# FCC Test Report

**For:**
Trackonomy System Inc.

**Brand:**
Trackonomy

**Marketing Name:**
Multifunctional IoT Platform Wall-plug

**Model Number:**
PGW-2003

**Product Description:**

Multifunctional IoT Platform Wall-plug

**FCC ID:** 2AXA8-PGW-2003

**Applied Rules and Standards:**
47 CFR Part 15.247 (DTS)

**REPORT #:** EMC_TRACK_001_23001_FCC_15_247_BLE_DTS_Rev1

**DATE:** 10/3/2023

**A2LA Accredited**

**IC recognized # 3462B**

***CETECOM* Inc.**
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## 1 Assessment

The following equipment (as identified in section 3 of this test report) was evaluated against the applicable criteria specified in FCC rules Parts 15.247 of Title 47 of the Code of Federal Regulations.

According to section 5 of this report, the overall result is Pass.

| Company | Description | Model # |
|---|---|---|
| Trackonomy System Inc. | Data transmission for IoT platform | PGW-2003 |

**Responsible for Testing Laboratory:**

| Date | Section | Name | Signature |
|---|---|---|---|
| 2023-10-03 | Compliance | Arndt Stoecker (Director of Regulatory Services) | Arndt Stoecker Digitally signed by: Arndt Stoecker DN: CN = Arndt Stoecker email = arndt.stoecker@cetecom.com C = US O = CETECOM Inc Date: 2023.10.04 18:51:41 -07'00' |

**Responsible for the Report:**

| Date | Section | Name | Signature |
|---|---|---|---|
| 2023-10-03 | Compliance | Art Thammanavarat (Senior EMC Engineer) | art. thammanavarat@cetecom.com Digitally signed by: art. thammanavarat@cetecom.com DN: CN = art. thammanavarat@cetecom.com Date: 2023.10.03 11:39:35 -07'00' |

The test results of this test report relate exclusively to the test item specified in Section3.

CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

# 2 Administrative Data

## 2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

| | |
|---|---|
| **Company Name:** | CETECOM Inc. |
| **Department:** | Compliance |
| **Street Address:** | 411 Dixon Landing Road |
| **City/Zip Code** | Milpitas, CA 95035 |
| **Country** | USA |
| **Telephone:** | +1 (408) 586 6200 |
| **Fax:** | +1 (408) 586 6299 |
| **EMC Lab Manager:** | Stoecker, Arndt |
| **Responsible Project Leader:** | Sivaraman, Sangeetha |

## 2.2 Identification of the Client

| | |
|---|---|
| **Applicant's Name:** | Trackonomy System Inc. |
| **Street Address:** | 214 Devcon Drive |
| **City/Zip Code** | San Jose, CA 95112 |
| **Country** | USA |

## 2.3 Identification of the Manufacturer

| | |
|---|---|
| **Manufacturer's Name:** | Same as Client /---------- |
| **Manufacturers Address:** | ---------- |
| **City/Zip Code** | ---------- |
| **Country** | ---------- |

# 3 Equipment Under Test (EUT)

## 3.1 EUT Specifications

| | |
|---|---|
| **Brand:** | Trackonomy |
| **Model No:** | PGW-2003 |
| **Marketing name:** | Multifunctional IoT Platform Wall-plug |
| **FCC-ID :** | 2AXA8-PGW-2003 |
| **HW Version :** | V2 |
| **SW Version :** | V2 |
| **Product Description:** | Multifunctional IoT Platform Wall-Plug |
| **Frequency Range/number of channels:** | ❖ BT LE<br>○ Nominal band: 2400 MHz – 2483.5 MHz<br>○ Center to center: 2402 MHz (ch 0) – 2480 MHz (ch 39), 40 Channels |
| **Radio information:** | ❖ Bluetooth Low Energy: Murata Electronics North America MBN52832<br>○ FCC ID: HSW2832<br>○ BT LE V4.2<br>○ Modulation: GFSK<br>○ PHY: 2M |
| **Max. Measured Conducted Output Power:** | 2M: +2.38 dBm |
| **Power Supply/ Rated Operating Voltage Range:** | 100-240VAC/50-60Hz |
| **Operating Temperature Range:** | T min: -20 ºC / T max: +60 ºC |
| **Other Radios included in the device:** | ❖ Lora: HopeRF RFM95CW-915S2<br>○ FCC ID: 2ASEORFM95C |
| **Antenna Information as declared:** | BLE antenna : Molex M/N: 146186, gain: 3dBi, FPC antenna |
| **Sample Revision:** | ☑ Production Unit; ☐ Pre-Production |
| **Product dimensions [cm]:** | 127.3 L x 72 W x 46 H |
| Note: The information of the EUT specifications in the table above is provided by the applicant. | |

## 3.2 EUT Sample details

| EUT # | Serial Number | HW Version | SW Version | Notes/Comments |
|---|---|---|---|---|
| **1** | 10-080721-F12896 | V2 | V2 | Conducted measurement |
| **2** | 10-080721-F13016 | V2 | V2 | Radiated measurement |

### 3.3 Accessory Equipment (AE) details

| AE # | Type | Model | Manufacturer | Notes/Comments |
|---|---|---|---|---|
| N/A | - | - | - | - |

### 3.4 Test Sample Configuration

| EUT Set-up # | Combination of AE used for test setup | Comments |
|---|---|---|
| **1** | EUT # 1 | The measurement equipment was connected to the 50-ohm RF port of the EUT. |
| **2** | EUT # 2 | The internal antenna was connected. |

### 3.5 Mode of Operation details

| Mode of Operation | Description of Operating modes | Additional Information |
|---|---|---|
| **Op. 1** | Bluetooth LE | ❖ An Android application on tablet provided by the client used to communicate with the device, that will not be available to the end-user to configure the BLE radio to:<br>• Maximum output power setting*1<br>• Maximum duty cycle<br>• Modulated signal<br>• PHY: 2M<br>• Select TX channel: Mid 2440 MHz |
| **Op. 2** | Idle | EUT in operating mode. Radios in standby mode. |

*1: Refer to the power settings table below provided by the client:

### 3.6 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets on the Middle channel and the highest possible duty cycle and output power.

For conducted measurements;

- All data in this report show the worst case of BLE radio transmitting at the highest output power representing the worst case of BLE transmission mode.
- All measurements were performed with a peak detector" and that the highest possible duty cycle was used for the testing.

For radiated measurements;

- All data in this report show the worst case of BLE radio transmitting at the highest output power representing the worst case of BLE transmission mode.
- All data in this report show the worst case between horizontal and vertical antenna polarizations and for all orientations of the EUT.

# 4 Subject of Investigation

The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations.

