FCC Part 15C Compliance Test Report

Test Report no.:	FCC15CWLAN_RM-1085_16.docx	**Date of Report:**	04-Sep-2015
Number of pages:	24	**Customer's Contact person:**	Tia Melava
Testing laboratory:	TCC Microsoft Salo Laboratory P.O.Box(86) Joensuunkatu 7E FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 71 80 44122	**Customer:**	Microsoft P.O.Box(86) Joensuunkatu 7E FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 71 80 44122
FCC listing no.: **IC recognition no.:**	533467 661V-1		
Tested devices/ accessories:	**Phone RM-1085 / Battery BV-T4D / Charger AC-100E / Headset WH-308**		
FCC ID:	PYARM-1085	**IC:**	661X-RM1085
Supplement reports:	-		
Testing has been carried out in accordance with:	**CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2014), DTS procedures KDB 558074, IC standards, 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 Microsoft.		
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 Lehtonen Sami.K DN: o=Nokia, ou=People, 0.9.2342.19200300.100.1.1=10019393, cn=Lehtonen Sami.K Date: 2015.09.04 08:20:22 +03'00'		

Sami Lehtonen, Engineer, EMC

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1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	15-Jun-2015
Testing completed	23-Jul-2015
The customer's contact person	Tia Melava
Test Plan referred to	T:\Projects\RM-1085\TestPlan\RS_TestPlan_RM-1085.xlsm
Notes	-
Document name	T:\Projects\RM-1085\EMC\FCC15CWLAN_RM-1085_16.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-1085	004402742308384;059W5J6	2110	-	01063.00001.15244.09000	100024
Battery	BV-T4D	4955405174010300826;0670771	v3.0	-	-	100025
Charger	AC-100E	4090495125580301585;0675758	0.3	B2.0	-	100026
Headset	WH-308	51251B1	-	-	-	100028
Phone	RM-1085	0044027423084750059W5J6	2110	-	01065.00000.15264.47000	100191
Battery	BV-T4D	4955405174010300342ö0670771	-	-	-	100190
Charger	AC-100E	40904951255803017480675758	0.3	B2.0	-	100196
Headset	WH-308	-	-	-	-	100195

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), 15.205(b)	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	7.2.4	AC powerline conducted emissions	PASSED
15.247(a)(2)	A8.2(a)	6dB(bandwidth)	NP
15.247(e)	A8.2(b)	Power spectral density	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 Microsoft Laboratory.

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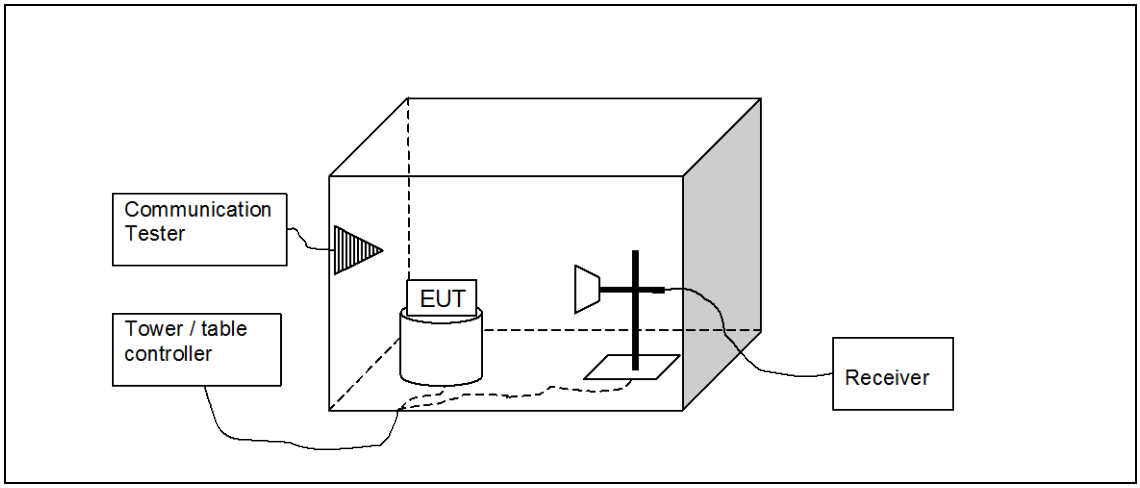
2. Band edge compliance of RF emissions
(FCC 15.247(d), 15.205(b), RSS-210 A8.5)

EUT with DUT number	RM-1085, DUT 100191
Accessories with DUT numbers	BV-T4D, DUT 100190 ; AC-100E, DUT 100196 ; WH-308, DUT 100195
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 44 / 100.4
Date of measurements	23-Jul-2015
Measured by	Kalle Hannila / Ville Mannermaa

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.

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

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

Frequency range [MHz]	Limit
Below 2390 and above 2483.5	54 dBuV/m (avg) and 74 dBuV/m (pk)
2390 - 2400	-20 dBc (pk)

