

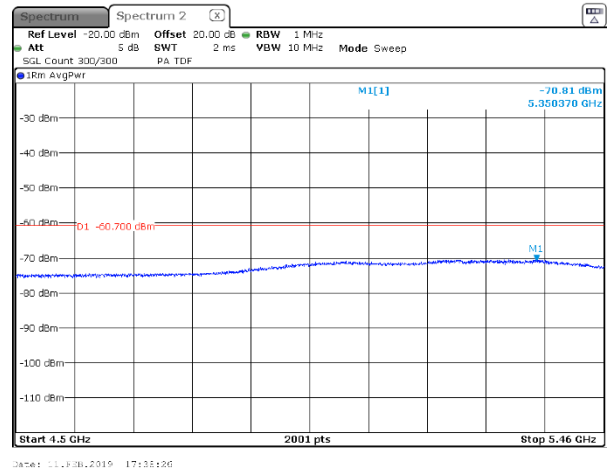
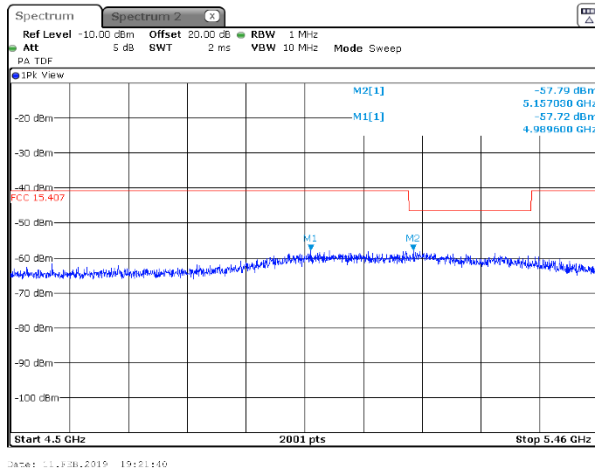


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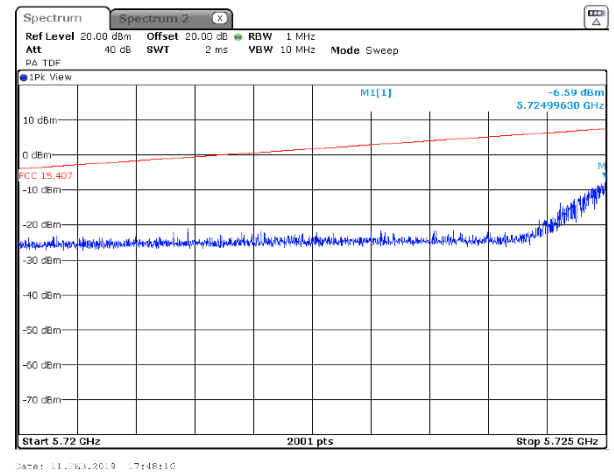
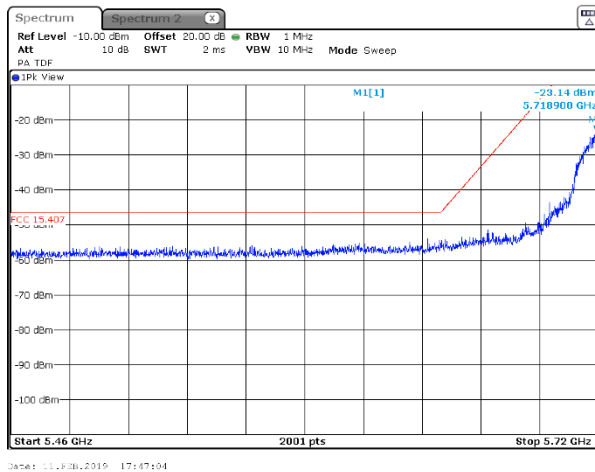
Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.7.20 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz
CARRIER FREQUENCY 5735 MHz
CHANNEL BANDWIDTH 20 MHz



Plot 7.7.21 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz
CARRIER FREQUENCY 5735 MHz
CHANNEL BANDWIDTH 20 MHz





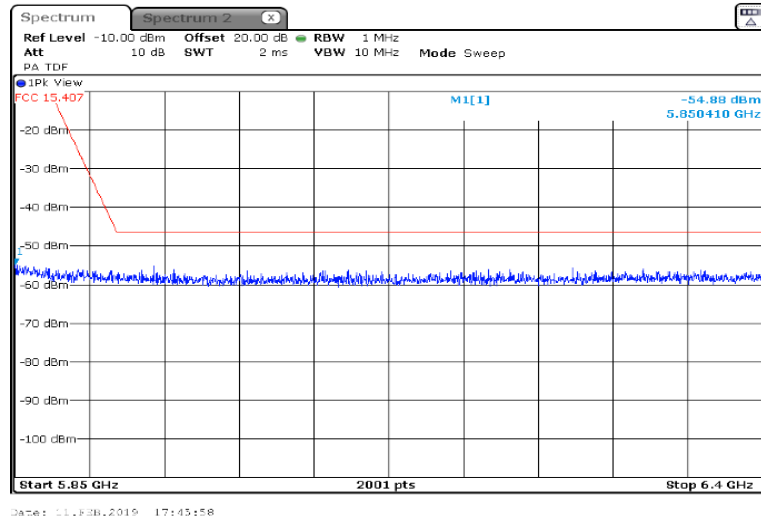
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Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.7.22 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5735 MHz
CHANNEL BANDWIDTH 20 MHz





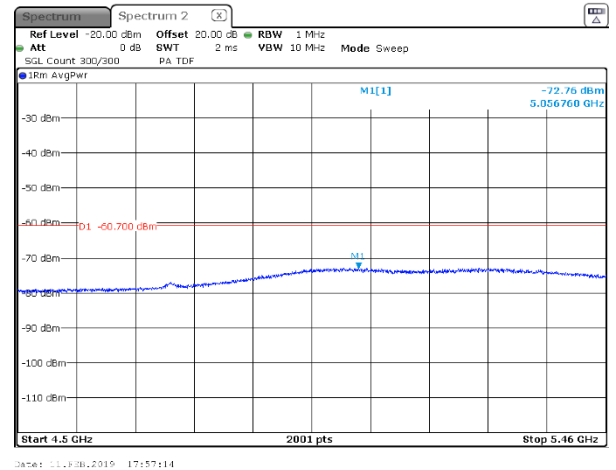
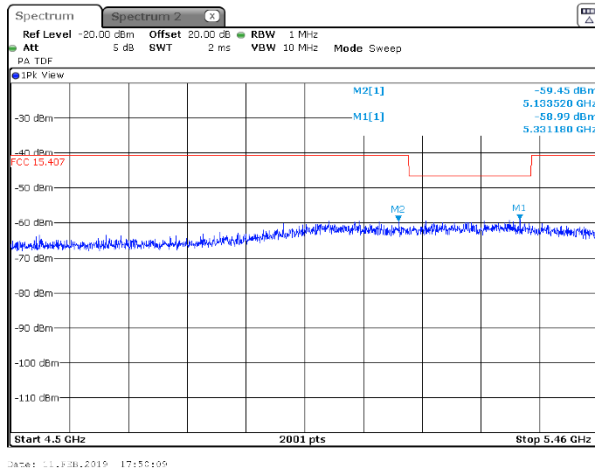
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Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

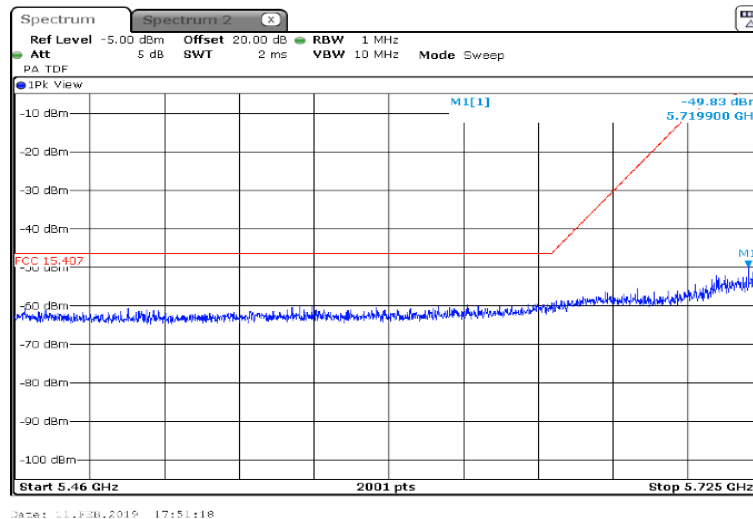
Plot 7.7.23 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 20 MHz



Plot 7.7.24 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 20 MHz





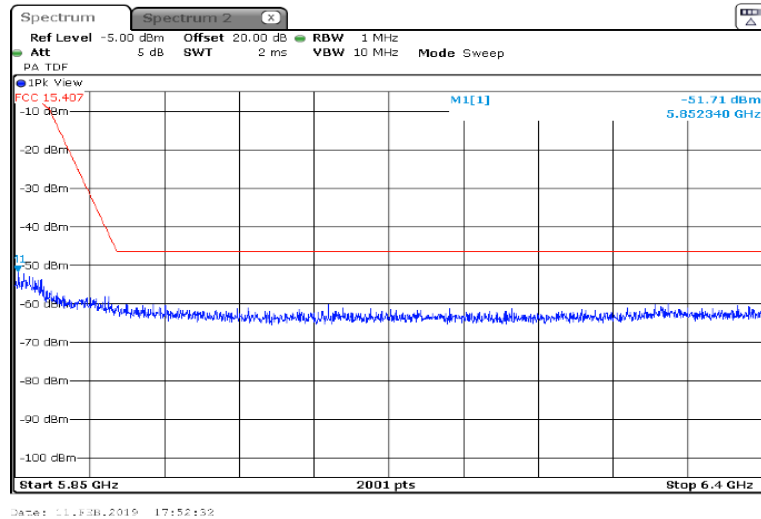
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.7.25 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 20 MHz





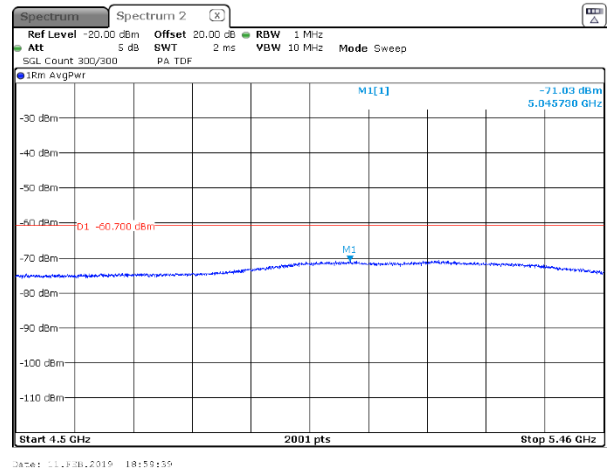
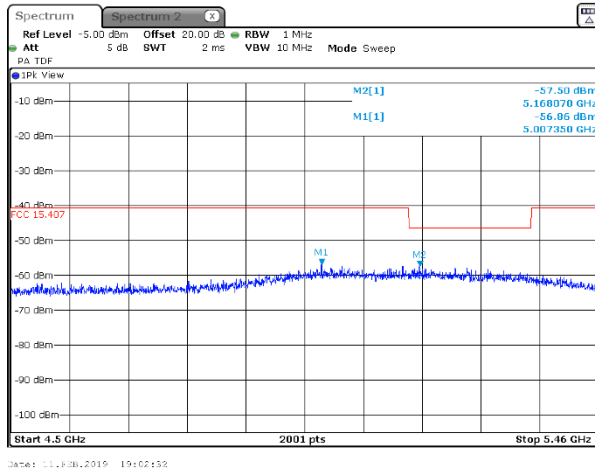
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

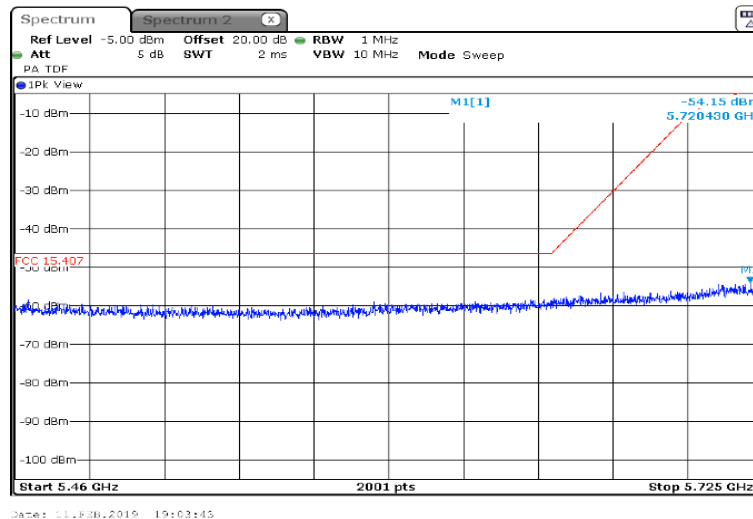
Plot 7.7.26 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5840 MHz
CHANNEL BANDWIDTH 20 MHz



Plot 7.7.27 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5840 MHz
CHANNEL BANDWIDTH 20 MHz





