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## Equipment authorization measurements on WCDMA Base Station 2100 MHz Radio Unit with FCC ID: TA8AKRC11829-2

(8 appendices)

### Test object

Radio Unit KRC 118 29/2

### Summary

Standard	Compliant	Appendix	Remarks
<b>FCC CFR 47</b>			
2.1046 RF power output	Yes	2	-
2.1049 Occupied bandwidth	Yes	3	-
2.1051 Band edge	Yes	4	-
2.1051 Spurious emission at antenna terminals	Yes	5	-
2.1053 Field strength of spurious radiation	Yes	6	-
2.1055 Frequency stability	Yes	7	-

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FCC ID: TA8AKRC11829-2

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**Description – Test object**

Equipment: WCDMA Radio Unit (RU) 2100 MHz, single and multi carrier

Tx Frequency range: 2112.4-2152.6 MHz

Modulations: QPSK and 16QAM

Maximum output power: Single carrier: 1x46 dBm (40W)  
Multi carrier: 2x43 dBm (2x20W)

Nominal power voltage: -48 VDC

**Tested channels**

UARFCN	Frequency
1537	2112.4 MHz
1587	2122.4 MHz
1612	2127.4 MHz
1637	2132.4 MHz
1662	2137.4 MHz
1688	2142.6 MHz
1738	2152.6 MHz

**Operation mode during measurements****Test models**

All measurements were performed with the test object transmitting the Test models 1 and 5 defined in 3GPP TS 25.141. Test model 1 use the QPSK modulation only, and Test model 5 includes the 16QAM modulation.

**Conducted measurements**

All RF conducted measurements were performed with the test object installed in a RBS 3206 cabinet powered with -48 VDC. All measurements were done at the output connector (Ant A) of the Filter Unit (FU) KRC 118 28/1. All measurements were performed at maximum output power with both modulations.

The settings below were found to be representative for all traffic scenarios when several settings were tested to find the setting for worst case.

**Single carrier**

Test model 1: 64 DPCHs at 30 ksps (SF=128)

Test model 5: 30 DHCPs at 30 ksps (SF=128) and 8 HS-PDSCHs at 240 ksps (SF=16)

**Multi carrier**

Test model 1: 32 DPCHs at 30 ksps (SF=128)

Test model 5: 30 DHCPs at 30 ksps (SF=128) and 8 HS-PDSCHs at 240 ksps (SF=16)

## Radiated measurements

All radiated measurements were performed with the test object installed in a RBS 3106 cabinet powered with 3-phase 208/120 VAC and in a RBS 3206 cabinet powered with -48 VDC. In both cases there were six RU units installed in the cabinets (RF configuration 3x2).

The RU units were activated for maximum transmit power. The RU units were activated as Single Carrier 3x2 (6 RU, 1x46 dBm) and Multi Carrier 3x2 (3 RU, 2x43 dBm). The RF output power ports were terminated with 50 ohm loads.

The RU units were allocated to the following UARFCN:

### Single Carrier:

RU	1	2	3	4	5	6
Cell	1	2	3	4	5	6
Downlink	1537 (2112.4 MHz)	1587 (2122.4 MHz)	1612 (2127.4 MHz)	1662 (2137.4 MHz)	1688 (2142.6 MHz)	1738 (2152.6 MHz)
Uplink	1312 (1712.4 MHz)	1362 (1722.4 MHz)	1387 (1727.4 MHz)	1437 (1737.4 MHz)	1463 (1742.6 MHz)	1513 (1752.6 MHz)
Test model	5	1	5	1	5	1

### Multi Carrier:

RU	1		3		5	
Cell	1	2	3	4	5	6
Downlink	1537 (2112.4 MHz)	1587 (2122.4 MHz)	1612 (2127.4 MHz)	1662 (2137.4 MHz)	1688 (2142.6 MHz)	1738 (2152.6 MHz)
Uplink	1312 (1712.4 MHz)	1362 (1722.4 MHz)	1387 (1727.4 MHz)	1437 (1737.4 MHz)	1463 (1742.6 MHz)	1513 (1752.6 MHz)
Test model	5	1	5	1	5	1

Test model 1: 16 DPCHs at 30 ksps (SF=128)

Test model 5: 6 DHCPs at 30 ksps (SF=128) and 2 HS-PDSCHs at 240 ksps (SF=16)

## Purpose of test

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

## References

Measurements were done according to relevant parts of the following standards:  
ANSI/TIA/EIA-603-B-2002  
3GPP TS 25.141

## Reservation

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

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Appendix 1

**Delivery of test object**

The test object was delivered: 2006-05-09

**Manufacturer's representative**

Larry Lindström, Ericsson AB

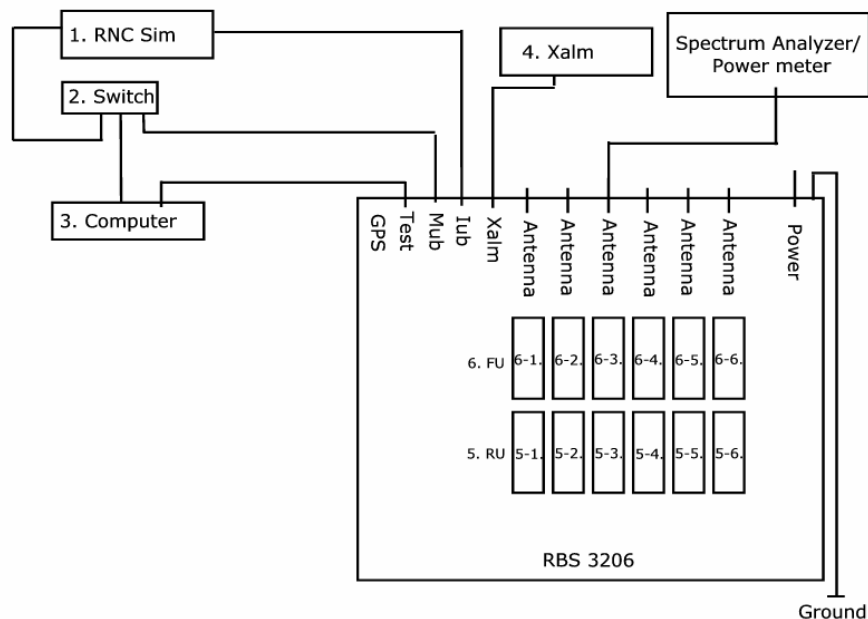
**Test engineers**

Stefan Larsson, Jörgen Wassholm, and Jonas Bremholt.

**Test witnesses**

Larry Lindström, Christer Gustavsson, and Thomas Odén, Ericsson AB

## Test set-up, conducted measurements



RBS 3206: Product number: 2/BFE 401 1012 R1J, Serial No: AB20037199 with software CXP 901 1610 rev. P3ED. More information about the RBS hardware units are shown in SP document F610065-H1.

1. RNC Sim CES 4780DA Mini-sim#53, Asset ID.: ETE-212119
2. Switch, Netgear Ethernet switch FS108
3. Computer, SUN Microsystems, Asset ID.: ETE-203521
4. Xalm connection unit ZHA 901 01/3 R1A
- 5-3. RU KRC 118 29/2 Rev. R1A, Serial No: AE52762076 (FCC id: TA8AKRC11829-2)
- 6-3. FU KRC 118 28/1 Rev. R1B, Serial No: A400384921

### Interfaces:

Power, -48 VDC

Coaxial cable with N connector and adaptor to 7/16"

Iub, configured as T1 by CBU, shielded multi-wire with RJ-45 connector

Mub, shielded multi-wire with RJ-45 connector

Test, serial interface, shielded multi-wire with RJ-45 connector

Xalm, shielded multi-wire with RJ-45 connector

GPS, not supported

### Type of port:

DC power

Antenna

Telecom

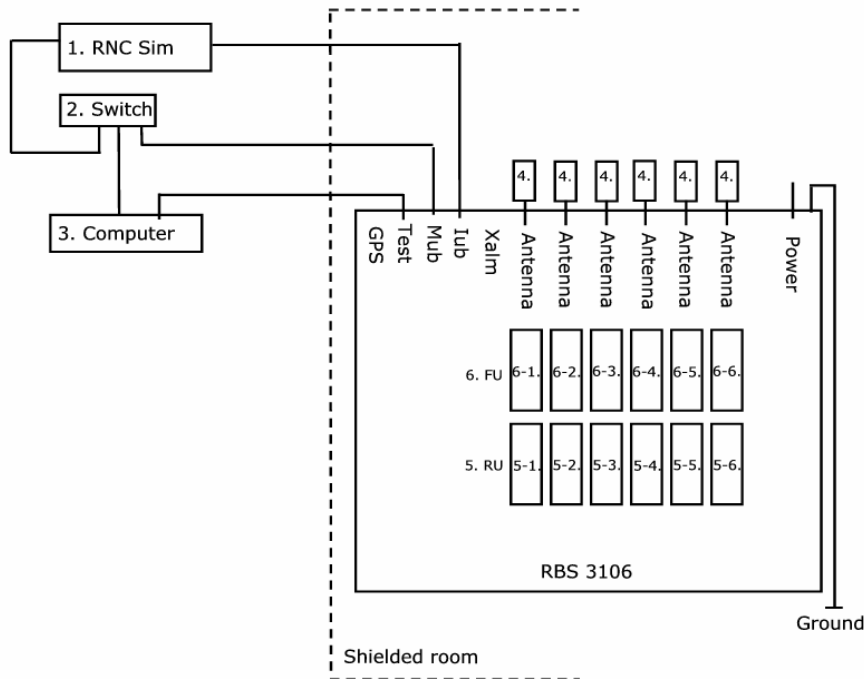
Test purpose

Test purpose

Signal

Signal

### Test set-up, radiated measurements RBS 3106



RBS 3106: Product number: 3/BFE 401 1015/08, R2A, Serial No: TU87830689 with software CXP 901 1610 rev. P3ED. More information about the RBS hardware units are shown in SP document F610065-H2

1. RNC Sim CES 4780DA Mini-sim#33, Ericsson no.: ETE-203565
2. Switch, Netgear Ethernet switch FS108
3. Computer, SUN Microsystems, Ericsson no.: ETE-203521
4. 50 ohm terminator
5. RU KRC 118 29/2 Rev. R1A (FCC id: TA8AKRC11829-2)
  - 5-1. Serial No: AE52800020
  - 5-2. Serial No: AE52800019 (not used during multi carrier)
  - 5-3. Serial No: AE52799996
  - 5-4. Serial No: AE52754639 (not used during multi carrier)
  - 5-5. Serial No: AE52762092
  - 5-6. Serial No: AE52762091 (not used during multi carrier)
6. FU KRC 118 28/1 Rev. R1B
  - 6-1. Serial No: A400389534
  - 6-2. Serial No: A400388435 (not used during multi carrier)
  - 6-3. Serial No: A400389098
  - 6-4. Serial No: A400384911 (not used during multi carrier)
  - 6-5. Serial No: A400389093
  - 6-6. Serial No: A400389095 (not used during multi carrier)

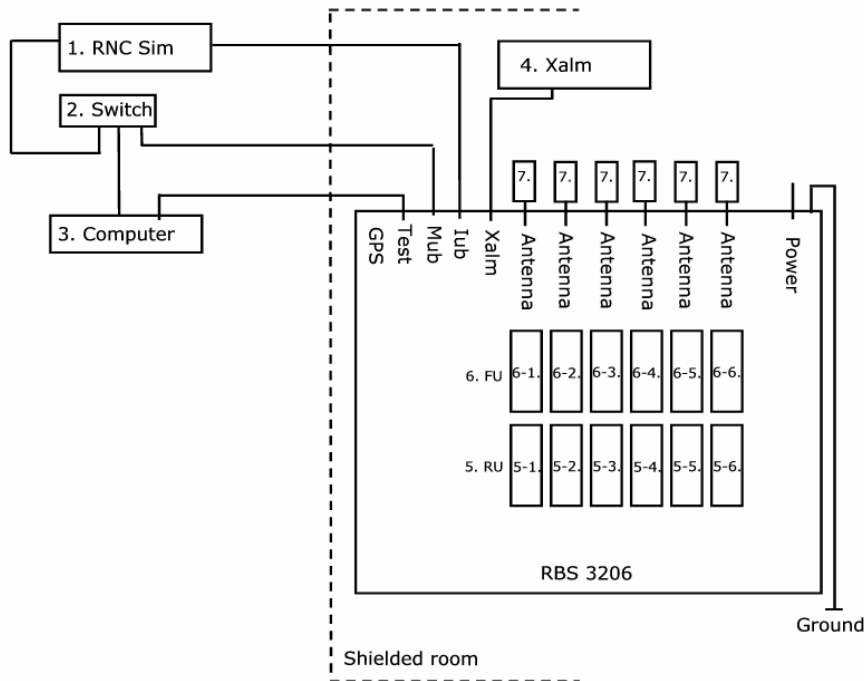
#### Interfaces:

Power, 208/120 VAC  
 Coaxial cable with N connector and adaptor to 7/16"  
 Iub, configured as T1 by CBU, shielded multi-wire with RJ-45 connector  
 Mub, shielded multi-wire with RJ-45 connector  
 Test, shielded multi-wire with RJ-45 connector  
 Xalm, no external cable attached  
 GPS, not supported

#### Type of port:

AC Mains  
 Antenna  
 Telecom  
 Test purpose  
 Test purpose  
 Signal  
 Signal

### Test set-up, radiated measurements RBS 3206



RBS 3206: Product number: 2/BFE 401 1012 R1J, Serial No: AB20037199 with software CXP 901 1610 rev. P3ED. More information about the RBS hardware units are shown in SP document F610065-H1.

1. RNC Sim CES 4780DA Mini-sim#33, Ericsson no.: ETE-203565
2. Switch, Netgear Ethernet switch FS108
3. Computer, SUN Microsystems, Ericsson no.: ETE-203521
4. Xalm connection unit ZHA 901 01/3 R1A with 2 m alarm cables
5. RU KRC 118 29/2 Rev. R1A (FCC id: TA8AKRC11829-2)
  - 5-1. Serial No: AE52762090
  - 5-2. Serial No: AE52754615 (not used during multi carrier)
  - 5-3. Serial No: AE52762076
  - 5-4. Serial No: AE52800009 (not used during multi carrier)
  - 5-5. Serial No: AE52762093
  - 5-6. Serial No: AE52754617 (not used during multi carrier)
6. FU KRC 118 28/1 Rev. R1B
  - 6-1. Serial No: A400384919
  - 6-2. Serial No: A400387411 (not used during multi carrier)
  - 6-3. Serial No: A400384921
  - 6-4. Serial No: A400387410 (not used during multi carrier)
  - 6-5. Serial No: A400387408
  - 6-6. Serial No: A400387412 (not used during multi carrier)
7. 50 ohm Termination

#### Interfaces:

Power, -48 VDC  
 Coaxial cable with N connector and adaptor to 7/16"  
 Iub, configured as T1 by CBU, shielded multi-wire with RJ-45 connector  
 Mub, no cable attached  
 Test, no cable attached  
 Xalm, shielded multi-wire with RJ-45 connector  
 GPS, Not supported

#### Type of port:

DC Power  
 Antenna  
 Telecom  
 Test purpose  
 Test purpose  
 Signal  
 Signal



## RF power output measurements according to 47 CFR 2.1046

Date 2006-06-09	Temperature 22 °C ± 3 °C	Humidity 41 % ± 5 %
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### Test set-up and procedure

The output was connected to a Peak power analyzer. The transmitter was set up according to Test model 1 and Test model 5 during the measurements.

Measurement equipment	Calibration Due	SP number
Boonton RF Peak power meter/analyzer	2007-08	503 144
Boonton Power sensor 56518-S/4	2007-08	503 145
Multimeter Fluke 87	2006-11	502 190
Testo 610, Temperature and humidity meter	2006-12	502 658

**Measurement uncertainty:** 0.5 dB

### Results

#### Single carrier

Rated output power level after FU unit (maximum): 1x46 dBm

Test conditions $T_{nom}$ 22 °C/ $V_{nom}$ -48 V DC	Transmitter power (dBm) Average		
	Frequency 2112.4	Frequency 2132.4	Frequency 2152.6
QPSK	46.0	45.9	45.8
16QAM	46.0	45.9	45.8

#### Multi carrier

Rated output power level after FU unit (maximum): 2x43 dBm

Test conditions $T_{nom}$ 22 °C/ $V_{nom}$ -48 V DC	Transmitter combined power (dBm) Average		
	Frequencies 2112.4 2122.4	Frequencies 2127.4 2137.4	Frequencies 2142.6 2152.6
QPSK	45.9	45.9	45.7
16QAM	45.9	45.8	45.7

### Limit

§27.50: Maximum output power shall not exceed 100W (50dBm).

Complies?	Yes
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## Occupied bandwidth measurements according to 47 CFR 2.1049

Date 2006-06-09	Temperature 22 °C ± 3 °C	Humidity 48 % ± 5 %
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### Test set-up and procedure

The measurements were made per definition in §2.1049. The output was connected to a spectrum analyzer. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements. The transmitter was set up according to Test model 1 and Test model 5 during the measurements.

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

**Measurement uncertainty:** 3.7 dB

### Results

The results are shown in appendix 3.1

#### QPSK

	Frequency	OBW
Diagram 1	2112.4 MHz	4.2 MHz
Diagram 2	2132.4 MHz	4.2 MHz
Diagram 3	2152.6 MHz	4.2 MHz

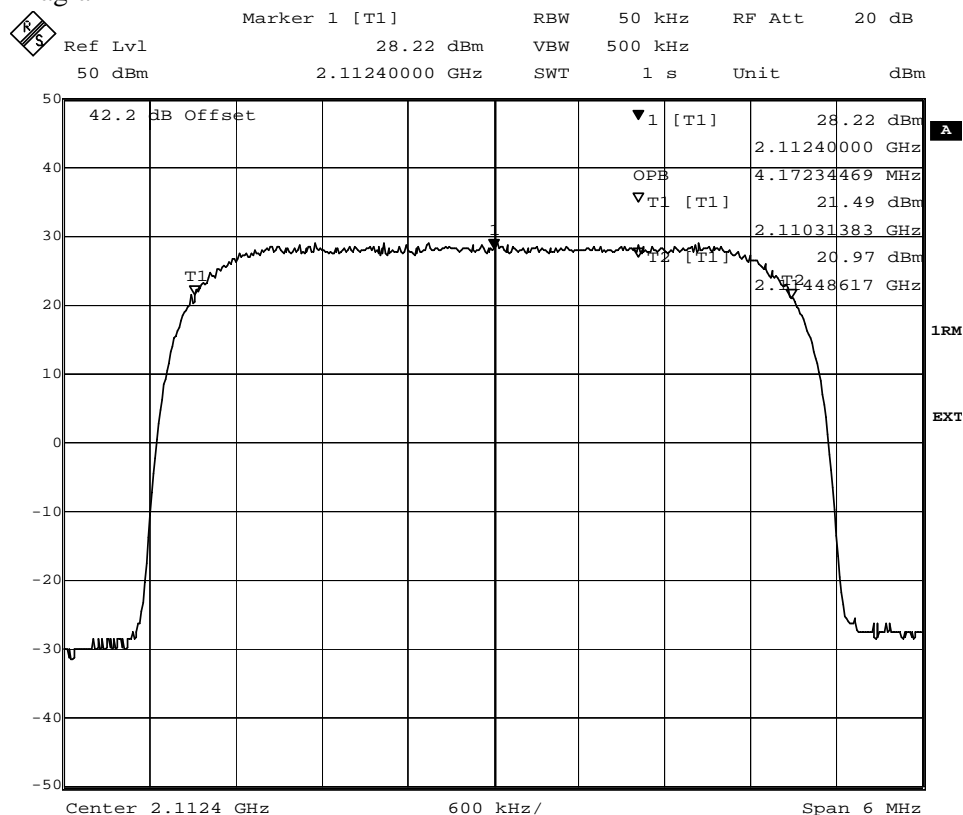
#### 16QAM

	Frequency	OBW
Diagram 4	2112.4 MHz	4.2 MHz
Diagram 5	2132.4 MHz	4.2 MHz
Diagram 6	2152.6 MHz	4.2 MHz

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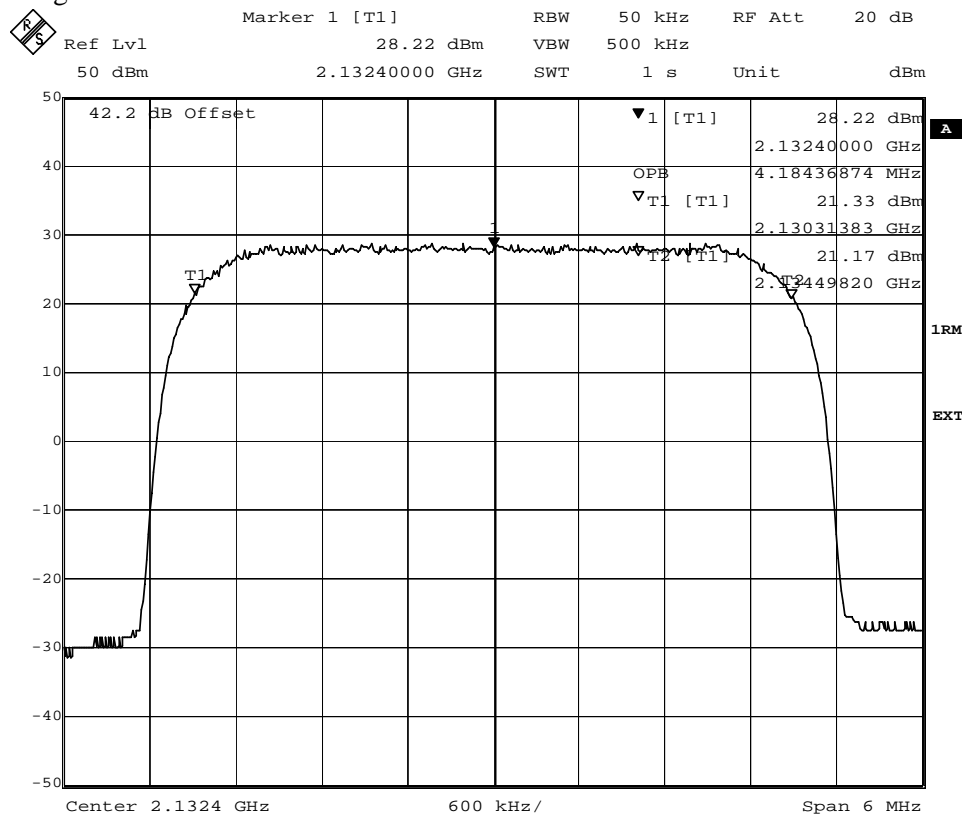
Appendix 3.1

