

Test Report



INTENTIONAL RADIATOR TESTS ACCORDING TO FCC PART 15 C

Equipment Under Test: Handheld Material Analyzer

Model: LMDS2850

Manufacturer: Oxford Instruments Analytical Oy
Tarvonsalmenkatu 17
FI-02631 ESPOO
FINLAND

Customer: Oxford Instruments Analytical Oy
Tarvonsalmenkatu 17
FI-02631 ESPOO
FINLAND

FCC Rule Part: 15.247: 2015
IC Rule Part: RSS-247, Issue 1, 2015
RSS-GEN Issue 4, 2014

KDB: Guidance for Performing Compliance
Measurements on Digital Transmission Systems
(DTS) Operating Under §15.247 (June 9, 2015)

Date: 23 September 2016

Issued by:

A blue ink signature of Emil Haverinen.

Emil Haverinen
Testing Engineer

Date: 23 September 2016

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Testing Engineer

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Equipment Under Test (EUT)

Trade mark: Oxford Instruments
Model: LMDS2850
Type: Handheld material analyzer
Serial no: 100005 & 100008
FCC ID: Contains FCC ID: Z64-WL18SBMOD
IC: Contains IC ID: 451I-WL18SBMOD

Description of the EUT

The EUT is handheld material analyzer using 802.11b/g module made by Texas Instruments (FCC ID: Z64-WL18SBMOD).

The device has USB port for transferring data from the device. The EUT uses battery which can be charged when it is connected to the device or via separate charging dock.

The module's Bluetooth, 802.11n, HT40 and MIMO capabilities have been disabled.

Classification of the device

| | |
|--|-------------------------------------|
| Fixed device | <input type="checkbox"/> |
| Mobile Device (Human body distance > 20cm) | <input type="checkbox"/> |
| Portable Device (Human body distance < 20cm) | <input checked="" type="checkbox"/> |

Modifications Incorporated in the EUT

No modifications.

Ratings and declarations

Operating Frequency Range (OFR): 2412 - 2462 MHz
Channels: 11
Channel separation: 5 MHz
Channel bandwidth: 20 MHz (802.11b)
22 MHz (802.11g)
Conducted power: 14.71 dBm
Transmission technique: DSSS
Modulation: CCK, OFDM
Antenna gain: 4.0 dBi

Power Supply

Operating voltage range: 12 VDC

Samples

Two samples were used in the testing. Normal commercial sample with integral antenna for radiated emissions and a sample with integral antenna removed and replaced with 50Ω coaxial cable and SMA-connector for conducted RF tests. During the tests the EUT was set into continuous transmit and was set to the channel under test with special software embedded to the EUT operating system. Normal test modulation and maximum transmit power was used in all tests.

Disclaimer

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. This document cannot be reproduced except in full, without prior approval of the Company.

SUMMARY OF TESTING

| Test Specification | Description of Test | Result |
|--------------------------------------|--|--------|
| §15.207(a) / RSS-GEN 8.8 | Conducted Emissions on Power Supply Lines | N/T |
| §15.247(b)(3) / RSS-247 5.4(4) | Maximum Peak Conducted Output Power | PASS |
| §15.247(a)(2) / RSS-247 5.2(1) | 6 dB Bandwidth | N/T |
| §15.247(e) / RSS-247 5.2(2) | Power Spectral Density | N/T |
| RSS-GEN 6.6 | 99% Occupied Bandwidth | N/T |
| §15.247(d) / RSS-247 5.5 | 100 kHz Bandwidth of Frequency Band Edges and Conducted Spurious Emissions | PASS |
| §15.209(a), §15.247(d) / RSS-247 5.5 | Radiated Emissions Within The Restricted Bands | PASS |

Some tests were not performed; test report will be used to apply for C2PC. Unperformed tests marked as N/T (not tested).

EUT Test Conditions During Testing

The EUT was set to transmit at its maximum duty cycle and power (setting 15). The EUT was powered from its batteries.

The EUT was set to following channels during the tests:

Channel Low (Ch 1) = 2412 MHz

Channel Mid (Ch 6) = 2437 MHz

Channel High (Ch 11) = 2462 MHz

Test Facility

| | | |
|-------------------------------------|--|--|
| <input type="checkbox"/> | Testing Location / address: FCC registration number: 90598 | SGS Fimko Ltd Särkiniementie 3 FI-00210, HELSINKI FINLAND |
| <input checked="" type="checkbox"/> | Testing Location / address: FCC registration number: 178986 Industry Canada registration number: 8708A-2 | SGS Fimko Ltd Karakaarenkuja 4 FI-02610, ESPOO FINLAND |

TEST RESULTS

Average Conducted Output Power

Standard: ANSI C63.10 (2013)
Tested by: EHA
Date: 16.8.2016
Temperature: 23 °C
Humidity: 49 %
Measurement uncertainty $\pm 2.87\text{dB}$ Level of confidence 95 % ($k = 2$)

FCC Rule: 15.247(b)(3) RSS-247 5.4(4)

For systems using digital modulation in the 2400-2483.5 MHz bands the limit is 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Average conducted output power was measured with average power meter.

The EUT was connected to the power meter via 10 dB attenuator.

