

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15CWLAN_RM-1045_06.docx	Date of Report:	02-May-2014
Number of pages:	90	Customer's Contact person:	Tia Melava
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FCC listing no.:	533467		
IC recognition no.:	661V-1		
Tested devices/ accessories:	Phone RM-1045 /AC-Charger AC-60E / Headset WH-208		
FCC ID:	PYARM-1045	IC:	661R-RM1045
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), DTS procedures KDB 558074, IC standards. 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:			

Kalle Hannila, System Manager, EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	14-Apr-2014
Testing completed	dd-mmm-yyyy
The customer's contact person	Tia Melava
Test Plan referred to	T:\Projects\RM-1045\TestPlan\RS_Testplan_RM-1045.xlsm
Notes	-
Document name	T:\Projects\RM-1045\EMC\FCC15CWLAN_RM-1045_06.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-1045	004402478600277004402478600277	1004	-	02061.00037.14145.00001	18213
Headset	WH-208	2145W41	-	-	-	18198
AC-Charger	AC-60E	09049324161031071500675677	-	-	-	18197

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(0.4(4))	Conducted peak output power	PASSED
15.247(d), 15.205(b)	A8(0.5)	Band edge compliance of RF emissions	
15.247(d)	A8(0.5)	Spurious RF conducted emissions	PASSED
15.247(d), 15.209	A8(0.5)	Spurious radiated emissions	
15.207	7.2.2	AC powerline conducted emissions	
15.247(a)(2)	A8(0.1(1))	6dB(bandwidth)	PASSED
15.247(e)	A8(0.1(2))	Power spectral density	PASSED

5 GHz RLAN:

Section in CFR 47	Section in RSS-GEN or RSS-210	Name of the test	Result
15.407(a)	A9.2	Conducted peak output power	PASSED
15.407(b)	A9.2	Band edge compliance of RF emissions	PASSED
15.407(a)(6)	A9.2	Peak excursion	
15.407(d)	A8(0.5)	Spurious RF conducted emissions	PASSED
15.407(b)	A9.2	Spurious radiated emissions	PASSED
15.407(b)(6)	A9.2	AC powerline conducted emissions	
	A9.2	26dB(bandwidth)	PASSED
15.407(a)	A9.2	Power spectral density	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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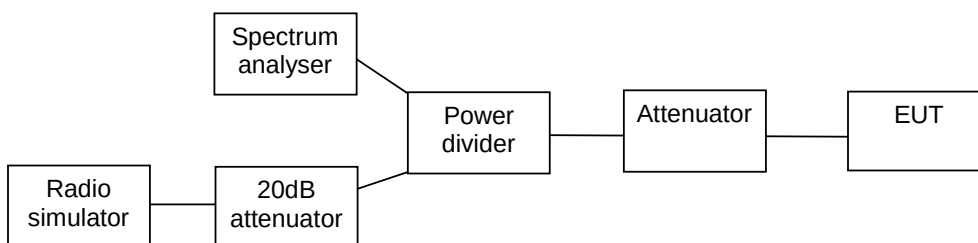
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2. Conducted peak output power (15.247(b)(1), RSS-210 A8.4 (4))

EUT with DUT number	RM-1045, DUT 18213
Accessories with DUT numbers	AC-60E, DUT 18197 ; WH-208, DUT 18198
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 37 / 100.8
Date of measurements	17-Apr-2014
Measured by	Jari Keto

2.1. 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 conducted peak output power measurements

Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5 5725 - 5850	<= 1	<= 30

2.3. Power results summary

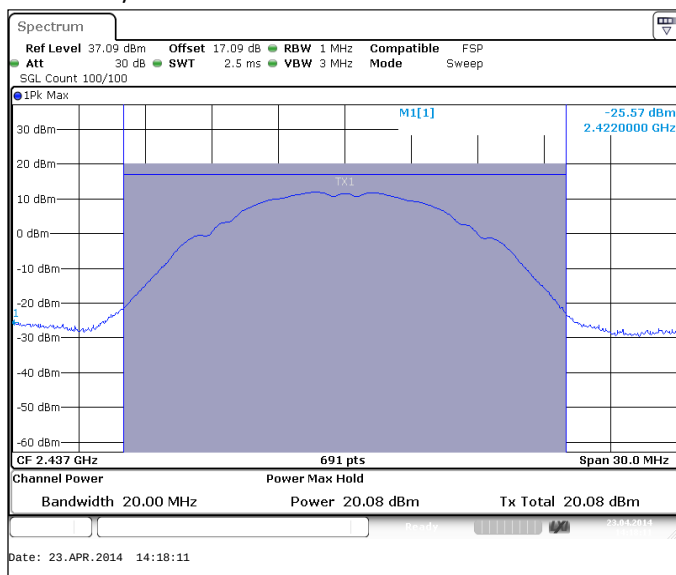
Channel / f _c [MHz]	Mode	Modulation	Data rate	Level [dBm]
6 / 2437	802.11b	BPSK	1 Mbps	20.08
6 / 2437	802.11b	QPSK	2 Mbps	19.85
6 / 2437	802.11b	QPSK	5.5 Mbps	21.29
6 / 2437	802.11b	QPSK	11 Mbps	22.83
6 / 2437	802.11g	BPSK	6 Mbps	24.5
6 / 2437	802.11g	BPSK	9 Mbps	23.86
6 / 2437	802.11g	QPSK	12 Mbps	22.66
6 / 2437	802.11g	QPSK	18 Mbps	22.71
6 / 2437	802.11g	16QAM	24 Mbps	23.18
6 / 2437	802.11g	16QAM	36 Mbps	23.11
6 / 2437	802.11g	16QAM	48 Mbps	23.16
6 / 2437	802.11g	16QAM	54 Mbps	23.15
6 / 2437	802.11n	BPSK	6.5 / 7.25 Mbps	24
6 / 2437	802.11n	QPSK	13.0 / 14.4 Mbps	23.22
6 / 2437	802.11n	QPSK	19.5 / 21.7 Mbps	22.72
6 / 2437	802.11n	16QAM	26.0 / 28.9 Mbps	23.2
6 / 2437	802.11n	16QAM	39.0 / 43.3 Mbps	23.18
6 / 2437	802.11n	64QAM	52.0 / 57.8 Mbps	23.22
6 / 2437	802.11n	64QAM	58.5 / 65.0 Mbps	23.22
6 / 2437	802.11n	64QAM	65.0 / 72.2 Mbps	21.1
1 / 2412	802.11g	BPSK	6 Mbps	22
11 / 2462	802.11g	BPSK	6 Mbps	24.27
1 / 2412	802.11n	QPSK	13.0 / 14.4 Mbps	21.82
11 / 2462	802.11n	QPSK	13.0 / 14.4 Mbps	22.84
149 / 5745	802.11n	BPSK	6.5 / 7.25 Mbps	23.17
157 / 5785	802.11n	BPSK	6.5 / 7.25 Mbps	23
165 / 5825	802.11n	BPSK	6.5 / 7.25 Mbps	23.1
149 / 5745	802.11n	QPSK	13.0 / 14.4 Mbps	22.82
157 / 5785	802.11n	QPSK	13.0 / 14.4 Mbps	22.59
165 / 5825	802.11n	QPSK	13.0 / 14.4 Mbps	22.71
149+153 / 5755	802.11n	BPSK	13.5 / 15.0 Mbps	22.35
157+161 / 5795	802.11n	BPSK	13.5 / 15.0 Mbps	21.89
149+153 / 5755	802.11n	QPSK	27.0 / 30.0 Mbps	22.24
157+161 / 5795	802.11n	QPSK	27.0 / 30.0 Mbps	22.01
149-161 / 5775	802.11ac	BPSK	29.3 / 32.5 Mbps	20.03
149-161 / 5775	802.11ac	16QAM	117.0 / 130.0 Mbps	18.52

2.4. WLAN Test results

2.4.1 802.11b mode, BPSK modulation, 1 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	20.08	101.859	PASSED

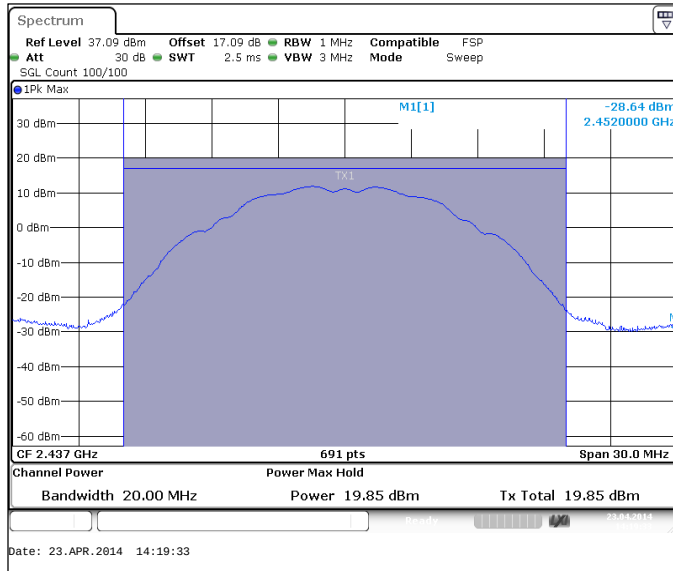
Channel 6 / 2437 MHz



2.4.2 802.11b mode, QPSK modulation, 2 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	19.85	96.605	PASSED

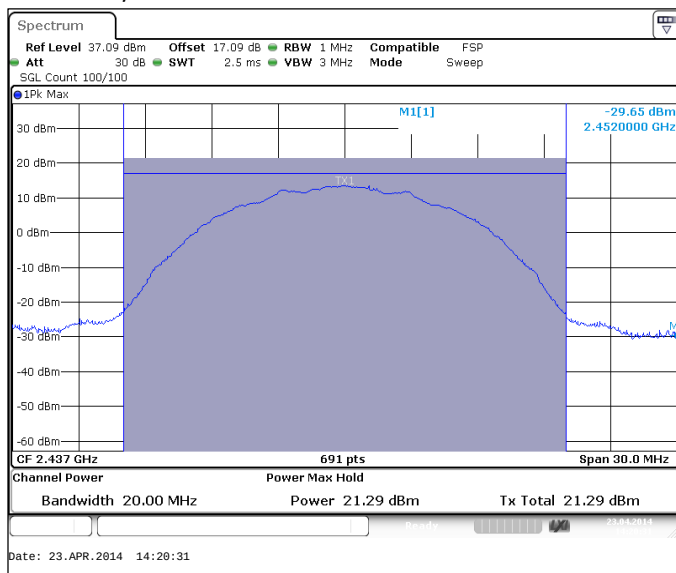
Channel 6 / 2437 MHz



2.4.3 802.11b mode, QPSK modulation, 5.5 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	21.29	134.586	PASSED

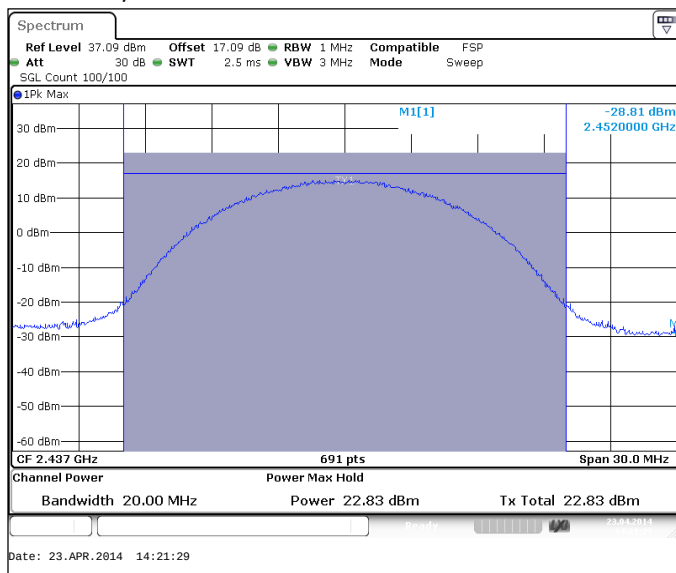
Channel 6 / 2437 MHz



2.4.4 802.11b mode, QPSK modulation, 11 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	22.83	191.867	PASSED

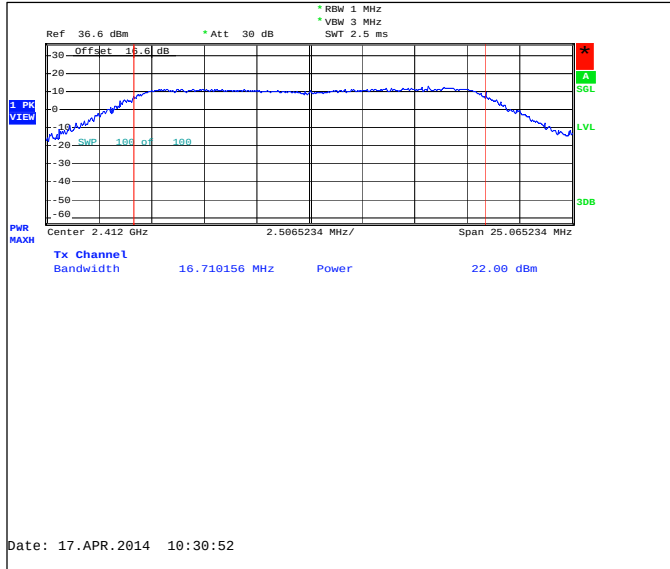
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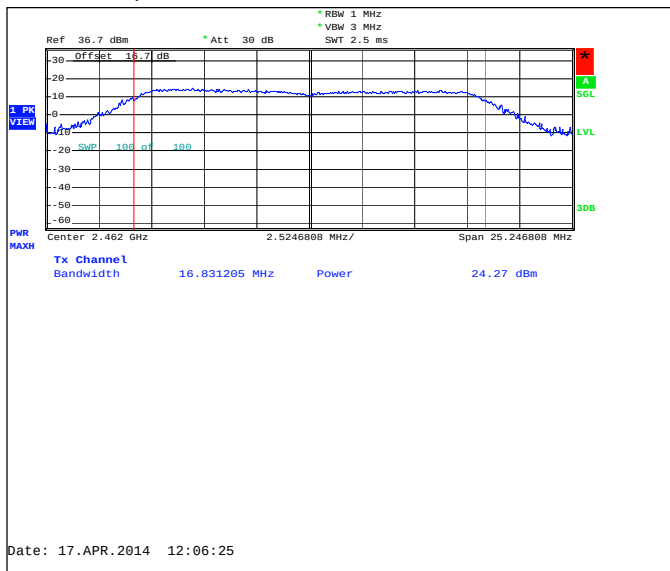
2.4.5 802.11g mode, BPSK modulation, 6 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
1 / 2412	22	158.489	PASSED
11 / 2462	24.27	267.301	PASSED
6 / 2437	24.5	281.838	PASSED

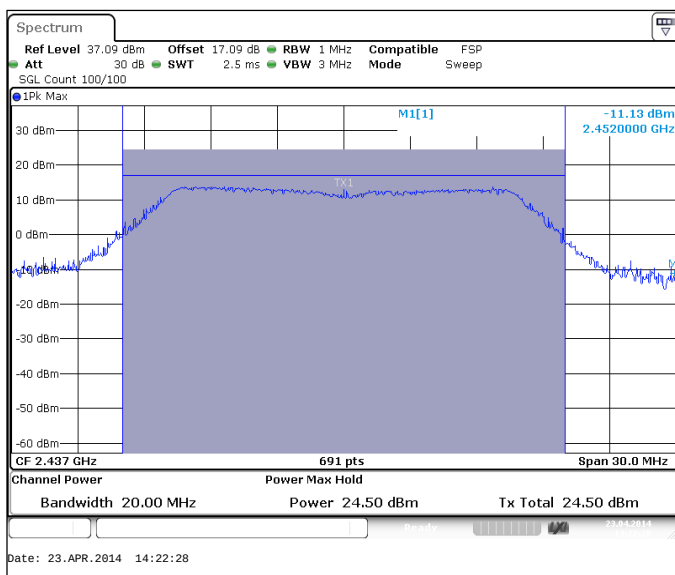
Channel 1 / 2412 MHz



Channel 11 / 2462 MHz



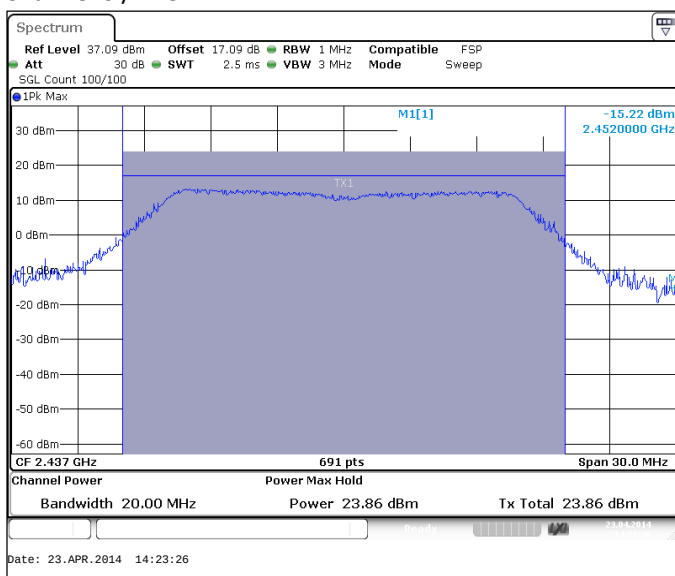
Channel 6 / 2437 MHz



2.4.6 802.11g mode, BPSK modulation, 9 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	23.86	243.22	PASSED

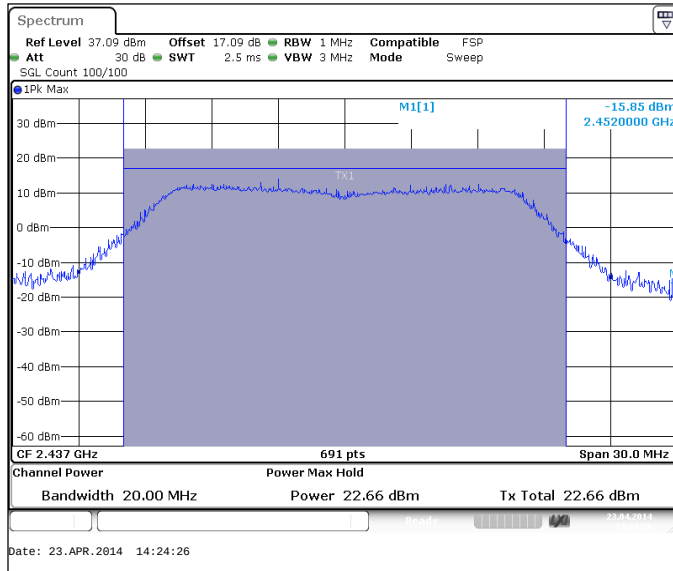
Channel 6 / 2437 MHz



2.4.7 802.11g mode, QPSK modulation, 12 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	22.66	184.50 2	PASSED

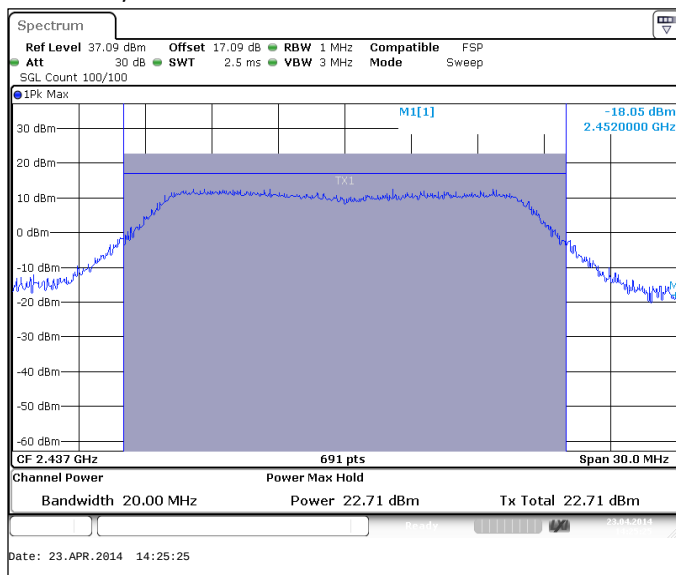
Channel 6 / 2437 MHz



2.4.8 802.11g mode, QPSK modulation, 18 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	22.71	186.638	PASSED

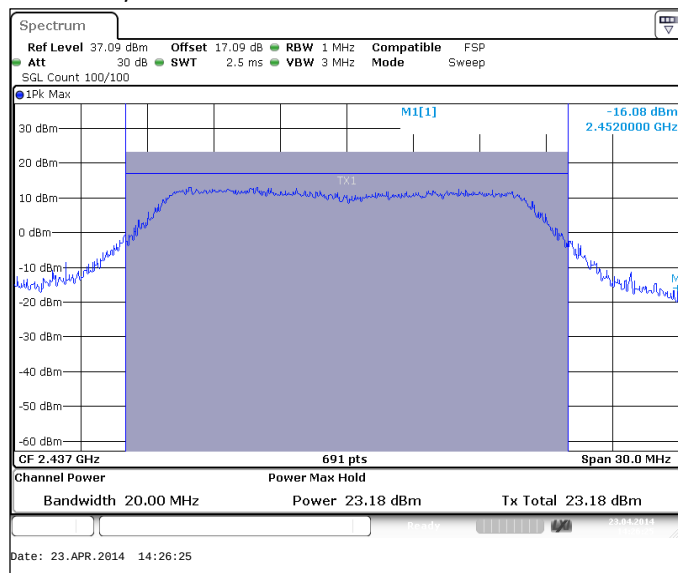
Channel 6 / 2437 MHz



2.4.9 802.11g mode, 16QAM modulation, 24 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	23.18	207.97	PASSED

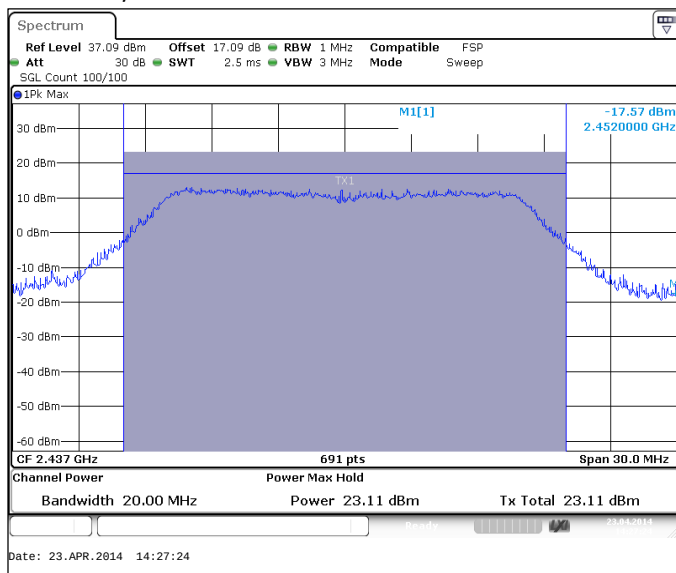
Channel 6 / 2437 MHz



2.4.10 802.11g mode, 16QAM modulation, 36 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	23.11	204.644	PASSED

