

Figure 67 - 2440 MHz (CH18), Thread, iPA, Core 0, 30 MHz to 1 GHz, Vertical (Peak)

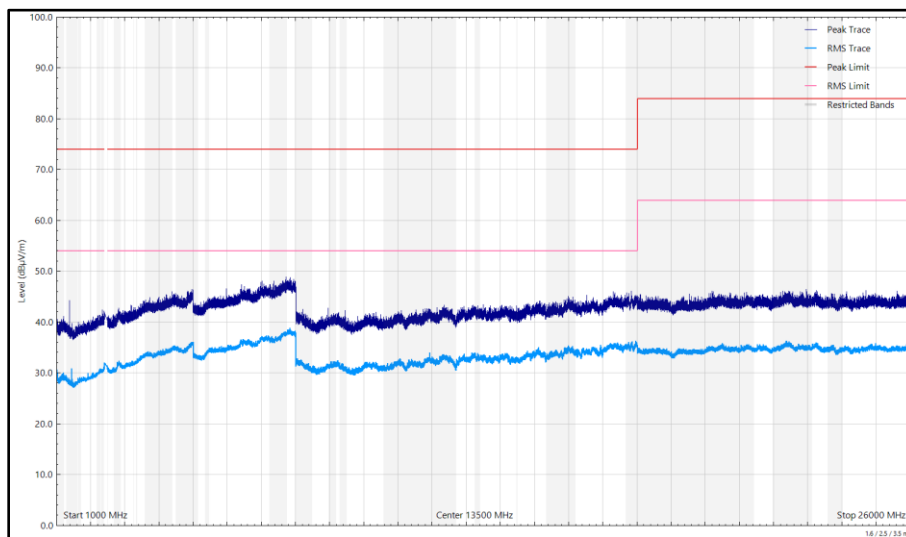


Figure 68 - 2440 MHz (CH18), Thread, iPA, Core 0, 1 GHz to 26 GHz, Vertical



| Frequency (MHz) | Level (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Detector | Angle (°) | Height (cm) | Polarisation |
|-----------------|----------------|----------------|-------------|----------|-----------|-------------|--------------|
| * | | | | | | | |

Table 50 - 2475 MHz (CH25), Thread, iPA, Core 0, 1 GHz to 26 GHz

*No emissions found within 10 dB of the limit.

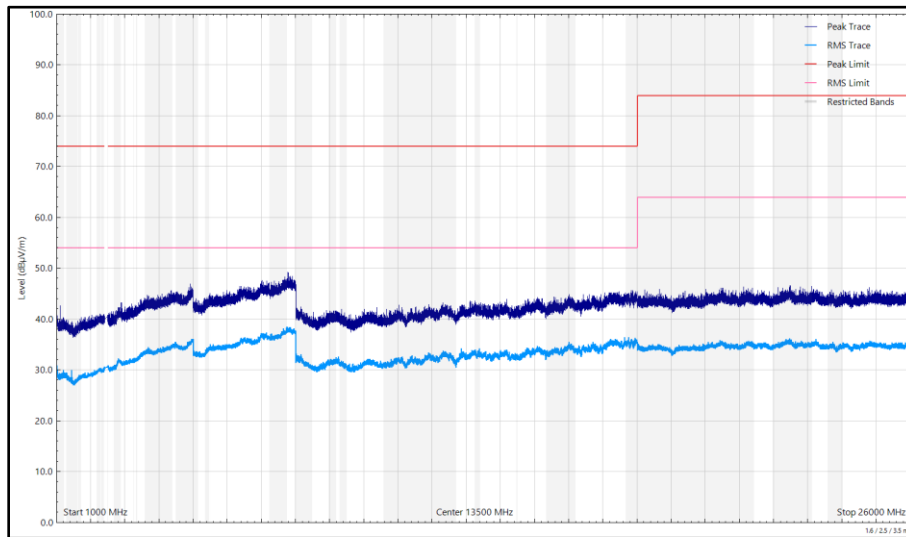


Figure 69 - 2475 MHz (CH25), Thread, iPA, Core 0, 1 GHz to 26 GHz, Horizontal

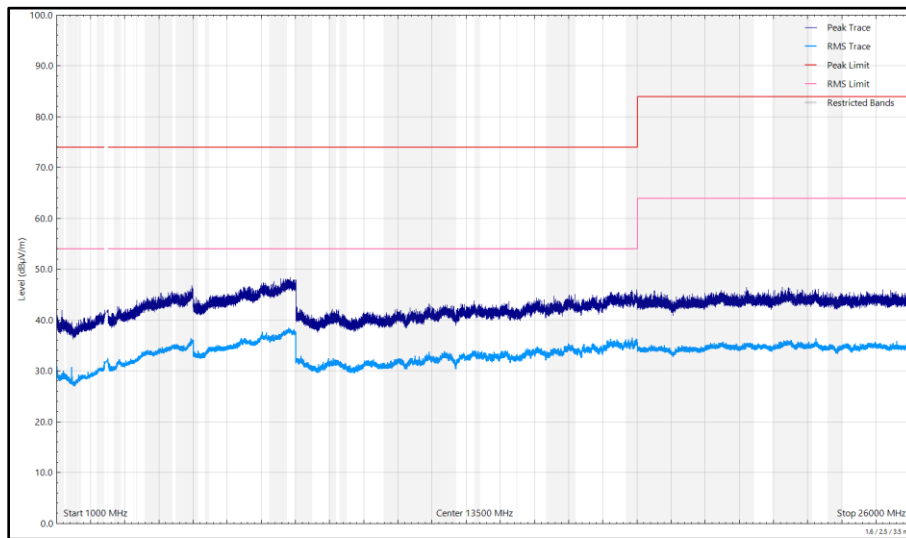


Figure 70 - 2475 MHz (CH25), Thread, iPA, Core 0, 1 GHz to 26 GHz, Vertical



| Frequency (MHz) | Level (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Detector | Angle (°) | Height (cm) | Polarisation |
|-----------------|----------------|----------------|-------------|----------|-----------|-------------|--------------|
| * | | | | | | | |

Table 51 - 2405 MHz (CH11), Thread, iPA, Core 1, 1 GHz to 26 GHz

*No emissions found within 10 dB of the limit.