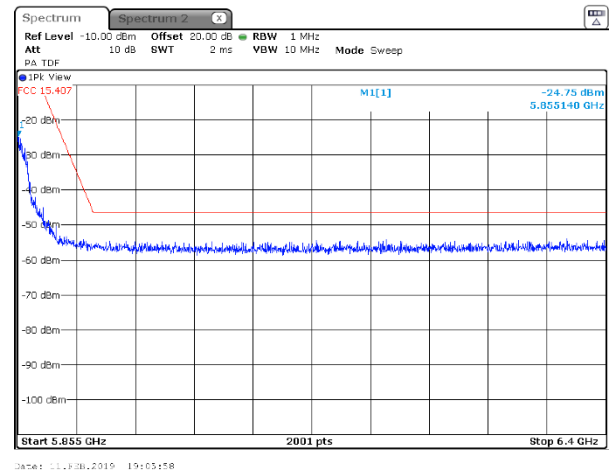
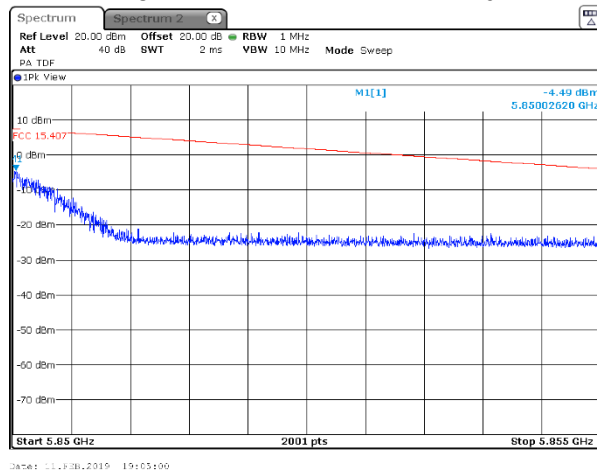
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.7.28 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5840 MHz
CHANNEL BANDWIDTH 20 MHz





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

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

7.8.1 General

This test was performed to measure spurious emissions from the EUT near the band edges and within the pass band of the antenna. Specification test limits are given in Table 7.8.1 & EIRP of undesirable emission limits are given in Table 7.8.2

Table 7.8.1 Unwanted emissions limit within restricted bands above 1 GHz

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

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

Table 7.8.2 EIRP of undesirable emission limits outside restricted bands above 1 GHz

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

7.8.2 Test procedure

- 7.8.2.1** The EUT was set up as shown in Figure 7.8.1, energized and the performance check was conducted.
- 7.8.2.2** The EUT was adjusted to produce maximum available to end user RF output power at the lowest carrier frequency.
- 7.8.2.3** The spectrum analyzer span was set to capture the carrier frequency and associated modulation products. The resolution bandwidth was set to 1 MHz.
- 7.8.2.4** The spectrum analyzer was set in max hold mode and allowed trace to stabilize. The highest emission level within the authorized band was measured.
- 7.8.2.5** The maximum band edge emission and modulation product outside of the band were measured as provided in the associated tables and plots.
- 7.8.2.6** The above procedure was repeated with the EUT adjusted to produce maximum RF output power at the mid and highest carrier frequencies.
- 7.8.2.7** Test results are shown in the Table 7.8.3, Table 7.8.4, Table 7.8.5 and the associated plots.

Figure 7.8.1 Setup for conducted spurious emissions





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

Table 7.8.3 Conducted spurious emission within restricted band test results

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

| Frequency, MHz | Antenna gain, dBi | Antenna gain array*, dB | Peak | | | | Average | | | | Verdict |
|------------------------|-------------------------|-------------------------------|--------------------|--------------------|---------------|------------------|--------------------|--------------------|---------------|------------------|---------|
| | | | SA reading, dBm | EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | SA reading, dBm | EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | |
| Low carrier frequency | | | | | | | | | | | |
| 5132.560 | 16.5 | 6.0 | -64.78 | -42.28 | -21.2 | -21.08 | -76.93 | -51.96 | -41.2 | -10.76 | Pass |
| Mid carrier frequency | | | | | | | | | | | |
| 5122.010 | 16.5 | 6.0 | -65.04 | -42.54 | -21.2 | -21.34 | -76.45 | -51.48 | -41.2 | -10.28 | Pass |
| High carrier frequency | | | | | | | | | | | |
| 4562.130 | 16.5 | 6.0 | -63.13 | -40.63 | -21.2 | -19.43 | -76.5 | -51.53 | -41.2 | -10.33 | Pass |

CHANNEL BANWIDTH: 15 MHz

| Frequency, MHz | Antenna gain, dBi | Antenna gain array*, dB | Peak | | | | Average | | | | Verdict |
|------------------------|----------------------|-------------------------------|--------------------|--------------------|---------------|------------------|--------------------|--------------------|---------------|------------------|---------|
| | | | SA reading, dBm | EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | SA reading, dBm | EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | |
| Low carrier frequency | | | | | | | | | | | |
| 5120.090 | 16.5 | 6.0 | -64.30 | -41.8 | -21.2 | -20.6 | -75.32 | -50.35 | -41.2 | -9.15 | Pass |
| Mid carrier frequency | | | | | | | | | | | |
| 5354.210 | 16.5 | 6.0 | -64.47 | -41.97 | -21.2 | -20.77 | -75.68 | -50.71 | -41.2 | -9.51 | Pass |
| High carrier frequency | | | | | | | | | | | |
| 5098.500 | 16.5 | 6.0 | -64.72 | -42.22 | -21.2 | -21.02 | -76.56 | -51.59 | -41.2 | -10.39 | Pass |

CHANNEL BANWIDTH: 20 MHz

| Frequency, MHz | Antenna gain, dBi | Antenna gain array*, dB | Peak | | | | Average | | | | Verdict |
|------------------------|----------------------|-------------------------------|--------------------|----------------------------|---------------|------------------|--------------------|---------------------------------|---------------|------------------|---------|
| | | | SA reading, dBm | Peak EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | SA reading, dBm | Average EIRP****, dBm/MHz | Limit, dBm | Margin***, dB | |
| Low carrier frequency | | | | | | | | | | | |
| 5098.500 | 16.5 | 6.0 | -66.49 | -43.99 | -21.2 | -22.79 | -76.56 | -51.59 | -41.2 | -10.39 | Pass |
| Mid carrier frequency | | | | | | | | | | | |
| 5098.500 | 16.5 | 6.0 | -66.15 | -43.65 | -21.2 | -22.45 | -76.38 | -51.41 | -41.2 | -10.21 | Pass |
| High carrier frequency | | | | | | | | | | | |
| 5373.400 | 16.5 | 6.0 | -64.42 | -41.92 | -21.2 | -20.72 | -75.33 | -50.36 | -41.2 | -9.16 | Pass |

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

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

*** - Margin = EIRP – specified limit.

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

Table 7.8.4 Duty cycle factor calculation

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

* - Duty cycle = Burst duration / Burst period

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



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

Table 7.8.5 Conducted spurious emission outside restricted band test results

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

| Frequency, MHz | SA reading, dBm | Antenna gain, dBi | Antenna gain array*, dB | EIRP**, dBm/MHz | Limit, dBm/MHz | Margin***, dB | Verdict |
|-------------------------------|-----------------|-------------------|-------------------------|-----------------|----------------|---------------|---------|
| Low carrier frequency | | | | | | | |
| 5284.170 | -63.95 | 16.5 | 6.0 | -41.45 | -27.0 | -14.45 | Pass |
| 5719.680 | -44.61 | 16.5 | 6.0 | -22.11 | 15.5 | -37.61 | Pass |
| 5724.931 | -8.94 | 16.5 | 6.0 | 13.56 | 27.0 | -13.44 | Pass |
| Mid carrier frequency | | | | | | | |
| 5260.660 | -63.71 | 16.5 | 6.0 | -41.21 | -27.0 | -14.21 | Pass |
| High carrier frequency | | | | | | | |
| 5234.750 | -64.62 | 16.5 | 6.0 | -42.12 | -27.0 | -15.12 | Pass |

CHANNEL BANDWIDTH: 15 MHz

| Frequency, MHz | SA reading, dBm | Antenna gain, dBi | Antenna gain array*, dB | EIRP**, dBm/MHz | Limit, dBm/MHz | Margin***, dB | Verdict |
|-------------------------------|-----------------|-------------------|-------------------------|-----------------|----------------|---------------|---------|
| Low carrier frequency | | | | | | | |
| 5266.420 | -63.70 | 16.5 | 6.0 | -41.20 | -27.0 | -14.20 | Pass |
| 5719.160 | -46.32 | 16.5 | 6.0 | -23.82 | 15.5 | -39.32 | Pass |
| 5724.971 | -15.10 | 16.5 | 6.0 | 7.40 | 27.0 | -19.60 | Pass |
| Mid carrier frequency | | | | | | | |
| 5287.050 | -64.51 | 16.5 | 6.0 | -42.01 | -27.0 | -15.01 | Pass |
| High carrier frequency | | | | | | | |
| 5307.680 | -63.97 | 16.5 | 6.0 | -41.47 | -27.0 | -14.47 | Pass |



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

Table 7.8.5 Conducted spurious emission outside restricted band test results

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

| Frequency, MHz | SA reading, dBm | Antenna gain, dBi | Antenna gain array*, dB | EIRP**, dBm/MHz | Limit, dBm/MHz | Margin***, dB | Verdict |
|-------------------------------|-----------------|-------------------|-------------------------|-----------------|----------------|---------------|---------|
| Low carrier frequency | | | | | | | |
| 5326.390 | -63.31 | 16.5 | 6.0 | -40.81 | -27.0 | -13.81 | Pass |
| 5719.940 | -47.70 | 16.5 | 6.0 | -25.20 | 15.5 | -40.70 | Pass |
| 5724.996 | -19.05 | 16.5 | 6.0 | 3.45 | 27.0 | -23.55 | Pass |
| Mid carrier frequency | | | | | | | |
| 5240.990 | -63.84 | 16.5 | 6.0 | -41.34 | -27.0 | -14.34 | Pass |
| High carrier frequency | | | | | | | |
| 5267.380 | -63.10 | 16.5 | 6.0 | -40.60 | -27.0 | -13.60 | Pass |

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

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

*** - Margin = EIRP – specified limit.

Reference numbers of test equipment used

| | | | | | | | |
|---------|---------|--|--|--|--|--|--|
| HL 3901 | HL 4355 | | | | | | |
|---------|---------|--|--|--|--|--|--|

Full description is given in Appendix A.

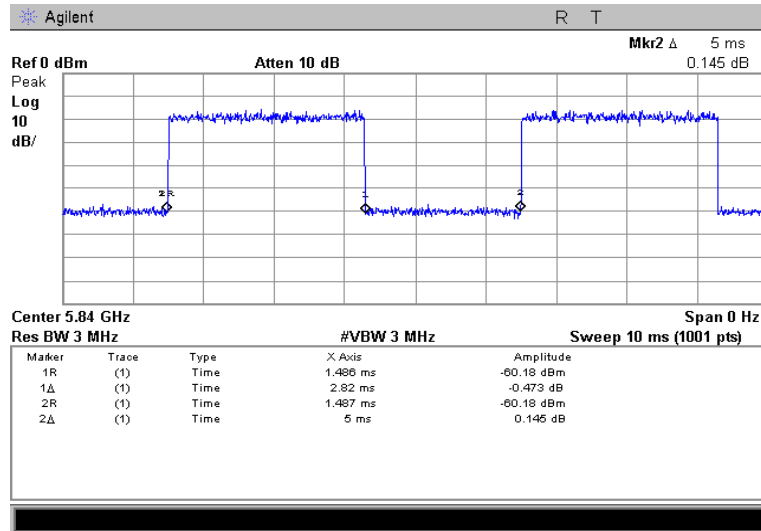


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| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 |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

Plot 7.8.1 Duty cycle





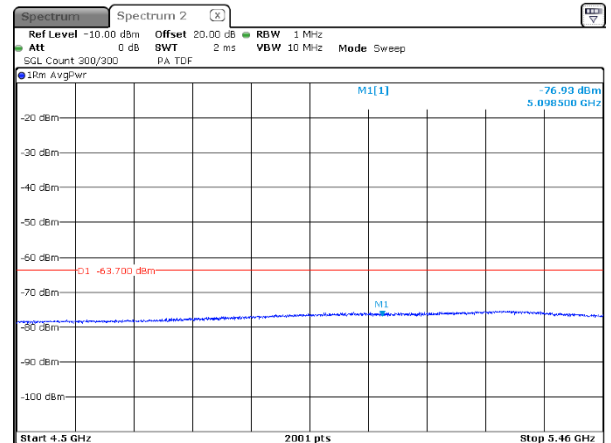
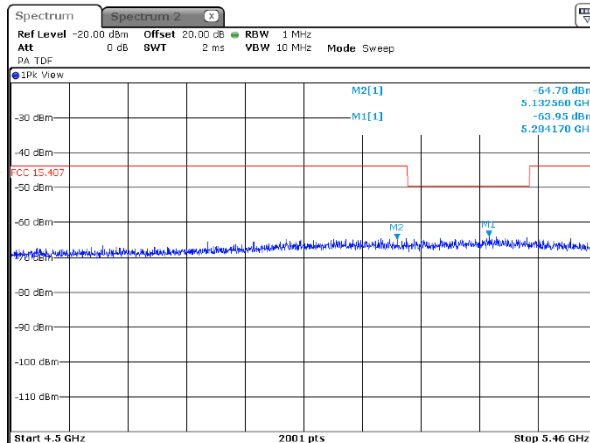
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|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test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

Plot 7.8.2 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

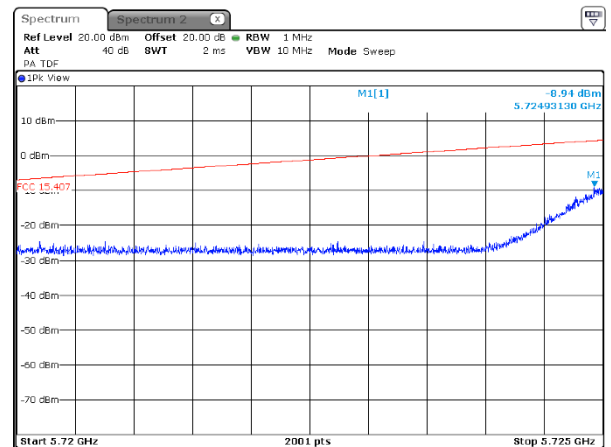
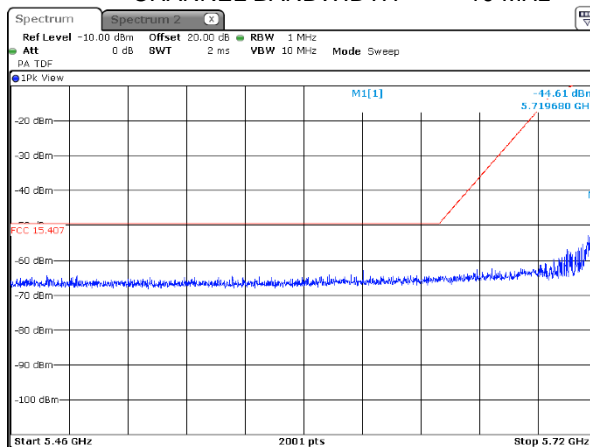
CARRIER FREQUENCY 5730 MHz
CHANNEL BANDWIDTH 10 MHz



