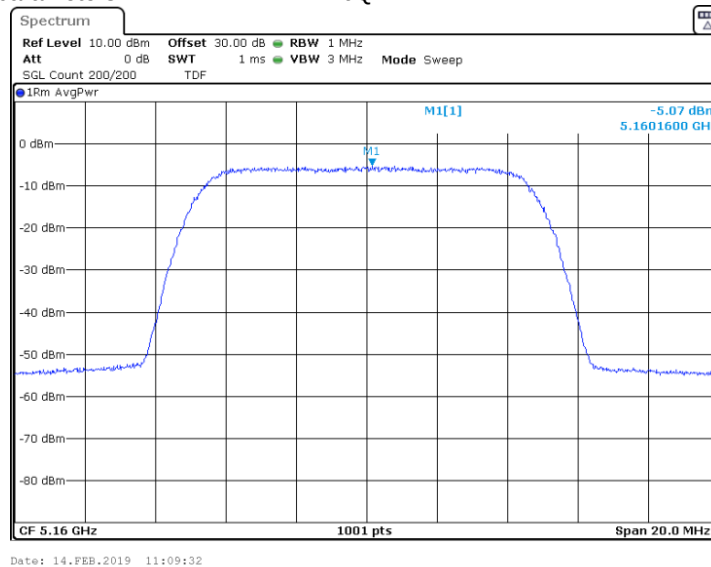
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Test mode:		Compliance	Verdict: PASS
Date(s):		12-Marc-19	
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Plot 7.7.20 Peak power spectral density test results

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



Modulation parameters: 16QAM





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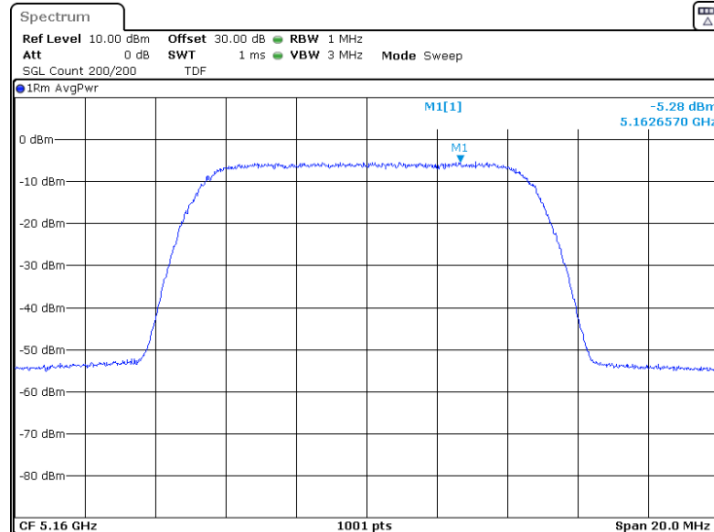
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Test mode:		Verdict: PASS	
Date(s):			
12-Marc-19			
Temperature: 24 °C	Relative Humidity: 46 %	Air Pressure: 1015 hPa	Power: 48 VDC
Remarks:			

Modulation parameters:

64QAM



Date: 14.FEB.2019 11:09:54