www.nemko.com

Compliance test report ID **220378-1TRFWL**

Date of issue
October 11, 2012

FCC 47 CFR Part 90, Boosters

Private Land Mobile Radio Service

Applicant G-Way Microwave
Product Remote Unit-Dual RF Bi-Directional Amplifier
Model RHBDA-U454.7/467.5-0.1/8W-55-A
FCC ID Q8KUHF8W55R

Nemko Canada Inc., a testing laboratory, is accredited by the Standards Council of Canada. The tests included in this report are within the scope of this accreditation

SCC Accredited LAB
LAB Accrédité CCN

Test location

Nemko Canada Inc.
303 River Road
Ottawa, ON, K1V 1H2
Canada
Test site FCC ID: 176392 (3 m semi anechoic chamber)

Telephone +1 613 737 9680
Facsimile +1 613 737 9691
Toll free +1 800 563 6336
Website www.nemko.com

Tested by Kevin Rose, Wireless/EMC Specialist

Reviewed by 

Andrey Adelberg, Senior Wireless/EMC Specialist

October 11, 2012

Date

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

Copyright notification

Table of contents

Section 1: Report summary

1.1 Applicant and manufacturer

G-Way Microwave
38 Leuning Street
South Hackensack NJ 07606
United States

1.2 Test specifications

FCC 47 CFR 90, Boosters
Private Land Mobile Radio Services

1.3 Statement of compliance

In the configuration tested the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

1.4 Exclusions

None

1.5 Test report revision history

Revision #	Details of changes made to test report
TRF	Original report issued

Section 2: Summary of test results

2.1 FCC Part 90 test results

Part	Test description	Verdict
90.219	Output power	Pass
90.210	Conducted and radiated spurious emissions	Pass
90.213	Frequency stability	Not applicable
90.219	Use of boosters	Pass
2-11-04/EAB/RF	Occupied bandwidth	Pass
2-11-04/EAB/RF	Out of band rejection	Pass
Notes: The EUT doesn't change the frequency.		

Section 3: Equipment under test (EUT) details

3.1 Sample information

Receipt date	September 18, 2012
Nemko sample ID number	1

3.2 EUT information

Product name	G-Wave PBS Booster
Model	RHBDA-U454.7/467.5-0.1/8W-55-A
Serial number	12091001

3.3 Technical information

Operating band	Uplink: 460.5–464.6 MHz and 451.7–452.7. MHz Downlink: 456.7–457.7 MHz and 465.5–469.6 MHz
Modulation type	F3E
Emission designator	F3E
Power requirements	120 V_{AC} 60 Hz
Antenna information	The EUT is professionally installed.

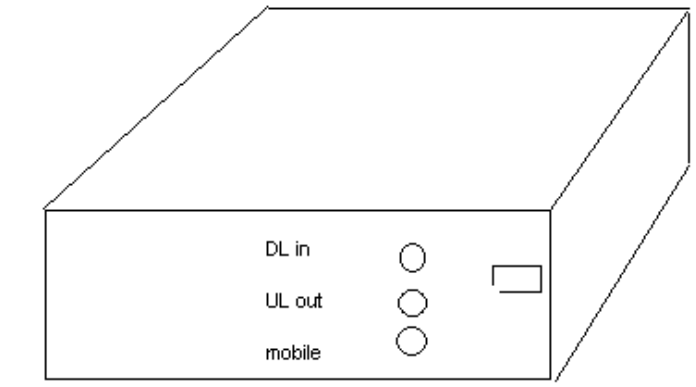
3.4 Product description and theory of operation

Dual RF Bi-Directional Amplifier.

3.5 EUT exercise details

Downlink input to the Mobile output and the Mobile input to the Uplink output.

3.6 EUT setup diagram



DL in to Mobile Out
Mobile in to UL Out

Diagram 3.6-1: Setup diagram

Section 4: Engineering considerations

1.4 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

1.5 Technical judgment

None

1.6 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5: Test conditions

5.1 Atmospheric conditions

Temperature: 15–30 °C
Relative humidity: 20–75 %
Air pressure: 86–106 kPa

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

Section 6: Measurement uncertainty

6.1 Uncertainty of measurement

Nemko Canada Inc. has calculated measurement uncertainty and is documented in EMC/MUC/001 “Uncertainty in EMC measurements.” Measurement uncertainty was calculated using the methods described in CISPR 16-4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC measurements; as well as described in UKAS LAB34: The expression of Uncertainty in EMC Testing. Measurement uncertainty calculations assume a coverage factor of K=2 with 95% certainty.

Section 7: Test equipment

7.1 Test equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
3 m EMI test chamber	TDK	SAC-3	FA002047	1 year	Mar. 09/13
Flush mount turntable	Sunol	FM2022	FA002082	—	NCR
Controller	Sunol	SC104V	FA002060	—	NCR
Antenna mast	Sunol	TLT2	FA002061	—	NCR
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	May 16/13
Spectrum analyzer	Rohde & Schwarz	FSP	FA001920	1 year	June 14/13
Horn antenna #2	EMCO	3115	FA000825	1 year	Feb. 24/13
Bilog antenna	Sunol	JB3	FA002108	1 year	Feb. 07/13
1–18 GHz pre-amplifier	JCA	JCA118-503	FA002091	1 year	July 03/13
Signal generator	Rohde & Schwarz	SMIQ03E	FA001269	1 year	Jan 10/13
Signal generator	Rohde & Schwarz	SMIQ06B	FA001878	1 year	Jan. 09/13
Note: NCR - no calibration required					

Section 8: Testing data

8.1 Clause 2-11-04/EAB/RF Occupied bandwidth

The spectral shape of the output should look similar to the input for all modulations.

8.1.1 Test summary

Test date	September 20, 2012	**Test engineer**	Kevin Rose	**Verdict**	Pass
Temperature	23 °C	**Air pressure**	1003 mbar	**Relative humidity**	30 %

8.1.2 Observations/special notes

The EUT was set up as tabletop configuration.

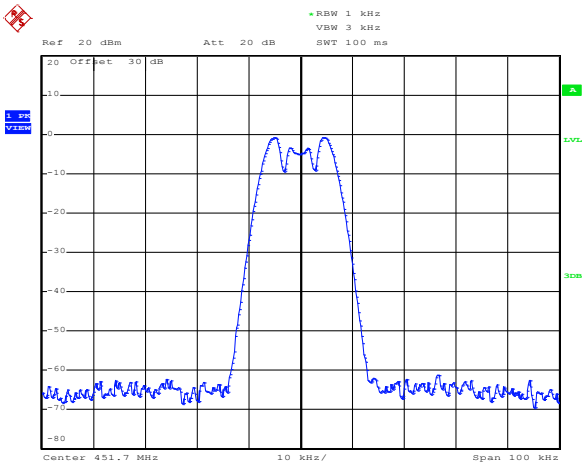
The Downlink is split into two band therefore testing was performed on the low, middle, and highest channel of each bands

Downlink band 1 is 456.7–457.7 MHz (Low 456.70625 MHz, Mid 457.20, and High 457.69375).
Downlink band 2 is 465.5–469.6 MHz (Low 465.50625 MHz, Mid 467.55, and High 469.59375).

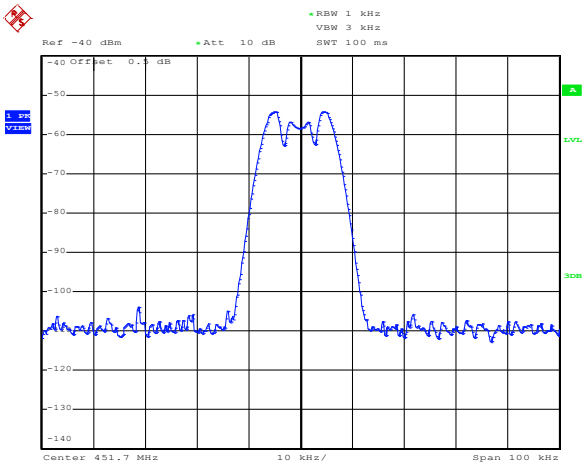
The Uplink is split into two band therefore testing was performed on the low, middle, and highest channel of each bands

Uplink band 1 is 451.7–452.7 MHz (Low 451.70625MHz, Mid 452.20, and High 452.69375).
Uplink band 2 is 460.5–464.6 MHz (Low 460.50625 MHz, Mid 462.55, and High 464.59375).

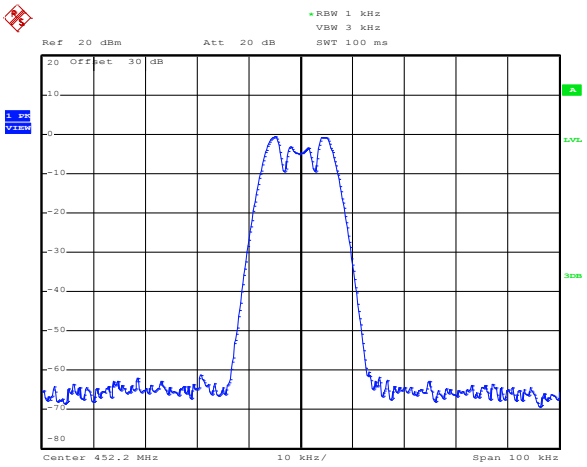
8.1.3 Test data



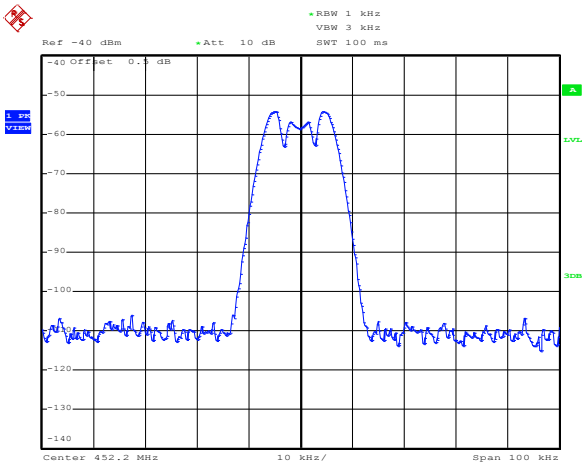
Plot 8.1-1: Occupied bandwidth at the output
Uplink 451.70625 MHz



Plot 8.1-2: Occupied bandwidth at the input
Uplink 451.70625 MHz

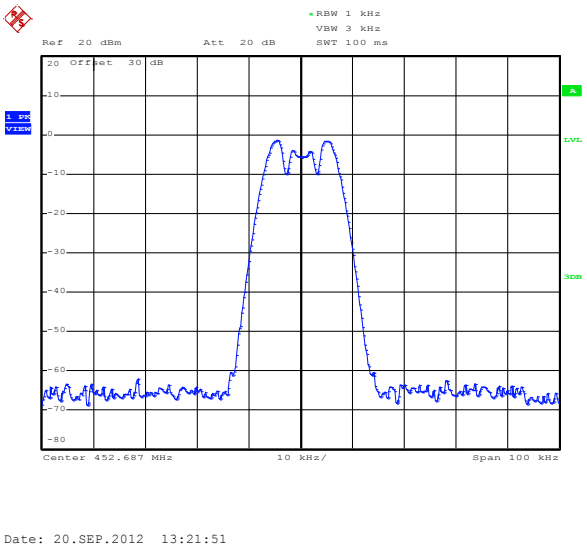


Plot 8.1-3: Occupied bandwidth at the output
Uplink 452.2 MHz

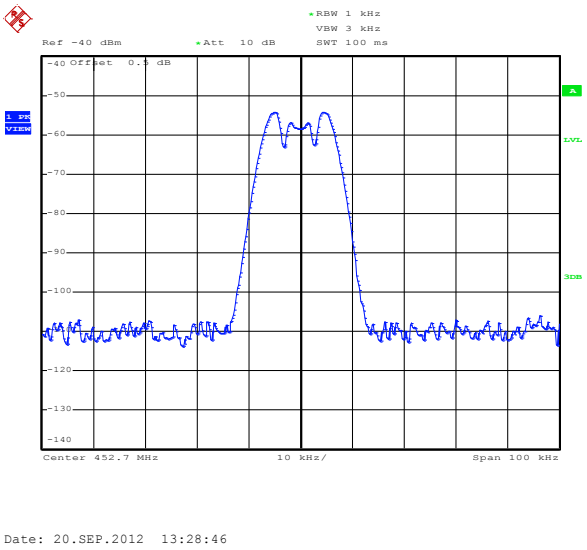


Plot 8.1-4: Occupied bandwidth at the input
Uplink 452.2 MHz

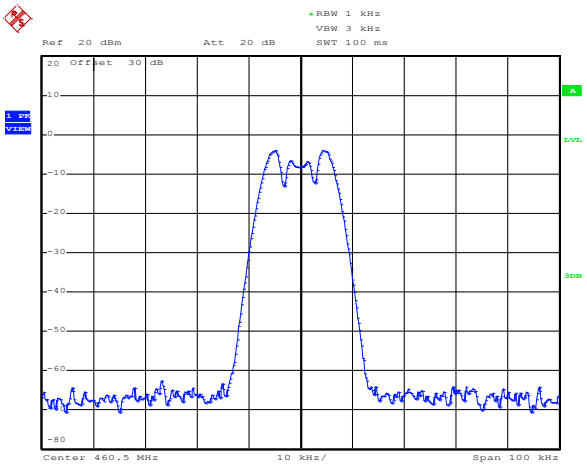
8.1.3 Test data, continued



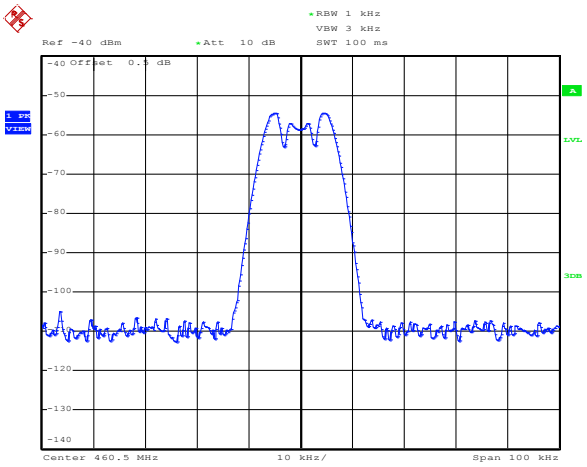
Plot 8.1-5: Occupied bandwidth at the output
Uplink 452.69375 MHz



Plot 8.1-6: Occupied bandwidth at the input
Uplink 452.69375 MHz

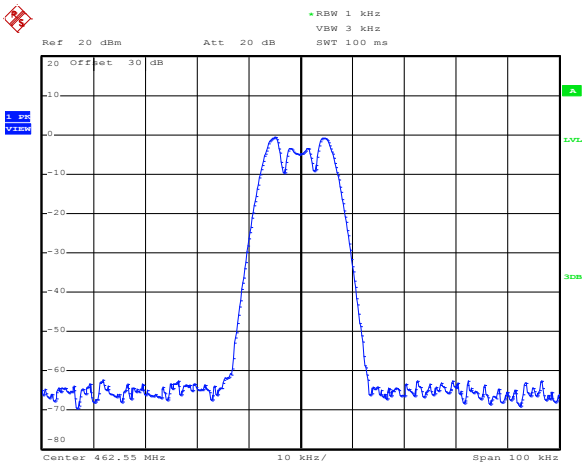


Plot 8.1-7: Occupied bandwidth at the output
Uplink 460.50625 MHz



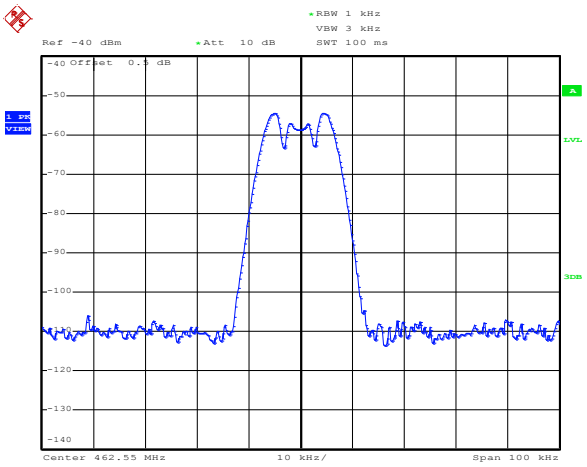
Plot 8.1-8: Occupied bandwidth at the input
Uplink 460.50625 MHz

