

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-639_11.doc	Date of Report:	08-Jun-2010
Number of pages:	30	Customer's Contact person:	Ralph Schwarz
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FCC listing no.:	94436		
IC recognition no.:	661AK-1		
Tested devices/ accessories:	Phone RM-639, Battery BL-4S		
FCC ID:	PPIRM-639	IC:	661U-RM639
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-GEN (Issue 2, June 2007) and 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	18-May-2010
Testing completed	02-Jun-2010
The customer's contact person	Ralph Schwarz
Test Plan referred to	T:\Projects\RM-639\TestPlan\RS_testplan_RM-639_CR_HW0222.xls
Notes	-
Document name	FCC15C_RM-639_11.doc

1.1. EUT and Accessory Information

The EUT is a 8-band (GSM850/900/1800/1900 and WCDMA Band I/II(1900)/V(850)/VIII) mobile phone with GPRS, EGPRS, Bluetooth and WLAN. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-639	004402130976024	0222	-	Vp. Le5.03	DUT42249
Phone	RM-639	004402130975430	0222	-	Vp. Le5.03	DUT42248
Battery	BL-4S	3820669472185781739;0670577	-	-	-	DUT42250
Battery	BL-4S	3820669472185781116;0670577	-	-	-	DUT42251

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	PASSED
15.247(d)	A8.5	Band edge compliance of RF emissions	PASSED
15.247(d)	A8.5	Spurious RF conducted emissions	PASSED
15.247(d), 15.209	A8.5	Spurious radiated emissions	PASSED
15.207	7.2.2	AC powerline conducted emissions	NP
15.247(a)(2)	A8.2 (a)	6 dB bandwidth	PASSED
15.247(e)	A8.2 (b)	Power spectral density	PASSED

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

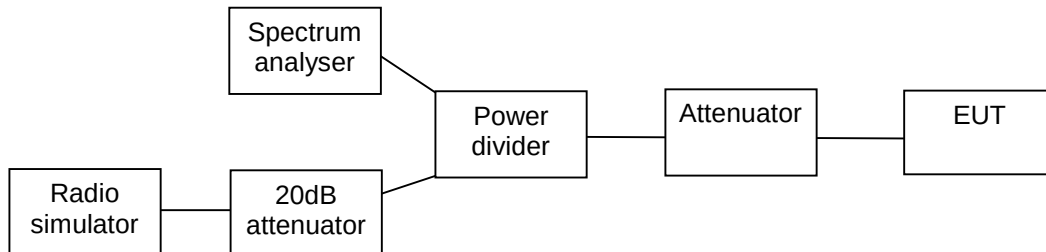
The test was not performed by the TCC Nokia Tampere Laboratory.

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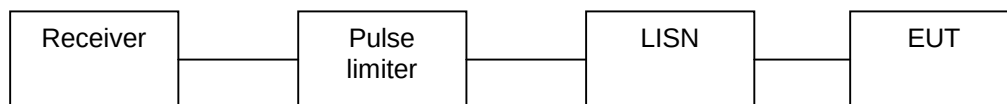
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2. Test setups

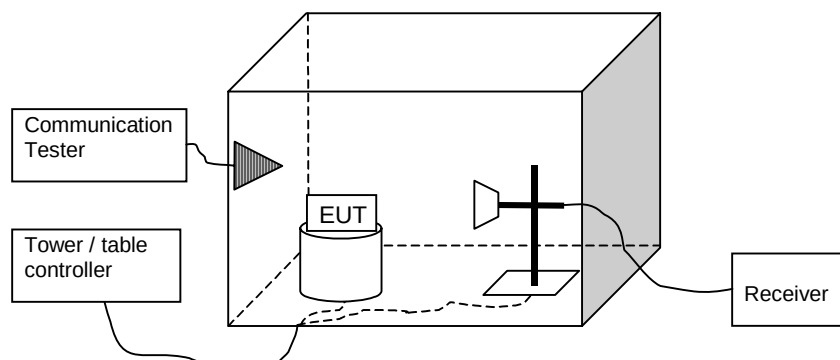
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Radiated test setup



3. Conducted peak output power (FCC §15.247(b)(1), RSS-210 A8.4 (4))

EUT with DUT number	RM-639 DUT42249
Accessories with DUT numbers	BL-4S DUT42251
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 49 / 99.7
Date of measurements	2-Jun.2010
Measured by	Hannu Söderholm

3.1. Test method and limit

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

Limits for conducted peak output power measurements

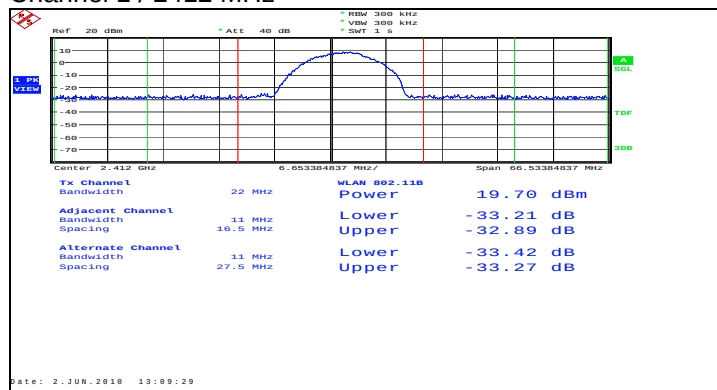
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. WLAN Test results

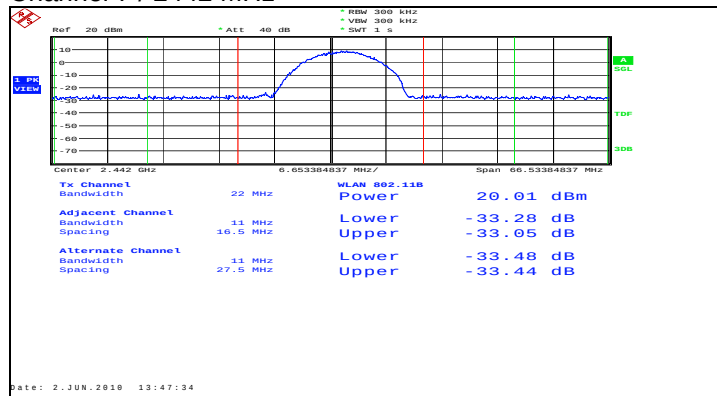
3.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [W]	Result
1 / 2412	19.70	0.093	PASSED
7 / 2442	20.01	0.100	PASSED
11 / 2462	20.37	0.109	PASSED

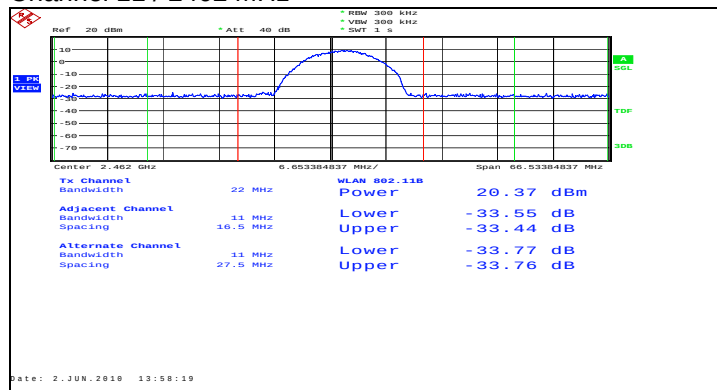
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



