

AT4 wireless S.A.

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TEST REPORT

REFERENCE STANDARD:

FCC Rules and Regulations 47 CFR Part 15, Subpart B

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IC RSS-Gen Issue 2, June 2007

FCC Rules and Regulations 47 CFR Part 15, Subpart B: Limits and methods of measurements for radio frequency devices. Unintentional radiators

&

IC RSS-Gen Issue 2, June 2007: General Requirements and Information for the Certification of Radiocommunication Equipment.

NIE :	27229REM.005	
Approved by (name / position & signature)	Rafael López EMC Manager	Rafael López Martín <small>Firmado digitalmente por Rafael López Martín Fecha: 2009.08.14 14:43:44 +02'00'</small>
Elaboration date	2009-08-14	
Identification of item tested	Wireless Module	
Trademark	Ericsson	
Model and/or type reference	F3307	
Other identification of the product	FCC ID: VV7-MBMF33071 IC ID: 287AG-MBMF33071 Type number: KRD 131 16/01 Final HW version: R1 Final SW version: R1G05	
Features	QUAD BAND GSM/GPRS/EGPRS class 10, WCDMA Bands II/V, HSDPA Cat. 8, HSUPA Cat. 5	
Description	3.5G Wireless PCI Express Module	
Applicant	Ericsson AB	
Address..... :	Lindholmospiren 11 Gothenburg, Sweden SE-41756	
CIF/NIF/Passport..... :	N/A	
Contact person	Jonas Rinman	
Telephone / Fax	+46 10 717 5061 / +46 10 712 6033	
e-mail:	jonas.rinman@ericsson.com	

Test samples supplier	Ericsson AB
Address.....	Lindholmspiren 11 Gothenburg, Sweden SE-41756
CIF/NIF/Passport	N/A
Contact person:.....	Jonas Rinman
Telephone / Fax.....	+46 10 717 5061 / +46 10 712 6033
e-mail:	jonas.rinman@ericsson.com
Manufacturer	Ericsson AB
Address.....	Lindholmspiren 11 Gothenburg, Sweden SE-41756
CIF/NIF/Passport	N/A
Telephone / Fax.....	+46 10 717 5061 / +46 10 712 6033
Test method requested	
Standard	FCC Rules and Regulations 47 CFR Part 15 & IC RSS-Gen Issue 2, June 2007
Test procedure.....	PEEM001; PEEM002
Report template No.	FDT08_11
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Competences and guarantees

This certificate of conformity was issued in accordance with the decision N° 3/2000 of the Joint Committee established under the Agreement on Mutual Recognition between the European Community and the United States of America. By this decision, AT4 wireless can act as Conformity Assessment Body (CAB) on Electromagnetic Compatibility. This Certificate applies to the samples listed at technical reports.

This laboratory is designed by the Federal Communications Commission (ES0004)

AT4 wireless is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, AT4 wireless has a calibration and maintenance programme for its measurement equipment.

AT4 wireless guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at AT4 wireless at the time of performance of the test.

AT4 wireless is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of AT4 wireless.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the following AT4 wireless's internal documents:

1. PODT000: Procedure for the measure uncertainty calculation.

Usage of samples

Samples undergoing test have been selected by: Ericsson AB

Sample S/01 is composed of the following elements:

<u>Control N°</u>	<u>Description</u>	<u>Model</u>	<u>Serial N°</u>	<u>Date of reception</u>
27229/07	Wireless Module	F3307	Final Hw Version: R1 Final Sw Version: R1G05 FCC ID: VV7-MBMF33071 IC ID: 287AG-MBMF33071 Type number: KRD 131 16/01 IMEI: 004401700341494	2009-07-07

Auxiliary elements:

<u>Control N°</u>	<u>Description</u>	<u>Model</u>	<u>Serial N°</u>	<u>Date of reception</u>
28940/41	Cradle	---	---	2009-02-20
28940/56	Portable antenna	---	---	2009-02-20
28940/57	Portable support	---	---	2009-02-20

Samples S/01 has undergone the next test(s):

1. Continuous conducted emission, power leads:
 - Standard: FCC Rules and Regulations 47 CFR Part 15 / IC RSS-Gen Issue 2, June 2007
 - Method: FCC Rules and Regulations 47 CFR Part 15, Subpart B (Class B) / IC RSS-Gen Issue 2, June 2007
2. Radiated emission, electromagnetic field:
 - Standard: FCC Rules and Regulations 47 CFR Part 15 / IC RSS-Gen Issue 2, June 2007
 - Method: FCC Rules and Regulations 47 CFR Part 15, Subpart B (Class B) / IC RSS-Gen Issue 2, June 2007

Testing period

The performed test started on 2009-08-14 and finished on the same day.

The tests have been performed at AT4 wireless.

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 80 %
Shielding effectiveness	> 100 dB
Electric insulation	> 10 k Ω
Reference resistance to earth	< 0,5 Ω

In the semianechoic chamber (21 meters x 11 meters x 8 meters), the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 30 °C
Relative humidity	Min. = 45 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 k Ω
Reference resistance to earth	< 0,5 Ω
Normal site attenuation (NSA)	< \pm 4 dB at 10 m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
Field homogeneity	More than 75% of illuminated surface is between 0 and 6 dB (26 MHz to 1000 MHz).

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 30 °C
Relative humidity	Min. = 45 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 k Ω
Reference resistance to earth	< 0,5 Ω

Summary

Considering the results of the performed test according to standard **FCC Rules and Regulations 47 CFR Part 15, Subpart B / IC RSS-Gen Issue 2, June 2007**, the items under test are **IN COMPLIANCE** with the requested specifications specified in the standard.

NOTE: The results presented in this Test Report apply only to the particular item under test established in page 1 of this document, as presented for test on the date(s) shown in section, "USAGE OF SAMPLES, TESTING PERIOD AND ENVIRONMENTAL CONDITIONS".

Remarks and comments

The tests have been realized by the technical personnel: José Manuel Marquez González.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 150 kHz to 30 MHz is $I = \pm 3,60$ dB for quasi-peak measurements, $I = \pm 3,48$ dB for peak measurements ($k = 2$).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1 GHz is $I = \pm 4,57$ dB for quasi-peak measurements, $I = \pm 4,48$ dB for peak measurements ($k = 2$) and from 1 to 12,75 GHz is $I = \pm 3,43$ dB for average and peak measurements.

