



FCC PART 15E TEST REPORT No.24T04Z101591-004

for

Guangdong OPPO Mobile Telecommunications Corp., Ltd.

Mobile Phone

CPH2659

FCC ID: R9C-OP23216

with

Hardware Version: 11

Software Version: Color OS 15.0

Issued Date: 2024-10-09

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
24T04Z101591-004	Rev.0	1st edition	2024-09-02
24T04Z101591-004	Rev.1	Added OFDMA modulation type.	2024-10-09

Note: the latest revision of the test report supersedes all previous version.

CONTENTS

CONTENTS	3
1. TEST LABORATORY	5
1.1. INTRODUCTION & ACCREDITATION	5
1.2. TESTING LOCATION	5
1.3. TESTING ENVIRONMENT	5
1.4. PROJECT DATE	5
1.5. SIGNATURE	6
2. CLIENT INFORMATION	7
2.1. APPLICANT INFORMATION	7
2.2. MANUFACTURER INFORMATION	7
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	8
3.1. ABOUT EUT	8
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	8
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	8
3.4. GENERAL DESCRIPTION	8
4. REFERENCE DOCUMENTS	9
4.1. DOCUMENTS SUPPLIED BY APPLICANT	9
4.2. REFERENCE DOCUMENTS FOR TESTING	9
5. LABORATORY ENVIRONMENT	10
6. TEST RESULTS	11
6.1. SUMMARY OF TEST RESULTS	11
6.2. FOR CONDUCTED RESULT :	11
6.3. STATEMENTS	12
6.4. TEST CONDITIONS	12
7. TEST FACILITIES UTILIZED	13
8. MEASUREMENT UNCERTAINTY	14
8.1. TRANSMITTER OUTPUT POWER	14
8.2. PEAK POWER SPECTRAL DENSITY	14
8.3. 6DB EMISSION BANDWIDTH	14
8.4. BAND EDGES COMPLIANCE	14
8.5. SPURIOUS EMISSIONS	14
8.6. AC POWER-LINE CONDUCTED EMISSION	14
ANNEX A: MEASUREMENT RESULTS	15
A.1. MEASUREMENT METHOD	15
A.2. MAXIMUM PEAK OUTPUT POWER	16

A.2.1 ANTENNA GAIN	16
A.2.2. MAXIMUM AVERAGE OUTPUT POWER-CONDUCTED	16
A.3. PEAK POWER SPECTRAL DENSITY	22
A.4. 6dB EMISSION BANDWIDTH	27
.5. RADIATED UNWANTED EMISSION	35
A.5.1 LIMITS	35
A.5.2 TEST SETUP	36
A.5.3 TEST PROCEDURES	37
A.5.4 CALCULATION.....	37
A.6. AC POWERLINE CONDUCTED EMISSION.....	65
A.6.1 SUMMARY	65
A.6.2 METHOD OF MEASUREMENT	65
A.6.3 TEST CONDITION	65
A.6.4 TEST SETUP	65
A.6.5 MEASUREMENT RESULT AND LIMIT	66
ANNEX B: EUT PARAMETERS.....	70
ANNEX C: ACCREDITATION CERTIFICATE	70

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

1.2. Testing Location

Conducted testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

Radiated testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

1.3. TestingEnvironment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project date

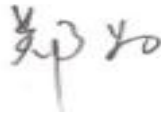
Testing Start Date: 2024-08-27

Testing End Date: 2024-09-02

1.5. Signature



Dong Jiaxuan
(Prepared this test report)



Zheng Wei
(Reviewed this test report)



Pang Shuai
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Company Addr: NO.18 HaiBin Road, Wusha Village, Chang'an Town, DongGuan City,
Guangdong Province, P.R. China
Contact Name: Xiong Bo
Tel No: (86)76986076999
E-mail: xiongbo@oppo.com

2.2. Manufacturer Information

Company Name: Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Company Addr: NO.18 HaiBin Road, Wusha Village, Chang'an Town, DongGuan City,
Guangdong Province, P.R. China
Contact Name: Xiong Bo
Tel No: (86)76986076999
E-mail: xiongbo@oppo.com

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Mobile Phone
Model name	CPH2659
FCC ID	R9C-OP23216
WLAN Frequency Band	ISM Band: 5725MHz~5850MHz
Type of modulation	OFDM/OFDMA
Nominal Voltage	3.87V
Extreme High Voltage	4.5V
Extreme Low Voltage	3.6V

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
UT02a	866185070019957/ 866185070019940	11	Color OS 15.0
UT12a	866185070033131	11	Color OS 15.0
UT10a	866185070033115	11	Color OS 15.0

*EUT ID: is used to identify the test sample in the lab internally.

UT02a is used for Conduction test, UT10a and UT12a is used for Radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	Manufacturer
AE1	Battery	BLPB05	Dongguan NVT Technology Co., Ltd
AE2	Adapter	VCB80AUH	Dongguan Aohai Technology Co.,Ltd.
AE3	Cable	DL129	DUWEI

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

Equipment Under Test (EUT) is a model of Mobile Phone with integrated antenna. It consists of normal options: Battery and Charger.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the Client.

4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

FCC Part15	FCC CFR 47, Part 15, Subpart C and E:	
	15.205 Restricted bands of operation;	2021
	15.209 Radiated emission limits, general requirements;	
	15.407 General technical requirements	
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from	
	Low-Voltage Electrical and Electronic Equipment in the	2013
	Range of 9 kHz to 40 GHz	
UNII: KDB 789033 D02	General U-NII Test Procedures New Rules v02r01	2017-12

5. Laboratory Environment

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. Test Results

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.407 (a)	/	P
Peak Power Spectral Density	15.407 (a)	/	P
Occupied 6dB Bandwidth	15.407 (e)	/	P
Radiated Unwanted Emission	15.407, 15.205, 15.209	/	P
AC Powerline Conducted Emission	15.107, 15.207	/	P

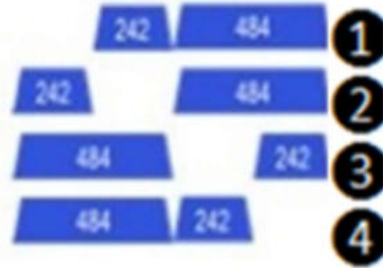
Please refer to **ANNEX A** for detail.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NM	Not measured, The test was not measured by CTTL
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. For conducted result :

- As WLAN SISO(1x1) & MIMO(2x2) mode have the same power setting, the whole testing has assessed only MIMO mode.
- 802.11ax support full RU and single RU modes.
- 802.11be support full RU, single RU, small MRU, large MRU and puncturing modes.
- For 802.11ax full RU and 802.11be full RU modes, the whole testing (include PSD) has reported only 802.11be-EHT20/40 and 802.11ax-HE80 by referring to the higher output power.
- For 802.11ax single RU and 802.11be single RU modes, the whole testing (include PSD) has reported only 802.11ax-HE20-single RU by referring to the higher output power.
- For 802.11be-EHT20/40MHz small MRU mode, the whole testing (include PSD) has reported only 802.11be- EHT20 by referring to the higher output power.
 - For low channel : 52 Tone,index38 + 26Tone,index1 and 106 Tone,index53 + 26Tone,index4;
 - For high channel : 52 Tone,index39 + 26Tone,index7 and 106 Tone,index54 + 26Tone,index4.
- For 802.11be-EHT80MHz large MRU and Puncturing modes are tested for conducted power/PSD.

Bandwidth	Pattern	index
80MHz		484+242-tone Index 1 484+242-tone Index 2 484+242-tone Index 3 484+242-tone Index 4

6.3. Statements

CTTL has evaluated the test cases as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.

This report only deals with the WLAN function among the features described in section 3.

6.4. Test Conditions

For this report, all the test cases are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	26°C
Voltage	3.87V
Humidity	44%

7. Test Facilities Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2025-08-12
2	Vector Signal Analyzer	FSW67	104051	Rohde & Schwarz	1 year	2025-04-06
3	Attenuator	10dB/2W	/	Rosenberger	/	/
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESW44	103144	R&S	1 year	2024-11-26
2	EMI Antenna	VULB 9163	01222	SCHWARZBECK	1 year	2025-07-30
3	EMI Antenna	3115	00167250	ETS-Lindgren	1 year	2025-04-11
4	EMI Antenna	3116	2663	ETS-Lindgren	1 year	2025-04-31

8. Measurement Uncertainty

8.1. Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

8.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

8.3. 6dB Emission Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

8.4. Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

8.5. Spurious Emissions

Conducted (k=1.96)

Frequency Range	Uncertainty(dB)
$30\text{MHz} \leq f \leq 2\text{GHz}$	1.22
$2\text{GHz} \leq f \leq 3.6\text{GHz}$	1.22
$3.6\text{GHz} \leq f \leq 8\text{GHz}$	1.22
$8\text{GHz} \leq f \leq 12.75\text{GHz}$	1.51
$12.75\text{GHz} \leq f \leq 26\text{GHz}$	1.51
$26\text{GHz} \leq f \leq 40\text{GHz}$	1.59

Radiated (k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	4.72
$1\text{GHz} \leq f \leq 18\text{GHz}$	4.84
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.12

8.6. AC Power-line Conducted Emission

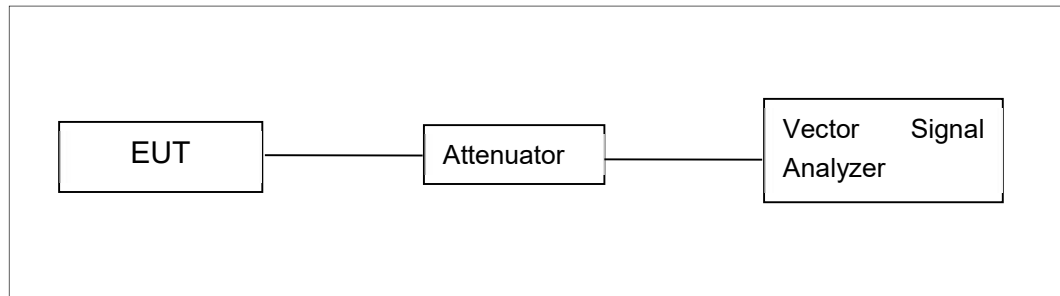
Measurement Uncertainty : 3.08dB,k=2

ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

A.1.1. Conducted Measurements

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode.
- 3). Set the EUT to the required channel.
- 4). Set the spectrum analyzer to start measurement.
- 5). Record the values. Vector Signal Analyzer



A.1.2. Radiated Emission Measurements

Measurement performed according to Clause 6.4, 6.5, 6.6 in ANSI C63.10-2013 and II.G.4, II.G.5, II.G.6 in KDB 789033.

The radiated emission test is performed in sei-anechoic chamber. The EUT was placed on a non-conductive table with 80cm above the ground plane for measurement below 1GHz and 1.5m above the ground plane for measurement above 1GHz. The measurement antenna was placed at a distance of 3 meters from the EUT. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated from 0° to 360° and the measurement antenna is moved from 1m to 4m to get the maximization result. The maximization process was repeated with the EUT positioned in each of its three orthogonal orientations

A.2. Maximum Peak Output Power

Measurement Limit and Method:

Standard	Limit (dBm)
FCC CRF Part 15.407(a)	< 30

Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

Set RBW = 1 MHz.

Set VBW ≥ 3 MHz.

Number of points in sweep ≥ 2 × span / RBW.

Sweep time = auto.

Detector = power averaging (rms)

Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.

Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal. Add 10 log (1/x), where x is the duty cycle

A.2.1 Antenna Gain

Antenna gain is -1.13dBi(ANT9)/0.21dBi(ANT10) /1dBi(ANT14) and the value is supplied by the applicant or manufacturer.

A.2.2. Maximum Average Output Power-Conducted

EUT ID: UT02a

Measurement Results:

Full RU Mode ANT9/ANT10

Mode	Data Rate (Index)	Test Result (dBm)								
		5745MHz(Ch149)			5785MHz(Ch157)			5825MHz(Ch165)		
		Ant9	Ant10	MIMO	Ant9	Ant10	MIMO	Ant9	Ant10	MIMO
802.11a	6Mbps	17.71	19.21	21.53	17.91	19.11	21.56	17.58	19.21	21.48
802.11n-HT20	MCS0	17.63	19.12	21.45	17.76	18.99	21.43	17.44	19.09	21.35
802.11ac-VHT20	MCS0	17.64	19.14	21.46	17.77	19.04	21.46	17.45	19.08	21.35
802.11ax-HE20	MCS0	17.81	19.33	21.65	17.96	19.18	21.62	17.74	19.26	21.58
802.11be-EHT20	MCS0	17.85	19.40	21.70	18.01	19.23	21.67	17.73	19.26	21.57

Mode	Data Rate (Index)	Test Result (dBm)					
		5755MHz(Ch151)			5795MHz(Ch159)		
		Ant9	Ant10	MIMO	Ant9	Ant10	MIMO
802.11n-HT40	MCS0	17.11	18.46	20.85	16.91	18.30	20.67
802.11ac-VHT40	MCS0	17.11	18.48	20.86	17.01	18.30	20.71
802.11ax-HE40	MCS0	17.42	18.71	21.12	17.35	18.54	21.00
802.11be-EHT40	MCS0	17.39	18.81	21.17	17.23	18.64	21.00

Mode	Data Rate (Index)	Test Result (dBm)		
		5775MHz(Ch155)		
		Ant9	Ant10	MIMO
802.11ac-VHT80	MCS0	14.88	16.05	18.51
802.11ax-HE80	MCS0	14.80	16.12	18.52
802.11be-EHT80	MCS0	14.78	16.11	18.51

Full RU Mode ANT10/ANT14

Mode	Data Rate (Index)	Test Result (dBm)								
		5745MHz(Ch149)			5785MHz(Ch157)			5825MHz(Ch165)		
		Ant10	Ant14	MIMO	Ant10	Ant14	MIMO	Ant10	Ant14	MIMO
802.11a	6Mbps	18.95	17.75	21.40	18.96	17.92	21.48	18.87	17.78	21.37
802.11n-HT20	MCS0	18.78	17.67	21.27	18.68	17.78	21.26	18.62	17.65	21.17
802.11ac-VHT20	MCS0	18.89	17.95	21.46	18.84	17.97	21.44	18.79	17.78	21.32
802.11ax-HE20	MCS0	19.14	17.89	21.57	18.98	17.97	21.51	18.93	17.98	21.49
802.11be-EHT20	MCS0	19.14	17.96	21.60	18.99	18.12	21.59	18.98	17.89	21.48

Mode	Data Rate (Index)	Test Result (dBm)					
		5755MHz(Ch151)			5795MHz(Ch159)		
		Ant10	Ant14	MIMO	Ant10	Ant14	MIMO
802.11n-HT40	MCS0	17.93	17.16	20.57	17.63	16.86	20.27
802.11ac-VHT40	MCS0	18.23	17.27	20.79	17.95	17.03	20.52
802.11ax-HE40	MCS0	18.59	17.70	21.18	18.19	17.41	20.83
802.11be-EHT40	MCS0	18.48	17.51	21.03	18.18	17.25	20.75

Mode	Data Rate (Index)	Test Result (dBm)		
		5775MHz(Ch155)		
		Ant10	Ant14	MIMO
802.11ac-VHT80	MCS0	15.58	15.06	18.34
802.11ax-HE80	MCS0	15.49	14.99	18.26
802.11be-EHT80	MCS0	15.48	14.84	18.18

RU mode MIMO ANT9/ANT10:

Mode	RU index	Test Result (dBm)								
		5745MHz(Ch149)			5785MHz(Ch157)			5825MHz(Ch165)		
		Ant9	Ant10	MIMO	Ant9	Ant10	MIMO	Ant9	Ant10	MIMO
802.11ax -HE20	RU26 left	0.10	1.05	3.61	0.28	1.91	4.18	0.31	2.32	4.44
	RU26 right	0.00	1.61	3.89	0.26	1.69	4.04	0.03	1.74	3.98
	RU52 left	2.85	3.94	6.44	3.12	4.73	7.01	3.09	5.18	7.27
	RU52 right	2.80	4.45	6.71	3.01	4.55	6.86	2.85	4.65	6.85
	RU106 left	6.49	7.76	10.18	6.66	8.07	10.43	6.59	8.50	10.66
	RU106 right	6.46	8.11	10.37	6.63	7.87	10.30	6.43	8.17	10.40
802.11be -EHT20	RU26 left	0.06	1.06	3.60	0.24	1.92	4.17	0.28	2.34	4.44
	RU26 right	-0.04	1.61	3.87	0.21	1.67	4.01	0.01	1.76	3.98
	RU52 left	2.83	3.95	6.44	3.01	4.68	6.94	2.97	5.16	7.21
	RU52 right	2.78	4.43	6.69	2.98	4.49	6.81	2.76	4.64	6.81
	RU106 left	6.45	7.75	10.16	6.61	8.00	10.37	6.57	8.48	10.64
	RU106 right	6.23	8.09	10.27	6.57	7.89	10.29	6.34	8.09	10.31

RU mode MIMO ANT10/ANT14:

Mode	RU index	Test Result (dBm)								
		5745MHz(Ch149)			5785MHz(Ch157)			5825MHz(Ch165)		
		Ant10	Ant14	MIMO	Ant10	Ant14	MIMO	Ant10	Ant14	MIMO
802.11ax -HE20	RU26 left	0.92	-0.25	3.38	1.70	0.22	4.03	2.06	0.36	4.30
	RU26 right	1.45	0.08	3.83	1.57	-0.02	3.86	1.59	0.05	3.90
	RU52 left	3.81	2.73	6.31	4.49	3.00	6.82	4.92	3.04	7.09
	RU52 right	4.25	2.97	6.67	4.35	2.97	6.72	4.50	2.88	6.78
	RU106 left	7.63	6.49	10.11	7.87	6.83	10.39	8.24	6.66	10.53
	RU106 right	7.91	6.62	10.32	7.74	6.64	10.24	7.91	6.54	10.29
802.11be -EHT20	RU26 left	1.06	0.02	3.58	1.81	0.53	4.23	2.11	0.39	4.34
	RU26 right	1.57	0.30	3.99	1.66	0.27	4.03	1.61	0.28	4.01
	RU52 left	3.94	2.89	6.46	4.57	3.37	7.02	4.88	3.27	7.16
	RU52 right	4.37	3.12	6.80	4.39	3.15	6.82	4.48	3.15	6.88
	RU106 left	7.68	6.46	10.12	7.93	6.77	10.40	8.29	6.87	10.65
	RU106 right	7.96	6.63	10.36	7.85	6.68	10.31	7.97	6.80	10.43

