

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-691_09.docx	Date of Report:	02-Feb-2011
Number of pages:	9	Customer's Contact person:	Alison Lenaghan
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FCC listing no.:	94436		
IC recognition no.:	661AK-1		
Tested devices/ accessories:	Phone RM-691 / Battery BL-5K / AC charger AC-15E / Headset WH-102		
FCC ID:	QFXRM-691	IC:	661Z-RM691
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), Public Notice DA 00-705, DTS procedures KDB 558074, IC standards, RSS-210 (Issue 7, June 2007). 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:			

Hannu Söderholm, Senior Engineer, EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	14-Jan-2011
Testing completed	19-Jan-2011
The customer's contact person	Alison Lenaghan
Test Plan referred to	T:\Projects\RM-691\TestPlan\RS_testplan_RM-691.xls
Notes	-
Document name	\\vatcc001\certification\Projects\RM-691\EMC\FCC15C_RM-691_09.docx

1.1. EUT and Accessory Information

The EUT is a 9-band (GSM850/900/1800/1900) and WCDMA Band (I/II(1900)/IV(1700)/V(850)/VIII/) mobile phone with GPRS, EGPRS, HSDPA, HSUPA and WLAN and Bluetooth and FM transmitter. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-691	004402134040447	5000	-	020.022	42453
Battery	BL-5K	4620400321K10100712;0670580	-	-	-	42455
AC charger	AC-15E	4090499512230700758;0675463	-	-	-	42457
Headset	WH-102	0694323939454109378	-	-	-	42459

1.2. Summary of Test Results

WLAN:

Section in CFR 47	Section in RSS-GEN or RSS-210	Name of the test	Result
15.247(b)(1)	A8.4 (4)	Conducted peak output power	NP
15.247(d)	A8.5	Band edge compliance of RF emissions	PASSED
15.247(d)	A8.5	Spurious RF conducted emissions	NP
15.247(d), 15.209	A8.5	Spurious radiated emissions	NP
15.207	7.2.2	AC powerline conducted emissions	NP
15.247(a)(2)	A8.2 (a)	6dB(bandwidth)	NP
15.247(e)	A8.2 (b)	Power spectral density	NP

FM TX:

Section in CFR 47	Section in RSS-210	Name of the test	Result
15.239(a)	A2(0.8)	Field strength of the fundamental signal	NP
15.239(c)	A2(0.8)	Spurious radiated emissions	NP
15.207	6.6	AC powerline conducted emissions	NP
15.239(a)	A2(0.8)	26dB(bandwidth)	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.

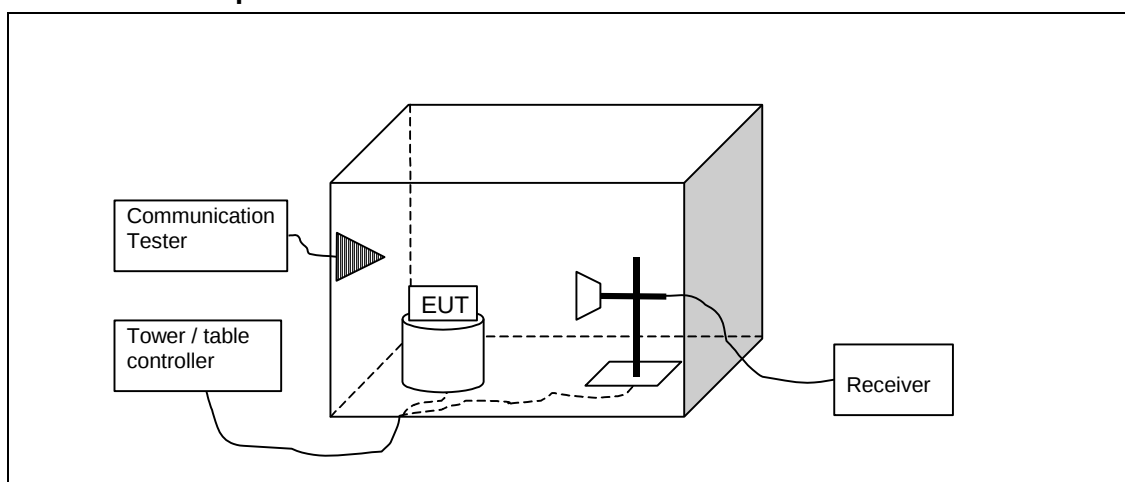
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2. Band edge compliance of RF emissions (FCC §15.247(d), RSS-210 A8.5)

EUT with DUT number	RM-691, DUT 42453
Accessories with DUT numbers	BL-5K, DUT 42455 ; AC-15E, DUT 42457 ; WH-102, DUT 42459
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 52 / 99.0
Date of measurements	19-Jan-2011
Measured by	Jari Jantunen

2.1.1 Test Setup



2.2. Test method and limit

The measurement is made according to DTS procedures KDB 558074 and IC standard RSS-210.

