



FCC PART 15E TEST REPORT No.25T04Z100220-006

for

TCL Communication Ltd.

GSM/UMTS/LTE mobile phone

Model Name: T517A

FCC ID: 2ACCJB236

with

Hardware Version: 05

Software Version: 3A4G

Issued Date: 2025-03-20

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.25T04Z100220-006

REPORT HISTORY

Report Number	Revision	Description	Issue Date
25T04Z100220-006	Rev.0	1st edition	2025-03-20

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
8.1	RADIATED UNWANTED EMISSION.....	11
8.2	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	37
A.5.1 LIMITS	37
A.5.2 TEST SETUP	38
A.5.3 TEST PROCEDURES	39
A.5.4 CALCULATION.....	39
A.6. AC POWERLINE CONDUCTED EMISSION (150kHz- 30MHz).....	61
A.6.1 SUMMARY	61
A.6.2 METHOD OF MEASUREMENT	61
A.6.3 TEST CONDITION	61
A.6.4 TEST SETUP	61
A.8. 99% OCCUPIED BANDWIDTH	65
A.9. POWER CONTROL	82
A.10. ANTENNA REQUIREMENT.....	82
ANNEX B: EUT PARAMETERS.....	83
ANNEX C: ACCREDITATION CERTIFICATE	83

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

Location 1:CTTL(Gaolizhang Road)

Address: Cuihu Cloud Center, No.1, Gaolizhang Road, Wenquan,
Haidian District, Beijing, China

Location 2: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

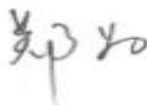
Testing Start Date: 2025-02-10

Testing End Date: 2025-03-20

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: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Contact: Ting Wang
Email: ting.wang.hz@tcl.com
Telephone: +86 752 2639091
Fax: +86 755 36612000-81722

2.2 Manufacturer Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Contact: Ting Wang
Email: ting.wang.hz@tcl.com
Telephone: +86 752 2639091
Fax: +86 755 36612000-81722

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

3.1. About EUT

Description	GSM/UMTS/LTE mobile phone
Model name	T517A
FCC ID	2ACCJB236
WLAN Frequency Band	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Nominal Voltage	3.91V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
UT07a	351434670000138	05	3A4G	2025-03-10
	351434670000146			
UT13a	351434670000377	05	3A4G	2025-03-10
	351434670000385			

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

UT07a is used for Conduction test, UT65a is used for Radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	Manufacturer
AE1	Battery1	TLp050C7	Dongguan Veken Battery Co., Ltd.
AE2	Battery2	TLp050CB	Shenzhen Aerospace Electronic Co., Ltd.
AE3	Charger1	QC13US-N	ShenZhen BajunDa Electronics Co.,Ltd
AE4	USB Cable1	JWUB1686-M01R	Huizhou Juwei Electronics Co.,Ltd
AE5	USB Cable2	FKY-23-367	Qiyang Fukangyuan Electronic Technology Co., 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 GSM/UMTS/LTE 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
Occupied 26dB 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	3.91V
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	Test Receiver	ESCI	100344	R&S	1 year	2025-04-01
4	LISN	ENV216	101200	R&S	1 year	2025-05-16
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	2025-03-21

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

8.1 Radiated Unwanted Emission

Frequency Range	Uncertainty(dB) (k=2)
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

8.2 AC Power-line Conducted Emission

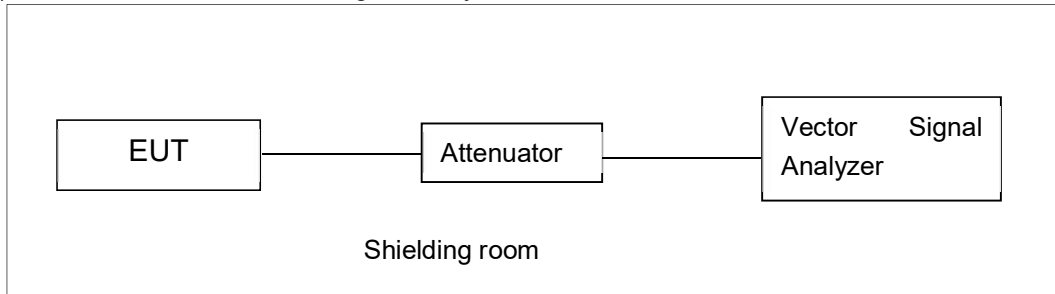
Measurement Uncertainty : 3.08dB,k=2

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 -0.8dBi and the value is supplied by the applicant or manufacturer.

A.2.2 Maximum output Power-Conducted

EUT ID: UT07a

Measurement Results:

802.11a mode

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	17.30	/	/	/	/	/	/	/
	5200MHz	17.65	/	/	/	/	/	/	/
	5240MHz	17.70	/	/	/	/	/	/	/
	5260MHz	17.36	/	/	/	/	/	/	/
	5280MHz	17.80	/	/	/	/	/	/	/
	5320MHz	17.31	/	/	/	/	/	/	/
	5500MHz	17.07	/	/	/	/	/	/	/
	5580MHz	17.00	/	/	/	/	/	/	/
	5700MHz	16.01	/	/	/	/	/	/	/
	5720MHz	17.06	/	/	/	/	/	/	/

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	16.75	/	/	/	/	/	/	/
	5200MHz	17.09	/	/	/	/	/	/	/
	5240MHz	17.00	/	/	/	/	/	/	/
	5260MHz	16.72	/	/	/	/	/	/	/
	5280MHz	17.03	/	/	/	/	/	/	/
	5320MHz	16.61	/	/	/	/	/	/	/

	5500MHz	16.65	/	/	/	/	/	/	/
	5580MHz	16.50	/	/	/	/	/	/	/
	5700MHz	15.30	/	/	/	/	/	/	/
	5720MHz	16.56	/	/	/	/	/	/	/

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	14.58	/	/	/	/	/	/	/	/
	5200MHz	14.86	/	/	/	/	/	/	/	/
	5240MHz	14.97	/	/	/	/	/	/	/	/
	5260MHz	14.71	/	/	/	/	/	/	/	/
	5280MHz	14.87	/	/	/	/	/	/	/	/
	5320MHz	14.69	/	/	/	/	/	/	/	/
	5500MHz	14.87	/	/	/	/	/	/	/	/
	5580MHz	14.29	/	/	/	/	/	/	/	/
	5700MHz	14.81	/	/	/	/	/	/	/	/
	5720MHz	14.43	/	/	/	/	/	/	/	/