Diagram 1



Date: 9.JUN.2006 13:07:09

Diagram 2

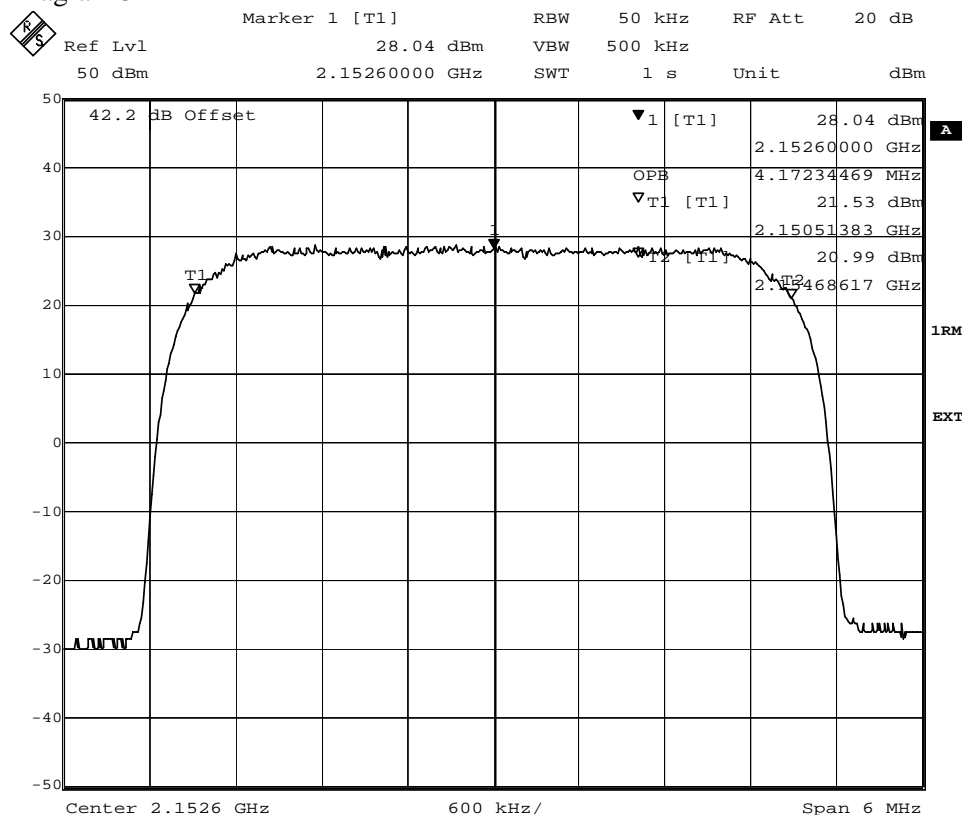


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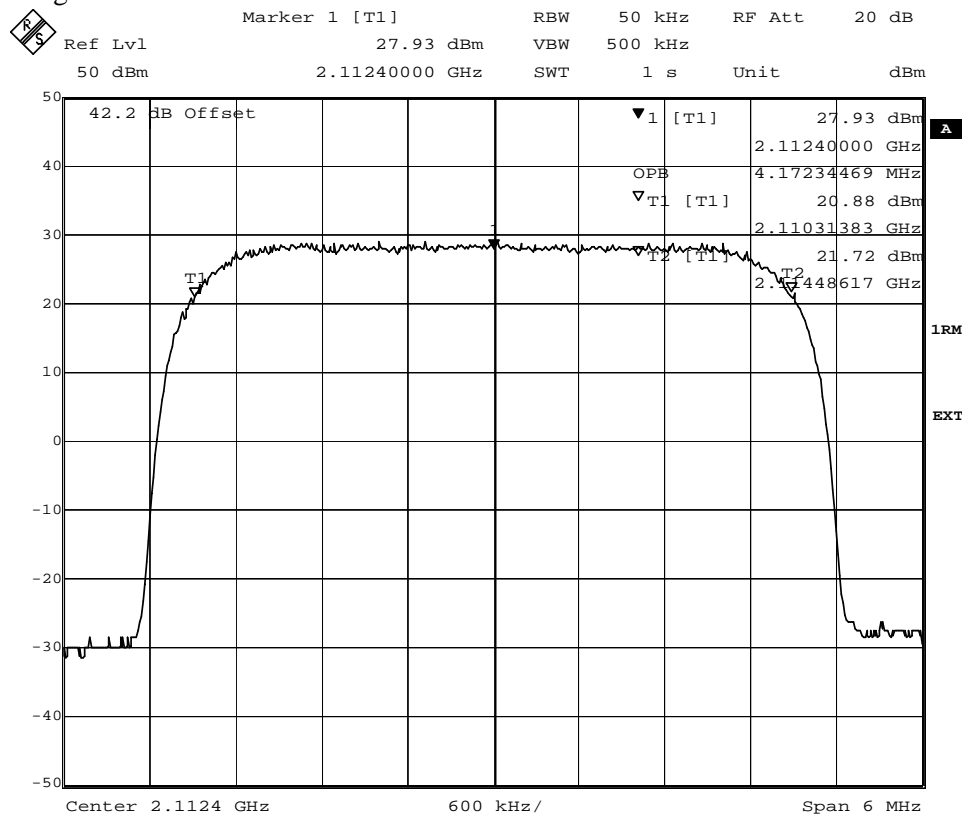
Appendix 3.1

Diagram 3



Date: 9.JUN.2006 14:45:15

Diagram 4

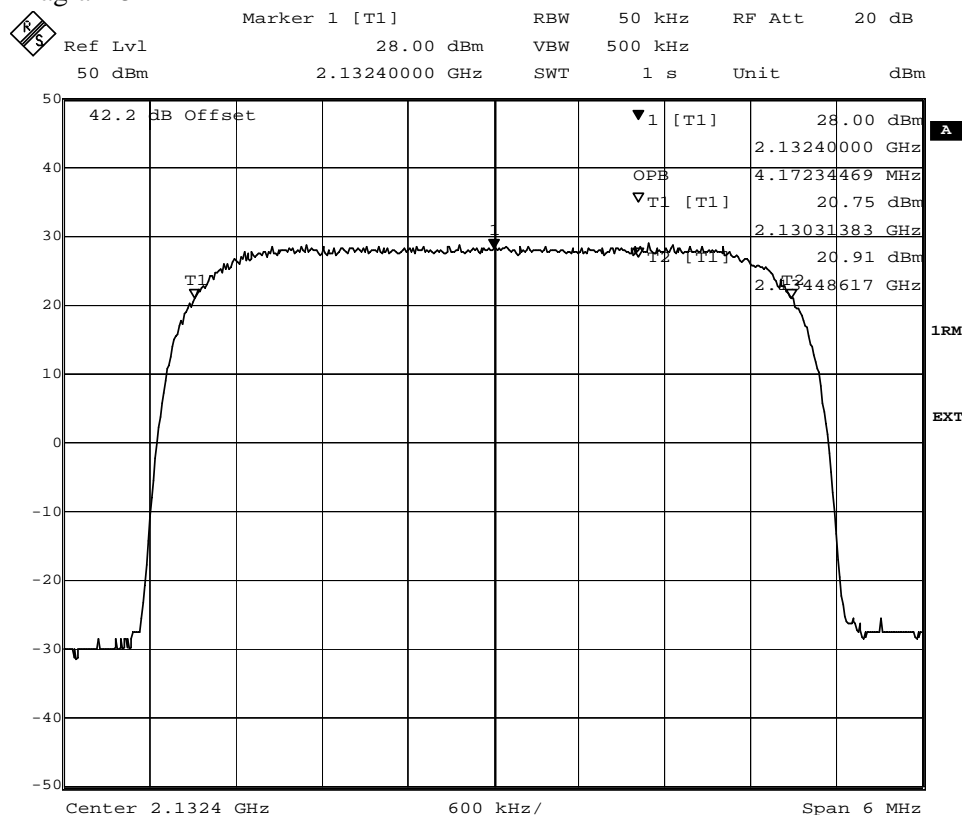


Date: 9.JUN.2006 13:01:52

FCC ID: TA8AKRC11829-2

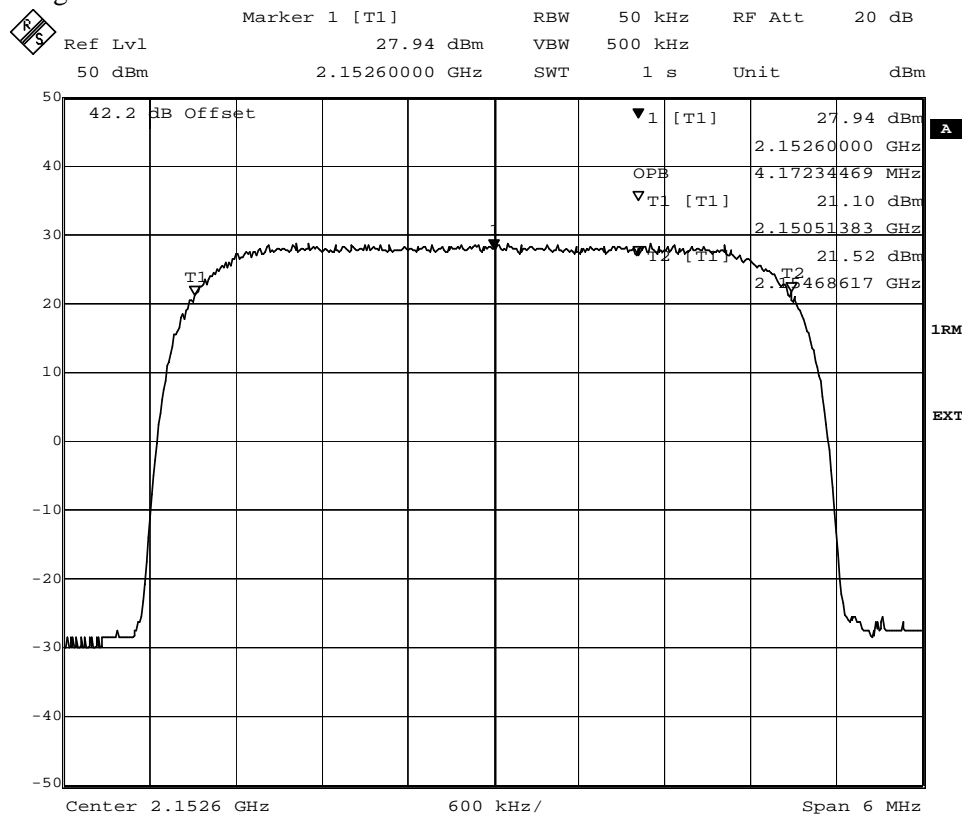
Appendix 3.1

Diagram 5



Date: 9.JUN.2006 14:26:07

Diagram 6



Date: 9.JUN.2006 14:55:30

**Band edge measurements according to 47 CFR 2.1051**

Date 2006-06-09	Temperature 22 °C ± 3 °C	Humidity 48 % ± 5 %
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**Test set-up and procedure**

The measurements were made per definition in §27.53. The output was connected to a spectrum analyzer with the average detector activated. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements. A resolution bandwidth of 30 kHz was used up to 1 MHz away from the band edges. 30 kHz is <1% of the Emission BW(4.25 MHz between the 26 dB points). The limit was adjusted with 1.5 dB to -14.5 dBm to compensate for the reduced bandwidth. A RBW of 50 kHz was used between 1 to 5 MHz away from the band edges. As the FCC rules specify a RBW of 1 MHz for measurements of emissions >1 MHz away from the band edges, the limit was adjusted with 13 dB to -26 dBm to compensate for the reduced measurement bandwidth. The transmitter was set up according to Test model 1 and Test model 5 during the measurements.

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

**Measurement uncertainty:** 3.7 dB**Results**

The results are shown in appendix 4.1

**Single carrier****QPSK**

Diagram 1: 2112.4 MHz

Diagram 2: 2152.6 MHz

**16QAM**

Diagram 3: 2112.4 MHz

Diagram 4: 2152.6 MHz

**Multi carrier****QPSK**

Diagram 5: 2112.4+2122.4 MHz

Diagram 6: 2142.6+2152.6 MHz

**16QAM**

Diagram 7: 2112.4+2122.4 MHz

Diagram 8: 2142.6+2152.6 MHz

**Limits**

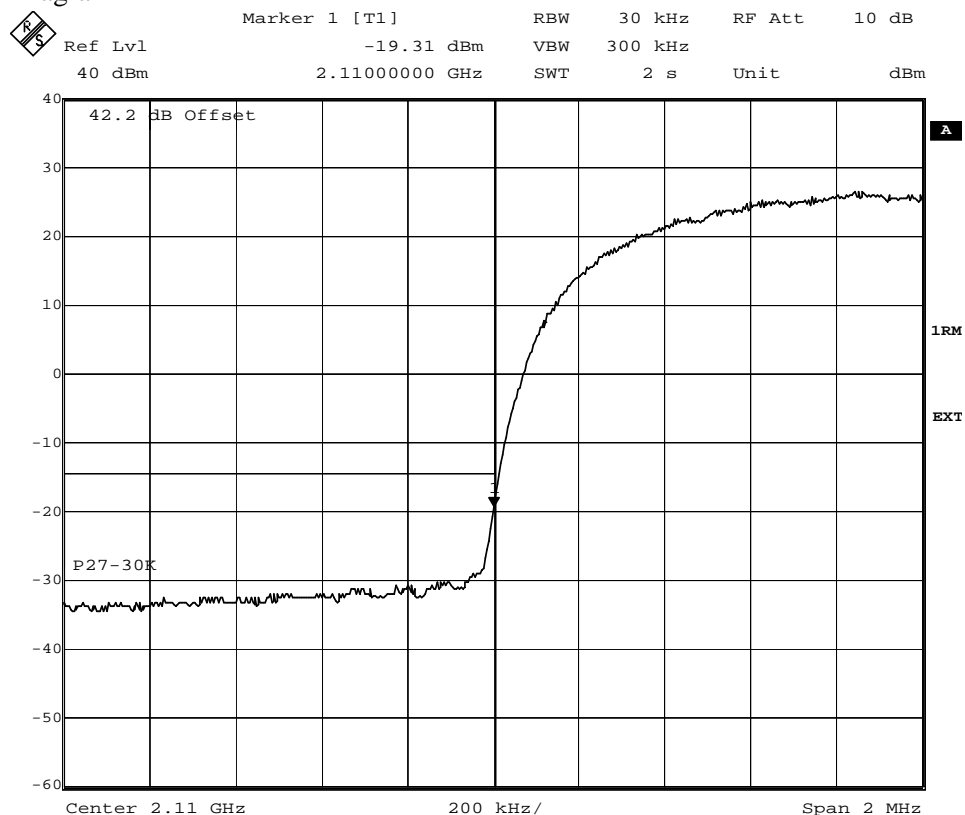
The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log P$  dB.

Complies?	Yes
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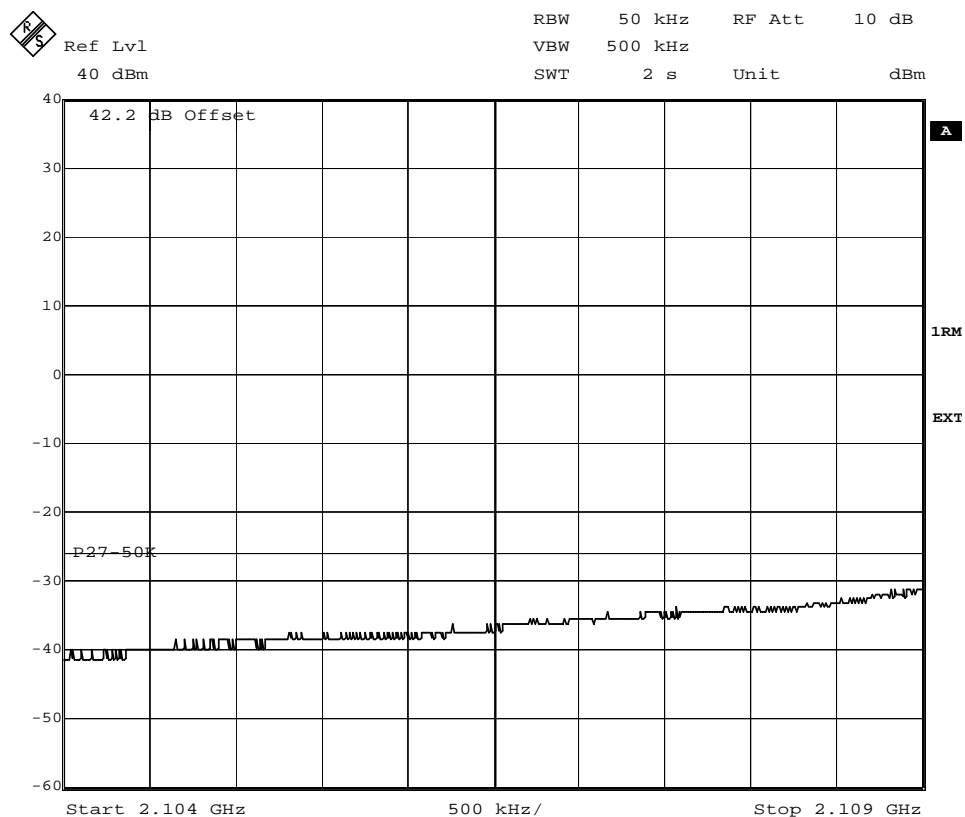
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Appendix 4.1

Diagram 1



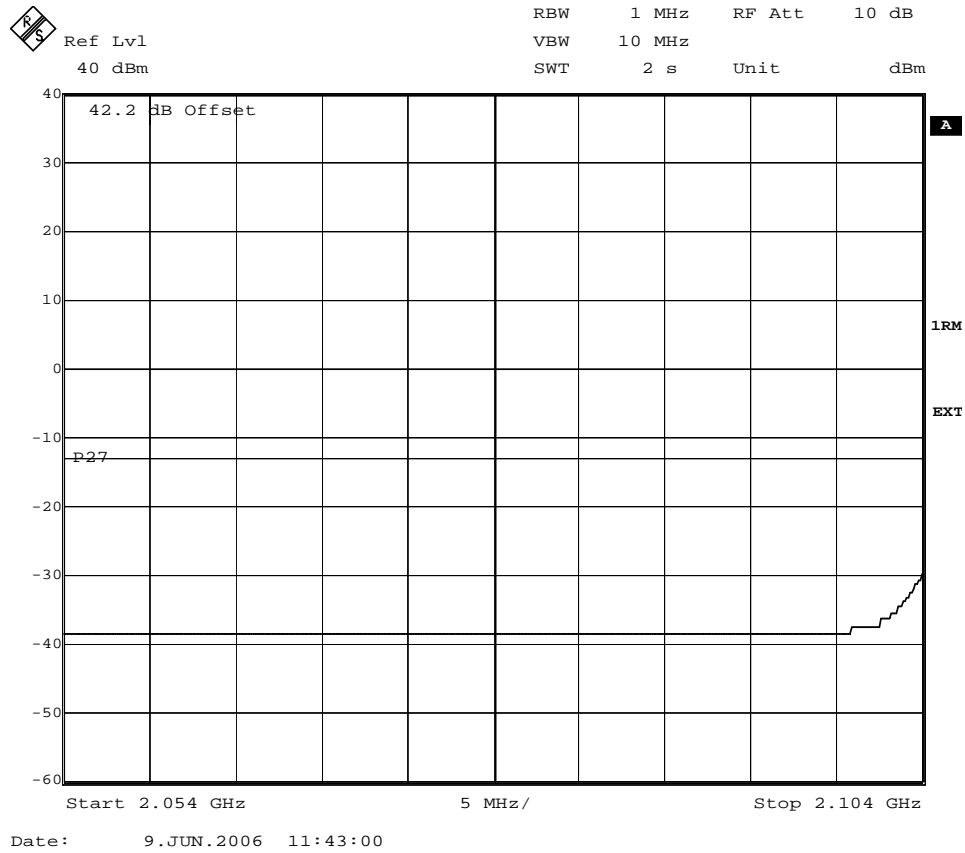
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Date: 9.JUN.2006 11:42:15