Limits for band edge compliance of RF emissions measurements (3 m measurement distance)

Frequency range [MHz]	Limit Average [dBμV/m]	Limit Peak [dBμV/m]
Below 2390 and above 2483.5	<=54	<=74

2.3. WLAN Test results

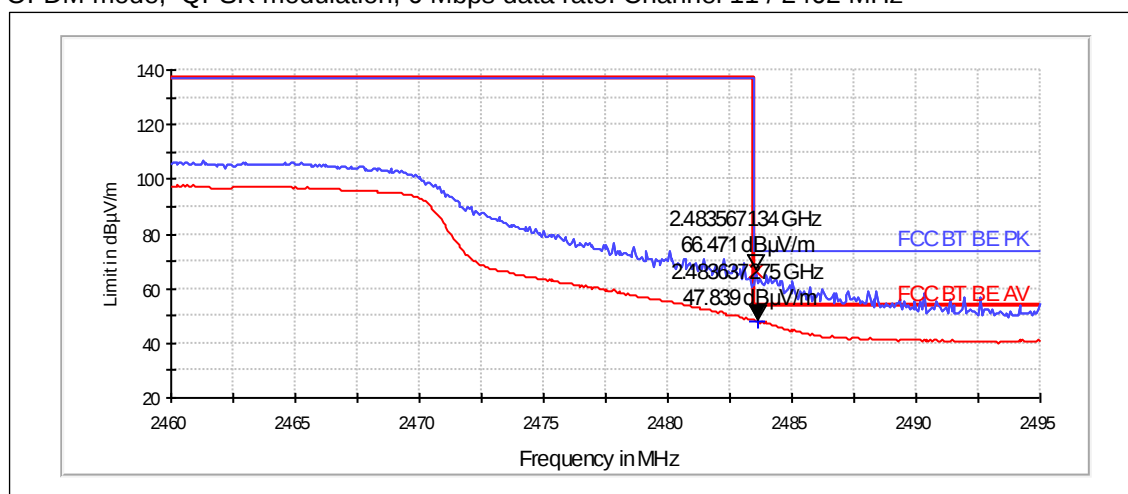
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
11 / 2462 (OFDM, QPSK,6)	47.84	PASSED
1 / 2412 (OFDM,QPSK,6)	43.31	PASSED

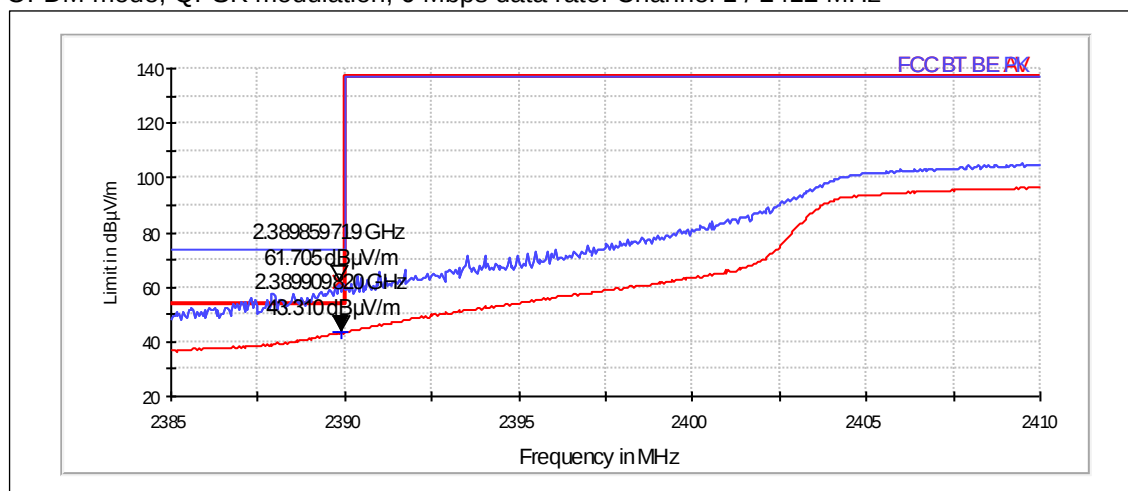
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
11 / 2462 (OFDM, QPSK,6)	66.47	PASSED
1 / 2412 (OFDM,QPSK,6)	61.71	PASSED