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

Plot 7.8.3 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5730 MHz
CHANNEL BANDWIDTH 10 MHz





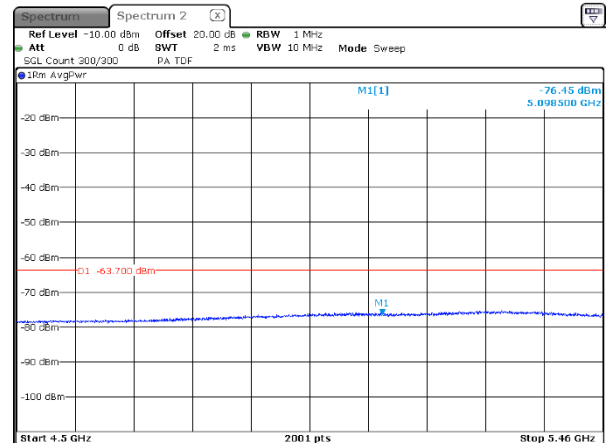
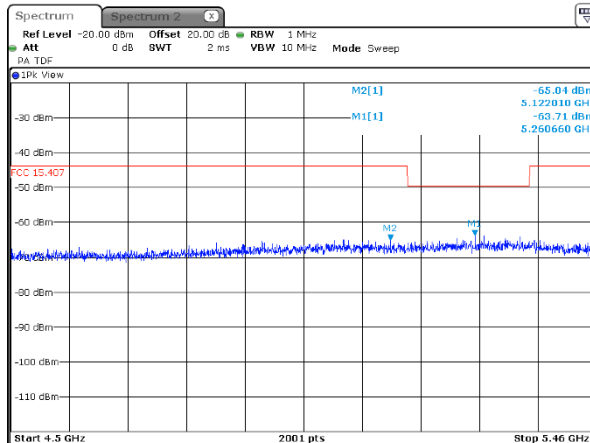
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

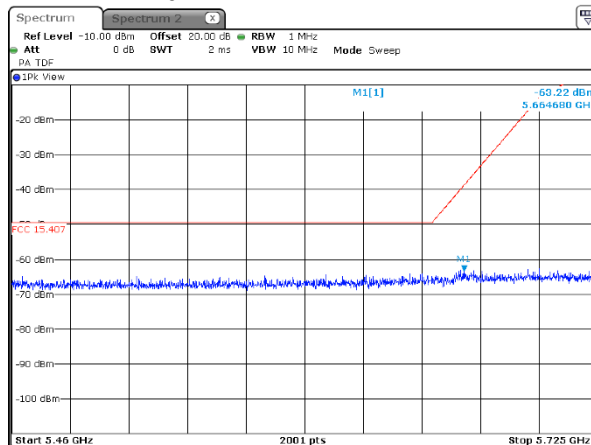
Plot 7.8.5 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 10 MHz



Plot 7.8.6 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 10 MHz





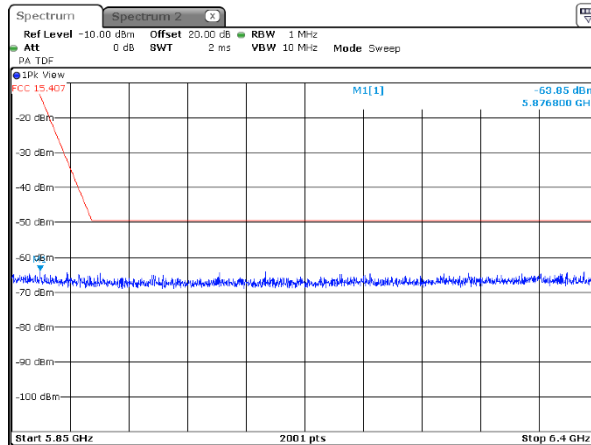
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.8.7 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 10 MHz





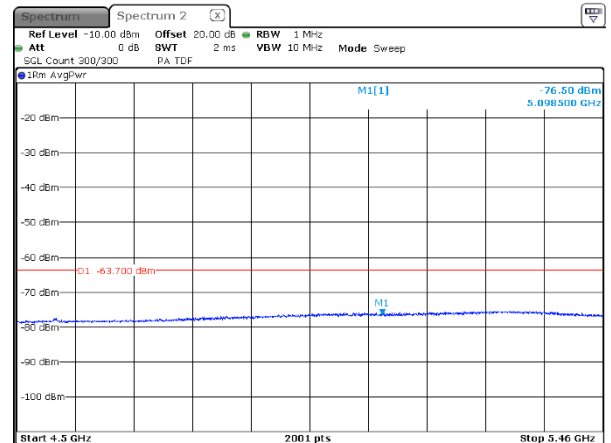
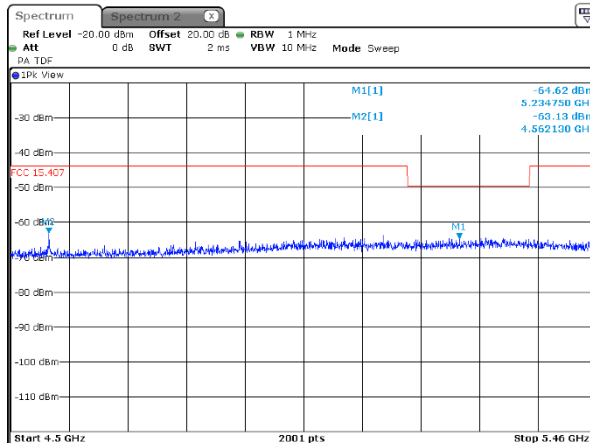
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

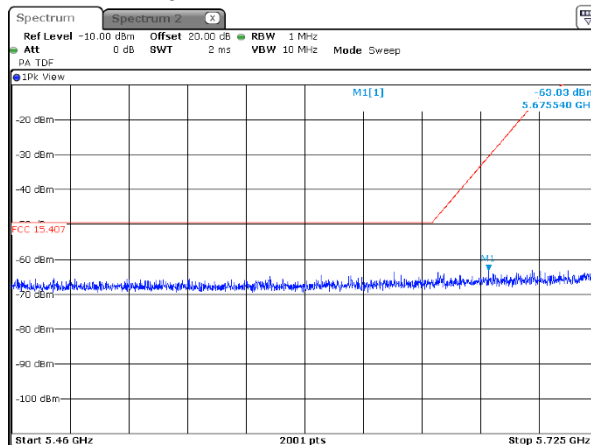
Plot 7.8.8 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5845 MHz
CHANNEL BANDWIDTH 10 MHz



Plot 7.8.9 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5845 MHz
CHANNEL BANDWIDTH 10 MHz



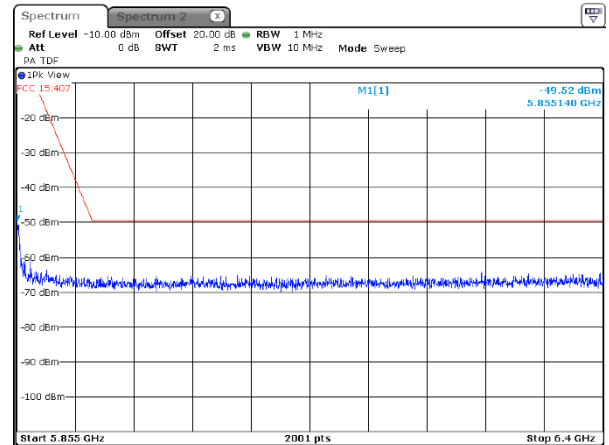
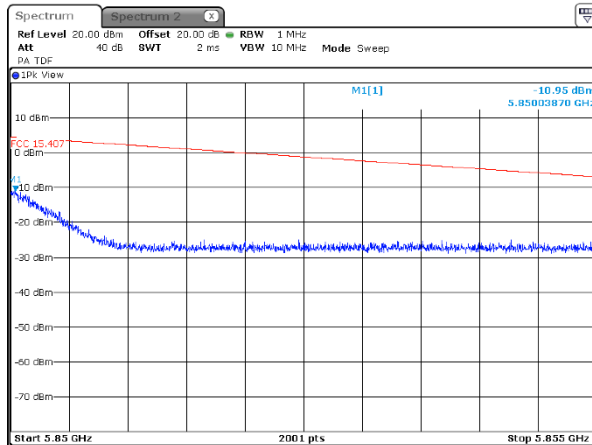


HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.8.10 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz
CARRIER FREQUENCY 5845 MHz
CHANNEL BANDWIDTH 10 MHz





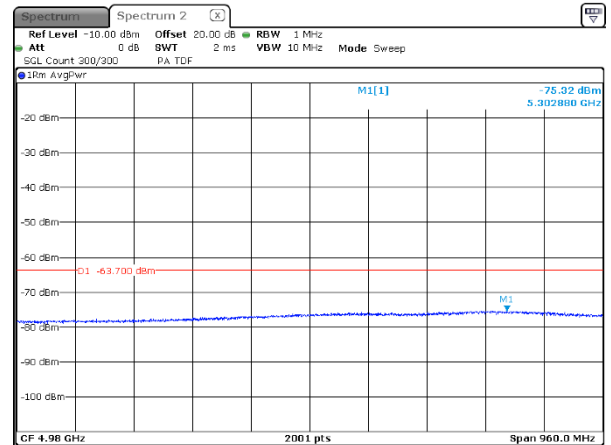
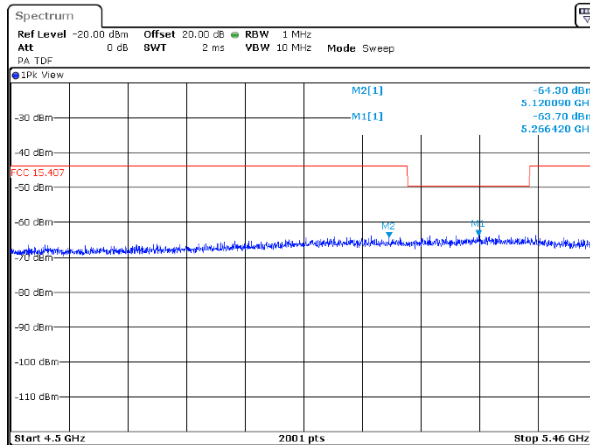
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

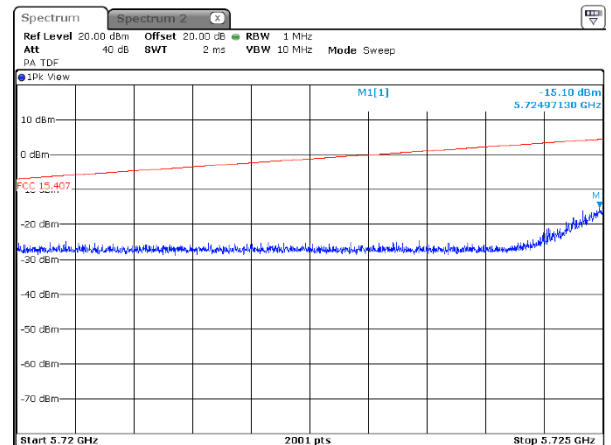
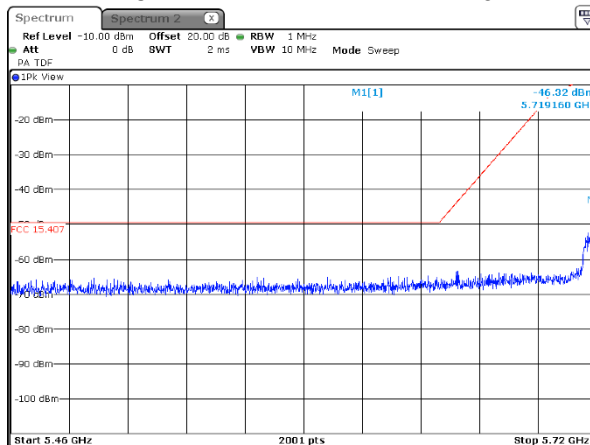
Plot 7.8.11 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5732.5 MHz
CHANNEL BANDWIDTH 15 MHz



Plot 7.8.12 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5732.5 MHz
CHANNEL BANDWIDTH 15 MHz





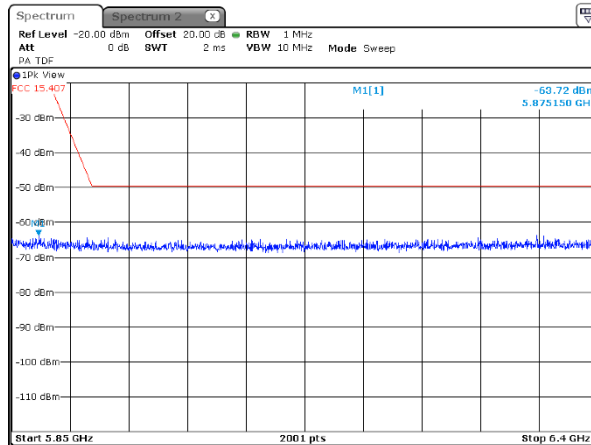
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.8.13 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5732.5 MHz
CHANNEL BANDWIDTH 15 MHz





