SWEDAC ACKREDITERING
1002
ISO/IEC 17025

REPORT

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

Handled by, department
Jonas Bremholt
Electronics
+46 33 16 54 38, jonas.bremholt@sp.se

Date	Reference	Page
2005-04-04	F501803-F24rev1	1 (1)

Rev.date
2005-04-19

ERICSSON AB
Per Helmersson
Färögatan 2, Kista
164 80 STOCKHOLM

Equipment Authorization measurements on GSM Base station Transceiver unit with FCC ID: B5KCKRC1311004-2 in the RBS 2107 cabinet

(4 appendices)
This revision replaces the original report F501803-F24. Appendix 4, external photos of the EUT are added.

Test object

Transceiver Unit dTRU 19 Edge, KRC 131 1004/2, R2F

Summary

Standard	Compliant	Appendix	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 - Equipment Under Test (EUT)

Equipment: GSM Base station transceiver 1900 MHz

Tx Frequency range: 1930.2-1989.8 MHz

Modulation: GMSK and 8-PSK

Tested Channels

Radiated measurements:

dTRU	ARFCN	Frequency	Configuration
No 1	512	1930.2 MHz	With internal combiner
	537	1935.2 MHz	With internal combiner
No 2	661	1960.0 MHz	With internal combiner+TCC
No 3	785	1984.8 MHz	Without internal combiner
	810	1989.8 MHz	Without internal combiner

Three modes were tested at the same time to simulate worst case: with internal combiner, without internal combiner and with internal combiner+TCC.

Manufacturer's representative

Per Helmersson, Ericsson AB

Purpose of test

The purpose of the tests is to verify compliance to the performance characteristics specified in FCC CFR47 when the EUT is operational in the 2107 cabinet.

References

Measurements were done according to relevant parts of the following standards:
ANSI/TIA/EIA-603-B-2002
J-STD007A Vol 1
ANSI/TIA/EIA 136-280-B-2000

Reservation

The test results in this report apply only to the particular Equipment Under Test (EUT) as declared in the report.

