

Ericsson AB
Klaes Holm
PDU HW
164 80 Stockholm

Class II permissive change on RRUS 01 B5 850 MHz radio equipment with FCC ID TA8AKRC118703 and IC 287AB-AS118703 (7 appendices)

Test object

RRUS 01 B5, product KRC 118 70/3, revision R1E

Summary

See appendix 1 for general information and appendix 7 for external photos.

Standard	Compliant	Appendix
FCC CFR 47 / IC RSS-132		
2.1046 / RSS-132 5.4 RF power output	Yes	2
2.1049 / RSS-Gen 4.6.1 Occupied bandwidth	Yes	3
2.1051 / RSS-132 5.5 Band edge	Yes	4
2.1051 / RSS-132 5.5 Spurious emission at antenna terminals	Yes	5
2.1053 / RSS-132 5.5 Field strength of spurious radiation	Yes	6

Note: Above RSS-132 items are given as cross-reference only. Measurements were performed according to ANSI procedures referenced by FCC and covered by SP's accreditation.

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Appendix 1

Description of the test object

Equipment:	Radio equipment RRUS 01 B5
Operating bands:	TX: 869 - 894 MHz RX: 824 - 849 MHz
Antenna ports:	1 TX/RX port and 1 RX port
Nominal RF output power:	Single carrier: 1x 49.0 dBm (1 x 80.0W) Multi carrier: 2x 46.0 dBm (2 x 40.0W) 3x 44.2 dBm (3 x 26.6W) 4x 43.0 dBm (4 x 20W) In WCDMA MIMO configuration the maximum nominal output power is limited to 47 dBm (50W) per carrier and port. In GSM single carrier configuration maximum nominal output power is limited to 47.8 dBm (60W).
GSM supports	
Modulations (payload):	GMSK, 16QAM, 32QAM, AQPSK and 8PSK
Carrier constellations	Single and multi carrier in conventional mode
WCDMA supports	
Modulations:	QPSK, 16QAM and 64QAM
Channel bandwidths:	4.2 to 5 MHz (configurable in steps of 100/200 kHz)
Channel spacings:	4.4 to 5 MHz (configurable in steps of 100/200 kHz)
Carrier constellations	Single & multi carrier in conventional and 2x2 MIMO mode
Nominal supply voltage:	-48VDC

Purpose of test

The purpose of this test is to justify a Class II Permissive Change, adding MIMO mode for WCDMA and to verify maintained compliance for the performance characteristics specified in applicable items of FCC CFR 47 and Industry Canada RSS-132 and RSS-Gen with updated hardware.

Appendix 1

Operation modes during measurements**GSM single RAT**

All measurements were performed with the test object transmitting with GMSK modulation. Where specified, additional measurements were performed with the testobject transmitting AQPSK, 8-PSK, 16QAM and 32QAM.

WCDMA single RAT

Measurements in conventional mode were performed with the test object transmitting test model 1 (TM1) with 64 DPCH:s at 30 kbps (SF=128) according 3GPP TS 25.141.

Measurements in MIMO mode were performed with the test object transmitting test model 5 (TM5) with 30 DPCH:s at 30 kbps and 8 HS-PDSCH (SF=128) according 3GPP TS 25.141.

Channel bandwidth 5MHz.

Complete measurements were made on RRUS 1 port RF A in primary mode and additional measurements on port RF A RRUS 2 in secondary mode to verify that the ports were identical, as declared by the client.

MSR, WCDMA + GSM

The test object supports MSR with WCDMA + GSM access techniques in conventional mode. Measurements were performed with one WCDMA carrier transmitting TM1 with 64DPCH:s at 30 kbps (SF=128) and two GSM carriers in GMSK modulation mode.

WCDMA Channel bandwidth 5MHz..

The test object was supplied with -48 VDC by an external power supply. Additional connections are documented in the set-up drawings below. Measurements were performed with the test object configured for the maximum transmit power applicable for the tested configuration.

For the purpose of this report the selected test scope was deemed representative for a worst case based on the guidelines applied in above mentioned 3GPP standards and prior experience from comparative tests with different modulations on similar products.

Appendix 1

Test frequencies used for conducted and radiated measurements

WCDMA single RAT TX test frequencies

UARFCN Downlink	Frequency [MHz]	Symbolic name	Comment
4357	871.4	B	Single carrier TX bottom frequency
4357 4382	871.4 876.4	B2	2 carrier TX band bottom constellation
4408	881.6	M	Single carrier TX band mid frequency
4385 4431	877.0 886.2	M2	2 carrier TX band mid constellation
4458	891.6	T	Single carrier TX top frequency
4433 4458	886.6 891.6	T2	2 carrier TX band top constellation

GSM single RAT TX test frequencies

ARFCN Downlink	Frequency [MHz]	Symbolic name	Comment
129	869.2	B	Single carrier TX bottom frequency
129 132	869.4 870.0	B2	2 carrier TX band bottom constellation
190	881.6	M	Single carrier TX band mid frequency
190 193	881.6 882.2	M2	2 carrier TX band mid constellation
250	891.6	T	Single carrier TX top frequency
247 250	893.0 893.6	T2	2 carrier TX band top constellation
185 250	880.6 893.6	B _{im 1}	2 carrier TX band bottom constellation
153 185	874.2 880.6	B _{im 2}	2 carrier TX band mid constellation
129 137	869.4 871.0	B _{im 3}	2 carrier TX band top constellation
129 194	869.4 882.4	T _{im 1}	2 carrier TX band bottom constellation
194 226	882.4 888.8	T _{im 2}	2 carrier TX band mid constellation
242 250	892.0 893.6	T _{im 3}	2 carrier TX band top constellation

Appendix 1

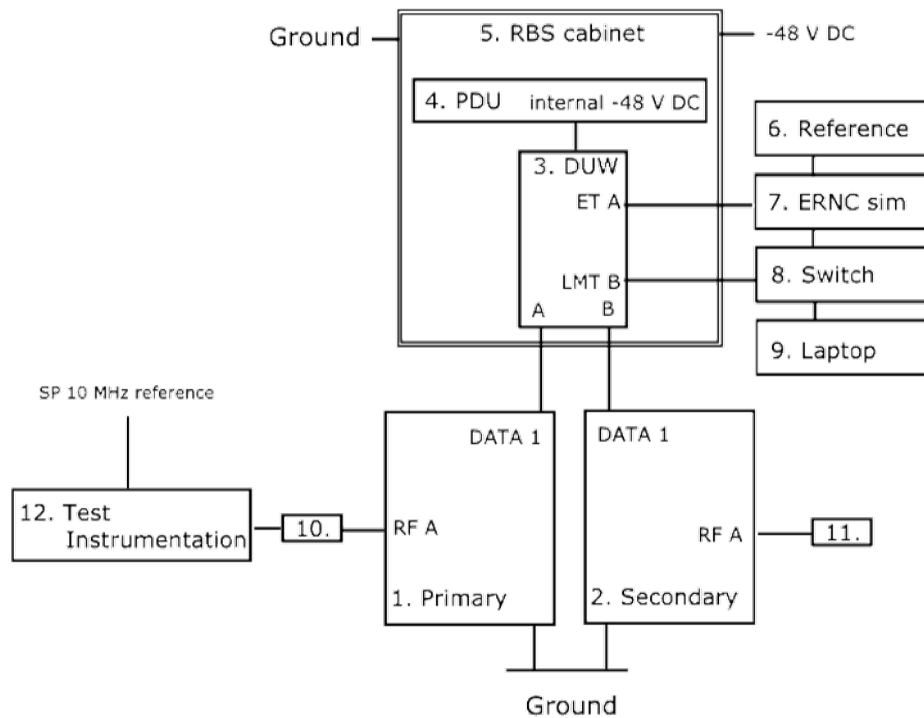
MSR, WCDMA + GSM TX test frequencies

WCDMA 1x20W			GSM 2x30W			Symbolic name
UARFCN Downlink	Frequency [MHz]	BW [MHz]	ARFCN Downlink	Carrier 1 [MHz]	Carrier 2 [MHz]	
4420	884.0	5	129/137	869.4	871.0	Config 1
4369	873.8	5	129/137	869.4	871.0	Config 2
4403	880.6	5	242/250	892.0	893.6	Config 3
4427	885.4	5	180/239	879.6	891.4	Config 4
4387	877.4	5	140/199	871.6	883.4	Config 5

All RX frequencies were configured 45 MHz below the corresponding TX frequency according the applicable duplex offset for the operating band.

Appendix 1

Test set-up conducted measurements WCDMA MIMO and conventional mode



Note: Picture above shows MIMO setup, during conventional mode the secondary test object was not used. Unconnected interfaces were omitted in the picture for simplicity, but are listed in the interface table on page 13.

Test object:

1.	RRUS 01 B5, KRC 118 70/3, rev. R1E, s/n: C826659428 Primary With software PIS CXP 901 7316/1 (pre-installed) R39UL unlocked working software CXP 901 3268/6 R49AL FCC ID TA8AKRC11870-3 and IC: 287AB-AS118703
2.	RRUS 01 B5, KRC 118 70/3, rev. R1E, s/n: C826659432 Secondary With software PIS CXP 901 7316/1 (pre-installed) R39UL unlocked working software CXP 901 3268/6 R49AL FCC ID TA8AKRC11870-3 and IC: 287AB-AS118703

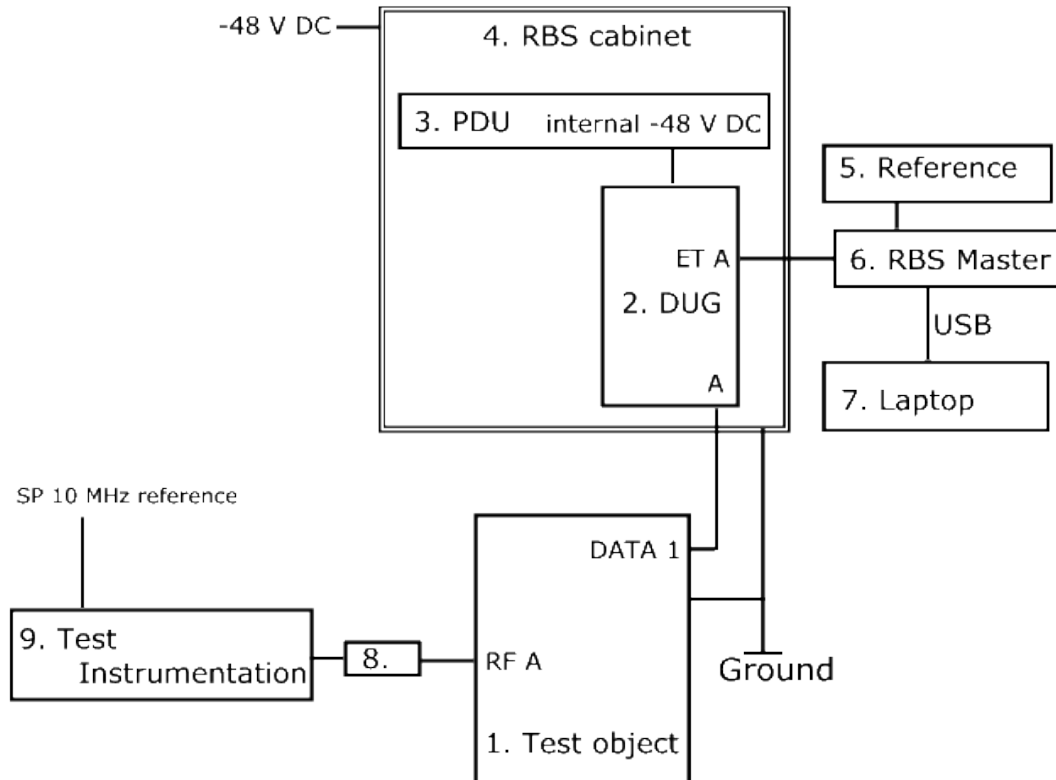
Appendix 1

Functional test equipment:

3.	DUW 30 01 KDU 127 161/3 R4C S/N: C824673232
4.	PDU 02 01, BMG 980 336/4, rev: R2A, s/n: BJ31528316
5.	RBS 6201 cabinet, BAMS 1000778792.
6.	Symmetricon 8040 reference, BAMS 1000714189
7.	ERNC Sim 130 BAMS 1000660991
8.	Fast Ethernet switch, Netgear FS726T
9.	Controlling laptop HP Elitebook 8540w, BAMS 1001052043 running software MOSHELL V9.0n
10.	Attenuator
11.	Termination 50 ohm
12.	SP test instrument according measurement equipment list

Appendix 1

Test set-up conducted measurements GSM



Note: Unconnected test object interfaces were omitted in the picture for simplicity, but are listed in the interface table on page 13.

Test object:

1.	RRUS 01 B5, KRC 118 70/3, rev. R1E, s/n: C826659428 With software PIS CXP 901 7316/1 (pre-installed) R39UL unlocked working software CXP 901 3268/6 R48YY FCC ID TA8AKRC11870-3 and IC: 287AB-AS118703
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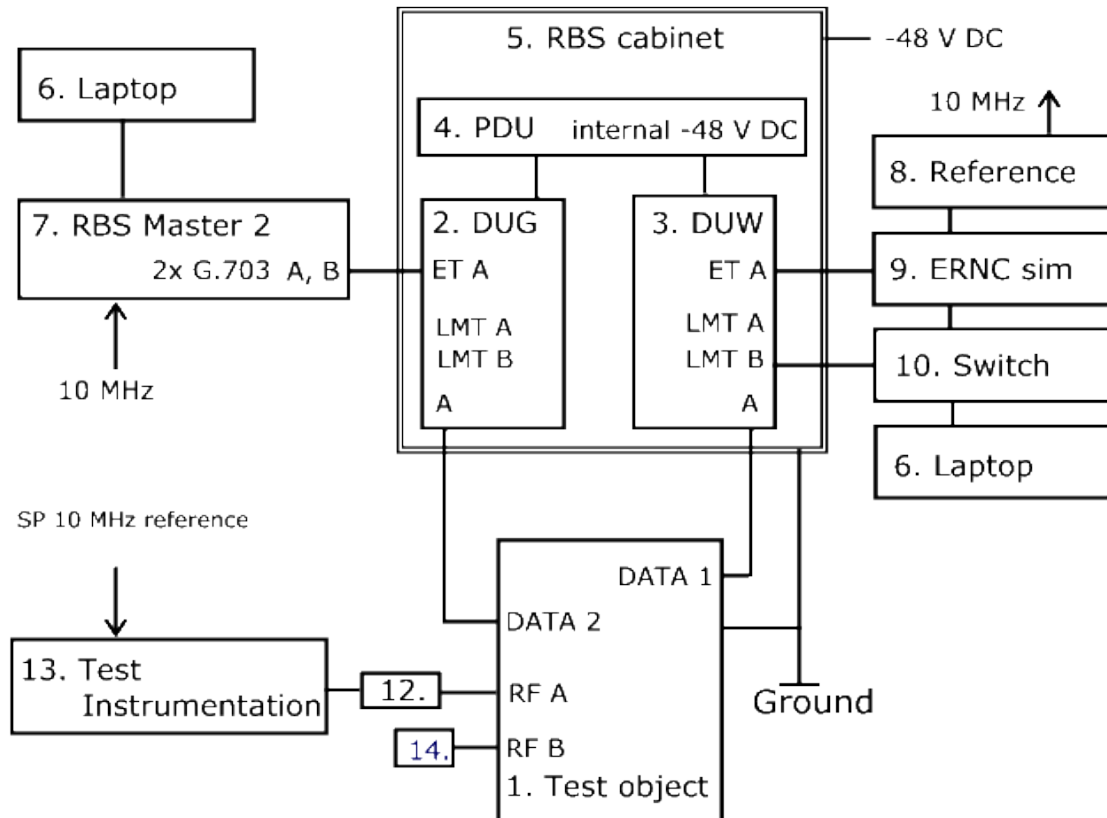
Appendix 1

Functional test equipment:

2.	DUG KDU 137 569/1 R2A C823721034
3.	PDU 02 01, BMG 980 336/4, rev: R2A, s/n: BJ31528316
4.	RBS 6201 cabinet, BAMS 1000778792.
5.	Symmetricon 8040 reference, BAMS 1000714189
6.	RBS Master LPY 107 1007/3 rev. R1C. BAMS 1001195173
7.	Controlling laptop HP Elitebook 8540w, BAMS 1001052043
8.	Attenuator
9..	SP test instrument according measurement equipment list

Appendix 1

Test set-up conducted measurements MSR, WCDMA + GSM



Note: Unconnected interfaces were omitted in the picture for simplicity, but are listed in the interface table on page 13.

Test object:

1.	RRUS 01 B5, KRC 118 70/3, rev. R1E, s/n: C826659428 With software PIS CXP 901 7316/1 (pre-installed) R39UL unlocked working software CXP 901 3268/6 R49AL FCC ID TA8AKRC11870-3 and IC: 287AB-AS118703
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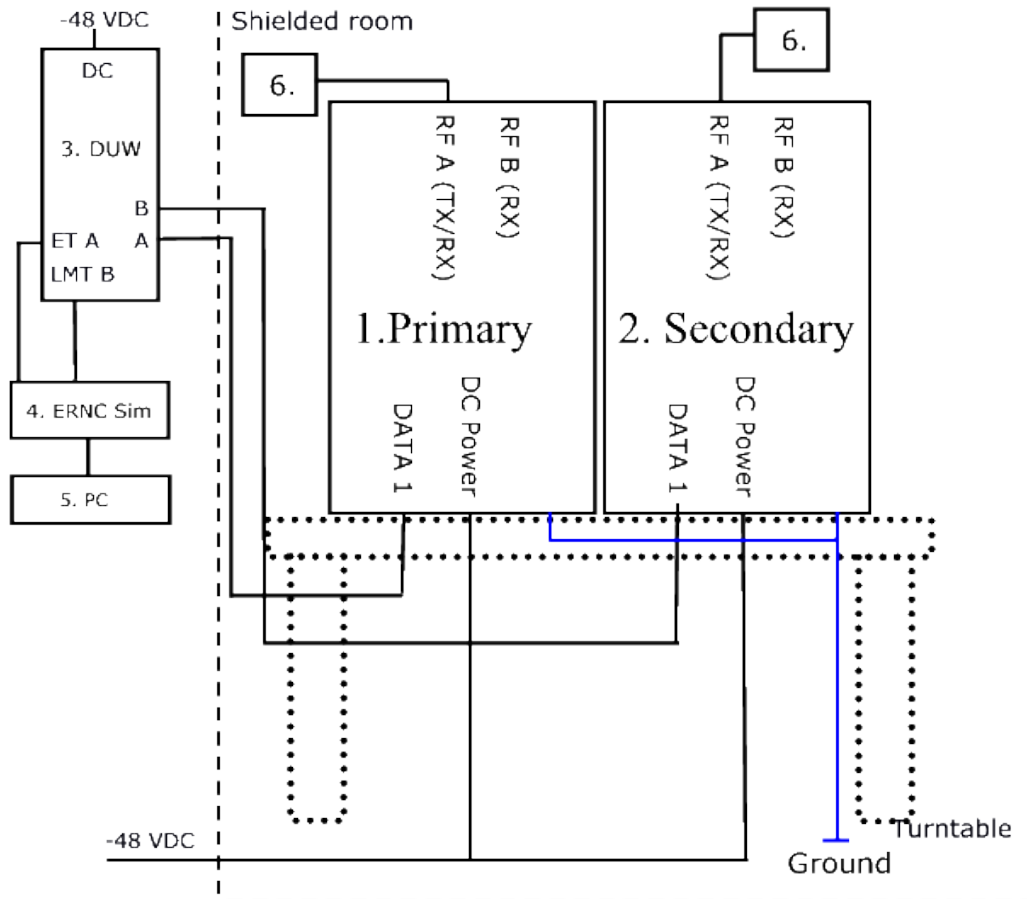
Appendix 1

Functional test equipment:

2.	DUG 20 01 KDU 137 569/1 R2A C823721034
3.	DUW 30 01 KDU 127 161/3 R4C S/N: C824673232
4.	PDU 02 01, BMG 980 336/4, rev: R2A, s/n: BJ31528316
5.	RBS 6201 cabinet, BAMS 1000778792.
6.	Controlling laptop HP Elitebook 8540w, BAMS 1001052043 running software MOSHELL V9.0n
7.	RBS Master LPY 107 1007/3 rev. R1C. BAMS 1001195173
8.	Symmetricon 8040 reference, BAMS 1000714189
9.	ERNC Sim 130 BAMS 1000660991
10.	Fast Ethernet switch, Netgear FS726T
12.	Attenuator
13..	SP test instrument according measurement equipment list
14.	Termination 50 ohm

Appendix 1

Test setup radiated measurements single RAT WCDMA MIMO



Test object:

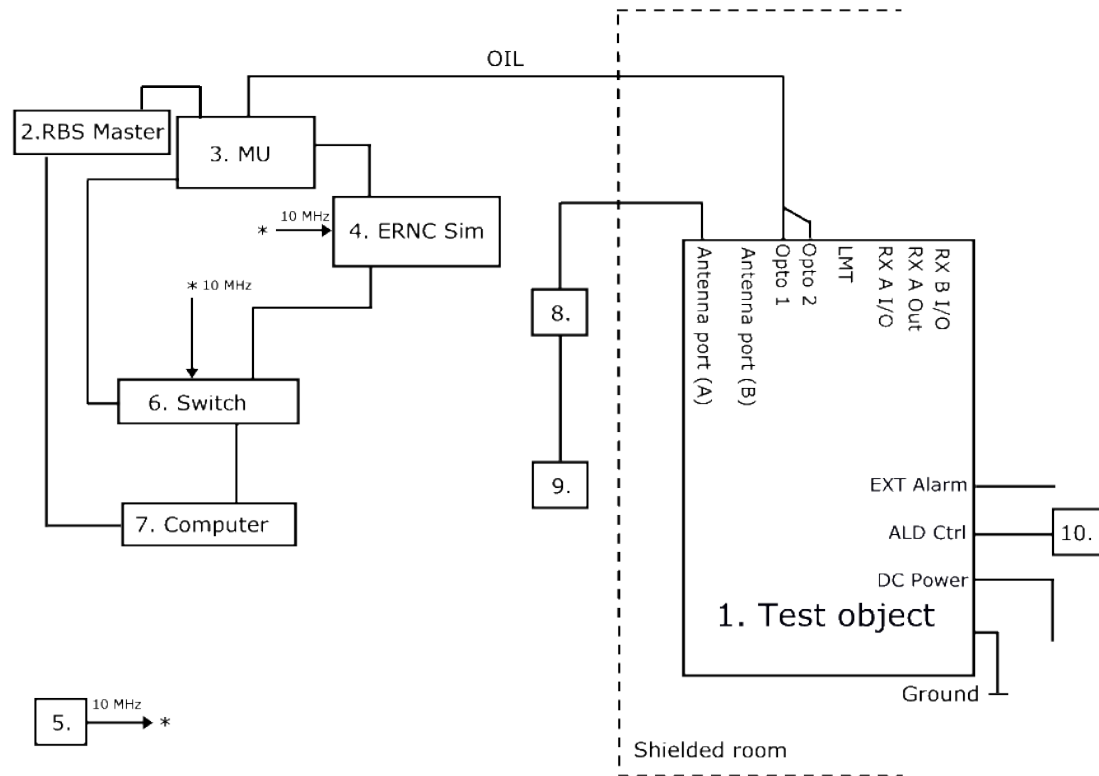
1.	RRUS 01 B5, KRC 118 70/3, rev. R1E, s/n: C826659428 Primary With software PIS CXP 901 7316/1 (pre-installed) R39UL unlocked working software CXP 901 3268/6 R49AL FCC ID TA8AKRC11870-3 and IC: 287AB-AS118703
2.	RRUS 01 B5, KRC 118 70/3, rev. R1E, s/n: C826659432 Secondary With software PIS CXP 901 7316/1 (pre-installed) R39UL unlocked working software CXP 901 3268/6 R49AL FCC ID TA8AKRC11870-3 and IC: 287AB-AS118703

Functional test equipment:

3.	DUW 30 01, product KDU 127 161/3, revision R4C, s/n: C824673232, hosted in RBS 6202, BAMS – 1000961945
4.	ERNC-SIM 130, BAMS – 1000660991
5.	Computer HP Elitebook 8540w, BAMS – 1001052043
6.	Termination 50 ohm

Appendix 1

Test setup radiated measurements MSR, WCDMA + GSM



Test object:

1.	RRUS 01 B5, KRC 118 70/3, rev. R1E, s/n: C826659428 With software PIS CXP 901 7316/1 (pre-installed) R39UL unlocked working software CXP 901 3268/6 R49AL FCC ID TA8AKRC11870-3 and IC: 287AB-AS118703
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Functional test equipment:

2	RBS Master LPY 107 1007/3 rev. R1C. BAMS 1001195173
3.	Main Unit RBS 6202 details given below
4.	ERNC-SIM 130, BAMS – 1000660991
5.	NTP server Symmetricon BAMS 1000714189
6.	Fast Ethernet switch, Netgear FS726 T
7.	Computer HP Elitebook 8540w, BAMS – 1001052043
8.	Attenuator
9.	SP test instrument according measurement equipment list
10.	RET – Remote Electrical Tilt unit, KRY 121 67/2, rev. R1N

Appendix 1

Interfaces:	Type of port:
Supply power -48 VDC	DC Power
Antenna port (A), 7/16 male connector	Antenna
Antenna port (B), 7/16 male connector	Antenna
Opto 1, Optical Interface Link, single mode opto fiber 1	Signal
Opto 2, for MSR Optical Interface Link, single mode opto fiber 2 for single RAT not connected	Signal
LMT, for maintenance use only	Signal
RX A Out, no cable attached	Antenna
RX A I/O, no cable attached	Antenna
RX B I/O, no cable attached	Antenna
EXT Alarm, shielded multi-wire	Signal
ALD Ctrl, shielded multi-wire	Signal
Ground wire	Ground

RBS CABINET 6202 BAMS 1000961945:

Product name	Product number	R-state	Serial number
PDU 0202	BMG 980 336/5	R1E	C941030896
SCU 0301	BGM 136 1006/3	R1A	C823563230
PFU 0202	KFE 101 116/3	R1B	BR80954554
DUMMY	SXK 109 8971/1	R1A	-
DUW 3001	KDU 127 161/3	R4C	C824673232
DUG 2001	KDU 137 569/1	R2A	C823721034

Appendix 1

Softwares

WCDMA Single RAT:

Software	Revision
CXP 901 8350/1	R11B08

WCDMA MSR:

Software	Revision
CXP 901 8350/1	R11B08

GSM, Single RAT:

Software	Revision
DXPR69GZ	R49E

GSM MSR:

Software	Revision
DXPP4BCZ	P49L

References

Measurements were done according to relevant parts of the following standards:

ANSI 63.4-2009

ANSI/TIA/EIA-603-C-2004

CFR 47 part 2, October 1st, 2012

CFR 47 part 22, October 1st, 2012

3GPP TS 25.141, version 8.9.0

3GPP TS 36.141, version 8.4.0

3GPP TS 37.141, version 10.8.0

RSS-Gen Issue 3

RSS-132 Issue 3

Appendix 1

Measurement equipment

	Calibration Due	SP number
Test site Edison	2014-01	504 114
R&S FSQ 40	2013-05	504 143
R&S ESIB 26	2013-07	503 885
Control computer with R&S software EMC32 version 8.52.0	-	503 889
High pass filter	2013-07	901 501
RF attenuator	2013-07	504 159
RF attenuator	2014-12	901 508
Antenna Shaffner CBL 6143	2013-04	504 079
Horn Antenna EMCO 3115	2014-01	501 548
MITEQ Low Noise Amplifier	2013-08	504 160
Testo 635 Temperature and humidity meter	2013-06	504 203
Testo 625 Temperature and humidity meter	2013-06	504 117

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). Compliance evaluation is based on a shared risk principle with respect to the measurement uncertainty.

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 2013-01-18.

Manufacturer's representative

Christer Gustavsson

Test engineers

Andreas Johnson, Tomas Lennhager, Tomas Isbring, Jörgen Wassholm and Martin Theorin, SP

Test participant

Adam Skoglund, Ericsson AB (partially)

Appendix 2

RF power output measurements according to CFR 47 2.1046 / IC RSS-132 5.4

Date	Temperature	Humidity
2013-01-30	23 °C ± 3 °C	26% ± 5 %
2013-01-31	23 °C ± 3 °C	28% ± 5 %
2013-02-01	23 °C ± 3 °C	22% ± 5 %
2013-02-11	23 °C ± 3 °C	14% ± 5 %
2013-02-12	22 °C ± 3 °C	15% ± 5 %
2013-02-13	21 °C ± 3 °C	16% ± 5 %

Test set-up and procedure

The test object was connected to a signal analyzer measuring peak and RMS output power in CDF mode. A RBW of 50 MHz was used.

Measurement equipment	SP number
Rohde & Schwarz signal analyzer FSQ40	504 143
RF attenuator	504 159
RF attenuator	901 508
Filter	901 501
Testo 635 temperature and humidity meter	504 203

Measurement uncertainty: 1.1 dB

Results

WCDMA single RAT, single carrier, MIMO mode

Rated output power 1x 47 dBm per RF port. Total nominal RF power 50 dBm.

Tested configuration BW and frequency	Transmitter power RMS (dBm)		
	Port RF A Primary mode	Port RF A Secondary mode	Total power ¹⁾
5 MHz, B	46.72 (Diagram 1)	46.77 (Diagram 2)	49.76
5 MHz, M	46.84 (Diagram 3)	46.83 (Diagram 4)	49.85
5 MHz, T	46.75 (Diagram 5)	46.75 (Diagram 6)	49.76

¹⁾: summed output power according to FCC KDB662911 Multiple transmitter output v01r02

Note: The diagrams are shown on the following pages and provide Peak to Average Ratio (PAPR). The highest single carrier PAPR measured was 7.91 dB (0.1%). For multi-carrier constellations the measured “PAPR” is informative only as to the definition of Peak to Average Ratio per carrier.

Appendix 2

WCDMA single RAT, multi carrier, MIMO mode

Rated output power 2 x 46 dBm per RF port. Total nominal RF power 52dBm.

Tested configuration Bandwidth and frequency	Transmitter power RMS (dBm)		
	Port RF A Primary mode	Port RF A Secondary mode	Total power ¹⁾
5 MHz, B2	48.79 (Diagram 7)	48.75 (Diagram 8)	51.78
5 MHz, M2	48.82 (Diagram 9)	48.81 (Diagram 10)	51.83
5 MHz, T2	48.74 (Diagram 11)	48.77 (Diagram 12)	51.77

¹⁾: summed output power according to FCC KDB662911 Multiple transmitter output v01r02

WCDMA single RAT, single carrier, conventional mode

Rated output power 1x 49 dBm.

Tested configuration Bandwidth and frequency	Transmitter power RMS (dBm)
	Port RF A
5MHz, B	48.79 (Diagram 13)
5MHz, M	48.84 (Diagram 14)
5MHz, T	48.76 (Diagram 15)

Appendix 2

GSM single RAT, single carrier, conventional mode

Rated output power 1x 47.8 dBm.

Tested configuration Modulation and frequency	Transmitter power RMS (dBm)
	Port RF A
GMSK, B	47.19 (Diagram 16)
GMSK, M	47.61 (Diagram 17)
8PSK, M	47.39 (Diagram 18)
16QAM, M	47.34 (Diagram 19)
32QAM, M	47.23 (Diagram 20)
AQPSK, M	47.26 (Diagram 21)
GMSK, T	47.11 (Diagram 22)

GSM single RAT, multi carrier, conventional mode

Rated output power 2x 46 dBm. Total nominal power 49 dBm.

Tested configuration Modulation and frequency	Transmitter power RMS (dBm)
	Port RF A
GMSK, B2	48.47 (Diagram 23)
GMSK, M2	48.64 (Diagram 24)
16QAM, M2	48.28 (Diagram 25)
GMSK, T2	48.28 (Diagram 26)

Appendix 2

MSR, WCDMA + GSM TX test frequencies

Rated output power 49 dBm

Tested configuration	Transmitter power RMS (dBm)
	Port RF A
Config 1	48.46 (Diagram 27)
Config 2	48.57 (Diagram 28)
Config 3	48.46 (Diagram 29)
Config 4	48.60 (Diagram 30)
Config 5	48.65 (Diagram 31)

The diagrams are shown on the following pages.

Limits

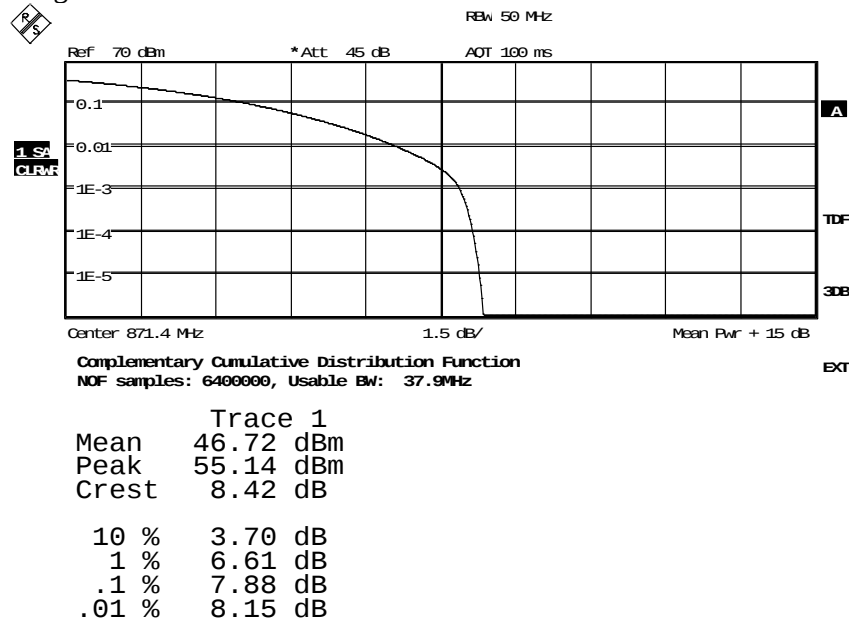
CFR47 § 22.913: The effective radiated power ERP shall not exceed 1000 W.

RSS-132 5.4: The average equivalent isotropically radiated power (e.i.r.p.) limits in SRSP-503 apply, resulting in a maximum EIRP of 1640 W.
The PAPR (0.1%) shall not exceed 13 dB.

