



FCC PART 15E TEST REPORT No.25T04Z100116-006

for

Guangdong OPPO Mobile Telecommunications Corp., Ltd.

Mobile Phone

CPH2735

FCC ID:R9C-OP24314

with

Hardware Version: 11

Software Version: ColorOS 15.0

Issued Date: 2025-02-24

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

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn



No.25T04Z100116-006

REPORT HISTORY

Report Number	Revision	Description	Issue Date
25T04Z100116-006	Rev.0	1st edition	2025-02-24

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

CONTENTS

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	5
2. CLIENT INFORMATION	6
2.1. APPLICANT INFORMATION	6
2.2. MANUFACTURER INFORMATION	6
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	7
3.1. ABOUT EUT	7
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	7
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	7
3.4. GENERAL DESCRIPTION	7
3.5. INTERPRETATION OF THE TEST ENVIRONMENT	8
4. REFERENCE DOCUMENTS	8
4.1. DOCUMENTS SUPPLIED BY APPLICANT	8
4.2. REFERENCE DOCUMENTS FOR TESTING	8
5. LABORATORY ENVIRONMENT	8
6. TEST RESULTS	9
6.1. SUMMARY OF TEST RESULTS	9
6.2. STATEMENTS	9
6.3. TEST CONDITIONS	9
7. TEST FACILITIES UTILIZED	10
8. MEASUREMENT UNCERTAINTY	11
8.1 TRANSMITTER OUTPUT POWER	11
8.2 PEAK POWER SPECTRAL DENSITY	11
8.3 26dB EMISSION BANDWIDTH	11
8.4 BAND EDGES COMPLIANCE	11
8.5 SPURIOUS EMISSIONS	11
8.6 RADIATED UNWANTED EMISSION	11
8.7 AC POWER-LINE CONDUCTED EMISSION	11
ANNEX A: DETAILED TEST RESULTS	12
A.1. MEASUREMENT METHOD	12
A.2. MAXIMUM OUTPUT POWER	13
A.2.1 ANTENNA GAIN	13

A.2.2 MAXIMUM OUTPUT POWER-CONDUCTED	13
A.3. PEAK POWER SPECTRAL DENSITY (CONDUCTED)	17
A.4. 26dB EMISSION BANDWIDTH (CONDUCTED)	19
A.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 (150kHz- 30MHz)	60
A.6.1 SUMMARY	60
A.6.2 METHOD OF MEASUREMENT	60
A.6.3 TEST CONDITION	60
A.6.4 TEST SETUP	60
A.7. 99% OCCUPIED BANDWIDTH	64
A.8. ANTENNA REQUIREMENT	69
A.9. POWER CONTROL	69
ANNEX B: EUT PARAMETERS	69
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,
100191, P. R. China

1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2025-01-20

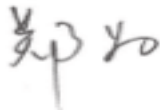
Testing End Date: 2025-02-24

1.5. Signature



Yao Xingyu

(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.
Address: NO.18 HaiBin Road, Wusha Village, Chang'an Town, DongGuan City,
Guangdong Province, P.R. China
City: DongGuan
Postal Code: /
Country: China
Telephone: (86)76986076999
Fax: /

2.2. Manufacturer Information

Company Name: Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address: NO.18 HaiBin Road, Wusha Village, Chang'an Town, DongGuan City,
Guangdong Province, P.R. China
City: DongGuan
Postal Code: /
Country: China
Telephone: (86)76986076999
Fax: /

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

3.1. About EUT

Description	Mobile Phone
Model name	CPH2735
FCC ID	R9C-OP24314
WLAN Frequency Band	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Normal Voltage	3.92V
Extreme High Voltage	4.54V
Extreme Low Voltage	3.41V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
UT08a	862170070019813/ 862170070019805	11	ColorOS 15.0	2025-01-22
UT03a	862170070019656/ 862170070019649	11	ColorOS 15.0	2025-01-20
UT04a	862170070019631/ 862170070019623	11	ColorOS 15.0	2025-01-20

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

UT08a is used for Conduction test, UT03a and UT04a is used for Radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	Manufacturer
AE1	Battery1	BLPC21	Dongguan NVT Technology Co., Ltd
AE2	Battery2	BLPC21	SUNWODA Electronic Co.,Ltd.
AE3	Charger1	VCB4JAUH	Huizhou Golden Lake Industrial Co., Ltd.
AE4	USB Cable1	DL154	Guangdong OPPO Mobile Telecommunications Corp., Ltd.

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

3.4. General Description

The Equipment under Test (EUT) is a model of Mobile Phone with integrated antenna and inbuilt battery.

It consists of normal options: travel charger, USB cable.

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

Samples undergoing test were selected by the client.

3.5. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor $k=2$.

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

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	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	2021
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
UNII: KDB 789033 D02	General U-NII Test Procedures New Rules v02r01	2017-12

Note:UNII: KDB 789033 D02 is not in the scope of ISO/IEC 17025 accreditation by A2LA.

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 Output Power	15.407	/	P
Peak Power Spectral Density	15.407	/	P
26dB Emission Bandwidth	15.403	/	P
Radiated Unwanted Emission	15.407, 15.205, 15.209	/	P
AC Powerline Conducted Emission	15.107, 15.207	/	P
99% Occupied bandwidth	/	/	P
Transmit Power Control	15.407	/	NA

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. 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.

6.3. 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	3.92V
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	2025-08-11
2	Vector Signal Analyzer	FSW67	104051	Rohde & Schwarz	1 year	2025-04-30
3	LISN	ENV216	101200	Rohde & Schwarz	1 year	2025-05-16
4	Test Receiver	ESCI	100344	Rohde & Schwarz	1 year	2025-04-01
5	Attenuator	10dB/2W	/	Rosenberger	/	/
6	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESW44	103023	Rohde & Schwarz	1 year	2025-06-06
2	EMI Antenna	VULB9163	01222	Schwarzbeck	1 year	2025-09-11
3	EMI Antenna	3115	00167250	ETS-Lindgren	1 year	2025-04-11
4	EMI Antenna	3116	2663	ETS-Lindgren	1 year	2025-02-21

Test Software

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V10.60.20	R&S
Conducted Emission	EMC32 V8.53.0	R&S

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 26dB 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

8.6 Radiated Unwanted Emission

Frequency Range	Uncertainty(dB) (k=2)
9kHz-30MHz	4.92
$30\text{MHz} \leq f \leq 1\text{GHz}$	4.72
$1\text{GHz} \leq f \leq 18\text{GHz}$	4.84
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.12

8.7 AC Power-line Conducted Emission

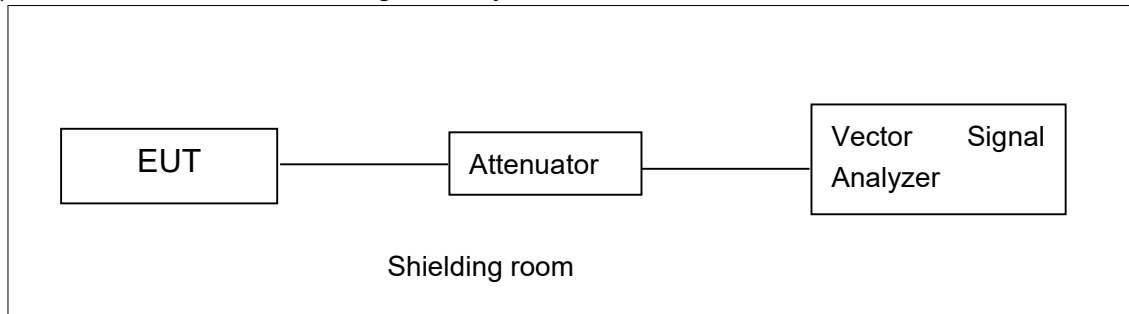
Measurement Uncertainty : 3.08dB,k=2

ANNEX A: Detailed Test 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 semi-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 output Power

Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	24dBm
	5250MHz~5350MHz	24dBm or 11+10logB
	5470MHz~5725MHz	24dBm or 11+10logB

Limit use the less value, and B is the 26dB bandwidth.

The measurement method SA-2 is made according to KDB 789033

A.2.1 Antenna Gain

Antenna gain is UNII-1:-0.5dBi、UNII-2A:0.5dBi、UNII-2C:0.5dBi and the value is supplied by the applicant or manufacturer.

A.2.2 Maximum output Power-Conducted

EUT ID: UT08a

Measurement Results:

802.11a mode

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	16.13	/	/	/	/	/	/	/
	5200MHz	16.48	/	/	/	/	/	/	/
	5240MHz	16.57	/	/	/	/	/	/	/
	5260MHz	16.53	/	/	/	/	/	/	/
	5280MHz	16.61	/	/	/	/	/	/	/
	5320MHz	16.49	/	/	/	/	/	/	/
	5500MHz	15.21	/	/	/	/	/	/	/
	5580MHz	14.78	/	/	/	/	/	/	/
	5700MHz	13.47	/	/	/	/	/	/	/

The data rate 6Mbps is selected as worst condition, and the following cases are performed with this condition.

802.11n-HT20 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5180MHz	15.43	/	/	/	/	/	/	/
	5200MHz	16.26	/	/	/	/	/	/	/
	5240MHz	16.47	/	/	/	/	/	/	/
	5260MHz	16.40	/	/	/	/	/	/	/
	5280MHz	16.46	/	/	/	/	/	/	/
	5320MHz	15.86	/	/	/	/	/	/	/

	5500MHz	14.01	/	/	/	/	/	/	/
	5580MHz	14.65	/	/	/	/	/	/	/
	5700MHz	11.26	/	/	/	/	/	/	/

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

802.11ac-VHT20 mode

Mode	Frequency	Test Result (dBm)								
		Data Rate								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
802.11ac (VHT20)	5180MHz	15.55	/	/	/	/	/	/	/	/
	5200MHz	16.31	/	/	/	/	/	/	/	/
	5240MHz	16.46	/	/	/	/	/	/	/	/
	5260MHz	16.34	/	/	/	/	/	/	/	/
	5280MHz	16.50	/	/	/	/	/	/	/	/
	5320MHz	15.89	/	/	/	/	/	/	/	/
	5500MHz	14.18	/	/	/	/	/	/	/	/
	5580MHz	14.63	/	/	/	/	/	/	/	/
	5700MHz	13.45	/	/	/	/	/	/	/	/

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

802.11n-HT40 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz	12.53	/	/	/	/	/	/	/
	5230MHz	16.31	/	/	/	/	/	/	/
	5270MHz	16.38	/	/	/	/	/	/	/
	5310MHz	12.87	/	/	/	/	/	/	/
	5510MHz	12.06	/	/	/	/	/	/	/
	5550MHz	15.01	/	/	/	/	/	/	/
	5670MHz	13.17	/	/	/	/	/	/	/

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

802.11ac-VHT40 mode

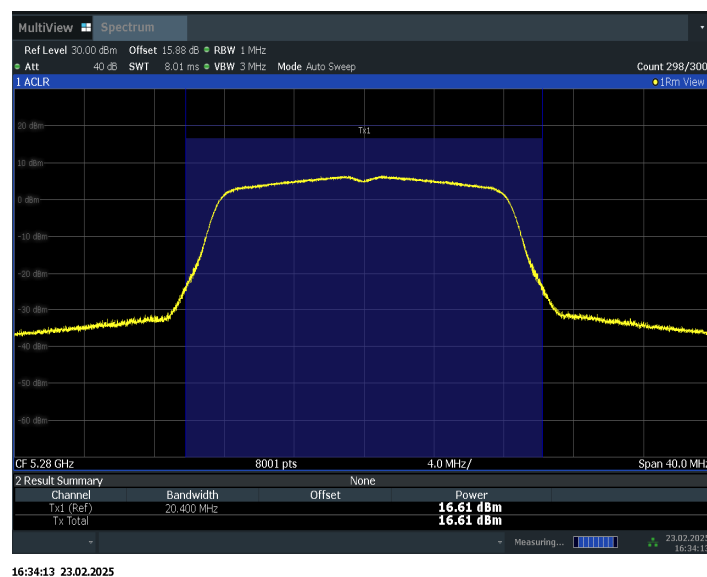
Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (VHT40)	5190MHz	12.67	/	/	/	/	/	/	/	/	/
	5230MHz	16.41	/	/	/	/	/	/	/	/	/
	5270MHz	16.45	/	/	/	/	/	/	/	/	/
	5310MHz	13.92	/	/	/	/	/	/	/	/	/
	5510MHz	13.03	/	/	/	/	/	/	/	/	/
	5550MHz	15.20	/	/	/	/	/	/	/	/	/
	5670MHz	14.29	/	/	/	/	/	/	/	/	/

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

802.11ac-VHT80 mode

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (VHT80)	5210MHz	11.47	/	/	/	/	/	/	/	/	/
	5290MHz	13.99	/	/	/	/	/	/	/	/	/
	5530MHz	12.06	/	/	/	/	/	/	/	/	/
	5610MHz	12.34	/	/	/	/	/	/	/	/	/

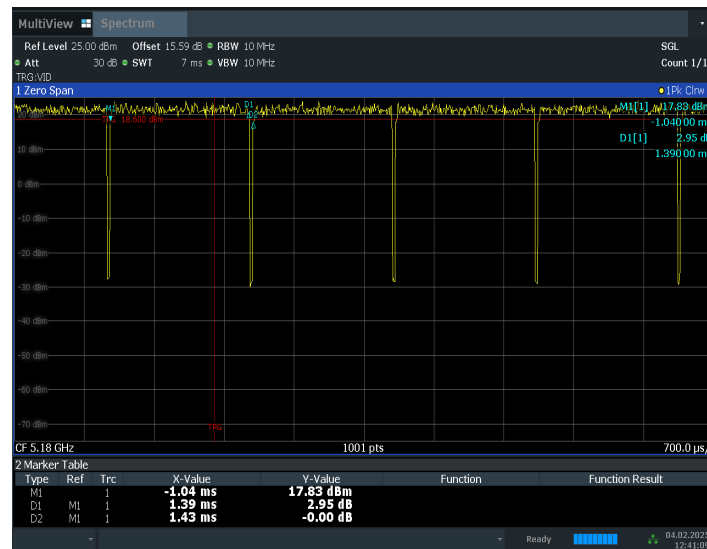
The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.



Maximum output Power: 11a CH56

The duty cycle of all mode

Mode	802.11a	802.11n20	802.11ac20	802.11n40	802.11ac40	802.11ac80
Duty Cycle	97%	97%	97%	94%	94%	89%



12:41:10 04.02.2025

Duty cycle

Conclusion: PASS

A.3. Peak Power Spectral Density (conducted)

Measurement Limit:

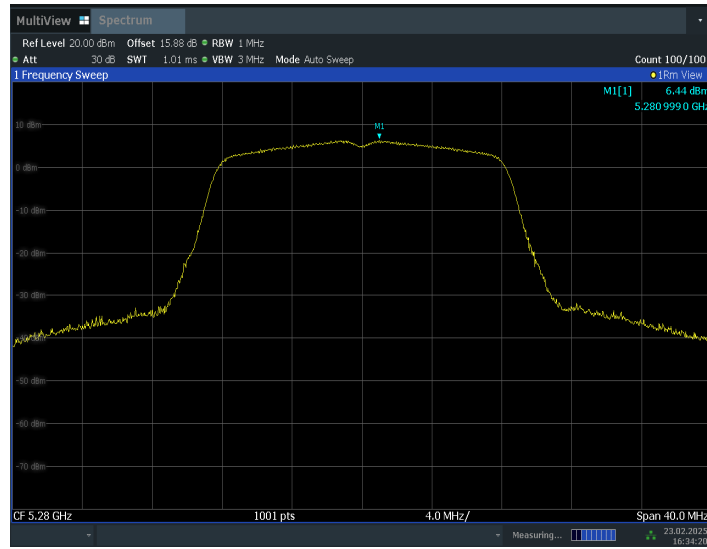
Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	11
	5250MHz~5350MHz	11
	5470MHz~5725MHz	11

The output power measurement method Section F is made according to KDB 789033

EUT ID: UT08a

Measurement Results:

TestMode	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	5180	5.75	≤11.00	PASS
	5200	6.23	≤11.00	PASS
	5240	6.35	≤11.00	PASS
	5260	6.29	≤11.00	PASS
	5280	6.44	≤11.00	PASS
	5320	6.28	≤11.00	PASS
	5500	4.97	≤11.00	PASS
	5580	4.57	≤11.00	PASS
	5700	3.20	≤11.00	PASS
11AC20SISO	5180	5.10	≤11.00	PASS
	5200	5.97	≤11.00	PASS
	5240	6.02	≤11.00	PASS
	5260	5.94	≤11.00	PASS
	5280	6.17	≤11.00	PASS
	5320	5.55	≤11.00	PASS
	5500	3.79	≤11.00	PASS
	5580	4.18	≤11.00	PASS
	5700	3.08	≤11.00	PASS
11AC40SISO	5190	-0.68	≤11.00	PASS
	5230	2.84	≤11.00	PASS
	5270	2.77	≤11.00	PASS
	5310	0.58	≤11.00	PASS
	5510	-0.39	≤11.00	PASS
	5550	2.16	≤11.00	PASS
	5670	0.99	≤11.00	PASS
11AC80SISO	5210	-4.91	≤11.00	PASS
	5290	-2.38	≤11.00	PASS
	5530	-4.64	≤11.00	PASS
	5610	-4.02	≤11.00	PASS



