N° 1-6736
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TEST REPORT

EUT Description	**WLAN and BT, 2x2 PCIe M.2 1216 SD adapter card**
Brand Name	**Intel® Wi-Fi 6E AX211**
Model Name	**AX211D2W**
Date of Test Start/End	**2020-12-03 / 2021-01-22**
Features	**802.11ax, Dual Band, 2x2 Wi-Fi + Bluetooth® 5.2 (see section 5)**

Applicant	**Intel Corporation SAS**
Address	**425 rue de Goa - Le Cargo B6 - 06600, Antibes, FRANCE**
Contact Person	**Laurence Peignot**
Telephone/Fax/ Email	**laurence.peignot@intel.com**

Reference Standards	**ETSI EN 301 893 V2.1.1 (see section 1)**

Test Report identification	**201120-03.TR15**
Revision Control	**Rev. 00** **This test report revision replaces any previous test report revision (see section 8)**

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Issued by	Reviewed by
Digitally signed by Khodor RIDA Date: 2021.01.28 10:08:28 +01'00'	Digitally signed by In Cheiel Date: 2021.01.28 10:57:12 +01'00'
Khodor RIDA (Test Engineer Lead)	Cheiel IN (Technical Manager)

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1. Standards, reference documents and applicable test methods

1. ETSI EN 301 893 V2.1.1 – 5GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

2. General conditions, competences and guarantees

- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an ISO/IEC 17025:2017 testing laboratory accredited by the French Committee for Accreditation (Cofrac) with the certificate number 1-6736.
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3. Environmental Conditions

- ✓ At the site where the measurements were performed the following limits were not exceeded during the tests:

Temperature	22.6ºC ± 2.5ºC
Humidity	38.8% ± 11.5%

4. Test samples

Sample	Control #	Description	Model	Serial #	Date of receipt	Note
#01	201120-03.S03	WiFi 6E Module	AX211D2W	WFM:D8F8834C251B	2020-23-11	Conducted tests
	170000-01.S19	Laptop	Latitude E5450	4TXV562	2020-02-04	
	200611-01.S12	Extender	PCB00651_01	-	2020-11-30	
#02	201120-03.S09	WiFi 6E Module	AX211D2W	WFM:DF8834E4C92	2020-11-23	Used for 1GHz-6.4GHz , 6.4-18GHz MIMO and 18GHz-26GHz Radiated Spurious Emissions Tx tests
	200102-01.S03	Extender	ADEXELEC	-	2020-01-02	
	200611-01.S06	Adaptor	PowerBy SNJ A4	-	2020-11-30	
	200602-03.S06	Absorber	MCS0	-	2020-07-03	
	180000-01.S05	Socket	Adapter 1216SD to M.2	-	2017-08-09	
	170801-01.S10	Laptop	Latitude E7470	7KNOXF2	2017-09-08	
	200611-03.S28	Main Antenna	SkyCross	-	2020-07-01	
	200611-03.S29	Aux Antenna	SkyCross	-	2020-07-01	
#03	201120-03.S08	WiFi 6E Module	AX211D2W	WFM:D8F8834E56AB	2020-11-23	Used for 30MHz-1GHz Radiated Spurious Emission tests and 6.4GHz-18GHz SISO Radiated Spurious Emissions Tx tests
	200611-03.S26	Extender	ADEXELEC	-	2020-07-01	
	200611-01.S07	Adaptor	PowerBy SNJ A4	-	2020-11-30	
	200602-03.S06	Absorber	MCS0	-	2020-07-03	
	180000-01.S02	Socket	Adapter 1216SD to M.2	-	2017-08-09	
	170000-01.S01	Laptop	Latitude E5470	DBPLMC2	2017-03-28	
	200928-03.S08	Main Antenna	SkyCross	-	2020-09-01	
	200928-03.S09	Aux Antenna	SkyCross	-	2020-09-01	
#04	201120-03.S02	WiFi 6E Module	AX211D2W	WFM:D8F8834C2462	2020-11-23	Used for 1GHz-26GHz Rx Radiated Spurious Emission tests
	200611-01.S06	Adaptor	PowerBy SNJ A4	-	2020-11-30	
	200602-03.S06	Absorber	MCS0	-	2020-07-03	
	200615-05.S06	Host	Latitude 7490	63QMRQ2	2020-06-12	

5. EUT Features

The herein information is provided by the customer

Brand Name	Intel® Wi-Fi 6E AX211
Model Name	AX211D2W
Software Version	DRTU version: 11195_99_2100_51G
Driver Version	V99.0.58.3_t64
Prototype / Production	Production
Supported Radios	802.11b/g/n/ax 2.4GHz (2400.0 – 2483.5 MHz) 802.11a/n/ac/ax 5.2GHz (5150.0 – 5350.0 MHz) 5.6GHz (5470.0 – 5725.0 MHz) 5.8GHz (5725.0 – 5875.0 MHz) Bluetooth 5.2 2.4GHz (2400.0 – 2483.5 MHz)

Antenna Information

Transmitter	Main (chain A)	Aux (chain B)
Manufacturer	SkyCross	Skycross
Antenna type	PIFA antenna	PIFA antenna
Part number	N/A	N/A
Declared antenna gain (dBi)	+5	+5

Document

Filename	Date of receipt
Intel_Ref_Antenna data_HMC-M2 Ant_Spec_Universe_SkyCross Antenna	2013-01-28
Annex G of EN 301 893 V211 2x2.pdf	2020-08.13

6. Remarks and comments

1. Channel Access Mechanism and maximum Channel Occupancy Time are declared compliant with requirement by manufacturer. Both items are not evaluated.

7. Test Verdicts summary

The statement of conformity to applicable standards in the table below are based on the measured values, without taking into account the measurement uncertainties.

7.1. 802.11a/n/ac/ax

Mode	ETSI clause	Test	Verdict
5.6GHz	4.2.1	Nominal Centre Frequencies	P
	4.2.2	Nominal Channel Bandwidth and Occupied Channel Bandwidth	P
	4.2.3.1.1	RF output power	P
	4.2.3.1.2	Transmit Power Control (TPC)	P
	4.2.3.1.3	Power Density	P
	4.2.4.1	Transmitter unwanted emissions outside the 5GHz RLAN bands	P
	4.2.4.2	Transmitter unwanted emissions within the 5GHz RLAN bands	P
	4.2.5	Receiver spurious emissions	P
	4.2.6	Dynamic Frequency Selection	P
	4.2.7	Adaptivity(Channel Access Mechanism)	P
	4.2.8	Receiver Blocking	P

P: Pass
F: Fail
NM: Not Measured
NA: Not Applicable

8. Document Revision History

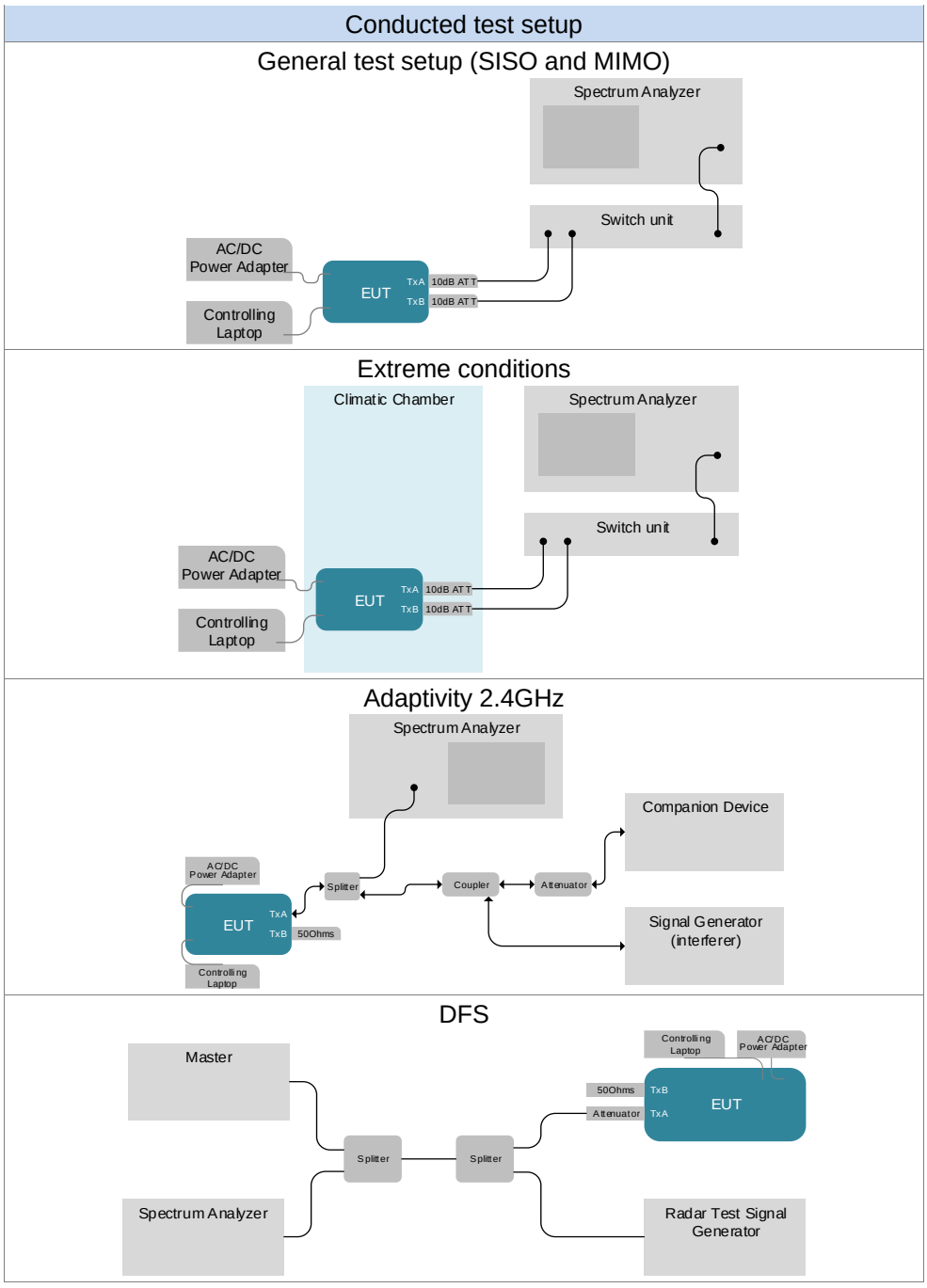
Revision #	Modified by	Revision Details
Rev. 00	N.Bui	First Issue

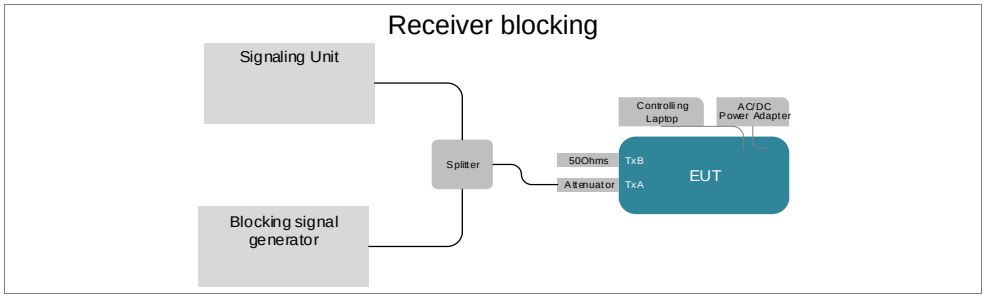
Annex A. Test & System Description

A.1 Measurement System

Measurements were performed using the following setups, made in accordance to the general provisions of ETSI EN 301 893 V2.1.1. Test Procedures. Rohde & Schwarz TS8997 system with the switching unit OSP120, OSP B-157 and software EMC32 were employed.

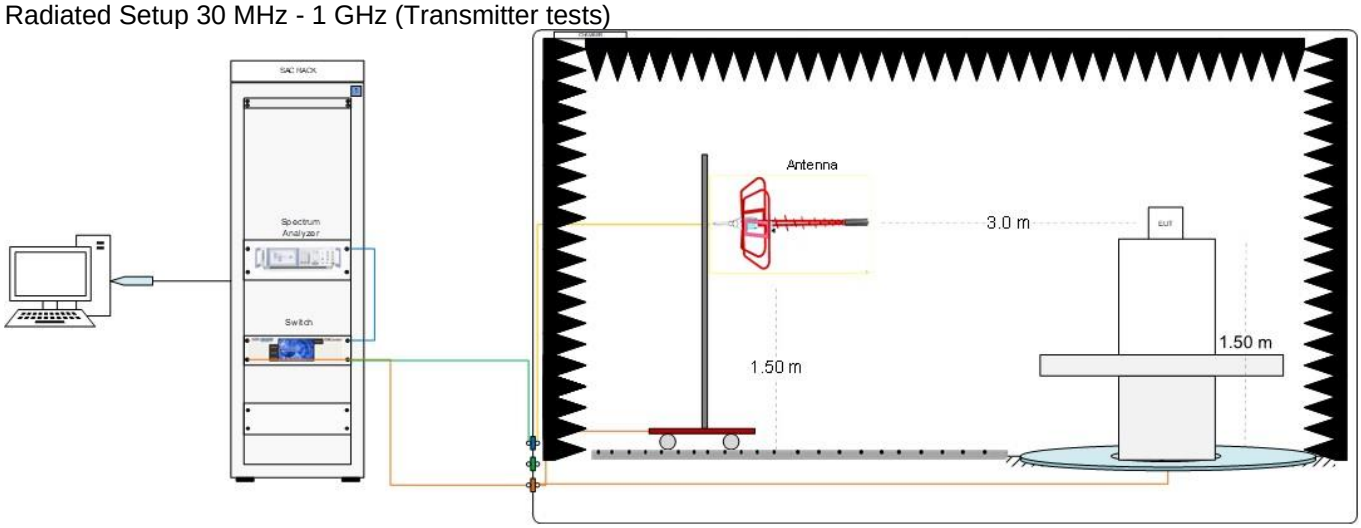
The EUT was installed in a test fixture and this test fixture is connected to a laptop computer and AC/DC power adapter. The laptop computer was used to configure the EUT to continuously transmit at a specified output power using all different modes and modulation schemes, using the Intel proprietary tool DRTU.
Setups for conducted and radiated measurements are shown below.



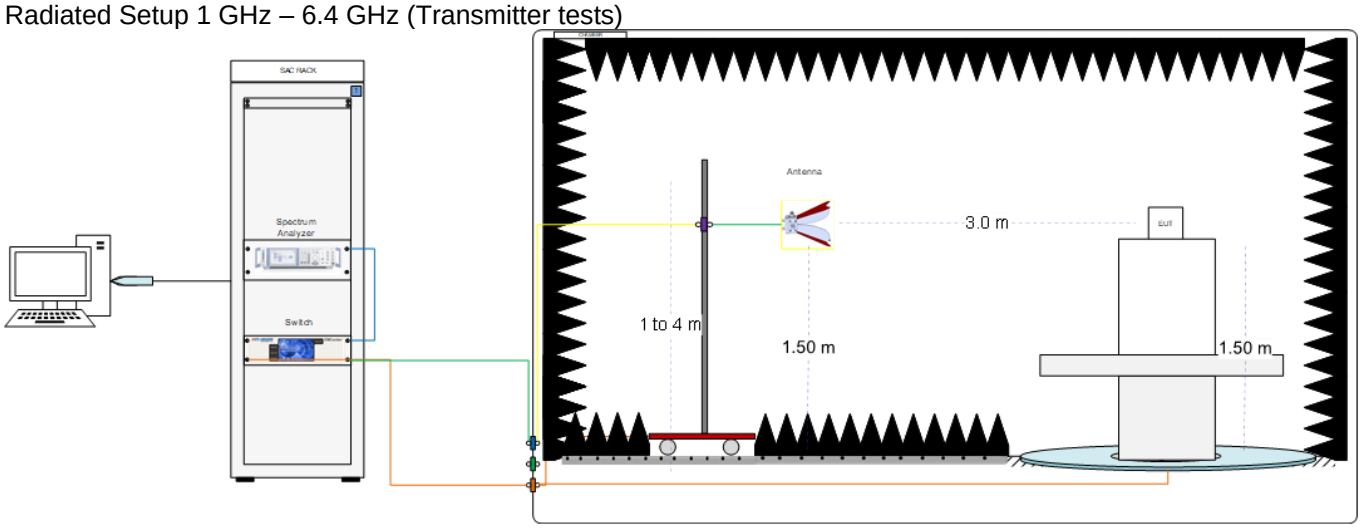

Receiver blocking
Signaling Unit
Blocking signal generator
Splitter
50Ohms
Attenuator
TxB
TxA
EUT
Controlling Laptop
AC/DC Power Adapter

Radiated test setup

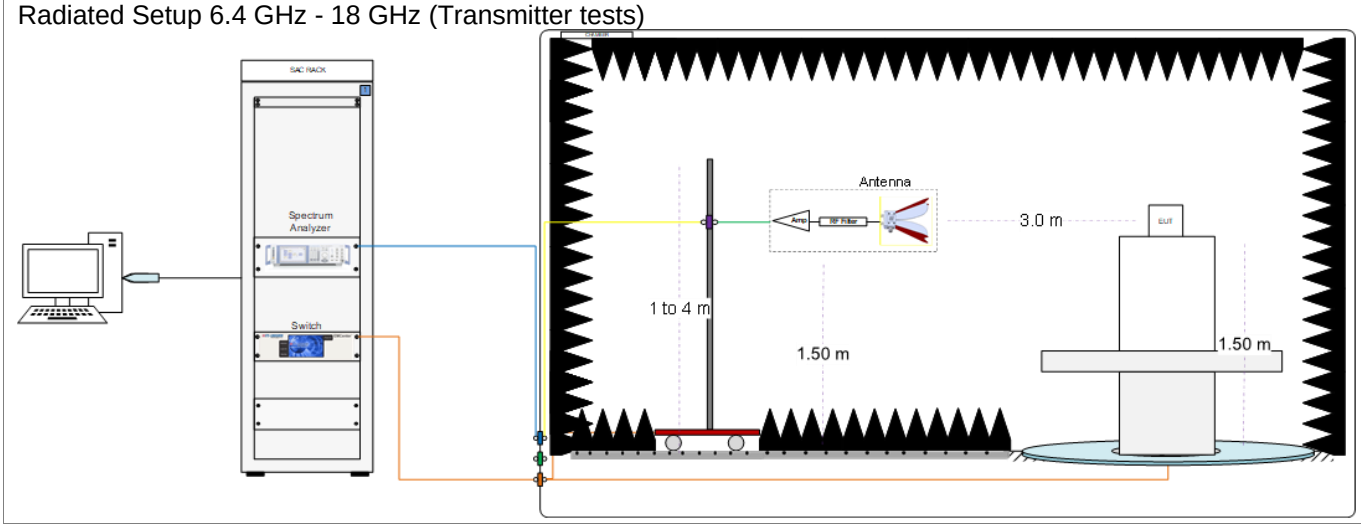
Radiated Setup 30 MHz - 1 GHz (Transmitter tests)



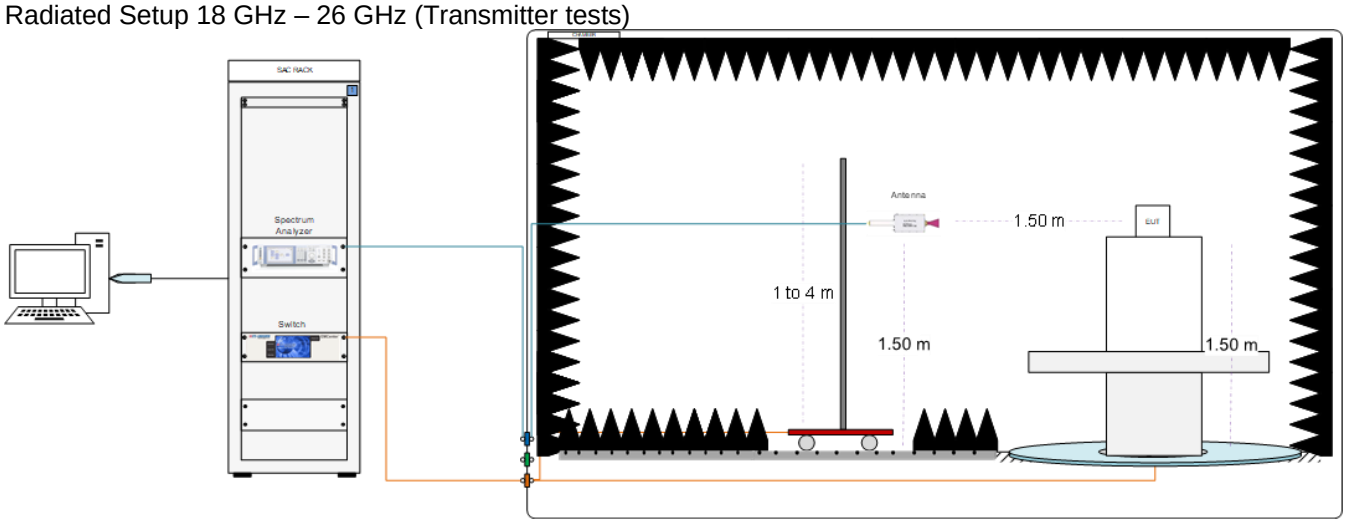
Radiated Setup 1 GHz – 6.4 GHz (Transmitter tests)