Results:

Table 1: Average conducted power 802.11b

| Data rate [Mbps] | Conducted power [dBm] | | | Limit [dBm] | Result |
|---------------------|--------------------------|-------------|--------------|----------------|--------|
| | Low channel | Mid channel | High channel | | |
| 1 | 14.71 | 14.16 | 14.18 | 30 | PASS |
| 2 | 14.62 | 14.16 | 13.93 | 30 | PASS |
| 5.5 | 13.91 | 13.31 | 13.02 | 30 | PASS |
| 11 | 12.85 | 12.49 | 12.20 | 30 | PASS |

Table 2: Average conducted power 802.11g

| Data rate [Mbps] | Conducted power [dBm] | | | Limit [dBm] | Result |
|---------------------|--------------------------|-------------|--------------|----------------|--------|
| | Low channel | Mid channel | High channel | | |
| 6 | 11.68 | 12.39 | 10.87 | 30 | PASS |
| 9 | 10.82 | 11.66 | 10.01 | 30 | PASS |
| 12 | 10.20 | 11.10 | 9.45 | 30 | PASS |
| 18 | 9.16 | 10.18 | 8.52 | 30 | PASS |
| 24 | 8.16 | 9.19 | 7.47 | 30 | PASS |
| 36 | 7.24 | 7.85 | 6.58 | 30 | PASS |
| 48 | 6.46 | 6.26 | 5.77 | 30 | PASS |
| 54 | 5.51 | 4.99 | 4.86 | 30 | PASS |

Original grant test report of the module has had following output powers:

802.11b 17.96 dBm
 802.11g 20.59 dBm

Transmitter Radiated Spurious Emissions

Transmitter Radiated Spurious Emissions 30 – 26500 MHz

Standard: ANSI C63.10 (2013)
Tested by: EHA
Date: 25.8 - 2.9.2016
Humidity: 50 - 56 %
Temperature: 20 - 22 °C
Measurement uncertainty ± 4.51 dB Level of confidence 95 % (k = 2)

FCC Rule: 15.247(d), 15.209(a)
RSS-247 5.5

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. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

The correction factor in the final result table contains the sum of the transducers (antenna + amplifier + cables). The Quasi-peak value is the measured value corrected with the correction factor.

Radiated spurious emissions measurements were tested with 1Mbps data rate since it has the highest power. Measurements less than 1 GHz were performed only on middle channel.

| Frequency range [MHz] | Limit [μ V/m] | Limit [dB μ V/m] | Detector |
|-----------------------|--------------------|----------------------|------------|
| 30 - 80 | 100 | 40.0 | Quasi-peak |
| 88 - 216 | 150 | 43.5 | Quasi-peak |
| 216 - 960 | 200 | 46.0 | Quasi-peak |
| 960 - 1000 | 500 | 53.9 | Quasi-peak |
| Above 1000 | 500 | 53.9 | Average |
| Above 1000 | 5000 | 73.9 | Peak |

Low channel

Table 3: Peak results (1 Mbps / ch low)

| Frequency (MHz) | MaxPeak (dB μ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dB μ V/m) |
|-----------------|------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------------|
| 1250.025000 | 53.5 | 1000.0 | 1000.000 | 166.0 | V | 338.0 | 7.8 | 20.4 | 73.9 |
| 2385.400000 | 52.7 | 1000.0 | 1000.000 | 150.0 | V | 221.0 | 14.0 | 21.2 | 73.9 |
| 2397.325000 | 60.2 | 1000.0 | 1000.000 | 177.0 | V | 13.0 | 14.1 | 13.7 | 73.9 |
| 2412.800000 | 100.2 | 1000.0 | 1000.000 | 150.0 | V | 220.0 | 14.1 | - | - |
| 4823.900000 | 48.1 | 1000.0 | 1000.000 | 150.0 | H | 118.0 | -3.1 | 25.8 | 73.9 |
| 17186.90000 | 52.8 | 1000.0 | 1000.000 | 400.0 | V | 324.0 | 14.2 | 21.1 | 73.9 |

Transmitter Radiated Spurious Emissions

Table 4: Average results (1 Mbps / ch low)

| Frequency (MHz) | Average (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1250.025000 | 45.6 | 1000.0 | 1000.000 | 166.0 | V | 338.0 | 7.8 | 8.3 | 53.9 |
| 2385.400000 | 39.6 | 1000.0 | 1000.000 | 150.0 | V | 221.0 | 14.0 | 14.3 | 53.9 |
| 2397.325000 | 47.0 | 1000.0 | 1000.000 | 177.0 | V | 13.0 | 14.1 | 6.9 | 53.9 |
| 2412.800000 | 96.7 | 1000.0 | 1000.000 | 150.0 | V | 220.0 | 14.1 | - | - |
| 4150.000000 | 34.0 | 1000.0 | 1000.000 | 206.0 | H | 357.0 | -4.6 | 19.9 | 53.9 |
| 4249.900000 | 34.8 | 1000.0 | 1000.000 | 192.0 | H | 352.0 | -4.2 | 19.1 | 53.9 |
| 4350.000000 | 35.3 | 1000.0 | 1000.000 | 205.0 | H | 353.0 | -4.0 | 18.6 | 53.9 |
| 4823.900000 | 42.3 | 1000.0 | 1000.000 | 150.0 | H | 114.0 | -3.1 | 11.6 | 53.9 |
| 7235.100000 | 32.1 | 1000.0 | 1000.000 | 150.0 | V | 207.0 | 0.4 | 21.8 | 53.9 |
| 17187.000000 | 39.0 | 1000.0 | 1000.000 | 400.0 | H | 353.0 | 14.2 | 14.9 | 53.9 |

Middle channel

Table 5: Quasi-peak results (1 Mbps / ch mid)

| Frequency (MHz) | QuasiPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 399.998000 | 31.0 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 17.7 | 15.0 | 46.0 |
| 416.659000 | 30.8 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 18.3 | 15.2 | 46.0 |
| 533.333000 | 32.2 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 20.9 | 13.8 | 46.0 |
| 566.661000 | 32.8 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 21.6 | 13.2 | 46.0 |
| 750.028000 | 35.4 | 1000.0 | 120.000 | 100.0 | H | 0.0 | 25.2 | 10.6 | 46.0 |
| 966.669000 | 35.8 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 27.9 | 18.1 | 53.9 |