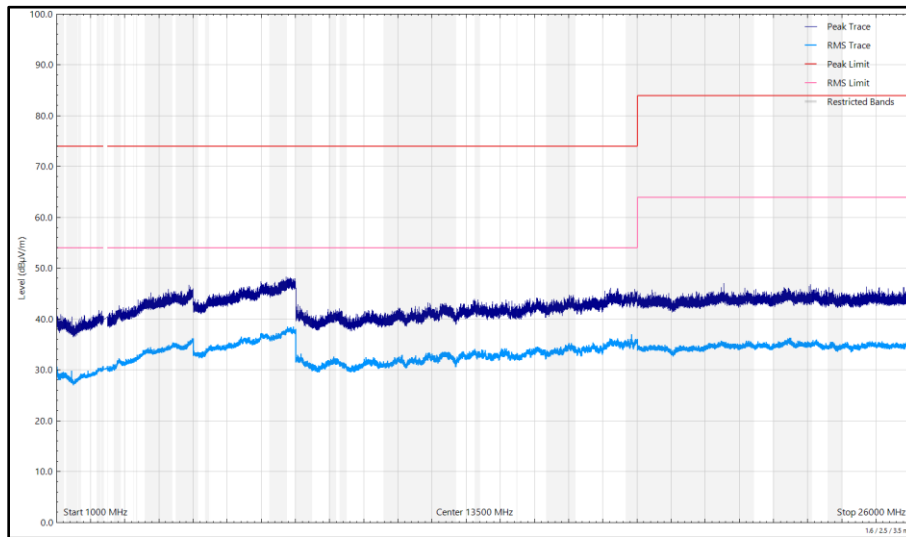


Figure 71 - 2405 MHz (CH11), Thread, iPA, Core 1, 1 GHz to 26 GHz, Horizontal

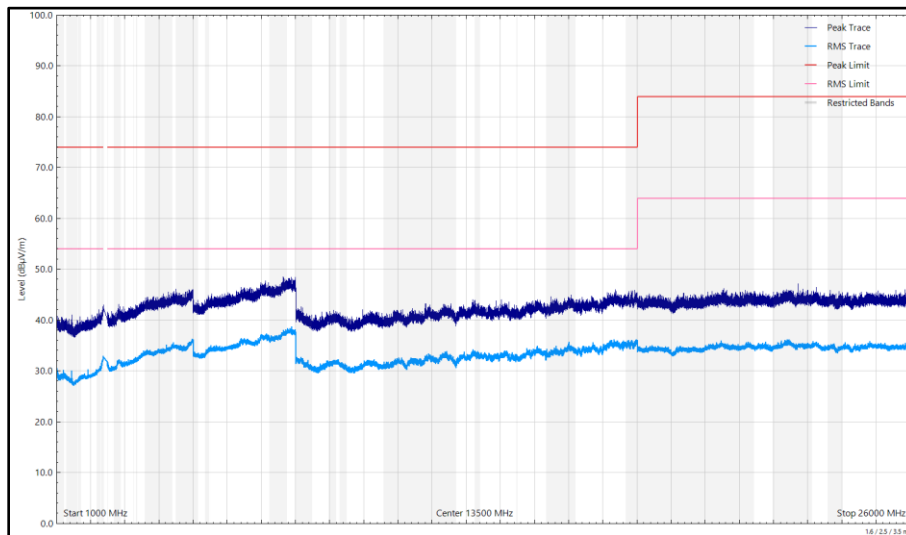


Figure 72 - 2405 MHz (CH11), Thread, iPA, Core 1, 1 GHz to 26 GHz, Vertical



| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Angle (°) | Height (cm) | Polarisation |
|-----------------|----------------|----------------|-------------|----------|-----------|-------------|--------------|
| 170.169 | 18.50 | 43.50 | -25.00 | Q-Peak | 358 | 100 | Vertical |
| 170.195 | 21.53 | 43.50 | -21.97 | Q-Peak | 1 | 163 | Horizontal |
| 408.200 | 21.08 | 46.00 | -24.92 | Q-Peak | 183 | 116 | Vertical |

Table 52 - 2440 MHz (CH18), Thread, iPA, Core 1, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

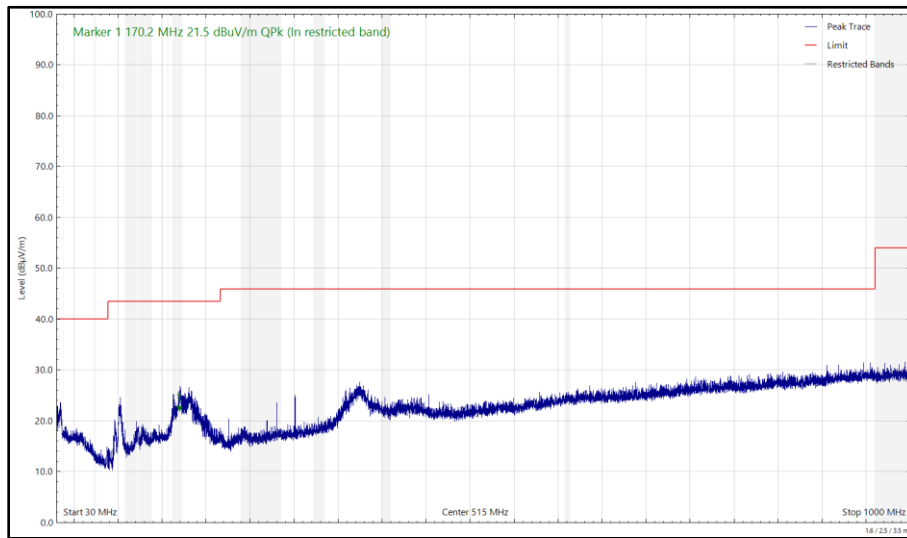


Figure 73 - 2440 MHz (CH18), Thread, iPA, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