Complies?	Yes
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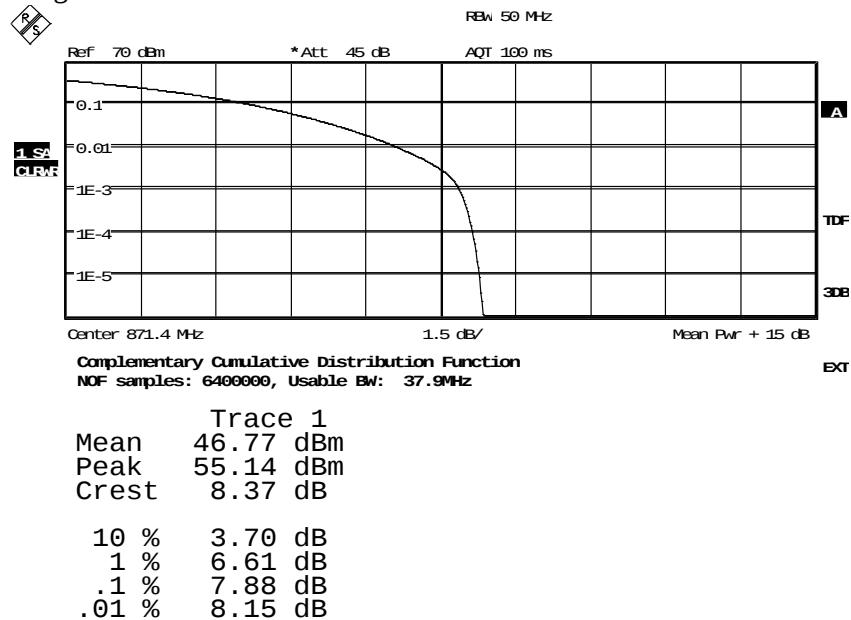
Appendix 2

Diagram 1:



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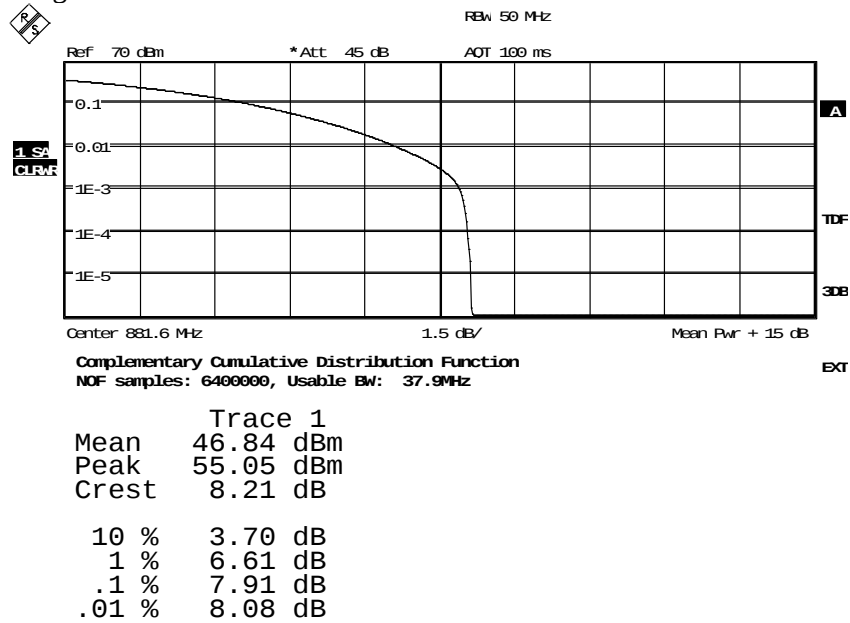
Diagram 2:



Date: 31.JAN.2013 15:15:37

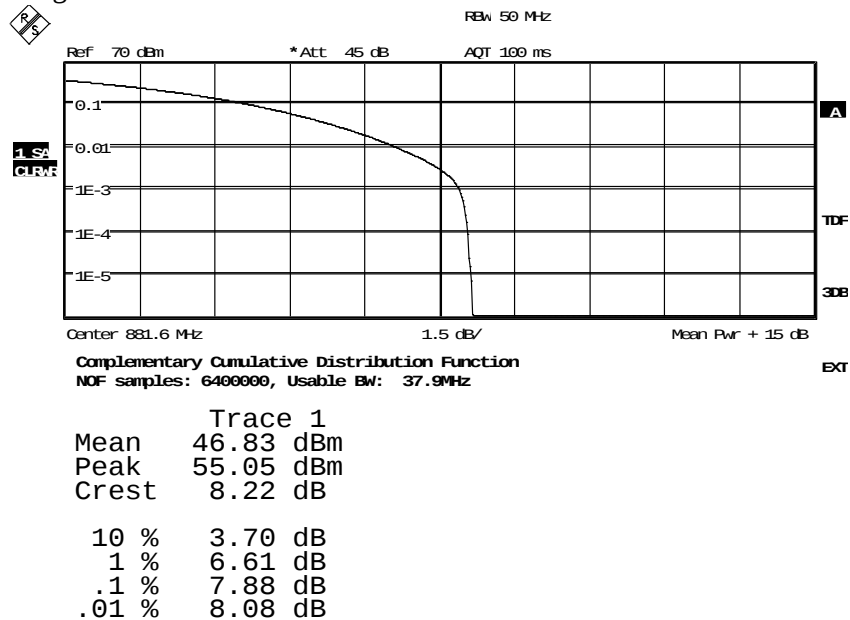
Appendix 2

Diagram 3:



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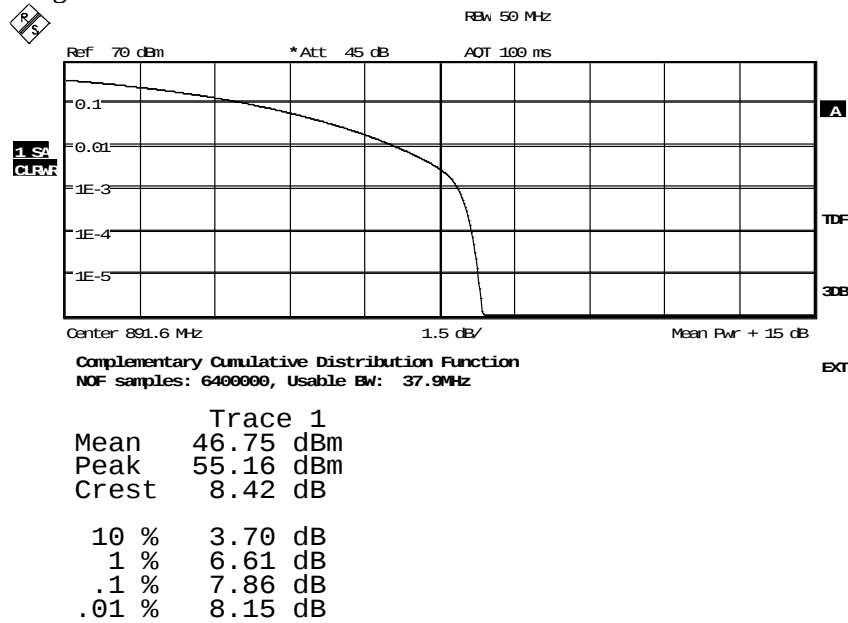
Diagram 4:



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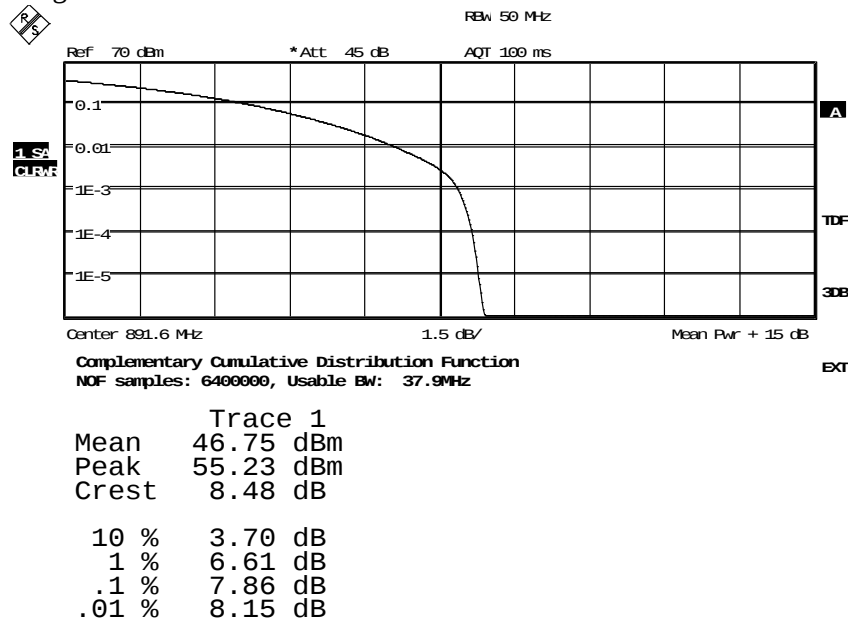
Appendix 2

Diagram 5:



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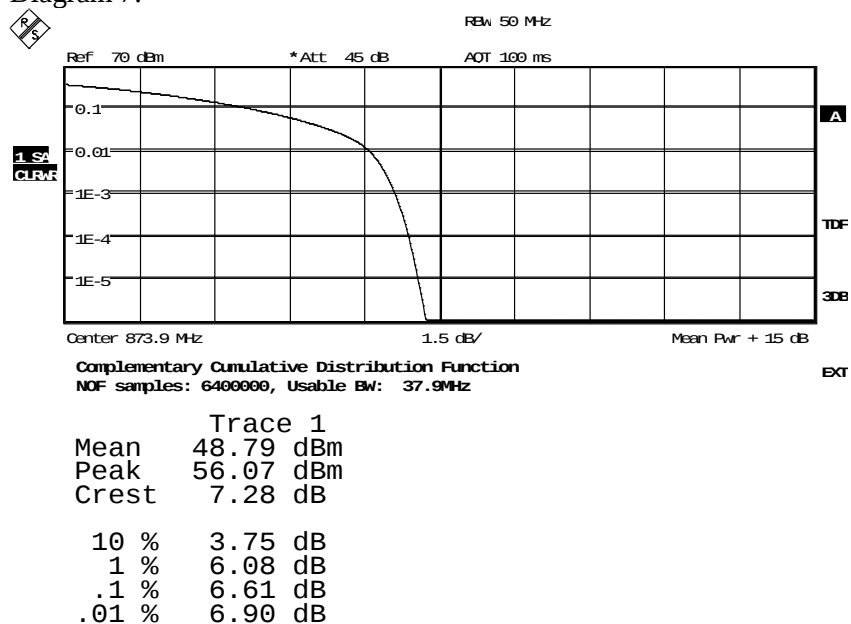
Diagram 6:



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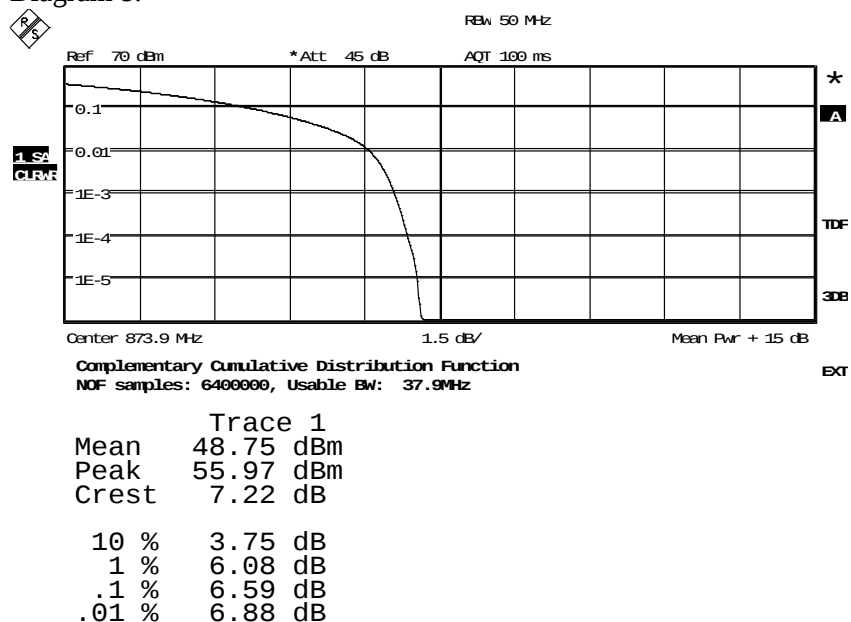
Appendix 2

Diagram 7:



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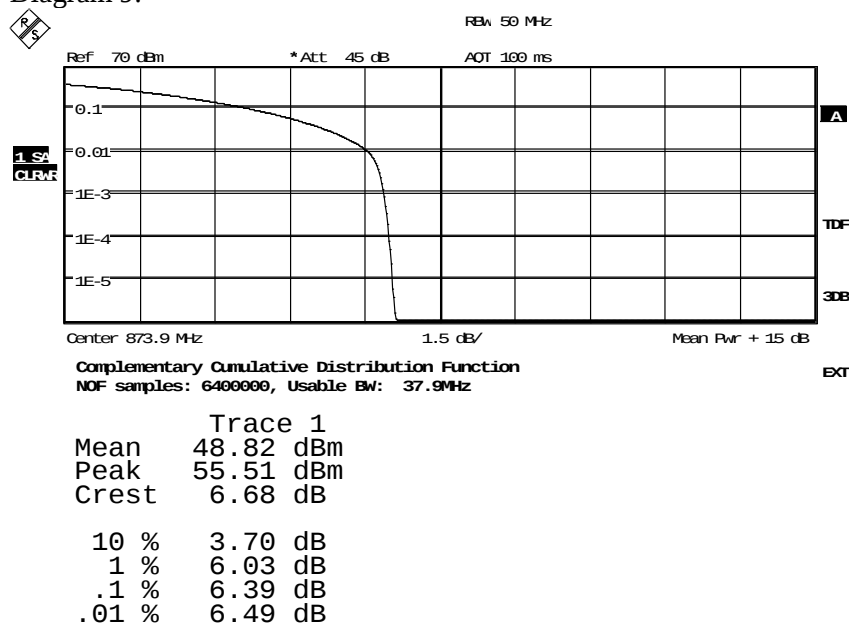
Diagram 8:



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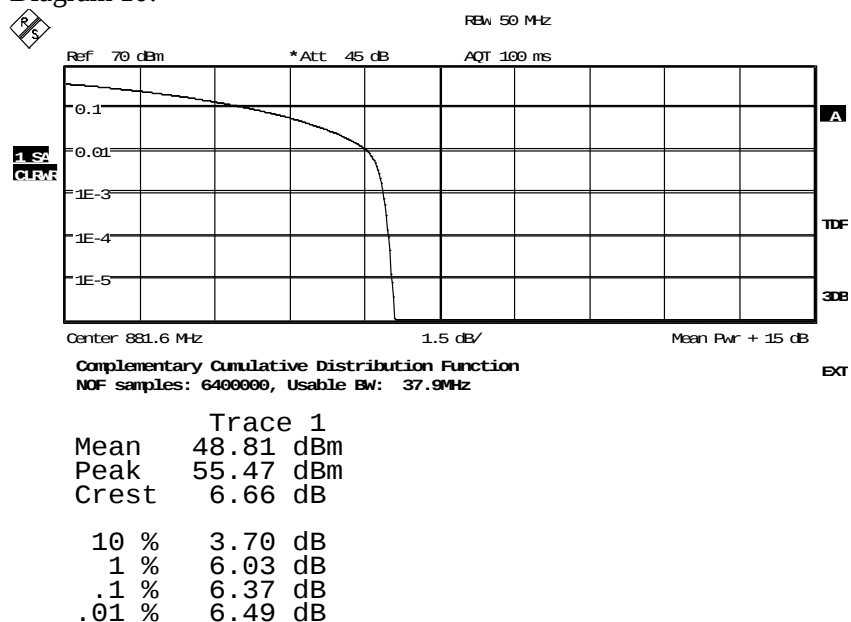
Appendix 2

Diagram 9:



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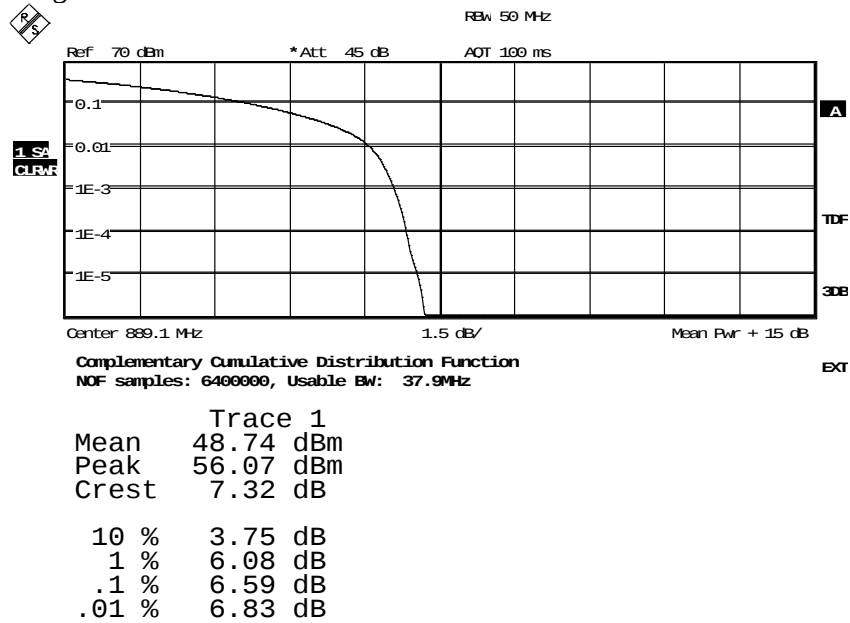
Diagram 10:



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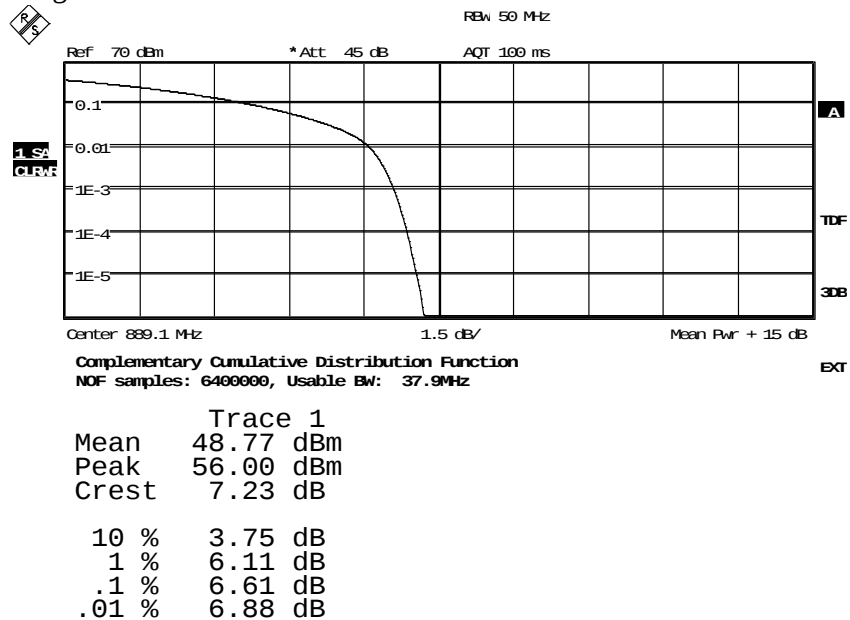
Appendix 2

Diagram 11:



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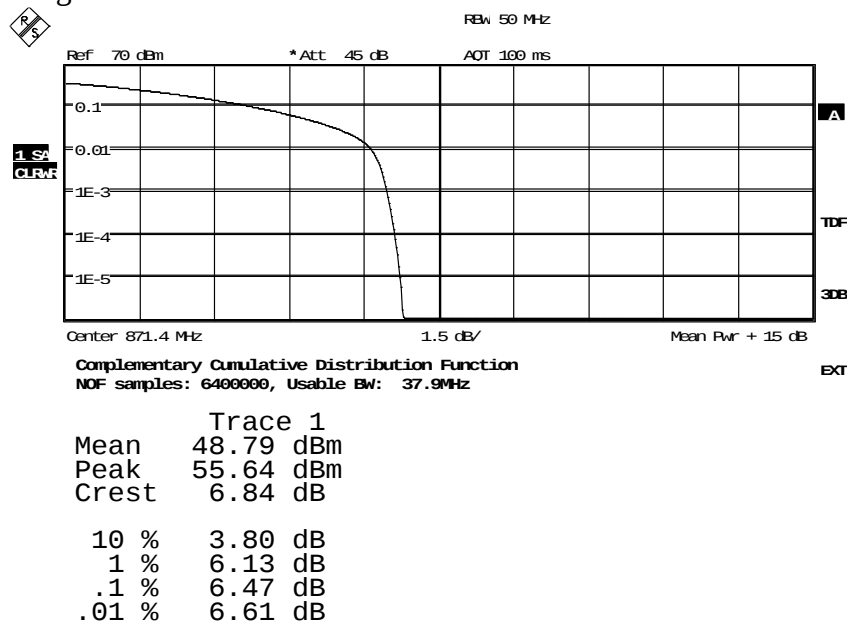
Diagram 12:



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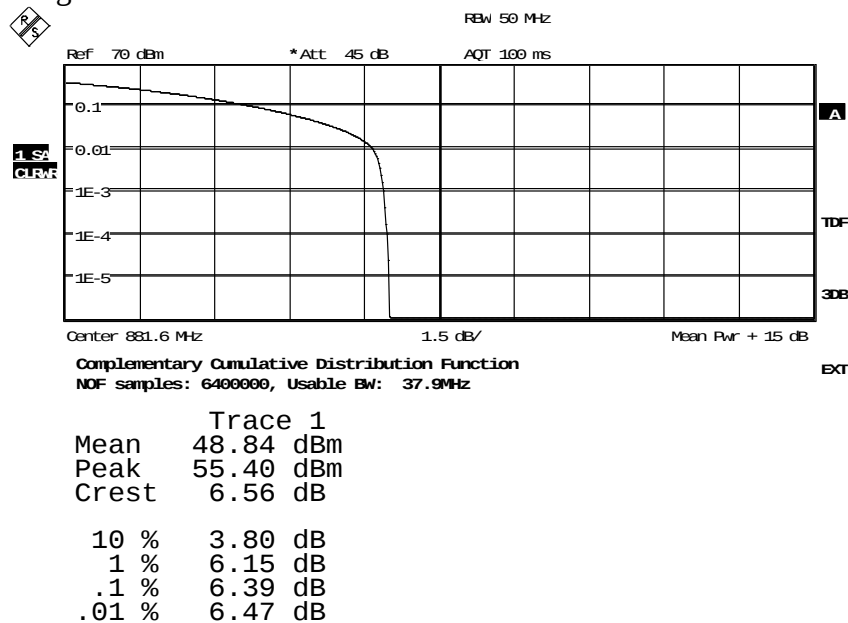
Appendix 2

Diagram 13:



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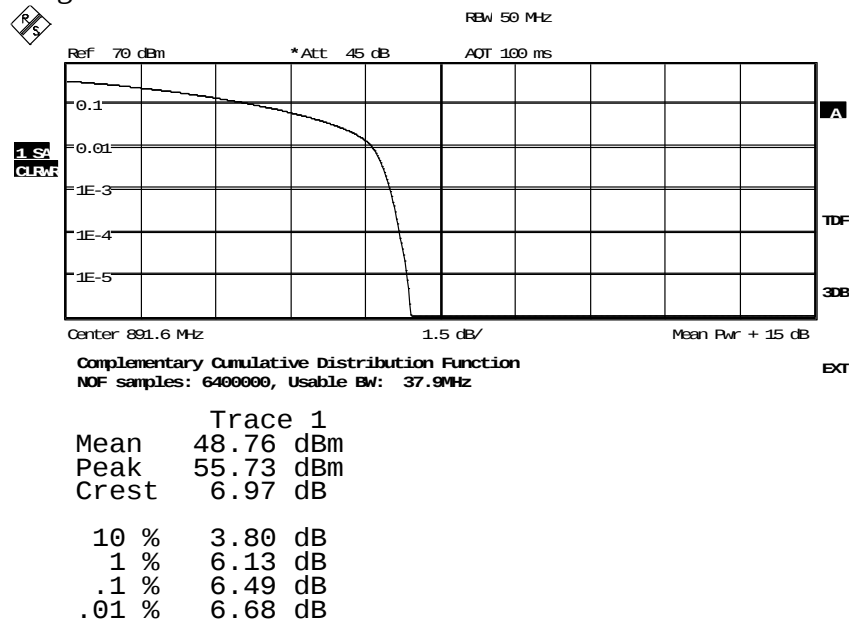
Diagram 14:



Date: 1.FEB.2013 10:16:52

Appendix 2

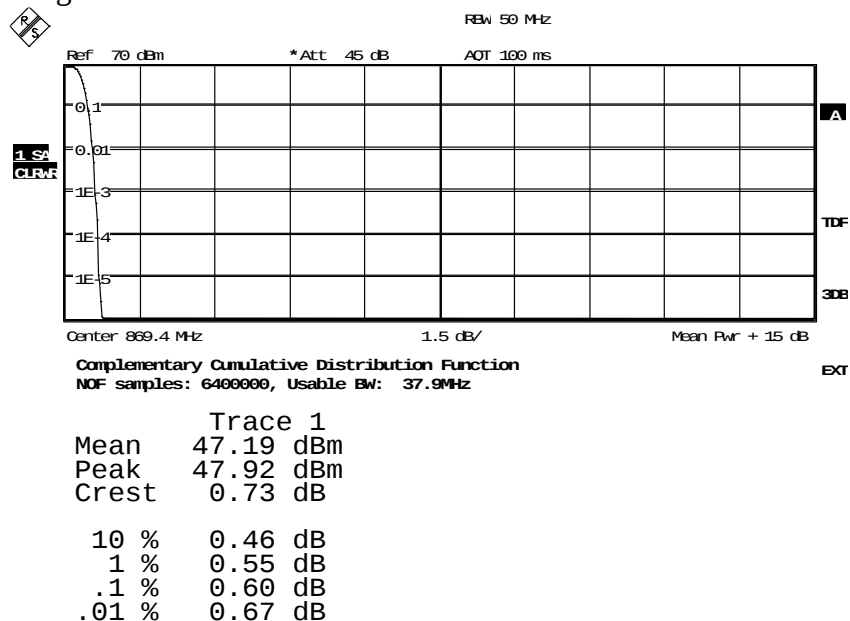
Diagram 15:



Date: 1.FEB.2013 10:53:34

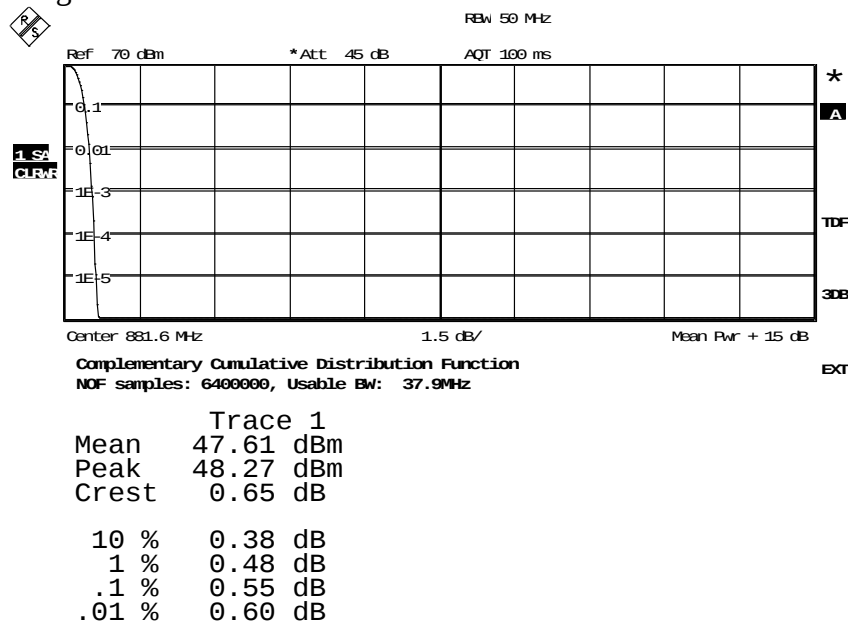
Appendix 2

Diagram 16:



Date: 11.FEB.2013 12:17:36

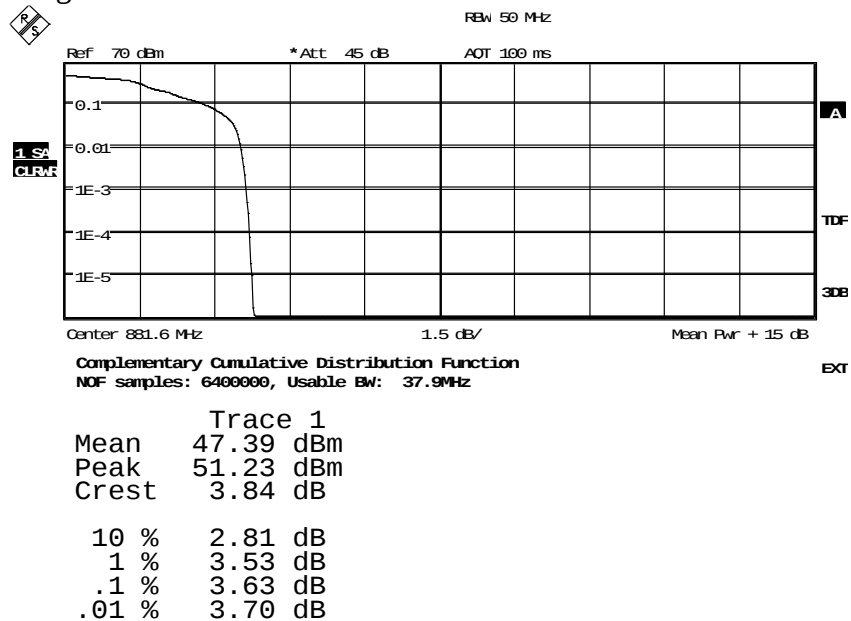
Diagram 17:



Date: 11.FEB.2013 09:33:24

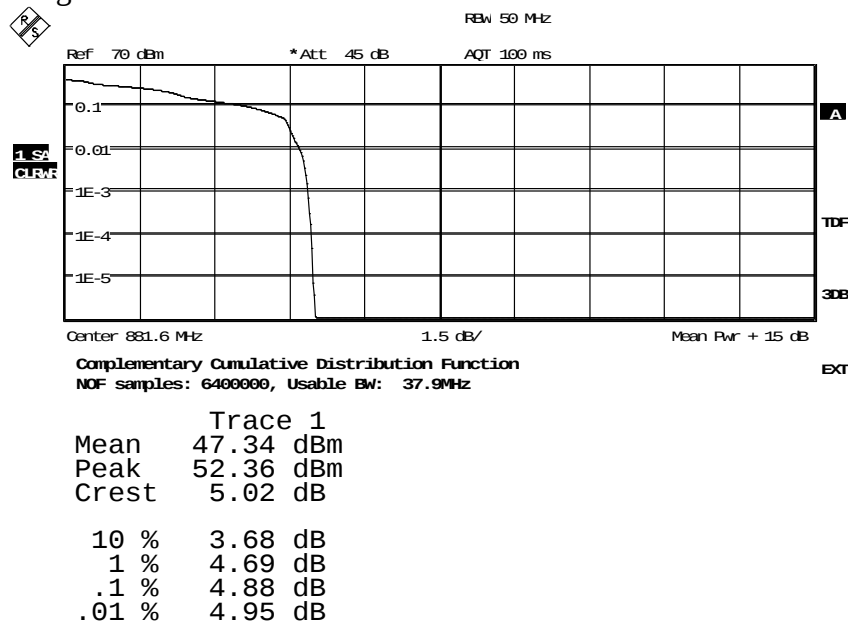
Appendix 2

Diagram 18:



Date: 11.FEB.2013 10:06:52

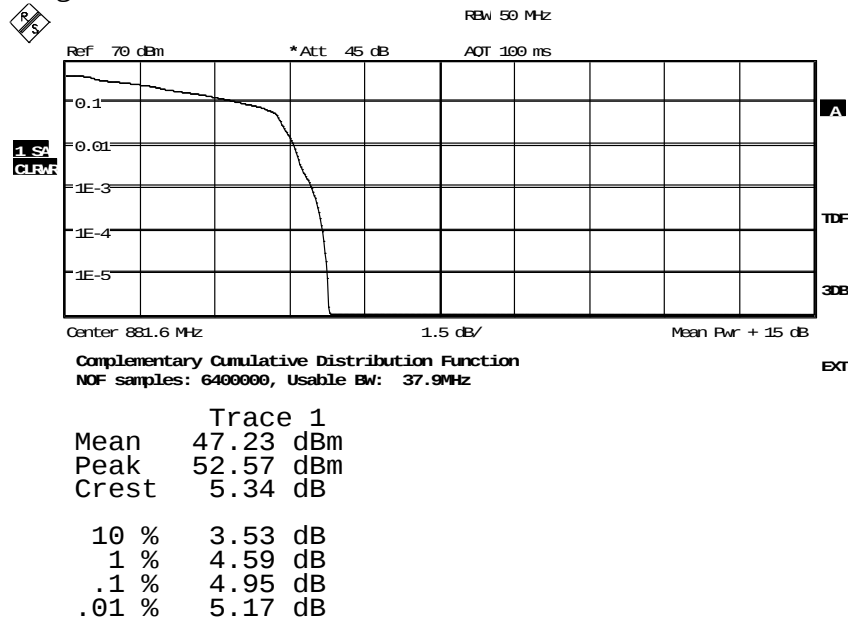
Diagram 19:



Date: 11.FEB.2013 10:16:22

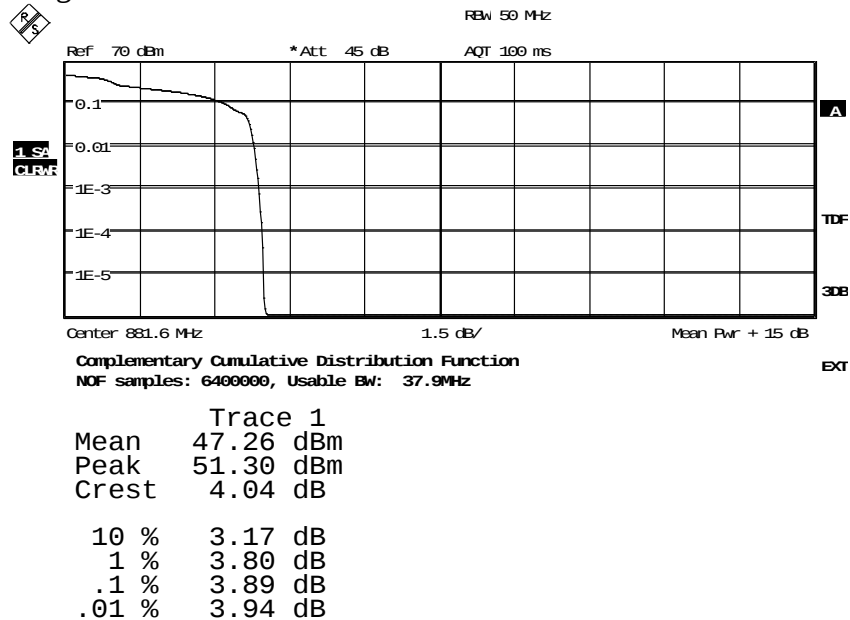
Appendix 2

Diagram 20:



Date: 11.FEB.2013 11:49:10

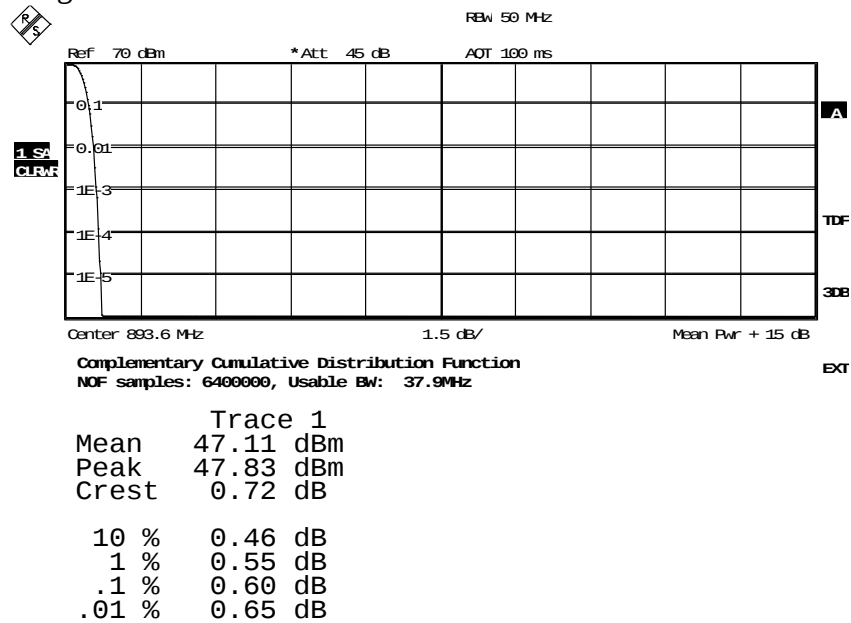
Diagram 21:



Date: 11.FEB.2013 12:03:52

Appendix 2

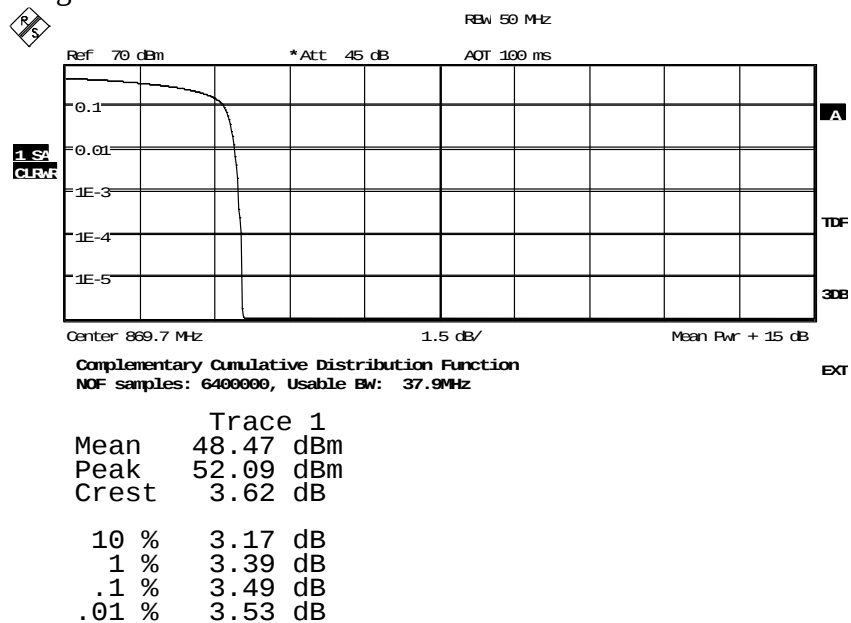
Diagram 22:



Date: 12.FEB.2013 07:04:29

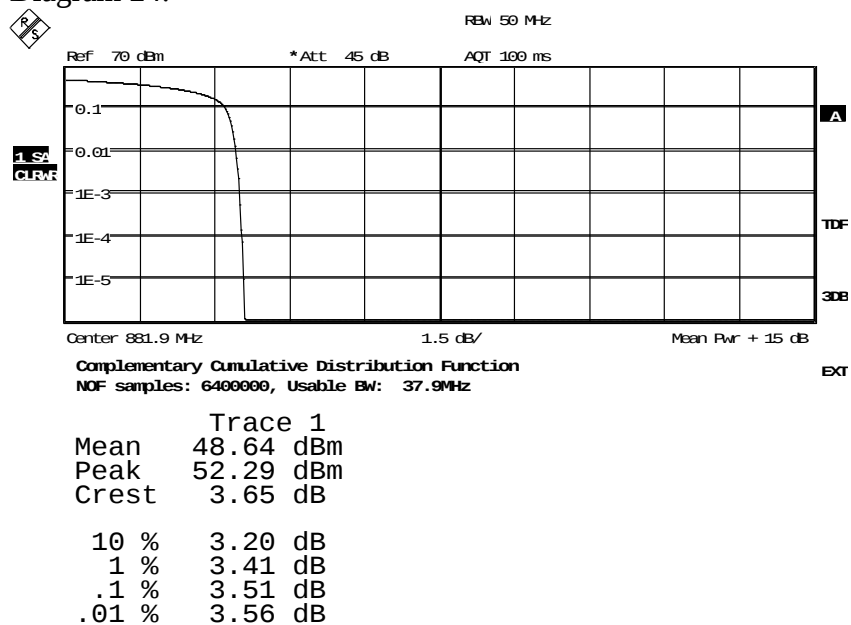
Appendix 2

Diagram 23:



Date: 12.FEB.2013 14:39:20

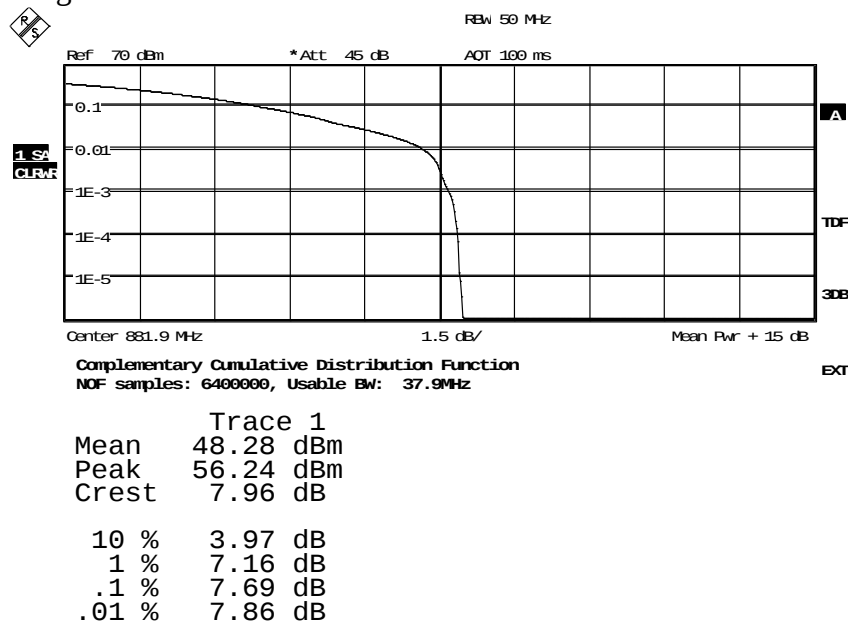
Diagram 24:



Date: 12.FEB.2013 12:14:08

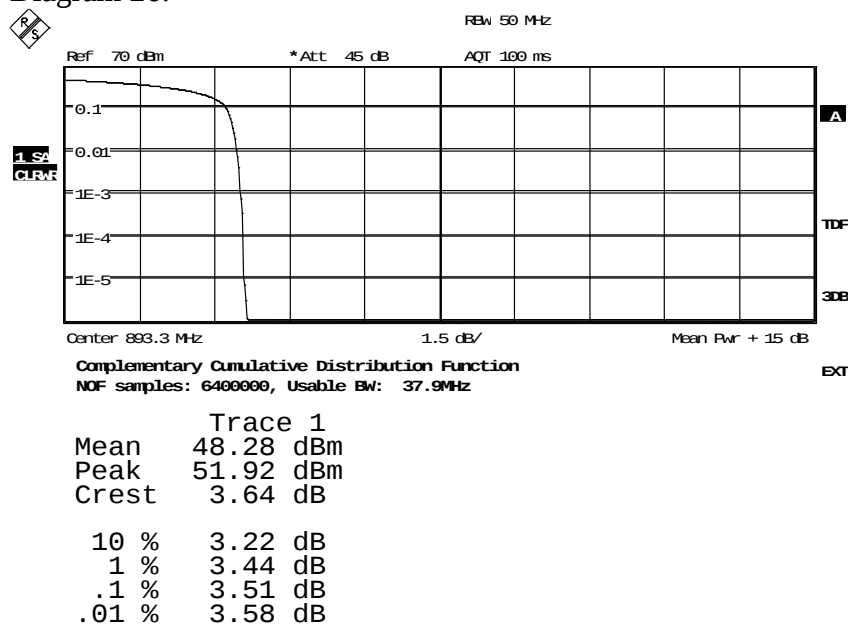
Appendix 2

Diagram 25:



Date: 12.FEB.2013 11:04:13

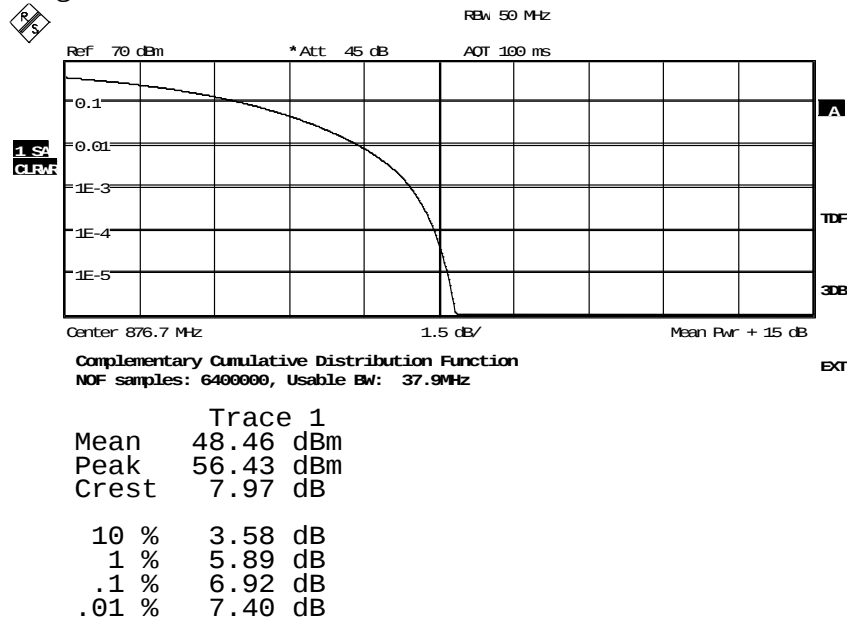
Diagram 26:



Date: 12.FEB.2013 12:21:18

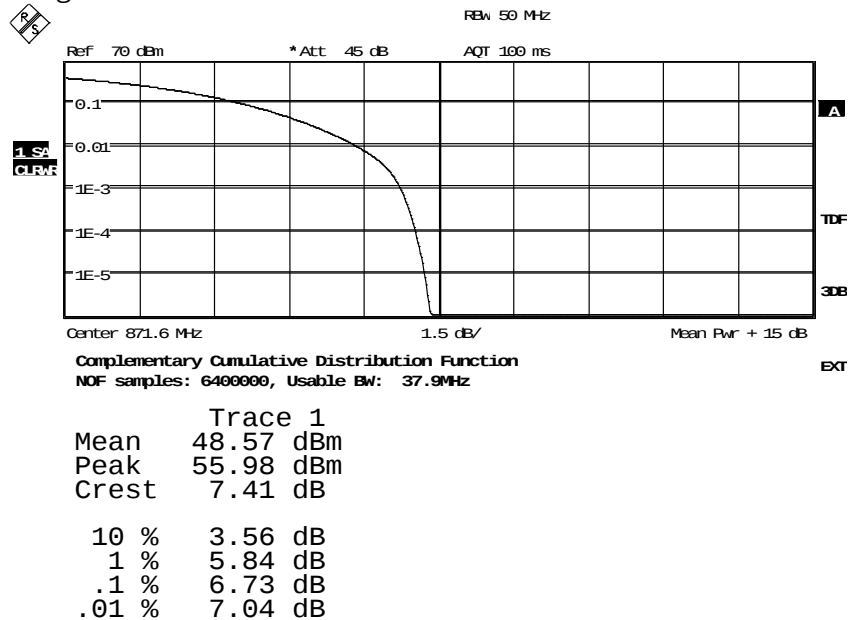
Appendix 2

Diagram 27:



Date: 13.FEB.2013 12:02:37

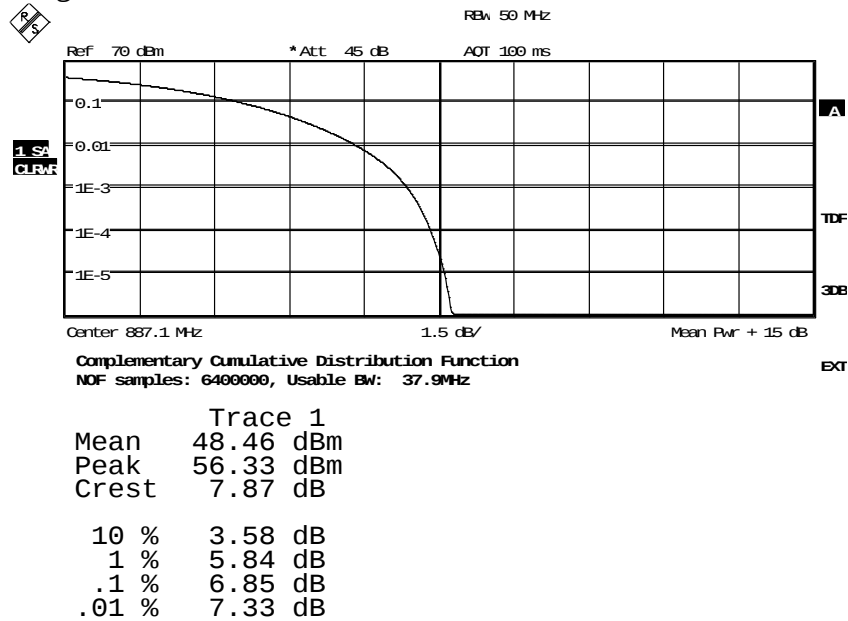
Diagram 28:



Date: 13.FEB.2013 12:20:01

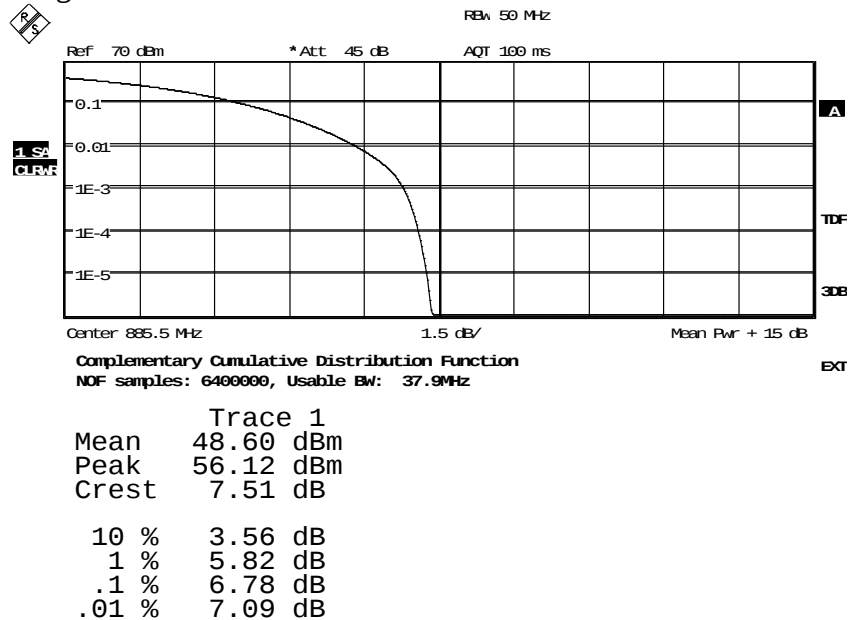
Appendix 2

Diagram 29:



Date: 13.FEB.2013 12:52:17

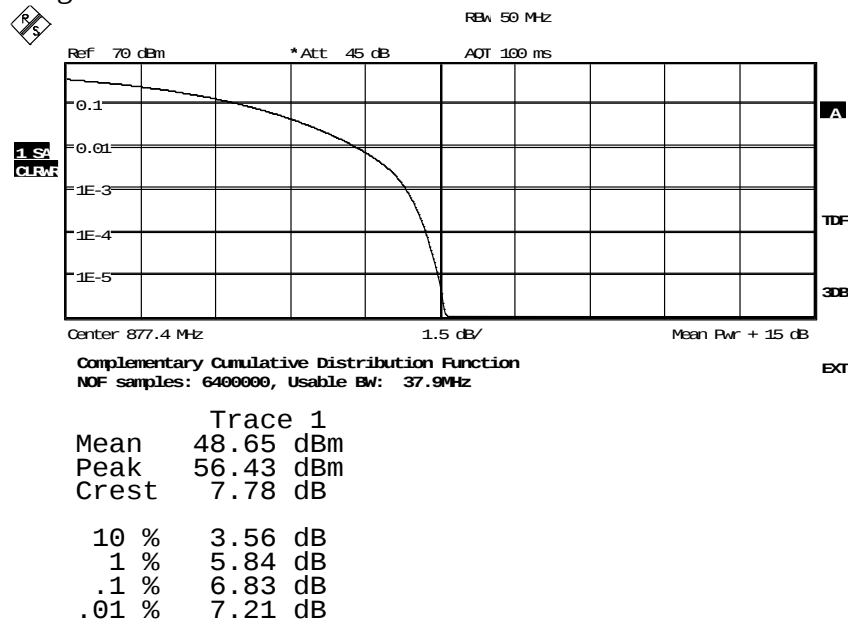
Diagram 30:



Date: 13.FEB.2013 13:16:54

Appendix 2

Diagram 31:



Date: 13.FEB.2013 13:34:27

Appendix 3

Occupied bandwidth measurements according to CFR47 2.1049 / RSS-Gen 4.6.1

Date	Temperature	Humidity
2013-02-01	22 °C ± 3 °C	23% ± 5 %
2013-02-11	23 °C ± 3 °C	14% ± 5 %
2013-02-12	22 °C ± 3 °C	15% ± 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	504 159
RF attenuator	901 508
Filter	901 501
Testo 635 temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Appendix 3

Results

WCDMA single RAT, MIMO mode.

Diagram	BW configuration	Tested frequency	Tested Port	Occupied BW (99%) [MHz]
1	5 MHz	M	RFA Primary	4.17
2	5 MHz	M	RFA Secondary	4.17

WCDMA, single RAT, conventional mode.

Diagram	BW configuration	Tested frequency	Tested Port	Occupied BW (99%) [MHz]
3	5 MHz	M	RF A	4.18

The diagrams are shown on the following pages.

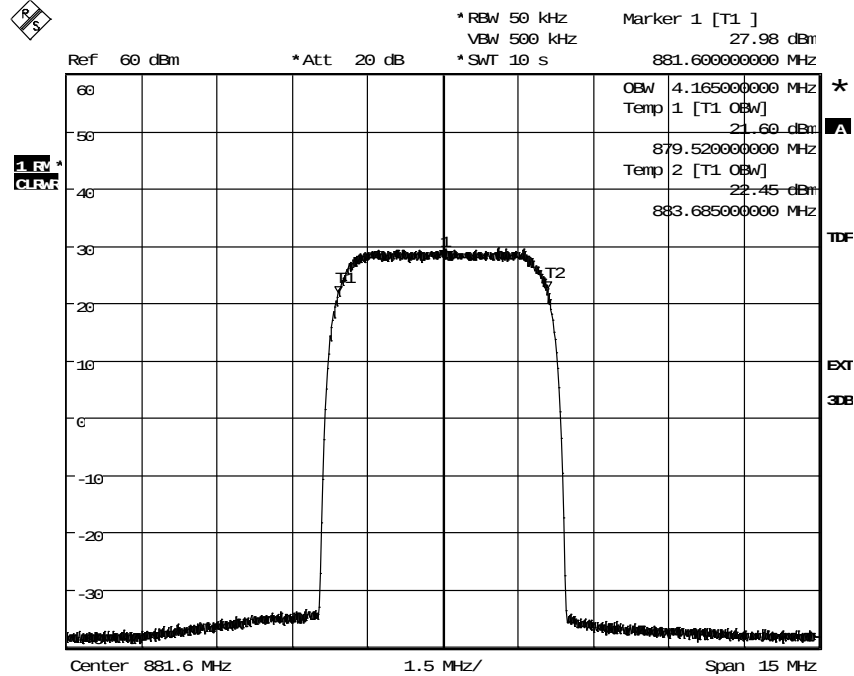
GSM single RAT, conventional mode.

Diagram	Modulation	Tested frequency	Tested Port	Occupied BW (99%) [KHz]
4	GMSK	B	RFA	241
5	GMSK	M	RFA	241
6	8 PSK	M	RFA	238
7	16 QAM	M	RFA	241
8	32 QAM	M	RFA	240
9	AQPSK	M	RFA	238
10	GMSK	T	RFA	241

The diagrams are shown on the following pages.

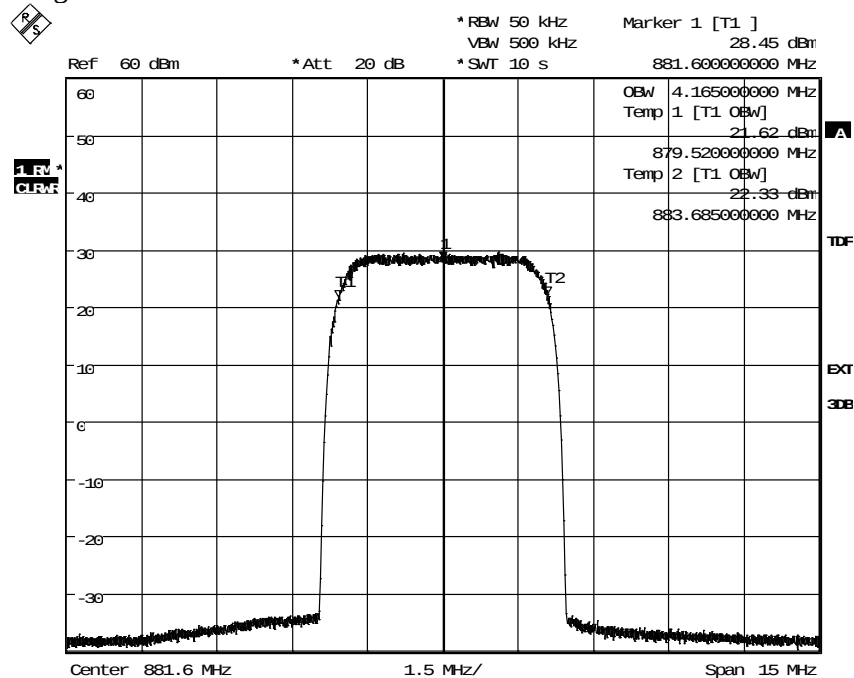
Appendix 3

Diagram 1:



Date: 1.FEB.2013 07:57:38

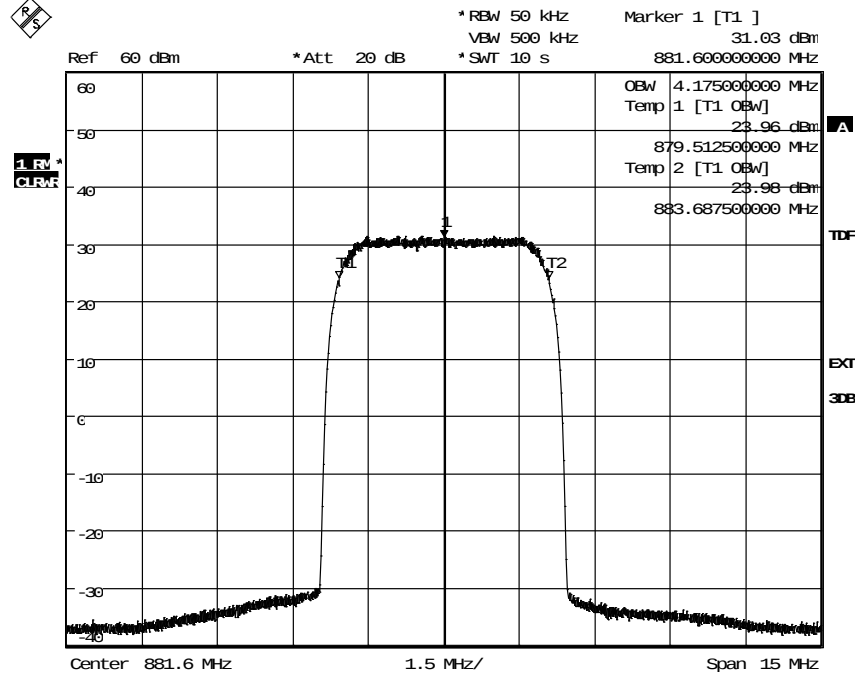
Diagram 2:



Date: 1.FEB.2013 09:52:13

Appendix 3

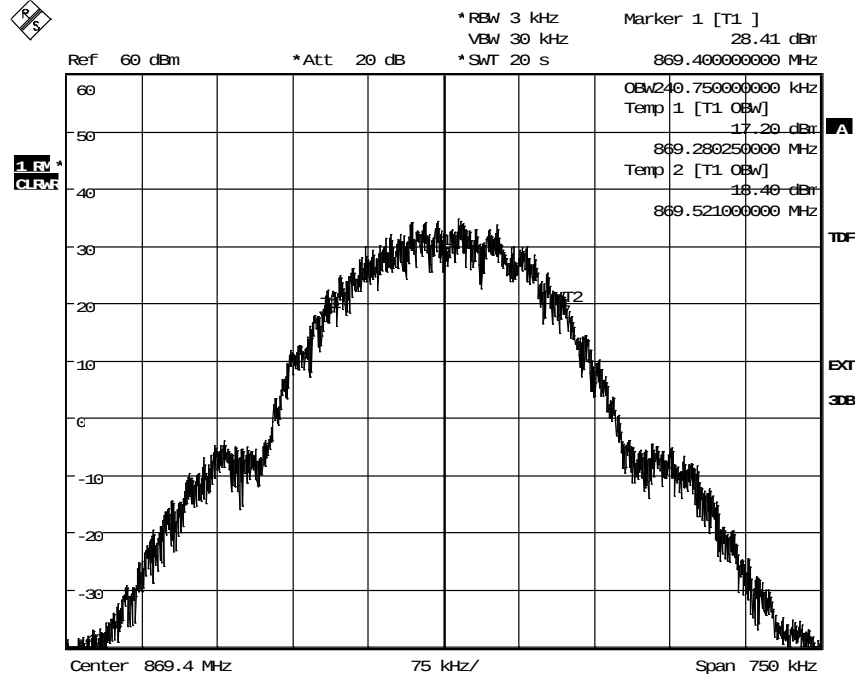
Diagram 3:



Date: 1.FEB.2013 10:14:23

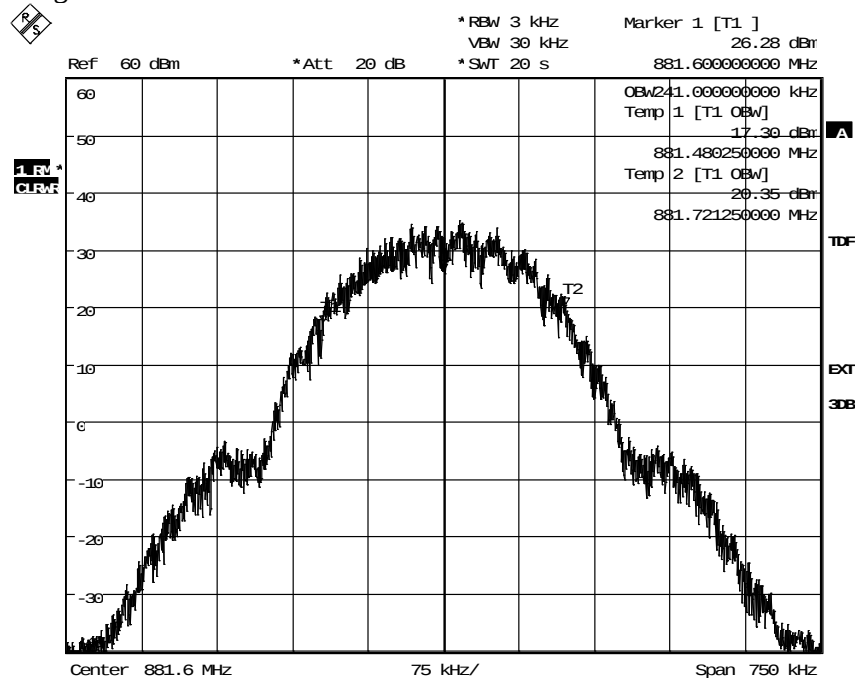
Appendix 3

Diagram 4:



Date: 11.FEB.2013 12:14:06

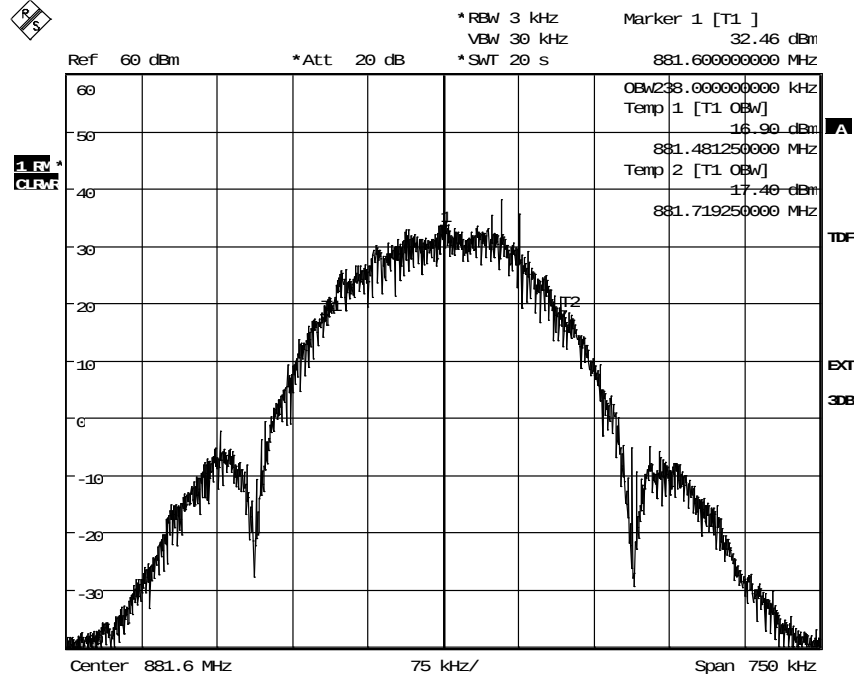
Diagram 5:



Date: 11.FEB.2013 12:10:28

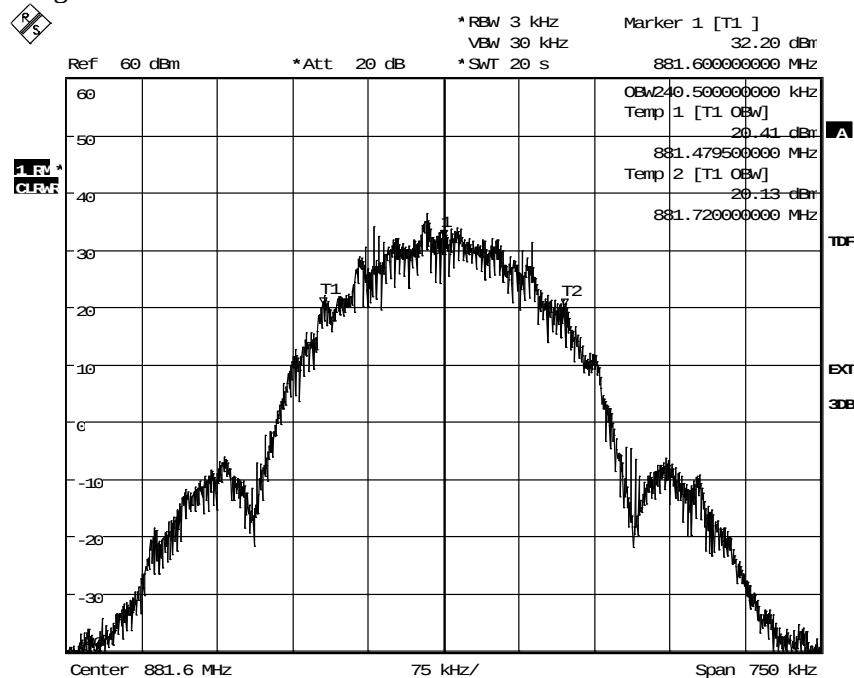
Appendix 3

Diagram 6:



Date: 11.FEB.2013 10:08:57

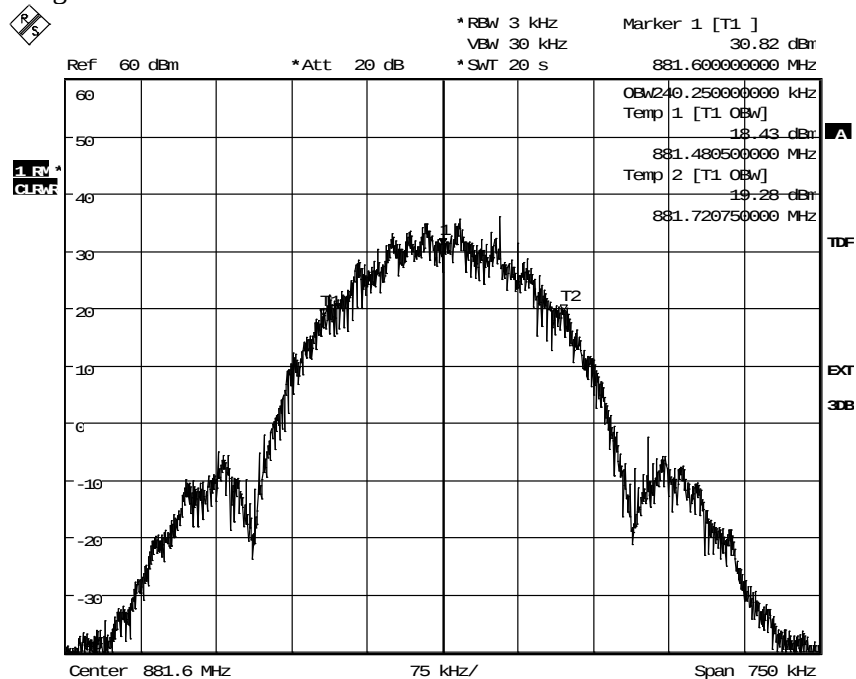
Diagram 7:



Date: 11.FEB.2013 11:40:52

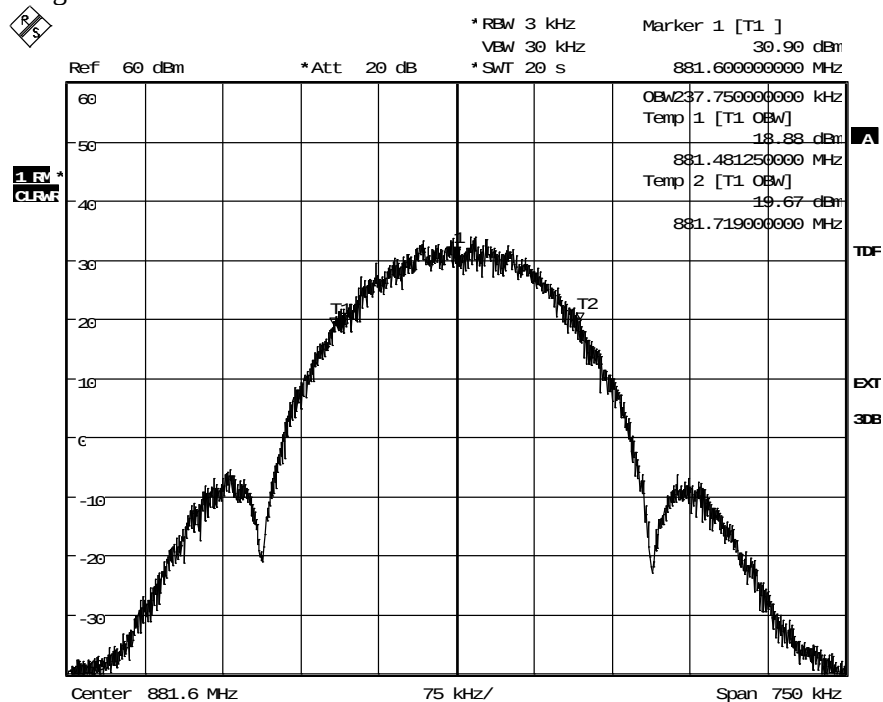
Appendix 3

Diagram 8:



Date: 11.FEB.2013 11:50:46

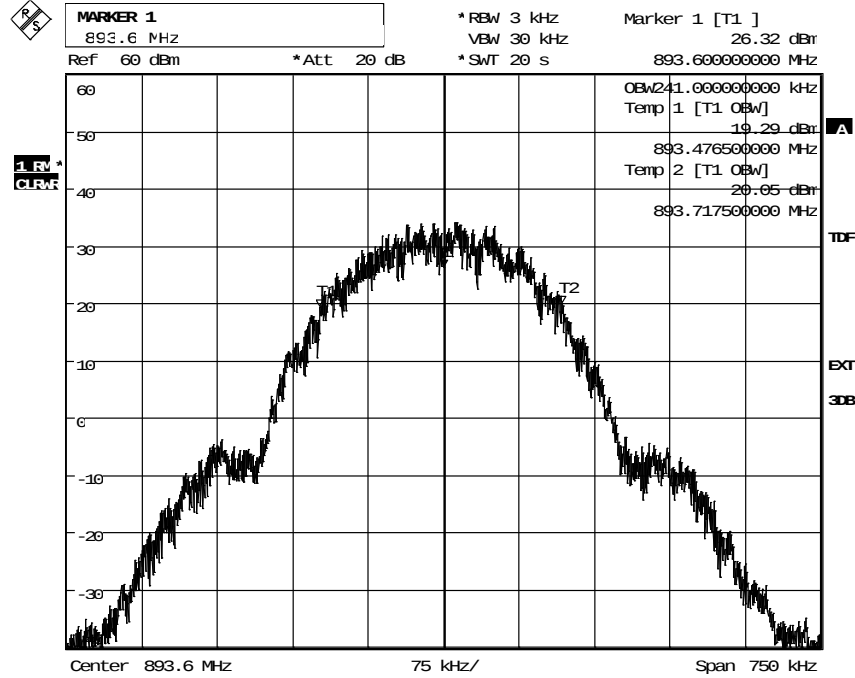
Diagram 9:



Date: 11.FEB.2013 12:01:53

Appendix 3

Diagram 10:



Date: 12.FEB.2013 07:02:10

Appendix 4

Band edge measurements according to CFR 47 §2.1051 / IC RSS-132 5.5

Date	Temperature	Humidity
2013-01-31	23 °C ± 3 °C	28% ± 5 %
2013-02-01	22 °C ± 3 °C	23% ± 5 %
2013-02-11	23 °C ± 3 °C	14% ± 5 %
2013-02-12	22 °C ± 3 °C	15% ± 5 %

Test set-up and procedure

The measurements were made per definition in § 22.917. 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.

FCC rules specify a RBW of at least 1% of the fundamental emission bandwidth (EBW) for offsets up to 1 MHz from the band edge and a RBW of 100 kHz for larger frequency offsets. Where a smaller RBW was used as compared to the rules the limit in the plot is adjusted by $10 \cdot \log(\text{RBW}_{\text{used}}/\text{RBW}_{1\% \text{EBW}})$ [dB].

WCDMA:

BW configuration	Emission BW [MHz]	RBW used	Adjusted limit [dBm]
5 MHz	4.37	20 kHz	-16.40

For MIMO mode configurations with up to 2 TX antennas an additional 3 dB [$10 \log(2)$] margin shall be added to the trace values shown prior to comparing to the limit, according to method 2 “measure and add $10 \log(N_{\text{ANT}})$ ” of FCC KDB662911 D01 Multiple Transmitter Output v01r02.

Measurement equipment	SP number
Rohde & Schwarz signal analyzer FSQ40	504 143
RF attenuator	504 159
RF attenuator	901 508
Filter	901 501
Testo 635 temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Appendix 4

Results

WCDMA single RAT, MIMO mode

Diagram	BW configuration	Tested frequency	Tested Port
1 a-b	5 MHz	B	RFA Primary
2 a-b	5 MHz	B	RFA Secondary
3 a-b	5 MHz	T	RFA Primary
4 a-b	5 MHz	T	RFA Secondary

WCDMA single RAT, conventional mode

Diagram	BW configuration	Tested frequency	Tested Port
5 a-b	5 MHz	B	RFA
6 a-b	5 MHz	T	RFA

GSM single RAT, conventional mode

Diagram	Modulation	Tested frequency	Tested Port
7 a-b	GMSK	B	RFA
8 a-b	16 QAM	B	RFA
9 a-b	GMSK	T	RFA
10 a-b	16QAM	T	RFA

The diagrams are shown on the following pages.

Remark

Where multiple requirements apply, the most stringent requirement is considered for compliance assessment.

Limits

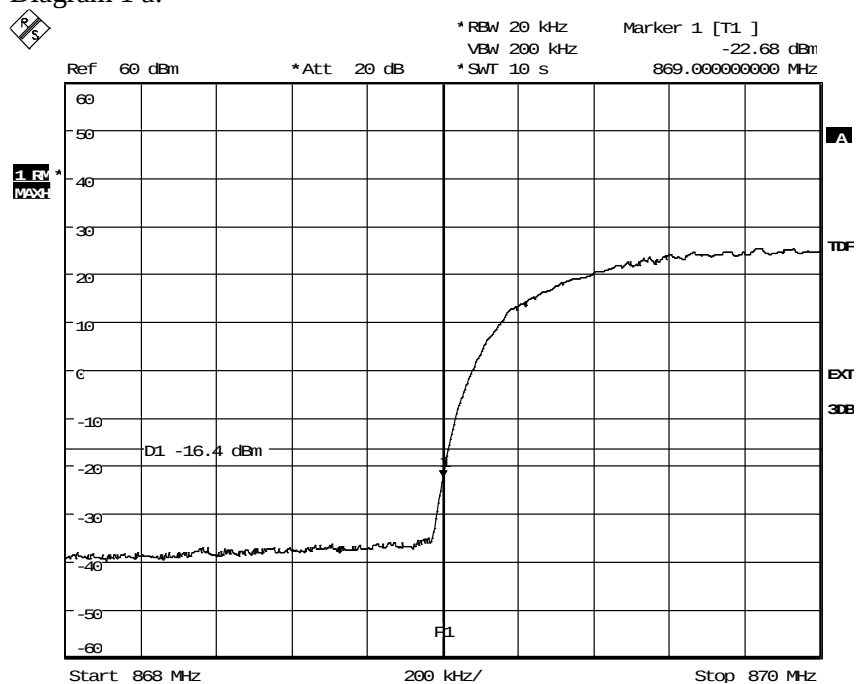
CFR 47 § 22.917: Outside a licensee's frequency band(s) of operation the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB, resulting in a limit of -13 dBm per 100 kHz RBW.

IC RSS-132 5.5.1.2: 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 per any 100 kHz RBW.