8.1.3 Test data, continued



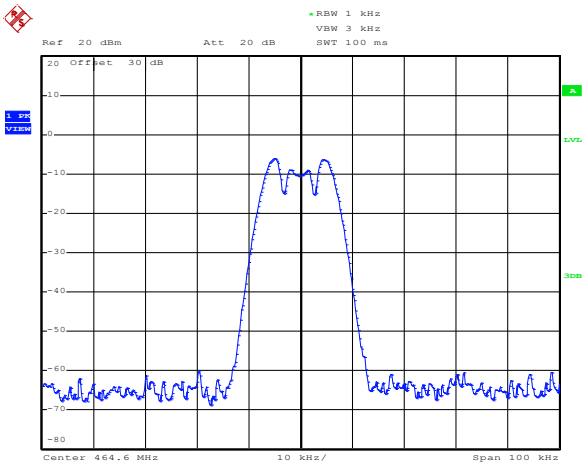
Date: 20.SEP.2012 13:24:04

Plot 8.1-9: Occupied bandwidth at the output
Uplink 462.55MHz



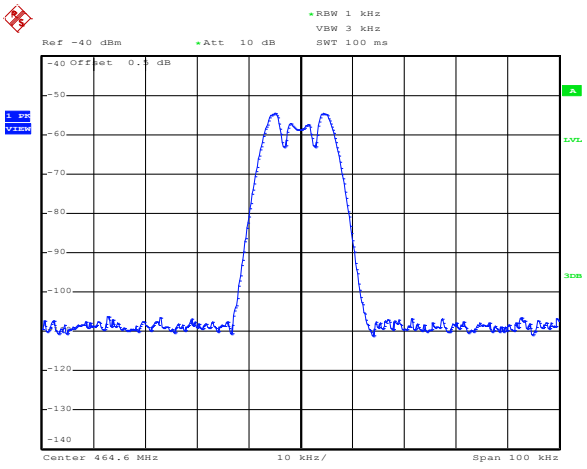
Date: 20.SEP.2012 13:26:47

Plot 8.1-10: Occupied bandwidth at the input
Uplink 462.55MHz



Date: 20.SEP.2012 13:24:36

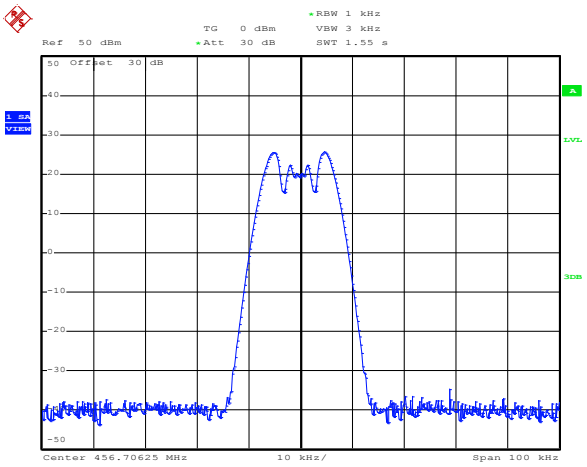
Plot 8.1-11: Occupied bandwidth at the output
Uplink 464.59375 MHz



Date: 20.SEP.2012 13:26:14

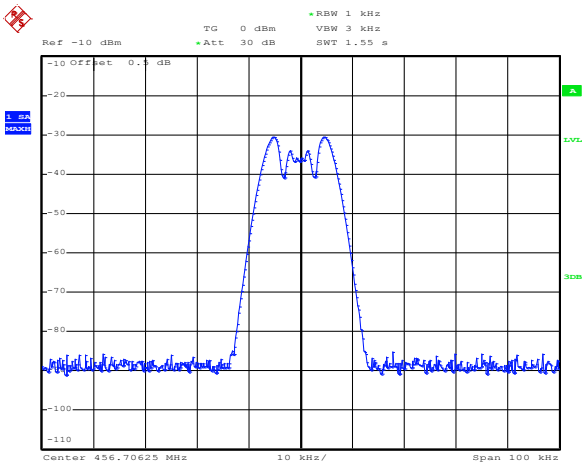
Plot 8.1-12: Occupied bandwidth at the input
Uplink 464.59375 MHz

8.1.3 Test data, continued



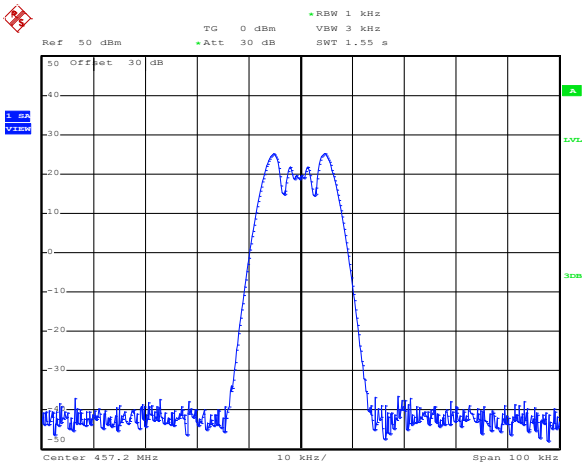
Date: 19.SEP.2012 17:31:08

Plot 8.1-13: Occupied bandwidth at the output Downlink 456.70625 MHz



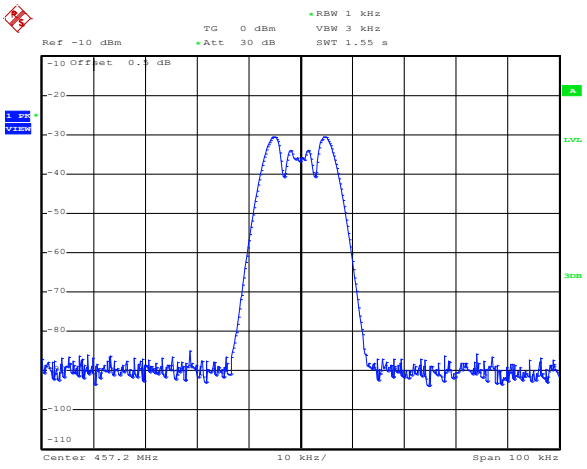
Date: 19.SEP.2012 17:52:37

Plot 8.1-14: Occupied bandwidth at the input Downlink 456.70625 MHz



Date: 19.SEP.2012 17:32:42

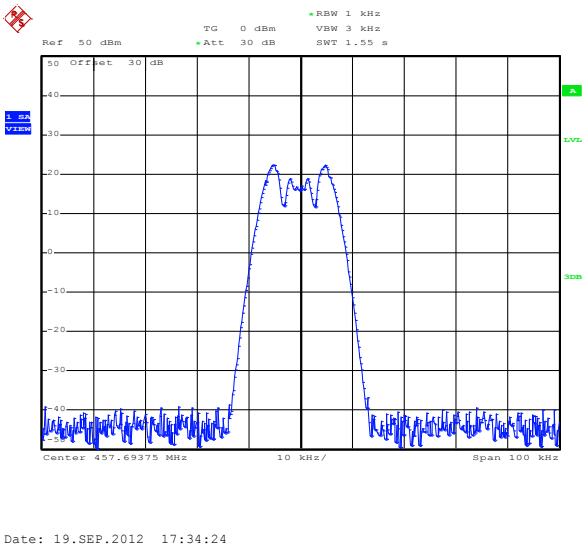
Plot 8.1-15: Occupied bandwidth at the output Downlink 457.2 MHz



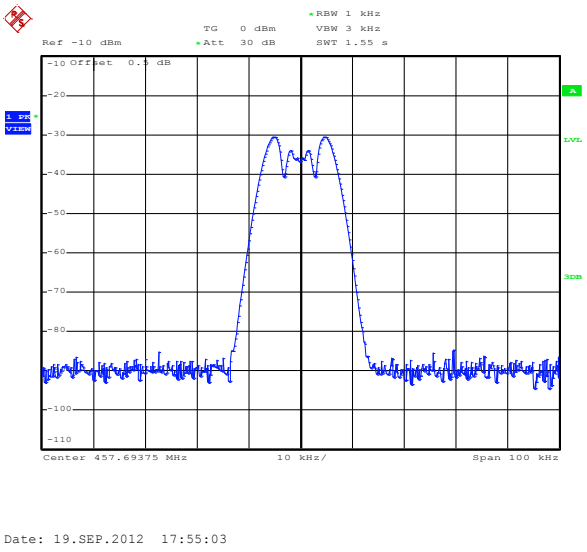
Date: 19.SEP.2012 17:53:38

Plot 8.1-16: Occupied bandwidth at the input Downlink 457.2 MHz

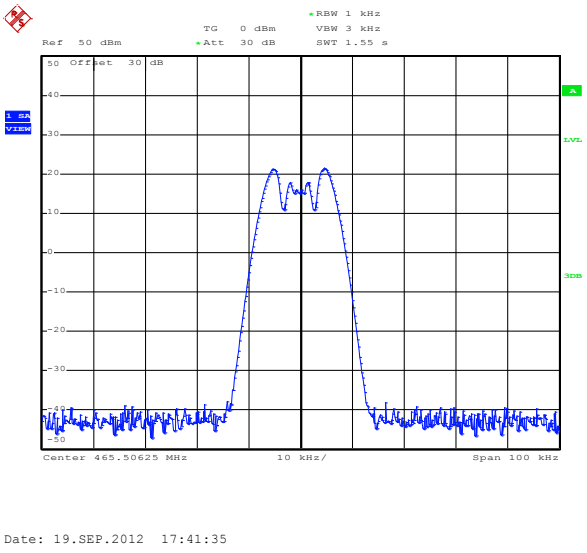
8.1.3 Test data, continued



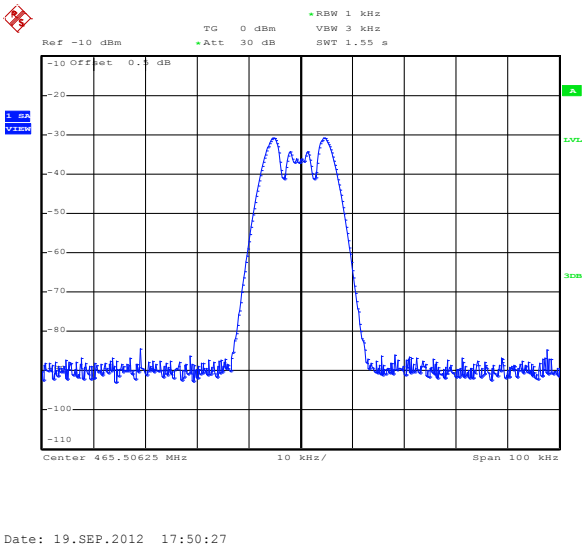
Plot 8.1-17: Occupied bandwidth at the output Downlink 457.69375 MHz



Plot 8.1-18: Occupied bandwidth at the input Downlink 457.69375 MHz

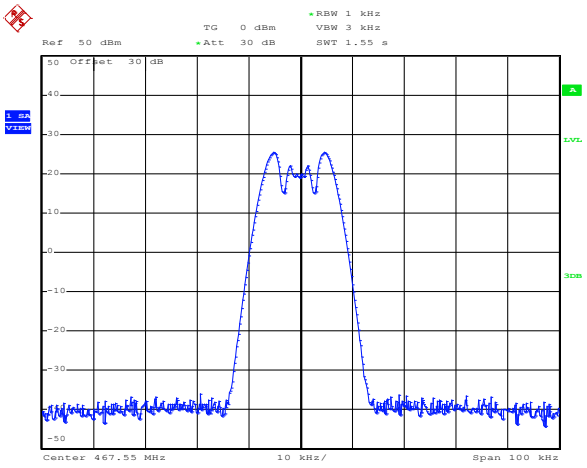


Plot 8.1-19: Occupied bandwidth at the output Downlink 465.50625 MHz

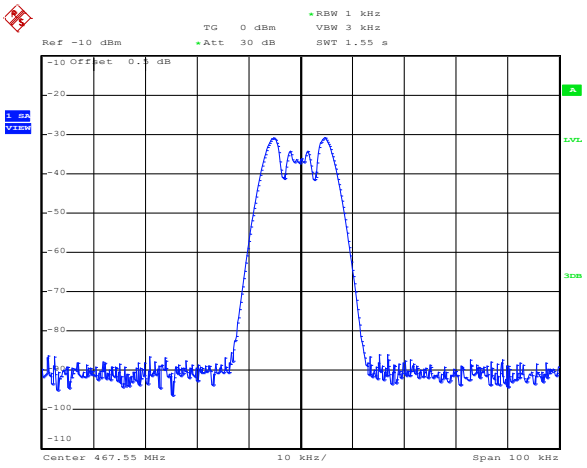


Plot 8.1-20: Occupied bandwidth at the input Downlink 465.50625MHz

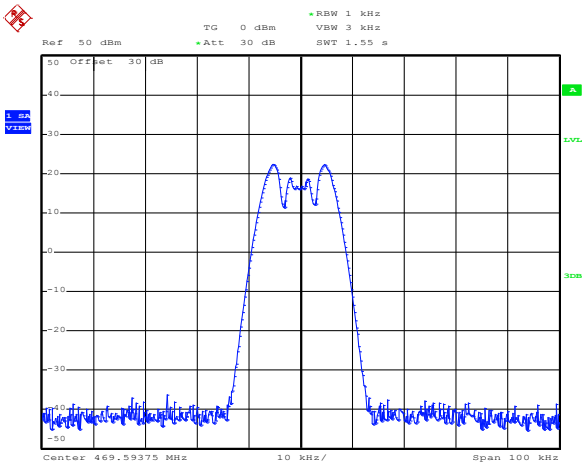
8.1.3 Test data, continued



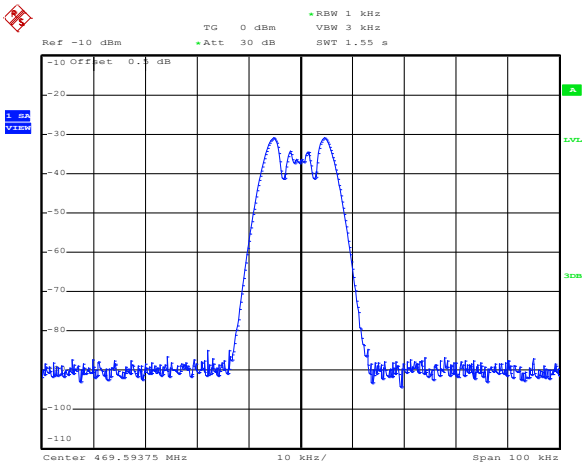
Plot 8.1-21: Occupied bandwidth at the output Downlink 467.55 MHz



Plot 8.1-22: Occupied bandwidth at the input Downlink 467.55 MHz



Plot 8.1-23: Occupied bandwidth at the output Downlink 469.59375 MHz



Plot 8.1-24: Occupied bandwidth at the input Downlink 469.59375 MHz

8.2 Clause 90.205 Output power

Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation. Except where otherwise specifically provided for, the maximum power that will be authorized for new stations authorized after August 16, 1995 is as follows in FCC Part 90.205(a) through (r).

8.2.1 Test summary

Test date	September 20, 2012	**Test engineer**	Kevin Rose	**Verdict**	Pass
Temperature	23 °C	**Air pressure**	1003 mbar	**Relative humidity**	30 %

8.2.2 Observations/special notes

The test was performed using 1 MHz RBW and 3 MHz VBW.

