

Test Report no.:	FCC15B_RM-927_20.docx	Date of Report:	23-Aug-2013
Number of pages:	12	Customer's Contact person:	Victoria Abadilla
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FCC listing no.:	586140		
IC recognition no.:	10162A-1		
Tested devices/ accessories:	Phone RM-927 / Salcomp AC Charger AC-60 / Cable CA-190 / Headset WH-902		
FCC ID:	QMND	IC:	661X-D
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). 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:			

Tyrone Hawes, Specialist

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	20-Jul-2013
Testing completed	22-Aug-2013
The customer's contact person	Victoria Abadilla
Test Plan referred to	T:\Projects\RM-927\TestPlan\RS_testplan_RM-927.xlsm
Notes	-
Document name	T:\Projects\RM-927\EMC\FCC15B_RM-927_20.docx

1.1. EUT and Accessory Information

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

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-927	355906050012284	0160	-	1028.0305.1329.2000	30743
Salcomp AC Charger	AC-60	-	-	-	-	30744
Cable	CA-190	-	-	-	-	30745
Headset	WH-902	-	-	-	-	30746
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
Apple Laptop PC	A1370	C02GT7C3DJYC	-	-	-	30751
AC Charger	PA-1450-7	NSW24929	-	-	-	30752
External Hard Drive	MS25U3L2	1430130201089G	-	-	-	30756

1.2. Summary of Test Results

GSM850:

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

LTE (Band 4):

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

GSM1900:

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

LTE (Band 13):

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

PASSED

The EUT complies with the essential requirements in the standard.

FAILED
NP

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

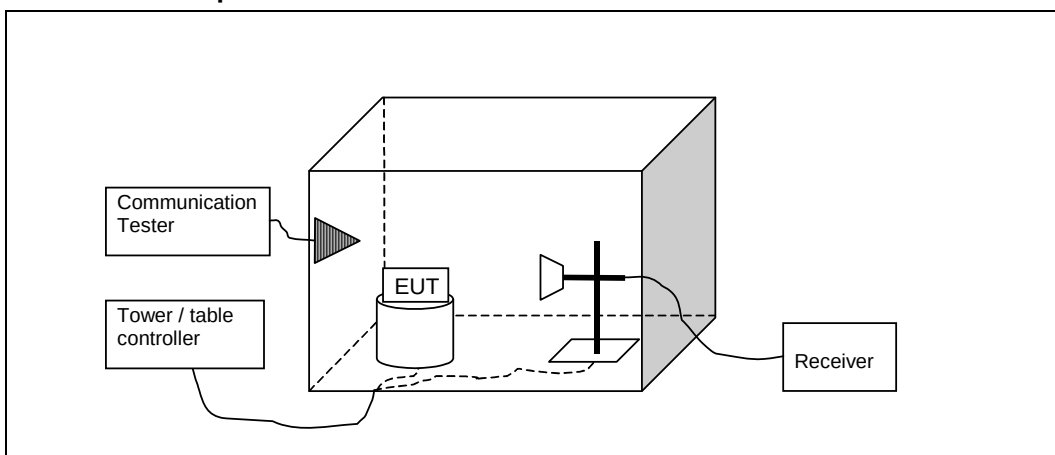
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2. Radiated emissions (FCC §15.109, ICES-003 section 5.5, RSS-132 4.6, RSS-133 6.6)

EUT with DUT number	RM-927, DUT 30743
Accessories with DUT numbers	AC-60, DUT 30744 ; CA-190, DUT 30745 ; WH-902, DUT 30746
Operation Voltage [V] / [Hz]	115V/60Hz
Results	PASSED
Remarks	
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	16.4/43.4/1050
Date of measurements	22-Aug-2013
Measured by	Tyrone Hawes

2.1.1 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:

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

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

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

Frequency range [MHz]	Quasi peak limit [dB μ V/m]	Average limit [dB μ V/m]	Peak limit [dB μ V/m]
30 - 230	40	-	-
230 – 1000	47	-	-
1000 - 3000	-	50	70
Above 3000	-	54	74

2.3. GSM850 Idle, FM radio active test results

RX mode, channel 190 / 881.6 MHz

Peak (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
2204.51	46.07	201.025	38.47	7.6	23.9	70	PASSED
2901.503	51.19	362.452	39.22	11.97	18.8	70	PASSED

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
98.096	39.9	98.81	59.14	-19.24	0.1	40	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
2204.51	33.23	45.851	25.63	7.6	16.8	50	PASSED
2901.503	37.48	74.817	25.51	11.97	12.5	50	PASSED

