

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-693_04.docx	Date of Report:	25-Mar-2011
Number of pages:	11	Customer's Contact person:	Zhang David
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FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-693 / Battery BL-5C / AC-charger AC-3E / USB Data Cable CA-101 / Laptop IBM T40 / Printer HP C6427A		
FCC ID:	QTLRM-693	IC:	661AB-RM693
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	15-Mar-2011
Testing completed	21-Mar-2011
The customer's contact person	Zhang David
Test Plan referred to	T:\Projects\RM-693\TestPlan\RS_testplan_RM-693.xls
Notes	-
Document name	FCC15B_RM-693_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-693	001004004139235	0402	-	so104 11w06	52118
Battery	BL-5C	0670400382066R24210GL25830	-	-	-	52124
AC-charger	AC-3E	4090498272171205946;0675370	-	-	-	52127
USB Data Cable	CA-101	07306349242Q1205251	-	-	-	51836
Laptop	IBM T40	99FMPGT	-	-	-	51044
Printer	HP C6427A	MY15B18156JJ	-	-	-	51838

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	NP

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	PASSED
15.109, a	5.5 (6.6)	Radiated emissions	PASSED

Bluetooth:

Section in CFR 47	Section in ICES-003 (RSS-133)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	PASSED
15.109, a	5.5 (6.6)	Radiated emissions	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.

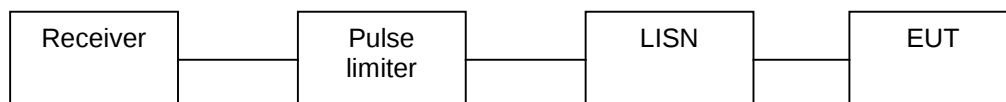
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2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-693, DUT 52118
Accessories with DUT numbers	BL-5C, DUT 52124 ; AC-3E, DUT 52127 ; WH-102, DUT 52128 ; IBM T40, DUT 51044 ; HP C6427A, DUT 51838
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	Data was transferring during the test between mobile phone and PC.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 25 / 100.9
Date of measurements	18-Mar-2011
Measured by	Zou Ming

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.

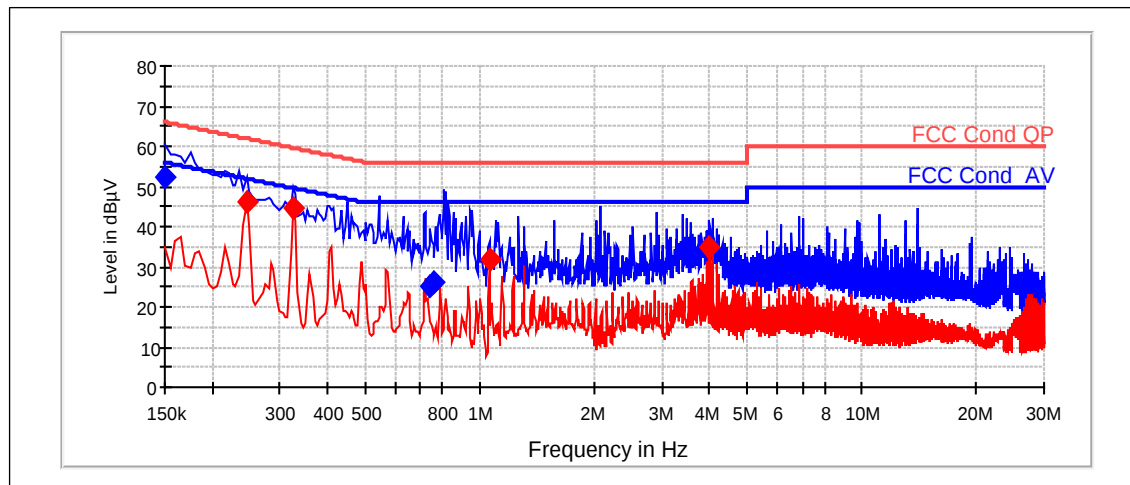
CISPR 22 Class B limits

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)

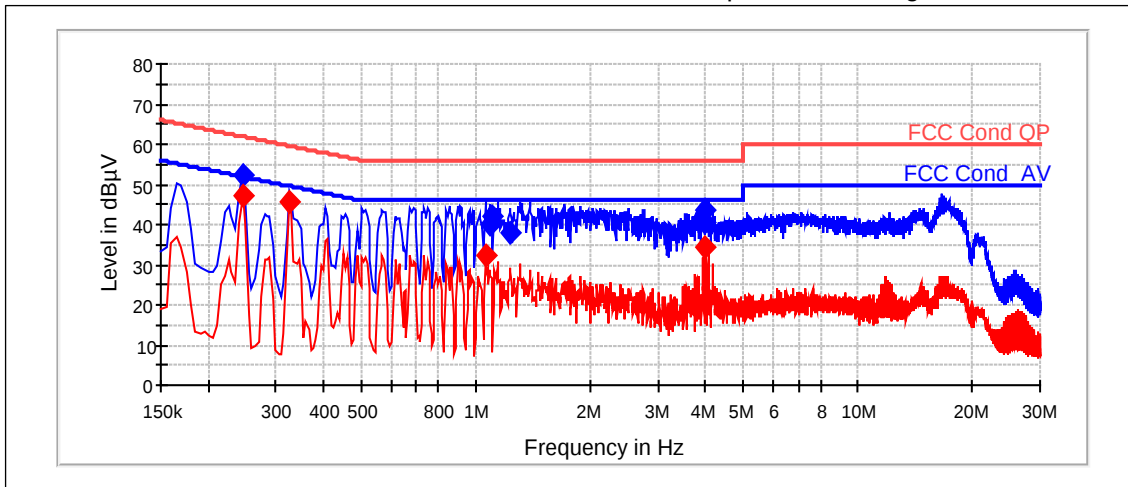
Frequency [MHz]	U [dBμV]	Line	Result
0.15	52.43	L1	PASSED
0.74	24.97	N	PASSED
0.76	26.15	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.245	46.09	N	PASSED
0.325	44.36	N	PASSED
1.06	31.71	N	PASSED
4	35.12	N	PASSED

