REPORT

issued by an FCC listed Laboratory Reg. no. 93866
The test sites comply with RSS-Gen, IC file no: 3482A

Date	Reference	Page
2011-11-04	FX114281-F27	1 (2)

1002
ISO/IEC 17025

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164 80 Stockholm

Radio measurements on RUS 01 B12 700 MHz radio equipment with FCC ID:TA8AKRC11894-1

(9 appendices)

Test object

RUS 01 B12, KRC 118 94/1 Rev R1B, serial no: C825071668

Summary

Standard	Compliant	Appendix
FCC CFR 47		
2.1046 RF power output	Yes	2
2.1049 Occupied bandwidth	Yes	3
2.1051 Band edge	Yes	4
2.1051 Spurious emission at antenna terminals	Yes	5
2.1053 Field strength of spurious radiation	Yes	6
2.1055 Frequency stability	Yes	7
15.111 Receiver spurious emissions	Yes	8

SP Technical Research Institute of Sweden
Electronics - EMC

Performed by

Jörgen Wassholm

Examined by

Christer Karlsson

Table of contents

Description of test object

Equipment:	Radio equipment RUS 01 B12 running in LTE mode
Frequency bands:	TX: 729 – 745 MHz RX: 699 – 715 MHz The highest and lowest EARFCNs and the corresponding frequencies for each supported channel BW configuration are listed below and are pursuant to 3GPP TS 36.141 section 5.7 Channel arrangement
Supported channel bandwidth configurations	5, 10 and 15 MHz
Modulation and access scheme	OFDMA in FDD
OFDM subcarrier modulation	System information and pilots use BPSK and QPSK. For payload data QPSK, 16QAM and 64QAM can be used.
Maximum rated output power:	Single carrier 1x 47.8 dBm (1x60 W)
Number of antenna ports:	TX/RX: 1 RX only: 1
Nominal supply voltage:	-48 VDC

Tested frequencies and EARFCNs for TX measurements

EARFCN Downlink	Frequency [MHz]	Comment
5035	731.5	TX bottom (B) frequency in 5 MHz BW configuration
5060	734.0	TX bottom (B) frequency in 10 MHz BW configuration
5085	736.5	TX bottom (B) frequency in 15 MHz BW configuration
5090	737.0	TX band mid (M) frequency in 5,10 and 15 MHz BW configurations
5095	737.5	TX top (T) frequency in 15 MHz BW configuration
5120	740.0	TX top (T) frequency in 10 MHz BW configuration
5145	742.5	TX top (T) frequency in 5 MHz BW configuration

Tested frequency and EARFCN for RX measurement

EARFCN	Frequency [MHz]	Comment
23035	701.5	RX band bottom (B) frequency in 5 MHz BW configuration
23090	707.0	RX band bottom (M) frequency in 5 MHz BW configuration
23145	712.5	RX band bottom (T) frequency in 5 MHz BW configuration

Each corresponding uplink (RX) channel was offset by +18000 from above given downlink EARFCN.

Note: EARFCN are derived according 3GPP TS 36.141, table 5.7.3-1.

Operation modes during measurements

Measurements were performed with the test object transmitting test models as defined in 3GPP TS 36.141. Test model E-TM1.1 was used to represent QPSK, test model E-TM3.2 to represent 16QAM and test model E-TM3.1 to represent 64QAM payload modulation.

The setting TX single carrier with test model E-TM1.1 in channel bandwidth configuration 5 MHz was found to be representative for all traffic scenarios when several settings with different modulations and channel bandwidth configurations were compared to find a worst case setting. This setting was used for all measurements unless noted otherwise.

The test object was powered with -48 VDC unless noted otherwise. All measurements were performed with the test object configured for maximum transmit power.

Conducted measurements

The EUT was mounted into a RBS 6202 cabinet and supplied by the cabinet's internal -48 V DC. TX parameters were measured at port RF A. RX spurious emission conducted was measured at port RF B with port RF A activated with E-TM1.1. Port RF A was terminated into 50 ohm.

Radiated measurements

The test object was tested stand-alone. It was powered with -48 VDC. All measurements were performed with the test object configured for maximum transmitter output power at port RF A. Antenna port RF B was unterminated.

Purpose of test

The purpose of the tests is to verify compliance to the performance characteristics specified in applicable parts of FCC CFR 47.

References

Measurements were done according to relevant parts of the following standards:
ANSI C63.4-2009
ANSI/TIA/EIA-603-C-2004
3GPP TS 36.141, version 8.5.0
CFR 47 part 2, October 1st , 2010
CFR 47 Part 15, October 1st , 2010
CFR 47 part 27 Subpart H, October 1st, 2010

Measurement equipment

Measurement equipment	Calibration Due	SP number
Test site Tesla	2012-10	503 881
Test site Edison	2011-12	504 114
R&S ESIB 26	2012-07	503 885
R&S FSIQ 40	2012-07	503 738
R&S FSQ 40	2012-07	504 143
R&S ESI 26	2012-07	503 292
Control computer with R&S software EMC32 version 8.51.0	-	503 889
Control computer with R&S software EMC32 version 8.20.1	-	503 479
High pass filter	2012-07	504 199
High pass filter	2012-07	504 200
High pass filter	2012-07	503 739
High pass filter	2012-07	503 740
RF attenuator	2012-07	504 159
RF attenuator	2012-07	900 229
RF attenuator	2012-07	900 118
RF attenuator	2012-07	900 690
RF attenuator	2012-07	900 691
Boonton RF Peak power meter/analyzer	2011-10	503 144
Boonton Power sensor 56518-S/4	2012-10	503 145
Chase Bilog Antenna CBL 6111A	2011-10	503 182
Antenna Schaffner CBL 6143	2013-04	504 079
EMCO Horn Antenna 3115	2014-01	502 175
Std.gain horn FLANN model 20240-20	-	503 674
µComp Nordic, Low Noise Amplifier	2012-07	504 160
MITEQ Low Noise Amplifier	2012-07	503 285
Temperature cabinet	-	503 360
Multimeter Fluke 87	2012-05	502 190
Testo 625, Temperature and humidity meter	2012-06	504 188
Testo 635 Temperature and humidity meter	2012-05	504 203

Uncertainties

Measurement and test instrument uncertainties are described in the quality assurance documentation ”SP-QD 10885”. The uncertainties are calculated with a coverage factor k=2 (95% level of confidence).

Reservation

The test results in this report apply only to the particular test object as declared in the report.

Delivery of test object

The test object was delivered: 2011-09-08.

Manufacturer’s representative

Christer Gustavsson, Ericsson AB

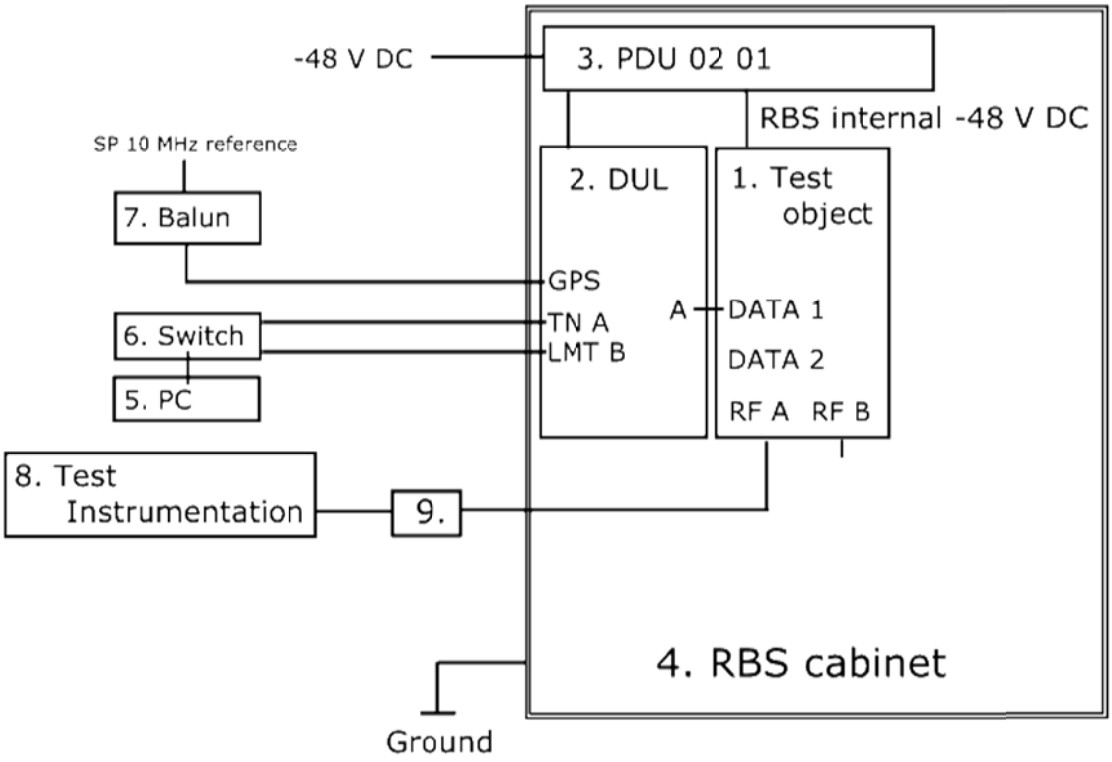
Test engineers

Andreas Johnson, Tomas Lennhager, and Jörgen Wassholm

Test participant

None

Test set-up conducted TX measurements at port RF A



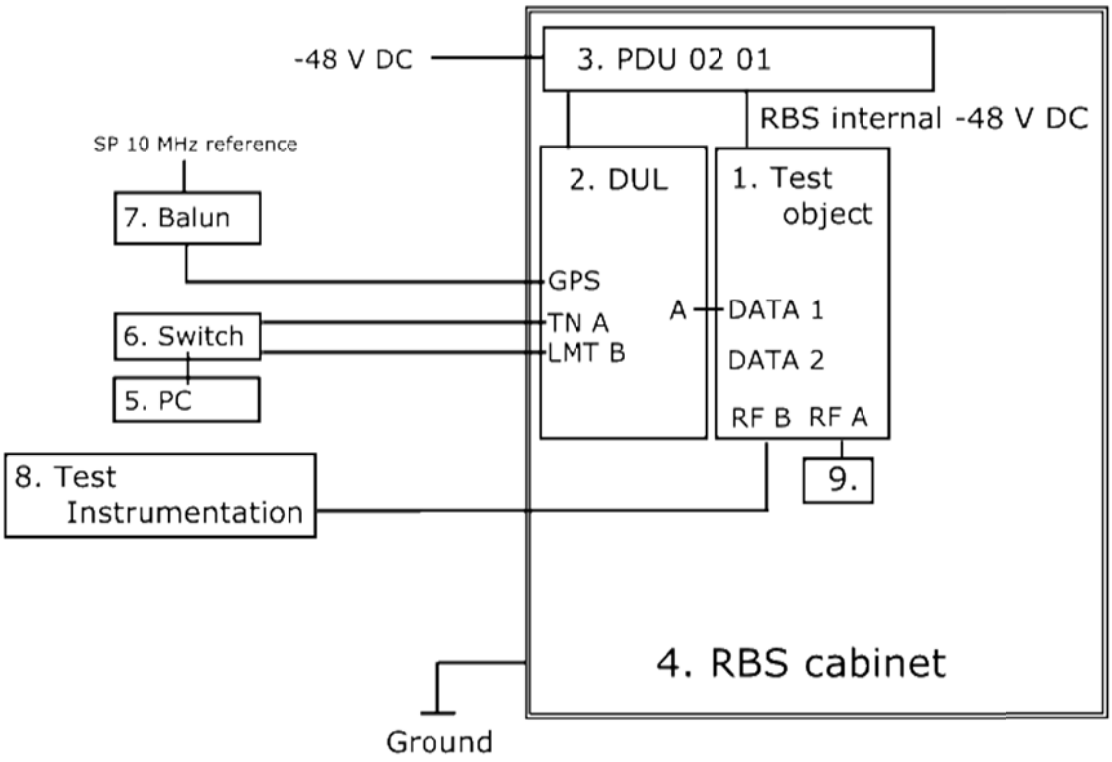
Test object

1. RUS 01 B12, KRC 118 94/1, revision R1B, S/N: C825071668
   FCC ID:TA8AKRC11894-1

Functional test equipment

2. DUL 20 01, KDU 137 533/4, revision R1C, S/N: C824461313
3. PDU 02 02, BMG 980 336/5, revision R1E, S/N: C941030896
4. RBS 6202 cabinet, BAMS 1000961945
5. Controlling laptop HP Elitebook 8730w, , BAMS 1000757968
   running software MOSHELL V8.0k
6. Fast Ethernet Switch: NETGEAR 10/100 Mbps model: FS108
7. Balun for 10 MHz reference, converting BNC to RJ-45 connector
8. SP test instrument according measurement equipment list
9. Attenuator and filter according measurement equipment list

Test set-up conducted RX measurements at port RF B



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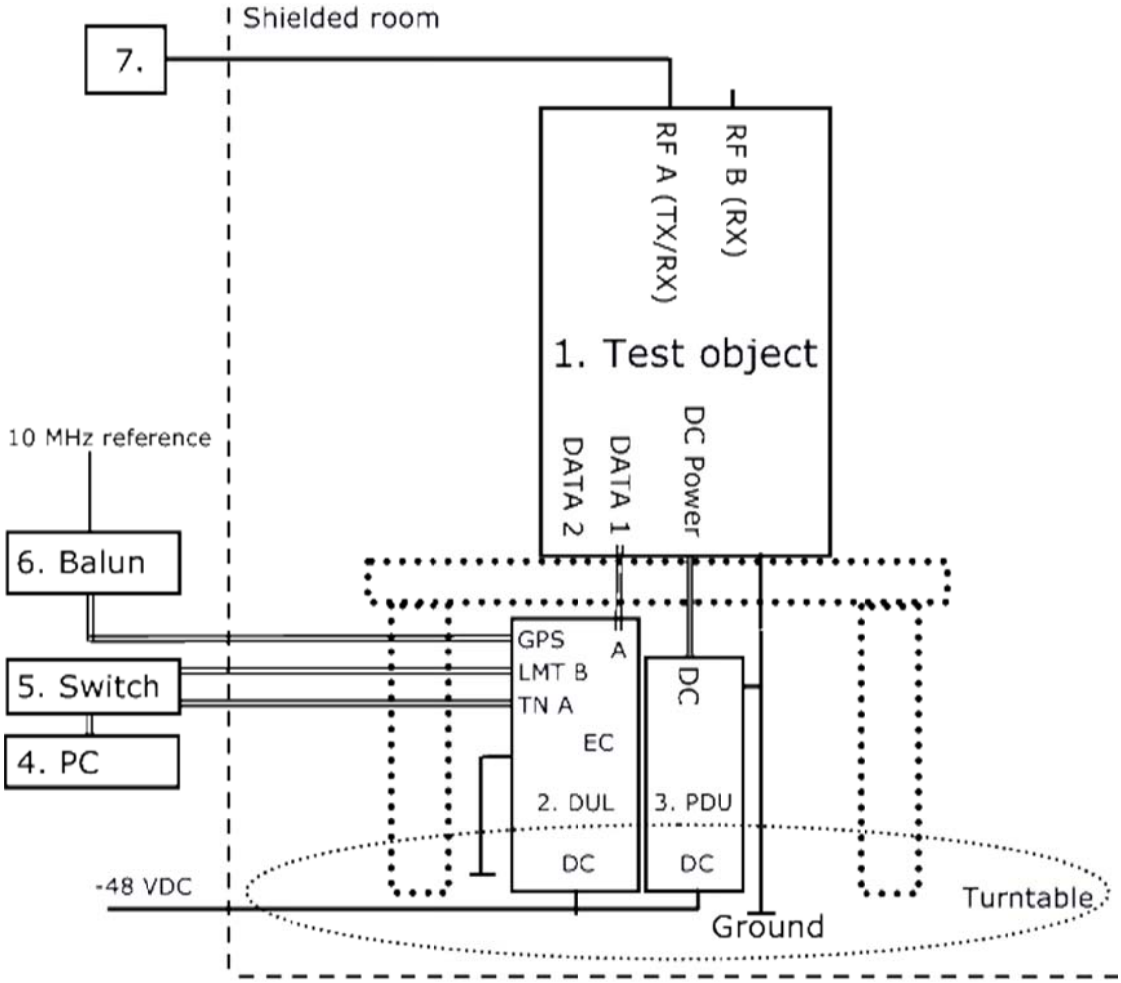
4. RBS 6202 cabinet, BAMS 1000961945
5. Controlling laptop HP Elitebook 8730w, , BAMS 1000757968
   running software MOSHELL V8.0k
6. Fast Ethernet Switch: NETGEAR 10/100 Mbps model: FS108
7. Balun for 10 MHz reference, converting BNC to RJ-45 connector
8. SP test instrument according measurement equipment list
9. 50 ohm termination

Test set-up, radiated measurements



Test object

1 RUS 01 B12, KRC 118 94/1, revision R1B, S/N: C825071668
FCC ID:TA8AKRC11894-1

Functional test equipment

2. DUL 20 01, KDU 137 533/4, revision R1C, S/N: C824461313,
hosted in SUP 6601 1/BFL 901 009/1 Rev R3B, S/N. BR81262569
3. Power Distribution Unit PDU 02 01, BMG 980 336/4 Rev R2A, S/N: BJ31534775
4. Laptop computor:Mobile Workstation, HP Elite book BAMS – 1000757967
with MOSHELL Ver. 8.0k
5. Fast Ethernet Switch: NETGEAR 10/100 Mbps model: FS108
6. Balun for 10 MHz reference, converting BNC to RJ-45 connector
7. 50 ohm terminator

Test object ports

Interface:	Type of port:
Ground connection during stand alone radiated emission test, in normal use grounded via cabinet	Ground
Supply power -48 VDC	DC Power
Antenna port 1 “RF A”, 7/16 connector, female, combined TX/RX	Antenna
Antenna port 2 “RF B”, 7/16 connector, female, RX only	Antenna
Data 1, connected to Port “A” at DUL	Signal
Data 2, unused	Signal
RXA I/O cross connecter, unused	Signal
RXA OUT cross connecter, unused	Signal
RXB I/O cross connecter, unused	Signal

RBS software

Software	Revision
CXP 102 051/12	R18AK

RF power output measurements according to CFR 47 §27.50

Date	Temperature	Humidity
2011-10-06	23 °C ± 3 °C	57 % ± 5 %

Test set-up and procedure

The test object was connected to a power analyzer measuring peak and RMS output power in CDF mode.

Measurement equipment	SP number
Boonton RF Peak power meter/analyzer	503 144
Boonton Power sensor 56518-S/4	503 146
RF attenuator	900 229
Testo 635, temperature and humidity meter	504 203

Measurement uncertainty: 0.7 dB

Results

Measured output power level at connector RF A

Test conditions	Transmitter power RMS (dBm) / PAR (dB)		
	Frequency B	Frequency M	Frequency T
BW configuration 5 MHz	47.3/ 6.9	47.3/ 6.8	47.2/ 6.8
BW configuration 10 MHz	47.2/ 7.2	47.2/ 6.7	47.2/ 6.8
BW configuration 15 MHz	47.0/ 7.2	47.0/ 7.0	47.0/ 6.9

Limit

Derived from CFR 47 § 27.50 (c) (3): Base stations transmitting in the 698 –746 MHz band with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz.

The peak-to-average ratio (PAR) shall not exceed 13 dB.

Complies?	Yes

Occupied bandwidth measurements according to CFR 47 2.1049

Date	Temperature	Humidity
2011-10-06	23 °C ± 3 °C	57 % ± 5 %

Test set-up and procedure

The measurements were made per definition in §2.1049. The output was connected to a signal analyzer with the RMS detector activated. The signal analyzer was connected to an external 10 MHz reference standard during the measurements.

