



FCC / ISED & Test Report

For:
Honeywell International Inc.

Model:
NXCMR200

Product Description:
900MHz ISM radio, LTE Cat-M1 MODEM, gas & water metering metrology

Applied Rules and Standards:
47 CFR Parts 22, 24, and 27
RSS: 132 Issue 3, 133 Issue 6, 139 Issue 3

FCC ID: QZC-NXCMR200
IC ID: 4577A-NXCMR200

REPORT #: EMC_HONEY-225-22001_FCC_Spotcheck

DATE: 2022-04-11



A2LA Accredited

IC recognized #
3462B-1

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CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

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1 Assessment

The following device as further described in section 3 of this report was evaluated against the applicable criteria specified in the Code of Federal Regulations Title 47 parts 22, 24 and 27 and Industry Canada Standards RSS-GEN issue 5, RSS-132 issue 3, RSS-133 issue 6 and RSS-139 issue 3.

No deficiencies were ascertained.

Company Name	Product Description	Model #
Honeywell International Inc.	900MHz ISM radio, LTE Cat-M1 MODEM, gas & water metering metrology	NXCMR200

Responsible for Testing Laboratory:

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Date	Section	Name	Signature

Responsible for the Report:

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Date	Section	Name	Signature

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:	Cathy Palacios

2.2 Identification of the Client

Client's Name:	Honeywell International Inc.
Street Address:	208 South Rogers Lane
City/Zip Code	Raleigh, NC 27610
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	NXCMR200
HW Version	1.0
SW Version	1.10
FCC-ID	QZC-NXCMR200
IC-ID:	4577A-NXCMR200
PMN:	Next Generation Cellular Module
Product Description	900MHz ISM radio, LTE Cat-M1 MODEM, gas & water metering metrology
Radios included in device	ISM: • SiLabs EFR32FG1 SoC • FSK modulation • 25 channels frequency hopping Cellular: • Quectel BG95-M2 (CAT-M1) • FCC ID: XMR2020BG95M2; IC ID: 10224A-2020BG95M2
Operating Band	LTE 2, 4, 5, 12, 13
Max. declared antenna gain	multiband dipole, Gain = 1dBi 699-960MHz, Gain = 3.5dBi 1710-2170 MHz
Power Supply/ Rated Operating Voltage Range	3.2 VDC – 3.6 VDC
Operating Temperature Range	-40° to 85° C
Sample Revision	☐ Prototype ☐ Production ☒ Pre-Production

3.2 EUT Sample details

EUT #	Model Number	HW Version	SW Version	Comments
1	NXCMR200	1.0	1.10	

3.3 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Serial Number
1	-----	-----	-----	-----

3.4 Test Sample Configuration

Set-up #	EUT / AE used for set-up	Comments
1	EUT#1	

4 **Subject of Investigation**

The objective of the measurements done by CETECOM Inc. was to evaluate the compliance of the EUT against the relevant requirements specified in the Code of Federal Regulations Title 47 parts 22, 24, 27 and ISSED Standards RSS-132 issue 3, RSS-133 issue 6, and RSS-139 issue 3.

4.1 **Dates of Testing:**

3/30/2022 – 4/1/2022

4.2 **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.

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 – 1 GHz)	3.17 dB	3.34 dB
(1 GHz – 3 GHz)	5.01 dB	4.45 dB
(> 3 GHz)	4.0 dB	4.79 dB

4.3 **Environmental Conditions during Testing:**

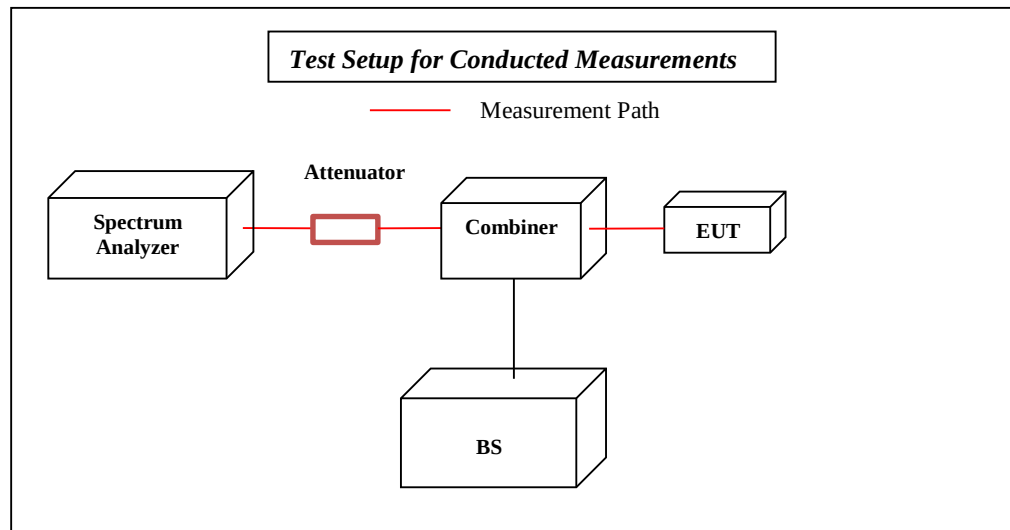
The following environmental conditions were maintained during the course of testing:

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

Deviating test conditions are indicated at individual test description where applicable.

5 Measurement Procedures

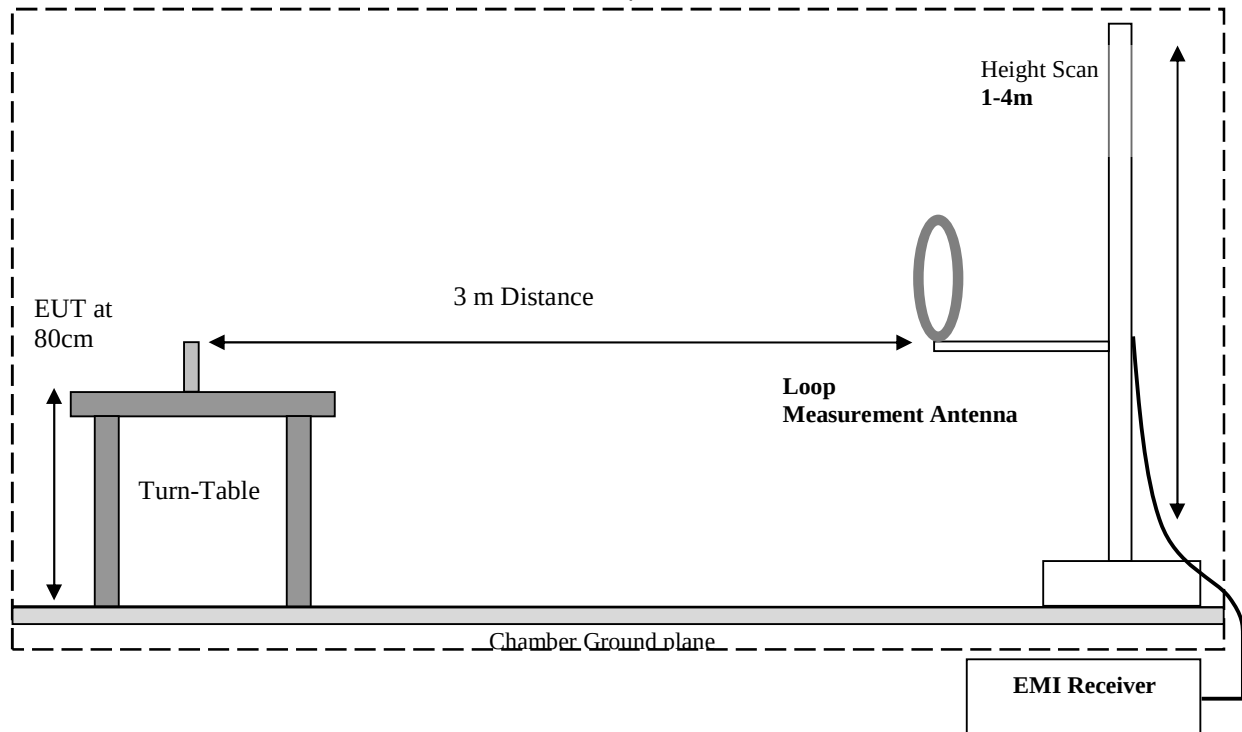
Testing is performed according to the guidelines provided in FCC publication (KDB) 971168 D01 v03r01 – “Measurement Guidance for Certification of Licensed Digital Transmitters” and according to relevant parts of ANSI/TIA-603-D-2010 as detailed below.



