



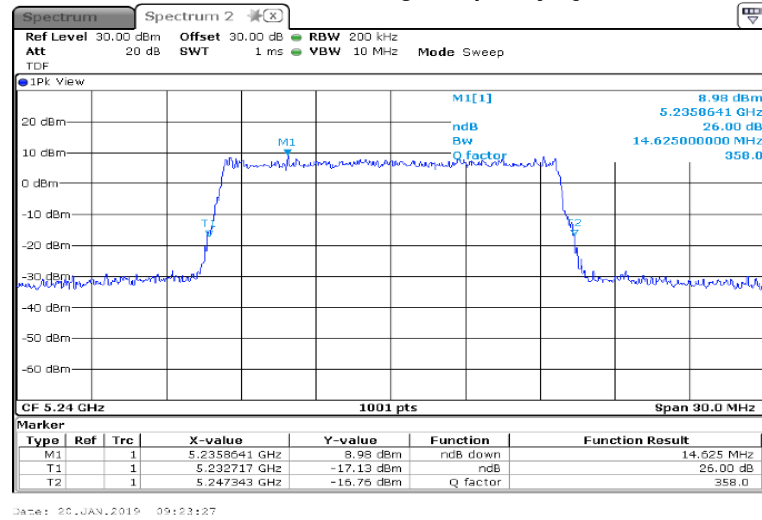
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Report ID: TelRad_FCC_31832_rev2

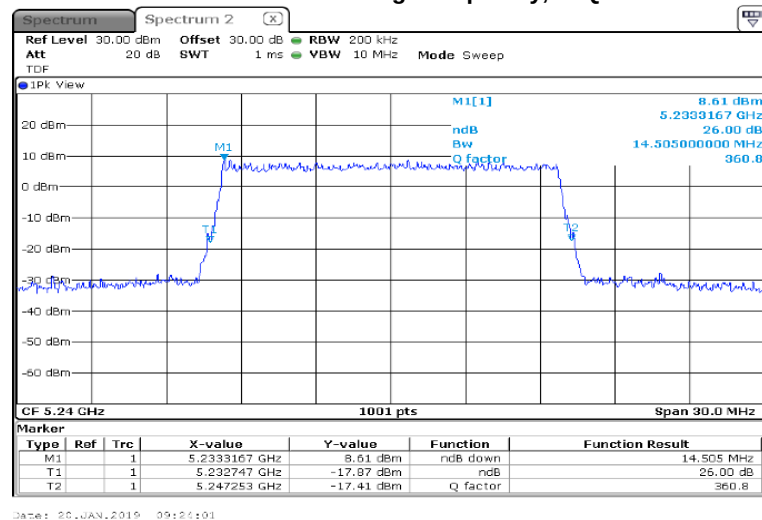
Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(5), RSS-247 section 6.2.1.2, 26 dB Occupied bandwidth			
Test procedure: ANSI C63.10, section 6.9.2; KDB 789033			
Test mode: Compliance		Verdict: PASS	
Date(s): 17-Jan-19			
Temperature: 26 °C	Relative Humidity: 49 %	Air Pressure: 1018 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.16 The 26 dB bandwidth test result at high frequency, QPSK modulation, 15 MHz EBW



Plot 7.3.17 The 26 dB bandwidth test result at high frequency, 16QAM modulation, 15 MHz EBW





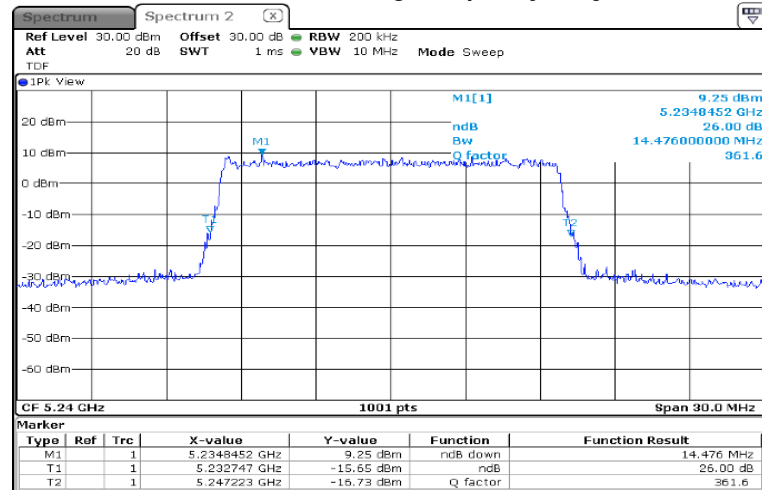
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Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(5), RSS-247 section 6.2.1.2, 26 dB Occupied bandwidth			
Test procedure: ANSI C63.10, section 6.9.2; KDB 789033			
Test mode: Compliance		Verdict: PASS	
Date(s): 17-Jan-19			
Temperature: 26 °C	Relative Humidity: 49 %	Air Pressure: 1018 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.18 The 26 dB bandwidth test result at high frequency, 64QAM modulation, 15 MHz EBW



Date: 20-JAN-2019 09:20:42



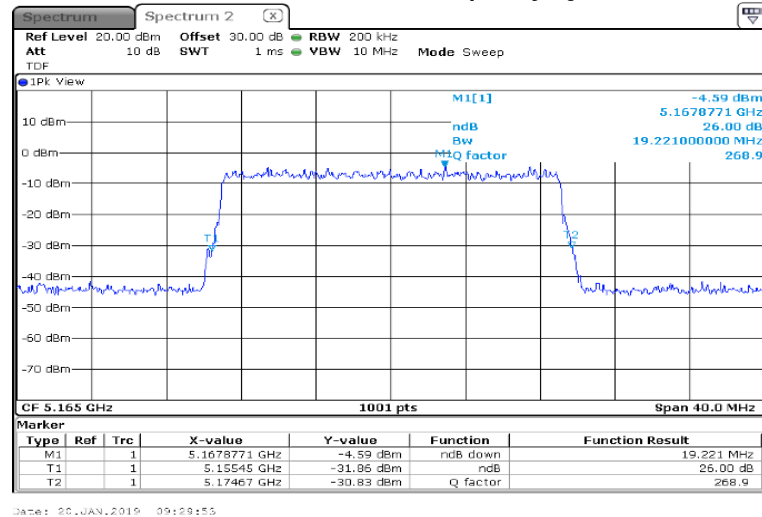
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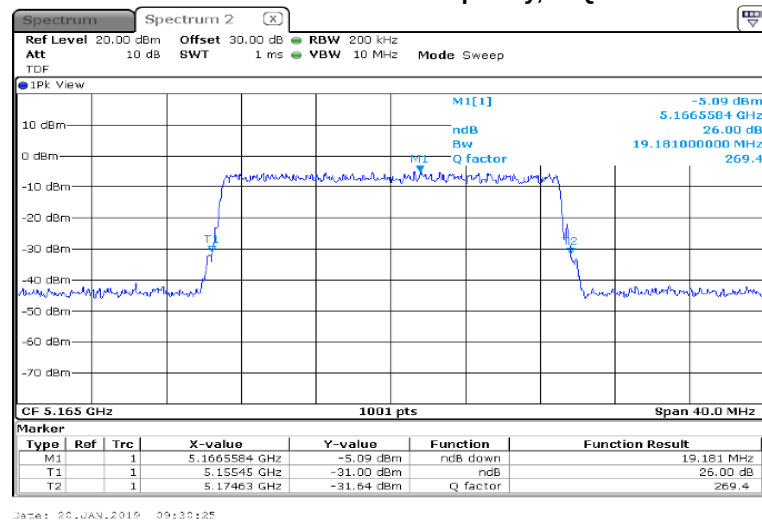
Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(5), RSS-247 section 6.2.1.2, 26 dB Occupied bandwidth			
Test procedure: ANSI C63.10, section 6.9.2; KDB 789033			
Test mode: Compliance		Verdict: PASS	
Date(s): 17-Jan-19			
Temperature: 26 °C	Relative Humidity: 49 %	Air Pressure: 1018 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.19 The 26 dB bandwidth test result at low frequency, QPSK modulation, 20 MHz EBW



Plot 7.3.20 The 26 dB bandwidth test result at low frequency, 16QAM modulation, 20 MHz EBW





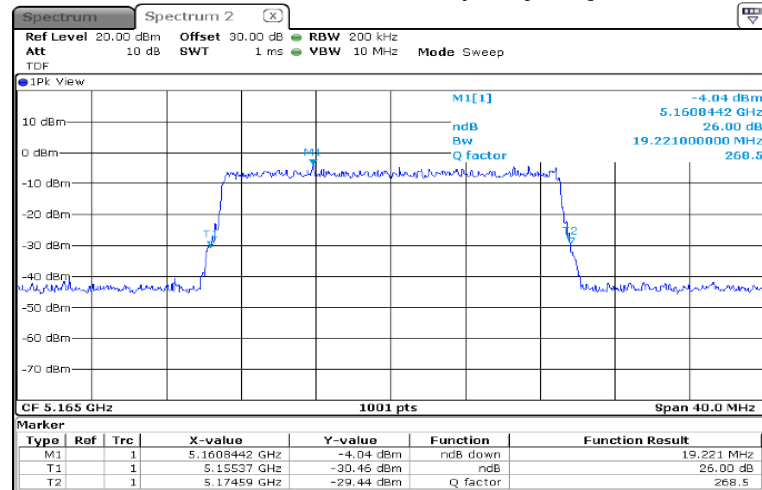
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Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(5), RSS-247 section 6.2.1.2, 26 dB Occupied bandwidth			
Test procedure: ANSI C63.10, section 6.9.2; KDB 789033			
Test mode: Compliance		Verdict: PASS	
Date(s): 17-Jan-19			
Temperature: 26 °C	Relative Humidity: 49 %	Air Pressure: 1018 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.21 The 26 dB bandwidth test result at low frequency, 64QAM modulation, 20 MHz EBW





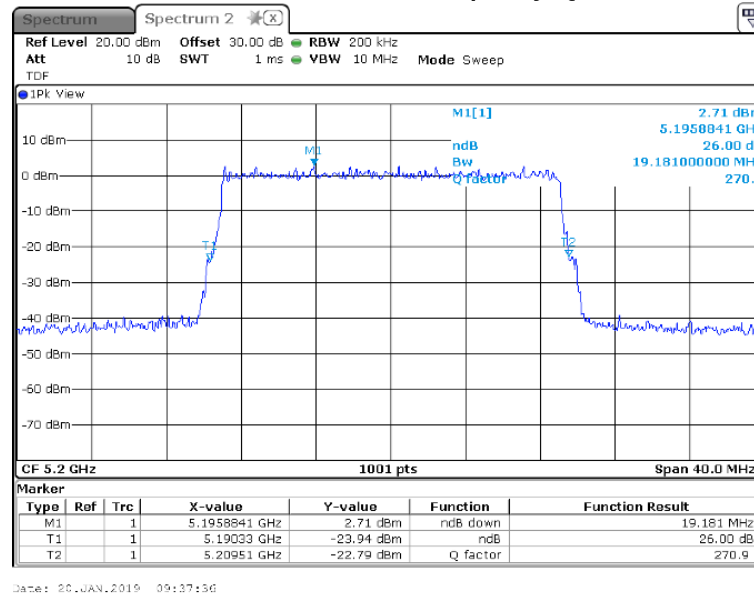
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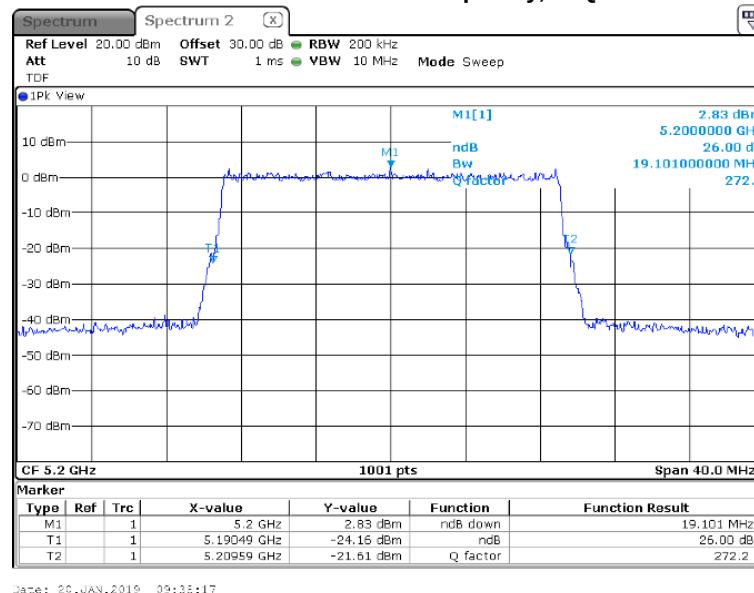
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Test specification: FCC section 15.407(a)(5), RSS-247 section 6.2.1.2, 26 dB Occupied bandwidth			
Test procedure: ANSI C63.10, section 6.9.2; KDB 789033			
Test mode: Compliance		Verdict: PASS	
Date(s): 17-Jan-19			
Temperature: 26 °C	Relative Humidity: 49 %	Air Pressure: 1018 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.22 The 26 dB bandwidth test result at mid frequency, QPSK modulation, 20 MHz EBW



Plot 7.3.23 The 26 dB bandwidth test result at mid frequency, 16QAM modulation, 20 MHz EBW