Peak Power Spectral Density:11a CH56

Conclusion: PASS

A.4. 26dB Emission Bandwidth (conducted)

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.403 (i)	/

The measurement is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
-------------------------	---------

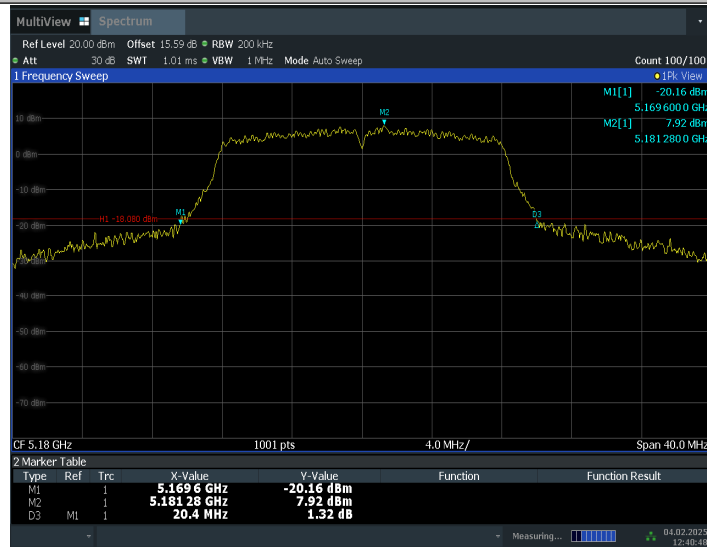
EUT ID: UT08a

Measurement Result:

TestMode	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	5180	20.40	5169.60	5190.00	---	---
	5200	20.64	5189.40	5210.04	---	---
	5240	20.88	5229.48	5250.36	---	---
	5260	22.48	5249.76	5272.24	---	---
	5280	20.64	5269.96	5290.60	---	---
	5320	19.96	5310.08	5330.04	---	---
	5500	20.00	5489.96	5509.96	---	---
	5580	22.04	5569.44	5591.48	---	---
	5700	19.96	5690.04	5710.00	---	---
11AC20SISO	5180	20.24	5169.88	5190.12	---	---
	5200	22.12	5189.24	5211.36	---	---
	5240	23.96	5227.36	5251.32	---	---
	5260	24.52	5248.36	5272.88	---	---
	5280	22.04	5268.96	5291.00	---	---
	5320	20.20	5309.92	5330.12	---	---
	5500	20.32	5489.88	5510.20	---	---
	5580	23.80	5568.20	5592.00	---	---
	5700	20.20	5689.84	5710.04	---	---
11AC40SISO	5190	40.88	5169.52	5210.40	---	---
	5230	41.20	5209.44	5250.64	---	---
	5270	50.48	5248.80	5299.28	---	---
	5310	40.88	5289.52	5330.40	---	---
	5510	41.04	5489.44	5530.48	---	---
	5550	40.96	5529.52	5570.48	---	---
	5670	40.96	5649.60	5690.56	---	---
11AC80SISO	5210	81.12	5169.36	5250.48	---	---
	5290	81.60	5249.20	5330.80	---	---
	5530	81.60	5489.04	5570.64	---	---
	5610	81.44	5569.36	5650.80	---	---

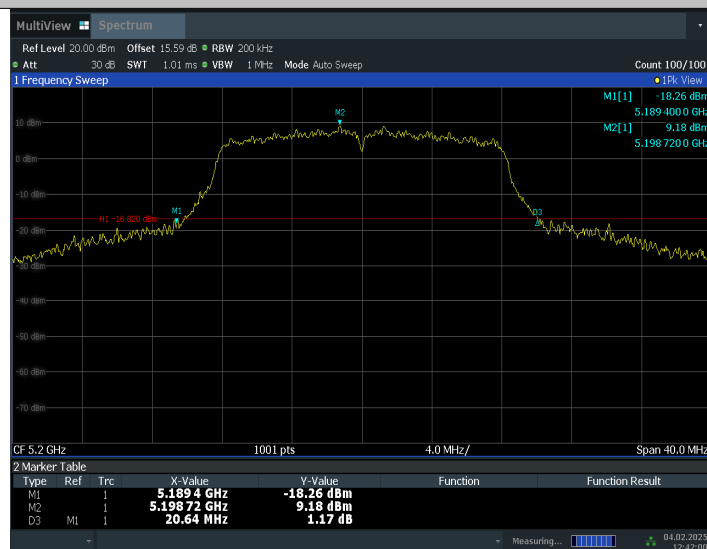
Test graphs as below:

11A_5180



12:40:48 04.02.2025

11A_5200



12:42:01 04.02.2025

11A_5240



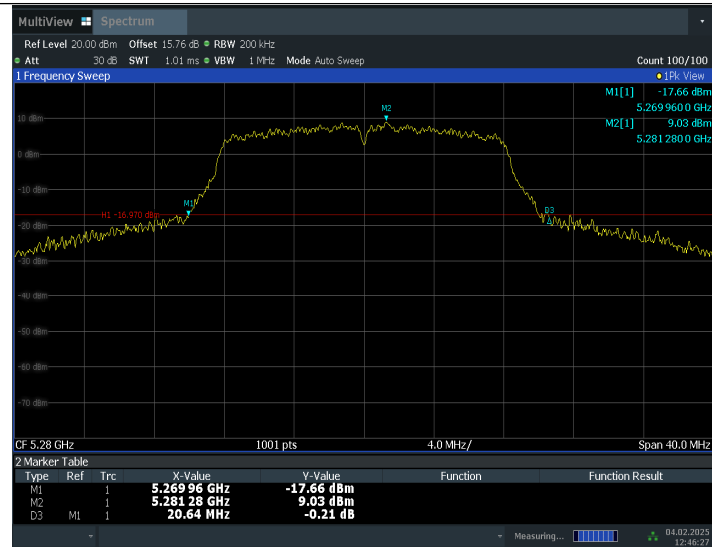
12:43:06 04.02.2025

11A_5260



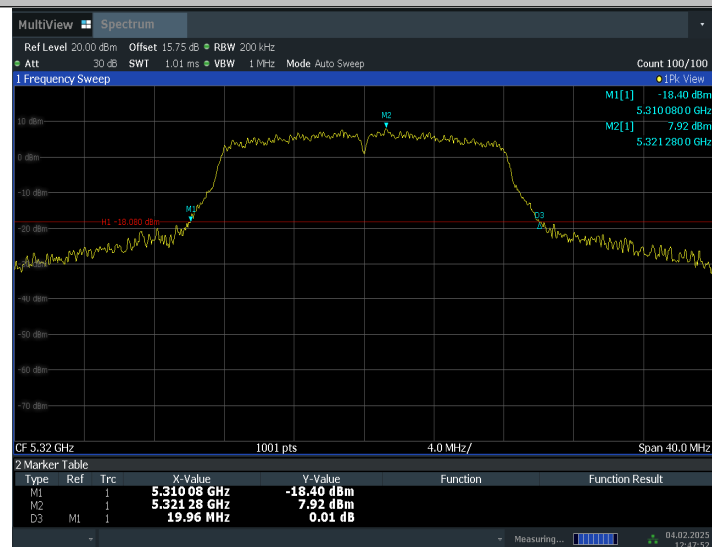
12:44:56 04.02.2025

11A_5280



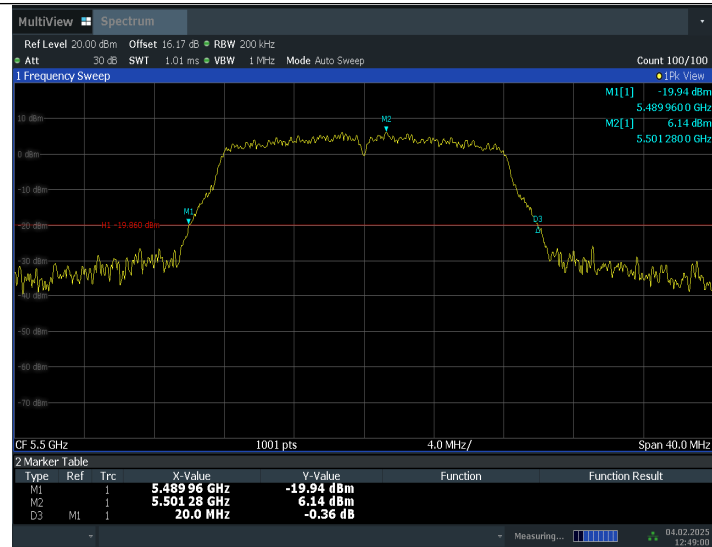
12:46:27 04.02.2025

11A_5320



12:47:52 04.02.2025

11A_5500



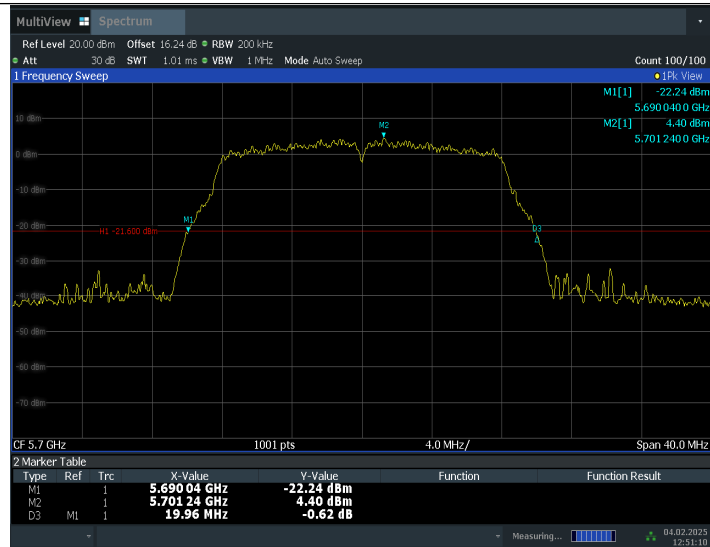
12:49:01 04.02.2025

11A_5580



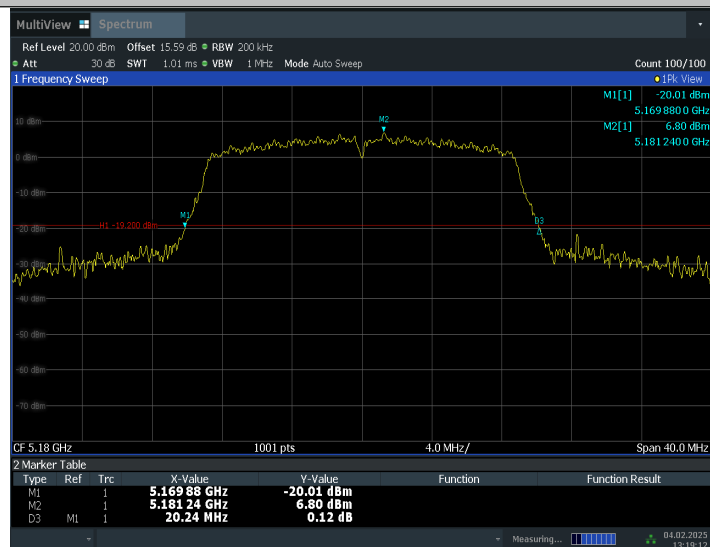
12:50:02 04.02.2025

11A_5700



12:51:11 04.02.2025

11AC20SISO_5180



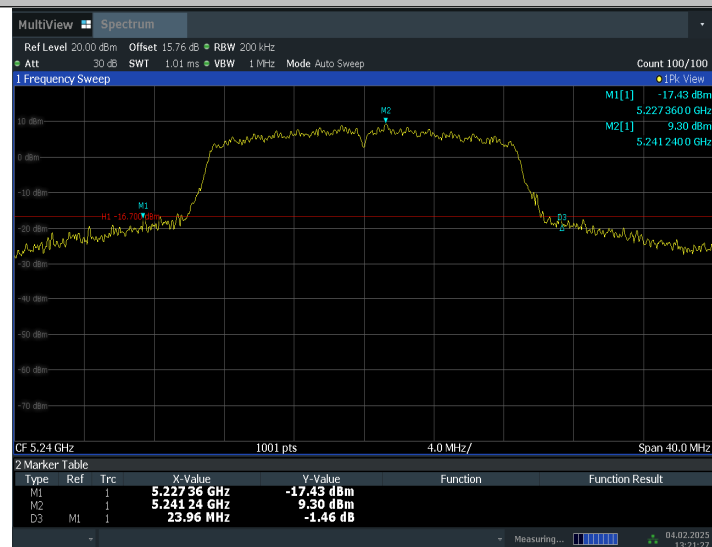
13:19:13 04.02.2025

11AC20SISO_5200



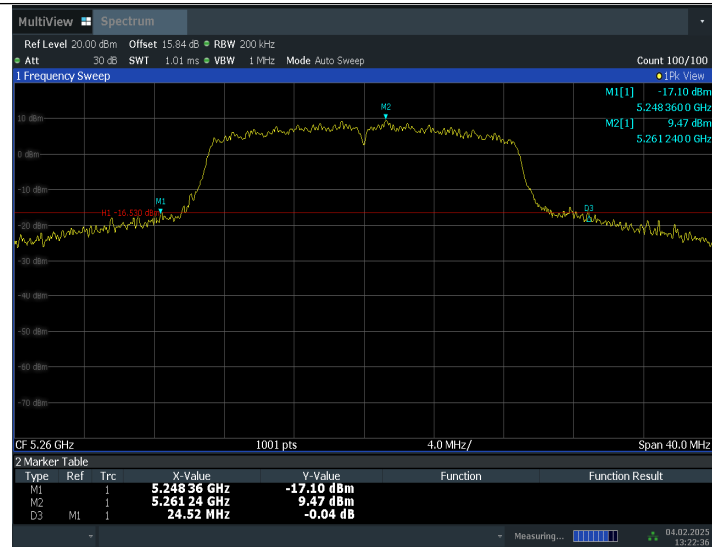
13:20:21 04.02.2025

11AC20SISO_5240



13:21:27 04.02.2025

11AC20SISO_5260



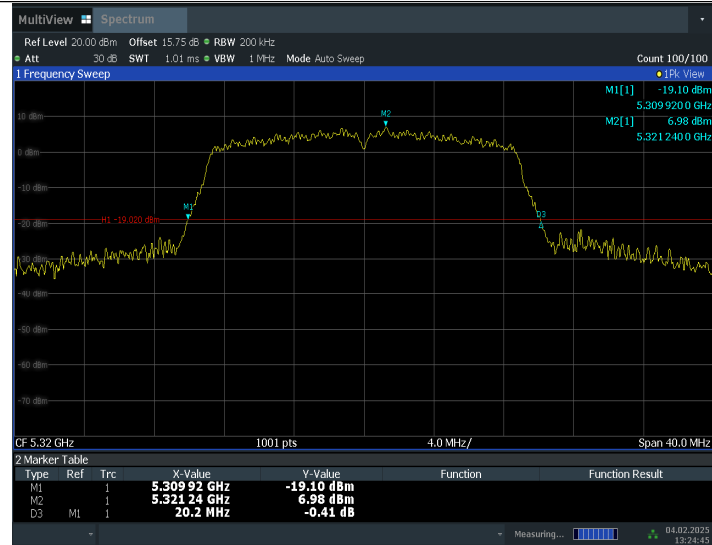
13:22:36 04.02.2025

11AC20SISO_5280



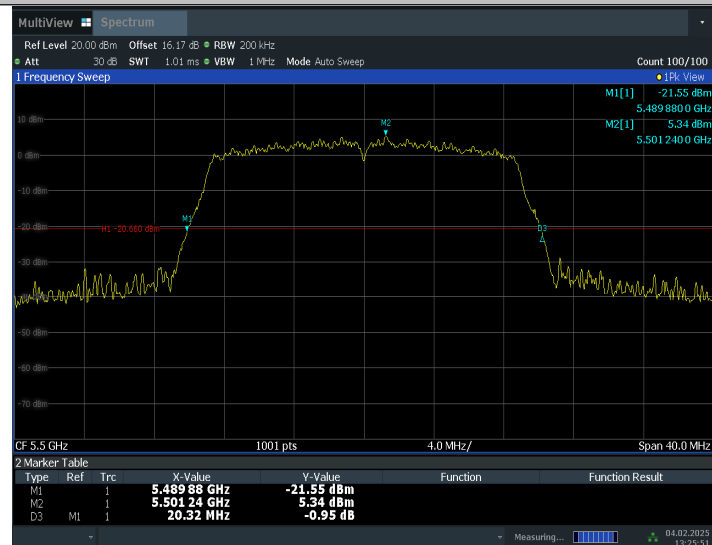
13:23:35 04.02.2025

11AC20SISO_5320



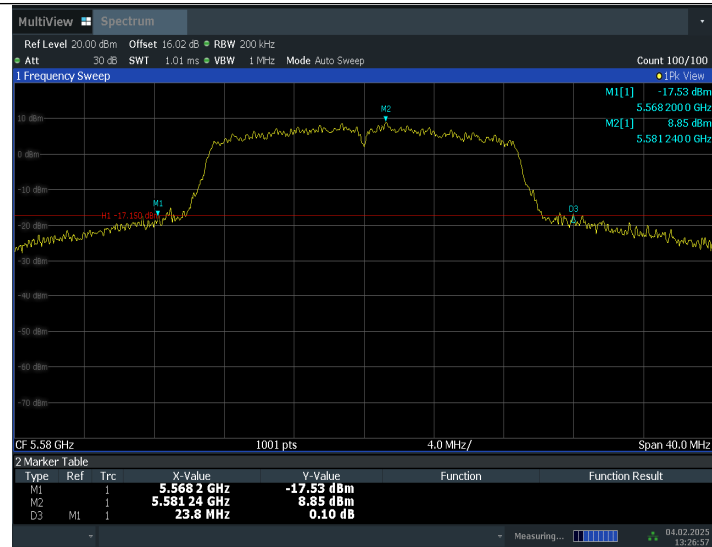
13:24:46 04.02.2025

11AC20SISO_5500



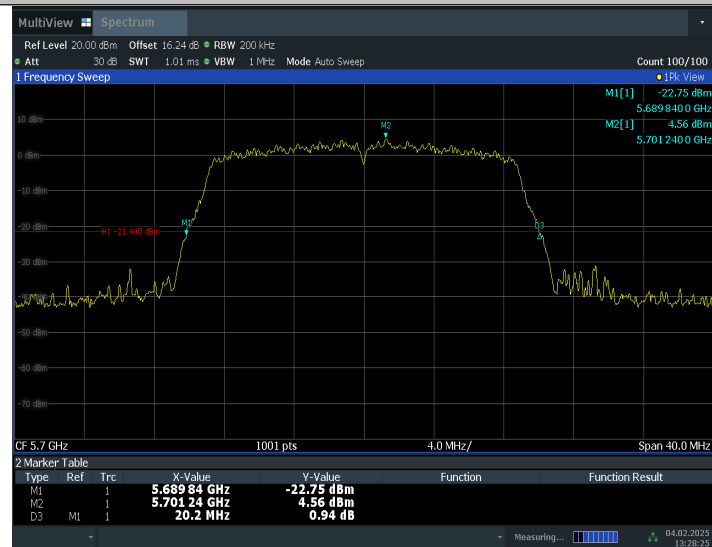
13:25:52 04.02.2025

11AC20SISO_5580



13:26:57 04.02.2025

11AC20SISO_5700



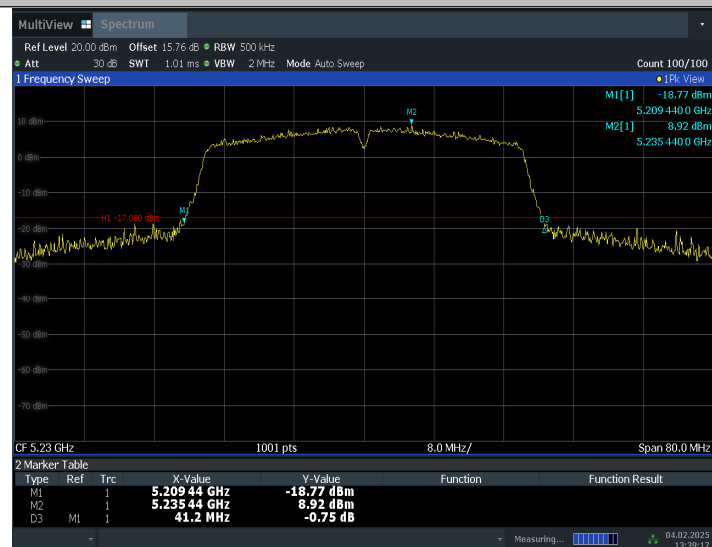
13:28:25 04.02.2025

11AC40SISO_5190



13:38:12 04.02.2025

11AC40SISO_5230



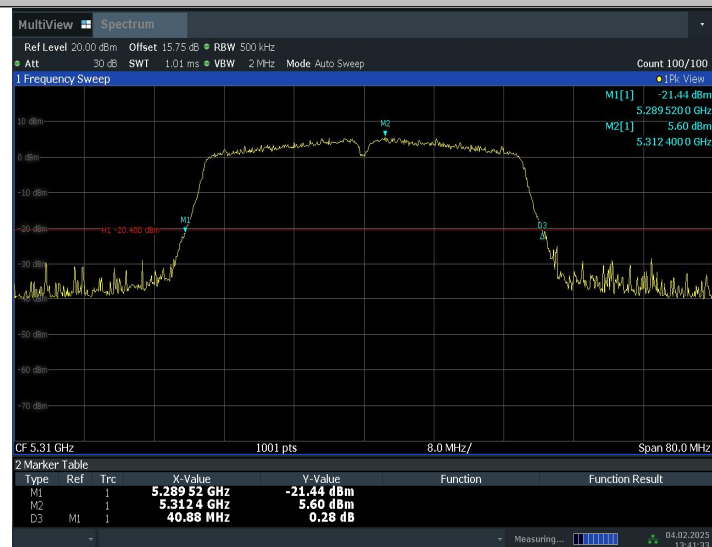
13:39:17 04.02.2025

11AC40SISO_5270



13:40:29 04.02.2025

11AC40SISO_5310



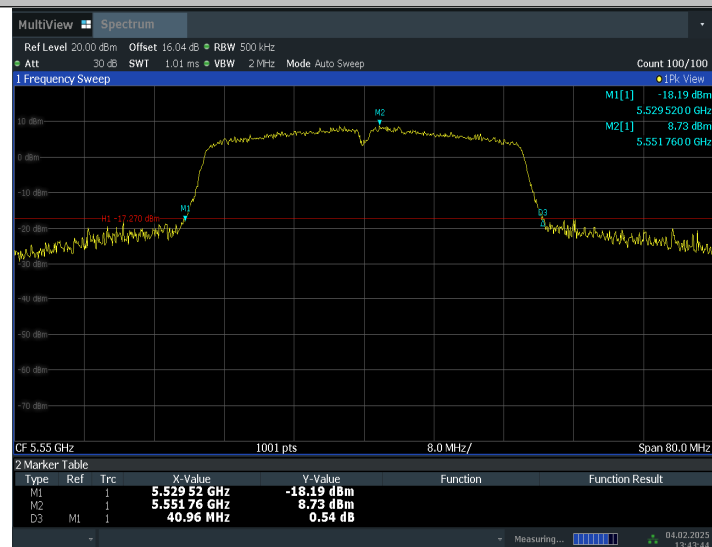
13:41:34 04.02.2025

11AC40SISO_5510



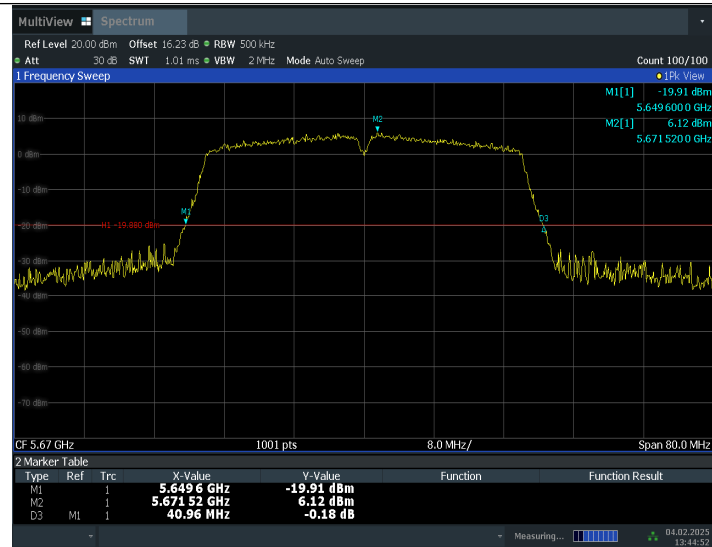
13:42:37 04.02.2025

11AC40SISO_5550



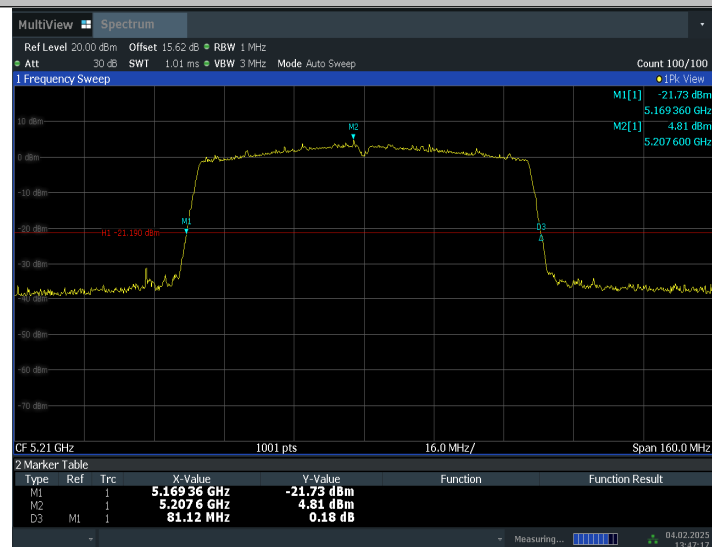
13:43:45 04.02.2025

11AC40SISO_5670



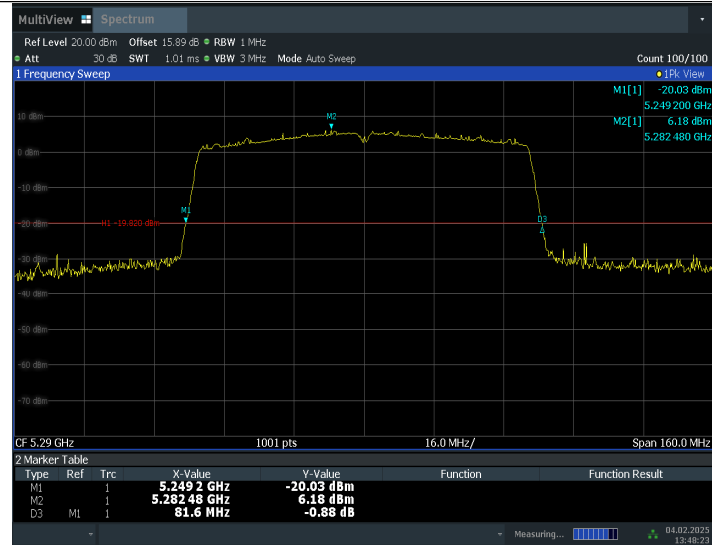
13:44:53 04.02.2025

11AC80SISO_5210



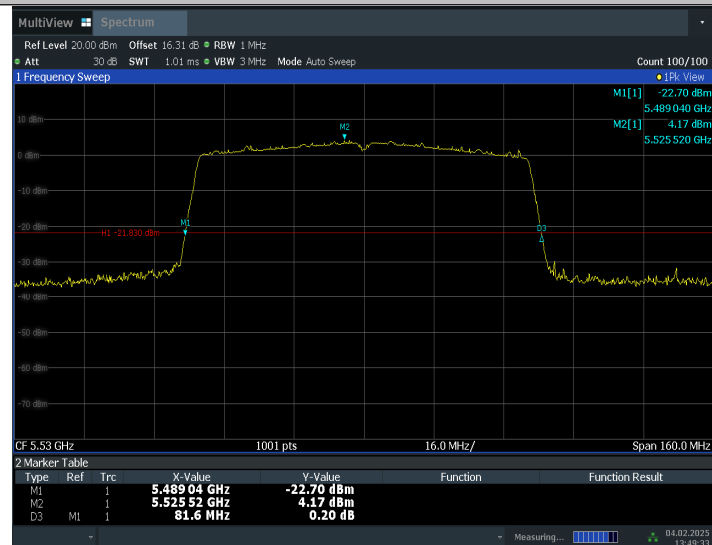
13:47:18 04.02.2025

11AC80SISO_5290



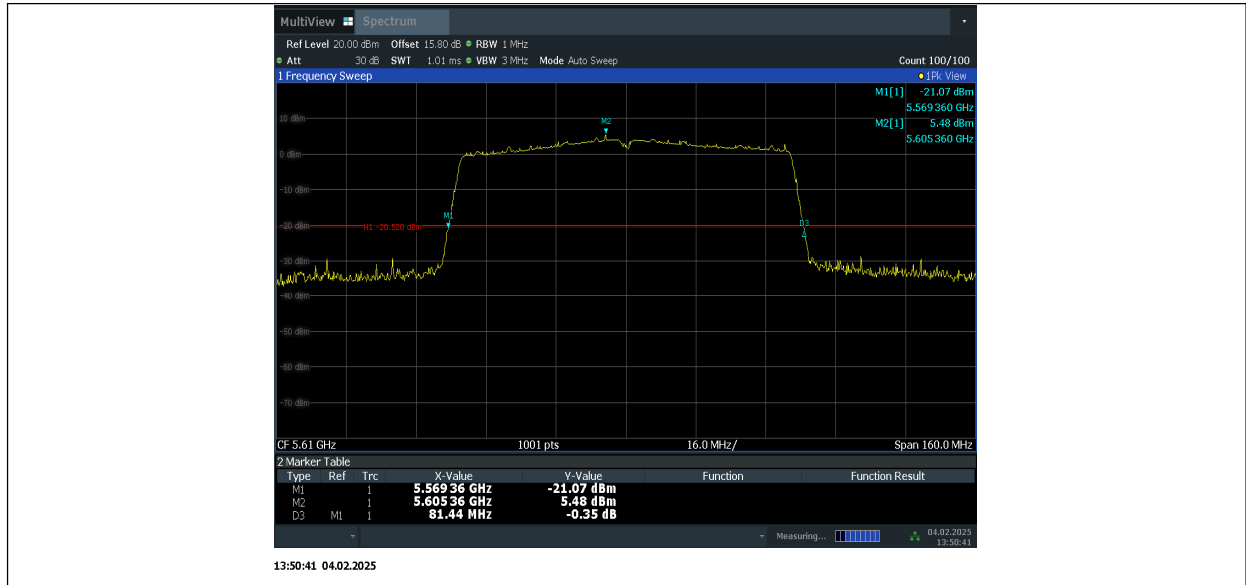
13:48:24 04.02.2025

11AC80SISO_5530



13:49:33 04.02.2025

11AC80SISO_5610



Conclusion: PASS

A.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
FCC 47 CFR Part 15.407	(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

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 (μ V/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

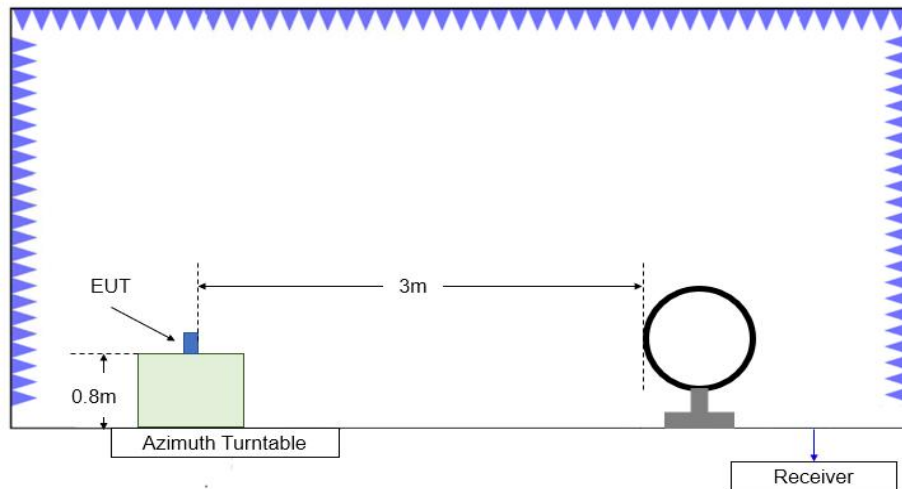


Figure A.5.1. Test Site Diagram (9kHz-30MHz)