Testing verdicts

Not applicable: NA
 Pass.....: P
 Fail: F
 Not measured.....: NM

APPENDIX A

Test Result

APPENDIX A CONTENT:

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DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. Every operation mode takes a failure criteria for the immunity test that they were applying to it and a monitoring to guarantee performance of the same ones.

In the following table appears the operation modes used by the samples tested to that it refers the present test report.

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. IDLE 850 MHz. Power supply 3,3Vdc.
OM#02	EUT ON. IDLE 1900 MHz. Power supply 3,3Vdc.
OM#03	EUT ON. TCH 850 MHz. Power supply 3,3Vdc.
OM#04	EUT ON. TCH 1900 MHz. Power supply 3,3Vdc.

RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE.

LIMITS:	Product standard :	FCC RULES AND REGULATIONS 47 CFR PART 15, SUBPART B & IC RSS-GEN ISSUE 2, JUNE 2007.
	Test standard :	FCC RULES AND REGULATIONS 47 CFR PART 15, SUBPART B & IC RSS-GEN Issue 2, June 2007.

LIMITS OF INTERFERENCE CLASS B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B in the frequency range 30 MHz to 12,5 GHz, for Class B equipment, which is a transmitter in a band over 500 MHz, was:

Frequency range (MHz)	Limit for 3 m ($\mu\text{V/m}$)	Limit for 3 m ($\text{dB}\mu\text{V/m}$)
30 to 88	100	40
88 to 216	150	43,52
216 to 960	200	46,02
Above 960	500	53,98

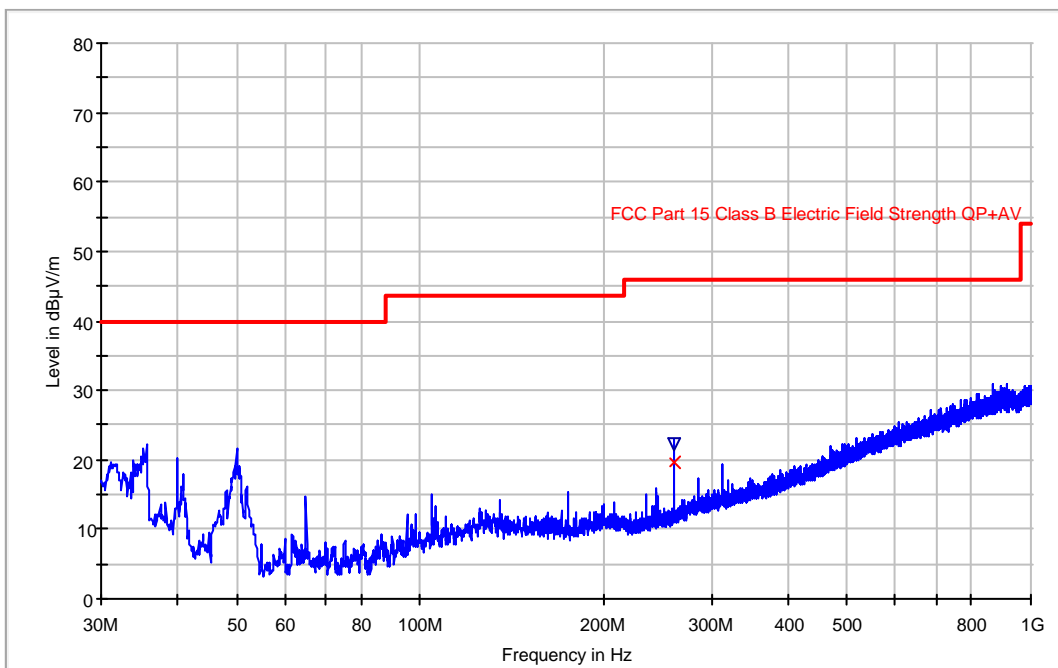
TESTED SAMPLES:	S/01
TESTED OPERATION MODES:	OM#01 & 02
TEST RESULTS :	CRmmnn: CR, Radiation Condition; mm: Sample number; nn: Operation mode, xx: Polarisation.

CRmmnn	Description	Result
CR0101	EUT ON. Idle 850 MHz. Range 30 - 1000 MHz.	P
CR0102	EUT ON. Idle 1900 MHz. Range 30 - 1000 MHz.	P
CR0101PH	EUT ON. Idle 850 MHz. Range 1 – 12.5 GHz. Horizontal polarisation	P
CR0101PV	EUT ON. Idle 850 MHz. Range 1 – 12.5 GHz. Vertical polarisation.	P
CR0102PH	EUT ON. Idle 1900 MHz. Range 1 – 12.5 GHz. Horizontal polarisation	P
CR0102PV	EUT ON. Idle 1900 MHz. Range 1 – 12.5 GHz. Vertical polarisation.	P

Radiated Emission: CR0101 (30MHz to 1GHz)

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#01
 Date: 2009-08-14 09:07
 Setup: EMI radiated
 Mode: EUT ON. Idle 850MHz.

