

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-725_04.docx	Date of Report:	29-Apr-2011
Number of pages:	11	Customer's Contact person:	Hu Helen
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FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-725 / Battery BL-4C / AC-charger AC-3U / Laptop IBM T40 / USB Data Cable CA-101 / Printer HP C6427A		
FCC ID:	QTLRM-725	IC:	661AB-RM725
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:			

Jia Dongsheng, System Manager

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	02-Apr-2011
Testing completed	27-Apr-2011
The customer's contact person	Hu Helen
Test Plan referred to	T:\Projects\RM-725\TestPlan\RS_testplan_RM-725.xls
Notes	-
Document name	FCC15B_RM-725_04.docx

1.1. EUT and Accessory Information

The EUT is a 2-band (GSM850/1900) mobile phone with GPRS and Bluetooth.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-725	001004004193463	0204	-	bx104_11w12_1	52138
Battery	BL-4C	0670389382066O40612AW37795	-	-	-	52149
AC-charger	AC-3U	4818711012132006452;0675372	-	-	-	52154
Laptop	IBM T40	99FMPGT	-	-	-	51044
USB Data Cable	CA-101	07306349242Q1205251	-	-	-	51836
Printer	HP C6427A	MY15B18156JJ	-	-	-	51838

1.2. Summary of Test Results

Bluetooth:

Section in CFR 47	Section in ICES-003 (RSS-132)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	PASSED
15.109, a	5.5 (4.6)	Radiated emissions	PASSED

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.

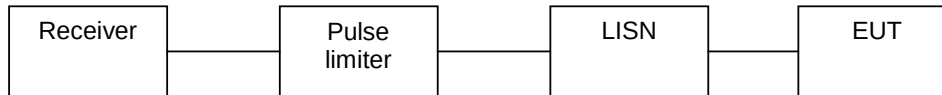
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2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-725, DUT 52138
Accessories with DUT numbers	BL-4C, DUT 52149 ; AC-3U, DUT 52154 ; IBM T40, DUT 51044 ; CA-101, DUT 51836 ; HP C6427A, DUT 51838
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	Data was transferring between mobile phone and PC during the BT measurement.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 32 / 100.7
Date of measurements	27-Apr-2011
Measured by	Jia Dongsheng

2.1. Test Setup



2.2. Test method and limit

The measurement is made according to ANSI C63.4-2003 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:

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

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

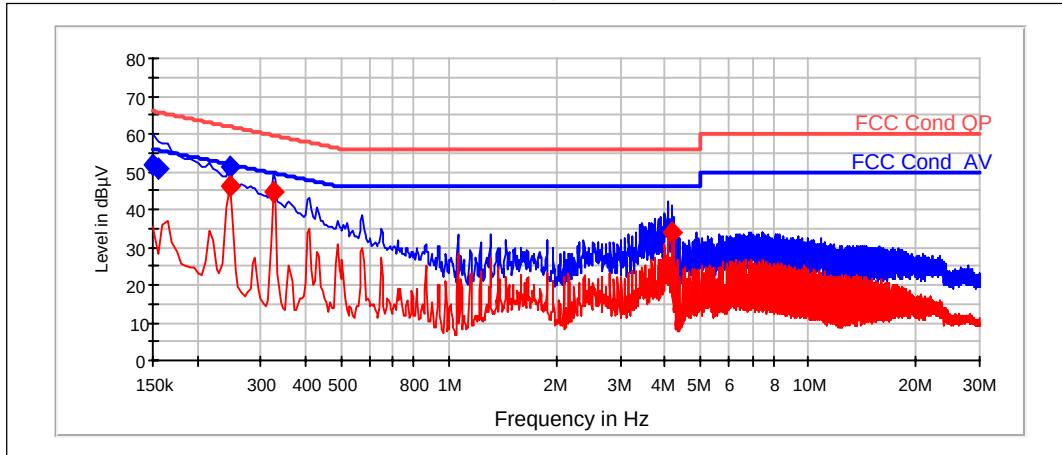
CISPR 22 Class B limits

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

2.3. Bluetooth Test results

2.3.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz, measured from PC charger



QuasiPeak (RBW: 9 kHz)

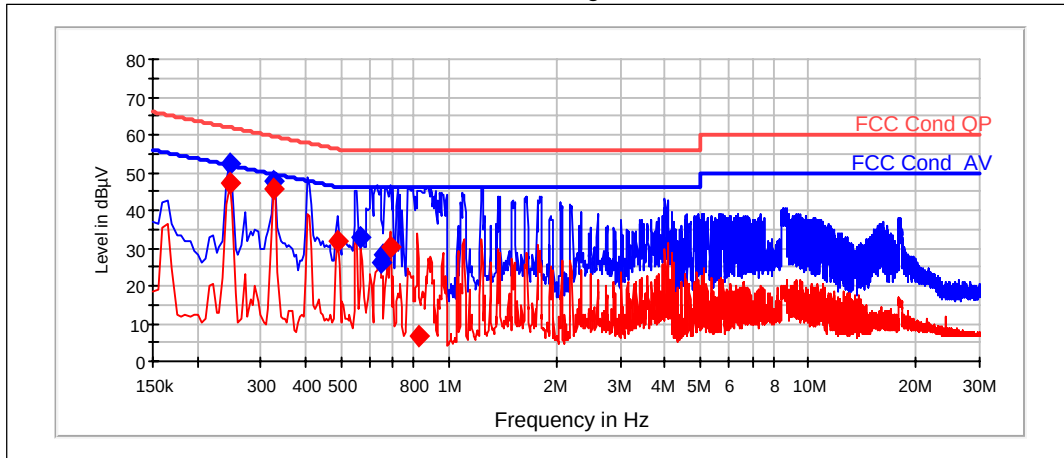
Frequency [MHz]	U [dBμV]	Line	Result
0.15	51.8	N	PASSED
0.155	50.7	N	PASSED
0.245	51.26	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.245	46	N	PASSED
0.325	44.36	N	PASSED
4.165	34.09	N	PASSED