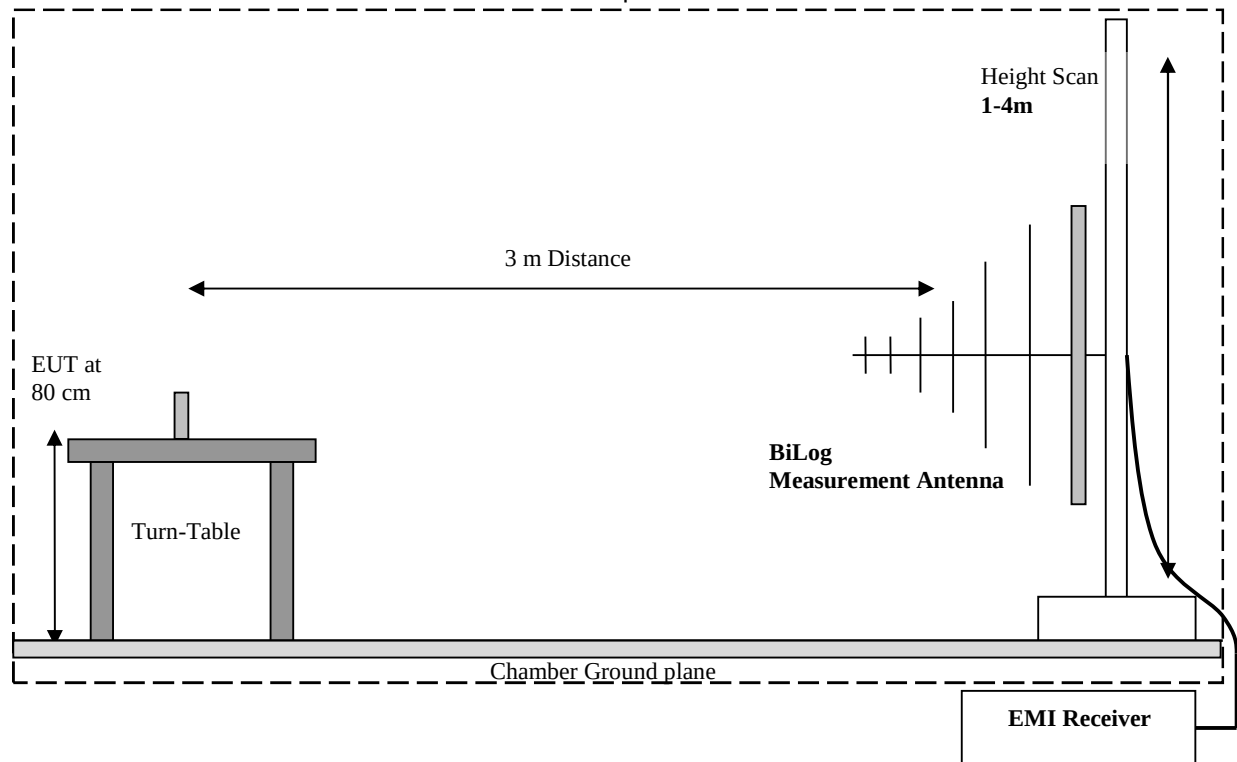
5.1 Radiated Measurement

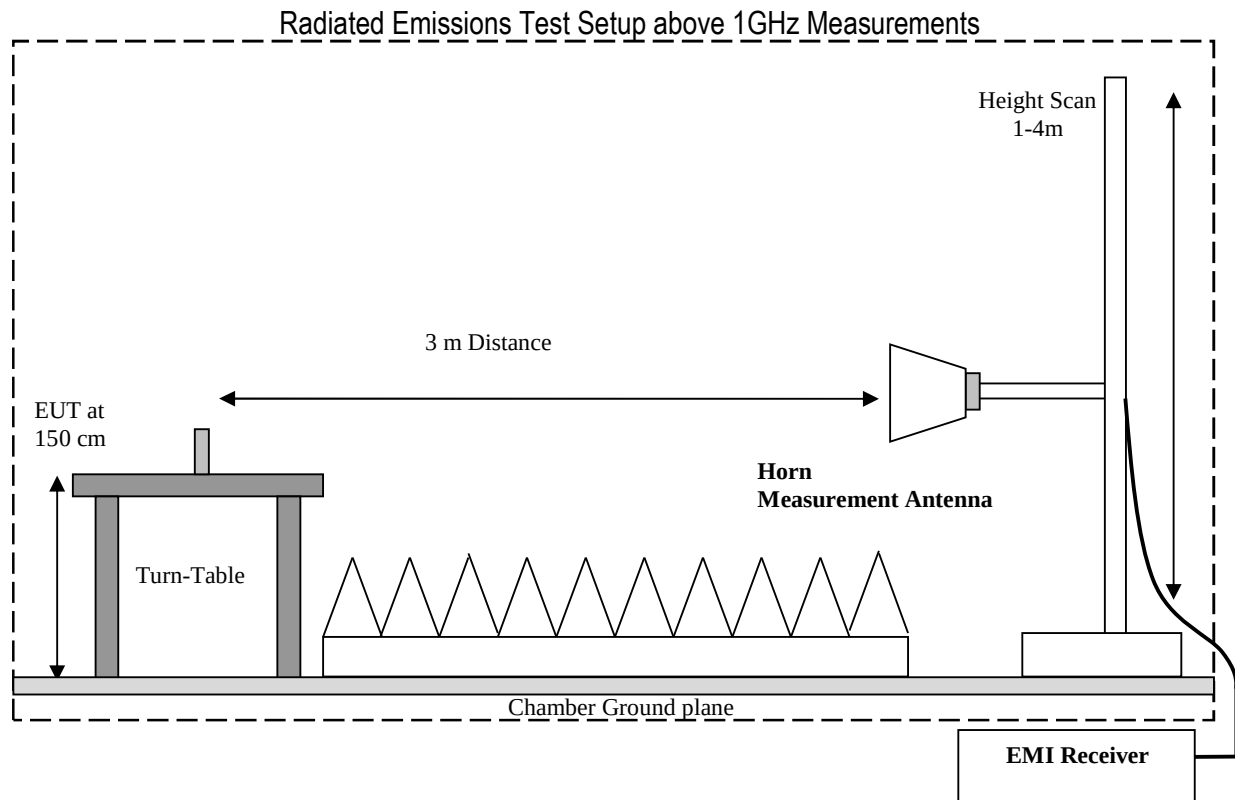
- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to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





5.2 Sample Calculations for Field Strength Measurements

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

- Measured reading in dB μ V
- Cable Loss between the receiving antenna and SA in dB and
- 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

6 Measurement Results Summary

6.1 Part 22 / RSS-132

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046; §22.913 (a)	RF Output Power	Nominal		☐	☐	☐	■	Note 2
§2.1055; §22.355	Frequency Tolerance	Extreme Temperature and Voltage		☐	☐	☐	■	Note 2
§2.1049; §22.917	Occupied Bandwidth	Nominal		☐	☐	☐	■	Note 2
§2.1051; §22.917	Band Edge Compliance	Nominal		☐	☐	☐	■	Note 2
§2.1051; §22.917	Conducted Spurious Emissions	Nominal		☐	☐	☐	■	Note 2
§2.1053; §22.917	Radiated Spurious Emissions	Nominal	LTE 5	■	☐	☐	☐	Complies

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

Note 2: Leveraged from module certification report under FCC ID: XMR2020BG95M2

6.2 Part 24 / RSS-133

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046; §24.232 (a)	RF Output Power	Nominal		☐	☐	☐	■	Note 2
§2.1055; §24.235	Frequency Stability	Extreme Temperature and Voltage		☐	☐	☐	■	Note 2
§2.1049; §24.238	Occupied Bandwidth	Nominal		☐	☐	☐	■	Note 2
§2.1051; §24.238	Band Edge Compliance	Nominal		☐	☐	☐	■	Note 2
§2.1051; §24.238	Conducted Spurious Emissions	Nominal		☐	☐	☐	■	Note 2
§2.1053; §24.238	Radiated Spurious Emissions	Nominal	LTE 2	■	☐	☐	☐	Complies

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

Note 2: Leveraged from module certification report under FCC ID: XMR2020BG95M2

6.3 Part 27 / RSS-139

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046; §27.50	RF Output Power	Nominal		☐	☐	☐	■	Note 2
§2.1055; §27.54	Frequency Stability	Extreme Temperature and Voltage		☐	☐	☐	■	Note 2
§2.1049; §27.53	Occupied Bandwidth	Nominal		☐	☐	☐	■	Note 2
§2.1051; §27.53	Band Edge Compliance	Nominal		☐	☐	☐	■	Note 2
§2.1051; §27.53	Conducted Spurious Emissions	Nominal		☐	☐	☐	■	Note 2
§2.1053; §27.53	Radiated Spurious Emissions	Nominal	LTE 5 LTE 12 LTE 13	■	☐	☐	☐	Complies

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

Note 2: Leveraged from module certification report under FCC ID: XMR2020BG95M2

7 Test Result Data

7.1 Radiated Spurious Emissions

7.1.1 Measurement utilizing KDB 971168 D01 Power Meas License Digital Systems v03r01, and according to ANSI/TIA-603-D-2010

Spectrum Analyzer Settings for FCC 22

Frequency Range	30MHz – 1 GHz	1 – 1.58 GHz	1.58 – 9 GHz
Resolution Bandwidth	100 kHz	1 MHz	1 MHz
Video Bandwidth	100 kHz	1 MHz	1 MHz
Detector	Peak	Peak	Peak
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep Time	Auto	Auto	Auto

Spectrum Analyzer Settings for FCC 24

Frequency Range	30MHz – 1 GHz	1 – 2.7 GHz	2.7 – 18 GHz	18 – 19.1 GHz
Resolution Bandwidth	100 kHz	1 MHz	1 MHz	1 MHz
Video Bandwidth	100 kHz	1 MHz	1 MHz	1 MHz
Detector	Peak	Peak	Peak	Peak
Trace Mode	Max Hold	Max Hold	Max Hold	Max Hold
Sweep Time	Auto	Auto	Auto	Auto

7.1.2 Limits:

7.1.2.1 FCC Part 22.917 (a); FCC Part 24.238 (a); FCC Part 27.53 (h)

Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

7.1.2.2 RSS-132 Part 5.5; RSS-133 Part 6.5; RSS-139 Part 6.6 Transmitter Unwanted Emissions

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

i. In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).

ii. After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

Note: The limit calculation result is a constant of -13 dBm.

7.1.3 Test conditions and setup:

Ambient Temperature (C)	EUT Set-Up #	EUT operating mode	Power Input
23	1	Cellular	3.6 VDC