FCC class B Bilog Hibrid



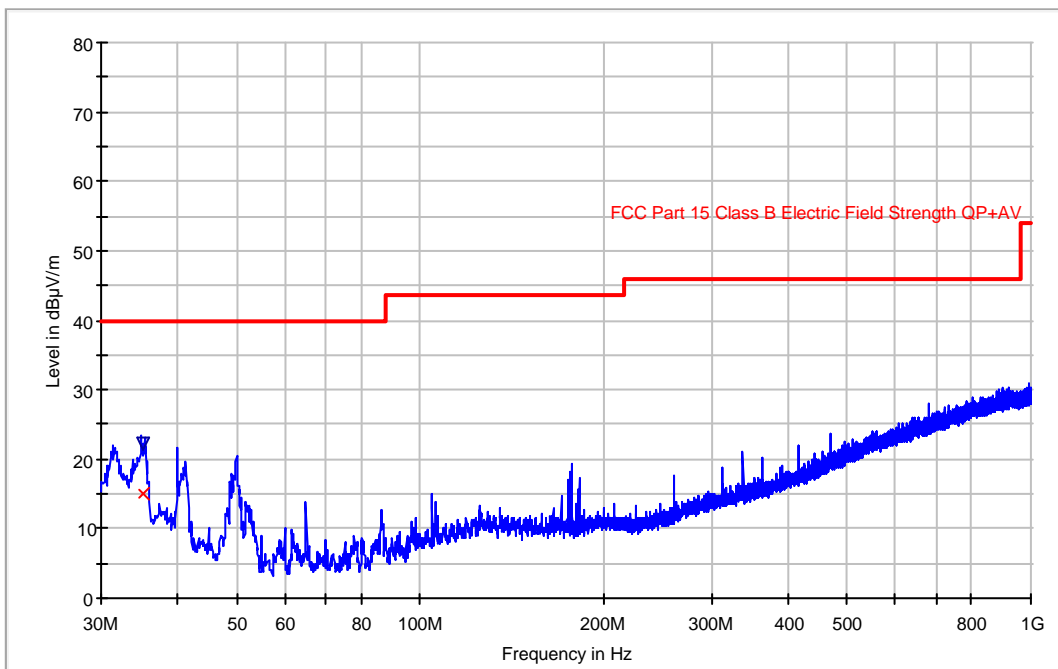
Maximized

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)
259.974950	19.7	22.1	114.00	H	6.0

Radiated Emission: CR0102 (30MHz to 1GHz)

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#02
 Date: 2009-08-14 09:55
 Setup: EMI radiated
 Mode: EUT ON. Idle 1900MHz.

FCC class B Bilog Hibrid



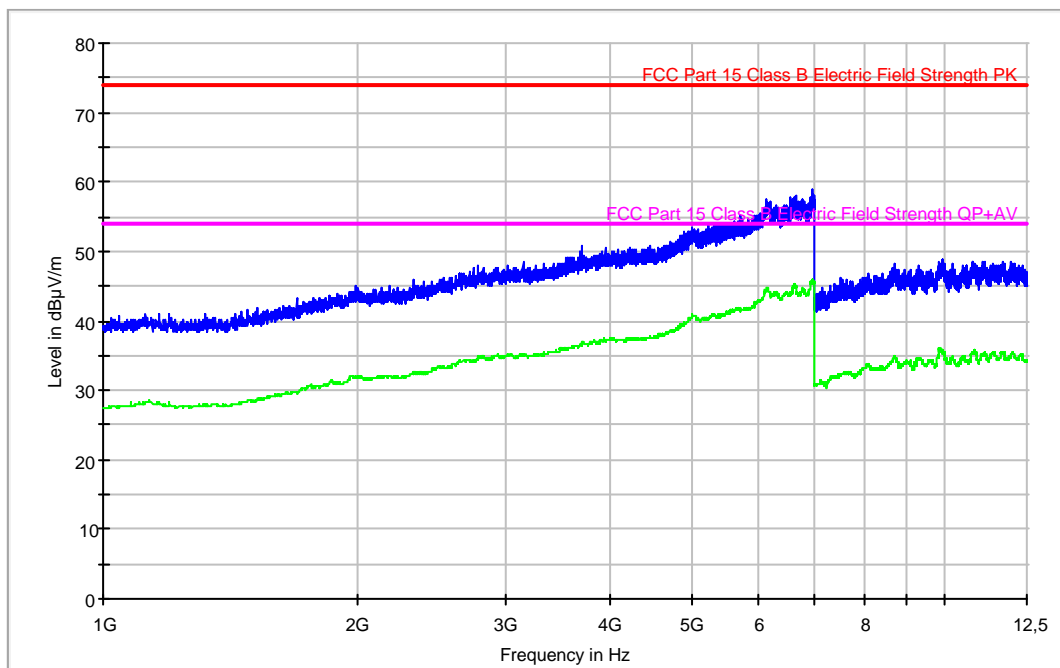
Maximized

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)
35.071343	15.0	22.3	104.00	V	100.0

Radiated Emission: CR0101 (1GHz to 12.5GHz Horizontal polarisation)

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#01
 Date: 2009-08-14 10:52
 Setup: EMI radiated
 Mode: EUT ON. IDLE 850MHz. Horizontal polarization.

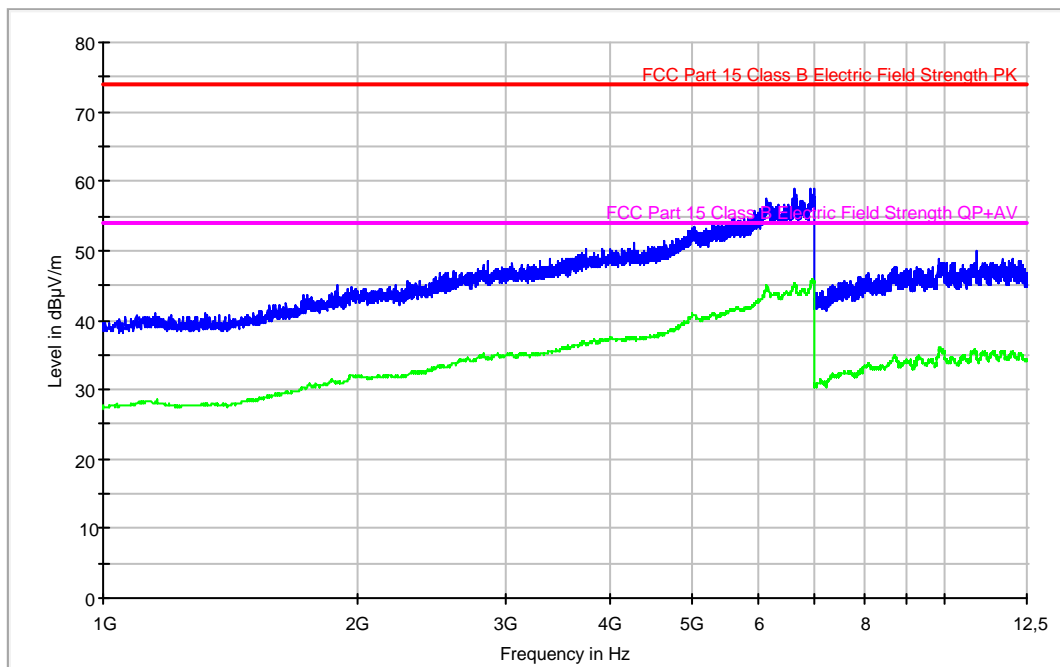
FCC 1-12.5GHz class B



Radiated Emission: CR0101 (1GHz to 12.5GHz Vertical polarisation)

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#01
 Date: 2009-08-14 10:56
 Setup: EMI radiated
 Mode: EUT ON. IDLE 850MHz. Vertical polarization.