Measurement equipment	SP number
Rohde & Schwarz signal analyzer FSQ40	504 143
RF attenuator	900 229
RF attenuator	900 118
Testo 635, Temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Results

Diagram	BW configuration	Tested frequency	Occupied BW (99%) [MHz]
1	5 MHz	B	4.480
2	15 MHz	B	13.413
3	5 MHz	M	4.480
4	10 MHz	M	8.933
5	15 MHz	M	13.413
6	5 MHz	T	4.480
7	15 MHz	T	13.413

Appendix 3

Diagram 1

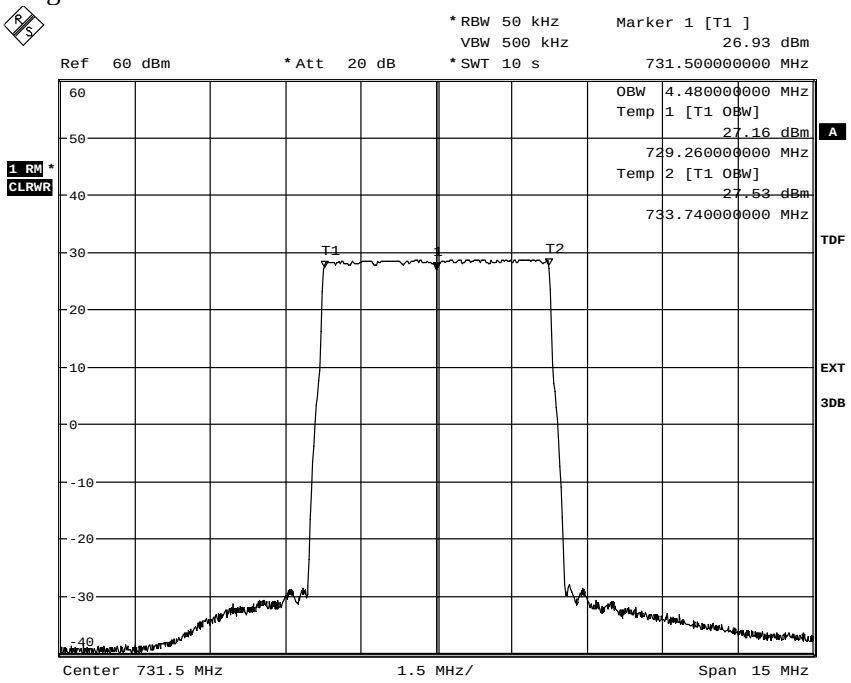


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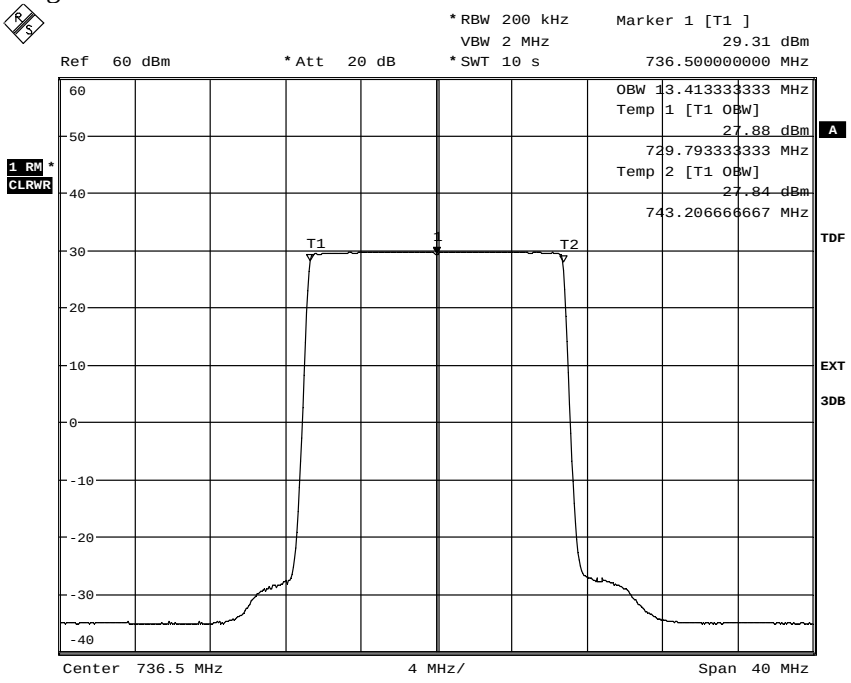
Diagram 2



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Appendix 3

Diagram 3

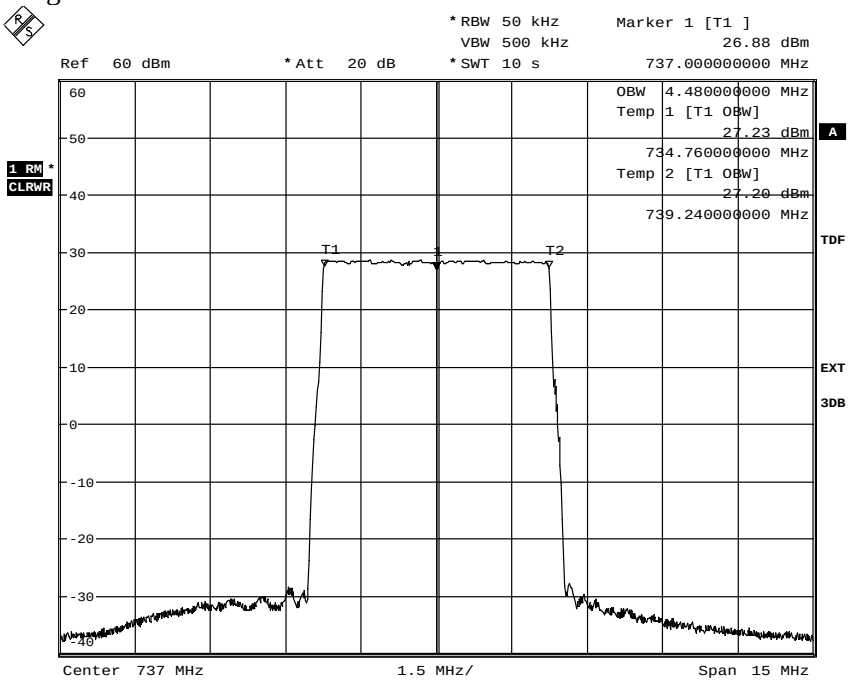

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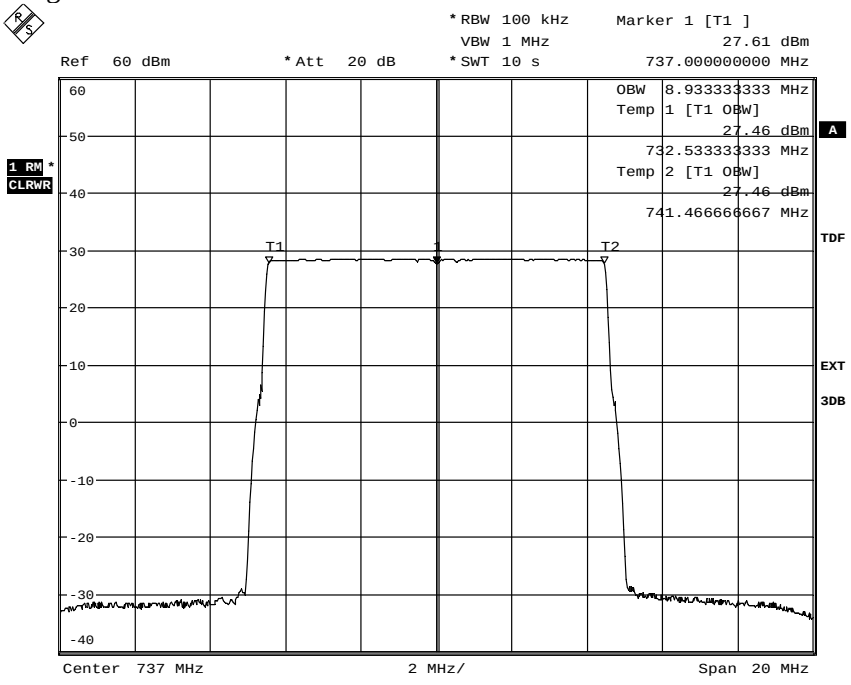
Diagram 4



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Appendix 3

Diagram 5

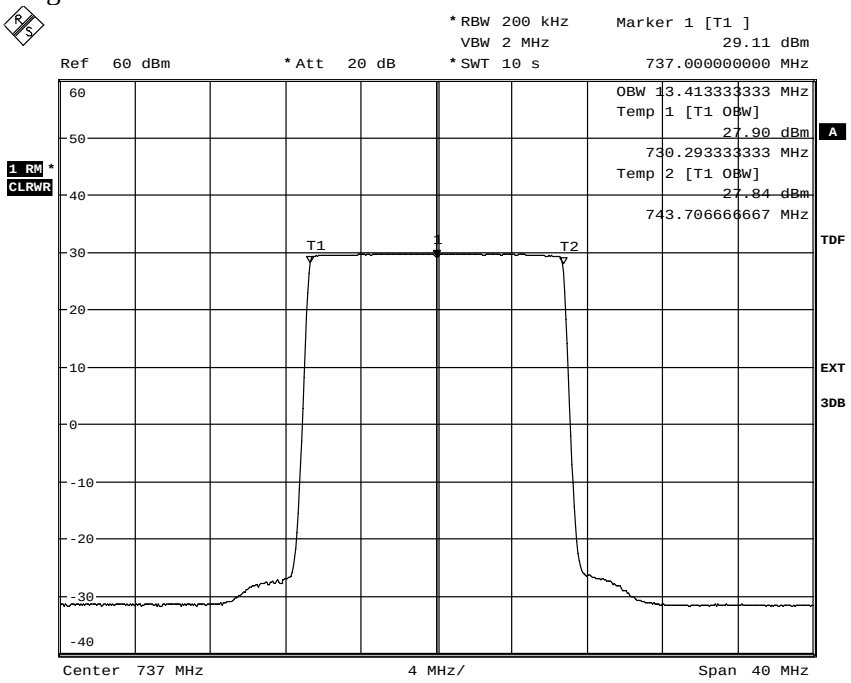

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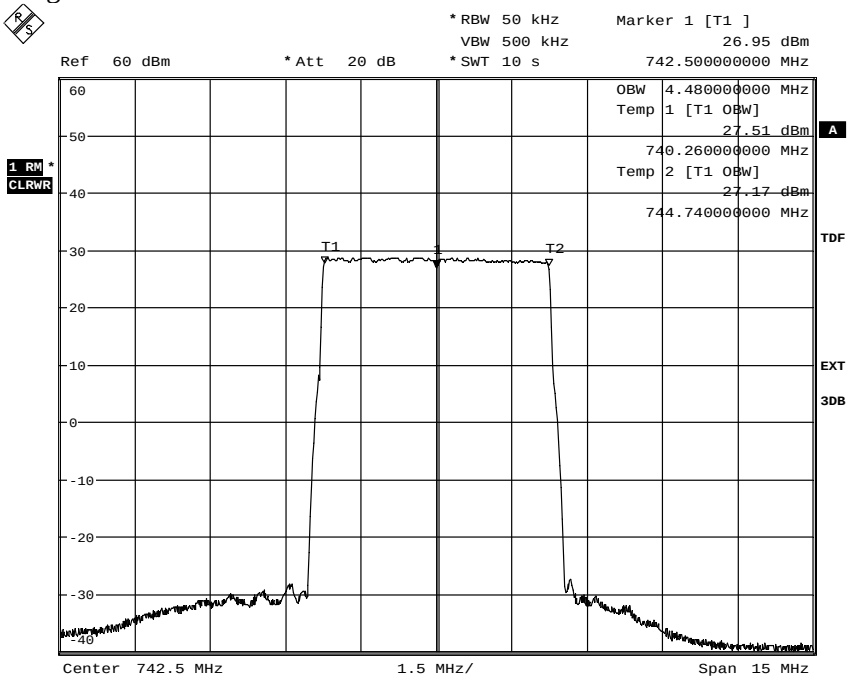
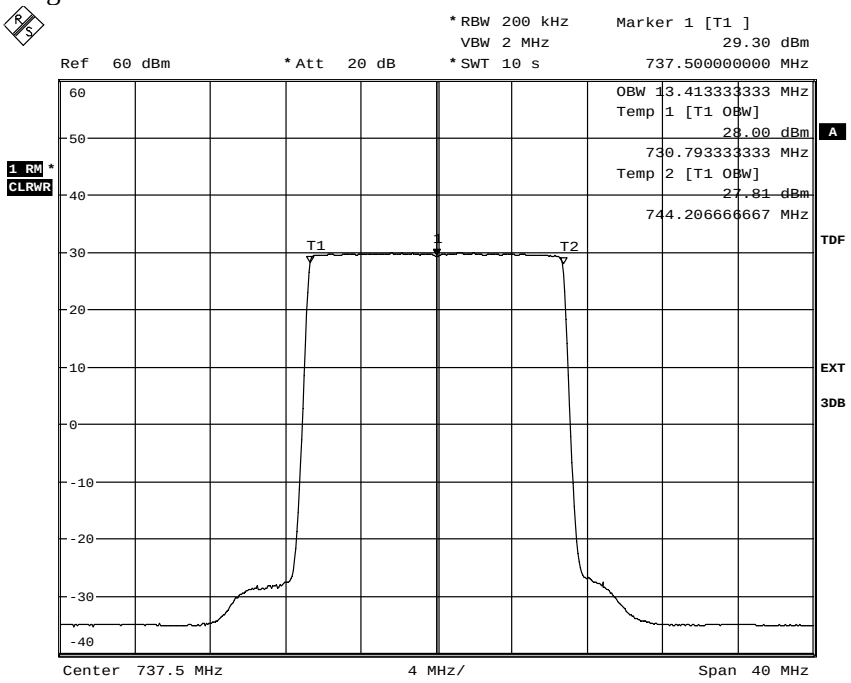
Diagram 6



Date: 6.OCT.2011 14:35:24

Appendix 3

Diagram 7



Date: 6.OCT.2011 13:03:32

Band edge measurements according to CFR 47 §27.53

Date	Temperature	Humidity
2011-10-17 and 2011-10-18	23 °C ± 3 °C	40-43 % ± 5 %

Test set-up and procedure

The test object was connected to a spectrum analyzer with the RMS detector activated. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements.

The measurements were made as defined in §27.53 (g). The FCC rules, specifying a RBW of at least 30k up to 100 kHz away from the band edges and a RBW of 100 kHz for measurements of emissions more than 100 kHz away from the band edges.
A resolution bandwidth of 30 kHz was used up to 1 MHz from the band edges. After the 100 kHz immediately outside the band edges the limit was adjusted -5.23 dB (10 log (30/100)) to -18.23 dBm in order to compensate for the reduced measurement bandwidth. The measurement from 1 MHz to 10 MHz were made with a RBW of 100 kHz

Measurement equipment	SP number
R&S FSQ	504 143
RF attenuator	900 229
RF attenuator	900 118
Testo 635, Temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Results

Diagram	BW configuration	Tested frequency
1 a+b	5 MHz	B
2 a+b	10 MHz	B
3 a+b	15 MHz	B
4 a+b	5 MHz	T
5 a+b	10 MHz	T
6 a+b	15 MHz	T

Limits

Derived from CFR 47 § 27.53 (g): Outside outside a licensee's frequency band(s) of operation the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, resulting in a limit of -13 dBm.

Complies?	Yes

Appendix 4

Diagram 1 a

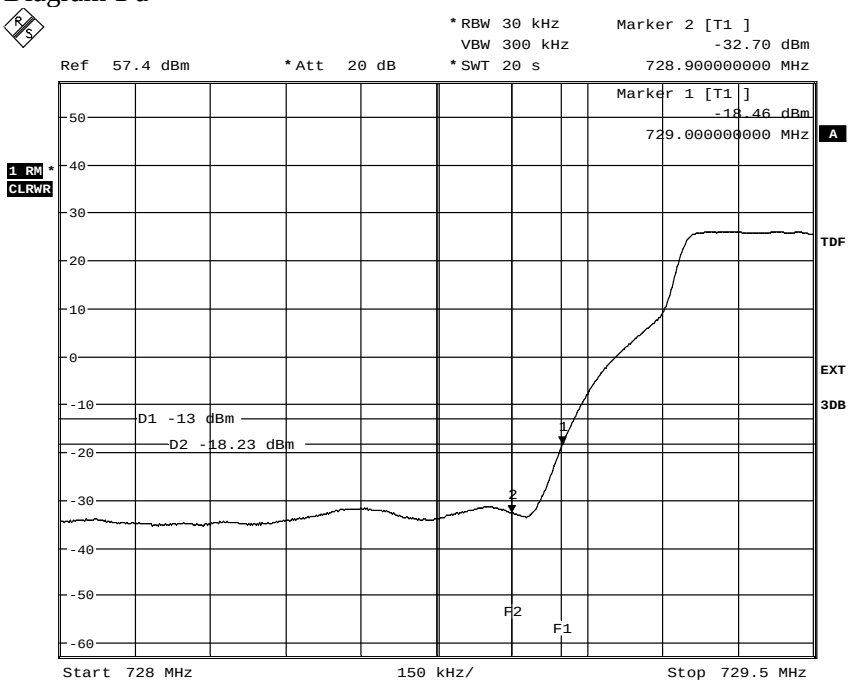


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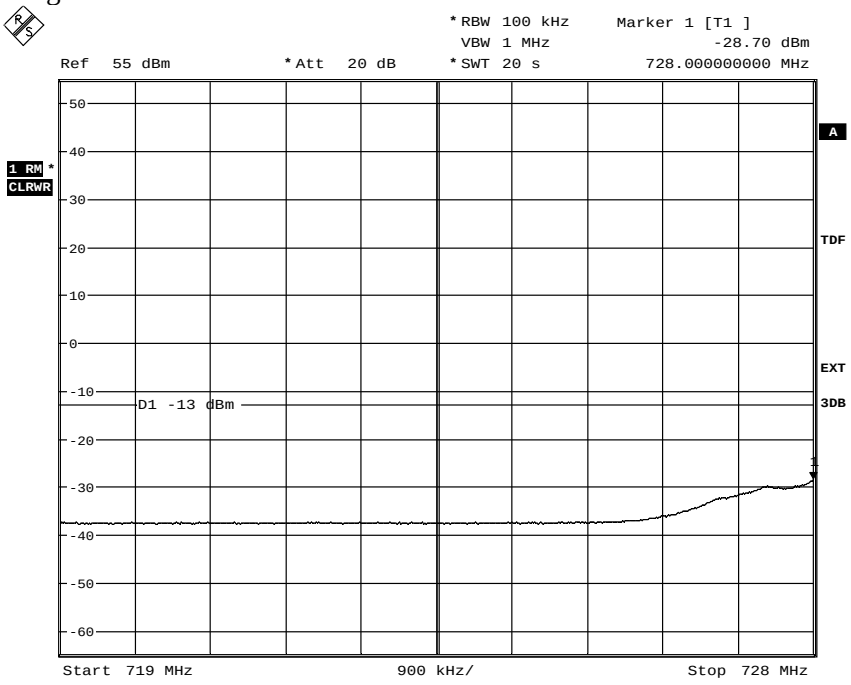
Diagram 1 b



