



REPORT

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Class II Permissive change measurements on RRUW 02 B2 WCDMA 1900 MHz radio equipment with FCC ID: TA8AKRC11847-2 and IC: 287AB-AW118472 (6 appendices)

Test object

RRUW 02 B2, KRC 118 47/2 Rev. R1B, S/N C823058255


Summary

Standard	Compliant	Appendix
FCC CFR 47 / IC RSS-133 Issue 5		
2.1046 / RSS-133 6.4 RF power output	Yes	2
2.1049 / RSS-Gen 4.6.1 Occupied bandwidth	Yes	3
2.1051 / RSS-133 6.5 Band edge	Yes	4
2.1051 / RSS-133 6.5 Spurious emission at antenna terminals	Yes	5

Note: Above RSS-133 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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REPORT

FCC ID: TA8AKRC11847-2
IC: 287AB-AW118472

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Appendix 1

Description – Test object

Equipment: WCDMA radio equipment (RRUW) 1900 MHz single and multi carrier.

Frequency range: TX: 1932.4 – 1987.6 MHz (Downlink)
RX: 1852.4 – 1907.6 MHz (Uplink)

Modulations: QPSK, 16QAM and 64QAM

Maximum output power: Single carrier: 1x 47.8 dBm (1x 60W)
Multi carrier: 2x 44.8 dBm (2x 30W)

Channel bandwidth: 4.2 to 5 MHz (configurable in steps of 100/200 kHz)

Channel spacing: 4.4 to 5 MHz (configurable in steps of 100/200 kHz)

Nominal power voltage: -48 VDC

Tested channels

Channel	Downlink		Uplink	
	Frequency*	UARFCN	Frequency*	UARFCN
B	1932.4	9662	1852.4	9262
M	1957.6	9788	1877.6	9388
T	1987.6	9938	1907.6	9538

* Frequency in MHz

Operation mode during measurements

The settings below represent worst case setting. These settings were used for all measurements.

Single carrier TM1: 64 DPCH:s at 30 ksps (SF=128)
Channel bandwidth 5 MHz

Conducted measurements

The test object was powered with -48 VDC. All RF conducted measurements were performed with the test object configured for maximum transmit power. All TX measurements were done at the RF A connector.

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Appendix 1

Purpose of test

The purpose of the tests is to verify compliance to the performance characteristics specified in applicable items of FCC CFR 47 and Industry Canada RSS-133.

References

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

ANSI/TIA/EIA-603-B-2002

3GPP TS 25.141

RSS-Gen Issue 2

RSS-133 Issue 5

Measurement equipment

Measurement equipment	Calibration Due	SP number
Test site Tesla	2010-10	503 881
R&S FSIQ 40	2010-07	503 738
High pass filter	2010-06	503 739
RF attenuator	2010-06	504 159
Boonton RF Peak power meter/analyzer	2010-09	503 144
Boonton Power sensor 56518-S/4	2010-02	503 146
Multimeter Fluke 87	2010-01	502 190
Testo 625, Temperature and humidity meter	2010-05	504 188

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: 2009-10-22.

