



FCC / ISED Test Report

FOR:
Innophase Inc.

Model Name:
INP1014

Product Description:
Low Power WiFi/BLE IOT Module

FCC ID: 2AVAL-INP2045A
IC ID: 25715-INP2045A

Applied Rules and Standards:
47 CFR Part 15.247 (DTS)
RSS-247 Issue 2 (DTS) & RSS-Gen Issue 5

REPORT #: EMC_INNOP-018-21001_INP1014_15.247_BT_DTS

DATE: 2021-12-16



A2LA Accredited

IC recognized #
3462B-1
CABID: US0187

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1 Assessment

The following device was evaluated against the applicable criteria specified in FCC rules Parts 15.247 of Title 47 of the Code of Federal Regulations and the relevant ISED Canada standard RSS-247.

No deviations were ascertained.

| Company | Description | Model # |
|----------------|-------------------------------|---------|
| Innophase Inc. | Low Power WiFi/BLE IOT Module | INP1014 |

Responsible for Testing Laboratory:

| 2021-12-16 | Compliance | Kevin Wang (EMC Lab Manager) |
|------------|------------|---------------------------------|
| Date | Section | Name |

Responsible for the Report:

| 2021-12-16 | Compliance | Yuchan Lu (Test Engineer) |
|------------|------------|------------------------------|
| Date | Section | Name |

The test results of this test report relate exclusively to the test item specified in Section 3.

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: | Kevin Wang |
| Responsible Project Leader: | Akanksha Baskaran |

2.2 Identification of the Client

| | |
|------------------------|---------------------|
| Client's Name: | Innophase Inc. |
| Street Address: | 6815 Flanders Drive |
| City/Zip Code: | San Diego, CA 92121 |
| Country: | USA |

2.3 Identification of the Manufacturer

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

3 Equipment Under Test (EUT)

3.1 EUT Specifications

| | |
|---|---|
| Model No: | INP1014 |
| HW Version : | REV1.0 |
| SW Version : | Rel2.2 |
| FCC-ID: | 2AVAL-INP2045A |
| IC-ID: | 25715-INP2045A |
| HVIN: | INP1014 |
| PMN: | Talaria TWO |
| Product Description: | Low Power WiFi/BLE IOT Module |
| Frequency Range / number of channels: | Module name: Talaria TWO Module number: INP2045-H FCC/IC ID: 2AVAL-INP2045/25715-INP2045 Nominal band: 2400 MHz – 2483.5 MHz; Center to center: 2402 MHz (ch 0) – 2480 MHz (ch 39), 40 channels |
| Type(s) of Modulation: | Bluetooth Low Energy, using Dynamic Sequence Spread Spectrum with GFSK modulation. |
| Modes of Operation: | Bluetooth LE in both advertising and connected mode of operation |
| Antenna Information as declared: | PCB Antenna 5.33 dBi |
| Max. Peak Output Power: | Conducted Power 8.24 dBm |
| Power Supply/ Rated Operating Voltage Range: | Low 3.0 VDC, High 3.6 VDC |
| Operating Temperature Range: | Low -40°C, High 85°C |
| Other Radios included in the device: | ❖ <u>WLAN</u> <ul style="list-style-type: none">Module name: Talaria TWOModule number: INP2045-HFCC/IC ID: 2AVAL-INP2045/25715-INP2045 |
| Sample Revision: | <input type="checkbox"/> Prototype Unit; <input type="checkbox"/> Production Unit; <input checked="" type="checkbox"/> Pre-Production |

3.2 EUT Sample details

| EUT # | Sample Number | HW Version | SW Version | Notes/Comments |
|-------|---------------|------------|------------|--------------------|
| 1 | 14120005 | REV1.0 | Rel2.2 | Radiated Emissions |

3.3 Accessory Equipment details

| AE # | Type | Manufacture | Model | P/N |
|------|-----------------|-------------|-------|-----|
| 1 | USB Power Cable | - | - | - |

3.4 Support Equipment (SE) details

| SE # | Type | Model | Manufacturer | Serial Number |
|------|---------------|--------------|------------------------|---------------|
| 1 | AC/DC Adapter | PSAI05R-050Q | Switching Power Supply | - |

3.5 Test Sample Configuration

| EUT Set-up # | Combination of AE used for test set up | Comments |
|--------------|--|--|
| 1 | EUT#1 + AE#1 | Special commands through command window used to configure the BLE radio to low, mid and high channels provided by the client that will not be available to the end user. |

3.6 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets on low, mid and high channels. The EUT was configured to the highest duty cycle and output power at 5 dBm through commands.

For radiated measurements, all data in this report shows 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 and Radio Standard Specification RSS-247 of ISED Canada.

Testing procedures are based on 558074 D01 DTS Meas Guidance v05r02 – “GUIDANCE FOR PERFORMING COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEMS (DTS) OPERATING UNDER SECTION 15.247” - April 2, 2019, by the Federal Communications Commission, Office of Engineering and Technology, Laboratory Division.

5 Measurement Results Summary

| Test Specification | Test Case | Temperature and Voltage Conditions | Mode | Pass | NA | NP | Result |
|--|---|------------------------------------|------|-------------------------------------|--------------------------|-------------------------------------|----------------|
| §15.247(a)(1) RSS-247 5.2(1) | Emission Bandwidth | Nominal | BTLE | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1 Note2 |
| §15.247(e) RSS-247 5.2(2) | Power Spectral Density | Nominal | BTLE | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1 Note2 |
| §15.247(b)(1) RSS-247 5.4(4) | Maximum Conducted Output Power and EIRP | Nominal | BTLE | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1 Note2 |
| §15.247(d) RSS-247 5.5 | Band edge compliance Unrestricted Band Edges | Nominal | BTLE | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1 Note2 |
| §15.247; 15.209; 15.205 RSS-Gen 8.9; 8.10 | Band edge compliance Restricted Band Edges | Nominal | BTLE | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
| §15.247(d); §15.209 RSS-Gen 6.13 | TX Spurious emissions- Radiated | Nominal | BTLE | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
| §15.207(a) RSS Gen 8.8 | AC Conducted Emissions | Nominal | BTLE | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |

Note1: NA= Not Applicable; NP= Not Performed.

Note2: The conducted measurements are leveraged from report EMC_INNOP-018-21001_INP1015_15.247_BT_DTS for compliance against the applicable rules.

6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with 95% confidence interval (in dB delta to result), based on a coverage factor k=1.

Radiated measurement

| | |
|--------------------|---------------------------------|
| 9 kHz to 30 MHz | ±2.5 dB (Magnetic Loop Antenna) |
| 30 MHz to 1000 MHz | ±2.0 dB (Biconilog Antenna) |
| 1 GHz to 40 GHz | ±2.3 dB (Horn Antenna) |

Conducted measurement

| | |
|-------------------|----------------|
| 150 kHz to 30 MHz | ±0.7 dB (LISN) |
|-------------------|----------------|

| | |
|--------------------------|---------|
| 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:

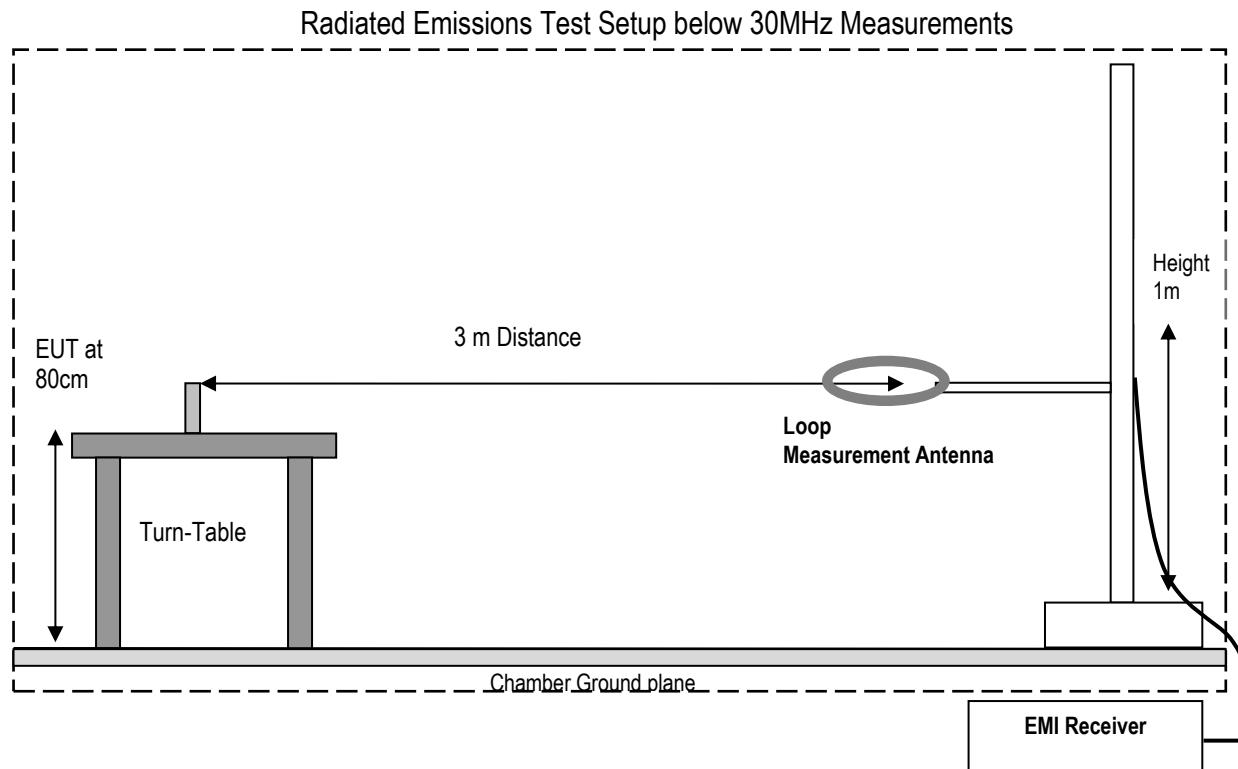
09/23/2021-10/07/2021

7 Measurement Procedures

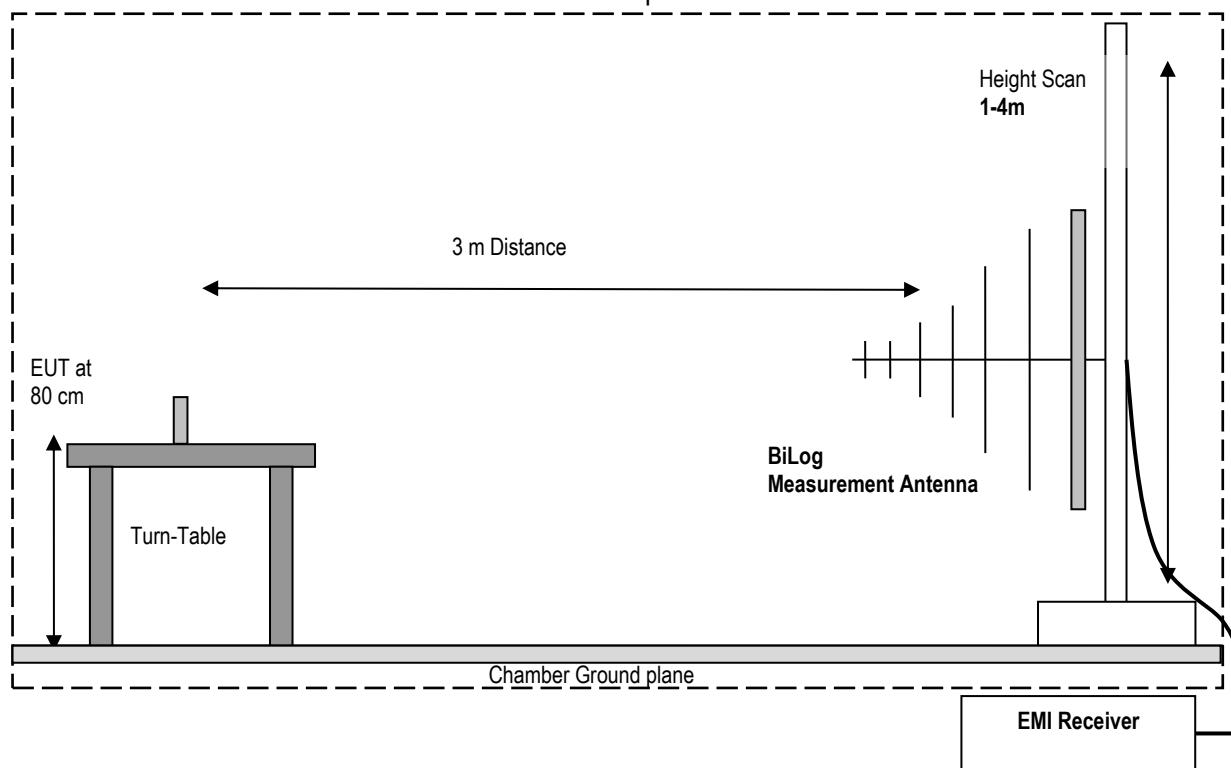
7.1 Radiated Measurement

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

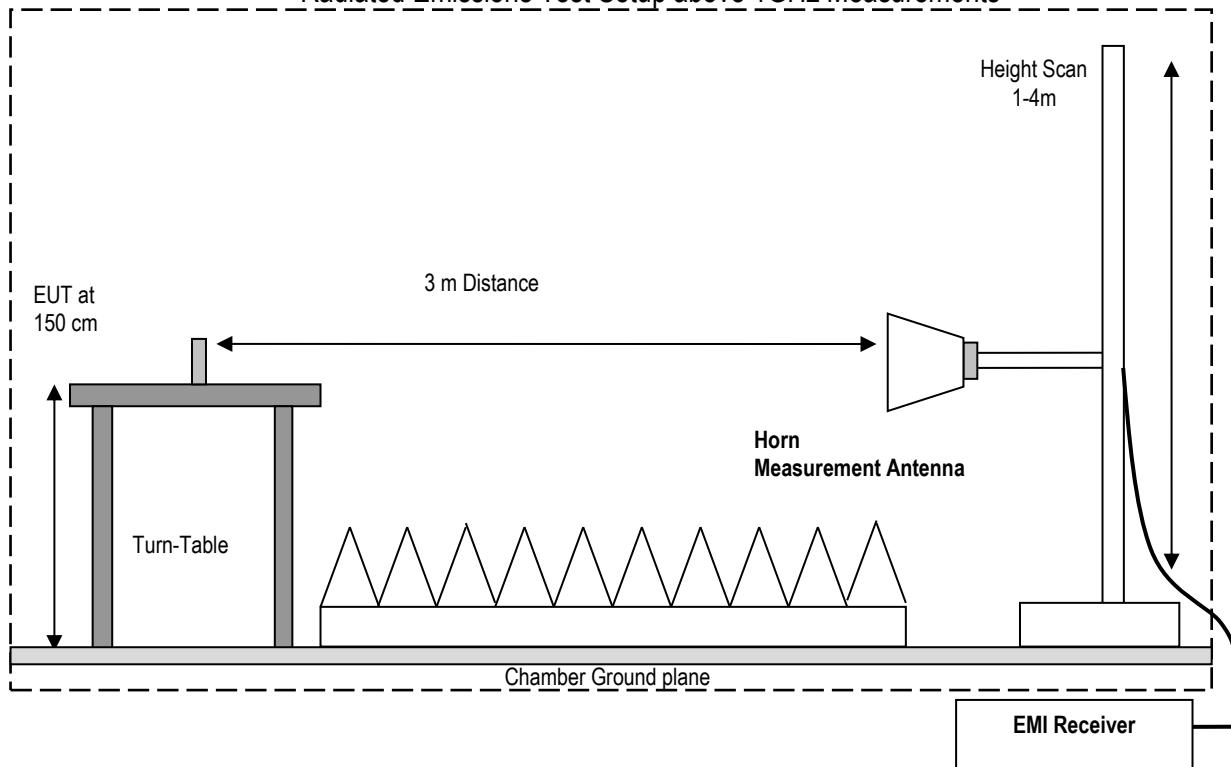
- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to 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 10 highest 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 up 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 30MHz-1GHz Measurements



Radiated Emissions Test Setup above 1GHz 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 dB μ V
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:

$$FS \text{ (dB}\mu\text{V/m)} = \text{Measured Value on SA (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$$

Example:

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

8 Test Result Data

8.1 Band Edge Compliance

8.1.1 Limits restricted band §15.247/15.209/15.205 and RSS-Gen 8.9/8.10

- *PEAK LIMIT= 74 dB μ V/m @3m =-21.23 dBm
- *AVG LIMIT= 54 dB μ V/m @3m =-41.23 dBm
- Start frequency & stop frequency according to frequency range specified in the restricted band table in FCC section 15.205 & RSS-Gen 8.10
- Measurements with a peak detector were used to show compliance to average limits, thus showing compliance to both peak and average limits.