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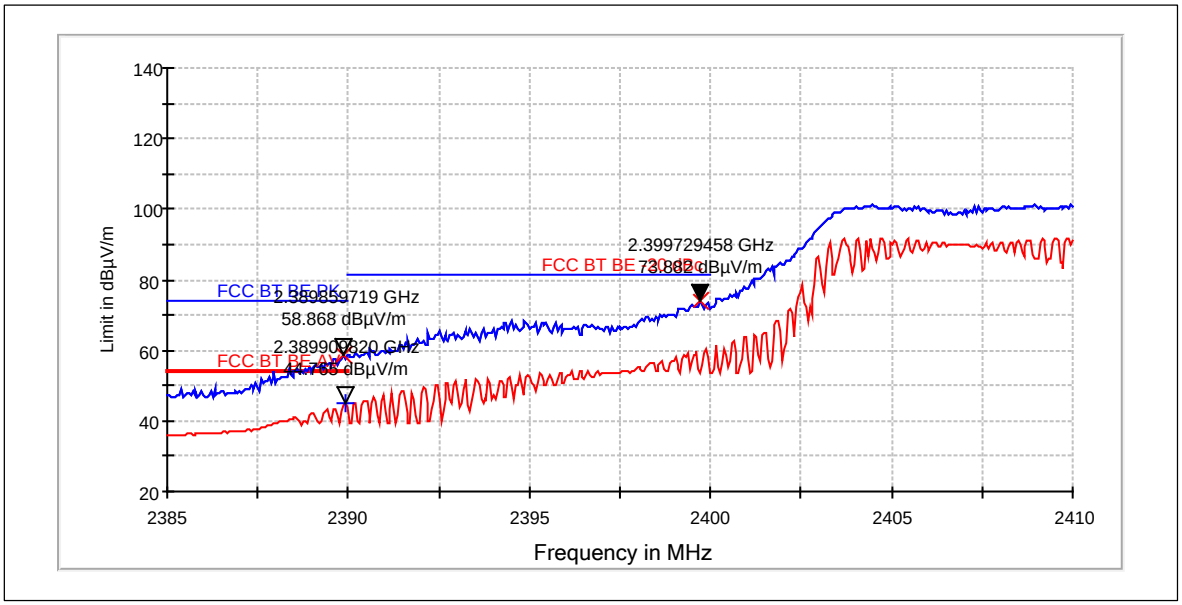
2.3. WLAN test results

2.3.1 802.11n, BPSK modulation, 6.5 / 7.25 Mbps data rate.

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]	Results
2390	58.87	877.809	58.69	0.18	PASSED
2400	73.88	4944.245	73.7	0.18	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2390	44.77	173.081	44.59	0.18	PASSED

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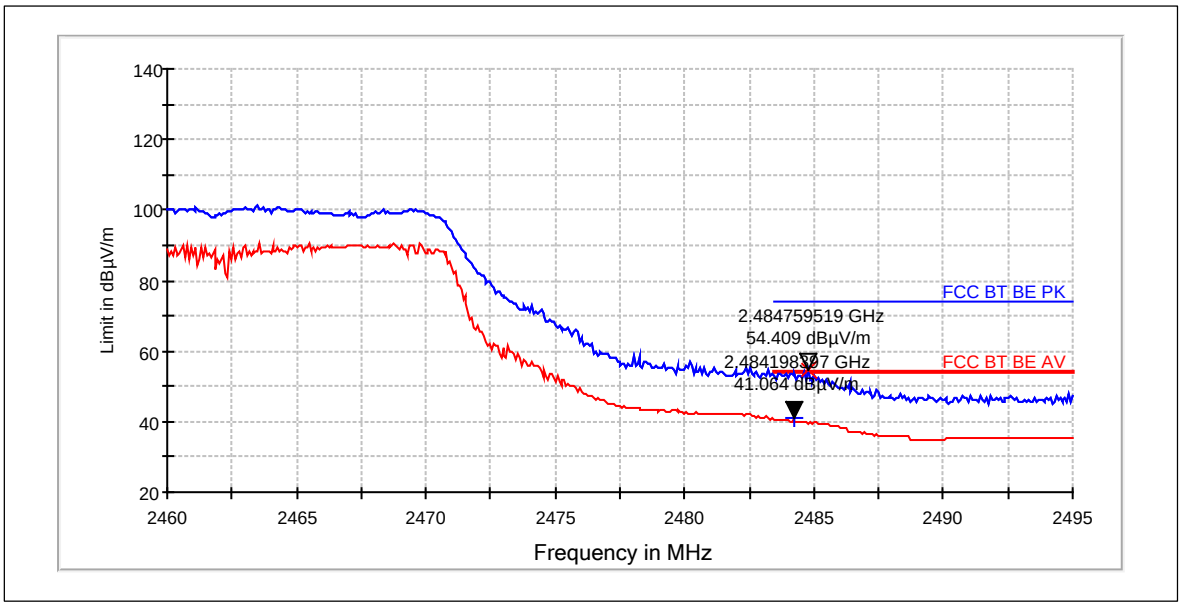
Channel 11 / 2462 MHz



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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2485	54.41	525.352	54.21	0.2	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2484	41.06	113.032	40.86	0.2	PASSED

