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.

1002

ERICSSON AB
Jan Rimming
PDU RBS WCDMA
164 80 STOCKHOLM

Handläggare, enhet/*Handled by, department*
Jonas Bremholt
Electronics
Tel +46 (0) 33 16 54 38

Datum/*Date*	Beteckning/*Reference*	Sida/*Page*
2004-02-27	F400632-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 3101 (BFE 401 1003)

(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 Carlsson
Deputy 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 3101.

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 objects were delivered: 2004-01-20.

Test engineers

Peter Grahn
Markel Bertilsson

Test witnesses

Larry Lindström, Ericsson AB
Mats Iregren, Ericsson AB

Field strength of spurious radiation measurements according to 47CFR 2.1053

Date	Temperature	Humidity
2004-01-20	20 °C ± 3 °C	17 % ± 5 %
2004-01-21	20 °C ± 3 °C	22 % ± 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.

All three transceiver units in the RBS were activated and the RF output connectors were terminated with attenuators with 50 ohm termination. The transmitters were 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 3-phase 208 V AC phase to phase voltage
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	4/BFE 401 1003	R2B	X891016078
	CLU	BPD 104 36/1	R9A	S781224425
	BB Subrack	BFX 901 11/1	R2A	Q891016010
	Fan unit	BKV 301 487/1	R3A	X76CE06073
1	SCB2	ROJ 119 2108/3	R3C	T012803330
2	ET-MC1	ROJ 119 2163/1	R5A	T012702158
3	ET-M3	ROJ 119 2214/1	R1A	T012621411
4	TUB	ROJ 119 2104/4	R3A/A	TU82290783
5	Dummy	SXK 107 8896/1	R3B	-
6	BBIFB	ROJ 119 2114/2	R2B	S952198003
7	Dummy	SXK 107 8896/1	R3B	-
8	RAX3	ROJ 119 2187/2	R1A	AE50385694
9	Dummy	SXK 107 8896/1	R3B	-
10	Dummy	SXK 107 8896/1	R3B	-
11	Dummy	SXK 107 8896/1	R3B	-
12	Dummy	SXK 107 8896/1	R3B	-
13	Dummy	SXK 107 8896/1	R3B	-
14	Dummy	SXK 107 8896/1	R3B	-
15	Dummy	SXK 107 8896/1	R3B	-
16	Dummy	SXK 107 8896/1	R3B	-
17	TXB	ROJ 119 2124/3	R1J/A	AE5000RBWP
18	Dummy	SXK 107 8896/1	R3B	-
19	Dummy	SXK 107 8896/1	R3B	-
20	GPB41	ROJ 119 2106/41	R4A	T012755476
21	Dummy	SXK 107 8896/1	R3B	-
22	Dummy	SXK 107 8896/1	R3B	-
23	Dummy	SXK 107 8896/1	R3B	-
24	Dummy	SXK 107 8896/1	R3B	-
25	Dummy	SXK 107 8896/1	R3B	-
26	Dummy	SXK 107 8896/1	R3B	-
27	Dummy	SXK 107 8896/1	R3B	-
28	Dummy	SXK 107 8896/1	R3B	-
	RF Subrack	BFX 901 12/1	R1A	X891015997
	Fan unit	BKV 301 487/1	R3A	X76CE06072
1	SCB2	ROJ 119 2108/3	R3C	TO12803322
2	RFIF	ROJ 119 2115/4	R1E	TU82111198
3	Dummy	SXK 107 8896/1	R3B	-
4	TRX	ROJ 119 2233/1	R1C	AE50400168
5	Dummy	SXK 107 8896/1	R3B	-
6	AIU	KRC 101 1451/3	R1C	A40004FMKD
7	TRX	ROJ 119 2233/1	R1C	AE50494223
8	Dummy	SXK 107 8896/1	R3B	-
9	AIU	KRC 101 1451/3	R1C	A40004FU2P
10	TRX	ROJ 119 2233/1	R1C	AE50493255
11	Dummy	SXK 107 8896/1	R3B	-

Sign:…..