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

(b)

| MHz | MHz | MHz | GHz |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| 10.495-0.505 | 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 | | | |

8.1.2 Measurement Results

| EUT operating mode | Band Edge | Measured Peak Value (dBm) | Corrected by duty cycle | Corrected by Antenna Gain (dBm) | Limit (dBm) | Result |
|-------------------------------|--------------------------|---------------------------|-------------------------|---------------------------------|-------------|--------|
| GFSK continuous fixed channel | Upper Restricted peak | -30.23 | NA | -24.9 | -21.23 Peak | Pass |
| GFSK continuous fixed channel | Upper Restricted Average | -49.06 | -48.96 | -43.63 | -41.23 AVG | Pass |

Note: the conducted results leveraged from report: EMC_INNOP-018-21001_INP1015_15.247_BT_DTS.

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) = $40 \log(D/d) = 40 \log(300m / 3m) = 80\text{dB}$

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 & RSS-Gen 8.9

- 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 (μ V/m) | Measurement Distance (m) | Field strength @ 3m (dB μ V/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 dB μ V/m |
| 88–216 | 150 | 3 | 43.5 dB μ V/m |
| 216–960 | 200 | 3 | 46 dB μ V/m |
| Above 960 | 500 | 3 | 54 dB μ V/m |

FCC §15.205 & RSS-Gen 8.10

- 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 |
| 10.495-0.505 | 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 dB μ V/m

*AVG. LIMIT= 54 dB μ V/m

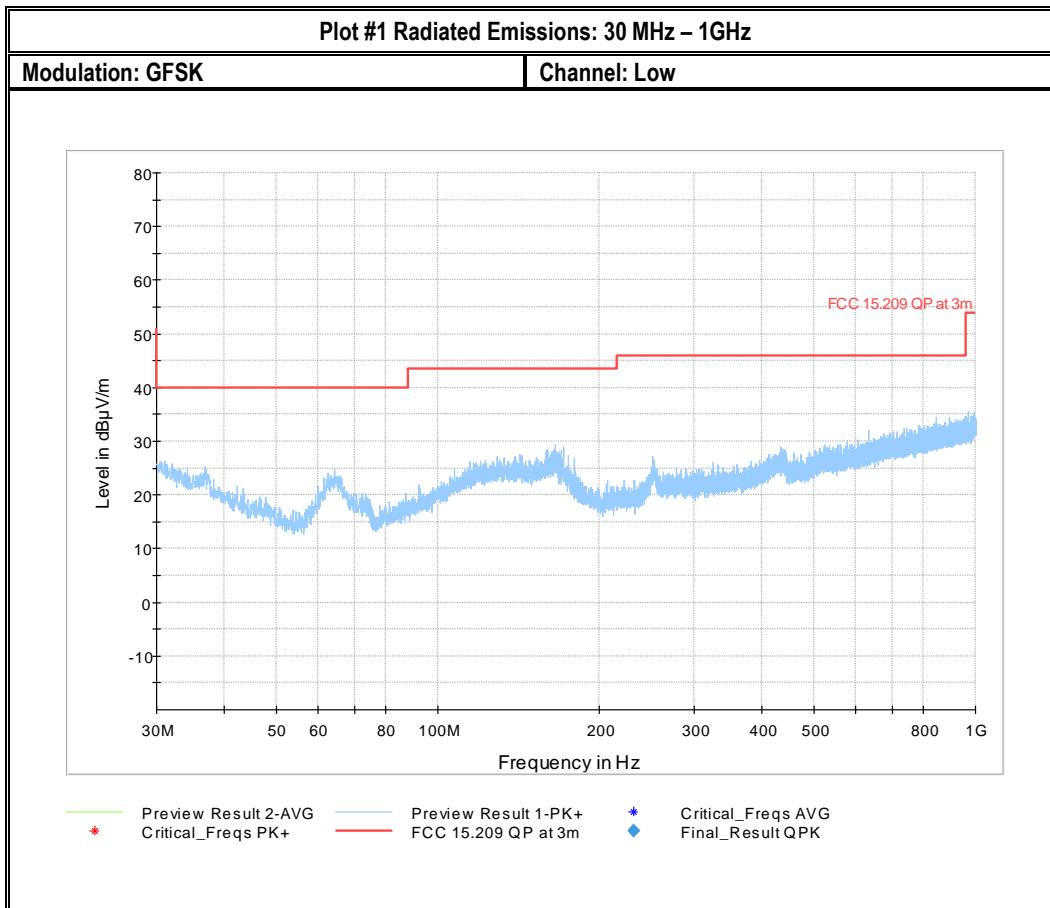
8.2.3 Test conditions and setup:

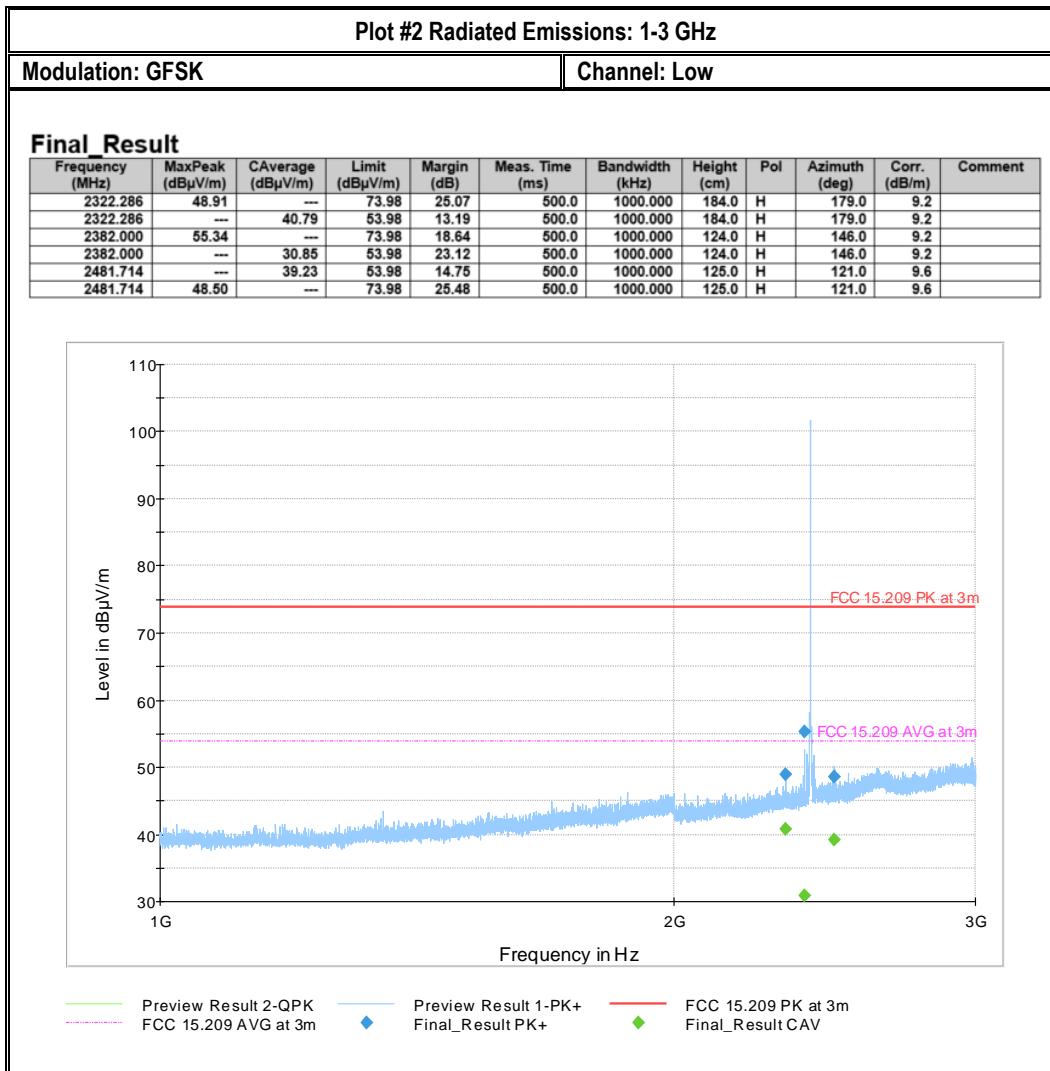
| Ambient Temperature | EUT Set-Up # | EUT operating mode | Power Input |
|---------------------|--------------|-------------------------------|-------------|
| 23° C | 1 | GFSK continuous fixed channel | 110 VAC |

