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REPORT

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Date	Reference	Page
2006-12-13	F623842-F22	1 (1)

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Permissible change measurements on GSM Base station Transceiver unit with FCC ID: B5KDKRC1311005-2 in the RBS 2206V2 cabinet

(7 appendices)

Test object

Transceiver Unit dTRU-8 Edge, KRC 131 1005/2, R4A
See appendix 1 for general information, appendix 6 for hardware list and appendix 7 for photos of the EUT.

Summary

Standard	Compliant	Appendix	Remarks
FCC CFR 47			
2.1046 RF Power output	Yes	2	
2.1049 Band Edge	Yes	3	Note 1
2.1051 Spurious emission at antenna	Yes	4	
2.1053 Field strength of spurious radiation	Yes	5	

Note 1: The maximum output power with GMSK and 8-PSK modulation that can be used on the channels adjacent to the frequency band edges is 38.3 dBm in order to comply.

SP Swedish National Testing and Research Institute
Electronics - EMC

Jan Welinder
Technical Manager

Jonas Bremholt
Technical Officer

FCC ID: B5KDKRC1311005-2 Appendix 1

Description - Equipment Under Test (EUT)

Equipment: GSM Base station transceiver 800 MHz

Tx Frequency range: 869.2-893.8 MHz

Modulations: GMSK and 8-PSK

Maximum output power(average):

	GMSK	8-PSK
Uncombined:	46.3 dBm	43.0 dBm
Combined:	43.0 dBm	39.7 dBm
Combined+TCC:	49.0 dBm	45.7 dBm

Nominal power voltage: 24 V DC

Tested Channels

Radiated measurements:

dTRU	ARFCN	Frequency	Modulation	Configuration
No 1	145	872.6 MHz	8-PSK	With internal combiner
	163	876.2 MHz	GMSK	With internal combiner
No 2	180	879.6 MHz	8-PSK	With internal combiner
	198	883.2. MHz	GMSK	With internal combiner
No 3	128	869.2 MHz	8-PSK	With internal combiner+TCC
No 4	251	893.8 MHz	GMSK	With internal combiner+TCC
No 5	215	886.6 MHz	8-PSK	Without internal combiner
	230	889.6 MHz	GMSK	Without internal combiner

The radiated spurious emission measurements were done with the three RF configurations listed above at the same time to simulate worst case.

The radiated measurements were performed with the EUT installed in a RBS 2206V2 powered with -48 VDC which was used as a worst case configuration.

Conducted measurements:

ARFCN	Frequency	ARFCN	Frequency
128	869.2 MHz	226	888.8 MHz
129	869.4 MHz	250	893.6 MHz
153	874.2 MHz	251	893.8 MHz
190	881.6 MHz		

All RF conducted measurements were performed with the EUT installed in a RBS 2206V2 powered with 24 VDC power (the list of the RBS hardware is shown in appendix 6). The measurements were done at the output connector of CDU-K 8 (BFL 119 443/1 rev. R1A) with serial number TR45148522. The dTRU with serial number AE53038583 was used for the measurements. The measurement was performed with configurations that represents worst case scenario.

Manufacturer's representative

Per Helmersson, Ericsson AB

Purpose of test

The purpose of the tests is to verify compliance to the performance characteristics specified in FCC CFR47.

References

Measurements were done according to relevant parts of the following standards:
ANSI/TIA/EIA-603-C-2004
J-STD007A Vol 1
ANSI/TIA/EIA 136-280-D-2002

Reservation

The test results in this report apply only to the particular Equipment Under Test (EUT) as declared in the report.

Delivery of test object

The test object was delivered: 2006-12-01

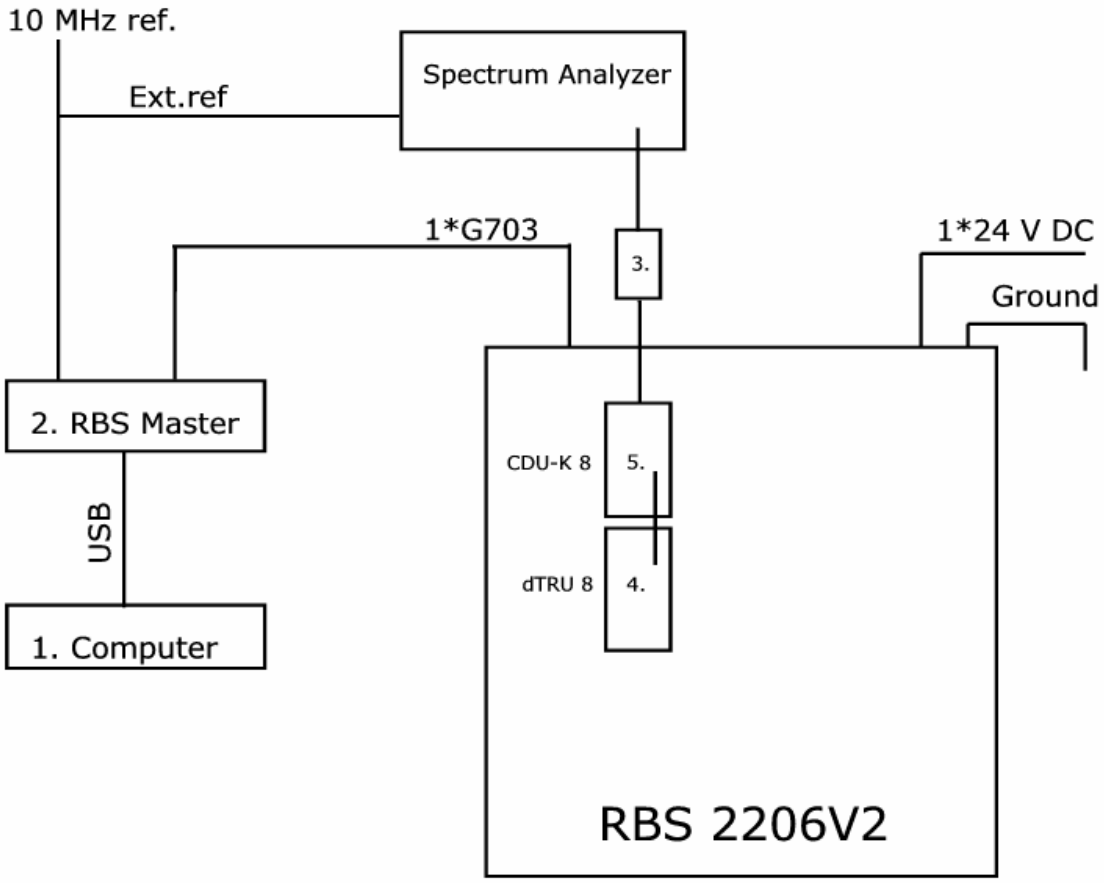
Test engineers

Nina Johansson and Jonas Bremholt

Test witnesses

Lars Hagbjörk and Dan Westberg, Ericsson AB

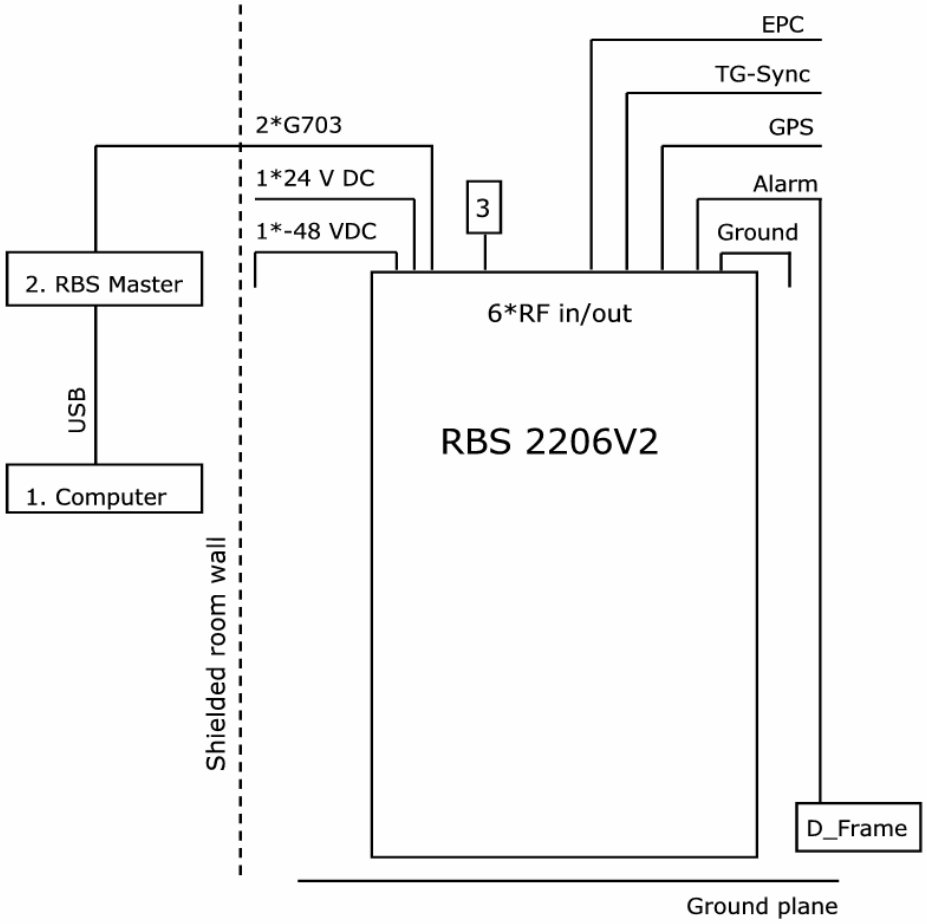
Test set-up, conducted measurements



1. Computer with software RBSMMI ver. R10A06
2. Ericsson RBS Master 2 LPY 107 1007/1 R1F/A software ver. R6A06
3. Attenuator

Interfaces:	**Type of port:**
24 VDC	DC power
Antenna: Coaxial cable (50 ohm)	Antenna
G703: T1, shielded multi-wire (120 ohm)	Telecom

Test set-up, radiated measurements



1. Computers, with software RBSMMI ver. R10A06
2. Ericsson RBS Master 2 LPY 107 1007/1 R1F/A software ver. R6A06
3. Dummy loads (50 ohm)

Interfaces:	**Type of port:**
-48 VDC	DC power
Antenna: Coaxial cable (50 ohm)	Antenna
G703: T1, shielded multi-wire RJ-45 connector (120 ohm)	Telecom
TG-sync: Shielded multi-wire, unterminated	Signal
Alarm: Unshielded 4 wire, terminated in a distribution frame	Signal
GPS: Shielded multi-wire, unterminated	Signal
EPC: Shielded multi-wire, unterminated	Signal

RF Power output measurements according to 47CFR 2.1046

Date	Temperature	Humidity
2006-12-07	22 °C ± 3 °C	28 % ± 5 %

Test set-up and procedure

Measurements were made at CDU-K 8 output connector. The output was connected to a Peak power analyser via a 50 ohm attenuator. The transmitter was modulated with pseudorandom data and with maximum power in all the time slots during the measurements.

Measurement equipment	Calibration Due	SP number
Boonton RF Peak power meter/analyzer	2007-02	503 144
Boonton Power sensor 56518-S/4	2007-02	503 145
Multimeter Fluke 87	2007-11	502 190
Testo 610, Temperature and humidity meter	2006-12	502 658

Measurement uncertainty: 0.5 dB

Results

Modulation: **GMSK**

dTRU, output 1+2, with internal combiner plus TCC.
Rated output power level after CDU-G (maximum): 49.0 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	49.7/ 48.9	49.9/ 49.1	49.5/ 48.8

dTRU, output 1, without internal combiner:
Rated output power level after CDU-G (maximum): 46.3 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	47.1/ 46.2	47.3/ 46.4	46.9/ 46.0

dTRU, output 2, without internal combiner:
Rated output power level after CDU-G (maximum): 46.3 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	46.9/ 46.1	47.3/ 46.4	46.9/ 46.0

dTRU, output 1, with internal combiner:
Rated output power level after CDU-G (maximum): 43.0 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	43.5/ 43.0	43.7/ 43.1	43.4/ 42.8

dTRU, output 2, with internal combiner:
Rated output power level after CDU-G (maximum): 43.0 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	43.6/ 43.0	43.8/ 43.3	43.5/ 43.0

Modulation: **8-PSK**

dTRU, output 1+2, with internal combiner plus TCC:
Rated output power level after CDU-G (maximum): 45.7 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	49.6/ 45.6	49.9/ 45.9	49.5/ 45.6

dTRU, output 1, without internal combiner:
Rated output power level after CDU-G (maximum): 43.0 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	47.0/ 43.0	47.2/ 43.2	46.9/ 42.9

dTRU, output 2, without internal combiner:
Rated output power level after CDU-G (maximum): 43.0 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	46.9/ 43.0	47.2/ 43.3	46.8/ 42.9

dTRU, output 1, with internal combiner:
Rated output power level after CDU-G (maximum): 39.7 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	43.4/ 39.6	43.7/ 39.8	43.3/ 39.6

dTRU, output 2, with internal combiner:
Rated output power level after CDU-G (maximum): 39.7 dBm

Test conditions		Transmitter power (dBm) Peak/ Average		
		Channel 128	Channel 190	Channel 251
T_{nom} 22 °C	V_{nom} 24 V DC	43.6/ 39.7	43.8/ 40.0	43.5/ 39.7

Limit

According to CFR § 22 there are no conducted limits at the antenna connector.

CFR § 22.913: The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts (57 dBm).

GMSK: The measured output power shall be within ± 2dB of the rated output power (J-STD007A Vol 1)
8-PSK: The measured output power shall be within +1 to -3 dB of the rated output power (ANSI/TIA/EIA 136-280-B)

Complies?	Yes

Band edge measurements according to 47CFR 2.1049

Date	Temperature	Humidity
2006-12-07	22 °C ± 3 °C	28 % ± 5 %
2006-12-10	23 °C ± 3 °C	29 % ± 5 %

Test set-up and procedure

The measurements were made per definition in 22.917. The measurements were made at CDU-G8 output connector. The output was connected to a spectrum analyser with the RMS detector activated. A resolution bandwidth of 3 kHz (1% of OBW) was used up to 300 kHz away from the band edges. A resolution bandwidth of 50 kHz was used up to 5 MHz from the band edges. As the FCC rules specify a RBW of 100 kHz for measurements of emissions >1 MHz away from the band edges, the limit was adjusted with 3 dB to –16 dBm to compensate for the reduced measurement bandwidth.
The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements. The transmitter was modulated with pseudorandom data during the measurements.

Measurement equipment	Calibration Due	SP number
R&S FSIQ	2007-08	503 738
Testo 610, Temperature and humidity meter	2006-12	502 658

Measurement uncertainty: 3.7 dB

Results

The results are shown in appendix 5.1

GMSK

dTRU Output 1, without internal combiner

Diagram 1 Ch 128 (869.2 MHz) Band edge 38.3 dBm output power
Diagram 2 Ch 251 (893.8 MHz) Band edge 38.3 dBm output power

dTRU Output 2, without internal combiner

Diagram 3 Ch 128 (869.2 MHz) Band edge 38.3 dBm output power
Diagram 4 Ch 251 (893.8 MHz) Band edge 38.3 dBm output power

TCC), dTRU Output 1+2 (TX1+TX2)

Diagram 5 Ch 129 (869.4 MHz) Band edge 49.0 dBm output power
Diagram 6 Ch 250 (893.6 MHz) Band edge 49.0 dBm output power

8-PSK

dTRU Output 1, without internal combiner

Diagram 7 Ch 128 (869.2 MHz) Band edge 38.3 dBm output power
Diagram 8 Ch 251 (893.8 MHz) Band edge 38.3 dBm output power

dTRU Output 2, without internal combiner

Diagram 9 Ch 128 (869.2 MHz) Band edge 38.3 dBm output power
Diagram 10 Ch 251 (893.8 MHz) Band edge 38.3 dBm output power

TCC), dTRU Output 1+2 (TX1+TX2)

Diagram 11 Ch 129 (869.4 MHz) Band edge 45.7 dBm output power
Diagram 12 Ch 250 (893.6 MHz) Band edge 45.7 dBm output power

Remarks

The maximum output power with GMSK and 8-PSK modulation that can be used on the channels adjacent to the frequency band edges are 38.3 dBm in order to comply.

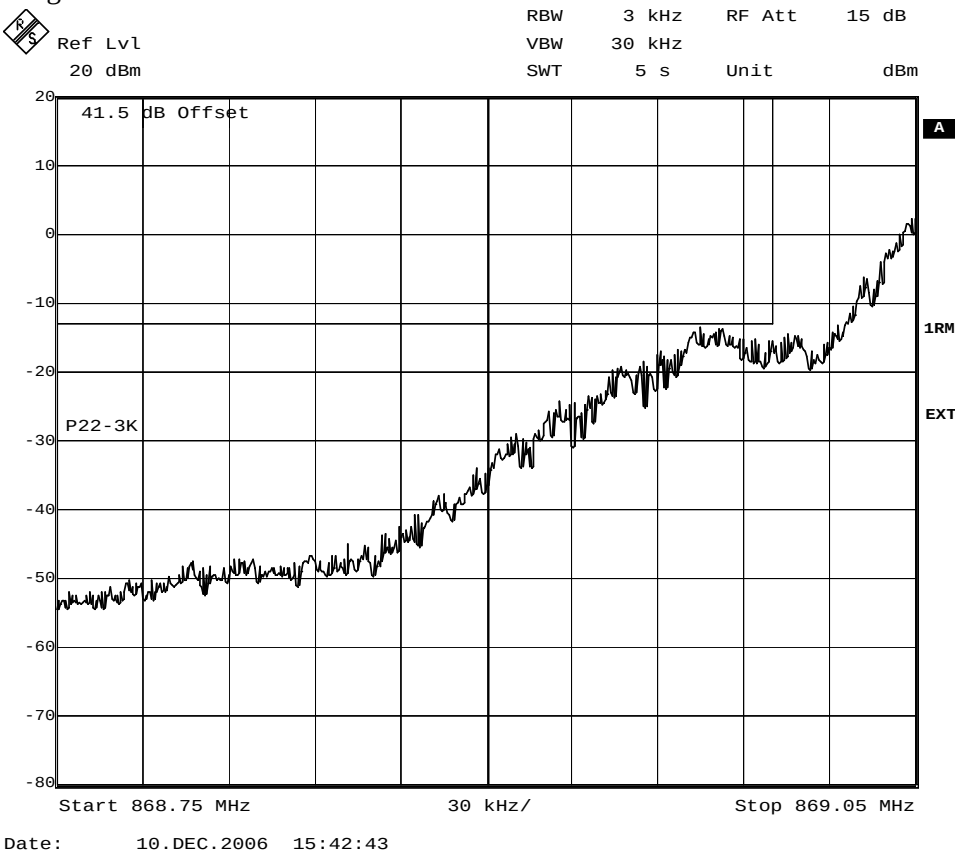
Limits

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least 43 + 10 log P dB.

Complies?	Yes

FCC ID: B5KDKRC1311005-2 Appendix 3.1

Diagram 1



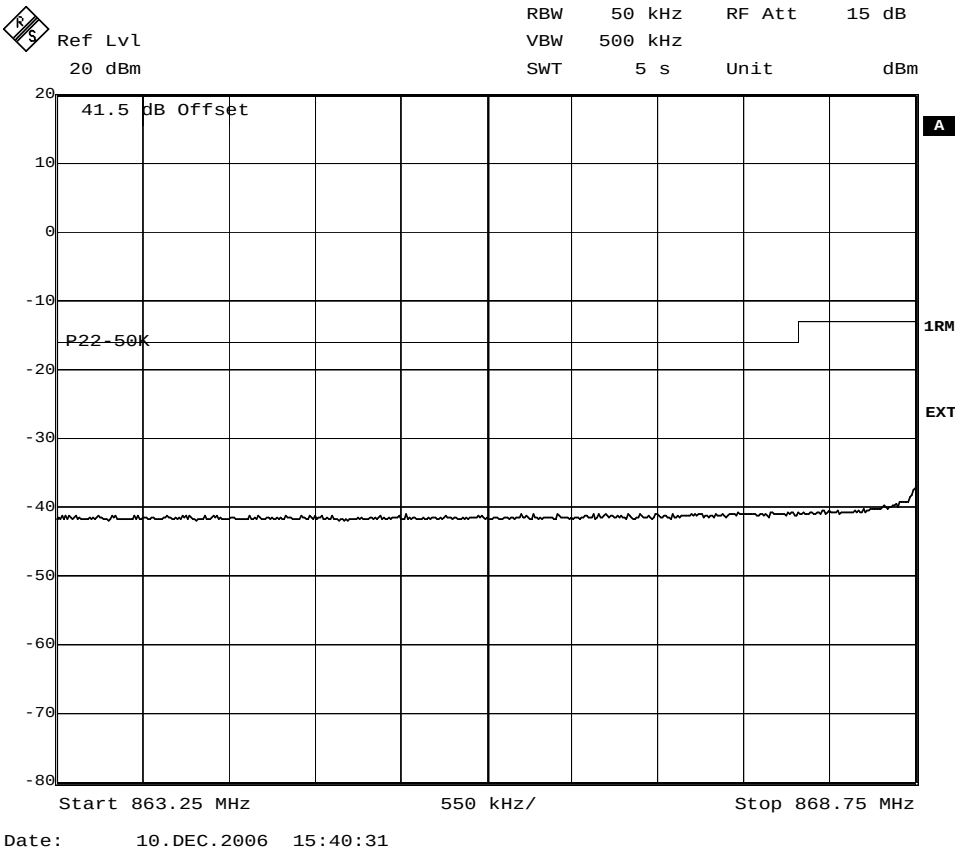
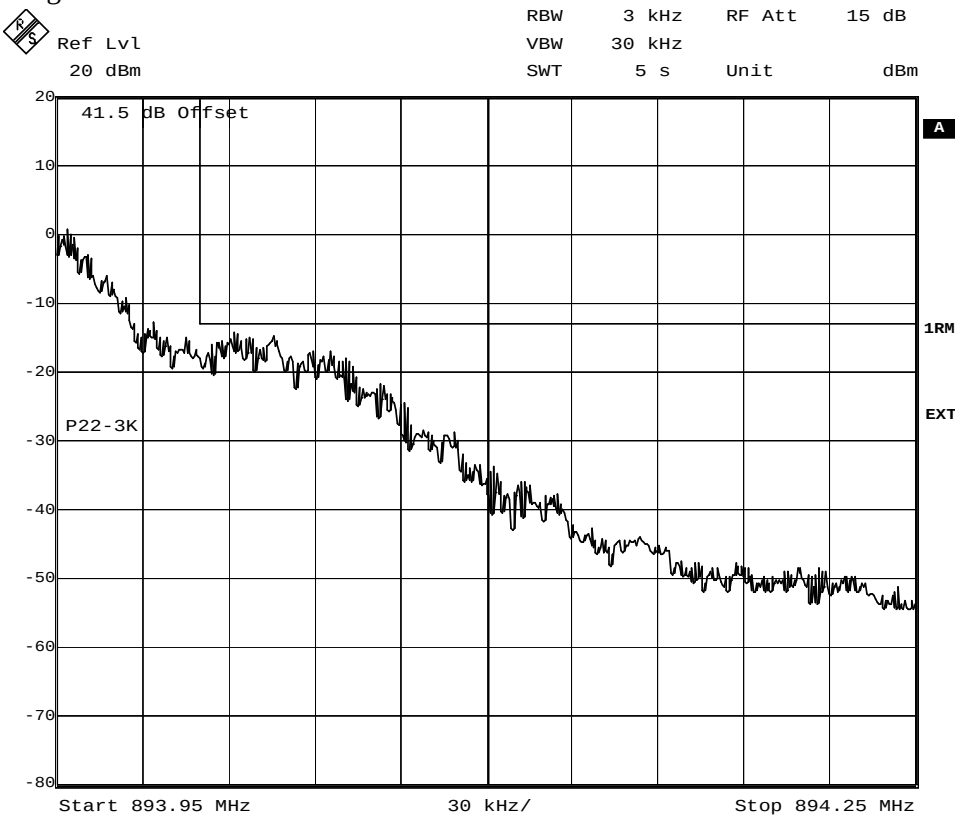


Diagram 2


Ref Lvl
20 dBm
RBW 3 kHz
VBW 30 kHz
SWT 5 s
RF Att 15 dB
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-3K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 893.95 MHz
30 kHz/
Stop 894.25 MHz
Date: 10.DEC.2006 15:33:43

