




**TEST REPORT
FROM
RFI GLOBAL SERVICES LTD**

Test of: Ericsson AB
RBS 2109 850 MHz

To: FCC Part 22: 2004

Test Report Serial No:
RFI/MPTE2/RP70958JD03A
Supersedes Test Report Serial No:
RFI/MPTE1/RP70958JD03A

This Test Report Is Issued Under The Authority Of Andrew Brown, Operations Manager: 	
Tested By: Monika Berenyi 	Checked By: Tony Henriques 
Report Copy No: PDF01	
Issue Date: 07 March 2005	Test Dates: 11 January 2005 to 18 January 2005

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Supersedes Test Report Serial No: RFI/MPTE1/RP70958JD03A

Test Of: Ericsson AB
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1. Client Information

Company Name:	Ericsson AB
Address:	Lindholmspiren 11 417 56 Göteborg Sweden
Contact Name:	Mr Jan-Olof Johansson

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2. Equipment Under Test (EUT)

The following information have been supplied by the client:

2.1. Identification of Equipment Under Test (EUT)

FCC ID: B5KAKRC161028-1

No.	Unit	Model Number	Serial Number	Revision Number
1	RBS 2109 850 MHz	KRC 161 028/1	AE51509662	R1B

Note The above unit was tested for all conducted measurements at Lindholmen.

No.	Unit	Model Number	Serial Number	Revision Number
1	RBS 2109 850 MHz	KRC 161 028/1	AE51384656	R1A

Note The above unit was tested for radiated spurious emissions at RFI in Basingstoke.

Hardware List - Conducted Measurements at Lindholmen.

Unit	Model Number	Serial Number	Revision Number
Mounting Base	SEB 112 1133/1	S952040555	R1A
Mounting Base PSU	ROA 117 4776/1	S952022738	R2A
IXU-21	BOE 602 15/2	AE51349570	R3D
RRU-H8	KRC 161 028/1	AE51509662	R1B
Radio Access Board 1	ROA 219 5747/1	AE51459272	R1C
Digital Radio Board 1	ROA 117 4767/1	AE51434932	R1B
Duplex Filter 1	KRF 102 251/2	T89H200038	R1B
Duplex Filter 2	KRF 102 251/1	T89H100042	R1B
Heater	BPC 111 25/1	X031018820	R4A/A
PSU	BML 151 23/2	X701021294	R1B
Power Interface Board	ROA 117 4775/1	B340291374	R2A
Ground Plane Extender	TVK 219 5259	N/A	R1A
Y Interface Board	ROA 117 4331/1	B340290568	R2B
Radio Interface Board	ROA 117 4799/3	B340318043	R2A

Hardware List - Radiated Measurements at Basingstoke

Unit	Model Number	Serial Number	Revision Number
IXU-21	BOE 602 15/2	AE50998795	None stated
MBU-01	SEB 112 1133/3	200 40923 B340252474	R3A

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2.2. Description of EUT

The equipment under test is a RBS 2109 GMSK/8PSK base transceiver station operating in the GSM 850 MHz band.

2.3. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

2.4. Additional Information Related to Testing

Power Supply Requirement:	115V AC/-48V DC		
Intended Operating Environment:	Within GSM Network Coverage		
Equipment Category:	Fixed (Base Station)		
Type of Unit:	GSM 850 MHz Base Transceiver Station		
Interface Ports:	Telecommunication Line – E1 or T1 PCM x 1 (G703) TIB – Synchronisation Interface Mains 115 V AC Input DVT – RBS Master Control RF x 2		
Transmit Frequency Range	869.0 MHz to 894.0 MHz		
Transmit Channels Tested	Channel ID	Channel Number	Channel Frequency (MHz)
	EDGE/GMSK	128	869.2
	EDGE/GMSK	129	869.4
	EDGE/GMSK	190	881.6
	EDGE/GMSK	250	893.6
	EDGE/GMSK	251	893.8
Receive Frequency Range	824.0 MHz to 849.0 MHz		
Declared Maximum Power Output	+43.0 dBm		

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2.5. Support Equipment – Lindholmen

The following support equipment was used to exercise the EUT during testing at Lindholmen:

Description:	BSC Simulator
Brand Name:	RBS Master 2
Model Name or Number:	LPY 107 1007/1 R1D/A
Serial Number:	0000000166
FCC ID Number:	B5KAKRC161028-1
Cable Length And Type:	3 m, 9 pin, D Type, Shielded
Connected to Port:	G703-1 ABIS
Cable Length And Type:	3 m, 9 pin, D type
Connected to Port:	RBS DVT
Cable Length And Type:	2 m, BNC
Connected to Port:	Ext Ref In
Cable Length And Type:	2 m, BNC
Connected to Port:	TRIG Out
Cable Length And Type:	2 m, BNC
Connected to Port:	10 MHz Out
Cable Length And Type:	1.5 m, 9 Way, D Type
Connected to Port:	PC DVT
Cable Length And Type:	1.5 m, 9 Way, D Type
Connected to Port:	PC Ctrl
Cable Length And Type:	2 m, Mains Cable
Connected to Port:	AC Mains In

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Support Equipment – Lindholmen (Continued)

Description:	Computer
Brand Name:	Compaq
Model Name or Number:	Evo
Serial Number:	CZC3230BP2
FCC ID Number:	Not applicable
Cable Length And Type:	1.5 m, 9 Pin D Type
Connected to Port:	PC DVT
Cable Length And Type:	1.5 m, 9 Pin D Type
Connected to Port:	PC Ctrl
Cable Length And Type:	2 m, Mains Cable
Connected to Port:	AC Input
Cable Length And Type:	0.3 m, GPIB
Connected to Port:	IEEE Bus
Cable Length And Type:	4 m, 8 Core
Connected to Port:	Network
Cable Length And Type:	5 m, 7 Way
Connected to Port:	Mouse
Cable Length And Type:	5 m, 7 Way
Connected to Port:	Keyboard

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2.6. Support Equipment – Basingstoke

The following support equipment was used to exercise the EUT during testing at Basingstoke:

Description:	Laptop
Brand Name:	Compaq
Model Name or Number:	HP0014
Serial Number:	031027
Cable Length And Type:	1.5m USB
Connected to Port:	USB on RBS Master 2

Description:	48 V 027 PSU
Brand Name:	AC, DC Electronics ASTEC
Model Name or Number:	JF151A-9000-4136
Serial Number:	BP5033
Cable Length And Type:	5m, 2 Core
Connected to Port:	EUT DC input

Description:	RBS Master 2
Brand Name:	Ericsson
Model Name or Number:	LPY 107 1007/1
Serial Number:	A25766
Cable Length And Type:	10m Shielded RS232
Connected to Port:	EUT G703.1 Interface

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3. Test Specification, Methods and Procedures

3.1 Test specification

Reference:	FCC Part 22: 2004 Subpart C (Operational and Technical Requirements)
Title:	Code of Federal Regulations, Part 22 (47CFR) Personal Communication Services.
Comments:	None.
Purpose of Test:	To determine whether the equipment complied with the requirements of the specification for the purposes of certification.

Reference:	FCC Part 2: 2004
Title:	Code of Federal Regulations, Part 2 (47CFR) Frequency allocations and radio treaty matters; General Rules and Regulations
Comments:	None.
Purpose of Test:	To determine whether the equipment complied with the requirements of the specification for the purposes of certification.

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3.2 Methods and Procedures

The methods and procedures used were as detailed in:

47CFR: Part 22 (2004)

Title: Federal Communications Commission: Code of Federal Regulations 47:
Public Mobile Services.

47CFR: Part 2 (2004)

Title: Federal Communications Commission: Code of Federal Regulations 47:
Telecommunication

ANSI/TIA-603-B-2002

Land Mobile Communications Equipment, Measurements and performance Standards.

ANSI C63.2 (1996)

Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2003)

Title: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1998)

Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)

Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1 (1999)

Title: Specification for radio disturbance and immunity measuring apparatus and methods. Part 1. Radio disturbance and immunity measuring apparatus.

3.3 Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the Methods and Procedures section above. Appendix 1 contains a list of the test equipment used.

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4. Deviations from the Test Specification

None

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5. Operation of the EUT During Testing

5.1. Operating Conditions

During testing, the EUT was powered by mains supply 115V AC at the RBS 2109 with the exception of radiated emissions which were performed with the EUT supplied via the AC mains and a -48V DC supply.

5.2. Operating Modes

The EUT operates in modulation modes 8PSK and GMSK and therefore all tests have been performed in both modes.

The BTS has 2 transmitters, TX0 and TX1. All transmitters are identical with regards to operating modes.

All testing was performed on both TX0 and TX1, which are identical in all respects. Testing was performed on the specified TXs to show that they were indeed identical.

Tests were performed on bottom (128), middle (190) and top (251) channels unless stated otherwise for each measurement.

The ARFCNs tested at Band Edges needed to have their power levels reduced by 2 static power steps, i.e. 4 dB for GMSK modulation and 0.7dB for 8PSK modulation, in order to fulfil the requirements. The ARFCNs adjacent to these channels were also tested to show that the requirements were met for these ARFCNs at full output power.

Tests of radiated emissions were performed with the EUT powered by 115V AC mains supply and by a -48V DC supply. Tests were performed with the EUT set to the middle channel (190) with TX0 transmitting GMSK on full power and with TX1 transmitting EDGE/8-PSK on full power.

5.3. Configuration and Peripherals

The EUT was tested in the following configuration:

As a standalone 2 TRX RBS 2109 base transceiver station.

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6. Summary of Test Results

Range Of Measurements	Specification Reference	Port Type	Compliance Status
Transmitter Carrier Output Power	Part 2 of CFR 47: 2004, Section 2.1046(a)	Antenna Terminals	Complied
Transmitter Modulation Characteristics	Part 2 of CFR 47: 2004, Section 2.1047	Antenna Terminals	Complied
Transmitter Frequency Stability (Temperature Variation)	Part 2 & 22 of CFR 47: 2004, Section 2.1055/22.355	Antenna Terminals	Complied
Transmitter Frequency Stability (Voltage Variation)	Part 2 & 22 of CFR 47: 2004, Section 2.1055/22.355	Antenna Terminals	Complied
Transmitter Occupied Bandwidth	Part 2 & 22 of CFR 47: 2004 Sections 2.1049/22.917	Antenna Terminals	Complied
Transmitter Conducted Out of Band Emissions	Part 2 & 22 of CFR 47: 2004 Sections 2.1051/22.917	Antenna Terminals	Complied
Transmitter Conducted Inband Intermodulation	Part 2 & 22 of CFR 47: 2004 Sections 2.1051/22.917	Antenna Terminals	Complied
Transmitter Conducted Emissions at Band Edges	Part 2 & 22 of CFR 47: 2004 Section 2.1051/22.917	Antenna Terminals	Complied
Radiated Spurious Emissions (30 MHz to 10 GHz)	Part 2 & 22 of CFR 47: 2004 Section 2.1053/22.917	Enclosure	Complied

6.1. Location of Tests

All the measurements described in this report were performed at the premises of Ericsson AB, Lindholmospiren 11, 417 56 Göteborg, Sweden and RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ, England.

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7. Measurements, Examinations and Derived Results

7.1. General Comments

7.1.1. This section contains test results only. Details of the test methods and procedures can be found in section 9 of this report.

7.1.2. Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to Section 8 for details of measurement uncertainties.

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7.2. Transmitter Carrier Output Power: Section 2.1046 (a)

7.2.1. The EUT was configured for Conducted Carrier Output Power Measurements testing as described in Section 9 of this report.

7.2.2. Tests were performed to identify the maximum transmit power in accordance with FCC Part 2.1046(a) for conducted power, with reference to TIA_EIA_603B.

Transmitter Carrier Output Power: Section 2.1046 (a) (Continued)

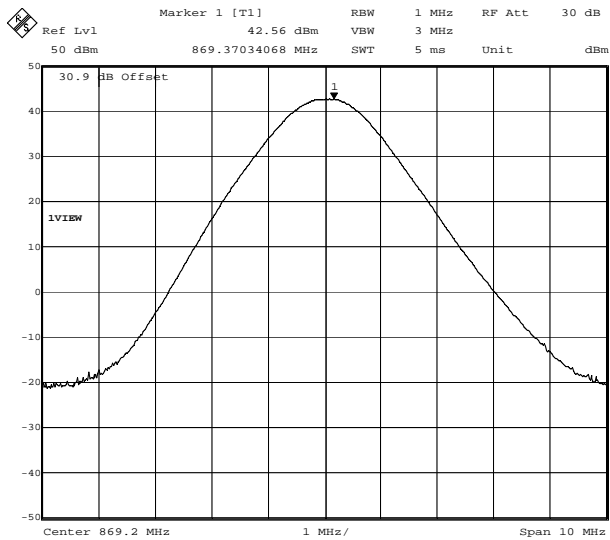
8PSK – TX0:

Results:

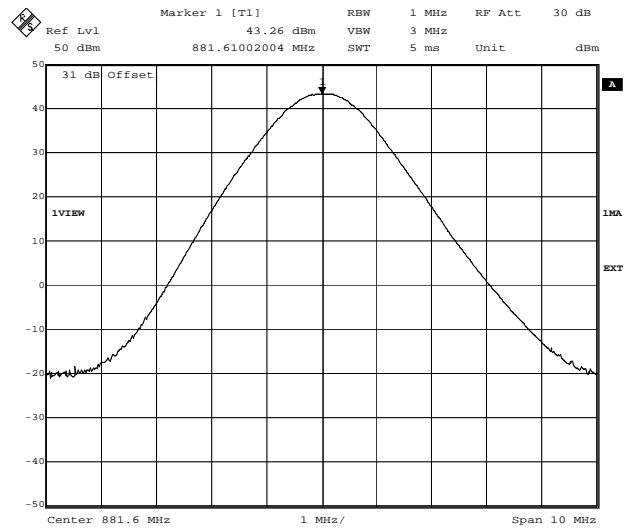
Channel	Frequency (MHz)	Level (dBm)
Bottom	869.37034	42.6
Middle	881.61002	43.3
Top	893.81002	42.8

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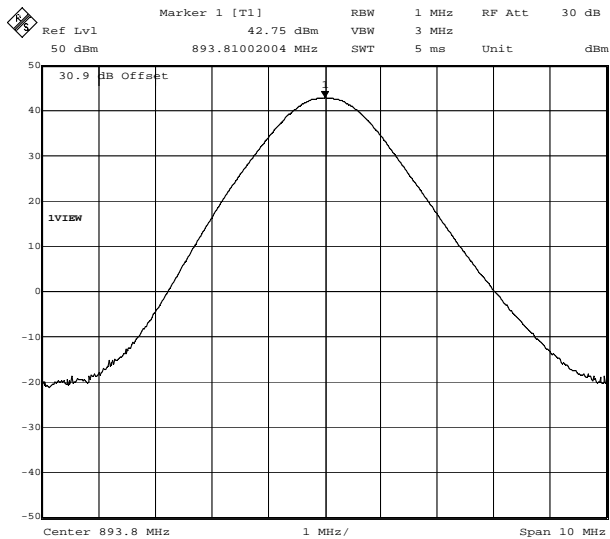
Transmitter Carrier Output Power: Section 2.1046 (a) (Continued)



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. Output Power. 8PSK TRX0. +39.7dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 13:45:17



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch190. Output Power. 8PSK TRX0. +39.7dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 13:55:37



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. Output Power. 8PSK TRX0. +39.7dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 13:57:43

Test Of: Ericsson AB
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Transmitter Carrier Output Power: Section 2.1046 (a) (Continued)

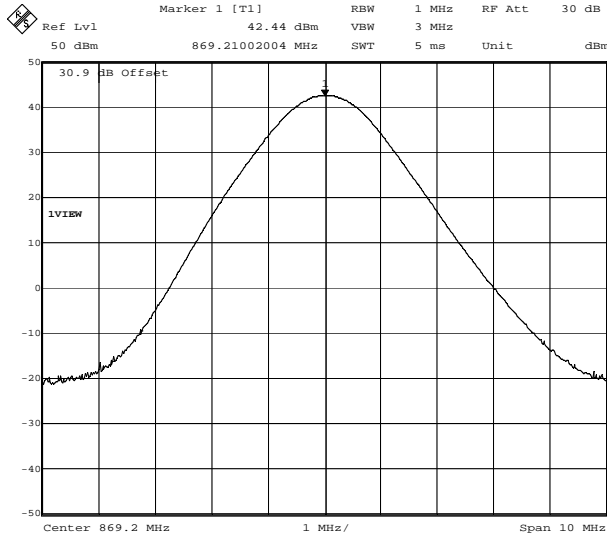
8PSK – TX1:

Results:

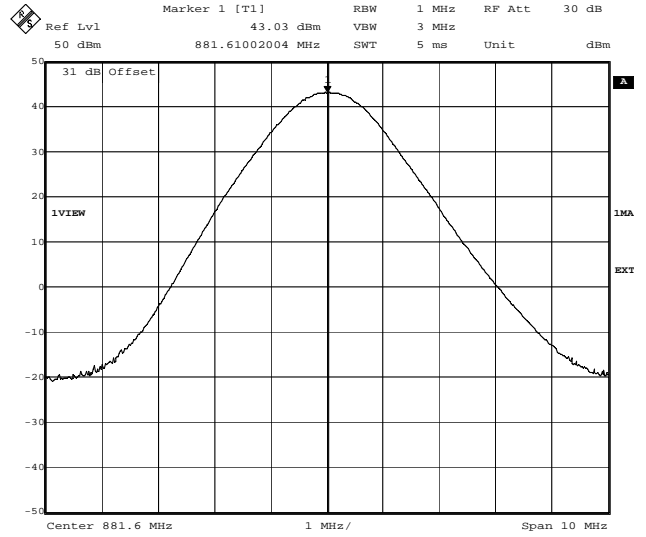
Channel	Frequency (MHz)	Level (dBm)
Bottom	869.21002	42.4
Middle	881.61002	43.0
Top	893.81002	42.6

Test Of: Ericsson AB
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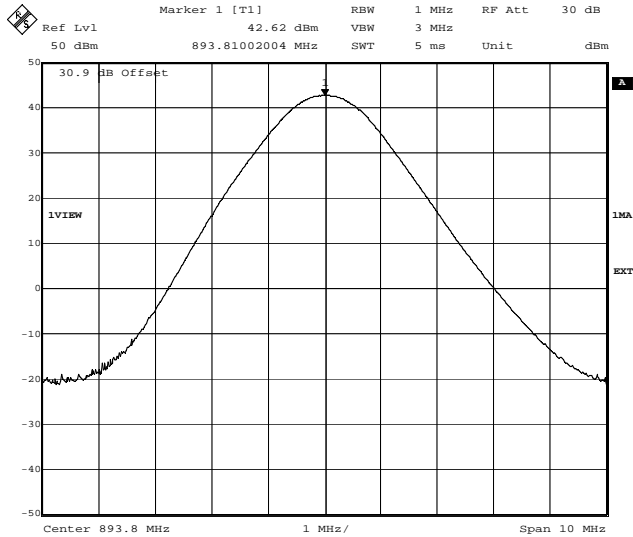
Transmitter Carrier Output Power: Section 2.1046 (a) (Continued)



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. Output Power. 8PSK TRX1. +39.7dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 13:03:39



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch190. Output Power. 8PSK TRX1. +39.7dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 13:05:50



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. Output Power. 8PSK TRX1. +39.7dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 13:07:49

Test Of: Ericsson AB
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Transmitter Carrier Output Power: Section 2.1046 (a) (Continued)

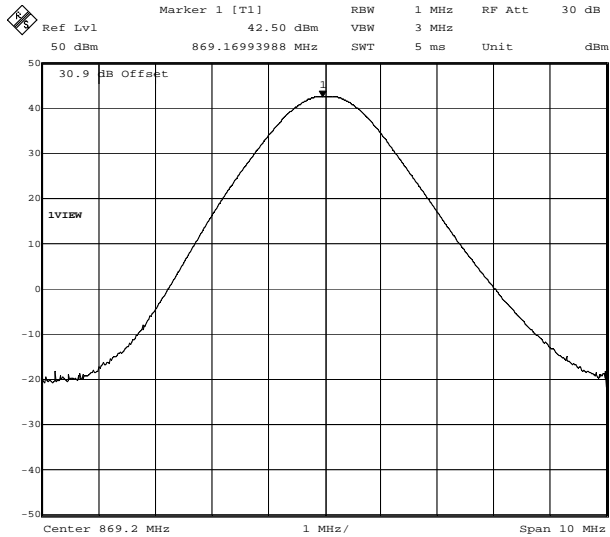
GMSK – TX0:

Results:

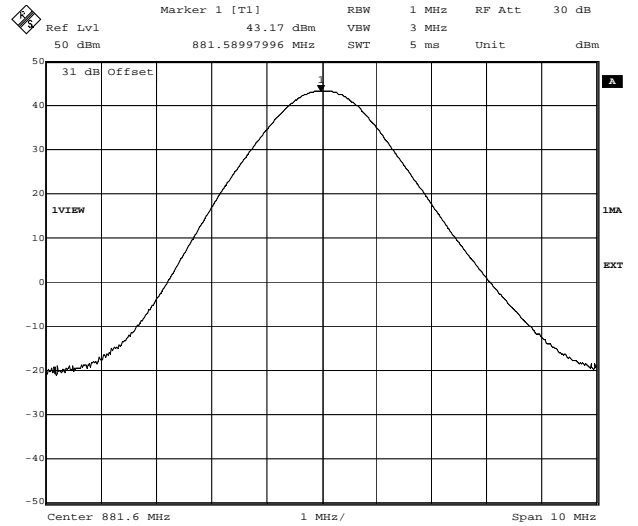
Channel	Frequency (MHz)	Level (dBm)
Bottom	869.16994	42.5
Middle	881.58998	43.2
Top	893.78998	42.7