Position	Product name	Product number	R-state	Serial number
12	AIU	KRC 101 1451/3	R1C	A40004FU2T
13	Dummy	SXK 107 8896/1	R3B	-
14	Dummy	SXK 107 8896/1	R3B	-
15	Dummy	SXK 107 8896/1	R3B	-
16	Dummy	SXK 107 8896/1	R3B	-
	Power subrack	SXK 109 4312/1	R3C	-
	Fan unit	BKV 301 487/1	R3A	X76CE06074
1	PCU	BMP 210 1002/1	R1B	A083848538
2	PSU	BML 353 132/1	R1B	TL91786981
3	PSU	BML 353 132/1	R1B	TL91787760
4	PSU	BML 353 132/1	R2A	TL92279514
5	Dummy	SXK 109 4813/1	R1B	-
6	Dummy	SXK 109 4813/1	R1B	-
7	Dummy	SXK 109 4813/1	R1B	-
	ACCU	BMG 980 11/2	R3D	A441832593
	IDM-BFU	BMG 907 23/1	R6A	X481016248
	AMP Subrack	1/BFL 119 415/1	R1B	-
	Fan unit	BKV 301 488/1	R3A	TH4D911041
1	MCPA	KRB 101 1112/2	R1B	A57003EABS
2	Dummy	SXK 109 4281/1	R1A	-
3	MCPA	KRB 101 1112/2	R1B	A57003EAKC
4	Dummy	SXK 109 4281/1	R1A	-
5	MCPA	KRB 101 1112/2	R1B	A57003E9ZE
6	Dummy	SXK 109 4281/1	R1A	-
	DC FILTER	KFE 101 1145/3	R1A	X181035461
	X-ALM	ZHA 901 01/3	R1A	-
	AU-HUB	BGK 901 08/2	R1A	-
	OVP	NCD 300 12/03	R1A	-
	ADM panel	BMG 980 12/2	R3B	-
	MCPA HUB	BKG 90 109/2	R1A	-
	Couplings panel	NCD 300 16/02	R1A	-
	Smoke detector	NTM 101 525/1	R2B	-
	Battery	BKC 901 06/001	R2A	-

Software	Revision
WEGA	INC 3.12

Description of 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.

Photos

RBS 3101

Front

Back

Sign:…..

