REPORT

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

Date	Reference	Page
2012-06-27	FX200290-F24W	1 (2)

1002
ISO/IEC 17025

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Class II permissive change measurements on RUS 01 B2 1900 MHz radio equipment with FCC ID:TA8AKRC11866-2 and IC:287AB-AS118662

(3 appendices)

Test object

RUS 01 B2, KRC 118 66/2 Rev R1C, serial no: CB4K958361

Summary

Standard	Compliant	Appendix
FCC CFR 47 / IC RSS-133		
2.1046 / RSS-133 6.4 RF power output	Yes	2

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.

SP Technical Research Institute of Sweden
Electronics - EMC

Performed by

Jörgen Wassholm

Examined by

Christer Karlsson

Table of contents

Description – Test object

Equipment:	Radio equipment RUS 01 B2 running in WCDMA supporting single and multi carrier.
Antenna ports:	1 TX/RX port and 1 RX port
Frequency bands:	TX: 1930 – 1990 MHz RX: 1850 – 1910 MHz
Modulations:	QPSK, 16QAM and 64QAM
Nominal output power per antenna port:	Single carrier: 1x 49 dBm (1x 80W) Multi carrier: 2x 46 dBm (2x 40W) 3x 44.2 dBm (3x 26.6W) 4x 43 dBm (4x 20W)
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

Operation mode during measurements

Measurements were performed with the test object transmitting the Test model TM1 with the settings below which are defined in 3GPP TS 25.141.

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

Tested channels

	Downlink		Uplink	
Channel	Frequency*	UARFCN	Frequency*	UARFCN
B	1932.4	9662	1852.4	9262
M	1960.0	9800	1880.0	9400
T	1987.6	9938	1907.6	9538

* Frequency in MHz

Conducted measurements

The EUT was mounted into a RBS 6201 cabinet and supplied by the cabinet's internal -48 V DC. 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.

Purpose of test

The purpose of this test is to verify that the output power in WCDMA mode is within tolerance due to software upgrade.

References

Measurements were done according to relevant parts of the following standards:
ANSI 63.4-2009
ANSI/TIA/EIA-603-C-2004
CFR 47 part 2, October 1st , 2010
CFR 47 part 24, October 1st, 2010
3GPP TS 25.141, version 8.9.0
RSS-Gen Issue 3
RSS-133 Issue 5

Measurement equipment

Measurement equipment	Calibration Due	SP number
Test site Tesla	2014-01	503 881
R&S FSIQ 40	2012-07	503 738
R&S FSQ 40	2012-07	504 143
R&S ESI 26	2012-07	503 292
Control computer with R&S software EMC32 version 8.20.1	-	503 479
High pass filter	2012-07	504 199
High pass filter	2012-07	504 200
High pass filter	2012-07	503 739
High pass filter	2012-07	503 740
RF attenuator	2012-07	504 159
RF attenuator	2012-07	900 233
Chase Bilog Antenna CBL 6111A	2013-10	503 182
EMCO Horn Antenna 3115	2014-01	502 175
Std.gain horn FLANN model 20240-20	-	503 674
µComp Nordic, Low Noise Amplifier	2012-07	504 160
MITEQ Low Noise Amplifier	2012-07	503 285
Temperature cabinet	-	503 360
Testo 635 Temperature and humidity meter	2013-05	504 203

Uncertainties

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

Reservation

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

Delivery of test object

The test object was delivered 2012-01-05.