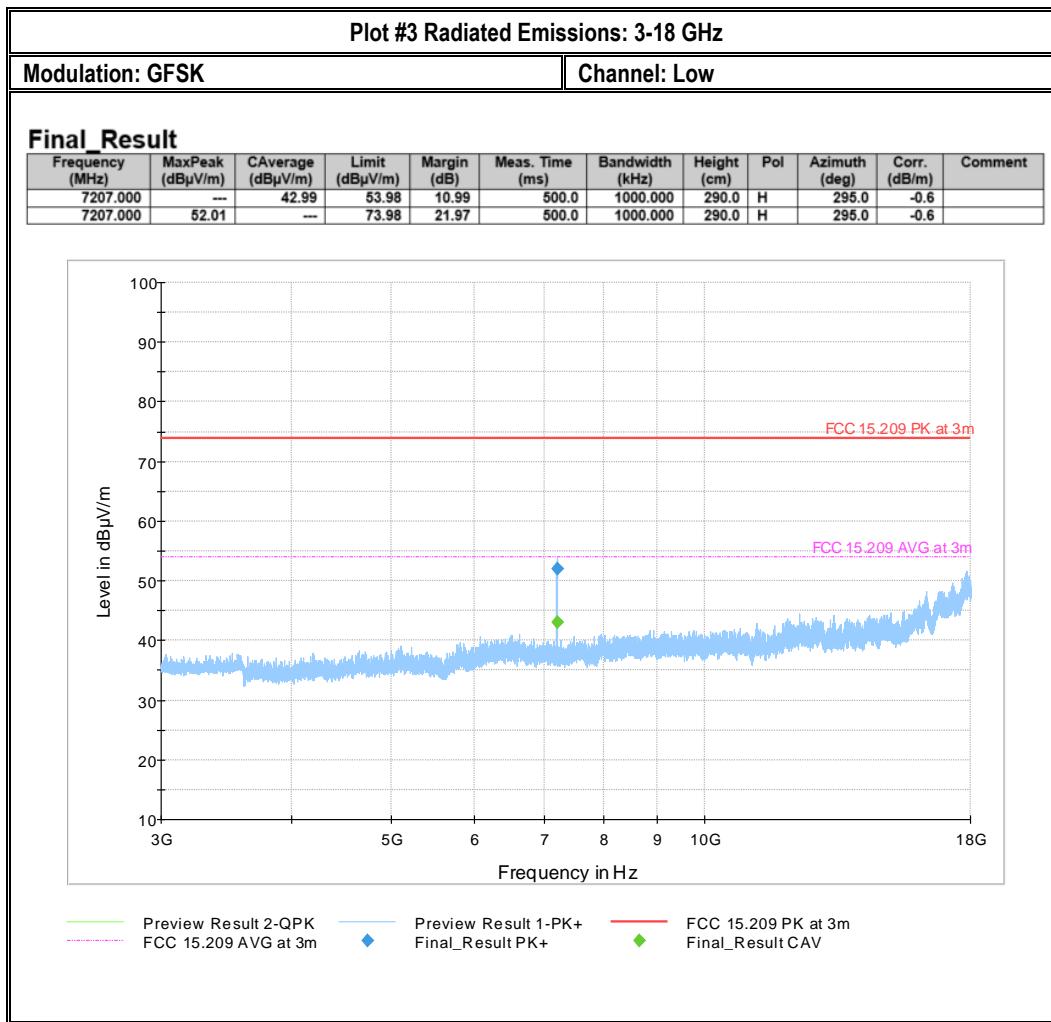
8.2.4 Measurement result:

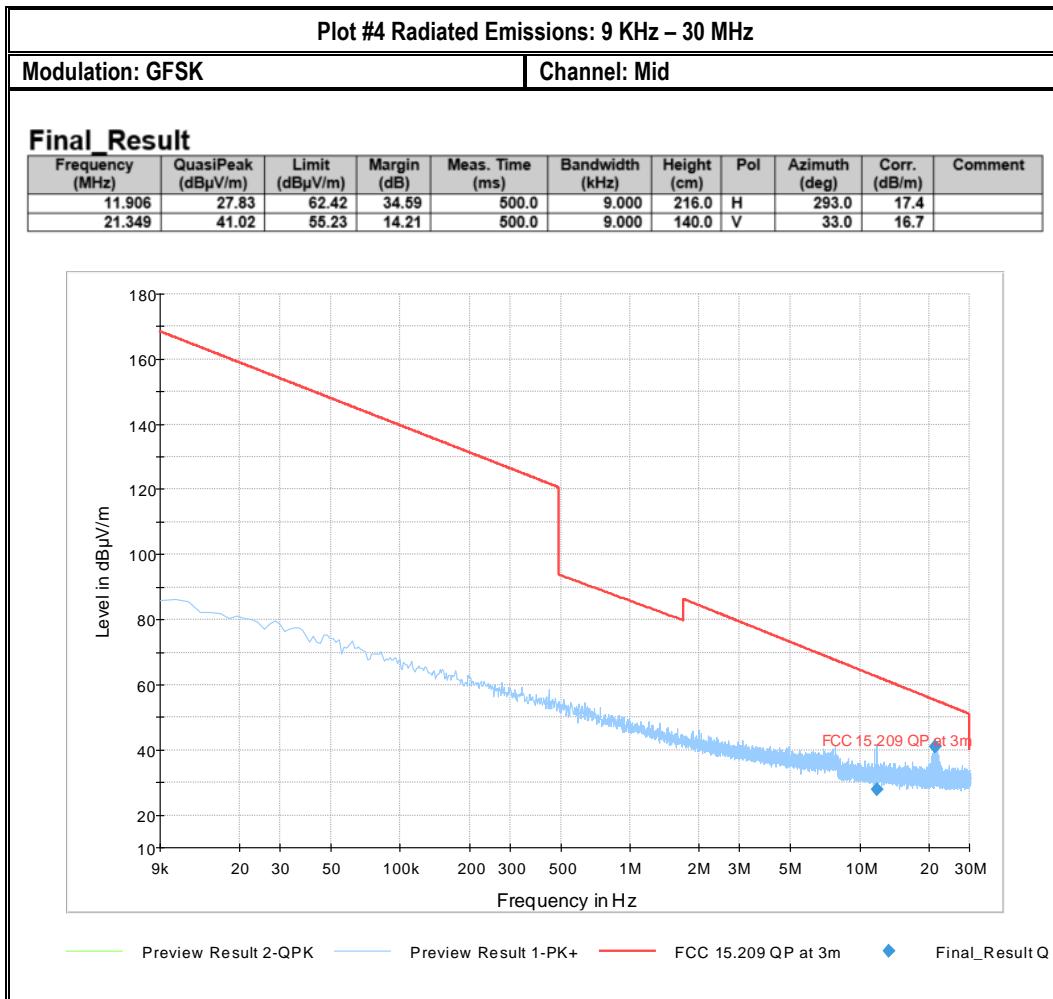
| Plot # | Channel # | Scan Frequency | Limit | Result |
|--------|-----------|-----------------|-------------------|--------|
| 1-3 | Low | 30 MHz – 18 GHz | See section 8.2.2 | Pass |
| 4-8 | Mid | 9 kHz – 26 GHz | See section 8.2.2 | Pass |
| 9-11 | High | 30 MHz – 18 GHz | See section 8.2.2 | Pass |