OFDM mode, QPSK modulation, 6 Mbps data rate. Channel 11 / 2462 MHz



OFDM mode, QPSK modulation, 6 Mbps data rate. Channel 1 / 2412 MHz



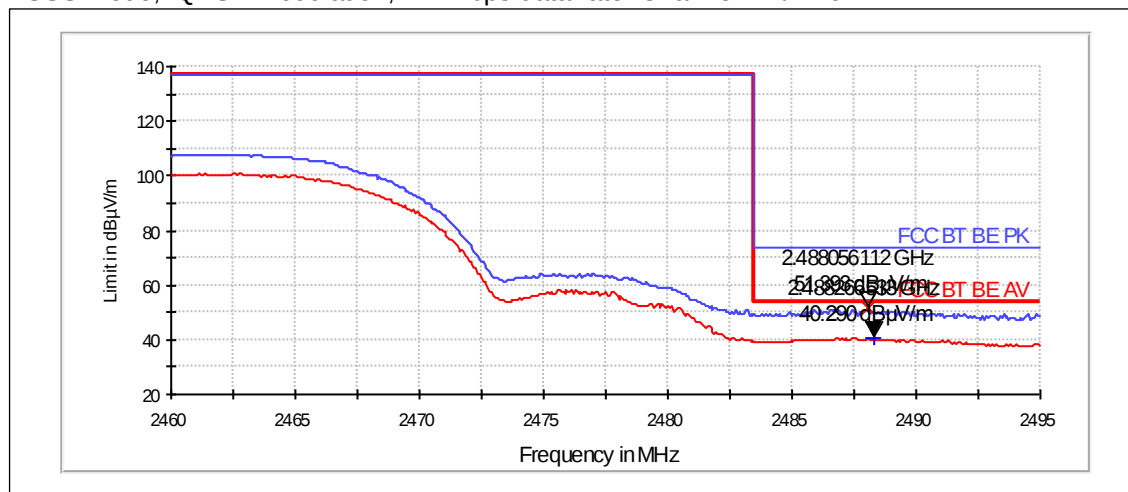
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
11 / 2462 (DSSS, QPSK, 11)	40.29	PASSED
1 / 2412 (DSSS, QPSK, 11)	39.36	PASSED

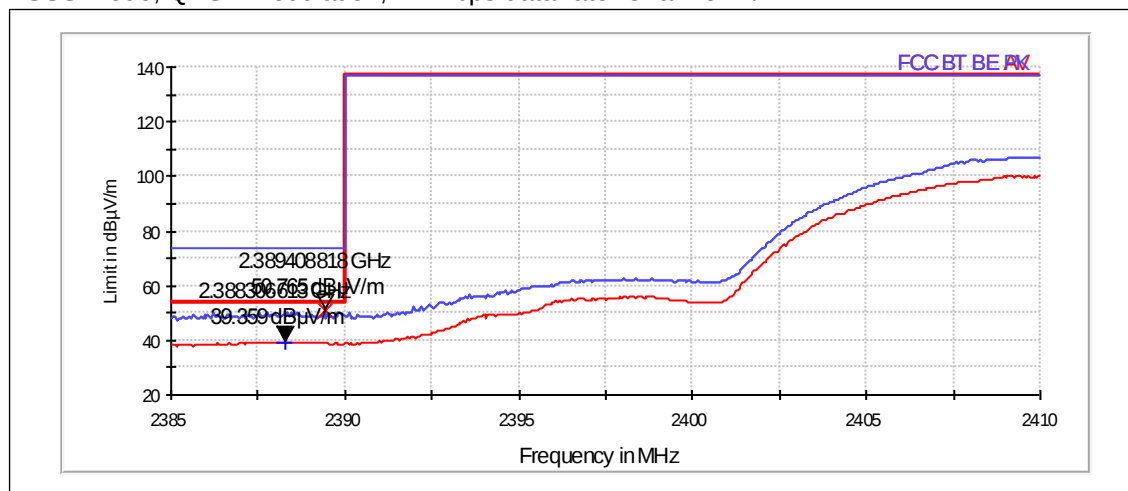
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
11 / 2462 (DSSS, QPSK, 11)	51.39	PASSED
1 / 2412 (DSSS, QPSK, 11)	50.76	PASSED

