

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15CBT_RM-878_08.docx	Date of Report:	24-Sep-2012
Number of pages:	9	Customer's Contact person:	Jerry Williams
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FCC listing no.:	586140		
IC recognition no.:	10162A-1		
Tested devices/ accessories:	Phone RM-878 / Battery BP-4W / Wireless Charger AC-301U / Wireless Charging Pad DT-900 / WC Cover CC-3063		
FCC ID:	QMNRM-878	IC:	661X-RM878
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), Public Notice DA 00-705, DTS procedures KDB 558074, IC standards, 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:			

Feng You, Senior Specialist

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	23-Aug-2012
Testing completed	19-Sep-2012
The customer's contact person	Jerry Williams
Test Plan referred to	T:\Projects\RM-878\TestPlan\RS_testplan_RM-878 EMC FCC SAR.xlsm
Notes	-
Document name	T:\Projects\RM-878\EMC\FCC15CBT_RM-878_08.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:
GSM/WCDMA/WLAN/Bluetooth
The EUT is tested with maximum rated TX power.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-878	004402471091631	0205	060	1530.0035.8516.9754.12312	30627
Battery	BP-4W	3932132155140101183;0670671	-	-	-	30616
Wireless Charger	AC-301U	4090492206580200327;0675641	0.34	0.12	-	30628
Wireless Charging Pad	DT-900	SEMCO2127	2.6	3.4	2.2.7.4897	30629
WC Cover	CC-3063	-	-	-	-	30625

1.2. Summary of Test Results

Bluetooth:

Section in CFR 47	Section in RSS-GEN or RSS-210	Name of the test	Result
15.247(b)(1)	A8(0.4(2))	Conducted peak output power	N/P
15.247(d), 15.205(b)	A8(0.5)	Band edge compliance of RF emissions	N/P
15.247(d)	A8(0.5)	Spurious RF conducted emissions	N/P
15.247(d), 15.209	A8(0.5)	Spurious radiated emissions	PASSED
15.207	7.2.2	AC powerline conducted emissions	N/P
15.247(a)(1)	A8(0.1(1))	20dB(bandwidth)	N/P
15.247(a)(1)	A8(0.1(2))	Carrier frequency separation	N/P
15.247(a)(1)(iii)	A8(0.1(4))	Number of hopping frequencies	N/P
15.247(a)(1)(iii)	A8(0.1(4))	Time of occupancy	N/P

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 Laboratory.

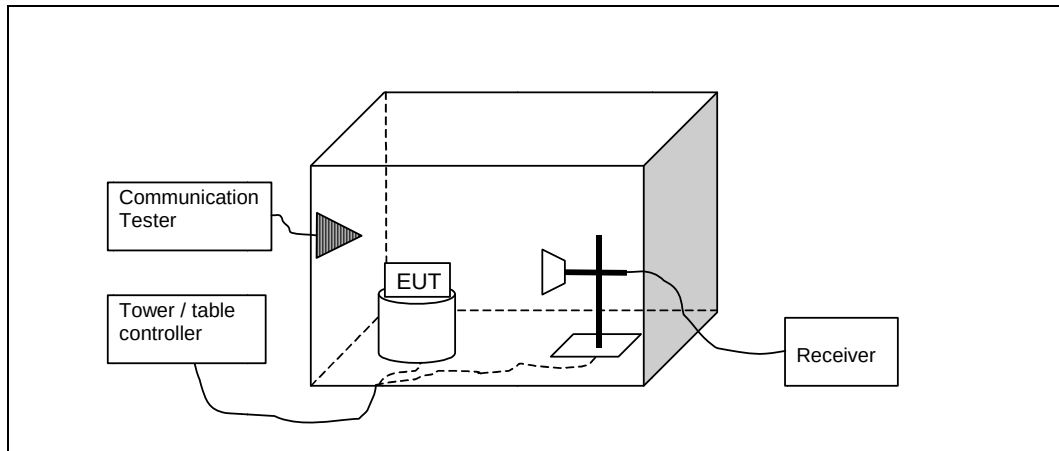
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2. Spurious radiated emissions (FCC §15.247(d), §15.209, RSS-210 A8.5)

EUT with DUT number	RM-878, DUT 30627
Accessories with DUT numbers	BP-4W, DUT 30616 ; AC-301U, DUT 30628 ; DT-900, DUT 30629 ; -, DUT 30625
Operation Voltage [V] / [Hz]	115V / 60Hz
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	17.5 / 46.7%
Date of measurements	17-Sep-2012
Measured by	Feng You

2.1.1 Test setup



2.2. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210 as follows:
The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system.

The Final Measurement is performed in the Semi-Anechoic Chamber with conducting metal floor, if the Preliminary Measurement results are closer than 20 dB to the permissible value.

The EUT is placed at nonconductive plate at the turntable center.