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Appendix 4

Diagram 2 a

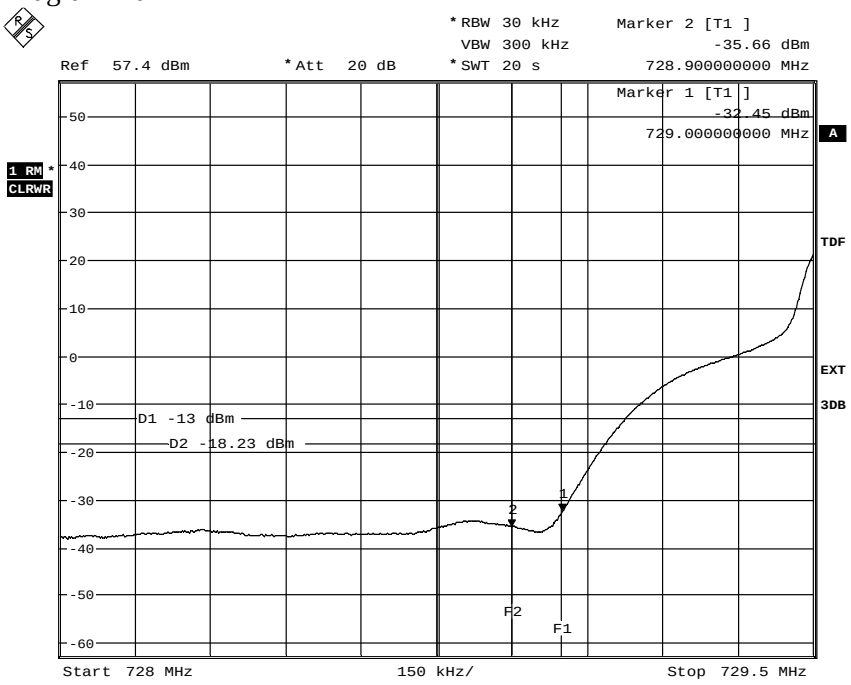

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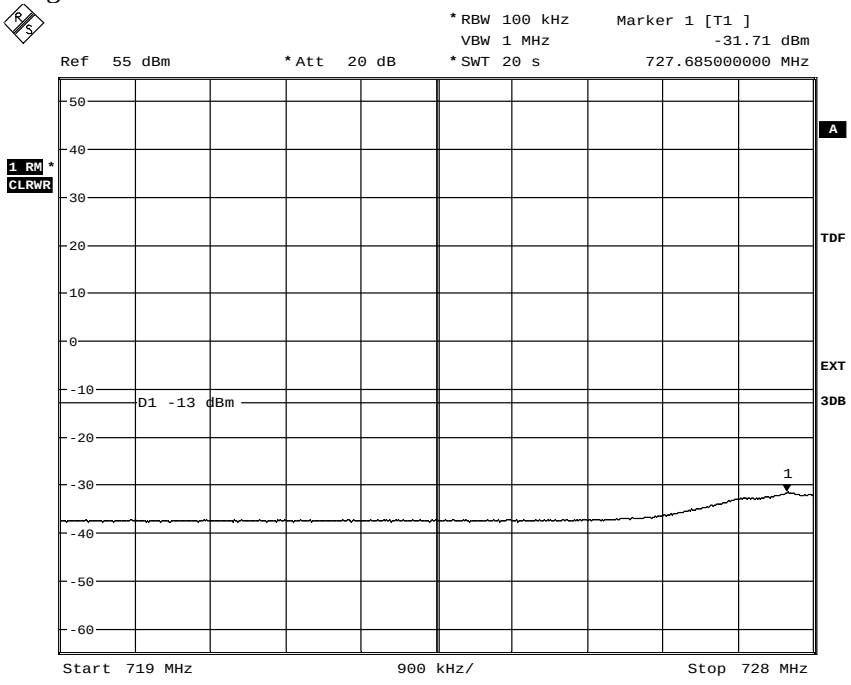
Diagram 2 b



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Appendix 4

Diagram 3 a

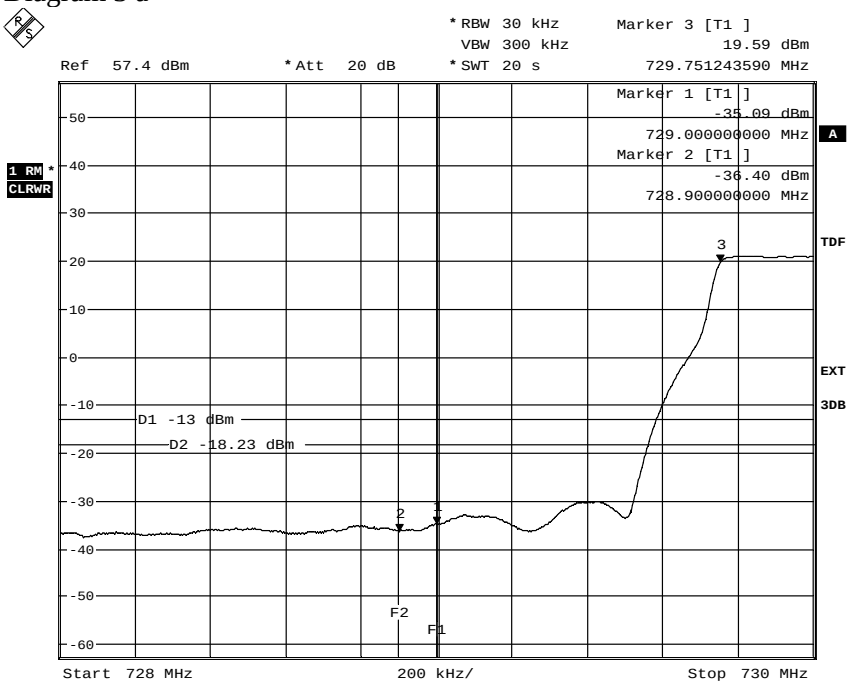

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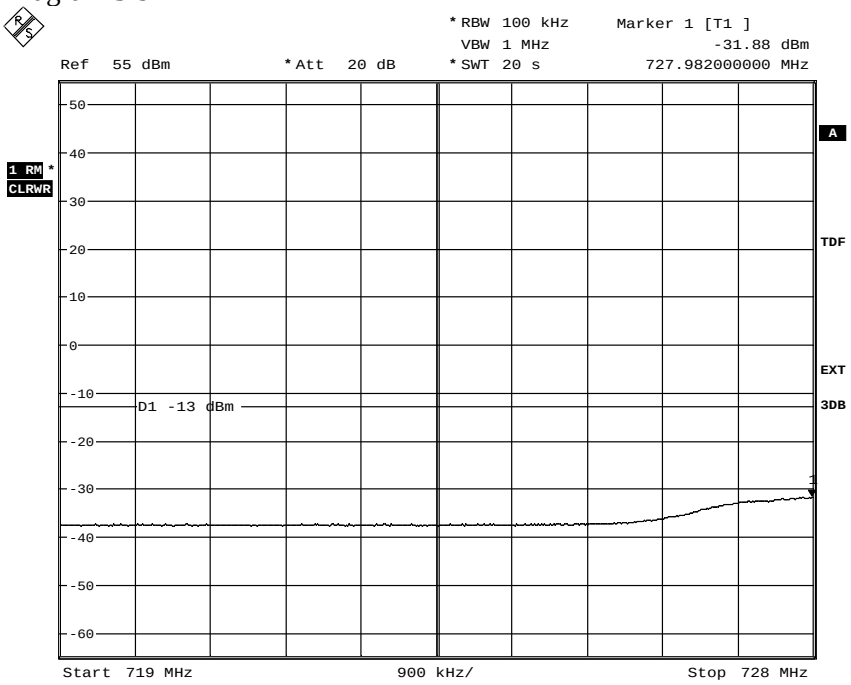
Diagram 3 b



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Appendix 4

Diagram 4 a

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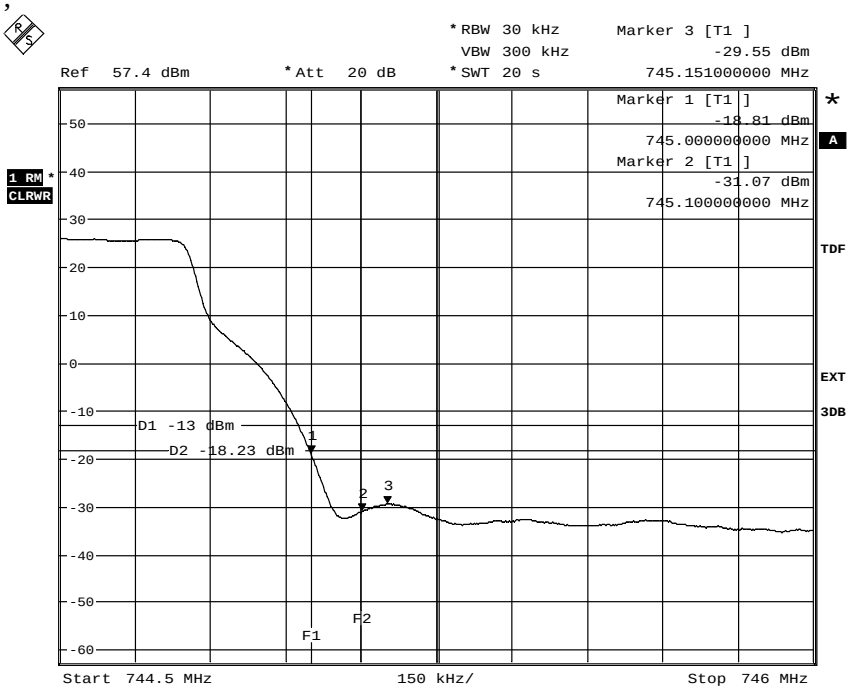

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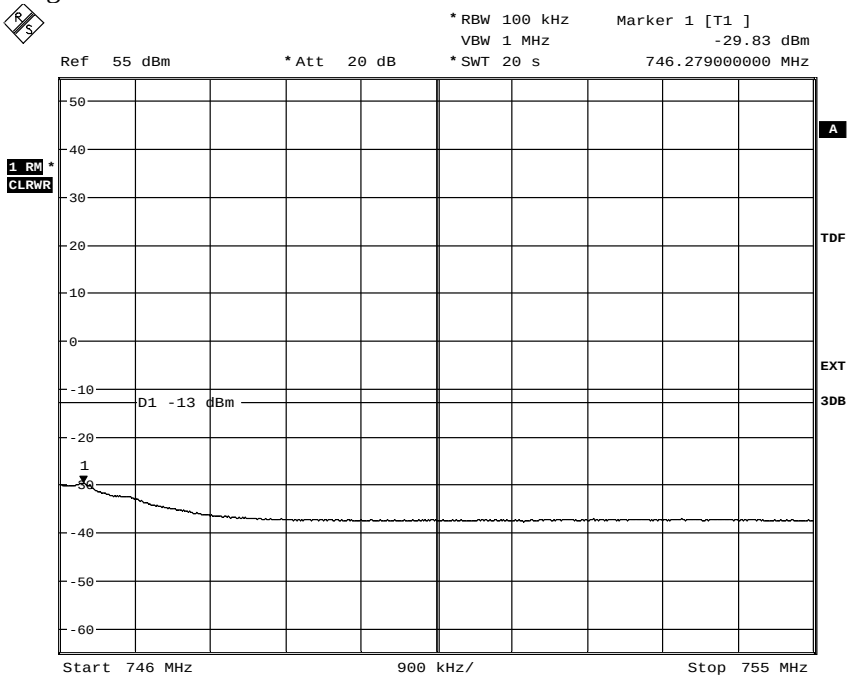
Diagram 4 b



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Appendix 4

Diagram 5 a

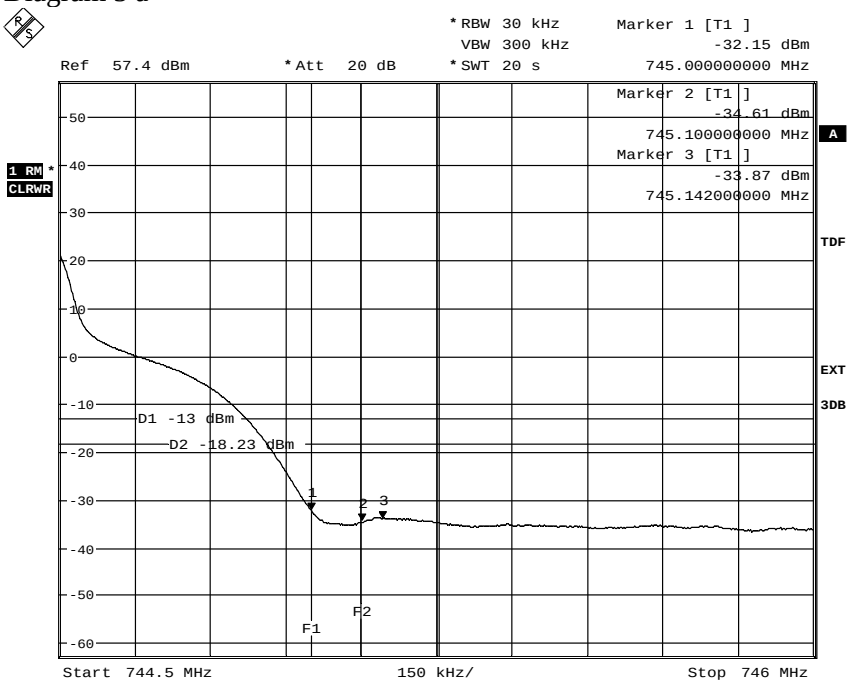

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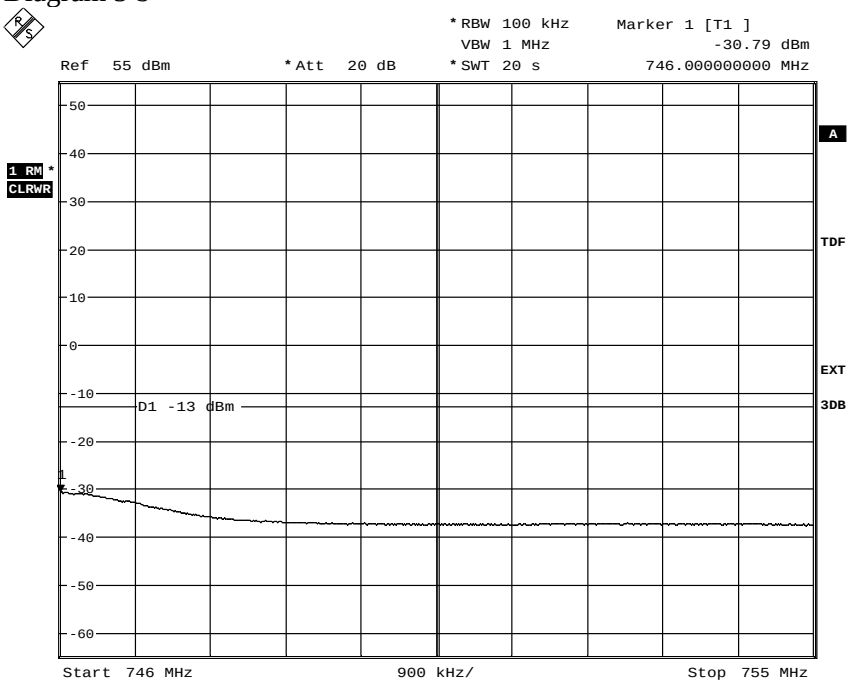
Diagram 5 b



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Appendix 4

Diagram 6 a

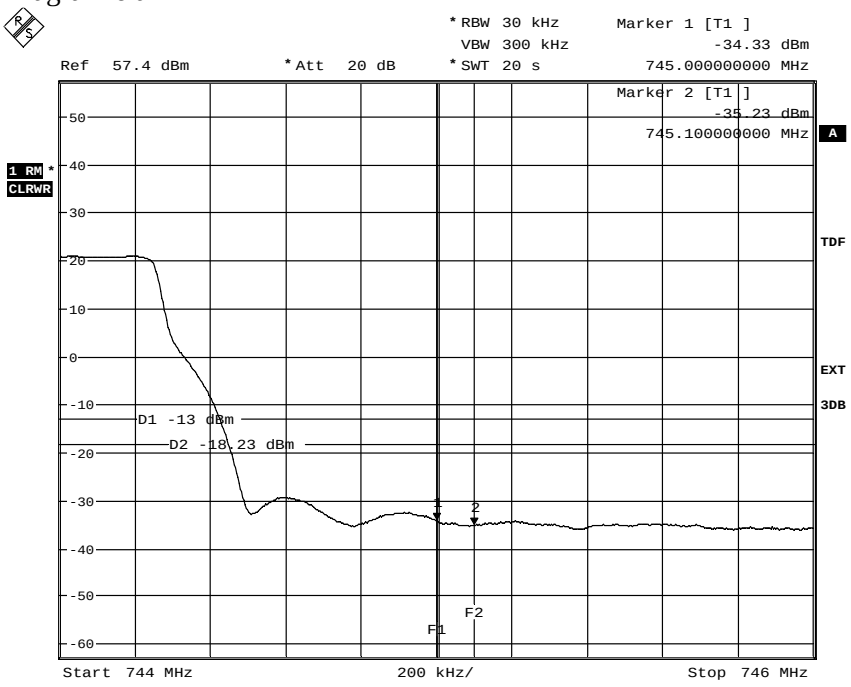

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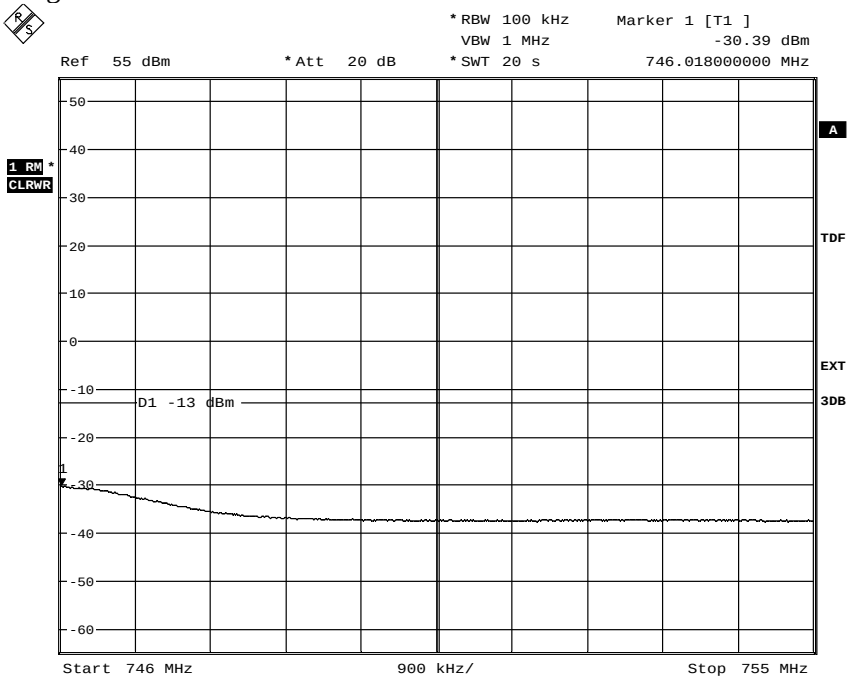
Diagram 6 b



Date: 17.OCT.2011 16:19:56

Conducted spurious emission measurements according to CFR 47 §27.53

Date	Temperature	Humidity
2011-10-06	23 °C ± 3 °C	57 % ± 5 %

Test set-up and procedure

The measurements were made per definition in §27.53. The output was connected to a spectrum analyzer with a RBW setting of 1 MHz and RMS detector activated.

Measurement equipment	SP number
R&S FSQ	504 143
High pass filter	504 199
High pass filter	504 200
High pass filter	503 740
RF attenuator	900 690
RF attenuator	900 691
RF attenuator	900 229
RF Attenuator	900 118
Testo 635 temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Results

Diagram	BW configuration / [MHz]	Tested frequency
1 a+b+c+d+e	5	B
2 a+b+c+d+e	15	B
3 a+b+c+d+e	5	M
4 a+b+c+d+e	10	M
5 a+b+c+d+e	15	M
6 a+b+c+d+e	5	T
7 a+b+c+d+e	15	T

Remark

The emission at 9 kHz on some plots was not generated by the test object. A complementary measurement with a smaller RBW showed that it was related to the LO feed-through.

The highest internal frequency as declared by the client was 2.4576 GHz, thus the choice of the upper frequency boundary was set to 10x2.5 GHz = 25 GHz for emission measurements.

Limits

Derived from CFR 47 § 27.53 (g): Outside a licensee's frequency band(s) of operation the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, resulting in a limit of -13 dBm per 100 kHz RBW.