MRU mode MIMO ANT9/ANT10:

Mode	RU index	Test Result (dBm)								
		5745MHz(Ch149)			5785MHz(Ch157)			5825MHz(Ch165)		
		Ant9	Ant10	MIMO	Ant9	Ant10	MIMO	Ant9	Ant10	MIMO
802.11be -EHT20	52 Tone,index38 + 26Tone,index1	2.69	4.18	6.51	2.93	4.52	6.81	2.85	5.06	7.10
	52 Tone,index39 + 26Tone,index7	2.61	4.35	6.58	2.89	4.41	6.73	2.69	4.73	6.84
	106 Tone,index53 + 26Tone,index4	6.29	7.87	10.16	6.61	7.96	10.35	6.46	8.43	10.57
	106 Tone,index54 + 26Tone,index4	6.28	8.09	10.29	6.50	7.86	10.24	6.30	8.37	10.47

Mode	RU index	configure	Test Result (dBm)		
			5775MHz(Ch155)		
			Ant9	Ant10	MIMO
802.11be -EHT80	484+242 Tone	1	16.55	17.85	20.26
		2	16.72	17.96	20.39
		3	16.79	18.29	20.61
		4	16.59	18.07	20.40

MRU mode MIMO ANT10/ANT14:

Mode	RU index	Test Result (dBm)								
		5745MHz(Ch149)			5785MHz(Ch157)			5825MHz(Ch165)		
		Ant10	Ant14	MIMO	Ant10	Ant14	MIMO	Ant10	Ant14	MIMO
802.11be -EHT20	52 Tone,index38 + 26Tone,index1	3.76	2.94	6.38	4.28	3.36	6.85	4.69	3.38	7.09
	52 Tone,index39 + 26Tone,index7	4.04	3.13	6.62	4.25	3.18	6.76	4.45	3.22	6.89
	106 Tone,index53 + 26Tone,index4	7.52	6.61	10.10	7.77	6.97	10.40	8.08	6.89	10.54
	106 Tone,index54 + 26Tone,index4	7.78	6.70	10.28	7.73	6.83	10.31	7.91	6.88	10.44

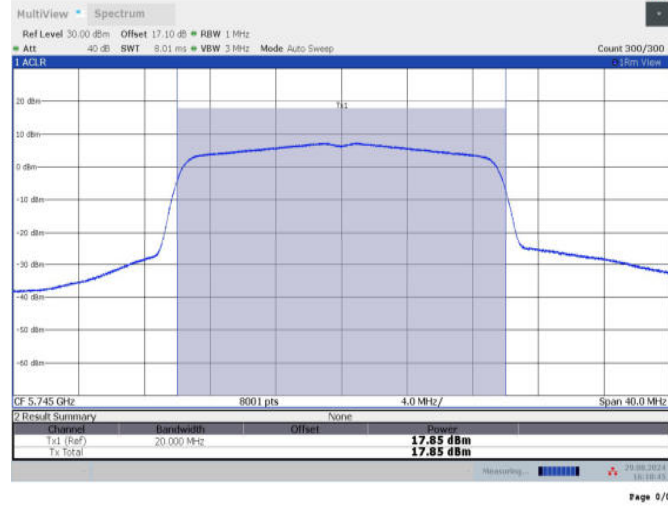
Mode	RU index	configure	Test Result (dBm)		
			5775MHz(Ch155)		
			Ant10	Ant14	MIMO
802.11be -EHT80	484+242 Tone	1	17.38	17.01	20.21
		2	17.61	17.11	20.38
		3	17.69	17.18	20.45
		4	17.72	17.28	20.52

The data rate 6Mbps (11a mode), MCS0 (11n-HT20 mode), MCS0 (11n-HT40 mode), MCS0 (11ac-VHT20 mode), MCS0 (11ac-VHT40 mode), MCS0 (11ac-VHT80 mode) , MCS0 (11ax-HE20 mode), MCS0 (11ax-HE40 mode), MCS0 (11ax-HE80 mode),MCS0 (11be-EHT20 mode), MCS0 (11be-EHT40 mode), MCS0 (11be-EHT80 mode)are selected as the worst condition; as the maximum power is got with these data rate. The following cases are performed with this condition.

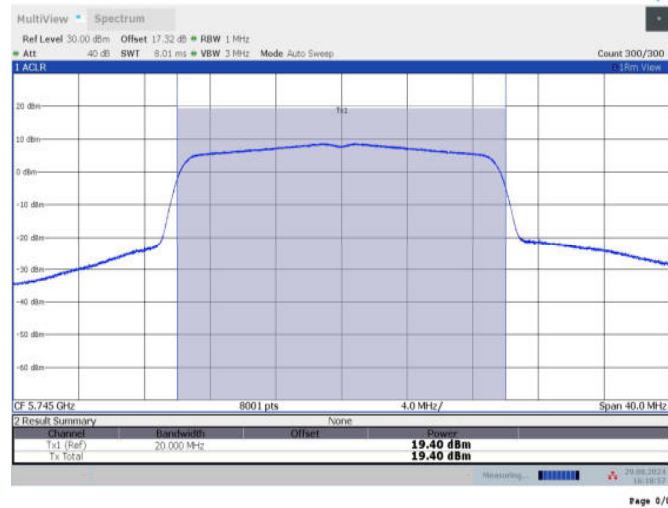
The duty cycle of all mode are>98%

Maximum output Power:

11BE20MIMO_Ant9_5745



11BE20MIMO_Ant10_5745



Conclusion: PASS

A.3. Peak Power Spectral Density

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407(a)	< 30 dBm/500 kHz

Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

Set RBW = 500 kHz.

Set VBW ≥ 3 MHz.

Number of points in sweep ≥ 2 × span / RBW.

Sweep time = auto.

Detector = power averaging (rms)

Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter. Use the peak search function on the instrument to find the peak of the spectrum and record its value. Add 10 log (1/x), where x is the duty cycle.

Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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EUT ID: UT02a

Measurement Results:

TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A-CDD	Ant9	5745	4.85	≤30.00	PASS
	Ant10	5745	6.04	≤30.00	PASS
	total	5745	8.50	≤30.00	PASS
	Ant9	5785	5.05	≤30.00	PASS
	Ant10	5785	6.19	≤30.00	PASS
	total	5785	8.67	≤30.00	PASS
	Ant9	5825	4.73	≤30.00	PASS
	Ant10	5825	6.34	≤30.00	PASS
	total	5825	8.62	≤30.00	PASS
11BE20MIMO	Ant9	5745	4.66	≤30.00	PASS
	Ant10	5745	5.94	≤30.00	PASS
	total	5745	8.36	≤30.00	PASS
	Ant9	5785	4.75	≤30.00	PASS
	Ant10	5785	5.92	≤30.00	PASS
	total	5785	8.38	≤30.00	PASS
	Ant9	5825	4.60	≤30.00	PASS
	Ant10	5825	5.78	≤30.00	PASS
	total	5825	8.24	≤30.00	PASS
11BE40MIMO	Ant9	5755	1.83	≤30.00	PASS
	Ant10	5755	2.62	≤30.00	PASS

	total	5755	5.25	≤ 30.00	PASS
	Ant9	5795	1.09	≤ 30.00	PASS
	Ant10	5795	2.10	≤ 30.00	PASS
	total	5795	4.63	≤ 30.00	PASS
11AX80MIMO	Ant9	5775	-3.59	≤ 30.00	PASS
	Ant10	5775	-3.39	≤ 30.00	PASS
	total	5775	-0.48	≤ 30.00	PASS

Note:All results have been tested, only shows the worst case.

RU mode MIMO:

Test Mode	Antenna	Frequency[MHz]	Ru Size	Ru Index	Result [dBm/MHz]	Limit [dBm/MHz]	Verdict
11AX20MIMO	Ant9	5745	26Tone	RU0	-4.94	≤ 30.00	PASS
				RU8	-5.20	≤ 30.00	PASS
			52Tone	RU37	-5.24	≤ 30.00	PASS
				RU40	-5.51	≤ 30.00	PASS
			106Tone	RU53	-4.66	≤ 30.00	PASS
				RU54	-4.89	≤ 30.00	PASS
	Ant10	5745	26Tone	RU0	-4.09	≤ 30.00	PASS
				RU8	-3.82	≤ 30.00	PASS
			52Tone	RU37	-3.99	≤ 30.00	PASS
				RU40	-3.43	≤ 30.00	PASS
			106Tone	RU53	-3.52	≤ 30.00	PASS
				RU54	-3.13	≤ 30.00	PASS
	total	5745	26Tone	RU0	-1.48	≤ 30.00	PASS
				RU8	-1.45	≤ 30.00	PASS
			52Tone	RU37	-1.56	≤ 30.00	PASS
				RU40	-1.34	≤ 30.00	PASS
			106Tone	RU53	-1.04	≤ 30.00	PASS
				RU54	-0.91	≤ 30.00	PASS
	Ant9	5785	26Tone	RU0	-4.90	≤ 30.00	PASS
				RU8	-5.15	≤ 30.00	PASS
			52Tone	RU37	-4.96	≤ 30.00	PASS
				RU40	-5.28	≤ 30.00	PASS
			106Tone	RU53	-4.70	≤ 30.00	PASS
				RU54	-4.44	≤ 30.00	PASS
	Ant10	5785	26Tone	RU0	-3.34	≤ 30.00	PASS
				RU8	-3.37	≤ 30.00	PASS
			52Tone	RU37	-3.55	≤ 30.00	PASS
				RU40	-3.72	≤ 30.00	PASS
			106Tone	RU53	-3.18	≤ 30.00	PASS
				RU54	-3.21	≤ 30.00	PASS
	total	5785	26Tone	RU0	-1.04	≤ 30.00	PASS

				RU8	-1.16	≤30.00	PASS
			52Tone	RU37	-1.19	≤30.00	PASS
				RU40	-1.42	≤30.00	PASS
			106Tone	RU53	-0.86	≤30.00	PASS
				RU54	-0.77	≤30.00	PASS
	Ant9	5825	26Tone	RU0	-5.13	≤30.00	PASS
				RU8	-5.09	≤30.00	PASS
			52Tone	RU37	-5.11	≤30.00	PASS
				RU40	-4.94	≤30.00	PASS
			106Tone	RU53	-4.65	≤30.00	PASS
				RU54	-4.75	≤30.00	PASS
	Ant10	5825	26Tone	RU0	-2.96	≤30.00	PASS
				RU8	-3.46	≤30.00	PASS
			52Tone	RU37	-3.16	≤30.00	PASS
				RU40	-3.64	≤30.00	PASS
			106Tone	RU53	-2.75	≤30.00	PASS
	total	5825	26Tone	RU0	-0.90	≤30.00	PASS
				RU8	-1.19	≤30.00	PASS
			52Tone	RU37	-1.02	≤30.00	PASS
				RU40	-1.23	≤30.00	PASS
			106Tone	RU53	-0.59	≤30.00	PASS

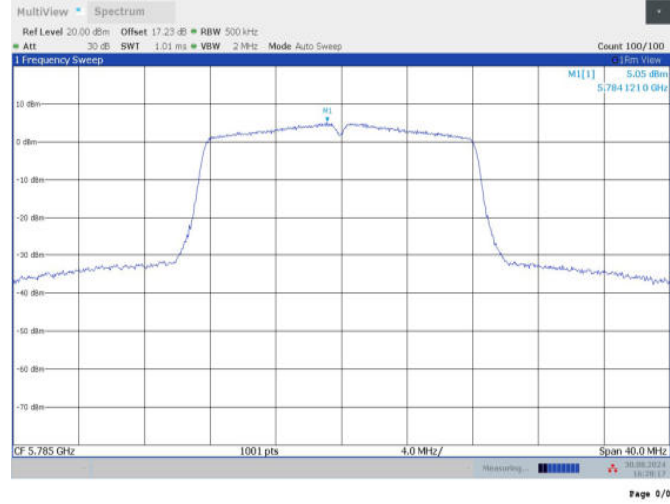
MRU mode MIMO:

Test Mode	Antenna	Channel	Mru Type	Mru Index	Result [dBm/MHz]	Limit [dBm/MHz]	Verdict
11BE20MIMO	Ant9	5745	52+26_OFDMA	1	-6.93	≤30.00	PASS
				2	-7.16	≤30.00	PASS
			106+26_OFDMA	1	-4.31	≤30.00	PASS
				4	-4.39	≤30.00	PASS
	Ant10	5745	52+26_OFDMA	1	-5.62	≤30.00	PASS
				2	-5.54	≤30.00	PASS
			106+26_OFDMA	1	-3.17	≤30.00	PASS
				4	-2.99	≤30.00	PASS
	total	5745	52+26_OFDMA	1	-3.22	≤30.00	PASS
				2	-3.26	≤30.00	PASS
			106+26_OFDMA	1	-0.69	≤30.00	PASS
				4	-0.62	≤30.00	PASS
	Ant9	5785	52+26_OFDMA	1	-6.87	≤30.00	PASS
				2	-6.84	≤30.00	PASS
			106+26_OFDMA	1	-4.09	≤30.00	PASS
				4	-4.15	≤30.00	PASS
	Ant10	5785	52+26_OFDMA	1	-5.17	≤30.00	PASS
				2	-5.23	≤30.00	PASS

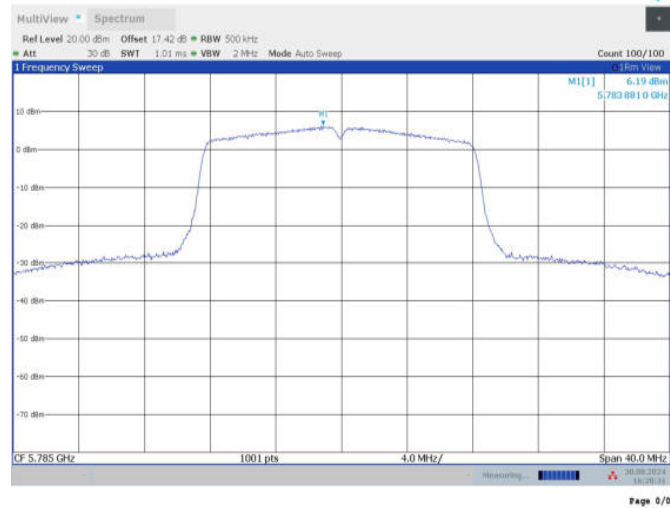
			106+26_OFDMA	1	-2.66	≤30.00	PASS
				4	-2.78	≤30.00	PASS
	total	5785	52+26_OFDMA	1	-2.93	≤30.00	PASS
				2	-2.95	≤30.00	PASS
			106+26_OFDMA	1	-0.31	≤30.00	PASS
				4	-0.40	≤30.00	PASS
	Ant9	5825	52+26_OFDMA	1	-7.11	≤30.00	PASS
				2	-7.19	≤30.00	PASS
			106+26_OFDMA	1	-4.13	≤30.00	PASS
				4	-4.48	≤30.00	PASS
	Ant10	5825	52+26_OFDMA	1	-4.74	≤30.00	PASS
				2	-5.04	≤30.00	PASS
			106+26_OFDMA	1	-2.21	≤30.00	PASS
				4	-2.27	≤30.00	PASS
	total	5825	52+26_OFDMA	1	-2.75	≤30.00	PASS
				2	-2.97	≤30.00	PASS
			106+26_OFDMA	1	-0.05	≤30.00	PASS
				4	-0.23	≤30.00	PASS
11BE80MIMO	Ant9	5775	484+242_OFDMA	1	-1.52	≤30.00	PASS
				2	-1.11	≤30.00	PASS
				3	-0.82	≤30.00	PASS
				4	-1.57	≤30.00	PASS
	Ant10	5775	484+242_OFDMA	1	-0.08	≤30.00	PASS
				2	0.54	≤30.00	PASS
				3	0.64	≤30.00	PASS
				4	-0.18	≤30.00	PASS
	total	5775	484+242_OFDMA	1	2.27	≤30.00	PASS
				2	2.80	≤30.00	PASS
				3	2.98	≤30.00	PASS
				4	2.19	≤30.00	PASS

Peak Power Spectral Density:

11A-CDD_Ant9_5785



11A-CDD_Ant10_5785



Conclusion: PASS

A.4. 6dB Emission Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.407 (e)	≥ 500

Set RBW = 100 kHz.

Set the video bandwidth (VBW) $\geq 3 \times$ RBW.

Detector = Peak.

Trace mode = max hold.

Sweep = auto couple.

Allow the trace to stabilize.

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.

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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EUT ID: UT02a

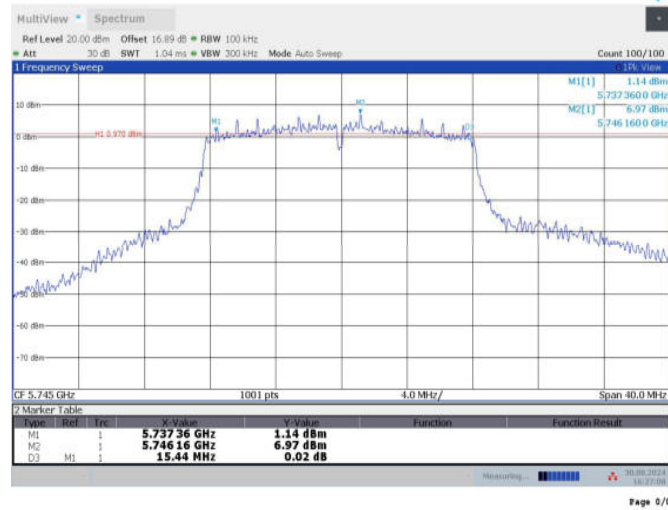
Measurement Result:

TestMode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A-CDD	Ant9	5745	15.44	5737.36	5752.80	0.5	PASS
	Ant10	5745	16.32	5736.76	5753.08	0.5	PASS
	Ant9	5785	13.84	5778.64	5792.48	0.5	PASS
	Ant10	5785	15.44	5777.00	5792.44	0.5	PASS
	Ant9	5825	16.04	5816.76	5832.80	0.5	PASS
	Ant10	5825	14.48	5818.00	5832.48	0.5	PASS
11BE20MIMO	Ant9	5745	17.56	5736.44	5754.00	0.5	PASS
	Ant10	5745	18.12	5735.88	5754.00	0.5	PASS
	Ant9	5785	15.76	5776.68	5792.44	0.5	PASS
	Ant10	5785	16.04	5776.64	5792.68	0.5	PASS
	Ant9	5825	16.28	5816.12	5832.40	0.5	PASS
	Ant10	5825	16.32	5817.32	5833.64	0.5	PASS
11BE40MIMO	Ant9	5755	34.96	5737.40	5772.36	0.5	PASS
	Ant10	5755	33.76	5738.60	5772.36	0.5	PASS
	Ant9	5795	35.04	5777.40	5812.44	0.5	PASS
	Ant10	5795	35.60	5777.00	5812.60	0.5	PASS
11AX80MIMO	Ant9	5775	76.48	5736.44	5812.92	0.5	PASS
	Ant10	5775	75.04	5737.40	5812.44	0.5	PASS

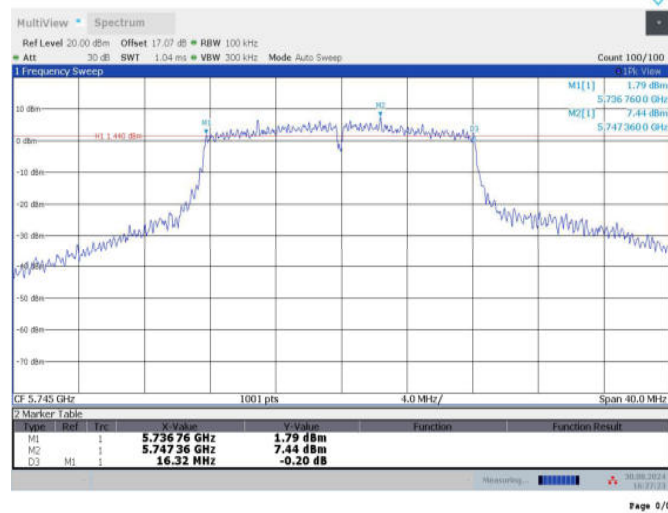
Note: All results have been tested, only shows the worst case.

