

FCC Part 22/24/27 Compliance Test Report

Test Report no.:	FCC22&24&27_RM-878_03.docx	Date of Report:	25-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 Parts 22/24/27, TIA-603-C-2004 and IC standards, RSS-GEN (Issue 3, December 2010), RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009), RSS-139 (Issue 2, February 2009). 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 22/24/27 Compliance Test Report

Date of receipt	23-Aug-2012
Testing completed	07-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	Wireless Charging Configuration Only
Document name	T:\Projects\RM-878\EMC\FCC22&24&27_RM-878_03.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	3932132274140101601;0670672	-	-	-	30588
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

GSM850:

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	4.4	Conducted RF output power	NP
§22.913(a)	4.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§22.917(a)	4.5	Band edge compliance	NP
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	PASSED
§2.1055(a)	4.3	Frequency stability, temperature variation	NP
§2.1055(d)	4.3	Frequency stability, voltage variation	NP

WCDMA 850 (Band V):

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	4.4	Conducted RF output power	NP
§22.913(a)	4.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§22.917(a)	4.5	Band edge compliance	NP
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	PASSED
§2.1055(a)	4.3	Frequency stability, temperature variation	NP
§2.1055(d)	4.3	Frequency stability, voltage variation	NP

GSM1900:

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§24.232(b)	6.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§24.238(a)	6.5	Band edge compliance	NP
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP

WCDMA 1900 (Band II):

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§24.232(b)	6.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§24.238(a)	6.5	Band edge compliance	NP
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP

WCDMA 1700 (Band IV):

Section in CFR 47	Section in RSS-GEN or RSS-139	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§27.50(d)(2)	6.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§27.53(g)	6.5	Band edge compliance	NP
§27.53(g), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP

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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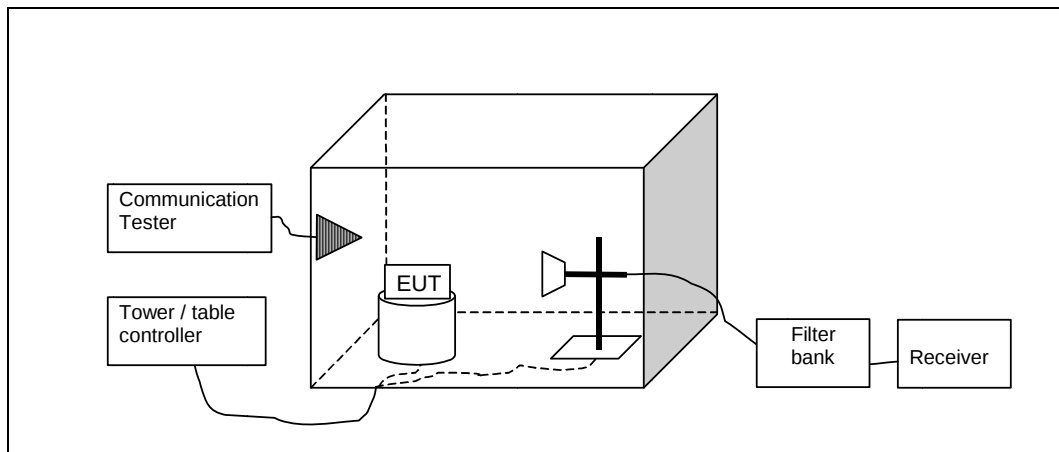
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2. Spurious radiated emissions

(FCC §22.917(a), §2.1053, §24.238(a), §2.1053, §27.53(g), §2.1053, §27.53(h), RSS-132 4.5, RSS-133 6.5)

EUT with DUT number	RM-878, DUT 30627
Accessories with DUT numbers	BP-4W, DUT 30588 ; AC-301U, DUT 30628 ; DT-900, DUT 30629 ; CC-3063, DUT 30625
Operation Voltage [V] / [Hz]	115V / 60Hz
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	17.9 / 43.9%
Date of measurements	04-Sep-2012
Measured by	Feng You/Ty Hawes

2.1.1 Test setup



2.2. Test method and limit

The measurement is made according to TIA-603-C-2004 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 substitution method is used.

The measurement results are obtained as described below:

$$P [dBm] = P_{SUBST\ TX} + G_{SUBST\ TX\ ANT} - L_{SUBST\ CABLE}$$

Where $P_{SUBST\ TX}$ is signal generator level, which produces the same receiver reading P_{MEAS} in dBm as EUT. $G_{SUBST\ TX\ ANT}$ is substitution antenna gain and $L_{SUBST\ CABLE}$ is the loss of the cable between the signal generator and the substitution antenna.