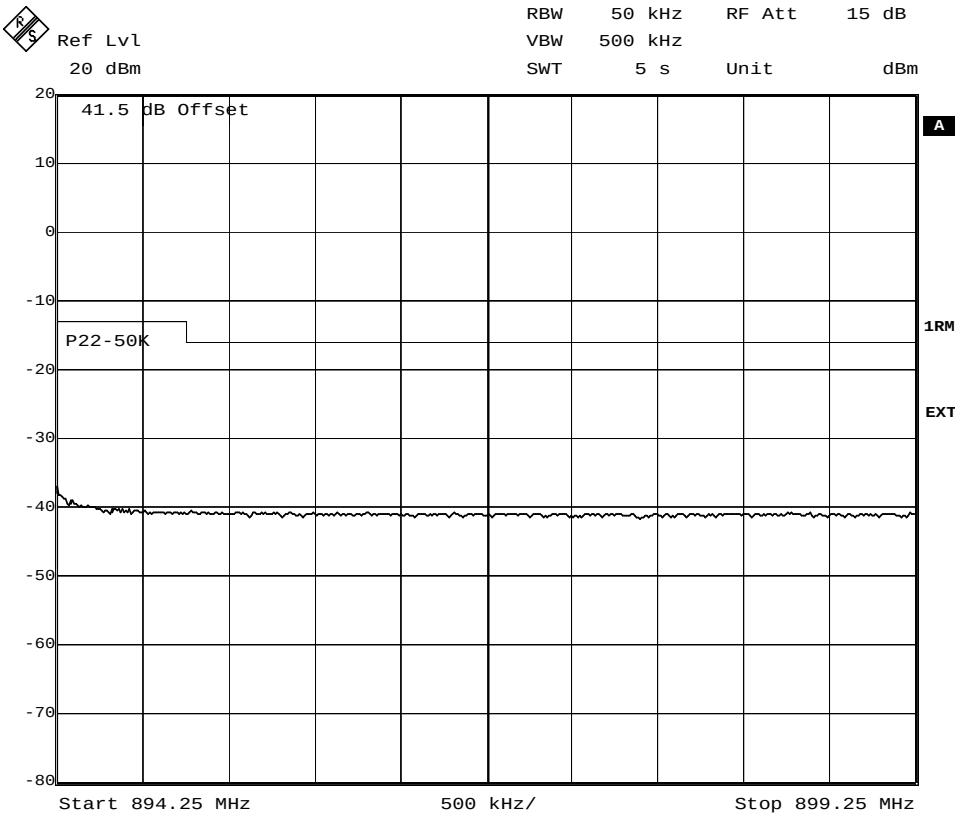
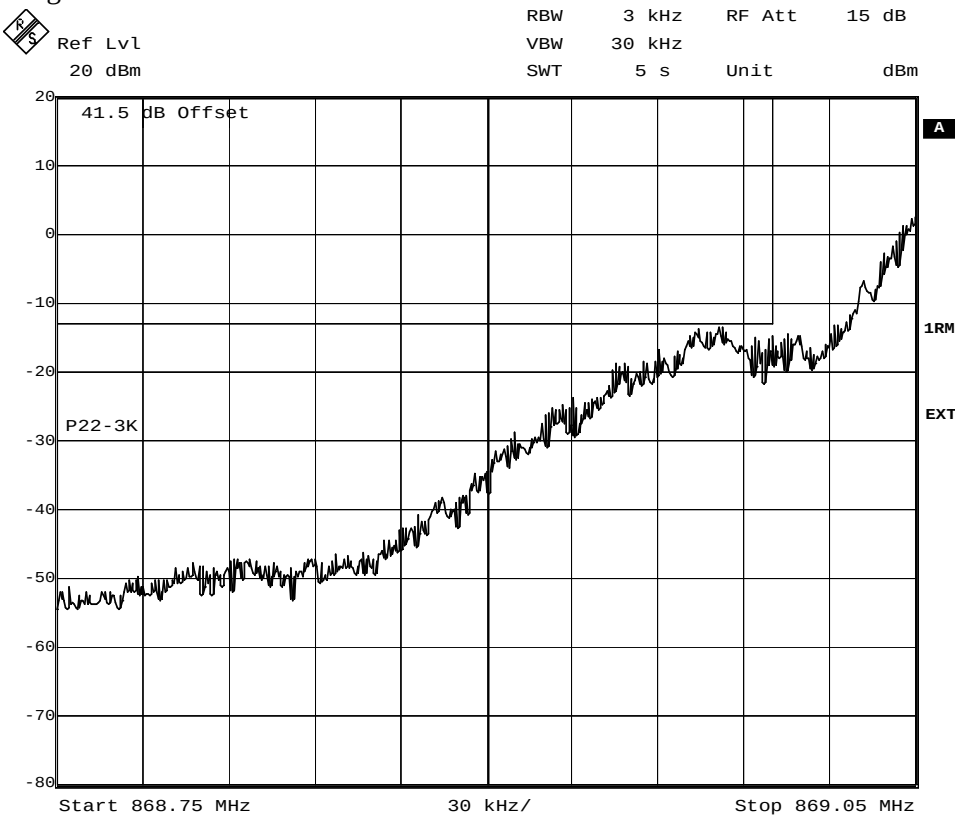

Ref Lvl
20 dBm
RBW 50 kHz
VBW 500 kHz
SWT 5 s
RF Att 15 dB
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-50K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 894.25 MHz
500 kHz/
Stop 899.25 MHz
Date: 10.DEC.2006 15:34:12

Diagram 3


Ref Lvl
20 dBm
RBW 3 kHz
VBW 30 kHz
SWT 5 s
RF Att 15 dB
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-3K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 868.75 MHz
30 kHz/
Stop 869.05 MHz
Date: 10.DEC.2006 15:46:44

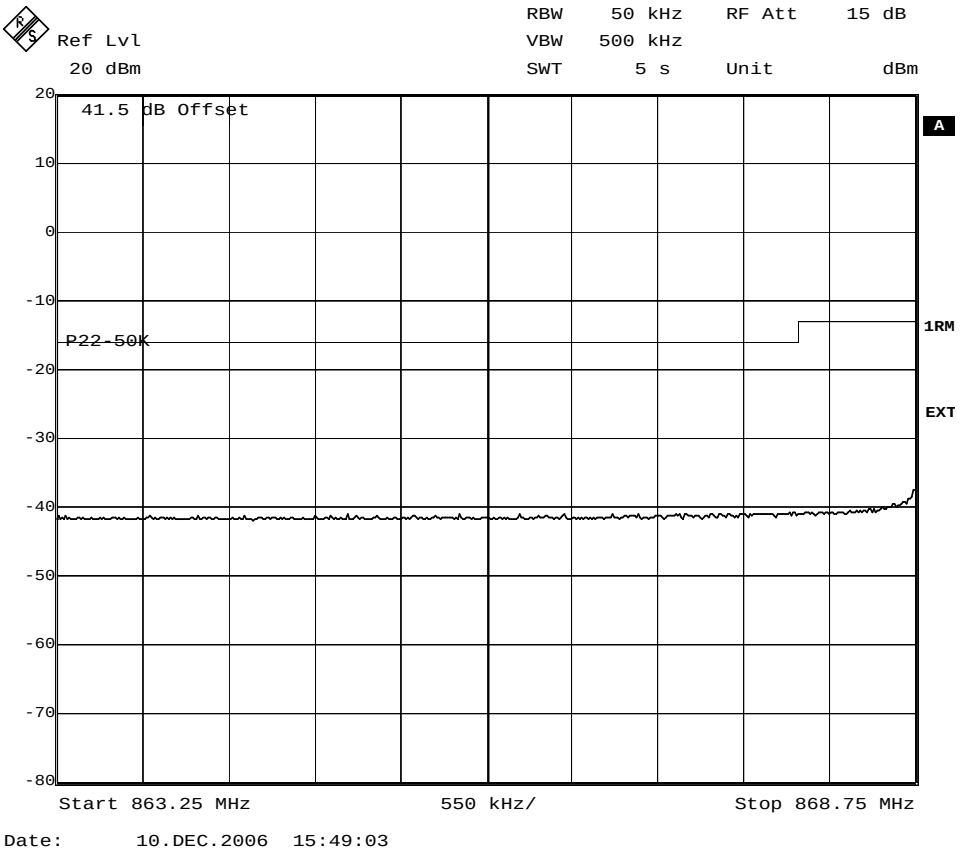
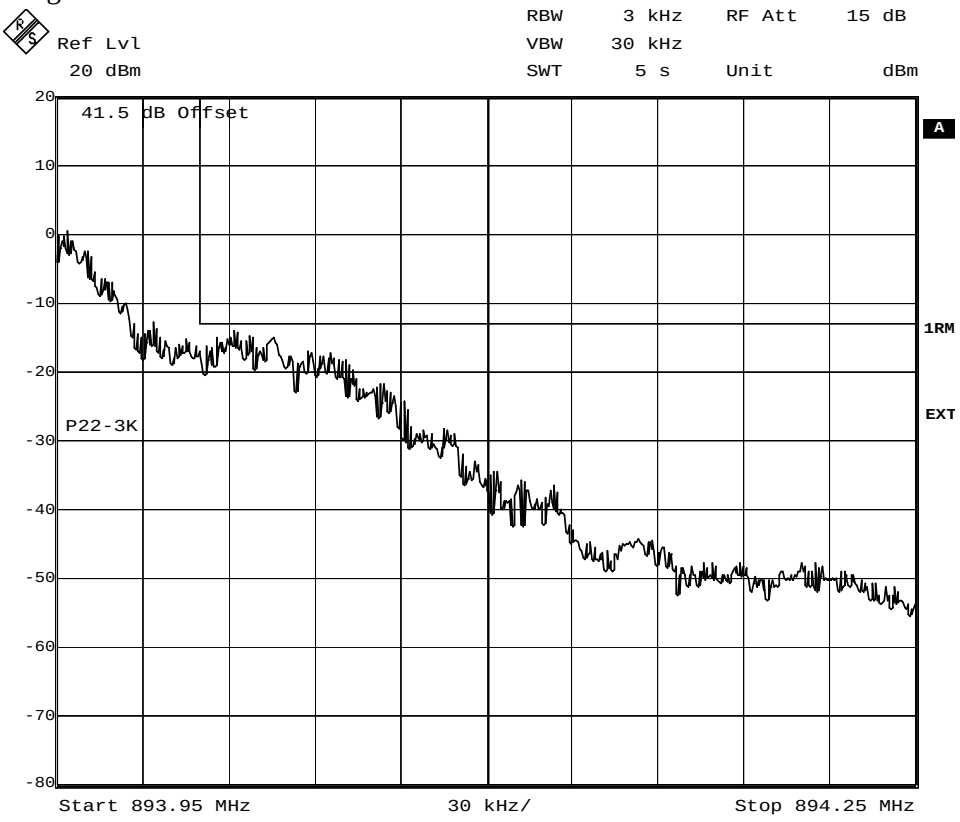

Ref Lvl
20 dBm
RBW 50 kHz
VBW 500 kHz
SWT 5 s
RF Att 15 dB
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-50K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 863.25 MHz
550 kHz/
Stop 868.75 MHz
Date: 10.DEC.2006 15:49:03

Diagram 4


RBW 3 kHz
RF Att 15 dB
VBW 30 kHz
Ref Lvl
20 dBm
SWT 5 s
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-3K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 893.95 MHz
30 kHz/
Stop 894.25 MHz
Date: 10.DEC.2006 15:50:19

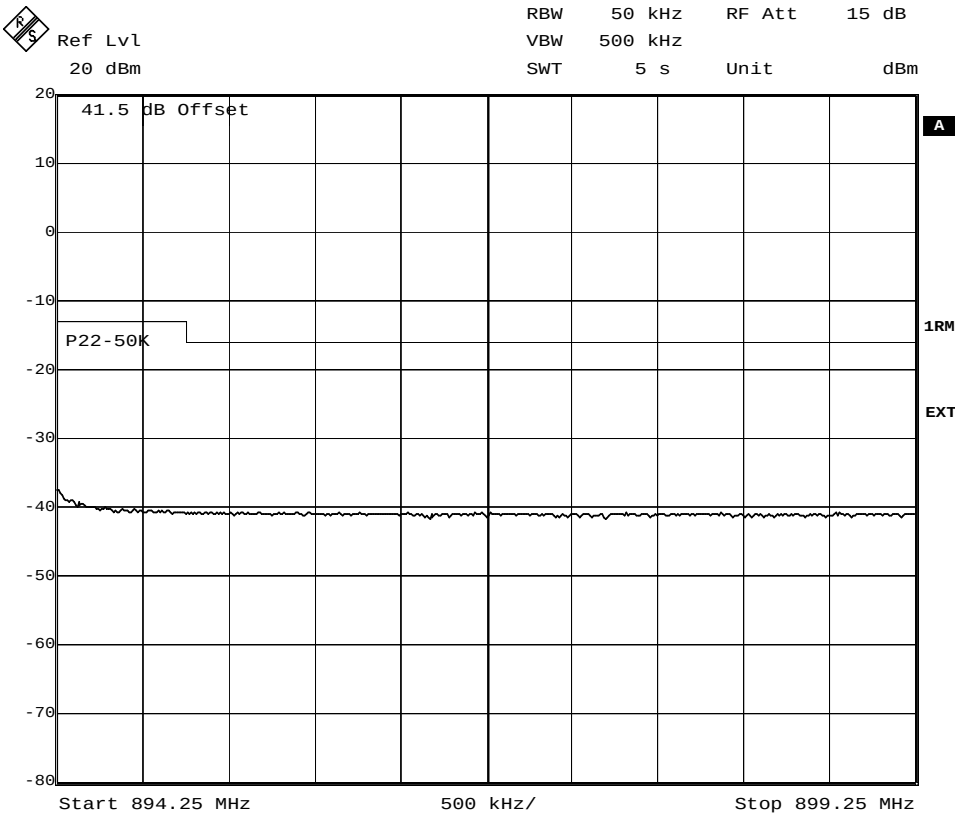
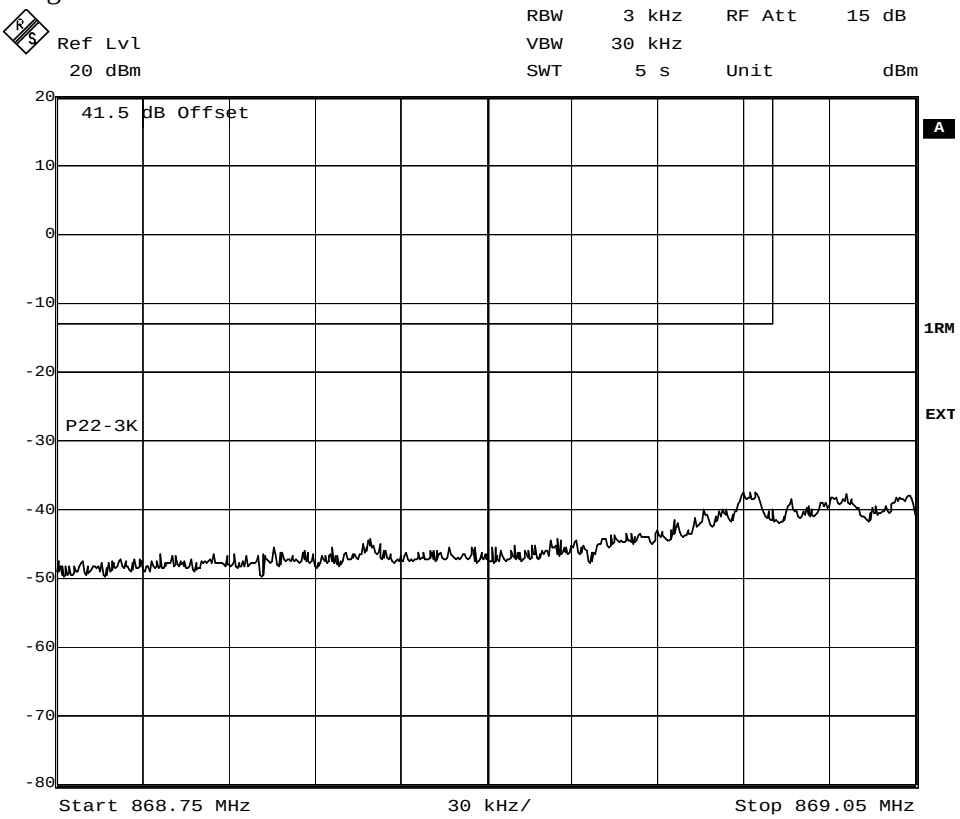

RBW 50 kHz
RF Att 15 dB
VBW 500 kHz
Ref Lvl
20 dBm
SWT 5 s
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-50K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 894.25 MHz
500 kHz/
Stop 899.25 MHz
Date: 10.DEC.2006 15:51:07

Diagram 5



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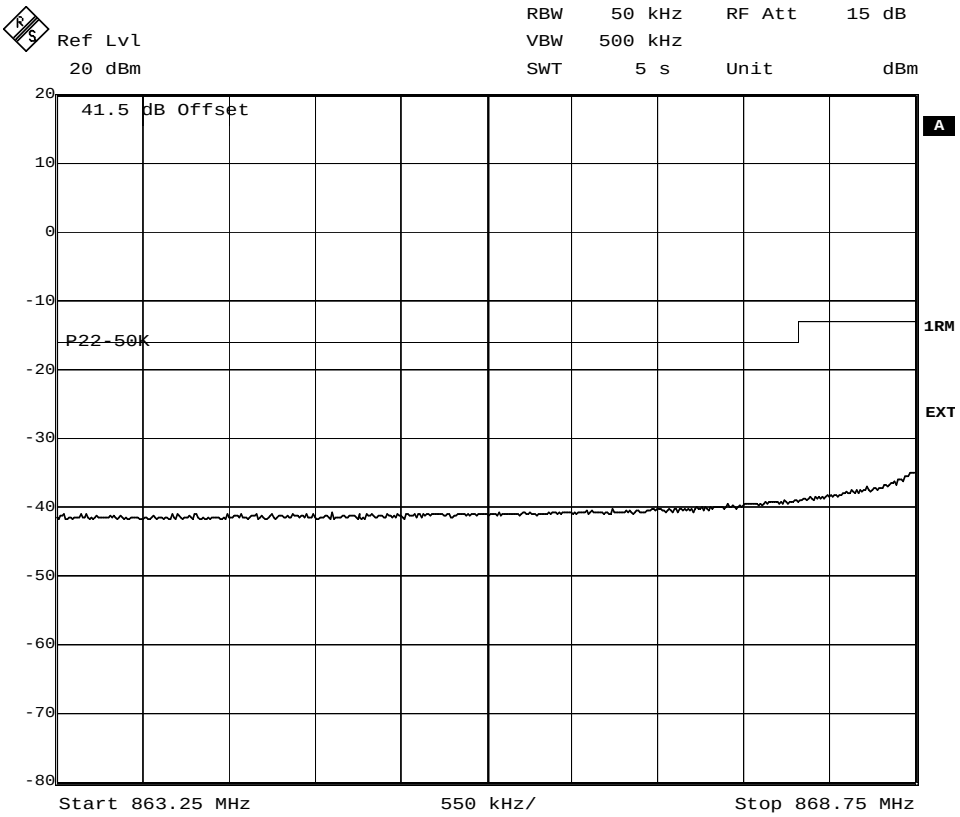

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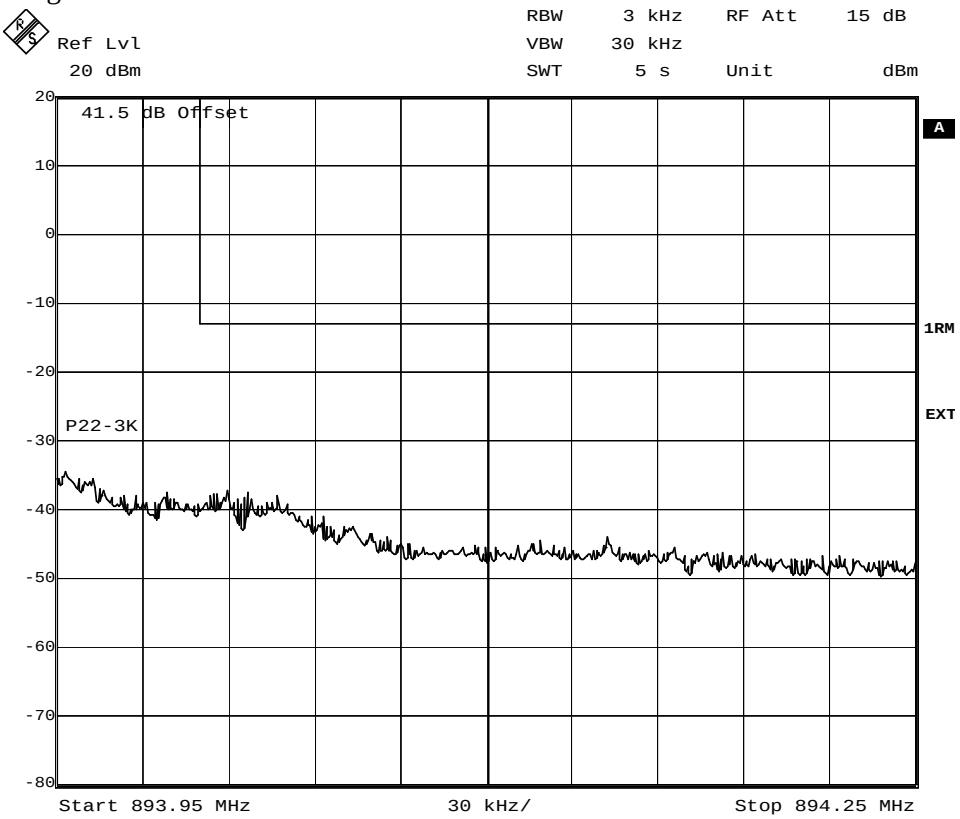
Diagram 6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RF Att 15 dB
VBW 30 kHz
Ref Lvl
20 dBm
SWT 5 s
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-3K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 893.95 MHz
30 kHz/
Stop 894.25 MHz
Date: 7.DEC.2006 15:53:09

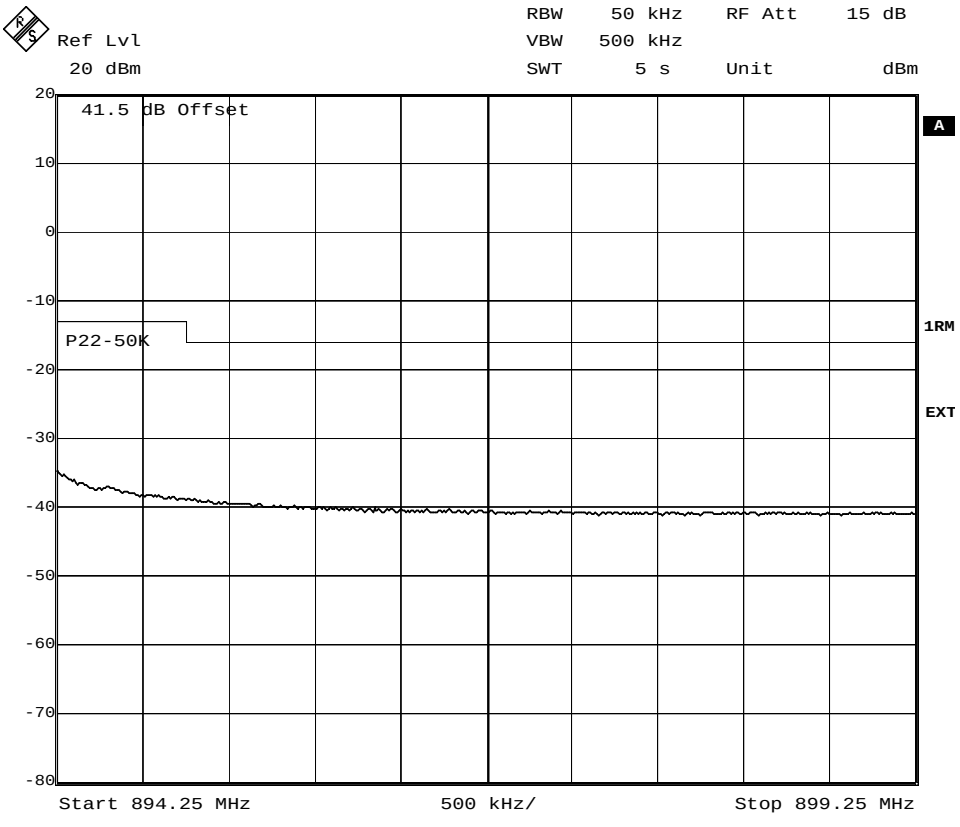
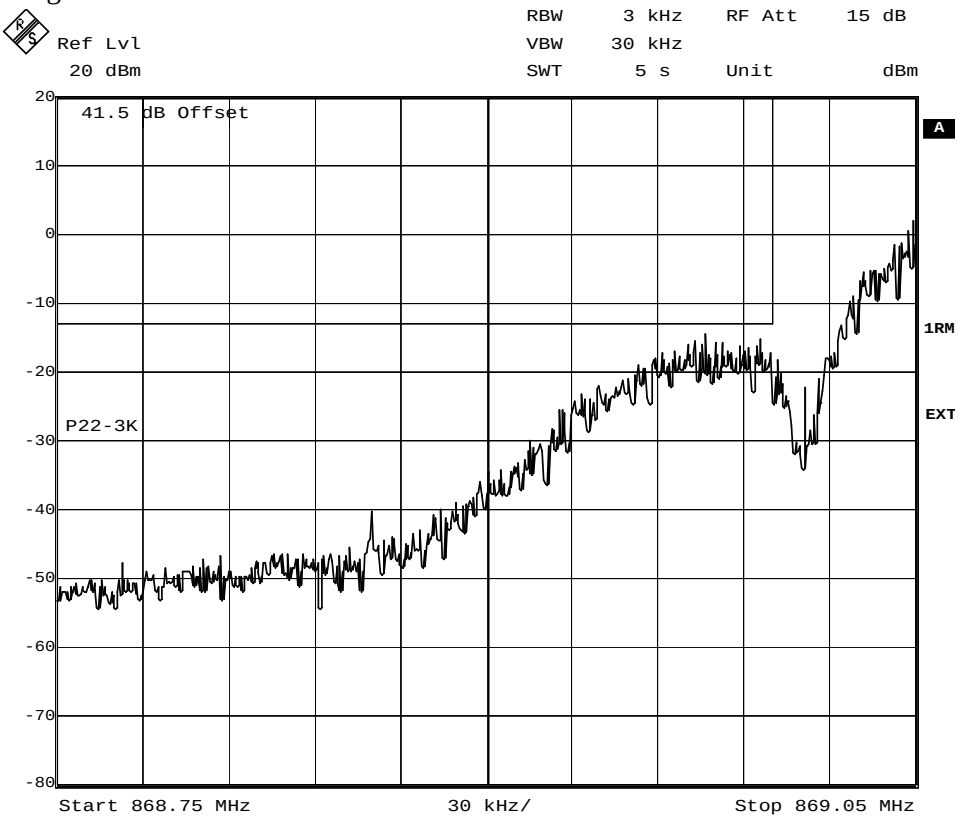

RBW 50 kHz
RF Att 15 dB
VBW 500 kHz
Ref Lvl
20 dBm
SWT 5 s
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-50K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 894.25 MHz
500 kHz/
Stop 899.25 MHz
Date: 7.DEC.2006 15:52:37

