

FCC Part 15E Compliance Test Report

Test Report no.:	FCC15E_RM-825_21	Date of Report:	17-Jul-2012
Number of pages:	57	Customer's Contact person:	Melava Tia
Testing laboratory:	TCC Nokia Tampere Laboratory P.O. Box 68 Sinitaival 5 FIN-33720 TAMPERE, FINLAND Tel. +358 (0) 7180 46800 Fax. +358 (0) 7180 46880	Customer:	Nokia Corporation P.O.Box(86) Joensuunkatu 7H / Kiila 1B FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220
FCC listing no.:	94436		
IC recognition no.:	661AK-1		
Tested devices/ accessories:	Phone RM-825 / Battery BP-5T 5T / Charger AC-50E / Data Cable CA-190CD / Headset WH-208		
FCC ID:	PYARM-825	IC:	661V-RM825
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart E, ANSI C63.4 (2003), DTS procedures KDB 789033 D01, 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 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:			

Jari Jantunen, System Manager, EMC

1. Summary for FCC Part 15E Compliance Test Report

Date of receipt	29-Jun-2012
Testing completed	04-Jul-2012
The customer's contact person	Melava Tia
Test Plan referred to	T:\Projects\RM-824\TestPlan\RS_testplan_RM-824.xls
Notes	-
Document name	T:\Projects\RM-825\EMC\FCC15E_RM-824_05.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-824	004402139761484	2210	-	1121.0002.8297.9657.110	42842
Battery	BP-5T	3932132224140100128;0670665	-	-	-	42845
Phone	RM-824	004402139761476	2210	-	1121.0002.8297.9657.110	42843
Battery	BP-5T	3932132224140100129;0670665	-	-	-	42844
Charger	AC-50E	4090492023260400312;0675619	0.5	0.4	-	42776
Data Cable	CA-190CD	-	-	-	-	42778
Headset	WH-208	-	-	-	-	42831

1.2. Summary of Test Results

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	-
15.407(a)(6)	A9.2	Peak excursion	PASSED
15.407(b)	A9.2	Spurious radiated emissions	-
15.407(b)(6)	A9.2	AC powerline conducted emissions	PASSED
-	A9.2	26dB(bandwidth)	PASSED
15.407(a)	A9.2	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 Laboratory.

The test results of PYARM-824 are re-used for certification of the PYARM-825. The table above indicates the results, which will be re-used.

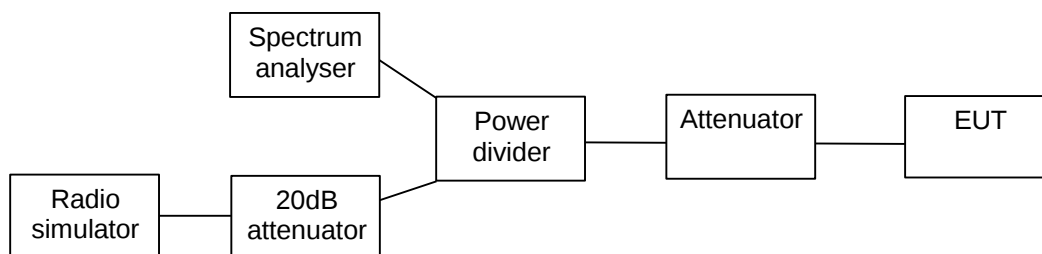
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2. Maximum conducted output power (FCC §15.407 (a), RSS-210 A9.2)

EUT with DUT number	RM-824, DUT 42842
Accessories with DUT numbers	BP-5T, DUT 42845
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 51 / 99.5
Date of measurements	03-Jul-2012
Measured by	Hannu Söderholm

2.1. Test Setup



2.2. Test method and limit

The measurement is made according to Public Notice KDB 789033 D01 and IC standard RSS-210.

Limits for Maximum conducted output power measurements

Frequency range [MHz]	Limit [mW] / (dBm)	Limit [dBm]	Limit [dBm] for B=20 MHz
5150-5250	50 (17)	4+10 log B	17
5250-5350	250 (24)	11+10 log B	24
5470-5725	250 (24)	11+10 log B	24
5725-5825	1000 (30)	17+10 log B	30

2.3. 5 GHz RLAN Test results

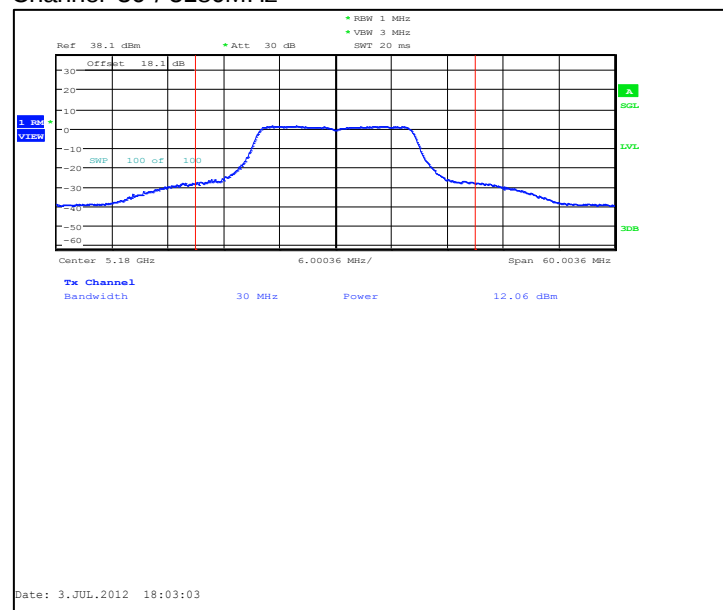
RLAN 5 GHz, RMS output power [dBm]	
Mode & data speed	Ch 36
g-mode WLAN OFDM 6 Mbps	11.91
g-mode WLAN OFDM 9 Mbps	11.89
g-mode WLAN OFDM 12 Mbps	11.98
g-mode WLAN OFDM 18 Mbps	12.01
g-mode WLAN OFDM 24 Mbps	11.19
g-mode WLAN OFDM 36 Mbps	11.24
g-mode WLAN OFDM 48 Mbps	10.09
g-mode WLAN OFDM 54 Mbps	10.14
n-mode MCS 0: OFDM 6.5 / 7.25 Mbps	11.9
n-mode MCS 1: OFDM 13.0 / 14.4 Mbps	11.99
n-mode MCS 2: OFDM 19.5 / 21.7 Mbps	10.99
n-mode MCS 3: OFDM 26.0 / 28.9 Mbps	11.37
n-mode MCS 4: OFDM 39.0 / 43.3 Mbps	10.38
n-mode MCS 5: OFDM 52.0 / 57.8 Mbps	10.41
n-mode MCS 6: OFDM 58.5 / 65.0 Mbps	9.48
n-mode MCS 7: OFDM 65.0 / 72.2 Mbps	9.53

RLAN 5 GHz, RMS output power [dBm]	
Mode & data speed	Ch 38
n-mode MCS 0: OFDM 13.5 / 15.0 Mbps	12.14
n-mode MCS 1: OFDM 27.0 / 30.0 Mbps	12.23
n-mode MCS 2: OFDM 40.5 / 45.0 Mbps	12.34
n-mode MCS 3: OFDM 54.0 / 60.0 Mbps	12.54
n-mode MCS 4: OFDM 81.0 / 90.0 Mbps	12.57
n-mode MCS 5: OFDM 108.0 / 120.0 Mbps	12.55
n-mode MCS 6: OFDM 121.5 / 135.0 Mbps	12.59
n-mode MCS 7: OFDM 135.0 / 150.0 Mbps	12.59

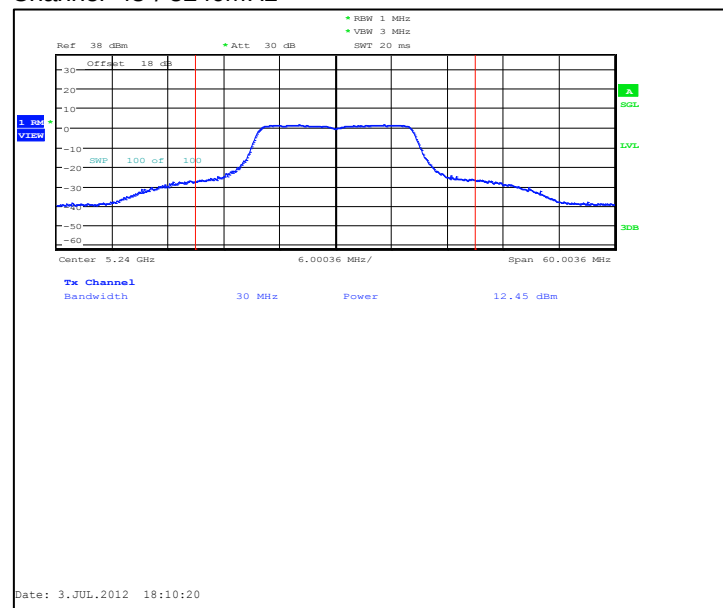
2.3.1 OFDM mode, BPSK modulation, 18 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
36 / 5180	12.06	16.069	PASSED
48 / 5240	12.45	17.579	PASSED
52 / 5260	12.76	18.88	PASSED
64 / 5320	12.95	19.724	PASSED
100 / 5500	12.98	19.861	PASSED
116 / 5580	12.91	19.543	PASSED
140 / 5700	12.54	17.947	PASSED

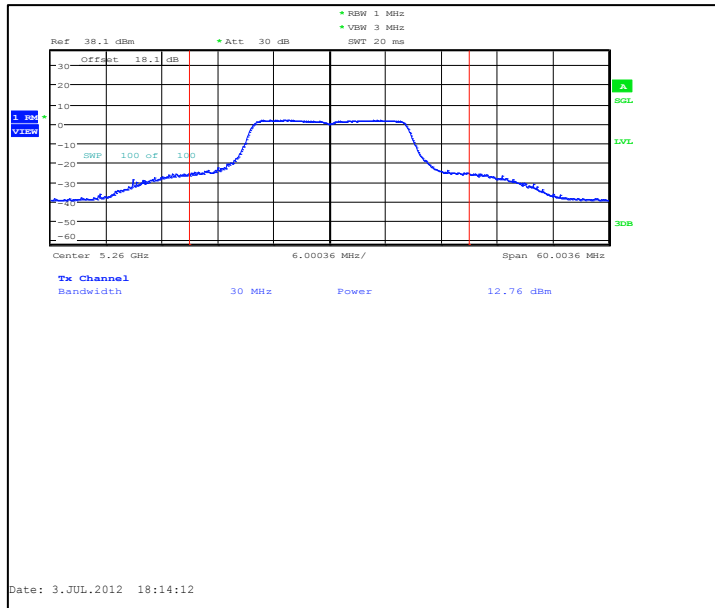
Channel 36 / 5180MHz



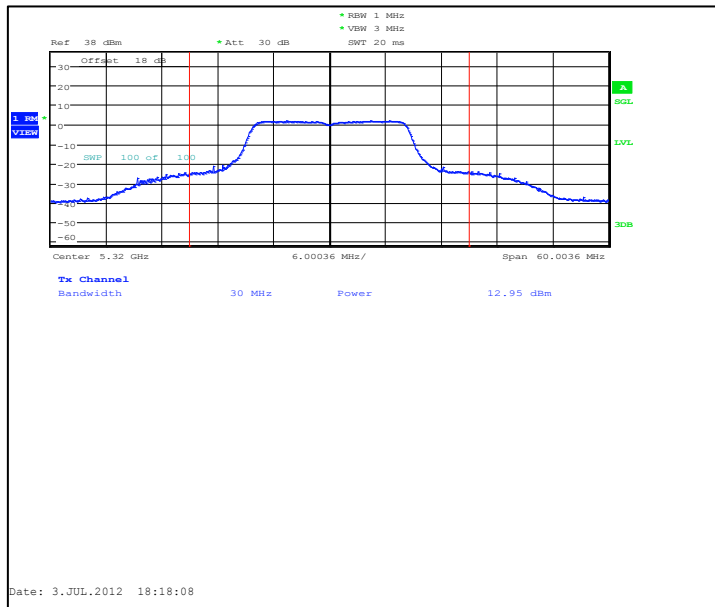
Channel 48 / 5240MHz



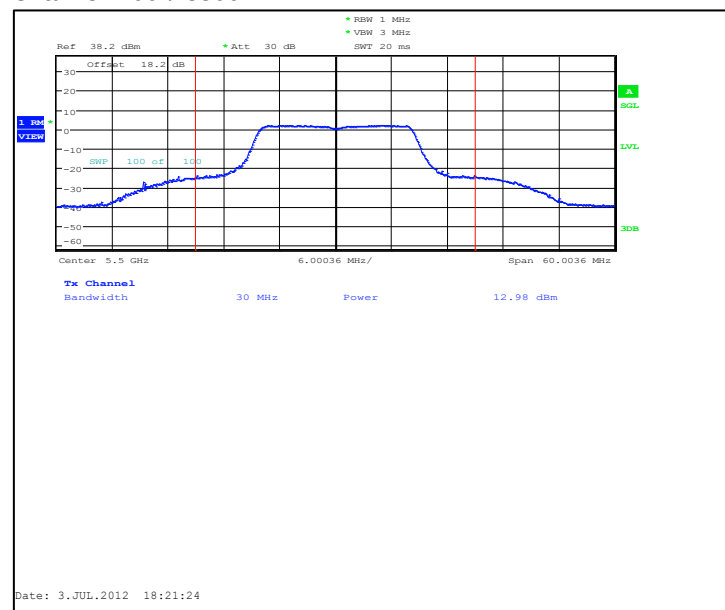
Channel 52 / 5260MHz



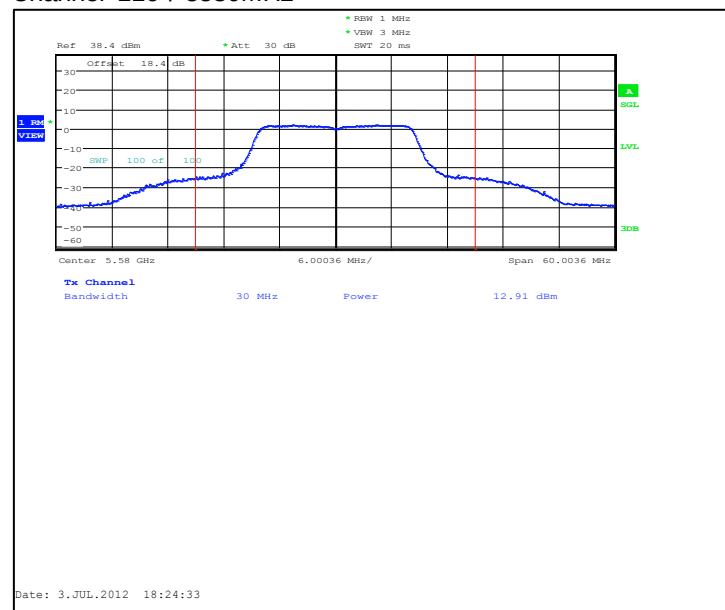
Channel 64 / 5320MHz



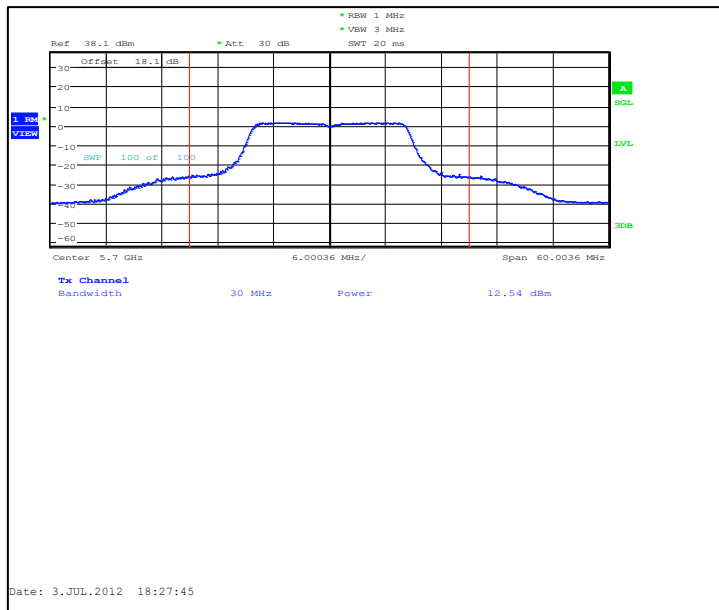
Channel 100 / 5500MHz



Channel 116 / 5580MHz



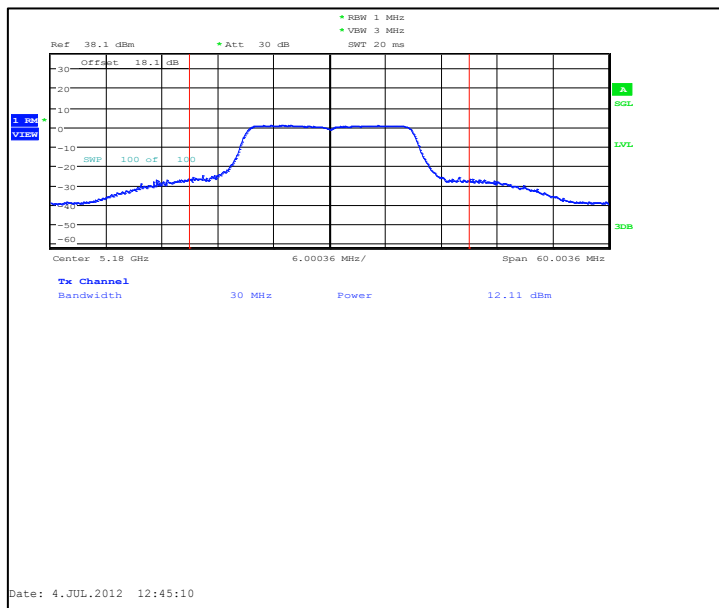
Channel 140 / 5700MHz



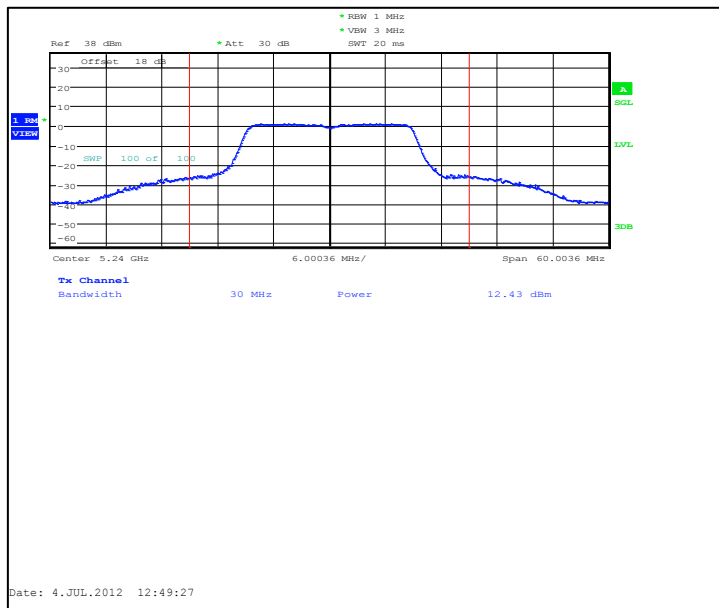
2.3.2 802.11n HT20 MCS1, 20 MHz CBW mode, BPSK modulation, 13.0 / 14.4 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
36 / 5180	12.11	16.255	PASSED
48 / 5240	12.43	17.498	PASSED
52 / 5260	12.4	17.378	PASSED
64 / 5320	12.62	18.281	PASSED
100 / 5500	12.83	19.187	PASSED
116 / 5580	12.89	19.454	PASSED
140 / 5700	12.43	17.498	PASSED