Delivery of test object

The test object was delivered: 2005-02-07

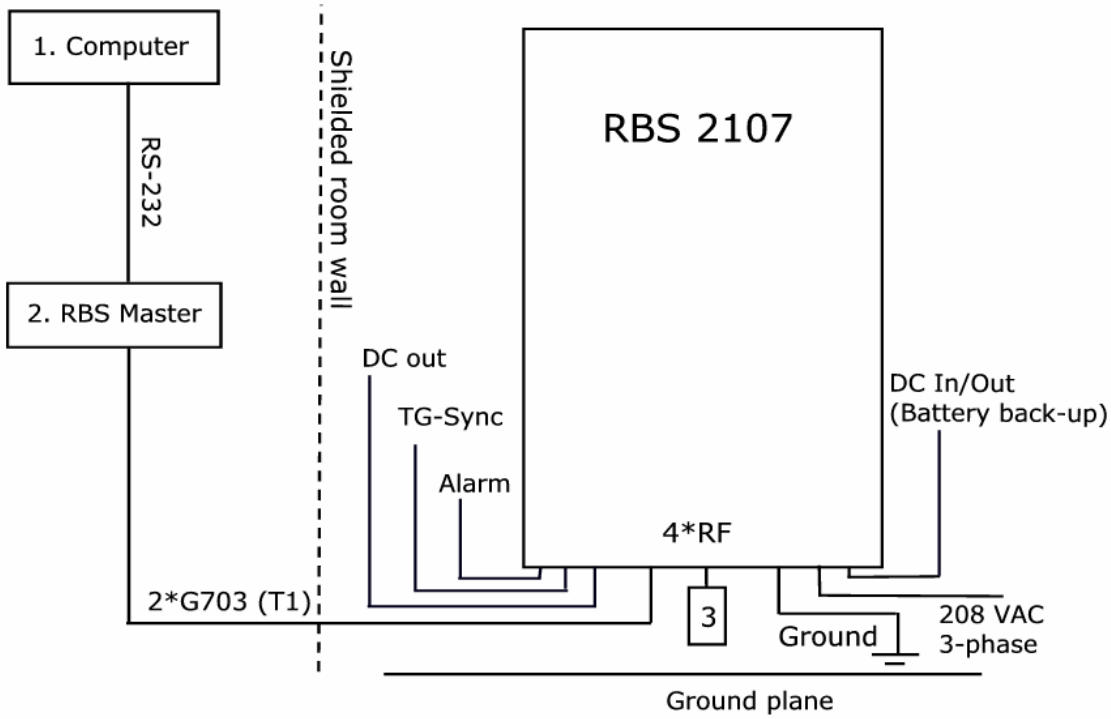
Test engineers

Stefan Larsson and Jonas Bremholt

Test witnesses

Dan Westberg, Ericsson AB

Test set-up



1. Computer, with software RBSMMI ver. R9A02
2. Ericsson RBS Master 2 LPY 107 1007/1 software ver. R4C01
3. 4 units, Dummy loads (50 ohm)

Interfaces:	**Type of port:**
208 VAC	3-phase AC mains
Antenna: Coaxial cable (50 ohm)	Antenna
G703: T1, Coaxial cable (75 ohm)	Telecom
TG-sync: Shielded multi-wire	Signal
Alarm: Unshielded multi wire	Signal
24 VDC battery back-up, 2-wire	DC power

Field strength of spurious radiation measurements according to 47CFR 2.1053

Date	Temperature	Humidity
2005-02-17	21 °C ± 3 °C	25 % ± 5 %

Test set-up and procedure

The 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 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 18-20 GHz.

A pre-measurement was first performed:
In the frequency range 30 MHz-20 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,

$\gamma = 20\log\left(\frac{4\pi D}{\lambda}\right)$, γ is the propagation loss in dB and D 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
Anechoic chamber	-	15:115
R&S ESI 26	2005-08	503 292
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	2006-11	502 548
EMCO Horn Antenna 3116	2007-11	503 279
MITEQ Low Noise Amplifier	2005-04	503 285
Testo 615, Temperature and humidity meter	2005-09	503 505

The measurement was performed with the following configurations that represents worst case scenario:
Without internal combiner, with internal combiner, with internal combiner plus TCC.

During the measurements the test object was transmitting the pseudorandom data with GMSK and 8-PSK modulation (one modulation tested at a time).

The test set-up during the spurious radiation measurements can be seen in the picture below

Results

GMSK

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

8-PSK

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

Hardware configuration list RBS 2107

Unit	Product Number	Serial Number	Revision
Cabinet	1/SEB 112 1144/8	TU85378847	R5A
Cabinet Gray	BYB 415 04/08	TU85378859	R2A
CLU	BPD 104 101/1	S781279138	R2B
FCU-01	BGM 136 1001/3	B991836838	R1A
IDM 03	BMG 980 29/1	B351000373	R3A
PSU-shelf	BFL 119 431/1	TU85378883	R1A
PSU-AC	BML 231 202/1	TL93420823	R3C
PSU-AC	BML 231 202/1	TL93420830	R3C
PSU-AC	BML 231 202/1	TL93420903	R3C
BFU-21	BMG 980 13/1	B991550807	R2A
CDU shelf	BFL 119 424/1	- -	R1A
CDU-J 19	BFL 119 430/1	A40004XB70	R1B
CDU-J 19	BFL 119 430/1	A40004XB6R	R1B
CDU-J 19	BFL 119 430/1	A40004XB6S	R1B
TRU shelf	BFX 901 39/1	TU85378835	R1A
Dummy	SXK 107 9314/1	- -	R1C
Dummy	SXK 107 9314/1	- -	R1C
DXU-21A	BOE 602 14/1	TU84969091	R14A
TMA-CM-01	SDK 107 881/1	BF31259359	R1C
dTRU-19 EDGE	KRC 131 1004/2	AE51350902	R2F
dTRU-19 EDGE	KRC 131 1004/2	AE51350889	R2F
dTRU-19 EDGE	KRC 131 1004/2	AE51350891	R2F
Dummy	SXK 107 5031/2	- -	R1B
Dummy	SXK 107 5031/2	- -	R1B
ACCU-32	BMG 980 26/1	T341010410	R3A
DC-Filter 02	KFE 101 1145/2	X181070463	R1A
DC/DC-200W	BMR 911 20/1	B991782709	R4A
EIM-T1	NCD 901 26/11	- -	R1A
EIM-T2	NCD 901 26/12	- -	R1A
EIM-T2	NCD 901 26/12	- -	R1A
EIM-S1	NCD 901 26/13	- -	R1A