DSSS mode, QPSK modulation, 11 Mbps data rate. Channel 11 / 2462 MHz



DSSS mode, QPSK modulation, 11 Mbps data rate. Channel 1 / 2412 MHz



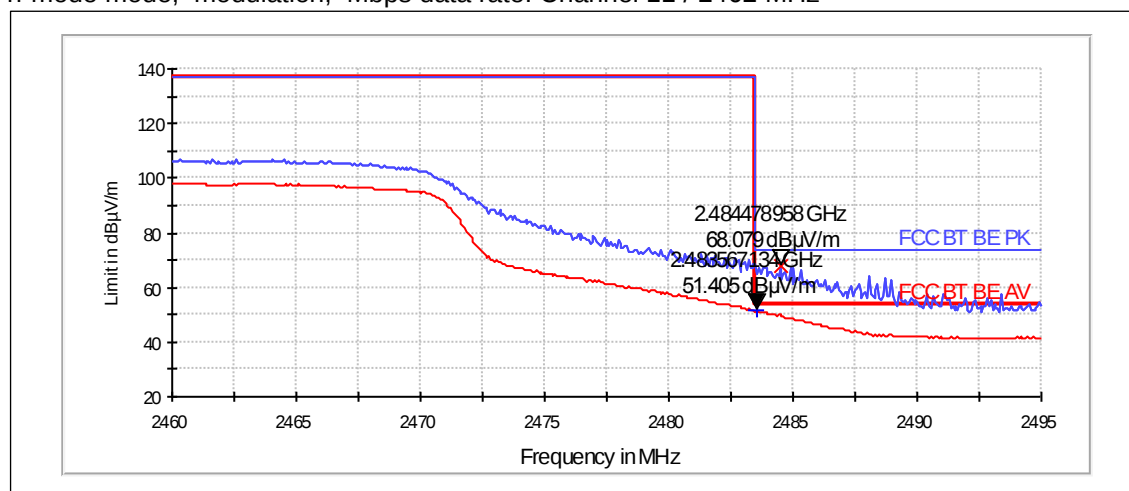
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
11 / 2462 (n-mode)	51.4	PASSED
1 / 2412 (n-mode)	47.53	PASSED

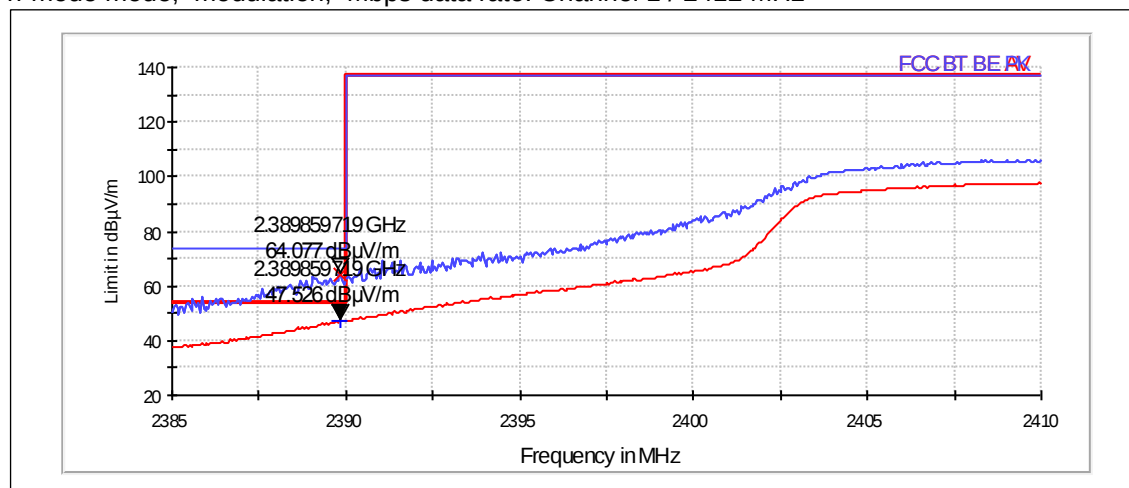
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
11 / 2462 (n-mode)	68.08	PASSED
1 / 2412 (n-mode)	64.08	PASSED