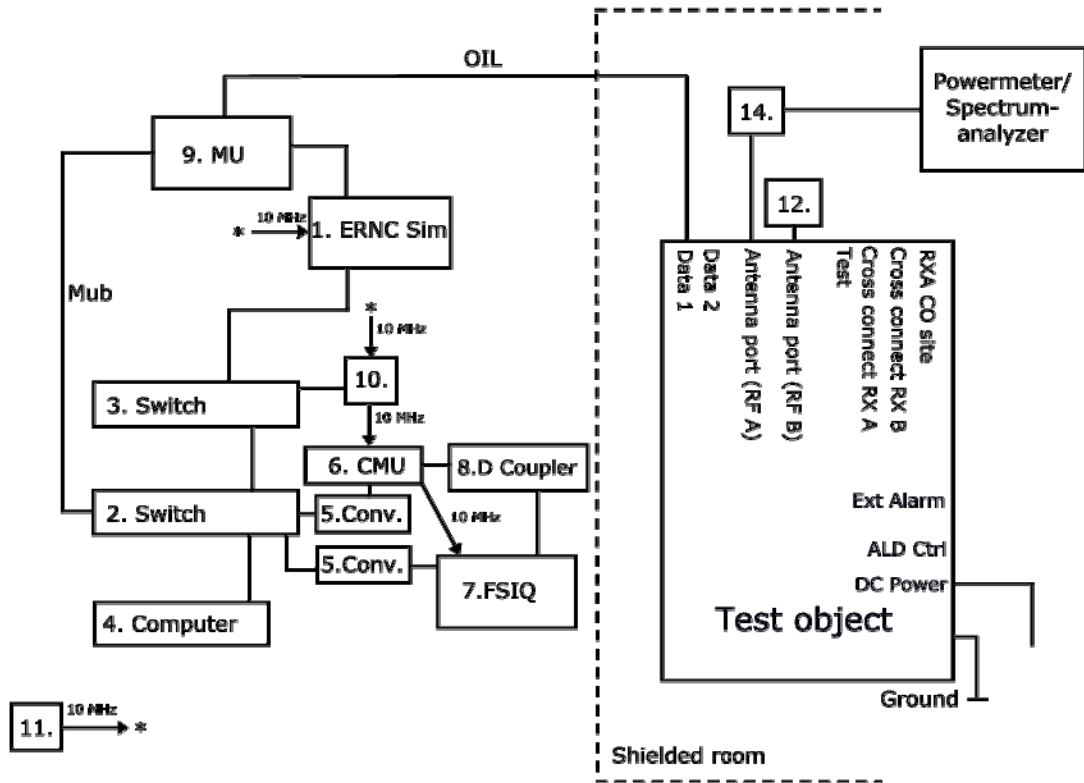
Test engineer

Jonas Bremholt

Test participant

Christer Hjorth, Ericsson AB

Test set-up conducted measurements TX



Test object

RRUW 02 B2, KRC 118 47/2 with software CXP 901 4350 Rev R2J05
(FCC ID: TA8AKRC11847-2 / IC: 287AB-AW118472)

Functional test equipment

1. ERNC SIM 072, 2/BFD 7422018 R1A, BAMS – 1000579045
2. Fast ethernet switch, Netgear FS726
3. Fast ethernet switch, Netgear FS726
4. Computer Sunblade Ultra 45 BAMS 1000655789
5. Ethernet/GPIB converter, National Instrument
6. CMU 300, R & S, BAMS 1000452891
7. Spectrum analyzer, R & S, FSQ 26, BAMS 1000452890
8. Directional coupler
9. Main Unit: RBS 3418, BFE 401 1019, Software CXP 901 4350 Rev R2J05
10. NTP-server, Symmetricom, BAMS 1000562217
11. Symmetricom model 8040 BAMS 1000645314
12. Terminator
13. RET – Remote Electrical Tilt unit
14. RF Attenuator (40 dB)



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Appendix 2

RF power output measurements according to 47 CFR 2.1046/ RSS-133 6.4

Date 2009-10-23	Temperature 22 °C ± 3 °C	Humidity 32 % ± 5 %
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Test set-up and procedure

The output was connected to a peak power analyzer with the CDF mode activated.

Measurement equipment	SP number
Boonton RF Peak power meter/analyzer	503 144
Boonton Power sensor 56518-S/4	503 146
Multimeter Fluke 87	502 190
Testo 625, Temperature and humidity meter	504 188

Measurement uncertainty: 0.5 dB

Results

Output power level at RF A connector (maximum):

Transmitter power (dBm / dB) RMS / PAR		
B	M	T
47.7/ 6.5	47.7/ 6.5	47.7/ 6.5

Limit

§24.232 **Federal Register** / Vol. 73, No. 86
The maximum output power may not exceed 1640 W (EIRP)
The Peak to Average Ratio (PAR) may not exceed 13 dB.

RSS-133: The average equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

Complies?	Yes
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Appendix 3

Occupied bandwidth measurements according to 47 CFR 2.1049/ RSS-Gen 4.6.1

Date 2009-10-23	Temperature 22 °C ± 3 °C	Humidity 32 % ± 5 %
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Test set-up and procedure

The measurements were made as defined 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.

Measurement equipment	SP number
R&S FSIQ	503 738
Testo 625, Temperature and humidity meter	504 188

