FCC/IC Test Report

For:

ResMed Ltd.

Model:

27201

Product Description:

Connectivity Module

FCC ID: 2ACHL-RCM3G
IC ID: 9103A-RCM3G

Per:

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

REPORT #: EMC_CONNE-044-15001_FCC_22_24_27_Rev_2

DATE: 2016-03-11

A2LA Accredited

IC recognized # 3462B-1

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1 Assessment

The following device as further described in section 3 of this report was evaluated against selected applicable criteria specified in the Code of Federal Regulations Title 47 parts 22, 24, 27, and Industry Canada Radio Standard Specifications RSS: 132 Issue 3, 133 Issue 6, 139 Issue 3.

No deficiencies were ascertained.

Company Name	Product Description	Model
ResMedLtd.	Connectivity Module	27201

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2016-03-11	Compliance	Franz Engert (Compliance Manager)	Digitally signed by Franz Engert DN: cn=Franz Engert, c=US, o=CETECOM, ou=Complience, email=franz.engert@cetecom.com

Responsible for the Report:

Date	Section	Name	Signature
2016-03-11	Compliance	Kris Lazarov (EMC Engineer)	Kris Lazarov Digitally signed by Kris Lazarov DN: cn=Kris Lazarov, o, ou, email=kris.lazarov@cetecom.com, c=US

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
Compliance Manager:	Franz Engert
Responsible Project Leader:	Kris Lazarov

2.2 Identification of the Client

Applicant's Name:	ResMed Ltd.
Street Address:	1 Elizabeth Macarthur Drive,
City/Zip Code	Bella Vista, NSW, 2153
Country	Australia
Contact Person:	Gerry O'Connor
Phone No.	+612 8884 2165
e-mail:	Gerry.O'Connor@resmed.com.au

2.3 Identification of the Manufacturer

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

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Model No	27201				
HW Version	BOM 27201				
SW Version	SX560				
FCC-ID	2ACHL-RCM3G				
IC-ID:	9103A-RCM3G				
HVIN:	27201				
PMN:	ResMed Connectivity Module				
Product Description	Connectivity Module				
Module Information	**Module:** Telit HE910		**FCC-ID:** RI7HE910		**IC:** 5131A-HE910
Mode	**GSM/GPRS EGPRS**	**Band**	**UL Frequency (MHz)**	**DL Frequency (MHz)**	**Modulation**
		850	824.2 – 848.8	869.2 – 839.8	GMSK/8PSK
		1900	1850.2-1909.8	1930.2 – 1989.8	GMSK/8PSK
	WCDMA	II	1852.4 – 1907.6	1932.2 – 1987.6	QPSK
		IV	1712.4 – 1752.6	2112.4-2152.6	QPSK
		V	826.4 – 846.6	871.4 – 891.6	QPSK
Max. declared antenna gain	824 MHz to 849 MHz = 1.49 dBi 1710 MHz to 1910 MHz = 2.53 dBi				
Max. declared average conducted output power including tune up	FDD Band 2, 4 and 5 = 23dBm +1dB Tolerance GSM 850 = 32.5dBm +1dB Tolerance GSM 1900 = 29.5dBm +1dB Tolerance				
Operating Voltage Range	Vmin: 23V DC / Vnom: 24V DC / Vmax: 25V DC				
Operating Temperature Range	5 ºC to 35 ºC				
Other Radios included in the device	N/A				
Sample Revision	☐Prototype ■Production ☐ Pre-Production				
EUT Dimensions	134 mm x 44 mm x 150 mm				
EUT Diameter	■ < 60 cm ☐ Other _____				

3.2 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Comments
1	20150171232	BOM 27201	SX560	Radiated Measurements
2	20150171215	BOM 27201	SX560	Conducted Measurements

3.3 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Serial Number
1	AC/DC Adapter	272000	ResMed Ltd.	YL69515831000006300

3.4 Test Sample Configuration

Set-up #	EUT / AE used for set-up	Comments
1	EUT #1+ AE #1	Radiated Measurements
2	EUT #2+ AE #1	Conducted Measurements

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: 2ACHL-RCM3G and IC ID: 9103A-RCM3G.

According to the guidelines from FCC KDB 996369 for the product under evaluation, and the pre-certified module to be integrated (Telit HE910) as described in Section 3, the output power has been verified to be within the specified production tolerances and measurement uncertainties, and where relevant test procedures did not change the conducted test results from module certification are re-used. Full Radiated Spurious Emissions test was conducted, per Code of Federal Regulations Title 47 parts 22, 24, 27, and Industry Canada Radio Standard Specifications RSS: 132 Issue 3, 133 Issue 6, and 139 Issue 3.

The module test data can be obtained under the FCC Filing ID: RI7HE910 and IC Filling: 5131A-HE910.

4.1 Dates of Testing:

11/10/2015 - 03/08/2016

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)

Conducted measurement

150 kHz to 30 MHz	±0.7 dB (LISN)

RF conducted measurement	±0.5 dB

4.3 Environmental Conditions during Testing:

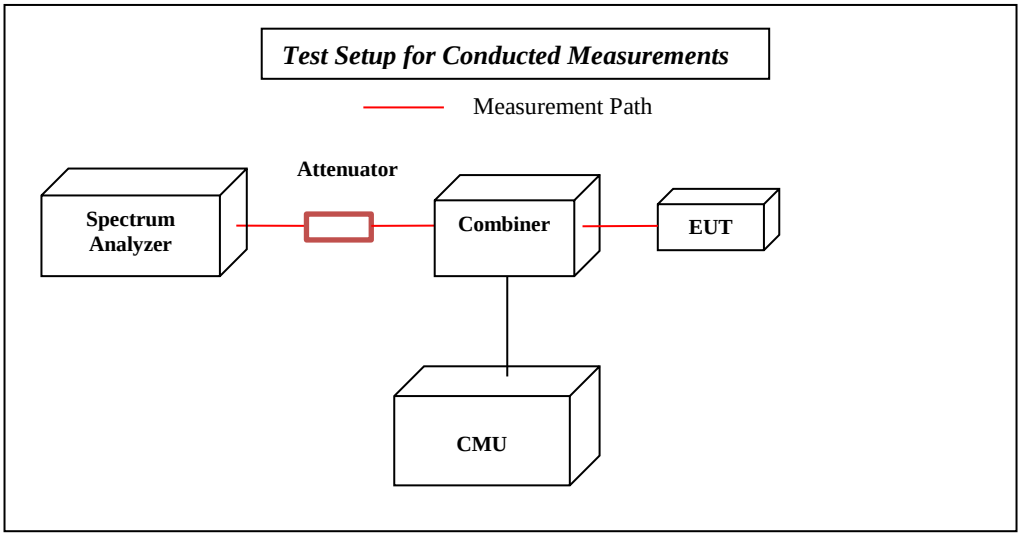
The following environmental conditions were maintained during the course of testing:

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

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

5 Measurement Procedures

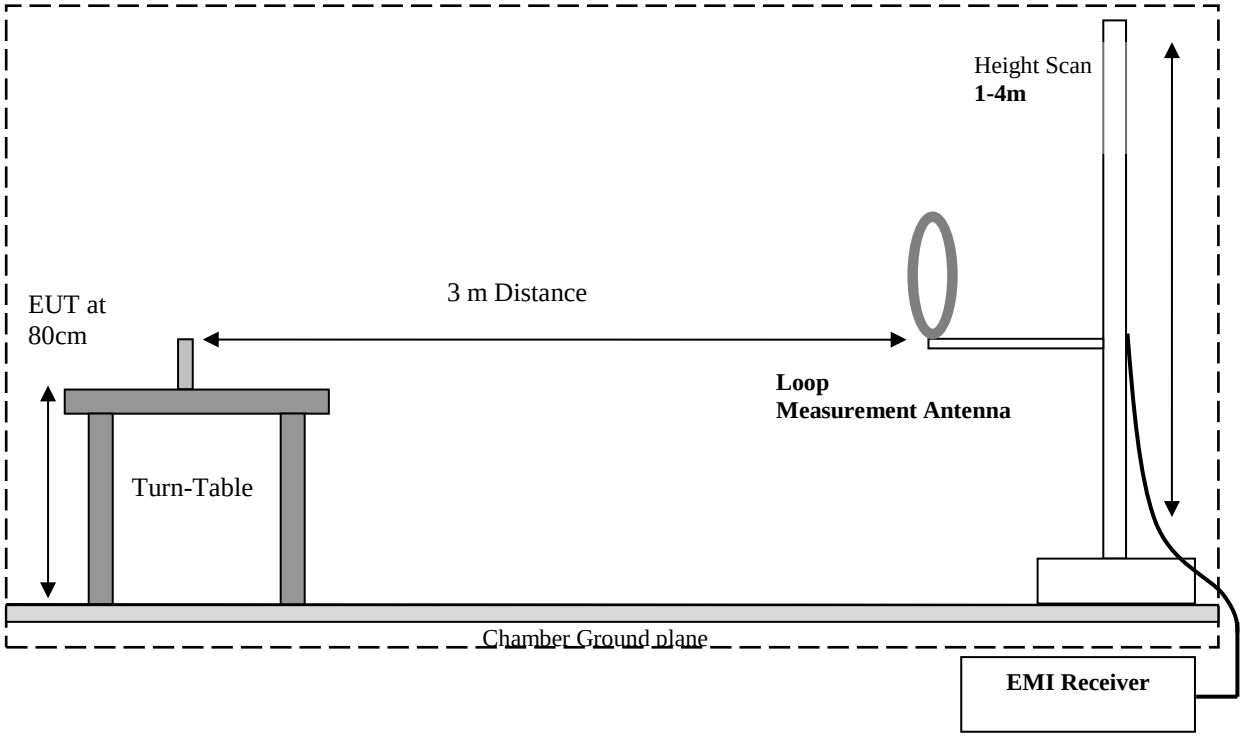
Testing is performed according to the guidelines provided in FCC publication (KDB) 971168 D01 v02r02 – "Measurement Guidance for Certification of Licensed Digital Transmitters" and according to relevant parts of TIA-603C 2004 as detailed below.



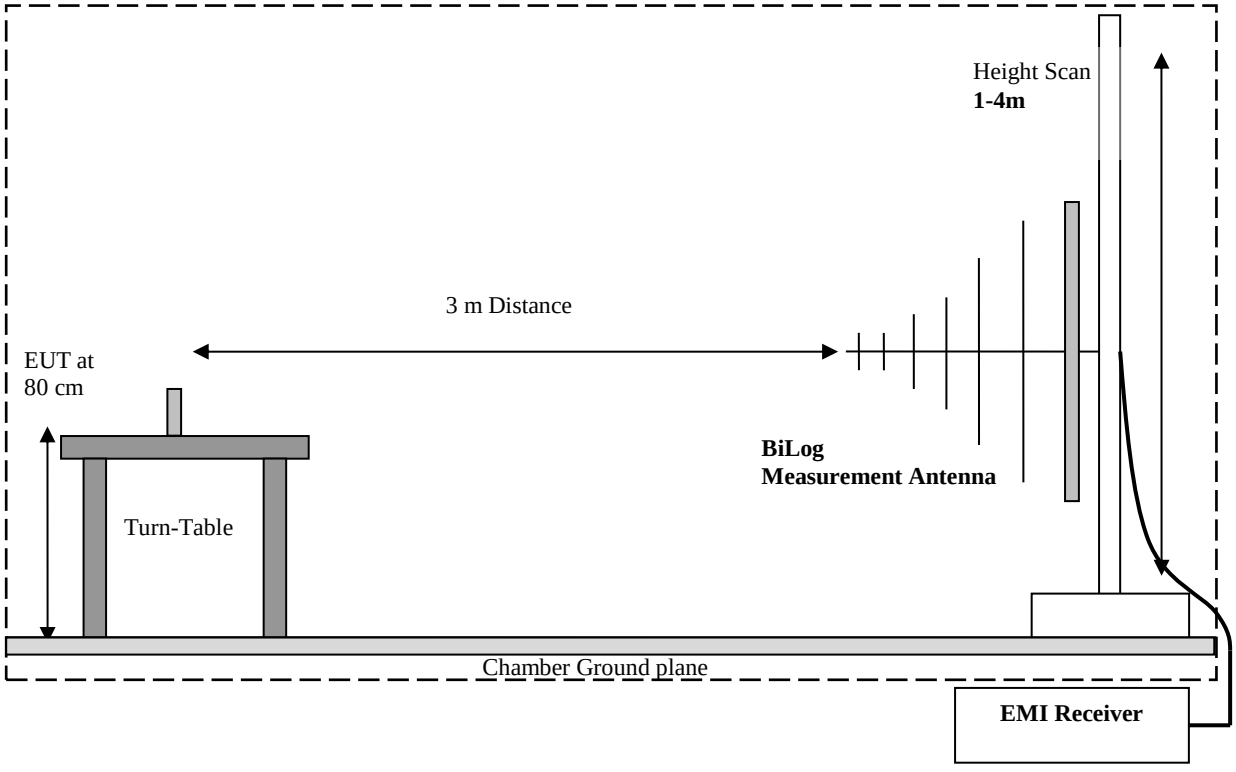
5.1 Radiated Measurement

- 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.

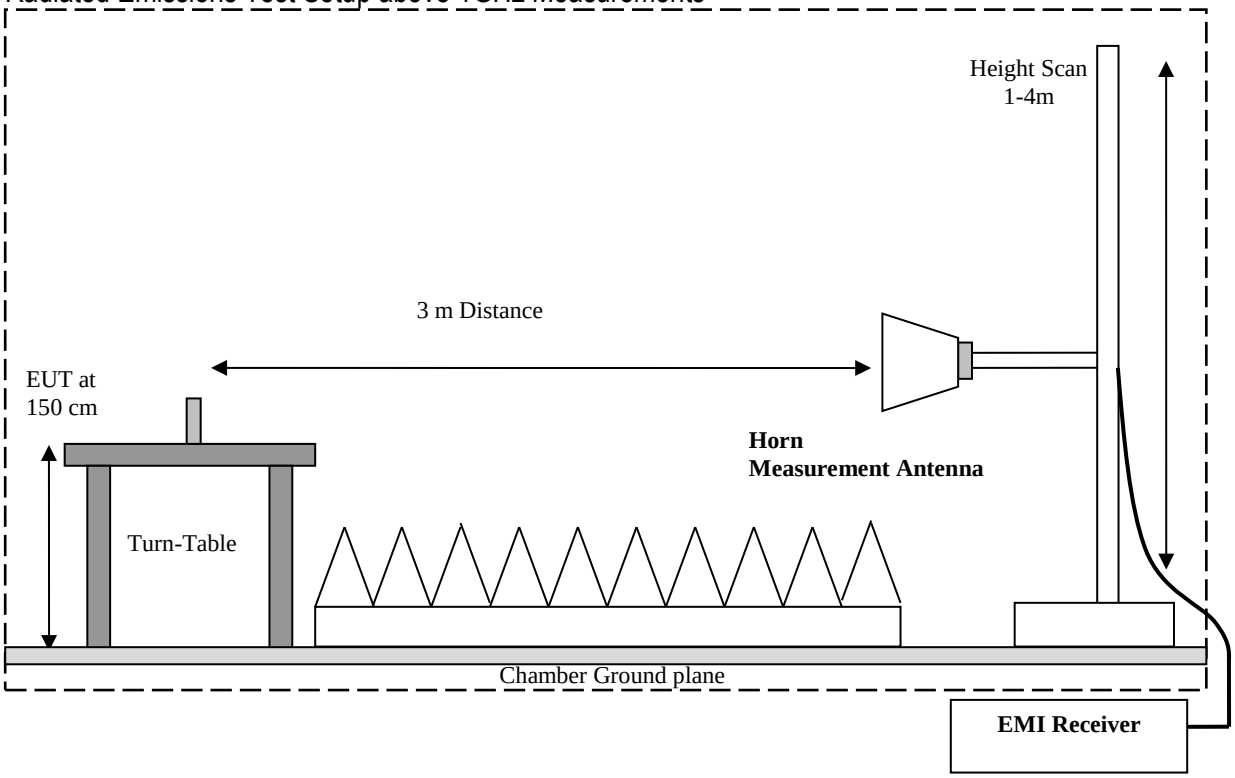
Radiated Emissions Test Setup below 30MHz Measurements



Radiated Emissions Test Setup 30MHz-1GHz Measurements



Radiated Emissions Test Setup above 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 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) RSS-132 5.4	RF Output Power	Nominal	GSM WCDMA	■	☐	☐	☐	Complies Note 2; 3
§2.1055; §22.355 RSS-132 5.3	Frequency Stability	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1049; §22.917 RSS-132 5.2	Occupied Bandwidth	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1051; §22.917 RSS-132 5.5	Band Edge Compliance	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1051; §22.917 RSS-132 5.5	Conducted Spurious Emissions	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1053; §22.917 RSS-132 5.5	Radiated Spurious Emissions	Nominal	GSM WCDMA	■	☐	☐	☐	Complies

Note 1: NA= Not Applicable; NP= Not Performed.
Note 2: Partial RF Output Power test intended for power verification on mid channel of applicable frequency band – see section 7.1.
Note 3: Leveraged from module certification.

6.2 FCC 24 / RSS-133:

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046; §24.232 (a); RSS-133 6.4	RF Output Power	Nominal	GSM WCDMA	■	☐	☐	☐	Complies Note 2; 3
§2.1055; §24.235; RSS-133 6.3	Frequency Stability	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1049; §24.238; RSS-133 6.2	Occupied Bandwidth	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1051; §24.238; RSS-133 6.5	Band Edge Compliance	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1051; §24.238; RSS-133 6.5	Conducted Spurious Emissions	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1053; §24.238; RSS-133 6.5	Radiated Spurious Emissions	Nominal	GSM WCDMA	■	☐	☐	☐	Complies

Note 1: NA= Not Applicable; NP= Not Performed.
Note 2: Partial RF Output Power test intended for power verification on mid channel of applicable frequency band – see section 7.1.
Note 3: Leveraged from module certification.

6.3 FCC 27 / RSS-139:

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046; §27.50 (d); RSS-139 6.5	RF Output Power	Nominal	GSM WCDMA	■	☐	☐	☐	Complies Note 2; 3
§2.1055; §27.54; RSS-139 6.4	Frequency Stability	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1049; §27.53; RSS-139 6.2	Occupied Bandwidth	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1051; §27.53; RSS-139 6.6	Band Edge Compliance	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1051; §27.53; RSS-139 6.6	Conducted Spurious Emissions	Nominal	GSM WCDMA	☐	☐	☐	■	Complies Note 3
§2.1053; §27.53; RSS-139 6.6	Radiated Spurious Emissions	Nominal	GSM WCDMA	■	☐	☐	☐	Complies

Note 1: NA= Not Applicable; NP= Not Performed.
Note 2: Partial RF Output Power test intended for power verification on mid channel of applicable frequency band – see section 7.1.
Note 3: Leveraged from module certification.