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	16.54	/	/	/	/	/	/	/
	5230MHz	16.66	/	/	/	/	/	/	/
	5270MHz	16.76	/	/	/	/	/	/	/
	5310MHz	15.36	/	/	/	/	/	/	/
	5510MHz	13.66	/	/	/	/	/	/	/
	5550MHz	16.32	/	/	/	/	/	/	/
	5670MHz	16.25	/	/	/	/	/	/	/
	5710MHz	16.51	/	/	/	/	/	/	/

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	14.71	/	/	/	/	/	/	/	/	/
	5230MHz	14.85	/	/	/	/	/	/	/	/	/
	5270MHz	14.83	/	/	/	/	/	/	/	/	/
	5310MHz	14.71	/	/	/	/	/	/	/	/	/
	5510MHz	14.79	/	/	/	/	/	/	/	/	/
	5550MHz	14.53	/	/	/	/	/	/	/	/	/
	5670MHz	14.43	/	/	/	/	/	/	/	/	/
	5710MHz	14.64	/	/	/	/	/	/	/	/	/

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	14.74	/	/	/	/	/	/	/	/	/
	5290MHz	14.77	/	/	/	/	/	/	/	/	/
	5530MHz	12.98	/	/	/	/	/	/	/	/	/
	5610MHz	14.15	/	/	/	/	/	/	/	/	/
	5690MHz	14.59	/	/	/	/	/	/	/	/	/

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

The duty cycle of all mode are 100%



Maximum output Power

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

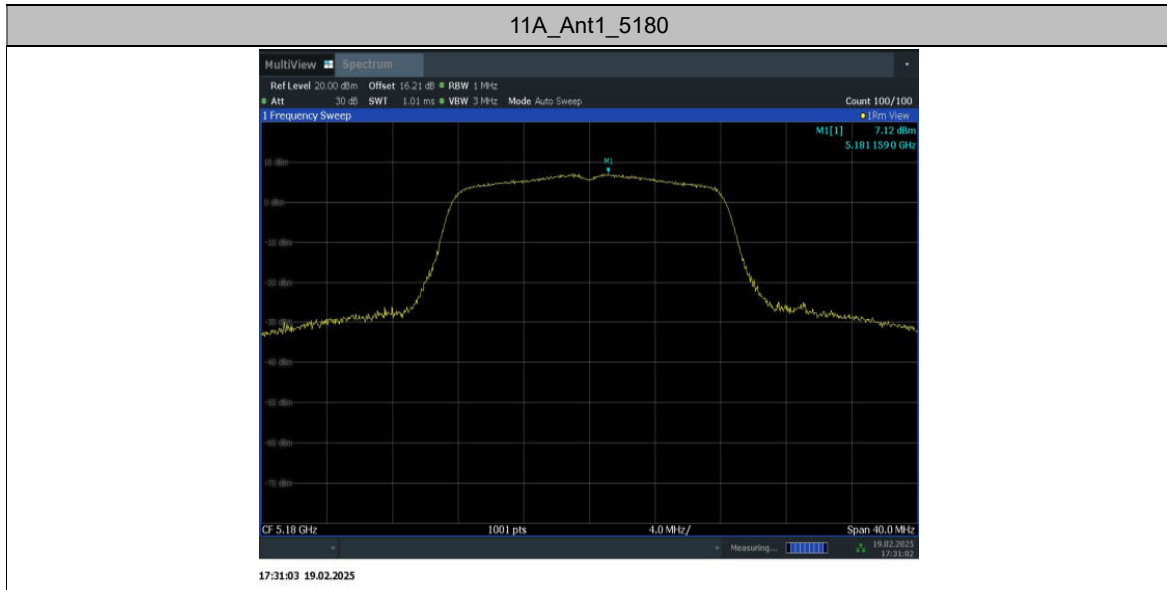
The output power measurement method Section F is made according to KDB 789033

EUT ID: UT07a

Measurement Results:

TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	7.12	≤11.00	PASS
		5200	7.48	≤11.00	PASS
		5240	7.50	≤11.00	PASS
		5260	7.20	≤11.00	PASS
		5280	7.58	≤11.00	PASS
		5320	7.01	≤11.00	PASS
		5500	7.15	≤11.00	PASS
		5580	6.41	≤11.00	PASS
		5700	7.02	≤11.00	PASS
		5720	6.98	≤11.00	PASS
11N20SISO	Ant1	5180	6.31	≤11.00	PASS
		5200	6.79	≤11.00	PASS
		5240	7.01	≤11.00	PASS
		5260	6.24	≤11.00	PASS
		5280	6.79	≤11.00	PASS
		5320	6.12	≤11.00	PASS
		5500	6.19	≤11.00	PASS
		5580	5.88	≤11.00	PASS
		5700	6.54	≤11.00	PASS
		5720	6.48	≤11.00	PASS
11N40SISO	Ant1	5190	3.68	≤11.00	PASS
		5230	3.79	≤11.00	PASS
		5270	3.66	≤11.00	PASS
		5310	3.22	≤11.00	PASS
		5510	3.36	≤11.00	PASS
		5550	2.97	≤11.00	PASS
		5670	3.07	≤11.00	PASS
		5710	3.52	≤11.00	PASS
11AC80SISO	Ant1	5210	-1.75	≤11.00	PASS
		5290	-1.50	≤11.00	PASS

		5530	-1.84	≤ 11.00	PASS
		5610	-2.02	≤ 11.00	PASS
		5690	-1.68	≤ 11.00	PASS



Peak Power Spectral Density

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
-------------------------	---------