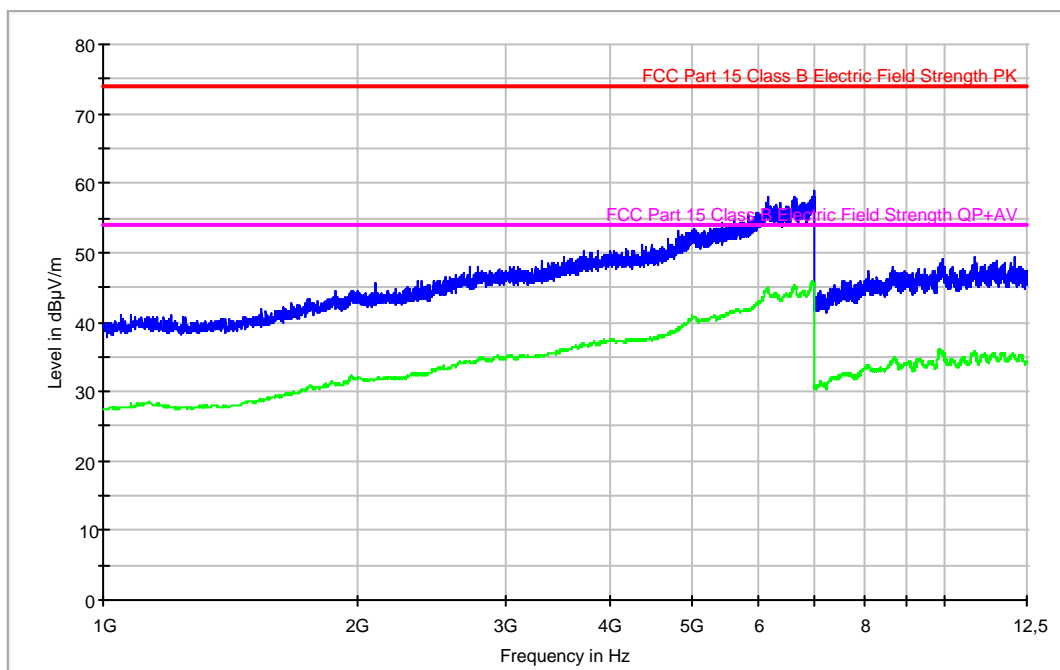
FCC 1-12.5GHz class B



Radiated Emission: CR0102 (1GHz to 12.5GHz Horizontal polarisation)

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#02
 Date: 2009-08-14 10:47
 Setup: EMI radiated
 Mode: EUT ON. IDLE 1900MHz. Horizontal polarization.

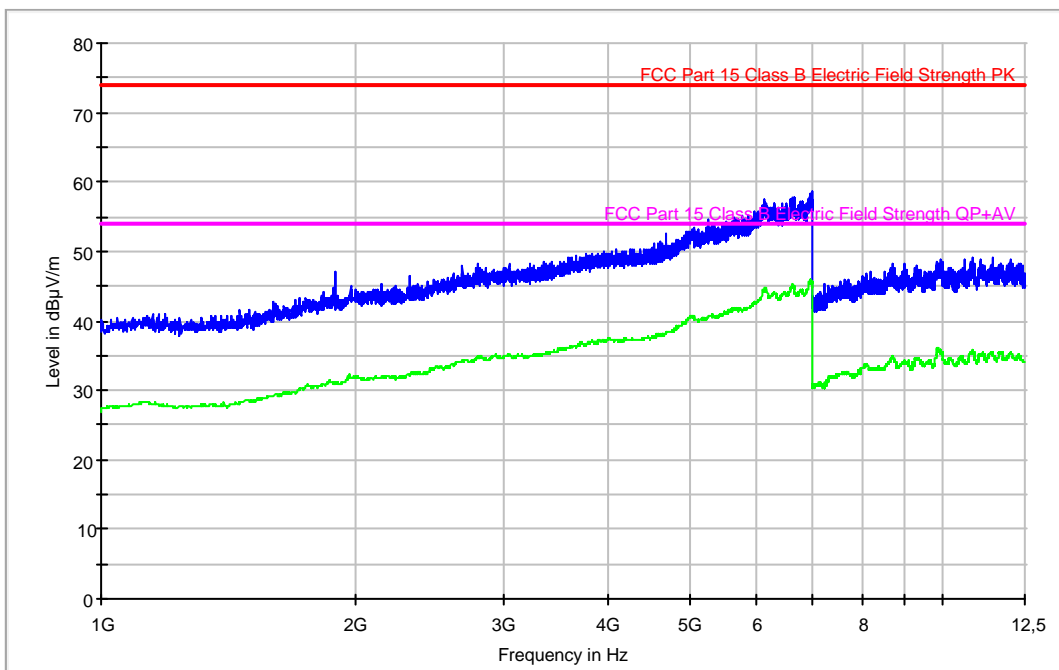
FCC 1-12.5GHz class B



Radiated Emission: CR0102 (1GHz to 12.5GHz Vertical polarisation)

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#02
 Date: 2009-08-14 10:42
 Setup: EMI radiated
 Mode: EUT ON. IDLE 1900MHz. Vertical polarization.

FCC 1-12.5GHz class B



CONTINUOUS CONDUCTED EMISSION ON POWER LEADS

LIMITS:	Product standard :	FCC RULES AND REGULATIONS 47 CFR PART 15, SUBPART B & IC RSS-GEN ISSUE 2, JUNE 2007.
	Test standard :	FCC RULES AND REGULATIONS 47 CFR PART 15, SUBPART B & IC RSS-GEN Issue 2, June 2007.