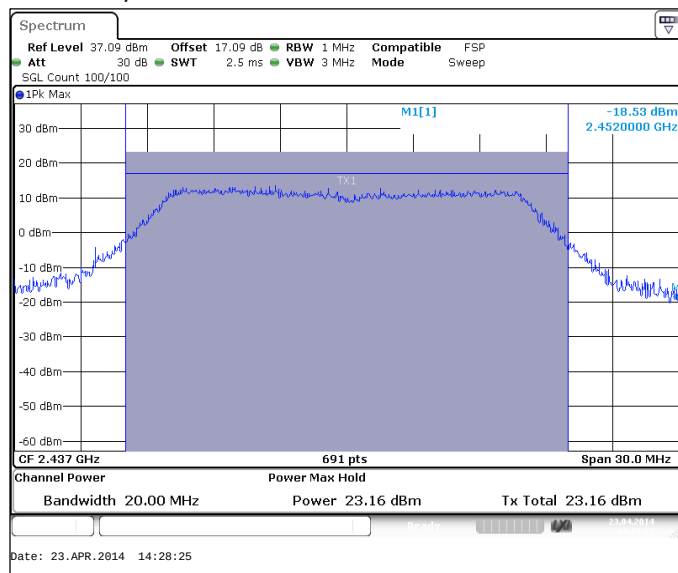
Channel 6 / 2437 MHz



2.4.11 802.11g mode, 16QAM modulation, 48 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	23.16	207.014	PASSED

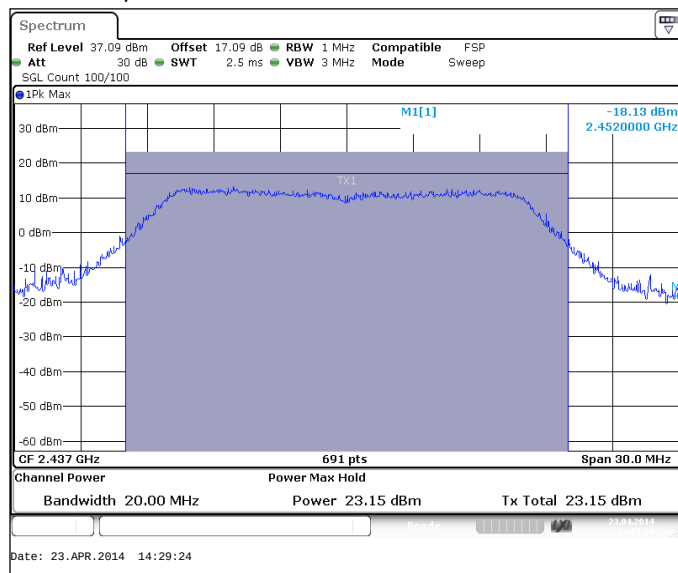
Channel 6 / 2437 MHz



2.4.12 802.11g mode, 16QAM modulation, 54 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	23.15	206.538	PASSED

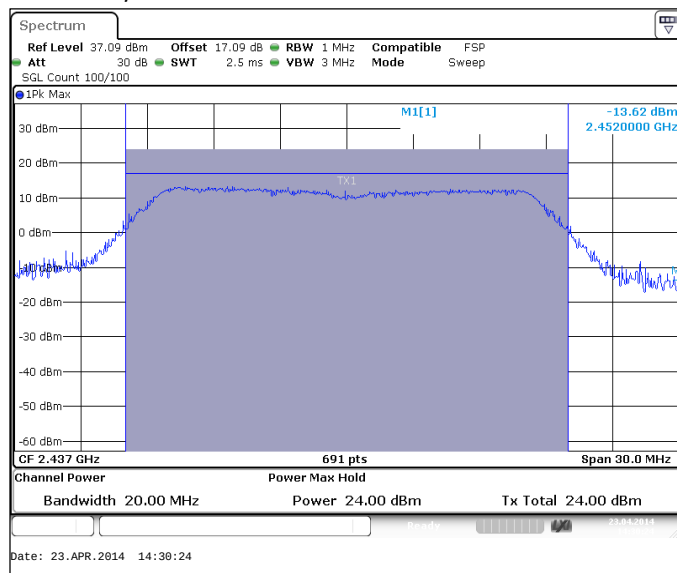
Channel 6 / 2437 MHz



2.4.13 802.11n mode, BPSK modulation, 6.5 / 7.25 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	24	251.189	PASSED

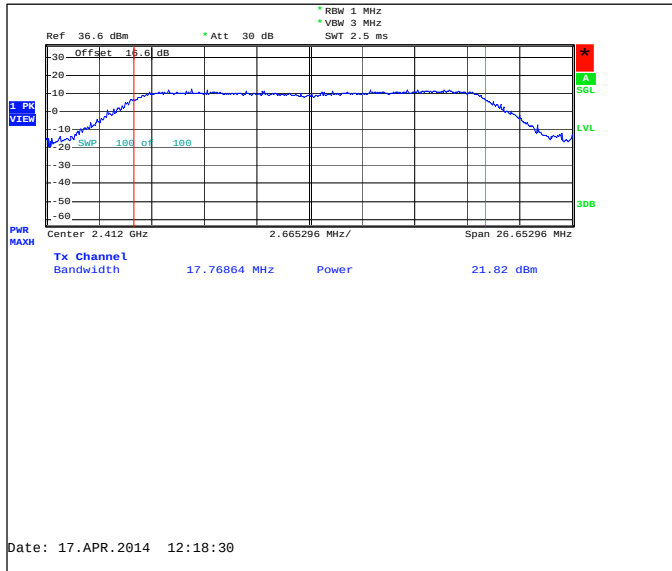
Channel 6 / 2437 MHz



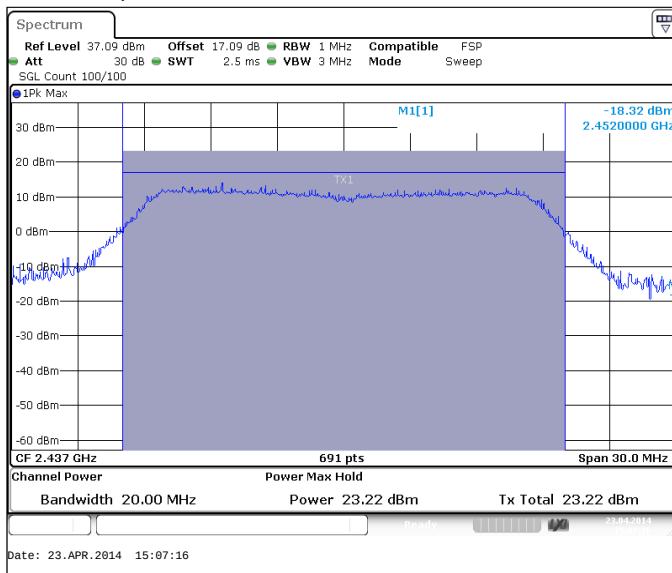
2.4.14 802.11n mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
1 / 2412	21.82	152.055	PASSED
6 / 2437	23.22	209.894	PASSED
11 / 2462	22.84	192.309	PASSED

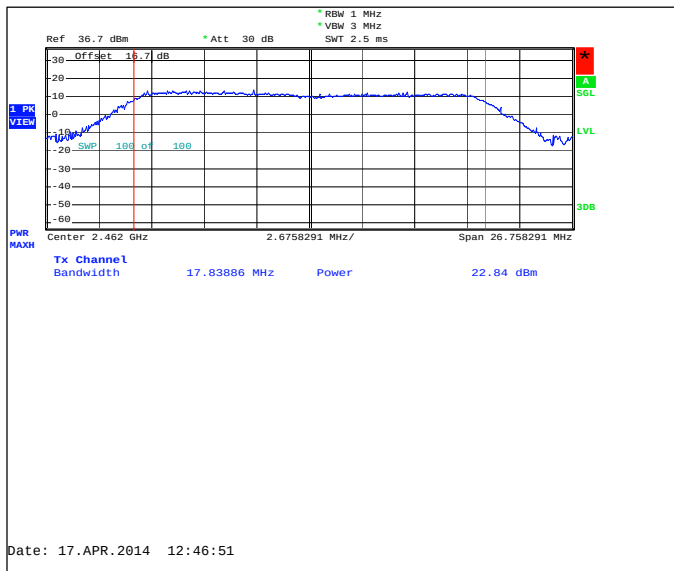
Channel 1 / 2412 MHz



Channel 6 / 2437 MHz



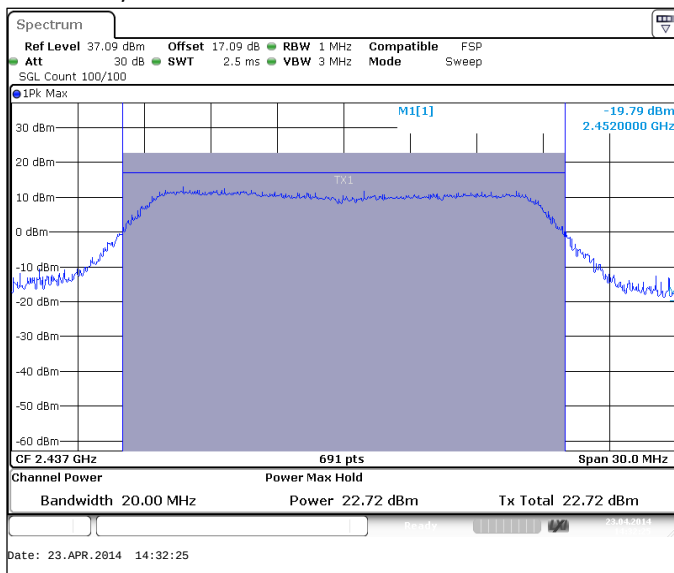
Channel 11 / 2462 MHz



2.4.15 802.11n mode, QPSK modulation, 19.5 / 21.7 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	22.72	187.068	PASSED

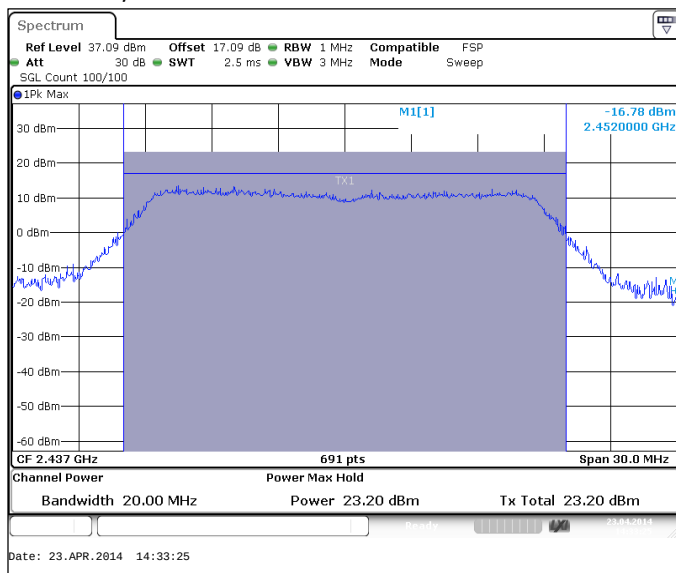
Channel 6 / 2437 MHz



2.4.16 802.11n mode, 16QAM modulation, 26.0 / 28.9 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	23.2	208.93	PASSED

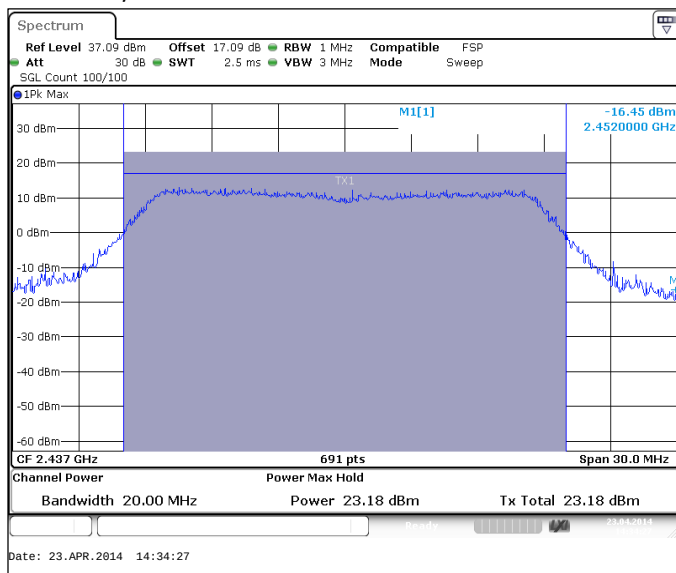
Channel 6 / 2437 MHz



2.4.17 802.11n mode, 16QAM modulation, 39.0 / 43.3 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	23.18	207.97	PASSED

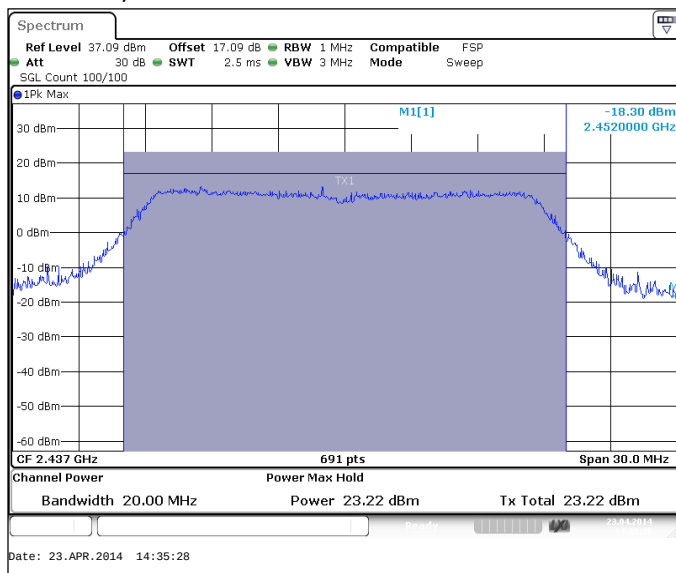
Channel 6 / 2437 MHz



2.4.18 802.11n mode, 64QAM modulation, 52.0 / 57.8 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	23.22	209.894	PASSED

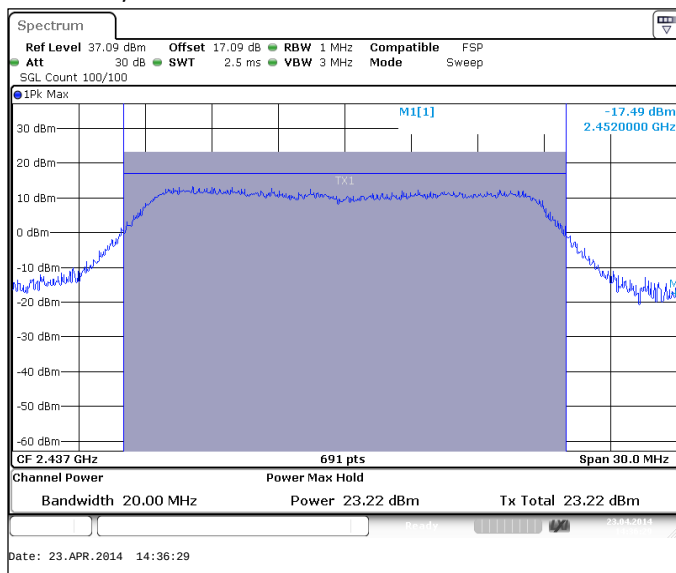
Channel 6 / 2437 MHz



2.4.19 802.11n mode, 64QAM modulation, 58.5 / 65.0 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	23.22	209.894	PASSED

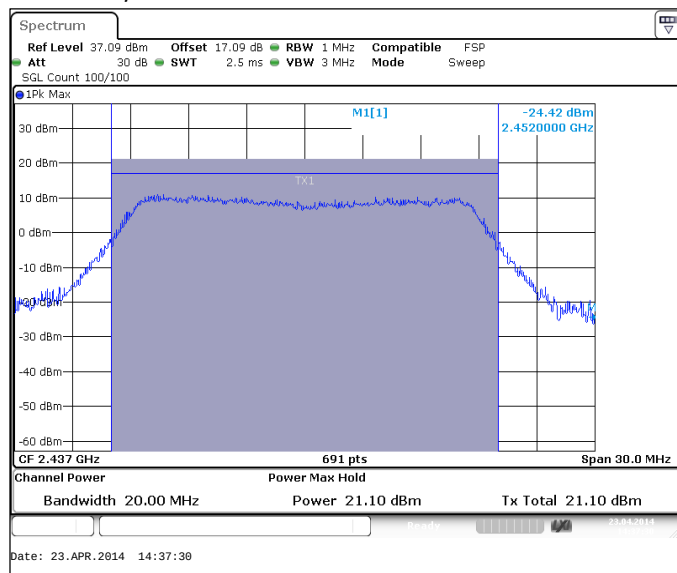
Channel 6 / 2437 MHz



2.4.20 802.11n mode, 64QAM modulation, 65.0 / 72.2 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
6 / 2437	21.1	128.825	PASSED

Channel 6 / 2437 MHz

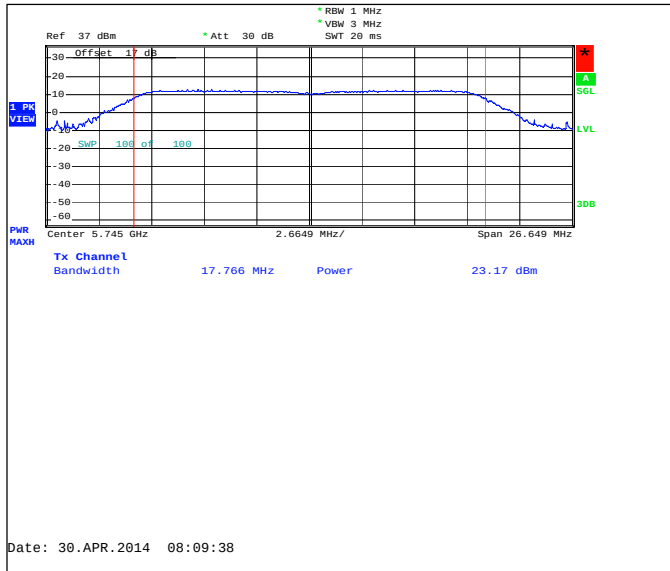


2.5. 5 GHz RLAN Test results

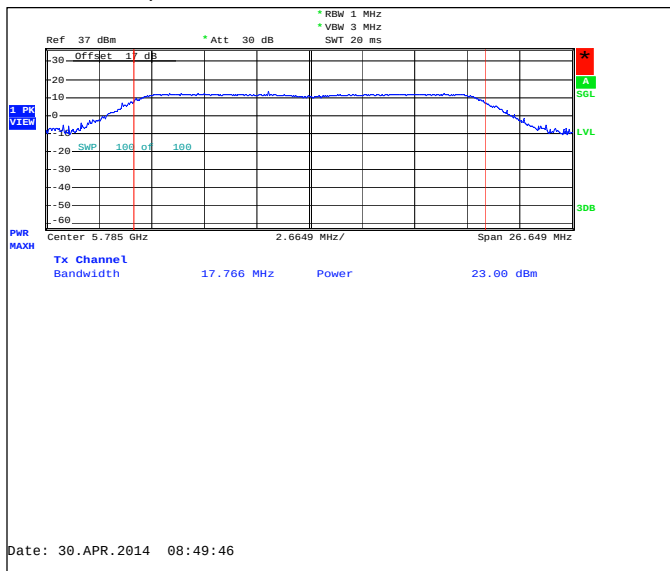
2.5.1 802.11n mode, BPSK modulation, 6.5 / 7.25 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
149 / 5745	23.17	207.491	PASSED
157 / 5785	23	199.526	PASSED
165 / 5825	23.1	204.174	PASSED

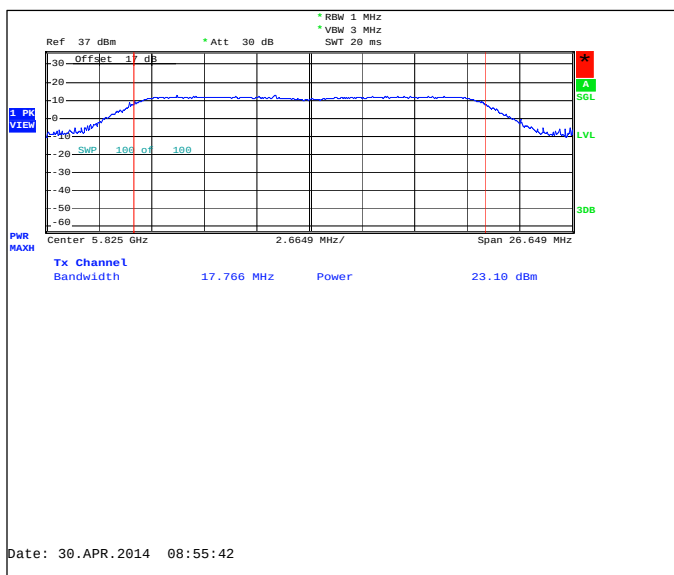
Channel 149 / 5745MHz



Channel 157 / 5785MHz



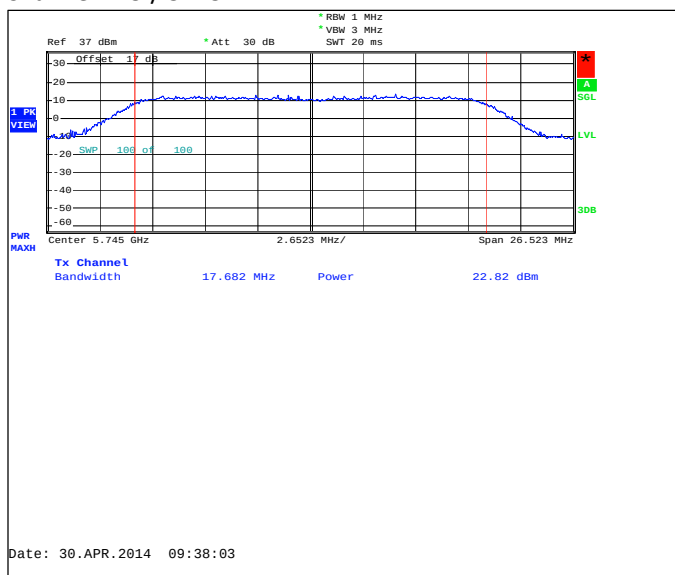
Channel 165 / 5825MHz



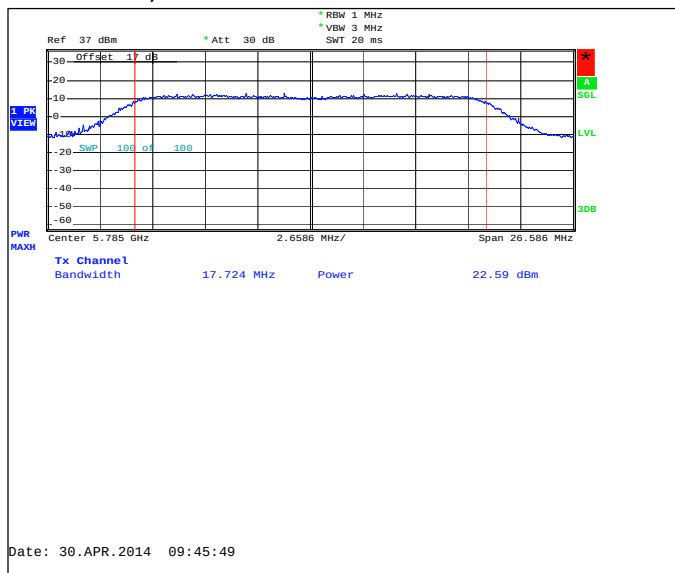
2.5.2 802.11n mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
149 / 5745	22.82	191.426	PASSED
157 / 5785	22.59	181.552	PASSED
165 / 5825	22.71	186.638	PASSED