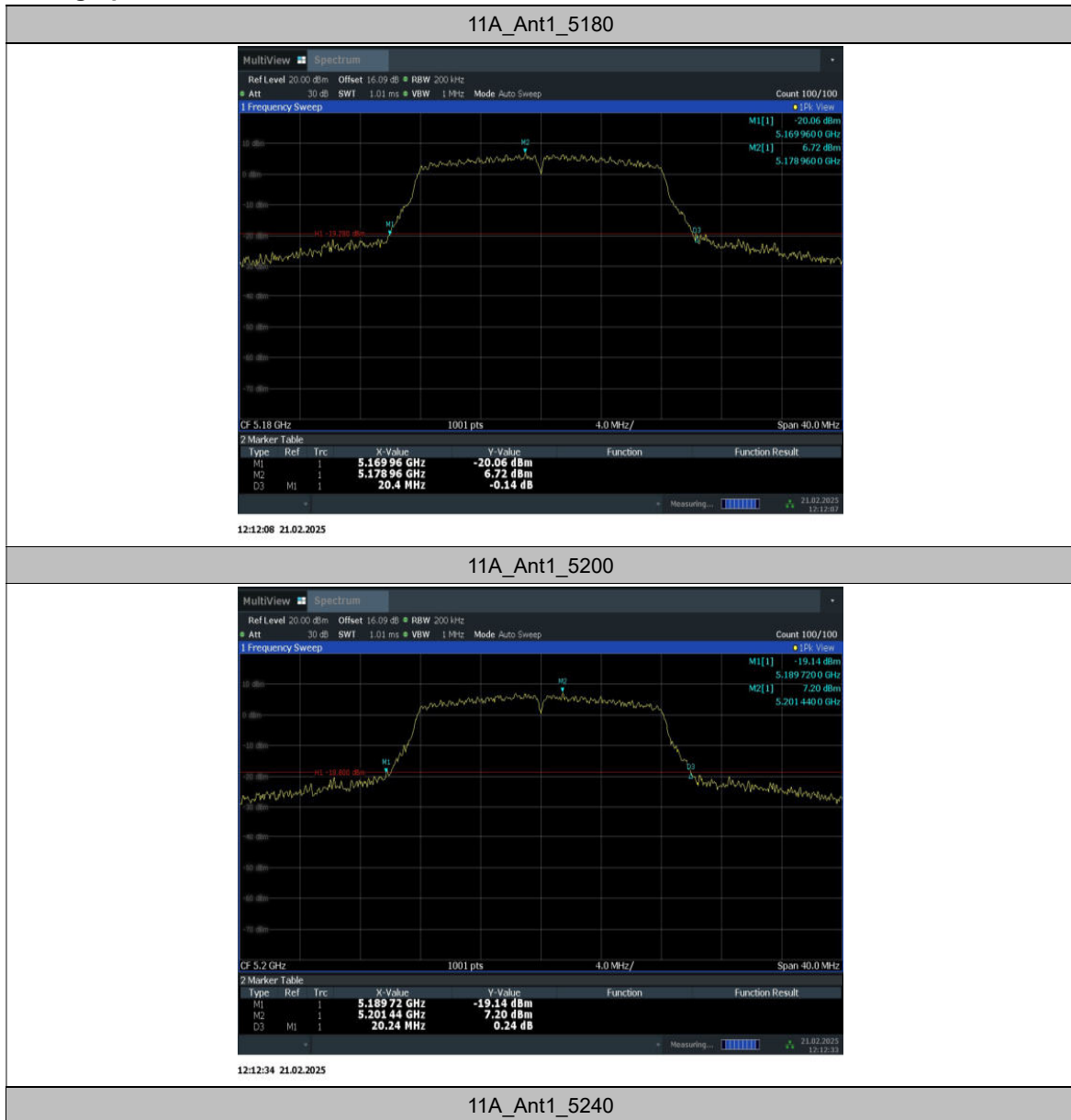
EUT ID: UT07a

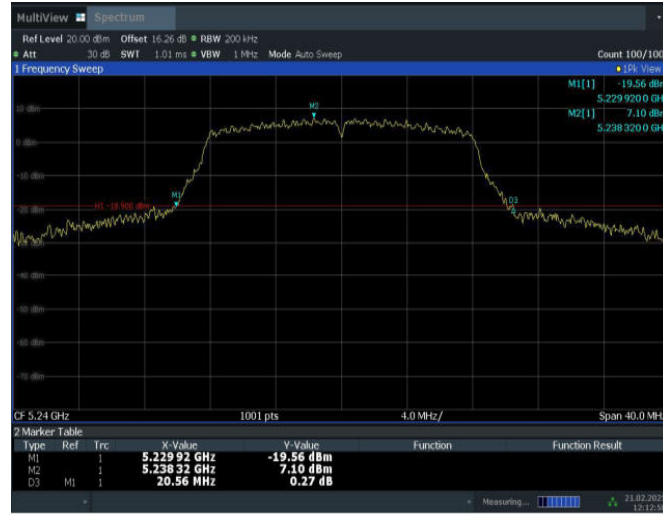
Measurement Result:

TestMode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	20.40	5169.96	5190.36	---	---
		5200	20.24	5189.72	5209.96	---	---
		5240	20.56	5229.92	5250.48	---	---
		5260	20.96	5249.96	5270.92	---	---
		5280	20.04	5269.92	5289.96	---	---
		5320	22.72	5309.76	5332.48	---	---
		5500	22.68	5489.52	5512.20	---	---
		5580	22.96	5567.48	5590.44	---	---
		5700	21.64	5688.88	5710.52	---	---
		5720	21.92	5709.20	5731.12	---	---
11N20SISO	Ant1	5180	20.60	5169.68	5190.28	---	---
		5200	20.48	5189.72	5210.20	---	---
		5240	22.44	5228.28	5250.72	---	---
		5260	21.68	5249.68	5271.36	---	---
		5280	20.40	5269.72	5290.12	---	---
		5320	22.52	5309.80	5332.32	---	---
		5500	21.28	5489.24	5510.52	---	---
		5580	20.64	5569.60	5590.24	---	---
		5700	20.80	5689.52	5710.32	---	---
		5720	21.28	5709.12	5730.40	---	---
11N40SISO	Ant1	5190	40.56	5169.68	5210.24	---	---
		5230	41.04	5209.44	5250.48	---	---
		5270	41.28	5249.44	5290.72	---	---
		5310	41.36	5289.36	5330.72	---	---
		5510	41.12	5489.44	5530.56	---	---
		5550	41.20	5529.52	5570.72	---	---
		5670	41.12	5649.44	5690.56	---	---
		5710	41.60	5689.12	5730.72	---	---
11AC80SISO	Ant1	5210	81.76	5169.04	5250.80	---	---
		5290	81.28	5249.52	5330.80	---	---

		5530	81.44	5489.20	5570.64	---	---
		5610	81.60	5569.04	5650.64	---	---
		5690	81.60	5649.20	5730.80	---	---