Limits for spurious radiated emissions measurements

Operation band	Frequency range [MHz]	Limit [dBm]
GSM850 / WCDMA850	30 - 8500	-13
WCDMA1700 / GSM1900 / WCDMA1900	30 - 18000	-13

2.3. GSM850 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
824	-12.83	52.11947	-81.52	68.69	VERTICAL	*PASSED
848.751	-20.34	9.24485	-81.55	61.21	VERTICAL	PASSED
849.565	-20.87	8.1903	-81.34	60.47	VERTICAL	PASSED
2509.74	-24.92	3.22329	-44.93	20.01	VERTICAL	PASSED
2509.935	-25.52	2.80479	-45.53	20.01	VERTICAL	PASSED

*824 MHz frequency is coming Transmitter fundamental and thus ignored.

2.4. GSM1900 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
1850.135	1.39	1377.20947	-70.47	71.86	HORIZONTAL	*PASSED
1910.202	9.06	8055.63908	-69.58	78.64	VERTICAL	*PASSED
9798.312	-39.33	0.11671	-69.57	30.24	HORIZONTAL	PASSED
9927.013	-40.12	0.09723	-69.82	29.7	HORIZONTAL	PASSED
9979.043	-39.8	0.10464	-69.78	29.98	HORIZONTAL	PASSED
10000.853	-39.57	0.11043	-69.98	30.41	HORIZONTAL	PASSED

*1850.135 and 1910.202 MHz frequency is coming Transmitter fundamental and thus ignored.

2.5. GSM850-E1 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
824	-13.1	49.00044	-81.79	68.69	VERTICAL	PASSED
824	-11.51	70.63176	-80.84	69.33	HORIZONTAL	*PASSED
848.6	-20.42	9.08239	-81.77	61.35	VERTICAL	PASSED
849.192	-20.66	8.58223	-81.47	60.81	VERTICAL	PASSED
2509.74	-20.81	8.30233	-40.82	20.01	VERTICAL	PASSED
2509.805	-20.67	8.57038	-40.68	20.01	VERTICAL	PASSED

*824 MHz frequency is coming Transmitter fundamental and thus ignored.

2.6. GSM1900-E1 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
1850.2	0.5	1121.50186	-71.52	72.02	HORIZONTAL	*PASSED
1910.125	7.99	6289.26653	-70.79	78.78	VERTICAL	*PASSED

9800.519	-39.56	0.11064	-69.84	30.28	HORIZONTAL	PASSED
9905.844	-39.48	0.11272	-69.53	30.05	HORIZONTAL	PASSED
9967.403	-39.74	0.10622	-69.64	29.9	HORIZONTAL	PASSED
10007.792	-39.56	0.11066	-69.72	30.16	HORIZONTAL	PASSED

*1850.2 and 1910.125 MHz frequency is coming Transmitter fundamental and thus ignored.

2.7. WCDMA 1900 (Band II) test results

Channel 9400 / 1880.0 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
2395.605	-49.74	0.01063	-70.12	20.38	HORIZONTAL	PASSED
2413.27	-48.9	0.01288	-69.71	20.81	HORIZONTAL	PASSED
9793.506	-38.95	0.12744	-68.99	30.04	HORIZONTAL	PASSED
9797.273	-39.21	0.11998	-69.41	30.2	HORIZONTAL	PASSED
9981.688	-39.24	0.11904	-69.19	29.95	HORIZONTAL	PASSED
10000.195	-38.47	0.14223	-68.92	30.45	HORIZONTAL	PASSED

2.8. WCDMA 1700 (Band IV) test results

Channel 1412 / 1732.4 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
2133.539	-33.62	0.43441	-52.46	18.84	VERTICAL	PASSED
3581.169	-46.72	0.0213	-69.58	22.86	VERTICAL	PASSED
9795.714	-38.34	0.14669	-68.47	30.13	HORIZONTAL	PASSED
9900.39	-38.92	0.12835	-69.16	30.24	HORIZONTAL	PASSED
9975.844	-37.4	0.18205	-67.43	30.03	HORIZONTAL	PASSED
10003.701	-38.38	0.14521	-68.63	30.25	HORIZONTAL	PASSED

2.9. WCDMA 850 (Band V) test results

Channel 4175 / 835.0 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
1667.662	-37.04	0.19783	-49.93	12.89	VERTICAL	PASSED
1668.506	-38.19	0.15174	-51.11	12.92	VERTICAL	PASSED
1676.104	-56.11	0.00245	-69.27	13.16	HORIZONTAL	PASSED
2504.091	-49.6	0.01098	-69.75	20.15	VERTICAL	PASSED
2516.169	-50.32	0.00929	-70.07	19.75	HORIZONTAL	PASSED
3342.597	-48.26	0.01494	-68.94	20.68	VERTICAL	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	-