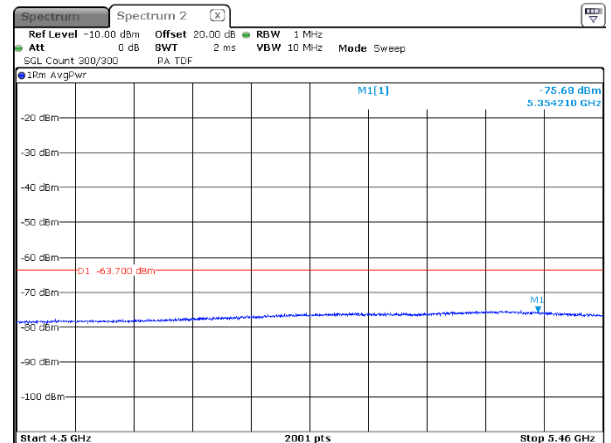
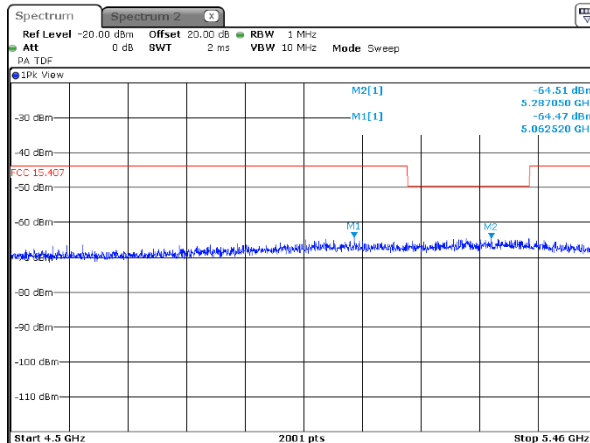
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

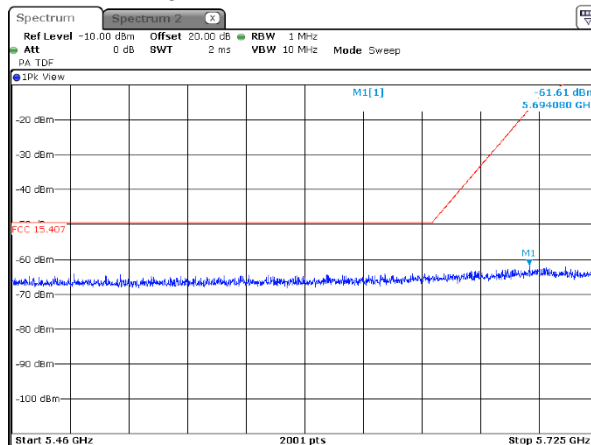
Plot 7.8.14 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 15 MHz



Plot 7.8.15 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 15 MHz





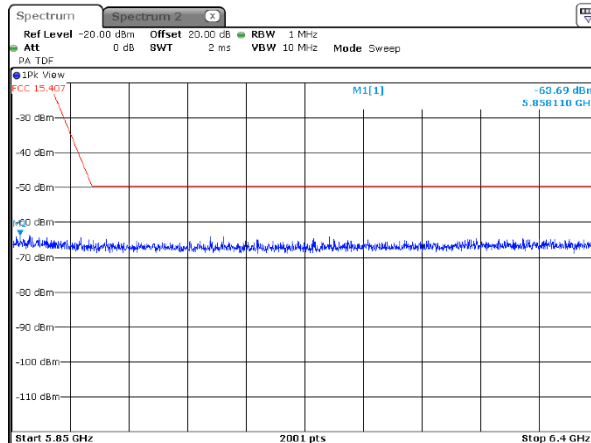
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

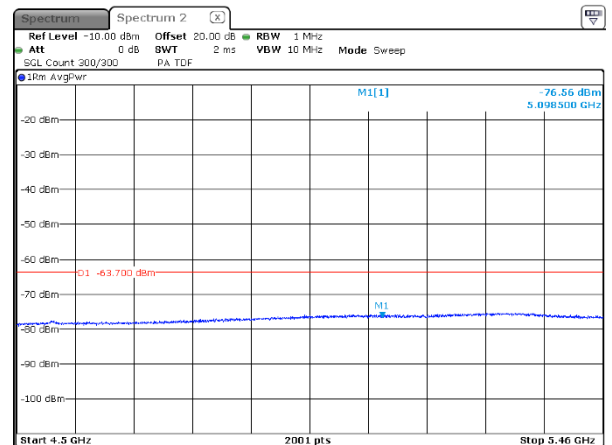
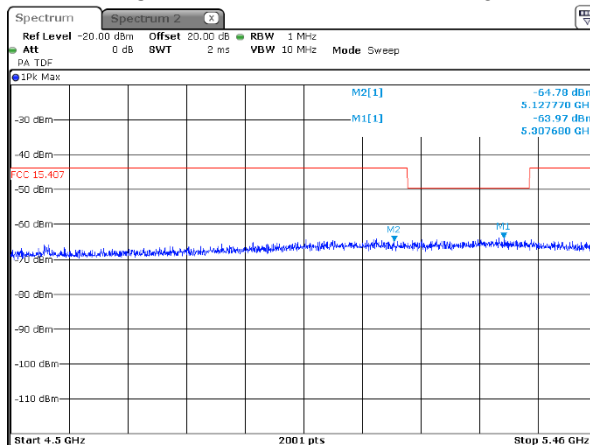
Plot 7.8.16 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 15 MHz



Plot 7.8.17 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5842.5 MHz
CHANNEL BANDWIDTH 15 MHz





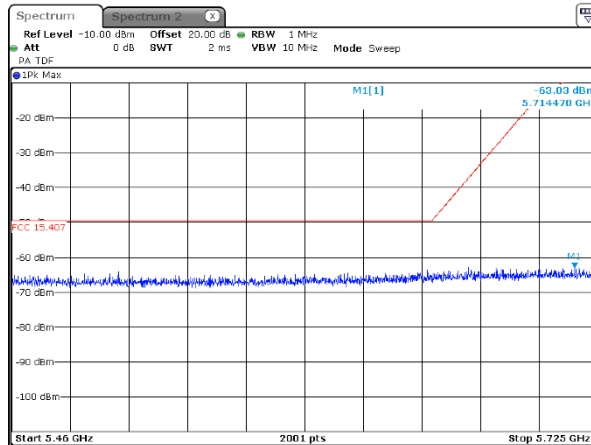
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

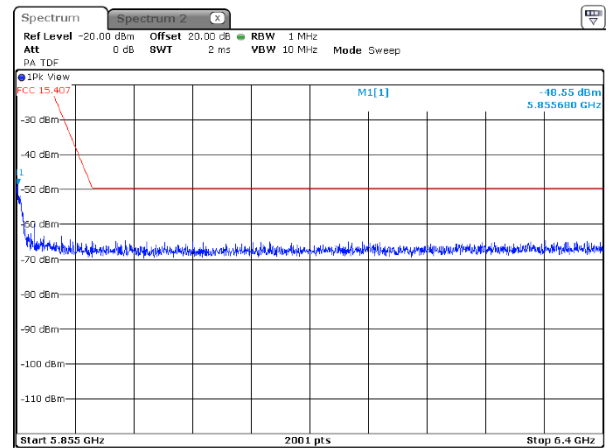
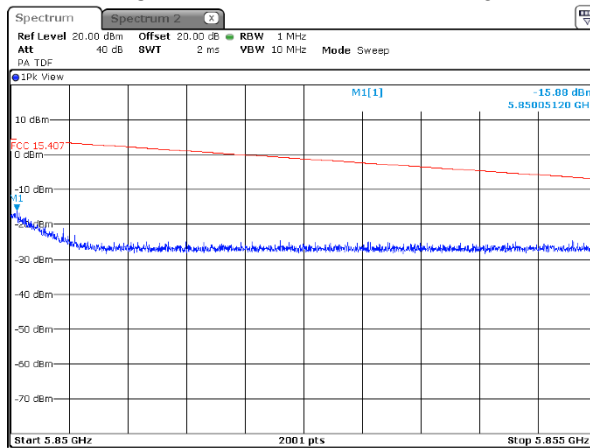
Plot 7.8.18 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5842.5 MHz
CHANNEL BANDWIDTH 15 MHz



Plot 7.8.19 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5842.5 MHz
CHANNEL BANDWIDTH 15 MHz





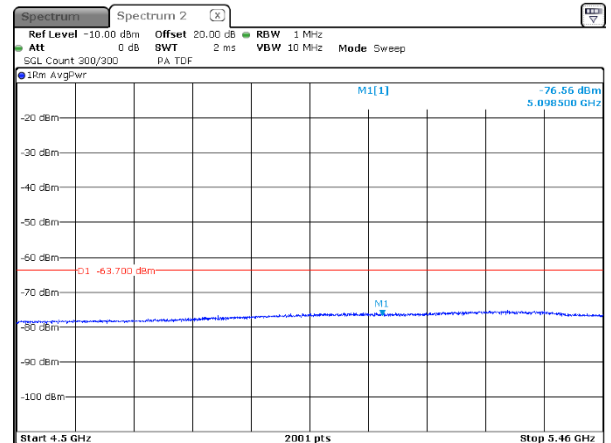
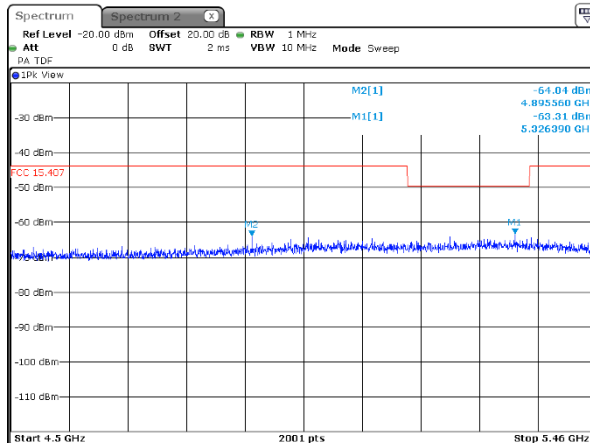
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

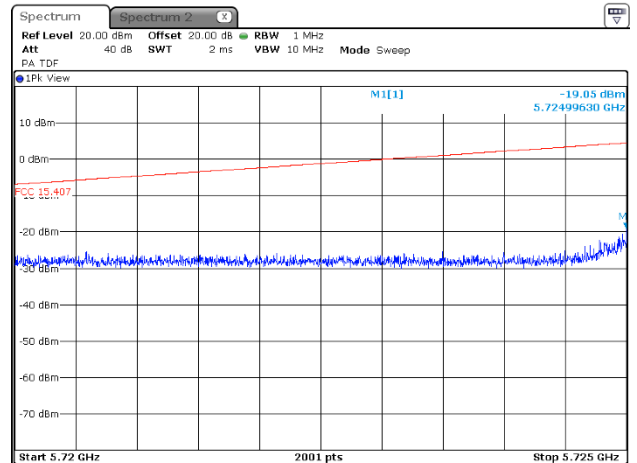
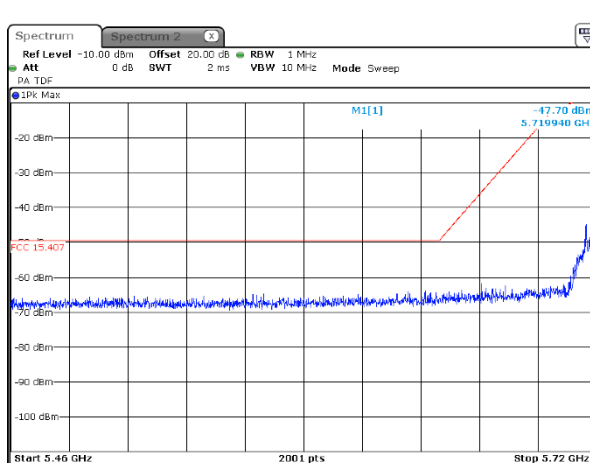
Plot 7.8.20 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5735 MHz
CHANNEL BANDWIDTH 20 MHz



Plot 7.8.21 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5735 MHz
CHANNEL BANDWIDTH 20 MHz





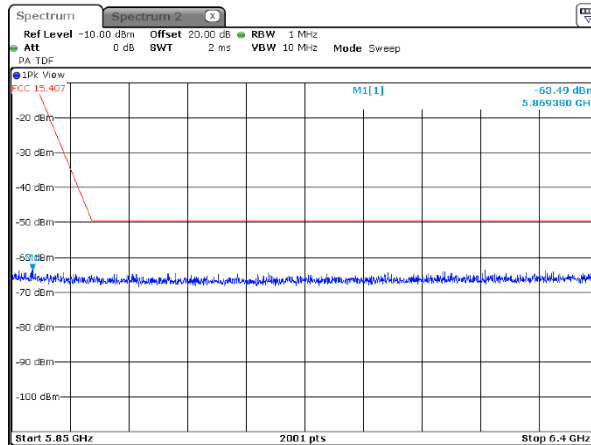
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.8.22 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5735 MHz
CHANNEL BANDWIDTH 20 MHz





Spectrum 2

Ref Level -20.00 dBm Att PA TDF

Offset 20.00 dB BW 2 ms RBW 1 MHz VBW 10 MHz Mode Sweep

SPK View

M2[1] -64.42 dBm 5.126810 GHz

M1[1] -63.84 dBm 5.240990 GHz

PCC 15.407

Start 4.5 GHz 2001 nts Stop 5.46 GHz

The screenshot shows a Spectrum Analyzer interface with the following settings and display:

- Top Bar:** Spectrum 2, X1, REF Level -10.00 dBm, Att (green dot), Offset 20.00 dB, RBW 1 MHz, SWT 2 ms, VBW 10 MHz, Mode Sweep.
- Left Panel:** 10m AvgPwr, SGL Count 300/300, PA TDF.
- Main Display:** A grid showing frequency from 4.5 GHz to 5.46 GHz. The y-axis represents power in dBm, ranging from -100 to -20. A red horizontal line is drawn at -63.700 dBm, labeled "D1 -63.700 dBm". A blue trace shows a noisy signal floor at approximately -76.59 dBm, labeled "M1[1] -76.59 dBm" and "5.098500 GHz". A blue cursor labeled "M1" is positioned on the trace at approximately 5.0985 GHz.
- Bottom Bar:** Start 4.5 GHz, 2001 nts, Stop 5.46 GHz.

