REPORT

issued by an FCC listed Laboratory Reg. no. 93866
The test site complies with RSS 212, Issue 1, Industry Canada file no. :IC 3482.

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2004-02-27	F402234-F24	1(1)

Equipment Authorization measurements on WCDMA base station Transceiver (FCC ID: B5KAROJ1192233-1) and Amplifier units (FCC ID:B5KAKRB1011112-2) operational in RBS 3104 (BFE 401 1006)

(4 enclosures)

Test objects

Transceiver unit ROJ 119 2233/1
Amplifier units KRB 101 1112/2
KRC 101 1451/3

Summary

Standard	Compliant	Enclosure	Remarks
FCC CFR 47			
2.1053 Field strength of spurious radiation	Yes	2	

SP Swedish National Testing and Research Institute
Electronics - EMC

Jan Welinder
Technical Manager

Jonas Bremholt
Technical Officer

Description – Test objects

Equipment:	WCDMA base station transceiver and amplifier units used in single carrier configuration.
Frequency range:	1930 MHz to 1970 MHz
Tested channels:	1932.5 MHz, 1947.5 MHz, and 1967.5 MHz.

The identity of the units used is shown in the hardware list in encl. 3.

Configuration

The transmitter was set-up according to 3GPP TS 25.141 Test model 1.
16 DPCH:s at 30 ksps (SF=128) distributed randomly across the code space, at random power levels and random timing offsets are defined so as to simulate a realistic scenario which may have high PAR (Peak to Average Ratio).

Manufacturer's representative

Larry Lindström, Ericsson AB

Purpose of test

The purpose of the tests is to verify the compliance with the performance characteristics specified in FCC CFR47 when the test objects are operational in RBS 3104.

Reservation

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

Delivery of test object

The test object was delivered: 2004-02-12.

Test engineers

Nina Johansson
Fredrik Isaksson

Test witnesses

Larry Lindström, Ericsson AB
Mats Iregren, Ericsson AB

Field strength of spurious radiation measurements according to 47CFR 2.1053

Date	Temperature	Humidity
2004-02-16	20 °C ± 3 °C	21 % ± 5 %
2004-02-17	20 °C ± 3 °C	25 % ± 5 %

Test set-up and procedure

The measurement procedure is per ANSI/TIA/EIA-603. The semi anechoic chamber 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 transceiver unit in the RBS was activated and the RF output connector was terminated with an attenuator with 50 ohm termination. The transmitter was set up according to Test Model 1 in 3GPP TS 25.141 during the measurements.

The measurements were performed with both horizontal and vertical polarization of the antenna. The antenna distance was 3 m in the frequency range 30-18000 MHz, above 18 GHz the antenna distance was 1 m.

A pre-measurement was performed:
The measurement was performed in Effective Radiated Power (ERP). A propagation loss in free space was calculated and used as a transducer. The used formula, was, propagation loss = $20 \log(4 \pi \times \text{antenna distance}/\lambda)$.

The measurement procedure is as the following:

1. The pre-measurement is performed with peak detector. The test object is measured in eight directions with the antenna at three heights, 1.0 m, 1.5 m and 2.0 m.
2. If the spurious radiation is closer than 20 dB to the limit during the pre-measurement, the substitution method according to the standard is used.

Measurement equipment	Calibration Due	SP number
Semi anechoic chamber, Tesla	-	15:115
R&S ESI 26	2004-05	503 292
R&S FSIQ 40	2004-04	503 738
Control computer	-	503 479
Software: R&S ES-K1, ver. 1.60	-	-
Chase Bilog antenna CBL 6111A	2006-08	503 182
EMCO Horn Antenna 3115	2004-11	502 175
EMCO Horn Antenna 3116	2004-09	503 279
MITEQ Low Noise Amplifier	2004-04	503 277
Testo 615, Temperature and humidity meter	2005-09	503 505

The test set-up during the spurious radiation measurements is shown in the picture below.

Results

Nominal Voltage -48 V DC
Output power: +43 dBm

The results of the spurious radiation measurements are shown in the table below:

		Spurious emission level (dBm)	
Frequency (MHz)	RBW	Vertical	Horizontal
30-20 000	1 MHz	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

Sign:…..

