# FCC / ISED Test Report

**FOR:**
Garmin International, Inc.

**Model Name:**
GMN-02245

**Product Description:**
LTE/Wi-Fi Datalink and Data Storage System

**FCC ID:** IPH-03788
**IC ID:** 1792A-03788

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

**REPORT #:** EMC_GARMI-094-21001_15.247_BT_DSS_R1

**DATE:** 2021-11-15

**A2LA Accredited**

**IC recognized #**
**3462B-1**
**CABID: US0187**


***CETECOM* Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
Phone: + 1 (408) 586 6200 ◆ Fax: + 1 (408) 586 6299 ◆ E-mail: contect@cetecom.com ◆ http://www.cetecom.com
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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 # |
|---|---|---|
| Garmin International, Inc. | LTE/Wi-Fi Datalink and Data Storage System | GMN-02245 |

**Responsible for Testing Laboratory:**

| Date | Section | Name | Signature |
|---|---|---|---|
| 2021-11-15 | Compliance | Kevin Wang (EMC Lab Manager) | kevin.wang@cetecom.com Digitally signed by: kevin.wang@cetecom.com DN: CN = kevin.wang@cetecom.com Date: 2021.11.16 16:54:24 -08'00' |

**Responsible for the Report:**

| Date | Section | Name | Signature |
|---|---|---|---|
| 2021-11-15 | Compliance | Yuchan Lu (Test Engineer) | Yuchan Lu Digitally signed by: Yuchan Lu DN: CN = Yuchan Lu email = Yuchan.Lu@cetecom.com C = US O = CETECOM Inc. OU = EMC Date: 2021.11.15 17:18:59 -08'00' |

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:** | Kevin Wang |
| **Responsible Project Leader:** | Sangeetha Sivaraman |

## 2.2 Identification of the Client

| | |
|---|---|
| **Client's Name:** | Garmin International, Inc. |
| **Street Address:** | 1200 East 151st Street |
| **City/Zip Code** | Olathe, KS / 66062 |
| **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

| | |
|---|---|
| **Model No:** | GMN-02245 |
| **HW Version :** | Ver 11 |
| **SW Version :** | 1.40 |
| **FCC-ID :** | IPH-03788 |
| **IC-ID:** | 1792A-03788 |
| **FWIN:** | 1.40 |
| **HVIN:** | GMN-02245 |
| **PMN:** | GDL 60 |
| **Product Description:** | LTE/Wi-Fi Datalink and Data Storage System |
| **Frequency Range / number of channels:** | Nominal band: 2400 MHz – 2483.5 MHz<br>Center to center: 2402 MHz (ch 0) – 2480 MHz (ch 78), 79 Channels |
| **Radio Information:** | Bluetooth:<br>Module Name: Texas Instruments<br>Module Number: WiLink WL1835MOD<br>FCC ID: Z64-WL18SBMOD<br>IC ID: 451I-WL18SBMOD<br>Type(s) of Modulation: BDR/EDR: GFSK, π /4 DQPSK, 8DPSK |
| **Modes of Operation:** | Hopping |
| **Antenna Information as declared:** | max gain 5 dBi |
| **Max. declared output Powers:** | Conducted Power 12.39 dBm |
| **Power Supply/ Rated Operating Voltage Range:** | Vmin: 9 VDC/ Vnom: 24 VDC / Vmax: 32 VDC |
| **Operating Temperature Range** | -40ºC to 70 ºC |
| **Other Radios included in the device:** | ❖ WLAN<br>• Manufacture: Texas Instruments<br>• Module name/number: WiLink WL1807MOD<br>• FCC ID: Z64-WL18DBMOD<br>• IC ID: 451I-WL18DBMOD<br>❖ LTE<br>• Manufacture: Quectel<br>• Module name/number: EG25-G<br>• FCC ID: XMR201903EG25G |

| | |
|---|---|
| | • IC ID: 10224A-201903EG25G<br>❖ BLE,WLAN<br>• Manufacture: Texas Instruments<br>• Module name/number: WiLink 1835 |
| **Sample Revision** | ☐Prototype Unit; ☐Production Unit; ■Pre-Production |

### 3.2 EUT Sample details

| EUT # | Serial Number | HW Version | SW Version | Notes/Comments |
|---|---|---|---|---|
| **1** | 67H000367 | Ver 11 | 1.40 | Radiated Emissions |

### 3.3 Test Sample Configuration

| EUT Set-up # | Combination of AE used for test set up | Comments |
|---|---|---|
| **1** | EUT#1 | Special interface called "GDL 60 Engineering Tool" is used to configure the Bluetooth radio to low, mid and high channels and co-transmitting with LTE Band 4 mid Channel (1732.5 MHz) provided by the client that will not be available to the end user.<br>For radiated measurements, the external antenna was connected. |

### 3.4 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets on low, mid and high channels and co-transmitting with LTE Band 4 mid Channel (1732.5 MHz).

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 Issue 2 of ISED Canada.

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

- FCC ID: IPH-03788
- IC ID: 1792A-03788

Testing procedures are based on ANSI C63.10:2013 including section 7.8 for FHSS systems.

## 5 Measurement Results Summary

| Test Specification | Test Case | Temperature and Voltage Conditions | Mode | Pass | NA | NP | Result |
|---|---|---|---|---|---|---|---|
| §15.247(b)(1)<br>RSS-247 5.4(b) | Maximum Peak Conducted Output Power | Nominal | GFSK<br>DQPSK<br>8DPSK | ☐ | ☐ | ■ | Complies<br>Note1 |
| §15.247(d)<br>RSS-247 5.5<br>RSS-Gen 8.10 | Band Edge Compliance | Nominal | GFSK | ☐ | ☐ | ■ | Complies<br>Note1 |
| §15.247(a)(1)<br>RSS-247 5.1(b) | Spectrum Bandwidth | Nominal | GFSK<br>DQPSK<br>8DPSK | ☐ | ☐ | ■ | Complies<br>Note1 |
| §15.247(a)(1)<br>RSS-247 5.1(b) | Carrier Frequency Separation | Nominal | GFSK | ☐ | ☐ | ■ | Complies<br>Note1 |
| §15.247(a)(1)<br>RSS-247 5.1(d) | Number of Hopping Channels | Nominal | GFSK | ☐ | ☐ | ■ | Complies<br>Note1 |
| §15.247(a)(1)(iii)<br>RSS-247 5.1(d) | Time of occupancy | Nominal | GFSK | ☐ | ☐ | ■ | Complies<br>Note1 |
| §15.247(d)<br>§15.209 (a)<br>RSS-Gen 6.13 | TX Spurious emissions-Radiated | Nominal | GFSK | ■ | ☐ | ☐ | Complies |
| §15.207(a)<br>RSS-Gen 8.8 | AC Conducted Emissions | Nominal | GFSK | ☐ | ☐ | ■ | Complies<br>Note1 |