7 Test Result Data

7.1 RF Output Power Verification

7.1.1 Conducted Measurement according to: FCC: CFR 47 Part 2.1046; CFR Part 22.913; Part 24.232; Part 27.50; RSS-132 5.4; RSS-133 6.4; RSS-139 6.5, utilizing KDB 971168 D01 Power Meas License Digital Systems v02r02 - Section 5.2.1

Spectrum Analyzer settings for CCDF procedure for conducted output power / PAPR measurements:

- RBW ≥ OBW
- Number of counts = 10000
- Sweep time ≥ 1ms
- Record the Mean Power level
- Record the maximum PAPR level associated with a probability of 0.1%

7.1.2 Limits:

- The measured output power shall be within +0.2dB and -1dB from the modular report power.
- The power measured on the mid channel of each RF band of operation will be compared to the Max. Output Power from the modular reports as indicated in the table below:

RF Band	Test Lab	Report Number	Report Date
GSM/GPRS 850	A Test Lab Techno Corp.	1112FR12-02	2/3/2012
GSM/GPRS 1900	A Test Lab Techno Corp.	1112FR12-02	2/3/2012
WCDMA II	A Test Lab Techno Corp.	1112FR12-02	2/3/2012
WCDMA IV	A Test Lab Techno Corp.	1201FR11-02	2/3/2012
WCDMA V	A Test Lab Techno Corp.	1112FR12-02	2/3/2012

7.1.3 Test conditions and setup:

Ambient Temperature (C)	EUT Set-Up #	EUT operating mode	Power Input	Measurement Path Correction (dB)
22	2	GSM 850 / 1900 FDD II / FDD IV / FDD V	120V AC	20 up to 1GHz 20.8 up to 2 GHz

Note 1: Measurement Path accounts for the attenuation of the temporary affixed RF connector to the module output

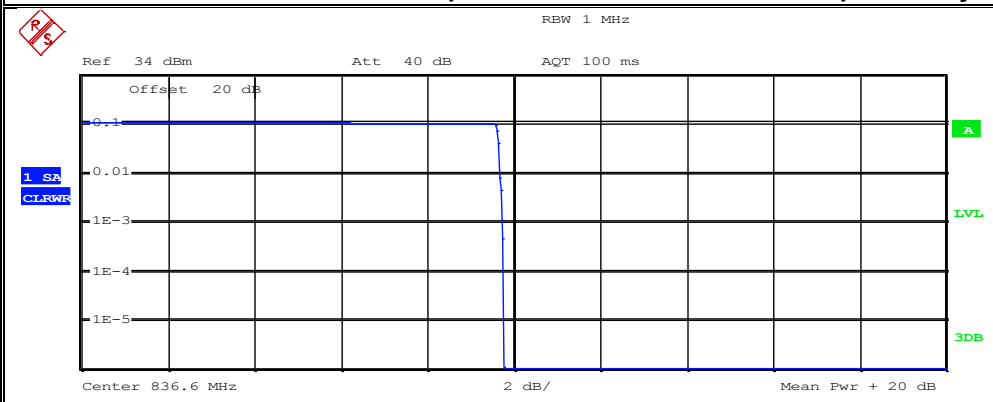
7.1.4 Measurement result ERP / EIRP:

Plot #	Chanel #	Frequency (MHz)	Measured Maximum AVG Conducted Output Power (dBm)	AVG Conducted Output Power From Modular Report (dBm)	Output Power Delta (dB)	Result
1	190 (GSM 850)	836.6	31.83 (See note 1)	32.40	-0.57	Pass
2	661 (GSM 1900)	1880	28.90 (See note 1)	29.40	-0.50	Pass
3	9400 (FDD II)	1880	22.69	23.57	-0.88	Pass
4	1413 (FDD IV)	1732.6	22.96	23.48	-0.52	Pass
5	4183 (FDD V)	836.6	22.94	23.61	-0.67	Pass

Note 1: Measurement results are adjusted for GSM duty cycle by adding (+9dB)

7.1.5 Measurement Plots:

Plot #1 Conducted Output Power / PAPR level at 0.1% probability

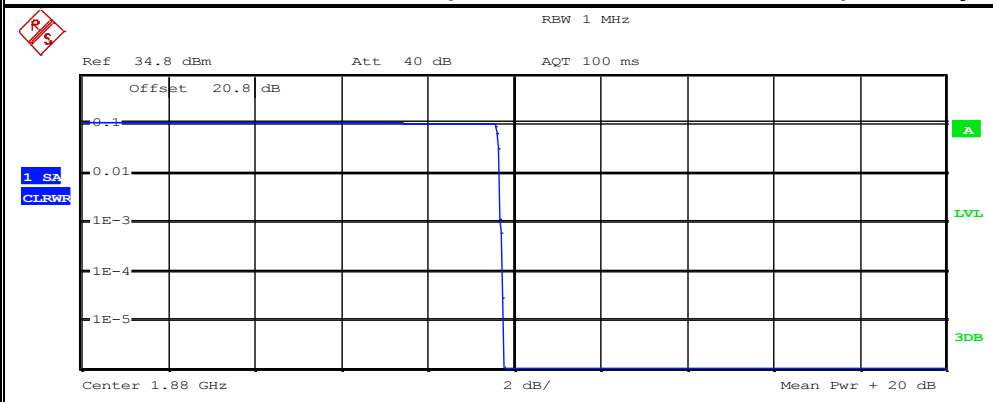


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.83 dBm
Peak	32.56 dBm
Crest	9.73 dB
10 %	9.55 dB
1 %	9.68 dB
.1 %	9.74 dB
.01 %	9.78 dB

Date: 8.MAR.2016 15:57:05

Plot #2 Conducted Output Power / PAPR level at 0.1% probability

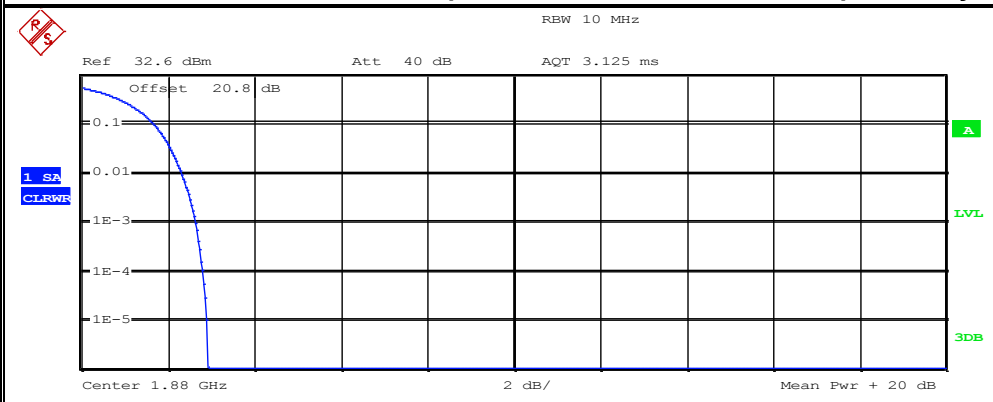


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.90 dBm
Peak	29.62 dBm
Crest	9.73 dB
10 %	9.55 dB
1 %	9.68 dB
.1 %	9.68 dB
.01 %	9.74 dB

Date: 8.MAR.2016 16:00:49

Plot #3 Conducted Output Power / PAPR level at 0.1% probability

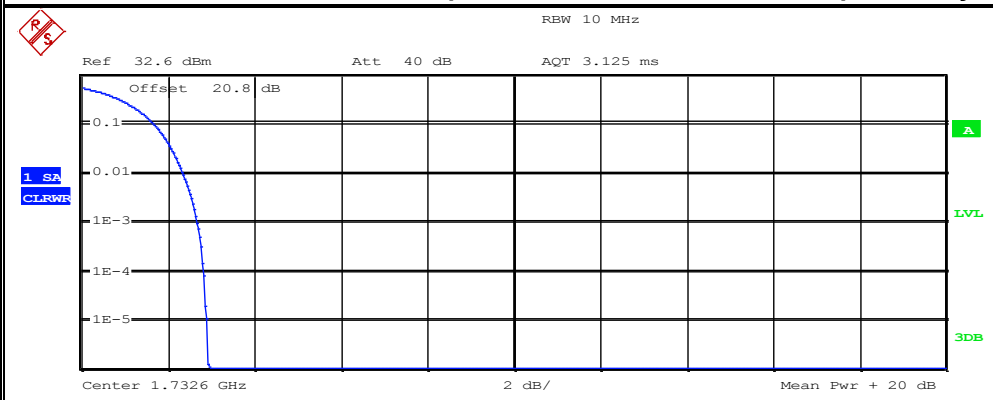


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.69 dBm
Peak	25.59 dBm
Crest	2.90 dB
10 %	1.63 dB
1 %	2.28 dB
.1 %	2.63 dB
.01 %	2.79 dB

Date: 8.MAR.2016 15:30:23

Plot #4 Conducted Output Power / PAPR level at 0.1% probability

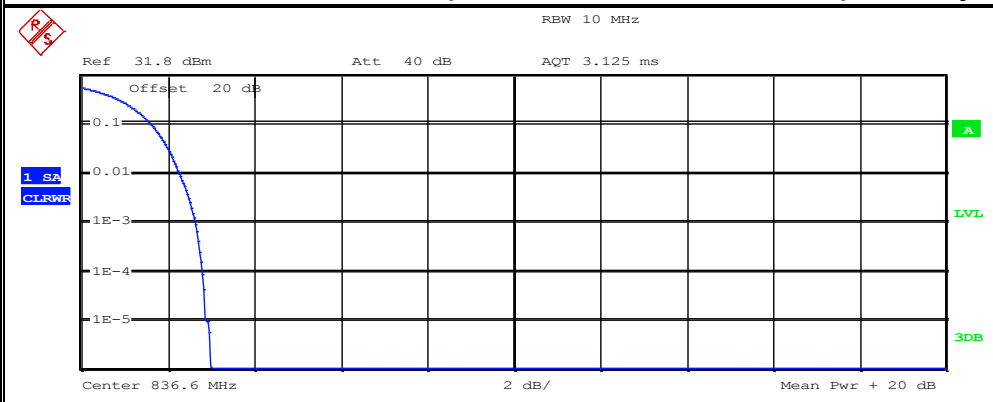


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.96 dBm
Peak	25.87 dBm
Crest	2.92 dB
10 %	1.63 dB
1 %	2.31 dB
.1 %	2.66 dB
.01 %	2.82 dB

Date: 8.MAR.2016 15:35:55

Plot #5 Conducted Output Power / PAPR level at 0.1% probability



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.94 dBm
Peak	25.92 dBm
Crest	2.98 dB
10 %	1.57 dB
1 %	2.24 dB
.1 %	2.63 dB
.01 %	2.79 dB

Date: 8.MAR.2016 15:47:50

7.2 Radiated Spurious Emissions

7.2.1 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

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 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:

7.2.2.1 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)

7.2.2.2 RSS-132 5.5; RSS-133 6.5; RSS-139 6.6

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 equipment's operating frequency block, 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 log10p (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 log10 p (watts).

7.2.3 Test conditions and setup:

Ambient Temperature (C)	EUT Set-Up #	EUT operating mode	Power Input
22	1	GSM 850 / 1900 FDD II / FDD IV / FDD V	120V AC

7.2.4 Measurement result:

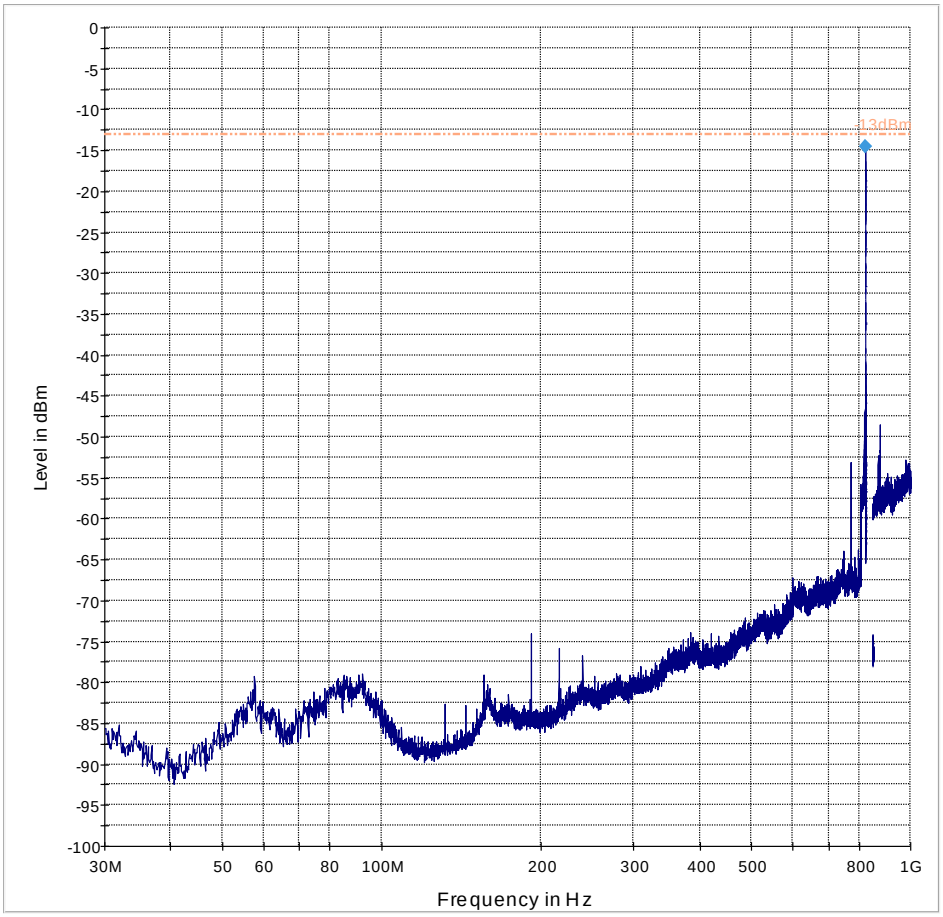
Plot #	Channel #	EUT operating mode	Scan Frequency	Limit (dBm)	Result
1-2	Low	GSM 850	30 MHz – 9 GHz	-13	Pass
3-5	Mid	GSM 850	9 kHz – 9 GHz	-13	Pass
6-7	High	GSM 850	30 MHz – 9 GHz	-13	Pass
8-10	Low	GSM 1900	30 MHz – 18 GHz	-13	Pass
11-15	Mid	GSM 1900	9 kHz – 22 GHz	-13	Pass
16-18	High	GSM 1900	30 MHz – 18 GHz	-13	Pass
19-21	Low	FDD II	30 MHz – 18 GHz	-13	Pass
22-26	Mid	FDD II	9 kHz – 22 GHz	-13	Pass
27-29	High	FDD II	30 MHz – 18 GHz	-13	Pass
30-32	Low	FDD IV	30 MHz – 18 GHz	-13	Pass
33-36	Mid	FDD IV	9 kHz – 18 GHz	-13	Pass
37-39	High	FDD IV	30 MHz – 18 GHz	-13	Pass
40-41	Low	FDD V	30 MHz – 9 GHz	-13	Pass
42-44	Mid	FDD V	9 kHz – 9 GHz	-13	Pass
45-46	High	FDD V	30 MHz – 9 GHz	-13	Pass

7.2.5 Measurement Plots:

GSM 850

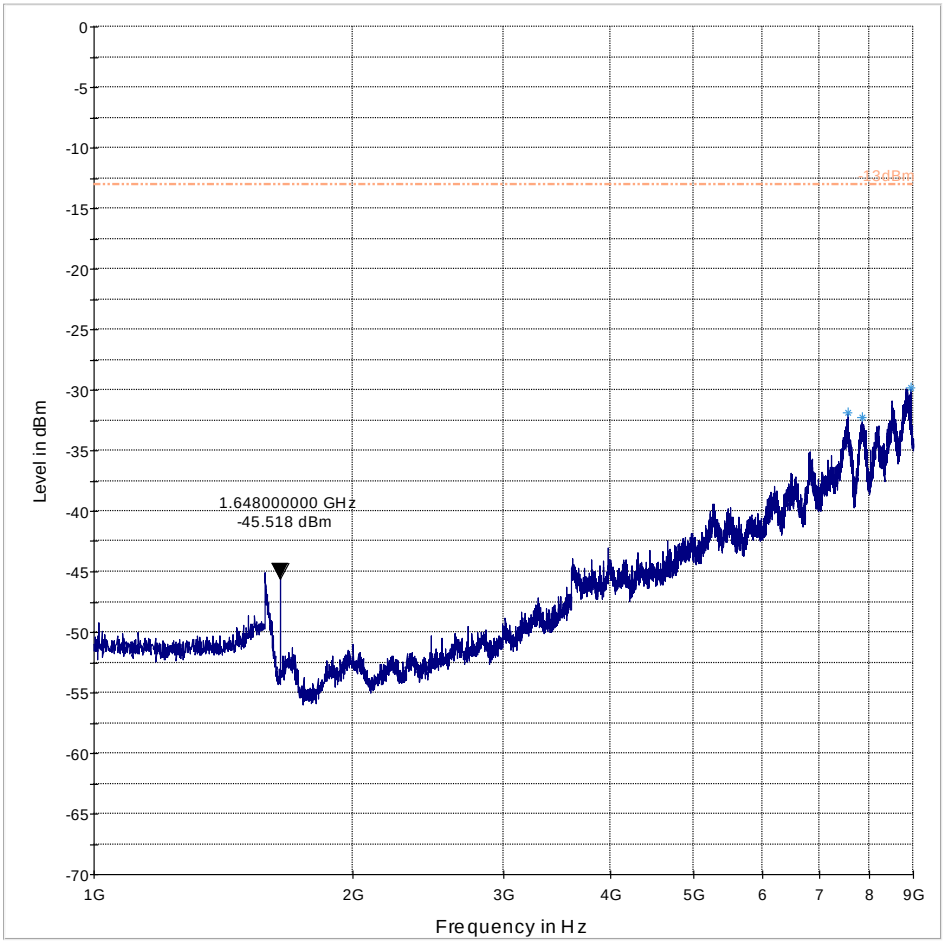
Plot #1 Radiated Emissions: 30 MHz – 1GHz