Measurement uncertainty: 3.7 dB

Results

The results are shown in appendix 3.1

Channel Bandwidth 5.0 MHz

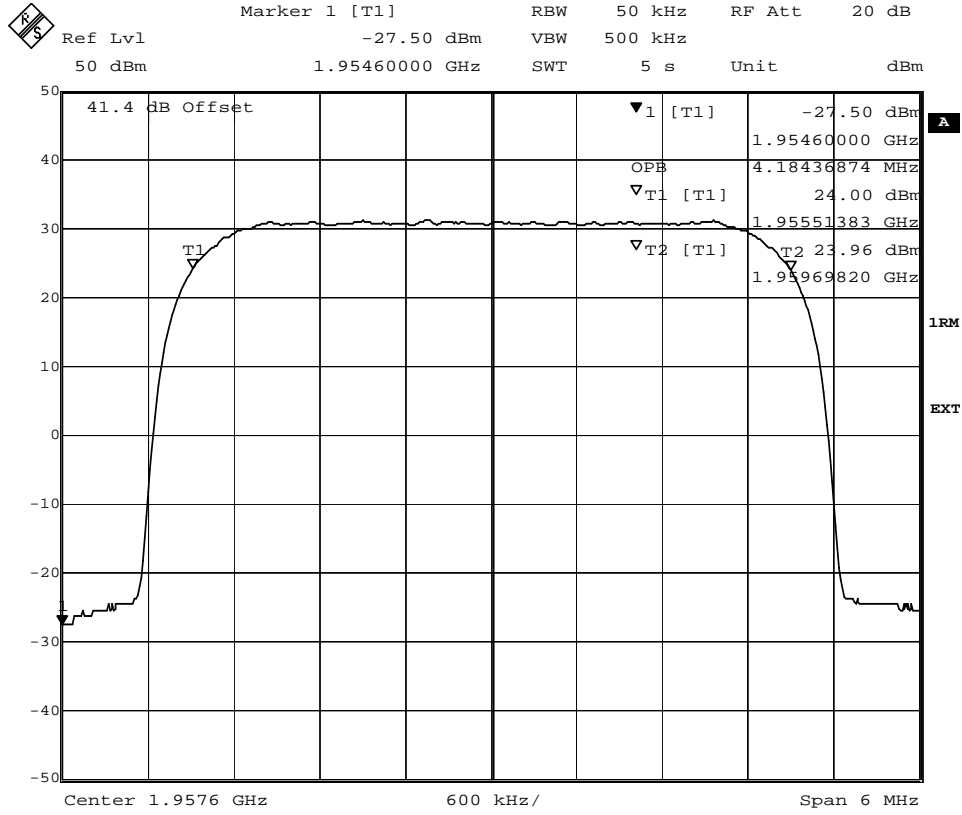
Diagram 1 Channel M OBW 4.18 MHz



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Appendix 3.1

Diagram 1



Date: 23.OCT.2009 13:38:14



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Appendix 4

Band edge measurements according to 47 CFR 2.1051/ RSS-133 6.5

Date 2009-10-23	Temperature 22 °C ± 3 °C	Humidity 32% ± 5 %
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Test set-up and procedure

The measurements were made as defined in §24.238. 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. A resolution bandwidth of 30 kHz was used up to 3.25 MHz away from the band edges. 