Complies?	Yes
-----------	-----

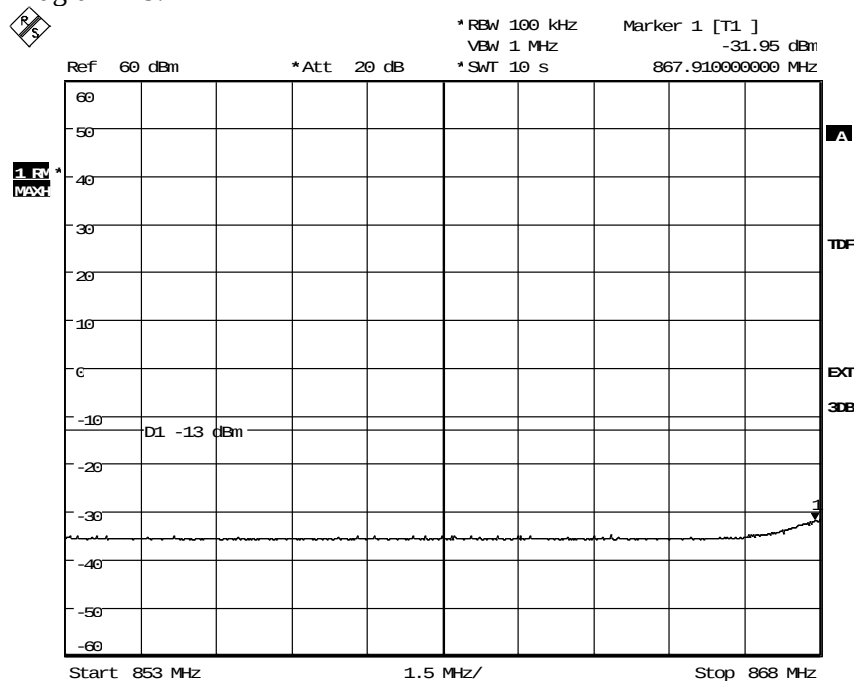
Appendix 4

Diagram 1 a:



Date: 1.FEB.2013 08:07:57

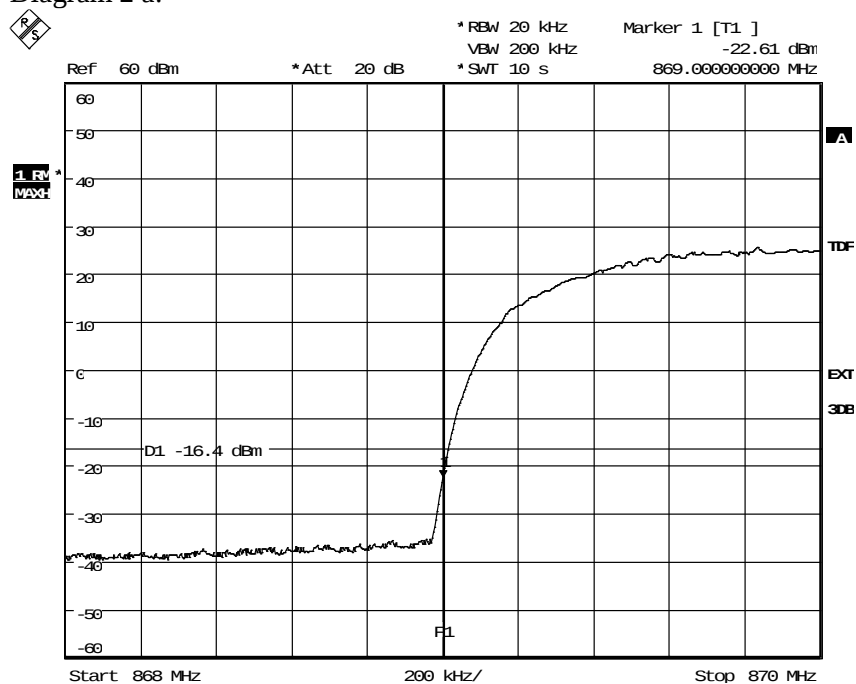
Diagram 1 b:



Date: 1.FEB.2013 08:08:57

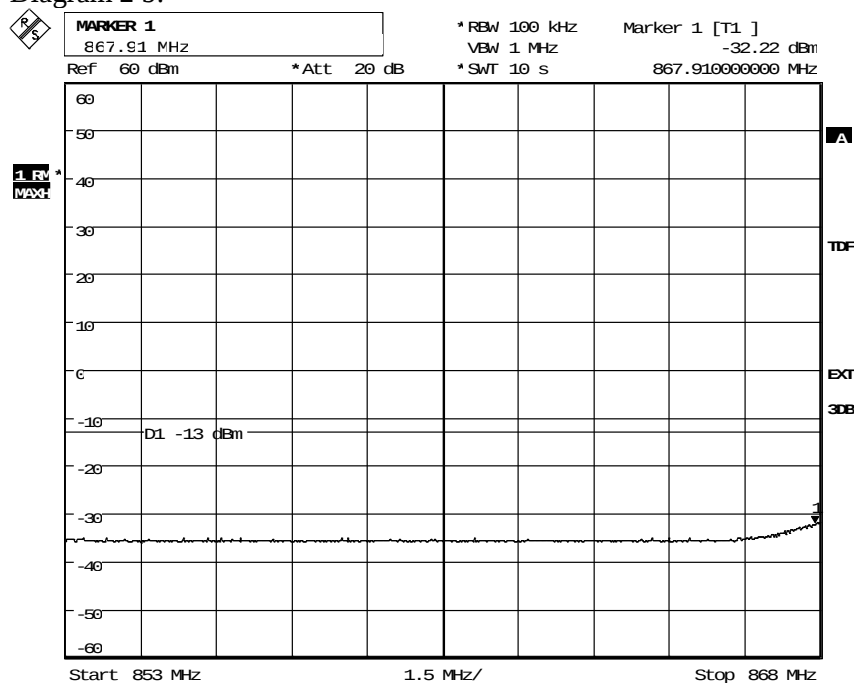
Appendix 4

Diagram 2 a:



Date: 31.JAN.2013 15:20:15

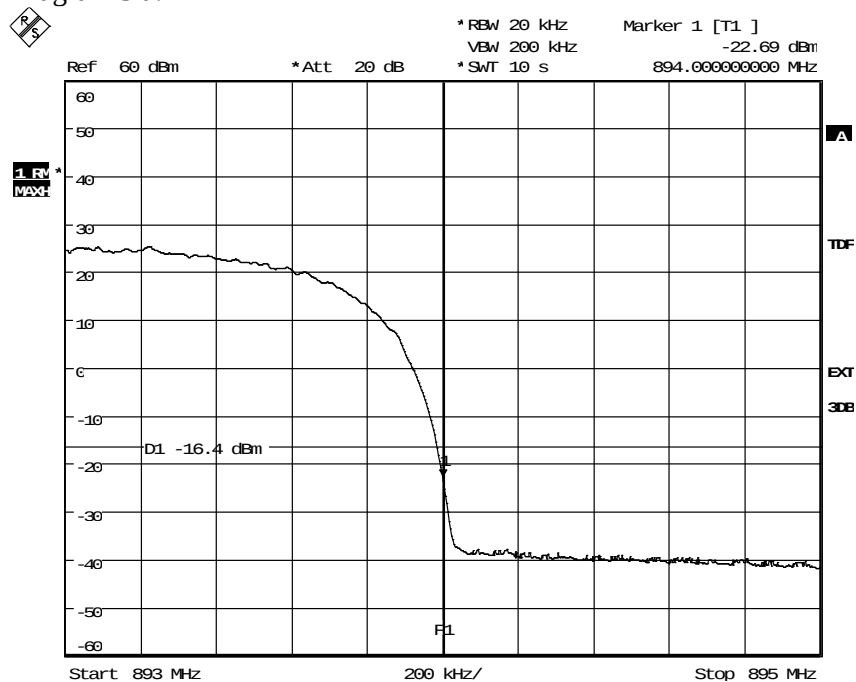
Diagram 2 b:



Date: 31.JAN.2013 15:35:05

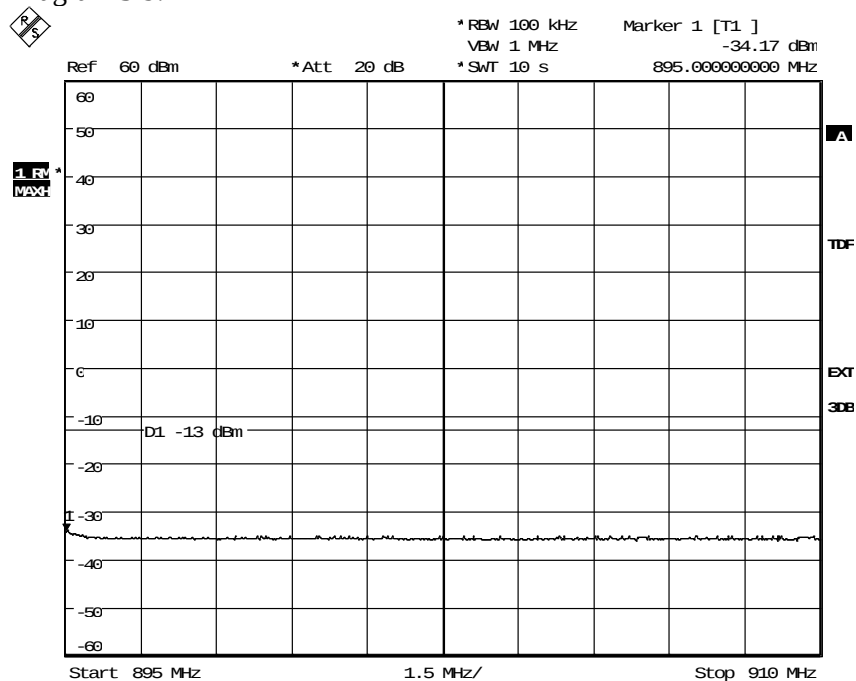
Appendix 4

Diagram 3 a:



Date: 1.FEB.2013 08:25:48

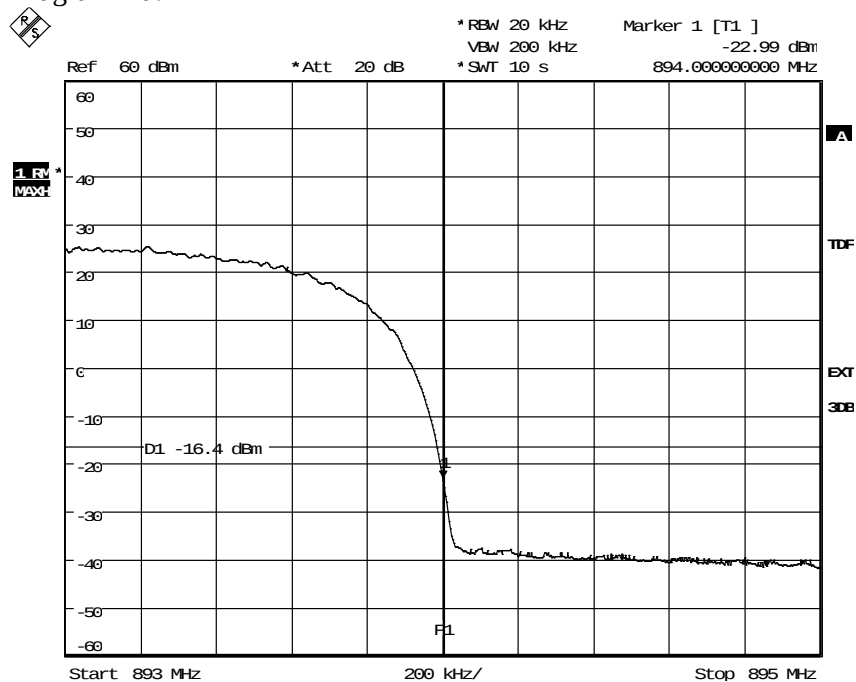
Diagram 3 b:



Date: 1.FEB.2013 08:26:44

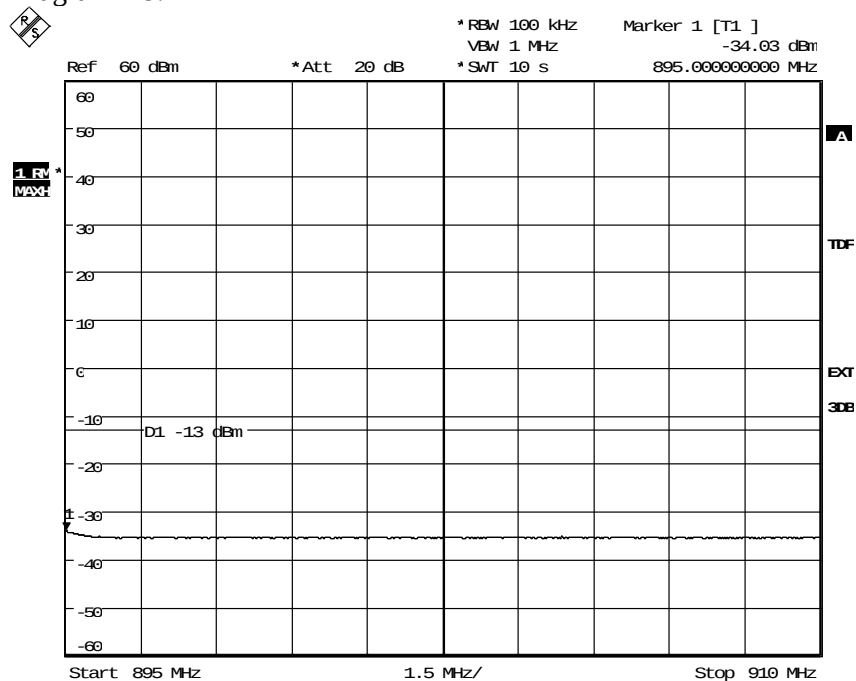
Appendix 4

Diagram 4 a:



Date: 1.FEB.2013 07:39:49

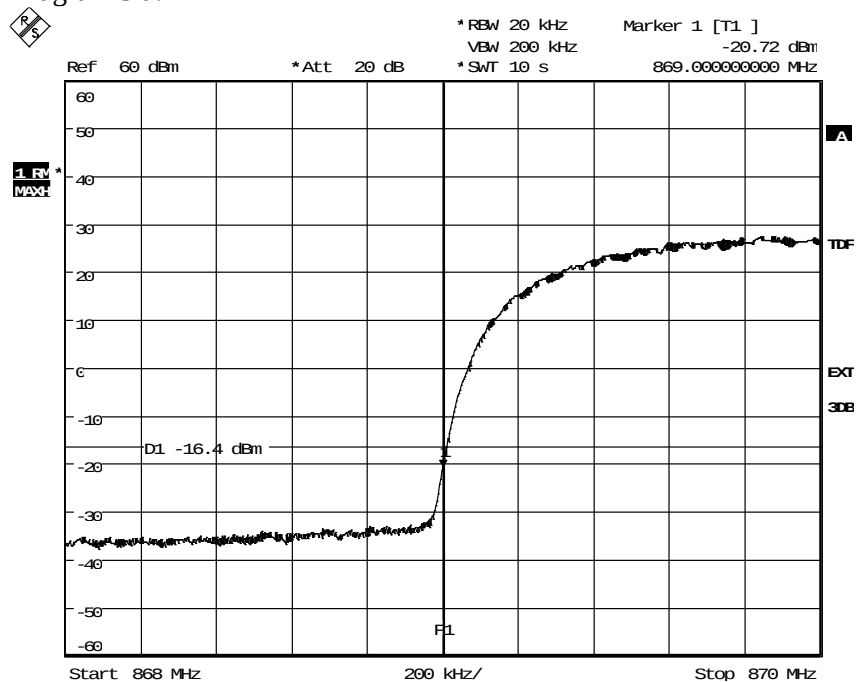
Diagram 4 b:



Date: 1.FEB.2013 07:36:05

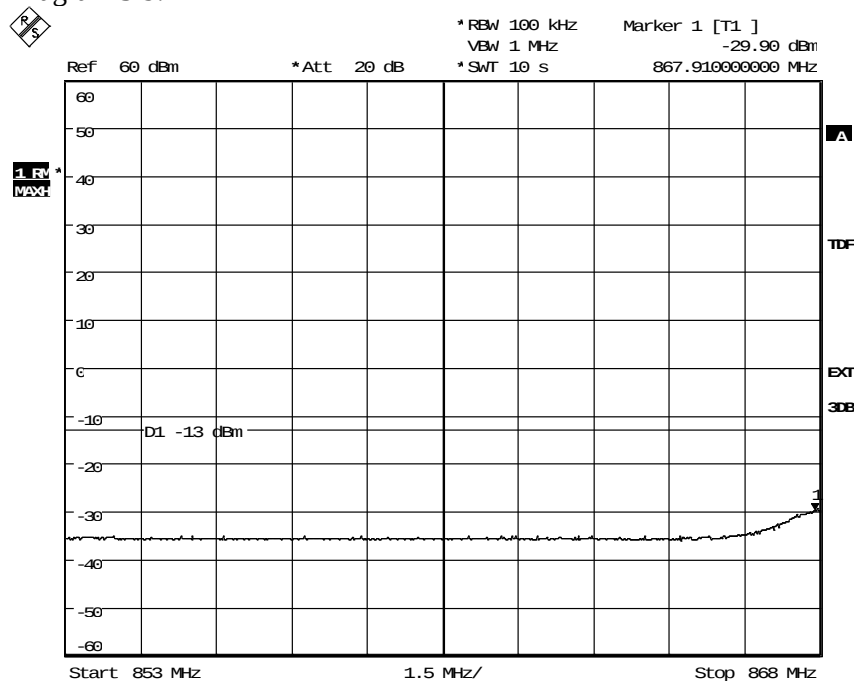
Appendix 4

Diagram 5 a:



Date: 1.FEB.2013 10:31:46

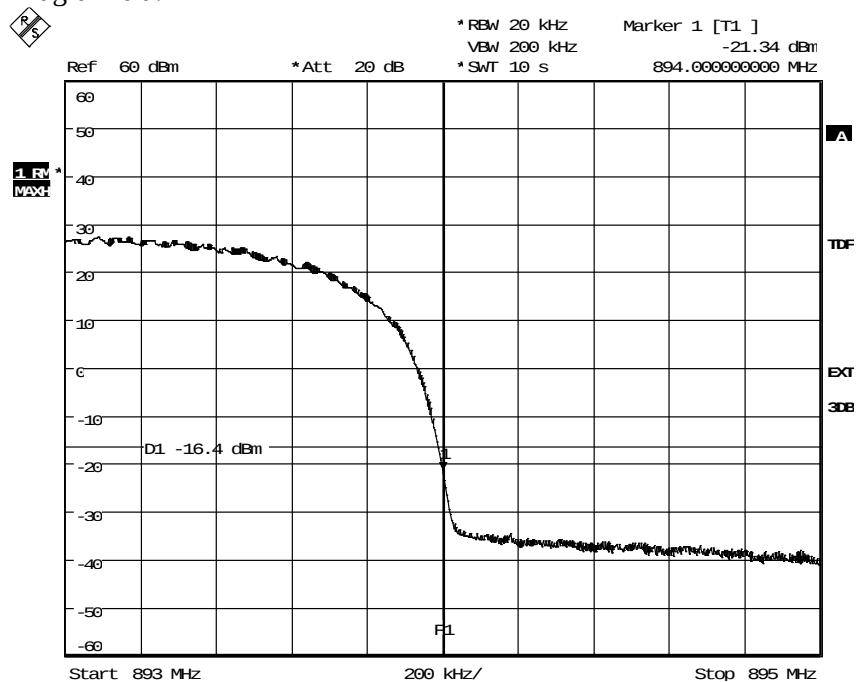
Diagram 5 b:



Date: 1.FEB.2013 10:32:34

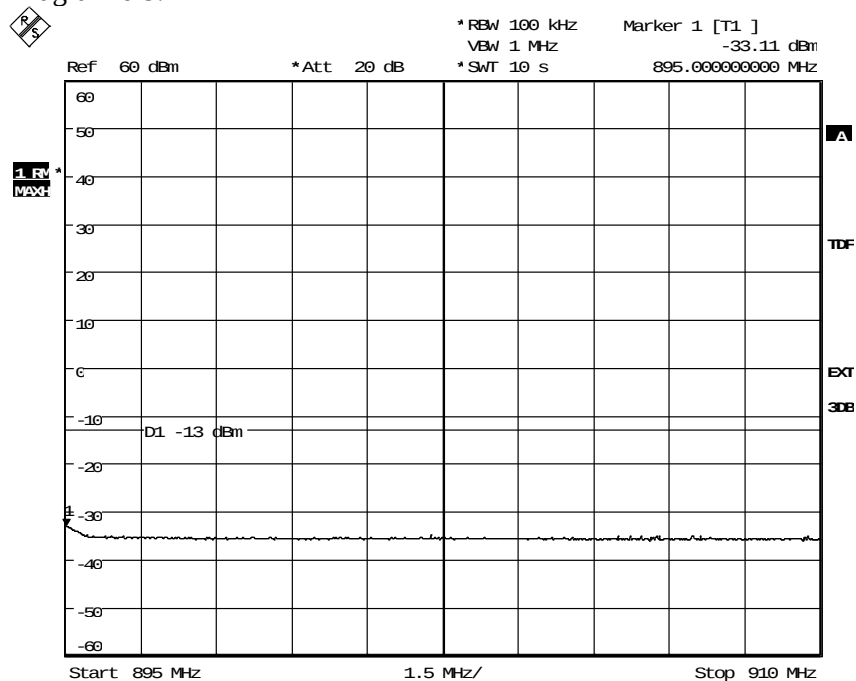
Appendix 4

Diagram 6 a:



Date: 1.FEB.2013 10:54:58

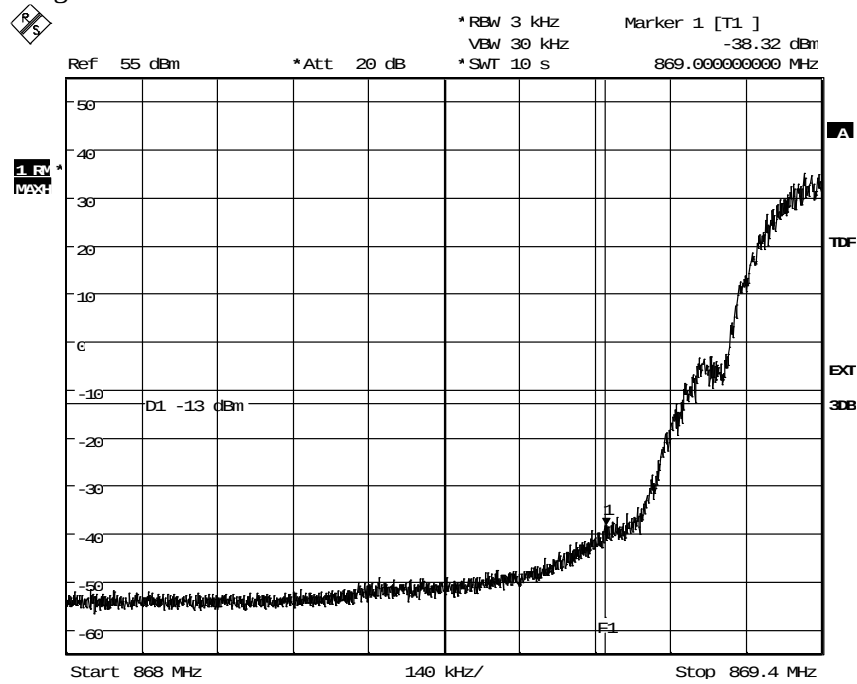
Diagram 6 b:



Date: 1.FEB.2013 10:55:46

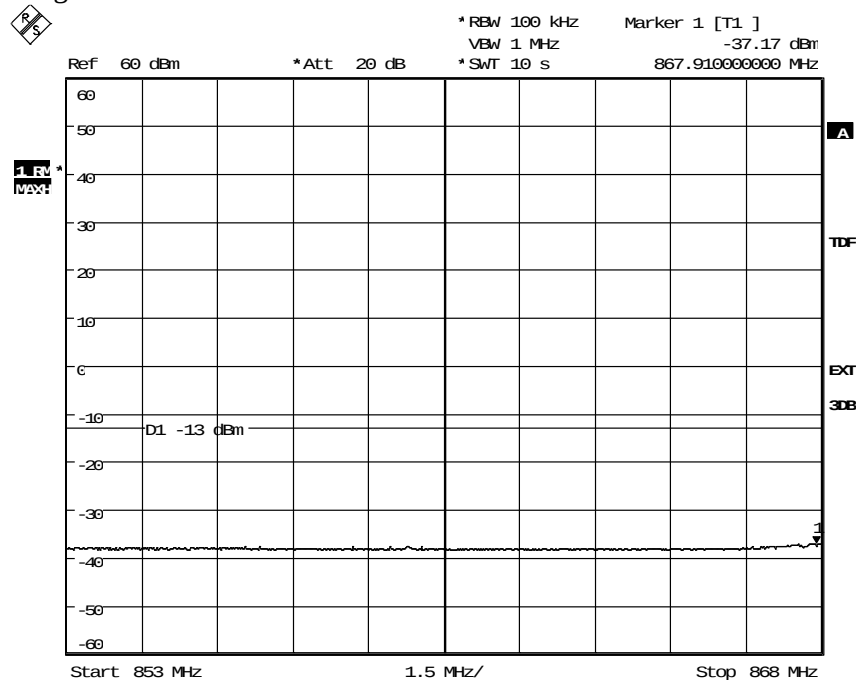
Appendix 4

Diagram 7 a:



Date: 11.FEB.2013 12:56:29

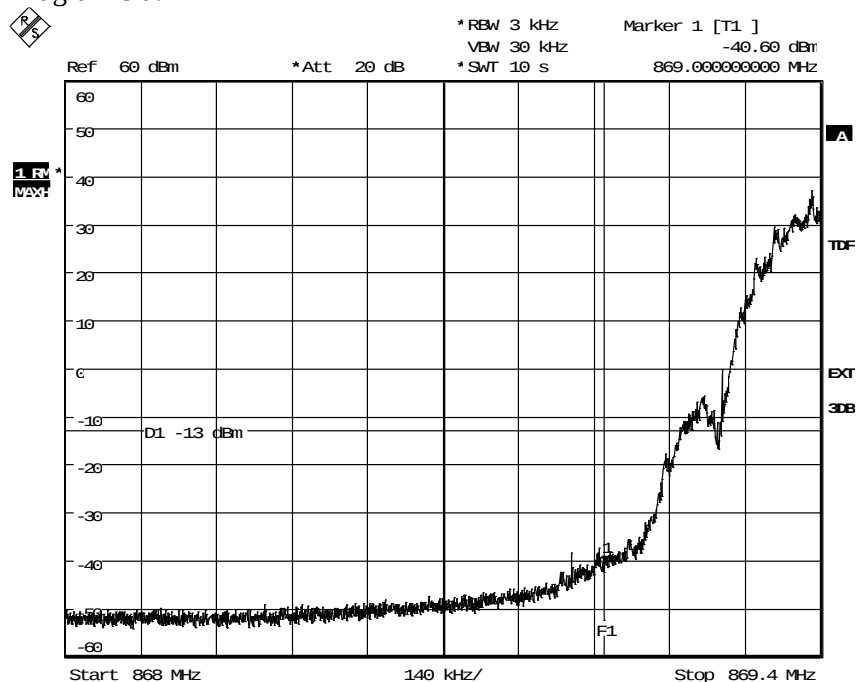
Diagram 7 b:



Date: 11.FEB.2013 12:57:58

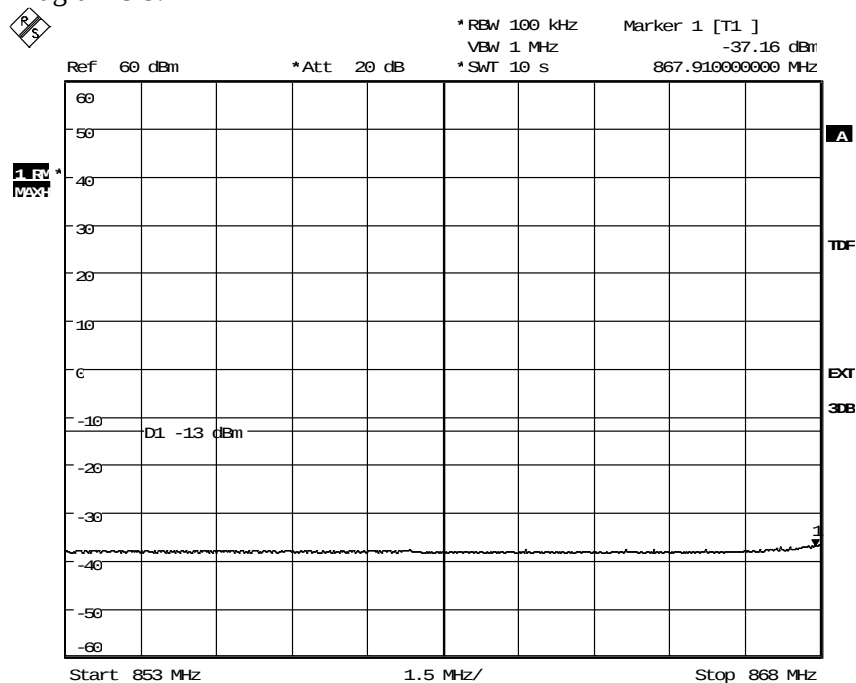
Appendix 4

Diagram 8 a:



Date: 11.FEB.2013 13:06:43

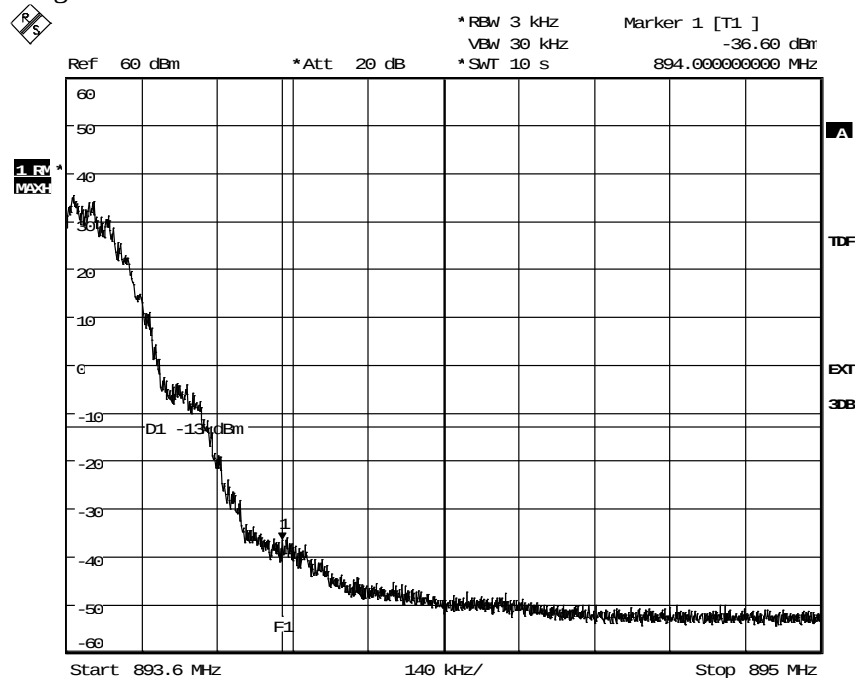
Diagram 8 b:



Date: 11.FEB.2013 13:04:33

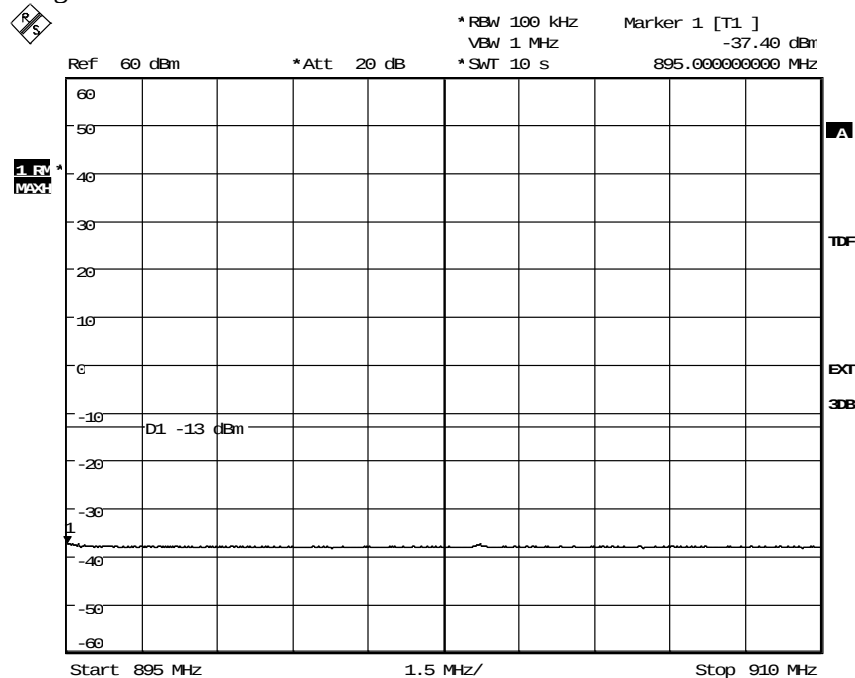
Appendix 4

Diagram 9 a:



Date: 12.FEB.2013 06:57:54

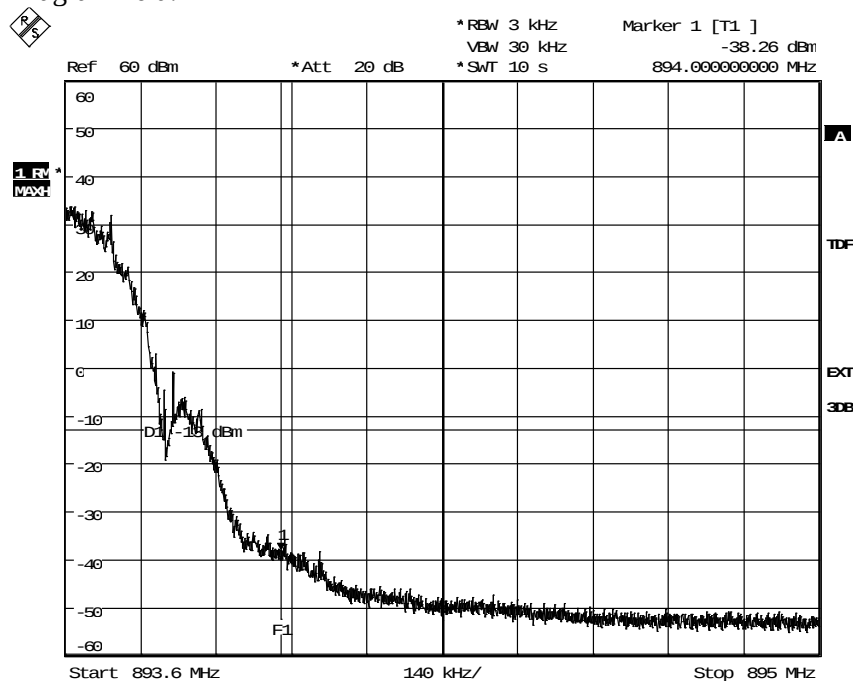
Diagram 9 b:



Date: 12.FEB.2013 07:00:16

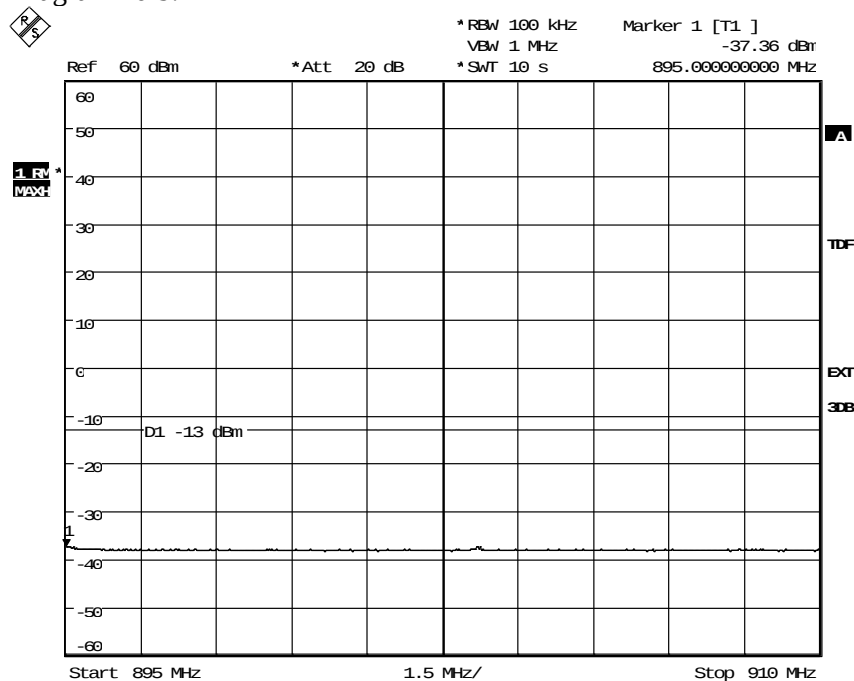
Appendix 4

Diagram 10 a:



Date: 12.FEB.2013 07:38:43

Diagram 10 b:



Date: 12.FEB.2013 07:39:56

Appendix 5

Conducted spurious emission measurements according to CFR 47 2.1051 / IC RSS-132 5.5

Date	Temperature	Humidity
2013-01-31	23 °C ± 3 °C	28% ± 5 %
2013-02-01	22 °C ± 3 °C	23% ± 5 %
2013-02-11	23 °C ± 3 °C	14% ± 5 %
2013-02-12	22 °C ± 3 °C	15% ± 5 %
2013-02-13	21 °C ± 3 °C	16% ± 5 %

Test set-up and procedure

The measurements were made per definition in § 22.917, but with a conservative 1 MHz RBW. The output 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.

For MIMO mode configurations with up to 2 TX antennas an additional 3 dB [10 log (2)] margin shall be added to trace values shown according to method 2 “measure and add 10 log(N_{ANT})” of FCC KDB662911 D01 Multiple Transmitter Output v01r02 before comparing the results to the limit.

Measurement equipment	SP number
Rohde & Schwarz signal analyzer FSQ40	504 143
RF attenuator	504 159
RF attenuator	901 508
High pass filter	901 501
Testo 635 temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Appendix 5

Results

WCDMA single RAT, MIMO mode, single carrier

Diagram	BW configuration[MHz]	Tested frequency	Tested Port
1a+b	5 MHz	B	RFA Primary
2 a+b	5 MHz	M	RFA Primary
3 a+b	5 MHz	M	RFA Secondary
4 a+b	5 MHz	T	RFA Primary

WCDMA single RAT, MIMO mode, 2 carrier

Diagram	BW configuration[MHz]	Tested frequency	Tested Port
5 a+b	5 MHz	B2	RFA Primary
6 a+b+c	5 MHz	M2	RFA Primary
7 a+b+c	5 MHz	M2	RFA Secondary
8 a+b	5 MHz	T2	RFA Primary

Note: Test of 2 carriers MIMO mode was deemed sufficient to represent worst-case multi-carrier scenarios.

WCDMA single RAT, conventional mode, single carrier

Diagram	BW configuration[MHz]	Tested frequency	Tested Port
9 a+b	5 MHz	M	RFA

GSM single RAT, conventional mode, single carrier

Diagram	Modulation	Tested frequency	Tested Port
10 a+b	GMSK	B	RFA
11 a+b	GMSK	M	RFA
12 a+b	GMSK	T	RFA

Appendix 5

GSM single RAT, conventional mode, multi carrier

Diagram	Modulation	Tested frequency	Tested Port
13 a+b	GMSK	M2	RFA
14 a+b	16QAM	M2	RFA
15 a+b+c	GMSK	B _{im 1}	RFA
16 a+b+c	16QAM	B _{im 1}	RFA
17 a+b+c	GMSK	B _{im 2}	RFA
18 a+b+c	16QAM	B _{im 2}	RFA
19 a+b+c	GMSK	B _{im 3}	RFA
20 a+b+c	16QAM	B _{im 3}	RFA
21 a+b+c	GMSK	T _{im 1}	RFA
22 a+b+c	16QAM	T _{im 1}	RFA
23 a+b+c	GMSK	T _{im 2}	RFA
24 a+b+c	16QAM	T _{im 2}	RFA
25 a+b+c	GMSK	T _{im 3}	RFA
26 a+b+c	16QAM	T _{im 3}	RFA

MSR, WCDMA + GSM, conventional mode

Diagram	Tested configuration	Tested Port
27 a+b+c	Config 1	RFA
28 a+b+c	Config 2	RFA
29 a+b+c	Config 3	RFA
30 a+b+c	Config 4	RFA
31 a+b+c	Config 5	RFA

Appendix 5

Remarks

The emission at 9 kHz on some of the 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 upper frequency boundary covers 10x the highest TX fundamental frequency.

Limits

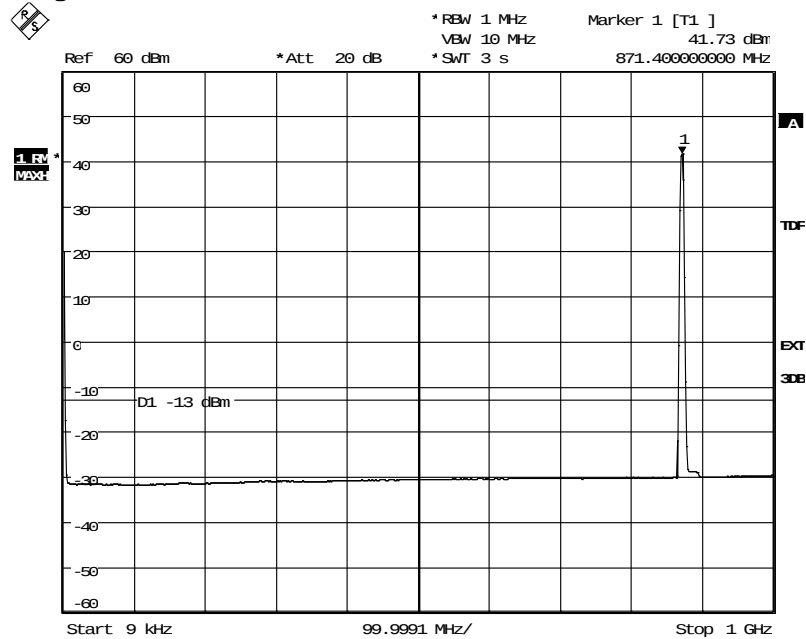
CFR 47 § 22.917: Outside a licensee's frequency band(s) of operation the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB, resulting in a limit of -13 dBm per 100 kHz RBW.

IC RSS-132 5.5.1.2: 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 per any 100 kHz RBW.