8.2.3 Test data

Table 8.2-1: Output power results for CW

Band	Frequency, MHz	Power dBm
Downlink	456.706250	31.23
	457.200000	31.20
	457.693750	29.36
	465.506250	28.38
	467.550000	31.13
	469.593750	28.35
Uplink	460.506250	4.68
	462.550000	5.86
	464.593750	3.02
	451.706250	5.69
	452.200000	5.82
	452.693750	5.06

Table 8.2-2: Maximum output power results

Uplink / Downlink	Maximum output power, dBm	ERP limit, dBm	Margin, dB
Downlink	31.23	37.00	5.77
Uplink	5.86	37.00	31.14

The ERP (effective radiated power) from the booster system must not exceed +37 dBm (5 Watts) in order to remain compliant with FCC regulations, therefore maximum antenna gain for the Downlink chain should be no more than 5.77 dBd and maximum antenna gain for the Uplink chain should be no more than 31.14 dBd. If antennas with higher gains than specified above are used the conducted output power shall be reduced below the stated values in the table above by the amount in dB that the directional gain of the antenna exceeds the recommended gains.

8.3 Clause 2-11-04/EAB/RF Out of band rejection

Plots showing the filter frequency response.

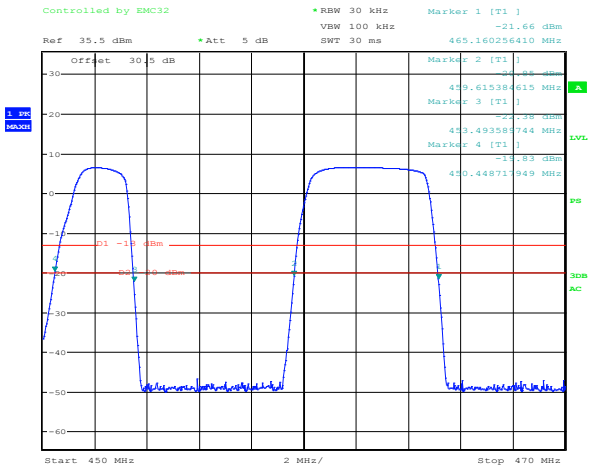
8.3.1 Test summary

Test date	September 19, 2012	**Test engineer**	Kevin Rose	**Verdict**	Pass
Temperature	22 °C	**Air pressure**	1002 mbar	**Relative humidity**	33 %

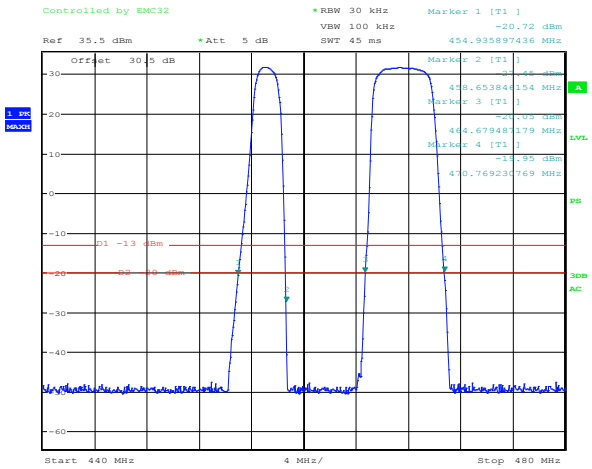
8.3.2 Observations/special notes

None

8.3.3 Test data



Plot 8.3-1: Out of band rejection Uplink



Plot 8.3-2: Out of band rejection Downlink

8.4 Clause 90.210 Conducted and radiated spurious emissions

Except as indicated elsewhere in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (m) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere, the Table below specifies the emission masks for equipment operating in the frequency bands governed under this part.

8.4.1 Test summary

Test date	September 19, 2012	**Test engineer**	Kevin Rose	**Verdict**	Pass
Temperature	22 °C	**Air pressure**	1002 mbar	**Relative humidity**	33 %

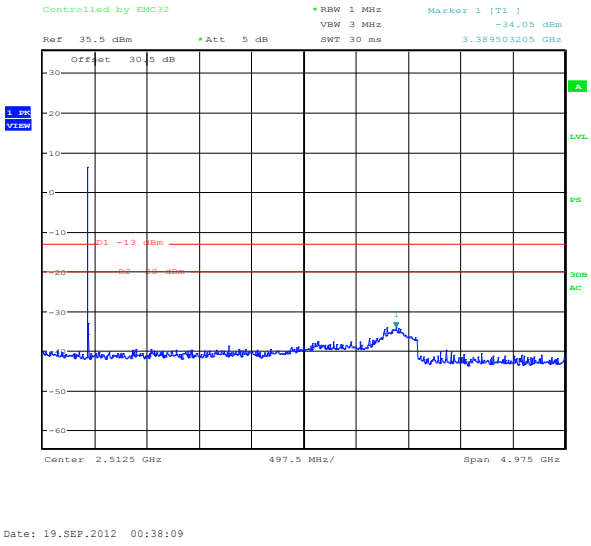
8.4.2 Observations/special notes

Emission Mask G. For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:
(1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 10 kHz, but no more than 250 percent of the authorized bandwidth: At least 116 log (fd/6.1) dB, or 50 + 10 log (P) dB, or 70 dB, whichever is the lesser attenuation;
(2) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.

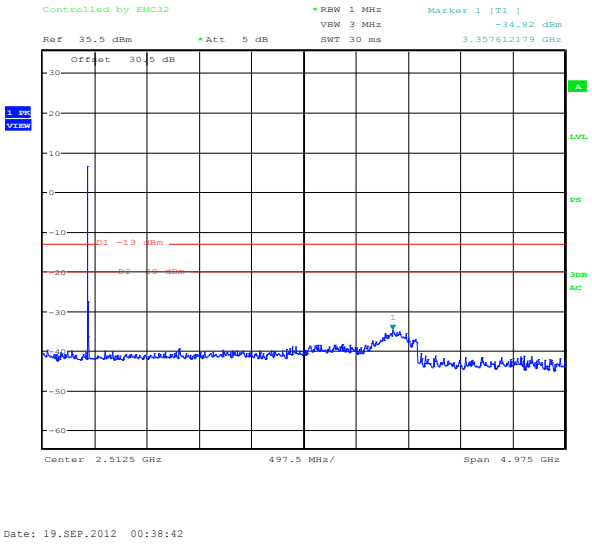
Emission Mask H. For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:
(1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of 4 kHz or less: Zero dB.
(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 4 kHz, but no more than 8.5 kHz: At least 107 log (fd/4) dB;
(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 8.5 kHz, but no more than 15 kHz: At least 40.5 log (fd/1.16) dB;
(4) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 15 kHz, but no more than 25 kHz: At least 116 log (fd/6.1) dB;
(5) On any frequency removed from the center of the authorized bandwidth by more than 25 kHz: At least 43 + log (P) dB.

All radiated measurements were performed using a Peak Detector with 100 kHz RBW below 1 GHz and a 1 MHz RBW above 1 GHz at a distance of 3 meters. The spectrum was swept from 30 MHz up to the 9 GHz.
Radiated Spurious emissions were tested with −80 dBm CW at the input of the EUT and 50 Ω termination at the output.
Theoretical field strength limit equivalent to −20 dBm is 75.23 dBµV/m.
No emissions were found within 20 dB below the limit.

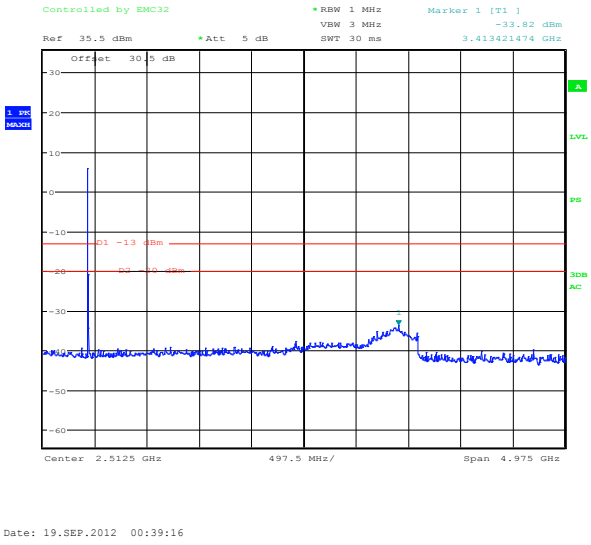
8.4.3 Test data



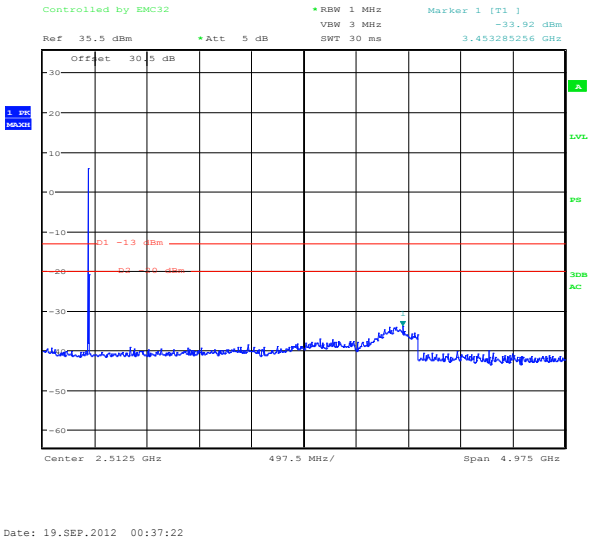
Plot 8.4-1: Conducted Spurious emissions Uplink 460.50625 MHz



Plot 8.4-2: Conducted Spurious emissions Uplink 462.55MHz

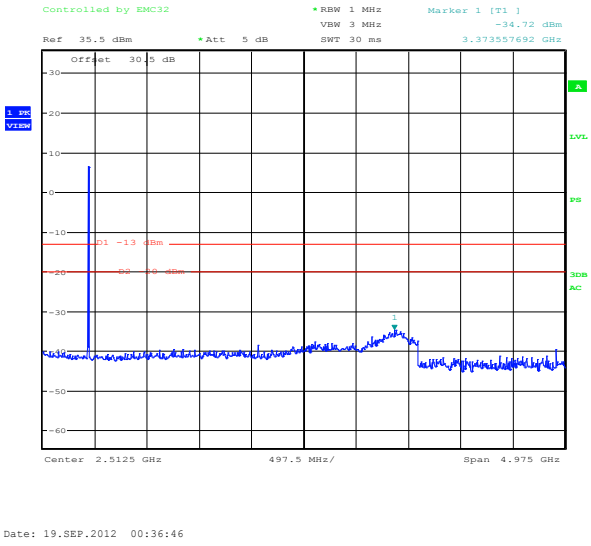


Plot 8.4-3: Conducted Spurious emissions Uplink 464.59375 MHz

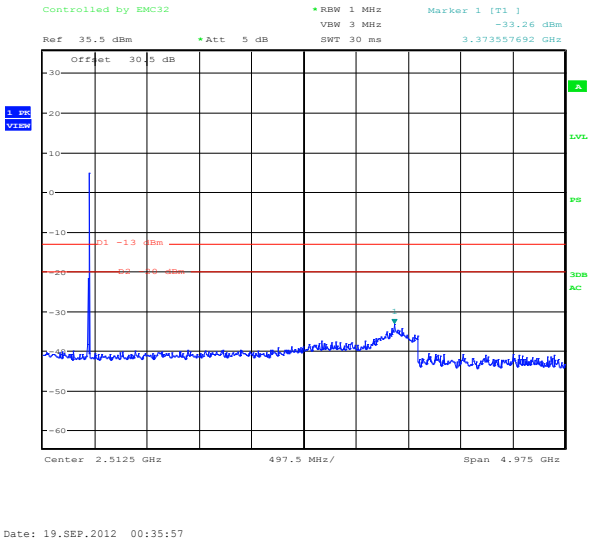


Plot 8.4-4: Conducted Spurious emissions Uplink 451.70625 MHz

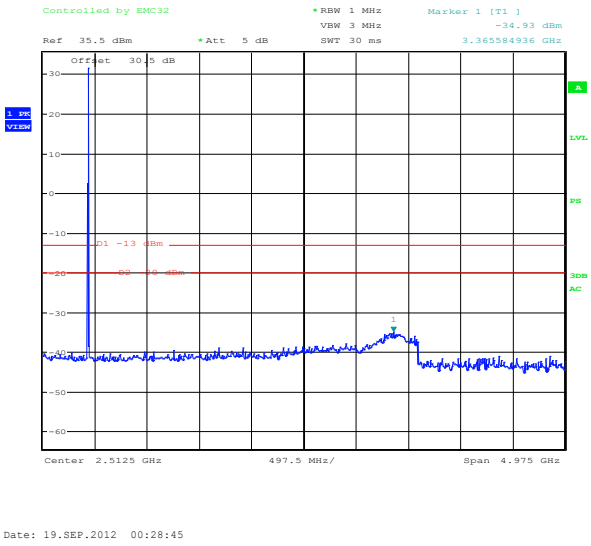
8.4.3 Test data continued



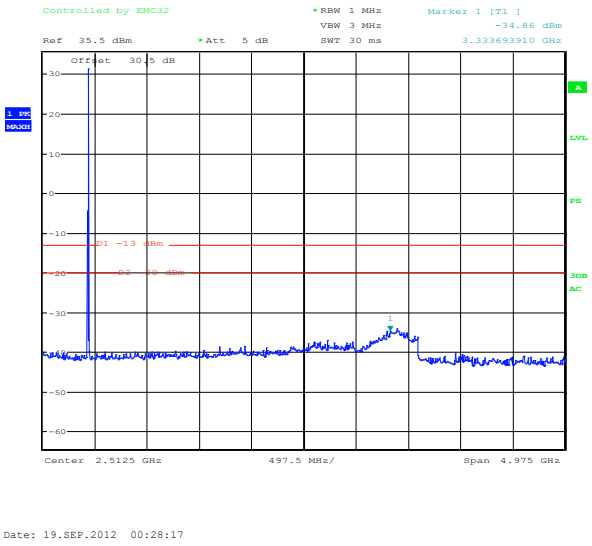
Plot 8.4-5: Conducted Spurious emissions Uplink 452.2 MHz