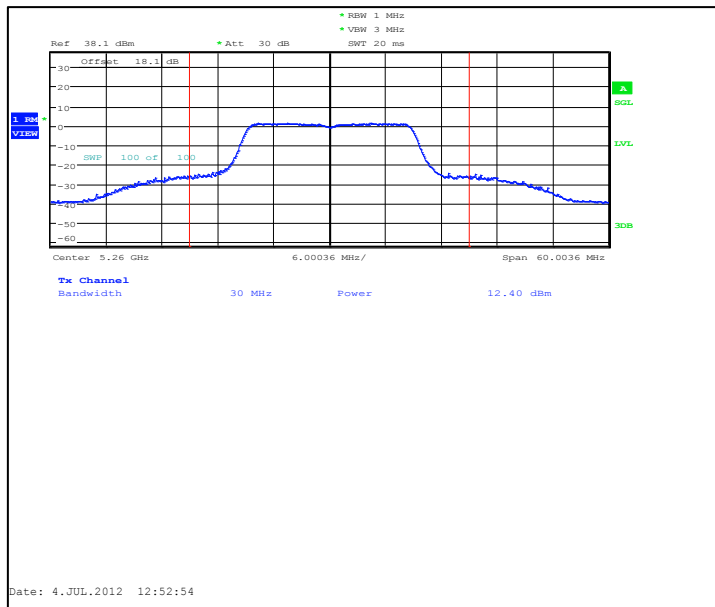
Channel 36 / 5180MHz



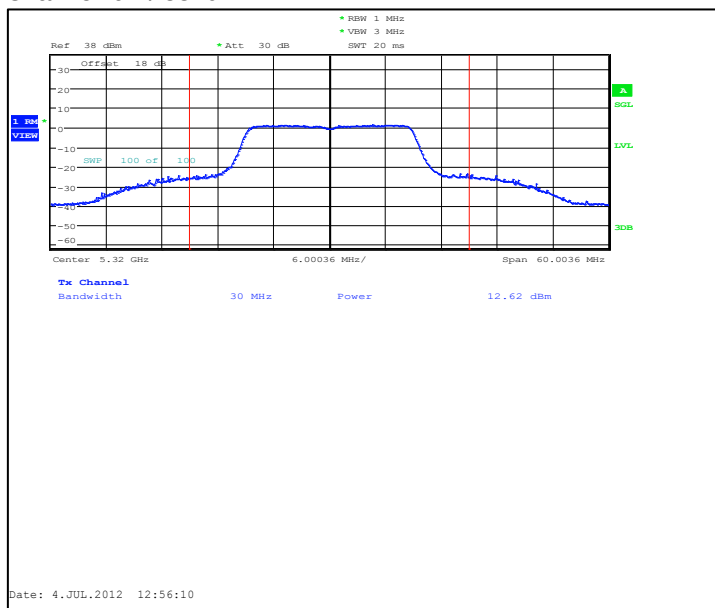
Channel 48 / 5240MHz



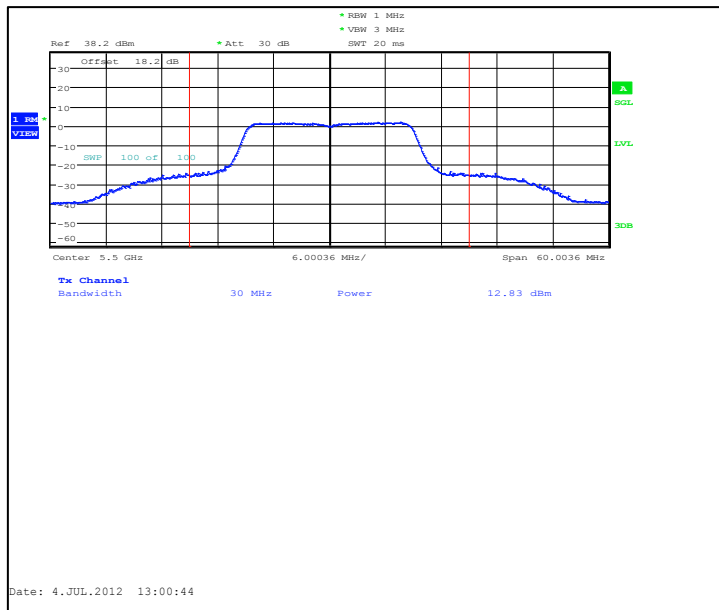
Channel 52 / 5260MHz



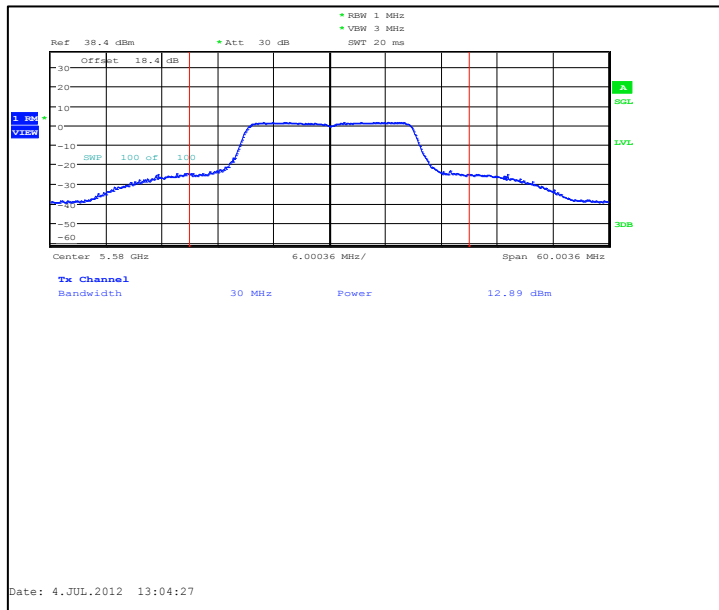
Channel 64 / 5320MHz



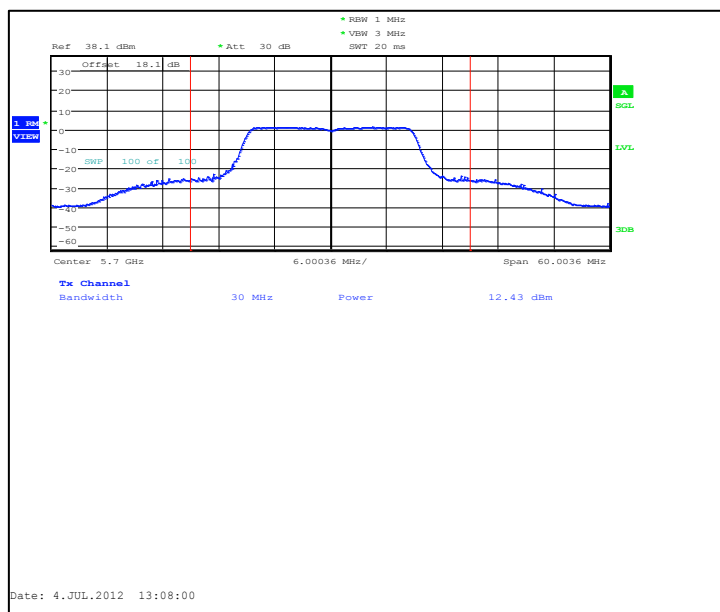
Channel 100 / 5500MHz



Channel 116 / 5580MHz



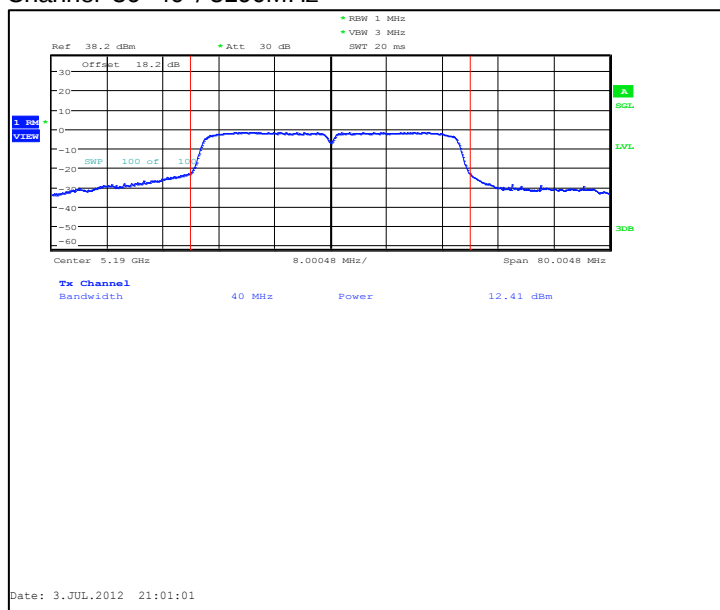
Channel 140 / 5700MHz



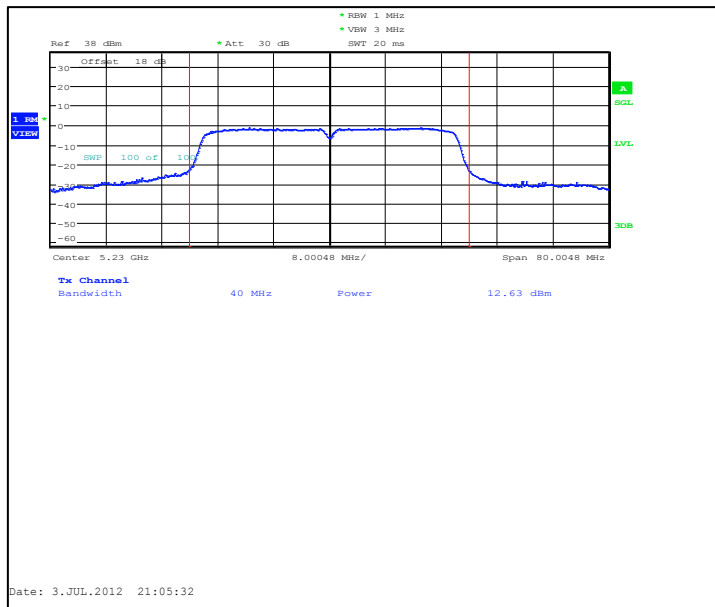
2.3.3 802.11n HT20 MCS4, 40 MHz CBW mode, BPSK modulation, 81.0 / 90.0 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
36+40 / 5190	12.41	17.418	PASSED
44+48 / 5230	12.63	18.323	PASSED
52+56 / 5270	13	19.953	PASSED
60+64 / 5310	12.93	19.634	PASSED
100+104 / 5510	13.57	22.751	PASSED
108+112 / 5550	13.73	23.605	PASSED
132+136 / 5670	13.41	21.928	PASSED

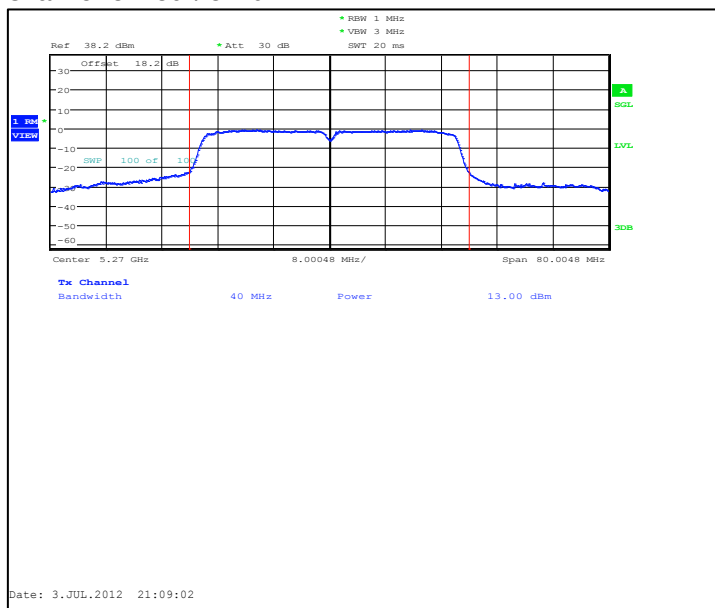
Channel 36+40 / 5190MHz



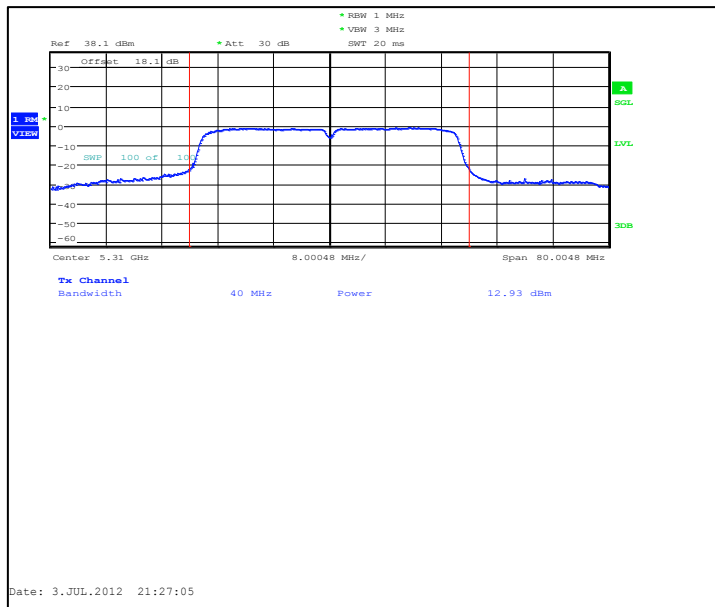
Channel 44+48 / 5230MHz



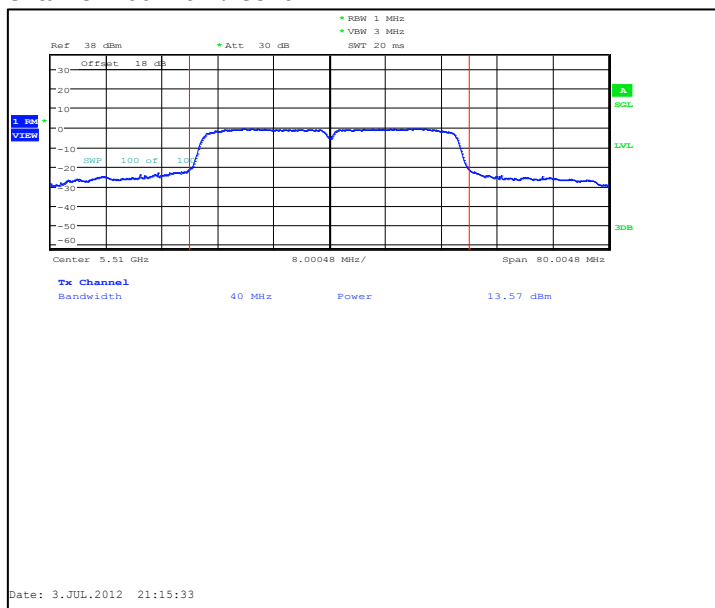
Channel 52+56 / 5270MHz



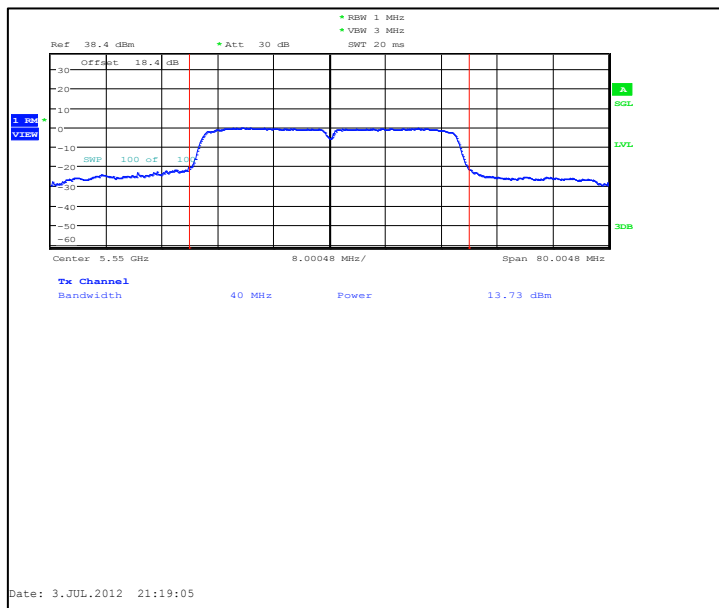
Channel 60+64 / 5310MHz



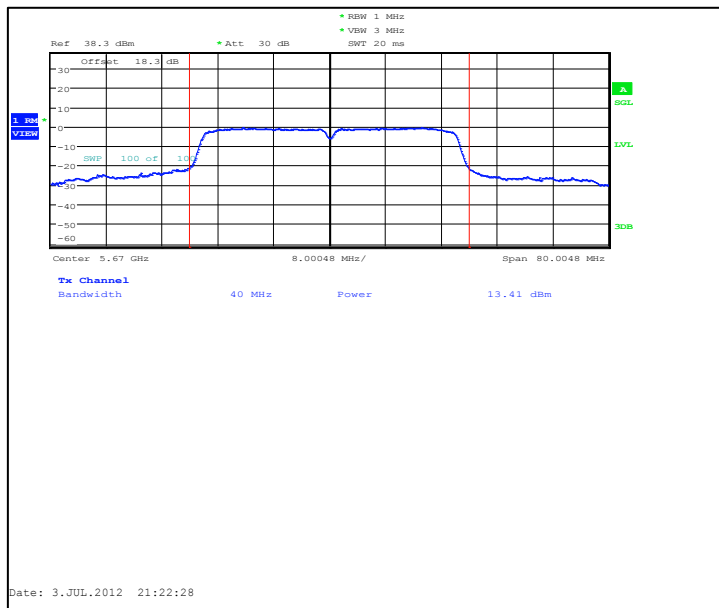
Channel 100+104 / 5510MHz



Channel 108+112 / 5550MHz



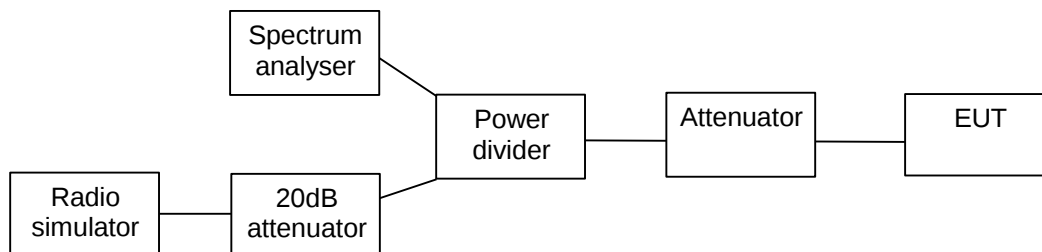
Channel 132+136 / 5670MHz



3. Peak excursion (FCC §15.407 (a), RSS-210 A9.2)

EUT with DUT number	RM-824, DUT 42842
Accessories with DUT numbers	BP-5T, DUT 42845
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 51 / 99.5
Date of measurements	03-Jul-2012
Measured by	Hannu Söderholm

3.1. Test Setup



3.2. Test method and limit

The measurement is made according to Public Notice KDB 789033 D01 and IC standard RSS-210.