Complies?	Yes

Appendix 5

Diagram 1 a:

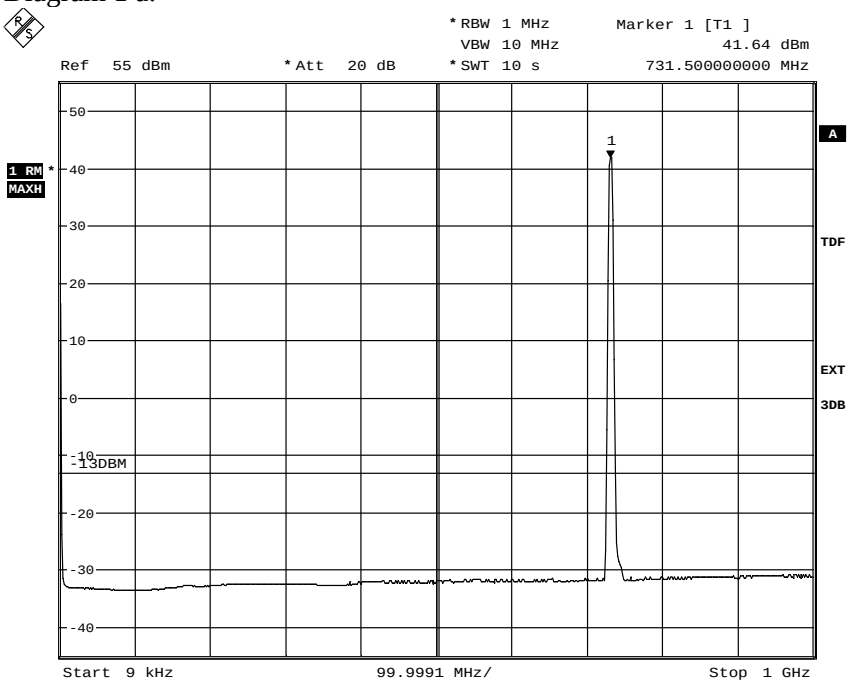


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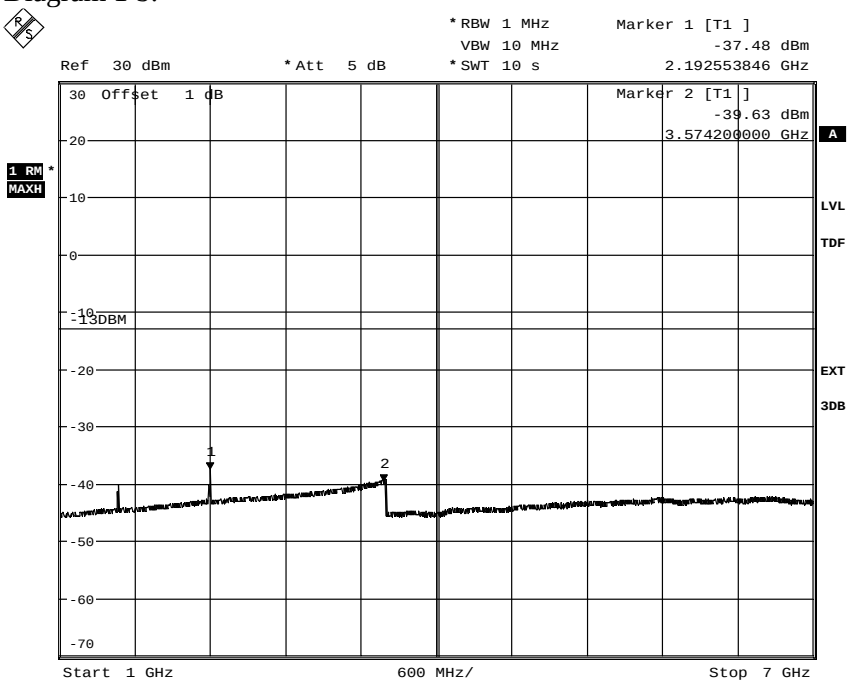
Diagram 1 b:



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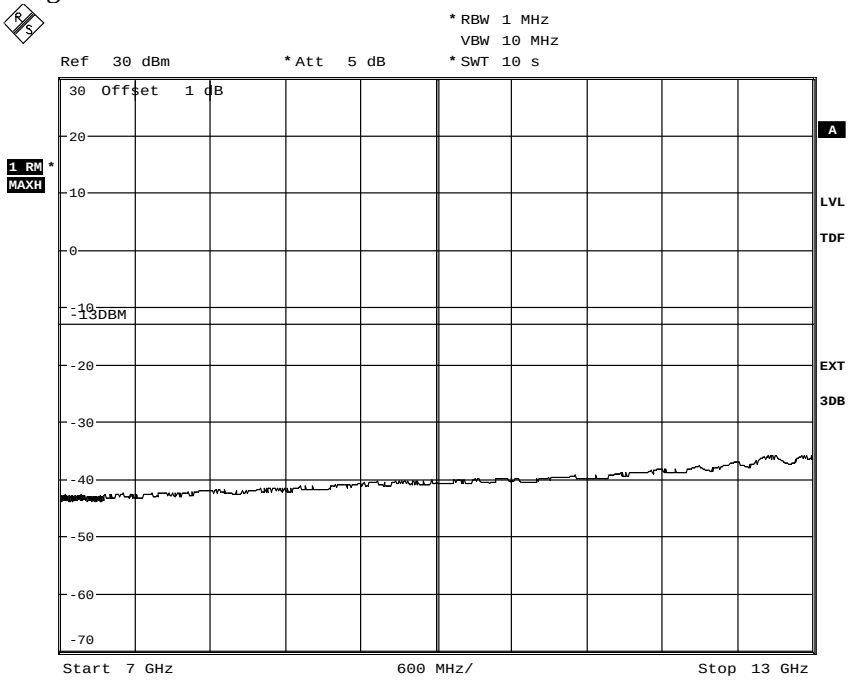
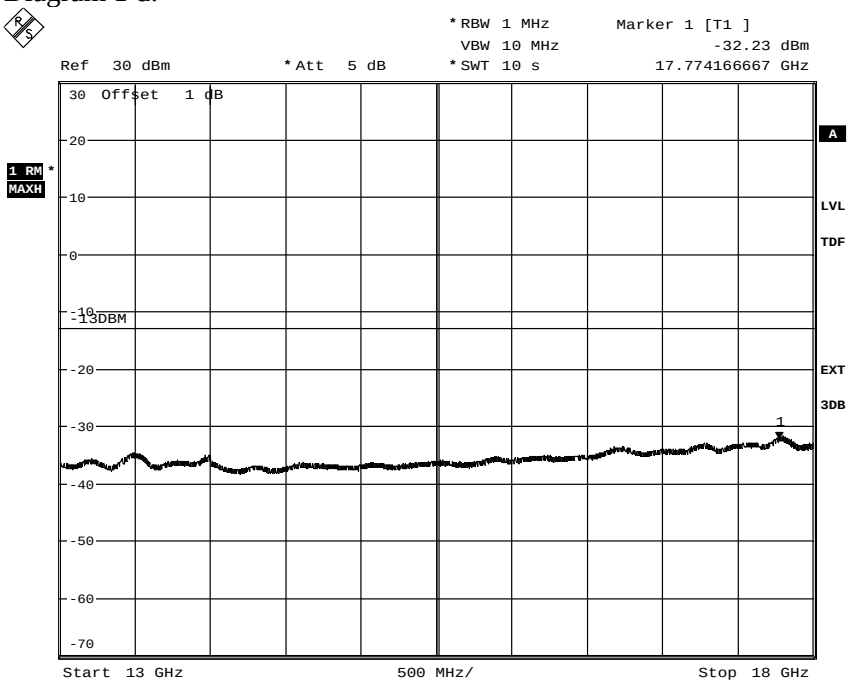
Appendix 5

Diagram 1 c:



Date: 7.OCT.2011 09:58:19

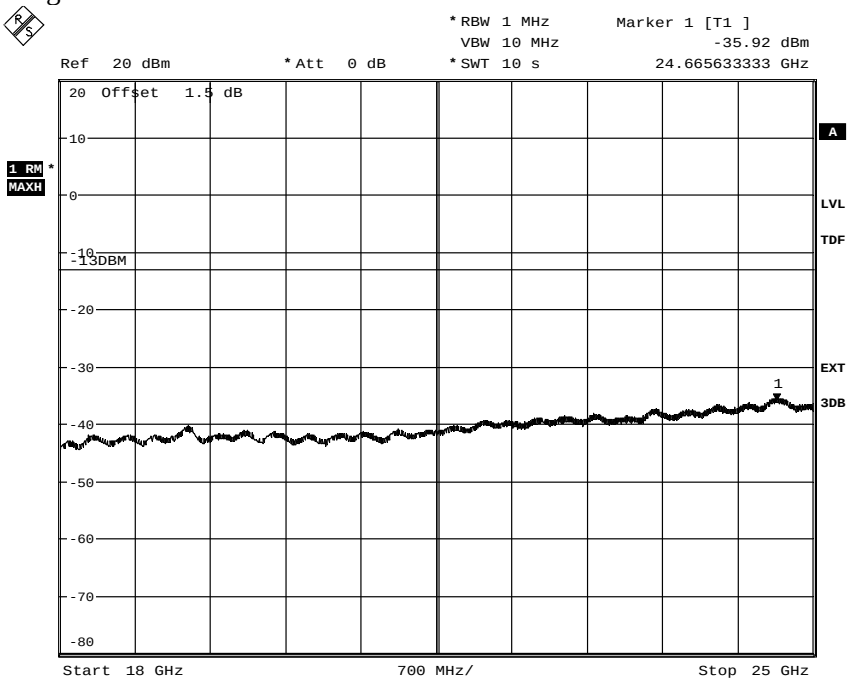
Diagram 1 d:



Date: 6.OCT.2011 14:17:40

Appendix 5

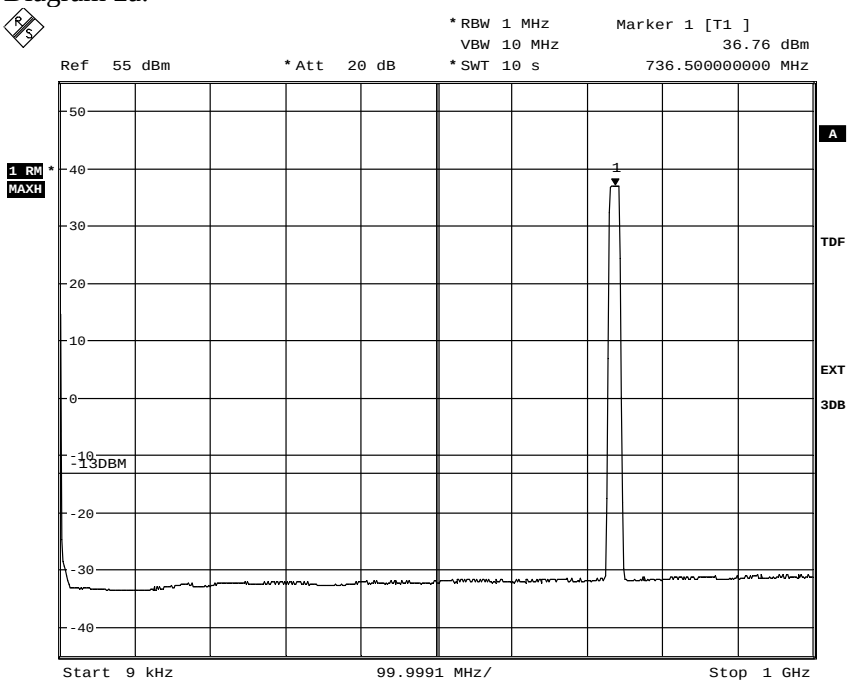
Diagram 1 e:



Date: 6.OCT.2011 14:58:34

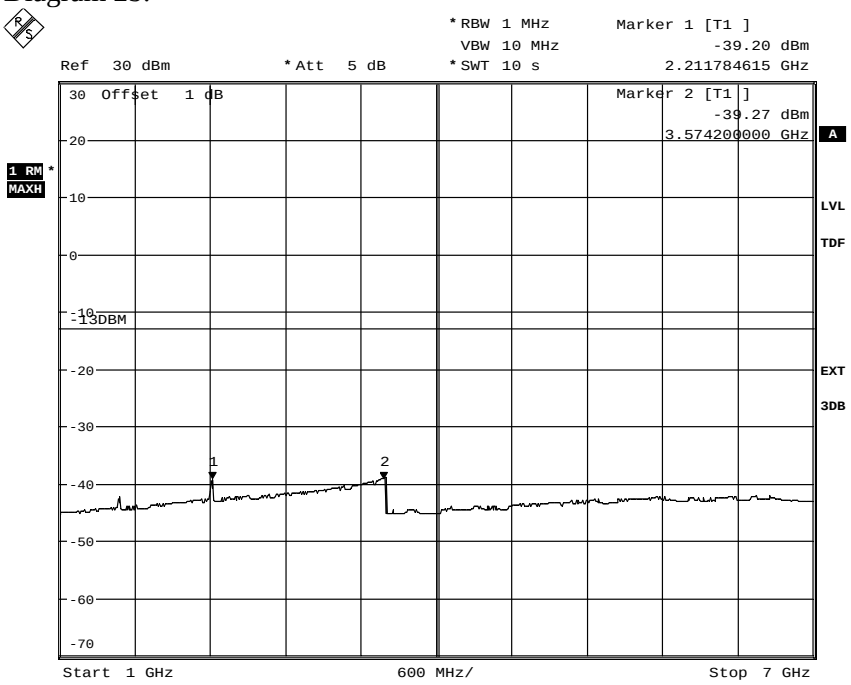
Appendix 5

Diagram 2a:



Date: 6.OCT.2011 12:40:09

Diagram 2b:



Date: 6.OCT.2011 13:33:19

Appendix 5

Diagram 2c:

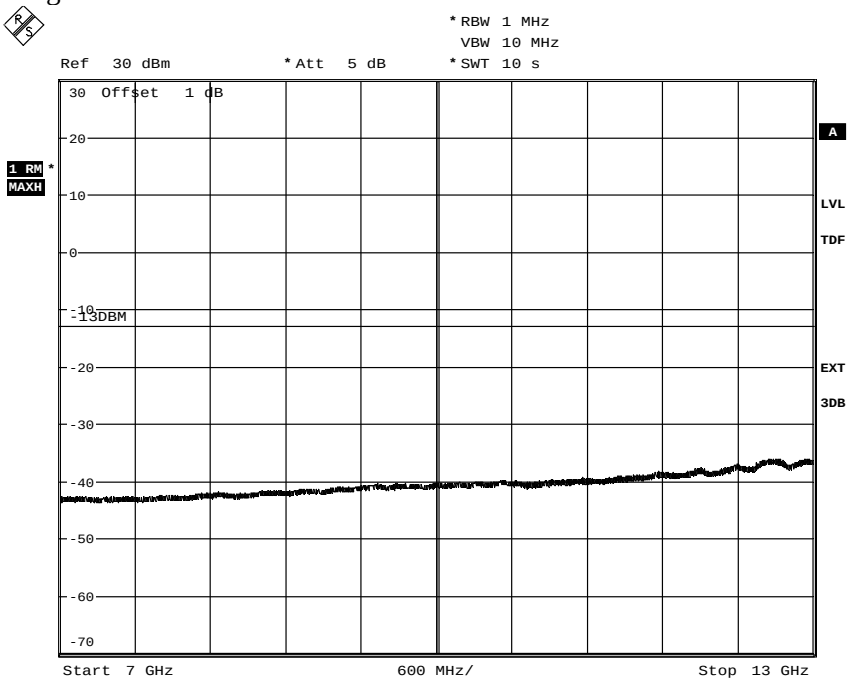


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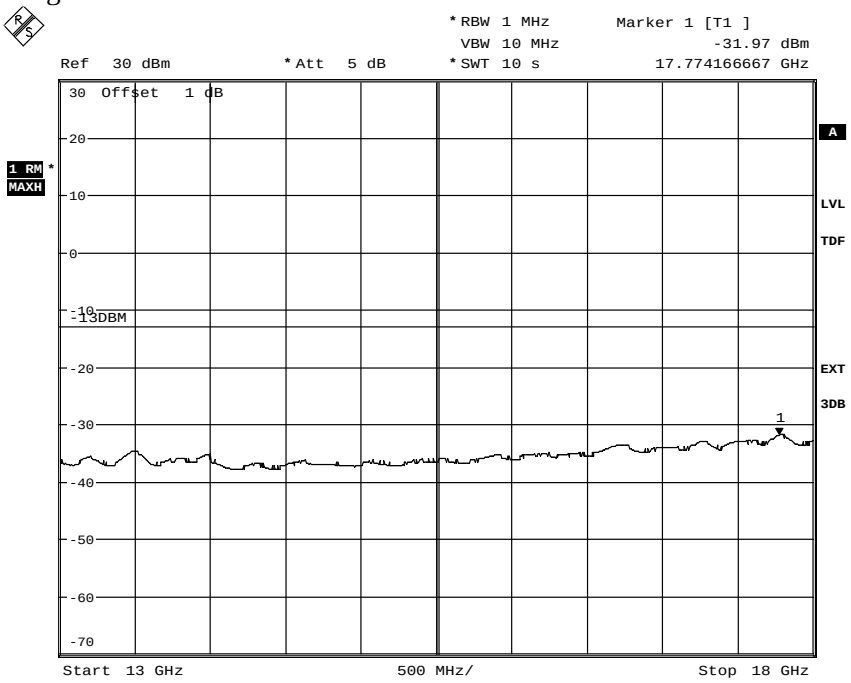
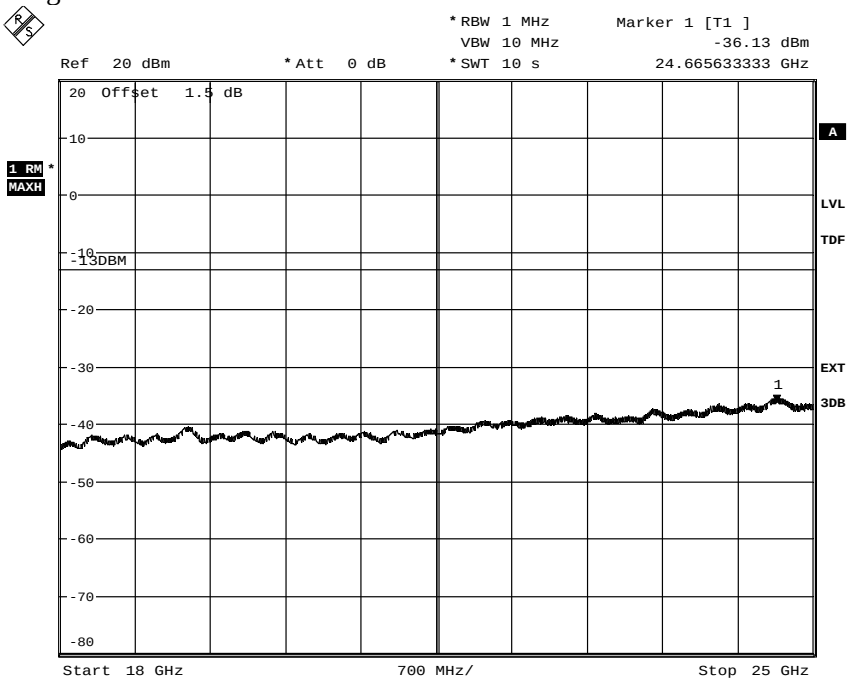
Diagram 2d:



Date: 6.OCT.2011 12:16:12

Appendix 5

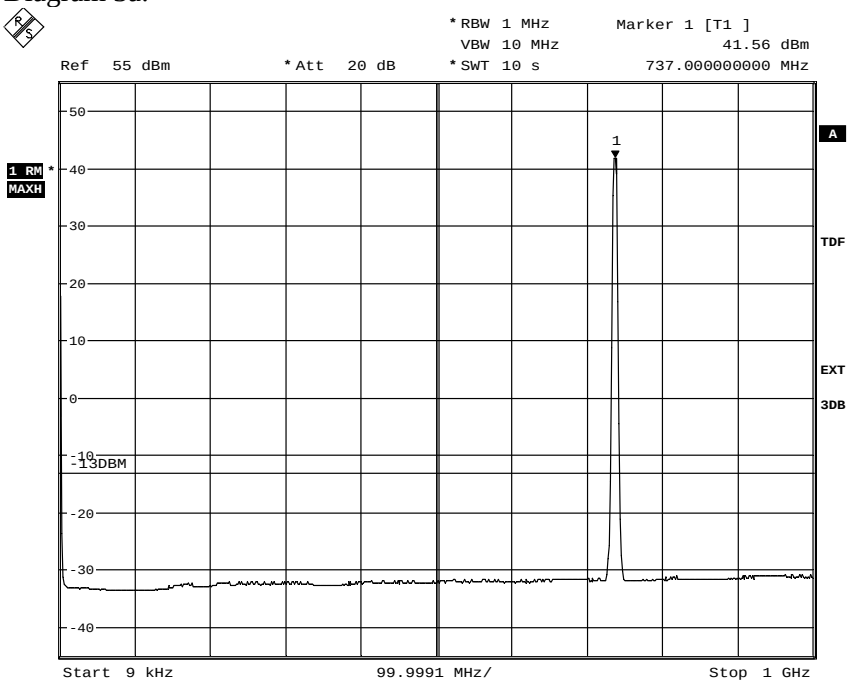
Diagram 2e:



Date: 6.OCT.2011 15:18:46

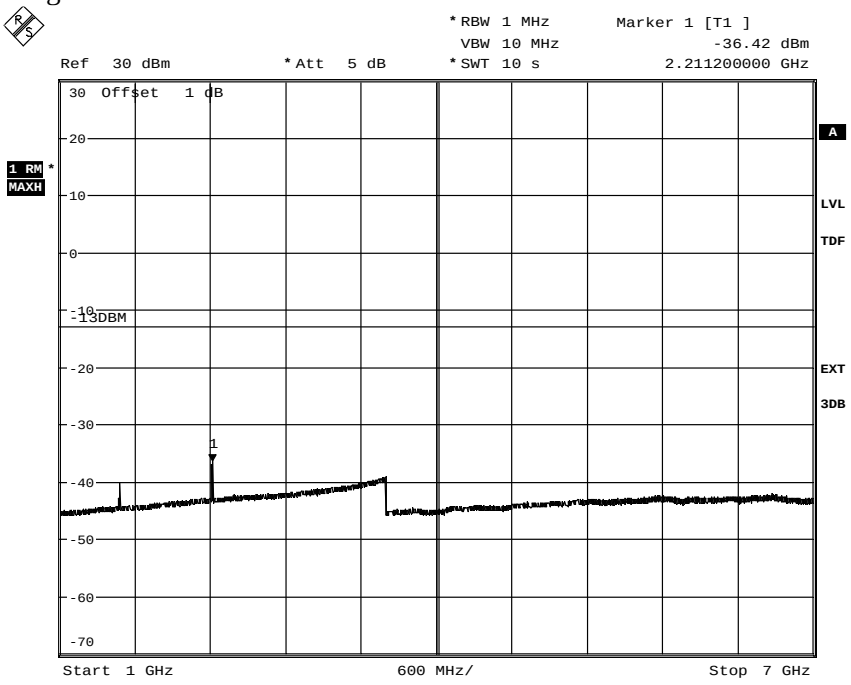
Appendix 5

Diagram 3a:



Date: 6.OCT.2011 10:58:04

Diagram 3b:



Date: 6.OCT.2011 11:38:09

Appendix 5

Diagram 3c:

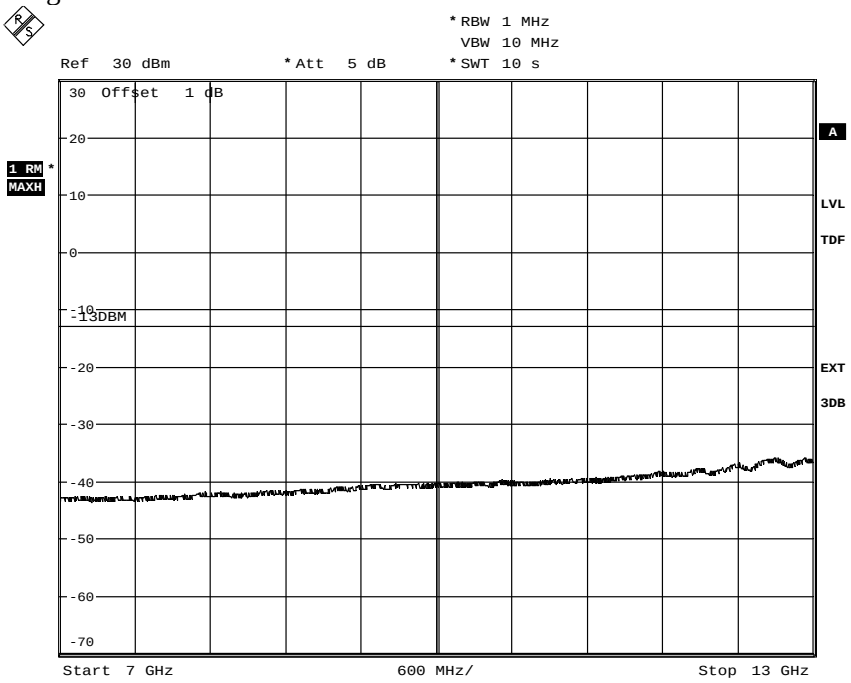


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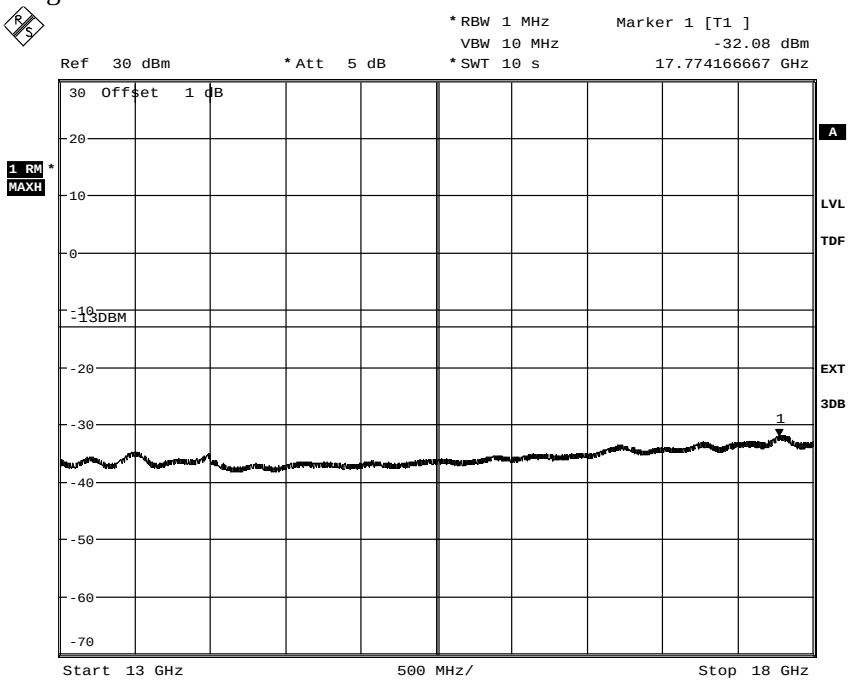
Diagram 3d:



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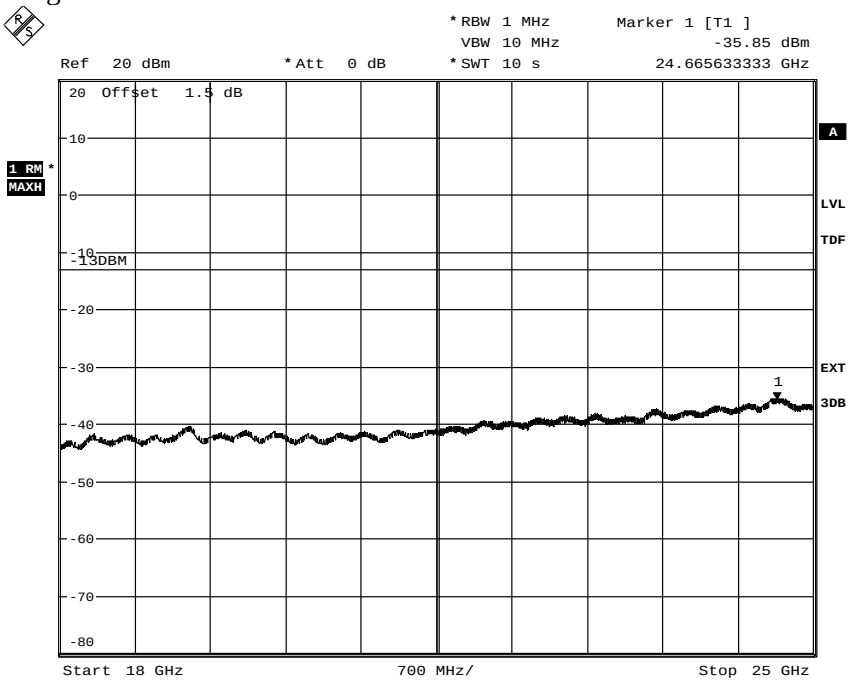
Appendix 5

Diagram 3e:



Date: 6.OCT.2011 14:50:26

Appendix 5

Diagram 4a:

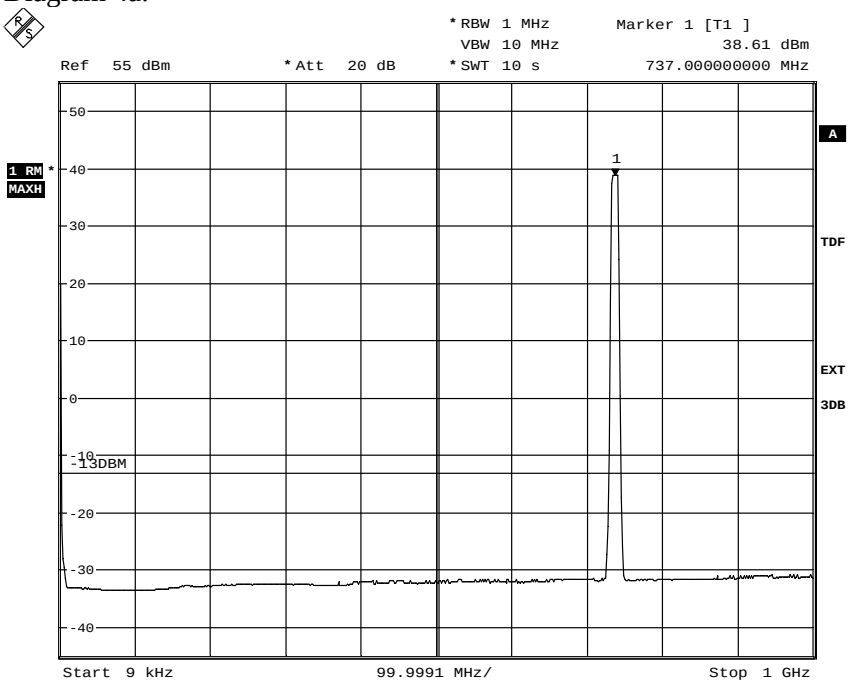


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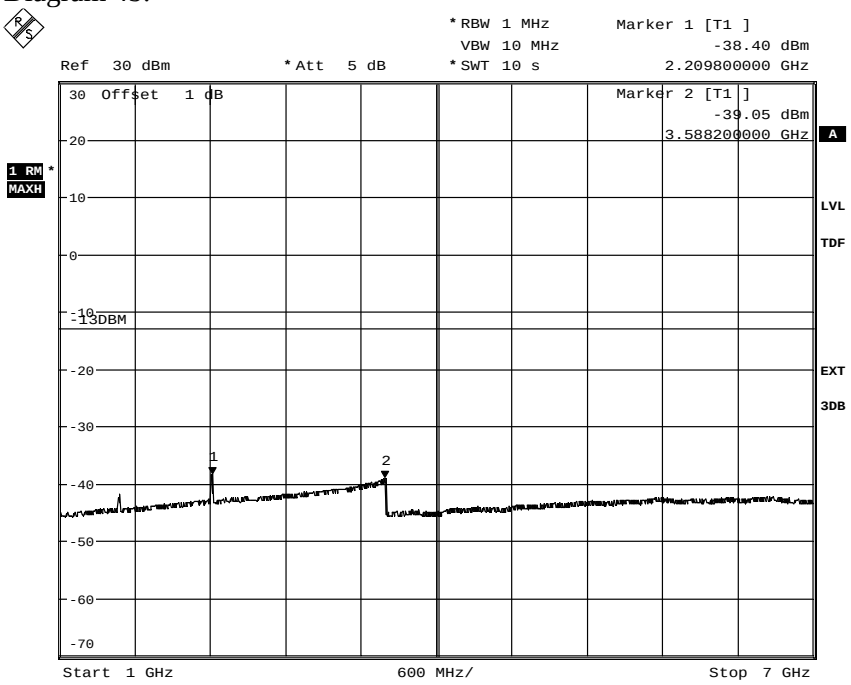
Diagram 4b:



Date: 6.OCT.2011 10:42:17

Appendix 5

Diagram 4c:

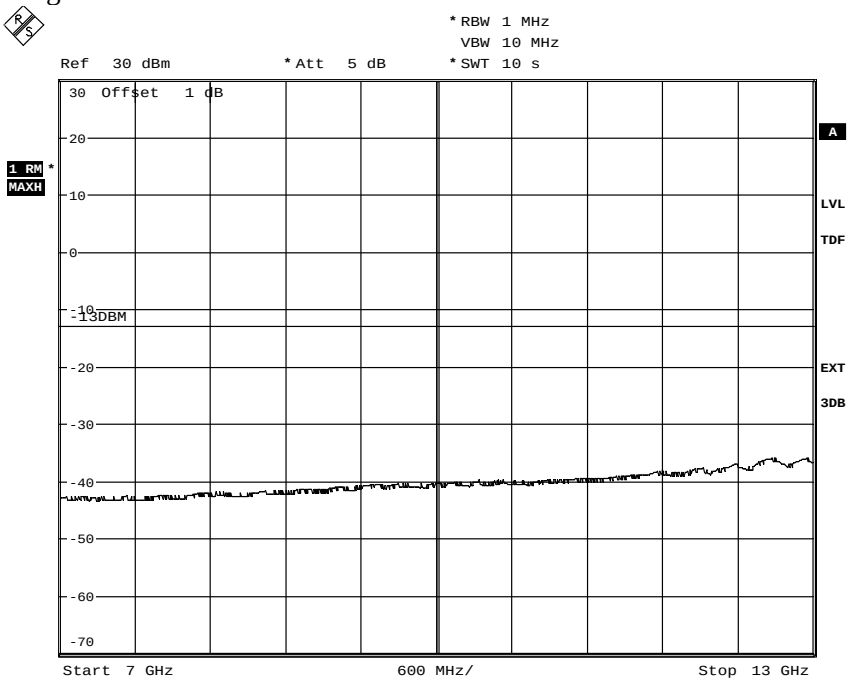


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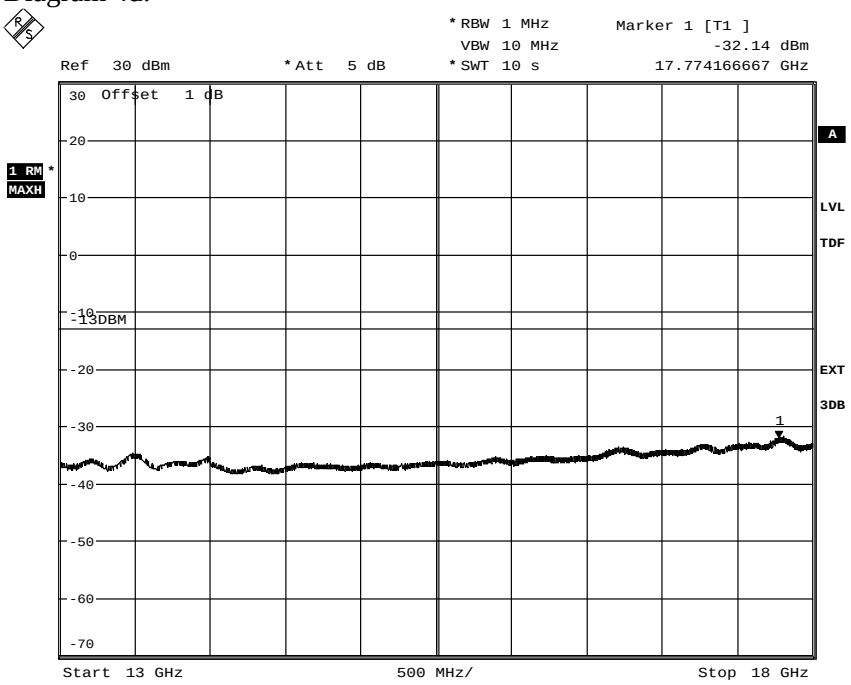
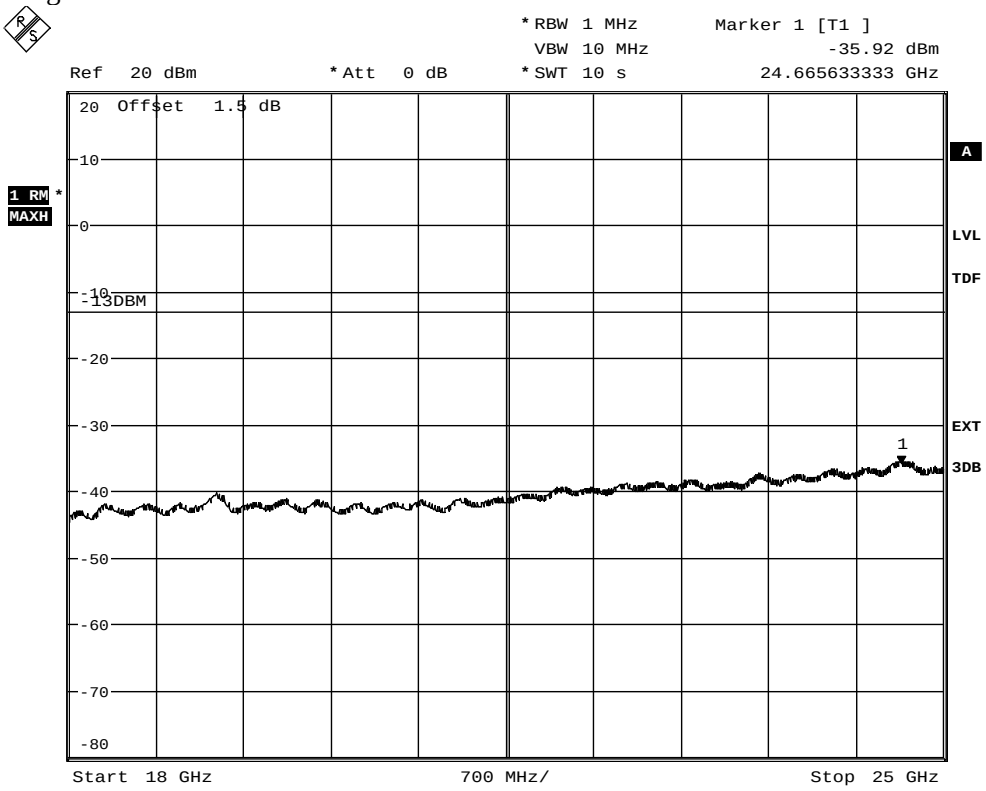
Diagram 4d:



Date: 6.OCT.2011 10:38:10

Appendix 5

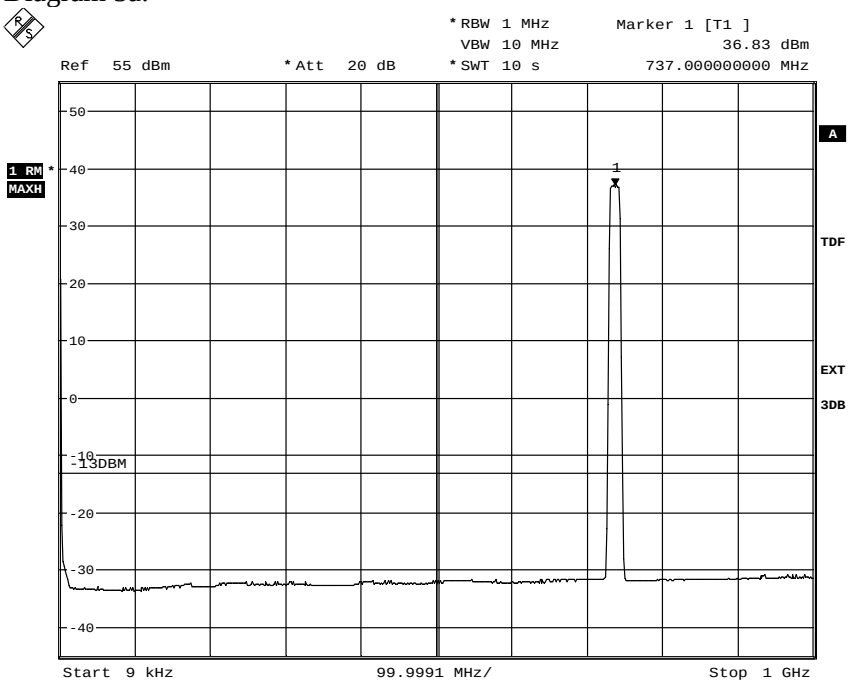
Diagram 4e:



Date: 6.OCT.2011 15:04:07

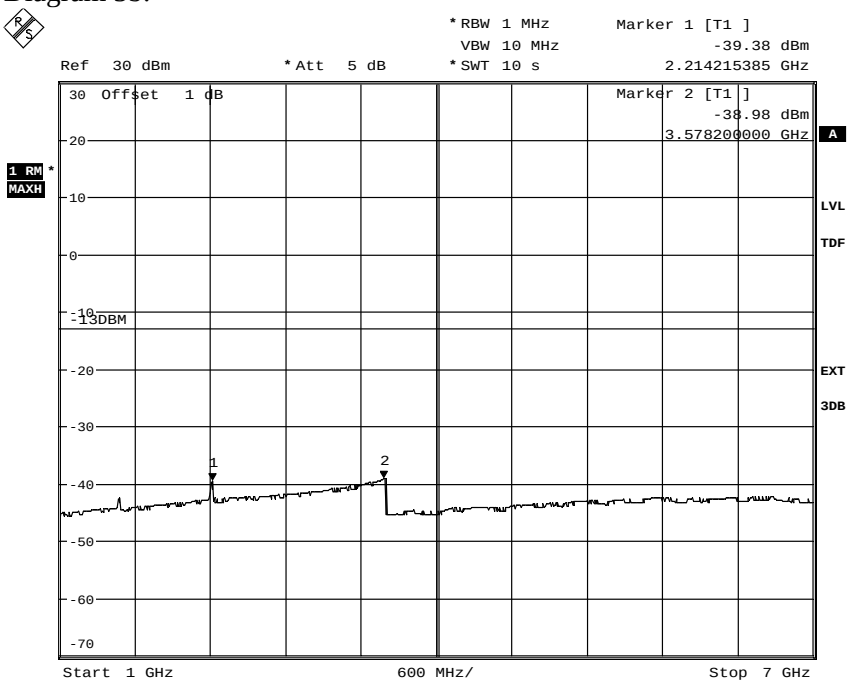
Appendix 5

Diagram 5a:



Date: 6.OCT.2011 10:04:17

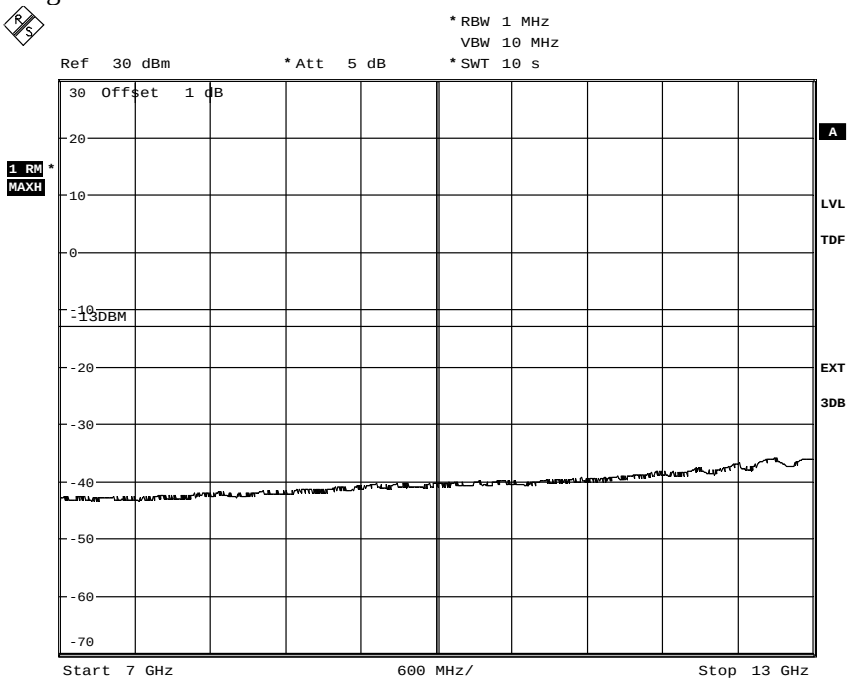
Diagram 5b:



Date: 6.OCT.2011 10:26:50

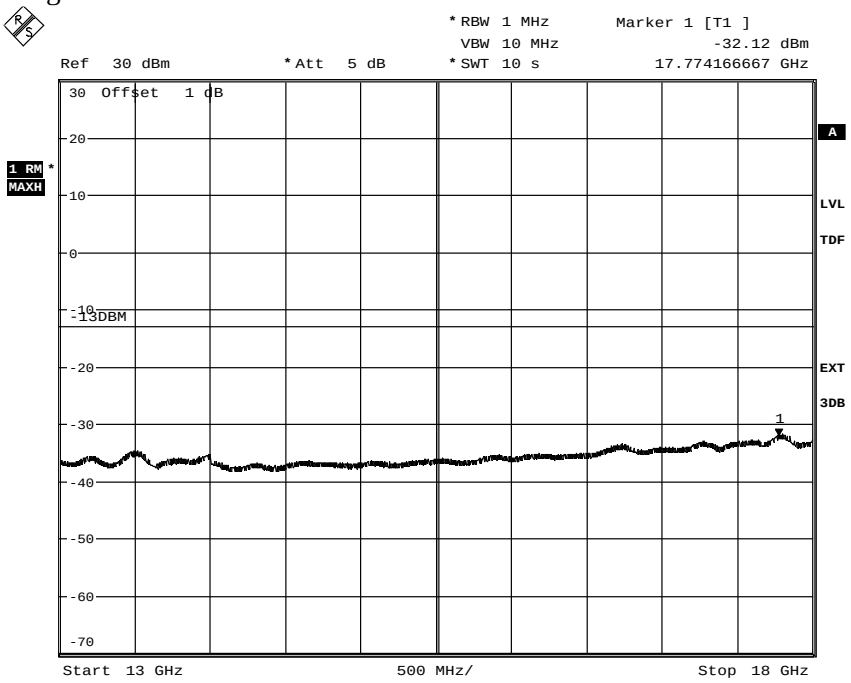
Appendix 5

Diagram 5c:



Date: 6.OCT.2011 10:29:43

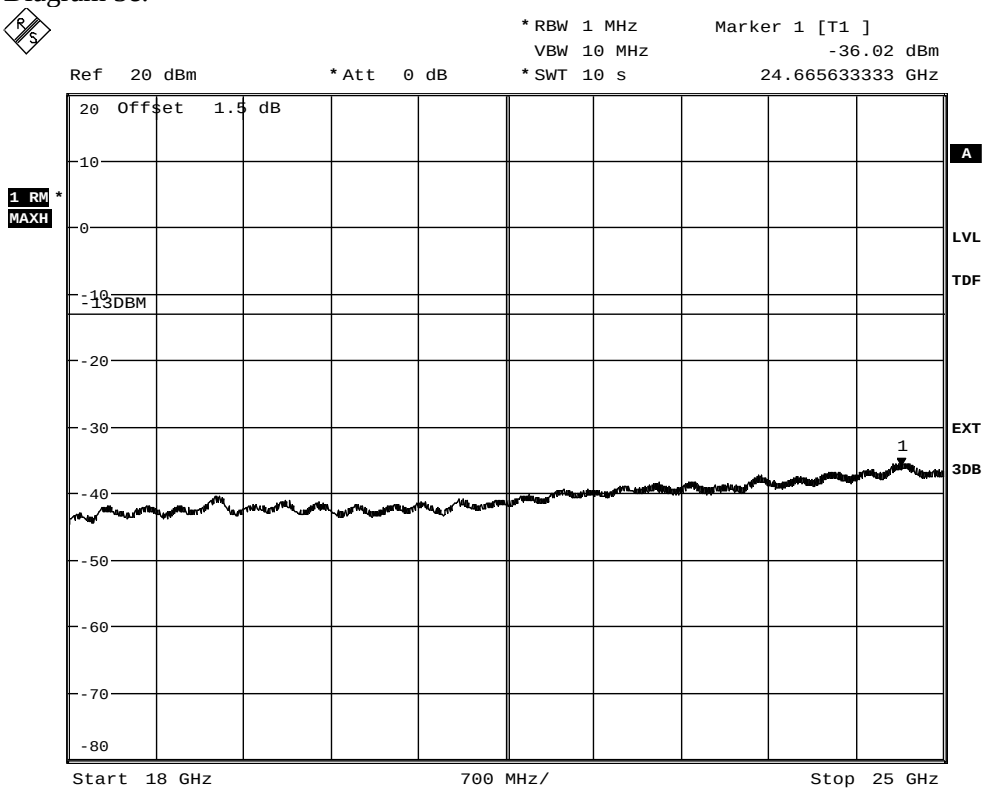
Diagram 5d:



Date: 6.OCT.2011 10:30:51

Appendix 5

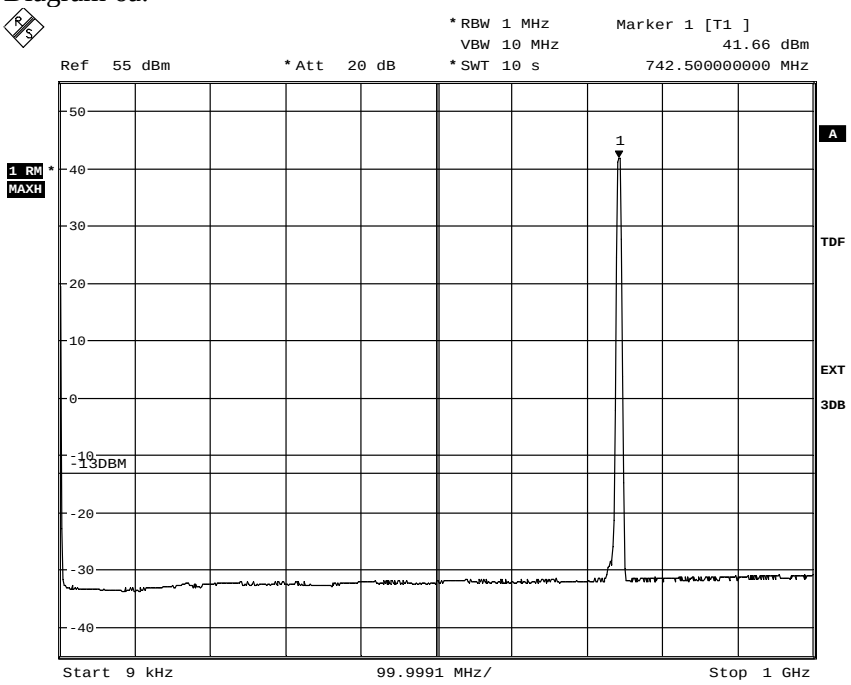
Diagram 5e:



Date: 6.OCT.2011 15:08:40

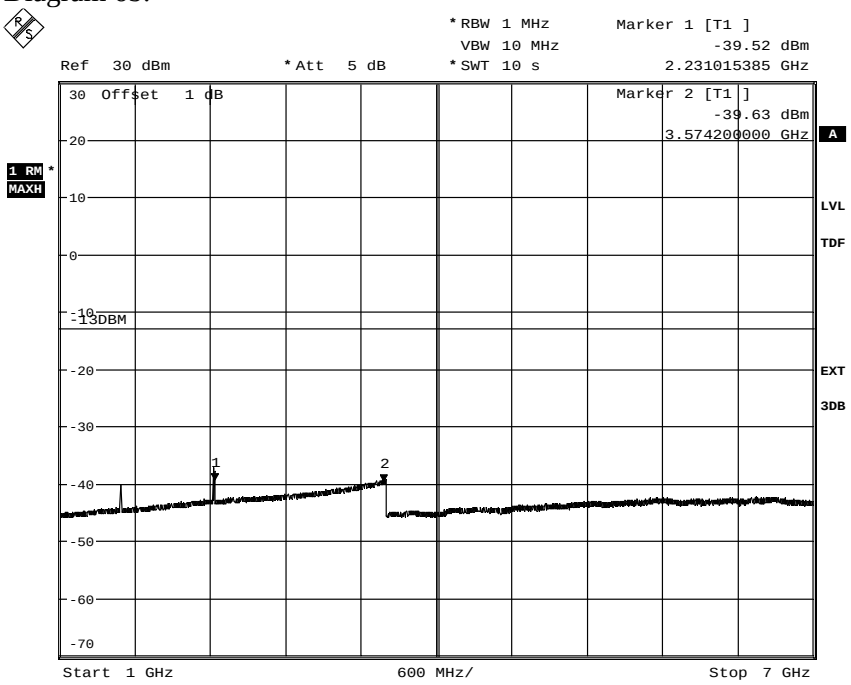
Appendix 5

Diagram 6a:



Date: 6.OCT.2011 14:32:30

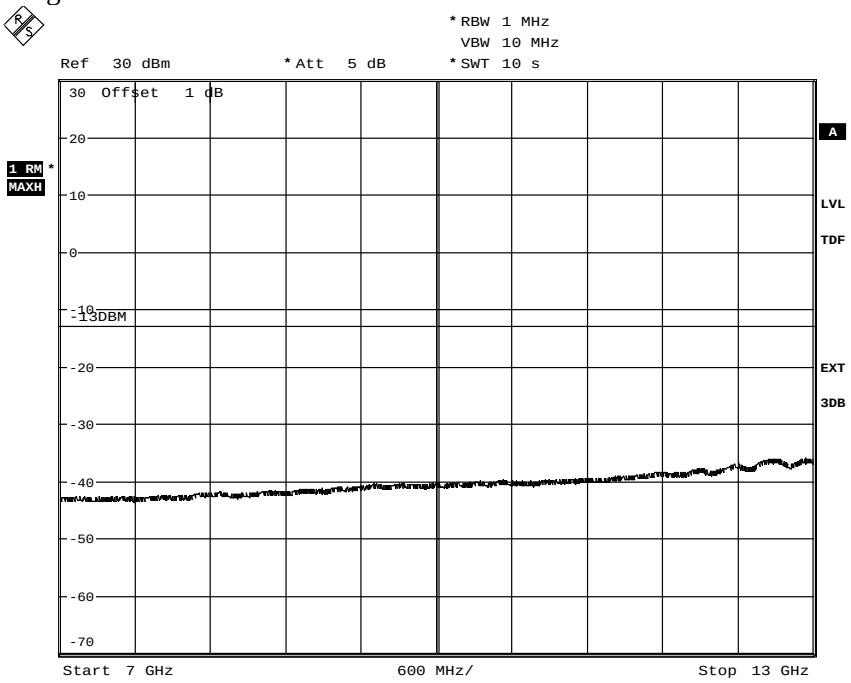
Diagram 6b:



Date: 6.OCT.2011 14:30:54

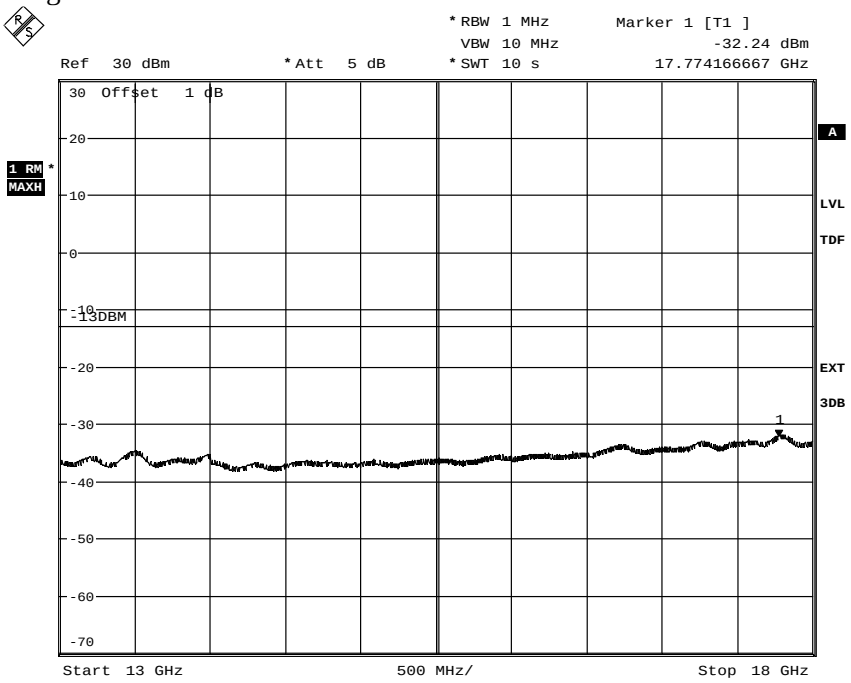
Appendix 5

Diagram 6c:



Date: 6.OCT.2011 14:28:31

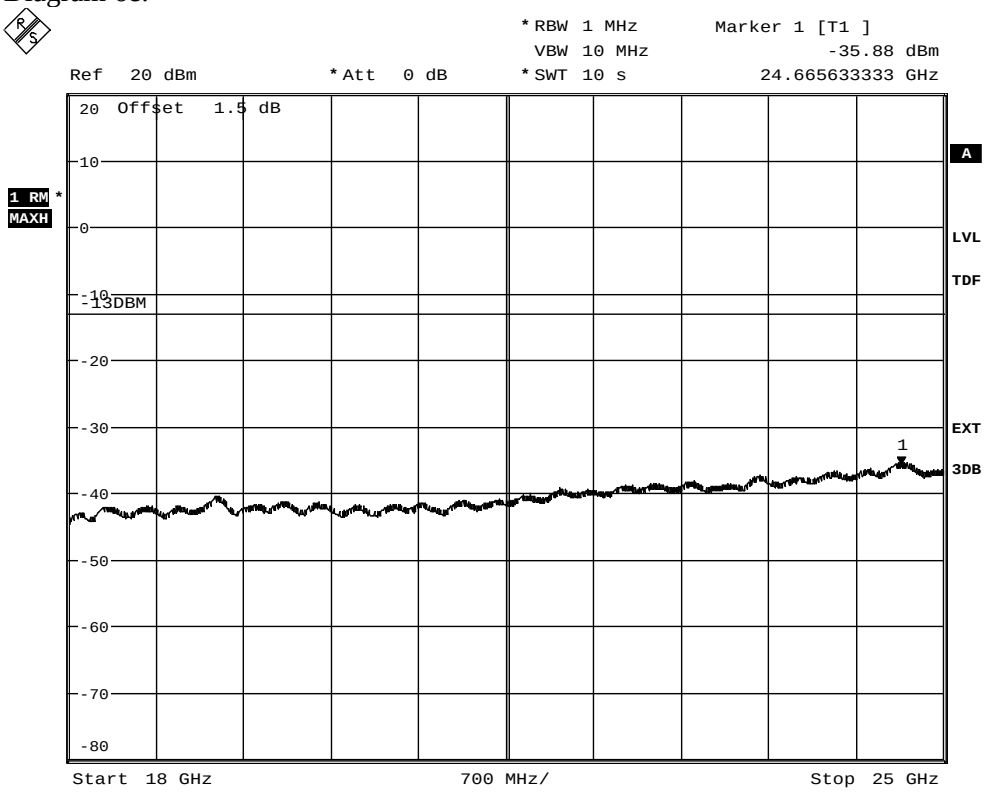
Diagram 6d:



Date: 6.OCT.2011 14:27:18

Appendix 5

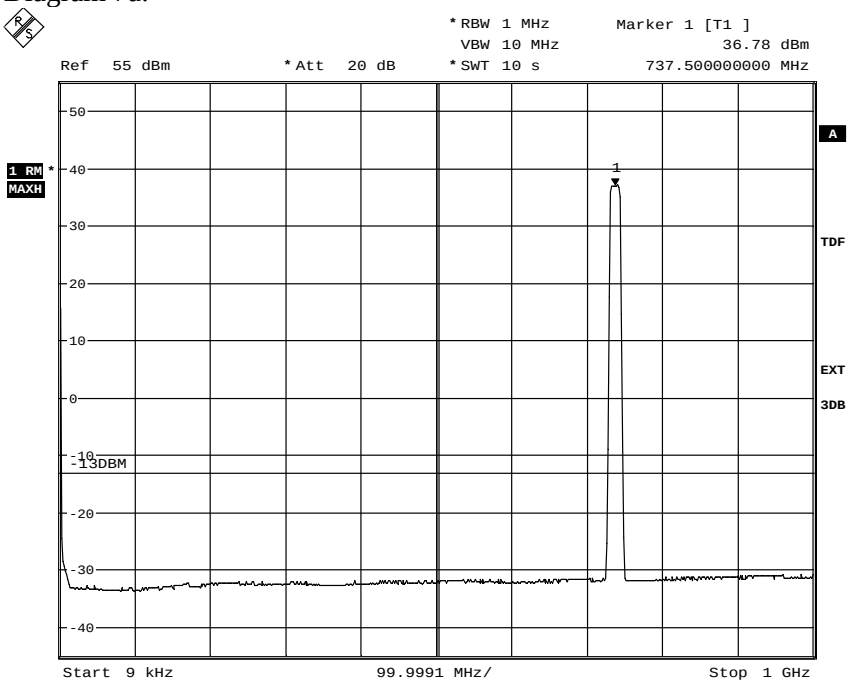
Diagram 6e:



Date: 6.OCT.2011 14:47:02

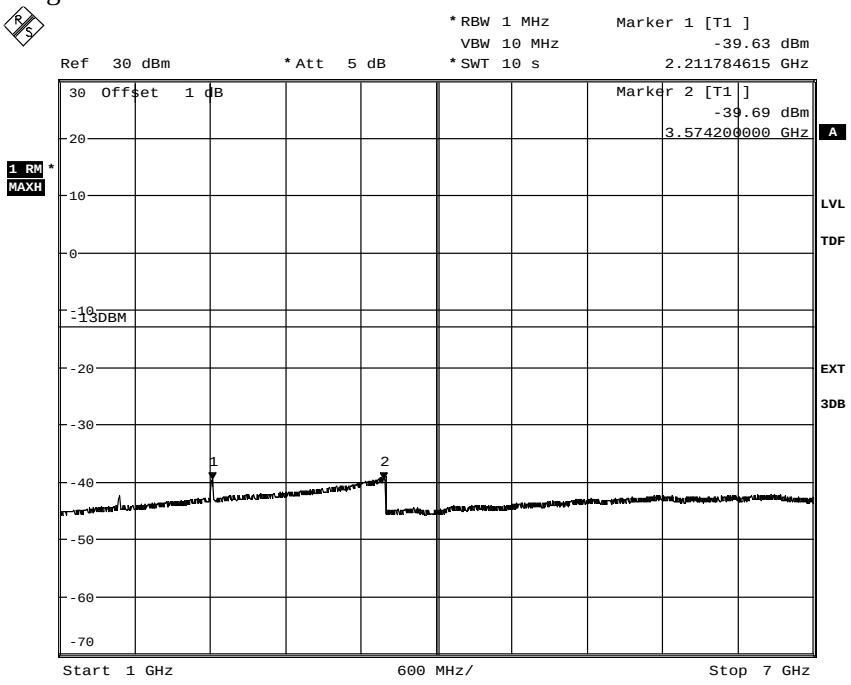
Appendix 5

Diagram 7a:



Date: 6.OCT.2011 13:04:40

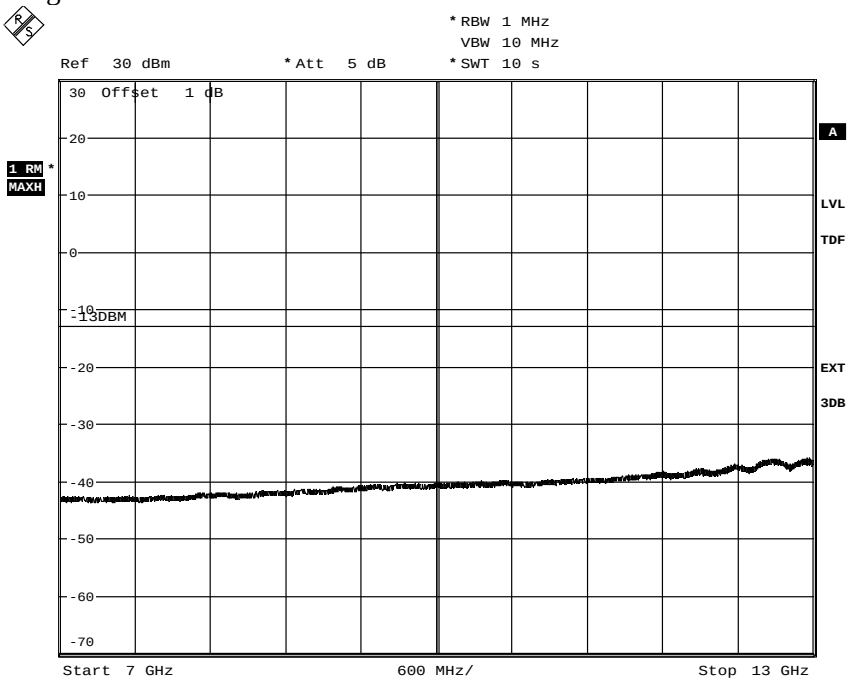
Diagram 7b:



Date: 6.OCT.2011 13:06:35

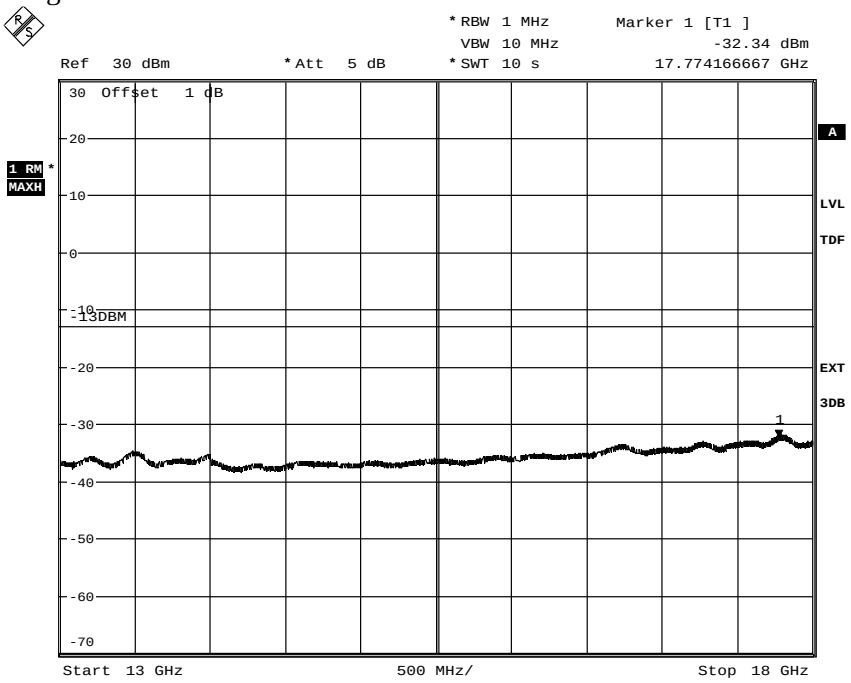
Appendix 5

Diagram 7c:



Date: 6.OCT.2011 13:14:45

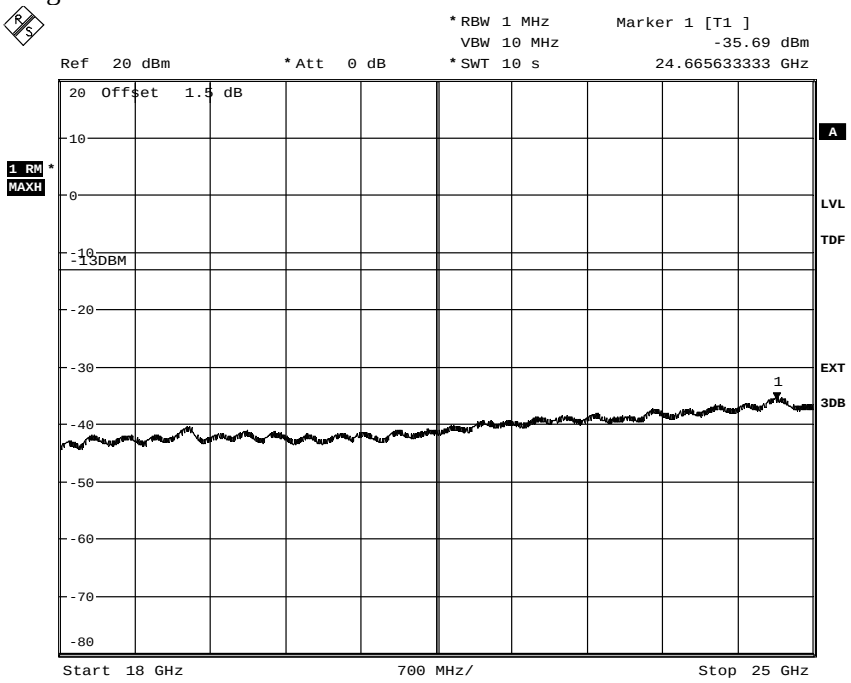
Diagram 7d:



Date: 6.OCT.2011 13:16:08

Appendix 5

Diagram 7e:



Date: 6.OCT.2011 15:13:50

Field strength of spurious radiation measurements according to CFR 47 §27.53

Date	Temperature	Humidity
2011-09-11 to 2011-09-16	23°C ± 3°C	37-59 % ± 5 %

Test set-up and procedure

The test sites are listed at FCC, Columbia with registration number: 93866. The test sites complies with RSS-Gen, Industry Canada file no. 3482A-1 and no. 3482A-2.

The measurements were performed with both horizontal and vertical polarization of the antenna. The antenna distance was 3 m in the frequency range 30 MHz – 18 GHz and 1m in the frequency range 18 – 25 GHz.

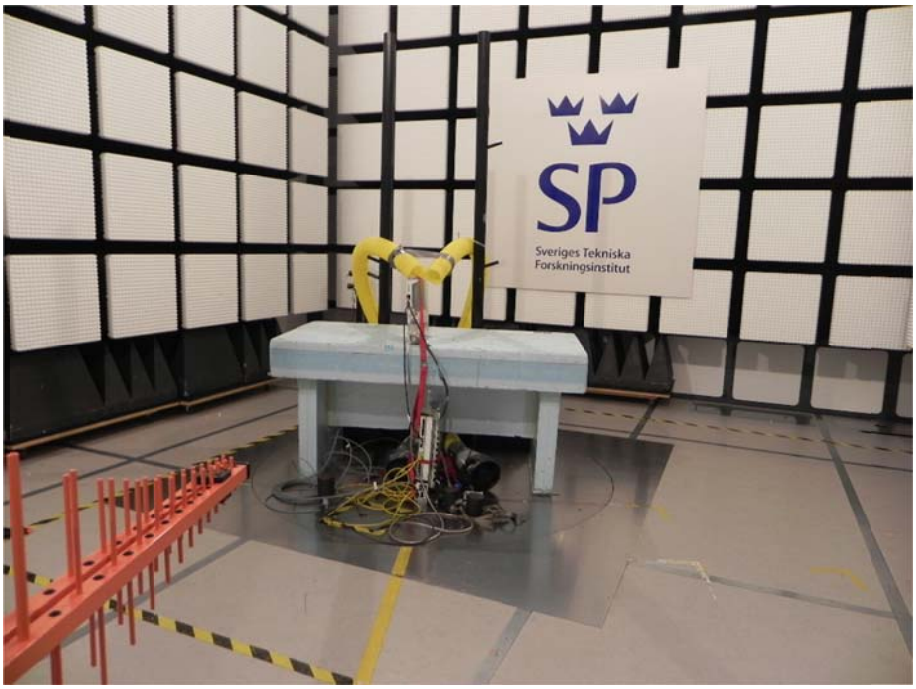
In the frequency range 30 MHz – 25 GHz the measurement was performed in power with a RBW of 1 MHz. A propagation loss in free space was calculated. The used formula was $\gamma = 20\log\left(\frac{4\pi D}{\lambda}\right)$, γ is the propagation loss and D is the antenna distance.

The measurement procedure was as the following:

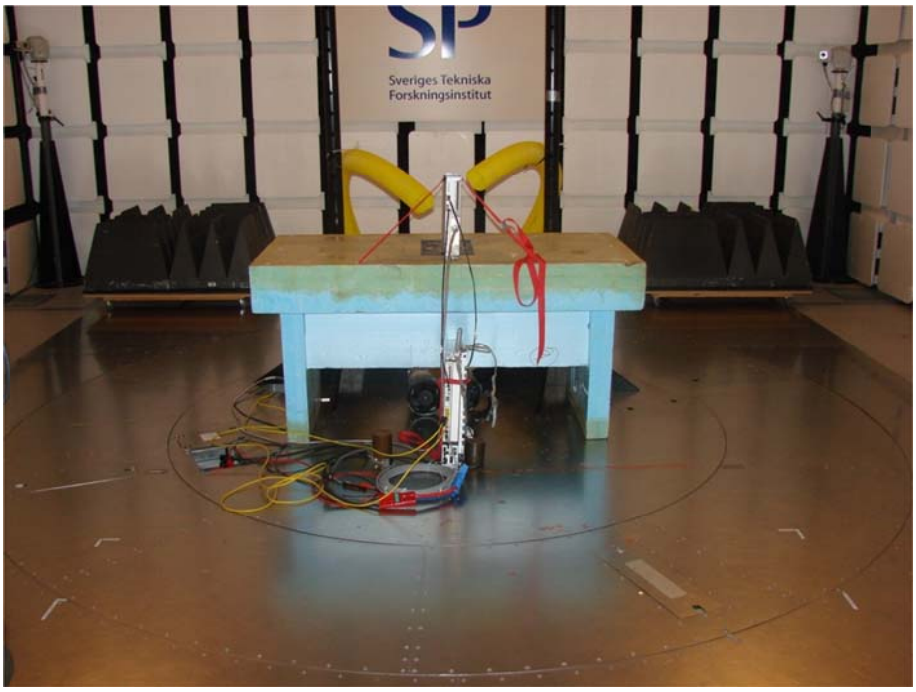
1. The pre-measurement was first performed with peak detector. The EUT was measured in eight directions and with the antenna at three heights, 1.0 m, 1.5 m and 2.0 m.
2. Spurious radiation on frequencies closer than 20 dB to the limit in the pre-measurement is scanned 0-360 degrees and the antenna is scanned 1- 4 m for maximum response. The emission is then measured with the RMS detector and the RMS value is reported. Frequencies closer than 10 dB to the limit when measured with the RMS detector were measured with the substitution method according to the standard.

The test set-up during the spurious radiation measurement are shown in the pictures below:

Test site Edison



Test site Tesla



Measurement equipment

Measurement equipment	SP number
Test site Edison	504 114
Test site Tesla	503 881
R&S ESIB 26	503 885
R&S ESI 26	503 292
Control computer	503 479
Software: R&S EMC32, ver. 8.20.1	503 745
Control computer	503 889
Software: R&S EMC32, ver. 8.51.0	503 745
Chase Bilog antenna CBL 6111A	503 182
Antenna Schaffner CBL 6143	504 079
µCorp Nordic, Low Noise Amplifier	504 160
Miteq, Low Noise Amplifier	503 285
EMCO Horn Antenna 3115	502 175
Standard gain antenna 20240-20	503 674
High pass filter, Wainright	504 200
High pass filter, RLC Electronics	503 739
Testo 625 temperature and humidity meter	504 188
Testo 635 temperature and humidity meter	504 203

Results

Frequency (MHz)	Spurious emission level (dBm)	
	Vertical	Horizontal
30-25 000	All emission > 20 dB below limit	All emission > 20 dB below limit

Measurement uncertainty:

3.2 dB up to 18 GHz, 3.6 dB above 18 GHz

Limits

Derived from CFR 47 § 27.53 (g): Outside a licensee's frequency band(s) of operation the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, resulting in a limit of -13 dBm per 100 kHz RBW.

Complies?	Yes

Frequency stability measurements according to CFR 47 § 27.54

Date	Temperature (test equipment)	Humidity (test equipment)
2011-06-19 to 2011-06-21	22-24°C ± 3 °C	43-58% ± 5 %

Test set-up and procedure

The measurement was made per 3GPP TS 36.141. The output was connected to a spectrum 1nalyser. The spectrum 1nalyser was connected to an external 10 MHz reference standard during the measurements.

Measurement equipment	SP number
Temperature cabinet	503 360
Rohde & Schwarz signal analyzer FSQ40	504 143
RF attenuator	504 159
Testo 635, Temperature and humidity meter	504 203
Multimeter Fluke 87	502 190

Results

Nominal transmitter frequency was 737.0 MHz in channel bandwidth configuration 5 MHz. with setting for maximum output power.

Test conditions		Frequency error (Hz)
Supply voltage DC (V)	T (°C)	Test model E-TM1.1
-48.0	+20	-3
-55.2	+20	-3
-40.8	+20	-3
-48.0	+30	-2
-48.0	+40	-3
-48.0	+50	-3
-48.0	+10	-3
-48.0	0	-3
-48.0	-10	-3
-48.0	-20	-4
-48.0	-30	+2
Maximum freq. error (Hz)		4
Measurement uncertainty		$< \pm 1 \times 10^{-7}$

Remark

It was deemed sufficient to test one combination of TX frequency, channel bandwidth configuration and test model (modulation), as all combinations share a common internal reference to derive the TX frequency from.

Limits

According to 3GPP TS 36.141, section 6.5.1.5:
The frequency Error shall be within ±(0.05 PPM+12 Hz) (±48.85 Hz).

§ 27.54 Frequency stability

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Complies?	Yes

Receiver spurious emissions measurements according to CFR 47 § 15.111

Date	Temperature	Humidity
2011-10-07	22 °C ± 3 °C	57 % ± 5 %

Test set-up and procedure

The measurements were performed according to ANSI C63.4.

Measurements were performed on port “RF B”. The measurement was first performed with peak detector. Emission on frequencies close to or above the limit was re-measured with quasi-peak detector below 1 GHz and with average detector above 1GHz.

During the measurement at the receiver port “RF B” the combined TX/RX port “RF A” was terminated into 50 ohm. The TX was active at maximum power at the TX band center frequency with test model E-TM1.1 in channel bandwidth configuration 5 MHz.

Measurement equipment	SP number
R&S FSQ40	504 143
RF terminator (RF A)	-
RF attenuator	503 249
Testo 635, Temperature and humidity meter	504 203

Result

	Channel	Tested port, frequency range
Diagram 1a+b+c	dl 5035, B	RX B, 9 kHz – 12.5 GHz
Diagram 2a+b+c	dl 5090, M	RX B, 9 kHz – 12.5 GHz
Diagram 3a+b+c	dl 5145, T	RX B, 9 kHz – 12.5 GHz

A frequency component at 488 kHz was measured to -58.0 dBm.

Remark

The highest internal frequency as declared by the client was 2.4576 GHz, thus the choice of the upper frequency boundary was set to 5x2.5 GHz = 12.5 GHz for emission measurements.

Limit

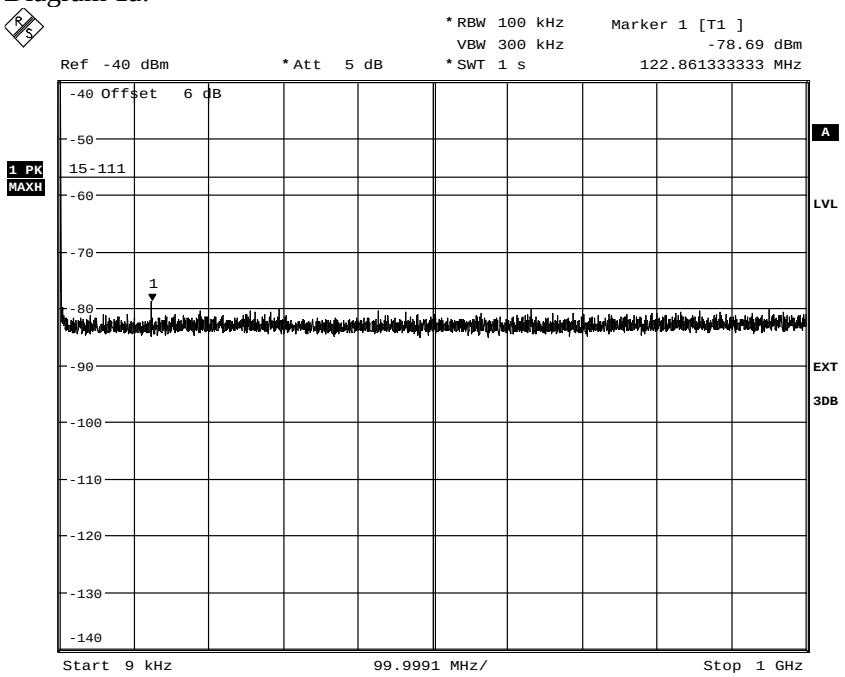
§15.111 Antenna power conduction limits for receivers

The power at the antenna terminal at any frequency within the range of measurements specified in §15.33 shall not exceed 2.0 nanowatts (-57 dBm).

