EMC TEST REPORT
No. 151101871SHA-003

Applicant	:	Ericsson WiFi Inc. 6300 Legacy Drive, Plano Texas 75024 USA
Manufacturer	:	Ericsson WiFi Inc. 6300 Legacy Drive, Plano Texas 75024 USA
Product Name	:	Access Point
Type/Model	:	AP 6335
TEST RESULT	**:**	**PASS**

SUMMARY

The equipment complies with the requirements according to the following standard(s) or specification:

47CFR Part 15 (2014): Radio Frequency Devices (Subpart E)

ANSI C63.10 (2013): American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

Date of issue: February 4, 2016

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Content

SUMMARY 1
1 GENERAL INFORMATION 5
1.1 Description of Client 5
1.2 Identification of the EUT 5
1.3 Technical Specification 6
2 TEST SPECIFICATIONS 7
2.1 Standards or specification 7
2.2 Mode of operation during the test 7
2.3 Test software list 10
2.4 Test peripherals list 10
2.5 Instrument list 11
2.6 Test Summary 14
3 MAXIMUM CONDUCTED OUTPUT POWER AND EIRP 15
3.1 Test limit 15
3.2 Test Configuration 16
3.3 Test procedure and test setup 16
3.4 Test protocol 17
4 POWER SPECTRUM DENSITY 22
4.1 Test limit 22
4.2 Test Configuration 22
4.3 Test procedure and test setup 23
4.4 Test Protocol 24
5 MINIMUM 6DB BANDWIDTH 28
5.1 Limit 28
5.2 Test Configuration 28
5.3 Test Procedure and test setup 28
5.4 Test Protocol 29
6 RADIATED EMISSIONS 30
6.1 Test limit 30
6.1.1 The radiated emissions below 1GHz or fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a) showed as below: 30
6.1.2 The emission which is outside the restrict bands, should comply with the limit as below: 30
6.2 Test Configuration 31
6.3 Test procedure and test setup 32
6.4 Test Protocol 33
7 POWER LINE CONDUCTED EMISSION 40
7.1 Limit 40
7.2 Test configuration 40
7.3 Test procedure and test set up 41
7.4 Test protocol 42
8 26 DB BANDWIDTH & EMISSION BANDWIDTH (99%) 43
8.1 Test limit 43
8.2 Test Configuration 43

8.3 Test procedure and test setup 43
8.4 Test protocol 45

1 GENERAL INFORMATION

1.1 Description of Client

Applicant	:	Ericsson WiFi Inc. 6300 Legacy Drive, Plano Texas 75024 USA
Manufacturer	:	Ericsson WiFi Inc. 6300 Legacy Drive, Plano Texas 75024 USA

1.2 Identification of the EUT

Product Name	:	Access Point
Type/model	:	AP 6335
FCC ID	:	RAR60005008

1.3 Technical Specification

Operation Frequency Band	:	5150 ~ 5250MHz, 5725 ~ 5850MHz
Type of Modulation	:	OFDM(BPSK, QPSK, 16QAM, 64QAM, 256QAM)
EUT Modes of Modulation	:	802.11a; 802.11n/ac20, 802.11n/ac40; 802.11ac 80
Channel Number	:	4 Channel for 5180~5240MHz for 11a/n/ac20; 2 Channel for 5190~5230MHz for 11n/ac40; 1 Channel for 5210MHz for 11ac80; 5 Channel for 5745~5825MHz for 11a/n/ac20; 2 Channel for 5755~5795MHz for 11n/ac40; 1 Channel for 5775MHz for 11ac80;
Description of EUT	:	The EUT is a wireless access point containing Wi-Fi module, it is a MIMO device and has only one model.
Antenna	:	PCB antenna 2.4G band: 4.3dBi, 5G band: 5.2dBi
Rating	:	44-90 Vac, 2.5A, 47-63Hz
Category of EUT	:	Class B
EUT type	:	☒ Table top ☐ Floor standing
Sample received date	:	November 16, 2015
Date of test	:	November 18, 2015 – January 29, 2016

2 TEST SPECIFICATIONS

2.1 Standards or specification

47CFR Part 15 (2014)
ANSI C63.10 (2013)
KDB 558074 (v03r03)

2.2 Mode of operation during the test

While testing transmitting mode of EUT, the internal modulation and continuously transmission was applied.

The lowest, middle and highest channel were tested as representatives.

Frequency Band (MHz)	Mode	Lowest (MHz)	Middle (MHz)	Highest (MHz)
5150~5250MHz	802.11a	5180	5200	5240
	802.11n20	5180	5200	5240
	802.11n40	5190	/	5230
	802.11ac80	/	5210	/
5725~5850MHz	802.11a	5745	5785	5825
	802.11n20	5745	5785	5825
	802.11n40	5755	/	5795
	802.11ac80	/	5775	/

MIMO Function Description:

Mode	Tx/Rx Function	Beamforming
802.11a	4Tx/4Rx	No
802.11n20	4Tx/4Rx	Yes
802.11n40	4Tx/4Rx	Yes
802.11ac80	4Tx/4Rx	Yes

Data rate VS Power:

The pre-scan for the conducted power with all rates in each modulation and bands was used, and the worst case was found and used in all test cases.

After this pre-scan,we choose the following table of the data rata as the worst case.

Frequency Band (MHz)	Mode	Worst case data rate
5150~5250	802.11a	6Mbps
	802.11n20	MCS0, MCS24
	802.11n40	MCS0, MCS24
	802.11ac80	MCS0NSS1, MCS0NSS4
5725~5850	802.11a	6Mbps
	802.11n20	MCS0, MCS24
	802.11n40	MCS0, MCS24
	802.11ac80	MCS0NSS1, MCS0NSS4

There are two modes of EUT in 802.11n/ac, one is beamforming mode and the other is non-beamforming mode. After evaluating, beamforming mode is evaluated on MCS0 for 802.11n and MCS0NSS1 for 802.11ac, non-beamforming mode is evaluated on MCS24 for 802.11n and MCS0NSS4 for 802.11ac as representative.

Test software setting:

The power level setting for 802.11a/n/ac is used with QDART software offered by the manufactory.

Frequency Band (MHz)	Mode	Frequency (MHz)	Power level Setting
5150~5250	802.11a	5180	17.5
		5200	17.5
		5240	17
5725~5850	802.11a	5745	21
		5785	23
		5825	21

For beamforming mode:

Frequency Band (MHz)	Mode	Frequency (MHz)	Power level Setting
5150~5250	802.11n20	5180	17.5
		5200	17.5
		5240	17.5
	802.11n40	5190	19
		5230	19
	802.11ac80	5210	17
5725~5850	802.11n20	5745	19.5
		5785	19.5
		5825	19.5
	802.11n40	5755	19
		5795	19
	802.11ac80	5775	15

For non-beamforming mode:

Frequency Band (MHz)	Mode	Frequency (MHz)	Power level Setting
5150~5250	802.11n20	5180	21
		5200	23
		5240	23
	802.11n40	5190	20
		5230	23
	802.11ac80	5210	17
5725~5850	802.11n20	5745	21
		5785	23
		5825	22
	802.11n40	5755	19
		5795	21
	802.11ac80	5775	15

Duty cycle:

Frequency Band (MHz)	Mode	Tx on (ms)	Tx on + Tx off (ms)	Duty cycle factor (dB)
5150~5250	802.11a	2.135	2.200	0.13
	802.11n20	5.065	5.150	0.07
	802.11n40	2.430	2.503	0.14
	802.11ac80	1.150	1.219	0.25
5725~5850	802.11a	2.065	2.130	0.13
	802.11n20	5.000	5.071	0.06
	802.11n40	2.425	2.499	0.13
	802.11ac80	1.1475	1.2185	0.26

2.3 Test software list

Test Items	Software	Manufacturer	Version
Conducted emission	ESxS-K1	R&S	V2.1.0
Radiated emission	ES-K1	R&S	V1.71

2.4 Test peripherals list

Item No.	Name	Band and Model	Description
1	Laptop computer	HP ProBook 6470b	100-240V AC, 50/60Hz