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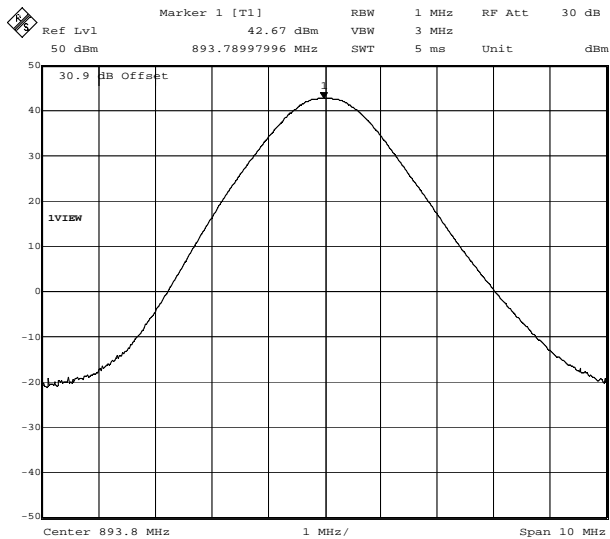
Transmitter Carrier Output Power: Section 2.1046 (a) (Continued)



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. Output Power. GMSK TRX0. +43.0dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 12:49:48



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch190. Output Power. GMSK TRX0. +43.0dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 12:52:10



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. Output Power. GMSK TRX0. +43.0dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 12:53:56

Test Of: Ericsson AB
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Transmitter Carrier Output Power: Section 2.1046 (a) (Continued)

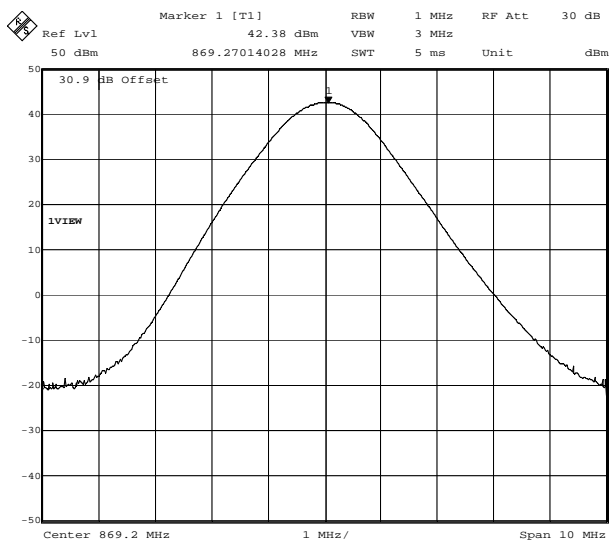
GMSK – TX1:

Results:

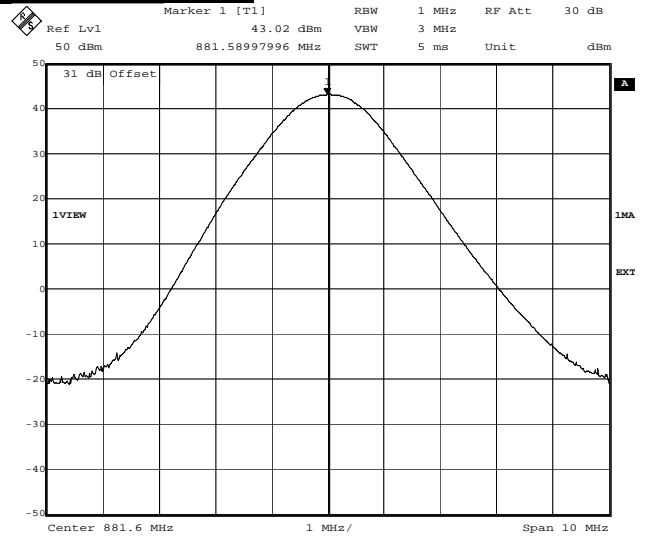
Channel	Frequency (MHz)	Level (dBm)
Bottom	869.27014	42.4
Middle	881.58998	43.0
Top	893.76994	42.6

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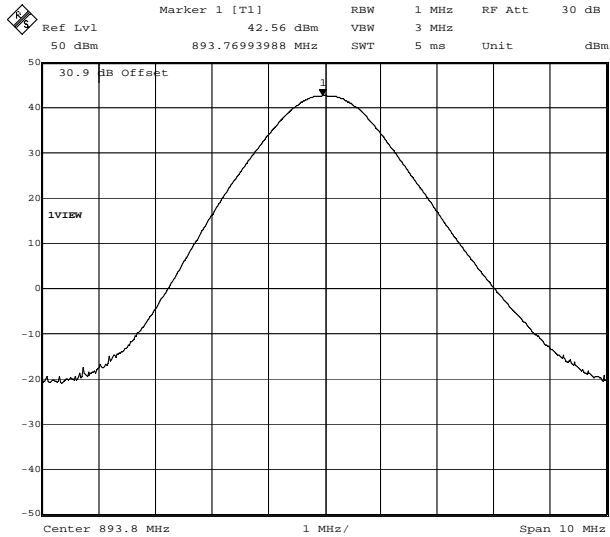
Transmitter Carrier Output Power: Section 2.1046 (a) (Continued)



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. Output Power. GMSK TRX1. +43.0dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 13:00:08



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch190. Output Power. GMSK TRX1. +43.0dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 12:58:11



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. Output Power. GMSK TRX1. +43.0dBm. FCC Part 2.1046(a)
 Date: 11.JAN.2005 12:56:35

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7.3. Modulation Characteristics: Section 2.1047

7.3.1. The EUT and spectrum analyser were configured for conducted antenna port measurements.

7.3.2. Tests were performed to identify the modulation characteristics in accordance with FCC Part 2.1047, with reference to TIA_EIA_603B.

7.3.3. Measurements were made at the ARP output connectors.

7.3.4. The output was connected to a spectrum analyser, which was used in GSM BTS analyser mode, via cables and with 30 dB of attenuation in the path.

7.3.5. Testing was performed on the middle channel only.

GMSK	Phase Error (°)	
	TX0	TX1
Phase Error	2.96	2.56
Max	2.96	

8PSK	EVM (% RMS)	
	TX0	TX1
EVM	1.55	1.96
Max EVM	1.96	

8PSK	Origin Offset (dB)	
	TX0	TX1
Origin Offset	42.62	44.49
Max 00	42.62	

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7.4. Transmitter Frequency Stability (Temperature Variation): Section 22.355

7.4.1. The EUT and spectrum analyser were configured for conducted antenna port measurements.

7.4.2. Measurements were performed to determine the frequency stability of the fundamental emission from the EUT, when subjected to variation of ambient temperature and variation of supply voltage.

7.4.3. Measurements were made at the ARP output connectors.

7.4.4. The output was connected to a spectrum analyser, which was used in GSM BTS analyser mode, via cables and with 30 dB of attenuation in the path.

7.4.5. Testing was performed for TX0 and TX1 on the Bottom and Top channels

7.4.6. The ambient temperature was varied from -30°C to +50°C in 10°C steps.

7.4.7. All transceivers were active and evenly spaced out in the frequency band to simulate worst case. The measured transceiver was set up to transmit on 1 timeslot and testing was performed over 50 bursts.

7.4.8. The ppm frequency error is calculated using the following formula taken from the TIA_EIA_603B document.

$$\text{ppm error} = ((MCF_{\text{MHz}} / ACF_{\text{MHz}}) - 1) * 1000000$$

where,

MCF_{MHz} is the measured carrier frequency in MHz

ACF_{MHz} is the assigned carrier frequency in MHz

7.4.9. The client has stated that the authorised frequency band is:

Lower Band Edge	869.0 MHz
Upper Band Edge	894.0 MHz

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**Transmitter Frequency Stability (Temperature Variation): Section 22.355
(continued)**

Results

Mode: 8PSK – TX0

Channel: 128 (869.2MHz)

Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
-30	869.2	869.199994	-6	-0.007	1.5	Complied
-20	869.2	869.199994	-6	-0.007	1.5	Complied
-10	869.2	869.199992	-8	-0.009	1.5	Complied
0	869.2	869.200009	9	0.010	1.5	Complied
10	869.2	869.199994	-6	-0.007	1.5	Complied
20	869.2	869.199995	-5	-0.006	1.5	Complied
30	869.2	869.200005	5	0.006	1.5	Complied
40	869.2	869.199995	-5	-0.006	1.5	Complied
50	869.2	869.199995	-5	-0.006	1.5	Complied

Mode: 8PSK – TX0

Channel: 251 (893.8 MHz)

Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
-30	893.8	893.799995	-5	-0.006	1.5	Complied
-20	893.8	893.799995	-5	-0.006	1.5	Complied
-10	893.8	893.799992	-8	-0.009	1.5	Complied
0	893.8	893.800008	8	0.009	1.5	Complied
10	893.8	893.799994	-6	-0.007	1.5	Complied
20	893.8	893.799995	-5	-0.006	1.5	Complied
30	893.8	893.799996	-4	-0.005	1.5	Complied
40	893.8	893.799993	-7	-0.008	1.5	Complied
50	893.8	893.799994	-6	-0.007	1.5	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

Transmitter Frequency Stability (Temperature Variation): Section 22.355
(continued)

Mode: GMSK – TX0

Channel: 128 (869.2 MHz)

Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
-30	869.2	869.200010	10	0.012	1.5	Complied
-20	869.2	869.200009	9	0.010	1.5	Complied
-10	869.2	869.200007	7	0.008	1.5	Complied
0	869.2	869.200013	13	0.015	1.5	Complied
10	869.2	869.200007	7	0.008	1.5	Complied
20	869.2	869.200008	8	0.009	1.5	Complied
30	869.2	869.200010	10	0.012	1.5	Complied
40	869.2	869.200007	7	0.008	1.5	Complied
50	869.2	869.200007	7	0.008	1.5	Complied

Mode: GMSK – TX0

Channel: 251 (893.8 MHz)

Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
-30	893.8	893.800007	7	0.008	1.5	Complied
-20	893.8	893.800006	6	0.007	1.5	Complied
-10	893.8	893.800006	6	0.007	1.5	Complied
0	893.8	893.800011	11	0.012	1.5	Complied
10	893.8	893.800006	6	0.007	1.5	Complied
20	893.8	893.800007	7	0.008	1.5	Complied
30	893.8	893.800008	8	0.009	1.5	Complied
40	893.8	893.800007	7	0.008	1.5	Complied
50	893.8	893.800006	6	0.007	1.5	Complied

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

Transmitter Frequency Stability (Temperature Variation): Section 22.355 (continued)

Mode: 8PSK – TX1

Channel: 128 (869.2 MHz)

Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
-30	869.2	869.200006	6	0.007	1.5	Complied
-20	869.2	869.200005	5	0.006	1.5	Complied
-10	869.2	869.200007	7	0.008	1.5	Complied
0	869.2	869.200010	10	0.012	1.5	Complied
10	869.2	869.199995	-5	-0.006	1.5	Complied
20	869.2	869.200004	4	0.005	1.5	Complied
30	869.2	869.200006	6	0.007	1.5	Complied
40	869.2	869.200007	7	0.008	1.5	Complied
50	869.2	869.200007	7	0.008	1.5	Complied

Mode: 8PSK – TX1

Channel: 251 (893.8 MHz)

Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
-30	893.8	893.800005	5	0.006	1.5	Complied
-20	893.8	893.800007	7	0.008	1.5	Complied
-10	893.8	893.800007	7	0.008	1.5	Complied
0	893.8	893.800009	9	0.010	1.5	Complied
10	893.8	893.799993	-7	-0.008	1.5	Complied
20	893.8	893.800005	5	0.006	1.5	Complied
30	893.8	893.800009	9	0.010	1.5	Complied
40	893.8	893.800007	7	0.008	1.5	Complied
50	893.8	893.800007	7	0.008	1.5	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

Transmitter Frequency Stability (Temperature Variation): Section 22.355
(continued)

Mode: GMSK – TX1

Channel: 128 (869.2 MHz)

Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
-30	869.2	869.200013	13	0.015	1.5	Complied
-20	869.2	869.200013	13	0.015	1.5	Complied
-10	869.2	869.200014	14	0.016	1.5	Complied
0	869.2	869.200017	17	0.020	1.5	Complied
10	869.2	869.200011	11	0.013	1.5	Complied
20	869.2	869.200010	10	0.012	1.5	Complied
30	869.2	869.200013	13	0.015	1.5	Complied
40	869.2	869.200012	12	0.014	1.5	Complied
50	869.2	869.200011	11	0.013	1.5	Complied

Mode: GMSK – TX1

Channel: 251 (893.8 MHz)

Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
-30	893.8	893.800013	13	0.015	1.5	Complied
-20	893.8	893.800012	12	0.013	1.5	Complied
-10	893.8	893.800018	18	0.020	1.5	Complied
0	893.8	893.800018	18	0.020	1.5	Complied
10	893.8	893.800011	11	0.012	1.5	Complied
20	893.8	893.800010	10	0.011	1.5	Complied
30	893.8	893.800013	13	0.015	1.5	Complied
40	893.8	893.800011	11	0.012	1.5	Complied
50	893.8	893.800013	13	0.015	1.5	Complied

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

7.5. Transmitter Frequency Stability (Voltage Variation): Section 22.355

7.5.1. The EUT was configured as for frequency stability measurements as described in Appendix 2 of this report.

7.5.2. Tests were performed to identify the maximum frequency error of the EUT with variations in nominal operating voltage.

Mode: 8PSK – TX0

Channel: 128 (869.2 MHz)

Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
97.75	869.2	869.199993	-7	-0.008	1.5	Complied
115	869.2	869.199995	-5	-0.006	1.5	Complied
132.25	869.2	869.199995	-5	-0.006	1.5	Complied

Mode: 8PSK – TX0

Channel: 251 (893.8 MHz)

Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
97.75	893.8	893.799994	-6	-0.007	1.5	Complied
115	893.8	893.799995	-5	-0.006	1.5	Complied
132.25	893.8	893.799994	-6	-0.007	1.5	Complied

Mode: GMSK – TX0

Channel: 128 (869.2 MHz)

Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
97.75	869.2	869.200009	9	0.010	1.5	Complied
115	869.2	869.200008	8	0.009	1.5	Complied
132.25	869.2	869.200009	9	0.010	1.5	Complied

Mode: GMSK – TX0

Channel: 251 (893.8 MHz)

Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
97.75	893.8	893.800007	7	0.008	1.5	Complied
115	893.8	893.800007	7	0.008	1.5	Complied
132.25	893.8	893.800008	8	0.009	1.5	Complied

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

Transmitter Frequency Stability (Voltage Variation): Section 22.355
(Continued)

Mode: 8PSK – TX1

Channel: 128 (869.2 MHz)

Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
97.75	869.2	869.199995	-5	-0.006	1.5	Complied
115	869.2	869.200004	4	0.005	1.5	Complied
132.25	869.2	869.200004	4	0.005	1.5	Complied

Mode: 8PSK – TX1

Channel: 251 (893.8 MHz)

Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
97.75	893.8	893.799996	-4	-0.004	1.5	Complied
115	893.8	893.800005	5	0.006	1.5	Complied
132.25	893.8	893.800005	5	0.006	1.5	Complied

Mode: GMSK – TX1

Channel: 128 (869.2 MHz)

Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
97.75	869.2	869.200010	10	0.012	1.5	Complied
115	869.2	869.200010	10	0.012	1.5	Complied
132.25	869.2	869.200011	11	0.013	1.5	Complied

Mode: GMSK – TX1

Channel: 251 (893.8 MHz)

Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
97.75	893.8	893.800009	9	0.010	1.5	Complied
115	893.8	893.800010	10	0.011	1.5	Complied
132.25	893.8	893.800009	9	0.010	1.5	Complied

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

7.6. Transmitter Occupied Bandwidth: Section 2.1049(i)

7.6.1. The EUT was configured for Occupied Bandwidth measurements as described in Section 9 of this report.

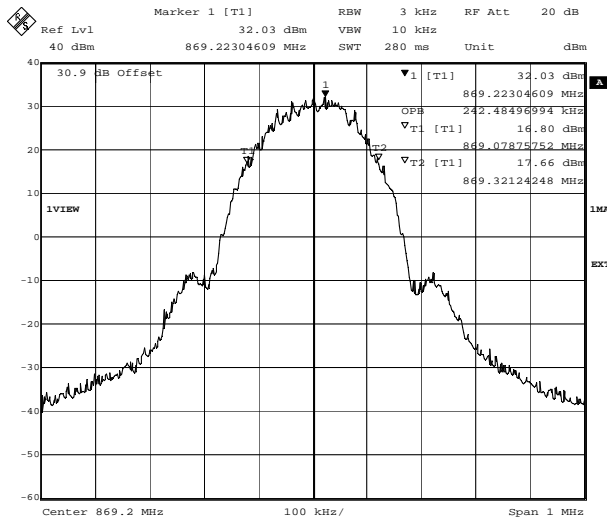
7.6.2. Tests were performed to identify the maximum bandwidth occupied by the fundamental frequency of the EUT.

Results: 8PSK – TX0 and TX1

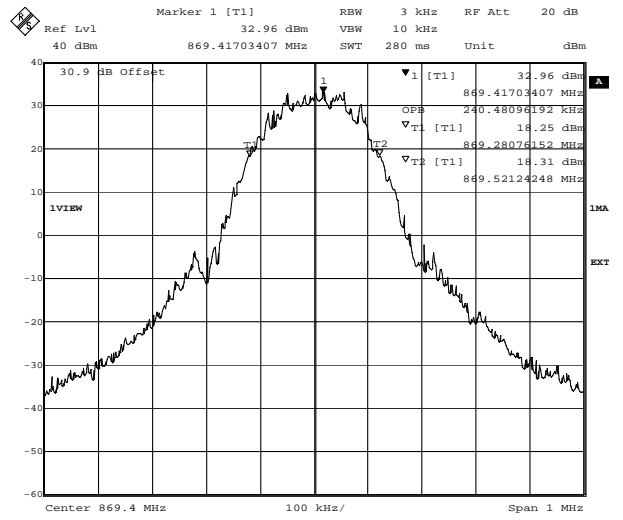
TX	Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
TX0	128	869.22304609	3	10	242.485
TX0	129	869.41703407	3	10	240.481
TX0	250	893.65911824	3	10	234.469
TX0	251	893.80100200	3	10	236.473
TX1	128	869.20100200	3	10	240.481
TX1	129	869.46112224	3	10	236.473
TX1	250	893.67715431	3	10	236.473
TX1	251	893.73286573	3	10	240.481

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

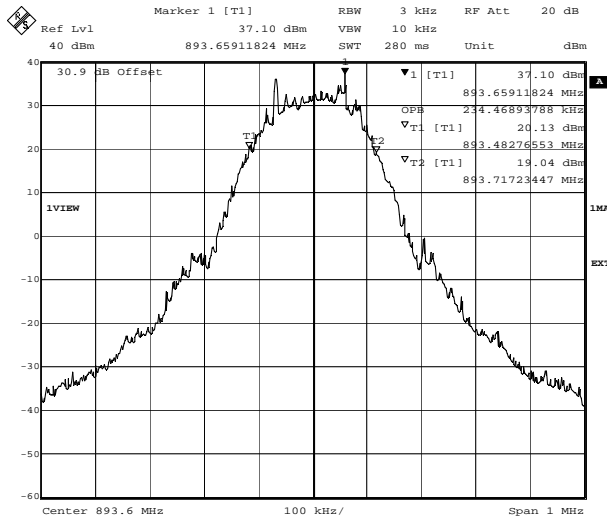
Transmitter Occupied Bandwidth: Section 2.1049(i) (Continued)



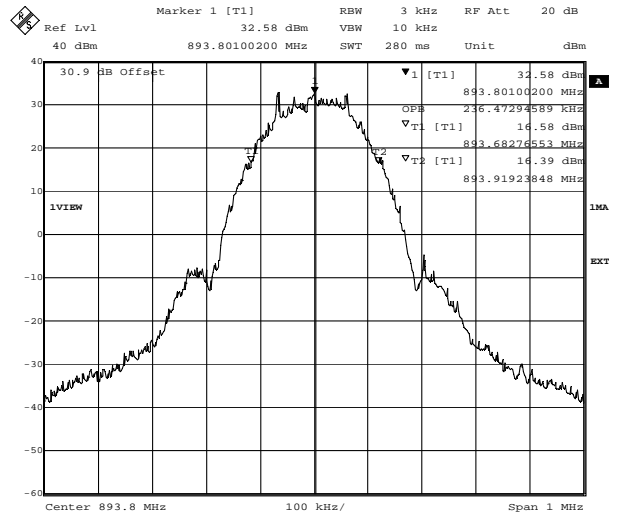
Title: Testing for Ericsson AB, RBS2109 850MHz, 70958JD03.
 Comment A: Ch128, OBW 99% Occupied Bandwidth, 8PSK TRX0, +39.0dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 15:36:47