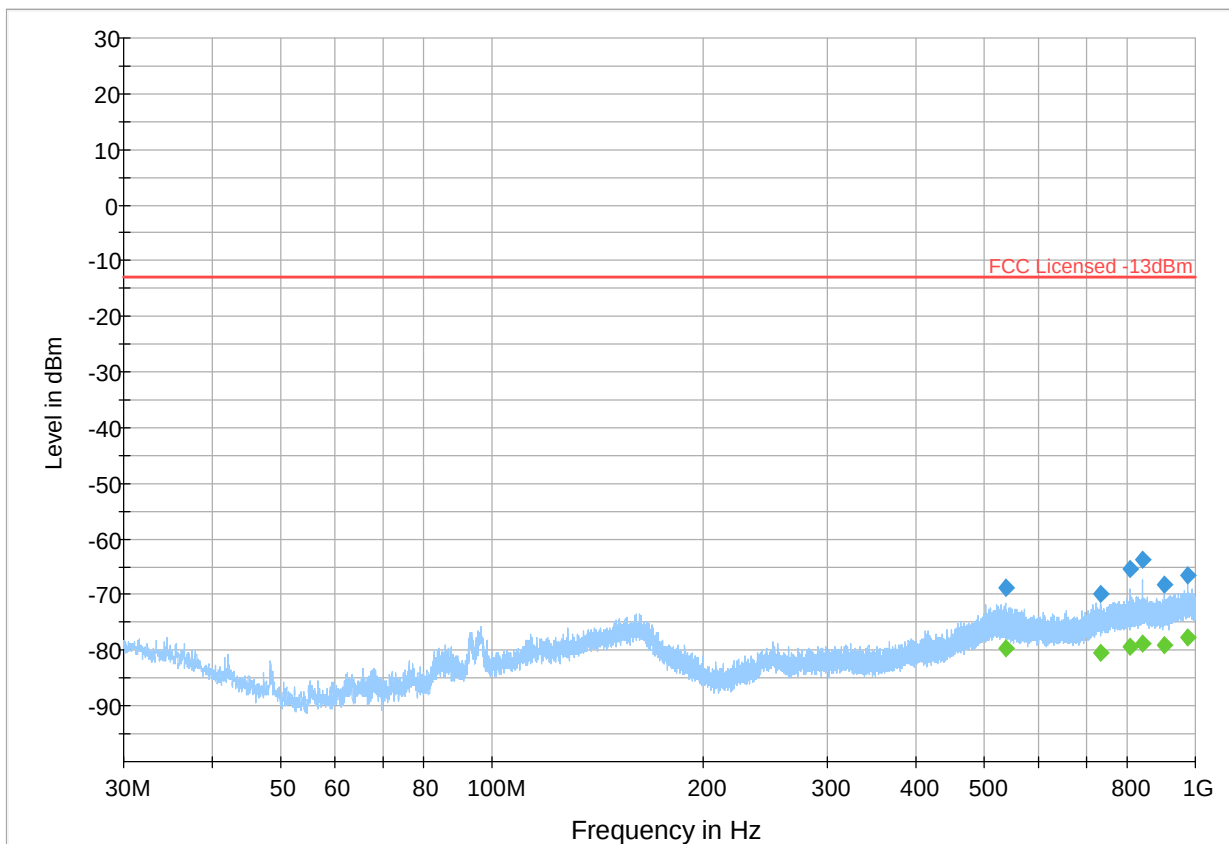
7.1.4 Measurement result:

Plot #	Channel	EUT operating mode	Scan Frequency	Limit (dBm)	Result
1-3	Mid	LTE 2	30 MHz – 18 GHz	-13	Pass
4-6	Mid	LTE 4	30 MHz – 18 GHz	-13	Pass
7-9	Mid	LTE 5	30 MHz – 9 GHz	-13	Pass
10-12	Mid	LTE 12	30 MHz – 9 GHz	-13	Pass
13-15	Mid	LTE 13	30 MHz – 9 GHz	-13	Pass

7.1.5 Measurement Plots:

Plot # 1

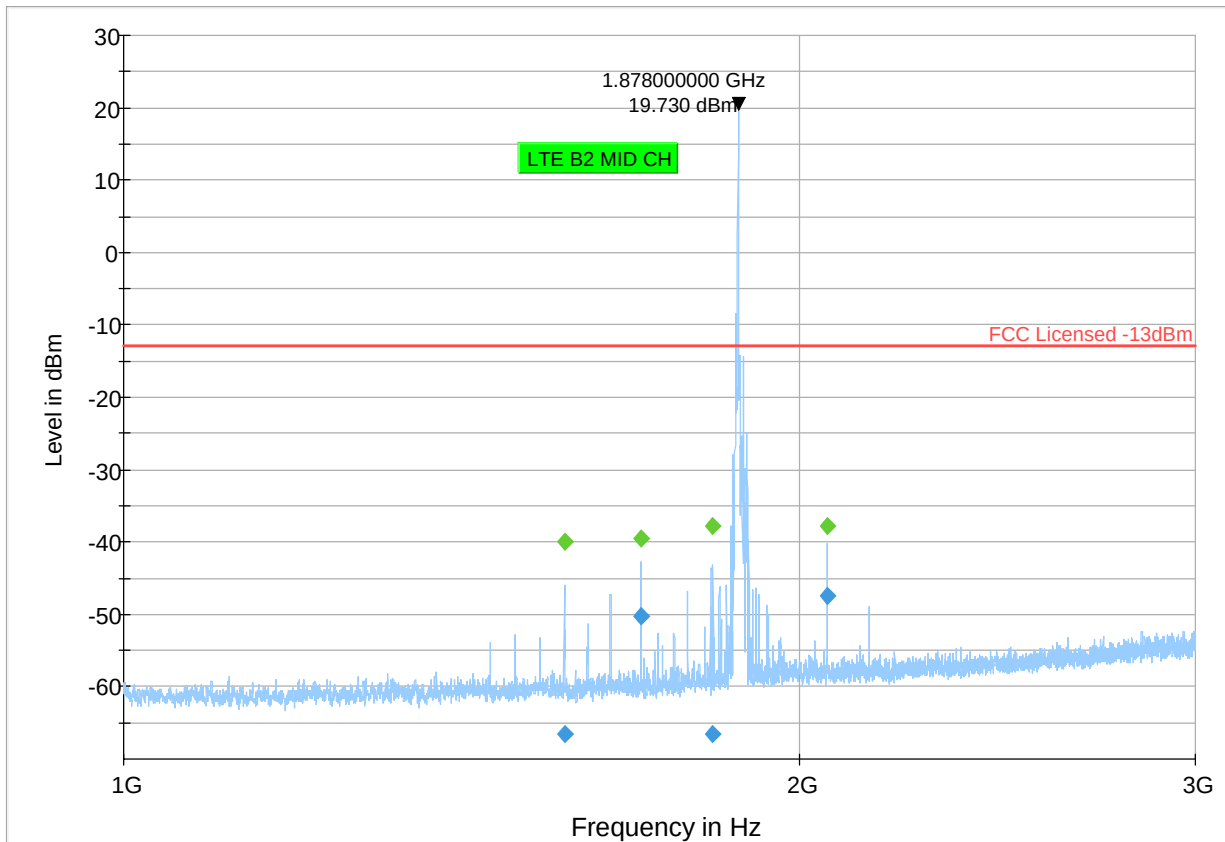
Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
536.58	-68.83	---	-13.00	55.83	500.0	120.0	134.0	H	180.0	-103.9
536.58	---	-79.68	---	---	500.0	120.0	134.0	H	180.0	-103.9
732.16	---	-80.49	---	---	500.0	120.0	107.0	H	205.0	-100.4
732.16	-69.80	---	-13.00	56.80	500.0	120.0	107.0	H	205.0	-100.4
806.34	-65.46	---	-13.00	52.46	500.0	120.0	270.0	H	257.0	-99.2
806.34	---	-79.35	---	---	500.0	120.0	270.0	H	257.0	-99.2
841.09	---	-78.71	---	---	500.0	120.0	218.0	H	-41.0	-98.5
841.09	-63.78	---	-13.00	50.78	500.0	120.0	218.0	H	-41.0	-98.5
901.59	-68.19	---	-13.00	55.19	500.0	120.0	125.0	V	279.0	-98.7
901.59	---	-79.08	---	---	500.0	120.0	125.0	V	279.0	-98.7
972.84	-66.53	---	-13.00	53.53	500.0	120.0	275.0	V	100.0	-97.3
972.84	---	-77.73	---	---	500.0	120.0	275.0	V	100.0	-97.3



Preview Result 1-PK+ FCC Licensed -13dBm Final_Result PK+ Final_Result RM

Plot # 2

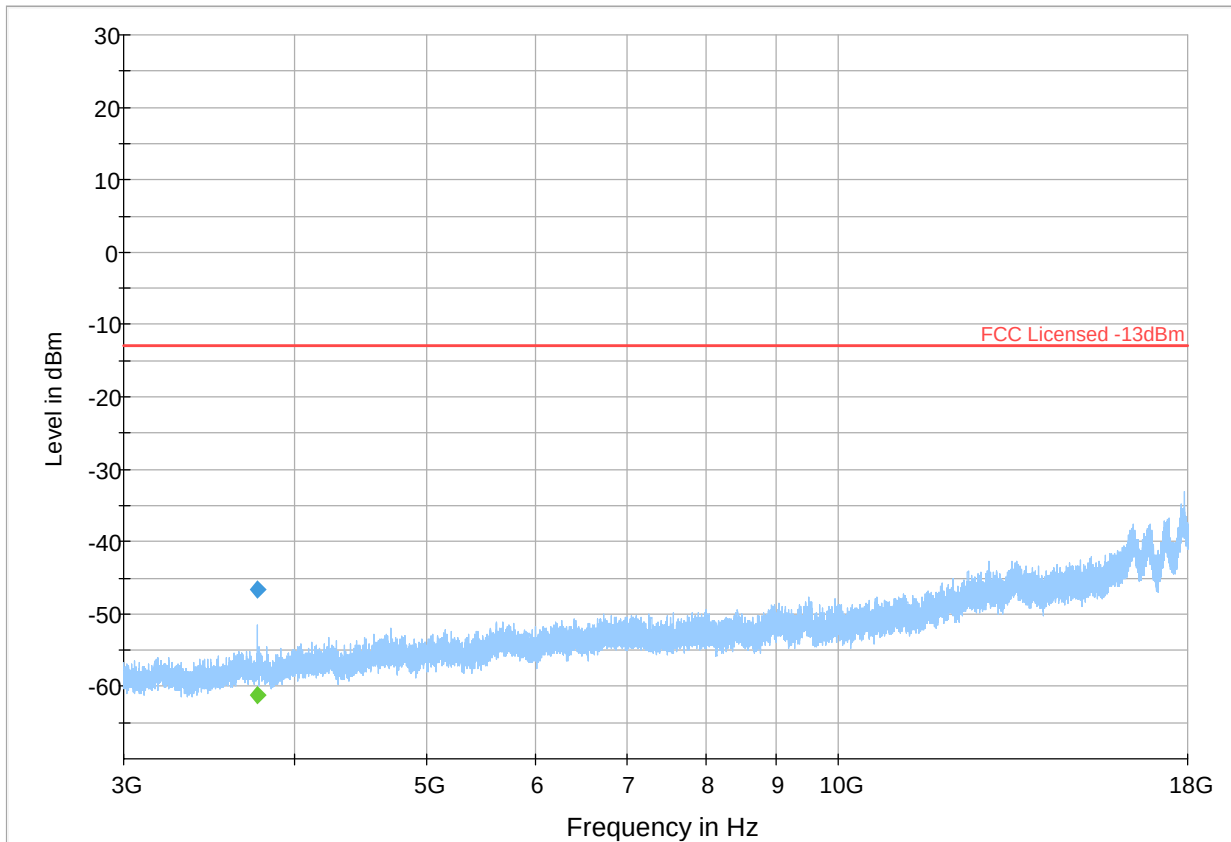
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1570.75	---	-40.04	---	---	500.0	1000.0	193.0	H	54.0	-91.9
1570.75	-66.59	---	-13.00	53.59	500.0	1000.0	193.0	H	54.0	-91.9
1699.00	---	-39.54	---	---	500.0	1000.0	151.0	H	62.0	-91.5
1699.00	-50.24	---	-13.00	37.24	500.0	1000.0	151.0	H	62.0	-91.5
1829.50	---	-37.72	---	---	500.0	1000.0	261.0	H	126.0	-90.9
1829.50	-66.62	---	-13.00	53.62	500.0	1000.0	261.0	H	126.0	-90.9
2057.00	---	-37.73	---	---	500.0	1000.0	146.0	H	269.0	-90.1
2057.00	-47.48	---	-13.00	34.48	500.0	1000.0	146.0	H	269.0	-90.1