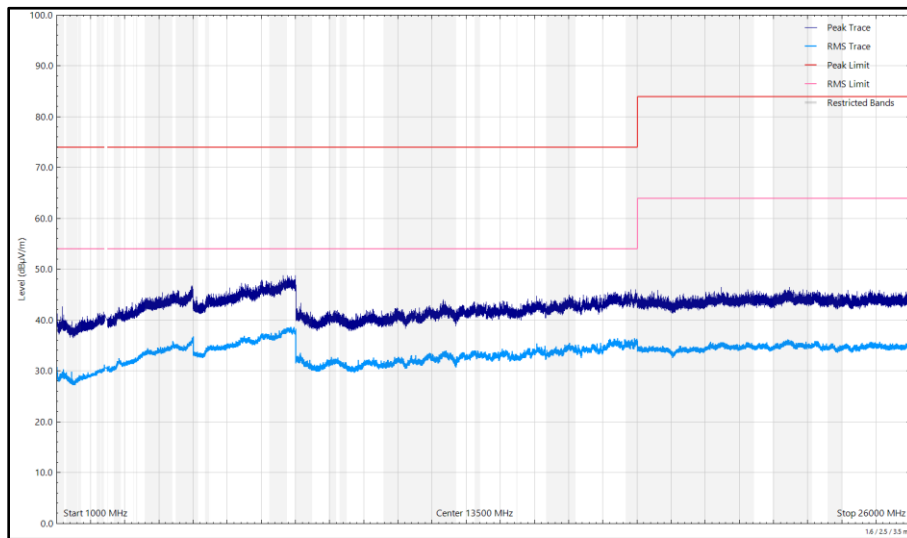


Figure 74 - 2440 MHz (CH18), Thread, iPA, Core 1, 1 GHz to 26 GHz, Horizontal

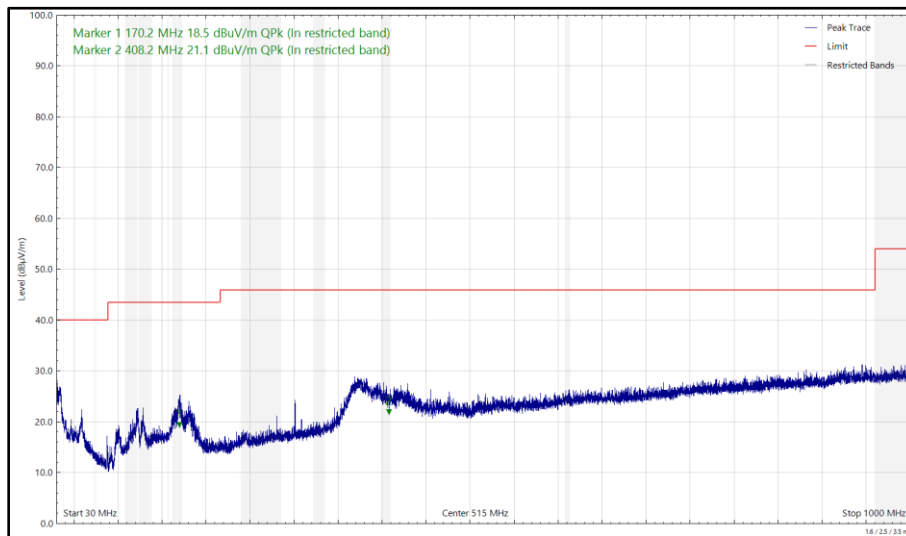


Figure 75 - 2440 MHz (CH18), Thread, iPA, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

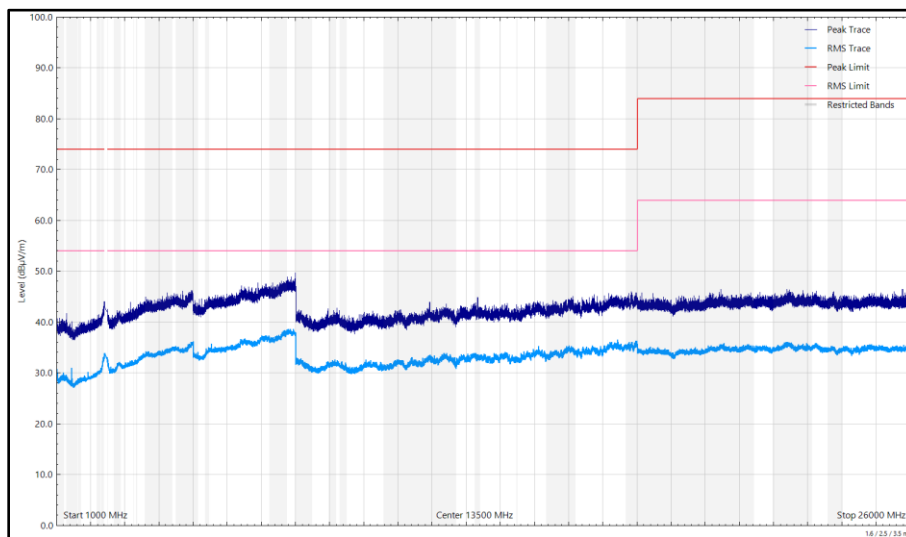


Figure 76 - 2440 MHz (CH18), Thread, iPA, Core 1, 1 GHz to 26 GHz, Vertical



| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Angle (°) | Height (cm) | Polarisation |
|-----------------|----------------|----------------|-------------|----------|-----------|-------------|--------------|
| 2498.566 | 35.35 | 54.00 | -18.65 | RMS | 31 | 283 | Vertical |

Table 53 - 2475 MHz (CH25), Thread, iPA, Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