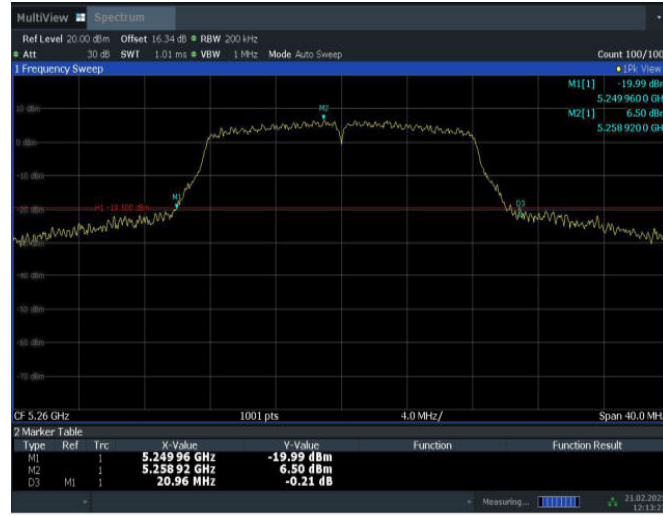
Test graphs as below:





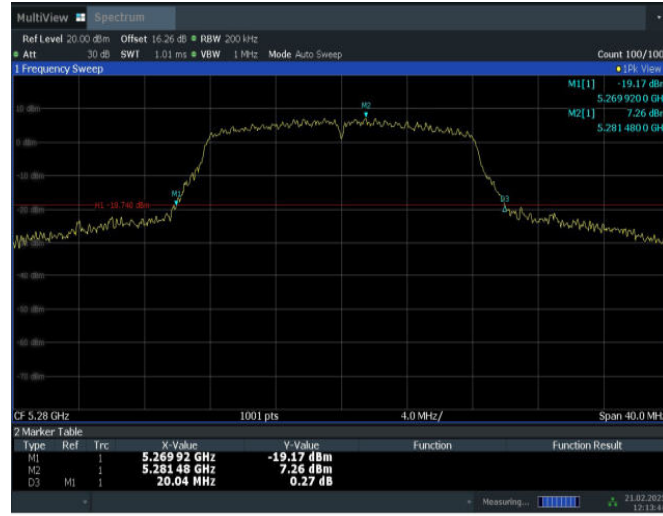
12:12:59 21.02.2025

11A_Ant1_5260

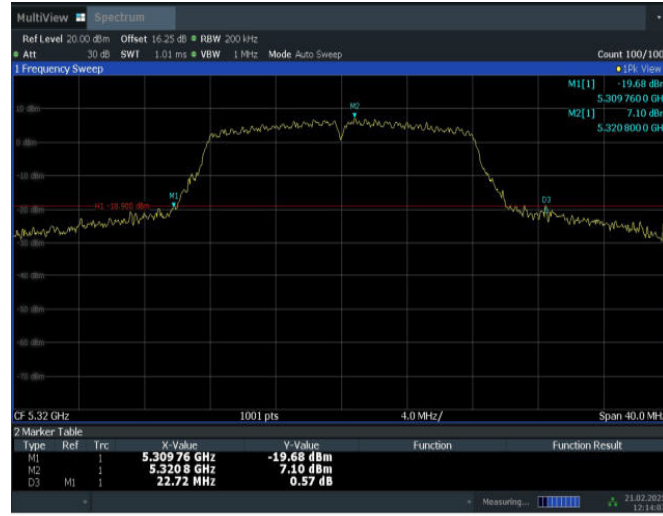


12:13:22 21.02.2025

11A_Ant1_5280



11A_Ant1_5320

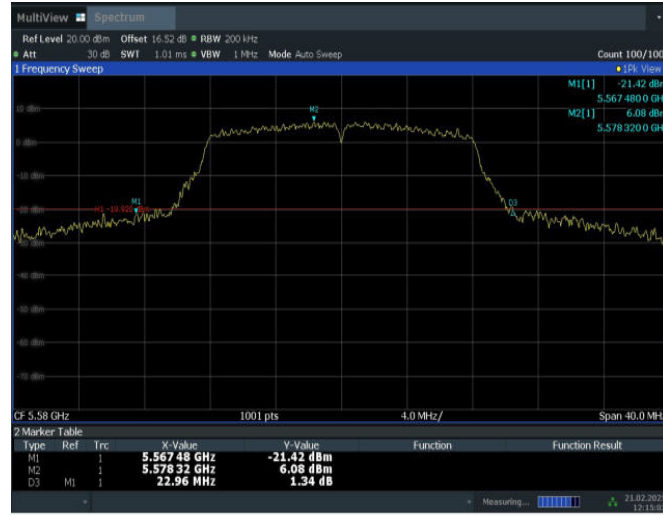


11A_Ant1_5500



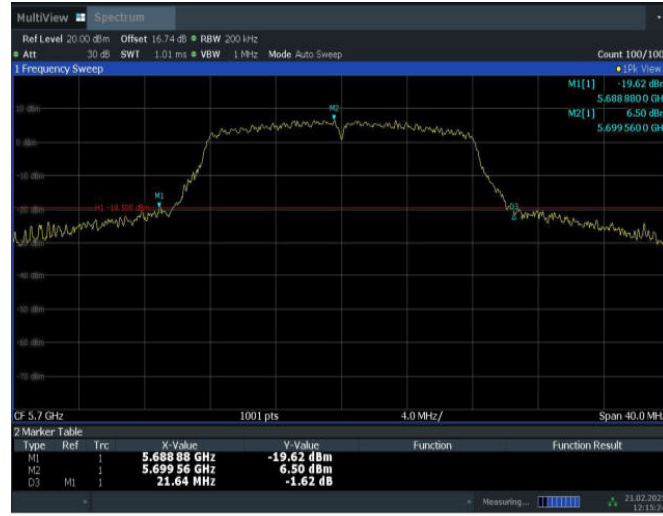
12:14:30 21.02.2025

11A_Ant1_5580



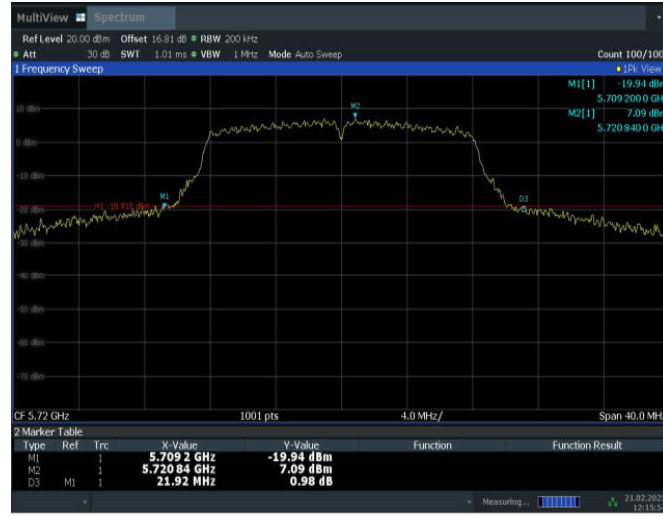
12:15:03 21.02.2025

11A_Ant1_5700