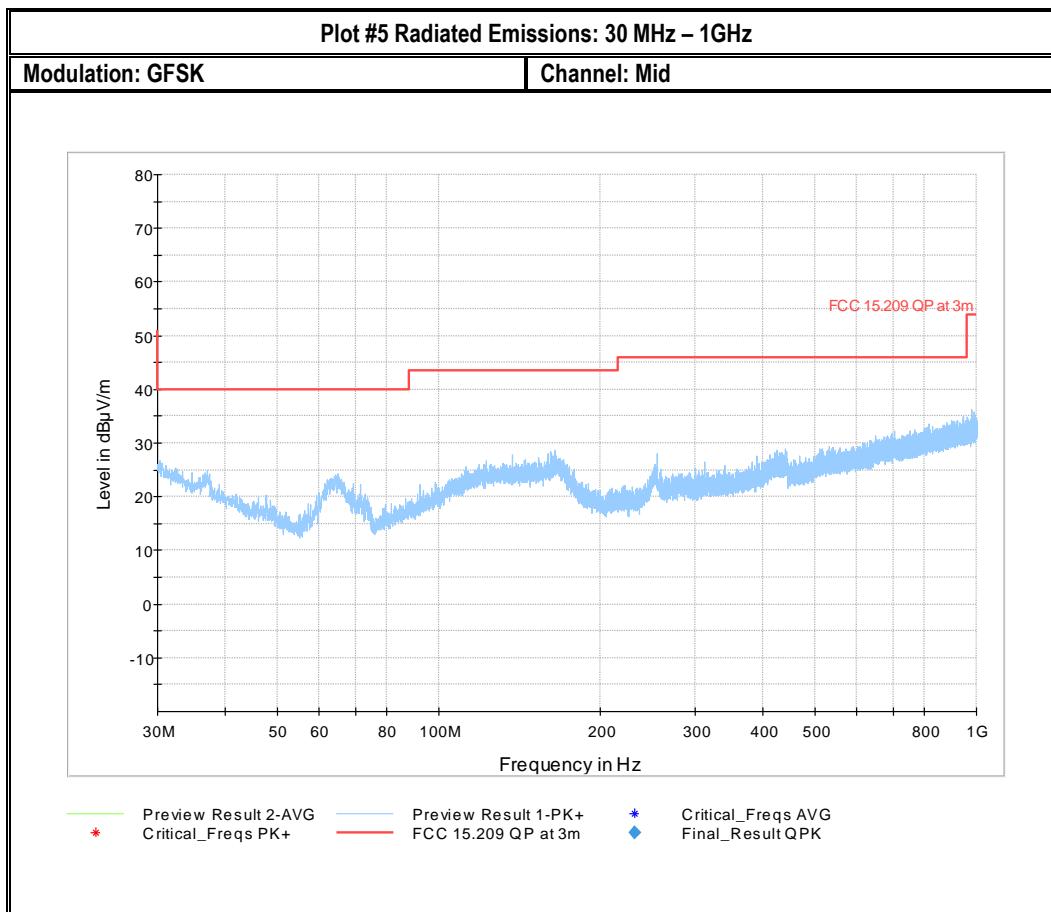
8.2.5 Measurement Plots:

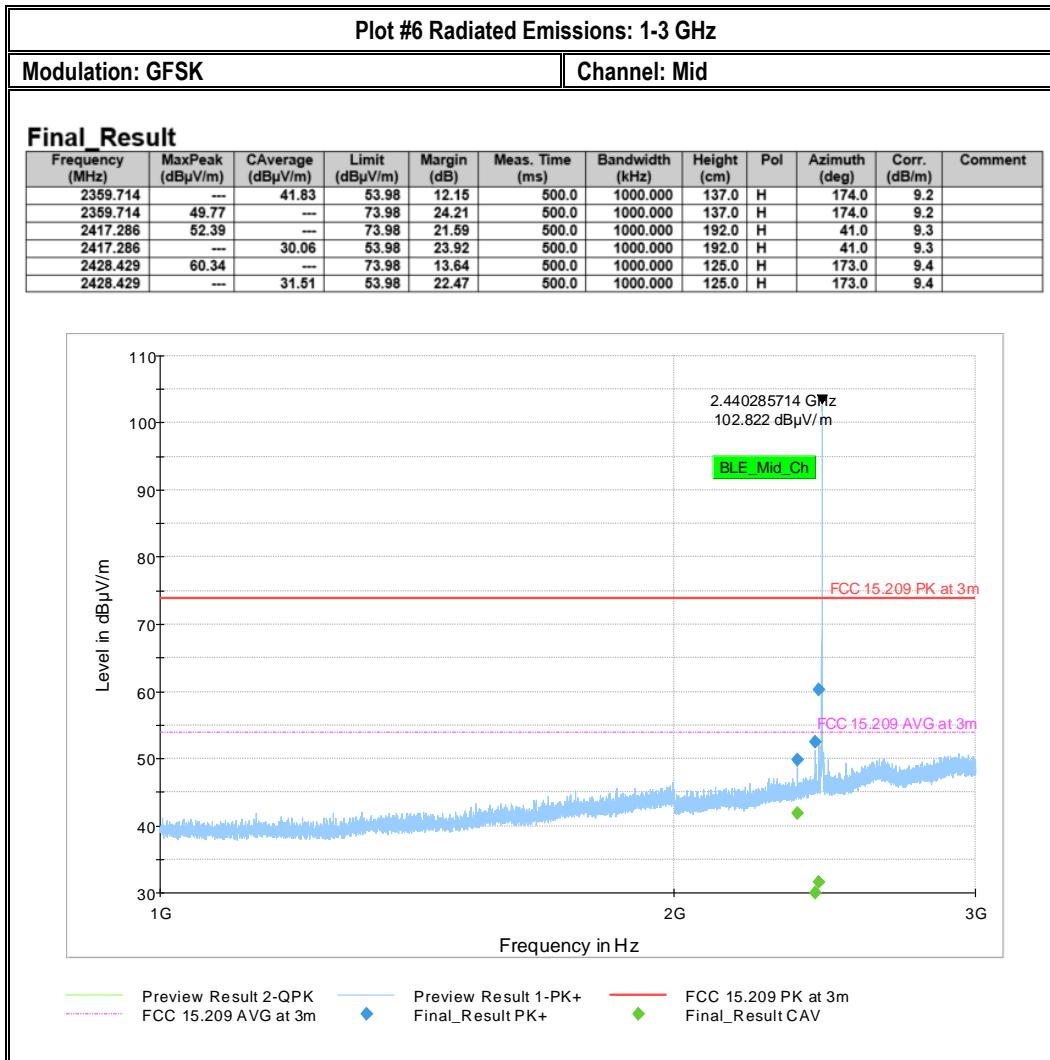


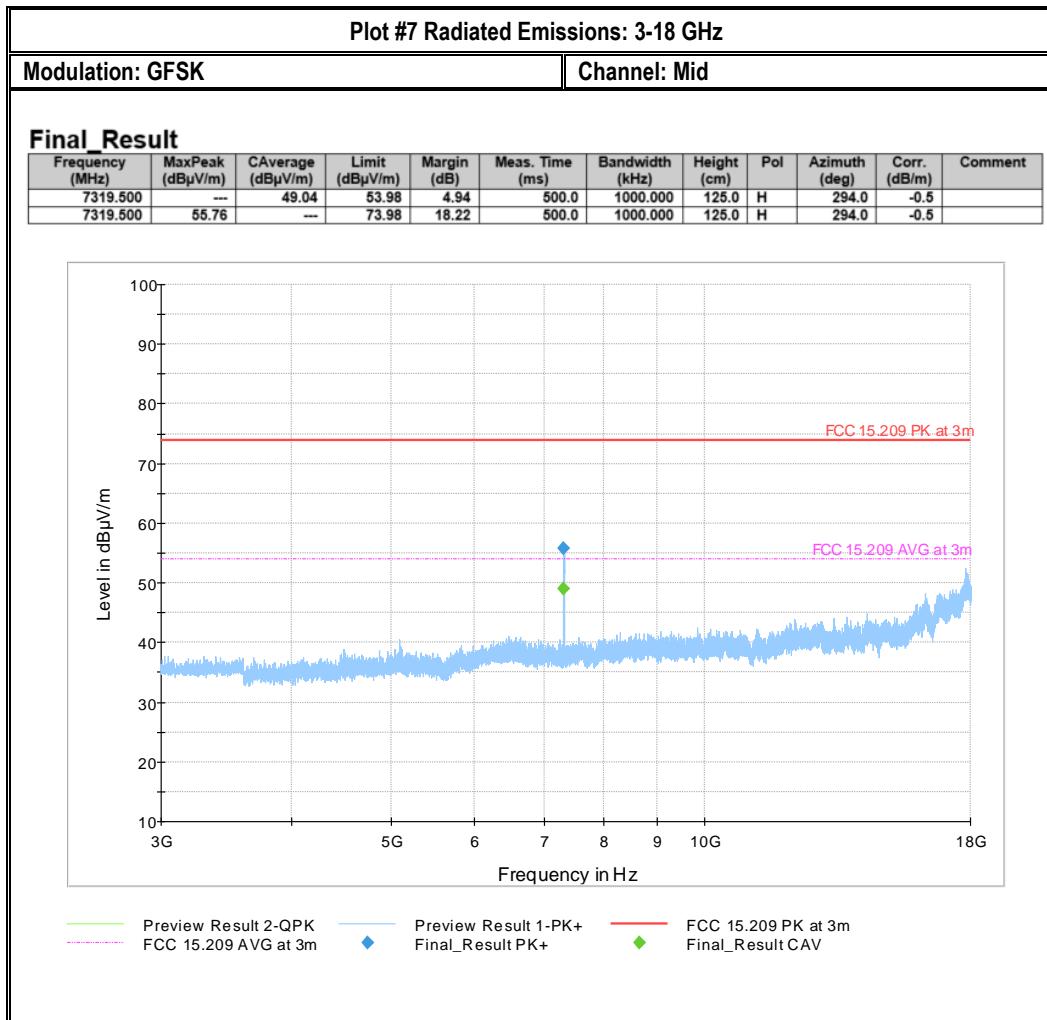


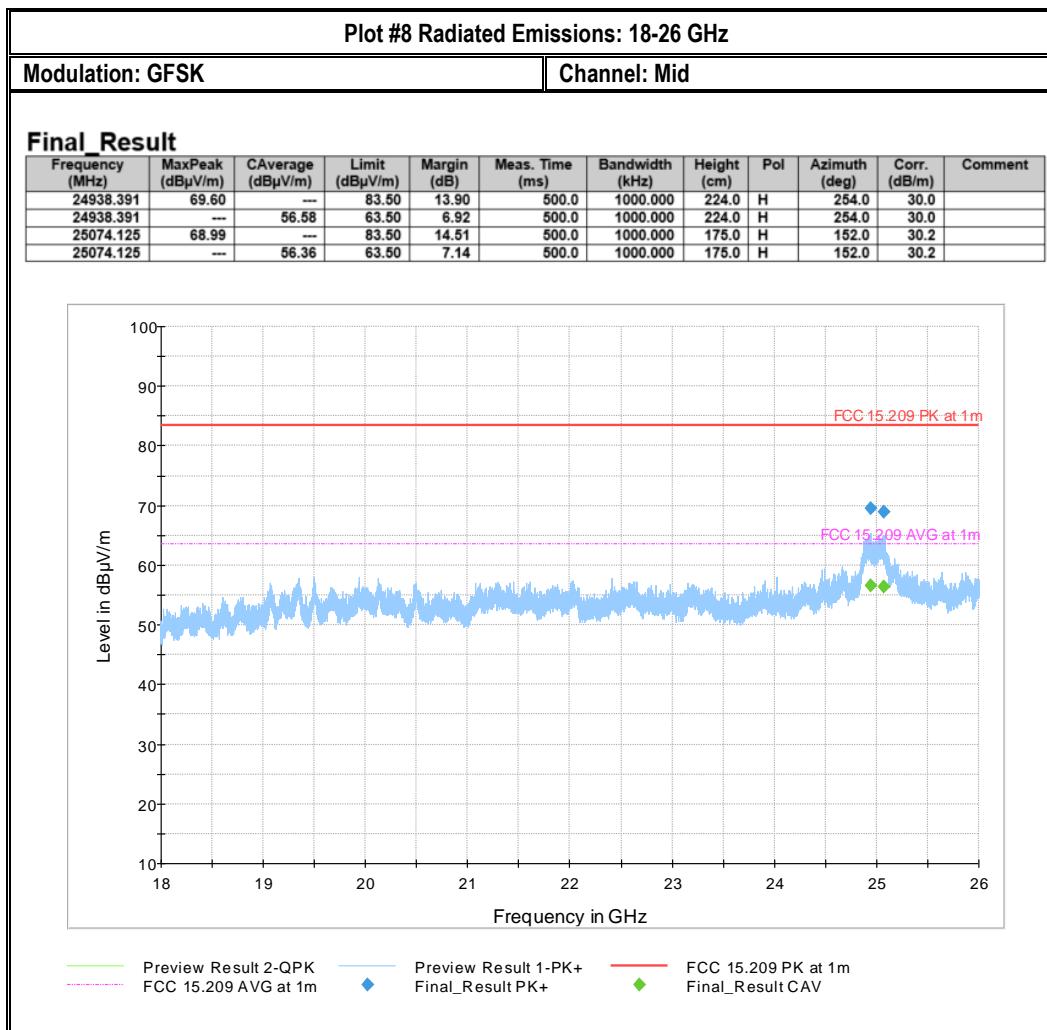


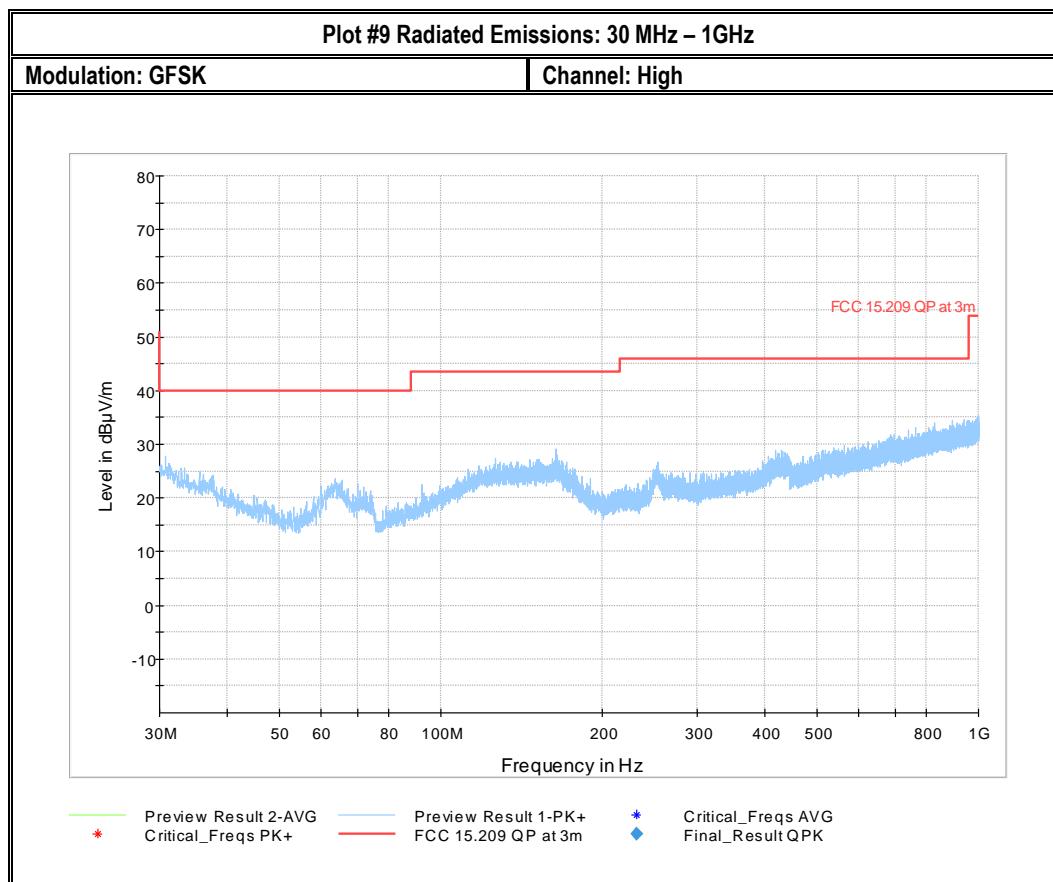


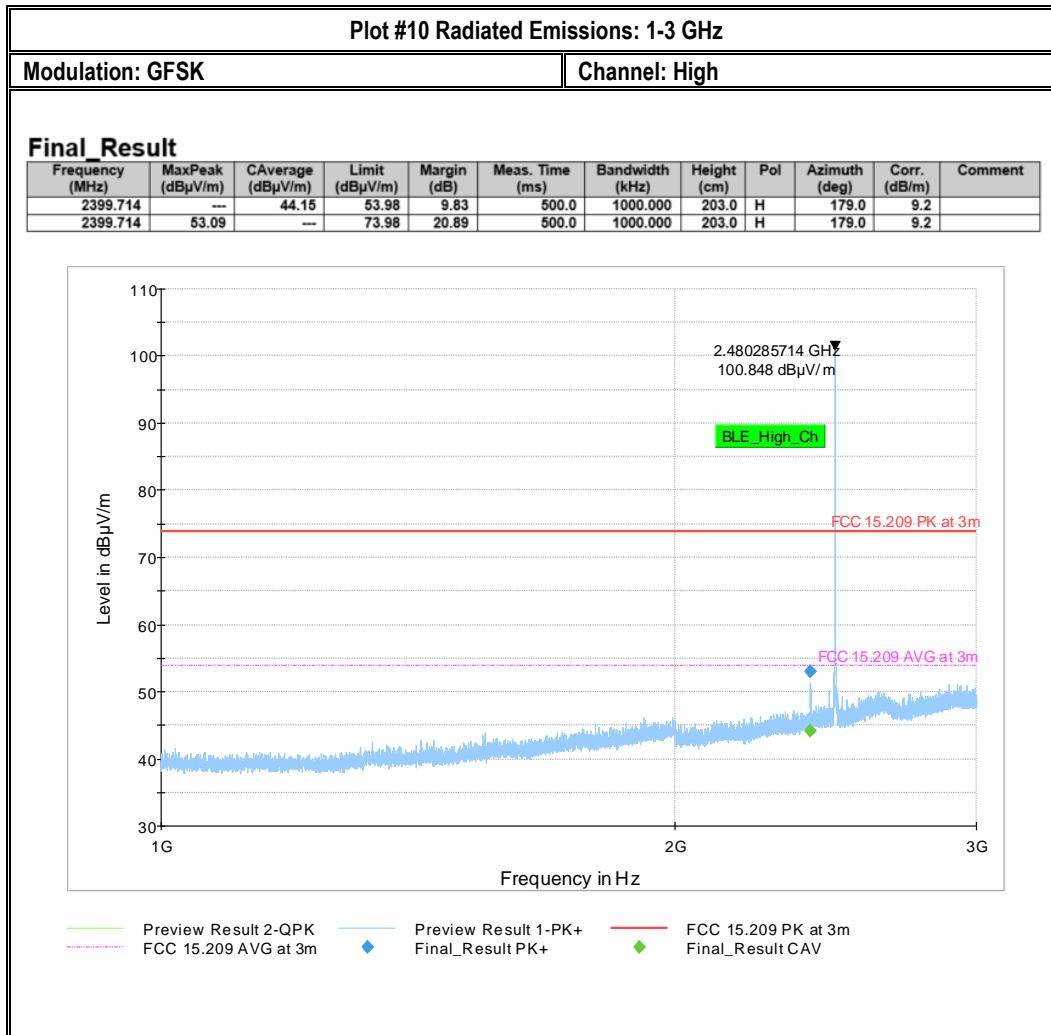


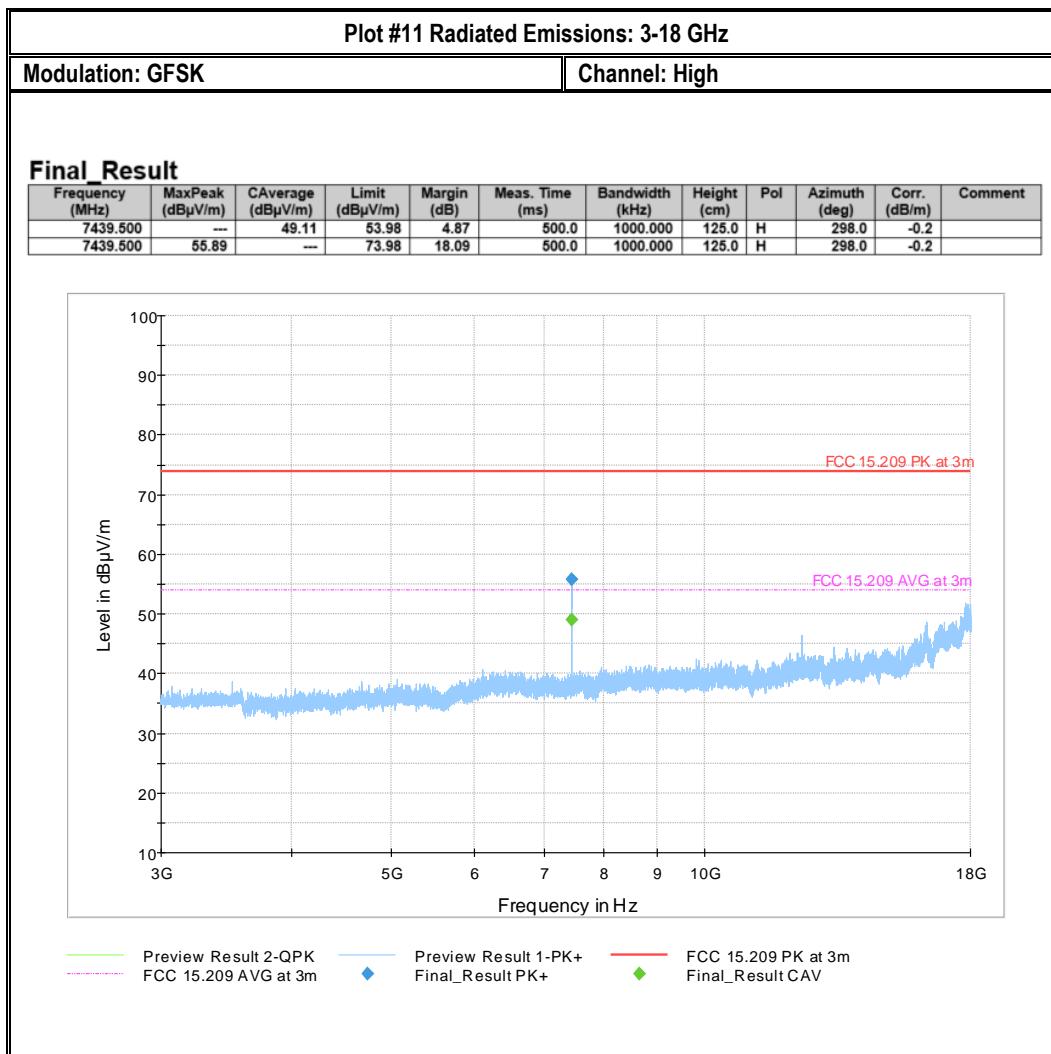












8.3 AC Power Line Conducted Emissions

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 & RSS-Gen 8.8

FCC §15.207(a) & RSS-Gen 8.8

- 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 μ H/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 (dB μ V) | |
|-----------------------------|------------------------------|-----------|
| | 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 © | EUT Set-Up # | EUT operating mode | Power line (L1, L2, L3, N) | Power Input |
|-----------------------|--------------|--------------------------------|----------------------------|-------------|
| 22° C | 1 | BT LE continuous fixed channel | Line & Neutral | 110VAC |