Software	Revision
R11A	R07A

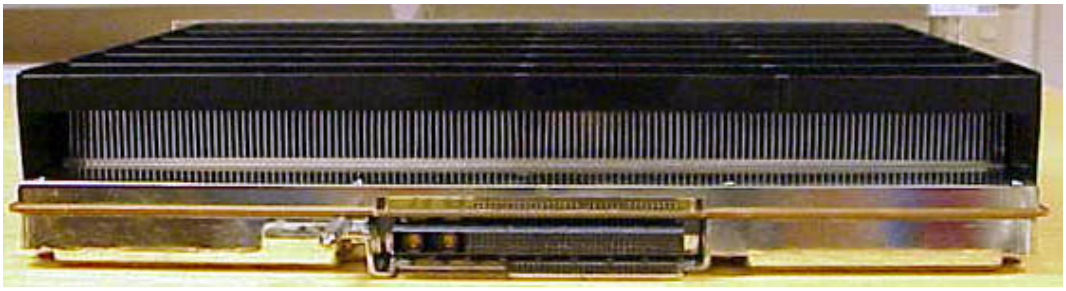
Description of EUT

The EUT is a dTRU that can be installed in a GSM Base station that are designed to provide mobile telephone users with a connection to a mobile network or the PSTN.

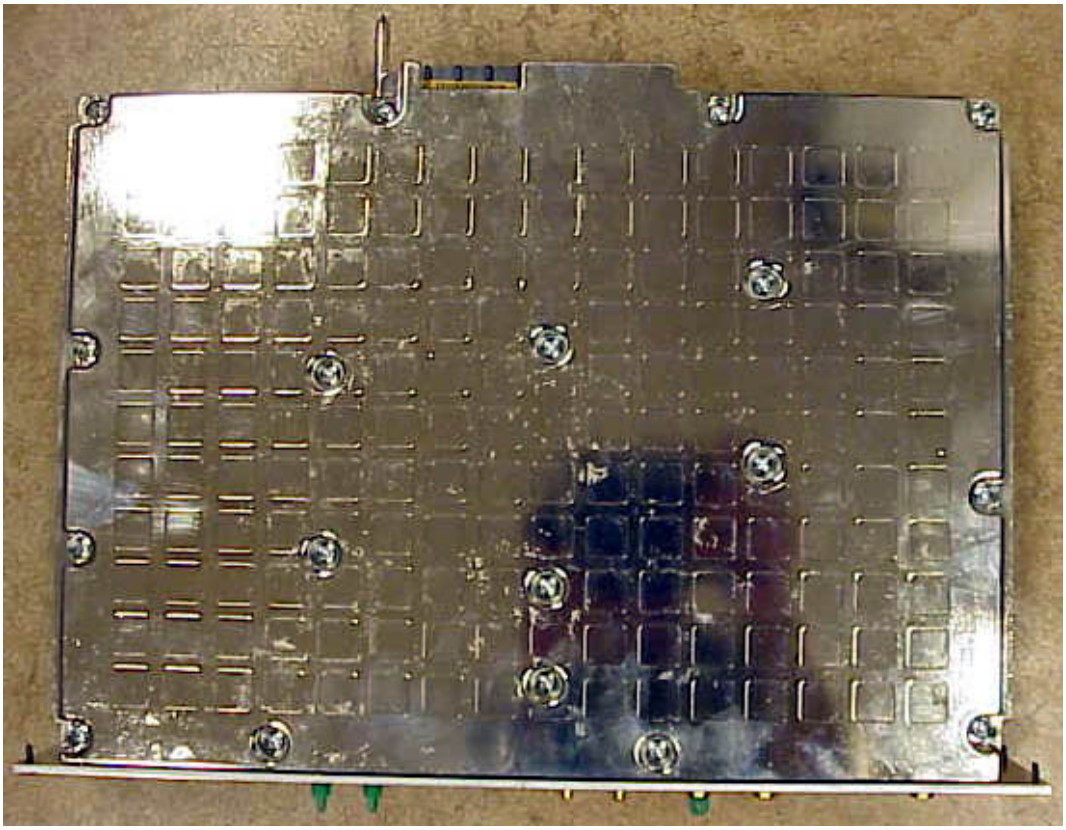
Photos
Transceiver Unit KRC 131 1004/2, R2F