CLASS B

The applied limit for continuous conducted emissions in power leads, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B in the frequency range 0,15 to 30 MHz, for Class B equipment was:

Frequency range (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0,15 to 0,5	66-56	56-46
0,5 to 5	56	46
5 to 30	60	50

TESTED SAMPLES:	S/01
TESTED OPERATION MODES:	OM#01 to OM#04
TEST RESULTS :	CCmmnnhh: CC, Conducted Condition; mm: Sample number; nn: Operation mode; hh: wire

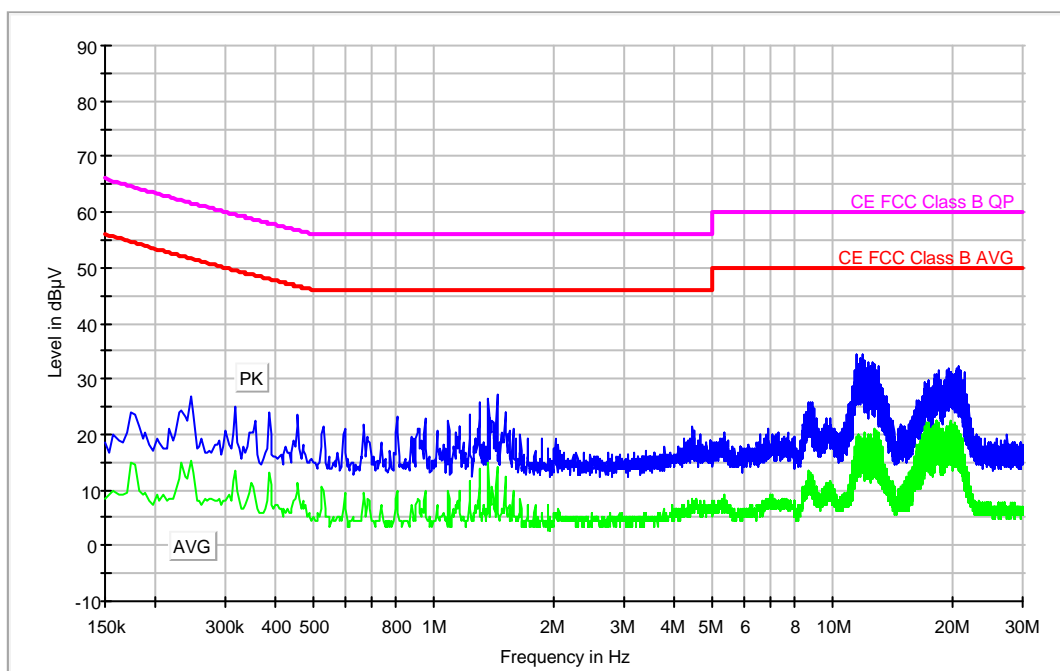
CCmmnnhh	Description	Result
CC0101PO	Positive wire noise	P
CC0101NE	Negative wire noise	P
CC0102PO	Positive wire noise	P
CC0102NE	Negative wire noise	P
CC0103PO	Positive wire noise	P
CC0103NE	Negative wire noise	P
CC0104PO	Positive wire noise	P
CC0104NE	Negative wire noise	P

Continuous Conducted emission : CC0101PO

Detector : Peak / Average / Cuasi-peak

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#01
 Date: 2009-08-14 12:25
 Setup: EMI conducted
 Mode: EUT ON. Idle 850MHz. Positive noise.

EC FCC Class B ESIB26 CC



Subrange Maxima

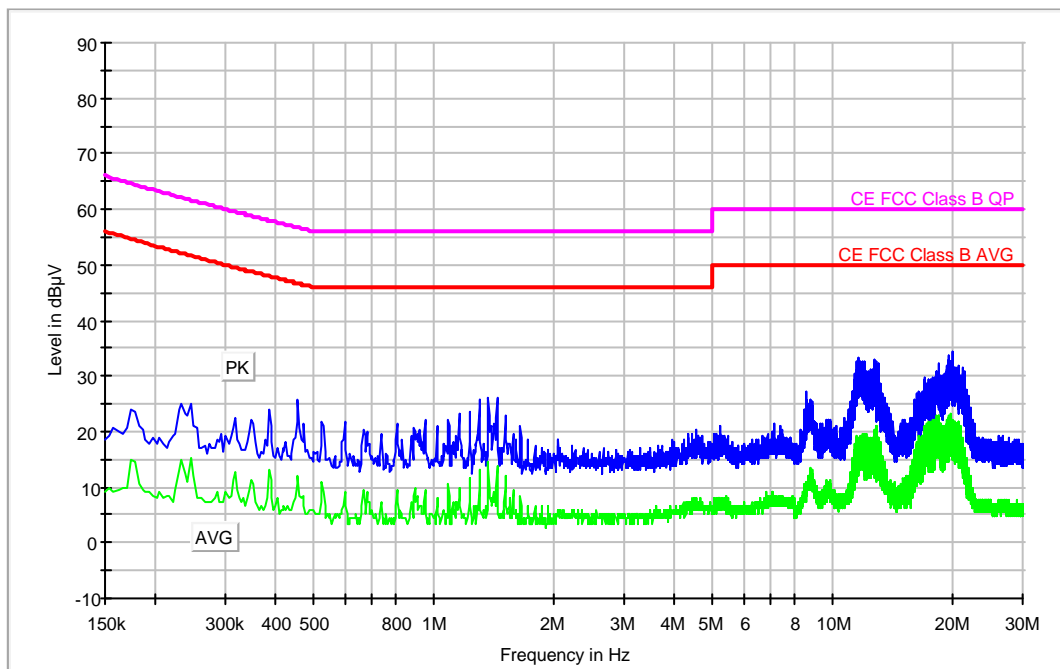
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.174000	24.0	14.8
0.246000	26.8	15.3
0.386000	23.8	13.0
0.810000	23.3	10.0
1.302000	25.7	13.7
1.442000	27.3	14.3
3.166000	16.7	4.4
4.470000	21.2	8.0
6.902000	21.1	8.6
11.898000	34.5	19.2
12.602000	32.9	19.4
20.806000	32.3	20.5

Continuous Conducted emission : CC0101NE

Detector : Peak / Average / Cuasi-peak

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#01
 Date: 2009-08-14 12:21
 Setup: EMI conducted
 Mode: EUT ON. Idle 850MHz. Negative noise.