Plot 8.4-6: Conducted Spurious emissions Uplink 452.69375 MHz

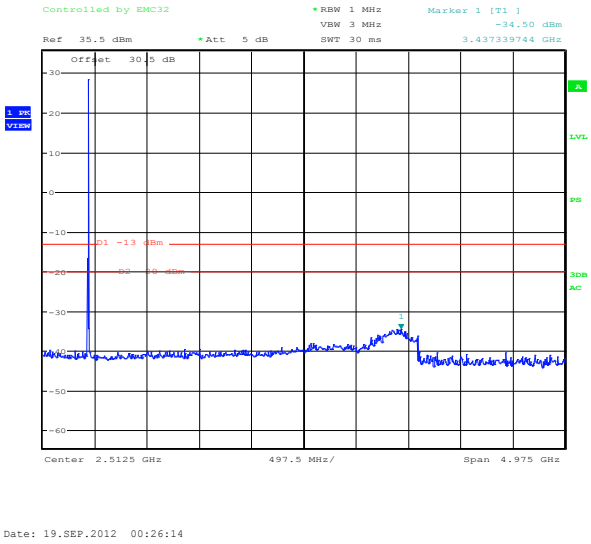


Plot 8.4-7: Conducted Spurious emissions Downlink 456.70625 MHz

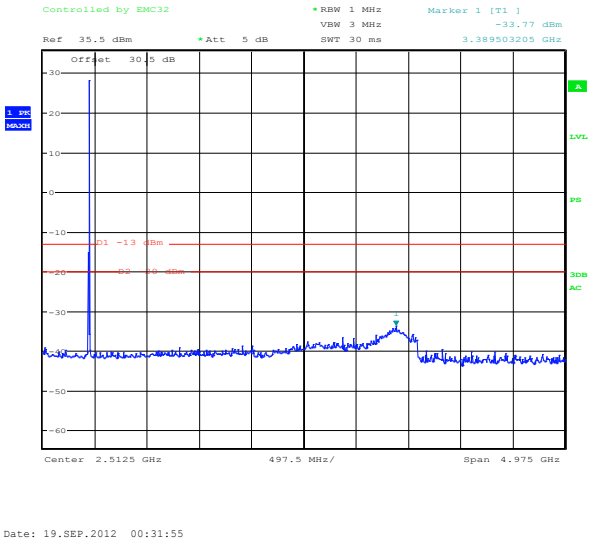


Plot 8.4-8: Conducted Spurious emissions Downlink 457.2 MHz

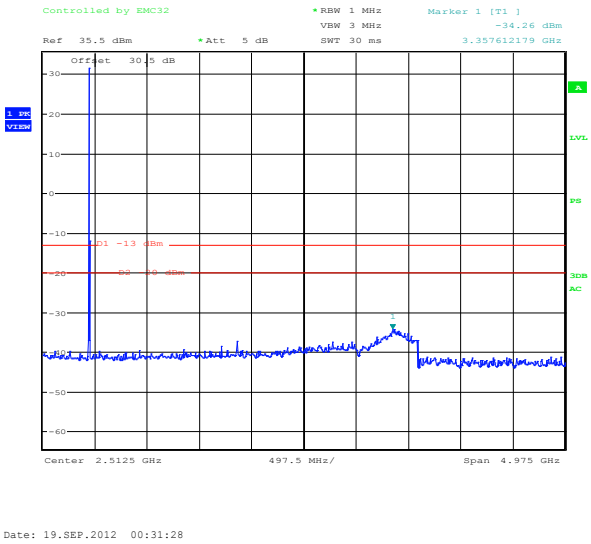
8.4.3 Test data continued



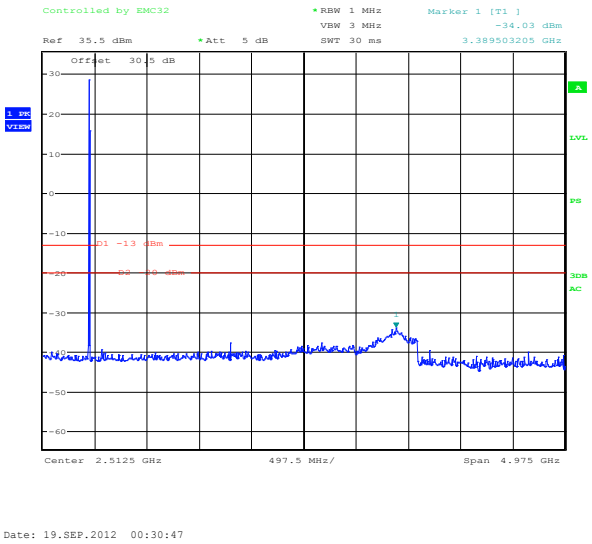
Plot 8.4-9: Conducted Spurious emissions Downlink 457.69375 MHz



Plot 8.4-10: Conducted Spurious emissions Downlink 465.50625 MHz

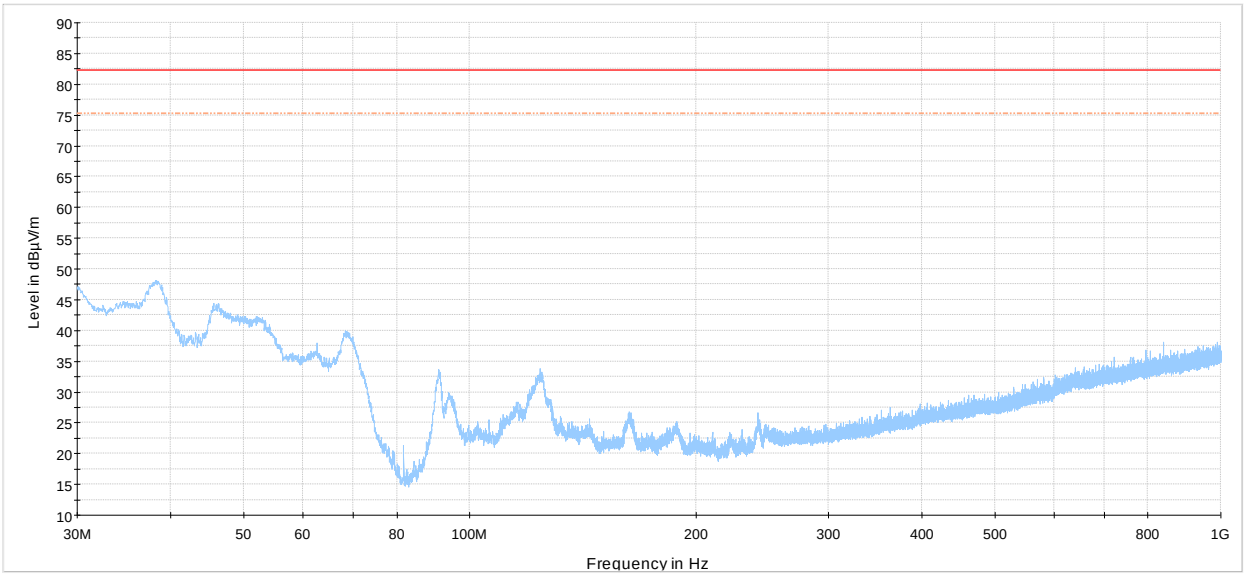


Plot 8.4-11: Conducted Spurious emissions Downlink 467.55 MHz



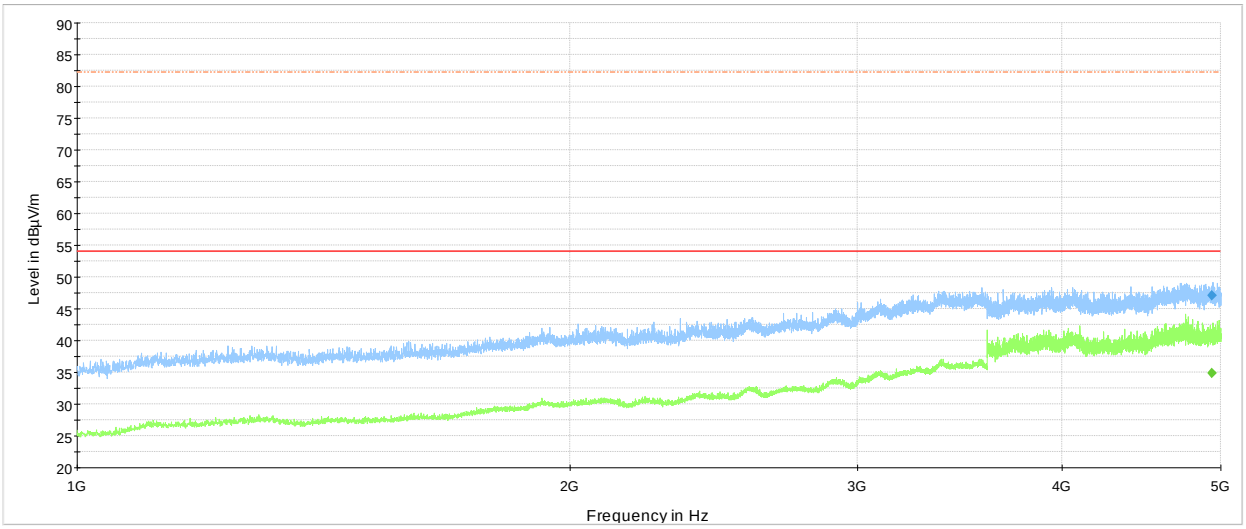
Plot 8.4-12: Conducted Spurious emissions Downlink 469.59375 MHz

8.4.3 Test data continued



NEX-220378 G-WAY UPLINK LOW BAND LOW FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

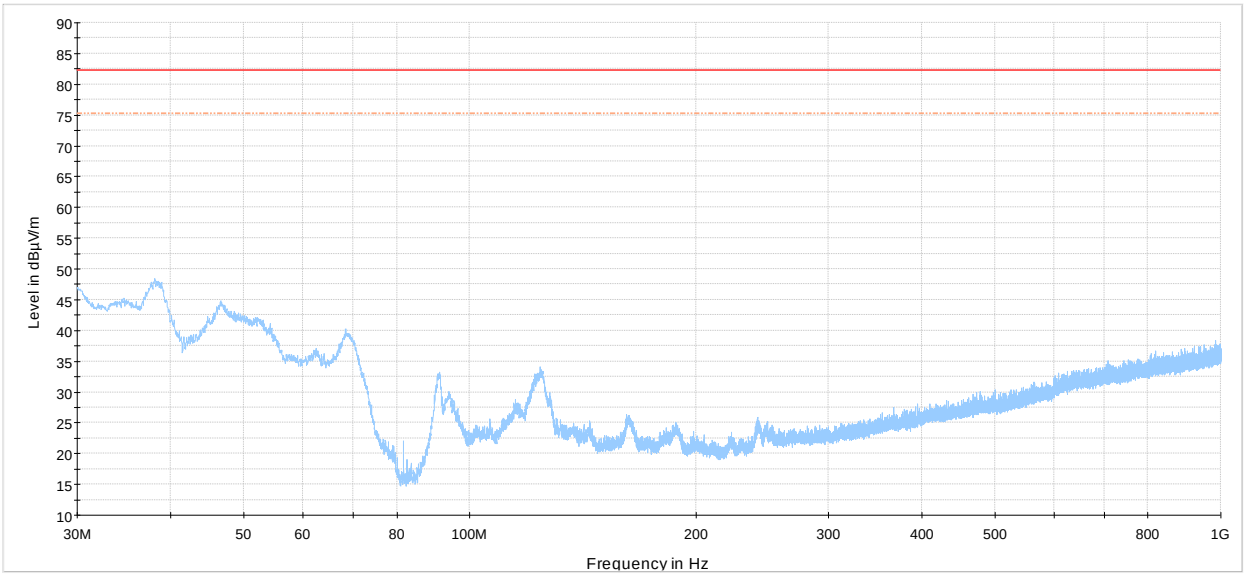
Plot 8.4-13: Radiated spurious emissions
Uplink 460.506250 MHz



NEX-220378 G-WAY UPLINK LOW BAND LOW FREQUENCY 1-5GHz
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

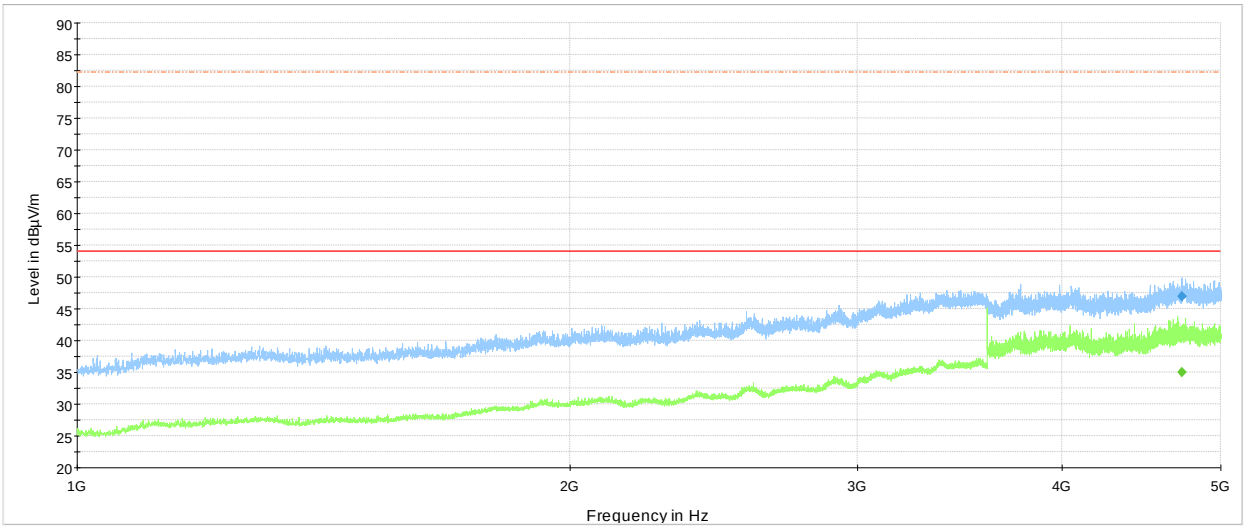
Plot 8.4-14: Radiated spurious emissions
Uplink 460.506250 MHz

8.4.3 Test data continued



NEX-220378 G-WAY UPLINK LOW BAND MID FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

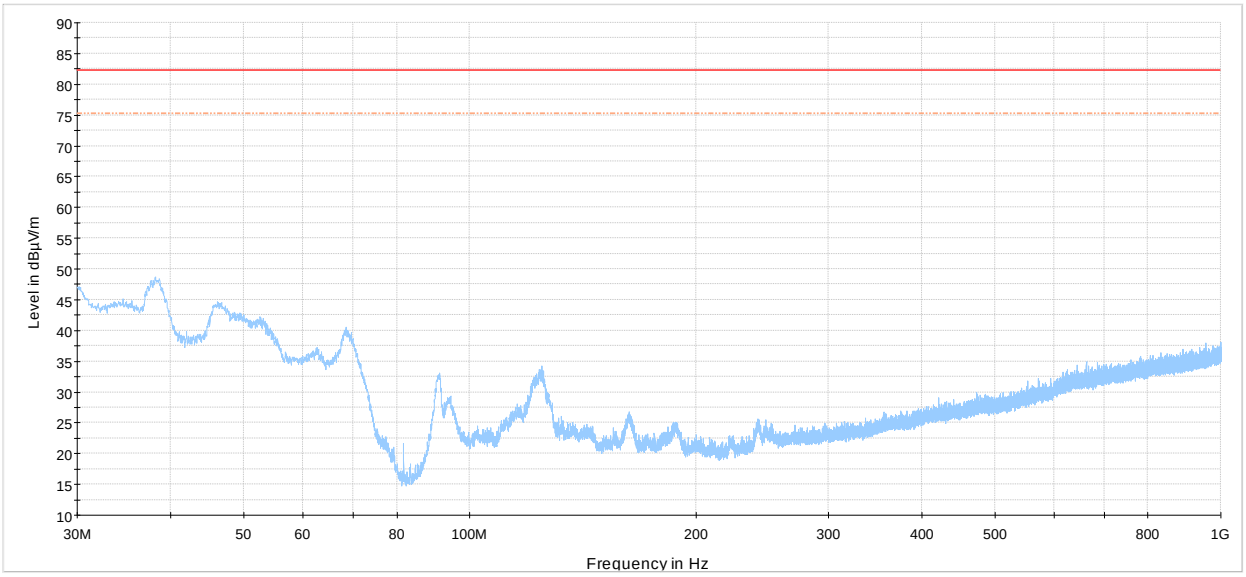
Plot 8.4-15: Radiated spurious emissions
Uplink 462.550000 MHz



NEX-220378 G-WAY UPLINK LOW BAND MID FREQUENCY 1-5GHz
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

