

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-675_15.docx	Date of Report:	21-Jul-2010
Number of pages:	11	Customer's Contact person:	Alison Lenaghan
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FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-675 / Battery BL-5K / AC-charger AC-15E / Headset WH-102		
FCC ID:	QFXRM-675	IC:	661Z-RM675
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 7, June 2007). 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 15C Compliance Test Report

Date of receipt	29-Jun-2010
Testing completed	20-Jul-2010
The customer's contact person	Alison Lenaghan
Test Plan referred to	T:\Projects\RM-675\TestPlan\Copy of RS_testplan_RM-675 EMC FCC SAR.xls
Notes	-
Document name	FCC15C_RM-675_11.docx

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, HSDPA, HSUPA and WLAN and Bluetooth and FM transmitter. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-675	004402131424719	3001	-	010.022	51747
Battery	BL-5K	4620400051K10101256;0670580	-	-	-	51751
AC-charger	AC-15E	4090490023220806073;0675463	-	-	-	51720
Headset	WH-102	0694323939454109315	-	-	-	51755

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)	A8.4 (2)	Conducted peak output power	NP
15.247(d)	A8.5	Band edge compliance of RF emissions	NP
15.247(d)	A8.5	Spurious RF conducted emissions	NP
15.247(d), 15.209	A8.5	Spurious radiated emissions	PASSED
15.207	7.2.2	AC powerline conducted emissions	PASSED
15.247(a)(1)	A8.1 (a)	20 dB bandwidth	NP
15.247(a)(1)	A8.1 (b)	Carrier frequency separation	NP
15.247(a)(1)(iii)	A8.1 (d)	Number of hopping frequencies	NP
15.247(a)(1)(iii)	A8.1 (d)	Time of occupancy	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.

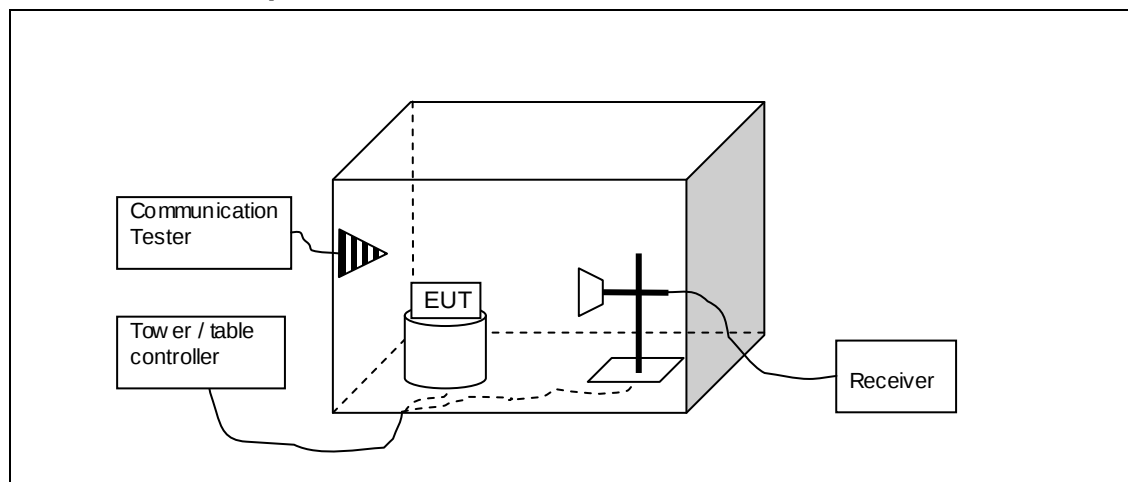
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2. Spurious radiated emissions (FCC §22.917(a), §24.238(a), §2.1053, RSS-132 4.5, RSS-133 6.5)

EUT with DUT number	RM-675, DUT 51747
Accessories with DUT numbers	BL-5K, DUT 51751 ; AC-15E, DUT 51720 ; WH-102, DUT 51755
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 63 / 100.1
Date of measurements	16-Jul-2010
Measured by	Jia Dongsheng

2.1. 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:

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

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 0 / 2402 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.4	31.74	38.619	31.99	-0.25	HORIZONTAL	PASSED
7206	33.65	48.112	28.63	5.02	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.4	46.1	201.86	46.35	-0.25	HORIZONTAL	PASSED
7206	46.58	213.378	41.56	5.02	VERTICAL	PASSED

Channel 40 / 2442 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2813.429	37.8	77.607	29.27	8.53	HORIZONTAL	PASSED
2869.84	37.48	74.791	28.86	8.62	VERTICAL	PASSED
3913.023	27.84	24.672	29.25	-1.41	VERTICAL	PASSED
3938.076	27.71	24.288	29.27	-1.56	VERTICAL	PASSED
17975.25	45.4	186.209	26.54	18.86	VERTICAL	PASSED

Quasi peak (RBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
40.379	33.67	48.223	43.74	-10.07	VERTICAL	PASSED
40.4	26.17	20.345	36.26	-10.09	VERTICAL	PASSED
40.482	34.69	54.263	44.83	-10.14	VERTICAL	PASSED
40.781	35.09	56.8	45.41	-10.32	VERTICAL	PASSED
40.821	35.28	58.056	45.62	-10.34	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2813.429	51.15	360.952	42.62	8.53	HORIZONTAL	PASSED
2869.84	50.71	342.965	42.09	8.62	VERTICAL	PASSED
3913.023	40.81	109.736	42.22	-1.41	VERTICAL	PASSED
3938.076	40.66	107.882	42.22	-1.56	VERTICAL	PASSED
17975.25	58.86	876.799	40	18.86	VERTICAL	PASSED