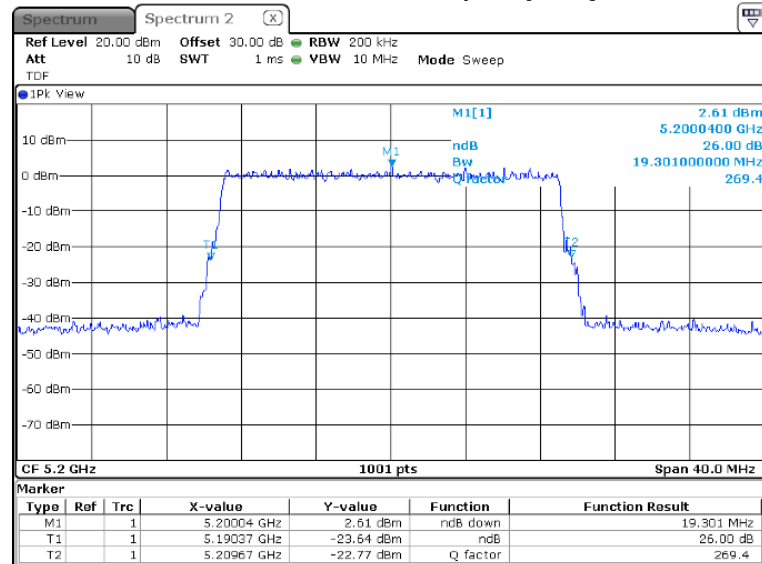
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Date of Issue: 25-Jun-19

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Test procedure: ANSI C63.10, section 6.9.2; KDB 789033			
Test mode: Compliance		Verdict: PASS	
Date(s): 17-Jan-19			
Temperature: 26 °C	Relative Humidity: 49 %	Air Pressure: 1018 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.24 The 26 dB bandwidth test result at mid frequency, 64QAM modulation, 20 MHz EBW



Date: 20.JAN.2019 09:35:53



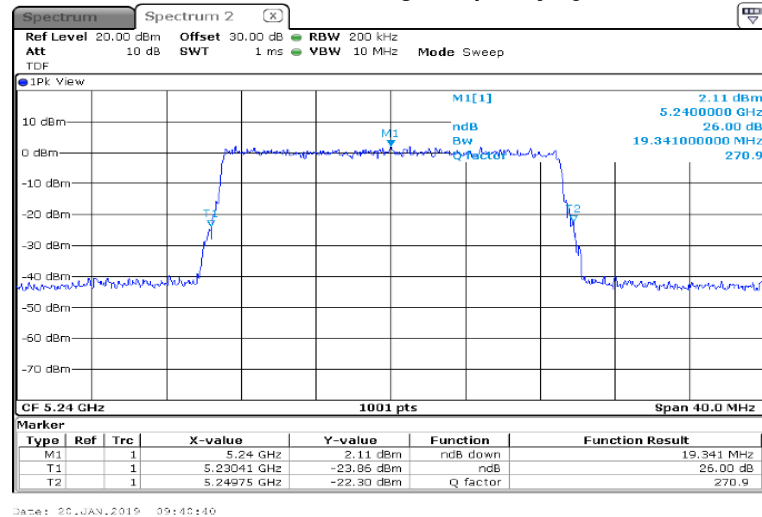
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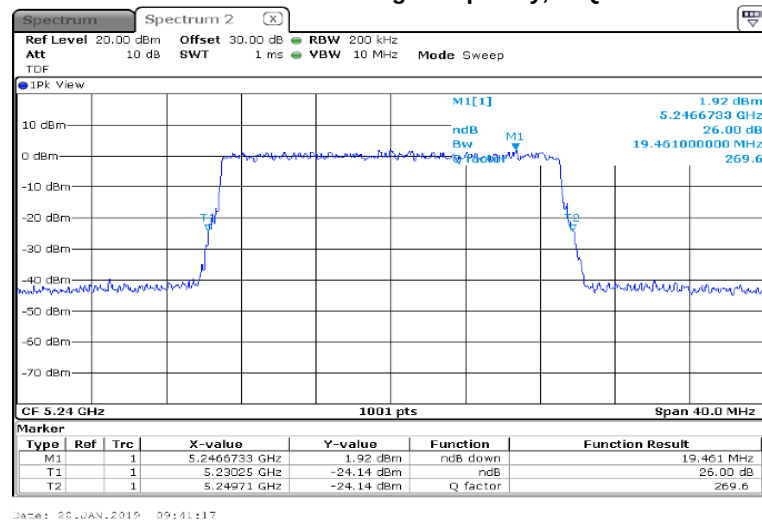
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Test procedure: ANSI C63.10, section 6.9.2; KDB 789033			
Test mode: Compliance		Verdict: PASS	
Date(s): 17-Jan-19			
Temperature: 26 °C	Relative Humidity: 49 %	Air Pressure: 1018 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.25 The 26 dB bandwidth test result at high frequency, QPSK modulation, 20 MHz EBW



Plot 7.3.26 The 26 dB bandwidth test result at high frequency, 16QAM modulation, 20 MHz EBW





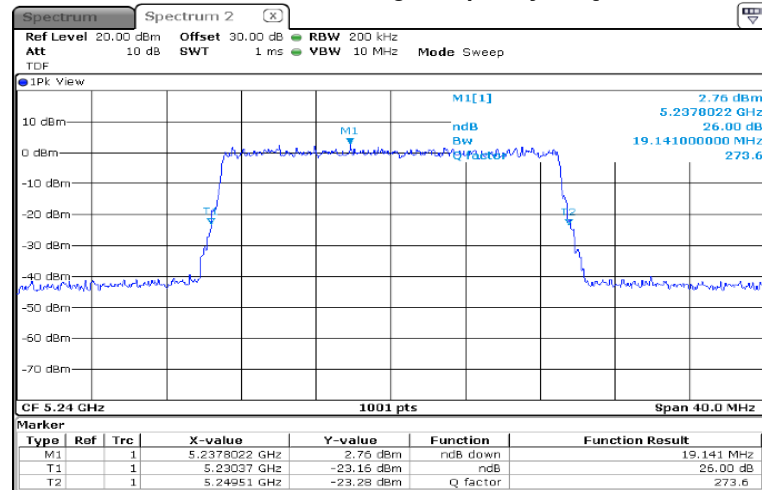
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Test procedure: ANSI C63.10, section 6.9.2; KDB 789033			
Test mode: Compliance		Verdict: PASS	
Date(s): 17-Jan-19			
Temperature: 26 °C	Relative Humidity: 49 %	Air Pressure: 1018 hPa	Power: 48 VDC
Remarks:			

Plot 7.3.27 The 26 dB bandwidth test result at high frequency, 64QAM modulation, 20 MHz EBW



Date: 20-JAN-2019 09:42:04



Test specification: FCC section 15.407, RSS-Gen section 6.7, Occupied 99% bandwidth			
Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

7.4 Occupied 99% bandwidth at 5150 – 5250 MHz range

7.4.1 General

This test was performed to measure 99% bandwidth of the EUT carrier frequency. Specification test limits are given in Table 7.4.1.

Table 7.4.1 The 99% bandwidth limits

Assigned frequency, MHz	Modulation envelope, 99%	Minimum bandwidth, kHz
5150.0 – 5250.0	99	NA
5725.0 – 5850.0	99	NA

* - Modulation envelope reference points provided in terms of attenuation below the peak of modulated carrier.

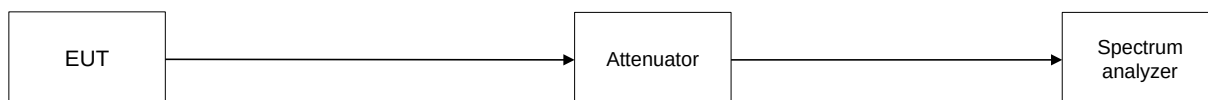
7.4.2 Test procedure

7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized and its proper operation was checked.

7.4.2.2 The EUT was set to transmit modulated carrier.

7.4.2.3 The transmitter minimum 99% bandwidth was measured with spectrum analyzer RBW=1% of EBW as frequency delta between reference points on modulation envelope and provided in Table 7.4.2 and the associated plots.

Figure 7.4.1 The 99% bandwidth test setup





Test specification: FCC section 15.407, RSS-Gen section 6.7, Occupied 99% bandwidth			
Test procedure: ANSI C63.10, section 6.9.3			
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 7.4.2 The 99% bandwidth test results

ASSIGNED FREQUENCY BAND: 5.15 – 5.25 GHz
 DETECTOR USED: Peak
 SWEEP TIME: Auto
 RESOLUTION BANDWIDTH: 1% of the EBW
 VIDEO BANDWIDTH: ≥RBW
 EBW: 10 MHz

Carrier frequency, GHz	Modulation	99% bandwidth, MHz
Low frequency		
5.160	QPSK	9.021
	16QAM	8.961
	64QAM	8.991
Mid frequency		
5.200	QPSK	8.961
	16QAM	8.961
	64QAM	8.961
High frequency		
5.245	QPSK	8.931
	16QAM	8.961
	64QAM	8.961

EBW: 15 MHz

Carrier frequency, GHz	Modulation	99% bandwidth, MHz
Low frequency		
5.165	QPSK	13.487
	16QAM	13.487
	64QAM	13.427
Mid frequency		
5.200	QPSK	13.516
	16QAM	13.427
	64QAM	13.487
High frequency		
5.240	QPSK	13.457
	16QAM	13.457
	64QAM	13.427



Test specification: FCC section 15.407, RSS-Gen section 6.7, Occupied 99% bandwidth			
Test procedure: ANSI C63.10, section 6.9.3			
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 7.4.3 The 99% bandwidth test results

ASSIGNED FREQUENCY BAND: 5.15 – 5.25 GHz
 DETECTOR USED: Peak
 SWEEP TIME: Auto
 RESOLUTION BANDWIDTH: 1% of the EBW
 VIDEO BANDWIDTH: ≥RBW
 EBW: 20 MHz

Carrier frequency, GHz	Modulation	99% bandwidth, MHz
Low frequency		
5.165	QPSK	17.922
	16QAM	17.892
	64QAM	17.862
Mid frequency		
5.200	QPSK	19.181
	16QAM	19.101
	64QAM	19.301
High frequency		
5.240	QPSK	17.902
	16QAM	17.902
	64QAM	17.902

Reference numbers of test equipment used

HL 3901	HL 4068							
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Full description is given in Appendix A.



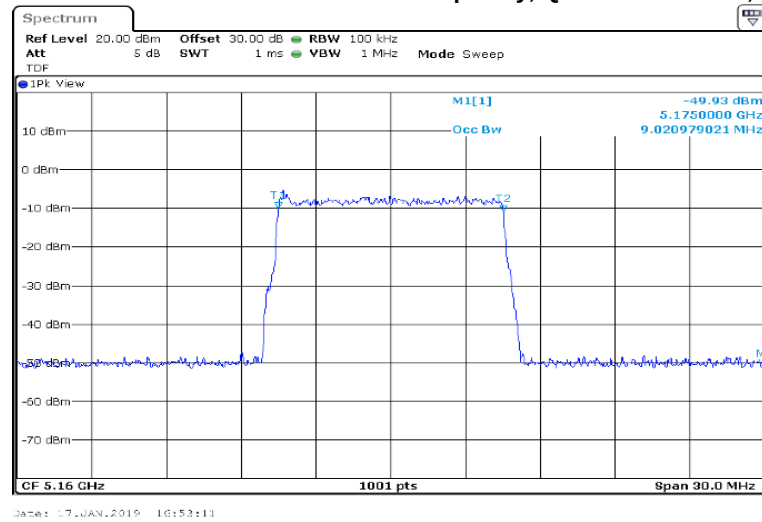
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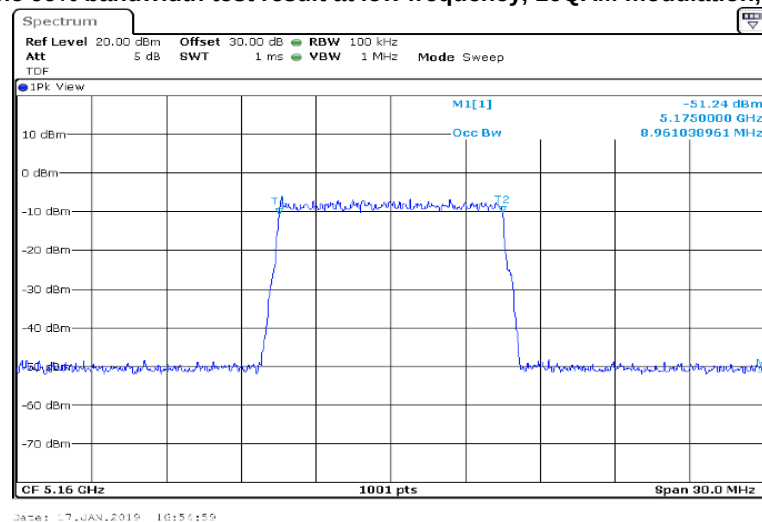
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Test specification: FCC section 15.407, RSS-Gen section 6.7, Occupied 99% bandwidth			
Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.1 The 99% bandwidth test result at low frequency, QPSK modulation, 10 MHz EBW



Plot 7.4.2 The 99% bandwidth test result at low frequency, 16QAM modulation, 10 MHz EBW