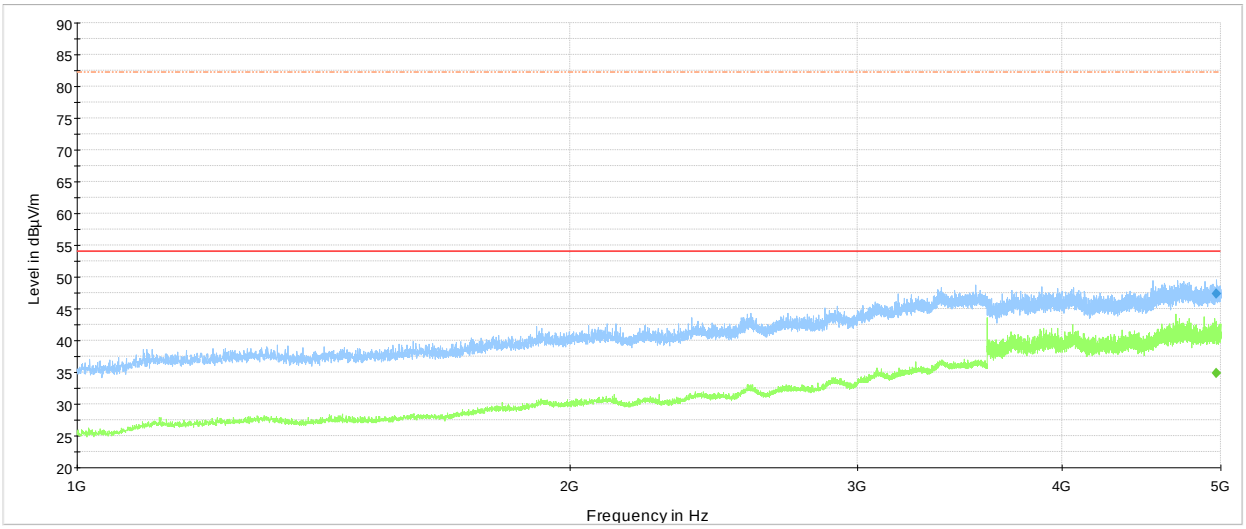
Plot 8.4-16: Radiated spurious emissions
Uplink 462.550000 MHz

8.4.3 Test data continued



NEX-220378 G-WAY UPLINK LOW BAND HIGH FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

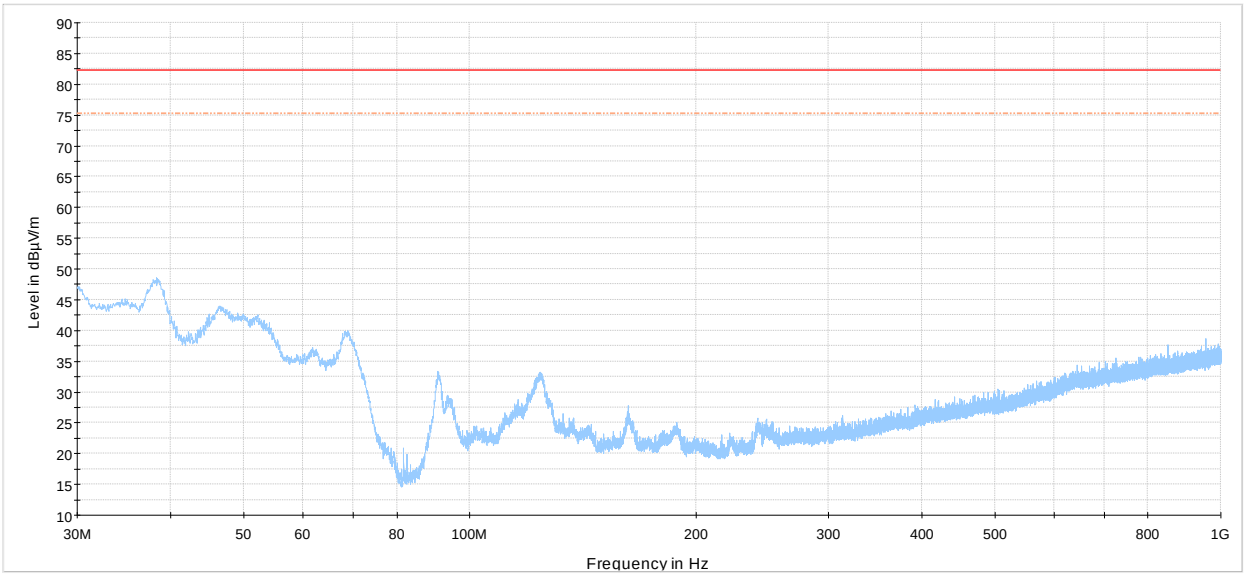
Plot 8.4-17: Radiated spurious emissions
Uplink 464.593750 MHz



NEX-220378 G-WAY UPLINK LOW BAND HIGH FREQUENCY 1-5GHz
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

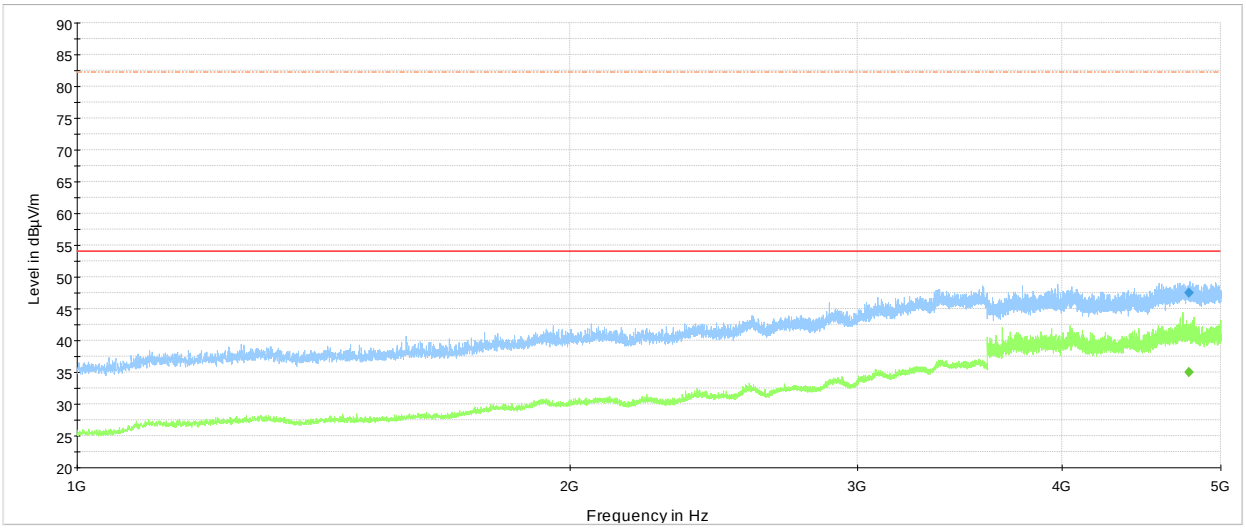
Plot 8.4-18: Radiated spurious emissions
Uplink 464.593750 MHz

8.4.3 Test data continued



NEX-220378 G-WAY UPLINK HIGH BAND LOW FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

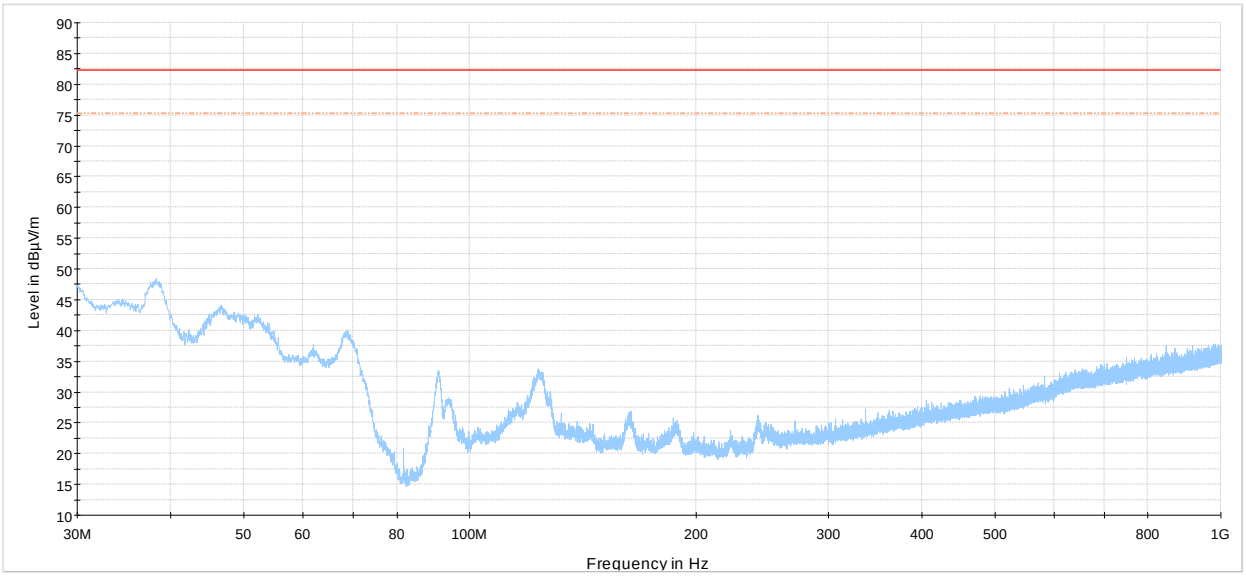
Plot 8.4-19: Radiated spurious emissions
Uplink 451.706250 MHz



NEX-220378 G-WAY UPLINK HIGH BAND LOW FREQUENCY 1-5GHz
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

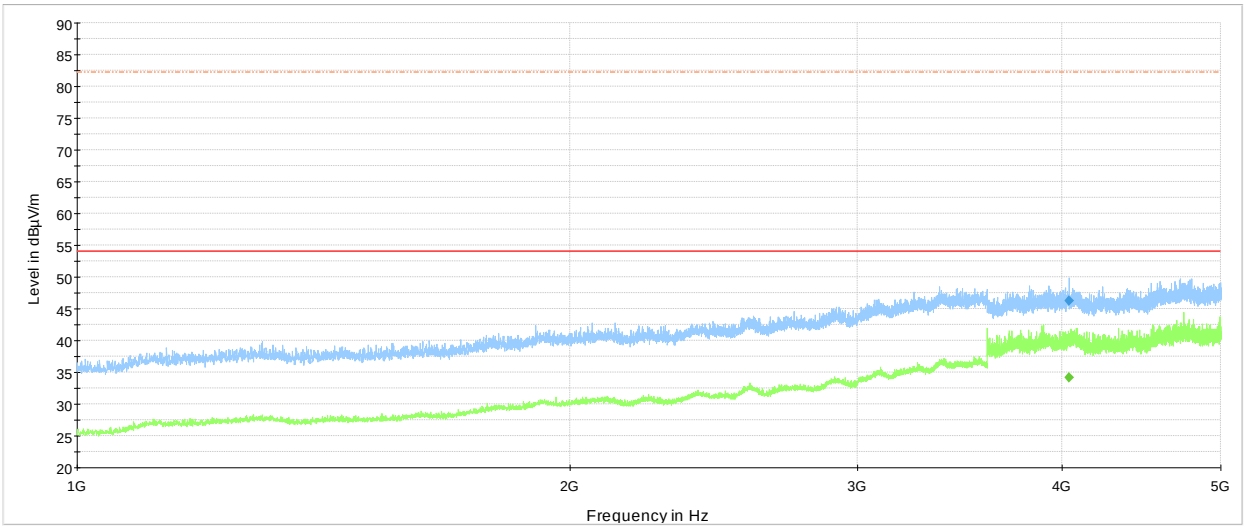
Plot 8.4-20: Radiated spurious emissions
Uplink 451.706250 MHz

8.4.3 Test data continued



NEX-220378 G-WAY UPLINK HIGH BAND MID FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

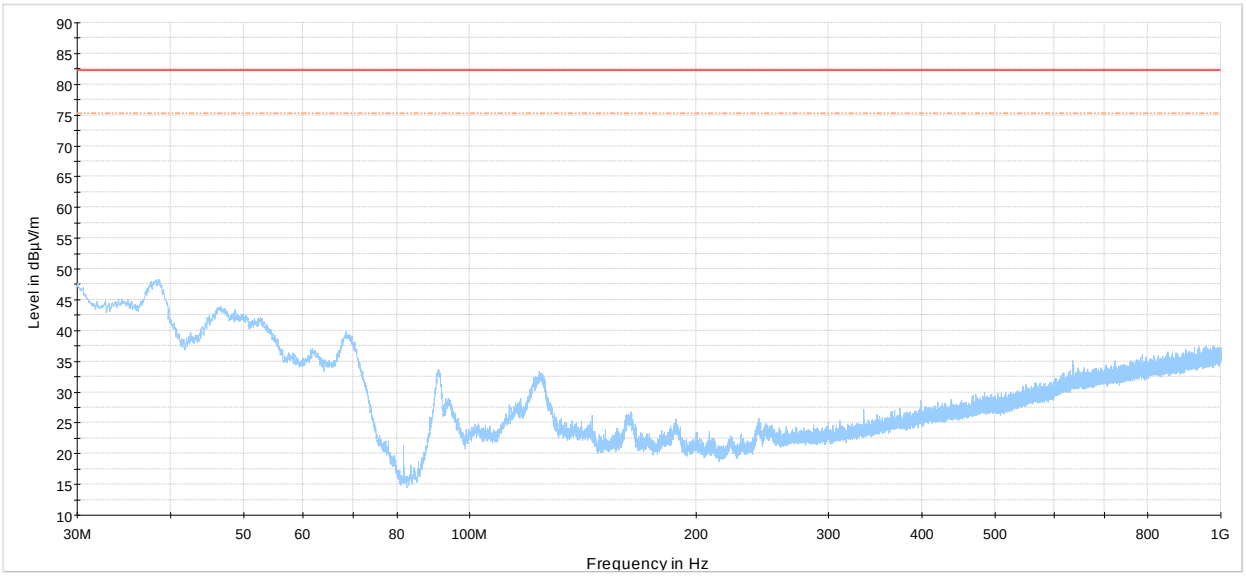
Plot 8.4-21: Radiated spurious emissions
Uplink 452.200000 MHz



NEX-220378 G-WAY UPLINK HIGH BAND MID FREQUENCY 1-5GHz
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

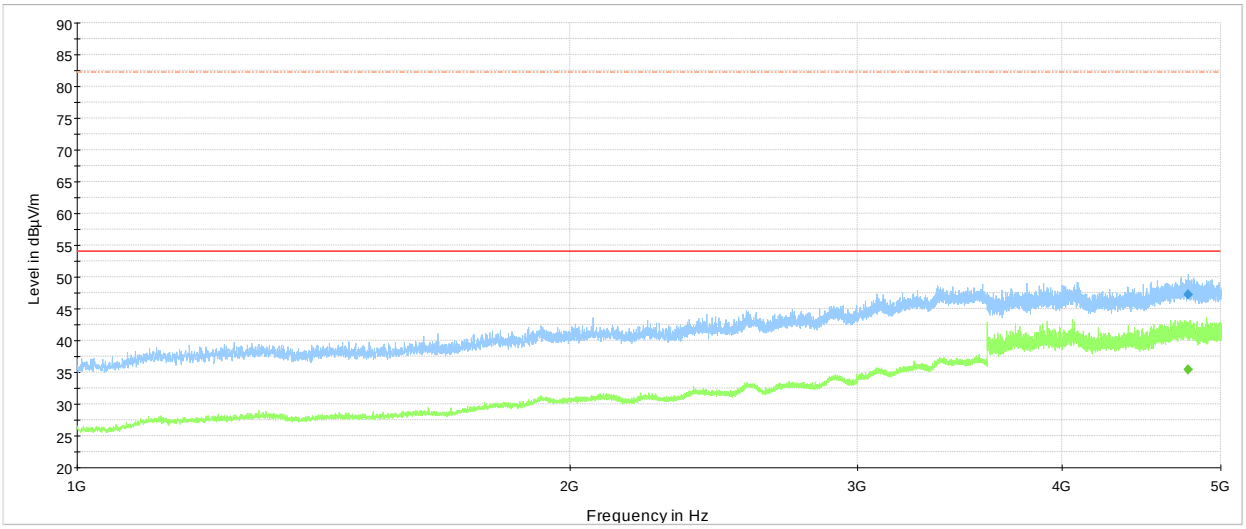
Plot 8.4-22: Radiated spurious emissions
Uplink 452.200000 MHz