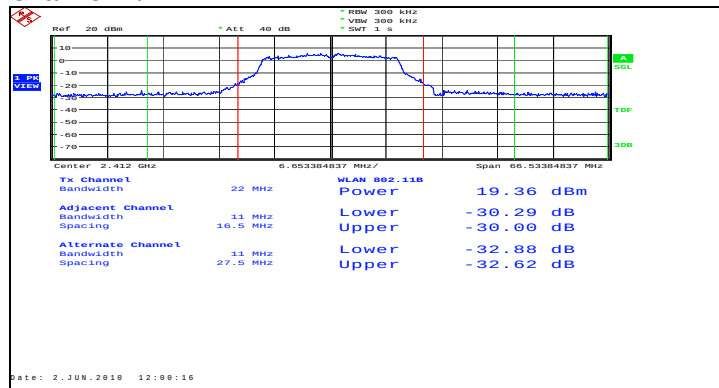
Channel 11 / 2462 MHz



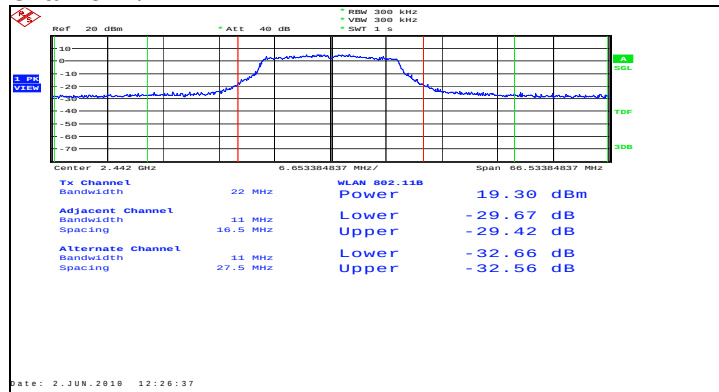
3.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [W]	Result
1 / 2412	19.36	0.086	PASSED
7 / 2442	19.30	0.085	PASSED
11 / 2462	19.93	0.098	PASSED

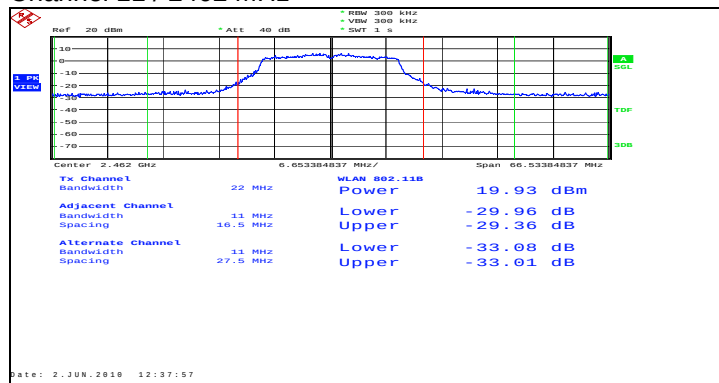
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



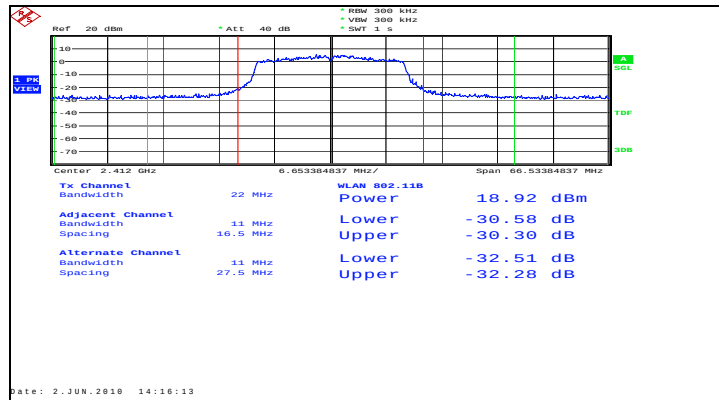
Channel 11 / 2462 MHz



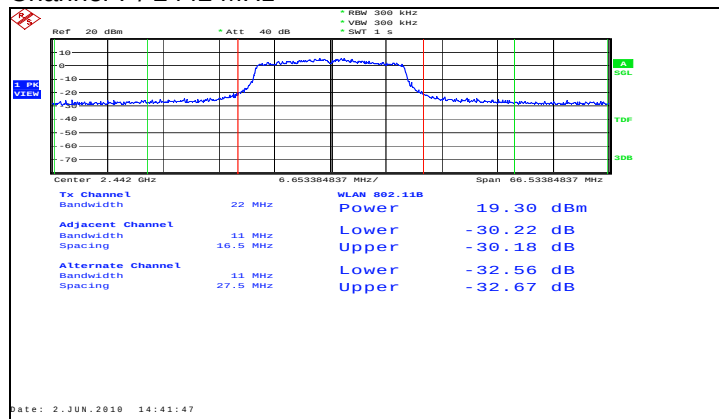
3.2.3 802.11n HT20 MCS 0

Channel / f_c [MHz]	P [dBm]	P [W]	Result
1 / 2412	18.92	0.078	PASSED
7 / 2442	19.30	0.085	PASSED
11 / 2462	19.53	0.090	PASSED

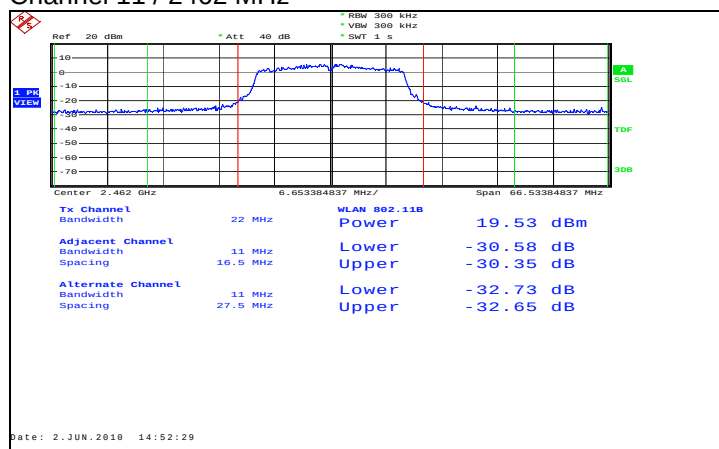
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



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

EUT with DUT number	RM-639 DUT 42248
Accessories with DUT numbers	BL-4S DUT42250
Operation Voltage [V] / [Hz]	240 / 50
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 44 / 101.4, 24 / 47 / 101.5
Date of measurements	31-May.. 02-Jun-2010
Measured by	Jari Jantunen

4.1. Test method and limit

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

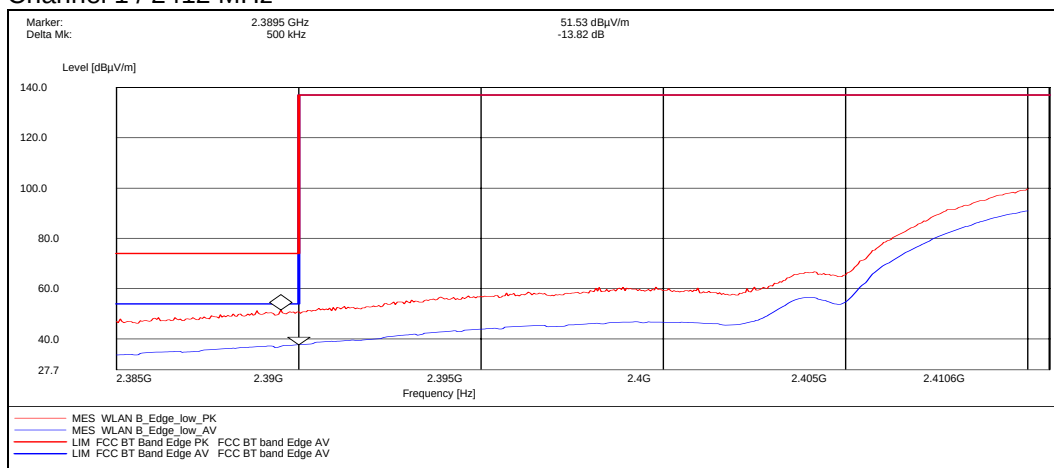
Limits for band edge compliance of RF emissions measurements (3 m measurement distance)