Manufacturer's representative

Christer Gustavsson, Ericsson AB

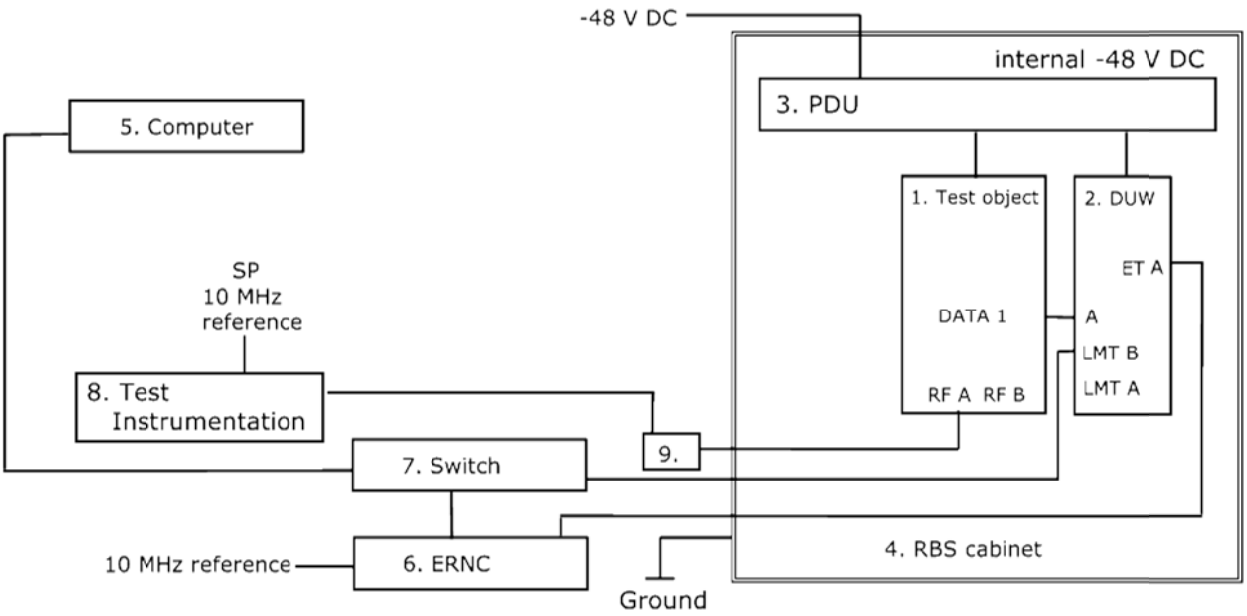
Test engineers

Martin Theorin and Jörgen Wassholm

Test participant

Samir Catic, Ericsson AB (Partly present)

Test set-up conducted measurements TX



Test object

1. RUS 01 B2, KRC 118 66/2, revision R1C, S/N: CB4K958361
(FCC ID:TA8AKRC11866-2 / IC:287AB-AS118662) with preinstalled software (PIS)
CXP9 017316/ 1_R39UD

Functional test equipment

2. DUW 30 01 KDU 127 161/3 Rev R4C, S/N: C824609611
3. PDU 02 01, BMG 980336/4, R2A, (S)BJ31528316
4. RBS 6201 cabinet, BAMS 1000778792
5. Computer, BAMS 1001052042
6. ERNC, BAMS – 1000759880
7. Switch Netgear FS726T
8. SP test instrument according measurement equipment list
9. RF attenuator

Appendix 1

Test object interfaces	**Type of port:**
Power: -48 VDC	DC Power
Antenna port (A), 7/16 connector	Antenna
Antenna port (B), 7/16 connector	Antenna
Opto 1, Optical Interface Link, single mode opto fibre	Telecom
Opto 2, Optical Interface Link, single mode opto fibre	Telecom
LMT, for maintenance use only	Telecom
RX A Out, not supported	Antenna
RX A I/O, not supported	Antenna
RX B I/O, not supported	Antenna
EXT Alarm, shielded multi-wire	Signal
ALD Ctrl, shielded multi-wire	Signal
Ground wire	Ground

RBS software

Software	Revision
CXP 901 8350/1	R4A02

RF power output measurements according to CFR 47 §24.232 / IC RSS-133 6.4

Date	Temperature	Humidity
2012-02-16	21 °C ± 3 °C	15 % ± 5 %

Test set-up and procedure

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

Measurement equipment	SP number
R&S FSQ 40	504 143
RF attenuator	504 159
Testo 635, temperature and humidity meter	504 203