Test graphs as below:

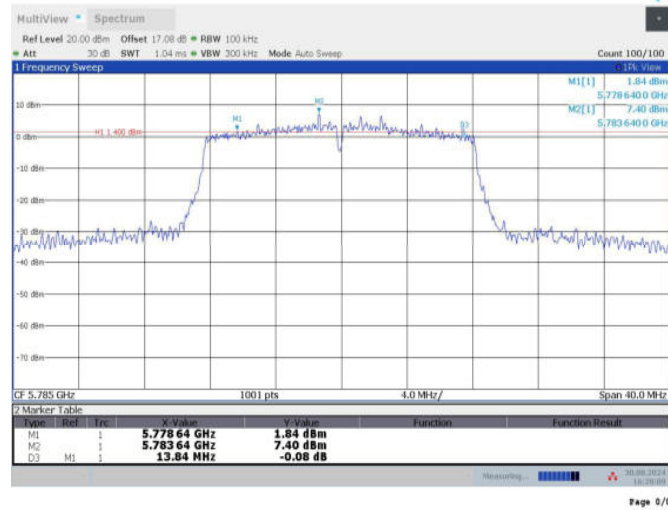
11A-CDD Ant9_5745



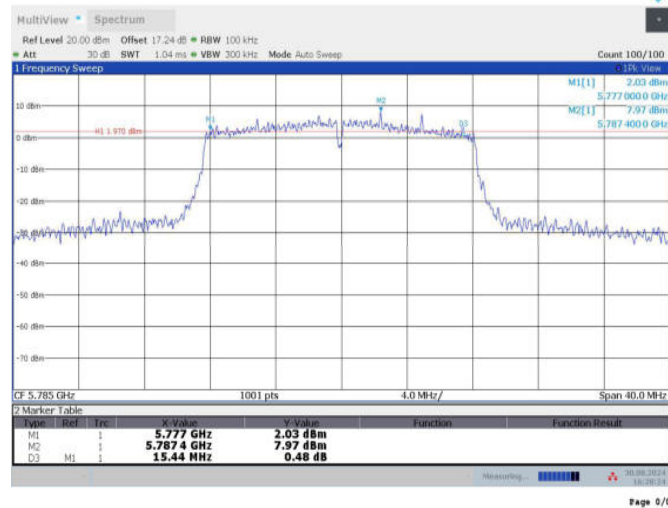
11A-CDD Ant10_5745



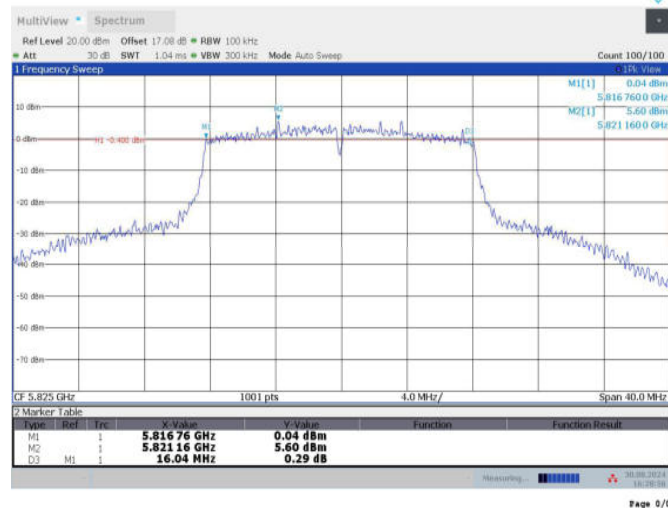
11A-CDD Ant9_5785



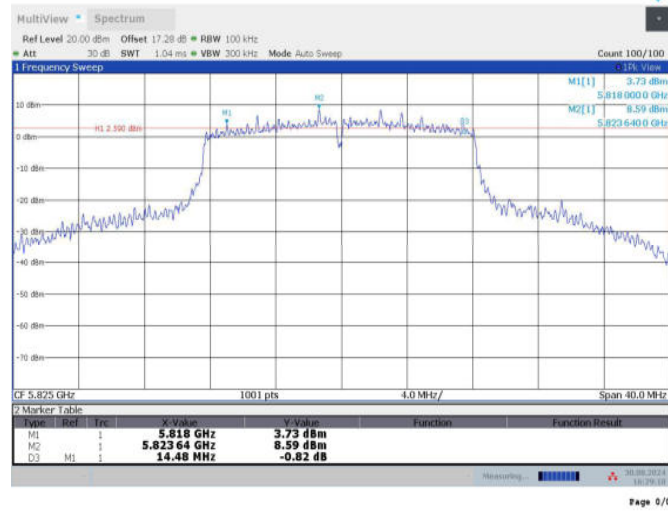
11A-CDD_Ant10_5785



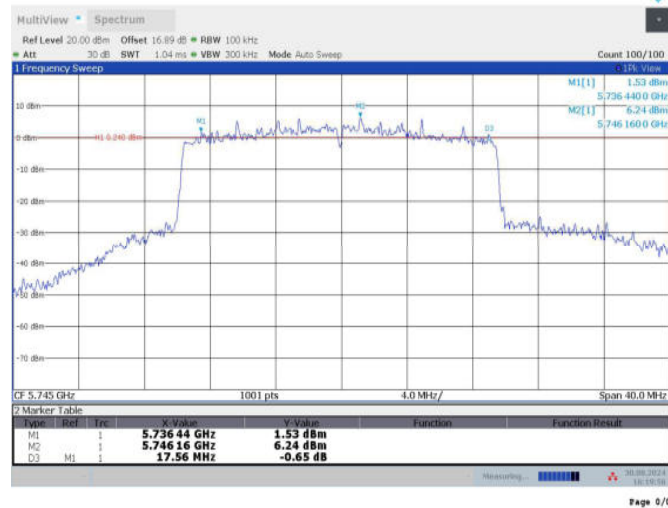
11A-CDD_Ant9_5825



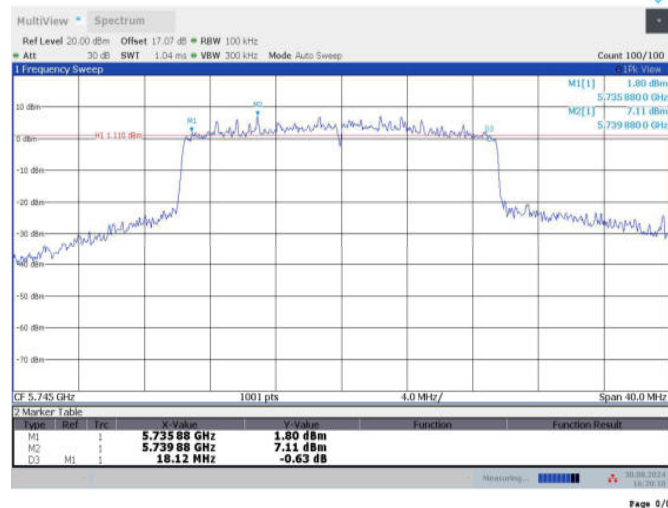
11A-CDD_Ant10_5825



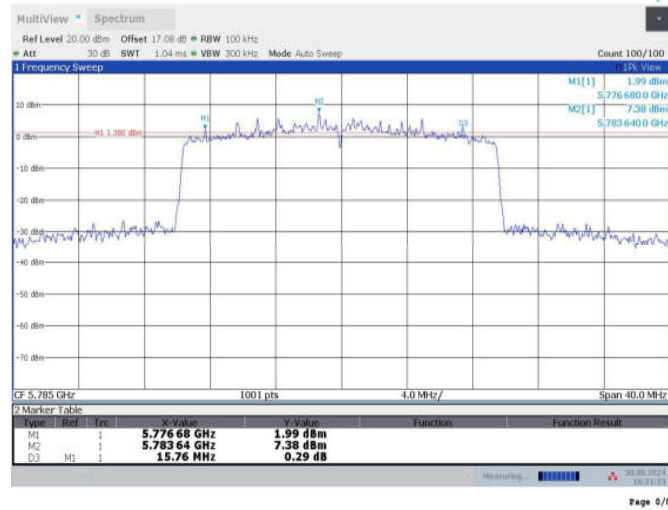
11BE20MIMO_Ant9_5745



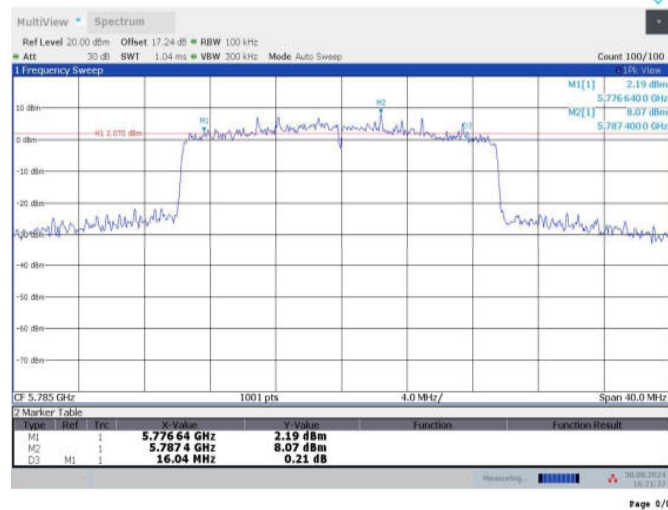
11BE20MIMO_Ant10_5745



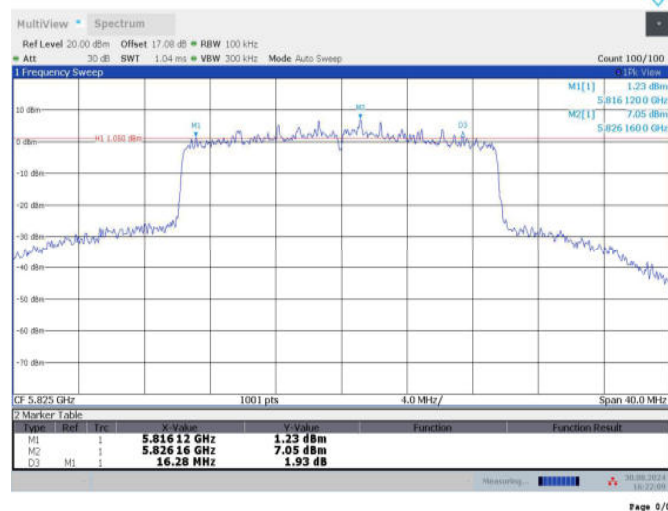
11BE20MIMO_Ant9_5785



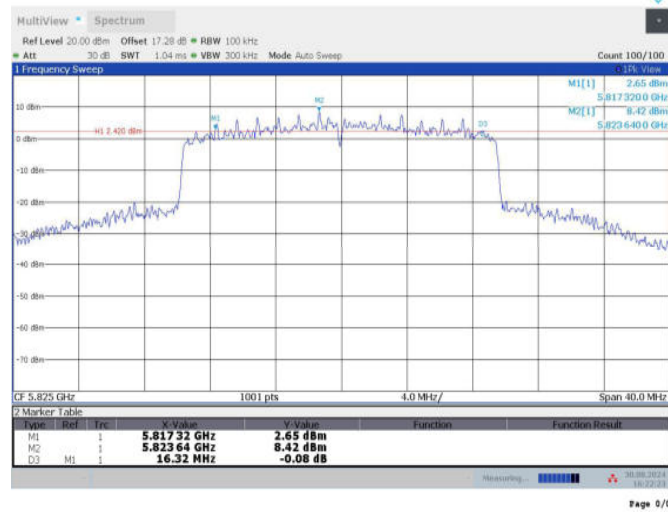
11BE20MIMO_Ant10_5785



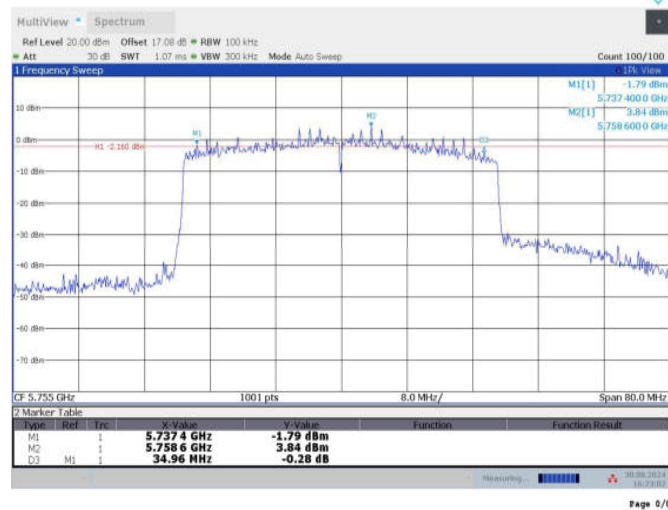
11BE20MIMO_Ant9_5825



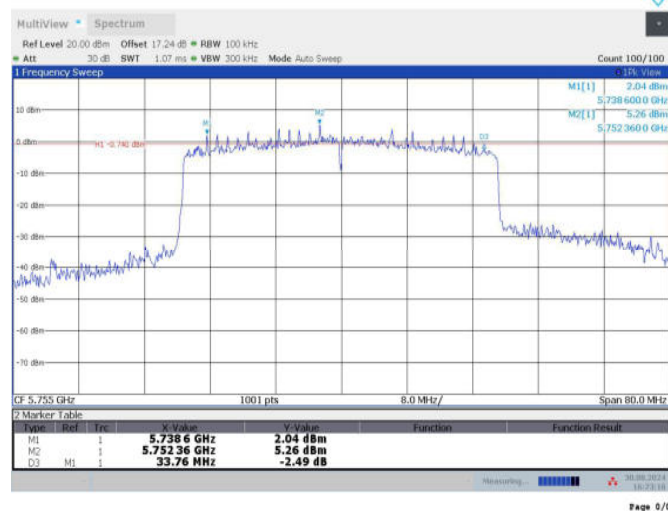
11BE20MIMO_Ant10_5825



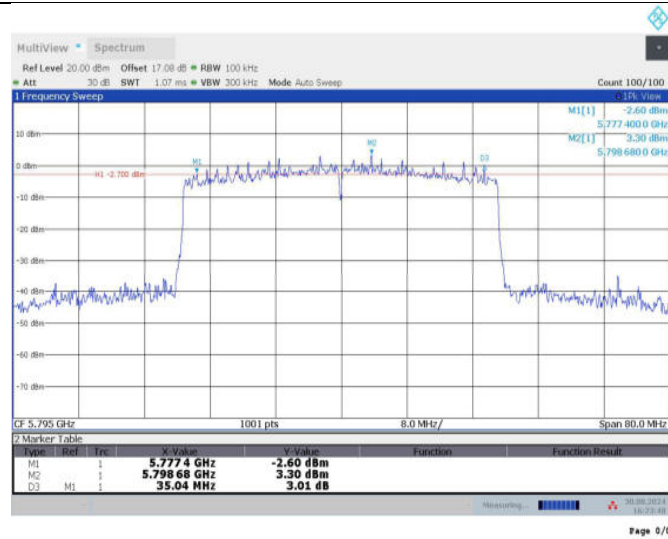
11BE40MIMO_Ant9_5755



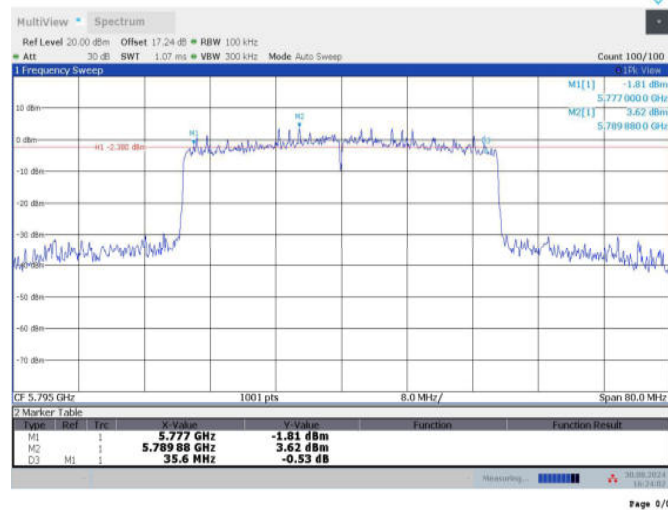
11BE40MIMO_Ant10_5755



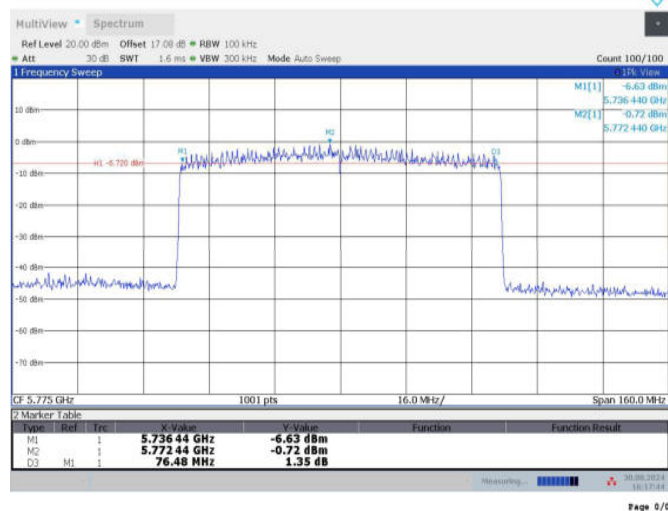
11BE40MIMO_Ant9_5795



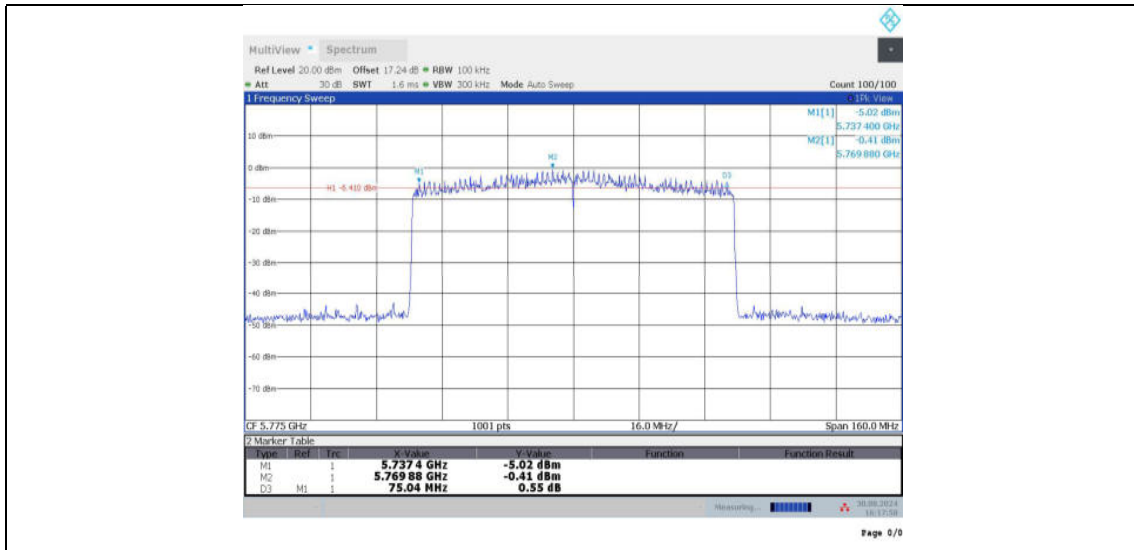
11BE40MIMO_Ant10_5795



11AX80MIMO_Ant9_5775



11AX80MIMO_Ant10_5775



Conclusion: PASS

5. Radiated Unwanted Emission

A.5.1 Limits

Unwanted Emissions in the unrestricted bands shall not exceed the limits that shown in 15.407:

Standard	Limit (dBm/MHz)	
FCC 47 CFR Part 15.407	at the band edge	27
	at 5 MHz above or below the band edge	15.6
	at 25 MHz above or below the band edge	10
	at 75 MHz or more above or below the band edge	-27
	Note: Increasing linearly from point to point.	

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c))

Frequency (MHz)	Field strength(μ V/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

Frequency of emission (MHz)	Field strength (uV/m)	Field strength (dBuV/m)	Measurement distance (m)
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Note: When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor (as defined in KDB 789033 II.G.2.d).

A.5.2 Test setup

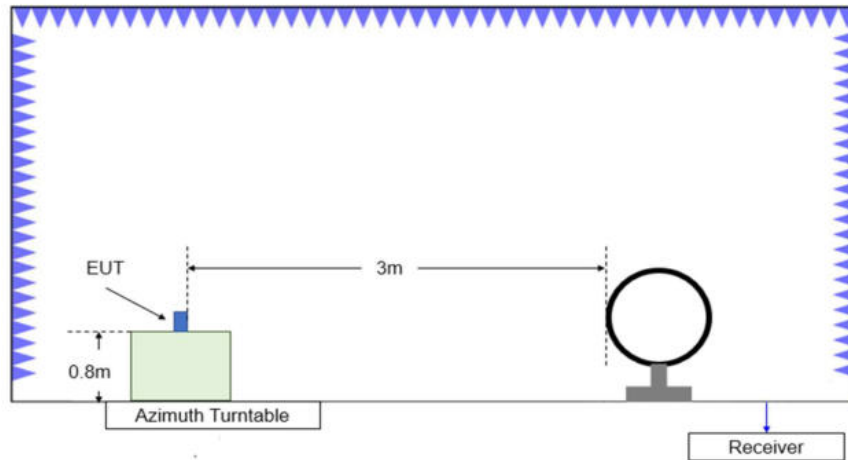


Figure A.5.1. Test Site Diagram (9kHz-30MHz)

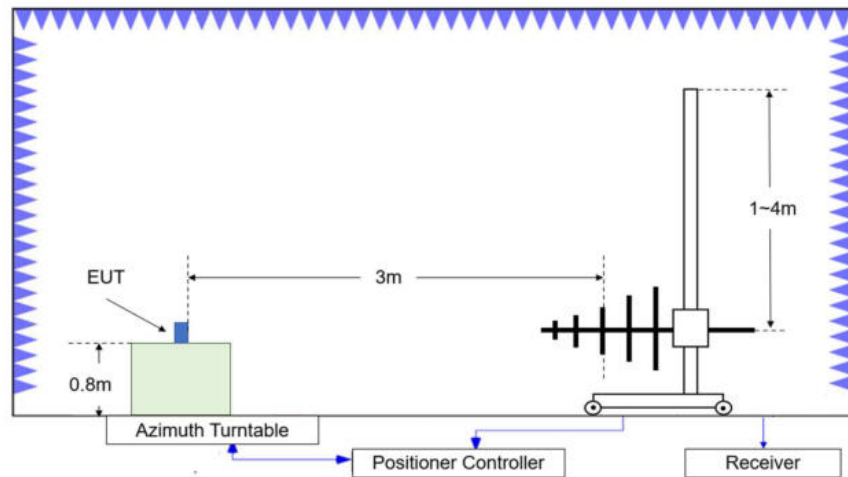


Figure A.5.2. Test Site Diagram (30MHz-1GHz)

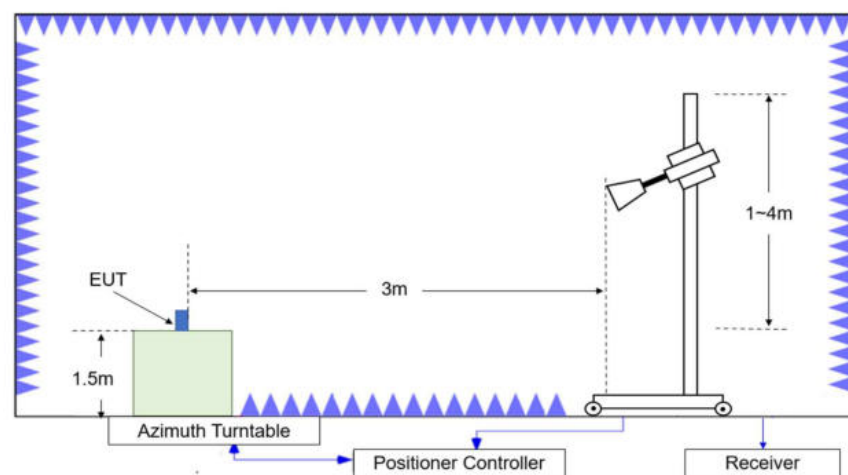


Figure A.5.3. Test Site Diagram (1GHz-40GHz)

A.5.3 Test Procedures

Radiated unwanted emissions from the EUT were measured according to ANSI C63.10 and KDB 789033 D02 v02r01.

Test setting

Frequency of emission (MHz)	RBW/VBW
30-1000	100kHz/300kHz
1000-4000	1MHz/3MHz
4000-18000	1MHz/3MHz
18000-26500	1MHz/3MHz
26500-40000	1MHz/3MHz

A.5.4 Calculation

1. The measurement results reported below is calculated by:

Measurement Results (dBμV/m) = $P_{\text{measurement}}$ (dBμV) + Cable Loss (dB) + Antenna Factor (dB/m)

Where: $P_{\text{measurement}}$ is the field strength recorded from the instrument

2. Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20 \log(D) + 104.77$$

Where:

E is the field strength in dBμV/m

D is the measurement distance in meters

EIRP is the equivalent isotropically radiated power in dBm

Test note

1. The EUT is operating at its maximum duty cycle and its maximum power control level.
2. Investigation has been done on all modes and modulations/data rates. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.
3. Spurious emissions for all channels were investigated and almost the same below 1GHz. According to FCC 47 CFR §15.31, emission levels are not report much lower than the limit by over 20dB
4. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept.
5. EUT in each of three orthogonal axis emissions had been tested out only the worst case (axis data) recorded in the report.
6. Measurement frequencies were performed from 9 kHz to the 10th harmonic of highest fundamental frequency or 40GHz, whichever is lower.
7. No spurious emissions were detected within 20dB of the limit below 30MHz. OFS and semi-chamber comparison testing had been performed and the result came out very similar.(KDB 414788)
8. The low/mid/high channels of all working mode with different bandwidths were all tested, only the worst ones were reported.
9. The EUT supports SISOs for chain0/chain1/chain2, and MIMO for Chain01/Chain12, all combinations are evaluated, only the worst cases are reported.
10. The EUT support full RU and partial RU for 802.11ax and 802.11be, both full RU and partial RU spurious emission was tested. And the results are basically noises with no suspicious emission. In

this case, the measurement results of full RU were reported and represented worst cases.

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

P_{Mea} is the field strength recorded from the instrument.

Conclusion: PASS

Average Results:

802.11a

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17910.900	44.93	-26.18	45.95	25.16	54.00	9.07	V
17904.850	44.89	-26.18	45.95	25.12	54.00	9.11	V
14479.450	38.89	-28.77	41.90	25.76	54.00	15.11	V
14493.750	38.48	-28.77	41.90	25.35	54.00	15.52	H
11863.100	36.77	-31.54	39.15	29.16	54.00	17.23	V
11869.700	36.74	-31.54	39.15	29.13	54.00	17.26	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17913.650	44.84	-26.18	45.95	25.07	54.00	9.16	V
17923.000	44.67	-26.18	45.95	24.90	54.00	9.33	V
14494.850	39.16	-28.77	41.90	26.03	54.00	14.84	V
14478.350	39.08	-28.77	41.90	25.95	54.00	14.92	V
11843.300	37.04	-31.54	39.15	29.43	54.00	16.96	V
11829.550	37.01	-31.76	39.20	29.57	54.00	16.99	V

802.11n-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17915.300	44.69	-26.18	45.95	24.92	54.00	9.31	V
17925.200	44.61	-26.18	45.95	24.84	54.00	9.39	H