2.4. GSM1900 Test results

RX mode, channel 661 / 1960.0 MHz, measured from mobile phone AC charger



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.245	52.44	N	PASSED
1.095	40.12	L1	PASSED
1.1	42.3	L1	PASSED
1.225	38.02	L1	PASSED
3.995	40.65	L1	PASSED
4	43.44	L1	PASSED

Average (RBW: 9 kHz)

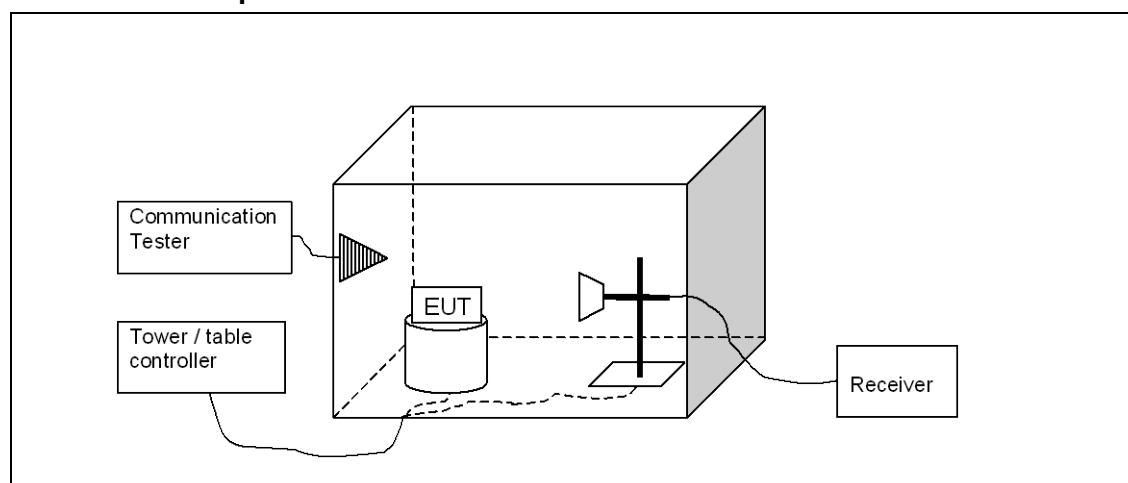
Frequency [MHz]	U [dBμV]	Line	Result
0.245	46.99	N	PASSED
0.325	45.55	N	PASSED
1.06	32.52	N	PASSED
4	34.52	N	PASSED

3. Radiated emissions

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

EUT with DUT number	RM-693, DUT 52118
Accessories with DUT numbers	BL-5C, DUT 52124 ; AC-3E, DUT 52127 ; CA-101, DUT 51836 ; IBM T40, DUT 51044 ; HP C6427A, DUT 51838
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	Data was transferring during the test between mobile phone and PC.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19 / 25 / 102.4
Date of measurements	21-Mar-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. GSM1900 Test results

RX mode, channel 512 / 1930.2 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3860.5	44.38	165.596	45.86	-1.48	VERTICAL	PASSED
7718.5	45.41	186.509	40.85	4.56	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
3860.5	30.02	31.681	31.5	-1.48	VERTICAL	PASSED
7718.5	32.75	43.416	28.19	4.56	VERTICAL	PASSED

RX mode, channel 661 / 1960.0 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
37.295	29.07	28.412	42.88	-13.81	VERTICAL	PASSED
45.421	32.54	42.359	51.57	-19.03	VERTICAL	PASSED
99.89	32.77	43.506	55.82	-23.05	VERTICAL	PASSED
108.037	31.89	39.292	53.64	-21.75	VERTICAL	PASSED
196.603	36.35	65.667	60.89	-24.54	HORIZONTAL	PASSED
257.064	39.88	98.639	61.69	-21.81	HORIZONTAL	PASSED
399.429	32.72	43.256	50.41	-17.69	VERTICAL	PASSED
400.501	41.71	121.787	59.37	-17.66	HORIZONTAL	PASSED
563.076	30.34	32.878	45.07	-14.73	HORIZONTAL	PASSED
667.481	23.53	15.021	36.07	-12.54	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
7026.356	45.65	191.712	40.72	4.93	HORIZONTAL	PASSED
7040.083	45.73	193.33	40.86	4.87	HORIZONTAL	PASSED
7054.512	45.89	197.061	40.99	4.9	VERTICAL	PASSED
7857.113	45.61	190.788	40.86	4.75	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
7026.356	32.81	43.702	27.88	4.93	HORIZONTAL	PASSED
7040.083	32.66	42.959	27.79	4.87	HORIZONTAL	PASSED
7054.512	32.71	43.202	27.81	4.9	VERTICAL	PASSED
7857.113	32.78	43.566	28.03	4.75	HORIZONTAL	PASSED

RX mode, channel 810 / 1989.8 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
3979.6	44.99	177.542	46.96	-1.97	VERTICAL	PASSED
7958.5	45.52	188.886	40.72	4.8	VERTICAL	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
3979.6	30.09	31.963	32.06	-1.97	VERTICAL	PASSED
7958.5	32.42	41.773	27.62	4.8	VERTICAL	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
BJPCWH0020	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	Tempreture Test chamber	VT4002	Votsch industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0094	GPB-RS232 convertor	GPB-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