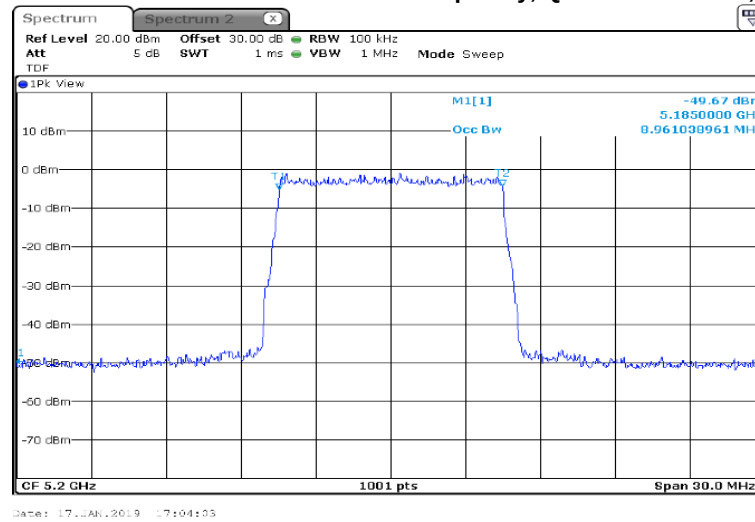
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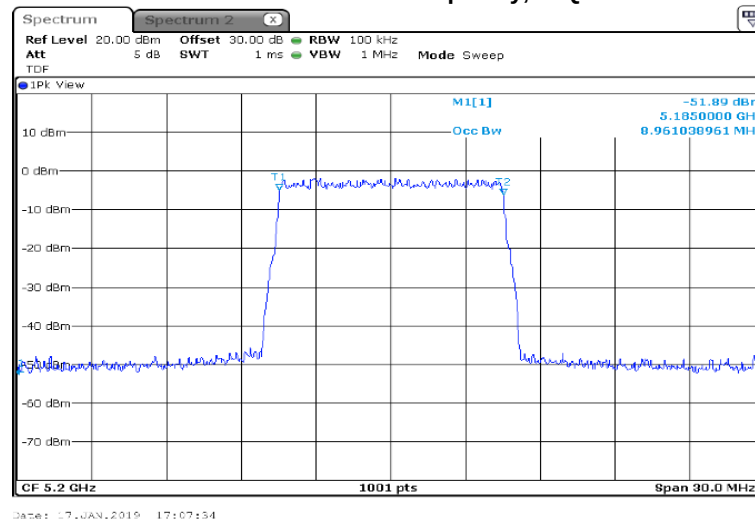
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Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.4 The 99% bandwidth test result at mid frequency, QPSK modulation, 10 MHz EBW



Plot 7.4.5 The 99% bandwidth test result at mid frequency, 16QAM modulation, 10 MHz EBW



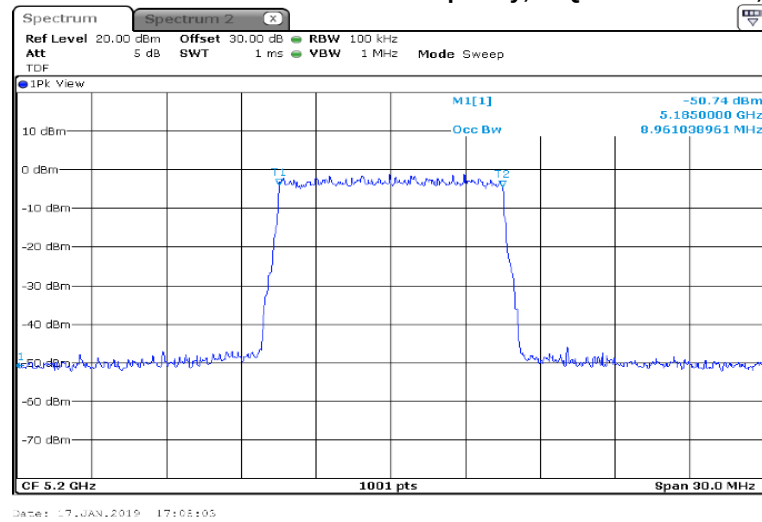


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Report ID: TelRad_FCC_31832_rev2
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Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.6 The 99% bandwidth test result at mid frequency, 64QAM modulation, 10 MHz EBW





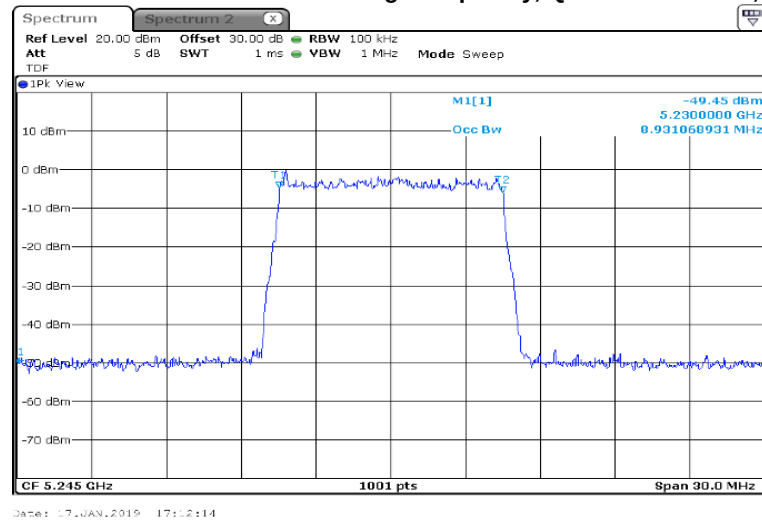
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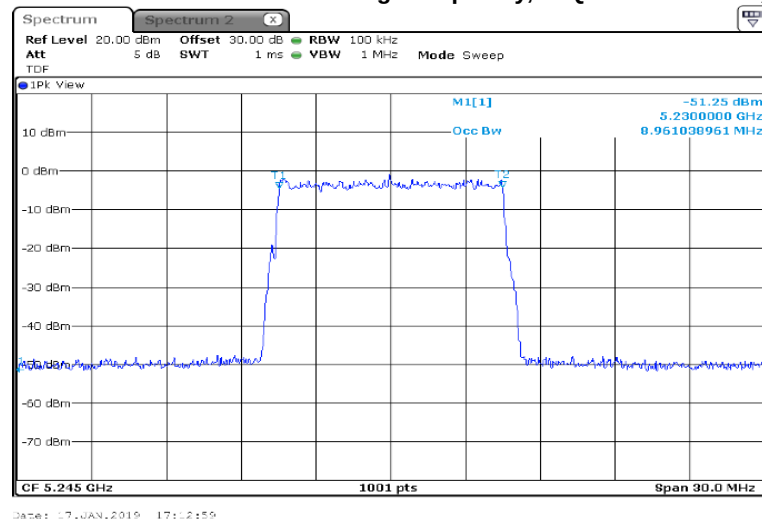
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Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.7 The 99% bandwidth test result at high frequency, QPSK modulation, 10 MHz EBW



Plot 7.4.8 The 99% bandwidth test result at high frequency, 16QAM modulation, 10 MHz EBW



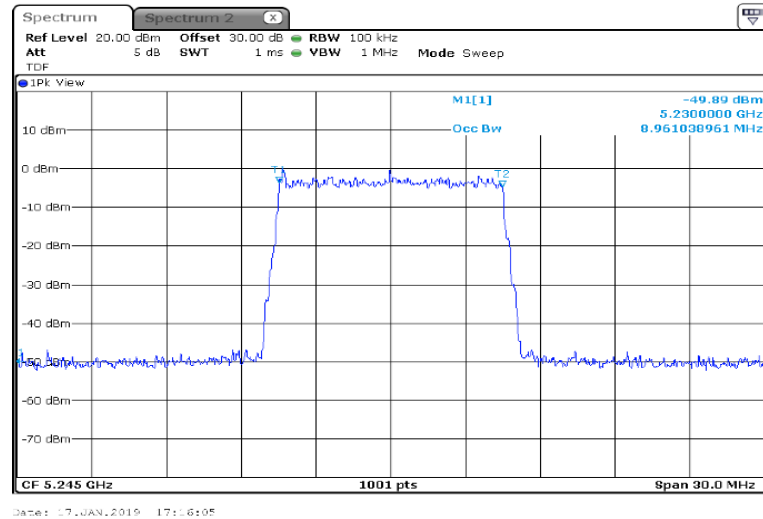


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Date of Issue: 25-Jun-19

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Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.9 The 99% bandwidth test result at high frequency, 64QAM modulation, 10 MHz EBW





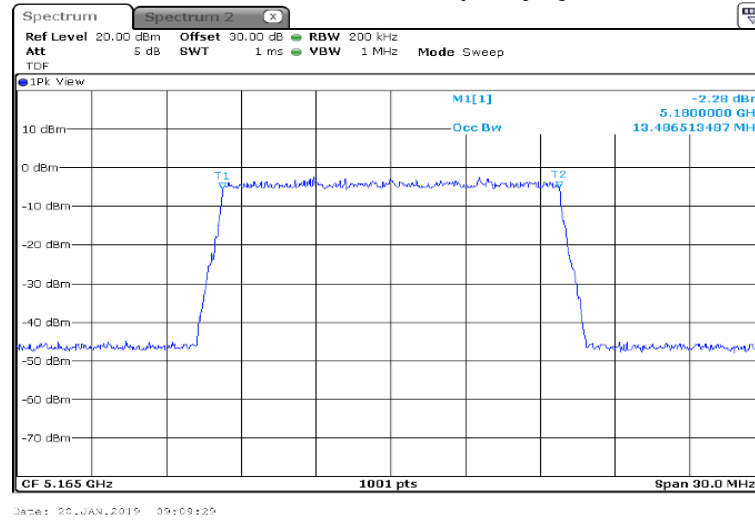
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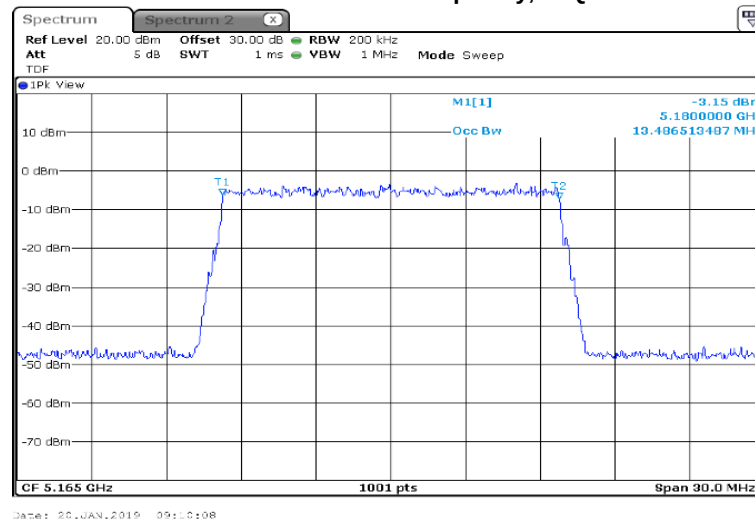
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Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.10 The 99% bandwidth test result at low frequency, QPSK modulation, 15 MHz EBW



Plot 7.4.11 The 99% bandwidth test result at low frequency, 16QAM modulation, 15 MHz EBW





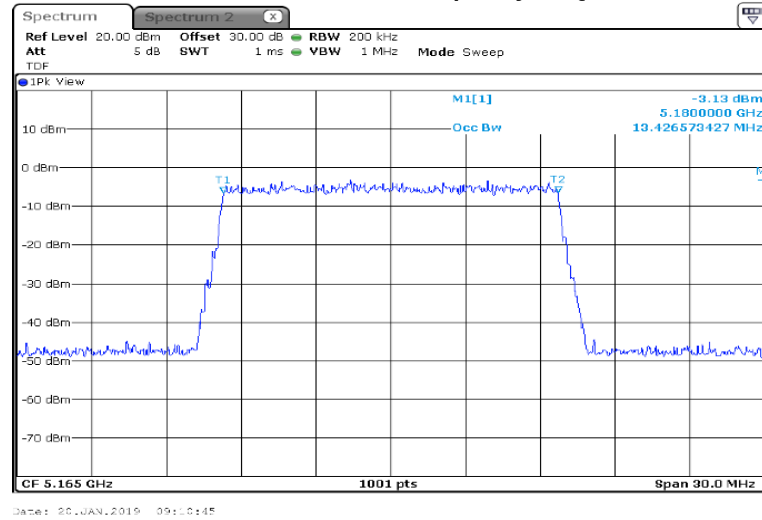
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Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.12 The 99% bandwidth test result at low frequency, 64QAM modulation, 15 MHz EBW