Table 6: Peak results (1 Mbps / ch mid)

| Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 399.998000 | 32.9 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 17.7 | - | - |
| 416.659000 | 32.7 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 18.3 | - | - |
| 533.333000 | 34.5 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 20.9 | - | - |
| 566.661000 | 35.2 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 21.6 | - | - |
| 750.028000 | 37.8 | 1000.0 | 120.000 | 100.0 | H | 0.0 | 25.2 | - | - |
| 966.669000 | 38.9 | 1000.0 | 120.000 | 100.0 | V | 0.0 | 27.9 | - | - |
| 1250.025000 | 53.0 | 1000.0 | 1000.000 | 190.0 | V | 352.0 | 7.8 | 20.9 | 73.9 |
| 1350.025000 | 52.2 | 1000.0 | 1000.000 | 242.0 | H | 42.0 | 7.7 | 21.7 | 73.9 |

Table 7: Average results (1 Mbps / ch mid)

| Frequency (MHz) | Average (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1250.025000 | 46.3 | 1000.0 | 1000.000 | 190.0 | V | 352.0 | 7.8 | 7.6 | 53.9 |
| 1350.025000 | 44.7 | 1000.0 | 1000.000 | 242.0 | H | 42.0 | 7.7 | 9.2 | 53.9 |
| 4550.100000 | 34.3 | 1000.0 | 1000.000 | 205.0 | H | 344.0 | -3.6 | 19.6 | 53.9 |
| 4874.000000 | 37.7 | 1000.0 | 1000.000 | 150.0 | H | 192.0 | -3.0 | 16.2 | 53.9 |

Transmitter Radiated Spurious Emissions

High channel

Table 8: Peak results (1 Mbps / ch high)

| Frequency (MHz) | MaxPeak (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1249.825000 | 53.2 | 1000.0 | 1000.000 | 191.0 | V | 0.0 | 7.8 | 20.7 | 73.9 |
| 2488.500000 | 53.4 | 1000.0 | 1000.000 | 204.0 | V | 212.0 | 14.4 | 20.5 | 73.9 |
| 4250.100000 | 43.8 | 1000.0 | 1000.000 | 150.0 | H | 347.0 | -4.2 | 30.1 | 73.9 |
| 4924.000000 | 44.8 | 1000.0 | 1000.000 | 150.0 | H | 192.0 | -3.0 | 29.1 | 73.9 |
| 17176.80000 | 51.9 | 1000.0 | 1000.000 | 400.0 | H | 40.0 | 14.2 | 22.0 | 73.9 |

Table 9: Average results (1 Mbps / ch high)

| Frequency (MHz) | Average (dBμV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin (dB) | Limit (dBμV/m) |
|-----------------|------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------|----------------|
| 1249.825000 | 45.5 | 1000.0 | 1000.000 | 191.0 | V | 0.0 | 7.8 | 8.4 | 53.9 |
| 2488.500000 | 40.8 | 1000.0 | 1000.000 | 204.0 | V | 212.0 | 14.4 | 13.1 | 53.9 |
| 4249.900000 | 34.6 | 1000.0 | 1000.000 | 192.0 | H | 353.0 | -4.2 | 19.3 | 53.9 |
| 4924.000000 | 35.7 | 1000.0 | 1000.000 | 150.0 | H | 136.0 | -3.0 | 18.2 | 53.9 |
| 17185.20000 | 38.7 | 1000.0 | 1000.000 | 400.0 | V | 359.0 | 14.2 | 15.2 | 53.9 |

Transmitter Band Edge Measurement and Conducted Spurious Emissions

Transmitter Band Edge Measurement and Conducted Spurious Emissions

Standard: ANSI C63.10 (2013)
Tested by: EHA
Date: 16.8 - 17.8.2016
Humidity: 51 %
Temperature: 23 °C
Measurement uncertainty ± 2.87 dB Level of confidence 95 % ($k = 2$)

FCC Rule: 15.247(d), 15.209(a) RSS-247 5.5

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

Measurements were performed with both modulation schemes with speed rate where highest power was achieved.

Table 10: Band edge attenuation 1 Mbps data rate

| Band Edge Attenuation | |
|-----------------------|-----------------|
| Lower Band Edge | Upper Band Edge |
| -43.4 dBc | -53.7 dBc |
| Limit: -20dBc | |

Table 11: Band edge attenuation 54 Mbps data rate

| Band Edge Attenuation | |
|-----------------------|-----------------|
| Lower Band Edge | Upper Band Edge |
| -30.6 dBc | -40.3 dBc |
| Limit: -20dBc | |

802.11b

Table 12: Conducted spurious emissions channel low 1 Mbps

| Frequency [MHz] | Level [dBm] | Limit [dBm] | Margin [dB] | Result |
|-----------------|-------------|-------------|-------------|---------|
| 970.98 | -60.03 | -14.41 | 45.62 | PASS |
| 2412.53 | 5.59 | - | - | Carrier |
| 6997.89 | -51.80 | -14.41 | 37.39 | PASS |
| 9792.21 | -51.66 | -14.41 | 37.25 | PASS |
| 12483.22 | -49.00 | -14.41 | 34.59 | PASS |
| 15532.72 | -47.27 | -14.41 | 32.86 | PASS |
| 16460.53 | -44.93 | -14.41 | 30.52 | PASS |
| 19153.23 | -46.34 | -14.41 | 31.93 | PASS |
| 24453.13 | -46.53 | -14.41 | 32.12 | PASS |
| 25016.43 | -46.05 | -14.41 | 31.64 | PASS |