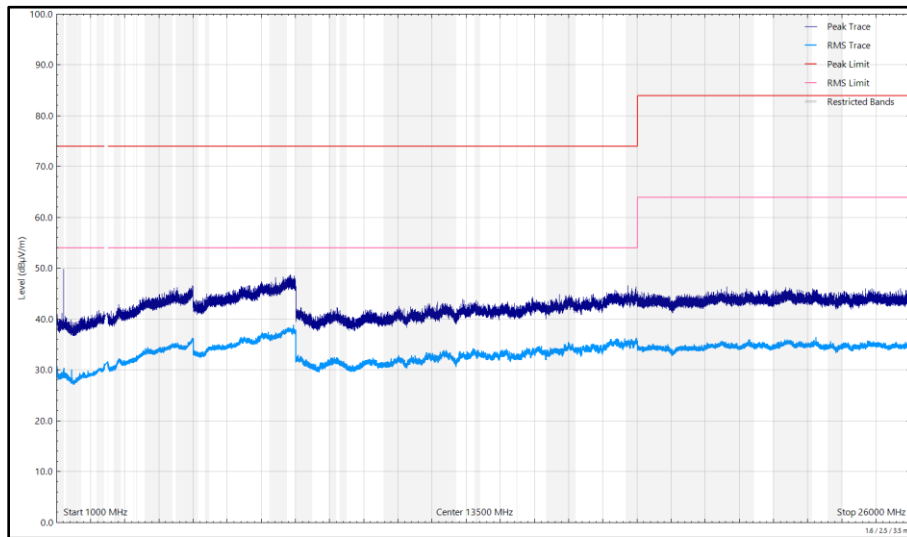


Figure 77 - 2475 MHz (CH25), Thread, iPA, Core 1, 1 GHz to 26 GHz, Horizontal

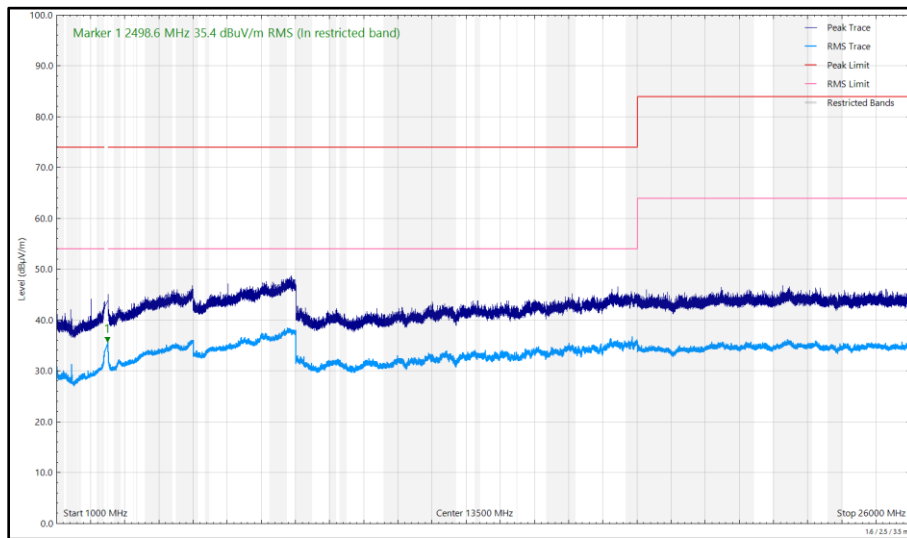


Figure 78 - 2475 MHz (CH25), Thread, iPA, Core 1, 1 GHz to 26 GHz, Vertical



| Frequency (MHz) | Level (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Detector | Angle (°) | Height (cm) | Polarisation |
|-----------------|----------------|----------------|-------------|----------|-----------|-------------|--------------|
| * | | | | | | | |

Table 54 - 2405 MHz (CH11), Thread, iPA, Core 2, 1 GHz to 26 GHz

*No emissions found within 10 dB of the limit.