— Preview Result 1-PK+
 — FCC Licensed -13dBm
 ◆ Final_Result RMS
 ◆ Final_Result PK

Plot # 3

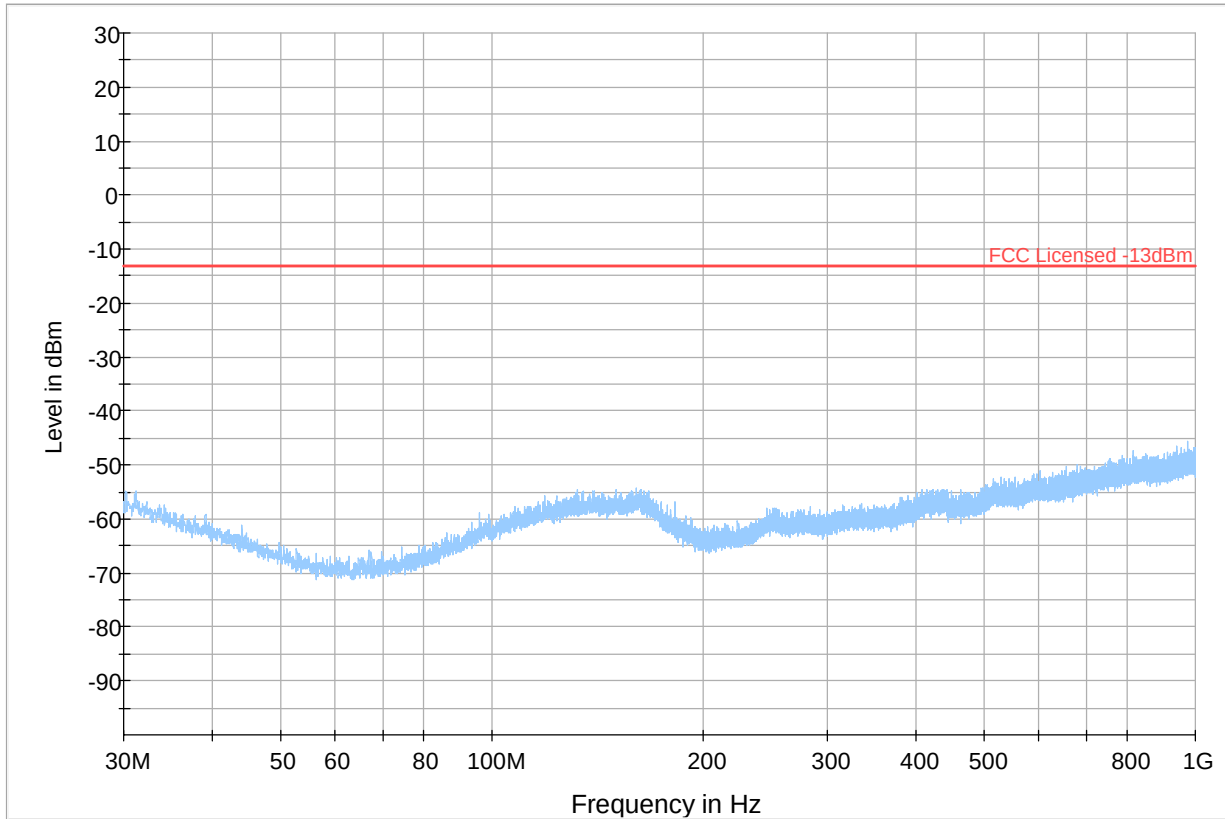
Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3755.50	---	-61.10	---	---	500.0	1000.0	116.0	H	37.0	-100.9
3755.50	-46.67	---	-13.00	33.67	500.0	1000.0	116.0	H	37.0	-100.9



Preview Result 1-PK+ FCC Licensed -13dBm Final_Result PK+ Final_Result RMS

Plot # 4

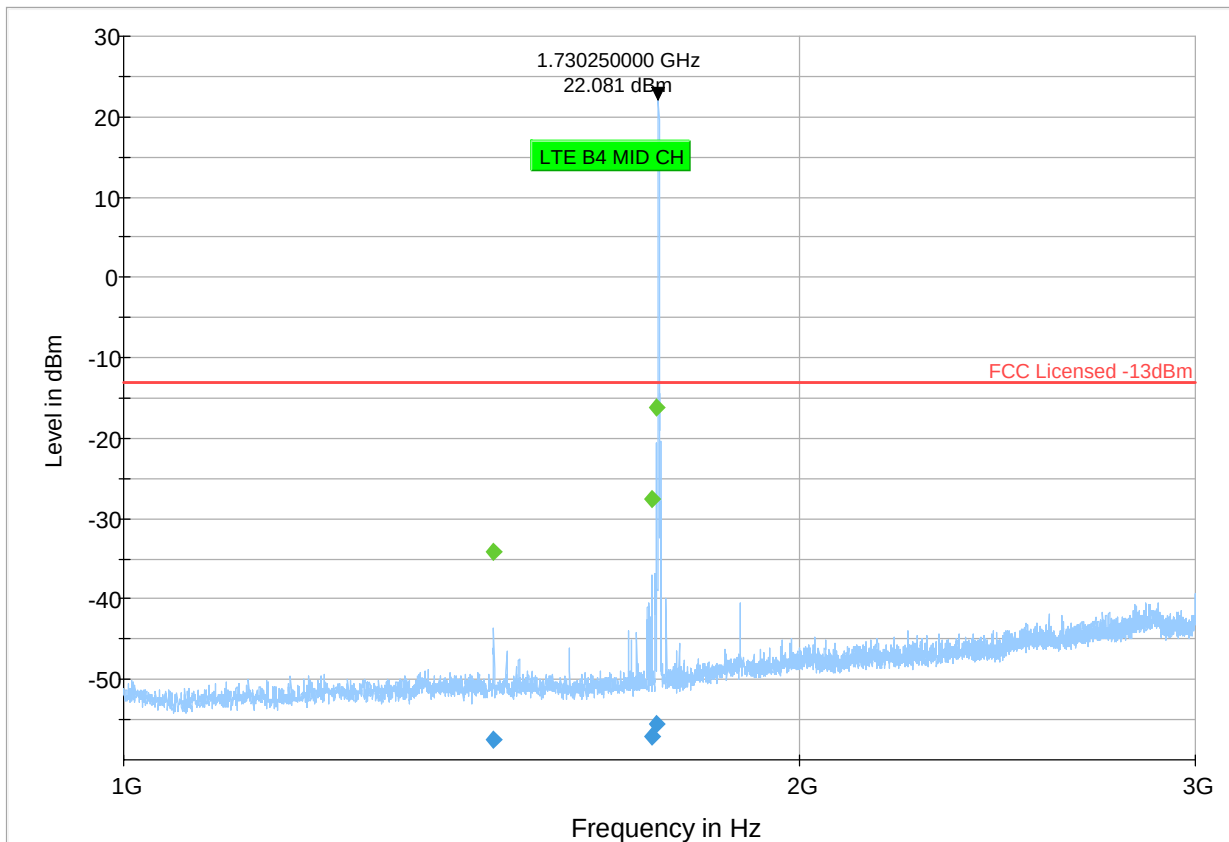
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
---	---	---	---	---	---	---	---		---	---



◆ Preview Result 1-PK+ Final_Result RMS * Critical_Freqs PK+ Final_Result PK+ — FCC Licensed -13dBm