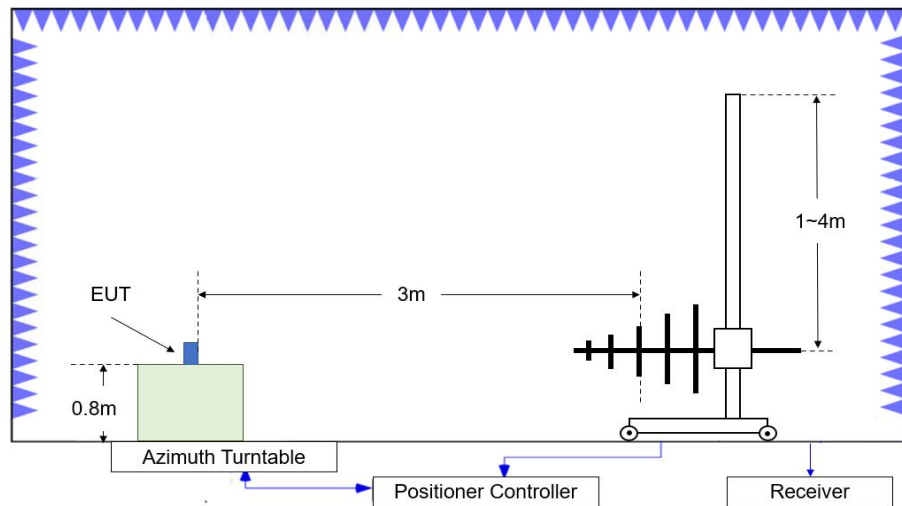


Figure A.5.2. Test Site Diagram (30MHz-1GHz)

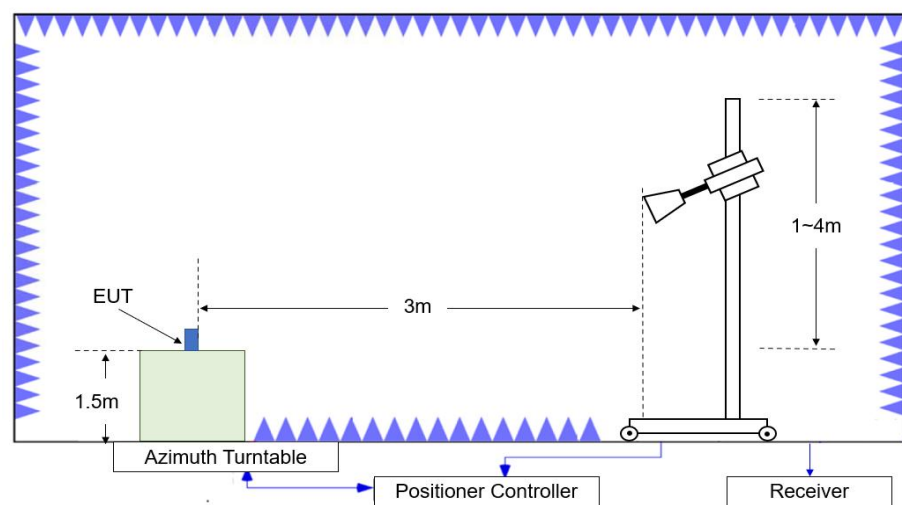


Figure A.5.3. Test Site Diagram (1GHz-40GHz)

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 (dB μ V/m) = $P_{\text{measurement}}$ (dB μ V) + 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 dB μ V/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)

Measurement Results:
Average Results:
802.11a
Channel 36

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	45.39	-25.55	42.30	28.64	54.00	8.61	H
17922.450	45.38	-25.55	42.30	28.63	54.00	8.62	V
14493.750	39.48	-28.78	40.00	28.26	54.00	14.52	H
13282.650	39.43	-29.75	40.30	28.88	54.00	14.57	H
5148.460	47.95	-27.34	32.70	42.59	54.00	6.05	H
5149.380	47.94	-27.27	32.70	42.51	54.00	6.06	H

Channel 64

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	45.42	-25.55	42.30	28.67	54.00	8.58	H
17927.950	45.40	-25.55	42.30	28.65	54.00	8.60	V
13274.400	39.55	-29.75	40.30	29.00	54.00	14.45	V
14491.550	39.52	-28.78	40.00	28.30	54.00	14.48	H
5350.832	48.92	-27.08	33.50	42.50	54.00	5.08	H
5350.000	48.69	-27.08	33.50	42.27	54.00	5.31	H

Channel 100

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	45.40	-25.55	42.30	28.65	54.00	8.60	V
17919.700	45.34	-25.55	42.30	28.59	54.00	8.66	V
14480.550	39.53	-28.78	40.00	28.31	54.00	14.47	V
13282.650	39.38	-29.75	40.30	28.83	54.00	14.62	V
5456.110	44.90	-27.06	33.70	38.26	54.00	9.10	H
5459.755	44.73	-27.06	33.70	38.09	54.00	9.27	H

802.11n-HT20

Channel 36

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)
17905.400	45.57	-25.55	42.30	28.82	54.00	8.43	H
17942.250	45.31	-25.55	42.30	28.56	54.00	8.69	V
13269.450	39.98	-29.75	40.30	29.43	54.00	14.02	H
13263.950	39.40	-29.75	40.20	28.95	54.00	14.60	V
5149.360	47.28	-27.27	32.70	41.85	54.00	6.72	H
5148.580	46.55	-27.27	32.70	41.12	54.00	7.45	H

Channel 64

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)
17909.250	45.39	-25.55	42.30	28.64	54.00	8.61	V
17909.800	45.31	-25.55	42.30	28.56	54.00	8.69	V
13283.200	39.50	-29.75	40.30	28.95	54.00	14.50	H
13305.750	39.50	-29.75	40.30	28.95	54.00	14.50	H
5350.400	47.98	-27.08	33.50	41.56	54.00	6.02	H
5350.608	47.79	-27.08	33.50	41.37	54.00	6.21	H

Channel 100

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)
17911.450	45.75	-25.55	42.30	29.00	54.00	8.25	V
17914.200	45.73	-25.55	42.30	28.98	54.00	8.27	H
14492.650	39.63	-28.78	40.00	28.41	54.00	14.37	H
13297.500	39.60	-29.75	40.30	29.05	54.00	14.40	H
5459.230	45.13	-27.06	33.70	38.49	54.00	8.87	H
5459.260	44.90	-27.06	33.70	38.26	54.00	9.10	H

802.11n-HT40
Channel 38

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	45.68	-25.55	42.30	28.93	54.00	8.32	V
17916.400	45.50	-25.55	42.30	28.75	54.00	8.50	V
13302.450	39.42	-29.75	40.30	28.87	54.00	14.58	V
14484.400	39.42	-28.78	40.00	28.20	54.00	14.58	H
5148.380	47.47	-27.34	32.70	42.11	54.00	6.53	H
5149.200	47.26	-27.27	32.70	41.83	54.00	6.74	H

Channel 62

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	45.57	-25.55	42.30	28.82	54.00	8.43	H
17910.350	45.43	-25.55	42.30	28.68	54.00	8.57	V
14490.450	39.48	-28.78	40.00	28.26	54.00	14.52	V
13321.700	39.43	-30.08	40.30	29.21	54.00	14.57	H
5353.568	47.54	-27.08	33.50	41.12	54.00	6.46	H
5354.000	47.44	-27.08	33.50	41.02	54.00	6.56	H

Channel 102

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	46.16	-25.55	42.30	29.41	54.00	7.84	V
17916.400	46.05	-25.55	42.30	29.30	54.00	7.95	V
13294.750	40.45	-29.75	40.30	29.90	54.00	13.55	H
13278.800	40.43	-29.75	40.30	29.88	54.00	13.57	V
5458.825	45.01	-27.06	33.70	38.37	54.00	8.99	H
5457.805	44.74	-27.06	33.70	38.10	54.00	9.26	H

802.11ac-HT20

Channel 36

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)
17918.050	45.58	-25.55	42.30	28.83	54.00	8.42	H
17901.550	45.37	-25.55	42.30	28.62	54.00	8.63	H
13277.150	39.59	-29.75	40.30	29.04	54.00	14.41	V
13288.700	39.43	-29.75	40.30	28.88	54.00	14.57	H
5147.740	46.78	-27.34	32.70	41.42	54.00	7.22	H
5145.640	46.45	-27.34	32.70	41.09	54.00	7.55	H

Channel 64

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)
17908.700	45.51	-25.55	42.30	28.76	54.00	8.49	H
17921.900	45.38	-25.55	42.30	28.63	54.00	8.62	H
13283.200	39.41	-29.75	40.30	28.86	54.00	14.59	H
13318.400	39.36	-30.08	40.30	29.14	54.00	14.64	V
5350.352	47.55	-27.08	33.50	41.13	54.00	6.45	H
5350.928	47.53	-27.08	33.50	41.11	54.00	6.47	H

Channel 100

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)
17908.150	45.44	-25.55	42.30	28.69	54.00	8.56	V
17916.400	45.44	-25.55	42.30	28.69	54.00	8.56	V
14483.850	39.57	-28.78	40.00	28.35	54.00	14.43	H
13323.350	39.44	-30.08	40.30	29.22	54.00	14.56	V
5449.510	44.47	-27.06	33.70	37.83	54.00	9.53	H
5459.050	44.42	-27.06	33.70	37.78	54.00	9.58	H

802.11ac-HT40
Channel 38

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)
17904.300	45.73	-25.55	42.30	28.98	54.00	8.27	H
17906.500	45.51	-25.55	42.30	28.76	54.00	8.49	V
13291.450	40.05	-29.75	40.30	29.50	54.00	13.95	V
13295.850	39.39	-29.75	40.30	28.84	54.00	14.61	V
5149.800	47.53	-27.27	32.70	42.10	54.00	6.47	H
5148.200	47.27	-27.34	32.70	41.91	54.00	6.73	H

Channel 62

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)
17919.700	45.78	-25.55	42.30	29.03	54.00	8.22	V
17934.550	45.49	-25.55	42.30	28.74	54.00	8.51	V
13290.900	39.41	-29.75	40.30	28.86	54.00	14.59	H
13280.450	39.38	-29.75	40.30	28.83	54.00	14.62	V
5351.696	48.55	-27.08	33.50	42.13	54.00	5.45	H
5350.640	48.13	-27.08	33.50	41.71	54.00	5.87	H

Channel 102

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)
17925.200	45.62	-25.55	42.30	28.87	54.00	8.38	V
17926.300	45.49	-25.55	42.30	28.74	54.00	8.51	H
13259.550	39.45	-29.75	40.20	29.00	54.00	14.55	H
14472.850	39.27	-28.78	40.00	28.05	54.00	14.73	H
5459.890	44.79	-27.06	33.70	38.15	54.00	9.21	H
5459.950	44.56	-27.06	33.70	37.92	54.00	9.44	H

Channel 118

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	45.38	-25.55	42.30	28.63	54.00	8.62	H
17920.250	45.20	-25.55	42.30	28.45	54.00	8.80	H
13265.050	39.58	-29.75	40.20	29.13	54.00	14.42	H
13272.750	39.55	-29.75	40.30	29.00	54.00	14.45	H
11873.550	37.63	-31.75	38.90	30.48	54.00	16.37	H
11856.500	37.45	-31.75	38.90	30.30	54.00	16.55	V

802.11ac-HT80

Channel 42

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)
17908.150	45.46	-25.55	42.30	28.71	54.00	8.54	V
17901.000	45.29	-25.55	42.30	28.54	54.00	8.71	V
14492.100	39.74	-28.78	40.00	28.52	54.00	14.26	V
13289.800	39.54	-29.75	40.30	28.99	54.00	14.46	V
5149.600	47.56	-27.27	32.70	42.13	54.00	6.44	H
5149.940	47.48	-27.27	32.70	42.05	54.00	6.52	H

Channel 58

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)
17921.900	45.36	-25.55	42.30	28.61	54.00	8.64	V
17920.800	45.26	-25.55	42.30	28.51	54.00	8.74	H
14493.200	39.36	-28.78	40.00	28.14	54.00	14.64	V
13283.200	39.31	-29.75	40.30	28.76	54.00	14.69	H
5350.464	50.90	-27.08	33.50	44.48	54.00	3.10	H
5350.128	50.68	-27.08	33.50	44.26	54.00	3.32	H

Channel 106

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)
17921.900	45.42	-25.55	42.30	28.67	54.00	8.58	V
17915.300	45.37	-25.55	42.30	28.62	54.00	8.63	V
13286.500	39.39	-29.75	40.30	28.84	54.00	14.61	H
13271.650	39.35	-29.75	40.30	28.80	54.00	14.65	V
5457.745	47.88	-27.06	33.70	41.24	54.00	6.12	H
5459.365	47.58	-27.06	33.70	40.94	54.00	6.42	H

PEAK Results:
802.11a

Channel 36

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)
17888.900	56.42	-25.55	42.30	39.67	74.00	17.58	V
17887.800	56.41	-25.55	42.30	39.66	74.00	17.59	H
14131.300	52.10	-28.86	40.50	40.46	68.20	16.10	H
13656.650	51.94	-29.88	40.60	41.22	68.20	16.26	V
5148.840	66.24	-27.27	32.70	60.81	74.00	7.76	H
5149.380	64.58	-27.27	32.70	59.15	74.00	9.42	H

Channel 64

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)
17934.000	56.21	-25.55	42.30	39.46	74.00	17.79	H
17882.300	55.96	-25.55	42.30	39.21	74.00	18.04	H
14193.450	52.13	-28.86	40.40	40.59	68.20	16.07	H
13642.900	51.93	-29.88	40.60	41.21	68.20	16.27	V
5350.832	68.25	-27.08	33.50	61.83	74.00	5.75	H
5351.856	68.07	-27.08	33.50	61.65	74.00	5.93	H

Channel 100

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)
17908.150	56.39	-25.55	42.30	39.64	74.00	17.61	V
17880.100	56.24	-25.55	42.30	39.49	74.00	17.76	V
14162.100	52.14	-28.86	40.40	40.60	68.20	16.06	H
14114.800	51.69	-28.86	40.50	40.05	68.20	16.51	V
5459.725	59.30	-27.06	33.70	52.66	74.00	14.70	H
5469.355	63.03	-27.06	33.70	56.39	68.20	5.17	H

802.11n-HT20

Channel 36

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	56.62	-25.55	42.30	39.87	74.00	17.38	V
17810.250	56.44	-25.55	42.30	39.69	74.00	17.56	H
14211.050	52.21	-28.86	40.40	40.67	68.20	15.99	H
13710.000	51.87	-29.88	40.70	41.05	68.20	16.33	H
5148.940	67.39	-27.27	32.70	61.96	74.00	6.61	H
5150.000	67.23	-27.27	32.70	61.80	74.00	6.77	H

Channel 64

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)
17931.250	56.67	-25.55	42.30	39.92	74.00	17.33	H
17915.850	56.22	-25.55	42.30	39.47	74.00	17.78	V
14141.750	52.69	-28.86	40.50	41.05	68.20	15.51	V
14048.800	52.35	-28.98	40.70	40.63	68.20	15.85	H
5350.208	68.67	-27.08	33.50	62.25	74.00	5.33	H
5350.928	68.60	-27.08	33.50	62.18	74.00	5.40	H

Channel 100

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)
17932.900	56.05	-25.55	42.30	39.30	74.00	17.95	H
17896.600	55.92	-25.55	42.30	39.17	74.00	18.08	V
13724.850	52.68	-29.41	40.70	41.39	68.20	15.52	V
14128.000	52.16	-28.86	40.50	40.52	68.20	16.04	V
5457.940	59.56	-27.06	33.70	52.92	74.00	14.44	H
5464.210	61.02	-27.06	33.70	54.38	68.20	7.18	H

802.11n-HT40

Channel 38

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	56.57	-25.55	42.30	39.82	74.00	17.43	H
17925.750	56.57	-25.55	42.30	39.82	74.00	17.43	H
13925.050	51.96	-29.33	40.90	40.39	68.20	16.24	V
14201.150	51.93	-28.86	40.40	40.39	68.20	16.27	H
5149.840	66.48	-27.27	32.70	61.05	74.00	7.52	H
5149.280	66.25	-27.27	32.70	60.82	74.00	7.75	H

Channel 62

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)
17918.050	56.53	-25.55	42.30	39.78	74.00	17.47	H
17910.350	55.85	-25.55	42.30	39.10	74.00	18.15	V
13619.800	51.87	-29.88	40.60	41.15	68.20	16.33	H
14126.900	51.87	-28.86	40.50	40.23	68.20	16.33	H
5351.216	61.84	-27.08	33.50	55.42	74.00	12.16	H
5350.944	61.71	-27.08	33.50	55.29	74.00	12.29	H

Channel 102

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)
17877.350	57.52	-25.55	42.30	40.77	74.00	16.48	H
17935.100	56.96	-25.55	42.30	40.21	74.00	17.04	H
14060.900	52.82	-28.98	40.50	41.30	68.20	15.38	H
13750.700	52.62	-29.41	40.70	41.33	68.20	15.58	H
5453.425	57.74	-27.06	33.70	51.10	74.00	16.26	H
5467.525	57.77	-27.06	33.70	51.13	68.20	10.43	H

