

FCC Part 22/24 Compliance Test Report

Test Report no.:	FCC22&24_RM-688_02.docx	Date of Report:	17-Jun-2010
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FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-688 / Battery BL-5CT / AC-charger AC-8C / Charger adapter CA-100C / Headset WH-102 / Memory Card MU-37		
FCC ID:	QFXRM-688	IC:	661Z-RM688
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Parts 22/24 , TIA-603-C-2004 and IC standards, RSS-GEN (Issue 2, June 2007), 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:			

Jia Dongsheng, System Manager

1. Summary for FCC Part 22/24 Compliance Test Report

Date of receipt	29-May-2010
Testing completed	07-Jun-2010
The customer's contact person	Alison Lenaghan
Test Plan referred to	T:\Projects\RM-688\TestPlan\RS_testplan_RM-688.xls
Notes	-
Document name	FCC22&24_RM-688_02.docx

1.1. EUT and Accessory Information

The EUT is a 6-band (GSM850/900/1800/1900) and WCDMA Band (I/V(850) mobile phone with GPRS, EGPRS, HSDPA, HSUPA and Bluetooth. The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-688	004402130836046	4500	-	032.006	51683
Battery	BL-5CT	3635639385150103997;0670555	-	-	-	51691
AC-charger	AC-8C	4419299414010343131;0675391	-	-	-	51697
Charger adapter	CA-100C	0730339805111830435	-	-	-	51700
Headset	WH-102	06943239375c4106664	-	-	-	51703
Memory Card	MU-37	M24U2GTM1BRN11PK3991Q	-	-	-	51695

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

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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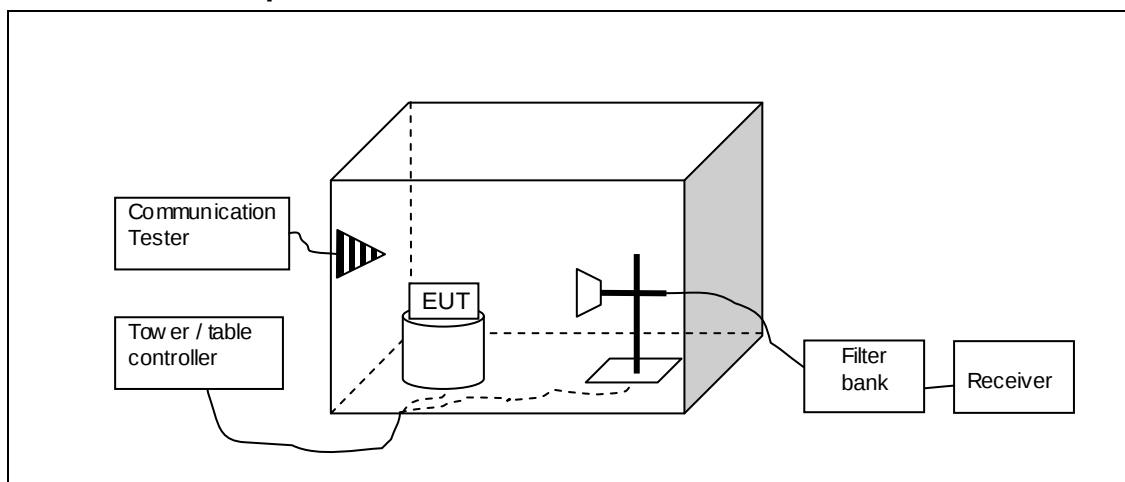
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2. Spurious radiated emissions

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

EUT with DUT number	RM-688, DUT 51683
Accessories with DUT numbers	BL-5CT, DUT 51691 ; AC-8C, DUT 51697 ; CA-100C, DUT 51700 ; WH-102, DUT 51703 ; MU-37, DUT 51695
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 62 / 100.8
Date of measurements	07-Jun-2010
Measured by	Jia Dongsheng

2.1. 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 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. Substitution values at each frequencies are measured beforehand and saved to the test software.

The substitution corrections are obtained as described below:

$$A_{SUBST} = P_{SUBST\ TX} - P_{SUBST\ RX} - L_{SUBST\ CABLES} + G_{SUBST\ TX\ ANT}$$

Where A_{SUBST} is the final substitution correction including receive antenna gain. $P_{SUBST\ TX}$ is signal generator level, $P_{SUBST\ RX}$ is receiver level, $L_{SUBST\ CABLES}$ is cable losses including both TX and RX cables and $G_{SUBST\ TX\ ANT}$ is substitution antenna gain.

The measurement results are obtained as described below:

$$P[dBm] = P_{MEAS} + A_{TOT}$$

Where P_{MEAS} is receiver reading in dBm and A_{TOT} is total correction factor including cable loss and substitution correction ($A_{TOT} = L_{CABLES} - G_{PREAMP} + A_{SUBST}$).