n-mode mode, modulation, Mbps data rate. Channel 11 / 2462 MHz



n-mode mode, modulation, Mbps data rate. Channel 1 / 2412 MHz



3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM38112	Power supply	6632A	Agilent	22/24/27, 15C
TM38631	Signal Generator	83640L	Agilent	22/24/27, 15C, 15B
OM06312	Signal Generator	E4422B	Agilent	22/24
TM37678	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
TM37773	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
TM30600	Impulse limiter	ESH3-Z2	R&S	15C, 15B
TM26490	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM26491	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM37610	Spectrum Analyzer	FSU26	R&S	22/24/27, 15C
TM22806	Battery	BAT 20/E	Fiskars	15C, 15B
TM22805	UPS	PS 20/1.2	Fiskars	15C, 15B
-	Temperature and humidity logger	175-H2	Testo	15C, 15B
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B
-	Temperature test chamber	VT 4002	Vötsch	22/24
2058	Receiver	ESPC	R&S	15C, 15B
2001	Bluetooth tester	CBT	R&S	22/24/27, 15C, 15B
2002	Communication Tester	CMU200	R&S	22/24/27
2009	LISN 50 µH	ENV216	R&S	15C, 15B
2010	LISN 50 µH	ENV216	R&S	15C, 15B
2012	Power splitter	11667B	Agilent	22/24/27, 15C
2013	Attenuator	8493C	Agilent	22/24/27, 15C
2014	Attenuator	8493C	Agilent	22/24/27, 15C

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM38114	Power supply	6632A	Agilent	22/24/27, 15C, 15B
TM38631	Signal Generator	83640L	Agilent	22/24/27, 15C, 15B
TM38323	Preamplifier	PA-02 18-26 GHz	EMC Automation	22/24/27, 15C, 15B
-	Antenna	BBHA 9120 D	Schwarzbeck	22/24/27, 15C
TM26497	Antenna	3115	Emco	22/24/27, 15C, 15B
TM37678	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
TM37773	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
TM38845	Receiver	ESIB 26	R&S	22/24/27, 15C, 15B
-	Antenna	HL562	R&S	22/24/27, 15C, 15B
-	Turntable	2188	EMCO	22/24/27, 15C, 15B
-	Turntable controller	2090	EMCO	22/24/27, 15C, 15B
-	RF system panel	TS-RSP	R&S	22/24/27, 15C, 15B
-	RF system panel	TS-RSP	R&S	22/24/27, 15C, 15B
-	Mini mast	2075-2	ETS Lindgren	22/24/27, 15C, 15B
TM38843	Mini mast	2075	Emco	22/24/27, 15C, 15B
TM38842	Antenna mast controller	2090	Emco	22/24/27, 15C, 15B
TM30643	LISN 50 µH	LISN-5-20-2	FCC	22/24/27, 15C, 15B
TM30644	LISN 50 µH	LISN-5-20-2	FCC	22/24/27, 15C, 15B
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C, 15B
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
TM39180	Laser distance meter	Disto Pro	Leica	22/24/27, 15C, 15B
TM37523	Preamplifier	AMF-4D-10M-3G-25-20P	Miteq	22/24/27, 15C, 15B
TM37498	Preamplifier	AMF-5D-020180-26-10P	Miteq	22/24/27, 15C, 15B
TM30599	Semi anechoic chambre	UNKNOWN	TDK	22/24/27, 15C, 15B
TM22638	Power supply	OL63743-901	-	22/24/27, 15C, 15B
TM38066	High pass filter	4HC3000/18000-3-KK	Trilithic	22/24/27, 15C, 15B
-	High pass filter	F-90-1500-6-R	RLC Electronics	22/24/27, 15C, 15B
TM37545	Tunable notch filter	800.0/960.0-0.2/40-8SSK	Wainwright	22
TM26512	Tunable notch filter	WRCD1850/1910-0.2/40-10SSK	Wainwright	24
-	Band reject filter	WRCG1877/1883-1870/1890-40/6EE	Wainwright	24
-	Band reject filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
-	Band reject filter	WRCG832/838-825/848-40/5SS	Wainwright	22
TM23892	Controller	G-1000SDX	Yaesu	22/24/27
2001	Bluetooth tester	CBT	R&S	22/24/27, 15C, 15B
6023	Antenna	VUBA 9117	Schwarzbeck	22/24/27, 15C