30 kHz is <1% of the Emission BW(4.25 MHz between the 26 dB points). To compensate for the reduced measurement band width, the limit was adjusted with 1.5 dB to -14.5 dBm up to 1 MHz away from the band edges and with 15.2 dB to -28.2 dBm between 1 MHz to 3.25 MHz away from the band edges.

Measurement equipment	SP number
R&S FSIQ	503 738
Testo 625, Temperature and humidity meter	504 188

Measurement uncertainty: 3.7 dB

Results

The results are shown in appendix 4.1

Single carrier:

Diagram 1: B

Diagram 2: T

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.

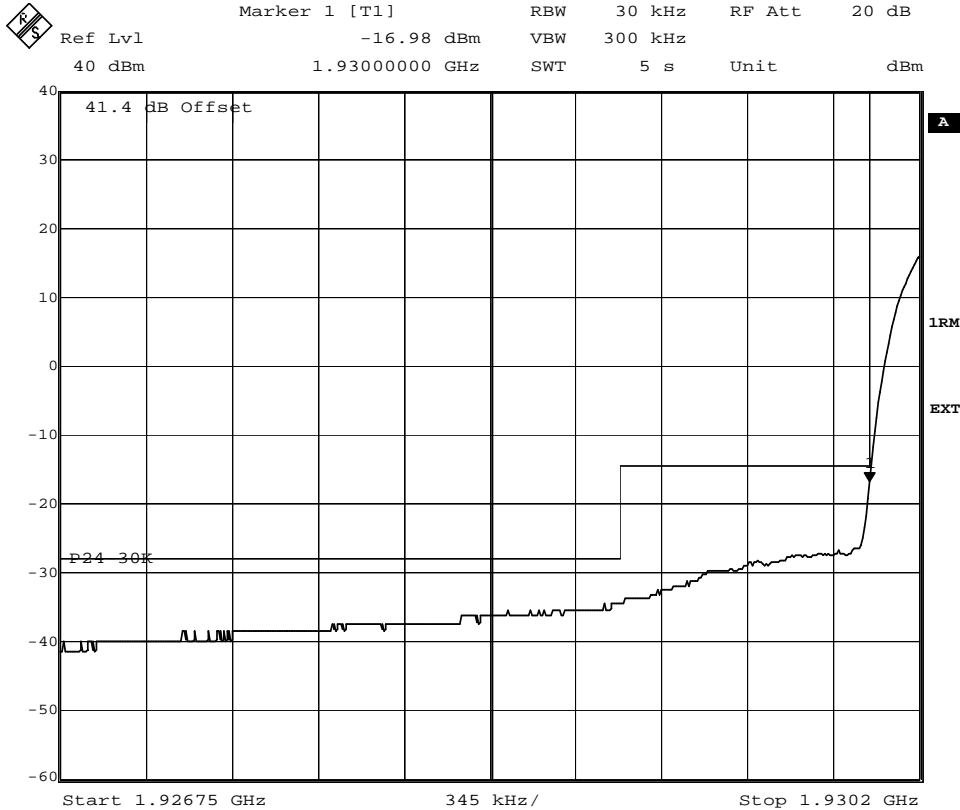
Complies?	Yes
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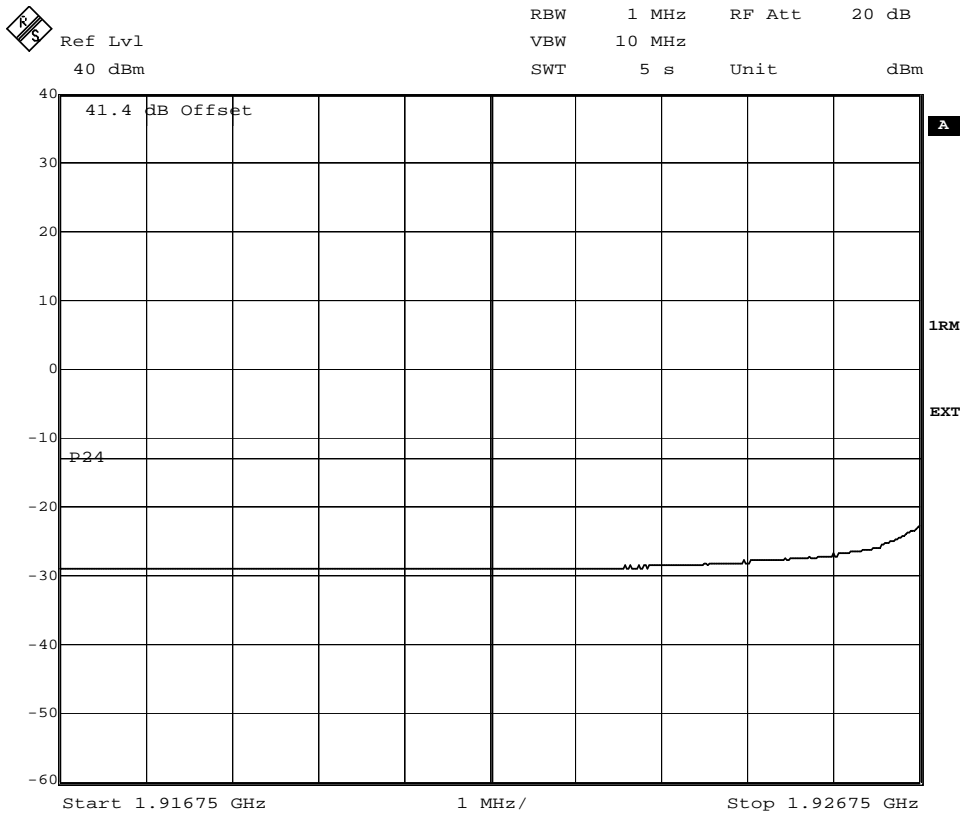
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Appendix 4.1