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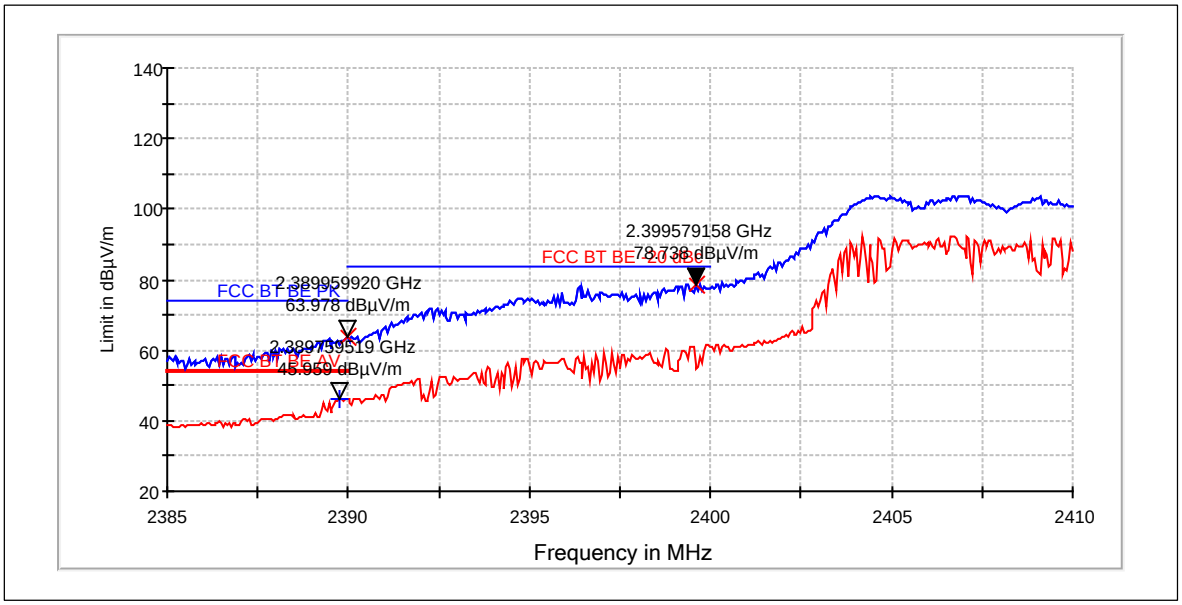
2.3.2 802.11g, 16QAM modulation, 24 Mbps data rate.

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]	Results
2390	63.98	1580.884	63.8	0.18	PASSED
2400	78.74	8647.688	78.56	0.18	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2390	45.96	198.587	45.78	0.18	PASSED

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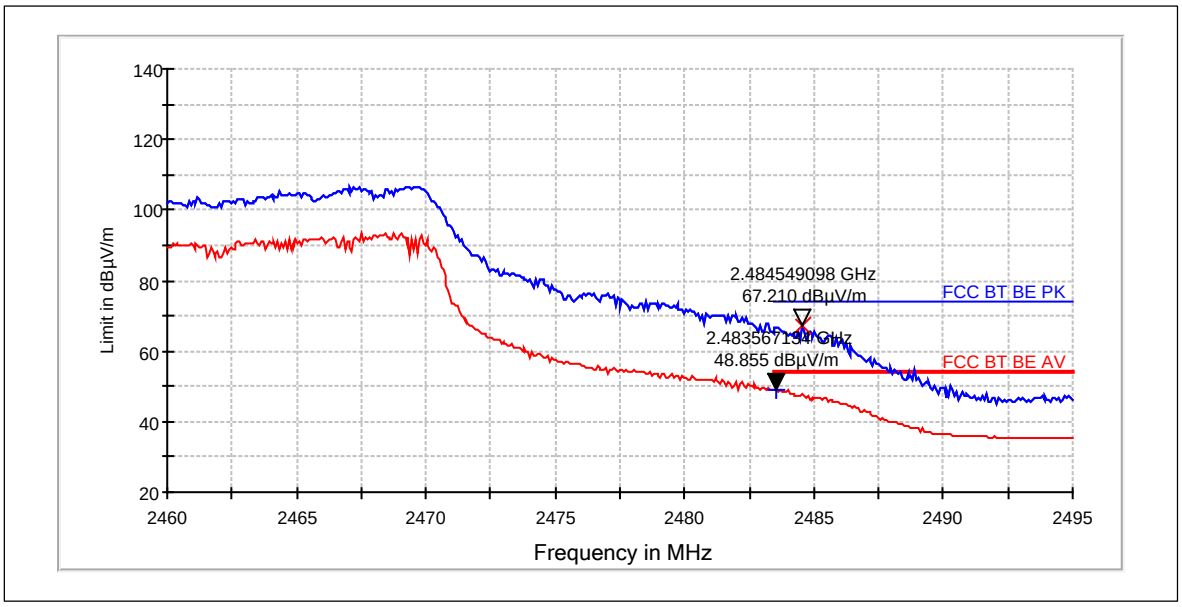
Channel 11 / 2462 MHz



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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2485	67.21	2293.507	67.01	0.2	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2484	48.86	277.172	48.66	0.2	PASSED

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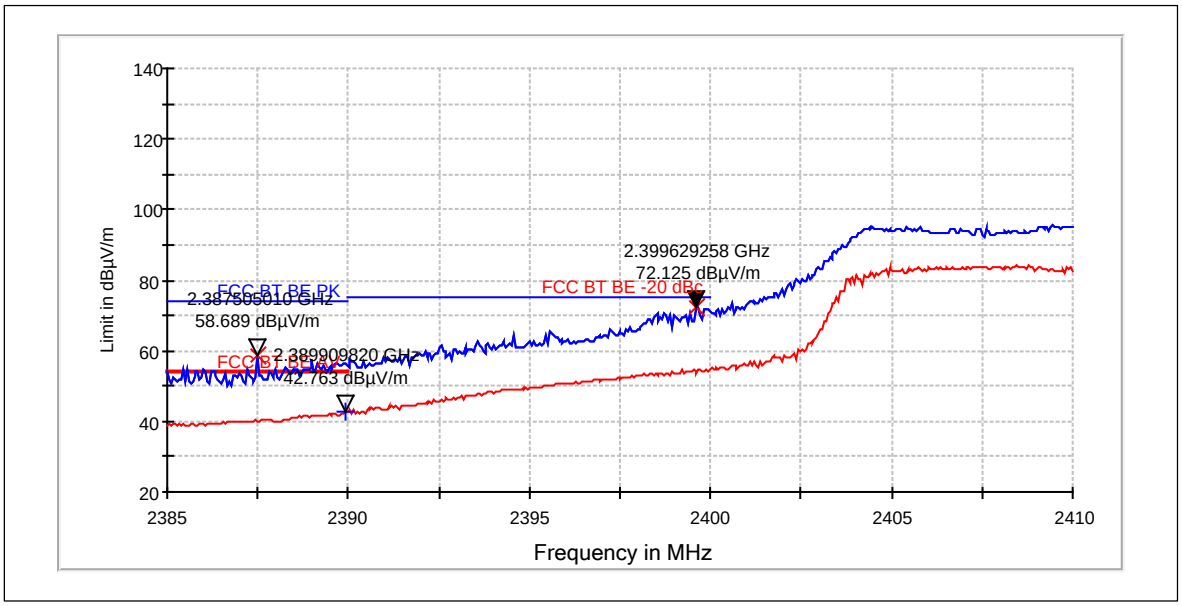
2.3.3 802.11n, BPSK modulation, 13.5 / 15.0 Mbps data rate.