Front side

Rear side



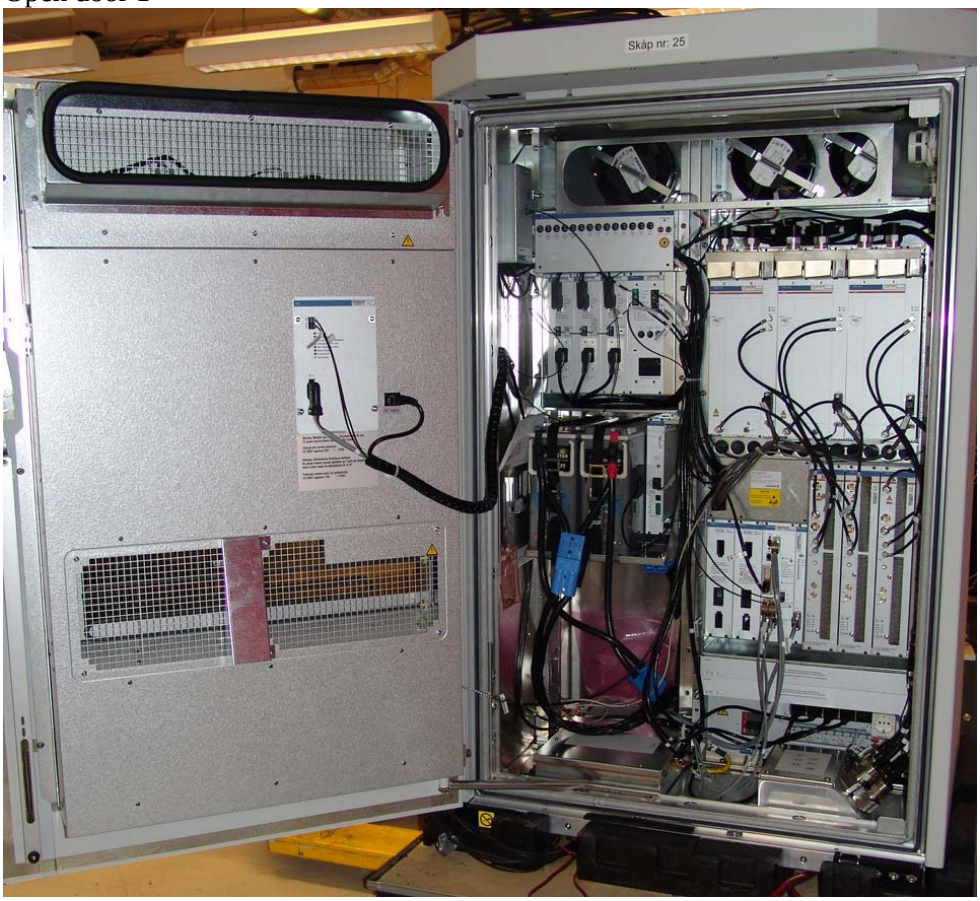
Left side



Right side

RBS 2107 Cabinet, 208 VAC

Open door 1



Open door 2