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Appendix 4.1

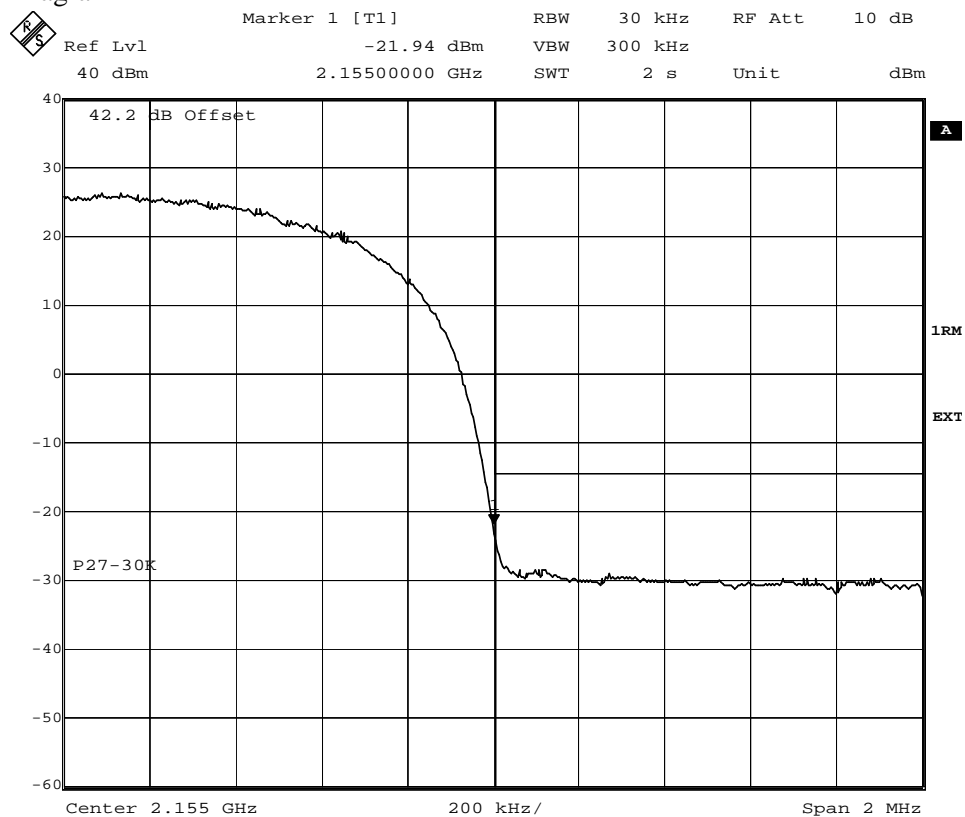




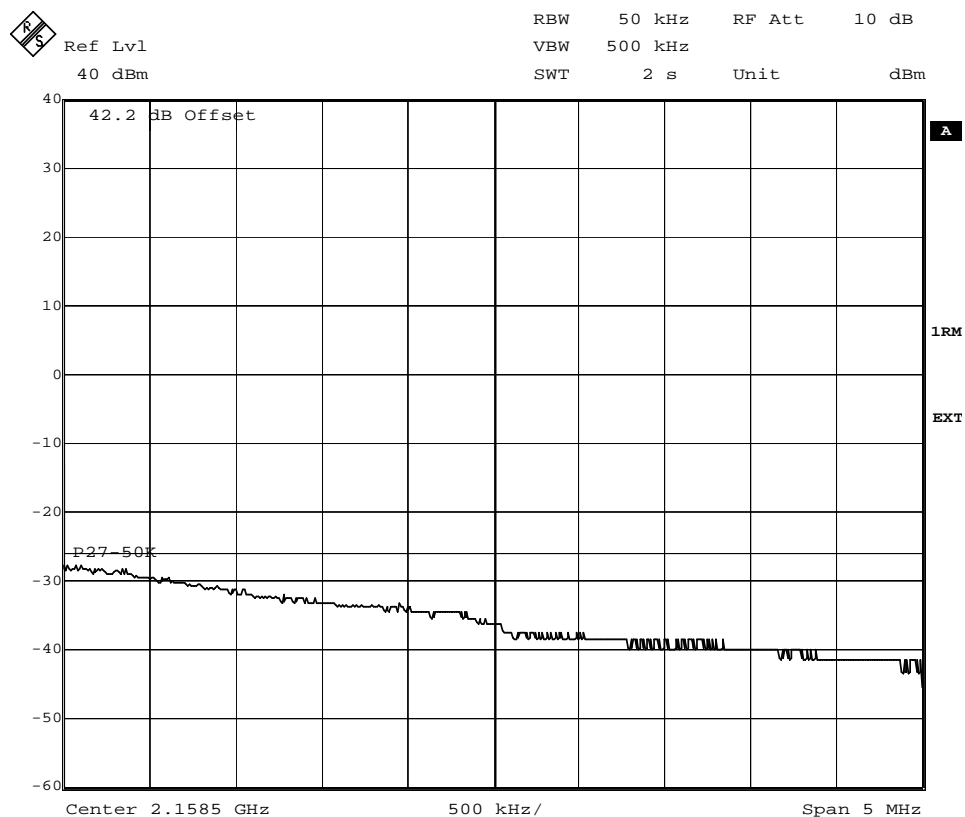
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Appendix 4.1

Diagram 2



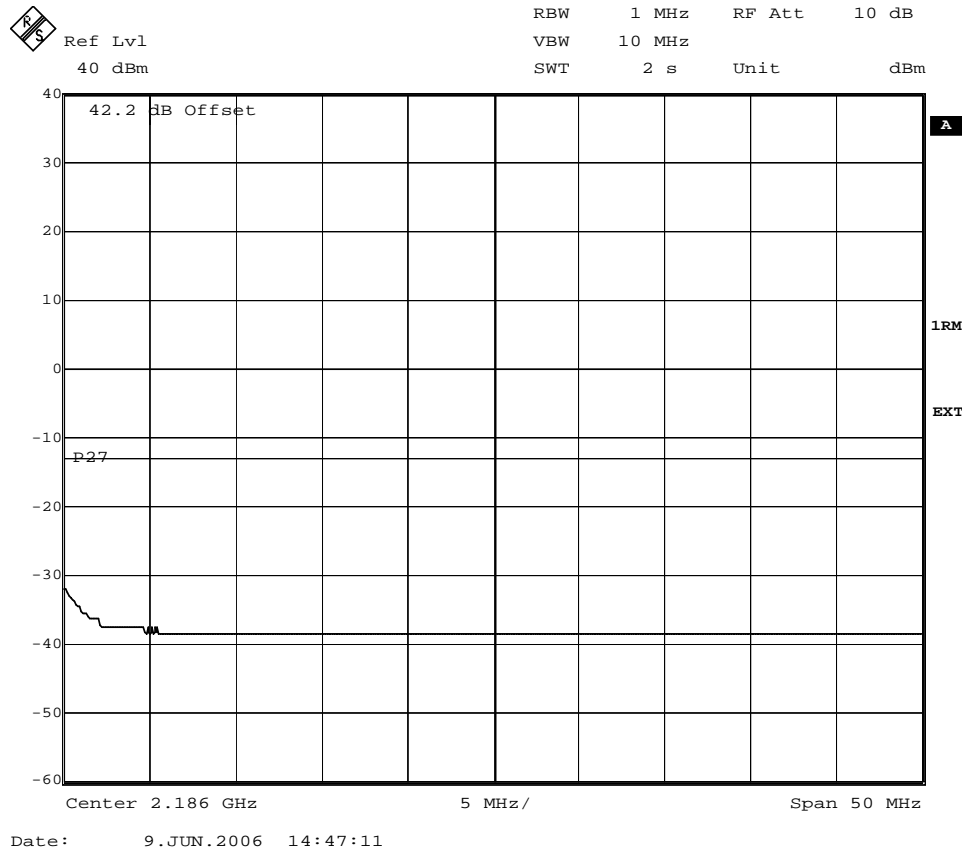
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Date: 9.JUN.2006 14:46:51

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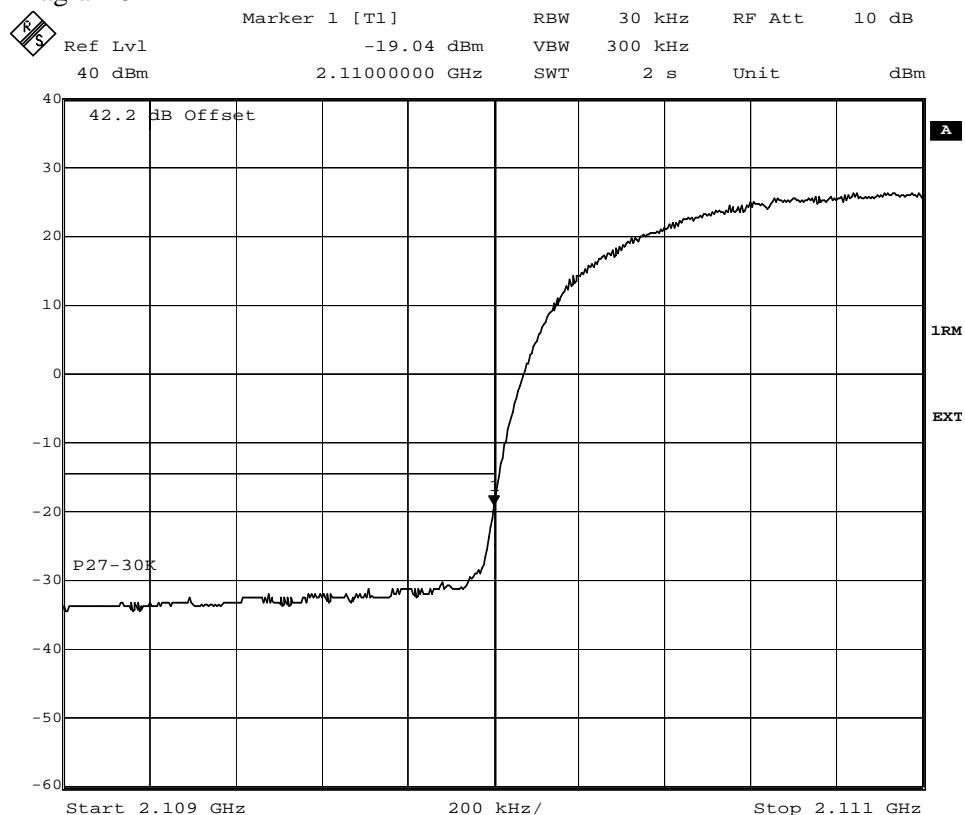
Appendix 4.1



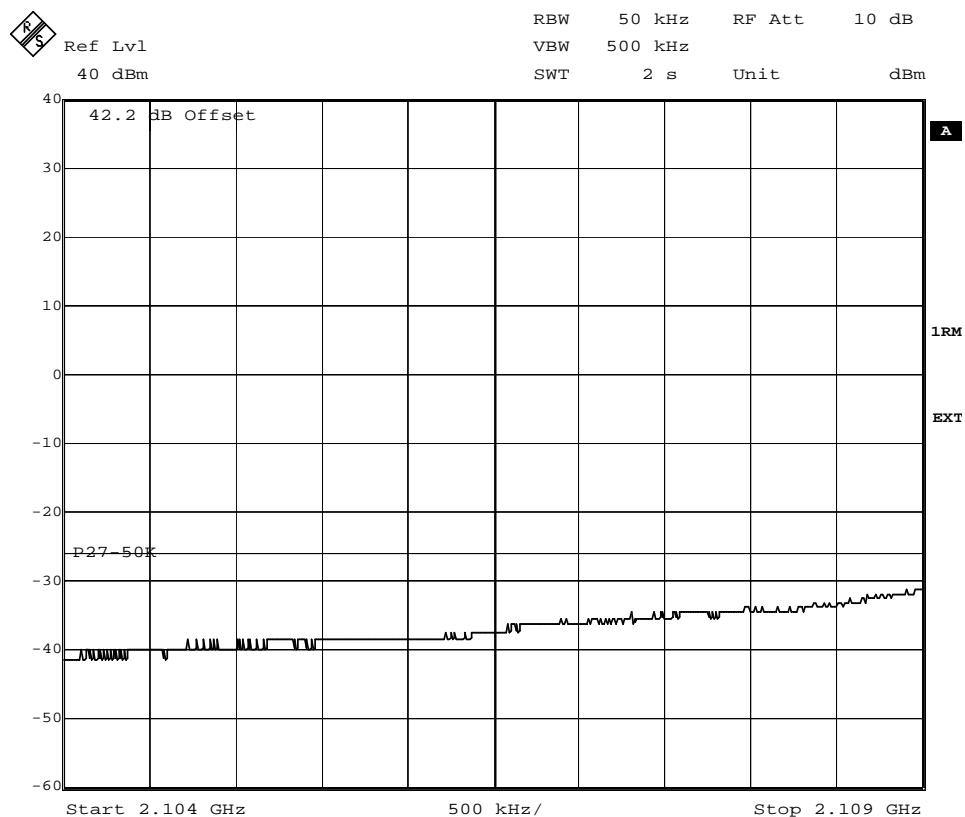
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Appendix 4.1

Diagram 3



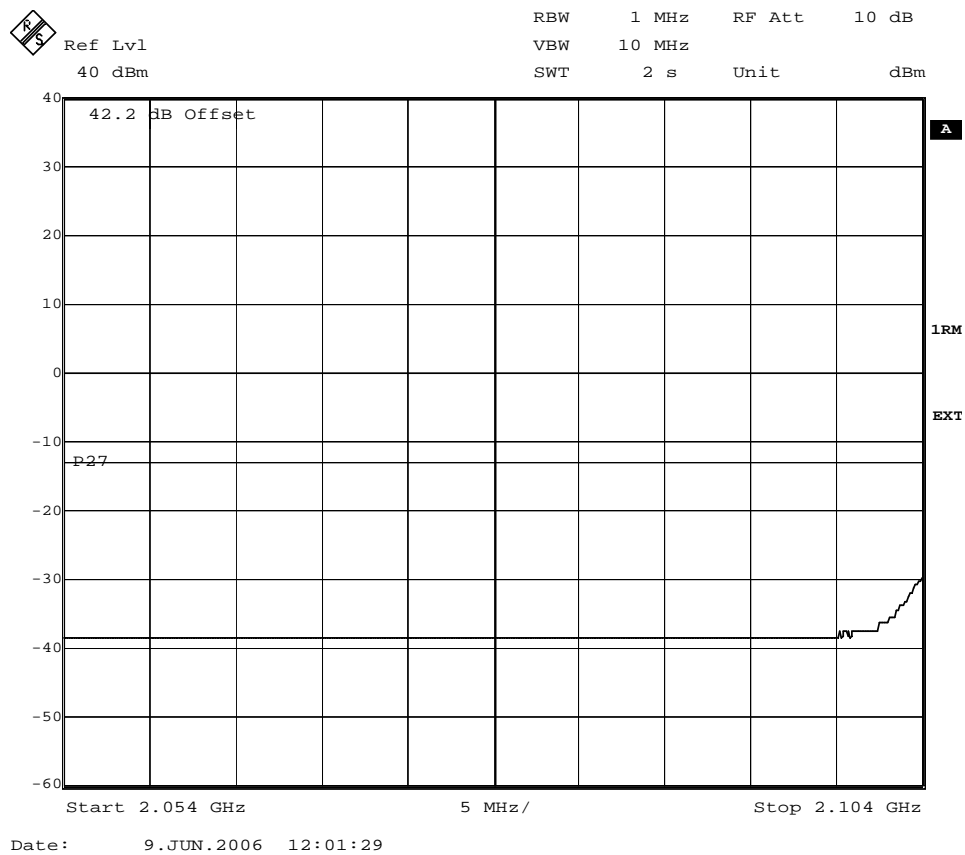
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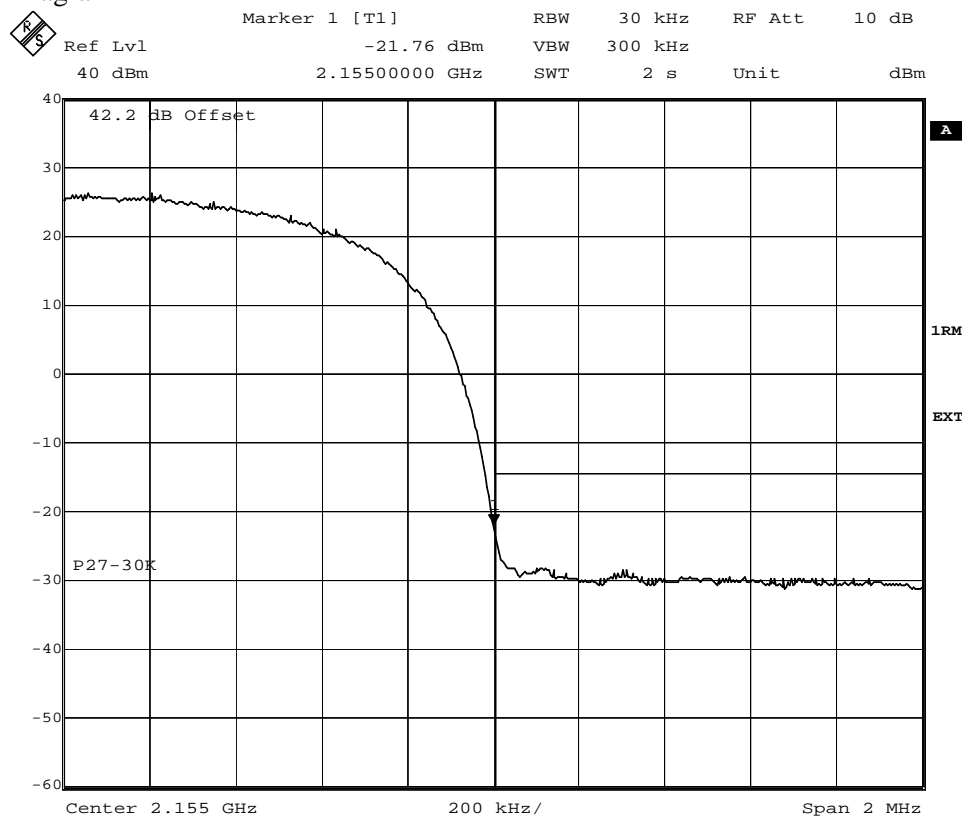
Appendix 4.1



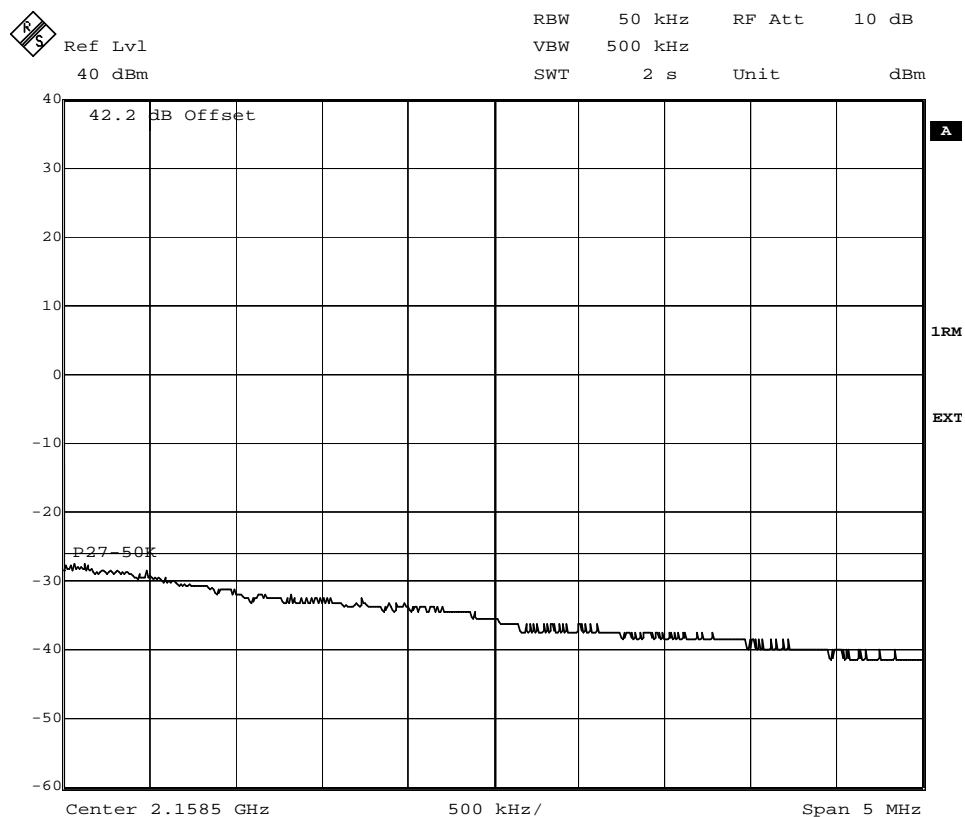
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Appendix 4.1

Diagram 4



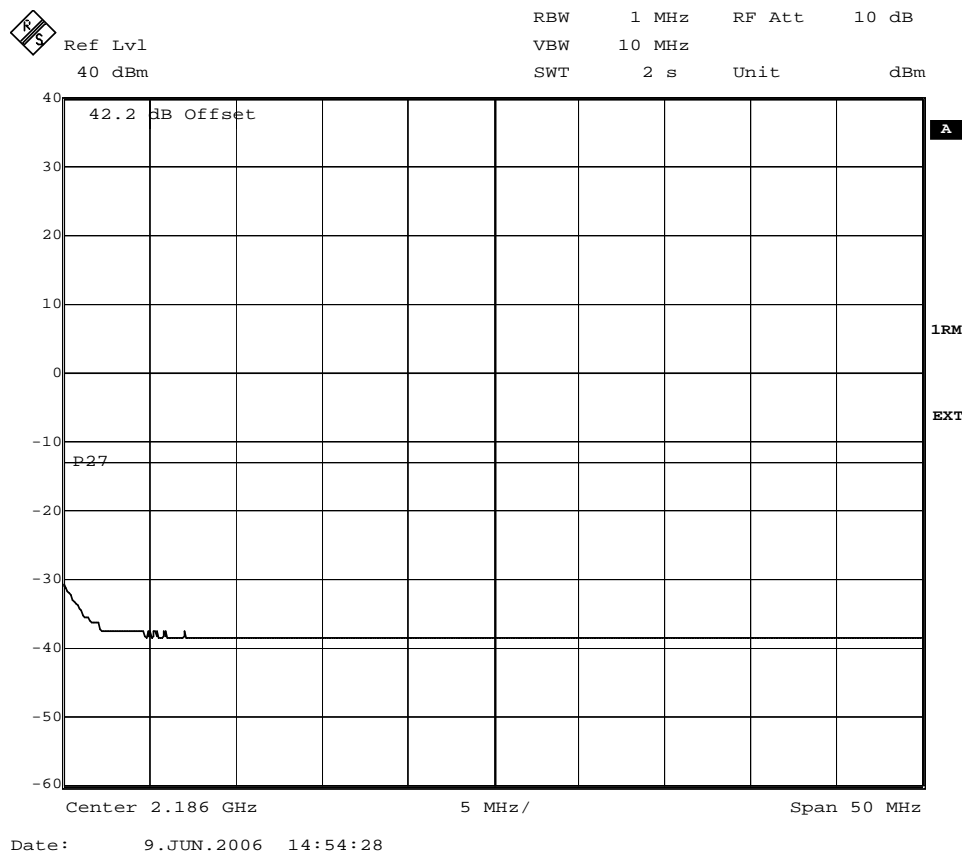
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Date: 9.JUN.2006 14:54:06

