

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-923_08.docx	Date of Report:	07-Nov-2012
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-923 / Battery BP-3L / USB data cable CA-190CD / Headset WH-902 / Laptop IBM T43 / Printer HP C6427A		
FCC ID:	QTLRM-923	IC:	-
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), RSS-210 (Issue 8, December 2010). 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:			

Gao Sherina, Engineer, EMC

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	16-Oct-2012
Testing completed	30-Oct-2012
The customer's contact person	Hu Helen
Test Plan referred to	T:\Projects\RM-923\TestPlan\RS_testplan_RM-923.xlsm
Notes	-
Document name	FCC15B_RM-923_08.docx

1.1. EUT and Accessory Information

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

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-923	004402471590087	1001	-	1102.0000.8779.12418	53011
Battery	BP-3L	4955402172050108160;0670635	-	-	-	52821
USB data cable	CA-190CD	07304562201628	-	-	-	53024
Headset	WH-902	126582R	-	-	-	53015
Laptop	IBM T43	L3KXHL3	-	-	-	52468
Printer	HP C6427A	MY15B18156JJ	-	-	-	51838
Phone	RM-923	004402/47/159004/6	1001	-	1102.0000.8779.12418	52875

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	PASSED
15.109, a	5.5 (4.6)	Radiated emissions	PASSED

WCDMA 850 (Band V):

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	NP
15.109, a	5.5 (6.6)	Radiated emissions	NP

WCDMA 1900 (Band II):

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	NP

WLAN:

Section in CFR 47	Section in ICES-003 (RSS-139)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP

15.109, a	5.5 (6.6)	Radiated emissions	NP
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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.

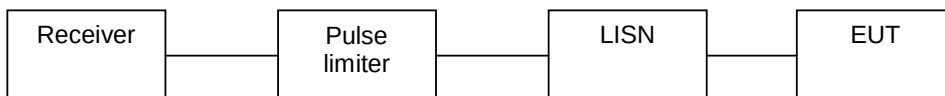
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2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-923, DUT 52875
Accessories with DUT numbers	BP-3L, DUT 52821 ; CA-190CD, DUT 53024 ; WH-902, DUT 53015 ; IBM T43, DUT 52468 ; HP C6427A, DUT 51838
Operation Voltage [V] / [Hz]	115/60
Results	PASSED
Remarks	Data was keeping transferred between PC and mobile phone during the test.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/37/101.5
Date of measurements	24-Oct-2012
Measured by	Gao Sherina

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:

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

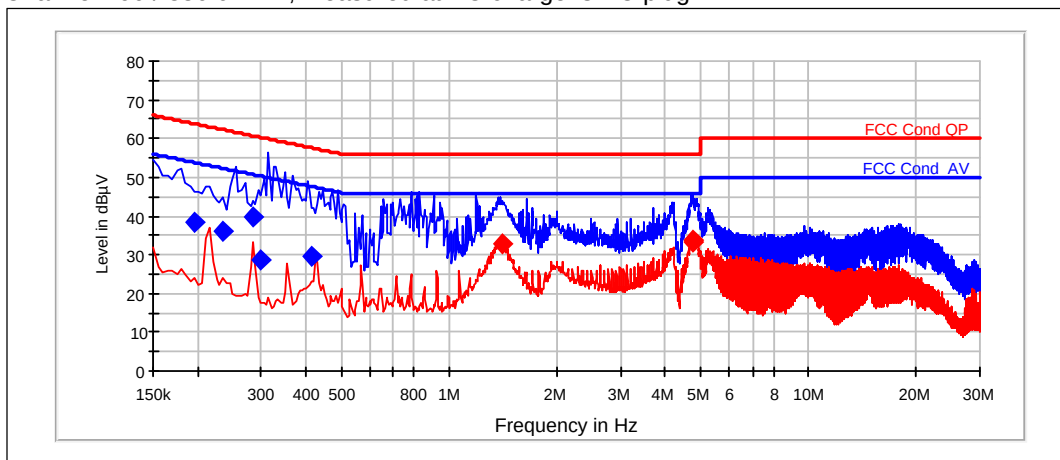
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

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. GSM 850 Test results

Channel 190 / 836.6 MHz, measured at PC charger's AC plug.