8.4.3 Test data continued



NEX-220378 G-WAY UPLINK HIGH BAND HIGH FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

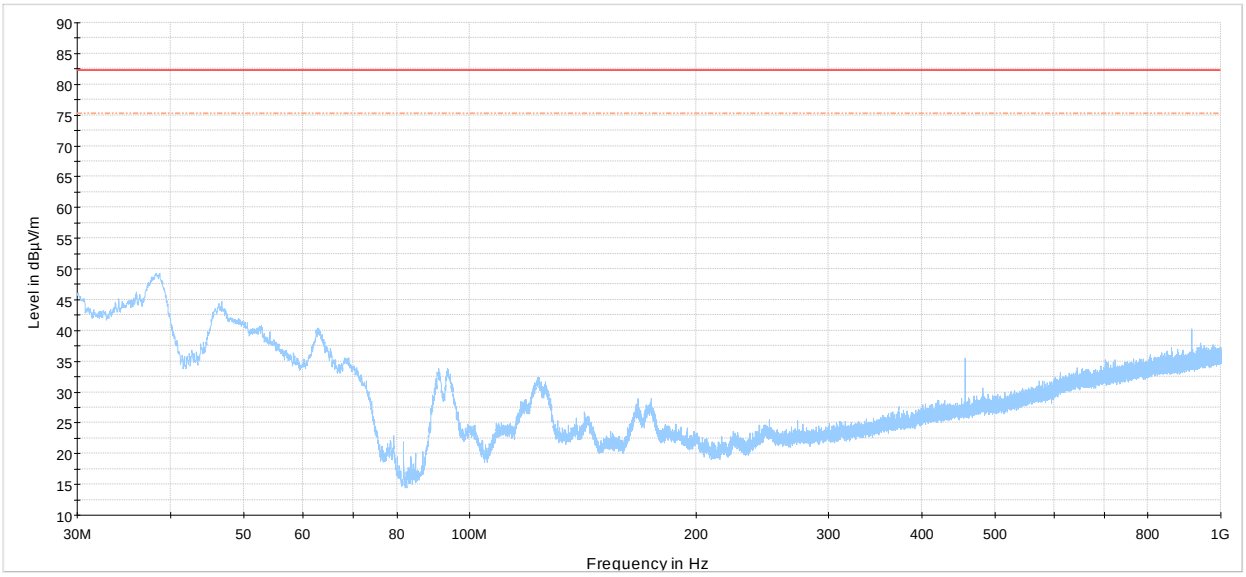
Plot 8.4-23: Radiated spurious emissions
Uplink 452.693750 MHz



NEX-220378 G-WAY UPLINK HIGH BAND HIGH FREQUENCY
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

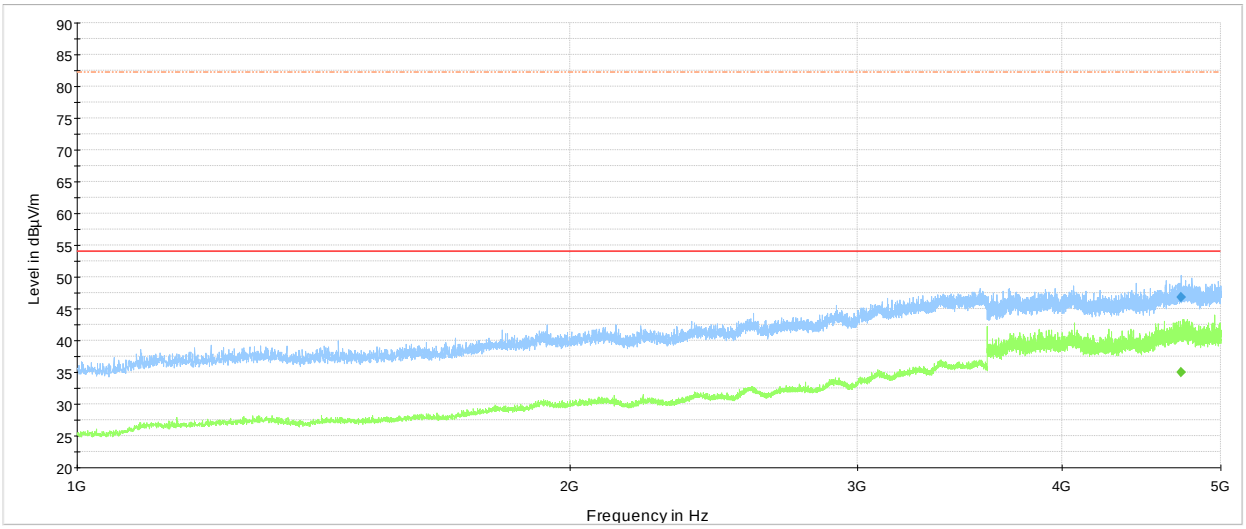
Plot 8.4-24: Radiated spurious emissions
Uplink 452.693750 MHz

8.4.3 Test data continued



NEX-220378 G-WAY DOWNLINK LOW BAND LOW FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

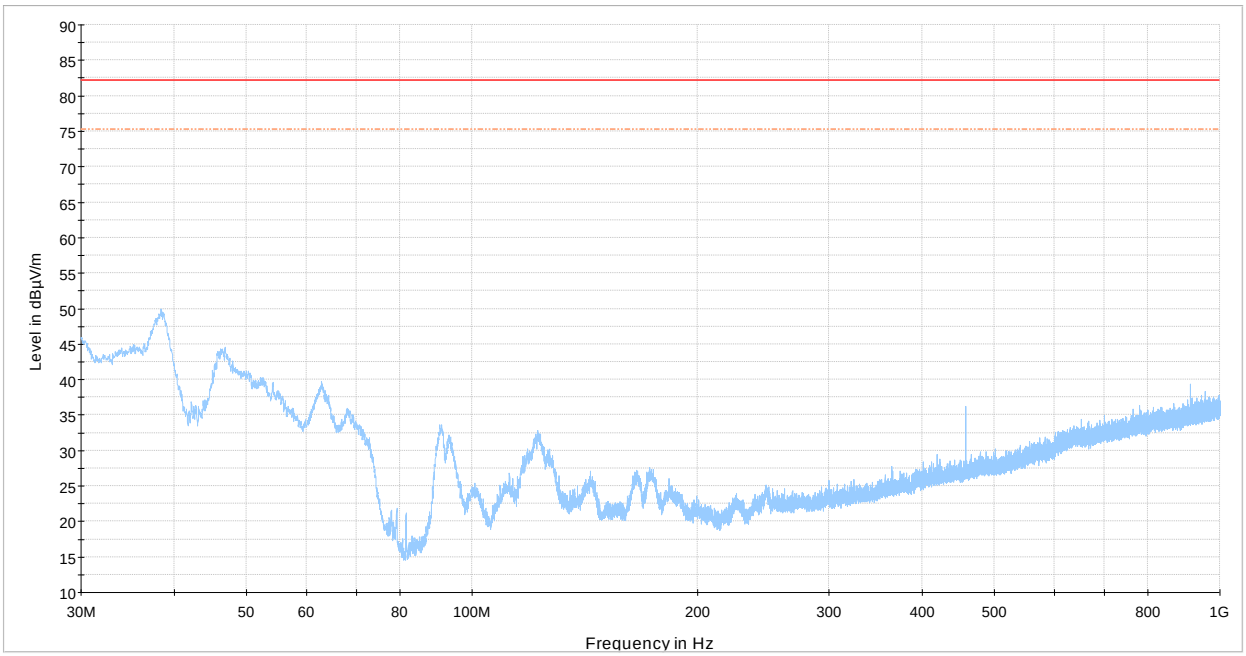
Plot 8.4-25: Radiated spurious emissions
Downlink 456.706250 MHz



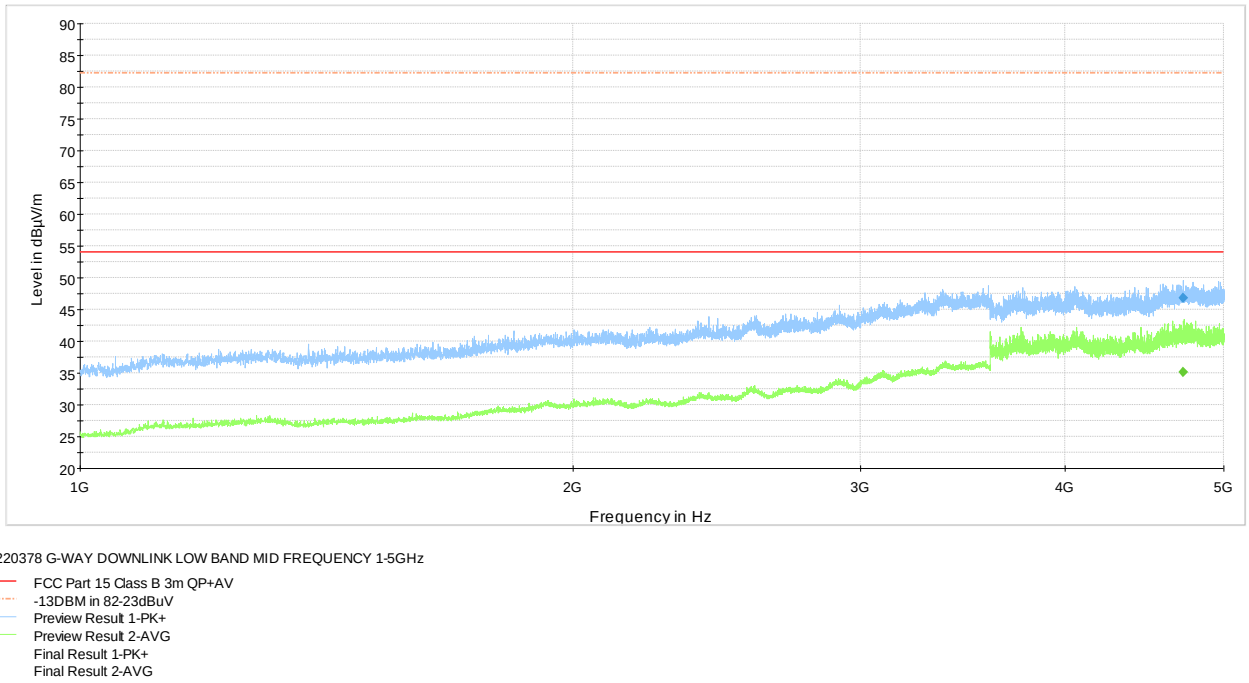
NEX-220378 G-WAY DOWNLINK LOW BAND HIGH FREQUENCY 1-5GHz
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