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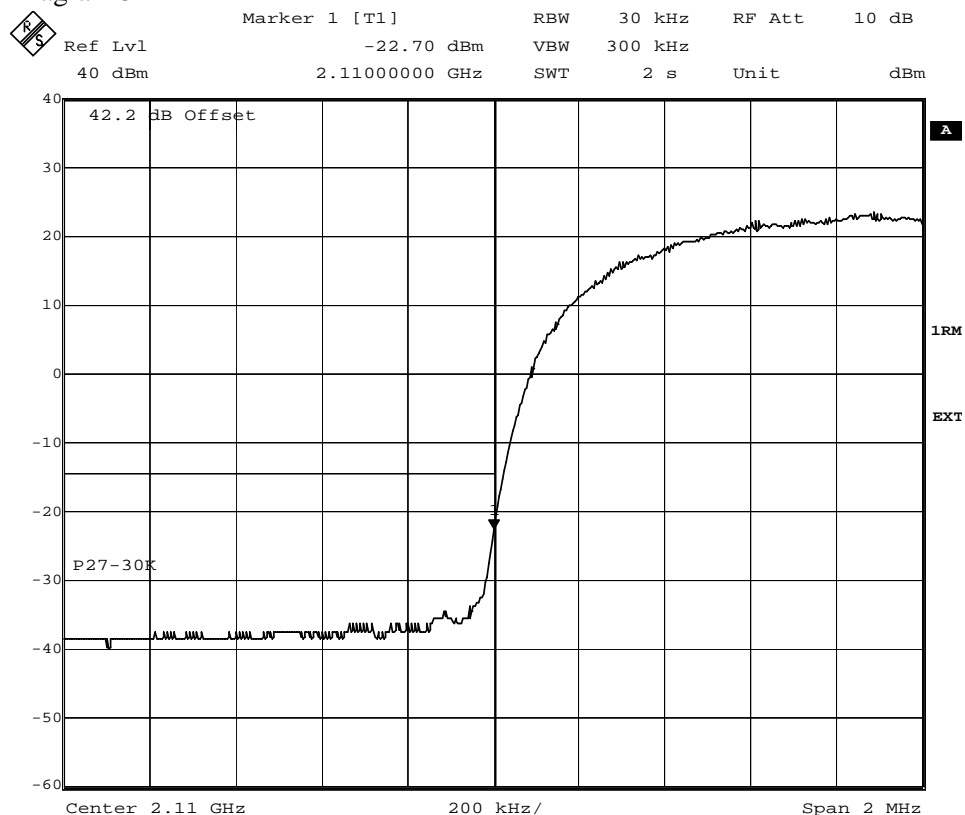
Appendix 4.1



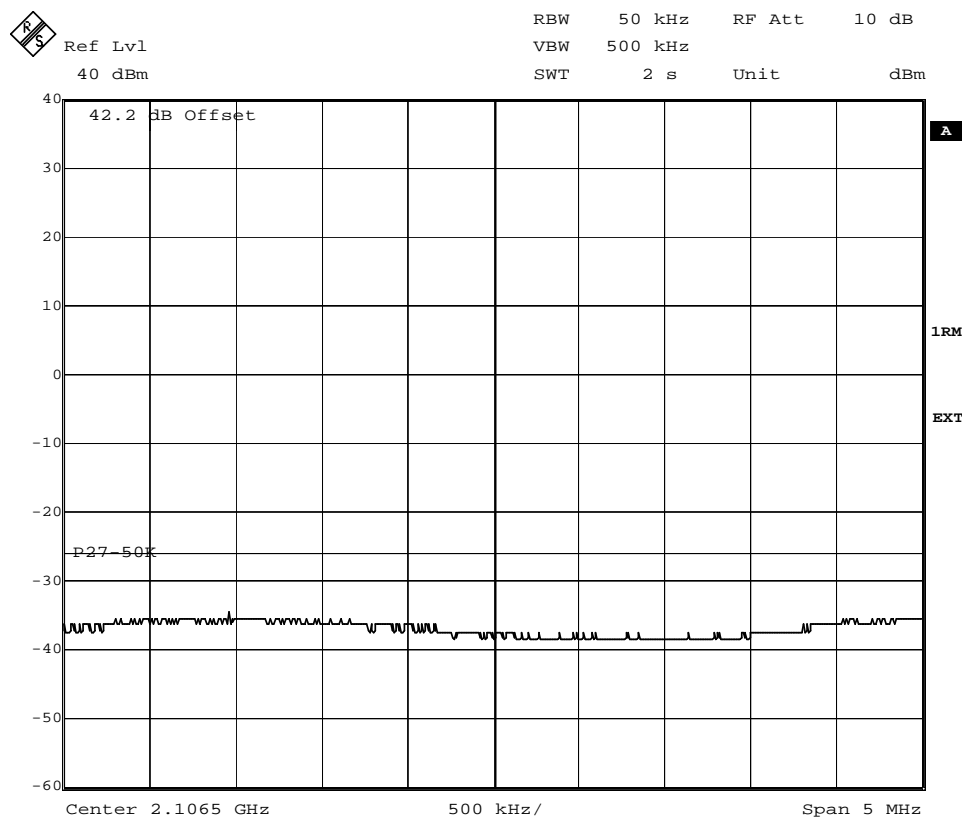
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Appendix 4.1

Diagram 5



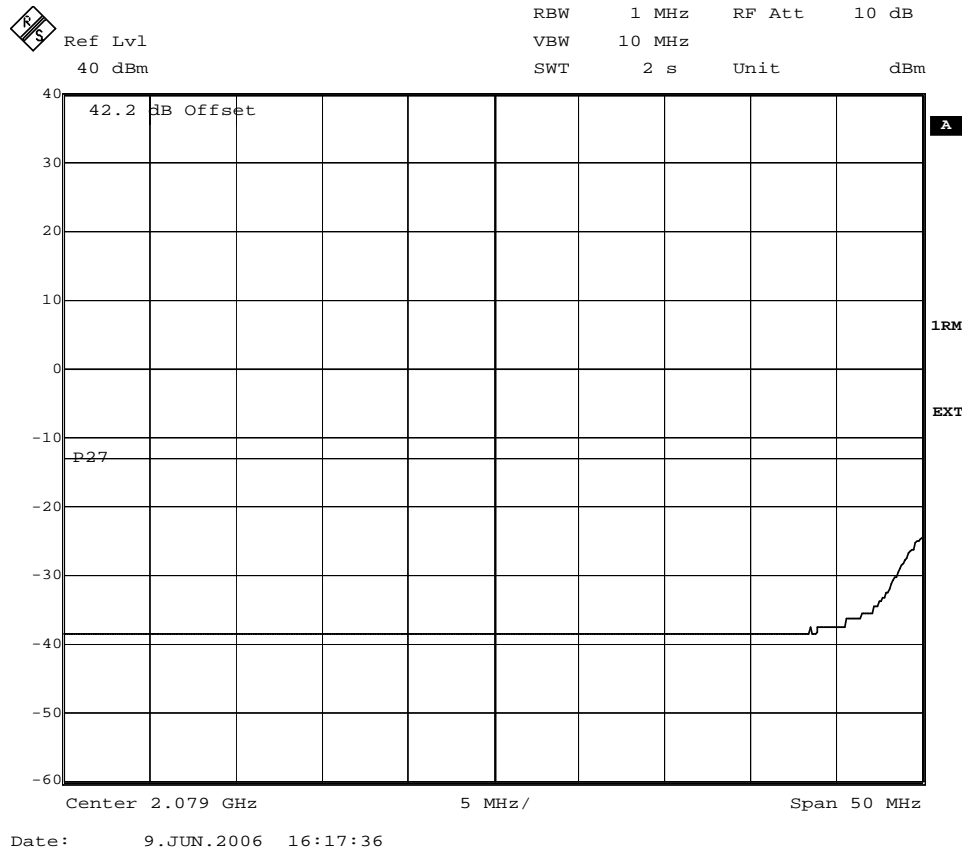
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Appendix 4.1

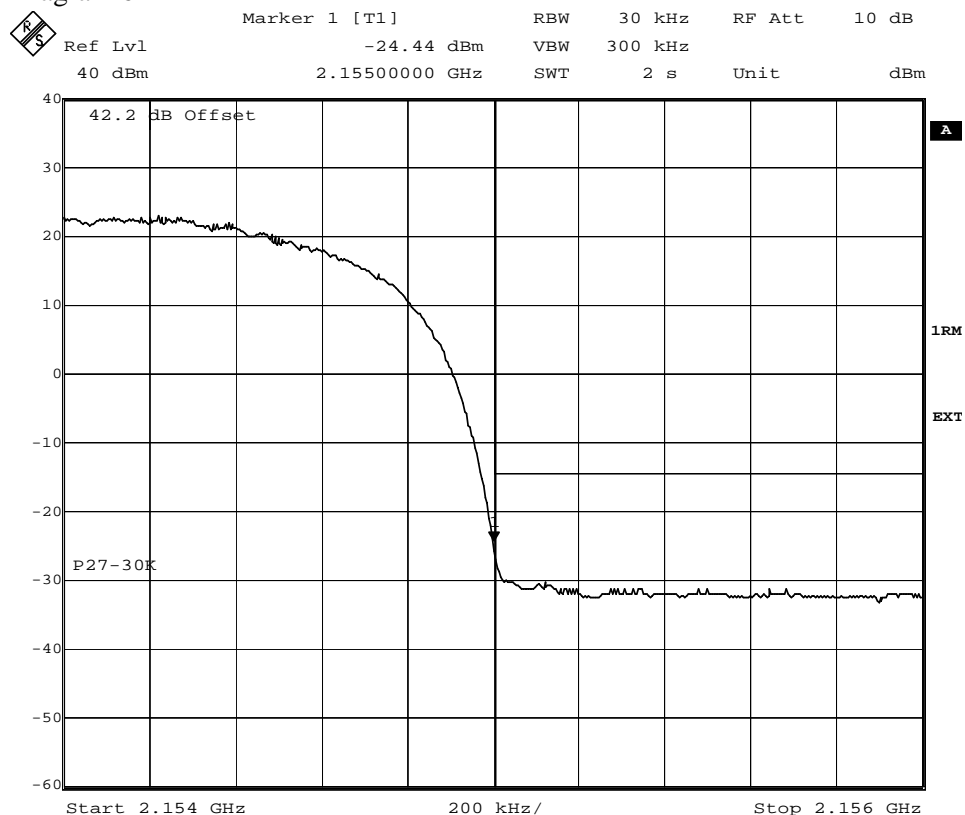




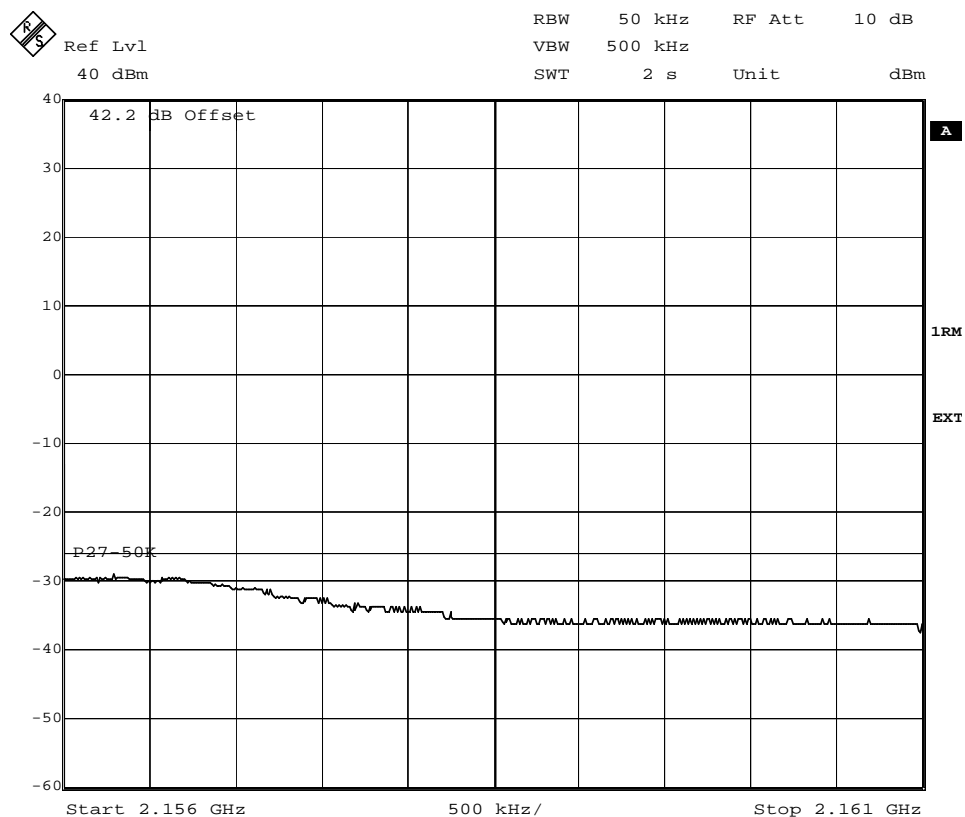
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Appendix 4.1

Diagram 6



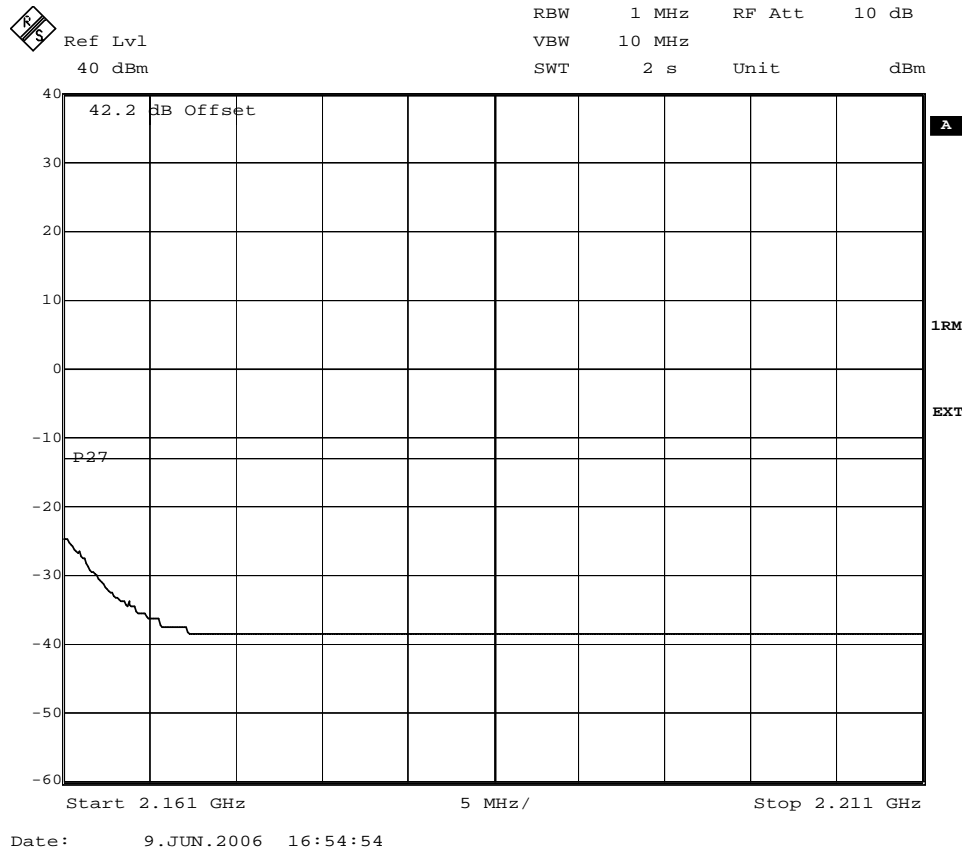
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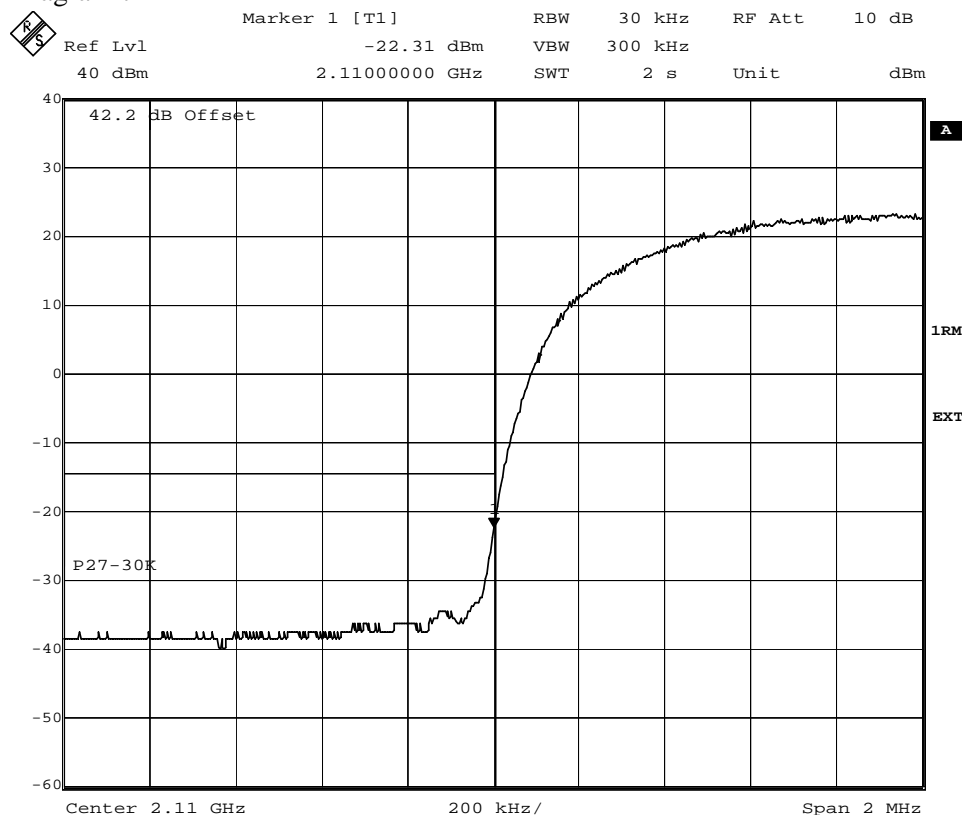
Appendix 4.1



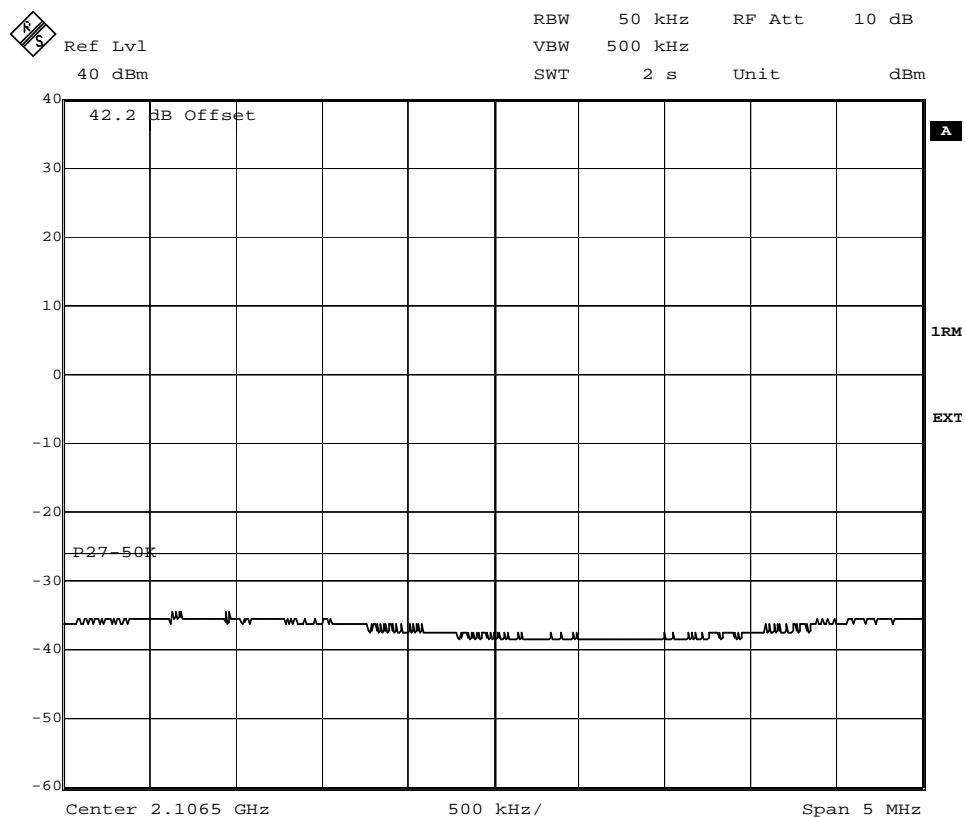
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Appendix 4.1

