

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-601_07.docx	Date of Report:	14-Jul-2010
Number of pages:	16	Customer's Contact person:	Kari Koskela
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FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-601 / Battery BL-5CT / AC-charger AC-15E / Headset WH-102		
FCC ID:	PYARM-601	IC:	661V-RM601
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:			

Jia Dongsheng, System Manager

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	11-Jun-2010
Testing completed	13-Jul-2010
The customer's contact person	Kari Koskela
Test Plan referred to	T:\Projects\RM-601\TestPlan\RS_testplan_RM-601.xls
Notes	-
Document name	FCC15C_RM-601_07.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. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-601	004401109708913;0585851	0400	-	010.021	51714
Battery	BL-5CT	3635630153910408530;0670555	-	-	-	51712
AC-charger	AC-15E	4090490023220806073;0675463	-	-	-	51720
Headset	WH-102	06943239346A4106742	-	-	-	51608

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	PASSED
15.207	7.2.2	AC powerline conducted emissions	PASSED
15.247(a)(2)	A8.2 (a)	6 dB bandwidth	NP
15.247(e)	A8.2 (b)	Power spectral density	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 Beijing Laboratory.

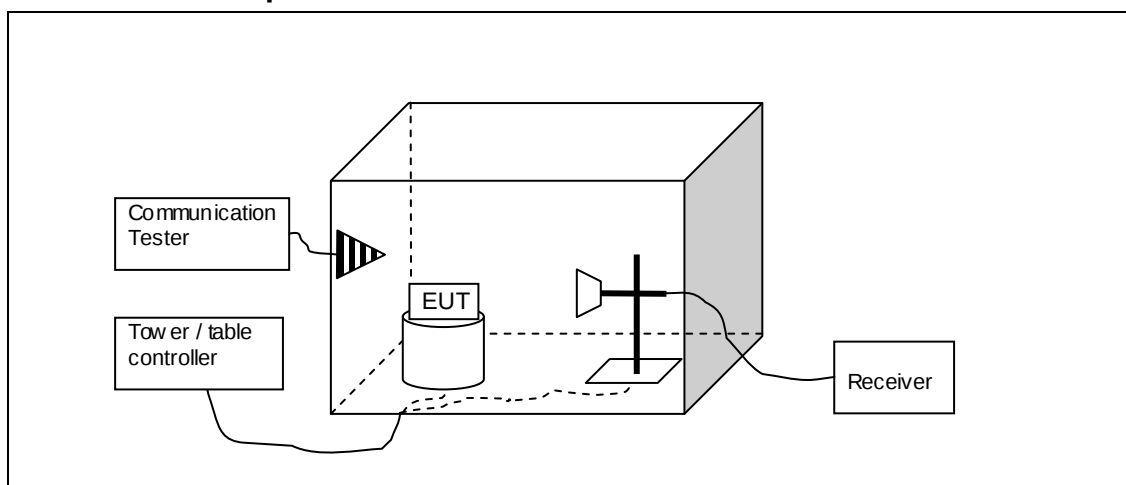
CONTENTS

1. Summary for FCC Part 15C Compliance Test Report	2
1.1. EUT and Accessory Information	2
1.2. Summary of Test Results	2
2. Band edge compliance of RF emissions (FCC §15.247(d), RSS-210 A8.5)	4
2.1. Test Setup.....	4
2.2. Test method and limit	4
2.3. WLAN Test results	5
3. Spurious radiated emissions (FCC §22.917(a), §24.238(a), §2.1053, RSS-132 4.5, RSS-133 6.5).....	8
3.1. Test Setup.....	8
3.2. Test method and limit	8
3.3. WLAN Test results	10
4. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2).....	14
4.1. Test Setup.....	14
4.2. Test method and limit	14
4.3. WLAN Test results	15
5. Test Equipment	16
5.1. Conducted measurements	16
5.2. Radiated measurements	16

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

EUT with DUT number	RM-601, DUT 51714
Accessories with DUT numbers	BL-5CT, DUT 51712 ; AC-15E, DUT 51720 ; WH-102, DUT 51608
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 59 / 99.8
Date of measurements	13-Jun-2010
Measured by	Jia Dongsheng

2.1. Test Setup



2.2. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210.