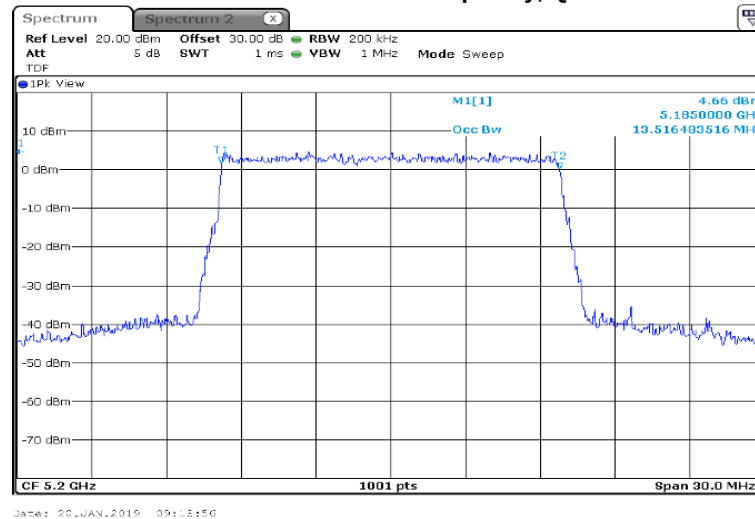
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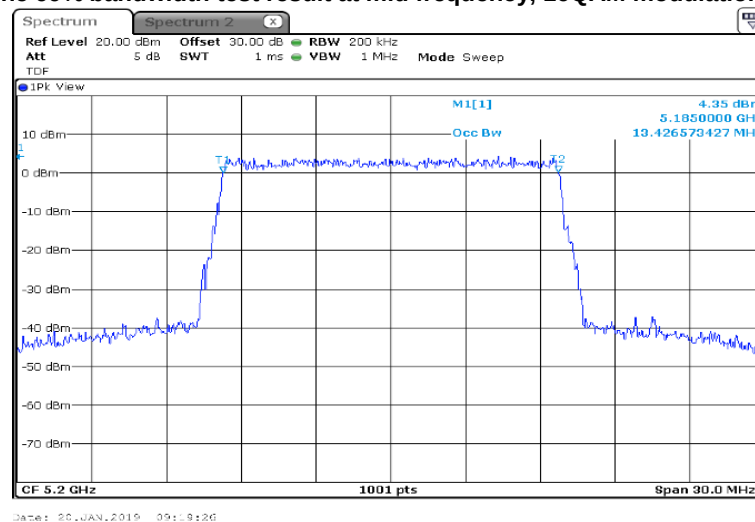
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Test specification: FCC section 15.407, RSS-Gen section 6.7, Occupied 99% bandwidth			
Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.13 The 99% bandwidth test result at mid frequency, QPSK modulation, 15 MHz EBW



Plot 7.4.14 The 99% bandwidth test result at mid frequency, 16QAM modulation, 15 MHz EBW





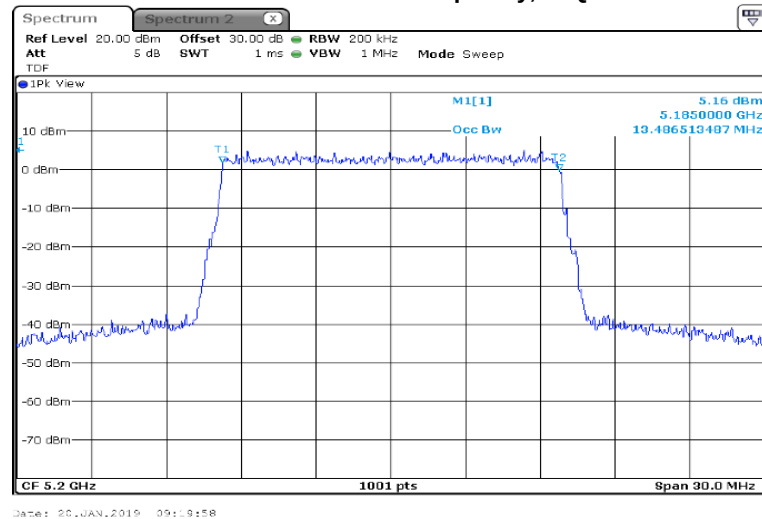
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Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.15 The 99% bandwidth test result at mid frequency, 64QAM modulation, 15 MHz EBW





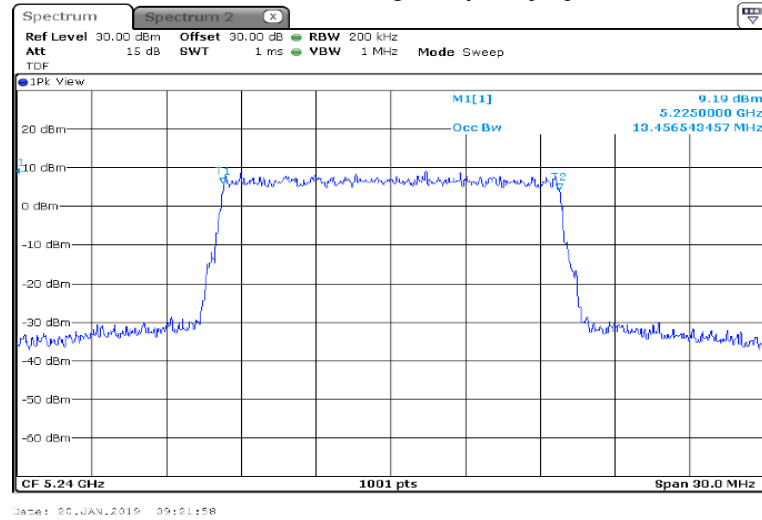
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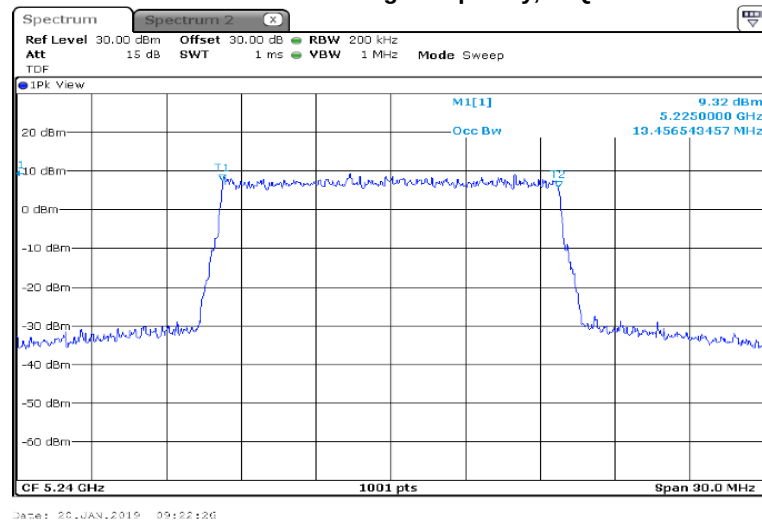
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Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.16 The 99% bandwidth test result at high frequency, QPSK modulation, 15 MHz EBW



Plot 7.4.17 The 99% bandwidth test result at high frequency, 16QAM modulation, 15 MHz EBW





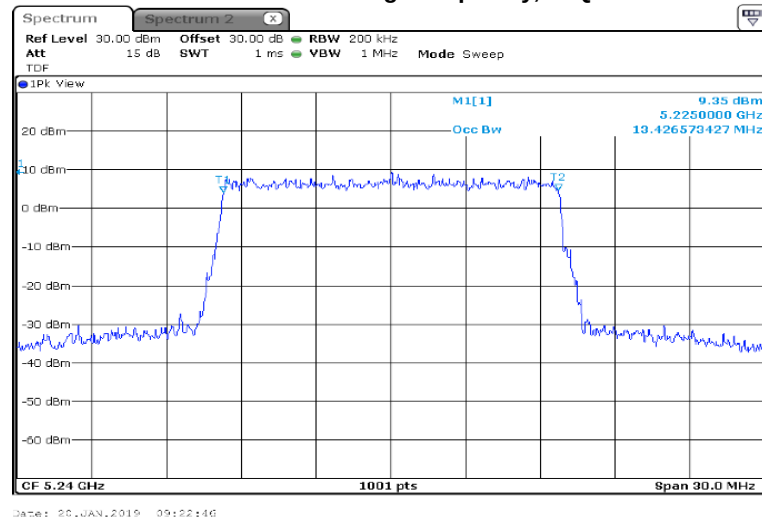
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Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.18 The 99% bandwidth test result at high frequency, 64QAM modulation, 15 MHz EBW





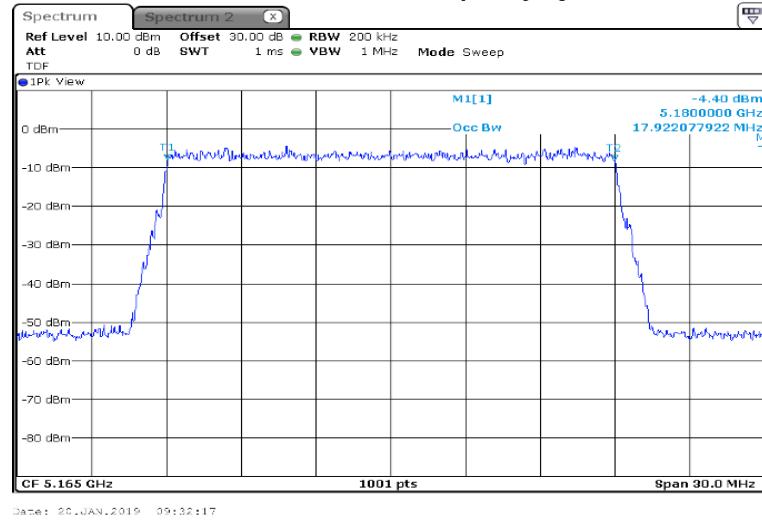
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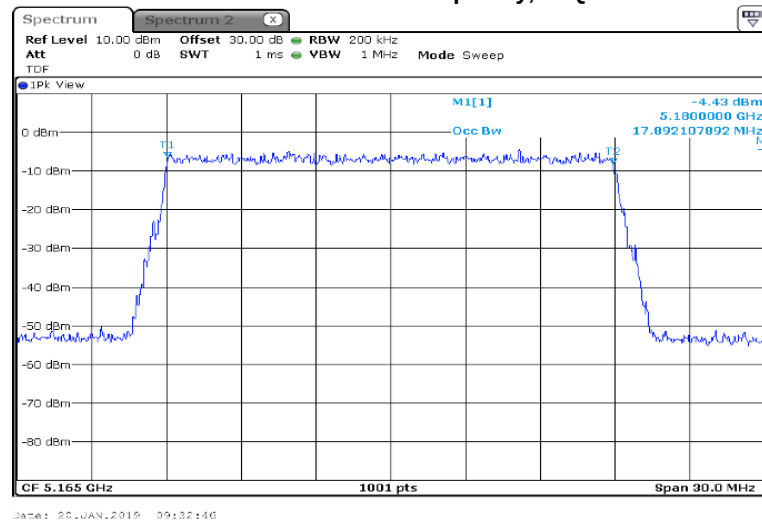
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Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.19 The 99% bandwidth test result at low frequency, QPSK modulation, 20 MHz EBW



Plot 7.4.20 The 99% bandwidth test result at low frequency, 16QAM modulation, 20 MHz EBW



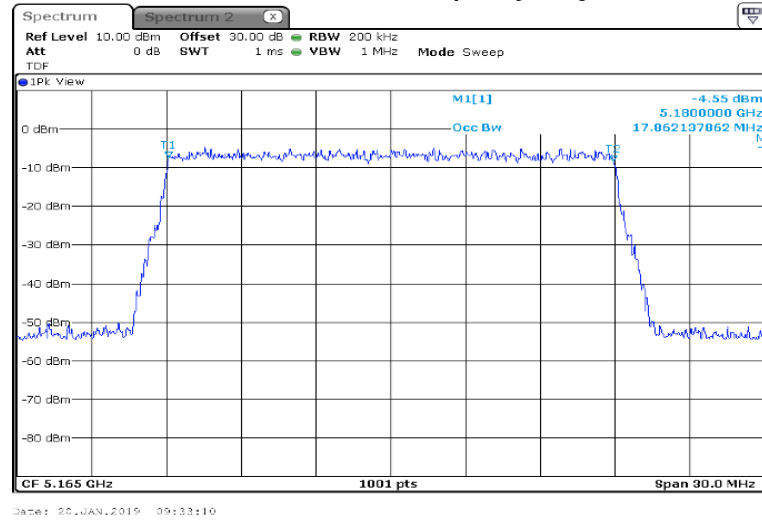


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Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.21 The 99% bandwidth test result at low frequency, 64QAM modulation, 20 MHz EBW





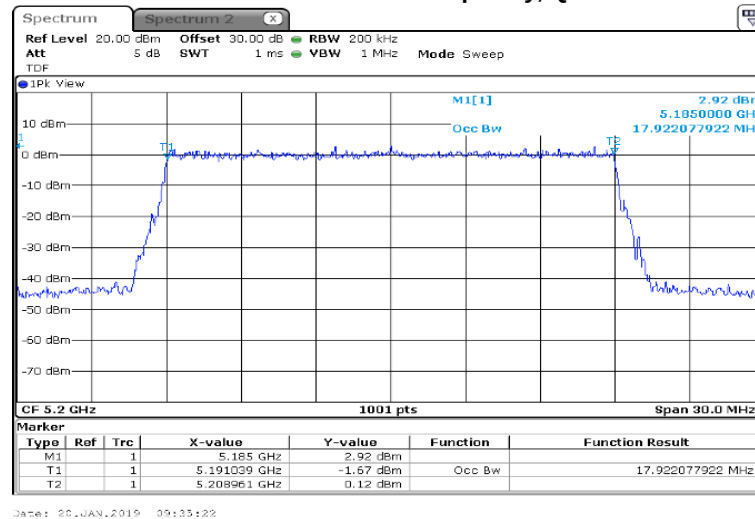
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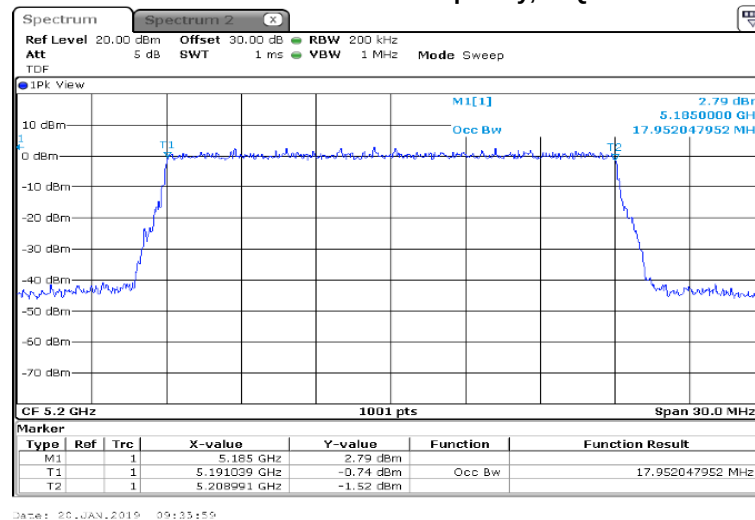
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Test specification: FCC section 15.407, RSS-Gen section 6.7, Occupied 99% bandwidth			
Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.22 The 99% bandwidth test result at mid frequency, QPSK modulation, 20 MHz EBW