Channel 1-5 / 2422MHz



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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2388	58.69	859.904	58.51	0.18	PASSED
2400	72.13	4038.778	71.95	0.18	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2390	42.76	137.452	42.58	0.18	PASSED

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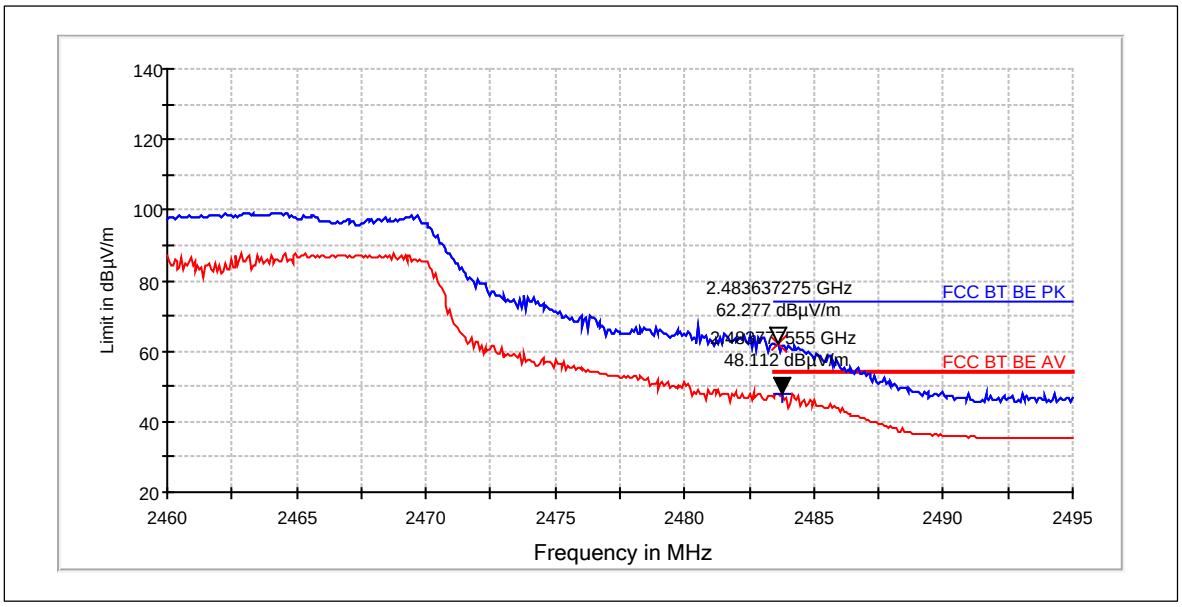
Channel 7-11 / 2452MHz



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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2484	62.28	1299.721	62.1	0.18	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2484	48.11	254.449	47.93	0.18	PASSED

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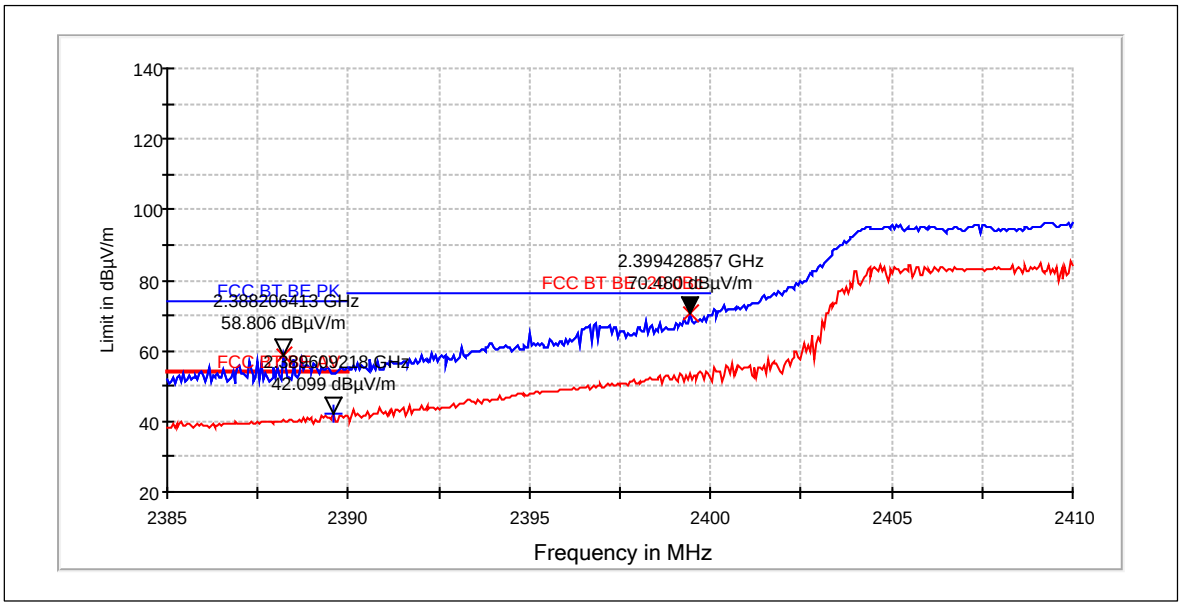
2.3.4 802.11n, QPSK modulation, 27.0 / 30.0 Mbps data rate.