2.5 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Shielded room	-	Zhongyu	EC 2838	1/9/2016	1/8/2017
Test Receiver	ESCS 30	R&S	EC 2107	10/20/2015	10/19/2016
A.M.N.	ESH2-Z5	R&S	EC 3119	12/17/2015	12/16/2016
A.M.N.	ENV 216	R&S	EC 3394	8/2/2015	8/1/2016
A.M.N.	ENV4200	R&S	EC3558	8/2/2015	8/1/2016
Voltage Probe	ESH2-Z3	R&S	EC 3405	1/9/2016	1/8/2017
Voltage Probe	TK9420	Schwarzbeck	EC 4888	11/21/2015	11/20/2016
Current probe	EZ-17	R&S	EC 3221	1/9/2016	1/8/2017
I.S.N.	FCC-TLISN-2	FCC	EC3754	1/9/2016	1/8/2017
I.S.N.	FCC-TLISN-4	FCC	EC3755	1/9/2016	1/8/2017
I.S.N.	FCC-TLISN-8	FCC	EC3756	1/9/2016	1/8/2017
Click meter	CL55C	AFJ	EC 5320	12/19/2015	12/18/2016
AMN	LS16C	AFJ	EC 5320-1	12/10/2015	12/9/2016
Absorbing clamp	MDS 21	R&S	EC 2108	1/9/2016	1/8/2017
Tri-loop	HXYZ 9170	Schwarzbeck	EC 3384	6/19/2015	6/18/2016
Harmonic-flicker system	5001ix-PACS-1	CI	EC 2110	5/7/2015	5/6/2016
Three phase Harmonic-flicker system	PFS 503N	EM TEST	EC 5383	3/12/2015	3/11/2016
	DPA 503N	EM TEST	EC 5383-1	3/19/2015	3/18/2016
	NETWAVE30	EM TEST	EC 5383-2	3/19/2015	3/18/2016
Semi-anechoic chamber	-	Albatross project	EC 3048	5/12/2015	5/11/2016
Test Receiver	ESIB 26	R&S	EC 3045	10/20/2015	10/19/2016
Active Loop Antenna	FMZB1519	Schwarzbeck	EC5345	1/20/2016	1/19/2017
Bilog Antenna	CBL 6112D	TESEQ	EC 4206	4/28/2015	4/27/2016
Horn antenna	HF 906	R&S	EC 3049	4/28/2015	4/27/2016
Horn antenna	3117	ETS	EC 4792-1	4/22/2015	4/21/2016
Horn antenna	HAP18-26W	TOYO	EC 4792-3	6/12/2015	6/11/2016
Pre-amplifier	Pre-amp 18	R&S	EC 5262	5/26/2015	5/25/2016
Pre-amplifier	Tpa0118-40	TOYO	EC 4792-2	4/12/2015	4/11/2016
EMF meter	ELT-400	NARDA	EC2928	8/4/2015	8/3/2016
Protection Network	VDHH 9502	Schwarzbeck	EC4631	7/7/2015	7/6/2016
Shielded room	-	Zhongyu	EC 2839	1/9/2016	1/8/2017
ESD generator	ditto	EM TEST	EC 2956	5/9/2015	5/8/2016
ESD generator	NSG 437	TESEQ	EC 4792-4	3/4/2015	3/3/2016

Conducted immunity system	UCS 500M6B	EM TEST	EC 2958	4/8/2015	4/7/2016
Automatic transformer	MV2616	EM TEST	EC 2957	Not required	Not required
Surge generator	TSS 500M2F	EM TEST	EC 2960	9/24/2015	9/23/2016
Surge generator	TSS 500M4	EM TEST	EC 2961	1/9/2016	1/8/2017
Surge Coupling network	CNV 504M	EM TEST	EC 2958-2	1/9/2016	1/8/2017
Surge Coupling network	CNV 504S1	EM TEST	EC 2958-1	1/9/2016	1/8/2017
Capacity clamp	HFK	EM TEST	EC 2959	Not required	Not required
Ring wave generator	SKS-1206GB	SANKI	EC 5033-1	2/26/2015	2/25/2016
EFT generator	SKS-0404IB	SANKI	EC 5033-2	1/9/2016	1/8/2017
Surge generator	SKS-0506GB-30	SANKI	EC 5033-3	1/9/2016	1/8/2017
DIPs generator	SKS-1130GT	SANKI	EC 5033	1/9/2016	1/8/2017
Signal generator	SML 01	R&S	EC 2338	4/11/2015	4/10/2016
Power amplifier	75A250	AR	EC 3043-1	8/15/2015	8/14/2016
Attenuator	ATT6/75	EM TEST	EC 3043-3	1/7/2016	1/8/2017
CDN	CDN M216	Schaffner	EC 2113-2	8/2/2015	8/1/2016
CDN	CDN M316	Schaffner	EC 2113-1	9/29/2015	9/28/2016
CDN	CDN T2	EM TEST	EC 4970	10/22/2015	10/21/2016
CDN	CDN T4	EM TEST	EC 3043-4	1/7/2016	1/8/2017
CDN	CDN M1/16A	EM TEST	EC 4792-6	2/17/2015	2/16/2016
CDN	CDN M1/16A	EM TEST	EC 4792-7	2/17/2015	2/16/2016
CDN	CDN M1/32A	EM TEST	EC4792-10	2/17/2015	2/16/2016
CDN	CDN M3N/16A	EM TEST	EC 4792-12	2/17/2015	2/16/2016
CDN	CDN M3N/32A	EM TEST	EC 4792-13	2/17/2015	2/16/2016
CDN	CDN T8-RJ45	EM TEST	EC 4792-15	2/17/2015	2/16/2016
EM clamp	EM 101	EM TEST	EC 3043-6	10/20/2015	10/19/2016
Attenuator	68-6-44	Weinschel	EC 3043-9	1/9/2016	1/8/2017
Fully-anechoic chamber	-	Albatross project	EC 3047	5/12/2015	5/11/2016
Signal generator	SMR 20	R&S	EC 3044-1	8/18/2015	8/17/2016
Power amplifier	150W1000	AR	EC 3044-2	8/15/2015	8/14/2016
Power amplifier	25S1G4	AR	EC 3044-4	8/15/2015	8/14/2016
DDC	DC 6180A	AR	EC 3044-5	8/2/2015	8/1/2016
DDC	DC 7144A	AR	EC 3044-6	1/9/2016	1/8/2017
Power meter	PM2002	AR	EC3043-7	10/24/2015	10/23/2016

Power sensor	PH2000	AR	EC3043-8	10/24/2015	10/23/2016
Log-period antenna	AT 1080	AR	EC 3044-7	4/28/2015	4/27/2016
Horn antenna	AT 4002	AR	EC 3044-8	4/28/2015	4/27/2016
Field meter	FM 5004	AR	EC 3044-3	10/21/2015	7/27/2016
Field sensor	FP 6001	AR	EC 3044-9	10/21/2015	7/27/2016
Magnetic field coil	MS 100	EM TEST	EH2016	6/13/2015	6/12/2016
Current transformer	MC 2630	EM TEST	EH2015	6/13/2015	6/12/2016
Light Meter	1335	TES	EC 5203	3/4/2015	3/3/2016
TV generator	TG39	ShibaSoku	EC3555	4/8/2015	4/7/2016
Multi-meter	179	FLUKE	EC 3226	9/11/2015	9/10/2016
Multi-meter	187	FLUKE	EC 2560	3/4/2015	3/3/2016
Clamp meter	318	FLUKE	EC 3486	12/15/2015	12/14/2016
Pulse Engine Tachometer	PET-20000XR	OPPAMA	EC4782	1/20/2016	1/19/2017
Time relay	-	-	EC4186-1	5/5/2015	5/4/2016
Test Receiver	ESCI 7	R&S	EC4501	1/14/2016	1/13/2017
Power sensor / Power meter	N1911A/N1921A	Agilent	EC4318	4/9/2015	4/8/2016
PXA Signal Analyzer	N9030A	Agilent	EC5338	5/15/2015	5/14/2016
Power sensor	U2021XA	Agilent	EC5338-1	3/6/2015	3/5/2016
Vector Signal Generator	N5182B	Agilent	EC5175	1/9/2016	1/8/2017
MXG Analog Signal Generator	N5181A	Agilent	EC5338-2	3/6/2015	3/5/2016
Mobile Test System	Iqxel	Litepoint	EC 5176	1/9/2016	1/8/2017
Spectrum analyzer	E7402A	Agilent	EC2254	8/15/2015	8/14/2016

2.6 Test Summary

This report applies to tested sample only. The test results have been compared directly with the limits, and the measurement uncertainty is recorded. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

TEST ITEM	FCC REFERANCE	RESULT
Maximum Conducted Output Power	15.407(a)	Pass
Power spectral density	15.407(a)	Pass
Minimum 6dB Bandwidth	15.407(e)	Pass
Radiated emission	15.407 (b) 15.205, 15.209	Pass
Power line conducted emission	15.207	Pass
26 dB Bandwidth & Emission Bandwidth (99%)	15.403(i)	Tested

Notes: 1: NA =Not Applicable

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3 Maximum Conducted Output Power and EIRP

Test result: Pass

3.1 Test limit

☒ For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.
The maximum e.i.r.p.at any elevation angle above 30 degrees from the horizon must not exceed 125 mW (21 dBm).