Plot 7.4.23 The 99% bandwidth test result at mid frequency, 16QAM modulation, 20 MHz EBW





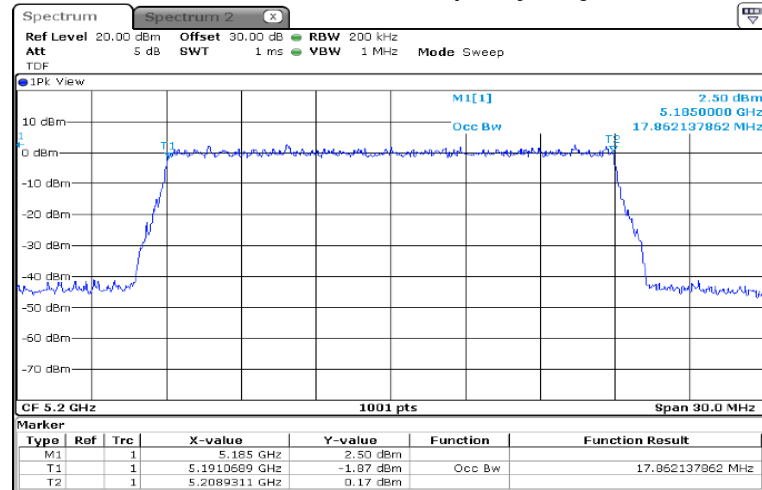
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Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification: FCC section 15.407, RSS-Gen section 6.7, Occupied 99% bandwidth			
Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.24 The 99% bandwidth test result at mid frequency, 64QAM modulation, 20 MHz EBW



Date: 20-JAN-2019 09:36:59



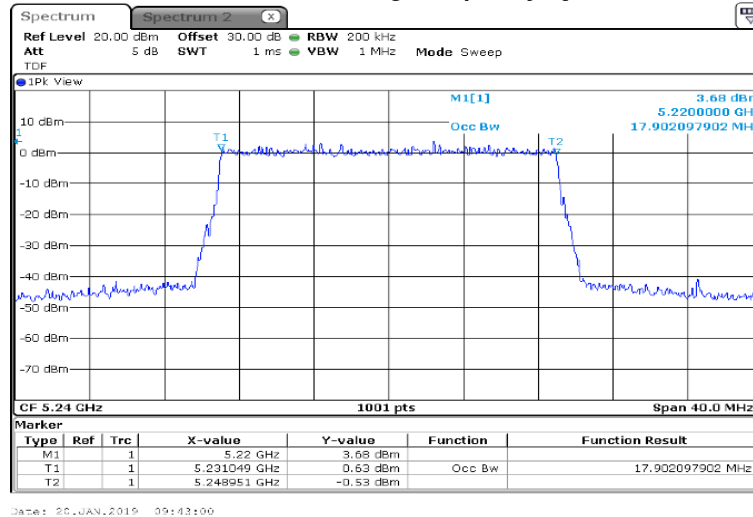
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Report ID: TelRad_FCC_31832_rev2

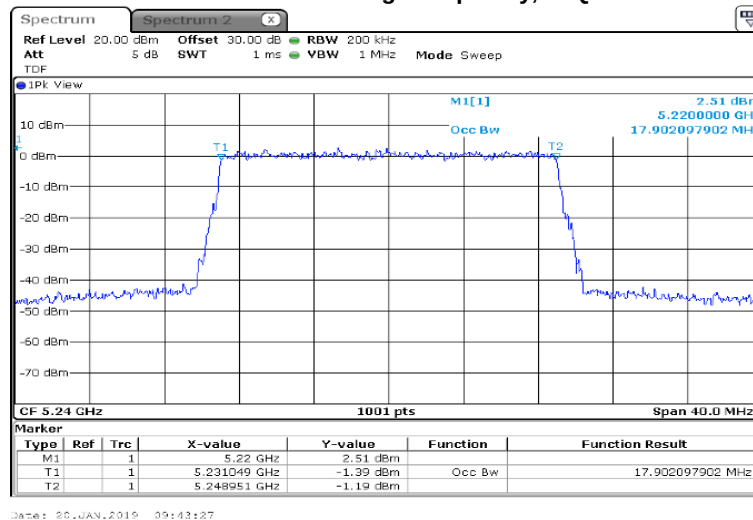
Date of Issue: 25-Jun-19

Test specification: FCC section 15.407, RSS-Gen section 6.7, Occupied 99% bandwidth			
Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.25 The 99% bandwidth test result at high frequency, QPSK modulation, 20 MHz EBW



Plot 7.4.26 The 99% bandwidth test result at high frequency, 16QAM modulation, 20 MHz EBW





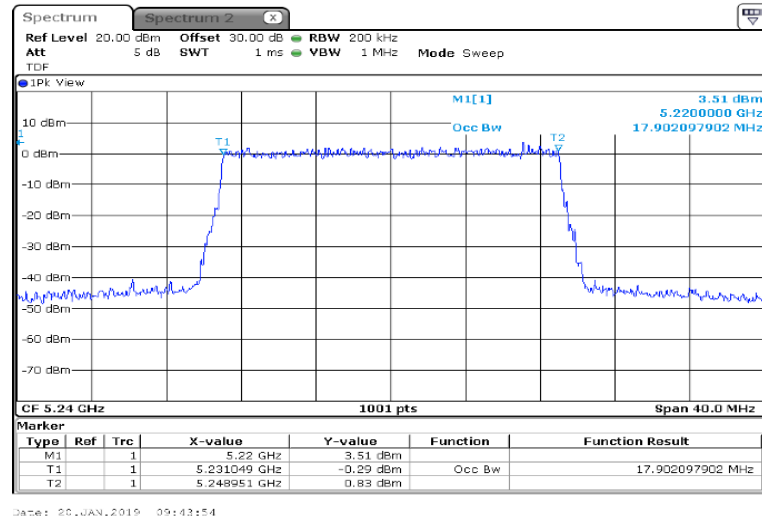
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification: FCC section 15.407, RSS-Gen section 6.7, Occupied 99% bandwidth			
Test procedure: ANSI C63.10, section 6.9.3			
Test mode: Compliance		Verdict: PASS	
Date(s): 16-Jan-19			
Temperature: 25 °C	Relative Humidity: 46 %	Air Pressure: 1009 hPa	Power: 48 VDC
Remarks:			

Plot 7.4.27 The 99% bandwidth test result at high frequency, 64QAM modulation, 20 MHz EBW





Test specification: FCC section 15.407(a)(1-3), RSS-Gen section 6.7, 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:			

7.5 Peak output power at 5725 – 5850 MHz range

7.5.1 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 7.5.1.

Table 7.5.1 Peak output power limits

Assigned frequency range, MHz	Conducted output power limit	EIRP limit
5725 - 5850	1 W (30 dBm)	36 dBm

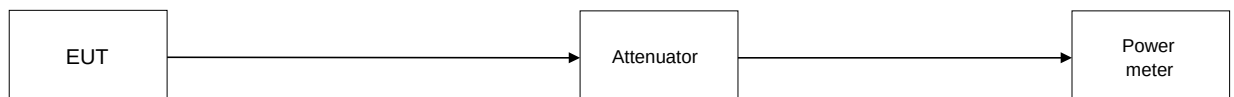
7.5.2 Test procedure

7.5.2.1 The EUT was set up as shown in Figure 7.5.1, energized and its proper operation was checked.

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

7.5.2.3 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 7.5.1 Peak output power test setup





Test specification: FCC section 15.407(a)(1-3), RSS-Gen section 6.7, 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 7.5.2 Peak output power test results

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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	5730	13.50	13.48	13.37	13.29	19.41	19.50	-0.09	Pass
		5788	13.41	13.35	13.28	13.26	19.33	19.50	-0.17	Pass
		5845	13.48	13.42	13.44	13.29	19.41	19.50	-0.09	Pass
	16QAM	5730	13.49	13.49	13.34	13.27	19.40	19.50	-0.10	Pass
		5788	13.40	13.36	13.30	13.28	19.34	19.50	-0.16	Pass
		5845	13.49	13.40	13.46	13.31	19.42	19.50	-0.08	Pass
	64QAM	5730	13.50	13.49	13.37	13.26	19.41	19.50	-0.09	Pass
		5788	13.43	13.36	13.27	13.29	19.34	19.50	-0.16	Pass
		5845	13.49	13.41	13.46	13.31	19.42	19.50	-0.08	Pass
15	QPSK	5732.5	13.41	13.42	13.29	13.35	19.37	19.50	-0.13	Pass
		5788	13.50	13.41	13.38	13.22	19.38	19.50	-0.12	Pass
		5842.5	13.36	13.34	13.49	13.21	19.35	19.50	-0.15	Pass
	16QAM	5732.5	13.41	13.45	13.28	13.35	19.37	19.50	-0.13	Pass
		5788	13.51	13.41	13.35	13.22	19.37	19.50	-0.13	Pass
		5842.5	13.50	13.34	13.50	13.21	19.39	19.50	-0.11	Pass
	64QAM	5732.5	13.40	13.43	13.25	13.35	19.36	19.50	-0.14	Pass
		5788	13.49	13.39	13.36	13.22	19.37	19.50	-0.13	Pass
		5842.5	13.33	13.35	13.49	13.20	19.34	19.50	-0.16	Pass
20	QPSK	5735	13.39	13.44	13.29	13.31	19.36	19.50	-0.14	Pass
		5788	13.41	13.25	13.33	13.20	19.30	19.50	-0.20	Pass
		5840	13.35	13.39	13.40	13.26	19.35	19.50	-0.15	Pass
	16QAM	5735	13.30	13.42	13.29	13.37	19.34	19.50	-0.16	Pass
		5788	13.43	13.27	13.35	13.20	19.32	19.50	-0.18	Pass
		5840	13.35	13.38	13.43	13.23	19.35	19.50	-0.15	Pass
	64QAM	5735	13.28	13.43	13.28	13.37	19.34	19.50	-0.16	Pass
		5788	13.44	13.28	13.32	13.20	19.31	19.50	-0.19	Pass
		5840	13.35	13.38	13.44	13.23	19.35	19.50	-0.15	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-Gen section 6.7, 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 7.5.3 Peak output power test results

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT2	ANT3	ANT4				
10	QPSK	5730	13.50	13.48	13.37	13.29	19.41	19.50	-0.09	Pass
		5788	13.41	13.35	13.28	13.26	19.33	19.50	-0.17	Pass
		5845	13.48	13.42	13.44	13.29	19.41	19.50	-0.09	Pass
	16QAM	5730	13.49	13.49	13.34	13.27	19.40	19.50	-0.10	Pass
		5788	13.40	13.36	13.30	13.28	19.34	19.50	-0.16	Pass
		5845	13.49	13.40	13.46	13.31	19.42	19.50	-0.08	Pass
	64QAM	5730	13.50	13.49	13.37	13.26	19.41	19.50	-0.09	Pass
		5788	13.43	13.36	13.27	13.29	19.34	19.50	-0.16	Pass
		5845	13.49	13.41	13.46	13.31	19.42	19.50	-0.08	Pass
15	QPSK	5732.5	13.41	13.42	13.29	13.35	19.37	19.50	-0.13	Pass
		5788	13.50	13.41	13.38	13.22	19.38	19.50	-0.12	Pass
		5842.5	13.36	13.34	13.49	13.21	19.35	19.50	-0.15	Pass
	16QAM	5732.5	13.41	13.45	13.28	13.35	19.37	19.50	-0.13	Pass
		5788	13.51	13.41	13.35	13.22	19.37	19.50	-0.13	Pass
		5842.5	13.50	13.34	13.50	13.21	19.39	19.50	-0.11	Pass
	64QAM	5732.5	13.40	13.43	13.25	13.35	19.36	19.50	-0.14	Pass
		5788	13.49	13.39	13.36	13.22	19.37	19.50	-0.13	Pass
		5842.5	13.33	13.35	13.49	13.20	19.34	19.50	-0.16	Pass
20	QPSK	5735	13.39	13.44	13.29	13.31	19.36	19.50	-0.14	Pass
		5788	13.41	13.25	13.33	13.20	19.30	19.50	-0.20	Pass
		5840	13.35	13.39	13.40	13.26	19.35	19.50	-0.15	Pass
	16QAM	5735	13.30	13.42	13.29	13.37	19.34	19.50	-0.16	Pass
		5788	13.43	13.27	13.35	13.20	19.32	19.50	-0.18	Pass
		5840	13.35	13.38	13.43	13.23	19.35	19.50	-0.15	Pass
	64QAM	5735	13.28	13.43	13.28	13.37	19.34	19.50	-0.16	Pass
		5788	13.44	13.28	13.32	13.20	19.31	19.50	-0.19	Pass
		5840	13.35	13.38	13.44	13.23	19.35	19.50	-0.15	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