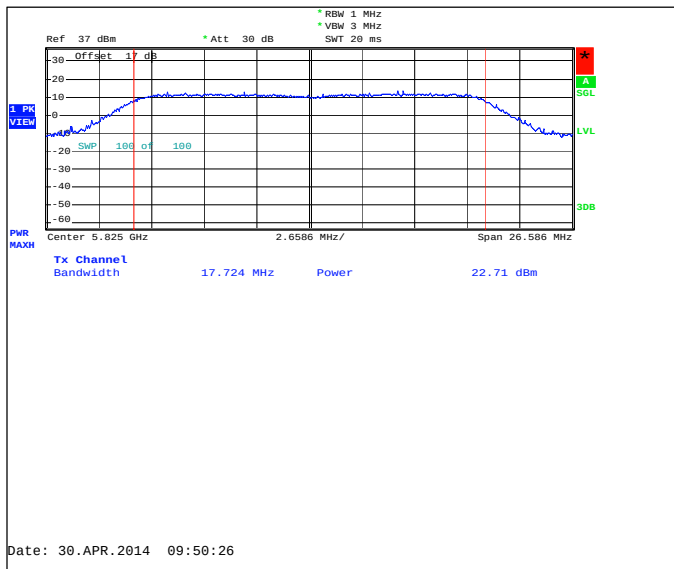
Channel 149 / 5745MHz



Channel 157 / 5785MHz



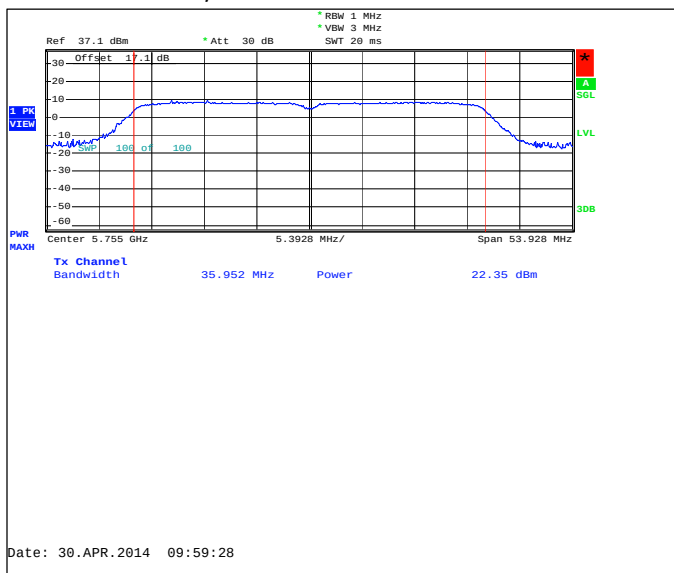
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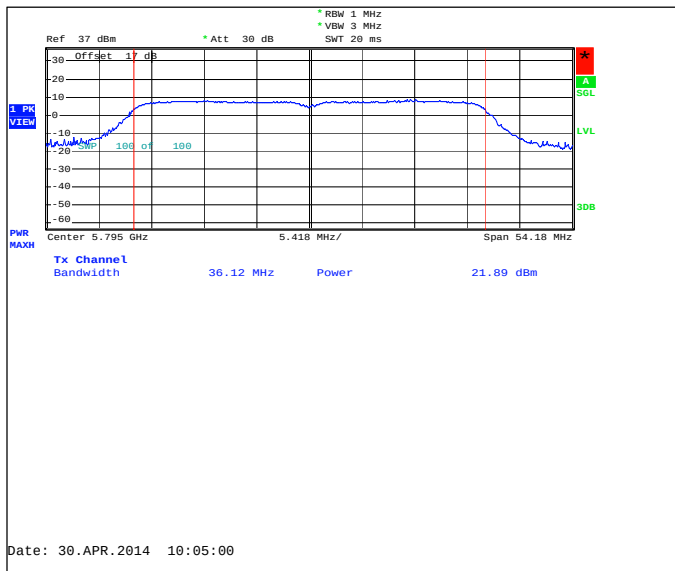
2.5.3 802.11n mode, BPSK modulation, 13.5 / 15.0 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
149+153 / 5755	22.35	171.791	PASSED
157+161 / 5795	21.89	154.525	PASSED

Channel 149+153 / 5755MHz



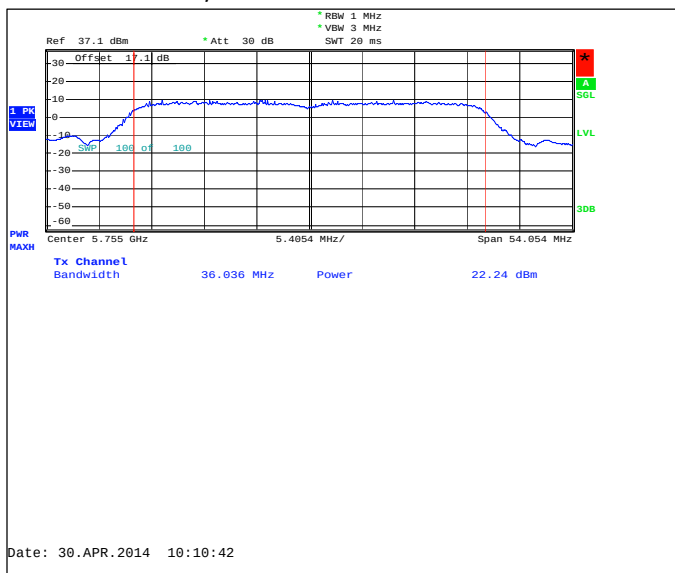
Channel 157+161 / 5795MHz



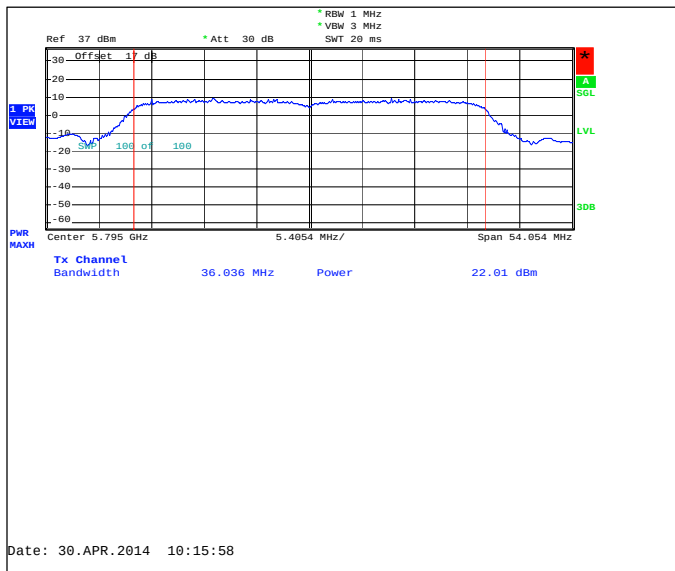
2.5.4 802.11n mode, QPSK modulation, 27.0 / 30.0 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
149+153 / 5755	22.24	167.494	PASSED
157+161 / 5795	22.01	158.855	PASSED

Channel 149+153 / 5755MHz



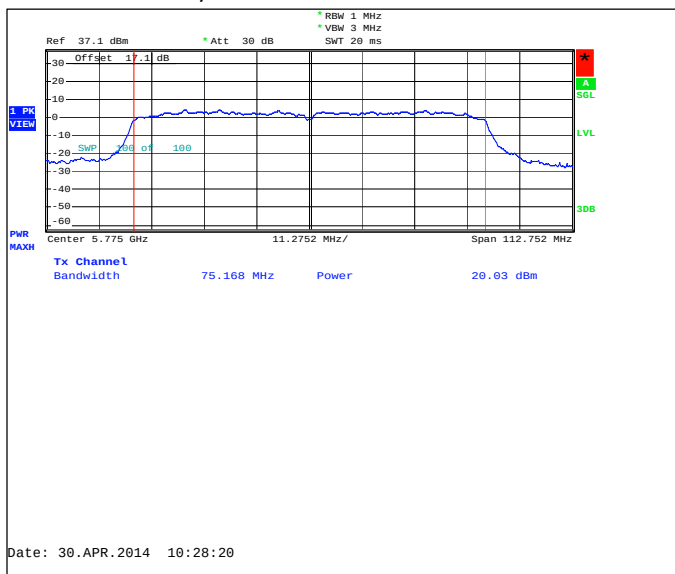
Channel 157+161 / 5795MHz



2.5.5 802.11ac mode, BPSK modulation, 29.3 / 32.5 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
149-161 / 5775	20.03	100.693	PASSED

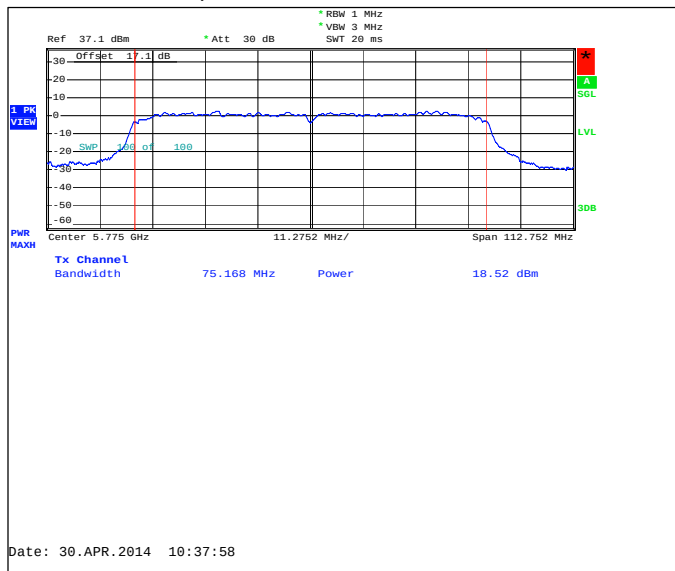
Channel 149-161 / 5775MHz



2.5.6 802.11ac mode, 16QAM modulation, 117.0 / 130.0 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
149-161 / 5775	18.52	71.121	PASSED

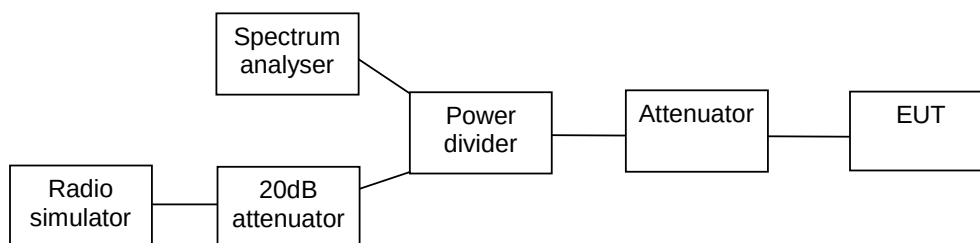
Channel 149-161 / 5775MHz



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

EUT with DUT number	RM-1045, DUT 18213
Accessories with DUT numbers	AC-60E, DUT 18197 ; WH-208, DUT 18198
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 37 / 100.8
Date of measurements	17-Apr-2014
Measured by	Jari Keto

3.1. Test Setup



3.2. Test method and limit

The measurement is made according to Public notice KDB 558 074 and IC standard RSS-210.

The reference level for the -20 dBc measurement was obtained as instructed in section 11.2 of the KDB 558074, using span of 1.5 times the OBW.

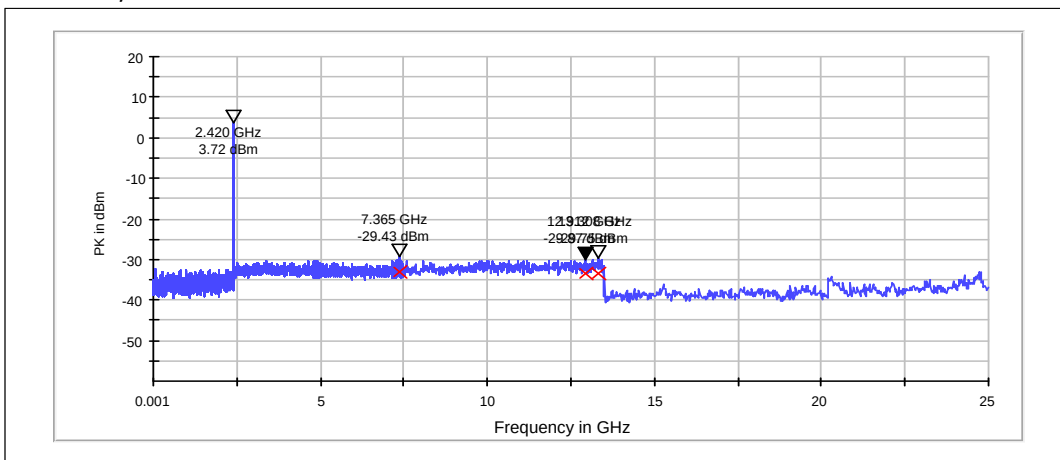
Limits for spurious RF conducted emissions measurements

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

3.3. WLAN Test results

3.3.1 802.11g mode, BPSK modulation, 6 Mbps data rate

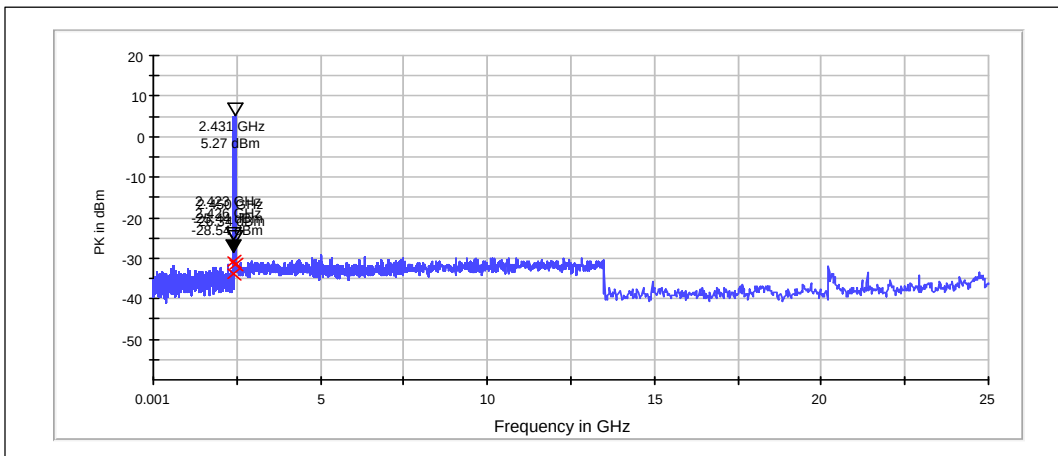
Channel 1 / 2412 MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
7365.000	-33.15	PASSED
13308.000	-33.47	PASSED
12912.000	-33.59	PASSED

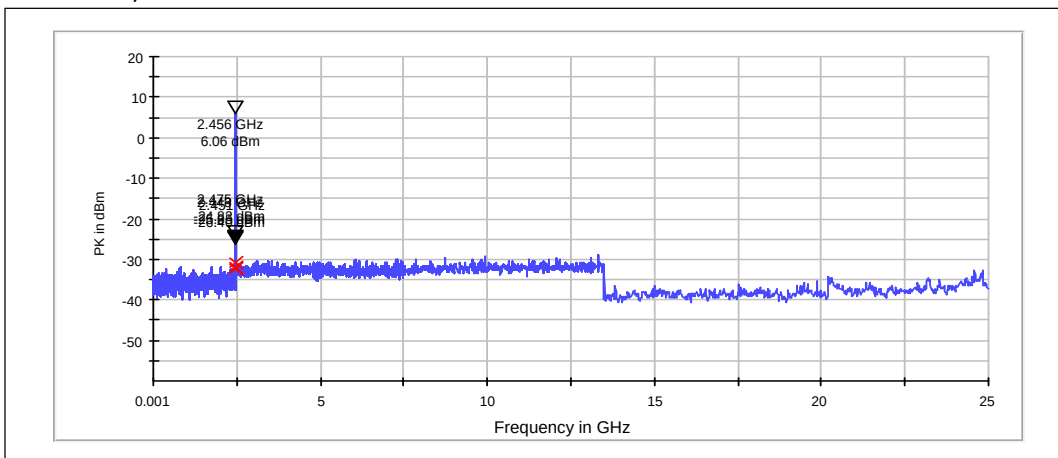
Channel 6 / 2437 MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
2423.284	-30.72	PASSED
2449.710	-31.62	PASSED
2426.142	-33.81	PASSED

Channel 11 / 2462 MHz

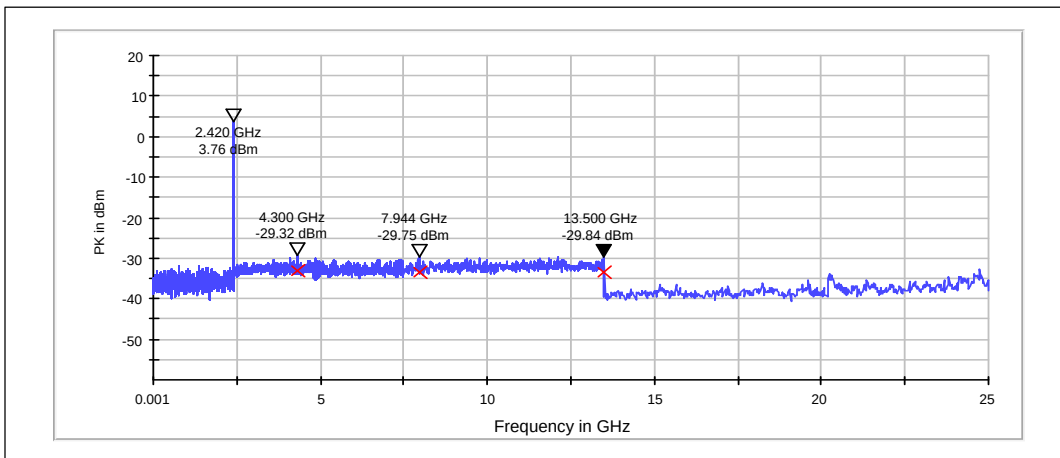


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
2474.660	-30.89	PASSED
2448.184	-31.92	PASSED
2451.092	-32.47	PASSED

3.3.2 802.11n mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

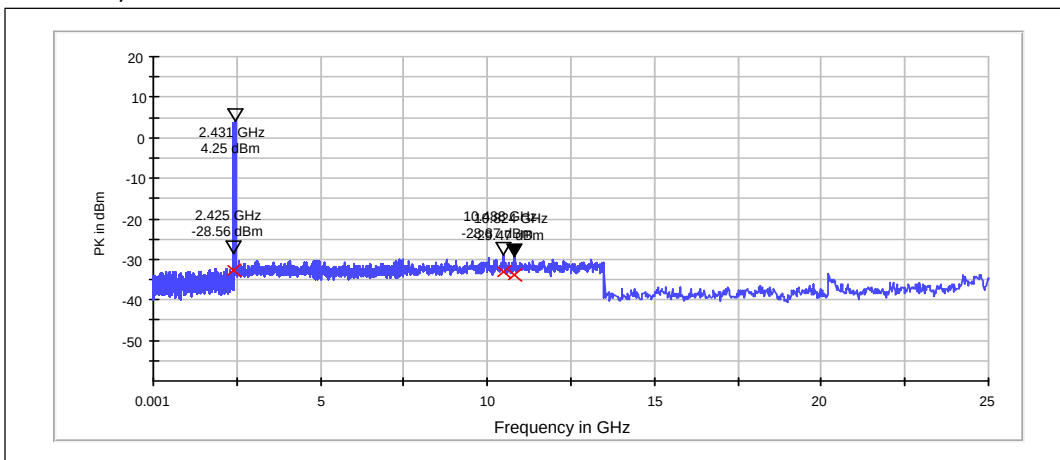
Channel 1 / 2412 MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
4300.410	-33.08	PASSED
7944.000	-33.50	PASSED
13500.000	-33.60	PASSED

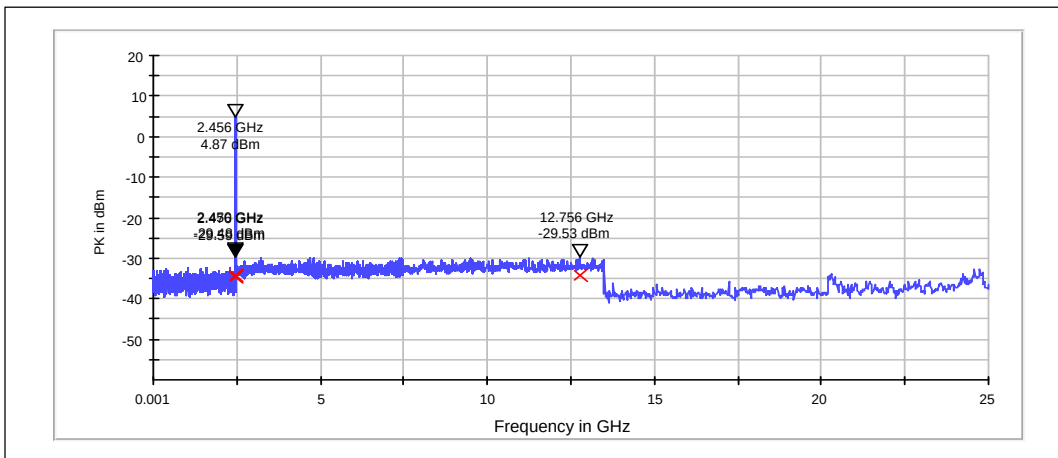
Channel 6 / 2437 MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
2425.144	-32.81	PASSED
10488.000	-33.12	PASSED
10824.000	-33.72	PASSED

Channel 11 / 2462 MHz



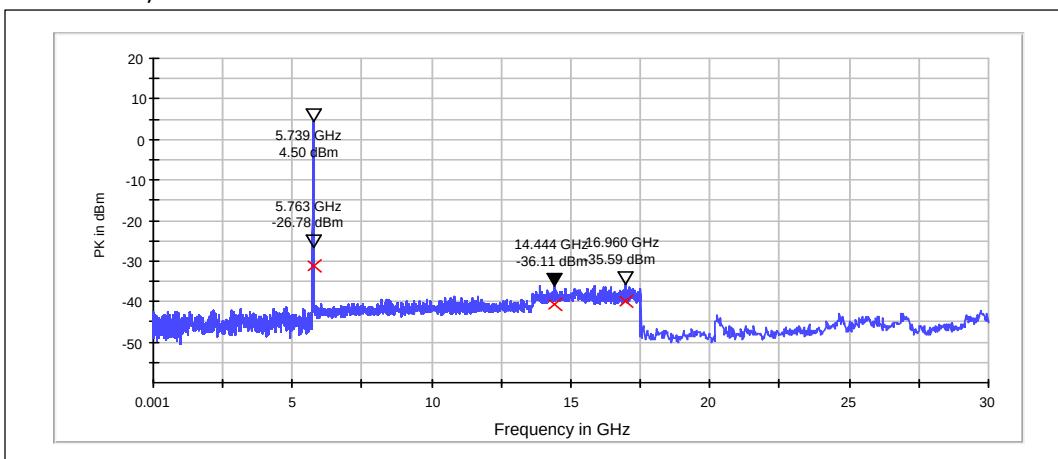
Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
2450.094	-34.34	PASSED
12756.000	-34.39	PASSED
2475.658	-34.46	PASSED