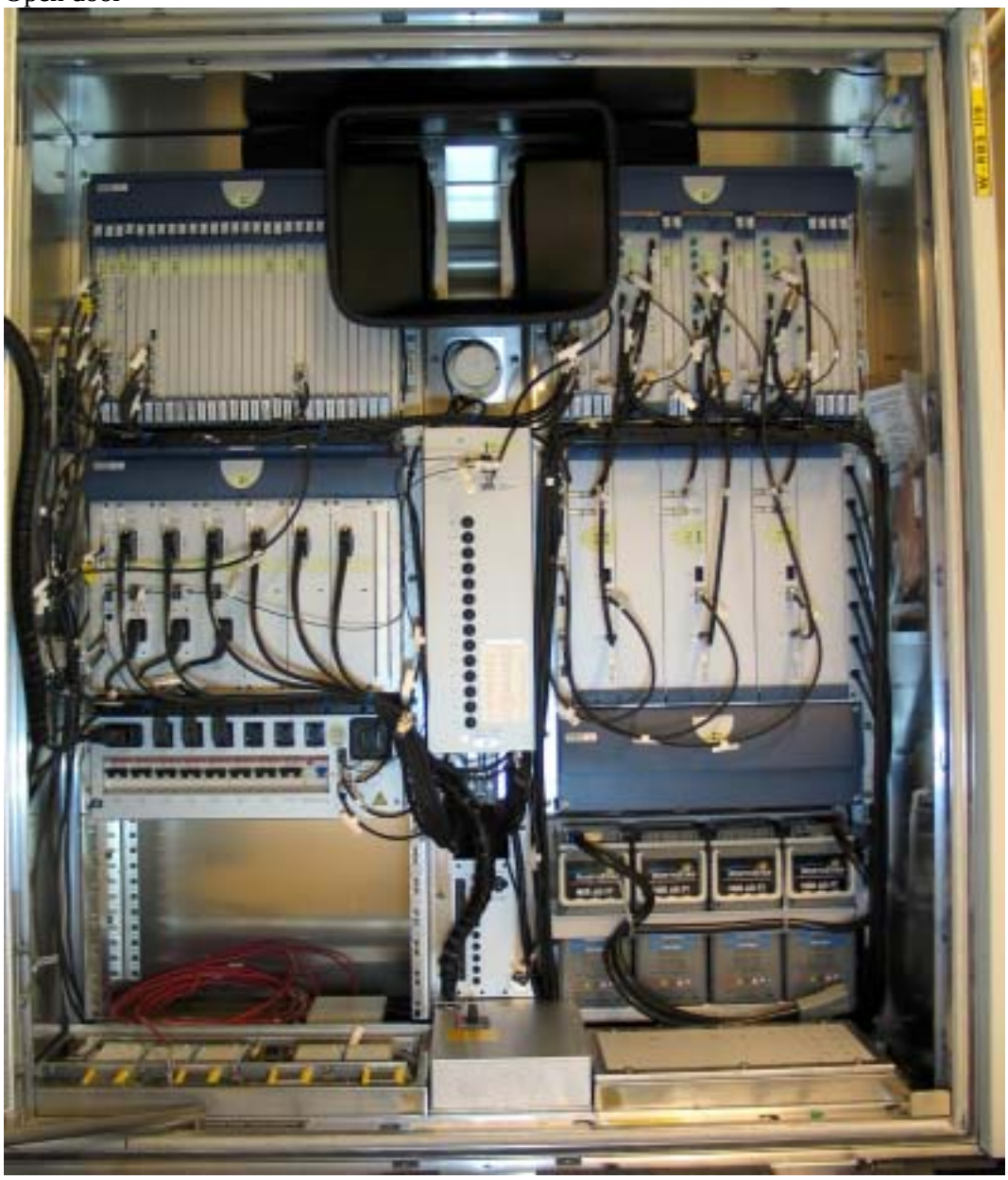
Left side

Sign:…..

Right side

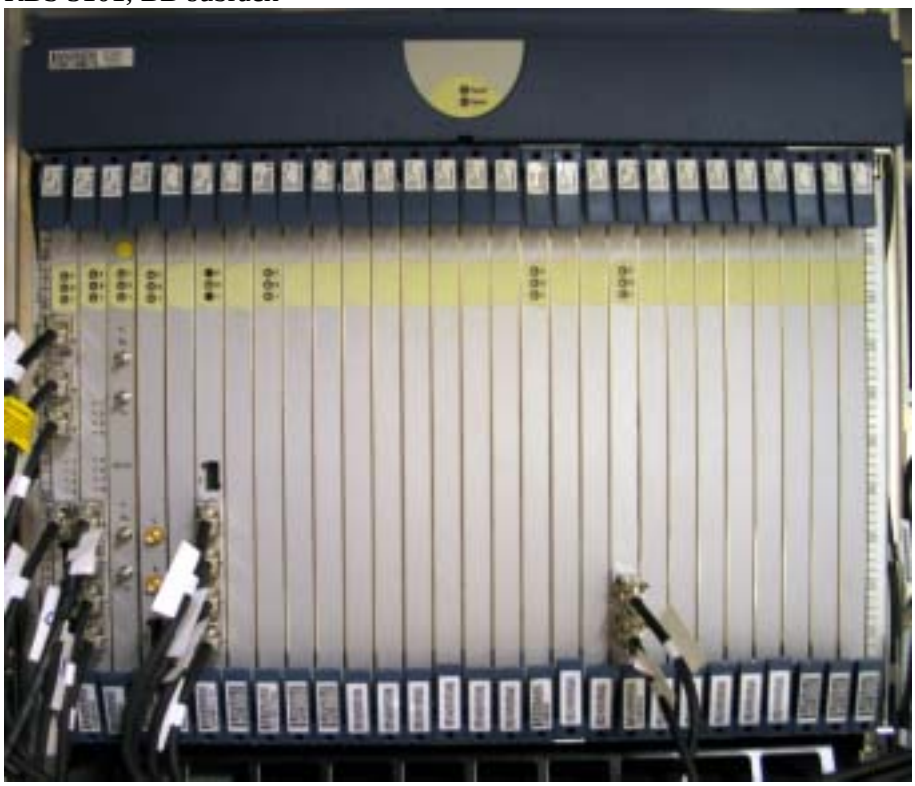
Sign:…..

