

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-679_03.docx	Date of Report:	07-Apr-2011
Number of pages:	11	Customer's Contact person:	Li Hongwei-Henry
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.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-679 / Battery BL-4D / AC-charger AC-10C / Charging data cable CA-100C / laptop IBM T40 / USB Data Cable CA-101 / Printer HP C6427A		
FCC ID:	QTLRM-679	IC:	661AB-RM679
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:			

Zou Ming, EMC Engineer

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	07-Mar-2011
Testing completed	01-Apr-2011
The customer's contact person	Li Hongwei-Henry
Test Plan referred to	T:\Projects\RM-679\TestPlan\RS_testplan_RM-679.xls
Notes	-
Document name	FCC15B_RM-679_03.docx

1.1. EUT and Accessory Information

The EUT is a 5-band (GSM850/900/1800/1900) and TD-SCDMA Band I&II mobile phone with GPRS, EGPRS, HSDPA and WLAN and Bluetooth and FM transmitter.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-679	008600080055923	0301	-	021.002	52100
Battery	BL-4D	4620401012N10312266;0670605	-	-	-	52101
AC-charger	AC-10C	3997910096012001230;0675412	-	-	-	52108
Charging data cable	CA-100C	07303390131L2605514	-	-	-	52109
laptop	IBM T40	99FMPGT	-	-	-	51044
USB Data Cable	CA-101	07306349242Q1205251	-	-	-	51836
Printer	HP C6427A	MY15B18156JJ	-	-	-	51838

1.2. Summary of Test Results

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	PASSED
15.109, a	5.5 (6.6)	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.

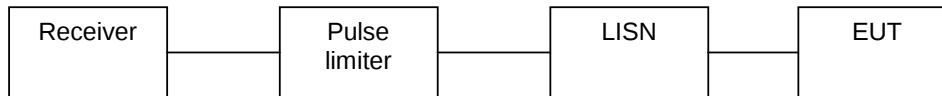
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2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-679, DUT 52100
Accessories with DUT numbers	BL-4D, DUT 52101 ; AC-10C, DUT 52108 ; CA-100C, DUT 52109 ; IBM T40, DUT 51044 ; CA-101, DUT 51836 ; 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]	22 / 25 / 102.4
Date of measurements	01-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.

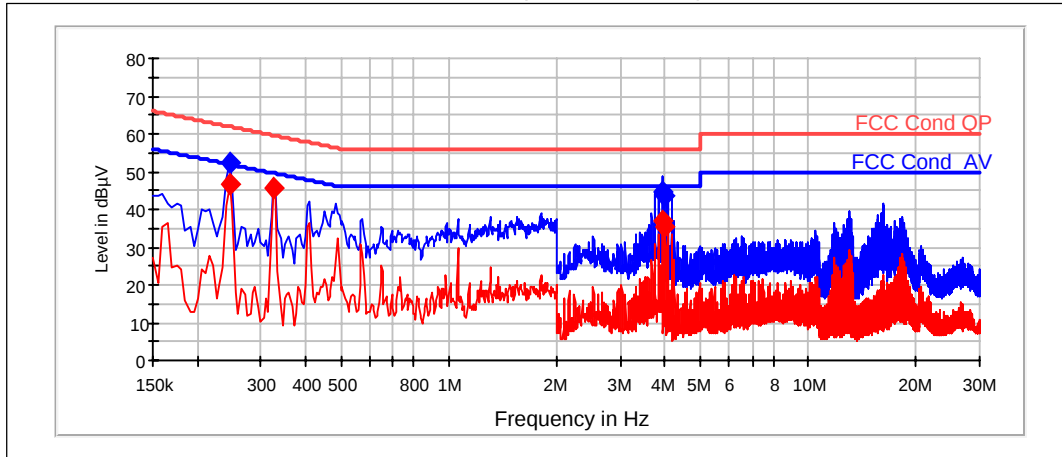
CISPR 22 Class B limits

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. WLAN Test results

2.3.1 DSSS mode, 11 Mbps data rate

Channel 7 / 2442 MHz, measured from mobile phone AC charger



QuasiPeak (RBW: 9 kHz)

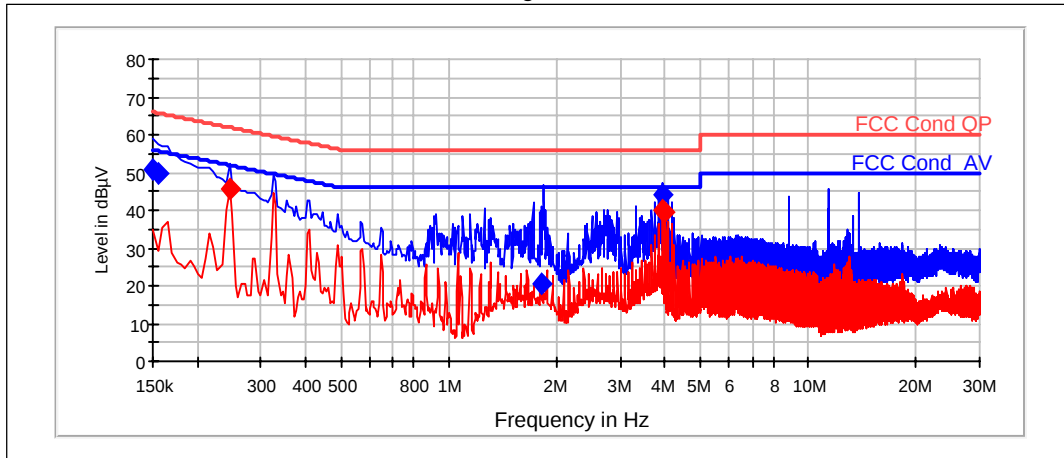
Frequency [MHz]	U [dBμV]	Line	Result
0.245	52.13	N	PASSED
3.92	44.83	N	PASSED
4	43.54	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.245	46.73	N	PASSED
0.325	45.47	N	PASSED
3.92	36.98	N	PASSED
4	35.2	N	PASSED