Plot 8.4-26: Radiated spurious emissions
Downlink 456.706250 MHz

8.4.3 Test data continued

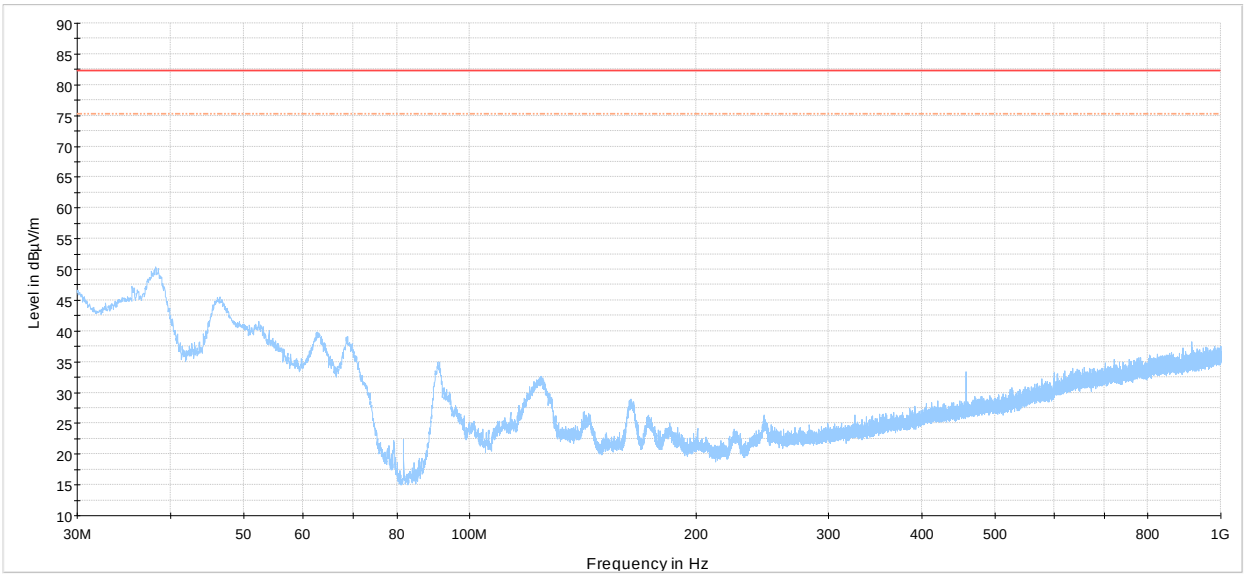


Plot 8.4-27: Radiated spurious emissions
Downlink 457.200000 MHz

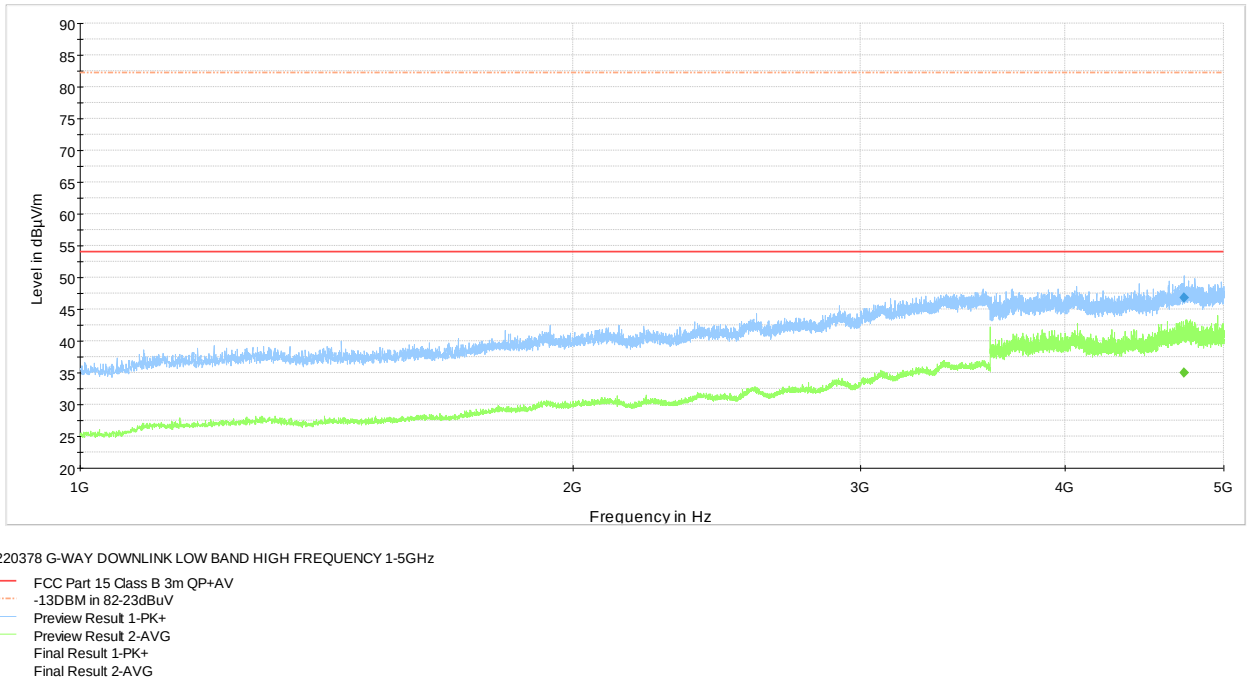


Plot 8.4-28: Radiated spurious emissions
Downlink 457.200000 MHz

8.4.3 Test data continued

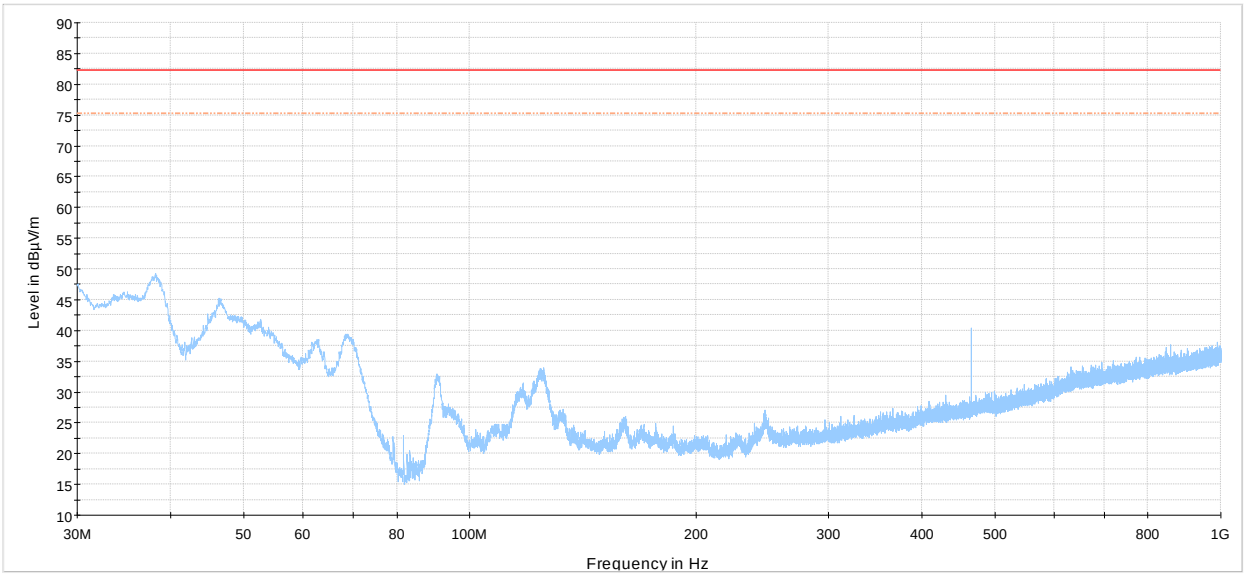


Plot 8.4-29: Radiated spurious emissions
Downlink 457.693750 MHz



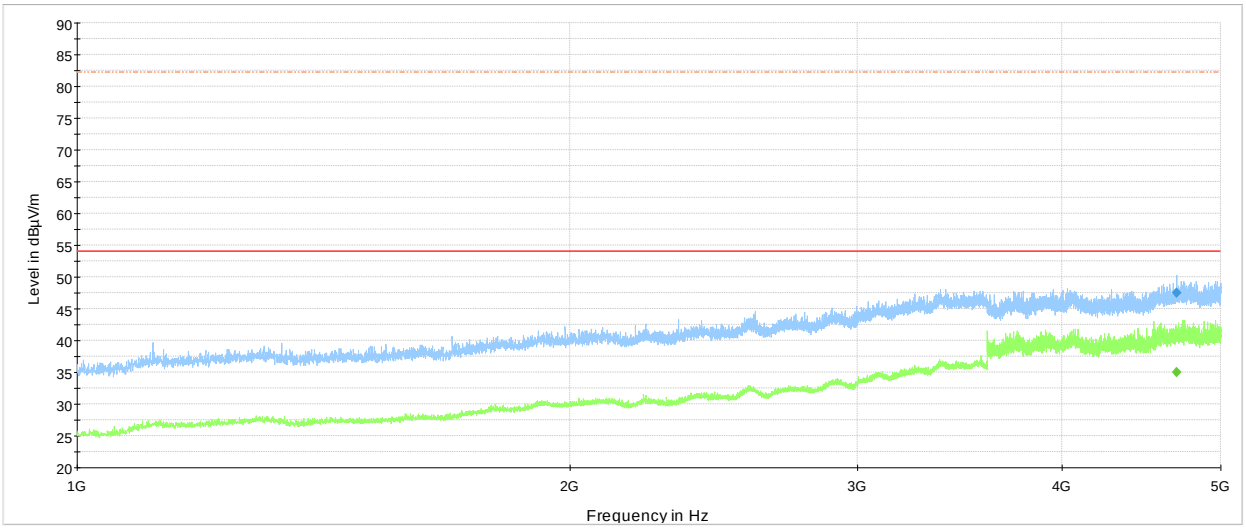
Plot 8.4-30: Radiated spurious emissions
Downlink 457.693750 MHz

8.4.3 Test data continued



NEX-220378 G-WAY DOWNLINK HIGH BAND LOW FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

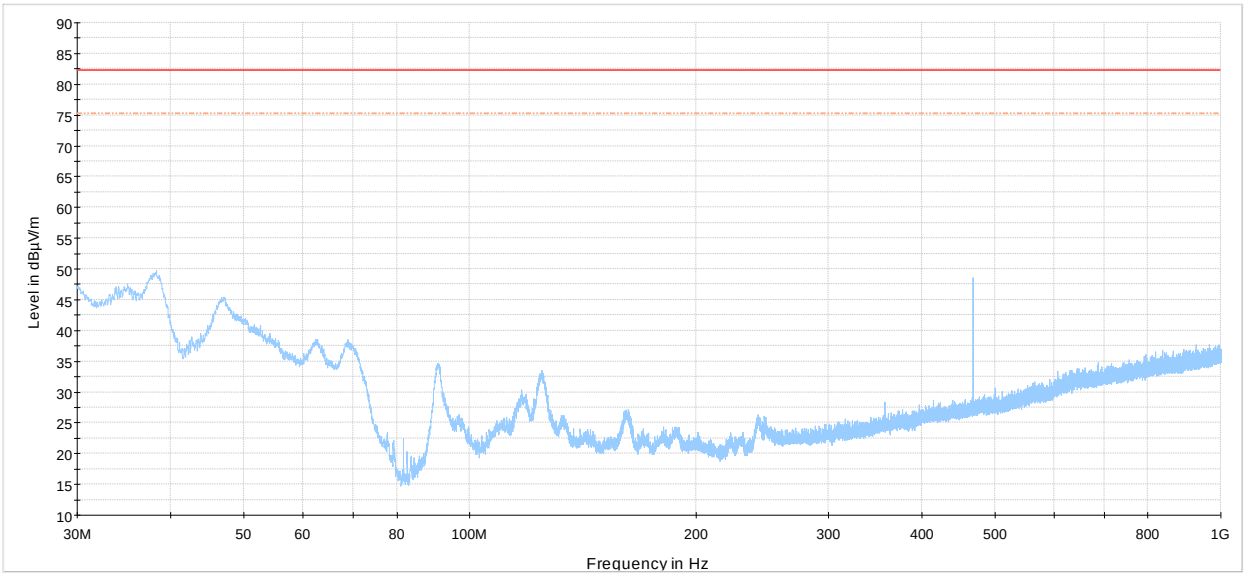
Plot 8.4-31: Radiated spurious emissions
Downlink 465.506250 MHz



NEX-220378 G-WAY DOWNLINK HIGH BAND LOW FREQUENCY 1-5GHz
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

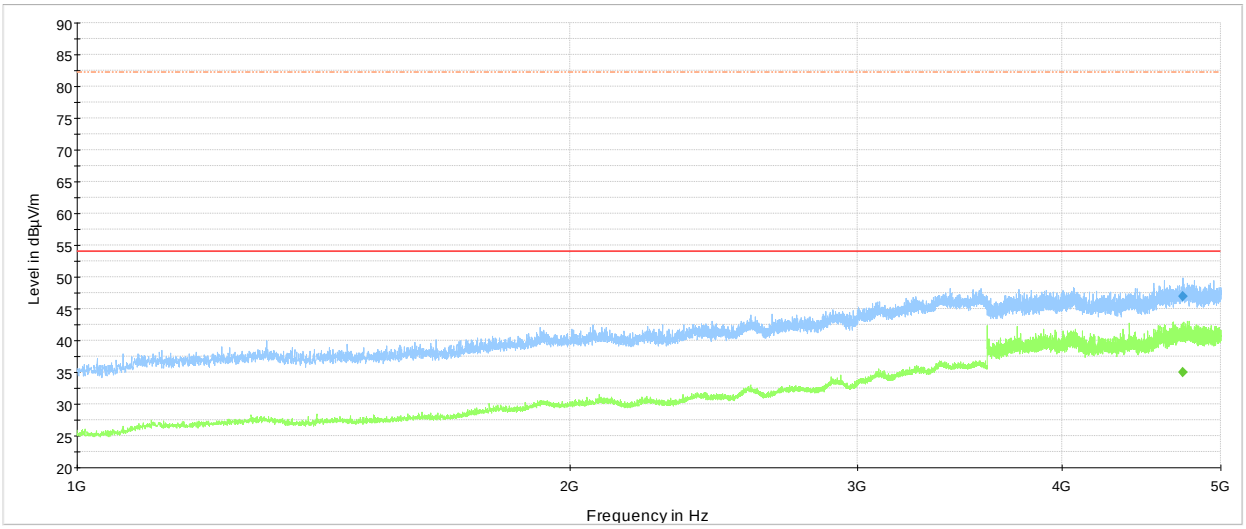
Plot 8.4-32: Radiated spurious emissions
Downlink 465.506250 MHz

8.4.3 Test data continued



NEX-220378 G-WAY DOWNLINK HIGH BAND MID FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

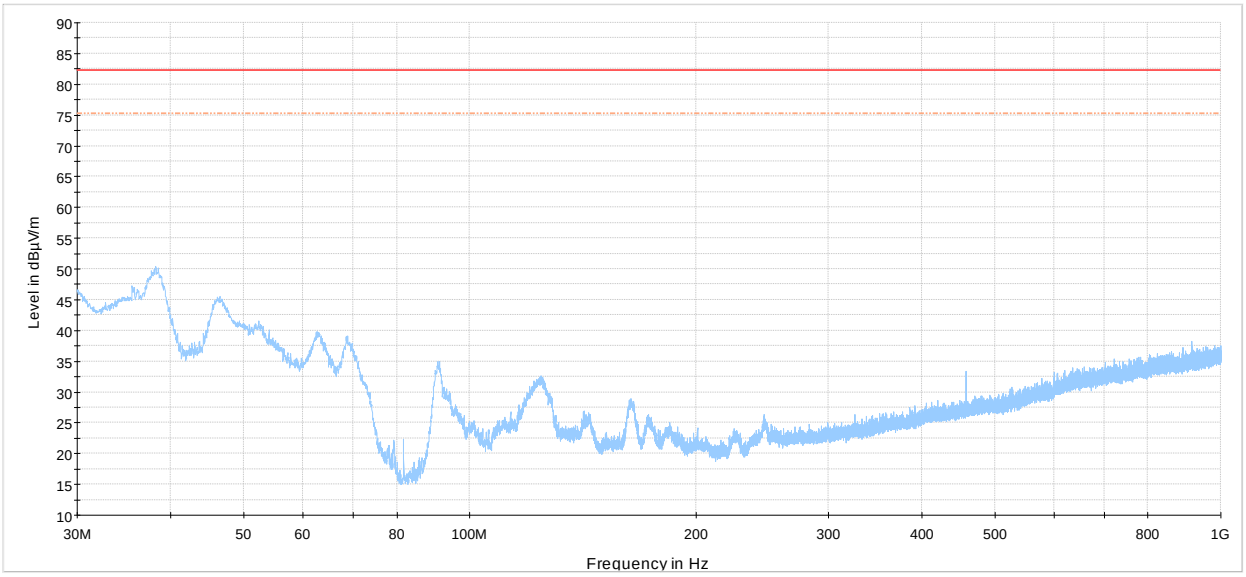
Plot 8.4-33: Radiated spurious emissions
Downlink 467.550000 MHz



NEX-220378 G-WAY DOWNLINK HIGH BAND MID FREQUENCY 1-5GHz
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

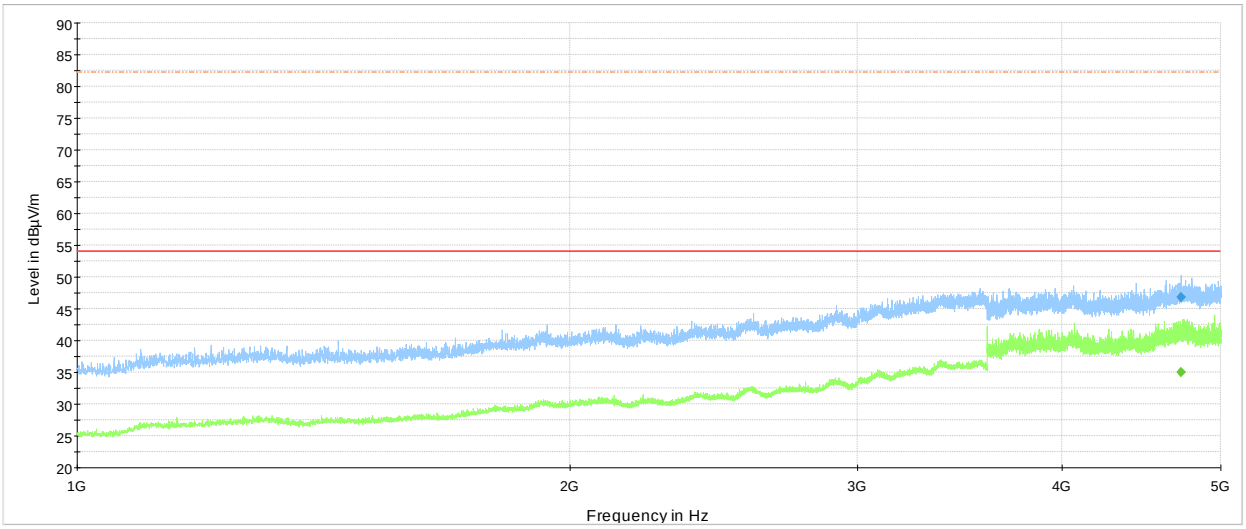
Plot 8.4-34: Radiated spurious emissions
Downlink 467.550000 MHz

8.4.3 Test data continued



NEX-220378 G-WAY DOWNLINK LOW BAND HIGH FREQUENCY
-13DBM in 82-23dBuV
-20DBM in 75-23dBuV
Preview Result 1-PK+

Plot 8.4-35: Radiated spurious emissions
Downlink 469.593750 MHz



NEX-220378 G-WAY DOWNLINK LOW BAND HIGH FREQUENCY 1-5GHz
FCC Part 15 Class B 3m QP+AV
-13DBM in 82-23dBuV
Preview Result 1-PK+
Preview Result 2-AVG
Final Result 1-PK+
Final Result 2-AVG

Plot 8.4-36: Radiated spurious emissions
Downlink 469.593750 MHz

8.5 Intermodulation

The test was performed when at the input of the EUT were 2 CW signals at two adjacent channels.