Plot # 5

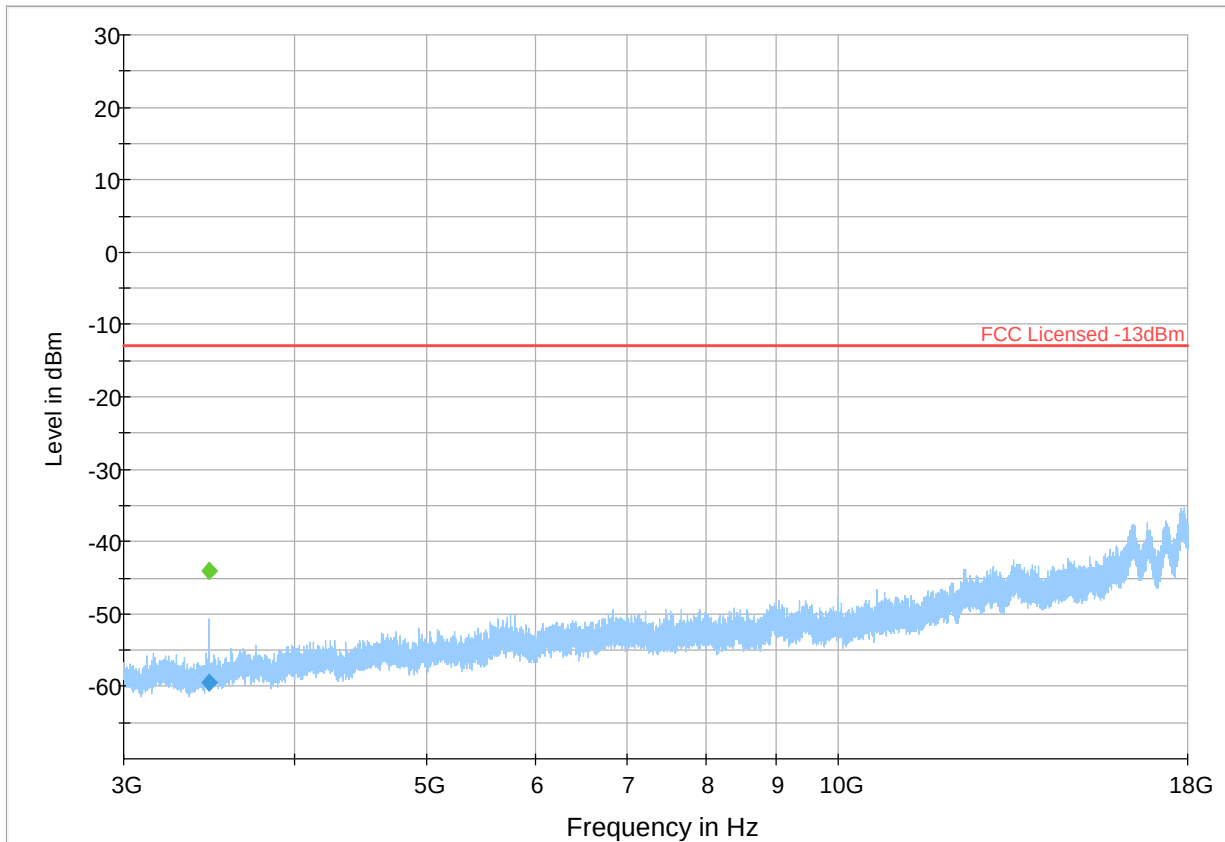
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1461.75	---	-34.08	---	---	500.0	1000.0	261.0	H	94.0	-66.4
1461.75	-57.49	---	-13.00	44.49	500.0	1000.0	261.0	H	94.0	-66.4
1718.75	---	-27.57	---	---	500.0	1000.0	107.0	V	256.0	-65.2
1718.75	-57.16	---	-13.00	44.16	500.0	1000.0	107.0	V	256.0	-65.2
1725.75	---	-16.13	---	---	500.0	1000.0	133.0	V	240.0	-65.1
1725.75	-55.62	---	-13.00	42.62	500.0	1000.0	133.0	V	240.0	-65.1



Preview Result 1-PK+ FCC Licensed -13dBm Final_Result RMS Final_Result PK

Plot # 6

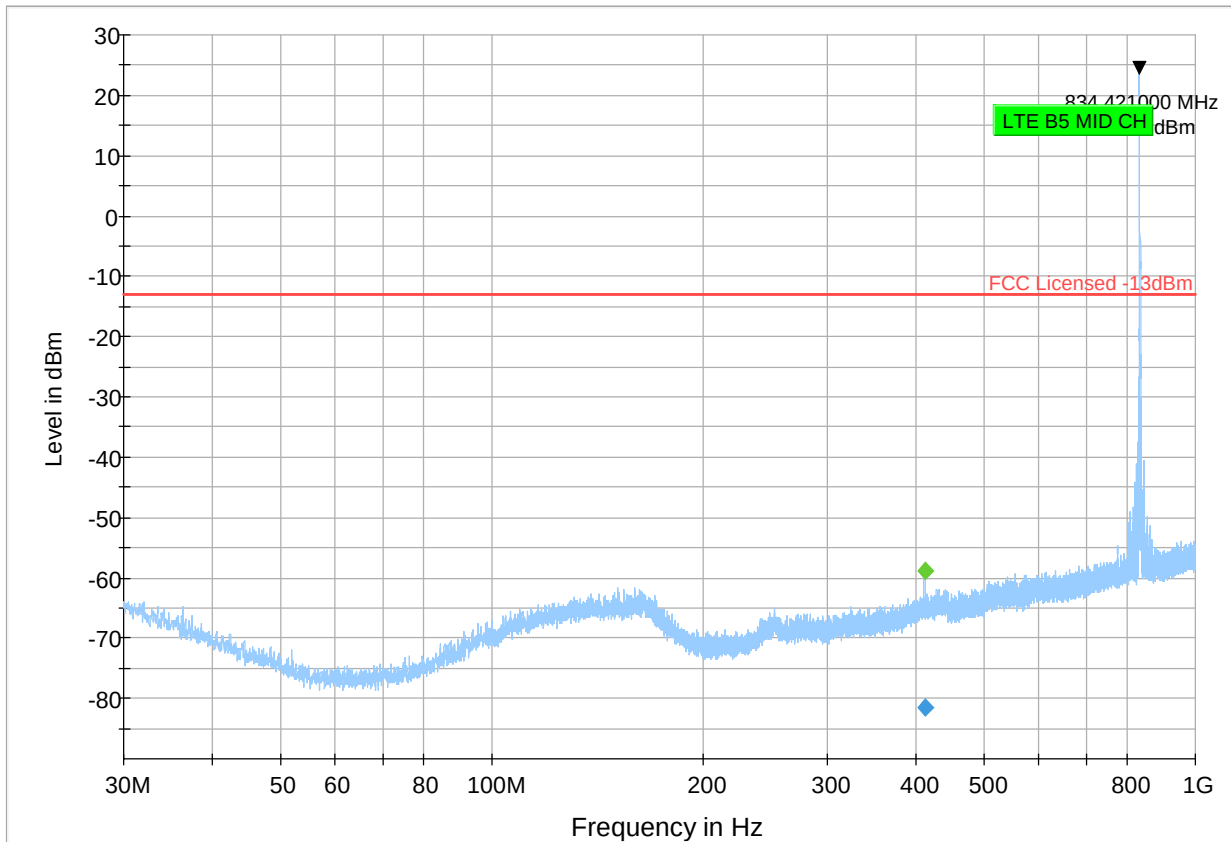
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3460.75	---	-44.00	---	---	500.0	1000.0	100.0	H	49.0	-102.2
3460.75	-59.40	---	-13.00	46.40	500.0	1000.0	100.0	H	49.0	-102.2



Preview Result 1-PK+ FCC Licensed -13dBm Final_Result RMS Final_Result PK

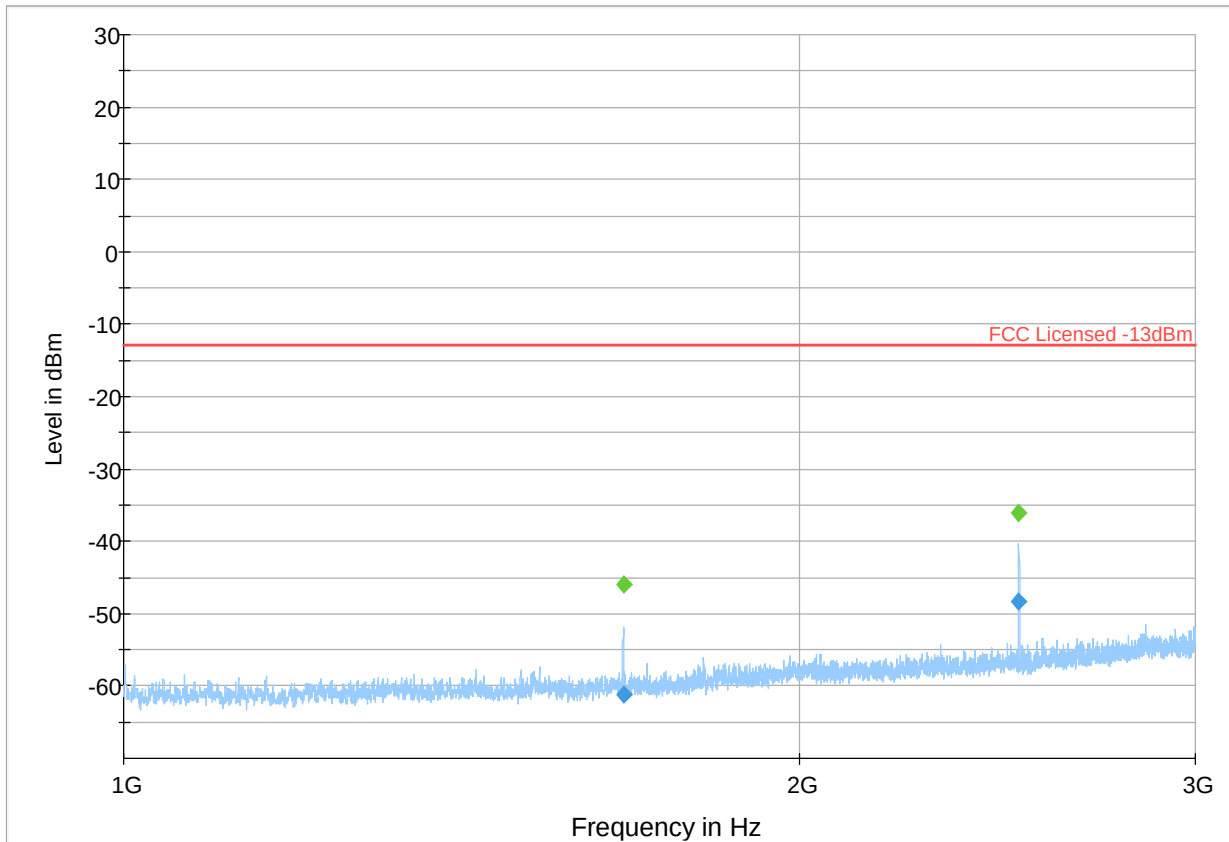
Plot # 7

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
412.02	---	-58.84	---	---	500.0	100.0	100.0	H	46.0	-71.5
412.02	-81.56	---	-13.00	68.56	500.0	100.0	100.0	H	46.0	-71.5