Limits for spurious radiated emissions measurements

Operation band	Frequency range [MHz]	Limit [dBm]
WCDMA 850	30 - 8500	-13
GSM 1900 / WCDMA 1700 /	30 - 18500	-13

2.3. GSM850 TX Test results

GSM mode, channel 190 / 836.6 MHz

Frequency [MHz]	P[dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
848.62	-68.88	0.00013	-67.92	-0.96	VERTICAL	PASSED
1695.191	-56.62	0.00218	-62.29	5.67	VERTICAL	PASSED
2512.906	-52.01	0.0063	-64.37	12.36	VERTICAL	PASSED
2531.563	-51.85	0.00653	-64.13	12.28	VERTICAL	PASSED
3346.373	-43.88	0.04093	-52.32	8.44	HORIZONTAL	PASSED
3346.653	-44.06	0.03926	-52.52	8.46	HORIZONTAL	PASSED

EGPRS mode, channel 190 / 836.6 MHz

Frequency [MHz]	P[dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
1673.086	-55.98	0.00252	-61.63	5.65	VERTICAL	PASSED
2509.659	-42.27	0.05929	-54.53	12.26	VERTICAL	PASSED
2509.8	-36.89	0.20464	-49.16	12.27	VERTICAL	PASSED
3346.192	-53.97	0.00401	-62.42	8.45	HORIZONTAL	PASSED
3346.393	-45.51	0.02812	-53.95	8.44	HORIZONTAL	PASSED

2.4. GSM1900 TX Test results

GSM mode, channel 661 / 1880.0 MHz

Frequency [MHz]	P[dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
2905.415	-44.19	0.03811	-64.03	19.84	HORIZONTAL	PASSED
2906.514	-44.46	0.03581	-63.87	19.41	VERTICAL	PASSED
2915.099	-43.4	0.04571	-63.79	20.39	HORIZONTAL	PASSED
2918.307	-44.32	0.03698	-64.33	20.01	HORIZONTAL	PASSED
2975.5	-44.42	0.03614	-64.79	20.37	HORIZONTAL	PASSED
9641.483	-45.32	0.02938	-66.54	21.22	VERTICAL	PASSED

EGPRS mode, channel 661 / 1880.0 MHz

Frequency [MHz]	P[dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
2890.382	-44.97	0.03184	-63.97	19	VERTICAL	PASSED
2914.694	-43.47	0.04498	-63.84	20.37	HORIZONTAL	PASSED
2939.167	-45.14	0.03062	-64.96	19.82	HORIZONTAL	PASSED
2950.231	-45.89	0.02576	-65.77	19.88	HORIZONTAL	PASSED
2975.486	-45.07	0.03112	-65.45	20.38	HORIZONTAL	PASSED
9598.136	-46	0.02512	-67.25	21.25	VERTICAL	PASSED

2.5. WCDMA5 TX Test results

Channel 4175 / 835.0 MHz

Frequency [MHz]	P[dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
823.619	-42.34	0.05834	-40.05	-2.29	VERTICAL	PASSED
848.661	-44.32	0.03698	-43.58	-0.74	VERTICAL	PASSED
850.061	-45.77	0.02649	-45.13	-0.64	VERTICAL	PASSED
850.263	-43.73	0.04236	-43.14	-0.59	VERTICAL	PASSED
2475.772	-52.03	0.00627	-64.14	12.11	VERTICAL	PASSED
2508.437	-51.21	0.00757	-63.43	12.22	VERTICAL	PASSED

3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	RF Emission Software	ES-K1 v.1.71	R&S	22/24/27, 15C, 15B
BJPCHW0020	DC Power supply	Hp6632B	HP	22/24/27, 15C
BJPCPT0040	Receiver	ESCS30	R&S	15C,15B
BJPCPT0069	LISN 50 µH	ESH3-Z5	R&S	15C,15B
BJPCPT0073	Signal Generator	SMR 20	R&S	22/24/27, 15C, 15B
BJPCPT0079	LISN 50 µH	ESH3-Z5	R&S	15C,15B
BJPCPT0131	Communication Tester	CMU200	R&S	15C,15B
BJPCPT0191	Pulse Limiter	ESH3-Z2	R&S	15C,15B
BJPCTC0017	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0067	Bluetooth Tester	CBT	R&S	22/24/27, 15C
BJPCTC0089	Temperature Test chamber	VT4002	Votsch industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0094	GPIO-RS232 convertor	GPIO-RS232	NI	22/24/27, 15C

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	RF Emission Software	ES-K1 v.1.71	R&S	22/24/27, 15C, 15B
BJPCPT0072	Receiver	ESI B26	R&S	22/24/27, 15C, 15B
BJPCPT0130	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
BJPCPT0150	High Pass Filter	WHKS1200-10SS	Wainwright	22/24/27, 15C, 15B
BJPCPT0151	Band Reject Filter	WRCD1880/2000-0.2/40-5SSK	Wainwright	24, 15B
BJPCPT0154	Band Reject Filter	WRCT2402/2480-2400/2483.5-30-20SS	Wainwright	15C, 15B
BJPCPT0162	Antenna	HF906	R&S	22/24/27, 15C, 15B
BJPCTC0007	Antenna	HL562	R&S	22/24/27, 15C, 15B
BJPCTC0029	Antenna	HF906	R&S	22/24/27, 15C, 15B
BJPCTC0034	Band Reject Filter	WRCT 800/880-0.2/40-5SSK	Wainwright	22, 15B
BJPCTC0049	Preamplifier	Blma 0118-1A-Bt	Bonn	22/24/27, 15C, 15B
BJPCTC0055	Communication Tester	CMU200	R&S	22/24/27,15C,15B
BJPCTC0058	Bluetooth Tester	CBT	R&S	15C, 15B
BJPCTC0064	Band Reject Filter	WRCG1877/1883-1870/1890-40/6SS	Wainwright	24, 15B
BJPCTC0065	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	27, 15B
BJPCTC0071	Multi-Device Controller	2090	EMCO	22/24/27, 15C, 15B
BJPCTC0072	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	ETS	22/24/27, 15C, 15B
BJPCTC0073	MAST	Model-TR/POL	ETS	22/24/27, 15C, 15B
BJPCTC0074	MAST	Model 2070-2	ETS	22/24/27, 15C, 15B
BJPCTC0075	Turntable	Model 2188	ETS-EMCO	22/24/27, 15C, 15B
BJPCTC0096	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B