Emission below limit?	Yes

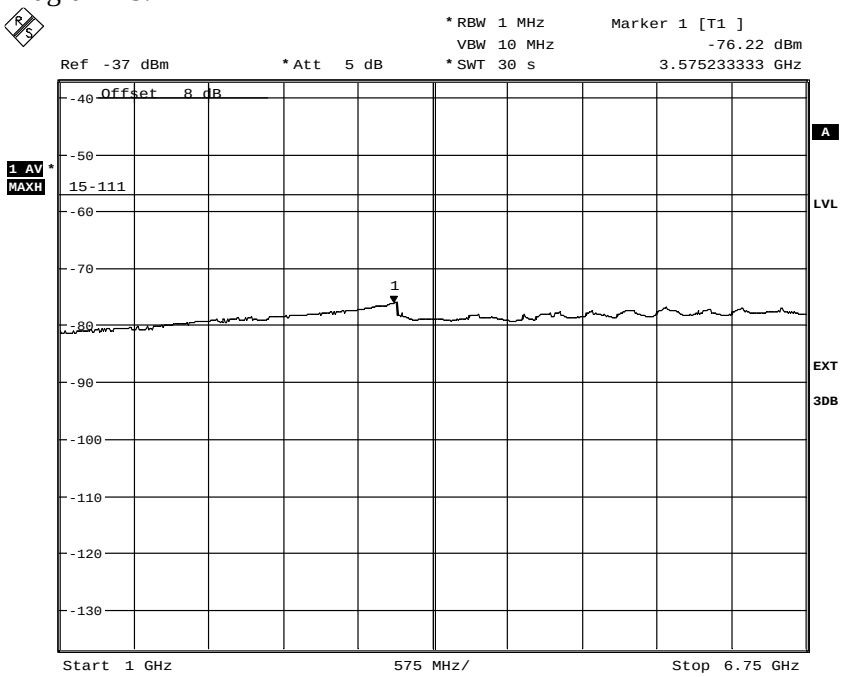
Appendix 8

Diagram 1a:



Date: 7.OCT.2011 13:13:36

Diagram 1b:



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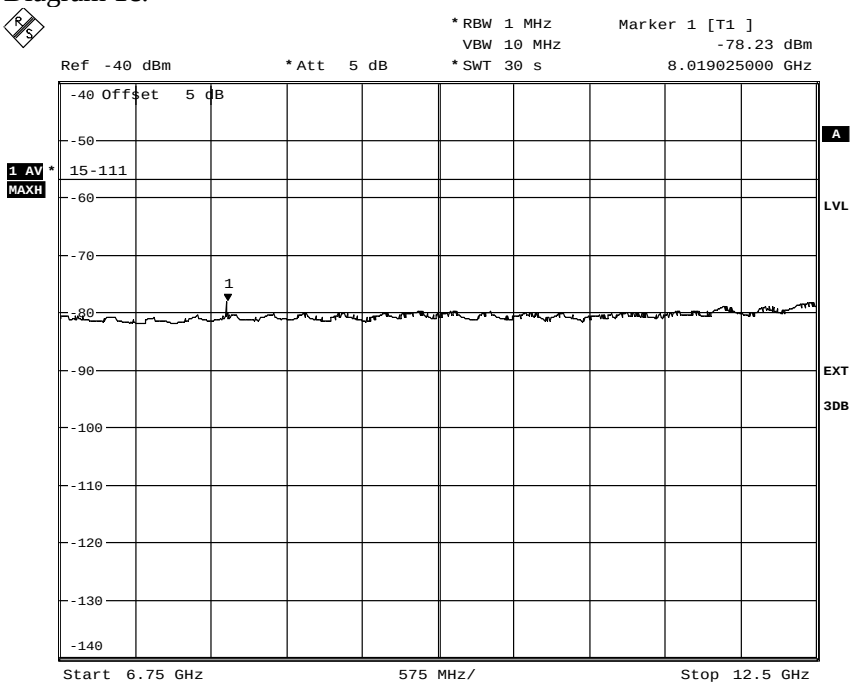
Appendix 8

Diagram 1c:



Date: 7.OCT.2011 13:28:49

Appendix 8

Diagram 2a:

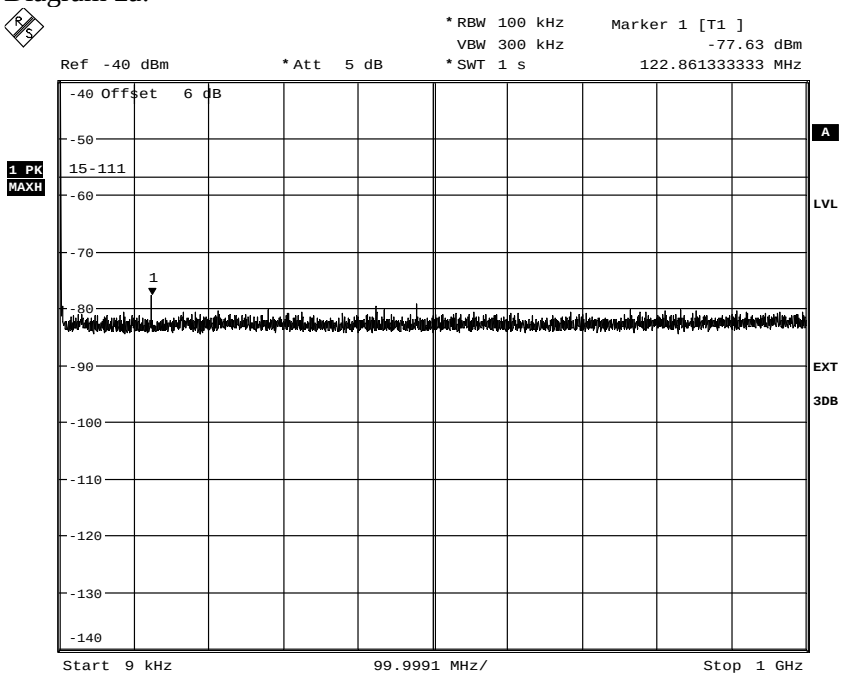


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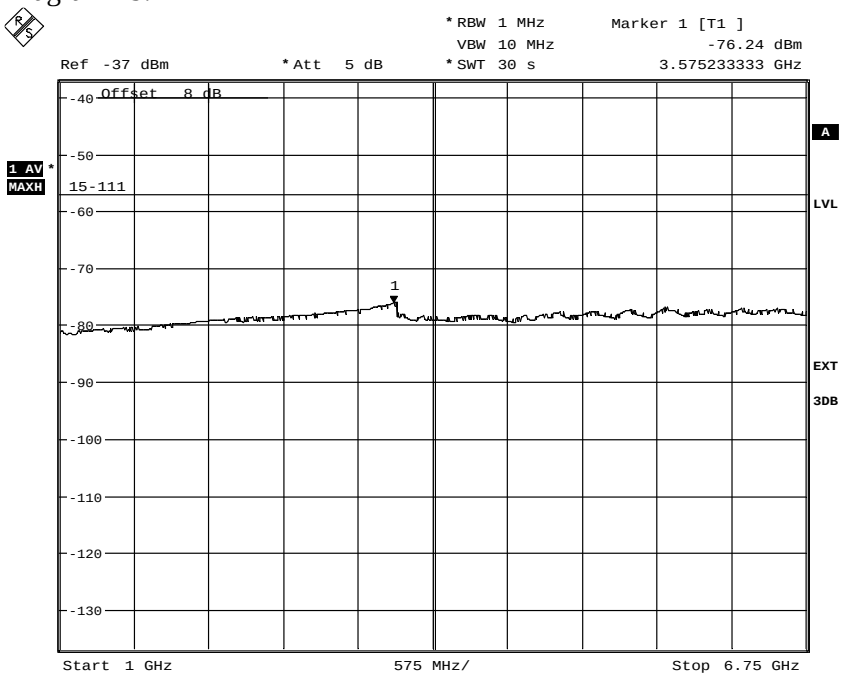
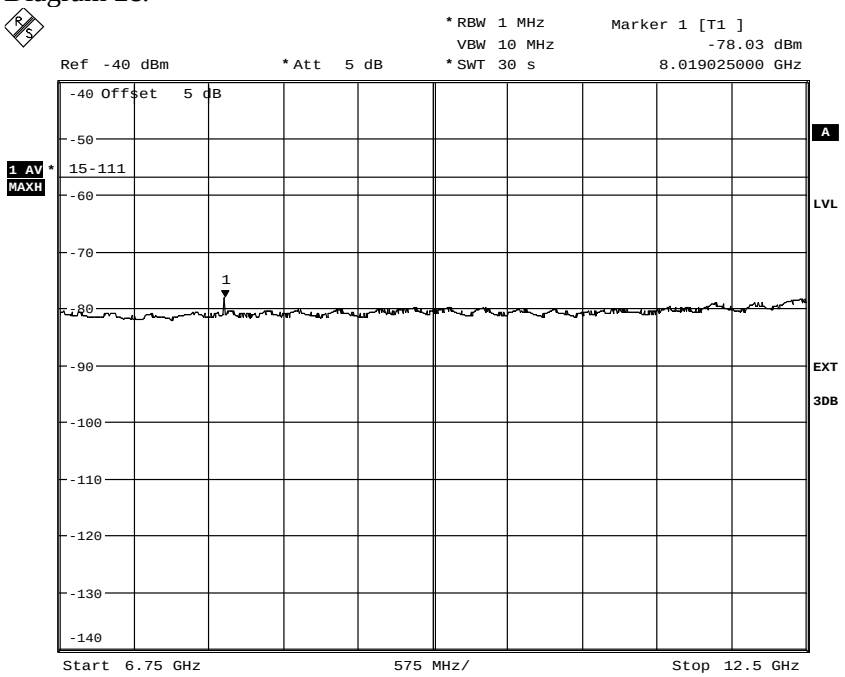
Diagram 2b:



Date: 7.OCT.2011 13:35:16

Appendix 8

Diagram 2c:



Date: 7.OCT.2011 13:32:25

Appendix 8

Diagram 3a:

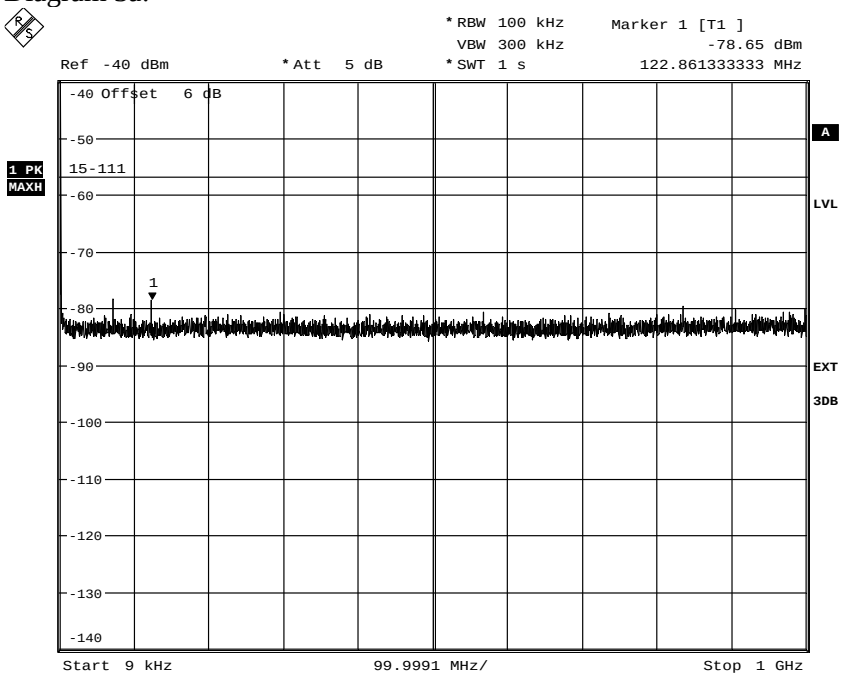


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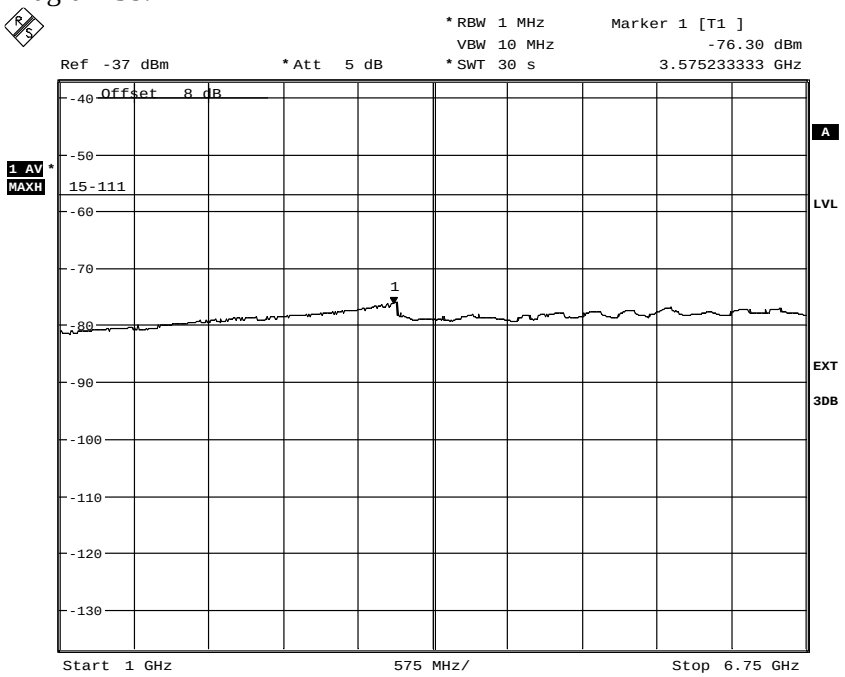
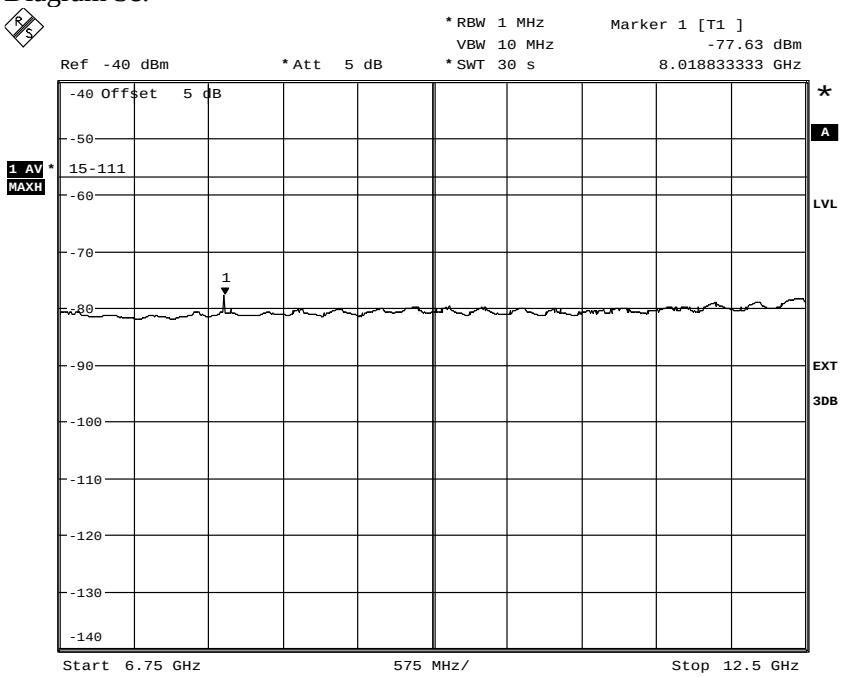
Diagram 3b:



Date: 7.OCT.2011 13:46:56

Appendix 8

Diagram 3c:



Date: 7.OCT.2011 13:48:52

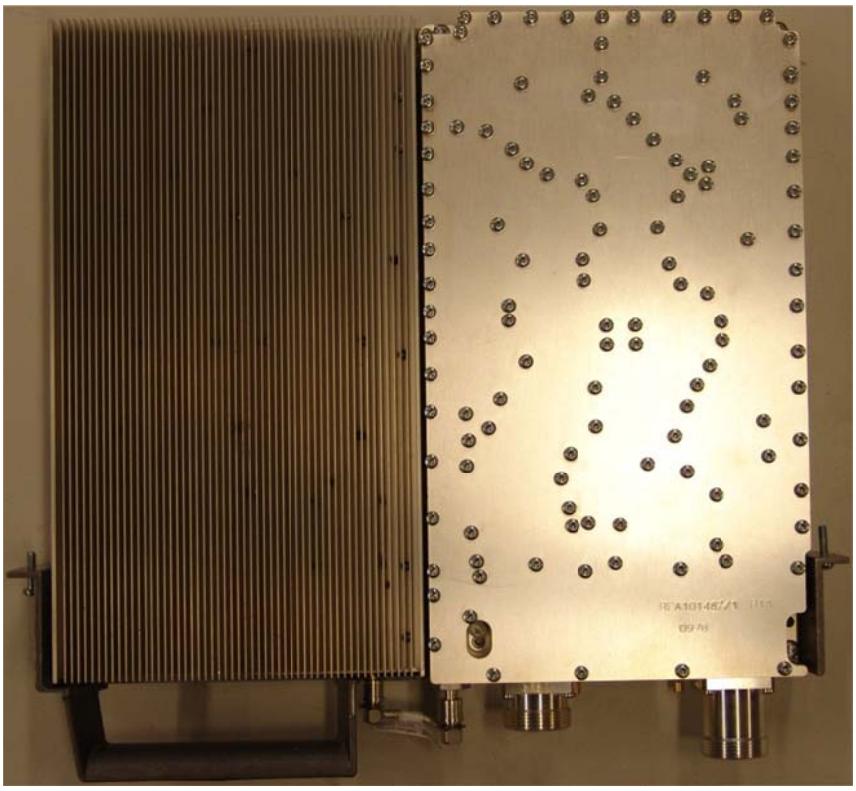
External photos

Front side

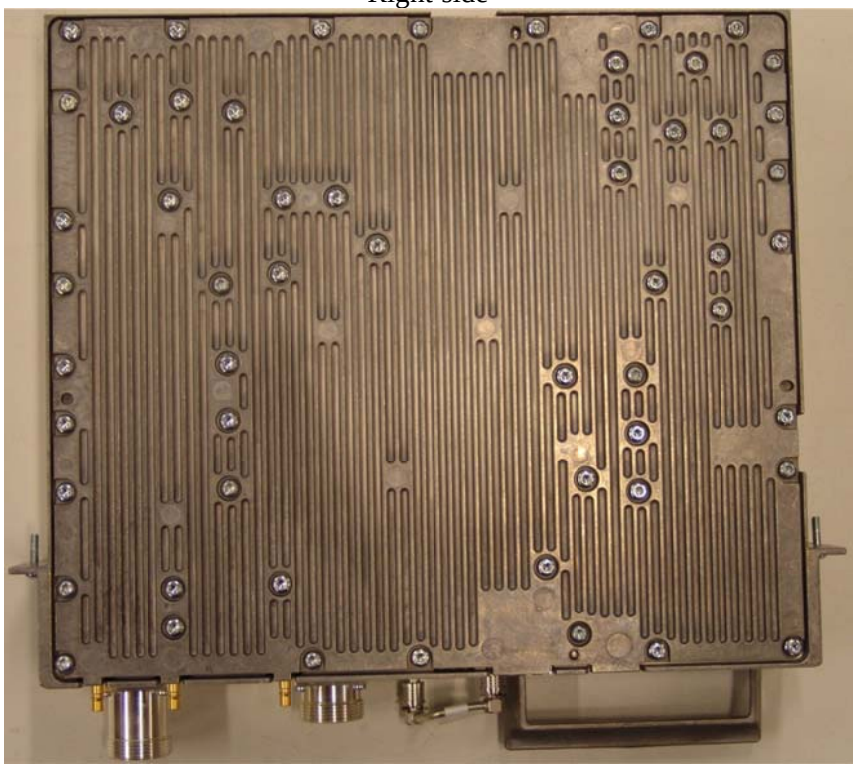
Rear side

Appendix 9

Left side



Right side



Appendix 9

Top side

Bottom side