14492.650	38.42	-28.77	41.90	25.29	54.00	15.58	V
14494.850	38.41	-28.77	41.90	25.28	54.00	15.59	V
11878.500	36.66	-31.54	39.15	29.05	54.00	17.34	V
11863.100	36.64	-31.54	39.15	29.03	54.00	17.36	H

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17925.750	44.69	-26.18	45.95	24.92	54.00	9.31	V
17934.550	44.57	-26.18	45.95	24.80	54.00	9.43	V
14477.800	38.75	-28.77	41.90	25.62	54.00	15.25	V
14476.700	38.67	-28.77	41.90	25.54	54.00	15.33	V
11841.100	36.97	-31.54	39.15	29.36	54.00	17.03	V
11857.050	36.71	-31.54	39.15	29.10	54.00	17.29	V

802.11n-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17920.250	44.74	-26.18	45.95	24.97	54.00	9.26	H
17925.750	44.64	-26.18	45.95	24.87	54.00	9.36	H
14481.650	38.69	-28.77	41.90	25.56	54.00	15.31	H
14493.750	38.66	-28.77	41.90	25.53	54.00	15.34	V
11843.300	36.64	-31.54	39.15	29.03	54.00	17.36	V
11849.900	36.62	-31.54	39.15	29.01	54.00	17.38	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17912.000	44.61	-26.18	45.95	24.84	54.00	9.39	H
17916.400	44.45	-26.18	45.95	24.68	54.00	9.55	H
14481.650	38.77	-28.77	41.90	25.64	54.00	15.23	V
14476.150	38.74	-28.77	41.90	25.61	54.00	15.26	H
11746.500	36.96	-31.80	39.20	29.56	54.00	17.04	H
11828.450	36.78	-31.76	39.20	29.34	54.00	17.22	H

802.11ac-VHT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17903.200	44.78	-26.18	45.95	25.01	54.00	9.22	V
17931.250	44.67	-26.18	45.95	24.90	54.00	9.33	V
14487.150	38.53	-28.77	41.90	25.40	54.00	15.47	H
14498.700	38.51	-28.77	41.90	25.38	54.00	15.49	V
11866.950	36.96	-31.54	39.15	29.35	54.00	17.04	H
11843.300	36.72	-31.54	39.15	29.11	54.00	17.28	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17940.050	44.90	-26.18	45.95	25.13	54.00	9.10	V
17922.450	44.60	-26.18	45.95	24.83	54.00	9.40	H
14481.100	38.76	-28.77	41.90	25.63	54.00	15.24	V
14487.700	38.60	-28.77	41.90	25.47	54.00	15.40	V
11951.100	36.85	-31.05	39.05	28.85	54.00	17.15	V
11816.350	36.63	-31.76	39.20	29.19	54.00	17.37	V

802.11ac-VHT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17923.550	45.23	-26.18	45.95	25.46	54.00	8.77	V
17917.500	44.91	-26.18	45.95	25.14	54.00	9.09	H
13291.450	38.73	-30.02	40.60	28.15	54.00	15.27	V
14494.300	38.68	-28.77	41.90	25.55	54.00	15.32	H
11868.050	36.78	-31.54	39.15	29.17	54.00	17.22	H
11754.200	36.70	-31.80	39.20	29.30	54.00	17.30	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17922.450	45.00	-26.18	45.95	25.23	54.00	9.00	H
17916.950	44.62	-26.18	45.95	24.85	54.00	9.38	V
14492.100	38.88	-28.77	41.90	25.75	54.00	15.12	V
14488.250	38.75	-28.77	41.90	25.62	54.00	15.25	V
11805.900	37.04	-31.76	39.20	29.60	54.00	16.96	V
11843.850	36.82	-31.54	39.15	29.21	54.00	17.18	H

802.11ac-VHT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17913.100	44.84	-26.18	45.95	25.07	54.00	9.16	V
17956.000	44.68	-26.18	45.95	24.91	54.00	9.32	V
14488.250	38.64	-28.77	41.90	25.51	54.00	15.36	H
14481.650	38.59	-28.77	41.90	25.46	54.00	15.41	V
12000.050	36.80	-31.01	39.00	28.81	54.00	17.20	H
11833.950	36.73	-31.54	39.15	29.12	54.00	17.27	V

802.11ax-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17922.450	44.94	-26.18	45.95	25.17	54.00	9.06	V
17897.700	44.74	-26.18	45.95	24.97	54.00	9.26	V
14487.700	38.63	-28.77	41.90	25.50	54.00	15.37	V
14496.500	38.56	-28.77	41.90	25.43	54.00	15.44	V
11947.800	36.84	-31.05	39.05	28.84	54.00	17.16	H
11837.250	36.62	-31.54	39.15	29.01	54.00	17.38	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17930.700	44.88	-26.18	45.95	25.11	54.00	9.12	H
17947.750	44.73	-26.18	45.95	24.96	54.00	9.27	V
14498.700	38.98	-28.77	41.90	25.85	54.00	15.02	V
14490.450	38.64	-28.77	41.90	25.51	54.00	15.36	H
11735.500	36.66	-31.80	39.20	29.26	54.00	17.34	V
11821.850	36.58	-31.76	39.20	29.14	54.00	17.42	V

802.11ax-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17910.350	45.04	-26.18	45.95	25.27	54.00	8.96	H
17919.700	44.87	-26.18	45.95	25.10	54.00	9.13	H
14499.250	38.70	-28.77	41.90	25.57	54.00	15.30	V
14477.250	38.51	-28.77	41.90	25.38	54.00	15.49	H
11880.150	36.66	-31.54	39.15	29.05	54.00	17.34	H
11869.700	36.64	-31.54	39.15	29.03	54.00	17.36	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17921.350	44.86	-26.18	45.95	25.09	54.00	9.14	H
17924.100	44.73	-26.18	45.95	24.96	54.00	9.27	V
14489.350	38.96	-28.77	41.90	25.83	54.00	15.04	H
14494.300	38.69	-28.77	41.90	25.56	54.00	15.31	H
11829.550	36.81	-31.76	39.20	29.37	54.00	17.19	V
11743.750	36.70	-31.80	39.20	29.30	54.00	17.30	H

802.11ax-HT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17895.500	44.66	-26.18	45.95	24.89	54.00	9.34	H
17897.150	44.64	-26.18	45.95	24.87	54.00	9.36	H
14491.550	38.85	-28.77	41.90	25.72	54.00	15.15	H
14493.200	38.85	-28.77	41.90	25.72	54.00	15.15	H
11793.800	36.91	-31.76	39.20	29.47	54.00	17.09	H
11853.200	36.75	-31.54	39.15	29.14	54.00	17.25	V

802.11be-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17916.400	45.07	-26.18	45.95	25.30	54.00	8.93	H
17914.750	44.94	-26.18	45.95	25.17	54.00	9.06	V
14494.300	38.78	-28.77	41.90	25.65	54.00	15.22	V
14475.600	38.71	-28.77	41.90	25.58	54.00	15.29	H
11843.300	36.86	-31.54	39.15	29.25	54.00	17.14	V
11865.300	36.69	-31.54	39.15	29.08	54.00	17.31	H

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17916.950	44.66	-26.18	45.95	24.89	54.00	9.34	H
17908.700	44.54	-26.18	45.95	24.77	54.00	9.46	V
14496.500	38.75	-28.77	41.90	25.62	54.00	15.25	H
14478.900	38.71	-28.77	41.90	25.58	54.00	15.29	V
11814.150	36.90	-31.76	39.20	29.46	54.00	17.10	V
11810.300	36.72	-31.76	39.20	29.28	54.00	17.28	H