Diagram 7



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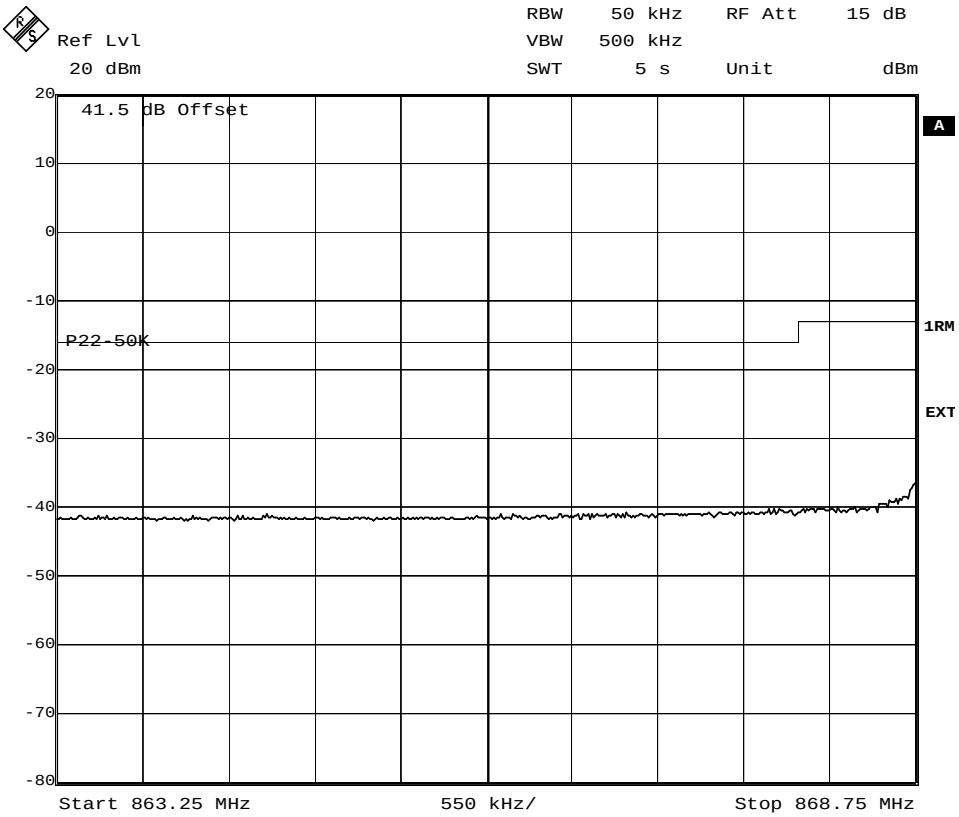

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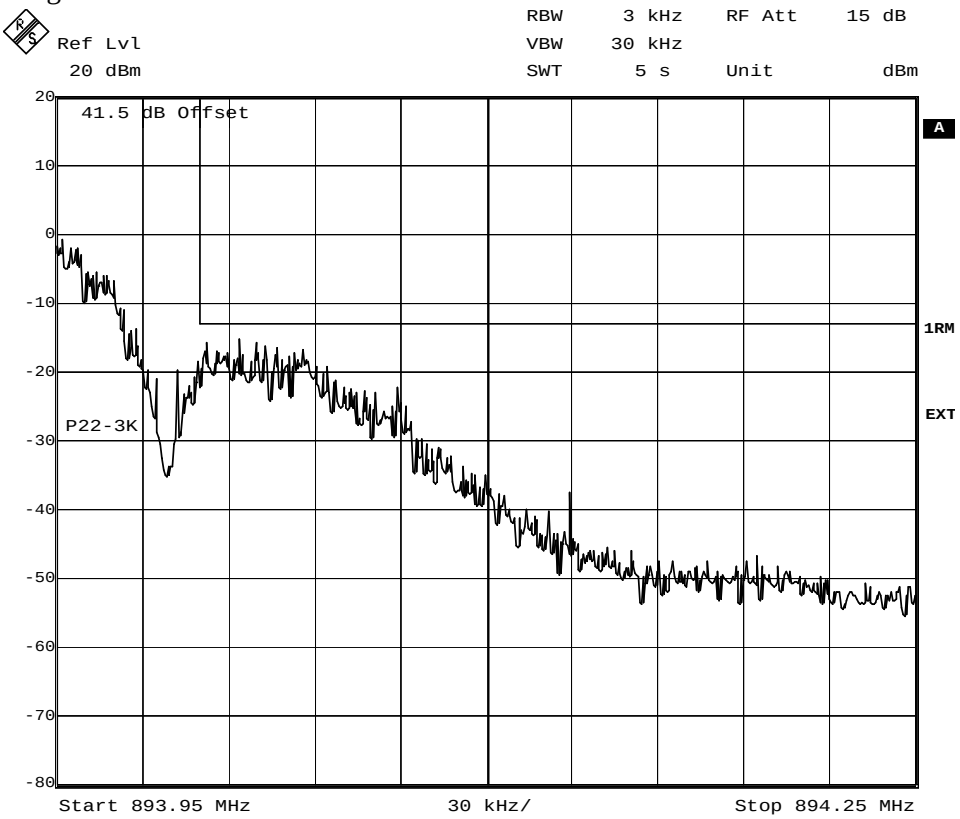
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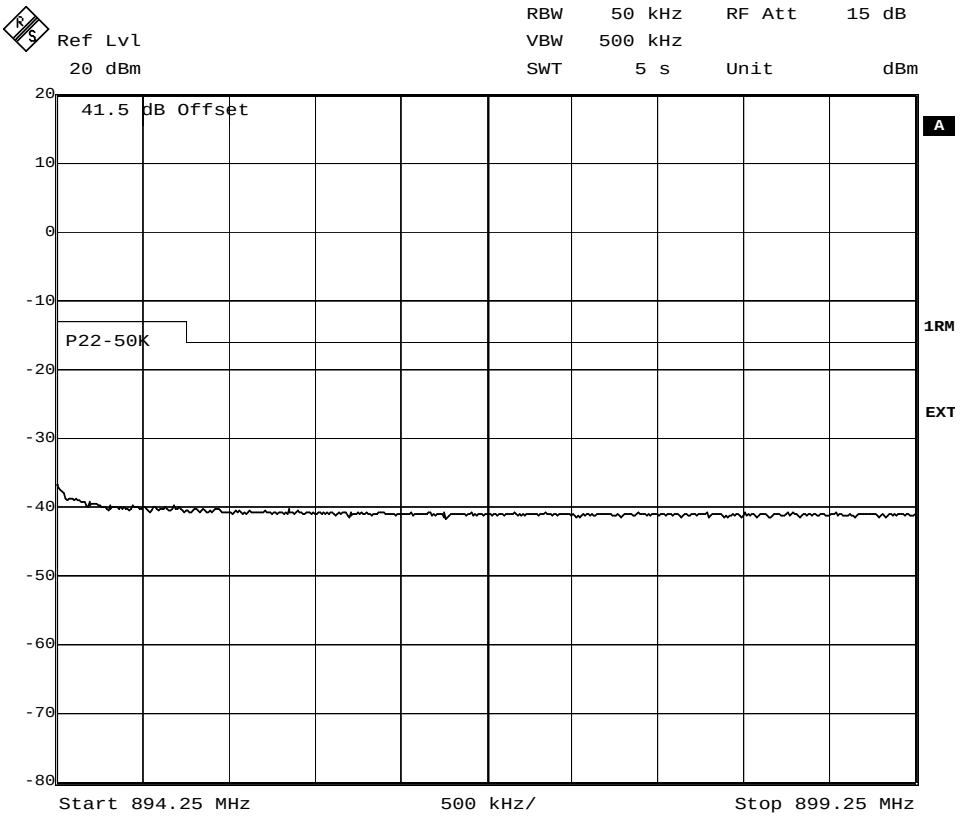
RBW 3 kHz
VBW 30 kHz
SWT 5 s
RF Att 15 dB
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-3K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 893.95 MHz
30 kHz/
Stop 894.25 MHz
Date: 10.DEC.2006 15:36:26


Ref Lvl
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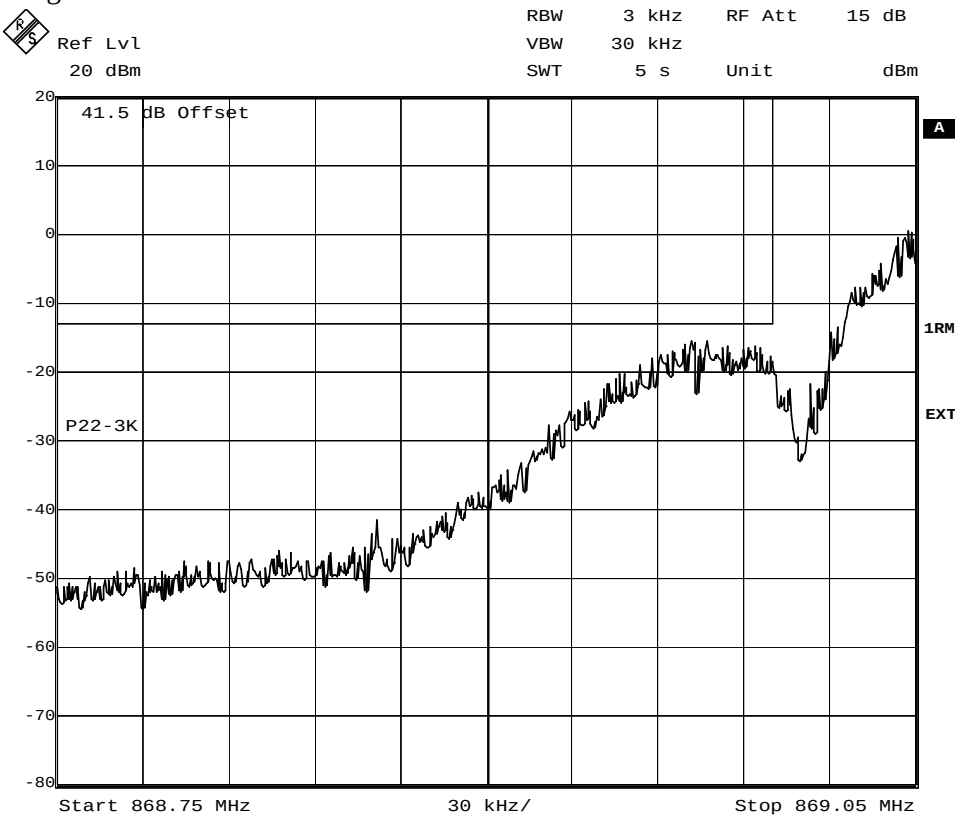
RBW 50 kHz
VBW 500 kHz
SWT 5 s
RF Att 15 dB
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-50K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 894.25 MHz
500 kHz/
Stop 899.25 MHz
Date: 10.DEC.2006 15:37:19

Diagram 9


RBW 3 kHz
RF Att 15 dB
VBW 30 kHz
Ref Lvl
20 dBm
SWT 5 s
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-3K
Start 868.75 MHz
30 kHz/
Stop 869.05 MHz
Date: 10.DEC.2006 15:55:37

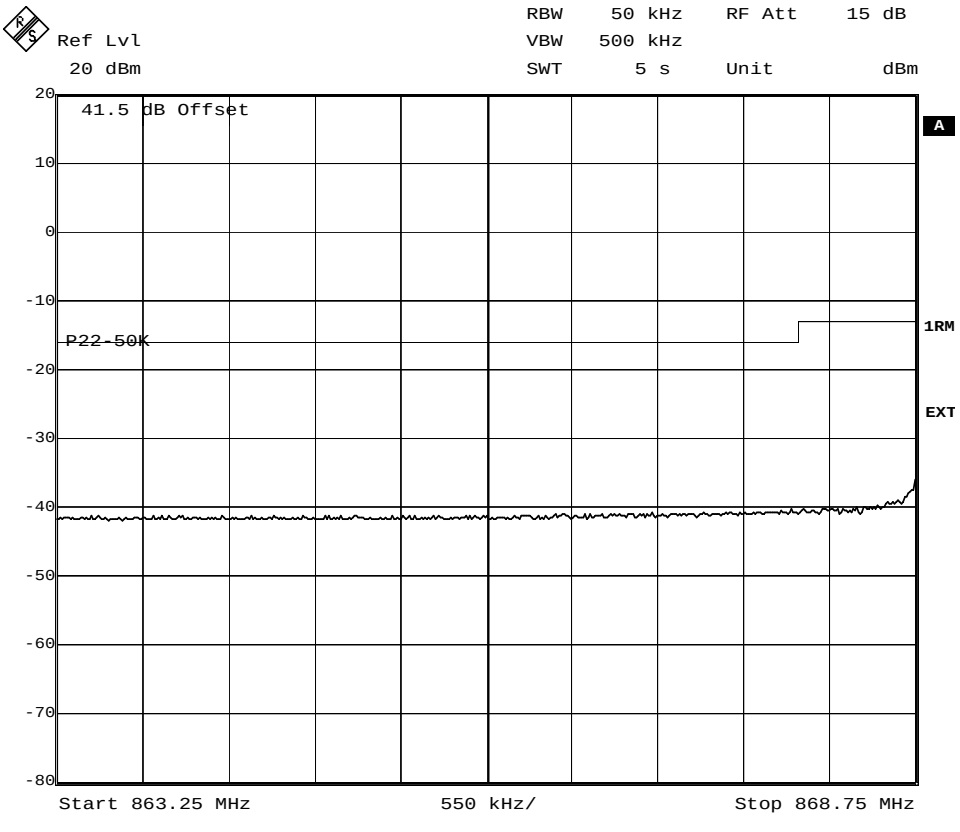
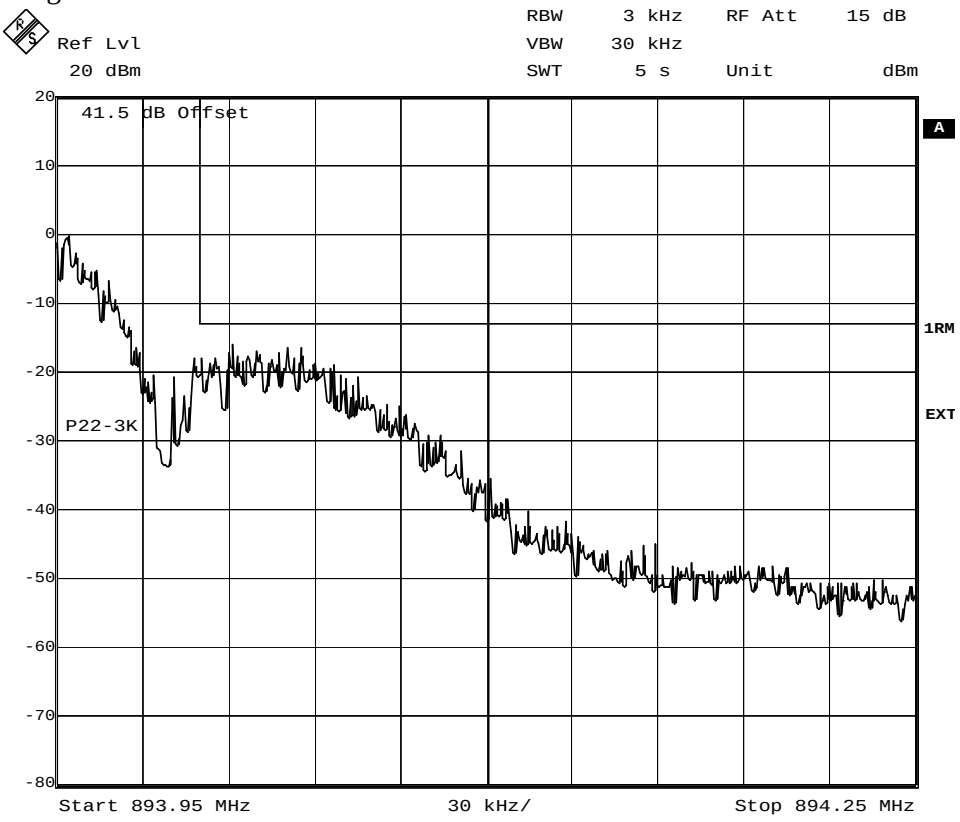

RBW 50 kHz
RF Att 15 dB
VBW 500 kHz
Ref Lvl
20 dBm
SWT 5 s
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-50K
Start 863.25 MHz
550 kHz/
Stop 868.75 MHz
Date: 10.DEC.2006 15:56:24

Diagram 10


RBW 3 kHz
RF Att 15 dB
VBW 30 kHz
Ref Lvl
20 dBm
SWT 5 s
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-3K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 893.95 MHz
30 kHz/
Stop 894.25 MHz
Date: 10.DEC.2006 15:52:57

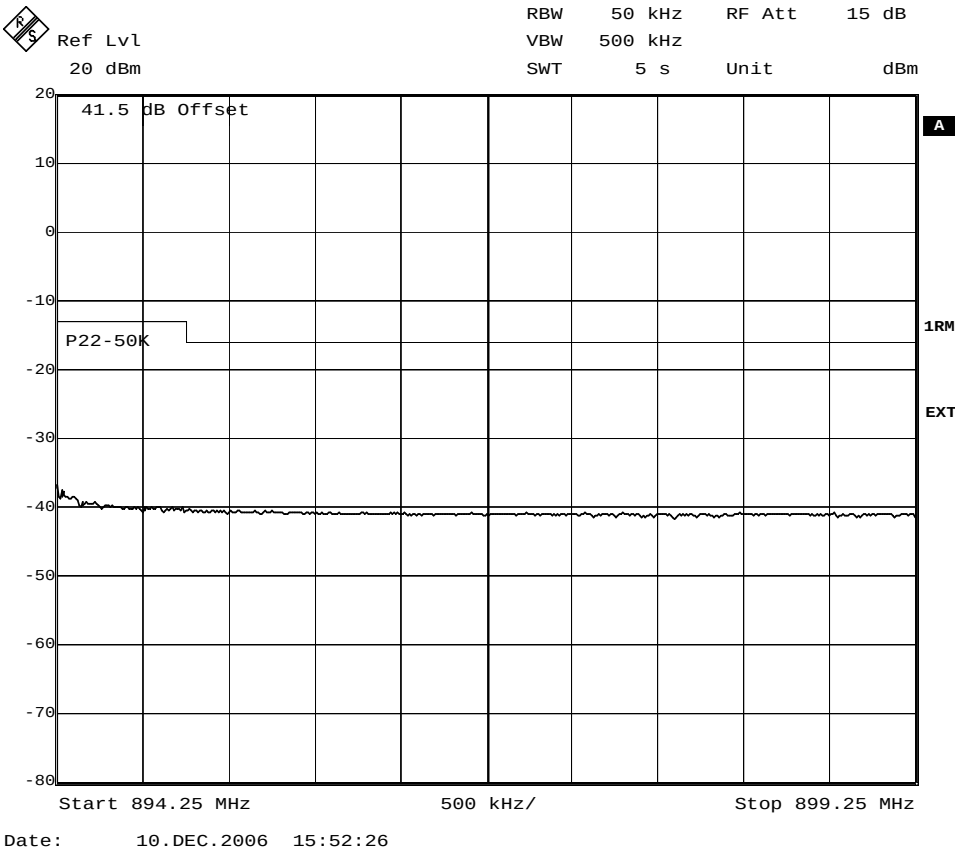
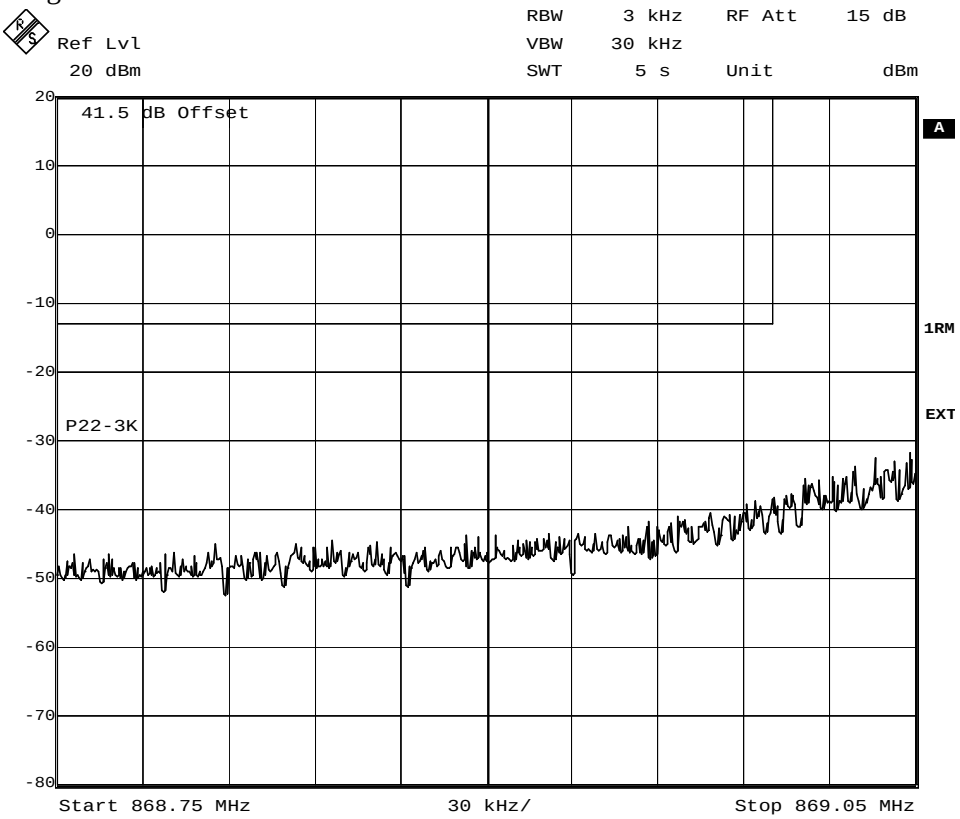
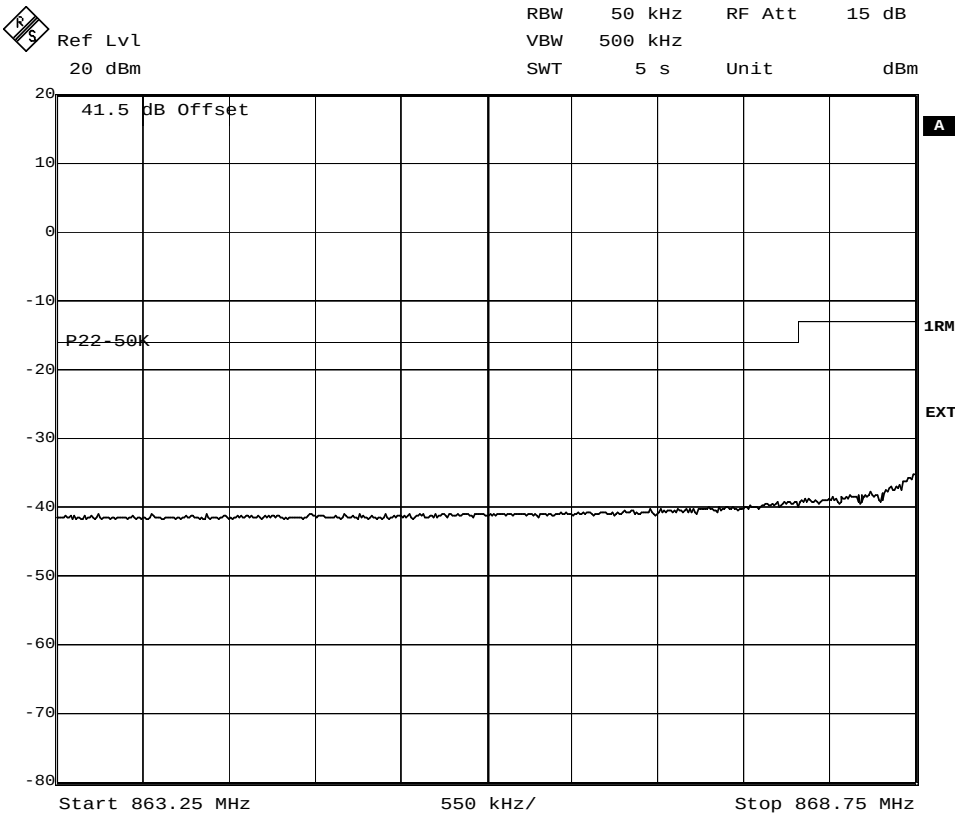

RBW 50 kHz
RF Att 15 dB
VBW 500 kHz
Ref Lvl
20 dBm
SWT 5 s
Unit dBm
41.5 dB Offset
A
1RM
EXT
P22-50K
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 894.25 MHz
500 kHz/
Stop 899.25 MHz
Date: 10.DEC.2006 15:52:26

Diagram 11

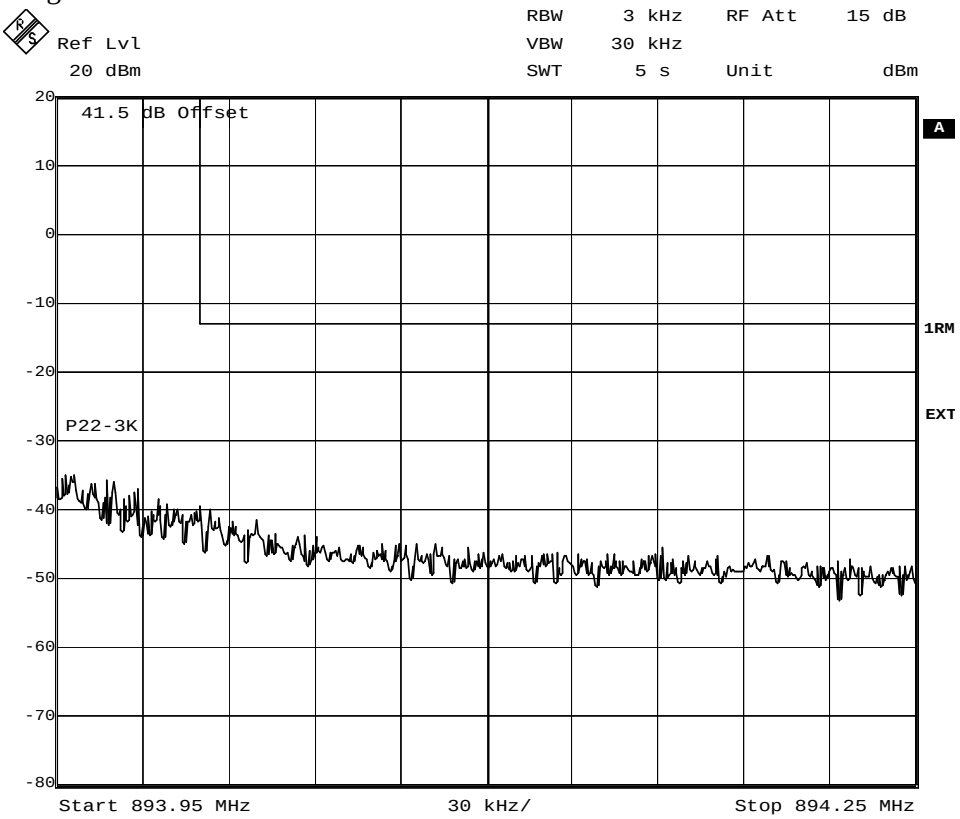


Date: 7.DEC.2006 14:17:56

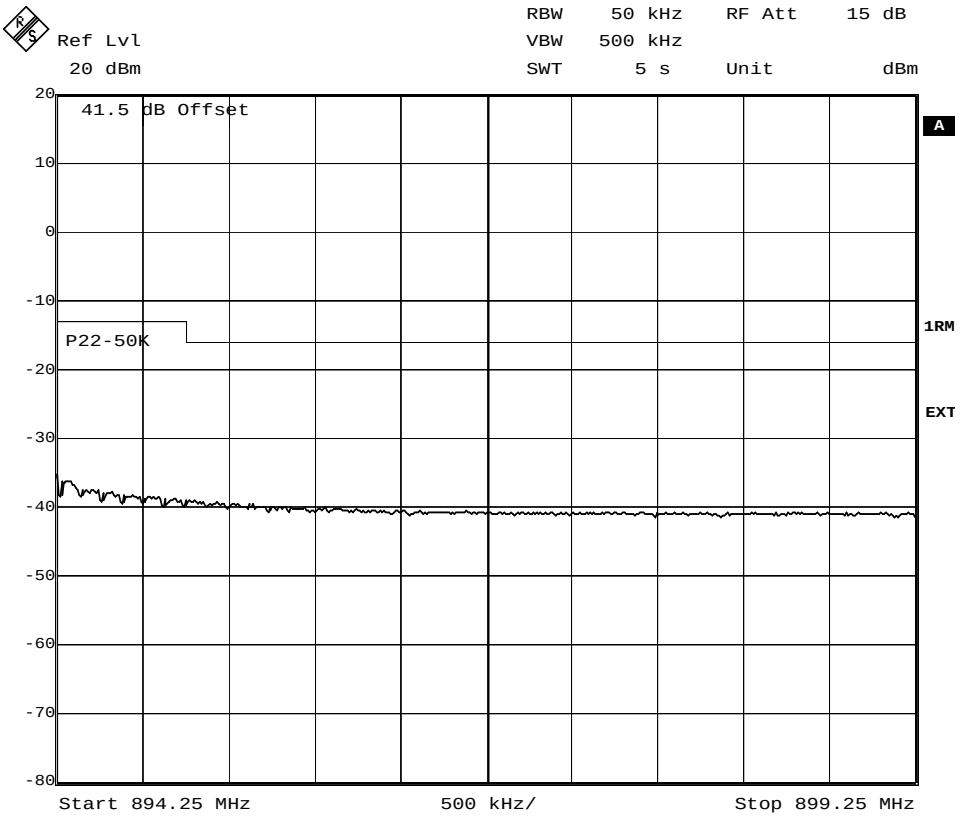


Date: 7.DEC.2006 14:17:06

Diagram 12



Date: 7.DEC.2006 15:49:07



Date: 7.DEC.2006 15:49:34

Conducted spurious emission measurements according to 47CFR 2.1051

Date	Temperature	Humidity
2006-12-07	22 °C ± 3 °C	28 % ± 5 %
2006-12-08	22 °C ± 3 °C	34 % ± 5 %
2006-12-11	22 °C ± 3 °C	33 % ± 5 %

Test set-up and procedure

The measurements were made per definition in 22.917. Measurements were made at CDU-K8 output connectors. The output was connected to a spectrum analyser. A pre-measurement was performed with the peak detector, spurious emissions close to or above the limit was measured with the RMS detector. The spectrum analyser was connected to an external 10 MHz reference standard during the measurements. The transmitter was activated at maximum output power and modulated with pseudorandom data during the measurements.