Diagram 7



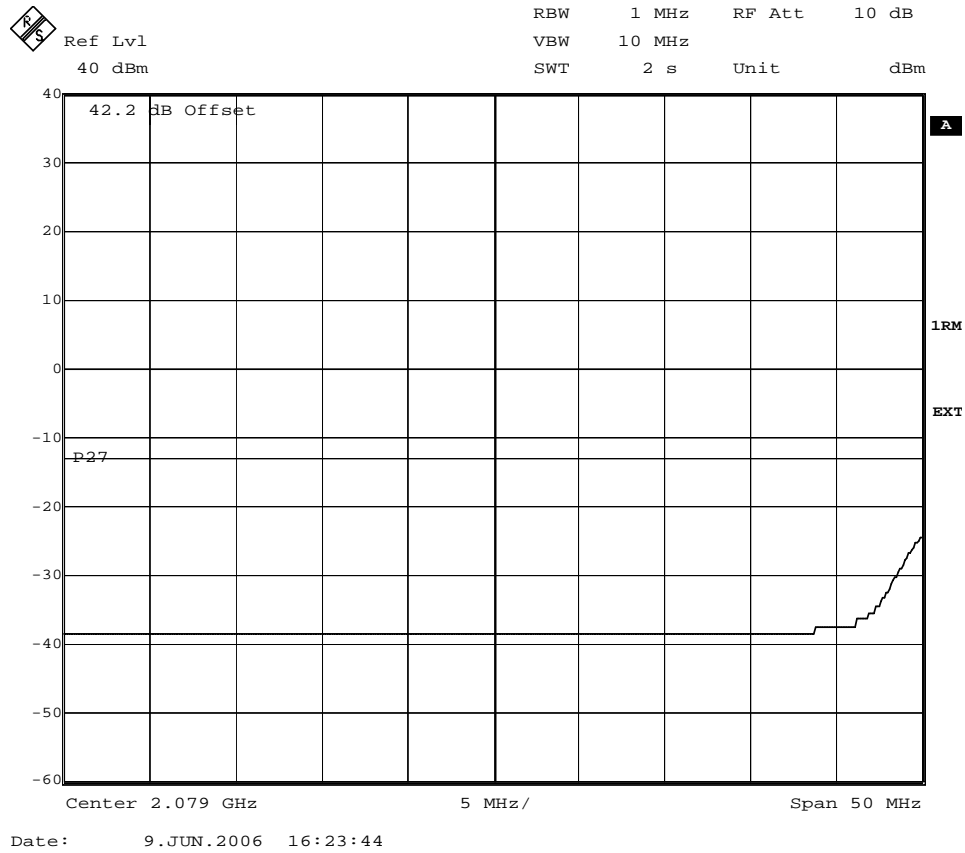
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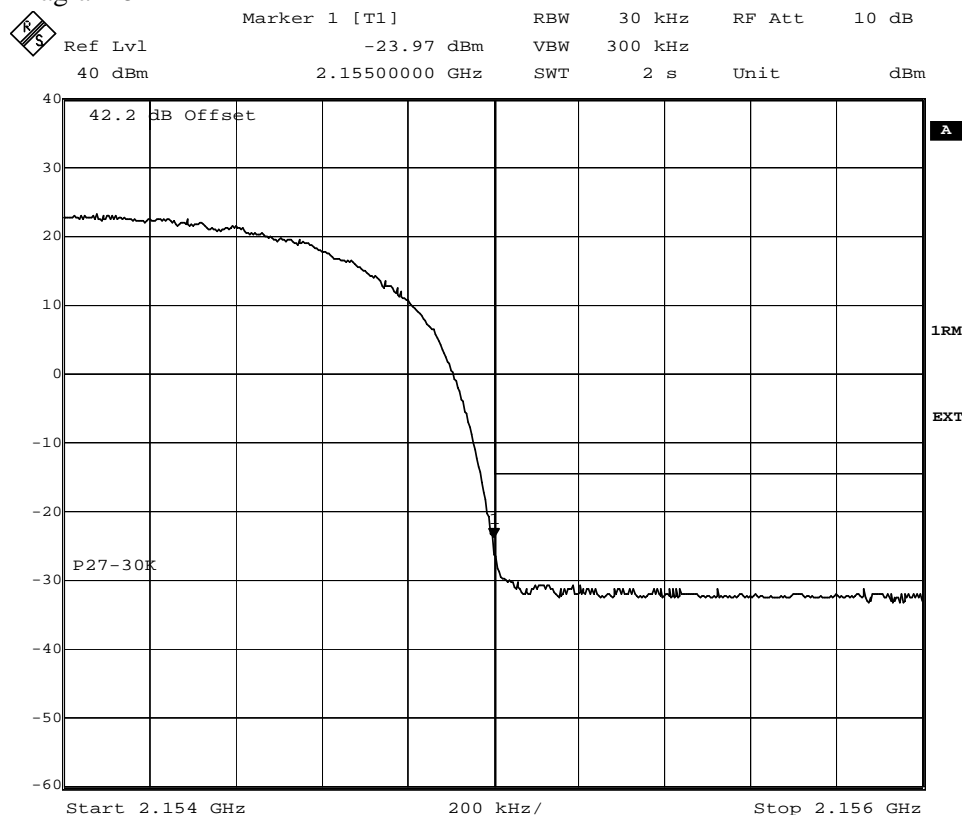
Appendix 4.1



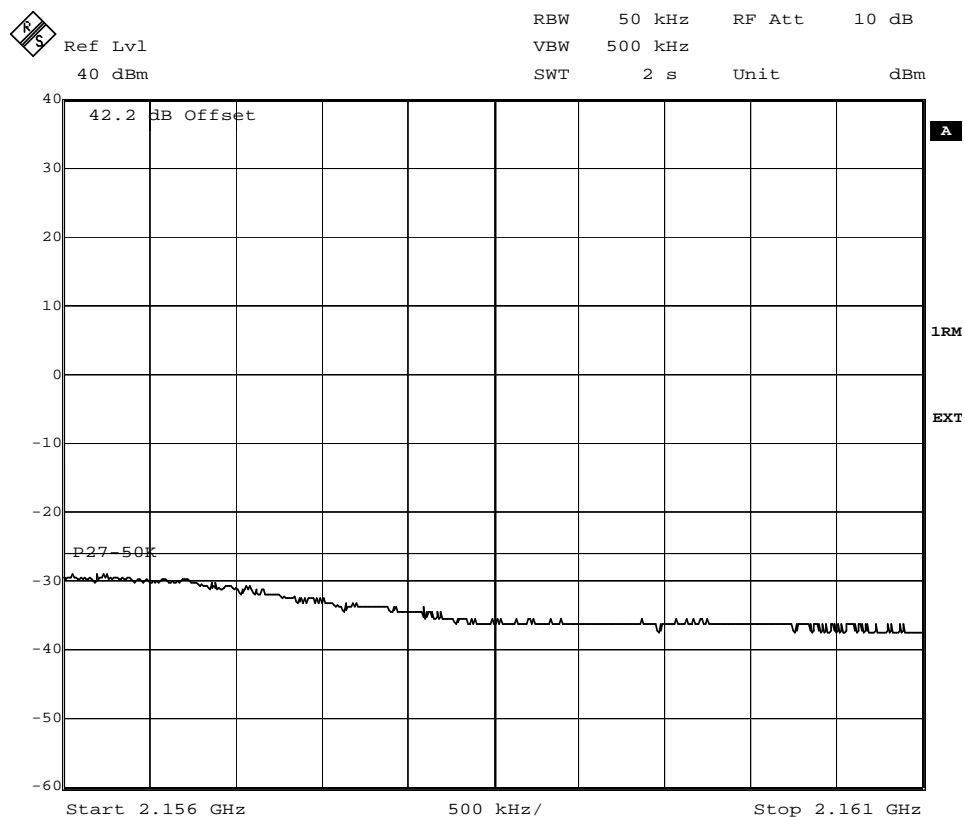
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Appendix 4.1

Diagram 8



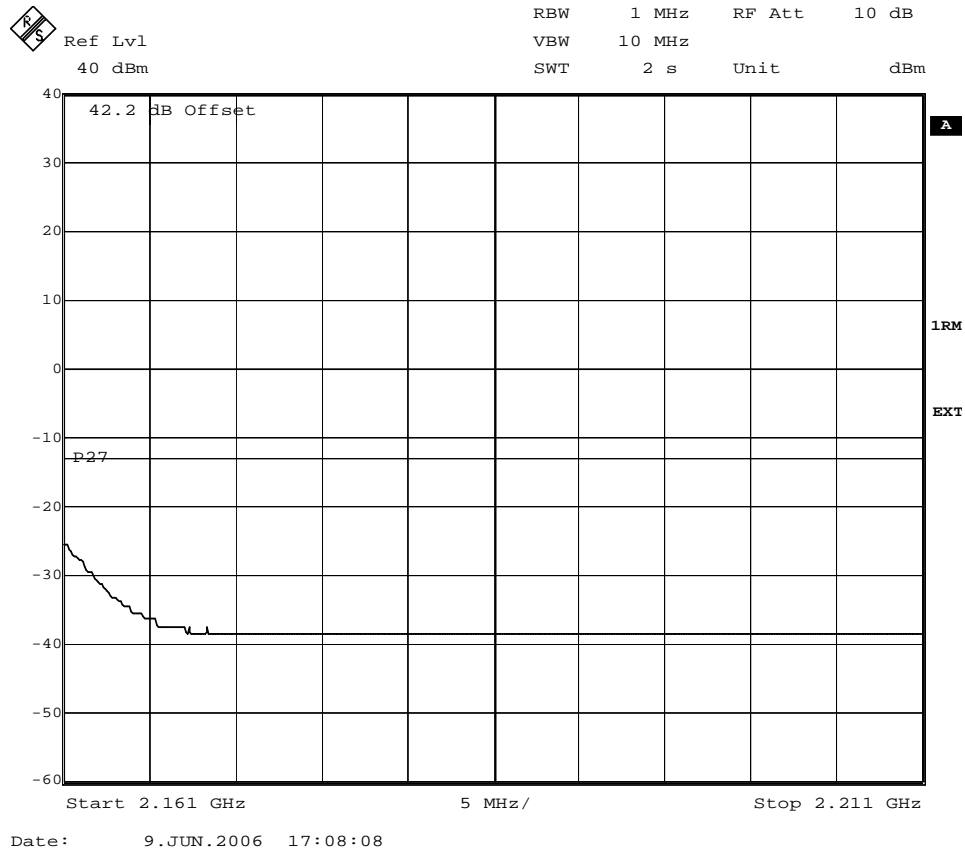
Date: 9.JUN.2006 17:08:39



Date: 9.JUN.2006 17:09:06

FCC ID: TA8AKRC11829-2

Appendix 4.1



FCC ID: TA8AKRC11829-2

Appendix 5

## Conducted spurious emission measurements according to 47 CFR 2.1051

Date 2006-06-22	Temperature 23 °C ± 3 °C	Humidity 48 % ± 5 %
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### Test set-up and procedure

The measurements were made per definition in §27.53. The output was connected to a spectrum analyzer with the average detector activated. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements. The transmitter was set up according to Test model 1 and Test model 5 during the measurements.

Measurement equipment	Calibration Due	SP number
R&S FSIQ	2006-07	503 738
HP filter	2006-07	502 739
Testo 610, Temperature and humidity meter	2006-12	502 658

**Measurement uncertainty:** 3.7 dB

### Results

The results are shown in appendix 5.1

#### Single carrier

QPSK		16QAM	
Diagram 1:	2112.4 MHz	Diagram 4:	2112.4 MHz
Diagram 2:	2132.4 MHz	Diagram 5:	2132.4 MHz
Diagram 3:	2152.6 MHz	Diagram 6:	2152.6 MHz

#### Multi carrier

QPSK		16QAM	
Diagram 7:	2112.4+2122.4 MHz	Diagram 10:	2112.4+2122.4 MHz
Diagram 8:	2127.4+2137.4 MHz	Diagram 11:	2127.4+2137.4 MHz
Diagram 9:	2142.6+2152.6 MHz	Diagram 12:	2142.6+2152.6 MHz

### Limits

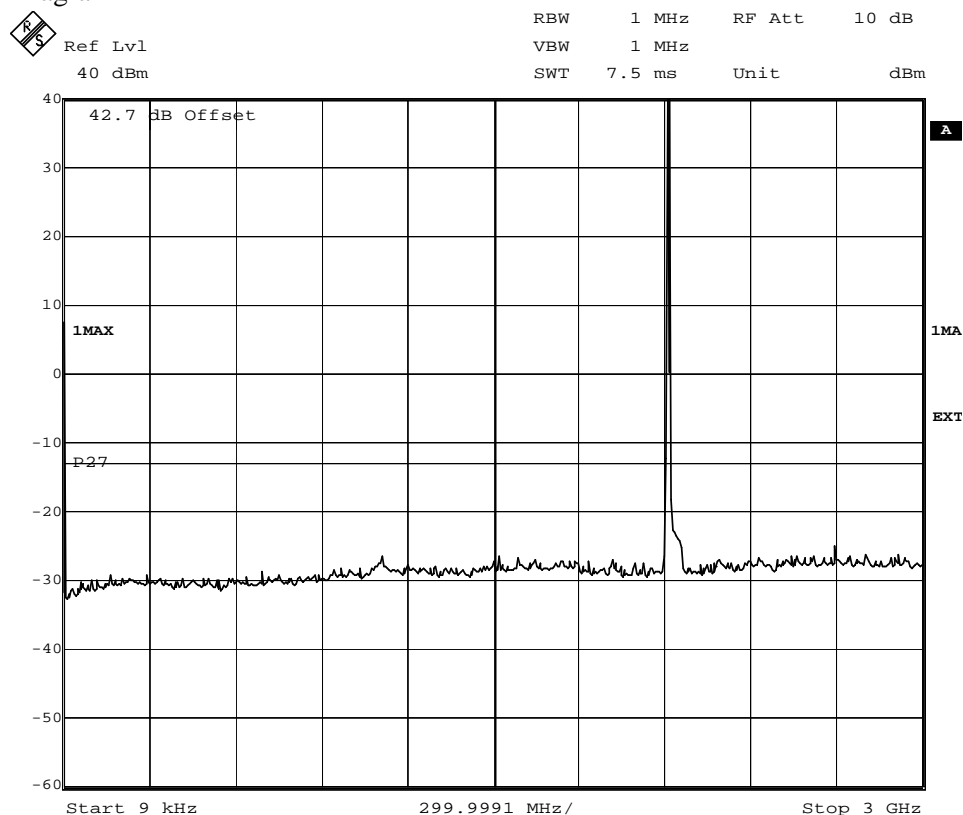
The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log P$  dB.

Complies?	Yes
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FCC ID: TA8AKRC11829-2

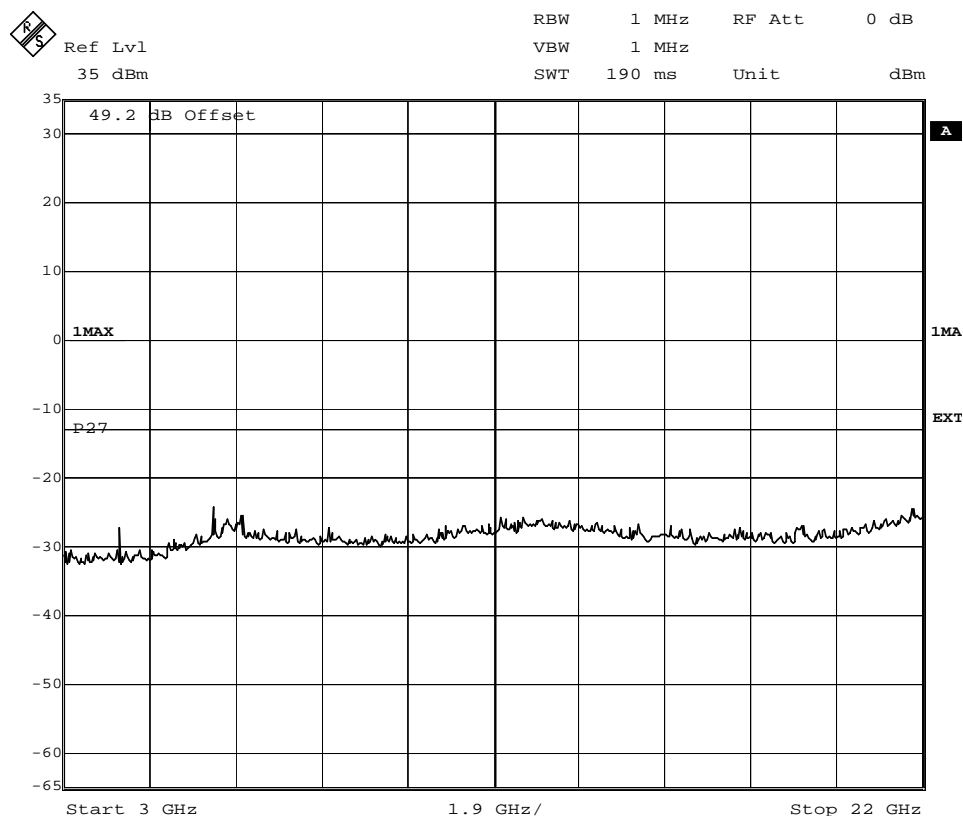
Appendix 5.1

Diagram 1



Date: 22.JUN.2006 11:08:34

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.



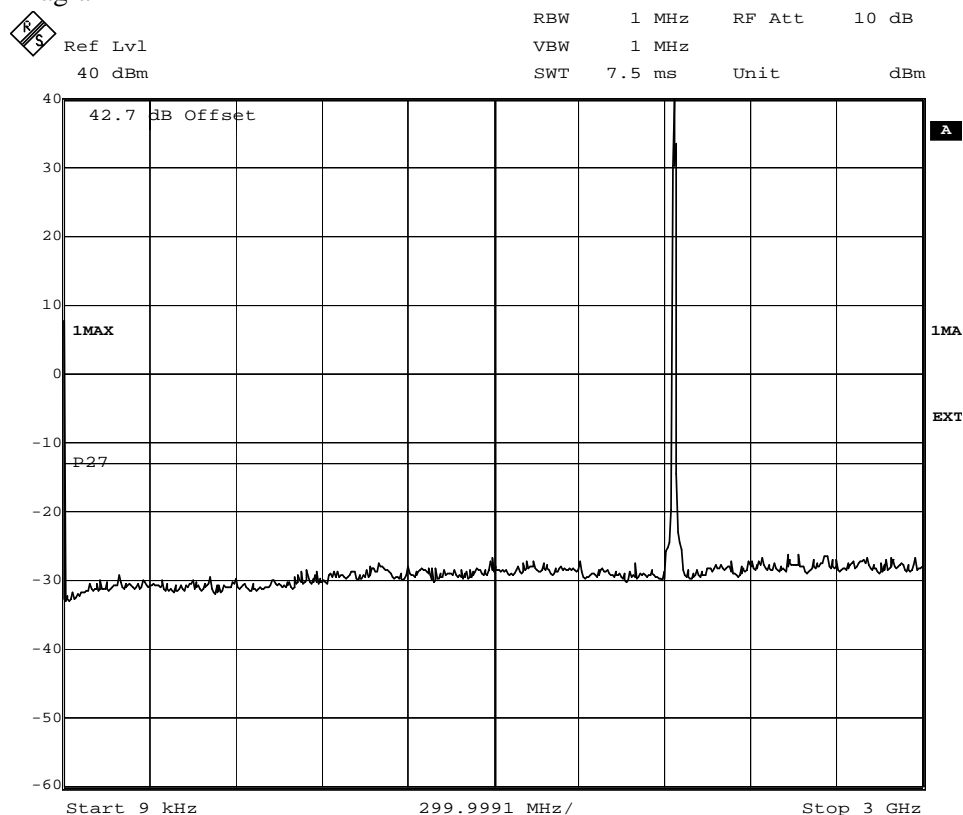
Date: 22.JUN.2006 10:48:26



FCC ID: TA8AKRC11829-2

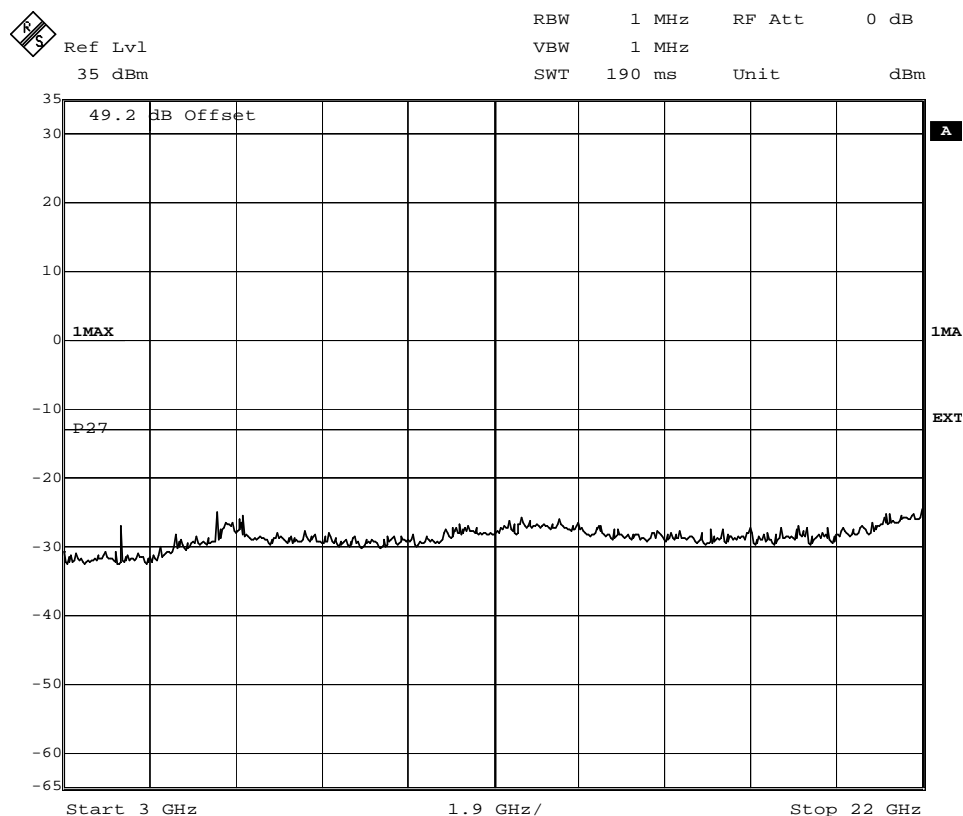
Appendix 5.1

Diagram 2



Date: 22.JUN.2006 11:26:41

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.