Transmitter Band Edge Measurement and Conducted Spurious Emissions

Table 13: Conducted spurious emissions channel mid 1 Mbps

| Frequency [MHz] | Level [dBm] | Limit [dBm] | Margin [dB] | Result |
|-----------------|-------------|-------------|-------------|---------|
| 991.41 | -60.52 | -14.55 | 45.97 | PASS |
| 2438.03 | 5.45 | - | - | Carrier |
| 6384.13 | -51.97 | -14.55 | 37.42 | PASS |
| 8485.19 | -51.82 | -14.55 | 37.27 | PASS |
| 12500.56 | -49.15 | -14.55 | 34.59 | PASS |
| 15506.28 | -46.97 | -14.55 | 32.41 | PASS |
| 16168.23 | -45.82 | -14.55 | 31.27 | PASS |
| 19488.75 | -47.57 | -14.55 | 33.02 | PASS |
| 24484.25 | -46.33 | -14.55 | 31.78 | PASS |
| 26297.25 | -45.37 | -14.55 | 30.82 | PASS |

Table 14: Conducted spurious emissions channel high 1 Mbps

| Frequency [MHz] | Level [dBm] | Limit [dBc] | Margin [dB] | Result |
|-----------------|-------------|-------------|-------------|---------|
| 869.25 | -60.46 | -15.26 | 45.20 | PASS |
| 2463.06 | 4.74 | - | - | Carrier |
| 6988.14 | -52.02 | -15.26 | 36.77 | PASS |
| 8472.06 | -51.70 | -15.26 | 36.45 | PASS |
| 12534.87 | -49.65 | -15.26 | 34.39 | PASS |
| 15786.30 | -47.27 | -15.26 | 32.02 | PASS |
| 16199.26 | -46.13 | -15.26 | 30.87 | PASS |
| 19497.28 | -47.00 | -15.26 | 31.75 | PASS |
| 24139.73 | -46.47 | -15.26 | 31.22 | PASS |
| 26315.58 | -46.16 | -15.26 | 30.90 | PASS |

802.11g

Table 15: Conducted spurious emissions channel low 6 Mbps

| Frequency [MHz] | Level [dBm] | Limit [dBm] | Margin [dB] | Result |
|-----------------|-------------|-------------|-------------|---------|
| 813.81 | -59.56 | -18.86 | 40.70 | PASS |
| 2465.78 | 1.14 | - | - | Carrier |
| 6983.92 | -51.36 | -18.86 | 32.50 | PASS |
| 8457.35 | -51.13 | -18.86 | 32.26 | PASS |
| 11804.21 | -49.31 | -18.86 | 30.44 | PASS |
| 15834.96 | -47.16 | -18.86 | 28.29 | PASS |
| 16496.25 | -45.74 | -18.86 | 26.88 | PASS |
| 19508.06 | -47.48 | -18.86 | 28.62 | PASS |
| 24443.19 | -46.32 | -18.86 | 27.45 | PASS |
| 26220.33 | -46.23 | -18.86 | 27.36 | PASS |

Transmitter Band Edge Measurement and Conducted Spurious Emissions

Table 16: Conducted spurious emissions channel mid 6 Mbps

| Frequency [MHz] | Level [dBm] | Limit [dBm] | Margin [dB] | Result |
|-----------------|-------------|-------------|-------------|---------|
| 847.73 | -59.91 | -16.47 | 43.44 | PASS |
| 2435.78 | 3.53 | - | - | Carrier |
| 6996.02 | -52.04 | -16.47 | 35.57 | PASS |
| 8473.66 | -51.75 | -16.47 | 35.29 | PASS |
| 12502.81 | -49.50 | -16.47 | 33.03 | PASS |
| 15522.22 | -46.75 | -16.47 | 30.28 | PASS |
| 16479.00 | -45.80 | -16.47 | 29.33 | PASS |
| 19162.60 | -47.06 | -16.47 | 30.59 | PASS |
| 24434.10 | -46.42 | -16.47 | 29.95 | PASS |
| 26261.25 | -45.51 | -16.47 | 29.04 | PASS |

Table 17: Conducted spurious emissions channel high 6 Mbps

| Frequency [MHz] | Level [dBm] | Limit [dBc] | Margin [dB] | Result |
|-----------------|-------------|-------------|-------------|---------|
| 852.16 | -59.97 | -17.54 | 42.43 | PASS |
| 2414.50 | 2.46 | - | - | Carrier |
| 6896.74 | -51.95 | -17.54 | 34.41 | PASS |
| 8629.56 | -52.19 | -17.54 | 34.65 | PASS |
| 12495.31 | -49.40 | -17.54 | 31.86 | PASS |
| 15525.12 | -47.36 | -17.54 | 29.82 | PASS |
| 16461.47 | -45.06 | -17.54 | 27.52 | PASS |
| 19847.90 | -47.47 | -17.54 | 29.93 | PASS |
| 24417.97 | -46.95 | -17.54 | 29.41 | PASS |
| 25508.41 | -45.68 | -17.54 | 28.14 | PASS |