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 ($A_{TOT} = L_{CABLES} + A_F - G_{PREAMP}$).

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

2.3.2 OFDM mode, BPSK modulation, 6 Mbps data rate

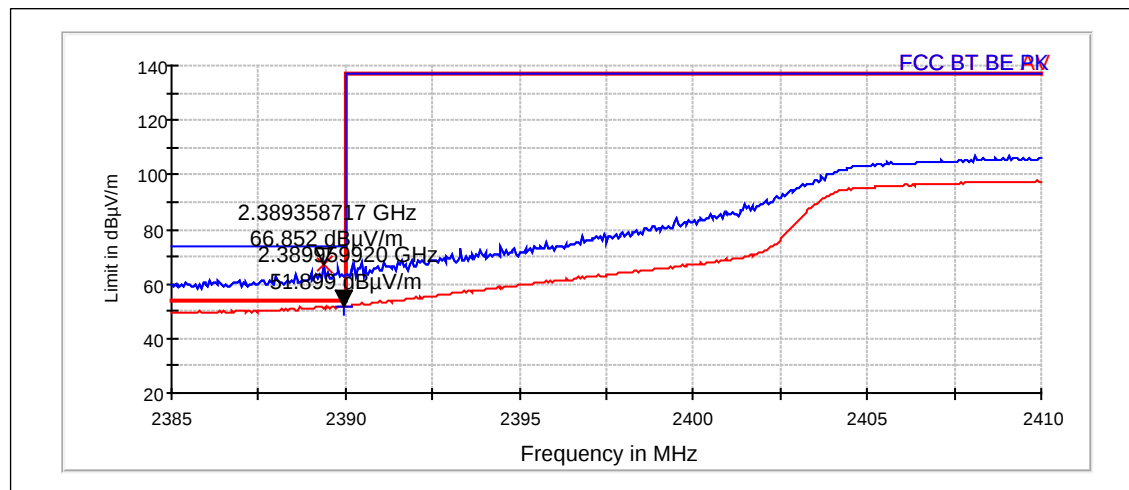
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
1 / 2412 (OFDM,QPSK,6)	51.9	PASSED
11 / 2462 (OFDM,QPSK,6)	52.04	PASSED

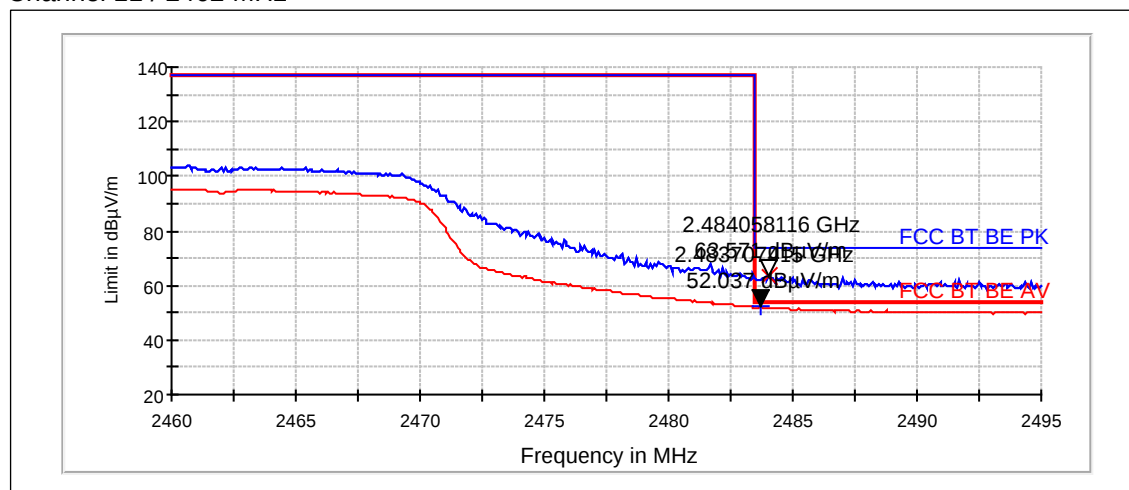
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
1 / 2412 (OFDM,QPSK,6)	66.85	PASSED
11 / 2462 (OFDM,QPSK,6)	63.57	PASSED