Complies?	Yes
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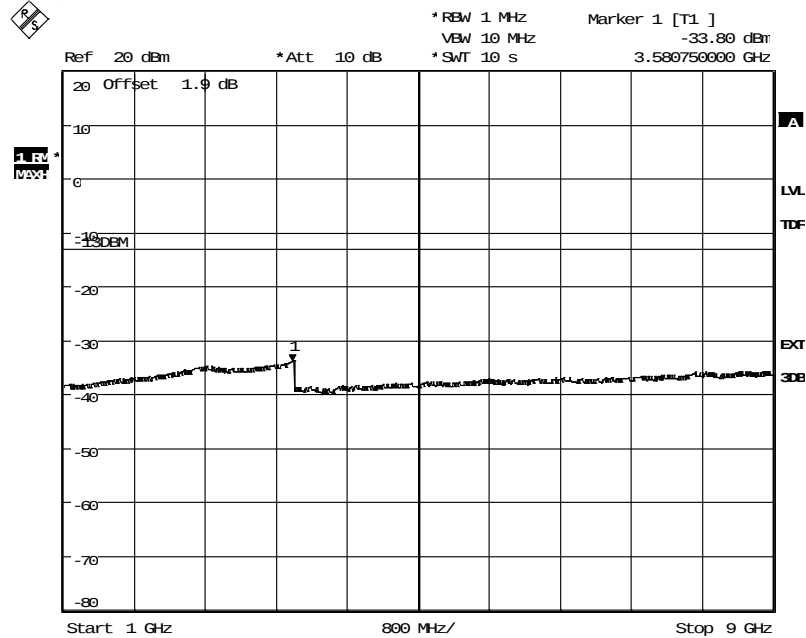
Appendix 5

Diagram 1 a:



Date: 1.FEB.2013 08:10:11

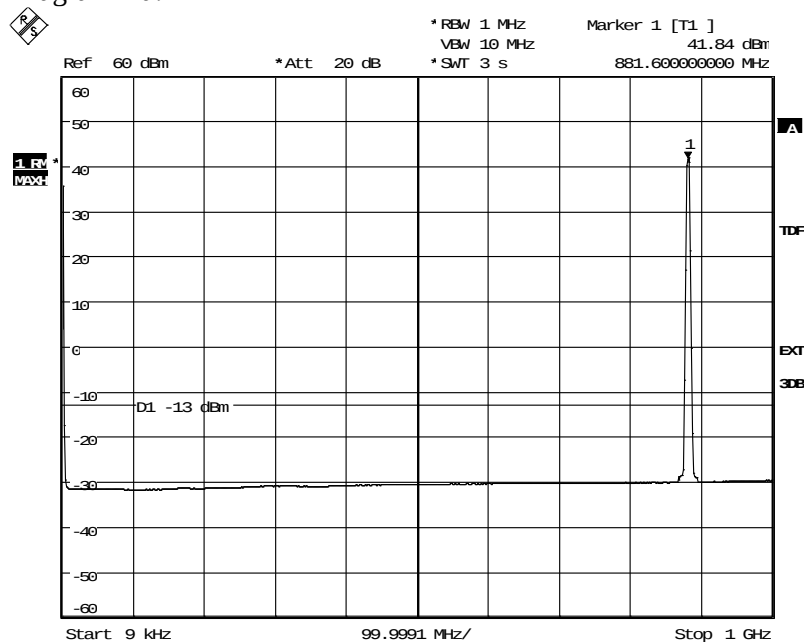
Diagram 1 b:



Date: 1.FEB.2013 08:11:55

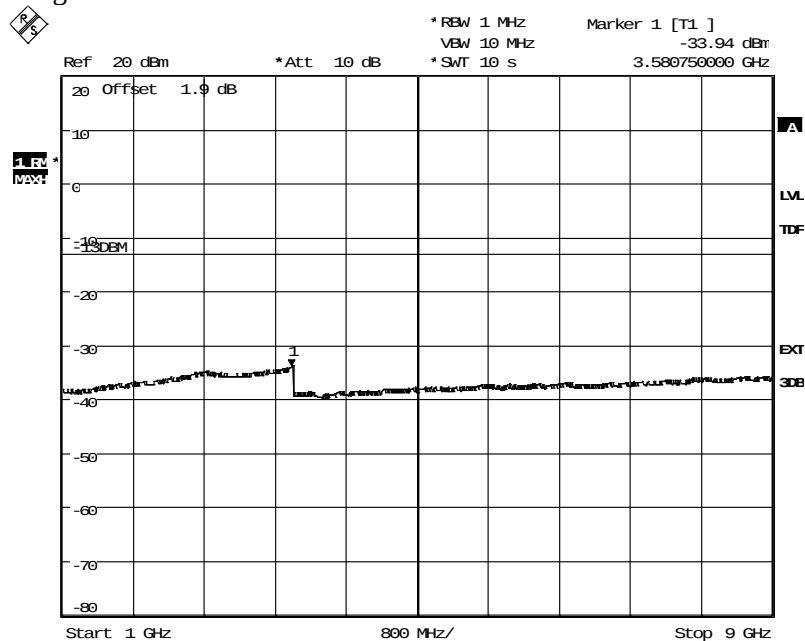
Appendix 5

Diagram 2 a:



Date: 1.FEB.2013 07:54:50

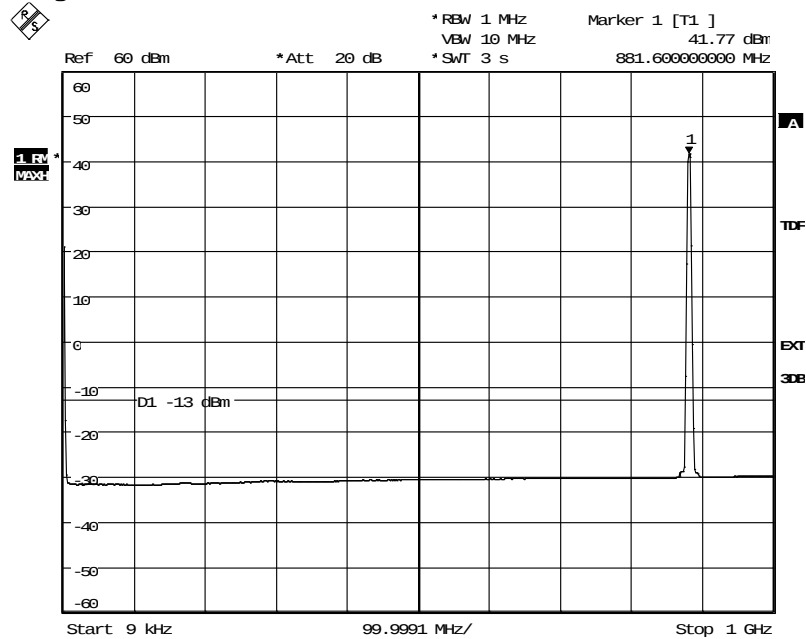
Diagram 2 b:



Date: 1.FEB.2013 07:52:20

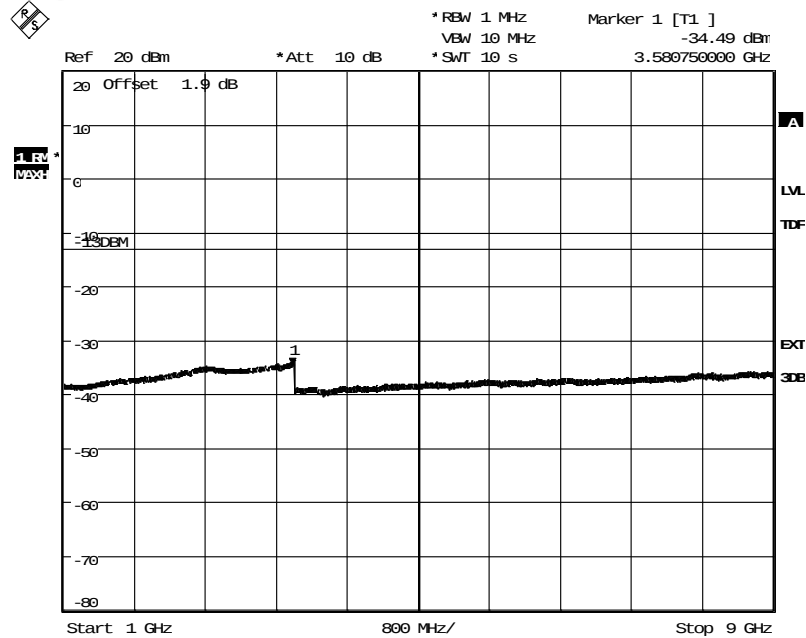
Appendix 5

Diagram 3 a:



Date: 31.JAN.2013 14:55:22

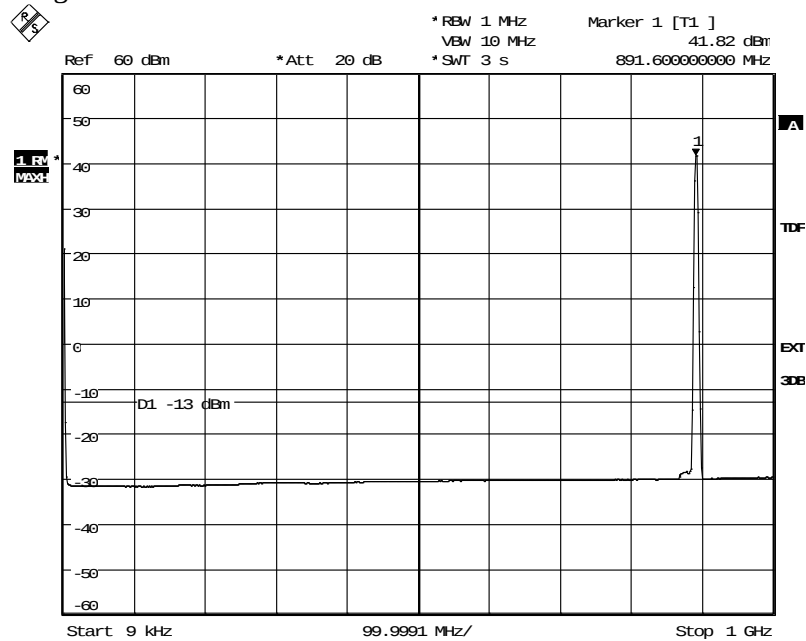
Diagram 3 b:



Date: 31.JAN.2013 14:56:44

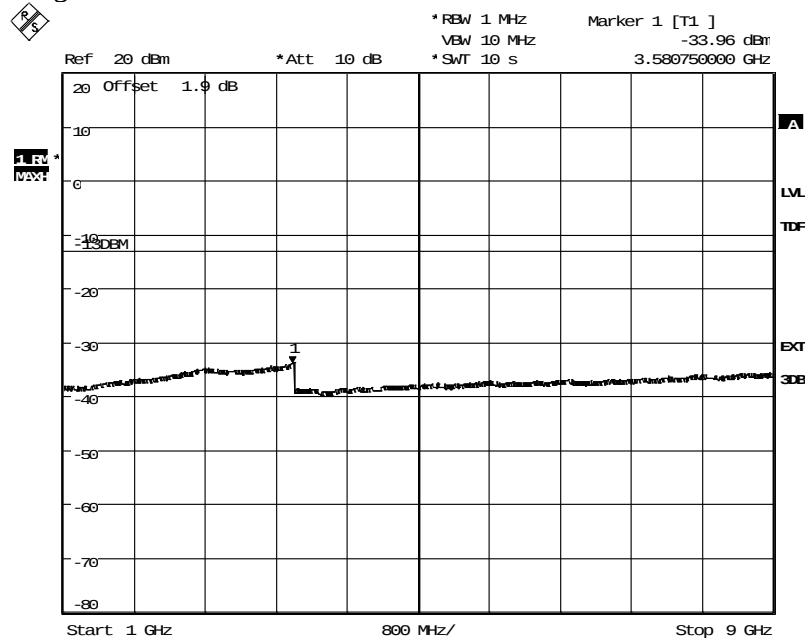
Appendix 5

Diagram 4 a:



Date: 1.FEB.2013 08:19:53

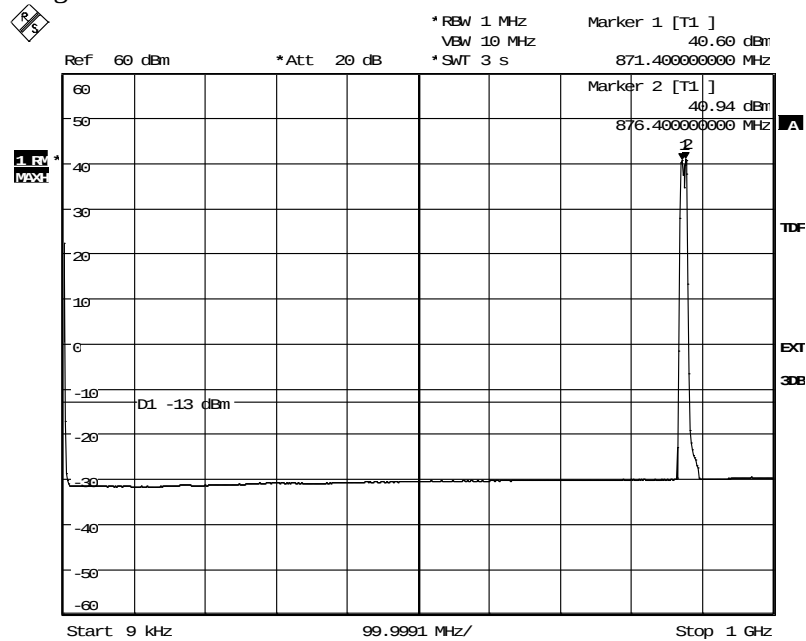
Diagram 4 b:



Date: 1.FEB.2013 08:17:07

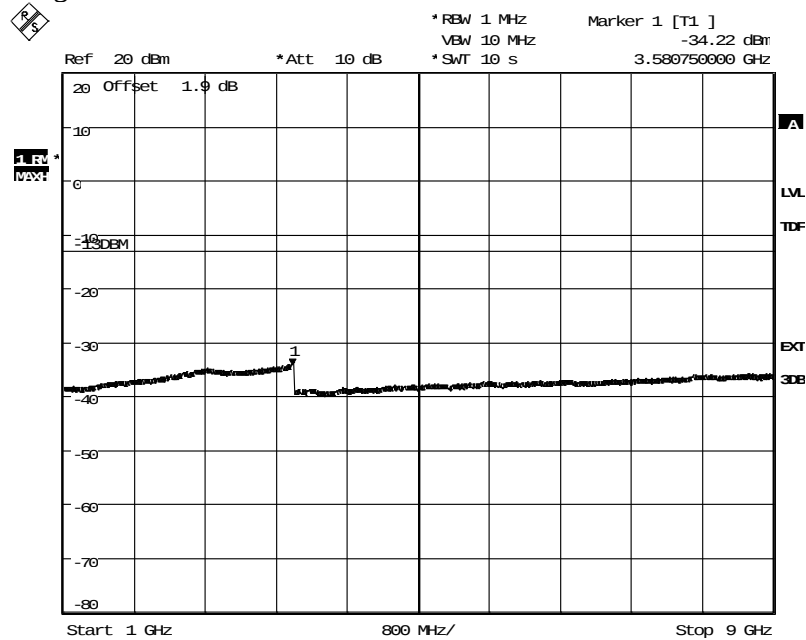
Appendix 5

Diagram 5 a:



Date: 31.JAN.2013 08:55:03

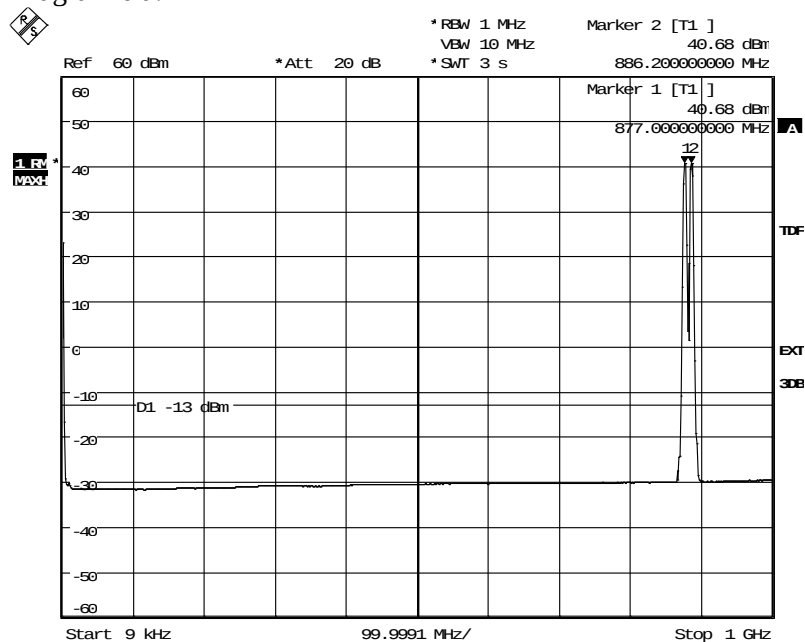
Diagram 5 b:



Date: 31.JAN.2013 08:45:43

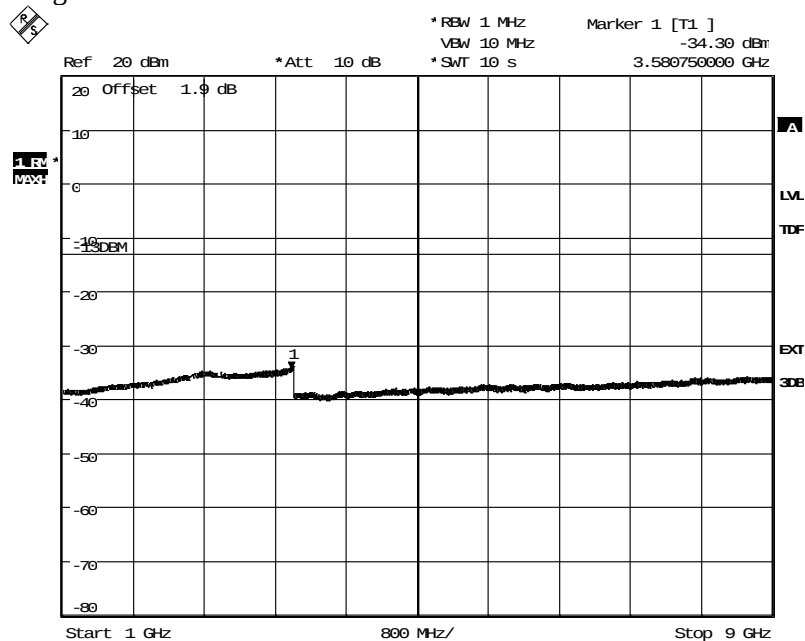
Appendix 5

Diagram 6 a:



Date: 31.JAN.2013 08:10:15

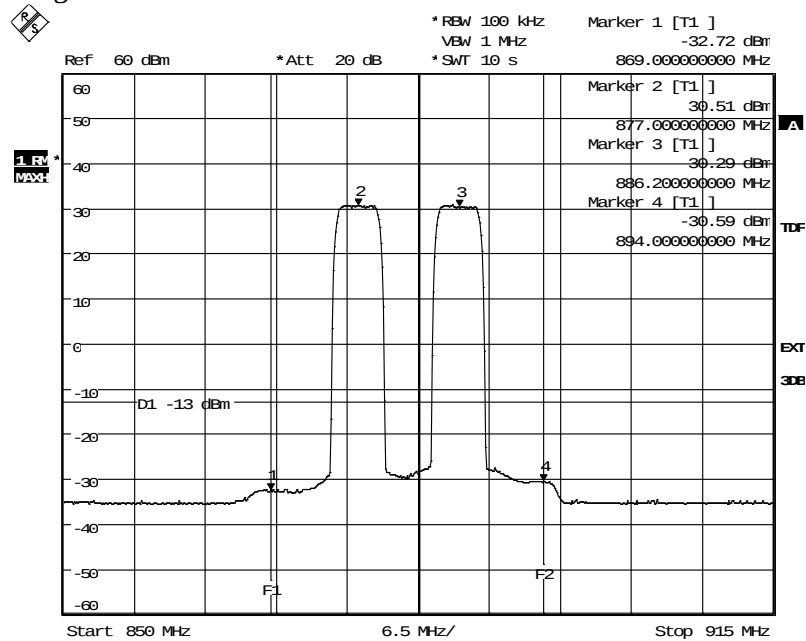
Diagram 6 b:



Date: 31.JAN.2013 08:22:03

Appendix 5

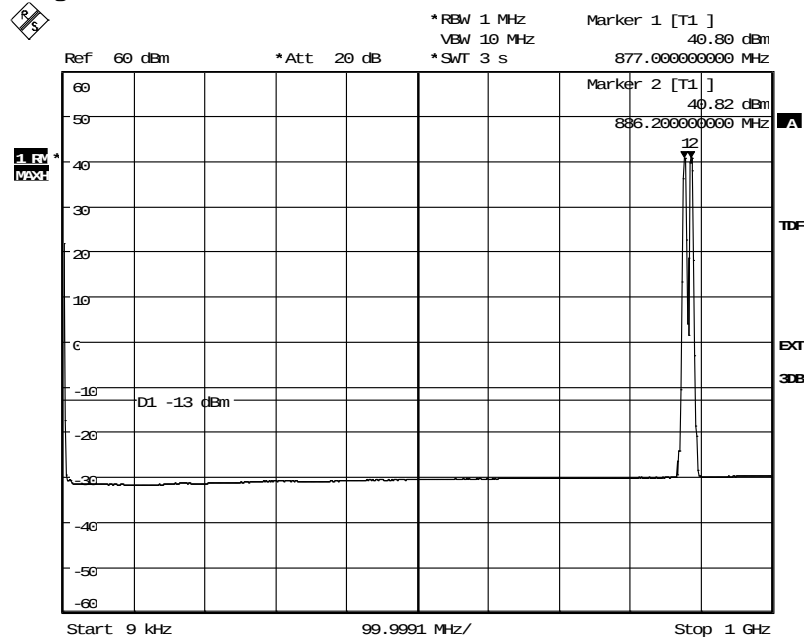
Diagram 6 c:



Date: 31.JAN.2013 08:17:28

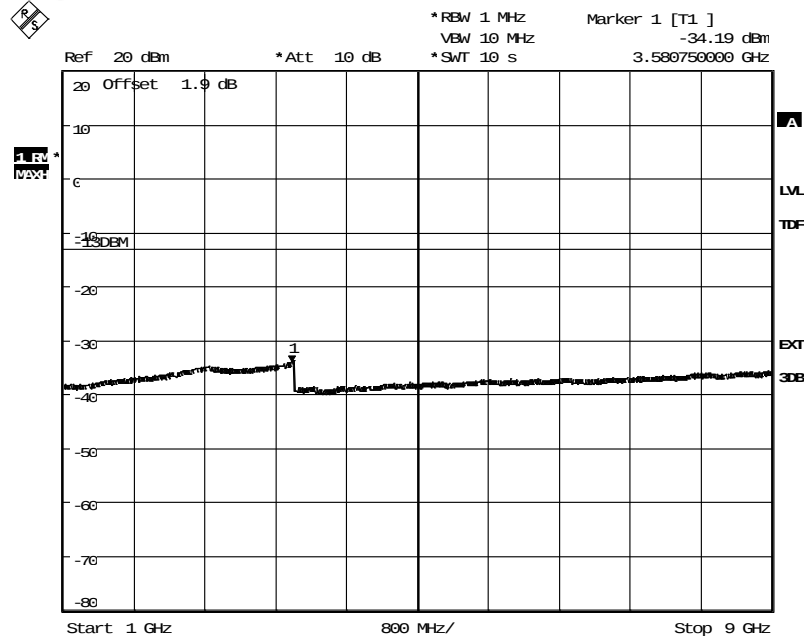
Appendix 5

Diagram 7 a:



Date: 31.JAN.2013 12:56:58

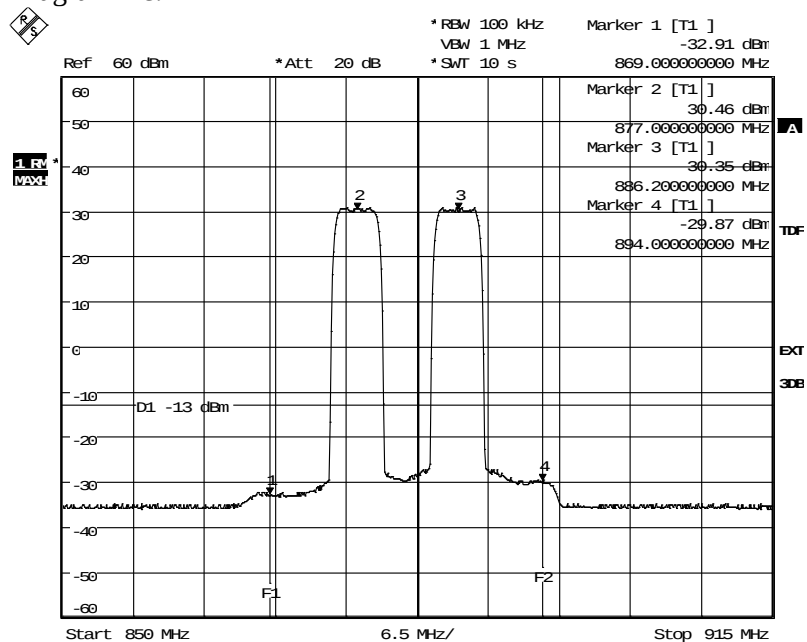
Diagram 7 b:



Date: 31.JAN.2013 12:59:06

Appendix 5

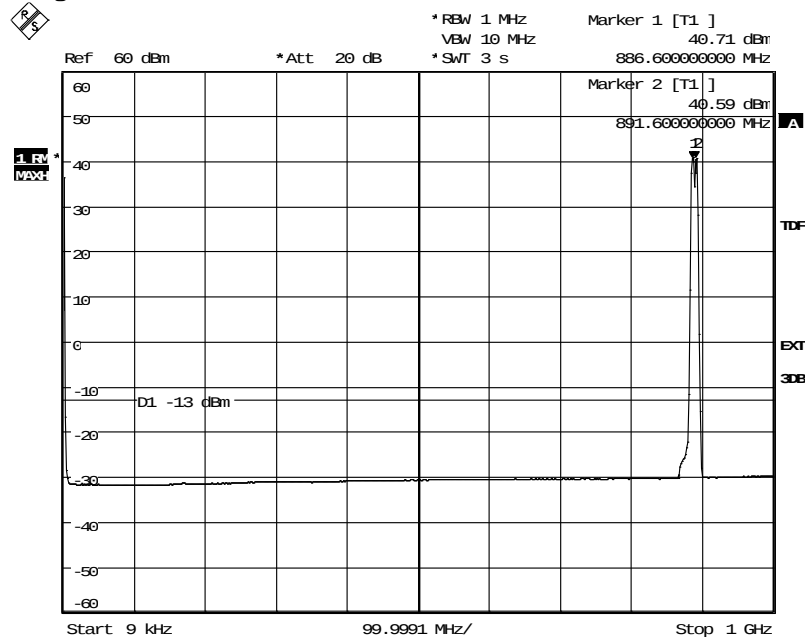
Diagram 7 c:



Date: 31.JAN.2013 12:55:08

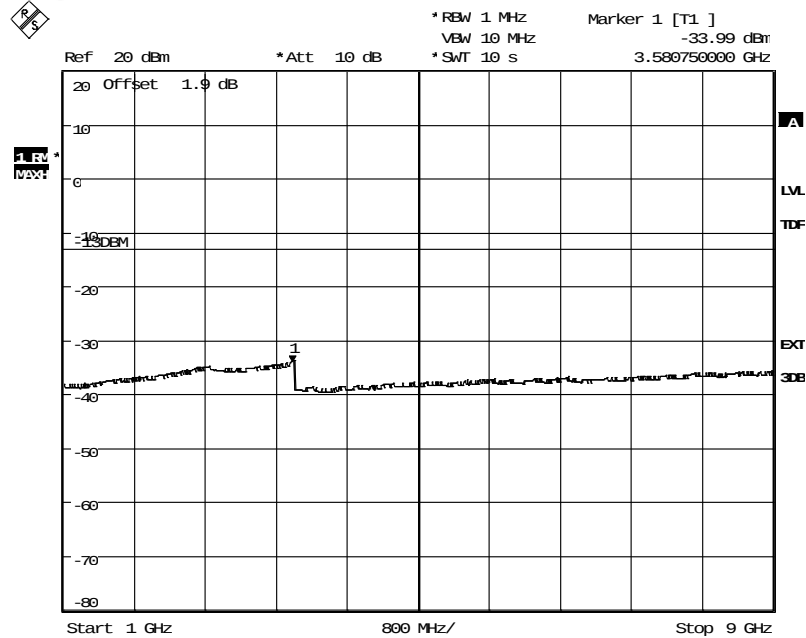
Appendix 5

Diagram 8 a:



Date: 31.JAN.2013 10:16:56

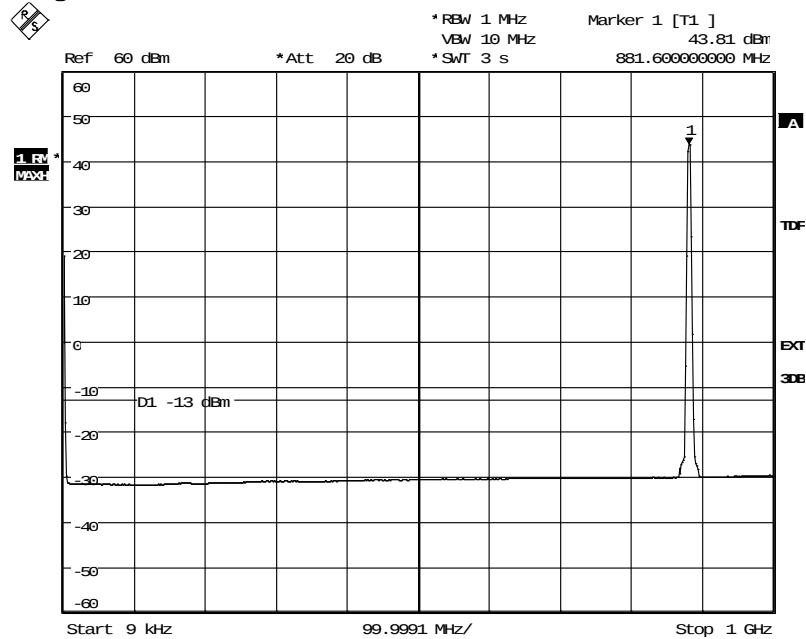
Diagram 8 b:



Date: 31.JAN.2013 10:27:02

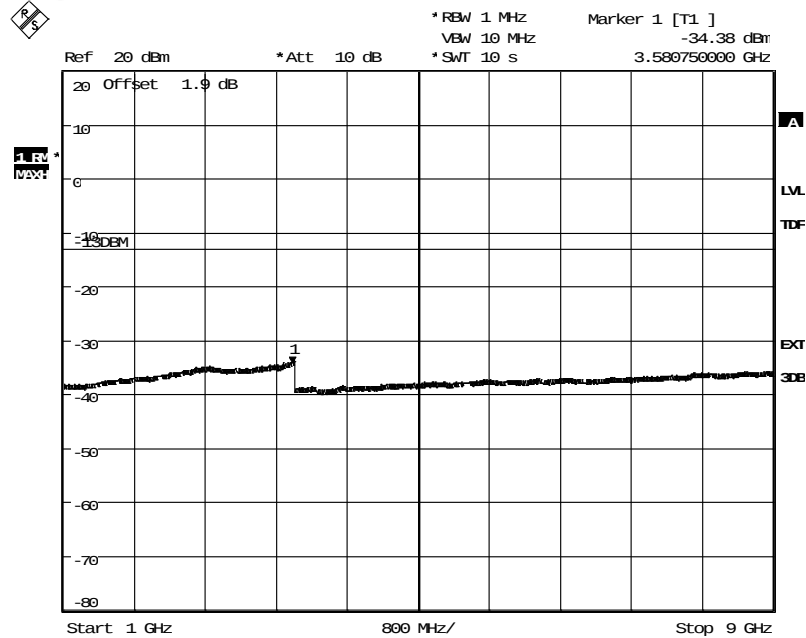
Appendix 5

Diagram 9 a:



Date: 1.FEB.2013 10:18:03

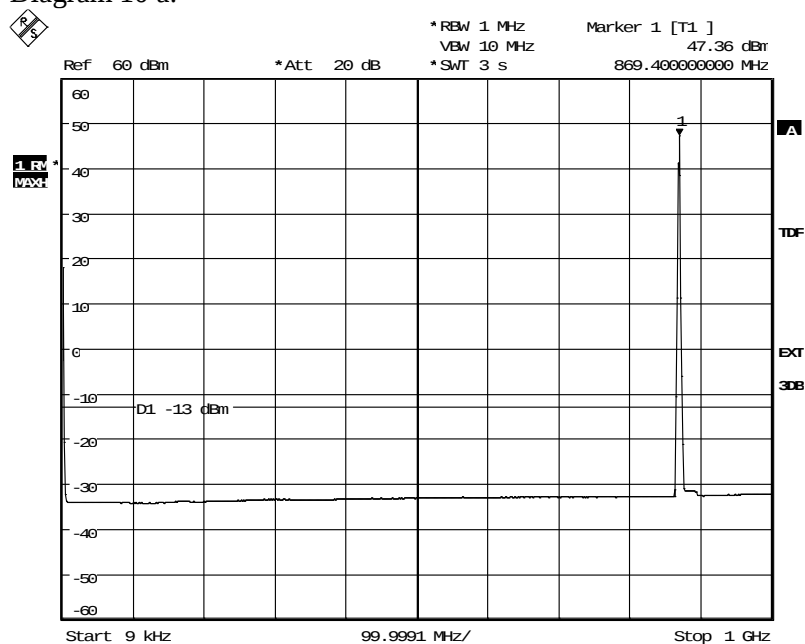
Diagram 9 b:



Date: 1.FEB.2013 10:19:36

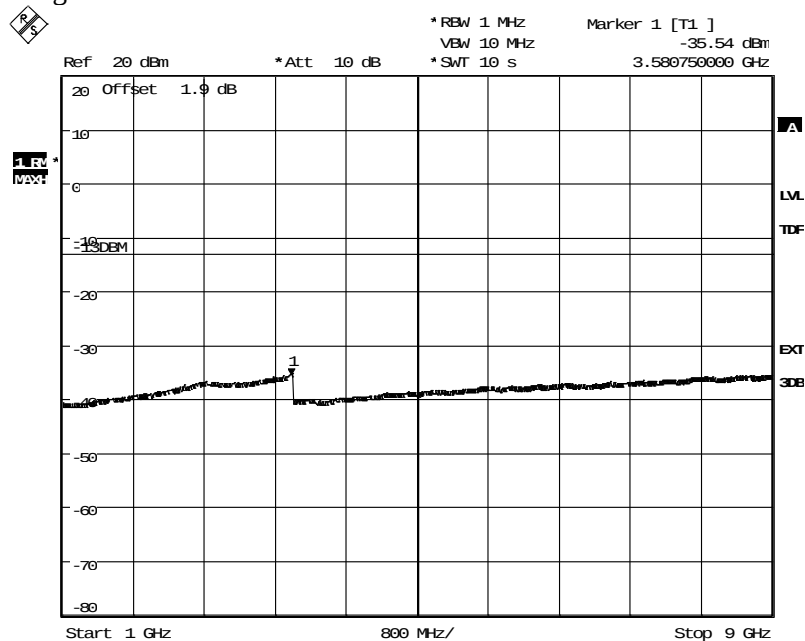
Appendix 5

Diagram 10 a:



Date: 11.FEB.2013 12:19:11

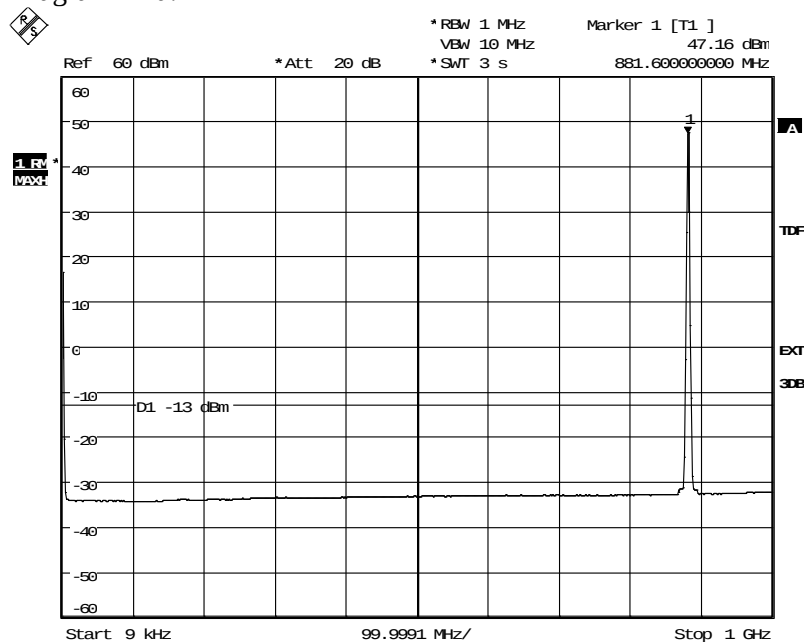
Diagram 10 b:



Date: 11.FEB.2013 12:20:53

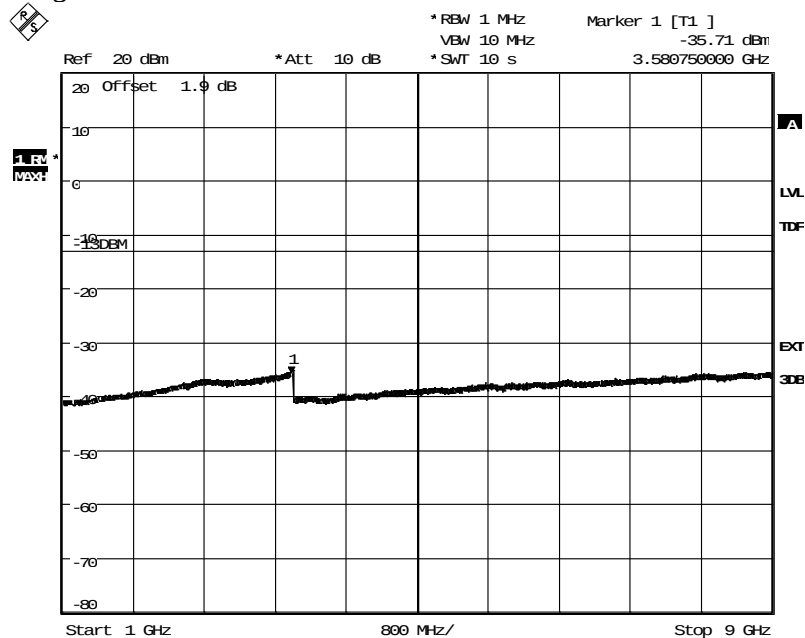
Appendix 5

Diagram 11 a:



Date: 11.FEB.2013 10:03:46

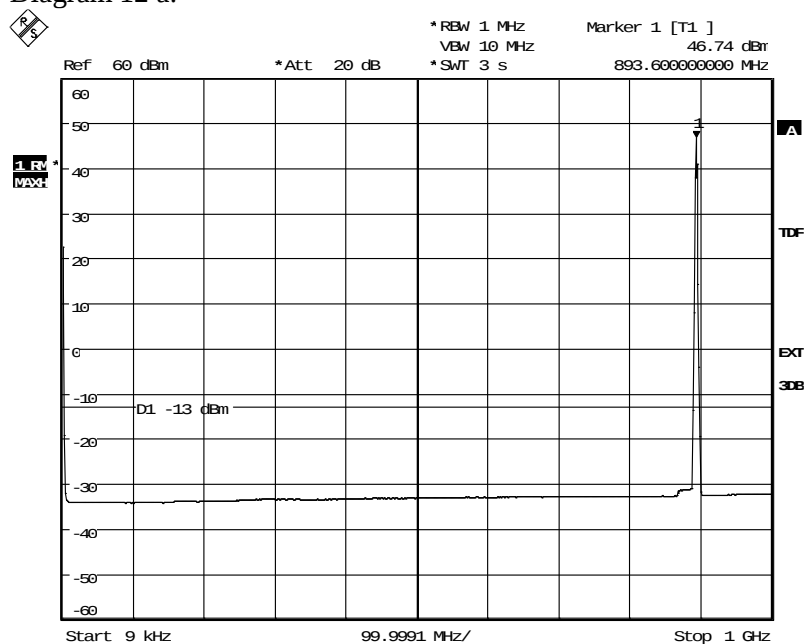
Diagram 11 b:



Date: 11.FEB.2013 09:57:32

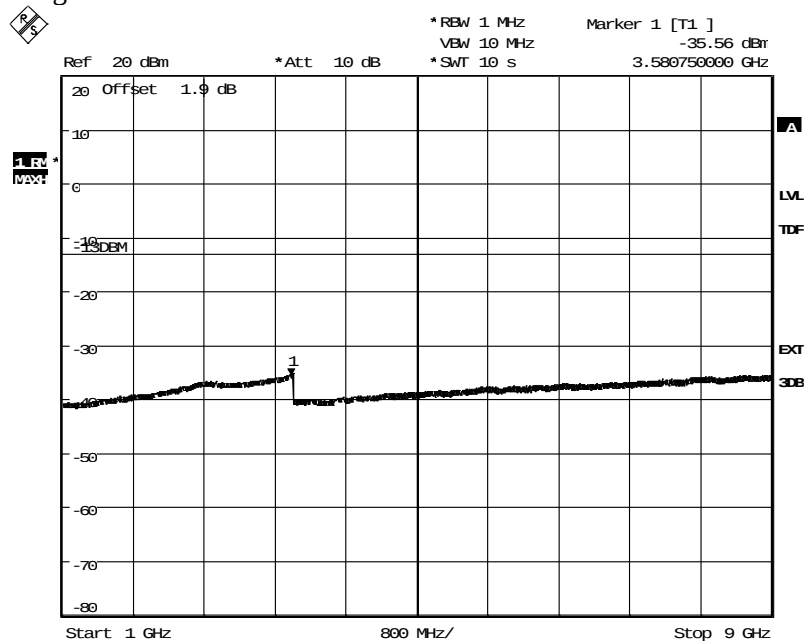
Appendix 5

Diagram 12 a:



Date: 12.FEB.2013 07:06:12

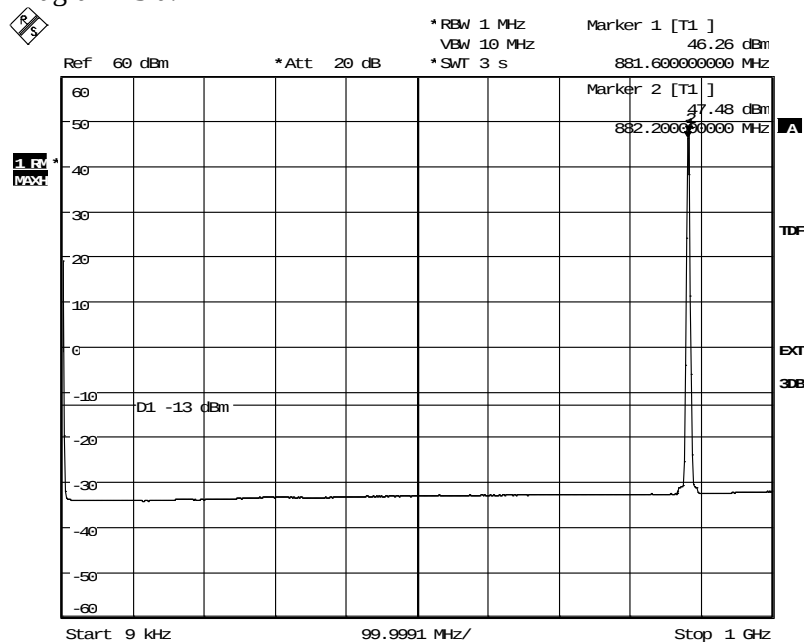
Diagram 12 b:



Date: 12.FEB.2013 07:07:34

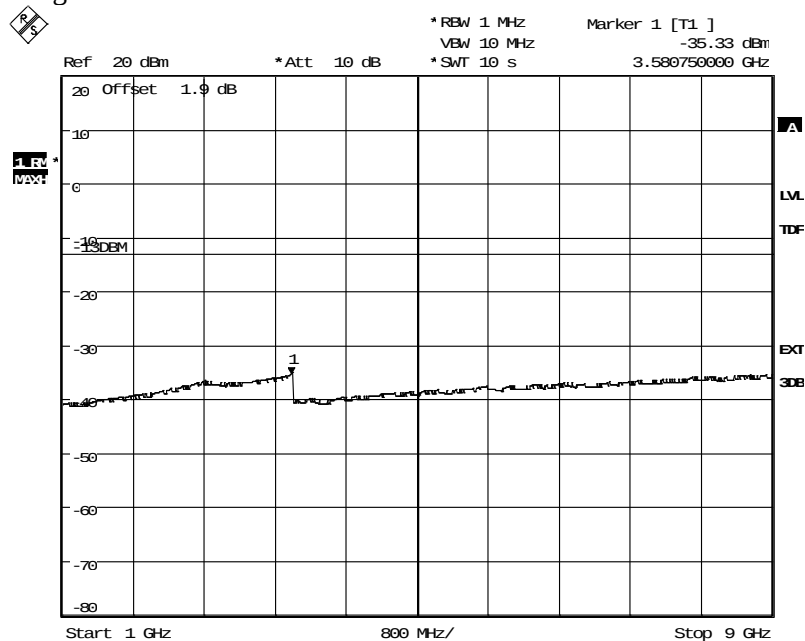
Appendix 5

Diagram 13 a:



Date: 12.FEB.2013 10:31:42

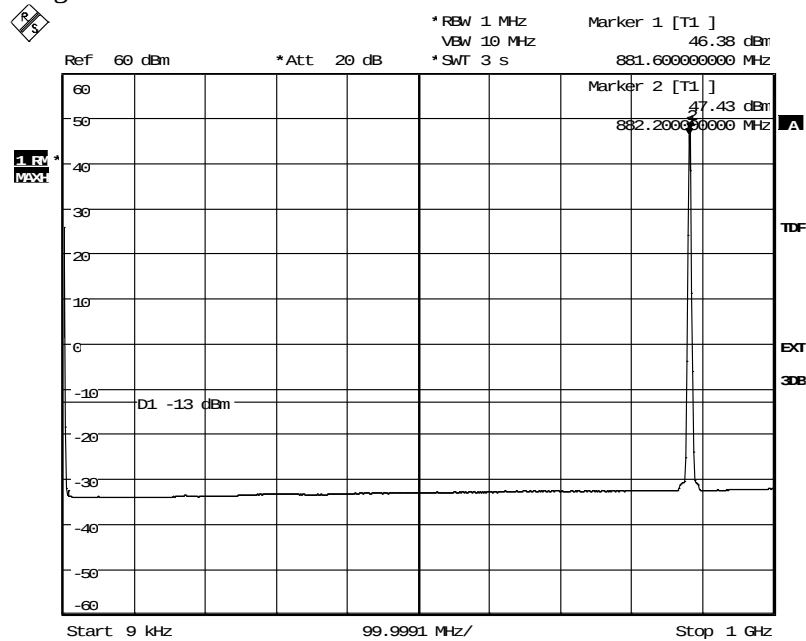
Diagram 13 b:



Date: 12.FEB.2013 10:55:15

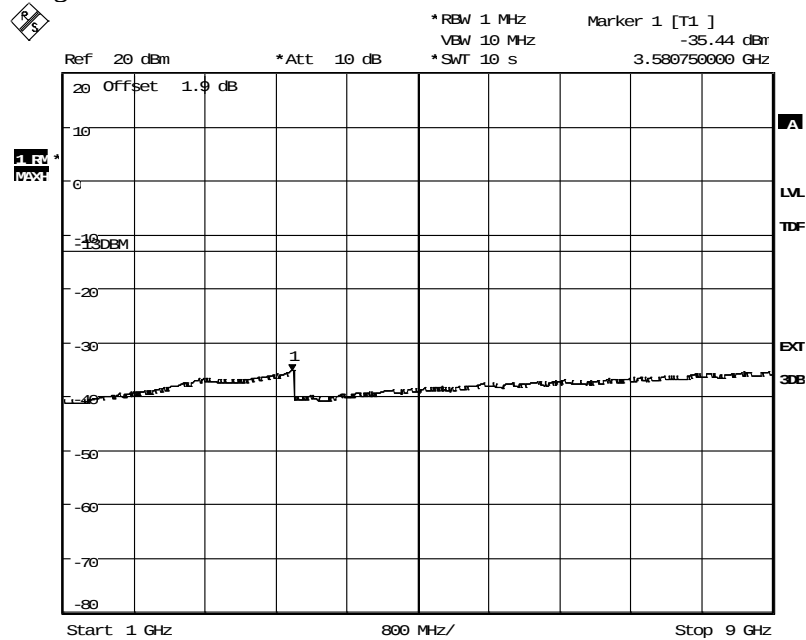
Appendix 5

Diagram 14 a:



Date: 12.FEB.2013 11:02:41

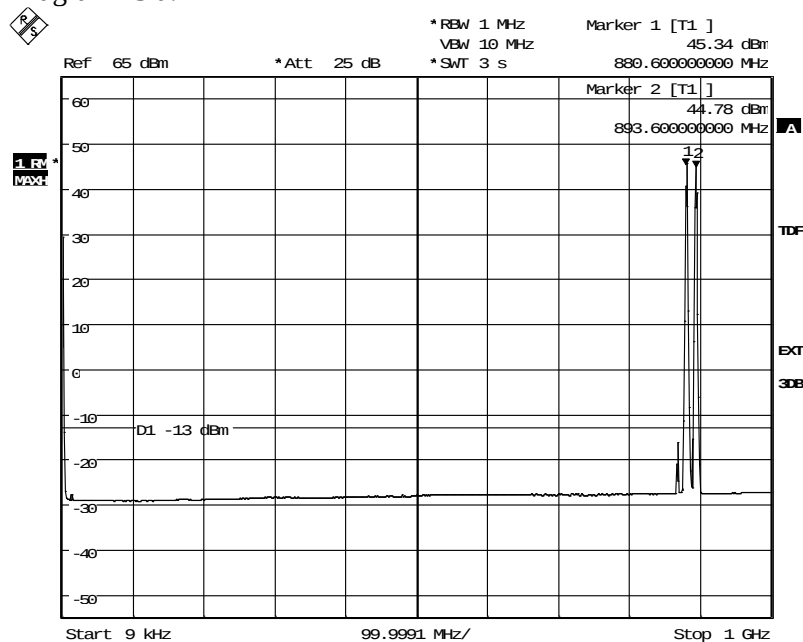
Diagram 14 b:



Date: 12.FEB.2013 10:59:39

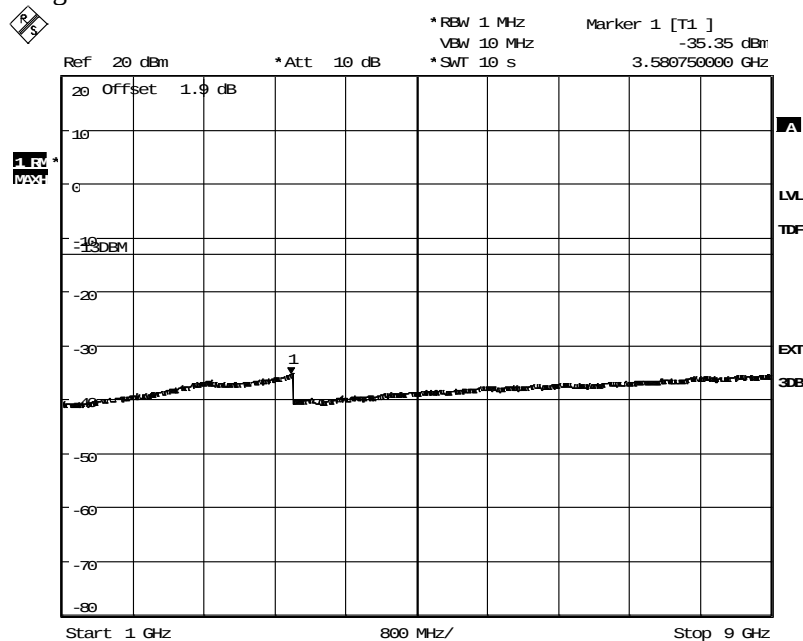
Appendix 5

Diagram 15 a:



Date: 13.FEB.2013 07:34:45

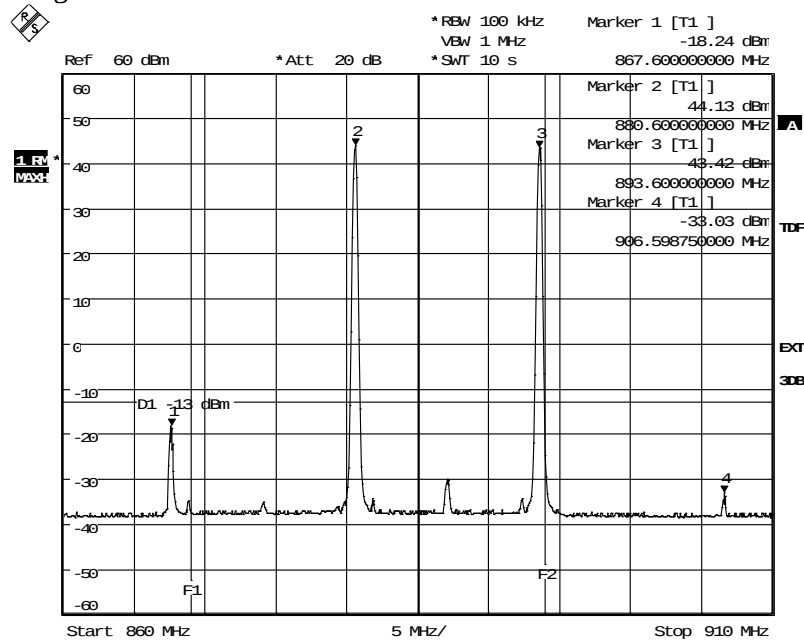
Diagram 15 b:



Date: 13.FEB.2013 07:40:40

Appendix 5

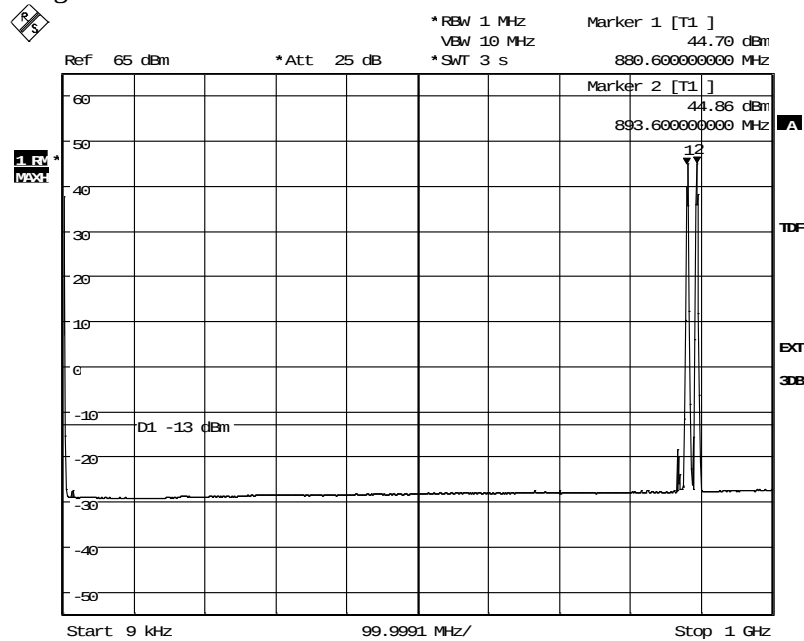
Diagram 15 c:



Date: 13.FEB.2013 07:38:19

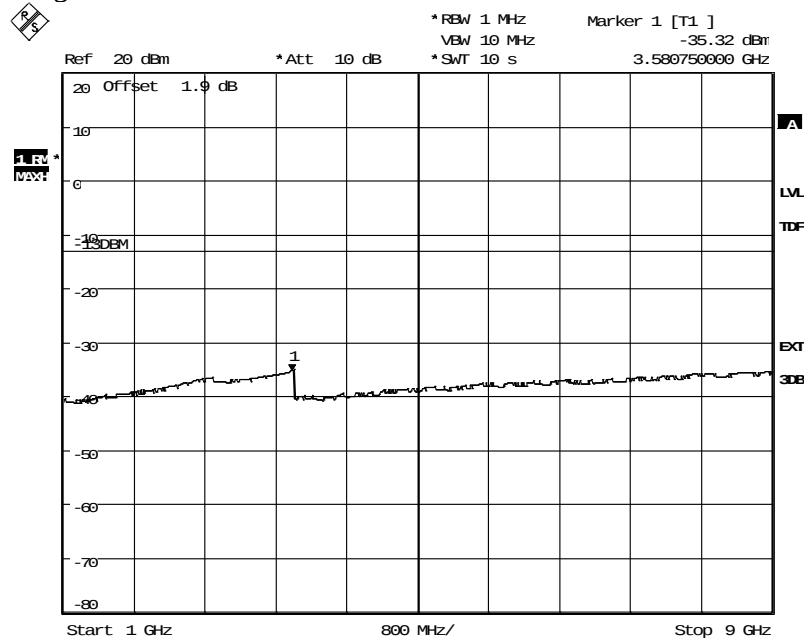
Appendix 5

Diagram 16 a:



Date: 13.FEB.2013 07:47:51

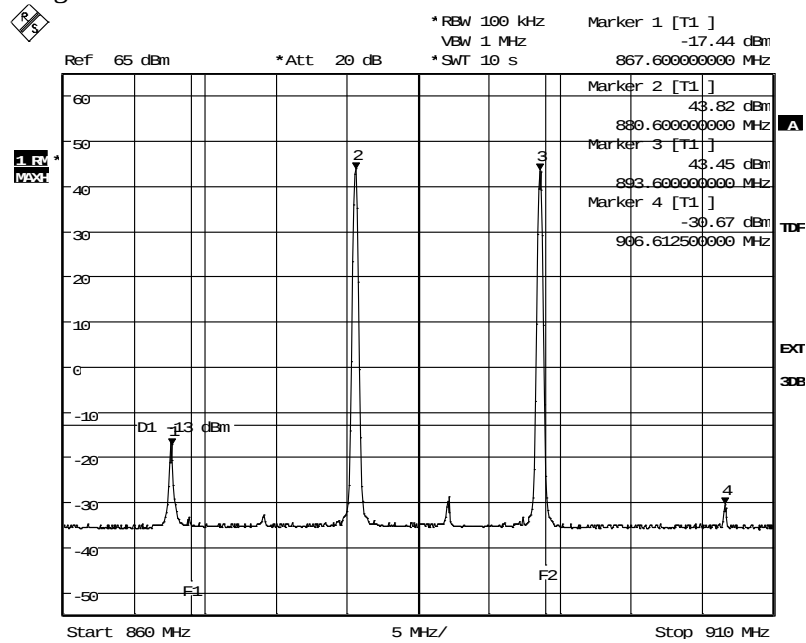
Diagram 16 b:



Date: 13.FEB.2013 07:44:05

Appendix 5

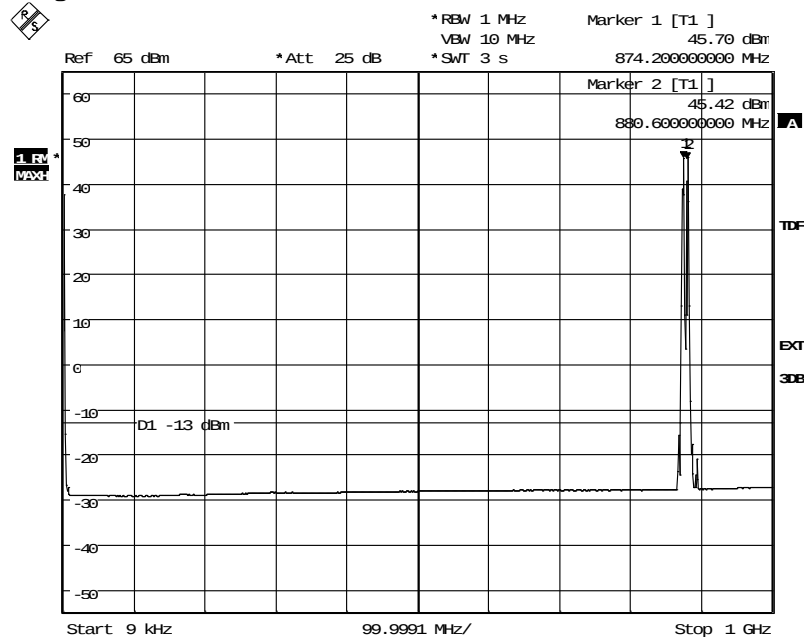
Diagram 16 c:



Date: 13.FEB.2013 07:54:01

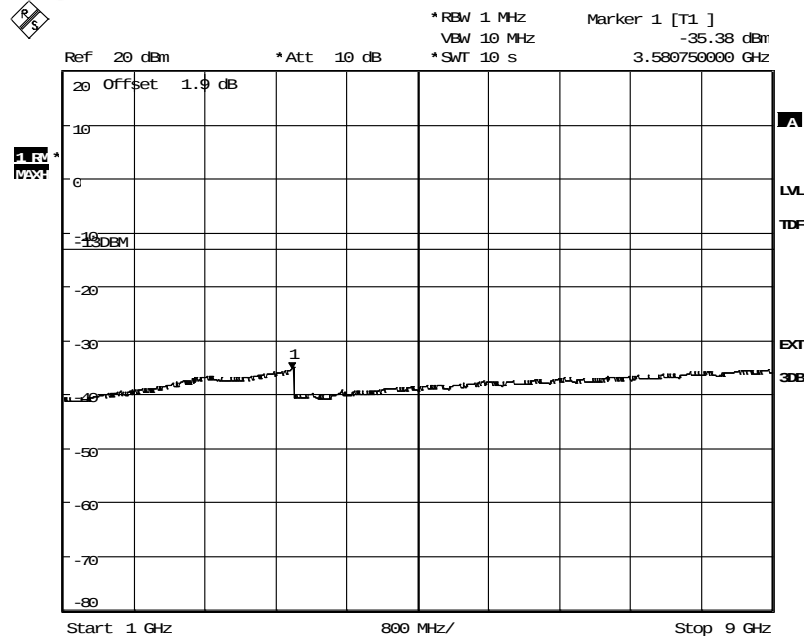
Appendix 5

Diagram 17 a:



Date: 13.FEB.2013 08:13:36

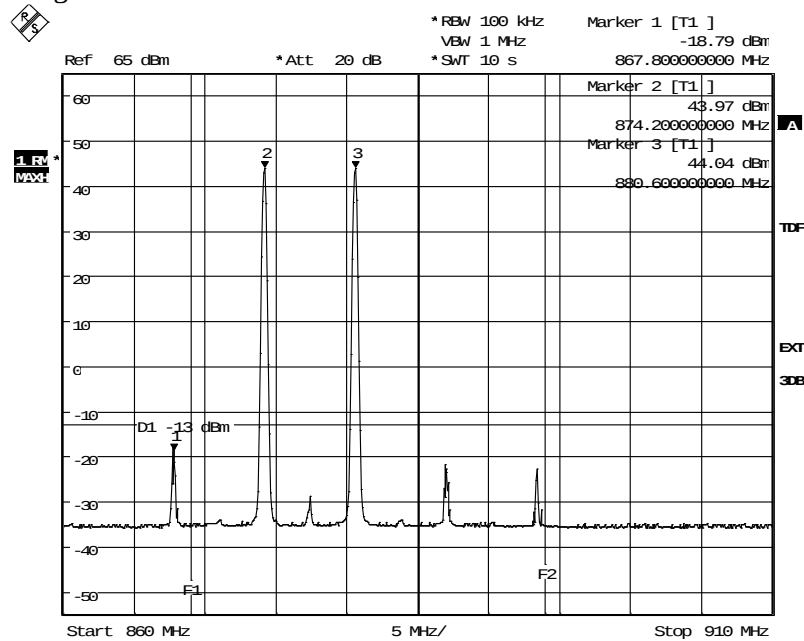
Diagram 17 b:



Date: 13.FEB.2013 08:08:28

Appendix 5

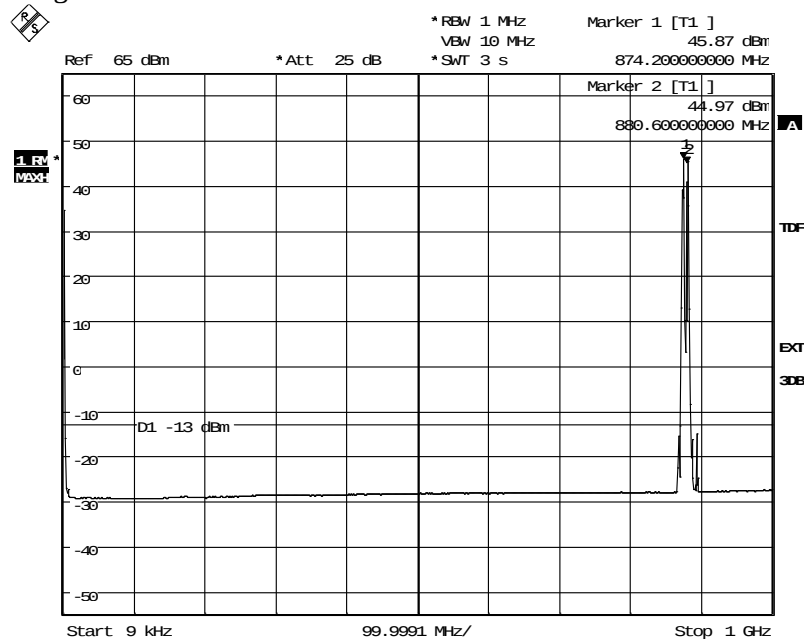
Diagram 17 c:



Date: 13.FEB.2013 08:15:17

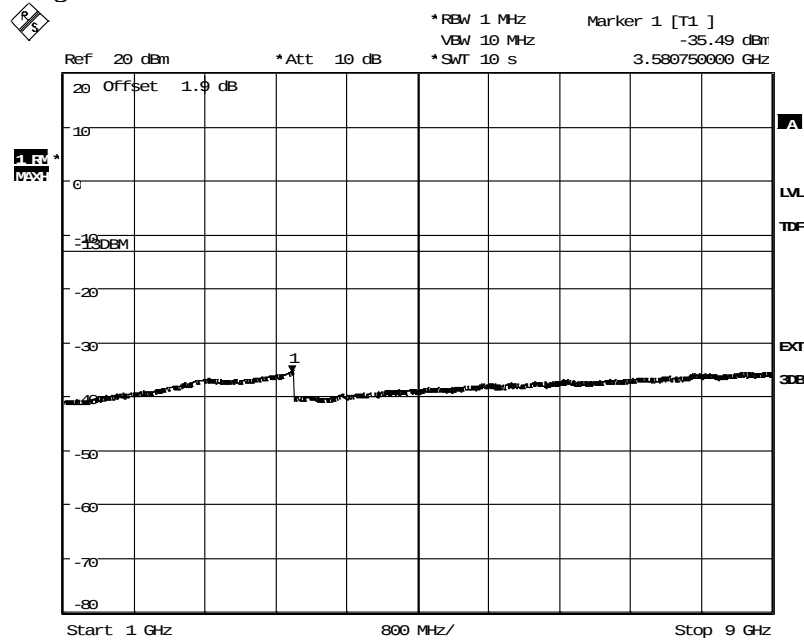
Appendix 5

Diagram 18 a:



Date: 13.FEB.2013 07:59:32

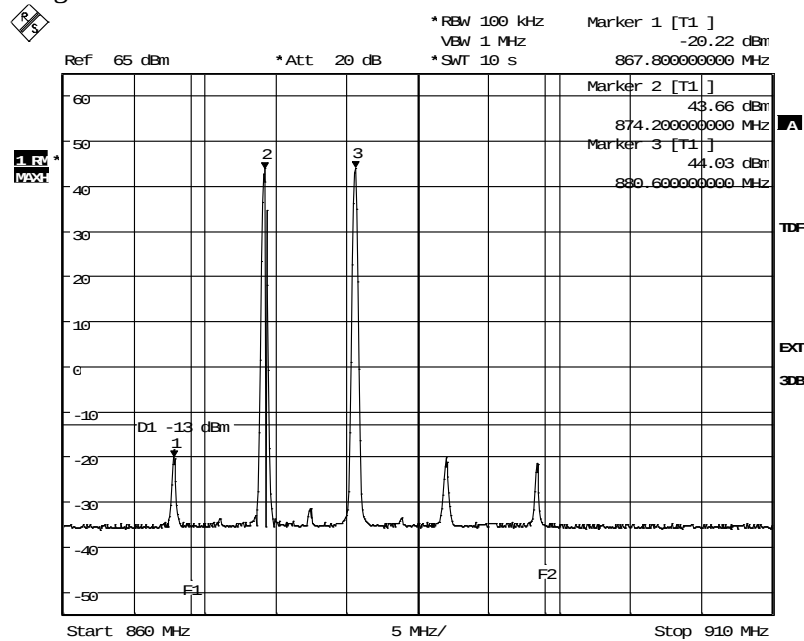
Diagram 18 b:



Date: 13.FEB.2013 08:04:58

Appendix 5

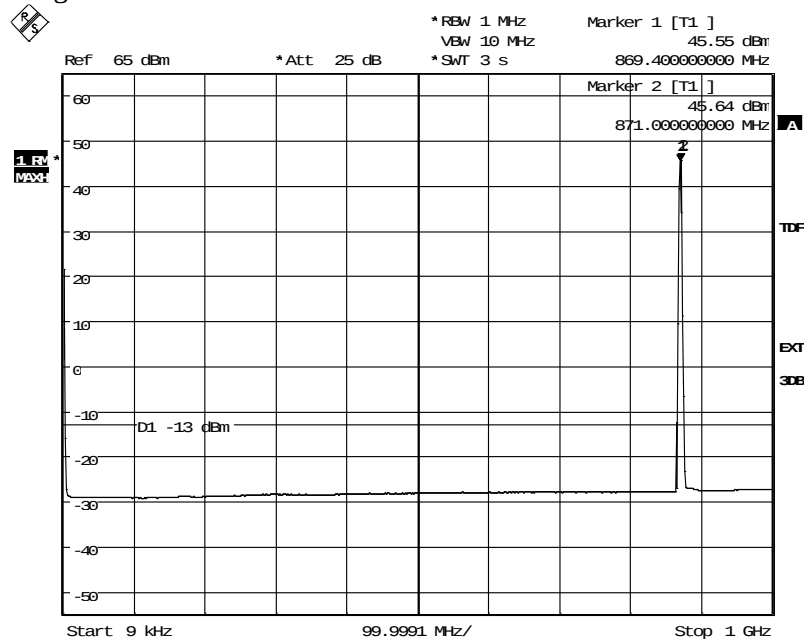
Diagram 18 c:



Date: 13.FEB.2013 08:02:49

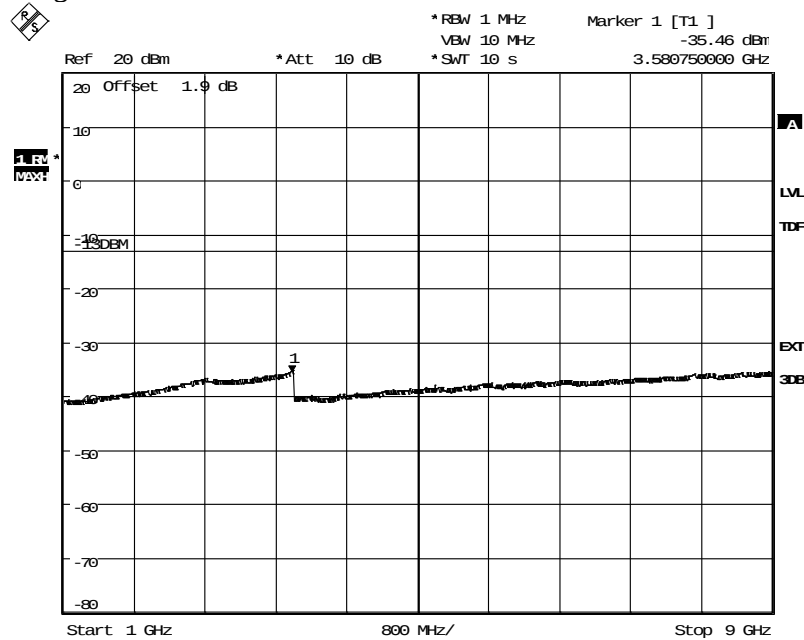
Appendix 5

Diagram 19 a:



Date: 13.FEB.2013 08:49:23

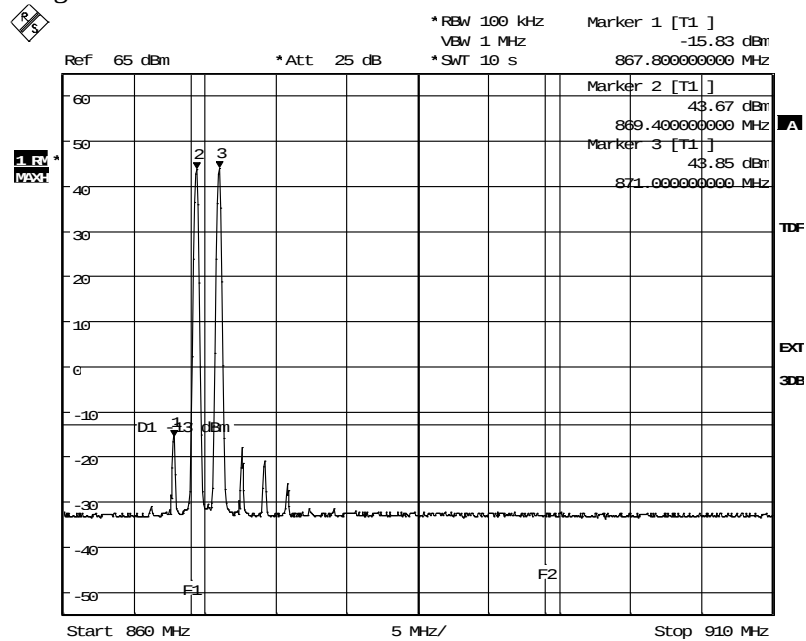
Diagram 19 b:



Date: 13.FEB.2013 08:51:58

Appendix 5

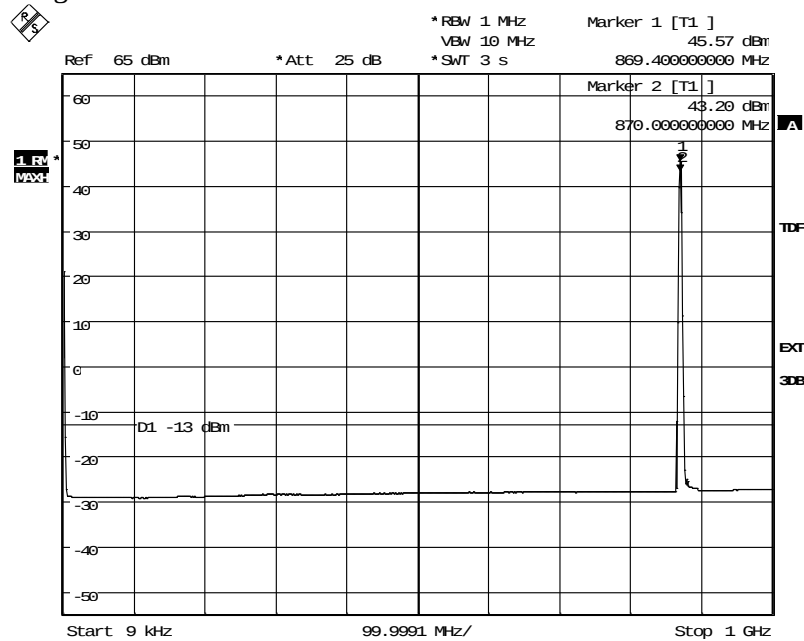
Diagram 19 c:



Date: 13.FEB.2013 08:48:10

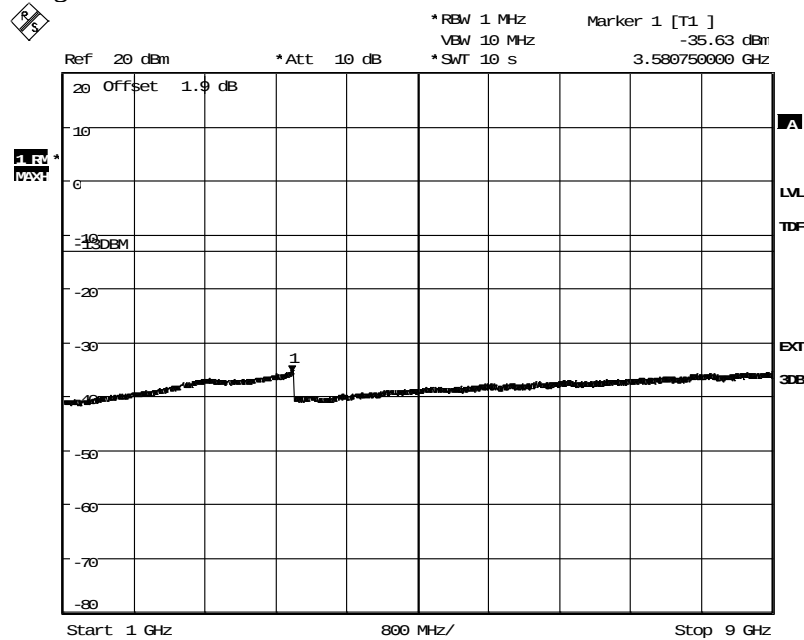
Appendix 5

Diagram 20 a:



Date: 13.FEB.2013 08:58:02

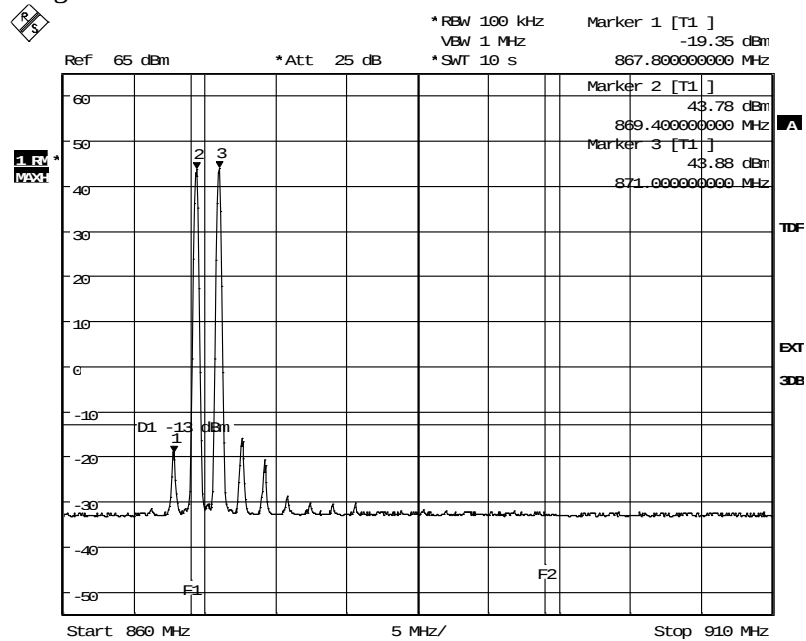
Diagram 20 b:



Date: 13.FEB.2013 08:55:35

Appendix 5

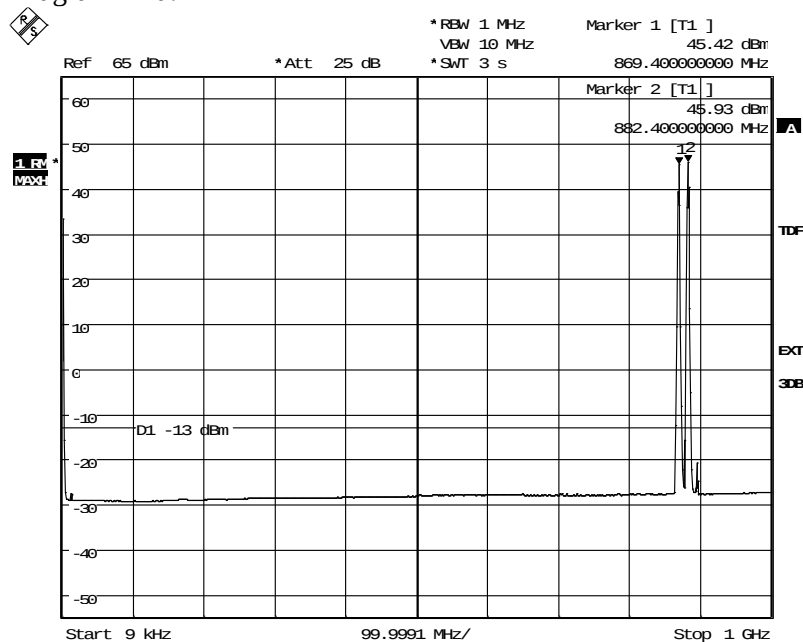
Diagram 20 c:



Date: 13.FEB.2013 09:00:24

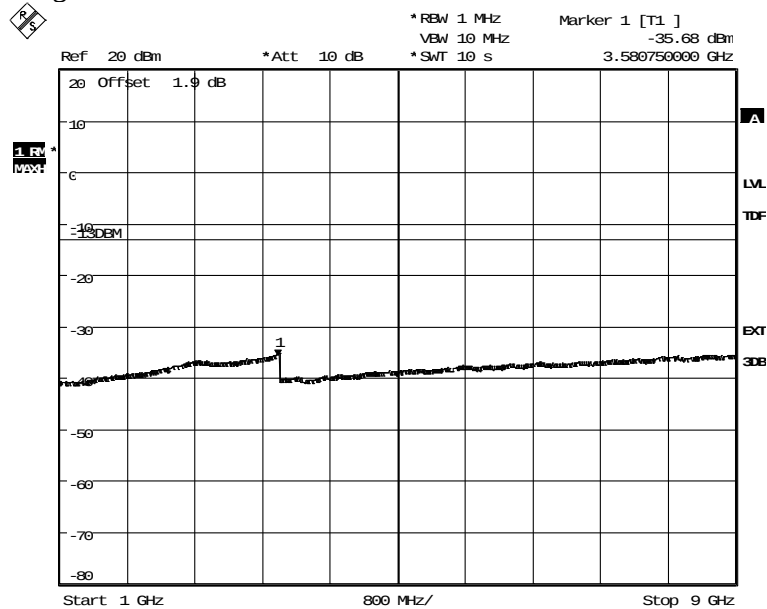
Appendix 5

Diagram 21 a:



Date: 12.FEB.2013 13:56:24

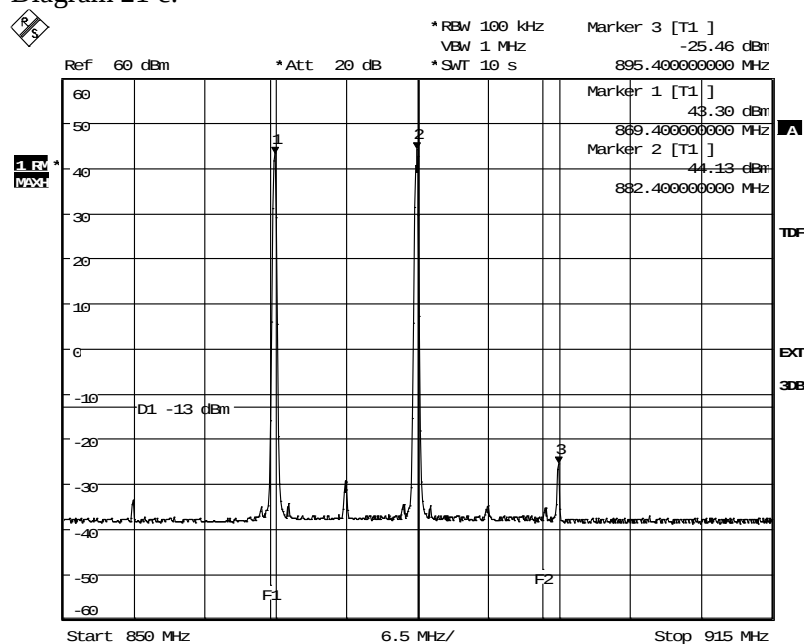
Diagram 21 b:



Date: 12.FEB.2013 13:18:57

Appendix 5

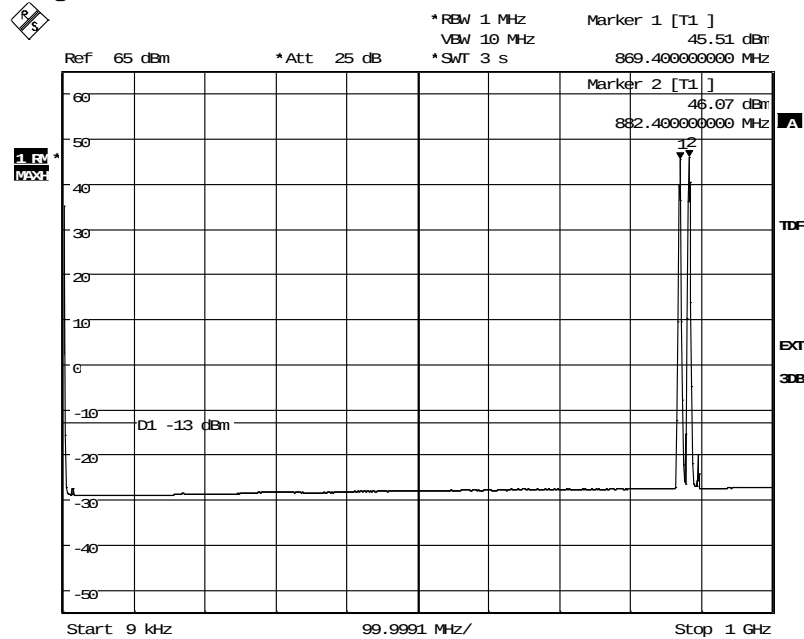
Diagram 21 c:



Date: 12.FEB.2013 13:23:17

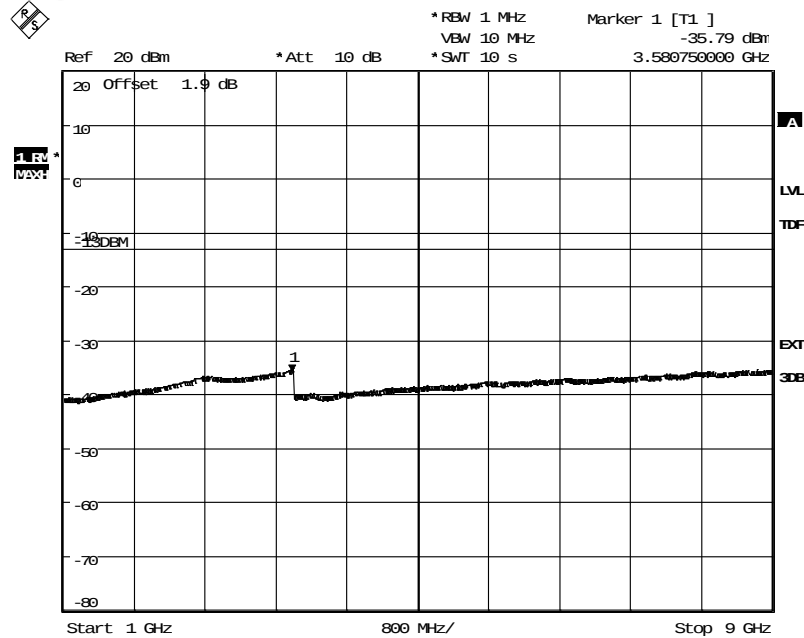
Appendix 5

Diagram 22 a:



Date: 12.FEB.2013 13:50:31

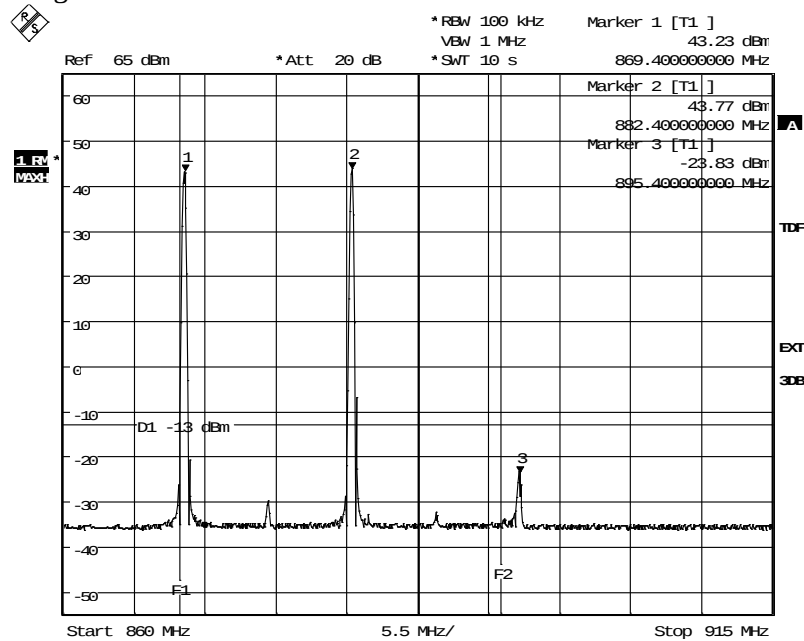
Diagram 22 b:



Date: 12.FEB.2013 13:42:53

Appendix 5

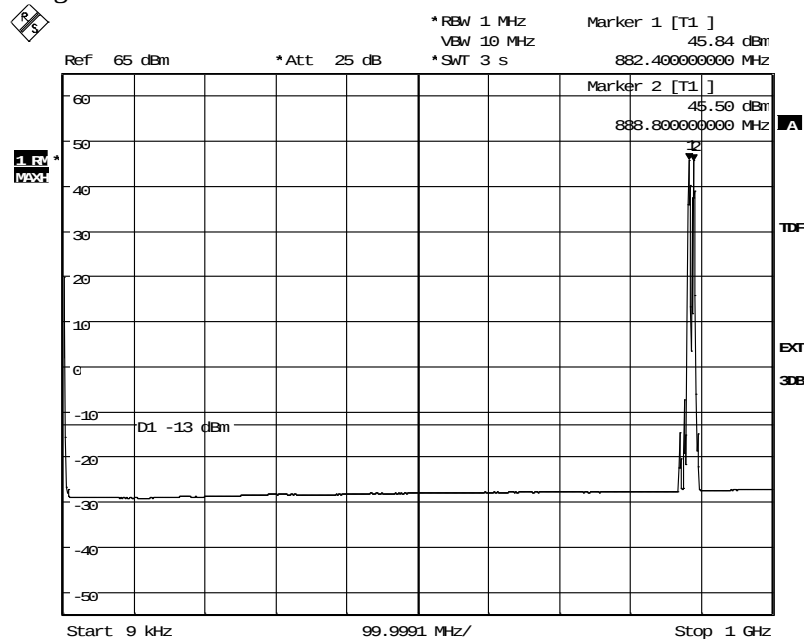
Diagram 22 c:



Date: 12.FEB.2013 13:36:22

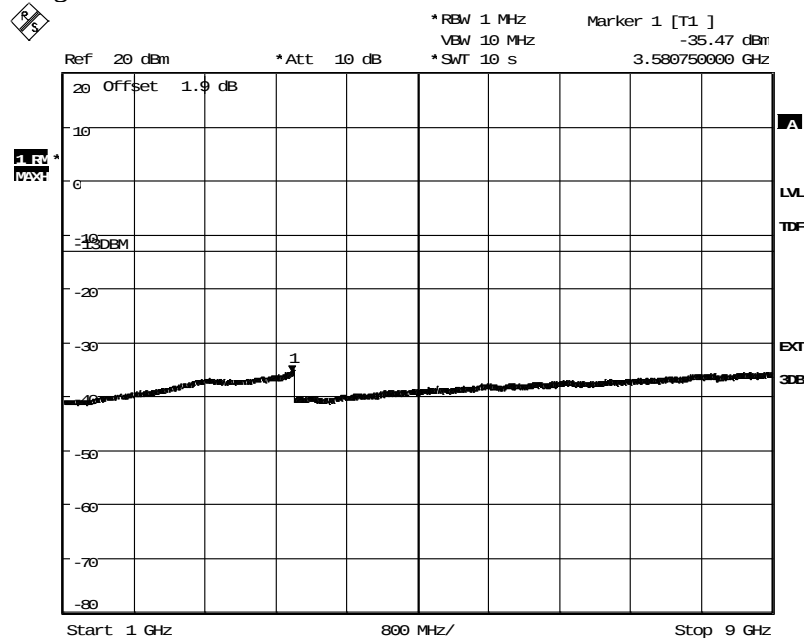
Appendix 5

Diagram 23 a:



Date: 12.FEB.2013 14:03:35

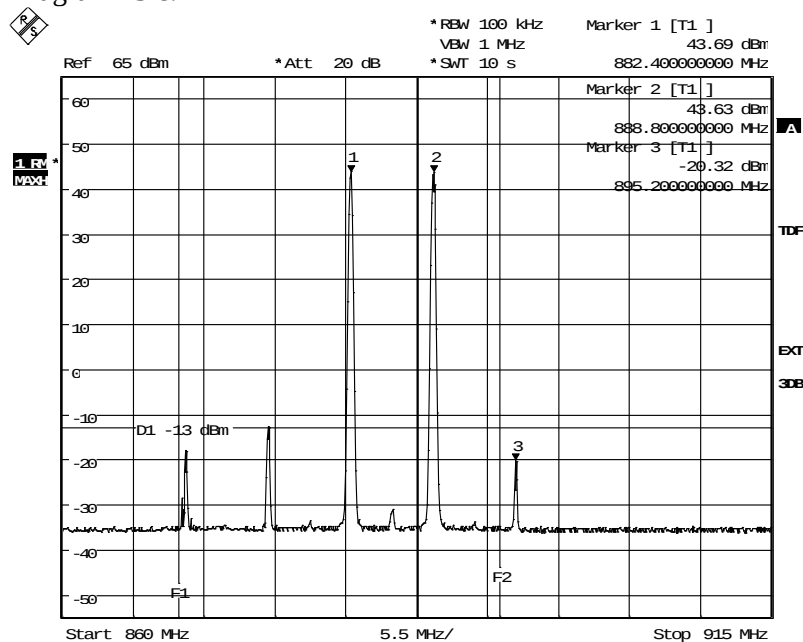
Diagram 23 b:



Date: 13.FEB.2013 09:12:44

Appendix 5

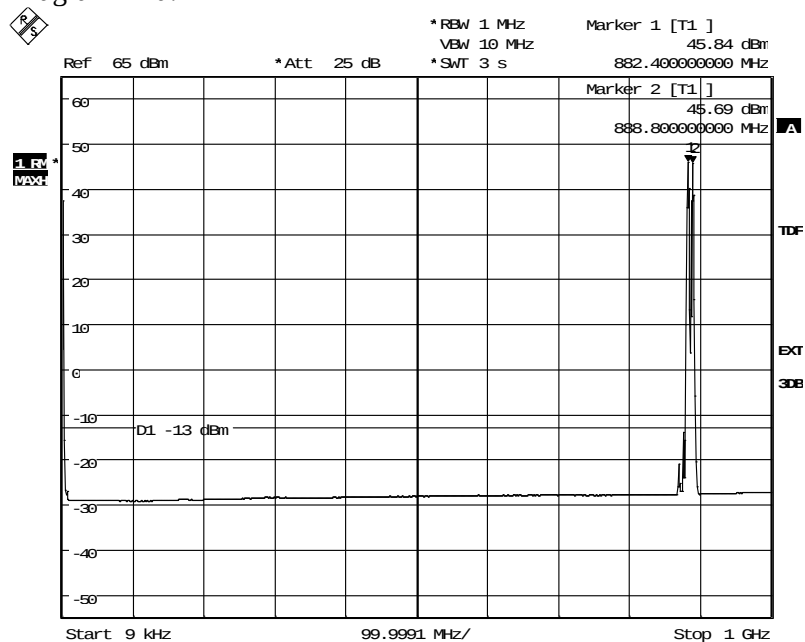
Diagram 23 c:



Date: 12.FEB.2013 13:10:24

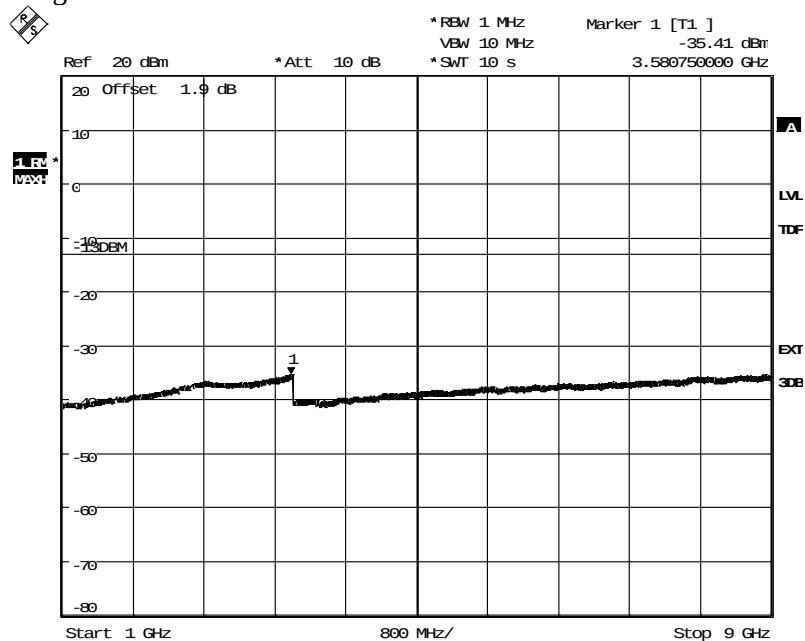
Appendix 5

Diagram 24 a:



Date: 12.FEB.2013 14:05:40

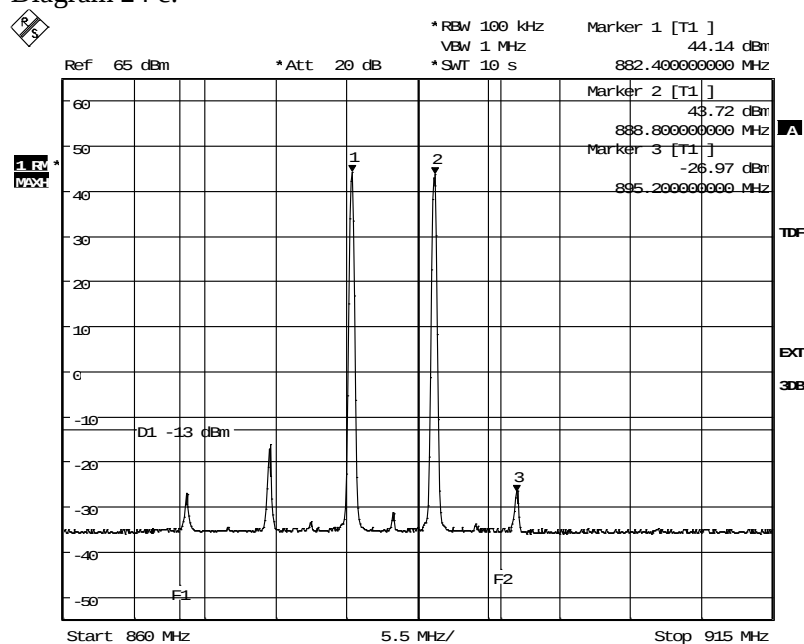
Diagram 24 b:



Date: 12.FEB.2013 12:57:28

Appendix 5

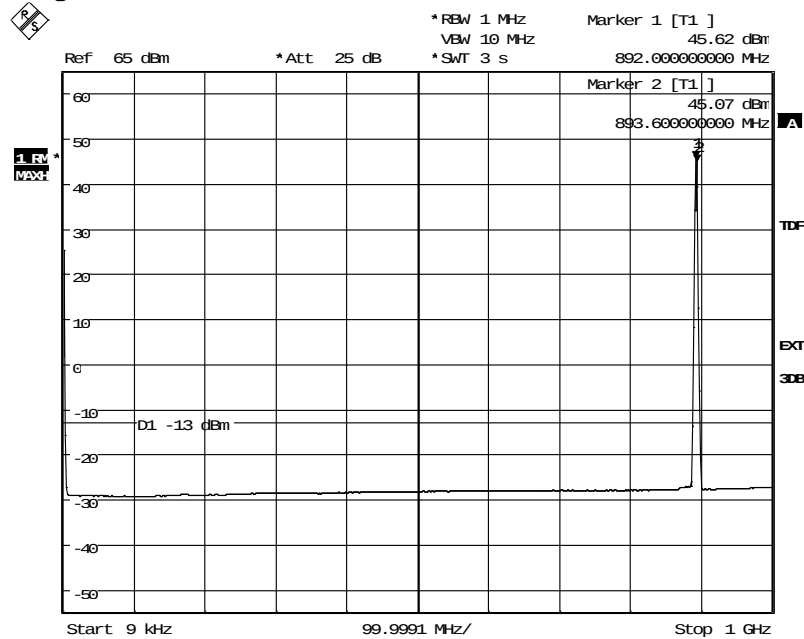
Diagram 24 c:



Date: 12.FEB.2013 13:04:53

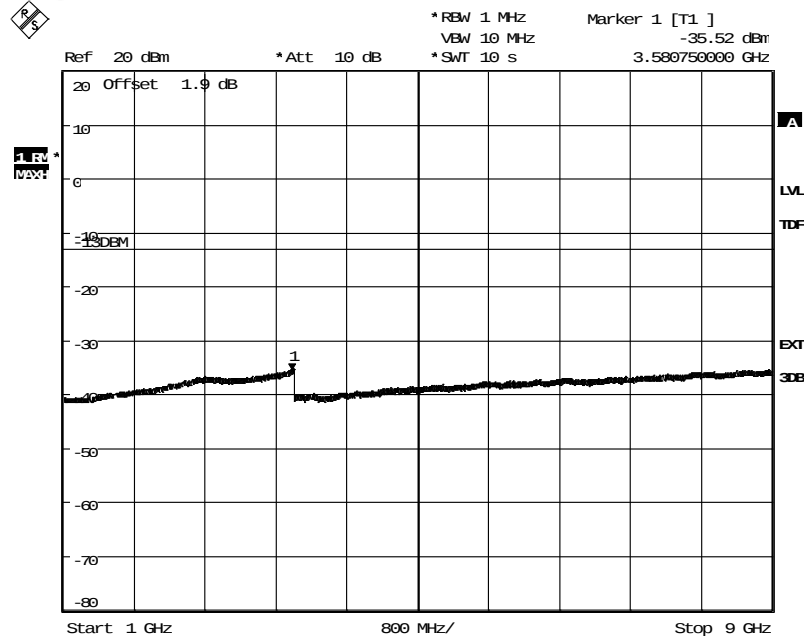
Appendix 5

Diagram 25 a:



Date: 12.FEB.2013 14:12:16

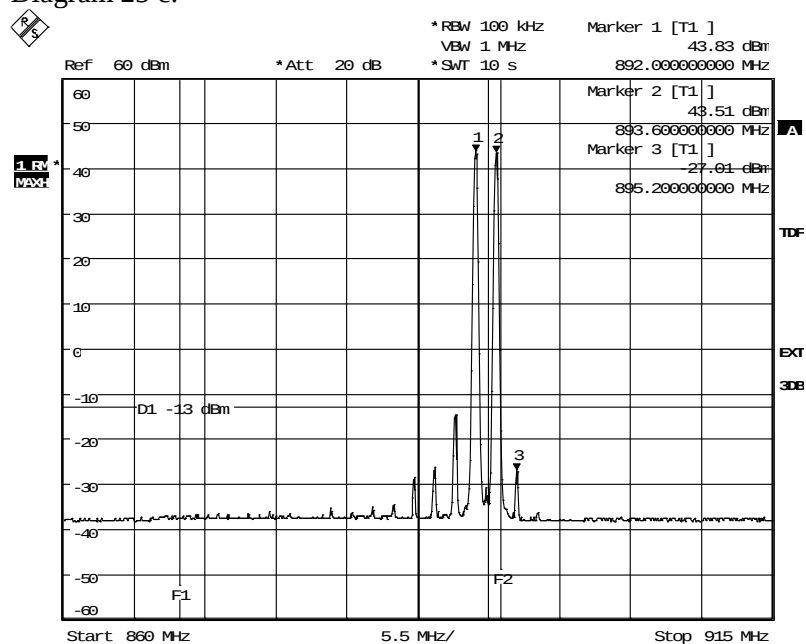
Diagram 25 b:



Date: 12.FEB.2013 12:38:30

Appendix 5

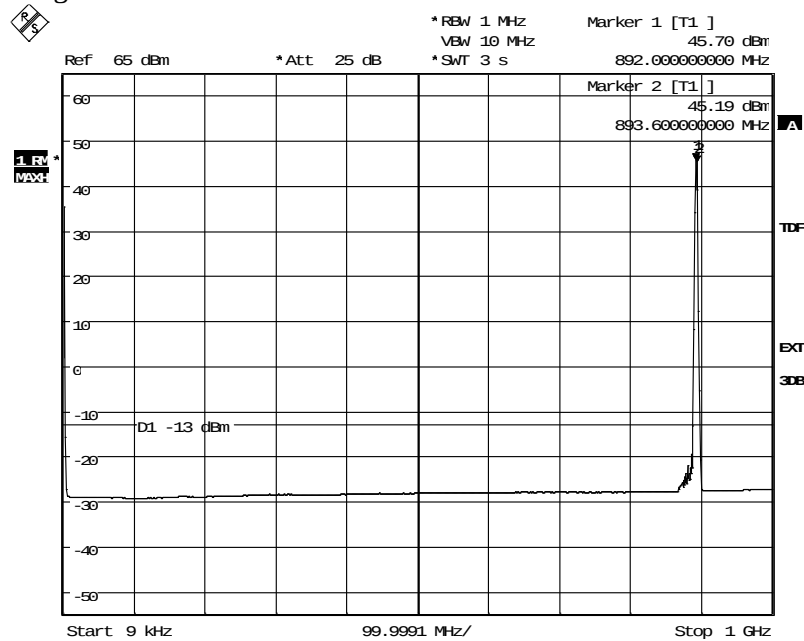
Diagram 25 c:



Date: 12.FEB.2013 12:45:15

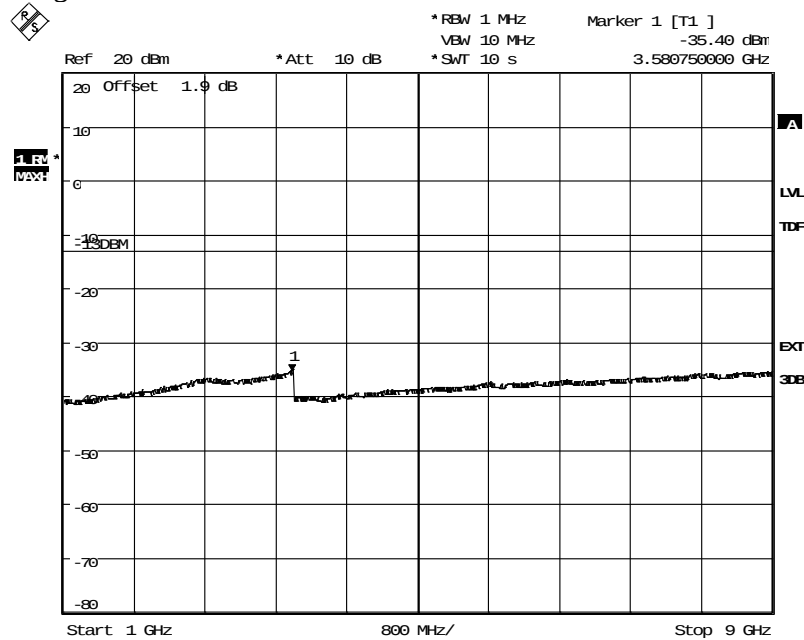
Appendix 5

Diagram 26 a:



Date: 12.FEB.2013 14:09:48

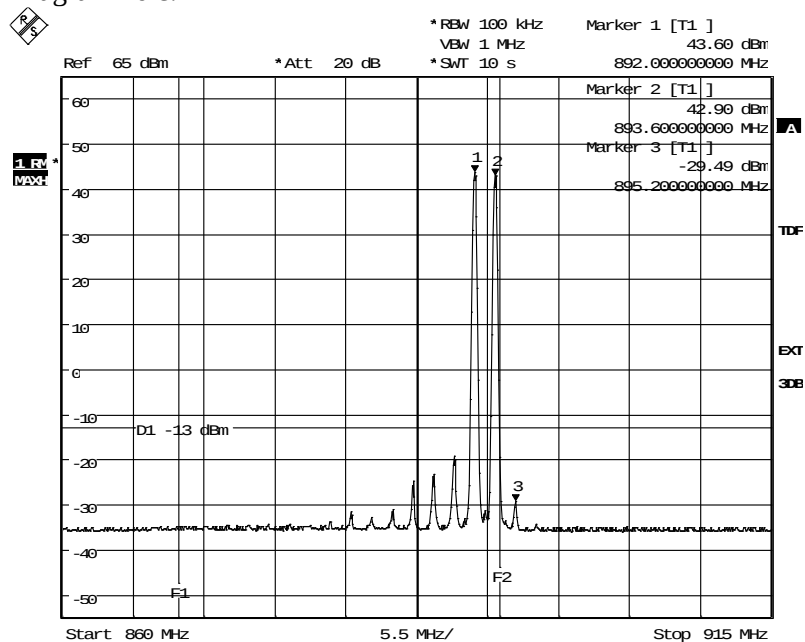
Diagram 26b:



Date: 12.FEB.2013 12:53:23

Appendix 5

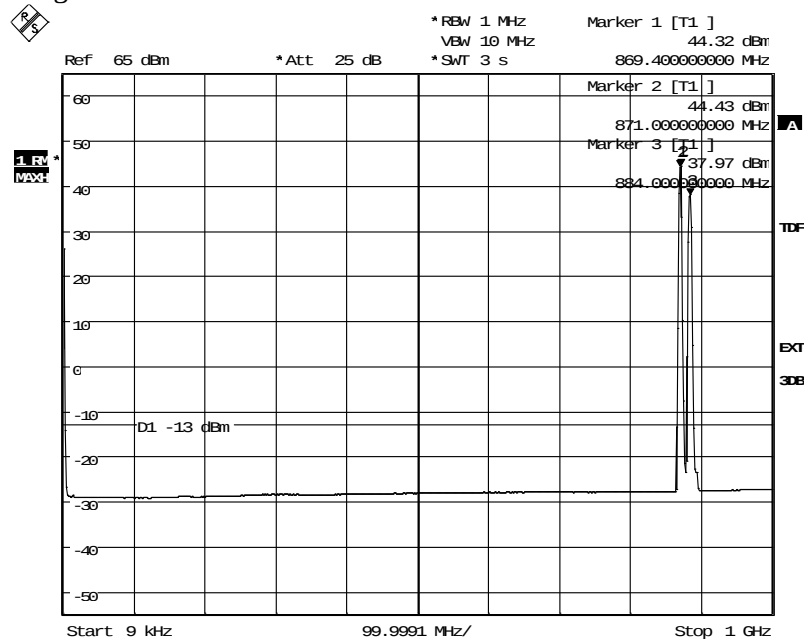
Diagram 26 c:



Date: 12.FEB.2013 12:50:45

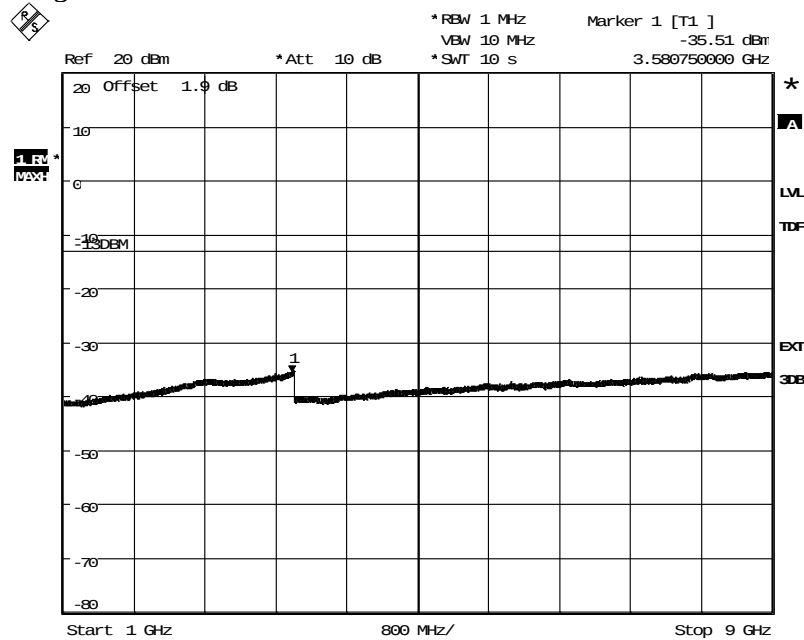
Appendix 5

Diagram 27 a:



Date: 13.FEB.2013 12:04:03

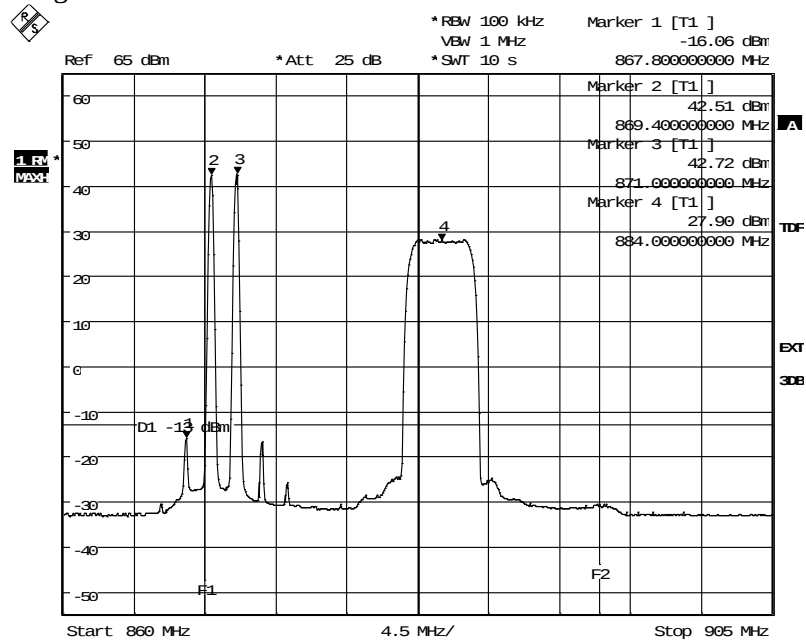
Diagram 27b:



Date: 13.FEB.2013 11:59:58

Appendix 5

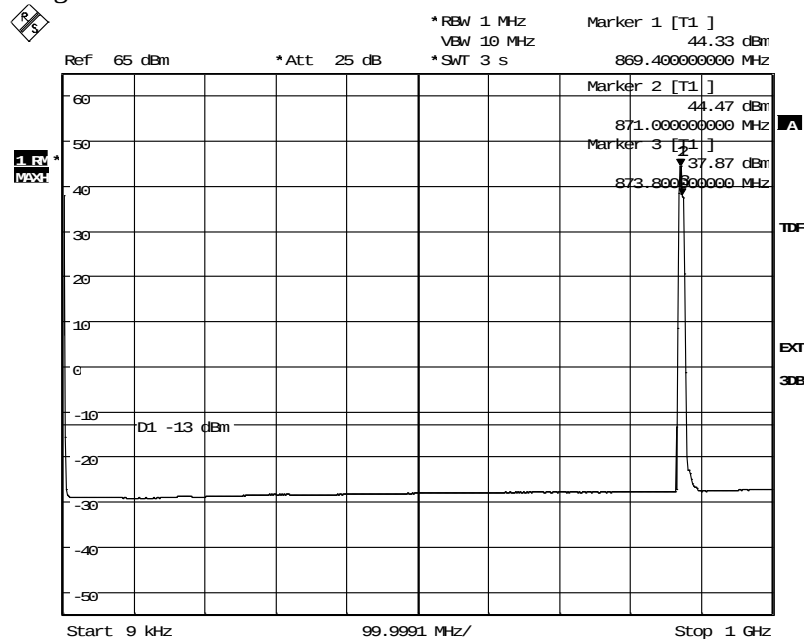
Diagram 27 c:



Date: 13.FEB.2013 12:08:18

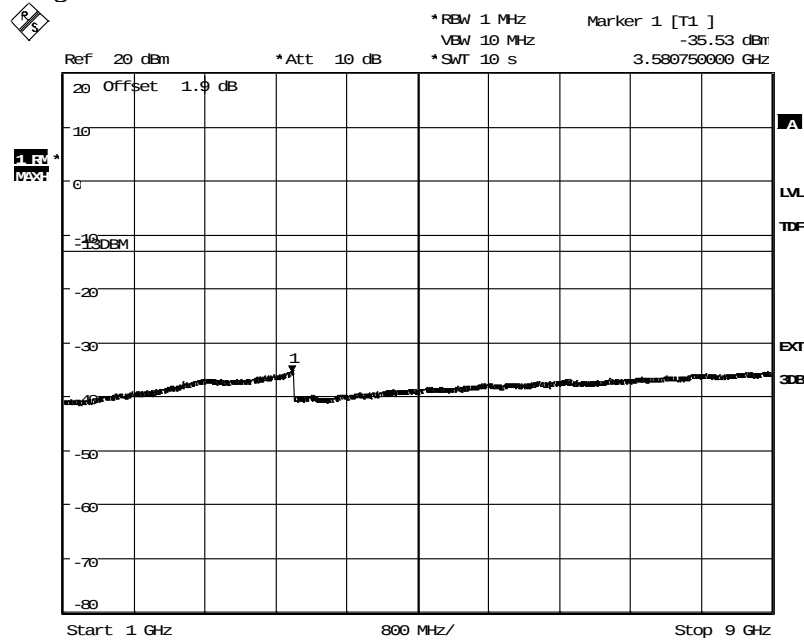
Appendix 5

Diagram 28 a:



Date: 13.FEB.2013 12:19:05

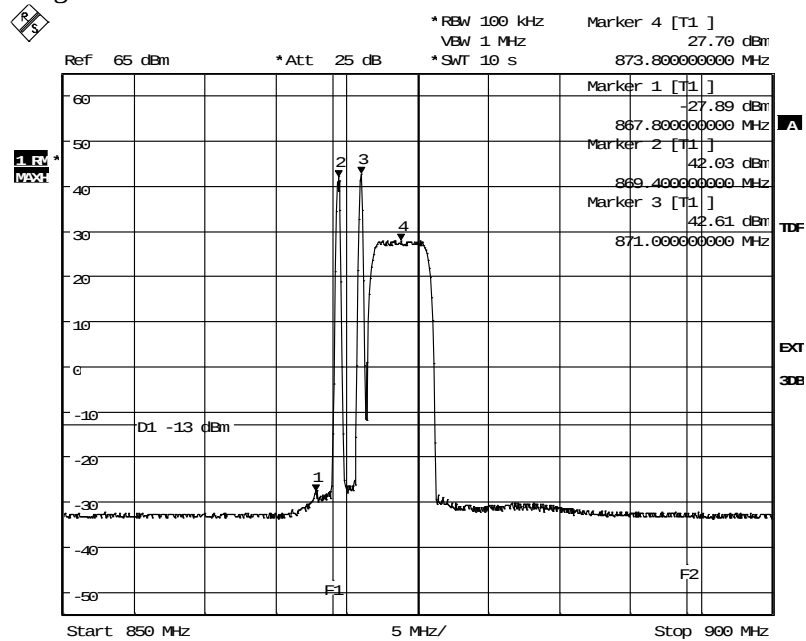
Diagram 28 b:



Date: 13.FEB.2013 12:21:21

Appendix 5

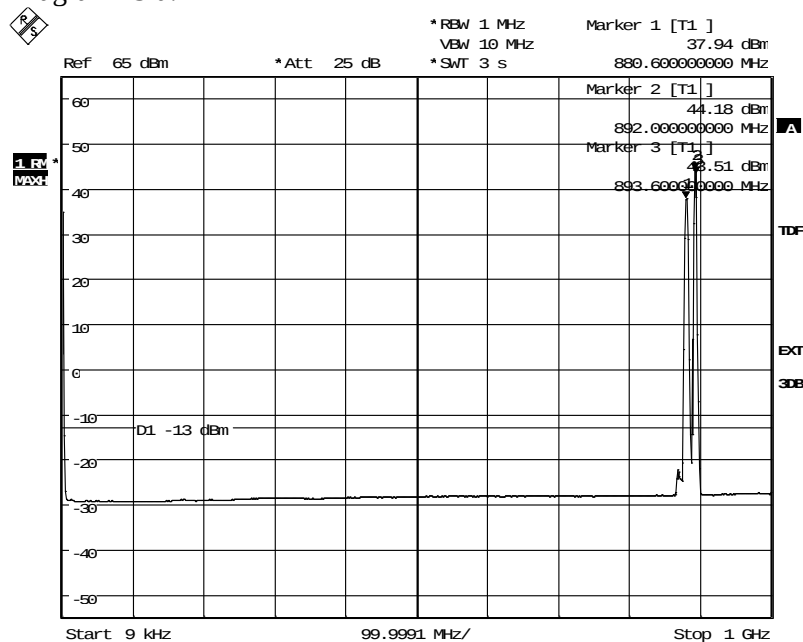
Diagram 28 c:



Date: 13.FEB.2013 12:16:40

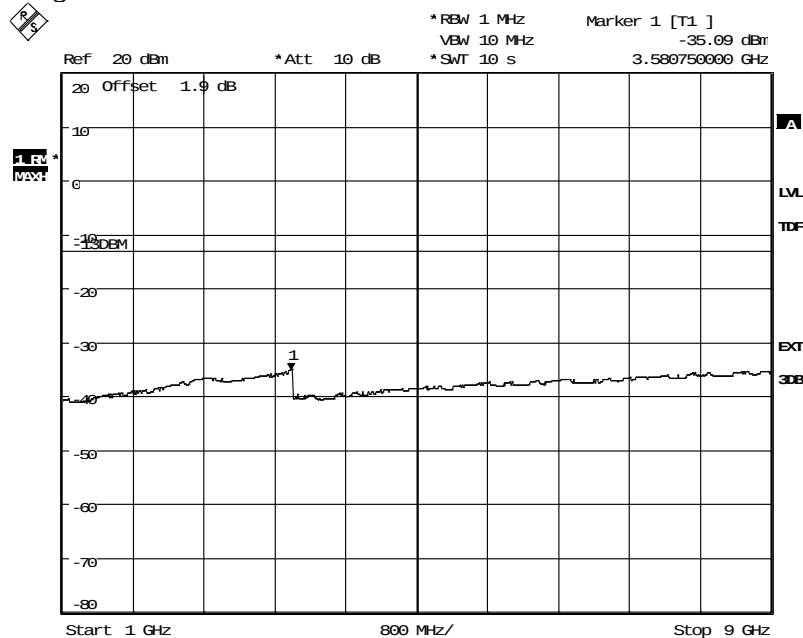
Appendix 5

Diagram 29 a:



Date: 13.FEB.2013 12:51:03

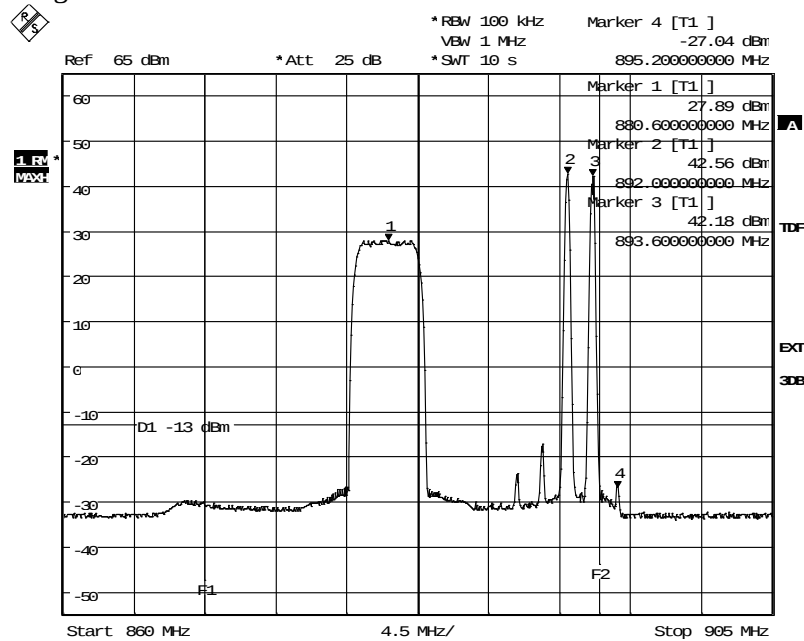
Diagram 29 b:



Date: 13.FEB.2013 12:43:54

Appendix 5

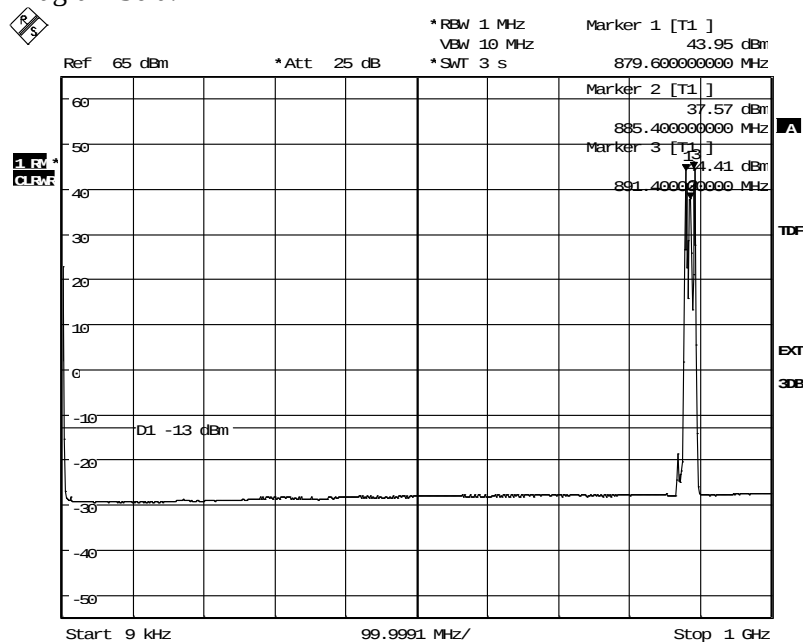
Diagram 29 c:



Date: 13.FEB.2013 12:56:28

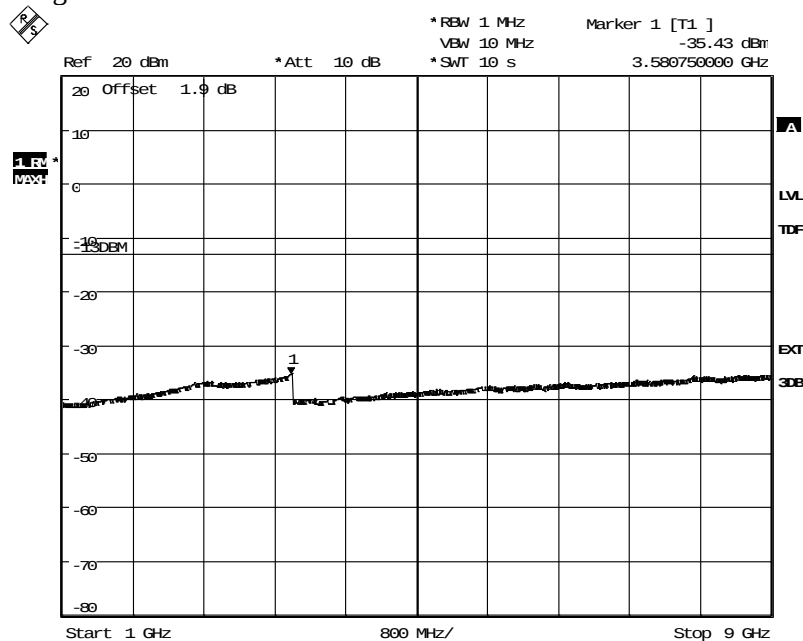
Appendix 5

Diagram 30 a:



Date: 13.FEB.2013 13:15:02

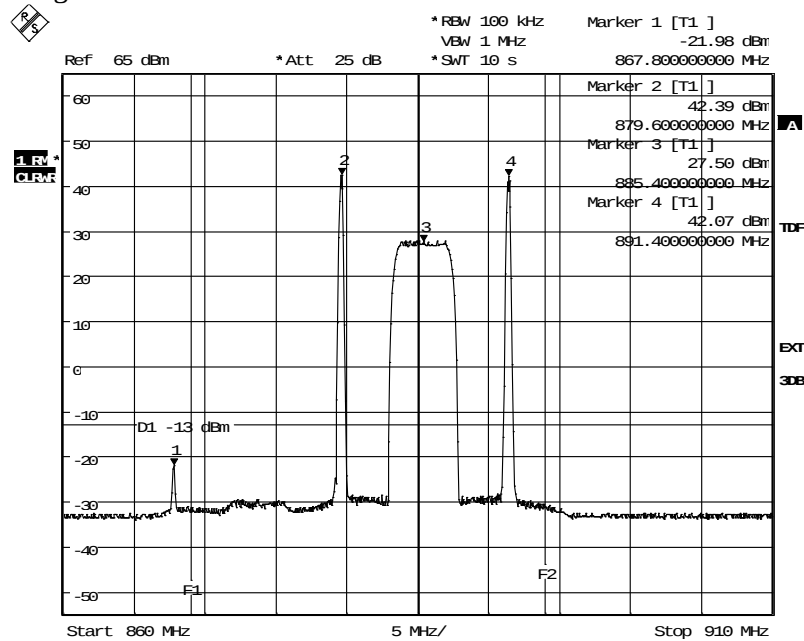
Diagram 30 b:



Date: 13.FEB.2013 13:18:12

Appendix 5

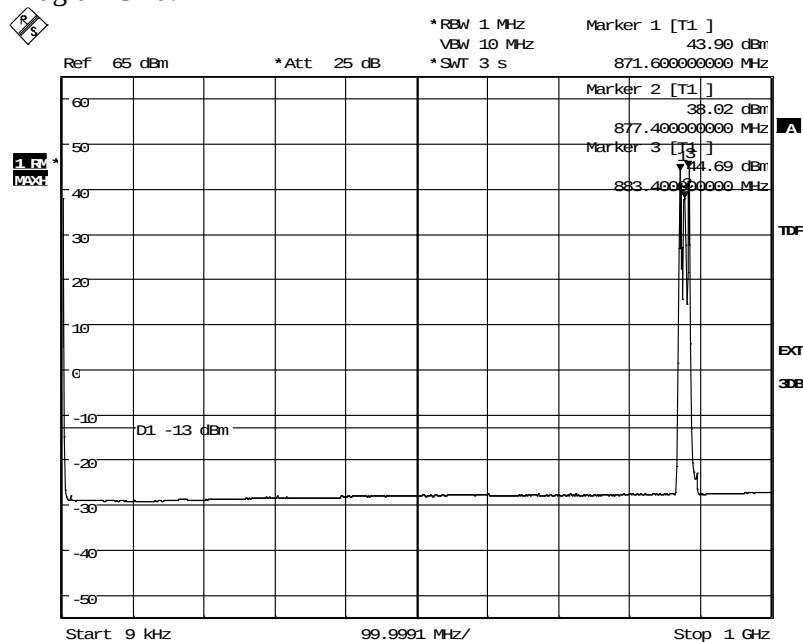
Diagram 30 c:



Date: 13.FEB.2013 13:12:16

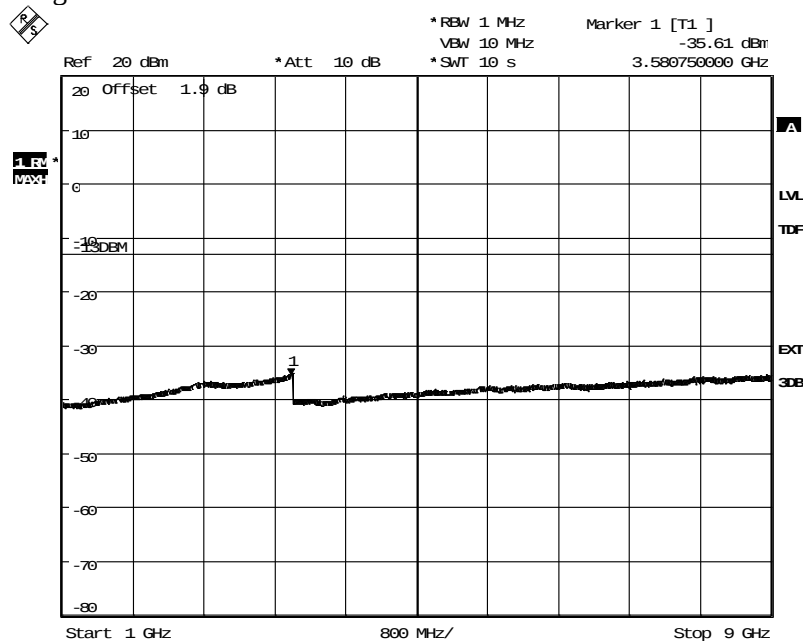
Appendix 5

Diagram 31 a:



Date: 13.FEB.2013 13:33:21

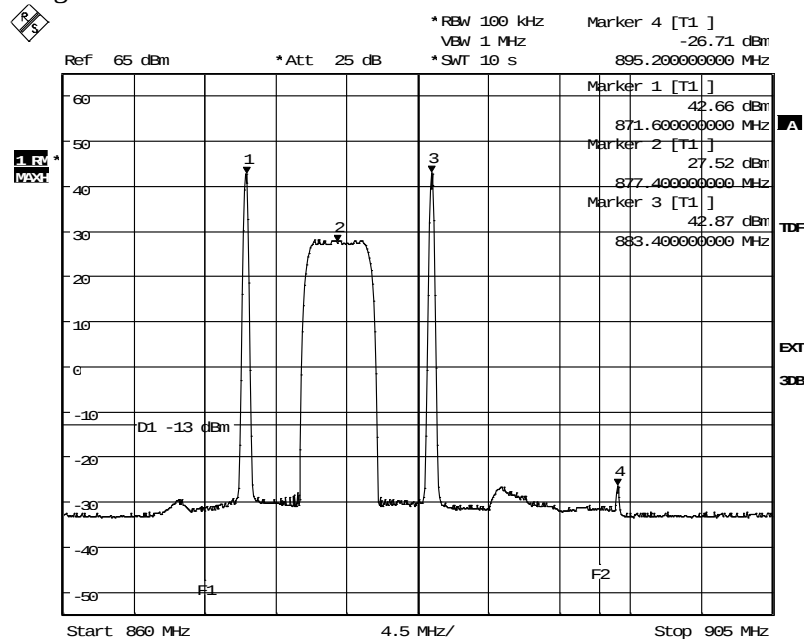
Diagram 31 b:



Date: 13.FEB.2013 13:29:32

Appendix 5

Diagram 31 c:



Date: 13.FEB.2013 13:37:00

Appendix 6

Field strength of spurious radiation measurements according to 47 CFR 2.1053 / IC RSS-132 5.5

Date	Temperature	Humidity
2013-02-04	23°C ± 3°C	39 % ± 5 %
2013-02-05	22°C ± 3°C	30 % ± 5 %
2013-02-06	23°C ± 3°C	43 % ± 5 %
2013-02-07	22°C ± 3°C	46 % ± 5 %
2013-02-08	22°C ± 3°C	35 % ± 5 %

Test set-up and procedure

The test sites are listed at FCC, Columbia with registration number: 93866. The test site complies with RSS-Gen, Industry Canada file 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 – 9 GHz. The upper frequency boundary was chosen to comprise 10x the highest fundamental TX frequency.

In the frequency range 30 MHz - 9 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

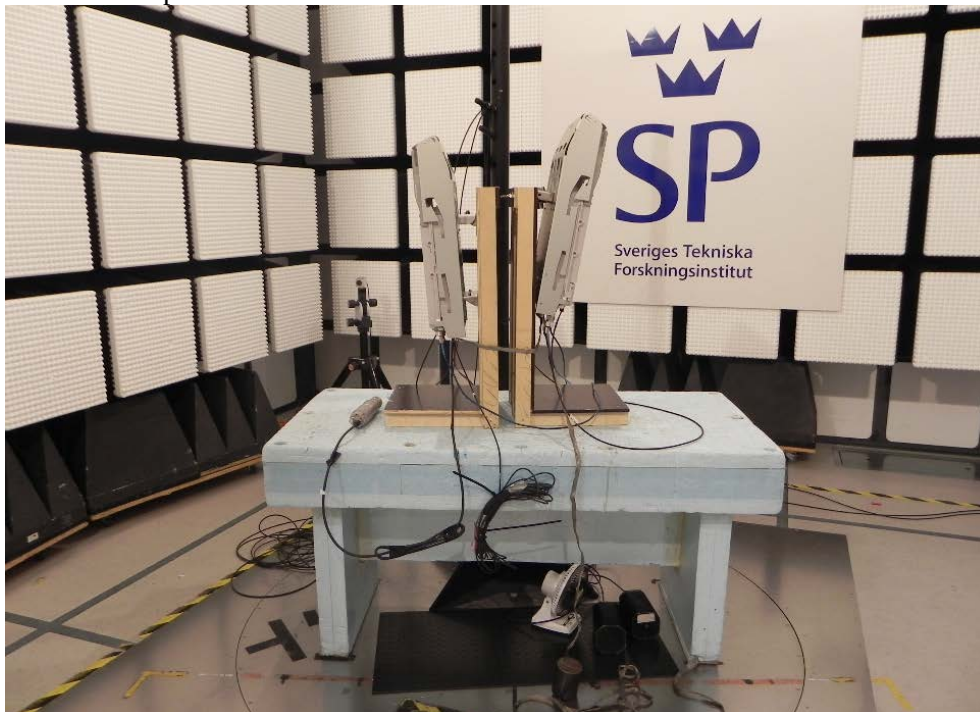
$$\gamma = 20 \log \left(\frac{4\pi D}{\lambda} \right), \gamma \text{ is the propagation loss and } D \text{ is the antenna distance.}$$

The measurement procedure was as the following:

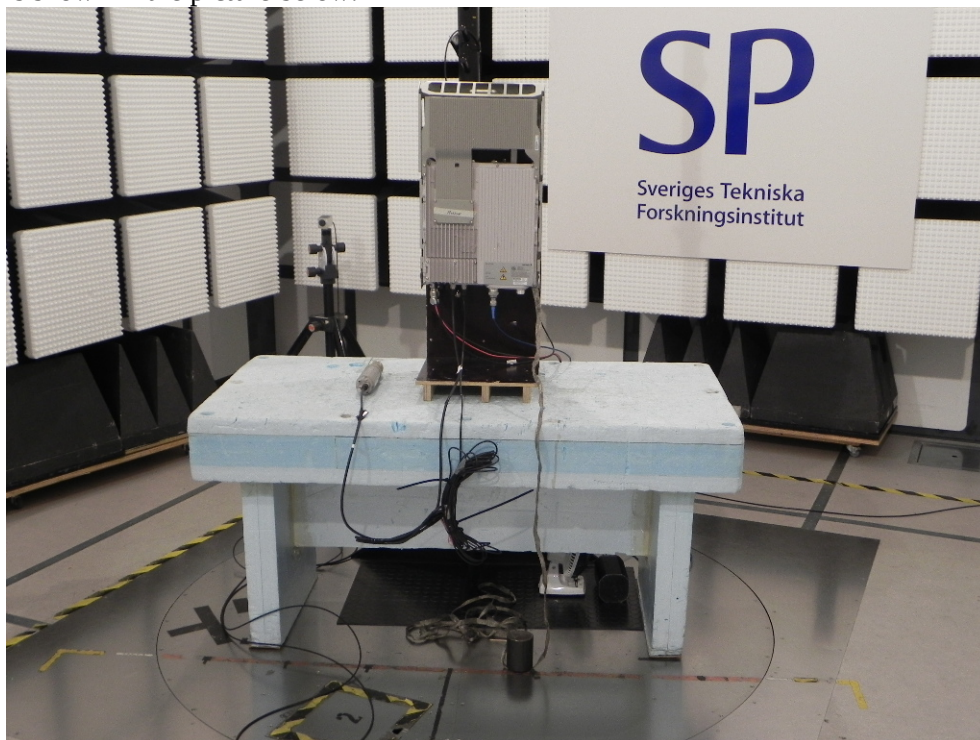
1. A pre-measurement was first performed with peak detector. The Test object was measured in eight directions and with the antenna at three heights, 1.0 m, 1.5 m and 2.0 m.
2. Spurious radiation on frequencies closer than 20 dB to the limit in the pre-measurement is scanned 0-360 degrees and the antenna 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
3. with the substitution method according to the standard.

Appendix 6

Representative test set-up for MIMO mode during the spurious radiation measurements is shown in the picture below:



Representative test set-up for conventional mode during the spurious radiation measurements is shown in the picture below:



Appendix 6

Measurement equipment

Measurement equipment	SP number
Semi anechoic chamber	504 114
R&S ESIB 26	503 885
Control computer with R&S software EMC32 version 8.52.0	503 889
Antenna Shaffner CBL 6143	504 079
EMCO Horn Antenna 3115	501 548
High pass filter	901 501
MITEQ Low Noise Amplifier	504 160
Testo 625 temperature and humidity meter	504 117

Tested frequencies

WCDMA single RAT:

B

B2

M2

T2

GSM single RAT, single carrier:

B, GMSK

GSM single RAT, multi carrier:

B2, GMSK

M2, GMSK

T2, GMSK

MSR, WCDMA + GSM:

Config 3

Config 4

See appendix 1 for all frequency settings during radiated measurements.

Appendix 6

Results

Measured worst case emission results are presented on the following pages.

Diagram 1 a-b: GSM single RAT, multi carrier B2

Diagram 2 a-b: WCDMA single RAT, MIMO mode, B2

Diagram 3 a-b: MSR, config 3

Frequency (MHz)	Spurious emission level (dBm)	
	Vertical	Horizontal
30 - 9 000	All emissions > 20 dB below limit	All emissions > 20 dB below limit

Measurement uncertainty: 3.2 dB

Remarks

The upper frequency bound for verification was chosen as 9 GHz in order to cover 10 x the maximum fundamental TX frequency.

Limits

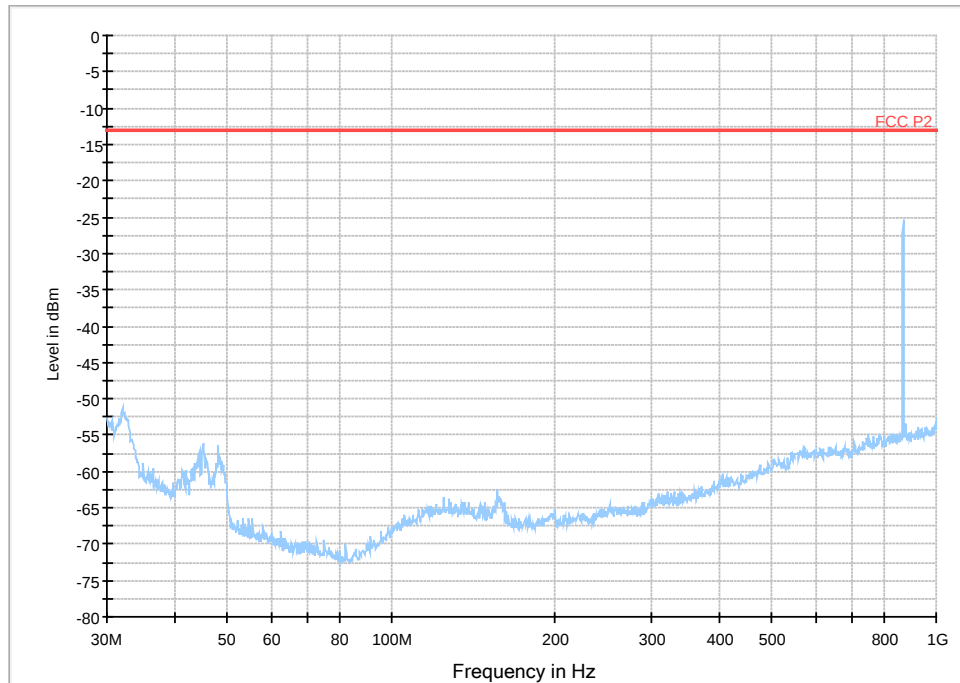
CFR 47 § 22.917 and IC RSS-132 5.5

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 any 100 kHz bandwidth.

Complies?	Yes
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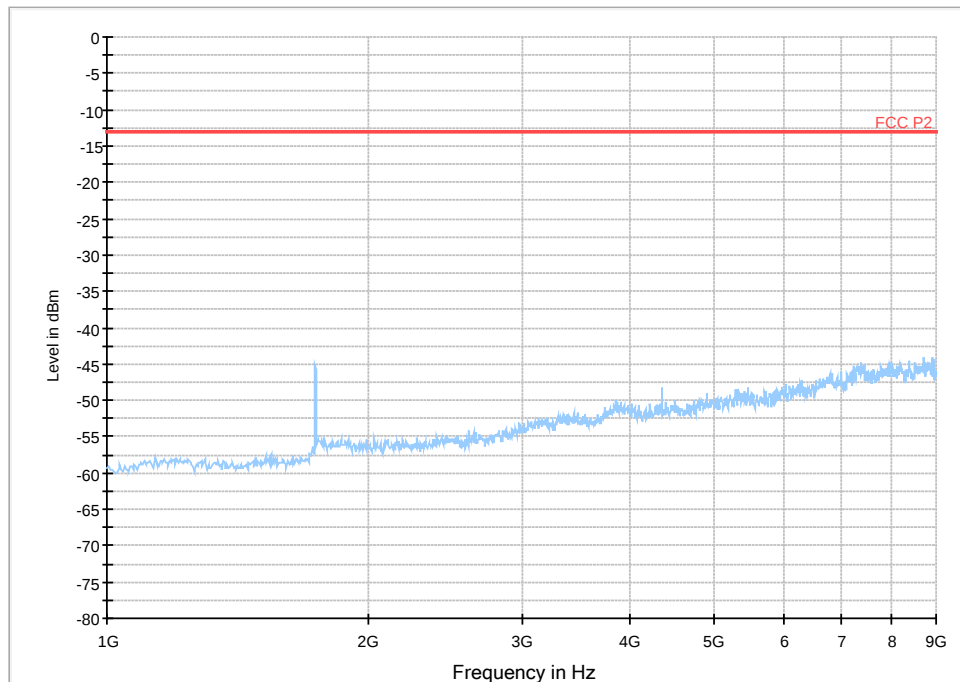
Appendix 6

Diagram 1 a:



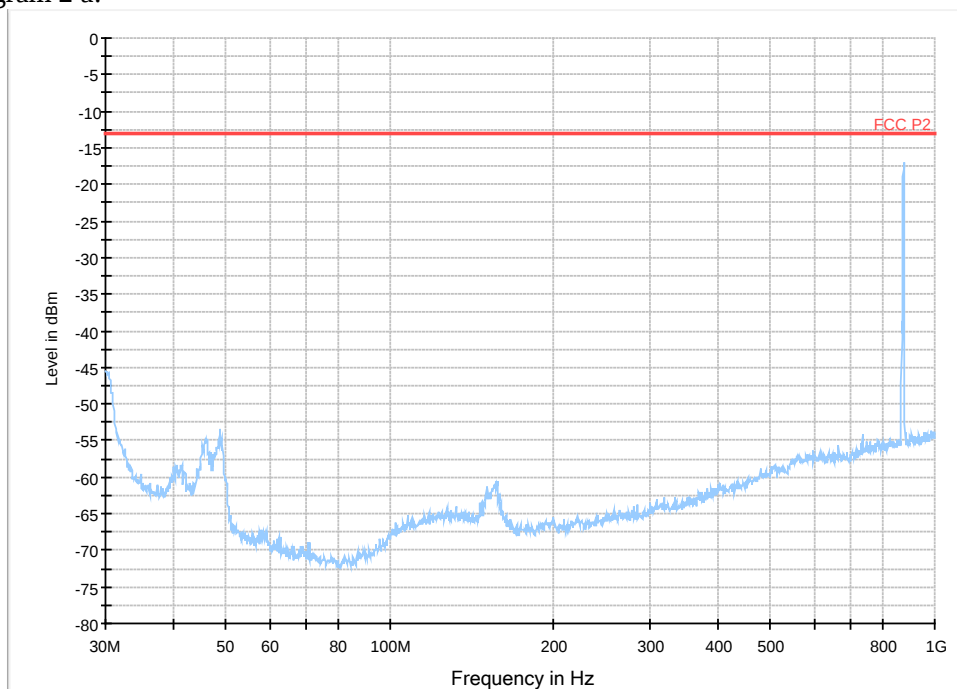
Note: The emission at 869.4 and 870.0 MHz is the carrier frequency and shall be ignored in this context.

Diagram 1 b:



Appendix 6

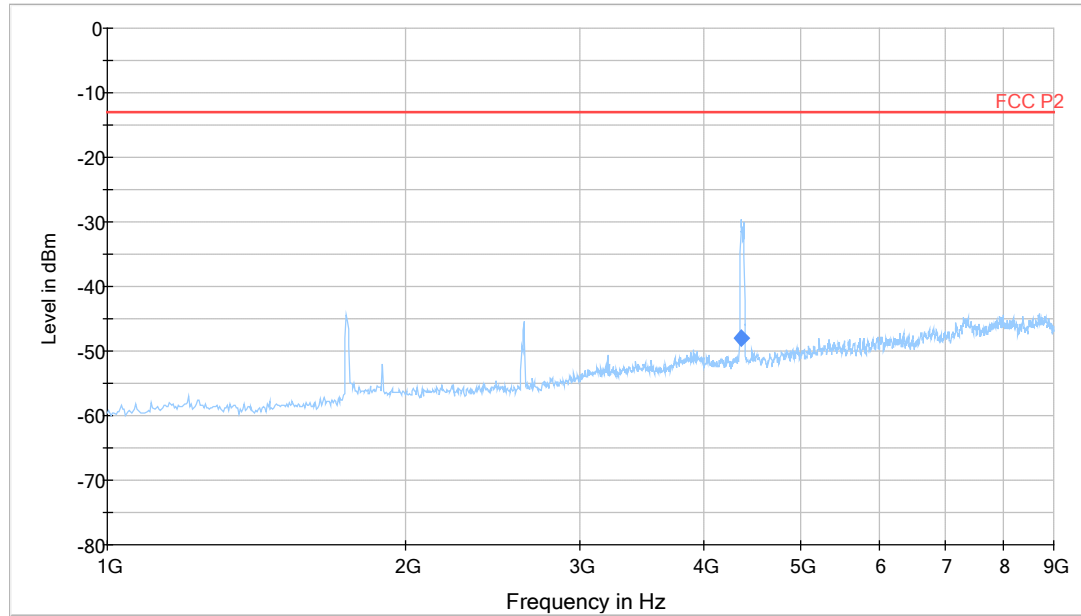
Diagram 2 a:



Note: The emission at 871.4MHz and 876.4 MHz is the carrier frequency and shall be ignored in the context.

Appendix 6

Diagram 2 b:

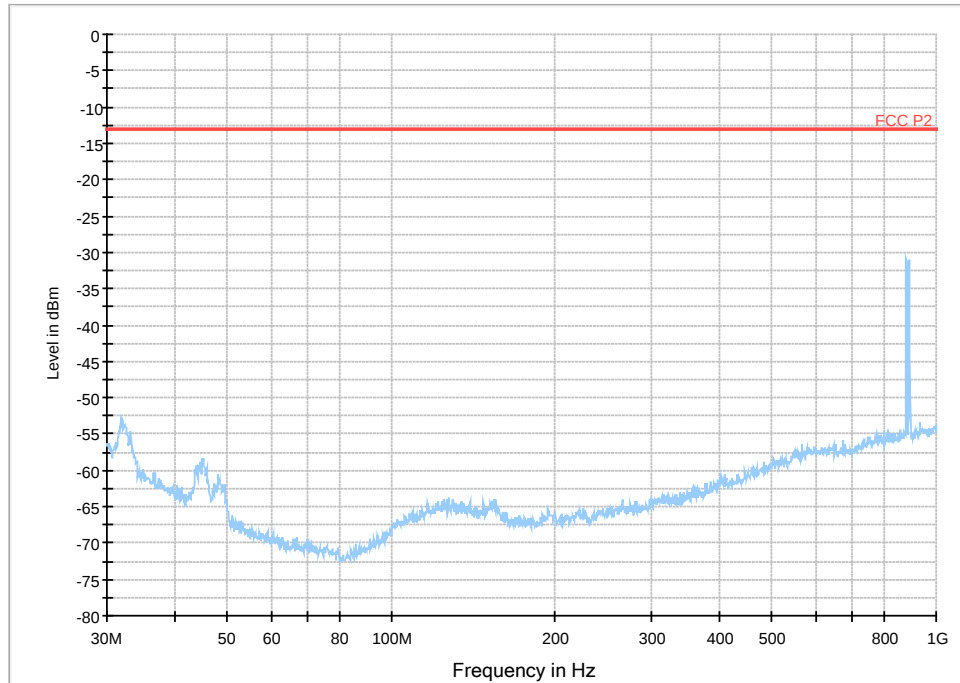


Final Result 1

Frequency (MHz)	CAverage (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBm)
4356.022044	-48.1	3000.0	1000.000	100.0	V	260.0	-103.2	35.1	-13.0

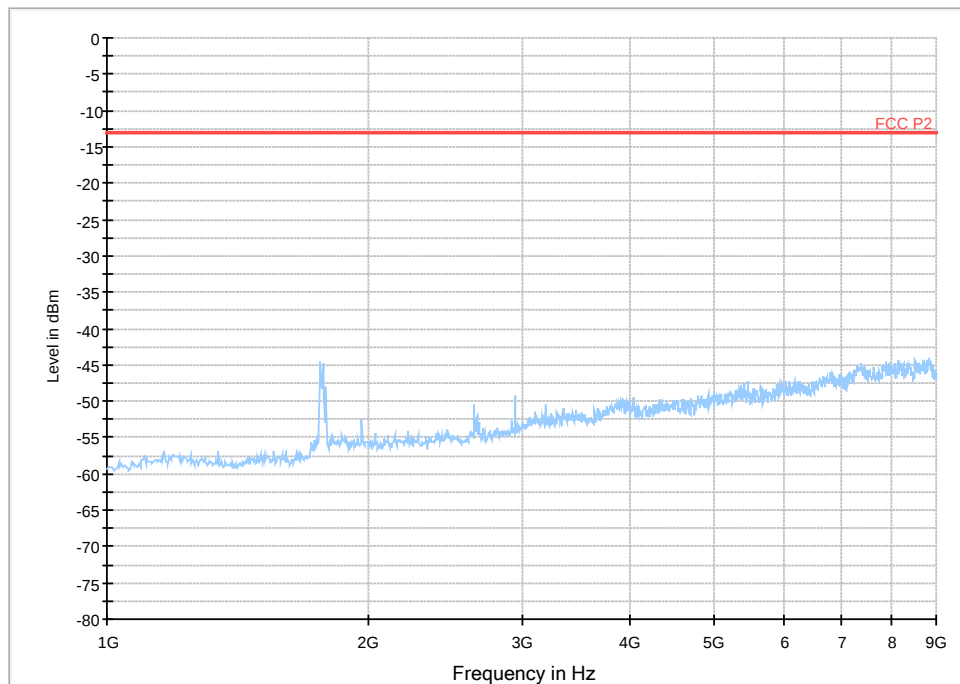
Appendix 6

Diagram 3 a:



Note: The emissions at 880.6, 892.0 and 893.6 MHz and are the carrier frequencies and shall be ignored in this context.

Diagram 3 b:



Appendix 7

External photos

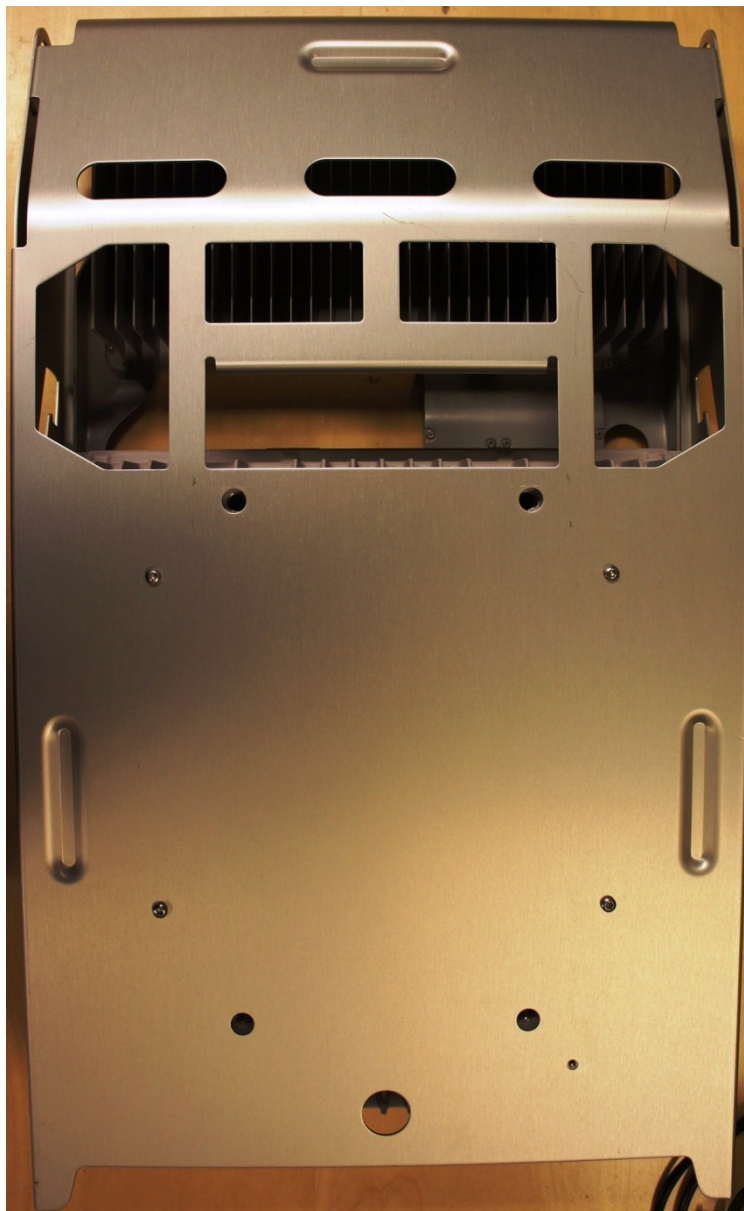
Front side:



FCC ID: TA8AKRC11870-3
IC: 287AB-AS118703
IC MODEL NO: AS118703

Appendix 7

Rear side



Appendix 7

Left side



Right side



Appendix 7

Top side



Bottom side with connections