Channel 1-5 / 2422MHz



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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2388	58.81	871.565	58.63	0.18	PASSED
2399	70.48	3341.95	70.3	0.18	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2390	42.1	127.336	41.92	0.18	PASSED

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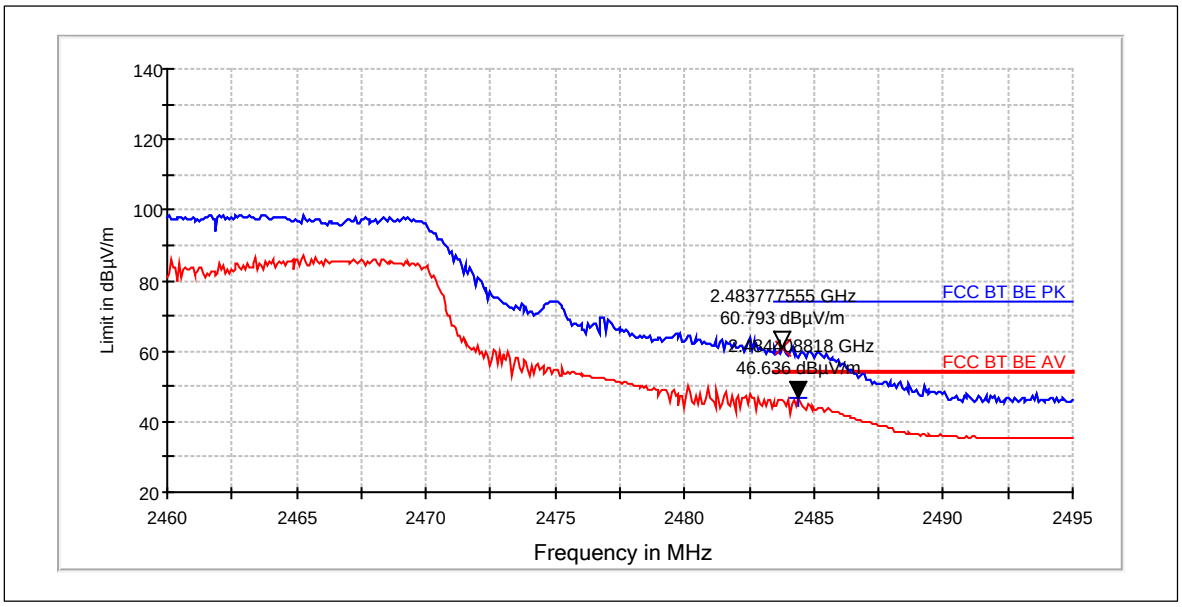
Channel 7-11 / 2452MHz



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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2484	60.79	1095.595	60.61	0.18	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Results
2484	46.64	214.684	46.46	0.18	PASSED

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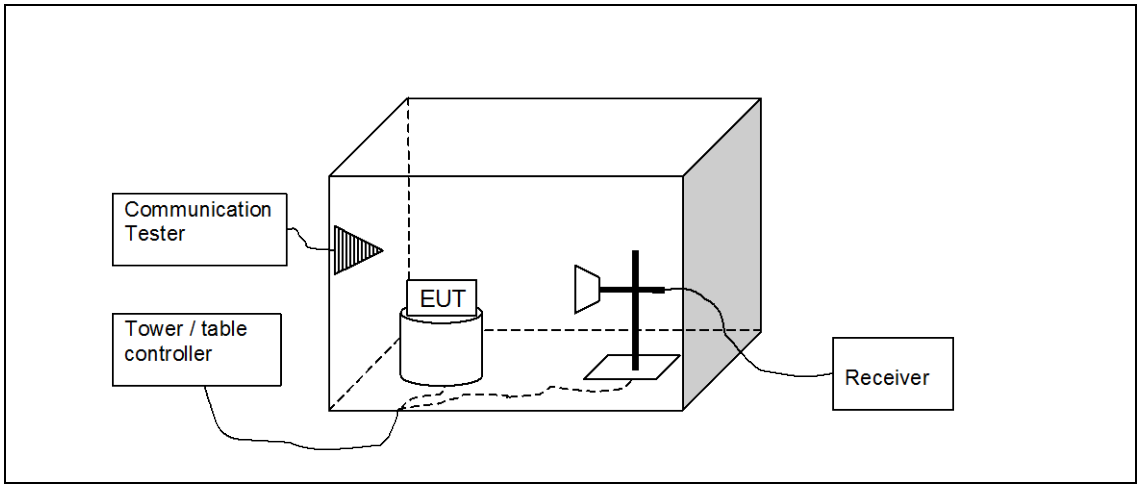
3. Spurious radiated emissions
(FCC 15.247(d), 15.209, RSS-210 A8.5)

EUT with DUT number	RM-1085, DUT 100191
Accessories with DUT numbers	BV-T4D, DUT 100190 ; AC-100E, DUT 100196 ; WH-308, DUT 100195
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 44 / 100.4
Date of measurements	23-Jul-2015
Measured by	Kalle Hannila / Ville Mannermaa

3.1.1 Test setup



3.2. Test method and limit

The measurement is made according to DTS procedures KDB 558074 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 is made up to 10th harmonic of the EUT highest TX channel.