Title: Testing for Ericsson AB, RBS2109 850MHz, 70958JD03.
 Comment A: Ch129, OBW 99% Occupied Bandwidth, 8PSK TRX0, +39.7dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 15:40:02



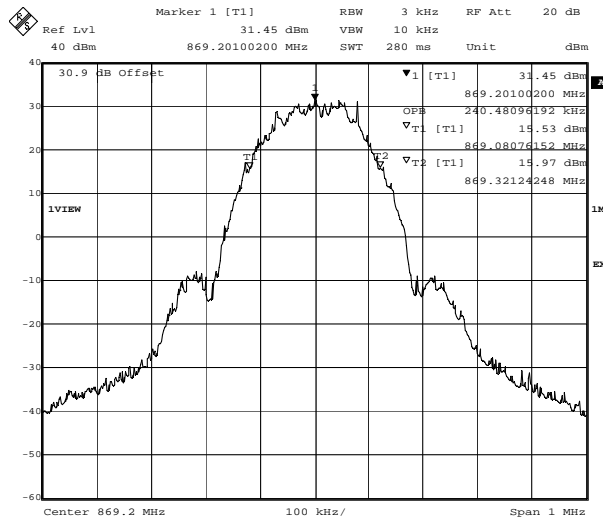
Title: Testing for Ericsson AB, RBS2109 850MHz, 70958JD03.
 Comment A: Ch250, OBW 99% Occupied Bandwidth, 8PSK TRX0, +39.7dBm.
 FCC Part 2.1049
 Date: 19.JAN.2005 12:56:36



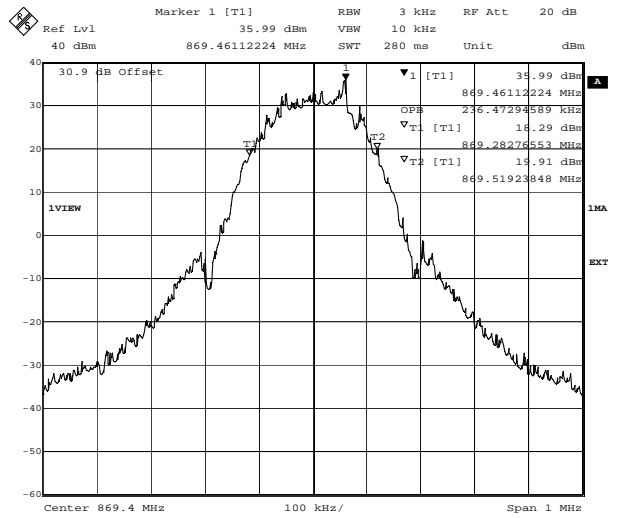
Title: Testing for Ericsson AB, RBS2109 850MHz, 70958JD03.
 Comment A: Ch251, OBW 99% Occupied Bandwidth, 8PSK TRX0, +39.0dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 16:02:16

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

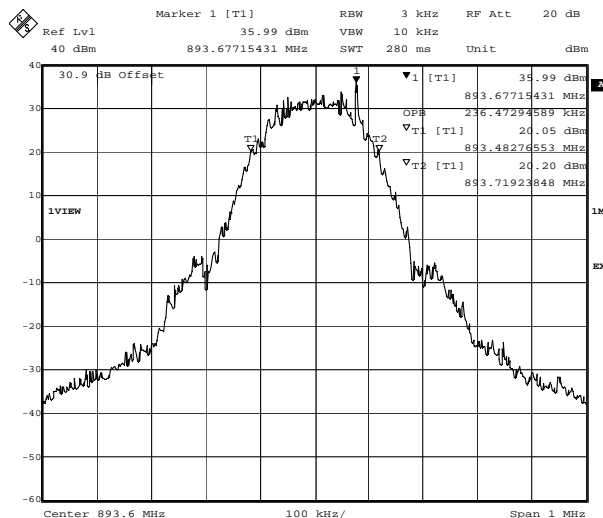
Transmitter Occupied Bandwidth: Section 2.1049(i) (Continued)



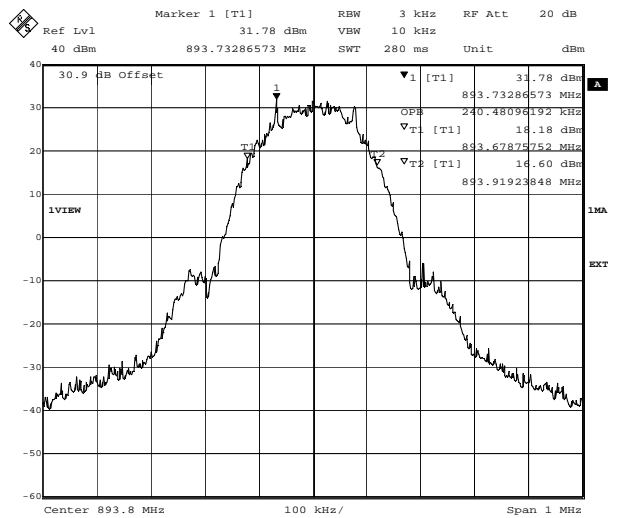
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. OBW 99% Occupied Bandwidth. 8PSK TRX1. +39.0dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 16:26:22



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129. OBW 99% Occupied Bandwidth. 8PSK TRX1. +39.7dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 16:29:19



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250. OBW 99% Occupied Bandwidth. 8PSK TRX1. +39.7dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 16:45:51



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. OBW 99% Occupied Bandwidth. 8PSK TRX1. +39.0dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 16:44:31

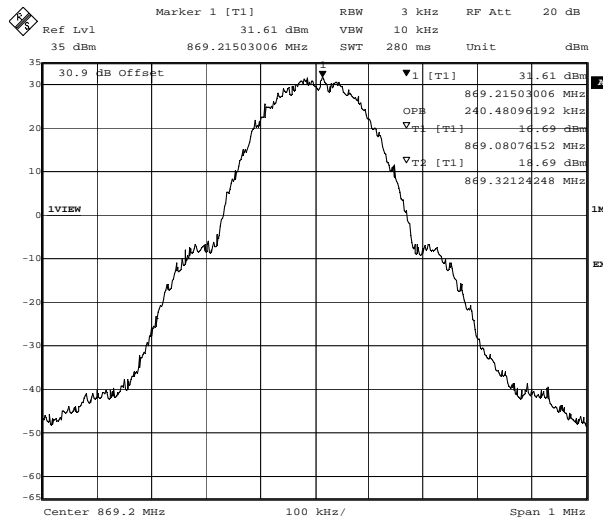
Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

Transmitter Occupied Bandwidth: Section 2.1049(i) (Continued)**Results: GMSK – TX0 and TX1**

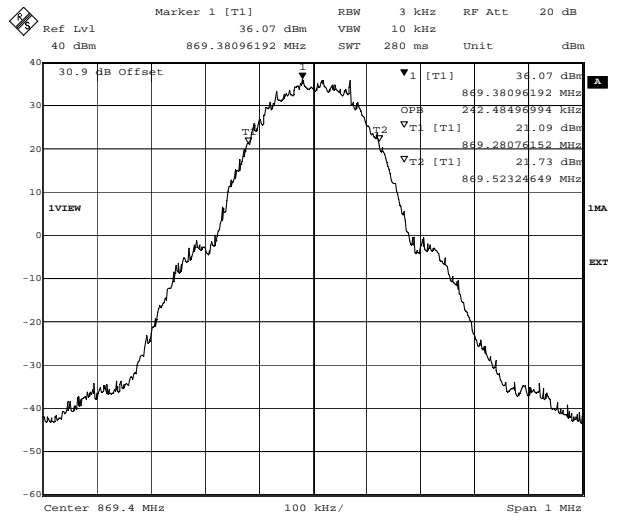
TX	Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
TX0	128	869.21503006	3	10	240.481
TX0	129	869.38096192	3	10	242.485
TX0	250	893.57695391	3	10	238.477
TX0	251	893.82104208	3	10	242.485
TX1	128	869.21903808	3	10	240.481
TX1	129	869.41102204	3	10	240.481
TX1	250	893.61302605	3	10	240.481
TX1	251	893.81102204	3	10	240.481

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

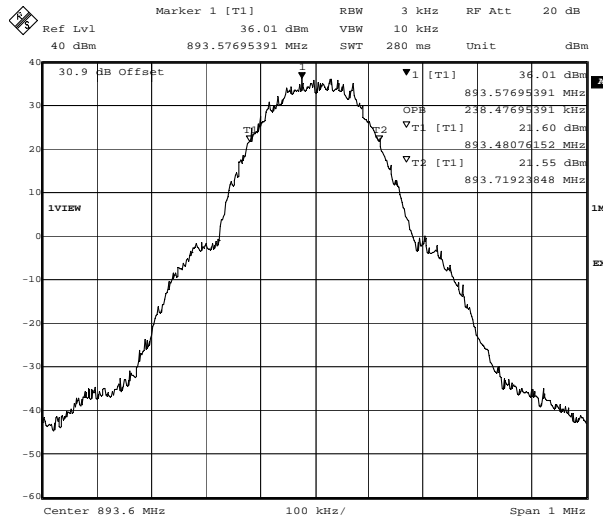
Transmitter Occupied Bandwidth: Section 2.1049(i) (Continued)



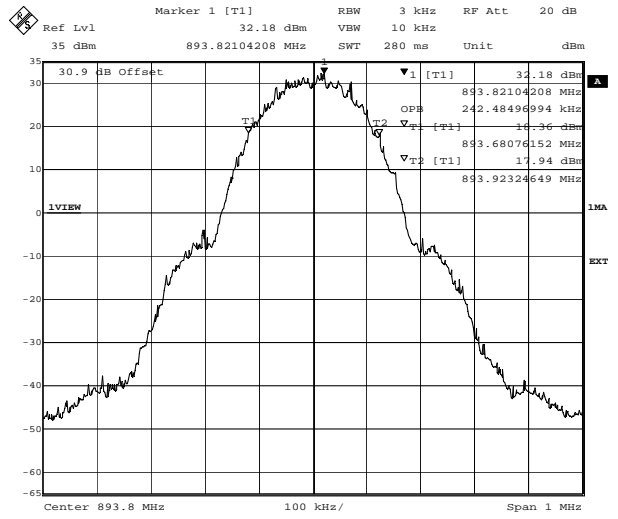
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. OBW 99% Occupied Bandwidth. GMSK TRX0. +39.0dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 09:56:55



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129. OBW 99% Occupied Bandwidth. GMSK TRX0. +43.0dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 10:01:33



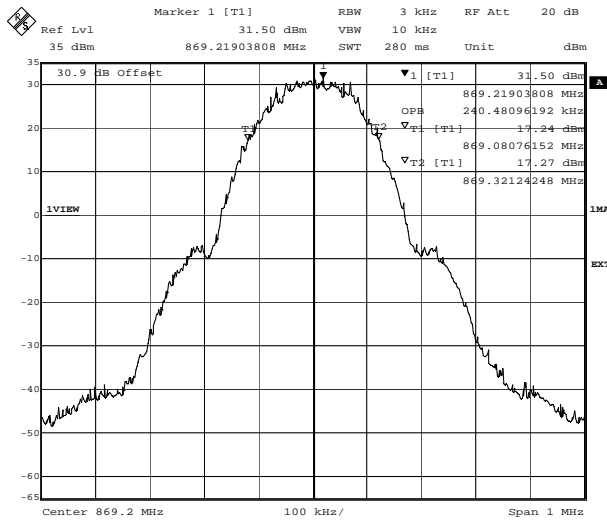
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250. OBW 99% Occupied Bandwidth. GMSK TRX0. +43.0dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 10:26:25



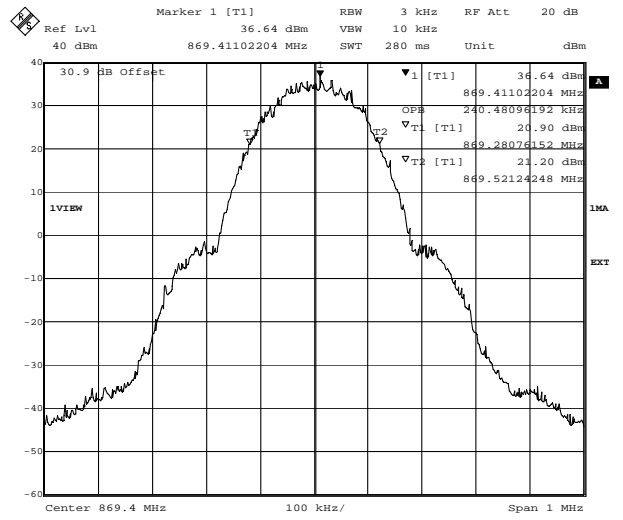
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. OBW 99% Occupied Bandwidth. GMSK TRX0. +39.0dBm.
 FCC Part 2.1049
 Date: 12.JAN.2005 10:23:26

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

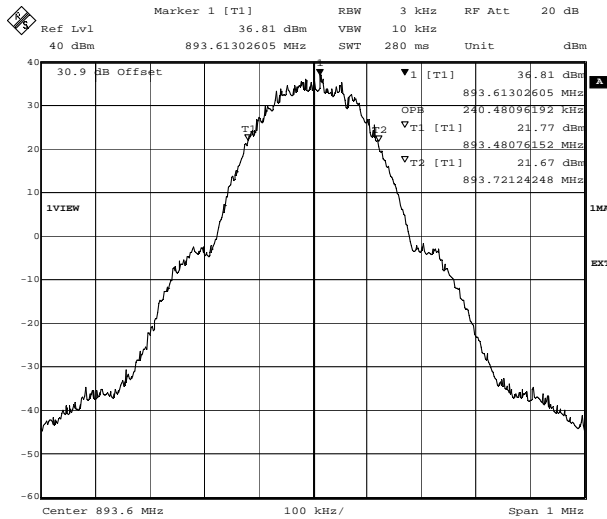
Transmitter Occupied Bandwidth: Section 2.1049(i) (Continued)



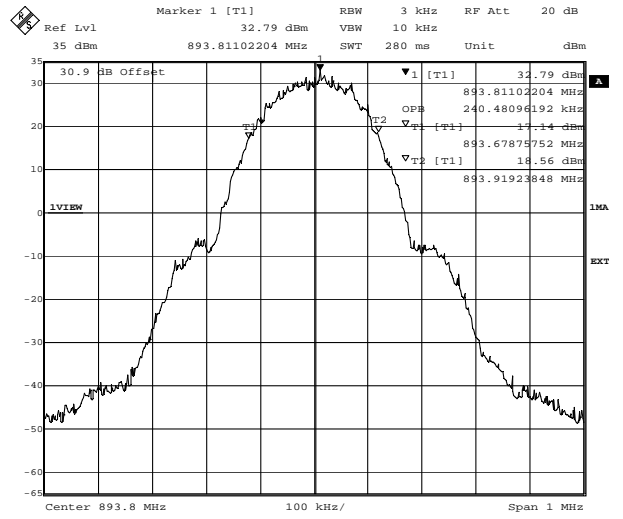
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. OBW 99% Occupied Bandwidth. GMSK TRX1. +39.0dBm.
 Date: 12.JAN.2005 10:40:17



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129. OBW 99% Occupied Bandwidth. GMSK TRX1. +43.0dBm.
 Date: 12.JAN.2005 10:43:30



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250. OBW 99% Occupied Bandwidth. GMSK TRX1. +43.0dBm.
 Date: 12.JAN.2005 10:59:01



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. OBW 99% Occupied Bandwidth. GMSK TRX1. +39.0dBm.
 Date: 12.JAN.2005 10:57:24

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

7.7. Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917

7.7.1. The EUT was configured for conducted emissions testing as described in Section 9 of this report.

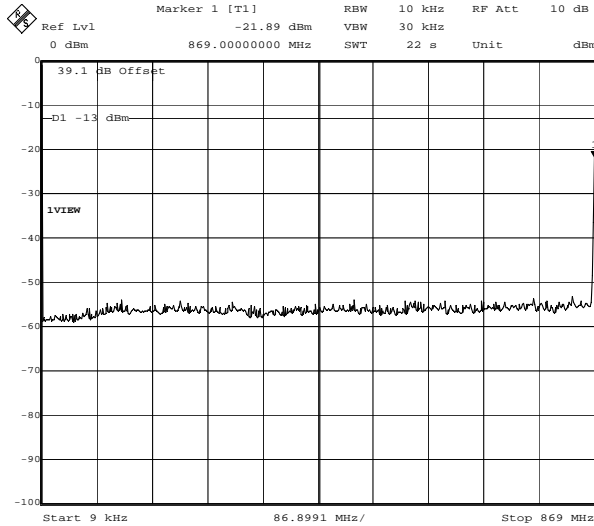
7.7.2. Tests were performed to identify the maximum transmitter conducted emission levels.

Result: 8PSK, TX0=129 and TX1=154

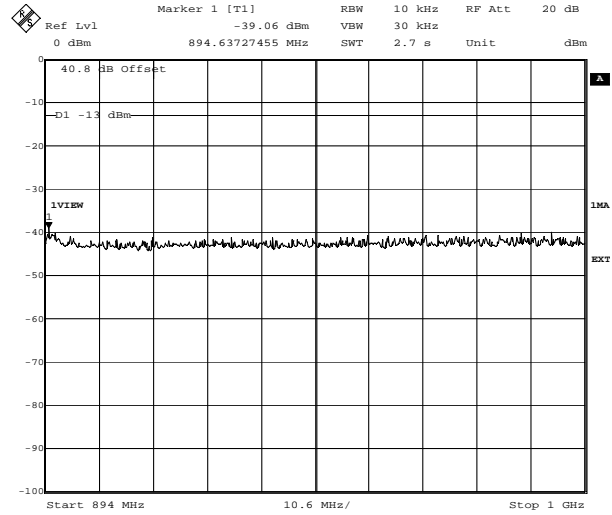
Band	Peak Power (dBm)	Limit (dBm)	Margin (dB)	Results
9 kHz to 869.0 MHz	-21.9	-13.0	8.9	Complied
894.0 MHz to 1.0 GHz	-39.1	-13.0	26.1	Complied
1.0 GHz to 5.0 GHz	-38.0	-13.0	25.0	Complied
5.0 GHz to 10.0 GHz	-32.4	-13.0	19.4	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

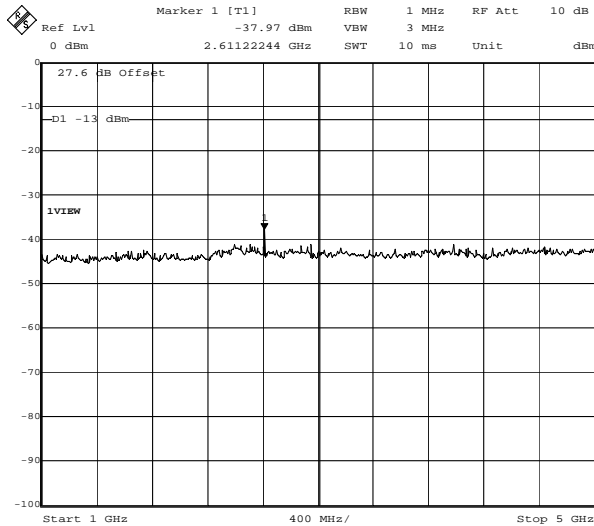
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)



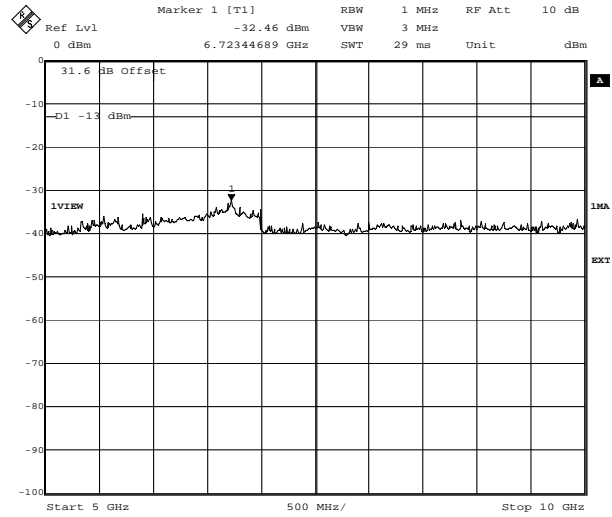
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129&154. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 14.JAN.2005 11:07:26



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129&154. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 14.JAN.2005 11:16:14



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129&154. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 14:08:10



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129&154. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 14:07:13

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

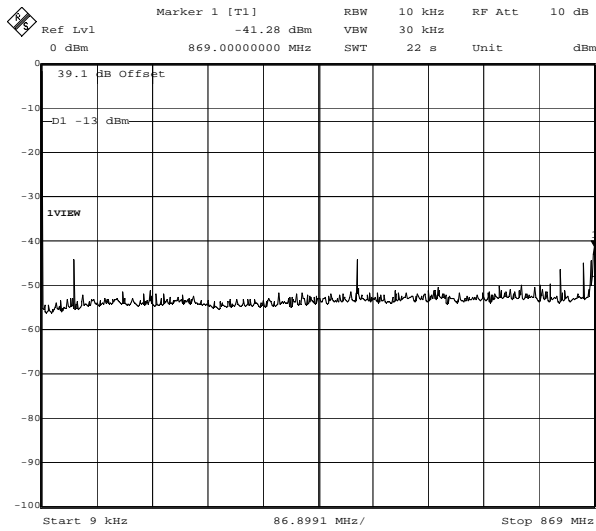
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)