802.11ac-HT20

Channel 36

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)
17868.550	57.11	-25.55	42.30	40.36	74.00	16.89	H
17942.800	56.49	-25.55	42.30	39.74	74.00	17.51	V
14256.700	52.83	-28.86	40.40	41.29	68.20	15.37	V
13736.400	52.79	-29.41	40.70	41.50	68.20	15.41	V
5147.740	63.64	-27.34	32.70	58.28	74.00	10.36	H
5147.760	62.29	-27.34	32.70	56.93	74.00	11.71	H

Channel 64

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)
17974.700	56.49	-25.55	42.30	39.74	74.00	17.51	V
17941.700	56.20	-25.55	42.30	39.45	74.00	17.80	V
13805.700	52.18	-29.41	40.90	40.69	68.20	16.02	V
14064.750	51.94	-28.98	40.50	40.42	68.20	16.26	H
5350.176	68.82	-27.08	33.50	62.40	74.00	5.18	H
5351.120	67.99	-27.08	33.50	61.57	74.00	6.01	H

Channel 100

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)
17921.900	56.07	-25.55	42.30	39.32	74.00	17.93	H
17924.650	56.03	-25.55	42.30	39.28	74.00	17.97	V
14222.050	52.80	-28.86	40.40	41.26	68.20	15.40	V
13791.400	51.85	-29.41	40.90	40.36	68.20	16.35	V
5457.625	56.61	-27.06	33.70	49.97	74.00	17.39	H
5468.530	61.73	-27.06	33.70	55.09	68.20	6.47	H

802.11ac-HT40

Channel 38

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)
17903.750	56.60	-25.55	42.30	39.85	74.00	17.40	V
17964.800	56.59	-25.55	42.30	39.84	74.00	17.41	H
13697.900	52.62	-29.88	40.70	41.80	68.20	15.58	H
14182.450	52.23	-28.86	40.40	40.69	68.20	15.97	V
5147.560	63.08	-27.34	32.70	57.72	74.00	10.92	H
5149.180	60.36	-27.27	32.70	54.93	74.00	13.64	H

Channel 62

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	56.86	-25.55	42.30	40.11	74.00	17.14	V
17922.450	56.54	-25.55	42.30	39.79	74.00	17.46	H
13709.450	52.24	-29.88	40.70	41.42	68.20	15.96	H
13712.750	52.10	-29.88	40.70	41.28	68.20	16.10	H
5351.600	68.00	-27.08	33.50	61.58	74.00	6.00	H
5351.568	67.94	-27.08	33.50	61.52	74.00	6.06	H

Channel 102

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)
17975.250	56.11	-25.55	42.30	39.36	74.00	17.89	V
17921.350	56.00	-25.55	42.30	39.25	74.00	18.00	H
13635.750	52.43	-29.88	40.60	41.71	68.20	15.77	H
14120.850	51.82	-28.86	40.50	40.18	68.20	16.38	H
5457.940	56.10	-27.06	33.70	49.46	74.00	17.90	H
5468.965	61.45	-27.06	33.70	54.81	68.20	6.75	H

Channel 118

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	56.24	-25.55	42.30	39.49	74.00	17.76	H
17844.900	56.07	-25.55	42.30	39.32	74.00	17.93	H
13972.900	52.19	-29.33	40.70	40.82	68.20	16.01	H
13688.550	51.97	-29.88	40.70	41.15	68.20	16.23	V
11832.850	48.36	-31.75	38.90	41.21	74.00	25.64	V
11981.900	48.30	-31.07	38.70	40.67	74.00	25.70	V

802.11ac-HT80

Channel 42

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	56.85	-25.55	42.30	40.10	74.00	17.15	H
17921.900	56.81	-25.55	42.30	40.06	74.00	17.19	V
14139.550	51.95	-28.86	40.50	40.31	68.20	16.25	V
13733.650	51.93	-29.41	40.70	40.64	68.20	16.27	V
5146.100	59.95	-27.34	32.70	54.59	74.00	14.05	H
5144.480	59.87	-27.34	32.70	54.51	74.00	14.13	H

Channel 58

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)
17941.700	56.61	-25.55	42.30	39.86	74.00	17.39	H
17940.050	56.22	-25.55	42.30	39.47	74.00	17.78	H
13816.700	52.97	-29.41	40.90	41.48	68.20	15.23	H
14037.800	52.03	-28.98	40.70	40.31	68.20	16.17	H
5357.312	67.10	-27.08	33.50	60.68	74.00	6.90	H
5356.240	66.36	-27.08	33.50	59.94	74.00	7.64	H

Channel 106

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	56.32	-25.55	42.30	39.57	74.00	17.68	H
17917.500	56.19	-25.55	42.30	39.44	74.00	17.81	H
14280.900	52.23	-28.97	40.30	40.90	68.20	15.97	V
14163.750	51.83	-28.86	40.40	40.29	68.20	16.37	H
5459.335	58.97	-27.06	33.70	52.33	74.00	15.03	H
5469.580	61.32	-27.06	33.70	54.68	68.20	6.88	H

Conclusion: PASS

Band edge compliance

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.1	P
	5320 MHz	Fig.2	P
	5500 MHz	Fig.3	P
	5700 MHz	Fig.4	P
802.11n HT20	5180 MHz	Fig.5	P
	5320 MHz	Fig.6	P
	5500 MHz	Fig.7	P
	5700 MHz	Fig.8	P
802.11n HT40	5190 MHz	Fig.9	P
	5310 MHz	Fig.10	P
	5510 MHz	Fig.11	P
	5670 MHz	Fig.12	P
802.11ac HT20	5180 MHz	Fig.13	P
	5320 MHz	Fig.14	P
	5500 MHz	Fig.15	P
	5700 MHz	Fig.16	P
802.11ac HT40	5190 MHz	Fig.17	P
	5310 MHz	Fig.18	P
	5510 MHz	Fig.19	P
	5670 MHz	Fig.20	P
802.11ac HT80	5210MHz	Fig.21	P
	5290MHz	Fig.22	P
	5530MHz	Fig.23	P
	5610MHz	Fig.24	P

Conclusion: PASS

Test graphs as below:

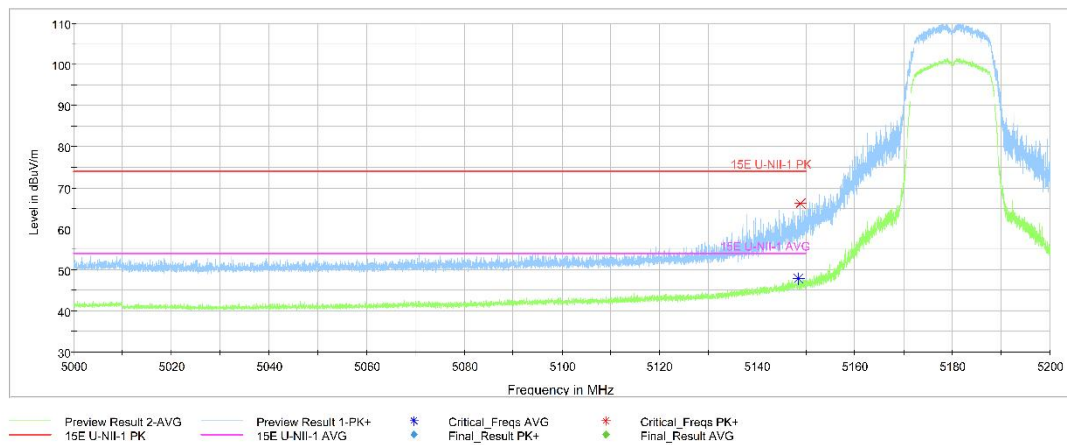


Fig. 1 Band Edges (802.11a Ch36, 5180MHz)

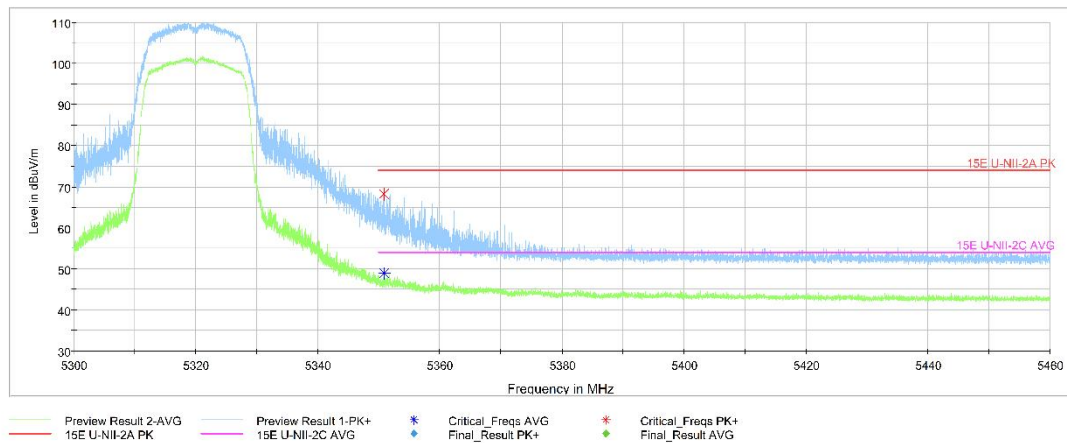


Fig. 2 Band Edges (802.11a Ch64, 5320MHz)

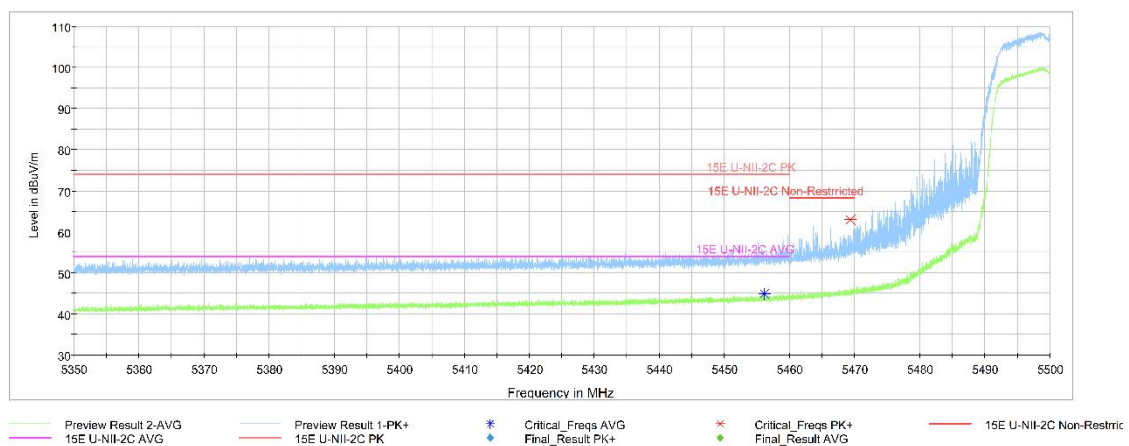


Fig. 3 Band Edges (802.11a Ch100, 5500MHz)

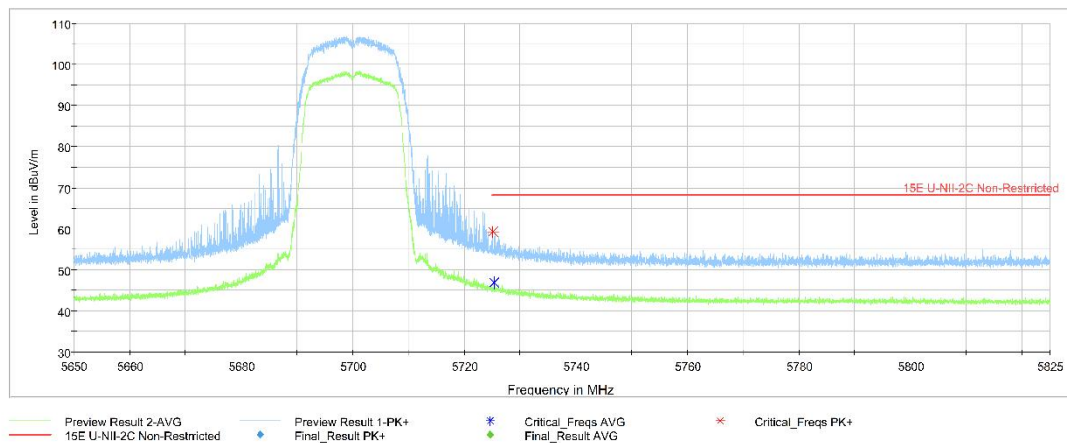


Fig. 4 Band Edges (802.11a Ch140, 5700MHz)

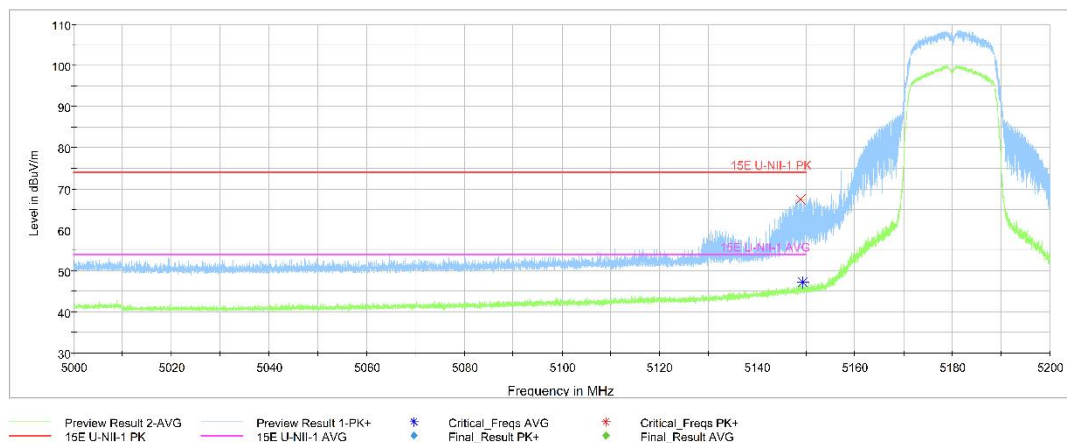


Fig. 5 Band Edges (802.11n-HT20 Ch36, 5180MHz)

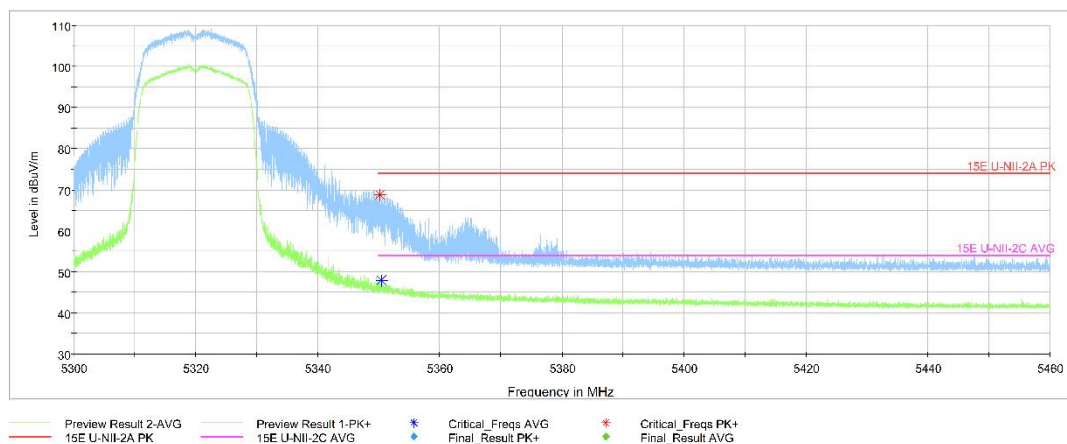


Fig. 6 Band Edges (802.11n-HT20 Ch64, 5320MHz)

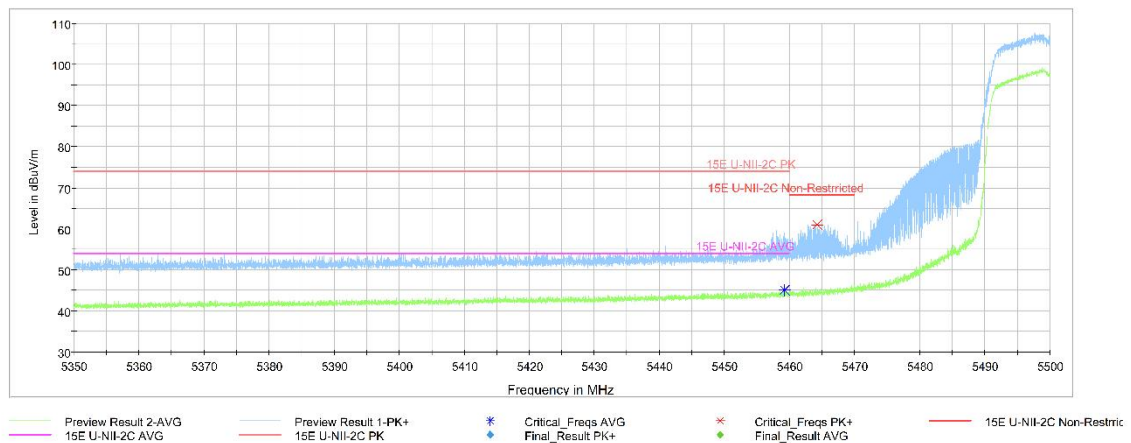


Fig. 7 Band Edges (802.11n-HT20 Ch100, 5500MHz)

