FCC/ISED Test Report

FOR:
Keep Truckin, Inc.

Model Name:
LBB-3.6CA

Product Description:
LBB-3.6CA is a Vehicle Gateway. Its purpose is to act as the primary gateway between various pieces of hardware and software in a motor vehicle and the Keep Trucking database back-end in the cloud.

FCC ID: 2AQM7-36
IC ID: 24516-36

Per:
47 CFR: Part 22, Part 24, Part 27
RSS-130 Issue 2; RSS-132 Issue 3; RSS-133 Issue 6; RSS-139 Issue 3

REPORT #: EMC_KPTRK-024-21001_FCC_22_24_27_ISED_R1

DATE: 2021-06-03

A2LA Accredited

IC recognized #
3462B-2
CABID: US0187

***CETECOM* Inc.**
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1 Assessment

The following device as further described in section 3 of this report was evaluated for radiated spurious emissions in simultaneous transmission of cellular and unlicensed radios according to criteria specified in the Code of Federal Regulations Title 47 parts 22, 24, 27 and Industry Canada Radio Standard Specifications RSS: 130 Issue 2, 132 Issue 3, 133 Issue 6 and 139 Issue 3.

Company	Description	Model #
Keep Truckin, Inc.	LBB-3.6CA is a Vehicle Gateway. Its purpose is to act as the primary gateway between various pieces of hardware and software in a motor vehicle and the Keep Trucking database back-end in the cloud.	LBB-3.6CA

No deficiencies were ascertained.

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2021-06-03	Compliance	Kevin Wang (Lab Manager)	kevin.wang@cetecom.com Digitally signed by: kevin.wang@cetecom.com DN: CN = kevin.wang@cetecom.com Date: 2021.06.03 17:41:51 -07'00'

Responsible for the Report:

Date	Section	Name	Signature
2021-06-03	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: 2021.06.03 17:40:15 -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
Lab Manager:	Kevin Wang
Responsible Project Leader:	Akanksha Baskaran

2.2 Identification of the Client

Client's Name:	Keep Truckin, Inc.
Street Address:	55 Hawthorne Street #400
City/Zip Code	San Francisco, California 94105
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

Hardware Version Identification Number (HVIN):	LBB-3.6CA
Product Marketing Name (PMN):	Vehicle Gateway
Antenna Information as declared:	Antenna Type for LTE (Main) : Model Name : WCDMA/LTE Main Antenna Part No : CWT0020P Type & Gain : Inverted–F Antenna (IFA), Max Gain 2.7dBi
Other Radios included in the device:	❖ WLAN, BT • Manufacture: Laird Connectivity • Module name/number: LSR 450-0159R • FCC ID: TFB-1003 • IC ID: 5969A-1003
Power Supply/ Rated Operating Voltage Range:	Vmin: 10 VDC/ Vnom: 12 VDC / Vmax: 24 VDC
Operating Temperature Range:	Low -20ºC, Nominal 20ºC, High 65ºC
Sample Revision	☐Prototype Unit; ☐Production Unit; ■Pre-Production
EUT Dimensions(mm):	110 X 105 X 26
Weight(grams):	257
EUT Diameter	■ < 60 cm ☐ Other _____

Module Information	
Module Name:	Sierra Wireless
Model Number:	WP7611
FCC ID:	N7NWP76B
IC ID:	2417C-WP76B

3.2 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Notes/Comments
1	AABL3DB180027	1	71118	Radiated Measurement

3.3 Accessory Equipment details

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

3.4 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT# 1 +AE# 1	Worst Case

3.5 Mode of Operation details

Mode of Operation	Description of Operating modes	Additional Information
Op. 1	Cellular Transmission	Cellular was tested on Low, Mid, High Channels at the maximum power, and co-transmitting with WLAN mid channel. For radiated measurements, the internal antenna was connected.

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 and co-transmitting with WLAN mid channel at the maximum power transmission.

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 evaluation conducted by CETECOM Inc. is to support a request for new equipment authorization under **FCC ID:** 2AQM7-36 / **IC ID:** 24516-36.

The pre-certified module to be integrated (Sierra Wireless WP7611) as described in Section 3, Radiated Spurious Emissions test was performed. Results have been checked to meet limits per Code of Federal Regulations Title 47 parts 22, 24, 27 and Industry Canada Radio Standard Specifications RSS: 130 Issue 2, 132 Issue 3, 133 Issue 6 and 139 Issue 3.

The conducted module test data that can be obtained under the **FCC Filing ID:** N7NWP76B is applicable for the host described in section 3.

4.1 Dates of Testing:

05/18/2021 – 05/24/2021

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.

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)

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%

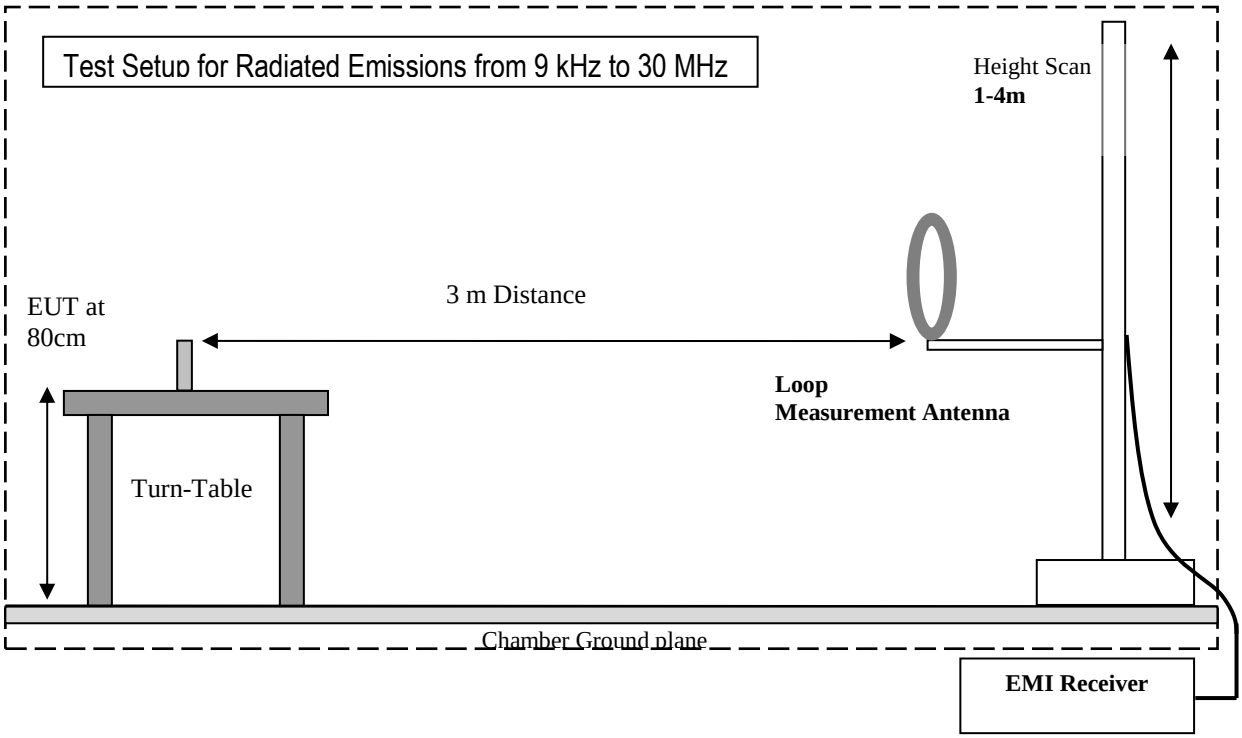
Deviating test conditions are indicated at individual test description where applicable.

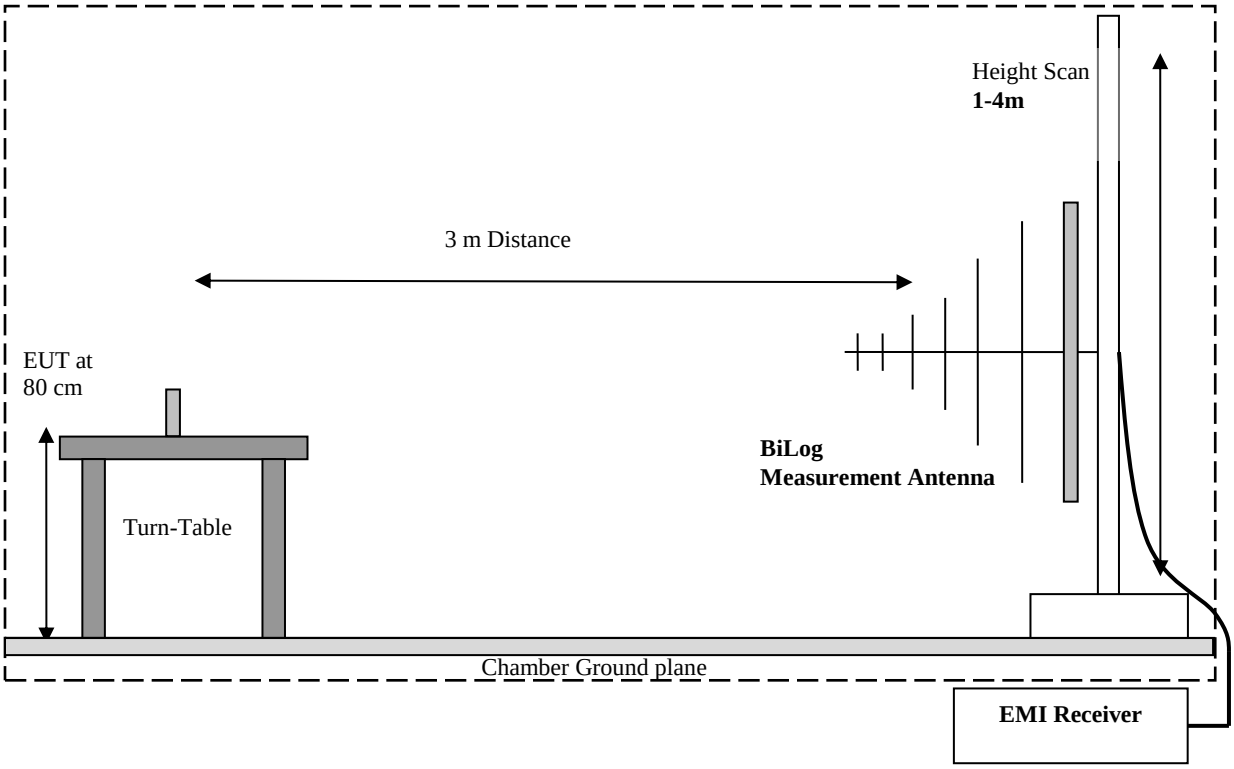
5 Measurement Procedures

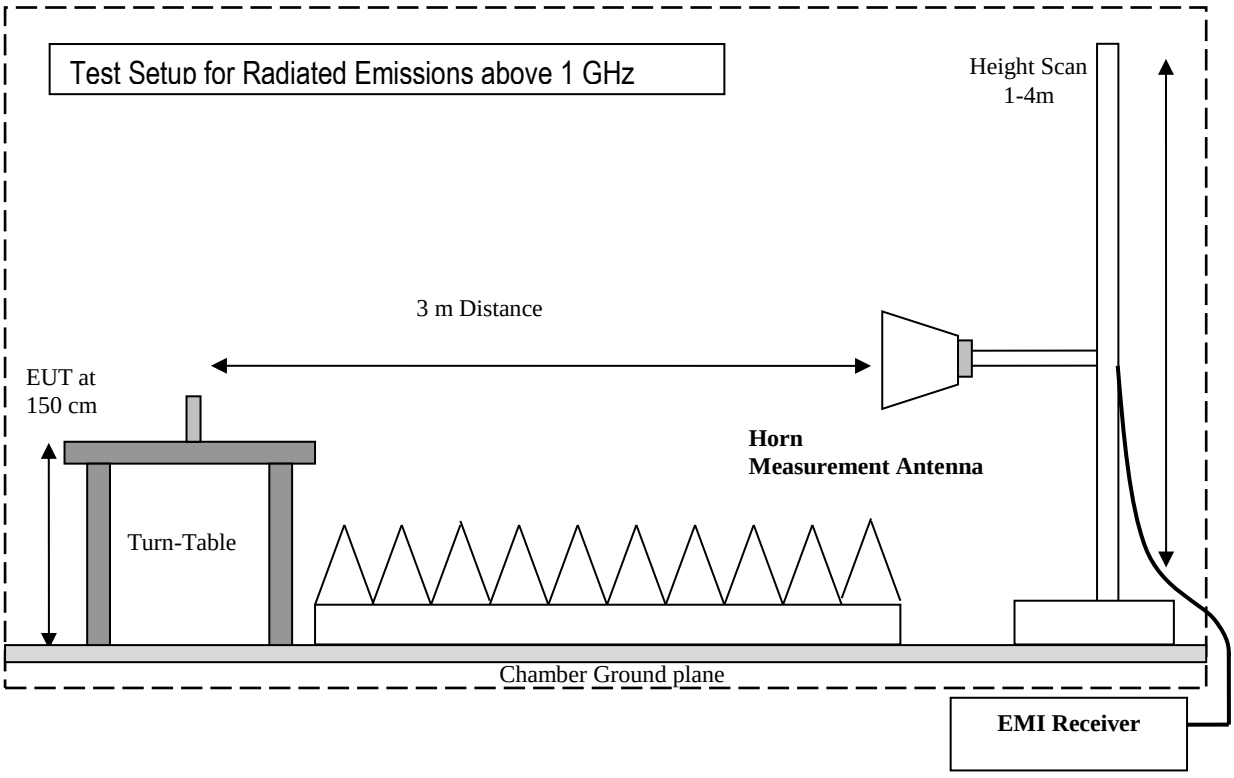
Testing is performed according to the guidelines provided in FCC publication (KDB) 971168 D01 v03 – "Measurement Guidance for Certification of Licensed Digital Transmitters" and according to ANSI C63.26 as detailed below.

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.




Height Scan
1-4m
3 m Distance
EUT at
80 cm
BiLog
Measurement Antenna
Turn-Table
Chamber Ground plane
EMI Receiver


Test Setup for Radiated Emissions above 1 GHz
Height Scan
1-4m
3 m Distance
EUT at
150 cm
Horn
Measurement Antenna
Turn-Table
Chamber Ground plane
EMI Receiver

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 dBµV
- 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 (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

6 Measurement Results Summary

6.1 FCC 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 1 Note 2
§2.1055; §22.355	Frequency Stability	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1049; §22.917	Occupied Bandwidth	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1051; §22.917	Band Edge Compliance	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1051; §22.917	Conducted Spurious Emissions	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1053; §22.917(a); RSS-132 Issue 3-5.5;	Radiated Spurious Emissions	Nominal	Op.1	■	☐	☐	☐	Complies

Note 1: NA= Not Applicable; NP= Not Performed.
Note 2: Leveraged from module certification FCC ID: N7NWP76B

FCC 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 1 Note 2
§2.1055; §24.235	Frequency Stability	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1049; §24.238	Occupied Bandwidth	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1051; §24.238	Band Edge Compliance	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1051; §24.238	Conducted Spurious Emissions	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1053; §24.238(a); RSS-133 Issue 6-6.5.1;	Radiated Spurious Emissions	Nominal	Op.1	■	☐	☐	☐	Complies

Note 1: NA= Not Applicable; NP= Not Performed.
Note 2: Leveraged from module certification FCC ID: N7NWP76B

6.2 FCC 27, RSS-130, RSS-139:

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046; §27.50 (d)	RF Output Power	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1055; §27.54	Frequency Stability	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1049; §27.53	Occupied Bandwidth	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1051; §27.53	Band Edge Compliance	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1051; §27.53	Conducted Spurious Emissions	Nominal	-	☐	☐	☐	■	Note 1 Note 2
§2.1053; §27.53(g); §27.53(h); RSS-130 Issue 2-4.6; RSS-139 Issue 3-6.6;	Radiated Spurious Emissions	Nominal	Op.1	■	☐	☐	☐	Complies

Note 1: NA= Not Applicable; NP= Not Performed.
Note 2: Leveraged from module certification FCC ID: N7NWP76B

7 Test Result Data

7.1 E(I)RP

Band	Frequency Range (MHz)	Power conducted (W)	Emission Designator	Antenna Gain (dBi)	gain linear	EIRP[1] (W)	ERP[1] (W)	Frequency deviation (PPM)	Limit ERP (W)
WCDMA II	1852.4 – 1907.6	0.2421	4M12F9W	2.7	1.862	0.451	-	2.5	2
WCDMA IV	1712.4 - 1752.6	0.2366	4M15F9W	2.7	1.862	0.441	-	2.5	1
WCDMA V	826.4 – 846.6	0.2153	4M15F9W	2.7	1.862	0.401	0.244	2.5	7
LTE 2	1850 – 1910	0.2173	2M73G7D	2.7	1.862	0.405	-	2.5	2
LTE 2	1850 – 1910	0.2133	18M5G7D	2.7	1.862	0.397	-	2.5	2
LTE 4	1710 – 1755	0.2188	18M5G7D	2.7	1.862	0.407	-	2.5	1
LTE 4	1710 – 1755	0.1754	18M5W7D	2.7	1.862	0.327	-	2.5	1
LTE 5	824 – 849	0.2500	2M73G7D	2.7	1.862	0.466	0.284	2.5	7
LTE 5	824 – 849	0.2427	9M11G7D	2.7	1.862	0.452	0.276	2.5	7
LTE 12	699 – 716	0.2339	2M73G7D	2.7	1.862	0.436	0.266	2.5	3
LTE 12	699 – 716	0.2244	9M11G7D	2.7	1.862	0.418	0.255	2.5	3
LTE 13	777 - 787	0.2218	4M50G7D	2.7	1.862	0.413	0.252	2.5	3
LTE 13	777 - 787	0.1679	9M01W7D	2.7	1.862	0.313	0.191	2.5	3

Note 1: E(I)RP are calculated from maximum power in grant of cellular module WP7611 adding the maximum gain of the utilized cellular antenna per operational description.

