FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-596_58.doc	**Date of Report:**	03-May-2011
Number of pages:	11	**Customer's Contact person:**	Tuomo Pursiheimo
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FCC listing no.: **IC recognition no.:**	94436 661AK-1		
Tested devices/ accessories:	**Phone RM-596 / AC charger AC-15E, Headset WH-701**		
FCC ID:	PDNRM-596X	**IC:**	661R-RM596
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, RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009), RSS-139 (Issue 2, February 2009), RSS-210 (Issue 8, December 2010). 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 Jari Jantunen Date: 2011.05.04 12:14:38 +03'00'		

Jari Jantunen, System Manager, EMC

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	8-Mar-2010
Testing completed	30-Mar-2010
The customer's contact person	Tuomo Pursiheimo
Test Plan referred to	T:\Projects\RM-596\TestPlan\RS_testplan_RM-596_2nd.xls
Notes	-
Document name	FCC15B_RM-596_58.doc

1.1. EUT and Accessory Information

The EUT is a 9-band (GSM850/900/1800/1900 and WCDMA Band I/II(1900)/IV(1700)/V(850)/VIII) mobile phone with GPRS, EGPRS, Bluetooth, WLAN and FM transmitter. GSM and WCDMA bands are tested in idle mode. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-596	004402130475365	3630	-	010.008	42210
Headset	WH-701	06944289501G2R01954	-	-	-	42192
Charger	AC-15E	4090499512230700960;0675463	-	-	-	42190

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	NP
15.109, a	5.5 (4.6)	Radiated emissions	PASSED

GSM 1900:

Section in CFR 47	Section in ICES-003 (RSS-133)	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

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

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 Tampere Laboratory.

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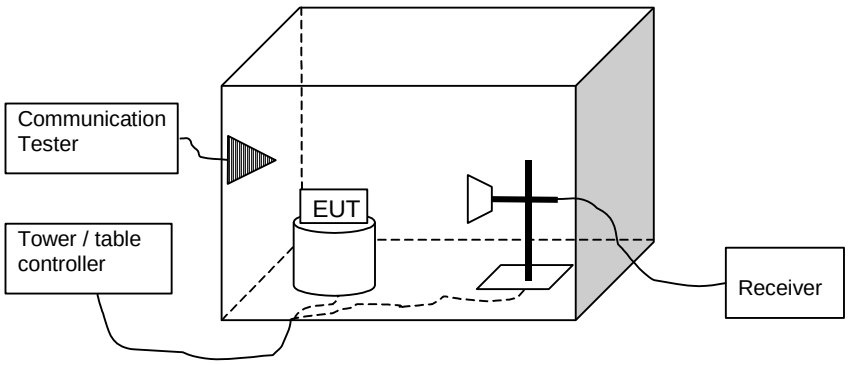
2. Radiated emissions

(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-596 DUT42210
Accessories with DUT numbers	AC-15E DUT42190, WH-701 DUT42192
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 42 / 1003
Date of measurements	30-Mar-2010
Measured by	Jari Jantunen

2.1. Test setup



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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:

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

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

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2.3. GSM 850 + FM radio on Test results

RX mode, channel 128 / 869.2 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3476.800000	38.10	80.35	42.50	-4.4	VERTICAL	PASSED
6953.600000	43.10	142.89	41.60	1.5	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3476.800000	25.20	18.20	29.60	-4.4	HORIZONTAL	PASSED
6953.600000	29.80	30.90	28.30	1.5	VERTICAL	PASSED

RX mode, channel 190 / 881.6 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3526.400000	38.50	84.14	42.70	-4.20	HORIZONTAL	PASSED
7052.800000	42.30	130.32	40.50	1.80	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3526.400000	25.30	18.41	29.50	-4.20	HORIZONTAL	PASSED
7052.800000	29.40	29.51	27.60	1.80	VERTICAL	PASSED

RX mode, channel 251 / 893.8 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3575.200000	38.00	79.43	42.20	-4.2	HORIZONTAL	PASSED
7150.400000	42.10	127.35	40.00	2.1	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3575.200000	25.10	17.99	29.30	-4.2	HORIZONTAL	PASSED
7150.400000	29.30	29.17	27.20	2.1	HORIZONTAL	PASSED

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2.4. GSM 1900 + FM radio on Test results

RX mode, channel 512 / 1930.2 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3860.000000	39.10	90.16	41.30	-2.2	HORIZONTAL	PASSED
7720.000000	44.60	169.82	41.10	3.5	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3860.000000	26.50	21.13	28.70	-2.2	VERTICAL	PASSED
7720.000000	30.60	33.88	27.10	3.5	VERTICAL	PASSED

