FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-898_04.docx	**Date of Report:**	24-Aug-2012
Number of pages:	11	**Customer's Contact person:**	Hu Helen
Testing laboratory:	TCC Nokia Beijing Laboratory Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550	**Customer:**	Nokia Corporation Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550
FCC listing no.: **IC recognition no.:**	975940 661AH-1		
Tested devices/ accessories:	**Phone RM-898 / Battery BP-3L / USB data cable CA-190CD / Laptop IBM T43 / Printer HP C6427A**		
FCC ID:	QTLRM-898	**IC:**	661AB-RM898
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. 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:	 Digitally signed by Zou Ming DN: CN = Zou Ming, C = CN, O = NOKIA, OU = PSCL Date: 2012.08.24 17:17:58 +08'00'		

Zou Ming, Engineer, EMC

TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	07-Aug-2012
Testing completed	17-Aug-2012
The customer's contact person	Hu Helen
Test Plan referred to	T:\Projects\RM-898\TestPlan\RS_testplan_RM-898.xlsm
Notes	-
Document name	FCC15B_RM-898_04.docx

1.1. EUT and Accessory Information

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

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-898	353661050000654;059Q0X2	2000	-	1102.0000.8779.12290	52817
Battery	BP-3L	4955402172050108160;0670635	-	-	-	52821
USB data cable	CA-190CD	07304572154V2F	-	-	-	52786
Laptop	IBM T43	L3KXHL3	-	-	-	52468
Printer	HP C6427A	MY15B18156JJ	-	-	-	51838
Phone	RM-898	353661050000381;059Q0X2	2000	-	1102.0000.8779.12290	52816
Battery	BP-3L	4955402172050108161;0670635	-	-	-	52823

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

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	PASSED
15.109, a	5.5 (6.6)	Radiated emissions	PASSED

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

TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

Bluetooth:

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

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

PASSED	The EUT complies with the essential requirements in the standard.
FAILED	The EUT does not comply with the essential requirements in the standard.
NP	The test was not performed by the TCC Nokia Laboratory.

TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

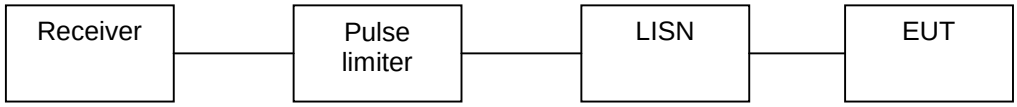
CONTENTS

TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

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

EUT with DUT number	RM-898, DUT 52817
Accessories with DUT numbers	BP-3L, DUT 52821 ; CA-190CD, DUT 52786 ; 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 testing.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 /64 /100.5
Date of measurements	17-Aug-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

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Beijing Economic and
Technological Development Area
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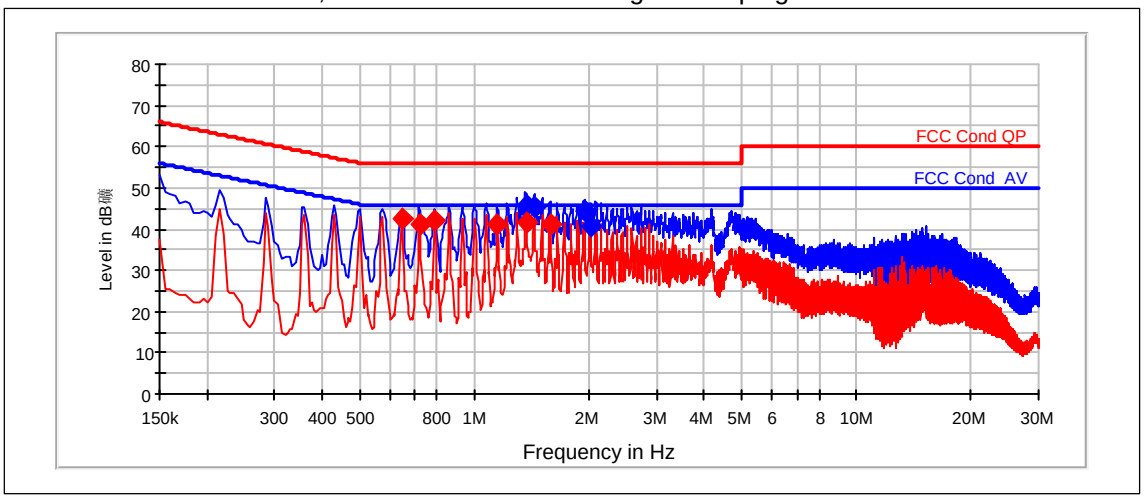
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

2.3. GSM 1900 Test results

Channel 661 / 1880.0 MHz, measured at the PC charger's AC plug.