3.4. 5 GHz RLAN Test results

3.4.1 802.11n mode, BPSK modulation, 6.5 / 7.25 Mbps data rate

Channel 149 / 5745MHz

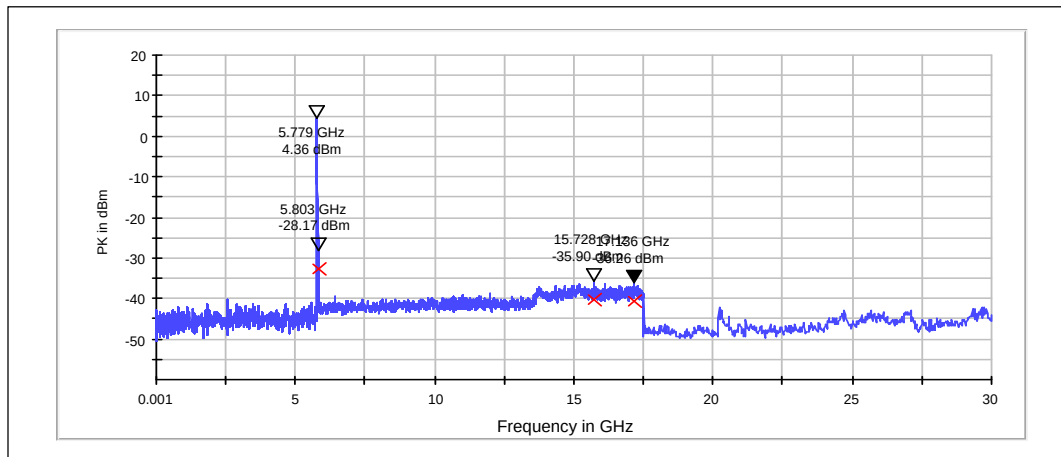


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5763.092	-31.27	PASSED

16960.000	-40.08	PASSED
14443.600	-40.60	PASSED

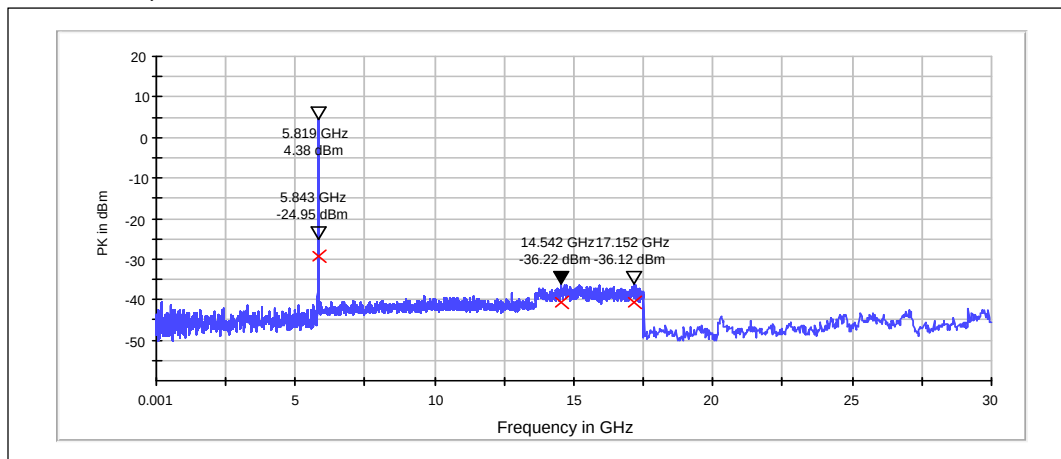
Channel 157 / 5785MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5803.012	-32.54	PASSED
15728.000	-40.26	PASSED
17136.000	-40.62	PASSED

Channel 165 / 5825MHz

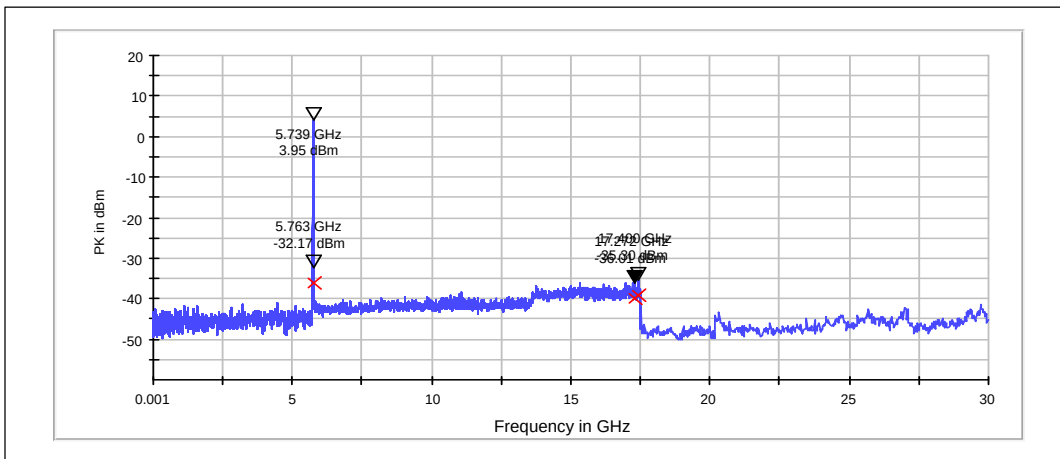


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5842.932	-29.33	PASSED
17152.000	-40.51	PASSED
14542.400	-40.60	PASSED

3.4.2 802.11n mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

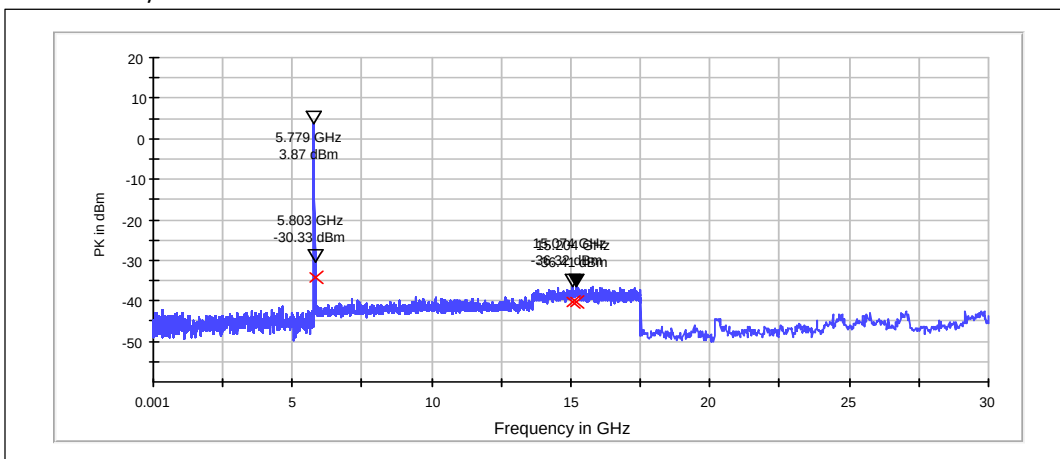
Channel 149 / 5745MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5763.092	-36.12	PASSED
17400.000	-39.25	PASSED
17272.000	-39.96	PASSED

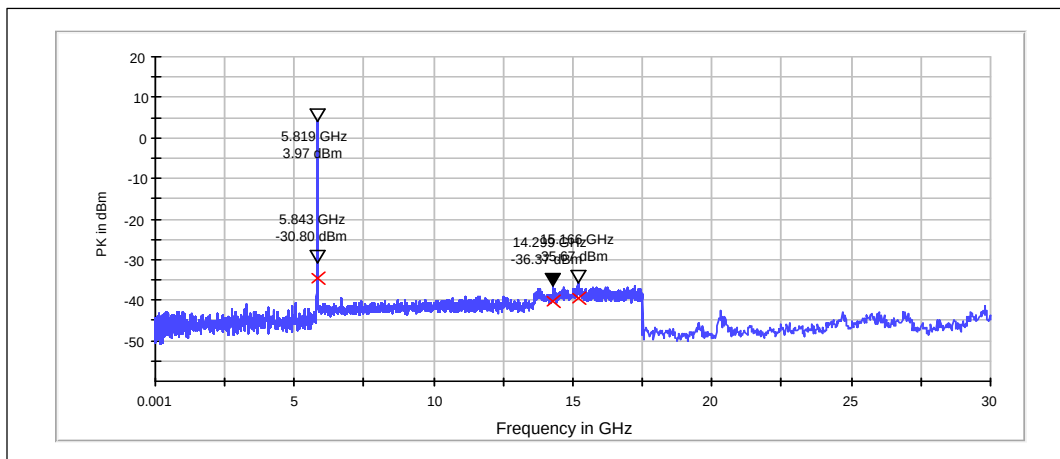
Channel 157 / 5785MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5803.012	-34.20	PASSED
15074.400	-40.19	PASSED
15203.600	-40.28	PASSED

Channel 165 / 5825MHz

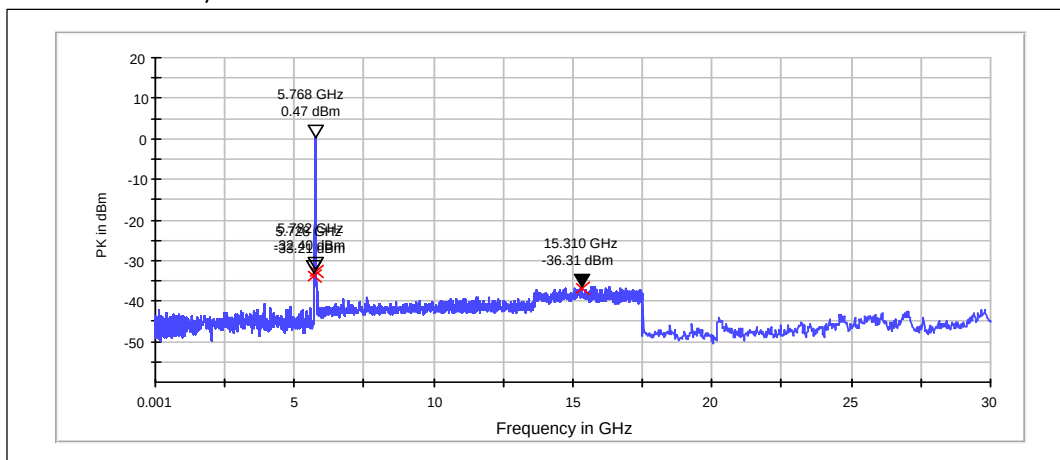


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5842.932	-34.77	PASSED
15165.600	-39.64	PASSED
14299.200	-40.35	PASSED

3.4.3 802.11n mode, BPSK modulation, 13.5 / 15.0 Mbps data rate

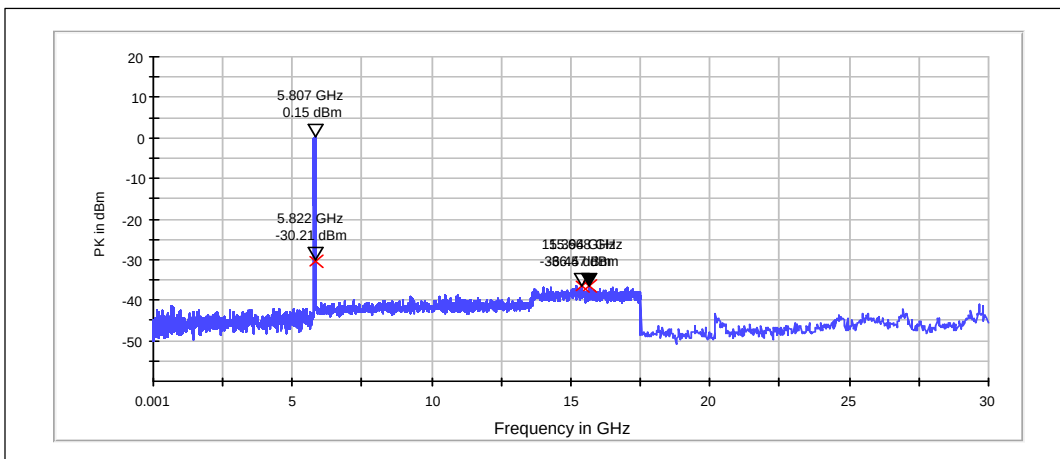
Channel 149+153 / 5755MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5782.054	-32.87	PASSED
5727.526	-33.68	PASSED
15310.000	-36.79	PASSED

Channel 157+161 / 5795MHz

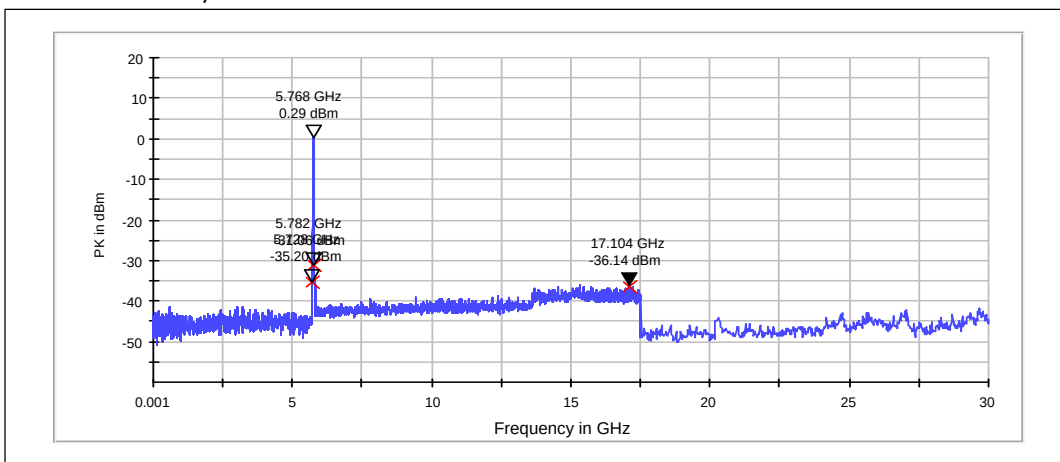


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5821.974	-30.36	PASSED
15393.600	-36.60	PASSED
15668.000	-36.62	PASSED

3.4.4 802.11n mode, QPSK modulation, 27.0 / 30.0 Mbps data rate

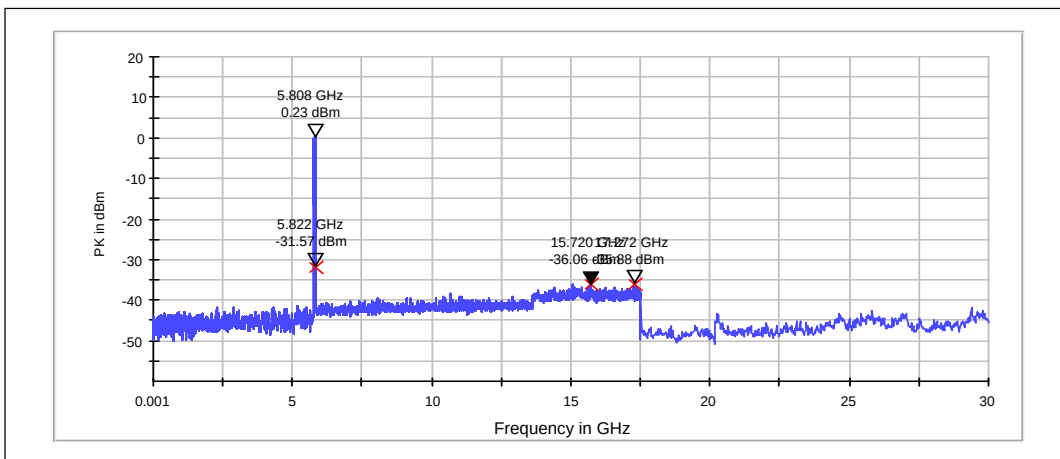
Channel 149+153 / 5755MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5782.054	-31.35	PASSED
5727.526	-35.50	PASSED
17104.000	-36.44	PASSED

Channel 157+161 / 5795MHz

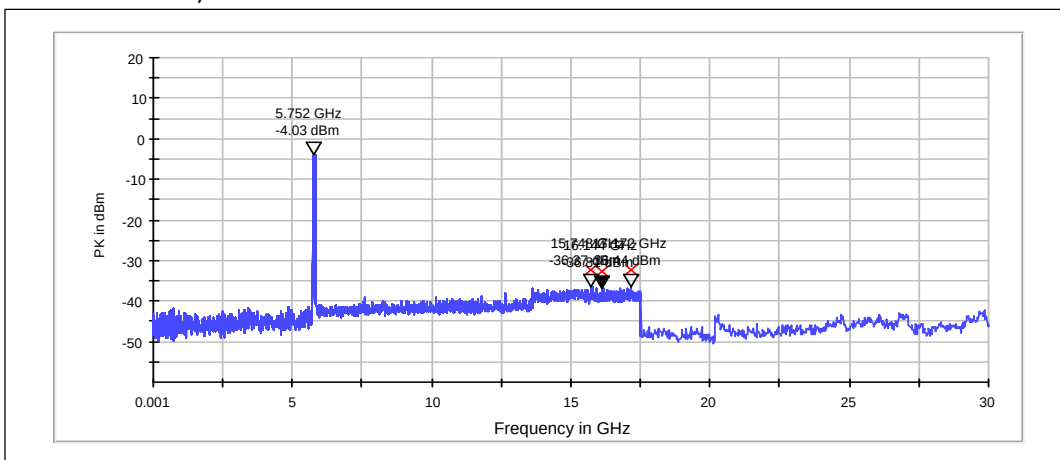


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5821.974	-31.80	PASSED
17272.000	-36.11	PASSED
15720.000	-36.29	PASSED

3.4.5 802.11ac mode, BPSK modulation, 29.3 / 32.5 Mbps data rate

Channel 149-161 / 5775MHz

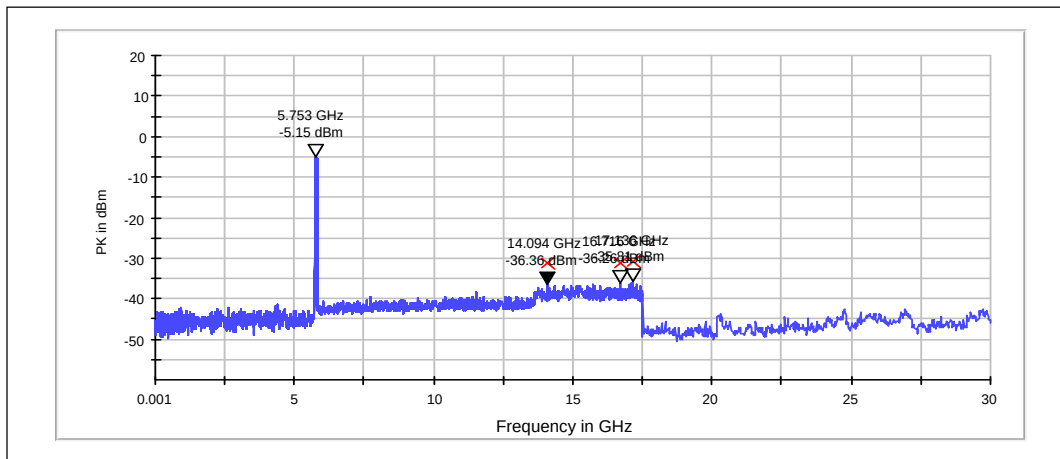


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
15748.000	-32.34	PASSED
17172.000	-32.41	PASSED
16144.000	-32.78	PASSED

3.4.6 802.11ac mode, 16QAM modulation, 117.0 / 130.0 Mbps data rate

Channel 149-161 / 5775MHz



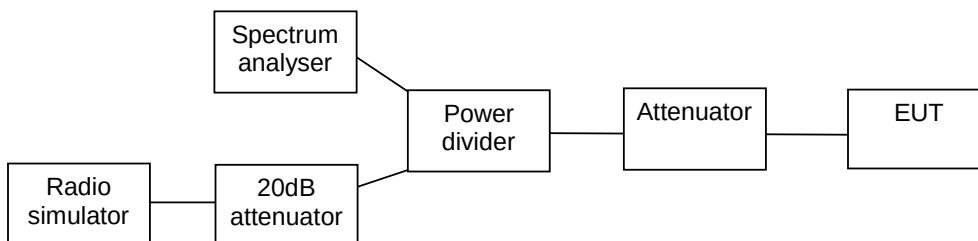
Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
17136.000	-30.66	PASSED
16716.000	-31.11	PASSED
14094.000	-31.20	PASSED

4. 6 dB bandwidth (FCC §15.247(a)(2), RSS-210 A8.2 (1))

EUT with DUT number	RM-1045, DUT 18213
Accessories with DUT numbers	AC-60E, DUT 18197 ; WH-208, DUT 18198
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 37 / 100.8
Date of measurements	17-Apr-2014
Measured by	Jari Keto

4.1. Test Setup



4.2. 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

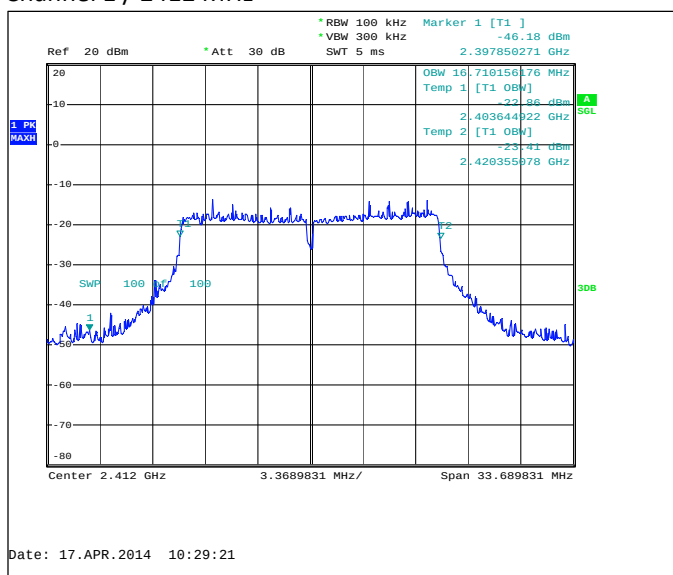
Limit [kHz]
>= 500

4.3. WLAN Test results

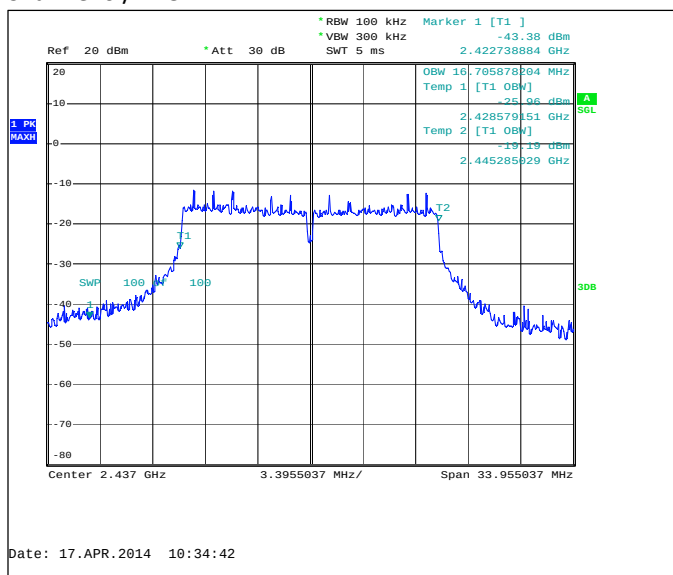
4.3.1 802.11g mode, BPSK modulation, 6 Mbps data rate