Channel 1 / 2412 MHz



Channel 11 / 2462 MHz



2.3.3 OFDM N mode, BPSK modulation

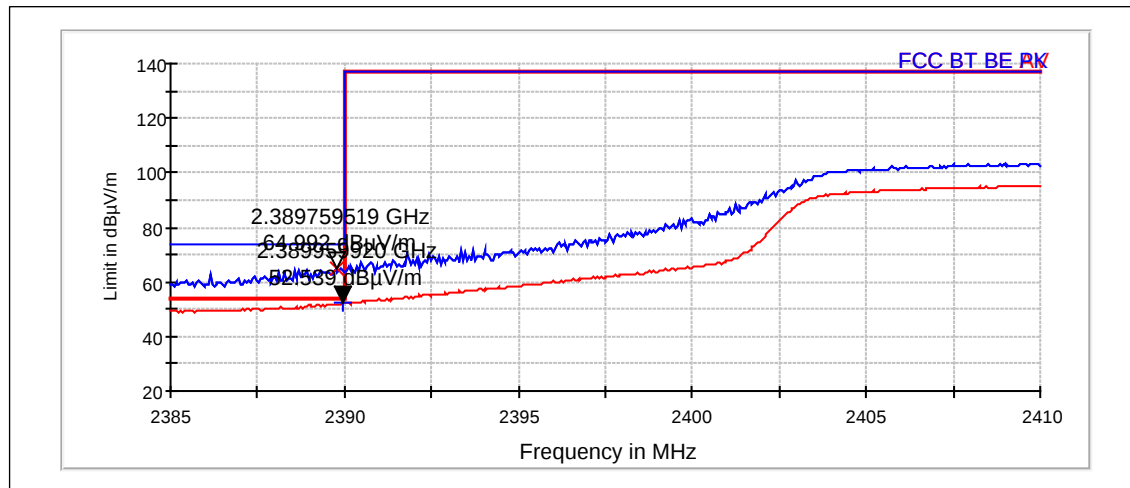
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
1 / 2412 (n)	52.54	PASSED
11 / 2462 (n)	52.71	PASSED

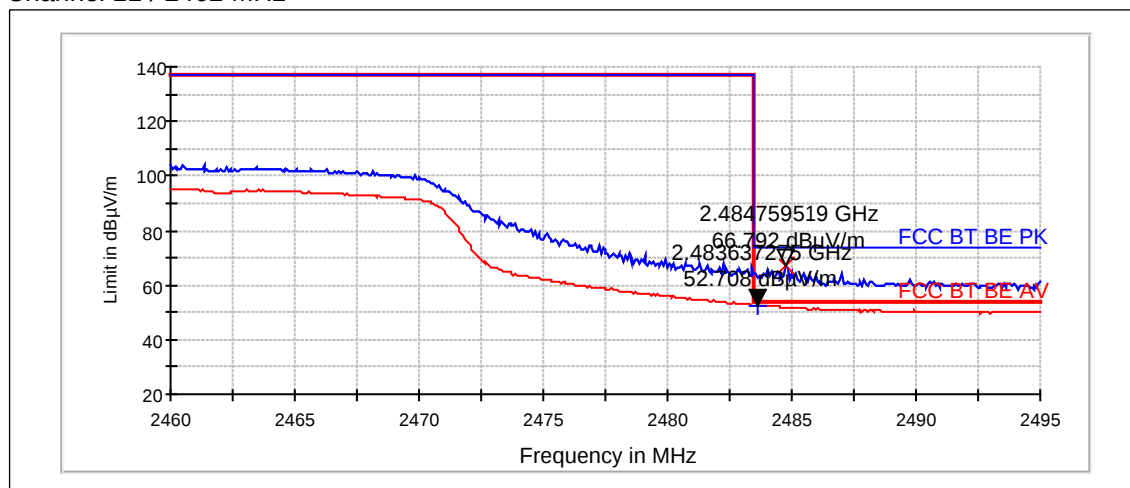
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
1 / 2412 (n)	64.99	PASSED
11 / 2462 (n)	66.79	PASSED