Plot # 8

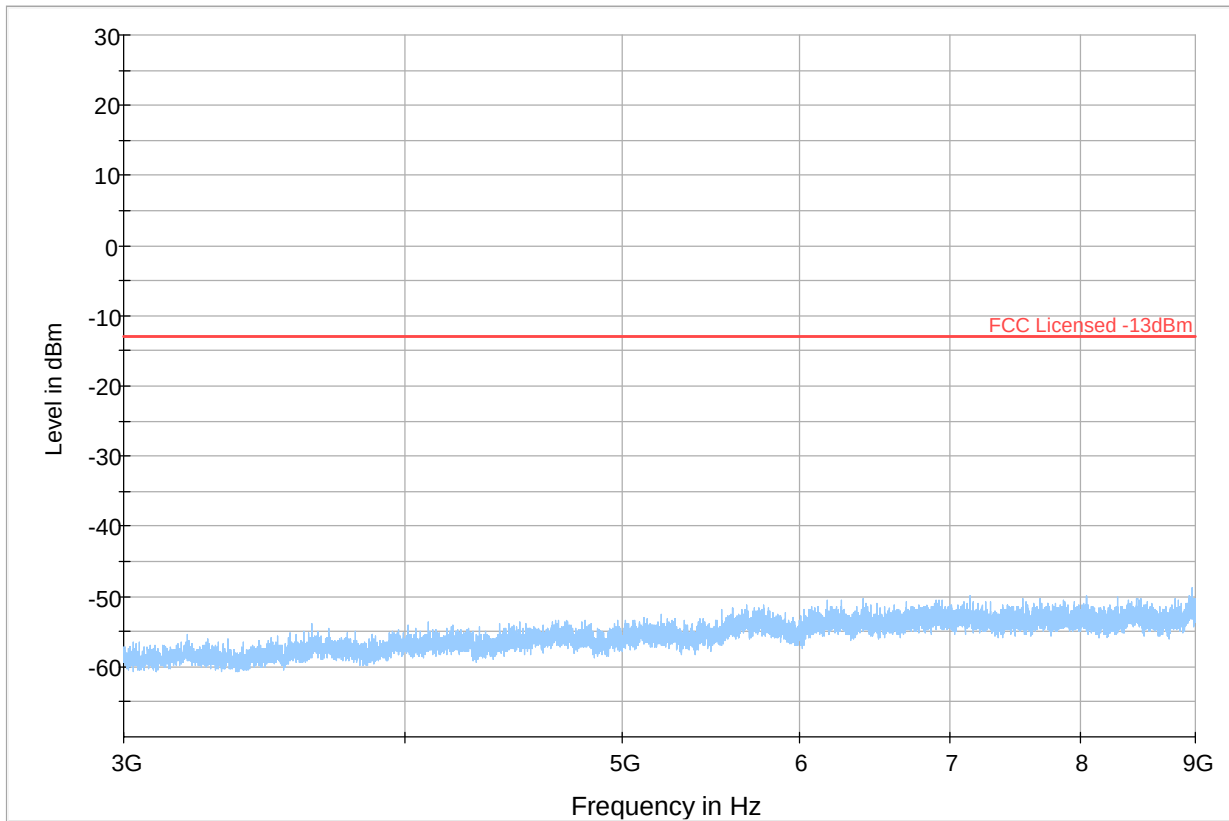
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1669.00	-61.11	---	-13.00	48.11	500.0	1000.0	151.0	V	215.0	-91.7
1669.00	---	-45.89	---	---	500.0	1000.0	151.0	V	215.0	-91.7
2503.75	-48.39	---	-13.00	35.39	500.0	1000.0	100.0	H	46.0	-88.7
2503.75	---	-36.06	---	---	500.0	1000.0	100.0	H	46.0	-88.7



Preview Result 1-PK+ FCC Licensed -13dBm Final_Result RMS Final_Result PK

Plot # 9

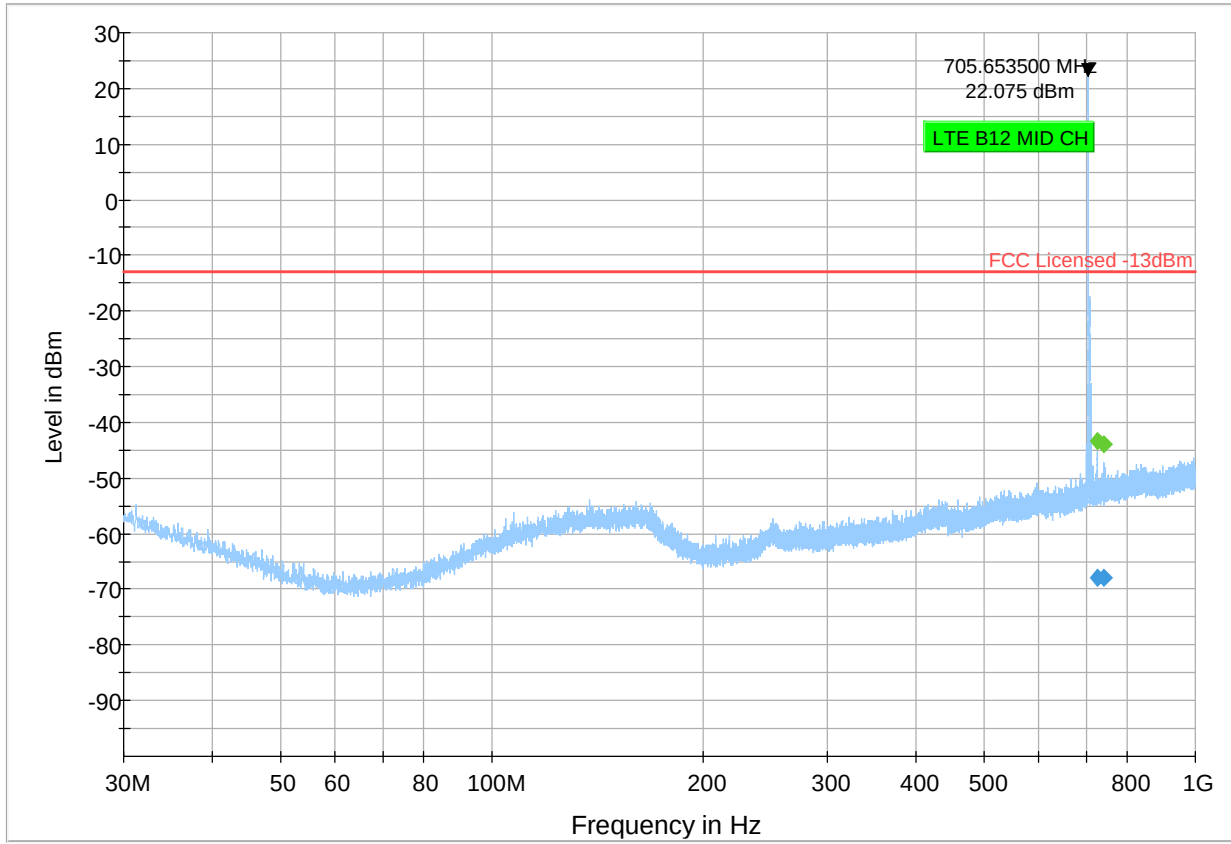
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
---	---	---	---	---	---	---	---		---	---



Preview Result 1-PK+ * Critical_Freqs PK+ FCC Licensed -13dBm
◆ Final_Result RMS ◆ Final_Result PK+

Plot # 10

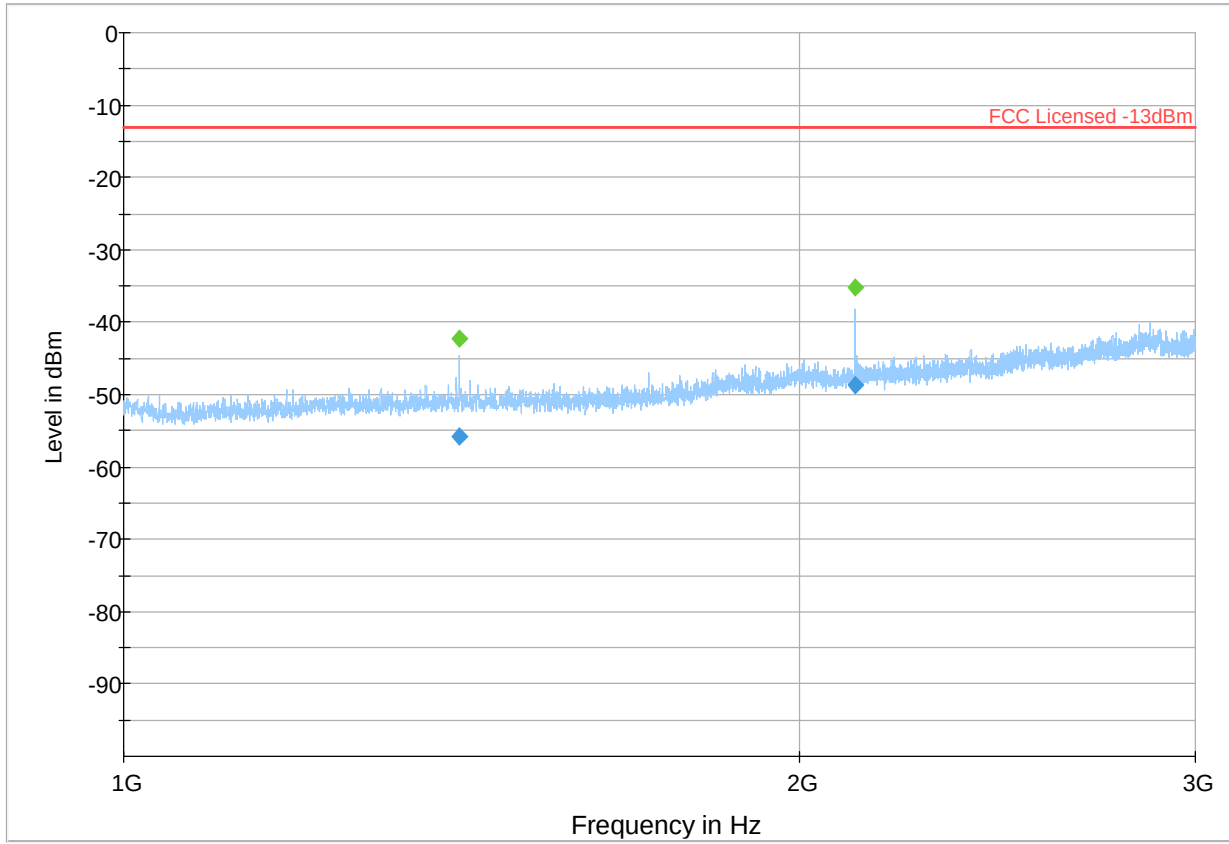
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
726.19	---	-43.26	---	---	500.0	100.0	125.0	H	238.0	-65.6
726.19	-68.04	---	-13.00	55.04	500.0	100.0	125.0	H	238.0	-65.6
742.59	---	-44.02	---	---	500.0	100.0	107.0	H	261.0	-65.2
742.59	-68.02	---	-13.00	55.02	500.0	100.0	107.0	H	261.0	-65.2