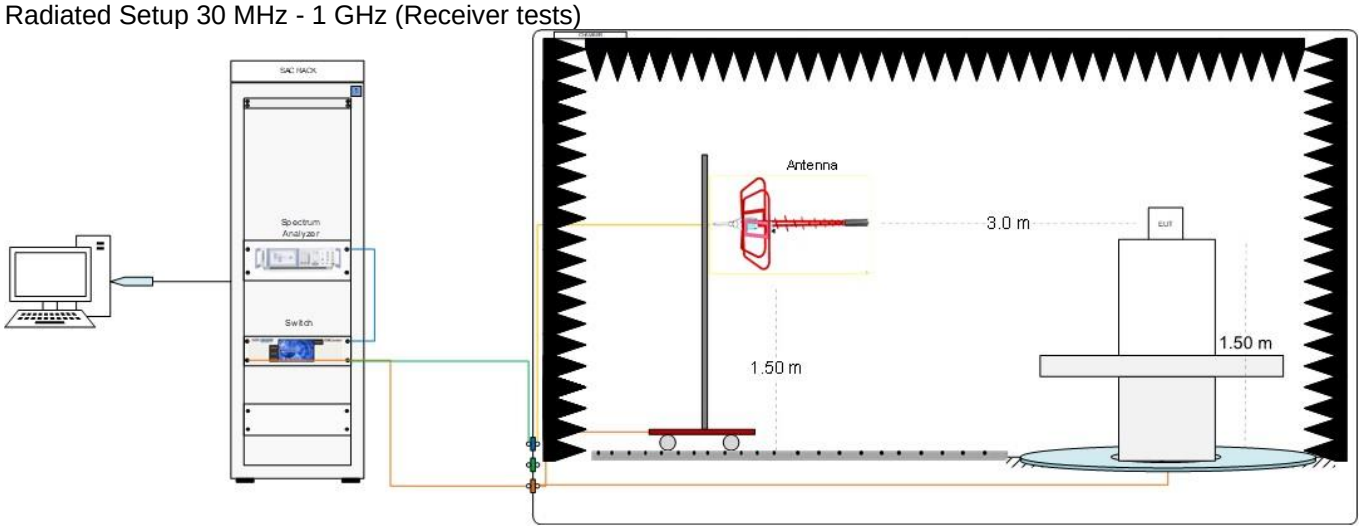
Radiated Setup 6.4 GHz - 18 GHz (Transmitter tests)



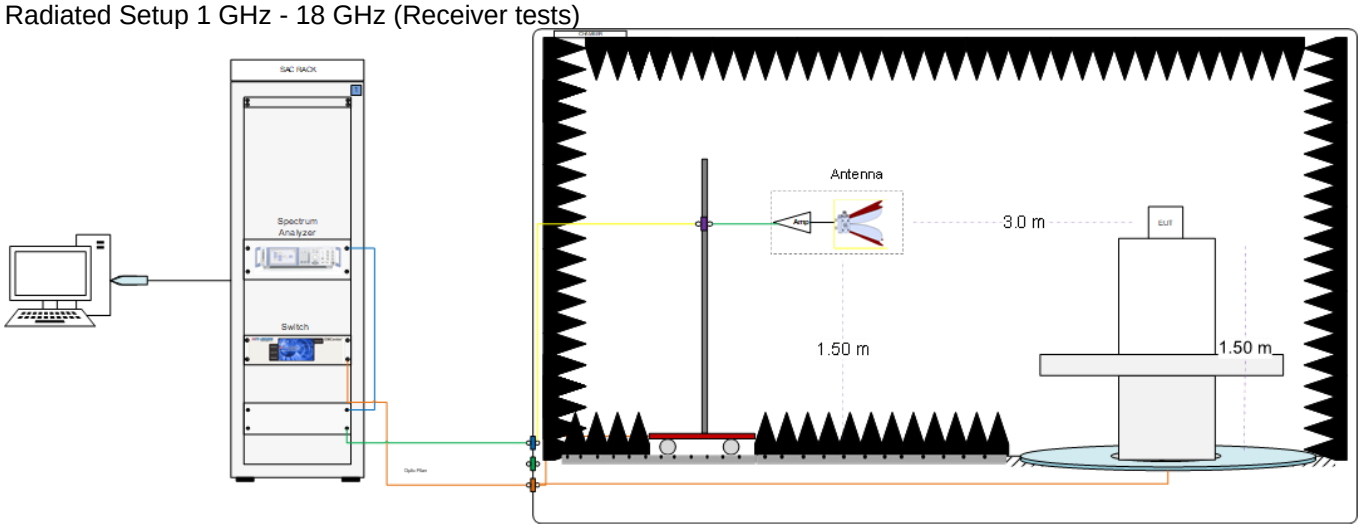
Radiated Setup 18 GHz – 26 GHz (Transmitter tests)



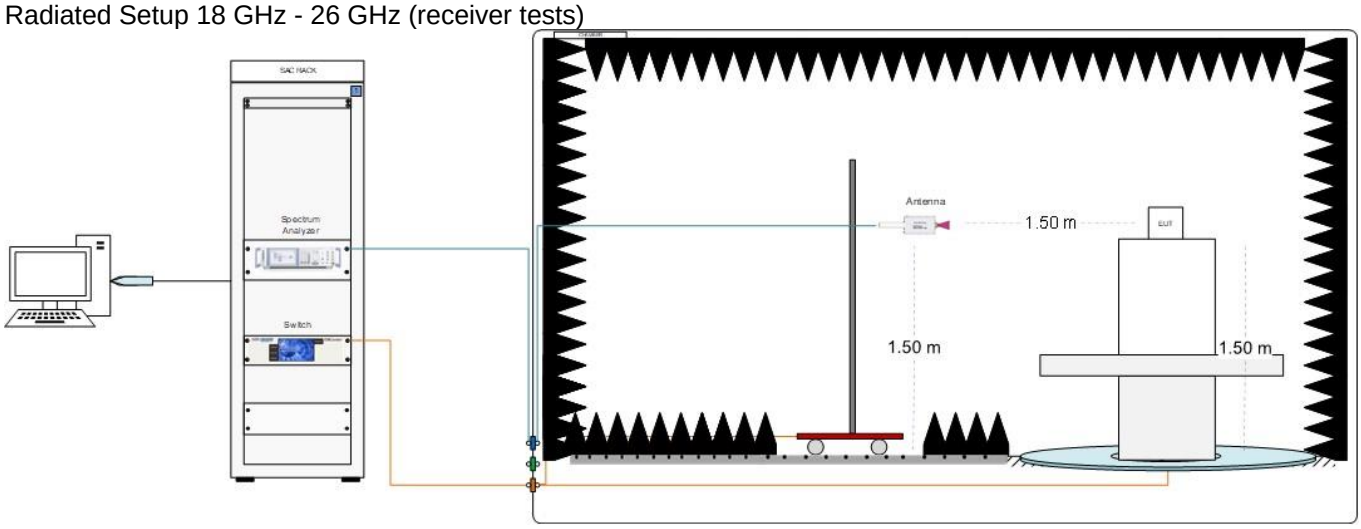
Radiated Setup 30 MHz - 1 GHz (Receiver tests)



Radiated Setup 1 GHz - 18 GHz (Receiver tests)



Radiated Setup 18 GHz - 26 GHz (receiver tests)



A.2 Test Equipment List

Conducted Setup

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
0017	Vector signal generator	SMJ100A	100458	Rohde & Schwarz	2019-04-23	2021-04-23
0056	Switch unit	OSP 120	100945	Rohde & Schwarz	2020-04-21	2022-04-21
0261	Access point	Aironet IOS	FTX134390GV	Cisco	N/A	N/A
0293	DC Power supply	E3640A	MY40006885	Agilent	N/A	N/A
0299	Multimeter	34401A	US36065790	HP	2019-12-11	2021-12-11
0300	Climatic chamber	SLT34/40	56746020930010	Secasi	2019-11-20	2021-11-20
0318	Spectrum analyzer	FSV30	103310	Rohde & Schwarz	2020-06-03	2022-06-03
0581	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-B89BE3	Avtech	2020-01-23	2022-01-23
0741	Measurement Software	EMC32 v11.00.00	200226	Rohde & Schwarz	N/A	N/A
0847	RF Cable 0.5m	PE3CA1039	-	Pasternack	2020-08-26	2021-02-26
0848	RF Cable 1.2m	PE3C0666	-	Pasternack	2020-08-26	2021-02-26
0869	Cable SMA Male to ML51-P	HRMP-ML51LP	DTR178-100RS	Hirose	2020-08-26	2021-02-26
0870	Cable SMA Male to ML51-P	HRMP-ML51LP	DTR178-100RS	Hirose	2020-08-26	2021-02-26
0876	Thermometer	t3000FC	-	Fluke	2019-11-29	2021-11-29
0991	RF Cable 2m + 10dB ATT	0900670672000PJ	1936949	Radiall	2020-08-26	2021-02-26
0992	RF Cable 2m + 10dB ATT	0900670672000PJ	1936947	Radiall	2020-08-26	2021-02-26

N/A: Not Applicable

Receiver blocking Setup

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
0100	Communication tester	CMW500	129337	Rohde & Schwarz	2019-04-02	2021-04-02
0309	Signal generator	SMB100A	178217	Rohde & Schwarz	2020-04-17	2022-04-17
0378	RF Cable 1.2m	UFA147A-0-0480-200200	MFR 64639 223720-001	Micro-coax	2020-08-26	2021-02-26
0796	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-D4F316	Avtech	2019-07-05	2021-07-05
0866	RF Cable 0.5m	FMC0202085-18	-	Fairview	2020-08-26	2021-02-26
0873	RF splitter	PE2083	-	Pasternack	N/A	N/A
0874	RF Cable 0.9m	PE3CA 1039-36	-	Pasternack	2020-08-26	2021-02-26

N/A: Not Applicable

Radiated Setup #1

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
0135	Anechoic Chamber	FACT3	5720	ETS-Lindgren	2020-01-07	2022-01-07
0136	Turn Table	ETS	-	ETS-Lindgren	N/A	N/A
1076	Spectrum Analyzer	FSW43	101847	Rohde & Schwarz	2020-11-02	2022-11-02
0530	Measurement SW	EMC32, v10.40.10	100623	Rohde & Schwarz	N/A	N/A
0147	Switch & Positioning systems	EMC Center	00159757	ETS-Lindgren	N/A	N/A
0137	Biconilog Antenna	3142E	00156946	ETS-Lindgren	2020-03-12	2022-03-12
0141	Horn Antenna+ Amplifier + HPF6.4	3117	00157736	ETS-Lindgren	2020-04-02	2022-04-02
0325	Horn antenna 3117	3117	00157734	ETS-Lindgren	2019-08-12	2021-08-12
0343	Double-Ridged Horn Antenna with Pre-Amplifier	3117-PA	00201542	ETS-Lindgren	2019-08-16	2021-08-16
1098	Cable 1.5m - DC-18GHz	CBL-1.5M-SMSM+	202879	Mini-Circuits	2020-11-27	2021-05-27
0263	Cable 1m - 1GHz to 18GHz	UFA147A	-	Utilflex	2020-08-25	2021-02-25
0371	Cable 1m – 30 MHz - 18GHz	UFB311A-0-0590-50U50U	MFR 64639 223230-001	Micro-coax	2020-08-25	2021-02-25
1099	Cable 7m DC-18 GHz	0501051057000GX	19.35.850	Radial	2020-11-27	2021-05-27
0859	Cable 2.5m - 30MHz to 18GHz	0500990992500KE	19.23.395	Radiall	2020-11-27	2021-05-27
1033	Boresight antenna mast	BAM 4.0-P	P/278/2890.01	Maturo	N/A	N/A
0797	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-D0EB1A	Avtech	2019-07-04	2021-07-04

N/A: Not Applicable

Radiated Setup #2

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
0337	Anechoic chamber	RFD-FA-100	5996	ETS Lindgren	2020-07-06	2022-07-06
0238	Switch & Positioner	EMCenter	00151232	ETS Lindgren	N/A	N/A
0382	Antenna Tower	2171B-3.0M	00150123	ETS Lindgren	N/A	N/A
0383	Turntable	-	-	ETS Lindgren	N/A	N/A
0329	Measurement SW	EMC32, v10.50.10	100401	Rohde & Schwarz	N/A	N/A
0133	Spectrum Analyzer	FSV40	101358	Rohde & Schwarz	2020-02-25	2022-02-25
0138	Double Ridge Horn (1-18GHz)	3117	00152266	ETS Lindgren	2020-03-08	2022-03-08
0141	Horn Antenna 3117 + Amplifier + HPF6.4	3117	00157736	ETS-Lindgren	2020-04-01	2022-04-01
0343	Double-Ridged Horn Antenna with Pre-Amplifier	3117-PA	00201542	ETS-Lindgren	2019-08-16	2021-08-16
0871	RF Cable 1-18GHz, 1.5 m	0501050991200GX	19.21.710	Radiall	2020-08-20	2021-02-20
0860	RF Cable 1-18GHz, 1.2 m	2301761761200PJ	12.22.1104	Radiall	2020-08-20	2021-02-20
0275	RF Cable 1-18GHz - 6.5m	140-8500-11-51	001	Spectrum	2020-08-20	2021-02-20
0684	RF Cable 1GHz-18GHz 1.5m	-	-	Spirent	2020-08-20	2021-02-20
0725	RF Cable 1-9.5GHz 1.2m	0500990991200KE	-	Radiall	2020-08-20	2021-02-20
0796	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-D4F316	Avtech	2019-07-05	2021-07-05

N/A: Not Applicable

Shared Radiated Equipment

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
0616	Power Sensor	NRP-Z81	104385	Rohde & Schwarz	2020-04-08	2022-04-08
0617	Power Sensor	NRP-Z81	104386	Rohde & Schwarz	2020-04-08	2022-04-08
0618	Power Sensor	NRP-Z81	104382	Rohde & Schwarz	2020-04-08	2022-04-08

A.3 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the table below with a coverage factor of k = 2 to indicate a 95% level of confidence:

Measurement type	Uncertainty	Unit
Frequency Stability	±6.18	ppm
RF Output Power, conducted	±0.99	dB
Power Spectral Density, conducted	±0.99	dB
Unwanted Emission, conducted	±1.53	dB
Radiated test < 1GHz	±4.04	dB
Radiated test 1GHz - 26 GHz	±4.68	dB
Temperature	±0.30	ºC
Humidity	±1.60	%
Time	±0.12	%

Annex B. Test Results

The herein test results were performed by:

Test case measurement	Test Engineer
Carrier frequencies	G. Roustan
Occupied channel bandwidth	G. Roustan
RF output power at the highest power	G. Roustan
RF output power at the lowest power of the TPC	G. Roustan
Power density	G. Roustan
Transmitter unwanted emissions within the 5GHz RLAN bands	G. Roustan
Transmitter unwanted emissions outside the 5GHz RLAN bands	N. Nachabe, N. Bui, A. Lounes
Receiver spurious emissions	N. Nachabe, N. Bui, A. Lounes
Dynamic Frequency Selection	G. Roustan
Adaptivity(Channel Access Mechanism)	G. Roustan
Receiver Blocking	Z. Ouachicha

B.1 Test Conditions

ETSI clause	Conditions	ETSI EN 301 893 V2.1.1.Annex G
5.1.1 5.4.1, item m).	Tests defined in the present document shall be carried out at representative points within the boundary limits of the declared operational environmental profile, see clause 5.4.1, item m). Where technical performance varies subject to environmental conditions, tests shall be carried out under a sufficient variety of environmental conditions (within the boundary limits of the declared operational environmental profile) to give confidence of compliance for the affected technical requirements. For each test defined in the present document, the environmental condition(s) at which the test has to be performed is specified in the clause on test conditions for that particular test. The operational environmental profile (e.g. the normal test conditions and the extreme test conditions) that applies to the equipment.	 **Information provided by the customer**

For 802.11a mode the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, but not simultaneously.

For 802.11n20, 802.11ax20 (20 MHz channel bandwidth), 802.11n40, 802.11ax40 (40MHz channel bandwidth), 802.11ac80, 802.11ax80 (80MHz channel bandwidth) and 802.11ac160, 802.11ax160 (160 MHz channel bandwidth) modes the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, and also simultaneously.

The conducted RF output power at each chain was adjusted according to the client's supplied target values (see following table) using the Intel DRTU tool and measuring the power by using a calibrated average power meter. Measured values for adjustment were within ±0.25 dB from the declared Target values.

5.6GHz					Conducted Power, Target Value (dBm)		
Mode	BW (MHz)	Data Rate	CH #	Freq. (MHz)	SISO Chain A	SISO Chain B	MIMO A + B
802.11a	20	6Mbps	100	5500	16.5	16.5	-
			140	5700	16.5	16.5	-
802.11n	20	HT0 HT8*	100	5500	16.5	16.5	16.5
			140	5700	16.5	16.5	16.5
	40	HT0 HT8*	102	5510	17.5	17.0	17.5
			134	5670	17.5	17.5	17.5
802.11ac	80	VHT0	106	5530	17.5	17.5	17.5
			122	5610	17.5	17.5	17.5
	160	VHT0	114	5570	17.5	17.5	17.5
802.11ax	20	HE0	100	5500	17.0	17.0	17.0
			140	5700	17.5	17.5	17.0
	40		102	5510	17.5	17.5	17.5
			134	5670	17.5	17.5	17.5
	80		106	5530	17.5	17.5	17.5
			122	5610	17.5	17.5	18.0
	160		114	5570	17.0	17.5	17.5

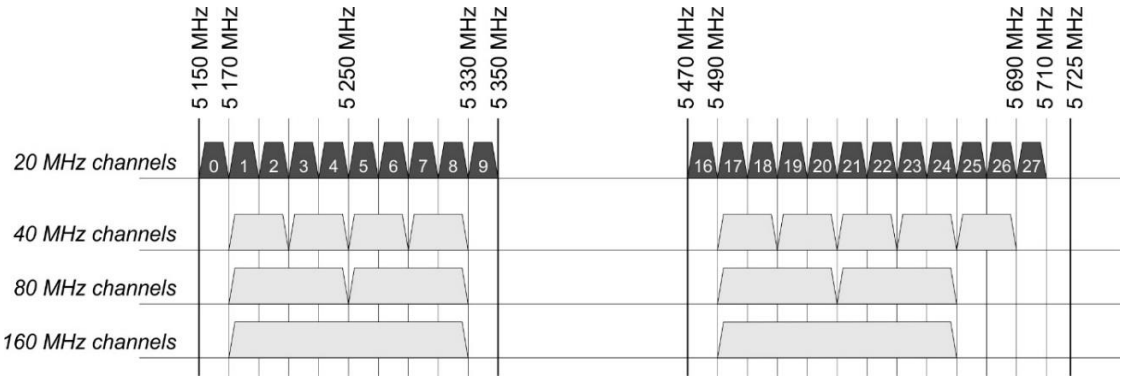
* Note: HT8 for MIMO modes only.

The following data rates were selected based on preliminary testing that identified those rates as the worst cases for output power and spurious levels at the band edges:

Transmission	Mode	Bandwidth (MHz)	Worst Case Data Rate
SISO	802.11a	20	6Mbps
	802.11n	20	HT0
		40	HT0
	802.11ac	80	VHT0
		160	VHT0
	802.11ax	20	HE0
		40	HE0
		80	HE0
		160	HE0
MIMO	802.11n	20/40	HT8
	802.11ac	80/160	VHT0
	802.11ax	20/40/80/160	HE0

B.2 Carrier frequencies

Test limits

ETSI clause	Limits
4.2.1.3	The Nominal Centre Frequencies (fc) for a Nominal Channel Bandwidth of 20 MHz are defined by equation (1). See also figure 3. fc = 5 160 + (g × 20) MHz, where 0 ≤ g ≤ 9 or 16 ≤ g ≤ 27 and where g shall be an integer. (1)  **Figure 3** A maximum offset of the Nominal Centre Frequency of ± 200 kHz is permitted. Where the manufacturer decides to make use of this frequency offset, the manufacturer shall declare the actual centre frequencies used by the equipment. See clause 5.4.1, item a). The actual centre frequency for any given channel shall be maintained within the range fc ± 20 ppm.

Test conditions

ETSI clause	Conditions
5.4.2.1	These measurements shall be performed under both normal and extreme test conditions The UUT shall be configured to operate at a normal RF Output Power level. In addition, the UUT shall be configured to operate on a single channel.

Test procedure

The conducted setups shown in section *Test & System Description* were used to measure the center frequency accordingly to the test procedure described in ETSI EN 301 893 V2.1.1. The antenna terminal of the EUT is connected to the OSP120 through an attenuator and a cable, the spectrum analyzer is connected to the receiver port on the OSP. System connection cable loss is compensated by the EMC32 software on measured parameters.

For MIMO transmission modes, measurements are taken from chain A on the EUT.

The declared maximum antenna gain is +5dBi.

Results tables

Centre Frequencies			Normal Condition Ambient temperature +23ºC		Extreme Condition High temperature +70ºC		Extreme Condition Low temperature -10ºC	
#Ch	Freq [MHz]	Chain	Centre frequency [MHz]	Deviation [ppm]	Centre frequency [MHz]	Deviation [ppm]	Centre frequency [MHz]	Deviation [ppm]
140	5700	A	5699.9970	0.526	5699.9930	1.228	5700.0090	1.579
		B	5699.9970	0.526	5699.9930	1.228	5700.0090	1.579
134	5670	A	5669.9960	0.705	5669.9920	1.411	5670.0080	1.411
		B	5669.9960	0.705	5669.9920	1.411	5670.0080	1.411
122	5610	A	5610.0040	0.713	5609.9920	1.426	5610.0080	1.426
		B	5610.0000	0.000	5609.9920	1.426	5610.0080	1.426
114	5570	A	5569.9878	2.197	5570.0000	0.000	5570.0080	1.436
		B	5570.0000	0.000	5570.0000	0.000	5570.0080	1.436

B.3 Occupied Channel Bandwidth

Test limits

ETSI clause	Limits
4.2.2.2	The Nominal Channel Bandwidth for a single Operating Channel shall be 20 MHz. Alternatively, equipment may implement a lower Nominal Channel Bandwidth with a minimum of 5 MHz, providing they still comply with the Nominal Centre Frequencies defined in clause 4.2.1 (20 MHz raster). The Occupied Channel Bandwidth shall be between 80 % and 100 % of the Nominal Channel Bandwidth. In case of smart antenna systems (devices with multiple transmit chains) each of the transmit chains shall meet this requirement. The Occupied Channel Bandwidth might change with time/payload. During a Channel Occupancy Time (COT), equipment may operate temporarily with an Occupied Channel Bandwidth of less than 80 % of its Nominal Channel Bandwidth with a minimum of 2 MHz.