Limits for peak excursion measurements

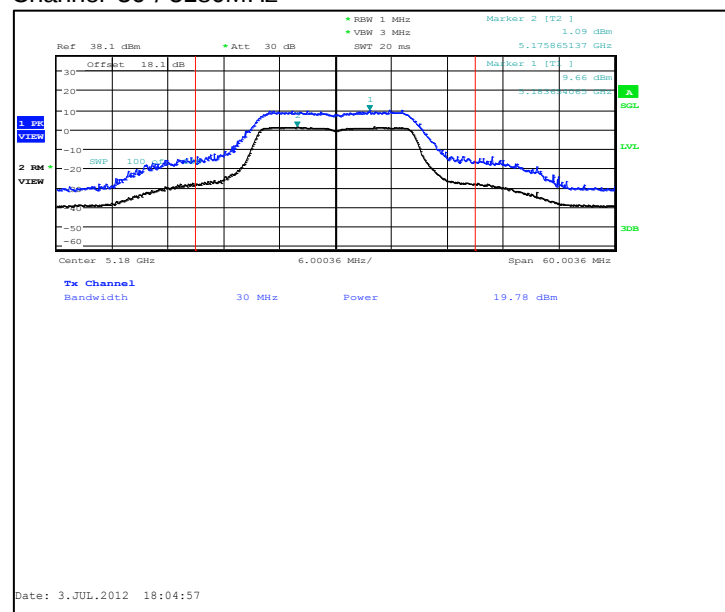
Limit [dB]
<= 13

3.3. 5 GHz RLAN Test results

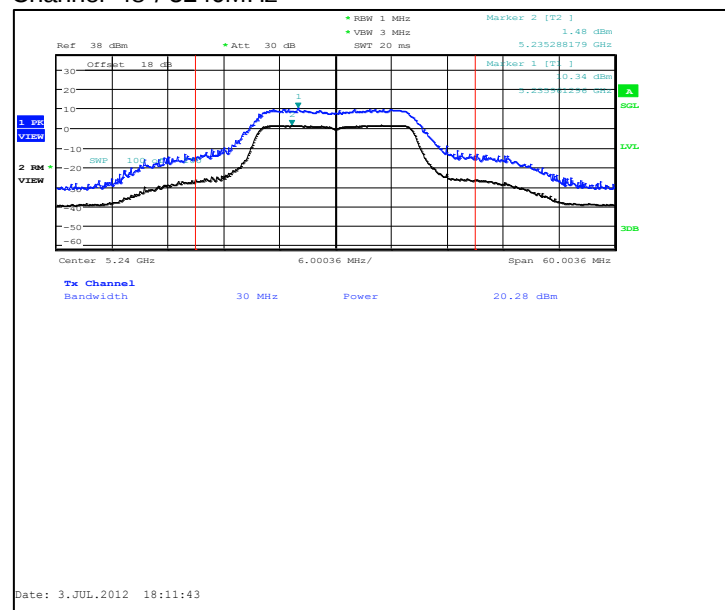
3.3.1 OFDM mode, BPSK modulation, 18 Mbps data rate

Channel / f _c [MHz]	Peak excursion [dB]	Result
36 / 5180	8.56	PASSED
48 / 5240	8.86	PASSED
52 / 5260	8.85	PASSED
64 / 5320	8.55	PASSED
100 / 5500	8.5	PASSED
116 / 5580	8.83	PASSED
140 / 5700	8.92	PASSED

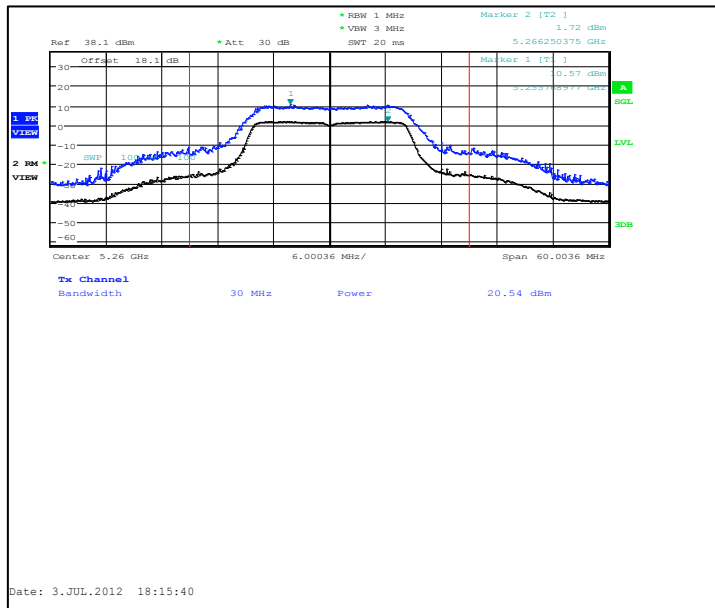
Channel 36 / 5180MHz



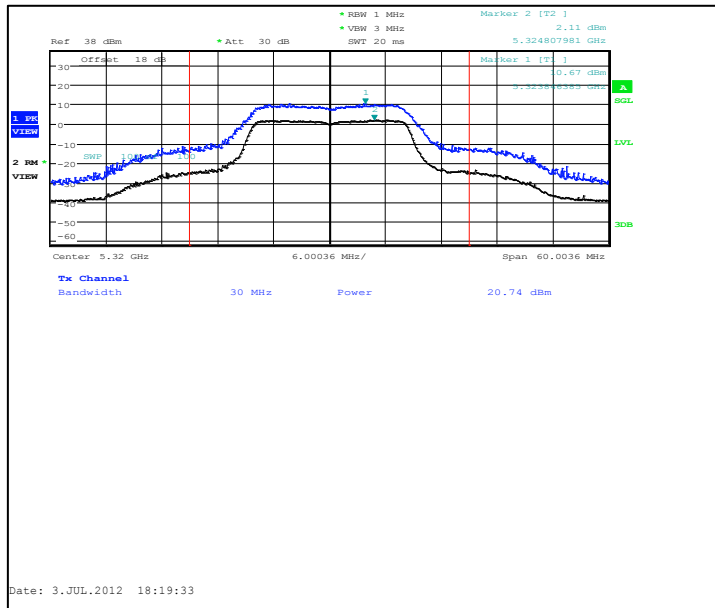
Channel 48 / 5240MHz



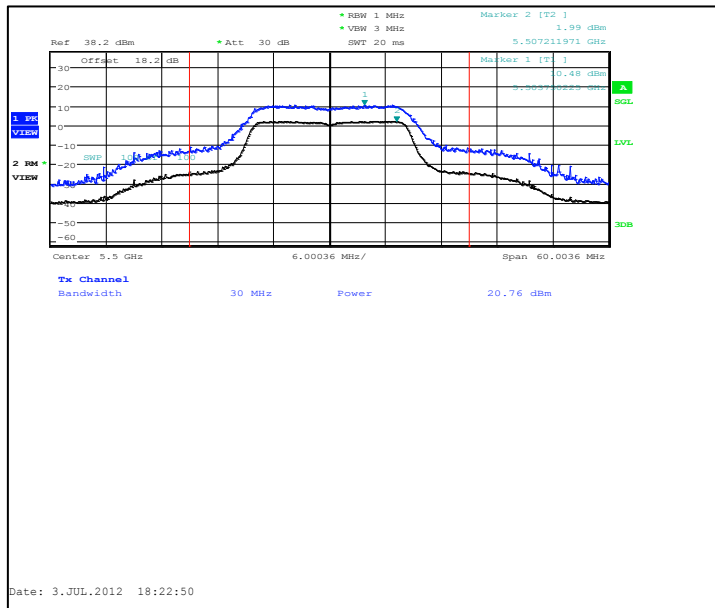
Channel 52 / 5260MHz



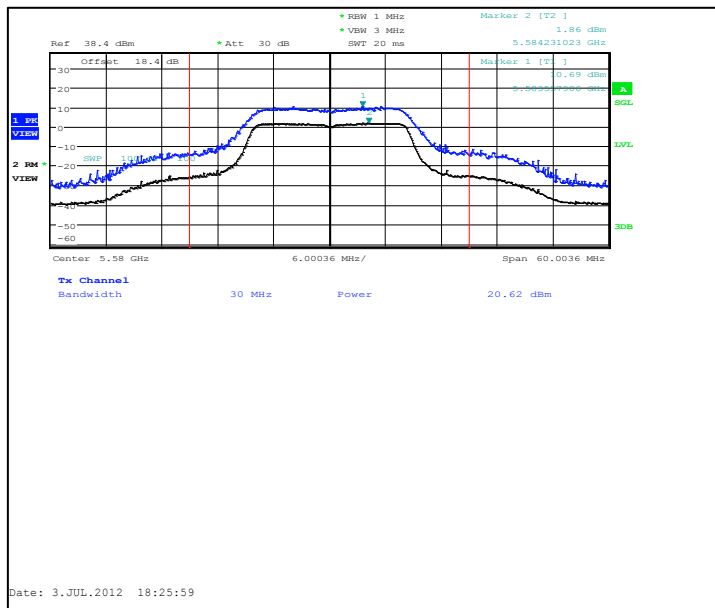
Channel 64 / 5320MHz



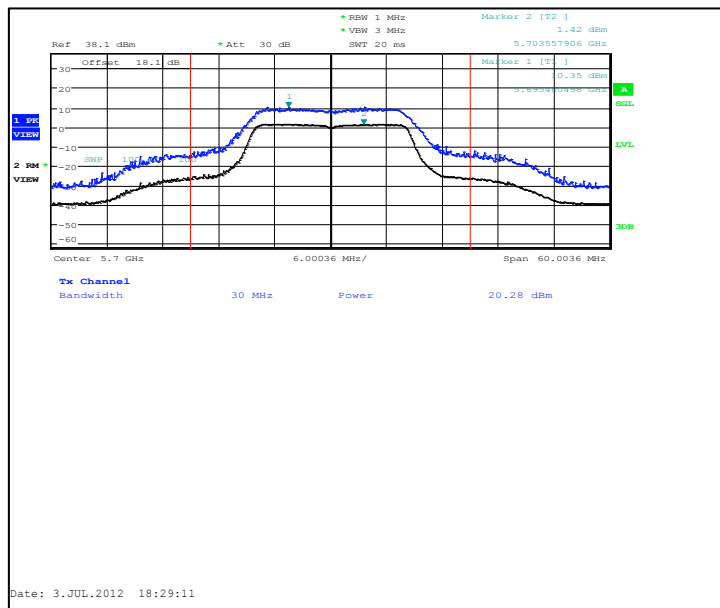
Channel 100 / 5500MHz



Channel 116 / 5580MHz



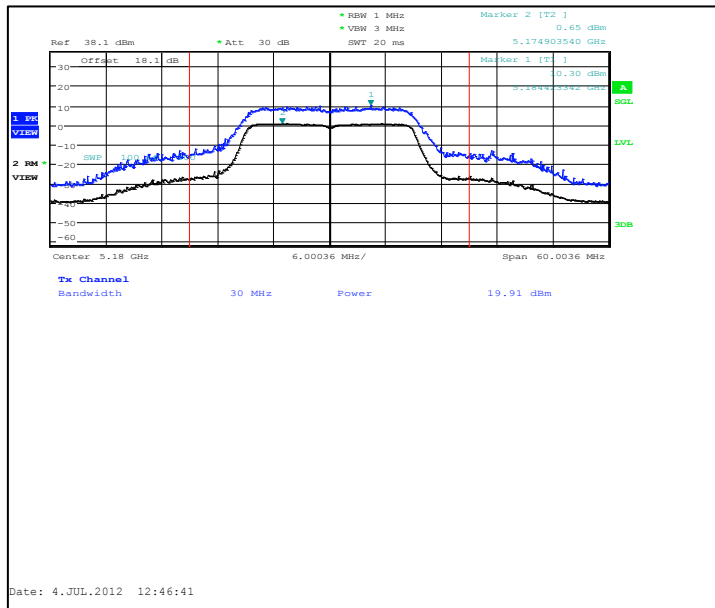
Channel 140 / 5700MHz



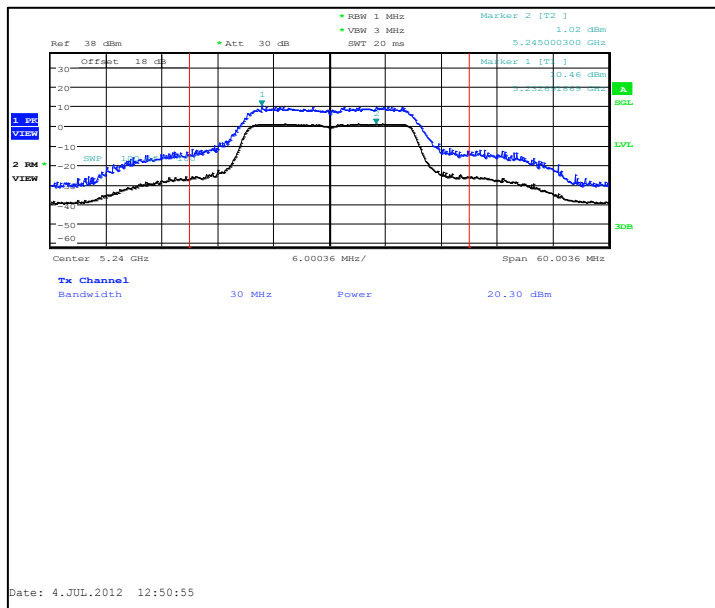
3.3.2 802.11n HT20 MCS1, 20 MHz CBW mode, BPSK modulation, 13.0 / 14.4 Mbps data rate

Channel / f _c [MHz]	Peak excursion [dB]	Result
36 / 5180	9.65	PASSED
48 / 5240	9.44	PASSED
52 / 5260	9.52	PASSED
64 / 5320	9.34	PASSED
100 / 5500	8.75	PASSED
116 / 5580	8.63	PASSED
140 / 5700	9.25	PASSED

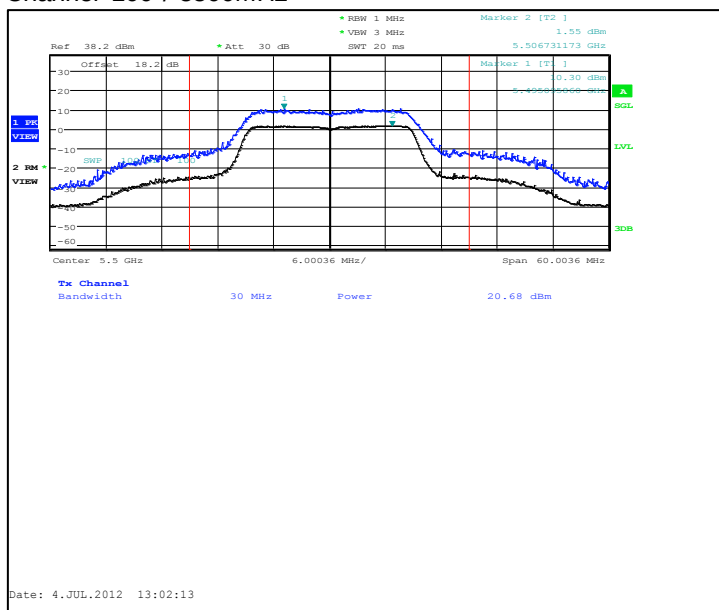
Channel 36 / 5180MHz



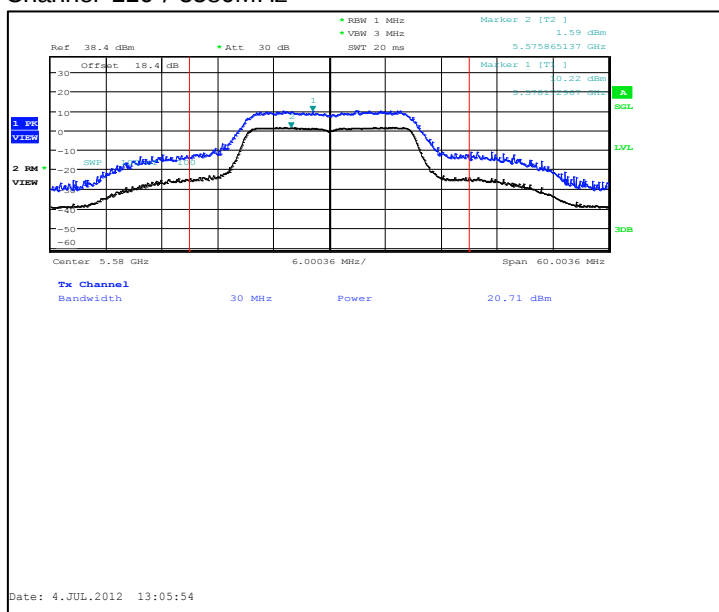
Channel 48 / 5240MHz



Channel 100 / 5500MHz



Channel 116 / 5580MHz



Ref 38.1 dBm Att 30 dB SWT 20 ms Marker 2 [OFF] 1.40 dBm

Offset 18.1 dB Marker 1 [ON] 30.65 dBm

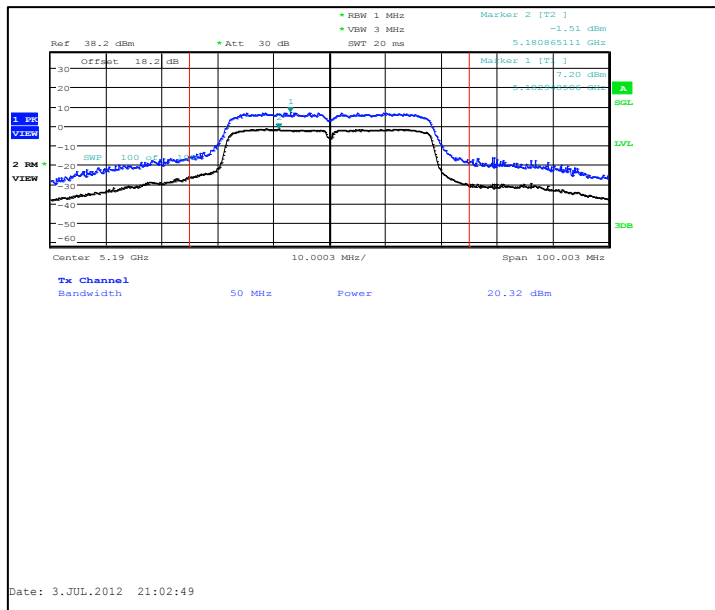
Center 5.7 GHz 6.0036 MHz/ Span 60.0036 MHz