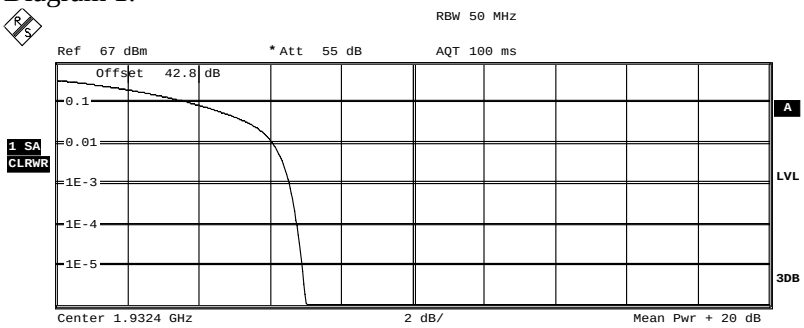
Measurement uncertainty: 1.1 dB

Results

Diagram 1: B
Diagram 2: M
Diagram 3: T

Appendix 2

Diagram 1:

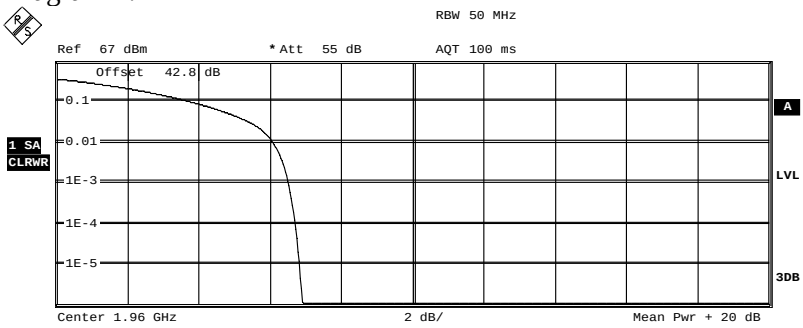


Complementary Cumulative Distribution Function
NOF samples: 6400000, Usable BW: 37.9MHz

	Trace 1
Mean	48.65 dBm
Peak	55.72 dBm
Crest	7.07 dB
10 %	3.81 dB
1 %	6.06 dB
.1 %	6.54 dB
.01 %	6.76 dB

Date: 16.FEB.2012 15:16:40

Diagram 2:



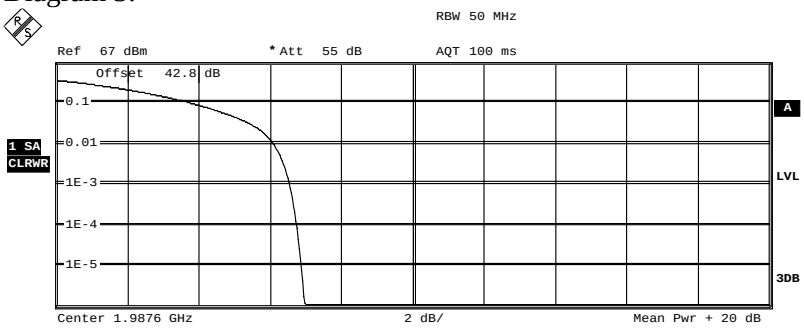
Complementary Cumulative Distribution Function
NOF samples: 6400000, Usable BW: 37.9MHz

	Trace 1
Mean	49.13 dBm
Peak	56.11 dBm
Crest	6.98 dB
10 %	3.81 dB
1 %	6.06 dB
.1 %	6.51 dB
.01 %	6.70 dB

Date: 16.FEB.2012 15:24:40

Appendix 2

Diagram 3:



Complementary Cumulative Distribution Function
NOF samples: 6400000, Usable BW: 37.9MHz

	Trace 1
Mean	48.59 dBm
Peak	55.66 dBm
Crest	7.07 dB
10 %	3.81 dB
1 %	6.09 dB
.1 %	6.54 dB
.01 %	6.73 dB

Date: 16.FEB.2012 15:48:26

Limits

§24.232 Federal Register / Vol. 73, No. 86
The maximum output power may not exceed 1640 W/ MHz (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

Appendix 3

External photos

Front side