Test conditions

ETSI clause	Conditions
5.4.3.1	The conformance requirements in clause 4.2.2 shall be verified only under normal operating conditions, and on those channels and channel bandwidths defined in clause 5.3.2. The measurements shall be performed using normal operation of the equipment with the test signal applied (see clause 5.3.1.1). The UUT shall be configured to operate at a typical RF power output level used for normal operation. When equipment has simultaneous transmissions in adjacent channels, these transmissions may be considered as one signal with an actual *Nominal Channel Bandwidth* of "n" times the individual *Nominal Channel Bandwidth* where "n" is the number of adjacent channels. When equipment has simultaneous transmissions in non-adjacent channels, each power envelope shall be considered separately.

Test procedure

The conducted setups shown in section *Test & System Description* were used to measure the occupied channel bandwidth accordingly to the test procedure described in ETSI EN 301 893 V2.1.1.. The antenna terminal of the EUT is connected to the OSP120 through an attenuator and a cable, the spectrum analyzer is connected to the receiver port on the OSP. System connection cable loss is compensated by the EMC32 software on measured parameters.

For MIMO transmission mode measurements are taken from chain A on the EUT.

Results tables

Mode	Rate	#Ch	Freq [MHz]	Chain	Measured 99% BW [MHz]	Min OBW 80%	Max OBW 100%
802.11a	6Mbps	140	5700	A	16.50	16.00	20.00
				B	16.50	16.00	20.00
802.11n20	HT0			A	17.70	16.00	20.00
				B	17.70	16.00	20.00
	HT8			A+B	17.70	16.00	20.00
802.11n40	HT0	134	5670	A	36.30	32.00	40.00
				B	36.30	32.00	40.00
	HT8			A+B	36.30	32.00	40.00
802.11ac80	VHT0	122	5610	A	75.90	64.00	80.00
				B	75.90	64.00	80.00
	VHT0			A+B	75.90	64.00	80.00
802.11ac160	VHT0	114	5570	A	155.30	128.00	160.00
				B	155.40	128.00	160.00
	VHT0			A+B	155.20	128.00	160.00
802.11ax20	HE0	140	5700	A	19.00	16.00	20.00
				B	18.90	16.00	20.00
	HE0			A+B	18.90	16.00	20.00
802.11ax40	HE0	134	5670	A	37.90	32.00	40.00
				B	37.90	32.00	40.00
	HE0			A+B	37.70	32.00	40.00
802.11ax80	HE0	122	5610	A	77.40	64.00	80.00
				B	77.30	64.00	80.00
	HE0			A+B	77.30	64.00	80.00
802.11ax160	HE0	114	5570	A	157.20	128.00	160.00
				B	156.90	128.00	160.00
	HE0			A+B	156.70	128.00	160.00

B.4 RF Output Power at the highest power

Test limits

<table>
<tr><th>ETSI clause</th><th>Limits</th></tr>
<tr><td>4.2.3.2.1</td><td>TPC is not required for channels whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz.
For devices with TPC, the RF output power and the Power Density when configured to operate at the highest stated power level (P_H) of the TPC range shall not exceed the levels given in table 2.
Devices are allowed to operate without TPC. See table 2 for the applicable limits that shall apply in this case.

Table 2: Mean e.i.r.p. limits for RF output and Power Density at the highest power level (P_H)
<table>
<tr><td rowspan="2">Frequency range [MHz]</td><td colspan="2">Mean e.i.r.p. limit for P_H [dBm]</td><td colspan="2">Mean e.i.r.p. density limit [dBm/MHz]</td></tr>
<tr><td>With TPC</td><td>Without TPC</td><td>With TPC</td><td>Without TPC</td></tr>
<tr><td>5 150 to 5 350</td><td>23</td><td>20/23 (see note 1)</td><td>10</td><td>7/10 (see note 2)</td></tr>
<tr><td>5 470 to 5 725</td><td>30 (see note 3)</td><td>27 (see note 3)</td><td>17 (see note 3)</td><td>14 (see note 3)</td></tr>
<tr><td colspan="5">NOTE 1: The applicable limit is 20 dBm, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 23 dBm.
NOTE 2: The applicable limit is 7 dBm/MHz, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 10 dBm/MHz.
NOTE 3: Slave devices without a Radar Interference Detection function shall comply with the limits for the frequency range 5 250 MHz to 5 350 MHz.</td></tr>
</table>
</td></tr>
</table>

Test conditions

ETSI clause	Conditions
5.4.4.2.1.1.1	These measurements shall be performed under both normal and extreme test conditions The UUT shall be configured to operate at: • the highest stated transmitter output power level of the TPC range; or • the maximum stated transmitter output power level in case the equipment has no TPC feature.

Test procedure

The conducted setups shown in section *Test & System Description* were used to measure the RF output power at the highest power. The antenna terminal of the EUT is connected to the OSP120 through an attenuator and a cable, the spectrum analyzer is connected to the receiver port on the OSP. System connection cable loss is compensated by the EMC32 software on the measured parameters.

Antenna gain is taken into account and added by the software to the measurements. The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power. The declared maximum antenna gain is +5dBi.

According to the test procedure described in ETSI EN 301 893 V2.1.1., the measurement for MIMO modes is done synchronously on all transmit ports, the power of the individual samples is sum for all ports and then the reported power is the highest calculated RMS power for the active bursts.

Results tables

RF Output power						Normal Condition Ambient temperature +23ºC		Extreme Condition High temperature +70ºC		Extreme Condition Low temperature -10ºC	
Mode	Meas Duty Cycle %	Rate	#Ch	Freq [MHz]	Chain	Measured Conducted [dBm]	EIRP [dBm]	Measured Conducted [dBm]	EIRP [dBm]	Measured Conducted [dBm]	EIRP [dBm]
802.11a	97.9	6Mbps	100	5500	A	16.3	21.3	16.4	21.4	16.6	21.6
					B	16.7	21.7	16.3	21.3	16.7	21.7
			140	5700	A	16.5	21.5	16.2	21.2	16.6	21.6
					B	16.3	21.3	16.2	21.2	16.6	21.6
802.11n20	98.9	HT0	100	5500	A	16.7	21.7	16.5	21.5	16.7	21.7
					B	16.5	21.5	16.4	21.4	16.8	21.8
			140	5700	A	16.7	21.7	16.6	21.6	16.7	21.7
					B	16.4	21.4	16.3	21.3	16.8	21.8
	98.9	HT8	100	5500	A+B	16.7	21.7	16.9	21.9	16.7	21.7
			140	5700	A+B	16.7	21.7	17.0	22.0	16.7	21.7
802.11n40	98.9	HT0	102	5510	A	17.4	22.4	17.4	22.4	17.3	22.3
					B	17.1	22.1	17.2	22.2	17.6	22.6
			134	5670	A	17.4	22.4	17.4	22.4	17.7	22.7
					B	17.4	22.4	17.3	22.3	17.7	22.7
	98.9	HT8	102	5510	A+B	17.6	22.6	17.8	22.8	17.5	22.5
			134	5670	A+B	17.4	22.4	17.6	22.6	17.4	22.4
802.11ac80	98.9	VHT0	106	5530	A	17.5	22.5	17.6	22.6	17.2	22.2
					B	17.3	22.3	17.3	22.3	17.4	22.4
			122	5610	A	17.4	22.4	17.4	22.4	17.5	22.5
					B	17.5	22.5	17.4	22.4	11.0	16.0
	98.9	VHT0	106	5530	A+B	17.5	22.5	17.9	22.9	17.5	22.5
			122	5610	A+B	17.4	22.4	17.8	22.8	17.4	22.4
802.11ac160	98.9	VHT0	114	5570	A	17.5	22.5	17.3	22.3	17.7	22.7
					B	17.3	22.3	17.1	22.1	17.8	22.8
	98.9	VHT0			A+B	17.4	22.4	17.5	22.5	17.4	22.4
802.11ax20	98.9	HE0	100	5500	A	17.1	22.1	16.9	21.9	17.2	22.2
					B	17.0	22.0	16.9	21.9	17.2	22.2
			140	5700	A	17.3	22.3	17.1	22.1	17.3	22.3
					B	17.3	22.3	17.1	22.1	17.4	22.4
	98.9	HE0	100	5500	A+B	17.0	22.0	16.9	21.9	16.7	21.7
			140	5700	A+B	17.1	22.1	17.1	22.1	17.0	22.0
802.11ax40	98.9	HE0	102	5510	A	17.4	22.4	17.3	22.3	17.3	22.3
					B	17.3	22.3	17.2	22.2	17.6	22.6
			134	5670	A	17.6	22.6	17.4	22.4	17.8	22.8
					B	17.5	22.5	17.4	22.4	17.6	22.6
	98.9	HE0	102	5510	A+B	17.6	22.6	17.7	22.7	17.5	22.5
			134	5670	A+B	17.5	22.5	17.6	22.6	17.4	22.4
802.11ax80	98.9	HE0	106	5530	A	17.5	22.5	17.5	22.5	17.3	22.3
					B	17.6	22.6	17.5	22.5	17.5	22.5
			122	5610	A	17.5	22.5	17.5	22.5	17.5	22.5
					B	17.3	22.3	17.4	22.4	17.4	22.4
	98.9	HE0	106	5530	A+B	17.6	22.6	17.4	22.4	17.6	22.6
			122	5610	A+B	17.8	22.8	17.7	22.7	17.7	22.7
802.11ax160	98.9	HE0	114	5570	A	17.2	22.2	17.0	22.0	17.3	22.3
					B	17.5	22.5	16.9	21.9	17.9	22.9
	98.9	HE0			A+B	17.5	22.5	17.5	22.5	17.4	22.4

B.5 RF Output Power at the lowest level of the TPC range

Test limits

<table>
<tr><th>ETSI clause</th><th>Limits</th></tr>
<tr><td>4.2.3.2.3</td><td>For devices using TPC, the RF output power during a transmission burst when configured to operate at the lowest stated power level of the TPC range shall not exceed the levels given in table 2. For devices without TPC, the limits in table 2 do not apply.

Table 2
<table><tr><th>Frequency range</th><th>Mean e.i.r.p. [dBm]</th></tr><tr><td>5 250 MHz to 5 350 MHz</td><td>17</td></tr><tr><td>5 470 MHz to 5 725 MHz</td><td>24 (see note)</td></tr></table>
NOTE: Slave devices without a Radar Interference Detection function shall comply with the limits for the band 5 250 MHz to 5 350 MHz.</td></tr>
</table>

Test conditions

ETSI clause	Conditions
5.4.4.2.1.2.1	This test is only required for equipment with a TPC feature. These measurements shall be performed under both normal and extreme test conditions (see clause 5.1.3). The UUT shall be configured to operate at the lowest stated transmitter output power level of the TPC range.

Test procedure

The conducted setups shown in section *Test & System Description* were used to measure the RF output power at the lowest level of the TPC. The antenna terminal of the EUT is connected to the OSP120 through an attenuator and a cable, the spectrum analyzer is connected to the receiver port on the OSP. System connection cable loss is compensated by the EMC32 software on the measured parameters.

Antenna gain is taken into account and added by the software to the measurements. The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power. The declared maximum antenna gain is +5dBi.

According to the test procedure described in ETSI EN 301 893 V2.1.1., the measurement for MIMO modes is done synchronously on all transmit ports, the power of the individual samples is sum for all ports and then the reported power is the highest calculated RMS power for the active bursts.

Results tables

TPC RF Output power						Normal Condition Ambient temperature +23ºC		Extreme Condition High temperature +70ºC		Extreme Condition Low temperature -10ºC	
Mode	Meas Duty Cycle %	Rate	#Ch	Freq [MHz]	Chain	Measured Conducted [dBm]	EIRP [dBm]	Measured Conducted [dBm]	EIRP [dBm]	Measured Conducted [dBm]	EIRP [dBm]
802.11a	97.9	6Mbps	100	5500	A	11.0	16.0	11.2	16.2	11.3	16.3
					B	10.6	15.6	10.8	15.8	10.8	15.8
			140	5700	A	11.1	16.1	11.0	16.0	11.0	16.0
					B	10.8	15.8	11.0	16.0	10.8	15.8
802.11n20	98.9	HT0	100	5500	A	11.0	16.0	11.0	16.0	11.1	16.1
					B	11.0	16.0	11.2	16.2	11.2	16.2
			140	5700	A	11.2	16.2	11.1	16.1	11.3	16.3
					B	11.1	16.1	11.3	16.3	11.2	16.2
	98.9	HT8	100	5500	A+B	10.8	15.8	11.0	16.0	10.8	15.8
			140	5700	A+B	11.1	16.1	11.5	16.5	11.3	16.3
802.11n40	98.9	HT0	102	5510	A	11.2	16.2	11.2	16.2	11.2	16.2
					B	10.8	15.8	11.1	16.1	11.0	16.0
			134	5670	A	11.2	16.2	11.0	16.0	11.2	16.2
					B	11.0	16.0	11.2	16.2	11.2	16.2
	98.9	HT8	102	5510	A+B	11.2	16.2	11.5	16.5	11.1	16.1
			134	5670	A+B	11.3	16.3	11.5	16.5	11.2	16.2
802.11ac80	98.9	VHT0	106	5530	A	11.4	16.4	11.5	16.5	11.4	16.4
					B	10.9	15.9	11.2	16.2	11.0	16.0
			122	5610	A	11.4	16.4	11.5	16.5	11.4	16.4
					B	10.9	15.9	11.2	16.2	11.3	16.3
	98.9	VHT0	106	5530	A+B	11.3	16.3	11.7	16.7	11.3	16.3
			122	5610	A+B	11.3	16.3	11.7	16.7	11.4	16.4
802.11ac160	98.9	VHT0	114	5570	A	11.0	16.0	10.8	15.8	11.0	16.0
					B	11.2	16.2	11.3	16.3	11.3	16.3
	98.9	VHT0			A+B	11.3	16.3	11.4	16.4	11.3	16.3
802.11ax20	98.9	HE0	100	5500	A	11.2	16.2	11.2	16.2	11.2	16.2
					B	11.1	16.1	11.1	16.1	11.1	16.1
			140	5700	A	11.1	16.1	11.3	16.3	11.2	16.2
					B	11.0	16.0	11.0	16.0	11.0	16.0
	98.9	HE0	100	5500	A+B	11.1	16.1	11.3	16.3	11.1	16.1
			140	5700	A+B	11.5	16.5	11.8	16.8	11.5	16.5
802.11ax40	98.9	HE0	102	5510	A	11.2	16.2	11.3	16.3	11.3	16.3
					B	10.9	15.9	11.0	16.0	11.0	16.0
			134	5670	A	11.4	16.4	11.6	16.6	11.6	16.6
					B	11.1	16.1	11.1	16.1	11.2	16.2
	98.9	HE0	102	5510	A+B	11.3	16.3	11.5	16.5	11.2	16.2
			134	5670	A+B	11.6	16.6	11.7	16.7	11.4	16.4
802.11ax80	98.9	HE0	106	5530	A	11.2	16.2	11.6	16.6	11.4	16.4
					B	11.1	16.1	11.3	16.3	11.2	16.2
			122	5610	A	11.3	16.3	11.6	16.6	11.4	16.4
					B	11.1	16.1	11.4	16.4	11.2	16.2
	98.9	HE0	106	5530	A+B	11.3	16.3	11.7	16.7	11.1	16.1
			122	5610	A+B	11.3	16.3	11.1	16.1	11.2	16.2
802.11ax160	98.9	HE0	114	5570	A	11.1	16.1	11.1	16.1	11.2	16.2
					B	10.8	15.8	11.1	16.1	10.9	15.9
	98.9	HE0			A+B	11.2	16.2	11.3	16.3	11.1	16.1

B.6 Power Density

Test limits

<table>
<tr><th>ETSI clause</th><th>Limits</th></tr>
<tr><td>4.2.3.2.1</td><td>TPC is not required for channels whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz.
For devices with TPC, the RF output power and the Power Density when configured to operate at the highest stated power level (P_H) of the TPC range shall not exceed the levels given in table 2.
Devices are allowed to operate without TPC. See table 2 for the applicable limits that shall apply in this case.

Table 2: Mean e.i.r.p. limits for RF output and Power Density at the highest power level (P_H)
<table>
<tr><th rowspan="2">Frequency range [MHz]</th><th colspan="2">Mean e.i.r.p. limit for P_H [dBm]</th><th colspan="2">Mean e.i.r.p. density limit [dBm/MHz]</th></tr>
<tr><th>With TPC</th><th>Without TPC</th><th>With TPC</th><th>Without TPC</th></tr>
<tr><td>5 150 to 5 350</td><td>23</td><td>20/23 (see note 1)</td><td>10</td><td>7/10 (see note 2)</td></tr>
<tr><td>5 470 to 5 725</td><td>30 (see note 3)</td><td>27 (see note 3)</td><td>17 (see note 3)</td><td>14 (see note 3)</td></tr>
<tr><td colspan="5">NOTE 1: The applicable limit is 20 dBm, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 23 dBm.
NOTE 2: The applicable limit is 7 dBm/MHz, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 10 dBm/MHz.
NOTE 3: Slave devices without a Radar Interference Detection function shall comply with the limits for the frequency range 5 250 MHz to 5 350 MHz.</td></tr>
</table>
</td></tr>
</table>

Test conditions

ETSI clause	Conditions
5.4.4.2.1.3.1	These measurements shall only be performed at normal test conditions (see clause 5.1.2). The UUT shall be configured to operate at the lowest nominal Channel Bandwidth with: • the highest stated transmitter output power level of its TPC range; or • the maximum stated transmitter output power level in case the equipment has no TPC feature.

Test procedure

The conducted setups shown in section *Test & System Description* were used to measure the power spectral density (PSD). The antenna terminal of the EUT is connected to the OSP120 through an attenuator and a cable, the spectrum analyzer is connected to the receiver port on the OSP. System connection cable loss is compensated by the EMC32 software to measure all parameters.

Antenna gain is taken into account and added by the software to the measurements. The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power. The declared maximum antenna gain is +5dBi.

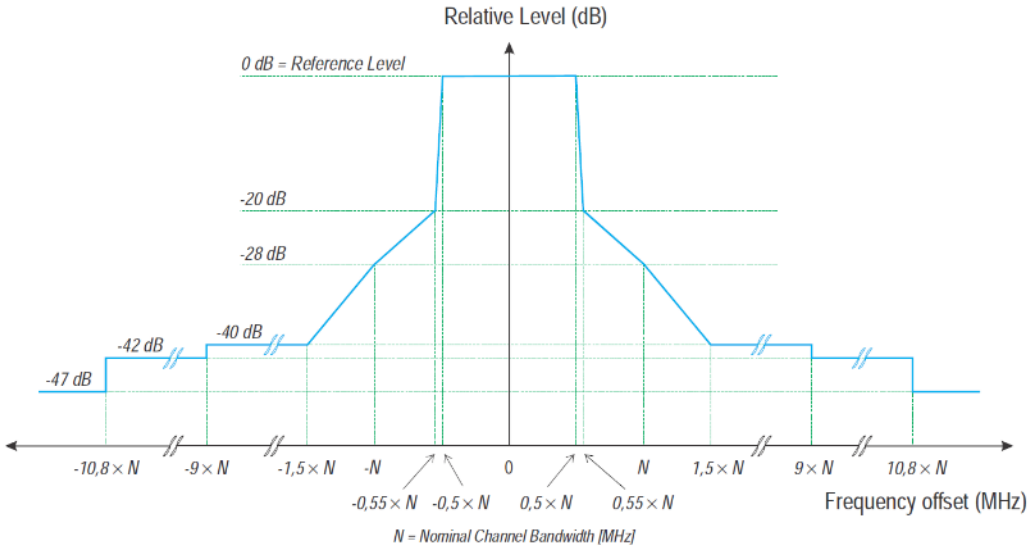
According to the test procedure described in ETSI EN 301 893 V2.1.1.the measurement for MIMO modes is done separately on each transmit ports and the power of the individual samples per frequency is sum for all ports. Finally, the software takes the highest PSD among the all the 1MHz calculated segments.

Results tables

Mode	Meas Duty Cycle %	Rate	CH Number	Frequency	Chain	EIRP PSD [dBm/MHz]
802.11a	97.9	6Mbps	100	5180	A	9.64
					B	9.84
			140	5320	A	9.67
					B	9.58
802.11n20	98.9	HT0	100	5180	A	9.63
					B	9.39
			140	5320	A	9.69
					B	9.31
	98.9	HT8	100	5180	A+B	9.60
			140	5320	A+B	9.57
802.11ax20	98.9	HE0	100	5180	A	9.57
					B	9.53
			140	5320	A	9.79
					B	9.82
	98.9	HE0	100	5180	A+B	9.44
			140	5320	A+B	9.60

B.7 Transmitter unwanted emissions within the 5GHz RLAN bands

Test limits

ETSI clause	Limits
4.2.4.2.2	The mean Power Density (measured with a 1 MHz measurement bandwidth) of the transmitter unwanted emissions within the 5 GHz RLAN bands shall not exceed the limits of the mask provided in figure 1 or an absolute level of -30 dBm/MHz, whichever is greater. The limits in figure 1 are relative to the maximum Power Density of the RLAN device when measured with a reference bandwidth of 1 MHz. The mask is only applicable within the band of operation. Beyond the band edges the requirements of clause 4.2.4.1 apply. In case of smart antenna systems (devices with multiple transmit chains) each of the transmit chains shall meet the limits provided in figure 1. **Figure 1. Transmit spectral power mask** 

Test conditions

ETSI clause	Conditions
5.4.6.1	The conformance requirements in clause 4.2.4.2 shall be verified only under normal operating conditions, and when operating on those channels and channel bandwidths defined in clause 5.3.2. The equipment shall be configured to operate under its worst case situation with respect to unwanted emissions within the 5 GHz RLAN bands. In case of conducted measurements on smart antenna systems (devices with multiple transmit chains) operating in a mode with more than one transmit chain being active simultaneously, measurements shall only be performed on one of the transmit chains (antenna outputs).