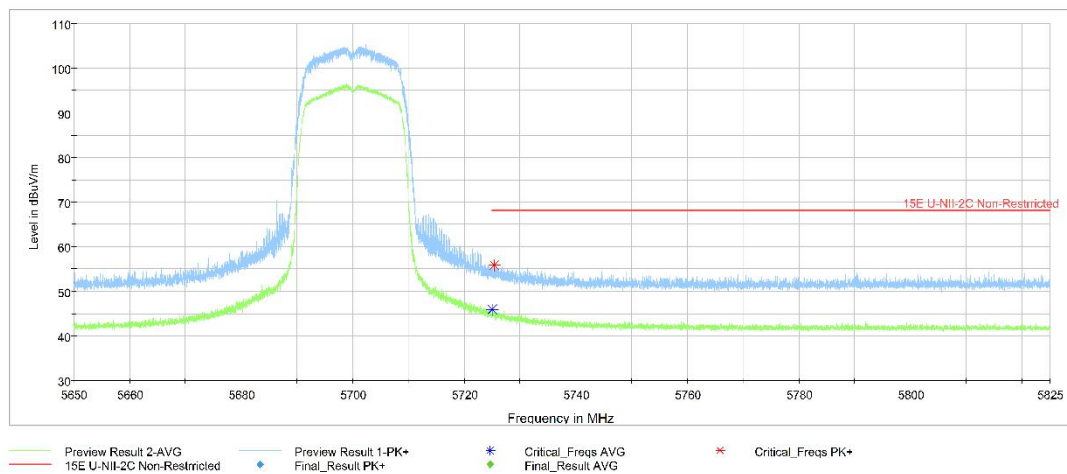


Fig. 8 Band Edges (802.11n-HT20 Ch140, 5700MHz)

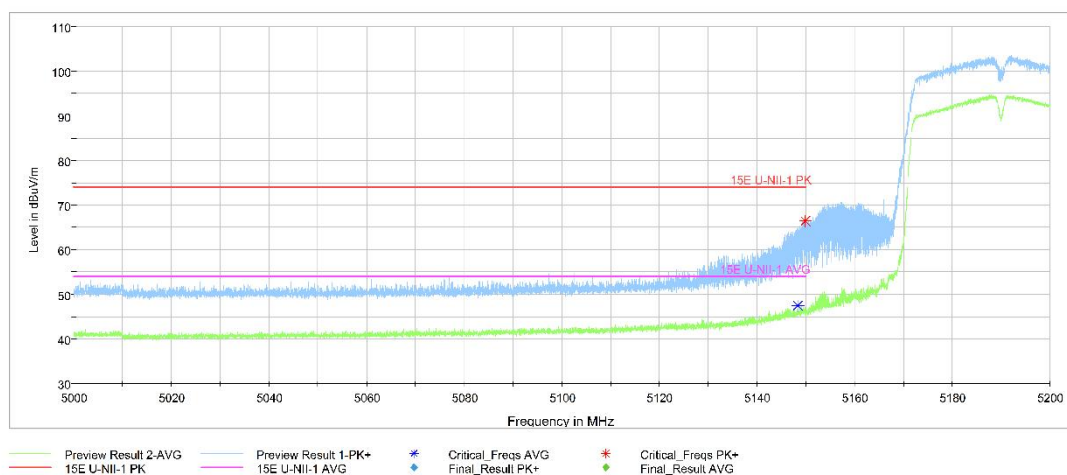


Fig. 9 Band Edges (802.11n-HT40 Ch38, 5190MHz)

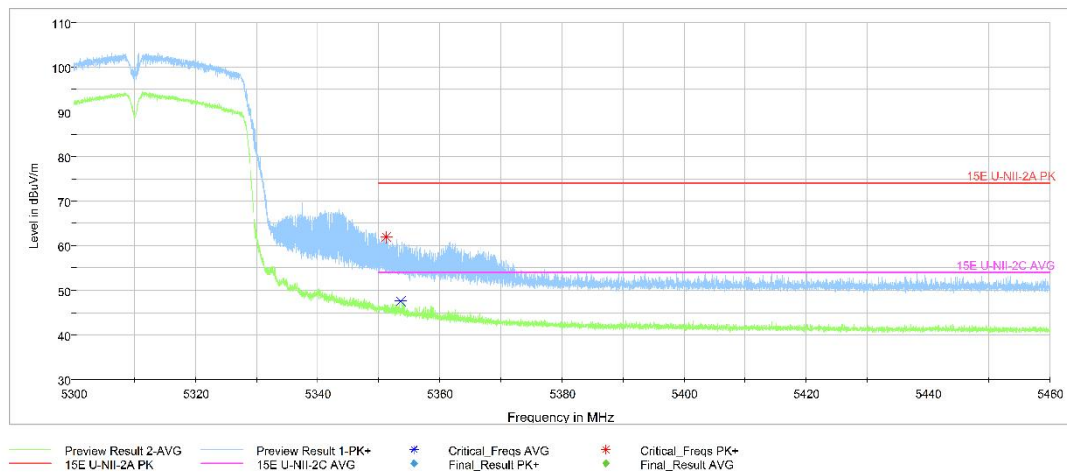


Fig. 10 Band Edges (802.11n-HT40 Ch62, 5310MHz)

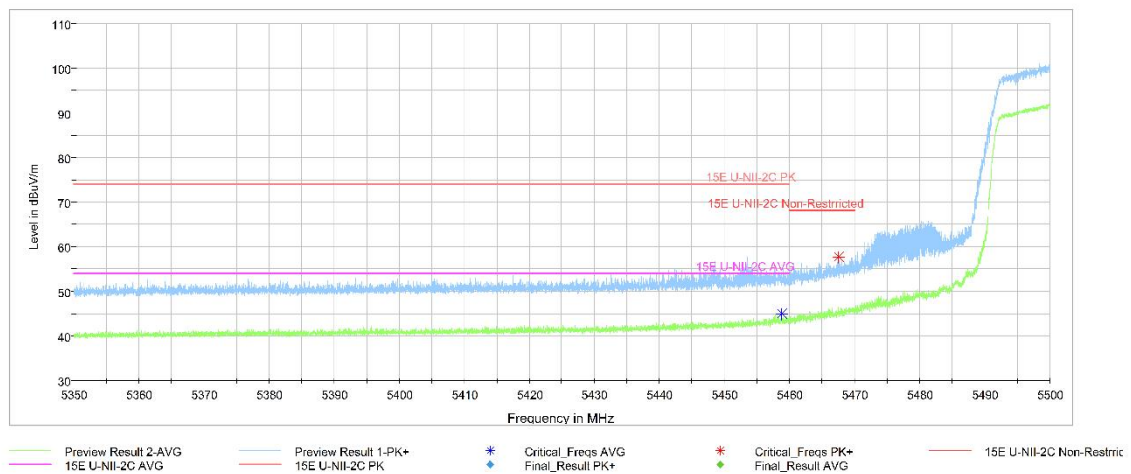


Fig. 11 Band Edges (802.11n-HT40 Ch102, 5510MHz)

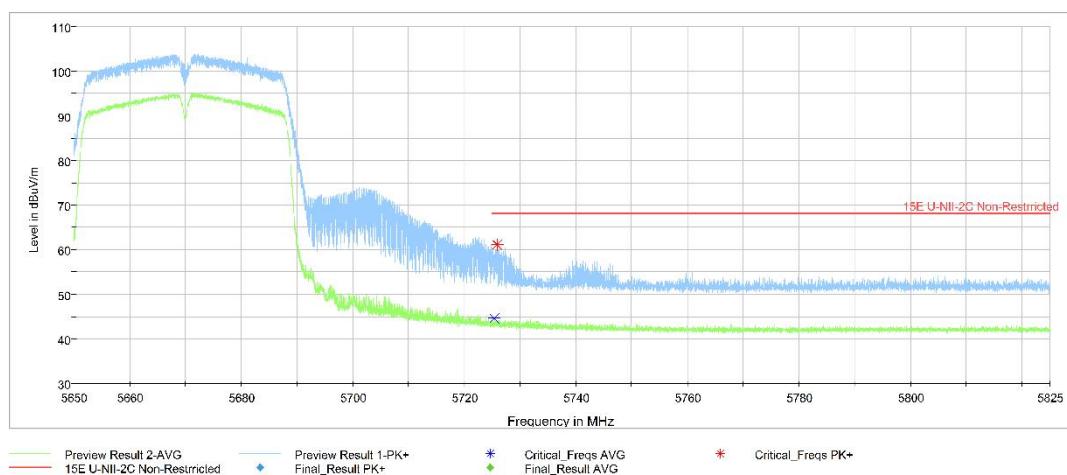


Fig. 12 Band Edges (802.11n-HT40 Ch134, 5670MHz)

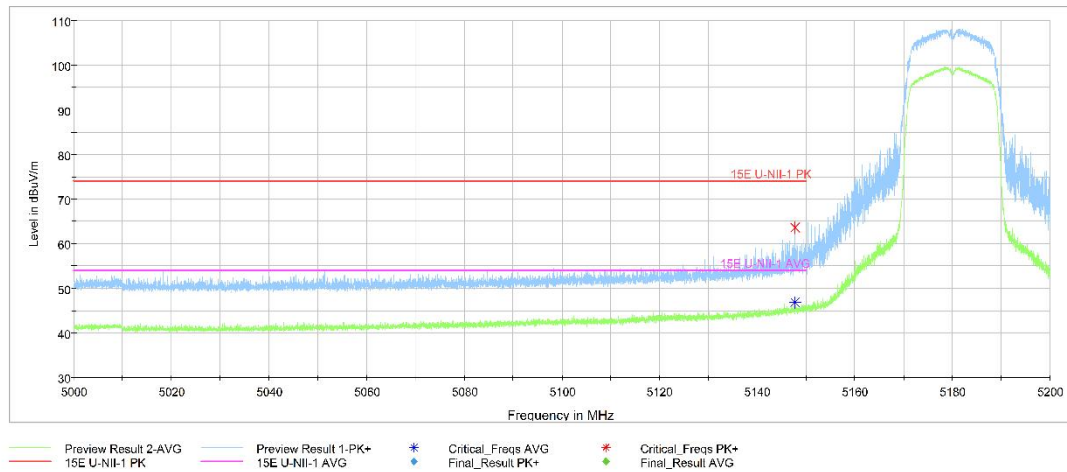


Fig. 13 Band Edges (802.11ac-HT20 Ch36, 5180MHz)

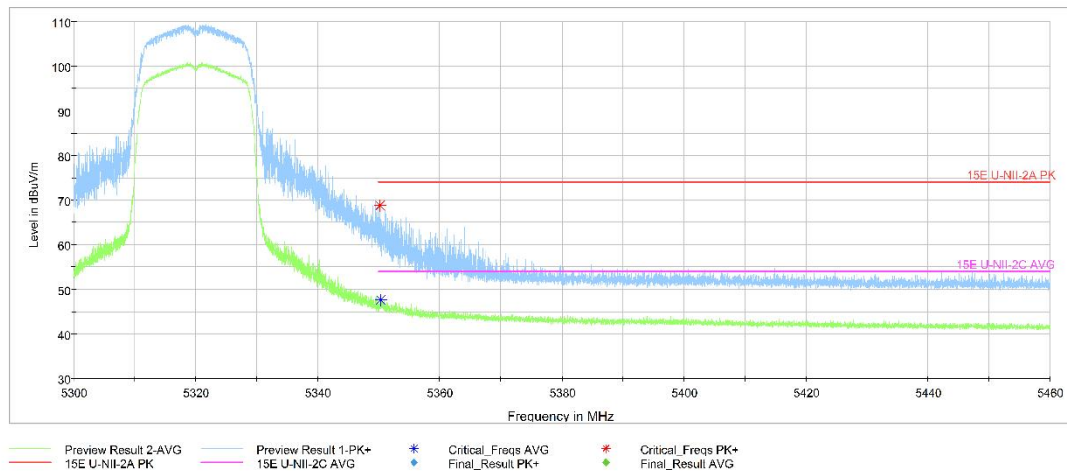


Fig. 14 Band Edges (802.11ac-HT20 Ch64, 5320MHz)

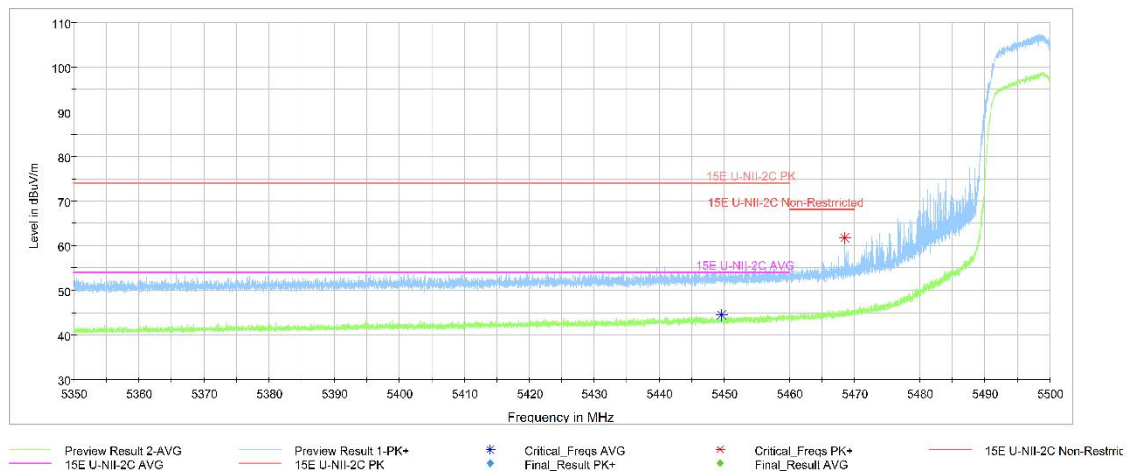


Fig. 15 Band Edges (802.11ac-HT20 Ch100, 5500MHz)

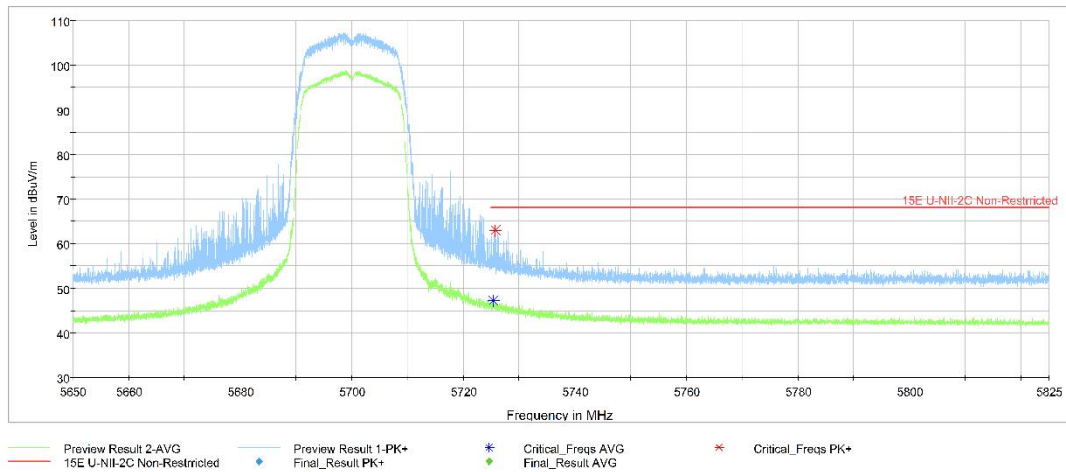


Fig. 16 Band Edges (802.11ac-HT20 Ch140, 5700MHz)

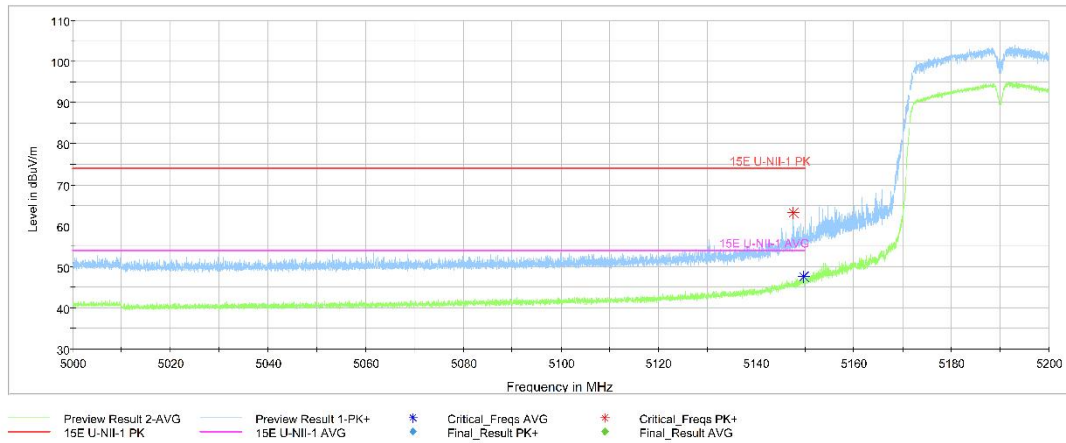


Fig. 17 Band Edges (802.11ac-HT40 Ch38, 5190MHz)