EC FCC Class B ESIB26 CC



Subrange Maxima

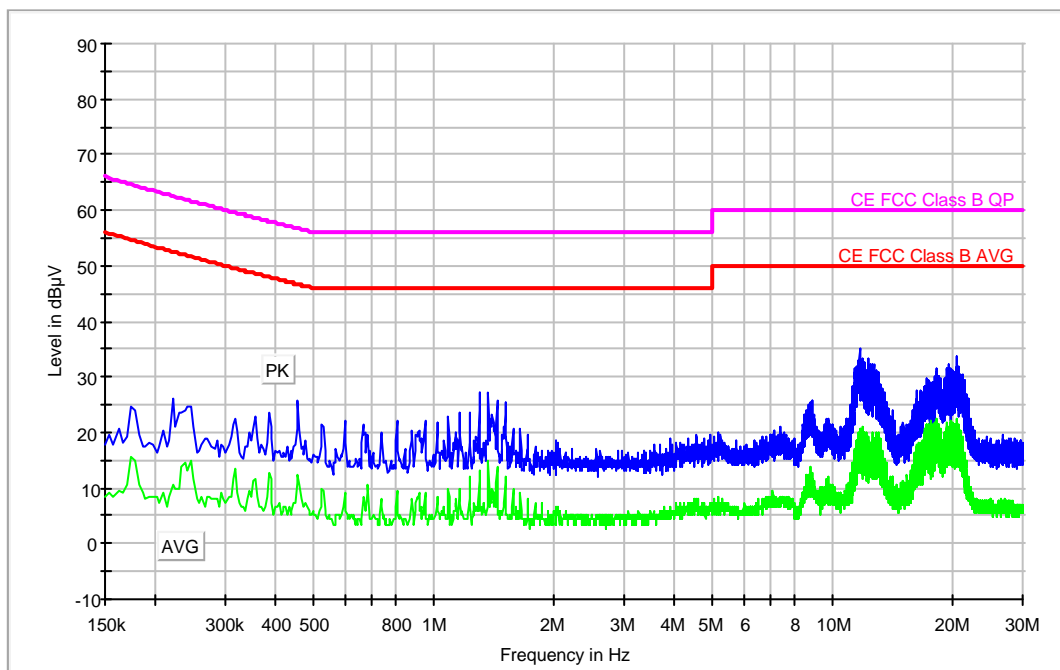
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.230000	24.1	13.0
0.234000	25.2	14.8
0.458000	25.9	12.0
0.598000	21.7	9.0
1.302000	25.6	13.1
1.370000	26.2	14.5
2.222000	17.3	5.3
4.574000	20.2	7.4
7.114000	21.5	8.6
11.622000	33.2	18.3
12.746000	32.9	20.3
20.034000	34.5	22.1

Continuous Conducted emission : CC0102PO

Detector : Peak / Average / Cuasi-peak

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#02
 Date: 2009-08-14 12:51
 Setup: EMI conducted
 Mode: EUT ON. Idle 1900MHz. Positive noise.

EC FCC Class B ESIB26 CC



Subrange Maxima

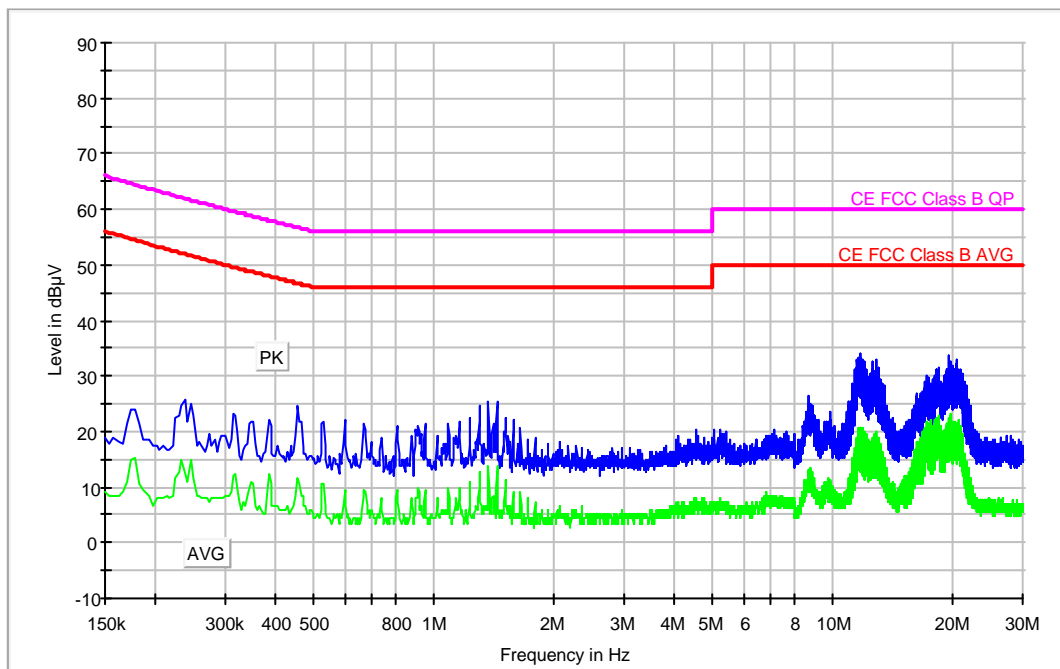
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.222000	26.0	10.4
0.242000	24.8	13.0
0.458000	25.9	12.4
0.598000	22.3	9.0
1.302000	27.3	13.1
1.374000	27.3	15.1
2.218000	17.1	5.3
4.934000	19.7	6.7
7.378000	20.9	8.0
11.686000	35.2	19.0
12.674000	32.4	18.4
20.382000	33.5	20.1

Continuous Conducted emission : CC0102NE

Detector : Peak / Average / Cuasi-peak

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#02
 Date: 2009-08-14 12:47
 Setup: EMI conducted
 Mode: EUT ON. Idle 1900MHz. Negative noise.