Test procedure

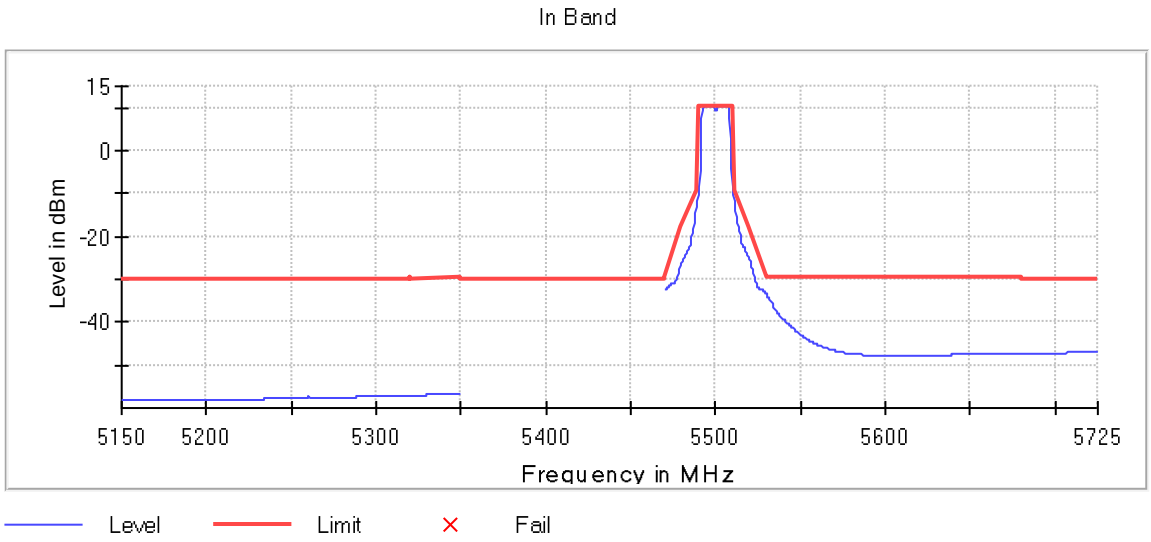
The conducted setups shown in section *Test & System Description* were used to measure the unwanted emissions within the 5GHz RLAN bands (Band Edge). The antenna terminal of the EUT is connected to the OSP120 through an attenuator and a cable, the spectrum analyzer is connected to the receiver port on the OSP. System connection cable loss is compensated by the EMC32 software on measured parameters.

EMC32 provides the mask and the frequency limits based in the measured channel bandwidth. For MIMO transmission mode measurements are taken from chain A on the EUT.