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

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

Frequency range [MHz]	Limit [µV/m]	Limit [dBµV/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

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3.3. WLAN test results

3.3.1 802.11n, BPSK modulation, 6.5 / 7.25 Mbps data rate.

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]	Limit [dBµV/m]	Margin	Results
4822.1	50.88	349.945	52.58	-1.7	74	23.1	PASSED
7234.2	46.6	213.796	43	3.6	95	48.63	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4822.1	34.82	55.081	36.52	-1.7	54	19.16	PASSED
7234.2	33.38	46.666	29.78	3.6	---	---	PASSED

Channel 6 / 2437 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
154.869	24.92	17.62	42.52	-17.6	44	18.6	PASSED
198.984	25.01	17.803	42.31	-17.3	44	18.51	PASSED
200.838	25.71	19.297	42.81	-17.1	44	17.81	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4879.6	44.49	167.687	45.99	-1.5	74	29.49	PASSED
7320.7	46.33	207.253	42.43	3.9	74	27.65	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4879.6	30.51	33.535	32.01	-1.5	54	23.47	PASSED
7320.7	32.68	43.053	28.78	3.9	54	21.3	PASSED

Channel 11 / 2462 MHz

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4922.1	51.69	384.149	53.19	-1.5	74	22.29	PASSED
7385	47.11	226.725	42.71	4.4	74	26.87	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4922.1	35.92	62.517	37.42	-1.5	54	18.06	PASSED
7385	33.94	49.774	29.54	4.4	54	20.04	PASSED

3.3.2 802.11g, 16QAM modulation, 24 Mbps data rate.

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]	Limit [dBµV/m]	Margin	Results
4824.1	51.03	356.041	52.73	-1.7	74	22.95	PASSED
7236.1	47.02	224.388	43.42	3.6	95	48.21	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4824.1	37.26	72.946	38.96	-1.7	54	16.72	PASSED
7236.1	33.38	46.666	29.78	3.6	---	---	PASSED

Channel 6 / 2437 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
158.847	24.92	17.62	42.72	-17.8	44	18.6	PASSED
198.774	26.29	20.63	43.59	-17.3	44	17.23	PASSED
200.658	26.44	20.989	43.54	-17.1	44	17.08	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4879.3	43.53	150.141	45.03	-1.5	74	30.45	PASSED
7318.7	45.36	185.353	41.56	3.8	74	28.62	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4879.3	29.89	31.225	31.39	-1.5	54	24.09	PASSED
7318.7	32.63	42.806	28.83	3.8	54	21.35	PASSED

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Channel 11 / 2462 MHz

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4924.1	49.14	286.418	50.64	-1.5	74	24.84	PASSED
7385	46.37	208.209	41.97	4.4	74	27.61	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4924.1	35.34	58.479	36.84	-1.5	54	18.64	PASSED
7385	33.51	47.37	29.11	4.4	54	20.47	PASSED

3.3.3 802.11n, BPSK modulation, 13.5 / 15.0 Mbps data rate.

Channel 1-5 / 2422MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
30.06	23.71	15.329	26.71	-3	40	16.29	PASSED
200.772	25.79	19.476	42.89	-17.1	44	17.73	PASSED
204.54	25.3	18.408	42.1	-16.8	44	18.22	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4843.7	44.8	173.78	46.5	-1.7	74	29.18	PASSED
7264.9	46.84	219.786	43.14	3.7	74	27.14	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4843.7	31.56	37.844	33.26	-1.7	54	22.42	PASSED
7264.9	33.43	46.935	29.73	3.7	54	20.55	PASSED

Channel 4-8 / 2437MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
198.984	25.77	19.431	43.07	-17.3	44	17.75	PASSED
200.568	25.82	19.543	42.92	-17.1	44	17.7	PASSED
200.892	26	19.953	43.1	-17.1	44	17.52	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4878.7	43.66	152.405	45.16	-1.5	74	30.32	PASSED
7321	45.65	191.646	41.75	3.9	74	28.33	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4878.7	29.88	31.189	31.38	-1.5	54	24.1	PASSED
7321	32.61	42.707	28.71	3.9	54	21.37	PASSED

Channel 7-11 / 2452MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
30	23.95	15.758	26.95	-3	40	16.05	PASSED
202.836	25.48	18.793	42.48	-17	44	18.04	PASSED
202.98	25.11	18.009	42.11	-17	44	18.41	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4903.8	48.05	252.639	49.65	-1.6	74	25.93	PASSED
7355.1	46.15	203.002	41.95	4.2	74	27.83	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4903.8	34.58	53.58	36.18	-1.6	54	19.4	PASSED
7355.1	33.61	47.918	29.41	4.2	54	20.37	PASSED

3.3.4 802.11n, QPSK modulation, 27.0 / 30.0 Mbps data rate.

