FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-593_12.doc	**Date of Report:**	6-oct-2009
Number of pages:	9	**Customer's Contact person:**	Jyrki Juvani
Testing laboratory:	TCC Nokia Beijing Laboratory Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550	**Customer:**	Nokia Corporation P.O. Box 50 Elektroniikkatie 10 FIN-90571 OULU, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 47222
FCC listing no.: **IC recognition no.:**	975940 661AH-1		
Tested devices/ accessories:	**Phone RM-593 / Battery BL-5J / AC-charger AC-8E / Headset HS-125 / Data cable CA-101D / Laptop IBM-T40**		
FCC ID:	LJPRM-593	**IC:**	661E-RM593
Supplement reports:	-		
Testing has been carried out in accordance with:	**CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), ICES-003, CISPR 22 and IC standards RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009), RSS-139 (Issue 1, February 2008) and RSS-210 (Issue 7, June 2007). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".**		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	**The EUT complies with the requirements in respect of all parameters subject to the test.** The test results relate only to devices specified in this document.		
Date and signature for the contents:	Digitally signed by Ruben Hansen DN: cn=Ruben Hansen, o=Nokia, ou=CertMT, email=ruben.hansen@nokia.com, c=DK Date: 2009.10.06 13:40:59 +02'00'		

Ruben Hansen, System Manager

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	10-Jul-2009
Testing completed	22-Jul-2009
The customer's contact person	Jyrki Juvani
Test Plan referred to	T:\Projects\RM-588\TestPlan_RS\RS_Test_plan_RM-588.xls
Notes	-
Document name	FCC15B_RM-593_12.doc

1.1. EUT and Accessory Information

The EUT is a 6-band (GSM850/900/1800/1900 and WCDMA Band I/VIII) mobile phone with GPRS, EGPRS and Bluetooth. GSM bands are tested in idle mode. Bluetooth is tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-588	004401106532365	0301	-	20.0.048	51348
Battery	BL-5J	462040917 6J20111120;0670573	-	-	-	51352
AC-charger	AC-8E	399791752 7070304595;0675387	-	-	-	51353
Headset	HS-125	069432384 63I3104890	-	-	-	51355
Data cable	CA-101D	07303688522X1214608		-	-	51357
Laptop	IBM-T40	99FMPGT	-	-	-	51044

1.2. Summary of Test Results

GSM 850:

Section in CFR 47	Section in ICES-003 (RSS-132)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	PASSED
15.109, a	5.5 (4.6)	Radiated emissions	-

Bluetooth:

Section in CFR 47	Section in ICES-003	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5	Radiated emissions	PASSED

PASSED	The EUT complies with the essential requirements in the standard.
FAILED	The EUT does not comply with the essential requirements in the standard.
NP	The test was not performed by the TCC Nokia Beijing Laboratory.

The test results of LJPRM-588 are re-used for certification of the LJPRM-593. The table(s) above indicates the results, which will be re-used.

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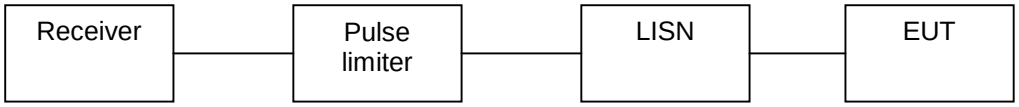
2. AC powerline conducted emissions

(FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-588, DUT51348
Accessories with DUT numbers	BL-5J, DUT51352; AC-8E, DUT51353; HS-125, DUT51355; CA-101D, DUT51357; IBM-T40, DUT51044
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Continuous data transferring between phone and PC was active during GSM850 measurement.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 59 / 99.6
Date of measurements	22-Jul-2009
Measured by	Zou Ming

2.1. Test setup



2.2. Test method and limit

The measurement is made according to ANSI C63.4-2003 as follows:

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$$U\ [dB\mu V] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

CISPR 22 Class B limits

Frequency range [MHz]	Quasi peak limit [dBµV]	Average limit [dBµV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