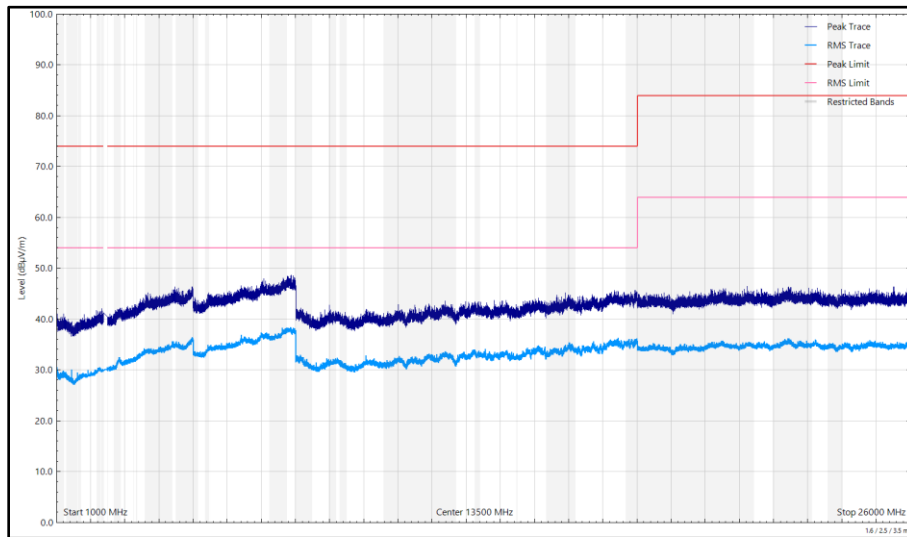


Figure 79 - 2405 MHz (CH11), Thread, iPA, Core 2, 1 GHz to 26 GHz, Horizontal

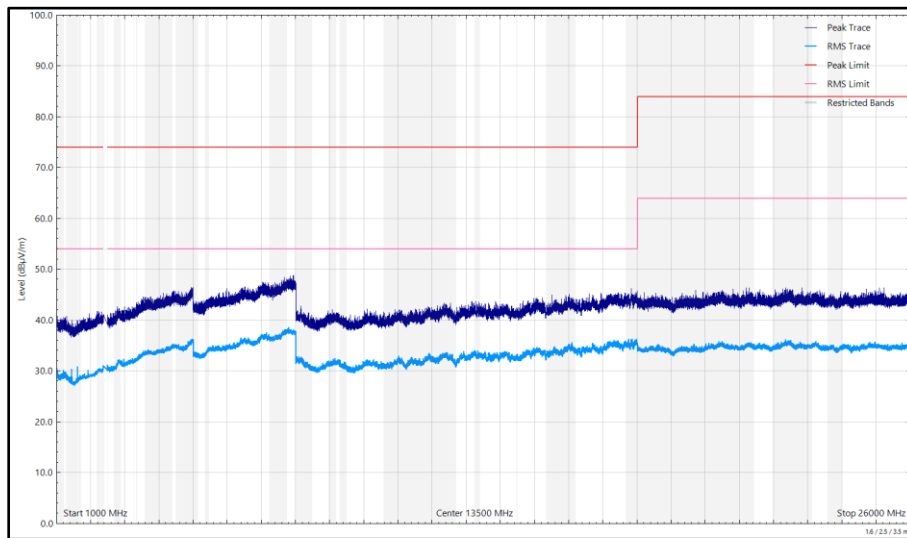


Figure 80 - 2405 MHz (CH11), Thread, iPA, Core 2, 1 GHz to 26 GHz, Vertical



| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Angle (°) | Height (cm) | Polarisation |
|-----------------|----------------|----------------|-------------|----------|-----------|-------------|--------------|
| 170.378 | 18.88 | 43.50 | -24.62 | Q-Peak | 360 | 102 | Vertical |
| 170.471 | 19.04 | 43.50 | -24.46 | Q-Peak | 165 | 276 | Horizontal |
| 4220.606 | 33.17 | 54.00 | -20.83 | RMS | 265 | 202 | Vertical |

Table 55 - 2440 MHz (CH18), Thread, iPA, Core 2, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

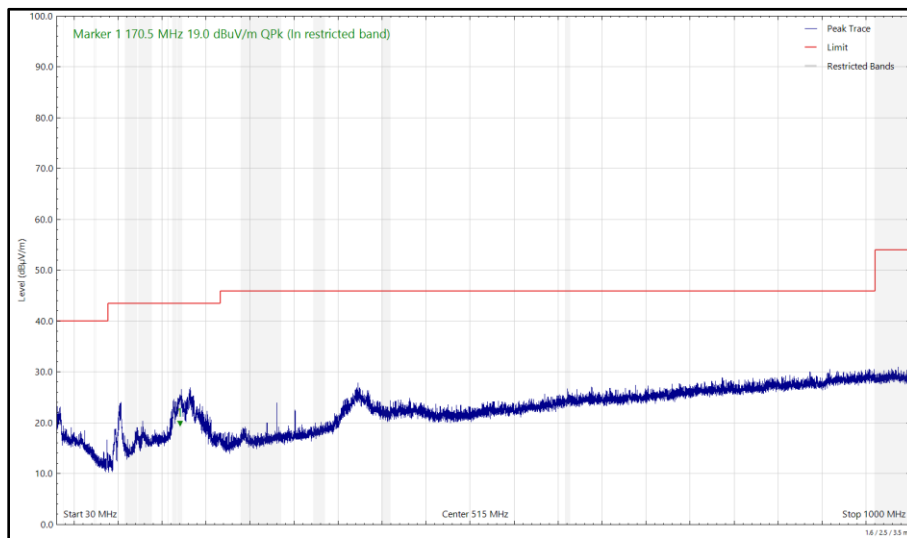


Figure 81 - 2440 MHz (CH18), Thread, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

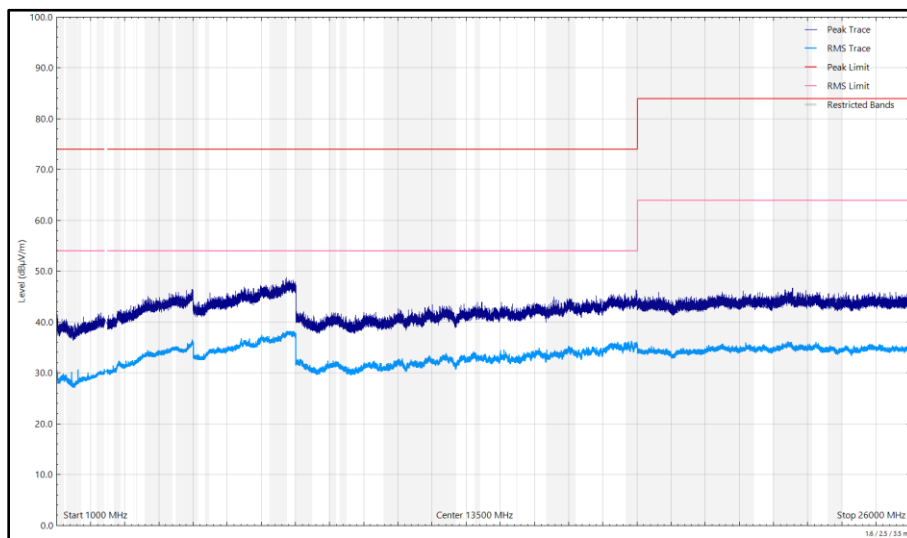


Figure 82 - 2440 MHz (CH18), Thread, iPA, Core 2, 1 GHz to 26 GHz, Horizontal

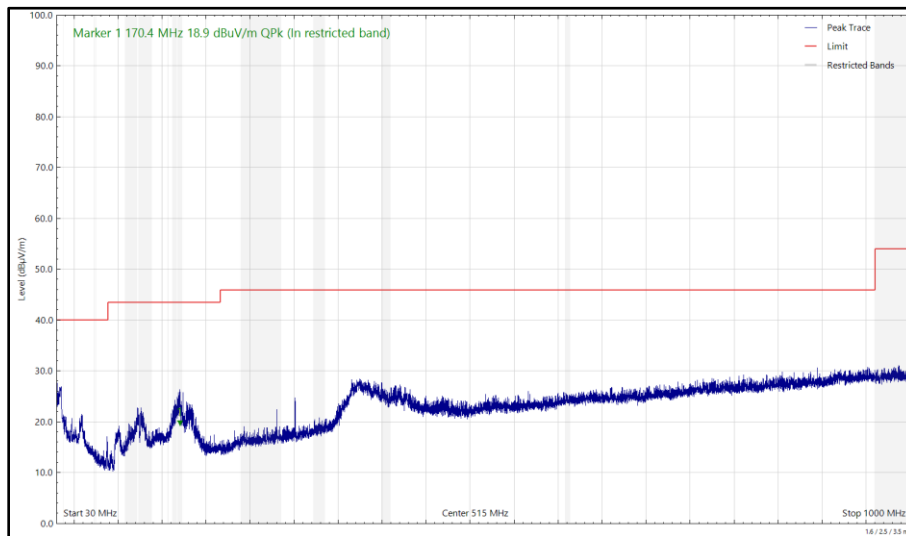


Figure 83 - 2440 MHz (CH18), Thread, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