Measurement equipment	Calibration Due	SP number
R&S FSIQ	2007-08	503 738
HP filter	2007-07	502 758
Testo 610, Temperature and humidity meter	2006-12	502 658

Measurement uncertainty: 3.7 dB

Results

The results are shown in appendix 4.1

GMSK

dTRU, with internal combiner plus TCC:

Diagram 1: Ch 128, 49.0 dBm
Diagram 2: Ch 190, 49.0 dBm
Diagram 3: Ch 251, 49.0 dBm

dTRU, without internal combiner:

Diagram 4: TRX output 1, Ch 128, 46.3 dBm
Diagram 5: TRX output 1, Ch 190, 46.3 dBm
Diagram 6: TRX output 1, Ch 251, 46.3 dBm
Diagram 7: TRX output 2, Ch 128, 46.3 dBm
Diagram 8: TRX output 2, Ch 190, 46.3 dBm
Diagram 9: TRX output 2, Ch 251, 46.3 dBm

dTRU, with internal combiner:

Diagram 10: Ch 128, 43.0 dBm and ch 153, 43.0 dBm
Diagram 11: Ch 226, 43.0 dBm and ch 251, 43.0 dBm

8-PSK

dTRU, with internal combiner plus TCC:

Diagram 12: Ch 128, 45.7 dBm
Diagram 13: Ch 190, 45.7 dBm
Diagram 14: Ch 251, 45.7 dBm

dTRU, without internal combiner:

Diagram 15: TRX output 1, Ch 128, 43.0 dBm
Diagram 16: TRX output 1, Ch 190, 43.0 dBm
Diagram 17: TRX output 1, Ch 251, 43.0 dBm
Diagram 18: TRX output 2, Ch 128, 43.0 dBm
Diagram 19: TRX output 2, Ch 190, 43.0 dBm
Diagram 20: TRX output 2, Ch 251, 43.0 dBm

dTRU, with internal combiner:

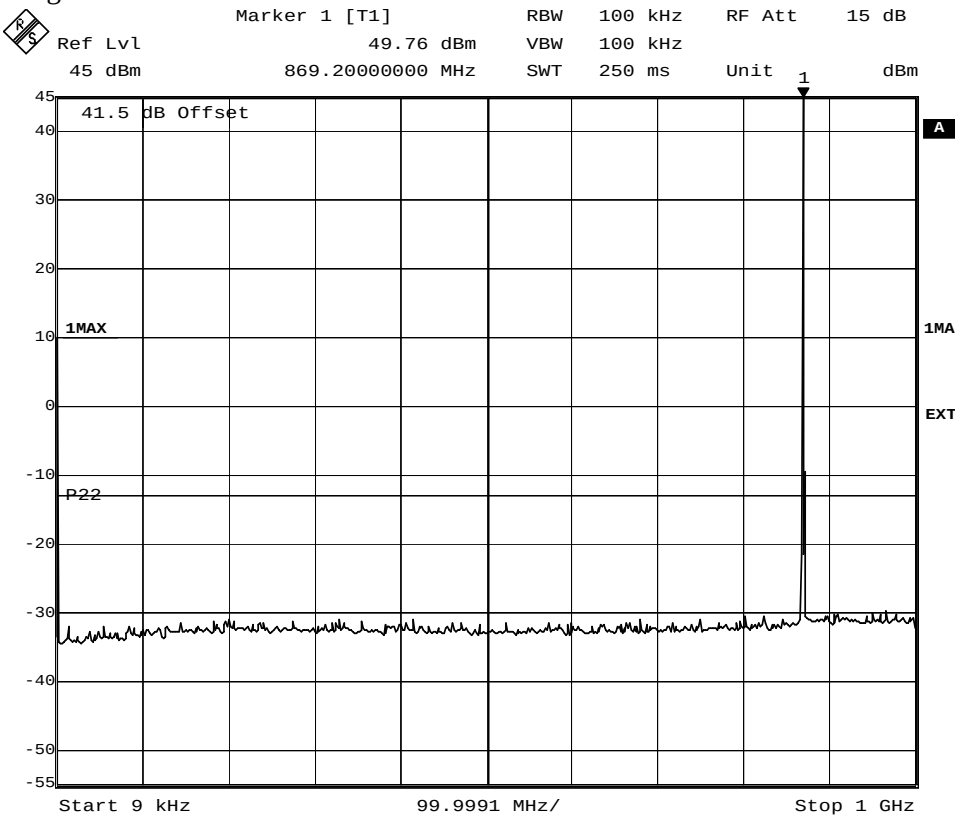
Diagram 21: Ch 128, 39.7 dBm and ch 153, 39.7 dBm
Diagram 22: Ch 226, 39.7 dBm and ch 251, 39.7 dBm

Limits

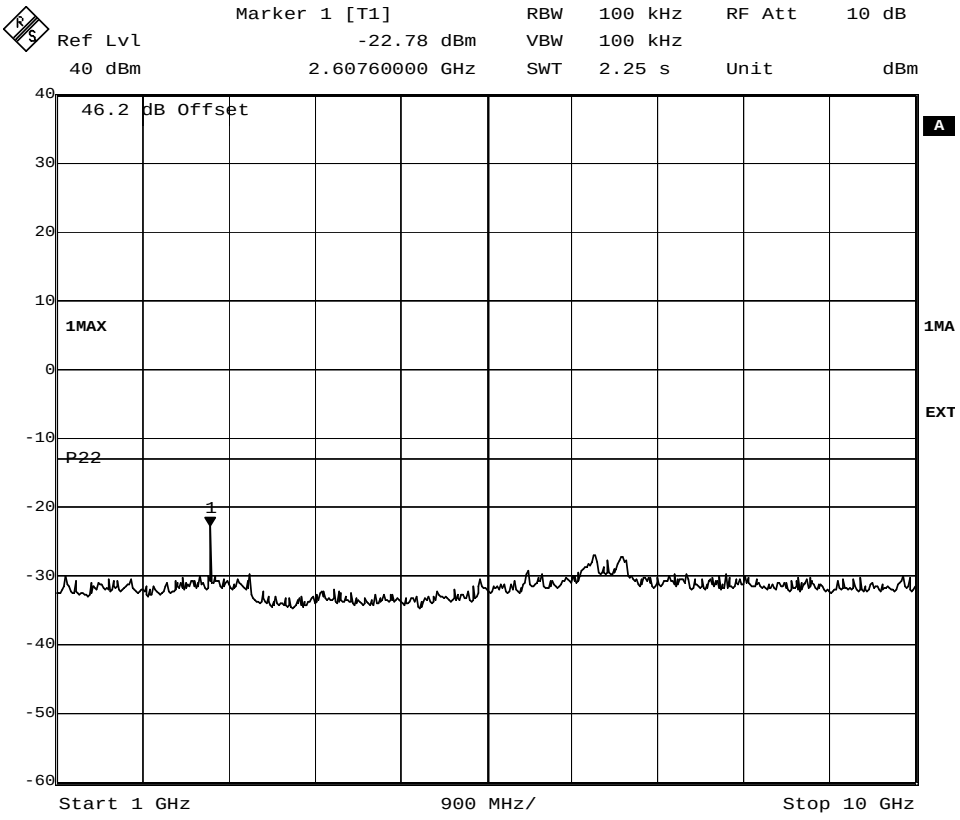
The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least 43 + 10 log P dB.

Complies?	Yes

Diagram 1

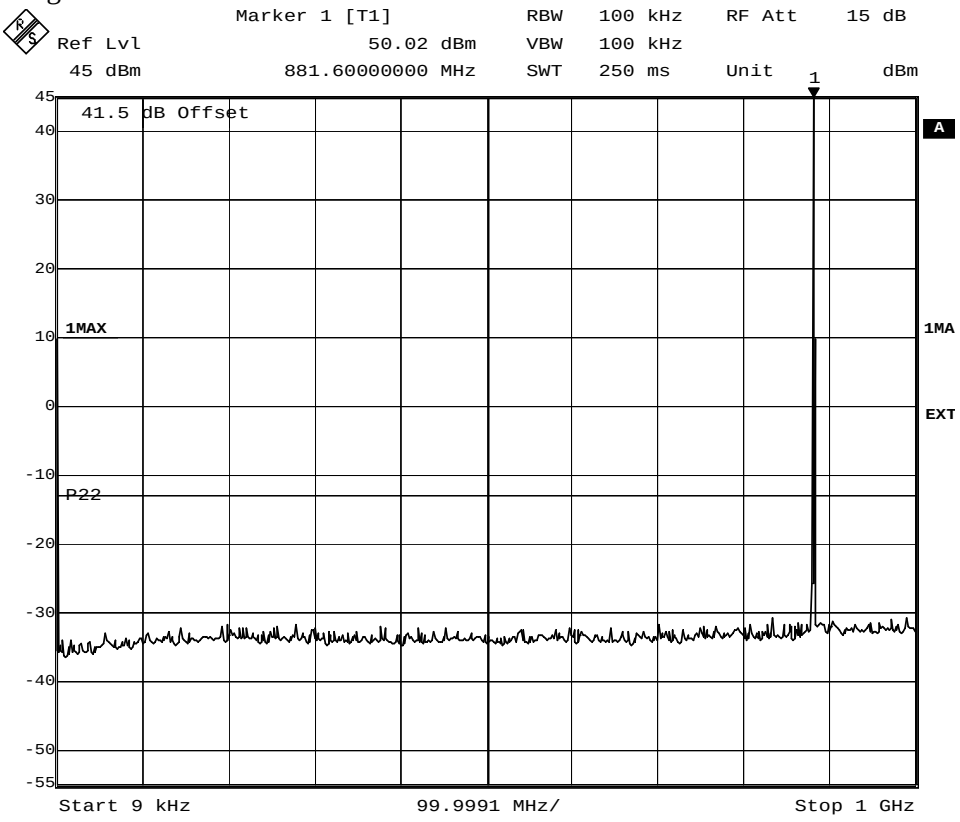


Date: 7.DEC.2006 16:00:43

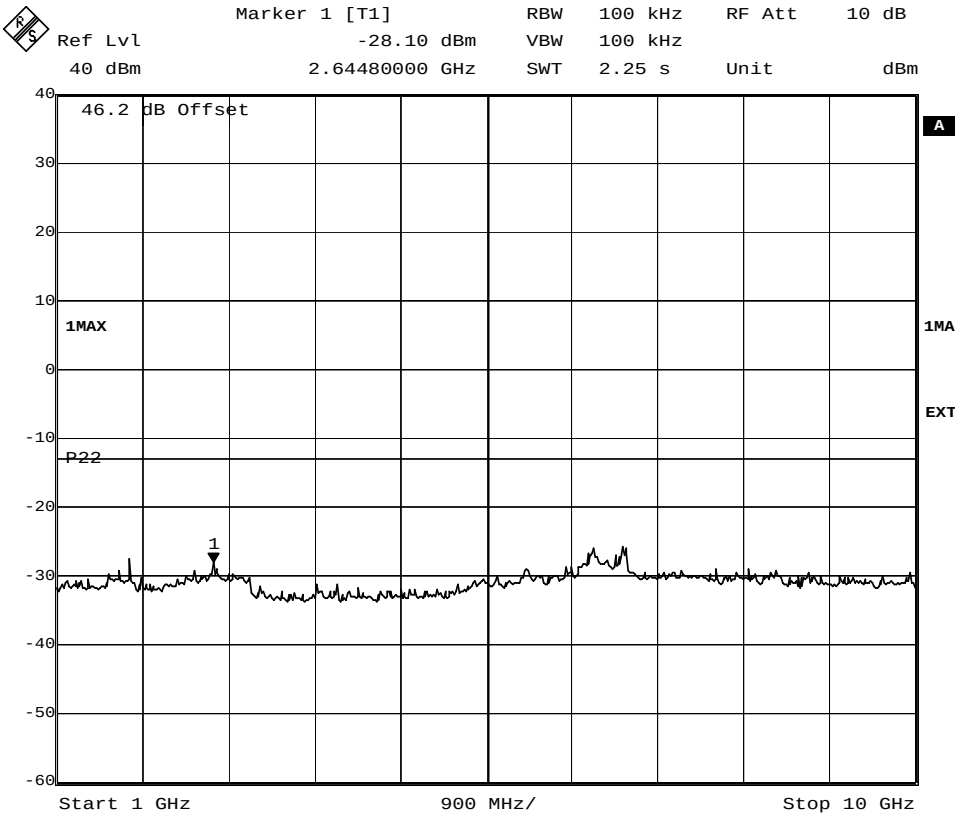


Date: 8.DEC.2006 09:02:29

Diagram 2

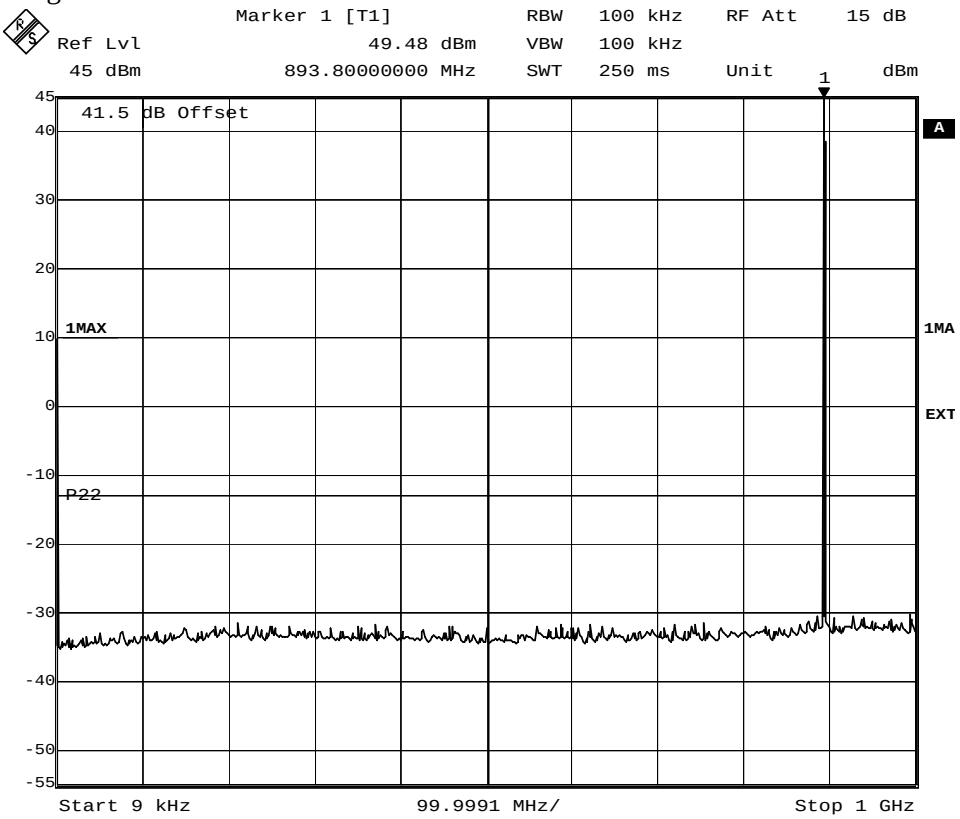


Date: 7.DEC.2006 16:01:18

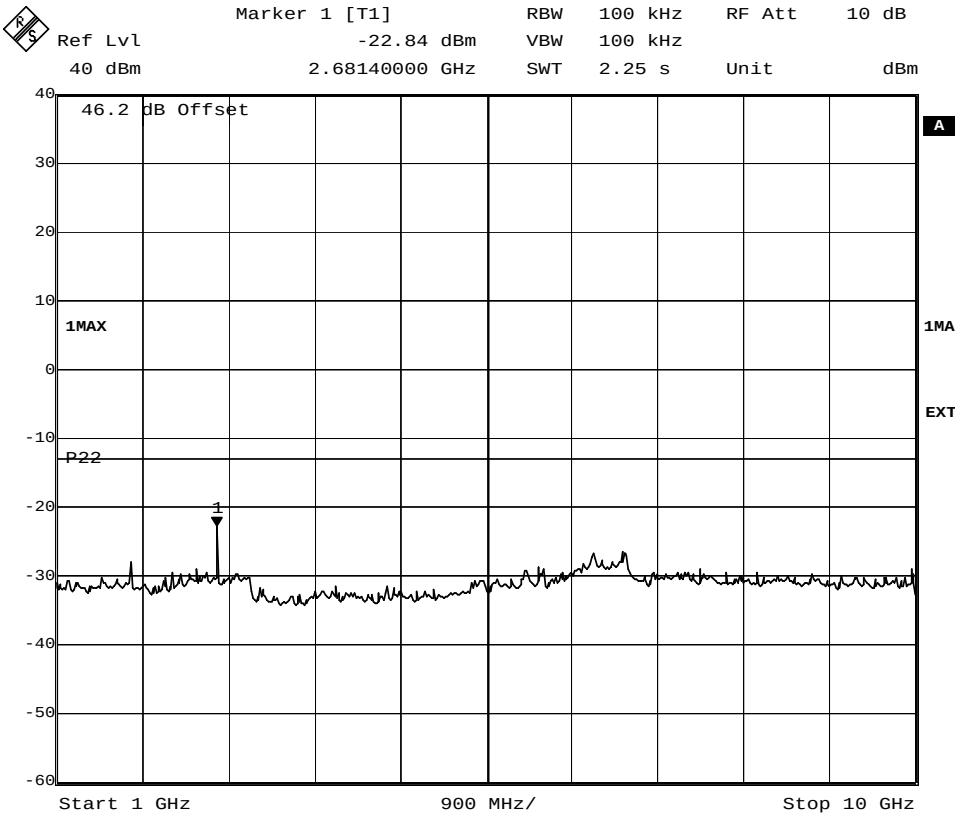


Date: 8.DEC.2006 09:01:38

Diagram 3

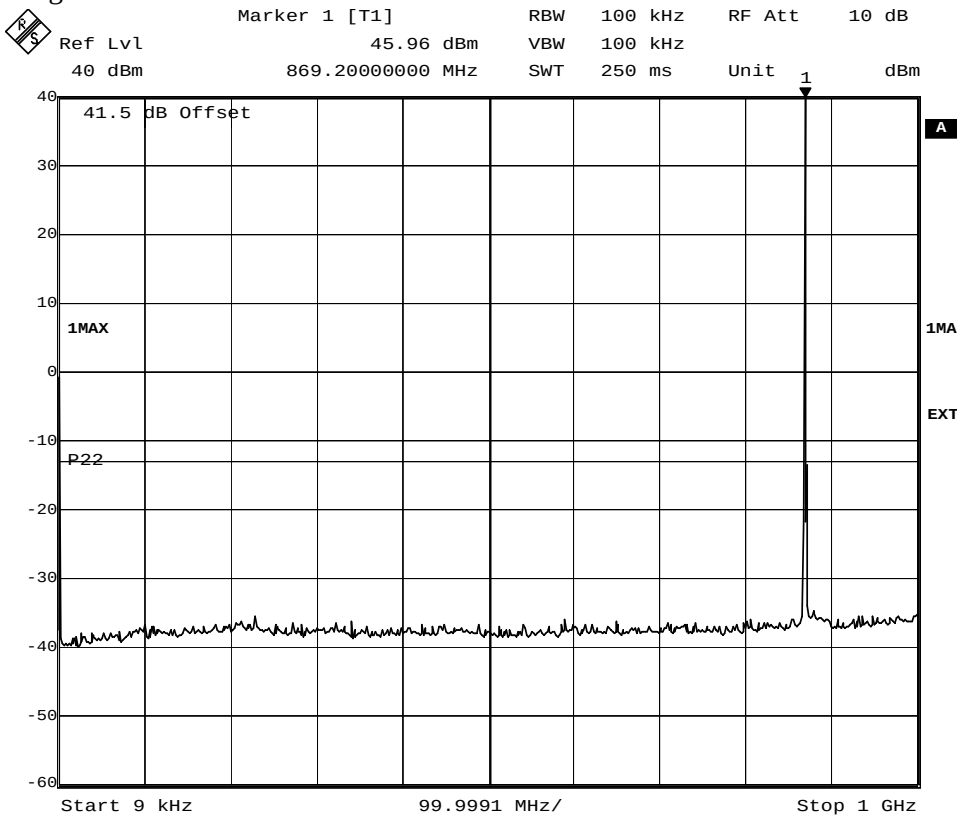


Date: 7.DEC.2006 16:12:09



Date: 8.DEC.2006 08:55:59

Diagram 4


Marker 1 [T1]
Ref Lvl
40 dBm
45.96 dBm
869.20000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 10:57:01