Plot 7.8.24 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

The screenshot shows the Spectrum Analyzer interface with the following settings and data:

- Ref Level:** -10.00 dBm
- Offset:** 20.00 dB
- RBW:** 1 MHz
- Att:** 0 dB
- SWT:** 2 ms
- VBW:** 10 MHz
- Mode:** Sweep
- DA TDS** (button)
- 1PK View** (selected)
- Trace:** M1[1] (red line)
- Frequency Range:** Start 5.46 GHz, Stop 5.725 GHz
- Time Scale:** 2001 nts
- Amplitude Scale:** -100 dBm to -20 dBm
- Key Data Points:**
 - Red trace starts at -62.90 dBm at 5.719640 GHz.
 - Red trace rises to -52.90 dBm at 5.719640 GHz.
 - Blue trace (noise floor) is around -70 dBm.



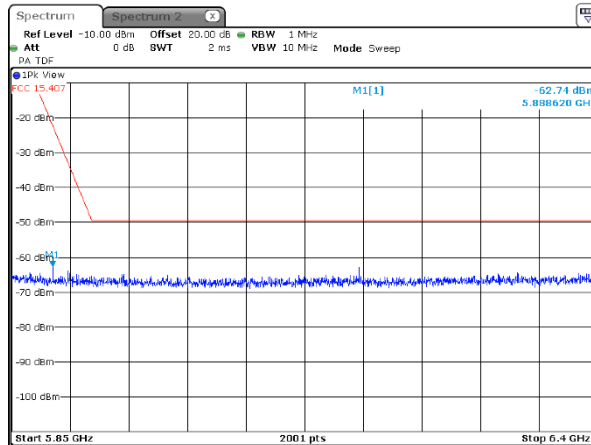
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Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.8.25 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5788 MHz
CHANNEL BANDWIDTH 20 MHz





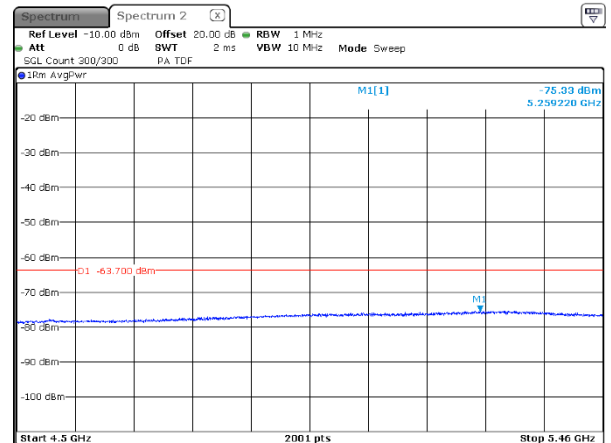
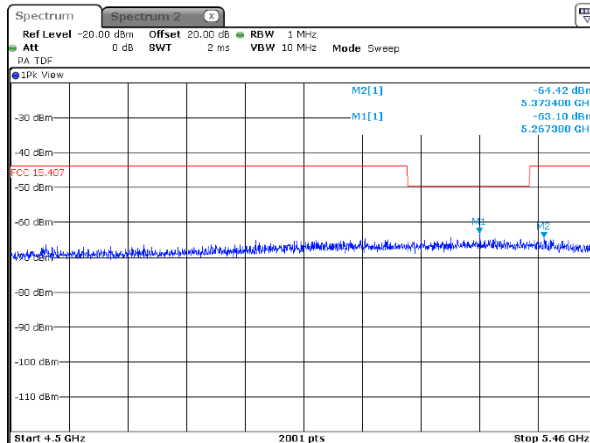
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

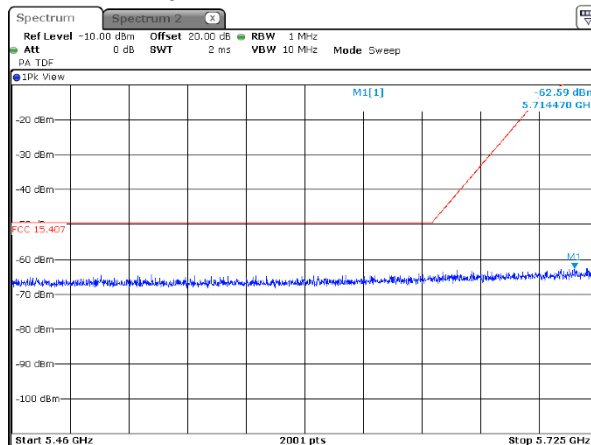
Plot 7.8.26 Conducted spurious emission measurements in the range 4.5 – 5.46 GHz

CARRIER FREQUENCY 5840 MHz
CHANNEL BANDWIDTH 20 MHz



Plot 7.8.27 Conducted spurious emission measurements in the range 5.46 – 5.725 GHz

CARRIER FREQUENCY 5840 MHz
CHANNEL BANDWIDTH 20 MHz





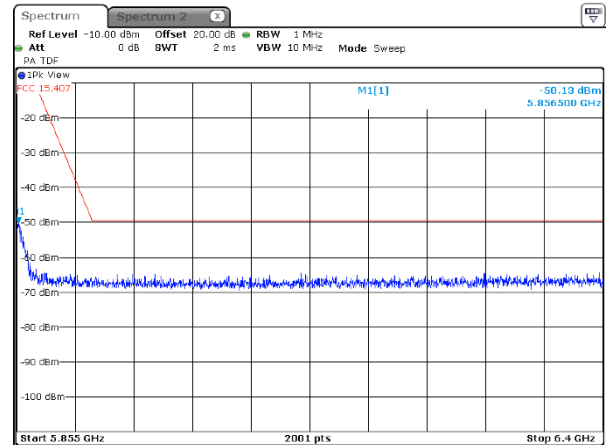
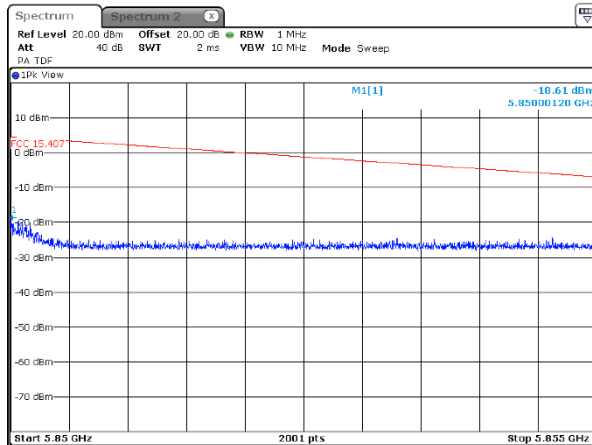
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

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

Plot 7.8.28 Conducted spurious emission measurements in the range 5.85 – 6.4 GHz

CARRIER FREQUENCY 5840 MHz
CHANNEL BANDWIDTH 20 MHz





| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

7.9 Conducted out of band emissions at 5150 – 5250 MHz range

7.9.1 General

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

Table 7.9.1 Unwanted emissions limit within restricted bands above 1 GHz

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

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

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

| Frequency, MHz | EIRP of spurious, dBm/MHz |
|------------------------|---------------------------|
| Outside 5150-5350 band | -27 |

7.9.2 Test procedure

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

Figure 7.9.1 Setup for conducted spurious emissions





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| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Table 7.9.3 Conducted spurious emission within restricted band test results

ASSIGNED FREQUENCY: 5.15 – 5.25 GHz
 INVESTIGATED FREQUENCY RANGE: 4500 - 6400 MHz
 MODULATION: QPSK
 DETECTOR USED: Peak/Average
 RESOLUTION BANDWIDTH: 1000 kHz
 EUT CONFIGURATION: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal
 CHANNEL BANWIDTH: 10 MHz

| CHANNEL BANDWIDTH: | | | 10 MHz | | | | | | | | |
|------------------------|-------------------------|-------------------------------|--------------------|--------------------|---------------|------------------|--------------------|--------------------|---------------|------------------|---------|
| Frequency, MHz | Antenna gain, dBi | Antenna gain array*, dB | Peak | | | | Average | | | | Verdict |
| | | | SA reading, dBm | EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | SA reading, dBm | EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | |
| Low carrier frequency | | | | | | | | | | | |
| 5149.840 | 16.5 | 3.0 | -49.09 | -29.59 | -21.2 | -8.39 | -64.15 | -42.18 | -41.2 | -0.98 | Pass |
| 5406.750 | 16.5 | 3.0 | -59.89 | -40.39 | -21.2 | -19.19 | -70.69 | -48.72 | -41.2 | -7.52 | Pass |
| Mid carrier frequency | | | | | | | | | | | |
| 4915.300 | 16.5 | 3.0 | -54.25 | -34.75 | -21.2 | -13.55 | -64.56 | -42.59 | -41.2 | -1.39 | Pass |
| 5406.750 | 16.5 | 3.0 | -54.32 | -34.82 | -21.2 | -13.62 | -70.59 | -48.62 | -41.2 | -7.42 | Pass |
| High carrier frequency | | | | | | | | | | | |
| 4915.300 | 16.5 | 3.0 | -54.89 | -35.39 | -21.2 | -24.19 | -63.90 | -41.93 | -41.2 | -0.73 | Pass |
| 5366.210 | 16.5 | 3.0 | -55.06 | -35.56 | -21.2 | -14.36 | -68.66 | -46.69 | -41.2 | -5.49 | Pass |

CHANNEL BANWIDTH: 15 MHz

| Frequency, MHz | Antenna gain, dBi | Antenna gain array*, dB | Peak | | | | Average | | | | Verdict |
|------------------------|----------------------|-------------------------------|--------------------|--------------------|---------------|------------------|--------------------|--------------------|---------------|------------------|---------|
| | | | SA reading, dBm | EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | SA reading, dBm | EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | |
| Low carrier frequency | | | | | | | | | | | |
| 5149.840 | 16.5 | 3.0 | -56.98 | -37.48 | -21.2 | -16.28 | -64.05 | -42.08 | -41.2 | -0.88 | Pass |
| 5437.420 | 16.5 | 3.0 | -60.02 | -40.52 | -21.2 | -19.32 | -72.53 | -50.56 | -41.2 | -9.36 | Pass |
| Mid carrier frequency | | | | | | | | | | | |
| 5068.950 | 16.5 | 3.0 | -56.54 | -37.04 | -21.2 | -15.84 | -65.15 | -43.18 | -41.2 | -1.98 | Pass |
| 5437.530 | 16.5 | 3.0 | -57.46 | -37.96 | -21.2 | -16.76 | -72.11 | -50.14 | -41.2 | -8.94 | Pass |
| High carrier frequency | | | | | | | | | | | |
| 5147.560 | 16.5 | 3.0 | -57.25 | -37.75 | -21.2 | -16.55 | -66.72 | -44.75 | -41.2 | -3.55 | Pass |
| 5437.530 | 16.5 | 3.0 | -56.45 | -36.95 | -21.2 | -15.75 | -72.42 | -50.45 | -41.2 | -9.25 | Pass |



HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
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| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Table 7.9.3 Conducted spurious emission within restricted band test results

ASSIGNED FREQUENCY: 5.15 – 5.25 GHz
 INVESTIGATED FREQUENCY RANGE: 4500 - 6400 MHz
 MODULATION: QPSK
 DETECTOR USED: Peak/Average
 RESOLUTION BANDWIDTH: 1000 kHz
 EUT CONFIGURATION: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal
 CHANNEL BANWIDTH: 20 MHz

| CHANNEL BANDWIDTH: | | | 20 MHz | | | | | | | | |
|------------------------|----------------------|-------------------------------|--------------------|----------------------------|---------------|------------------|--------------------|---------------------------------|---------------|------------------|---------|
| Frequency, MHz | Antenna gain, dBi | Antenna gain array*, dB | Peak | | | | Average | | | | Verdict |
| | | | SA reading, dBm | Peak EIRP**, dBm/MHz | Limit, dBm | Margin***, dB | SA reading, dBm | Average EIRP****, dBm/MHz | Limit, dBm | Margin***, dB | |
| Low carrier frequency | | | | | | | | | | | |
| 5149.840 | 16.5 | 3.0 | -49.63 | -30.13 | -21.2 | -8.93 | -64.27 | -42.30 | -41.2 | -1.10 | Pass |
| Mid carrier frequency | | | | | | | | | | | |
| 4915.300 | 16.5 | 3.0 | -52.43 | -32.93 | -21.2 | -11.73 | -63.46 | -41.49 | -41.2 | -0.29 | Pass |
| 5439.853 | 16.5 | 3.0 | -51.78 | -32.28 | -21.2 | -11.08 | -69.53 | -47.56 | -41.2 | -6.36 | Pass |
| High carrier frequency | | | | | | | | | | | |
| 4915.300 | 16.5 | 3.0 | -54.38 | -34.88 | -21.2 | -13.68 | -63.31 | -41.34 | -41.2 | -0.14 | Pass |
| 5360.032 | 16.5 | 3.0 | -54.65 | -35.15 | -21.2 | -13.95 | -68.59 | -46.62 | -41.2 | -5.42 | Pass |

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

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

*** - Margin = EIRP – specified limit.

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

Table 7.9.4 Duty cycle factor calculation

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

* - Duty cycle = Burst duration / Burst period

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



| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Table 7.9.5 Conducted spurious emission outside restricted band test results

ASSIGNED FREQUENCY RANGE: 5.15 – 5.25 GHz
 INVESTIGATED FREQUENCY RANGE: 4500 - 6400 MHz
 MODULATION: QPSK
 DETECTOR USED: Peak
 RESOLUTION BANDWIDTH: 1000 kHz
 EUT CONFIGURATION: 1 carrier, 1 sector (4 ports to 2 dual slant antennas), non-coherent signal
 CHANNEL BANWIDTH: 10 MHz

| Frequency, MHz | SA reading, dBm | Antenna gain, dBi | Antenna gain array*, dB | EIRP**, dBm/MHz | Limit, dBm/MHz | Margin***, dB | Verdict |
|-------------------------------|-----------------|-------------------|-------------------------|-----------------|----------------|---------------|---------|
| Low carrier frequency | | | | | | | |
| 5655.790 | -60.02 | 16.5 | 6.0 | -37.52 | -27.0 | -10.52 | Pass |
| Mid carrier frequency | | | | | | | |
| 5688.420 | -51.35 | 16.5 | 6.0 | -28.85 | -27.0 | -1.85 | Pass |
| High carrier frequency | | | | | | | |
| 5736.550 | -51.35 | 16.5 | 6.0 | -28.85 | -27.0 | -1.85 | Pass |