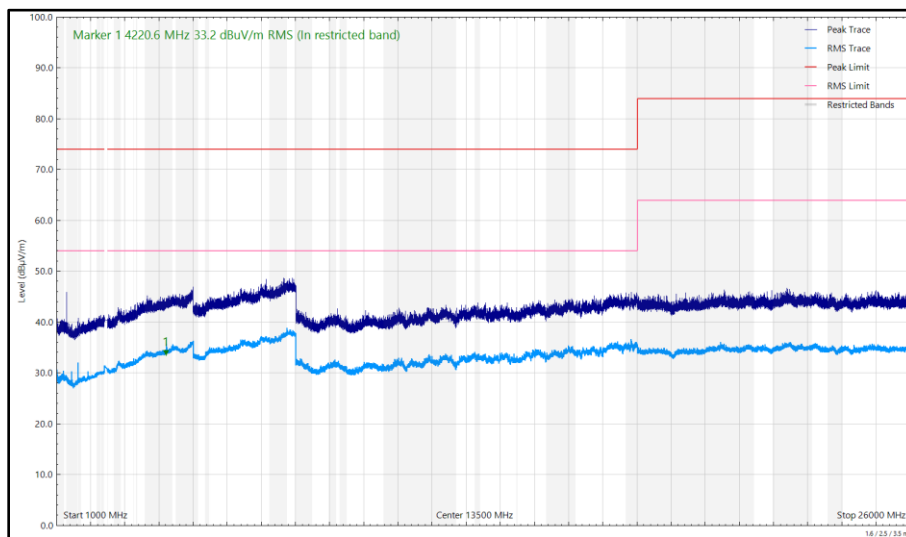


Figure 84 - 2440 MHz (CH18), Thread, iPA, Core 2, 1 GHz to 26 GHz, Vertical



| Frequency (MHz) | Level (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Detector | Angle (°) | Height (cm) | Polarisation |
|-----------------|----------------|----------------|-------------|----------|-----------|-------------|--------------|
| * | | | | | | | |

Table 56 - 2475 MHz (CH25), Thread, iPA, Core 2, 1 GHz to 26 GHz

*No emissions found within 10 dB of the limit.

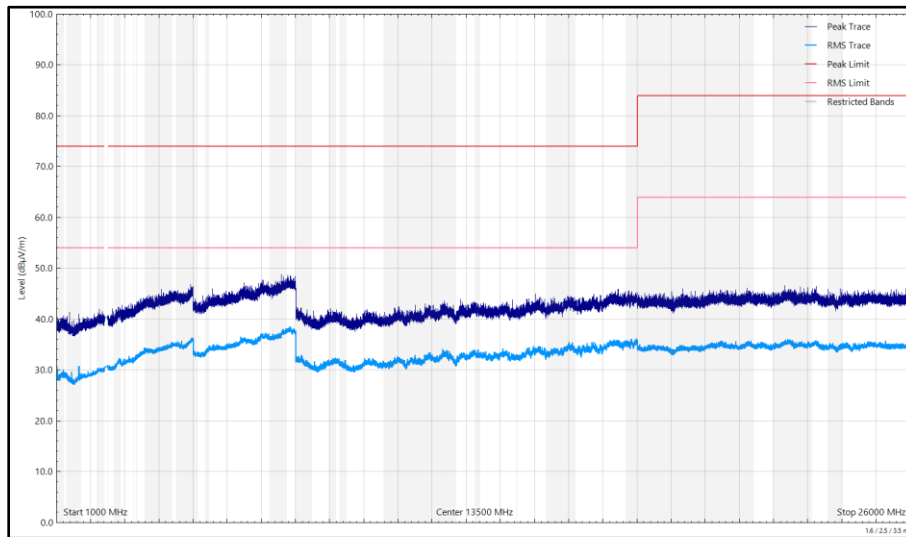


Figure 85 - 2475 MHz (CH25), Thread, iPA, Core 2, 1 GHz to 26 GHz, Horizontal

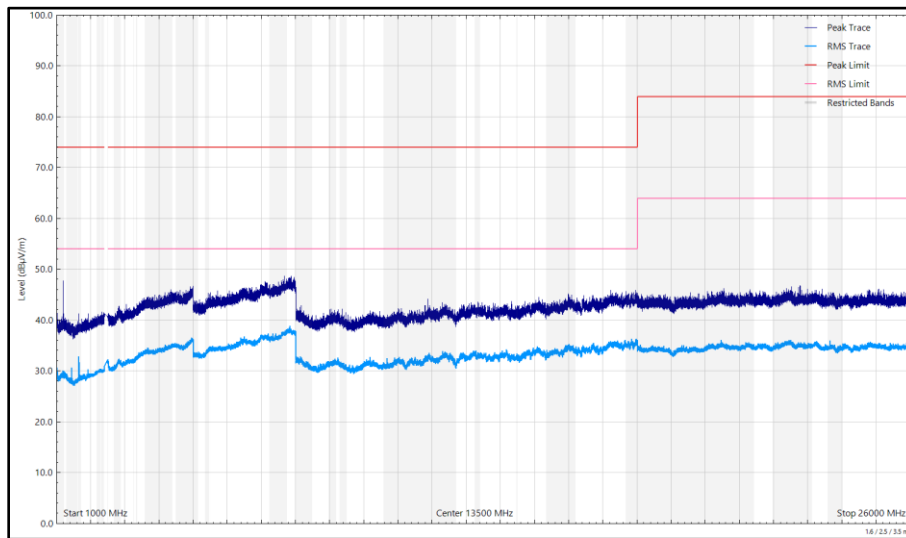


Figure 86 - 2475 MHz (CH25), Thread, iPA, Core 2, 1 GHz to 26 GHz, Vertical



FCC 47 CFR Part 15, Limit Clause 15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).