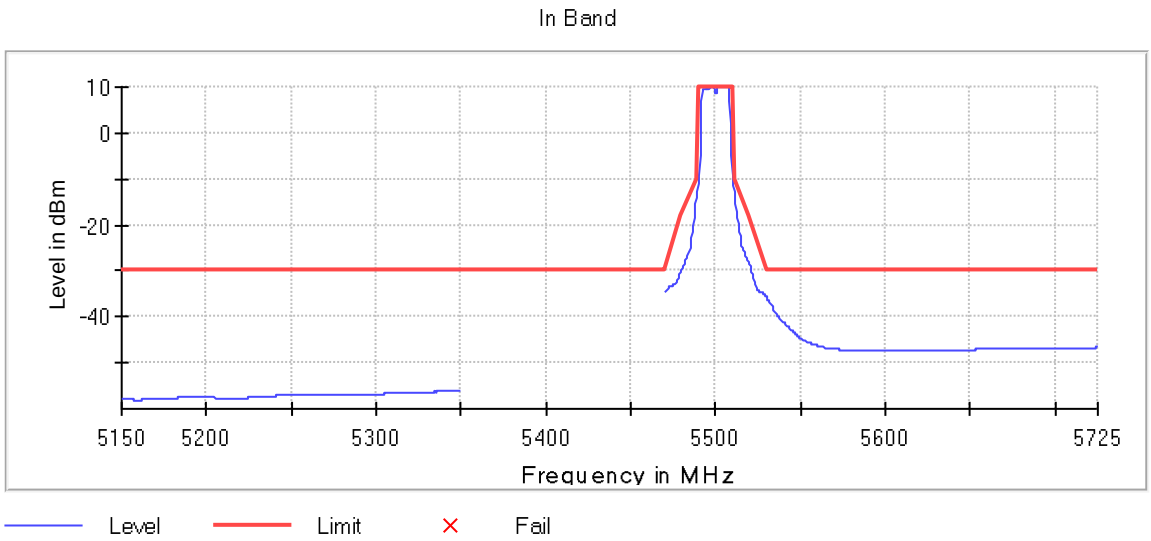
Results Screenshot

802.11a, 6Mbps – Channel 100

Channel 100 – Chain A

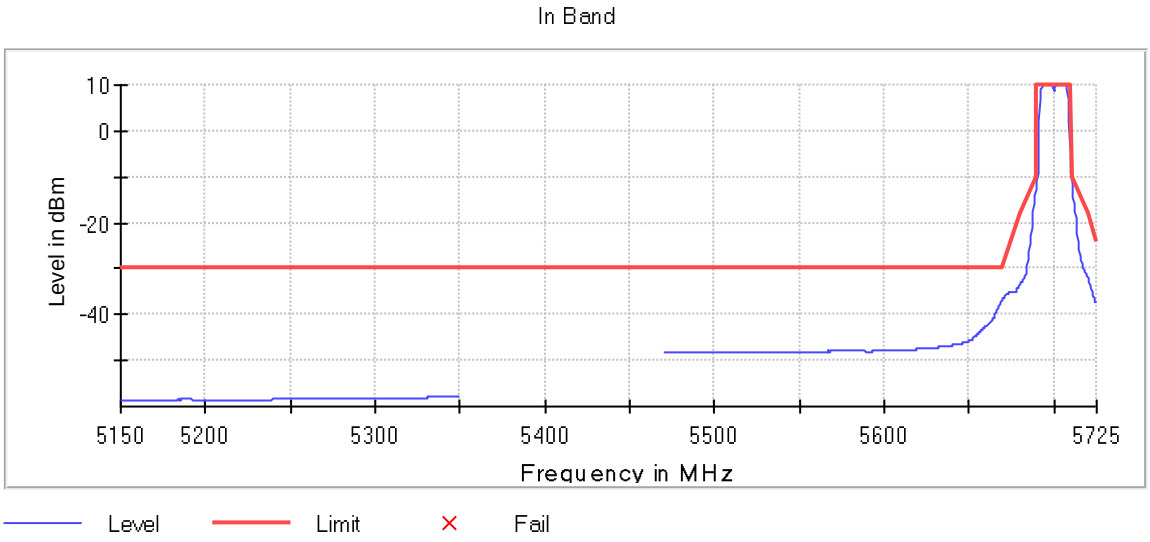


Channel 100 – Chain B

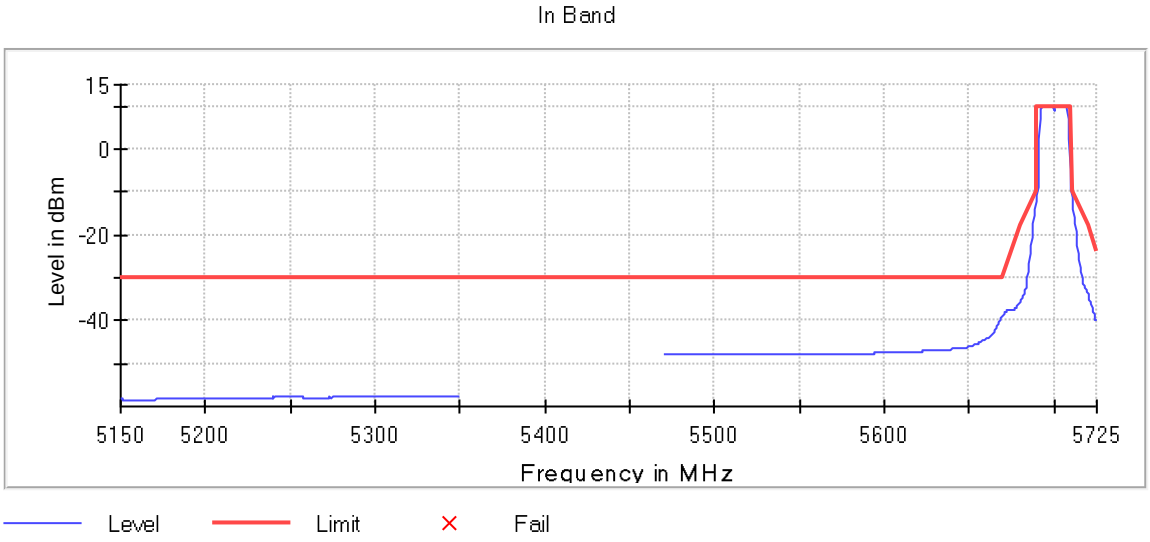


802.11a, 6Mbps Channel 140

Channel 140 – Chain A

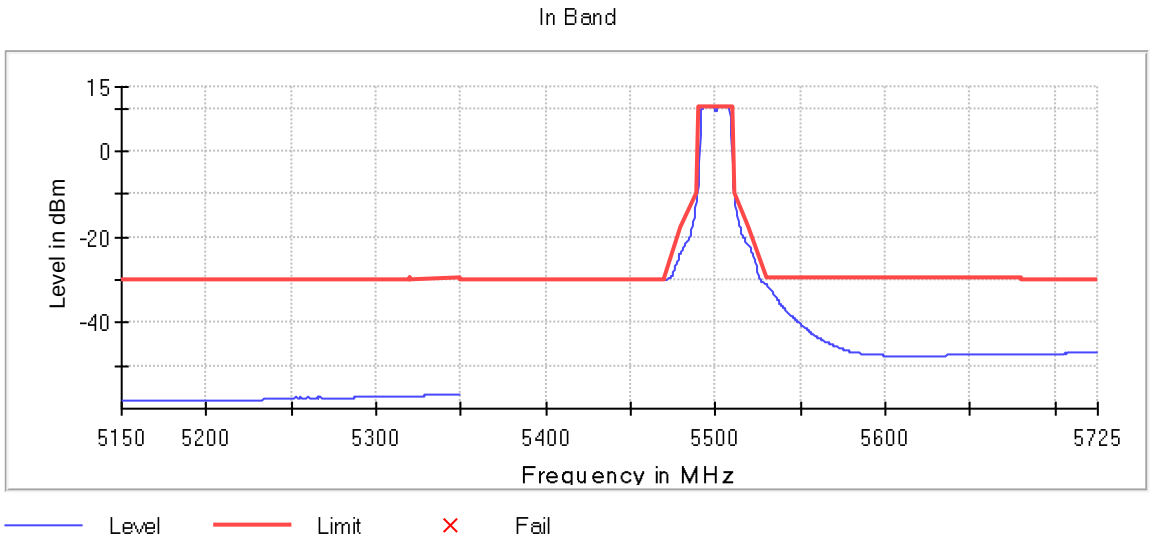


Channel 140 – Chain B

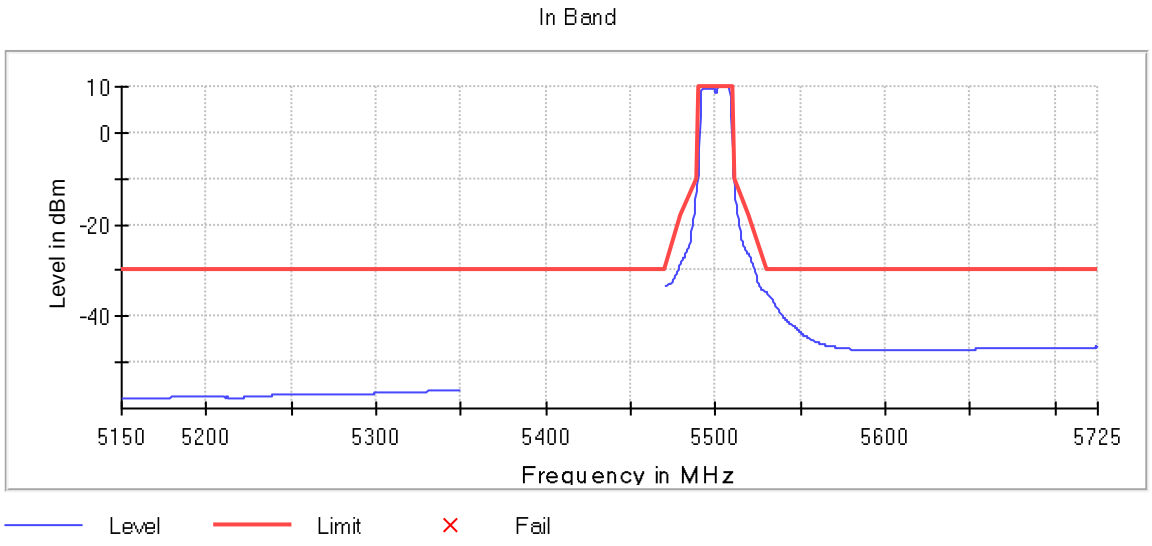


802.11n20 (SISO), HT0 – Channel 100

Channel 100 – Chain A

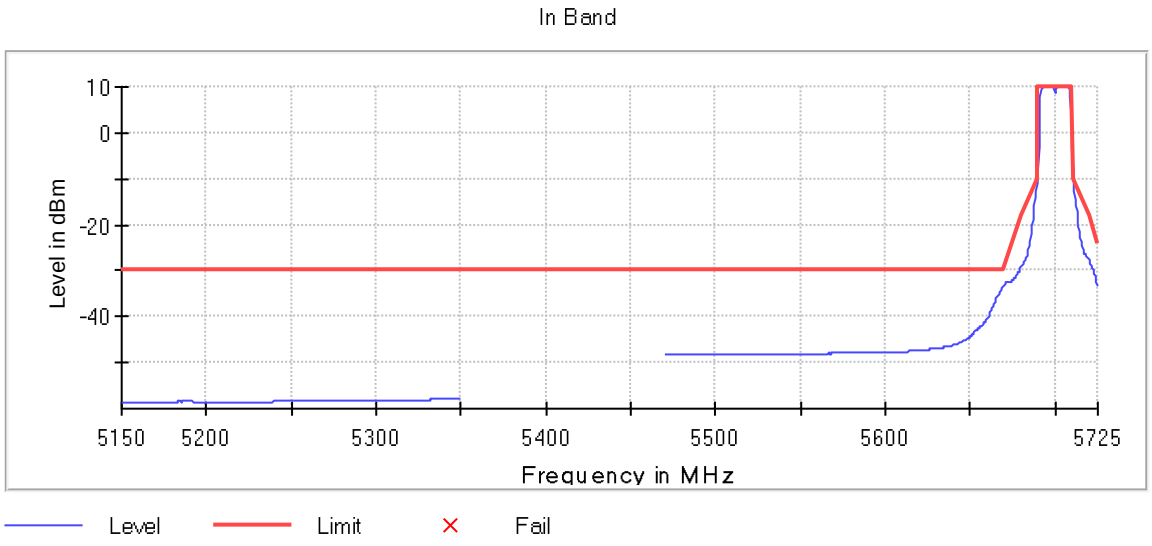


Channel 100 – Chain B

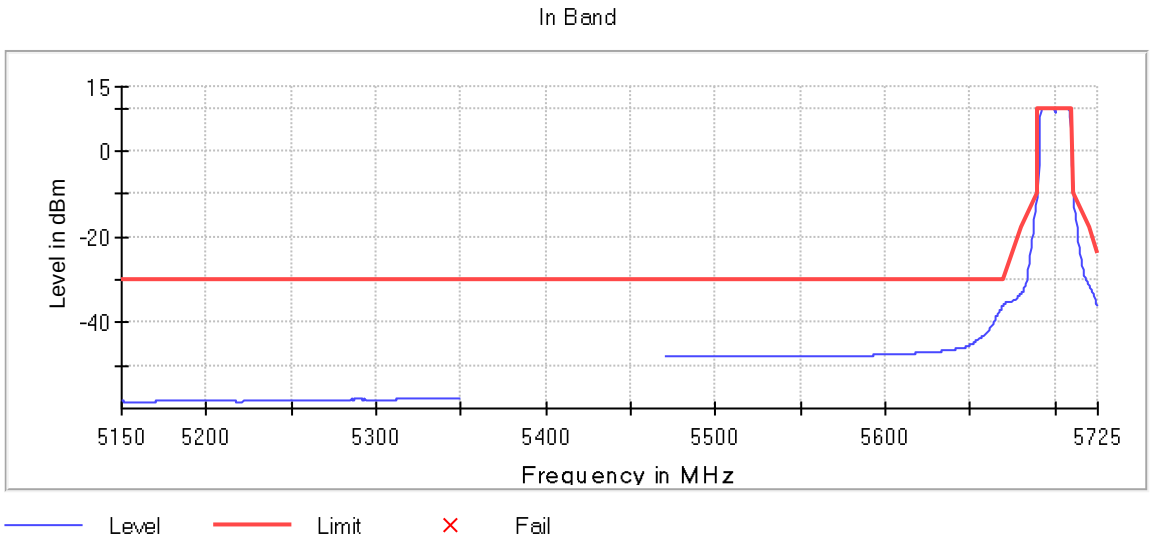


802.11n20 (SISO), HT0 – Channel 140

Channel 140 – Chain A

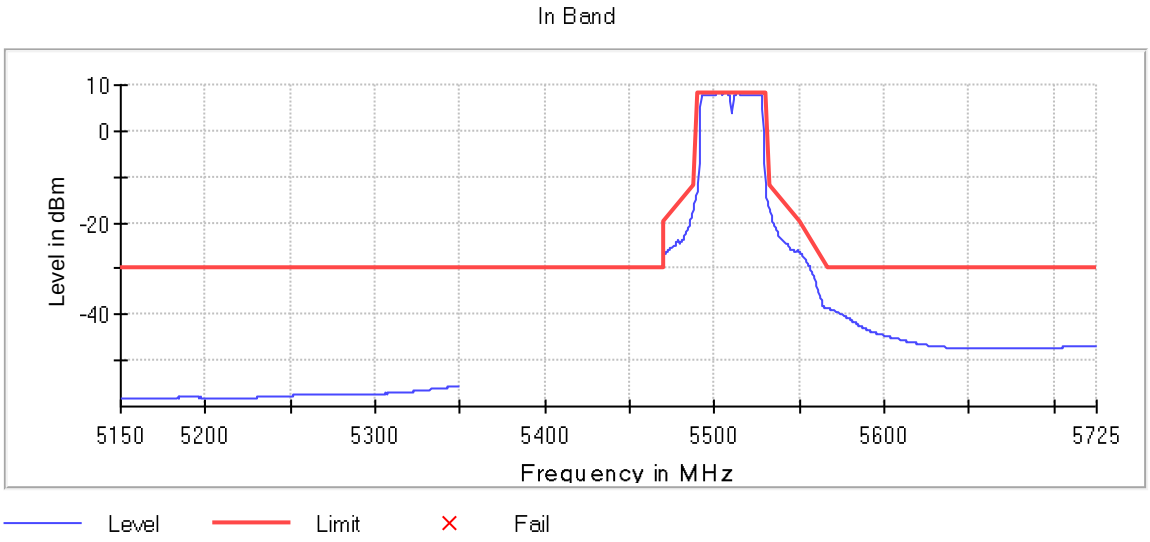


Channel 140 – Chain B

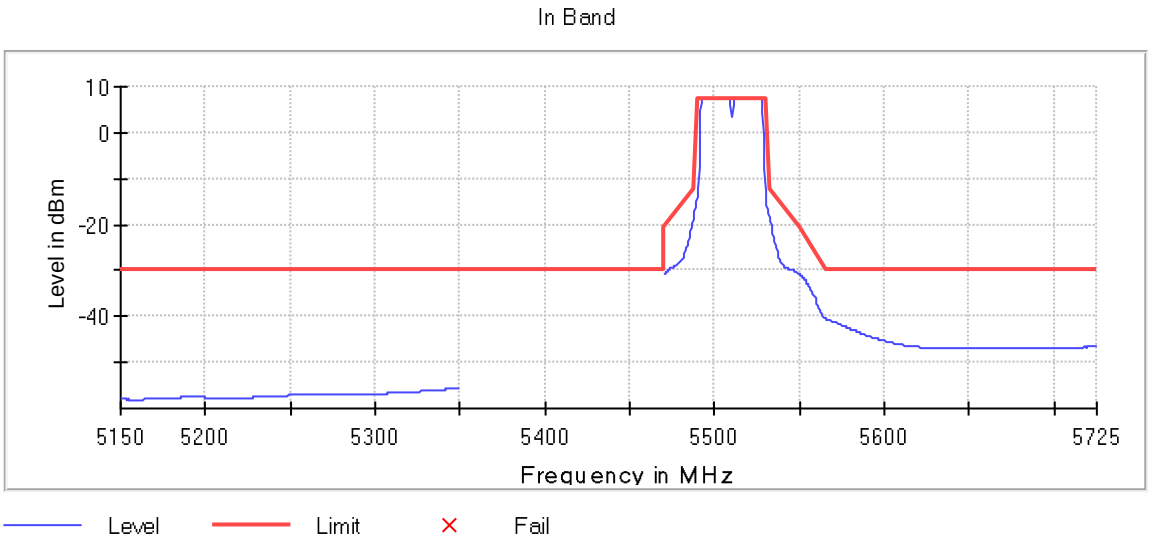


802.11n40 (SISO), HT0 – Channel 102

Channel 102 – Chain A

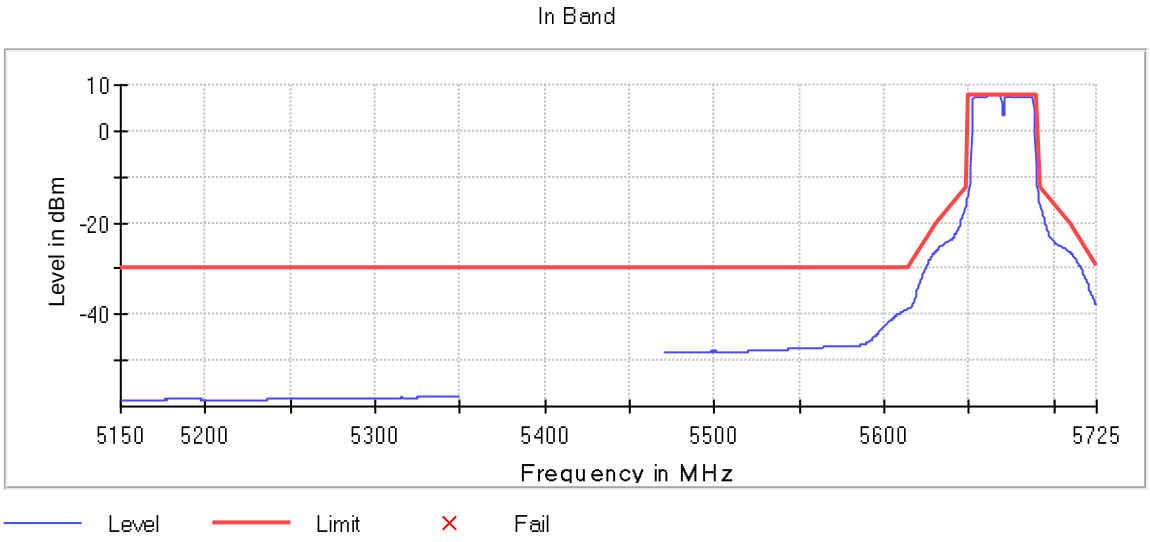


Channel 102 – Chain B

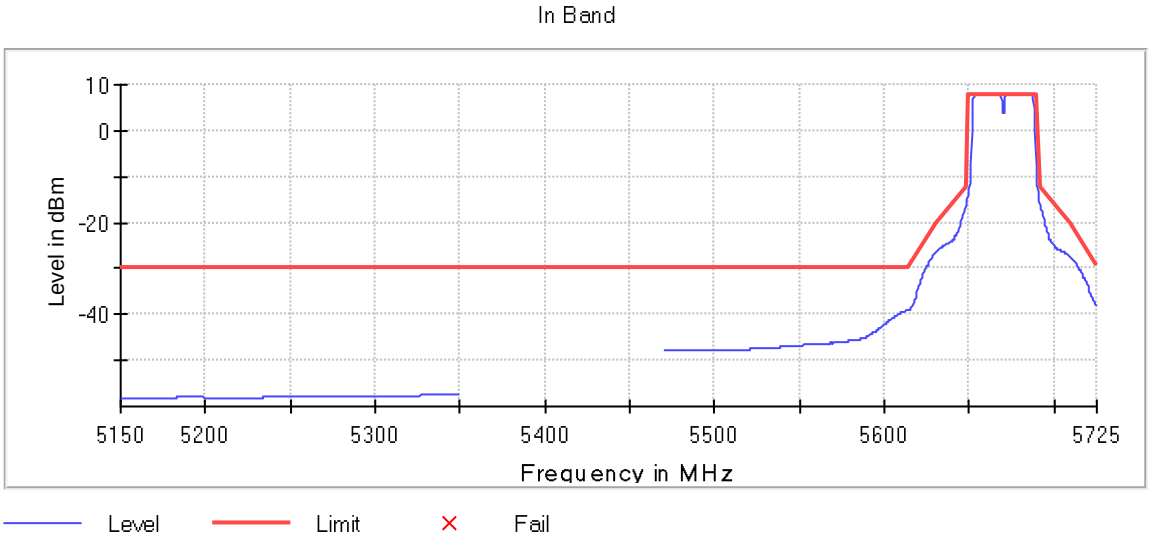


802.11n40 (SISO), HT0 – Channel 134

Channel 134 – Chain A

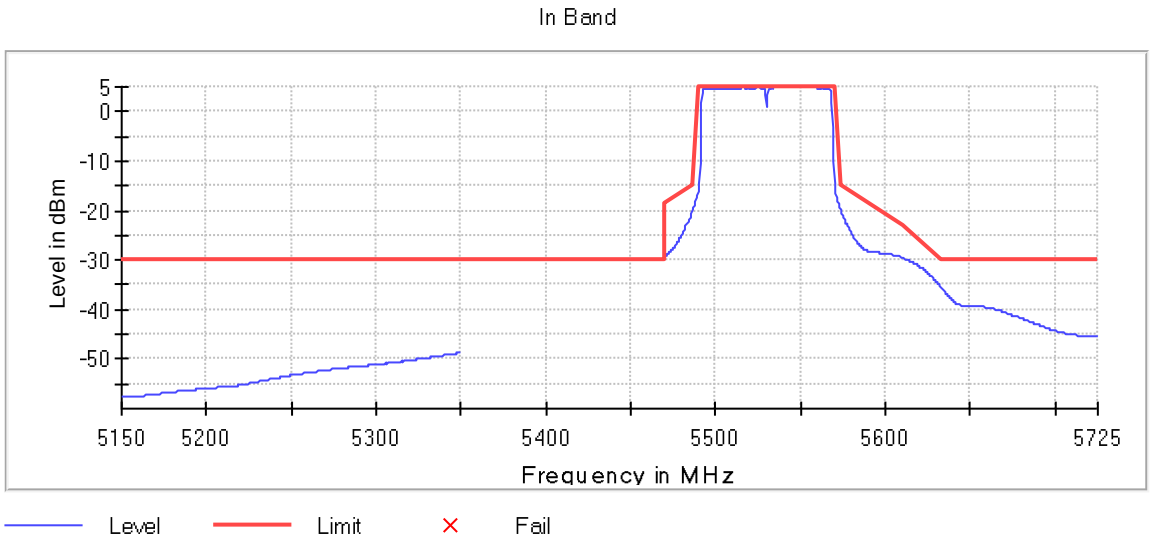


Channel 134 – Chain B

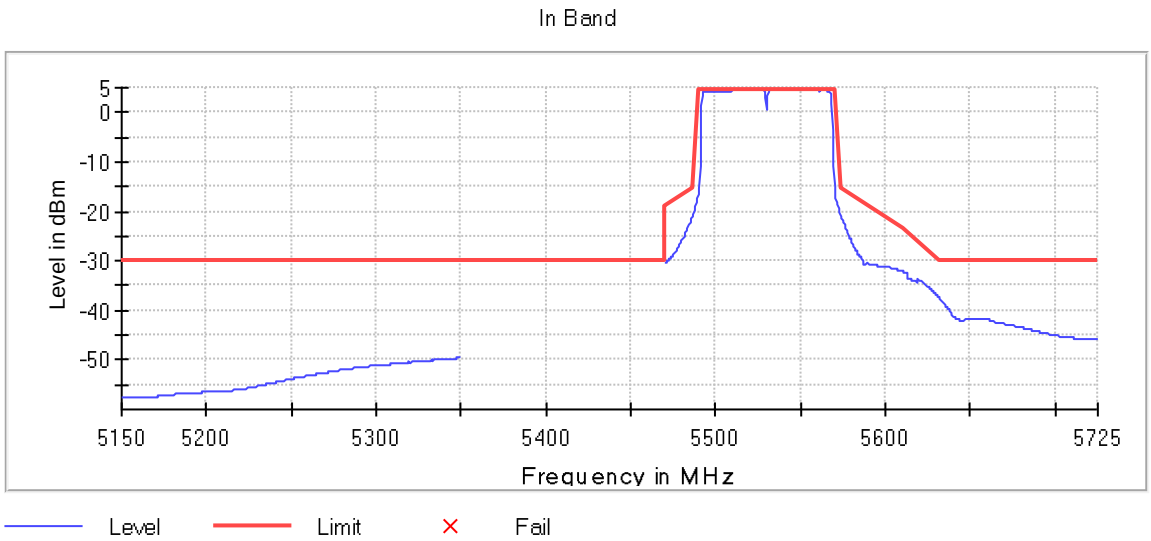


802.11ac80 (SISO), VHT0 – Channel 106

Channel 106 – Chain A

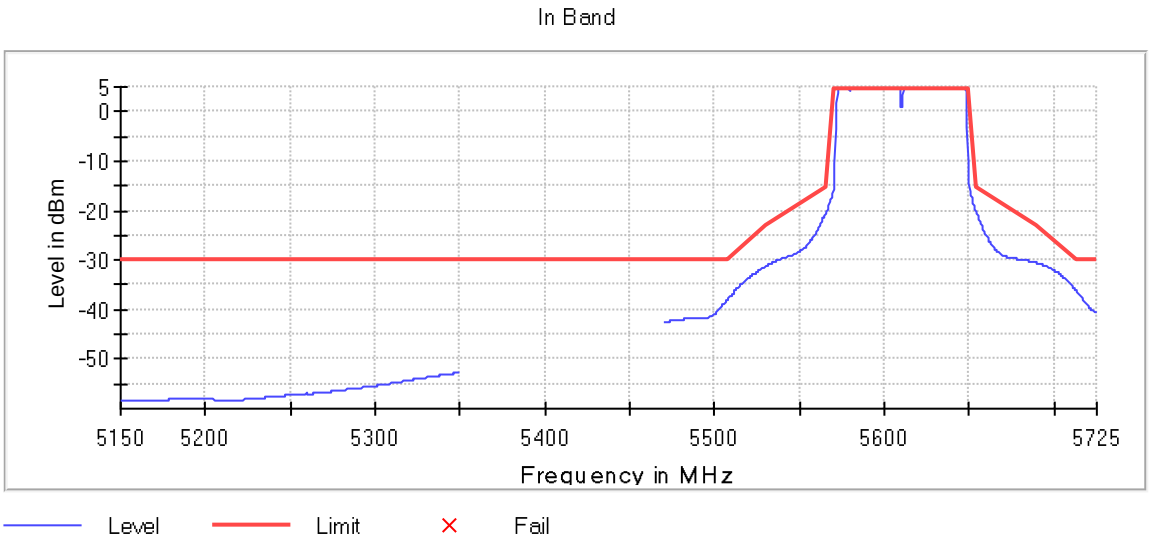


Channel 106 – Chain B

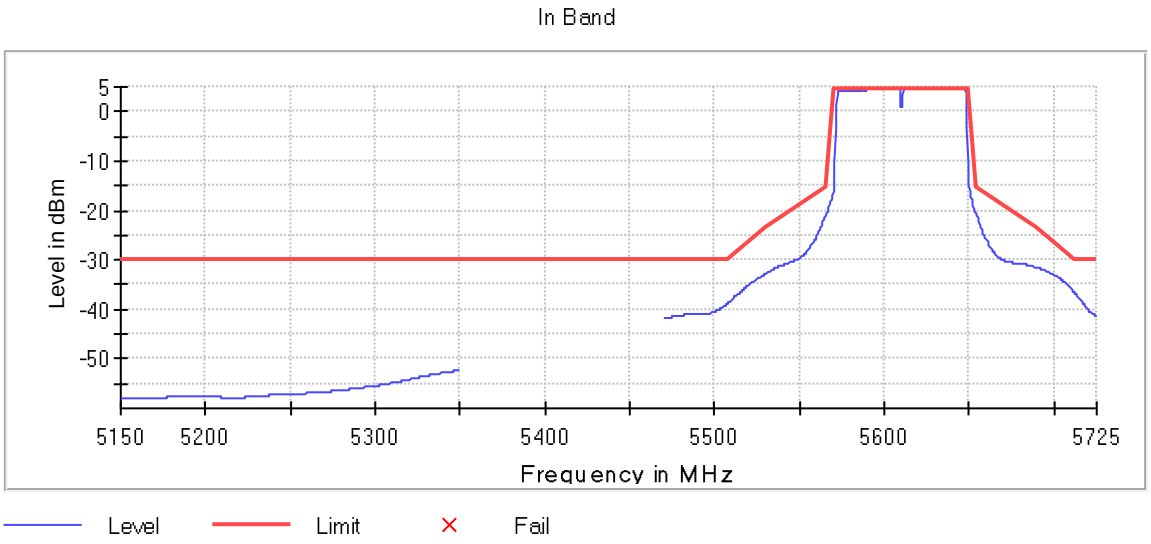


802.11ac80 (SISO), VHT0 – Channel 122

Channel 122 – Chain A

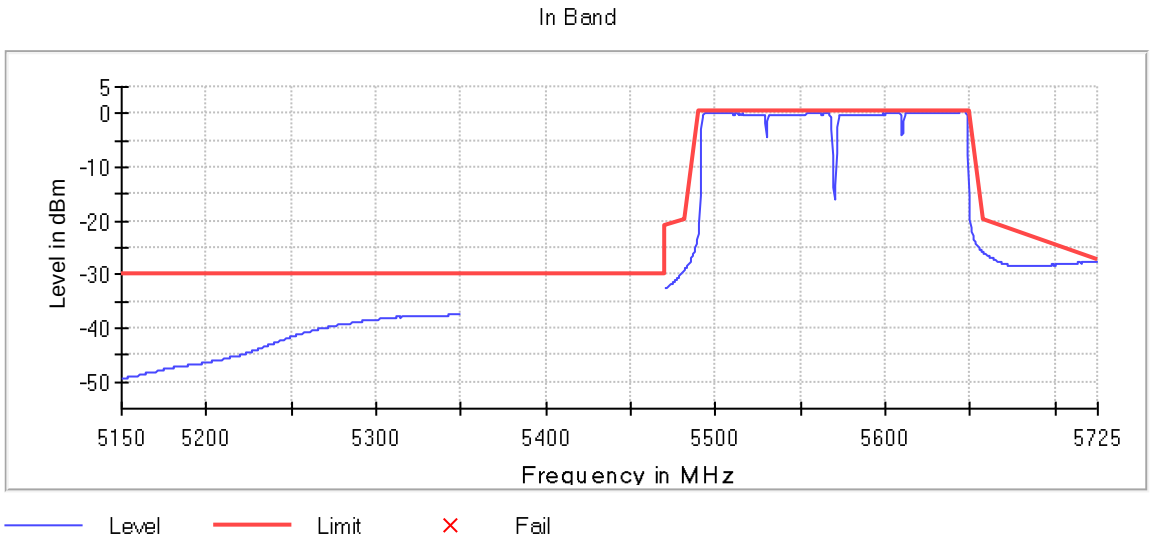


Channel 122 – Chain B

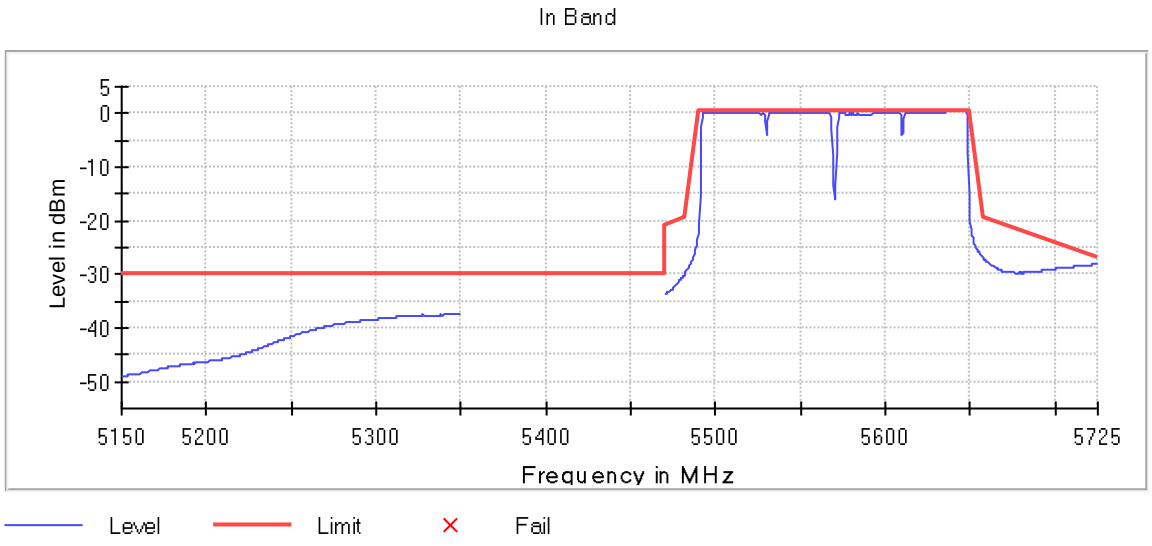


802.11ac160 (SISO), VHT0 – Channel 114

Channel 114 – Chain A