802.11be-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17914.200	44.91	-26.18	45.95	25.14	54.00	9.09	H
17909.800	44.74	-26.18	45.95	24.97	54.00	9.26	H
14494.850	38.62	-28.77	41.90	25.49	54.00	15.38	V
14495.400	38.60	-28.77	41.90	25.47	54.00	15.40	H
11981.350	36.70	-31.01	39.00	28.71	54.00	17.30	H
11851.550	36.66	-31.54	39.15	29.05	54.00	17.34	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17895.500	44.68	-26.18	45.95	24.91	54.00	9.32	H
17927.400	44.65	-26.18	45.95	24.88	54.00	9.35	H
14491.550	38.88	-28.77	41.90	25.75	54.00	15.12	V
14484.400	38.61	-28.77	41.90	25.48	54.00	15.39	V
11841.650	36.82	-31.54	39.15	29.21	54.00	17.18	V
11804.800	36.61	-31.76	39.20	29.17	54.00	17.39	H

802.11be-HT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17924.650	44.67	-26.18	45.95	24.90	54.00	9.33	V
17919.700	44.63	-26.18	45.95	24.86	54.00	9.37	V
14475.600	38.99	-28.77	41.90	25.86	54.00	15.01	V
14495.950	38.98	-28.77	41.90	25.85	54.00	15.02	V
11841.100	37.10	-31.54	39.15	29.49	54.00	16.90	V
11853.200	36.94	-31.54	39.15	29.33	54.00	17.06	H

Peak Results:

802.11a

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17904.850	55.68	-26.18	45.95	35.91	74.00	18.32	V
17914.750	55.45	-26.18	45.95	35.68	74.00	18.55	H
13728.150	51.11	-29.40	41.10	39.41	68.20	17.09	V
14246.800	50.96	-28.94	41.75	38.15	68.20	17.24	V
11283.400	47.96	-32.11	38.65	41.42	74.00	26.04	V
11865.300	47.83	-31.54	39.15	40.22	74.00	26.17	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17885.600	55.71	-26.18	45.95	35.94	74.00	18.29	V
17894.950	55.38	-26.18	45.95	35.61	74.00	18.62	H
14136.800	51.84	-28.86	41.70	39.00	68.20	16.36	H
14104.900	51.68	-28.90	41.70	38.88	68.20	16.52	V
11782.800	48.57	-31.76	39.20	41.13	74.00	25.43	V
11876.300	48.03	-31.54	39.15	40.42	74.00	25.97	H

802.11n-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17992.850	56.19	-26.18	45.95	36.42	74.00	17.81	V
17889.450	55.52	-26.18	45.95	35.75	74.00	18.48	V
13781.500	52.56	-29.37	41.20	40.73	68.20	15.64	V
14145.600	51.04	-28.86	41.70	38.20	68.20	17.16	H
11973.100	48.65	-31.05	39.05	40.65	74.00	25.35	V
11780.600	48.20	-31.80	39.20	40.80	74.00	25.80	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17906.500	55.96	-26.18	45.95	36.19	74.00	18.04	V
17913.650	55.61	-26.18	45.95	35.84	74.00	18.39	V
14106.550	51.52	-28.90	41.70	38.72	68.20	16.68	H
13593.400	51.19	-29.86	40.80	40.25	68.20	17.01	V
11980.250	48.06	-31.01	39.00	40.07	74.00	25.94	H
11874.100	48.01	-31.54	39.15	40.40	74.00	25.99	H

802.11n-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17931.800	55.91	-26.18	45.95	36.14	74.00	18.09	V
17921.900	55.71	-26.18	45.95	35.94	74.00	18.29	V
13768.850	51.61	-29.37	41.20	39.78	68.20	16.59	H
14076.300	51.58	-28.90	41.70	38.78	68.20	16.62	V
11675.550	48.42	-31.81	39.20	41.03	74.00	25.58	V
11759.150	48.26	-31.80	39.20	40.86	74.00	25.74	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17483.550	55.58	-27.23	44.55	38.26	68.20	12.62	H
17930.150	55.52	-26.18	45.95	35.75	74.00	18.48	V
14139.550	52.99	-28.86	41.70	40.15	68.20	15.21	H
14126.900	51.48	-28.86	41.70	38.64	68.20	16.72	V
9610.300	47.85	-33.29	37.60	43.54	68.20	20.35	H
9609.750	47.70	-33.29	37.60	43.39	68.20	20.50	V

802.11ac-VHT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17913.650	55.49	-26.18	45.95	35.72	74.00	18.51	H
17878.450	55.41	-26.18	45.95	35.64	74.00	18.59	H
13712.750	51.56	-29.51	41.00	40.07	68.20	16.64	H
13721.550	51.25	-29.40	41.10	39.55	68.20	16.95	V
11084.300	48.17	-32.24	38.60	41.81	74.00	25.83	H
11899.400	48.05	-31.25	39.10	40.20	74.00	25.95	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17981.850	55.90	-26.18	45.95	36.13	74.00	18.10	V
17899.350	55.78	-26.18	45.95	36.01	74.00	18.22	V
14195.650	51.44	-28.90	41.70	38.64	68.20	16.76	V
14101.600	51.29	-28.90	41.70	38.49	68.20	16.91	H
11694.250	48.06	-31.84	39.20	40.70	74.00	25.94	H
11780.600	47.69	-31.80	39.20	40.29	74.00	26.31	V

802.11ac-VHT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17927.400	55.45	-26.18	45.95	35.68	74.00	18.55	H
17945.550	55.31	-26.18	45.95	35.54	74.00	18.69	H
13795.250	51.38	-29.37	41.20	39.55	68.20	16.82	V
14069.700	51.34	-28.90	41.70	38.54	68.20	16.86	V
11726.150	48.40	-31.84	39.20	41.04	74.00	25.60	V
11742.100	48.20	-31.80	39.20	40.80	74.00	25.80	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17907.600	55.73	-26.18	45.95	35.96	74.00	18.27	H
17941.700	55.47	-26.18	45.95	35.70	74.00	18.53	H
14082.900	51.13	-28.90	41.70	38.33	68.20	17.07	H
14117.550	51.08	-28.86	41.70	38.24	68.20	17.12	H
11985.200	47.81	-31.01	39.00	39.82	74.00	26.19	H
11793.250	47.73	-31.76	39.20	40.29	74.00	26.27	H

802.11ac-VHT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17416.450	55.81	-27.37	43.80	39.38	68.20	12.39	V
17923.000	55.68	-26.18	45.95	35.91	74.00	18.32	V
13763.350	51.75	-29.37	41.20	39.92	68.20	16.45	H
14130.200	51.41	-28.86	41.70	38.57	68.20	16.79	V
11332.900	47.90	-32.12	38.70	41.32	74.00	26.10	V
11793.800	47.58	-31.76	39.20	40.14	74.00	26.42	H

802.11ax-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17902.650	55.59	-26.18	45.95	35.82	74.00	18.41	H
17952.700	55.55	-26.18	45.95	35.78	74.00	18.45	H
13695.150	51.36	-29.51	41.00	39.87	68.20	16.84	V
14191.800	51.01	-28.90	41.70	38.21	68.20	17.19	V
11309.800	48.60	-32.12	38.70	42.02	74.00	25.40	H
11435.750	48.10	-32.13	39.05	41.18	74.00	25.90	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17946.650	55.69	-26.18	45.95	35.92	74.00	18.31	H
17881.200	55.45	-26.18	45.95	35.68	74.00	18.55	H
13803.500	51.48	-29.37	41.20	39.65	68.20	16.72	V
13718.250	51.33	-29.40	41.10	39.63	68.20	16.87	V
9307.800	47.87	-33.31	37.80	43.38	74.00	26.13	V
11811.400	47.83	-31.76	39.20	40.39	74.00	26.17	V

802.11ax-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17912.550	55.96	-26.18	45.95	36.19	74.00	18.04	V
17915.300	55.64	-26.18	45.95	35.87	74.00	18.36	V
14131.300	51.18	-28.86	41.70	38.34	68.20	17.02	H
14107.100	51.17	-28.90	41.70	38.37	68.20	17.03	V
11819.650	47.80	-31.76	39.20	40.36	74.00	26.20	V
11830.650	47.72	-31.76	39.20	40.28	74.00	26.28	H

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17974.150	55.29	-26.18	45.95	35.52	74.00	18.71	V
17837.750	55.19	-26.18	45.95	35.42	74.00	18.81	V
14079.050	51.79	-28.90	41.70	38.99	68.20	16.41	H
14121.400	51.45	-28.86	41.70	38.61	68.20	16.75	H
11896.100	47.74	-31.25	39.10	39.89	74.00	26.26	V
10853.300	47.71	-32.42	38.50	41.63	74.00	26.29	H

802.11ax-HT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17962.600	56.47	-26.18	45.95	36.70	74.00	17.53	V
17940.600	55.96	-26.18	45.95	36.19	74.00	18.04	V
14219.300	51.37	-28.94	41.75	38.56	68.20	16.83	H
13738.600	51.36	-29.40	41.10	39.66	68.20	16.84	H
11797.100	48.21	-31.76	39.20	40.77	74.00	25.79	H
11624.950	47.86	-31.78	39.20	40.44	74.00	26.14	V

802.11be-HT20

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17926.850	55.81	-26.18	45.95	36.04	74.00	18.19	H
17922.450	55.63	-26.18	45.95	35.86	74.00	18.37	V
13741.900	52.26	-29.40	41.10	40.56	68.20	15.94	H
14134.050	51.54	-28.86	41.70	38.70	68.20	16.66	V
11269.100	49.04	-32.11	38.65	42.50	74.00	24.96	V
11905.450	48.32	-31.25	39.10	40.47	74.00	25.68	H

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17903.200	55.61	-26.18	45.95	35.84	74.00	18.39	H
17940.050	55.47	-26.18	45.95	35.70	74.00	18.53	V
14174.200	51.90	-28.90	41.70	39.10	68.20	16.30	V
13741.350	51.79	-29.40	41.10	40.09	68.20	16.41	H
11649.150	48.58	-31.81	39.20	41.19	74.00	25.42	V
7376.750	48.06	-34.28	36.60	45.74	74.00	25.94	H

802.11be-HT40

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17916.400	55.58	-26.18	45.95	35.81	74.00	18.42	V
17895.500	55.32	-26.18	45.95	35.55	74.00	18.68	H
14150.000	51.63	-28.86	41.70	38.79	68.20	16.57	V
14173.650	51.32	-28.90	41.70	38.52	68.20	16.88	V
11897.200	48.25	-31.25	39.10	40.40	74.00	25.75	H
11994.550	47.43	-31.01	39.00	39.44	74.00	26.57	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17902.100	55.75	-26.18	45.95	35.98	74.00	18.25	V
17903.200	55.45	-26.18	45.95	35.68	74.00	18.55	H
14183.550	51.42	-28.90	41.70	38.62	68.20	16.78	V
14075.750	51.35	-28.90	41.70	38.55	68.20	16.85	V
11851.000	48.07	-31.54	39.15	40.46	74.00	25.93	V
11388.450	47.96	-32.13	39.00	41.09	74.00	26.04	V

802.11be-HT80

Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17914.750	55.61	-26.18	45.95	35.84	74.00	18.39	V
17962.600	55.42	-26.18	45.95	35.65	74.00	18.58	V
14137.350	51.95	-28.86	41.70	39.11	68.20	16.25	V
14230.850	51.32	-28.94	41.75	38.51	68.20	16.88	V
11826.800	47.68	-31.76	39.20	40.24	74.00	26.32	H
9091.650	47.65	-33.45	37.70	43.40	74.00	26.35	V

Conclusion: PASS

Band edge compliance

Mode	Channel	Test Results	Conclusion
802.11a	5745 MHz	Fig.1	P
	5825 MHz	Fig.2	P
802.11n HT20	5745 MHz	Fig.3	P
	5825 MHz	Fig.4	P
802.11n HT40	5755 MHz	Fig.5	P
	5795 MHz	Fig.6	P
802.11ac VHT20	5745 MHz	Fig.7	P
	5825 MHz	Fig.8	P
802.11ac VHT40	5755 MHz	Fig.9	P
	5795 MHz	Fig.10	P
802.11ac VHT80	5775 MHz	Fig.11	P
		Fig.12	
802.11ax HT20 full RU	5745 MHz	Fig.13	P
	5825 MHz	Fig.14	P
802.11ax HT40 full RU	5755 MHz	Fig.15	P
	5795 MHz	Fig.16	P
802.11ax HT80 full RU	5775 MHz	Fig.17	P
		Fig.18	
802.11ax HT20 partial RU	5745 MHz	Fig.19	P
	5825 MHz	Fig.20	P
802.11ax HT40 partial RU	5755 MHz	Fig.21	P
	5795 MHz	Fig.22	P
802.11ax HT80 partial RU	5775 MHz	Fig.23	P
		Fig.24	
802.11be HT20 full RU	5745 MHz	Fig.25	P
	5825 MHz	Fig.26	P
802.11be HT40 full RU	5755 MHz	Fig.27	P
	5795 MHz	Fig.28	P
802.11be HT80 full RU	5775 MHz	Fig.29	P
		Fig.30	
802.11be HT20 partial RU	5745 MHz	Fig.31	P
	5825 MHz	Fig.32	P
802.11be HT40 partial RU	5755 MHz	Fig.33	P
	5795 MHz	Fig.34	P
802.11be HT80 partial RU	5775 MHz	Fig.35	P
		Fig.36	

Conclusion: PASS

Test graphs as below:

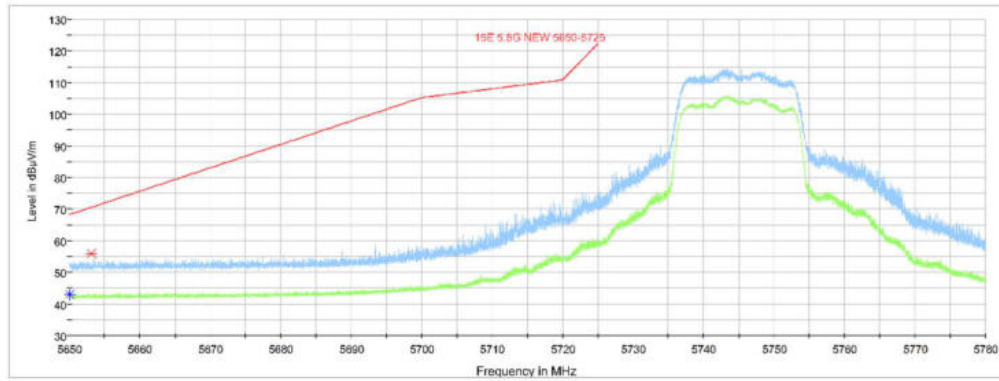


Fig. 15 Band Edges (802.11a Ch149,5745MHz, MIMO Chain 0+1)

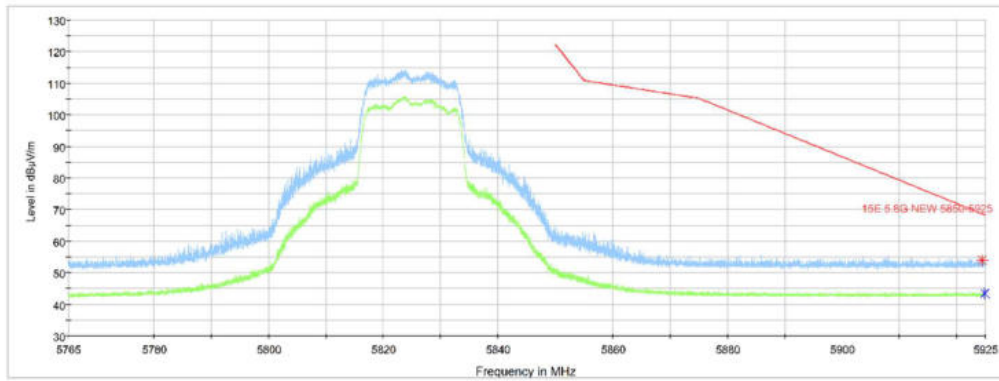


Fig. 16 Band Edges (802.11a Ch165, 5825MHz, MIMO Chain 0+1)

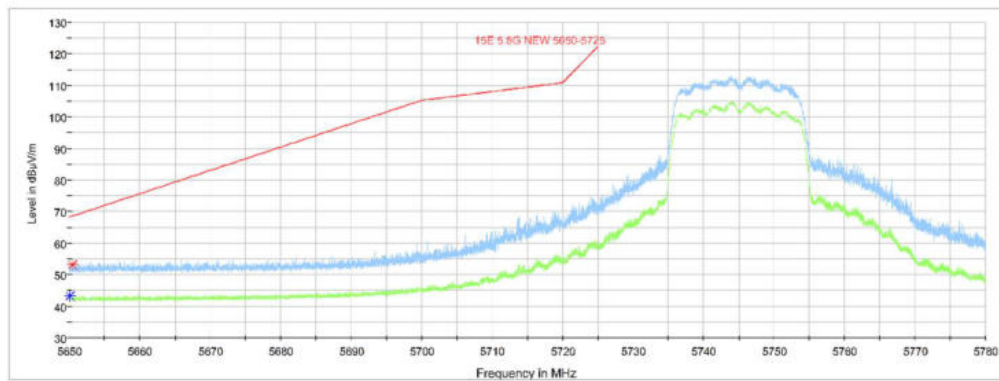


Fig. 17 Band Edges (802.11n-HT20 Ch149, 5745MHz, MIMO Chain 0+1)

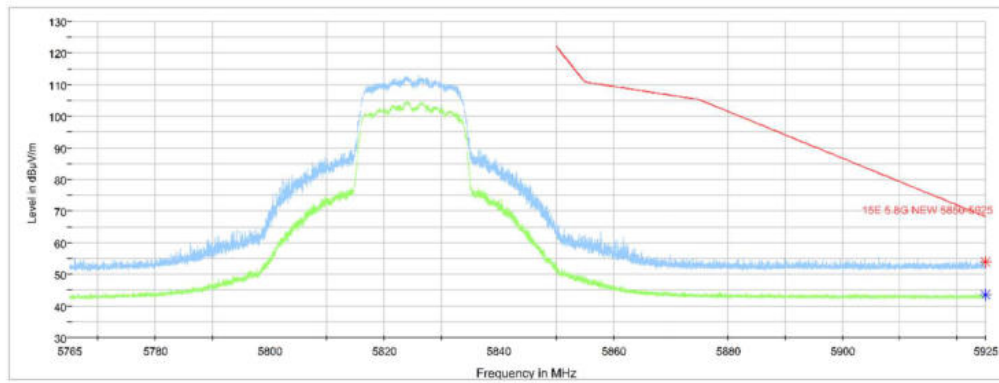


Fig. 18 Band Edges (802.11n-HT20 Ch165, 5825MHz, MIMO Chain 0+1)

