



# FCC/IC Test Report

FOR:

NetComm Wireless

Model Name:

MAX 6200-V1

Product Description:

3G M2M Router Plus

FCC ID: XIA-NTC620002

IC ID: 8847A-NTC600002

Per:

47 CFR: Part 22, Part 24, Part 27

Report #: EMC-NETCO-007-16001\_FCC\_22\_24\_27\_v2

Date: August 30, 2016



**CETECOM Inc.**

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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 24, 27.  
 No deficiencies to the FCC limits were ascertained.


The evaluation was performed for antenna+cable+adapter-configurations different to the ones in the filing for above FCC-ID, IC-ID.  
 The device was found to exceed the ERP value stated in the grant.

| Company Name     | Product Description | Model #     |
|------------------|---------------------|-------------|
| NetComm Wireless | 3G M2M Router Plus  | MAX 6200-V1 |

**Responsible for Testing Laboratory:**

| August 30, 2016 | Compliance | Franz Engert<br>(Manager Compliance Services) | <br>Digitally signed by Franz Engert<br>DN: cn=Franz Engert, c=US, o=CETECOM, ou=Compliance, email=franz.engert@cetecom.com |
|-----------------|------------|---|---|
| Date            | Section    | Name  | Signature   |

**Responsible for the Report:**

| August 30, 2016 | Compliance | James Donnellan<br>(Sr. EMC Engineer) | <br>Digitally signed by James Donnellan<br>DN: cn=James Donnellan, c=US, o=Cetecom Inc., ou=Compliance, email=james.donnellan@cetecom.com<br>Date: 2016.09.01 09:05:48 -0700 |
|-----------------|------------|---------------------------------------|---|
| Date            | Section    | Name                                  | Signature   |

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

|                            |                        |
|----------------------------|------------------------|
| <b>Company Name:</b>       | CETECOM Inc.           |
| <b>Department:</b>         | Compliance             |
| <b>Street Address:</b>     | 411 Dixon Landing Road |
| <b>City/Zip Code</b>       | Milpitas, CA 95035     |
| <b>Country</b>             | USA                    |
| <b>Telephone:</b>          | +1 (408) 586 6200      |
| <b>Fax:</b>                | +1 (408) 586 6299      |
| <b>Compliance Manager:</b> | Franz Engert           |
| <b>Project Engineer:</b>   | Yu-Chien Ho            |

2.2 Identification of the Client

|                          |                           |
|--------------------------|---------------------------|
| <b>Applicant's Name:</b> | NetComm Wireless Limited  |
| <b>Street Address:</b>   | Level 2, 18-20 Orion Road |
| <b>City/Zip Code</b>     | Lane Cove / 2066          |
| <b>Country</b>           | Australia                 |

2.3 Identification of the Manufacturer

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

### 3 Equipment Under Test (EUT)

#### 3.1 EUT Specifications

|   |   |
|---|---|
| <b>Model #:</b>                                       | MAX 6200-V1   |
| <b>HW Version:</b>                                    | 1.0   |
| <b>SW Version:</b>                                    | 2.0.24.3  |
| <b>FCC-ID:</b>  | XIA-NTC620002   |
| <b>IC-ID:</b>   | 8847A-NTC600002   |
| <b>Product Description</b>                            | 3G M2M Router Plus  |
| <b>Module Information:</b>                            | Not applicable. FCC-ID is not based on a modular certification.   |
| <b>Transceiver Technology / Type(s) of Modulation</b> | WCDMA/UMTS: QPSK<br>GPRS/GSM: GMSK<br>EGPRS: 8-PSK  |
| <b>TX Operating Frequency Ranges (MHz):</b>           | GSM850: 824.2MHz – 848.8MHz<br>GSM1900: 1850.2MHz – 1909.8MHz<br>WCDMA/UMTS FDD BAND II: 1852.4MHz – 1907.6MHz<br>WCDMA/UMTS FDD BAND V: 826.4MHz – 846.6MHz  |
| <b>Maximum AVG Conducted Output Power from grant:</b> | GPRS850 1.03W = 30.1dBm ERP<br>EDGE850 0.25W = 24.0dBm ERP<br>UMTS850 0.12W = 20.8dBm ERP<br>GPRS1900 1.54W = 31.9dBm EIRP<br>EDGE1900 0.53W = 27.2dBm EIRP<br>UMTS1900 0.37W = 25.7dBm EIRP  |
| <b>Antenna info:</b>                                  | Antenna more than 20cm away from human body according to manufacturer declaration.<br>ANT-0040 with 2 feet RG58<br>ANT-0040 with 2 feet RG174<br>ANT-0040 with 8 feet RG58<br>ANT-0040 with 8 feet RG174<br>Maximum Gain (in bands supported by EUT) of ANT-0040 tube antenna 3.42dBi in 1900Band |
| <b>Rated Operating Voltage Range:</b>                 | DC 8V to 40V  |
| <b>Operating Temperature Range:</b>                   | Tlow: -40° C/ Tnom: 23° C/ Tmax: 85° C  |
| <b>Other Radios included in the device</b>            | N/A   |
| <b>Sample Revision</b>                                | <input type="checkbox"/> Prototype <input checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-Production   |



**3.2 EUT Sample details**

| EUT # | Radio Serial Number | HW Version | SW Version | Antenna cable | Antenna  |
|-------|---------------------|------------|------------|---------------|----------|
| 1     | 165 711 160 310 026 | 1.0        | 2.0.24.3   | 2 feet RG-58  | ANT-0040 |
| 2     | 165 711 160 310 026 | 1.0        | 2.0.24.3   | 2 feet RG-174 | ANT-0040 |
| 3     | 165 711 160 310 026 | 1.0        | 2.0.24.3   | 8 feet RG-58  | ANT-0040 |
| 4     | 165 711 160 310 026 | 1.0        | 2.0.24.3   | 8 feet RG-174 | ANT-0040 |

**3.3 Accessory Equipment (AE) details**

| AE # | Type                   | Model          | Manufacturer   | Serial Number |
|------|------------------------|----------------|----------------|---------------|
| 1    | Switching Power Supply | S01BBAM1200150 | Kanematsu Corp | NA            |

**3.4 Test Sample Configuration**

| Set-up # | EUT / AE used for set-up | Measurement                 | Comments   |
|----------|--------------------------|-----------------------------|--|
| 1        | EUT #1 + AE #1           | E(I)RP measurements         | Lowest loss between Radio and Antenna.               |
| 2        | EUT #3 + AE #1           | Radiated Spurious Emissions | Longer cables prone to more unintentional radiation. |



#### 4 Subject of Investigation

The objective of the measurements done by CETECOM Inc. was to evaluate the compliance of the EUT with 4 new configurations for antenna + cable + antenna adapter against the relevant requirements specified in the Code of Federal Regulations Title 47 parts 22, 24, 27, 90 inside the scope of the existing grant for FCC-ID XIA-NTC620002 and IC ID: 8847A-NTC600002.



## 5 Measurement

### 5.1 Dates of Testing:

August 22, 2016 – August 30, 2016

### 5.2 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     | $\pm 2.5$ dB (Magnetic Loop Antenna) |
| 30 MHz to 1000 MHz | $\pm 2.0$ dB (Biconilog Antenna)     |
| 1 GHz to 40 GHz    | $\pm 2.3$ dB (Horn Antenna)          |

#### Conducted measurement

150 kHz to 30 MHz  $\pm 0.7$  dB (LISN)

RF conducted measurement  $\pm 0.5$  dB

### 5.3 Environmental Conditions during Testing:

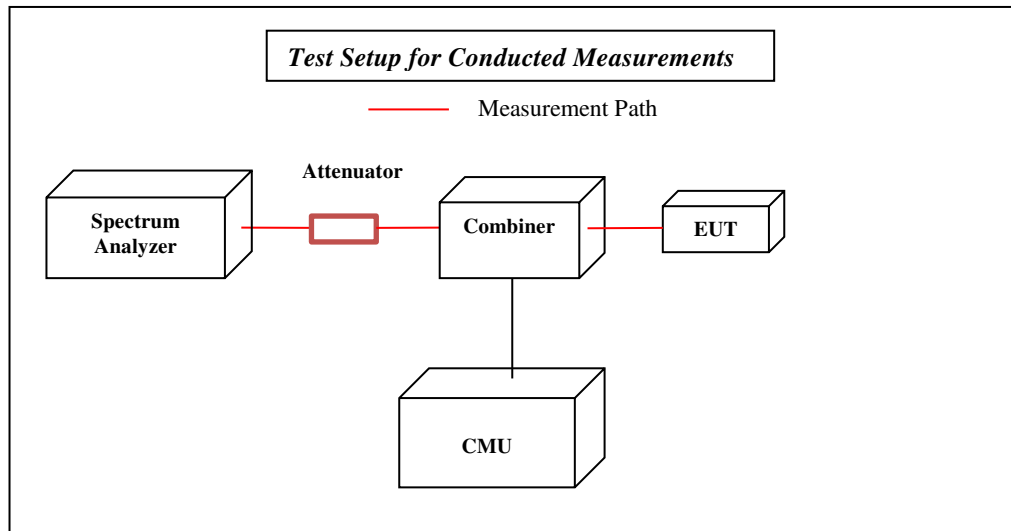
The following environmental conditions were maintained during the course of testing:

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



### 5.4 Conducted measurements

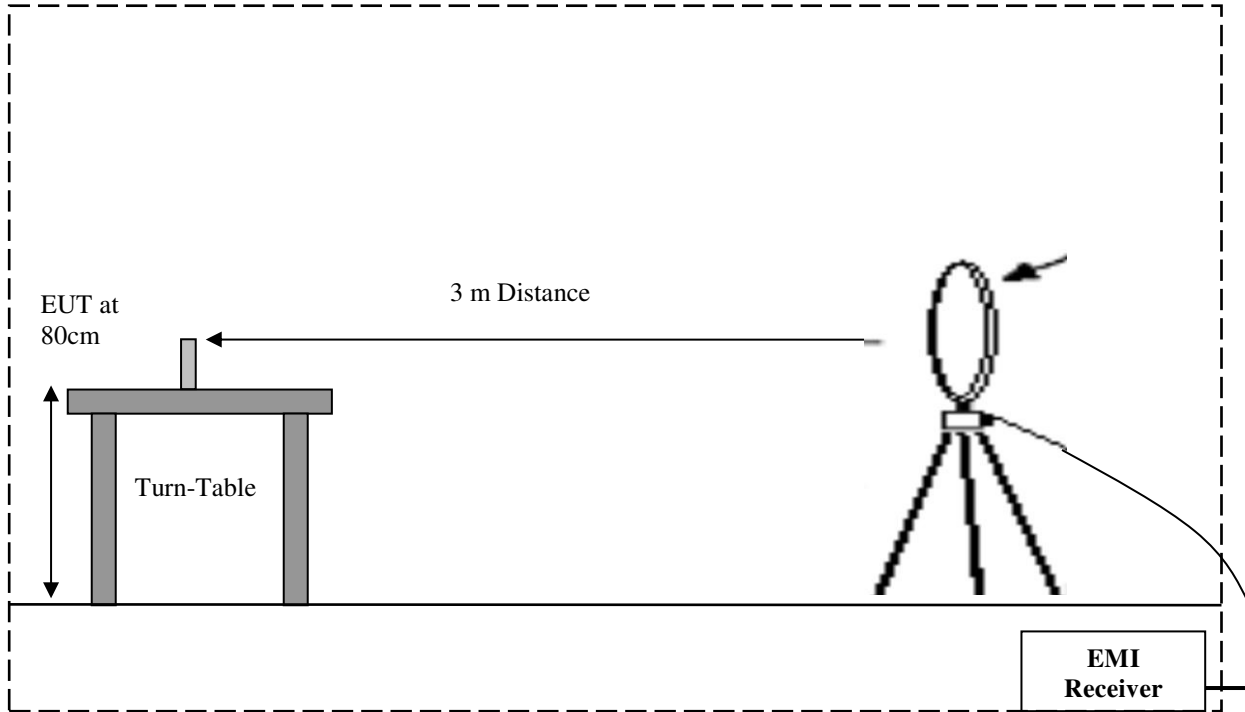
Testing is performed according to the guidelines provided in FCC publication (KDB) 971168 D01 v02r02 – “Measurement Guidance for Certification of Licensed Digital Transmitters” and according to relevant parts of TIA-603C 2004 as detailed below.



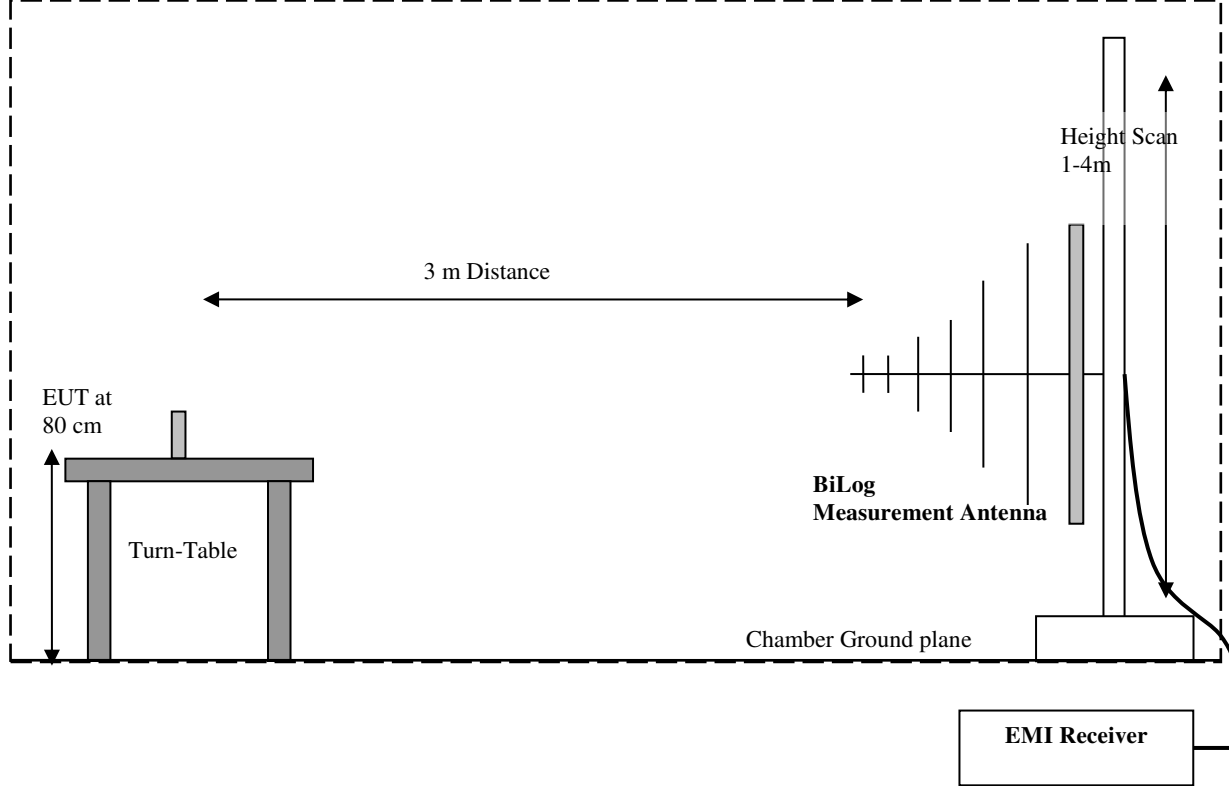
## 5.5 Radiated Measurement

- 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.

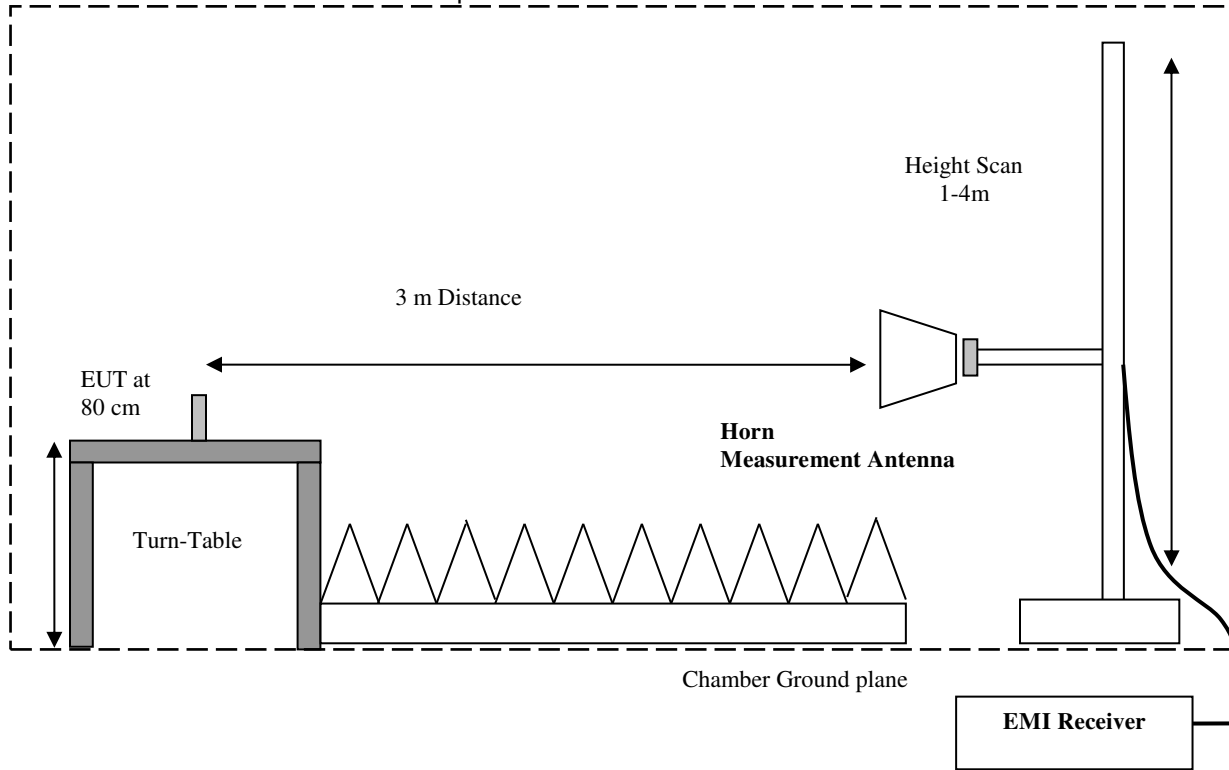
### 5.5.1 Radiated Emissions Test Setup below 30MHz Measurements



### 5.5.2 Radiated Emissions Test Setup 30MHz-1GHz Measurements



### 5.5.3 Radiated Emissions Test Setup above 1GHz Measurements





5.6 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:

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

Example:

| Frequency (MHz) | Measured SA (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:

| Test Specification   | Test Case                    | Temperature and Voltage Conditions | Mode                            | Pass | Fail | NA | NP | Result   |
|----------------------|------------------------------|------------------------------------|---------------------------------|------|------|----|----|----------|
| §2.1046; §22.913 (a) | RF Output Power              | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | ■    | □    | □  | □  | Complies |
| §2.1055; §22.355     | Frequency Stability          | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | □    | □    | □  | ■  | Note 2   |
| §2.1049; §22.917     | Occupied Bandwidth           | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | □    | □    | □  | ■  | Note 2   |
| §2.1051; §22.917     | Band Edge Compliance         | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | □    | □    | □  | ■  | Note 2   |
| §2.1051; §22.917     | Conducted Spurious Emissions | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | □    | □    | □  | ■  | Note 2   |
| §2.1053; §22.917     | Radiated Spurious Emissions  | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | ■    | □    | □  | □  | Complies |

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

Note 2: Leveraged from certification of initial product.

## 6.2 FCC 24:

| Test Specification               | Test Case                    | Temperature and Voltage Conditions | Mode                            | Pass | Fail | NA | NP | Result   |
|----------------------------------|------------------------------|------------------------------------|---------------------------------|------|------|----|----|----------|
| §2.1046; §24.232 (a); §27.50 (d) | RF Output Power              | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | ■    | □    | □  | □  | Complies |
| §2.1055; §24.235; §27.54         | Frequency Stability          | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | □    | □    | □  | ■  | Note 2   |
| §2.1049; §24.238; §27.53         | Occupied Bandwidth           | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | □    | □    | □  | ■  | Note 2   |
| §2.1051; §24.238; §27.53         | Band Edge Compliance         | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | □    | □    | □  | ■  | Note 2   |
| §2.1051; §24.238; §27.53         | Conducted Spurious Emissions | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | □    | □    | □  | ■  | Note 2   |
| §2.1053; §24.238; §27.53         | Radiated Spurious Emissions  | Nominal                            | GPRS class 8, WCDMA RMC12.2kbps | ■    | □    | □  | □  | Complies |

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

Note 2: Leveraged from module certification.

## 7 RF Output Power

### 7.1 Reference:

FCC: CFR Part 2.1046, CFR Part 22.913, CFR Part 24.232

### 7.2 Limits:

#### 7.2.1 FCC Part 22.913 (a)

(a) The effective radiated power (ERP) of mobile transmitters must not exceed 7 Watts (38.45dBm).

#### 7.2.2 FCC Part 24.232 (c),(d),(e)

(c) Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

(e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

#### 7.2.3 FCC Part 27.50 (d) (4)

(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

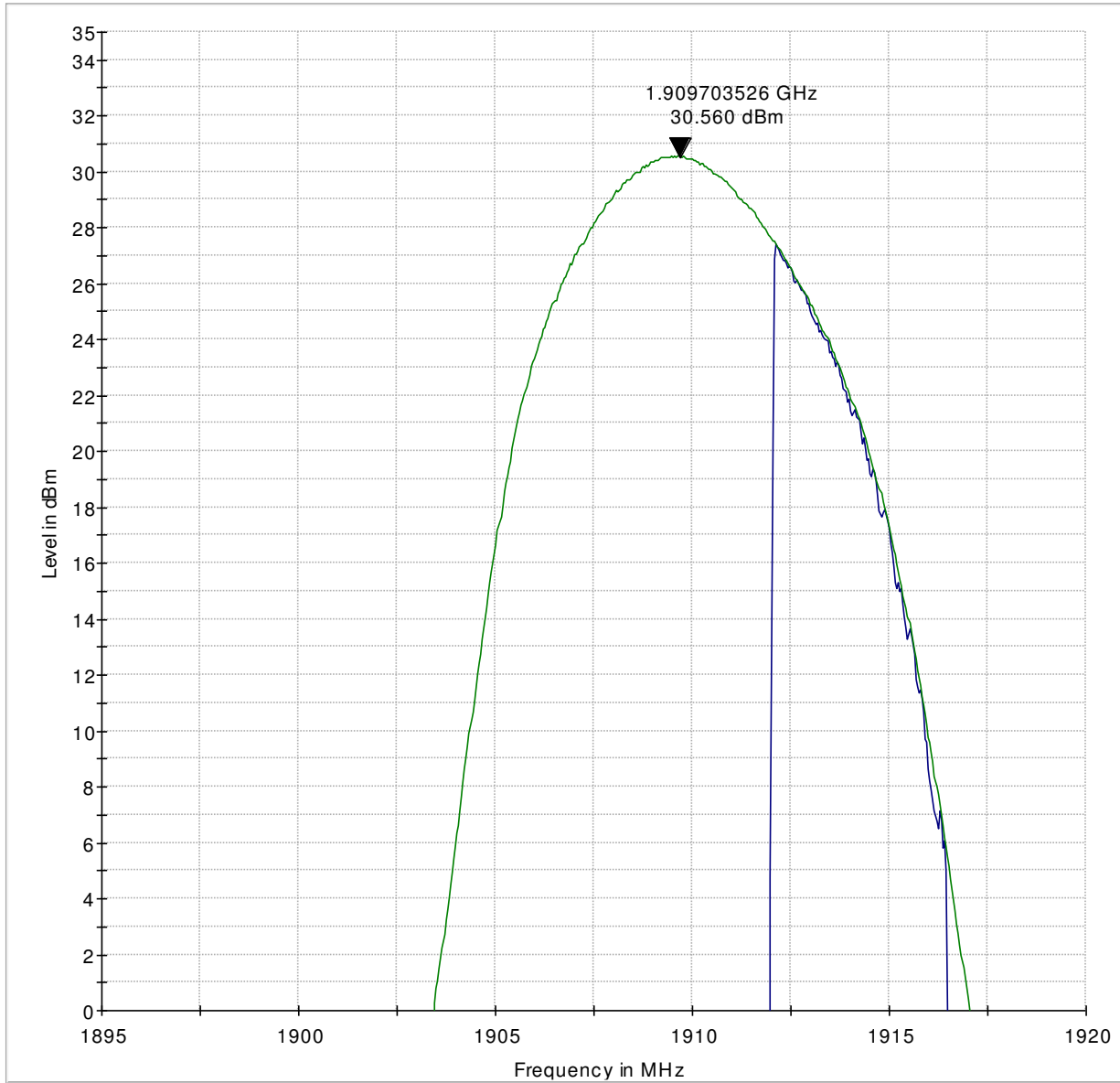


## 7.3 Summary Measurement Result:

| Band                    | Frequency (MHz) | Channel | Measured RMS ERP/EIRP [dBm] | Duty Cycle Correction [dB] | Maximum RMS ERP/EIRP from grant [dBm] | Margin to grant (dB) |
|-------------------------|-----------------|---------|-----------------------------|----------------------------|---------------------------------------|----------------------|
| GPRS850 (class8)        | 848.8           | High    | 28.7                        | 0                          | 30.1                                  | 1.4                  |
| GPRS850 (class8)        | 836.6           | Mid     | 30.4                        | 0                          | 30.1                                  | -0.3                 |
| GPRS850 (class8)        | 824.2           | Low     | 28.9                        | 0                          | 30.1                                  | 1.2                  |
| GPRS1900 (class8)       | 1909.8          | High    | 30.6                        | 0                          | 31.9                                  | 1.3                  |
| GPRS1900 (class8)       | 1880            | Mid     | 31.4                        | 0                          | 31.9                                  | 0.5                  |
| GPRS1900 (class8)       | 1850.2          | Low     | 30.3                        | 0                          | 31.9                                  | 1.6                  |
| UMTS FDD II (RMC 12.2k) | 1907.6          | High    | 24.3                        | 0                          | 25.7                                  | 1.4                  |
| UMTS FDD II (RMC 12.2k) | 1880            | Mid     | 25.4                        | 0                          | 25.7                                  | 0.3                  |
| UMTS FDD II (RMC 12.2k) | 1852.4          | Low     | 24.0                        | 0                          | 25.7                                  | 1.7                  |
| UMTS FDD V (RMC 12.2k)  | 849             | High    | 23.7                        | 0                          | 20.8                                  | -2.9                 |
| UMTS FDD V (RMC 12.2k)  | 836.6           | Mid     | 23.0                        | 0                          | 20.8                                  | -2.2                 |
| UMTS FDD V (RMC 12.2k)  | 826.4           | Low     | 22.5                        | 0                          | 20.8                                  | -1.7                 |