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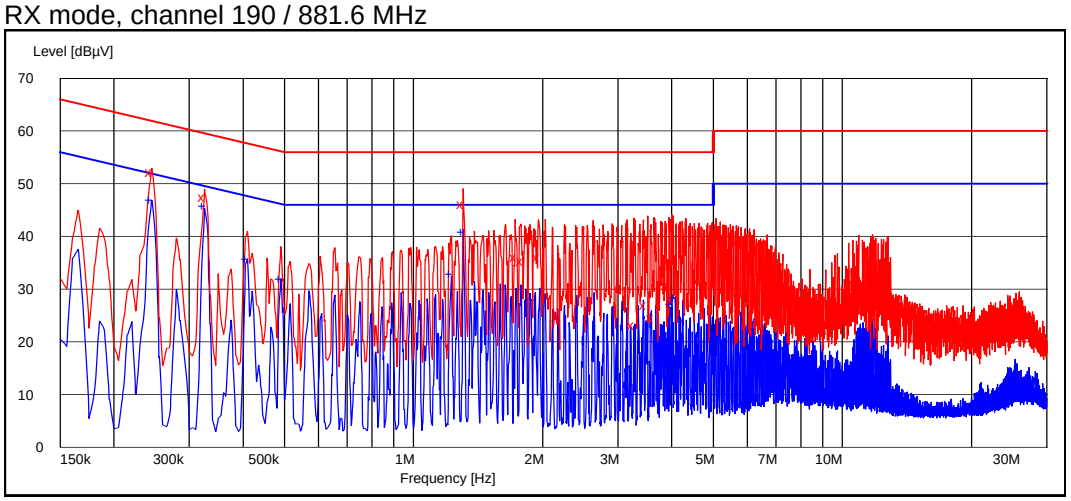
2.3. GSM 850 Test results

RX mode, channel 190 / 881.6 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.245000	52.30	N	PASSED
0.325000	47.40	N	PASSED
1.305000	46.20	N	PASSED
1.735000	36.10	N	PASSED
1.795000	35.30	N	PASSED
1.960000	36.00	L1	PASSED
3.265000	23.10	L1	PASSED
3.475000	26.90	L1	PASSED
3.615000	24.60	N	PASSED
3.920000	30.80	N	PASSED
4.000000	34.50	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.245000	46.90	N	PASSED
0.325000	45.70	N	PASSED
0.410000	35.80	N	PASSED
0.490000	31.90	N	PASSED
1.225000	32.80	N	PASSED
1.305000	40.90	N	PASSED
4.000000	27.10	L1	PASSED
4.080000	28.30	L1	PASSED

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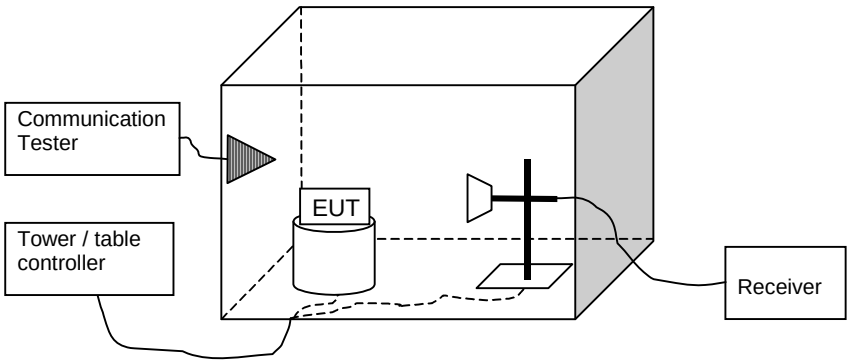
3. Radiated emissions

(FCC §15.109, ICES-003 section 5.5, RSS-132 4.6, RSS-133 6.6, RSS-139 6.6)

EUT with DUT number	RM-588, DUT51348
Accessories with DUT numbers	BL-5J, DUT51352; AC-8E, DUT51353; HS-125, DUT51355; CA-101D, DUT51357; IBM-T40, DUT51044
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Continuous data transferring between phone and PC was active during BT measurement.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 65 / 99.6
Date of measurements	22-Jul-2009
Measured by	Zou Ming

3.1. Test setup



3.2. Test method and limit

The measurement is made according to ANSI C63.4-2003as follows:

The measurement is performed in the Semi-Anechoic Chamber with conducting metal floor.

The measurement distance is 3 m.

The EUT is placed on a nonconductive plate at 80 cm height.

For each suspected frequency, the turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive antenna polarizations.

The emissions less than 20 dB below the permissible value are reported.

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The measurement results are obtained as described below:

$$E\ [\mu V/m] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable loss, antenna factor and preamplifier gain ($A_{TOT} = L_{CABLES} + AF - G_{PREAMP}$).

CISPR 22 and FCC Part 15 Class B limits (3 m measurement distance)

Frequency range [MHz]	Quasi peak limit [dBµV/m]	Average limit [dBµV/m]	Peak limit [dBµV/m]
30 – 230	40	-	-
230 – 1000	47	-	-
Above 1000	-	54	74

3.3. Bluetooth Test results

TX mode, channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4804.000000	40.10	101.16	40.00	0.1	VERTICAL	PASSED
7206.000000	43.60	151.36	39.40	4.2	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4804.000000	28.20	25.70	28.10	0.1	HORIZONTAL	PASSED
7206.000000	31.30	36.73	27.10	4.2	VERTICAL	PASSED