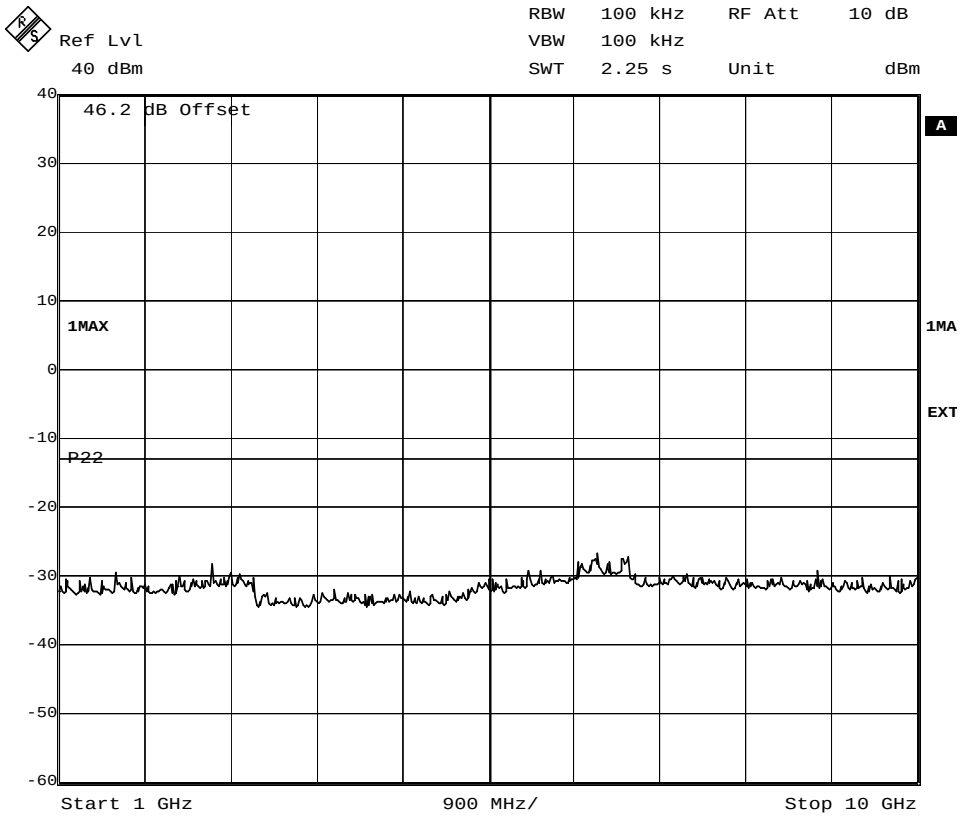
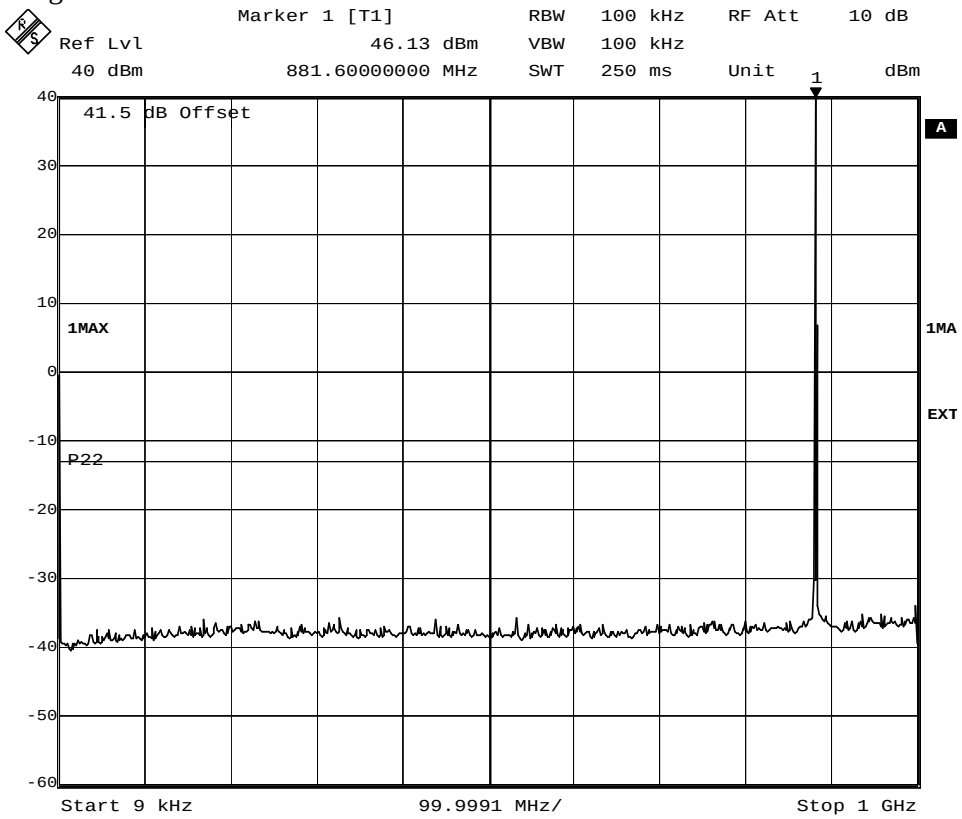

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 11:31:34

Diagram 5


Marker 1 [T1]
Ref Lvl
40 dBm
46.13 dBm
881.60000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 11:01:57

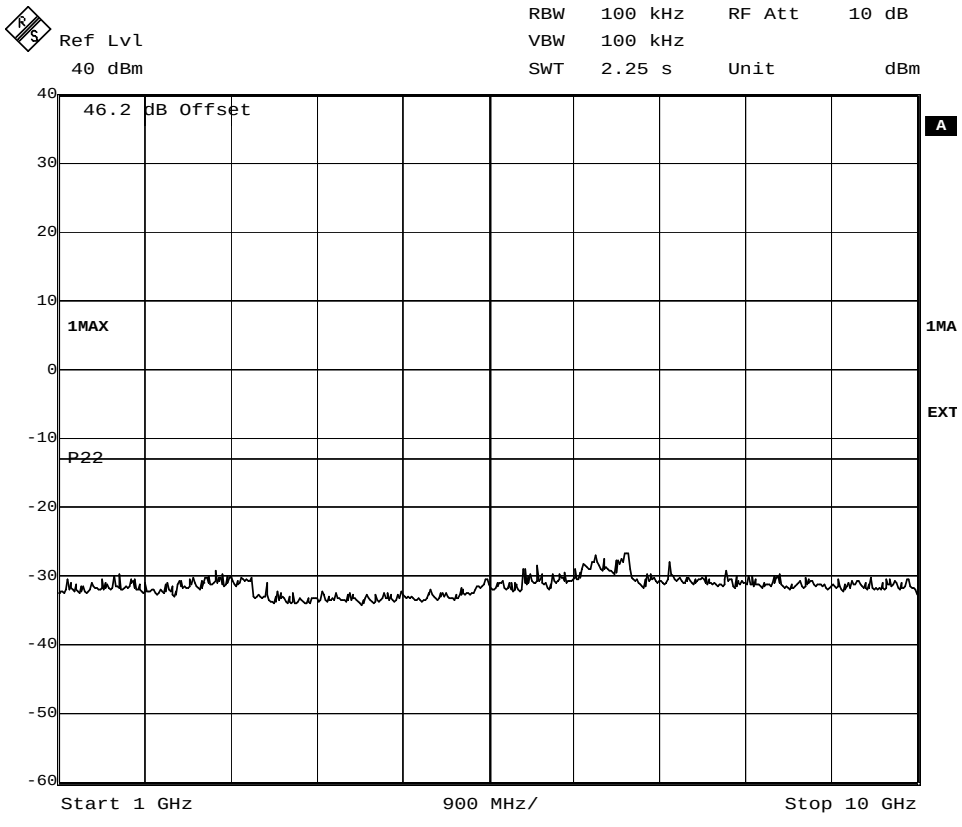
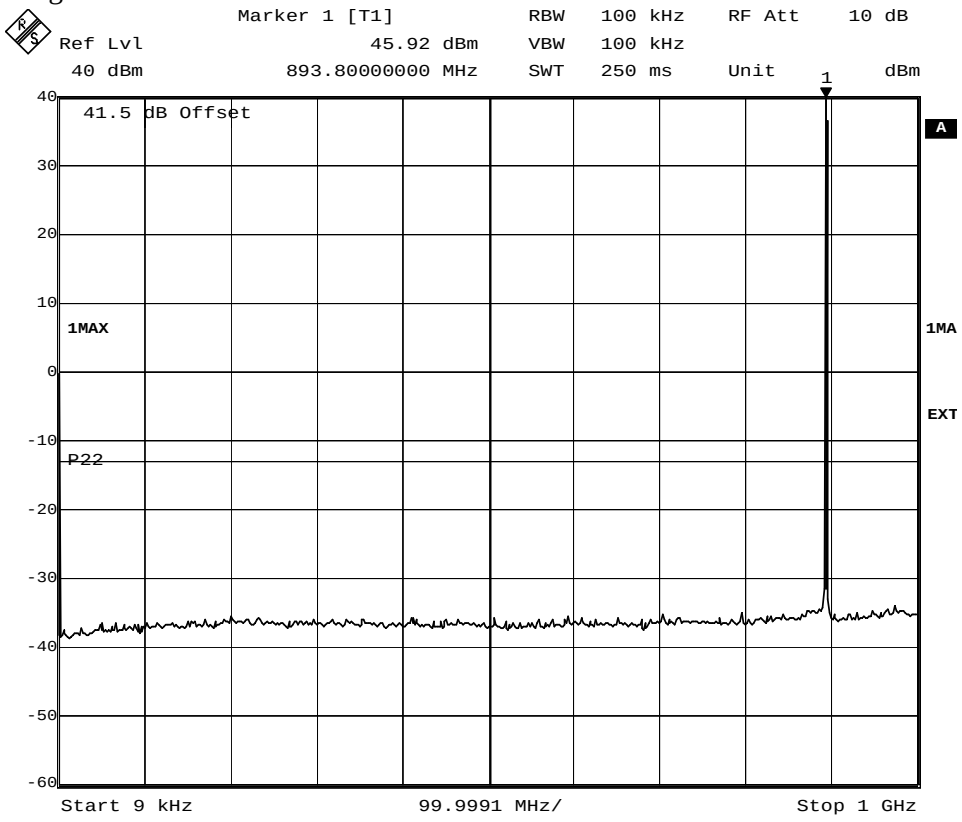

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 13:49:45

Diagram 6


Marker 1 [T1]
Ref Lvl
45.92 dBm
40 dBm
893.80000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 11:23:22

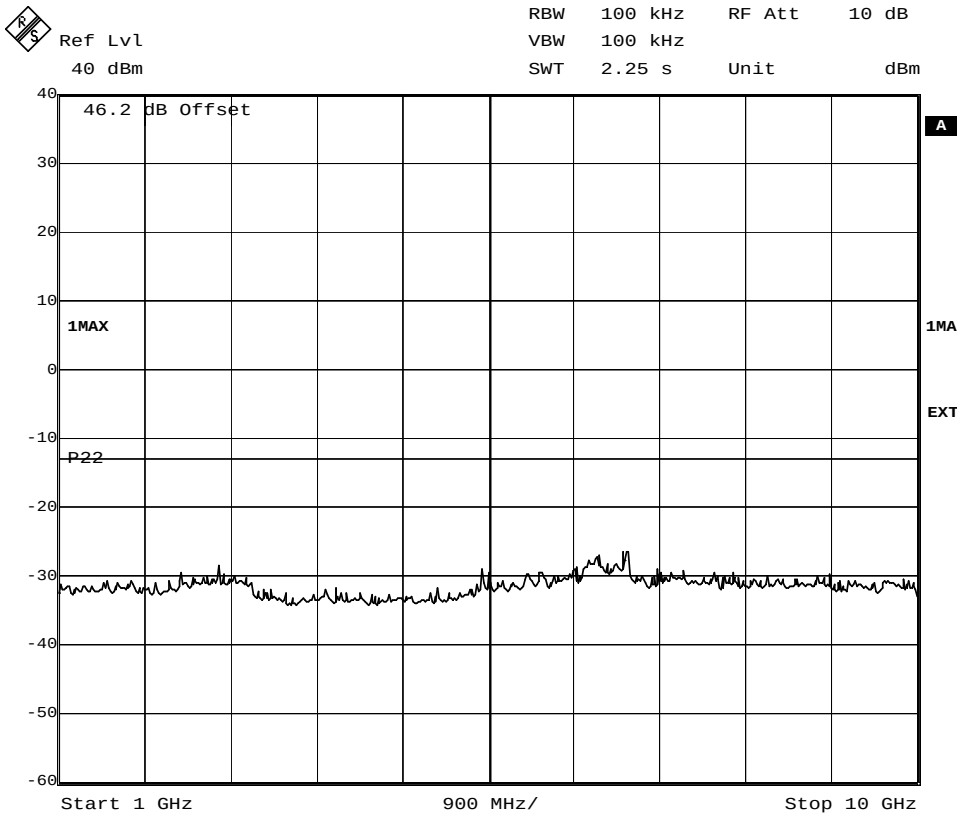
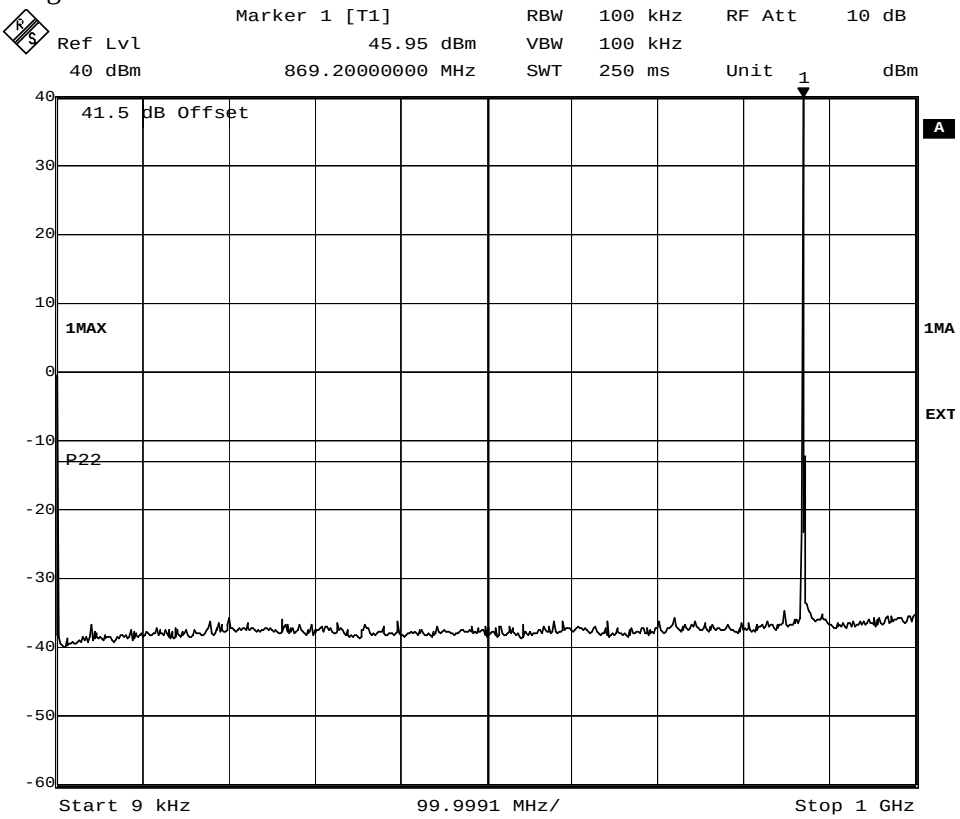

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 13:51:06

Diagram 7


Marker 1 [T1]
Ref Lvl
45.95 dBm
40 dBm
869.20000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 10:40:01

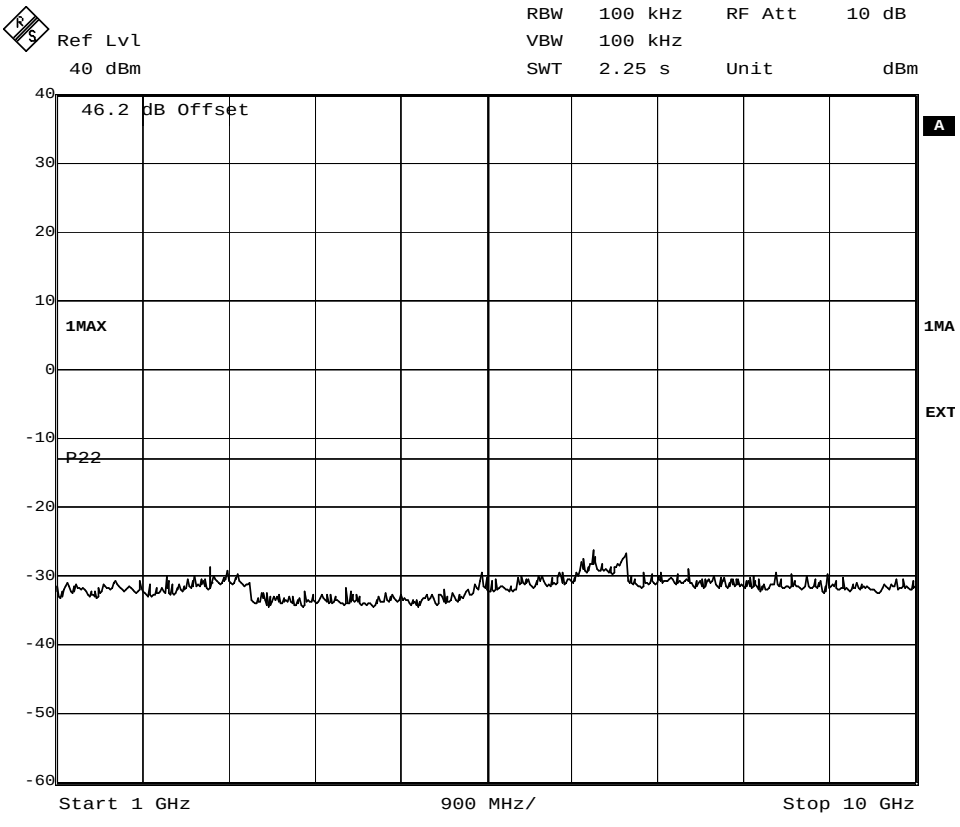
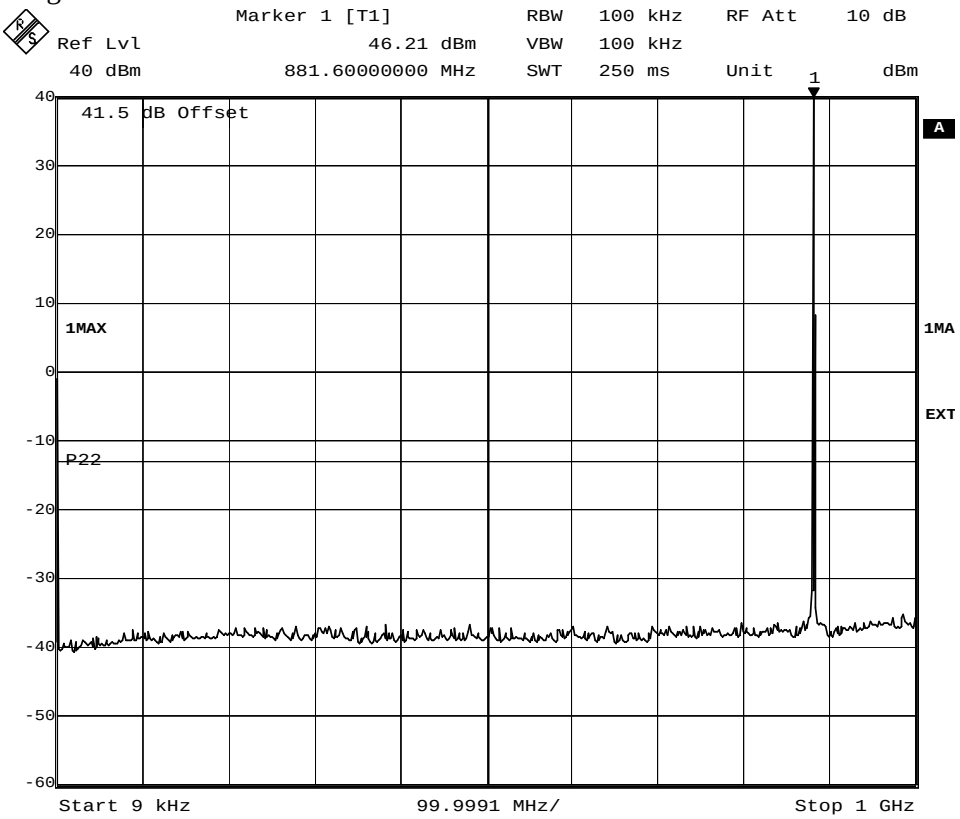

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 13:57:37

Diagram 8


Marker 1 [T1]
Ref Lvl
46.21 dBm
40 dBm
881.60000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 10:40:48

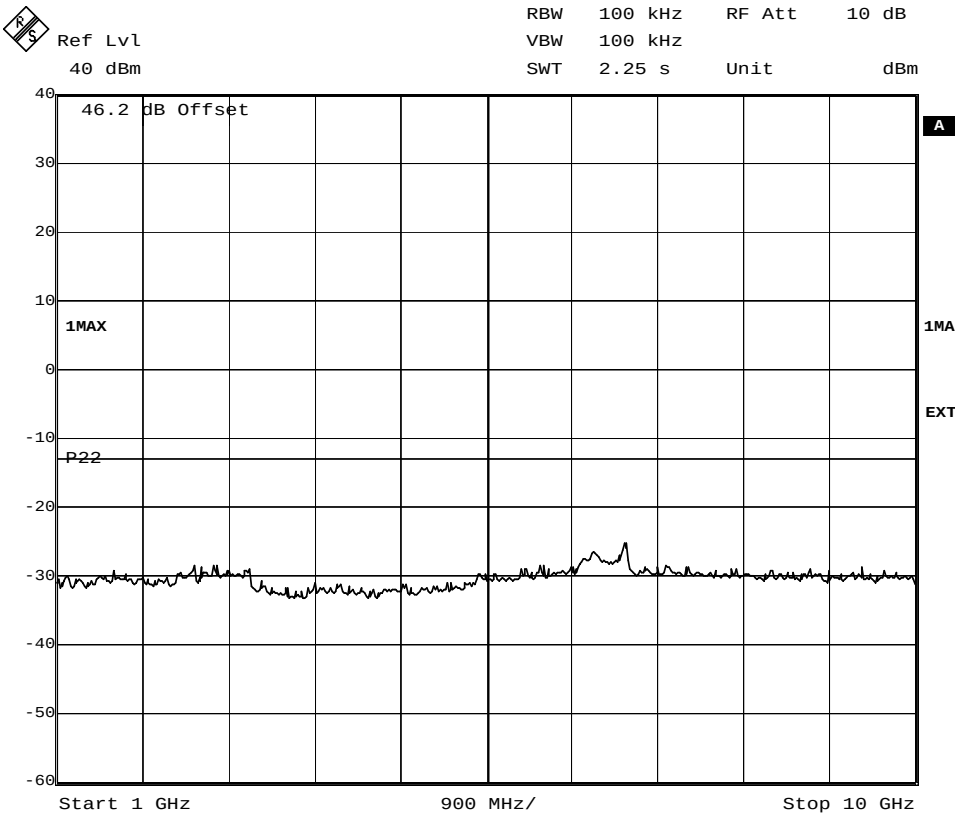
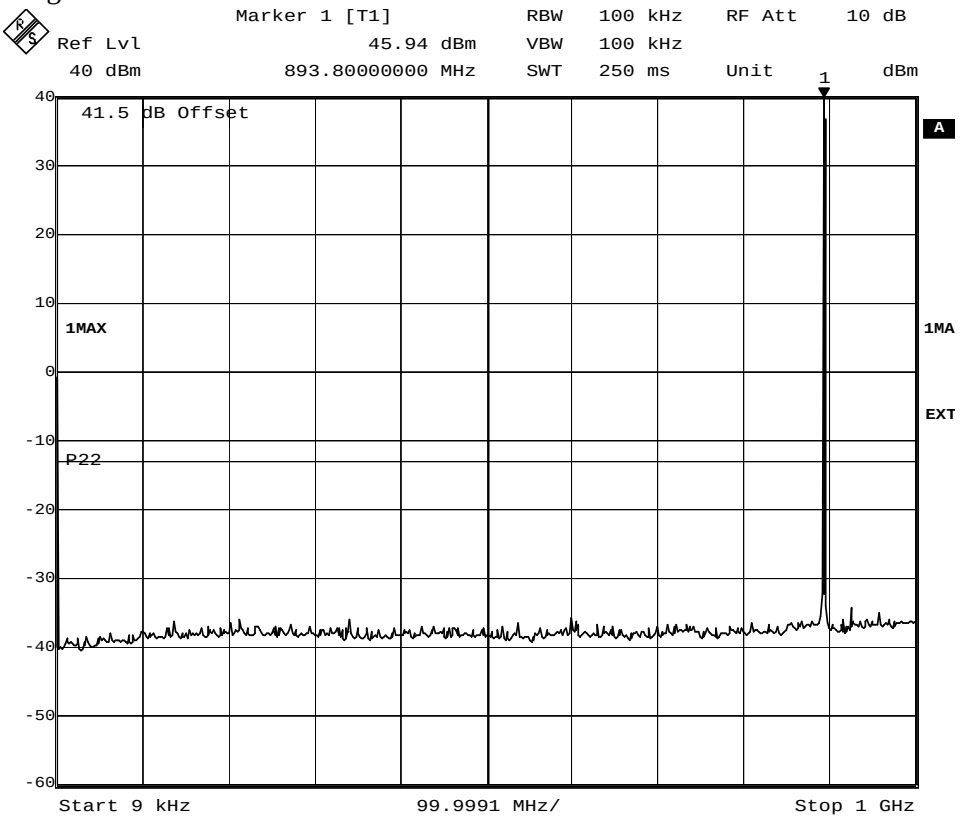

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 14:11:14

Diagram 9


Marker 1 [T1]
Ref Lvl
40 dBm
45.94 dBm
893.80000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 10:41:41