Channel: Low



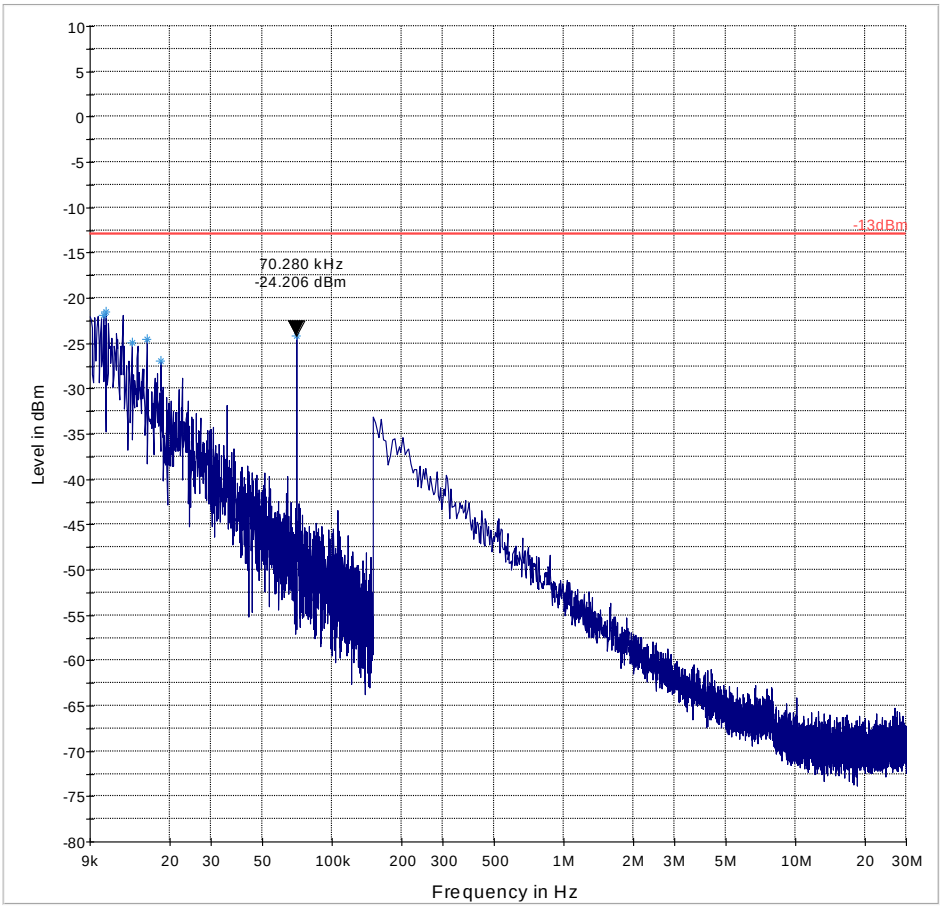
Plot # 2 Radiated Emissions: 1-9 GHz

Channel: Low



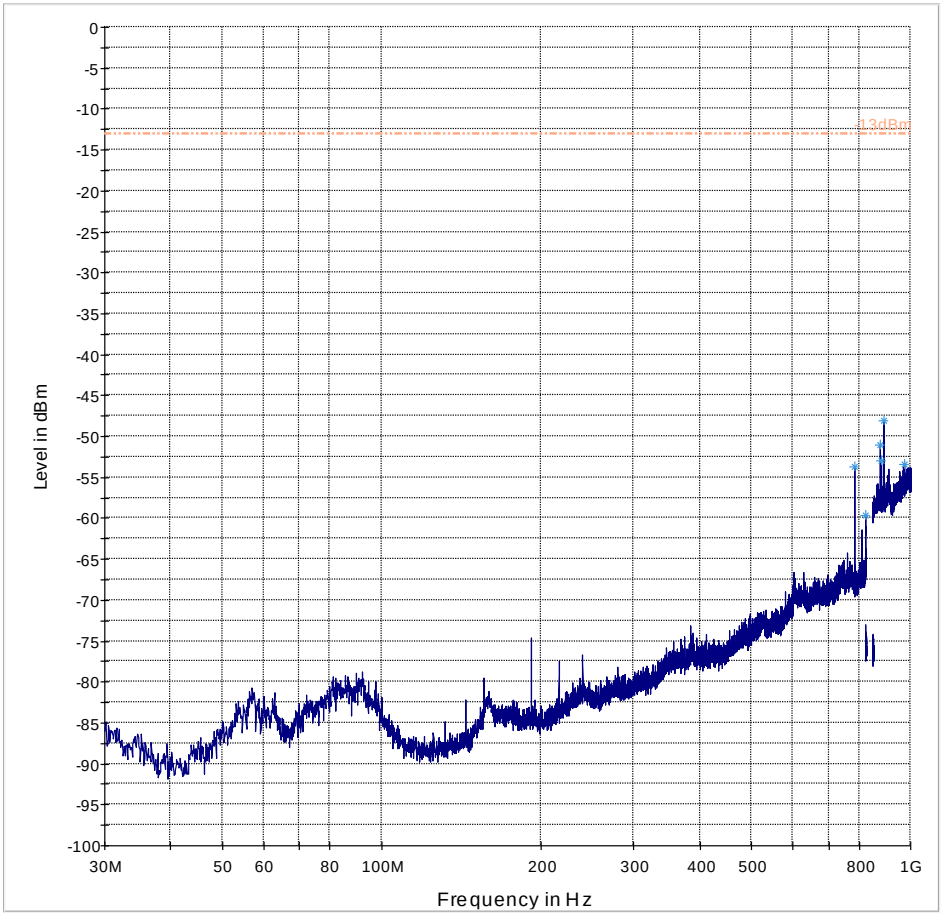
Plot # 3 Radiated Emissions: 9 kHz-30 MHz

Channel: Mid



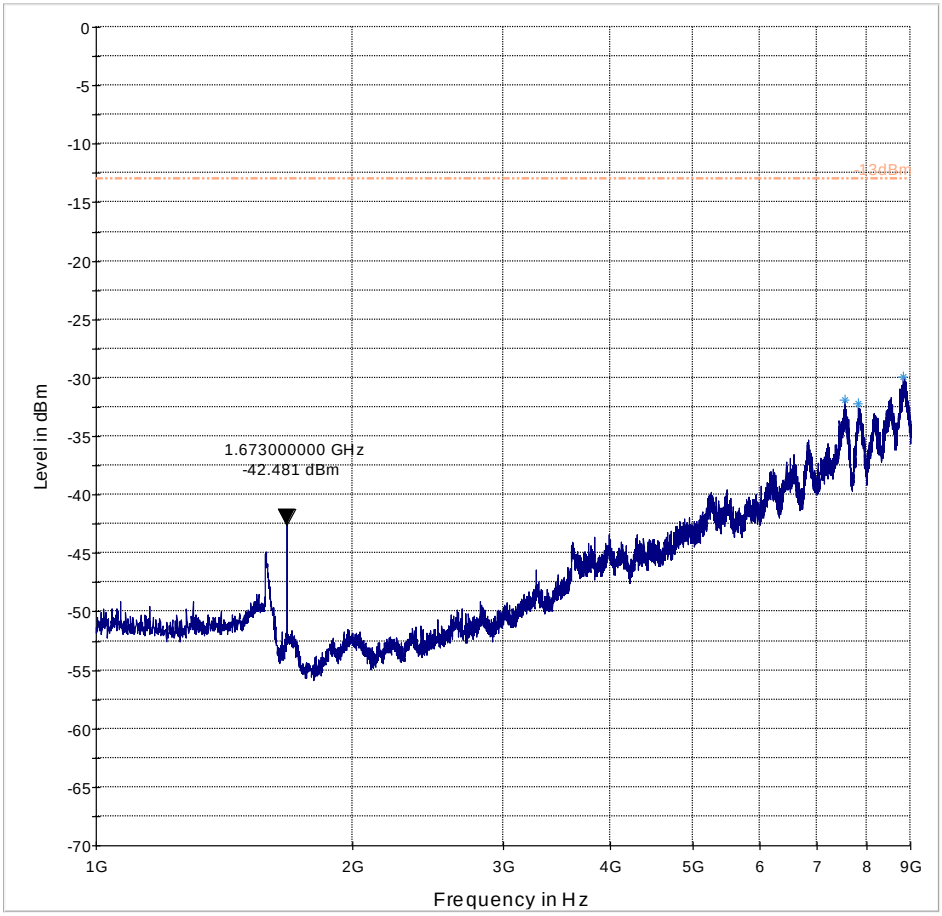
Plot #4 Radiated Emissions: 30 MHz – 1GHz

Channel: Mid



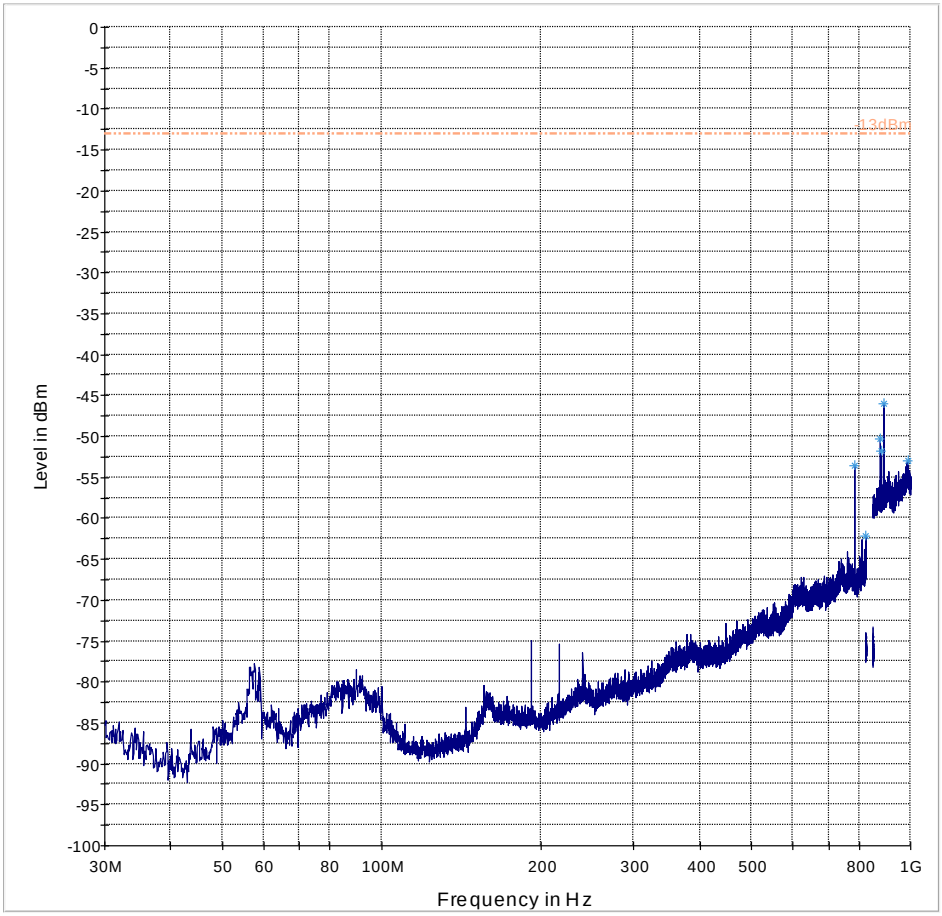
Plot #5 Radiated Emissions: 1-9 GHz

Channel: Mid



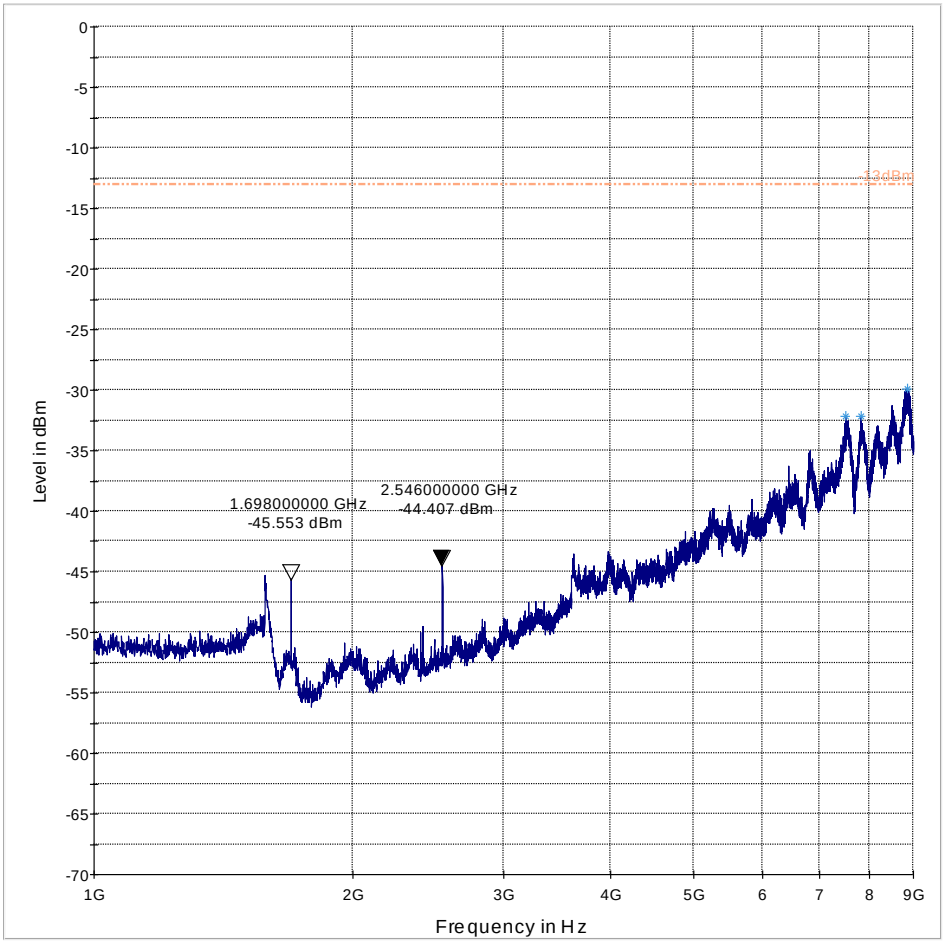
Plot #6 Radiated Emissions: 30 MHz – 1GHz

Channel: High



Plot #7 Radiated Emissions: 1-9 GHz

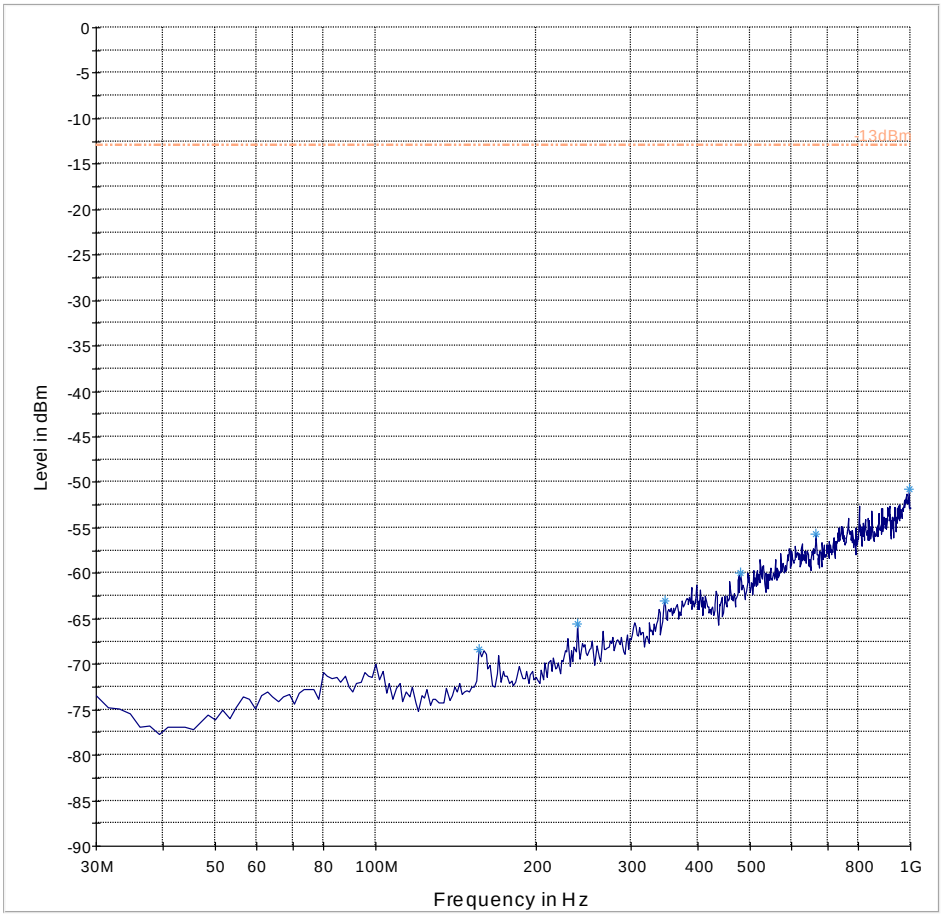
Channel: High



GSM 1900

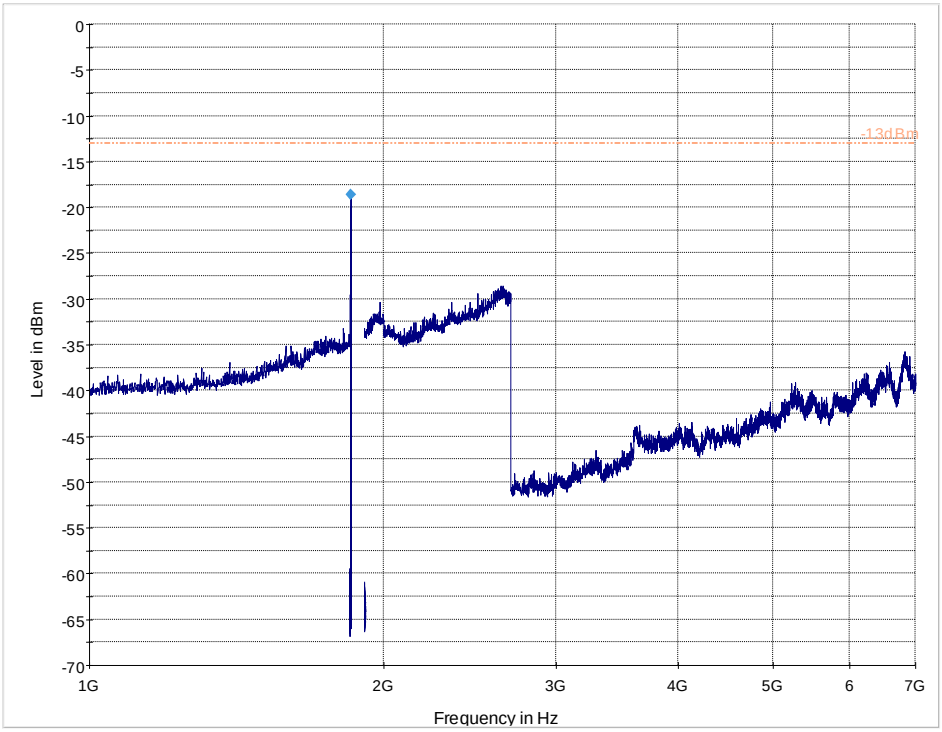
Plot #8 Radiated Emissions: 30 MHz – 1GHz