EC FCC Class B ESIB26 CC



Subrange Maxima

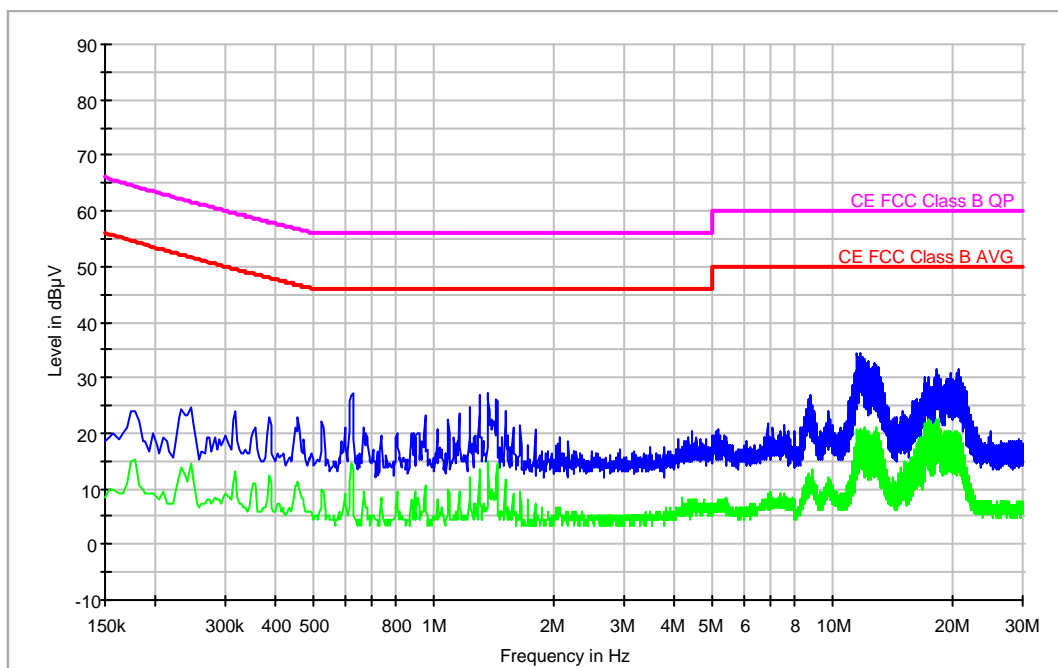
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.178000	24.1	15.3
0.238000	25.7	12.4
0.458000	24.5	11.7
0.598000	22.3	9.5
1.302000	24.8	12.7
1.374000	25.5	13.7
2.286000	17.3	5.3
5.038000	20.2	6.7
7.182000	20.3	8.0
11.758000	34.1	20.8
12.954000	32.9	18.7
19.542000	33.5	21.3

Continuous Conducted emission : CC0103PO

Detector : Peak / Average / Cuasi-peak

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#03
 Date: 2009-08-14 12:17
 Setup: EMI conducted
 Mode: EUT ON. TCH 850MHz. Positive noise.

EC FCC Class B ESIB26 CC



Subrange Maxima

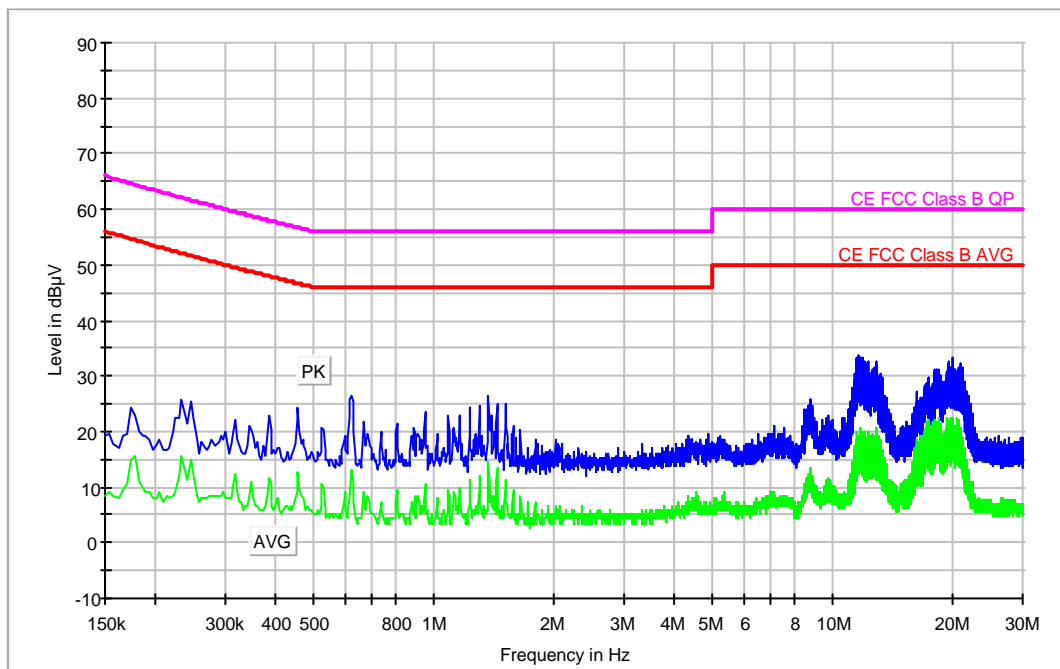
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.178000	24.0	15.3
0.246000	24.8	14.5
0.458000	23.0	11.3
0.626000	27.3	13.4
1.302000	26.9	13.4
1.370000	27.1	14.8
2.182000	18.4	5.3
5.090000	20.2	6.1
6.866000	21.9	6.8
11.550000	34.5	20.8
12.678000	32.5	19.5
20.670000	31.4	20.1

Continuous Conducted emission : CC0103NE

Detector : Peak / Average / Cuasi-peak

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#03
 Date: 2009-08-14 12:19
 Setup: EMI conducted
 Mode: EUT ON. TCH 850MHz. Negative noise.