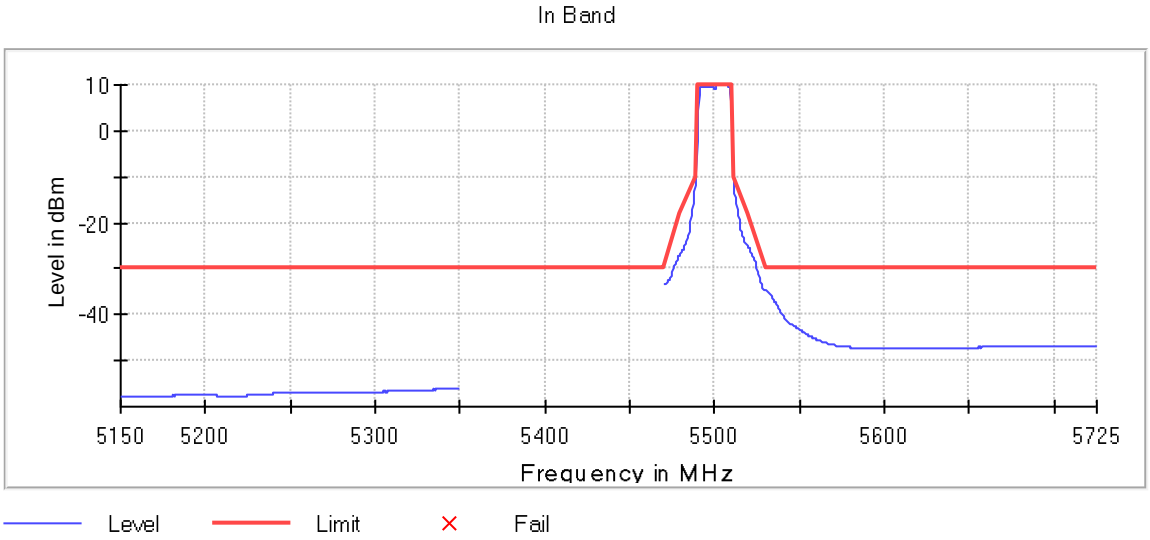


Channel 114 – Chain B

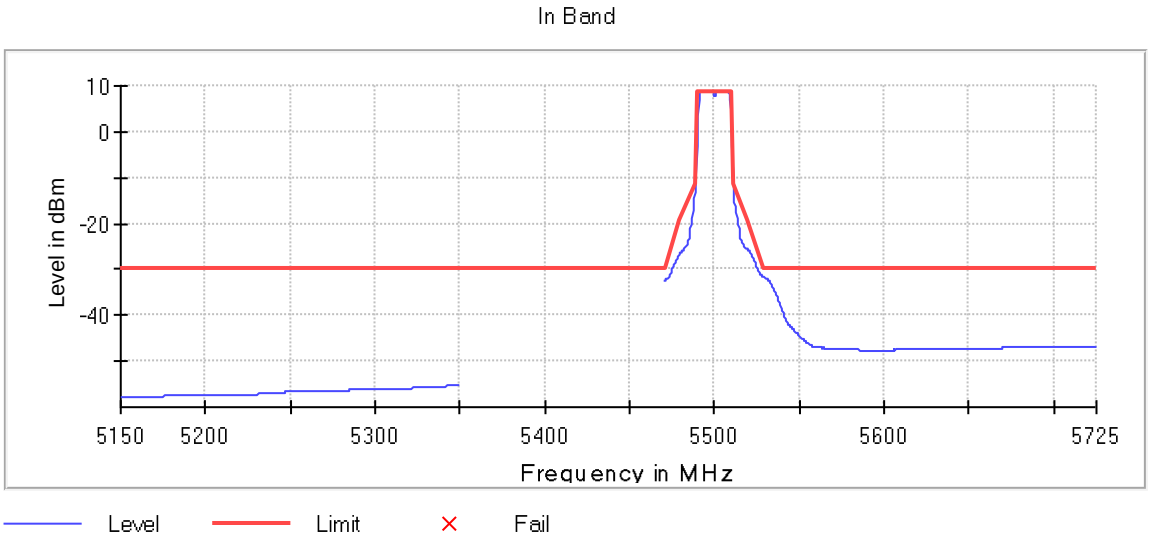


802.11ax20 (SISO), HE0 – Channel 100

Channel 100 – Chain A

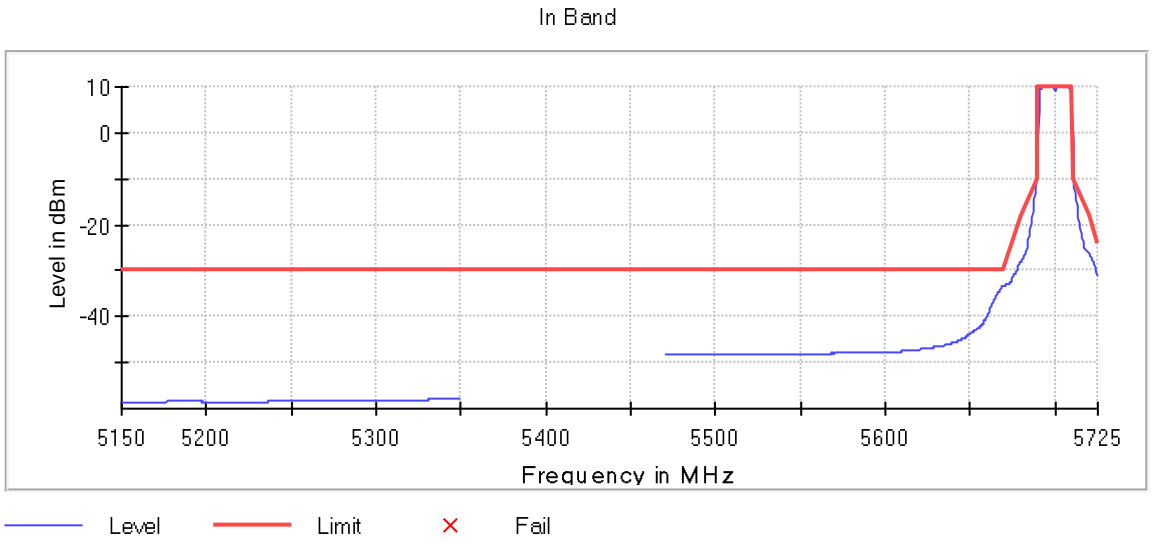


Channel 100 – Chain B

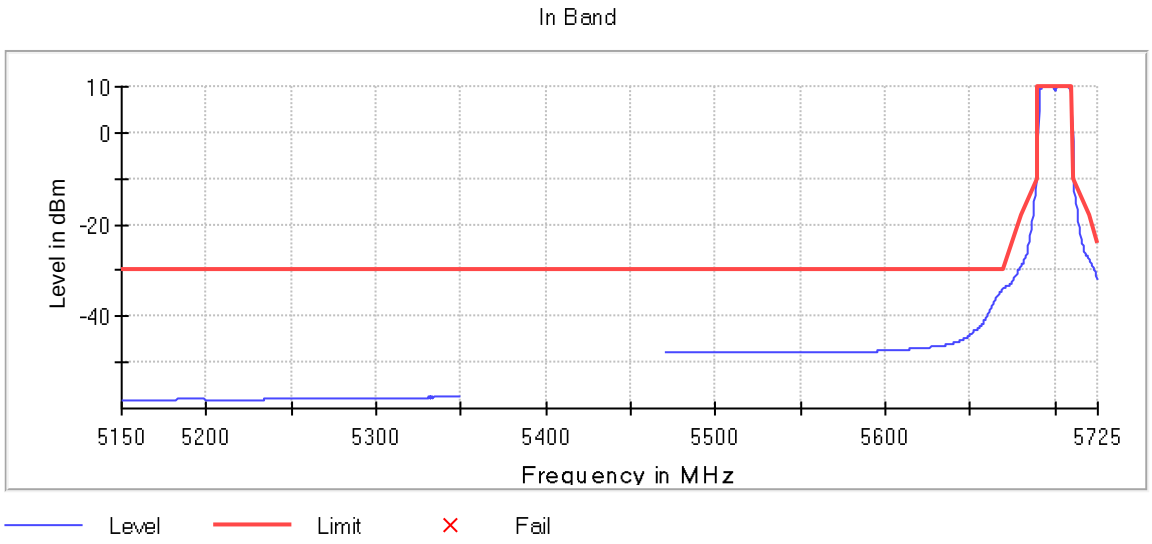


802.11ax20 (SISO), HE0 – Channel 140

Channel 140 – Chain A

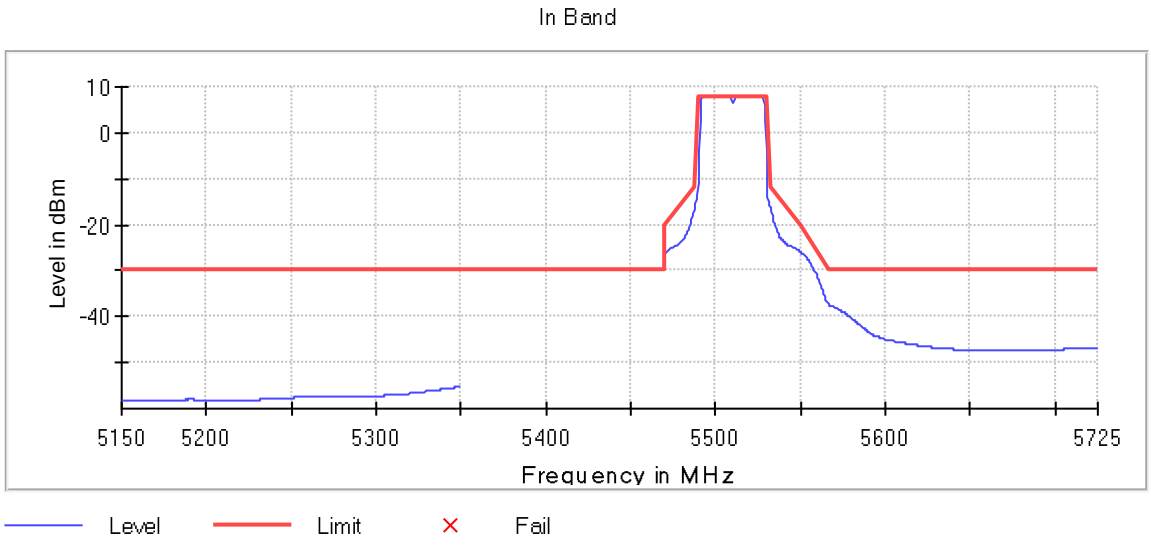


Channel 140 – Chain B

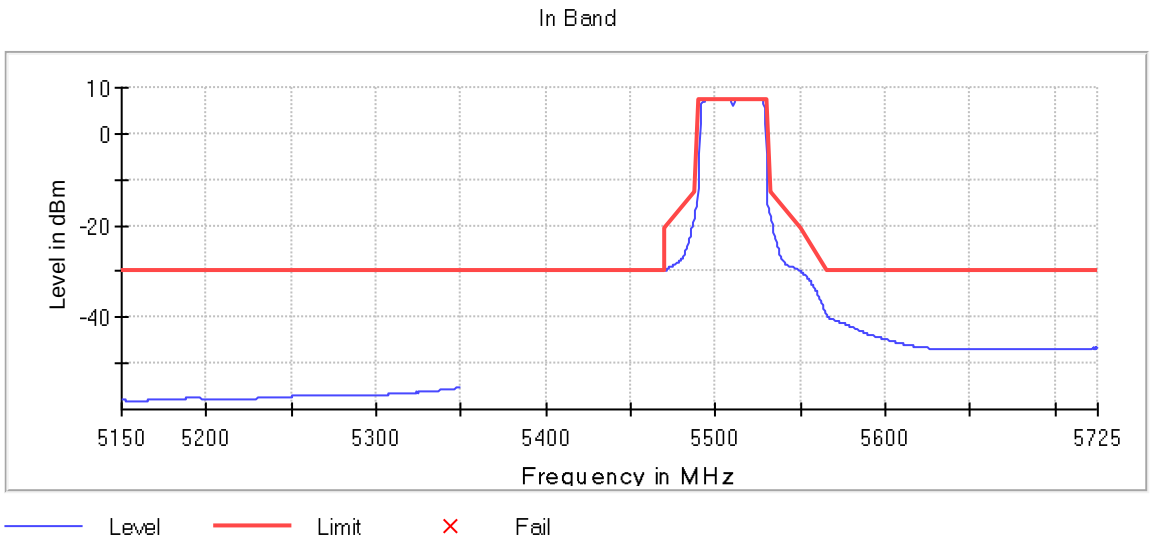


802.11ax40 (SISO), HE0 – Channel 102

Channel 102 – Chain A

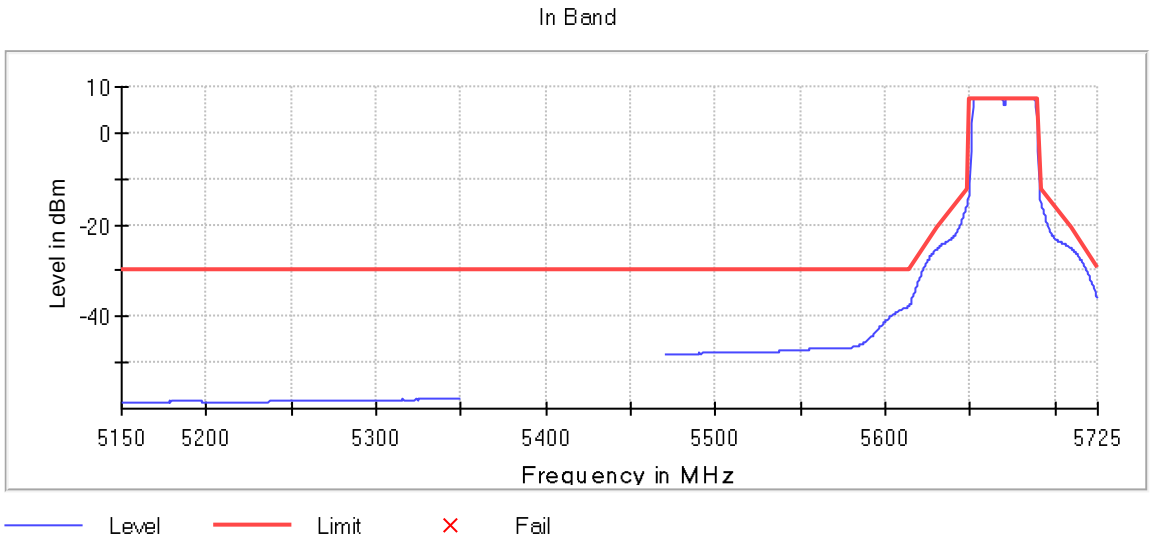


Channel 102 – Chain B

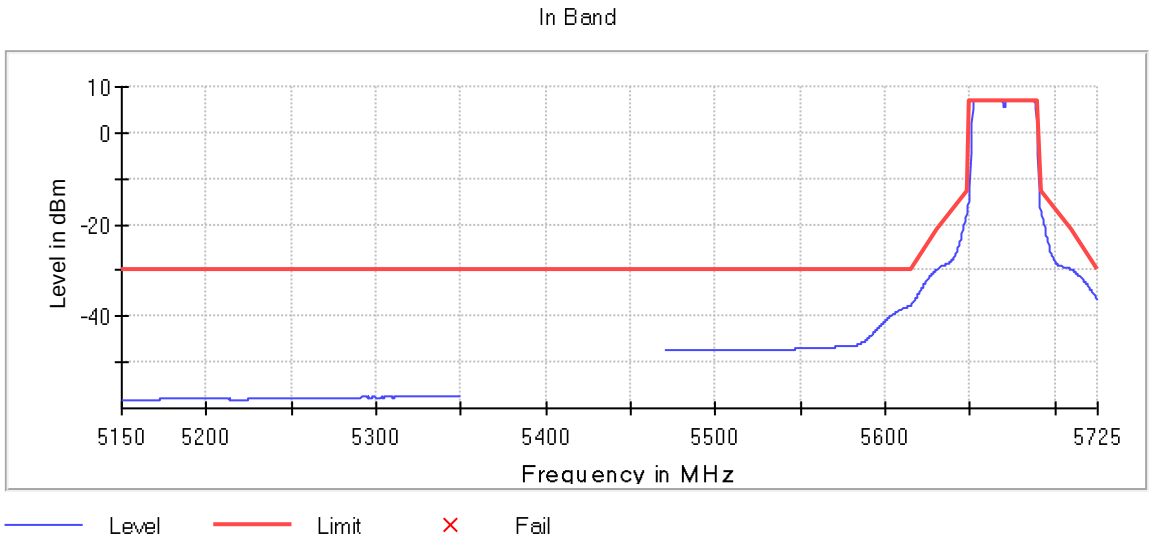


802.11ax40 (SISO), HE0 – Channel 134

Channel 134 – Chain A

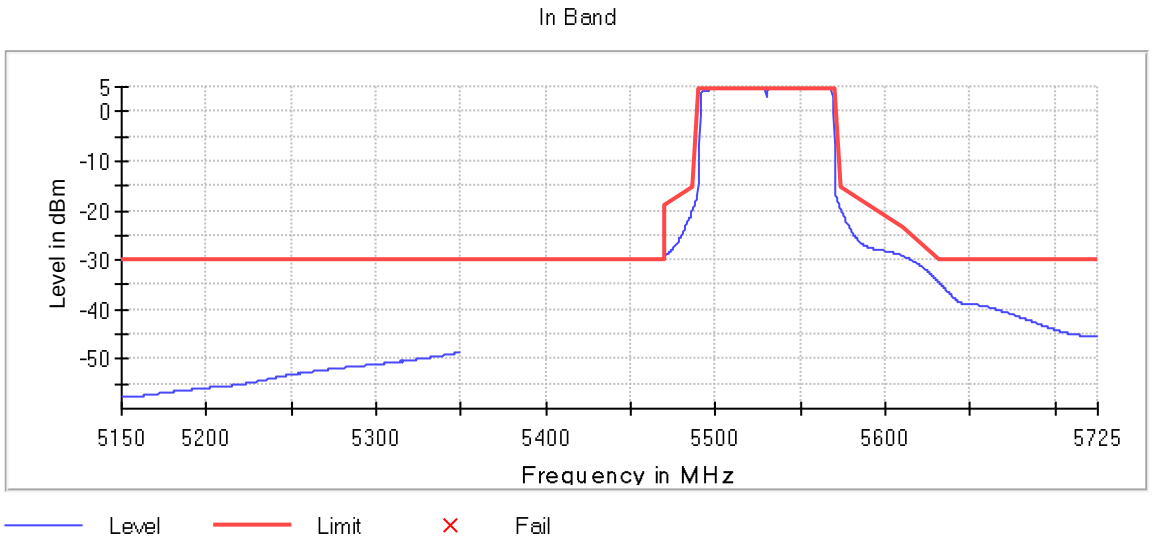


Channel 134 – Chain B

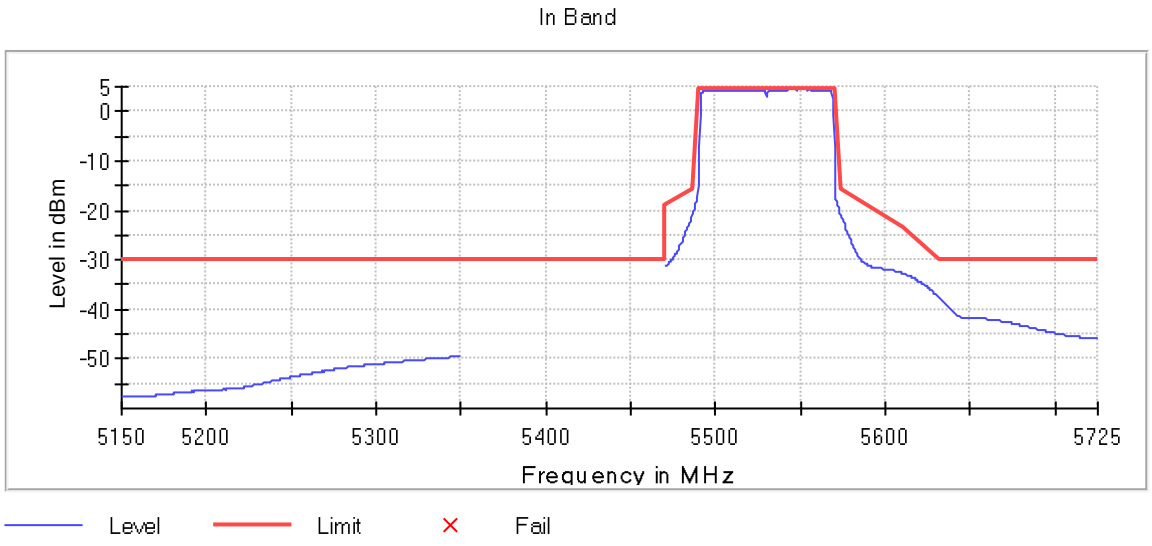


802.11ax80 (SISO), HE0 – Channel 106

Channel 106 – Chain A

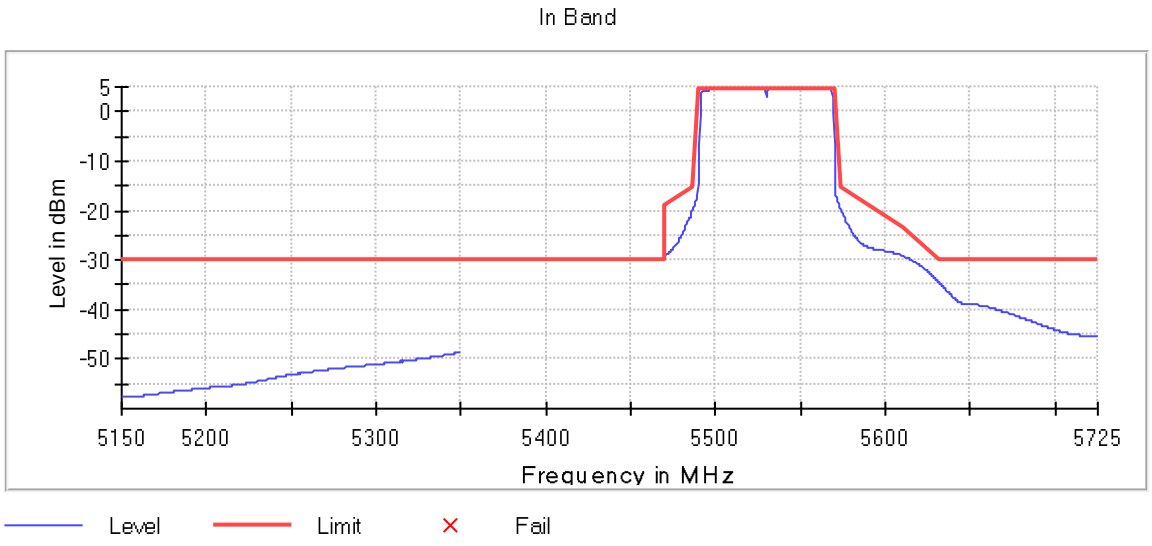


Channel 106 – Chain B

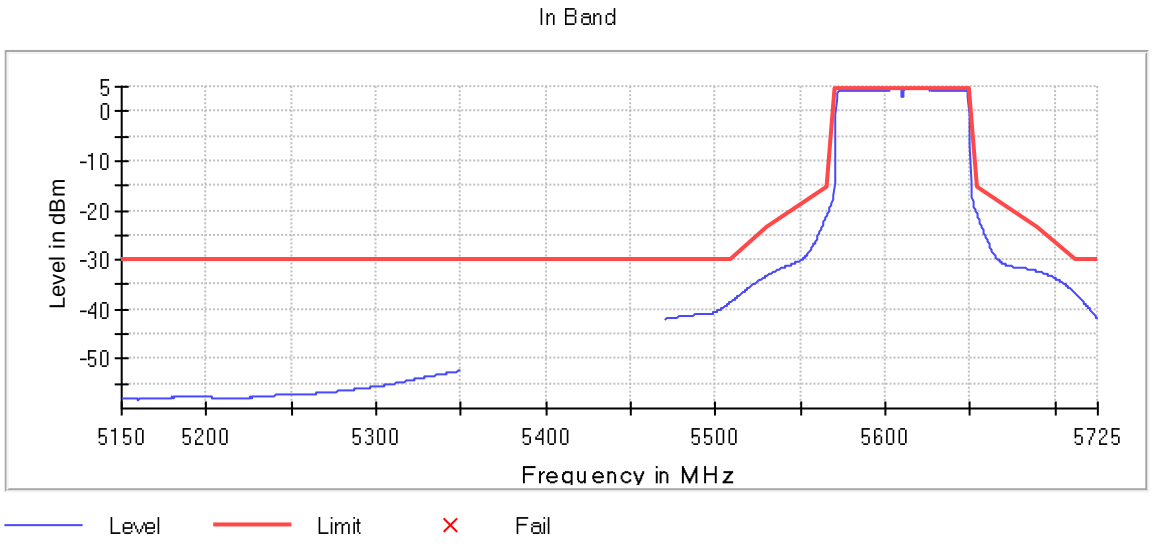


802.11ax80 (SISO), HE0 – Channel 122

Channel 122 – Chain A

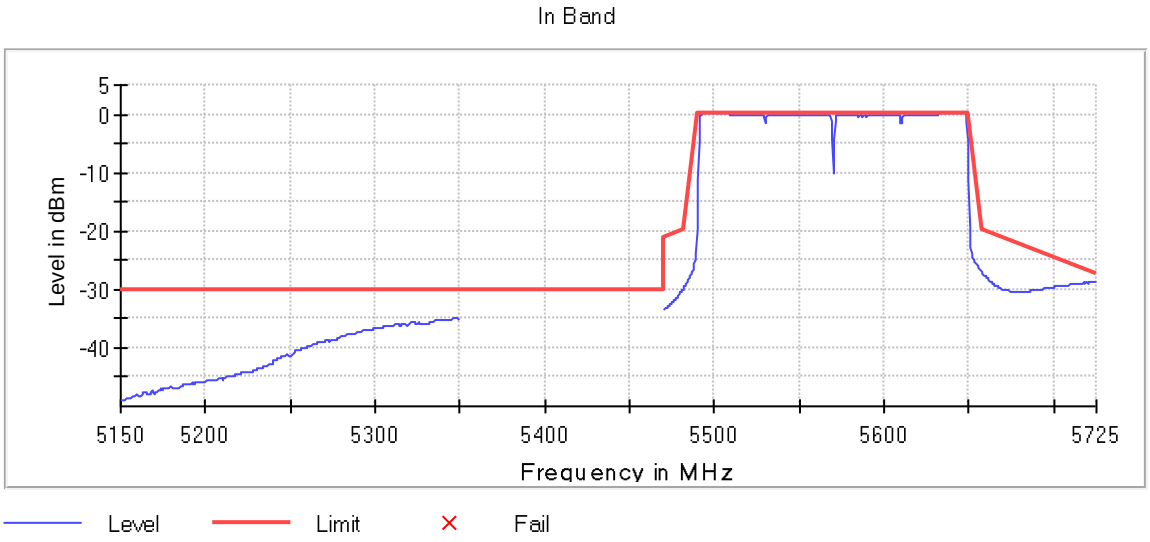


Channel 122 – Chain B

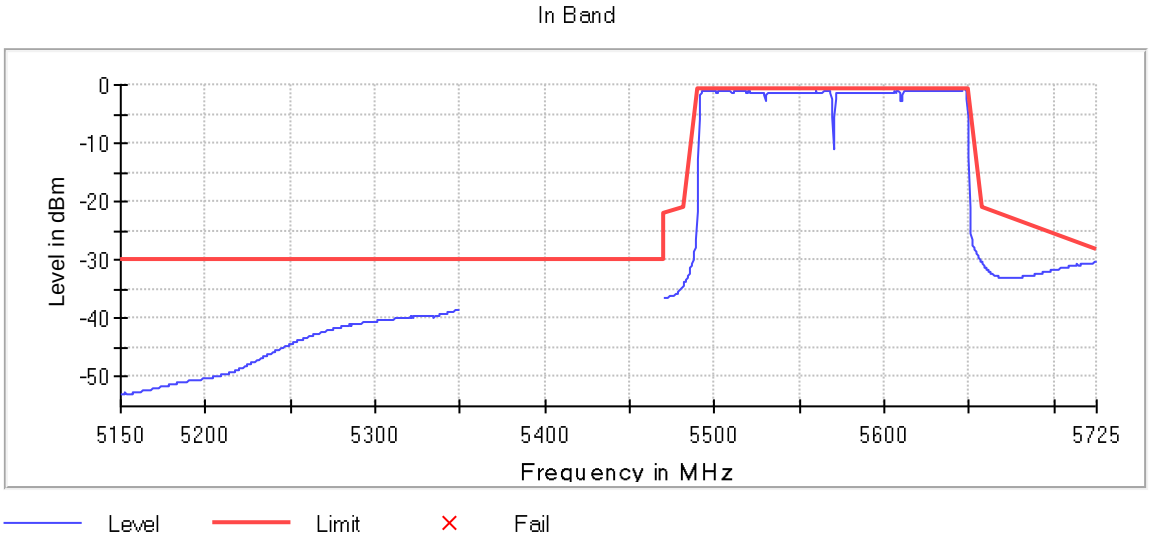


802.11ax160 (SISO), HE0 – Channel 114

Channel 114 – Chain A



Channel 114 – Chain B



B.8 Transmitter unwanted emissions outside the 5GHz RLAN bands

Standard references

<table>
<tr><th>ETSI clause</th><th>Limits</th></tr>
<tr><td>4.2.4.1.2</td><td>The level of transmitter unwanted emissions outside the 5 GHz RLAN bands shall not exceed the limits given in table 4.