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

4.2. WLAN Test results

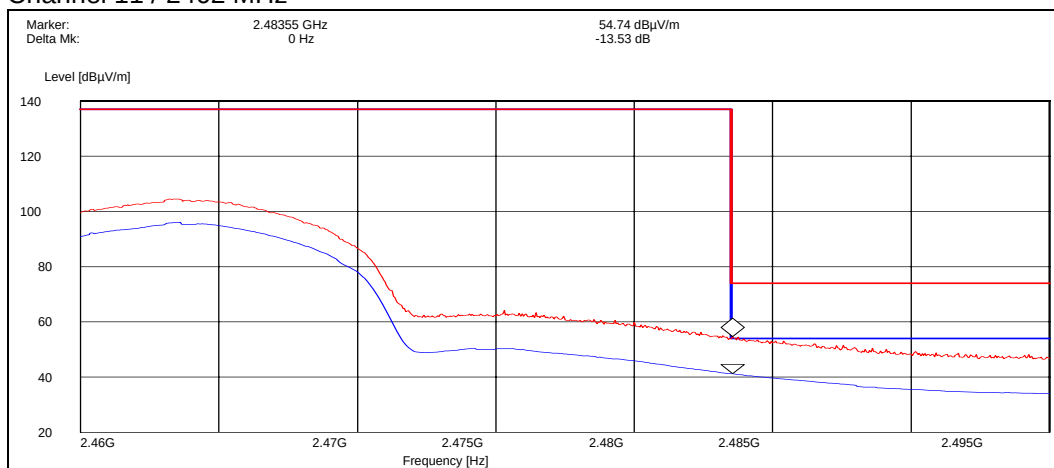
4.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 1 / 2412 MHz



Detector (RBW: 1 MHz)	E [dBμV/m]	Result
Peak	51.50	PASSED
Average	37.70	PASSED

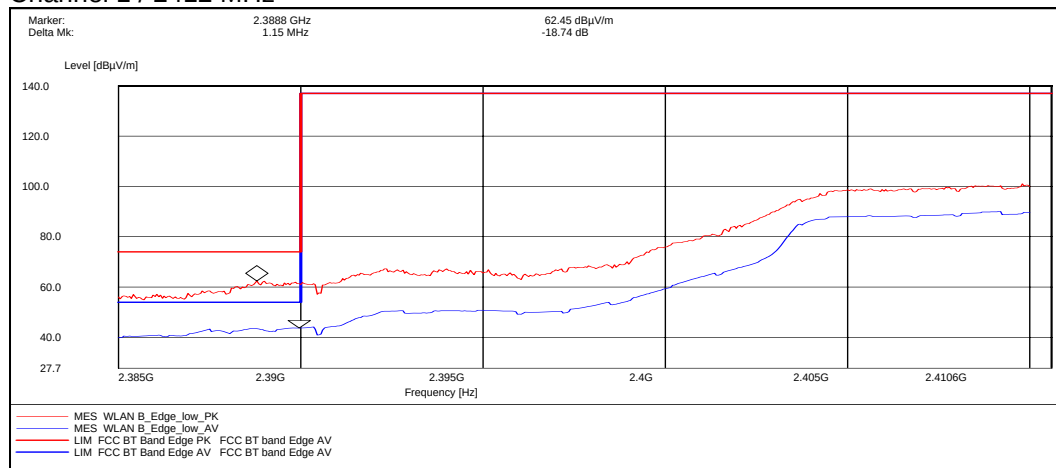
Channel 11 / 2462 MHz



Detector (RBW: 1 MHz)	E [dBμV/m]	Result
Peak	54.70	PASSED
Average	41.20	PASSED

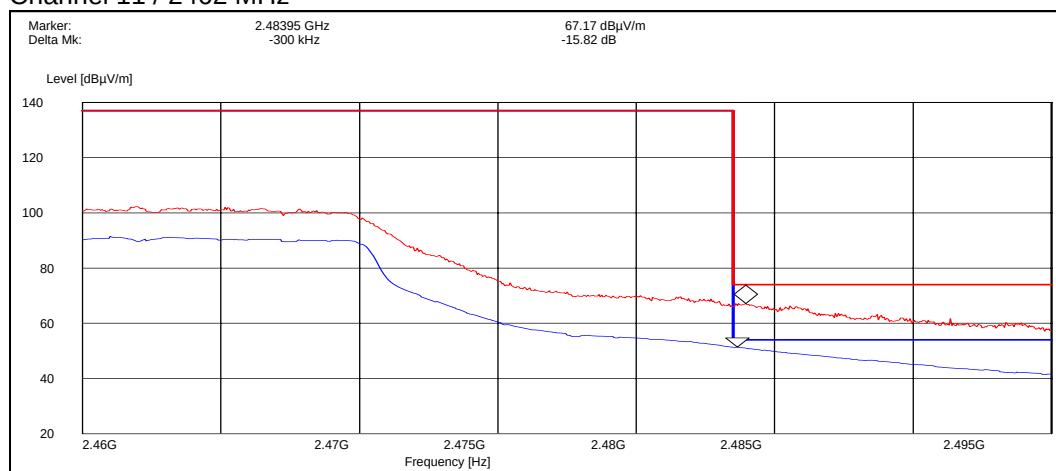
4.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel 1 / 2412 MHz