This test report is to support a request for new equipment authorization under the following:

- FCC ID: 2AXA8-PGW-2003

## 4.1 Test procedures and standards applied

- FCC part 15, Subpart C §15.247
- KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10:2013

## 5 Measurement Results Summary

| Test Specification | Test Case | Temperature and Voltage Conditions | Mode | Pass | NA | NP | Result |
|---|---|---|---|---|---|---|---|
| §15.247(a)(1) | Emission Bandwidth | Nominal | - | ☐ | ☐ | ☑ | Note 1<br>Note 3 |
| §15.247(e) | Power Spectral Density | Nominal | - | ☐ | ☐ | ☑ | Note 1<br>Note 4 |
| §15.247(b)(3) | Maximum Conducted Output Power and EIRP | Nominal | Op.1 | ☑ | ☐ | ☐ | Complies<br>Note 2, 5 |
| §15.247(d) | Band edge compliance Unrestricted Band Edges | Nominal | - | ☐ | ☐ | ☑ | Note 1<br>Note 6 |
| §15.247; 15.209; 15.205 | Band edge compliance Restricted Band Edges | Nominal | - | ☐ | ☐ | ☑ | Note 1<br>Note 6 |
| §15.247(d); §15.209 | TX Spurious emissions-Radiated | Nominal | Op.1 | ☑ | ☐ | ☐ | Complies |
| §15.207(a) | AC Conducted Emissions | Nominal | Op.2 | ☑ | ☐ | ☐ | Complies |

**Note 1:** NA: Not Applicable; NP: Not Performed.

**Note 2**: Spot check for power level verification.

**Note 3**: Leveraged from report # AT72154633-1P1, Section 7.3 (FCC ID: HSW2832)

**Note 4** Leveraged from report # AT72154633-1P1, Section 7.6 (FCC ID: HSW2832)

**Note 5**: Leveraged from report # AT72154633-1P1, Section 7.4 (FCC ID: HSW2832))

**Note 6**: Leveraged from report # AT72154633-1P1, Section 7.5 (FCC ID: HSW2832)

# 6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with a 95% confidence interval (in dB delta to result), based on a coverage factor k=2.

| Measurement System | | EMC 1 | EMC 2 |
|---|---|---|---|
| Conducted emissions (mains port) | | 1.12 dB | 0.46 dB |
| Radiated emissions | (< 30 MHz) | 3.66 dB | 3.88 dB |
| | (30 MHz – 1GHz) | 3.17 dB | 3.34 dB |
| | (1 GHz – 3 GHz) | 5.01 dB | 4.45 dB |
| | (>3 GHz) | 4.0 dB | 4.79 dB |

RF conducted measurement ±0.5 dB

According to TR 102 273, a multiplicative propagation of error is assumed for RF measurement systems. For this reason, the RMS method is applied to dB values and not to linear values as appropriate for additive propagation of error. Also used: http://physics.nist.gov/cuu/Uncertainty/typeb.html. The above calculated uncertainties apply to direct application of the Substitution method. The Substitution method is always used when the EUT comes closer than 3 dB to the limit.

## 6.1 Environmental Conditions During Testing:

The following environmental conditions were maintained during the course of testing:

- Ambient Temperature: 20-25° C
- Relative humidity: 40-60%

## 6.2 Dates of Testing:

8/8/2023 – 8/11/2023

## 6.3 Decision Rule:

Cetecom advanced follows ILAC G8:2019 chapter 4.2.1 (Simple Acceptance Rule).

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3. The measurement uncertainty is mentioned in this test report, See chapter 9, but is not taken into account – neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong.

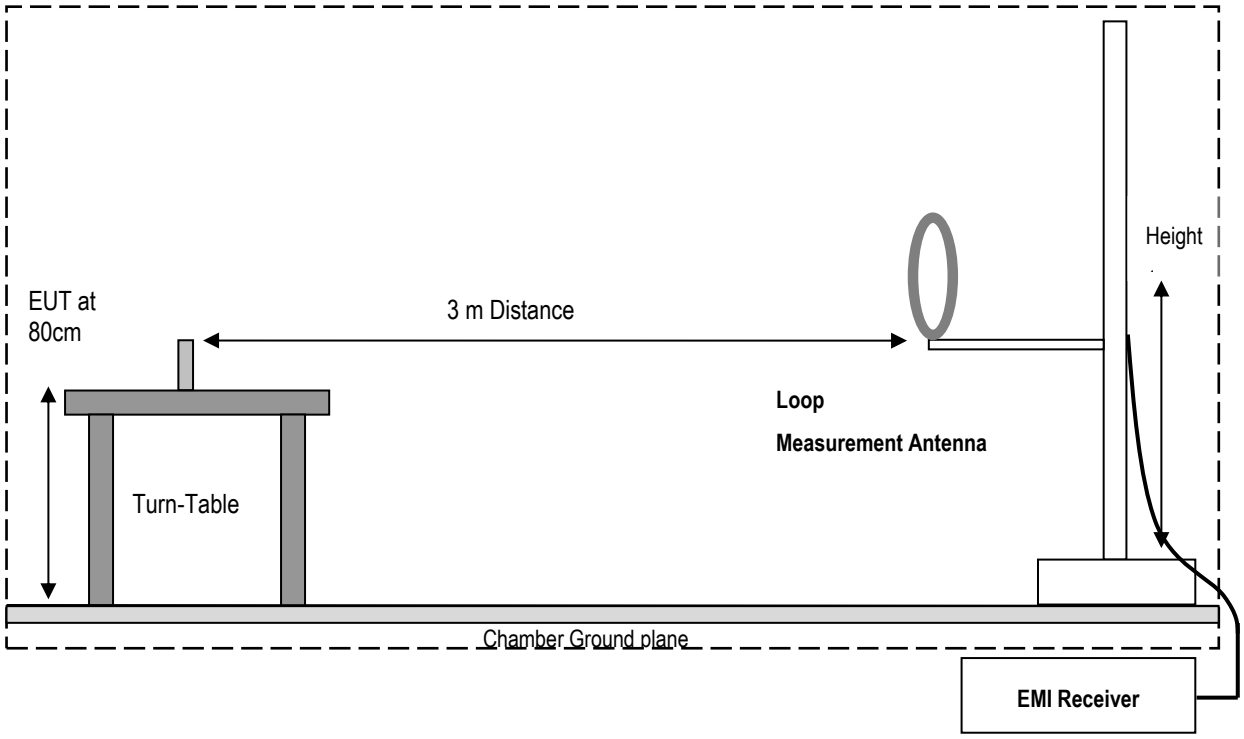
# 7 Measurement Procedures

## 7.1 Radiated Measurement

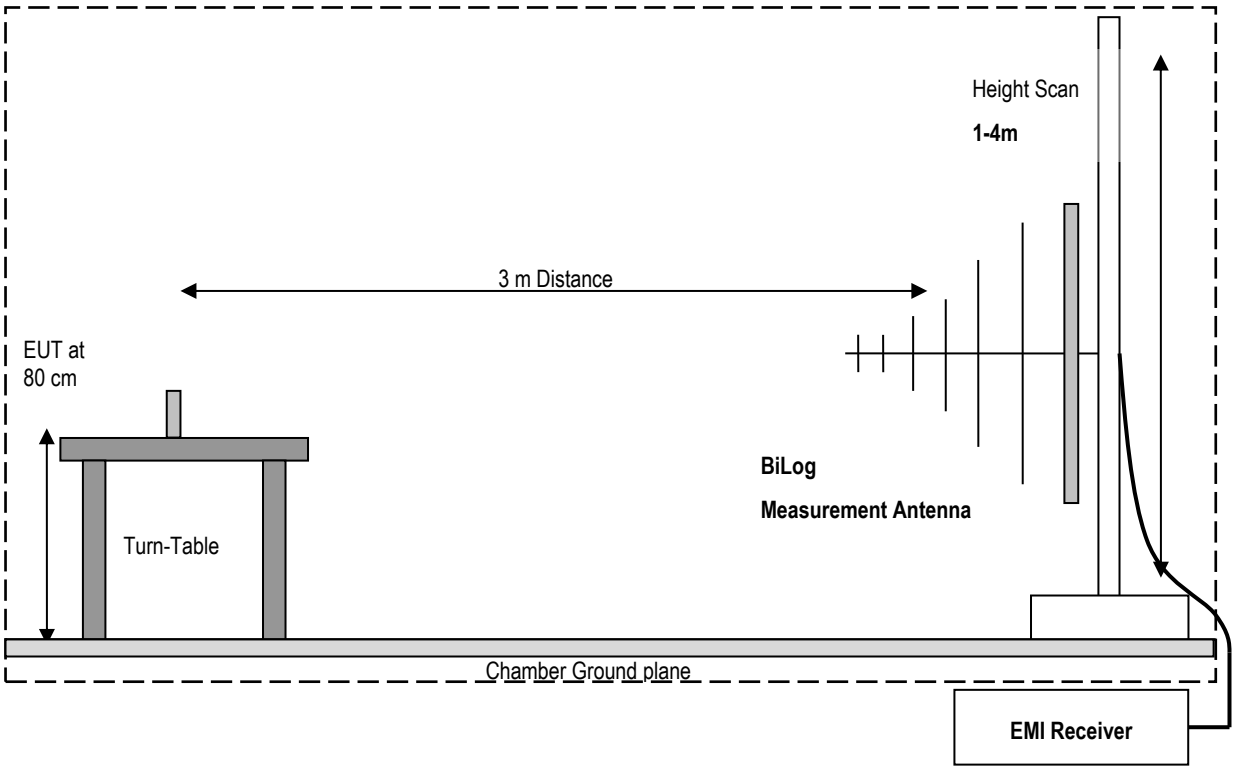
The radiated measurement is performed according to ANSI C63.10 (2013)

- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 360º continuous measurement of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to cover the 3 orthogonal axis of the EUT. A max peak detector is utilized during the exploratory measurement. The Test-SW creates an overall maximum trace for all 12 sweeps and saves the settings for each point of this trace. The maximum trace is part of the test report.
- The highest six emissions are selected with an automatic algorithm of EMC32 searching for peaks in the noise floor and ensuring that broadband signals are not selected multiple times.
- The maxima are then put through the final measurement and again maximized in a 90deg range of the turntable, fine search in frequency domain and height scan between 1m and 4m.
- The above procedure is repeated for all possible ways of power supply to EUT and for all supported modulations.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.
- The results are split into up to 4 frequency ranges due to antenna bandwidth restrictions. A magnetic loop is used from 9 kHz to 30 MHz, a Biconilog antenna is used from 30 MHz to 1 GHz, and two different horn antennas are used to cover frequencies up to 40 GHz.

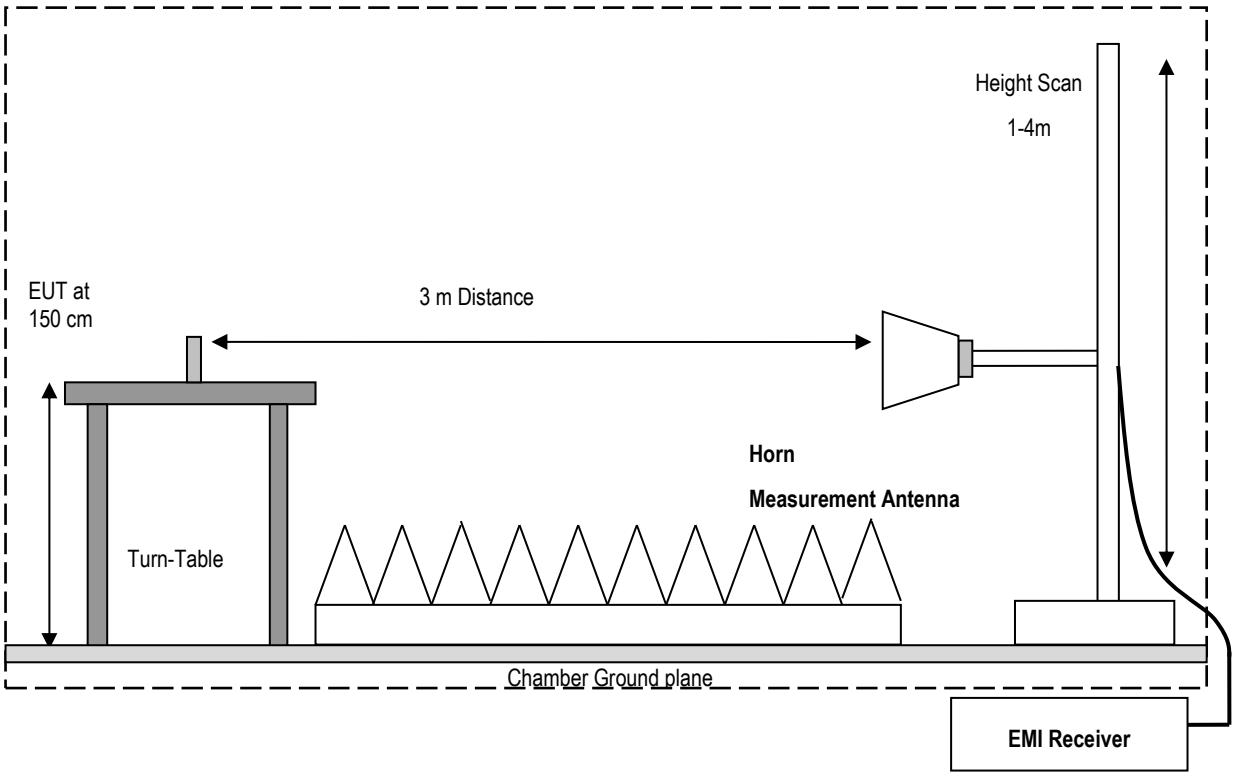
Radiated Emissions Test Setup below 30 MHz Measurements



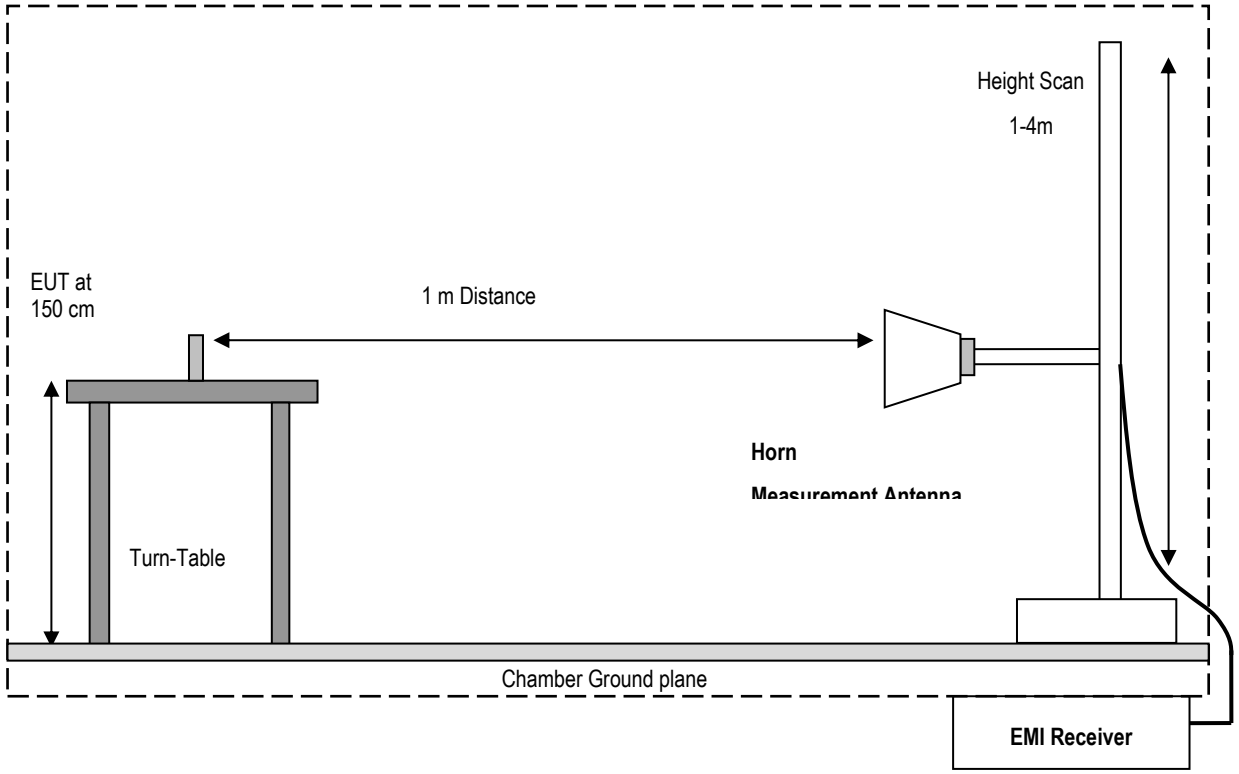
Radiated Emissions Test Setup 30 MHz-1 GHz Measurements