7.2 Radiated Spurious Emissions

7.2.1 Measurement according to FCC: CFR 47 Part 2.1053; CFR Part 22.917; CFR Part 24.238 and Part 27.53 utilizing KDB 971168 D01 Power Meas License Digital Systems v03, and according to ANSI C63.26 2017

Spectrum Analyzer Settings for FCC 22

Frequency Range	30 MHz – 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 and 27

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

7.2.2 Limits:

- **FCC Part 22.917(a), Part 24.238(a), Part 27.53 (g) and Part 27.53 (h)**
- **RSS-130 Issue 2-4.6, RSS-132 Issue 3 5.5, RSS-133 Issue 6 6.5.1, RSS-139 Issue 3 6.6**

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 = (-13dBm)

7.2.3 Test conditions and setup:

Ambient Temperature (C)	EUT operating mode	Power Input
22	Op. 1	12 VDC

7.2.4 Measurement Plots:

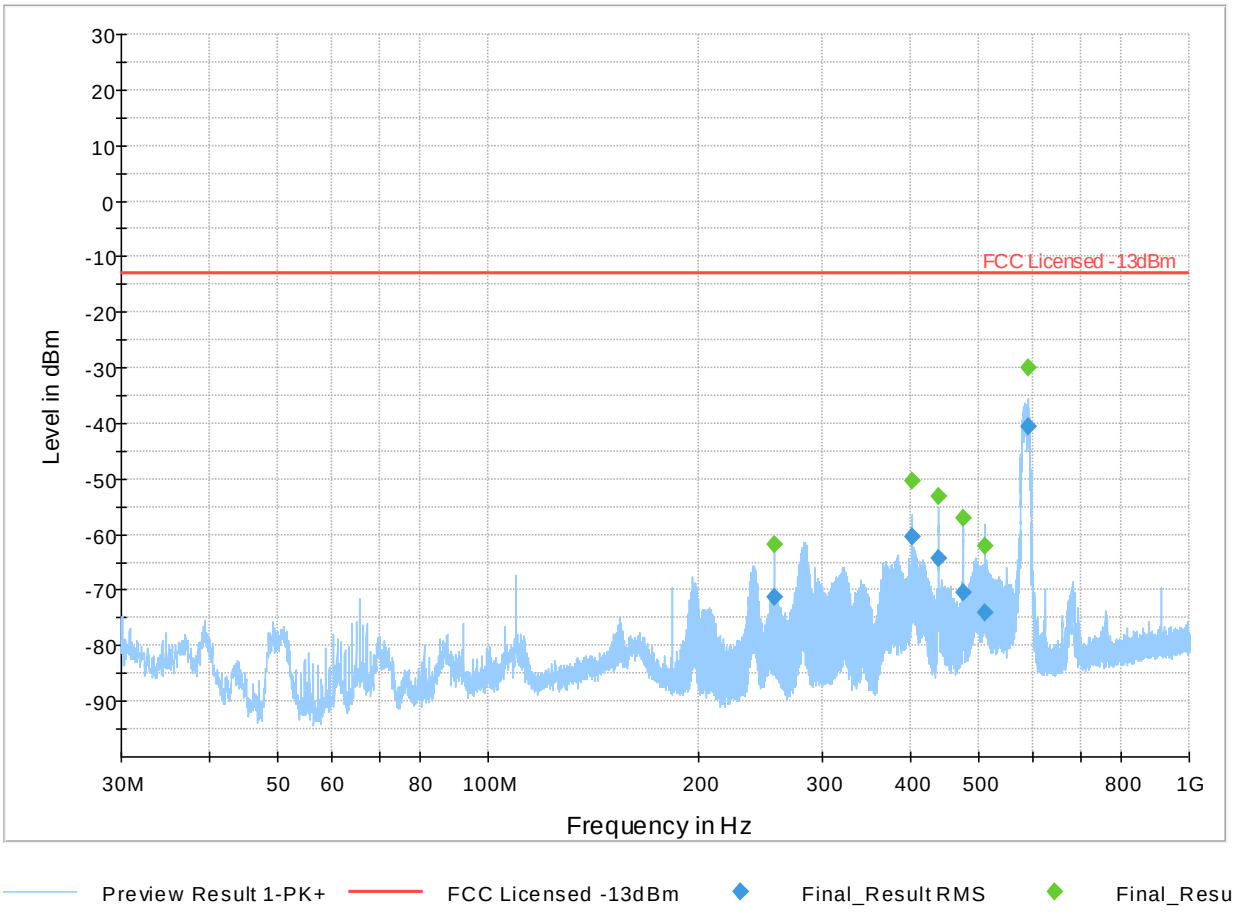
WCDMA Band II

Plot # 1 Radiated Emissions: 30 MHz - 1 GHz

Channel: Low

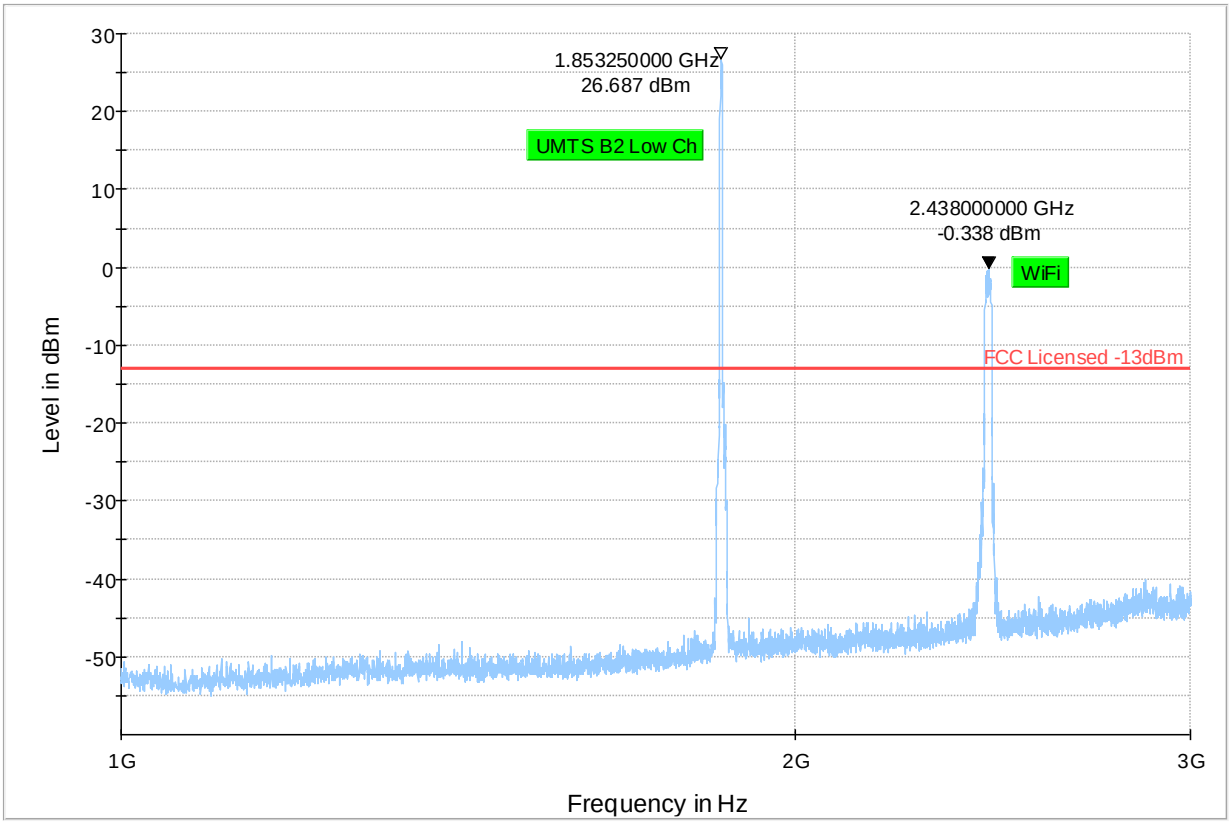
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
256.059	---	-61.69	---	---	500.0	120.000	116.0	H	64.0	-114.2	
256.059	-71.37	---	-13.00	58.37	500.0	120.000	116.0	H	64.0	-114.2	
402.529	---	-50.29	---	---	500.0	120.000	107.0	H	263.0	-112.5	
402.529	-60.47	---	-13.00	47.47	500.0	120.000	107.0	H	263.0	-112.5	
439.025	---	-53.05	---	---	500.0	120.000	100.0	H	205.0	-111.7	
439.025	-64.17	---	-13.00	51.17	500.0	120.000	100.0	H	205.0	-111.7	
475.424	---	-57.16	---	---	500.0	120.000	117.0	V	144.0	-111.3	
475.424	-70.34	---	-13.00	57.34	500.0	120.000	117.0	V	144.0	-111.3	
512.090	---	-61.98	---	---	500.0	120.000	155.0	V	103.0	-110.5	
512.090	-74.12	---	-13.00	61.12	500.0	120.000	155.0	V	103.0	-110.5	
588.284	---	-29.84	---	---	500.0	120.000	100.0	H	101.0	-108.7	
588.284	-40.47	---	-13.00	27.47	500.0	120.000	100.0	H	101.0	-108.7	



Plot # 2 Radiated Emissions: 1 GHz - 3 GHz

Channel: Low

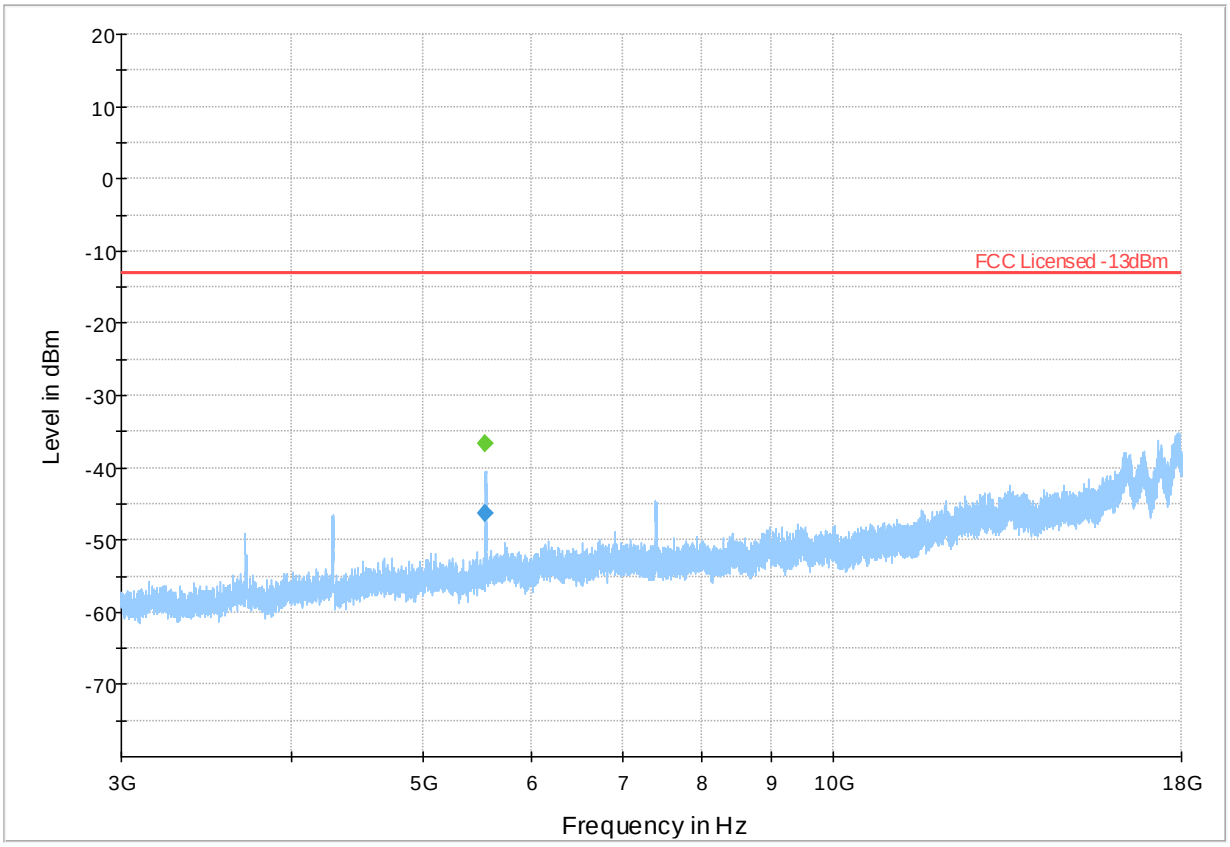


Plot # 3 Radiated Emissions: 3 GHz - 18 GHz

Channel: Low

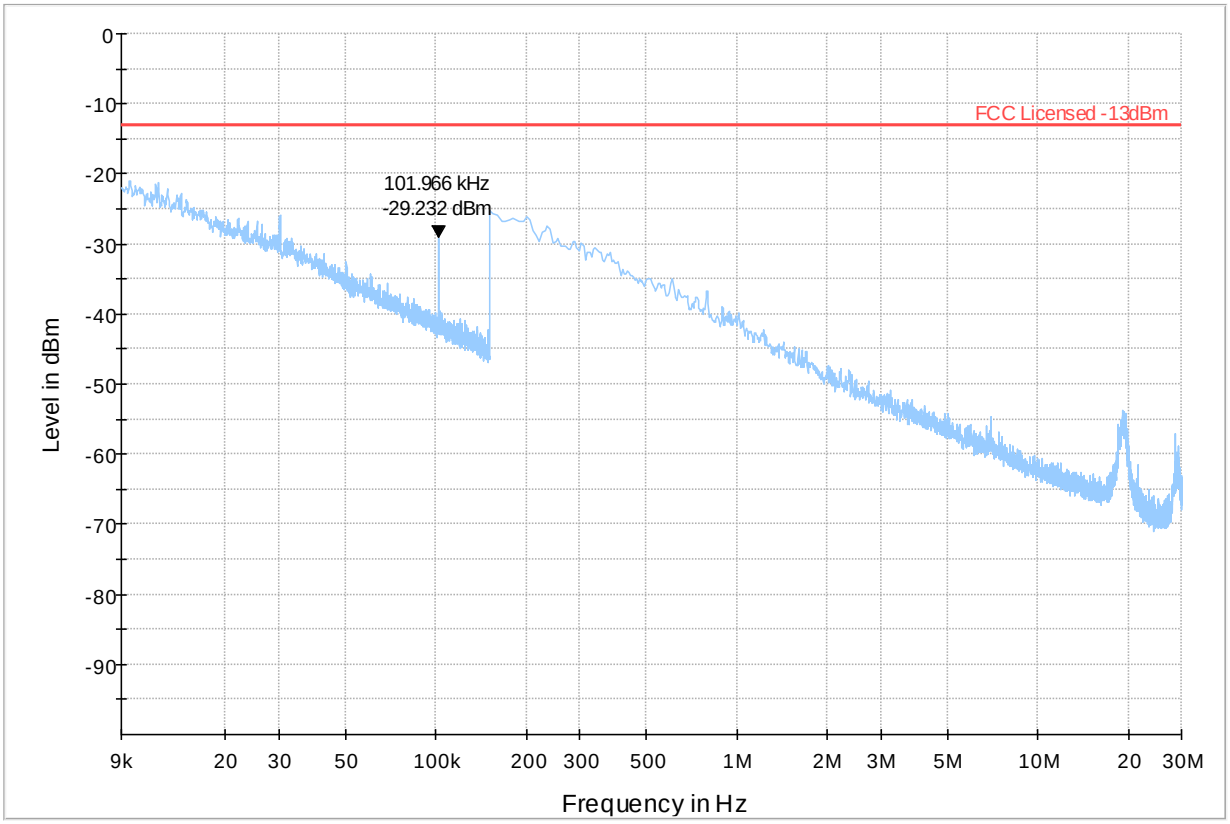
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
5554.500	---	-36.55	---	---	500.0	1000.000	125.0	H	122.0	-97.5	
5554.500	-46.27	---	-13.00	33.27	500.0	1000.000	125.0	H	122.0	-97.5	