Result: 8PSK, TX0=250 and TX1=225

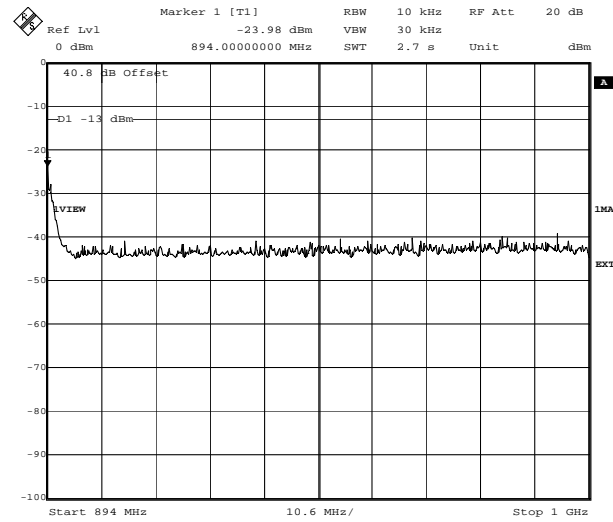
Band	Peak Power (dBm)	Limit (dBm)	Margin (dB)	Results
9 kHz to 869.0 MHz	-41.3	-13.0	28.3	Complied
894.0 MHz to 1.0 GHz	-24.0	-13.0	11.0	Complied
1.0 GHz to 5.0 GHz	-38.9	-13.0	25.9	Complied
5.0 GHz to 10.0 GHz	-32.9	-13.0	19.9	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

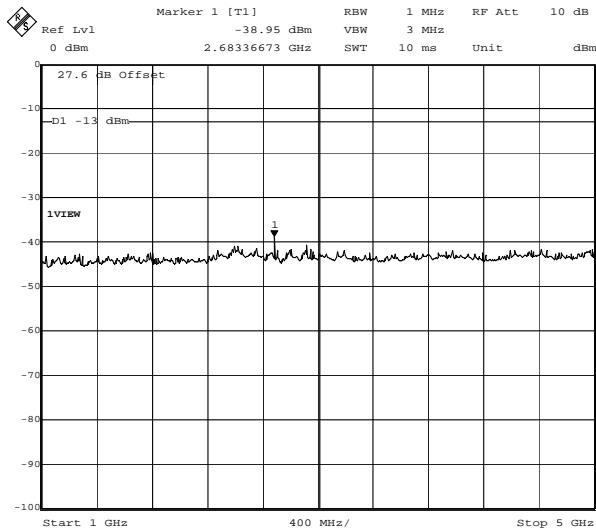
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)



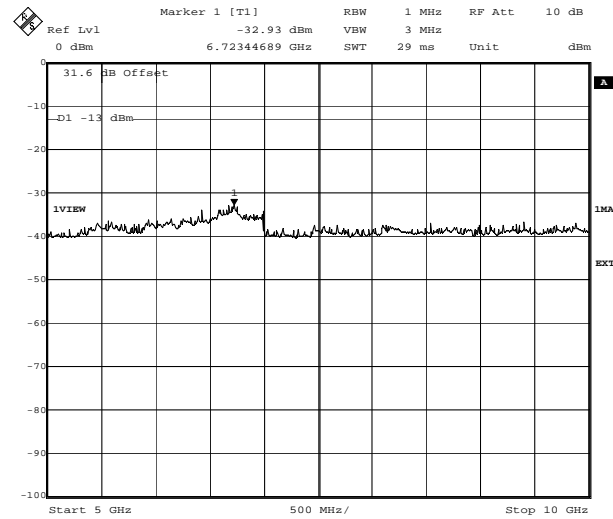
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 14.JAN.2005 11:05:49



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 14.JAN.2005 11:17:43



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 14:16:38



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 14:15:27

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

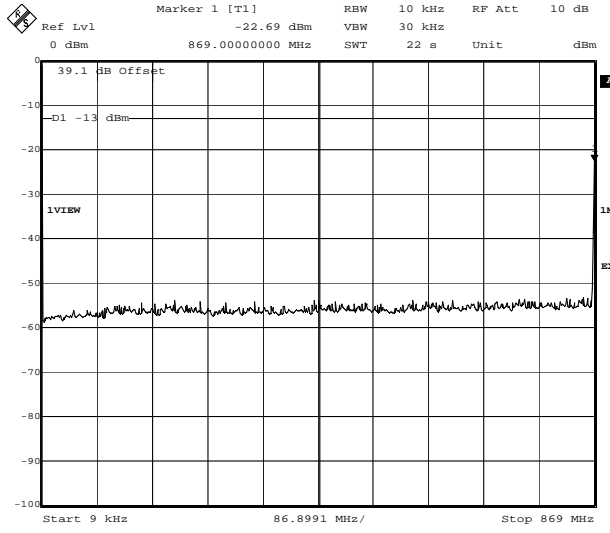
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917(Continued)

Result: 8PSK, TX0=154 and TX1=129

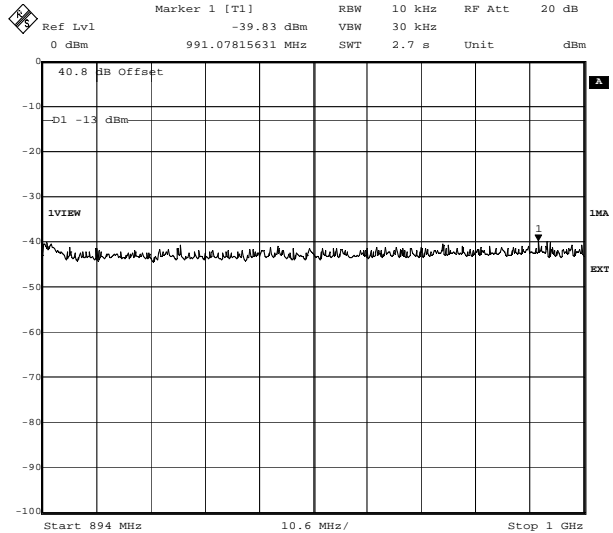
Band	Peak Power (dBm)	Limit (dBm)	Margin (dB)	Results
9 kHz to 869.0 MHz	-22.7	-13.0	9.7	Complied
894.0 MHz to 1.0 GHz	-39.8	-13.0	26.8	Complied
1.0 GHz to 5.0 GHz	-39.0	-13.0	26.0	Complied
5.0 GHz to 10.0 GHz	-32.6	-13.0	19.6	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

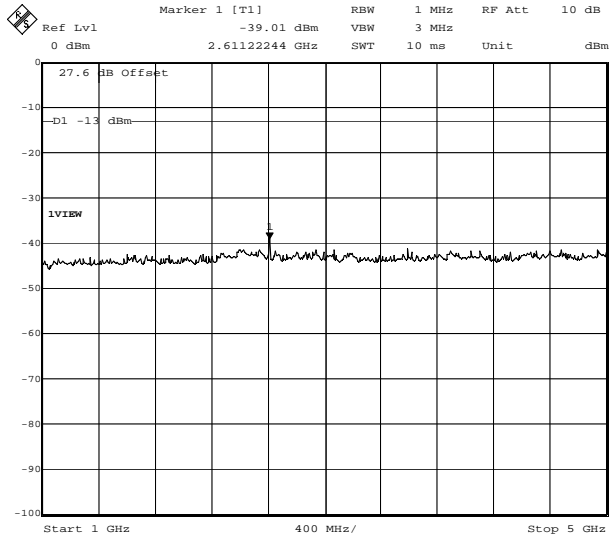
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)



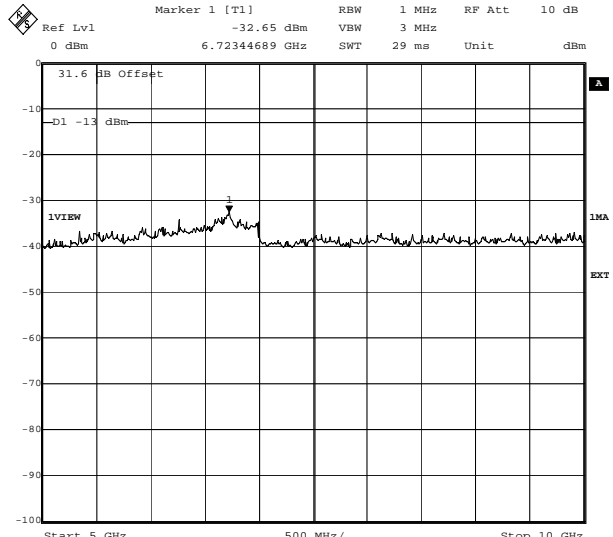
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch154&129. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 14.JAN.2005 10:40:19



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch154&129. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 14.JAN.2005 10:50:59



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch154&129. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:46:51



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch154&129. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:45:34

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

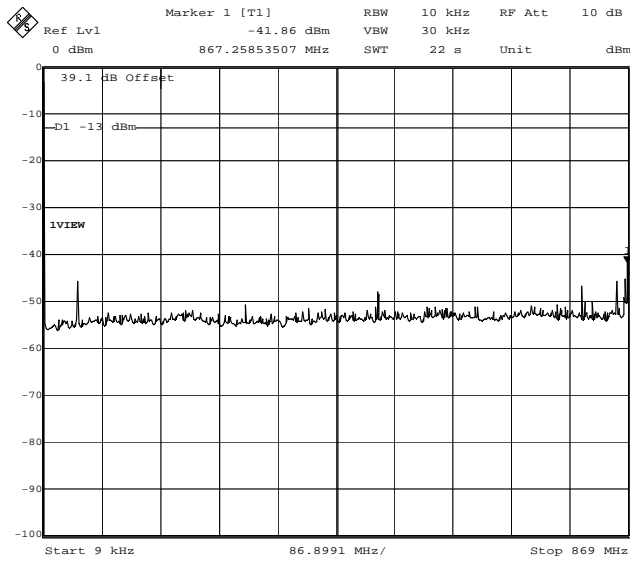
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)

Result: 8PSK, TX0=225 and TX1=250

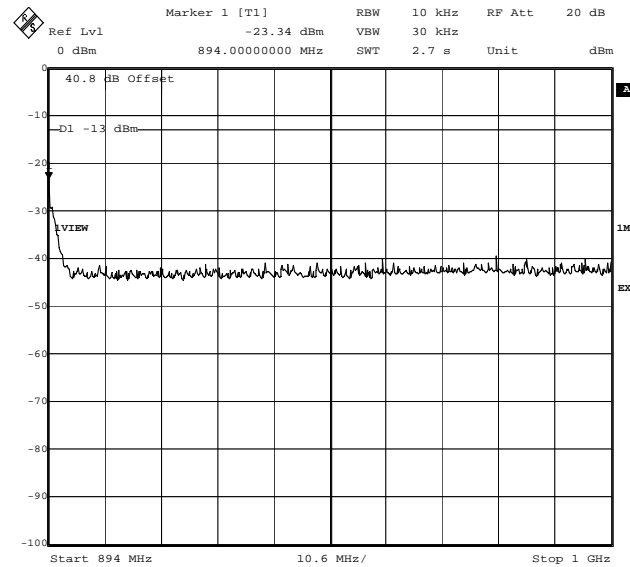
Band	Peak Power (dBm)	Limit (dBm)	Margin (dB)	Results
9 kHz to 869.0 MHz	-41.9	-13.0	28.9	Complied
894.0 MHz to 1.0 GHz	-23.3	-13.0	10.3	Complied
1.0 GHz to 5.0 GHz	-39.3	-13.0	26.3	Complied
5.0 GHz to 10.0 GHz	-32.2	-13.0	19.2	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

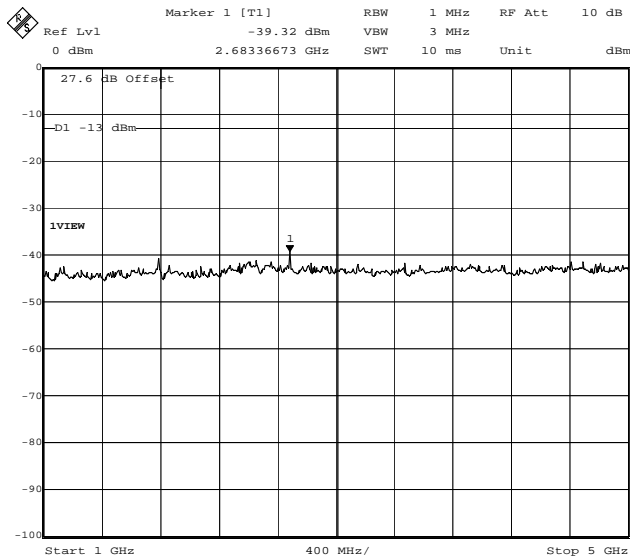
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)



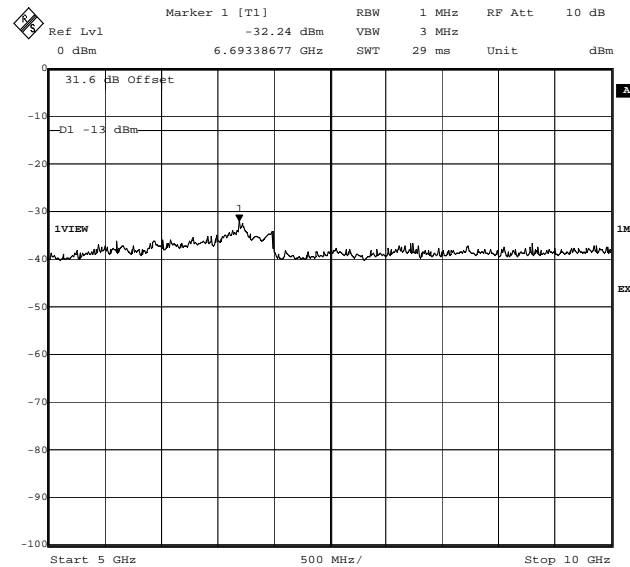
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 14.JAN.2005 10:38:14



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 14.JAN.2005 10:49:24



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:58:06



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. Conducted Spurious Emissions. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:57:02

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

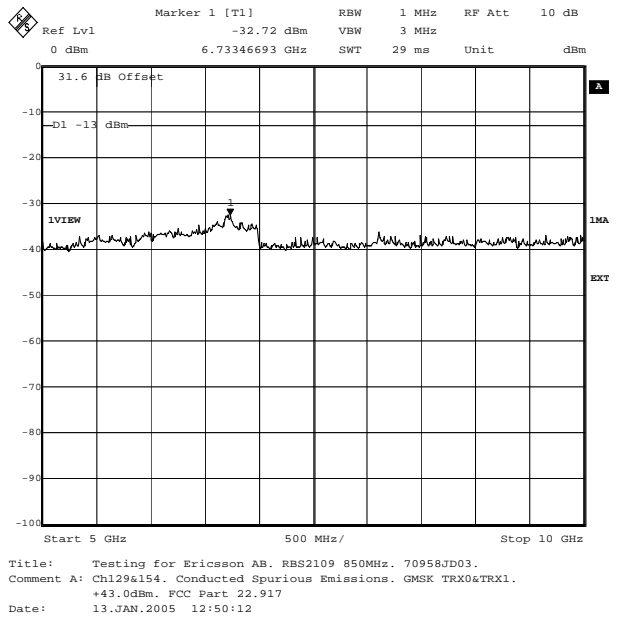
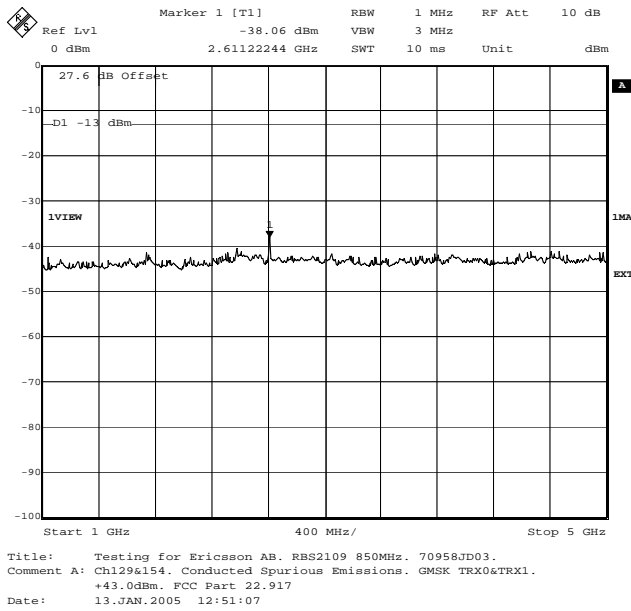
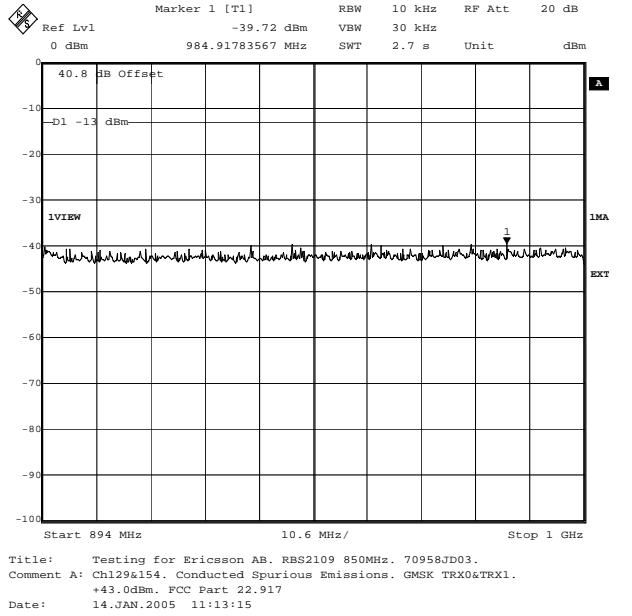
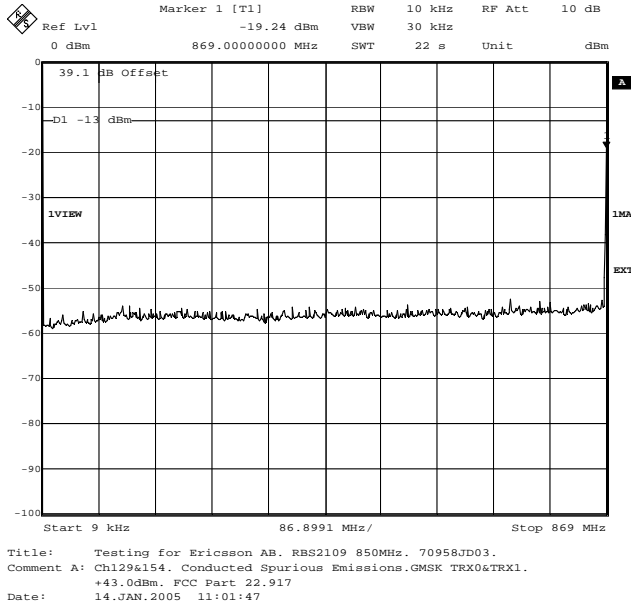
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)

Result: GMSK, TX0=129 and TX1=154

Band	Peak Power (dBm)	Limit (dBm)	Margin (dB)	Results
9 kHz to 869.0 MHz	-19.2	-13.0	6.2	Complied
894.0 MHz to 1.0 GHz	-39.7	-13.0	26.7	Complied
1.0 GHz to 5.0 GHz	-38.1	-13.0	25.1	Complied
5.0 GHz to 10.0 GHz	-32.7	-13.0	19.7	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)



Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

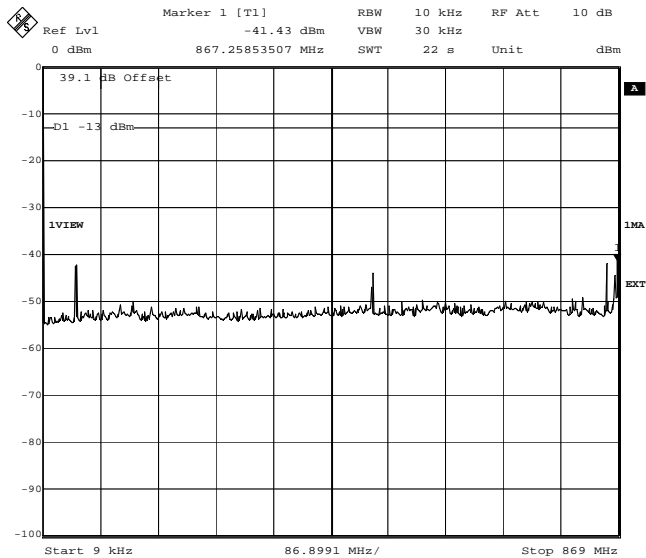
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)