Diagram 1



Date: 23.OCT.2009 13:55:46



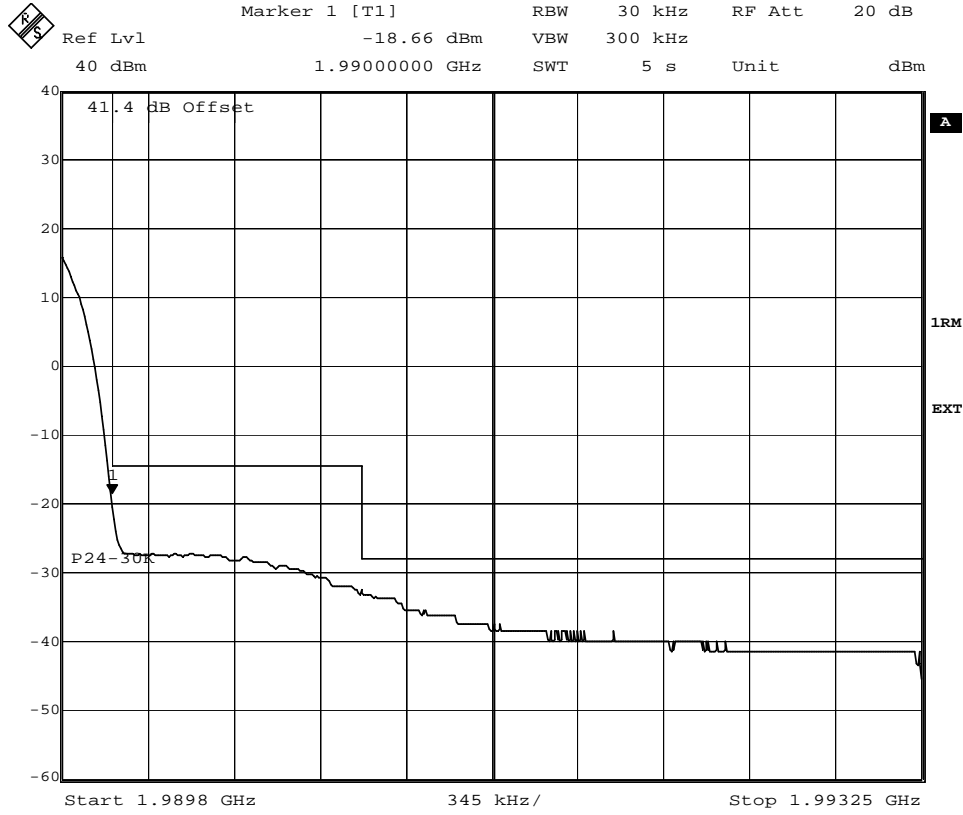
Date: 23.OCT.2009 13:55:08



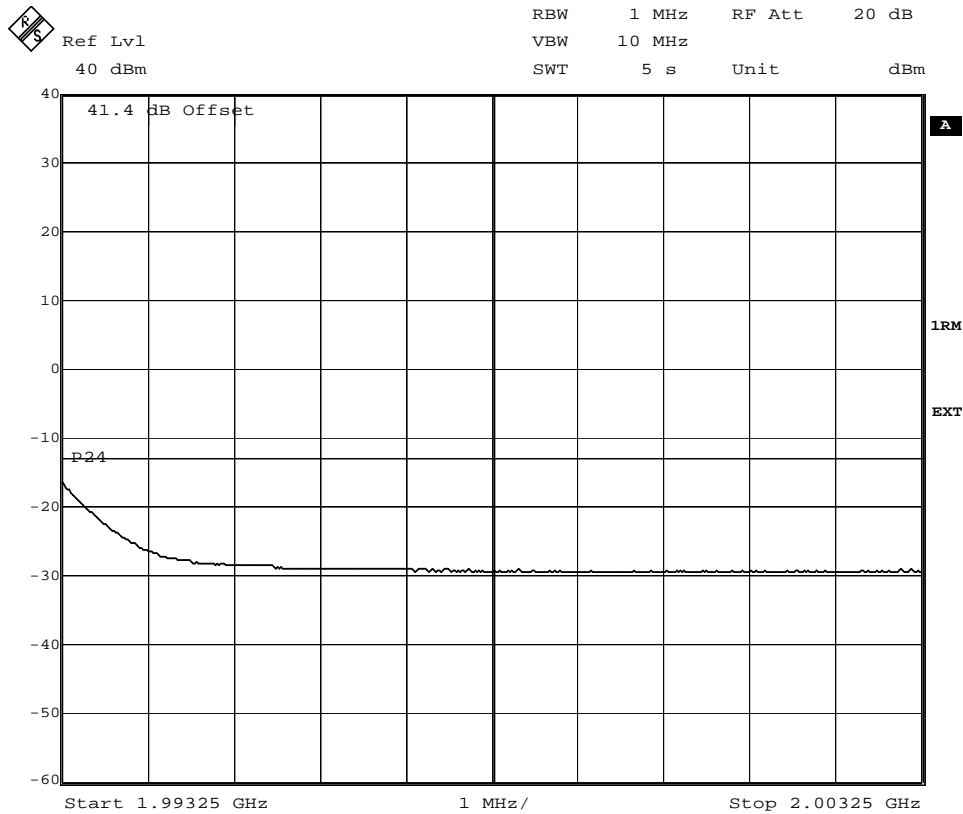
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Appendix 4.1

Diagram 2



Date: 23.OCT.2009 14:12:57



Date: 23.OCT.2009 14:13:47

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Appendix 5

**Conducted spurious emission measurements according to 47 CFR 2.1051/
RSS-133 6.5**

Date 2009-10-23	Temperature 22 °C ± 3 °C	Humidity 32 % ± 5 %
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Test set-up and procedure

The output was connected to a spectrum analyzer. First a pre-measurement with activated peak detector was performed. Emissions close to or above the limit is measured with activated RMS detector and the RMS measurement result is noted. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements.

Measurement equipment	SP number
R&S FSIQ	503 738
High pass filter	503 739
Testo 625, Temperature and humidity meter	504 188

Measurement uncertainty: 3.7 dB

Results

The results are shown in appendix 5.1

Single carrier:

Diagram 1: B

Diagram 2: M

Diagram 3: T

Remark

The emission at 9 kHz on 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.

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.