Plot # 4 Radiated Emissions: 9 kHz - 30 MHz

Channel: Mid

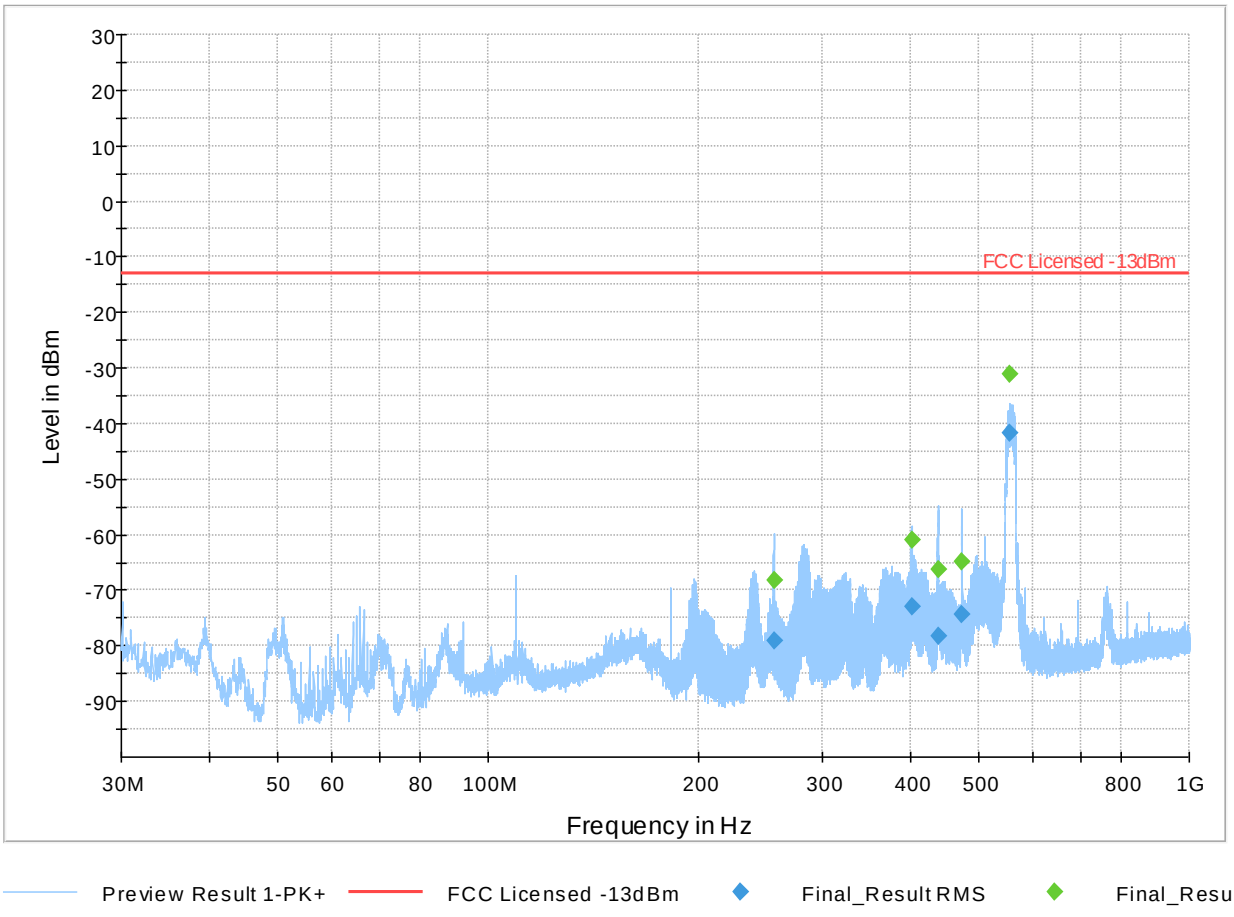


Plot # 5 Radiated Emissions: 30 MHz – 1GHz

Channel: Mid

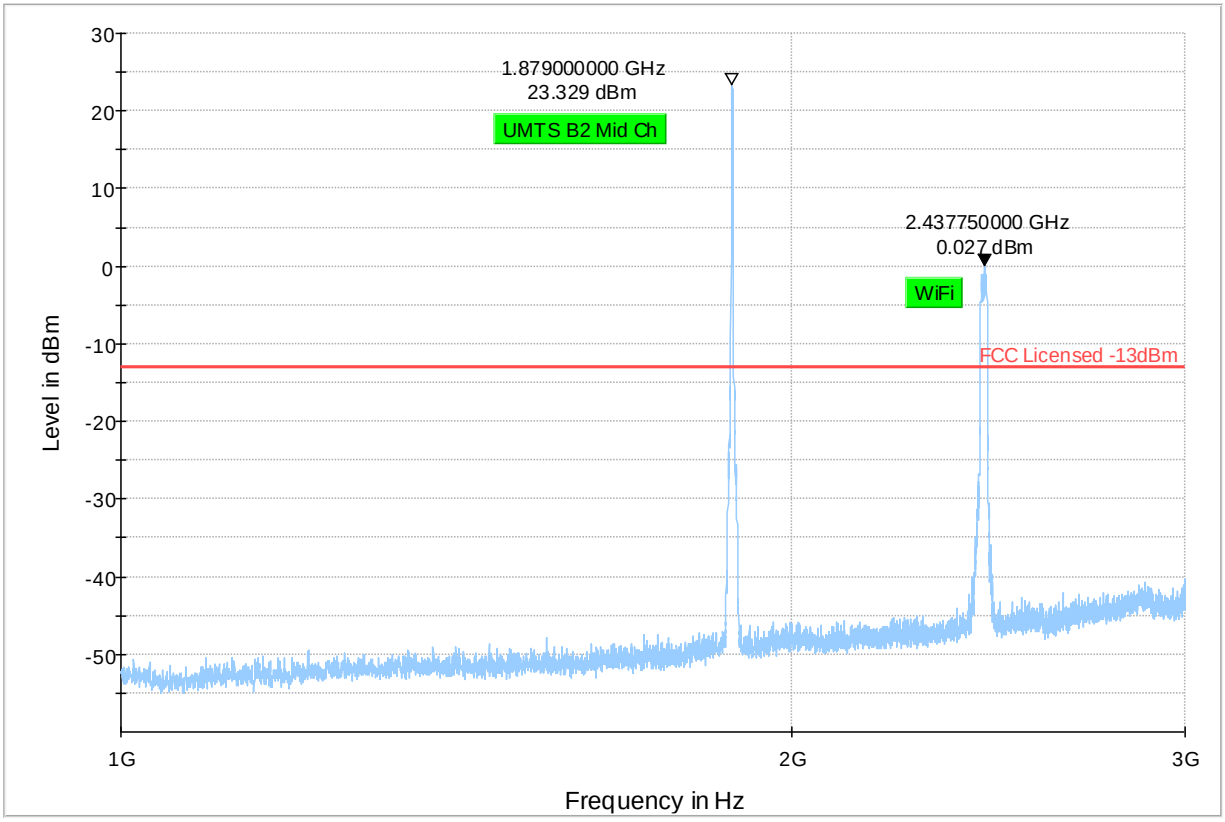
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
255.574	---	-68.17	---	---	500.0	120.000	116.0	H	84.0	-113.8	
255.574	-79.10	---	-13.00	66.10	500.0	120.000	116.0	H	84.0	-113.8	
401.656	---	-60.83	---	---	500.0	120.000	135.0	H	263.0	-112.5	
401.656	-72.98	---	-13.00	59.98	500.0	120.000	135.0	H	263.0	-112.5	
438.006	---	-66.32	---	---	500.0	120.000	107.0	V	120.0	-112.2	
438.006	-78.32	---	-13.00	65.32	500.0	120.000	107.0	V	120.0	-112.2	
474.406	---	-64.94	---	---	500.0	120.000	107.0	V	143.0	-111.3	
474.406	-74.23	---	-13.00	61.23	500.0	120.000	107.0	V	143.0	-111.3	
553.533	---	-31.16	---	---	500.0	120.000	143.0	H	100.0	-109.6	
553.533	-41.70	---	-13.00	28.70	500.0	120.000	143.0	H	100.0	-109.6	



Plot # 6 Radiated Emissions: 1 GHz - 3 GHz

Channel: Mid

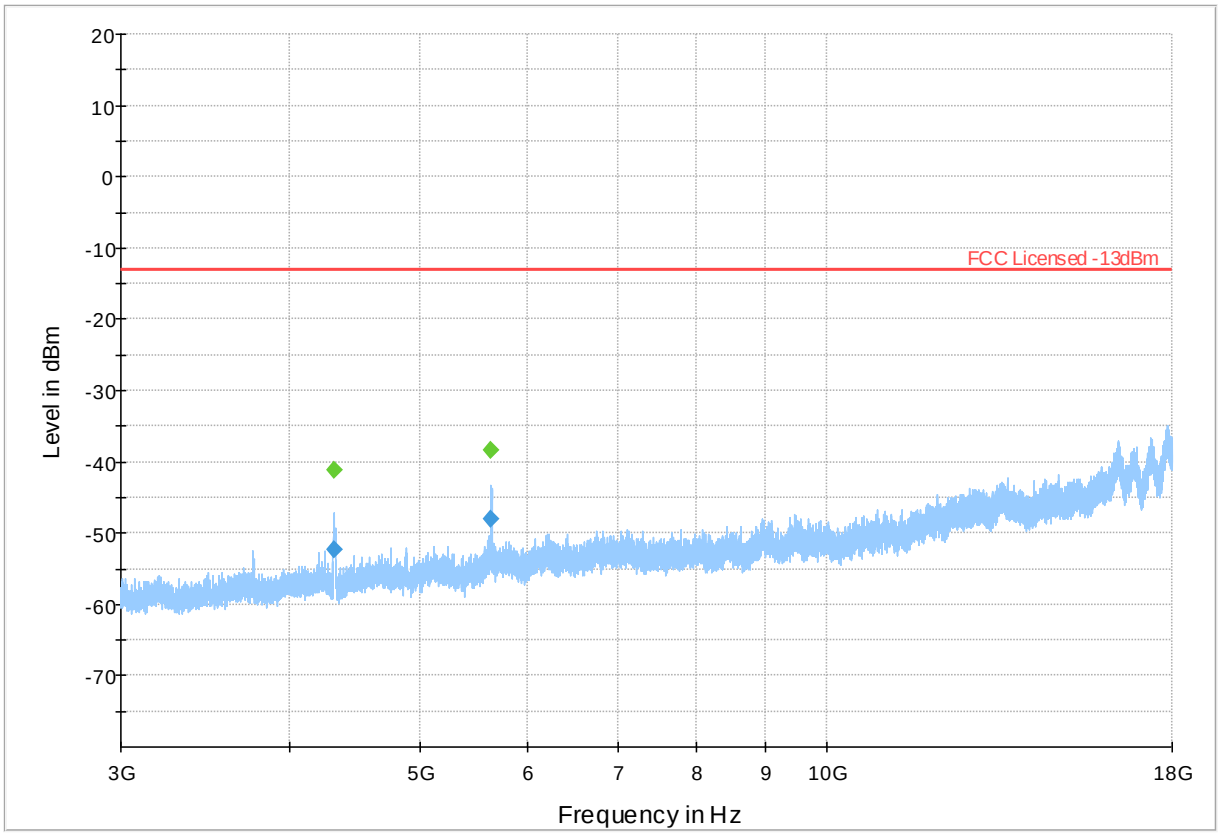


Plot # 7 Radiated Emissions: 3 GHz – 18 GHz

Channel: Mid

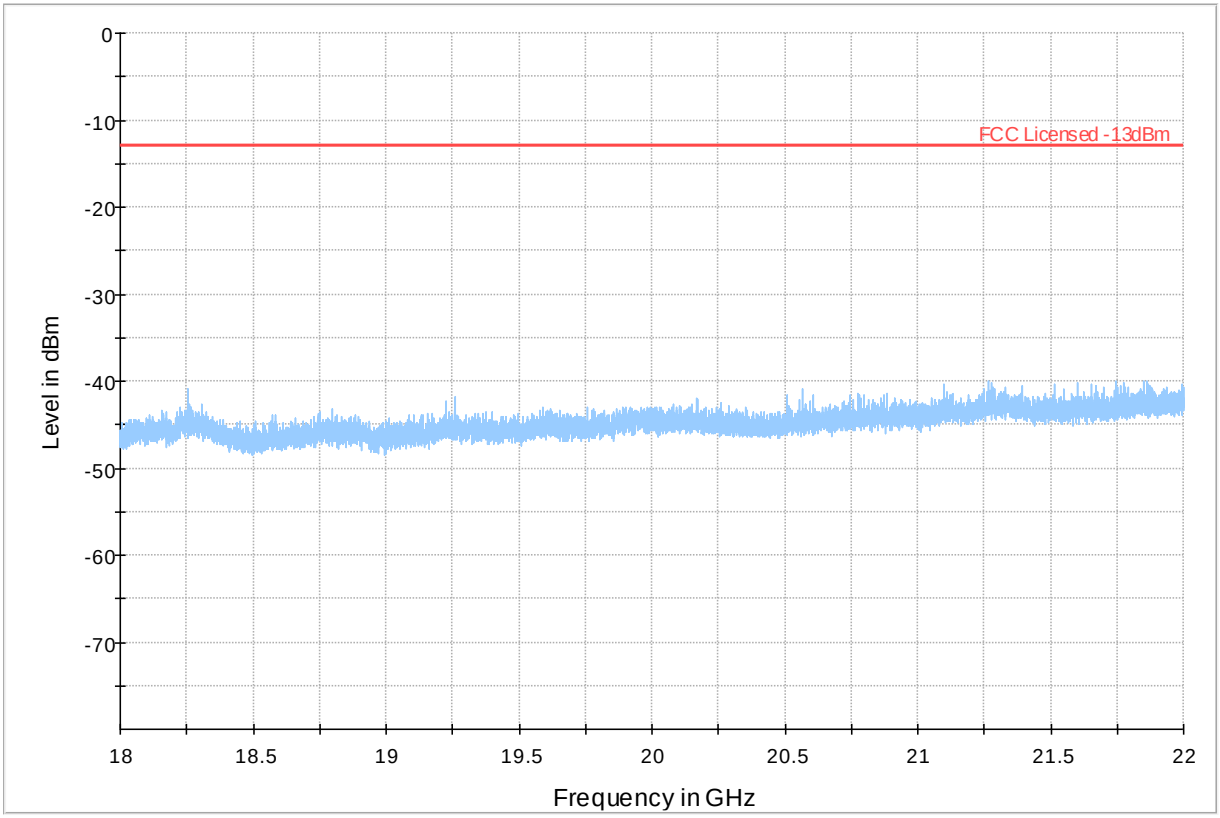
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4317.750	---	-41.25	---	---	500.0	1000.000	277.0	H	66.0	-99.8
4317.750	-52.36	---	-13.00	39.36	500.0	1000.000	277.0	H	66.0	-99.8
5637.000	---	-38.47	---	---	500.0	1000.000	170.0	H	124.0	-96.3
5637.000	-48.12	---	-13.00	35.12	500.0	1000.000	170.0	H	124.0	-96.3