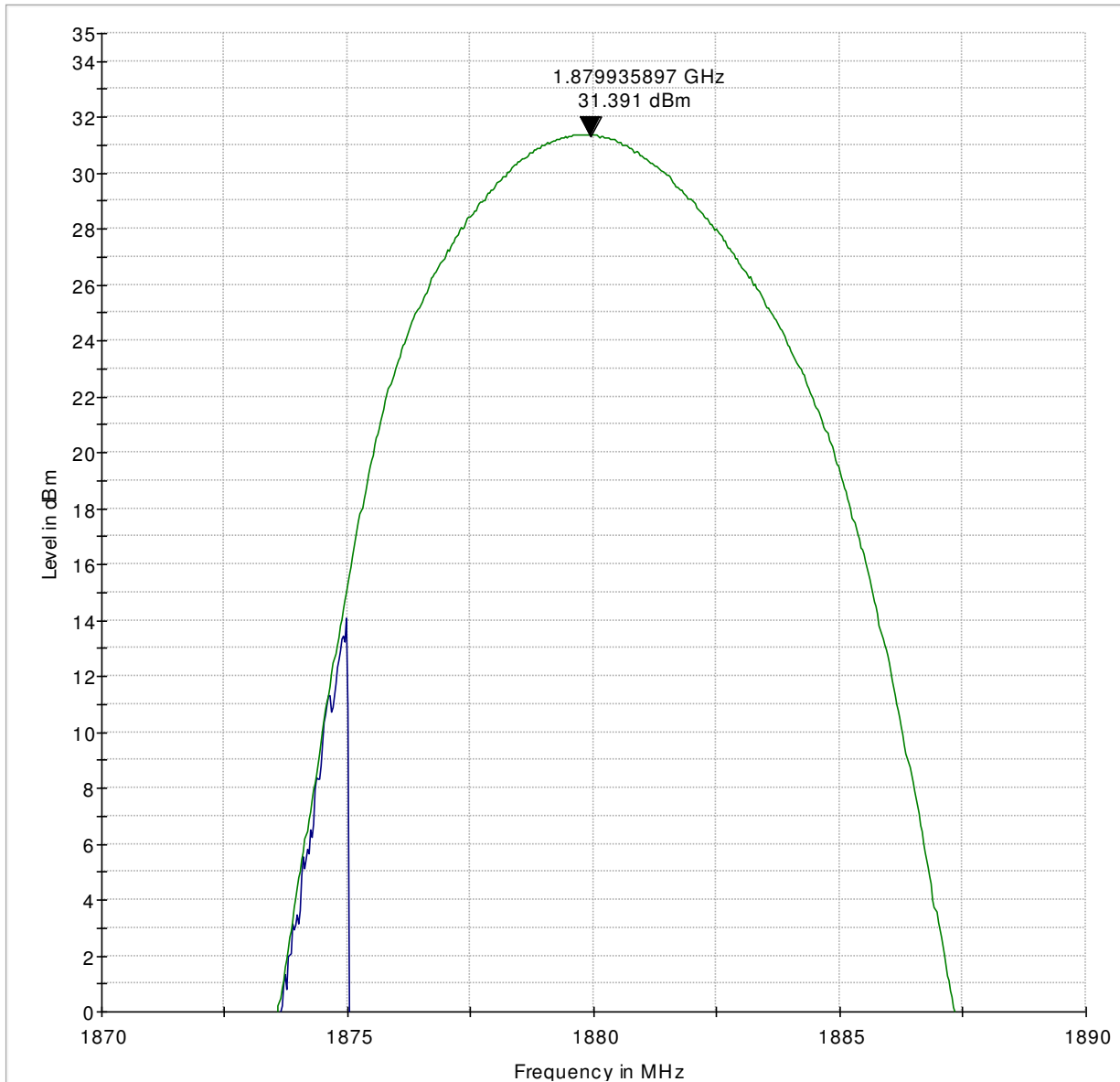
### 7.4 Measurement Plots:

#### 7.4.1 GSM1900 EIRP high channel



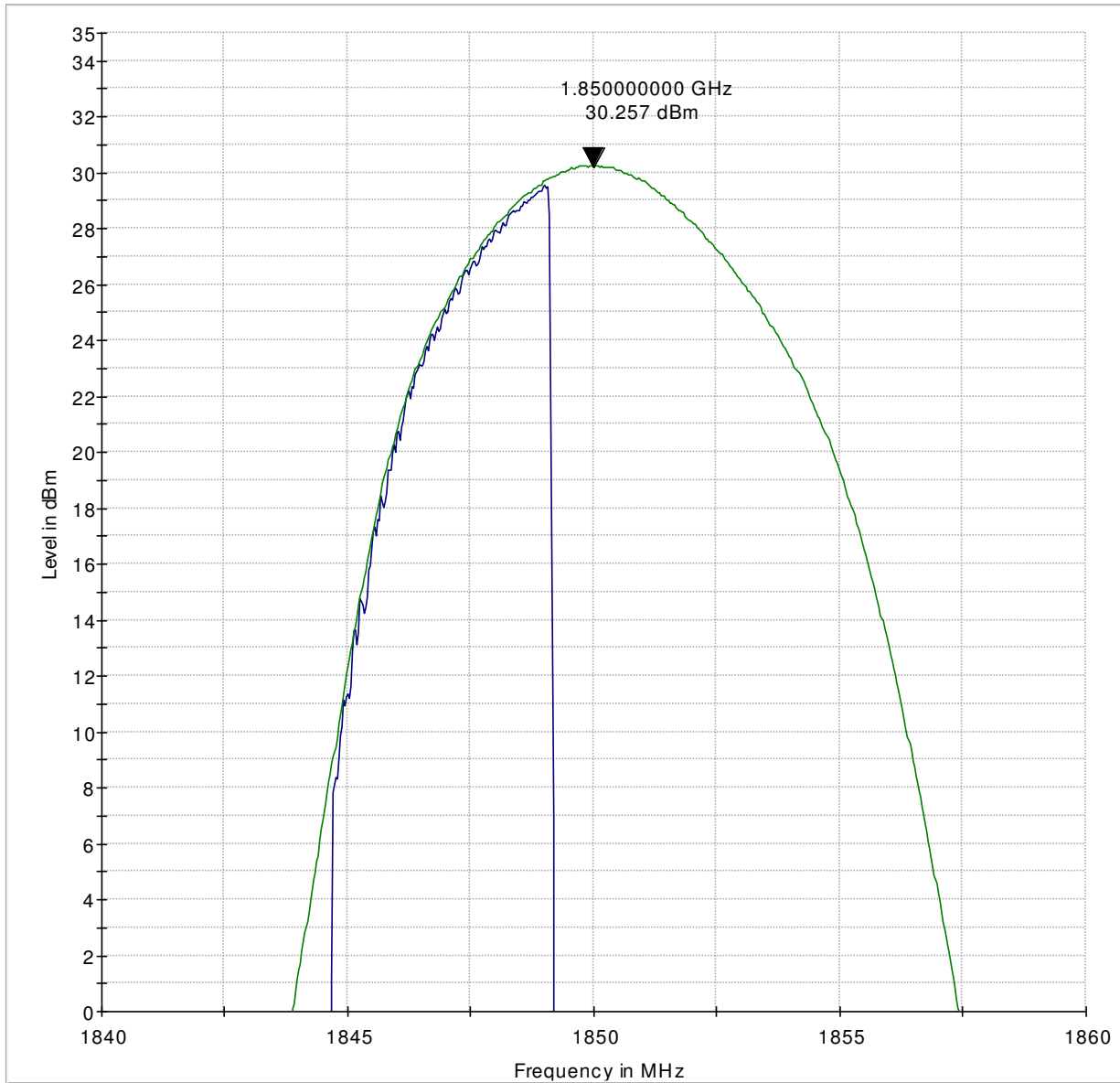
— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS

7.4.2 GSM1900 EIRP mid channel:



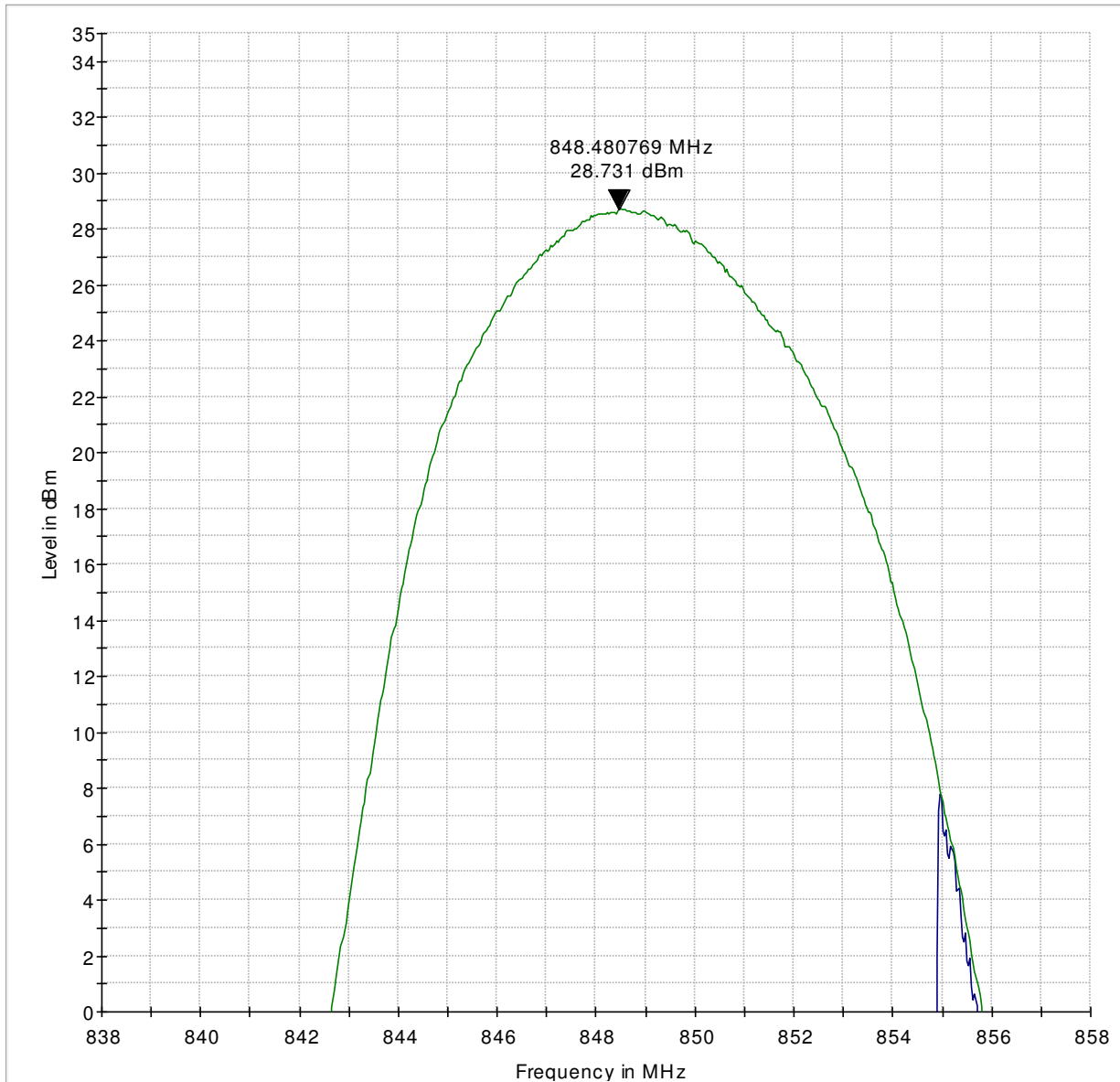
— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS

7.4.3 GSM1900 EIRP low channel:



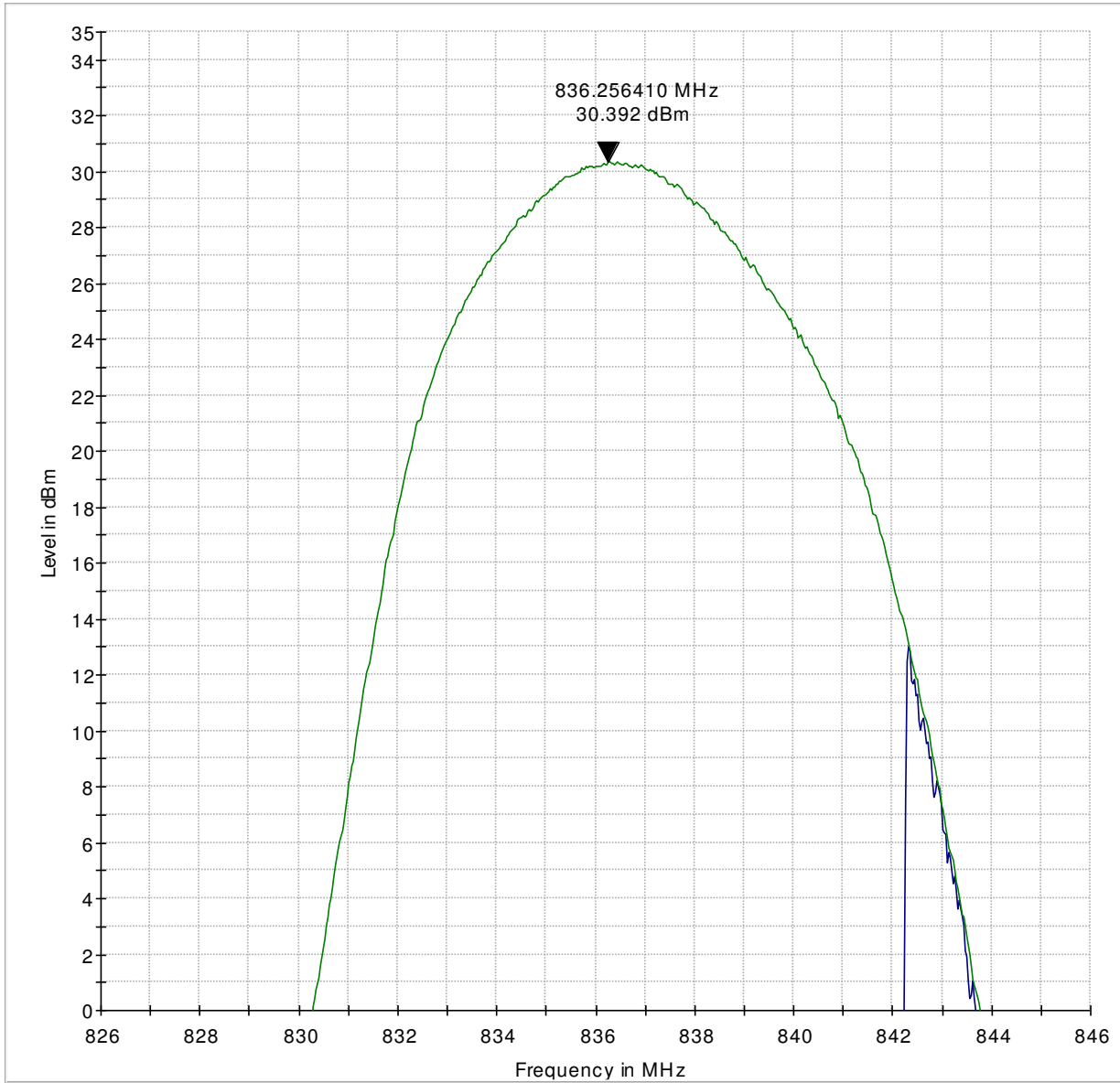
— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS

### 7.4.4 GSM850 ERP high channel



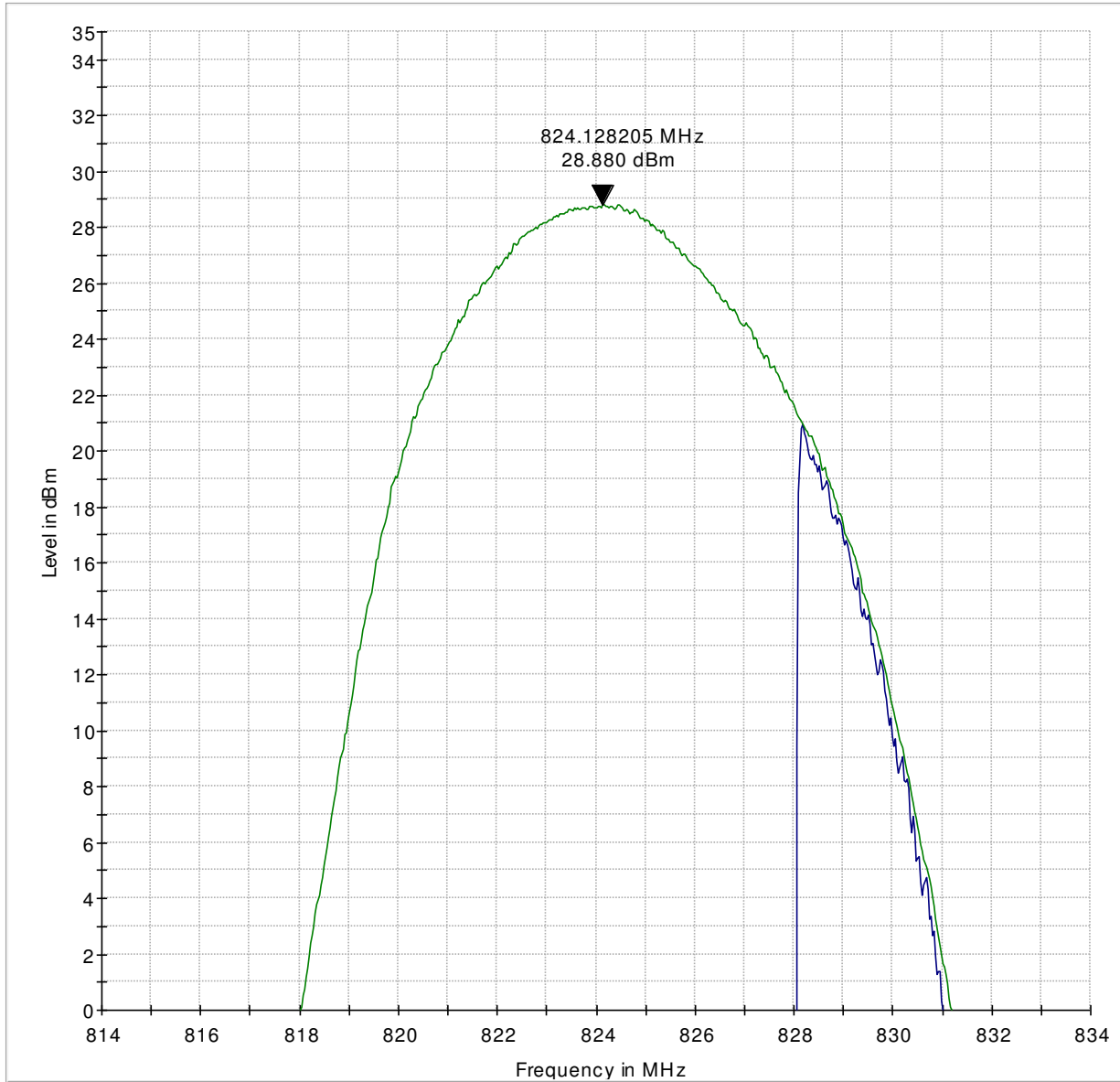
— RMS-ClearW rite-RMS    — RMS-MaxHold-RMS

7.4.5 GSM850ERP mid channel



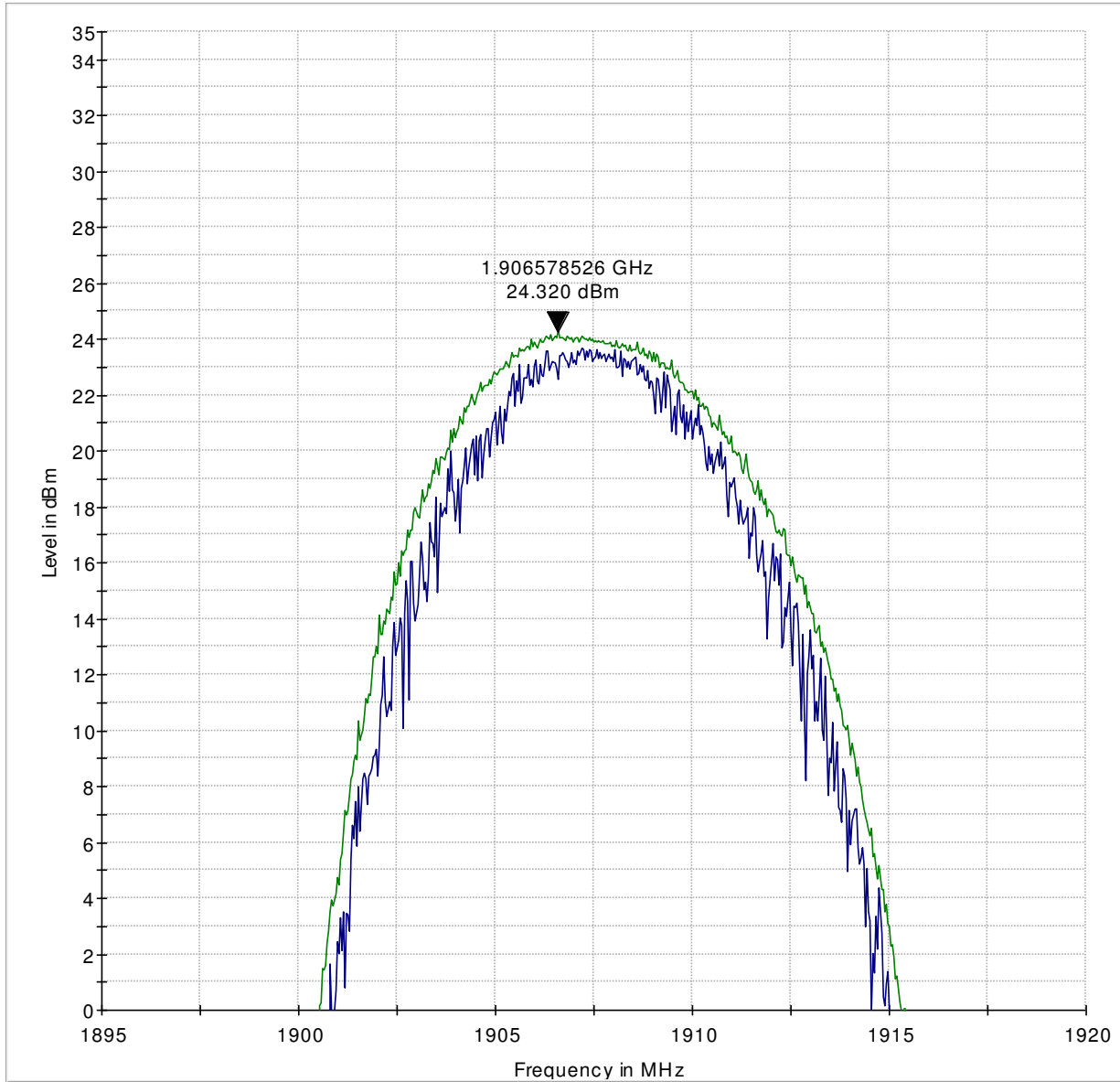
— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS

7.4.6 GSM850ERP low channel



— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS

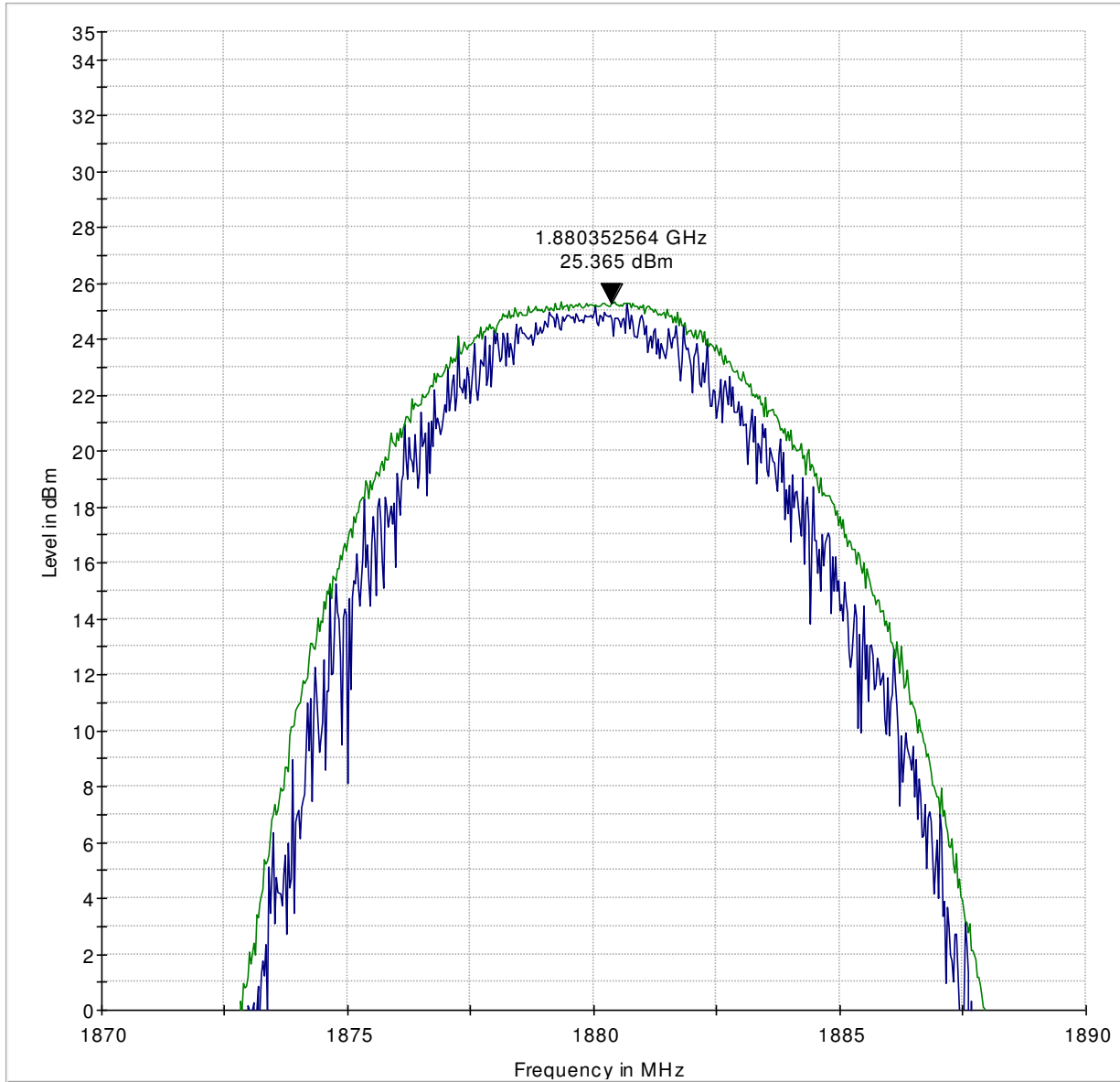
### 7.4.7 UMTS II EIRP high channel



— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS

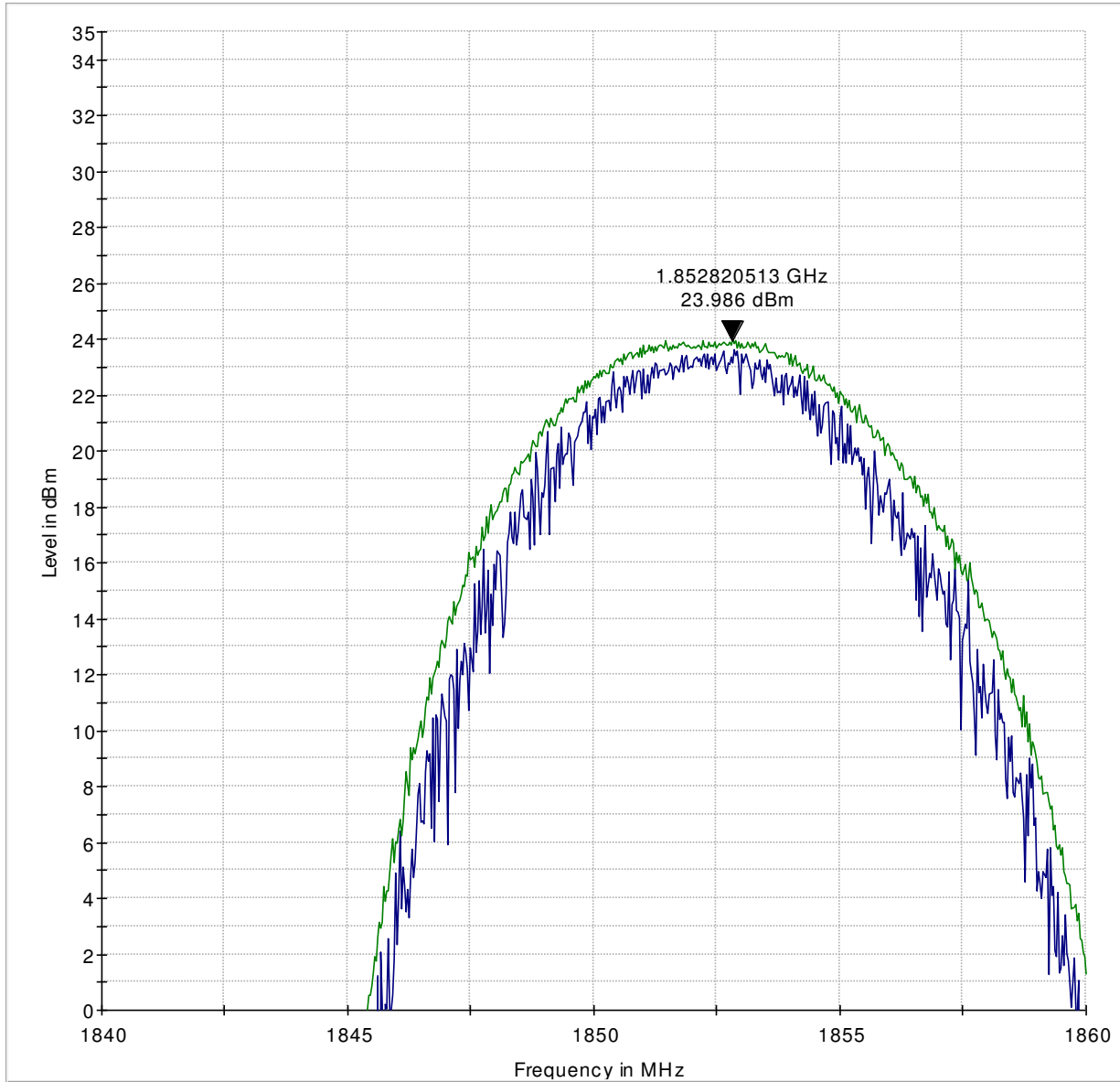


### 7.4.8 UMTS II EIRP mid channel



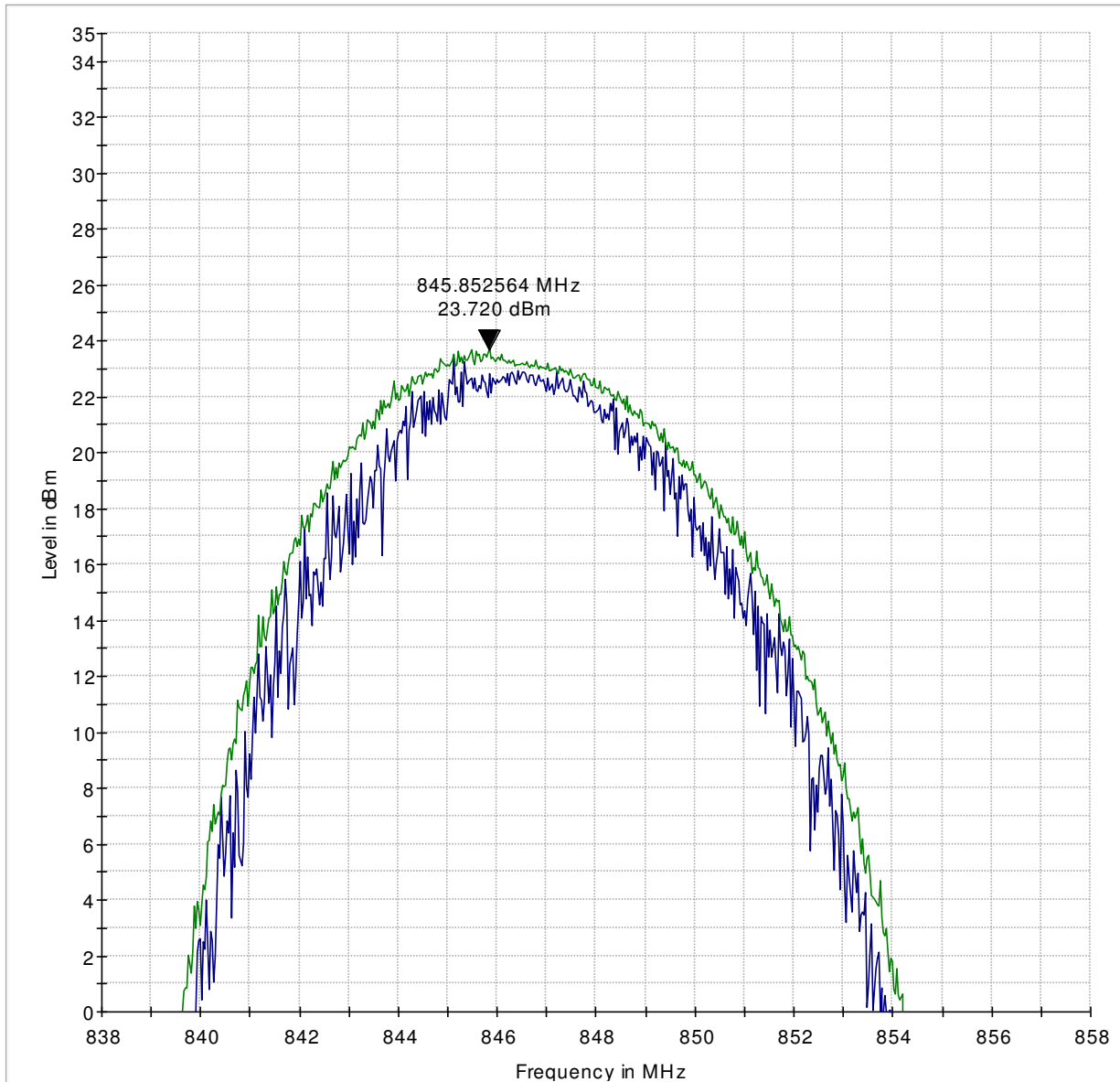
— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS

7.4.9 UMTS II EIRP low channel



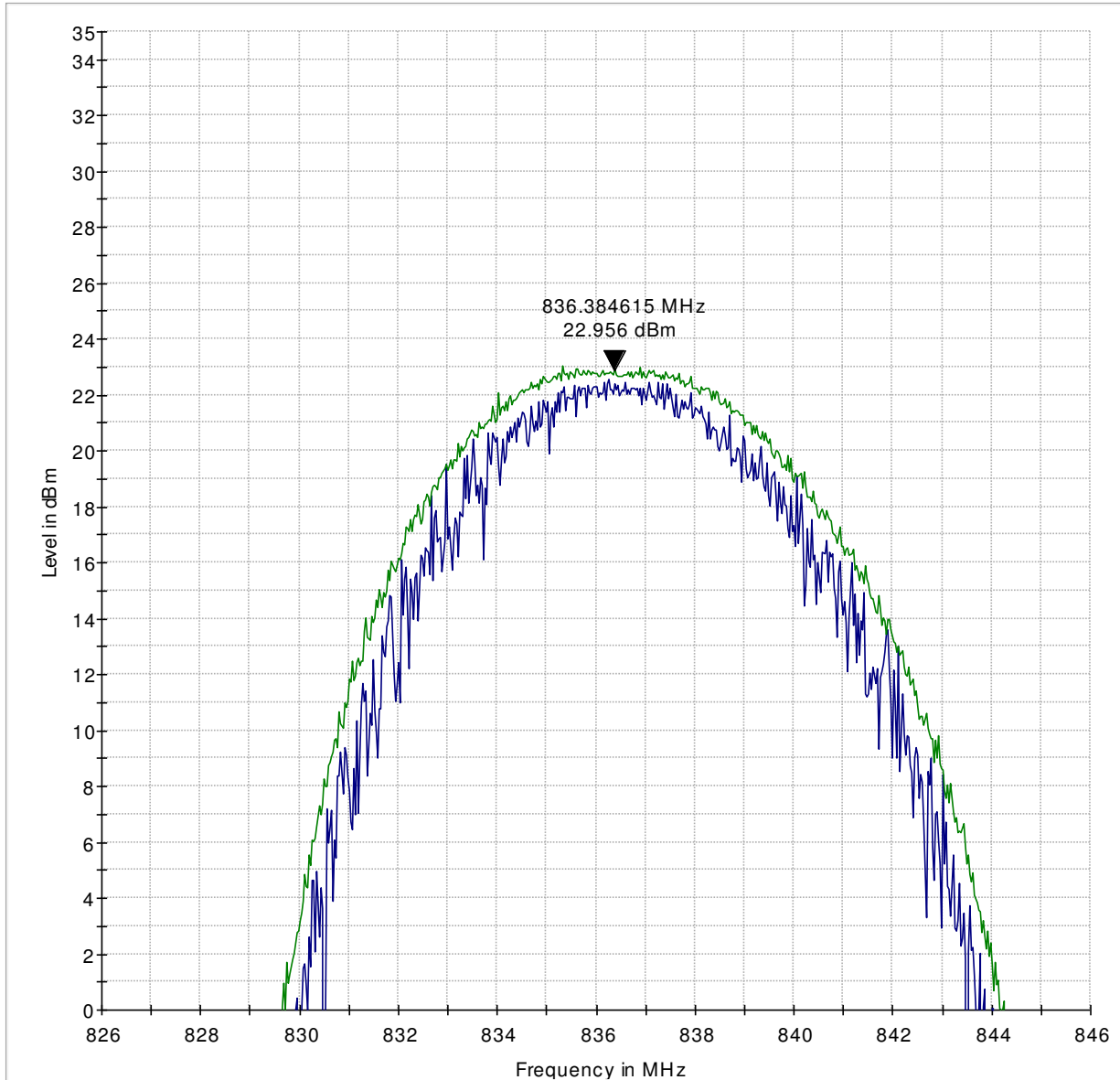
— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS

### 7.4.10 UMTS V ERP high channel



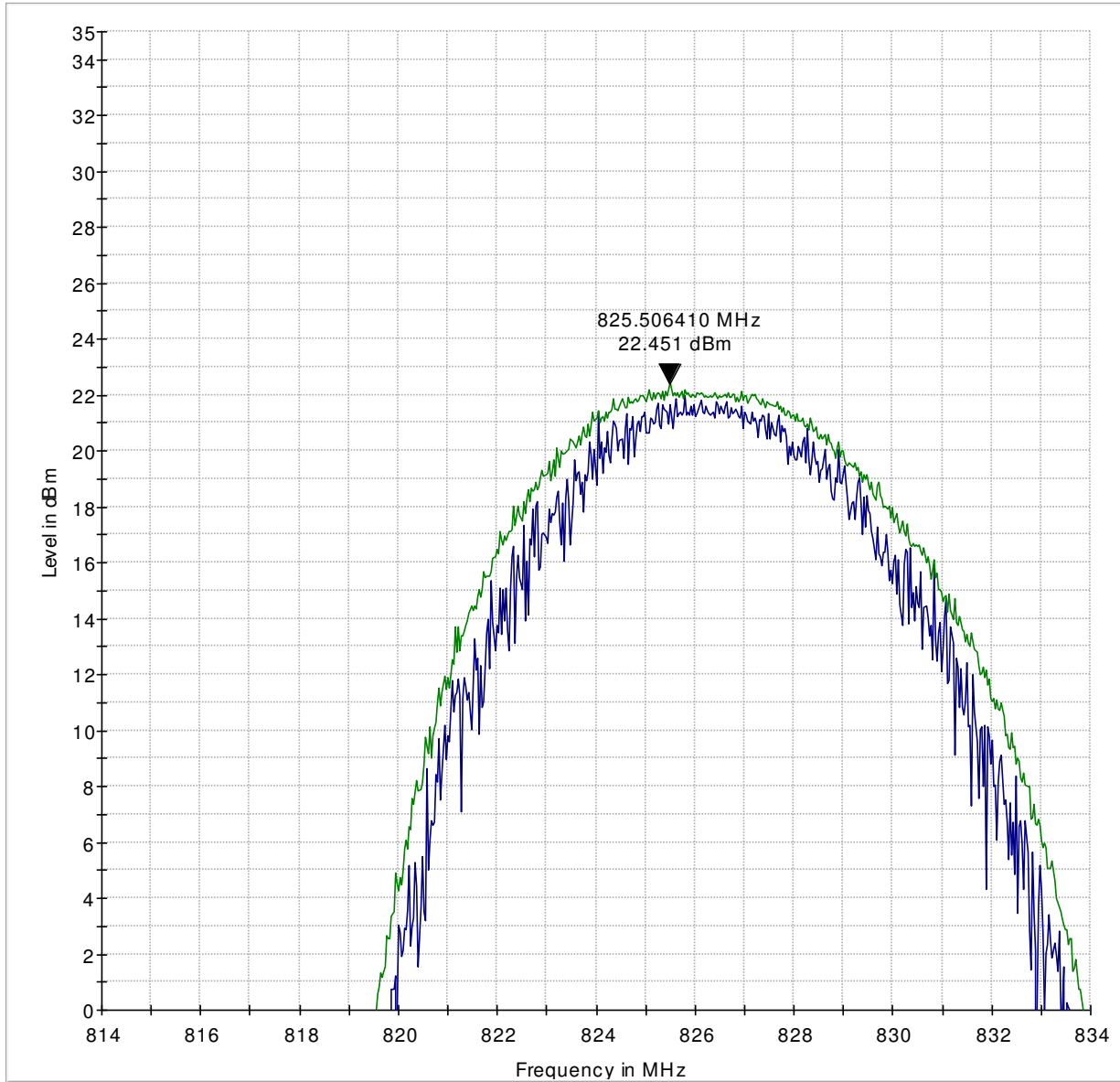
— RMS-ClearW rite-RMS    — RMS-MaxHold-RMS

7.4.11 UMTS V ERP mid channel



— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS

7.4.12 UMTS V ERP low channel



— RMS-ClearWrite-RMS    — RMS-MaxHold-RMS



8 Radiated Spurious Emissions

8.1 Reference

Measurement according to FCC: CFR 47 Part 2.1053; CFR Part 22.917; Part 24.238; Part 27.53; RSS-132 5.5; RSS-133 6.5; RSS-139 6.6, utilizing KDB 971168 D01 Power Meas License Digital Systems v02r02, and according to TIA-603C 2004- 2.2.12

**Spectrum Analyzer Settings for FCC 22**

|                             |               |              |              |
|-----------------------------|---------------|--------------|--------------|
| <b>Frequency Range</b>      | 30MHz – 1 GHz | 1 – 1.58 GHz | 1.58 – 9 GHz |
| <b>Resolution Bandwidth</b> | 100 kHz       | 1 MHz        | 1 MHz        |
| <b>Video Bandwidth</b>      | 100 kHz       | 1 MHz        | 1 MHz        |
| <b>Detector</b>             | Peak          | Peak         | Peak         |
| <b>Trace Mode</b>           | Max Hold      | Max Hold     | Max Hold     |
| <b>Sweep Time</b>           | Auto          | Auto         | Auto         |

**Spectrum Analyzer Settings for FCC 24 and 27**

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

## 8.2 Limits:

### 8.2.1 FCC Part 22.917 (a), Part 24.238 (a), and Part 27.53 (h)

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)



8.3 Test conditions and setup:

| Ambient Temperature (C) | EUT Set-Up # | EUT Operating Mode | Power Input                 |
|-------------------------|--------------|--------------------|-----------------------------|
| 22                      | 1            | GPRS class 8       | 03 on 850MHz, 05 on 1900MHz |
| 22                      | 2            | UMTS RMC 12.2k     | All 1                       |

8.4 Test plan

GPRS: maximum peak power measured on class 8 GPRS according to report on file for FCC-ID.

UMTS: maximum peak power measured on RMC12.2k according to report on file for FCC-ID.

Frequencies below 30MHz and frequencies above 18GHz have only been investigated for mid channel. For the frequency range between 1GHz and 18GHz low mid and high channel have been investigated.



## 8.5 Summary Measurement result:

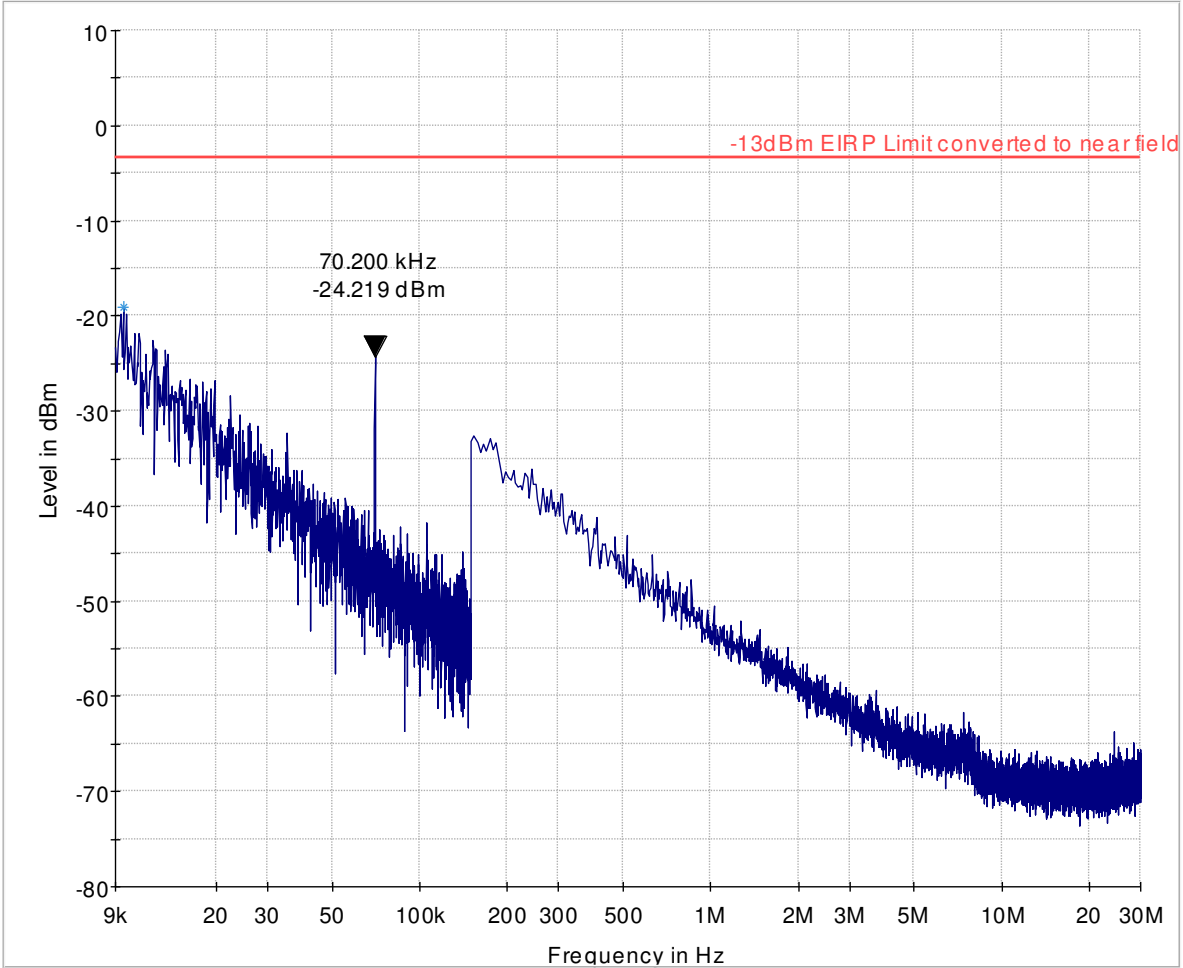
| Channel | EUT Operating Mode | Scan Frequency | Limit [dBm] | Result | Frequency of highest emission [MHz] | Highest Emission [dBm] |
|---------|--------------------|----------------|-------------|--------|-------------------------------------|------------------------|
| Mid     | WCDMA II RMC 12.2k | 9kHz – 30MHz   | -13         | Pass   | 0.701                               | -24.2                  |
| Low     | WCDMA II RMC 12.2k | 30MHz – 1 GHz  | -13         | Pass   |                                     | NF                     |
| Mid     | WCDMA II RMC 12.2k | 30MHz – 1 GHz  | -13         | Pass   |                                     | NF                     |
| High    | WCDMA II RMC 12.2k | 30MHz – 1 GHz  | -13         | Pass   |                                     | NF                     |
| Low     | WCDMA II RMC 12.2k | 1GHz – 18GHz   | -13         | Pass   | 3700                                | -51.3                  |
| Mid     | WCDMA II RMC 12.2k | 1GHz – 18GHz   | -13         | Pass   |                                     | NF                     |
| High    | WCDMA II RMC 12.2k | 1GHz – 18GHz   | -13         | Pass   | 3817                                | -49.5                  |
| Mid     | WCDMA II RMC 12.2k | 18GHz – 22GHz  | -13         | Pass   |                                     | NF                     |
|         |                    |                |             |        |                                     |                        |
| Mid     | WCDMA V RMC 12.2k  | 9kHz – 30MHz   | -13         | Pass   | 0.701                               | -24.6                  |
| Low     | WCDMA V RMC 12.2k  | 30MHz – 1 GHz  | -13         | Pass   |                                     | NF                     |
| Mid     | WCDMA V RMC 12.2k  | 30MHz – 1 GHz  | -13         | Pass   |                                     | NF                     |
| High    | WCDMA V RMC 12.2k  | 30MHz – 1 GHz  | -13         | Pass   |                                     | NF                     |
| Low     | WCDMA V RMC 12.2k  | 1GHz – 9GHz    | -13         | Pass   |                                     | NF                     |
| Mid     | WCDMA V RMC 12.2k  | 1GHz – 9GHz    | -13         | Pass   |                                     | NF                     |
| High    | WCDMA V RMC 12.2k  | 1GHz – 9GHz    | -13         | Pass   |                                     | NF                     |
|         |                    |                |             |        |                                     |                        |
| Mid     | GPRS 1900 class8   | 9kHz – 30MHz   | -13         | Pass   | 0.701                               | -25.0                  |
| Low     | GPRS 1900 class8   | 30MHz – 1 GHz  | -13         | Pass   |                                     | -49.0                  |
| Mid     | GPRS 1900 class8   | 30MHz – 1 GHz  | -13         | Pass   |                                     | NF                     |
| High    | GPRS 1900 class8   | 30MHz – 1 GHz  | -13         | Pass   | 877                                 | -36.4                  |
| Low     | GPRS 1900 class8   | 1GHz – 18GHz   | -13         | Pass   |                                     | NF                     |
| Mid     | GPRS 1900 class8   | 1GHz – 18GHz   | -13         | Pass   |                                     | NF                     |
| High    | GPRS 1900 class8   | 1GHz – 18GHz   | -13         | Pass   |                                     | NF                     |
| Mid     | GPRS 1900 class8   | 18GHz – 22GHz  | -13         | Pass   | 18256                               | -33.4                  |
|         |                    |                |             |        |                                     |                        |
| Mid     | GPRS 850 class8    | 9kHz – 30MHz   | -13         | Pass   | 0.701                               | -24.7                  |
| Low     | GPRS 850 class8    | 30MHz – 1 GHz  | -13         | Pass   | 220                                 | -65.0                  |
| Mid     | GPRS 850 class8    | 30MHz – 1 GHz  | -13         | Pass   | 220                                 | -65.0                  |
| High    | GPRS 850 class8    | 30MHz – 1 GHz  | -13         | Pass   | 220                                 | -65.0                  |
| Low     | GPRS 850 class8    | 1GHz – 9GHz    | -13         | Pass   |                                     | NF                     |
| Mid     | GPRS 850 class8    | 1GHz – 9GHz    | -13         | Pass   | 1673                                | -43.8                  |
| High    | GPRS 850 class8    | 1GHz – 9GHz    | -13         | Pass   |                                     | NF                     |

NF – Noise Floor



### 8.6 Measurement Plots WCDMA/UMTS FDD II

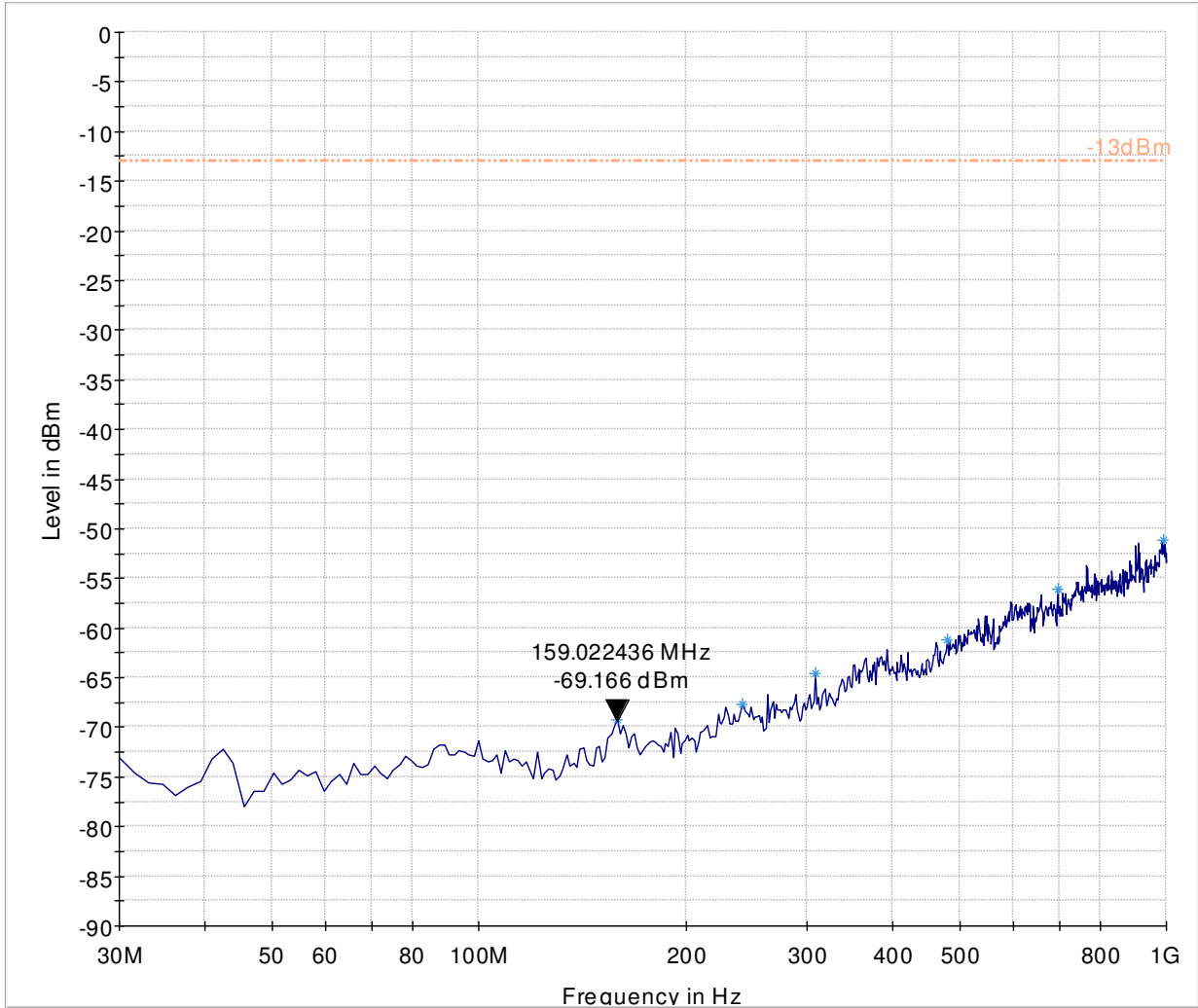
#### 8.6.1 9 kHz – 30MHzHz, Ch. mid



— -13dBm EIRP Limit converted to near field      — Preview Result 1-PK+  
\* Data Reduction Result 1 [1]-PK+