2.5.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 18.

| Instrument | Manufacturer | Type No. | TE No. | Calibration Period (months) | Calibration Expiry Date |
|--|---------------------|---------------------------|--------|-----------------------------|-------------------------|
| Emissions Software | TUV SUD | EmX V3.2.0 | 5125 | - | Software |
| Cable (N to N 1m) | Junkosha | MWX221-01000AMSAMS/B | 6009 | 12 | 20-May-2025 |
| SAC Switch Unit | TUV SUD | TUV_SSU_001 | 6144 | 12 | 11-Dec-2024 |
| Digital Multimeter | Fluke | 115 | 6146 | 12 | 06-Jun-2025 |
| 8GHz Highpass Filter | Wainwright | WHKX 7150 8000 18000 50SS | 6194 | 12 | 23-Apr-2025 |
| Pre Amp 8 - 18 GHz | Wright Technologies | APS06 0061 | 6200 | 12 | 03-Jun-2025 |
| Attenuator 4dB | Pasternack | PE7074-4 | 6204 | 24 | 20-Jun-2026 |
| Cable (SMA to SMA 20cm) | TUV SUD | MH-FH 8-18 | 6215 | 12 | 23-Apr-2025 |
| Cable (SMA to SMA 8m) | Junkosha | MWX221-08000AMSAMS/B | 6318 | 12 | 18-Feb-2025 |
| Cable (K Type 2m) | Junkosha | MWX241-02000KMSKMS/B | 6323 | 12 | 04-Feb-2025 |
| EMC Test Receiver | Rohde & Schwarz | ESW44 | 6333 | 12 | 16-Feb-2025 |
| Trilog Super Broadband Test Antenna | Schwarzbeck | VULB 9168 | 6456 | 24 | 10-Feb-2025 |
| DRG Horn Antenna (8-18 GHz) | Schwarzbeck | HWRD750 | 6458 | 12 | 05-May-2025 |
| Humidity and Temperature Meter | R.S Components | 1364 | 6486 | 12 | 04-Jun-2025 |
| 3m Semi-Anechoic Chamber , Chamber18 | Albatross Projects | Chamber 18 | 6597 | 36 | 07-Feb-2026 |
| Double Ridge Active Horn Antenna (18-40 GHz) | Com-Power | AHA-840 | 6771 | 24 | 17-Jan-2025 |
| Mast & Turntable Controller | Maturo Gmbh | FCU3.0 | 6795 | - | TU |
| Tilt Antenna Mast | Maturo Gmbh | BAM4.5-P | 6796 | - | TU |
| Turntable | Maturo Gmbh | TT1.5SI | 6797 | - | TU |
| AC Programmable Power Supply | iTech | IT7324 | 6812 | - | O/P Mon |
| Broad-Band Horn Antenna 1-10GHz N | Schwarzbeck | BBHA9120B | 6825 | 12 | 18-Jul-2025 |

Table 57

TU - Traceability Unscheduled

O/P Mon - Output Monitored using calibrated equipment



2.6 Power Spectral Density

2.6.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (e)

2.6.2 Equipment Under Test and Modification State

A3186, S/N: M44MHNWLH2 - Modification State 0
A3186, S/N: LXXD3YHT0L - Modification State 0

2.6.3 Date of Test

06-September-2024

2.6.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 11.10.5.

2.6.5 Environmental Conditions

| | |
|---------------------|---------|
| Ambient Temperature | 20.9 °C |
| Relative Humidity | 58.4 % |



2.6.6 Test Results

Thread

| Test Configuration | | | |
|--------------------------|---|-----------------|----------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause(s): | 15.247 (e) RSS-247 5.2 b) | Test Method(s): | C63.10 11.10.5 |
| Additional Reference(s): | - | | |
| Note(s): | DCCF was added to the spectrum analyser reference level offset. | | |

| DUT Configuration | | | |
|------------------------|------------|--------------------------|------|
| Mode: | Thread iPA | Duty Cycle (%): | 88.9 |
| Data Rate: | - | DCCF (dB): | 0.51 |
| Antenna Configuration: | SISO | Peak Antenna Gain (dBi): | - |
| Active Port(s): | A (Core 0) | Active Chain(s): | 0 |

| Test Frequency (MHz) | RBW (kHz) | PSD (dBm/RBW) | | | | | Limit (dBm/3 kHz) | Margin (dB) |
|----------------------|-----------|---------------|---|---|---|--------|-------------------|-------------|
| | | A | B | C | D | Σ | | |
| 2405 | 3.0 | -9.98 | - | - | - | -9.98 | 8.00 | -17.98 |
| 2440 | 3.0 | -10.10 | - | - | - | -10.10 | 8.00 | -18.10 |
| 2475 | 3.0 | -9.40 | - | - | - | -9.40 | 8.00 | -17.40 |

Table 58 - Maximum Power Spectral Density Results

| Test Configuration | | | |
|--------------------------|---|-----------------|----------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause(s): | 15.247 (e) RSS-247 5.2 b) | Test Method(s): | C63.10 11.10.5 |
| Additional Reference(s): | - | | |
| Note(s): | DCCF was added to the spectrum analyser reference level offset. | | |

| DUT Configuration | | | |
|------------------------|------------|--------------------------|------|
| Mode: | Thread iPA | Duty Cycle (%): | 88.9 |
| Data Rate: | - | DCCF (dB): | 0.51 |
| Antenna Configuration: | SISO | Peak Antenna Gain (dBi): | - |
| Active Port(s): | B (Core 1) | Active Chain(s): | 1 |

| Test Frequency (MHz) | RBW (kHz) | PSD (dBm/RBW) | | | | | Limit (dBm/3 kHz) | Margin (dB) |
|----------------------|-----------|---------------|--------|---|---|--------|-------------------|-------------|
| | | A | B | C | D | Σ | | |
| 2405 | 3.0 | - | -10.15 | - | - | -10.15 | 8.00 | -18.15 |
| 2440 | 3.0 | - | -10.42 | - | - | -10.42 | 8.00 | -18.42 |
| 2475 | 3.0 | - | -9.58 | - | - | -9.58 | 8.00 | -17.58 |