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:

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

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

Limits for spurious radiated emissions measurements (3 m measurement distance)

Frequency range [MHz]	Limit [$\mu V/m$]	Limit [$dB\mu V/m$]	Detector
30 - 88	100	40	Quasi peak
88 – 216	150	43.5	Quasi peak
216 – 960	200	46	Quasi peak
960 – 1000	500	54	Quasi peak
Above 1000	500	54	Average
Above 1000	5000	74	Peak

2.3. Bluetooth test results

2.3.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz

Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
2493	90.23	32478.802	36.97	53.26	-16.2	74	*PASSED
3936.965	49.37	294.239	40.16	9.21	24.6	74	PASSED
4004.795	49.09	284.807	40.15	8.94	24.9	74	PASSED

*2493 MHz frequency is coming from BT/WLAN Band Reject Filter Loss calculated back by test software and thus ignored.

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
30.27	37.27	73.063	41.72	-4.45	2.7	40	PASSED
34.539	30.59	33.834	36.97	-6.38	9.4	40	PASSED
44.287	30.27	32.606	41.99	-11.72	9.7	40	PASSED
48.756	29.94	31.387	44.34	-14.4	10.1	40	PASSED
57.195	34.69	54.256	53.91	-19.22	5.3	40	PASSED
191.946	37.41	74.174	51.48	-14.07	6.1	43.5	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
2493	77.08	7140.851	23.82	53.26	-23.1	54	*PASSED
3936.965	36.96	70.502	27.75	9.21	17	54	PASSED
4004.795	36.49	66.781	27.55	8.94	17.5	54	PASSED

*2493 MHz frequency is coming from BT/WLAN Band Reject Filter Loss calculated back by test software and thus ignored.

Channel 0 / 2402 MHz

Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
4805.9	50.22	324.153	39.93	10.29	23.8	74	PASSED
7207.9	53.77	487.809	40.43	13.34	---	---	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
4805.9	37.6	75.832	27.31	10.29	16.4	54	PASSED
7207.9	40.89	110.841	27.55	13.34	---	---	PASSED

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
4958.9	49.55	300.296	39.97	9.58	24.4	74	PASSED
7438.3	54.34	521.195	40.2	14.14	19.7	74	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
4958.9	36.84	69.494	27.26	9.58	17.2	54	PASSED
7438.3	41.51	119.015	27.37	14.14	12.5	54	PASSED

2.3.2 8DPSK modulation, PRBS packet type

Channel 40 / 2442 MHz

Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
2493	89.99	31582.754	36.73	53.26	-16	74	*PASSED
3924.977	50.27	326.099	40.97	9.3	23.7	74	PASSED
3933.565	49.61	302.169	40.62	8.99	24.4	74	PASSED

*2493 MHz frequency is coming from BT/WLAN Band Reject Filter Loss calculated back by test software and thus ignored.

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
30.15	39.67	96.294	43.98	-4.31	0.3	40	PASSED
55.595	30.71	34.328	49.38	-18.67	9.3	40	PASSED
169.991	35.94	62.625	50.12	-14.18	7.6	43.5	PASSED
176.71	35.09	56.833	47.7	-12.61	8.4	43.5	PASSED
182.979	40.07	100.809	53.92	-13.85	3.4	43.5	PASSED
186.278	40.11	101.298	54.22	-14.11	3.4	43.5	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
2493	77.07	7139.207	23.81	53.26	-23.1	54	*PASSED
3924.977	37.02	70.966	27.72	9.3	17	54	PASSED
3933.565	36.74	68.738	27.75	8.99	17.3	54	PASSED

*2493 MHz frequency is coming from BT/WLAN Band Reject Filter Loss calculated back by test software and thus ignored.

Channel 0 / 2402 MHz

Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
4803.1	50.34	328.965	40	10.34	23.7	74	PASSED
7205.5	53.83	491.53	40.52	13.31	---	---	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
4803.1	37.68	76.516	27.34	10.34	16.3	54	PASSED
7205.5	40.86	110.395	27.55	13.31	---	---	PASSED

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
4959	49.64	303.249	39.81	9.83	24.4	74	PASSED
7438.6	54.99	561.694	40.76	14.23	19	74	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
4959	37.09	71.54	27.26	9.83	16.9	54	PASSED
7438.6	41.61	120.393	27.38	14.23	12.4	54	PASSED

3. Test Equipment

3.1. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
N/A	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
7984	Data Logger	Testo175H1	Testo	-
3397	Signal Generator	83630B	Agilent	-
7591	Antenna	HL562	R&S	-
N/A	RF immunity / Emission Software	EMC32	R&S	-
7459	Open switch and control unit	TS-RSP	R&S	-
5729	Open switch and control unit	TS-RSP	R&S	-
N/A	Notch Filter	GSM1900	TTE	24
N/A	Notch Filter	GSM850	Trilithic	22
7572	Antenna	3117	EMCO	-
5730	Preamplifier/Switch Box	TS-ANA	R&S	-
N/A	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	-
N/A	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
N/A	Band Reject Filter	WRCA824/849-0,2-6SS	Wainwright	22
4406	Communication Tester	CMU200	R&S	-
7646	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	ETS-Lindgren	-
7451	EMI Receiver	ESU-26	R&S	-
3406	Mast/Turntable Controller	SC99V	Sunol	-