Detector (RBW: 1 MHz)	E [dBμV/m]	Result
Peak	62.50	PASSED
Average	43.70	PASSED

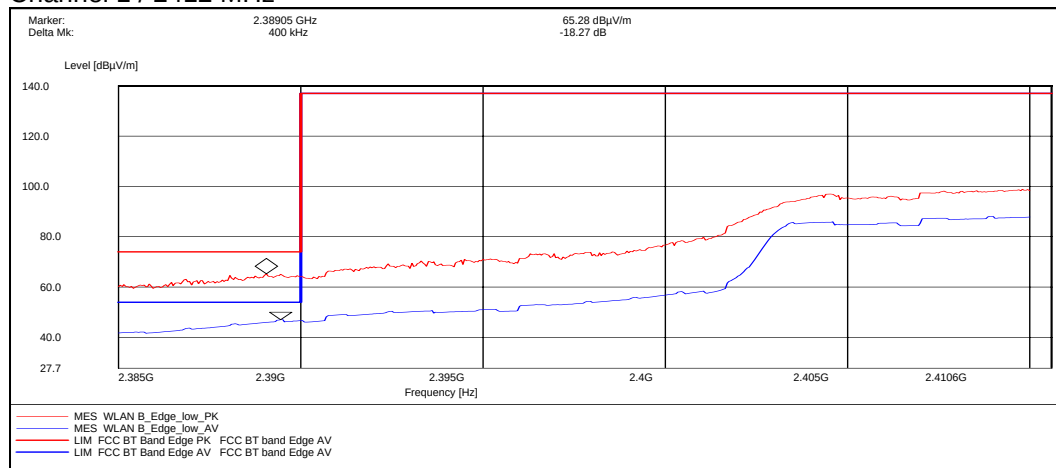
Channel 11 / 2462 MHz



Detector (RBW: 1 MHz)	E [dBμV/m]	Result
Peak	67.20	PASSED
Average	51.30	PASSED

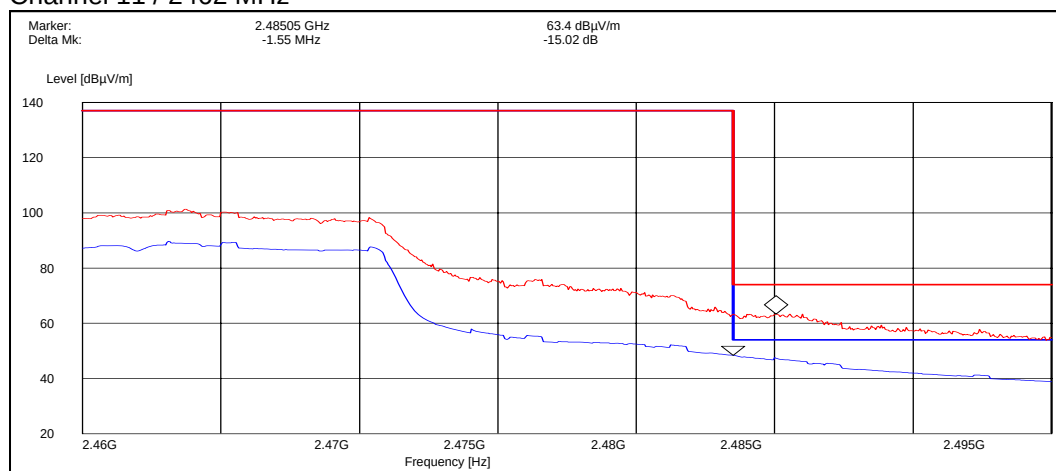
4.2.3 802.11n HT20 MCS 0

Channel 1 / 2412 MHz



Detector (RBW: 1 MHz)	E [dB μ V/m]	Result
Peak	65.30	PASSED
Average	47.00	PASSED

Channel 11 / 2462 MHz



Detector (RBW: 1 MHz)	E [dB μ V/m]	Result
Peak	63.40	PASSED
Average	48.40	PASSED

5. Spurious RF conducted emissions (FCC §15.247(d), RSS-210 A8.5)

EUT with DUT number	RM-639 DUT42249
Accessories with DUT numbers	BL-4S DUT42251
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 49 / 99.7
Date of measurements	2-Jun.2010
Measured by	Hannu Söderholm

5.1. Test method and limit

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

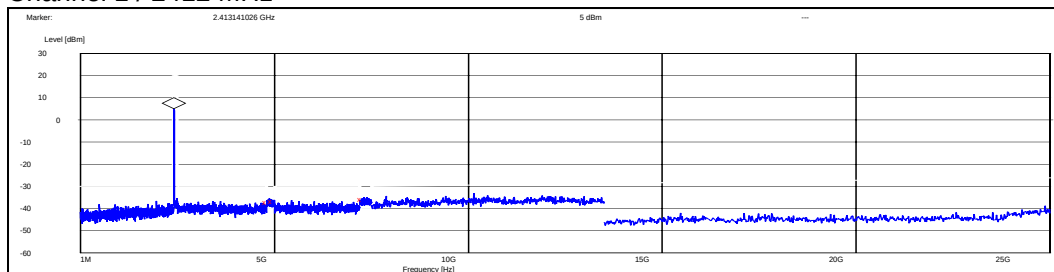
Limits for spurious RF conducted emissions measurements

Frequency range [MHz]	Limit [dBc]
1 – 25000	≤ -20

5.2. WLAN Test results

5.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

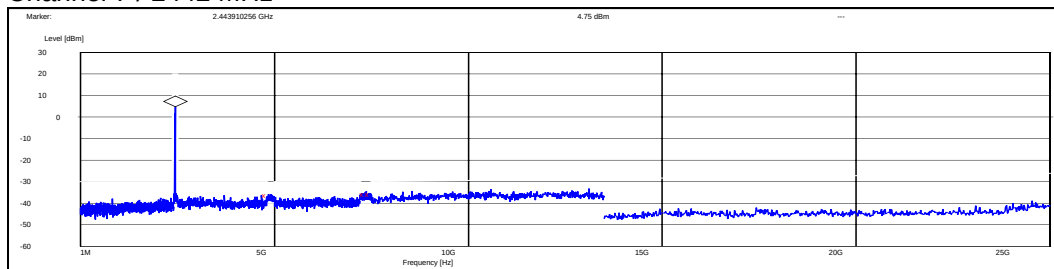
Channel 1 / 2412 MHz



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4861.538462	-42.303091	PASSED
5000.000000	-41.803091	PASSED
7315.865385	-40.603091	PASSED

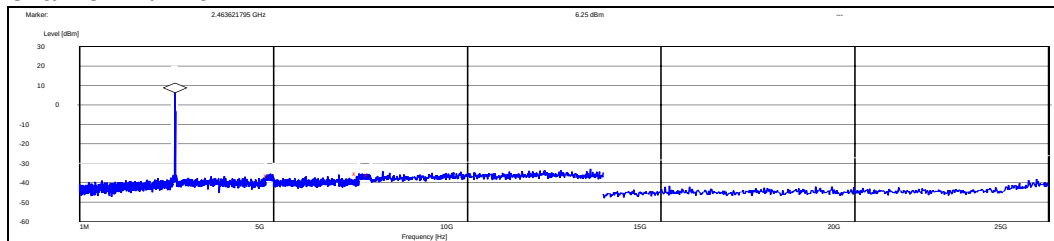
Channel 7 / 2442 MHz



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4847.756410	-41.249659	PASSED
7361.538462	-40.449659	PASSED
7500.000000	-40.749659	PASSED

Channel 11 / 2462 MHz

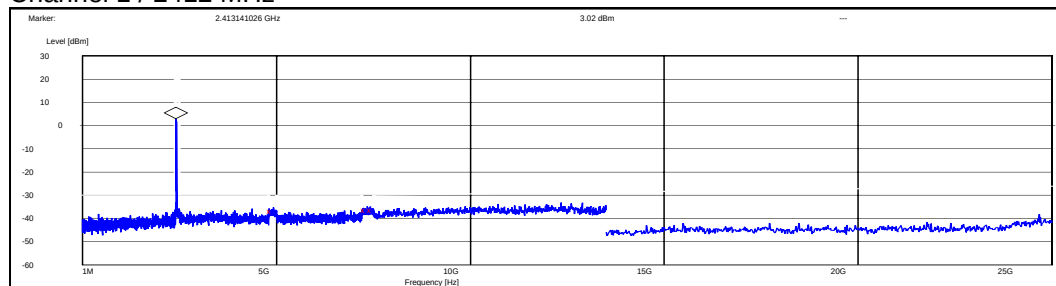


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4925.000000	-42.546315	PASSED
7201.923077	-41.646315	PASSED
7500.000000	-42.246315	PASSED

5.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

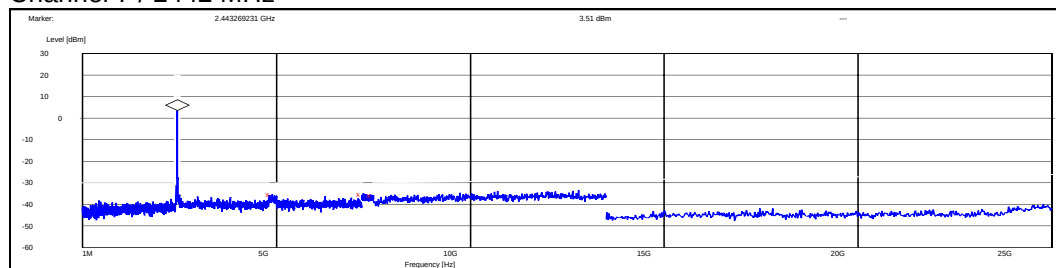
Channel 1 / 2412 MHz



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4918.269231	-39.718380	PASSED
7343.750000	-39.318380	PASSED
7500.000000	-39.218380	PASSED

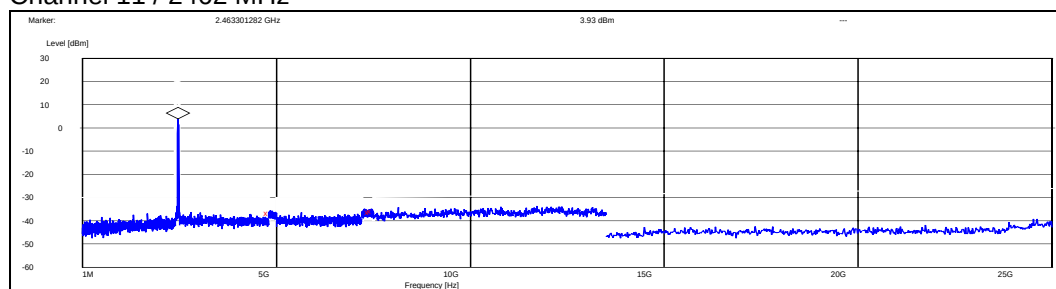
Channel 7 / 2442 MHz



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4898.717949	-39.013579	PASSED
7234.134615	-38.813579	PASSED
7500.000000	-39.213579	PASSED