Channel: Low



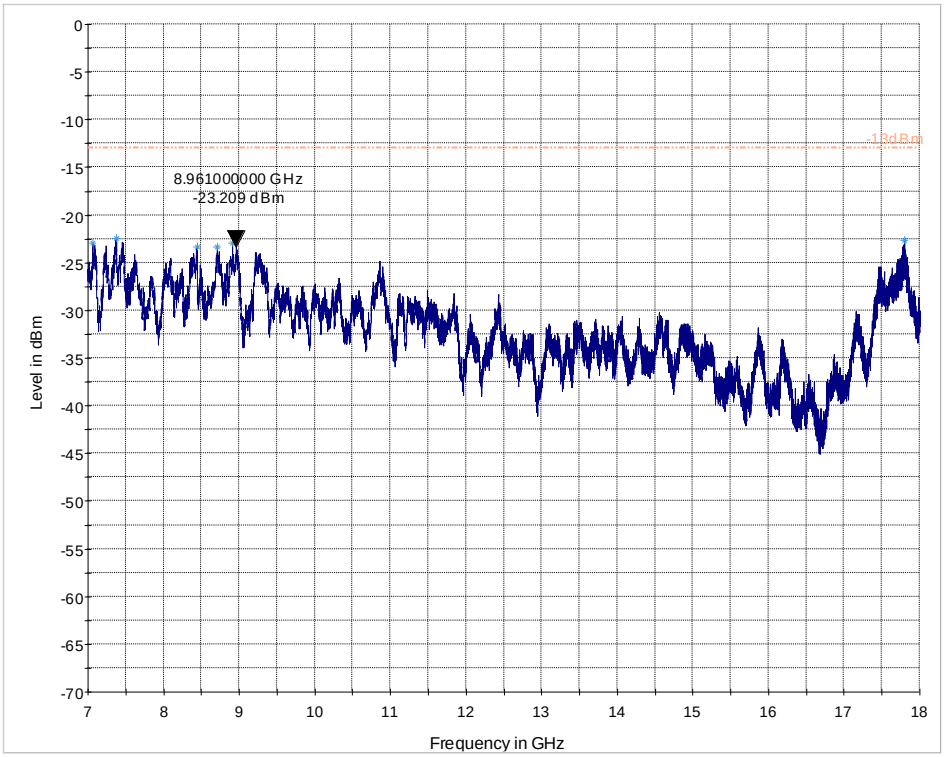
Plot # 9 Radiated Emissions: 1-7 GHz

Channel: Low



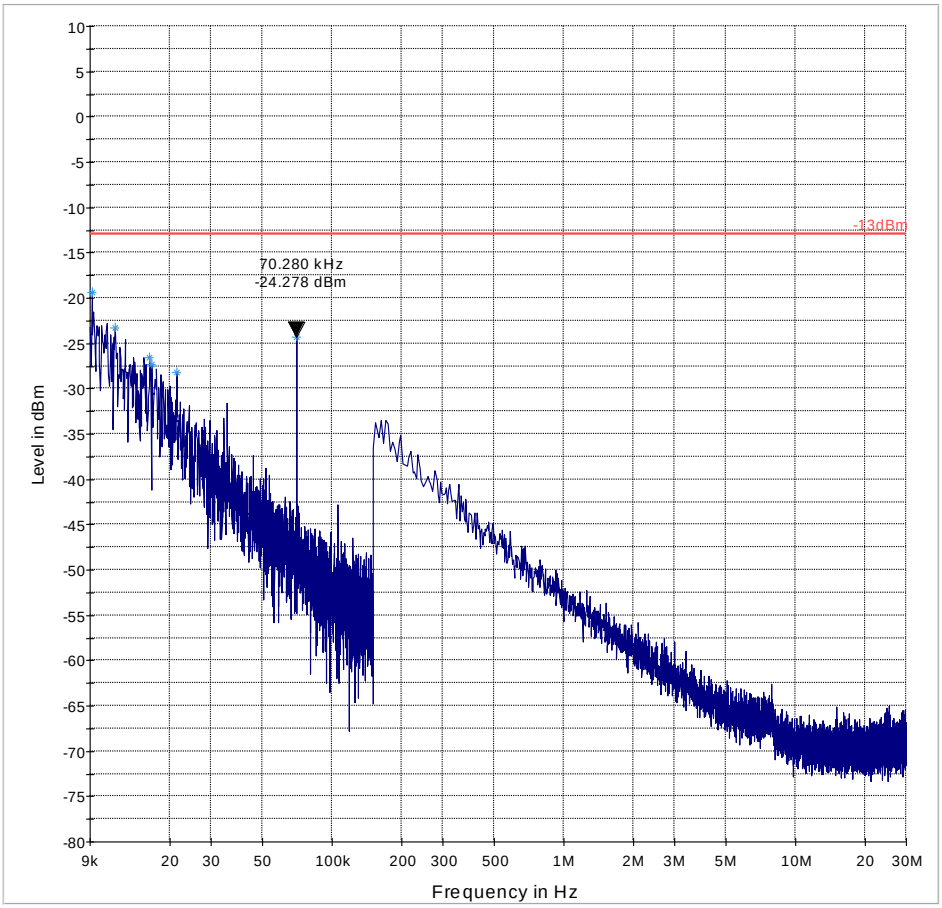
Plot # 10 Radiated Emissions: 7-18 GHz

Channel: Low



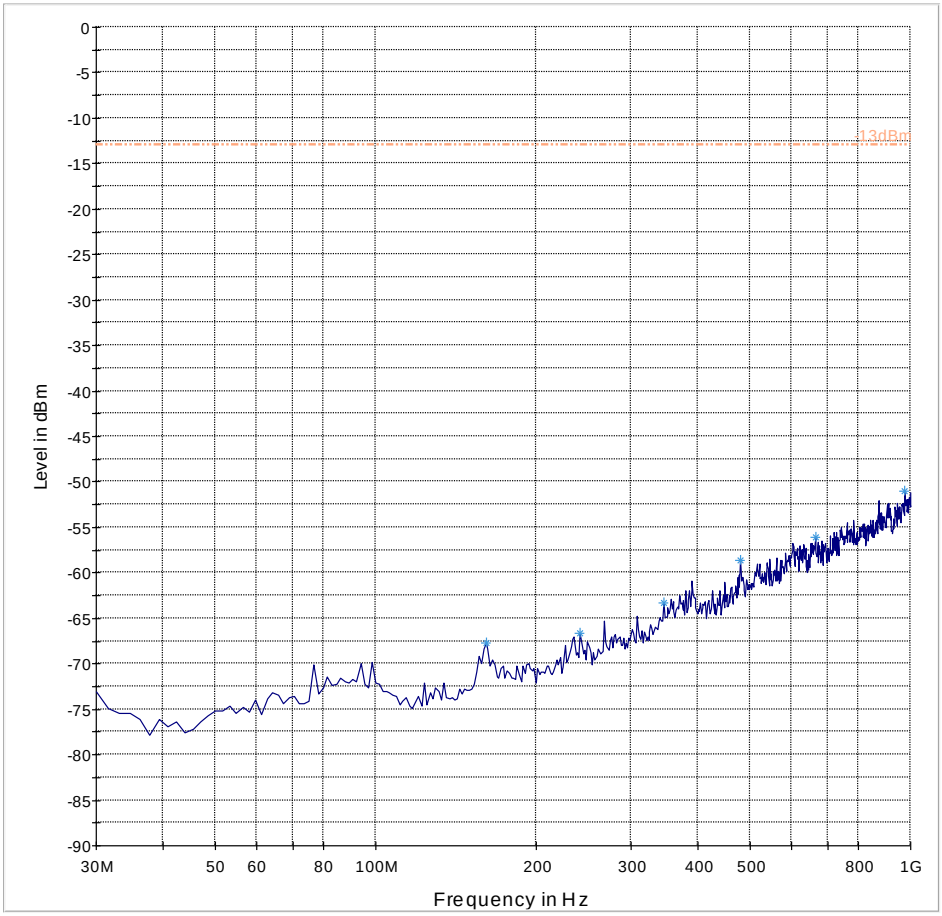
Plot # 11 Radiated Emissions: 9 kHz-30 MHz

Channel: Mid



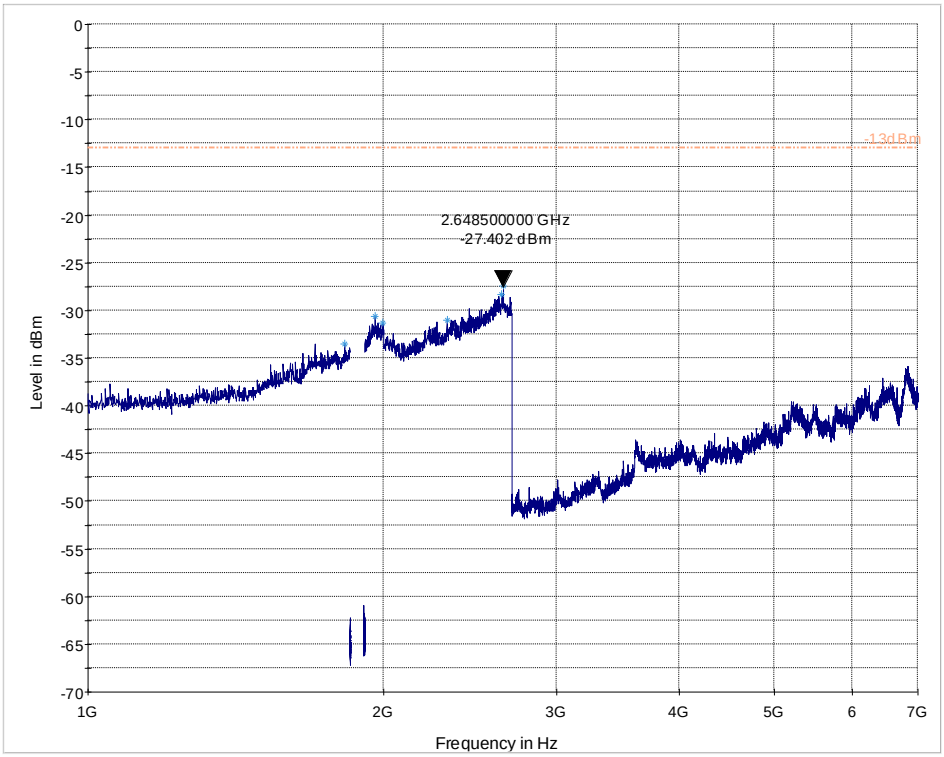
Plot #12 Radiated Emissions: 30 MHz – 1GHz

Channel: Mid



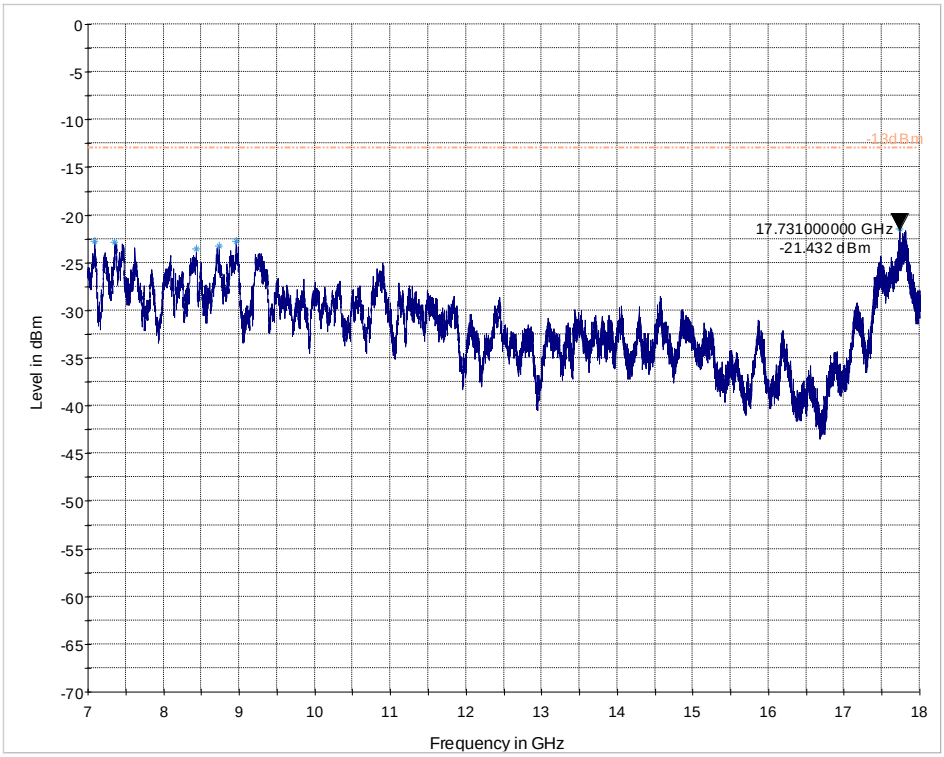
Plot #13 Radiated Emissions: 1-7 GHz

Channel: Mid



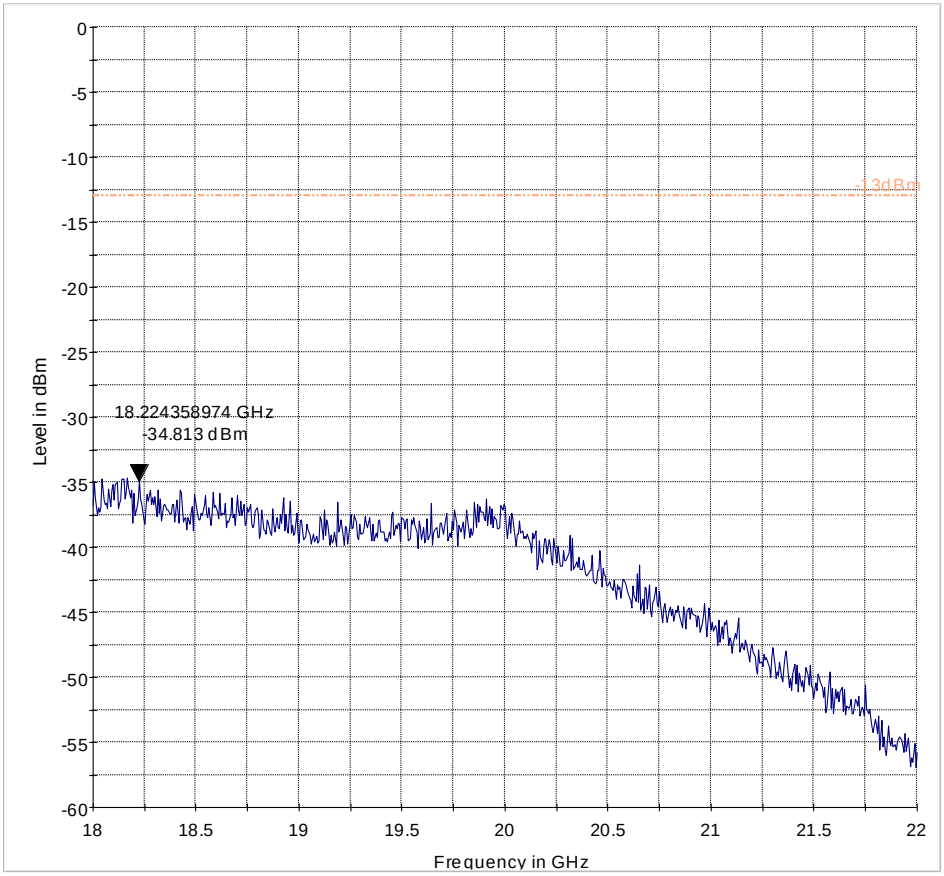
Plot #14 Radiated Emissions: 7-18 GHz

Channel: Mid



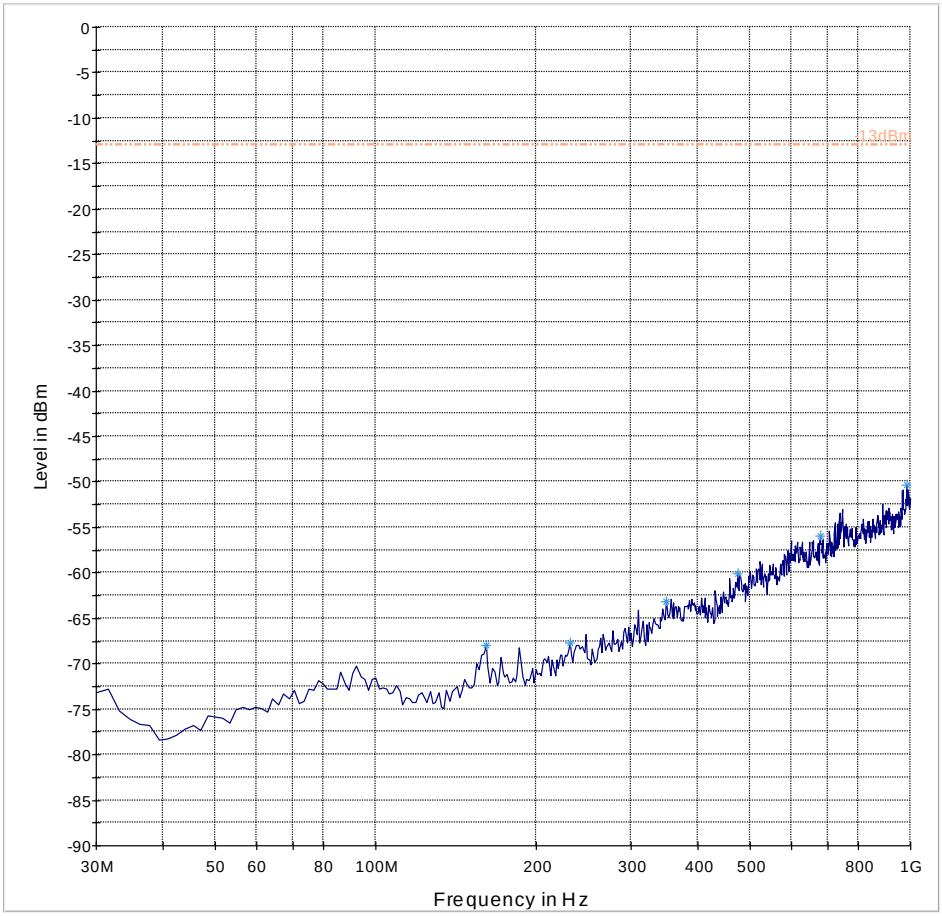
Plot #15 Radiated Emissions: 18-24 GHz

Channel: Mid



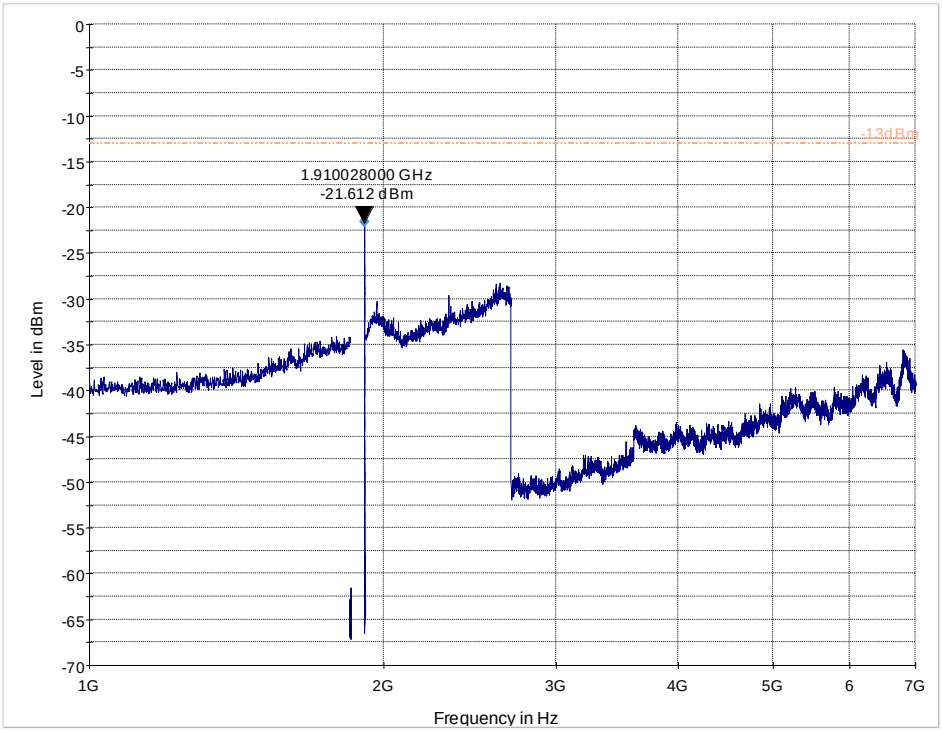
Plot #16 Radiated Emissions: 30 MHz – 1GHz