Channel / f _c [MHz]	6 dB bandwidth [kHz]	Result
1 / 2412	16710.2	PASSED
6 / 2437	16705.9	PASSED
11 / 2462	16831.2	PASSED

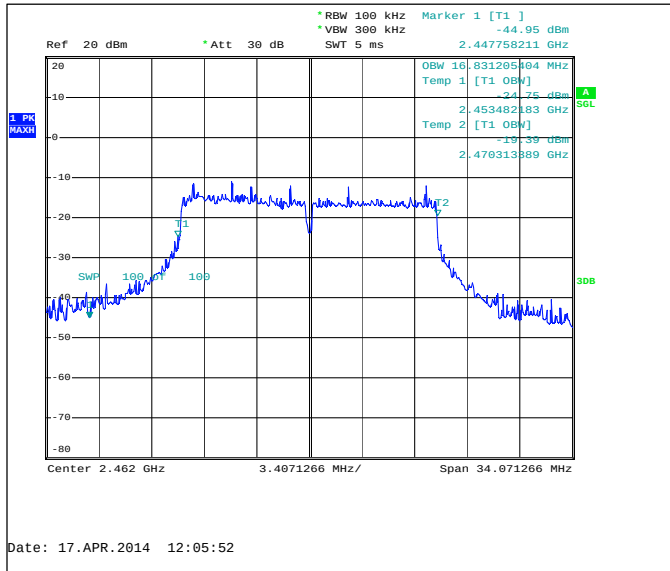
Channel 1 / 2412 MHz



Channel 6 / 2437 MHz



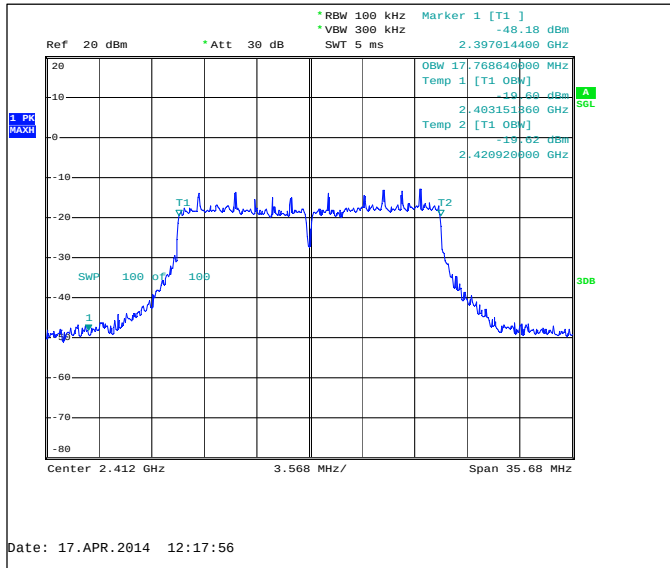
Channel 11 / 2462 MHz



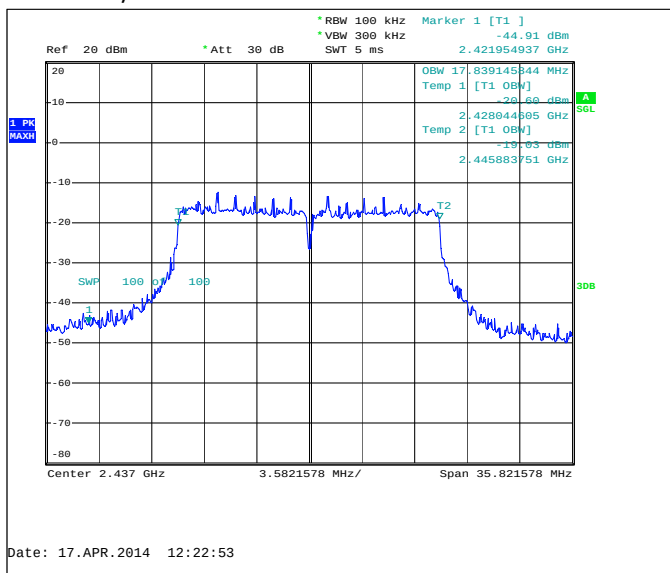
4.3.2 802.11n mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

Channel / f _c [MHz]	6 dB bandwidth [kHz]	Result
1 / 2412	17768.6	PASSED
6 / 2437	17839.1	PASSED
11 / 2462	17838.9	PASSED

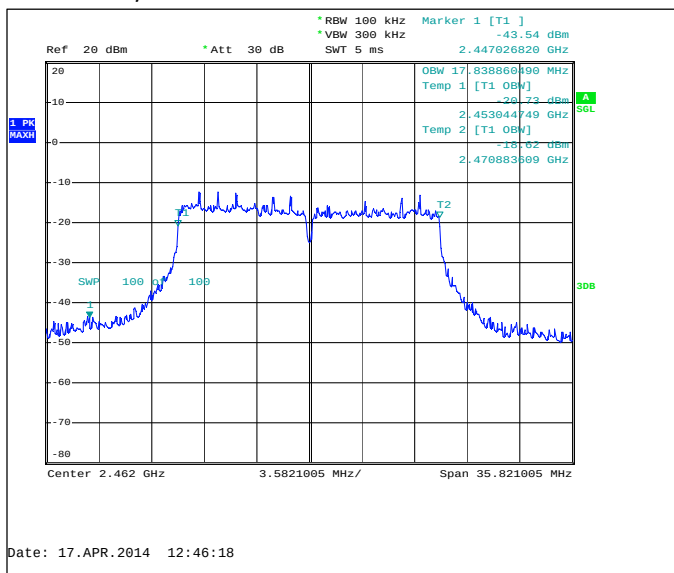
Channel 1 / 2412 MHz



Channel 6 / 2437 MHz



Channel 11 / 2462 MHz

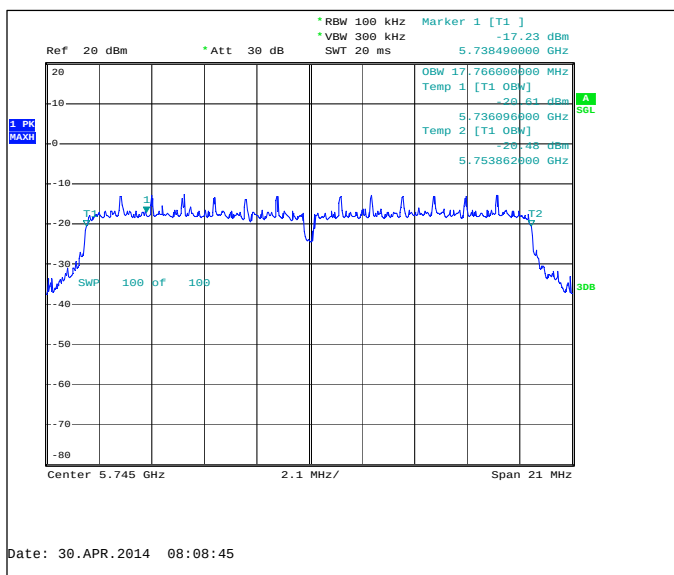


4.4. 5 GHz RLAN Test results

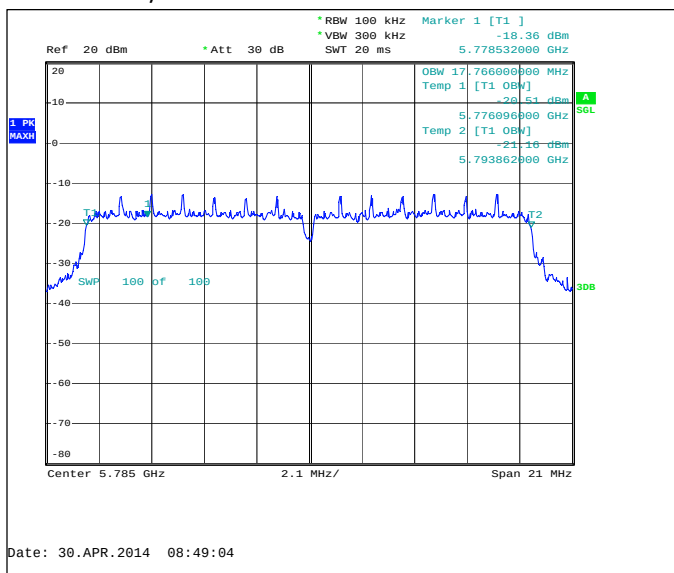
4.4.1 802.11n mode, BPSK modulation, 6.5 / 7.25 Mbps data rate

Channel / f _c [MHz]	6 dB bandwidth [kHz]	Result
149 / 5745	17766	PASSED
157 / 5785	17766	PASSED
165 / 5825	17766	PASSED

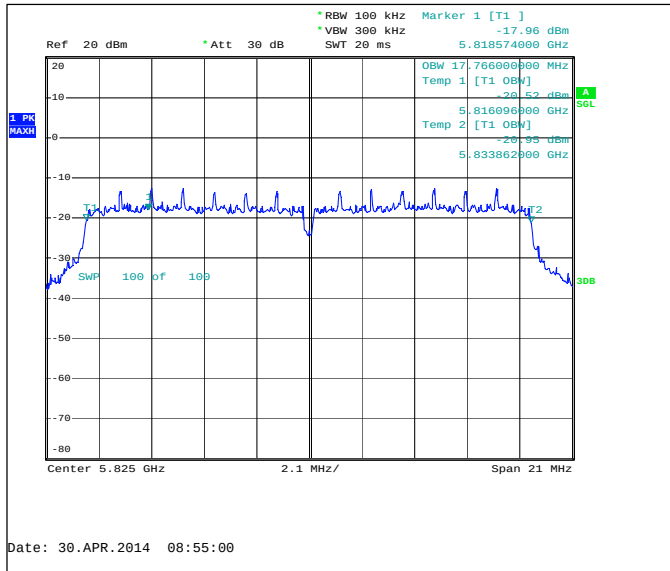
Channel 149 / 5745MHz



Channel 157 / 5785MHz



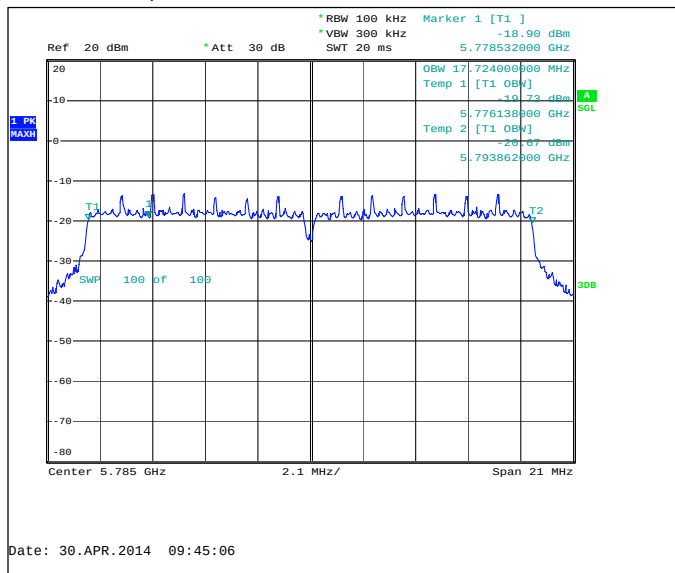
Channel 165 / 5825MHz



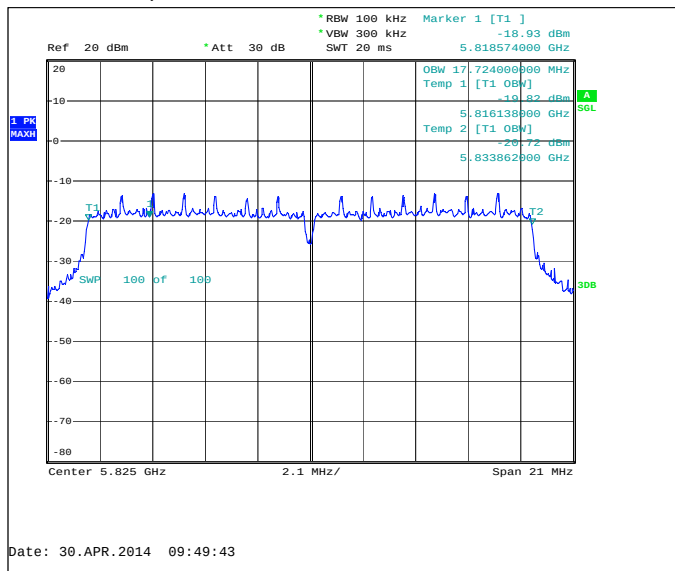
4.4.2 802.11n mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

Channel / f _c [MHz]	6 dB bandwidth [kHz]	Result
157 / 5785	17724	PASSED
165 / 5825	17724	PASSED

Channel 157 / 5785MHz



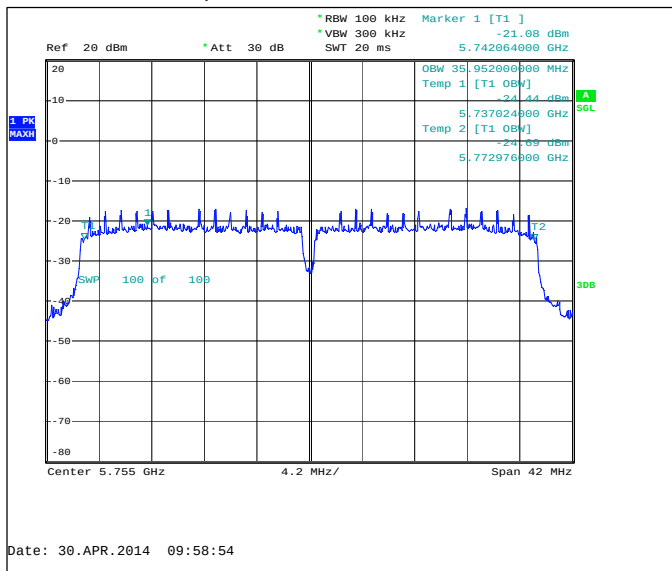
Channel 165 / 5825MHz



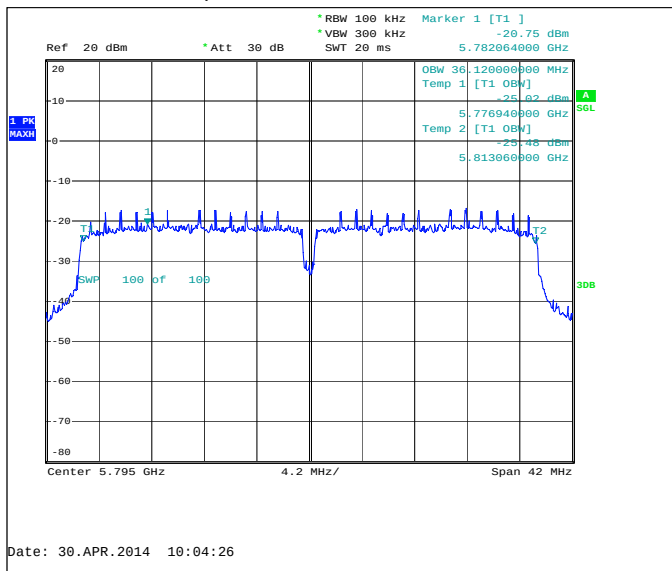
4.4.3 802.11n mode, BPSK modulation, 13.5 / 15.0 Mbps data rate

Channel / f _c [MHz]	6 dB bandwidth [kHz]	Result
149+153 / 5755	35952	PASSED
157+161 / 5795	36120	PASSED

Channel 149+153 / 5755MHz



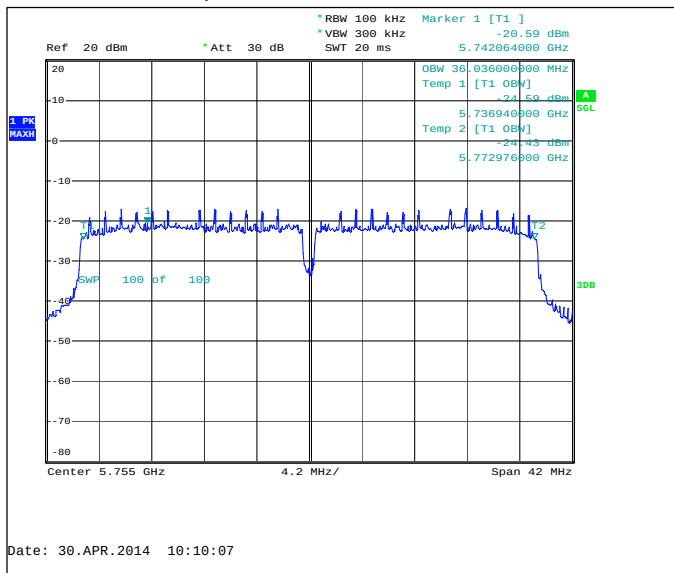
Channel 157+161 / 5795MHz



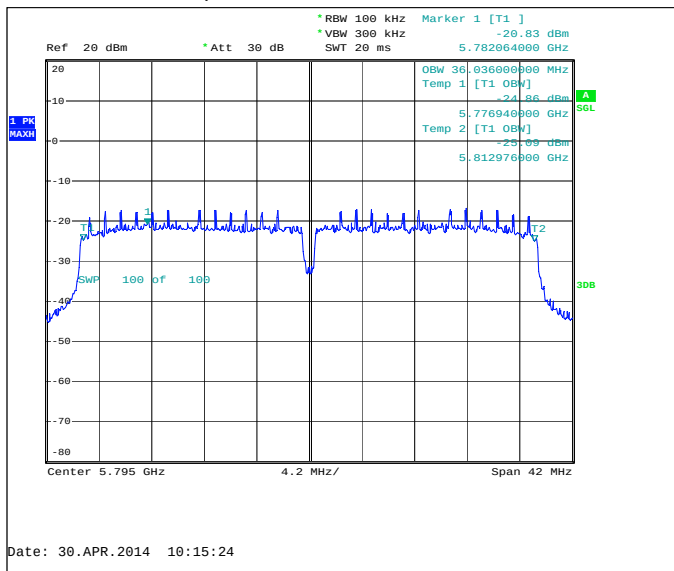
4.4.4 802.11n mode, QPSK modulation, 27.0 / 30.0 Mbps data rate

Channel / f _c [MHz]	6 dB bandwidth [kHz]	Result
149+153 / 5755	36036	PASSED
157+161 / 5795	36036	PASSED

Channel 149+153 / 5755MHz



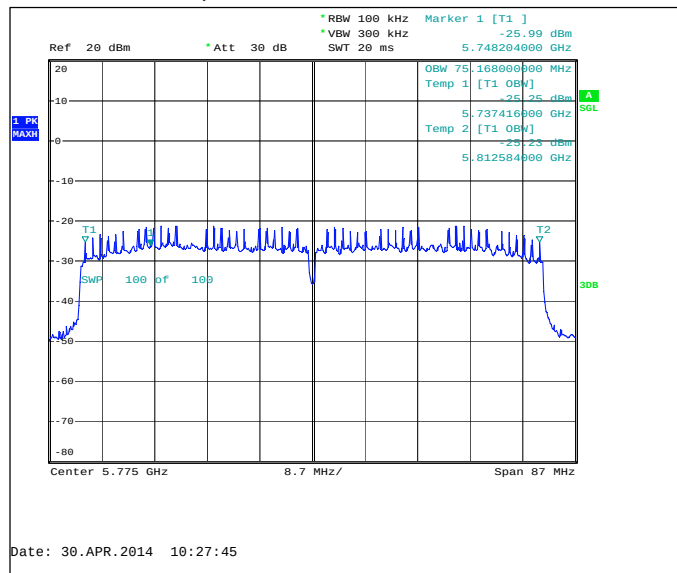
Channel 157+161 / 5795MHz



4.4.5 802.11ac mode, BPSK modulation, 29.3 / 32.5 Mbps data rate

Channel / f _c [MHz]	6 dB bandwidth [kHz]	Result
149-161 / 5775	75168	PASSED

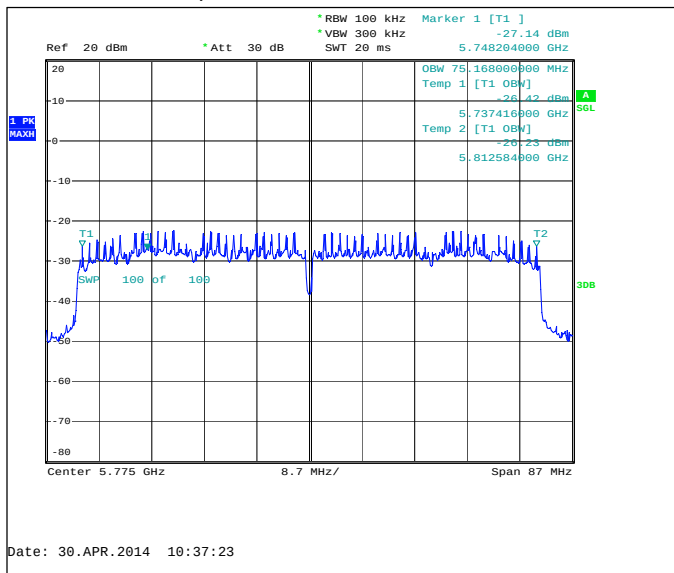
Channel 149-161 / 5775MHz



4.4.6 802.11ac mode, 16QAM modulation, 117.0 / 130.0 Mbps data rate

Channel / f _c [MHz]	6 dB bandwidth [kHz]	Result
149-161 / 5775	75168	PASSED

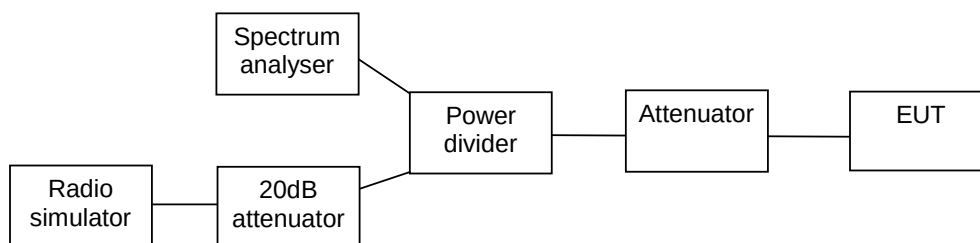
Channel 149-161 / 5775MHz



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

EUT with DUT number	RM-1045, DUT 18213
Accessories with DUT numbers	AC-60E, DUT 18197 ; WH-208, DUT 18198
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 37 / 100.8
Date of measurements	17-Apr-2014
Measured by	Jari Keto