Plot # 8 Radiated Emissions: 18 GHz – 22 GHz

Channel: Mid

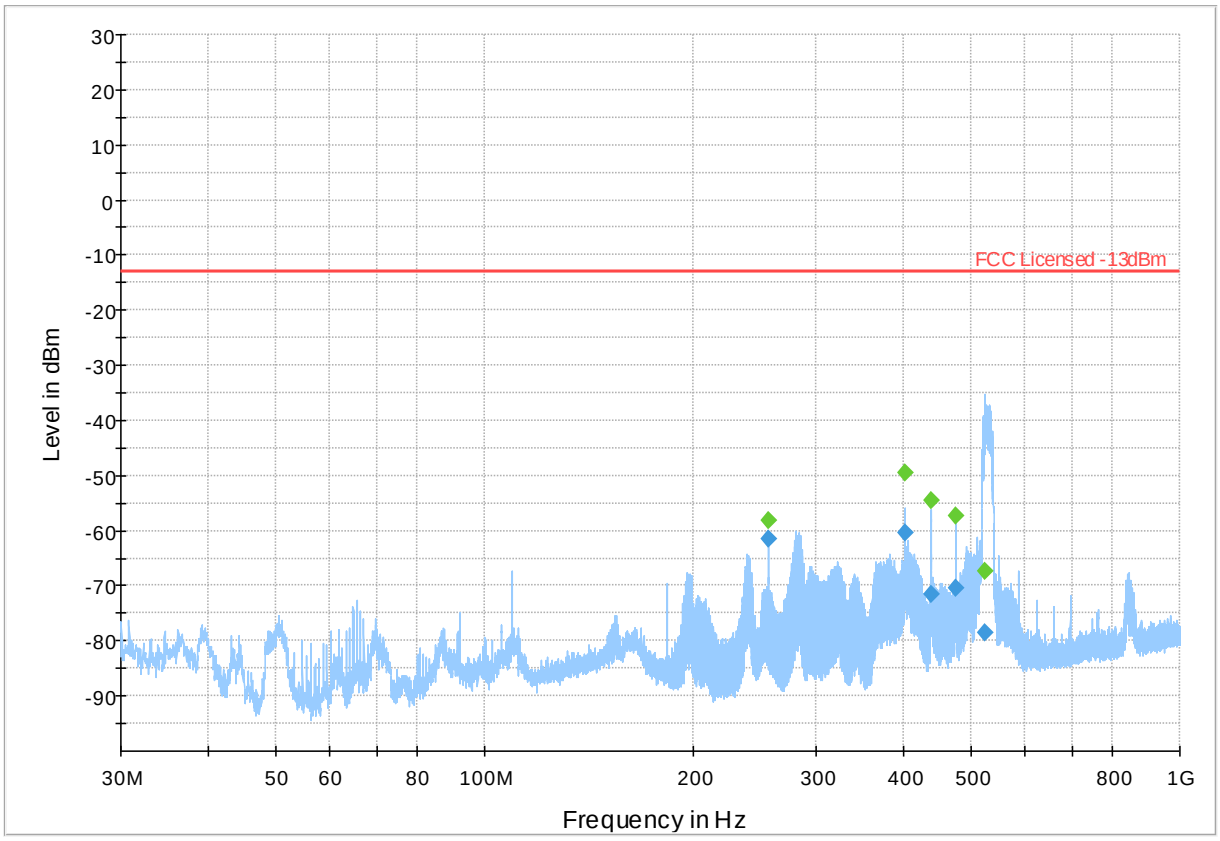


Plot # 9 Radiated Emissions: 30 MHz - 1 GHz

Channel: High

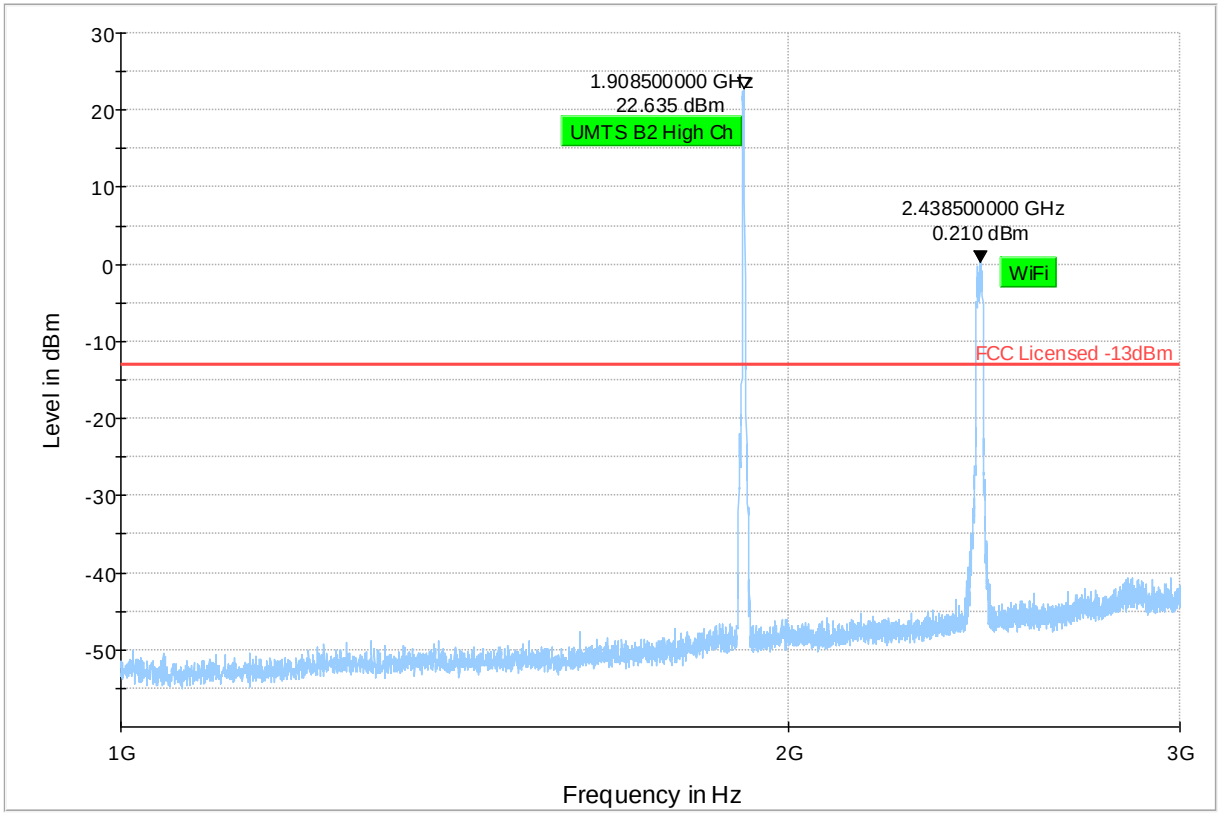
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
256.204	---	-58.21	---	---	500.0	120.000	125.0	H	82.0	-114.3	
256.204	-61.61	---	-13.00	48.61	500.0	120.000	125.0	H	82.0	-114.3	
402.626	---	-49.53	---	---	500.0	120.000	100.0	H	265.0	-112.5	
402.626	-60.25	---	-13.00	47.25	500.0	120.000	100.0	H	265.0	-112.5	
439.316	---	-54.58	---	---	500.0	120.000	134.0	V	179.0	-112.1	
439.316	-71.50	---	-13.00	58.50	500.0	120.000	134.0	V	179.0	-112.1	
475.836	---	-57.35	---	---	500.0	120.000	143.0	V	142.0	-111.3	
475.836	-70.39	---	-13.00	57.39	500.0	120.000	143.0	V	142.0	-111.3	
524.555	---	-67.38	---	---	500.0	120.000	100.0	H	129.0	-109.9	
524.555	-78.42	---	-13.00	65.42	500.0	120.000	100.0	H	129.0	-109.9	



Plot # 10 Radiated Emissions: 1 GHz - 3 GHz

Channel: High

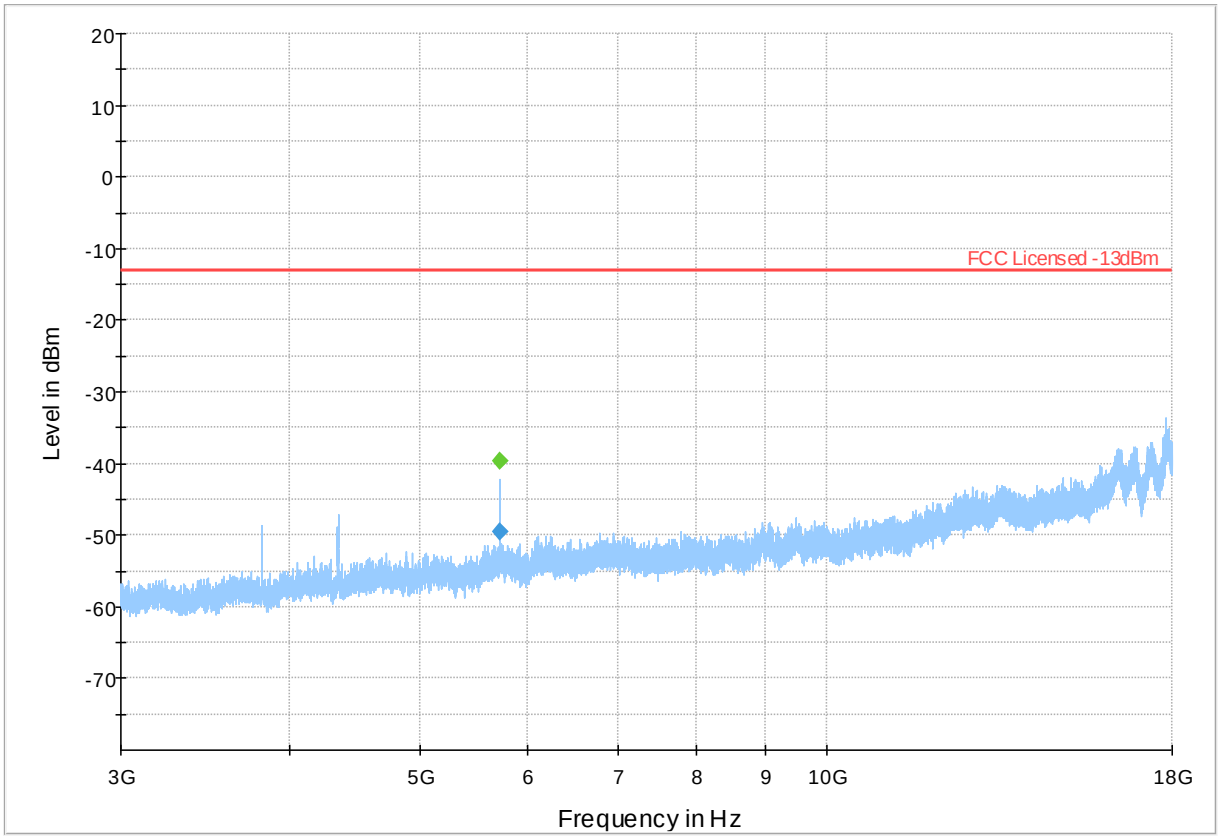


Plot # 11 Radiated Emissions: 3 GHz - 18 GHz

Channel: High

Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
5721.250	---	-39.61	---	---	500.0	1000.000	279.0	H	123.0	-95.9	
5721.250	-49.56	---	-13.00	36.56	500.0	1000.000	279.0	H	123.0	-95.9	



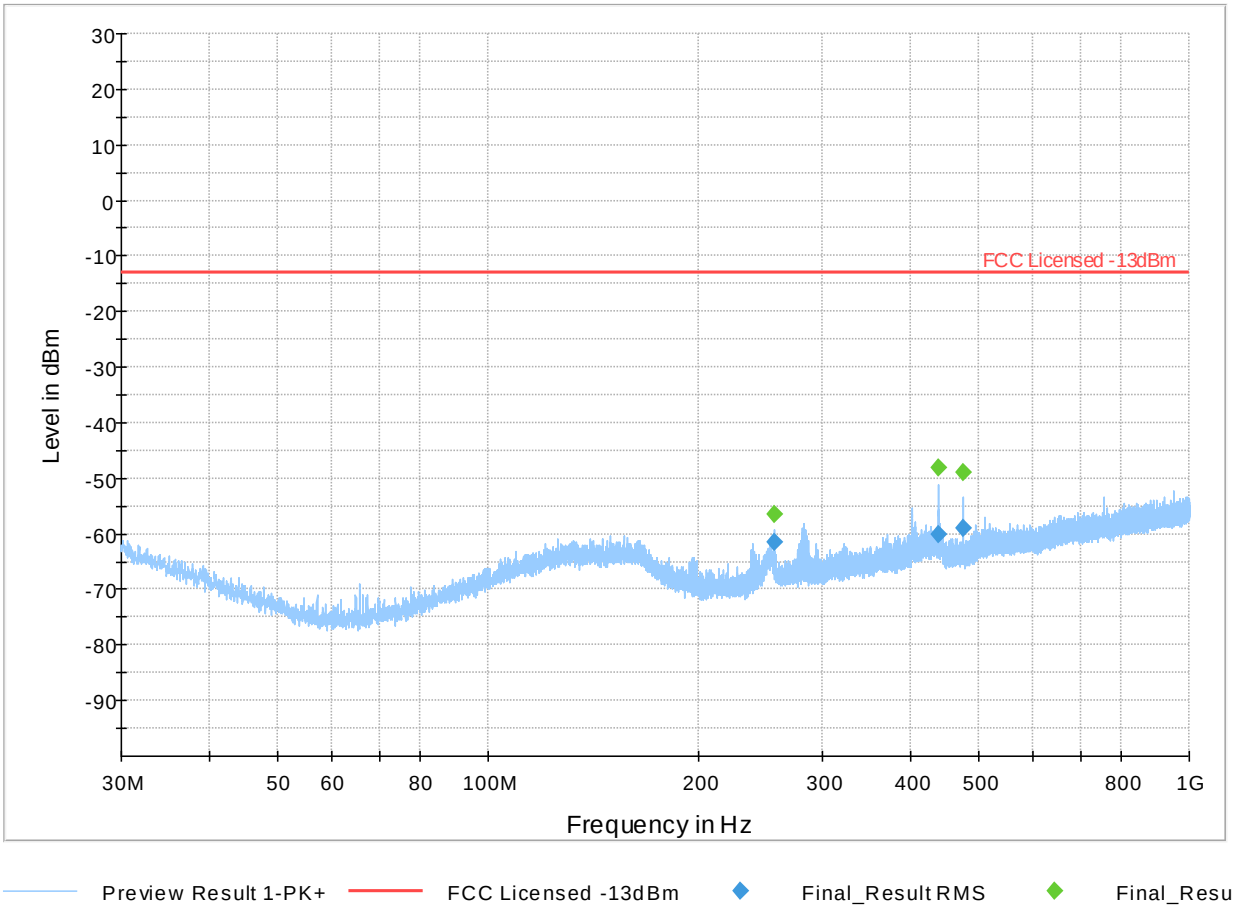
WCDMA Band IV

Plot # 12 Radiated Emissions: 30 MHz - 1 GHz

Channel: Low

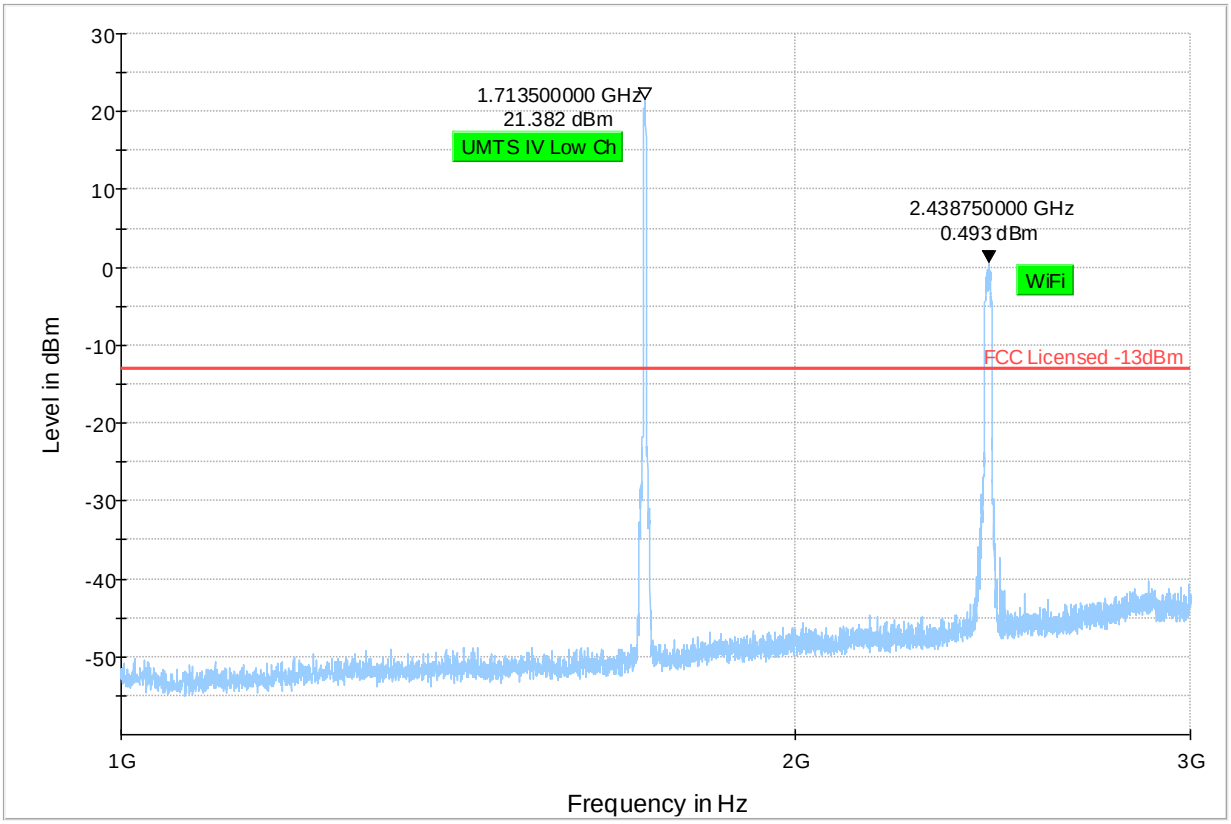
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
256.228	---	-56.56	---	---	500.0	100.000	116.0	H	99.0	-78.9
256.228	-61.61	---	-13.00	48.61	500.0	100.000	116.0	H	99.0	-78.9
439.267	---	-48.17	---	---	500.0	100.000	100.0	H	148.0	-76.5
439.267	-60.01	---	-13.00	47.01	500.0	100.000	100.0	H	148.0	-76.5
475.885	---	-49.05	---	---	500.0	100.000	230.0	H	108.0	-75.7
475.885	-58.91	---	-13.00	45.91	500.0	100.000	230.0	H	108.0	-75.7