Channel: High



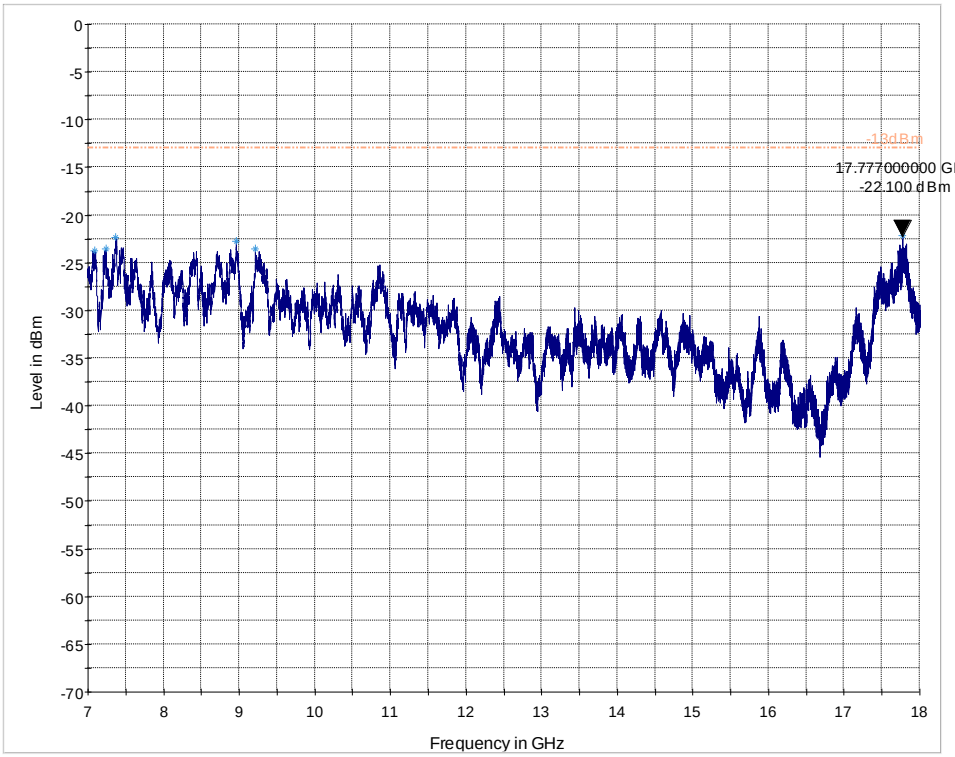
Plot #17 Radiated Emissions: 1-7 GHz

Channel: High



Plot #18 Radiated Emissions: 7-18 GHz

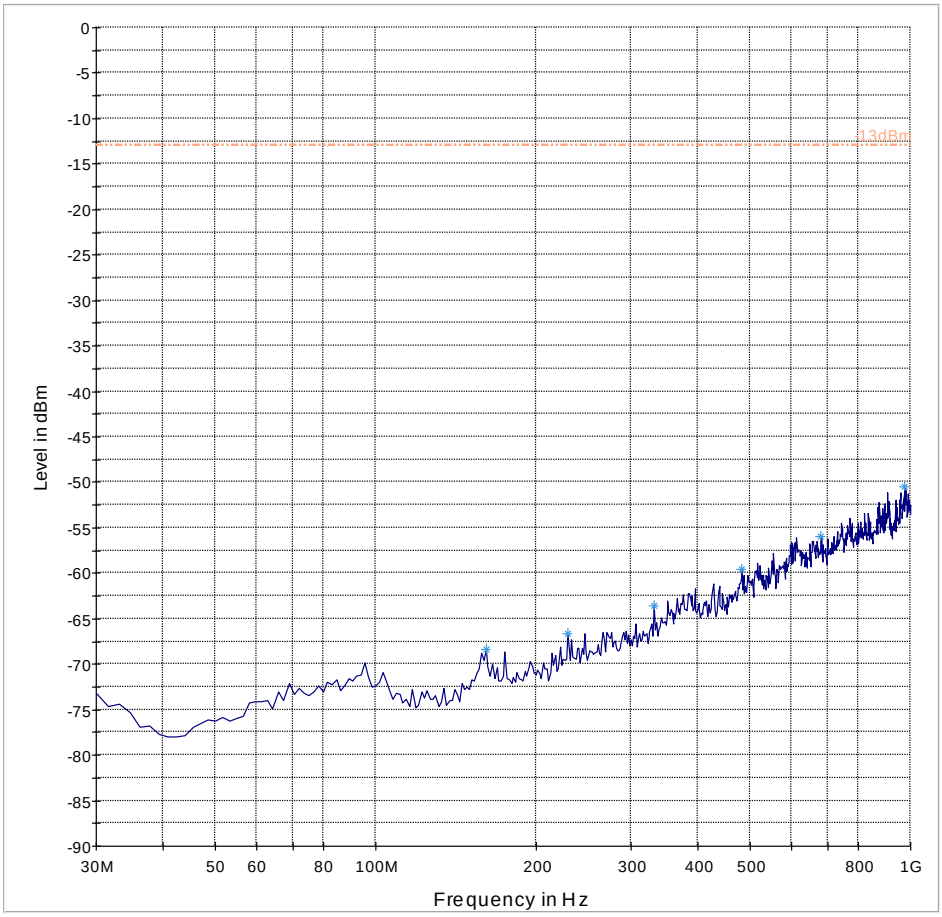
Channel: High



FDD II

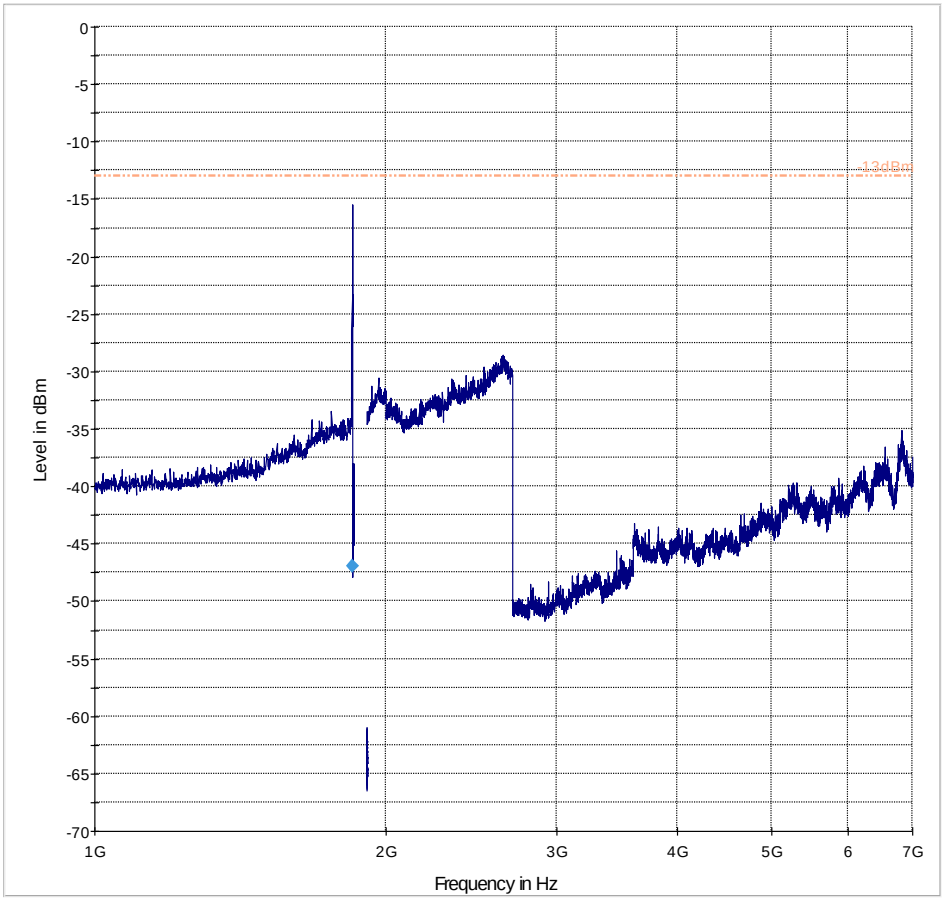
Plot #19 Radiated Emissions: 30 MHz – 1GHz

Channel: Low



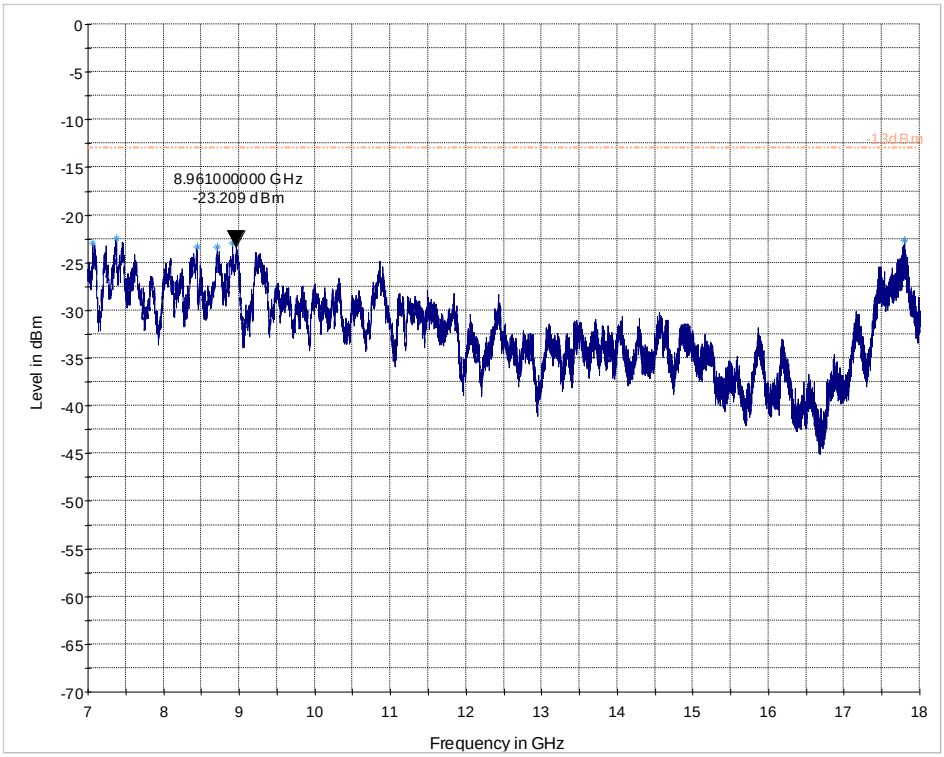
Plot # 20 Radiated Emissions: 1-7 GHz

Channel: Low



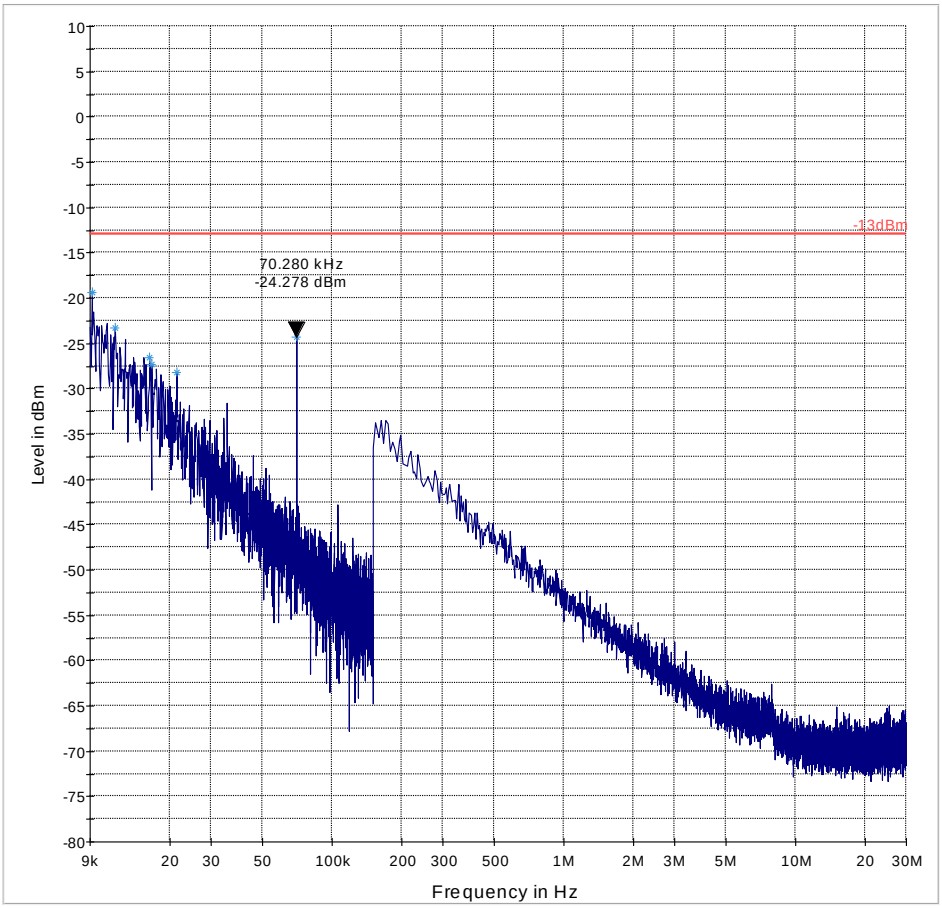
Plot # 21 Radiated Emissions: 7-18 GHz

Channel: Low



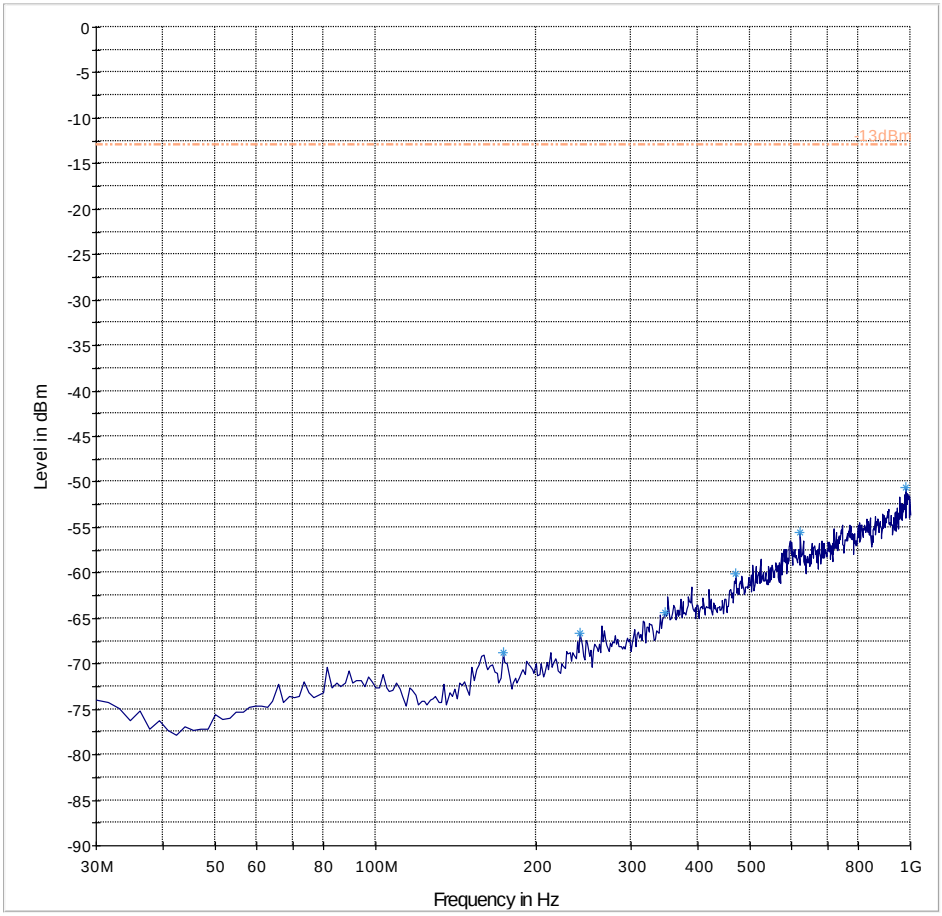
Plot # 22 Radiated Emissions: 9 kHz-30 MHz

Channel: Mid



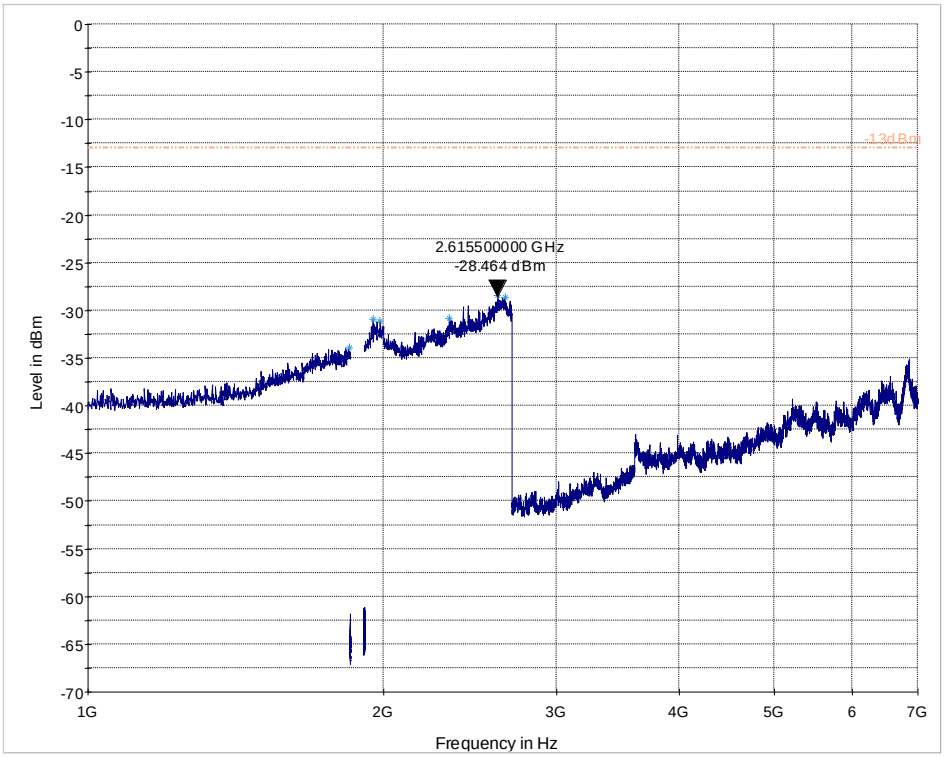
Plot #23 Radiated Emissions: 30 MHz – 1GHz