Channel 1 / 2412 MHz



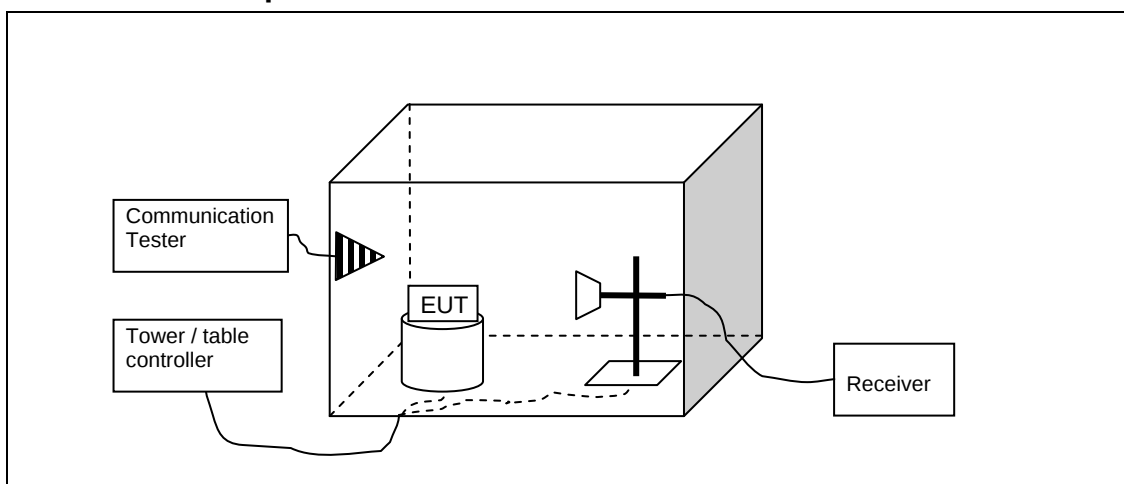
Channel 11 / 2462 MHz



3. Spurious radiated emissions (FCC §22.917(a), §24.238(a), §2.1053, RSS-132 4.5, RSS-133 6.5)

EUT with DUT number	RM-601, DUT 51714
Accessories with DUT numbers	BL-5CT, DUT 51712 ; AC-15E, DUT 51720 ; WH-102, DUT 51608
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] /	21 / 59 / 99.8
Date of measurements	13-Jun-2010
Measured by	Jia Dongsheng

3.1. Test Setup



3.2. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210 as follows:

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system.

The Final Measurement is performed in the Semi-Anechoic Chamber with conducting metal floor, if the Preliminary Measurement results are closer than 20 dB to the permissible value.

The EUT is placed at nonconductive plate at the turntable center.

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 ($A_{TOT} = L_{CABLES} + A_F - G_{PREAMP}$).

Limits for spurious radiated emissions measurements (3 m measurement distance)

Frequency range [MHz]	Limit [$\mu V/m$]	Limit [dB $\mu V/m$]	Detector
30 - 88	100	40	Quasi peak
88 – 216	150	43.5	Quasi peak
216 – 960	200	46	Quasi peak
960 – 1000	500	54	Quasi peak
Above 1000	500	54	Average
Above 1000	5000	74	Peak

3.3. WLAN Test results

3.3.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 1 / 2412 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4823.9	28.76	27.406	28.99	-0.23	HORIZONTAL	PASSED
7237.6	32.9	44.167	27.79	5.11	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4823.9	41.85	123.709	42.08	-0.23	HORIZONTAL	PASSED
7237.6	45.76	194.156	40.65	5.11	HORIZONTAL	PASSED

Channel 7 / 2442 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2817.136	38.08	80.168	29.25	8.83	VERTICAL	PASSED
2897.295	38.05	79.928	29.3	8.75	VERTICAL	PASSED
3901.904	28.05	25.273	29.45	-1.4	HORIZONTAL	PASSED
3942.185	27.77	24.454	29.37	-1.6	VERTICAL	PASSED
17987.176	45.56	189.583	26.51	19.05	HORIZONTAL	PASSED