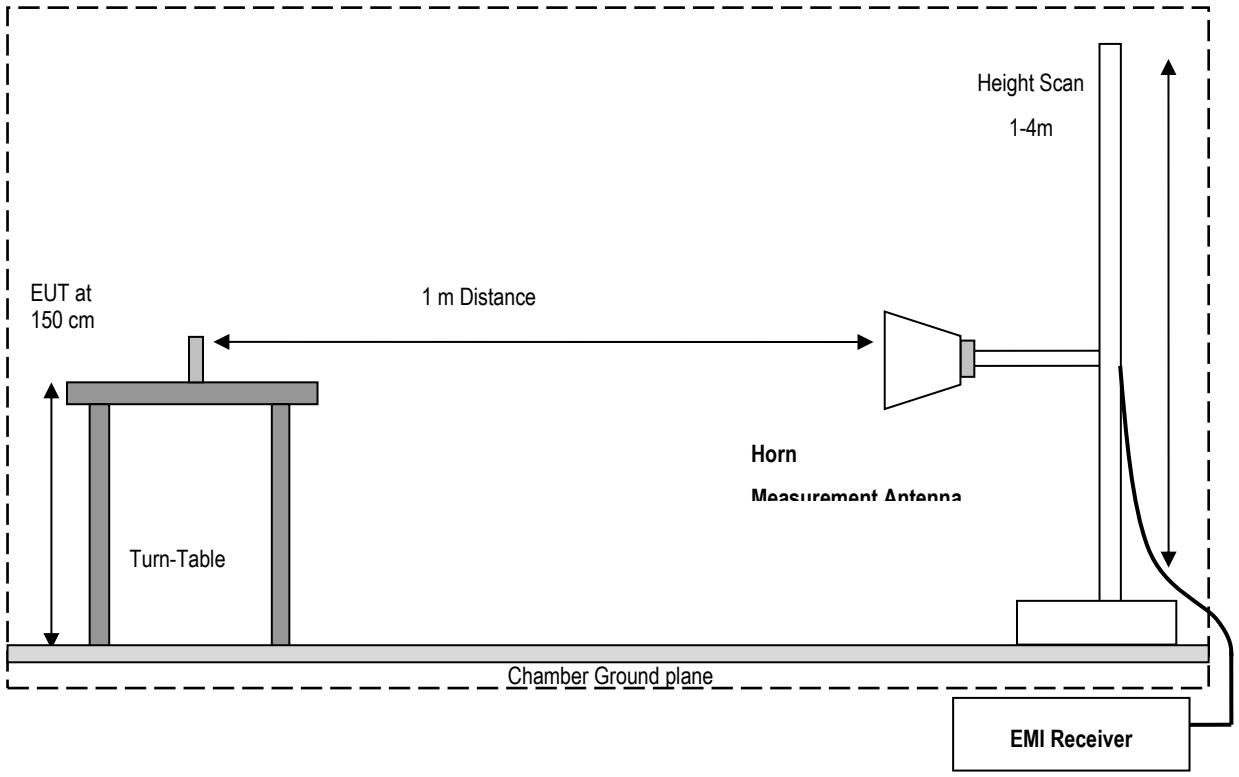

Radiated Emissions Test Setup above 1 GHz Measurements



Radiated Emissions Test Setup above 18 GHz Measurements




Radiated Emissions Test Setup above 18 GHz Measurements



### 7.1.1 Sample Calculations for Field Strength Measurements

Field Strength is calculated from the Spectrum Analyzer/ Receiver readings, taking into account the following parameters:

1. Measured reading in dBµV
2. Cable Loss between the receiving antenna and SA in dB and
3. Antenna Factor in dB/m

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the following equation:

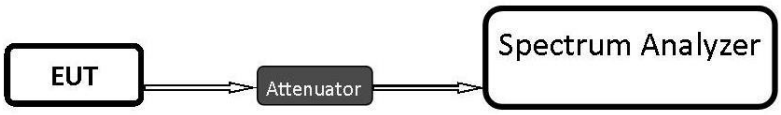
FS (dBµV/m) = Measured Value on SA (dBµV) + Cable Loss (dB) + Antenna Factor (dB/m)

Example:

| Frequency (MHz) | Measured SA (dBµV) | Cable Loss (dB) | Antenna Factor Correction (dB) | Field Strength Result (dBµV/m) |
|---|---|---|---|---|
| 1000 | 80.5 | 3.5 | 14 | 98.0 |

### 7.2 RF Conducted Measurement Procedure

Testing procedures are based on 558074 D01 15.247 Meas Guidance v05r02 – "GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES" - April 2, 2019, by the Federal Communications Commission, Office of Engineering and Technology, Laboratory Division.




- Connect the equipment as shown in the above diagram.
- Adjust the settings of the SA (Rohde-Schwarz Spectrum Analyzer) to connect the EUT at the required mode of test.
- Measurements are to be performed with the EUT set to the middle channel and for worst case modulation schemes.

# 8 Test Result Data

## 8.1 Maximum peak conducted output power

### 8.1.1 Measurement according to ANSI C63.10 clause 11.9.1.1 RBW ≥ DTS bandwidth

**Spectrum Analyzer settings:**

- RBW ≥ DTS bandwidth
- VBW ≥ 3 x RBW
- Span ≥ 3 x RBW
- Sweep = Auto couple
- Detector function = Peak
- Trace = Max hold
- Use peak marker function to determine the peak amplitude level

### 8.1.2 Limits:

**FCC §15.247: (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:**

- (3) For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

### 8.1.3 Test conditions and setup:

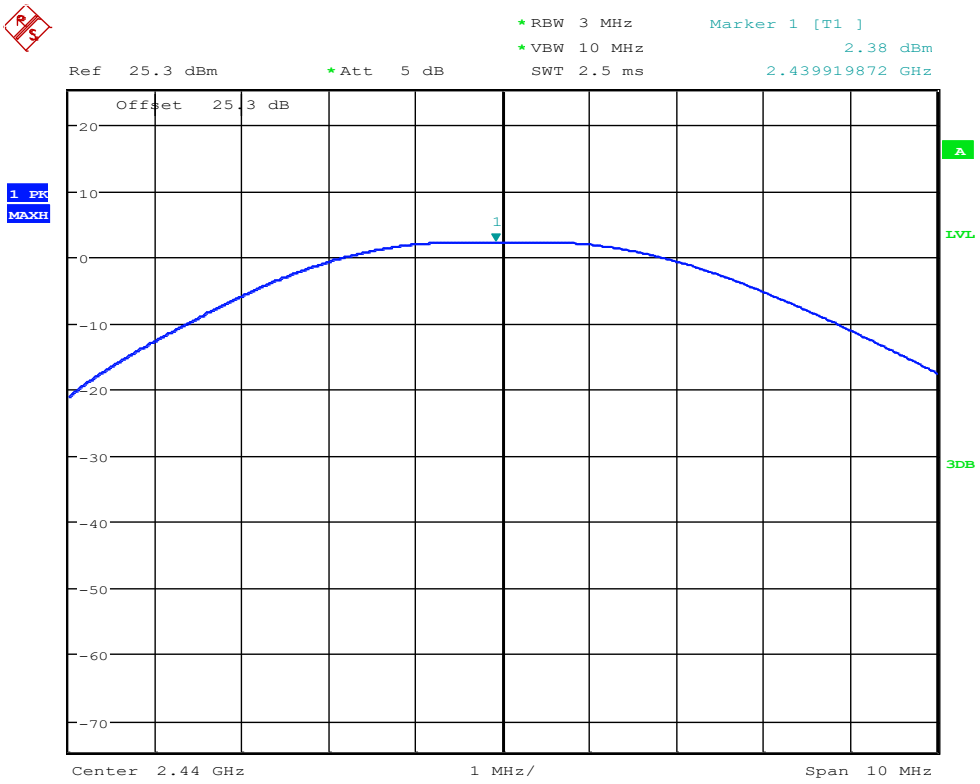
| Ambient Temperature | EUT Set-Up # | EUT operating mode | Power Input | Antenna Gain |
|---|---|---|---|---|
| 23°C | 1 | Op.1 | 110V AC | 3 dBi |