2.3.2 8DPSK modulation, PRBS packet type

Channel 40 / 2442 MHz, measured from mobile charger



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.245	52.56	N	PASSED
0.325	47.44	N	PASSED
0.57	32.9	N	PASSED
0.65	25.95	L1	PASSED
0.655	28.26	N	PASSED

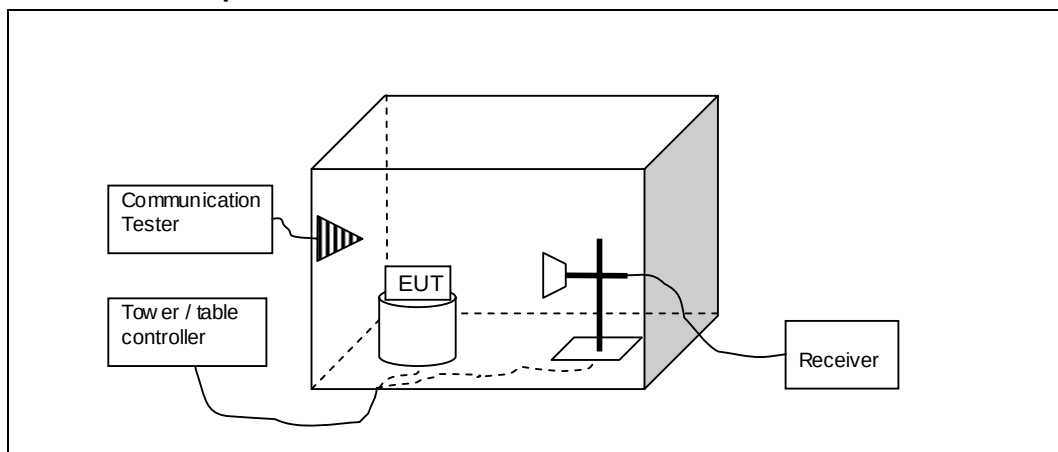
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.245	47.08	N	PASSED
0.325	45.52	N	PASSED
0.49	32.02	N	PASSED
0.69	30.39	L1	PASSED
0.825	6.82	N	PASSED

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

EUT with DUT number	RM-725, DUT 52138
Accessories with DUT numbers	BL-4C, DUT 52149 ; AC-3U, DUT 52154 ; IBM T40, DUT 51044 ; CA-101, DUT 51836 ; HP C6427A, DUT 51838
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	Data was transferring between mobile phone and PC during the BT measurement.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 40 / 100.7
Date of measurements	27-Apr-2011
Measured by	Jia Dongsheng

3.1.1 Test Setup



3.2. 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:

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

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

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

Frequency range [MHz]	Quasi peak limit [dBμV/m]	Average limit [dBμV/m]	Peak limit [dBμV/m]
30 - 230	40	-	-
230 – 1000	47	-	-
Above 1000	-	54	74

3.3. Bluetooth Test results

3.3.1 GFSK modulation, PRBS packet type

TX mode, Channel 0 / 2402 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.7	42.43	132.312	42.68	-0.25	VERTICAL	PASSED
7203.5	46.61	214.042	41.6	5.01	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.7	29.17	28.734	29.42	-0.25	VERTICAL	PASSED
7203.5	33.13	45.326	28.12	5.01	VERTICAL	PASSED

TX mode, Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
37.014	28.27	25.909	41.75	-13.48	VERTICAL	PASSED
44.589	26.69	21.592	45.31	-18.62	VERTICAL	PASSED
99.95	28.91	27.906	51.67	-22.76	HORIZONTAL	PASSED
114.529	34.61	53.771	56.03	-21.42	VERTICAL	PASSED
257.064	38.67	85.763	60.16	-21.49	VERTICAL	PASSED
465.187	32.21	40.776	47.46	-15.25	VERTICAL	PASSED
801.012	39.78	97.521	49.86	-10.08	VERTICAL	PASSED
909.077	18.98	8.89	27.36	-8.38	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2253.644	46.39	208.785	42.4	3.99	VERTICAL	PASSED
2930.257	52.7	431.42	42.69	10.01	VERTICAL	PASSED
7069.635	46.11	201.953	41.21	4.9	HORIZONTAL	PASSED
7418.537	52.84	438.733	47.77	5.07	VERTICAL	PASSED
7828.558	46.17	203.47	41.46	4.71	VERTICAL	PASSED
7854.707	47.03	224.595	42.27	4.76	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2253.644	33.86	49.3	29.87	3.99	VERTICAL	PASSED
2930.257	39.03	89.392	29.02	10.01	VERTICAL	PASSED
7069.635	33.3	46.243	28.4	4.9	HORIZONTAL	PASSED
7418.537	38.03	79.735	32.96	5.07	VERTICAL	PASSED
7828.558	33.19	45.667	28.48	4.71	VERTICAL	PASSED
7854.707	33.18	45.593	28.42	4.76	HORIZONTAL	PASSED

TX mode, Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4959	44.02	158.836	43.95	0.07	HORIZONTAL	PASSED
7438.7	46.55	212.545	41.47	5.08	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4959	30.34	32.893	30.27	0.07	HORIZONTAL	PASSED
7438.7	33.66	48.167	28.58	5.08	HORIZONTAL	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 μ H	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