Result: GMSK, TX0=250 and TX1=225

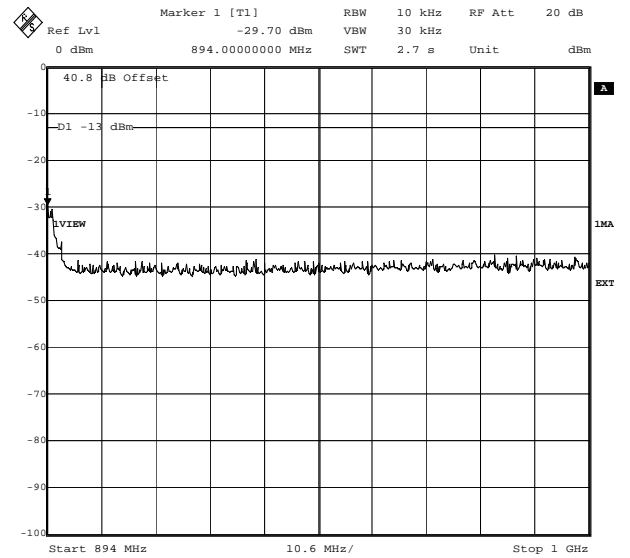
Band	Peak Power (dBm)	Limit (dBm)	Margin (dB)	Results
9 kHz to 869.0 MHz	-41.4	-13.0	28.4	Complied
894.0 MHz to 1.0 GHz	-29.7	-13.0	16.7	Complied
1.0 GHz to 5.0 GHz	-38.5	-13.0	25.5	Complied
5.0 GHz to 10.0 GHz	-33.3	-13.0	20.3	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

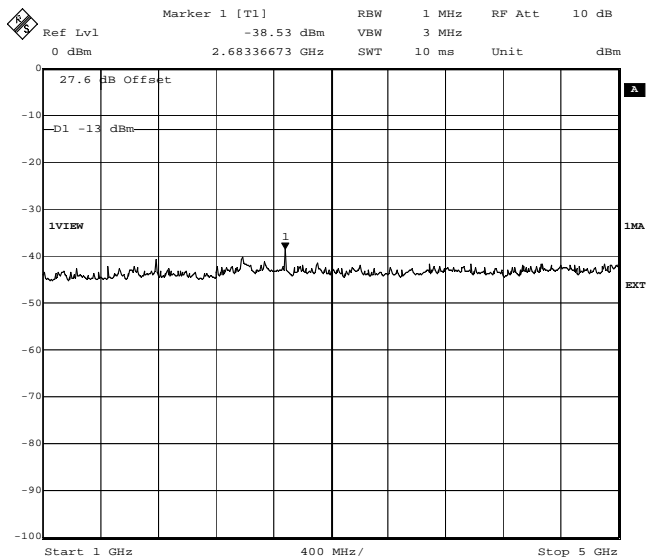
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)



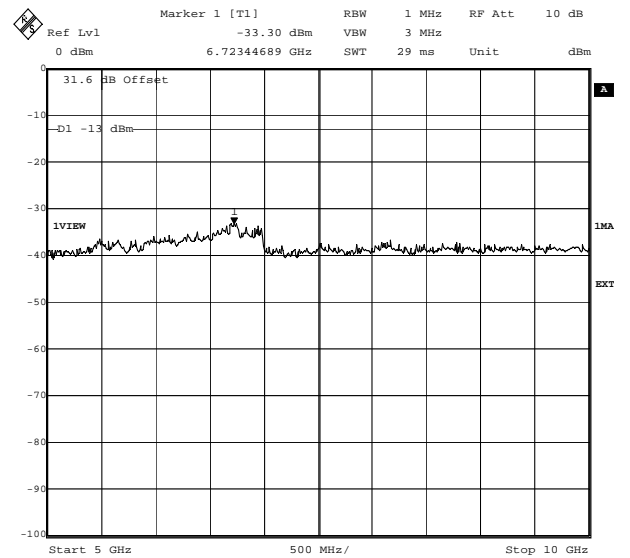
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. Conducted Spurious Emissions. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 14.JAN.2005 11:03:51



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. Conducted Spurious Emissions. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 14.JAN.2005 11:14:27



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. Conducted Spurious Emissions. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:15:28



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. Conducted Spurious Emissions. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:14:30

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

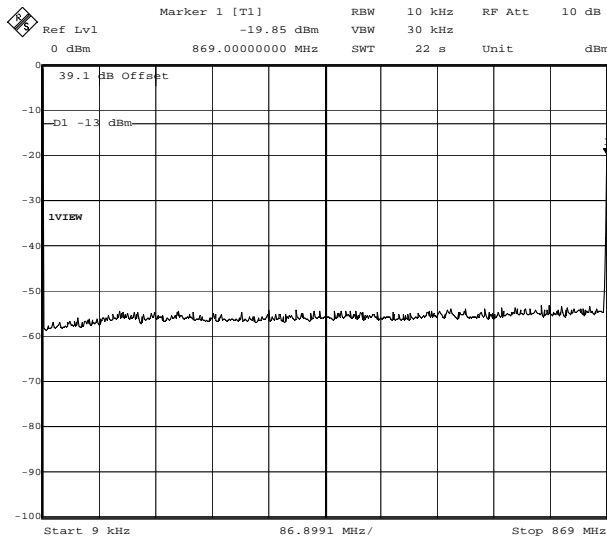
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)

Result: GMSK, TX0=154 and TX1=129

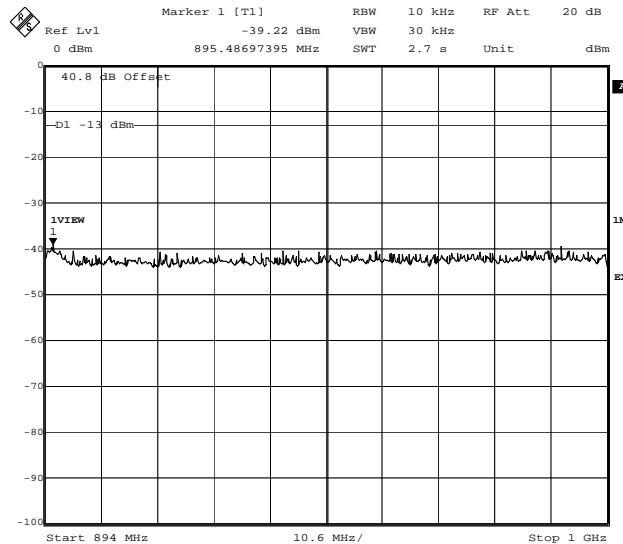
Band	Peak Power (dBm)	Limit (dBm)	Margin (dB)	Results
9 kHz to 869.0 MHz	-19.8	-13.0	6.8	Complied
894.0 MHz to 1.0 GHz	-39.2	-13.0	26.2	Complied
1.0 GHz to 5.0 GHz	-38.1	-13.0	25.1	Complied
5.0 GHz to 10.0 GHz	-32.3	-13.0	19.3	Complied

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

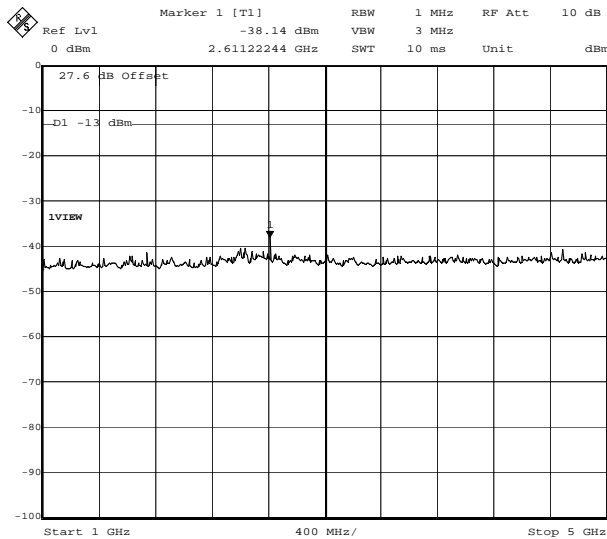
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)



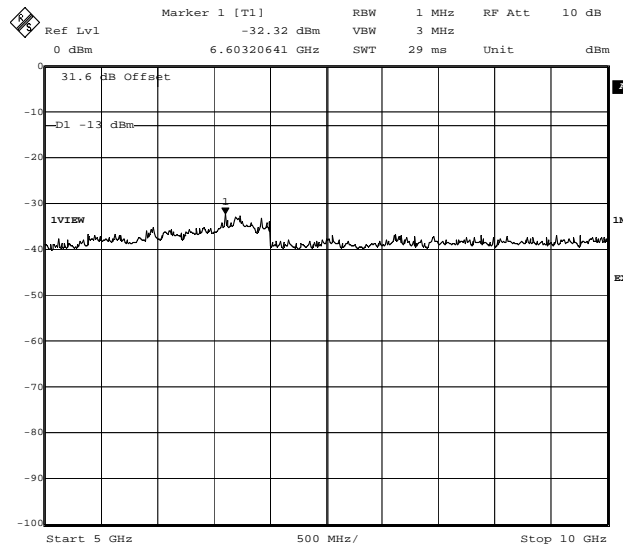
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
Comment A: Ch154k129. Conducted Spurious Emissions. GMSK TRX0&TRX1.
+43.0dBm. FCC Part 22.917
Date: 14.JAN.2005 10:32:11



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
Comment A: Ch154k129. Conducted Spurious Emissions. GMSK TRX0&TRX1.
+43.0dBm. FCC Part 22.917
Date: 14.JAN.2005 10:46:15



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
Comment A: Ch154k129. Conducted Spurious Emissions. GMSK TRX0&TRX1.
+43.0dBm. FCC Part 22.917
Date: 13.JAN.2005 13:26:44



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
Comment A: Ch154k129. Conducted Spurious Emissions. GMSK TRX0&TRX1.
+43.0dBm. FCC Part 22.917
Date: 13.JAN.2005 13:25:51

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

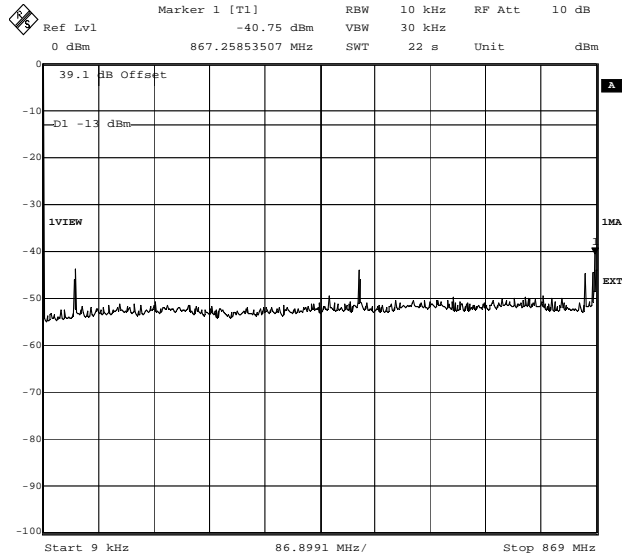
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)

Result: GMSK, TX0=225 and TX1=250

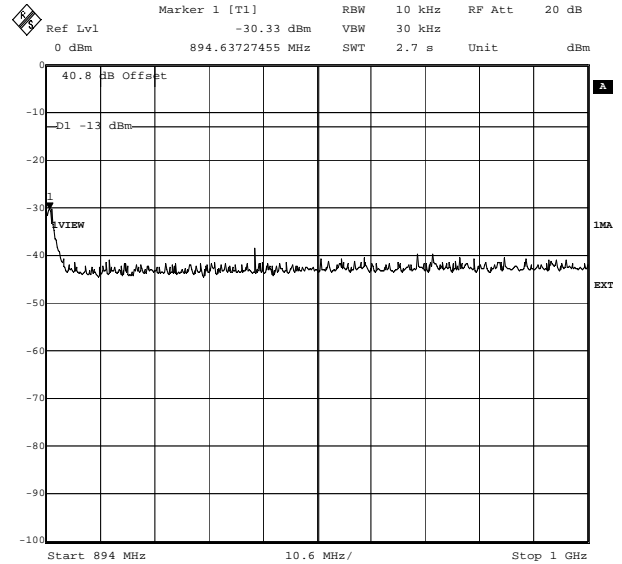
Band	Peak Power (dBm)	Limit (dBm)	Margin (dB)	Results
9 kHz to 869.0 MHz	-40.7	-13.0	27.7	Complied
894.0 MHz to 1.0 GHz	-30.3	-13.0	17.3	Complied
1.0 GHz to 5.0 GHz	-39.1	-13.0	26.1	Complied
5.0 GHz to 10.0 GHz	-33.0	-13.0	20.0	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

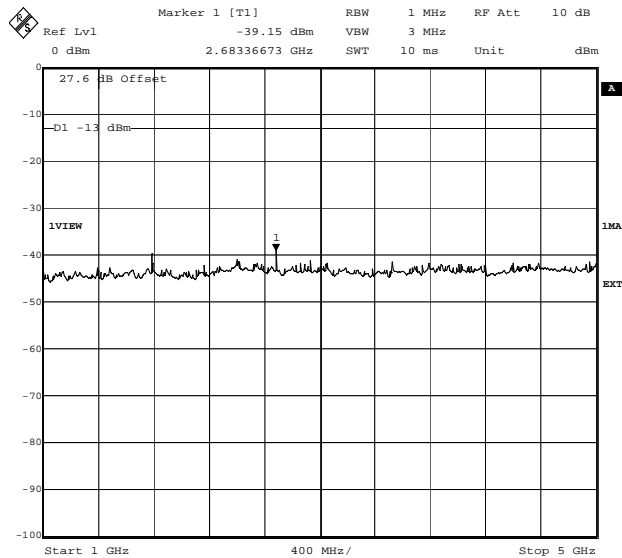
Transmitter Conducted Out of Band Emissions: Section 2.1051/22.917 (Continued)



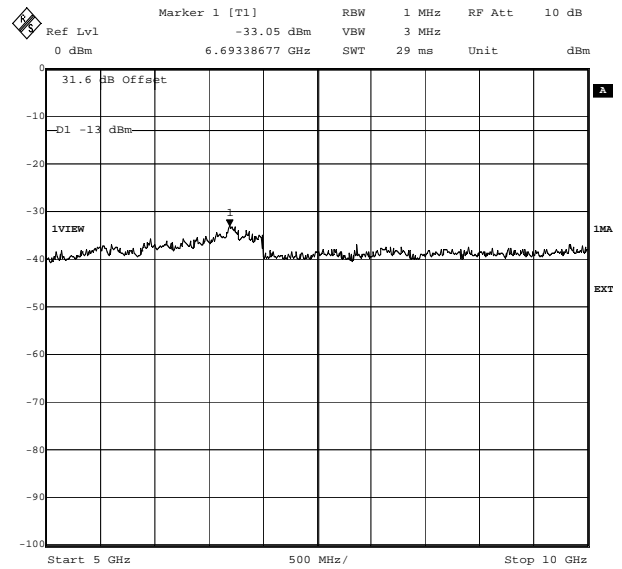
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. Conducted Spurious Emissions. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 14.JAN.2005 10:35:11



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. Conducted Spurious Emissions. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 14.JAN.2005 10:47:39



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. Conducted Spurious Emissions. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:36:12



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. Conducted Spurious Emissions. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:35:15

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

7.8. Transmitter Conducted Intermodulation Responses: Section 2.1051/22.917

7.8.1. The EUT was configured for conducted emissions testing as described in Section 9 of this report.

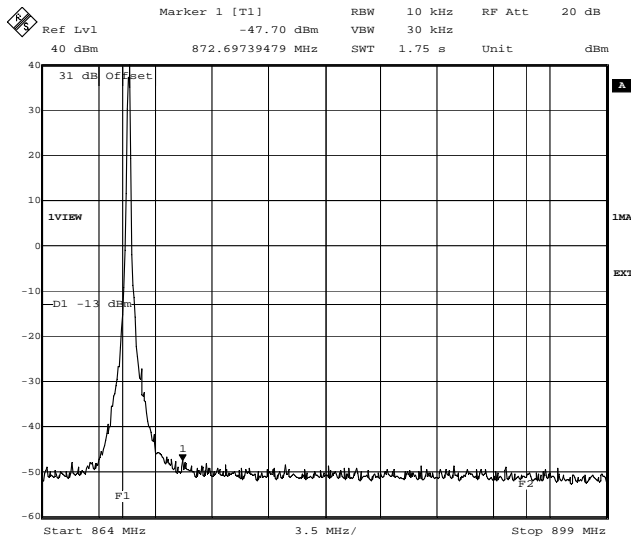
7.8.2. Tests were performed to identify the level of any Intermodulation responses present.

Results: 8PSK, TX0 and TX1

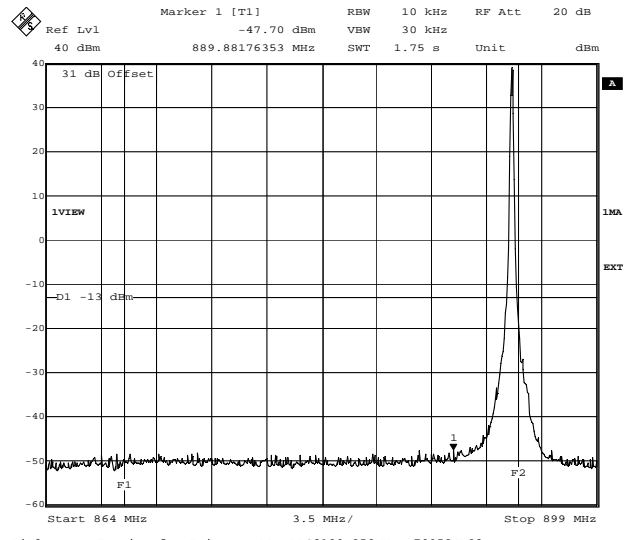
TX	Channel pair	Peak Power Emission (dBm)	Frequency (MHz)	Limit (dBm)	Margin (dB)	Result
TX0/TX1	129&154	-47.7	872.69739	-13.0	34.7	Complied
TX0/TX1	250&225	-47.7	889.88176	-13.0	34.7	Complied
TX1/TX0	129&154	-47.6	873.39880	-13.0	34.6	Complied
TX1/TX0	250&225	-48.4	887.63727	-13.0	35.4	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

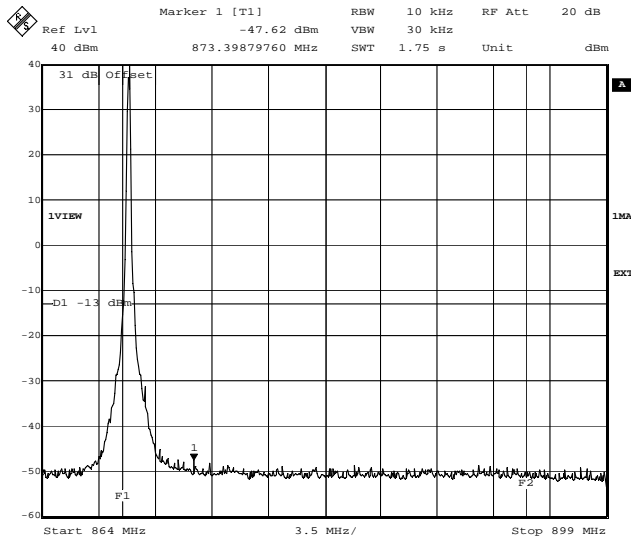
Transmitter Conducted Intermodulation Responses: Section 2.1051/22.917 (Continued)



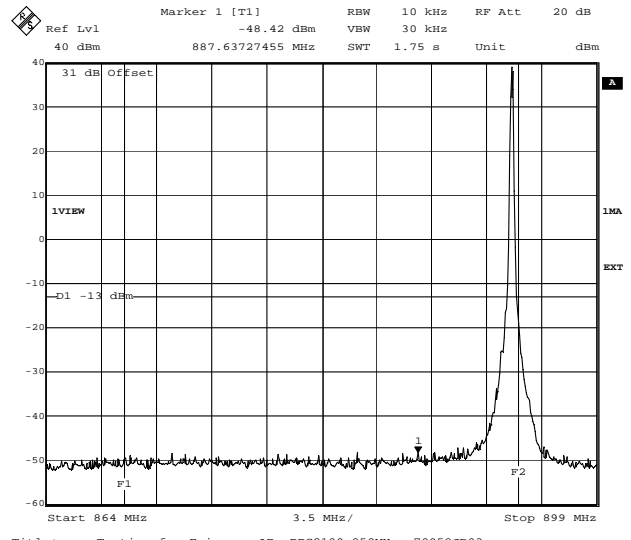
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129&154. TX Inband Intermodulation. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 14:05:20



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. TX Inband Intermodulation. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 14:13:29



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch154&129. TX Inband Intermodulation. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:42:59



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. TX Inband Intermodulation. 8PSK TRX0&TRX1.
 +39.7dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:54:43

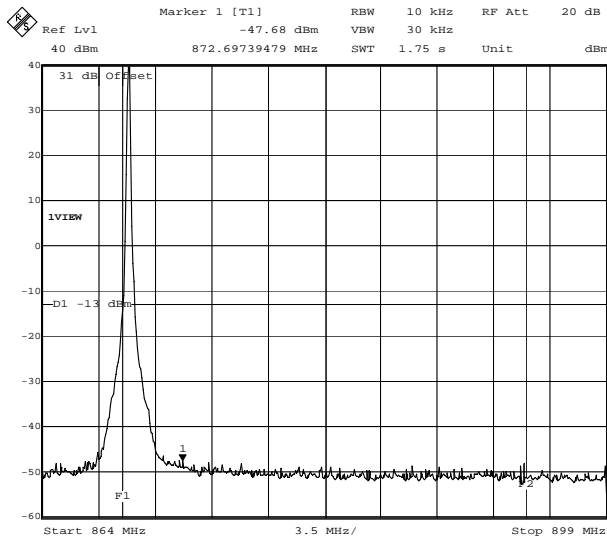
Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