### 8.1.4 Measurement result:

| Plot # | Frequency (MHz) | PHY | Conducted output power (Watt / dBm) | Limit (Watt / dBm) | Result |
|---|---|---|---|---|---|
| 1 | 2440 | 2M | **0.002 / 2.38** | 1 / 30 | Pass |

### 8.1.5 Measurement Plots:

| Plot # 1 | | |
|---|---|---|
| **Tx Frequency: 2440 MHz** | **Mode: LE** | **PHY: 2M** |



## 8.2 Radiated Transmitter Spurious Emissions and Restricted Bands

### 8.2.1 Measurement according to ANSI C63.10 (2013)

**Spectrum Analyzer Settings:**

- Frequency = 9 KHz – 30 MHz
- RBW = 9 KHz
- Detector: Peak
- Frequency = 30 MHz – 1 GHz
- Detector = Peak / Quasi-Peak
- RBW= 120 KHz (<1GHz)
- Frequency > 1 GHz
- Detector = Peak / Average
- RBW = 1 MHz
- Radiated spurious emissions shall be measured for the transmit frequencies, transmit power, and data rate for the lowest, middle and highest channel in each frequency band of operation and for the highest gain antenna for each antenna type, and using the appropriate parameters and test requirements.
- The highest (or worst-case) data rate shall be recorded for each measurement.
- For testing at distance other than the specified in the standard, the limit conversion is calculated by using 40 dB/decade extrapolation factor as follow: Conversion factor (CF) = 40 log (D/d) = 40 log (300m / 3m) = 80dB

### 8.2.2 Limits:

**FCC §15.247**

- 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) (see §15.205(c)).

**FCC §15.209**

- Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency of emission (MHz) | Field strength (µV/m) | Measurement Distance (m) | Field strength @ 3m (dBµV/m) |
|---|---|---|---|
| 0.009–0.490 | 2400/F(kHz) / --------- | 300 | - |
| 0.490–1.705 | 24000/F(kHz) / -------- | 30 | - |
| 1.705–30.0 | 30 / (29.5) | 30 | - |
| 30–88 | 100 | 3 | 40 dBµV/m |
| 88–216 | 150 | 3 | 43.5 dBµV/m |
| 216–960 | 200 | 3 | 46 dBµV/m |
| Above 960 | 500 | 3 | 54 dBµV/m |

**FCC §15.205**

- Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| [1]0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | Above 38.6 |
| 13.36-13.41 | | | |

- 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) (see §15.205(c)).

  *PEAK LIMIT= 74 dBµV/m

  *AVG. LIMIT= 54 dBµV/m

### 8.2.3 Test conditions and setup:

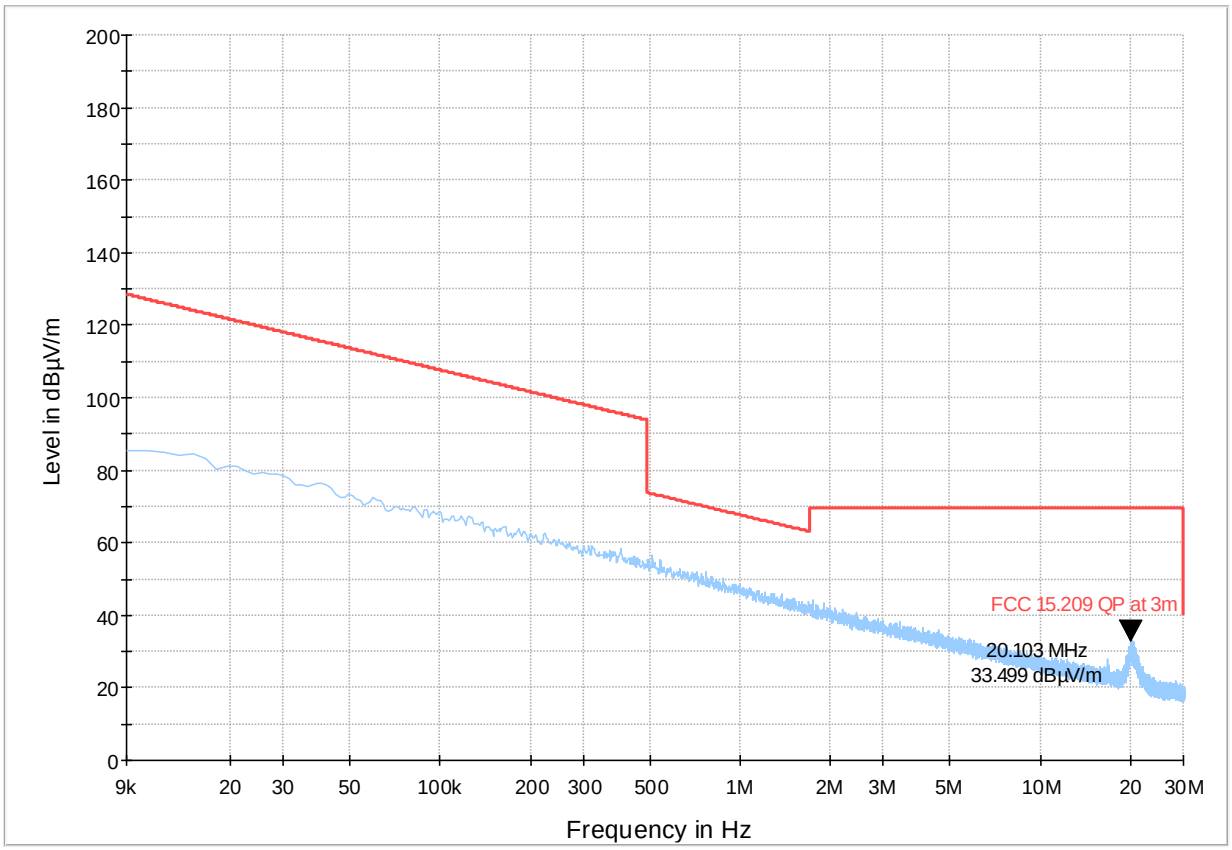
| Ambient Temperature | EUT Set-Up # | EUT operating mode | Power Input | Antenna Gain |
|---|---|---|---|---|
| 23°C | 2 | Op.1 | 110V AC | 3 dBi |

### 8.2.4 Measurement result:

| EUT Set-Up # | Plot # | Channel # | Scan Frequency | Lowest margin emission [dBµV/m] @ 3m | Limit | Result |
|---|---|---|---|---|---|---|
| 2 | 2 – 6 | Mid | 9 kHz – 26 GHz | 26.44 | See section 8.2.2 | Pass |