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

Note1: Leveraged from module certification Texas Instruments WiLink WL1835MOD (FCC ID: Z64-WL18SBMOD, IC ID: 451I-WL18SBMOD

# 6 Measurements

## 6.1 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 30MHz | ±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

| | |
|---|---|
| RF conducted measurement | ±0.5 dB |

## 6.2 Environmental Conditions During Testing:

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

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

## 6.3 Dates of Testing:

9/9/2021– 9/15/2021

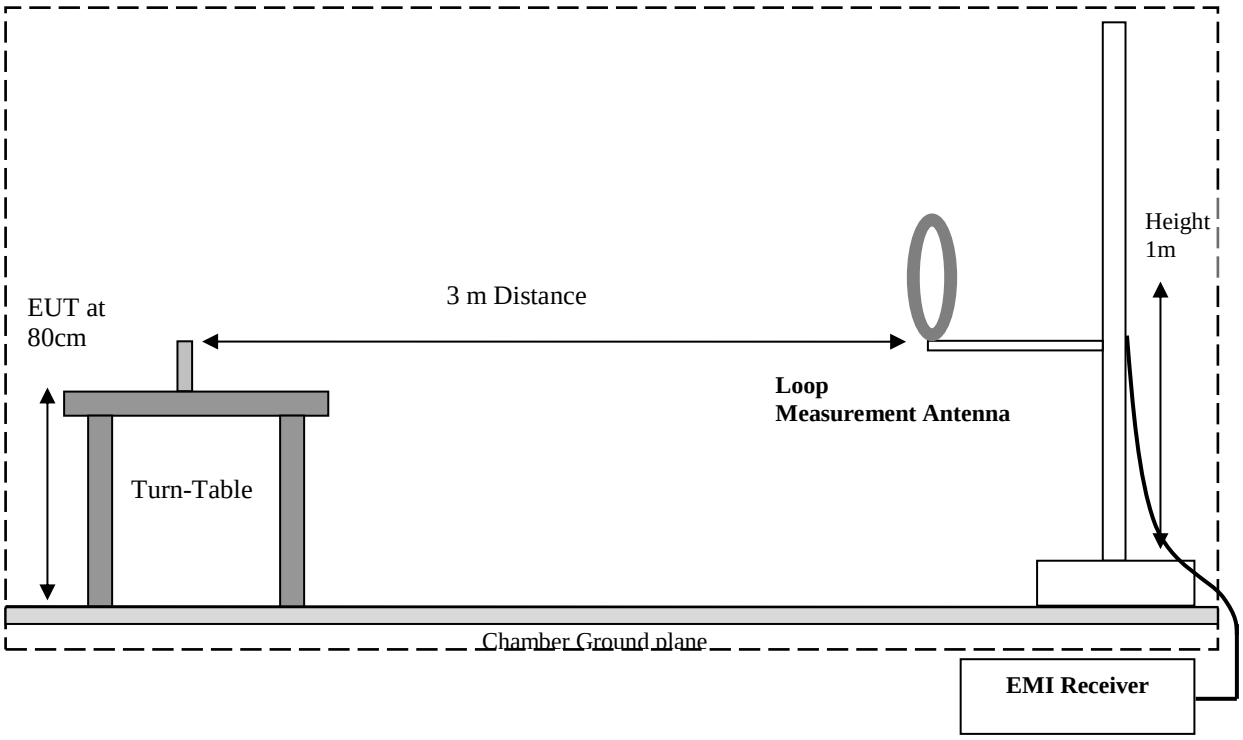
# 7 Measurement Procedures

## 7.1 Radiated Measurement

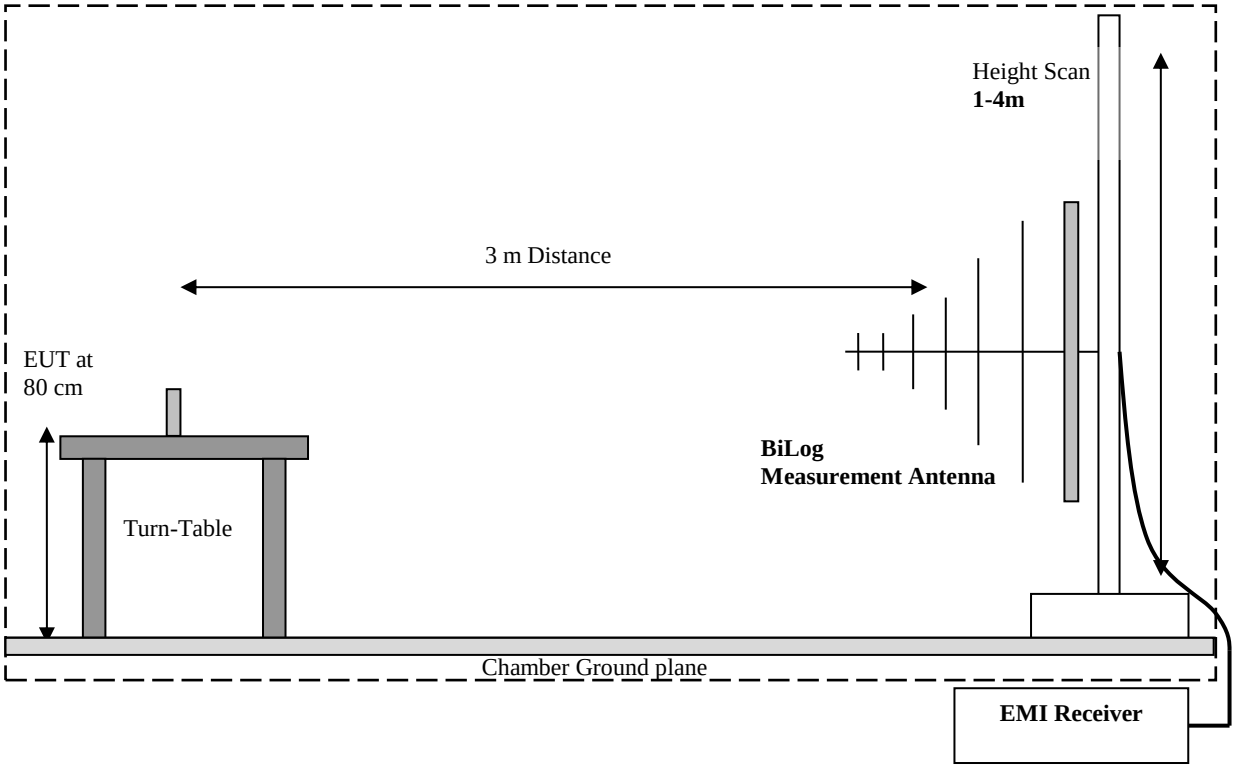
The radiated measurement is performed according to: ANSI C63.10 (2013)