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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-Gen section 6.7, 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 7.5.4 Peak output power test results

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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 per port, dBm		Total output power*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT3				
10	QPSK	5730	16.33	16.26	19.30	19.50	-0.20	Pass
		5788	16.37	16.25	19.31	19.50	-0.19	Pass
		5845	16.36	16.27	19.32	19.50	-0.18	Pass
	16QAM	5730	16.32	16.26	19.29	19.50	-0.21	Pass
		5788	16.39	16.24	19.32	19.50	-0.18	Pass
		5845	16.37	16.28	19.33	19.50	-0.17	Pass
	64QAM	5730	16.34	16.28	19.31	19.50	-0.19	Pass
		5788	16.39	16.27	19.33	19.50	-0.17	Pass
		5845	16.38	16.32	19.35	19.50	-0.15	Pass
15	QPSK	5732.5	16.49	16.45	19.47	19.50	-0.03	Pass
		5788	16.44	16.28	19.36	19.50	-0.14	Pass
		5842.5	16.43	16.33	19.38	19.50	-0.12	Pass
	16QAM	5732.5	16.47	16.43	19.45	19.50	-0.05	Pass
		5788	16.42	16.29	19.36	19.50	-0.14	Pass
		5842.5	16.45	16.34	19.40	19.50	-0.10	Pass
	64QAM	5732.5	16.45	16.41	19.43	19.50	-0.07	Pass
		5788	16.42	16.29	19.36	19.50	-0.14	Pass
		5842.5	16.42	16.31	19.37	19.50	-0.13	Pass
20	QPSK	5735	16.32	16.15	19.24	19.50	-0.26	Pass
		5788	16.17	16.40	19.29	19.50	-0.21	Pass
		5840	16.46	16.29	19.38	19.50	-0.12	Pass
	16QAM	5735	16.32	16.14	19.23	19.50	-0.27	Pass
		5788	16.16	16.41	19.29	19.50	-0.21	Pass
		5840	16.45	16.29	19.37	19.50	-0.13	Pass
	64QAM	5735	16.33	16.12	19.23	19.50	-0.27	Pass
		5788	16.14	16.38	19.26	19.50	-0.24	Pass
		5840	16.45	16.32	19.39	19.50	-0.11	Pass

* Total output power = $(10 \cdot \log(10^{(\text{Output power ANT1}/10)} + 10^{(\text{Output power ANT3}/10)}))$

** Margin = Total output power – 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-Gen section 6.7, 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 7.5.5 Peak output power test results (continued)

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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 per port, dBm		Total output power*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT2	ANT4				
10	QPSK	5730	16.34	16.38	19.35	19.50	-0.15	Pass
		5788	16.28	16.25	19.26	19.50	-0.24	Pass
		5845	16.35	16.30	19.32	19.50	-0.18	Pass
	16QAM	5730	16.35	16.36	19.35	19.50	-0.15	Pass
		5788	16.28	16.24	19.25	19.50	-0.25	Pass
		5845	16.35	16.31	19.32	19.50	-0.18	Pass
	64QAM	5730	16.38	16.35	19.36	19.50	-0.14	Pass
		5788	16.27	16.25	19.25	19.50	-0.25	Pass
		5845	16.35	16.30	19.32	19.50	-0.18	Pass
15	QPSK	5732.5	16.33	16.31	19.31	19.50	-0.19	Pass
		5788	16.40	16.19	19.29	19.50	-0.21	Pass
		5842.5	16.32	16.45	19.38	19.50	-0.12	Pass
	16QAM	5732.5	16.33	16.31	19.31	19.50	-0.19	Pass
		5788	16.40	16.20	19.29	19.50	-0.21	Pass
		5842.5	16.31	16.45	19.37	19.50	-0.13	Pass
	64QAM	5732.5	16.32	16.30	19.30	19.50	-0.20	Pass
		5788	16.41	16.20	19.30	19.50	-0.20	Pass
		5842.5	16.28	16.43	19.35	19.50	-0.15	Pass
20	QPSK	5735	16.38	16.37	19.37	19.50	-0.13	Pass
		5788	16.26	16.26	19.25	19.50	-0.25	Pass
		5840	16.42	16.32	19.36	19.50	-0.14	Pass
	16QAM	5735	16.37	16.37	19.36	19.50	-0.14	Pass
		5788	16.27	16.29	19.27	19.50	-0.23	Pass
		5840	16.42	16.33	19.37	19.50	-0.13	Pass
	64QAM	5735	16.38	16.37	19.37	19.50	-0.13	Pass
		5788	16.28	16.26	19.26	19.50	-0.24	Pass
		5840	16.42	16.32	19.36	19.50	-0.14	Pass

* Total output power = $(10 \cdot \log(10^{(\text{Output power ANT2}/10)} + 10^{(\text{Output power ANT4}/10)}))$

** Margin = Total output power – 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-Gen section 6.7, 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 7.5.6 EIRP test results

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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 array gain, dB	Single antenna gain, dBi	Total EIRP**, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT2							
10	QPSK	5730	13.50	13.48	16.49	3.00	16.50	35.99	36.00	-0.01	Pass
		5788	13.41	13.35	16.38	3.00	16.50	35.88	36.00	-0.12	Pass
		5845	13.48	13.42	16.45	3.00	16.50	35.95	36.00	-0.05	Pass
	16QAM	5730	13.49	13.49	16.49	3.00	16.50	35.99	36.00	-0.01	Pass
		5788	13.40	13.36	16.38	3.00	16.50	35.88	36.00	-0.12	Pass
		5845	13.49	13.40	16.45	3.00	16.50	35.95	36.00	-0.05	Pass
	64QAM	5730	13.50	13.49	16.50	3.00	16.50	36.00	36.00	-0.00	Pass
		5788	13.43	13.36	16.40	3.00	16.50	35.90	36.00	-0.10	Pass
		5845	13.49	13.41	16.45	3.00	16.50	35.95	36.00	-0.05	Pass
15	QPSK	5732.5	13.41	13.42	16.42	3.00	16.50	35.92	36.00	-0.08	Pass
		5788	13.50	13.41	16.46	3.00	16.50	35.96	36.00	-0.04	Pass
		5842.5	13.36	13.34	16.35	3.00	16.50	35.85	36.00	-0.15	Pass
	16QAM	5732.5	13.41	13.45	16.43	3.00	16.50	35.93	36.00	-0.07	Pass
		5788	13.51	13.41	16.46	3.00	16.50	35.96	36.00	-0.04	Pass
		5842.5	13.50	13.34	16.42	3.00	16.50	35.92	36.00	-0.08	Pass
	64QAM	5732.5	13.40	13.43	16.42	3.00	16.50	35.92	36.00	-0.08	Pass
		5788	13.49	13.39	16.44	3.00	16.50	35.94	36.00	-0.06	Pass
		5842.5	13.33	13.35	16.34	3.00	16.50	35.84	36.00	-0.16	Pass
20	QPSK	5735	13.39	13.44	16.42	3.00	16.50	35.92	36.00	-0.08	Pass
		5788	13.41	13.25	16.33	3.00	16.50	35.83	36.00	-0.17	Pass
		5840	13.35	13.39	16.37	3.00	16.50	35.87	36.00	-0.13	Pass
	16QAM	5735	13.30	13.42	16.36	3.00	16.50	35.86	36.00	-0.14	Pass
		5788	13.43	13.27	16.35	3.00	16.50	35.85	36.00	-0.15	Pass
		5840	13.35	13.38	16.37	3.00	16.50	35.87	36.00	-0.13	Pass
	64QAM	5735	13.28	13.43	16.34	3.00	16.50	35.84	36.00	-0.16	Pass
		5788	13.44	13.28	16.36	3.00	16.50	35.86	36.00	-0.14	Pass
		5840	13.35	13.38	16.37	3.00	16.50	35.87	36.00	-0.13	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



HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(1-3), RSS-Gen section 6.7, 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 7.5.7 EIRP test results (continued)

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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 array gain, dB	Single antenna gain, dBi	Total EIRP**, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT3	ANT4							
10	QPSK	5730	13.37	13.29	16.33	3.00	16.50	35.83	36.00	-0.17	Pass
		5788	13.28	13.26	16.27	3.00	16.50	35.77	36.00	-0.23	Pass
		5845	13.44	13.29	16.37	3.00	16.50	35.87	36.00	-0.13	Pass
	16QAM	5730	13.34	13.27	16.31	3.00	16.50	35.81	36.00	-0.19	Pass
		5788	13.30	13.28	16.29	3.00	16.50	35.79	36.00	-0.21	Pass
		5845	13.46	13.31	16.39	3.00	16.50	35.89	36.00	-0.11	Pass
	64QAM	5730	13.37	13.26	16.32	3.00	16.50	35.82	36.00	-0.18	Pass
		5788	13.27	13.29	16.28	3.00	16.50	35.78	36.00	-0.22	Pass
		5845	13.46	13.31	16.39	3.00	16.50	35.89	36.00	-0.11	Pass
15	QPSK	5732.5	13.29	13.35	16.32	3.00	16.50	35.82	36.00	-0.18	Pass
		5788	13.38	13.22	16.30	3.00	16.50	35.80	36.00	-0.20	Pass
		5842.5	13.49	13.21	16.35	3.00	16.50	35.85	36.00	-0.15	Pass
	16QAM	5732.5	13.28	13.35	16.32	3.00	16.50	35.82	36.00	-0.18	Pass
		5788	13.35	13.22	16.29	3.00	16.50	35.79	36.00	-0.21	Pass
		5842.5	13.50	13.21	16.36	3.00	16.50	35.86	36.00	-0.14	Pass
	64QAM	5732.5	13.25	13.35	16.30	3.00	16.50	35.80	36.00	-0.20	Pass
		5788	13.36	13.22	16.29	3.00	16.50	35.79	36.00	-0.21	Pass
		5842.5	13.49	13.20	16.35	3.00	16.50	35.85	36.00	-0.15	Pass
20	QPSK	5735	13.29	13.31	16.30	3.00	16.50	35.80	36.00	-0.20	Pass
		5788	13.33	13.20	16.27	3.00	16.50	35.77	36.00	-0.23	Pass
		5840	13.40	13.26	16.33	3.00	16.50	35.83	36.00	-0.17	Pass
	16QAM	5735	13.29	13.37	16.33	3.00	16.50	35.83	36.00	-0.17	Pass
		5788	13.35	13.20	16.28	3.00	16.50	35.78	36.00	-0.22	Pass
		5840	13.43	13.23	16.33	3.00	16.50	35.83	36.00	-0.17	Pass
	64QAM	5735	13.28	13.37	16.33	3.00	16.50	35.83	36.00	-0.17	Pass
		5788	13.32	13.20	16.26	3.00	16.50	35.76	36.00	-0.24	Pass
		5840	13.44	13.23	16.34	3.00	16.50	35.84	36.00	-0.16	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



HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(1-3), RSS-Gen section 6.7, 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 7.5.8 EIRP test results

ASSIGNED FREQUENCY RANGE:

5.725 - 5.850 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 array gain, dB	Single antenna gain, dBi	Total EIRP**, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT2							
10	QPSK	5730	13.50	13.48	16.49	0.00	16.50	32.99	36.00	-3.01	Pass
		5788	13.41	13.35	16.38	0.00	16.50	32.88	36.00	-3.12	Pass
		5845	13.48	13.42	16.45	0.00	16.50	32.95	36.00	-3.05	Pass
	16QAM	5730	13.49	13.49	16.49	0.00	16.50	32.99	36.00	-3.01	Pass
		5788	13.40	13.36	16.38	0.00	16.50	32.88	36.00	-3.12	Pass
		5845	13.49	13.40	16.45	0.00	16.50	32.95	36.00	-3.05	Pass
	64QAM	5730	13.50	13.49	16.50	0.00	16.50	33.00	36.00	-3.00	Pass
		5788	13.43	13.36	16.40	0.00	16.50	32.90	36.00	-3.10	Pass
		5845	13.49	13.41	16.45	0.00	16.50	32.95	36.00	-3.05	Pass
15	QPSK	5732.5	13.41	13.42	16.42	0.00	16.50	32.92	36.00	-3.08	Pass
		5788	13.50	13.41	16.46	0.00	16.50	32.96	36.00	-3.04	Pass
		5842.5	13.36	13.34	16.35	0.00	16.50	32.85	36.00	-3.15	Pass
	16QAM	5732.5	13.41	13.45	16.43	0.00	16.50	32.93	36.00	-3.07	Pass
		5788	13.51	13.41	16.46	0.00	16.50	32.96	36.00	-3.04	Pass
		5842.5	13.50	13.34	16.42	0.00	16.50	32.92	36.00	-3.08	Pass
	64QAM	5732.5	13.40	13.43	16.42	0.00	16.50	32.92	36.00	-3.08	Pass
		5788	13.49	13.39	16.44	0.00	16.50	32.94	36.00	-3.06	Pass
		5842.5	13.33	13.35	16.34	0.00	16.50	32.84	36.00	-3.16	Pass
20	QPSK	5735	13.39	13.44	16.42	0.00	16.50	32.92	36.00	-3.08	Pass
		5788	13.41	13.25	16.33	0.00	16.50	32.83	36.00	-3.17	Pass
		5840	13.35	13.39	16.37	0.00	16.50	32.87	36.00	-3.13	Pass
	16QAM	5735	13.30	13.42	16.36	0.00	16.50	32.86	36.00	-3.14	Pass
		5788	13.43	13.27	16.35	0.00	16.50	32.85	36.00	-3.15	Pass
		5840	13.35	13.38	16.37	0.00	16.50	32.87	36.00	-3.13	Pass
	64QAM	5735	13.28	13.43	16.34	0.00	16.50	32.84	36.00	-3.16	Pass
		5788	13.44	13.28	16.36	0.00	16.50	32.86	36.00	-3.14	Pass
		5840	13.35	13.38	16.37	0.00	16.50	32.87	36.00	-3.13	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



HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(1-3), RSS-Gen section 6.7, 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 7.5.9 EIRP test results (continued)

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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 array gain, dB	Single antenna gain, dBi	Total EIRP**, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT3	ANT4							
10	QPSK	5730	13.37	13.29	16.33	0.00	16.50	32.83	36.00	-3.17	Pass
		5788	13.28	13.26	16.27	0.00	16.50	32.77	36.00	-3.23	Pass
		5845	13.44	13.29	16.37	0.00	16.50	32.87	36.00	-3.13	Pass
	16QAM	5730	13.34	13.27	16.31	0.00	16.50	32.81	36.00	-3.19	Pass
		5788	13.30	13.28	16.29	0.00	16.50	32.79	36.00	-3.21	Pass
		5845	13.46	13.31	16.39	0.00	16.50	32.89	36.00	-3.11	Pass
	64QAM	5730	13.37	13.26	16.32	0.00	16.50	32.82	36.00	-3.18	Pass
		5788	13.27	13.29	16.28	0.00	16.50	32.78	36.00	-3.22	Pass
		5845	13.46	13.31	16.39	0.00	16.50	32.89	36.00	-3.11	Pass
15	QPSK	5732.5	13.29	13.35	16.32	0.00	16.50	32.82	36.00	-3.18	Pass
		5788	13.38	13.22	16.30	0.00	16.50	32.80	36.00	-3.20	Pass
		5842.5	13.49	13.21	16.35	0.00	16.50	32.85	36.00	-3.15	Pass
	16QAM	5732.5	13.28	13.35	16.32	0.00	16.50	32.82	36.00	-3.18	Pass
		5788	13.35	13.22	16.29	0.00	16.50	32.79	36.00	-3.21	Pass
		5842.5	13.50	13.21	16.36	0.00	16.50	32.86	36.00	-3.14	Pass
	64QAM	5732.5	13.25	13.35	16.30	0.00	16.50	32.80	36.00	-3.20	Pass
		5788	13.36	13.22	16.29	0.00	16.50	32.79	36.00	-3.21	Pass
		5842.5	13.49	13.20	16.35	0.00	16.50	32.85	36.00	-3.15	Pass
20	QPSK	5735	13.29	13.31	16.30	0.00	16.50	32.80	36.00	-3.20	Pass
		5788	13.33	13.20	16.27	0.00	16.50	32.77	36.00	-3.23	Pass
		5840	13.40	13.26	16.33	0.00	16.50	32.83	36.00	-3.17	Pass
	16QAM	5735	13.29	13.37	16.33	0.00	16.50	32.83	36.00	-3.17	Pass
		5788	13.35	13.20	16.28	0.00	16.50	32.78	36.00	-3.22	Pass
		5840	13.43	13.23	16.33	0.00	16.50	32.83	36.00	-3.17	Pass
	64QAM	5735	13.28	13.37	16.33	0.00	16.50	32.83	36.00	-3.17	Pass
		5788	13.32	13.20	16.26	0.00	16.50	32.76	36.00	-3.24	Pass
		5840	13.44	13.23	16.34	0.00	16.50	32.84	36.00	-3.16	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



HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev2

Date of Issue: 25-Jun-19

Test specification: FCC section 15.407(a)(1-3), RSS-Gen section 6.7, 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 7.5.10 EIRP test results

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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 array gain, dB	Single antenna gain, dBi	Total EIRP*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT1						
10	QPSK	5730	16.33	0	16.50	32.83	36.00	-3.17	Pass
		5788	16.37	0	16.50	32.87	36.00	-3.13	Pass
		5845	16.36	0	16.50	32.86	36.00	-3.14	Pass
	16QAM	5730	16.32	0	16.50	32.82	36.00	-3.18	Pass
		5788	16.39	0	16.50	32.89	36.00	-3.11	Pass
		5845	16.37	0	16.50	32.87	36.00	-3.13	Pass
	64QAM	5730	16.34	0	16.50	32.84	36.00	-3.16	Pass
		5788	16.39	0	16.50	32.89	36.00	-3.11	Pass
		5845	16.38	0	16.50	32.88	36.00	-3.12	Pass
15	QPSK	5732.5	16.49	0	16.50	32.99	36.00	-3.01	Pass
		5788	16.44	0	16.50	32.94	36.00	-3.06	Pass
		5842.5	16.43	0	16.50	32.93	36.00	-3.07	Pass
	16QAM	5732.5	16.47	0	16.50	32.97	36.00	-3.03	Pass
		5788	16.42	0	16.50	32.92	36.00	-3.08	Pass
		5842.5	16.45	0	16.50	32.95	36.00	-3.05	Pass
	64QAM	5732.5	16.45	0	16.50	32.95	36.00	-3.05	Pass
		5788	16.42	0	16.50	32.92	36.00	-3.08	Pass
		5842.5	16.42	0	16.50	32.92	36.00	-3.08	Pass
20	QPSK	5735	16.32	0	16.50	32.82	36.00	-3.18	Pass
		5788	16.17	0	16.50	32.67	36.00	-3.33	Pass
		5840	16.46	0	16.50	32.96	36.00	-3.04	Pass
	16QAM	5735	16.32	0	16.50	32.82	36.00	-3.18	Pass
		5788	16.16	0	16.50	32.66	36.00	-3.34	Pass
		5840	16.45	0	16.50	32.95	36.00	-3.05	Pass
	64QAM	5735	16.33	0	16.50	32.83	36.00	-3.17	Pass
		5788	16.14	0	16.50	32.64	36.00	-3.36	Pass
		5840	16.45	0	16.50	32.95	36.00	-3.05	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-Gen section 6.7, 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 7.5.11 EIRP test results (continued)

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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 array gain, dB	Single antenna gain, dBi	Total EIRP*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT2						
10	QPSK	5730	16.34	0	16.50	32.84	36.00	-3.16	Pass
		5788	16.28	0	16.50	32.78	36.00	-3.22	Pass
		5845	16.35	0	16.50	32.85	36.00	-3.15	Pass
	16QAM	5730	16.35	0	16.50	32.85	36.00	-3.15	Pass
		5788	16.28	0	16.50	32.78	36.00	-3.22	Pass
		5845	16.35	0	16.50	32.85	36.00	-3.15	Pass
	64QAM	5730	16.38	0	16.50	32.88	36.00	-3.12	Pass
		5788	16.27	0	16.50	32.77	36.00	-3.23	Pass
		5845	16.35	0	16.50	32.85	36.00	-3.15	Pass
15	QPSK	5732.5	16.33	0	16.50	32.83	36.00	-3.17	Pass
		5788	16.40	0	16.50	32.90	36.00	-3.10	Pass
		5842.5	16.32	0	16.50	32.82	36.00	-3.18	Pass
	16QAM	5732.5	16.33	0	16.50	32.83	36.00	-3.17	Pass
		5788	16.40	0	16.50	32.90	36.00	-3.10	Pass
		5842.5	16.31	0	16.50	32.81	36.00	-3.19	Pass
	64QAM	5732.5	16.32	0	16.50	32.82	36.00	-3.18	Pass
		5788	16.41	0	16.50	32.91	36.00	-3.09	Pass
		5842.5	16.28	0	16.50	32.78	36.00	-3.22	Pass
20	QPSK	5735	16.38	0	16.50	32.88	36.00	-3.12	Pass
		5788	16.26	0	16.50	32.76	36.00	-3.24	Pass
		5840	16.42	0	16.50	32.92	36.00	-3.08	Pass
	16QAM	5735	16.37	0	16.50	32.87	36.00	-3.13	Pass
		5788	16.27	0	16.50	32.77	36.00	-3.23	Pass
		5840	16.42	0	16.50	32.92	36.00	-3.08	Pass
	64QAM	5735	16.38	0	16.50	32.88	36.00	-3.12	Pass
		5788	16.28	0	16.50	32.78	36.00	-3.22	Pass
		5840	16.42	0	16.50	32.92	36.00	-3.08	Pass

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

** Margin = Total output power – specification limit



Test specification: FCC section 15.407(a)(1-3), RSS-Gen section 6.7, 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 7.5.12 EIRP test results (continued)

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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	5730	16.26	0	16.50	32.76	36.00	-3.24	Pass
		5788	16.25	0	16.50	32.75	36.00	-3.25	Pass
		5845	16.27	0	16.50	32.77	36.00	-3.23	Pass
	16QAM	5730	16.26	0	16.50	32.76	36.00	-3.24	Pass
		5788	16.24	0	16.50	32.74	36.00	-3.26	Pass
		5845	16.28	0	16.50	32.78	36.00	-3.22	Pass
	64QAM	5730	16.28	0	16.50	32.78	36.00	-3.22	Pass
		5788	16.27	0	16.50	32.77	36.00	-3.23	Pass
		5845	16.32	0	16.50	32.82	36.00	-3.18	Pass
15	QPSK	5732.5	16.45	0	16.50	32.95	36.00	-3.05	Pass
		5788	16.28	0	16.50	32.78	36.00	-3.22	Pass
		5842.5	16.33	0	16.50	32.83	36.00	-3.17	Pass
	16QAM	5732.5	16.43	0	16.50	32.93	36.00	-3.07	Pass
		5788	16.29	0	16.50	32.79	36.00	-3.21	Pass
		5842.5	16.34	0	16.50	32.84	36.00	-3.16	Pass
	64QAM	5732.5	16.41	0	16.50	32.91	36.00	-3.09	Pass
		5788	16.29	0	16.50	32.79	36.00	-3.21	Pass
		5842.5	16.31	0	16.50	32.81	36.00	-3.19	Pass
20	QPSK	5735	16.15	0	16.50	32.65	36.00	-3.35	Pass
		5788	16.40	0	16.50	32.9	36.00	-3.10	Pass
		5840	16.29	0	16.50	32.79	36.00	-3.21	Pass
	16QAM	5735	16.14	0	16.50	32.64	36.00	-3.36	Pass
		5788	16.41	0	16.50	32.91	36.00	-3.09	Pass
		5840	16.29	0	16.50	32.79	36.00	-3.21	Pass
	64QAM	5735	16.12	0	16.50	32.62	36.00	-3.38	Pass
		5788	16.38	0	16.50	32.88	36.00	-3.12	Pass
		5840	16.32	0	16.50	32.82	36.00	-3.18	Pass

* Total EIRP = 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-Gen section 6.7, 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 (continued)

ASSIGNED FREQUENCY RANGE: 5.725 - 5.850 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	5730	16.38	0	16.50	32.88	36.00	-3.12	Pass
		5788	16.25	0	16.50	32.75	36.00	-3.25	Pass
		5845	16.30	0	16.50	32.80	36.00	-3.20	Pass
	16QAM	5730	16.36	0	16.50	32.86	36.00	-3.14	Pass
		5788	16.24	0	16.50	32.74	36.00	-3.26	Pass
		5845	16.31	0	16.50	32.81	36.00	-3.19	Pass
	64QAM	5730	16.35	0	16.50	32.85	36.00	-3.15	Pass
		5788	16.25	0	16.50	32.75	36.00	-3.25	Pass
		5845	16.30	0	16.50	32.80	36.00	-3.20	Pass
15	QPSK	5732.5	16.31	0	16.50	32.81	36.00	-3.19	Pass
		5788	16.19	0	16.50	32.69	36.00	-3.31	Pass
		5842.5	16.45	0	16.50	32.95	36.00	-3.05	Pass
	16QAM	5732.5	16.31	0	16.50	32.81	36.00	-3.19	Pass
		5788	16.20	0	16.50	32.7	36.00	-3.30	Pass
		5842.5	16.45	0	16.50	32.95	36.00	-3.05	Pass
	64QAM	5732.5	16.30	0	16.50	32.80	36.00	-3.20	Pass
		5788	16.20	0	16.50	32.70	36.00	-3.30	Pass
		5842.5	16.43	0	16.50	32.93	36.00	-3.07	Pass
20	QPSK	5735	16.37	0	16.50	32.87	36.00	-3.13	Pass
		5788	16.26	0	16.50	32.76	36.00	-3.24	Pass
		5840	16.32	0	16.50	32.82	36.00	-3.18	Pass
	16QAM	5735	16.37	0	16.50	32.87	36.00	-3.13	Pass
		5788	16.29	0	16.50	32.79	36.00	-3.21	Pass
		5840	16.33	0	16.50	32.83	36.00	-3.17	Pass
	64QAM	5735	16.37	0	16.50	32.87	36.00	-3.13	Pass
		5788	16.26	0	16.50	32.76	36.00	-3.24	Pass
		5840	16.32	0	16.50	32.82	36.00	-3.18	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