RX mode, channel 190 / 881.6 MHz

Peak (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
7062.223	46.48	210.741	43.24	3.24	27.5	74	PASSED
7832.963	47.85	246.973	43.5	4.35	26.1	74	PASSED
7843.286	47.46	236.157	42.96	4.5	26.5	74	PASSED
7856.615	47.35	233.185	42.82	4.53	26.6	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
7062.223	33.4	46.747	30.16	3.24	20.6	54	PASSED
7832.963	34.38	52.336	30.03	4.35	19.6	54	PASSED
7843.286	34.49	53.052	29.99	4.5	19.5	54	PASSED
7856.615	34.55	53.383	30.02	4.53	19.5	54	PASSED

2.4. LTE 1700 (Band 4) Idle, GPS active test results

Channel 19975 / 1712.5 MHz

Peak (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
2132.565	76.59	6750.719	69.4	7.19	-6.6	70	FAIL
2462.825	47.52	237.547	38.72	8.8	22.5	70	PASSED
2466.433	48	251.275	39.21	8.79	22	70	PASSED
2467.136	47.51	237.438	38.71	8.8	22.5	70	PASSED

*2132.4 MHz frequency is coming from communication tester 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
32.884	19.91	9.896	31.52	-11.61	20.1	40	PASSED
52.785	1.22	1.15	24.26	-23.04	38.8	40	PASSED
56.416	7.41	2.347	32.39	-24.98	32.6	40	PASSED
67.904	1.56	1.196	24.26	-22.7	38.4	40	PASSED
91.994	2.19	1.287	21.7	-19.51	37.8	40	PASSED
938.431	19.5	9.436	22.39	-2.89	27.5	47	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
2132.565	54.48	529.42	47.29	7.19	-4.5	50	FAIL
2462.825	34.45	52.79	25.65	8.8	15.5	50	PASSED
2466.433	34.5	53.058	25.71	8.79	15.5	50	PASSED
2467.136	34.52	53.18	25.72	8.8	15.5	50	PASSED

*2132.4 MHz frequency is coming from communication tester and thus ignored.

Channel 20175 / 1732.5 MHz

Peak (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
7053.405	45.64	191.514	42.42	3.22	28.4	74	PASSED
7834.065	46.92	221.922	42.56	4.37	27.1	74	PASSED
7845.187	46.95	222.638	42.42	4.53	27	74	PASSED
7849.299	47.96	249.919	43.37	4.59	26	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
7053.405	33.24	45.93	30.02	3.22	20.8	54	PASSED
7834.065	34.31	51.958	29.95	4.37	19.7	54	PASSED
7845.187	34.38	52.336	29.85	4.53	19.6	54	PASSED
7849.299	34.41	52.553	29.82	4.59	19.6	54	PASSED

2.5. LTE700 Upper (Band 13) Idle, GPS active test results

Channel 23205 / 779.5 MHz

Peak (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
2044.892	47.09	226.23	39.87	7.22	22.9	70	PASSED
2346.291	47.81	245.641	38.59	9.22	22.2	70	PASSED

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
33.719	17.26	7.297	29.19	-11.93	22.7	40	PASSED
750.805	59.75	971.404	65.2	-5.45	-12.7	47	FAIL
784.349	16.58	6.744	21.7	-5.12	30.4	47	PASSED

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

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
2044.892	33.41	46.811	26.19	7.22	16.6	50	PASSED
2346.291	34.92	55.744	25.7	9.22	15.1	50	PASSED

Channel 23230 / 782 MHz

Peak (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
7053.31	46.32	206.943	43.1	3.22	27.7	74	PASSED
7827.758	46.7	216.197	42.43	4.27	27.3	74	PASSED
7833.871	47.33	232.434	42.97	4.36	26.7	74	PASSED
7847.291	47.12	226.908	42.56	4.56	26.9	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
7053.31	33.14	45.389	29.92	3.22	20.9	54	PASSED
7827.758	34.24	51.505	29.97	4.27	19.8	54	PASSED
7833.871	34.16	51.056	29.8	4.36	19.8	54	PASSED
7847.291	34.27	51.707	29.71	4.56	19.7	54	PASSED

2.6. GSM1900 Idle, Laptop with peripherals connected test results

RX mode, channel 661 / 1960.0 MHz

Peak (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
1960.119	47.89	247.885	42.03	5.86	22.1	70	PASSED
2906.211	49.35	293.326	37.56	11.8	20.7	70	PASSED