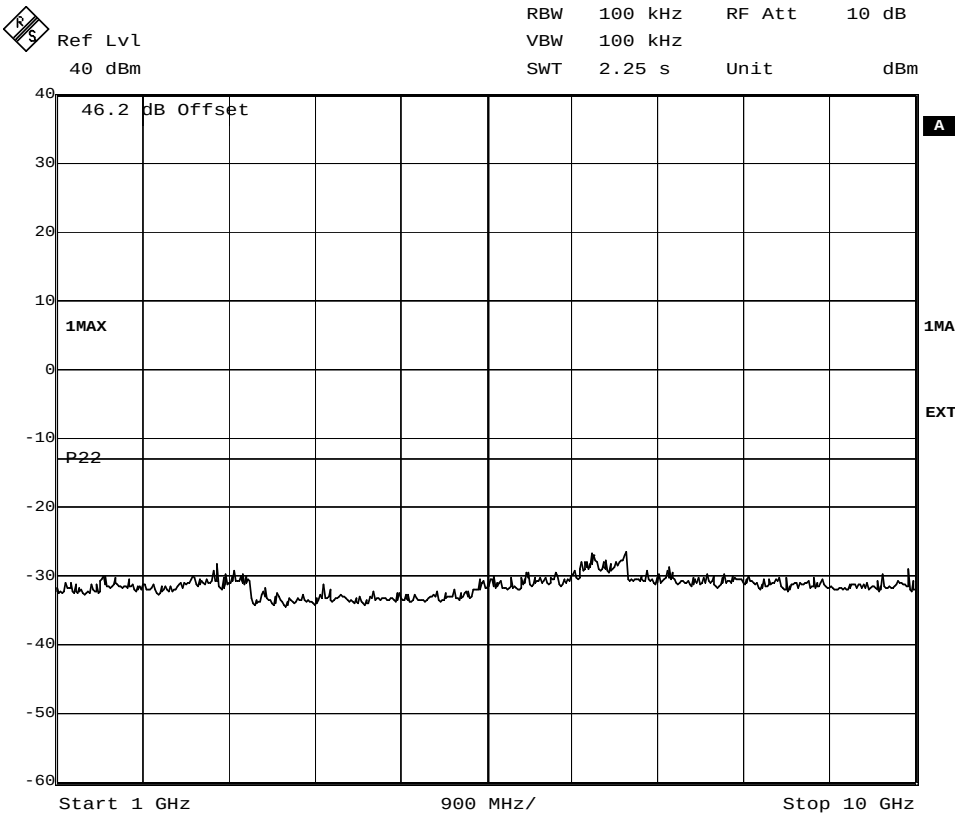
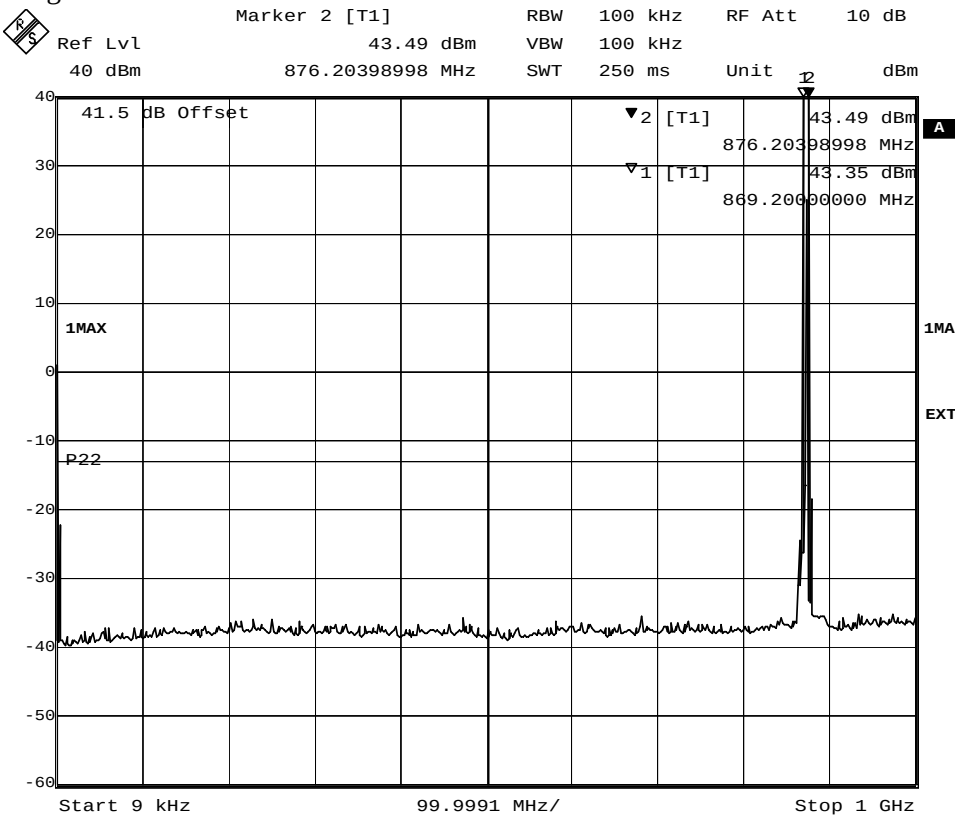
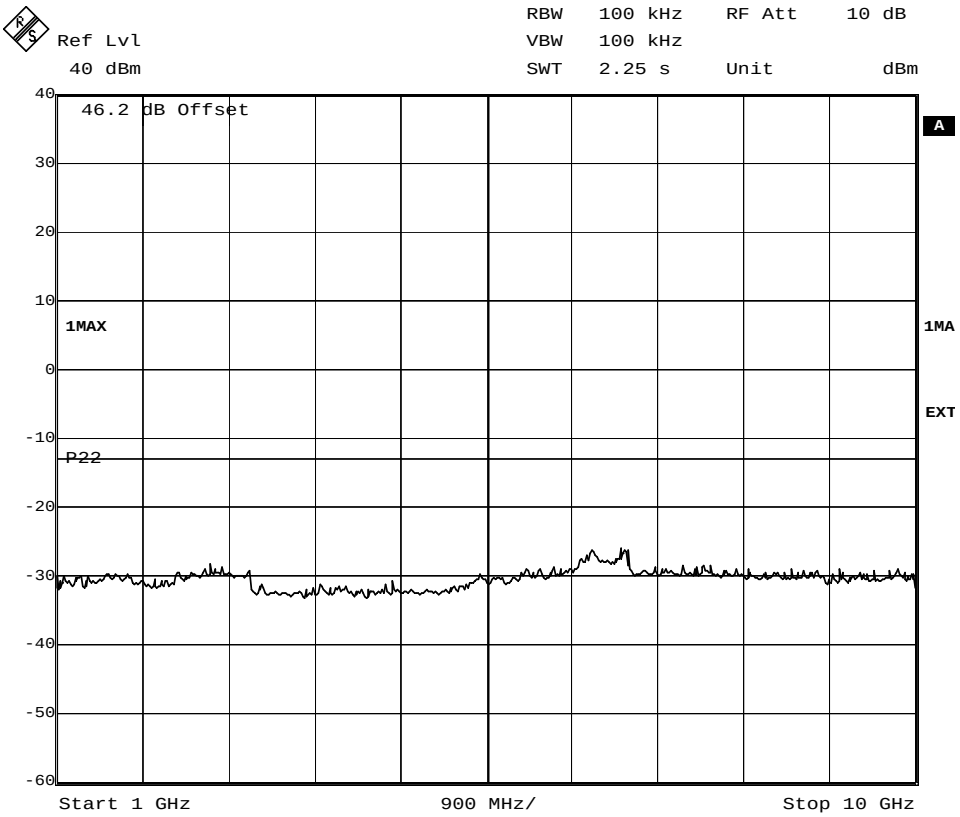