Transmitter Band Edge Measurement and Conducted Spurious Emissions

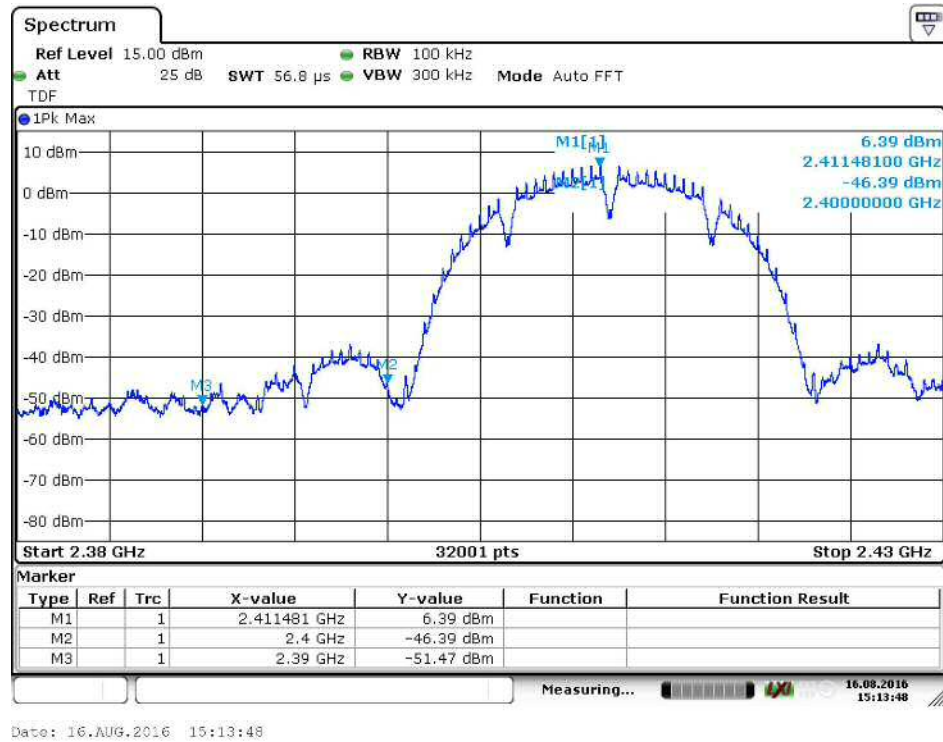


Figure 1. Lower Band Edge 1Mbps.

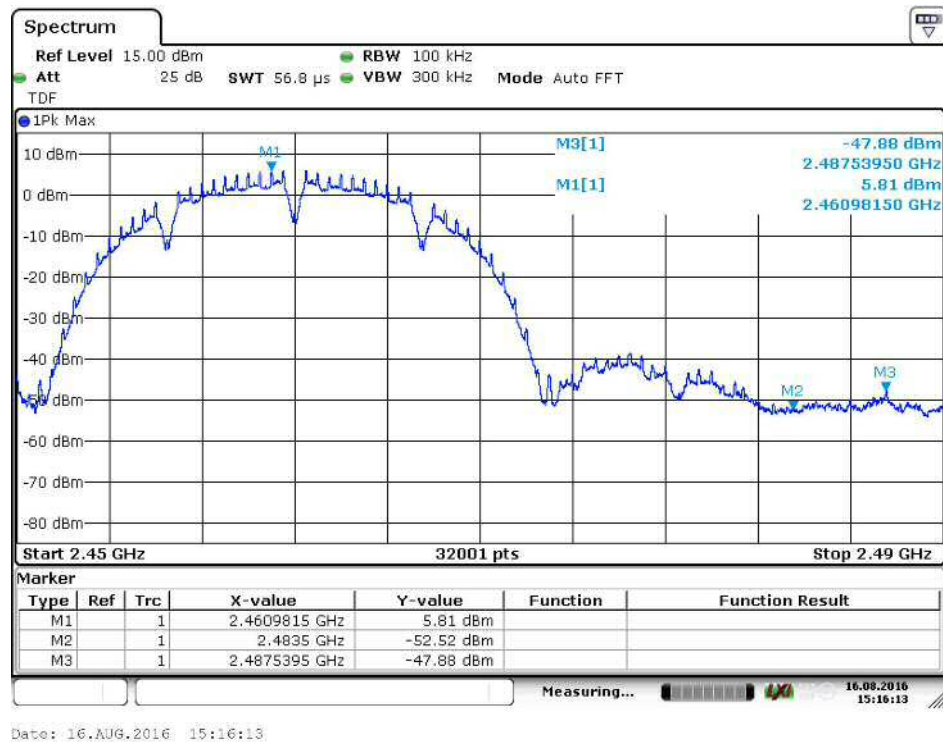


Figure 2. Upper Band Edge 1Mbps

Transmitter Band Edge Measurement and Conducted Spurious Emissions

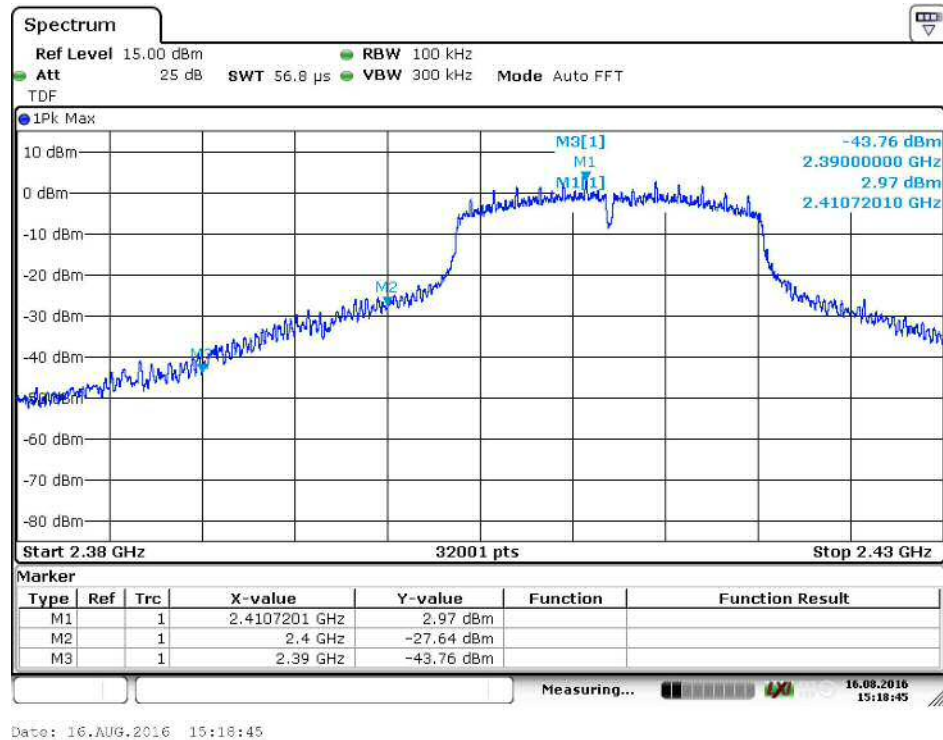


Figure 3. Lower Band Edge 6Mbps.