### 8.2.5 Measurement Plots:

| Plot # 2 Radiated Emissions: 9 KHz – 30 MHz | |
|---|---|
| Tx Frequency: 2440 MHz | PHY: 2M |

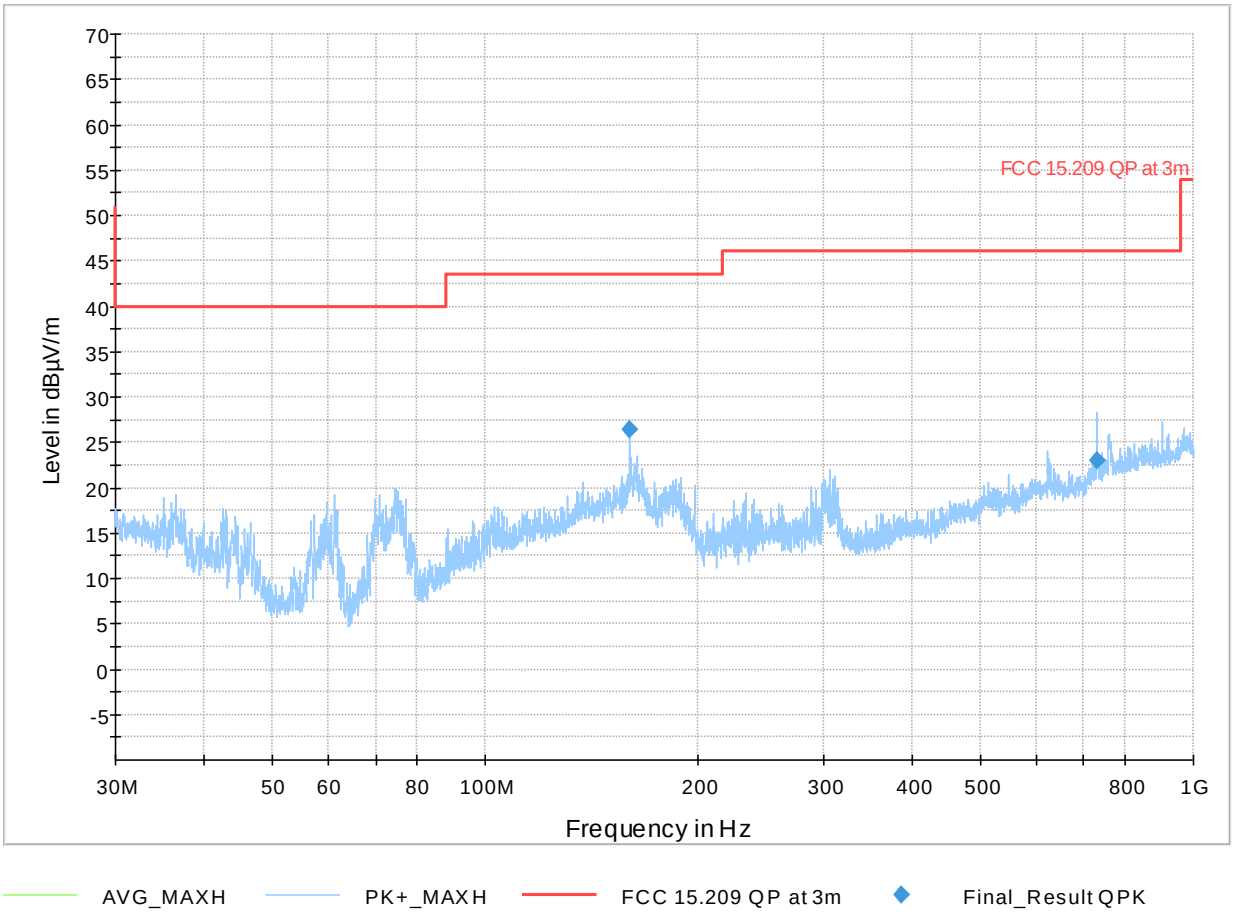


## Plot # 3 Radiated Emissions: 30 MHz – 1 GHz

**Tx Frequency: 2440 MHz** | **PHY: 2M**

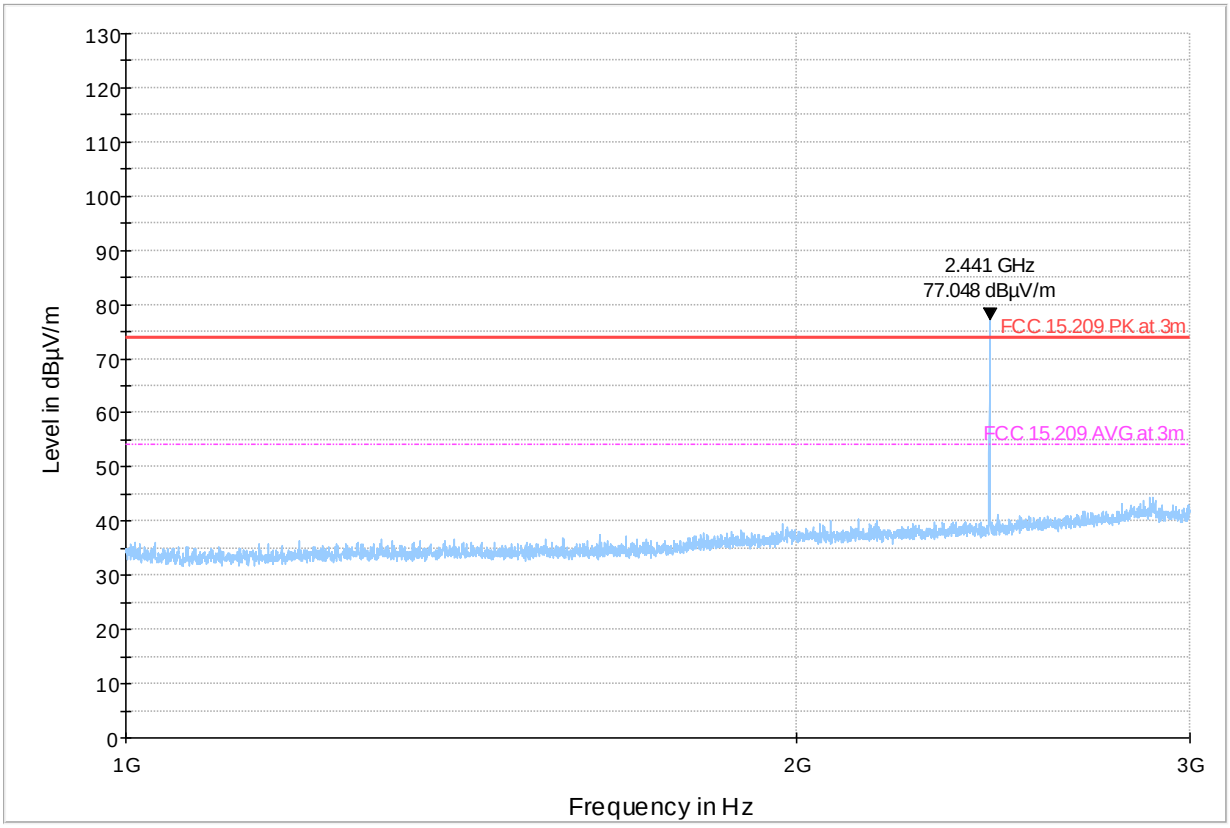
# Final_Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Sig Path (dB) | Trd Corr. (dB/m) | Raw Rec (dBµV) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 159.980 | 26.44 | 43.50 | 17.06 | 500.0 | 120.000 | 100.0 | V | 40.0 | -9.2 | -34.7 | 25.5 | 35.6 |
| 732.135 | 22.92 | 46.02 | 23.11 | 500.0 | 120.000 | 100.0 | V | 345.0 | -5.4 | -32.7 | 27.3 | 28.3 |