Quasi peak (RBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
37.294	32.57	42.496	40.27	-7.7	VERTICAL	PASSED
37.305	32.71	43.212	40.42	-7.71	VERTICAL	PASSED
40.772	33.9	49.568	44.21	-10.31	VERTICAL	PASSED
40.821	33.62	47.979	43.96	-10.34	VERTICAL	PASSED
40.891	33.63	48.051	44.01	-10.38	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2817.136	50.78	345.979	41.95	8.83	VERTICAL	PASSED
2897.295	50.7	342.689	41.95	8.75	VERTICAL	PASSED
3901.904	41.49	118.645	42.89	-1.4	HORIZONTAL	PASSED
3942.185	41.83	123.467	43.43	-1.6	VERTICAL	PASSED
17987.176	58.81	871.967	39.76	19.05	HORIZONTAL	PASSED

Channel 11 / 2462 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4923.6	29.68	30.461	29.67	0.01	HORIZONTAL	PASSED
7384.8	33.19	45.63	28.19	5	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4923.6	42.63	135.301	42.62	0.01	HORIZONTAL	PASSED
7384.8	46.44	209.797	41.44	5	HORIZONTAL	PASSED

3.3.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel 1 / 2412 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4823.2	29.5	29.864	29.73	-0.23	VERTICAL	PASSED
7234.5	33.55	47.61	28.44	5.11	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4823.2	41.84	123.552	42.07	-0.23	VERTICAL	PASSED
7234.5	46.28	205.992	41.17	5.11	VERTICAL	PASSED

Channel 7 / 2442 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2872.544	38.14	80.705	29.52	8.62	VERTICAL	PASSED
2897.296	38.49	84.014	29.74	8.75	VERTICAL	PASSED
3911.927	28.59	26.875	30	-1.41	VERTICAL	PASSED
17993.084	46.16	203.119	27.01	19.15	VERTICAL	PASSED

Quasi peak (RBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
40.58	35.24	57.803	45.44	-10.2	VERTICAL	PASSED
40.651	35.34	58.492	45.58	-10.24	VERTICAL	PASSED
40.821	35.42	59.02	45.76	-10.34	VERTICAL	PASSED
40.862	35.4	58.905	45.77	-10.37	VERTICAL	PASSED
907.839	24.67	17.11	27.11	-2.44	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
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2872.544	50.56	337.21	41.94	8.62	VERTICAL	PASSED
2897.296	51.76	387.168	43.01	8.75	VERTICAL	PASSED
3911.927	40.93	111.301	42.34	-1.41	VERTICAL	PASSED
17993.084	58.5	841.783	39.35	19.15	VERTICAL	PASSED

Channel 11 / 2462 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4923.8	30.38	33.033	30.37	0.01	VERTICAL	PASSED
7387.7	33.82	49.091	28.82	5	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4923.8	43.43	148.44	43.42	0.01	VERTICAL	PASSED
7387.7	46.17	203.493	41.17	5	VERTICAL	PASSED

3.3.3 OFDM N mode, BPSK modulation

Channel 1 / 2412 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4822.2	29.78	30.828	30.01	-0.23	HORIZONTAL	PASSED
7235.5	32.96	44.438	27.84	5.12	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4822.2	42.34	130.888	42.57	-0.23	HORIZONTAL	PASSED
7235.5	46.5	211.276	41.38	5.12	HORIZONTAL	PASSED

Channel 7 / 2442 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2885.271	38.23	81.546	29.08	9.15	HORIZONTAL	PASSED
2900.397	38.33	82.547	29.56	8.77	VERTICAL	PASSED
3898.096	28.49	26.571	29.89	-1.4	VERTICAL	PASSED
3921.543	28.31	26.035	29.72	-1.41	VERTICAL	PASSED
17850.099	45.12	180.302	27.22	17.9	VERTICAL	PASSED

Quasi peak (RBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
36.954	33.43	46.952	40.86	-7.43	VERTICAL	PASSED
39.991	32.46	41.981	42.3	-9.84	VERTICAL	PASSED
40.58	35.22	57.65	45.42	-10.2	VERTICAL	PASSED
40.641	35.34	58.486	45.57	-10.23	VERTICAL	PASSED

