

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-593_05.doc	Date of Report:	5-Oct-09
Number of pages:	8	Customer's Contact person:	Jyrki Juvani
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FCC listing no.:	99059		
IC recognition no.:	661AD-1		
Tested devices/ accessories:	Phone: RM-593 (HW 0530); Battery BL-5J; Charger AC-8; Headset HS-45		
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 2, February 2009) 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:			

Ruben Hansen, System Manager, EMC

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	14-sep-2009
Testing completed	5-oct-2009
The customer's contact person	Jyrki Juvani
Test Plan referred to	T:\Projects\RM-593\TestPlan_RS\RS_testplan_RM-593.xls
Notes	None
Document name	FCC15B_RM-593_05.doc

1.1. EUT and Accessory Information

The EUT is a 6-band (GSM850/900/1800/1900/IV(1700)/V(850)) mobile phone with GPRS and EGPRS. GSM and WCDMA bands are tested in idle mode.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-593		0530	-	-	24807
Battery	BL-5J		-	-	-	24803
Charger	AC-8	1103339192340304131;0675387	-	-	-	24793
Headset	HS-45	0694235815201B21412	-	-	-	26810

1.2. Summary of Test Results

WCDMA 1700 (Band IV):

Section in CFR 47	Section in ICES-003 (RSS-139)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5 (6.6)	Radiated emissions	Passed

PASSED
FAILED
NP

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

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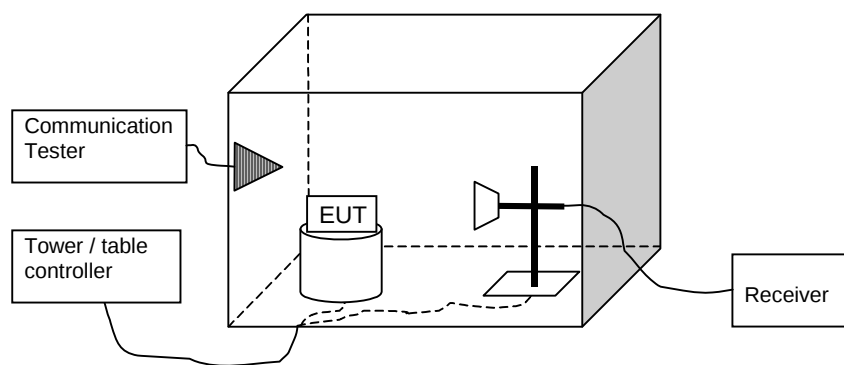
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2. Radiated emissions

(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-539 DUT 24807
Accessories with DUT numbers	BL-5J DUT 24803
Operation Voltage [V] / [Hz]	Battery
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 40 / 1015
Date of measurements	5-oct-2009
Measured by	Ruben Hansen

2.1. Test setup



2.2. 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.

The measurement results are obtained as described below:

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

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

2.3. WCDMA 1700 Test results

RX mode, channel 1537 / 2112.4 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarization	Result
2112.400000	65.70	1927.52	62.60	3.10	VERTICAL	
4224.800000	38.30	82.22	41.00	-2.70	HORIZONTAL	Passed
6337.200000	40.20	102.33	35.70	4.50	VERTICAL	Passed

*2112.4 MHz frequency is coming from communication tester and thus ignored.

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarization	Result
2112.400000	51.20	363.08	48.10	3.10	VERTICAL	
4224.800000	30.40	33.11	33.10	-2.70	HORIZONTAL	Passed
6337.200000	27.90	24.83	23.40	4.50	VERTICAL	Passed

*2112.4 MHz frequency is coming from communication tester and thus ignored.