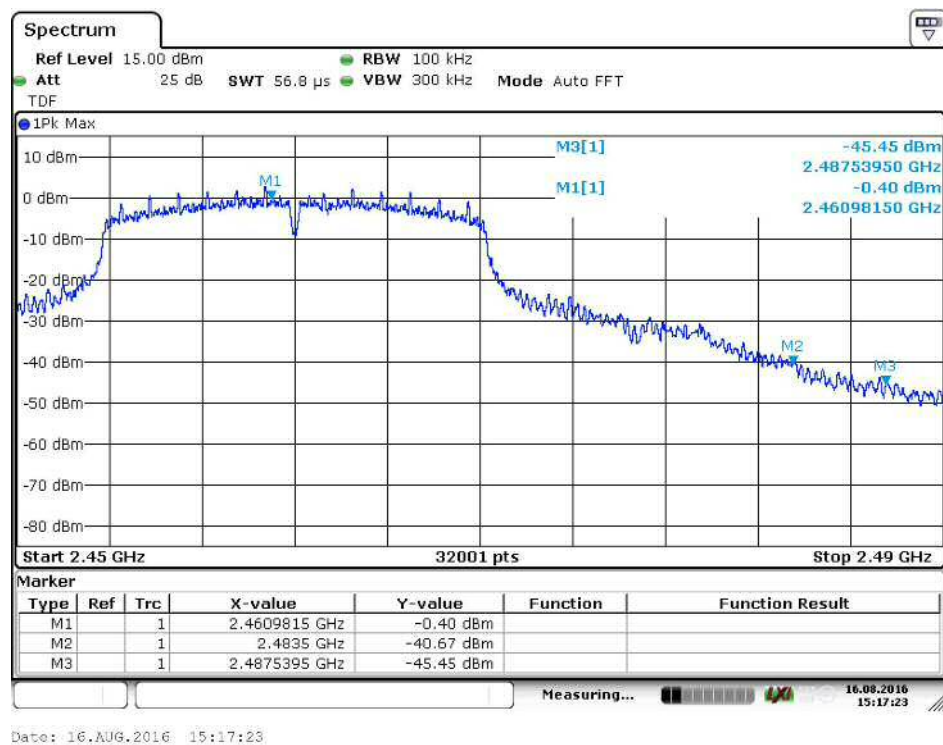


Figure 4. Upper Band Edge 6Mbps.