CHANNEL BANWIDTH: 15 MHz

| Frequency, MHz | SA reading, dBm | Antenna gain, dBi | Antenna gain array*, dB | EIRP**, dBm/MHz | Limit, dBm/MHz | Margin***, dB | Verdict |
|-------------------------------|-----------------|-------------------|-------------------------|-----------------|----------------|---------------|---------|
| Low carrier frequency | | | | | | | |
| 5736.550 | -52.38 | 16.5 | 6.0 | -29.88 | -27.0 | -2.88 | Pass |
| Mid carrier frequency | | | | | | | |
| 5722.470 | -60.55 | 16.5 | 6.0 | -38.05 | -27.0 | -11.05 | Pass |
| High carrier frequency | | | | | | | |
| 5750.640 | -53.62 | 16.5 | 6.0 | -31.12 | -27.0 | -4.12 | Pass |

CHANNEL BANWIDTH: 20 MHz

| Frequency, MHz | SA reading, dBm | Antenna gain, dBi | Antenna gain array*, dB | EIRP**, dBm/MHz | Limit, dBm/MHz | Margin***, dB | Verdict |
|-------------------------------|-----------------|-------------------|-------------------------|-----------------|----------------|---------------|---------|
| Low carrier frequency | | | | | | | |
| 5792.900 | -53.95 | 16.5 | 6.0 | -31.45 | -27.0 | -4.45 | Pass |
| Mid carrier frequency | | | | | | | |
| 5541.230 | -59.04 | 16.5 | 6.0 | -36.54 | -27.0 | -9.54 | Pass |
| High carrier frequency | | | | | | | |
| 5692.420 | -48.92 | 16.5 | 6.0 | -26.42 | -27.0 | 0.58 | Pass |

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

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

*** - Margin = EIRP – specified limit.

Reference numbers of test equipment used

| | | | | | | | |
|---------|---------|--|--|--|--|--|--|
| HL 3901 | HL 4355 | | | | | | |
|---------|---------|--|--|--|--|--|--|

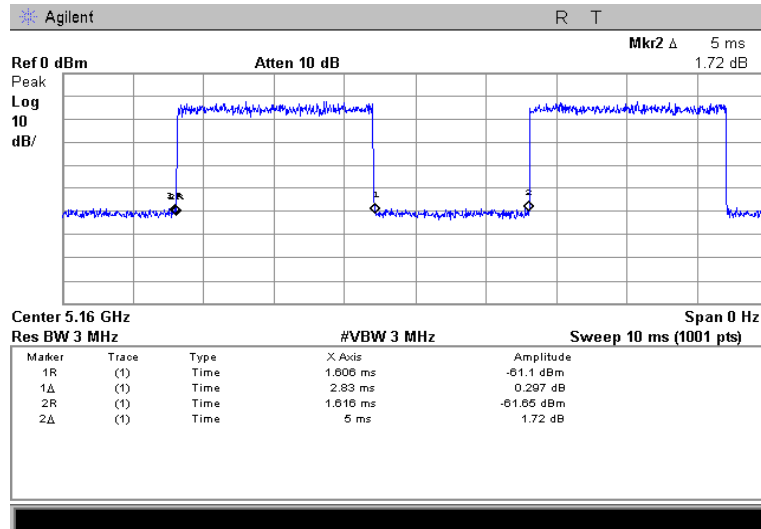
Full description is given in Appendix A.



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| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.1 Duty cycle





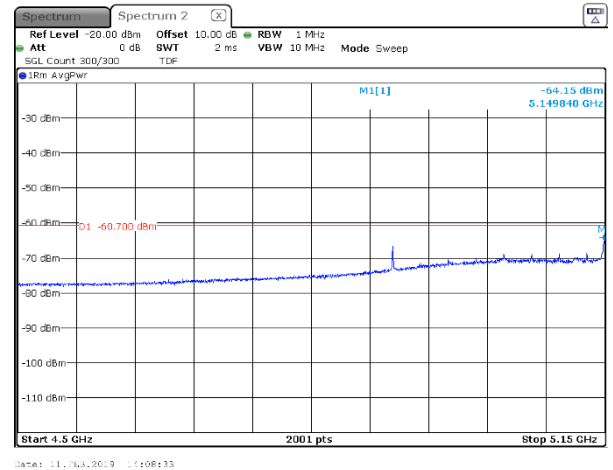
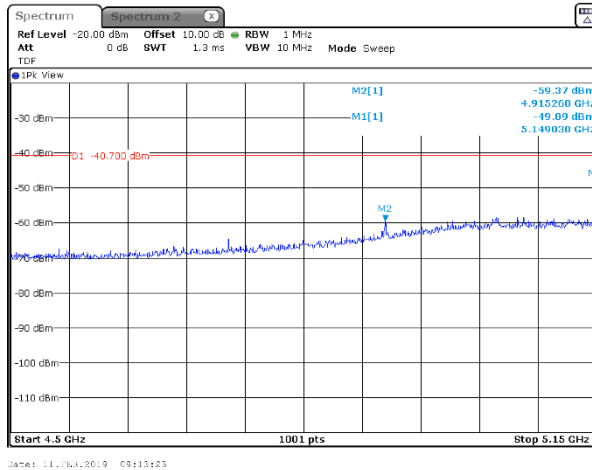
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.2 Conducted spurious emission measurements in the range 4.5 – 5.15 GHz

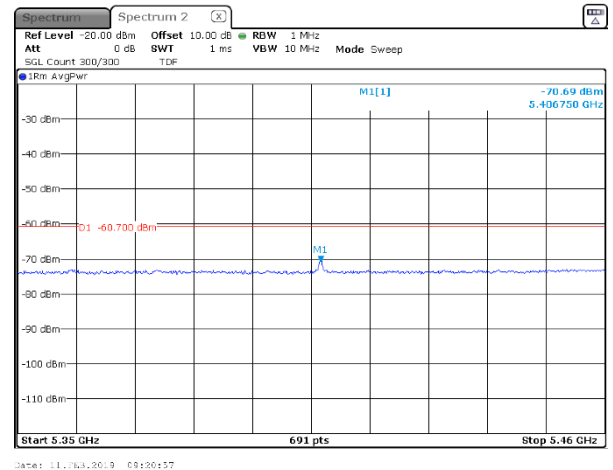
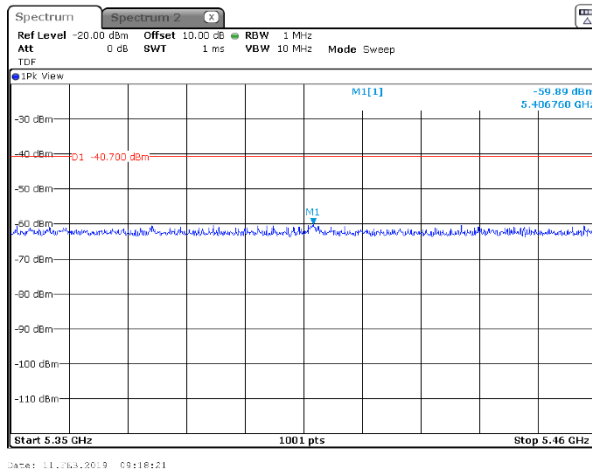
CARRIER FREQUENCY 5160 MHz
CHANNEL BANDWIDTH 10 MHz



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

Plot 7.9.3 Conducted spurious emission measurements in the range 5.35 – 5.46 GHz

CARRIER FREQUENCY 5160 MHz
CHANNEL BANDWIDTH 10 MHz





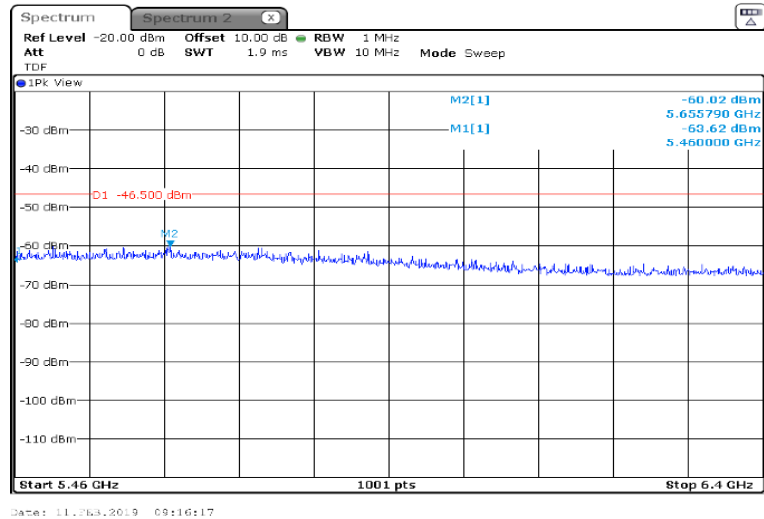
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.4 Conducted spurious emission measurements in the range 5.46 – 6.4 GHz

CARRIER FREQUENCY 5160 MHz
CHANNEL BANDWIDTH 10 MHz



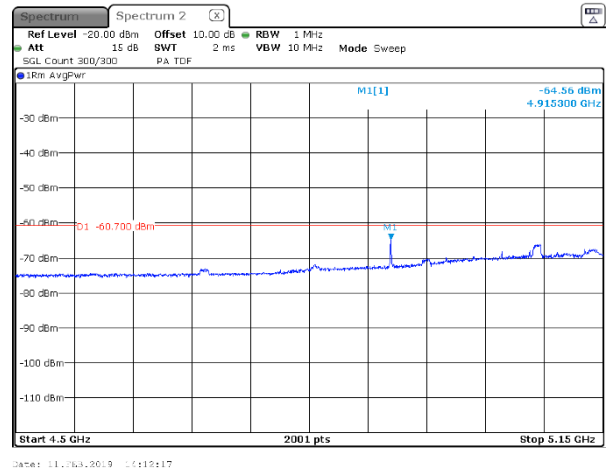
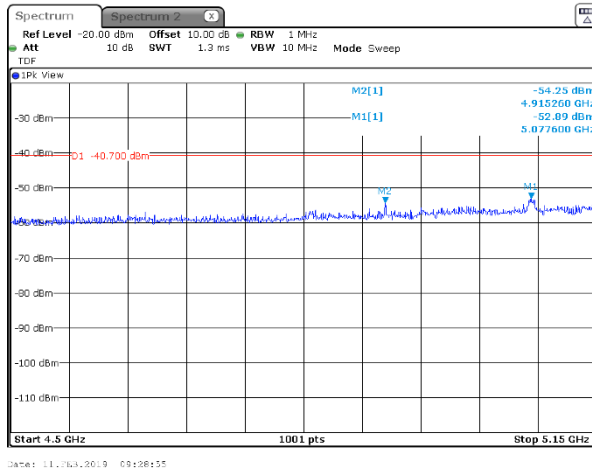


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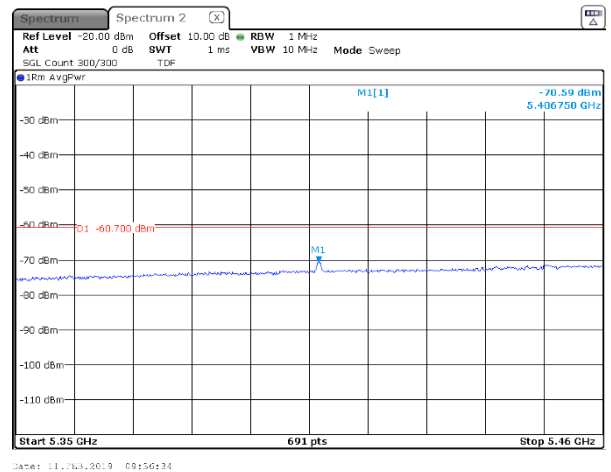
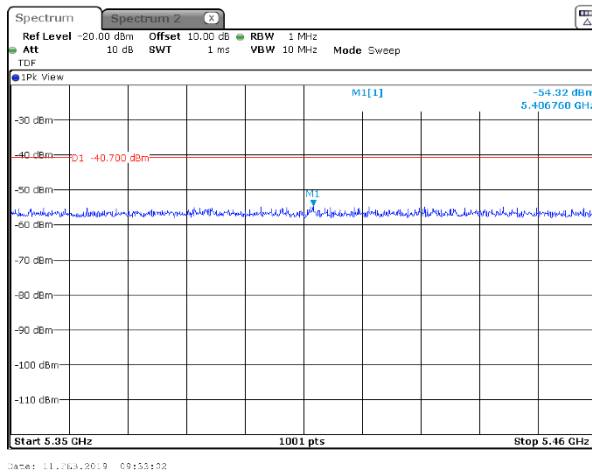
Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.5 Conducted spurious emission measurements in the range 4.5 – 5.15 GHz
CARRIER FREQUENCY 5200 MHz
CHANNEL BANDWIDTH 10 MHz



Plot 7.9.6 Conducted spurious emission measurements in the range 5.35 – 5.46 GHz
CARRIER FREQUENCY 5200 MHz
CHANNEL BANDWIDTH 10 MHz