Tx Channel
Bandwidth 30 MHz Power 20.22 dBm

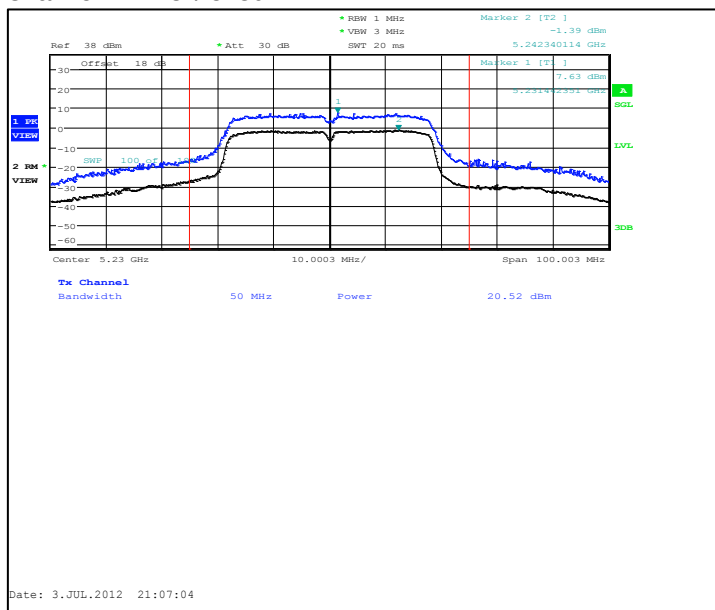
Date: 4.JUL.2012 13:09:28

Channel / f_c [MHz]	Peak excursion [dB]	Result
36+40 / 5190	8.71	PASSED
44+48 / 5230	9.02	PASSED
52+56 / 5270	8.97	PASSED
60+64 / 5310	9.07	PASSED
100+104 / 5510	9.28	PASSED
108+112 / 5550	8.73	PASSED
132+136 / 5670	8.98	PASSED

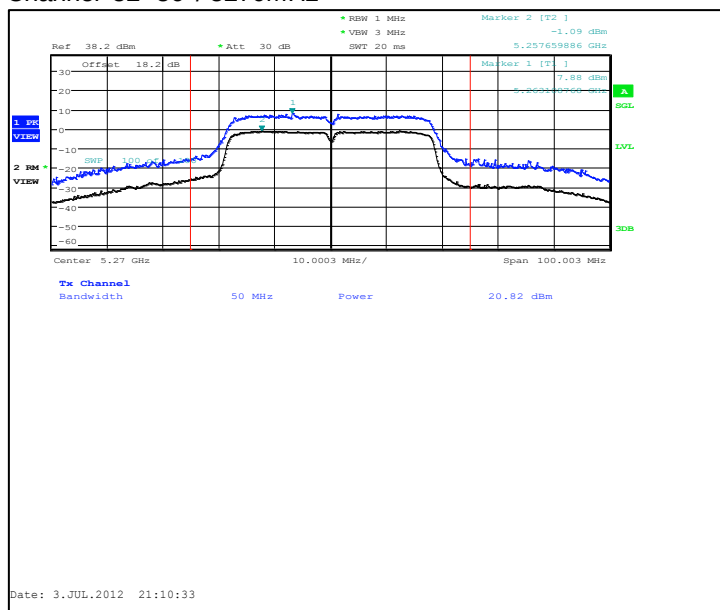
Channel 36+40 / 5190MHz



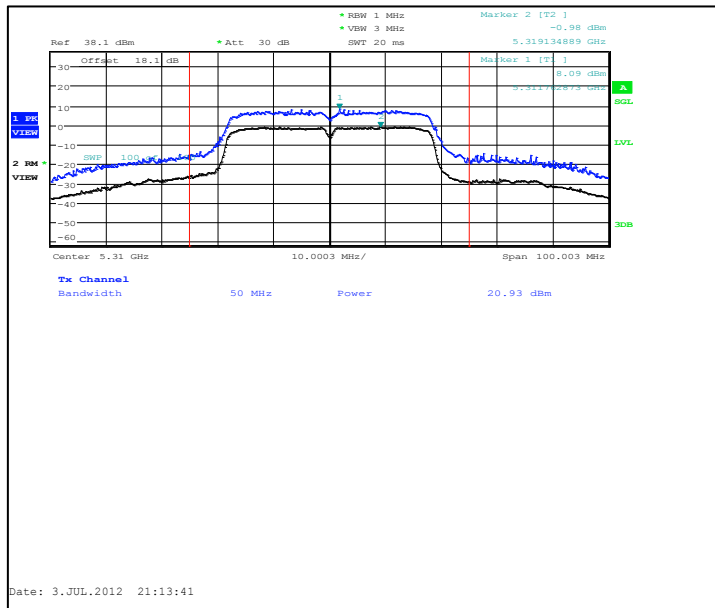
Channel 44+48 / 5230MHz



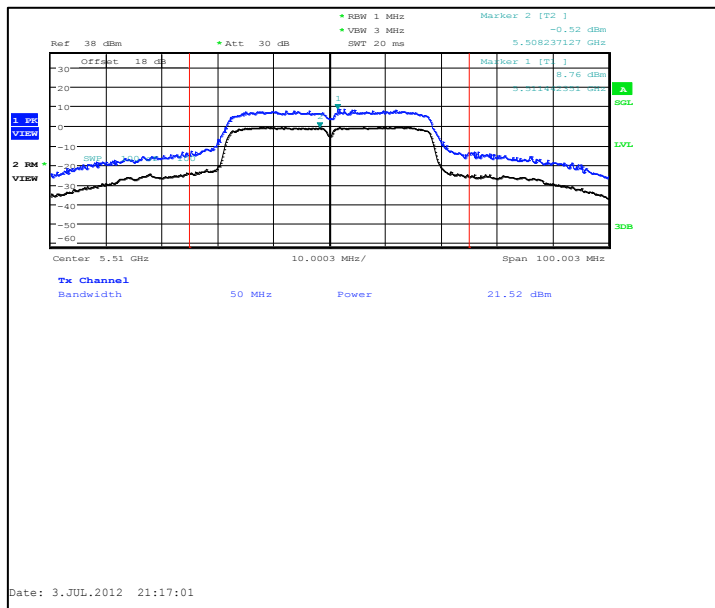
Channel 52+56 / 5270MHz



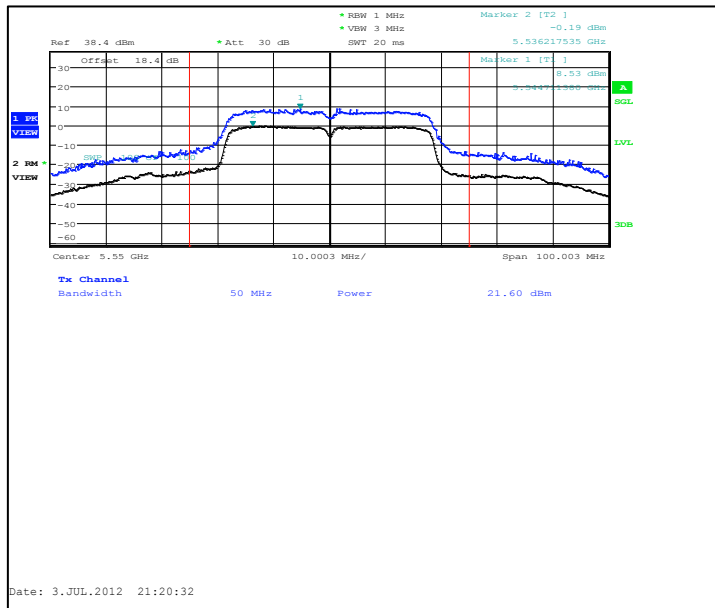
Channel 60+64 / 5310MHz



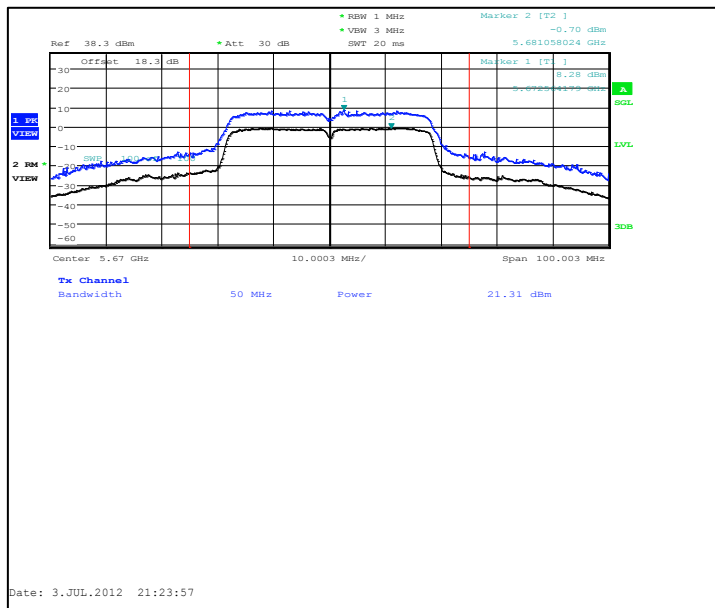
Channel 100+104 / 5510MHz



Channel 108+112 / 5550MHz



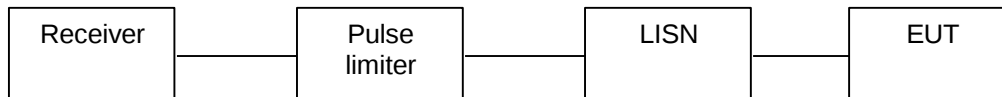
Channel 132+136 / 5670MHz



4. AC powerline conducted emissions (FCC §15.407 (b) (6), RSS-210 A9.2)

EUT with DUT number	RM-824, DUT 42843
Accessories with DUT numbers	BP-5T, DUT 42844 ; AC-50E, DUT 42776 ; CA-190CD, DUT 42778 ; WH-208, DUT 42831
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 49 / 98.5
Date of measurements	10-Jul-2012
Measured by	Jari Jantunen

4.1. Test Setup



4.2. Test method and limit

The measurement is made as follows:

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$$U [dB\mu V] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

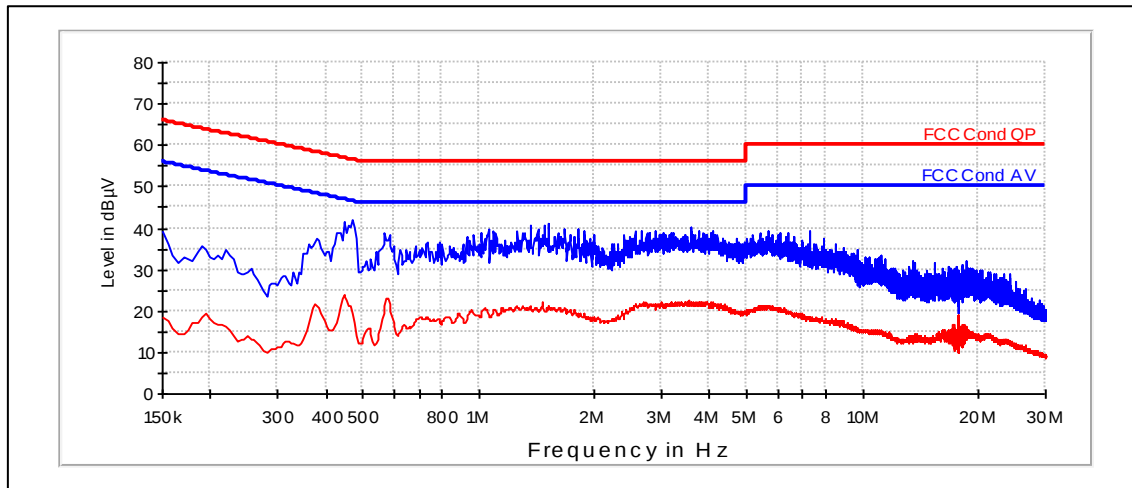
CISPR 22 Class B limits

Frequency range [MHz]	Quasi peak limit [dBμV]	Average limit [dBμV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

4.3. 5 GHz RLAN Test results

4.3.1 OFDM mode, BPSK modulation, 18 Mbps data rate

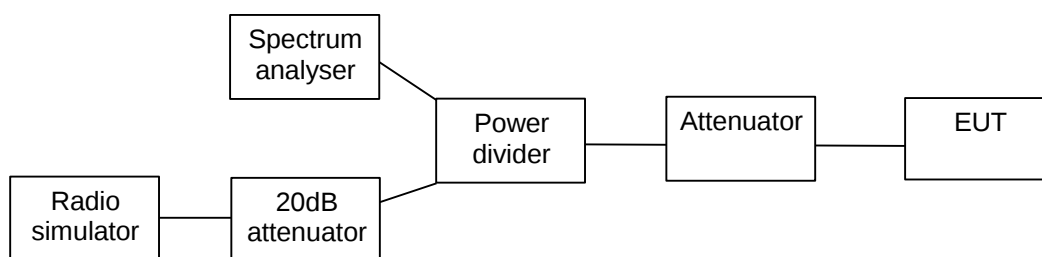
Channel 116 / 5580 MHz



5. 26 dB bandwidth

EUT with DUT number	RM-824, DUT 42842
Accessories with DUT numbers	BP-5T, DUT 42845
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 51 / 99.5
Date of measurements	03-Jul-2012
Measured by	Hannu Söderholm

5.1. Test Setup



5.2. Test method and limit

The measurement is made according to Public Notice KDB 789033 D01 and IC standard RSS-210.

Limits for 26 dB bandwidth measurements

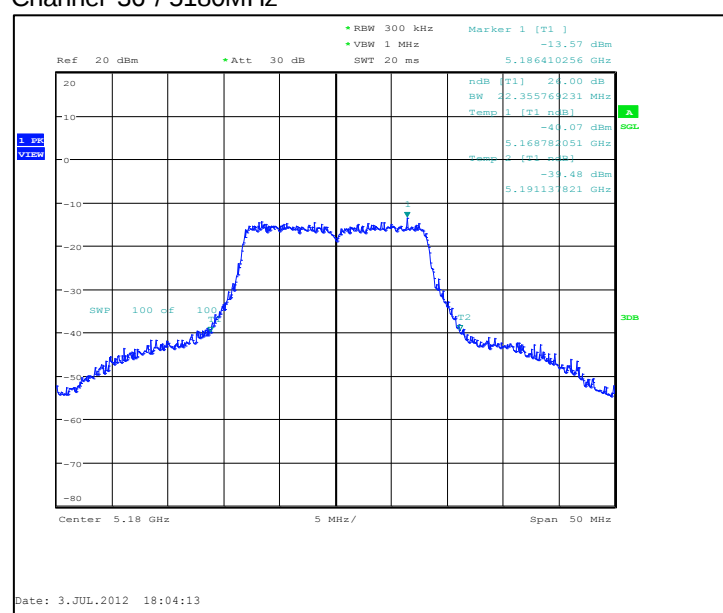
Limit [kHz]
No limit

5.3. 5 GHz RLAN Test results

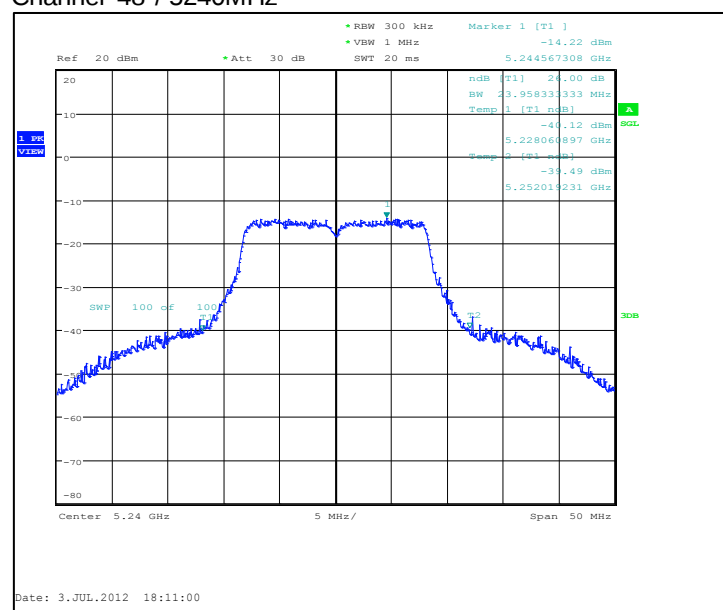
5.3.1 OFDM mode, BPSK modulation, 18 Mbps data rate