☐ For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

☐ For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

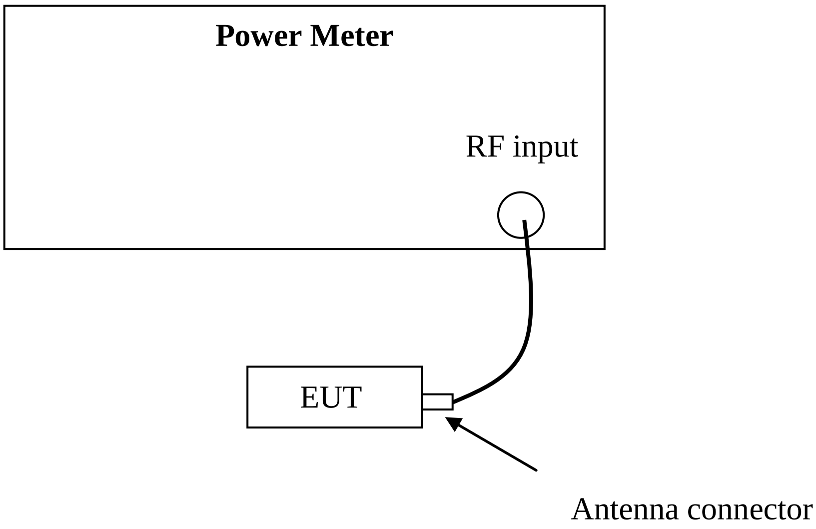
☐ For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

☐ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

☒ For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.2 Test Configuration



3.3 Test procedure and test setup

The power output per FCC §15.407(a) was measured from the antenna port of the EUT according to the measurement method refer to KDB 789033D02 v01: Method PM.

3.4 Test protocol

Temperature : 25 °C
Relative Humidity : 55 %

U-NII-1 Band Conducted Power:

Mode	Freq. (MHz)	Reading (dBm)				Duty cycle factor (dB)	Total power (dBm)	Limit (dBm)
		Port 0	Port 1	Port 2	Port 3			
802.11a	5180	16.32	16.27	16.72	16.57	0.13	22.62	30.00
	5200	16.61	16.10	16.49	16.57	0.13	22.60	30.00
	5240	15.91	15.85	16.01	15.70	0.13	22.02	30.00

Note:

1. Total power = 10 * lg(10$^{(\text{port 0 + Duty cycle factor}) / 10}$ + 10$^{(\text{port 1 + Duty cycle factor}) / 10}$ + 10$^{(\text{port 2 + Duty cycle factor}) / 10}$ + 10$^{(\text{port 3 + Duty cycle factor}) / 10}$)

For beamforming mode:

Mode	Freq. (MHz)	Reading (dBm)				Duty cycle factor (dB)	Total power (dBm)	Limit (dBm)
		Port 0	Port 1	Port 2	Port 3			
802.11n20	5180	16.25	16.41	16.59	16.62	0.07	22.56	24.80
	5200	16.18	16.17	16.35	16.81	0.07	22.48	24.80
	5240	16.29	16.16	16.52	17.23	0.07	22.66	24.80
802.11n40	5190	18.27	18.90	18.61	18.31	0.13	24.68	24.80
	5230	18.20	19.00	18.61	18.34	0.13	24.70	24.80
802.11ac80	5210	15.59	15.69	15.69	15.34	0.25	21.85	24.80

Note:

1. For antenna gain = 5.2dBi and with beamforming, the limit should be corrected.
2. Total power = 10 * lg(10$^{(\text{port 0 + Duty cycle factor}) / 10}$ + 10$^{(\text{port 1 + Duty cycle factor}) / 10}$ + 10$^{(\text{port 2 + Duty cycle factor}) / 10}$ + 10$^{(\text{port 3 + Duty cycle factor}) / 10}$)

For non-beamforming mode:

Mode	Freq. (MHz)	Reading (dBm)				Duty cycle factor (dB)	Total power (dBm)	Limit (dBm)
		Port 0	Port 1	Port 2	Port 3			
802.11n20	5180	19.76	19.98	20.16	20.37	0.07	26.17	30.00
	5200	21.62	21.82	21.91	22.13	0.07	27.97	30.00
	5240	21.84	21.71	21.71	22.15	0.07	27.95	30.00
802.11n40	5190	18.98	19.07	19.59	19.66	0.13	25.48	30.00
	5230	22.17	22.04	22.50	22.76	0.13	28.53	30.00
802.11ac80	5210	15.59	15.69	15.69	15.34	0.25	21.85	30.00

Note:

1. Total power = $10 * lg(10^{(\text{port 0 + Duty cycle factor}) / 10} + 10^{(\text{port 1 + Duty cycle factor}) / 10} + 10^{(\text{port 2 + Duty cycle factor}) / 10} + 10^{(\text{port 3 + Duty cycle factor}) / 10})$

U-NII-1 Band EIRP at any elevation angle above 30 degrees:

Mode	Freq. (MHz)	Total power (dBm)	Beam forming gain (dBi)	Max antenna gain above 30 degree	Max EIRP above 30 degree	Limit (dBm)
802.11a	5180	22.62	0	-10.36	12.26	21
	5200	22.60	0	-10.36	12.24	21
	5240	22.02	0	-10.36	11.66	21

Note:

1. For Max EIRP above 30 degree = Total power + Beamforming gain + Max antenna gain above 30 degree.

For beamforming mode:

Mode	Freq. (MHz)	Total power (dBm)	Beam forming gain (dBi)	Max antenna gain above 30 degree	Max EIRP above 30 degree	Limit (dBm)
802.11n20	5180	22.56	6	-10.36	18.20	21
	5200	22.48	6	-10.36	18.12	21
	5240	22.66	6	-10.36	18.30	21
802.11n40	5190	24.68	6	-10.36	20.32	21
	5230	24.70	6	-10.36	20.34	21
802.11ac80	5210	21.85	6	-10.36	17.49	21

Note:

1. For Max EIRP above 30 degree = Total power + Beamforming gain + Max antenna gain above 30 degree.

For non-beamforming mode:

Mode	Freq. (MHz)	Total power (dBm)	Beam forming gain (dBi)	Max antenna gain above 30 degree	Max EIRP above 30 degree	Limit (dBm)
802.11n20	5180	26.17	0	-10.36	15.81	21
	5200	27.97	0	-10.36	17.61	21
	5240	27.95	0	-10.36	17.59	21
802.11n40	5190	25.48	0	-10.36	15.12	21
	5230	28.53	0	-10.36	18.17	21
802.11ac80	5210	21.85	0	-10.36	11.49	21

Note:

1. For Max EIRP above 30 degree = Total power + Beamforming gain + Max antenna gain above 30 degree.

U-NII-3 Band Conducted Power:

Mode	Freq. (MHz)	Reading (dBm)				Duty cycle factor (dB)	Total power (dBm)	Limit (dBm)
		Port 0	Port 1	Port 2	Port 3			
802.11a	5745	20.34	20.14	20.17	20.20	0.13	26.37	30.00
	5785	22.05	21.79	21.80	21.81	0.13	28.02	30.00
	5825	19.89	19.50	19.86	19.67	0.13	25.89	30.00

Note:

1. Total power = $10 * lg(10^{(port\ 0 + Duty\ cycle\ factor) / 10} + 10^{(port\ 1 + Duty\ cycle\ factor) / 10} + 10^{(port\ 2 + Duty\ cycle\ factor) / 10} + 10^{(port\ 3 + Duty\ cycle\ factor) / 10})$

For beamforming mode:

Mode	Freq. (MHz)	Reading (dBm)				Duty cycle factor (dB)	Total power (dBm)	Limit (dBm)
		Port 0	Port 1	Port 2	Port 3			
802.11n20	5745	18.16	18.42	18.29	18.22	0.06	24.36	24.80
	5785	18.33	18.26	18.26	18.41	0.06	24.40	24.80
	5825	18.60	18.00	17.96	18.61	0.06	24.39	24.80
802.11n40	5755	18.18	18.47	18.35	18.62	0.13	24.56	24.80
	5795	18.29	18.11	18.09	18.68	0.13	24.45	24.80
802.11ac80	5775	14.13	13.71	14.11	14.22	0.26	20.33	24.80

Note:

1. For antenna gain = 5.2dBi and with beamforming, the limit should be corrected.
2. Total power = $10 * lg(10^{(port\ 0 + Duty\ cycle\ factor) / 10} + 10^{(port\ 1 + Duty\ cycle\ factor) / 10} + 10^{(port\ 2 + Duty\ cycle\ factor) / 10} + 10^{(port\ 3 + Duty\ cycle\ factor) / 10})$

For non-beamforming mode:

Mode	Freq. (MHz)	Reading (dBm)				Duty cycle factor (dB)	Total power (dBm)	Limit (dBm)
		Port 0	Port 1	Port 2	Port 3			
802.11n20	5745	20.54	20.10	20.06	20.19	0.06	26.31	30.00
	5785	21.80	21.88	21.81	22.03	0.06	27.96	30.00
	5825	20.74	20.55	20.57	20.76	0.06	26.74	30.00
802.11n40	5755	18.18	18.47	18.35	18.62	0.13	24.56	30.00
	5795	21.00	20.35	20.58	20.68	0.13	26.81	30.00
802.11ac80	5775	14.13	13.71	14.11	14.22	0.26	20.33	30.00

Note:

1. Total power = $10 * \lg(10^{(\text{port 0 + Duty cycle factor}) / 10} + 10^{(\text{port 1 + Duty cycle factor}) / 10} + 10^{(\text{port 2 + Duty cycle factor}) / 10} + 10^{(\text{port 3 + Duty cycle factor}) / 10})$

4 Power spectrum density

Test result: Pass

4.1 Test limit

☒ For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

☐ For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

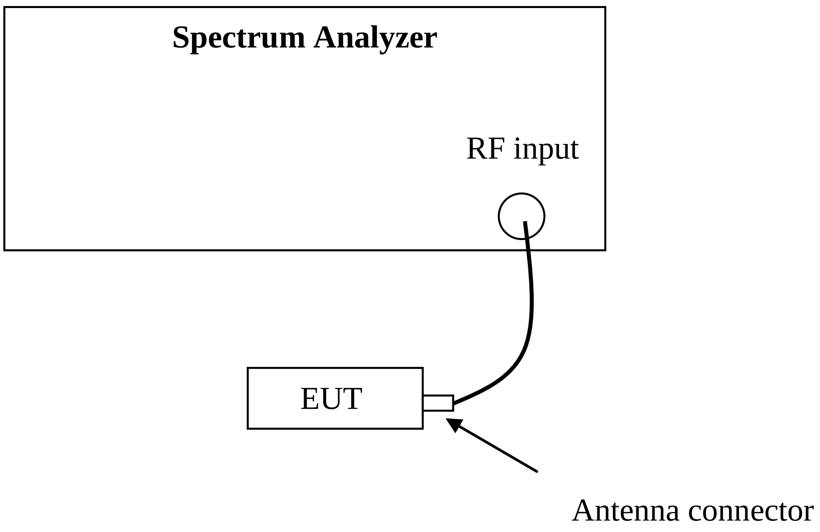
☐ For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

☐ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

☒ For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band.

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. If there have a beam forming type, the limit should be the less of original and original + (6 - antenna gain - beamforming gain).

4.2 Test Configuration



4.3 Test procedure and test setup

The power spectral density per FCC §15.407(a) was measured from the antenna port of the EUT according to the measurement method refer to KDB 789033D02 v01: section F.

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power…". (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum. b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 MHz reference bandwidth.
5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (*i.e.*, 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/*T*, where *T* is defined in section II.B.l.a).
b) Set VBW ≥ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since RBW=100 kHz is available on nearly all spectrum analyzers.

4.4 Test Protocol

Temperature: 25 °C
Relative Humidity: 55 %

U-NII-1 Band:

Mode	Freq. (MHz)	Calculate value (dBm/MHz)	Duty cycle factor (dB)	Total PSD (dBm/ MHz)	Limit (dBm/ MHz)
		Port 0 + Port 1 + Port 2 + Port 3			
802.11a	5180	11.41	0.13	11.54	11.80
	5200	11.40	0.13	11.53	11.80
	5240	11.21	0.13	11.34	11.80

Note:

1. For antenna gain = 5.2dBi and with CDD function, the limit should be corrected.
2. According to Clause E(2) of KDB 662911, the method (a) was used to calculate the total PSD.
3. Total PSD = 10 * lg(10$^{\text{(port 0 + port 1+port 2+port 3+duty cycle factor) / 10}}$)
4. For CDD transmissions, If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:
   Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

For beamforming mode:

Mode	Freq. (MHz)	Calculate value (dBm/MHz)	Duty cycle factor (dB)	Total PSD (dBm/ MHz)	Limit (dBm/ MHz)
		Port 0 + Port 1 + Port 2 + Port 3			
802.11n20	5180	11.18	0.07	11.25	11.80
	5200	11.07	0.07	11.14	11.80
	5240	11.36	0.07	11.43	11.80

Note:

1. For antenna gain = 5.2dBi and with beamforming, the limit should be corrected.
2. According to Clause E(2) of KDB 662911, the method (a) was used to calculate the total PSD.
3. Total PSD = 10 * lg(10$^{\text{(port 0 + port 1+port 2+port 3+duty cycle factor) / 10}}$)

Mode	Freq. (MHz)	Reading (dBm/MHz)				Duty cycle factor (dB)	Total PSD (dBm/ MHz)	Limit (dBm/ MHz)
		Port 0	Port 1	Port 2	Port 3			
802.11n40	5190	5.099	5.686	5.312	4.389	0.13	11.30	11.80
	5230	5.055	5.999	5.511	4.350	0.13	11.42	11.80
802.11ac80	5210	-0.206	-1.302	-0.372	-1.729	0.25	5.42	11.80

Note:

1. For antenna gain = 5.2dBi and with beamforming, the limit should be corrected.
2. Total PSD = 10 * lg($10^{(\text{port 0 + Duty cycle factor}) / 10}$ + $10^{(\text{port 1 + Duty cycle factor}) / 10}$ + $10^{(\text{port 2 + Duty cycle factor}) / 10}$ + $10^{(\text{port 3 + Duty cycle factor}) / 10}$)

For non-beamforming mode:

Mode	Freq. (MHz)	Calculate value (dBm/MHz)	Duty cycle factor (dB)	Total PSD (dBm/ MHz)	Limit (dBm/ MHz)
		Port 0 + Port 1 + Port 2 + Port 3			
802.11n20	5180	15.37	0.07	15.44	17.00
	5200	16.59	0.07	16.66	17.00
	5240	16.76	0.07	16.83	17.00

Note:

1. According to Clause E(2) of KDB 662911, the method (a) was used to calculate the total PSD.
2. Total PSD = 10 * lg($10^{(\text{port 0 + port 1+port 2+port 3+duty cycle factor}) / 10}$)

Mode	Freq. (MHz)	Reading (dBm/MHz)				Duty cycle factor (dB)	Total PSD (dBm/ MHz)	Limit (dBm/ MHz)
		Port 0	Port 1	Port 2	Port 3			
802.11n40	5190	4.977	5.625	5.703	6.255	0.13	11.81	17.00
	5230	8.011	8.637	8.698	9.318	0.13	14.84	17.00
802.11ac80	5210	-0.206	-1.302	-0.372	-1.729	0.25	5.42	17.00