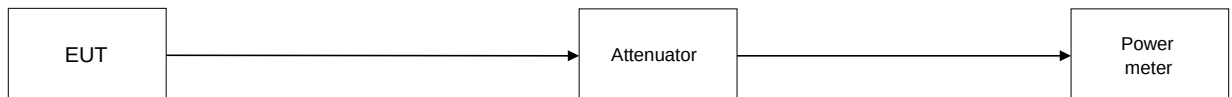
7.6.2 Test procedure

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), 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	4.31	4.29	4.24	4.30	10.29	19.50	-9.21	Pass
		5200	9.30	9.26	9.29	9.29	15.29	19.50	-4.21	Pass
		5245	8.00	8.00	8.01	7.95	13.99	19.50	-5.51	Pass
	16QAM	5160	4.31	4.28	4.25	4.31	10.29	19.50	-9.21	Pass
		5200	9.30	9.25	9.29	9.29	15.28	19.50	-4.22	Pass
		5245	7.99	7.98	8.01	7.93	13.98	19.50	-5.52	Pass
	64QAM	5160	4.30	4.29	4.25	4.30	10.29	19.50	-9.21	Pass
		5200	9.30	9.26	9.29	9.30	15.29	19.50	-4.21	Pass
		5245	7.98	7.99	7.99	7.92	13.97	19.50	-5.53	Pass
15	QPSK	5165	4.20	4.18	4.18	4.19	10.19	19.50	-9.31	Pass
		5200	11.25	11.24	11.24	11.21	17.24	19.50	-2.26	Pass
		5240	11.30	11.31	11.29	11.31	17.30	19.50	-2.20	Pass
	16QAM	5165	4.18	4.17	4.15	4.18	10.17	19.50	-9.33	Pass
		5200	11.26	11.24	11.24	11.22	17.24	19.50	-2.26	Pass
		5240	11.31	11.32	11.29	11.30	17.30	19.50	-2.20	Pass
	64QAM	5165	4.19	4.19	4.15	4.17	10.18	19.50	-9.32	Pass
		5200	11.26	11.24	11.26	11.20	17.24	19.50	-2.26	Pass
		5240	11.31	11.32	11.29	11.31	17.31	19.50	-2.19	Pass
20	QPSK	5165	3.19	3.15	3.16	3.18	9.17	19.50	-10.33	Pass
		5200	10.69	10.68	10.69	10.64	16.68	19.50	-2.82	Pass
		5240	10.41	10.42	10.40	10.36	16.40	19.50	-3.10	Pass
	16QAM	5165	3.19	3.13	3.17	3.17	9.17	19.50	-10.33	Pass
		5200	10.69	10.68	10.68	10.65	16.67	19.50	-2.83	Pass
		5240	10.42	10.42	10.39	10.36	16.40	19.50	-3.10	Pass
	64QAM	5165	3.20	3.15	3.17	3.20	9.18	19.50	-10.32	Pass
		5200	10.70	10.67	10.70	10.65	16.68	19.50	-2.82	Pass
		5240	10.41	10.43	10.41	10.36	16.41	19.50	-3.09	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: (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	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT2	ANT3	ANT4				
10	QPSK	5160	4.31	4.29	4.24	4.30	10.29	19.50	-9.21	Pass
		5200	9.30	9.26	9.29	9.29	15.29	19.50	-4.21	Pass
		5245	8.00	8.00	8.01	7.95	13.99	19.50	-5.51	Pass
	16QAM	5160	4.31	4.28	4.25	4.31	10.29	19.50	-9.21	Pass
		5200	9.30	9.25	9.29	9.29	15.28	19.50	-4.22	Pass
		5245	7.99	7.98	8.01	7.93	13.98	19.50	-5.52	Pass
	64QAM	5160	4.30	4.29	4.25	4.30	10.29	19.50	-9.21	Pass
		5200	9.30	9.26	9.29	9.30	15.29	19.50	-4.21	Pass
		5245	7.98	7.99	7.99	7.92	13.97	19.50	-5.53	Pass
15	QPSK	5165	4.20	4.18	4.18	4.19	10.19	19.50	-9.31	Pass
		5200	11.25	11.24	11.24	11.21	17.24	19.50	-2.26	Pass
		5240	11.30	11.31	11.29	11.31	17.30	19.50	-2.20	Pass
	16QAM	5165	4.18	4.17	4.15	4.18	10.17	19.50	-9.33	Pass
		5200	11.26	11.24	11.24	11.22	17.24	19.50	-2.26	Pass
		5240	11.31	11.32	11.29	11.30	17.30	19.50	-2.20	Pass
	64QAM	5165	4.19	4.19	4.15	4.17	10.18	19.50	-9.32	Pass
		5200	11.26	11.24	11.26	11.20	17.24	19.50	-2.26	Pass
		5240	11.31	11.32	11.29	11.31	17.31	19.50	-2.19	Pass
20	QPSK	5165	3.19	3.15	3.16	3.18	9.17	19.50	-10.33	Pass
		5200	10.69	10.68	10.69	10.64	16.68	19.50	-2.82	Pass
		5240	10.41	10.42	10.40	10.36	16.40	19.50	-3.10	Pass
	16QAM	5165	3.19	3.13	3.17	3.17	9.17	19.50	-10.33	Pass
		5200	10.69	10.68	10.68	10.65	16.67	19.50	-2.83	Pass
		5240	10.42	10.42	10.39	10.36	16.40	19.50	-3.10	Pass
	64QAM	5165	3.20	3.15	3.17	3.20	9.18	19.50	-10.32	Pass
		5200	10.70	10.67	10.70	10.65	16.68	19.50	-2.82	Pass
		5240	10.41	10.43	10.41	10.36	16.41	19.50	-3.09	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

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 per port, dBm		Total output power*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT1	ANT3				
10	QPSK	5160	6.20	6.15	9.18	19.50	-10.32	Pass
		5200	15.50	15.47	18.49	19.50	-1.01	Pass
		5245	15.35	15.31	18.33	19.50	-1.17	Pass
	16QAM	5160	6.19	6.16	9.18	19.50	-10.32	Pass
		5200	15.51	15.46	18.48	19.50	-1.02	Pass
		5245	15.35	15.32	18.34	19.50	-1.16	Pass
	64QAM	5160	6.18	6.15	9.17	19.50	-10.33	Pass
		5200	15.51	15.47	18.49	19.50	-1.01	Pass
		5245	15.36	15.32	18.34	19.50	-1.16	Pass
15	QPSK	5165	7.59	7.50	10.55	19.50	-8.95	Pass
		5200	14.46	14.45	17.47	19.50	-2.03	Pass
		5240	14.48	14.44	17.47	19.50	-2.03	Pass
	16QAM	5165	7.60	7.57	10.59	19.50	-8.91	Pass
		5200	14.46	14.45	17.47	19.50	-2.03	Pass
		5240	14.48	14.44	17.47	19.50	-2.03	Pass
	64QAM	5165	7.59	7.59	10.59	19.50	-8.91	Pass
		5200	14.46	14.43	17.46	19.50	-2.04	Pass
		5240	14.47	14.42	17.46	19.50	-2.04	Pass
20	QPSK	5165	5.58	5.56	8.57	19.50	-10.93	Pass
		5200	15.31	15.32	18.32	19.50	-1.18	Pass
		5240	16.35	16.30	19.32	19.50	-0.18	Pass
	16QAM	5165	5.58	5.54	8.56	19.50	-10.94	Pass
		5200	15.31	15.33	18.32	19.50	-1.18	Pass
		5240	16.35	16.28	19.31	19.50	-0.19	Pass
	64QAM	5165	5.58	5.57	8.58	19.50	-10.92	Pass
		5200	15.31	15.31	18.31	19.50	-1.19	Pass
		5240	16.34	16.29	19.31	19.50	-0.19	Pass

* Total output power = $10 \cdot \log(10^{(\text{Output power ANT1}/10)} + 10^{(\text{Output power ANT3}/10)})$

** Margin = Total output power – 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 6.2.1.1 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 (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 per port, dBm		Total output power*, dBm	Limit, dBm	Margin**, dB	Verdict
			ANT2	ANT4				
10	QPSK	5160	6.20	6.18	9.19	19.5	-10.31	Pass
		5200	15.50	15.48	18.49	19.5	-1.01	Pass
		5245	15.33	15.35	18.34	19.5	-1.16	Pass
	16QAM	5160	6.18	6.18	9.18	19.5	-10.32	Pass
		5200	15.48	15.47	18.48	19.5	-1.02	Pass
		5245	15.32	15.33	18.33	19.5	-1.17	Pass
	64QAM	5160	6.18	6.19	9.19	19.5	-10.31	Pass
		5200	15.49	15.48	18.49	19.5	-1.01	Pass
		5245	15.32	15.35	18.34	19.5	-1.16	Pass
15	QPSK	5165	7.55	7.56	10.56	19.5	-8.94	Pass
		5200	14.43	14.43	17.43	19.5	-2.07	Pass
		5240	14.45	14.44	17.45	19.5	-2.05	Pass
	16QAM	5165	7.59	7.58	10.59	19.5	-8.91	Pass
		5200	14.44	14.44	17.44	19.5	-2.06	Pass
		5240	14.45	14.43	17.44	19.5	-2.06	Pass
	64QAM	5165	7.59	7.58	10.59	19.5	-8.91	Pass
		5200	14.43	14.43	17.43	19.5	-2.07	Pass
		5240	14.45	14.43	17.44	19.5	-2.06	Pass
20	QPSK	5165	5.59	5.56	8.58	19.5	-10.92	Pass
		5200	15.30	15.29	18.29	19.5	-1.21	Pass
		5240	16.35	16.36	19.36	19.5	-0.14	Pass
	16QAM	5165	5.60	5.55	8.58	19.5	-10.92	Pass
		5200	15.30	15.28	18.29	19.5	-1.21	Pass
		5240	16.35	16.37	19.36	19.5	-0.14	Pass
	64QAM	5165	5.60	5.58	8.59	19.5	-10.91	Pass
		5200	15.30	15.29	18.30	19.5	-1.20	Pass
		5240	16.36	16.36	19.36	19.5	-0.14	Pass

* Total output power = $(10 \cdot \log(10^{(\text{Output power ANT2}/10)} + 10^{(\text{Output power ANT4}/10)})$

** Margin = Total output power – 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 6.2.1.1 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

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	5160	4.31	4.29	7.30	3.00	16.50	26.80	36.00	-9.20	Pass
		5200	9.30	9.26	12.28	3.00	16.50	31.78	36.00	-4.22	Pass
		5245	8.00	8.00	11.00	3.00	16.50	30.50	36.00	-5.50	Pass
	16QAM	5160	4.31	4.28	7.30	3.00	16.50	26.80	36.00	-9.20	Pass
		5200	9.30	9.25	12.28	3.00	16.50	31.78	36.00	-4.22	Pass
		5245	7.99	7.98	10.99	3.00	16.50	30.49	36.00	-5.51	Pass
	64QAM	5160	4.30	4.29	7.30	3.00	16.50	26.80	36.00	-9.20	Pass
		5200	9.30	9.26	12.28	3.00	16.50	31.78	36.00	-4.22	Pass
		5245	7.98	7.99	10.99	3.00	16.50	30.49	36.00	-5.51	Pass
15	QPSK	5165	4.20	4.18	7.19	3.00	16.50	26.69	36.00	-9.31	Pass
		5200	11.25	11.24	14.25	3.00	16.50	33.75	36.00	-2.25	Pass
		5240	11.30	11.31	14.31	3.00	16.50	33.81	36.00	-2.19	Pass
	16QAM	5165	4.18	4.17	7.18	3.00	16.50	26.68	36.00	-9.32	Pass
		5200	11.26	11.24	14.25	3.00	16.50	33.75	36.00	-2.25	Pass
		5240	11.31	11.32	14.32	3.00	16.50	33.82	36.00	-2.18	Pass
	64QAM	5165	4.19	4.19	7.19	3.00	16.50	26.69	36.00	-9.31	Pass
		5200	11.26	11.24	14.25	3.00	16.50	33.75	36.00	-2.25	Pass
		5240	11.31	11.32	14.32	3.00	16.50	33.82	36.00	-2.18	Pass
20	QPSK	5165	3.19	3.15	6.17	3.00	16.50	25.67	36.00	-10.33	Pass
		5200	10.69	10.68	13.69	3.00	16.50	33.19	36.00	-2.81	Pass
		5240	10.41	10.42	13.42	3.00	16.50	32.92	36.00	-3.08	Pass
	16QAM	5165	3.19	3.13	6.16	3.00	16.50	25.66	36.00	-10.34	Pass
		5200	10.69	10.68	13.69	3.00	16.50	33.19	36.00	-2.81	Pass
		5240	10.42	10.42	13.42	3.00	16.50	32.92	36.00	-3.08	Pass
	64QAM	5165	3.20	3.15	6.18	3.00	16.50	25.68	36.00	-10.32	Pass
		5200	10.70	10.67	13.69	3.00	16.50	33.19	36.00	-2.81	Pass
		5240	10.41	10.43	13.42	3.00	16.50	32.92	36.00	-3.08	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