- 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.

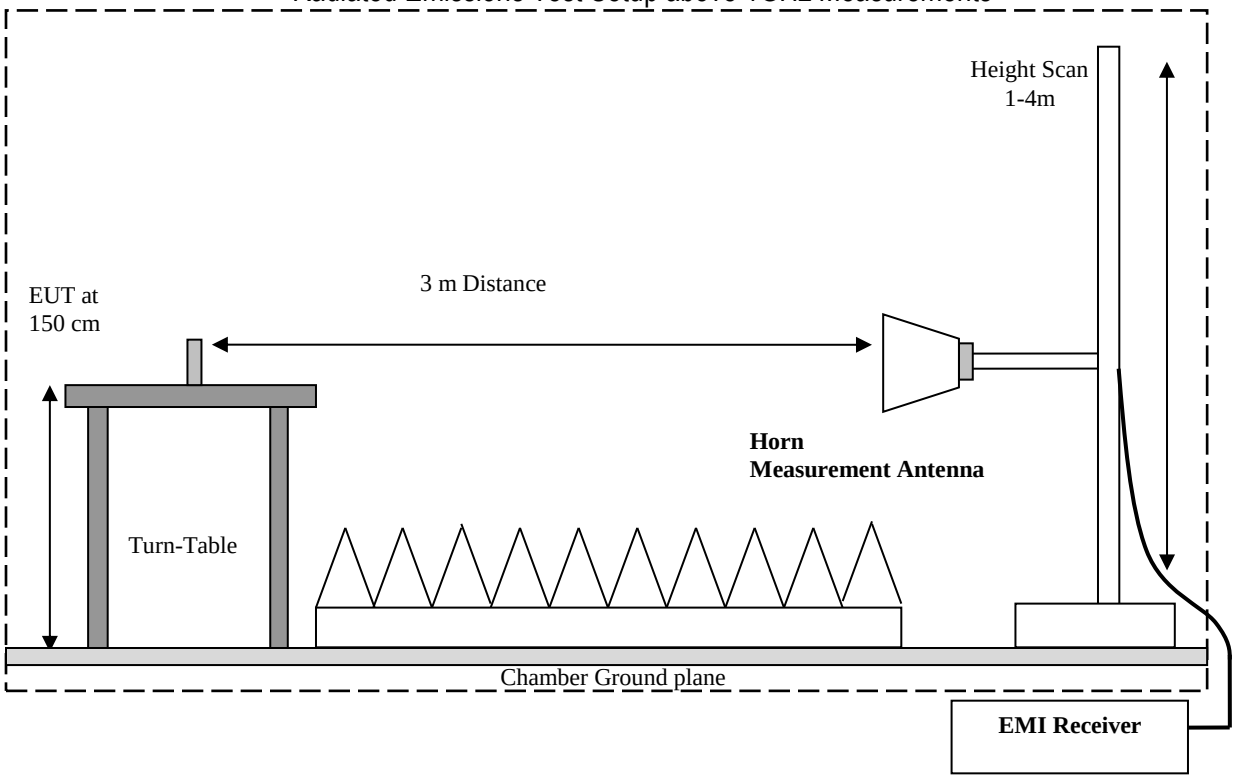
Radiated Emissions Test Setup below 30MHz Measurements



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 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 |

# 8 Test Result Data

## 8.1 Transmitter Spurious Emissions and Restricted Bands

### 8.1.1 Measurement according to ANSI C63.10

**Analyzer Settings:**

- Frequency = 9 KHz – 30 MHz
- RBW = 9 KHz
- Detector = Peak

- Frequency = 30 MHz – 1 GHz
- Detector = Peak / Quasi-Peak
- RBW = 120 KHz (<1 GHz)

- Frequency > 1 GHz
- Detector = Peak / Average
- RBW = 1MHz

- 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 frequencies below 30 MHz at distance other than the specified in the standard, the limit conversion is calculated by using the FCC materials for the ANSI 63 committee issued on January, 27 1991.

### 8.1.2 Limits: FCC 15.247(d)/15.209(a) /RSS-Gen 6.13

| 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= 74dB µV/m
- AVG. LIMIT= 54dB µV/m

- Except as shown in CFR 47 Part 15.205 paragraph (d), only spurious emissions are permitted in any of the frequency bands listed below

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|---|---|---|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100** | 3 |
| 88-216 | 150** | 3 |
| 216-960 | 200** | 3 |
| Above 960 | 500 | 3 |

### 8.1.3 Test conditions and setup:

| Ambient Temperature | EUT Set-Up # | EUT operating mode | Power Input |
|---|---|---|---|
| 23° C | 1 | GFSK fixed channel | 24 VDC |

### 8.1.4 Measurement result:

| Plot # | Channel # | Scan Frequency | Limit | Result |
|---|---|---|---|---|
| 1-3 | Low | 30 MHz – 18 GHz | See section 8.1.2 | Pass |
| 4-8 | Mid | 9 kHz – 26 GHz | See section 8..2 | Pass |
| 9-11 | High | 30 MHz – 18 GHz | See section 8.1.2 | Pass |