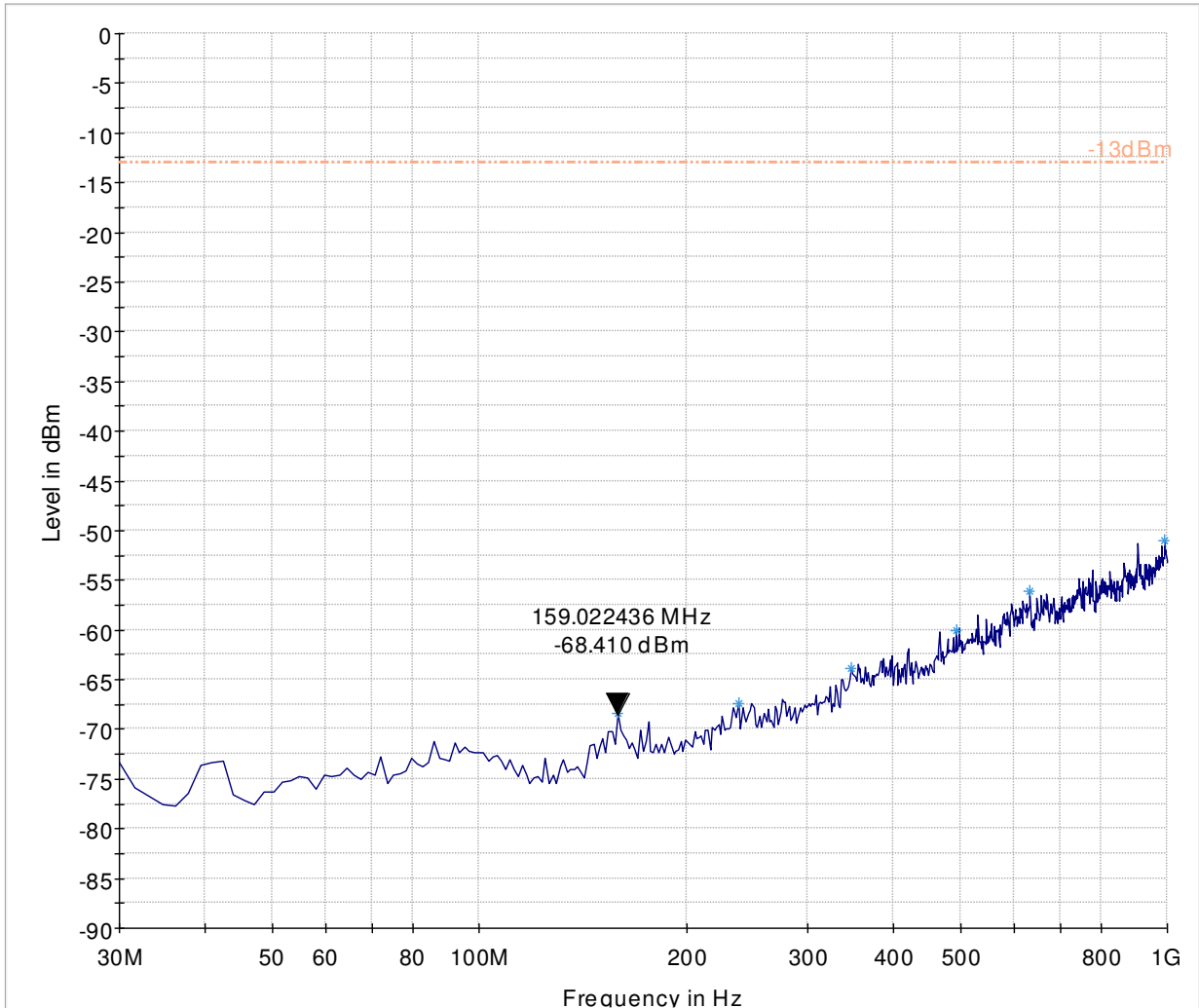
8.6.2 30MHz - 1GHz, Ch. Low



- - - -13dBm.LimitLine    — Preview Result 1-PK+    \* Data Reduction Result 1 [1]-PK+

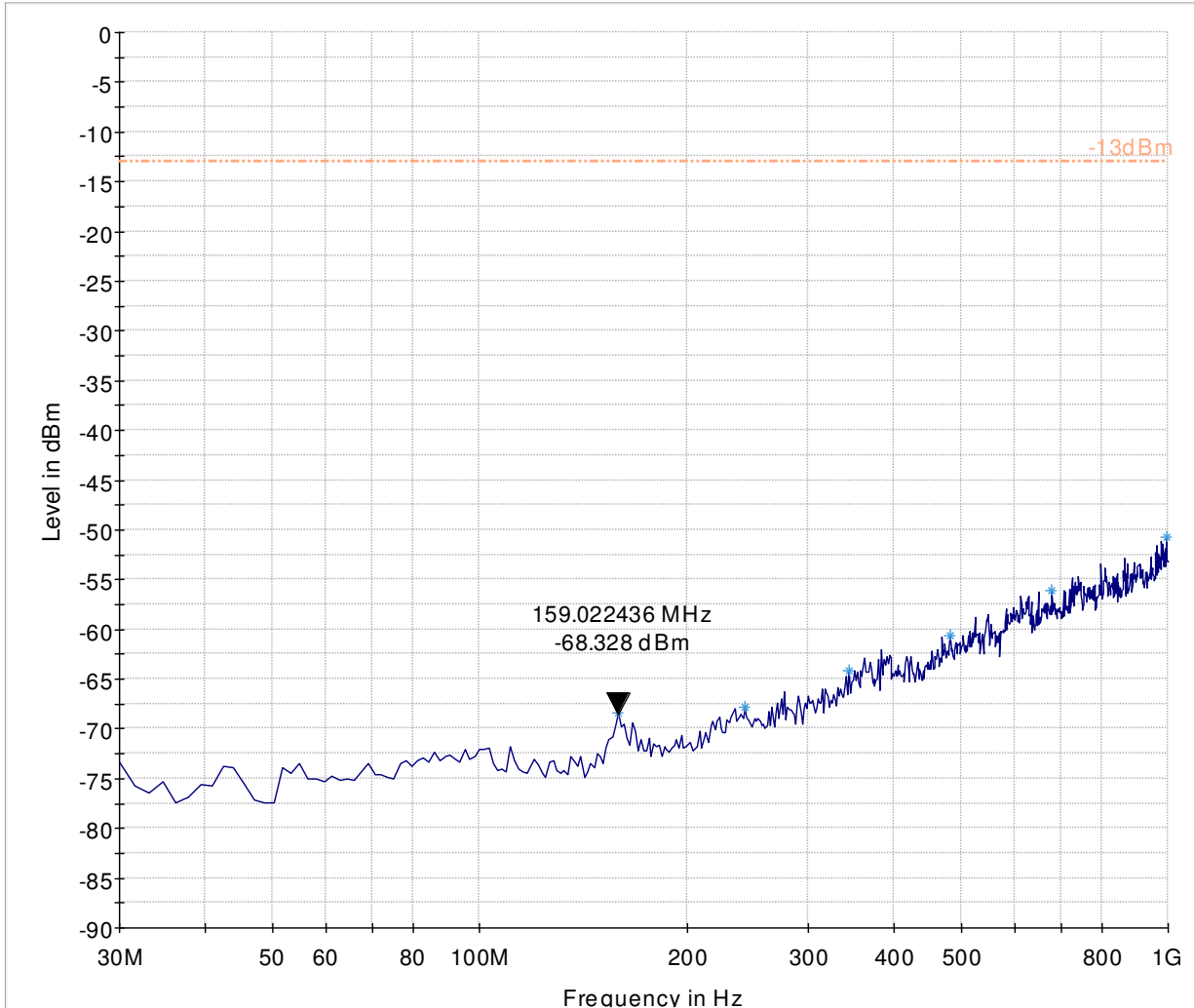


8.6.3 30MHz - 1GHz, Ch. Mid



-13dBm.LimitLine    Preview Result 1-PK+    \*    Data Reduction Result 1 [1]-PK+

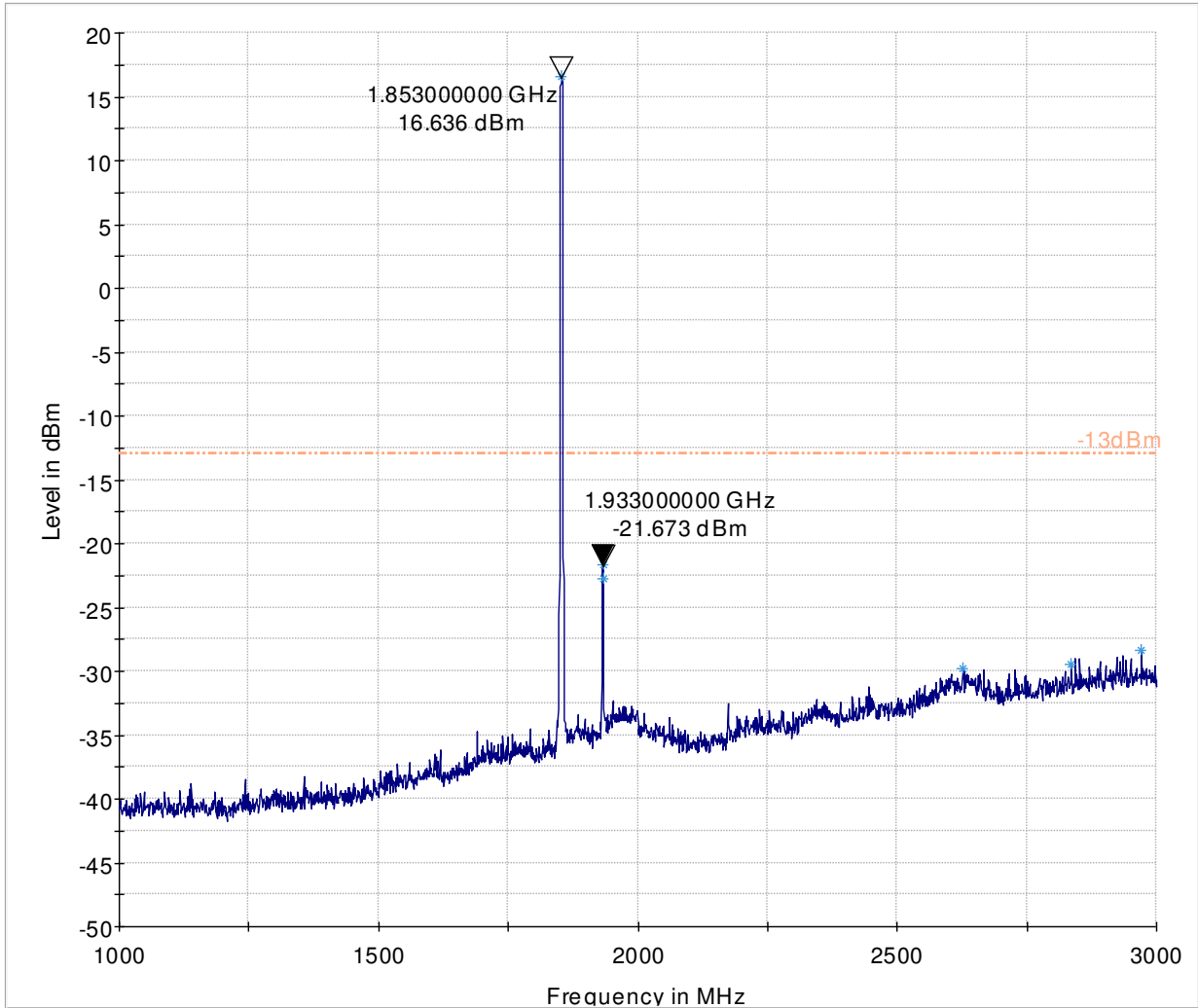
### 8.6.4 30MHz - 1GHz, Ch. High



-13dBm.LimitLine    Preview Result 1-PK+    Data Reduction Result 1 [1]-PK+

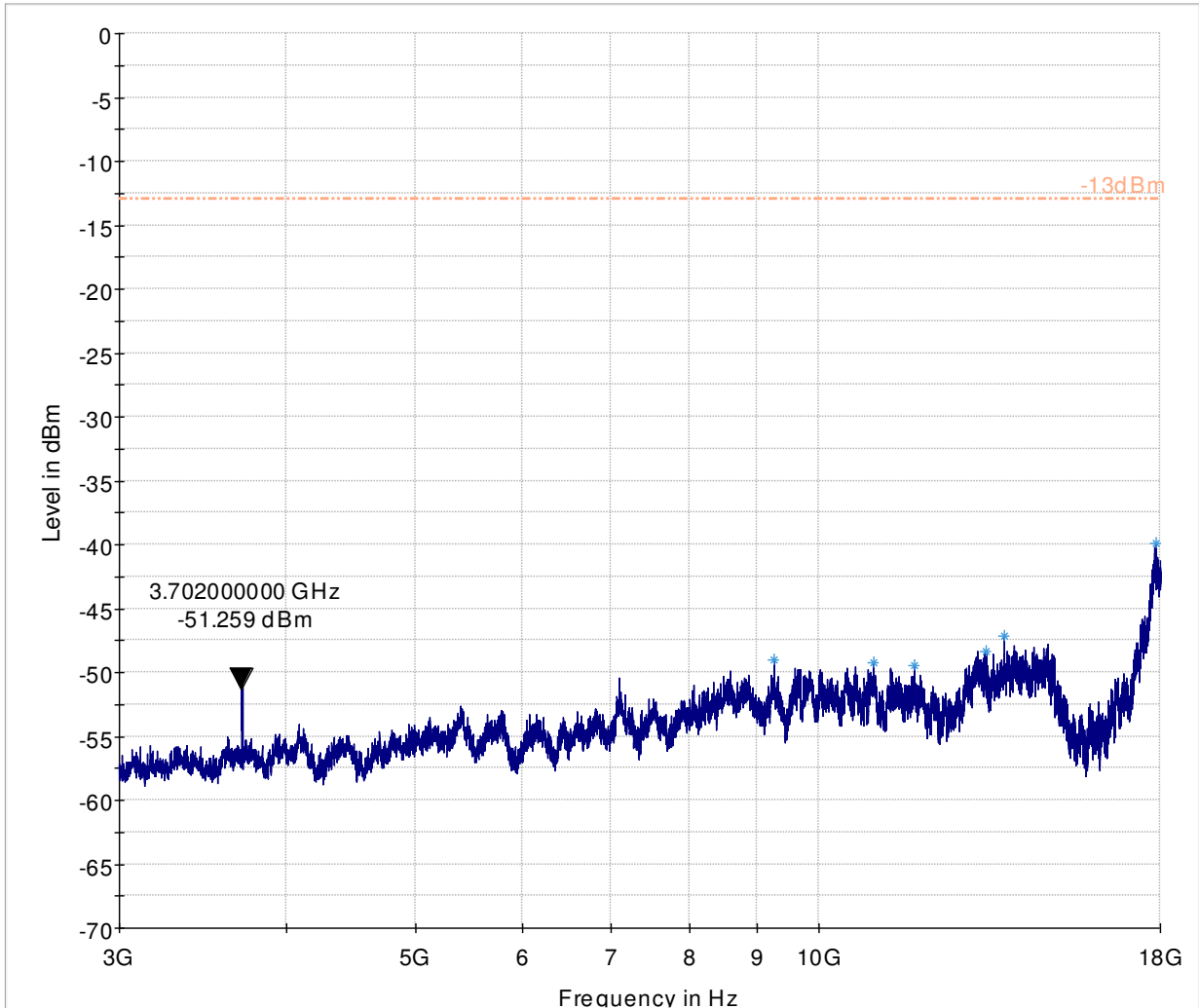


8.6.5 1 - 3GHz, Ch. Low



- - - - -13dBm.LimitLine      — Preview Result 1-PK+      \* Data Reduction Result 1 [2]-PK+

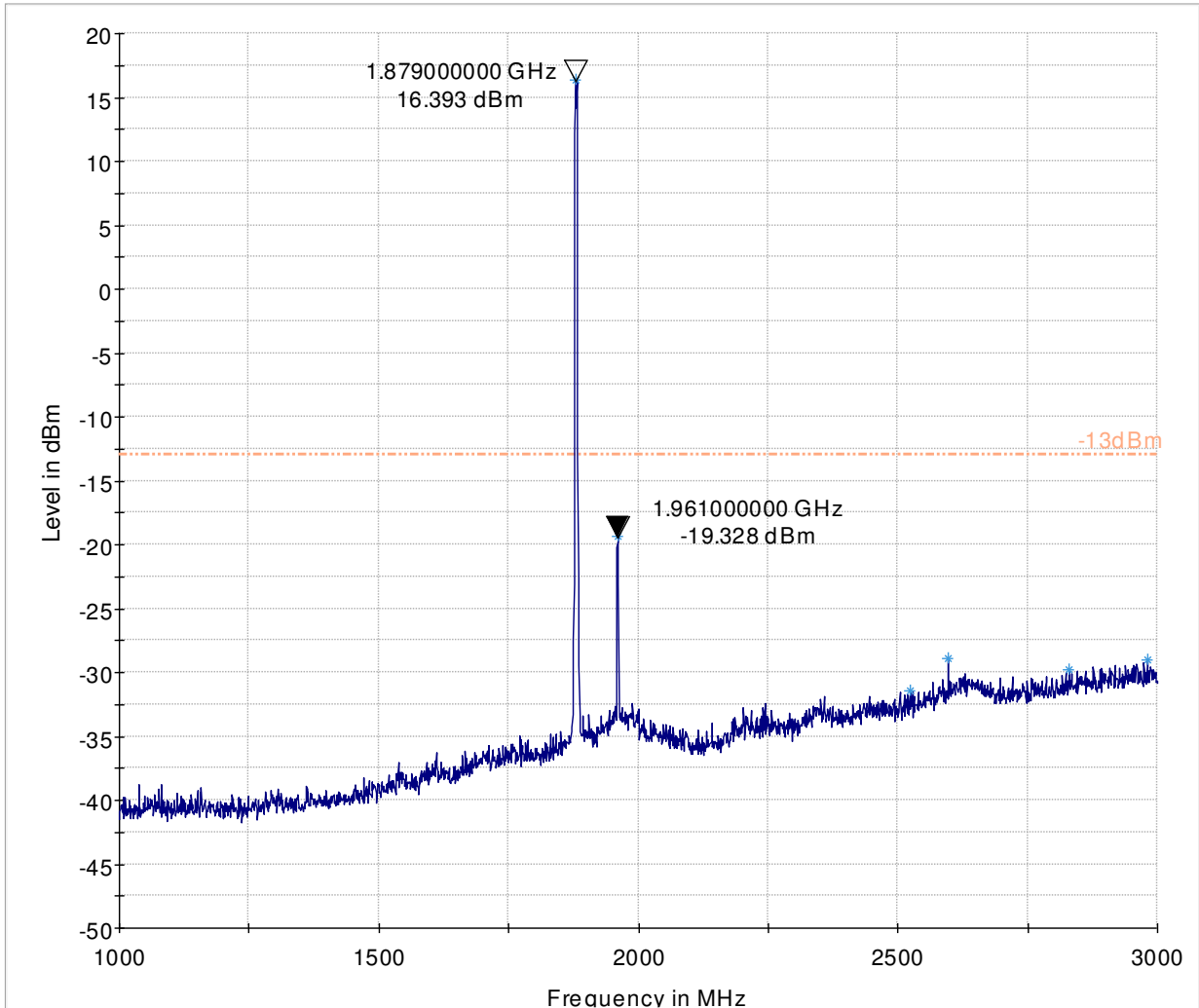
8.6.6 3GHz – 18GHz, Ch. Low



----- -13dBm.LimitLine    ——— Preview Result 1-PK+    \* Data Reduction Result 1 [3]-PK+



8.6.7 1GHz - 3GHz, Ch. Mid

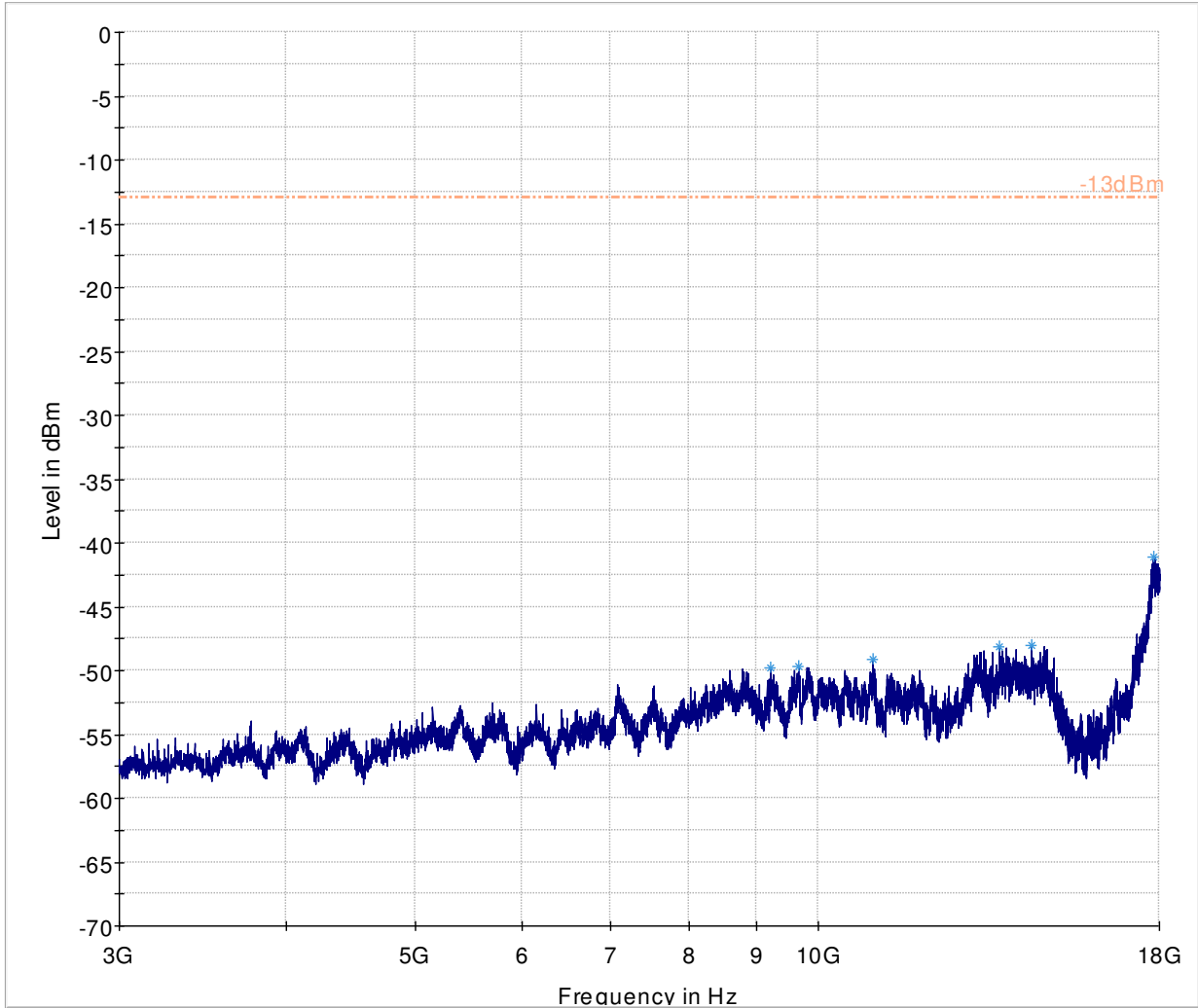


-13dBm.LimitLine    Preview Result 1-PK+    \*    Data Reduction Result 1 [2]-PK+





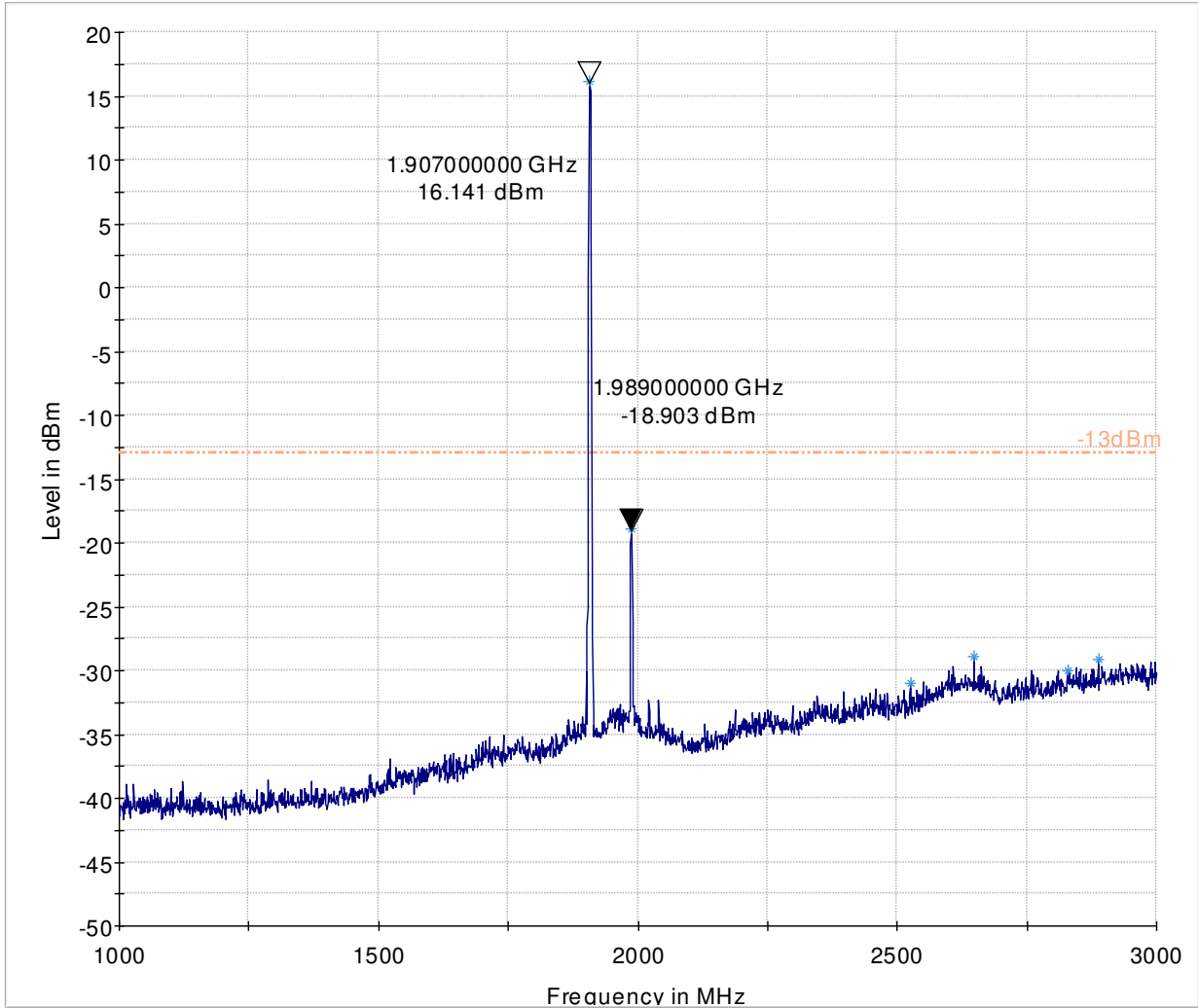
8.6.8 3GHz - 18GHz, Ch. Mid



----- -13dBm.LimitLine    ——— Preview Result 1-PK+    \* Data Reduction Result 1 [3]-PK+