Transmitter Band Edge Measurement and Conducted Spurious Emissions

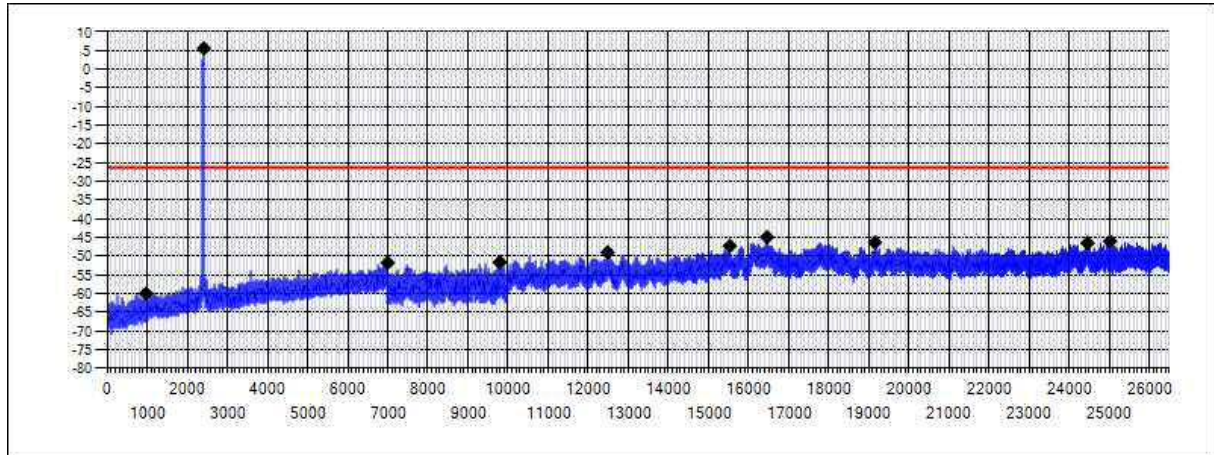


Figure 1: Conducted Spurious Emissions 30 - 26500 MHz channel low 1 Mbps

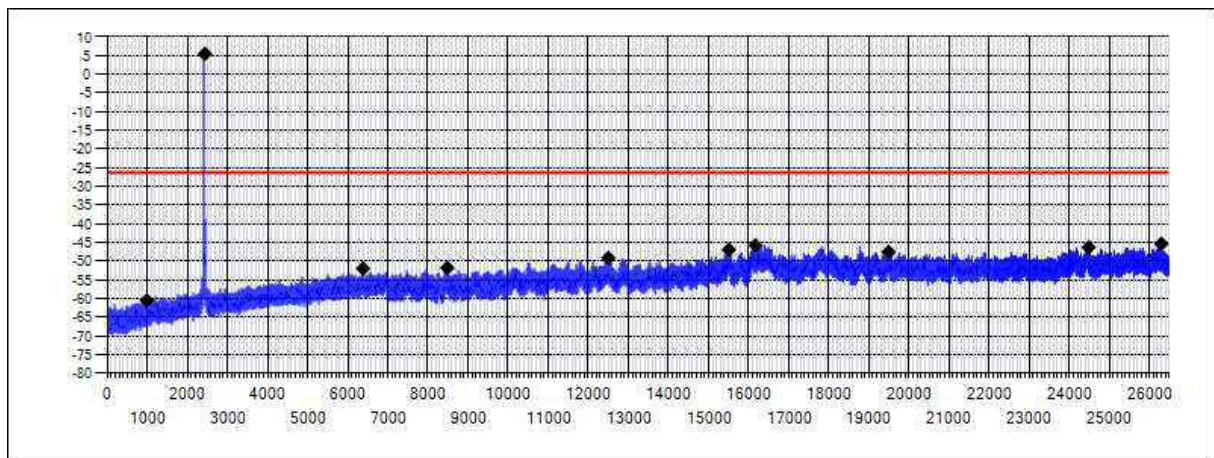


Figure 2: Conducted Spurious Emissions 30 - 26500 MHz channel mid 1 Mbps

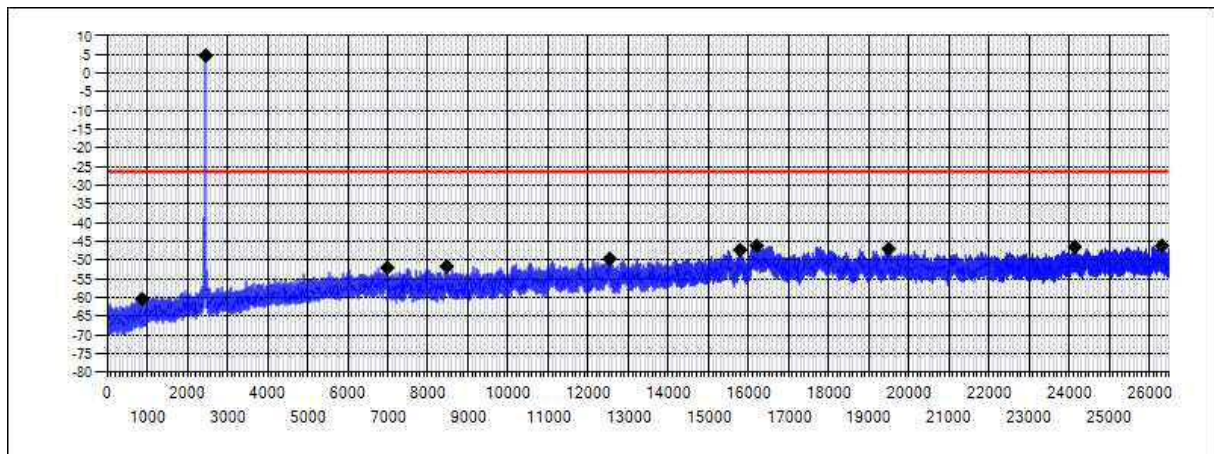


Figure 3: Conducted Spurious Emissions 30 - 26500 MHz channel high 1 Mbps

Transmitter Band Edge Measurement and Conducted Spurious Emissions

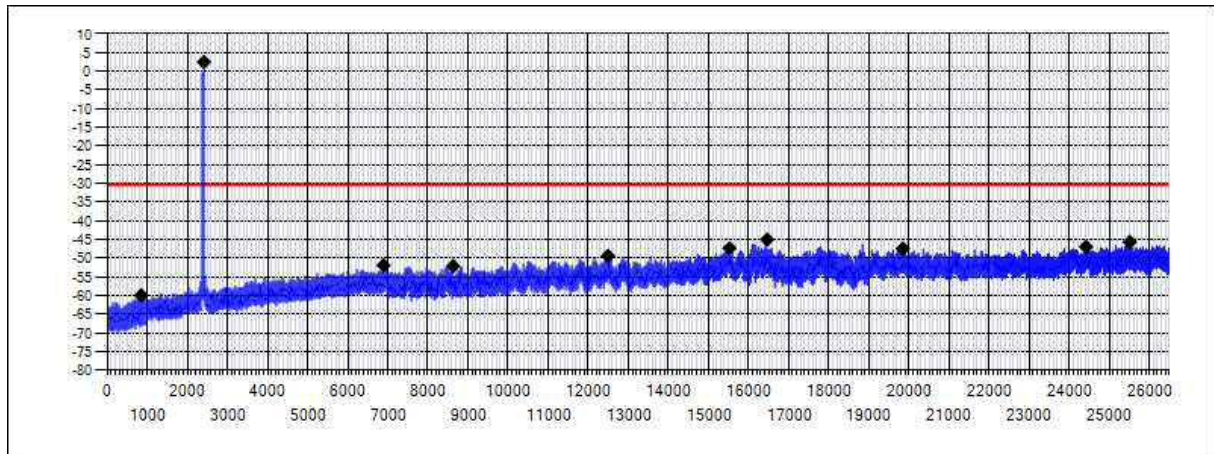


Figure 1: Conducted Spurious Emissions 30 - 26500 MHz channel low 6 Mbps

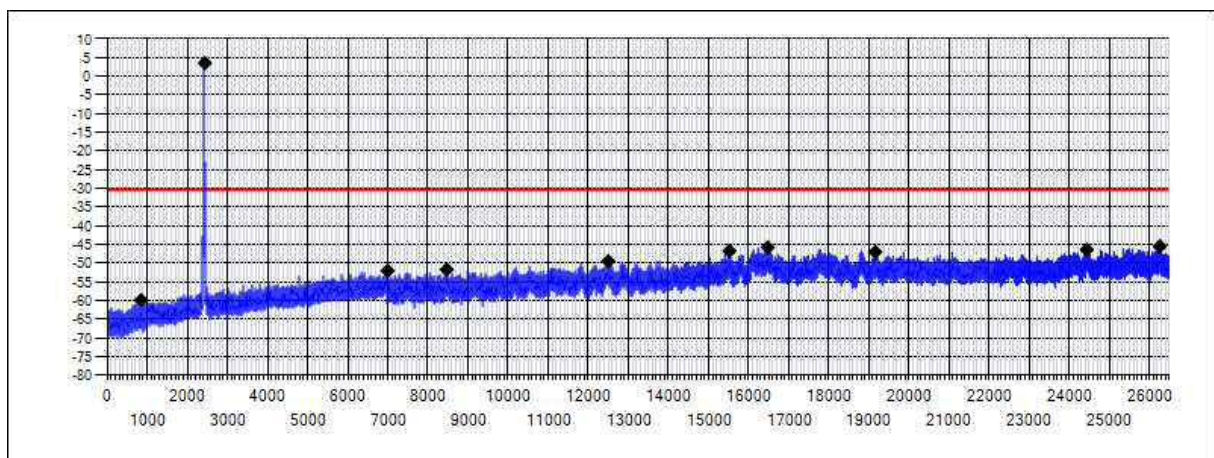


Figure 2: Conducted Spurious Emissions 30 - 26500 MHz channel mid 6 Mbps

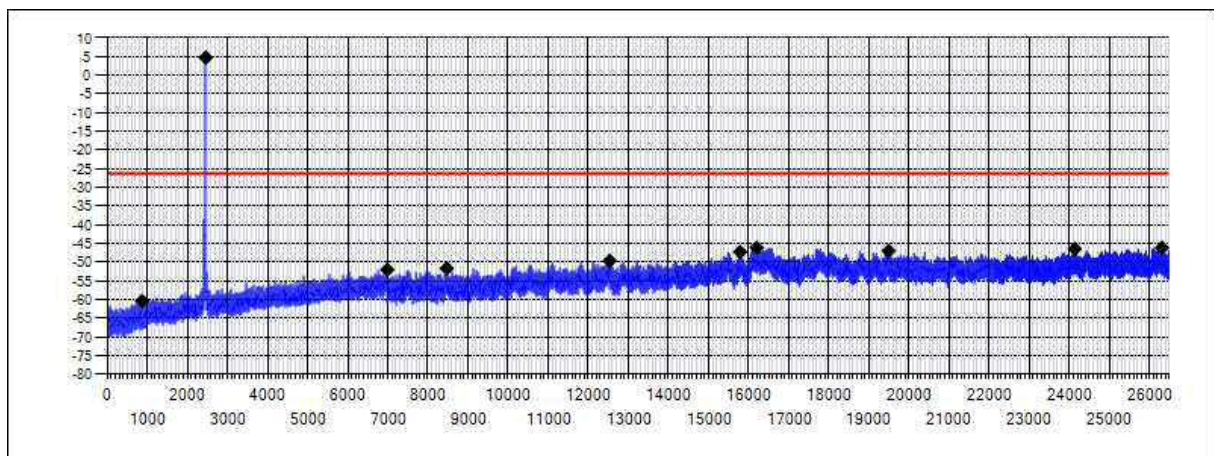


Figure 3: Conducted Spurious Emissions 30 - 26500MHz channel high 6 Mbps

TEST EQUIPMENT

| Equipment | Manufacturer | Type | Inv or serial | Prev Calib | Next Calib |
|------------------------------|------------------------|-------------------|---------------|------------|------------|
| MONITORING ANTENNA | A.H. SYSTEMS | SAS-200/518 | inv:7873 | - | - |