### 8.1.5 Measurement Plots:

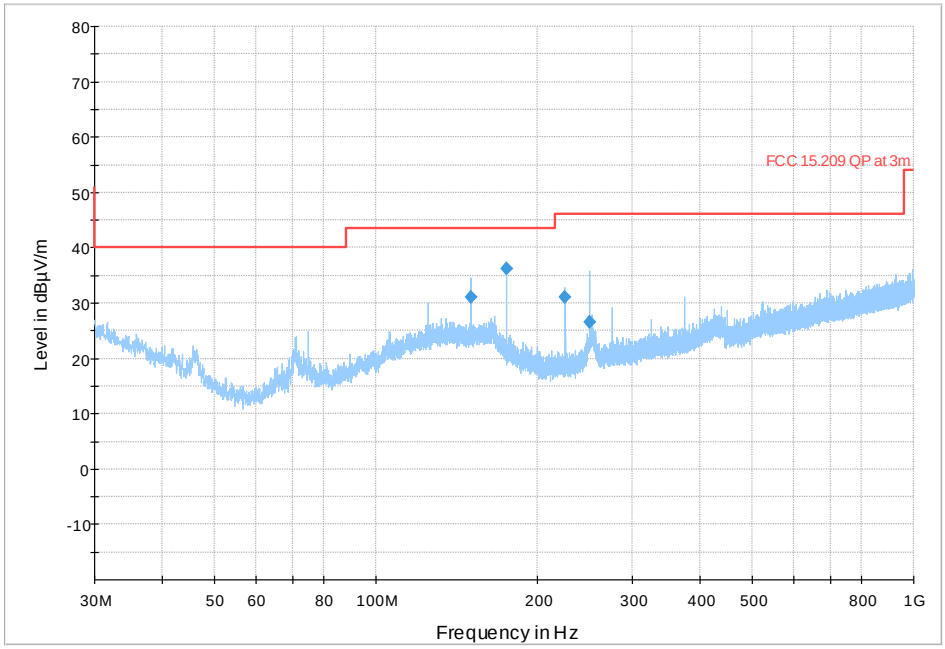
**Plot #1 Radiated Emissions: 30 MHz – 1GHz**

| Modulation: GFSK | Channel: Low |
|---|---|

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 149.957 | 31.02 | 43.50 | 12.48 | 500.0 | 120.000 | 107.0 | V | 72.0 | 18.2 |
| 174.983 | 36.25 | 43.50 | 7.25 | 500.0 | 120.000 | 100.0 | V | 320.0 | 16.2 |
| 224.970 | 31.08 | 46.02 | 14.94 | 500.0 | 120.000 | 151.0 | H | 88.0 | 12.9 |
| 249.964 | 26.54 | 46.02 | 19.48 | 500.0 | 120.000 | 107.0 | H | 31.0 | 17.9 |

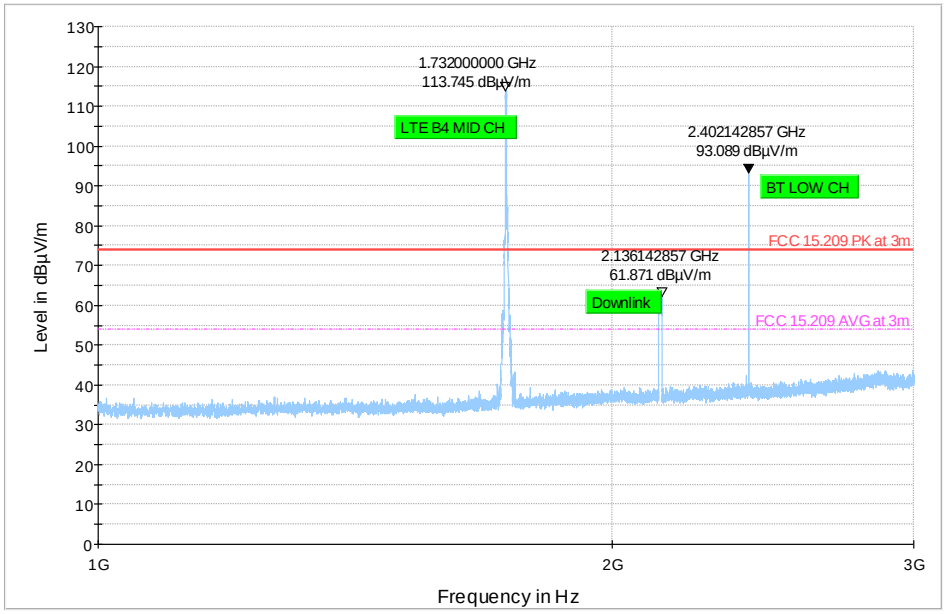



Preview Result 2-AVG Preview Result 1-PK+ FCC 15.209 QP at 3m Final_Result Q

**Plot # 2 Radiated Emissions: 1-3 GHz**

| **Modulation: GFSK** | **Channel: Low** |
|---|---|

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*



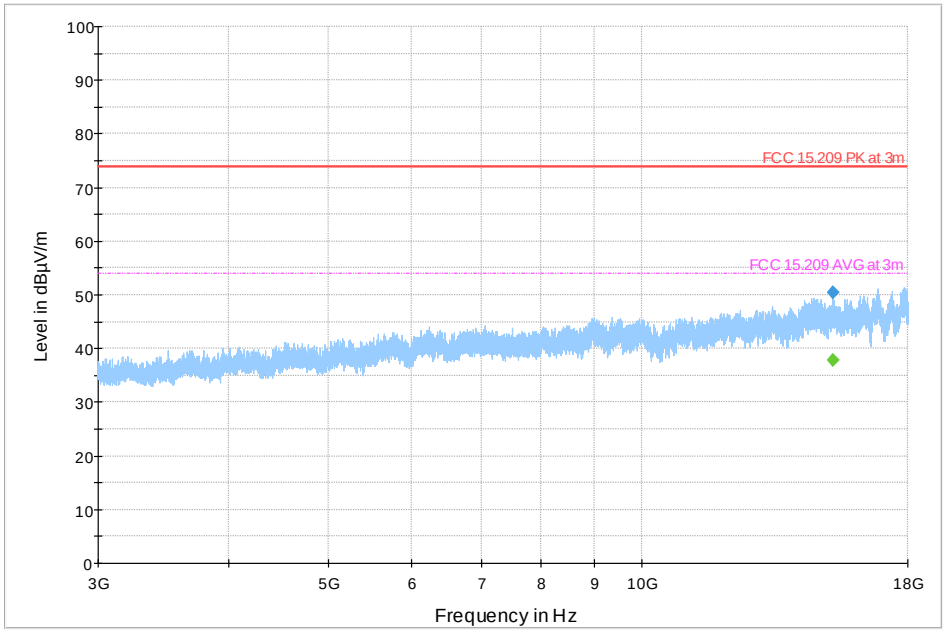
**Plot # 3 Radiated Emissions: 3-18 GHz**