Channel / f _c [MHz]	26 dB bandwidth [kHz]	Result
36 / 5180	22355.8	PASSED
48 / 5240	23958.3	PASSED
52 / 5260	23557.7	PASSED
64 / 5320	24599.4	PASSED
100 / 5500	24439.1	PASSED
116 / 5580	23557.7	PASSED
140 / 5700	23157.1	PASSED

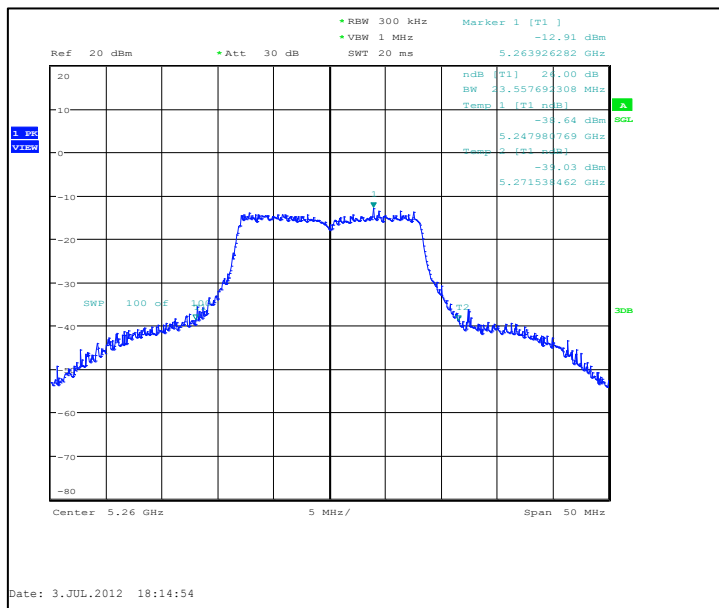
Channel 36 / 5180MHz



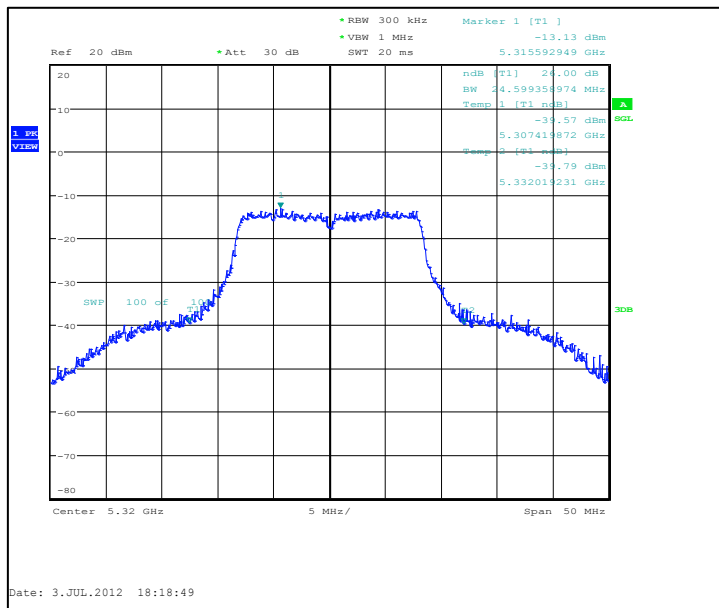
Channel 48 / 5240MHz



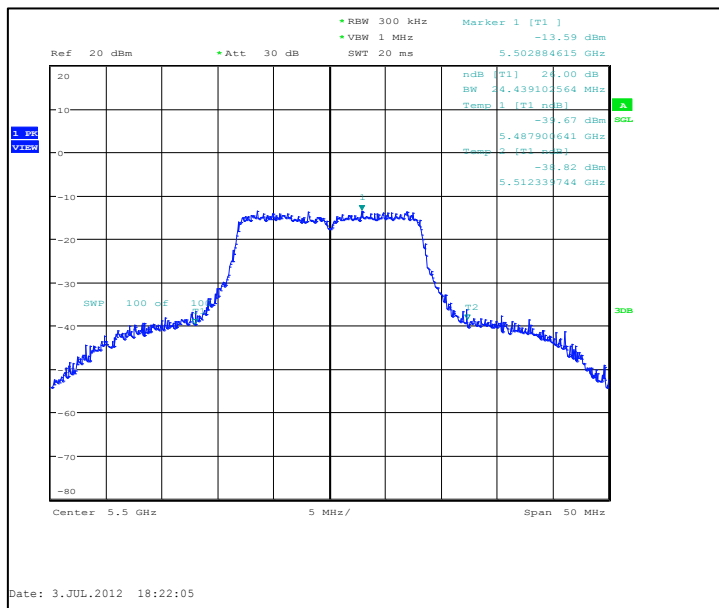
Channel 52 / 5260MHz



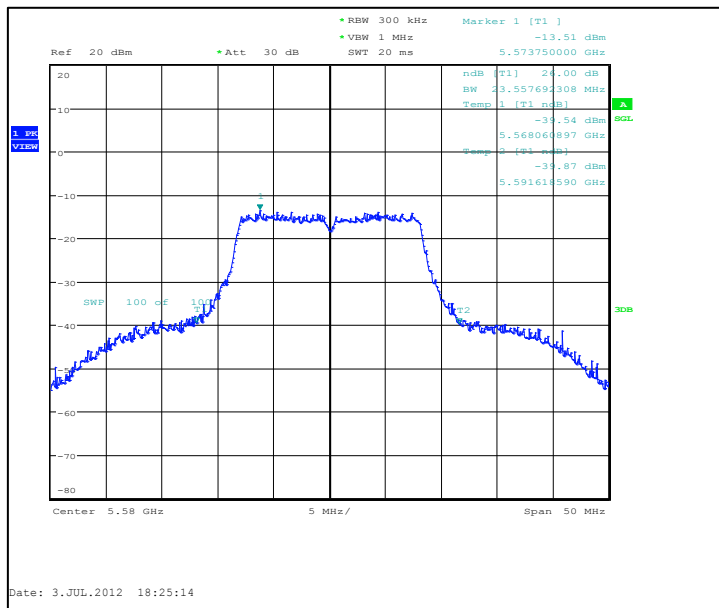
Channel 64 / 5320MHz



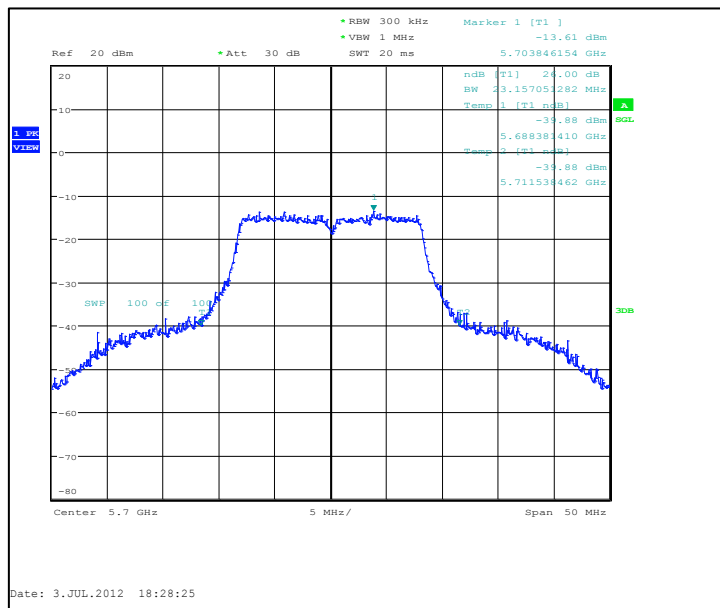
Channel 100 / 5500MHz



Channel 116 / 5580MHz



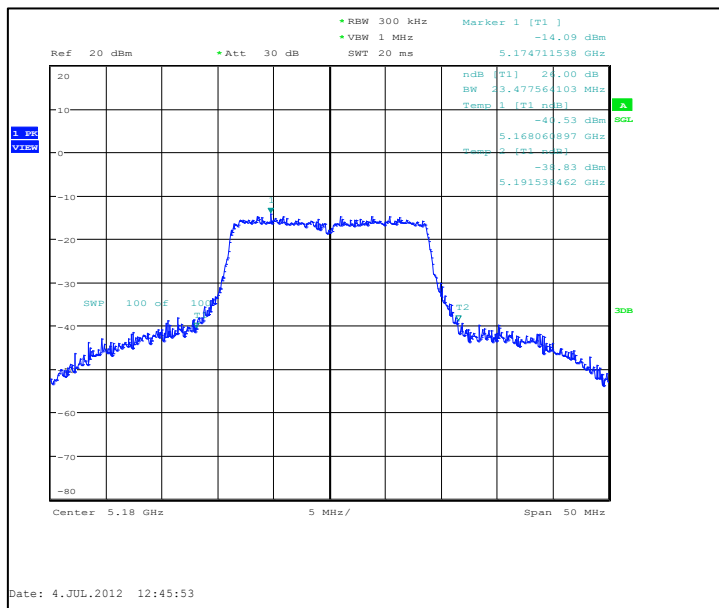
Channel 140 / 5700MHz



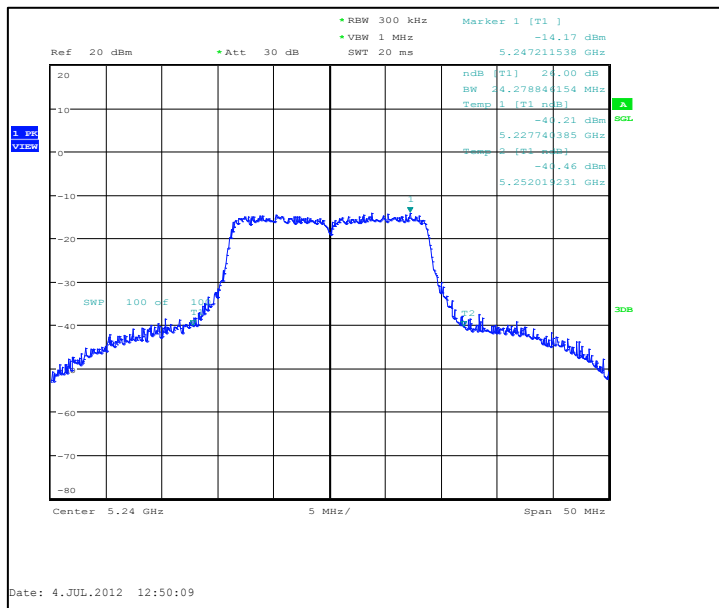
5.3.2 802.11n HT20 MCS1, 20 MHz CBW mode, BPSK modulation, 13.0 / 14.4 Mbps data rate

Channel / f _c [MHz]	26 dB bandwidth [kHz]	Result
36 / 5180	23477.6	PASSED
48 / 5240	24278.8	PASSED
52 / 5260	23717.9	PASSED
64 / 5320	24278.8	PASSED
100 / 5500	24839.7	PASSED
116 / 5580	24839.7	PASSED
140 / 5700	24038.5	PASSED