**Plot # 4 Radiated Emissions: 1 – 3 GHz**

| Tx Frequency: 2440 MHz | PHY: 2M |
|---|---|

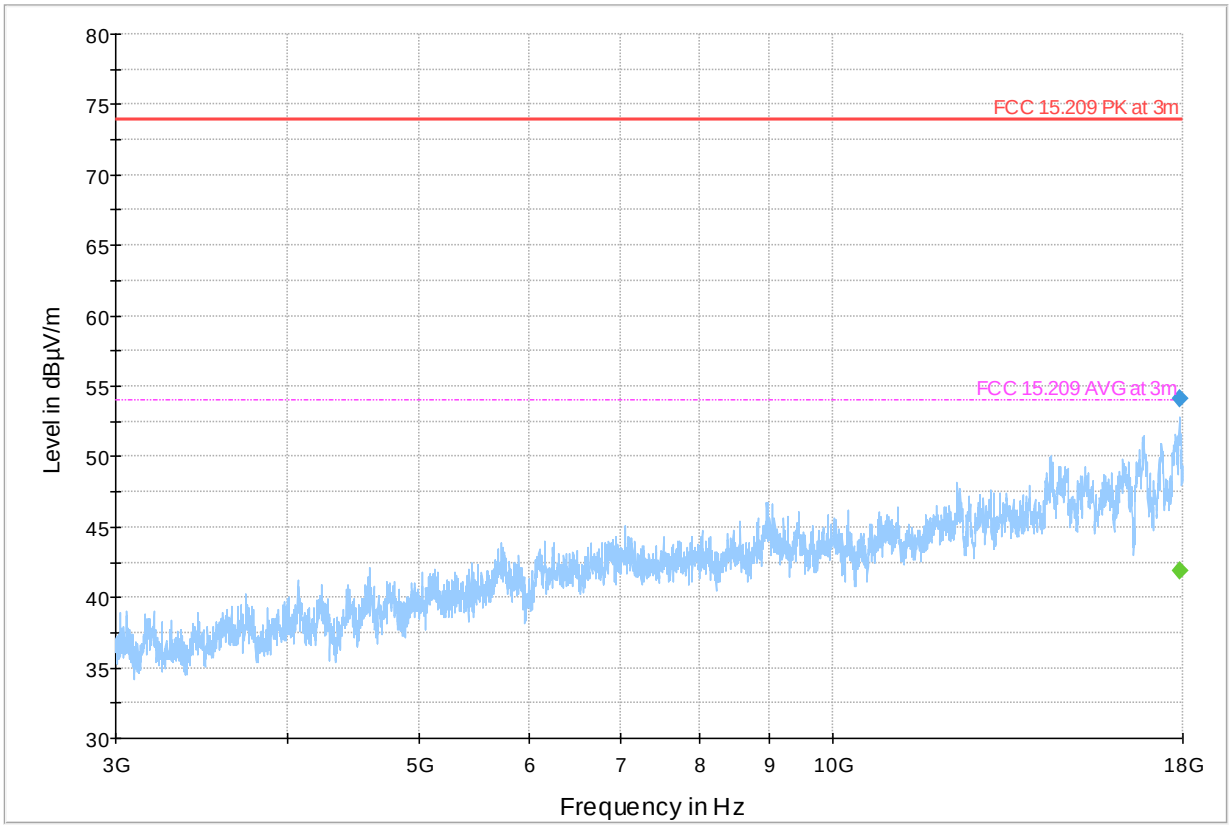


## Plot # 5 Radiated Emissions: 3 – 18 GHz

**Tx Frequency: 2440 MHz** | **PHY: 2M**

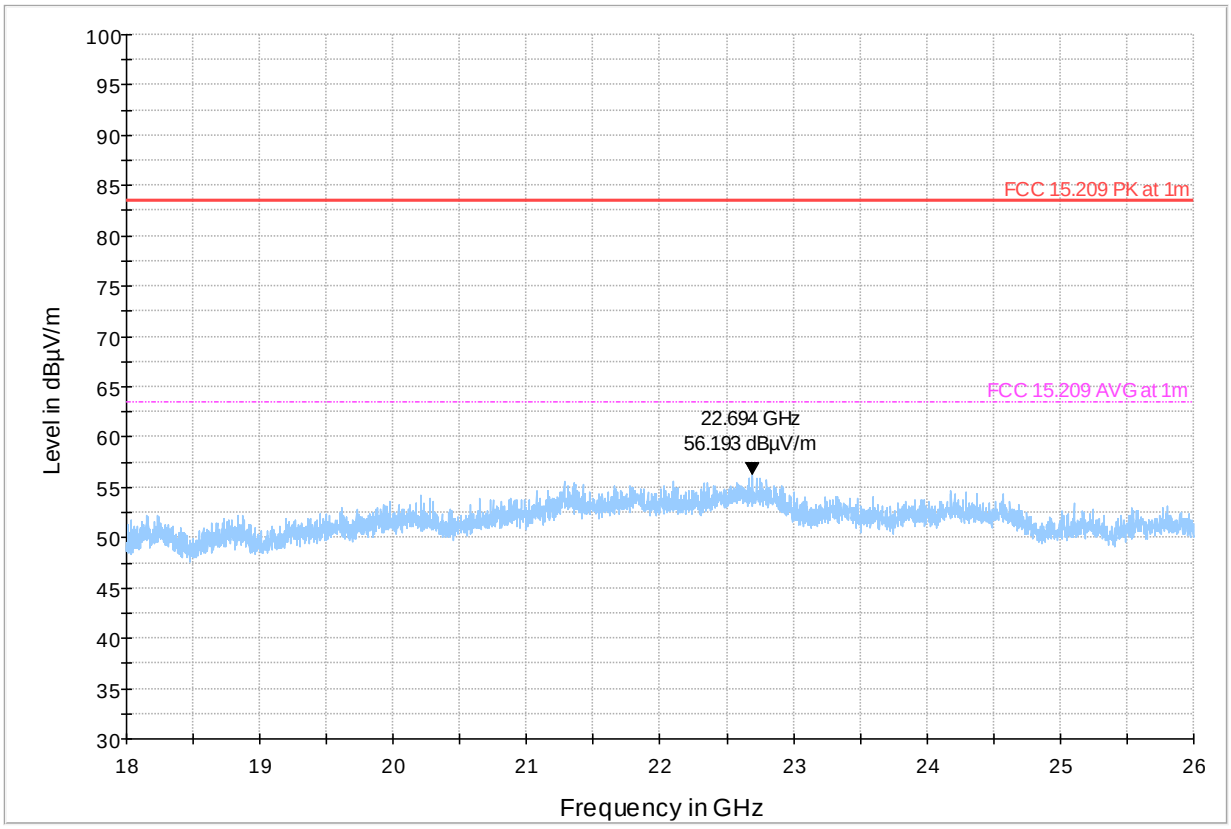
## Final_Result

| Frequency (MHz) | MaxPeak (dBµV/m) | CAverage (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Sig Path (dB) | Trd Corr. (dB/m) | Raw Rec (dBµV) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17910.0 | --- | 41.87 | 53.98 | 12.11 | 500.0 | 1000.000 | 125.0 | H | -45.0 | 18.1 | 16.2 | 1.9 | 23.7 |
| 17910.0 | 54.15 | --- | 73.98 | 19.83 | 500.0 | 1000.000 | 125.0 | H | -45.0 | 18.1 | 16.2 | 1.9 | 36.0 |