**Modulation: GFSK** | **Channel: Low**

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*

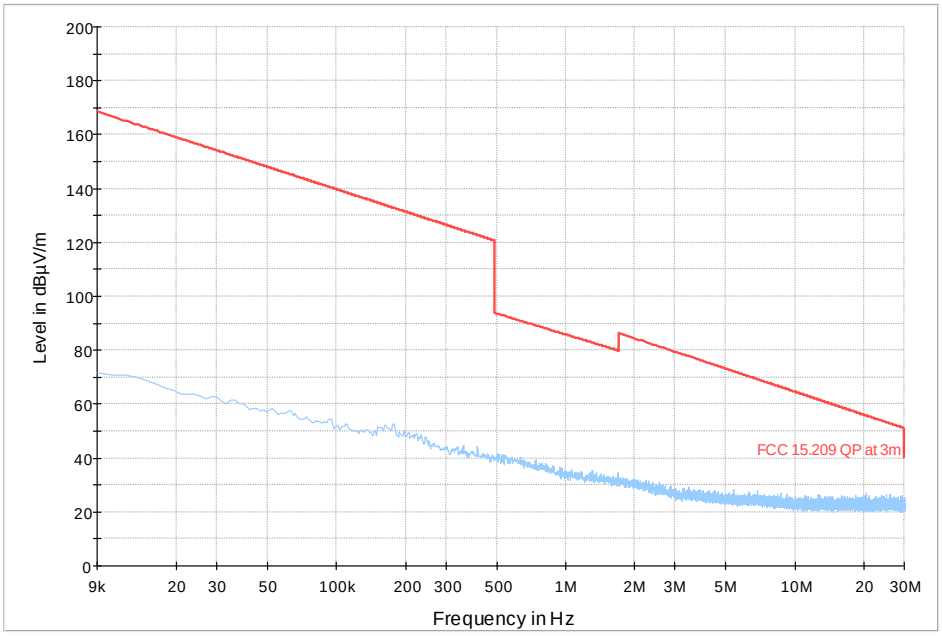
## Final_Result

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 15243.000 | --- | 37.93 | 53.98 | 16.05 | 500.0 | 1000.000 | 100.0 | V | -37.0 | 10.0 |
| 15243.000 | 50.52 | --- | 73.98 | 23.45 | 500.0 | 1000.000 | 100.0 | V | -37.0 | 10.0 |



| Plot # 4 Radiated Emissions: 9 KHz - 30 MHz | |
|---|---|
| **Modulation: GFSK** | **Channel: Mid** |

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*




Preview Result 2-AVG
Critical_Freqs PK+
Preview Result 1-PK+
FCC 15.209 QP at 3m
Critical_Freqs AVG
Final_Result QPK

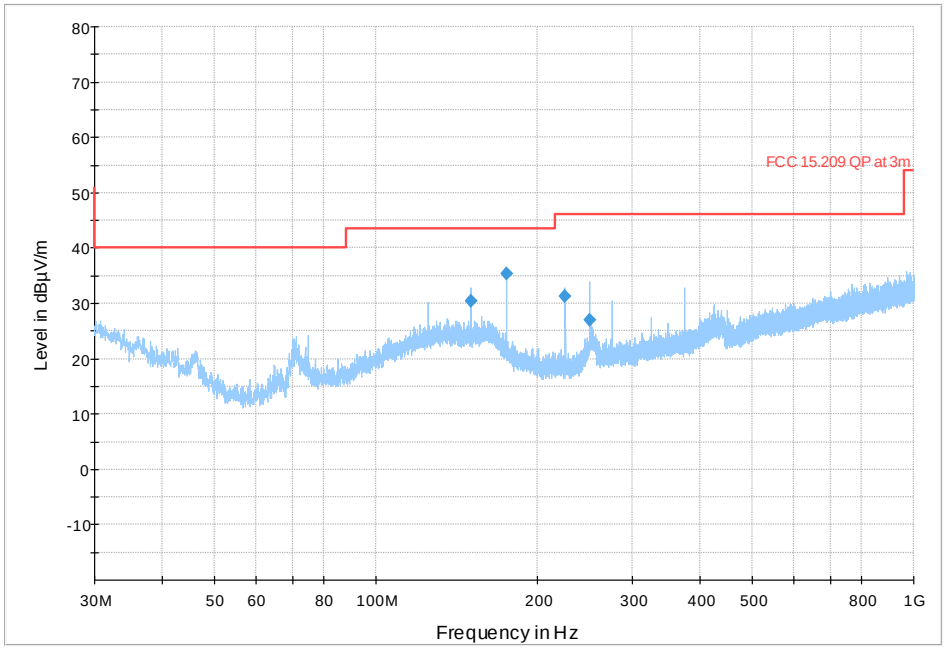
**Plot #5 Radiated Emissions: 30 MHz – 1GHz**

| **Modulation: GFSK** | **Channel: Mid** |
|---|---|

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*

## 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) |
|---|---|---|---|---|---|---|---|---|---|
| 149.957 | 30.33 | 43.50 | 13.17 | 500.0 | 120.000 | 100.0 | V | 79.0 | 18.2 |
| 174.983 | 35.35 | 43.50 | 8.15 | 500.0 | 120.000 | 100.0 | V | 233.0 | 16.2 |
| 224.970 | 31.26 | 46.02 | 14.76 | 500.0 | 120.000 | 142.0 | H | 85.0 | 12.9 |
| 249.964 | 27.05 | 46.02 | 18.97 | 500.0 | 120.000 | 125.0 | H | 35.0 | 17.9 |