RX mode, channel 1675 / 2140.0 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarization	Result
32.504810	31.00	35.48	37.90	-6.9	VERTICAL	Passed
38.335872	32.80	43.65	43.50	-10.7	VERTICAL	Passed
57.033868	28.90	27.86	51.30	-22.4	VERTICAL	Passed
62.083968	23.10	14.29	44.90	-21.8	VERTICAL	Passed
96.091784	25.90	19.72	44.10	-18.2	HORIZONTAL	Passed
108.618236	26.40	20.89	44.20	-17.8	VERTICAL	Passed

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarization	Result
1449.403808	42.80	138.04	43.50	-0.7	VERTICAL	Passed
1720.448898	44.30	164.06	44.00	0.3	HORIZONTAL	Passed
1948.893788	44.80	173.78	42.90	1.9	VERTICAL	Passed
2040.078156	46.70	216.27	43.30	3.4	HORIZONTAL	Passed
2133.266533	63.50	1496.24	60.90	2.6	VERTICAL	
2944.889780	52.30	412.10	42.20	10.1	VERTICAL	Passed
5716.940882	44.10	160.32	41.80	2.3	VERTICAL	Passed
6351.695391	41.50	118.85	37.30	4.2	VERTICAL	Passed
6781.563126	43.40	147.91	37.10	6.3	VERTICAL	Passed
6913.819639	46.70	216.27	39.00	7.7	VERTICAL	Passed
7372.237475	43.70	153.11	34.50	9.2	VERTICAL	Passed
7989.971944	43.90	156.68	32.90	11.0	VERTICAL	Passed

*2133 MHz frequency is coming from communication tester and thus ignored.

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarization	Result
1448.899800	30.10	31.99	30.80	-0.7	HORIZONTAL	Passed
1615.734469	31.10	35.89	30.80	0.3	VERTICAL	Passed
1981.959920	32.40	41.69	30.00	2.4	VERTICAL	Passed
2044.086172	33.80	48.98	30.20	3.6	VERTICAL	Passed
2132.264529	48.90	278.61	46.30	2.6	VERTICAL	
2983.465932	39.40	93.33	28.80	10.6	HORIZONTAL	Passed
5989.975952	32.50	42.17	29.50	3.0	VERTICAL	Passed
6218.932866	28.70	27.23	24.50	4.2	VERTICAL	Passed
6788.583166	31.00	35.48	24.30	6.7	VERTICAL	Passed
6911.821643	33.80	48.98	26.10	7.7	VERTICAL	Passed
7464.925852	31.20	36.31	21.80	9.4	VERTICAL	Passed
7888.271543	32.00	39.81	21.00	11.0	VERTICAL	Passed

*2132 MHz frequency is coming from communication tester and thus ignored.

RX mode, channel 1738 / 2152.6 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarization	Result
2152.600000	64.20	1621.81	60.80	3.4	VERTICAL	
4305.200000	39.00	89.13	41.10	-2.1	HORIZONTAL	Passed
6457.800000	41.50	118.85	37.00	4.5	HORIZONTAL	Passed

*2152.6 MHz frequency is coming from communication tester and thus ignored.

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarization	Result
2152.600000	50.50	334.97	47.10	3.4	VERTICAL	
4305.200000	31.50	37.58	33.60	-2.1	HORIZONTAL	Passed
6457.800000	28.60	26.92	24.10	4.5	VERTICAL	Passed

*2152.6 MHz frequency is coming from communication tester and thus ignored.