Channel 11 / 2462 MHz

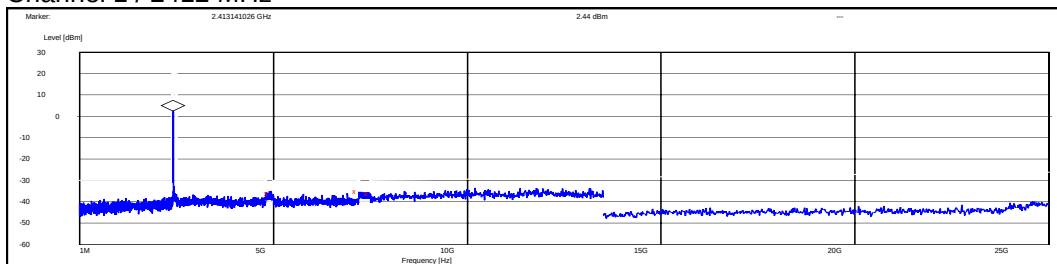


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4843.589744	-40.629947	PASSED
7456.250000	-40.129947	PASSED
7500.000000	-40.029947	PASSED

5.2.3 802.11n HT20 MCS 0

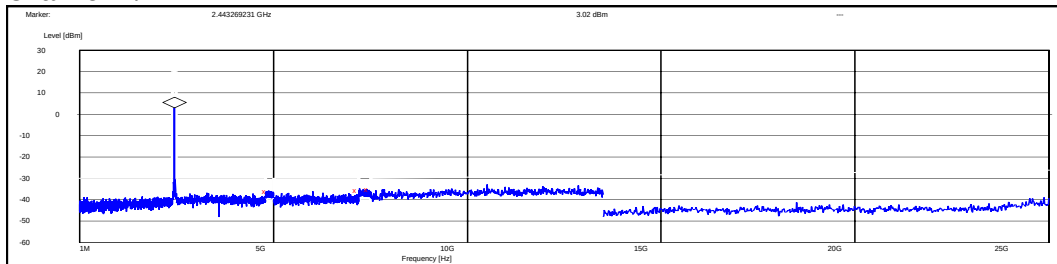
Channel 1 / 2412 MHz



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4933.974359	-38.940896	PASSED
7208.653846	-37.940896	PASSED
7500.000000	-38.540896	PASSED

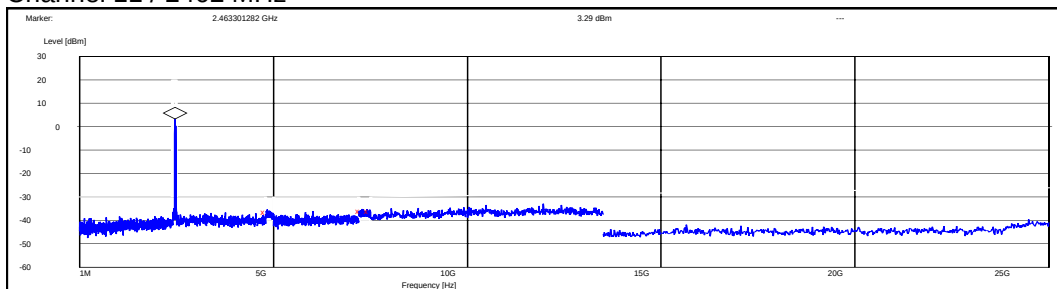
Channel 7 / 2442 MHz



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4879.487179	-39.520170	PASSED
7218.269231	-38.920170	PASSED
7500.000000	-38.420170	PASSED

Channel 11 / 2462 MHz



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4837.820513	-39.986995	PASSED
7289.423077	-39.186995	PASSED
7500.000000	-39.386995	PASSED

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

EUT with DUT number	RM-639 DUT 42248
Accessories with DUT numbers	BL-4S DUT42250
Operation Voltage [V] / [Hz]	240 / 50
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 44 / 101.4, 24 / 47 / 101.5
Date of measurements	31-May.. 02-Jun-2010
Measured by	Jari Jantunen

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

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

6.2. WLAN Test results

6.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

TX mode, channel 1 / 2412 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	41.30	116.14	42.40	-1.1	VERTICAL	PASSED
7236.000000	43.60	151.36	41.00	2.6	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	28.00	25.12	29.10	-1.1	VERTICAL	PASSED
7236.000000	30.70	34.28	28.10	2.6	HORIZONTAL	PASSED

TX mode, channel 7 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
38.176353	22.40	13.18	36.60	-14.2	VERTICAL	PASSED
74.267535	21.80	12.30	45.40	-23.6	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4886.773547	38.90	88.10	40.10	-1.2	HORIZONTAL	PASSED
7268.533066	42.70	136.46	40.00	2.7	HORIZONTAL	PASSED
7315.131263	43.30	146.22	40.30	3.0	VERTICAL	PASSED
7392.287575	42.60	134.90	39.30	3.3	HORIZONTAL	PASSED
17438.885772	51.50	375.84	32.90	18.6	HORIZONTAL	PASSED
17824.647295	54.70	543.25	33.90	20.8	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4883.773547	26.60	21.38	27.80	-1.2	HORIZONTAL	PASSED
7265.033066	29.90	31.26	27.20	2.7	HORIZONTAL	PASSED
7318.131263	30.30	32.73	27.20	3.1	VERTICAL	PASSED
7395.287575	29.90	31.26	26.60	3.3	HORIZONTAL	PASSED
17446.885772	39.20	91.20	20.50	18.7	HORIZONTAL	PASSED
17821.647295	42.20	128.82	21.40	20.8	VERTICAL	PASSED

TX mode, channel 11 / 2462 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	42.10	127.35	43.20	-1.1	VERTICAL	PASSED
7386.000000	44.80	173.78	41.60	3.2	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	29.70	30.55	30.80	-1.1	VERTICAL	PASSED
7386.000000	30.60	33.88	27.40	3.2	HORIZONTAL	PASSED

6.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

TX mode, channel 1 / 2412 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	39.80	97.72	40.90	-1.1	HORIZONTAL	PASSED
7236.000000	43.30	146.22	40.70	2.6	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	26.80	21.88	27.90	-1.1	VERTICAL	PASSED
7236.000000	30.10	31.99	27.50	2.6	HORIZONTAL	PASSED

TX mode, channel 7 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
38.176353	21.60	12.02	35.80	-14.2	VERTICAL	PASSED
73.027054	20.80	10.96	44.50	-23.7	HORIZONTAL	PASSED
74.369940	19.80	9.77	43.40	-23.6	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4884.000000	40.00	100.00	41.20	-1.20	VERTICAL	PASSED
7271.541082	42.40	131.83	39.70	2.7	HORIZONTAL	PASSED
7315.631263	43.30	146.22	40.30	3.0	VERTICAL	PASSED
7399.301603	42.80	138.04	39.40	3.4	VERTICAL	PASSED
17496.489980	53.00	446.68	34.10	18.9	VERTICAL	PASSED
17802.107214	55.00	562.34	34.20	20.8	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4884.000000	26.50	21.13	27.70	-1.20	HORIZONTAL	PASSED
7268.541082	29.80	30.90	27.10	2.7	HORIZONTAL	PASSED
7315.131263	30.50	33.50	27.50	3.0	VERTICAL	PASSED
7403.301603	30.30	32.73	27.00	3.3	VERTICAL	PASSED
17496.489980	39.60	95.50	20.70	18.9	VERTICAL	PASSED
17806.607214	42.10	127.35	21.30	20.8	HORIZONTAL	PASSED