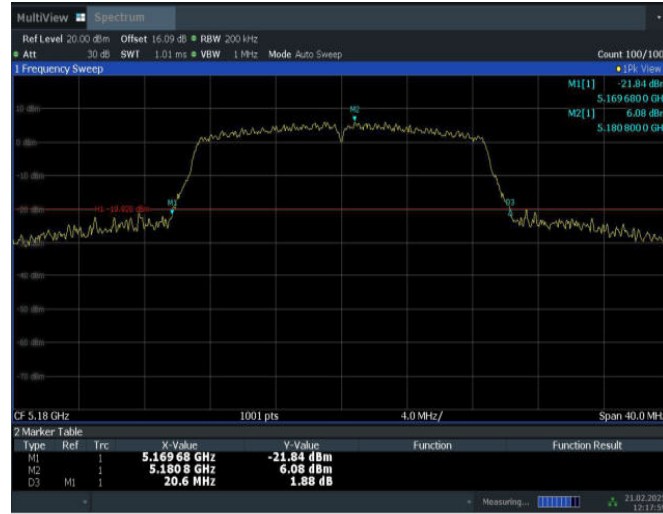
12:15:25 21.02.2025

11A_Ant1_5720



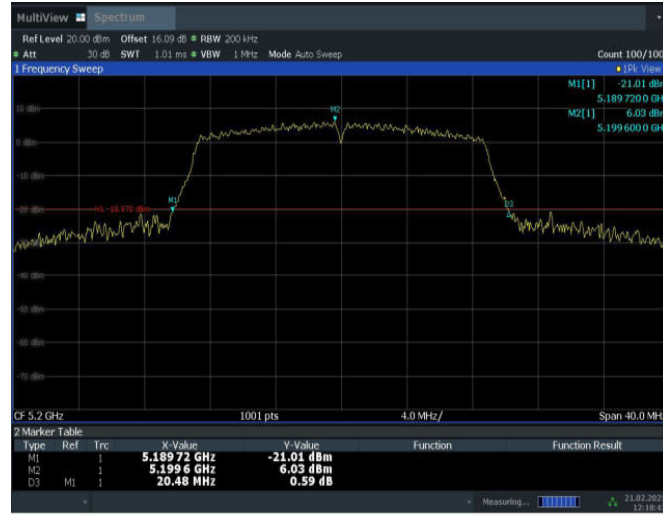
12:15:55 21.02.2025

11N20ISO_Ant1_5180



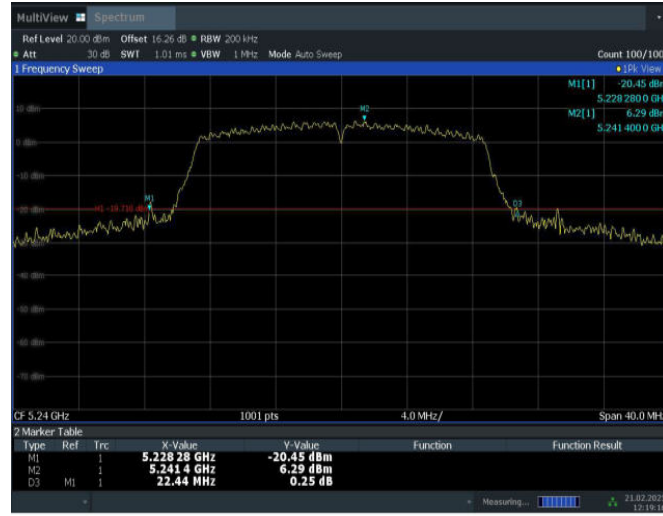
12:17:59 21.02.2025

11N20SISO_Ant1_5200



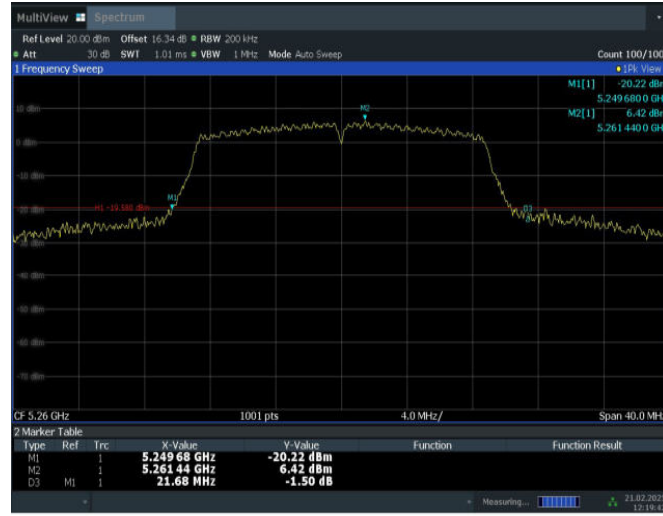
12:18:44 21.02.2025

11N20SISO_Ant1_5240



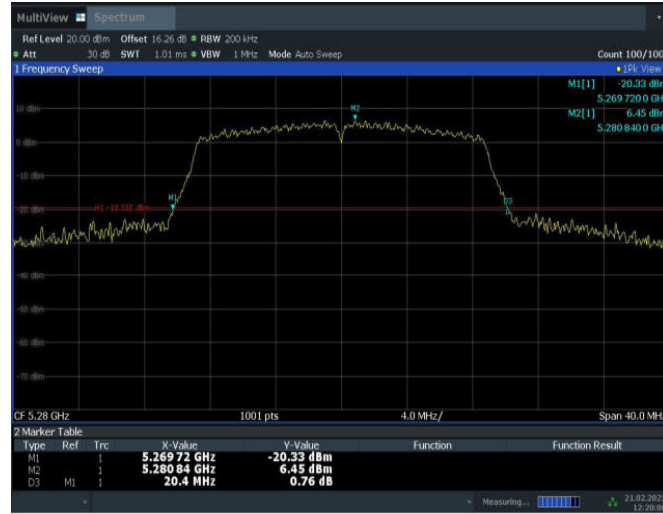
12:19:17 21.02.2025

11N20SISO_Ant1_5260



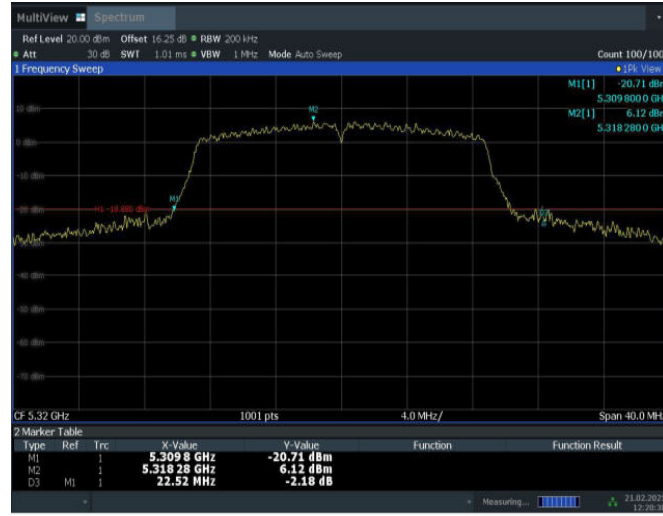
12:19:42 21.02.2025

11N20SISO_Ant1_5280