Plot # 13 Radiated Emissions: 1 GHz - 3 GHz

Channel: Low

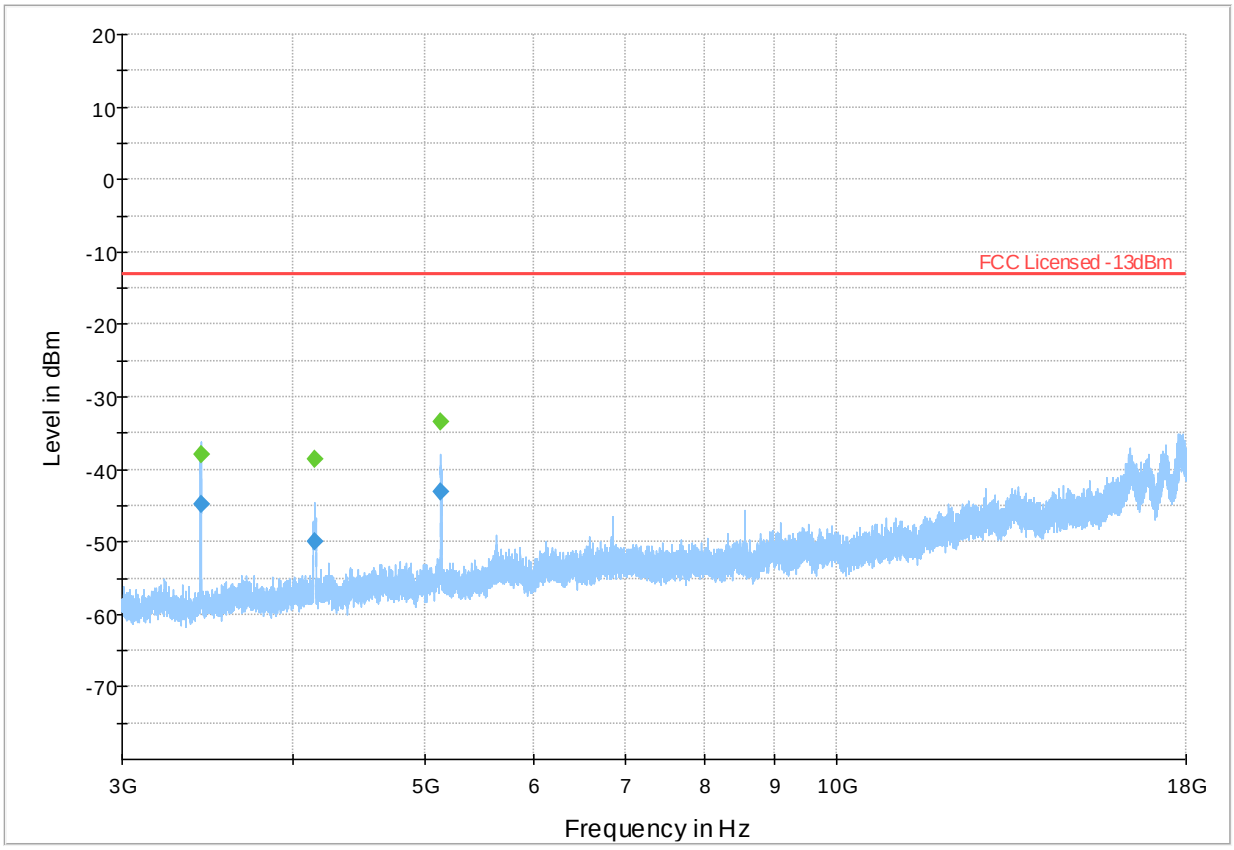


Plot # 14 Radiated Emissions: 3 GHz - 18 GHz

Channel: Low

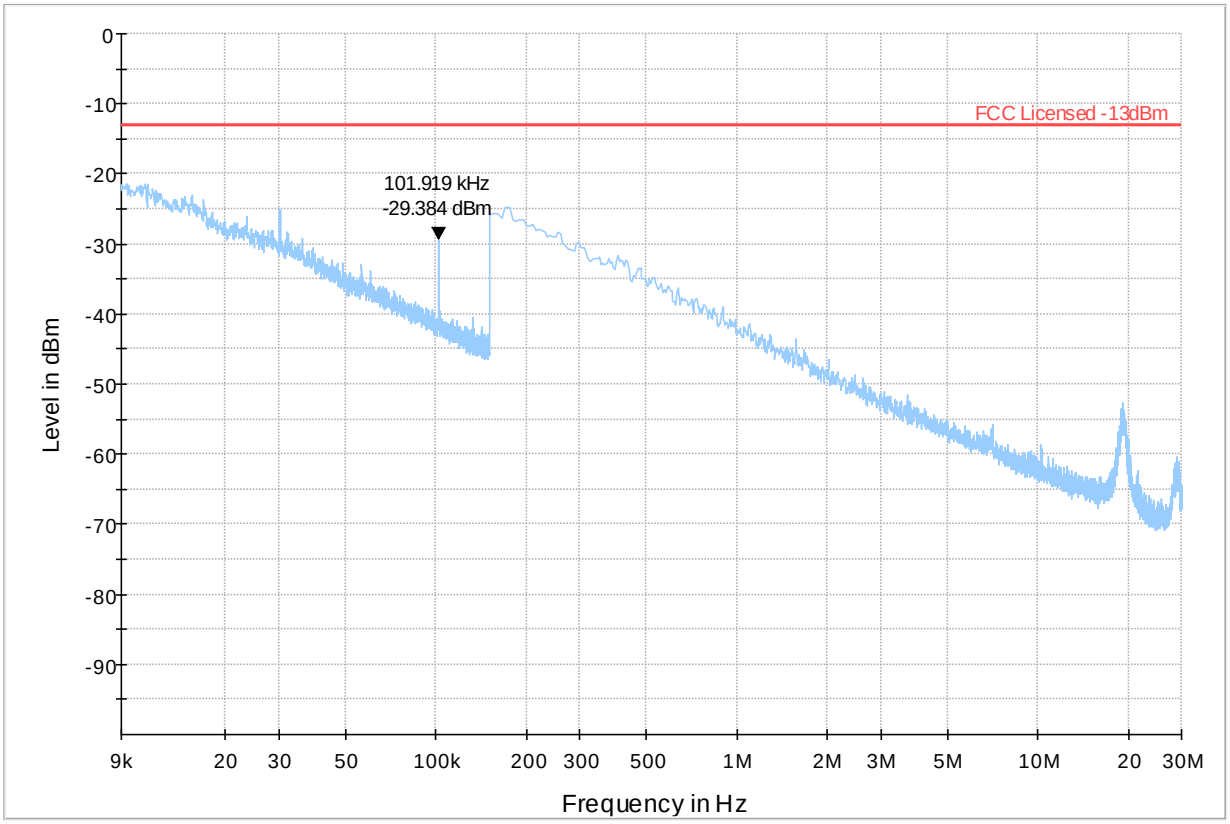
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3426.000	---	-38.01	---	---	500.0	1000.000	116.0	V	190.0	-102.3
3426.000	-44.70	---	-13.00	31.70	500.0	1000.000	116.0	V	190.0	-102.3
4147.000	---	-38.68	---	---	500.0	1000.000	325.0	H	63.0	-99.5
4147.000	-49.86	---	-13.00	36.86	500.0	1000.000	325.0	H	63.0	-99.5
5134.750	---	-33.34	---	---	500.0	1000.000	265.0	H	290.0	-97.8
5134.750	-43.12	---	-13.00	30.12	500.0	1000.000	265.0	H	290.0	-97.8



Plot # 15 Radiated Emissions: 9 kHz - 30 MHz

Channel: Mid

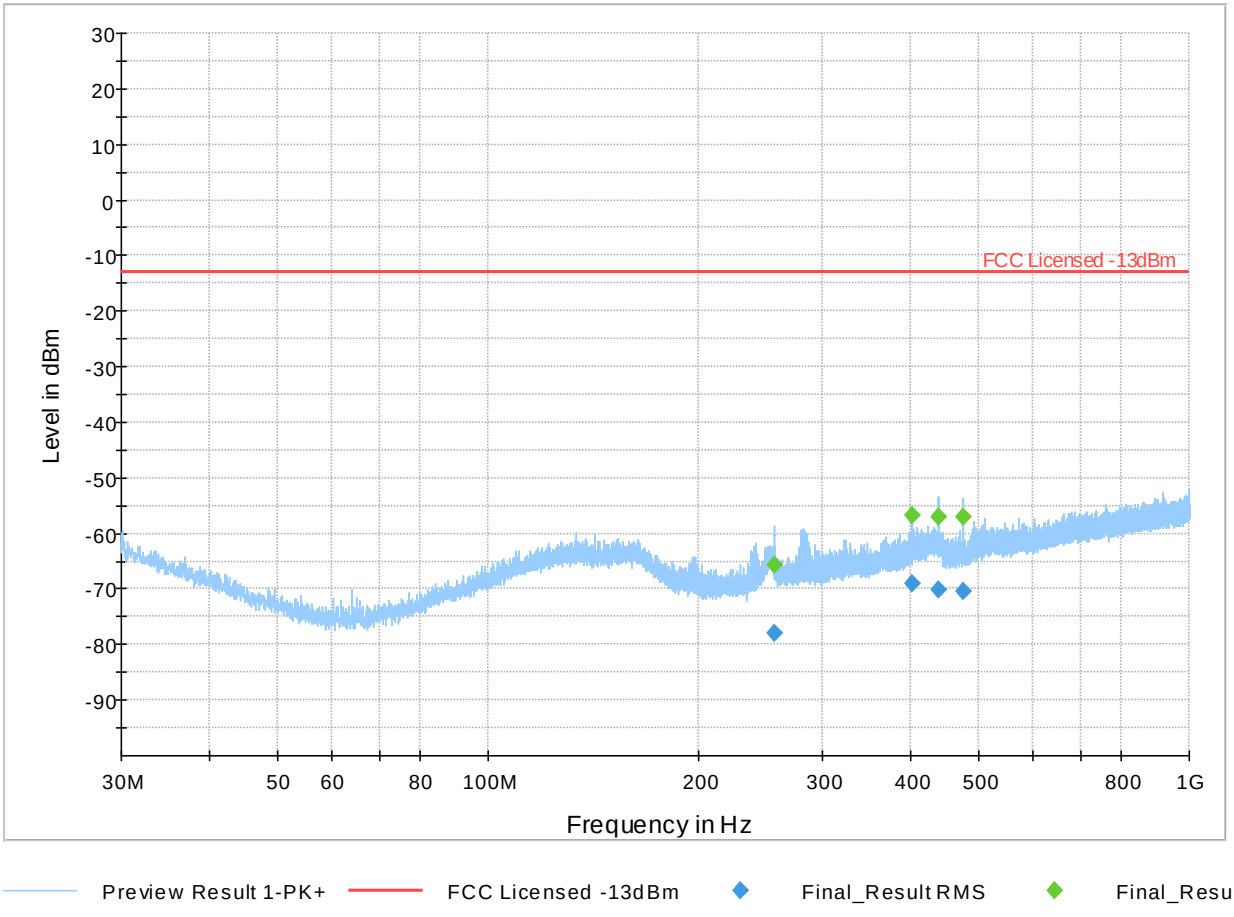


Plot # 16 Radiated Emissions: 30 MHz – 1GHz

Channel: Mid

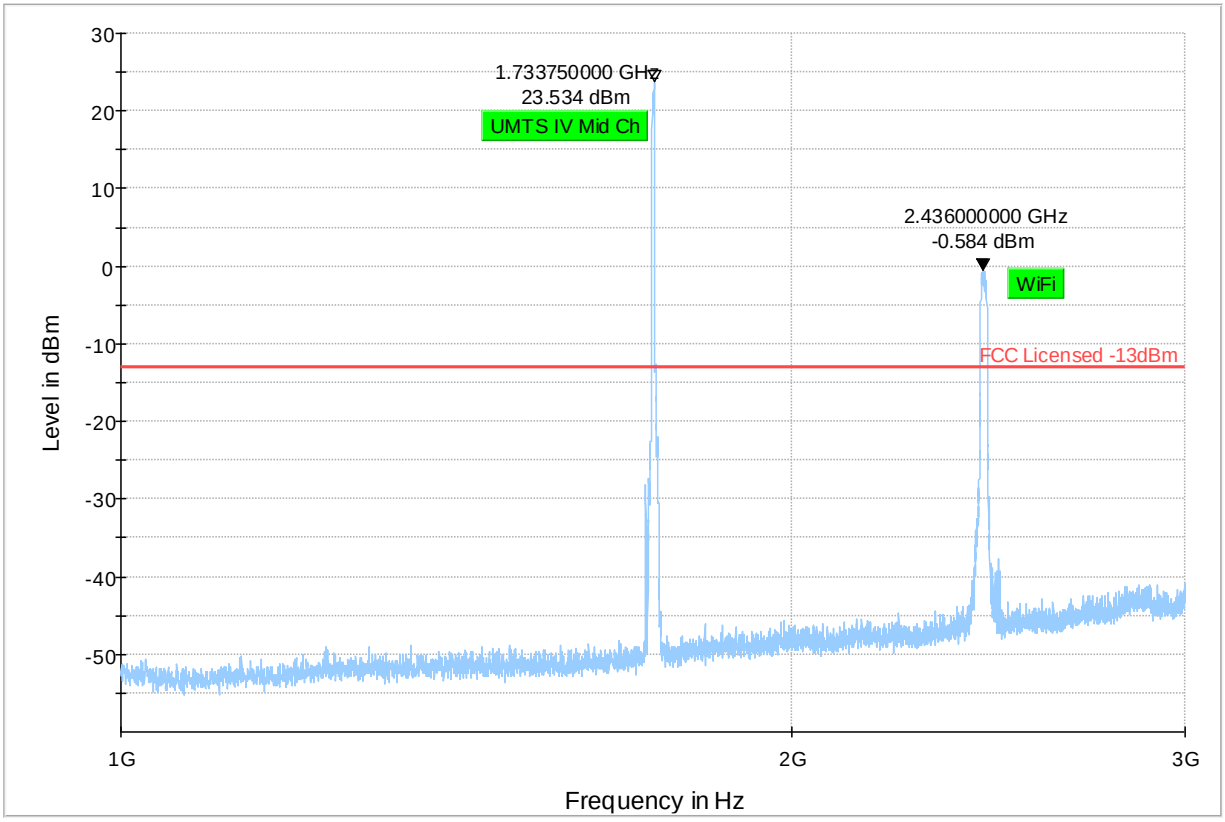
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
256.059	---	-65.81	---	---	500.0	100.000	107.0	H	35.0	-78.8
256.059	-78.01	---	-13.00	65.01	500.0	100.000	107.0	H	35.0	-78.8
402.238	---	-56.67	---	---	500.0	100.000	100.0	H	267.0	-77.2
402.238	-68.90	---	-13.00	55.90	500.0	100.000	100.0	H	267.0	-77.2
438.952	---	-57.08	---	---	500.0	100.000	134.0	V	132.0	-76.9
438.952	-70.11	---	-13.00	57.11	500.0	100.000	134.0	V	132.0	-76.9
475.521	---	-56.97	---	---	500.0	100.000	125.0	V	139.0	-76.0
475.521	-70.44	---	-13.00	57.44	500.0	100.000	125.0	V	139.0	-76.0