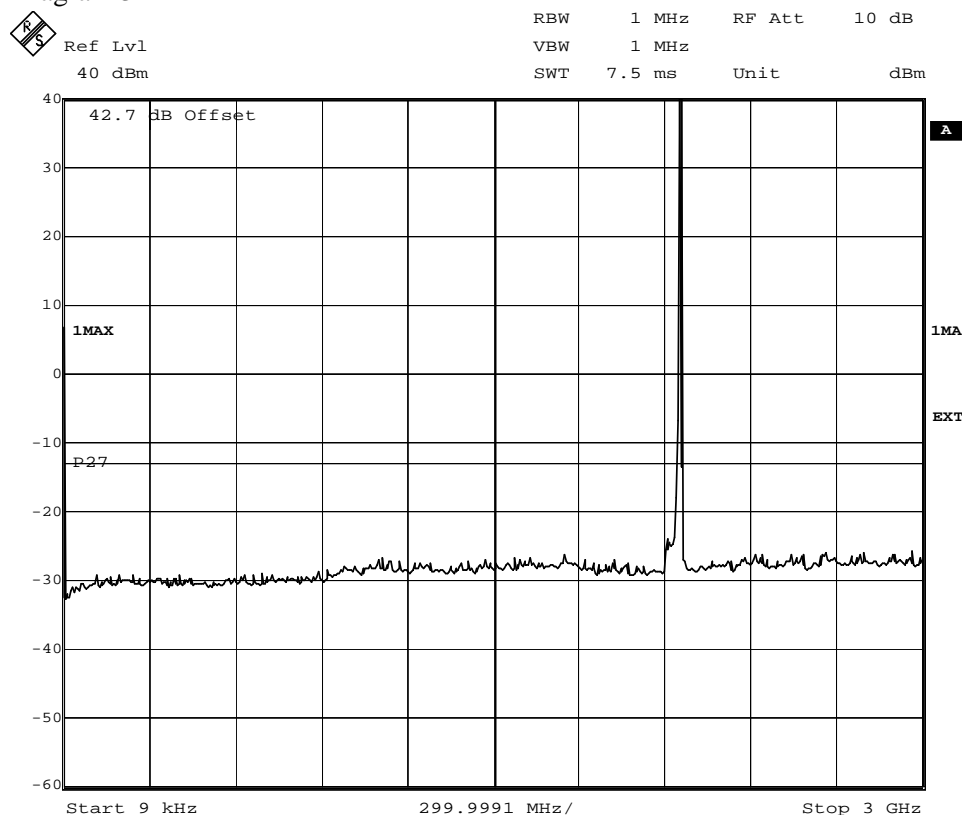


Date: 22.JUN.2006 11:28:09

FCC ID: TA8AKRC11829-2

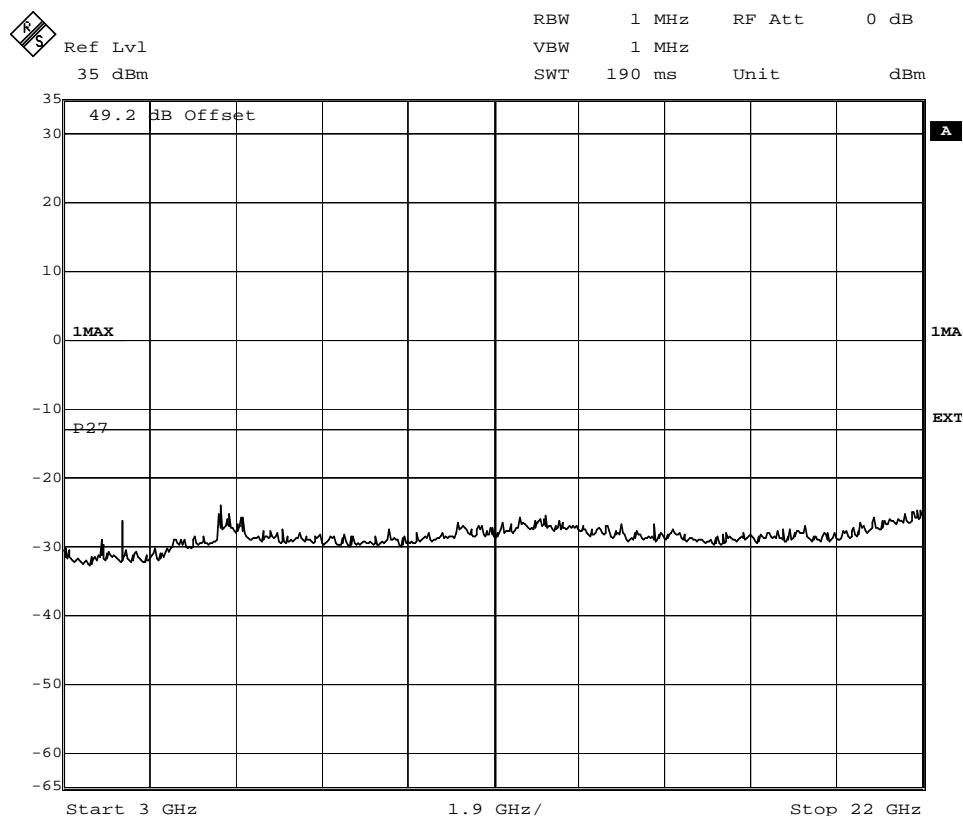
Appendix 5.1

Diagram 3



Date: 22.JUN.2006 11:56:18

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.

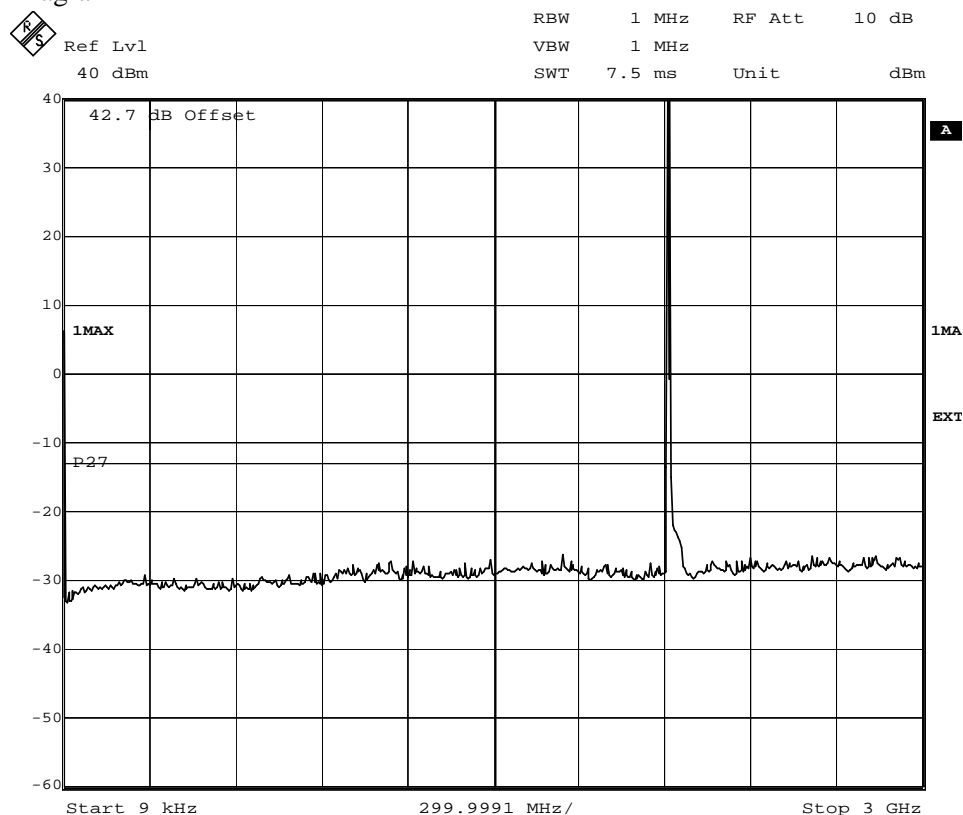


Date: 22.JUN.2006 11:54:03

FCC ID: TA8AKRC11829-2

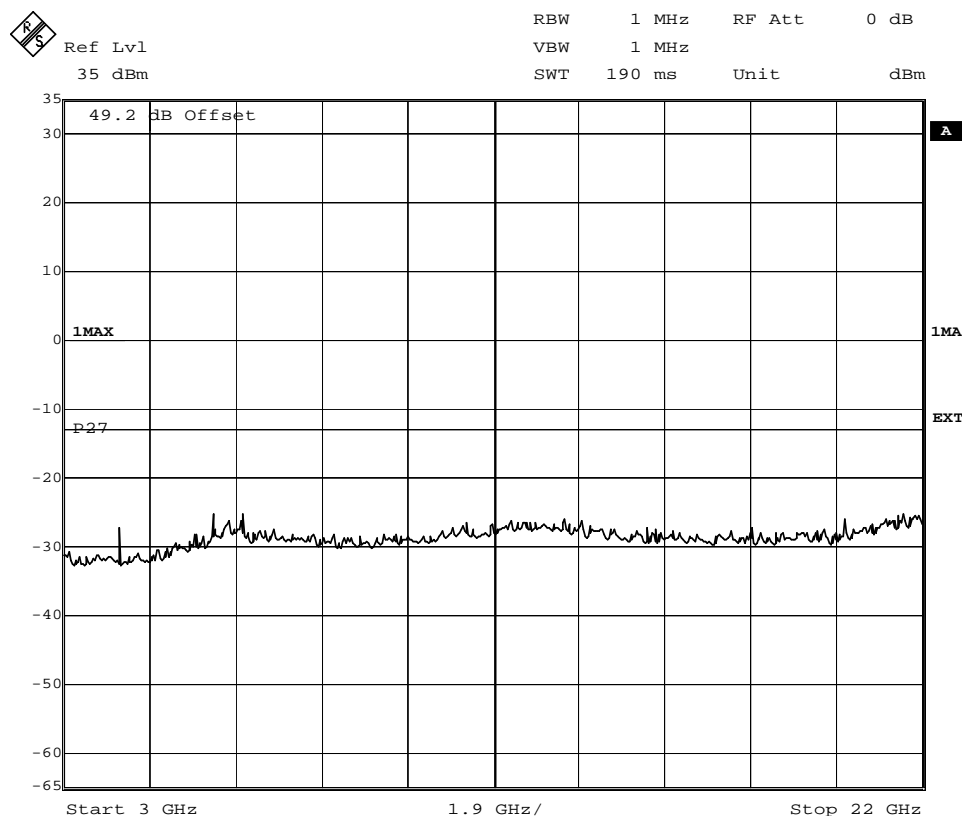
Appendix 5.1

Diagram 4



Date: 22.JUN.2006 10:55:40

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.

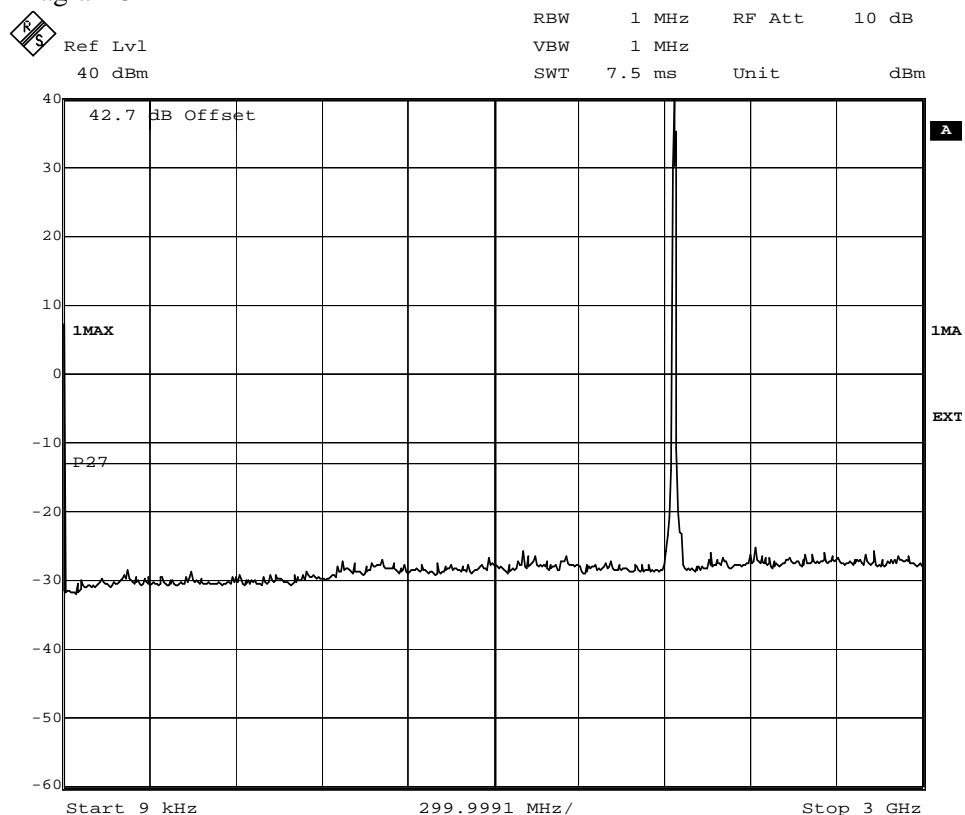


Date: 22.JUN.2006 10:53:30

FCC ID: TA8AKRC11829-2

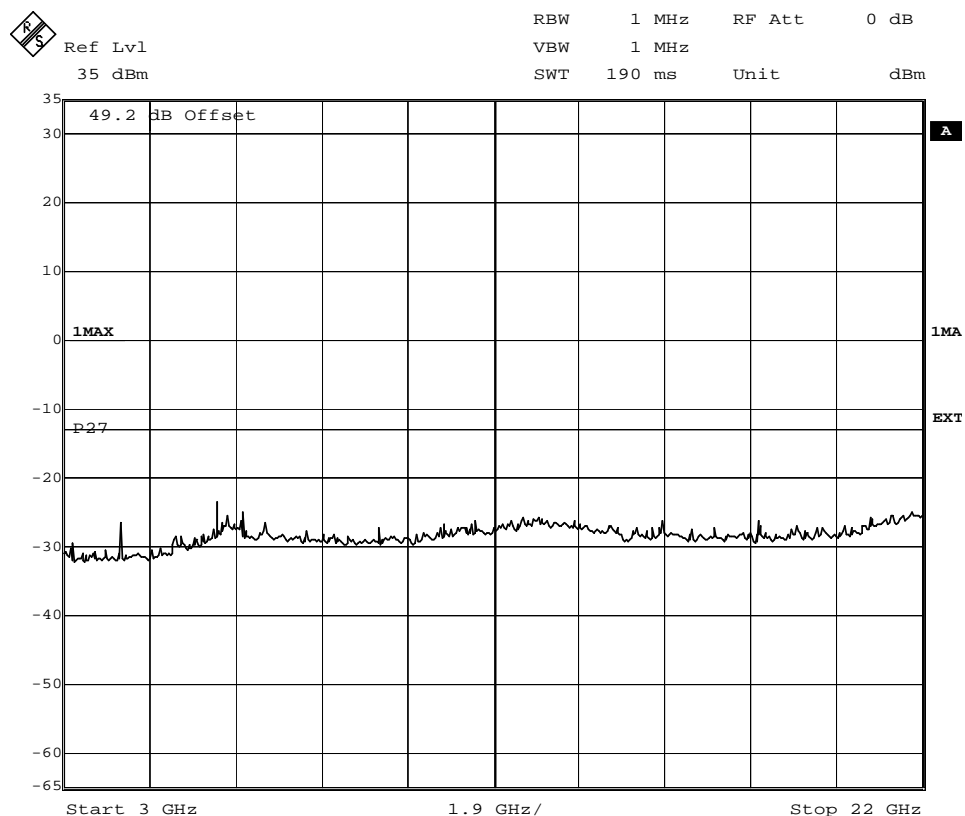
Appendix 5.1

Diagram 5



Date: 22.JUN.2006 11:34:52

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.

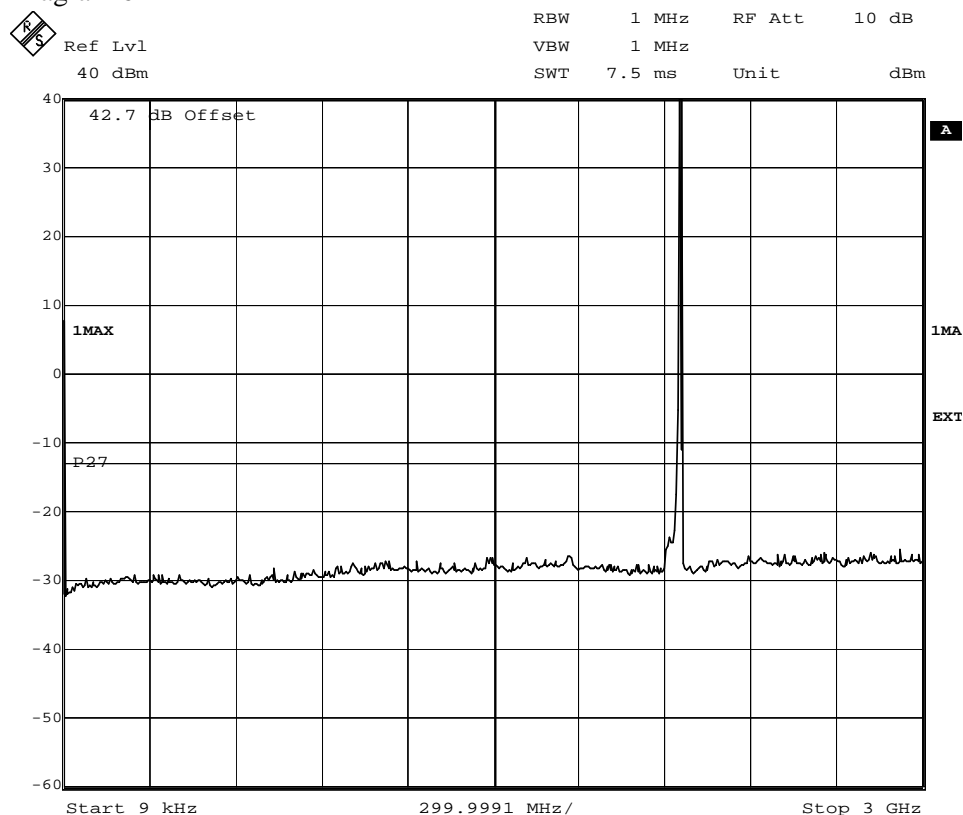


Date: 22.JUN.2006 11:32:24

FCC ID: TA8AKRC11829-2

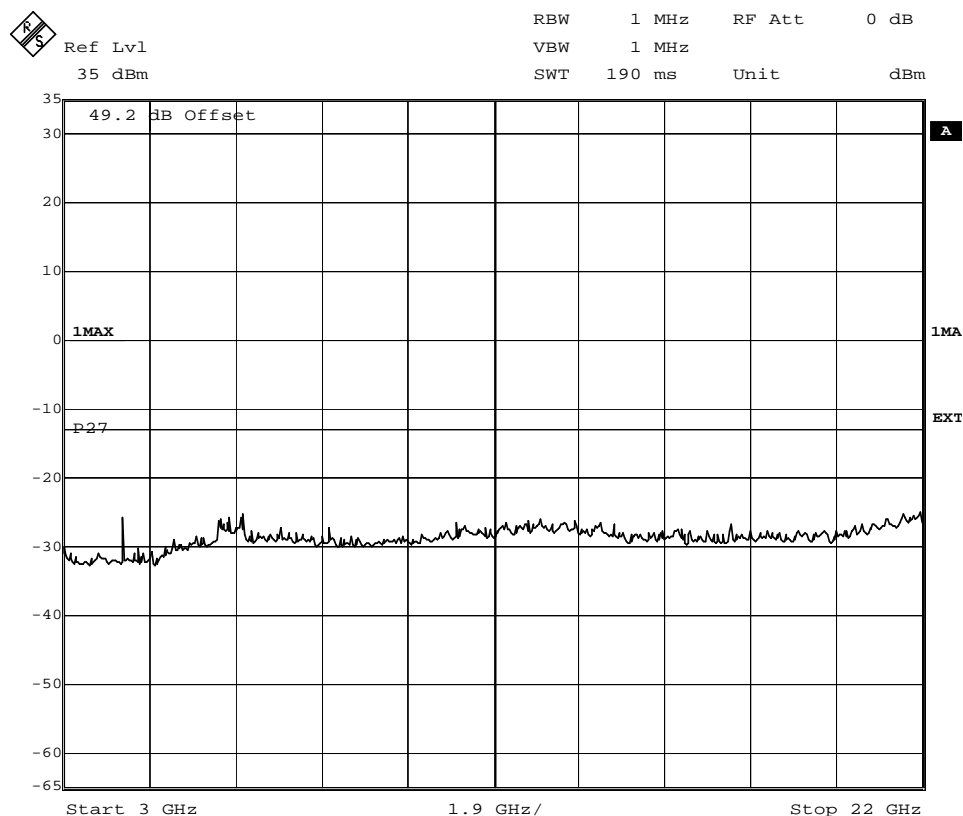
Appendix 5.1

Diagram 6



Date: 22.JUN.2006 11:48:20

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.

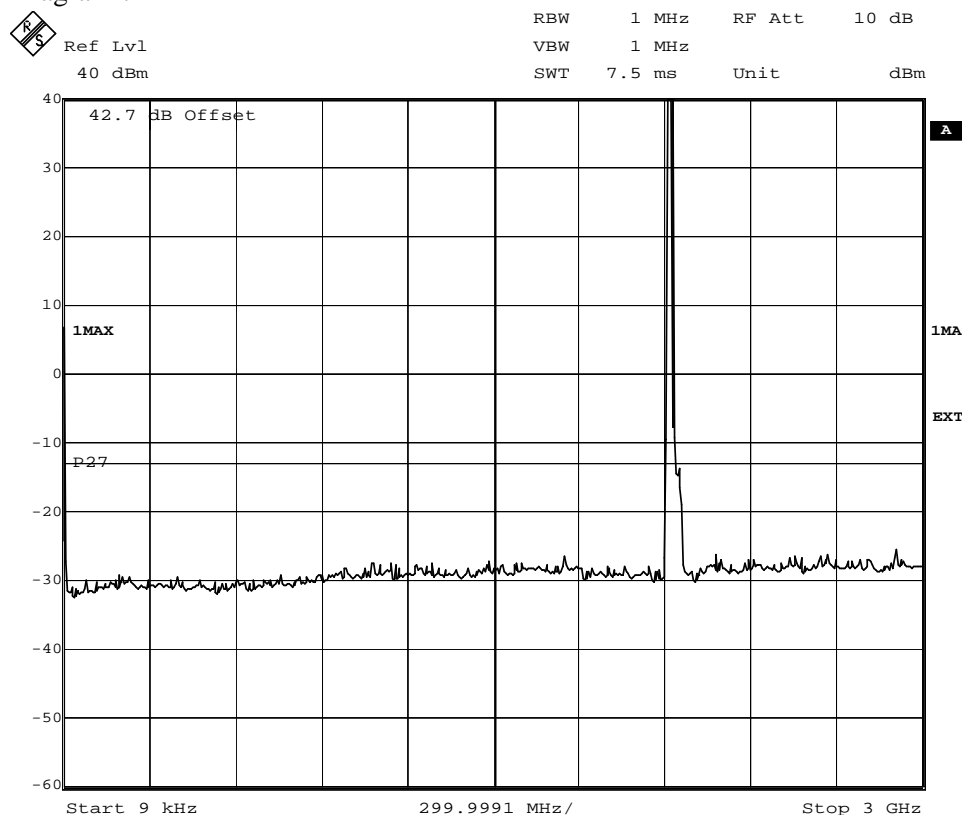


Date: 22.JUN.2006 11:49:37

FCC ID: TA8AKRC11829-2

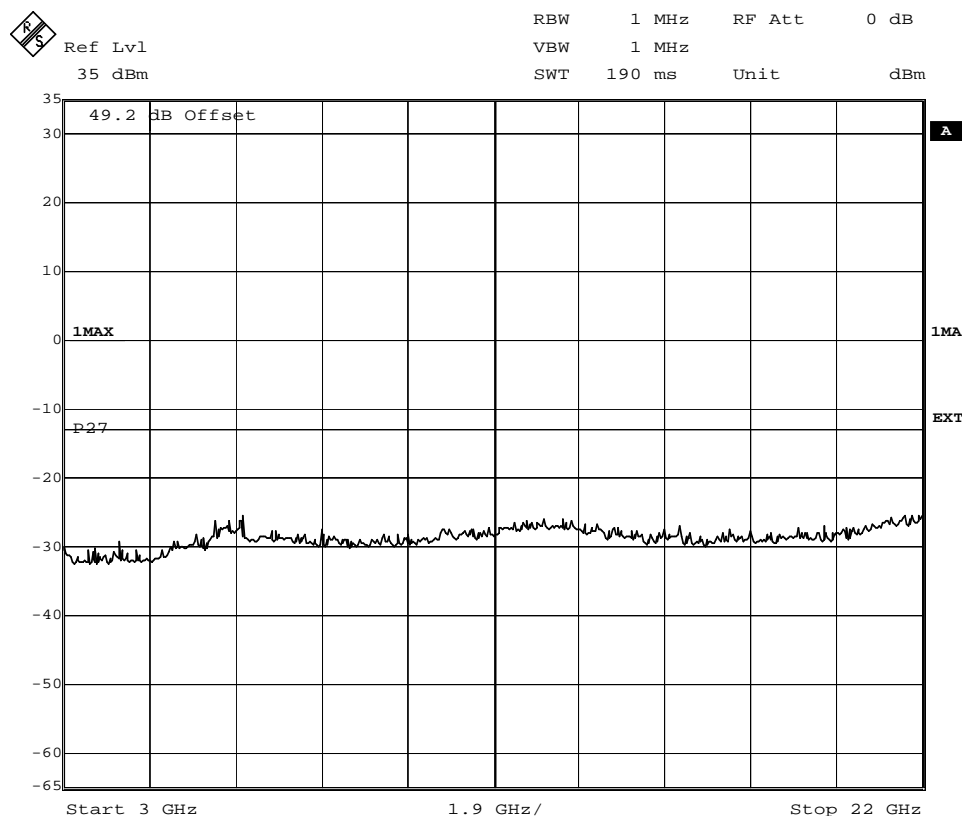
Appendix 5.1

Diagram 7



Date: 22.JUN.2006 13:27:22

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.