Note:

1. Total PSD = $10 * lg(10^{(port\ 0 + Duty\ cycle\ factor) / 10} + 10^{(port\ 1 + Duty\ cycle\ factor) / 10} + 10^{(port\ 2 + Duty\ cycle\ factor) / 10} + 10^{(port\ 3 + Duty\ cycle\ factor)\ / 10})$

U-NII-3 Band:

Mode	Freq. (MHz)	Reading (dBm/500kHz)				Duty cycle factor (dB)	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)
		Port 0	Port 1	Port 2	Port 3			
802.11a	5745	6.62	7.36	6.80	7.36	0.13	13.20	24.80
	5785	8.25	8.72	8.53	8.66	0.13	14.70	24.80
	5825	6.41	6.30	6.40	6.74	0.13	12.62	24.80

Note:

1. For antenna gain = 5.2dBi and with CDD function, the limit should be corrected.
2. Total PSD = $10 * lg(10^{(port\ 0 + Duty\ cycle\ factor) / 10} + 10^{(port\ 1 + Duty\ cycle\ factor) / 10} + 10^{(port\ 2 + Duty\ cycle\ factor) / 10} + 10^{(port\ 3 + Duty\ cycle\ factor)\ / 10})$
3. For CDD transmissions, If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:
   Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

For beamforming mode:

Mode	Freq. (MHz)	Reading (dBm/500kHz)				Duty cycle factor (dB)	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)
		Port 0	Port 1	Port 2	Port 3			
802.11n20	5745	5.49	4.93	4.97	4.52	0.06	11.07	24.80
	5785	5.48	4.97	5.49	4.63	0.06	11.24	24.80
	5825	5.32	4.56	5.03	4.60	0.06	10.97	24.80
802.11n40	5755	2.45	2.02	2.27	1.65	0.13	8.26	24.80
	5795	2.17	1.66	2.17	1.91	0.13	8.13	24.80
802.11ac80	5775	-6.10	-6.68	-6.04	-4.73	0.26	0.45	24.80

Note:

1. For antenna gain = 5.2dBi and with beamforming, the limit should be corrected.
2. Total PSD = $10 * lg(10^{(port\ 0 + Duty\ cycle\ factor) / 10} + 10^{(port\ 1 + Duty\ cycle\ factor) / 10} + 10^{(port\ 2 + Duty\ cycle\ factor) / 10} + 10^{(port\ 3 + Duty\ cycle\ factor) / 10})$

For non-beamforming mode:

Mode	Freq. (MHz)	Reading (dBm/500kHz)				Duty cycle factor (dB)	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)
		Port 0	Port 1	Port 2	Port 3			
802.11n20	5745	6.61	6.65	6.48	7.32	0.06	12.86	30.00
	5785	8.05	8.43	8.10	8.76	0.06	14.43	30.00
	5825	6.63	7.03	7.00	7.42	0.06	13.11	30.00
802.11n40	5755	2.45	2.02	2.27	1.65	0.13	8.26	30.00
	5795	3.76	4.04	3.80	4.48	0.13	10.18	30.00
802.11ac80	5775	-6.10	-6.68	-6.04	-4.73	0.26	0.45	30.00

Note:

1. Total PSD = $10 * lg(10^{(port\ 0 + Duty\ cycle\ factor) / 10} + 10^{(port\ 1 + Duty\ cycle\ factor) / 10} + 10^{(port\ 2 + Duty\ cycle\ factor) / 10} + 10^{(port\ 3 + Duty\ cycle\ factor) / 10})$

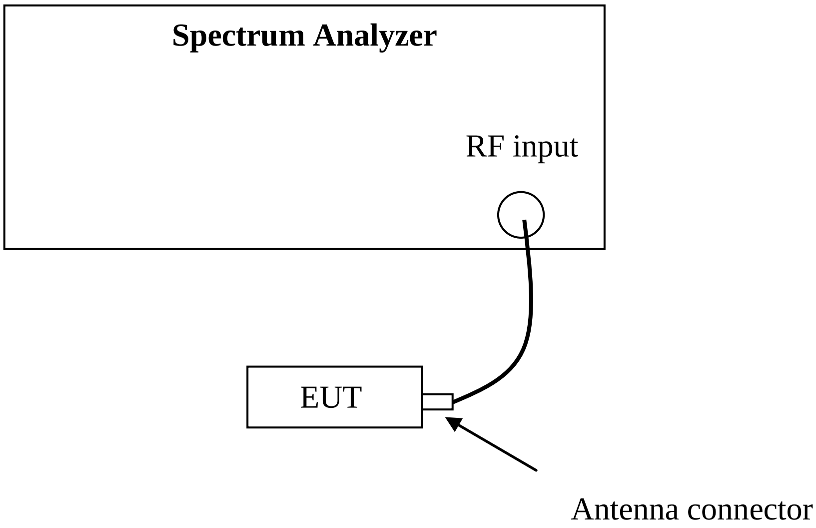
5 Minimum 6dB Bandwidth

Test result: Pass

5.1 Limit

For systems using digital modulation techniques that may operate in the 5725 - 5850 MHz band, the minimum 6 dB bandwidth shall be at least 500 kHz.

5.2 Test Configuration



5.3 Test Procedure and test setup

The minimum 6dB Bandwidth was measured from the antenna port of the EUT according to the measurement method refers to KDB 789033D02 v01: Section C.

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

5.4 Test Protocol

Temperature : 25 °C
Relative Humidity : 55 %

U-NII-3 Band:

Mode	Freq. (MHz)	Minimum 6dB Bandwidth (MHz)				Limits (MHz)
		Port0	Port 1	Port 2	Port 3	
802.11a	5745	16.33	16.32	16.34	16.34	> 0.5
	5785	16.34	16.34	16.35	16.33	> 0.5
	5825	16.35	16.34	16.35	16.34	> 0.5
802.11n20	5745	17.54	17.64	17.61	17.65	> 0.5
	5785	17.59	17.60	17.60	17.57	> 0.5
	5825	17.57	17.59	17.59	17.60	> 0.5
802.11n40	5755	35.31	36.29	35.93	36.33	> 0.5
	5795	36.28	35.55	36.29	36.28	> 0.5
802.11ac80	5775	76.35	76.34	76.36	76.34	> 0.5

6 Radiated Emissions

Test result: Pass

6.1 Test limit

6.1.1 The radiated emissions below 1GHz or fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a) showed as below:

Frequencies (MHz)	**Field Strength (microvolts/meter)**	**Measurement Distance (meters)**
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

6.1.2 The emission which is outside the restrict bands, should comply with the limit as below:

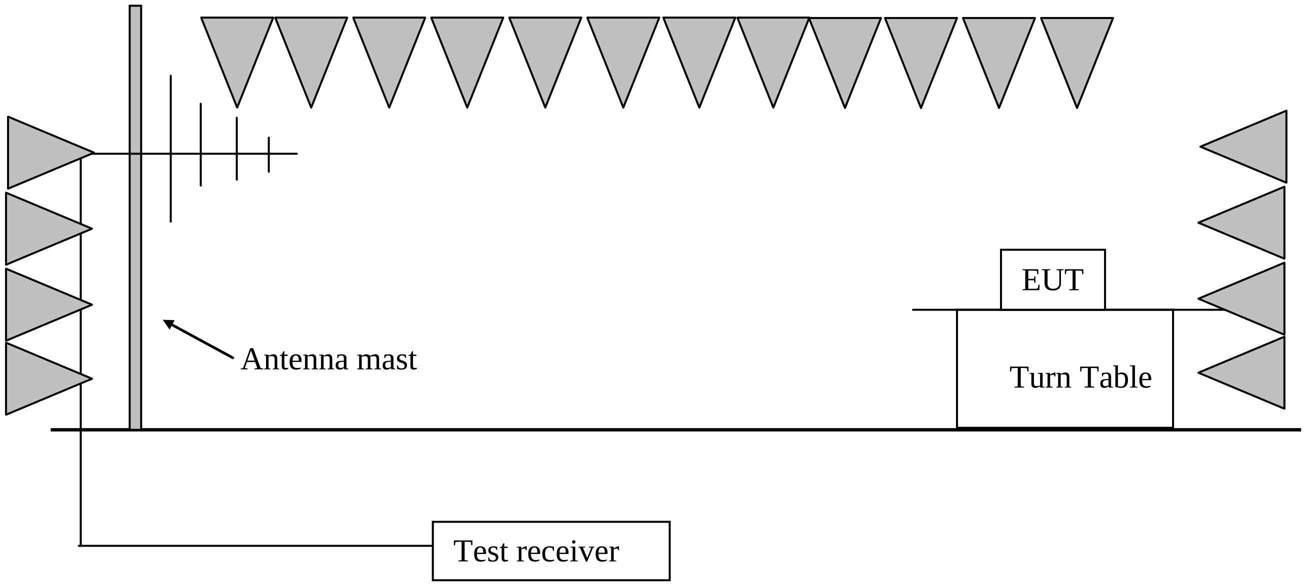
For transmitters operating in the 5.15–5.25 / 5.25 – 5.35 / 5.47 – 5.725 GHz band: all emissions outside of the 5.15 – 5.35 / 5.47 – 5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.

EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBµV/m)
-27	68.20

For transmitters operating in 5.725 – 5.85GHz band: emission among 5.715 – 5.725 GHz & 5.85 – 5.86 GHz shall not exceed the EIRP of -17 dBm/MHz, all emissions outside the above band shall not exceed an EIRP of -27 dBm/MHz.

EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBµV/m)
-27	68.20
-17	78.20

6.2 Test Configuration



6.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m.

The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

The EUT was tested according to KDB 789033D02 v01: Section G.

The radiated emission was measured using the Spectrum Analyzer with the resolutions bandwidth set as:

RBW = 300 Hz, VBW = 1 kHz (9 kHz~150 kHz);
RBW = 10 kHz, VBW = 30 kHz (150 kHz~30MHz);
RBW = 100 kHz, VBW = 300 kHz (30MHz~1GHz for PK)
RBW = 1MHz, VBW = 3MHz (>1GHz for PK);

Remark:
1. Factor= Antenna Factor + Cable Loss (-Amplifier, is employed)
2. Measured level= Original Receiver Reading + Factor
3. Margin = Limit – Measured level
4. If the PK measured level is lower than AV limit, the AV test can be elided.

Example:

Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10dBuV.
Then Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;
Measured level = 10dBuV + 0.20dB/m = 10.20dBuV/m
Assuming limit = 54dBuV/m,
Measured level = 10.20dBuV/m, then Margin = 54 - 10.20 = 43.80dBuV/m.

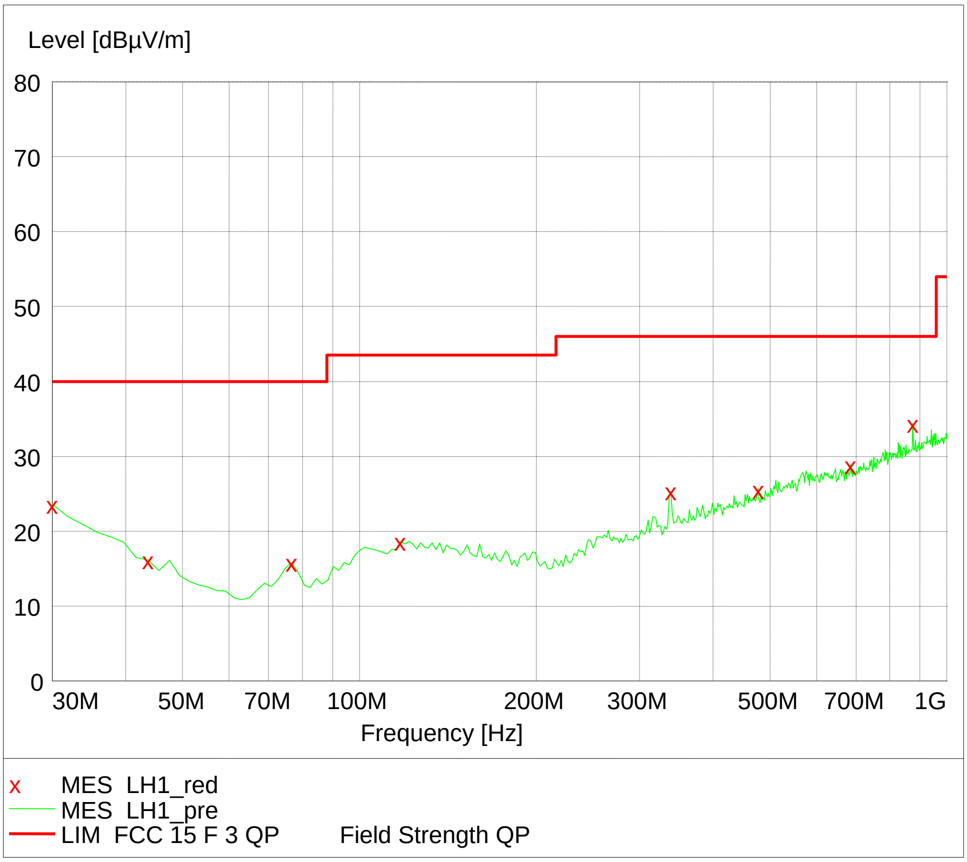
6.4 Test Protocol

Temperature: 25 °C
Relative Humidity: 55 %

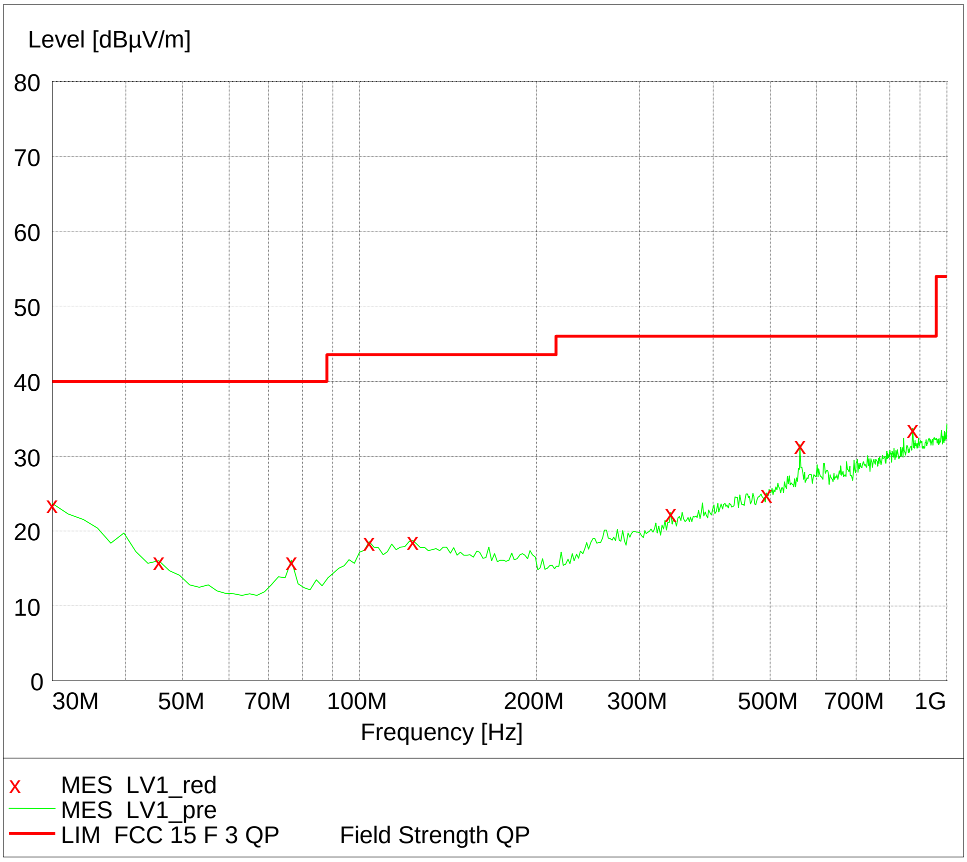
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

The worst waveform from 30MHz to 1000MHz is listed as below:

Horizontal



Vertical



30MHz~1GHz, Test data:

Polarization	Frequency (MHz)	Measured level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector
H	30.00	23.60	40.00	16.40	PK
	685.25	29.10	46.00	16.90	PK
	875.59	34.50	46.00	11.50	PK
V	30.00	23.70	40.00	16.30	PK
	562.69	31.50	46.00	14.50	PK
	875.65	33.70	46.00	12.30	PK

Note: The worst test result (30MHz to 1GHz) of channel L (802.11a 5745MHz) was chosen to list in the report as representative.