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
38.849	22.12	12.759	36.63	-14.51	17.9	40	PASSED
39.814	21.15	11.412	36.17	-15.02	18.9	40	PASSED
59.158	22.07	12.694	47.36	-25.29	17.9	40	PASSED
112.425	19.41	9.345	38.18	-18.77	20.6	40	PASSED
139.997	16.89	6.991	36.52	-19.63	23.1	40	PASSED
142.034	18.6	8.513	38.36	-19.76	21.4	40	PASSED
347.642	17.73	7.702	31.85	-14.12	29.3	47	PASSED
357.206	17.97	7.914	31.86	-13.89	29	47	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
1960.119	40.65	107.709	34.79	5.86	9.4	50	PASSED
2906.211	36.53	67.089	24.74	11.8	13.5	50	PASSED

RX mode, channel 661 / 1960.0 MHz

Peak (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
5798.898	52.18	406.256	49.62	2.56	21.8	74	PASSED
5801.001	49.78	308.425	47.2	2.58	24.2	74	PASSED
7826.65	48.35	261.577	41.64	6.71	25.6	74	PASSED
7838.177	48.35	261.397	41.52	6.83	25.7	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
5798.898	33.65	48.123	31.09	2.56	20.4	54	PASSED
5801.001	33.63	48.04	31.05	2.58	20.4	54	PASSED
7826.65	35.92	62.496	29.21	6.71	18.1	54	PASSED
7838.177	35.93	62.575	29.1	6.83	18.1	54	PASSED

3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
4406	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
7602	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
7151	Bluetooth Tester	CBT	R&S	15B
-	GPS RX Antenna w/AMP	L1A-PM-NF	GPS Source	15C
-	GPS Inline amplifier	A11M-V-NF-NM	GPS Source	15C
-	GPS signal Splitter	S12-P110/5-NF	GPS Source	15C
-	GPS TX Antenna	L1P-PV-NF	GPS Source	15C
7912	Spectrum Analyzer	FSV-30	R&S	22/24/27, 15C
-	Thermal Chamber	VT-4002	Vötsch	22/24/27, 15C
-	Power splitter	11667B	Agilent	22/24/27, 15C
3396	EMC Analyzer	E7405A	HP	-
7451	EMI Receiver	ESU-26	R&S	22/24/27, 15C, 15B
4188	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
6981	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
-	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
7582	Signal Generator	SMB100A	R&S	15C, 15B

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
7591	Antenna	HL562	R&S	22/24/27, 15C, 15B
7572	Double Ridge Horn Antenna	3117	ETS-Lindgren	22/24/27, 15C
7607	Standard Gain HornAntenna	SAS 586	A.H. System	22/24/27, 15C
7624	Standard Gain HornAntenna	SAS 587	A.H. System	22/24/27, 15C
7561	Antenna	HFH2-Z2	R&S	15C, 15B
5715	Antenna	MBA-3030	EMC Automation	22/24/27, 15C
5712	Antenna	PLP3003	EMC Automation	22/24/27, 15C
7457	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
7459	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
5729	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
5728	EMI Receiver	ESIB26	R&S	22/24/27, 15C, 15B
4406	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
7602	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
7151	Bluetooth Tester	CBT	R&S	15B
3406	Controller	Sc99V	Sunol	22/24/27, 15C, 15B
-	Controller	G-1000DXC	Yaesu	22/24/27, 15C, 15B
-	Computer Controller	GS-232B	Yaesu	22/24/27, 15C, 15B
7040	Preamplifier	TS-PR3	R&S	22/24/27, 15C, 15B
-	Preamplifier	AMF-6D-020180-29-20P	Miteq	22/24/27, 15C, 15B
-	Preamplifier	AMF-4D-01000800-30-29P	Miteq	22/24/27, 15C, 15B
-	Preamplifier	AMF-5F-18002650-25-10P	Miteq	22/24/27, 15C, 15B
-	High Pass Filter	4HC1700-1-KK	R&S	22
-	High Pass Filter	F-15041	RLC	22/24/27, 15C
-	Band Reject Filter	WRCA824/849-0.2-6SS	Wainwright	22
-	Band Reject Filter	WRCC1800/2000-0.2-10SS	Wainwright	24
-	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
-	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	22

Eq. No	Equipment	Type	Manufacturer	Used in
-	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
-	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
-	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	22/24/27
-	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	-
Planned	Notch Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	22/24/27
-	GPS RX Antenna w/AMP	L1A-PM-NF	GPS Source	15C
-	GPS Inline amplifier	A11M-V-NF-NM	GPS Source	15C
-	GPS signal Splitter	S12-P110/5-NF	GPS Source	15C
-	GPS TX Antenna	L1P-PV-NF	GPS Source	15C