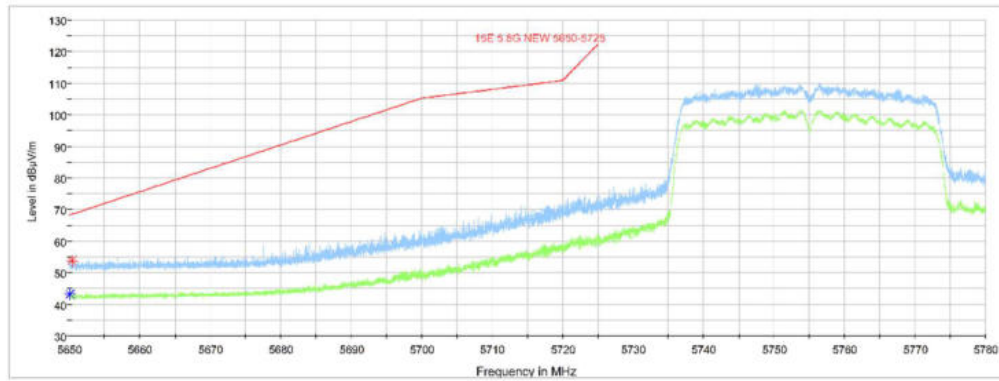


Fig. 19 Band Edges (802.11n-HT40 Ch151, 5755MHz, MIMO Chain 0+1)

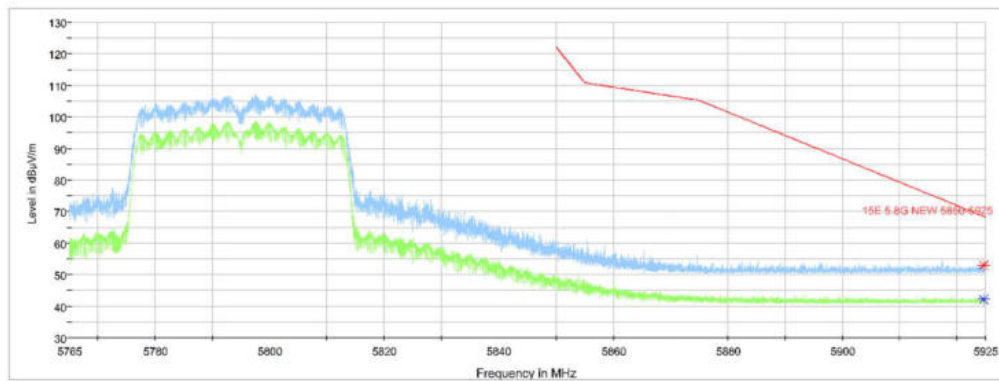


Fig. 20 Band Edges (802.11n-HT40 Ch159, 5795MHz, MIMO Chain 0+1)

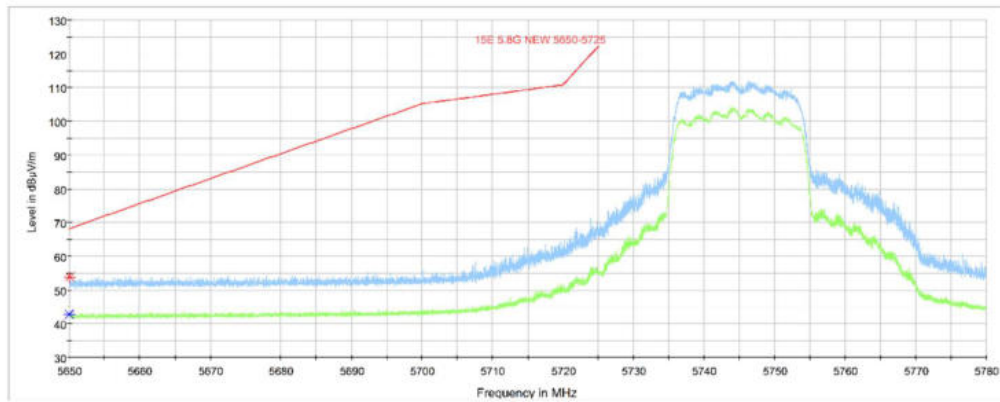


Fig. 21 Band Edges (802.11ac-HT20 Ch149, 5745MHz, MIMO Chain 0+1)

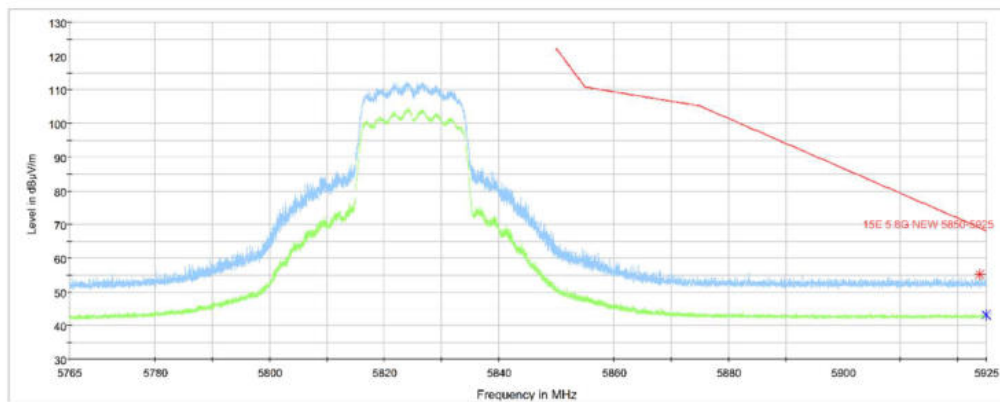


Fig. 22 Band Edges (802.11ac-HT20 Ch165, 5825MHz, MIMO Chain 0+1)

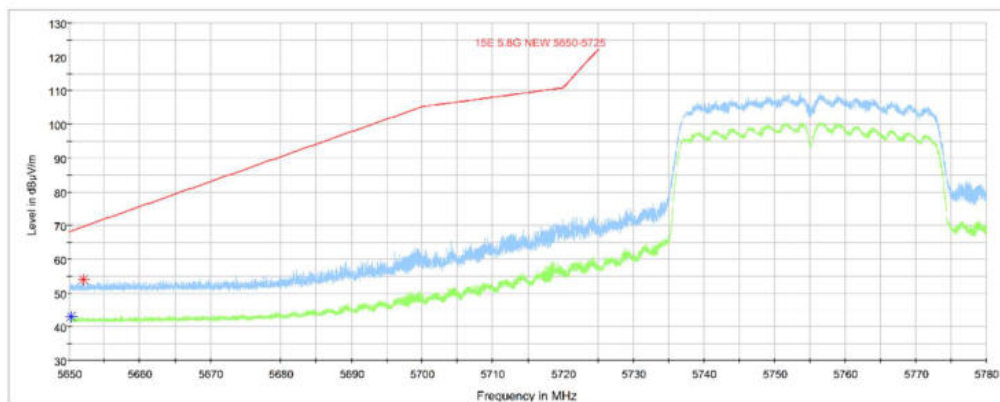


Fig. 23 Band Edges (802.11ac-HT40 Ch151, 5755MHz, MIMO Chain 0+1)

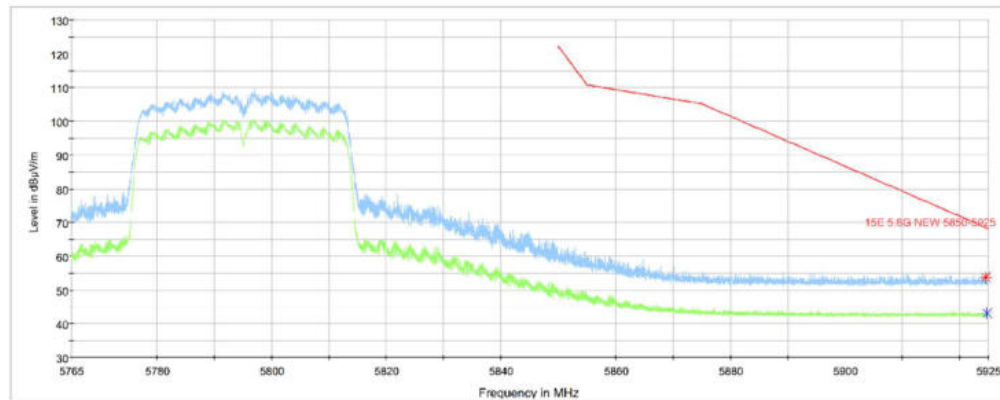


Fig. 24 Band Edges (802.11ac-HT40 Ch159, 5795MHz, MIMO Chain 0+1)

Full Spectrum

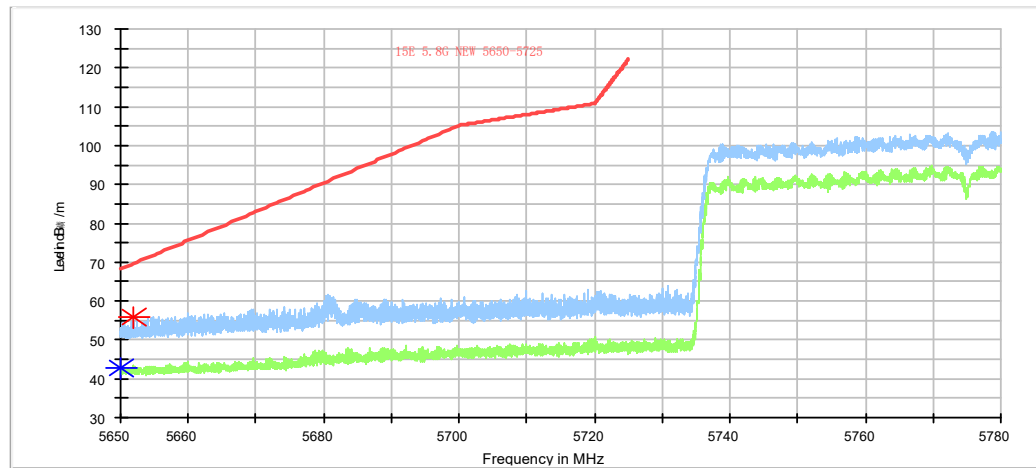


Fig. 25 Band Edges (802.11ac-HT80 Ch155-L, 5775MHz, MIMO Chain 0+1)

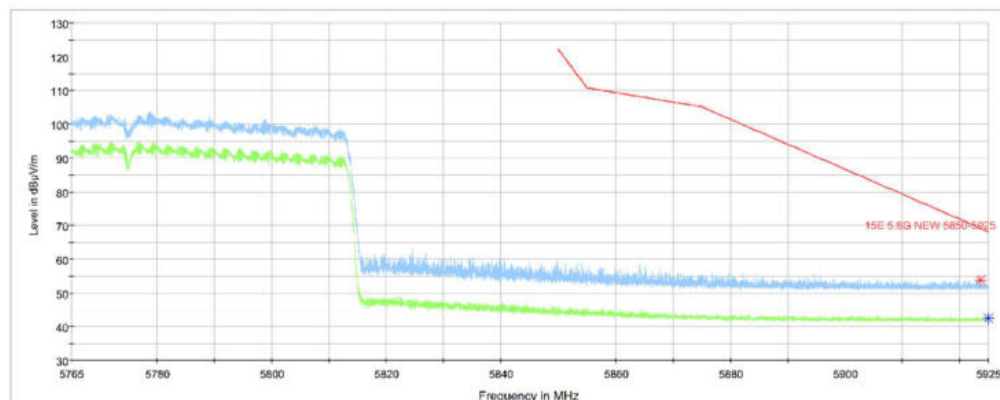


Fig. 26 Band Edges (802.11ac-HT80 Ch155-R, 5775MHz, MIMO Chain 0+1)

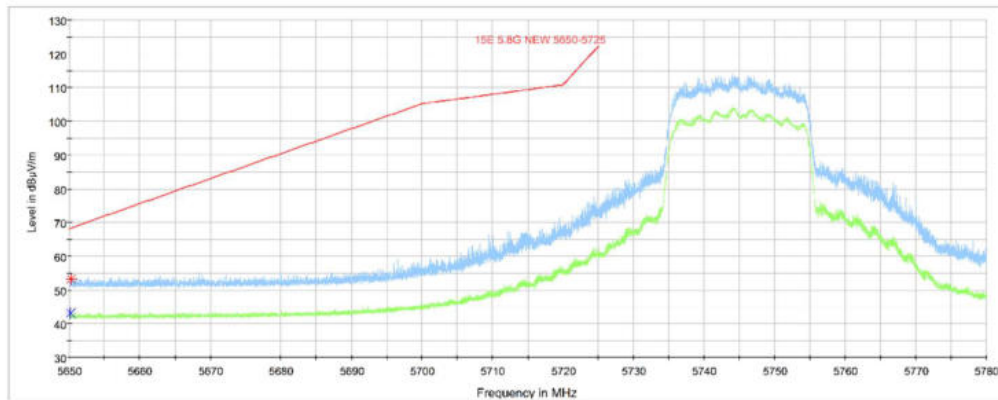


Fig. 27 Band Edges (802.11ax-HT20 Ch149 full RU, 5745MHz, MIMO Chain 0+1)

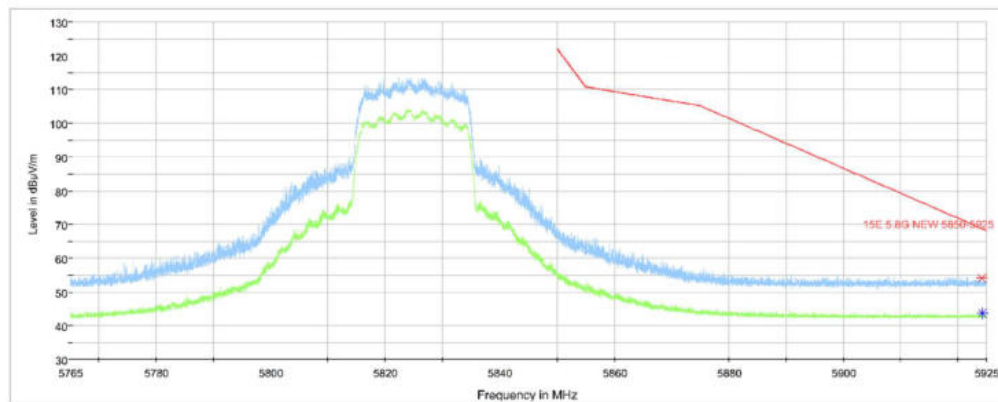


Fig. 28 Band Edges (802.11ax-HT20 Ch165 full RU, 5825MHz, MIMO Chain 0+1)

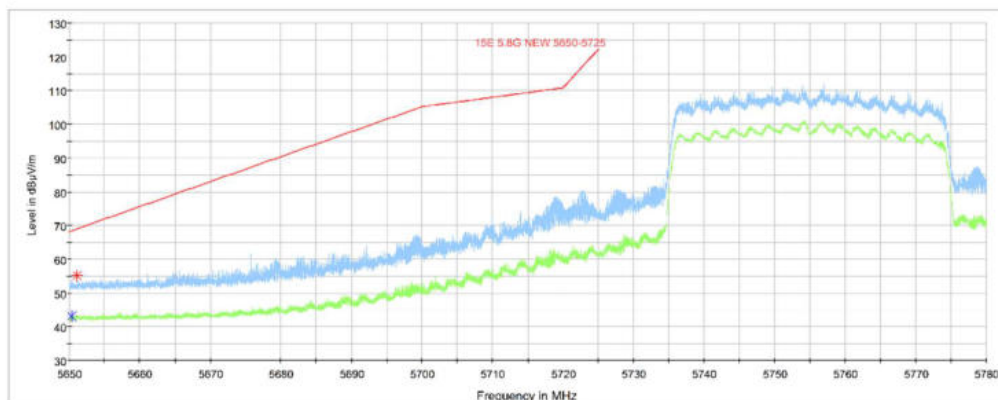


Fig. 29 Band Edges (802.11ax-HT40 Ch151 full RU, 5755MHz, MIMO Chain 0+1)

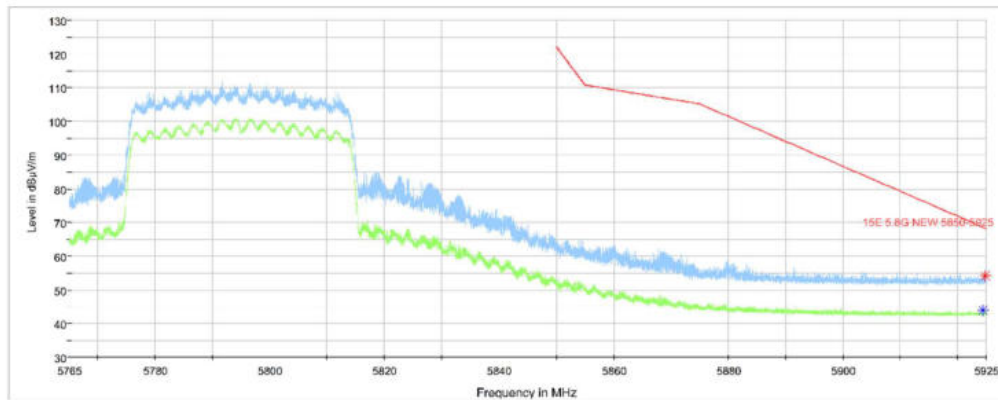


Fig. 30 Band Edges (802.11ax-HT40 Ch159 full RU, 5795MHz, MIMO Chain 0+1)

Full Spectrum

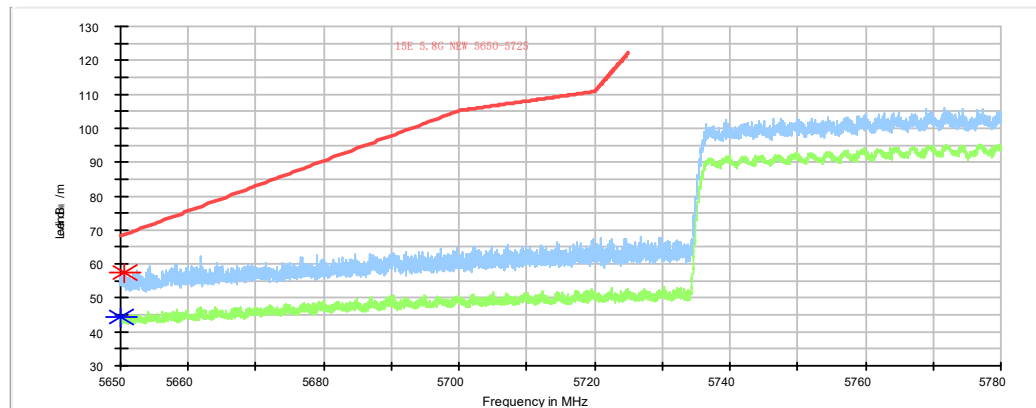


Fig. 31 Band Edges (802.11ax-HT80 Ch155-L full RU, 5775MHz, MIMO Chain 0+1)