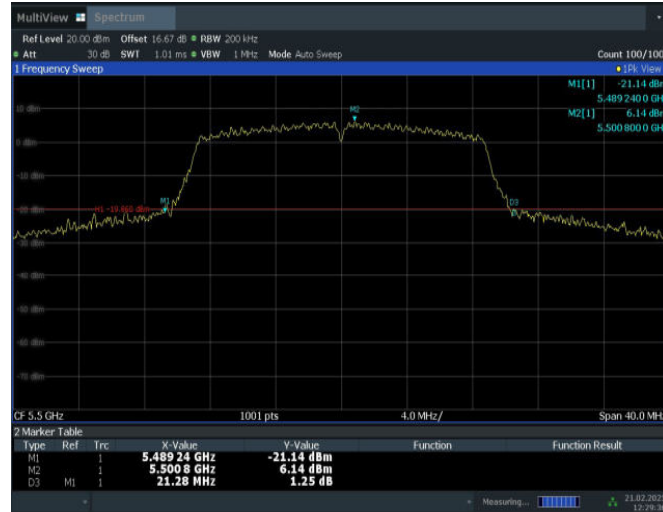
12:20:07 21.02.2025

11N20SISO_Ant1_5320



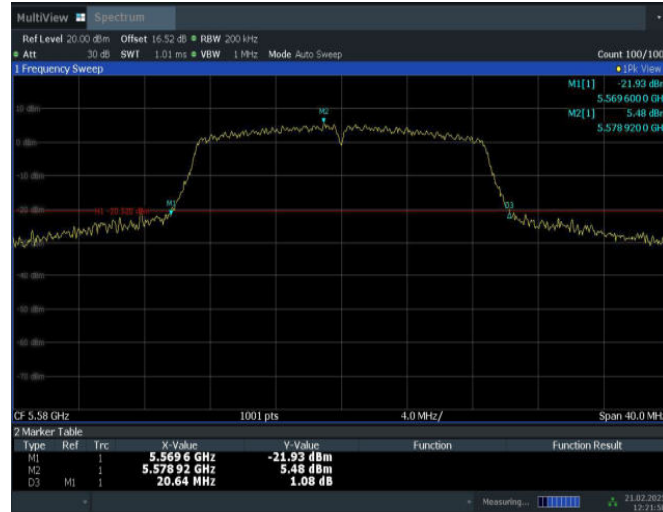
12:20:38 21.02.2025

11N20SISO_Ant1_5500



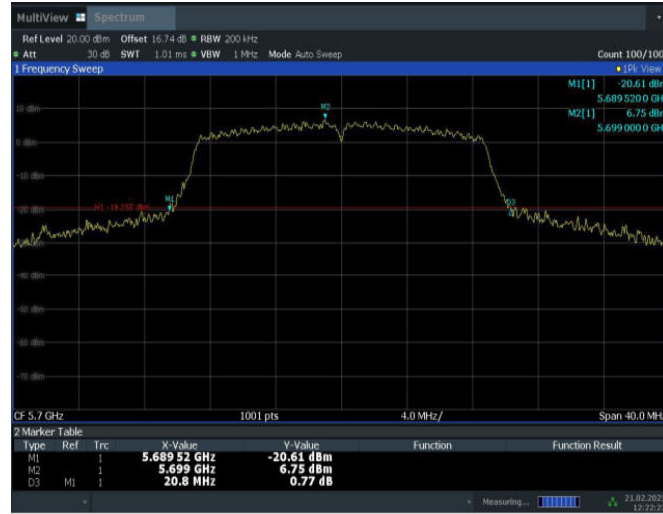
12:29:37 21.02.2025

11N20ISO_Ant1_5580



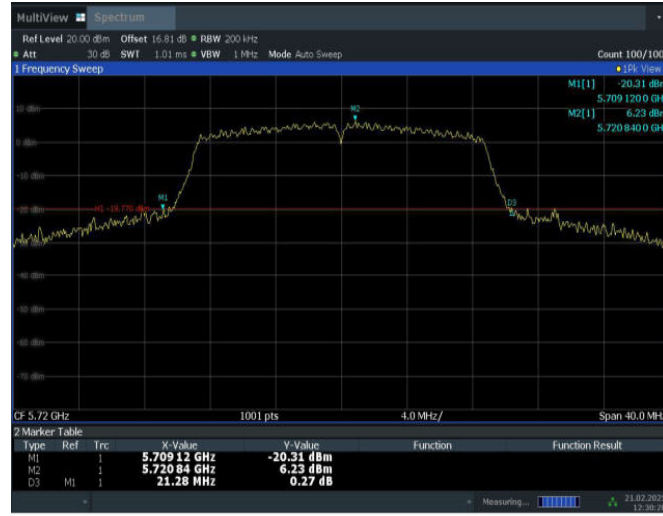
12:21:59 21.02.2025

11N20ISO_Ant1_5700



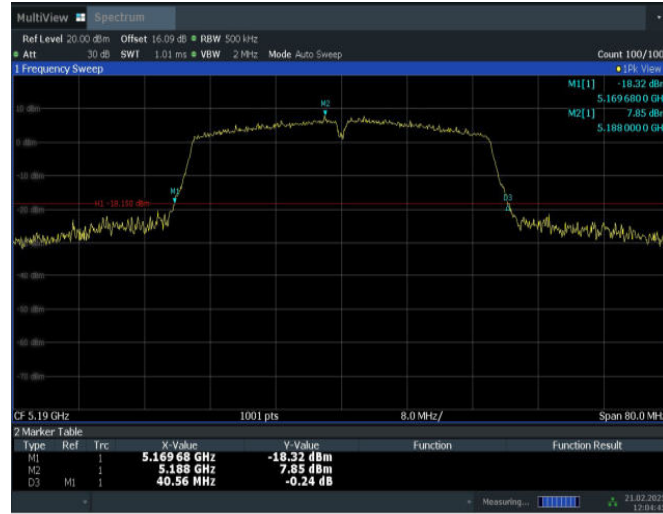
12:22:24 21.02.2025

11N20SISO_Ant1_5720



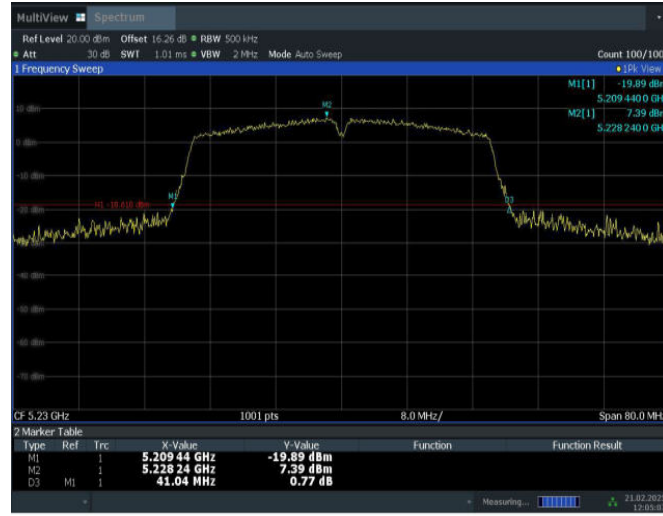