Transmitter Conducted Intermodulation Responses: Section 2.1051/22.917 (Continued)**Results: GMSK, TX0 and TX1**

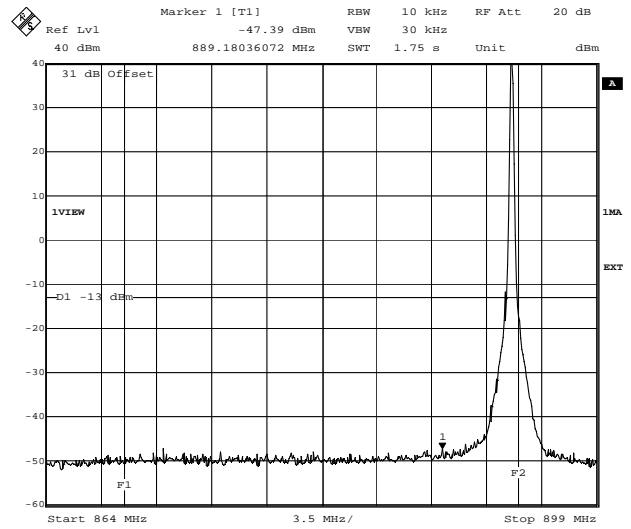
TX	Channel pair	Peak Power Emission (dBm)	Frequency (MHz)	Limit (dBm)	Margin (dB)	Result
TX0/TX1	129&154	-47.6	872.69739	-13.0	34.6	Complied
TX0/TX1	250&225	-47.3	889.18036	-13.0	34.3	Complied
TX1/TX0	129&154	-45.9	871.57515	-13.0	32.9	Complied
TX1/TX0	250&225	-47.9	889.95190	-13.0	34.9	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

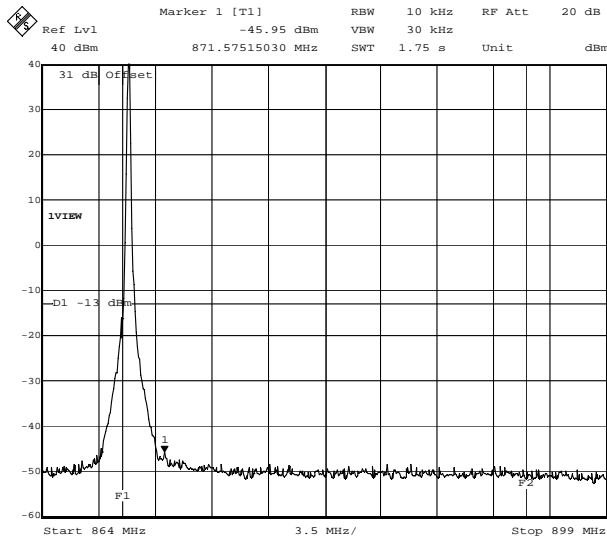
Transmitter Conducted Intermodulation Responses: Section 2.1051/22.917 (Continued)



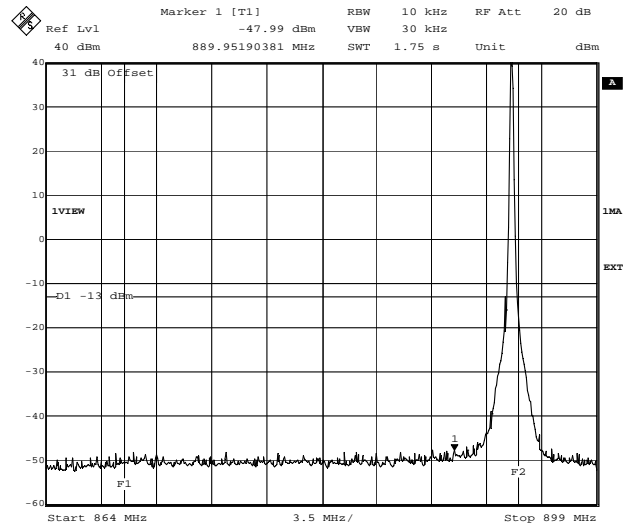
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129&154. TX Inband Intermodulation. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 13.JAN.2005 12:45:26



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250&225. TX Inband Intermodulation. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:08:46



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch154&129. TX Inband Intermodulation. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:23:37



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch225&250. TX Inband Intermodulation. GMSK TRX0&TRX1.
 +43.0dBm. FCC Part 22.917
 Date: 13.JAN.2005 13:33:13

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

7.9.Transmitter Conducted Emissions at Band Edges: Section 2.1051/22.917

7.9.1. The EUT was configured for conducted emissions at band edges testing as described in Section 9 of this report.

7.9.2. Tests were performed to identify the maximum conducted band edge emissions.

Results: 8PSK – TX0

Lower Band Edge

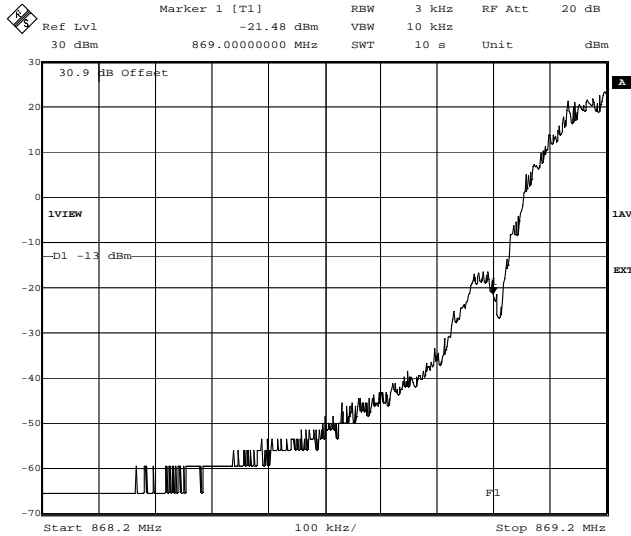
Frequency (MHz)	Output Power (dBm)	ARFCN	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
869.0	39.0	128	-21.4	-13.0	8.4	Complied
869.0	39.7	129	-41.4	-13.0	28.4	Complied

Upper Band Edge

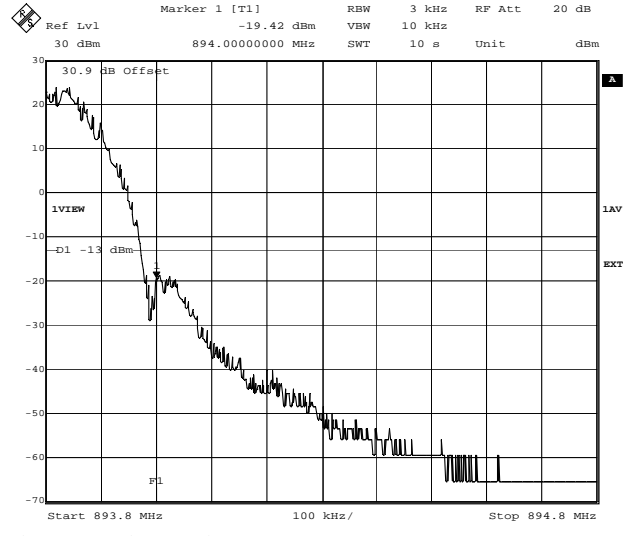
Frequency (MHz)	Output Power (dBm)	ARFCN	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
894.0	39.0	251	-19.4	-13.0	6.4	Complied
894.0	39.7	250	-42.6	-13.0	29.6	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

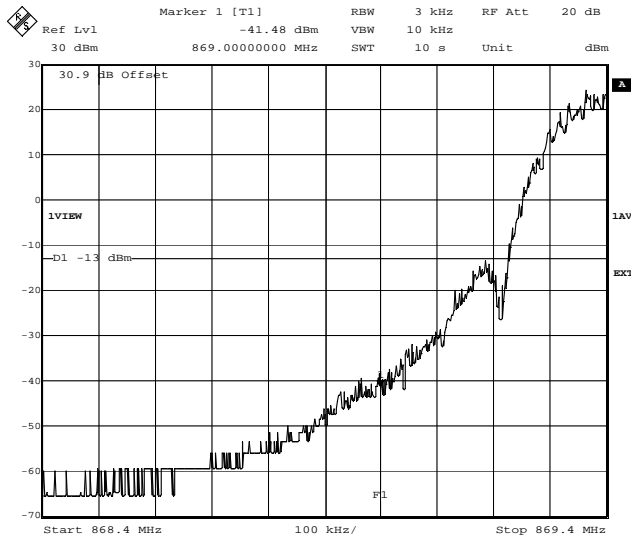
Transmitter Conducted Emissions at Band Edges: Section 2.1051/22.917 (Continued)



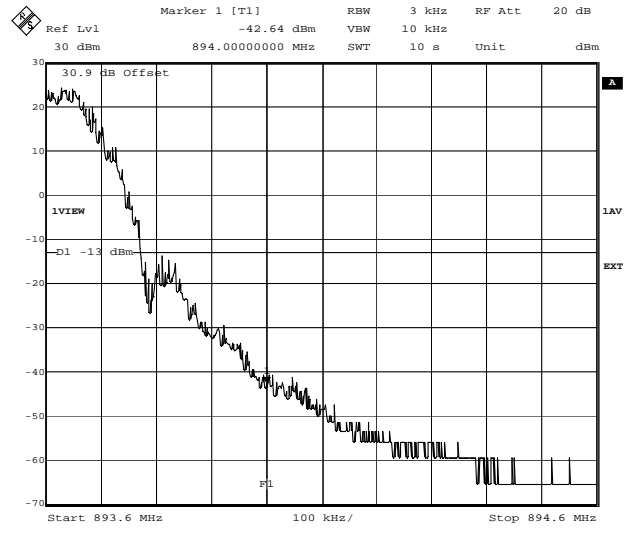
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. Band Edges. 8PSK TRX0. +39.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 15:32:33



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. Band Edges. 8PSK TRX0. +39.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 15:59:32



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129. Band Edges. 8PSK TRX0. +39.7dBm. FCC Part 22.917
 Date: 12.JAN.2005 15:38:31



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250. Band Edges. 8PSK TRX0. +39.7dBm. FCC Part 22.917
 Date: 19.JAN.2005 12:57:59

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

Transmitter Conducted Emissions at Band Edges: Section 2.1051/22.917 (Continued)**Results: 8PSK – TX1****Lower Band Edge**

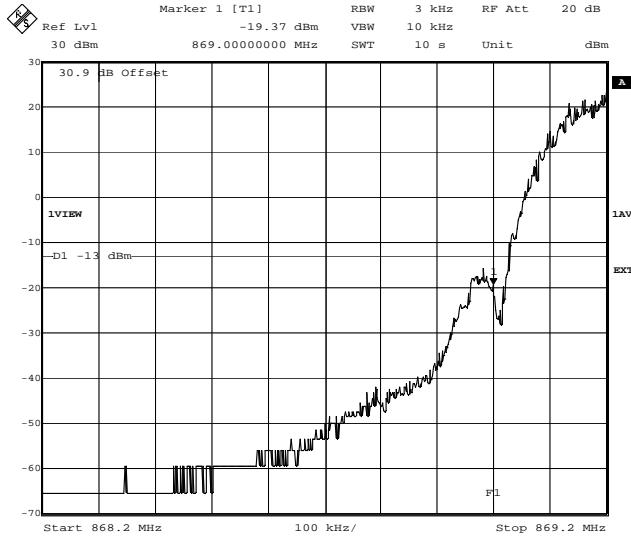
Frequency (MHz)	Output Power (dBm)	ARFCN	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
869.0	39.0	128	-19.3	-13.0	6.3	Complied
869.0	39.7	129	-42.0	-13.0	29.0	Complied

Upper Band Edge

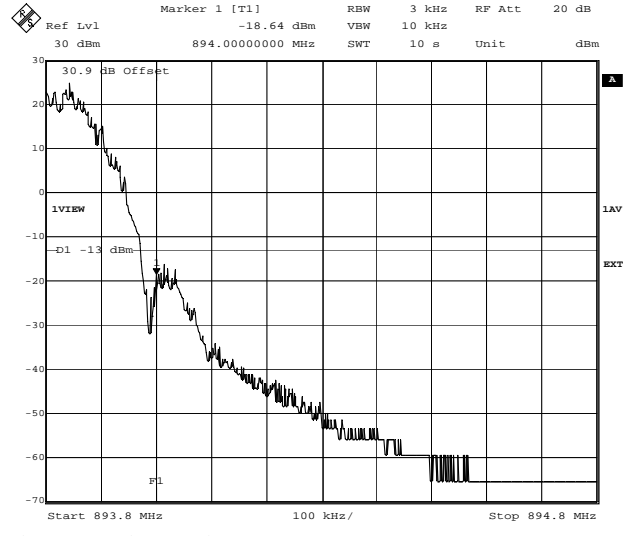
Frequency (MHz)	Output Power (dBm)	ARFCN	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
894.0	39.0	251	-18.6	-13.0	5.6	Complied
894.0	39.7	250	-43.2	-13.0	30.2	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

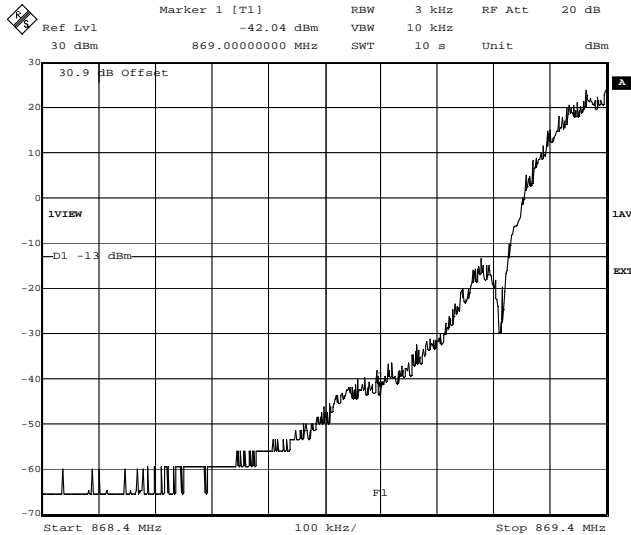
Transmitter Conducted Emissions at Band Edges: Section 2.1051/22.917 (Continued)



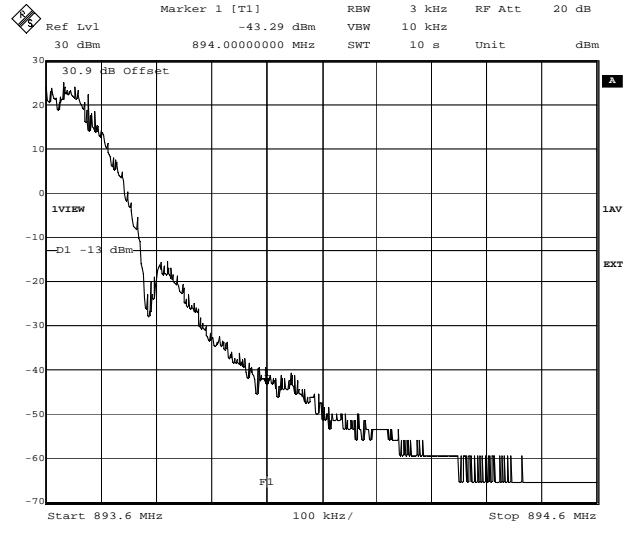
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. Band Edges. 8PSK TRX1. +39.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 16:24:00



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. Band Edges. 8PSK TRX1. +39.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 16:42:14



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129. Band Edges. 8PSK TRX1. +39.7dBm. FCC Part 22.917
 Date: 12.JAN.2005 16:30:40



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250. Band Edges. 8PSK TRX1. +39.7dBm. FCC Part 22.917
 Date: 12.JAN.2005 16:47:04

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

Transmitter Conducted Emissions at Band Edges: Section 2.1051/22.917 (Continued)**Results: GMSK – TX0****Lower Band Edge**

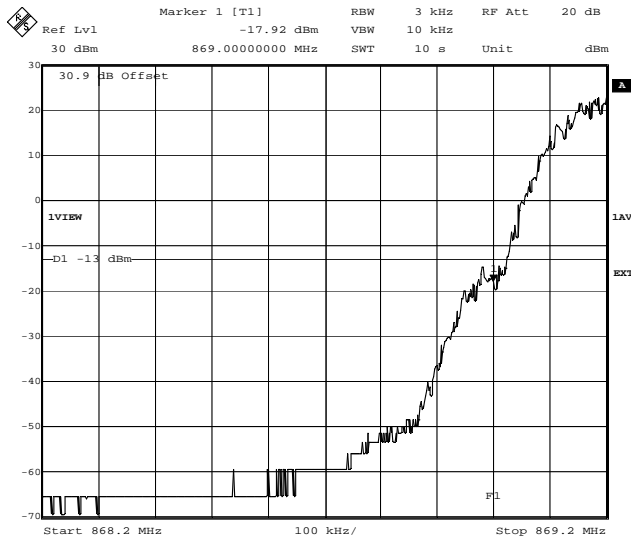
Frequency (MHz)	Output Power (dBm)	ARFCN	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
869.0	39.0	128	-17.9	-13.0	4.9	Complied
869.0	39.7	129	-47.5	-13.0	34.5	Complied

Upper Band Edge

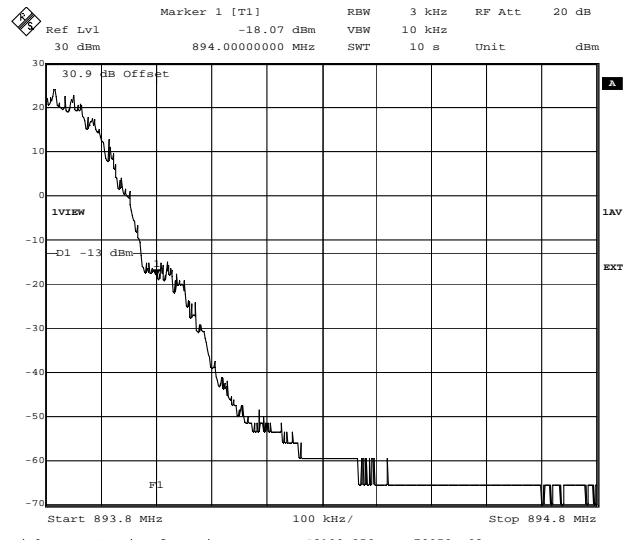
Frequency (MHz)	Output Power (dBm)	ARFCN	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
894.0	39.0	251	-18.0	-13.0	5.0	Complied
894.0	39.7	250	-45.5	-13.0	32.5	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

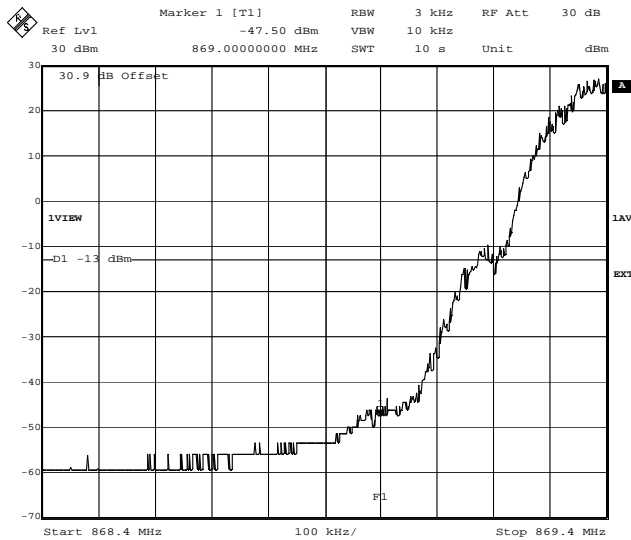
Transmitter Conducted Emissions at Band Edges: Section 2.1051/22.917 (Continued)



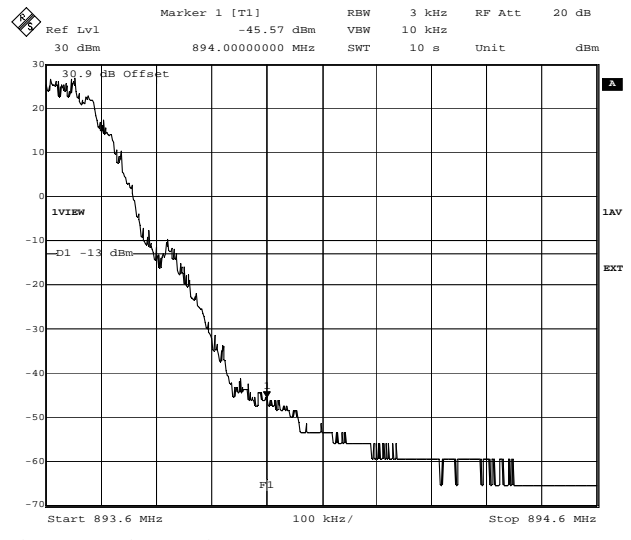
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. Band Edges. GMSK TRX0. +39.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 09:53:21



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. Band Edges. GMSK TRX0. +39.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 10:21:01



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129. Band Edges. GMSK TRX0. +43.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 09:59:30