Channel: Mid



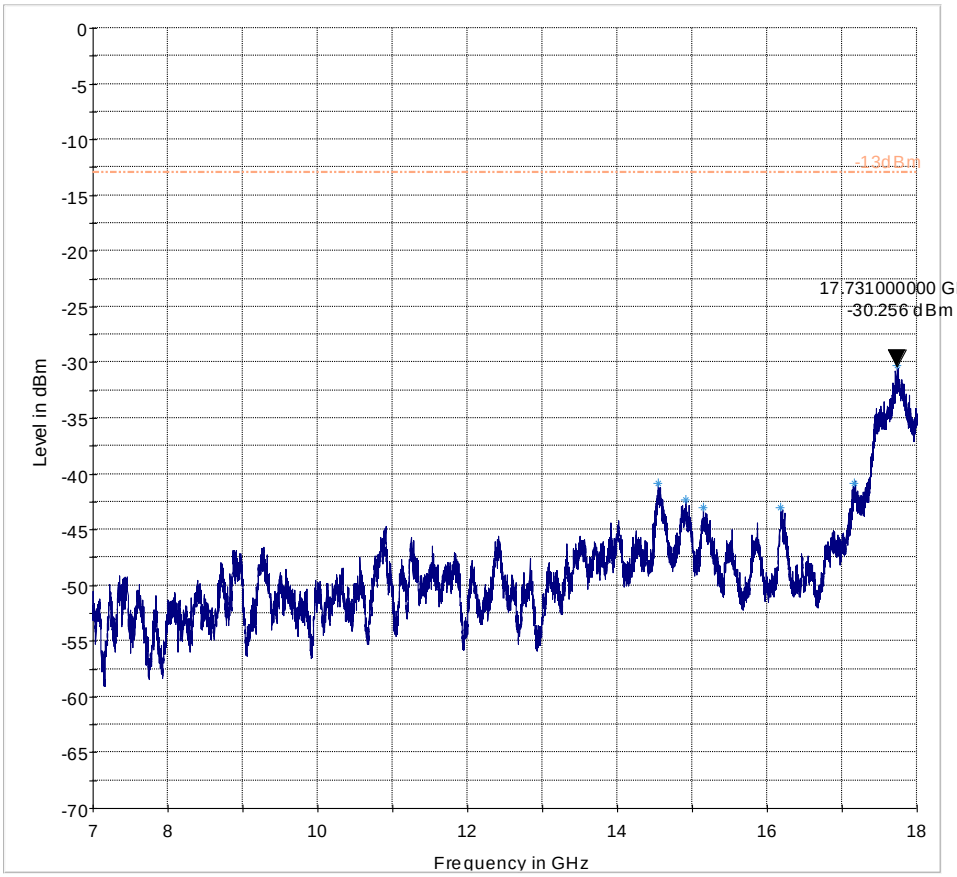
Plot #24 Radiated Emissions: 1-7 GHz

Channel: Mid



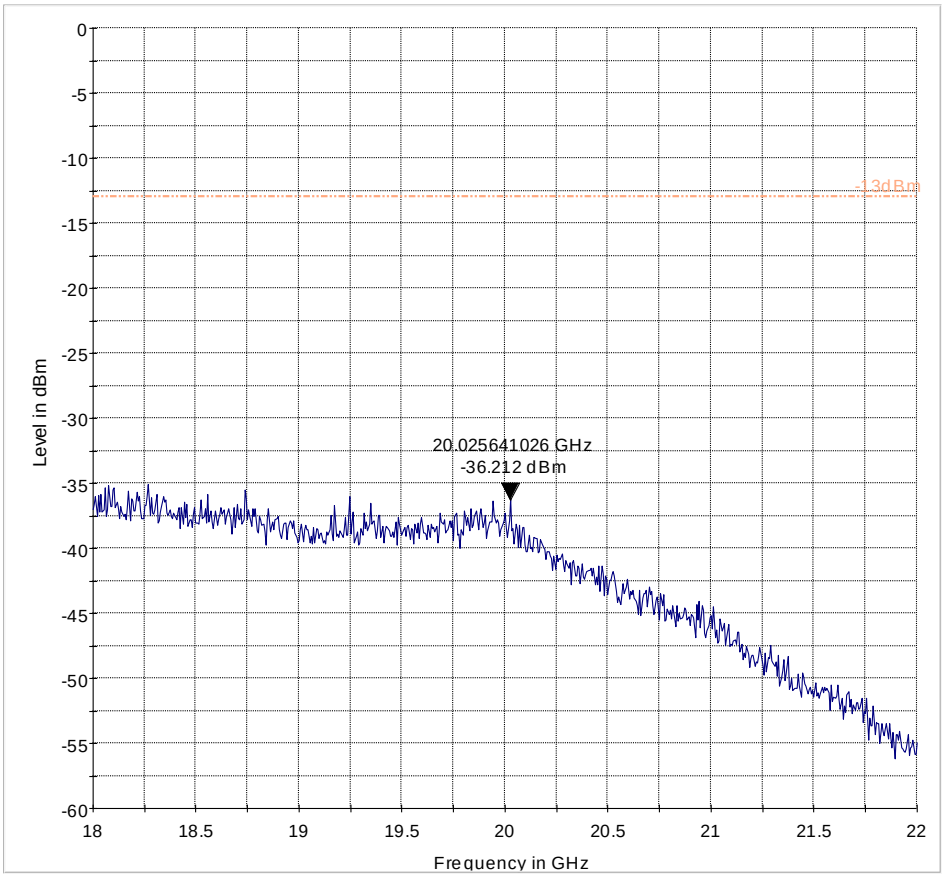
Plot #25 Radiated Emissions: 7-18 GHz

Channel: Mid



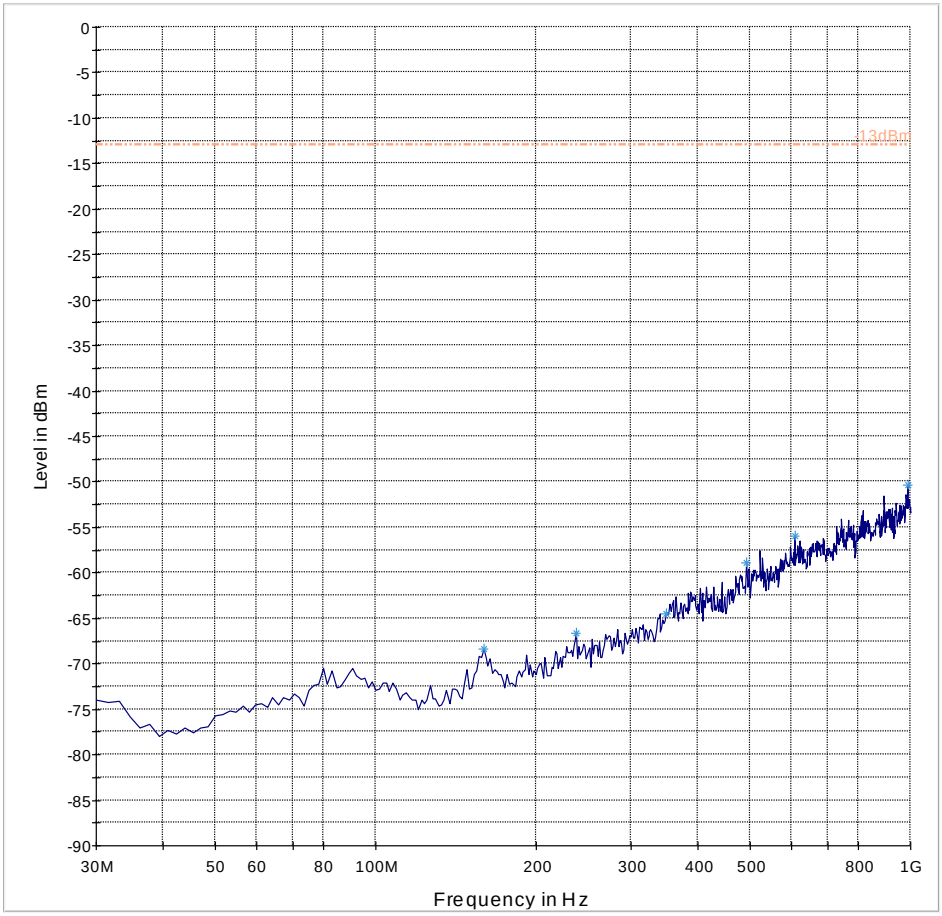
Plot #26 Radiated Emissions: 18-24 GHz

Channel: Mid



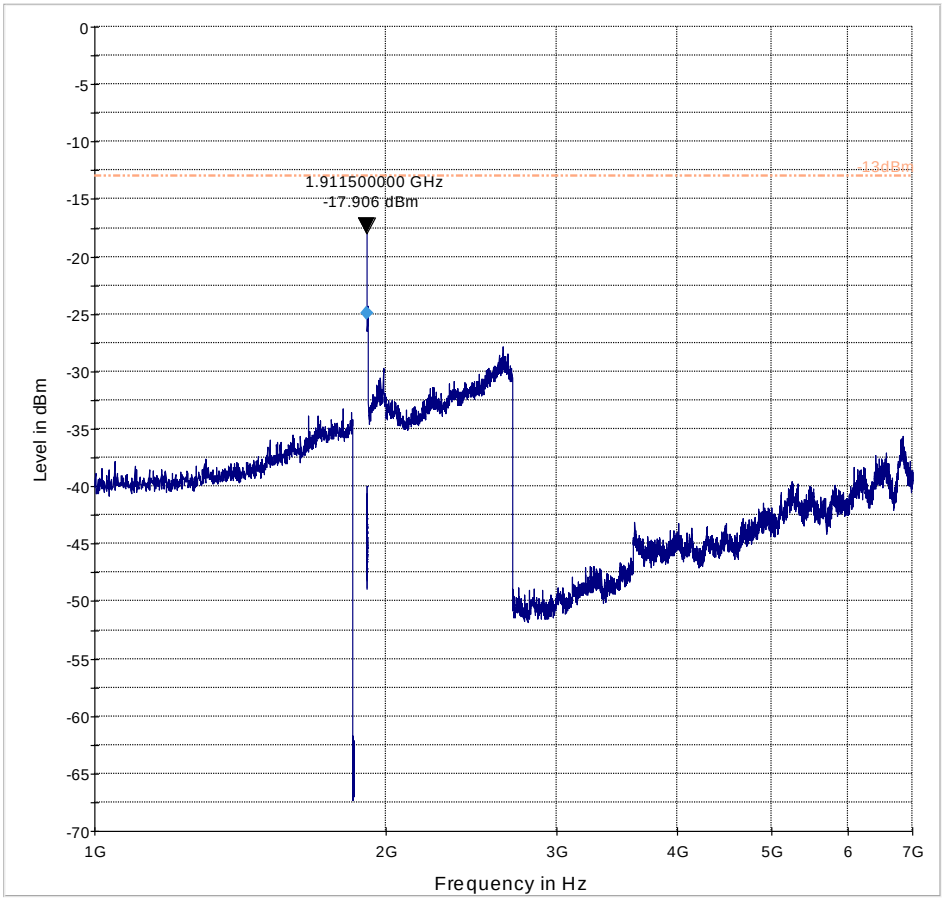
Plot #27 Radiated Emissions: 30 MHz – 1GHz

Channel: High



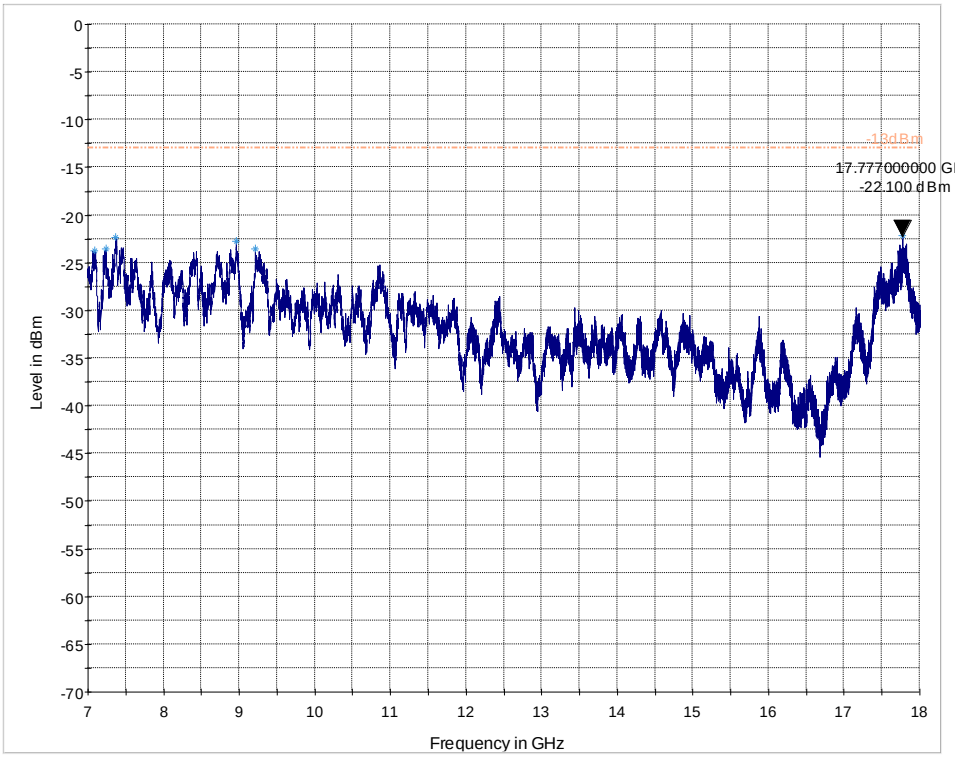
Plot #28 Radiated Emissions: 1-7 GHz

Channel: High



Plot #29 Radiated Emissions: 7-18 GHz

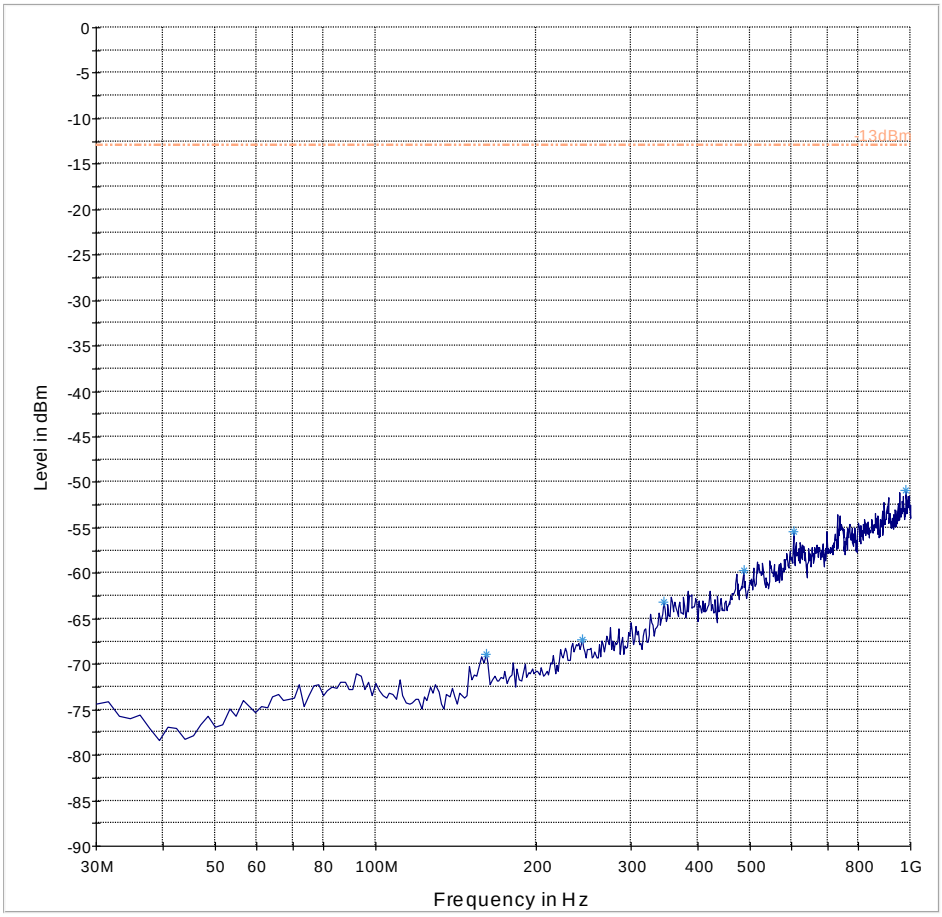
Channel: High



FDD IV

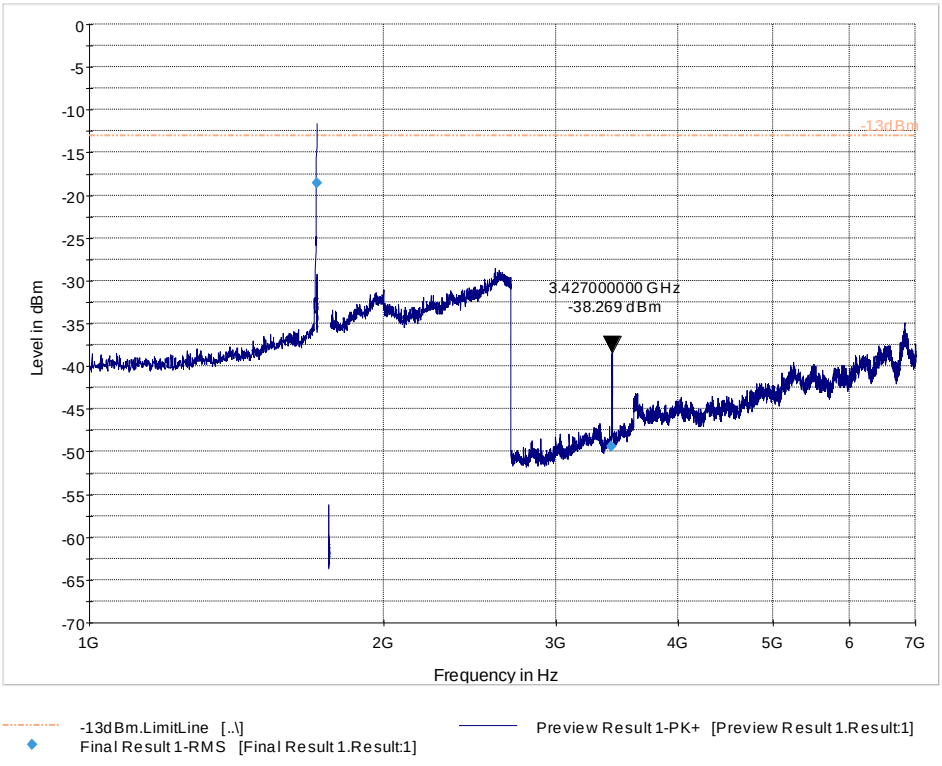
Plot #30 Radiated Emissions: 30 MHz – 1GHz