8.3.4 Measurement Result:

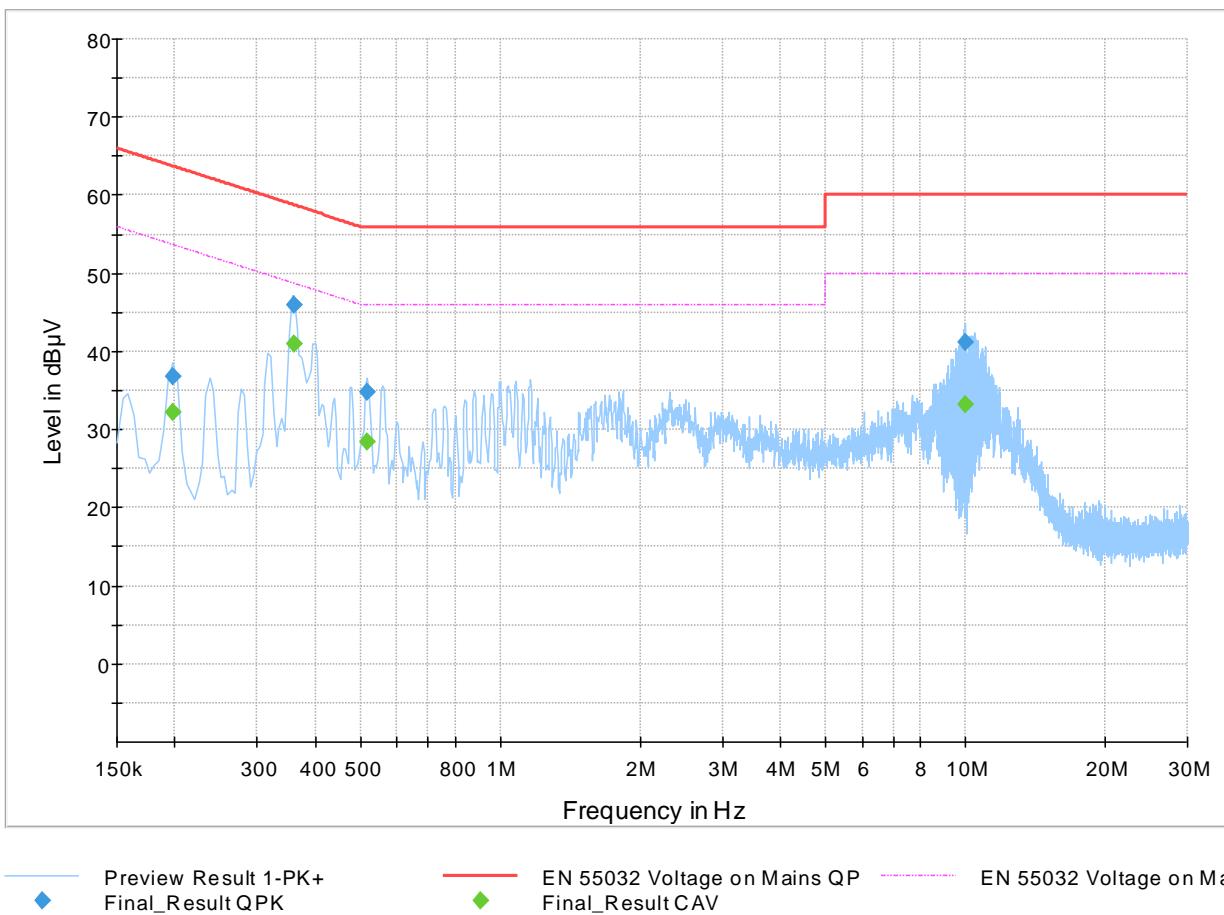
| Plot # | Port | EUT Set-Up #: | EUT operating mode | Scan Frequency | Limit | Result |
|--------|----------|---------------|--------------------------------|------------------|-------------------|--------|
| 1 | AC Mains | 1 | BT LE continuous fixed channel | 150 kHz – 30 MHz | See section 8.3.2 | Pass |

8.3.5 Measurement Plots:

Plot # 1

Final_Result

| Frequency (MHz) | QuasiPeak (dB μ V) | CAverage (dB μ V) | Limit (dB μ V) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | PE | Corr. (dB) | Comment |
|-----------------|------------------------|-----------------------|--------------------|-------------|-----------------|-----------------|------|-----|------------|---------|
| 0.198 | --- | 32.22 | 53.68 | 21.46 | 500.0 | 9.000 | L1 | GND | 10.2 | |
| 0.198 | 36.73 | --- | 63.68 | 26.95 | 500.0 | 9.000 | L1 | GND | 10.2 | |
| 0.361 | --- | 41.06 | 48.71 | 7.66 | 500.0 | 9.000 | L1 | GND | 10.0 | |
| 0.361 | 45.93 | --- | 58.71 | 12.78 | 500.0 | 9.000 | L1 | GND | 10.0 | |
| 0.519 | --- | 28.45 | 46.00 | 17.55 | 500.0 | 9.000 | L1 | GND | 10.0 | |
| 0.519 | 34.85 | --- | 56.00 | 21.15 | 500.0 | 9.000 | L1 | GND | 10.0 | |
| 10.018 | --- | 33.15 | 50.00 | 16.85 | 500.0 | 9.000 | L1 | GND | 10.1 | |
| 10.018 | 41.10 | --- | 60.00 | 18.90 | 500.0 | 9.000 | L1 | GND | 10.1 | |



9 Test setup photos

Setup photos are included in supporting file name: "EMC_INNOP_018_21001_INP1014_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 | 2 YEARS | 10/30/2020 |
| BILOG ANTENNA | ETS.LINDGREN | 3142E | 00166067 | 2 YEARS | 03/12/2020 |
| HORN ANTENNA | EMCO | 3115 | 00035114 | 2 YEARS | 08/10/2020 |
| HORN ANTENNA | ETS.LINDGREN | 3117 | 00215984 | 2 YEARS | 01/31/2021 |
| HORN ANTENNA | ETS.LINDGREN | 3116 | 00070497 | 2 YEARS | 11/23/2020 |
| TEST RECEIVER | R&S | ESU40 | 100251 | 2 YEARS | 09/13/2021 |
| COMPACT DIGITAL BAROMETER | CONTROL COMPANY | 10510-922 | 200236891 | 2 YEARS | 04/13/2020 |
| DIGITAL THERMOMETER | CONTROL COMPANY | 36934-164 | 181230565 | 3 YEARS | 01/10/2019 |
| LINE IMPEDANCE STABILIZATION NETWORK | FCC | FCC-LISN-50-25-2-08 | 08014 | 2 YEARS | 08/31/2021 |

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 is internally characterized before use.

11 Revision History

| Date | Report Name | Changes to report | Report prepared by |
|------------|---|-------------------|--------------------|
| 2021-12-16 | EMC_INNOP_018_21001_INP1014_15.247_BT_DTS | Initial version | Yuchan Lu |

<<The End>>