Table 4. Transmitter unwanted emission limits outside the 5GHz RLAN bands
<table>
<tr><th>Frequency range</th><th>Maximum power</th><th>Bandwidth</th></tr>
<tr><td>30 MHz to 47 MHz</td><td>-36 dBm</td><td>100 kHz</td></tr>
<tr><td>47 MHz to 74 MHz</td><td>-54 dBm</td><td>100 kHz</td></tr>
<tr><td>74 MHz to 87.5 MHz</td><td>-36 dBm</td><td>100 kHz</td></tr>
<tr><td>87.5 MHz to 118 MHz</td><td>-54 dBm</td><td>100 kHz</td></tr>
<tr><td>118 MHz to 174 MHz</td><td>-36 dBm</td><td>100 kHz</td></tr>
<tr><td>174 MHz to 230 MHz</td><td>-54 dBm</td><td>100 kHz</td></tr>
<tr><td>230 MHz to 470 MHz</td><td>-36 dBm</td><td>100 kHz</td></tr>
<tr><td>470 MHz to 862 MHz</td><td>-54 dBm</td><td>100 kHz</td></tr>
<tr><td>862 MHz to 1 GHz</td><td>-36 dBm</td><td>100 kHz</td></tr>
<tr><td>1 GHz to 5.15 GHz</td><td>-30 dBm</td><td>1 MHz</td></tr>
<tr><td>5.35 GHz to 5.47 GHz</td><td>-30 dBm</td><td>1 MHz</td></tr>
<tr><td>5.725 GHz to 26 GHz</td><td>-30 dBm</td><td>1 MHz</td></tr>
</table></td></tr>
</table>

Test conditions

<table>
<tr><th>ETSI clause</th><th>Conditions</th></tr>
<tr><td>5.4.5.1</td><td>The conformance requirements in clause 4.2.4.1 shall be verified only under normal operating conditions, and when operating on those channels defined in clause 5.3.2.

The equipment shall be configured to operate under its worst case situation with respect to unwanted emissions outside the 5 GHz RLAN bands.

If possible, the UUT shall be set to continuous transmit (duty cycle = 1) for the duration of this test.

If continuous transmit is not possible, the UUT should be configured to operate at its maximum duty cycle.

The level of transmitter unwanted emissions shall be measured as, either:
a) their power in a specified load (conducted emissions) and their radiated power (e.r.p. or e.i.r.p as given in clause 4.2.4.1.2) when radiated by the cabinet or structure of the equipment (cabinet radiation); or
b) their radiated power (e.r.p. or e.i.r.p as given in clause 4.2.4.1.2) when radiated by cabinet and antenna.</td></tr>
</table>

Test procedure

The radiated setups (transmitter) shown in section *Test & System Description* were used to measure the transmission spurious emissions. Depending of the frequency range and bands being tested, different antennas and filters were used; in consequence different setups are employed.

The final measurement is done by varying the antenna height, the EUT azimuth over 360º and for both Vertical and Horizontal polarizations.

The radiated spurious emission was measured on the worst case configuration on one channel for each transmission mode.

Test Results

Tx Spurious Emissions – 30MHz to 1GHz

Tx Spurious Emissions – All modes

Frequency	RMS	Limit (e.i.r.p)	Margin	Polarization
MHz	dBm	dBm	dB	---
72.0	-63.5	-51.9	11.6	V

Note 1: The spurious signals detected do not depend on either the operating channel or the modulation mode.

Tx Spurious Emissions – 1GHz to 26 GHz

802.11a

Tx Spurious Emissions – 802.11a (SISO), Chain A, CH120

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3399.0	-48.6	-30.0	18.6	V
11200.5	-52.9	-30.0	22.9	V
24246.6	-58.3	-30.0	28.3	V

Tx Spurious Emissions – 802.11a (SISO), Chain B, CH120

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3397.5	-48.3	-30.0	18.3	V
17925.1	-53.0	-30.0	23.0	V
24251.8	-58.4	-30.0	28.4	V

802.11n

Tx Spurious Emissions – 802.11n20 (SISO), Chain A, CH120

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3398.5	-48.5	-30.0	18.5	H
11199.0	-53.1	-30.0	23.1	V
24247.5	-58.2	-30.0	28.2	V

Tx Spurious Emissions – 802.11n20 (SISO), Chain B, CH120

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3381.0	-48.3	-30.0	18.3	H
17923.6	-53.6	-30.0	23.6	H
24248.9	-58.4	-30.0	28.4	V

Tx Spurious Emissions – 802.11n20 (MIMO), Chain A+B, CH120

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3360.5	-48.9	-30.0	18.9	H
11200.5	-55.4	-30.0	25.4	V
22398.3	-58.0	-30.0	28.0	V

Tx Spurious Emissions – 802.11n40 (SISO), Chain A, CH134

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3394.5	-49.7	-30.0	19.7	H
11350.3	-56.4	-30.0	26.4	V
24256.9	-57.3	-30.0	27.3	H

Tx Spurious Emissions – 802.11n40 (SISO), Chain B, CH134

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3391.0	-49.5	-30.0	19.5	V
17837.6	-54.6	-30.0	24.6	H
24239.5	-58.0	-30.0	28.0	V

Tx Spurious Emissions – 802.11n40 (MIMO), Chain A+B, CH134

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3363.5	-48.8	-30.0	18.8	H
11336.8	-54.2	-30.0	24.2	V
24547.8	-57.6	-30.0	27.6	V

802.11ac

Tx Spurious Emissions – 802.11ac80 (SISO), Chain A, CH106

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3384.5	-49.6	-30.0	19.6	H
11059.3	-54.2	-30.0	24.2	V
24241.8	-57.6	-30.0	27.6	H

Tx Spurious Emissions – 802.11ac80 (SISO), Chain B, CH106

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3387.0	-49.6	-30.0	19.6	V
17891.7	-55.0	-30.0	25.0	V
24270.2	-57.9	-30.0	27.9	H

Tx Spurious Emissions – 802.11ac80 (SISO), Chain A+B, CH106

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3369.0	-48.9	-30.0	18.9	H
11037.6	-55.6	-30.0	25.6	V
24547.8	-57.5	-30.0	27.5	V

Tx Spurious Emissions – 802.11ac80 (SISO), Chain A, CH122

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3382.5	-49.4	-30.0	19.4	H
17916.9	-53.7	-30.0	23.7	H
24248.9	-57.8	-30.0	27.8	H

Tx Spurious Emissions – 802.11ac80 (SISO), Chain B, CH122

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3389.0	-49.3	-30.0	19.3	V
17987.4	-49.6	-30.0	19.6	H
24252.7	-57.6	-30.0	27.6	H

Tx Spurious Emissions – 802.11ac80 (MIMO), Chain (A+B), CH122

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3371.5	-48.8	-30.0	18.8	V
10781.4	-58.0	-30.0	28.0	H
24539.8	-58.0	-30.0	28.0	V

Tx Spurious Emissions – 802.11ac160 (SISO), Chain A, CH114

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3395.0	-49.2	-30.0	19.2	V
17930.9	-53.6	-30.0	23.6	H
24237.1	-57.7	-30.0	27.7	H

Tx Spurious Emissions – 802.11ac160 (SISO), Chain B, CH114

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3392.0	-49.2	-30.0	19.2	V
17819.2	-55.0	-30.0	25.0	H
24237.6	-58.3	-30.0	28.3	V

Tx Spurious Emissions – 802.11ac160 (MIMO), Chain (A+B), CH114

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3372.0	-49.2	-30.0	19.2	H
11049.7	-56.4	-30.0	26.4	V
24248.9	-58.2	-30.0	28.2	V

802.11ax

Tx Spurious Emissions – 802.11ax20 (SISO), Chain A, CH120

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3395.0	-49.2	-30.0	19.2	V
11183.5	-50.9	-30.0	20.9	H
16774.3	-49.5	-30.0	19.5	V
24257.4	-57.9	-30.0	27.9	V

Tx Spurious Emissions – 802.11ax20 (SISO), Chain B, CH120

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3394.5	-49.4	-30.0	19.4	V
11183.1	-54.0	-30.0	24.0	V
16775.2	-49.4	-30.0	19.4	V
24248.0	-58.4	-30.0	28.4	V

Tx Spurious Emissions – 802.11ax20 (MIMO), Chain A+B, CH120

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3371.5	-48.7	-30.0	18.7	V
11183.1	-50.6	-30.0	20.6	V
16775.7	-44.7	-30.0	14.7	V
22366.6	-54.6	-30.0	24.6	V

Tx Spurious Emissions – 802.11ax40 (SISO), Chain A, CH134

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3394.0	-49.5	-30.0	19.5	H
11303.9	-53.8	-30.0	23.8	V
16956.0	-45.3	-30.0	15.3	H
24274.9	-58.5	-30.0	28.5	V

Tx Spurious Emissions – 802.11ax40 (SISO), Chain B, CH134

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3389.5	-49.4	-30.0	19.4	V
16956.5	-45.2	-30.0	15.2	V
22607.5	-57.8	-30.0	27.8	V

Tx Spurious Emissions – 802.11ax40 (MIMO), Chain A+B, CH134

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3373.5	-48.8	-30.0	18.8	V
11303.9	-43.3	-30.0	13.3	H
16955.5	-48.5	-30.0	18.5	V
22607.5	-53.6	-30.0	23.6	V

Tx Spurious Emissions – 802.11ax80 (SISO), Chain A, CH106

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3394.5	-49.5	-30.0	19.5	H
6868.8	-55.3	-30.0	25.3	V
6887.2	-57.9	-30.0	27.9	V
10983.9	-48.4	-30.0	18.4	H
16477.0	-51.8	-30.0	21.8	V
24224.8	-58.3	-30.0	28.3	V

Tx Spurious Emissions – 802.11ax80 (SISO), Chain B, CH106

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
4114.6	-53.8	-30.0	23.8	V
4132.4	-55.1	-30.0	25.1	V
6868.8	-55.2	-30.0	25.2	V
6887.2	-58.4	-30.0	28.4	V
10983.9	-56.6	-30.0	26.6	H
16476.5	-52.0	-30.0	22.0	V
24252.2	-57.5	-30.0	27.5	H

Tx Spurious Emissions – 802.11ax80 (SISO), Chain A+B, CH106

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
4114.6	-54.6	-30.0	24.6	V
6868.8	-55.0	-30.0	25.0	V
6887.2	-56.7	-30.0	26.7	V
10983.9	-46.4	-30.0	16.4	V
11007.1	-56.6	-30.0	26.6	V
25225.9	-57.6	-30.0	27.6	V

Tx Spurious Emissions – 802.11ax80 (SISO), Chain A, CH122

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3391.0	-49.2	-30.0	19.2	V
11143.9	-48.2	-30.0	18.2	H
16715.3	-51.1	-30.0	21.1	H
22287.8	-58.0	-30.0	28.0	H

Tx Spurious Emissions – 802.11ax80 (SISO), Chain B, CH122

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3382.0	-49.2	-30.0	19.2	V
11144.4	-52.9	-30.0	22.9	H
16715.8	-51.6	-30.0	21.6	V
24232.4	-58.4	-30.0	28.4	V

Tx Spurious Emissions – 802.11ax80 (MIMO), Chain (A+B), CH122

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3383.5	-49.3	-30.0	19.3	V
6974.2	-56.9	-30.0	26.9	V
7012.4	-58.1	-30.0	28.1	V
11143.9	-47.7	-30.0	17.7	V
16716.3	-44.2	-30.0	14.2	V
22287.8	-56.5	-30.0	26.5	V

Tx Spurious Emissions – 802.11ax160 (SISO), Chain A, CH114

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3388.5	-49.5	-30.0	19.5	H
6874.1	-53.5	-30.0	23.5	V
6912.3	-58.0	-30.0	28.0	V
10983.9	-48.0	-30.0	18.0	V
16476.0	-51.4	-30.0	21.4	V
24231.9	-57.9	-30.0	27.9	H

Tx Spurious Emissions – 802.11ax160 (SISO), Chain B, CH114

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3381.5	-49.3	-30.0	19.3	V
6874.1	-54.5	-30.0	24.5	V
6912.3	-58.3	-30.0	28.3	V
10983.9	-56.5	-30.0	26.5	V
16476.5	-52.9	-30.0	22.9	H
24234.8	-58.4	-30.0	28.4	V

Tx Spurious Emissions – 802.11ax160 (MIMO), Chain (A+B), CH114

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
3388.0	-49.4	-30.0	19.4	H
6874.1	-53.5	-30.0	23.5	V
6912.3	-57.2	-30.0	27.2	V
10983.9	-44.8	-30.0	14.8	V
25249.1	-57.1	-30.0	27.1	V

B.9 Receiver spurious emissions

Test limits

<table>
<tr><th>ETSI clause</th><th>Limits</th></tr>
<tr><td>4.2.5.2</td><td>The spurious emissions of the receiver shall not exceed the limits given in table 5.

Table 5: Spurious emissions limits for receivers
<table>
<tr><th>Frequency range</th><th>Maximum power</th><th>Bandwidth</th></tr>
<tr><td>30 MHz to 1GHz</td><td>-57 dBm</td><td>100 kHz</td></tr>
<tr><td>1GHz to 26 GHz</td><td>-47 dBm</td><td>1 MHz</td></tr>
</table></td></tr>
</table>

Test conditions

ETSI clause	Conditions
5.4.7.1	The conformance requirements in clause 4.2.5 shall be verified only under normal operating conditions, and when operating on those channels defined in clause 5.3.2. For equipment having different operating modes (see clause 5.3.3.2) the measurements described in the present clause may not need to be repeated for all the operating modes. The level of transmitter unwanted emissions shall be measured as, either: • their power in a specified load (conducted emissions) and their radiated power (e.r.p. or e.i.r.p as given in clause 4.2.5.2) when radiated by the cabinet or structure of the equipment (cabinet radiation); or • their radiated power (e.r.p. or e.i.r.p as given in clause 4.2.5.2) when radiated by cabinet and antenna. The test method in clause 5.4.7.2 below assumes, that for the duration of the test, the UUT is configured into a continuous receive mode, or is operated in a mode where no transmissions occur.

Test procedure

The radiated setups (receiver) shown in section *Test & System Description* were used to measure the receiver spurious emissions. Depending of the frequency range and bands being tested, different antennas and filters were used, in consequence different setups are employed.

The final measurement is done by varying the antenna height, the EUT azimuth over 360º and for both Vertical and Horizontal polarizations.

The radiated spurious emission was measured on the worst case configuration on one channel for each transmission mode.

Test Results Rx

Rx Spurious Emissions – 30MHz to 1GHz

Rx Spurious Emissions – All modes

Frequency	RMS	Limit (e.i.r.p)	Margin	Polarization
MHz	dBm	dBm	dB	---
72.0	-63.7	-54.9	8.8	V

Note 1: The spurious signals detected do not depend on either the operating channel or the modulation mode.

Rx Spurious Emissions – 1GHz to 26 GHz

Rx Spurious Emissions – 802.11a/n20 (MIMO), Chain A+B, CH120

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
14972.5	-54.8	-47.0	7.8	V
25915.0	-56.5	-47.0	9.5	H

Rx Spurious Emissions – 802.11n40 (MIMO), Chain A+B, CH134

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
15102.5	-54.5	-47.0	7.5	V
25935.0	-56.7	-47.0	9.7	H

Rx Spurious Emissions – 802.11ac80 (MIMO), Chain A+B, CH106

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
15054.5	-54.6	-47.0	7.6	V
25897.0	-56.7	-47.0	9.7	H

Rx Spurious Emissions – 802.11ac80 (MIMO), Chain A+B, CH122

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
15072.5	-54.3	-47.0	7.3	H
25917.0	-56.5	-47.0	9.5	H

Rx Spurious Emissions – 802.11ac160 (MIMO), Chain A+B, CH114

Frequency	RMS	Limit	Margin	Polar
MHz	dBm	dBm	dB	---
15067.0	-54.5	-47.0	7.5	H
25958.0	-56.9	-47.0	9.9	H

B.10 Dynamic Frequency Selection

Test limits

<table>
<tr><th>ETSI clause</th><th>Limits</th></tr>
<tr><td>4.2.6.2.1</td><td>The table below lists the DFS related technical requirements and their applicability for every operational mode. If the RLAN device is capable of operating in more than one operational mode then every operating mode shall be assessed separately.
<table>
<tr><th>Requirement</th><th>Slave without radar detection</th></tr>
<tr><td>Channel Availability Check</td><td>Not required</td></tr>
<tr><td>Off-Channel CAC (see note 1)</td><td>Not required</td></tr>
<tr><td>In-Service Monitoring</td><td>Not required</td></tr>
<tr><td>Channel Shutdown</td><td>✓</td></tr>
<tr><td>Non-Occupancy Period</td><td>Not required</td></tr>
<tr><td>Uniform Spreading</td><td>Not required</td></tr>
</table></td></tr>
<tr><td>4.2.6.2.5

Annex D</td><td>Channel Shutdown
The Channel Move Time shall not exceed the limit defined in table D.1.
The Channel Closing Transmission Time shall not exceed the limit defined in table D.1.
Table D.1. DFS requirement values
<table>
<tr><th>Parameter</th><th>Value</th></tr>
<tr><td>Channel Move Time</td><td>10 s</td></tr>
<tr><td>Channel Closing Transmission Time</td><td>1s</td></tr>
</table></td></tr>
</table>

Test conditions

ETSI clause	Conditions
5.4.8.1.1	The conformance requirements in clause 4.2.6 shall be verified only under normal operating conditions. The channels and the channel bandwidths to be used for testing are defined in clause 5.3.2. The UUT is capable of transmitting a test transmission sequence as described in clause 5.3.1.2. The UUT shall be configured to operate at its maximum *Channel Occupancy Time* without the use of any pauses in between transmissions.

Test procedure

The DFS setup shown in section *Test & System Description* was used to measure the Dynamic Frequency Selection (DFS). The DUT (slave device) is connected to the access point through an attenuator and a power splitter. A laptop is connected to the access point (master device) through an Ethernet connection and it receives the broadcasted data from the DUT.