Open door

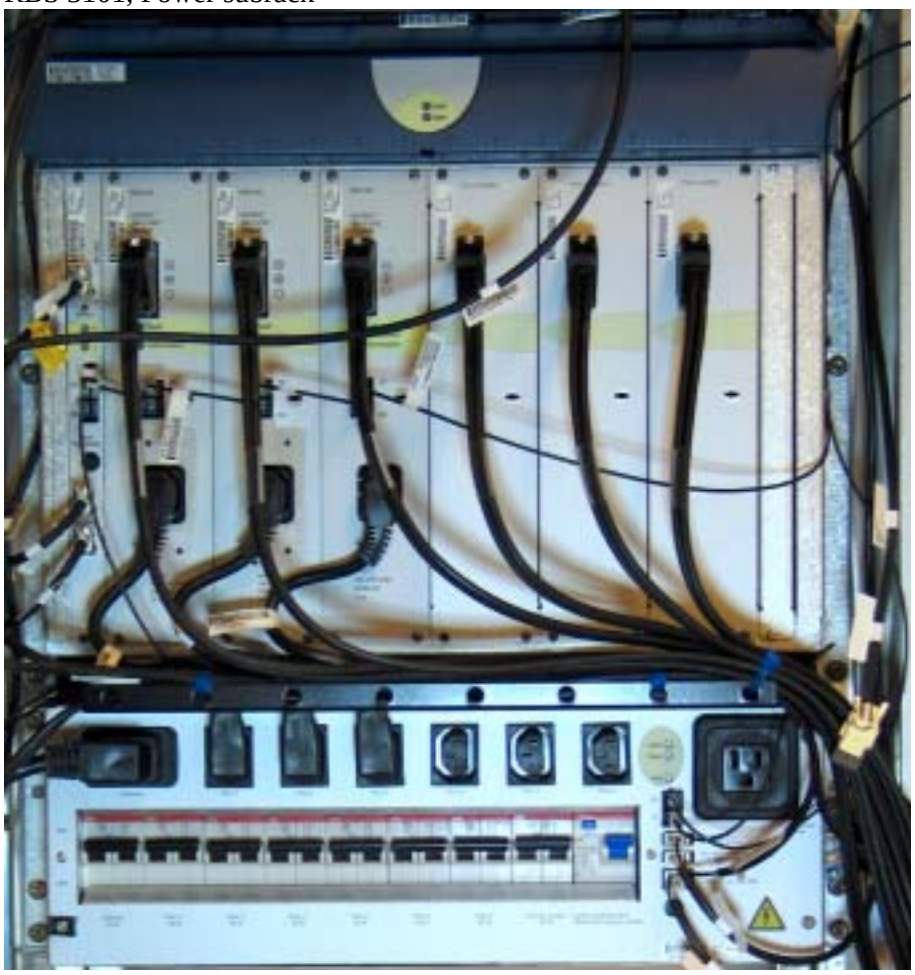


Sign:…..

RBS 3101, BB subrack



RBS 3101, Power subrack



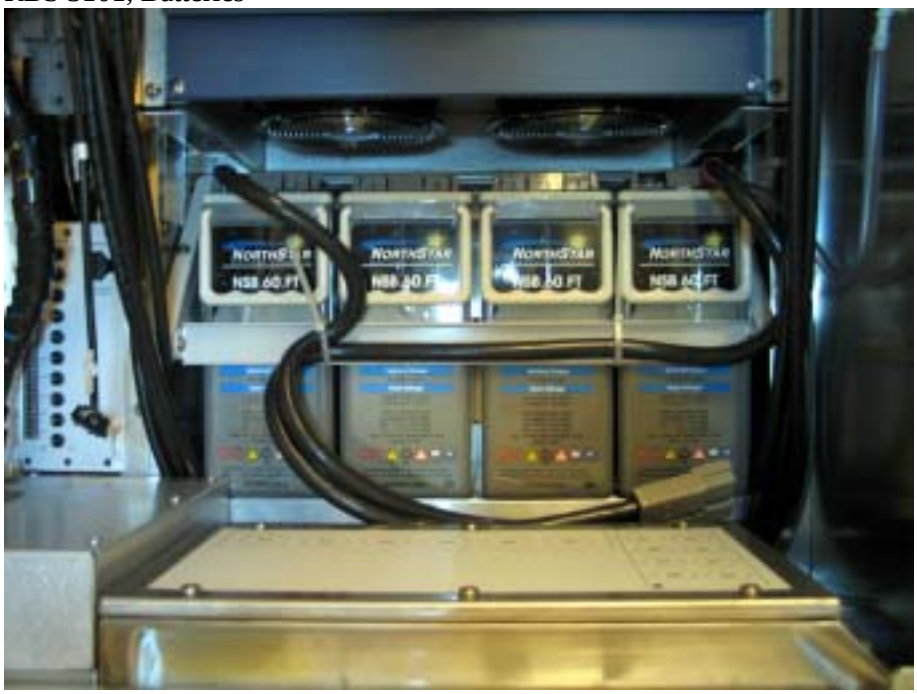
Sign:…..

RBS 3101, RF subrack

RBS 3101, AMP subrack

Sign:…..

RBS 3101, Batteries



Sign:…..