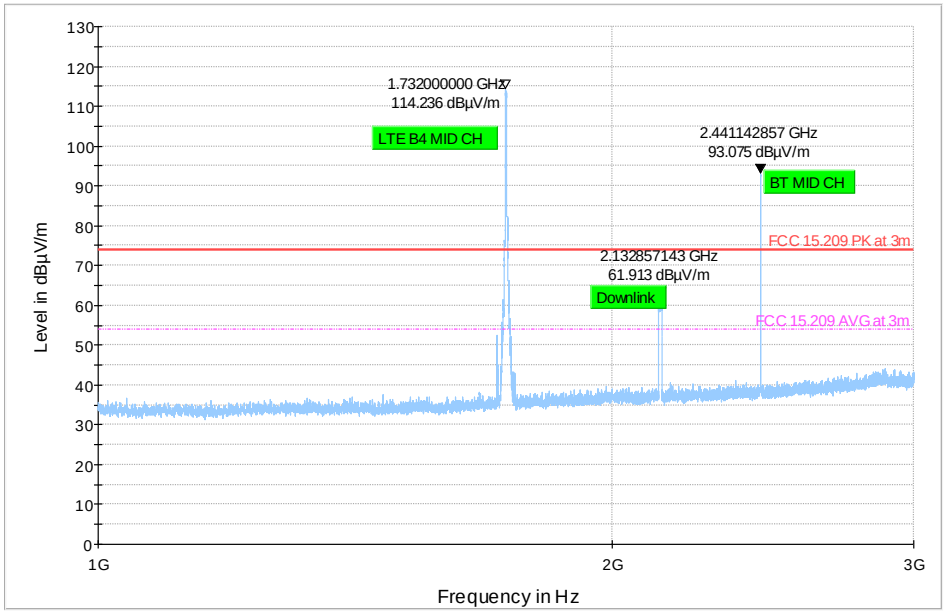



Preview Result 2-AVG Preview Result 1-PK+ FCC 15.209 QP at 3m Final_Result Q

**Plot #6 Radiated Emissions: 1-3 GHz**

| **Modulation: GFSK** | **Channel: Mid** |
|---|---|

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*




Preview Result 2-AVG
Critical_Freqs PK+
Final_Result PK+
Preview Result 1-PK+
FCC 15.209 PK at 3m
Final_Result CAV
Critical_Freqs AVG
FCC 15.209 AVG at 3m

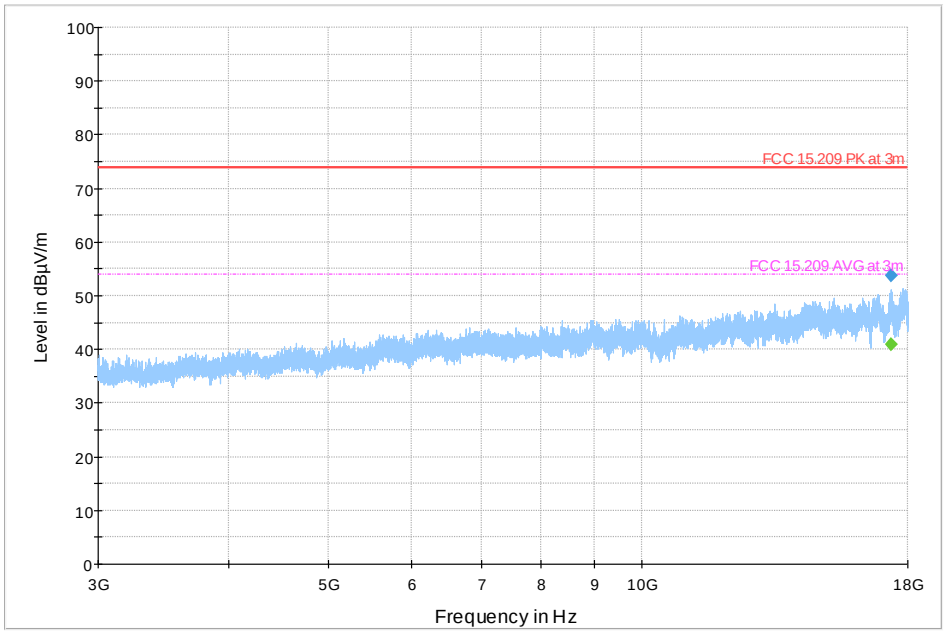
**Plot #7 Radiated Emissions: 3-18 GHz**

**Modulation: GFSK** | **Channel: Mid**

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*

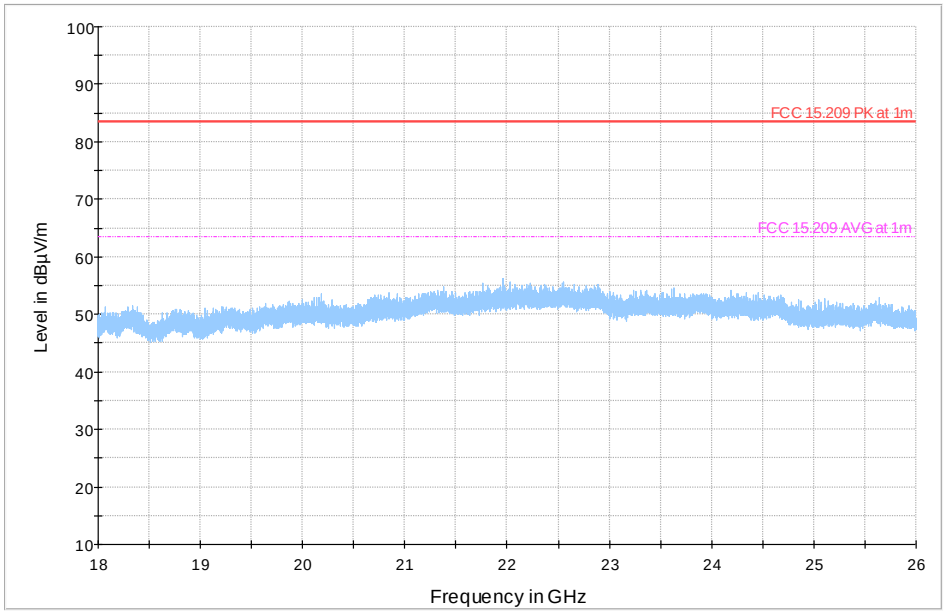
## Final_Result

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 17367.750 | --- | 40.95 | 53.98 | 13.03 | 500.0 | 1000.000 | 100.0 | H | 178.0 | 15.9 |
| 17367.750 | 53.76 | --- | 73.98 | 20.22 | 500.0 | 1000.000 | 100.0 | H | 178.0 | 15.9 |



| Plot #8 Radiated Emissions: 18-26 GHz | |
|---|---|
| **Modulation: GFSK** | **Channel: Mid** |