Plot # 17 Radiated Emissions: 1 GHz - 3 GHz

Channel: Mid

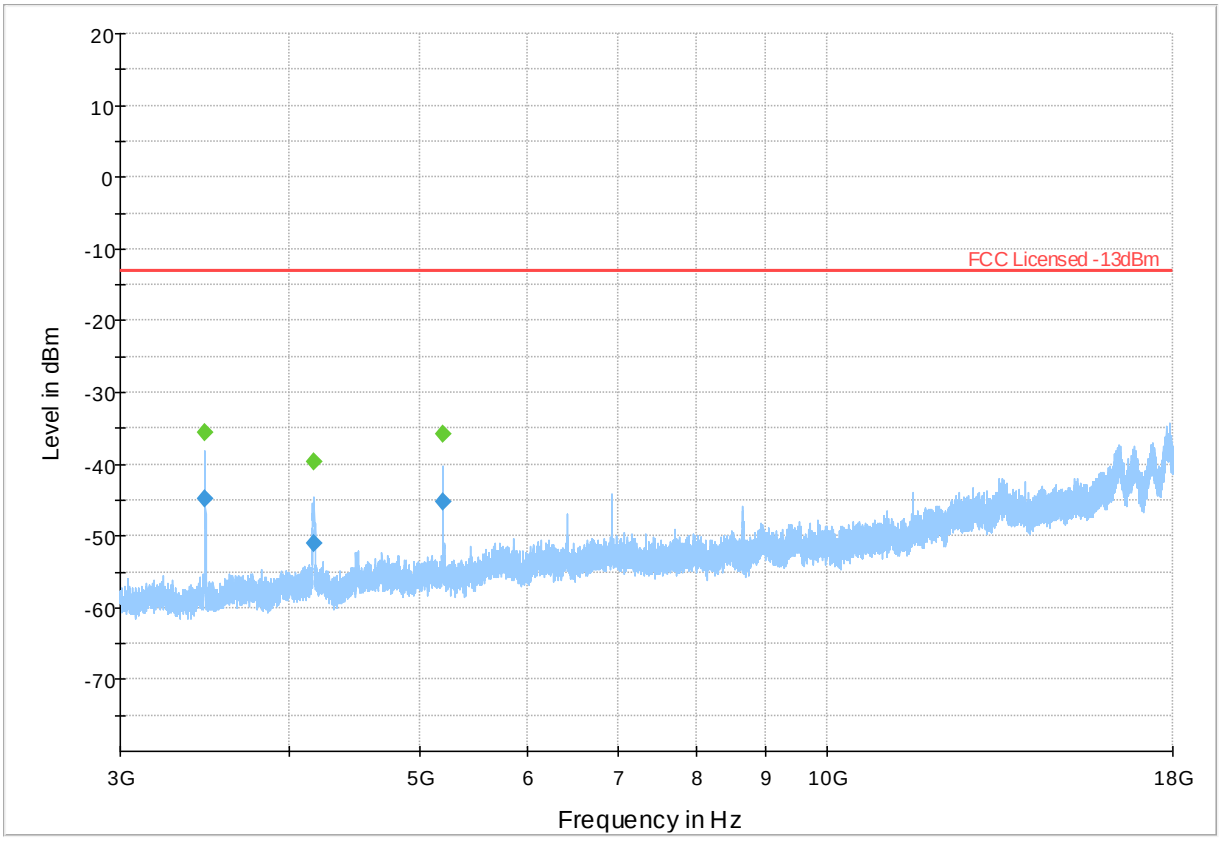


Plot # 18 Radiated Emissions: 3 GHz – 18 GHz

Channel: Mid

Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3462.750	---	-35.51	---	---	500.0	1000.000	252.0	H	15.0	-102.2
3462.750	-44.76	---	-13.00	31.76	500.0	1000.000	252.0	H	15.0	-102.2
4166.750	---	-39.58	---	---	500.0	1000.000	187.0	H	55.0	-99.3
4166.750	-51.02	---	-13.00	38.02	500.0	1000.000	187.0	H	55.0	-99.3
5200.500	---	-35.81	---	---	500.0	1000.000	107.0	H	298.0	-97.7
5200.500	-45.30	---	-13.00	32.30	500.0	1000.000	107.0	H	298.0	-97.7

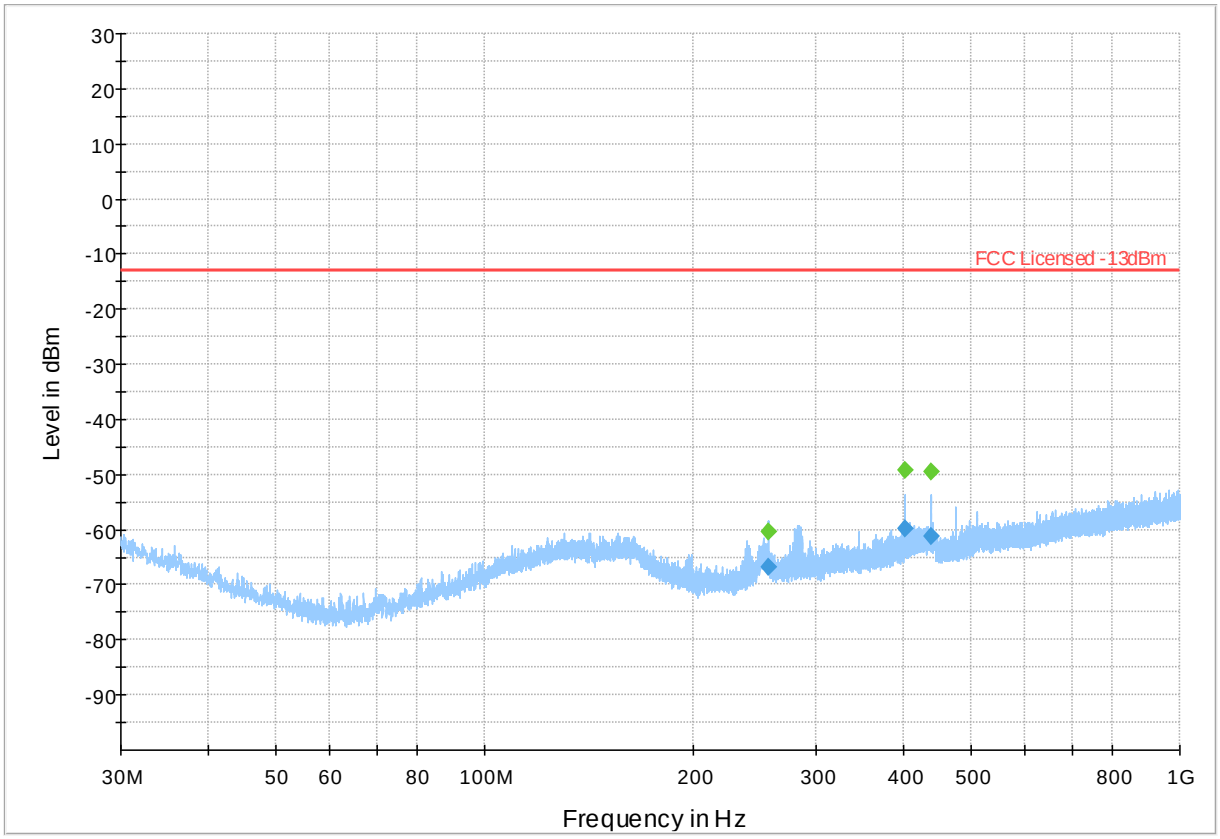


Plot # 19 Radiated Emissions: 30 MHz - 1 GHz

Channel: High

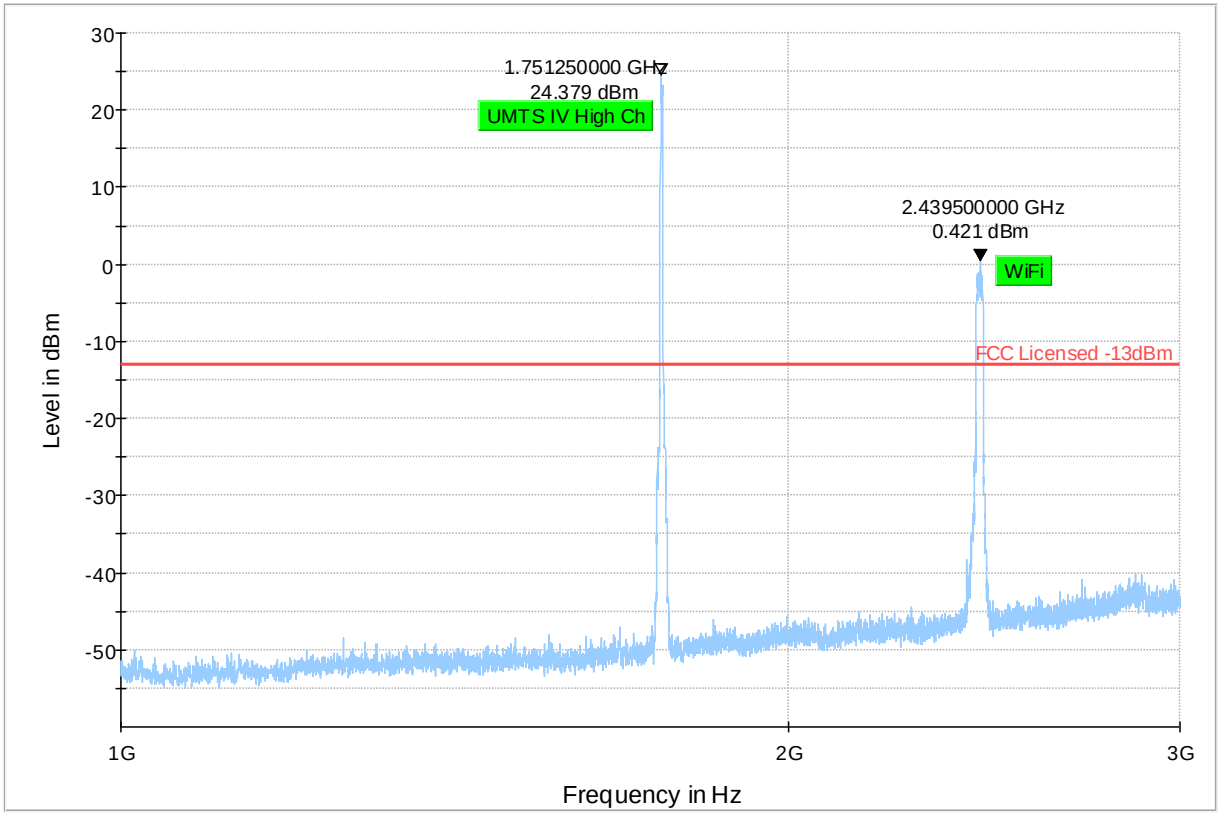
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
256.253	---	-60.52	---	---	500.0	100.000	142.0	H	44.0	-78.9
256.253	-66.83	---	-13.00	53.83	500.0	100.000	142.0	H	44.0	-78.9
402.771	---	-49.16	---	---	500.0	100.000	100.0	H	256.0	-77.2
402.771	-59.74	---	-13.00	46.74	500.0	100.000	100.0	H	256.0	-77.2
439.243	---	-49.55	---	---	500.0	100.000	100.0	H	198.0	-76.5
439.243	-61.13	---	-13.00	48.13	500.0	100.000	100.0	H	198.0	-76.5



Plot # 20 Radiated Emissions: 1 GHz - 3 GHz

Channel: High

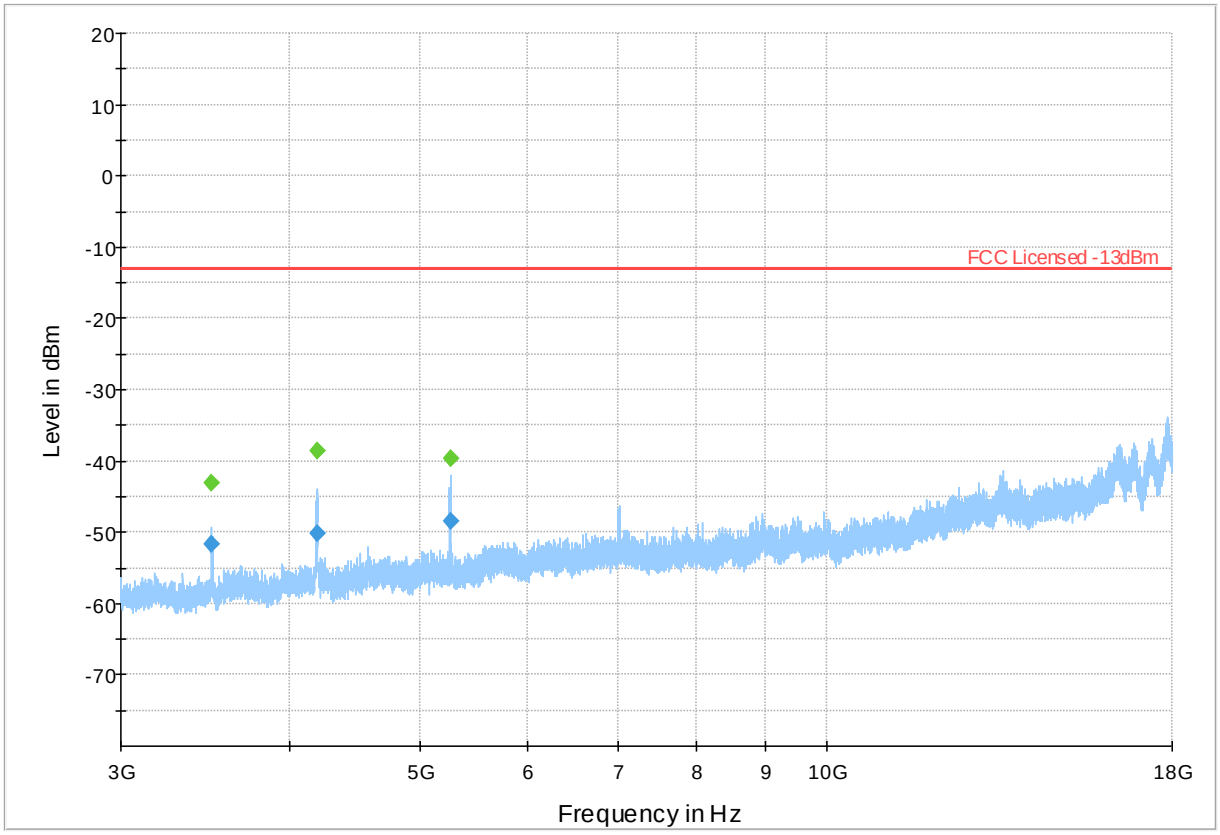


Plot # 21 Radiated Emissions: 3 GHz - 18 GHz

Channel: High

Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3503.500	---	-43.11	---	---	500.0	1000.000	325.0	H	135.0	-102.2
3503.500	-51.58	---	-13.00	38.58	500.0	1000.000	325.0	H	135.0	-102.2
4193.500	---	-38.55	---	---	500.0	1000.000	207.0	H	70.0	-99.2
4193.500	-50.15	---	-13.00	37.15	500.0	1000.000	207.0	H	70.0	-99.2
5259.500	---	-39.62	---	---	500.0	1000.000	142.0	H	296.0	-97.3
5259.500	-48.53	---	-13.00	35.53	500.0	1000.000	142.0	H	296.0	-97.3