Channel 1-5 / 2422MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
198.834	26.21	20.441	43.51	-17.3	44	17.31	PASSED
202.872	25.71	19.297	42.71	-17	44	17.81	PASSED
203.01	25.46	18.75	42.46	-17	44	18.06	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4843.8	45.22	182.39	46.92	-1.7	74	28.76	PASSED
7265.8	45.79	194.76	42.09	3.7	74	28.19	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4843.8	31.26	36.559	32.96	-1.7	54	22.72	PASSED
7265.8	33.28	46.132	29.58	3.7	54	20.7	PASSED

Channel 4-8 / 2437MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
30.09	23.95	15.758	26.95	-3	40	16.05	PASSED
202.722	25.27	18.344	42.27	-17	44	18.25	PASSED
211.182	25.6	19.055	42.3	-16.7	44	17.92	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4878.8	43.43	148.423	44.93	-1.5	74	30.55	PASSED
7319.3	45.53	189.017	41.63	3.9	74	28.45	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4878.8	29.77	30.796	31.27	-1.5	54	24.21	PASSED
7319.3	32.71	43.202	28.81	3.9	54	21.27	PASSED

Channel 7-11 / 2452MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
30.12	24.19	16.199	27.19	-3	40	15.81	PASSED
200.832	25.64	19.143	42.74	-17.1	44	17.88	PASSED
201.096	25.4	18.621	42.5	-17.1	44	18.12	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4905.2	47.5	237.137	49	-1.5	74	26.48	PASSED
7357.4	46.74	217.27	42.54	4.2	74	27.24	PASSED

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

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Limit [dBµV/m]	Margin	Results
4905.2	33.56	47.643	35.06	-1.5	54	20.42	PASSED
7357.4	33.61	47.918	29.41	4.2	54	20.37	PASSED

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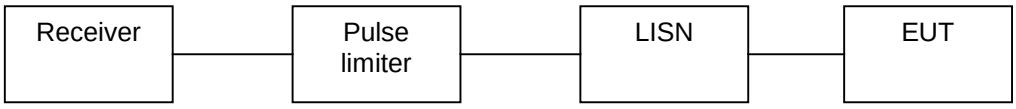
4. AC powerline conducted emissions
(FCC §15.207, RSS-210 7.2.4)

EUT with DUT number	RM-1085, DUT 100024
Accessories with DUT numbers	BV-T4D, DUT 100025 ; AC-100E, DUT 100026 ; WH-308, DUT 100028
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [ºC] / Humidity [%RH] / Air Pressure [kPa]	21.1 / 52.1 / 102.6
Date of measurements	02-Jul-2015
Measured by	Tomi Lipponen

4.1. Test Setup



4.2. Test method and limit

The measurement is made according to procedure KDB 558074 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

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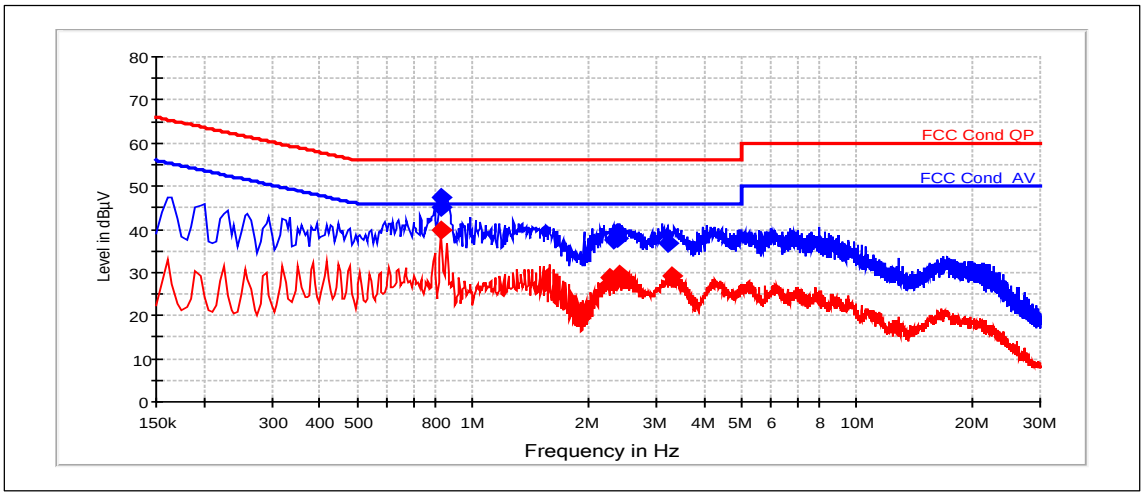
4.3. WLAN Test results

4.3.1 802.11n mode, BPSK modulation, 6.5 / 7.25 Mbps data rate

Channel 6 / 2437 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.825	47.39	N	PASSED
0.83	44.96	N	PASSED
2.33	37.68	N	PASSED
2.375	38.01	N	PASSED
3.205	36.81	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.825	40	N	PASSED
2.285	29	N	PASSED
2.41	29.53	N	PASSED
3.3	29.2	N	PASSED

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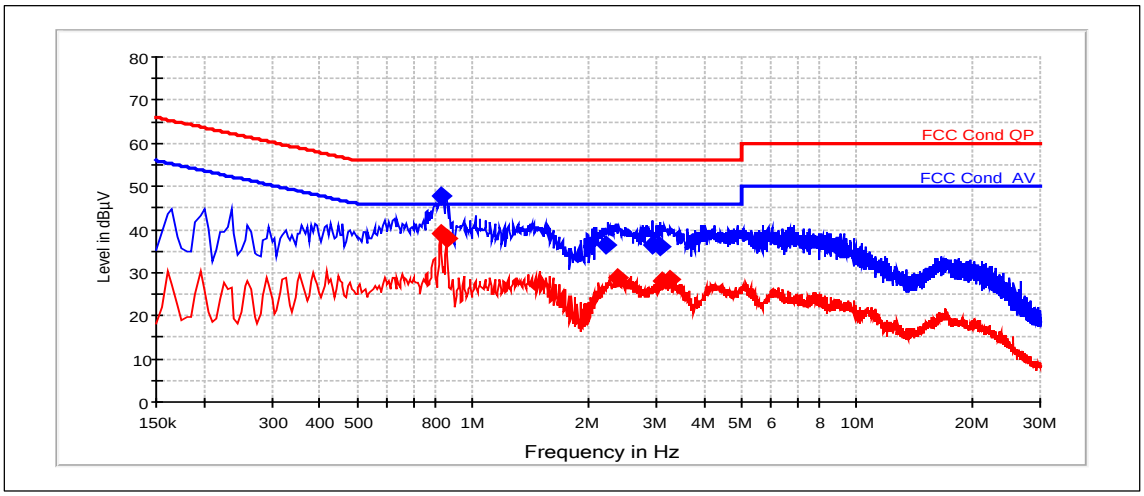
4.3.2 802.11g mode, 16QAM modulation, 24 Mbps data rate