5.1. Test Setup



5.2. 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

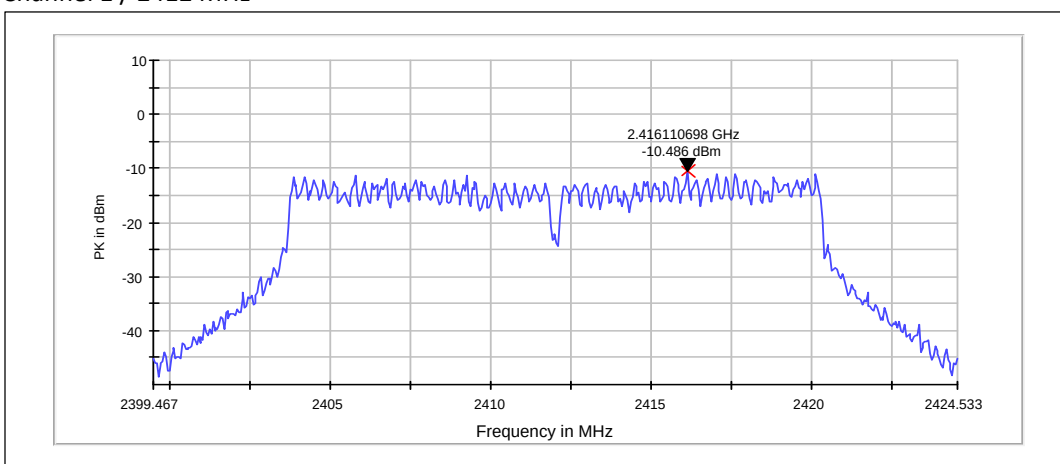
5.3. WLAN Test results

5.3.1 802.11g mode, BPSK modulation, 6 Mbps data rate

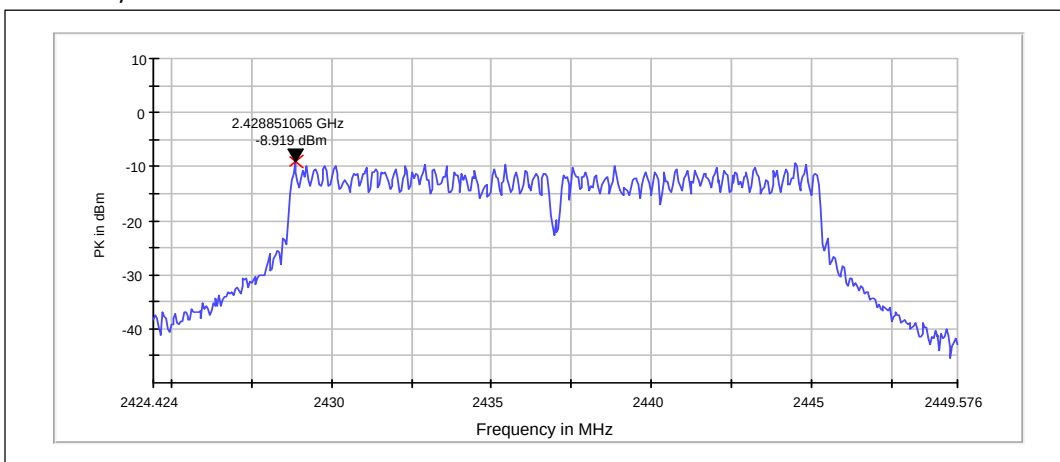
Peak (RBW: 3 kHz, VBW: 10 kHz, Max hold)

Channel / f_c [MHz]	P [dBm]	Result
1 / 2412	-10.49	PASSED
6 / 2437	-8.92	PASSED
11 / 2462	-8.54	PASSED

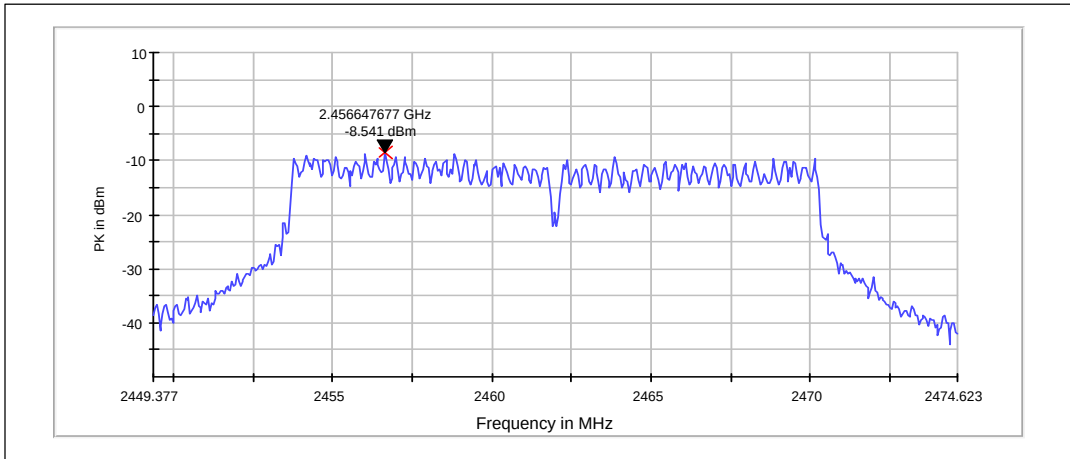
Channel 1 / 2412 MHz



Channel 6 / 2437 MHz



Channel 11 / 2462 MHz

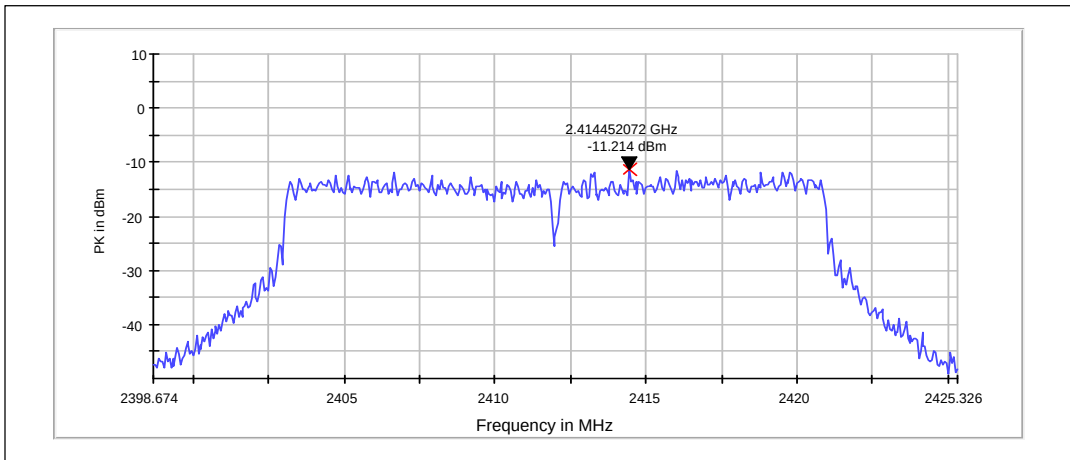


5.3.2 802.11n mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

Peak (RBW: 3 kHz, VBW: 10 kHz, Max hold)

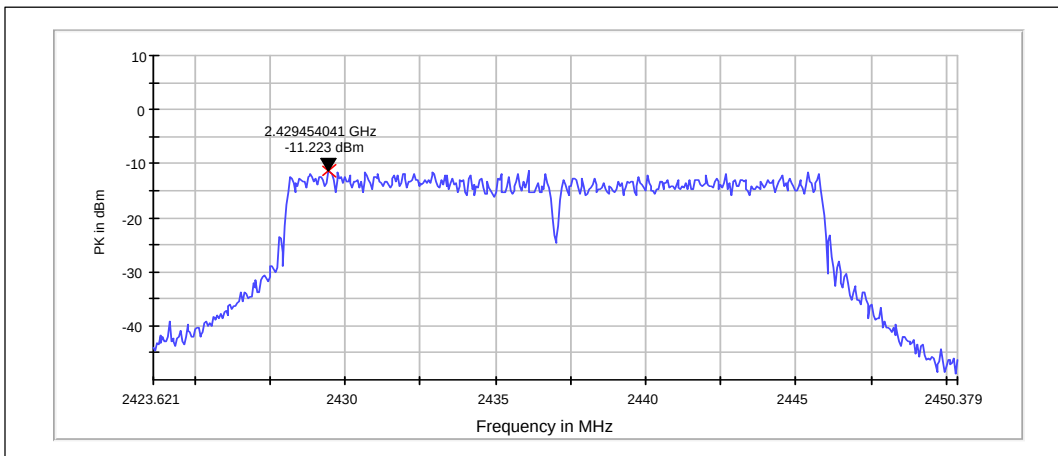
Channel / f_c [MHz]	P [dBm]	Result
1 / 2412	-11.21	PASSED
6 / 2437	-11.22	PASSED
11 / 2462	-10.04	PASSED

Channel 1 / 2412 MHz

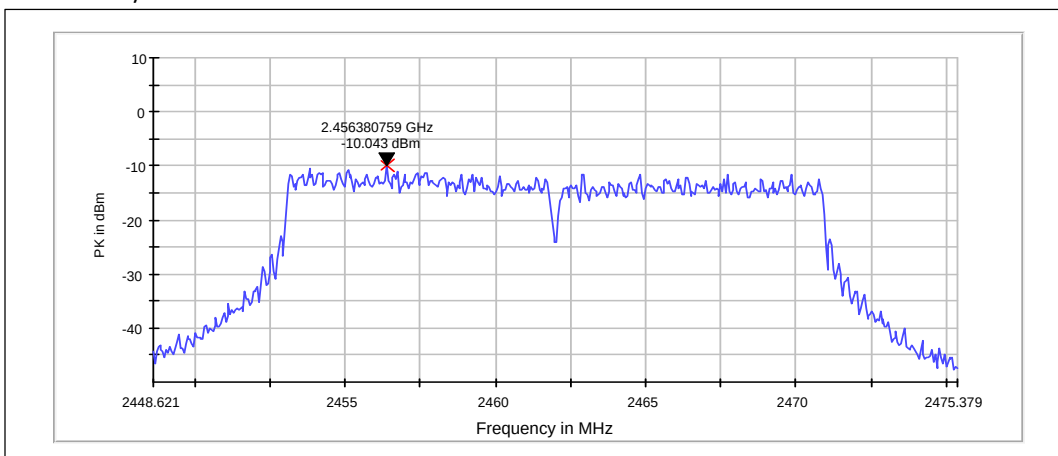


Channel 6

/ 2437 MHz



Channel 11 / 2462 MHz



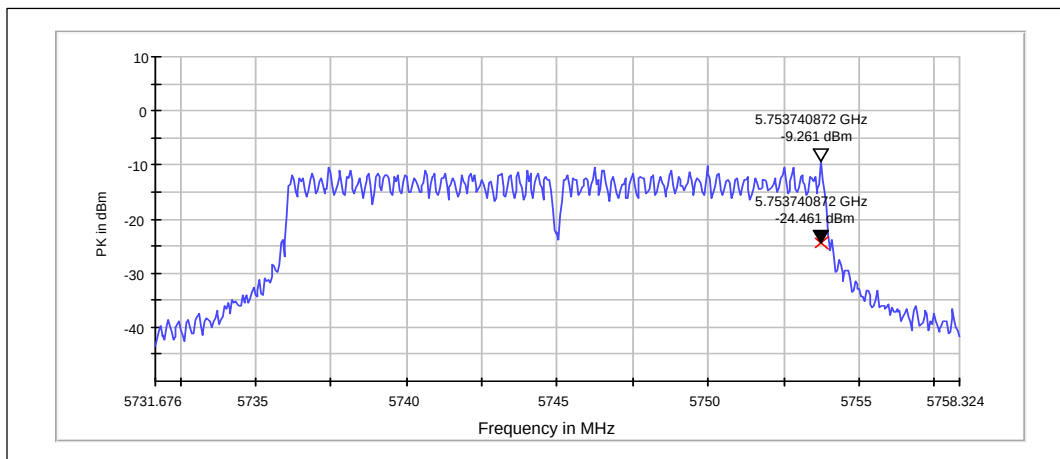
5.4. 5 GHz RLAN Test results

5.4.1 802.11n mode, BPSK modulation, 6.5 / 7.25 Mbps data rate

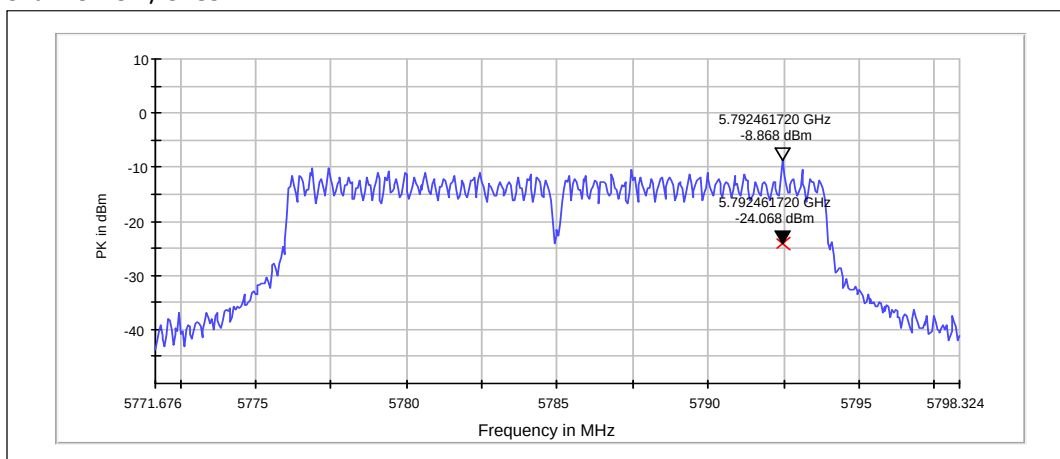
Peak (RBW: 3 kHz, VBW: 10 kHz, Max hold)

Channel / f _c [MHz]	P [dBm]	Result
149 / 5745	-24.46	PASSED
157 / 5785	-24.07	PASSED
165 / 5825	-25.56	PASSED

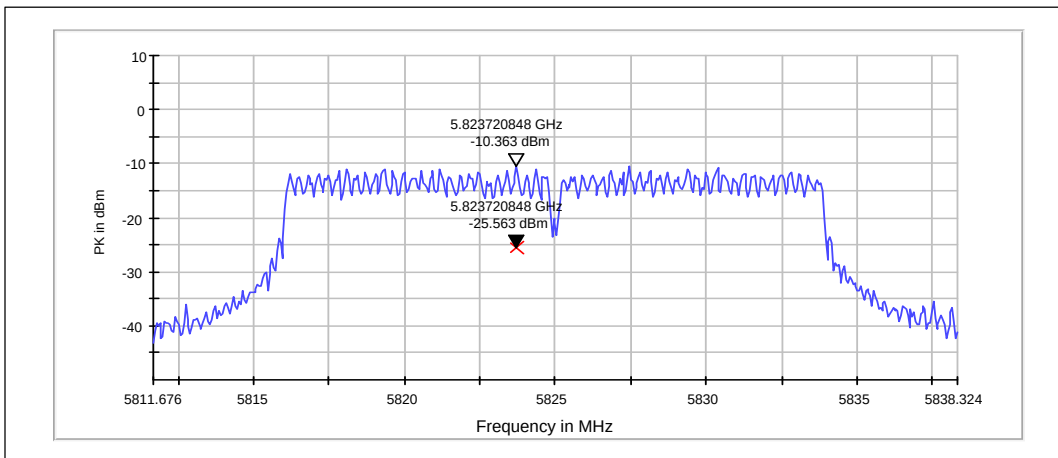
Channel 149 / 5745MHz



Channel 157 / 5785MHz



Channel 165 / 5825MHz

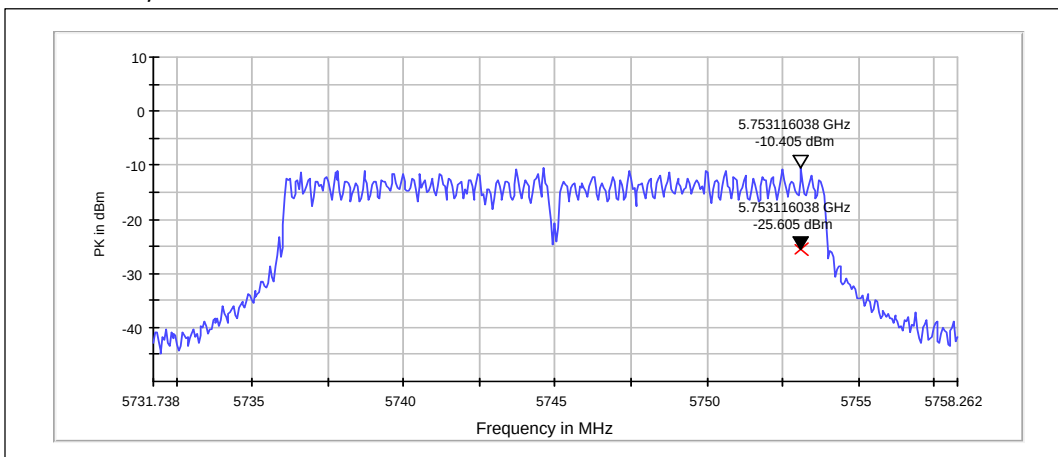


5.4.2 802.11n mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

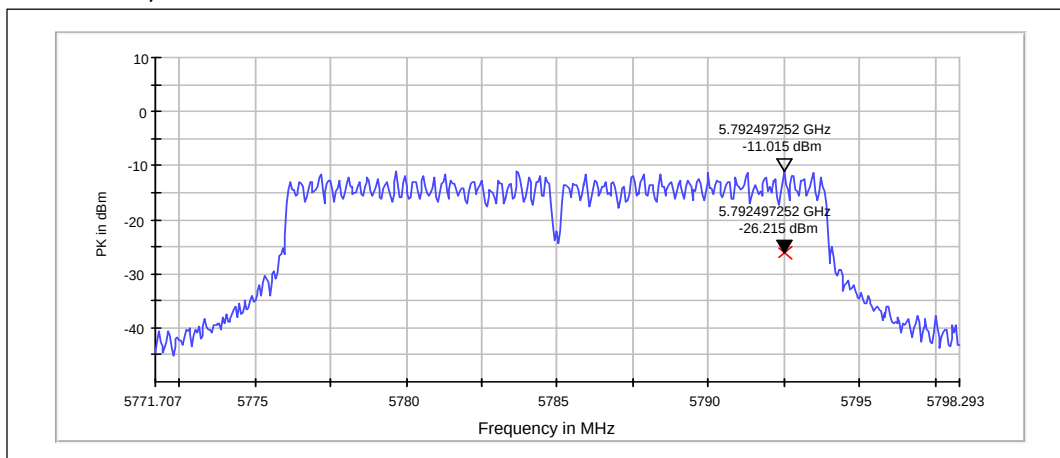
Peak (RBW: 3 kHz, VBW: 10 kHz, Max hold)

Channel / f_c [MHz]	P [dBm]	Result
149 / 5745	-25.61	PASSED
157 / 5785	-26.22	PASSED
165 / 5825	-25.35	PASSED

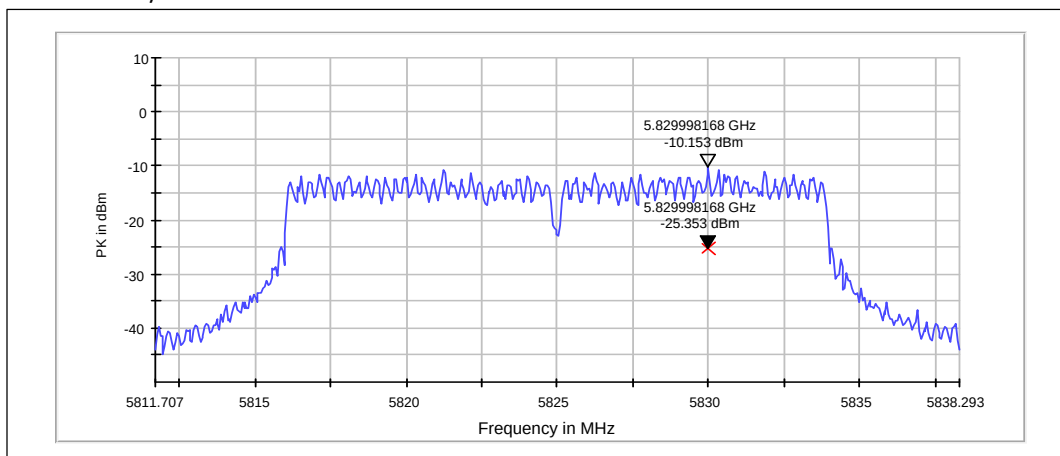
Channel 149 / 5745MHz



Channel 157 / 5785MHz



Channel 165 / 5825MHz

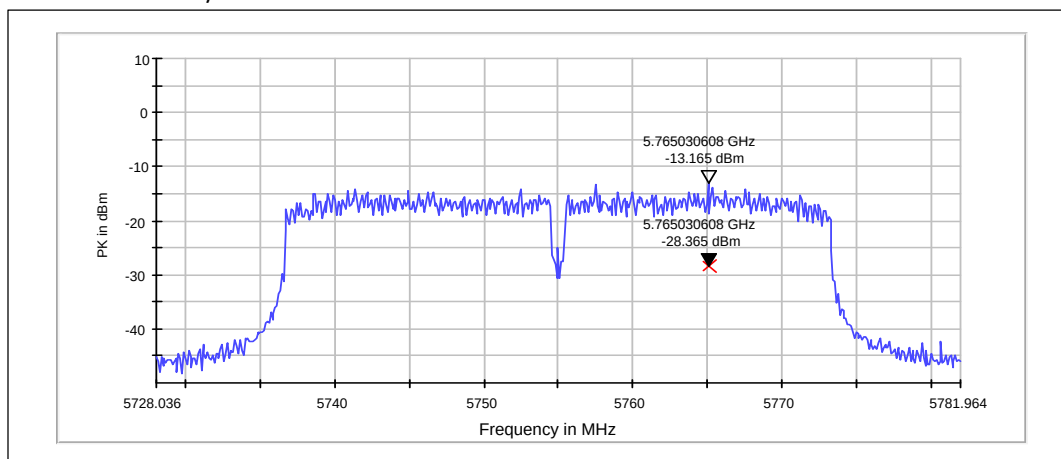


5.4.3 802.11n mode, BPSK modulation, 13.5 / 15.0 Mbps data rate

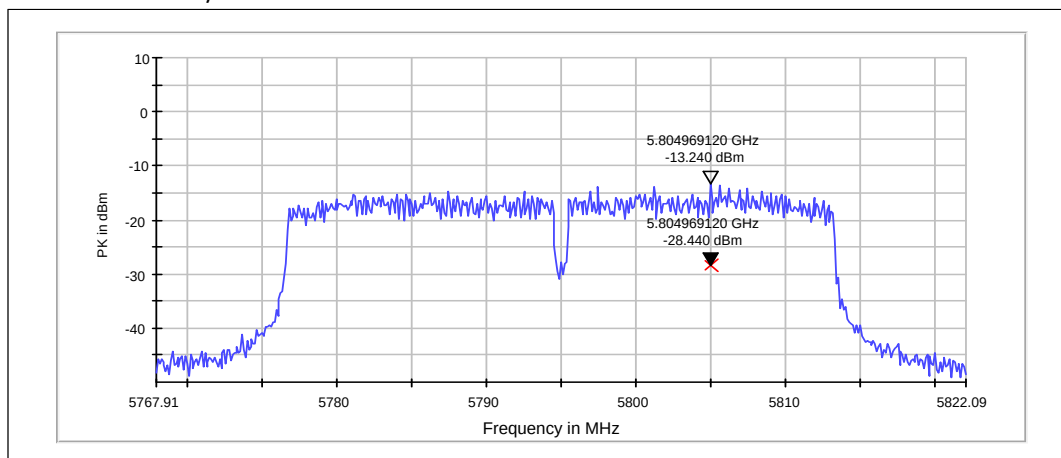
Peak (RBW: 3 kHz, VBW: 10 kHz, Max hold)