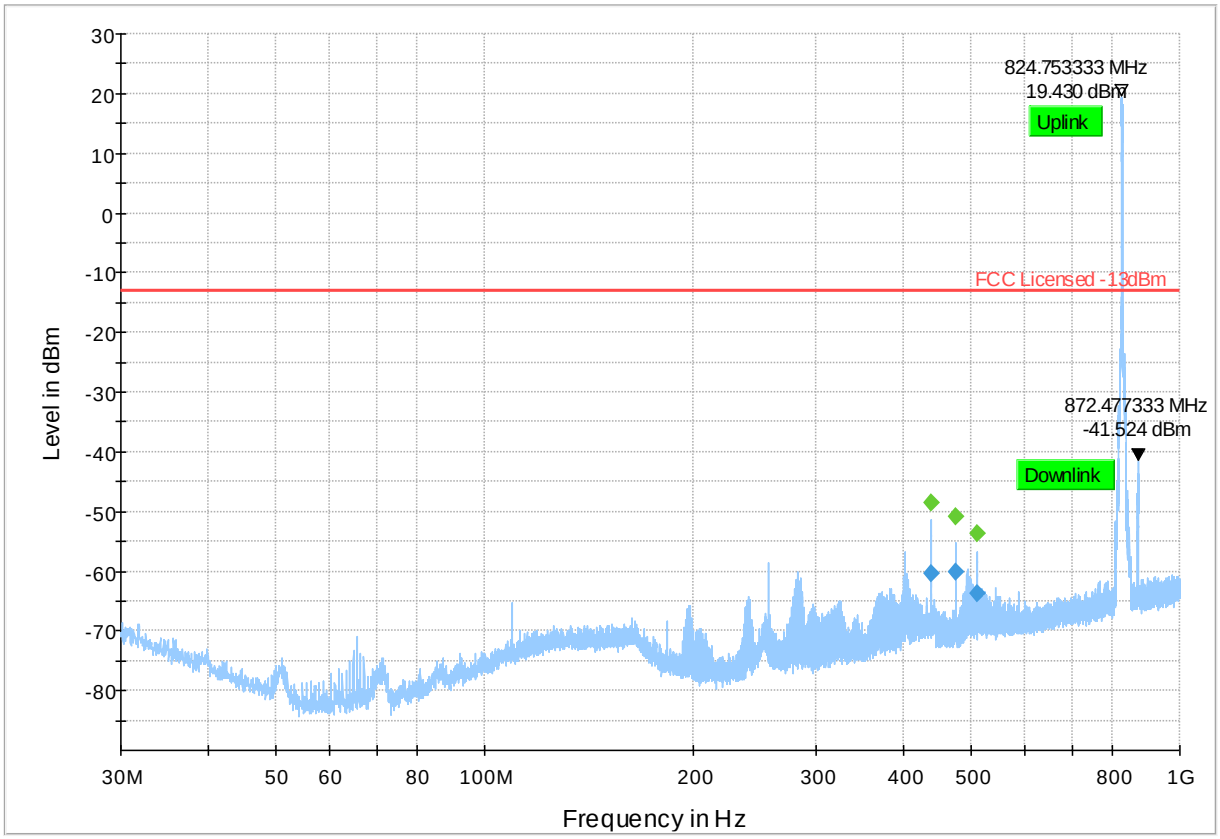
WCDMA Band V

Plot # 22 Radiated Emissions: 30 MHz - 1 GHz

Channel: Low

Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
439.340	-60.44	---	-13.00	47.44	500.0	100.000	100.0	H	192.0	-76.5	
439.340	---	-48.42	---	---	500.0	100.000	100.0	H	192.0	-76.5	
475.812	-60.25	---	-13.00	47.25	500.0	100.000	134.0	V	147.0	-76.0	
475.812	---	-50.79	---	---	500.0	100.000	134.0	V	147.0	-76.0	
512.381	---	-53.56	---	---	500.0	100.000	107.0	H	55.0	-75.0	
512.381	-63.85	---	-13.00	50.85	500.0	100.000	107.0	H	55.0	-75.0	

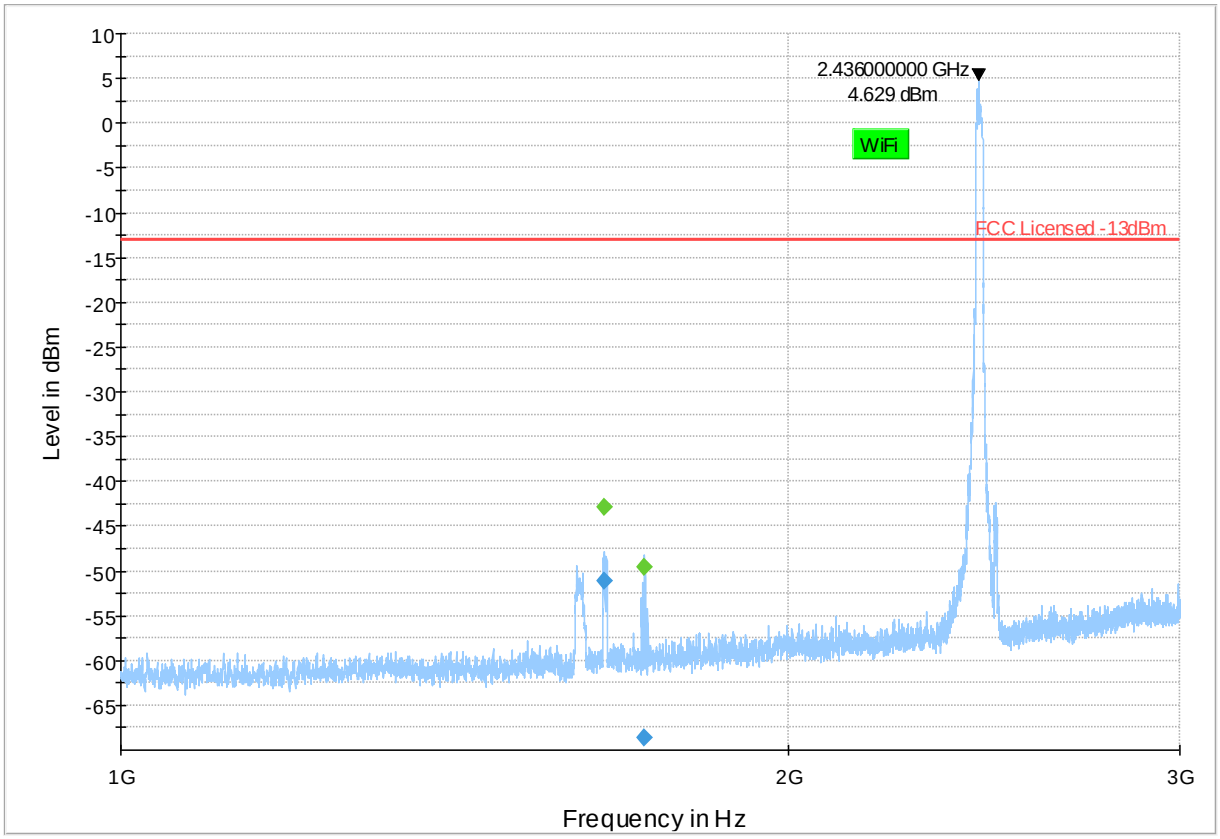


Plot # 23 Radiated Emissions: 1 GHz - 3 GHz

Channel: Low

Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
1650.750	-51.05	---	-13.00	38.05	500.0	1000.000	134.0	V	24.0	-91.7	
1650.750	---	-42.92	---	---	500.0	1000.000	134.0	V	24.0	-91.7	
1722.000	-68.67	---	-13.00	55.67	500.0	1000.000	171.0	H	230.0	-91.1	
1722.000	---	-49.55	---	---	500.0	1000.000	171.0	H	230.0	-91.1	

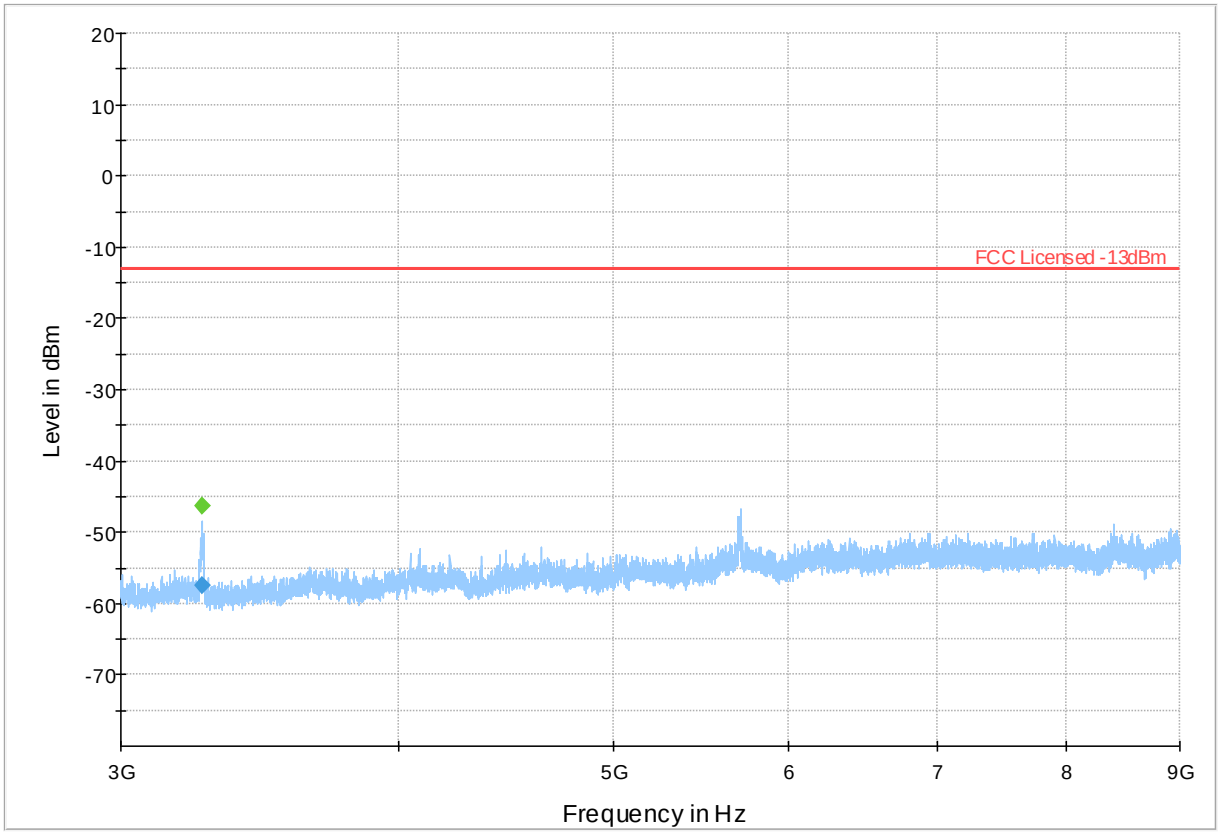


Plot # 24 Radiated Emissions: 3 GHz - 9 GHz

Channel: Low

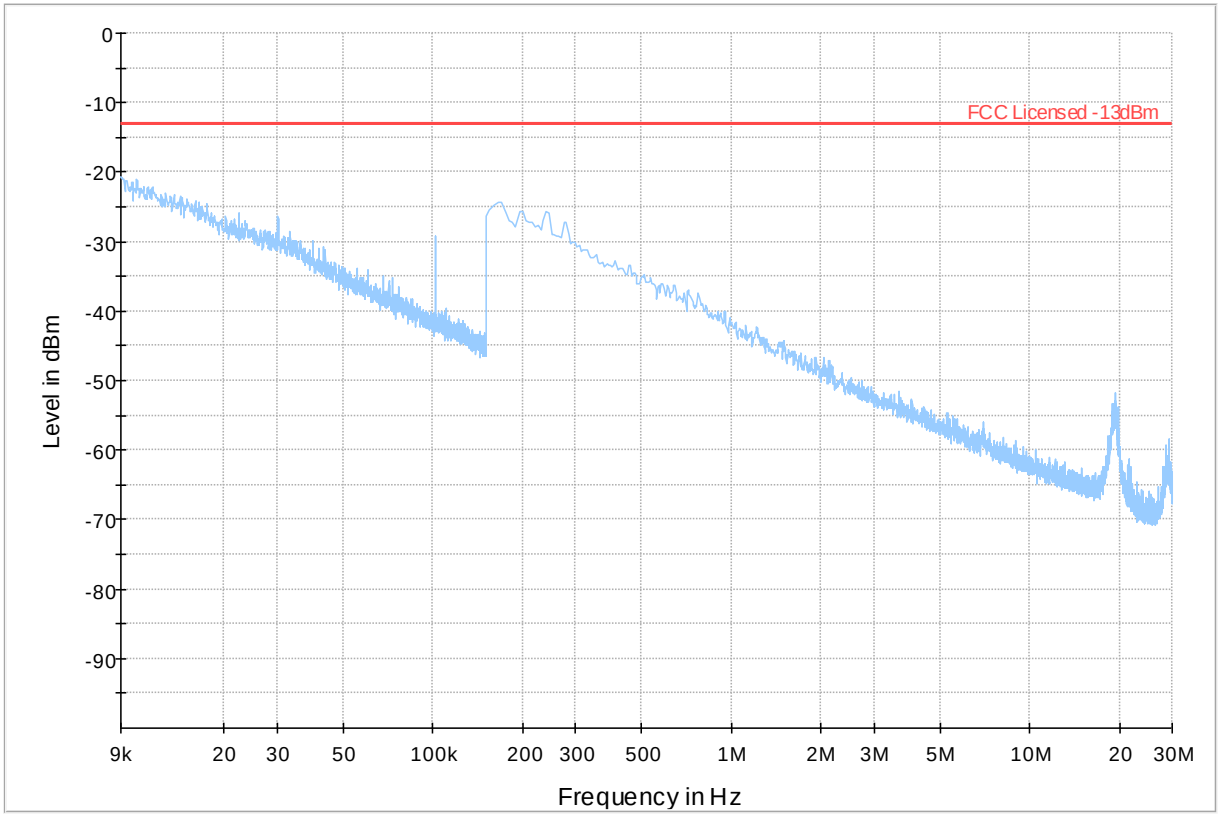
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
3263.750	---	-46.26	---	---	500.0	1000.000	175.0	H	116.0	-103.0	
3263.750	-57.39	---	-13.00	44.39	500.0	1000.000	175.0	H	116.0	-103.0	



Plot # 25 Radiated Emissions: 9 kHz - 30 MHz

Channel: Mid

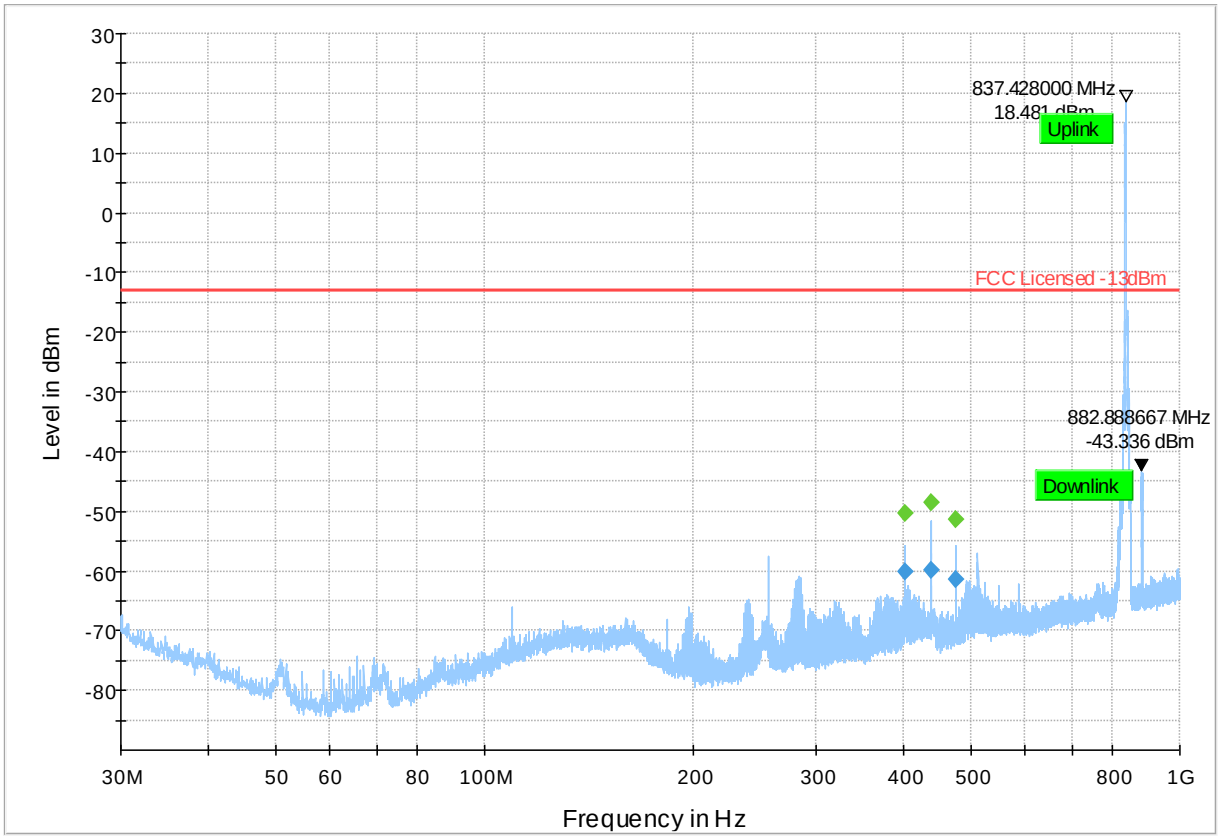


Plot # 26 Radiated Emissions: 30 MHz – 1 GHz

Channel: Mid

Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
402.674	-60.04	---	-13.00	47.04	500.0	100.000	100.0	H	268.0	-77.2	
402.674	---	-50.44	---	---	500.0	100.000	100.0	H	268.0	-77.2	
439.308	-59.99	---	-13.00	46.99	500.0	100.000	100.0	H	205.0	-76.5	
439.308	---	-48.54	---	---	500.0	100.000	100.0	H	205.0	-76.5	
475.844	---	-51.40	---	---	500.0	100.000	125.0	V	143.0	-76.0	
475.844	-61.45	---	-13.00	48.45	500.0	100.000	125.0	V	143.0	-76.0	