40.692	35.17	57.359	45.43	-10.26	VERTICAL	PASSED
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Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
2885.271	50.98	353.916	41.83	9.15	HORIZONTAL	PASSED
2900.397	51.67	383.178	42.9	8.77	VERTICAL	PASSED
3898.096	41.9	124.423	43.3	-1.4	VERTICAL	PASSED
3921.543	40.81	109.812	42.22	-1.41	VERTICAL	PASSED
17850.099	57.77	773.749	39.87	17.9	VERTICAL	PASSED

Channel 11 / 2462 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4922.4	30.69	34.253	30.68	0.01	HORIZONTAL	PASSED
7385.6	33.36	46.575	28.37	4.99	VERTICAL	PASSED

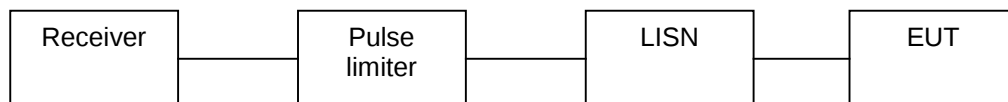
Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4922.4	43.79	154.721	43.78	0.01	HORIZONTAL	PASSED
7385.6	46.89	220.928	41.9	4.99	VERTICAL	PASSED

4. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2)

EUT with DUT number	RM-601, DUT 51714
Accessories with DUT numbers	BL-5CT, DUT 51712 ; AC-15E, DUT 51720 ; WH-102, DUT 51608
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 62 / 99.7
Date of measurements	29-Jun-2010
Measured by	Jia Dongsheng

4.1. Test Setup



4.2. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-GEN 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.

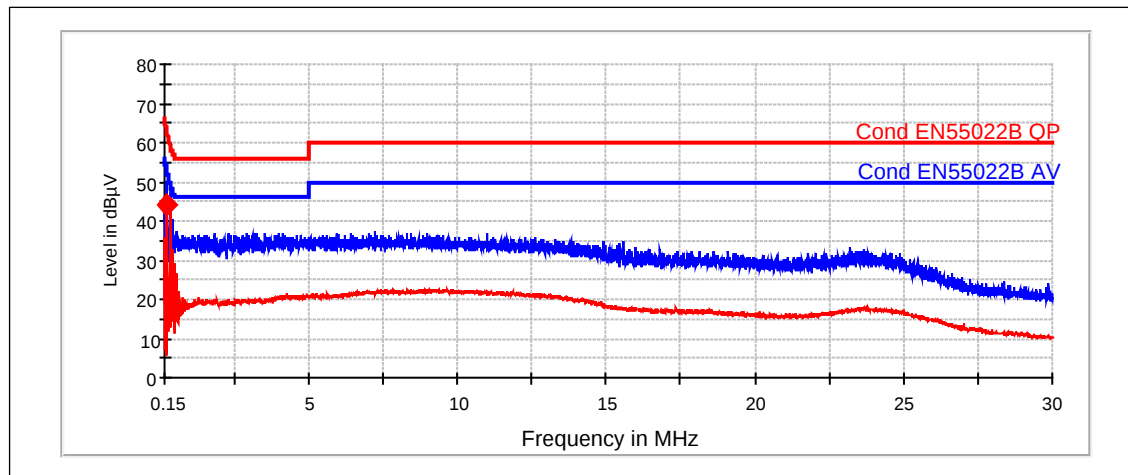
CISPR 22 Class B limits

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

4.3. WLAN Test results

4.3.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 7 / 2442 MHz



Average

Frequency [MHz]	Level [dBμV]	IF-BW[kHz]	Line	Margin	Result
0.245	44.01	9	L1	7.92	PASSED

5. Test Equipment

5.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	RF Emission Software	ES-K1 v.1.71	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
BJPCPT0079	LISN 50 µH	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	GPIO-RS232 convertor	GPIO-RS232	NI	22/24/27, 15C

5.2. 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	ES-K1 v.1.71	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