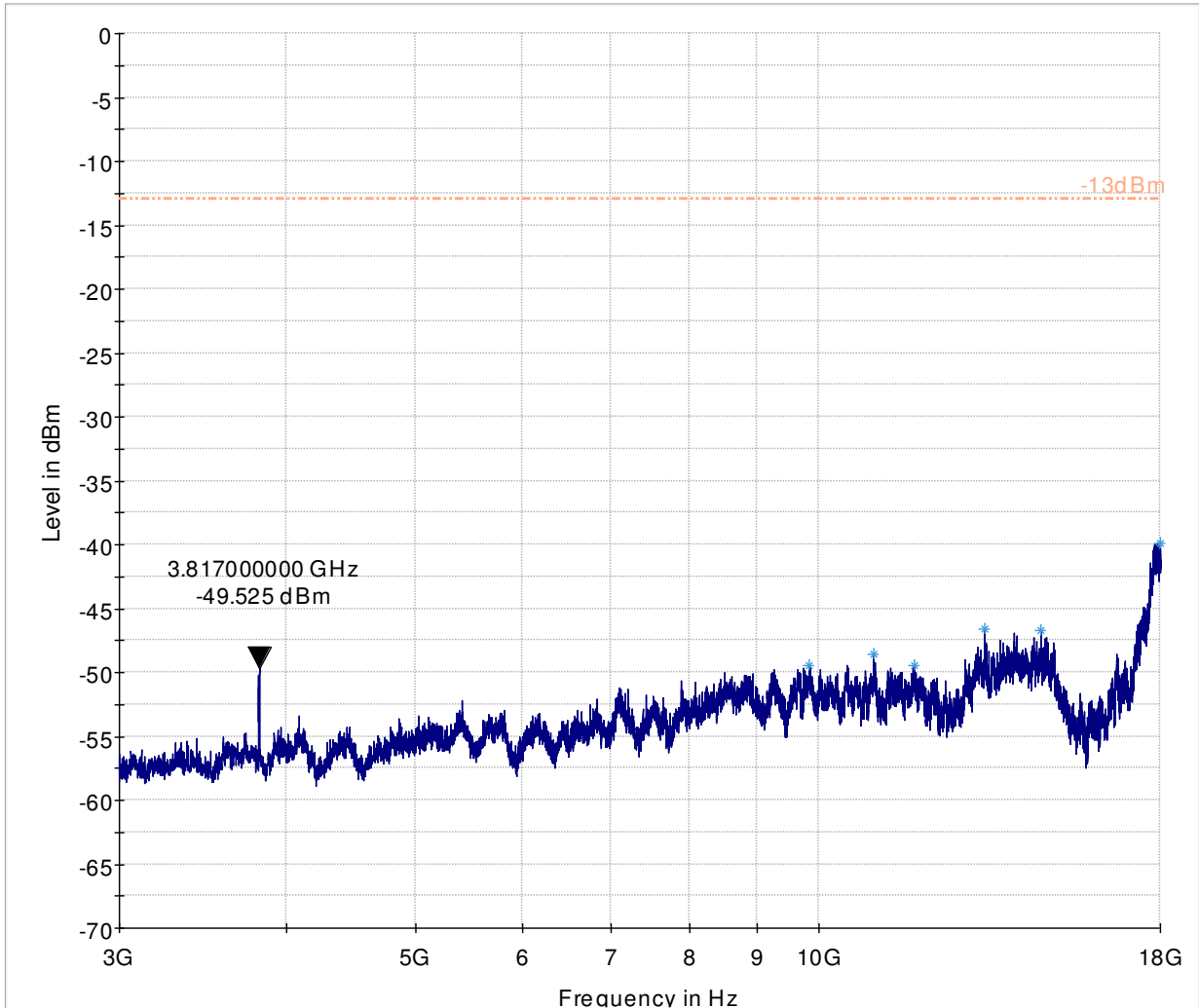
8.6.9 1GHz - 3GHz, Ch. High



- - - - -13dBm.LimitLine      — Preview Result 1-PK+      \* Data Reduction Result 1 [2]-PK+



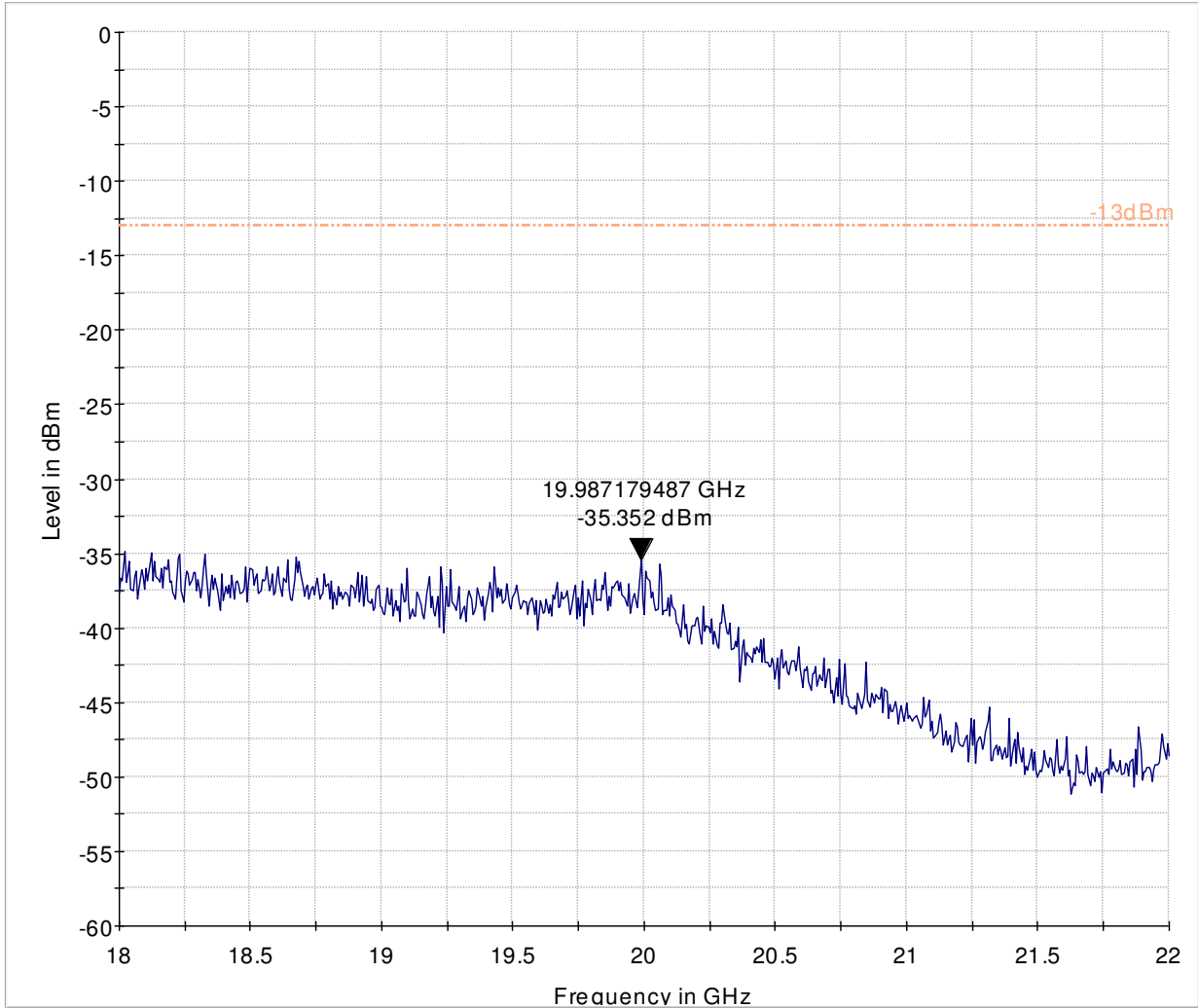
8.6.10 3GHz - 18GHz, Ch. High



----- -13dBm.LimitLine    ——— Preview Result 1-PK+    \* Data Reduction Result 1 [3]-PK+



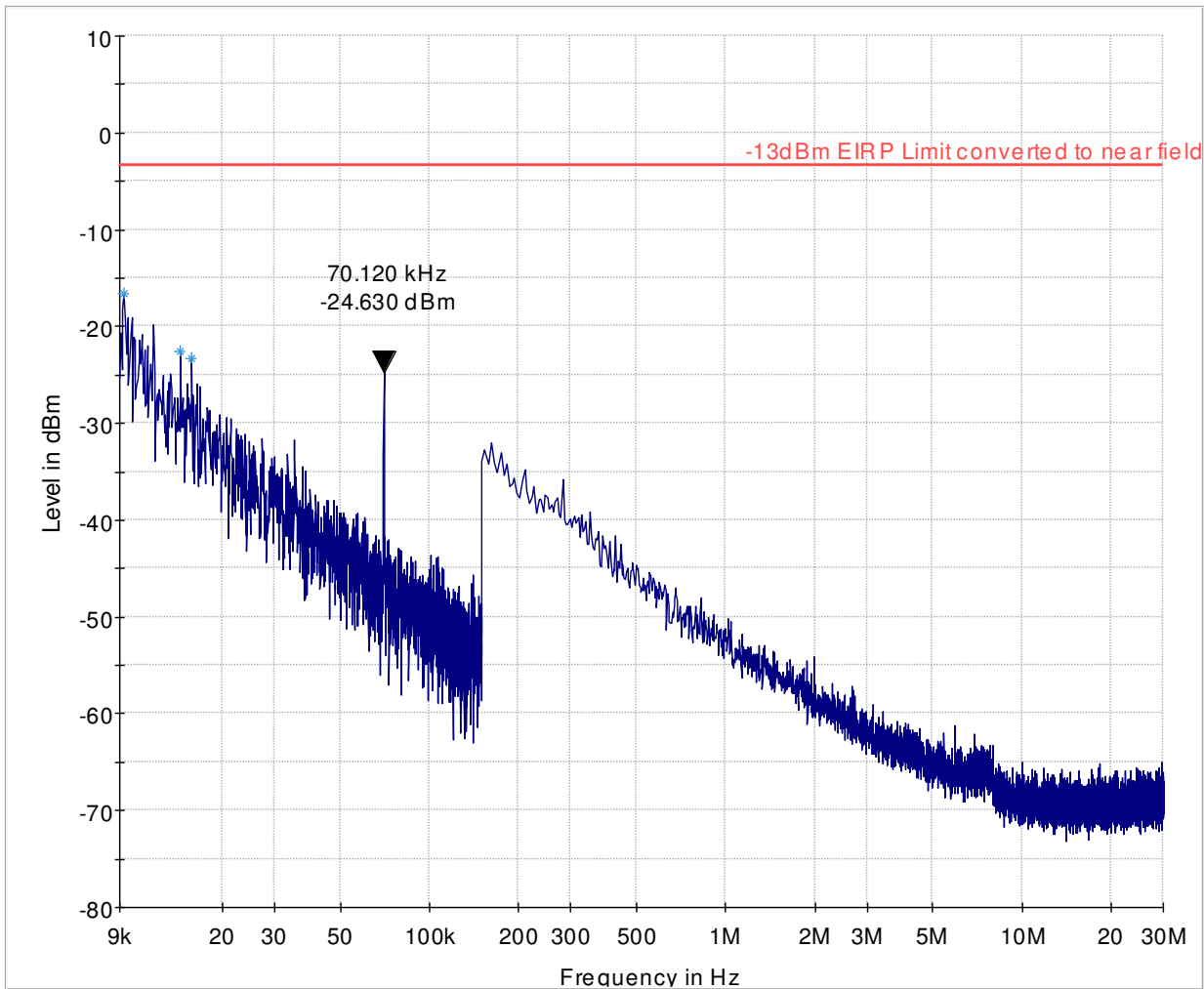
8.6.11 18 - 22 GHz, Ch. Mid



- - - - -13dBm      ——— Preview Result 1-PK+

8.7 Measurement Plots WCDMA/UMTS FDD V:

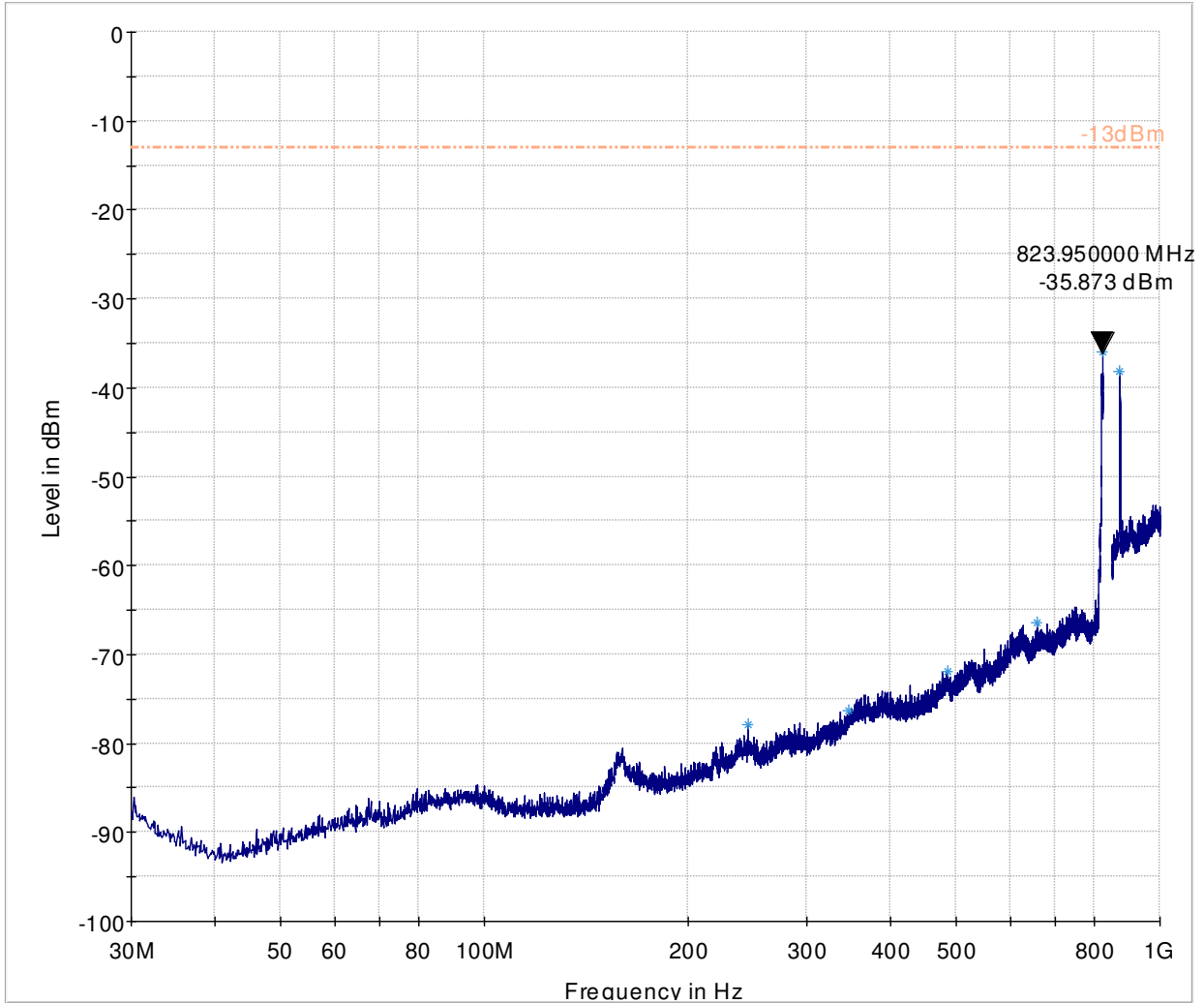
8.7.1 9kHz – 30MHz, Ch. mid



— -13dBm EIRP Limit converted to near field      — Preview Result 1-PK+  
\* Data Reduction Result 1 [1]-PK+



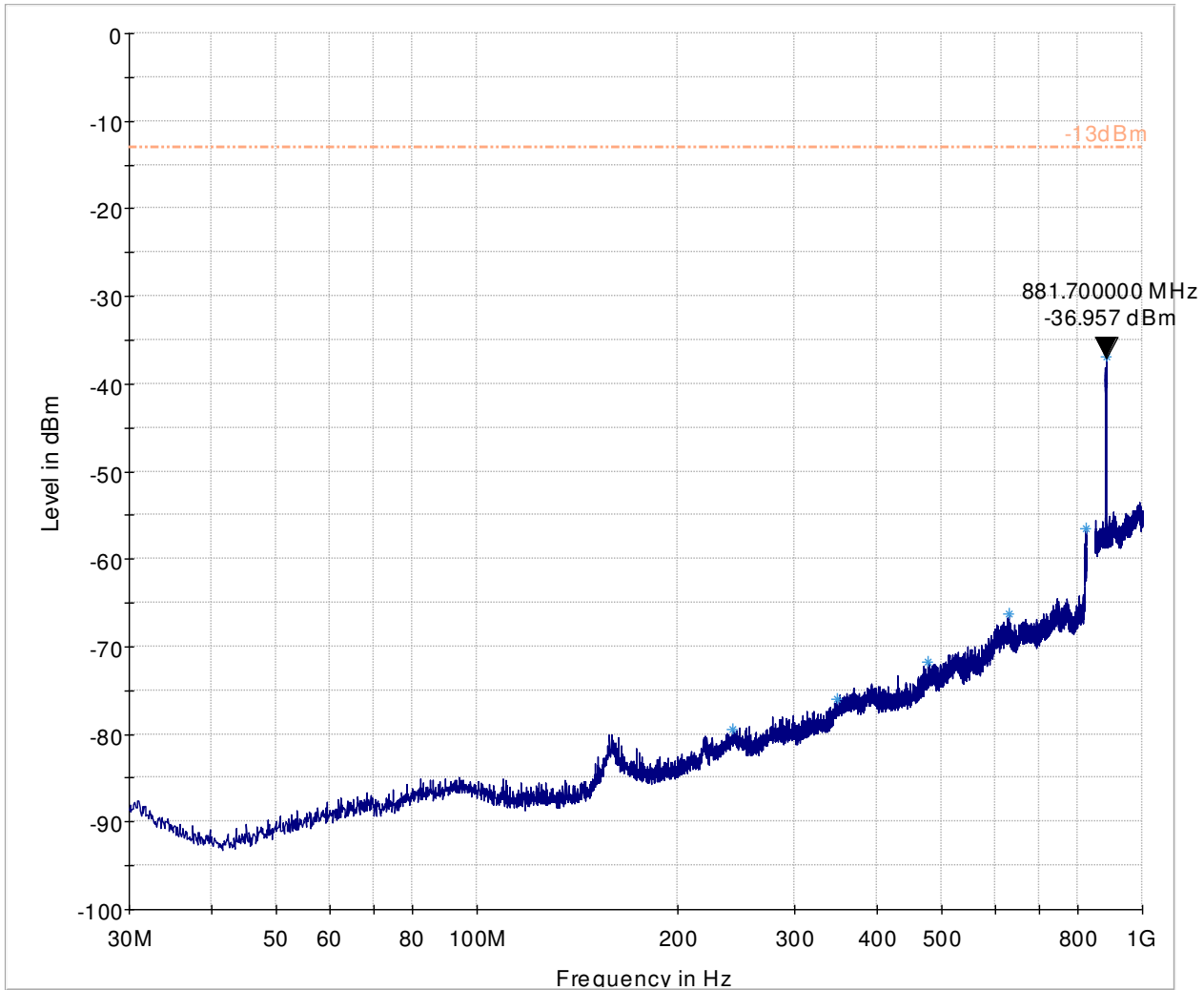
8.7.2 30 MHz – 1 GHz, Ch. Low



-13dBm.LimitLine    Preview Result 1-PK+    \*    Data Reduction Result 1 [1]-PK+



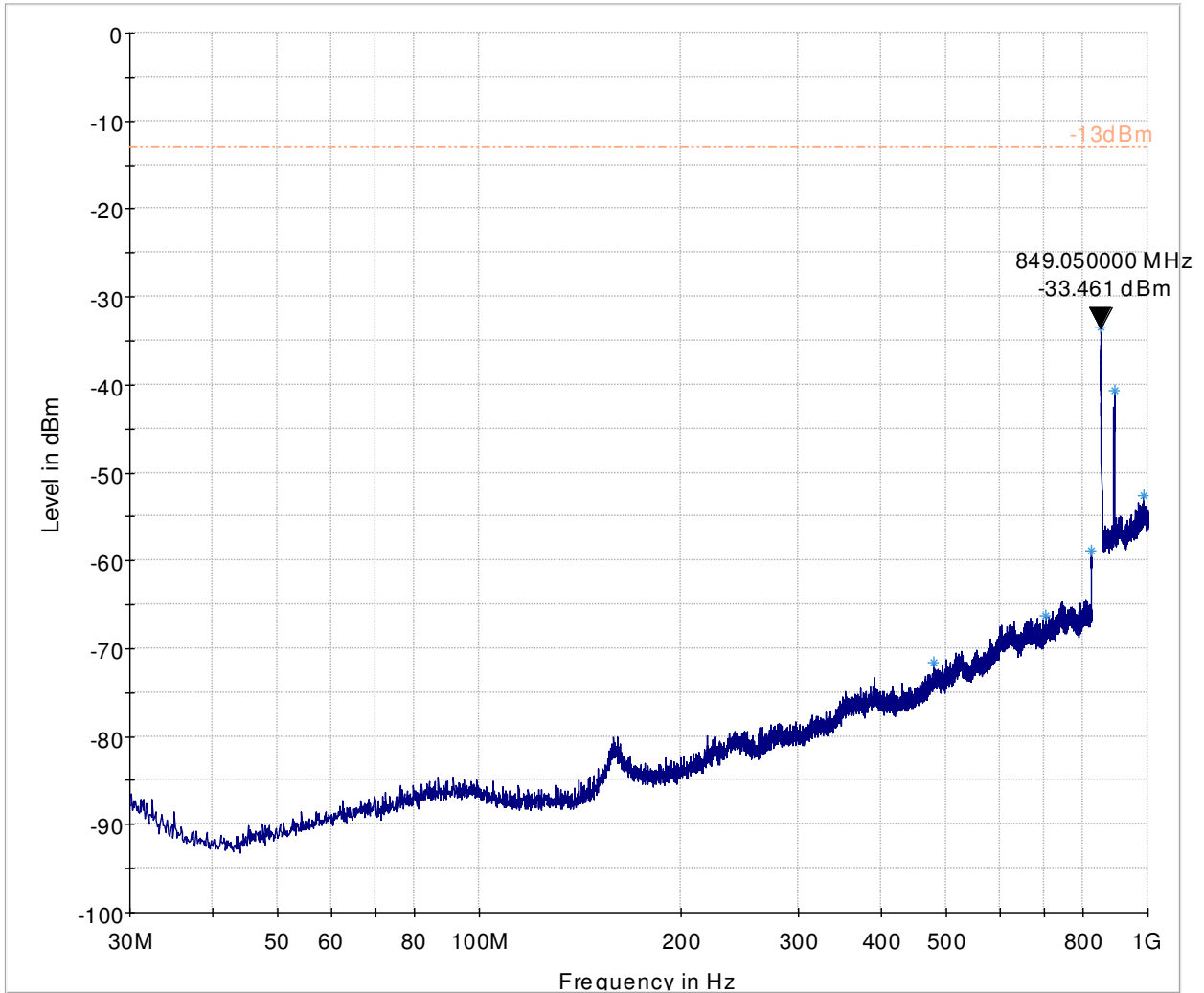
8.7.3 30 MHz – 1 GHz, Ch. Mid



- - - - -13dBm.LimitLine      — Preview Result 1-PK+      \* Data Reduction Result 1 [1]-PK+



8.7.4 30 MHz – 1 GHz, Ch. High

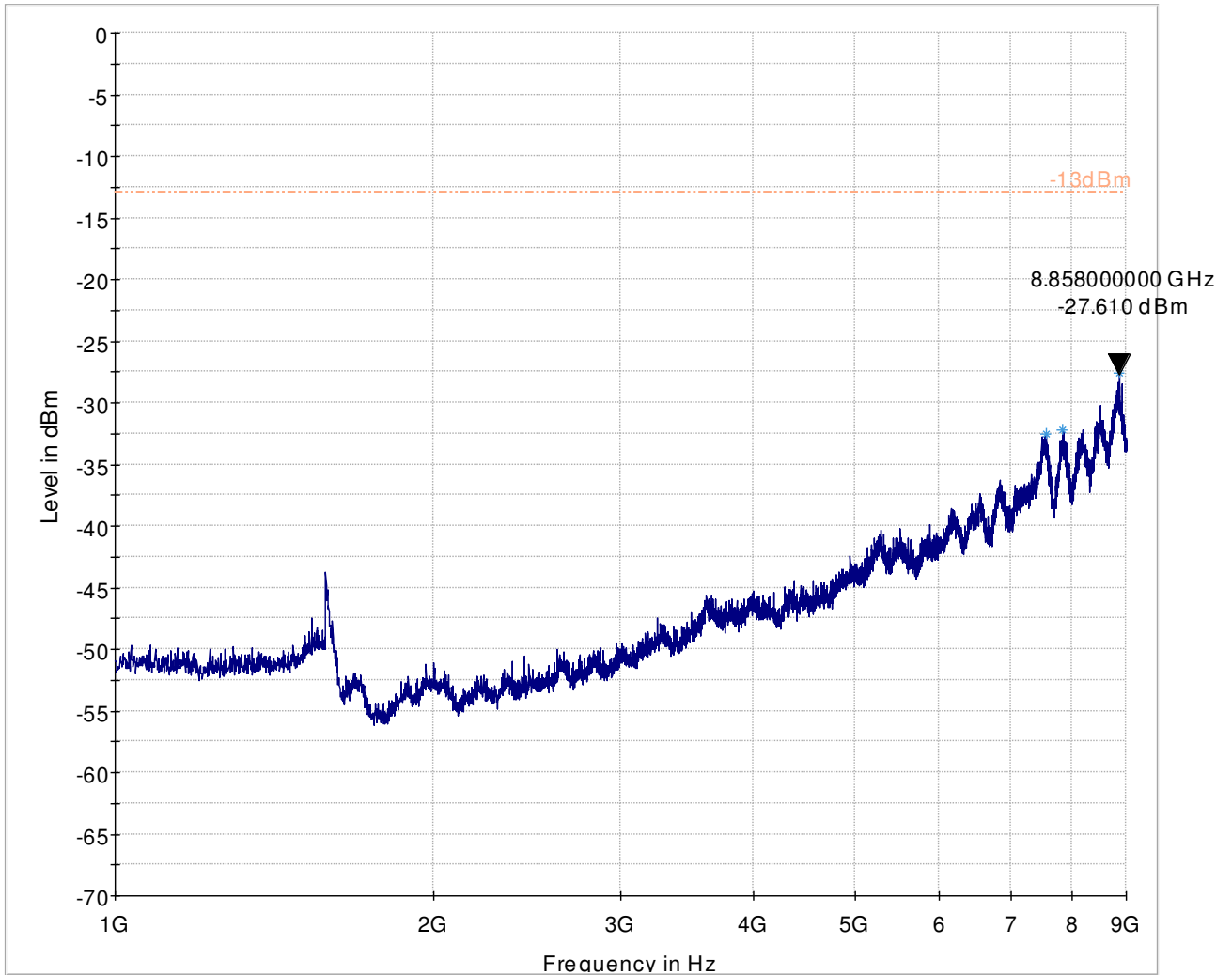


----- -13dBm.LimitLine    ——— Preview Result 1-PK+    \* Data Reduction Result 1 [1]-PK+