8.5.1 Test summary

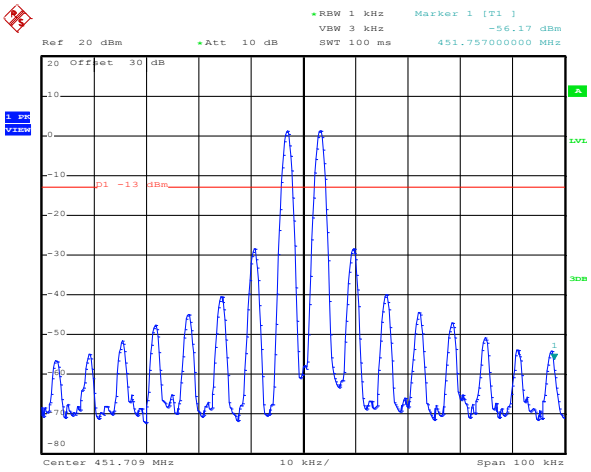
Test date	September 20, 2012	**Test engineer**	Kevin Rose	**Verdict**	Pass
Temperature	21 °C	**Air pressure**	1002 mbar	**Relative humidity**	29 %

8.5.2 Observations/special notes

Notes: channel separation is 12.5 kHz

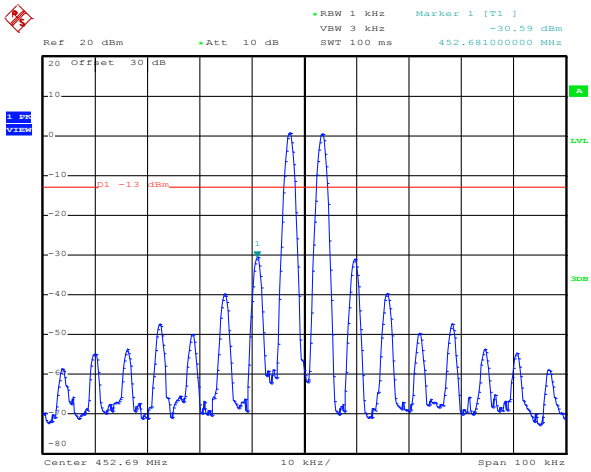
Down link	BAND (MHz) 456.7–457.7			
	Low		High	
	456.70625	456.71875	457.69375	457.68125
	BAND (MHz) 465.5–469.6			
	Low		High	
	465.50625	465.51875	469.59375	469.58125
UP link	BAND (MHz) 460.5–464.6			
	Low		High	
	460.50625	460.51875	464.59375	464.58125
	BAND (MHz) 451.7–452.7			
	Low		High	
	451.70625	451.71875	452.69375	452.68125

8.5.3 Test data



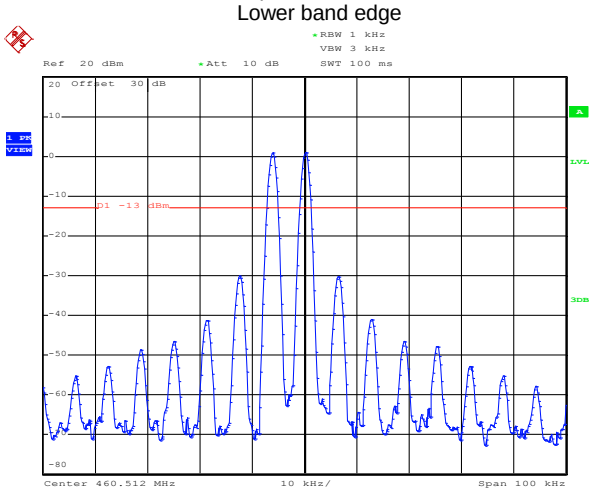
Date: 20.SEP.2012 15:56:42

Plot 8.5-1: 3rd order intermodulation
Uplink low band
Lower band edge



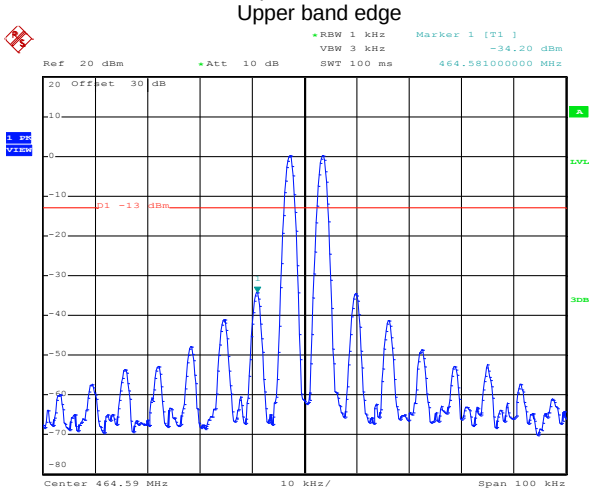
Date: 20.SEP.2012 15:58:57

Plot 8.5-2: 3rd order intermodulation
Uplink low band
Upper band edge



Date: 20.SEP.2012 15:53:53

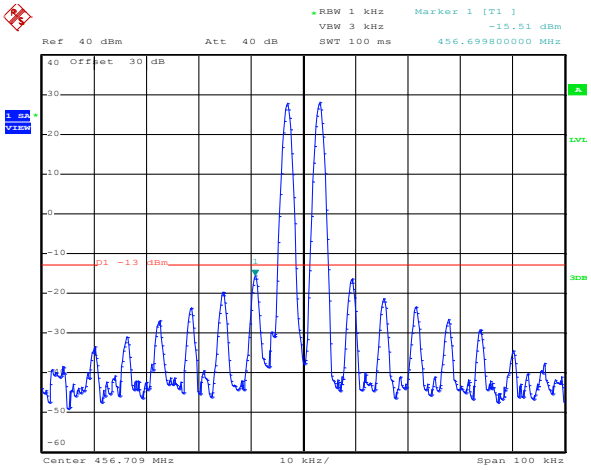
Plot 8.5-3: 3rd order intermodulation
Uplink High band
Lower band edge



Date: 20.SEP.2012 15:55:15

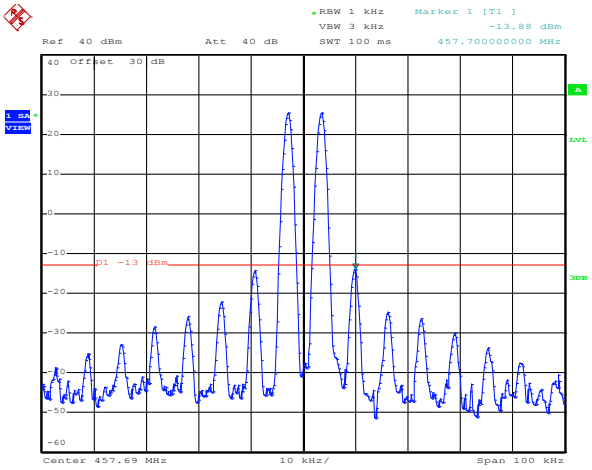
Plot 8.5-4: 3rd order intermodulation
Uplink High band
Upper band edge

8.5.3 Test data continued



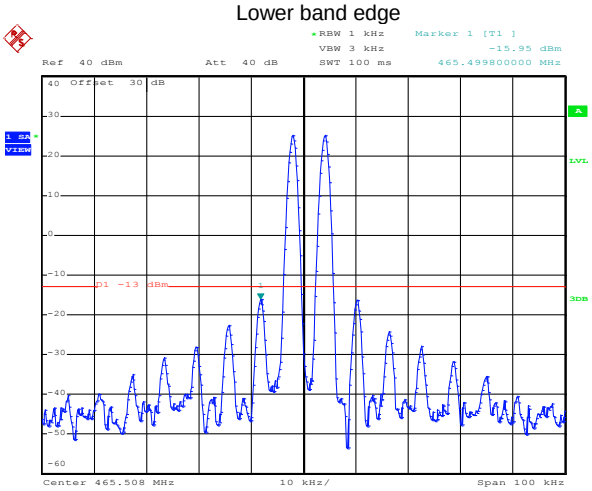
Date: 20.SEP.2012 12:51:09

Plot 8.5-5: 3rd order intermodulation
Downlink low band
Lower band edge



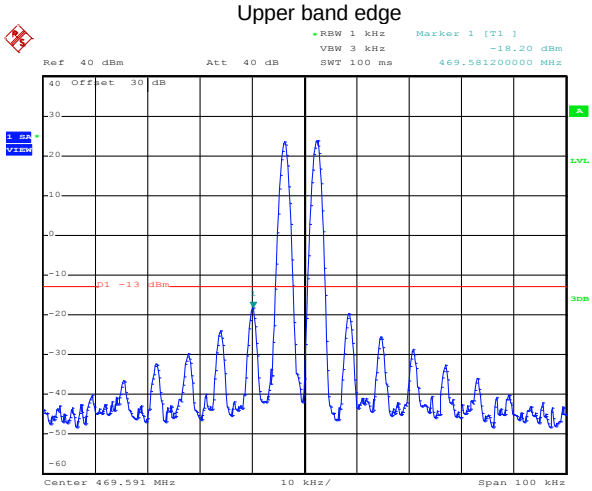
Date: 20.SEP.2012 12:53:02

Plot 8.5-6: 3rd order intermodulation
Downlink low band
Upper band edge



Date: 20.SEP.2012 12:48:11

Plot 8.5-7: 3rd order intermodulation
Downlink High band
Lower band edge

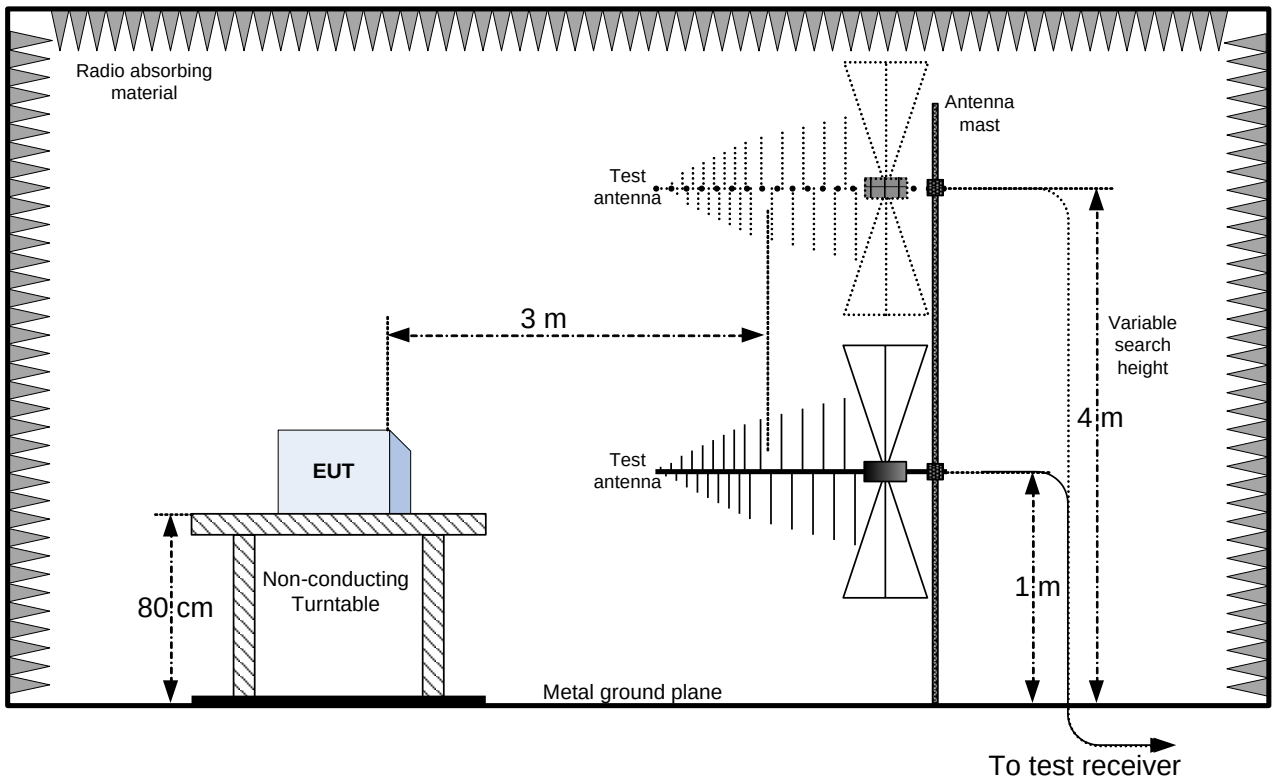


Date: 20.SEP.2012 12:46:26

Plot 8.5-8: 3rd order intermodulation
Downlink High band
Upper band edge

Section 9: Block diagrams of test set-ups

9.1 Radiated emissions set-up

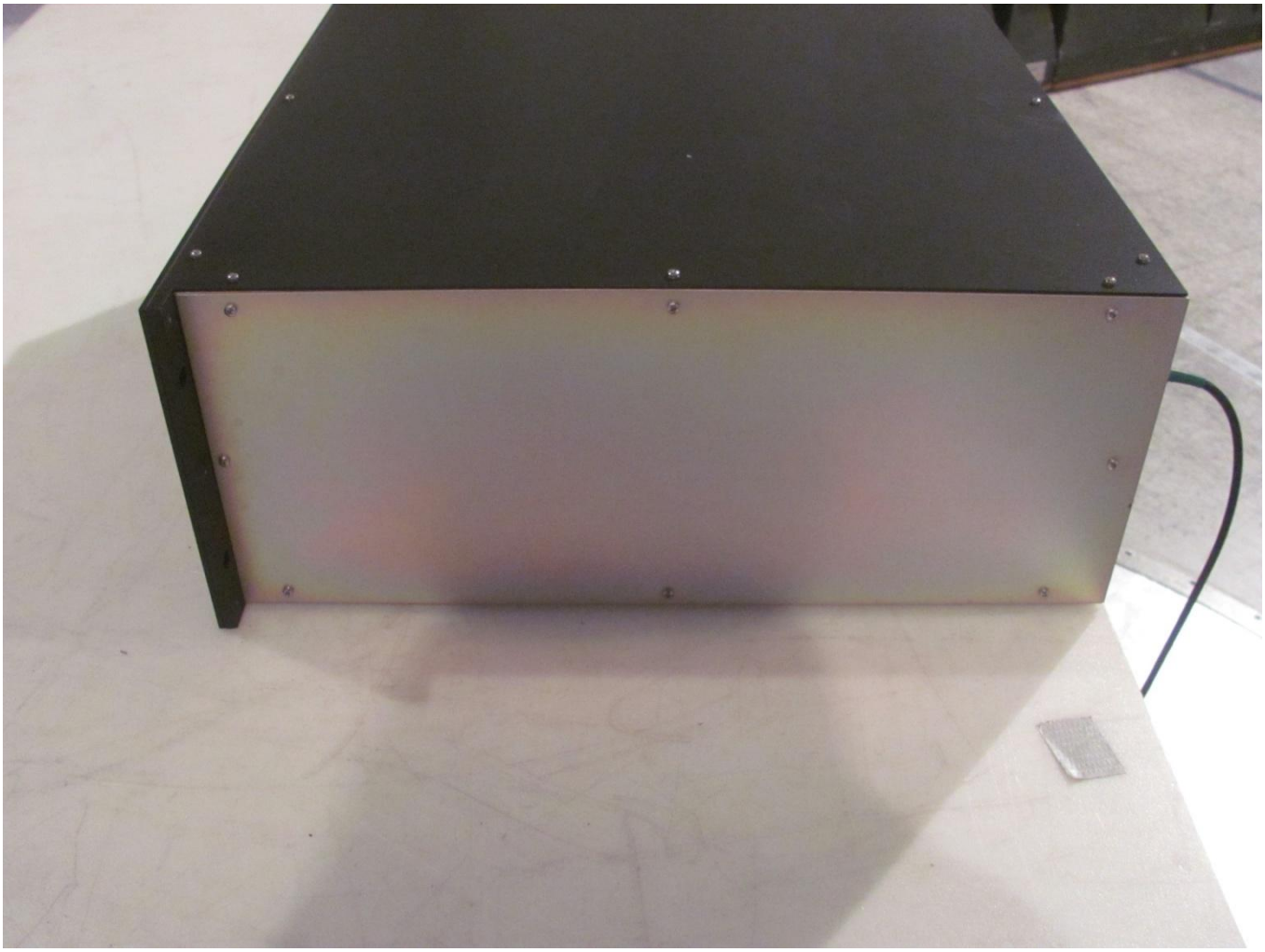


Section 10: EUT photos

10.1 EUT front view

10.2 EUT rear view

10.3 EUT left side view



10.4 EUT right side view