3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15C, 15B
13513	Pulse Limiter 9KHz-30MHz	ESH3Z2	Rohde&Schwarz	15C, 15B
13666	EMI Test Reciever 9KHz-2,5GHz	ESPC	Rohde&Schwarz	15C, 15B
13935	Two Lines Artificial Mains Network	ESH3-Z5	Rohde&Schwarz	15C, 15B
16995	Directional Coupler 20dB 0,5-2,0 GHz SMA Conn.	1538RA-20	Weinschel	15C, 15B
18772	Shielded Chamber	RFD-100	ETS-Lindgren	15C, 15B
19171	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	15C, 15B
11386	System DC Power Supply	HP6632A	Hewlett Packard	22/24/27, 15C, 15B
19678	Spectrum Analyzer 26 GHz	FSP	Rohde&Schwarz	22/24/27, 15C, 15B
16601	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
19625	Vötsch Climatic Chamber	VT4002EMC	Vötsch	22/24/27, 15C, 15B
13357	Rohde & Schwartz Signal Generator	SMP02	Rohde&Schwarz	22/24/27, 15C, 15B
20168	Bluetooth EDR Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
18416	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
	Programmable Relay Switching System	-----	Pickering	22/24/27, 15C, 15B
15742	Programmable Relay Switching System	-----	Pickering	22/24/27, 15C, 15B
14020	Power Supply Module Relay Switching System 45W	10-910-002	Pickering	22/24/27, 15C, 15B
15743	Power Supply Module Relay Switching System 50W	10-910L-001	Pickering	22/24/27, 15C, 15B
16490	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24/27, 15C, 15B
	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24/27, 15C, 15B
20078	Relay 2x6 Chnl μ Wave Mux	10-785B-522	Pickering	22/24/27, 15C, 15B
14021	Relay Dual 6 Chnl μ Wave Mux	10-785-522		22/24/27, 15C, 15B
	Relay Dual 6 Chnl μ Wave Mux	10-785-522		22/24/27, 15C, 15B
17644	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24/27, 15C, 15B
16948	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24/27, 15C, 15B
16949	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24/27, 15C, 15B
18792	Multi Device Controller	2090	ETS-EMCO	22/24/27, 15C, 15B
14963	RF Preamplifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	Miteq/NMP Cph	22/24/27, 15C, 15B
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	Rohde&Schwarz	22/24/27, 15C, 15B
20335	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	22/24/27, 15C, 15B
18773	Shielded Chamber	RFD-100	ETS-Lindgren	22/24/27, 15C, 15B
18774	Shielded Chamber	RFSD-F/A-100	ETS-Lindgren	22/24/27, 15C, 15B
19151	High Pass Filter 3GHz	WHJS3000-10SS	Wainwright	22/24/27, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
	WHK3.0/18G-10ss			
13937	Ultra Stable Notch Filter 850MHz	WRCA902.4-0.2/40-6SS	Wainwright Instruments	22/24/27, 15C, 15B
13936	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright Instruments	22/24/27, 15C, 15B
14114	Highpass filter	WHK1000-12SS	Wainwright Instruments	22/24/27, 15C, 15B
14188	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright	22/24/27, 15C, 15B
14187	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
19587	BT/WLAN Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	22/24/27, 15C, 15B
20115	WDCMA Band 2 filter		Wainwright	24, 15C, 15B
20114	WDCMA Band 4 filter	WRCG1737/1743-1733/1747-40/6SS	Wainwright	27, 15C, 15B
20116	WDCMA Band 5&6 filter	WRCG832/83/-825/845-40/5SS	Wainwright	22, 15C, 15B
18323	Band reject filter 1947-1953MHz 40dB	WRCG1947/1953-1940/1960-40/6SS	Wainwright	22/24/27, 15C, 15B
20031	Double Ridged Broadband Horn	BBHA 9120 D	SCHWARZBECK	22/24/27, 15C, 15B
19966	Magnetic Loop Antenna 9 kHz - 30 MHz	HFH2-Z2	Rohde&Schwarz	15C, 15B
14993	EMI Test Receiver 9KHz-2750MHz	ESCS30	Rohde&Schwarz	22/24/27, 15C, 15B
15191	Turntable Contoller Unit	G-800SDX	YAESU	22/24/27, 15C, 15B
14900	Antenna Controller	HD100	HD GmbH	22/24/27, 15C, 15B
19374	Resonant Dipole Antenna 850MHz SMA m Conn.	-----	NMP Cph	22/24/27, 15C, 15B
19375	Resonant Dipole Antenna 1900MHz SMA m Conn.	-----	NMP Cph	22/24/27, 15C, 15B
20168	Bluetooth EDR Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B