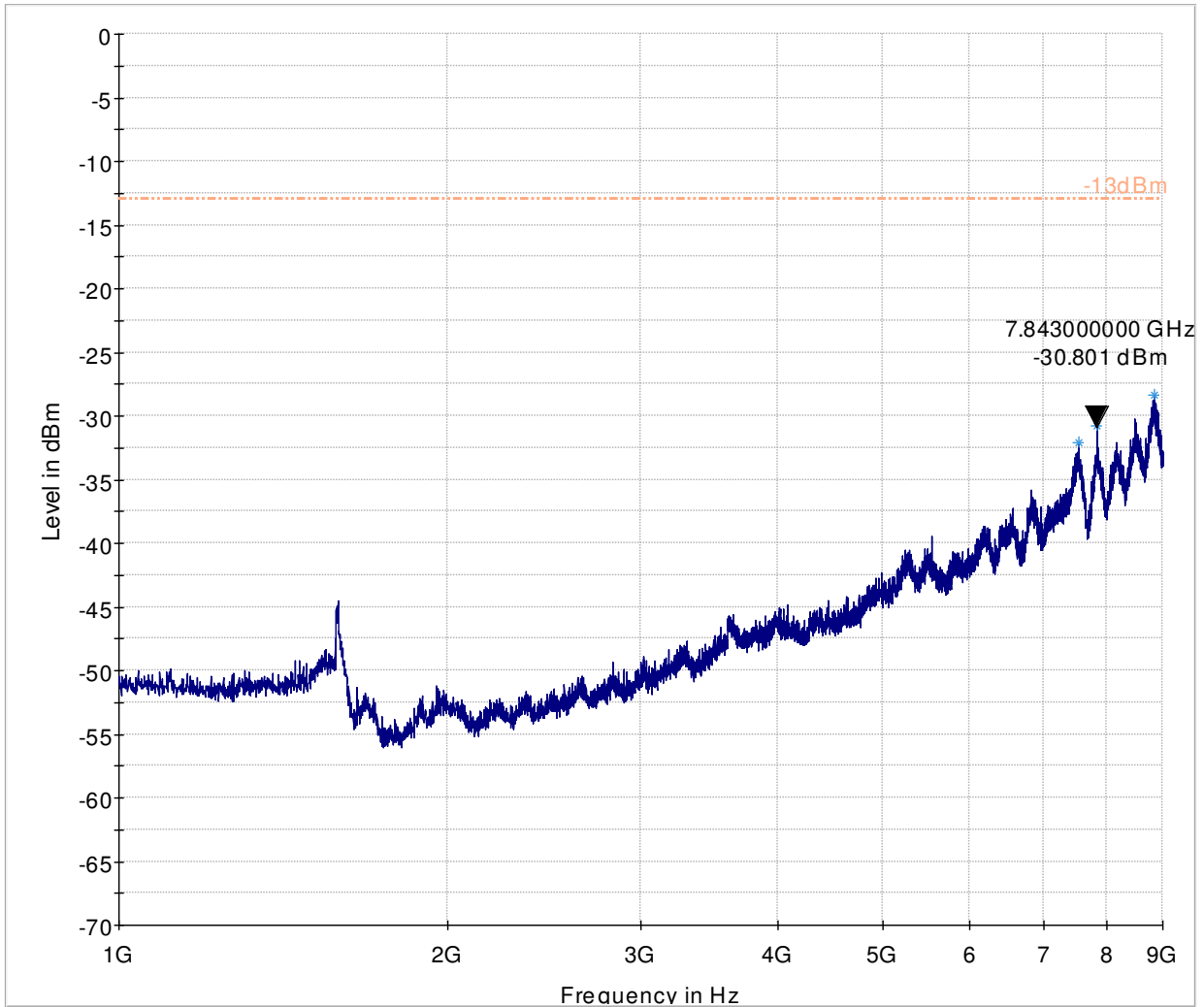
8.7.5 1 GHz – 9 GHz, Ch. Low



----- -13dBm      ——— Preview Result 1-PK+      \* Data Reduction Result 1 [2]-PK+



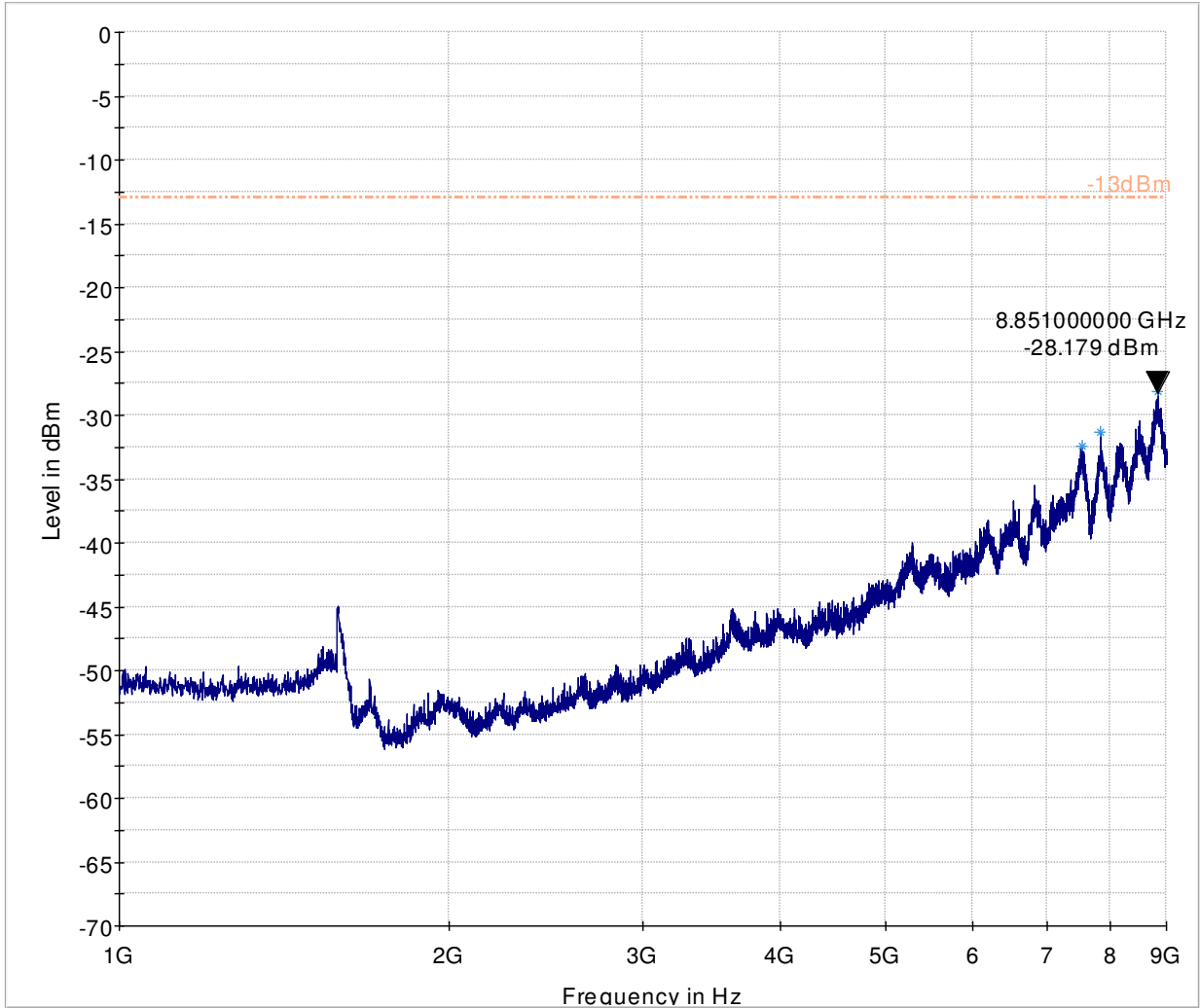
8.7.6 1 GHz – 9 GHz, Ch. Mid



----- -13dBm      ——— Preview Result 1-PK+      \* Data Reduction Result 1 [2]-PK+



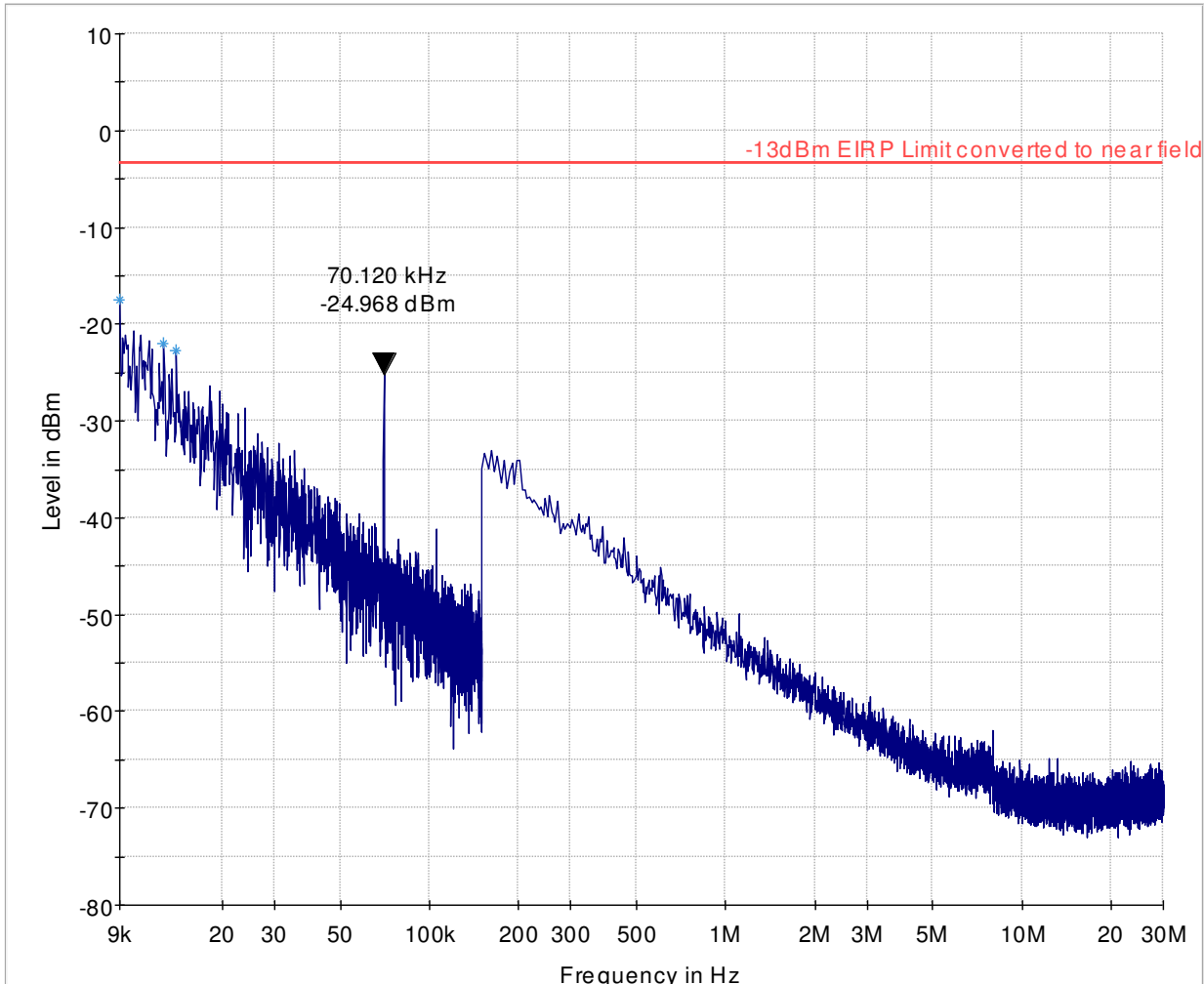
8.7.7 1 GHz – 9 GHz, Ch. High



----- -13dBm      ——— Preview Result 1-PK+      \*      Data Reduction Result 1 [2]-PK+

8.8 Measurement Plots GPRS1900 (class8):

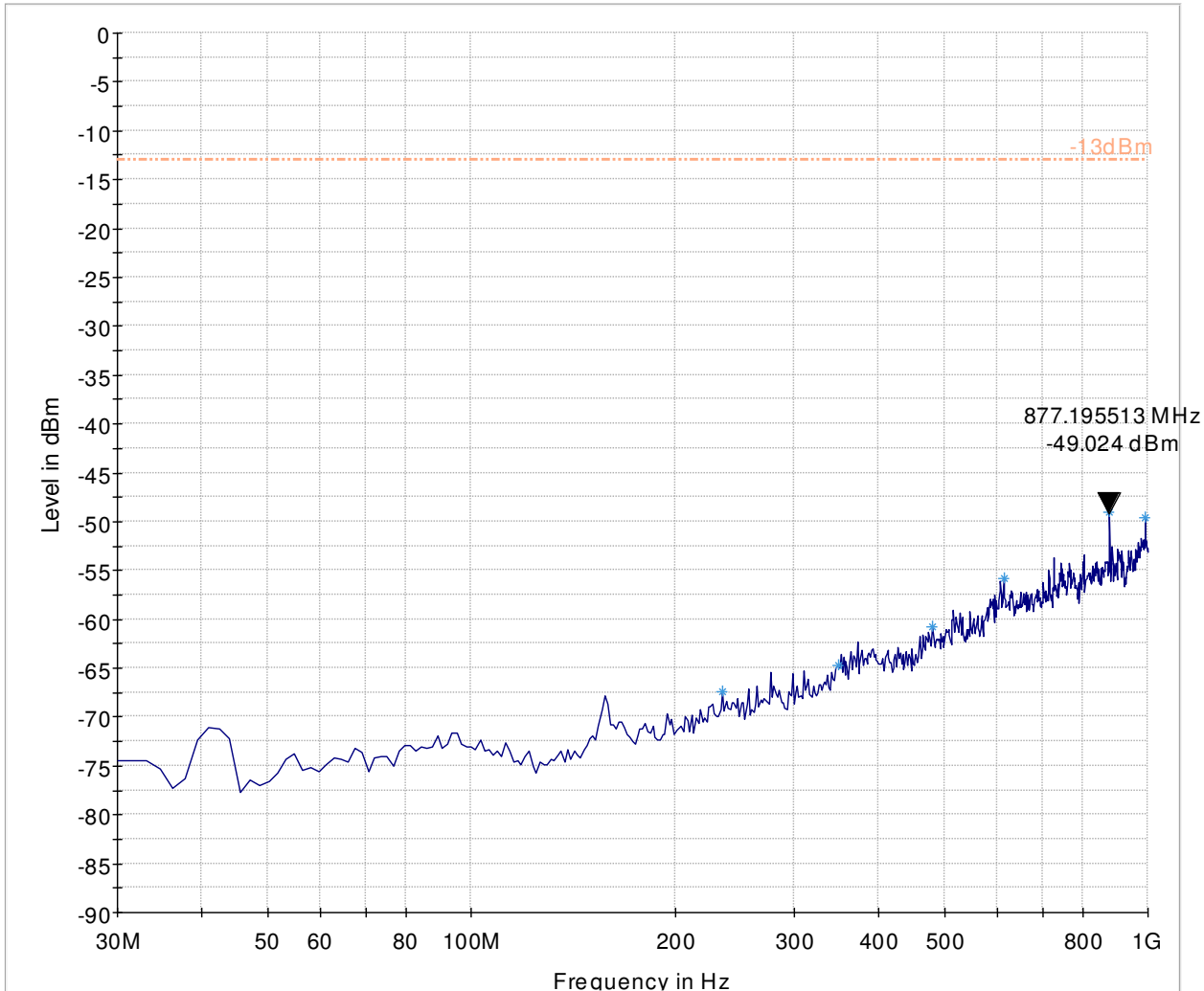
8.8.1 9kHz – 30MHz, Ch. mid



— -13dBm EIRP Limit converted to near field      — Preview Result 1 -PK+  
\* Data Reduction Result 1 [1]-PK+



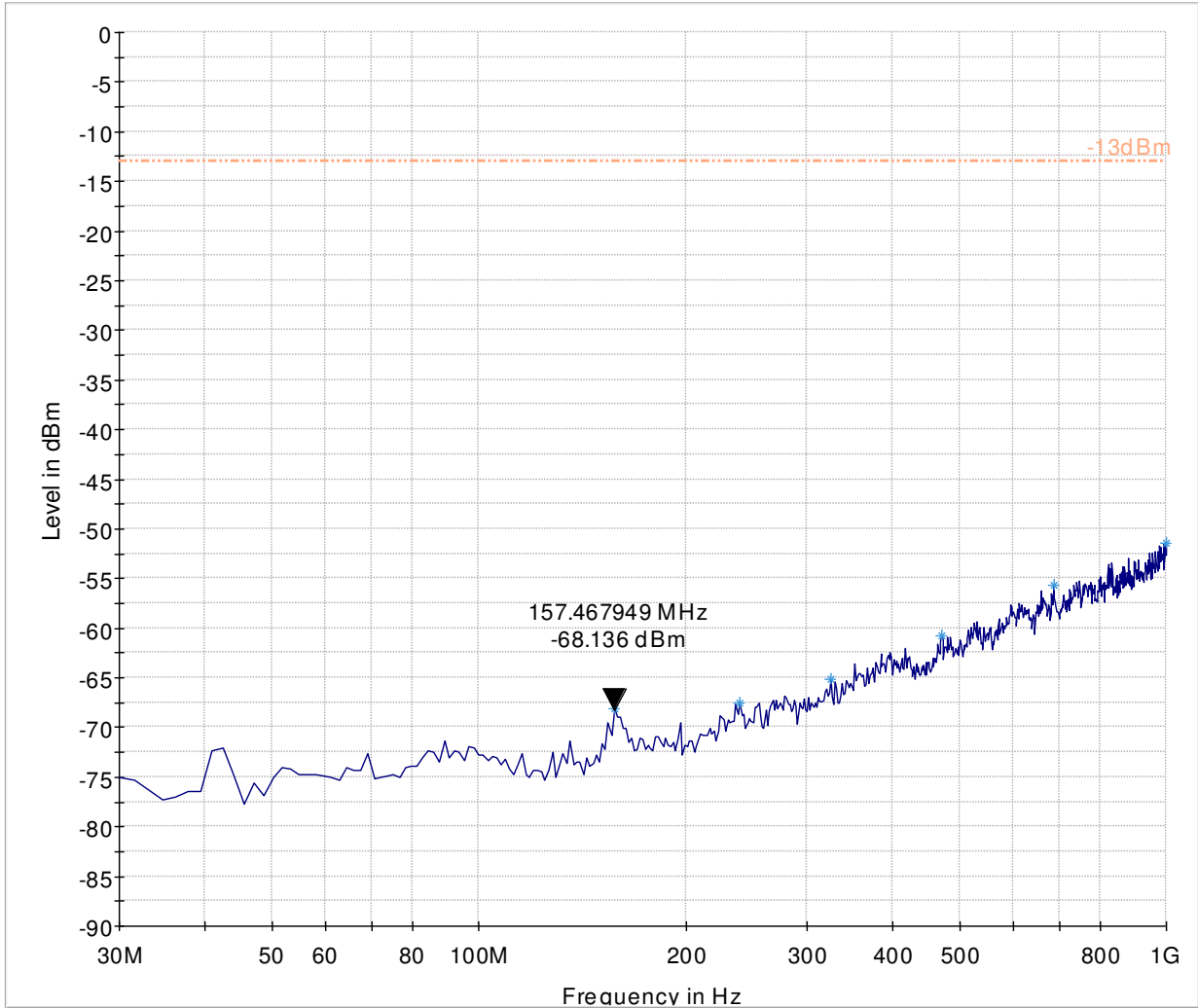
8.8.2 30MHz – 1GHz, Ch. Low



-13dBm.LimitLine    Preview Result 1-PK+    \*    Data Reduction Result 1 [1]-PK+



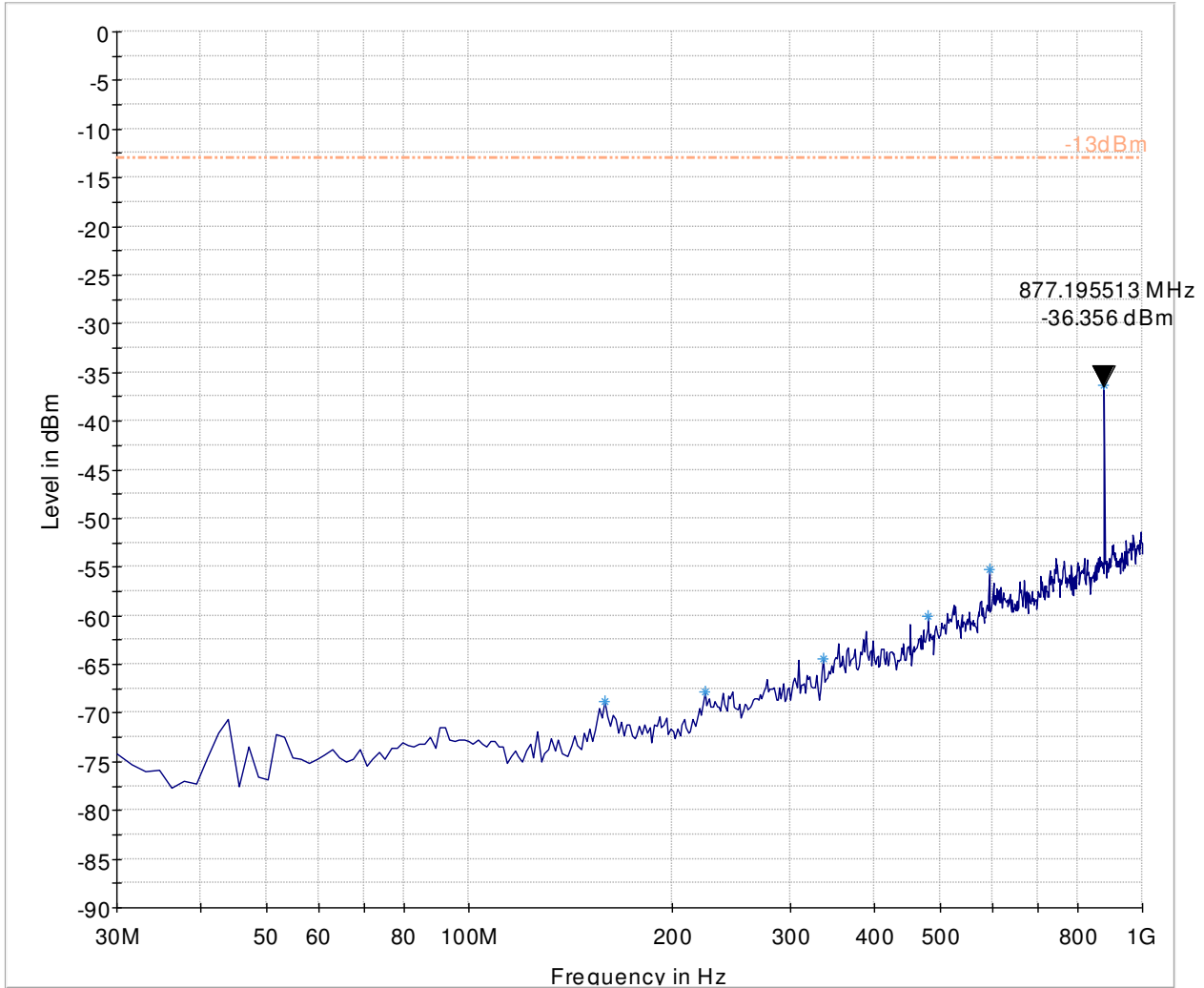
8.8.3 30MHz – 1GHz, Ch. Mid



----- -13dBm.LimitLine    ——— Preview Result 1-PK+    \* Data Reduction Result 1 [1]-PK+



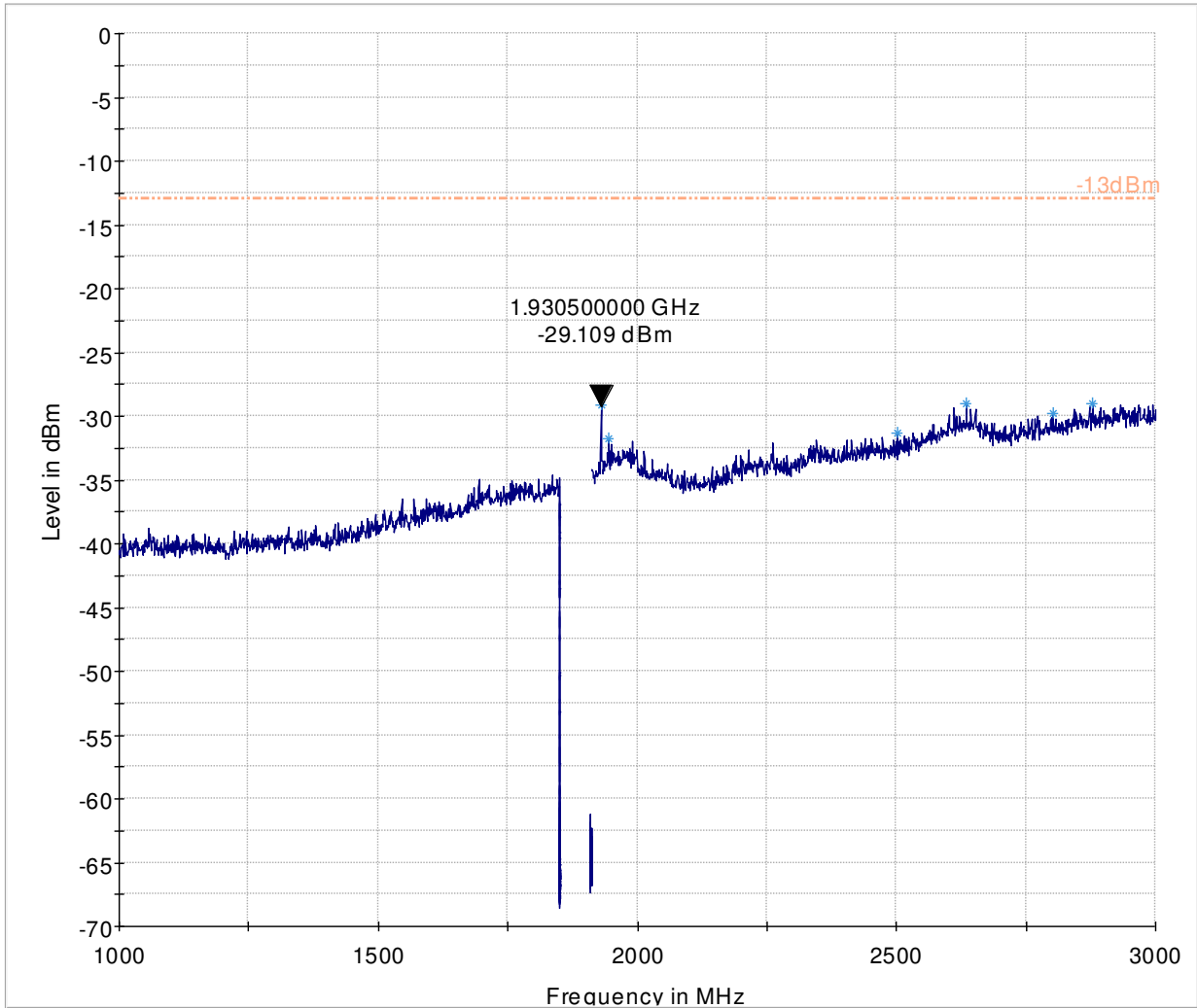
### 8.8.4 30MHz – 1GHz, Ch. High



----- -13dBm.LimitLine    ——— Preview Result 1-PK+    \* Data Reduction Result 1 [1]-PK+