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
1.365	45.74	L1	PASSED
1.435	45.15	L1	PASSED
1.94	44.48	L1	PASSED
2.02	40.78	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.645	42.33	N	PASSED
0.72	41.14	L1	PASSED
0.79	41.92	N	PASSED
1.15	41.08	L1	PASSED
1.365	41.64	L1	PASSED
1.58	41.24	N	PASSED

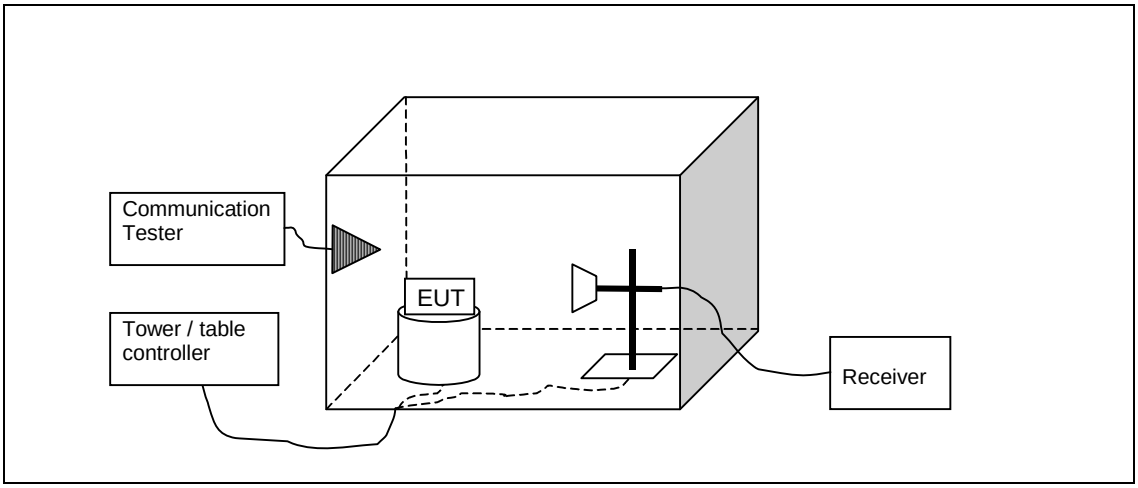
TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

3. Radiated emissions

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

EUT with DUT number	RM-898, DUT 52816
Accessories with DUT numbers	BP-3L, DUT 52823 ; HP C6427A, DUT 51838 ; CA-190CD, DUT 52786 ; IBM T43, DUT 52468
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	Data was keeping transferred between PC and mobile phone during the testing.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 61 / 100.2
Date of measurements	20-Aug-2012
Measured by	Zou Ming

3.1. 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.

TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

The measurement results are obtained as described below:

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

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

TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

3.3. GSM1900 test results

RX mode, channel 512 / 1930.2 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
3861.1	43.3	146.201	43.98	-0.68	30.7	74	PASSED
7721.6	46.53	212.178	42.09	4.44	27.5	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
3861.1	29.96	31.488	30.64	-0.68	24	54	PASSED
7721.6	32.62	42.771	28.18	4.44	21.4	54	PASSED

RX mode, channel 661 / 1960.0 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
30.09	24.6	16.977	27.3	-2.7	15.4	40	PASSED
47.475	22.41	13.193	43.38	-20.97	17.6	40	PASSED
61.001	25.25	18.302	52.57	-27.32	14.8	40	PASSED
108.517	36.45	66.474	59.43	-22.98	3.6	40	PASSED
135.099	34.25	51.6	58.18	-23.93	5.8	40	PASSED
138.9	28.81	27.574	53.1	-24.29	11.2	40	PASSED
150.83	22.25	12.958	47.21	-24.96	17.8	40	PASSED
161.354	25.12	18.022	50.06	-24.94	14.9	40	PASSED
214.391	36.45	66.443	59.98	-23.53	3.6	40	PASSED
256.851	30.03	31.725	51.99	-21.96	17	47	PASSED
257.434	30.19	32.311	52.13	-21.94	16.8	47	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
3000.4	41.66	121.102	43.3	-1.64	32.3	74	PASSED
3921.2	42.72	136.71	43.44	-0.72	31.3	74	PASSED
7841.2	45.89	196.947	41.32	4.57	28.1	74	PASSED
7039.08	46.05	200.563	40.8	5.25	28	74	PASSED
7045.896	45.82	195.321	40.66	5.16	28.2	74	PASSED
7060.223	46.16	203.166	40.93	5.23	27.8	74	PASSED
7076.254	46.87	220.496	41.58	5.3	27.1	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
3000.4	29.21	28.884	30.85	-1.64	24.8	54	PASSED
3921.2	29.75	30.722	30.47	-0.72	24.3	54	PASSED
7841.2	33.01	44.73	28.44	4.57	21	54	PASSED
7039.08	33.2	45.709	27.95	5.25	20.8	54	PASSED
7045.896	33.1	45.196	27.94	5.16	20.9	54	PASSED
7060.223	33.08	45.102	27.85	5.23	20.9	54	PASSED

TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

7076.254	33.4	46.774	28.11	5.3	20.6	54	PASSED

RX mode, channel 810 / 1989.8 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
3980.7	44.63	170.432	45.52	-0.89	29.4	74	PASSED
7958.6	46.21	204.362	41.19	5.02	27.8	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
3980.7	29.98	31.543	30.87	-0.89	24	54	PASSED
7958.6	33.33	46.382	28.31	5.02	20.7	54	PASSED

TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550

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 µH	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	Tempreture Test chamber	VT4002	Votsch industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0094	GPIB-RS232 convertor	GPIB-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	-

TCC Nokia Beijing Laboratory
Beijing Economic and
Technological Development Area
No.5 Donghuan Zhonglu
Beijing
PRC China 100176
Tel. +86 10 8711 8888
Fax. +86 10 8711 4550