Preview Result 1-PK+ FCC Licensed -13dBm Final_Result RMS Final_Result PK

Plot # 11

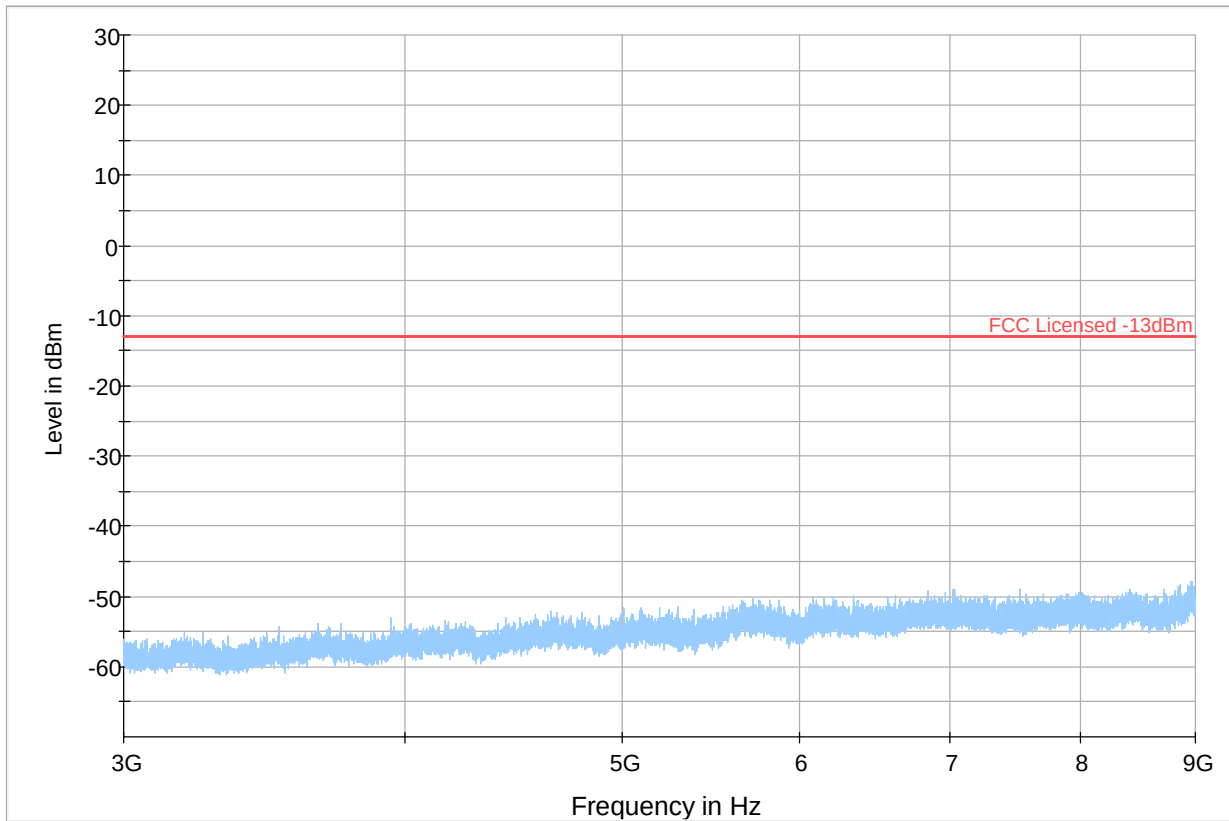
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1410.75	---	-42.22	---	---	500.0	1000.0	100.0	H	61.0	-66.4
1410.75	-55.90	---	-13.00	42.90	500.0	1000.0	100.0	H	61.0	-66.4
2116.50	---	-35.30	---	---	500.0	1000.0	218.0	H	140.0	-63.4
2116.50	-48.72	---	-13.00	35.72	500.0	1000.0	218.0	H	140.0	-63.4



Preview Result 1-PK+ FCC Licensed -13dBm Final_Result RMS Final_Result PK

Plot # 12

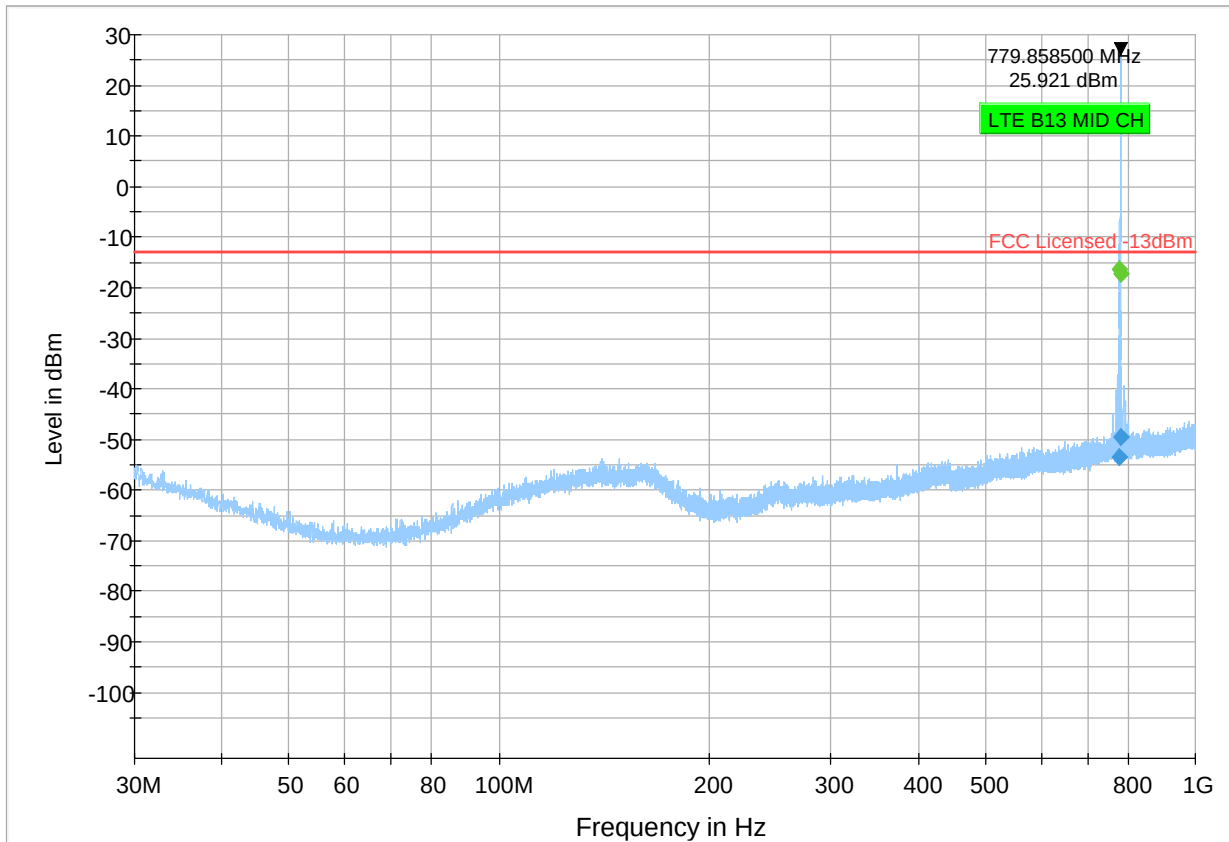
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
---	---	---	---	---	---	---	---		---	---



Preview Result 1-PK+ * Critical_Freqs PK+ FCC Licensed -13dBm
◆ Final_Result RMS ◆ Final_Result PK+

Plot # 13

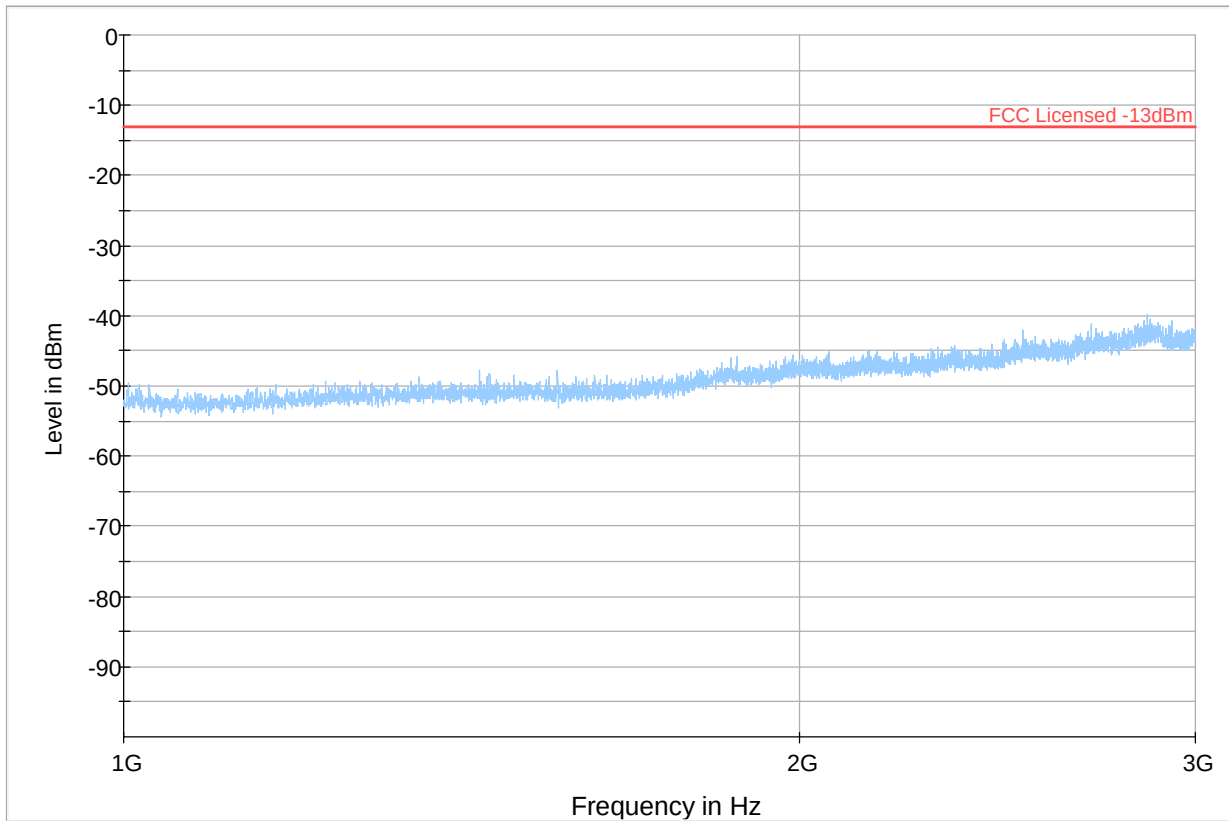
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
776.92	---	-16.45	---	---	500.0	100.0	116.0	H	287.0	-64.7
776.92	-53.57	---	-13.00	40.57	500.0	100.0	116.0	H	287.0	-64.7
781.92	---	-17.41	---	---	500.0	100.0	263.0	H	313.0	-64.6
781.92	-49.33	---	-13.00	36.33	500.0	100.0	263.0	H	313.0	-64.6