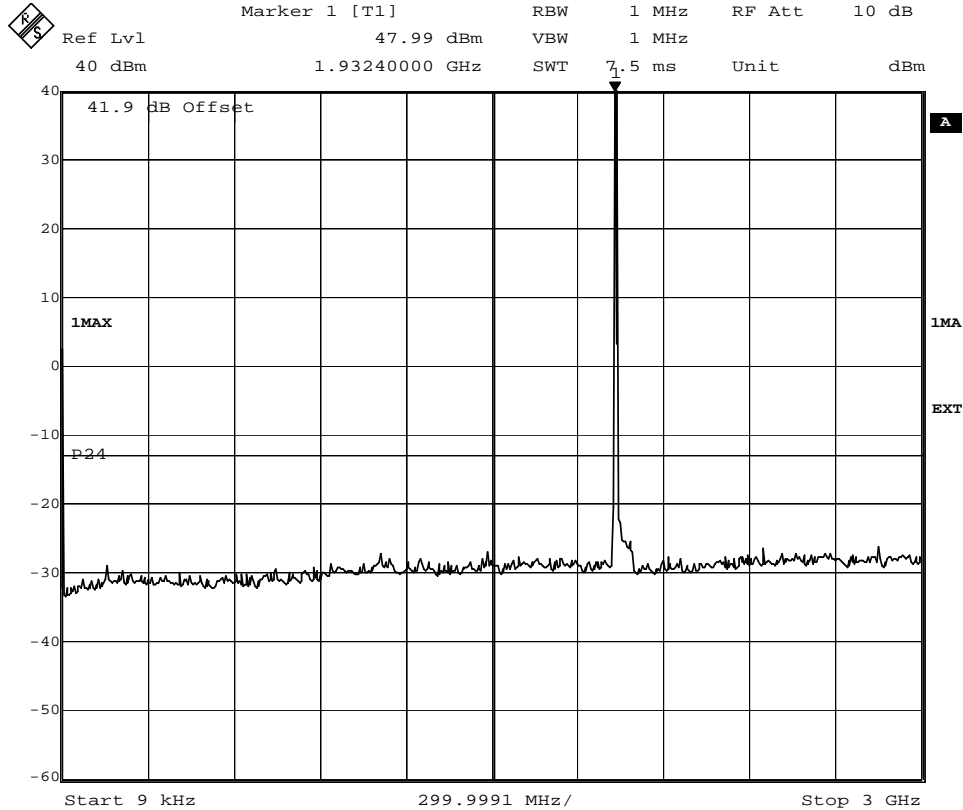
Complies?	Yes
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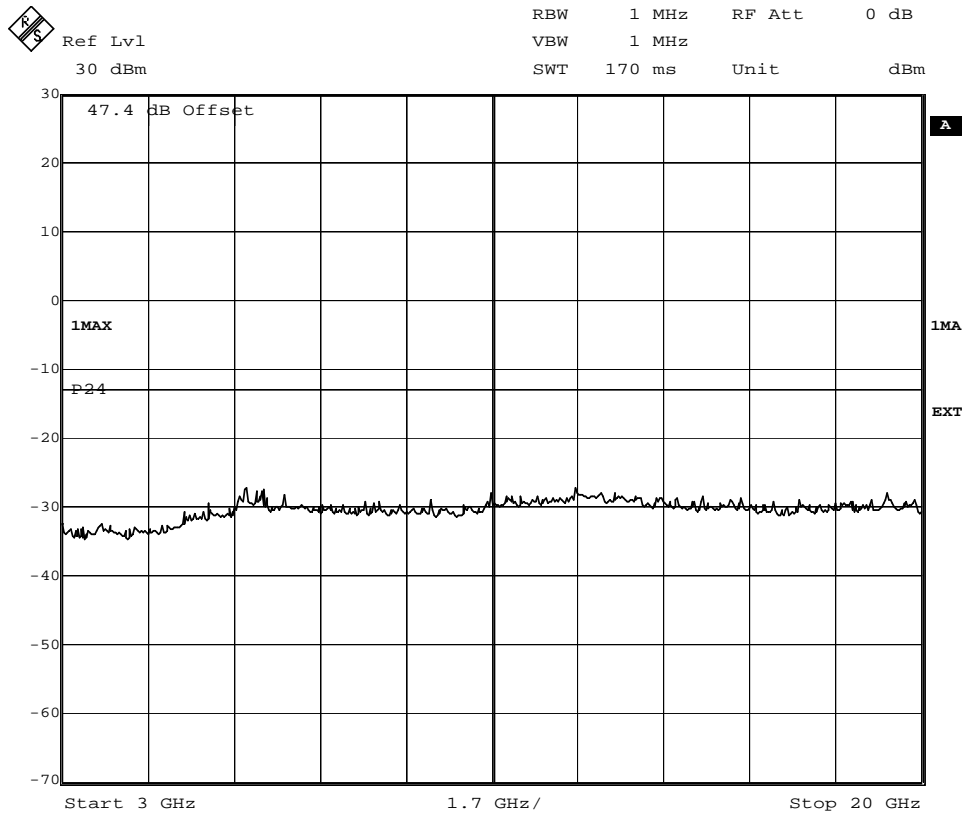
FCC ID: TA8AKRC11847-2
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Appendix 5.1