Hardware list

Position	Product name	Product number	R State	Serial number
	Cabinet	1/BFE 401 1006	R6A	S871151315
	CLU	BPD 104 32/1	R5A	S871151265
	Fan unit	BKV 301 490/1	R5B	S871151121
	Subrack 13 slots	BFX 901 22/1	R1A	S871151314
1	SCB2	ROJ 119 2108/3	R3C	T012836713
2	TUB	ROJ 119 2104/4	R3A/A	TU82503662
3	ET-MC1	ROJ 119 2163/1	R5A	T012854183
4	GPB41	ROJ 119 2106/41	R4A	T012840476
5	TXB	ROJ 119 2124/3	R1M	AE50416688
6	RAX	ROJ 119 2187/1	R4F	AE50511464
7	RAX	ROJ 119 2187/1	R4F	AE50515003
8	BBIFB	ROJ 119 2114/2	R2B	S952267019
9	RFIF	ROJ 119 2115/4	R1C/B	T012624956
10	TRX	ROJ 119 2233/1	R1C	AE50494198
11	Dummy	SXK 107 8896/1	R3B	-
12	AIU	KRC 101 1451/3	R1C	A40004HLL6
13	Dummy	SXK 107 8234/12	R1A	-
	MCPA	KRB 101 1112/2	R1B	A57003F2L4
	XALM	ZHA 901 01/1	R2C	S952192412
	CU	BMF 904 21/2	R1A	TJ51011994
	Alarm panel	BMG 980 20/1	R1A	S871150874
	OVP ALM	NTM 101 772/1	R1A	S871149008
	DC POWER	NTM 101 773/1	R2A	S871150290

Software	Revision
WEGA	INC 3.12

Description of the test objects

The test objects are transceiver and amplifier units intended to be used in a WCDMA base station designed to provide mobile users with a connection to mobile network.

Sign:…..