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*




Preview Result 2-AVG
Preview Result 1-PK+
Critical_Freqs AVG
Critical_Freqs PK+
FCC 15.209 PK at 1m
FCC 15.209 AVG at 1m
Final_Result PK+
Final_Result CAV

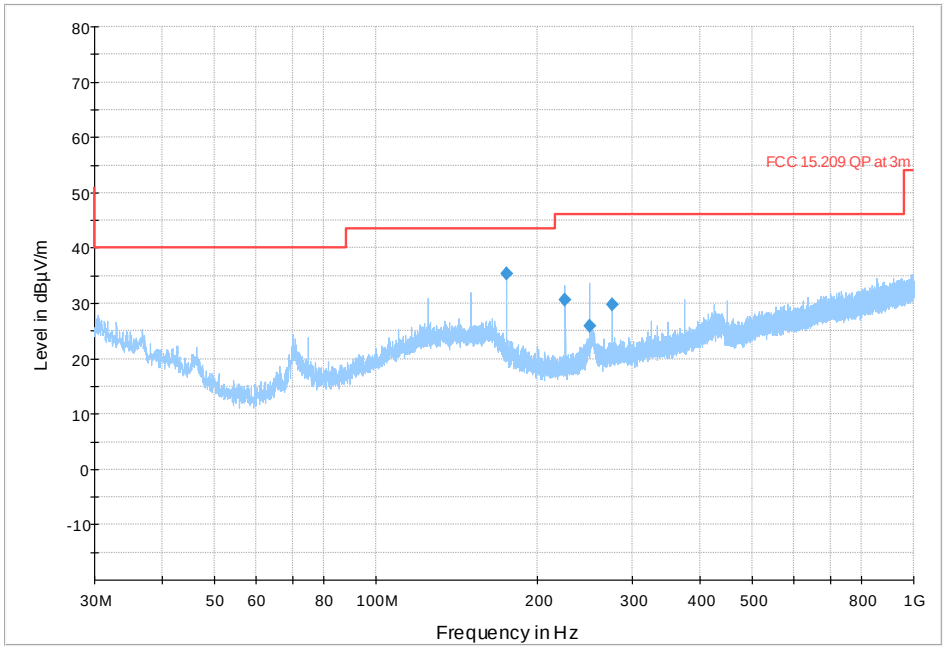
**Plot #9 Radiated Emissions: 30 MHz – 1GHz**

| **Modulation: GFSK** | **Channel: High** |
|---|---|

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*

## 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) |
|---|---|---|---|---|---|---|---|---|---|
| 174.983 | 35.38 | 43.50 | 8.12 | 500.0 | 120.000 | 100.0 | V | 315.0 | 16.2 |
| 224.970 | 30.62 | 46.02 | 15.40 | 500.0 | 120.000 | 161.0 | H | 102.0 | 12.9 |
| 249.964 | 25.90 | 46.02 | 20.12 | 500.0 | 120.000 | 125.0 | H | 28.0 | 17.9 |
| 274.990 | 29.71 | 46.02 | 16.31 | 500.0 | 120.000 | 100.0 | H | 75.0 | 14.6 |




Preview Result 2-AVG Preview Result 1-PK+ FCC 15.209 QP at 3m Final_Result Q

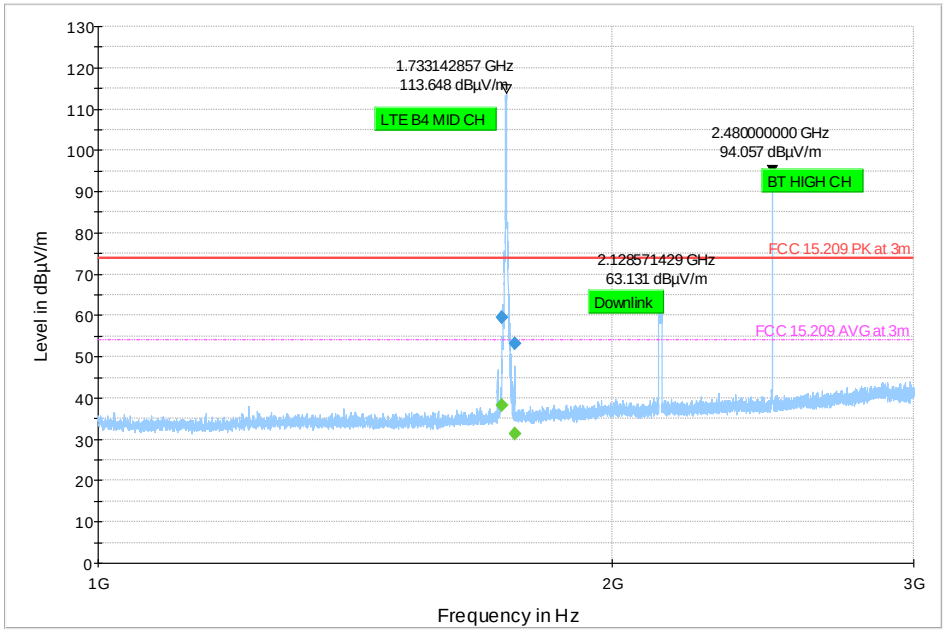
**Plot # 10 Radiated Emissions: 1-3 GHz**

**Modulation: GFSK** | **Channel: High**

*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*

## 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1722.714 | --- | 38.34 | 53.98 | 15.64 | 500.0 | 1000.000 | 137.0 | H | 1.0 | 4.1 |
| 1722.714 | 59.60 | --- | 73.98 | 14.38 | 500.0 | 1000.000 | 137.0 | H | 1.0 | 4.1 |
| 1752.286 | --- | 31.46 | 53.98 | 22.52 | 500.0 | 1000.000 | 100.0 | H | 250.0 | 4.2 |
| 1752.286 | 53.29 | --- | 73.98 | 20.69 | 500.0 | 1000.000 | 100.0 | H | 250.0 | 4.2 |