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.195	38.21	L1	PASSED
0.235	36.18	N	PASSED
0.285	39.93	L1	PASSED
0.3	28.63	N	PASSED
0.415	29.57	N	PASSED

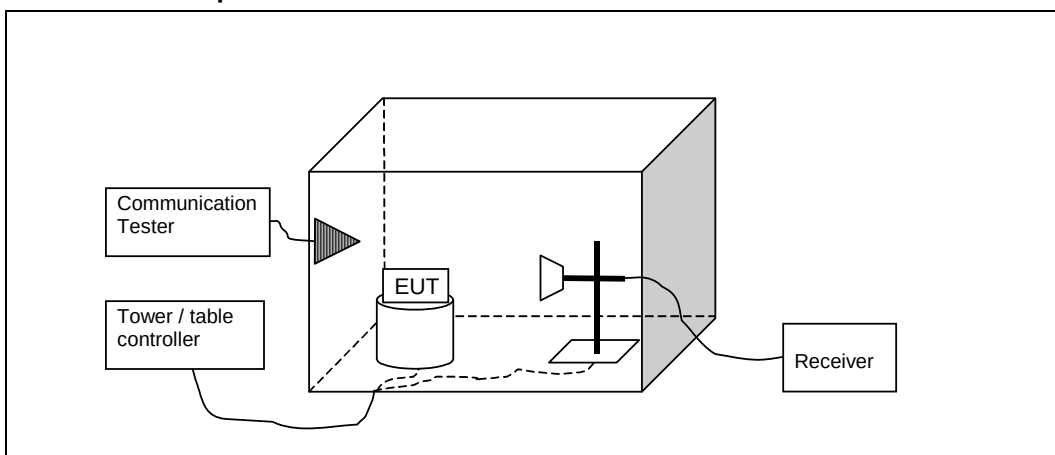
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
1.41	32.69	L1	PASSED
4.75	33.57	N	PASSED
4.77	33.19	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-923, DUT 53011
Accessories with DUT numbers	BP-3L, DUT 52821 ; CA-190CD, DUT 53024 ; WH-902, DUT 53015 ; IBM T43, DUT 52468 ; HP C6427A, DUT 51838
Operation Voltage [V] / [Hz]	115/60
Results	PASSED
Remarks	Data was keeping transferred between PC and mobile phone during the test.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/39/101.7
Date of measurements	30-Oct-2012
Measured by	Gao Sherina

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:

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

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	-	-
Above 1000	-	54	74

3.3. GSM850 test results

RX mode, channel 128 / 869.2 MHz

Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
3476.6	42.11	127.541	44.09	-1.98	31.9	74	PASSED
6952.2	52.38	416.102	47.25	5.13	21.6	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
3476.6	28.54	26.742	30.52	-1.98	25.5	54	PASSED
6952.2	39.91	98.935	34.78	5.13	14.1	54	PASSED

RX mode, channel 190 / 881.6 MHz

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
30.27	24.95	17.687	27.78	-2.83	15	40	PASSED
63.247	15.71	6.102	42.61	-26.9	24.3	40	PASSED
70.421	18.9	8.808	44.54	-25.64	21.1	40	PASSED
75.801	15.72	6.11	40.71	-24.99	24.3	40	PASSED
76.844	15.15	5.721	40.07	-24.92	24.9	40	PASSED
107.775	35.05	56.552	57.93	-22.88	8.5	43.5	PASSED
134.889	33.02	44.776	56.93	-23.91	10.5	43.5	PASSED
169.221	12.97	4.449	37.94	-24.97	30.5	43.5	PASSED
196.603	32.47	42	57	-24.53	11	43.5	PASSED
212.795	38.05	79.855	61.68	-23.63	5.5	43.5	PASSED
425.427	24.87	17.519	42.47	-17.6	21.1	46	PASSED

Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
3000.9	41.91	124.624	43.55	-1.64	32.1	74	PASSED
3525.8	41.32	116.399	43.69	-2.37	32.7	74	PASSED
7042.789	46.13	202.512	40.9	5.23	27.9	74	PASSED
7052.4	46.26	205.684	41.16	5.11	27.7	74	PASSED
7056.51	46.22	204.574	41.03	5.19	27.8	74	PASSED
7067.537	46.34	207.444	41.16	5.18	27.7	74	PASSED
7077.152	46.58	213.182	41.29	5.29	27.4	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
3000.9	28.5	26.62	30.14	-1.64	25.5	54	PASSED
3525.8	28.13	25.504	30.5	-2.37	25.9	54	PASSED
7042.789	33.03	44.818	27.8	5.23	21	54	PASSED
7052.4	33.1	45.201	28	5.11	20.9	54	PASSED
7056.51	32.9	44.162	27.71	5.19	21.1	54	PASSED

7067.537	33.1	45.206	27.92	5.18	20.9	54	PASSED
7077.152	33.36	46.564	28.07	5.29	20.6	54	PASSED

RX mode, channel 251 / 893.8 MHz

Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Margin	Limit [dBμV/m]	Results
3573.7	40.84	110.141	43.15	-2.31	33.2	74	PASSED
7150.7	45.87	196.653	40.76	5.11	28.1	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
3573.7	27.99	25.093	30.3	-2.31	26	54	PASSED
7150.7	33.08	45.102	27.97	5.11	20.9	54	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
BJPCPT0069	LISN 50 μ H	ESH3-Z5	R&S	15C, 15B
BJPCPT0073	Signal Generator	SMR 20	R&S	22/24/27, 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	E8257C	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
BJPCTC0124	Attenuator	SA18N200W-40	Fairview Microwave	-