Channel / f _c [MHz]	P [dBm]	Result
149+153 / 5755	-28.37	PASSED
157+161 / 5795	-28.44	PASSED

Channel 149+153 / 5755MHz



Channel 157+161 / 5795MHz

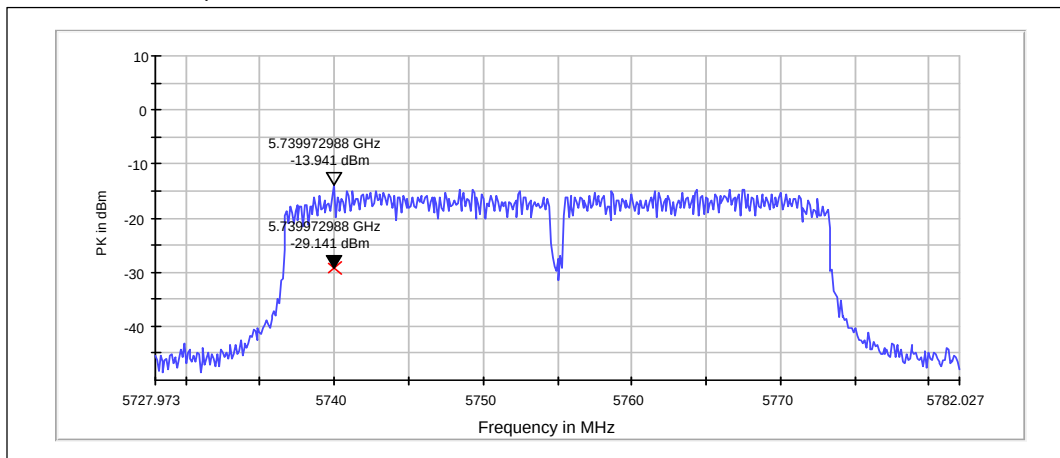


5.4.4 802.11n mode, QPSK modulation, 27.0 / 30.0 Mbps data rate

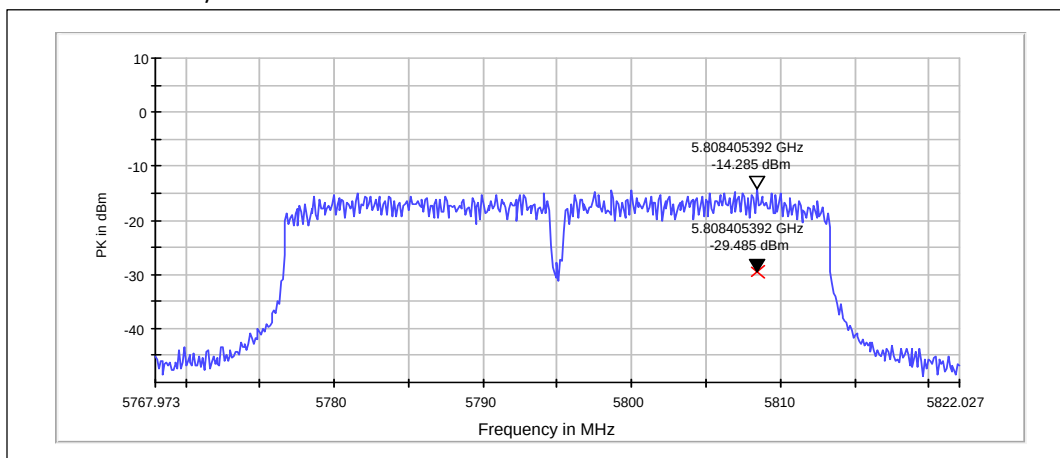
Peak (RBW: 3 kHz, VBW: 10 kHz, Max hold)

Channel / f _c [MHz]	P [dBm]	Result
149+153 / 5755	-29.14	PASSED
157+161 / 5795	-29.48	PASSED

Channel 149+153 / 5755MHz



Channel 157+161 / 5795MHz

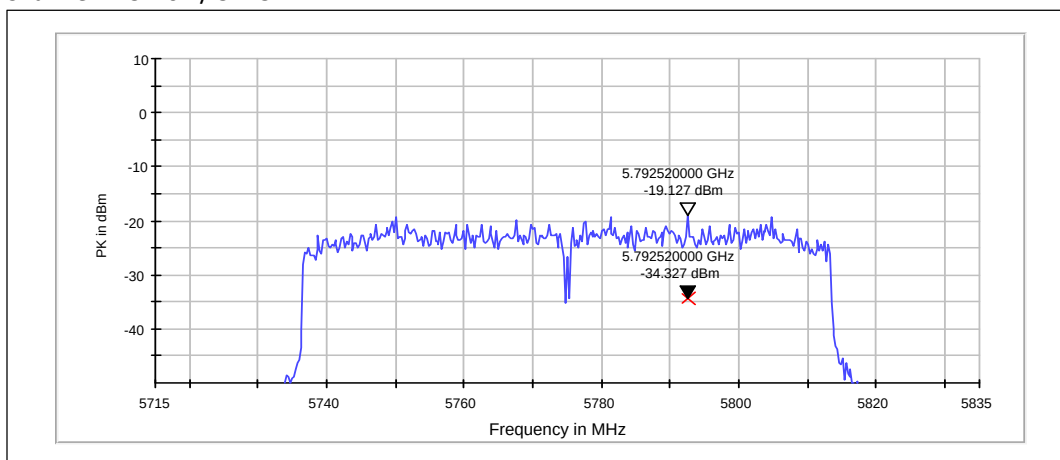


5.4.5 802.11ac mode, BPSK modulation, 29.3 / 32.5 Mbps data rate

Peak (RBW: 3 kHz, VBW: 10 kHz, Max hold)

Channel / f_c [MHz]	P [dBm]	Result
149-161 / 5775	-34.33	PASSED

Channel 149-161 / 5775MHz

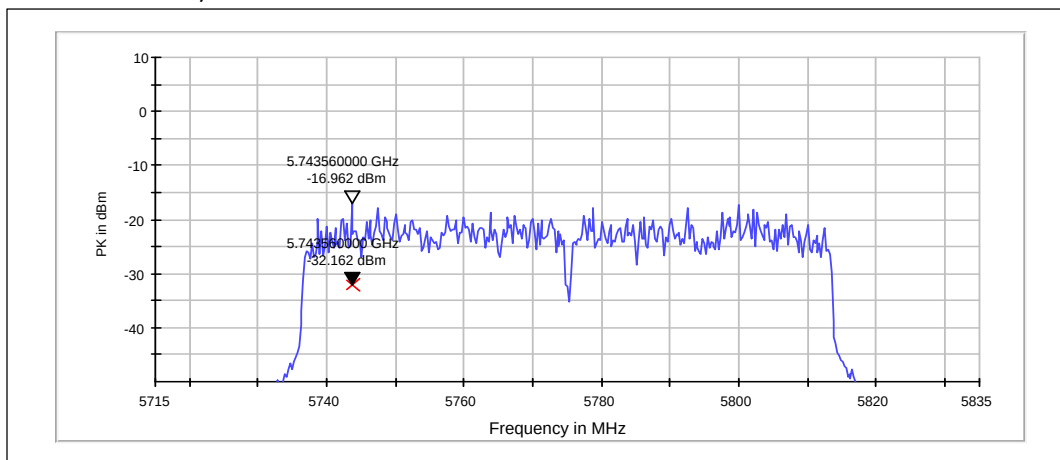


5.4.6 802.11ac mode, 16QAM modulation, 117.0 / 130.0 Mbps data rate

Peak (RBW: 3 kHz, VBW: 10 kHz, Max hold)

Channel / f_c [MHz]	P [dBm]	Result
149-161 / 5775	-32.16	PASSED

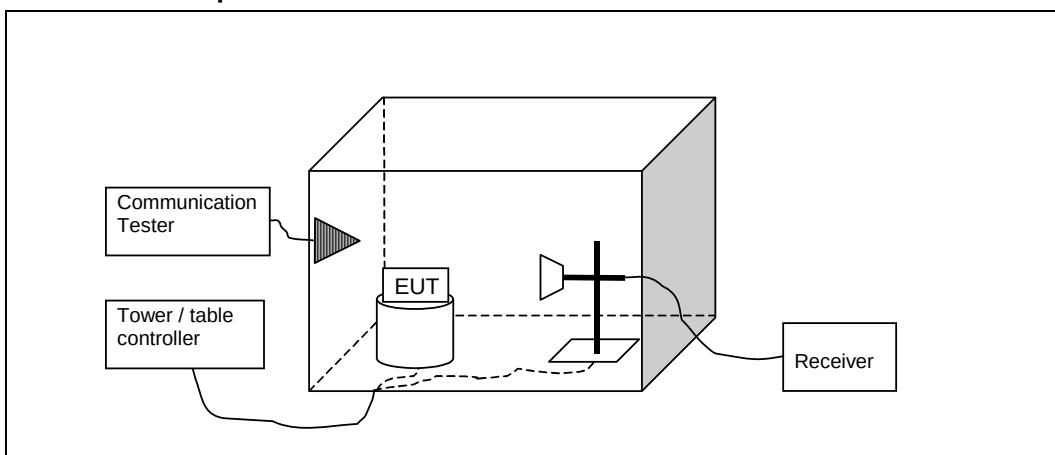
Channel 149-161 / 5775MHz



6. Band edge compliance of RF emissions (FCC 15.247(d), 15.205(b), RSS-210 A8(0.5))

EUT with DUT number	RM-1045, DUT 18216
Accessories with DUT numbers	AC-60E, DUT 18217 ; WH-208, DUT 18218 ; CA-190CD, DUT 18219
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 42 / 101.4
Date of measurements	01-May-2014
Measured by	Sami Lehtonen

6.1.1 Test setup



6.2. Test method and limit

The measurement is made according to KDB558074 and IC standard RSS-210.

The limit for 5 GHz RLAN is -20 dBc.

When the fundamental value in E [dBuV/m] column is at least 20 dB higher than the out of band emission, the result is pass.

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

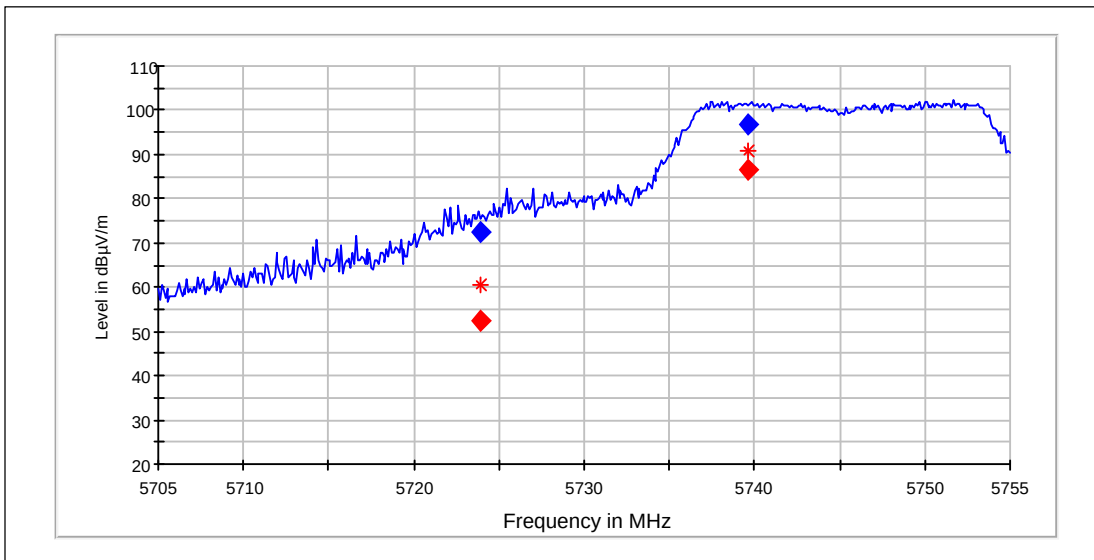
Limits for band edge compliance of RF emissions measurements (3 m measurement distance)

Frequency range [MHz]	Limit
Below 2390 and above 2483.5	54 dBuV/m (avg) and 74 dBuV/m (pk)
Below 5725 and above 5825	-20dBc

6.3. 5 GHz RLAN test results

6.3.1 802.11n, BPSK modulation, 6.5 / 7.25 Mbps data rate.

Channel 149 / 5745MHz



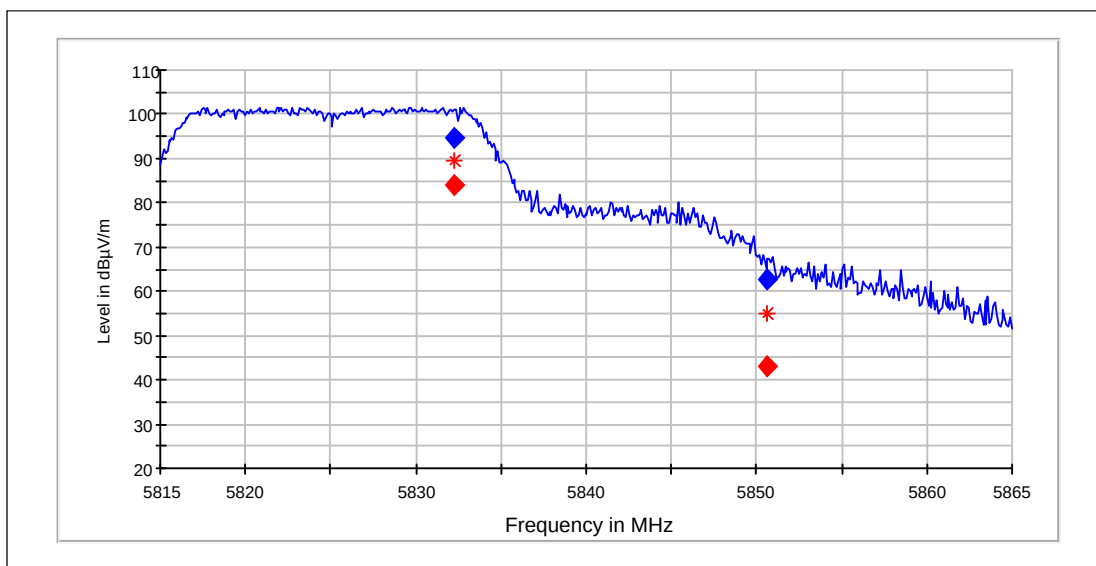
Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5723.958	72.51	200	127.49	170	H	-4	0	PASSED
5739.649	96.9	200	103.1	170	V	16	0	PASSED

Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5723.958	52.26	---	---	170	H	-4	0	PASSED
5739.649	86.63	---	---	170	V	16	0	PASSED

Channel 165 / 5825MHz



Peak (RBW: 1 MHz, VBW: 3 MHz)

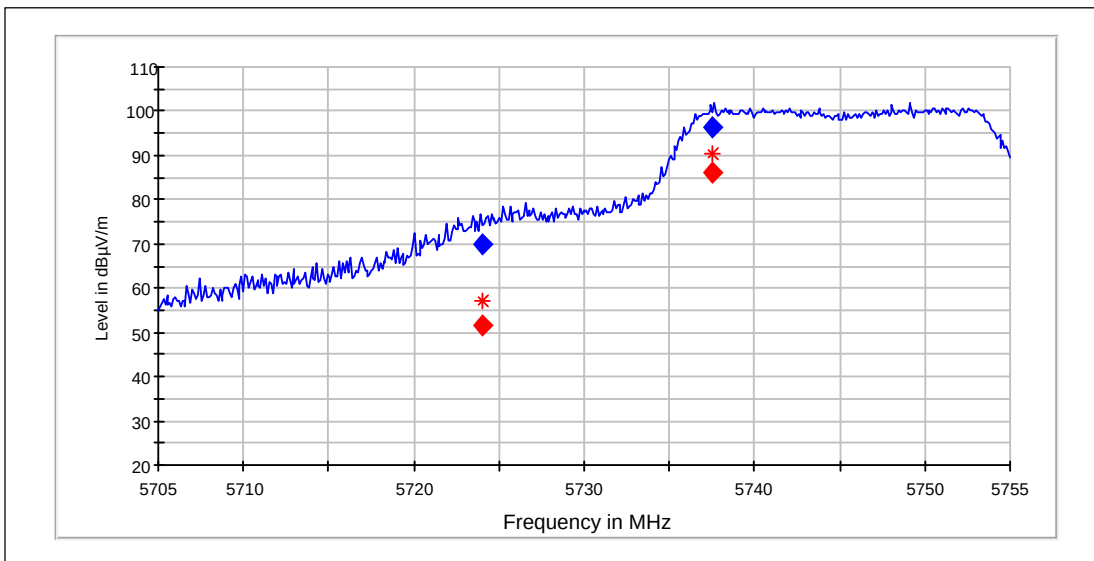
Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5832.234	94.58	200	105.42	170	H	-4	0	PASSED
5850.571	62.64	200	137.36	170	H	-3	0	PASSED

Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5832.234	84.15	---	---	170	H	-4	0	PASSED
5850.571	42.95	---	---	170	H	-3	0	PASSED

6.3.2 802.11n, QPSK modulation, 13.0 / 14.4 Mbps data rate.

Channel 149 / 5745MHz



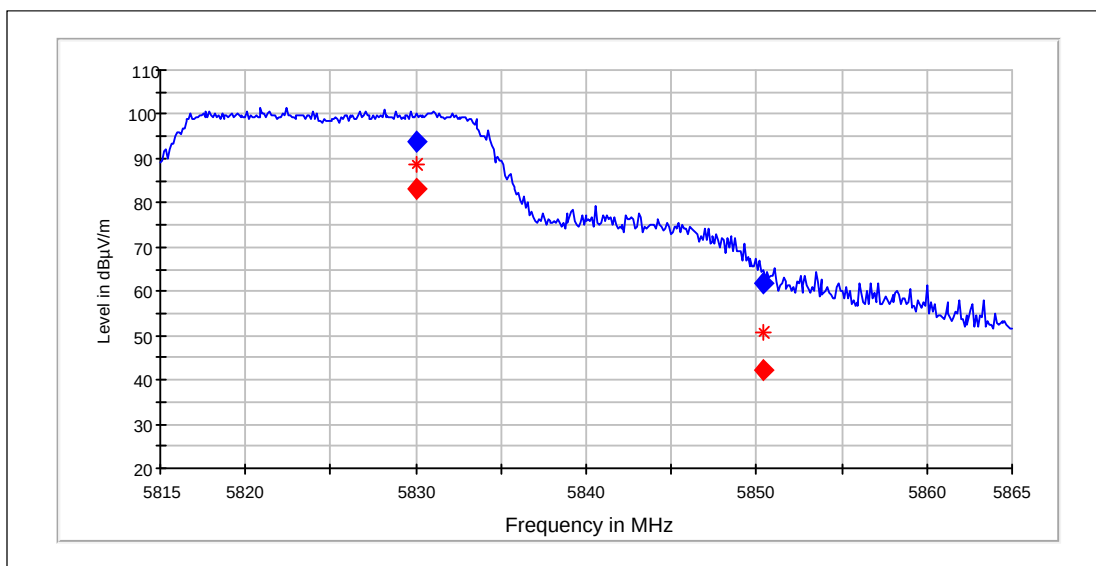
Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5724.078	69.71	200	130.29	170	H	-5	0	PASSED
5737.525	96.49	200	103.51	170	V	15	0	PASSED

Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5724.078	51.38	---	---	170	H	-5	0	PASSED
5737.525	86.32	---	---	170	V	15	0	PASSED

Channel 165 / 5825MHz



Peak (RBW: 1 MHz, VBW: 3 MHz)

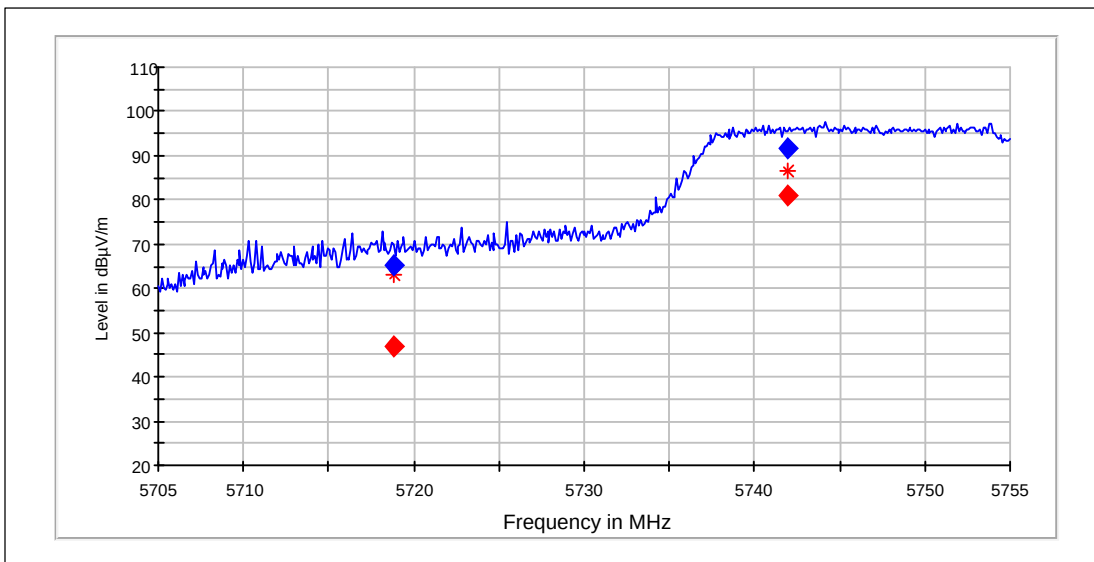
Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5830.07	93.95	200	106.05	170	H	-4	0	PASSED
5850.361	61.87	200	138.13	170	H	-3	0	PASSED

Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5830.07	83.34	---	---	170	H	-4	0	PASSED
5850.361	42.1	---	---	170	H	-3	0	PASSED

6.3.3 802.11n, BPSK modulation, 13.5 / 15.0 Mbps data rate.