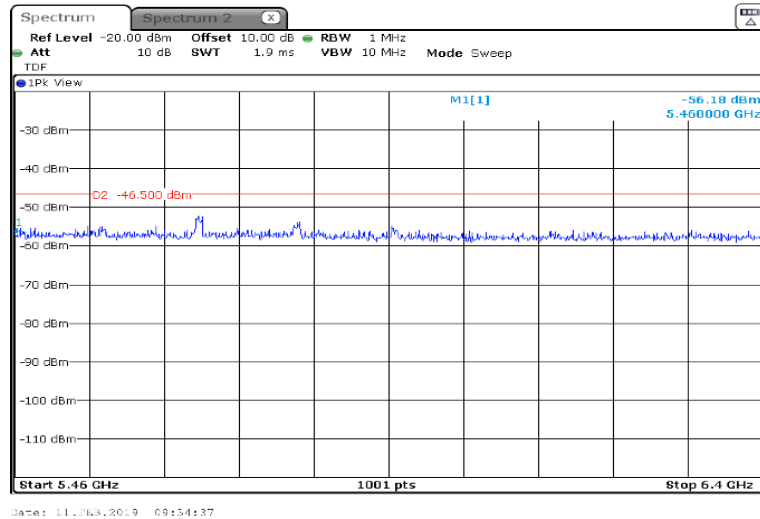
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Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.7 Conducted spurious emission measurements in the range 5.46 – 6.4 GHz

CARRIER FREQUENCY 5200 MHz
CHANNEL BANDWIDTH 10 MHz



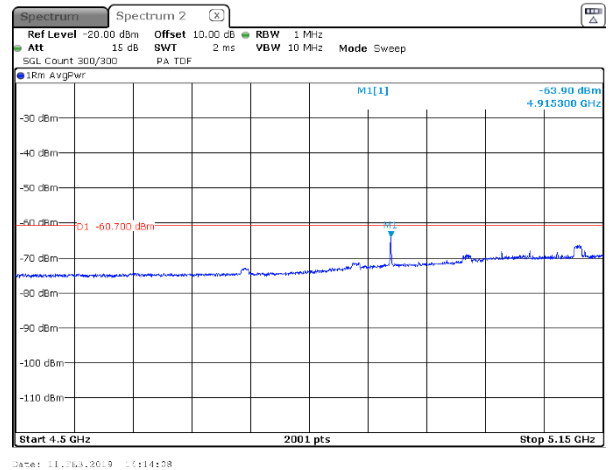
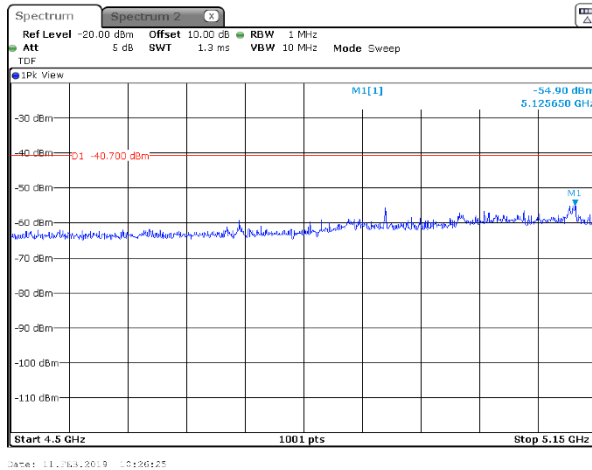


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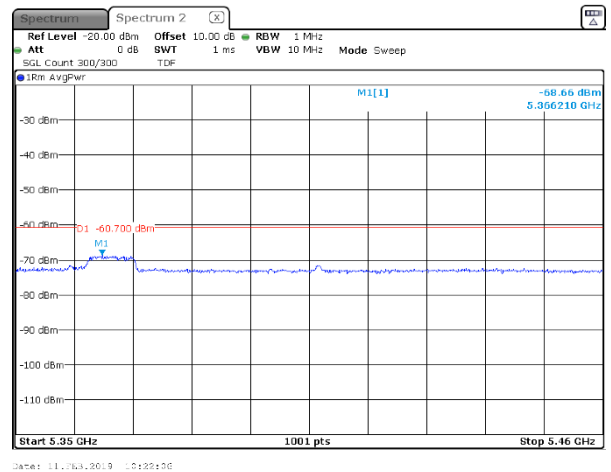
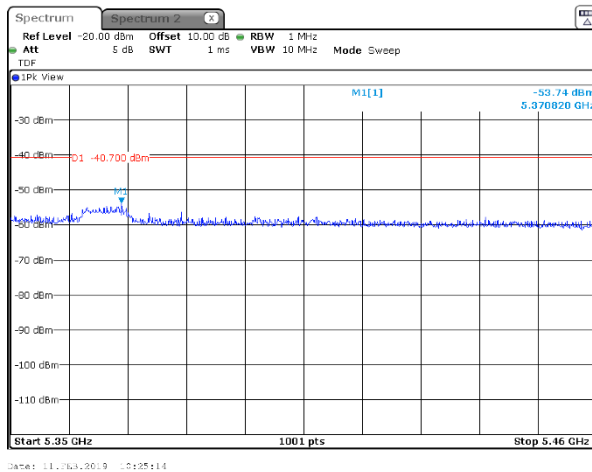
Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.8 Conducted spurious emission measurements in the range 4.5 – 5.15 GHz
CARRIER FREQUENCY 5245 MHz
CHANNEL BANDWIDTH 10 MHz



Plot 7.9.9 Conducted spurious emission measurements in the range 5.35 – 5.46 GHz
CARRIER FREQUENCY 5245 MHz
CHANNEL BANDWIDTH 10 MHz





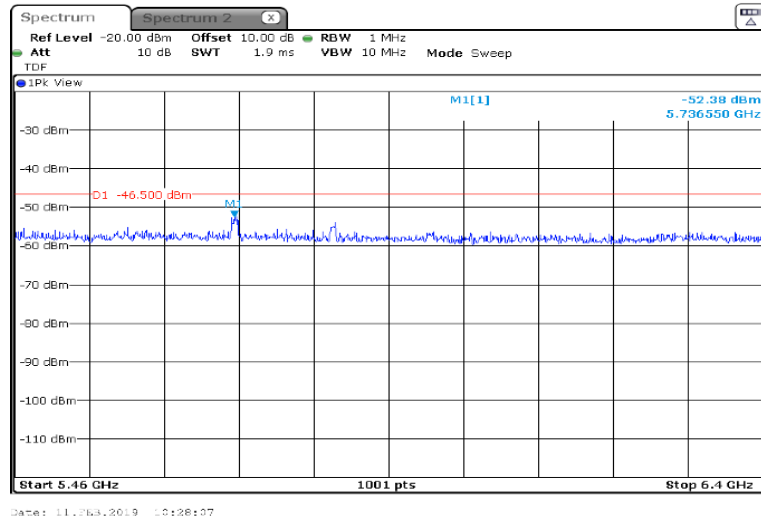
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Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.10 Conducted spurious emission measurements in the range 5.46 – 6.4 GHz

CARRIER FREQUENCY 5245 MHz
CHANNEL BANDWIDTH 10 MHz



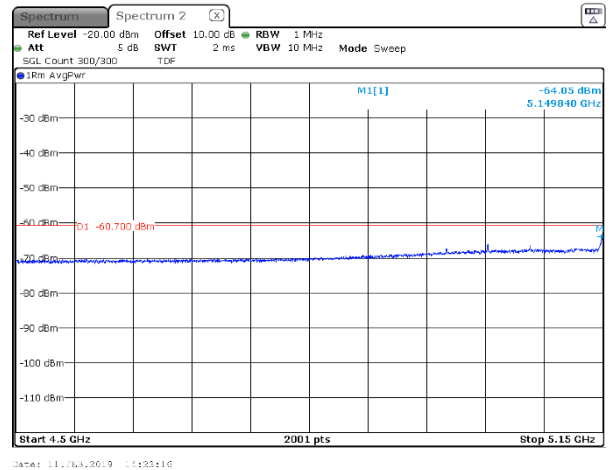
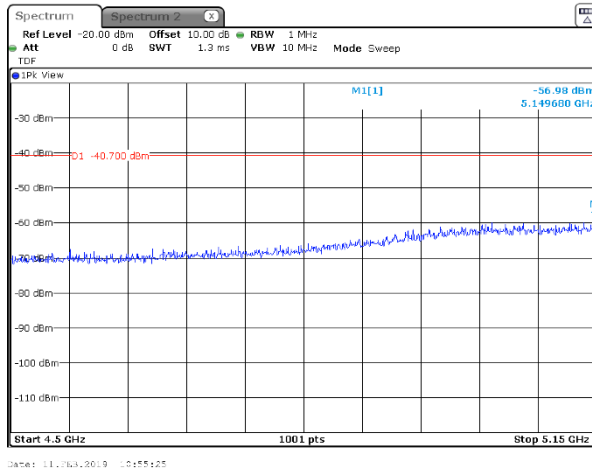


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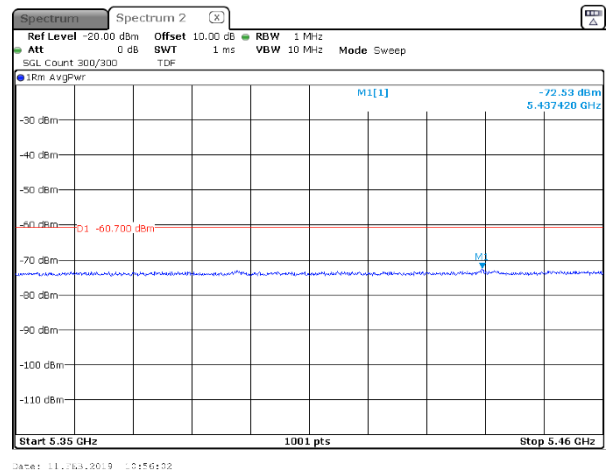
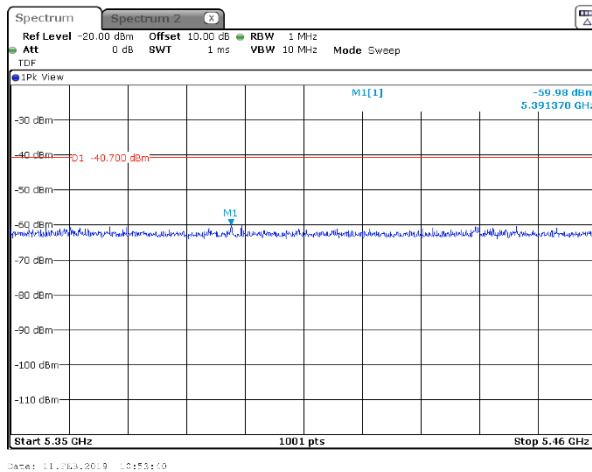
Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.11 Conducted spurious emission measurements in the range 4.5 – 5.15 GHz
CARRIER FREQUENCY 5165 MHz
CHANNEL BANDWIDTH 15 MHz



Plot 7.9.12 Conducted spurious emission measurements in the range 5.35 – 5.46 GHz
CARRIER FREQUENCY 5165 MHz
CHANNEL BANDWIDTH 15 MHz



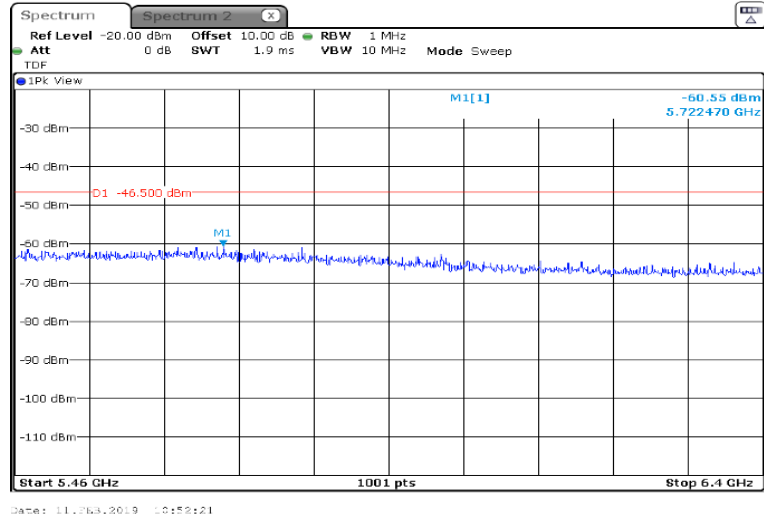


HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.13 Conducted spurious emission measurements in the range 5.46 – 6.4 GHz
CARRIER FREQUENCY 5165 MHz
CHANNEL BANDWIDTH 15 MHz



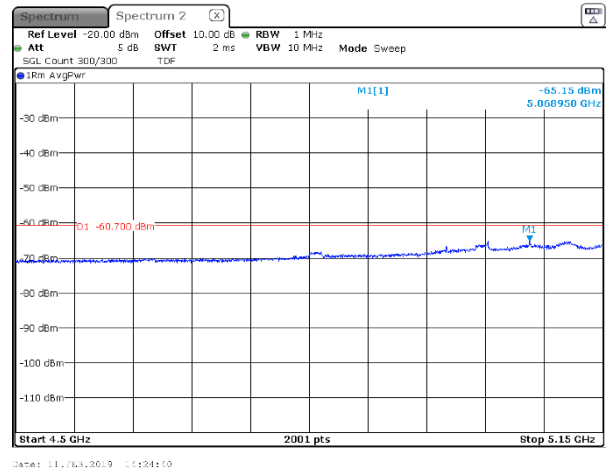
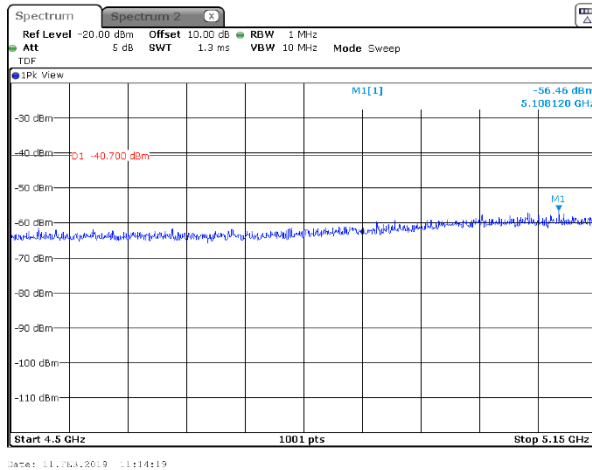