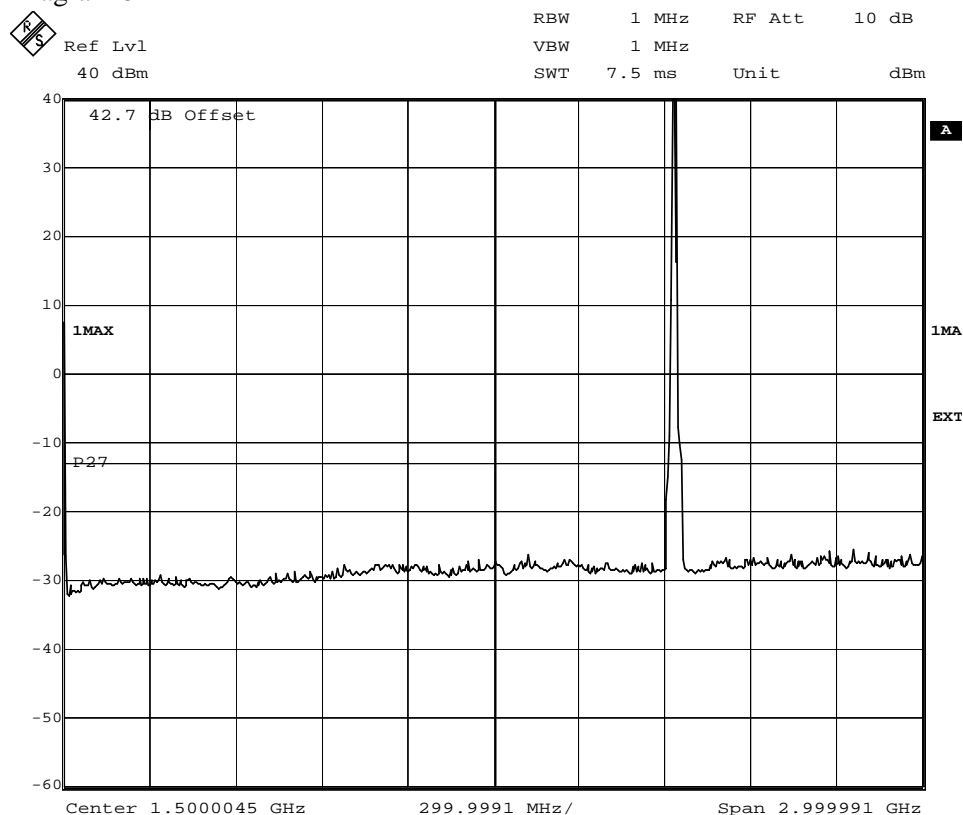


Date: 22.JUN.2006 13:26:27

FCC ID: TA8AKRC11829-2

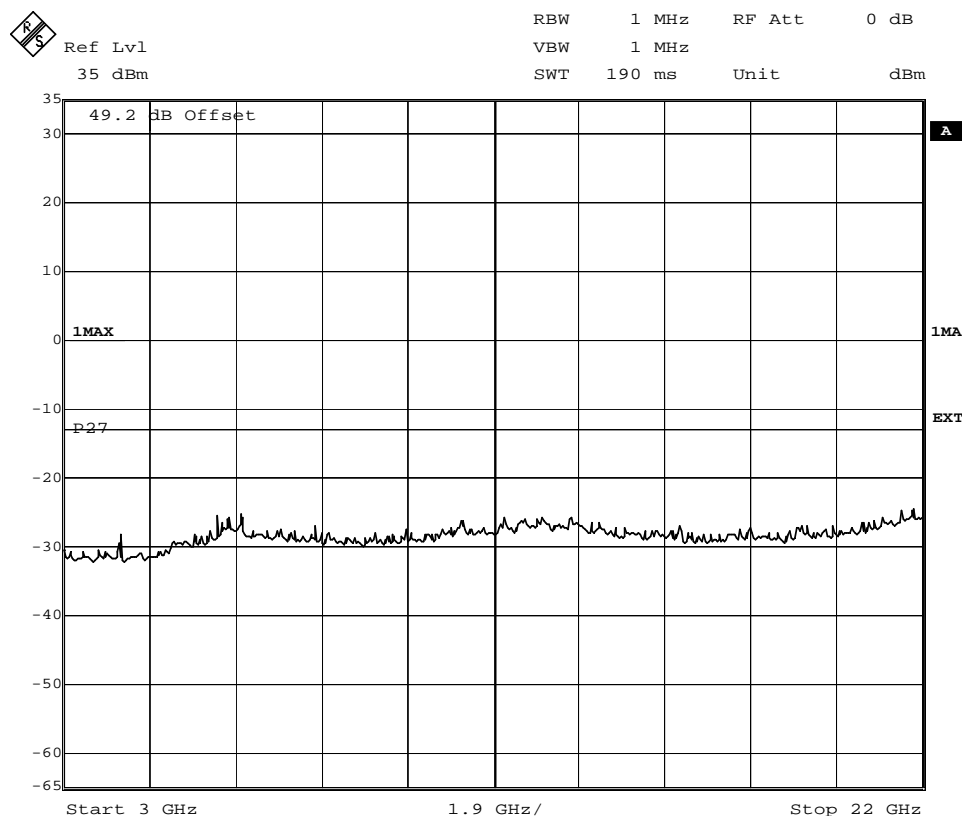
Appendix 5.1

Diagram 8



Date: 22.JUN.2006 13:44:41

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.

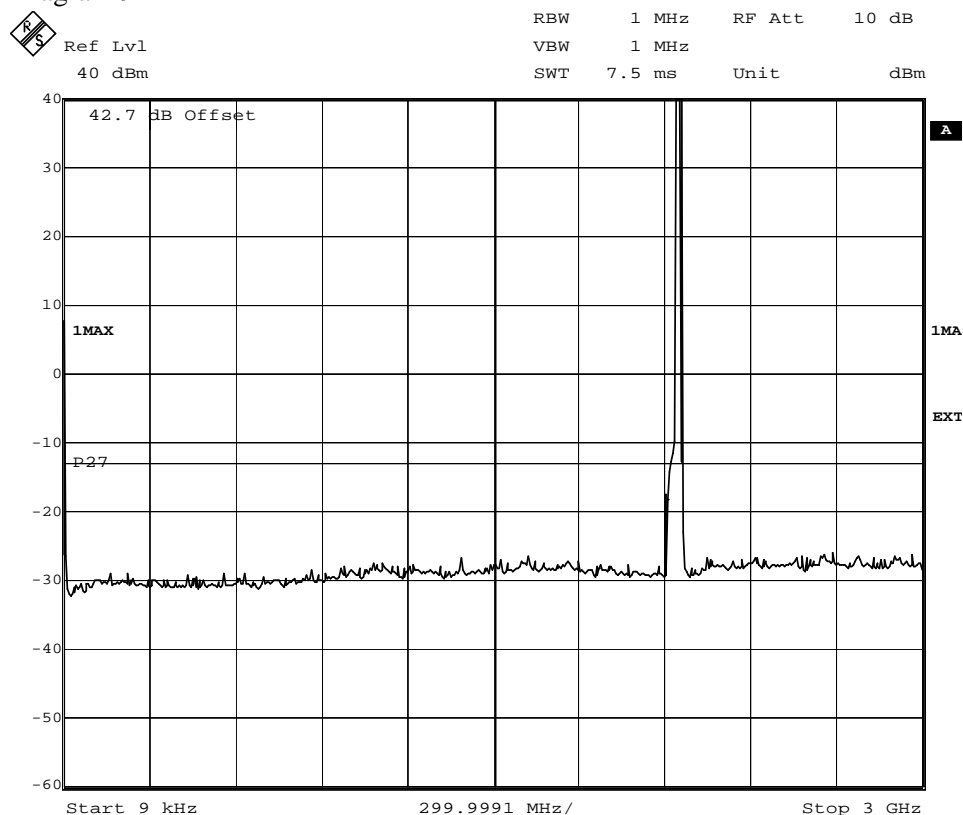


Date: 22.JUN.2006 13:46:38

FCC ID: TA8AKRC11829-2

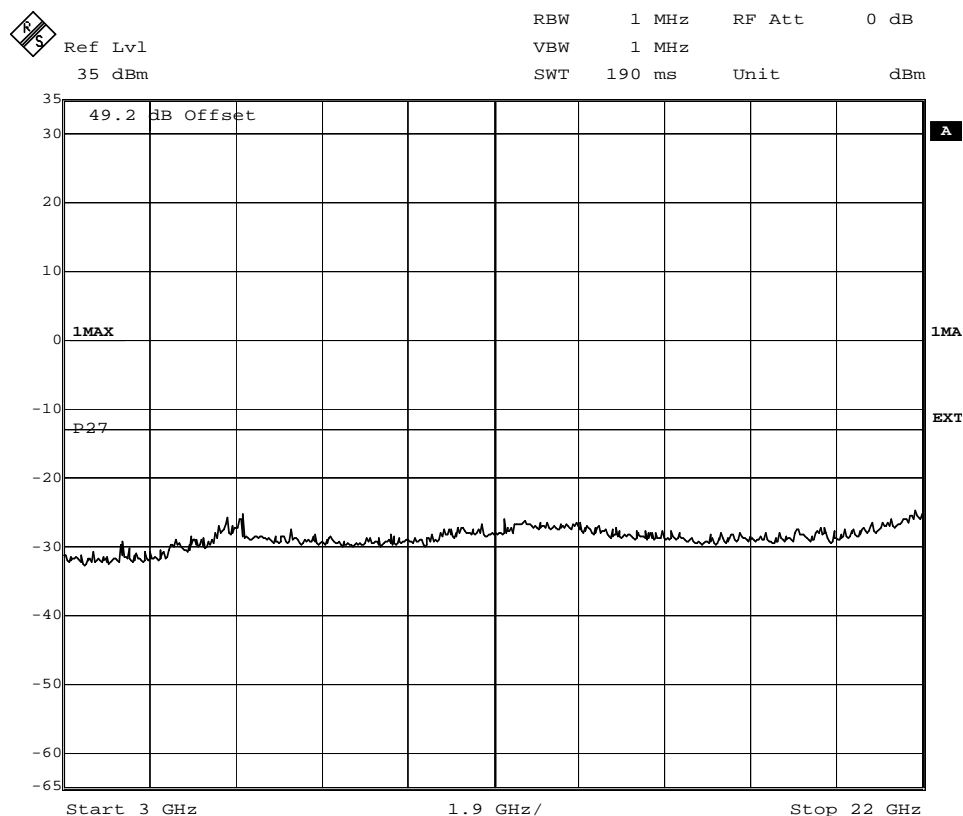
Appendix 5.1

Diagram 9



Date: 22.JUN.2006 12:56:21

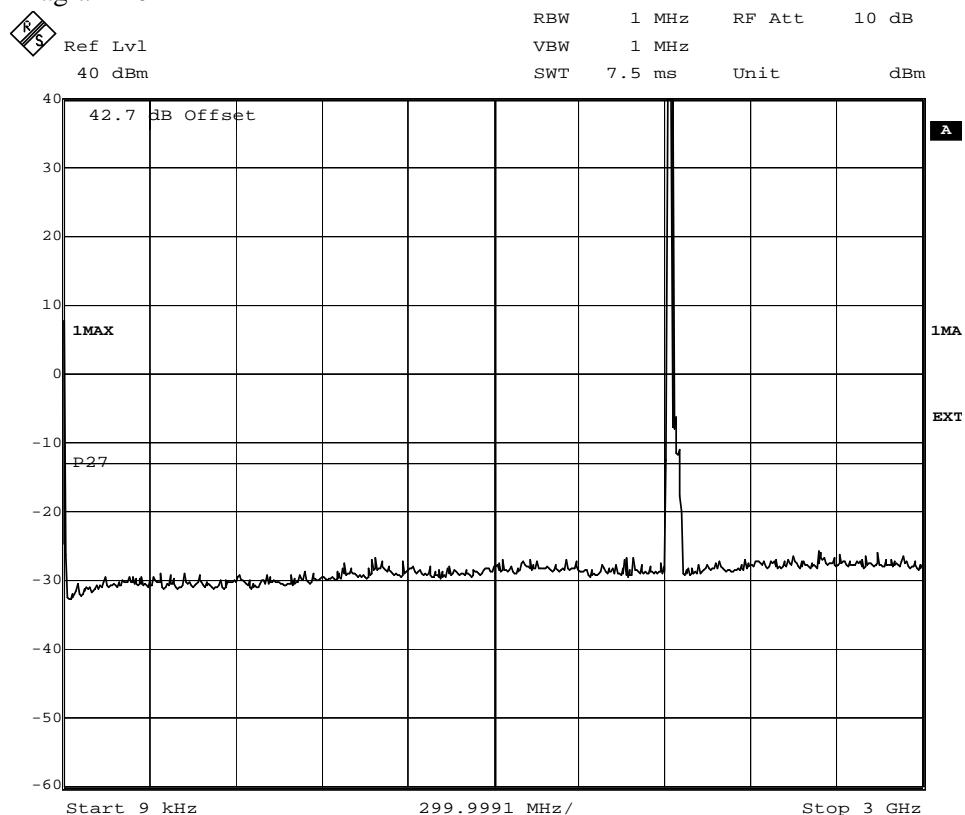
Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.



Date: 22.JUN.2006 13:00:51

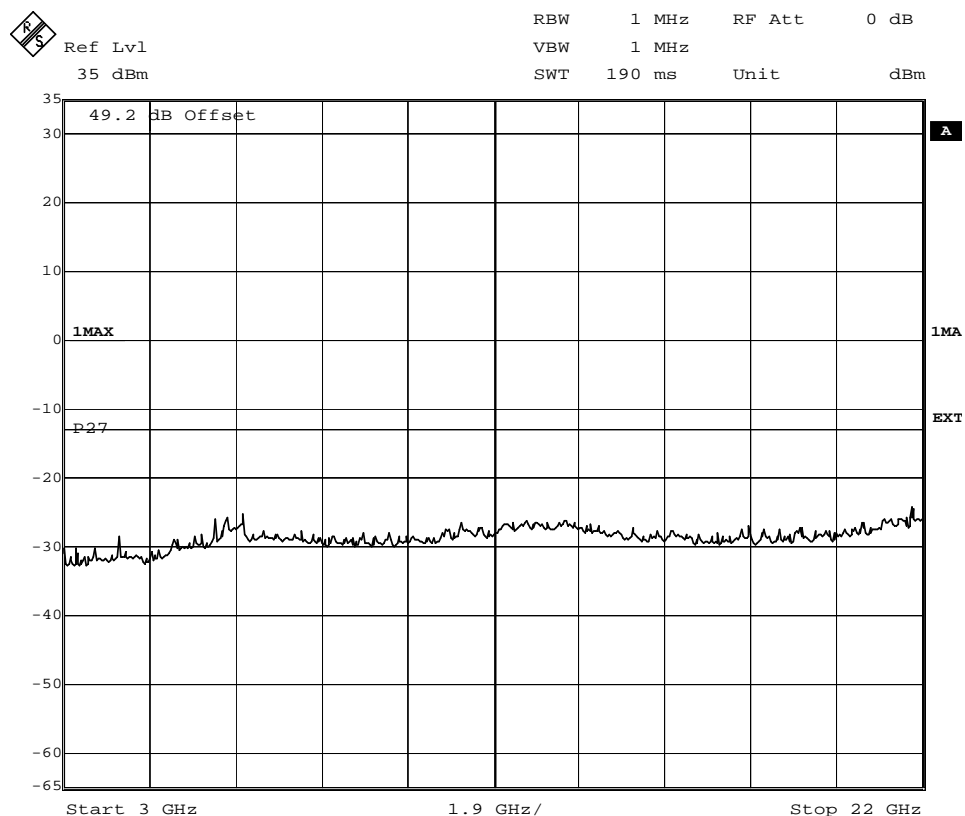


Diagram 10



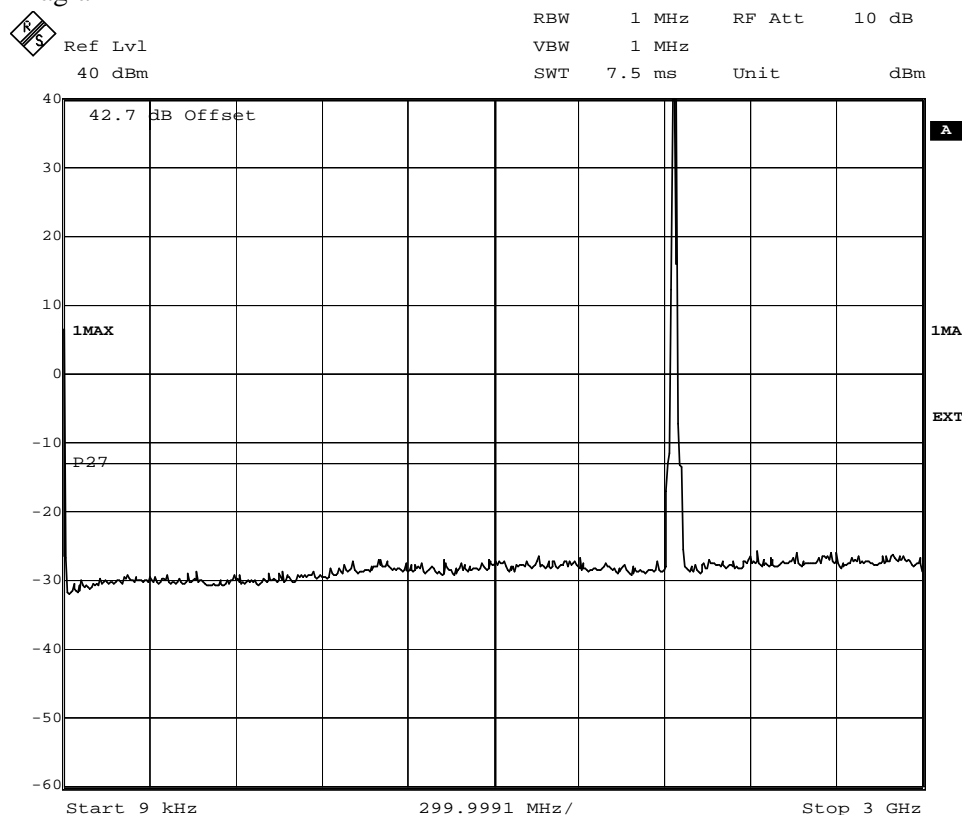
Date: 22.JUN.2006 13:20:56

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.



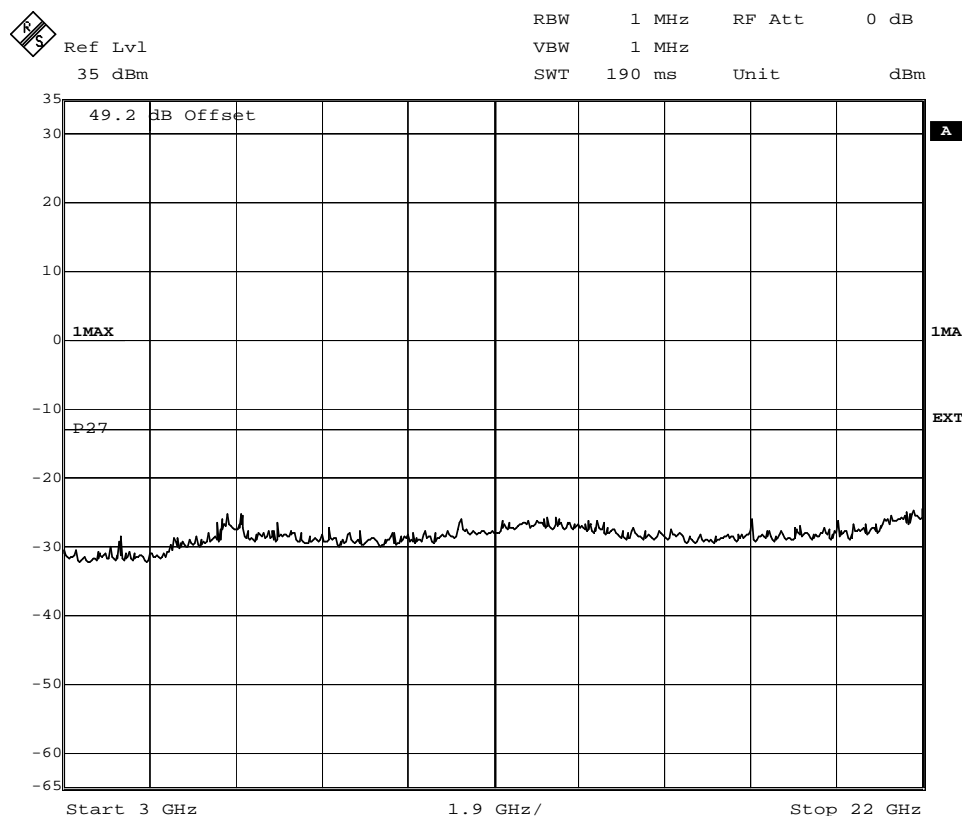
Date: 22.JUN.2006 13:22:53

Diagram 11



Date: 22.JUN.2006 13:54:42

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.