12:30:28 21.02.2025

11N40SISO_Ant1_5190



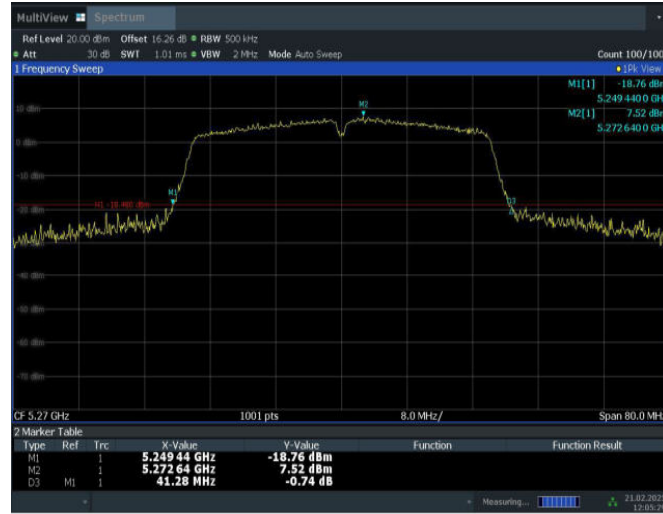
12:04:45 21.02.2025

11N40ISO_Ant1_5230



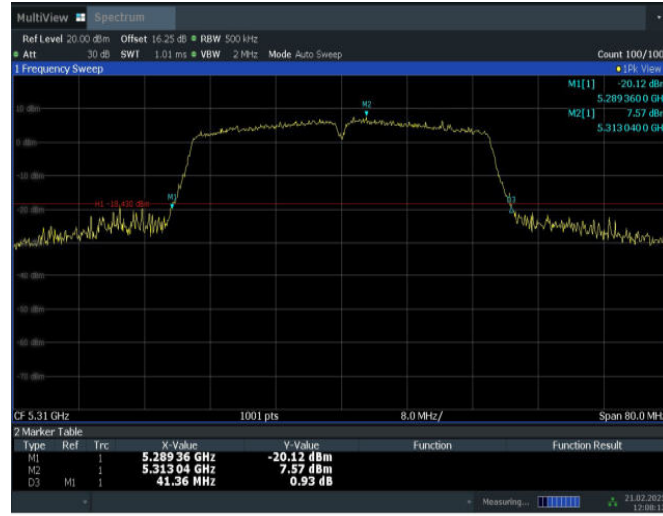
12:05:08 21.02.2025

11N40ISO_Ant1_5270



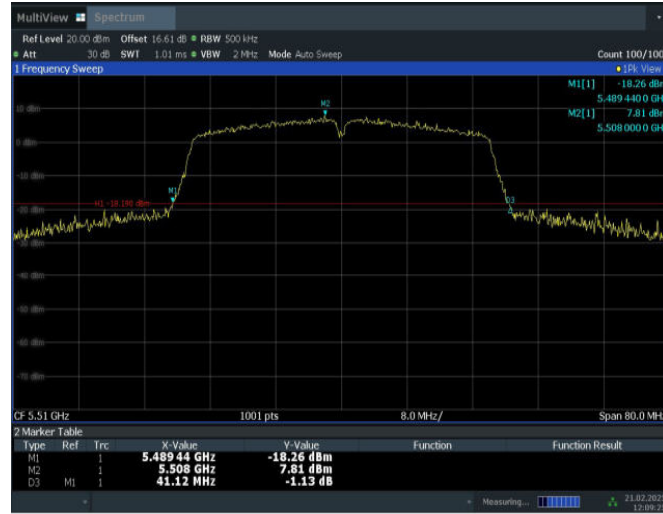
12:05:30 21.02.2025

11N40ISO_Ant1_5310



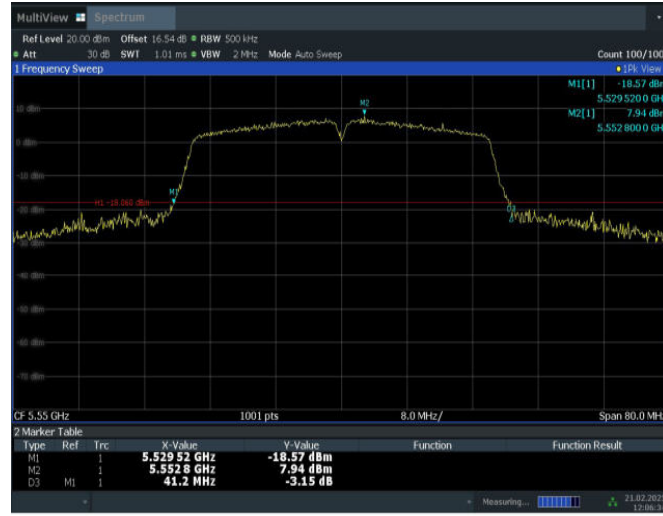
12:08:14 21.02.2025

11N40ISO_Ant1_5510



12:09:26 21.02.2025

11N40ISO_Ant1_5550



12:06:34 21.02.2025

11N40ISO_Ant1_5670