TX mode, channel 11 / 2462 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	39.70	96.61	40.80	-1.1	VERTICAL	PASSED
7386.000000	42.40	131.83	39.20	3.2	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	27.50	23.71	28.60	-1.1	VERTICAL	PASSED
7386.000000	30.00	31.62	26.80	3.2	VERTICAL	PASSED

6.2.3 802.11n HT20 MCS 0

TX mode, channel 1 / 2412 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	38.90	88.10	40.00	-1.1	HORIZONTAL	PASSED
7236.000000	45.30	184.08	42.70	2.6	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	26.90	22.13	28.00	-1.1	VERTICAL	PASSED
7236.000000	30.20	32.36	27.60	2.6	VERTICAL	PASSED

TX mode, channel 7 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
37.676353	21.40	11.75	35.30	-13.9	VERTICAL	PASSED
73.408016	19.60	9.55	43.30	-23.7	HORIZONTAL	PASSED
74.169940	20.60	10.72	44.20	-23.6	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4884.271543	40.20	102.33	41.40	-1.2	HORIZONTAL	PASSED
4914.821643	39.60	95.50	40.70	-1.1	VERTICAL	PASSED
7314.131263	43.80	154.88	40.80	3.0	VERTICAL	PASSED
7327.151303	44.50	167.88	41.60	2.9	VERTICAL	PASSED
17459.919840	52.50	421.70	33.80	18.7	VERTICAL	PASSED
17869.241483	54.10	506.99	33.50	20.6	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4885.771543	26.80	21.88	28.00	-1.2	HORIZONTAL	PASSED
4910.821643	26.70	21.63	27.80	-1.1	VERTICAL	PASSED
7317.631263	30.40	33.11	27.30	3.1	VERTICAL	PASSED
7328.151303	30.10	31.99	27.20	2.9	VERTICAL	PASSED
17459.419840	39.60	95.50	20.90	18.7	VERTICAL	PASSED
17867.741483	41.90	124.45	21.30	20.6	VERTICAL	PASSED

TX mode, channel 11 / 2462 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	39.70	96.61	40.80	-1.1	VERTICAL	PASSED
7386.000000	43.70	153.11	40.50	3.2	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	28.10	25.41	29.20	-1.1	VERTICAL	PASSED
7386.000000	29.90	31.26	26.70	3.2	HORIZONTAL	PASSED

7. 6 dB bandwidth (FCC §15.247(a)(2), RSS-210 A8.2 (a))

EUT with DUT number	RM-639 DUT42249
Accessories with DUT numbers	BL-4S DUT42251
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 49 / 99.7
Date of measurements	2-Jun.2010
Measured by	Hannu Söderholm

7.1. Test method and limit

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

Limits for 6 dB bandwidth measurements

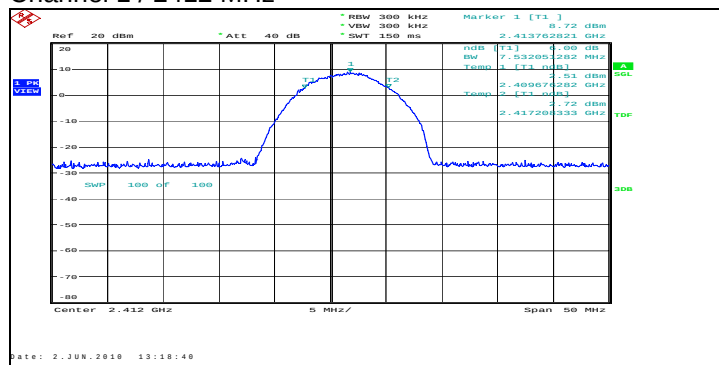
Limit [kHz]
≥ 500

7.2. WLAN test results

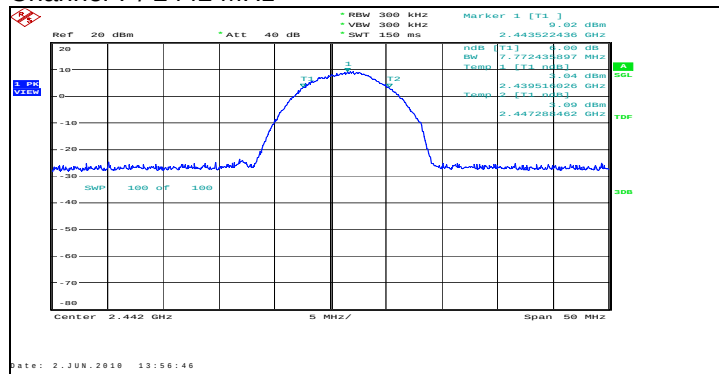
7.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel / f_c [MHz]	6 dB bandwidth [kHz]	Result
1	7532.051	PASSED
7	7772.436	PASSED
11	7532.051	PASSED

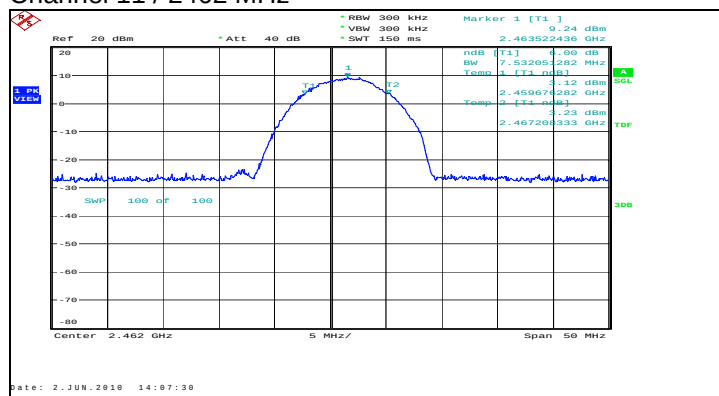
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



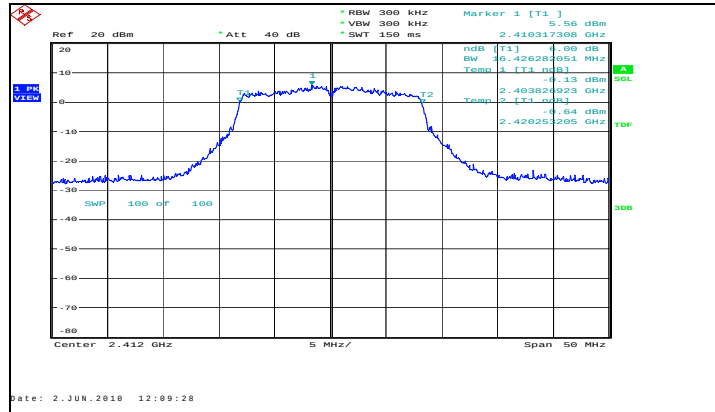
Channel 11 / 2462 MHz



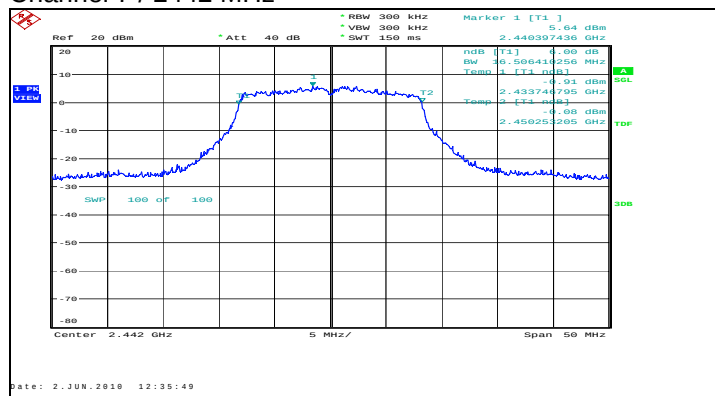
7.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel / f_c [MHz]	6 dB bandwidth [kHz]	Result
1	16426.282	PASSED
7	16506.410	PASSED
11	16426.282	PASSED