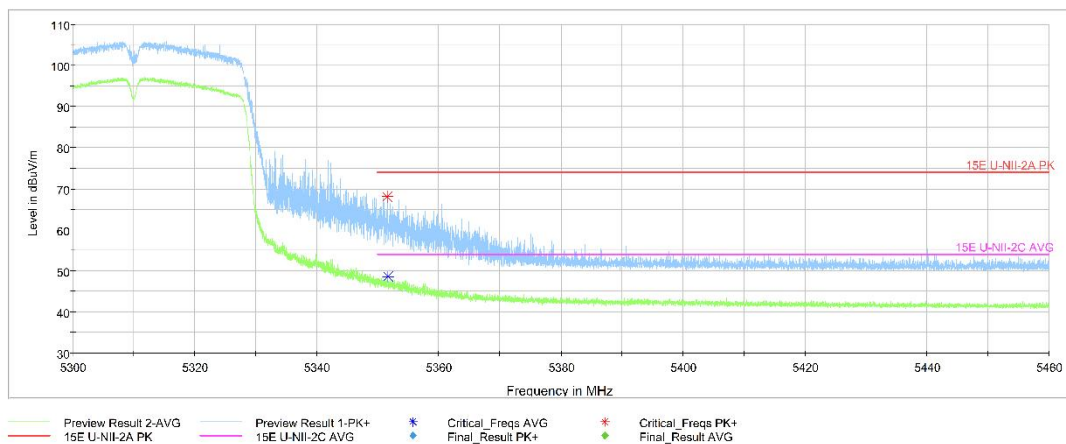


Fig. 18 Band Edges (802.11ac-HT40 Ch62, 5310MHz)

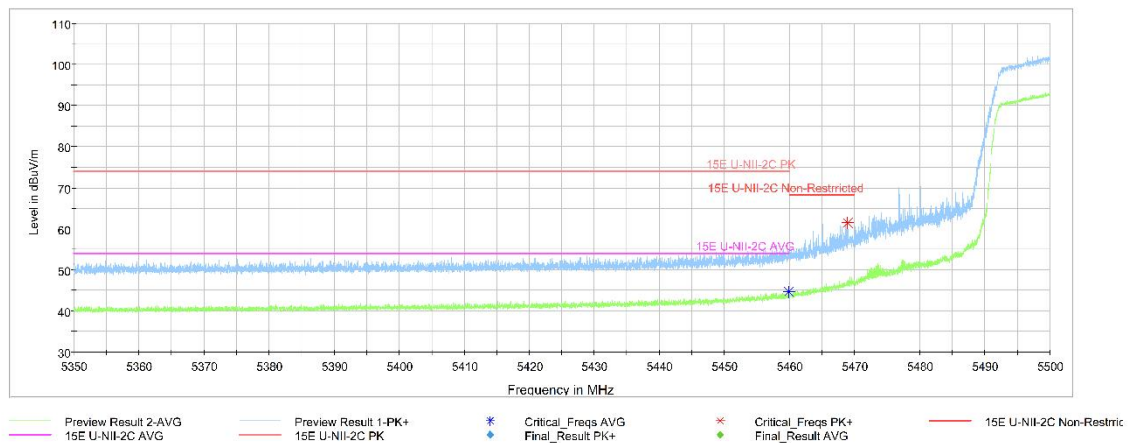


Fig. 19 Band Edges (802.11ac-HT40 Ch102, 5510MHz)

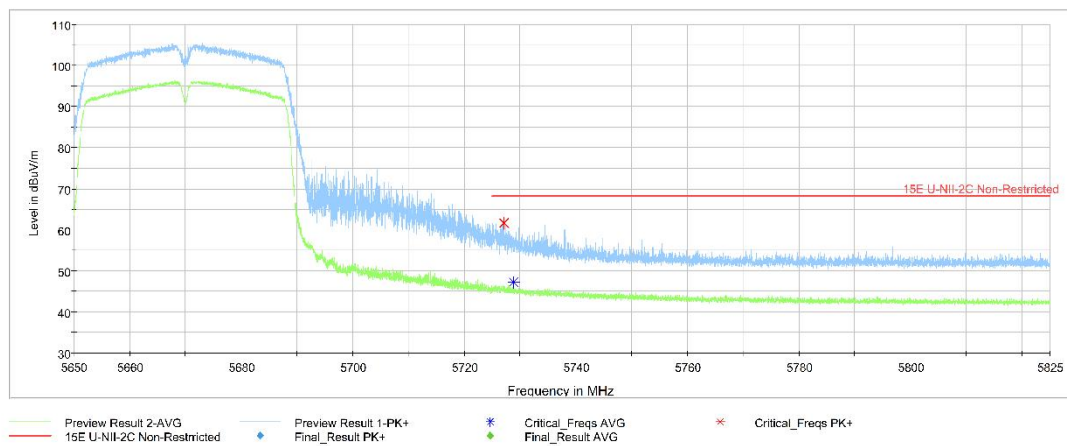


Fig. 20 Band Edges (802.11ac-HT40 Ch134, 5670MHz)

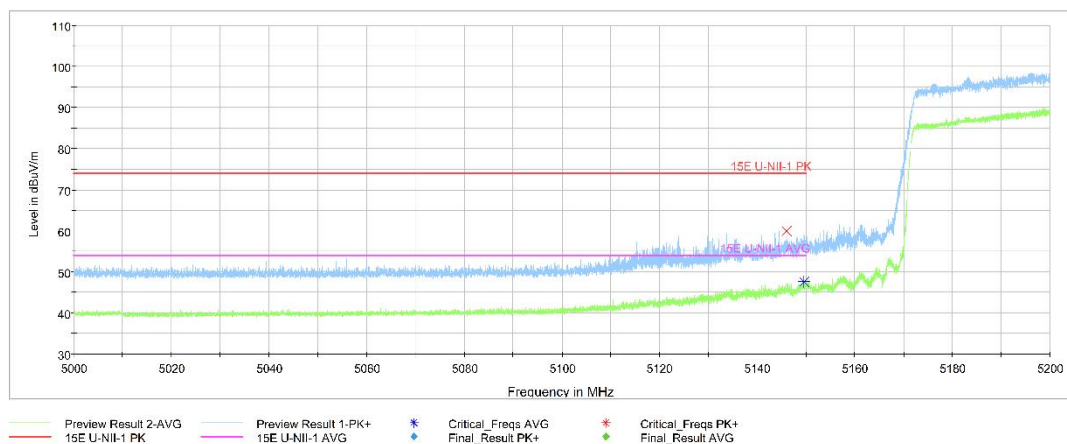


Fig. 21 Band Edges (802.11ac-HT80 Ch42, 5210MHz)

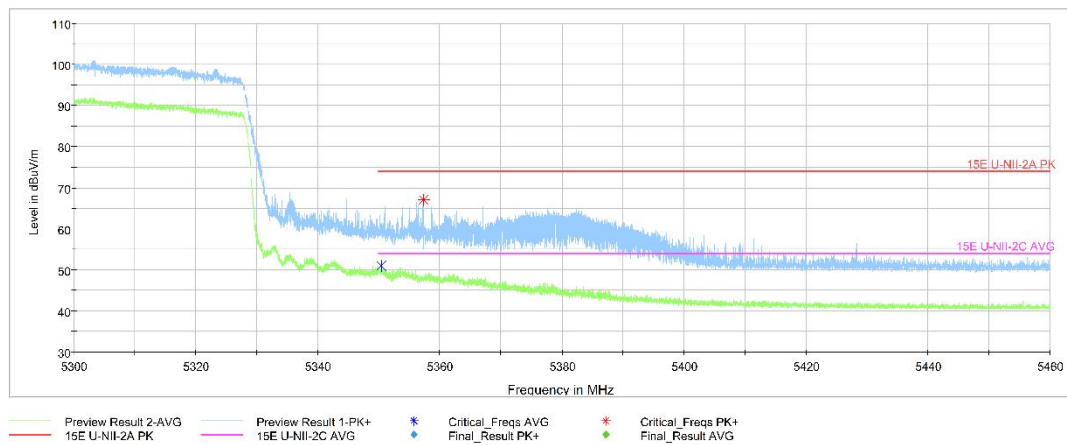


Fig. 22 Band Edges (802.11ac-HT80 Ch58, 5290MHz)

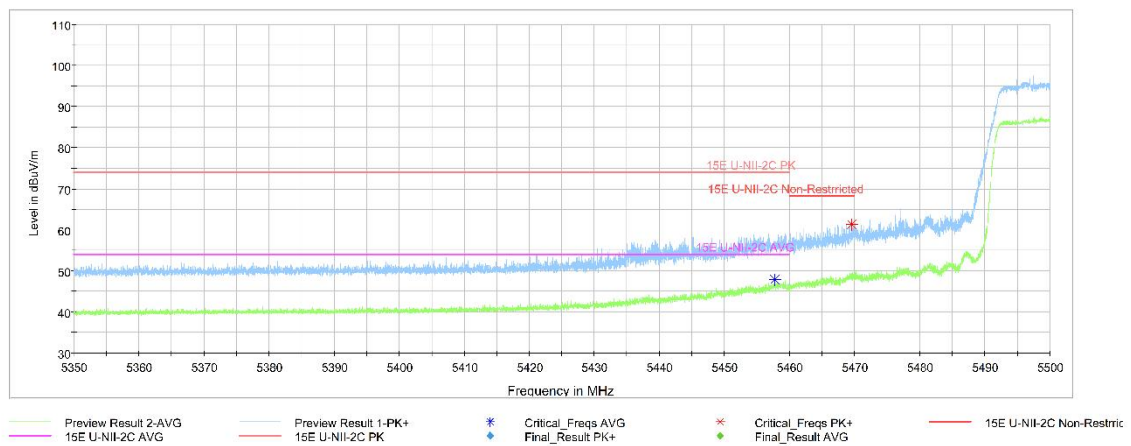


Fig. 23 Band Edges (802.11ac-HT80 Ch106, 5530MHz)

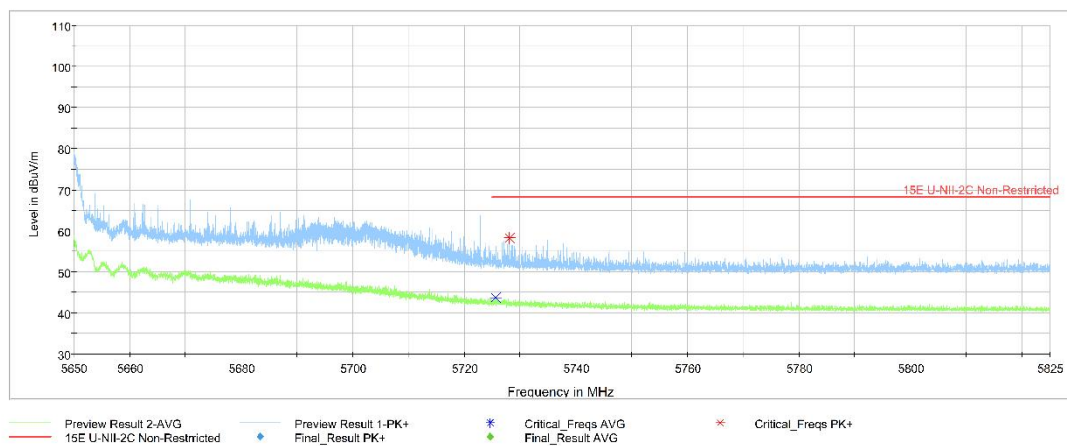


Fig. 24 Band Edges (802.11ac-HT80 Ch122, 5610MHz)

A.6. AC Powerline Conducted Emission (150kHz- 30MHz)

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.

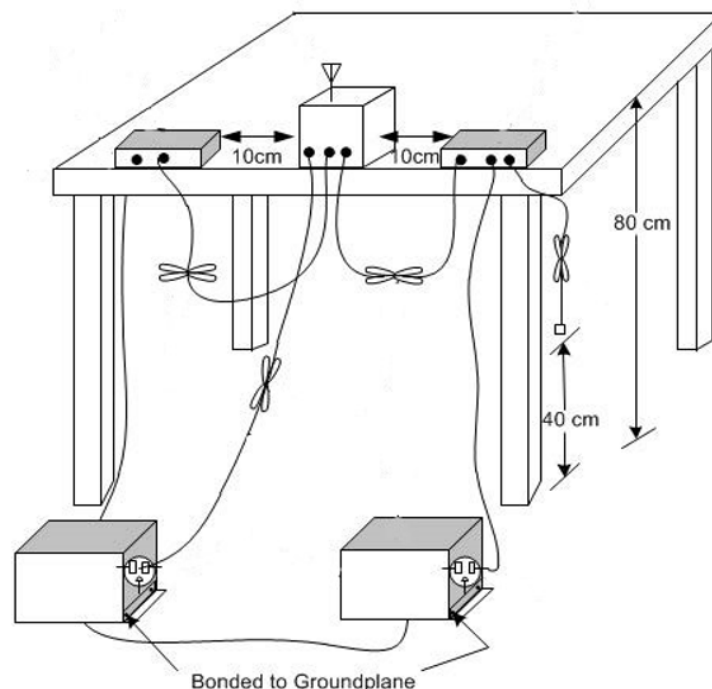
The measurement bandwidth is:

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



Measurement Result and limit:
WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.25	Fig.26	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		
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.25	Fig.26	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.

Conclusion: PASS

Test graphs as below:

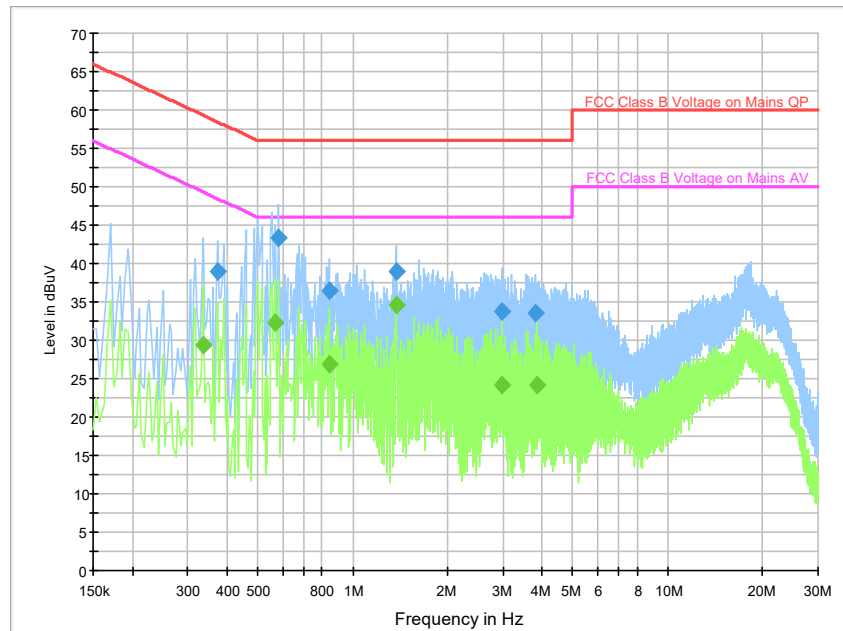


Fig.25 Conducted Emission(802.11a, Ch36, TX)

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.374000	38.9	2000.0	9.000	On	L1	19.9	19.5	58.4	
0.582000	43.4	2000.0	9.000	On	L1	20.0	12.6	56.0	
0.842000	36.5	2000.0	9.000	On	N	19.8	19.5	56.0	
1.370000	38.9	2000.0	9.000	On	L1	19.9	17.1	56.0	
2.974000	33.7	2000.0	9.000	On	L1	19.8	22.3	56.0	
3.818000	33.4	2000.0	9.000	On	L1	19.8	22.6	56.0	

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.334000	29.3	2000.0	9.000	On	L1	19.9	20.0	49.4	
0.566000	32.2	2000.0	9.000	On	N	19.9	13.8	46.0	
0.842000	26.9	2000.0	9.000	On	N	19.8	19.1	46.0	
1.370000	34.7	2000.0	9.000	On	L1	19.9	11.3	46.0	
2.974000	24.1	2000.0	9.000	On	L1	19.8	21.9	46.0	
3.842000	24.1	2000.0	9.000	On	L1	19.8	21.9	46.0	