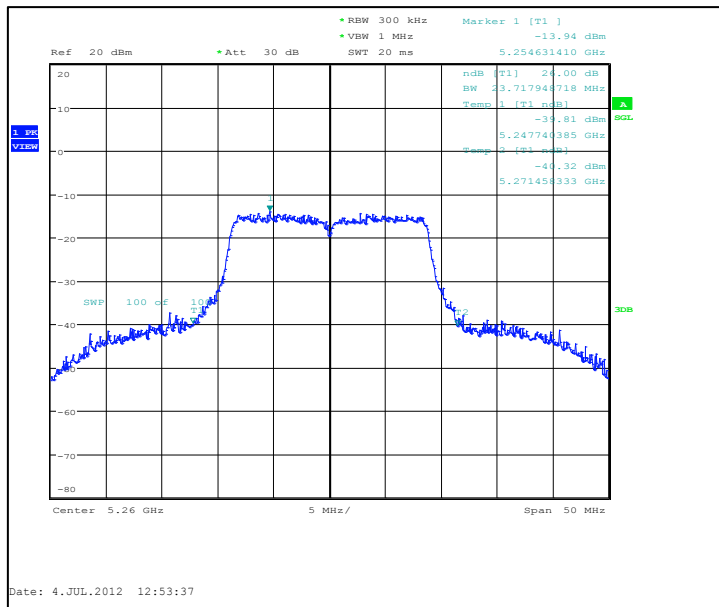
Channel 36 / 5180MHz



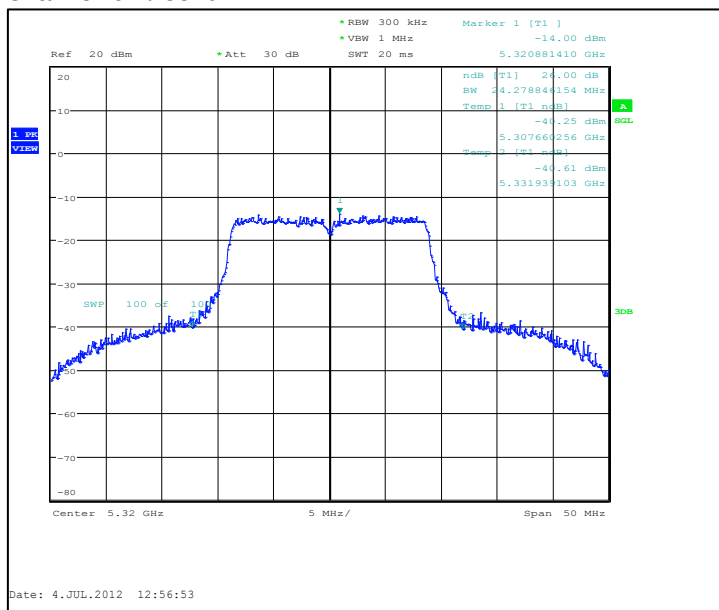
Channel 48 / 5240MHz



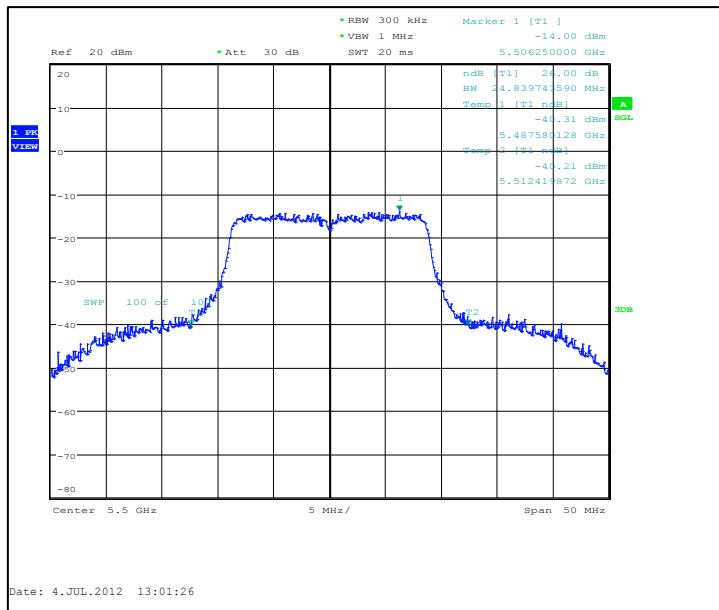
Channel 52 / 5260MHz



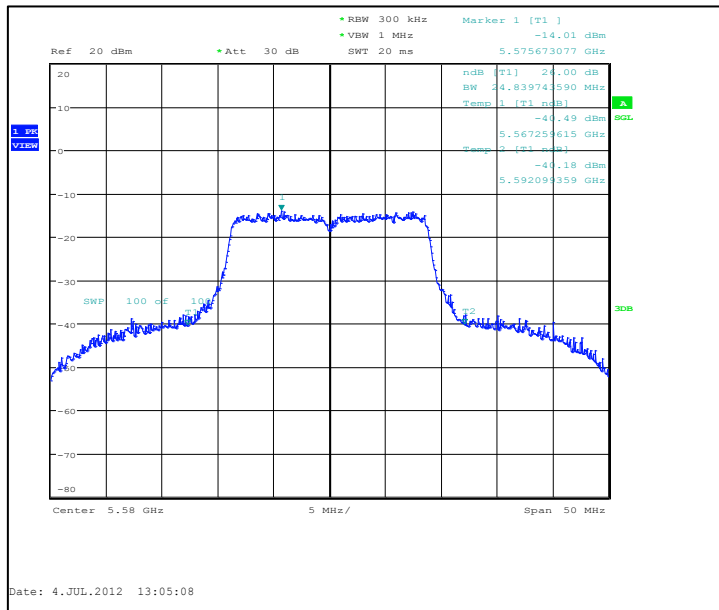
Channel 64 / 5320MHz



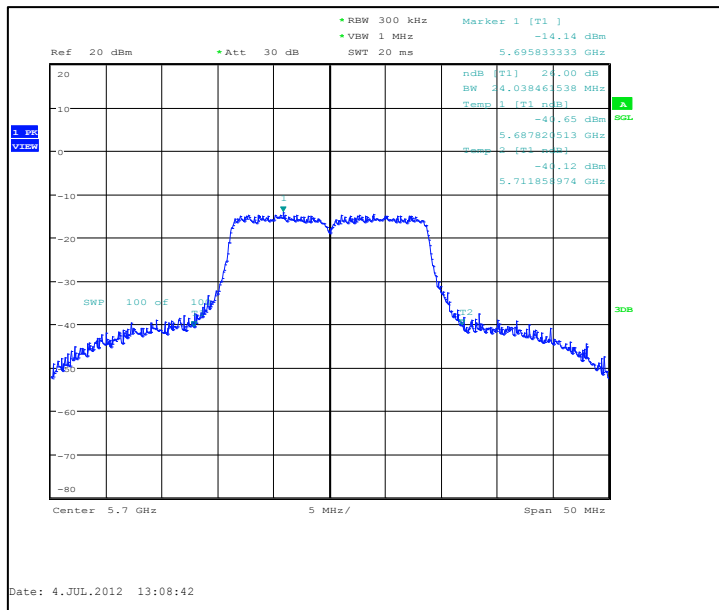
Channel 100 / 5500MHz



Channel 116 / 5580MHz



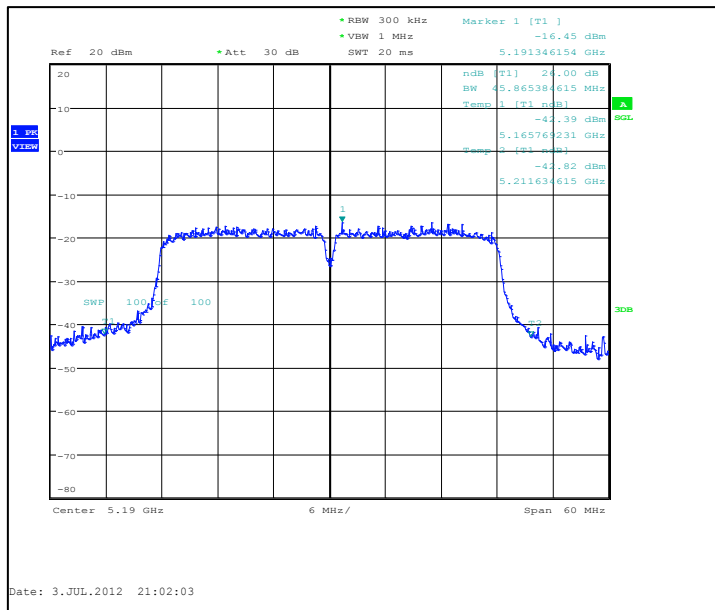
Channel 140 / 5700MHz



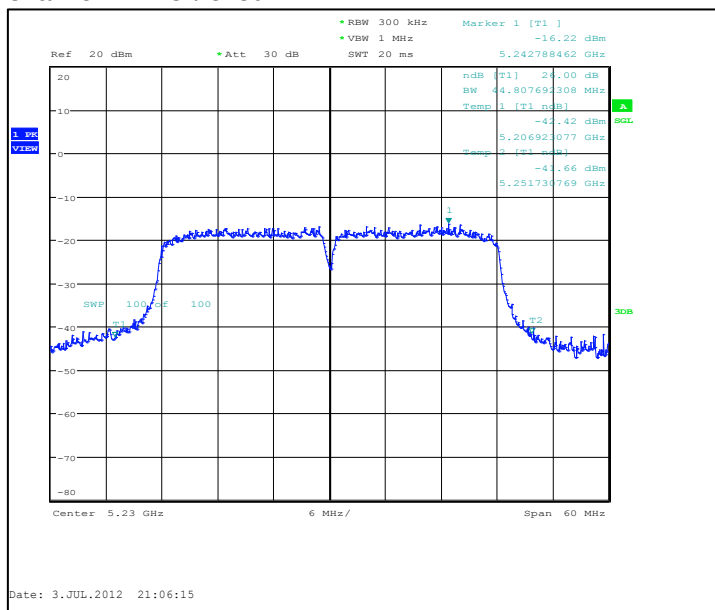
5.3.3 802.11n HT20 MCS4, 40 MHz CBW mode, BPSK modulation, 81.0 / 90.0 Mbps data rate

Channel / f _c [MHz]	26 dB bandwidth [kHz]	Result
36+40 / 5190	45865.4	PASSED
44+48 / 5230	44807.7	PASSED
52+56 / 5270	46538.5	PASSED
60+64 / 5310	44615.4	PASSED
100+104 / 5510	53365.4	PASSED
108+112 / 5550	50192.3	PASSED
132+136 / 5670	47788.5	PASSED

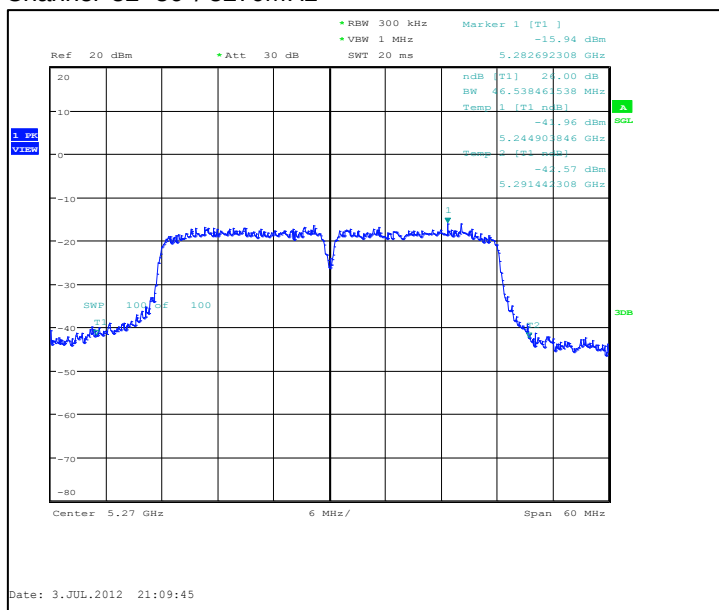
Channel 36+40 / 5190MHz



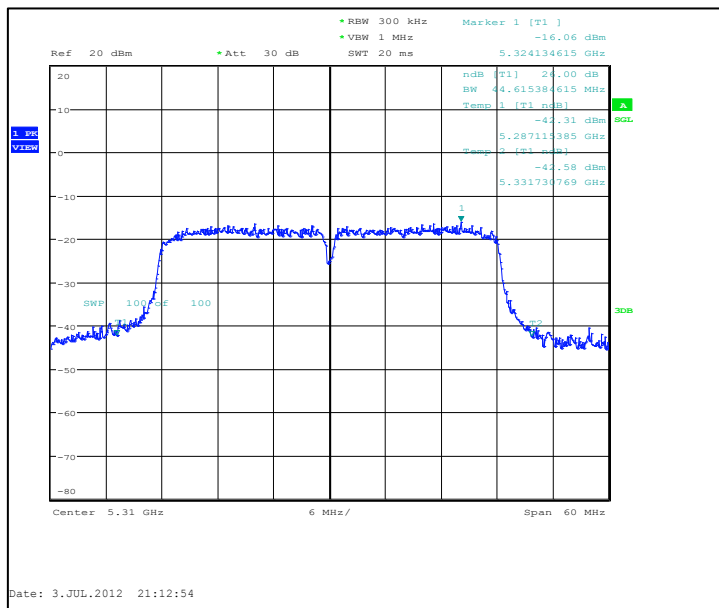
Channel 44+48 / 5230MHz



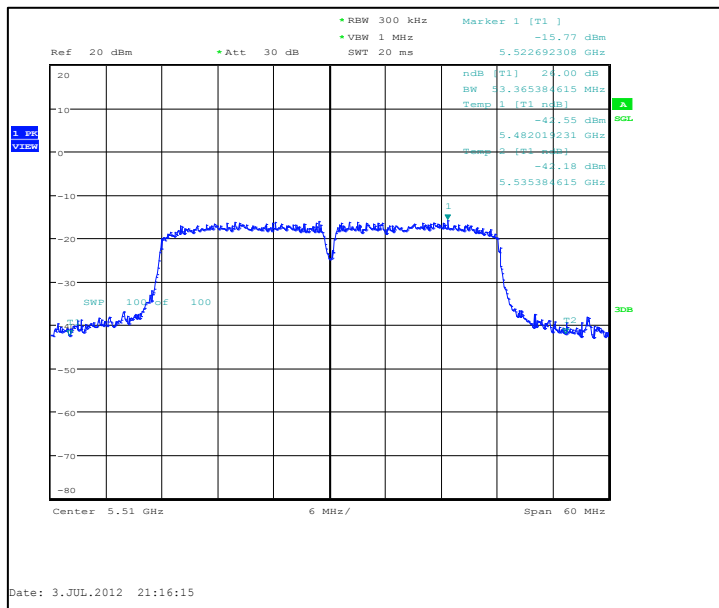
Channel 52+56 / 5270MHz



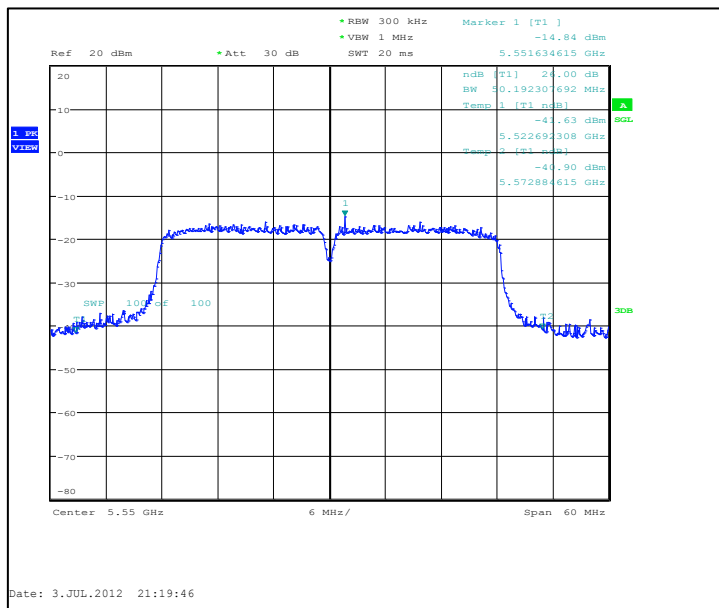
Channel 60+64 / 5310MHz



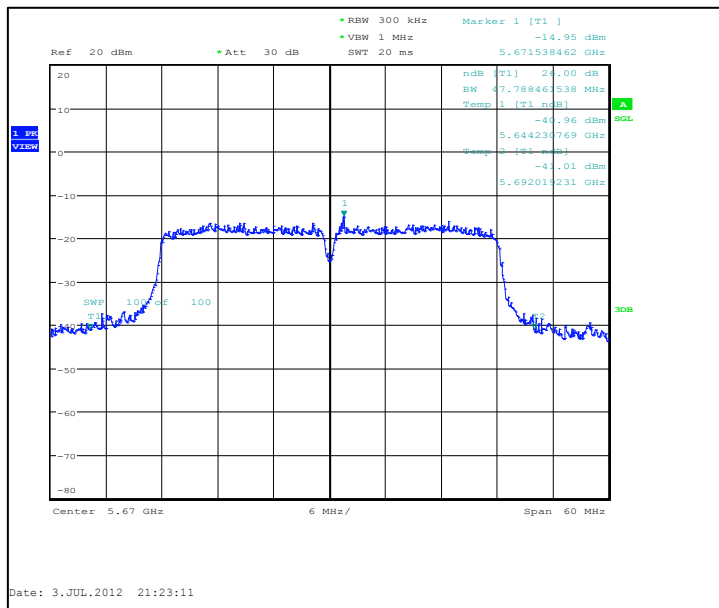
Channel 100+104 / 5510MHz



Channel 108+112 / 5550MHz



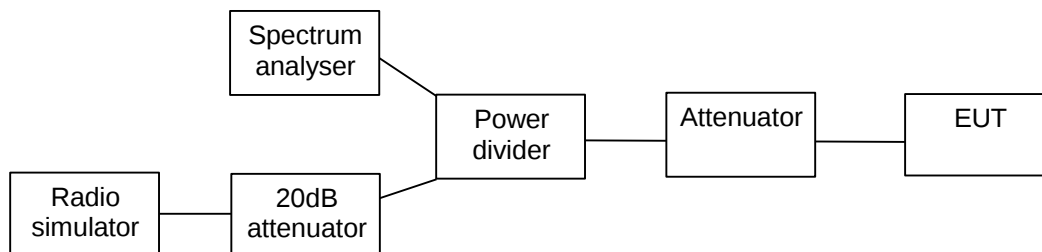
Channel 132+136 / 5670MHz



6. Peak power spectral density (FCC §15.407(a), RSS-210 A9.2)

EUT with DUT number	RM-824, DUT 42842
Accessories with DUT numbers	BP-5T, DUT 42845
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 51 / 99.5
Date of measurements	03-Jul-2012
Measured by	Hannu Söderholm

6.1. Test Setup



6.2. Test method and limit

The measurement is made according to Public Notice KDB 789033 D01 and IC standard RSS-210.

Limits for power spectral density measurements

Frequency range [MHz]	Limit [dBm]
5150-5250	4
5250-5350	11
5470-5725	11
5725-5825	17

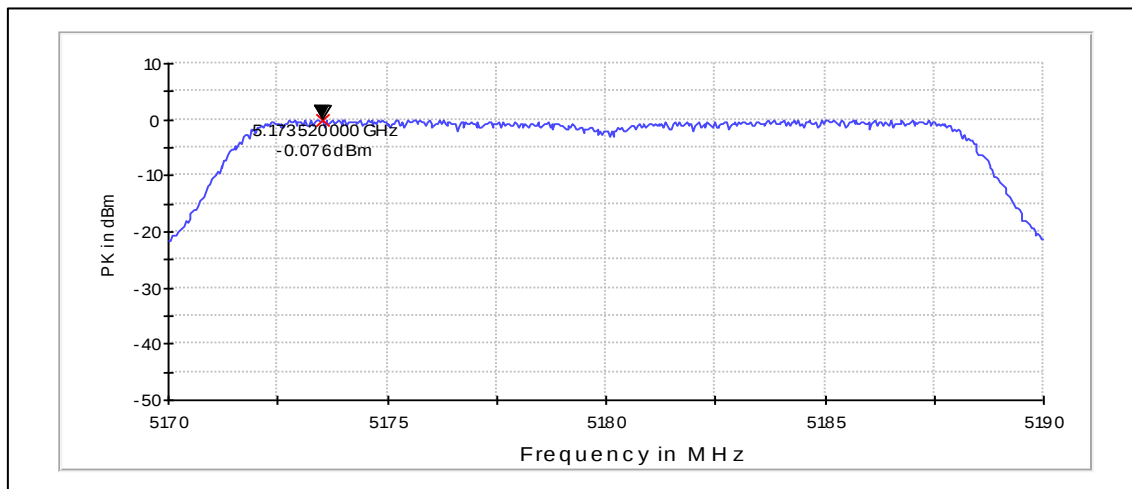
6.3. 5 GHz RLAN Test results

6.3.1 OFDM mode, BPSK modulation, 18 Mbps data rate

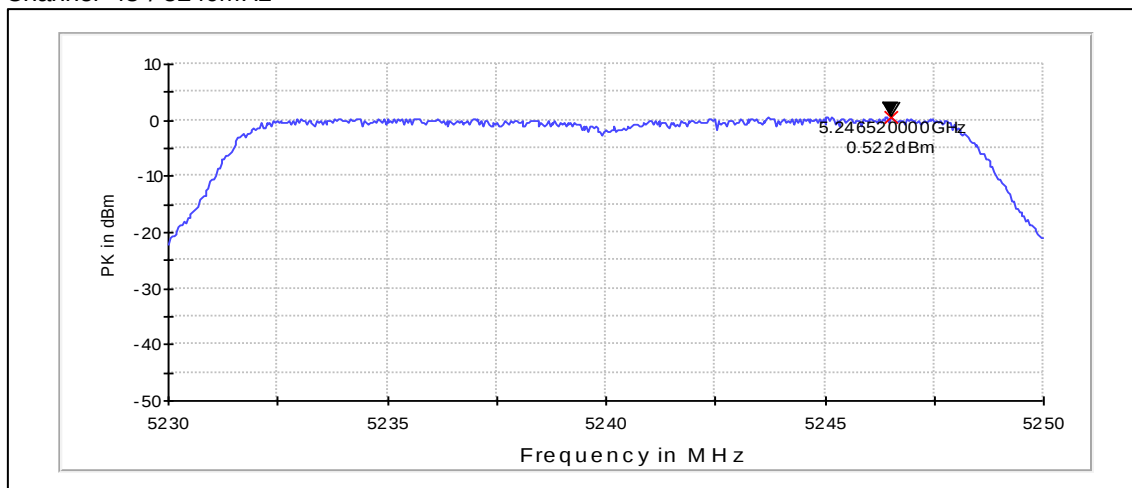
RMS detector (RBW: 1 MHz, VBW: 3 MHz, Video averaging)

Channel / f_c [MHz]	P [dBm]	Result
36 / 5180	-0.08	PASSED
48 / 5240	0.52	PASSED
52 / 5260	0.64	PASSED
64 / 5320	0.96	PASSED
100 / 5500	0.84	PASSED
116 / 5580	0.77	PASSED
140 / 5700	0.41	PASSED