Photos

RBS 3104

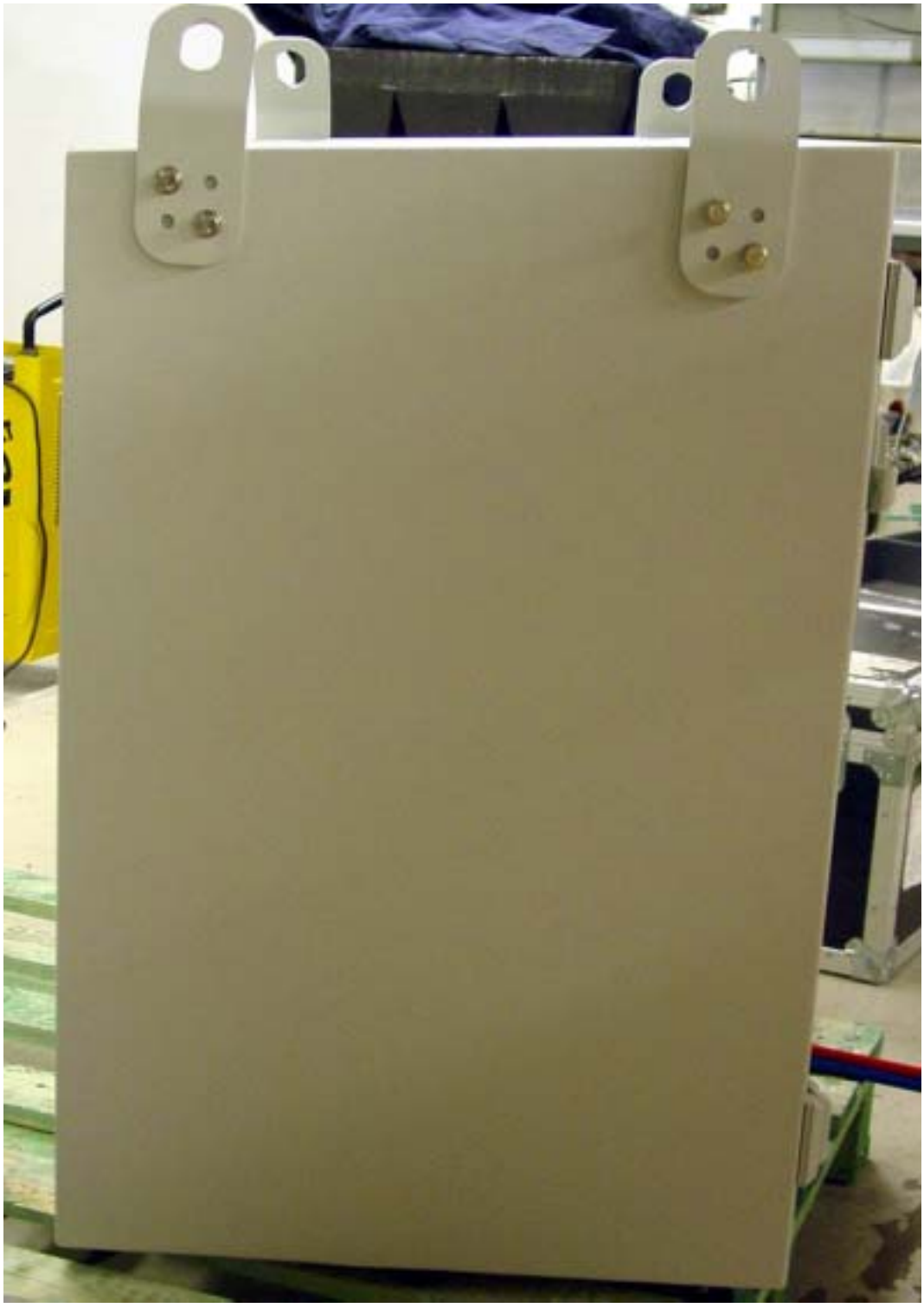
Front

Sign:…..

Back

Sign:…..

Left side



Sign:…..

Right side

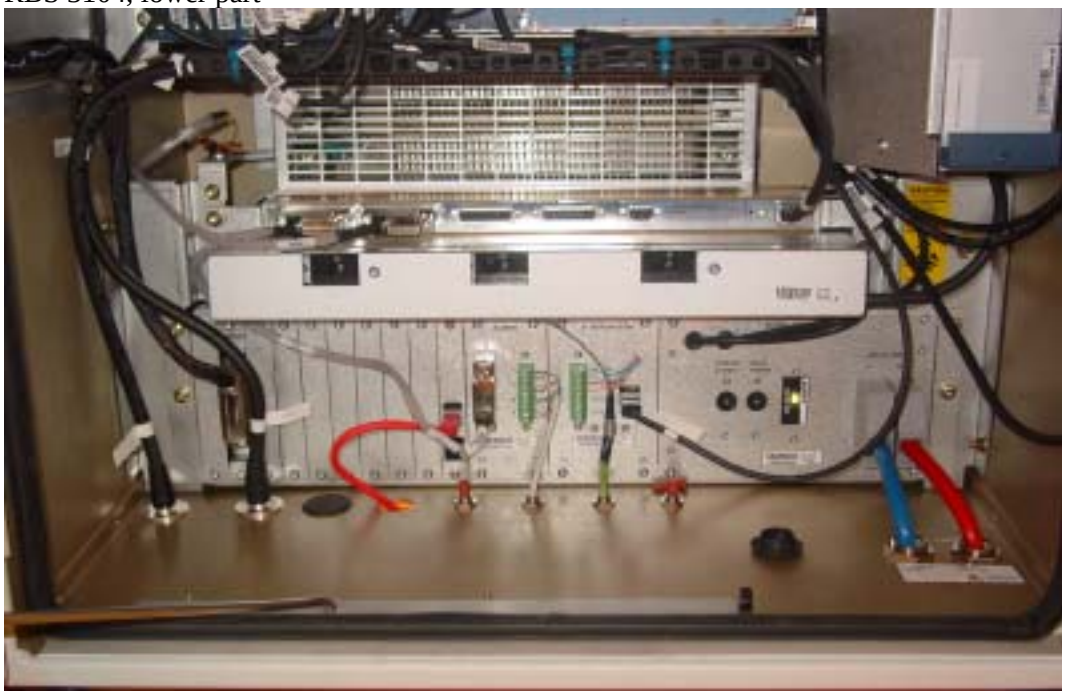
Sign:…..

Open door

Sign:…..

RBS 3104, upper part

RBS 3104, lower part



Sign:…..