Test result above 1GHz:

The emission was conducted from 1GHz to 40GHz.

U-NII-1 Band:

802.11a

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5180.20	42.80	118.60	Fundamental	/	PK
	V	5149.43	42.70	62.08	74.00	11.92	PK
	V	5149.43	42.70	48.33	54.00	5.67	AV
M	V	5200.20	42.90	118.70	Fundamental	/	PK
	V	5149.85	42.70	61.67	74.00	12.33	PK
	V	5149.85	42.70	47.50	54.00	6.50	AV
H	V	5240.20	43.00	118.50	Fundamental	/	PK
	V	5148.80	42.70	60.83	74.00	13.17	PK
	V	5148.80	42.70	47.08	54.00	6.92	AV

For beamforming mode:

802.11n20

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5180.20	42.80	119.70	Fundamental	/	PK
	V	5149.98	42.70	62.92	74.00	11.08	PK
	V	5149.98	42.70	48.35	54.00	5.65	AV
M	V	5200.20	42.90	119.60	Fundamental	/	PK
	V	5149.85	42.70	62.50	74.00	11.50	PK
	V	5149.85	42.70	47.50	54.00	6.50	AV
H	V	5240.20	43.00	119.60	Fundamental	/	PK
	V	5148.80	42.70	61.25	74.00	12.75	PK
	V	5148.80	42.70	47.08	54.00	6.92	AV

802.11n40

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5190.45	42.80	118.50	Fundamental	/	PK
	V	5149.62	42.70	66.25	74.00	7.75	PK
	V	5149.62	42.70	52.92	54.00	1.08	AV
H	V	5230.45	43.00	118.74	Fundamental	/	PK
	V	5149.60	42.70	62.50	74.00	11.50	PK
	V	5149.60	42.70	47.92	54.00	6.08	AV

802.11ac80

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
M	V	5210.65	42.90	118.50	Fundamental	/	PK
	V	5147.83	42.70	69.00	74.00	5.00	PK
	V	5147.83	42.70	52.50	54.00	1.50	AV

For non-beamforming mode:

802.11n20

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5180.20	42.80	121.40	Fundamental	/	PK
	V	5149.90	42.70	68.00	74.00	6.00	PK
	V	5149.98	42.70	52.00	54.00	2.00	AV
M	V	5200.20	42.90	122.80	Fundamental	/	PK
	V	5149.82	42.70	63.50	74.00	10.50	PK
	V	5149.82	42.70	49.00	54.00	5.00	AV
H	V	5240.20	43.00	123.90	Fundamental	/	PK
	V	5149.90	42.70	62.50	74.00	11.50	PK
	V	5149.90	42.70	48.50	54.00	5.50	AV

802.11n40

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5190.45	42.80	119.70	Fundamental	/	PK
	V	5149.60	42.70	68.50	74.00	5.50	PK
	V	5149.60	42.70	53.00	54.00	1.00	AV
H	V	5230.45	43.00	122.75	Fundamental	/	PK
	V	5149.60	42.70	66.50	74.00	7.50	PK
	V	5149.60	42.70	51.00	54.00	3.00	AV

802.11ac80

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
M	V	5210.65	42.90	118.50	Fundamental	/	PK
	V	5147.83	42.70	69.00	74.00	5.00	PK
	V	5147.83	42.70	52.50	54.00	1.50	AV

U-NII-3 Band:

802.11a

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5745.20	43.80	121.00	Fundamental	/	PK
	V	5711.62	43.80	66.10	68.20	1.90	PK
	V	5873.45	43.90	64.20	68.20	4.00	PK
M	V	5785.20	43.80	122.20	Fundamental	/	PK
	V	5712.63	43.80	65.20	68.20	3.00	PK
	V	5864.43	43.90	64.50	68.20	3.70	PK
H	V	5825.20	43.90	121.30	Fundamental	/	PK
	V	5671.54	43.80	64.60	68.20	3.60	PK
	V	5881.46	43.90	64.50	68.20	3.70	PK

For beamforming mode:

802.11n20

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5745.20	43.80	121.30	Fundamental	/	PK
	V	5712.65	43.80	64.50	68.20	3.70	PK
	V	5873.40	43.90	63.30	68.20	4.90	PK
M	V	5785.20	43.80	122.20	Fundamental	/	PK
	V	5691.58	43.80	64.30	68.20	3.90	PK
	V	5862.42	43.90	64.20	68.20	4.00	PK
H	V	5825.20	43.90	121.30	Fundamental	/	PK
	V	5860.90	43.90	64.10	68.20	4.10	PK

802.11n40

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5755.65	43.80	116.70	Fundamental	/	PK
	V	5708.12	43.80	65.20	68.20	3.00	PK
	V	5864.43	43.90	64.10	68.20	4.10	PK
H	V	5795.78	43.80	117.20	Fundamental	/	PK
	V	5701.20	43.80	64.10	68.20	4.10	PK
	V	5865.40	43.90	64.30	68.20	3.90	PK

802.11ac80

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
M	V	5775.60	43.80	107.70	Fundamental	/	PK
	V	5707.11	43.80	67.95	68.20	0.25	PK
	V	5861.92	43.90	63.00	68.20	5.20	PK

For non-beamforming mode:

802.11n20

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5745.20	43.80	121.30	Fundamental	/	PK
	V	5714.63	43.80	65.90	68.20	2.30	PK
	V	5871.44	43.90	64.30	68.20	3.90	PK
M	V	5785.20	43.80	122.20	Fundamental	/	PK
	V	5691.08	43.80	65.30	68.20	2.90	PK
	V	5860.42	43.90	64.80	68.20	3.50	PK
H	V	5825.20	43.90	121.30	Fundamental	/	PK
	V	5850.90	43.90	75.29	78.20	2.91	PK
	V	5860.92	43.90	65.29	68.20	2.91	PK

802.11n40

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	V	5755.65	43.80	116.70	Fundamental	/	PK
	V	5708.12	43.80	65.20	68.20	3.00	PK
	V	5864.43	43.90	64.10	68.20	4.10	PK
H	V	5795.78	43.80	117.20	Fundamental	/	PK
	V	5708.12	43.80	65.20	68.20	3.00	PK
	V	5864.43	43.90	65.30	68.20	2.90	PK

802.11ac80

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
M	V	5775.60	43.80	107.70	Fundamental	/	PK
	V	5707.11	43.80	67.95	68.20	0.25	PK
	V	5861.92	43.90	63.00	68.20	5.20	PK

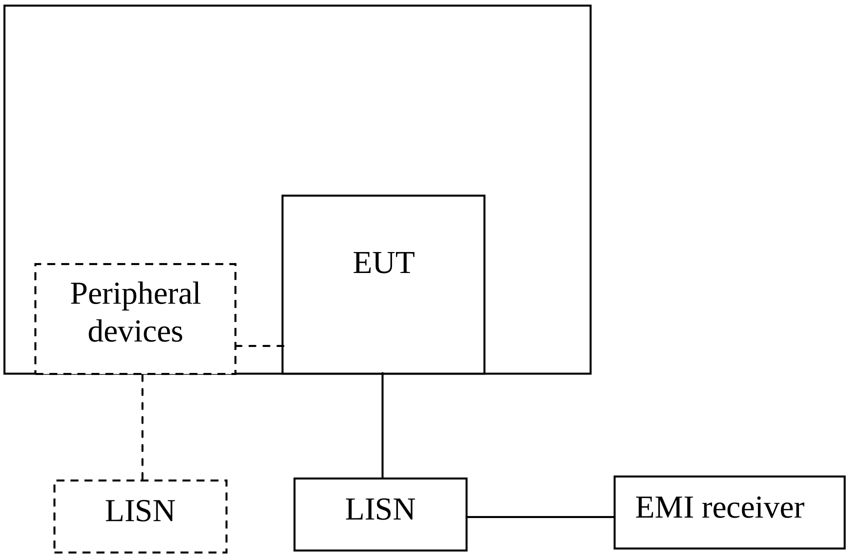
7 Power line conducted emission

Test result: Pass

7.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

7.2 Test configuration



☒ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

7.3 Test procedure and test set up

Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50 Ω LISN port (to which the EUT is connected), where permitted, terminated into a 50 Ω measuring instrument. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements using a LISN, the 50 Ω measuring port is terminated by a measuring instrument having 50 Ω input impedance. All other ports are terminated in 50 Ω loads.