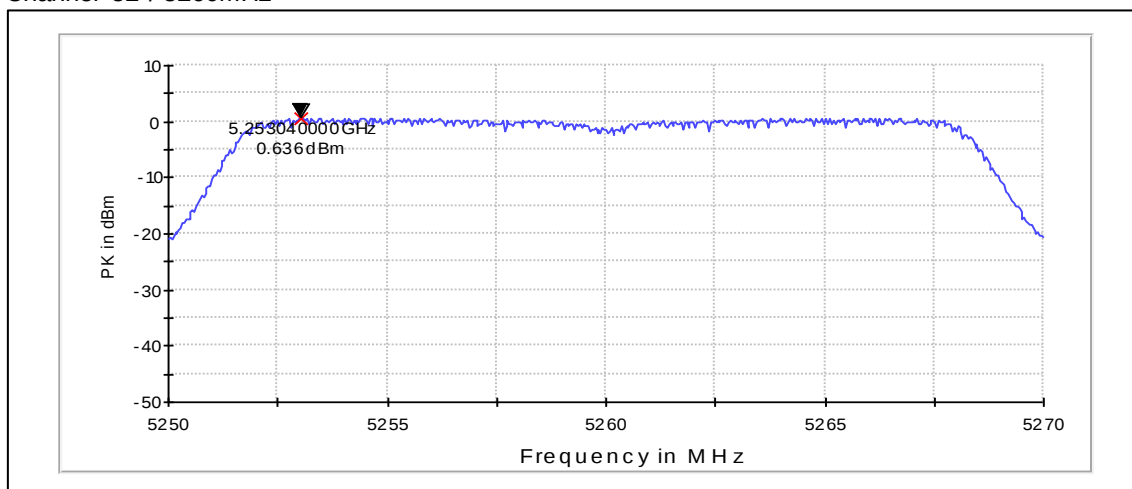
Channel 36 / 5180MHz



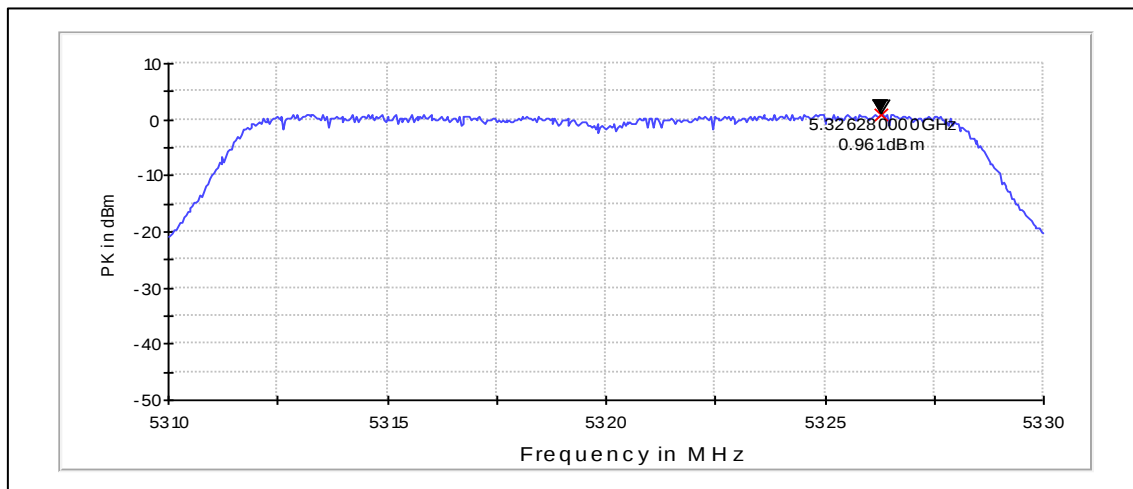
Channel 48 / 5240MHz



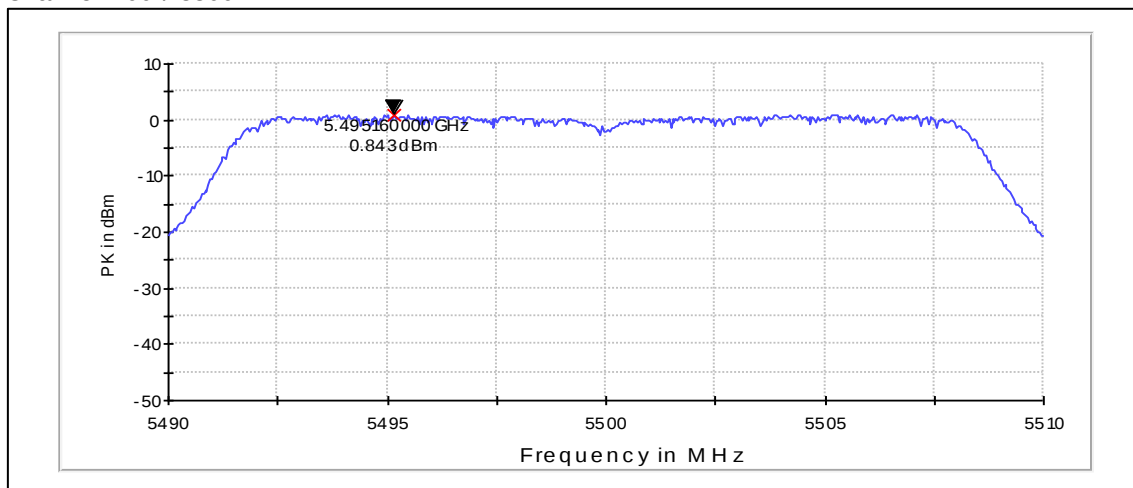
Channel 52 / 5260MHz



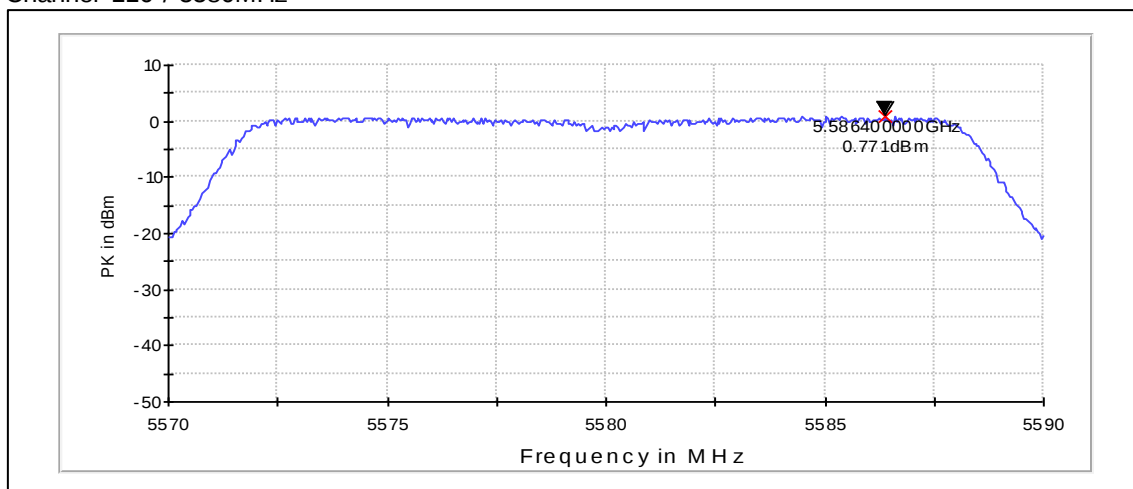
Channel 64 / 5320MHz



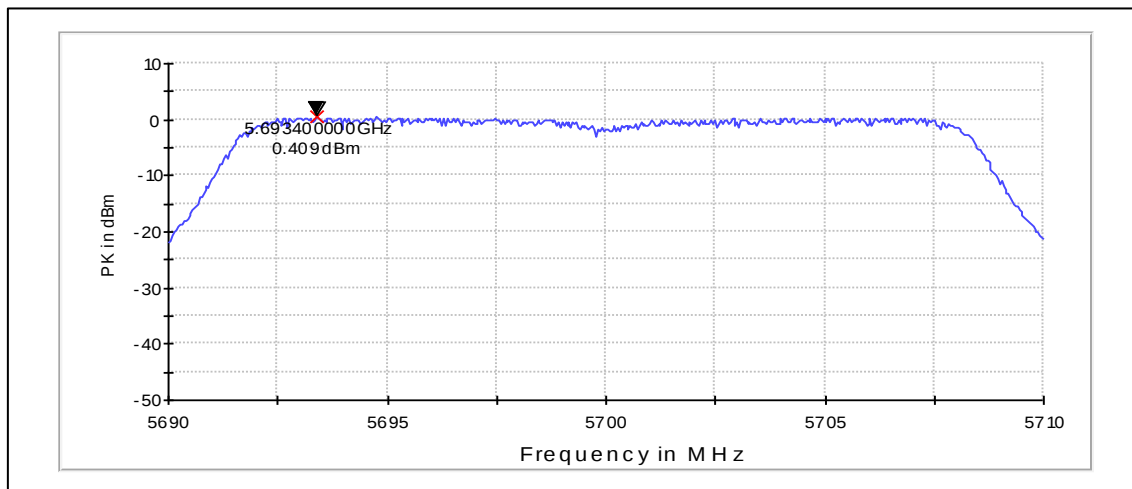
Channel 100 / 5500MHz



Channel 116 / 5580MHz



Channel 140 / 5700MHz

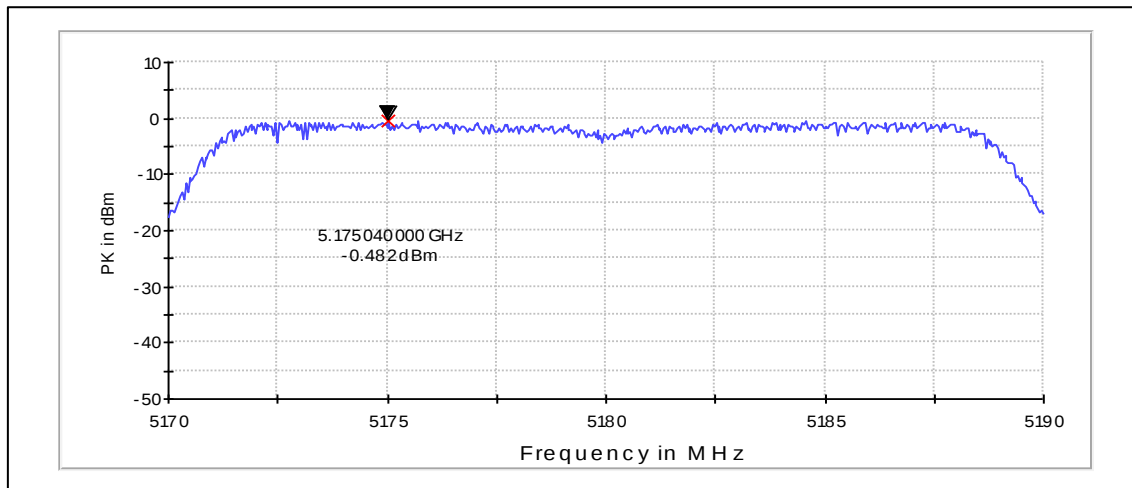


6.3.2 802.11n HT20 MCS1, 20 MHz CBW mode, BPSK modulation, 13.0 / 14.4 Mbps data rate

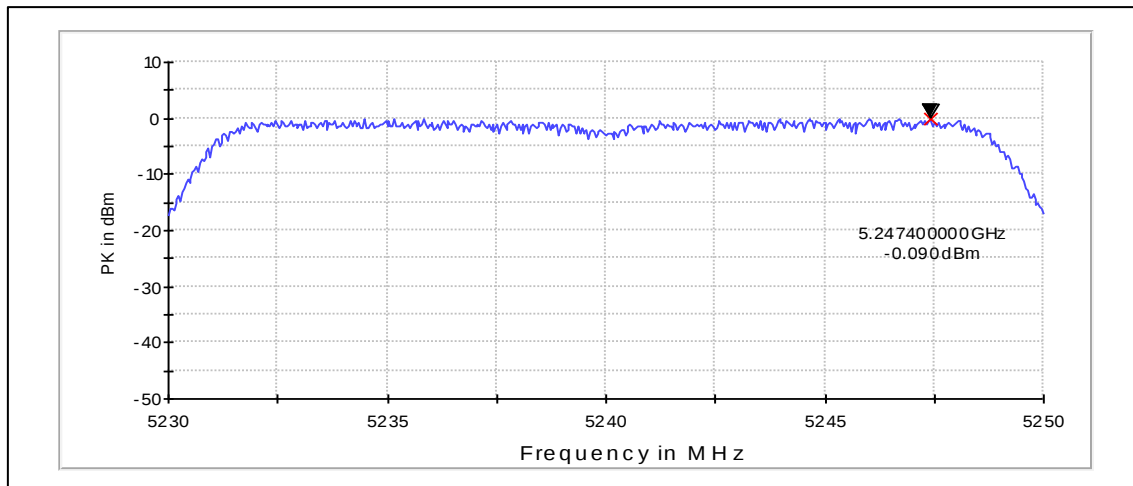
RMS detector (RBW: 1 MHz, VBW: 3 MHz, Video averaging)

Channel / f_c [MHz]	P [dBm]	Result
36 / 5180	-0.48	PASSED
48 / 5240	-0.09	PASSED
52 / 5260	-0.2	PASSED
64 / 5320	0.1	PASSED
100 / 5500	0.27	PASSED
116 / 5580	0.31	PASSED
140 / 5700	-0.06	PASSED