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 14:12:24

Diagram 10

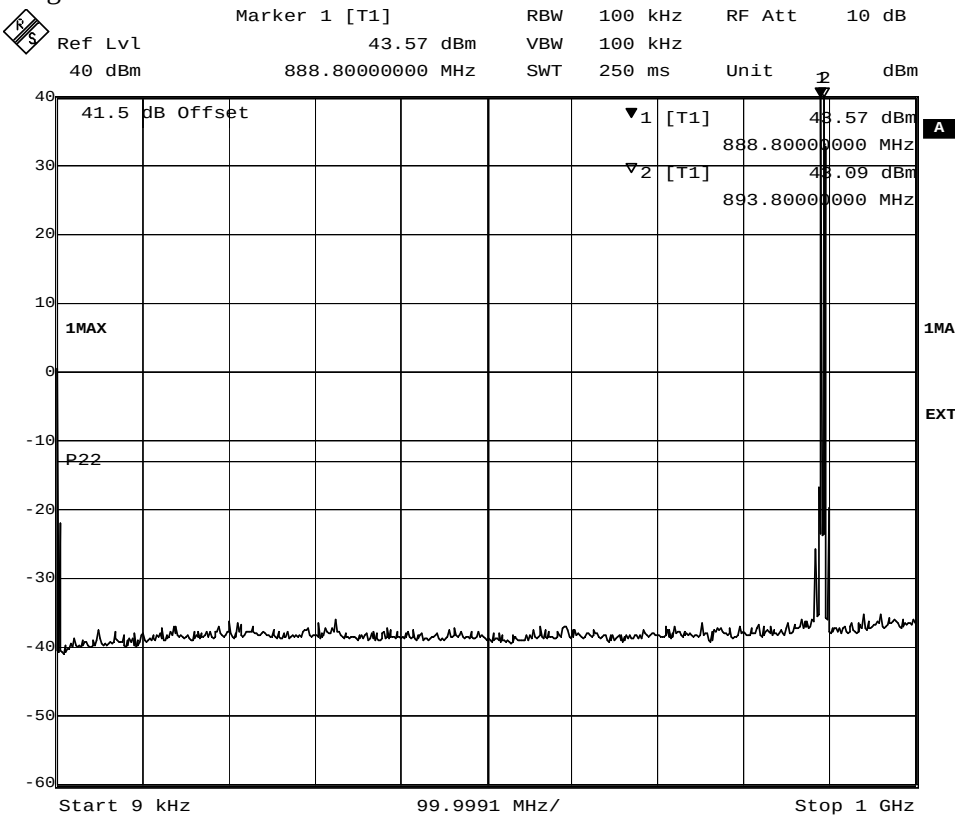


Date: 11.DEC.2006 16:10:37

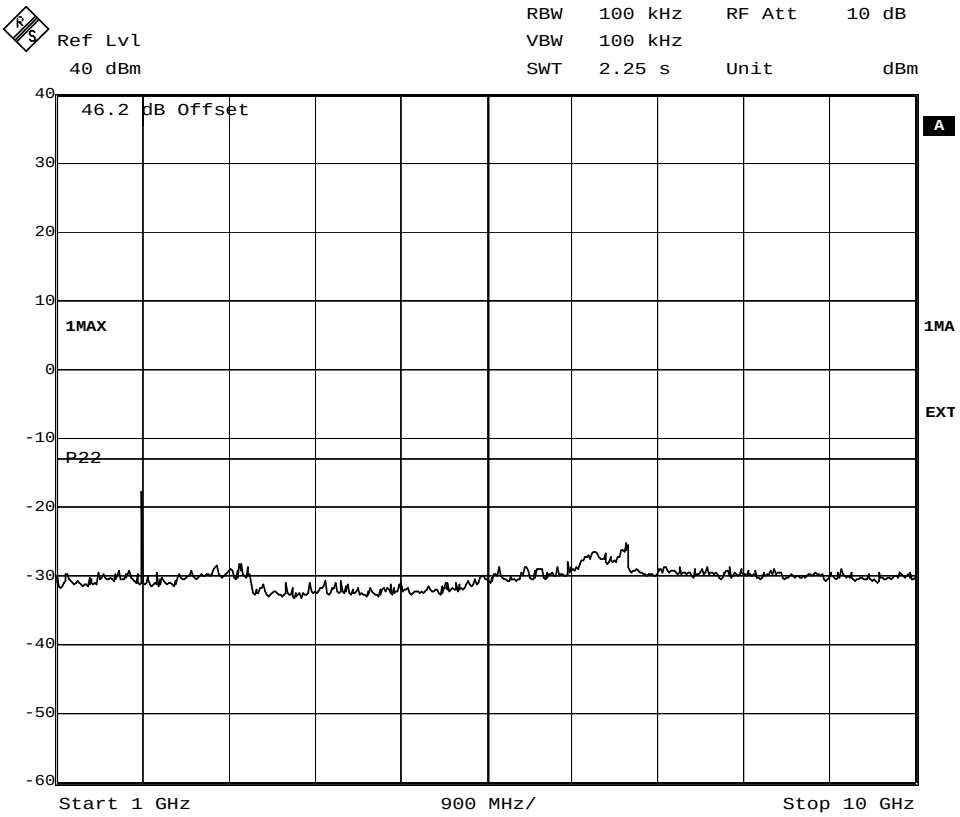


Date: 11.DEC.2006 15:41:13

Diagram 11

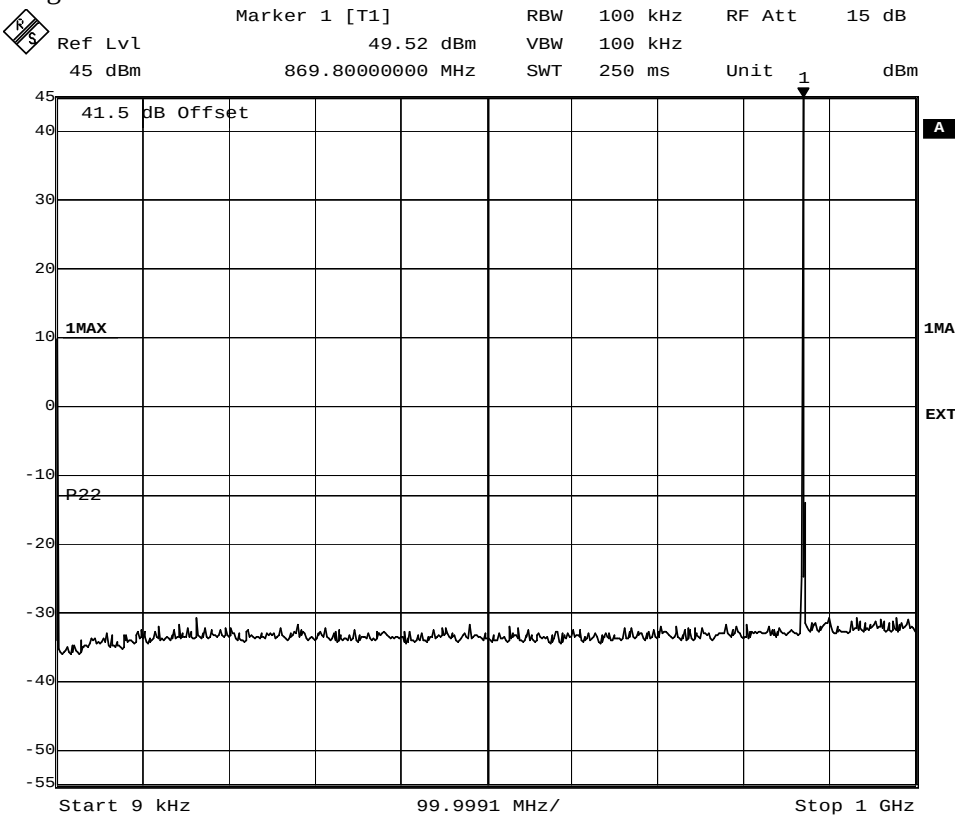


Date: 11.DEC.2006 16:08:45

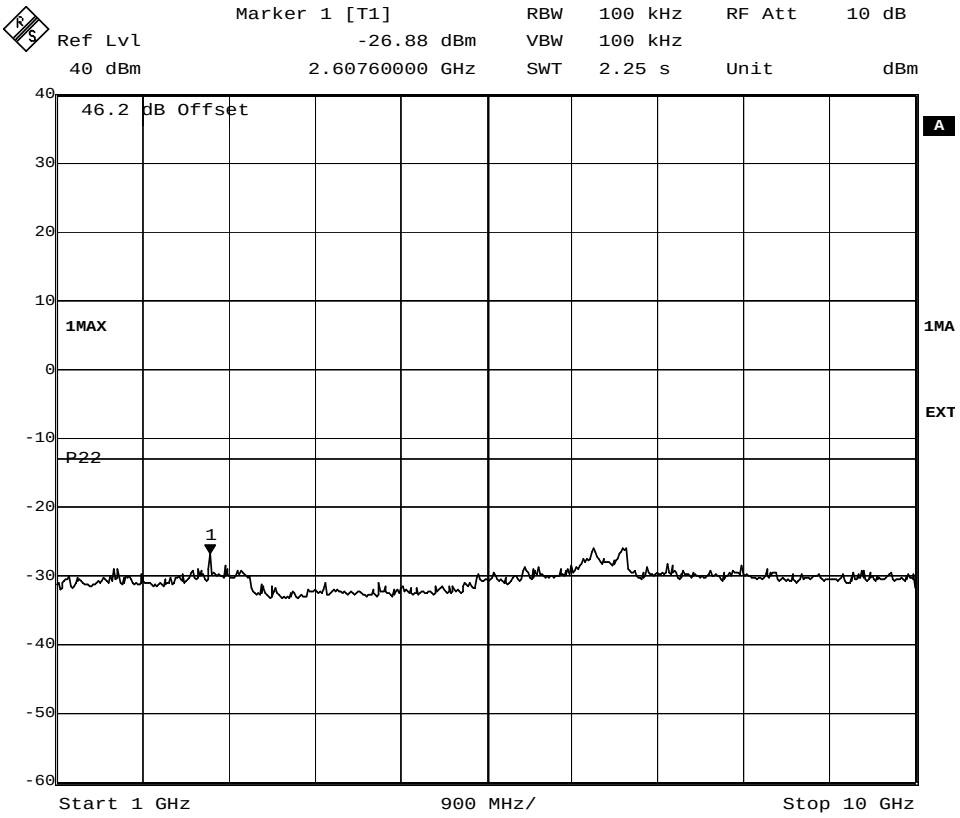


Date: 11.DEC.2006 15:55:58

Diagram 12

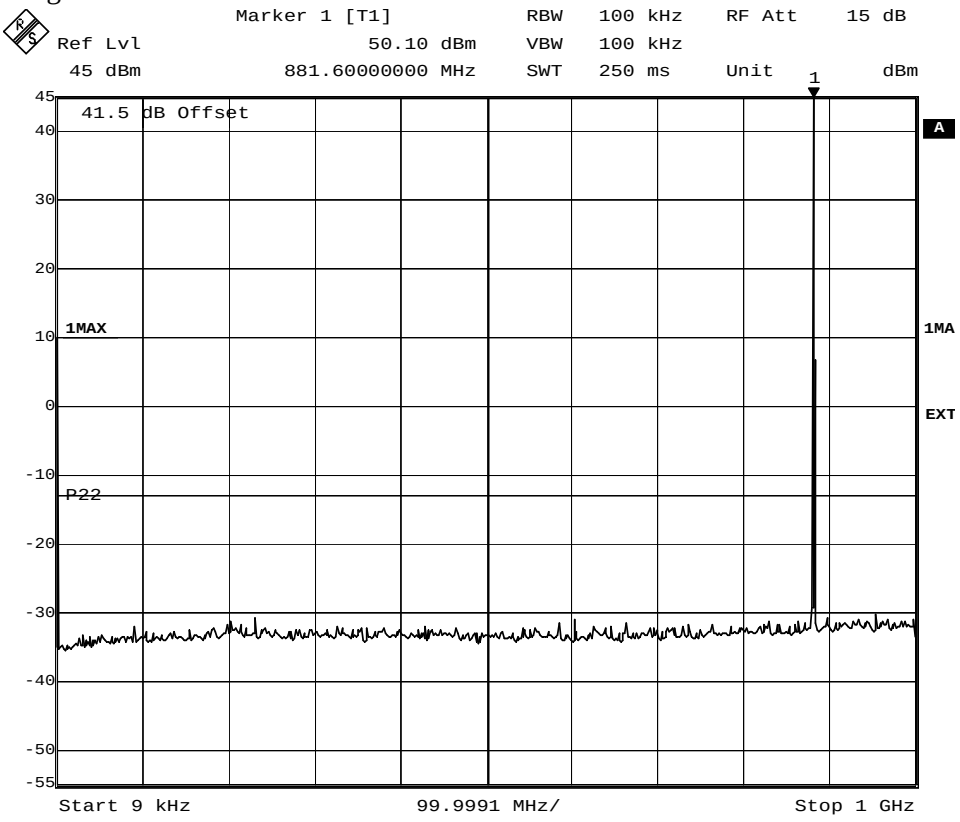


Date: 7.DEC.2006 16:14:22

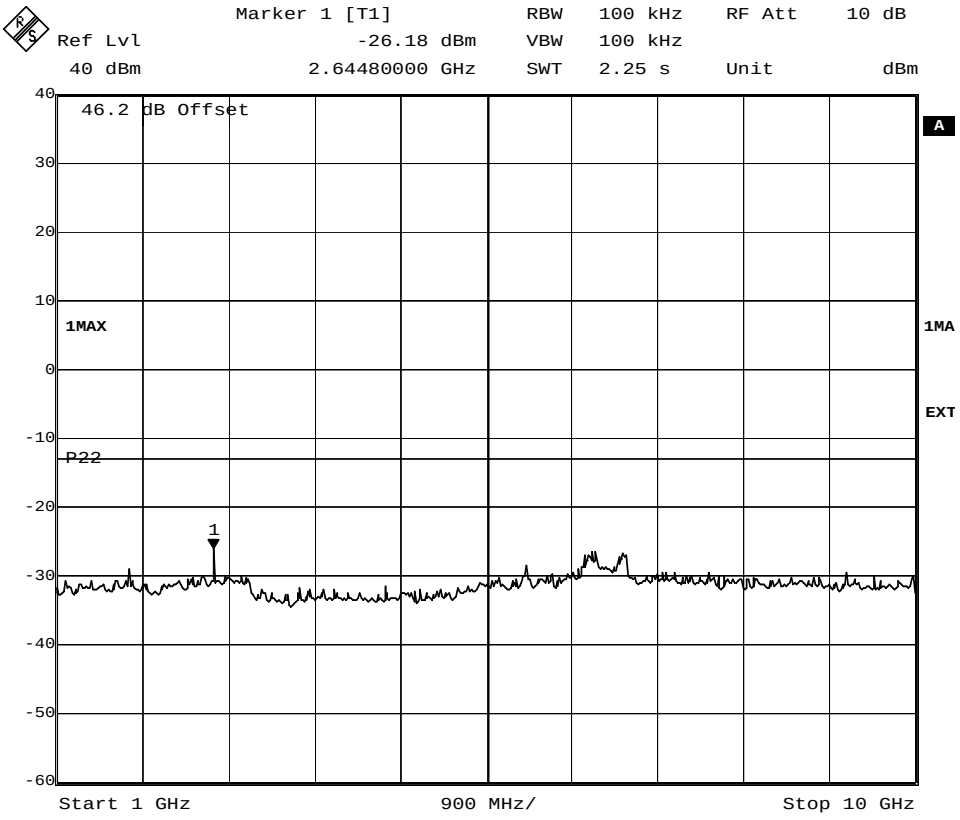


Date: 8.DEC.2006 08:48:52

Diagram 13

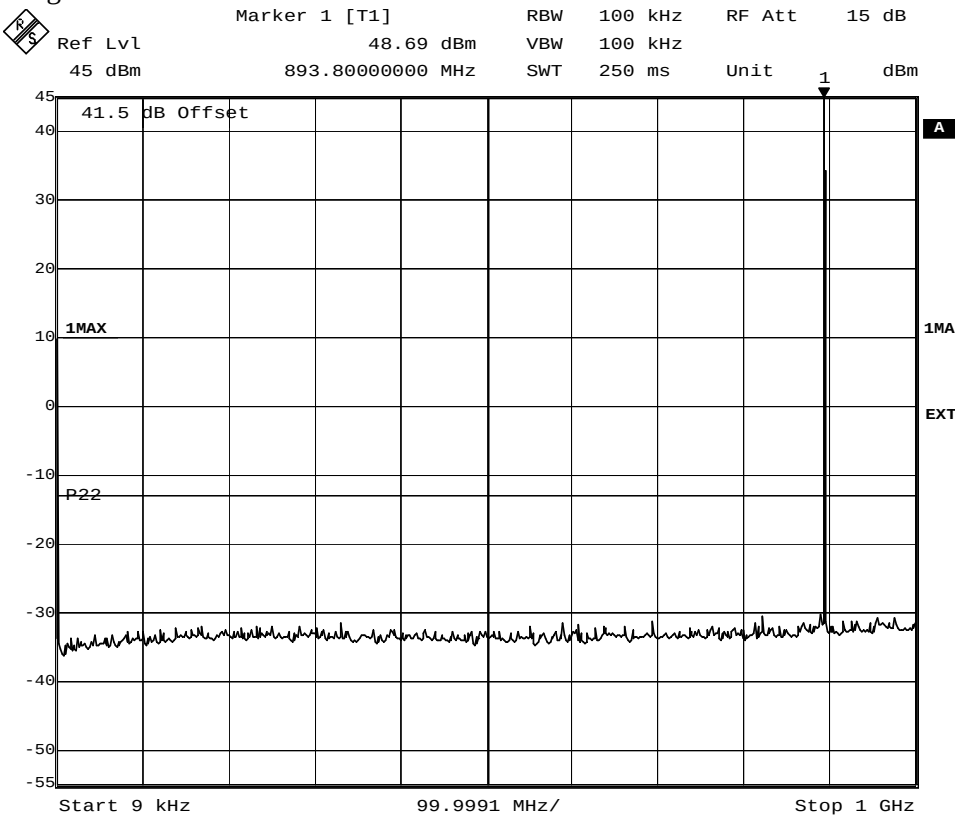


Date: 7.DEC.2006 16:13:53

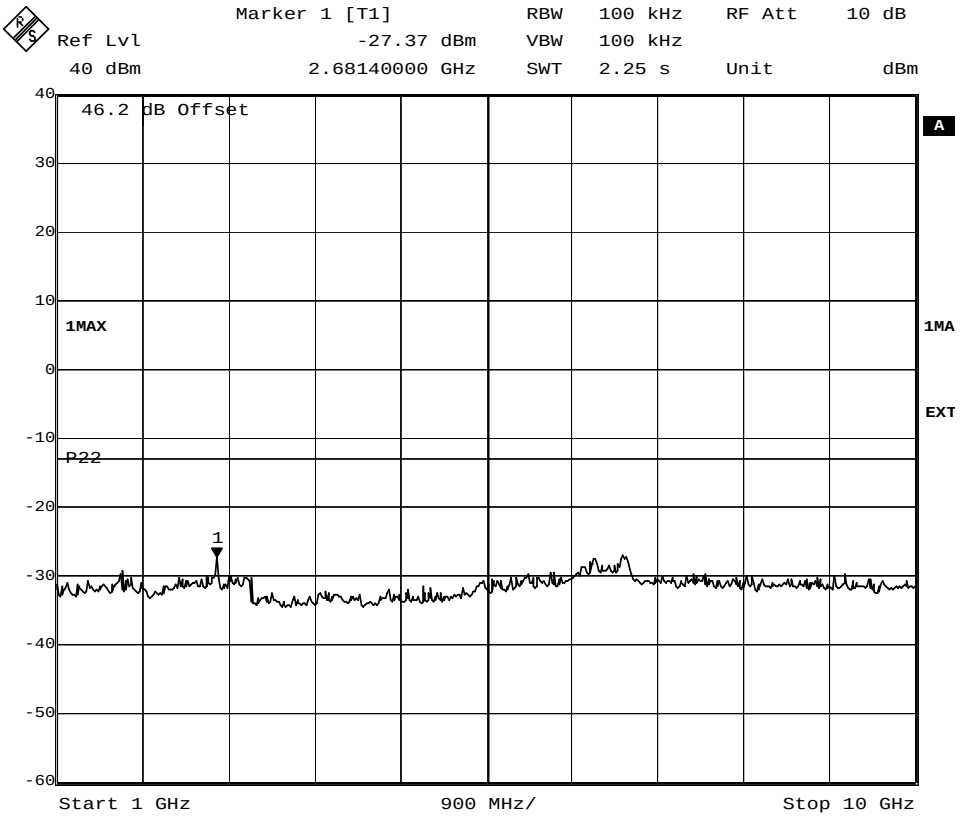


Date: 8.DEC.2006 08:52:21

Diagram 14

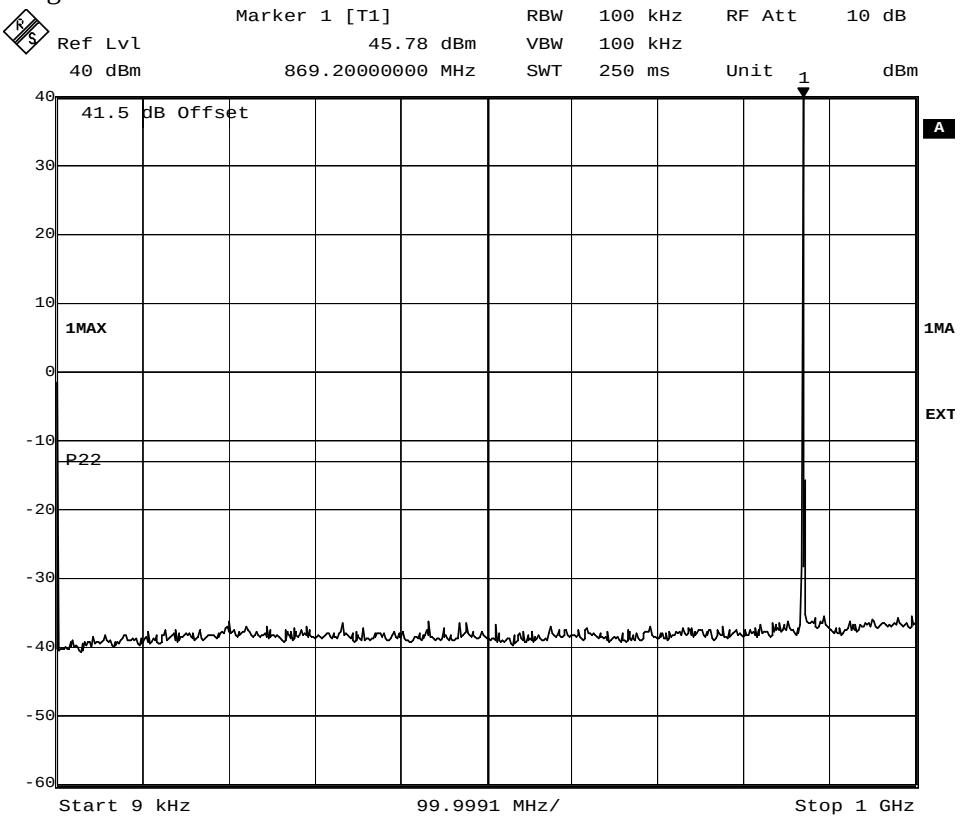


Date: 7.DEC.2006 16:13:21

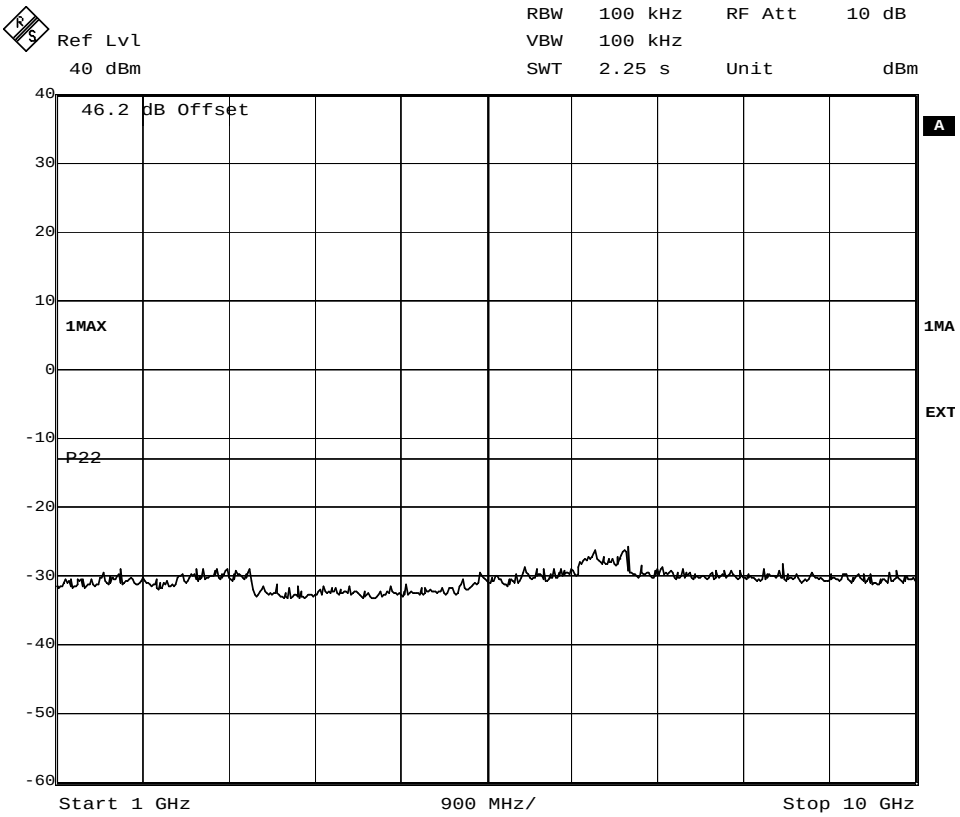


Date: 8.DEC.2006 08:53:36

Diagram 15

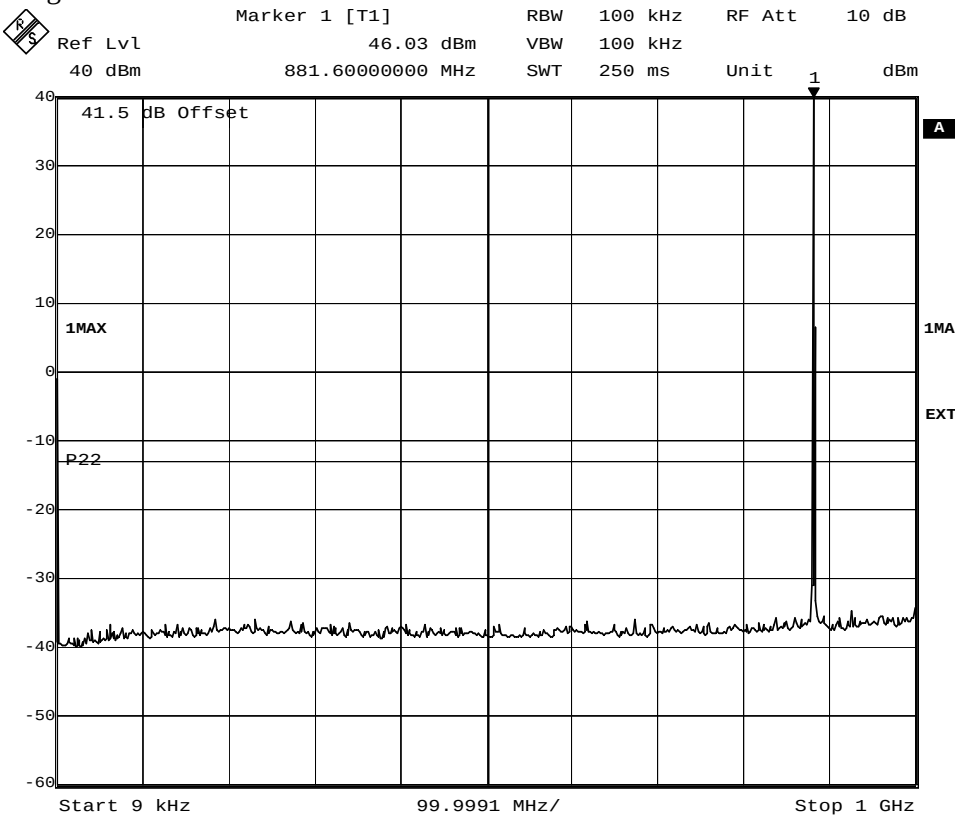


Date: 11.DEC.2006 10:58:36



Date: 11.DEC.2006 13:04:01

Diagram 16


Marker 1 [T1]
46.03 dBm
881.60000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
Ref Lvl
40 dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 11:00:24

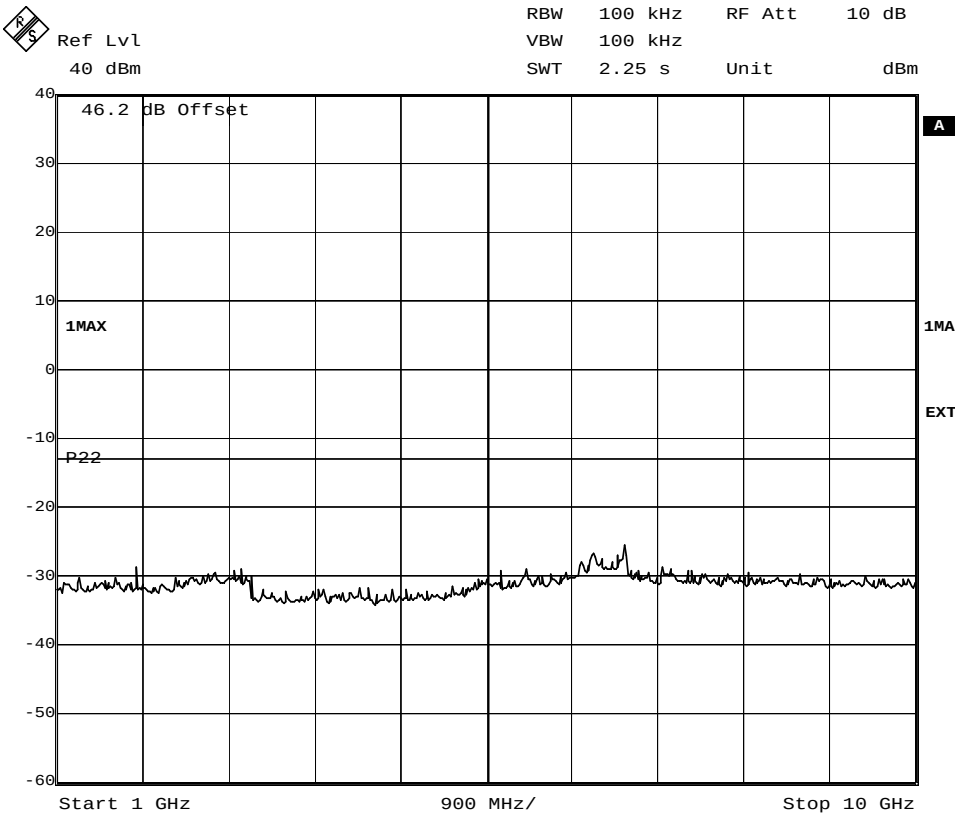
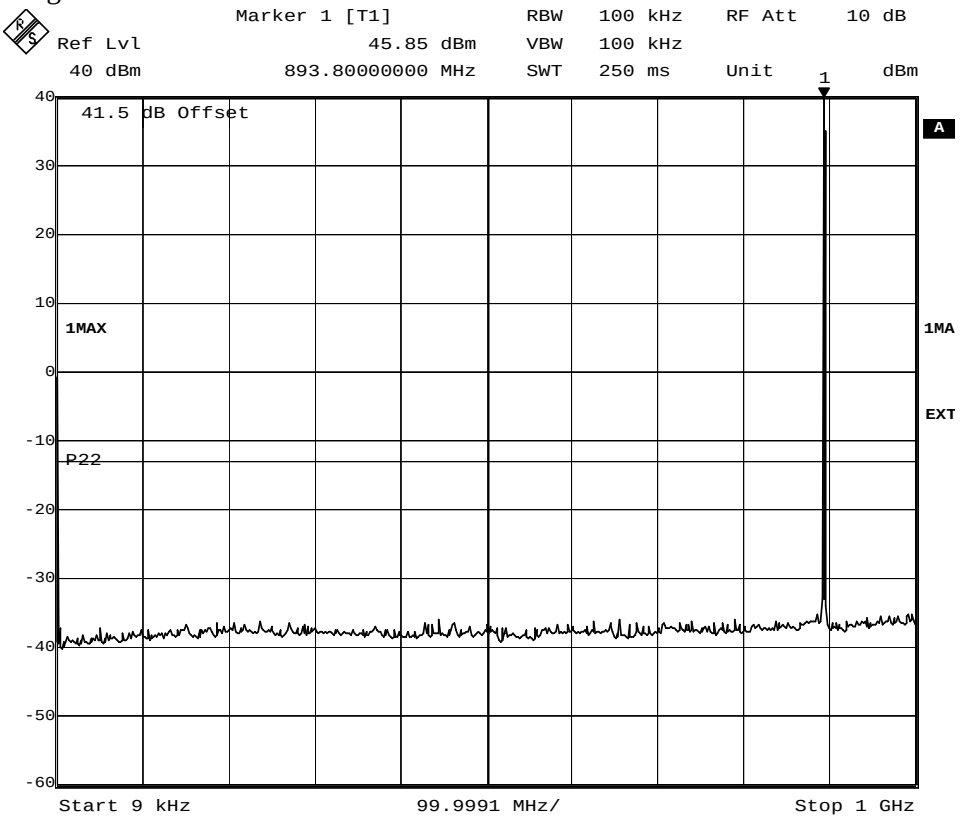

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 13:48:10

Diagram 17


Marker 1 [T1]
Ref Lvl
45.85 dBm
40 dBm
893.80000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 11:26:04

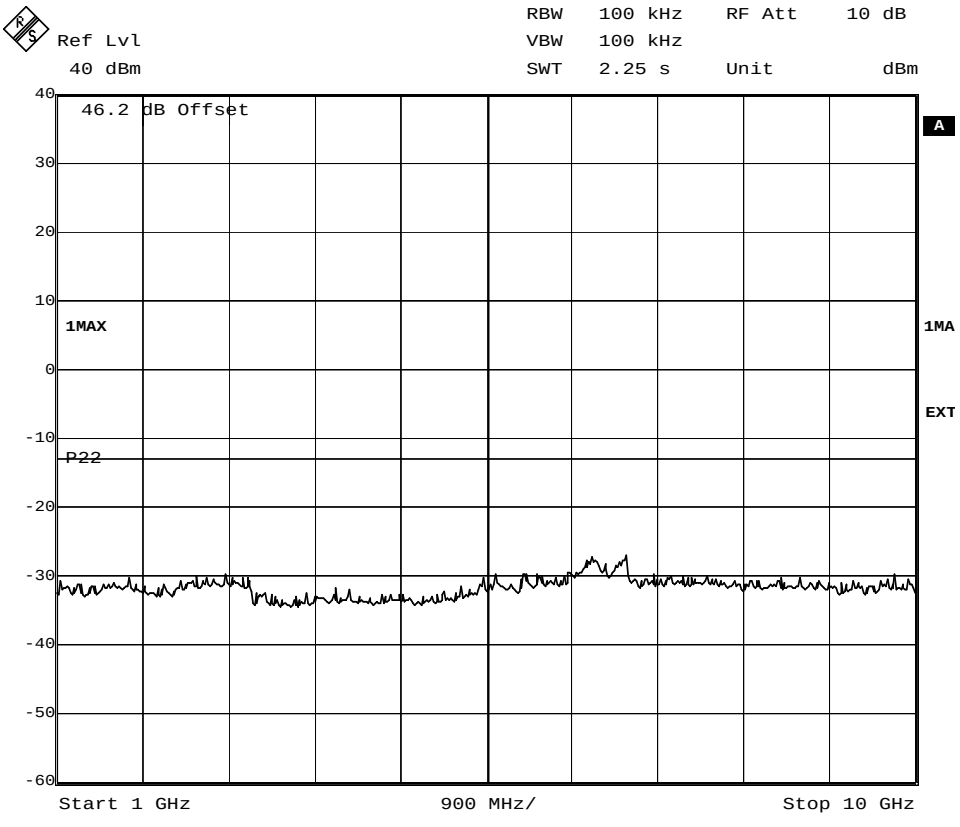
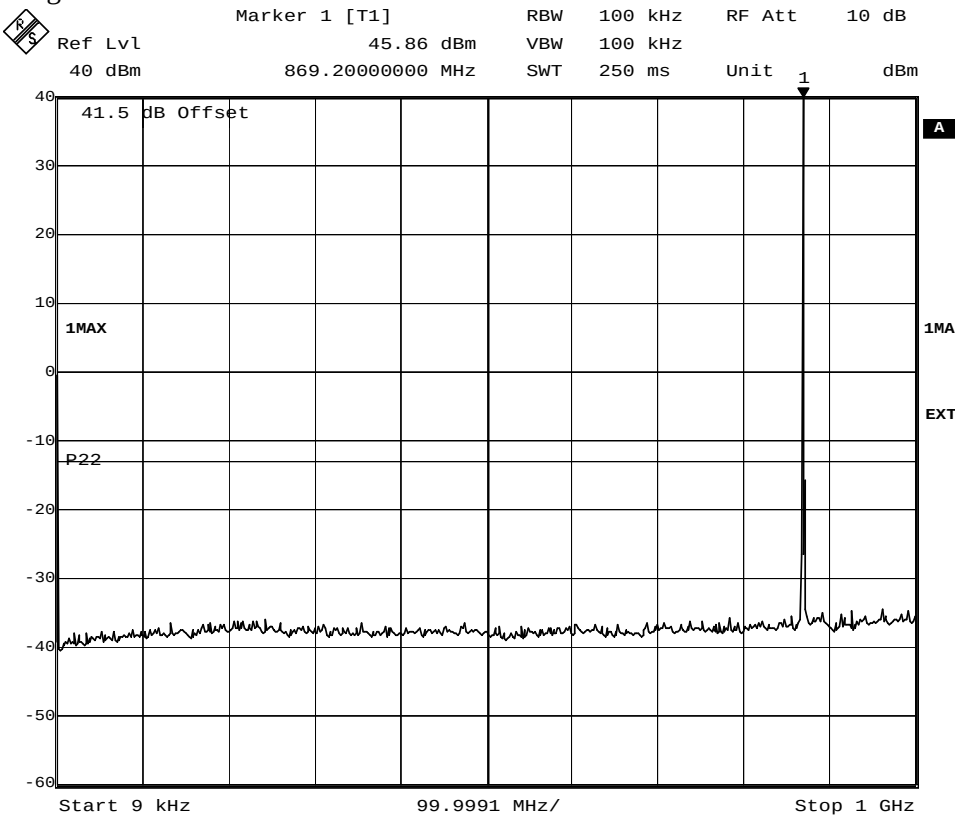

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 13:53:17

Diagram 18


Marker 1 [T1]
Ref Lvl
45.86 dBm
40 dBm
869.20000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 10:51:21

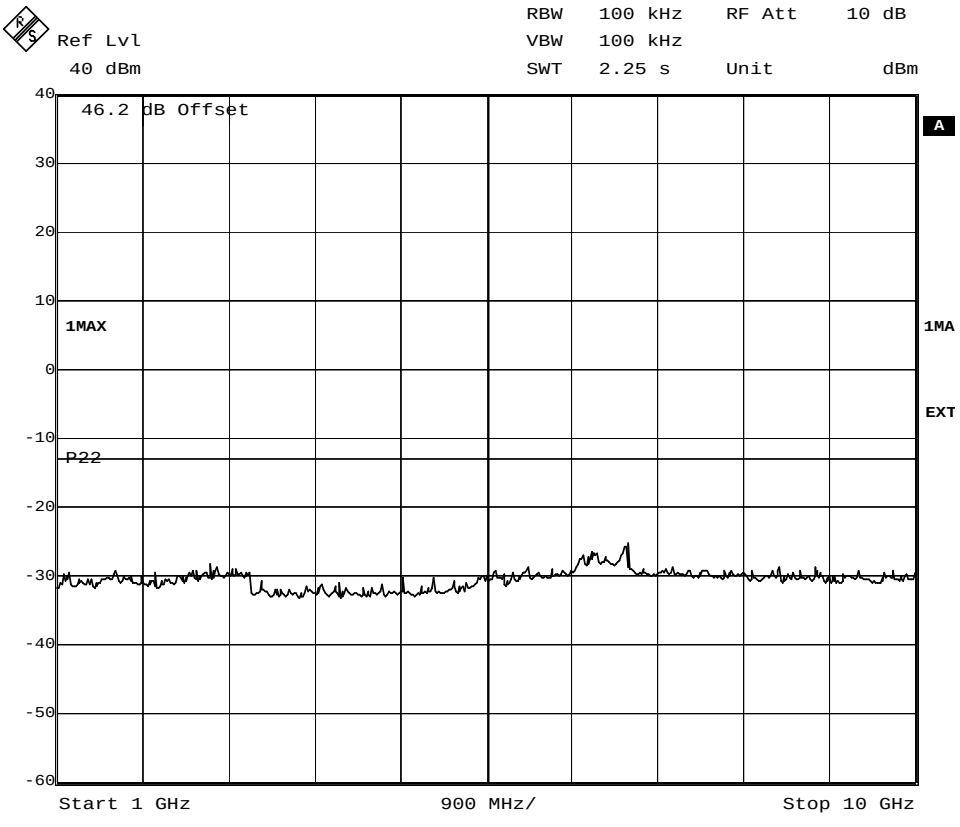
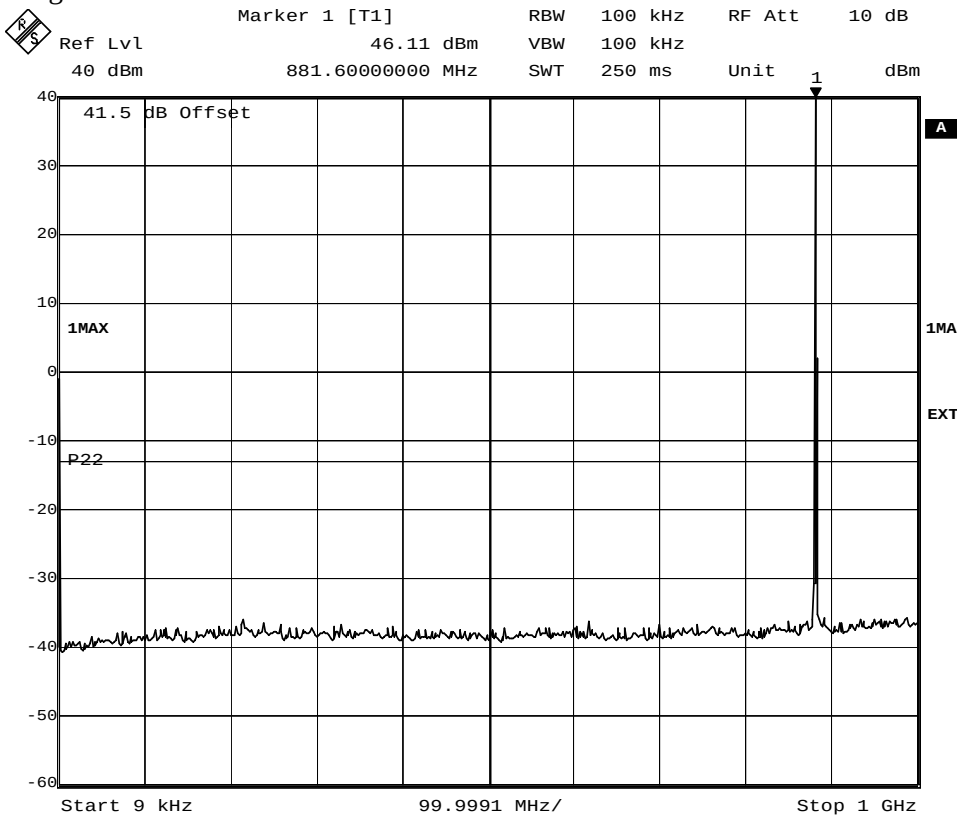

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 14:24:40

Diagram 19


Marker 1 [T1]
Ref Lvl
40 dBm
46.11 dBm
881.60000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 10:50:02