Diagram 1



Date: 23.OCT.2009 13:56:32



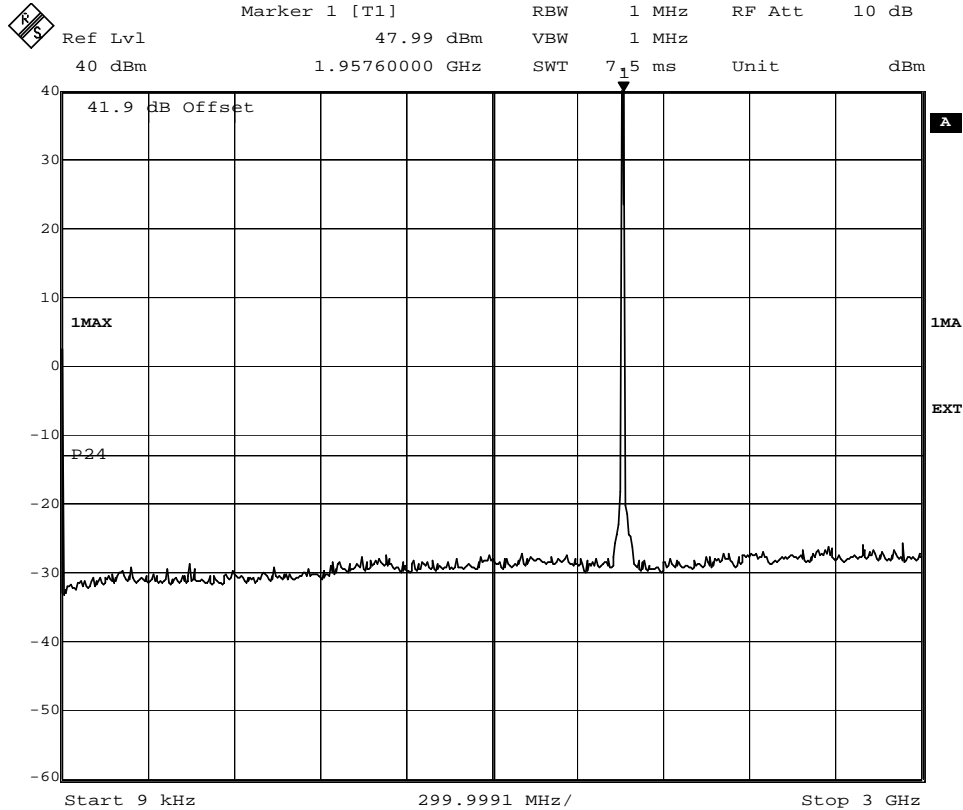
Date: 23.OCT.2009 13:57:44



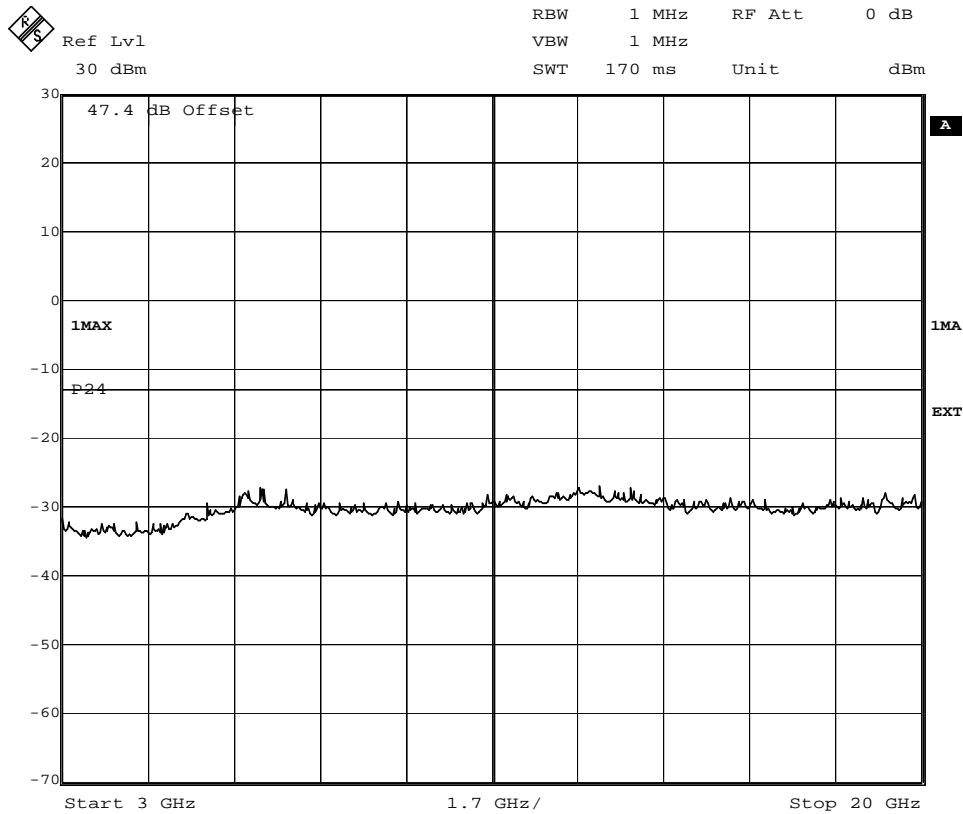
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Appendix 5.1