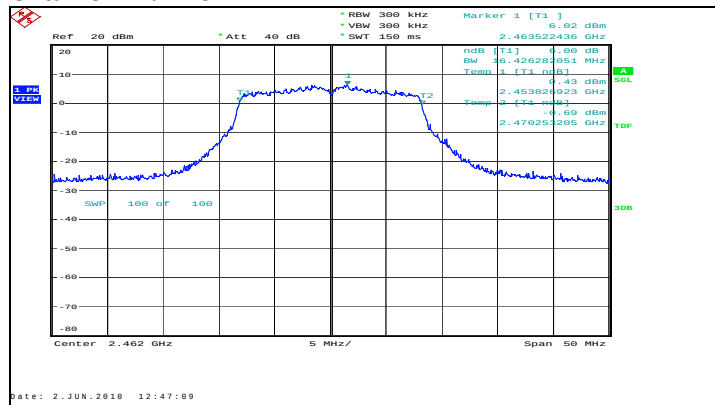
Channel 1 / 2412 MHz



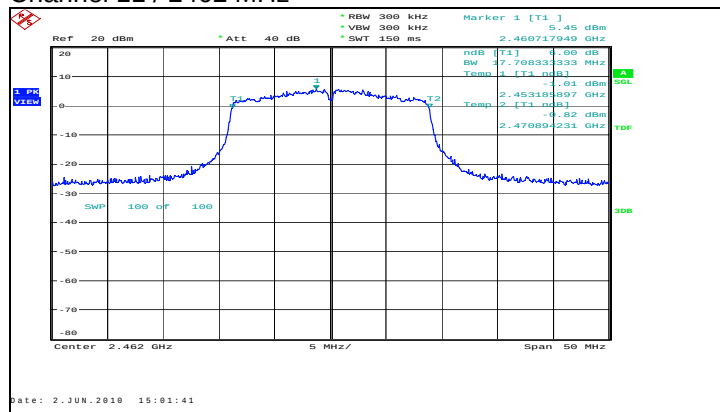
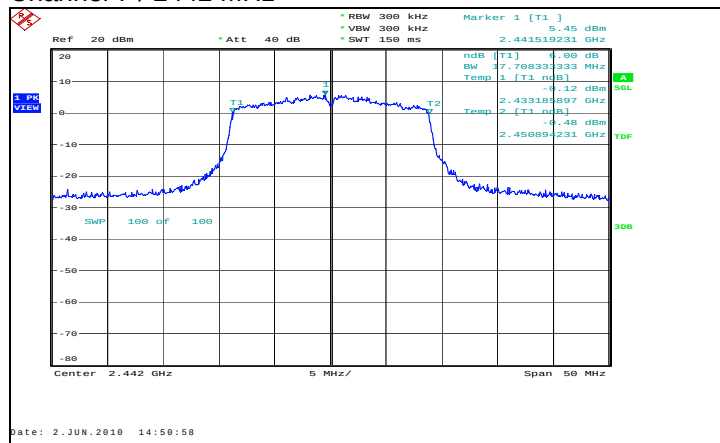
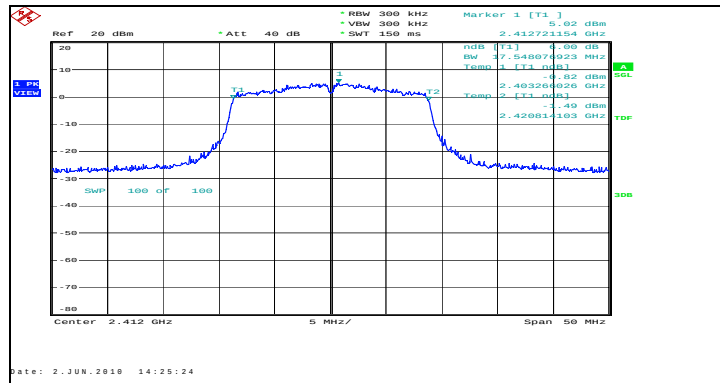
Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



Channel / f_c [MHz]	6 dB bandwidth [kHz]	Result
1	17548.077	PASSED
7	17708.333	PASSED
11	17708.333	PASSED



8. Power spectral density (FCC §15.247(e), RSS-210 A8.2 (b))

EUT with DUT number	RM-639 DUT42249
Accessories with DUT numbers	BL-4S DUT42251
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 49 / 99.7
Date of measurements	2-Jun.2010
Measured by	Hannu Söderholm

8.1. Test method and limit

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

Limits for power spectral density measurements

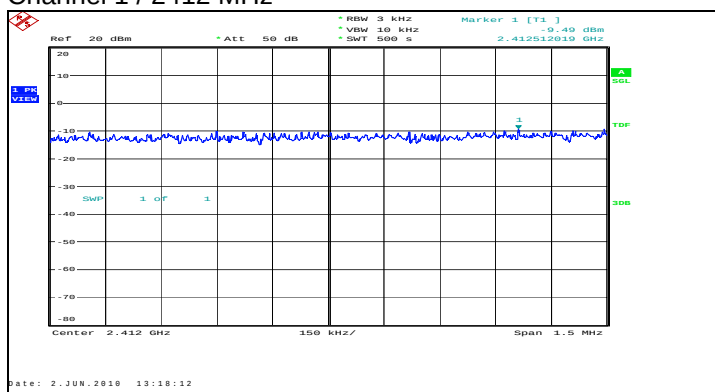
Limit [dBm] @ 3 kHz
≤ 8

8.2. WLAN test results

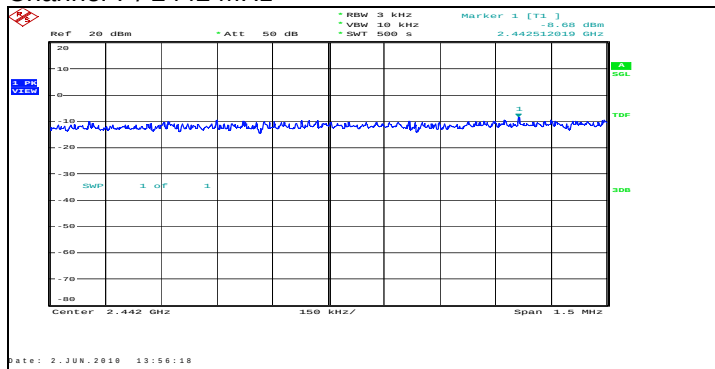
8.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel / f_c [MHz]	P [dBm]	Result
1 / 2412	-9.49	PASSED
7 / 2442	-8.68	PASSED
11 / 2462	-9.06	PASSED

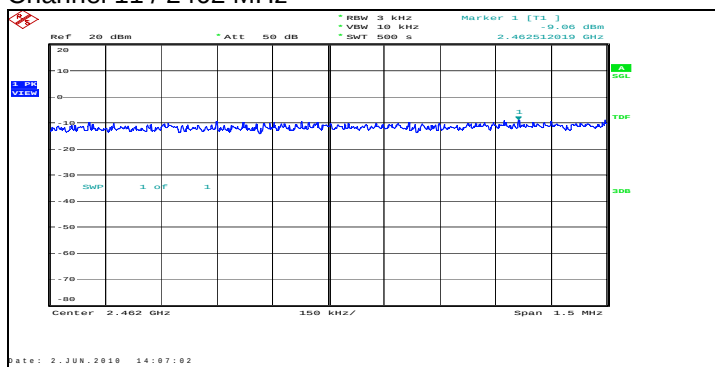
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