Channel 6 / 2437 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.825	47.66	N	PASSED
2.215	36.58	N	PASSED
2.95	36.35	N	PASSED
3.065	36.04	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.825	38.88	N	PASSED
0.855	37.75	N	PASSED
2.38	28.64	N	PASSED
3.11	28.17	N	PASSED
3.27	28.6	N	PASSED

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5. Test Equipment

5.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B
6044	V-network	ESH3-Z6	R&S	-
2059	V-network	ESH3-Z6	R&S	-
1759	LISN 50 µH	ESH3-Z5	R&S	22/24/27, 15C, 15B
2097	Pulse Limiter	ESH3-Z2	R&S	22/24/27, 15C, 15B
1999	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2390	Directional Coupler	DC2600	AR	-
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B
2060	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
1759	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
2039	Power Supply	PL330QMD	Thurlby	15C, 15B
6036	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
2359	Temperature Test Chamber	VT4002	Vötsch	22/24/27
2352	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C
6109	Communication Tester	CMU200	R&S	22/24/27, 15C
6246	Power Supply	66332A	HP	22/24/27, 15C
1992	Signal Generator	83630B	Agilent	15C, 15B
6098	Signal Generator	8648C	Agilent	-
6046	Attenuator 10dB	8493C	Agilent	22/24/27, 15C
6047	Attenuator 20dB	8493C	Agilent	22/24/27, 15C
6045	Power splitter	11667B	Agilent	22/24/27, 15C
6247	Communication Tester	CBT	R&S	22/24/27, 15C 15B
6052	Communication Tester	CMU200	R&S	22/24/27, 15C 15B
6248	Power Supply	6632B	-	22/24/27, 15C 15B
6106	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C 15B
6113	Signal Generator	SMF100A	R&S	22/24/27, 15C 15B
6202	Temperature Test Chamber	VT4002	Vötsch	22/24/27, 15C 15B
6122	Power Splitter	11667B	Agilent	22/24/27, 15C 15B
6134	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	22/24/27, 15C
6136	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	22/24/27, 15C
6103	Bluetooth tester	CBT	R&S	22/24/27, 15C 15B
6250	Power Supply	6651A	Agilent	22/24/27, 15C 15B
6108	Communication Tester	CMU200	R&S	22/24/27, 15C 15B
6105	Spectrum Analyzer	FSV-30	R&S	22/24/27, 15C 15B
6251	Temperature Test Chamber	VT4002	Vötsch	22/24/27, 15C 15B
6243	Power Splitter	1167B	Agilent	22/24/27, 15C 15B
6245	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	22/24/27, 15C 15B
6244	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	22/24/27, 15C 15B

5.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
2388	Bluetooth Tester	CBT	R&S	15B
10479	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2009	Signal Generator	SMP 22	R&S	22/24/27, 15C, 15B
2348	Controller	G-1000DXC	Yaesu	22/24/27, 15C, 15B
2349	Computer Controller	g-1000DXC	Yaesu	22/24/27, 15C, 15B
2116	Controller	EMCO 2090	ETS	22/24/27, 15C, 15B
2109	Power Supply	PL330QMD	Thurlby	22/24/27, 15C, 15B
2353	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
6115	Open switch and control unit	OSP 130	R&S	22/24/27, 15C 15B
6116	Open switch and control unit	OSP 150	R&S	22/24/27, 15C 15B

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Eq. No	Equipment	Type	Manufacturer	Used in
6117	Open switch and control unit	OSP 150	R&S	22/24/27, 15C 15B
6131	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	22/24/27, 15C 15B
6130	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	22/24/27
6159	Band Reject Filter	WRCD1747.8-0.4/40-5SS	Wainwright	22/24/27,15C, 15B
6158	Band Reject Filter	WRCT836.6-0.4/40-8SS	Wainwright	22/24/27,15C, 15B
6197	Band Reject Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	22/24/27,15C, 15B
2231	Band Reject Filter	WRCG1947/1953-1940/1960-40/6SS	Wainwright	22/24/27,15C, 15B
2391	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
2386	Band Reject Filter	WRCG1764.4/1770.4-1760.4/1774.4-40/6SS	Wainwright	22/24/27, 15C, 15B
2385	Band Reject Filter	WRCG1744.4/1750.4-1740.4/1754.4-40/6SS	Wainwright	22/24/27, 15C, 15B
2357	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
2188	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
6195	High Pass Filter	-	Wainwright	22/24/27, 15C, 15B
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
2361	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	Euroshield	22/24/27, 15C, 15B
6212	Antenna Array system	-	TCC	22/24/27, 15C, 15B
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B
6089	Antenna	HFH2-Z2	R&S	15C, 15B
2027	CDN	M2 (modified) DC1	MEB	22/24/27, 15C, 15B
2028	CDN	M3 (modified) DC2	MEB	22/24/27, 15C, 15B
2176	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2135	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2029	Power Supply	PL330	Thurlby	22/24/27, 15C
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6037	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B

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