EC FCC Class B ESIB26 CC



Subrange Maxima

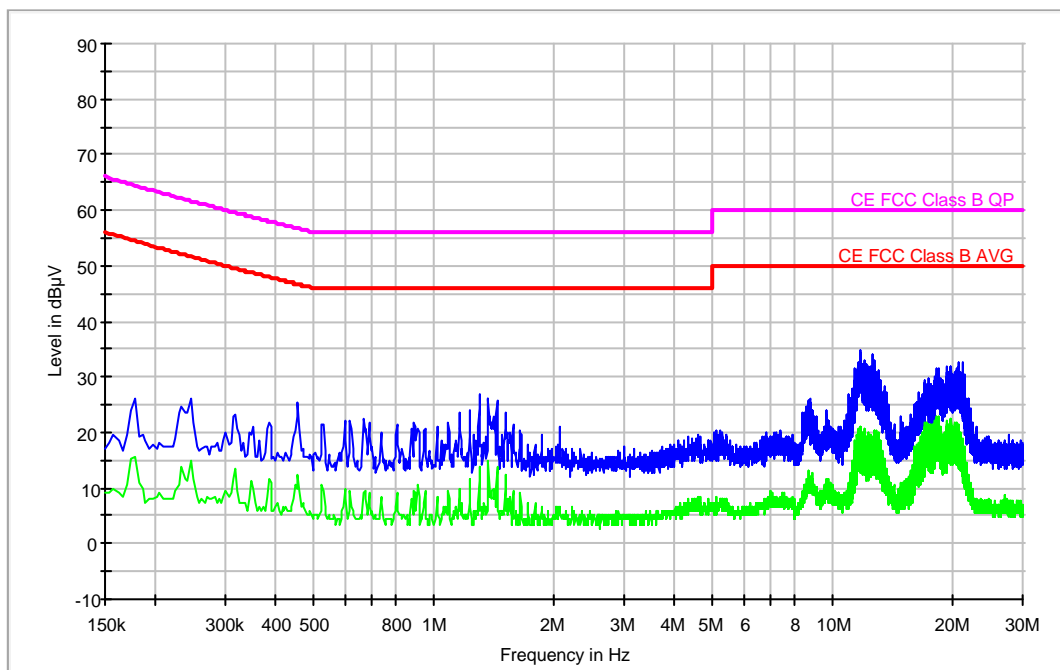
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.174000	24.4	15.1
0.234000	25.9	15.8
0.458000	24.2	12.7
0.622000	26.5	13.0
1.302000	24.8	12.0
1.374000	26.4	14.5
2.310000	17.1	4.4
4.862000	19.4	6.7
7.178000	21.0	7.4
11.622000	33.7	19.2
12.958000	32.7	20.0
20.002000	33.4	18.3

Continuous Conducted emission : CC0104PO

Detector : Peak / Average / Cuasi-peak

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#04
 Date: 2009-08-14 12:42
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Positive noise.

EC FCC Class B ESIB26 CC



Subrange Maxima

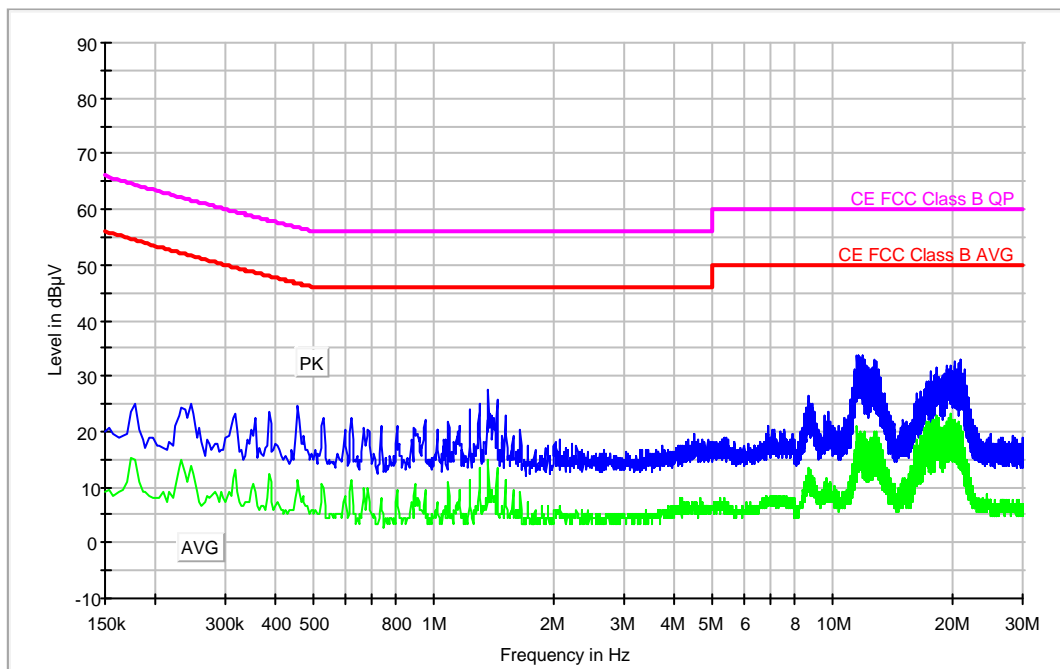
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.178000	26.1	15.5
0.246000	26.2	15.0
0.458000	25.3	12.4
0.670000	22.5	9.0
1.302000	26.8	14.0
1.370000	26.2	14.5
2.994000	17.3	4.4
5.106000	20.5	7.4
7.426000	20.5	8.0
11.766000	34.8	17.0
12.610000	34.0	18.4
21.162000	32.5	18.6

Continuous Conducted emission : CC0104NE

Detector : Peak / Average / Cuasi-peak

Project: 27229REM.005
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#04
 Date: 2009-08-14 12:45
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Negative noise.

EC FCC Class B ESIB26 CC



Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.178000	24.9	15.1
0.246000	25.2	14.0
0.458000	24.8	11.3
0.622000	22.4	11.3
1.302000	24.9	13.4
1.374000	27.7	14.3
2.218000	17.7	5.3
4.502000	19.4	7.4
6.938000	21.1	8.0
11.622000	33.8	19.2
12.674000	33.0	18.9
20.942000	32.8	16.0