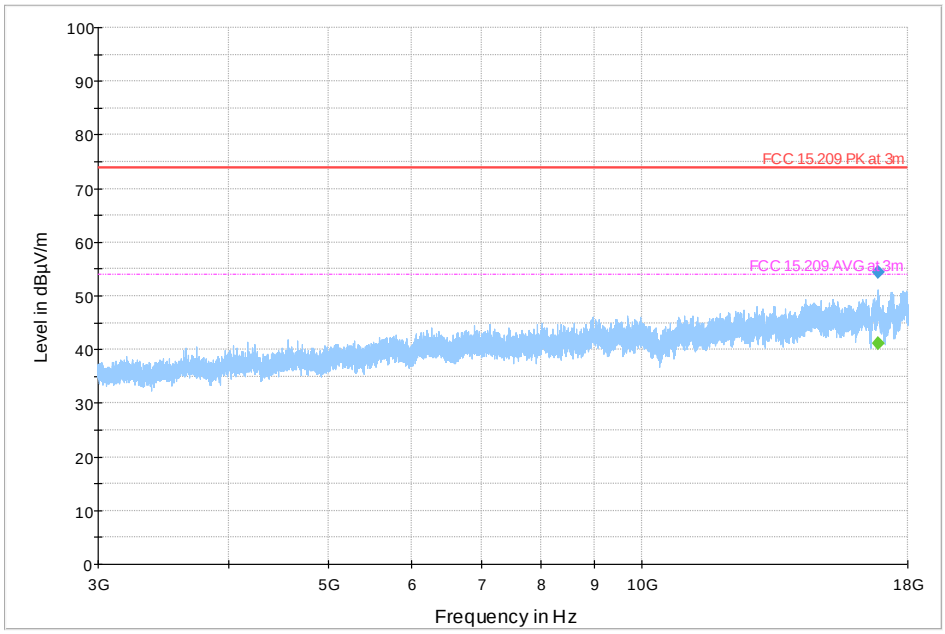
**Plot #11 Radiated Emissions: 3-18 GHz**

**Modulation: GFSK** | **Channel: High**

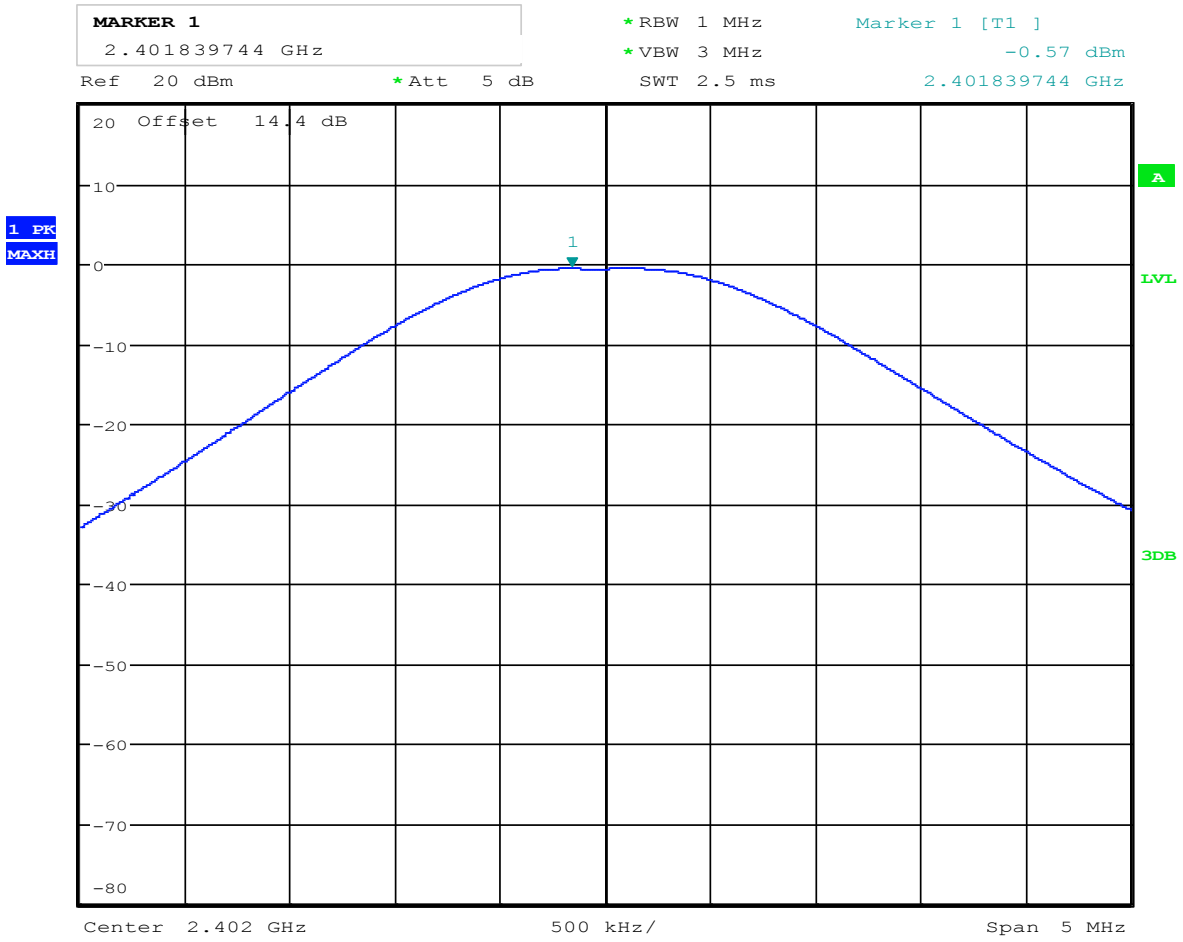
*Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.*

## 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 16865.750 | --- | 41.25 | 53.98 | 12.73 | 500.0 | 1000.000 | 205.0 | H | 115.0 | 14.3 |
| 16865.750 | 54.41 | --- | 73.98 | 19.57 | 500.0 | 1000.000 | 205.0 | H | 115.0 | 14.3 |



# 9 Conducted output power verification




low

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## 10 Test setup photos

Setup photos are included in supporting file name: "EMC_GARMI-094-21001_Setup_Photos_R1.pdf"

## 11 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 THRMOMETER | CONTROL COMPANY | 36934-164 | 181230565 | 3 YEARS | 01/10/2019 |

**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.

## 12 Revision History

| Date | Template Revision | Changes to report | Prepared by |
|---|---|---|---|
| 2021-10-20 | EMC_GARMI-094-21001_15.247_BT_DSS | Initial Version | Yuchan Lu |
| 2021-11-12 | EMC_GARMI-094-21001_15.247_BT_DSS_R1 | Added the counted output power verification | Yuchan Lu |

<<< The End >>>