**Plot # 6 Radiated Emissions: 18 – 26 GHz**

| Tx Frequency: 2440 MHz | PHY: 2M |
|---|---|



## 8.3 AC Power Line Conducted Emissions

### 8.3.1 Measurement according to ANSI C63.4

**Analyzer Settings**

- RBW = 9 KHz (CISPR Bandwidth)
- Detector: Peak / Average for Pre-scan
- Quasi-Peak/Average for Final Measurements

### 8.3.2 Limits: §15.207

**FCC §15.207(a)**

- Except as shown in paragraphs (b) and (c) of this section of the CFR, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table (1), as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between frequency ranges.

| Frequency of emission (MHz) | Conducted limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15–0.5 | 66 to 56* | 56 to 46* |
| 0.5–5 | 56 | 46 |
| 5–30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

### 8.3.3 Test conditions and setup:

| Ambient Temperature © | Power line (L1, L2, L3, N) | Power Input |
|---|---|---|
| 23° C | Line & Neutral | 110V / 60Hz |

### 8.3.4 Measurement Result

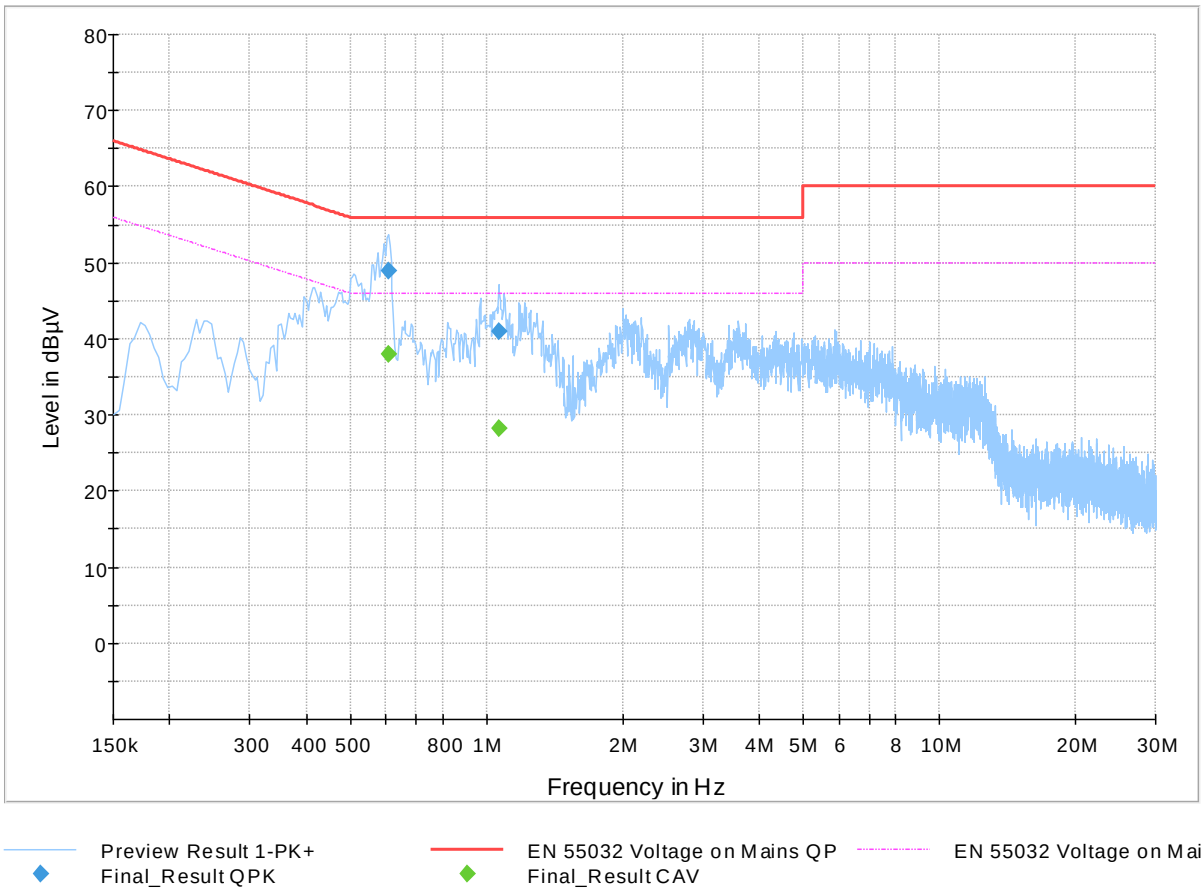
| Plot # | Port | EUT Set-Up # | EUT operating mode | Scan Frequency | Limit | Result |
|---|---|---|---|---|---|---|
| 7 | AC Mains | 2 | Op.2 | 150 kHz – 30 MHz | See section 8.3.2 | Pass |

### 8.3.5 Measurement Plots:

**Plot # 7 AC Conducted Emissions: 150 kHz – 30 MHz**

## Final_Result

| Frequency (MHz) | QuasiPeak (dBµV) | CAverage (dBµV) | Limit (dBµV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | PE | Corr. (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 0.607 | 48.914 | --- | 56.00 | 7.09 | 500.0 | 9.000 | N | GND | 10.0 |
| 0.607 | --- | 38.054 | 46.00 | 7.95 | 500.0 | 9.000 | N | GND | 10.0 |
| 1.063 | 40.953 | --- | 56.00 | 15.05 | 500.0 | 9.000 | L1 | GND | 10.1 |
| 1.063 | --- | 28.244 | 46.00 | 17.76 | 500.0 | 9.000 | L1 | GND | 10.1 |



## 9 Test setup photos

Setup photos are included in supporting file name: "EMC_TRACK_001_23001_FCC_ISED_Setup_Photos.pdf"

## 10 Test Equipment And Ancillaries Used For Testing

| Equipment Type | Manufacturer | Model | Serial # | Calibration Cycle | Last Calibration Date |
|---|---|---|---|---|---|
| ACTIVE LOOP ANTENNA | ETS LINDGREN | 6507 | 00161344 | 3 YEARS | 10/30/2020 |
| BICONILOG ANTENNA | AH-Systems | SAS-521-2 | 569 | 3 YEARS | 11/16/2021 |
| HORN ANTENNA | ETS LINDGREN | 3115 | 00035111 | 3 YEARS | 9/30/2021 |
| HORN ANTENNA | ETS LINDGREN | 3117-PA | 166067 | 3 YEARS | 6/8/2022 |
| HORN ANTENNA | ETS LINDGREN | 3116C-PA | 00169535 | 3 YEARS | 9/23/2020 |
| EMI RECEIVER | R&S | ESW44 | 101715 | 3 YEARS | 4/12/2021 |
| SPECTRUM ANALYZER | R&S | FSU26 | 200065 | 3 YEARS | 8/25/2021 |
| DIGITAL THERMOMETER | CONTROL COMPANY | 36934-164 | 191871986 | 3 YEARS | 10/20/2021 |
| LISN | FCC | FCC-LISN-50-25-2-08 | 8014 | 3 YEARS | 8/31/2021 |

**Note:** Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels.

Calibration due dates, unless defined specifically, falls on the last day of the month. Items indicated "N/A" for cal status either do not specifically require calibration or are internally characterized before use.

## 11 History

| Date | Report Name | Changes to report | Report prepared by |
|---|---|---|---|
| 8/29/2023 | EMC_TRACK_001_23001_FCC_15_247_BLE_DTS | Initial Version | Art Thammanavarat |
| 10/3/2023 | EMC_TRACK_001_23001_FCC_15_247_BLE_DTS_Rev1 | Report Revised.<br>1. Section 5: Adding Note and Corrected Typo.<br>2. Updated 9k to 30MHz plot | Art Thammanavarat |

<<< The End >>>