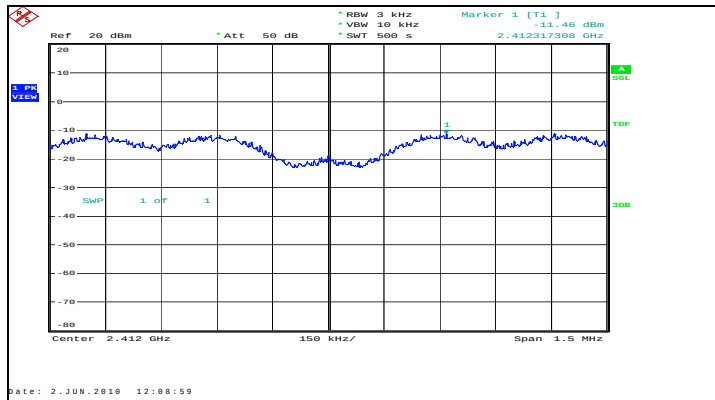
Channel 11 / 2462 MHz



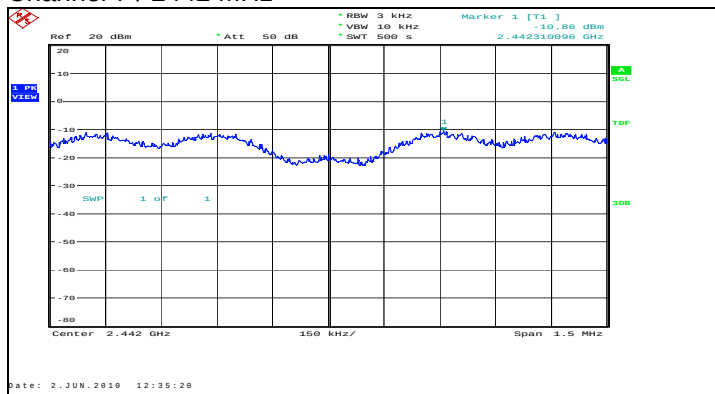
8.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel / f_c [MHz]	P [dBm]	Result
1 / 2412	-11.46	PASSED
7 / 2442	-10.86	PASSED
11 / 2462	-10.68	PASSED

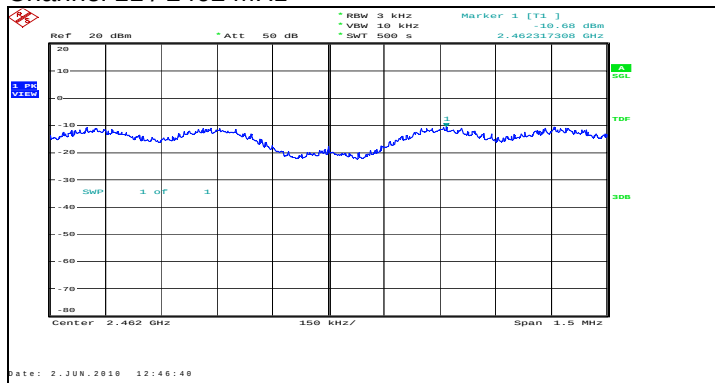
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



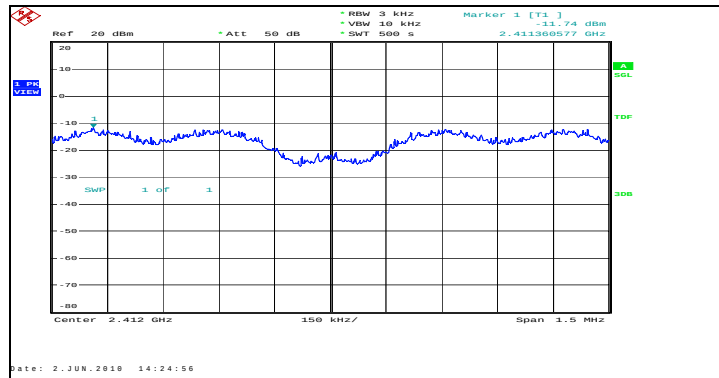
Channel 11 / 2462 MHz



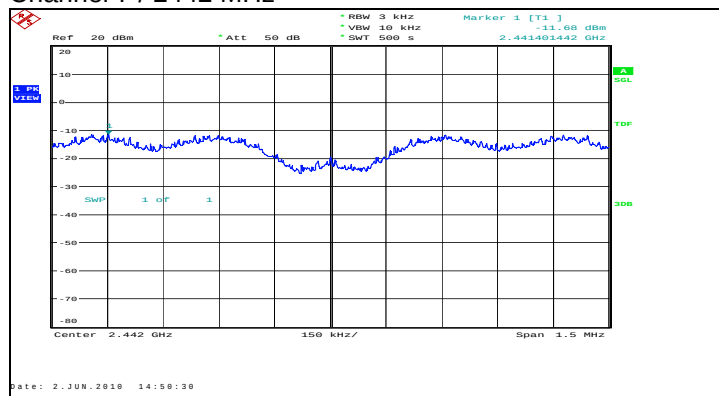
8.2.3 802.11n HT20 MCS 0

Channel / f_c [MHz]	P [dBm]	Result
1 / 2412	-11.74	PASSED
7 / 2442	-11.68	PASSED
11 / 2462	-10.92	PASSED

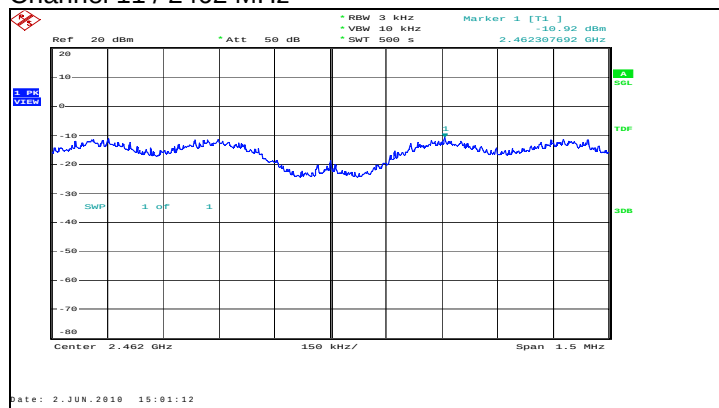
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



9. Test Equipment

9.1. 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
OM0631 2	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 μ H	ESH3-Z5	R&S	15C, 15B
TM26491	LISN 50 μ H	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 μ H	ENV216	R&S	15C, 15B
2010	LISN 50 μ H	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

9.2. 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
TM26500	Turntable	DS412	Deisel	22/24/27, 15C, 15B
TM30642	Mast/turntable controller	HD-100	Deisel	22/24/27, 15C, 15B
TM38990	Remote switching module	RSM1	EMC Automation	22/24/27, 15C, 15B
TM38341	System interface	SI-300	EMC Automation	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	Controller	2090	Emco	22/24/27, 15C, 15B
TM39158	Antenna	3116	Emco	22/24/27, 15C, 15B
TM30643	LISN 50 μ H	LISN-5-20-2	FCC	22/24/27, 15C, 15B
TM30644	LISN 50 μ H	LISN-5-20-2	FCC	22/24/27, 15C, 15B
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B
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
-	Preamplifier	AFS4-00100300-20-23P6	Miteq	15C
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	Torqueleader	22/24/27, 15C, 15B
TM38066	High pass filter	4HC3000/18000-3-KK	Trilithic	22/24/27, 15C, 15B
TM26511	Tunable notch filter	WRCA870/	Wainwright	27
TM38215	Band reject filter	WRCD 1920/1980-1918/1982-40/20	Wainwright UMTS	27
TM38214	Band reject filter	WRCT 2402/2480-2400/2483.5-30/	Wainwright ISM	15C
-	Band reject filter	WRCG1877/1883-1870/1890-40/6EE	Wainwright	27
-	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	27
TM23892	Controller	G-1000SDX	Yaesu	22/24/27
2001	Bluetooth tester	CBT	R&S	22/24/27, 15C, 15B
-	Antenna	SBA 9113	Schwarzbeck	22/24/27
6023	Antenna	VUBA 9117	Schwarzbeck	22/24/27, 15C