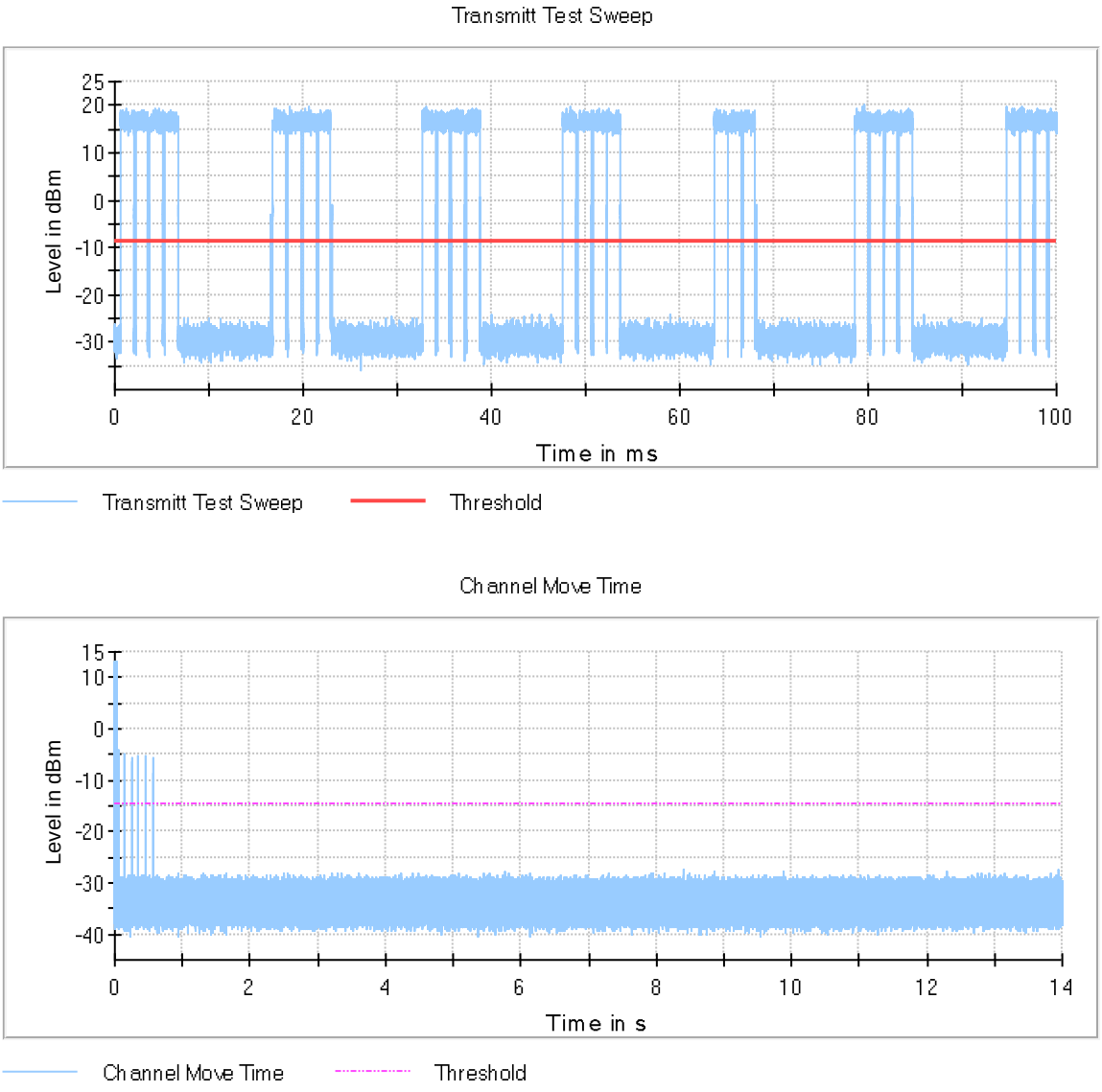
For the DFS measurement, the vector signal generator (VSG) send the reference DFS test signal to the access point. Then the access point should detected the radar, the DUT (slave) should stop its transmission on the current channel whenever instructed by the master device. All signals – master, slave, radar – are captured by the spectrum analyzer.

Results tables

Tested Channel: 108, Frequency: 5540 MHz

Test item	Results	Limit
Transmit Test Duty Cycle	38.193 %	-
Channel Closing Transmission Time	1.168 ms	1 second
Channel Move Time	558 ms	10 seconds

Results Screenshot



Channel Move Time < 10s. Test PASS
Channel Closing Transmission Time (*Aggregate Time*) = 1.712 ms. Test PASS
Channel Move Time (*Channel Closing Time*) = 609 ms. Test PASS

B.11 Adaptivity (Channel Access Mechanism)

Test limits

ETSI clause	Limits
4.2.7.3.2	*Load Based Equipment*. Load based Equipment shall implement a Listen Before Talk (LBT) based Channel Access Mechanism to detect the presence of other RLAN transmissions on an Operating Channel.
4.2.7.3.2.5 Option 1	*ED Threshold Level.* For equipment that for its operation in the 5 GHz bands is conforming to IEEE 802.11™-2016 [9], clause 17, clause 19 or clause 21, or any combination of these clauses, the ED Threshold Level (TL) is independent of the equipment's maximum transmit power (PH). Assuming a 0 dBi receive antenna the ED Threshold Level (TL) shall be: ***TL = -75 dBm/MHz***
4.2.7.3.3.3	*Short control signalling transmissions:* • within an observation period of 50 ms, the number of Short Control Signalling Transmissions by the equipment shall be equal to or less than 50; and • the total duration of the equipment's Control Signalling Transmissions shall be less than 2 500 µs within said observation period.

Test conditions

ETSI clause	Conditions
5.4.9.1	See clause 5.1 for the test conditions. These measurements shall only be performed at normal test conditions. The channel(s) to be used for testing is defined in clause 5.3.2. The device shall be configured to operate at its maximum output power level.

Test procedure

ETSI clause	Conducted measurements, verification of reaction to the interference signal.
5.4.9.2.2	It shall be verified that: • The UUT stops transmissions on the current operating channel. • Apart from Short Control Signaling Transmissions there shall be no subsequent transmissions while the interfering signal is present. • The Short Control Signalling Transmissions shall comply with the limits defined in clause 4.2.7.3.3.

The adaptivity setup shown in section *Test & System Description* was used to verify the adaptivity of the UUT.

The UUT connects to a companion device with the maximum possible payload.

The spectrum analyzer monitors the transmissions in response to three different interference signals.

These interferers are three 100% duty cycle noise signal: one Gaussian noise signal, one OFDM signal and one LTE type signal. These signals are injected on the current operating channel of the UUT

The power levels for the signals at the input of the receiver are as follows:

- Companion device= -50dBm/MHz
- Interference signal = ***TL + Antenna gain - Margin*** = -77dBm/MHz
  TL = -75 dBm/MHz, limit of the ED Threshold Level assuming 0dBi antenna gain
  Antenna gain = Antenna gain declared by the applicant (+5dBi)
  Margin = Additionnal margin requested by the applicant (7dB)

Test Results

According to ETSI EN 301 893 V2.1.1., table 11 of section 5.3.2, one channel out of the declared channels has been tested.
See report 201120-03.TR14 - ETSI, WLAN 5.2GHz, GfP 1216 (AX211D2W) for the test results.

Compliance

PASS

B.12 Receiver Blocking

Test limits

<table>
<tr><th>ETSI clause</th><th>Limits</th></tr>
<tr><td>4.2.8.3

4.2.8.4</td><td>The minimum performance criterion shall be a PER of less than or equal to 10 %.

While maintaining the minimum performance criteria as defined in clause 4.2.8.3, the blocking levels at specified frequency offsets shall be equal to or greater than the limits defined in table 9.

Table 9: Receiver Blocking parameters
<table>
<tr><th rowspan="2">Wanted signal mean power from companion device (dBm)</th><th rowspan="2">Blocking signal frequency (MHz)</th><th colspan="2">Blocking signal power (dBm) (see note 2)</th><th rowspan="2">Type of blocking signal</th></tr>
<tr><th>Master or Slave signal with radar detection (see table D.2, note 2)</th><th>Slave without radar detection (see table D.2, note 2)</th></tr>
<tr><td>Pmin + 6 dB</td><td>5 100</td><td>-53</td><td>-59</td><td>Continuous Wave</td></tr>
<tr><td>Pmin + 6 dB</td><td>4 900
5 000
5 975</td><td>-47</td><td>-53</td><td>Continuous Wave</td></tr>
<tr><td colspan="5">NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined clause 4.2.8.3 in the absence of any blocking signal.
NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the same levels should be used at the antenna connector irrespective of antenna gain.</td></tr>
</table>
</td></tr>
</table>

Test conditions

ETSI clause	Conditions
5.4.10.1	These measurements shall only be performed at normal test conditions. The UUT shall operate in its normal operational mode. If the equipment can be configured to operate with different Nominal Channel Bandwidths (e.g. 20 MHz and 40 MHz) and different data rates, then the combination of the smallest channel bandwidth and the lowest data rate for this channel bandwidth which still allows the equipment to operate as intended shall be used. It shall be verified that this performance criteria as defined by the manufacturer is achieved during the blocking test.

Test procedure

The receiver blocking setup shown in section *Test & System Description* was used to measure receiver blocking signal. The signaling Unit is a CMW500.
The packet error rate (PER) is measured with the CMW500. The blocking signal is emulated by the Signal generator SMB100A. According to the applicant declaration, the device is considered as a slave device.

Test results

Configuration tested: 802.11a, Chain A, Channel 100, 6Mbps

- **Minimum performance result without interferer**

Wanted signal mean power from companion device: Pmin [dBm]	PER [%]
-81.60	5.40

- **Minimum performance results with interferer**

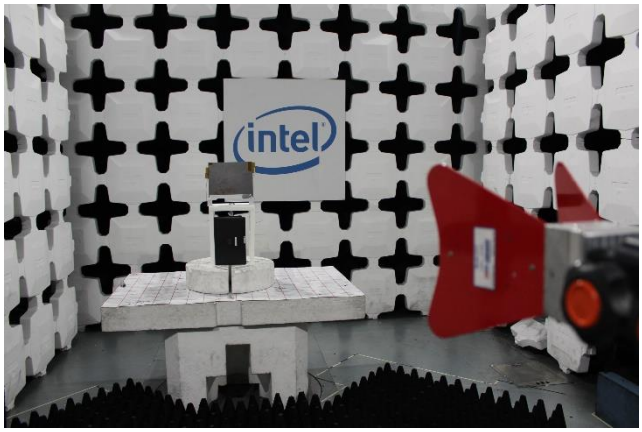
Wanted signal mean power from companion device:

✓ Pmin [dBm] + 6dB = -75.60 dBm

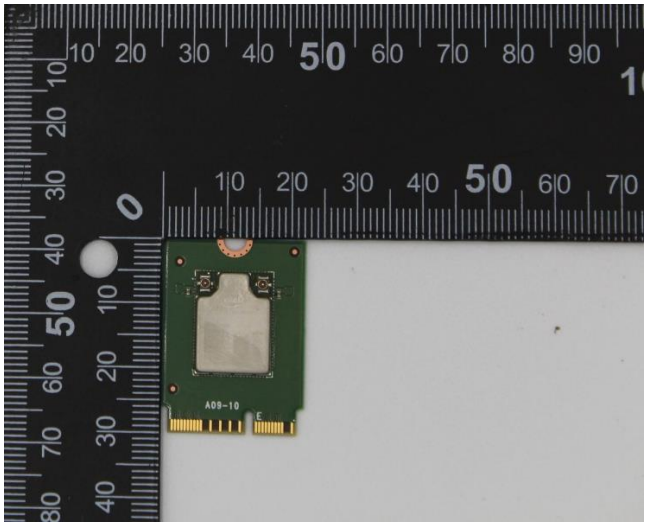
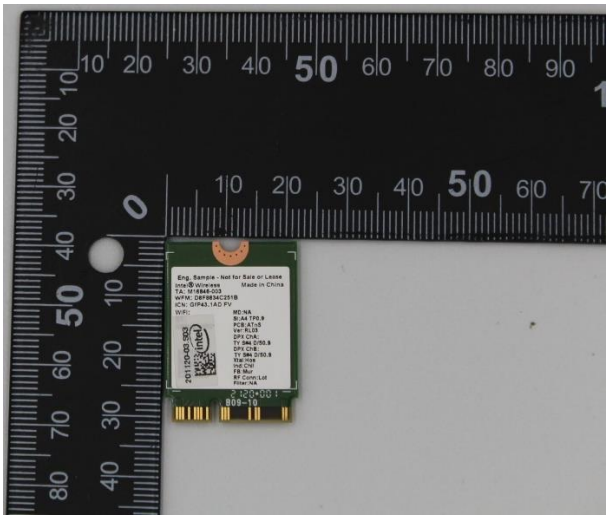
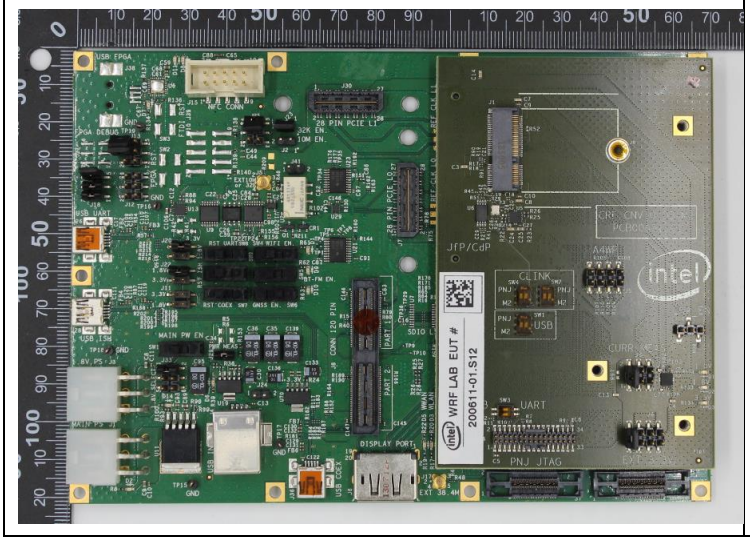
Blocking signal Frequency [MHz]	Blocking signal Power [dBm]	PER [%]	Verdict
5100	-59	0.10	Pass
4900	-53	0.10	Pass
5000	-53	0.10	Pass
5975	-53	0.05	Pass

Annex C. Photographs

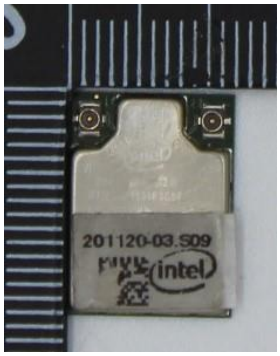
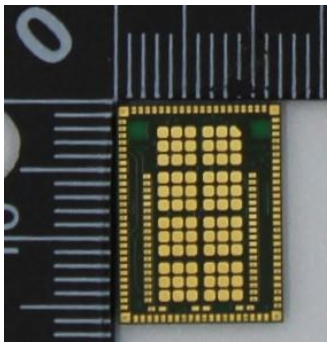
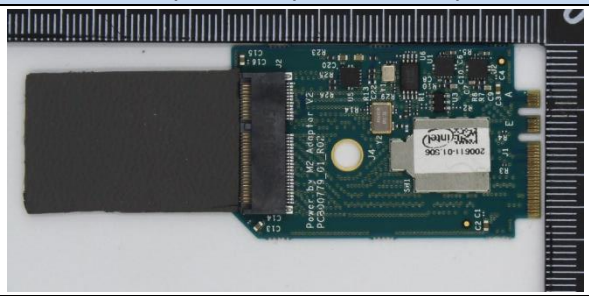
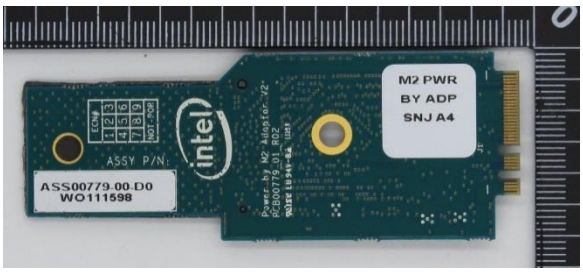
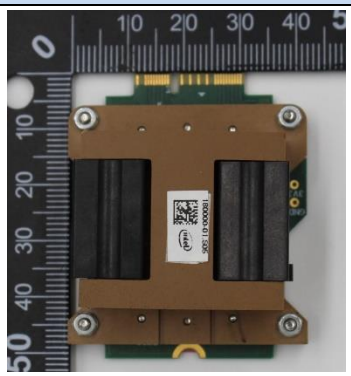
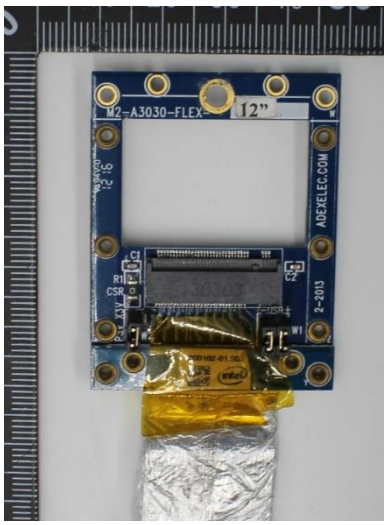
C.1 Test Setup

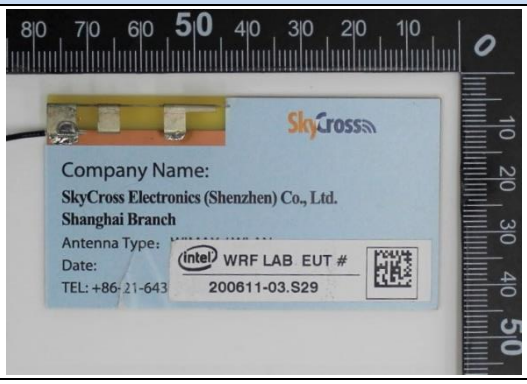
Radiated Setup 30 MHz – 1 GHz	Radiated Setup 1 GHz – 6.4 GHz (Transmitter tests)
	
Radiated Setup 6.4 GHz – 18 GHz (Transmitter tests) 1 GHz – 18 GHz (Receiver tests)	**Radiated Setup 18 GHz – 26 GHz**
	

C.2 Test Sample

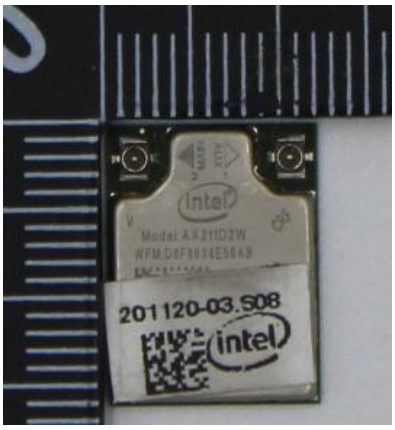
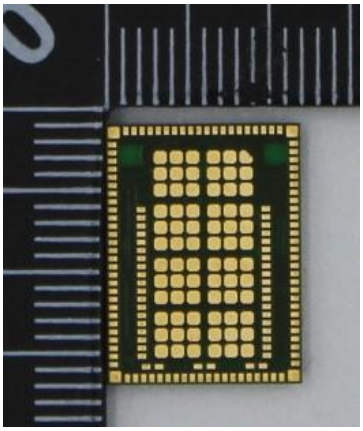
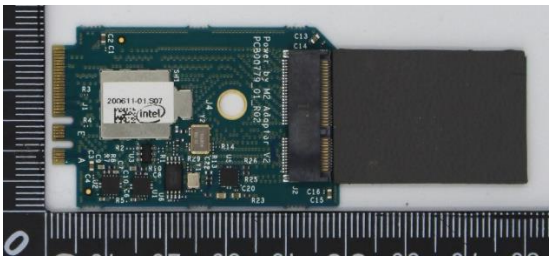
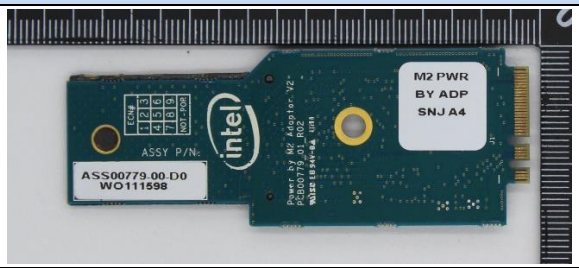
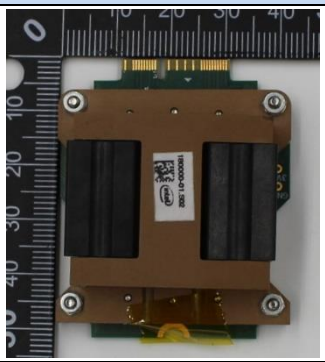
Sample #01	
Module Front	Module Back
	
Extender board	Laptop
	

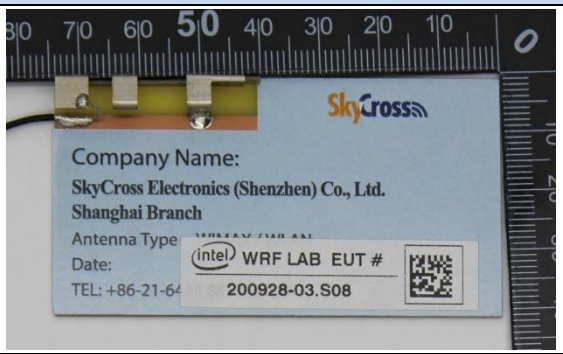
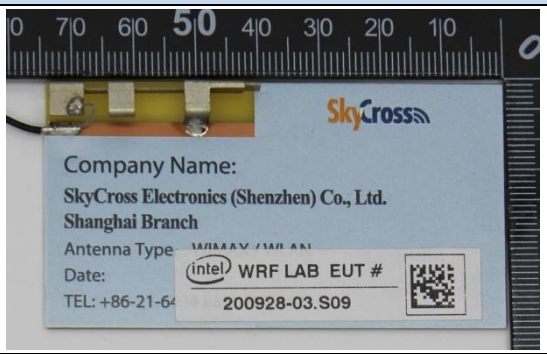
Sample #02

Module Front	Module Back
	
Adaptor front (with absorber)	**Adaptor back**
	
Socket front	**Socket back**
	
Extender board	**Laptop**
	

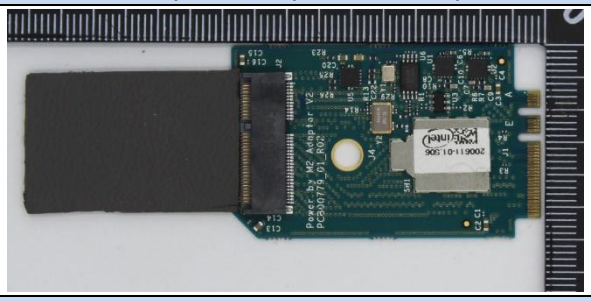
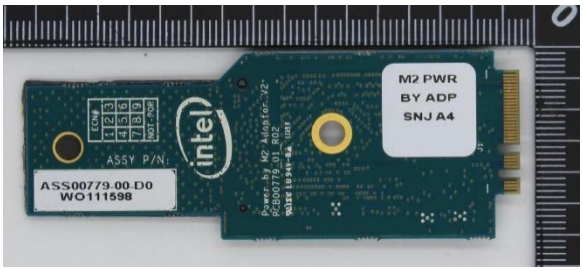
Main Antenna	Aux Antenna
	

Sample #03

Module Front	Module Back
	
Adaptor front (with absorber)	**Adaptor back**
	
Socket front	**Socket back**
	
Extender board	**Laptop**
	

Main Antenna	Aux Antenna
	

Sample #04

Module Front	Module Back
	
Adaptor front (with absorber)	**Adaptor back**
	
Laptop (Host)	
	

End of the report

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