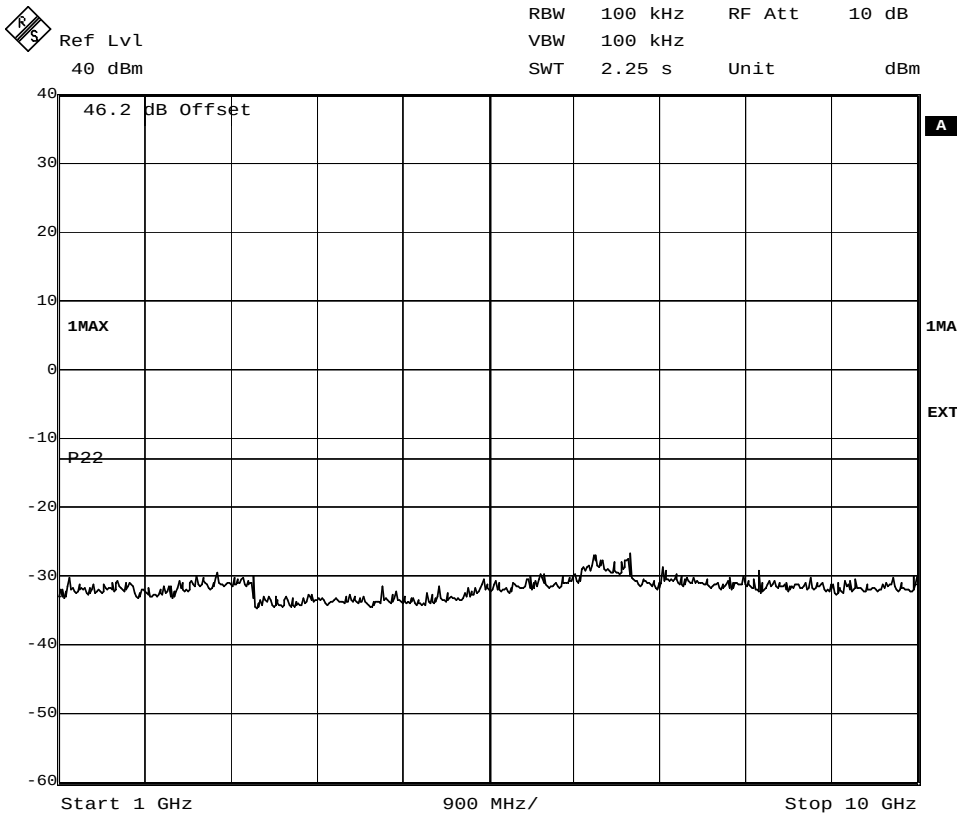
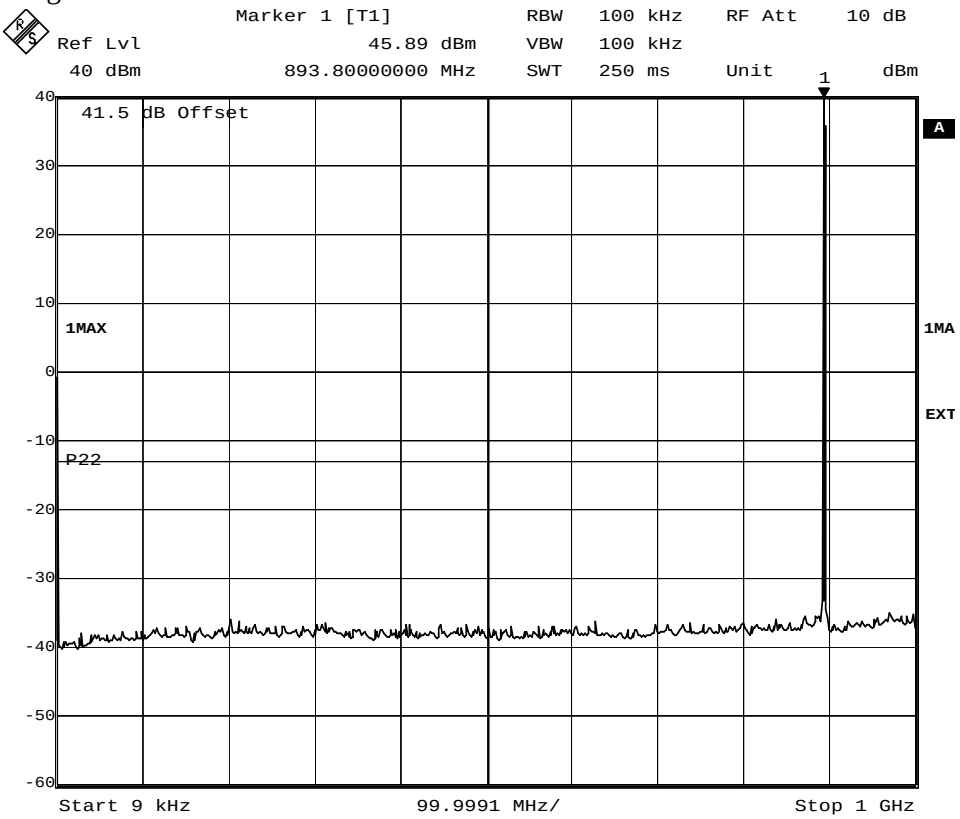

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 14:25:49

Diagram 20


Marker 1 [T1]
Ref Lvl
40 dBm
45.89 dBm
893.80000000 MHz
RBW 100 kHz
VBW 100 kHz
SWT 250 ms
RF Att 10 dB
Unit dBm
41.5 dB Offset
1MAX
P22
A
1MA
EXT
Start 9 kHz
99.9991 MHz/
Stop 1 GHz
Date: 11.DEC.2006 10:49:21

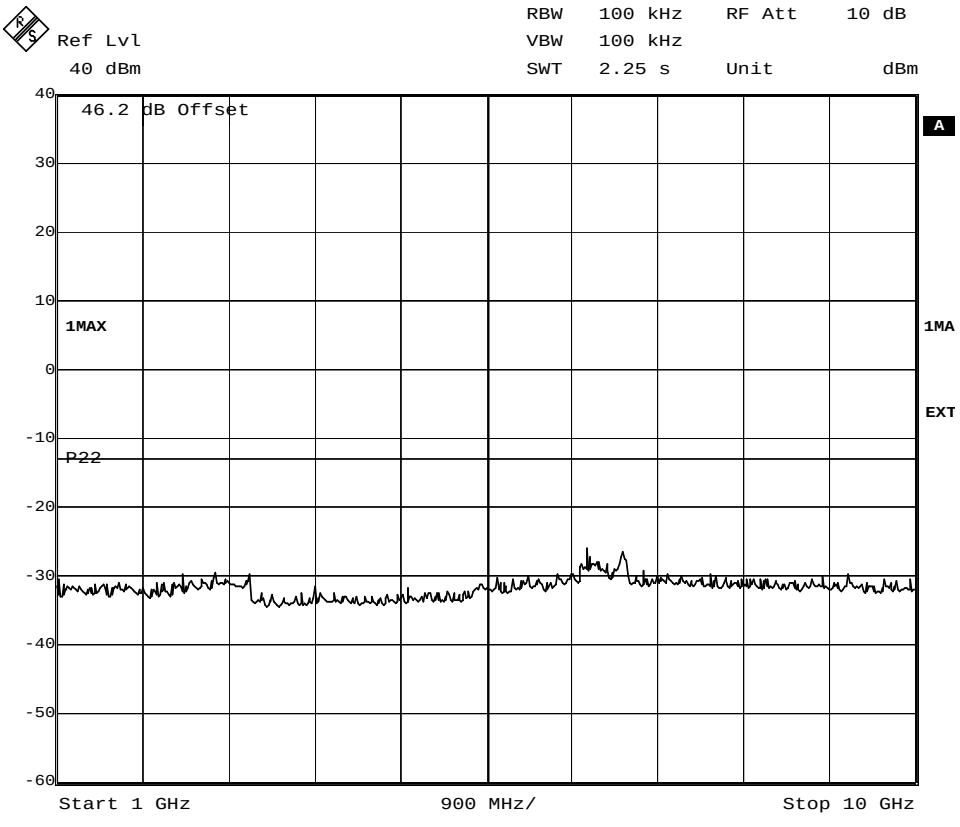
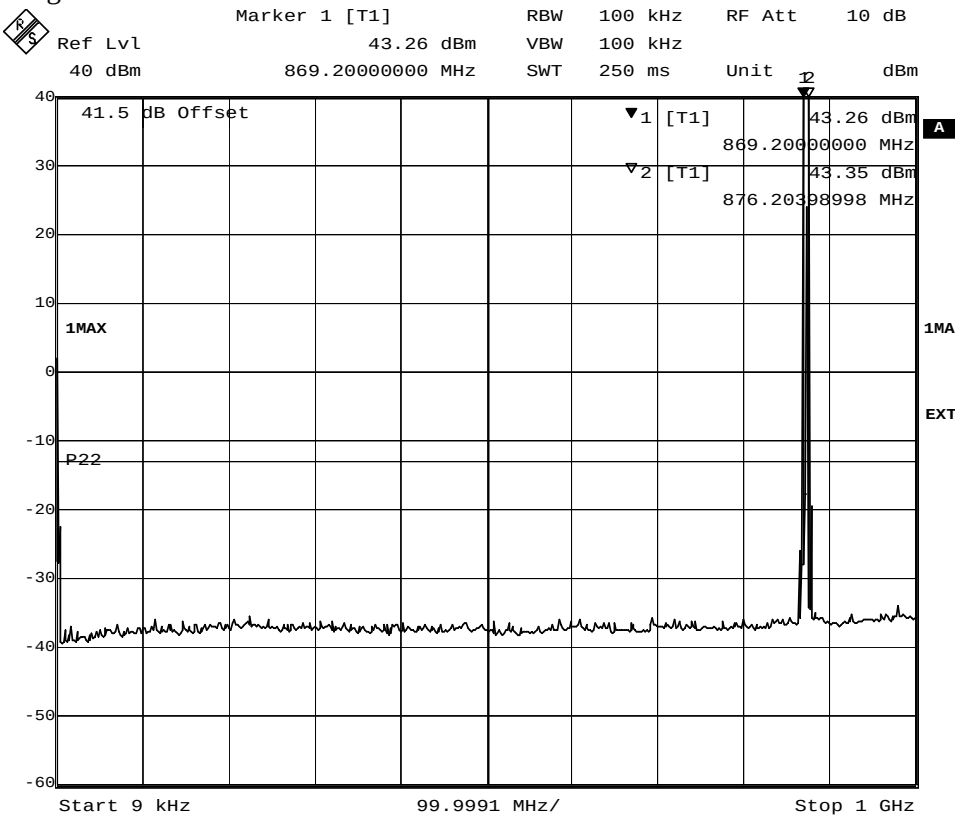
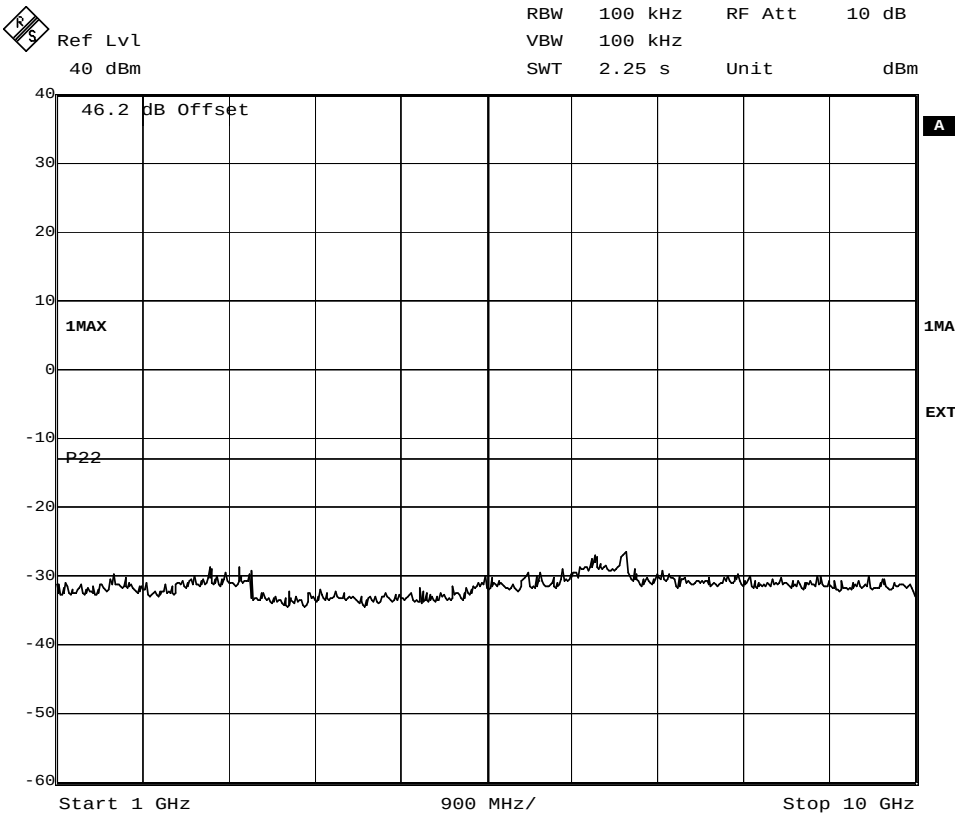

Ref Lvl
40 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
RF Att 10 dB
Unit dBm
46.2 dB Offset
1MAX
P22
A
1MA
EXT
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 11.DEC.2006 14:27:02

Diagram 21

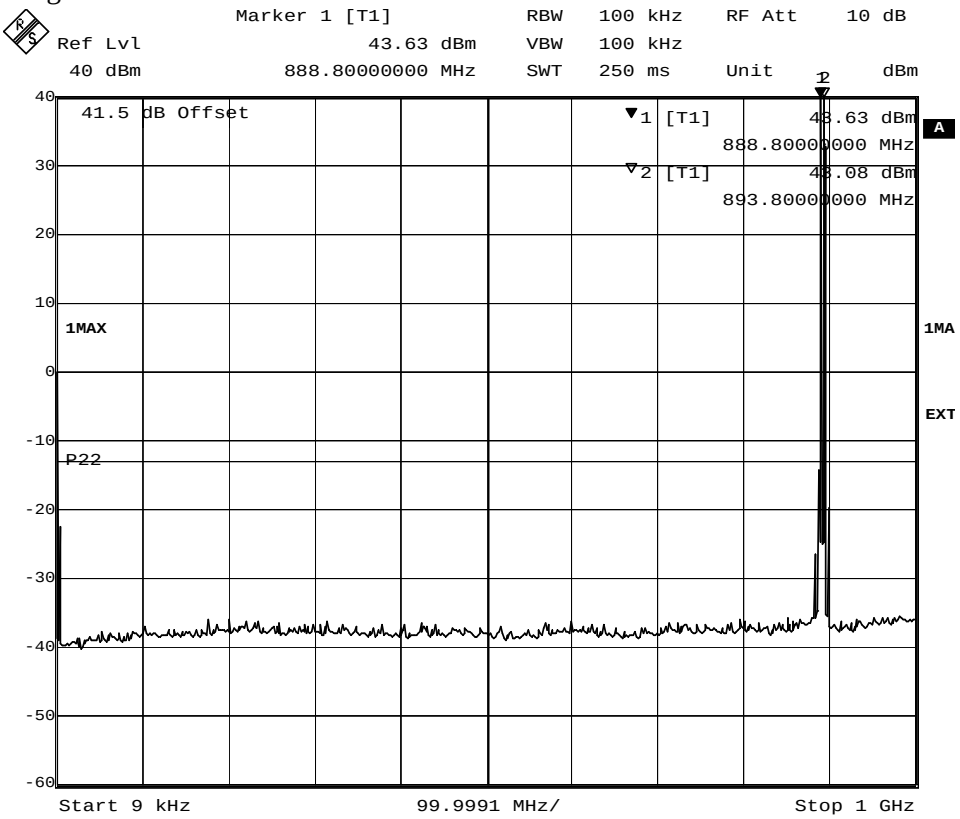


Date: 11.DEC.2006 16:03:34

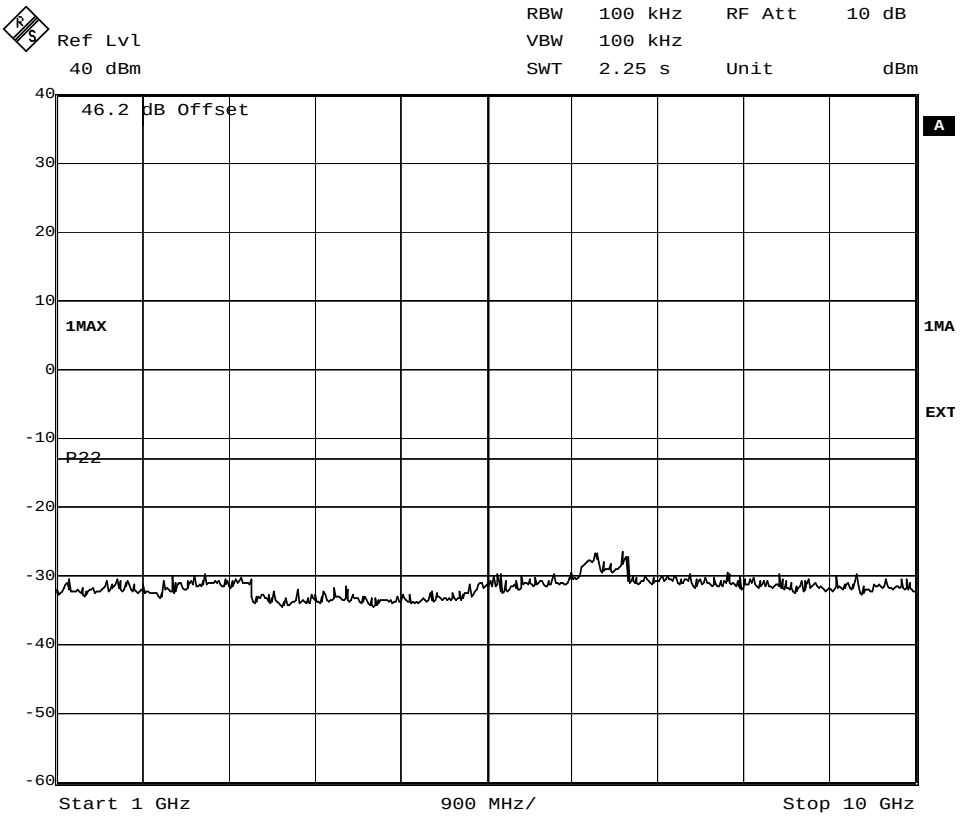


Date: 11.DEC.2006 15:59:38

Diagram 22



Date: 11.DEC.2006 16:05:57



Date: 11.DEC.2006 15:58:05

Field strength of spurious radiation measurements according to 47CFR 2.1053

Date	Temperature	Humidity
2006-12-04	21 °C ± 3 °C	38 % ± 5 %

Test set-up and procedure

The test site is listed at FCC, Columbia with registration number: 93866. The test site also complies with RSS 212, Issue 1, Industry Canada file no.:IC 3482.
The transmitter was activated at maximum output power and modulated with pseudorandom data during the measurements. The antenna ports were terminated with 50 ohm loads.

The measurements were performed with both horizontal and vertical polarisation of the antenna. The antenna distance was 3 m.

A pre-measurement was first performed:
In the frequency range 30 MHz-10 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,

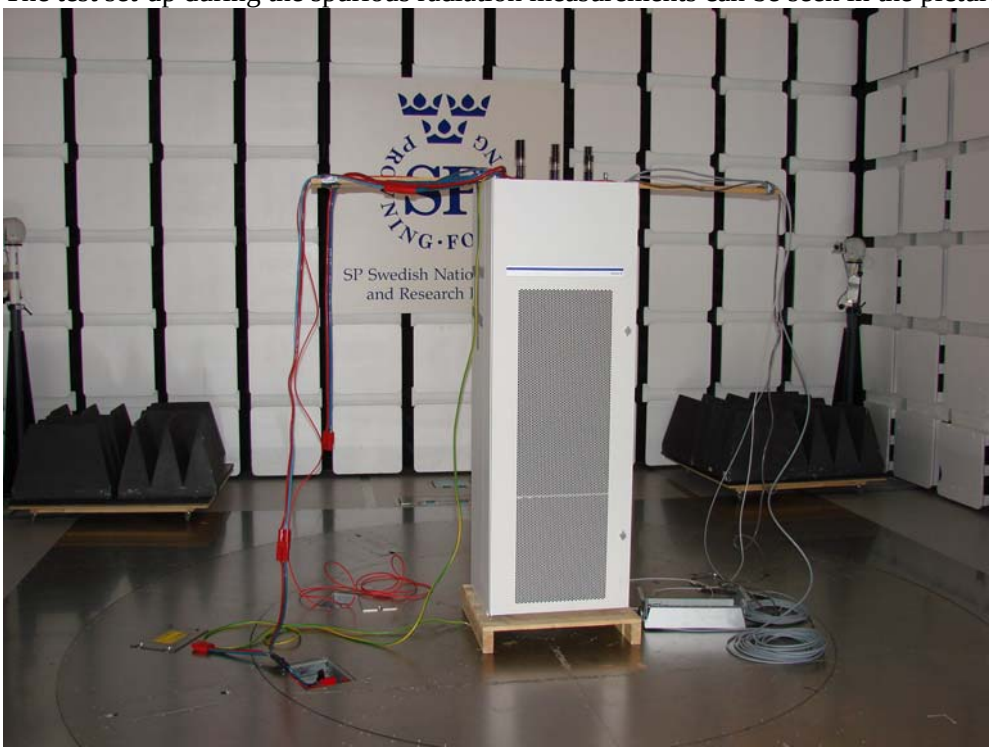
$\gamma = 20\log\left(\frac{4\pi D}{\lambda}\right)$, γ is the propagation loss and D is the antenna distance.

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 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 measured with the RMS detector was measured with the substitution method according to the standard.

Measurement equipment	Calibration Due	SP number
Test site, Tesla	2008-11	503 881
R&S ESI 26	2007-07	503 885
Control computer	-	503 479
Software: R&S ES-K1, ver. 1.60	-	-
Chase Bilog antenna CBL 6111A	2008-11	503 182
EMCO Horn Antenna 3115	2007-11	502 548
Std. gain :16240-25	-	503 939
MITEQ Low Noise Amplifier	2007-07	503 285
Testo 615, Temperature and humidity meter	2007-09	503 505

The test set-up during the spurious radiation measurements can be seen in the picture below



Results

GMSK and 8-PSK

Frequency (MHz)	Spurious emission level (dBm)	
	Vertical	Horizontal
30-10 000	All other emission > 20 dB below limit	All emission > 20 dB below limit
Measurement uncertainty		4.7 dB

Limits

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least 43 + 10 log P dB.

Complies?	Yes

Hardware list RBS 2206V2

Unit	Product Number	Revision	Serial Number
Cabinet	SEB 112 1154/1	R3A	AB20131929
Door	BXK 109 7157/1	R1A	-
DCCU-13	BMG 980 07/11	R1D	(S)BH41057603
DCCU-11	BMG 980 07/13	R1A	(S)BH41062174
Subrack	BFL 119 424/1	1R2C	-
CDU-K8-01	BFL 119 443/1	R1A	TR45148522
CDU-K8-01	BFL 119 443/1	R1A	TR45148518
CDU-K8-01	BFL 119 443/1	R1A	TR45148516
Dummy	SXK 107 5031/2	R1B	-
CXU-10	KRY 101 1856/1	R3D	TR44542643
Dummy	SXK 107 5031/1	R1B	-
TRU shelf	BFL 119 425/1	R1C	-
Backplane	BFX 101 107/3	R1B	-
dTRU-8	KRC 131 1005/2	R4A	AE53038583
dTRU-8	KRC 131 1005/2	R4A	AE53038589
dTRU-8	KRC 131 1005/2	R4A	AE53038582
dTRU-8	KRC 131 1005/2	R4A	AE53038585
dTRU-8	KRC 131 1005/2	R4A	AE53038709
dTRU-8	KRC 131 1005/2	R4A	AE53038579
IDM-11	BMG 980 327/2	R1A	X181174803
PSU-shelf	BFL 119 453/1	R1A	(S)BK41073469
Backplane	BFX 101 109/1	R1A	-
PSU-DC-32	BMR 910 423/2	R1A	(S)BR80231145
PSU-DC-32	BMR 910 423/2	R1A	(S)BR80231146
PSU-DC-32	BMR 910 423/2	R1A	(S)BR80231154
Dummy	SXK 107 9314/1	R1C	-
Dummy	-	-	-
Dummy	SXK 107 5029/1	R1D	-
TMA-CM-02	SDK 107 881/1	R4A	(S)BG800007QU
DXU-23	BOE 602 21/1	R1B	AE53362973

Distribution frame	NBA 101 22/1	R1A	-
OVP-ALM8	NFD 302 34/08	R1A	-
OVP-ALM8	NFD 302 34/08	R1A	-

Software	Revision
R12	R11E

FCC ID: B5KDKRC1311005-2 Appendix 7

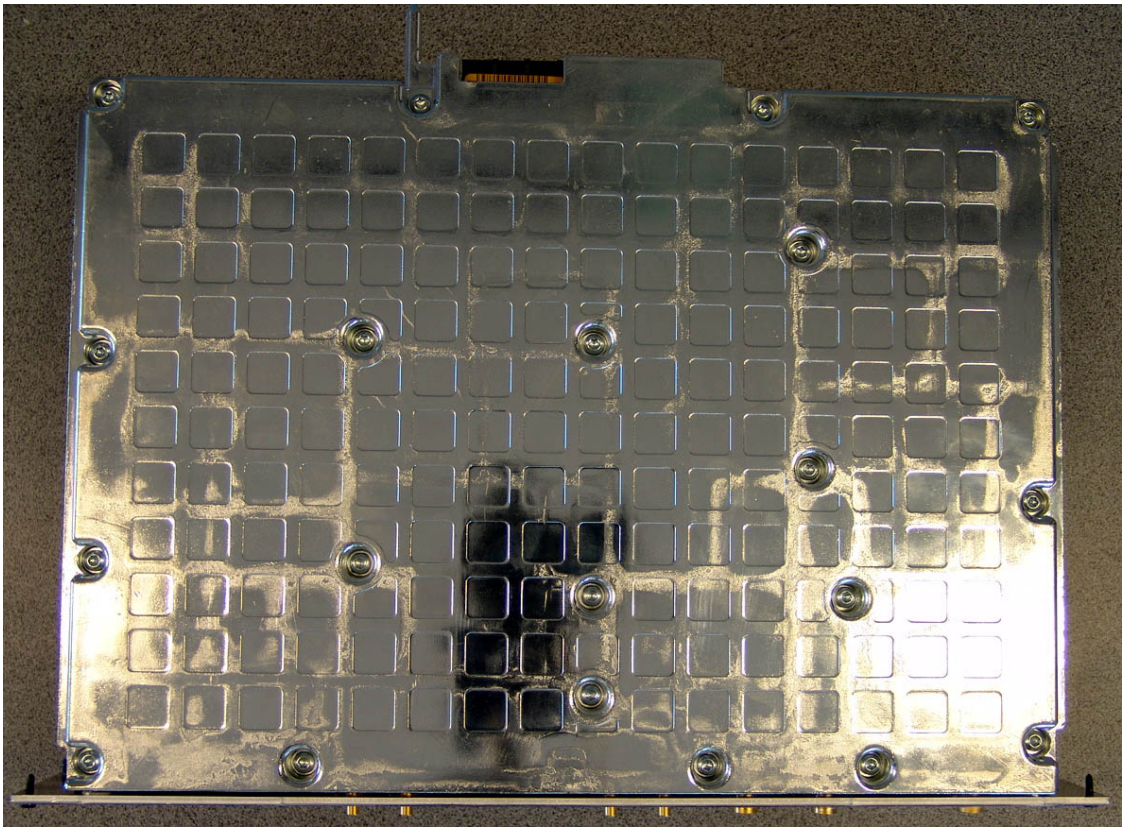
Photos
Transceiver Unit KRC 131 1005/2, R4A

Front side

Rear side

FCC ID label

Left side



Right side