Channel 78 / 2480 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.2	32.06	40.064	32	0.06	HORIZONTAL	PASSED
7440.2	34.58	53.592	29.5	5.08	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.2	44.88	175.327	44.82	0.06	HORIZONTAL	PASSED
7440.2	47.43	235.153	42.35	5.08	VERTICAL	PASSED

2.3.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804	40.4	104.737	40.65	-0.25	HORIZONTAL	PASSED
7205.8	33.14	45.394	28.12	5.02	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804	52.11	403.181	52.36	-0.25	HORIZONTAL	PASSED
7205.8	46.2	204.127	41.18	5.02	VERTICAL	PASSED

Channel 40 / 2442 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2845.591	36.99	70.746	28.76	8.23	HORIZONTAL	PASSED
2889.58	37.9	78.551	28.85	9.05	VERTICAL	PASSED
3920.541	28.1	25.395	29.51	-1.41	VERTICAL	PASSED
3936.374	27.9	24.831	29.44	-1.54	VERTICAL	PASSED
17943.89	45.34	184.969	26.78	18.56	VERTICAL	PASSED

Quasi peak (RBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
40.311	25.23	18.266	35.26	-10.03	VERTICAL	PASSED
40.562	24.93	17.642	35.11	-10.18	VERTICAL	PASSED
40.672	34.48	52.985	44.73	-10.25	VERTICAL	PASSED
40.82	33.21	45.751	43.55	-10.34	VERTICAL	PASSED
40.831	34.79	54.885	45.14	-10.35	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
2845.591	50.18	322.812	41.95	8.23	HORIZONTAL	PASSED
2889.58	51.67	383.045	42.62	9.05	VERTICAL	PASSED
3920.541	41.34	116.681	42.75	-1.41	VERTICAL	PASSED
3936.374	40.95	111.506	42.49	-1.54	VERTICAL	PASSED
17943.89	58.08	801.586	39.52	18.56	VERTICAL	PASSED

Channel 78 / 2480 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4959.9	35.48	59.422	35.42	0.06	HORIZONTAL	PASSED
7440.2	33.81	49.017	28.73	5.08	VERTICAL	PASSED

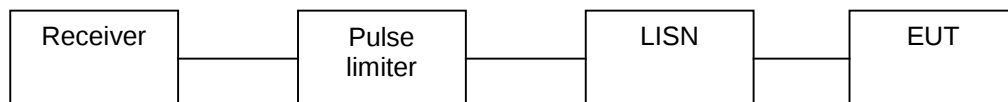
Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4959.9	47.97	250.438	47.91	0.06	HORIZONTAL	PASSED
7440.2	47.43	235.153	42.35	5.08	VERTICAL	PASSED

3. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2)

EUT with DUT number	RM-675, DUT 51747
Accessories with DUT numbers	BL-5K, DUT 51751 ; AC-15E, DUT 51720 ; WH-102, DUT 51755
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	25 / 60 / 100.2
Date of measurements	20-Jul-2010
Measured by	Zou Ming

3.1. Test Setup



3.2. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-GEN as follows:

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$$U [dB\mu V] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

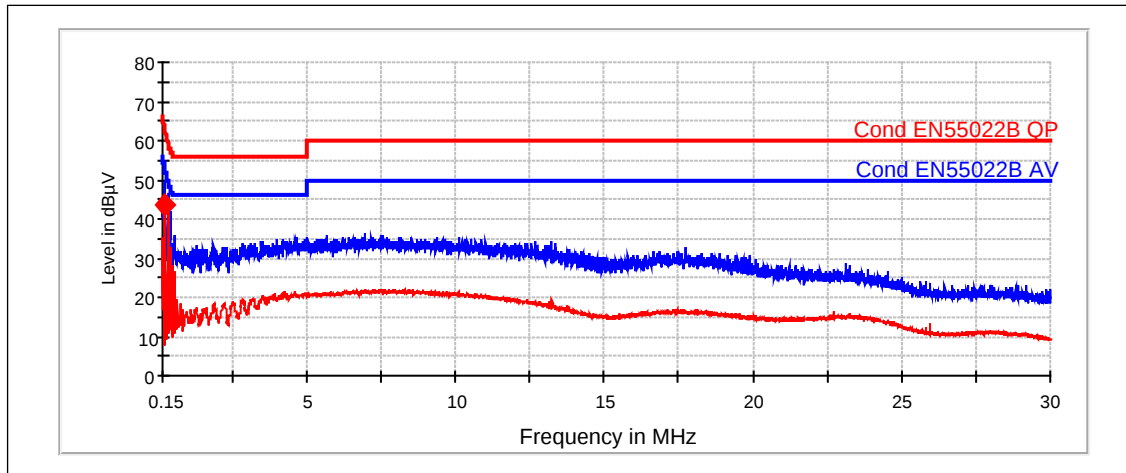
CISPR 22 Class B limits

Frequency range [MHz]	Quasi peak limit [dBμV]	Average limit [dBμV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

3.3. Bluetooth Test results

3.3.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Average

Frequency [MHz]	Level [dBμV]	IF-BW[kHz]	Line	Margin	Result
0.245	43.72	9	L1	8.22	PASSED

4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	RF Emission Software	EMC32 Test Software	R&S	22/24/27, 15C, 15B
BJPCHW0020	DC Power supply	Hp6632B	HP	22/24/27, 15C
BJPCPT0040	Receiver	ESCS30	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
BJPCTC0112	Power Splitter	11667B	Agilent	22/24/27, 15C
BJPCTC0114	Signal Generator	E8357C	Agilent	22/24/27, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C

4.2. 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	EMC32 Test Software	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
BJPCTC0113	Receiver	ESI B26	R&S	22/24/27, 15B, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C