Diagram 2



Date: 23.OCT.2009 13:29:06



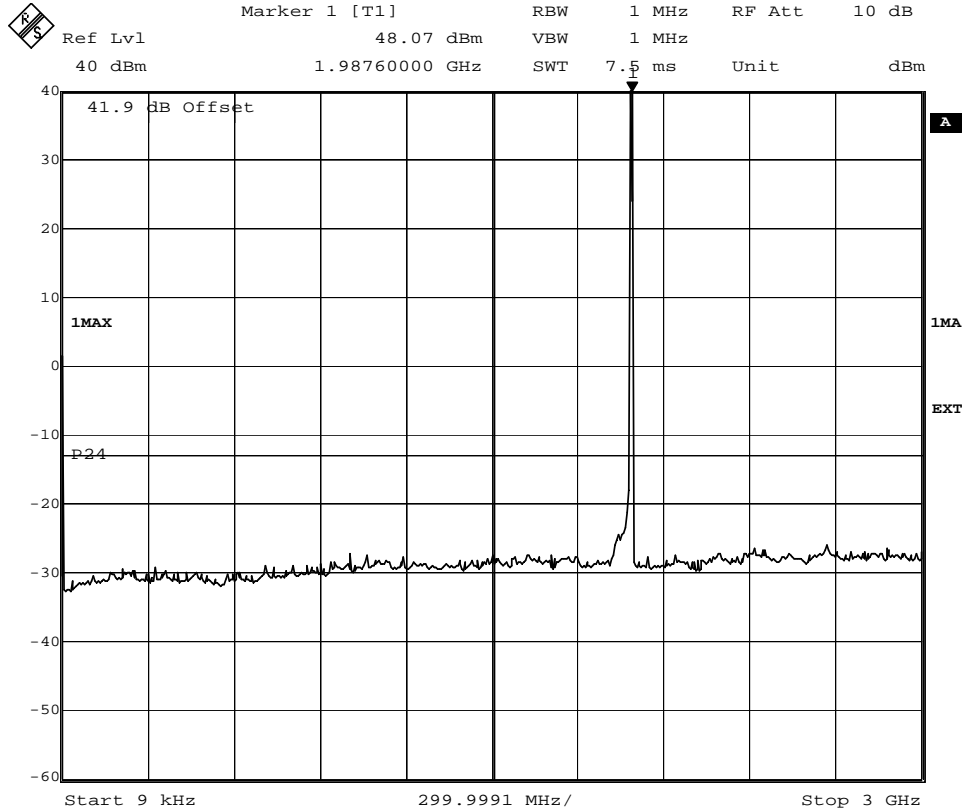
Date: 23.OCT.2009 13:32:18



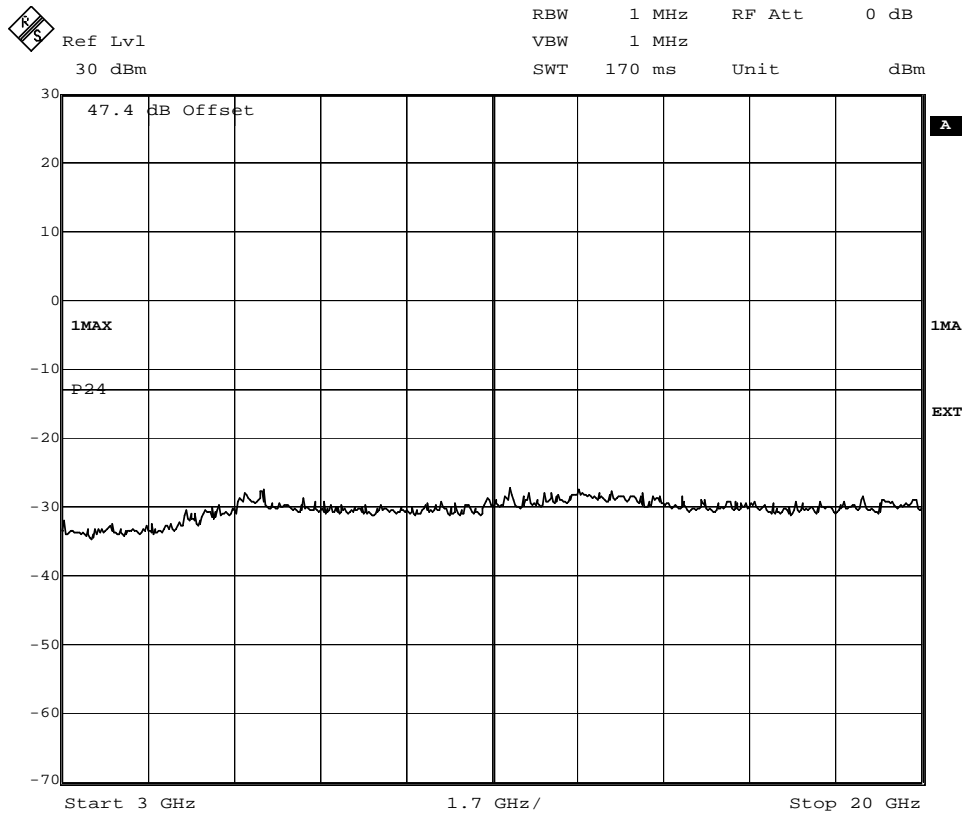
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Appendix 5.1

Diagram 3



Date: 23.OCT.2009 14:11:27



Date: 23.OCT.2009 14:08:50

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Appendix 6

External photos of EUT

Front side



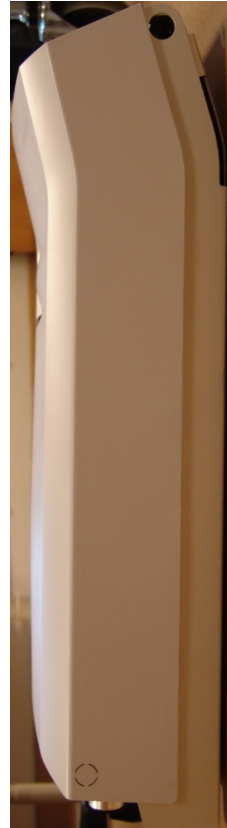
Rear side



Right side



Left side



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Appendix 6

Bottom side



Top side