| MONITORING SPECTRUM ANALYZER | AGILENT | E7405A | inv:9746 | 2016-01-07 | 2018-01-07 |
| ANTENNA MAST | MATURO | TAM 4.0E | inv:10181 | - | - |
| TURNTABLE | MATURO | DS430 UPGRADED | inv:10182 | - | - |
| MAST & TURNTABLE CONTROLLER | MATURO | NCD | inv:10183 | - | - |
| PREAMPLIFIER | ALC MICROWAVE | AWB-2018-40-08 | sn:14 | 2016-08-30 | 2017-08-30 |
| PREAMPLIFIER | MERCURY SYSTEMS | ALS1826-41-12 | - | 2016-09-02 | 2017-09-02 |
| TEST SOFTWARE | ROHDE & SCHWARZ | EMC-32 | - | - | - |
| EMI TEST RECEIVER | ROHDE & SCHWARZ | ESU 26 | inv:8453 | 2016-06-10 | 2017-06-10 |
| SIGNAL ANALYZER | ROHDE & SCHWARZ | FSV40 | inv:9093 | 2016-06-10 | 2017-06-10 |
| ANTENNA | SCHWARZBECK | VULB 9168 | inv:8911 | 2014-11-04 | 2016-11-04 |
| ANTENNA | EMCO | 3117 | inv:7293 | 2016-03-16 | 2018-03-06 |
| ANTENNA | EMCO | 3160-09 | inv:7294 | 2016-03-16 | 2017-03-16 |
| HIGH PASS FILTER | WAINWRIGHT | WHKX4.0/18G-10SS | sn:10 | 2016-01-22 | 2017-01-22 |
| ATTENUATOR 10 dB | HUBER & SUHNER | 6610.19.AA | sn:7 | 2016-02-02 | 2017-02-02 |
| AC POWER SOURCE | CALIFORNIA INSTRUMENTS | 5001 iX Series II | inv:7826 | - | - |

All used measurement equipment was calibrated (if required).