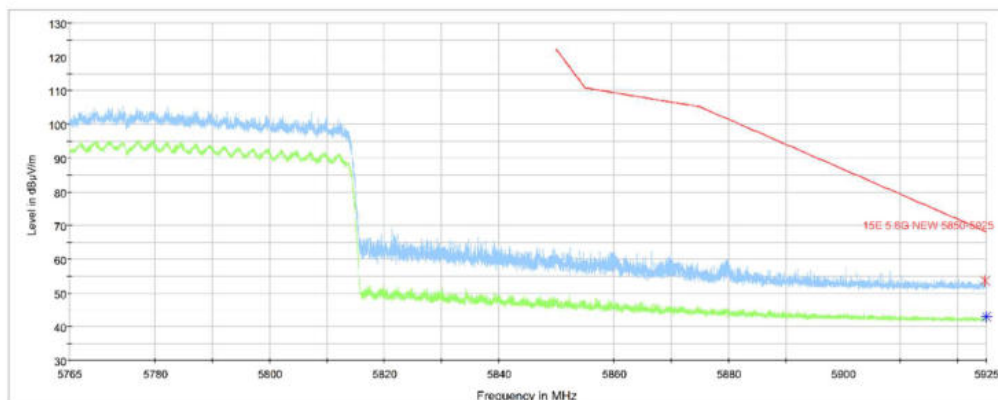


Fig. 32 Band Edges (802.11ax-HT80 Ch155-R full RU, 5775MHz, MIMO Chain 0+1)

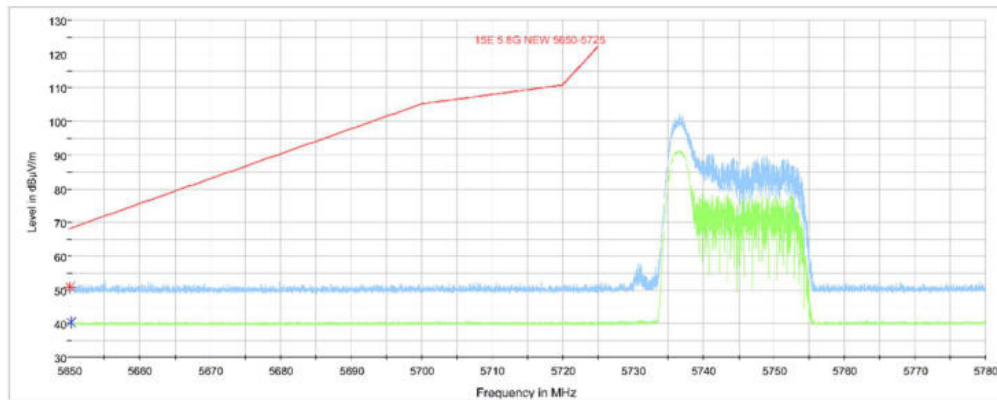


Fig. 33 Band Edges (802.11ax-HT20 Ch149 partial RU, 5745MHz, MIMO Chain 0+1)

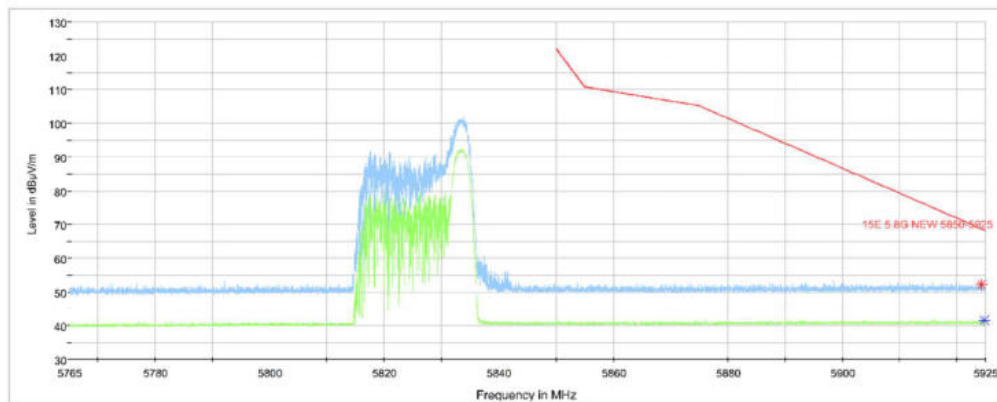


Fig. 34 Band Edges (802.11ax-HT20 Ch165 partial RU, 5825MHz, MIMO Chain 0+1)

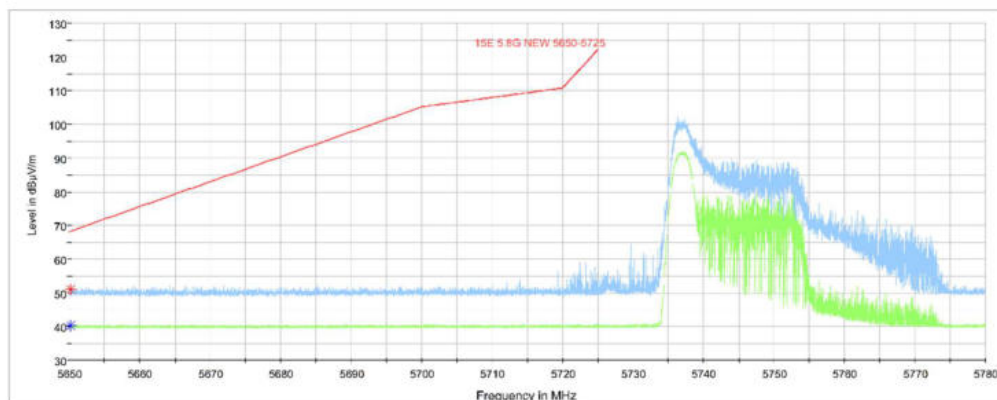


Fig. 35 Band Edges (802.11ax-HT40 Ch151 partial RU, 5755MHz, MIMO Chain 0+1)

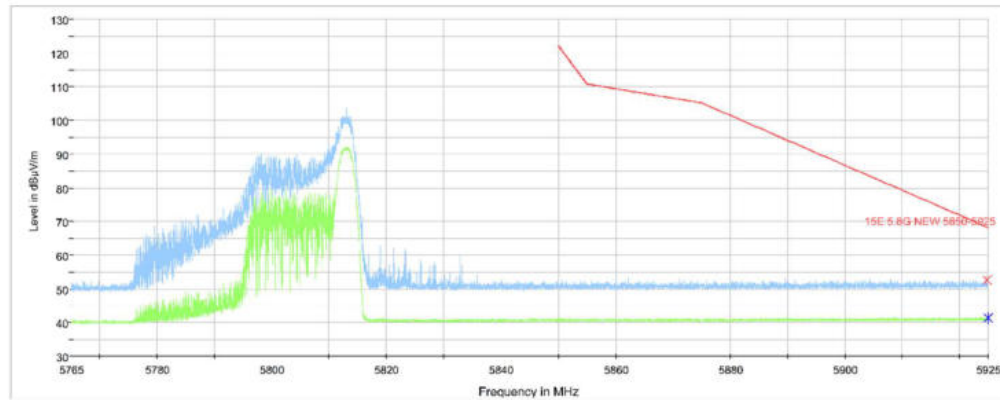


Fig. 36 Band Edges (802.11ax-HT40 Ch159 partial RU, 5795MHz, MIMO Chain 0+1)

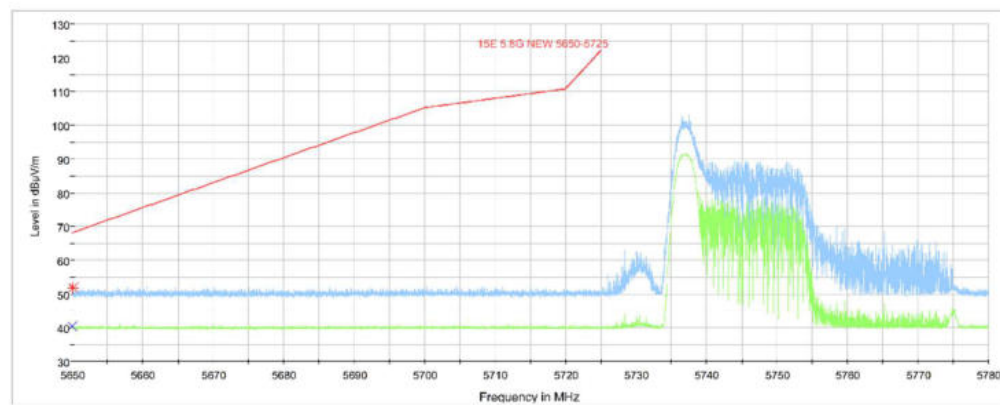


Fig. 37 Band Edges (802.11ax-HT80 Ch155-L partial RU, 5775MHz, MIMO Chain 0+1)

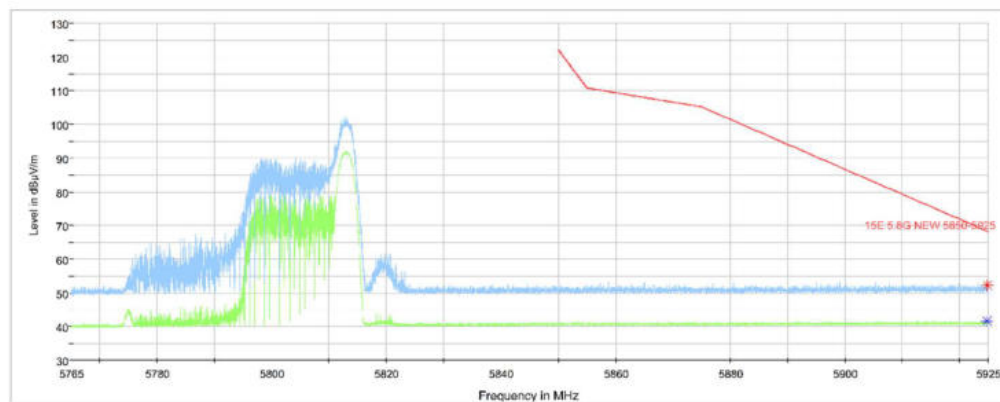


Fig. 38 Band Edges (802.11ax-HT80 Ch155-R partial RU, 5775MHz, MIMO Chain 0+1)

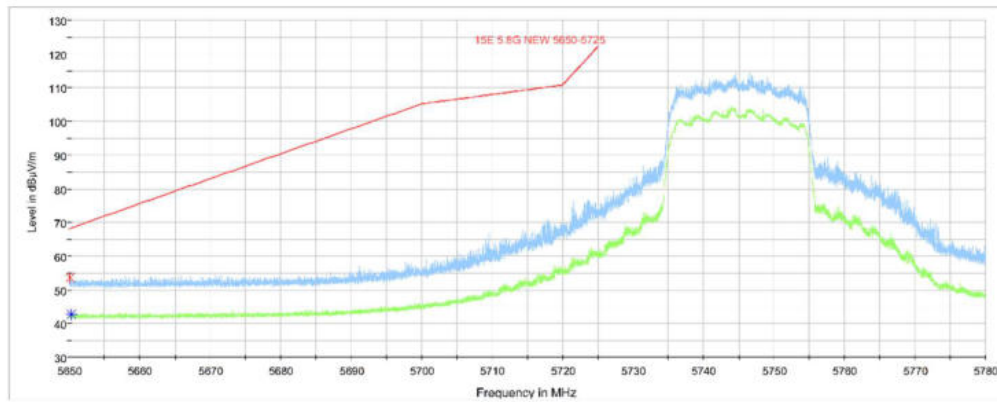


Fig. 39 Band Edges (802.11be-HT20 Ch149 full RU, 5745MHz, MIMO Chain 0+1)

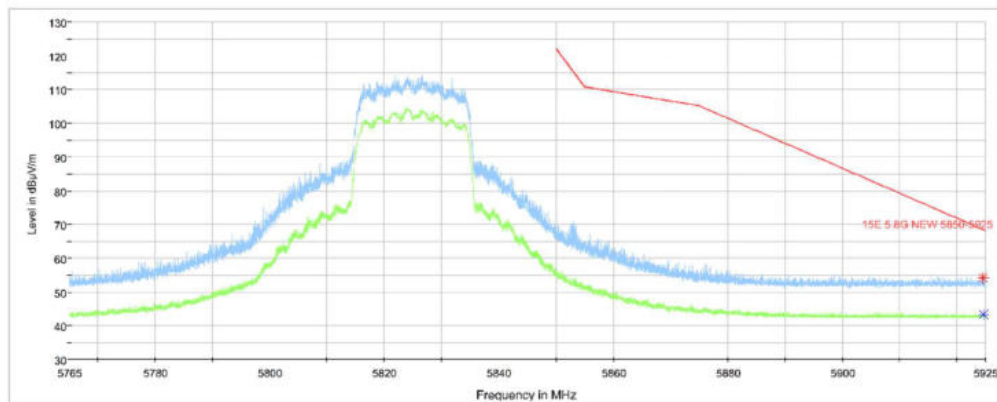


Fig. 40 Band Edges (802.11be-HT20 Ch165 full RU, 5825MHz, MIMO Chain 0+1)

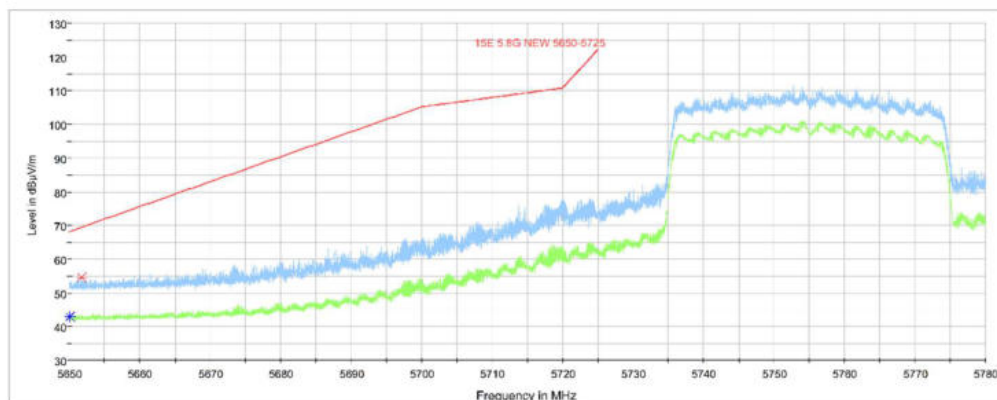


Fig. 41 Band Edges (802.11be-HT40 Ch151 full RU, 5755MHz, MIMO Chain 0+1)

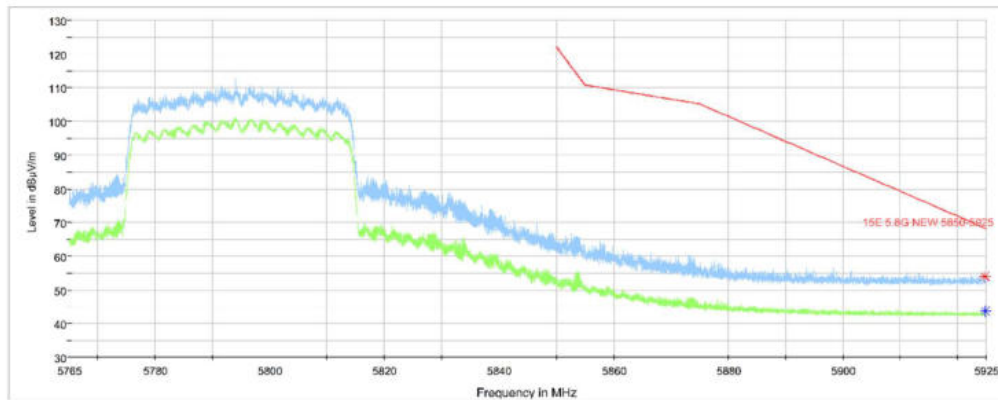


Fig. 42 Band Edges (802.11be-HT40 Ch159 full RU, 5795MHz, MIMO Chain 0+1)

Full Spectrum

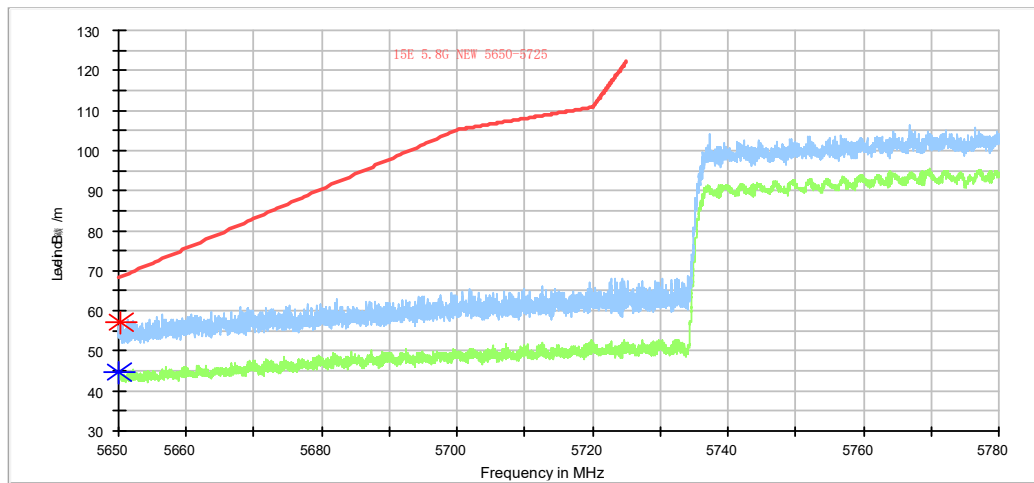


Fig. 43 Band Edges (802.11be-HT80 Ch155-L full RU, 5775MHz, MIMO Chain 0+1)