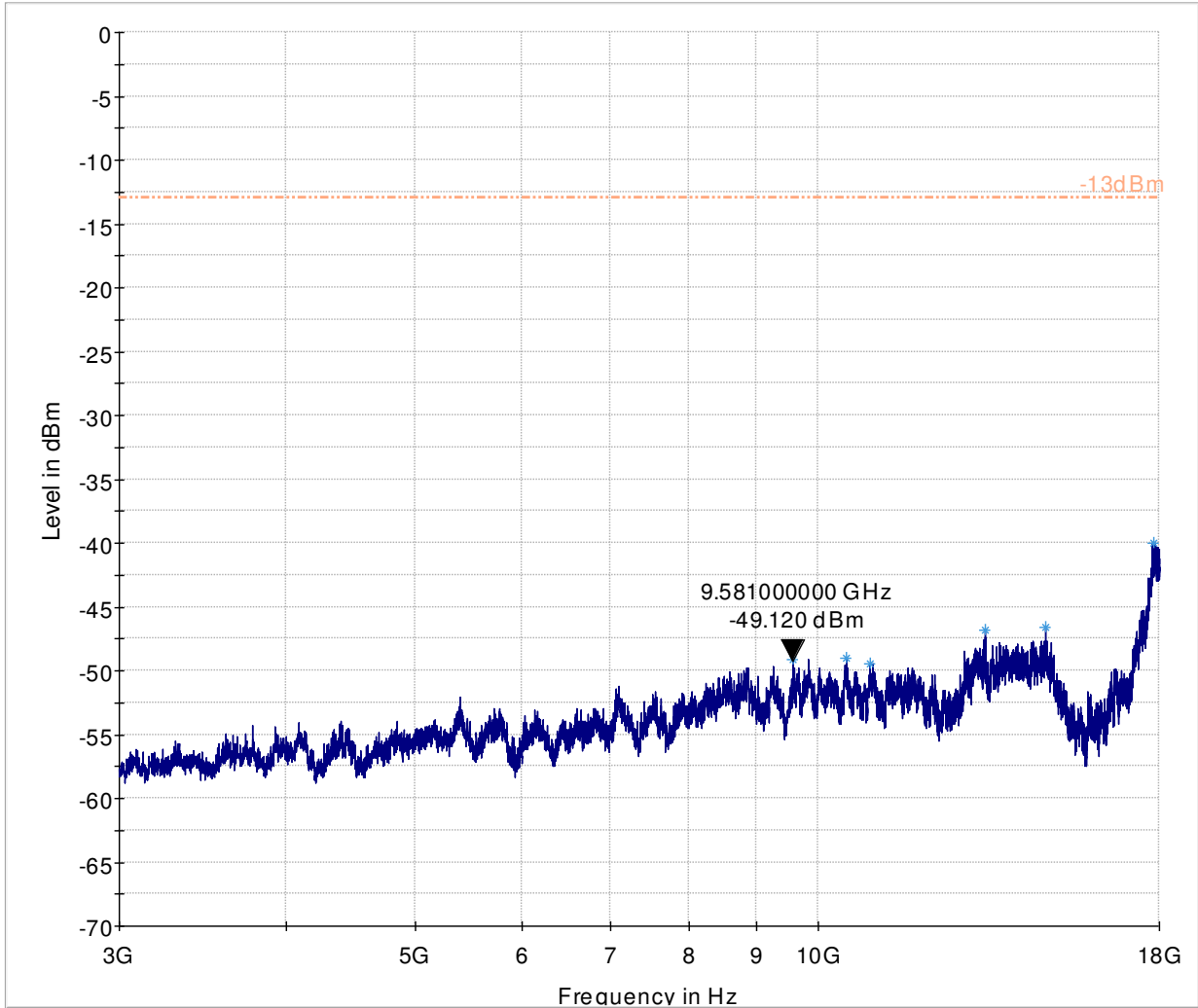
8.8.5 1GHz – 3GHz, Ch. Low



----- -13dBm.LimitLine      ——— Preview Result 1-PK+      \* Data Reduction Result 1 [2]-PK+



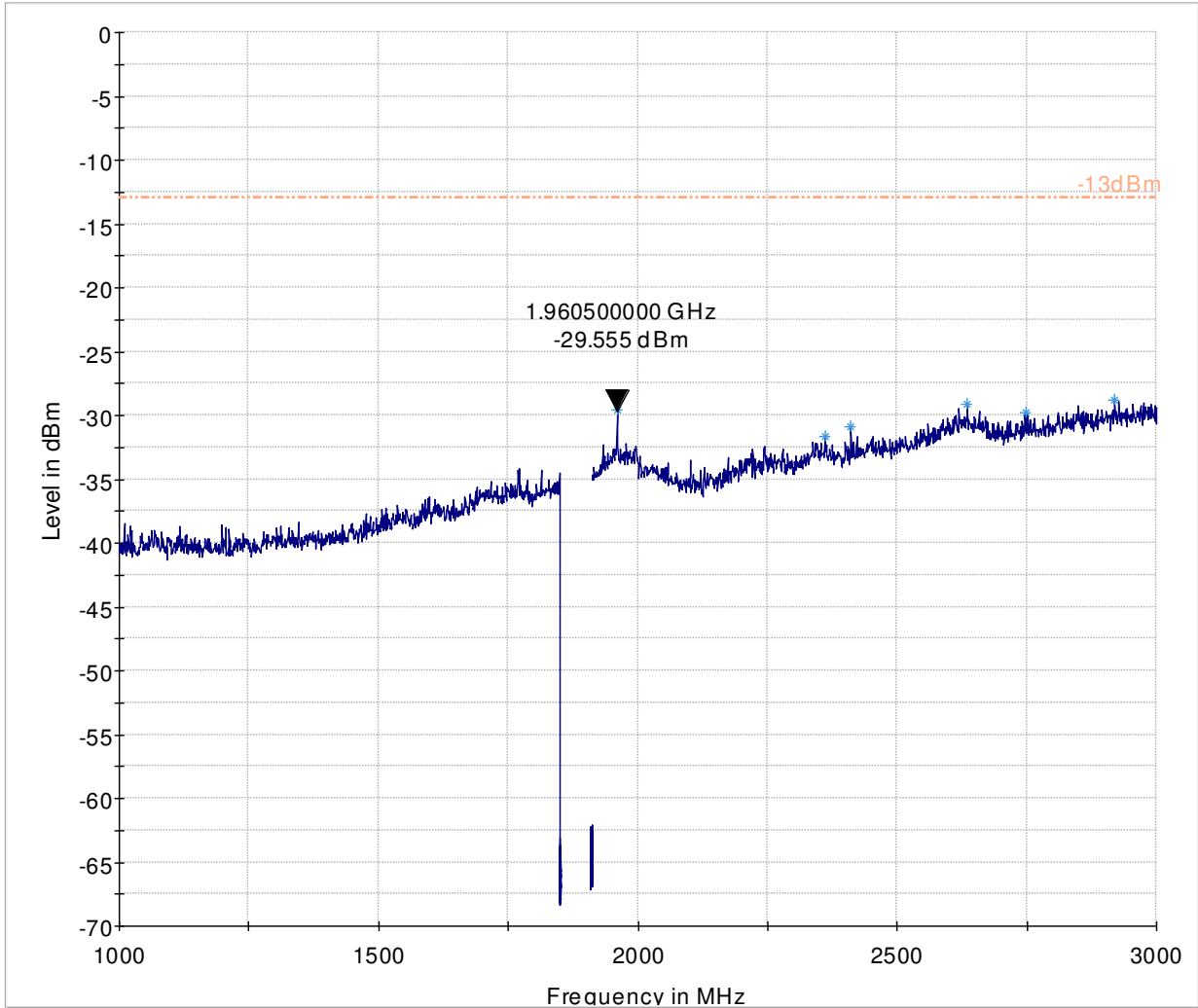
8.8.6 3GHz – 18GHz, Ch. Low



----- -13dBm.LimitLine    ——— Preview Result 1-PK+    \* Data Reduction Result 1 [3]-PK+



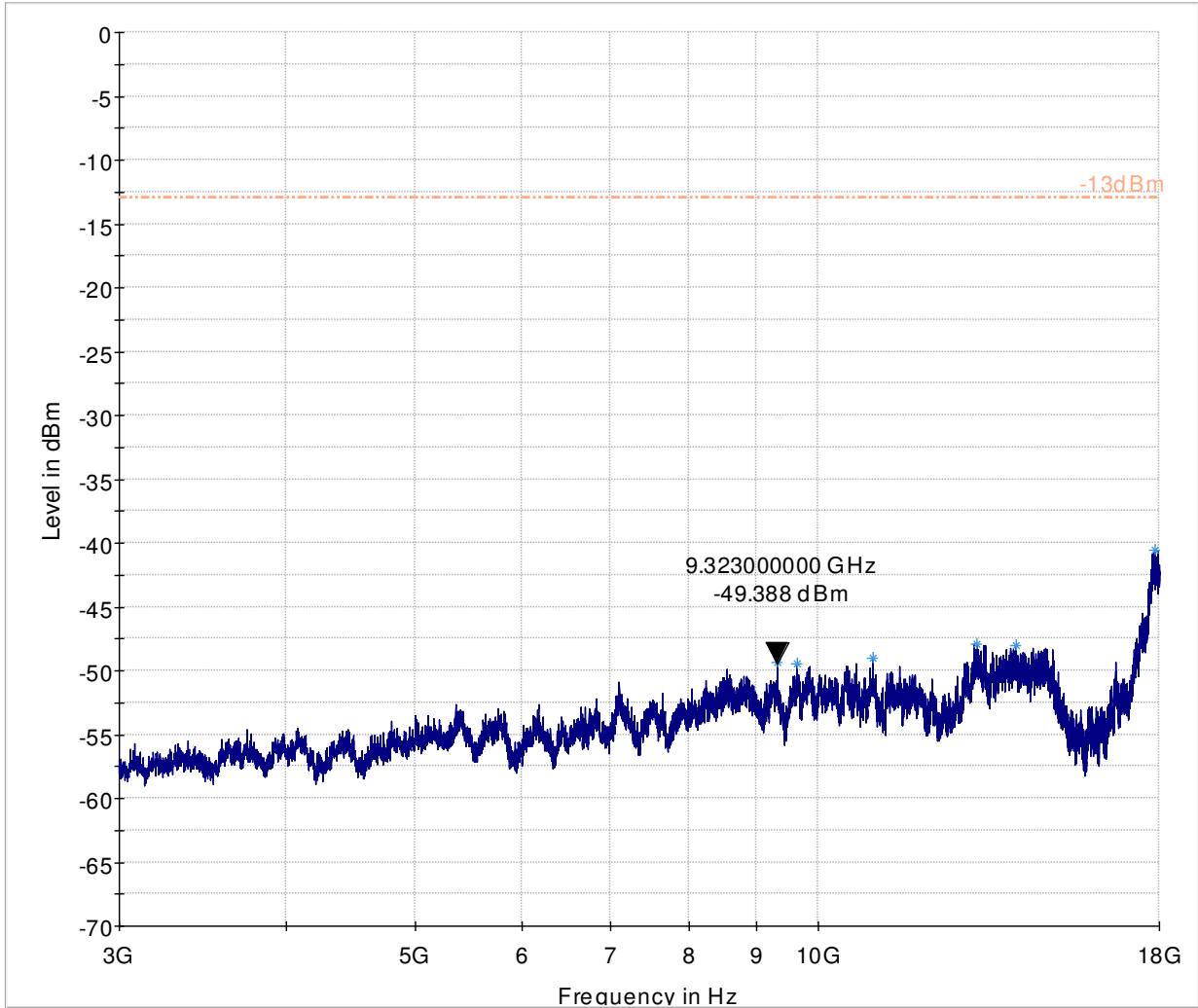
8.8.7 1GHz – 3GHz, Ch. Mid



-13dBm.LimitLine    Preview Result 1-PK+    \*    Data Reduction Result 1 [2]-PK+



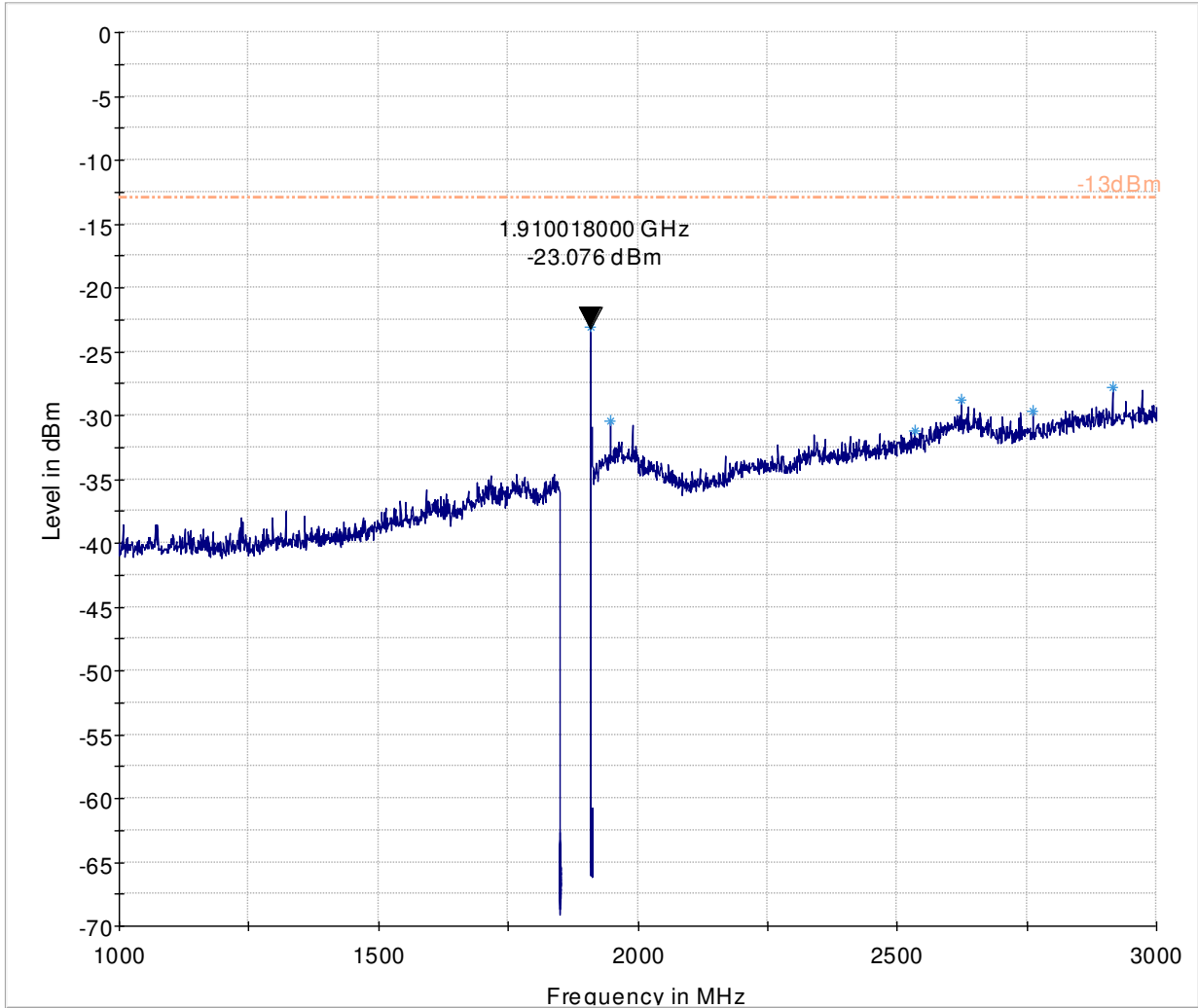
8.8.8 3GHz – 18GHz, Ch. Mid



----- -13dBm.LimitLine    ——— Preview Result 1-PK+    \* Data Reduction Result 1 [3]-PK+



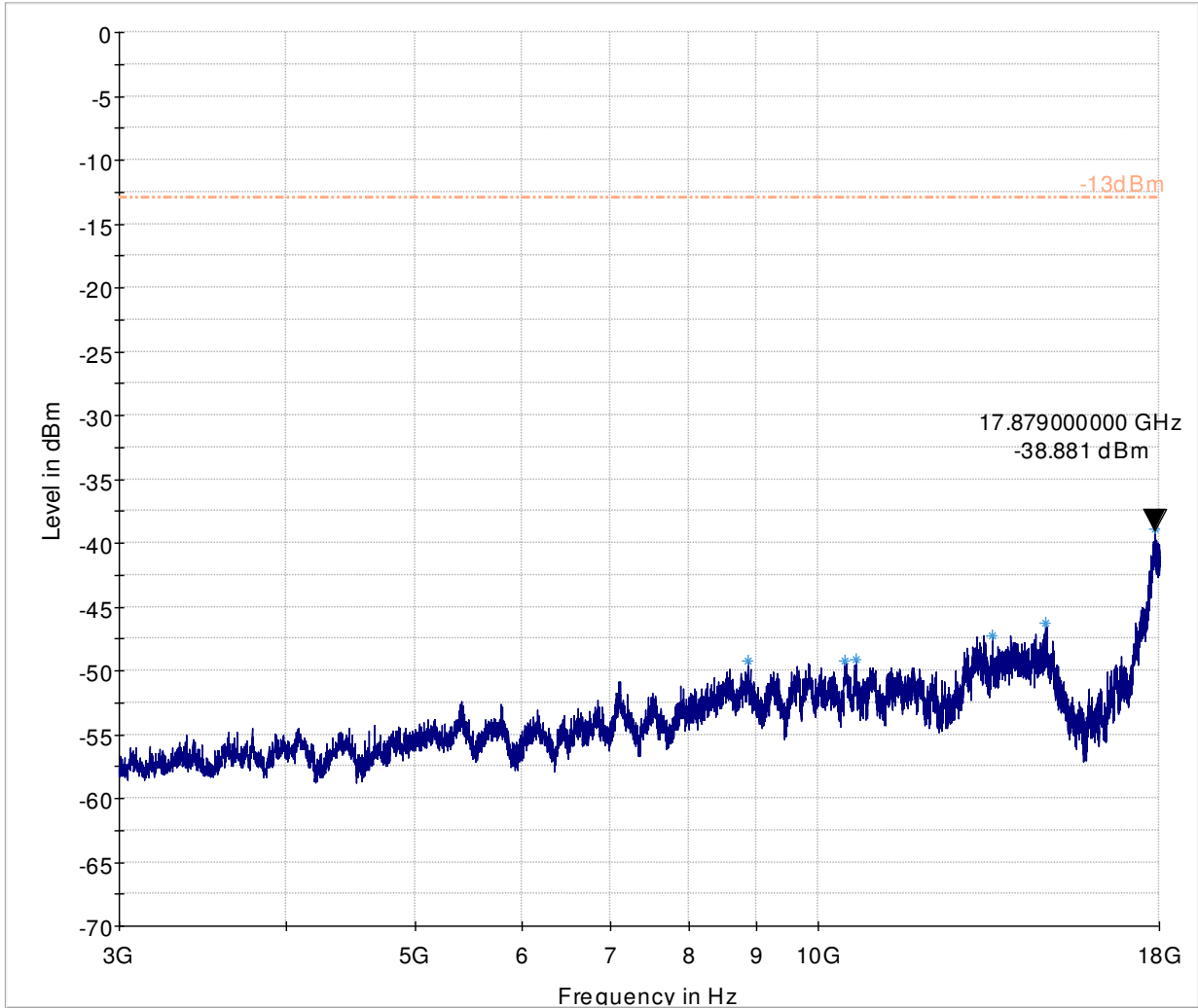
8.8.9 1GHz – 3GHz, Ch. High



----- -13dBm.LimitLine    ——— Preview Result 1-PK+    \*    Data Reduction Result 1 [2]-PK+



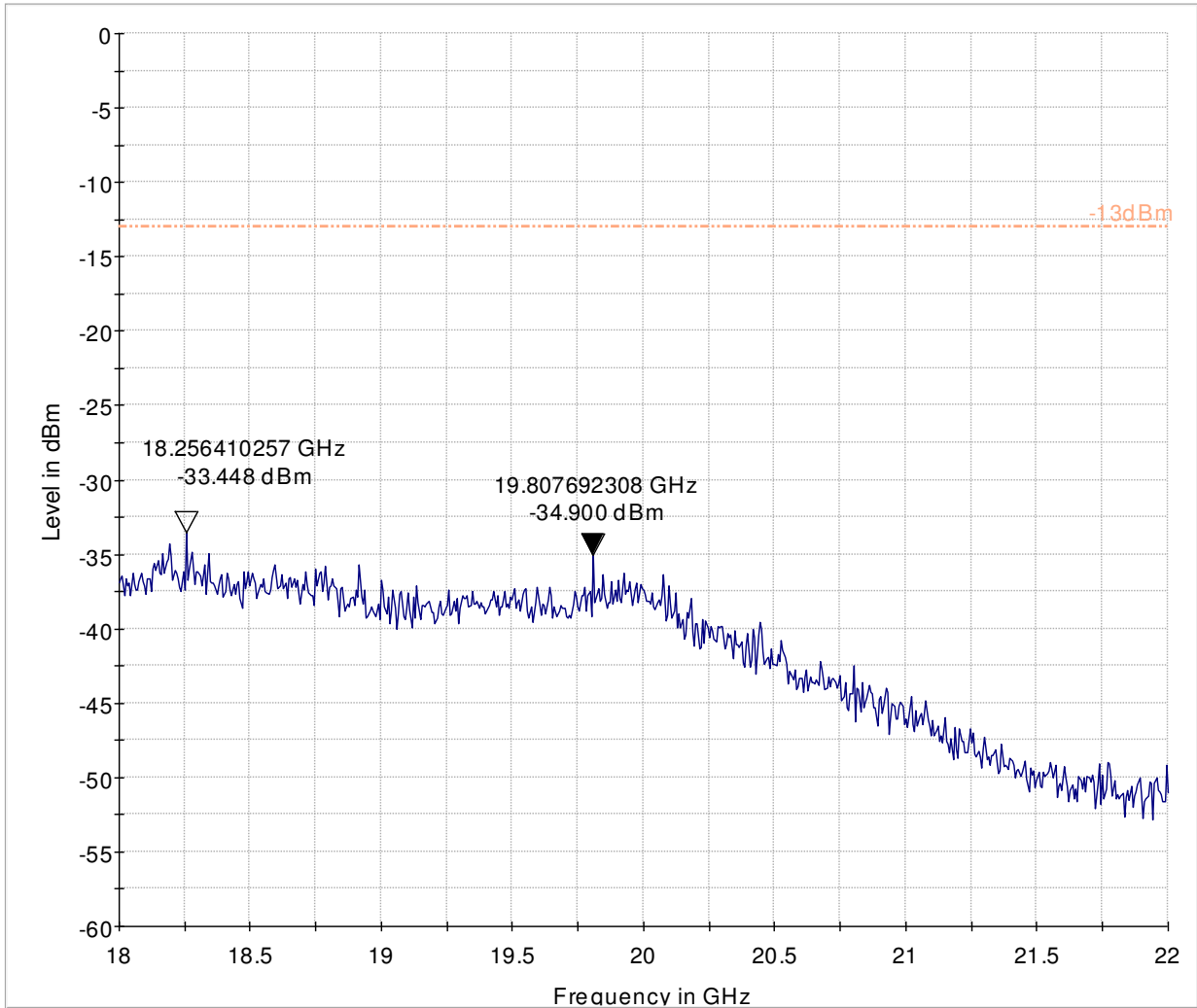
8.8.10 3GHz – 18GHz, Ch. High



- - - - -13dBm.LimitLine      — Preview Result 1-PK+      \* Data Reduction Result 1 [3]-PK+