Channel 149+153 / 5755MHz



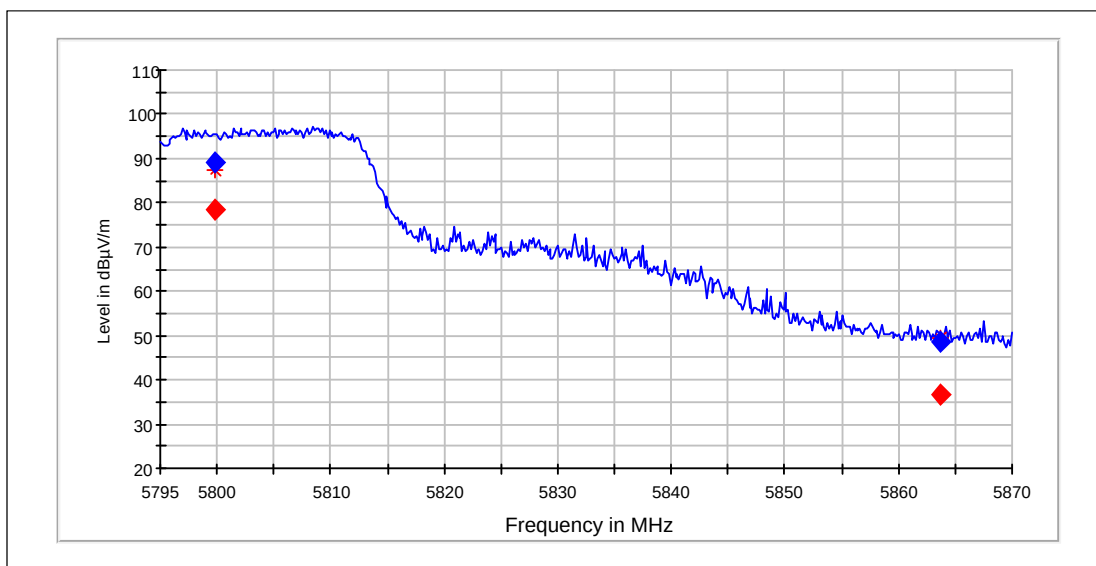
Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5718.868	65.19	200	134.81	170	H	-7	0	PASSED
5741.934	91.46	200	108.54	170	V	15	0	PASSED

Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5718.868	46.95	---	---	170	H	-7	0	PASSED
5741.934	80.97	---	---	170	V	15	0	PASSED

Channel 157+161 / 5795MHz



Peak (RBW: 1 MHz, VBW: 3 MHz)

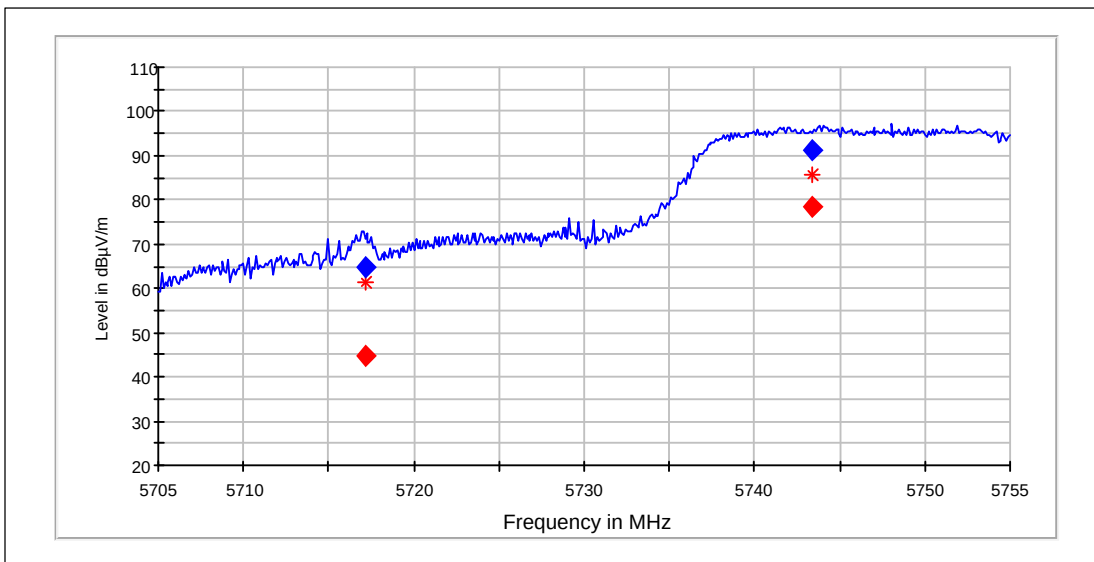
Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5799.85	89.08	200	110.92	170	H	-3	0	PASSED
5863.747	48.74	200	151.26	170	V	-14	0	PASSED

Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5799.85	78.39	---	---	170	H	-3	0	PASSED
5863.747	36.48	---	---	170	V	-14	0	PASSED

6.3.4 802.11n, QPSK modulation, 27.0 / 30.0 Mbps data rate.

Channel 149+153 / 5755MHz



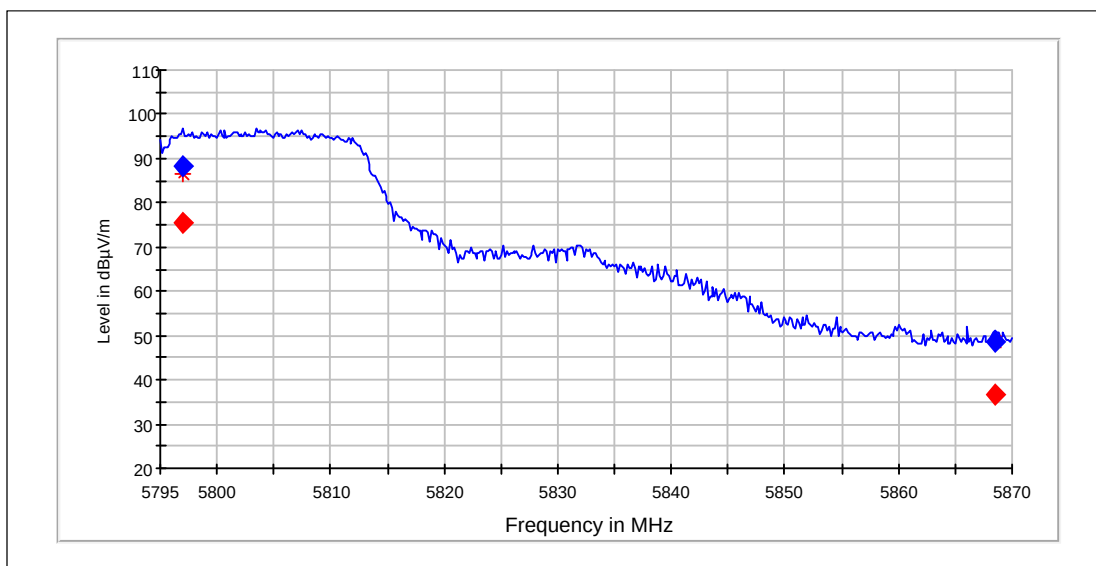
Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5717.184	64.93	200	135.07	170	H	-7	0	PASSED
5743.417	91.25	200	108.75	170	V	15	0	PASSED

Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5717.184	44.82	---	---	170	H	-7	0	PASSED
5743.417	78.27	---	---	170	V	15	0	PASSED

Channel 157+161 / 5795MHz



Peak (RBW: 1 MHz, VBW: 3 MHz)

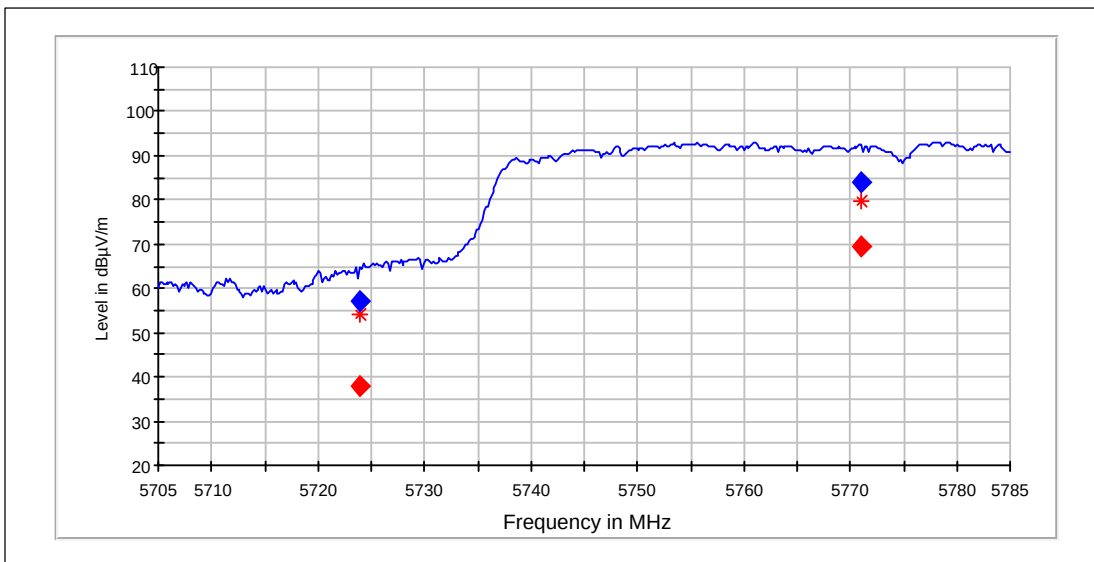
Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5797.004	88.42	200	111.58	170	H	-4	0	PASSED
5868.557	48.5	200	151.5	170	V	22	0	PASSED

Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5797.004	75.58	---	---	170	H	-4	0	PASSED
5868.557	36.45	---	---	170	V	22	0	PASSED

6.3.5 802.11ac, BPSK modulation, 29.3 / 32.5 Mbps data rate.

Channel 149-161 / 5775MHz



Peak (RBW: 1 MHz, VBW: 3 MHz)

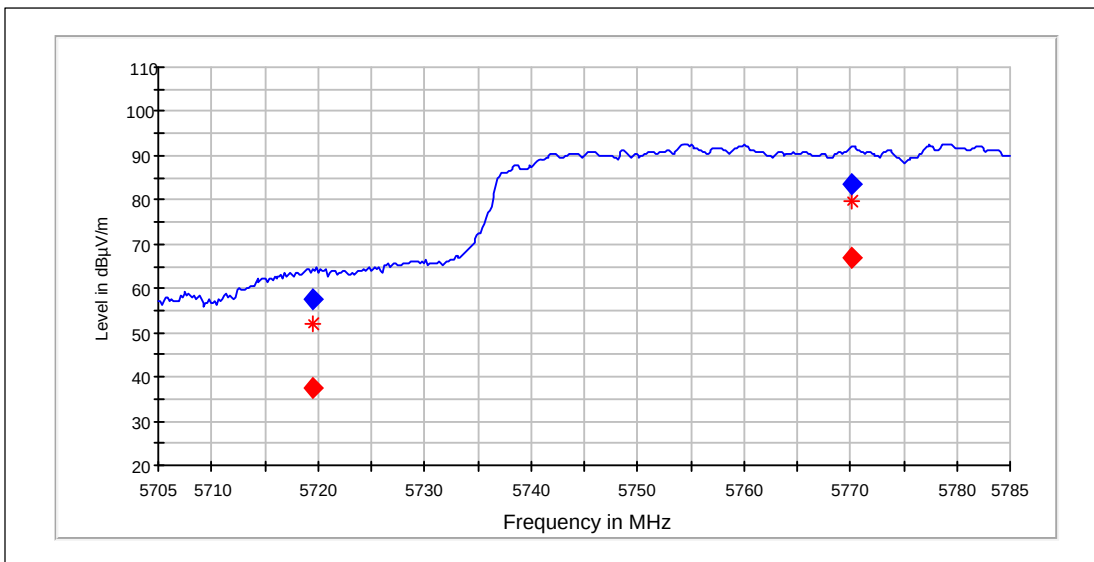
Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5723.878	57.12	200	142.88	170	H	-4	0	PASSED
5770.992	83.91	200	116.09	170	H	-5	0	PASSED

Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5723.878	37.89	---	---	170	H	-4	0	PASSED
5770.992	69.45	---	---	170	H	-5	0	PASSED

6.3.6 802.11ac, 16QAM modulation, 117.0 / 130.0 Mbps data rate.

Channel 149-161 / 5775MHz



Peak (RBW: 1 MHz, VBW: 3 MHz)

Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5719.549	57.6	200	142.4	170	H	-7	0	PASSED
5770.19	83.56	200	116.44	170	H	-5	0	PASSED

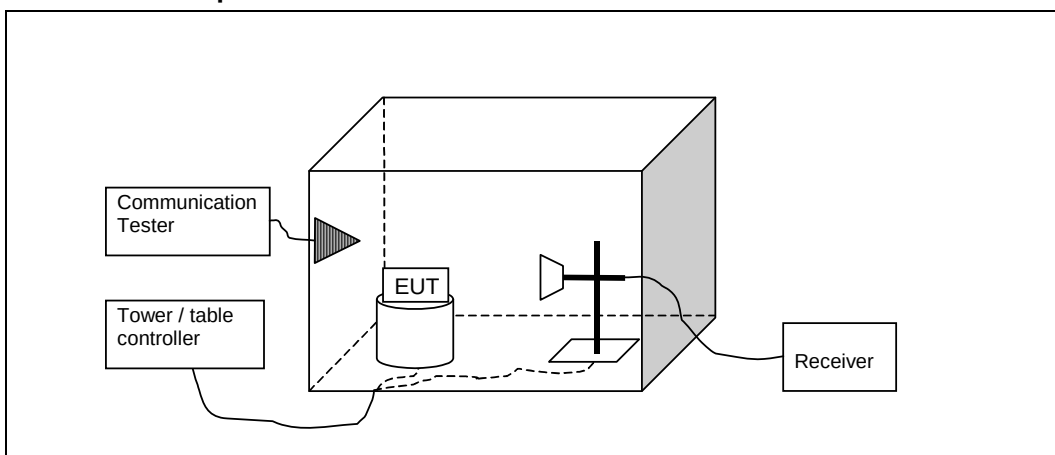
Average (RBW: 1 MHz, VBW: 10 Hz)

Frequency [MHz]	Average [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Elevation [deg]	Results
5719.549	37.53	---	---	170	H	-7	0	PASSED
5770.19	66.95	---	---	170	H	-5	0	PASSED

7. Radiated emissions (FCC 15.247(d), 15.209, RSS-210 A8(0.5))

EUT with DUT number	RM-1045, DUT 18216
Accessories with DUT numbers	AC-60E, DUT 18217 ; WH-208, DUT 18218 ; CA-190CD, DUT 18219
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 42 / 101.4
Date of measurements	01-May-2014
Measured by	Sami Lehtonen

7.1.1 Test setup



7.2. Test method and limit

The measurement is made according to ANSI C63.4 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:

$$E [dB\mu V/m] = U_{RX} + A_{TOT}$$

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 [$\mu V/m$]	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

7.3. 5 GHz RLAN test results

7.3.1 802.11n, BPSK modulation, 6.5 / 7.25 Mbps data rate.

Channel 149 / 5745MHz

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
11491.9	61.61	1203.649	49.61	12	74	12.37	PASSED
17235.2	48.69	271.957	39.79	8.9	95	46.54	PASSED
22973.5	53.84	492.04	40.14	13.7	74	20.14	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
11491.9	46.39	208.689	34.39	12	54	7.59	PASSED
17235.2	35.31	58.277	26.41	8.9	---	---	PASSED
22973.5	41.1	113.501	27.4	13.7	54	12.88	PASSED

Channel 149 / 5745MHz

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
11491.9	61.61	1203.649	49.61	12	74	12.37	PASSED
17235.2	48.69	271.957	39.79	8.9	95	46.54	PASSED
22973.5	53.84	492.04	40.14	13.7	74	20.14	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
11491.9	46.39	208.689	34.39	12	54	7.59	PASSED
17235.2	35.31	58.277	26.41	8.9	---	---	PASSED
22973.5	41.1	113.501	27.4	13.7	54	12.88	PASSED

Channel 157 / 5785MHz

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
30.69	25.81	19.521	29.71	-3.9	40	14.19	PASSED
30.72	25.25	18.302	29.15	-3.9	40	14.75	PASSED
42.463	27.36	23.335	38.96	-11.6	40	12.64	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
11561.8	53.16	454.988	41.36	11.8	74	20.82	PASSED
17362.2	48.54	267.301	39.84	8.7	95	46.69	PASSED
23137.7	54.01	501.765	40.31	13.7	95	41.22	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
11561.8	39.71	96.716	27.91	11.8	54	14.27	PASSED
17362.2	35.88	62.23	27.18	8.7	---	---	PASSED
23137.7	40.62	107.399	26.92	13.7	---	---	PASSED

Channel 165 / 5825MHz

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
11649.9	59.07	898.463	47.97	11.1	74	14.91	PASSED
17443.3	49.2	288.403	40.5	8.7	95	46.03	PASSED
23297.7	55.3	582.103	41.4	13.9	95	39.93	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
11649.9	45.12	180.302	34.02	11.1	54	8.86	PASSED
17443.3	36.16	64.269	27.46	8.7	---	---	PASSED
23297.7	42.67	135.988	28.77	13.9	---	---	PASSED

7.3.2 802.11n, QPSK modulation, 13.0 / 14.4 Mbps data rate.

Channel 157 / 5785MHz

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
41.52	26.74	21.727	37.74	-11	40	13.26	PASSED
41.97	27.06	22.542	38.36	-11.3	40	12.94	PASSED
42.613	27.2	22.909	38.9	-11.7	40	12.8	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
11569.9	53.84	492.04	42.14	11.7	74	20.14	PASSED
17354.5	48.97	280.867	40.27	8.7	95	46.26	PASSED
23146.4	54.02	502.343	40.12	13.9	95	41.21	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
11569.9	40.62	107.399	28.92	11.7	54	13.36	PASSED
17354.5	35.84	61.944	27.14	8.7	---	---	PASSED
23146.4	40.8	109.648	26.9	13.9	---	---	PASSED

Channel 149 / 5745MHz

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
11491.2	61.08	1132.4	49.08	12	74	12.9	PASSED
17229.2	48.97	280.867	39.97	9	95	46.26	PASSED
22981.6	54.09	506.407	40.39	13.7	74	19.89	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
11491.2	45.73	193.419	33.73	12	54	8.25	PASSED
17229.2	35.3	58.21	26.3	9	---	---	PASSED
22981.6	41	112.202	27.3	13.7	54	12.98	PASSED

Channel 165 / 5825MHz

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
11651.3	59.18	909.913	48.08	11.1	74	14.8	PASSED
17444.3	48.94	279.898	40.24	8.7	95	46.29	PASSED
23300.3	55.66	606.736	41.76	13.9	95	39.57	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
11651.3	44.05	159.404	32.95	11.1	54	9.93	PASSED
17444.3	36.17	64.343	27.47	8.7	---	---	PASSED
23300.3	42.65	135.675	28.75	13.9	---	---	PASSED

Channel 165 / 5825MHz

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
11651.3	59.18	909.913	48.08	11.1	74	14.8	PASSED
17444.3	48.94	279.898	40.24	8.7	95	46.29	PASSED
23300.3	55.66	606.736	41.76	13.9	95	39.57	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
11651.3	44.05	159.404	32.95	11.1	54	9.93	PASSED
17444.3	36.17	64.343	27.47	8.7	---	---	PASSED
23300.3	42.65	135.675	28.75	13.9	---	---	PASSED

7.3.3 802.11n, BPSK modulation, 13.5 / 15.0 Mbps data rate.

Channel 149+153 / 5755MHz

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
30.33	25.1	17.989	28.8	-3.7	40	14.9	PASSED
41.156	26.97	22.31	37.67	-10.7	40	13.03	PASSED
42.193	28.2	25.704	39.6	-11.4	40	11.8	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
11509.2	53.02	447.713	41.02	12	74	20.96	PASSED
17266.6	48.12	254.683	39.12	9	95	47.11	PASSED
23022.8	53.53	474.788	40.03	13.5	74	20.45	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
11509.2	39.92	99.083	27.92	12	54	14.06	PASSED
17266.6	35.43	59.088	26.43	9	---	---	PASSED
23022.8	40.48	105.682	26.98	13.5	54	13.5	PASSED

Channel 157+161 / 5795MHz

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
11588.7	57.99	793.414	46.49	11.5	74	15.99	PASSED
17396.1	49.27	290.737	40.67	8.6	95	45.96	PASSED
23186	53.53	474.788	39.63	13.9	95	41.7	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
11588.7	42.28	130.017	30.78	11.5	54	11.7	PASSED
17396.1	35.86	62.087	27.26	8.6	---	---	PASSED
23186	40.76	109.144	26.86	13.9	---	---	PASSED

7.3.4 802.11n, QPSK modulation, 27.0 / 30.0 Mbps data rate.

Channel 149+153 / 5755MHz

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
38.396	25.46	18.75	34.36	-8.9	40	14.54	PASSED
41.953	27.02	22.439	38.32	-11.3	40	12.98	PASSED
42.889	28.33	26.092	40.23	-11.9	40	11.67	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
11512.7	53.03	448.229	41.03	12	74	20.95	PASSED
17264.9	48.37	262.12	39.37	9	95	46.86	PASSED
23018.9	53.41	468.274	39.91	13.5	74	20.57	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
11512.7	39.98	99.77	27.98	12	54	14	PASSED
17264.9	35.39	58.817	26.39	9	---	---	PASSED
23018.9	40.52	106.17	27.02	13.5	54	13.46	PASSED

7.3.5 802.11ac, BPSK modulation, 29.3 / 32.5 Mbps data rate.

Channel 149-161 / 5775MHz

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	24.94	17.66	28.44	-3.5	40	15.06	PASSED
41.643	26.87	22.055	37.97	-11.1	40	13.13	PASSED
42.609	27.22	22.961	38.92	-11.7	40	12.78	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
11553.5	53.1	451.856	41.3	11.8	74	20.88	PASSED
17330.6	48.47	265.155	39.67	8.8	95	46.76	PASSED
23100	53.65	481.393	40.05	13.6	74	20.33	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
11553.5	39.77	97.387	27.97	11.8	54	14.21	PASSED
17330.6	35.5	59.566	26.7	8.8	---	---	PASSED
23100	40.73	108.768	27.13	13.6	54	13.25	PASSED

7.3.6 802.11ac, 16QAM modulation, 117.0 / 130.0 Mbps data rate.

Channel 149-161 / 5775MHz

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
30.6	24.97	17.721	28.87	-3.9	40	15.03	PASSED
42.69	25.19	18.176	36.99	-11.8	40	14.81	PASSED
42.783	26.6	21.38	38.4	-11.8	40	13.4	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
11553.3	52.1	402.717	40.3	11.8	74	21.88	PASSED
17328.5	48.07	253.221	39.27	8.8	95	47.16	PASSED
23096.8	54.21	513.452	40.51	13.7	74	19.77	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
11553.3	39.71	96.716	27.91	11.8	54	14.27	PASSED
17328.5	35.48	59.429	26.68	8.8	---	---	PASSED
23096.8	40.65	107.771	26.95	13.7	54	13.33	PASSED

8. Test Equipment

8.1. 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

8.2. 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

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