TX mode, channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
37.695391	18.50	8.41	33.70	-15.2	VERTICAL	PASSED
120.039880	25.90	19.72	50.50	-24.6	HORIZONTAL	PASSED
165.531864	25.20	18.20	51.40	-26.2	HORIZONTAL	PASSED
256.914629	31.00	35.48	54.60	-23.6	HORIZONTAL	PASSED
400.500401	35.50	59.57	54.90	-19.4	HORIZONTAL	PASSED

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2830.943888	53.30	462.38	42.70	10.6	HORIZONTAL	PASSED
4871.739479	40.20	102.33	40.00	0.2	HORIZONTAL	PASSED
7276.549098	43.40	147.91	39.10	4.3	VERTICAL	PASSED
7384.769539	44.10	160.32	39.60	4.5	VERTICAL	PASSED
17469.937876	52.60	426.58	35.90	16.7	VERTICAL	PASSED
17958.409820	55.60	602.56	35.90	19.7	VERTICAL	PASSED

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Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2824.943888	40.60	107.15	29.80	10.8	HORIZONTAL	PASSED
4865.739479	27.90	24.83	27.70	0.2	HORIZONTAL	PASSED
7270.549098	31.20	36.31	26.90	4.3	VERTICAL	PASSED
7387.269539	31.60	38.02	27.10	4.5	VERTICAL	PASSED
17471.937876	40.60	107.15	23.80	16.8	VERTICAL	PASSED
17950.909820	43.60	151.36	23.80	19.8	VERTICAL	PASSED

TX mode, channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4960.000000	41.90	124.45	41.20	0.7	HORIZONTAL	PASSED
7440.000000	43.80	154.88	39.80	4.0	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4960.000000	29.00	28.18	28.30	0.7	HORIZONTAL	PASSED
7440.000000	31.40	37.15	27.40	4.0	VERTICAL	PASSED

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4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCPT0073	SIGNAL GENERATOR	SMR 20	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0055	RADIO COMMUNICATION TESTER	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0039	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
BJPCPT0040	TEST RECEIVER	ESCS30	Rohde&Schwarz	15C, 15B
BJPCPT0069	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
BJPCPT0079	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
BJPCPT0191	PULSE LIMITER	ESH3-Z2	Rohde&Schwarz	15C, 15B
BJPCPT0131	RADIO COMMUNICATION TESTER	CMU200	ROHDE&SCHWARZ	15C, 15B
BJPCTC0089	Temperature Test chamber	VT4002	Vötsch Industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0067	BLUETOOTH TESTER	CBT	R&S	22/24/27, 15C
BJPCHW0020	Dc Power supply	Hp6632B	HP	22/24/27, 15C
BJPCTC0094	GPIB-RS232 convertor	GPIB-RS232	National Instruments	22/24/27, 15C

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCPT0129	Relay Unit	TS-RSP	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0130	Relay Unit	TS-RSP	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0080	Device Controller	EMCO2090	ETS-EMCO	22/24/27, 15C, 15B
BJPCTC0048	RF Preamplifier 10MHz-3GHz (Metal chassis)	AFS4-00100300-10-10P-4	MITEQ	22/24/27, 15C, 15B
BJPCTC0007	Ultra Broadband Antenna 30MHz-3000MHz	HL562	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0162	Horn Antenna 1GHz-18GHz	HF906	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0029	Horn Antenna 1GHz-18GHz	HF906	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0049	RF preamplifier 3GHz-18GHz	BLMA-0118-1A-BT	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0072	3m anechoic chamber	-	ETS-Lindgren	22/24/27, 15C, 15B
BJPCTC0075	Turntable	Model 2088	ETS-EMCO	22/24/27, 15C, 15B
BJPCPT0072	EMI Test Receiver 20Hz-26.5GHz	ESIB26	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0150	High Pass filter	WHKS 1200-10SS	Wainwright instruments	22/24/27, 15C, 15B
BJPCTC0034	Notch Filter	WRCT800/880-0.2/40-5SSK	Wainwright instruments	22, 15B
BJPCPT0151	Notch Filter	WRCD1800/2000-0.2/40-5SSK	Wainwright instruments	24, 15B
BJPCTC0017	Radio Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0154	Filter	WRCT2402/2480-2400/2483.5-30-20SS	Wainwright instruments	15C, 15B
BJPCTC0058	Bluetooth tester	CBT	Rohde&Schwarz	15C, 15B
BJPCTC0064	WCDMA II FILTER	WRCG1877/1883-1870/1890-40/6SS	Wainwright instruments	24, 15B
BJPCTC0065	WCDMA V FILTER	WRCG832/838-825/845-40/5SS	Wainwright instruments	22, 15B
BJPCTC0066	ANTENNA	SBA9113	SWARZBECK	22/24/27
BJPCTC0096	RF Preamplifier 100MHz-3GHz	AFS4-00100300-20-23P-6	MITEQ	22/24/27, 15C, 15B

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