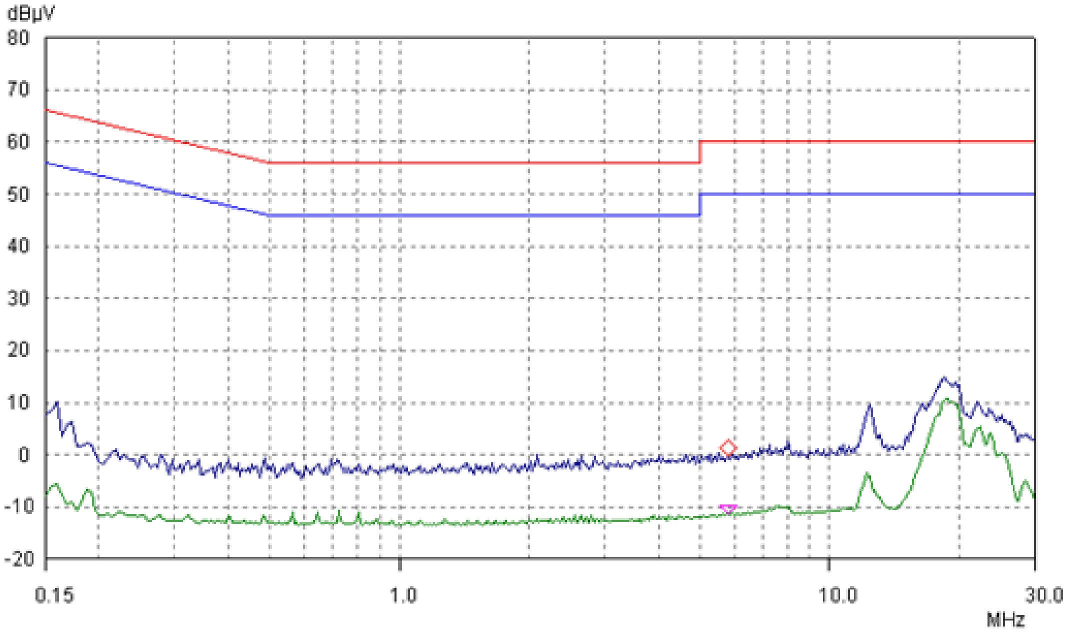
Tabletop devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

The bandwidth of the test receiver is set at 9 kHz.

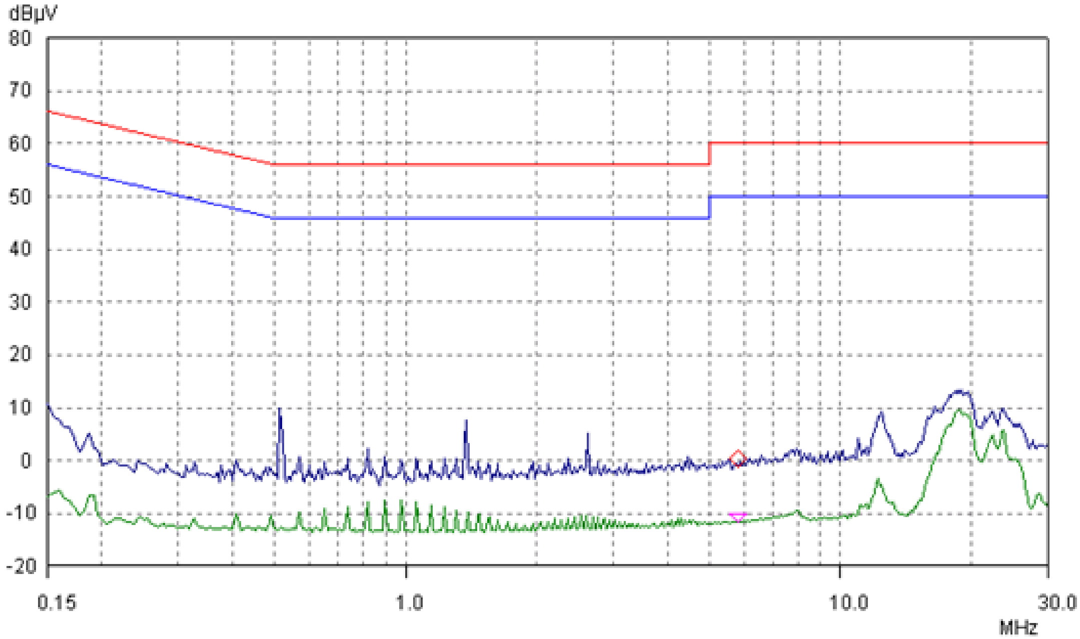
7.4 Test protocol

Temperature: 25 °C
Relative Humidity: 55 %

L Line:



N line



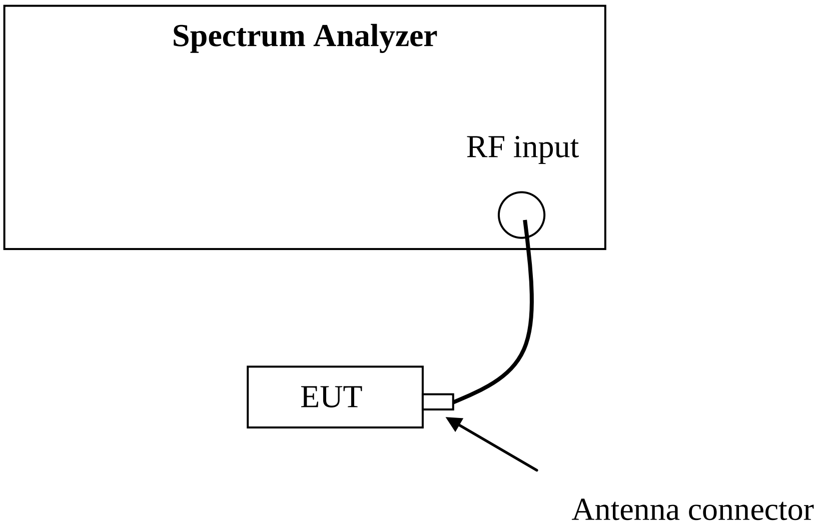
8 26 dB Bandwidth & Emission Bandwidth (99%)

Test Status: Tested

8.1 Test limit

None

8.2 Test Configuration



8.3 Test procedure and test setup

The bandwidth was measured from the antenna port of the EUT according to the measurement method refer to KDB 789033D02 v01: section C.

Emission Bandwidth (EBW)

a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

99 Percent Occupied Bandwidth

The following procedure shall be used for measuring (99 %) power bandwidth:
1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 · RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

8.4 Test protocol

Temperature : 25 °C
Relative Humidity : 55 %

Mode	Frequency (MHz)	26 dB Bandwidth (MHz)			
		Port 0	Port 1	Port 2	Port 3
802.11a	5180	19.28	18.97	19.17	19.11
	5200	19.33	19.19	19.17	19.05
	5240	19.17	19.19	19.08	19.12
802.11n20	5180	20.04	19.95	19.93	19.99
	5200	19.93	20.07	20.04	19.99
	5240	20.10	20.12	20.08	20.06
802.11n40	5190	39.49	39.44	39.34	39.41
	5230	39.24	39.04	39.41	39.51
802.11ac80	5210	79.88	79.13	79.81	80.36

Mode	Frequency (MHz)	99% Bandwidth (MHz)			
		Port 0	Port 1	Port 2	Port 3
802.11a	5180	16.439	16.464	16.459	16.440
	5200	16.441	16.449	16.458	16.475
	5240	16.450	16.448	16.457	16.455
802.11n20	5180	17.611	17.620	17.603	17.622
	5200	17.611	17.597	17.590	17.619
	5240	17.591	17.598	17.597	17.594
802.11n40	5190	36.089	36.090	36.088	36.084
	5230	36.017	36.059	36.044	36.025
802.11ac80	5210	75.641	75.715	75.707	75.600