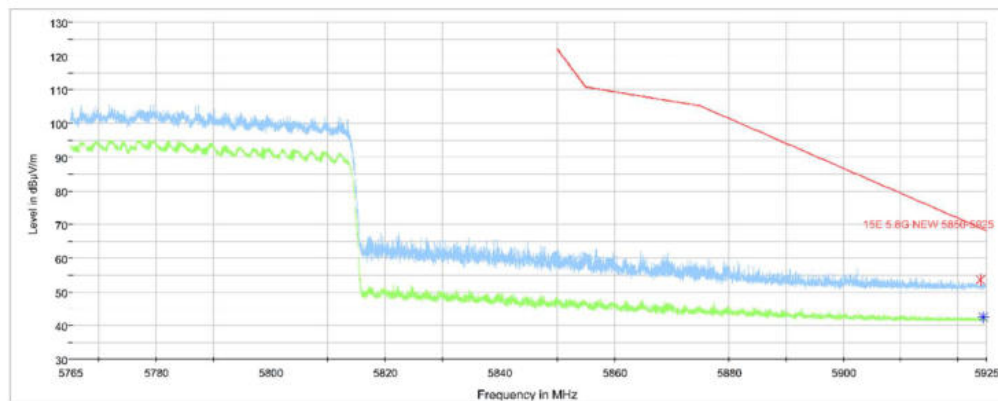


Fig. 44 Band Edges (802.11be-HT80 Ch155-R full RU, 5775MHz, MIMO Chain 0+1)

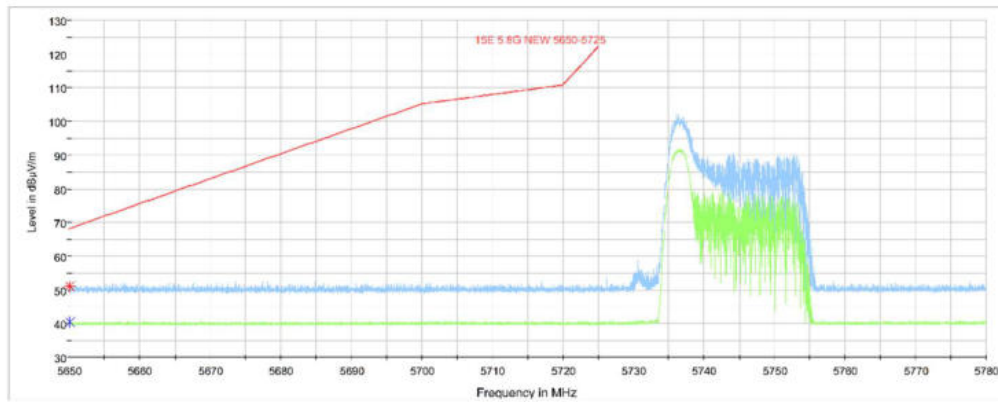


Fig. 45 Band Edges (802.11be-HT20 Ch149 partial RU, 5745MHz, MIMO Chain 0+1)

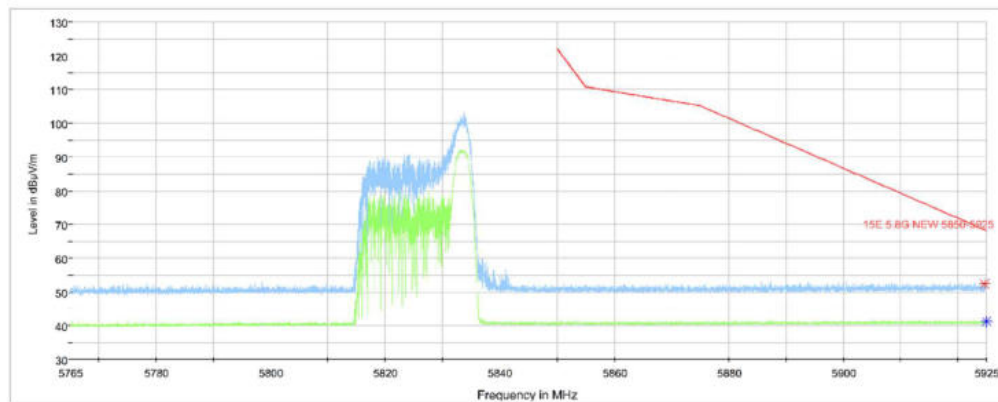


Fig. 46 Band Edges (802.11be-HT20 Ch165 partial RU, 5825MHz, MIMO Chain 0+1)

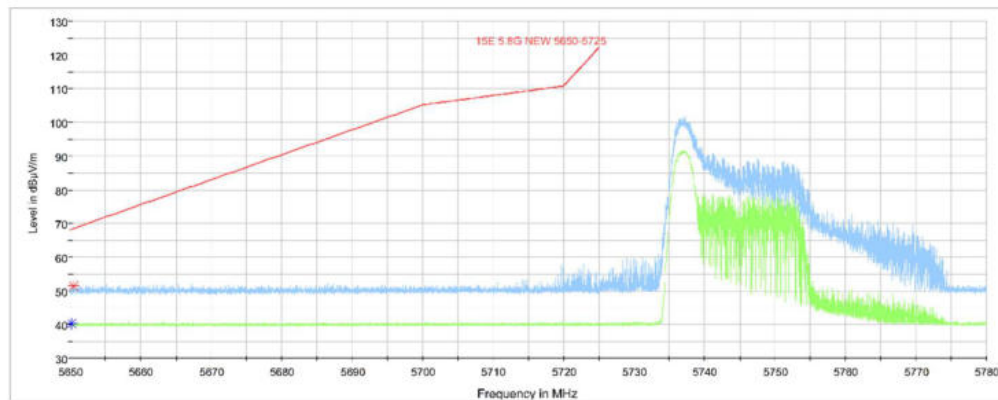


Fig. 47 Band Edges (802.11be-HT40 Ch151 partial RU, 5755MHz, MIMO Chain 0+1)

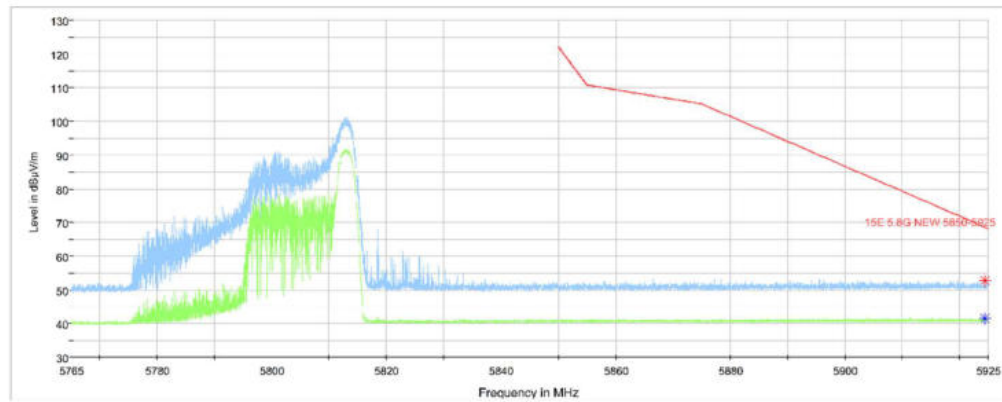


Fig. 48 Band Edges (802.11be-HT40 Ch159 partial RU, 5795MHz, MIMO Chain 0+1)

Full Spectrum

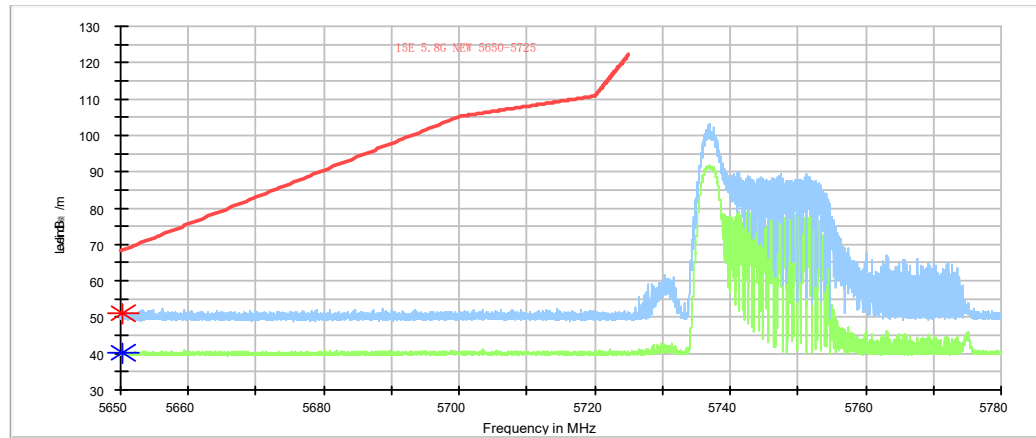


Fig. 49 Band Edges (802.11be-HT80 Ch155-L partial RU, 5775MHz, MIMO Chain 0+1)

Full Spectrum

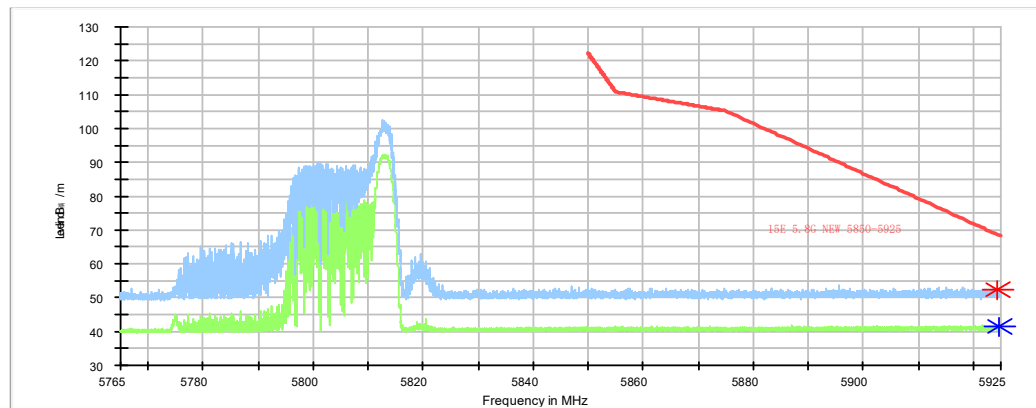


Fig. 50 Band Edges (802.11be-HT80 Ch155-R partial RU, 5775MHz, MIMO Chain 0+1)

A.6. AC Powerline Conducted Emission

A.6.1 Summary

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section

A.6.2 Method of Measurement

See Clause 6.2 of ANSI C63.10 specifically.

See Clause 4 and Clause 5 of ANSI C63.10 generally.

The conducted emissions from the AC port of the EUT are measured in a shielding room. The EUT is connected to a Line Impedance Stabilization Network (LISN). An overview sweep with peak detection was performed. The measurements were performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detector of the test receiver: Quasi-Peak / Average Detector.

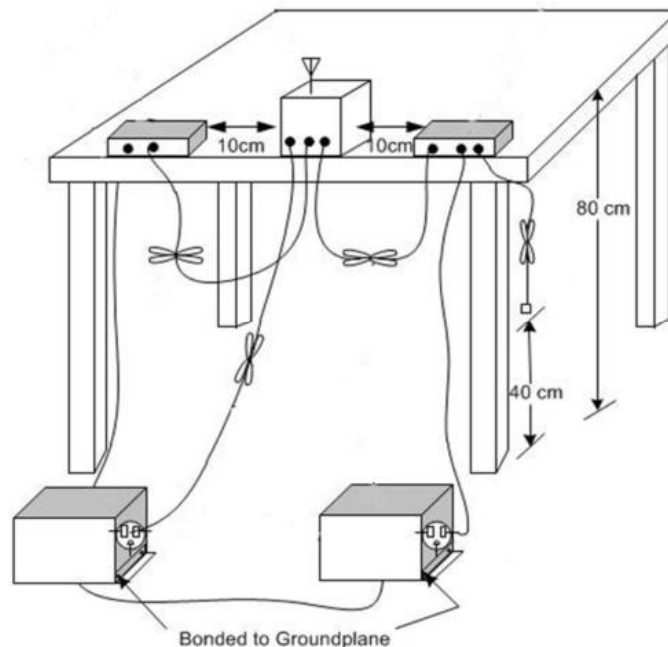
The measurement bandwidth is:

Frequency of Emission (MHz)	RBW/IF bandwidth
0.15-30	9kHz

A.6.3 Test Condition

Voltage (V)	Frequency (Hz)
120	60

A.6.4 Test setup



A.6.5 Measurement Result and limit

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.37	Fig.38	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	56 to 46	Fig.51	Fig.52	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

The measurement is made according to ANSI C63.10 .

Conclusion: PASS

Test graphs as below:

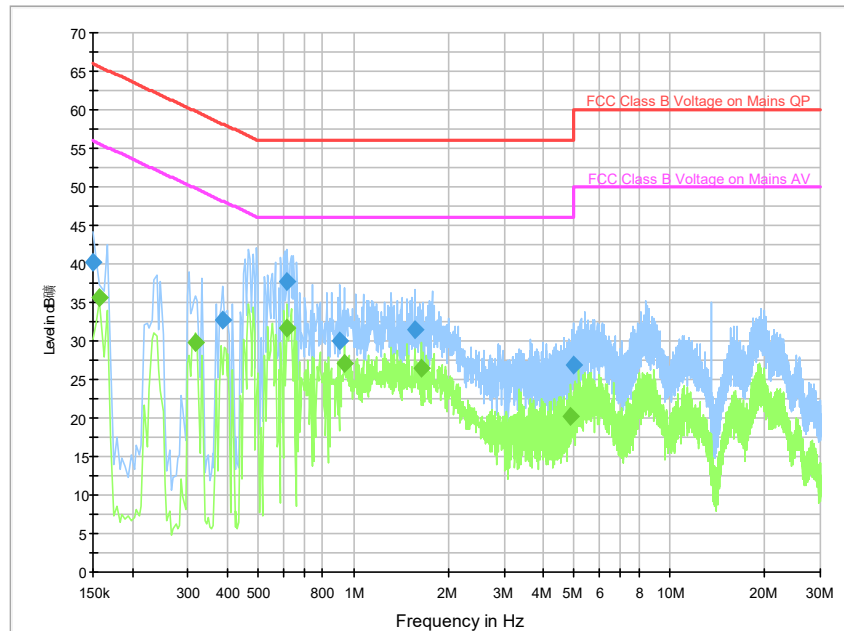


Fig. 51 AC Powerline Conducted Emission-802.11a

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	40.2	2000.0	9.000	On	L1	20.1	25.8	66.0	
0.386000	32.7	2000.0	9.000	On	L1	19.9	25.4	58.1	
0.618000	37.7	2000.0	9.000	On	L1	20.0	18.3	56.0	
0.910000	30.0	2000.0	9.000	On	L1	19.9	26.0	56.0	
1.558000	31.4	2000.0	9.000	On	L1	19.8	24.6	56.0	
4.974000	26.8	2000.0	9.000	On	L1	19.8	29.2	56.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.158000	35.5	2000.0	9.000	On	L1	19.9	20.0	55.6	
0.318000	29.7	2000.0	9.000	On	L1	19.9	20.0	49.8	
0.618000	31.7	2000.0	9.000	On	L1	20.0	14.3	46.0	
0.938000	27.2	2000.0	9.000	On	L1	19.9	18.8	46.0	
1.638000	26.4	2000.0	9.000	On	L1	19.8	19.6	46.0	
4.886000	20.3	2000.0	9.000	On	L1	19.8	25.7	46.0	

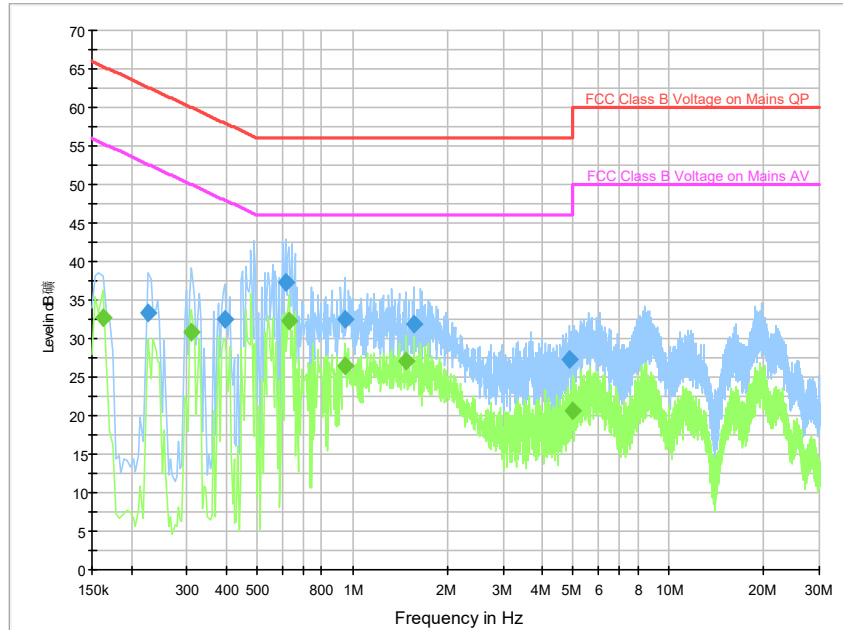


Fig. 52 AC Powerline Conducted Emission-Idle

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.226000	33.4	2000.0	9.000	On	N	19.8	29.2	62.6	
0.394000	32.5	2000.0	9.000	On	L1	20.0	25.5	58.0	
0.614000	37.2	2000.0	9.000	On	L1	20.0	18.8	56.0	
0.946000	32.5	2000.0	9.000	On	L1	19.9	23.5	56.0	
1.566000	31.8	2000.0	9.000	On	L1	19.8	24.2	56.0	
4.866000	27.3	2000.0	9.000	On	L1	19.8	28.7	56.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.162000	32.8	2000.0	9.000	On	L1	19.9	22.6	55.4	
0.310000	30.9	2000.0	9.000	On	L1	19.9	19.0	50.0	
0.630000	32.4	2000.0	9.000	On	L1	20.0	13.6	46.0	
0.946000	26.5	2000.0	9.000	On	L1	19.9	19.5	46.0	
1.486000	27.1	2000.0	9.000	On	L1	19.9	18.9	46.0	
4.986000	20.7	2000.0	9.000	On	L1	19.8	25.3	46.0	



No.24T04Z101591-004

A.8. Antenna Requirement

The antenna of the device is permanently attached. There are no provisions for connection to an external antenna.

The unit complies with the requirement of FCC Part 15.203.

ANNEX B: EUT parameters

Disclaimer: The antenna gain and worse case provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

ANNEX C: Accreditation Certificate



*** END OF REPORT BODY ***