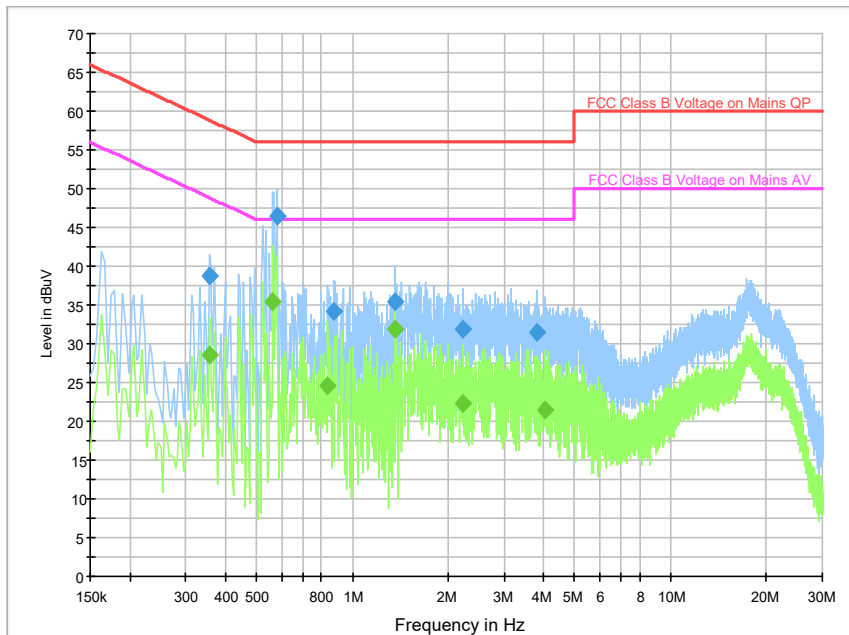


Fig.26 Conducted Emission(802.11a, IDLE)

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.354000	38.8	2000.0	9.000	On	L1	19.9	20.0	58.9	
0.578000	46.4	2000.0	9.000	On	L1	20.0	9.6	56.0	
0.878000	34.2	2000.0	9.000	On	L1	19.9	21.8	56.0	
1.362000	35.5	2000.0	9.000	On	L1	19.9	20.5	56.0	
2.226000	31.9	2000.0	9.000	On	L1	19.8	24.1	56.0	
3.786000	31.4	2000.0	9.000	On	L1	19.8	24.6	56.0	

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.354000	28.6	2000.0	9.000	On	L1	19.9	20.3	48.9	
0.562000	35.4	2000.0	9.000	On	L1	20.0	10.6	46.0	
0.838000	24.6	2000.0	9.000	On	L1	19.9	21.4	46.0	
1.366000	31.9	2000.0	9.000	On	N	19.7	14.1	46.0	
2.226000	22.2	2000.0	9.000	On	L1	19.8	23.8	46.0	
4.054000	21.4	2000.0	9.000	On	L1	19.8	24.6	46.0	

A.7. 99% Occupied bandwidth

Method of Measurement: See ANSI C63.10-2013-clause 12.4.2.

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) 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.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. 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% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
-------------------------	---------

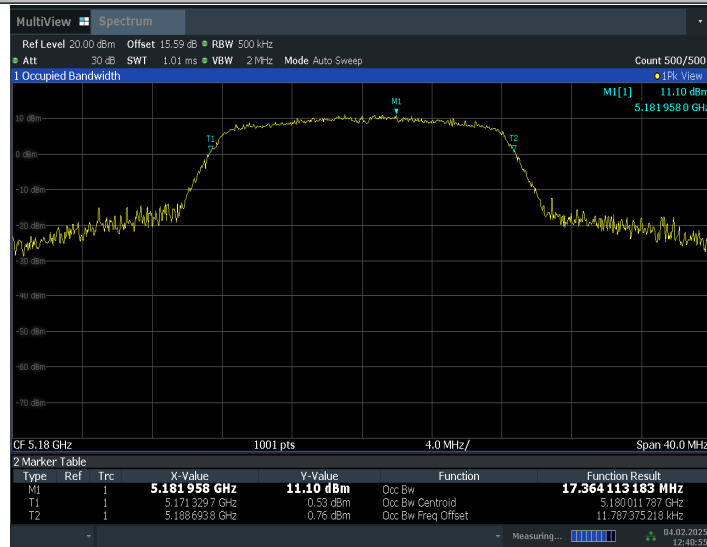
EUT ID: UT08a

Measurement Result:

TestMode	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	5180	17.364	5171.3297	5188.6938	---	---
	5200	17.447	5191.2321	5208.6791	---	---
	5240	17.402	5231.3032	5248.7050	---	---
11AC20SISO	5180	18.082	5170.9491	5189.0312	---	---
	5200	18.216	5190.8615	5209.0770	---	---
	5240	18.258	5230.8686	5249.1268	---	---
11AC40SISO	5190	36.33	5171.8123	5208.1422	---	---
	5230	36.524	5211.7460	5248.2704	---	---
11AC80SISO	5210	75.189	5172.4225	5247.6115	---	---

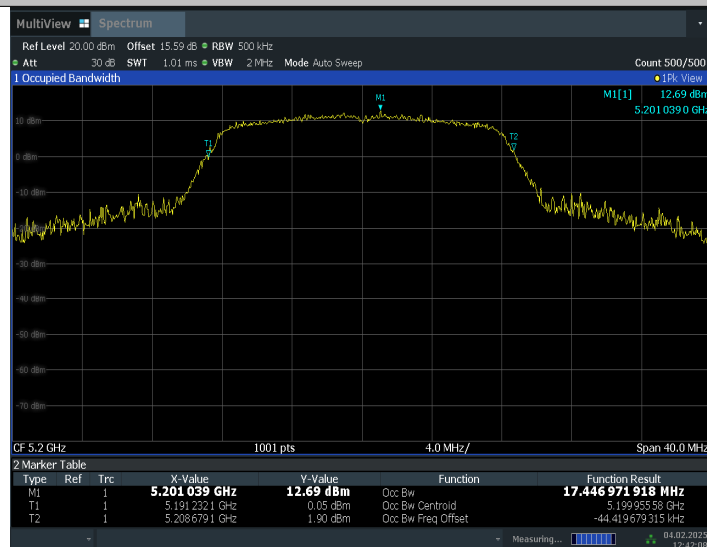
Test graphs as below:

11A_5180



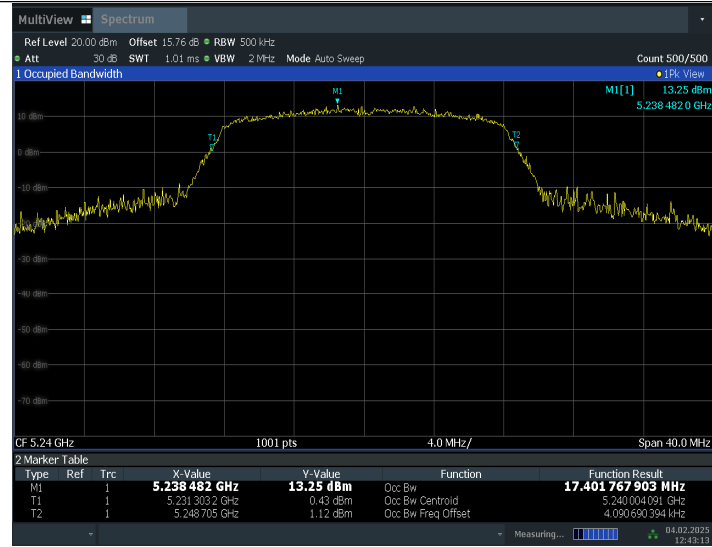
12:40:55 04.02.2025

11A_5200



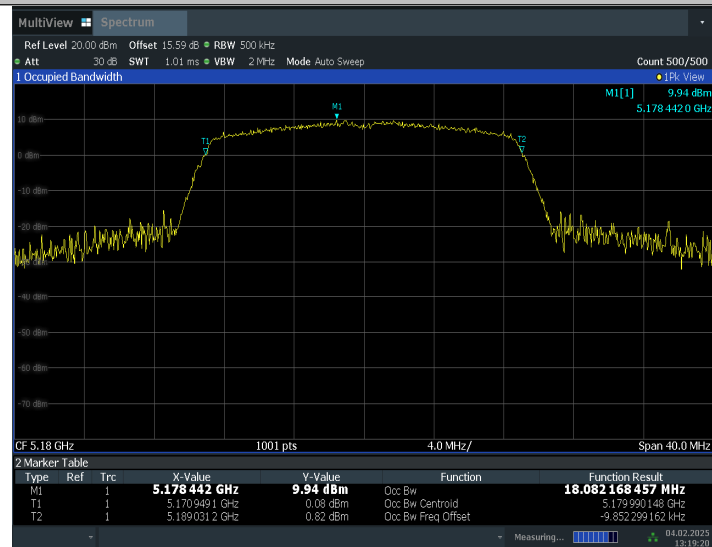
12:42:08 04.02.2025

11A_5240



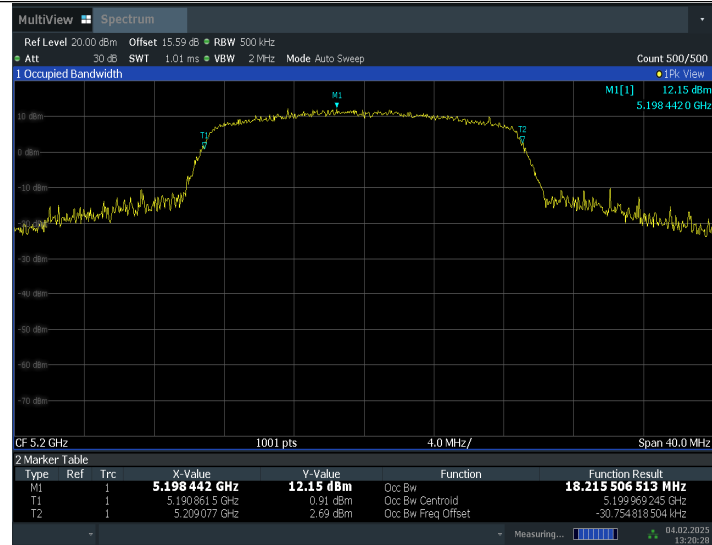
12:43:13 04.02.2025

11AC20SISO_5180



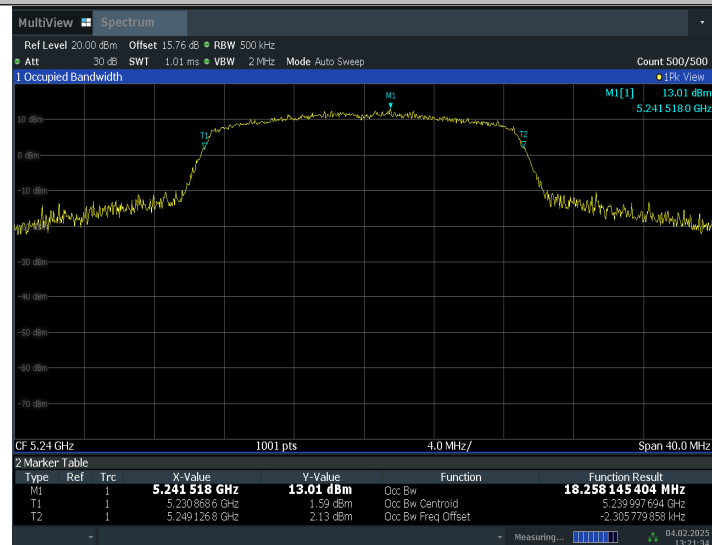
13:19:20 04.02.2025

11AC20SISO_5200



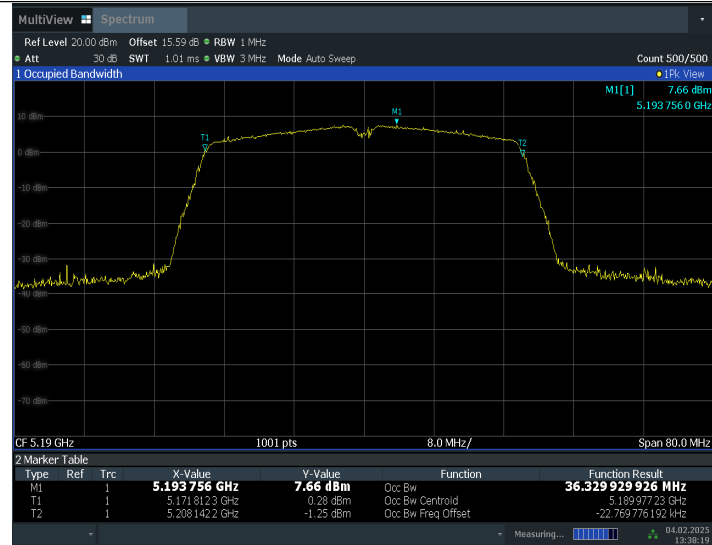
13:20:29 04.02.2025

11AC20SISO_5240



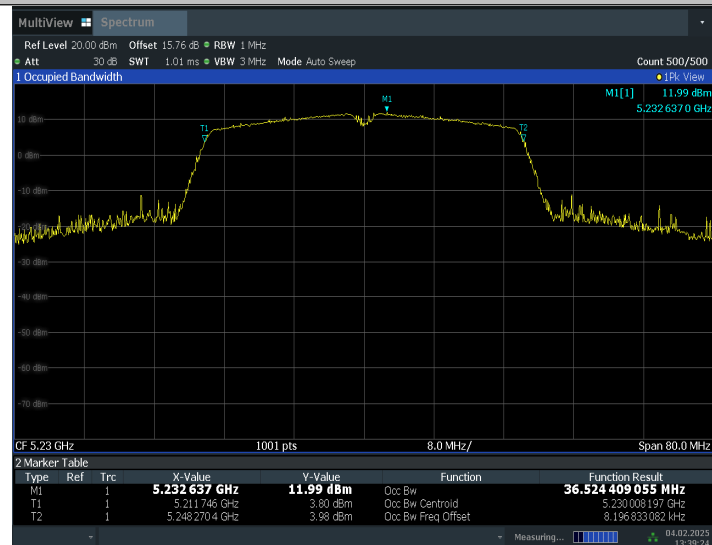
13:21:35 04.02.2025

11AC40SISO_5190



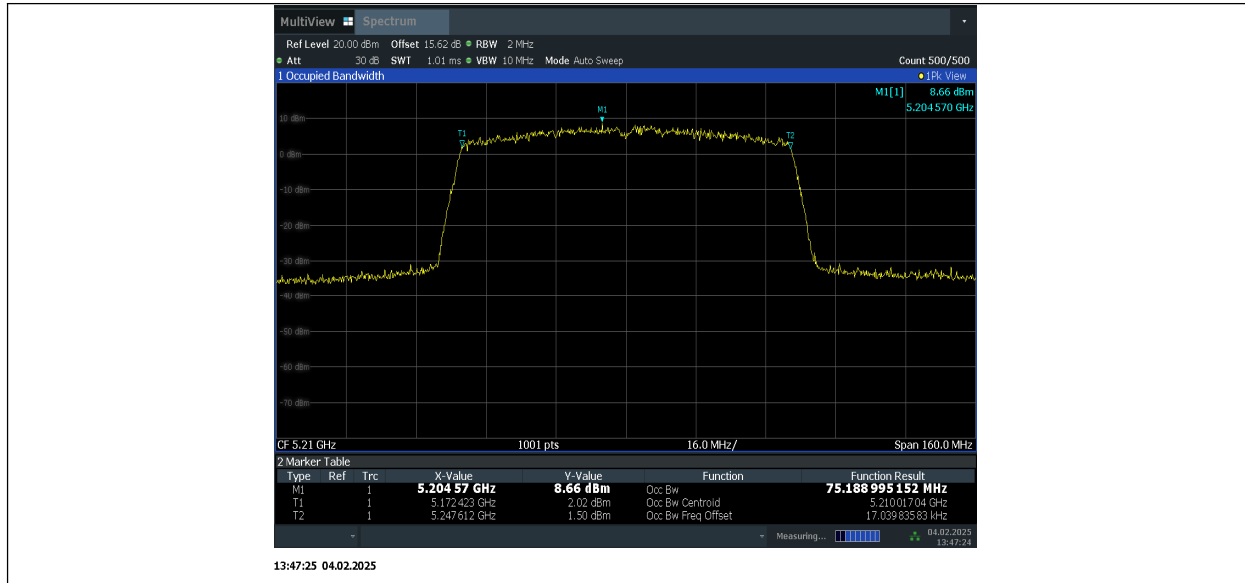
13:38:19 04.02.2025

11AC40SISO_5230



13:39:24 04.02.2025

11AC80SISO_5210



Conclusion: PASS

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.

A.9. Power control

A Transmission Power Control mechanism is not required for systems with an e.i.r.p. of less than 27dBm (500 mW).

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



Accredited Laboratory

A2LA has accredited

TELECOMMUNICATION TECHNOLOGY LABS, CAICT

Beijing, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 23rd day of July 2024.



Mr. Trace McInturf, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 7049.01
Valid to July 31, 2026

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

*** END OF REPORT BODY ***