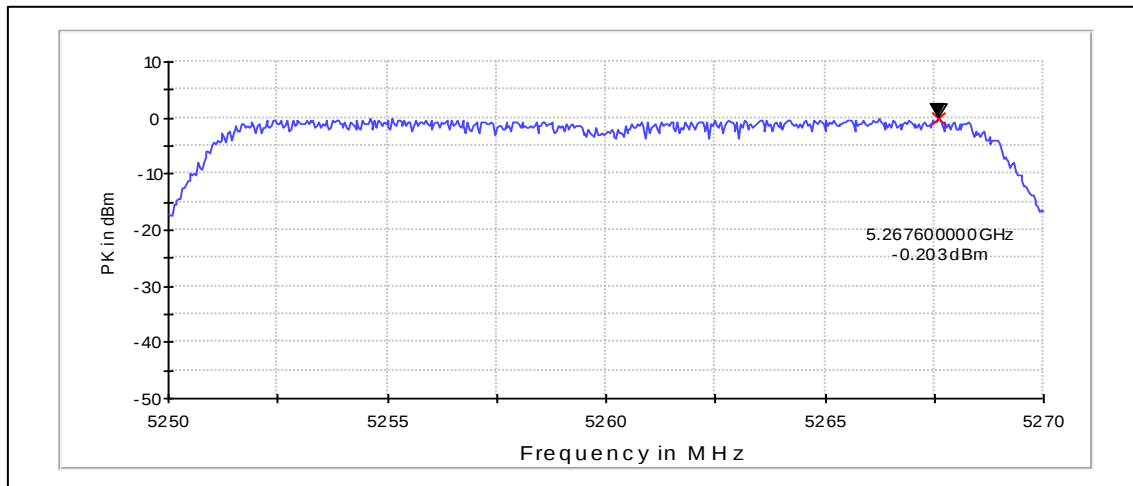
Channel 36 / 5180MHz



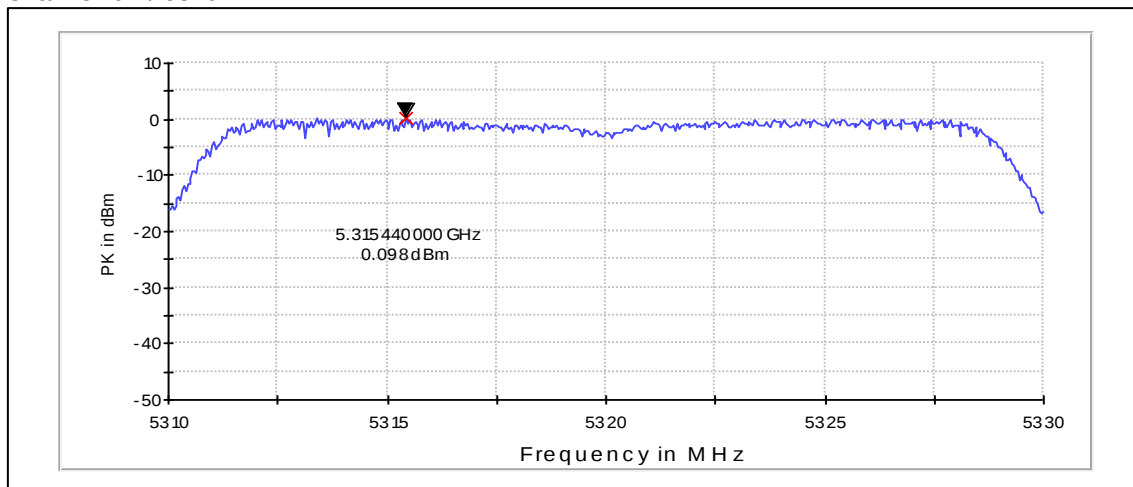
Channel 48 / 5240MHz



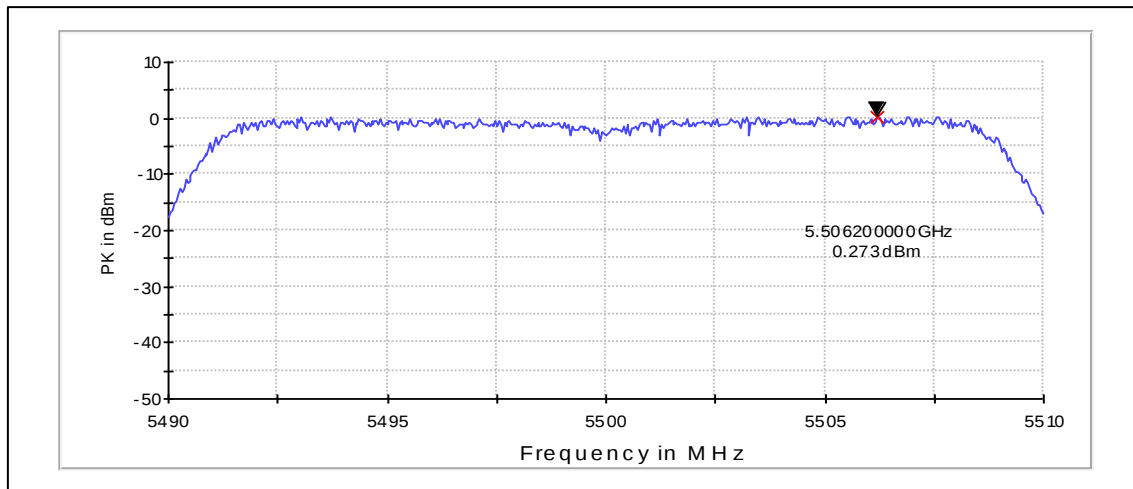
Channel 52 / 5260MHz



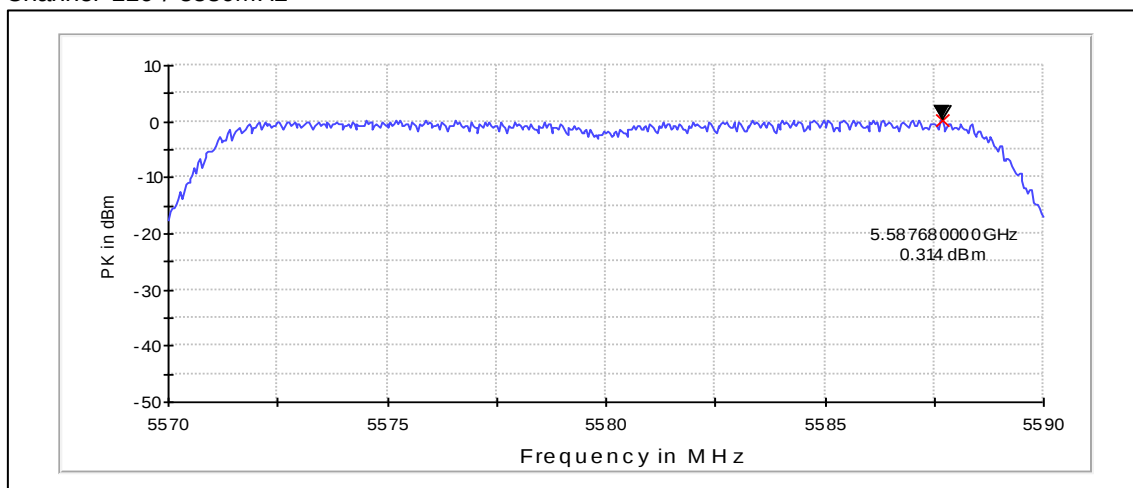
Channel 64 / 5320MHz



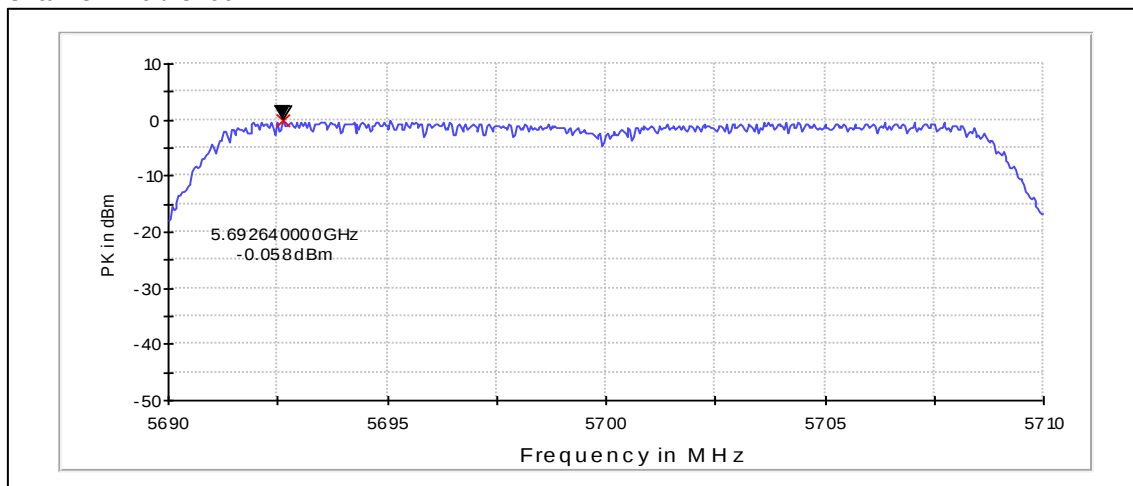
Channel 100 / 5500MHz



Channel 116 / 5580MHz



Channel 140 / 5700MHz

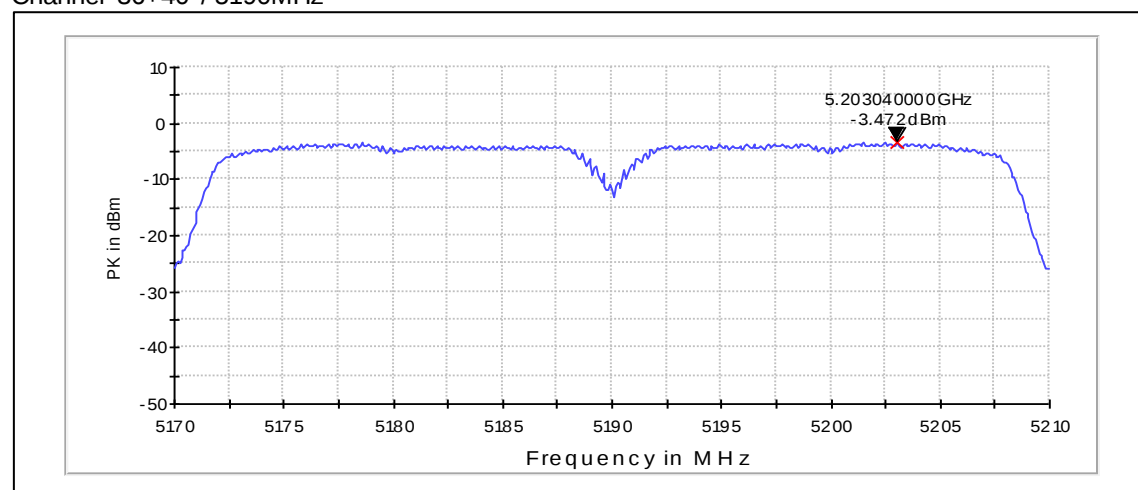


6.3.3 802.11n HT20 MCS4, 40 MHz CBW mode, BPSK modulation, 81.0 / 90.0 Mbps data rate

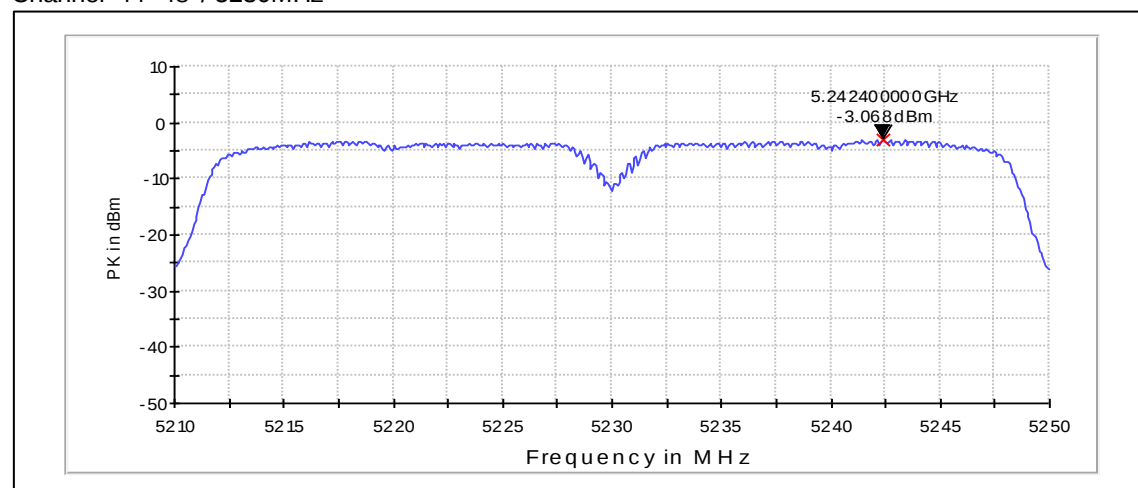
RMS detector (RBW: 1 MHz, VBW: 3 MHz, Video averaging)

Channel / f _c [MHz]	P [dBm]	Result
36+40 / 5190	-3.47	PASSED
44+48 / 5230	-3.07	PASSED
52+56 / 5270	-2.97	PASSED
60+64 / 5310	-2.93	PASSED
100+104 / 5510	-2.27	PASSED
108+112 / 5550	-2.25	PASSED
132+136 / 5670	-2.54	PASSED

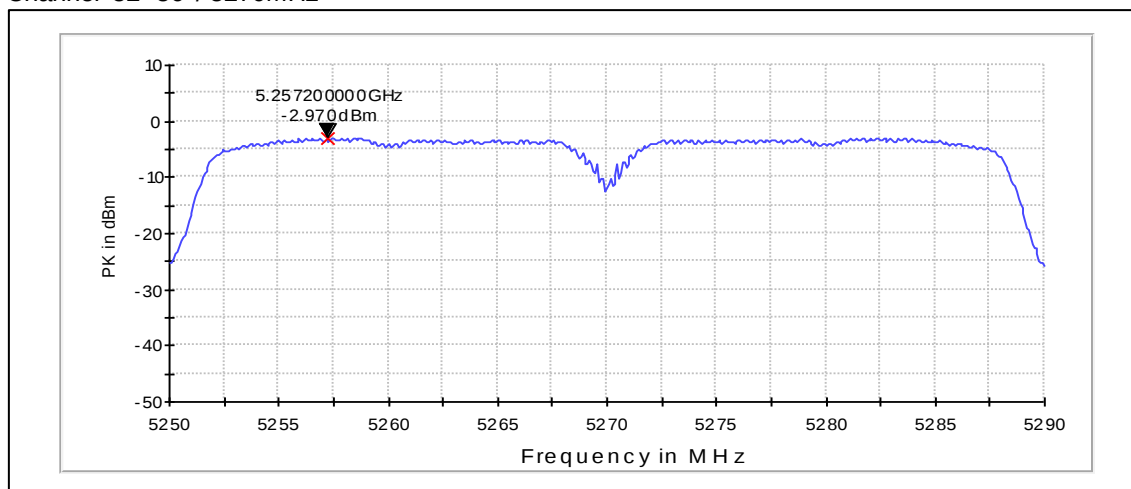
Channel 36+40 / 5190MHz



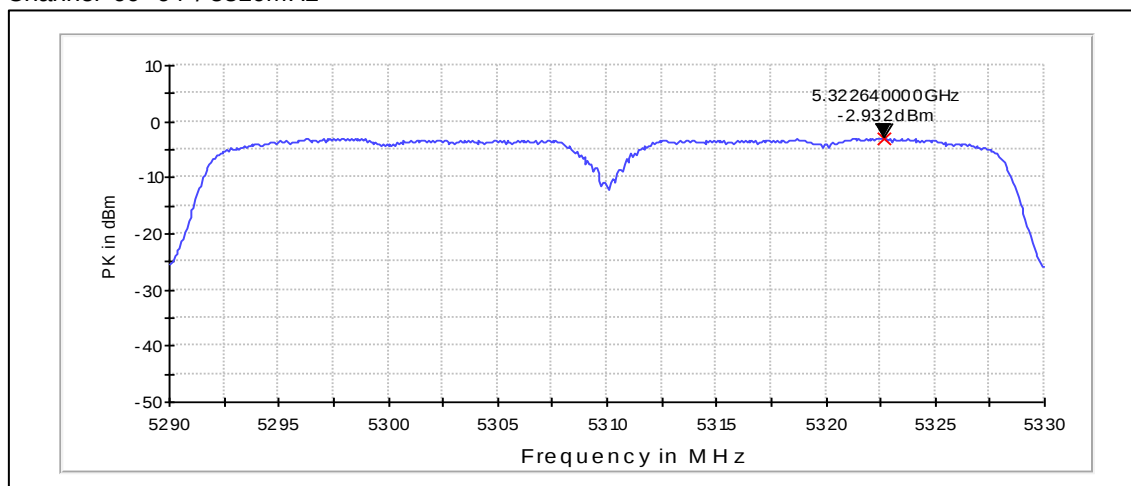
Channel 44+48 / 5230MHz



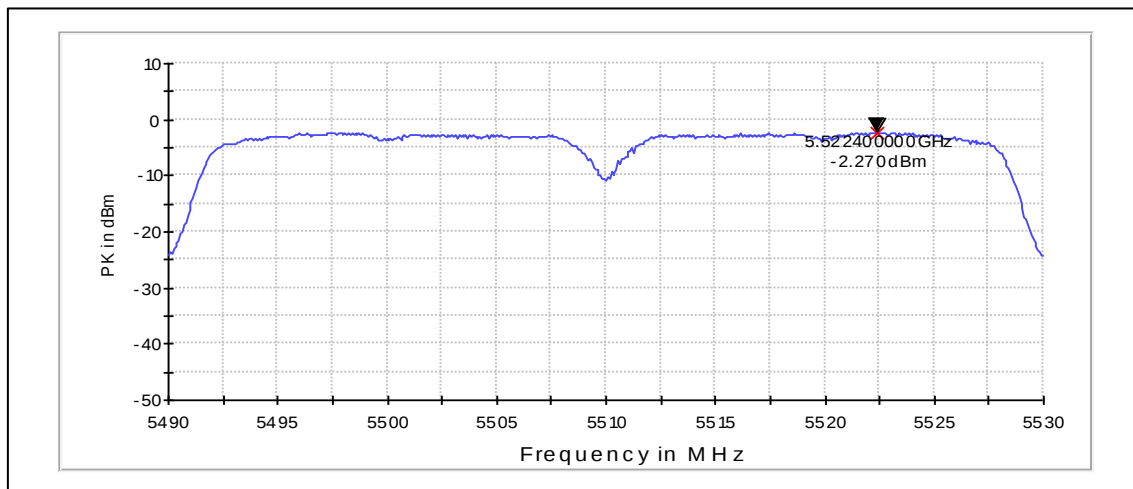
Channel 52+56 / 5270MHz



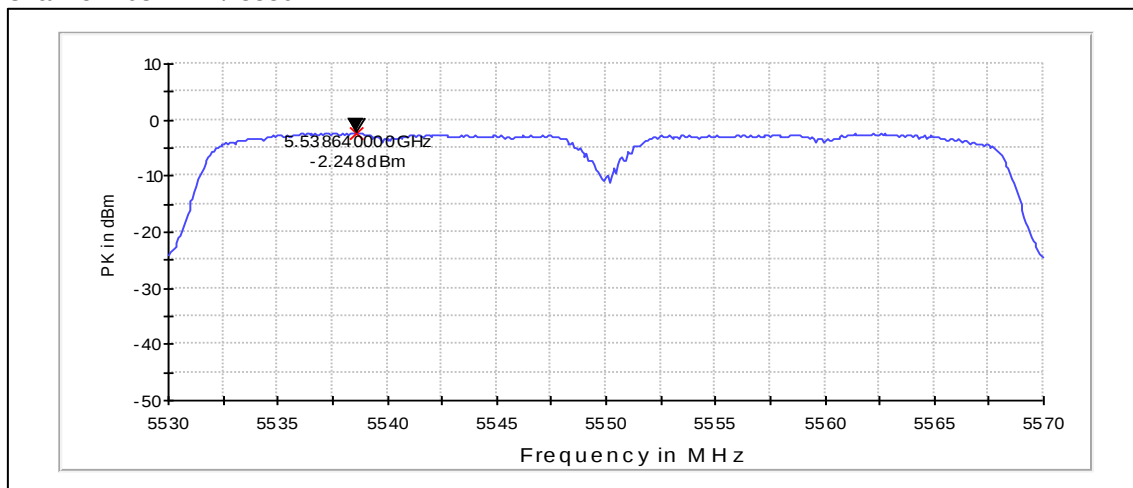
Channel 60+64 / 5310MHz



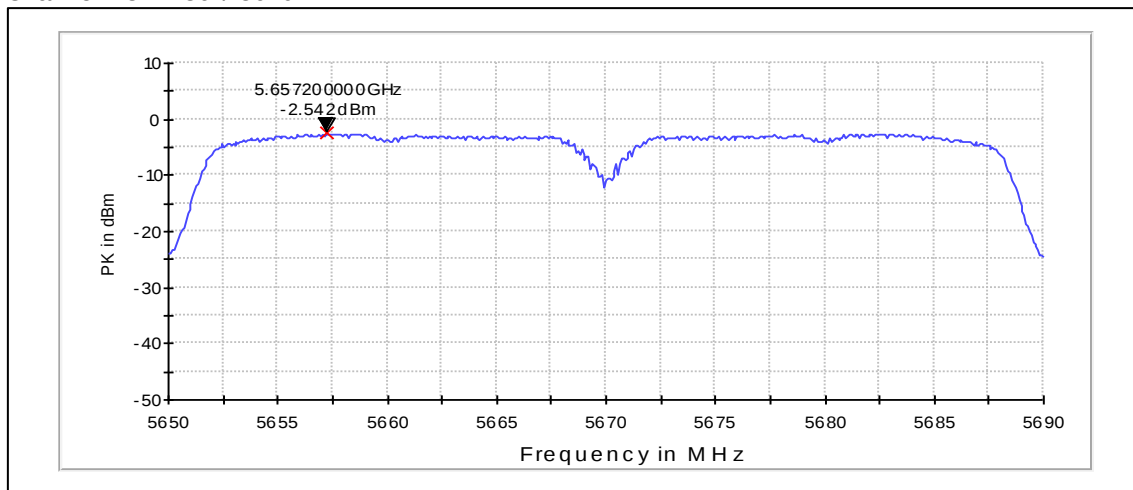
Channel 100+104 / 5510MHz



Channel 108+112 / 5550MHz



Channel 132+136 / 5670MHz



7. Test Equipment

7.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM38112	Power supply	6632A	Agilent	22/24/27, 15C
TM38631	Signal Generator	83640L	Agilent	22/24/27, 15C, 15B
OM06312	Signal Generator	E4422B	Agilent	22/24
TM37678	Communication Tester	CMU200	R&S	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, 15C
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
2019	Power splitter	ZN2PD-9G-S+	Mini-Circuits	15E
2020	Power splitter	ZN2PD-9G-S+	Mini-Circuits	15E
2023	Spectrum Analyzer	ESMI-RF	R&S	15B/15C
2024	Analyzer displayunit	ESAI-D	R&S	15B/15C

7.2. 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
TM37773	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
TM38845	Receiver	ESIB 26	R&S	22/24/27, 15C, 15B
-	Antenna	HL562	R&S	22/24/27, 15C, 15B
-	Turntable	2188	EMCO	22/24/27, 15C, 15B
-	Turntable controller	2090	EMCO	22/24/27, 15C, 15B
-	RF system panel	TS-RSP	R&S	22/24/27, 15C, 15B
-	RF system panel	TS-RSP	R&S	22/24/27, 15C, 15B
-	Mini mast	2075-2	ETS Lindgren	22/24/27, 15C, 15B
TM38843	Mini mast	2075	Emco	22/24/27, 15C, 15B
TM38842	Antenna mast controller	2090	Emco	22/24/27, 15C, 15B
TM30643	LISN 50 µH	LISN-5-20-2	FCC	22/24/27, 15C, 15B
TM30644	LISN 50 µH	LISN-5-20-2	FCC	22/24/27, 15C, 15B
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C, 15B
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B
TM39180	Laser distance meter	Disto Pro	Leica	22/24/27, 15C, 15B
TM37523	Preamplifier	AMF-4D-10M-3G-25-20P	Miteq	22/24/27, 15C, 15B
TM37498	Preamplifier	AMF-5D-020180-26-10P	Miteq	22/24/27, 15C, 15B
TM30599	Semi anechoic chambre	UNKNOWN	TDK	22/24/27, 15C, 15B
TM22638	Power supply	OL63743-901	-	22/24/27, 15C, 15B
TM38066	High pass filter	4HC3000/18000-3-KK	Trilithic	22/24/27, 15C, 15B
-	High pass filter	WHKX 1.6/15G-12SS	Wainwright	22/24/27, 15C, 15B
TM37545	Tunable notch filter	800.0/960.0-0.2/40-8SSK	Wainwright	22
TM26512	Tunable notch filter	WRCD1850/1910-0.2/40-10SSK	Wainwright	24
-	Band reject filter	WRCG1877/1883-1870/1890-40/6EE	Wainwright	24
-	Band reject filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
-	Band reject filter	WRCG832/838-825/848-40/5SS	Wainwright	22
TM23892	Controller	G-1000SDX	Yaesu	22/24/27
2001	Bluetooth tester	CBT	R&S	22/24/27, 15C, 15B
6023	Antenna	VUBA 9117	Schwarzbeck	22/24/27, 15C