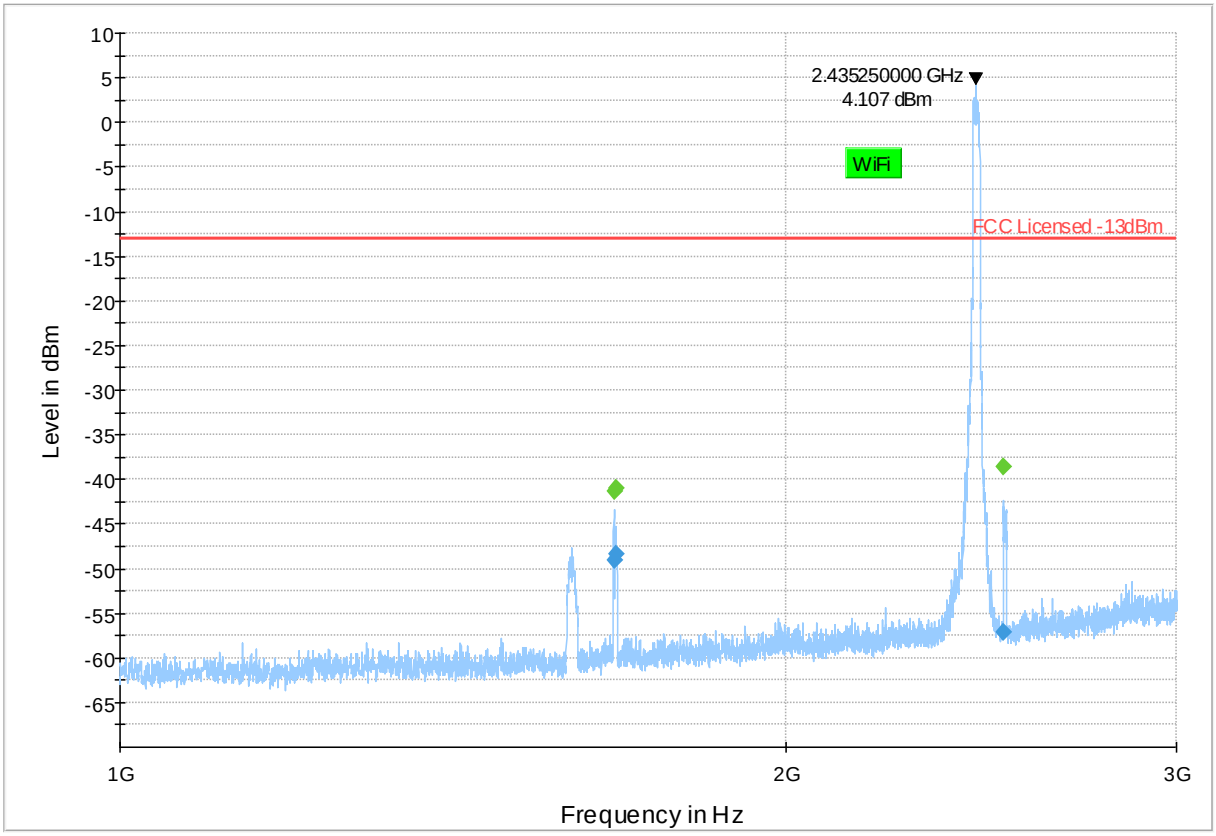


Plot # 27 Radiated Emissions: 1 GHz - 3 GHz

Channel: Mid

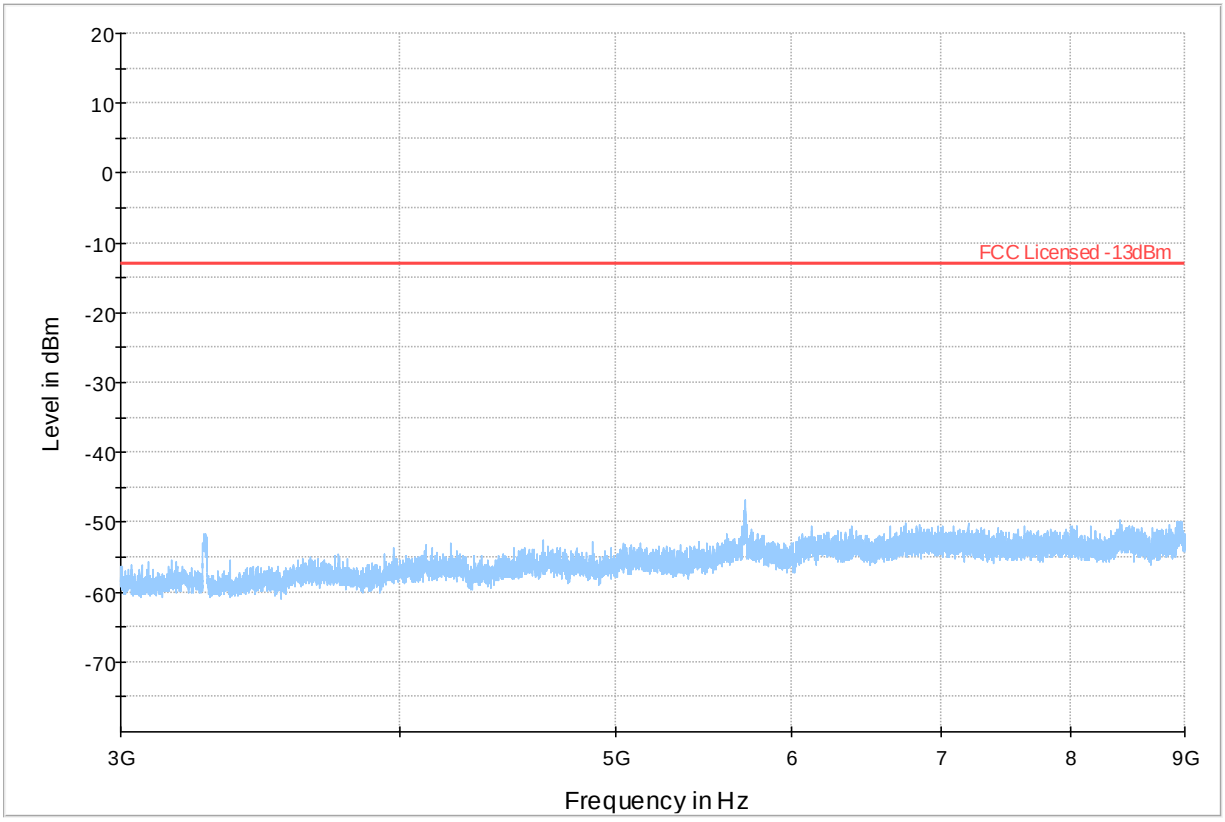
Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
1671.750	-49.13	---	-13.00	36.13	500.0	1000.000	264.0	V	137.0	-91.5	
1671.750	---	-41.29	---	---	500.0	1000.000	264.0	V	137.0	-91.5	
1674.750	---	-41.01	---	---	500.0	1000.000	245.0	V	139.0	-91.5	
1674.750	-48.31	---	-13.00	35.31	500.0	1000.000	245.0	V	139.0	-91.5	
2506.750	-57.05	---	-13.00	44.05	500.0	1000.000	150.0	H	316.0	-89.1	
2506.750	---	-38.65	---	---	500.0	1000.000	150.0	H	316.0	-89.1	



Plot # 28 Radiated Emissions: 3 GHz – 9GHz

Channel: Mid

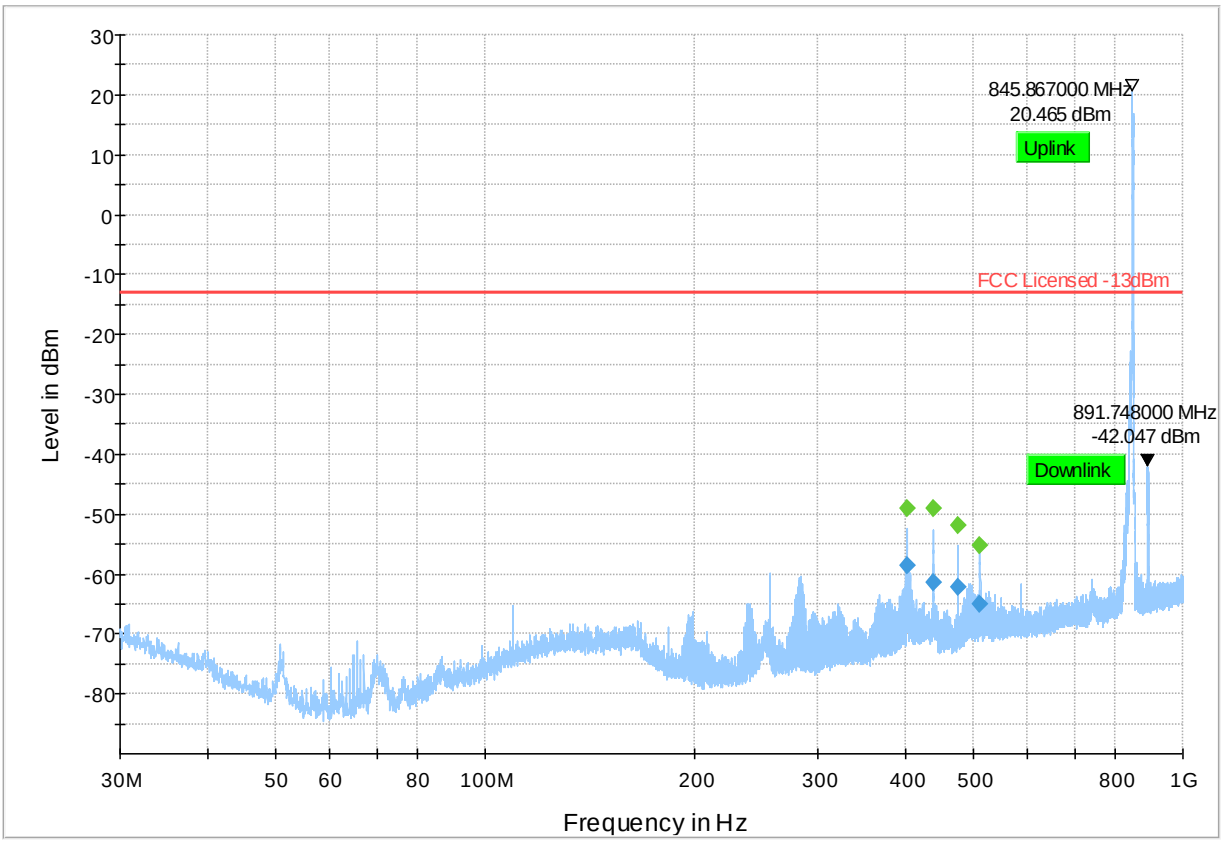


Plot # 29 Radiated Emissions: 30 MHz - 1 GHz

Channel: High

Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
402.674	-58.70	---	-13.00	45.70	500.0	100.000	100.0	H	267.0	-77.2	
402.674	---	-49.10	---	---	500.0	100.000	100.0	H	267.0	-77.2	
439.372	---	-49.09	---	---	500.0	100.000	100.0	H	147.0	-76.5	
439.372	-61.29	---	-13.00	48.29	500.0	100.000	100.0	H	147.0	-76.5	
475.812	-62.16	---	-13.00	49.16	500.0	100.000	134.0	V	143.0	-76.0	
475.812	---	-51.76	---	---	500.0	100.000	134.0	V	143.0	-76.0	
512.446	---	-55.14	---	---	500.0	100.000	107.0	H	56.0	-75.0	
512.446	-64.94	---	-13.00	51.94	500.0	100.000	107.0	H	56.0	-75.0	

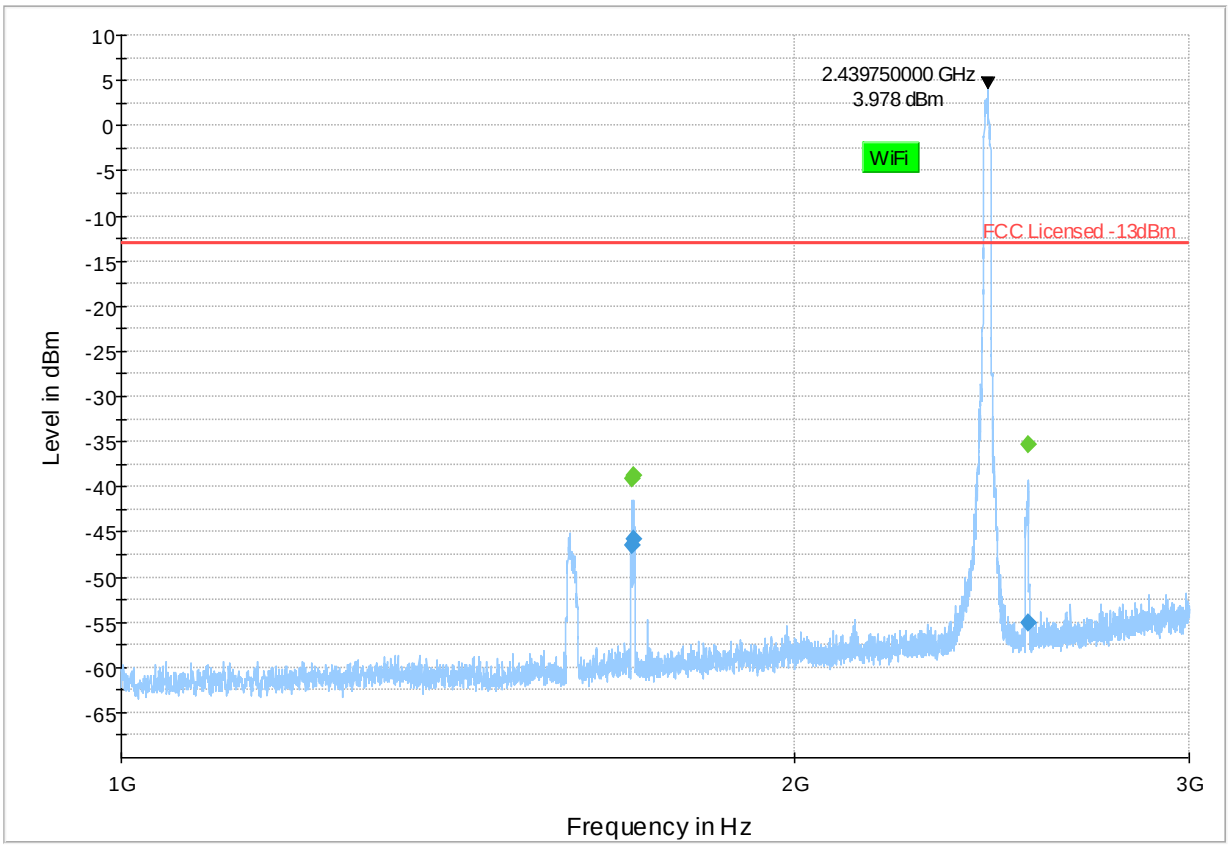


Plot # 30 Radiated Emissions: 1 GHz - 3 GHz

Channel: High

Final_Result

Frequency (MHz)	RMS (dBm)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
1691.250	-46.46	---	-13.00	33.46	500.0	1000.000	125.0	V	60.0	-91.3	
1691.250	---	-39.18	---	---	500.0	1000.000	125.0	V	60.0	-91.3	
1694.000	---	-38.75	---	---	500.0	1000.000	126.0	V	61.0	-91.3	
1694.000	-45.82	---	-13.00	32.83	500.0	1000.000	126.0	V	61.0	-91.3	
2542.750	-55.12	---	-13.00	42.12	500.0	1000.000	107.0	H	116.0	-88.9	
2542.750	---	-35.38	---	---	500.0	1000.000	107.0	H	116.0	-88.9	



Plot # 31 Radiated Emissions: 3 GHz - 9 GHz

Channel: High