Table 59 - Maximum Power Spectral Density Results



| Test Configuration | | | |
|--------------------------|---|-----------------|----------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause(s): | 15.247 (e) RSS-247 5.2 b) | Test Method(s): | C63.10 11.10.5 |
| Additional Reference(s): | - | | |
| Note(s): | DCCF was added to the spectrum analyser reference level offset. | | |

| DUT Configuration | | | |
|------------------------|------------|--------------------------|------|
| Mode: | Thread iPA | Duty Cycle (%): | 88.9 |
| Data Rate: | - | DCCF (dB): | 0.51 |
| Antenna Configuration: | SISO | Peak Antenna Gain (dBi): | - |
| Active Port(s): | C (Core 2) | Active Chain(s): | 2 |

| Test Frequency (MHz) | RBW (kHz) | PSD (dBm/RBW) | | | | | Limit (dBm/3 kHz) | Margin (dB) |
|----------------------|-----------|---------------|---|--------|---|--------|-------------------|-------------|
| | | A | B | C | D | Σ | | |
| 2405 | 3.0 | - | - | -14.41 | - | -14.41 | 8.00 | -22.41 |
| 2440 | 3.0 | - | - | -14.10 | - | -14.10 | 8.00 | -22.10 |
| 2475 | 3.0 | - | - | -14.13 | - | -14.13 | 8.00 | -22.13 |

Table 60 - Maximum Power Spectral Density Results



| Test Configuration | | | |
|--------------------------|---|-----------------|----------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause(s): | 15.247 (e) RSS-247 5.2 b) | Test Method(s): | C63.10 11.10.5 |
| Additional Reference(s): | - | | |
| Note(s): | DCCF was added to the spectrum analyser reference level offset. | | |

| DUT Configuration | | | |
|------------------------|------------|--------------------------|------|
| Mode: | Thread ePA | Duty Cycle (%): | 88.9 |
| Data Rate: | - | DCCF (dB): | 0.51 |
| Antenna Configuration: | SISO | Peak Antenna Gain (dBi): | - |
| Active Port(s): | A (Core 0) | Active Chain(s): | 0 |

| Test Frequency (MHz) | RBW (kHz) | PSD (dBm/RBW) | | | | | Limit (dBm/3 kHz) | Margin (dB) |
|----------------------|-----------|---------------|---|---|---|-------|-------------------|-------------|
| | | A | B | C | D | Σ | | |
| 2405 | 3.0 | -2.08 | - | - | - | -2.08 | 8.00 | -10.08 |
| 2440 | 3.0 | -2.58 | - | - | - | -2.58 | 8.00 | -10.58 |
| 2475 | 3.0 | -2.37 | - | - | - | -2.37 | 8.00 | -10.37 |

Table 61 - Maximum Power Spectral Density Results

| Test Configuration | | | |
|--------------------------|---|-----------------|----------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause(s): | 15.247 (e) RSS-247 5.2 b) | Test Method(s): | C63.10 11.10.5 |
| Additional Reference(s): | - | | |
| Note(s): | DCCF was added to the spectrum analyser reference level offset. | | |

| DUT Configuration | | | |
|------------------------|------------|--------------------------|------|
| Mode: | Thread ePA | Duty Cycle (%): | 88.9 |
| Data Rate: | - | DCCF (dB): | 0.51 |
| Antenna Configuration: | SISO | Peak Antenna Gain (dBi): | - |
| Active Port(s): | B (Core 1) | Active Chain(s): | 1 |

| Test Frequency (MHz) | RBW (kHz) | PSD (dBm/RBW) | | | | | Limit (dBm/3 kHz) | Margin (dB) |
|----------------------|-----------|---------------|-------|---|---|-------|-------------------|-------------|
| | | A | B | C | D | Σ | | |
| 2405 | 3.0 | - | -2.47 | - | - | -2.47 | 8.00 | -10.47 |
| 2440 | 3.0 | - | -2.03 | - | - | -2.03 | 8.00 | -10.03 |
| 2475 | 3.0 | - | -2.72 | - | - | -2.72 | 8.00 | -10.72 |

Table 62 - Maximum Power Spectral Density Results



FCC 47 CFR Part 15, Limit Clause 15.247 (e)

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

2.6.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 14.

| Instrument | Manufacturer | Type No. | TE No. | Calibration Period (months) | Calibration Expiry Date |
|------------------------------|-----------------------|-----------------|--------|-----------------------------|-------------------------|
| Hygrometer | Rotronic | I-1000 | 3068 | 12 | 07-Nov-2024 |
| Digital Multimeter | Fluke | 115 | 6145 | 12 | 06-Jun-2025 |
| MXA Signal Analyser | Keysight Technologies | N9020B | 6417 | 24 | 26-Feb-2025 |
| Signal Conditioning Unit | TUV SUD | SPECTRUM_SCU001 | 6518 | 12 | 16-Feb-2025 |
| SCU Cable Assembly | TUV SUD | SPECTRUM_SCU_CA | 6529 | 12 | 16-Feb-2025 |
| SCU Cable Assembly | TUV SUD | SPECTRUM_SCU_CA | 6530 | 12 | 16-Feb-2025 |
| SCU Cable Assembly | TUV SUD | SPECTRUM_SCU_CA | 6531 | 12 | 16-Feb-2025 |
| AC Programmable Power Supply | iTech | IT7324 | 6662 | - | O/P Mon |

Table 63

O/P Mon - Output Monitored using calibrated equipment



3 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

| Test Name | Measurement Uncertainty |
|--------------------------------|--|
| Restricted Band Edges | 30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB |
| Emission Bandwidth | ± 88.86 kHz |
| Maximum Conducted Output Power | ± 1.38 dB |
| Authorised Band Edges | 30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB |
| Spurious Radiated Emissions | 30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB |
| Power Spectral Density | ± 1.49 dB |

Table 64

Measurement Uncertainty Decision Rule – Accuracy Method

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2021, Clause 4.4.3 (Procedure 2). The measurement results are directly compared with the test limit to determine conformance with the requirements of the standard.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8.