Preview Result 1-PK+ FCC Licensed -13dBm Final_Result RMS Final_Result PK

Plot # 14

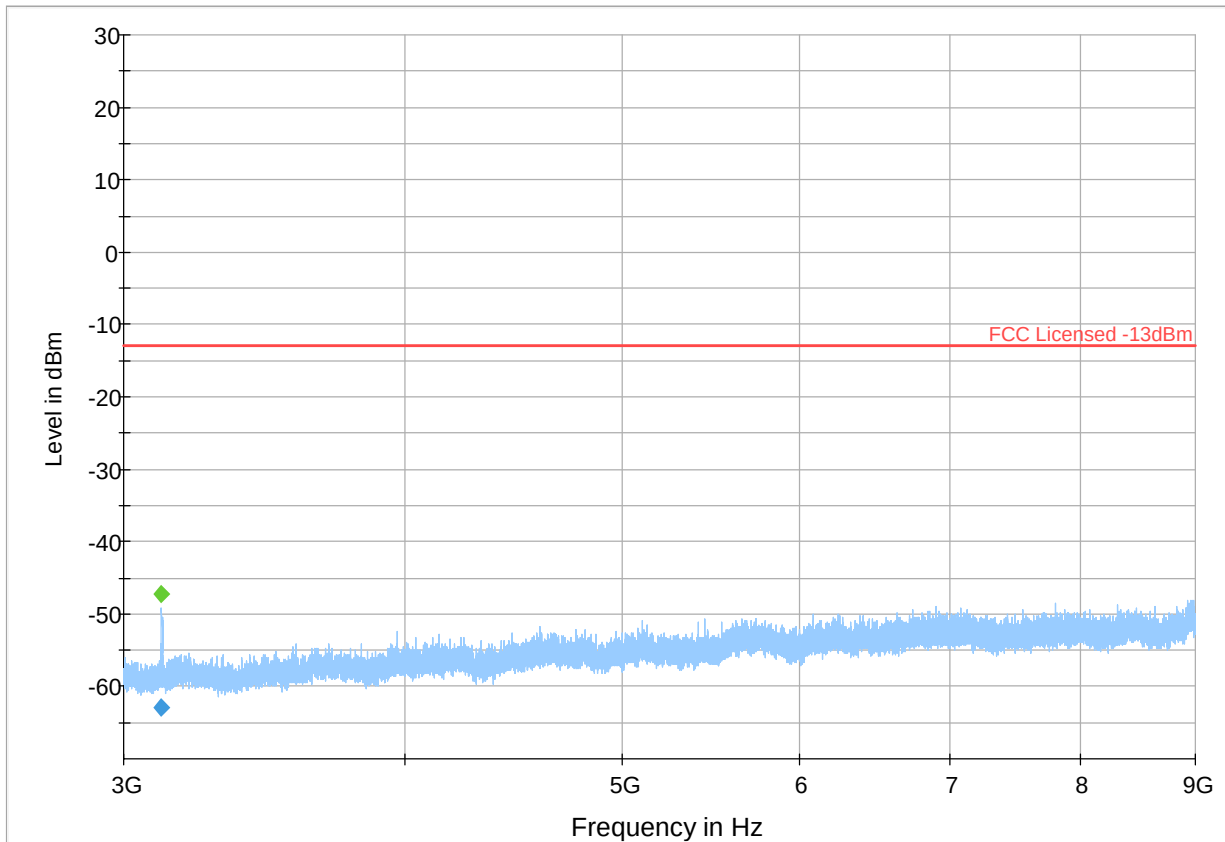
Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
---	---	---	---	---	---	---	---		---	---



Preview Result 1-PK+ * Critical_Freqs PK+ FCC Licensed -13dBm
◆ Final_Result RMS ◆ Final_Result PK+

Plot # 15

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3119.20	---	-47.23	---	---	500.0	1000.0	120.0	H	57.0	-103.4
3119.20	-62.85	---	-13.00	49.85	500.0	1000.0	120.0	H	57.0	-103.4



Preview Result 1-PK+ FCC Licensed -13dBm Final_Result RMS Final_Result PK

7.2 EIRP Verification

LTE 2

CTIA Report (RP_LTE-FDD 2_ch18900_4@25_tot)

Test Information

Test Method:	Radiated Power Mobile Phone
Test Condition:	FS: Free Space
EUT Identification:	IMEI: 863859043300453; UE Category: 1
Radio Link:	LTE-FDD 2 (Cat. M1); Channel 18900 (1880.360 MHz); UL RBs 4@25; DL RBs 4 (low, NB 0) 0.720 MHz Occupied BW / 10 MHz LTE Channel BW
Test Time:	Start: 3/29/2022 6:45:52 AM; Stop: 3/29/2022 7:01:28 AM
CMW500-LTE Connectors:	In: RF2 COM (25.0 dB), Out: RF1 OUT (20.0 dB)
Cal Data Phi:	51.62 dB (NRQ CHB to MA1 PHI, Chamber Cal_MA1 PHI)
Cal Data Theta:	54.05 dB (NRQ CHA to MA1 THETA_Link Bypass, Chamber Cal_MA1 THETA)

OTA Evaluation Results

Total Radiated Power	21.23 dBm
Peak EIRP	27.34 dBm
Directivity	6.11 dBi
Peak Gain	27.34 dBi
NHPRP 45°	19.01 dBm
NHPRP 45° / TRP	-2.21 dB
NHPRP 45° / TRP	60.08 %
NHPRP 30°	17.06 dBm
NHPRP 30° / TRP	-4.16 dB
NHPRP 30° / TRP	38.34 %
NHPRP 22.5°	15.72 dBm
NHPRP 22.5° / TRP	-5.50 dB
NHPRP 22.5° / TRP	28.18 %
UHRP	15.27 dBm
UHRP / TRP	-5.96 dB
UHRP / TRP	25.36 %
LHRP	19.95 dBm
LHRP / TRP	-1.27 dB
LHRP / TRP	74.64 %
PGRP (0-120°)	18.36 dBm
PGRP / TRP	-2.86 dB
PGRP / TRP	51.71 %
Front/Back Ratio	10.11
PhiBW	176.6 deg
PhiBW Up	70.1 deg
PhiBW Down	106.5 deg
ThetaBW	50.1 deg
ThetaBW Up	13.1 deg
ThetaBW Down	36.9 deg
Boresight Phi	255 deg
Boresight Theta	165 deg
Maximum Power	27.34 dBm
Minimum Power	9.54 dBm
Average Power	21.79 dBm
Max/Min Ratio	17.79 dB

LTE 13

CTIA Report (RP_LTE-FDD 13_ch23230_4@25_tot)

Test Information

Test Method:	Radiated Power Mobile Phone
Test Condition:	FS: Free Space
EUT Identification:	IMEI: 863859043300453; UE Category: 1
Radio Link:	LTE-FDD 13 (Cat. M1); Channel 23230 (782.360 MHz); UL RBs 4@25; DL RBs 4 (low, NB 0) 0.720 MHz Occupied BW / 10 MHz LTE Channel BW
Test Time:	Start: 3/29/2022 6:45:52 AM; Stop: 3/29/2022 7:01:28 AM
CMW500-LTE Connectors:	In: RF2 COM (25.0 dB), Out: RF1 OUT (20.0 dB)
Cal Data Phi:	43.57 dB (NRQ CHB to MA1 PHI, Chamber Cal_M A1 PHI)
Cal Data Theta:	43.90 dB (NRQ CHA to MA1 THETA_Link Bypass, Chamber Cal_M A1 THETA)

OTA Evaluation Results

Total Radiated Power	21.80 dBm
Peak EIRP	26.04 dBm
Directivity	4.25 dBi
Peak Gain	26.04 dBi
NHPRP 45°	19.76 dBm
NHPRP 45° / TRP	-2.03 dB
NHPRP 45° / TRP	62.63 %
NHPRP 30°	17.90 dBm
NHPRP 30° / TRP	-3.90 dB
NHPRP 30° / TRP	40.73 %
NHPRP 22.5°	16.55 dBm
NHPRP 22.5° / TRP	-5.25 dB
NHPRP 22.5° / TRP	29.88 %
UHRP	19.79 dBm
UHRP / TRP	-2.01 dB
UHRP / TRP	63.00 %
LHRP	17.48 dBm
LHRP / TRP	-4.32 dB
LHRP / TRP	37.00 %
PGRP (0-120°)	20.88 dBm
PGRP / TRP	-0.92 dB
PGRP / TRP	80.96 %
Front/Back Ratio	5.74
PhiBW	360.0 deg
PhiBW Up	360.0 deg
PhiBW Down	360.0 deg
ThetaBW	262.8 deg
ThetaBW Up	180.0 deg
ThetaBW Down	82.8 deg
Boresight Phi	0 deg
Boresight Theta	15 deg
Maximum Power	26.04 dBm
Minimum Power	-0.88 dBm
Average Power	22.36 dBm
Max/Min Ratio	26.92 dB

8 Test setup photos

Setup photos are included in supporting file name: "EMC_HONEY-225-22001_FCC_Setup_Photos"

9 Test Equipment And Ancillaries Used For Testing

Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
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
TEST RECEIVER	R&S	ESU40	100251	2 YEARS	09/13/2021
WIDEBAND COMM. TESTER	R&S	CMW 500	109825	2 YEARS	09/23/2020
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.

10 Revision History

Date	Report Name	Changes to report	Prepared by
2022-04-11	EMC_HONEY-225-22001_FCC_Spotcheck	Initial Version	Cheng Song

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