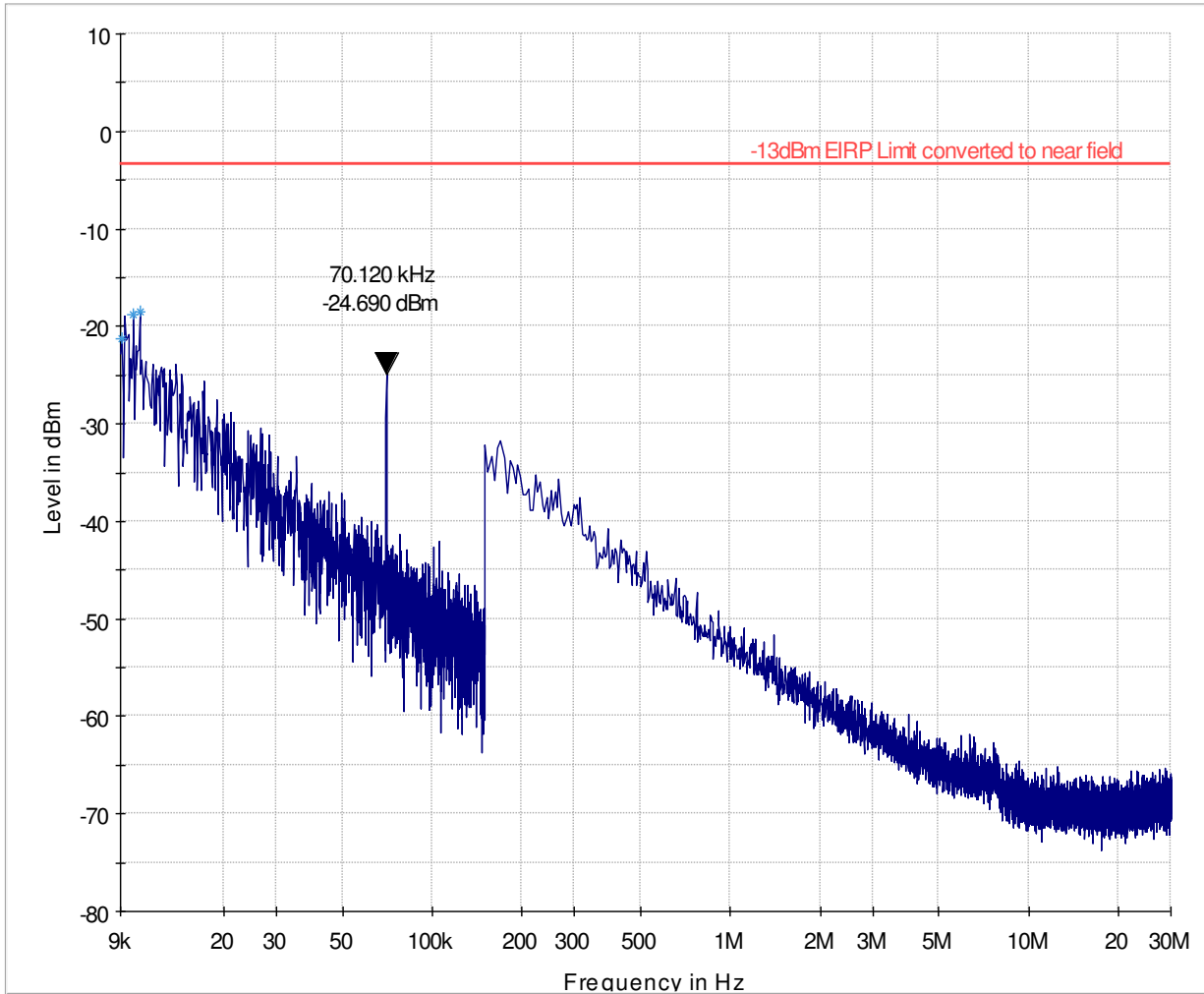
8.8.11 18GHz - 22GHz, Ch. Mid



- - - - -13dBm      ——— Preview Result 1-PK+

### 8.9 Measurement Plots GPRS850 (class8):

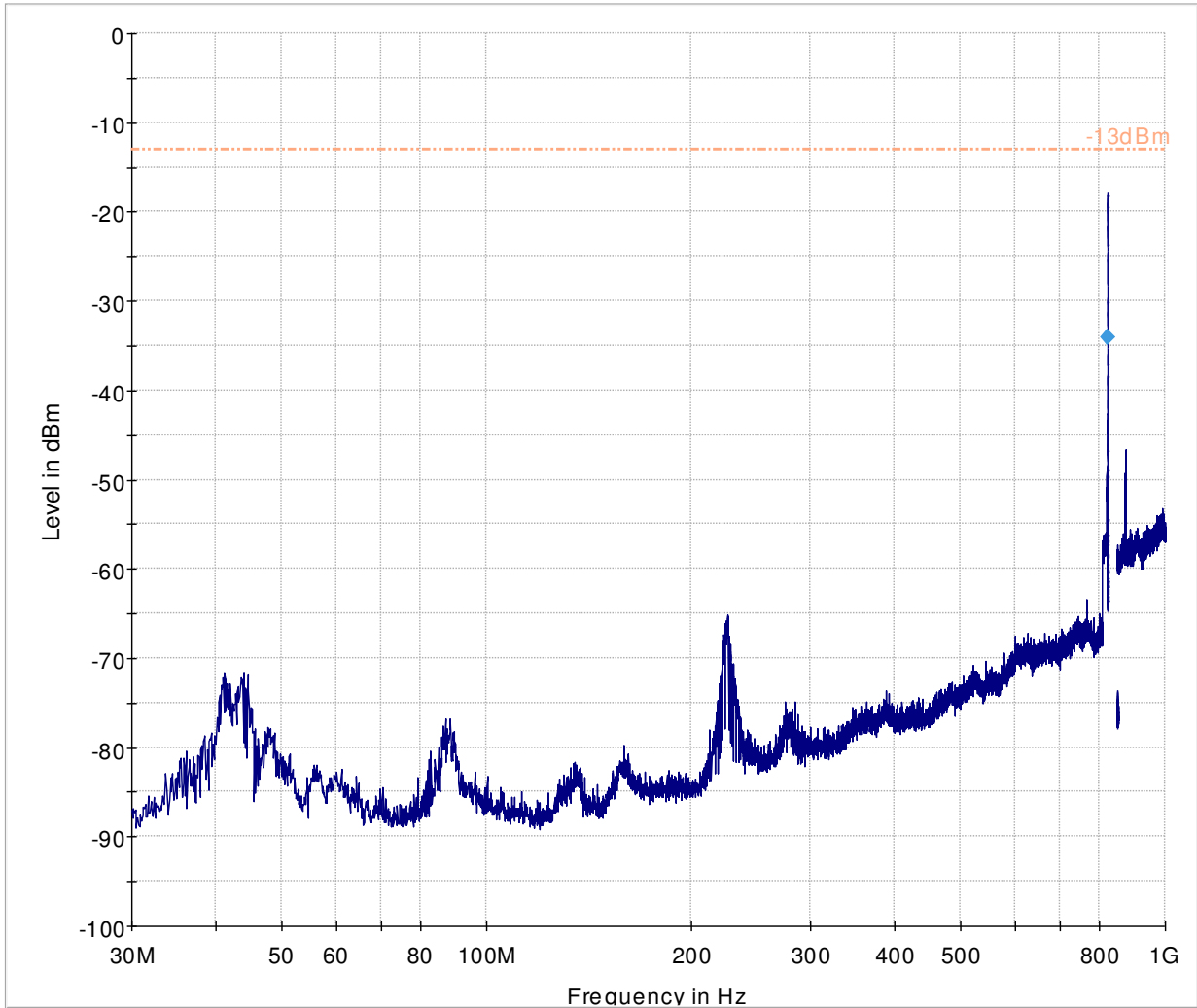
#### 8.9.1 9kHz – 30MHz, Ch. mid



— -13dBm EIRP Limit converted to near field  
\* Data Reduction Result 1 [1]-PK+

— Preview Result 1-PK+

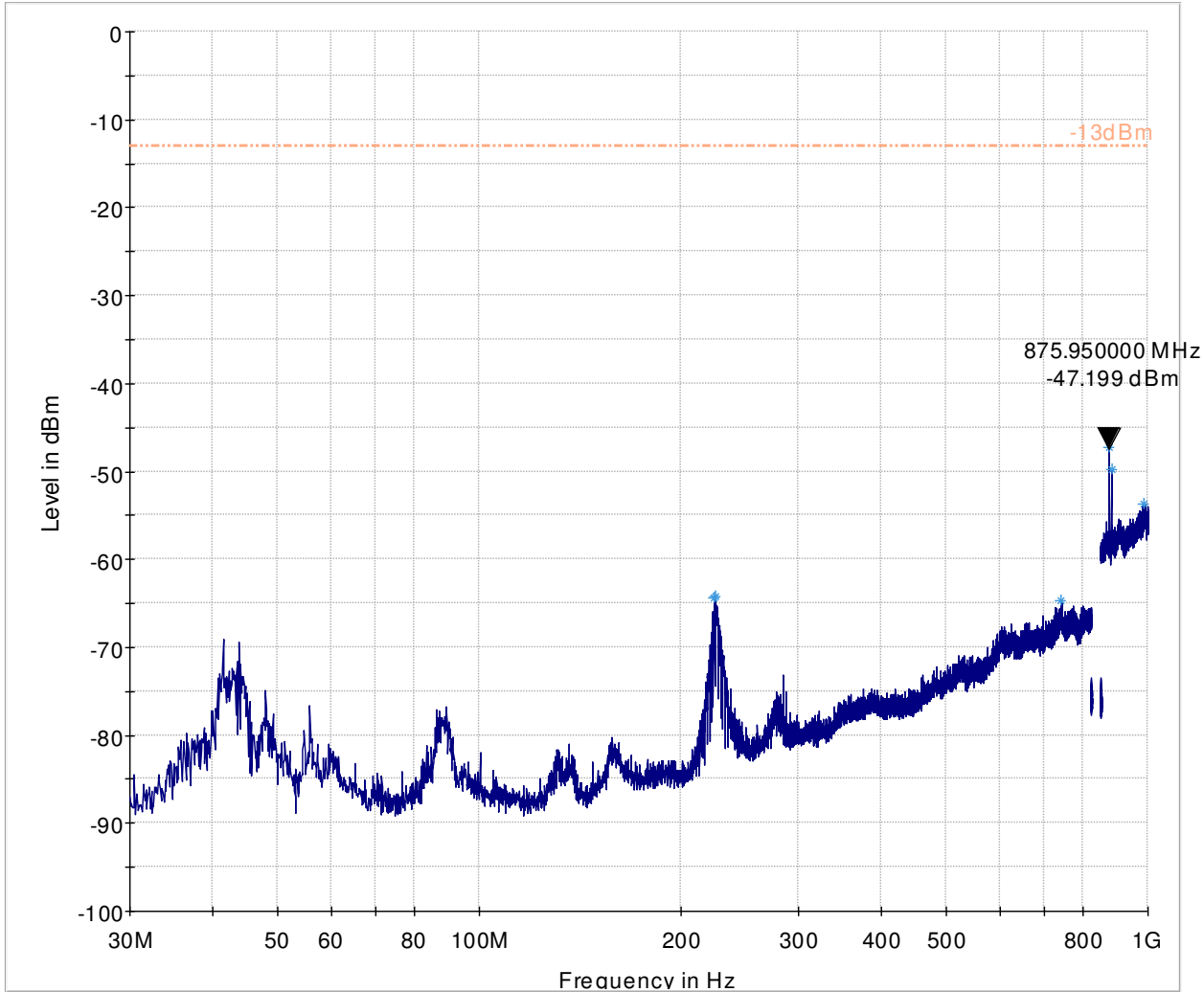
8.9.2 30MHz – 1GHz, Ch. Low



----- -13dBm.LimitLine      ——— Preview Result 1-PK+      ◆ Final Result 1-RMS



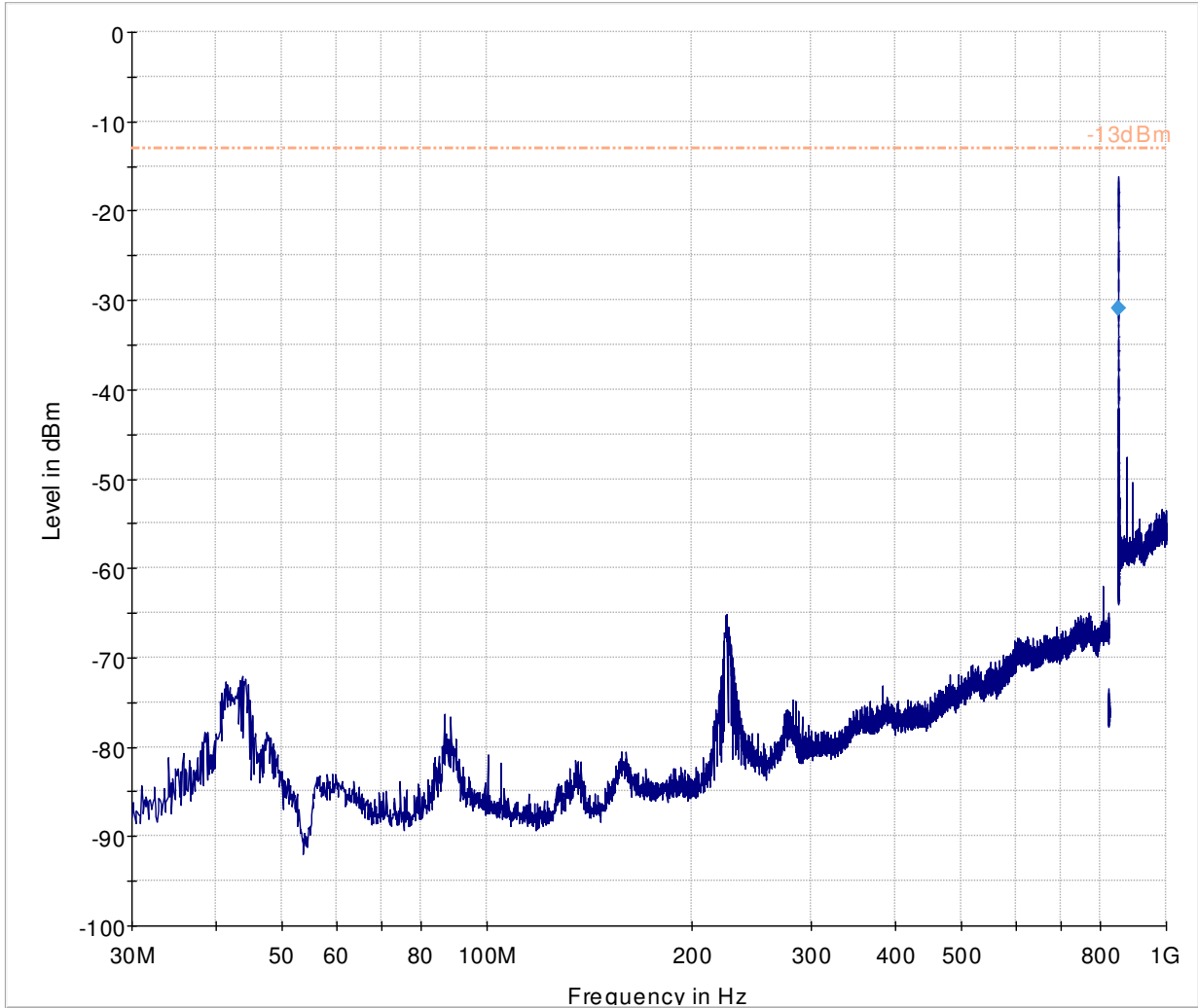
### 8.9.3 30MHz – 1GHz, Ch. Mid



-13dBm.LimitLine    Preview Result 1-PK+    \*    Data Reduction Result 1 [1]-PK+

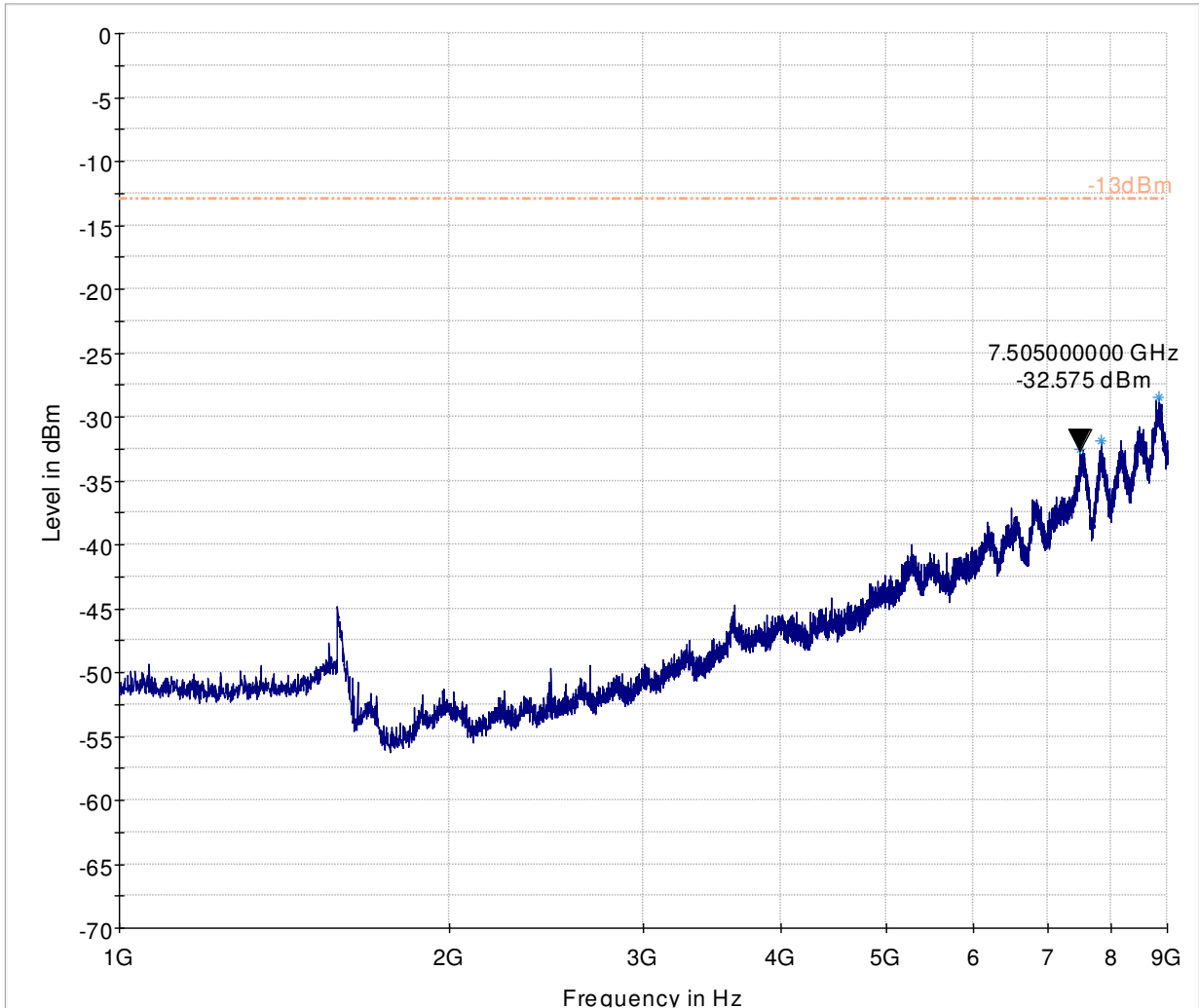


### 8.9.4 30MHz – 1GHz, Ch. High



----- -13dBm.LimitLine    ——— Preview Result 1-PK+    ◆ Final Result 1-RMS

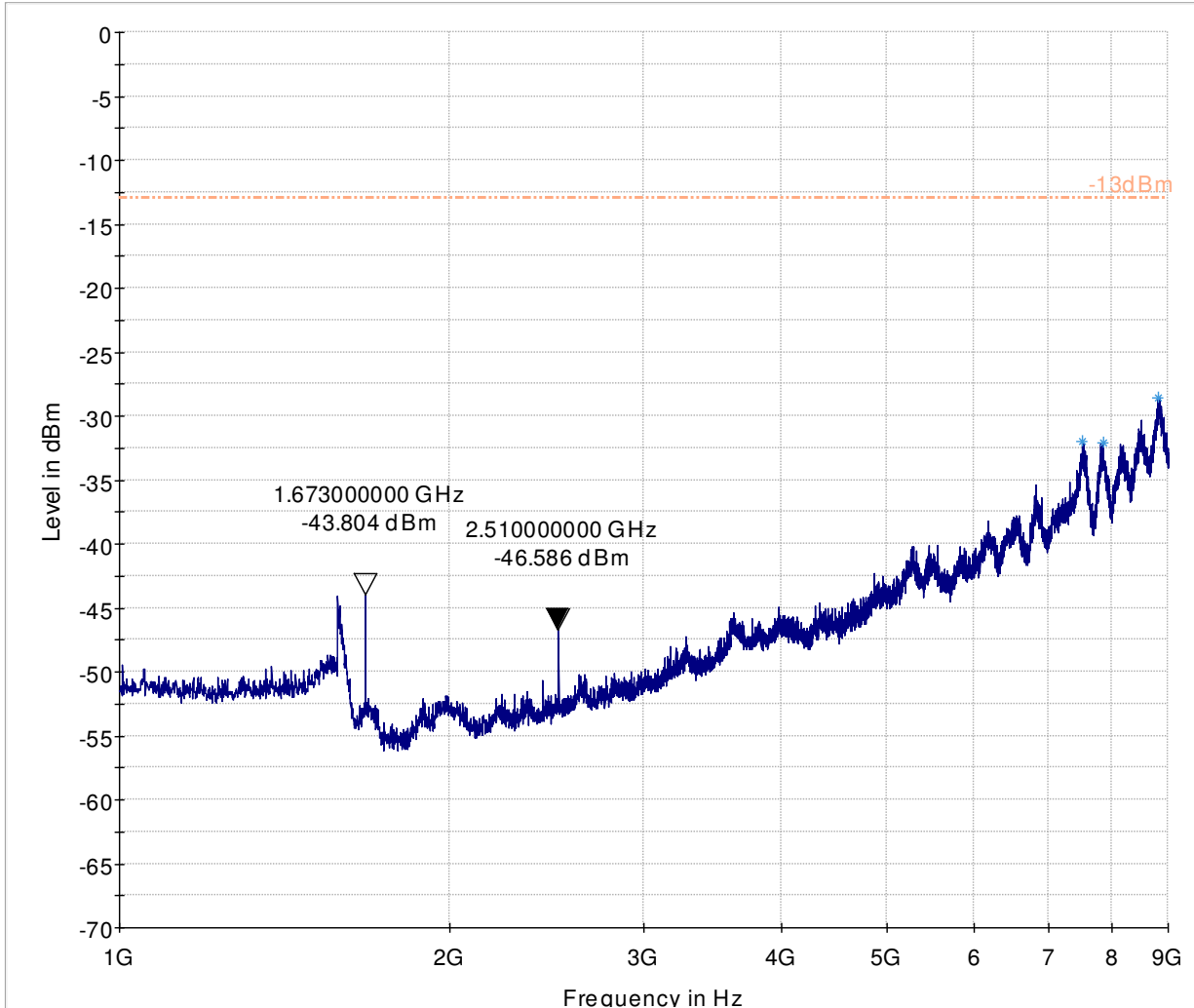
8.9.5 1GHz – 9GHz, Ch. Low



----- -13dBm      ——— Preview Result 1-PK+      \* Data Reduction Result 1 [2]-PK+



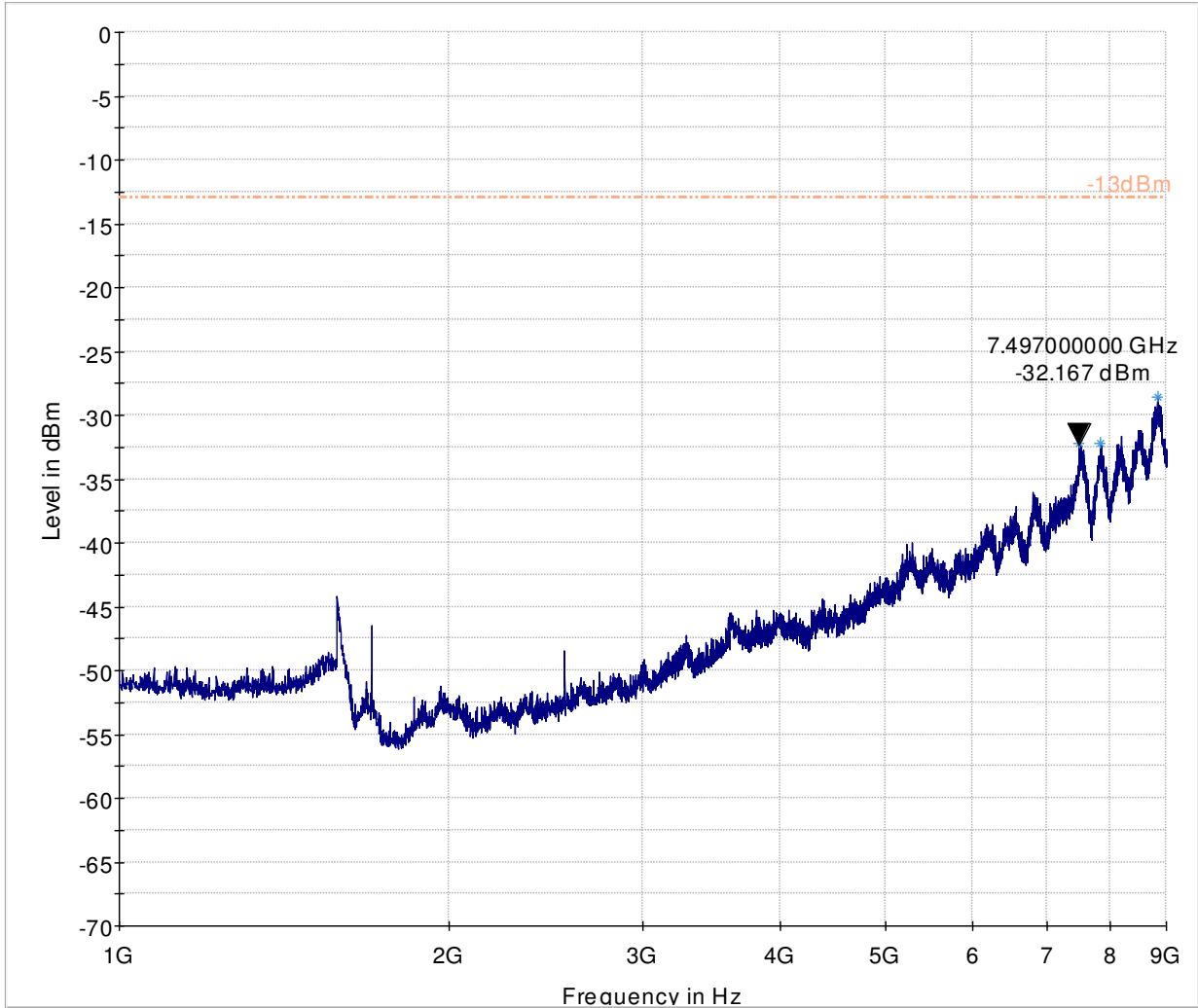
### 8.9.6 1GHz – 9GHz, Ch. Mid



----- -13dBm      ——— Preview Result 1-PK+      \* Data Reduction Result 1 [2]-PK+



8.9.7 1GHz – 9GHz, Ch. High



----- -13dBm      ——— Preview Result 1-PK+      \* Data Reduction Result 1 [2]-PK+



## 9 Test Setup Photos

Setup photos are included in supporting file name: "EMC-NETCO-007-16001\_TestSetupPhotos.pdf"



10 Test Equipment and Ancillaries Used For Testing

| Item Name                                | Equipment Type             | Manufacturer    | Model               | Serial #     | Calibration Cycle | Last Calibration Date |
|--|----------------------------|-----------------|---------------------|--------------|-------------------|-----------------------|
| Antenna Biconilog 3142E                  | Biconlog Antenna           | EMCO            | 3142E               | 166067       | 3 years           | 6/14/2014             |
| Antenna Loop 6512                        | Loop Antenna               | ETS Lindgren    | 6512                | 49838        | 3 years           | 3/13/2014             |
| Antenna Horn 3115 SN 35111               | Horn Antenna               | EMCO            | 3115                | 35111        | 3 years           | 7/24/2015             |
| Antenna Horn 3116                        | Horn Antenna               | ETS Lindgren    | 3116                | 70497        | 3 years           | 7/22/2015             |
| LISN FCC-LISN-50-25-2-08                 | LISN                       | FCC             | FCC-LISN-50-25-2-08 | 8014         | 2 Years           | 3/26/2015             |
| Digital Barometer                        | Compact Digital Barometer  | Control Company | 35519-055           | 911195<br>47 | 2 Years           | 4/7/2015              |
| Digital Radio Comm. Tester<br>CMU 200 #1 | Digital Radio Comm. Tester | R&S             | CMU 200 #1          | 101821       | 2 Years           | 7/4/2015              |
| ESU 40                                   | Receiver                   | R&S             | ESU 40              | 100251       | 2 years           | 6/29/2015             |
| Thermometer Humidity TM320               | Thermometer Humidity       | Dickson         | TM320               | 528006<br>3  | 1 Year            | 7/29/2015             |

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 |
|--------------------|---|--|--------------------|
| August 30,<br>2016 | EMC-NETCO-007-16001_FCC_22_24_27        | Initial Version  | Franz Engert       |
| August 31,<br>2016 | EMC-NETCO-007-<br>16001_FCC_22_24_27_v2 | Repeated E(I)RP<br>measurement with worst<br>case cable RG58 2 feet. | Franz Engert       |