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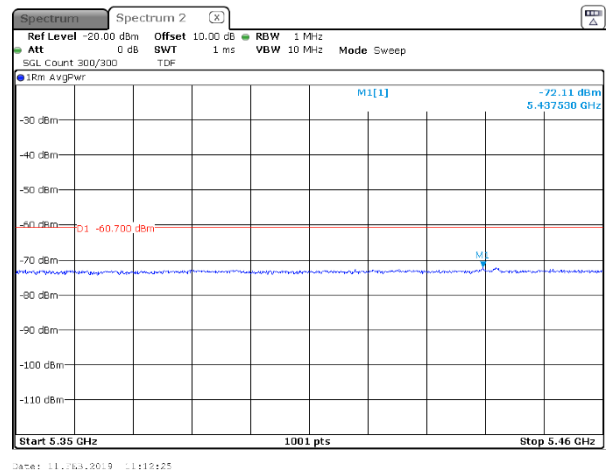
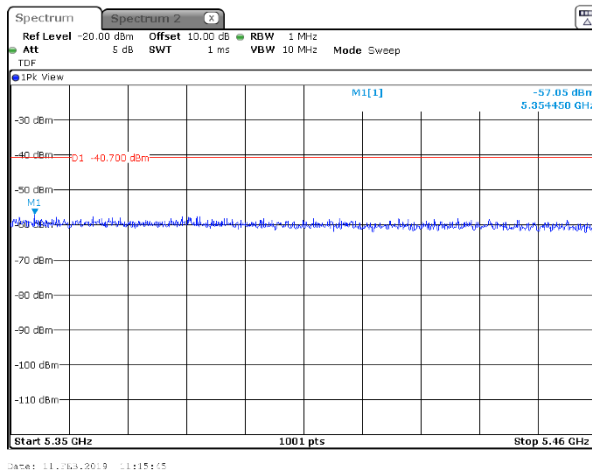
Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.14 Conducted spurious emission measurements in the range 4.5 – 5.15 GHz
CARRIER FREQUENCY 5200 MHz
CHANNEL BANDWIDTH 15 MHz



Plot 7.9.15 Conducted spurious emission measurements in the range 5.35 – 5.46 GHz
CARRIER FREQUENCY 5200 MHz
CHANNEL BANDWIDTH 15 MHz





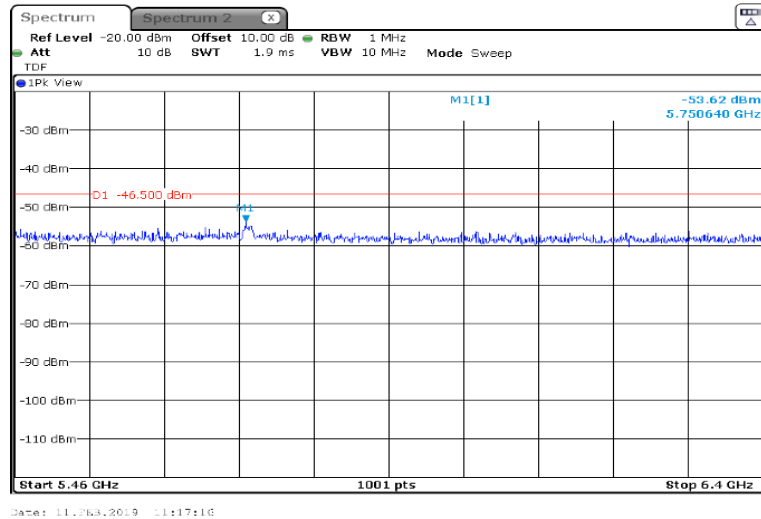
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Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.16 Conducted spurious emission measurements in the range 5.46 – 6.4 GHz

CARRIER FREQUENCY 5200 MHz
CHANNEL BANDWIDTH 15 MHz



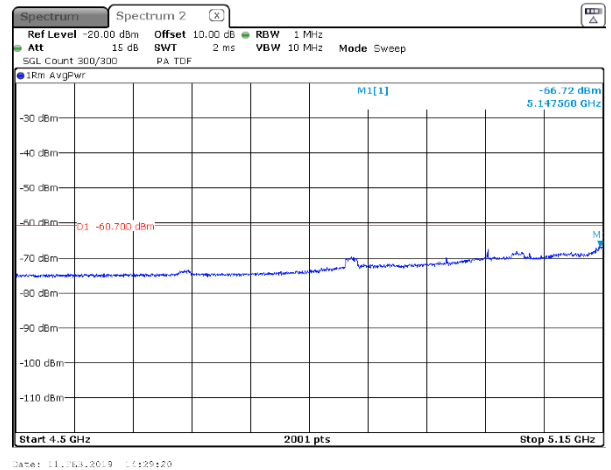
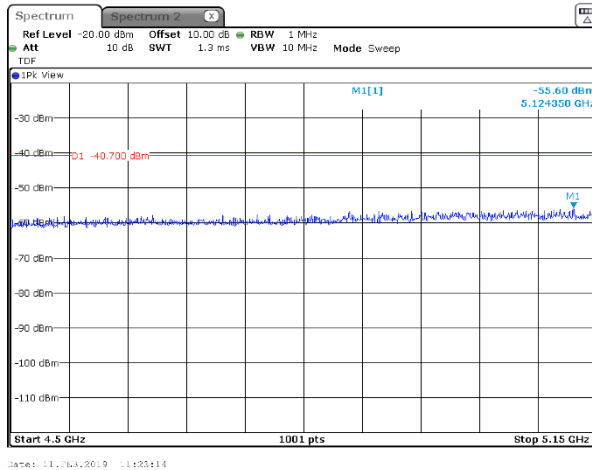


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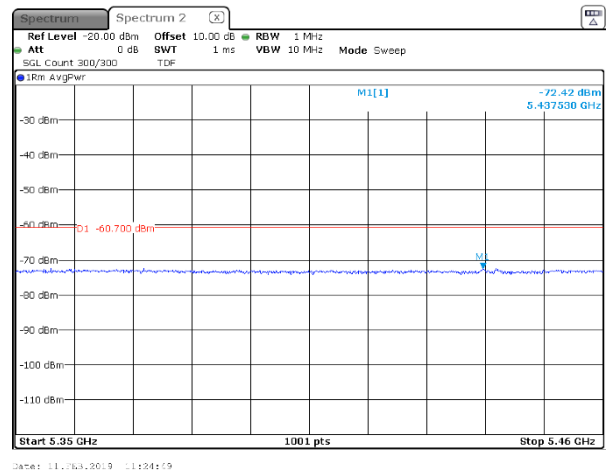
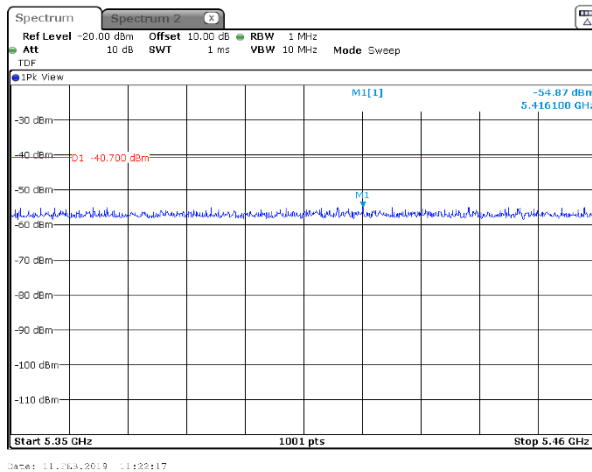
Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.17 Conducted spurious emission measurements in the range 4.5 – 5.15 GHz
CARRIER FREQUENCY 5240 MHz
CHANNEL BANDWIDTH 15 MHz



Plot 7.9.18 Conducted spurious emission measurements in the range 5.35 – 5.46 GHz
CARRIER FREQUENCY 5240 MHz
CHANNEL BANDWIDTH 15 MHz





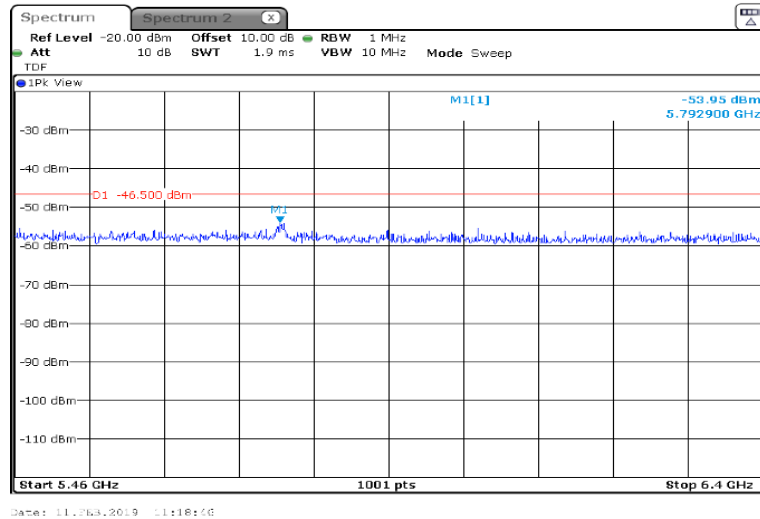
HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.19 Conducted spurious emission measurements in the range 5.46 – 6.4 GHz

CARRIER FREQUENCY 5240 MHz
CHANNEL BANDWIDTH 15 MHz



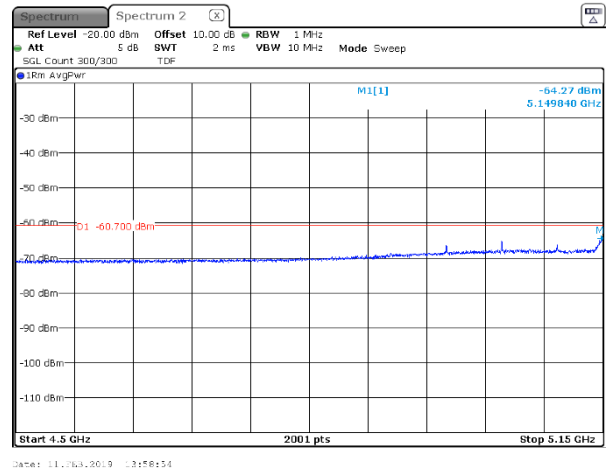
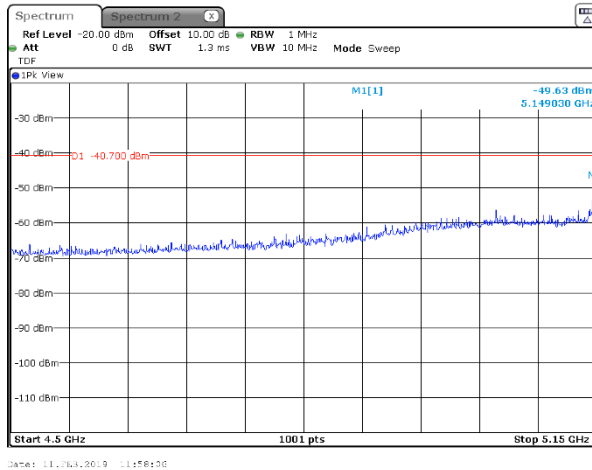


HERMON LABORATORIES

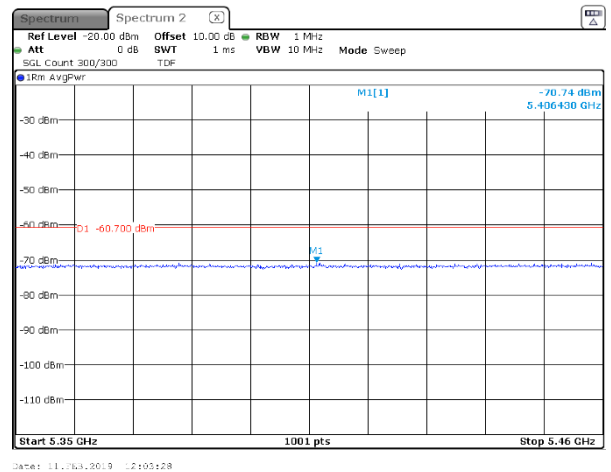
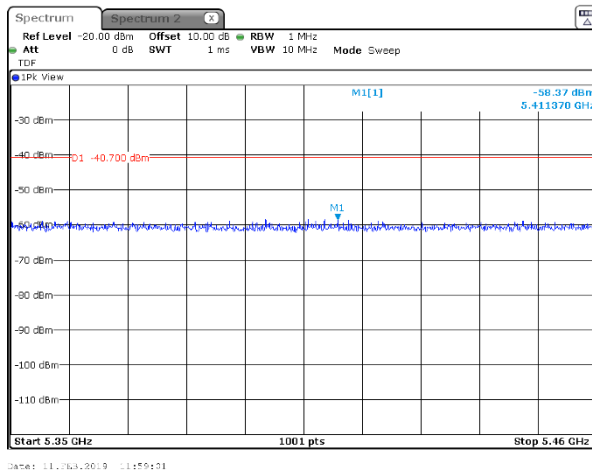
Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.20 Conducted spurious emission measurements in the range 4.5 – 5.15 GHz
CARRIER FREQUENCY 5165 MHz
CHANNEL BANDWIDTH 20 MHz



Plot 7.9.21 Conducted spurious emission measurements in the range 5.35 – 5.46 GHz
CARRIER FREQUENCY 5165 MHz
CHANNEL BANDWIDTH 20 MHz





HERMON LABORATORIES

Report ID: TelRad_FCC_31832_rev4
Date of Issue: 18-Sep-19

| | | | |
|--|-------------------------|------------------------|---------------|
| Test specification: FCC section 15.407(b), Conducted out of band emissions | | | |
| Test procedure: KDB 662911; KDB 789033, ANSI C63.10, section 12.7.6 & 12.7.7 | | | |
| Test mode: Compliance | | Verdict: PASS | |
| Date(s): 10-Feb-19 | | | |
| Temperature: 25 °C | Relative Humidity: 48 % | Air Pressure: 1019 hPa | Power: 48 VDC |
| Remarks: | | | |

Plot 7.9.22 Conducted spurious emission measurements in the range 5.46 – 6.4 GHz

CARRIER FREQUENCY 5165 MHz
CHANNEL BANDWIDTH 20 MHz