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
30.800000	27.40	23.44	53.50	-26.1	VERTICAL	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3920.000000	39.80	97.72	41.60	-1.80	HORIZONTAL	PASSED
7840.000000	44.20	162.18	40.40	3.80	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3920.000000	26.90	22.13	28.70	-1.80	HORIZONTAL	PASSED
7840.000000	31.10	35.89	27.30	3.80	VERTICAL	PASSED

RX mode, channel 810 / 1989.8 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3980.000000	40.60	107.15	42.30	-1.7	HORIZONTAL	PASSED
7960.000000	44.60	169.82	40.60	4.0	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3980.000000	27.30	23.17	29.00	-1.7	VERTICAL	PASSED
7960.000000	31.30	36.73	27.30	4.0	VERTICAL	PASSED

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2.5. WCDMA 1700 + GPS receiver Test results

RX mode, channel 1537 / 2112.4 MHz

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2112.400000	43.70	153.11	51.40	-7.70	VERTICAL	PASSED
4224.800000	39.50	94.41	42.00	-2.50	VERTICAL	PASSED
6337.200000	41.40	117.49	41.40	0.00	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2112.400000	30.50	33.50	38.20	-7.70	VERTICAL	PASSED
4224.800000	26.90	22.13	29.40	-2.50	VERTICAL	PASSED
6337.200000	28.60	26.92	28.60	0.00	VERTICAL	PASSED

RX mode, channel 1637 / 2132.4 MHz

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
30.700000	27.10	22.65	53.20	-26.10	VERTICAL	PASSED
80.520040	15.40	5.89	51.80	-36.40	HORIZONTAL	PASSED
106.691984	19.10	9.02	54.10	-35.00	VERTICAL	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2140.000000	43.80	154.88	51.20	-7.40	HORIZONTAL	PASSED
4280.000000	39.50	94.41	42.10	-2.60	VERTICAL	PASSED
6420.000000	42.10	127.35	42.40	-0.30	HORIZONTAL	PASSED
17852.205411	55.70	609.54	35.00	20.70	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2133.266533	33.70	48.42	46.90	-13.20	VERTICAL	PASSED
17848.705411	42.50	133.35	21.80	20.70	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2133.266533	33.70	48.42	46.90	-13.20	VERTICAL	PASSED
2140.000000	30.70	34.28	38.10	-7.40	VERTICAL	PASSED
4280.000000	26.90	22.13	29.50	-2.60	HORIZONTAL	PASSED
6420.000000	28.40	26.30	28.70	-0.30	VERTICAL	PASSED
17848.705411	42.50	133.35	21.80	20.70	HORIZONTAL	PASSED

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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]	Polarisation	Result
2152.600000	43.50	149.62	50.60	-7.1	HORIZONTAL	PASSED
4305.200000	39.30	92.26	41.90	-2.6	VERTICAL	PASSED
6457.800000	41.30	116.14	41.30	0.0	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2152.600000	30.70	34.28	37.80	-7.1	HORIZONTAL	PASSED
4305.200000	26.50	21.13	29.10	-2.6	VERTICAL	PASSED
6457.800000	28.70	27.23	28.70	0.0	VERTICAL	PASSED

2.6. Bluetooth + GPS receiver 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	44.00	158.49	45.00	-1.0	VERTICAL	PASSED
7206.000000	42.40	131.83	40.00	2.4	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4804.000000	31.00	35.48	32.00	-1.0	VERTICAL	PASSED
7206.000000	29.80	30.90	27.40	2.4	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
33.045291	30.50	33.50	41.30	-10.8	VERTICAL	PASSED
38.076353	26.10	20.18	40.20	-14.1	VERTICAL	PASSED
108.337275	19.10	9.02	41.10	-22.0	VERTICAL	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4883.767535	43.90	156.68	45.10	-1.2	VERTICAL	PASSED
4884.269539	44.40	165.96	45.60	-1.2	VERTICAL	PASSED
7313.131263	43.30	146.22	40.30	3.0	VERTICAL	PASSED
7341.187375	43.10	142.89	40.10	3.0	VERTICAL	PASSED
17494.483968	52.00	398.11	33.10	18.9	VERTICAL	PASSED
17751.501002	54.90	555.90	34.00	20.9	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
4884.267535	30.50	33.50	31.70	-1.2	VERTICAL	PASSED
4884.269539	30.70	34.28	31.90	-1.2	VERTICAL	PASSED
7319.131263	30.10	31.99	27.00	3.1	VERTICAL	PASSED
7341.687375	30.10	31.99	27.10	3.0	VERTICAL	PASSED
17488.983968	39.50	94.41	20.70	18.8	VERTICAL	PASSED
17753.501002	41.90	124.45	21.00	20.9	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	41.50	118.85	42.00	-0.5	VERTICAL	PASSED
7440.000000	42.30	130.32	39.10	3.2	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4960.000000	28.80	27.54	29.30	-0.5	VERTICAL	PASSED
7440.000000	29.50	29.85	26.30	3.2	VERTICAL	PASSED