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250. Band Edges. GMSK TRX0. +43.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 10:27:38

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

Transmitter Conducted Emissions at Band Edges: Section 2.1051/22.917 (Continued)**Results: GMSK – TX1****Lower Band Edge**

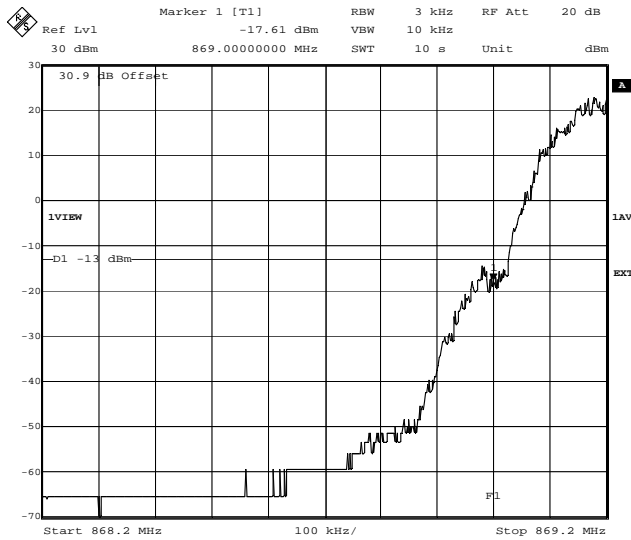
Frequency (MHz)	Output Power (dBm)	ARFCN	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
869.0	39.0	128	-17.6	-13.0	4.6	Complied
869.0	39.7	129	-47.5	-13.0	34.5	Complied

Upper Band Edge

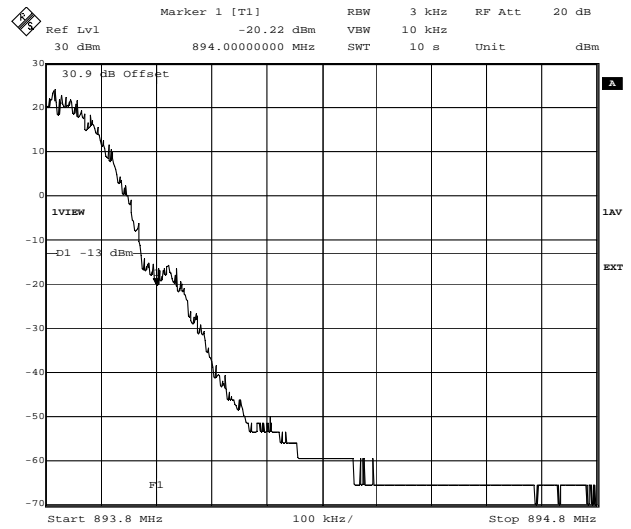
Frequency (MHz)	Output Power (dBm)	ARFCN	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
894.0	39.0	251	-20.2	-13.0	7.2	Complied
894.0	39.7	250	-46.4	-13.0	33.4	Complied

Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

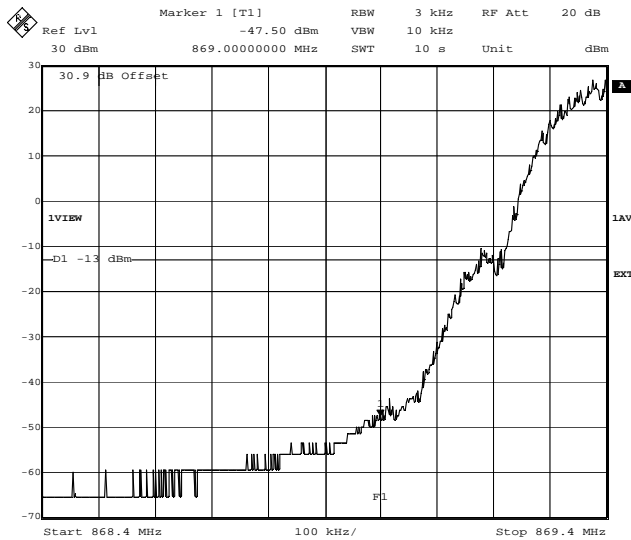
Transmitter Conducted Emissions at Band Edges: Section 2.1051/22.917 (Continued)



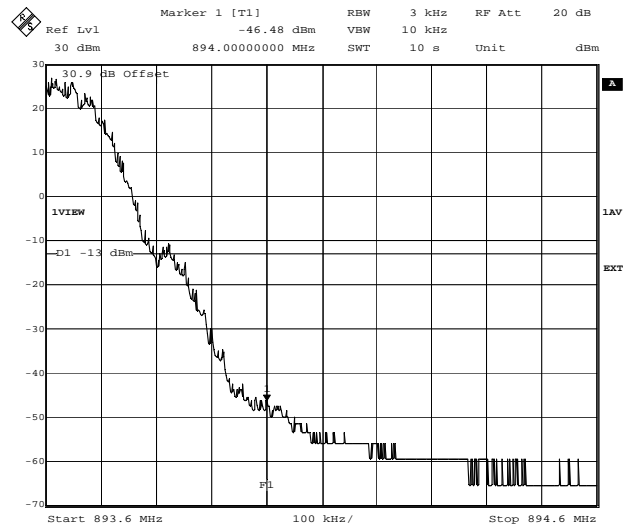
Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch128. Band Edges. GMSK TRX1. +39.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 10:37:42



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch251. Band Edges. GMSK TRX1. +39.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 10:54:59



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch129. Band Edges. GMSK TRX1. +43.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 10:42:08



Title: Testing for Ericsson AB. RBS2109 850MHz. 70958JD03.
 Comment A: Ch250. Band Edges. GMSK TRX1. +43.0dBm. FCC Part 22.917
 Date: 12.JAN.2005 11:00:05

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

7.10. Transmitter Radiated Emissions: Section 2.1053/22.917

Electric Field Strength Measurements of Spurious Emissions and Intermodulation Products: 30 MHz to 10 GHz

7.10.1. The EUT was configured for radiated emissions testing as described in Section 9 of this report.

7.10.2. Tests were performed to identify the field strength of spurious emissions.

7.10.3. Tests were also performed to identify the field strength of any Intermodulation responses present.

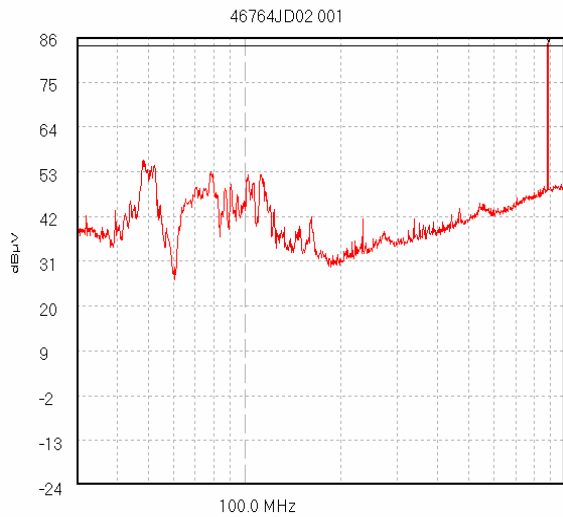
Results:

Excluding the fundamental emissions, all other indicated spurious and Intermodulation responses were at least 10 dB below the relevant limit; therefore no final measurements were performed.

Note: The limit line in all the following plots was set to 84 dB μ V/m which approximates very closely (within 0.4 dB) to the -13 dBm ERP limit below 1 GHz using the formula $P = (V/m \times d)^2 / 30$ which gives a conversion factor of -97.4. The limit line above 1 GHz on all the plots is 1.8 db tougher than that required to achieve the -13 dBm EIRP limit when using the appropriate conversion factor to convert fieldstrength to EIRP i.e. -95.2.

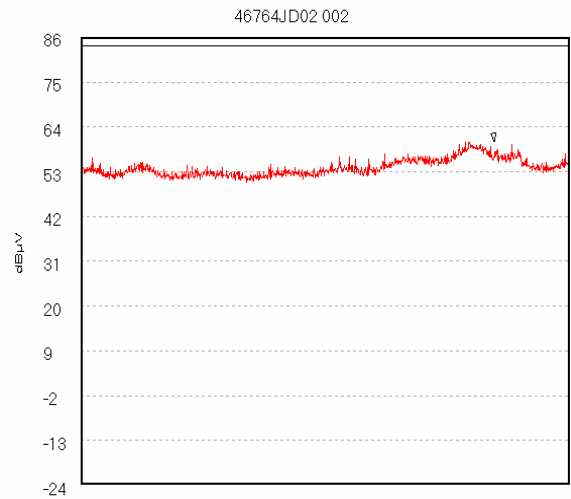
Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

Transmitter Radiated Emissions: EUT powered via -48V DC (Continued)



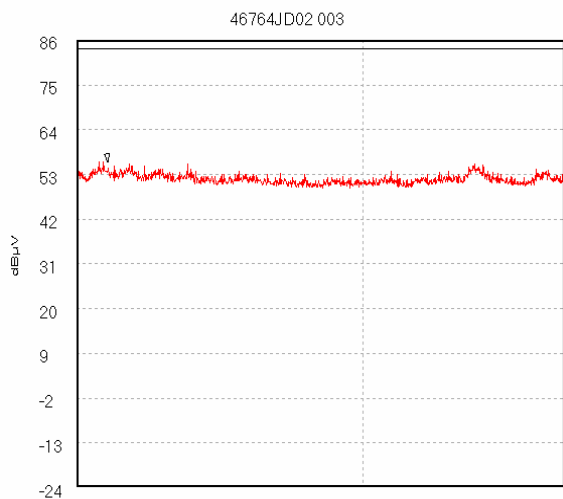
Trace 1
 84 dBµV

Start 30.0 MHz; Stop 1.0 GHz - Log Scale
 Ref 86 dBµV; Ref Offset 0.0 dB; 11 dB/div
 RBW 120.0 kHz; VBW 1.0 MHz; Att 6 dB; Swp 380.0 mS
 Peak 886.227776 MHz, 84.8 dBµV
 Display Line: 84 dBµV; ; Limit Test Failed
 11/11/2004 10:04:35 PM



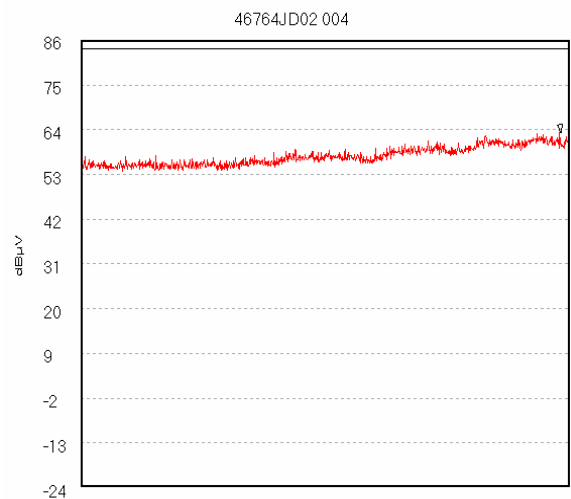
Trace 1
 84 dBµV

Start 1.0 GHz; Stop 2.0 GHz - Log Scale
 Ref 86 dBµV; Ref Offset 0.0 dB; 11 dB/div
 RBW 1000.0 kHz; VBW 3.0 MHz; Att 6 dB; Swp 5.0 S
 Peak 1.794444 GHz, 60.28 dBµV
 Display Line: 84 dBµV; ; Limit Test Passed
 11/11/2004 10:20:15 PM



Trace 1
 84 dBµV

Start 2.0 GHz; Stop 4.0 GHz - Log Scale
 Ref 86 dBµV; Ref Offset 0.0 dB; 11 dB/div
 RBW 1000.0 kHz; VBW 3.0 MHz; Att 6 dB; Swp 5.0 S
 Peak 2.088889 GHz, 56.09 dBµV
 Display Line: 84 dBµV; ; Limit Test Passed
 11/11/2004 10:37:27 PM



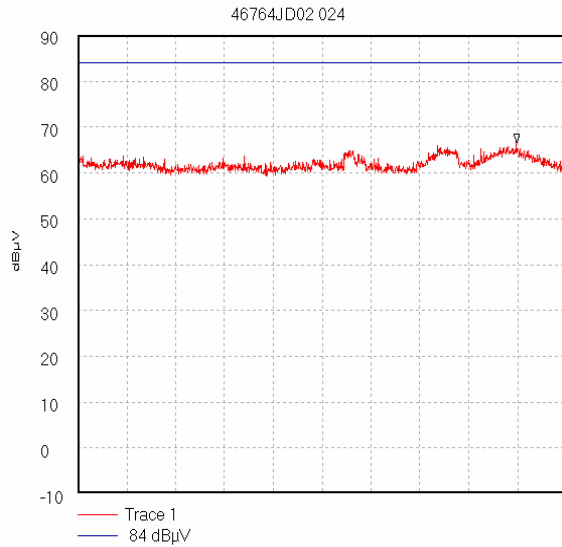
Trace 1
 84 dBµV

Start 4.0 GHz; Stop 5.0 GHz - Log Scale
 Ref 86 dBµV; Ref Offset 0.0 dB; 11 dB/div
 RBW 1000.0 kHz; VBW 3.0 MHz; Att 6 dB; Swp 5.0 S
 Peak 4.978889 GHz, 63.21 dBµV
 Display Line: 84 dBµV; ; Limit Test Passed
 11/11/2004 10:55:08 PM

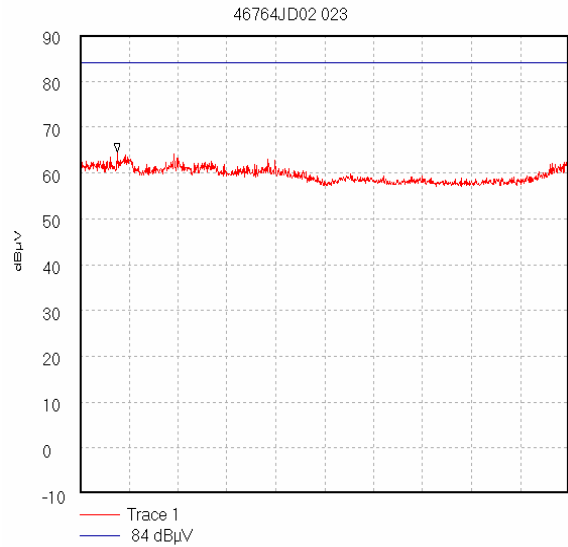
Note: Plot 46764JD02 001 shows an emission at circa 886.2 MHz. This is the fundamental transmission frequency of the middle channel i.e. it is the wanted emission and lies within the allowed operating frequency band.

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

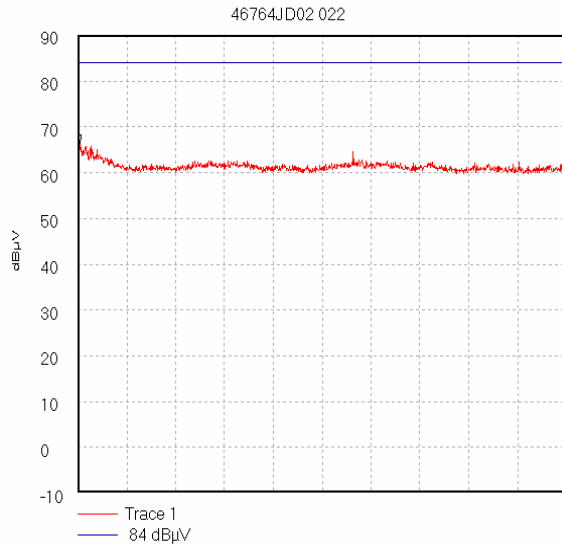
Transmitter Radiated Emissions: EUT powered via -48V DC (Continued)



Start 5.0 GHz; Stop 6.0 GHz
Ref 90 dBµV; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 3.0 MHz; Att 5 dB; Swp 5.0 S
Peak 5.899 GHz, 66.57 dBµV
Display Line: 84 dBµV;
Transducer Factors: A490
11/15/2004 11:02:40 PM



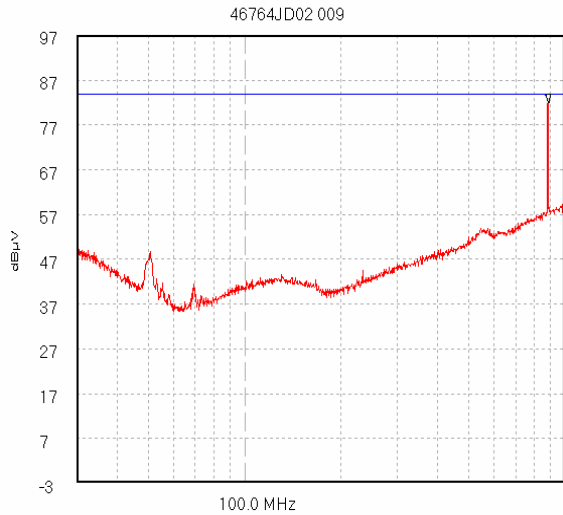
Start 6.0 GHz; Stop 8.0 GHz
Ref 90 dBµV; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 3.0 MHz; Att 5 dB; Swp 5.0 S
Peak 6.153 GHz, 64.46 dBµV
Display Line: 84 dBµV;
Transducer Factors: A490
11/15/2004 10:23:44 PM



Start 8.0 GHz; Stop 10.0 GHz
Ref 90 dBµV; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 3.0 MHz; Att 5 dB; Swp 5.0 S
Peak 8.007 GHz, 66.16 dBµV
Display Line: 84 dBµV;
Transducer Factors: A490
11/15/2004 9:55:54 PM

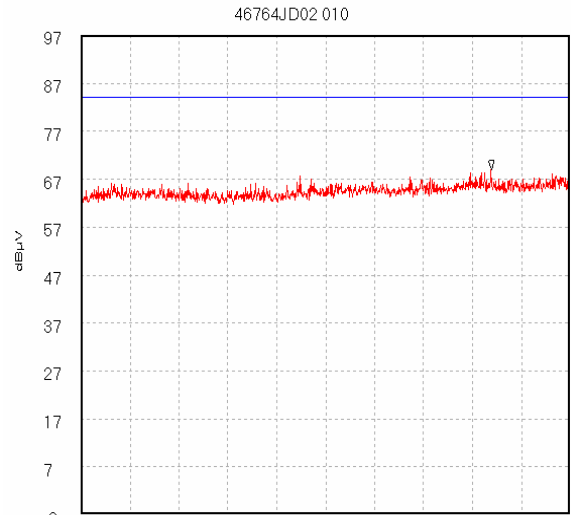
Test Of: Ericsson AB
 RBS 2109 850 MHz
 To: FCC Part 22: 2004

Transmitter Radiated Emissions: EUT powered via 115V AC (Continued)



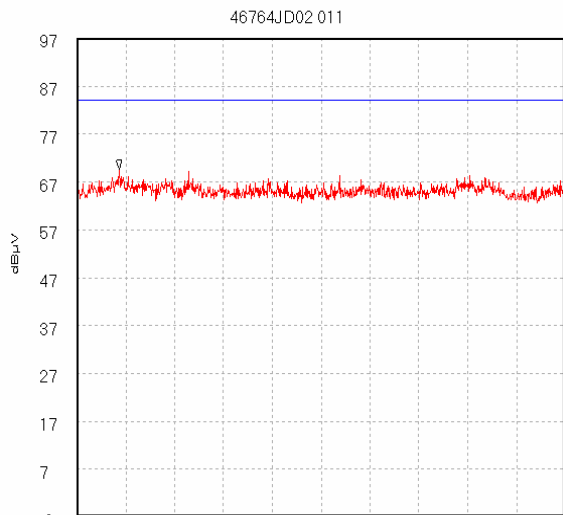
Trace 1
 84 dBµV

Start 30.0 MHz; Stop 1.0 GHz - Log Scale
 Ref 97 dBµV; Ref Offset 0.0 dB; 10 dB/div
 RBW 120.0 kHz; VBW 1.0 MHz; Att 20 dB; Swp 380.0 mS
 Peak 886.227776 MHz, 81.92 dBµV
 Display Line: 84 dBµV; ; Limit Test Passed
 11/12/2004 10:32:48 AM



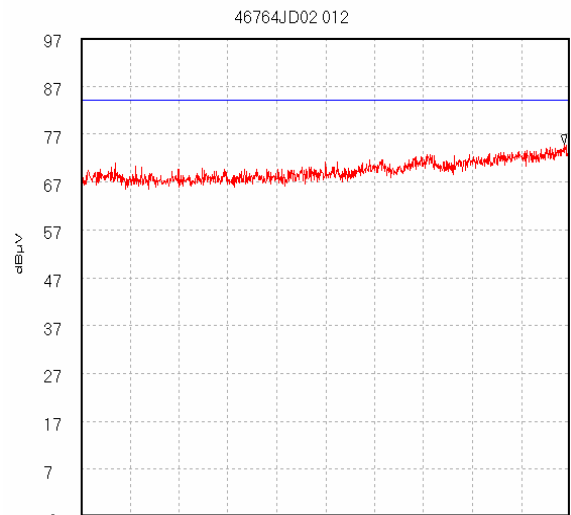
Trace 1
 84 dBµV

Start 1.0 GHz; Stop 2.0 GHz
 Ref 97 dBµV; Ref Offset 0.0 dB; 10 dB/div
 RBW 1000.0 kHz; VBW 3.0 MHz; Att 20 dB; Swp 20.0 mS
 Peak 1.838889 GHz, 69.05 dBµV
 Display Line: 84 dBµV; ; Limit Test Passed
 11/12/2004 11:05:19 AM