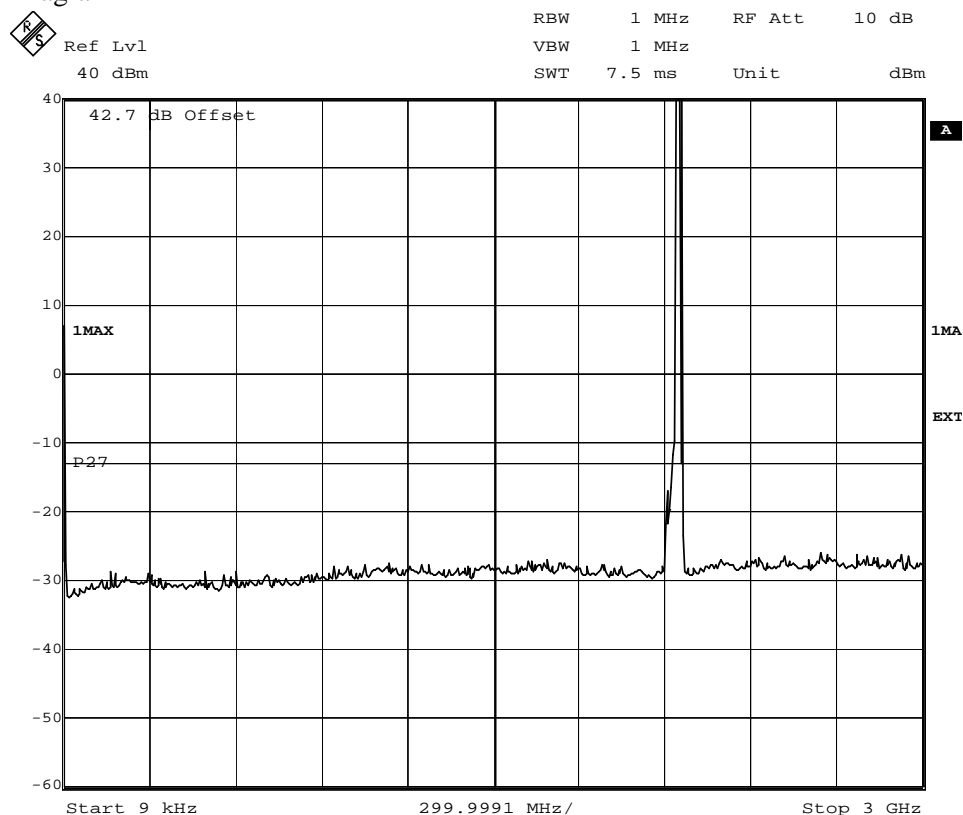


Date: 22.JUN.2006 13:52:56

FCC ID: TA8AKRC11829-2

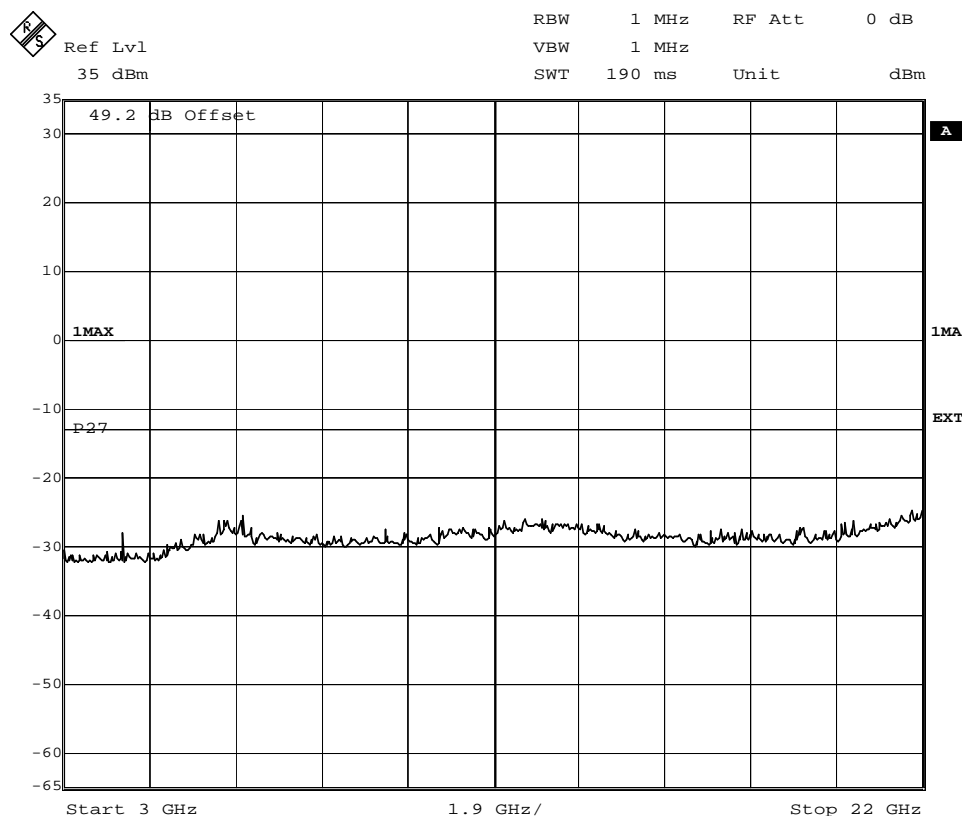
Appendix 5.1

Diagram 12



Date: 22.JUN.2006 13:06:46

Note: The emission at 9 kHz was related to the LO feedthrough. A complementary measurement was performed with a smaller RBW to verify that there were no emission in the frequency range 9k-10MHz.



Date: 22.JUN.2006 13:05:36

## Field strength of spurious radiation measurements according to 47 CFR 2.1053

Date	Temperature	Humidity
2006-05-09	21 °C ± 3 °C	25 % ± 5 %
2006-05-10	21 °C ± 3 °C	25 % ± 5 %
2006-05-11	22 °C ± 3 °C	35 % ± 5 %
2006-06-14	20 °C ± 3 °C	50 % ± 5 %
2006-06-15	22 °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 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 in the frequency range 30 MHz – 18 GHz and 1m in the frequency range 18-22 GHz.

A pre-measurement was first performed:

In the frequency range 30 MHz-22 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,

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

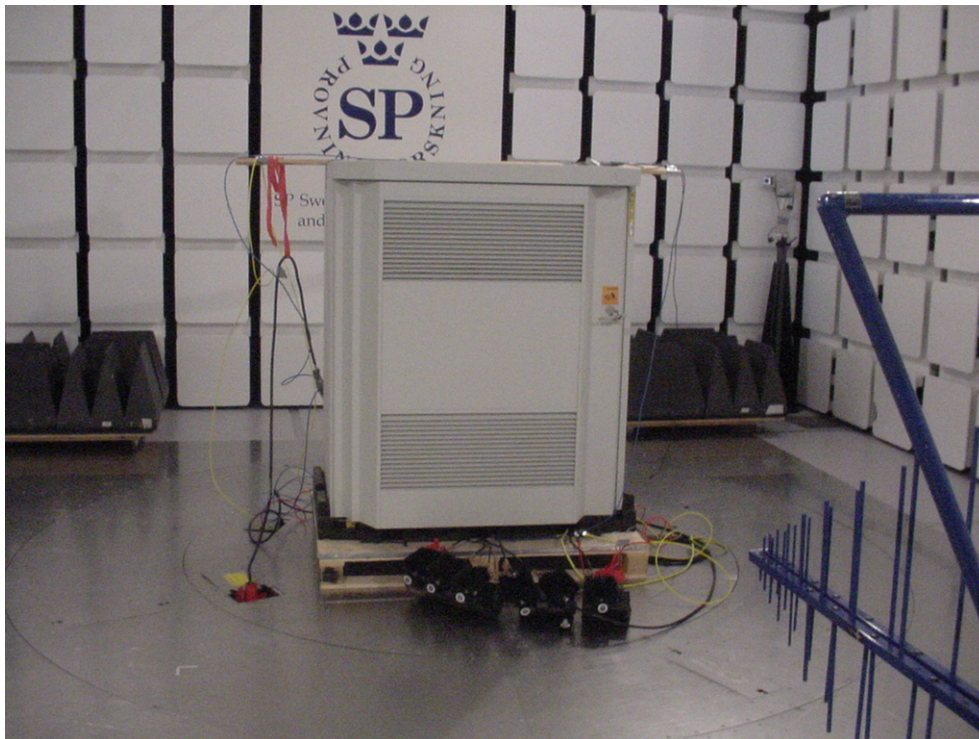
The measurement procedure was as the following:

1. 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 average detector and the average value is reported, frequencies closer than 10 dB to the limit measured with the average detector was measured with the substitution method according to the standard.

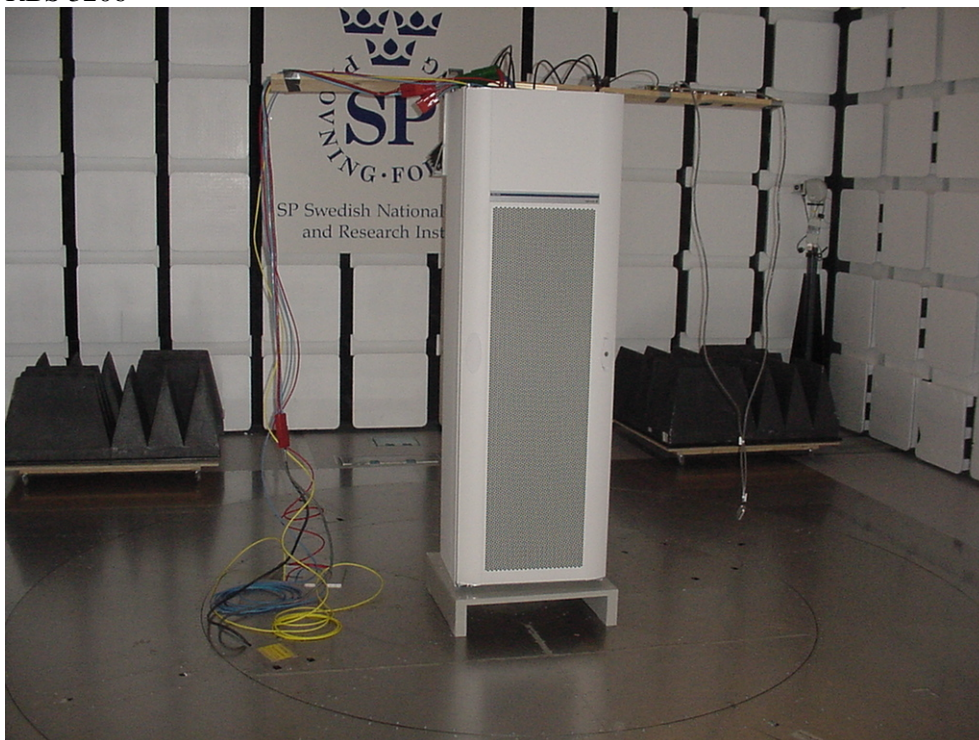
Measurement equipment	Calibration Due	SP number
Test site	2008-11	503 881
R&S ESI 26	2006-07	503 292
Control computer	-	503 479
Software: R&S ES-K1, ver. 1.60	-	-
Chase Bilog antenna CBL 6111A	2008-11	503 182
EMCO Horn Antenna 3115	2007-11	502 175
MITEQ Low Noise Amplifier	2006-07	503 285
Testo 615, Temperature and humidity meter	2007-09	503 505

The test set-ups during the spurious radiation measurements are shown in the pictures below.

RBS 3106



RBS 3206



**Results**

Test object installed in RBS 3106 (single carrier and multi carrier)

Frequency (MHz)	Spurious emission level (dBm)	
	Vertical	Horizontal
30-22 000	All emission > 20 dB below limit	All emission > 20 dB below limit
Measurement uncertainty		4.7 dB

Test object installed in RBS 3206 (single carrier and multi carrier)

Frequency (MHz)	Spurious emission level (dBm)	
	Vertical	Horizontal
30-22 000	All 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
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## Frequency stability measurements according to 47 CFR 2.1055

Date 2006-06-12 - 2006-06-15	Temperature (test equipment) 22 °C ± 3 °C	Humidity (test equipment) 48 % ± 5 %
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### Test set-up and procedure

The measurement was made per 3GPP TS 25.141. The output was connected to a spectrum analyzer. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements. The transmitter was set up according to Test model 1 and Test model 5 during the measurements.

Measurement equipment	Calibration Due	SP number
Climate chamber	2007-03	503 546
R&S FSIQ	2006-07	503 738
Multimeter Fluke 87	2006-11	502 190
Testo 610, Temperature and humidity meter	2006-12	502 658

### Results

Nominal Voltage -48 V DC  
46 dBm output power at (2132.4 MHz)

Test conditions		Frequency error (Hz)	
Supply voltage DC (V)	T (°C)	QPSK	16QAM
-48.0	+20	-14	-15
-55.2	+20	+15	+18
-40.8	+20	+14	-14
-48.0	+30	+25	+29
-48.0	+40	+29	+25
-48.0	+50	-13	-10
-48.0	+10	+33	+22
-48.0	0	+28	+31
Maximum freq. error (Hz)		+33	
Measurement uncertainty		< ± 1 x 10 <sup>-7</sup>	

Note: At -10°C it was not possible to enable the transmitter, the cell was not available.

### Limits (according to 3GPP TS 25.141)

The frequency Error shall be within ± 0.05 PPM (106.62 Hz).

Complies?	Yes
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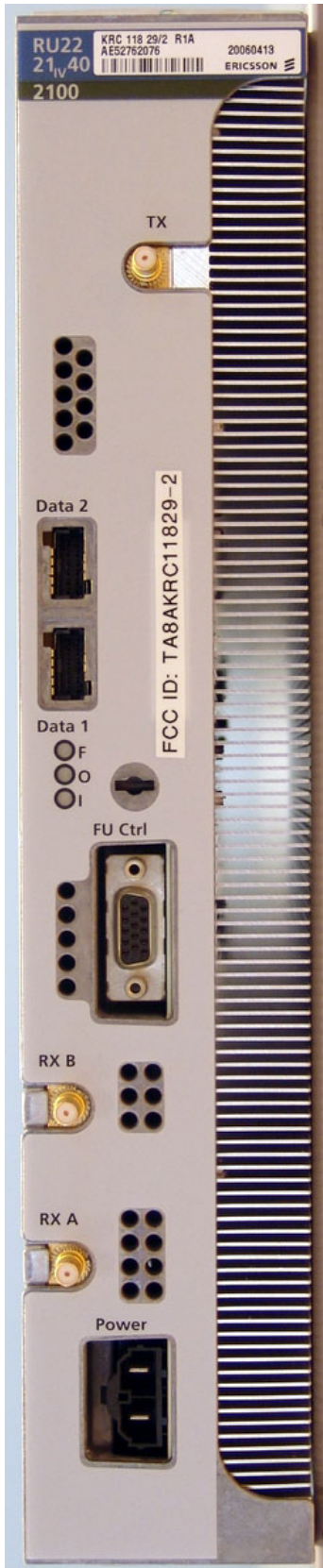


FCC ID: TA8AKRC11829-2

Appendix 8

## Photos Radio Unit KRC 118 29/2

Front side



Rear side

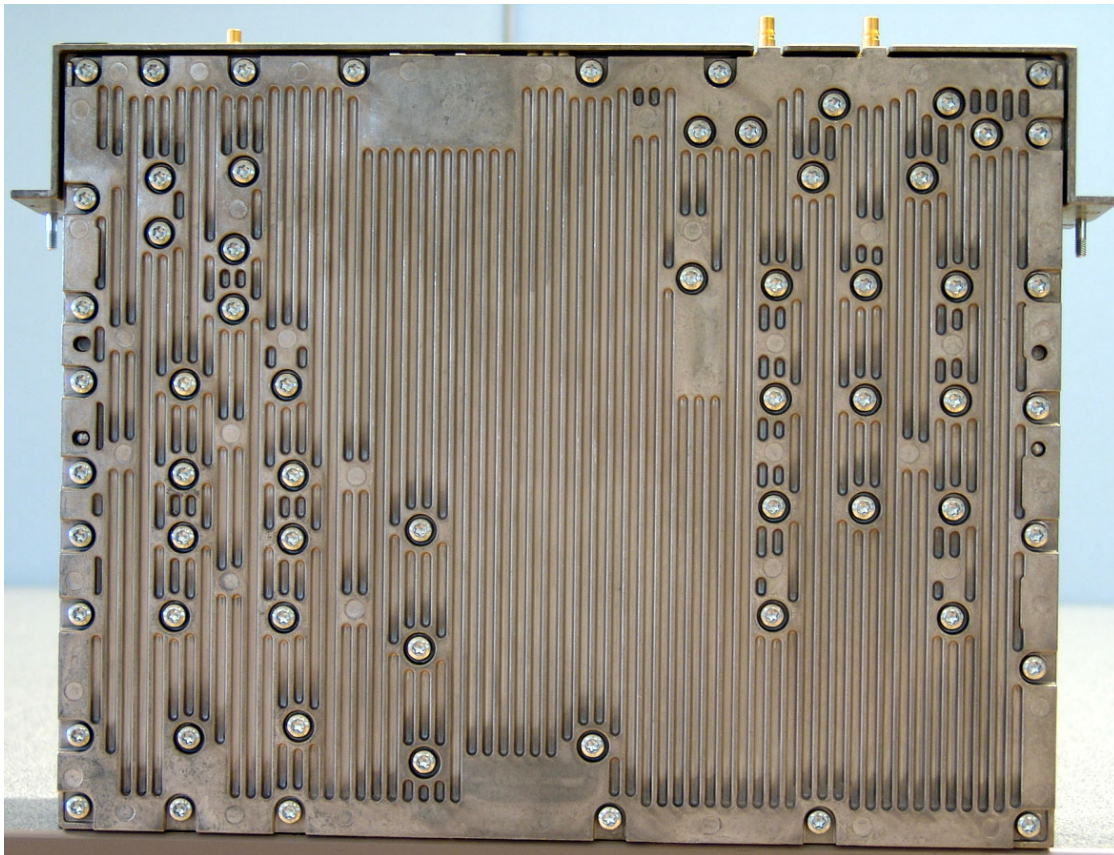




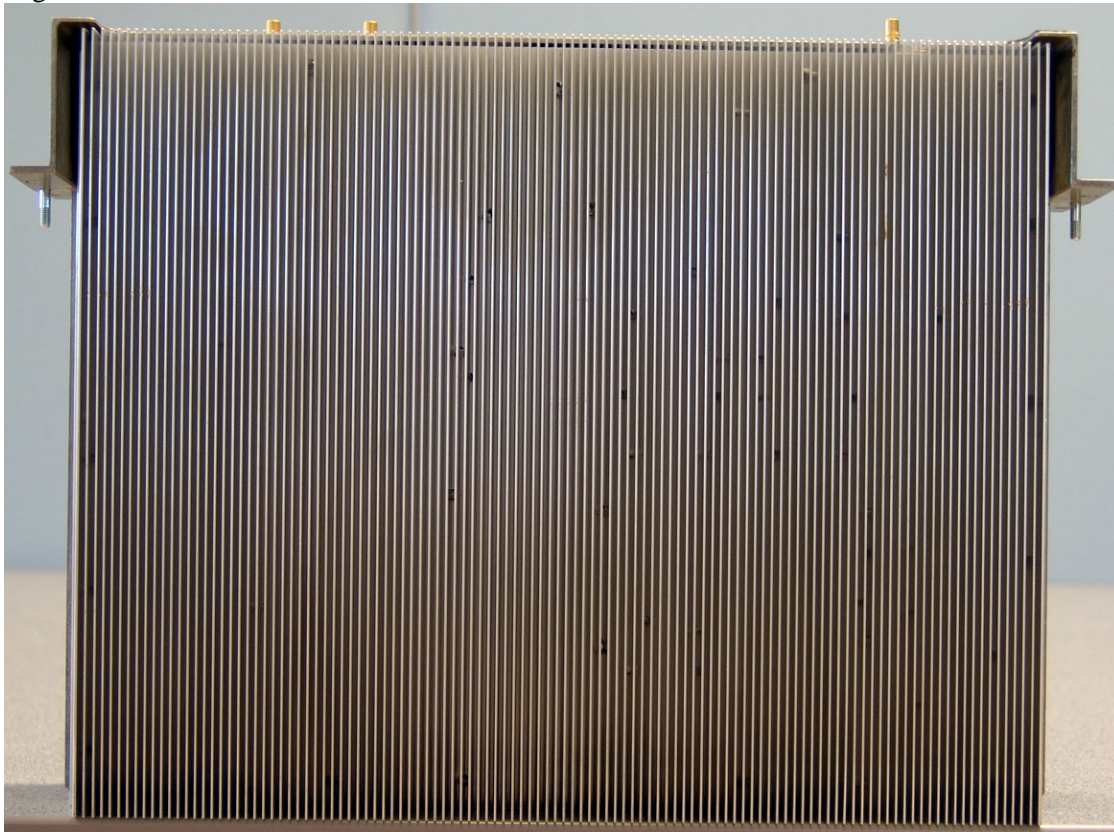
FCC ID: TA8AKRC11829-2

Appendix 8

Left side



Right side



FCC ID: TA8AKRC11829-2

Appendix 8

## RBS 3106

Front side



Rear side





FCC ID: TA8AKRC11829-2

Appendix 8

**RBS 3206**

Front side



Rear side