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3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM30597	Power splitter	11667A	Agilent	22/24/27, 15C
TM37499	Power splitter	11667A	Agilent	22/24/27, 15C
TM38111	Multimeter	34401A	Agilent	22/24/27, 15C
TM38112	DC power supply	6632A	Agilent	22/24/27, 15C
TM22901	Attenuator	8496A	Agilent	22/24/27, 15C
TM30636	Artificial mains net	L2-16	PMM	15C, 15B
TM37678	Radio communication tester	CMU-200	R&S	22/24/27, 15C, 15B
TM37773	Radio communication tester	CMU-200	R&S	22/24/27, 15C, 15B
TM30600	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
TM26490	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM37610	Spectrum analyzer	FSU	R&S	22/24/27, 15C
TM22835	Multimeter	87	Fluke	15C, 15B
TM37500	Microwave switch system	7116-MSW	Keithley	22/24/27, 15C, 15B
TM22638	Power supply	OL63743-901	Transformatic	22/24/27, 15C, 15B
	Temperature chamber	VT4002	Vötsch	22/24/27, 15C
2058	EMI Test receiver	ESPC	R&S	15C, 15B
2001	Bluetooth tester	CBT	R&S	22/24/27, 15C, 15B
2002	Radio communication tester	CMU-200	R&S	22/24/27, 15C, 15B

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM30599	3m semi-anechoic chamber		TDK	22/24/27, 15C, 15B
TM38845	EMI receiver	ESI 40	R&S	22/24/27, 15C, 15B
TM37498	Preamplifier	AMF-5D-020180-26-10P	MITEQ	22/24/27, 15C, 15B
TM37523	Preamplifier	AMF-4D-10M-3G-25-20P	MITEQ	22/24/27, 15C, 15B
TM37516	Biconilog antenna	HL562	R&S	22/24/27, 15C, 15B
TM26496	Double ridged waveguide antenna	3115	EMCO	22/24/27, 15C, 15B
TM39158	Horn antenna	3116	EMCO	22/24/27, 15C, 15B
TM26492	Reference dipole set	UHAP/VHAP	Schwarzbeck	22/24/27, 15C, 15B
TM37501	Dipole antenna	3125-870	EMCO	22/24/27
TM37502	Dipole antenna	3125-1880	EMCO	22/24/27
TM37773	Radio communication tester	CMU-200	R&S	22/24/27, 15C, 15B
TM38631	Signal generator	83640L	Agilent	22/24/27, 15C, 15B
TM38066	High pass filter	4HC3000/18000-3-KK	Trilithic	22/24/27, 15C, 15B
TM26511	Tunable notch filter	WRCA870	Wainwright	22/24/27
TM38215	Tunable notch filter	WRCD1850/1910-0.2/40	Wainwright	22/24/27
TM38214	Band reject filter	WRCT 2402/2480-2400/2483.5-30	Wainwright	15C
TM30642	Mast/Turntable controller	HD-100	Deisel	22/24/27, 15C, 15B
TM26500	Turntable	DS412	Deisel	22/24/27, 15C, 15B
TM38842	Antenna mast controller	2090	EMCO	22/24/27, 15C, 15B
TM38843	Antenna mast	2075	EMCO	22/24/27, 15C, 15B
TM38114	DC power supply	6632A	Agilent	22/24/27, 15C, 15B
TM38323	Preamplifier	PA-02 18-26 GHz	EMC Automation	22/24/27, 15C, 15B
TM37678	Radio communication tester	CMU-200	R&S	22/24/27, 15C, 15B
TM22638	Power supply	OL63743-901	Transformatic	22/24/27, 15C, 15B
TM23892	Yaesu controller	G-1000SDX	Yaesu	22/24/27, 15C, 15B
2001	Bluetooth tester	CBT	R&S	22/24/27, 15C, 15B
2002	Radio communication tester	CMU-200	R&S	22/24/27, 15C, 15B

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