Trace 1
 84 dBµV

Start 2.0 GHz; Stop 4.0 GHz
 Ref 97 dBµV; Ref Offset 0.0 dB; 10 dB/div
 RBW 1000.0 kHz; VBW 3.0 MHz; Att 20 dB; Swp 20.0 mS
 Peak 2.173393 GHz, 69.58 dBµV
 Display Line: 84 dBµV; ; Limit Test Passed
 11/12/2004 11:36:19 AM



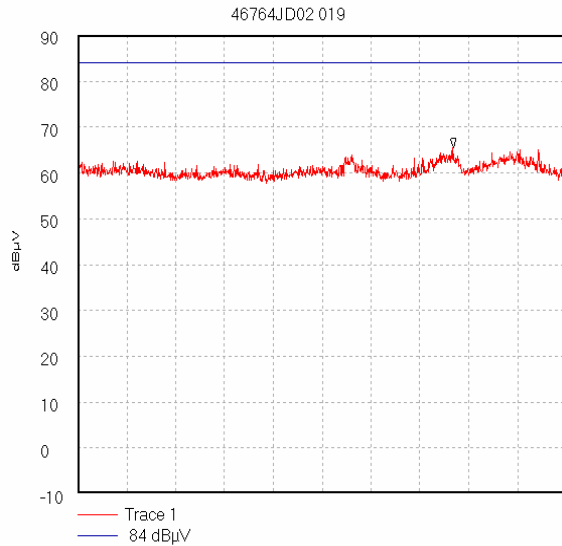
Trace 1
 84 dBµV

Start 4.0 GHz; Stop 5.0 GHz
 Ref 97 dBµV; Ref Offset 0.0 dB; 10 dB/div
 RBW 1000.0 kHz; VBW 3.0 MHz; Att 20 dB; Swp 20.0 mS
 Peak 4.987778 GHz, 74.84 dBµV
 Display Line: 84 dBµV; ; Limit Test Passed
 11/12/2004 11:59:34 AM

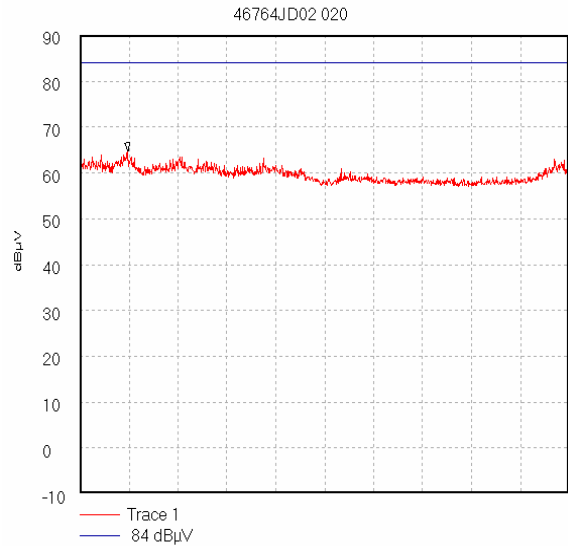
Note: Plot 46764JD02 009 shows an emission at circa 886.2 MHz. This is the fundamental transmission frequency of the middle channel i.e. it is the wanted emission and lies within the allowed operating frequency band.

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

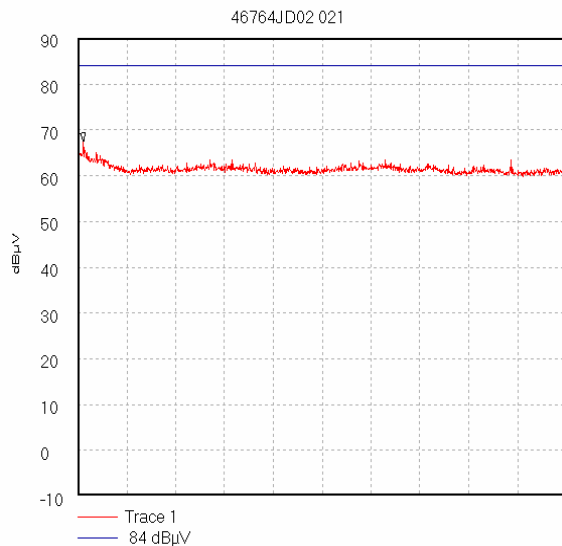
Transmitter Radiated Emissions: EUT powered via 115V AC (Continued)



Start 5.0 GHz; Stop 6.0 GHz
Ref 90 dBµV; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 3.0 MHz; Att 5 dB; Swp 5.0 S
Peak 5.769 GHz, 65.53 dBµV
Display Line: 84 dBµV;
Transducer Factors: A490
11/15/2004 8:38:37 PM



Start 6.0 GHz; Stop 8.0 GHz
Ref 90 dBµV; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 3.0 MHz; Att 5 dB; Swp 5.0 S
Peak 6.196 GHz, 64.69 dBµV
Display Line: 84 dBµV;
Transducer Factors: A490
11/15/2004 8:47:56 PM



Start 8.0 GHz; Stop 10.0 GHz
Ref 90 dBµV; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 3.0 MHz; Att 5 dB; Swp 5.0 S
Peak 8.022 GHz, 67.48 dBµV
Display Line: 84 dBµV;
Transducer Factors: A490
11/15/2004 9:10:54 PM

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

8. Measurement Uncertainty

8.1. No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

8.2. The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

8.3. The uncertainty of the result may need to be taken into account when interpreting the measurement results.

8.4. The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level	Calculated Uncertainty
Carrier Output Power	869 MHz to 894 MHz	95%	+/- 0.7 dB
Frequency Stability	869 MHz to 894 MHz	95%	+/- 5.0 Hz
Occupied Bandwidth	869 MHz to 894 MHz	95%	+/- 5.0 Hz
Modulation Characteristics	869 MHz to 894 MHz	95%	Phase error +/- 2.1° EVM (rms) <0.5% Origin Offset +/- 0.54 dB
Conducted Out of Band Emissions	9 kHz to 10 GHz	95%	+/- 3.5 dB
Conducted Emissions Inband Intermodulation	869 MHz to 894 MHz	95%	+/- 0.6 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	+/- 5.26 dB
Radiated Spurious Emissions	1 GHz to 26 GHz	95%	+/- 4.18 dB
Emissions at Band Edges	869 MHz to 894 MHz	95%	+/- 0.6 dB

8.5. The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

9. Measurement Methods

9.1. Conducted Carrier Output Power

Tests were performed to identify the maximum transmit power in accordance with FCC Part 2.1046 (a) for conducted power, with reference to TIA_EIA_603B.

Measurements were made at the ARP output connectors and testing was performed on bottom, middle and top channels using both 8PSK and GMSK modulation on TX0 and TX1.

The BTS output was connected to the antenna port of the EUT via cables and attenuators. The total loss of the path was measured and entered as a reference level offset into the spectrum analyser to correct for the losses.

The test equipment settings for conducted carrier output power measurements were as follows:

Receiver Function	Setting
Detector Type:	Peak
Mode:	Max Hold
Bandwidth:	1 MHz
Step Size:	Continuous sweep
Sweep Time:	Coupled

Test Of: Ericsson AB
RBS 2109 850 MHz
To: FCC Part 22: 2004

9.2. Frequency Stability

The EUT and spectrum analyser were configured for conducted antenna port measurements.

Measurements were performed to determine the frequency stability of the fundamental emission from the EUT, when subjected to variation of ambient temperature and variation of supply voltage.

The output was connected to a spectrum analyser, which was used in GSM BTS analyser mode, via cables and with 30 dB of attenuation in the path.

Testing was done at the ARP output connectors and performed for TX0 and TX1 on the Bottom and Top channels.

The ambient temperature was varied from -30°C to +50°C in 10°C steps.

The AC supply voltage was varied at nominal temperature and the frequency stability was measured from 85% to 115% of the nominal voltage value and at nominal voltage.

All transceivers were active and evenly spaced out in the frequency band to simulate worst case. The measured transceiver was set up to transmit on 1 timeslot and testing was performed over 50 bursts.

The ppm frequency error is calculated using the following formula taken from the TIA_EIA_603B document.

$$\text{ppm error} = ((MCF_{\text{MHz}} / ACF_{\text{MHz}}) - 1) * 1000000$$

where,

MCF_{MHz} is the measured carrier frequency in MHz

ACF_{MHz} is the assigned carrier frequency in MHz

9.2.1. The client has stated that the authorised frequency band is:

Lower Band Edge	869.0 MHz
Upper Band Edge	894.0 MHz

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RBS 2109 850 MHz
To: FCC Part 22: 2004

9.3. Occupied Bandwidth

The EUT was connected to a spectrum analyser enabled with an Occupied Bandwidth function.

Measurements were performed to determine the Occupied Bandwidth in accordance with FCC Part 2.1049. The Occupied Bandwidth was measured on the bottom, middle and top channels.

The Occupied Bandwidth was measured using the built in occupied bandwidth function of the Rohde and Schwarz FSIQ spectrum analyser. It was set to measure the bandwidth where 99% of the signal power was contained. The analyser settings were set as per those outlined in the FSIQ user manual for this measurement, i.e., $RBW \leq 1/20$ of occupied bandwidth. A value of 3 kHz was used.

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RBS 2109 850 MHz
To: FCC Part 22: 2004

9.4. Transmitter Conducted Emissions

Spurious emission measurements at the Antenna port were performed from 9 kHz to 10 times the highest EUT fundamental frequency as used in Section 7.7 of this report.

A spectrum analyser was connected to the antenna port of the EUT via cables, attenuators and filters. The total loss of the path was measured and entered as a reference level offset into the spectrum analyser to correct for the losses.

The limit in the standard states that emissions shall be attenuated by at least $43+10 \log(P)$ dB below the transmitter power (P), where (P) is the maximum measured fundamental power for the channel under test. This limit always reduces to -13 dBm as such, the limit line presented on the accompanying plots is set to -13 dBm.

The frequency band described above was investigated with the transmitter operating at full power on B+1 and T-1 channels for GMSK and 8PSK. Any spurious emissions observed were recorded and compared to the -13 dBm limit. The requirement for the emission is to be less than -13 dBm.

The test equipment settings for conducted antenna port measurements were as follows:

Receiver Function	Settings
Detector Type:	Peak
Mode:	Max Hold
Bandwidth:	1 MHz >1GHz
Bandwidth:	10 kHz <1GHz
Step Size:	Continuous sweep
Sweep Time:	Coupled

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To: FCC Part 22: 2004

9.5. Conducted Emissions Inband Intermodulation

Conducted Emissions Inband Intermodulation measurements were performed at the Antenna port.

A spectrum analyser was connected to the antenna port of the EUT via cables and attenuators. The total loss of the path was measured and entered as a reference level offset into the spectrum analyser to correct for the losses.

The base station was set up to transmit on two transmitters. First at bottom ARFCN and bottom ARFCN +25 and then on top ARFCN and top ARFCN -25, 5 MHz apart as this was stated by the client as being worst case for intermodulation purposes. However, as the band edge ARFCNs need to be reduced by 2 static power steps, i.e. 4 dB for GMSK modulation and 0.7dB for 8PSK modulation, the adjacent channels were measured at full output power instead. These being bottom ARFCN +1 and bottom ARFCN +26, top ARFCN -1 and top ARFCN -26 for GMSK and 8PSK.

The limit in the standard states that emissions shall be attenuated by at least $43+10 \log(P)$ dB below the transmitter power (P), where (P) is the maximum measured fundamental power for the channel under test. This limit always reduces to -13 dBm as such, the limit line presented on the accompanying plots is set to -13 dBm.

Any spurious emissions observed were recorded and compared to the -13 dBm limit. The requirement for the emission is to be less than -13 dBm.

The test equipment settings for conducted antenna port measurements were as follows:

Receiver Function:	Settings
Detector Type:	Peak
Mode:	Max Hold
Bandwidth:	10 kHz
Step Size:	Continuous sweep
Sweep Time:	1.75 s

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9.6. Transmitter Conducted Emissions at Band Edges

Testing was performed as per transmitter conducted emissions.

The limit in the standard states that emissions shall be attenuated by at least $43+10 \log(P)$ dB below the transmitter power (P), where (P) is the maximum measured fundamental power for the channel under test. This limit always reduces to -13 dBm as such, the limit line presented on the accompanying plots is set to -13 dBm.

The transmitter power (P) measured at the antenna terminals and used to calculate the out of band emission limit as stated above was measured as 42.7 dBm, using an average detector.

This unit must use a reduced transmit power by 2 static power steps, i.e. 4 dB to 39.0 dBm for GMSK modulation and 0.7 dB to 39.0 dBm for 8PSK modulation for the channels adjacent to each frequency band edge in order to show compliance.

Receiver Function:	Settings
Detector Type:	Average
Mode:	Max Hold
Resolution Bandwidth:	3kHz
Sweep Time:	10 s

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9.7. Transmitter Radiated Emissions

Radiated emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

Initial pre-scans covering the entire measurement band from the lowest generated frequency declared up to 10 times the highest fundamental frequency were performed within a screened chamber in order to identify frequencies on which the EUT was generating interference. This determined the frequencies from the EUT, which required further examination.

The radiated scans were performed at 3 m test distance with 1.5 m antenna height in an anechoic lined screened room in the frequency range of 30 MHz to 1 GHz. Between 1 GHz and 10 GHz a 1 m test distance was used. A limit line was set to the specifications limit. Levels within 20 dB of this limit were measured where possible, on occasion; the receiver noise floor came within the 20 dB boundary.

The limit stated in the standard states that emissions shall be attenuated by at least $43+10 \log(P)$ dB below the transmitter power (P), where (P) is the maximum measured fundamental power for the channel under test. The limit line was determined by radiating -13 dBm from a dipole located in place of the EUT and measuring the equivalent field strength at the 3 meters.

At the shorter test distance of 1 metre all results or limits were corrected using $20\log(D1/D2)$ where D1 and D2 are the respective test distances.

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Appendix 1. Test Equipment Used

Test Equipment Used for Testing at Ericsson AB

ID Number	Description	Manufacturer	Model Number	Serial Number
207268	Temperature and Humidity Indicator	Ahlbom	MT8636-HR6	H04070403
80025933	PC	Compaq	EVO	CZC3230BNX
A04547	Notch Filter 800-900MHz	Ericsson	LPY 108 16/1	1
A10474	Spectrum Analyzer	Rohde & Schwarz	FSIQ 26	838600/010
A19068	Vötsch	VCS 7250/S	Temperature chamber	58566031900010
A19314	Hewlett Packard	NTC195	Network Analyser Cables	50R49
A19315	Hewlett Packard	NTC195	Network Analyser Cables	50R50
A25756	RBS Master 2	Ericsson	LPY 107 1007/1	0000000166
EK8503	VXI Switch	Hewlett-Packard	HP 75000	3227A03962
GS4338	Hewlett Packard	6812A	AC Voltage Supply	3523A00639
Y02435	Signal Generator	Rohde & Schwarz	SME 03	843098/030
A001	Attenuator, 10dB, 100W	Weinschel Corp.	46-10-34	BC2561
A002	Attenuator, 10dB, 100W	Weinschel Corp.	48-10-33	BG0329
C001	Cable, 1.0m N-N-type	Suhner	Sucoflex 104E	1549/4E
C002	Cable, 1.0m SMA-N-type	Suhner	Sucoflex 104E	7694/4E
C003	Cable, 1.0m SMA-N-type	Suhner	Sucoflex 104E	1980/4E
C004	Cable, 3.0m N-N-type	Rosenberger	4A220BF030M70 70	RCL04H8376
C005	Cable, 1.5m N-N-type	Suhner	Sucoflex 104E	1847/4E
T001	Terminator, 50 ohm, 50W	Weinschel Corp.	M1426	BJ0249
T002	Terminator, 50 ohm, 50W	Weinschel Corp.	M1426	BL3577
XE4911	RF Modulation Box 900	Ericsson	LPY 107 614	1
YI2033	Hewlett Packard	8720D	Network Analyser	US36140166
YI2044	Hewlett Packard	11793A	Microwave Converter	3336A01928

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RFI Test Equipment Used for Testing at Ericsson AB

ID Number	Description	Manufacturer	Model Number	Serial Number
M1181	Temperature and Humidity Meter	Rohde & Schwarz	Thermo-Hygro	N/A
M517	Fluke	77 Series 11	Multimeter	63150434R

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Test Equipment Used for Testing at Basingstoke

RFI No.	Instrument	Manufacturer	Type No.	Serial No.
A253	WG 12 Microwave Horn	Flann Microwave	12240-20	128
A254	WG 14 Microwave Horn	Flann Microwave	14240-20	139
A255	WG 16 Microwave Horn	Flann Microwave	16240-20	519
C1121	Rosenberger	Rosenberger	FA210A103000 5050	1704 34844-02
C459	Cable	Rosenberger	UFA210A-1- 1182-704704	98H0303
M072	FSM Spectrum Analyser	Rohde & Schwarz	FSM	862 967/010 (RF) & 863 912/048 (Display)
M1178	RS	RS	212-124	N/A

NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.

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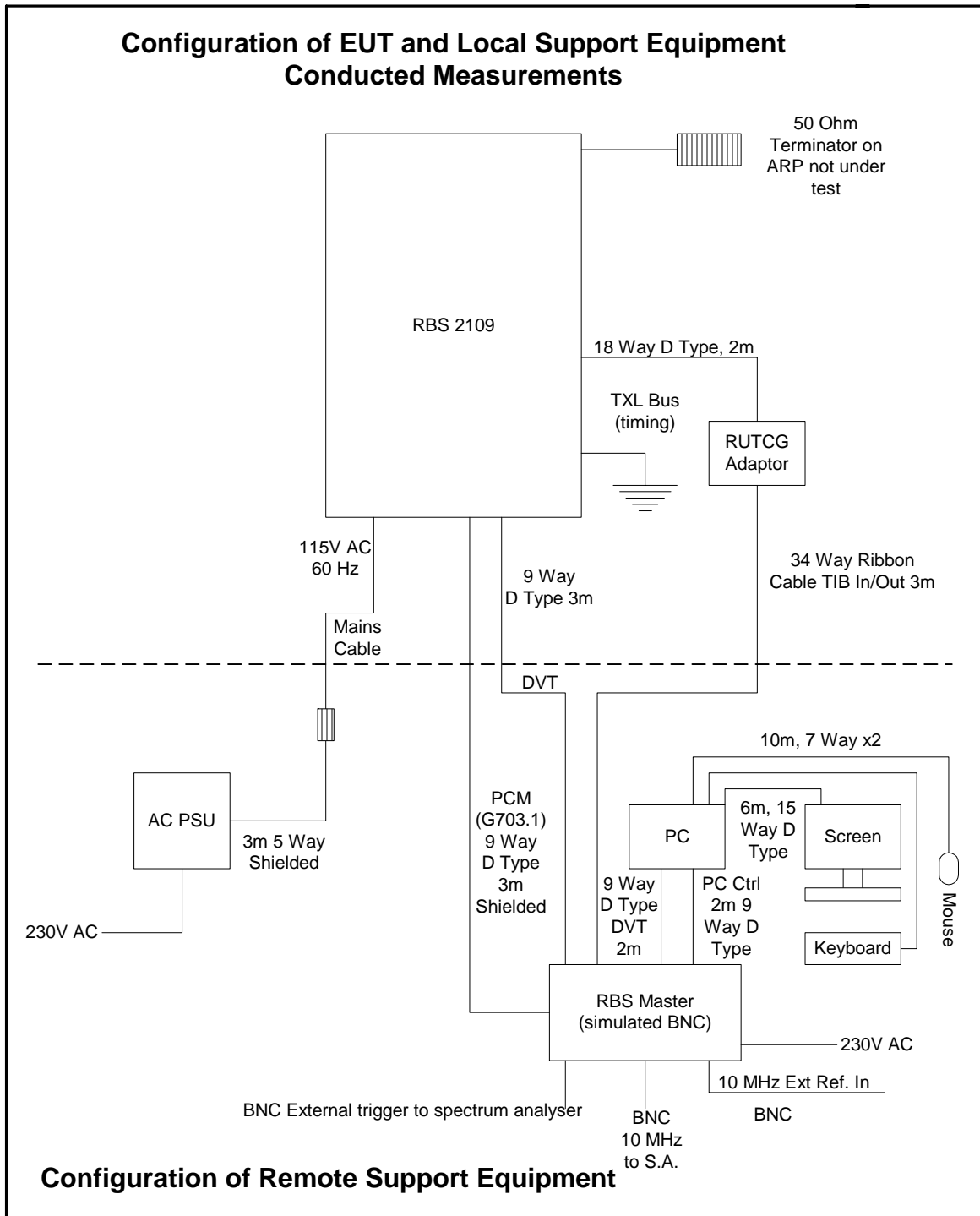
Appendix 2. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\70958JD03\001	Schematic diagram of the EUT, support equipment and interconnecting cables used for the conducted measurements in Lindholmen.
DRG\70958JD03\002	Schematic diagram of the EUT, support equipment and interconnecting cables used for testing in Basingstoke.

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DRG\70958JD03\002