Channel: Low



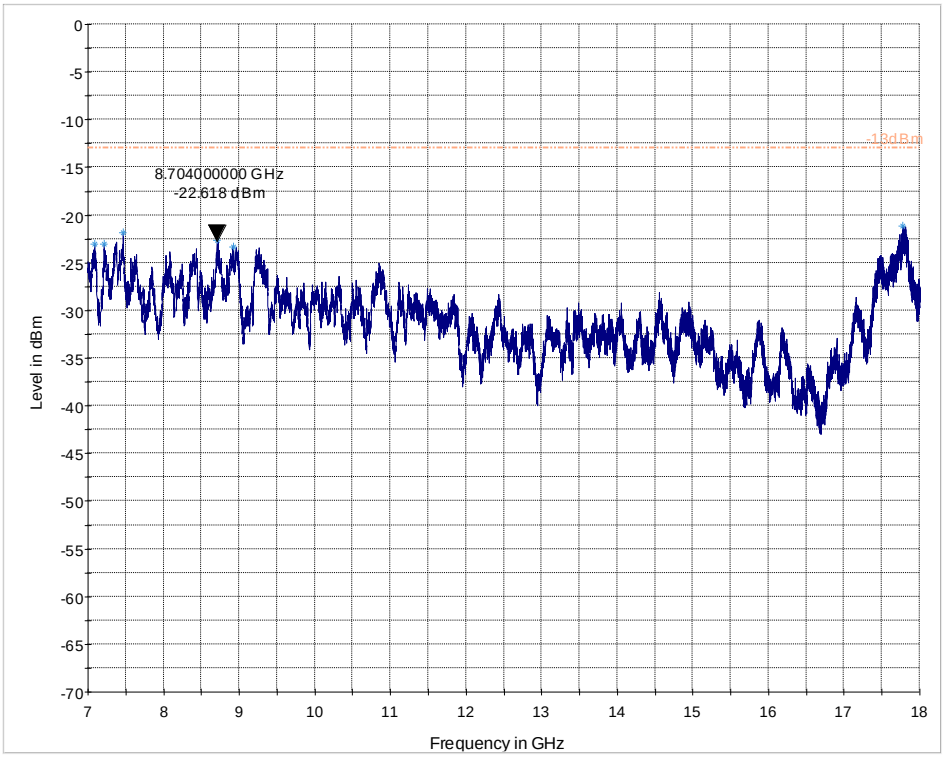
Plot # 31 Radiated Emissions: 1-7 GHz

Channel: Low



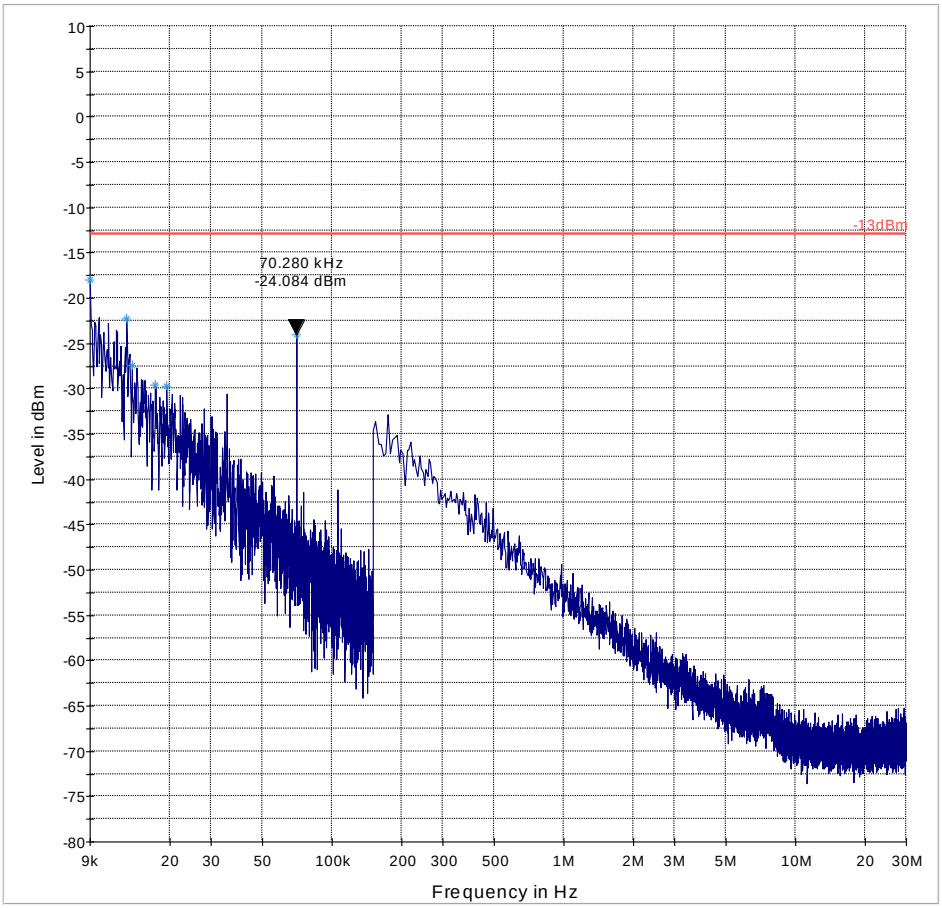
Plot # 32 Radiated Emissions: 7-18 GHz

Channel: Low



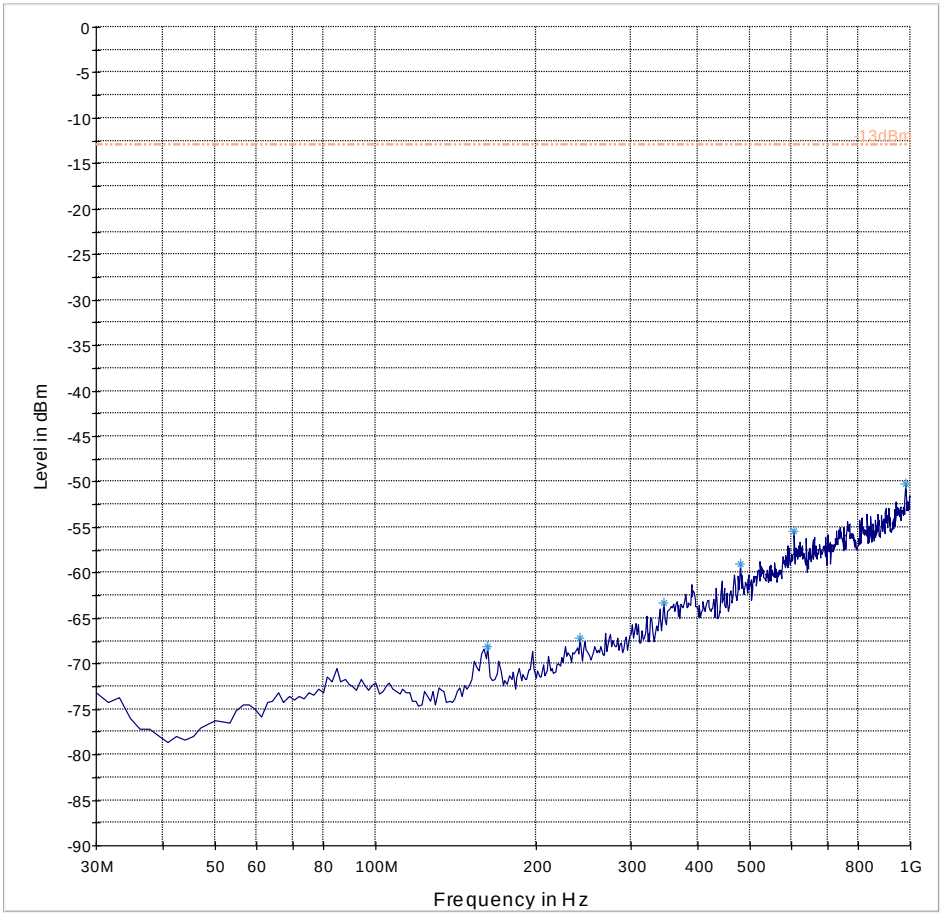
Plot # 33 Radiated Emissions: 9 kHz-30 MHz

Channel: Mid



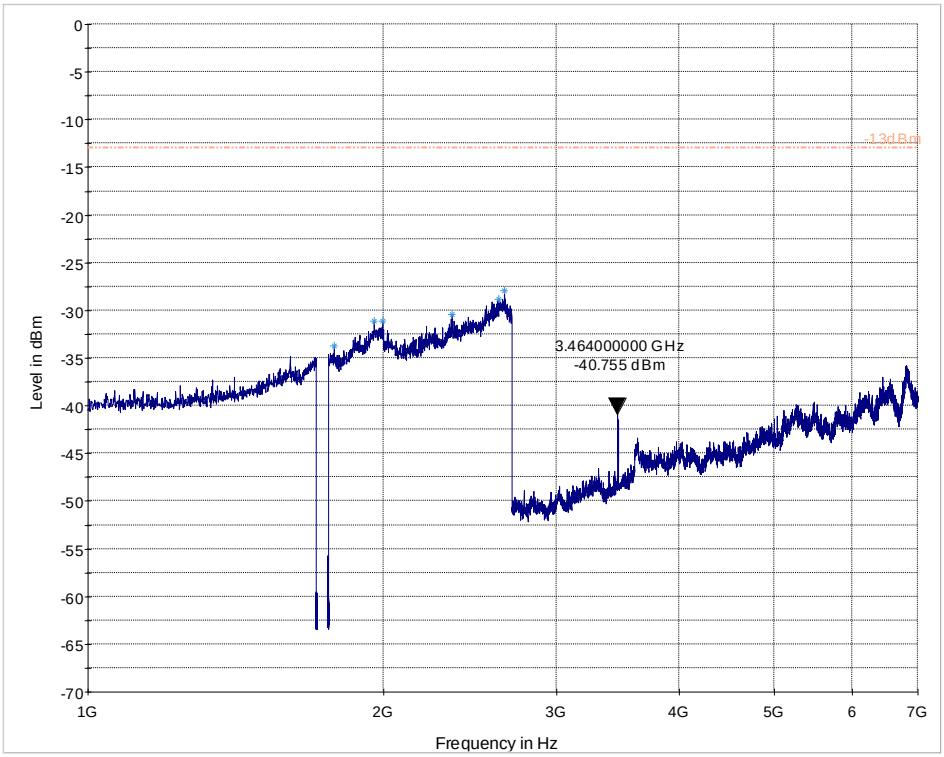
Plot #34 Radiated Emissions: 30 MHz – 1GHz

Channel: Mid



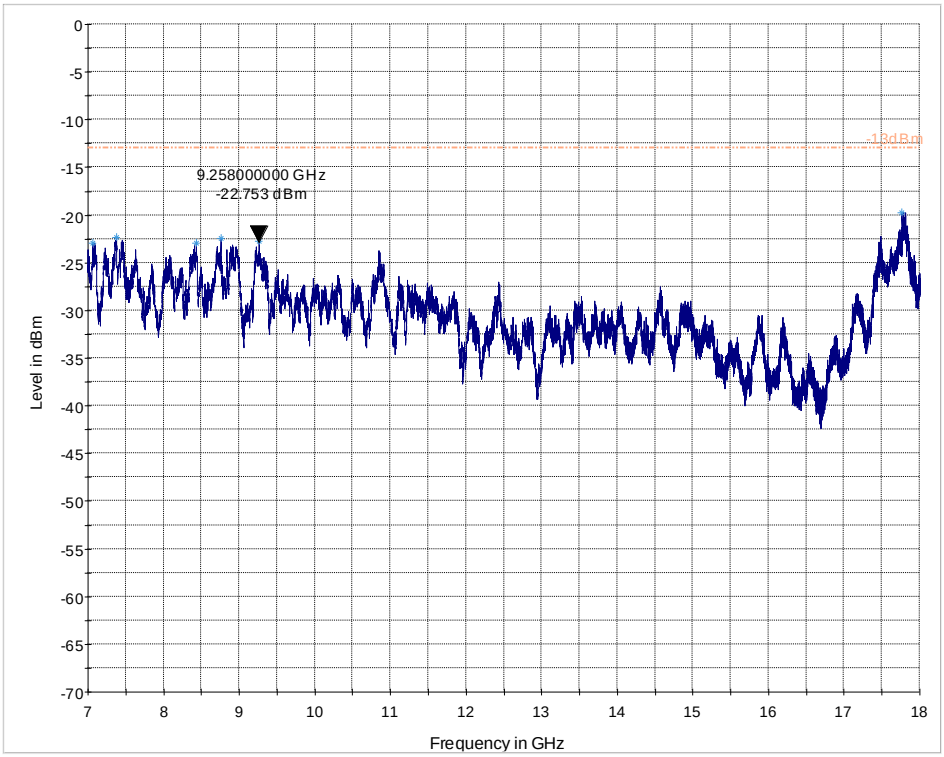
Plot #35 Radiated Emissions: 1-7 GHz

Channel: Mid



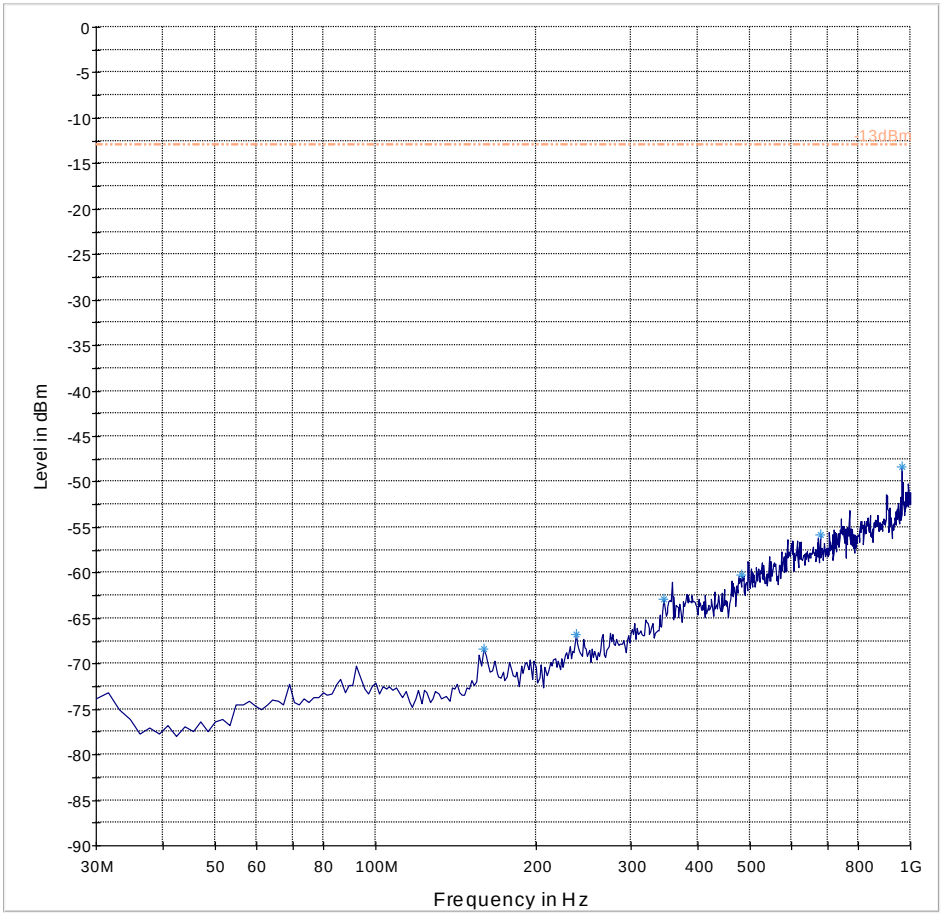
Plot #36 Radiated Emissions: 7-18 GHz

Channel: Mid



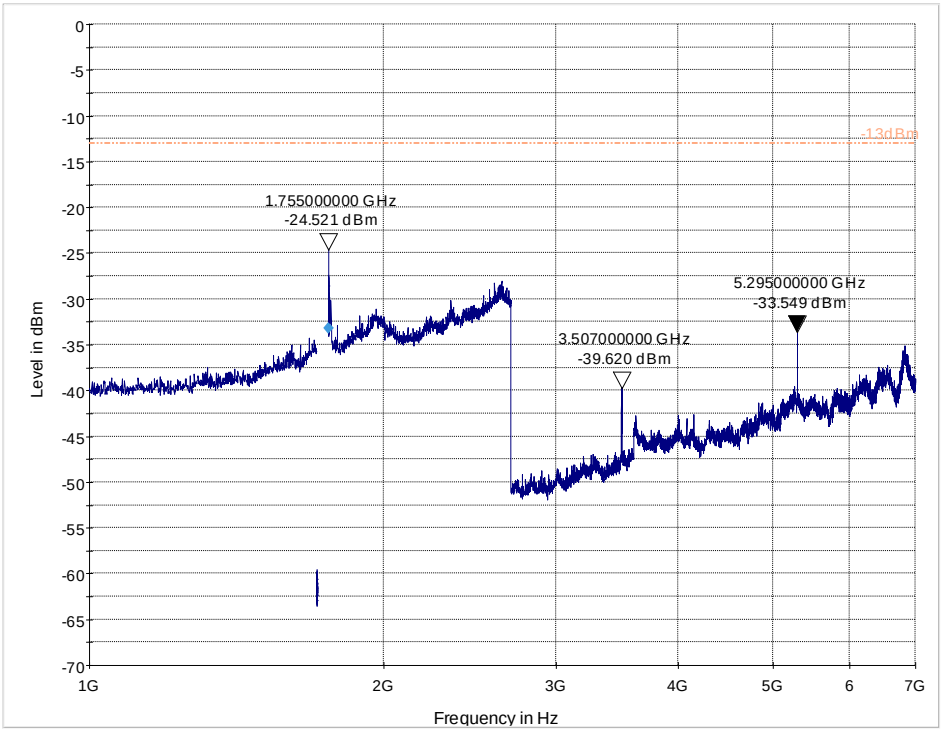
Plot #37 Radiated Emissions: 30 MHz – 1GHz