2.3.2 OFDM mode, 6 Mbps data rate

Channe7 / 2442 MHz, measured from PC charger



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.15	50.75	N	PASSED
0.155	49.51	N	PASSED
1.815	20.26	L1	PASSED
3.92	44.32	N	PASSED

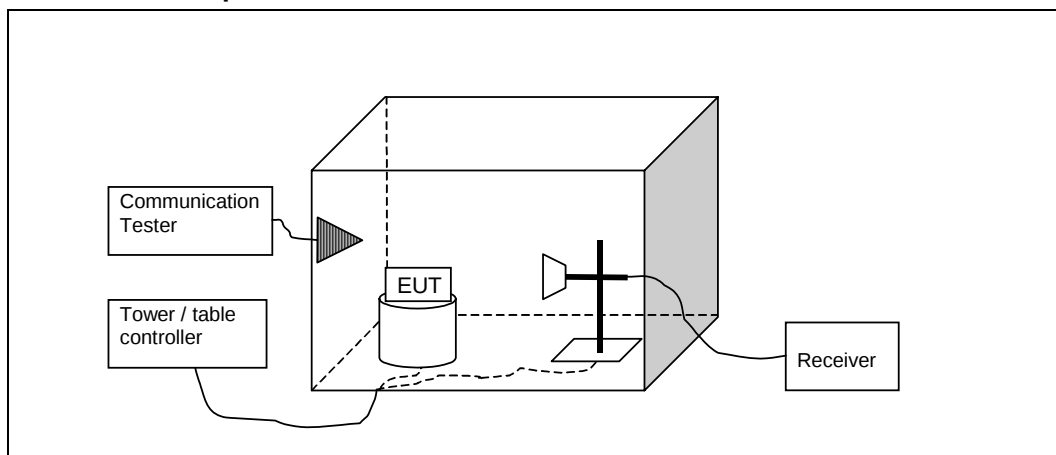
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.245	45.71	L1	PASSED
3.92	40.12	N	PASSED
4	39.37	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-679, DUT 52100
Accessories with DUT numbers	BL-4D, DUT 52101 ; AC-10C, DUT 52108 ; CA-100C, DUT 52109 ; IBM T40, DUT 51044 ; CA-101, DUT 51836 ; 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]	20 / 30 / 102.4
Date of measurements	01-Apr-2011
Measured by	Zou Ming

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. WLAN Test results

RX mode, Channel 7 / 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
42.654	26.3	20.656	43.7	-17.4	VERTICAL	PASSED
99.99	30.1	31.985	53.14	-23.04	VERTICAL	PASSED
196.594	36.35	65.667	60.89	-24.54	HORIZONTAL	PASSED
200.441	36.31	65.411	60.72	-24.41	HORIZONTAL	PASSED
233.076	33.03	44.797	55.74	-22.71	HORIZONTAL	PASSED
257.055	39.93	99.163	61.74	-21.81	HORIZONTAL	PASSED
257.064	41.36	116.99	63.17	-21.81	HORIZONTAL	PASSED
399.751	31.19	36.279	48.87	-17.68	VERTICAL	PASSED
665.229	30.17	32.244	42.77	-12.6	HORIZONTAL	PASSED
801.012	37.43	74.353	48.66	-11.23	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
7038.374	46.23	204.88	41.35	4.88	HORIZONTAL	PASSED
7047.192	46.09	201.651	41.22	4.87	VERTICAL	PASSED
7066.63	45.88	196.721	40.97	4.91	HORIZONTAL	PASSED
7074.05	46.35	207.802	41.48	4.87	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
7038.374	33.51	47.386	28.63	4.88	HORIZONTAL	PASSED
7047.192	33.42	46.887	28.55	4.87	VERTICAL	PASSED
7066.63	33.65	48.15	28.74	4.91	HORIZONTAL	PASSED
7074.05	33.63	48.012	28.76	4.87	VERTICAL	PASSED

RX mode, Channel 1 / 2412 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4825.7	42.18	128.514	42.42	-0.24	HORIZONTAL	PASSED
7235.4	45.69	192.597	40.57	5.12	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
4825.7	29.56	30.075	29.8	-0.24	HORIZONTAL	PASSED
7235.4	33.46	47.087	28.34	5.12	VERTICAL	PASSED

RX mode, Channel 11 / 2462 MHz

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

Frequency [MHz]	MaxPeak [dBμV/m]	Margin [dB]	Azimuth [deg]	Height [cm]	Polarisation	Result
4923	43.79	30.2	174	170	H	PASSED
7386.1	46.34	27.7	202	170	V	PASSED

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

Frequency [MHz]	Average [dBμV/m]	Margin [dB]	Azimuth [deg]	Height [cm]	Polarisation	Result
4923	30.54	23.5	174	170	H	PASSED
7386.1	33.82	20.2	202	170	V	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	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