Channel: High



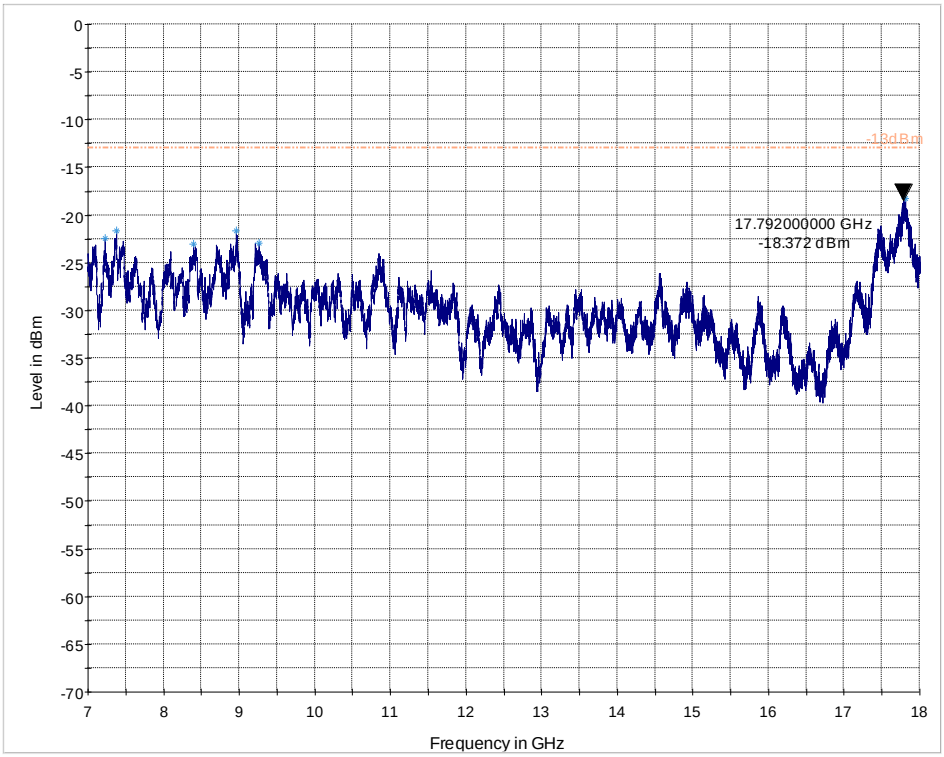
Plot #38 Radiated Emissions: 1-7 GHz

Channel: High



Plot #39 Radiated Emissions: 7-18 GHz

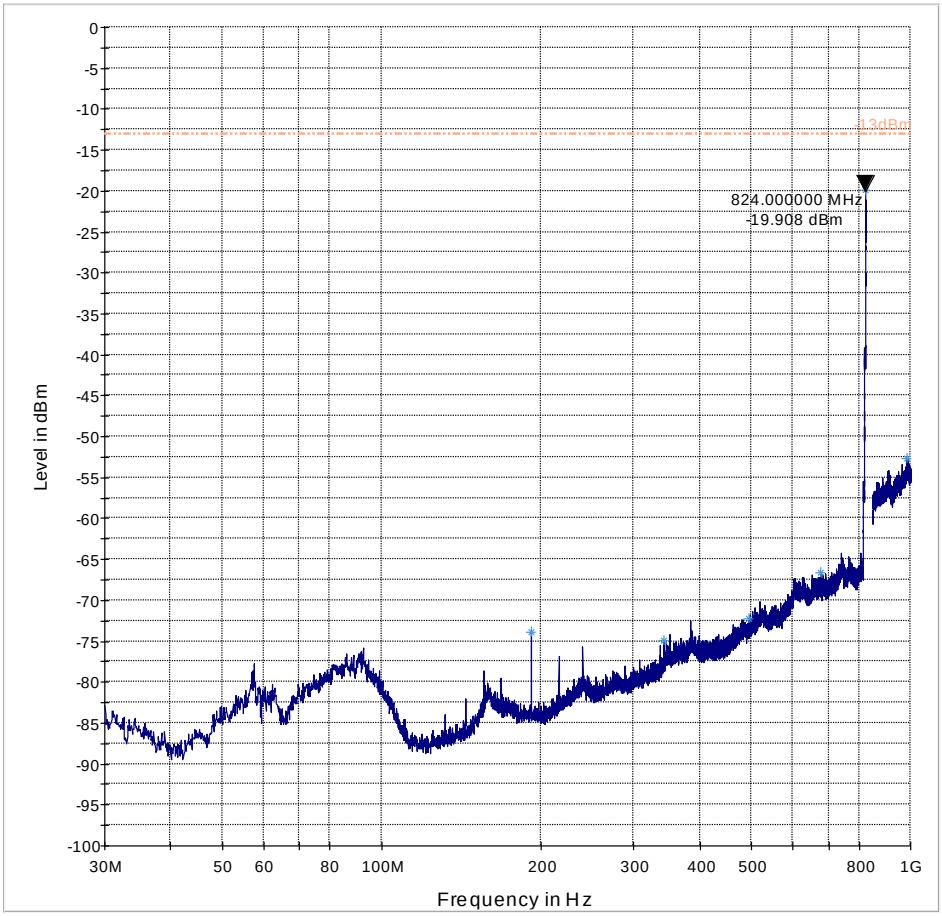
Channel: High



FDD V

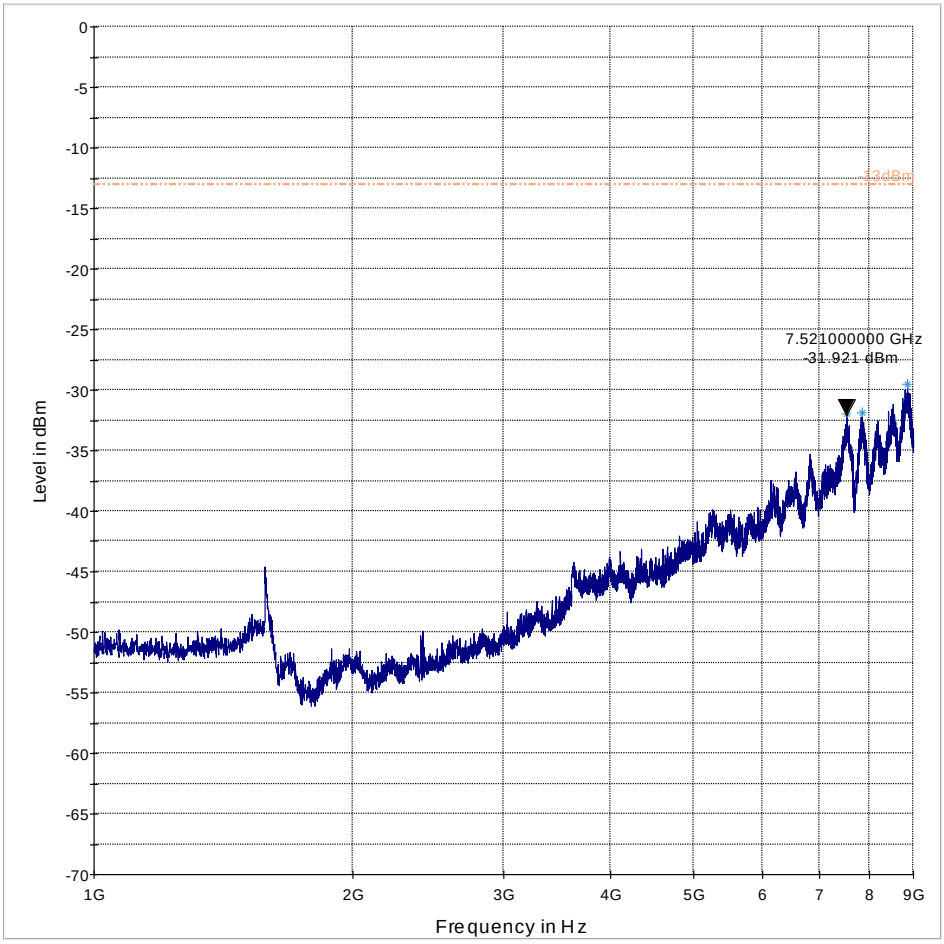
Plot #40 Radiated Emissions: 30 MHz – 1GHz

Channel: Low



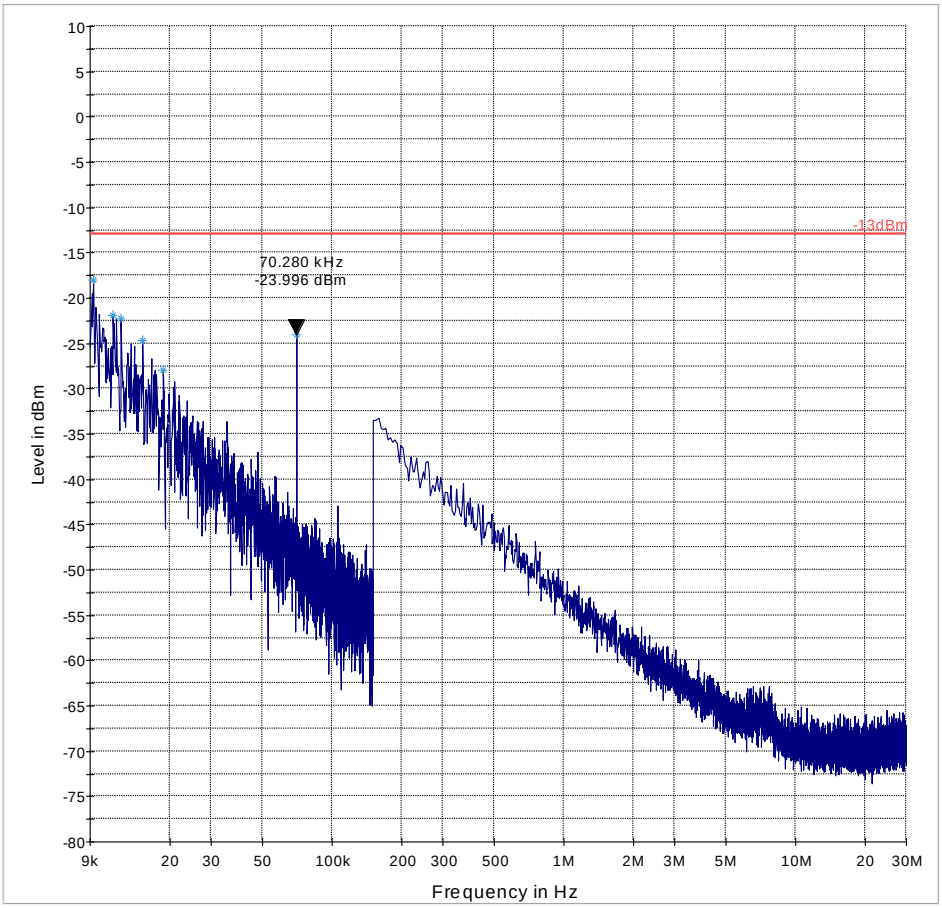
Plot # 41 Radiated Emissions: 1-9 GHz

Channel: Low



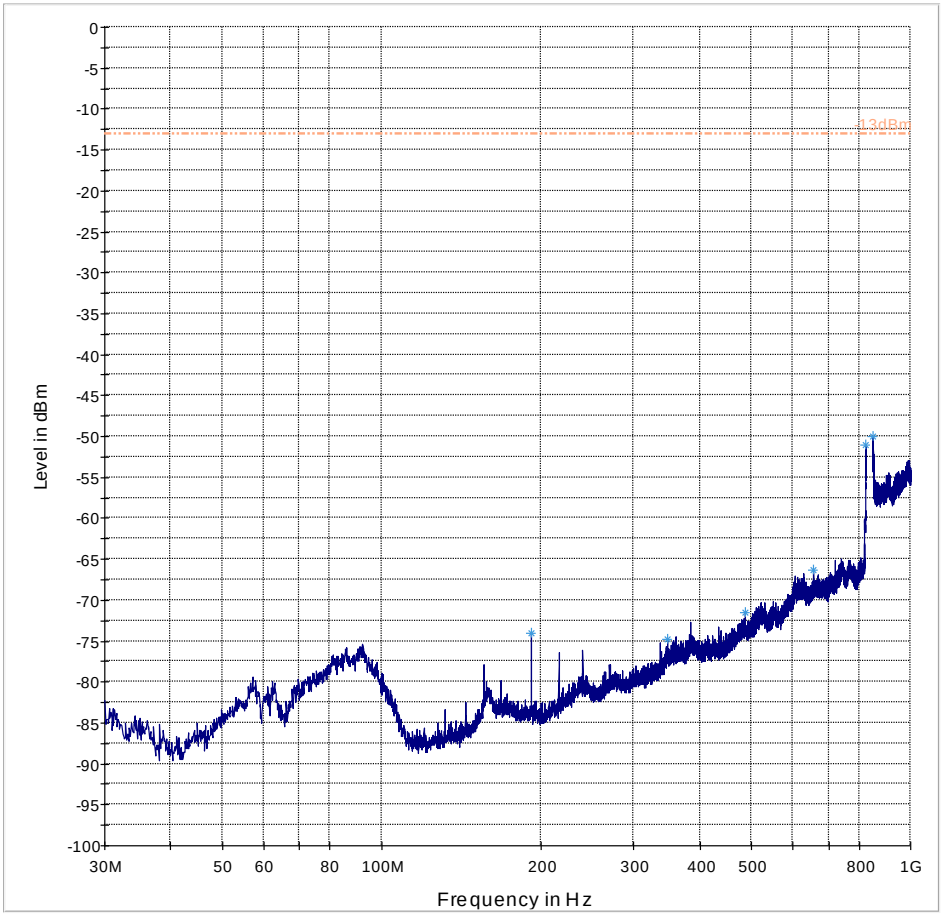
Plot # 42 Radiated Emissions: 9 kHz-30 MHz

Channel: Mid



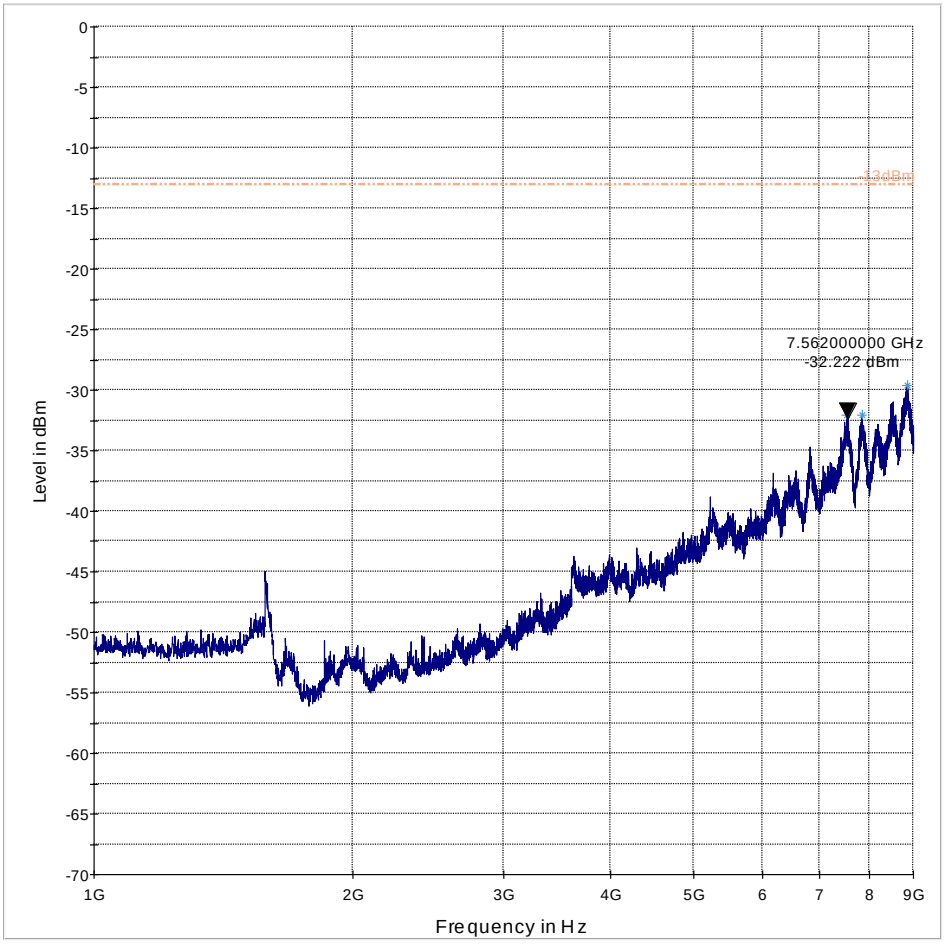
Plot #43 Radiated Emissions: 30 MHz – 1GHz

Channel: Mid



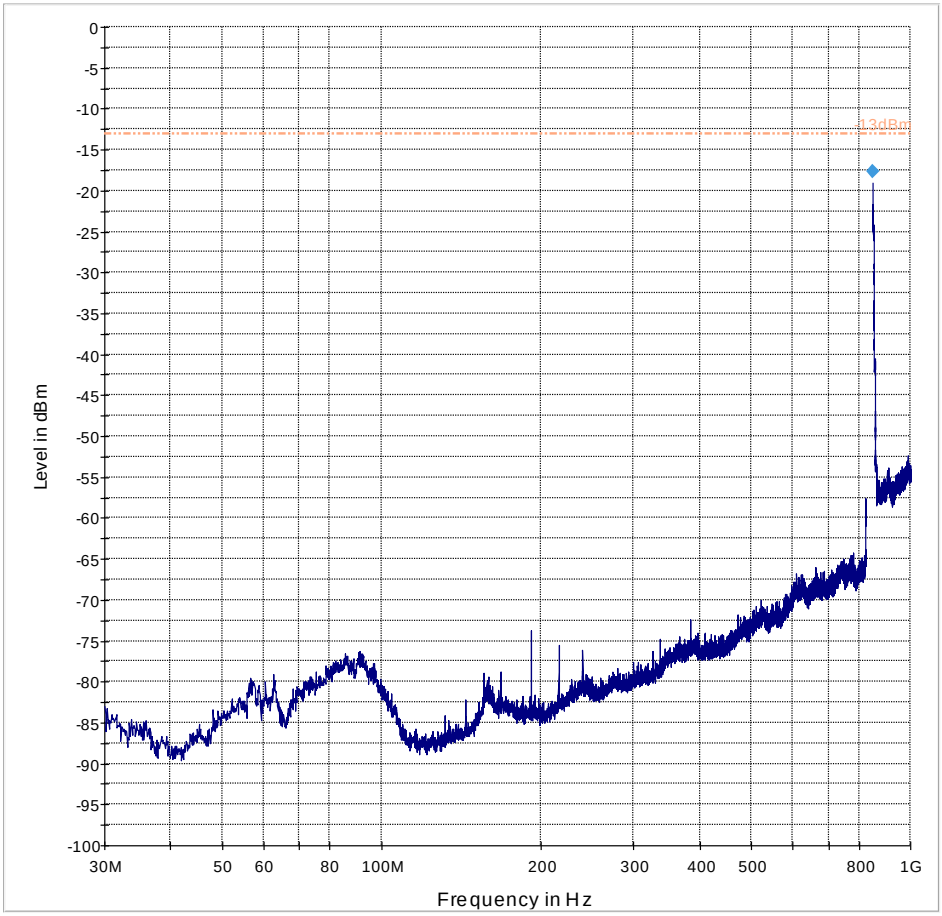
Plot #44 Radiated Emissions: 1-9 GHz

Channel: Mid



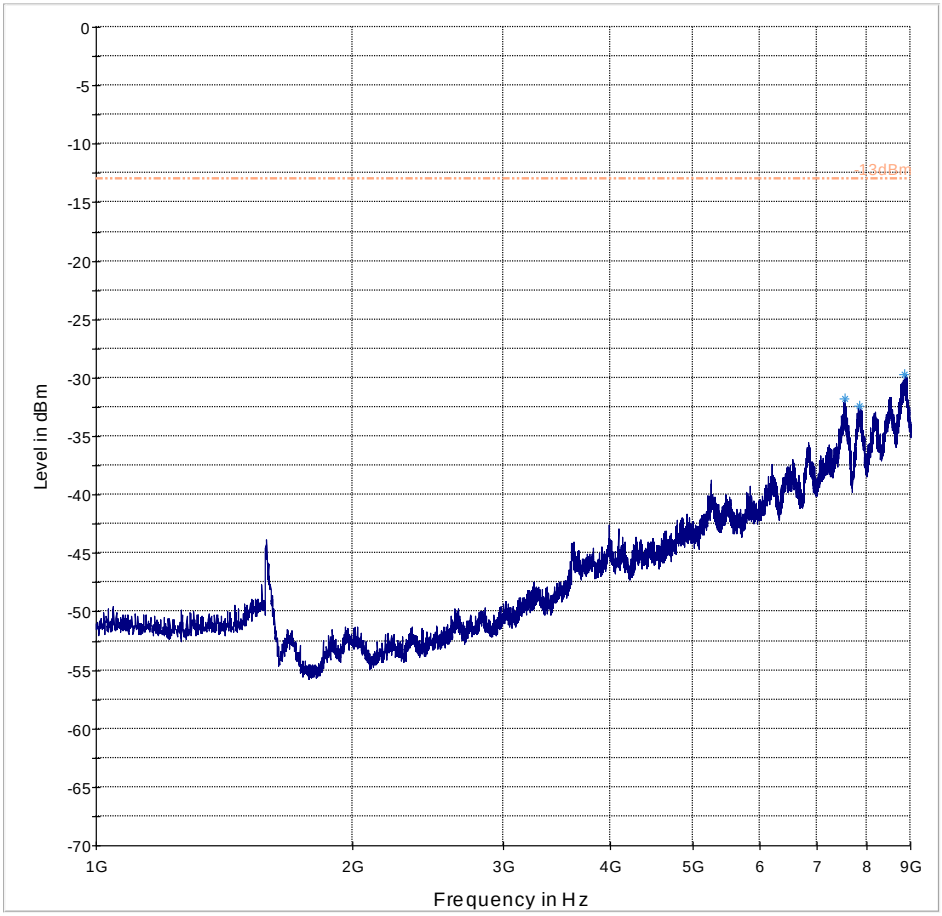
Plot #45 Radiated Emissions: 30 MHz – 1GHz

Channel: High



Plot #46 Radiated Emissions: 1-9 GHz

Channel: High



8 Test setup photos

Setup photos are included in supporting file name: "EMC_CONNE-044-15001_FCC_22_24_27_Setup_Photos.pdf"

9 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	91119547	2 Years	4/7/2015
Digital Radio Comm. Tester CMU 200 #1	Digital Radio Comm. Tester	R&S	CMU 200 #1	101821	2 Years	7/4/2015
Spectrum Analyzer FSU26 #2	Spectrum Analyzer	R&S	FSU26	200065	3 years	7/4/2015
Thermometer Humidity TM320	Thermometer Humidity	Dickson	TM320	5280063	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.

10 Revision History

Date	Report Name	Changes to report	Report prepared by
2016-02-24	EMC_CONNE-044-15001_FCC_22_24_27	Initial Version	Kris Lazarov
2016-03-02	EMC_CONNE-044-15001_FCC_22_24_27_Rev_1	Updated title; Updated Section 7.1 to Output Power Verification; Updated table 7.1.4	Kris Lazarov
2016-03-11	EMC_CONNE-044-15001_FCC_22_24_27_Rev_2	Revised the EUT Specification table section 3.1; Revised section the Subject of investigation section 4; Revised Measurement result summary Section 6; Revised section 7.1	Kris Lazarov