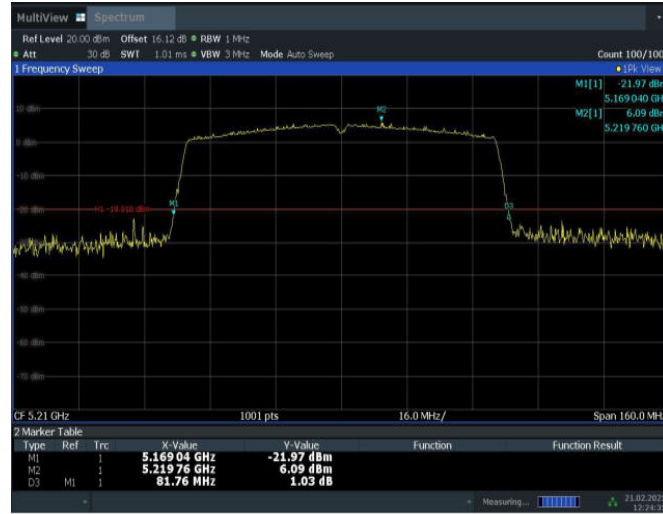
12:10:13 21.02.2025

11N40SISO_Ant1_5710



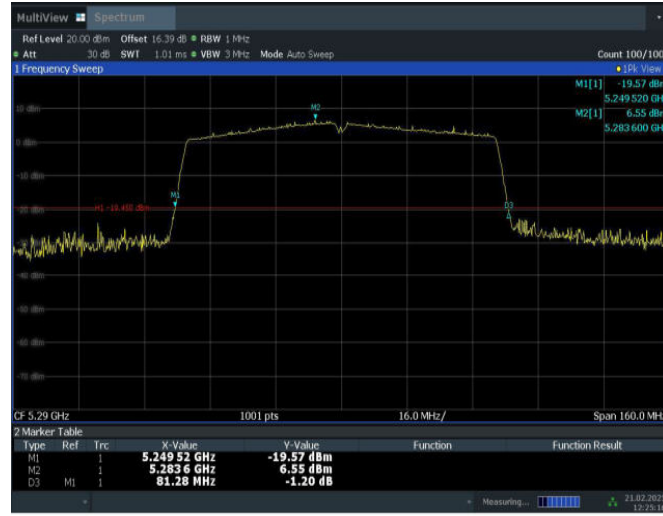
12:07:26 21.02.2025

11AC80SISO_Ant1_5210



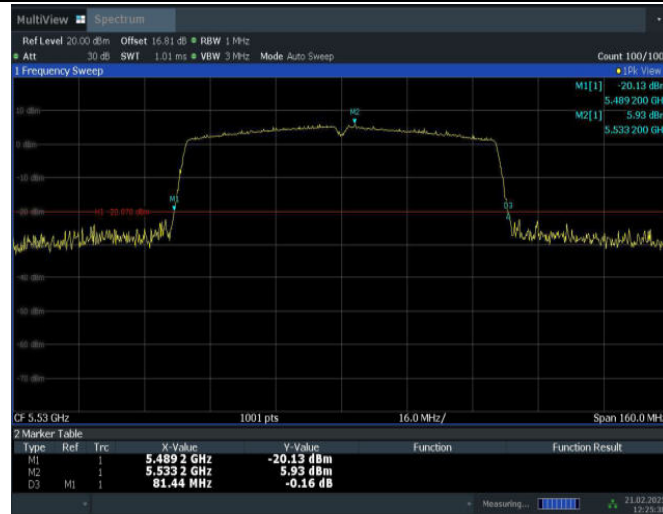
12:24:36 21.02.2025

11AC80SISO_Ant1_5290



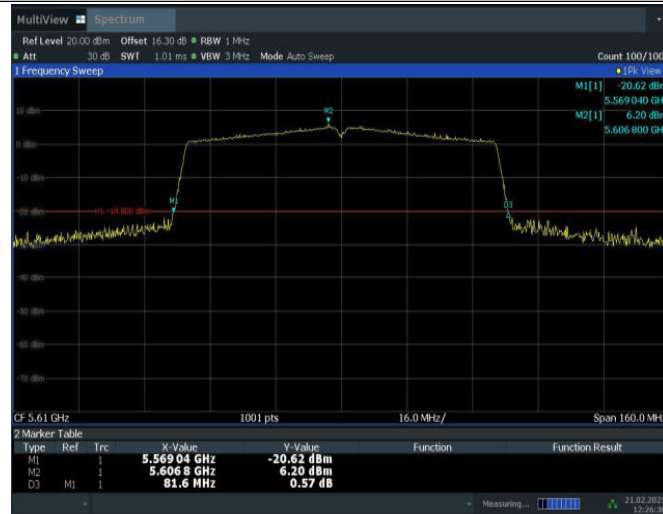
12:25:16 21.02.2025

11AC80SISO_Ant1_5530



12:25:39 21.02.2025

11AC80SISO_Ant1_5610



12:26:30 21.02.2025

11AC80SISO_Ant1_5690



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

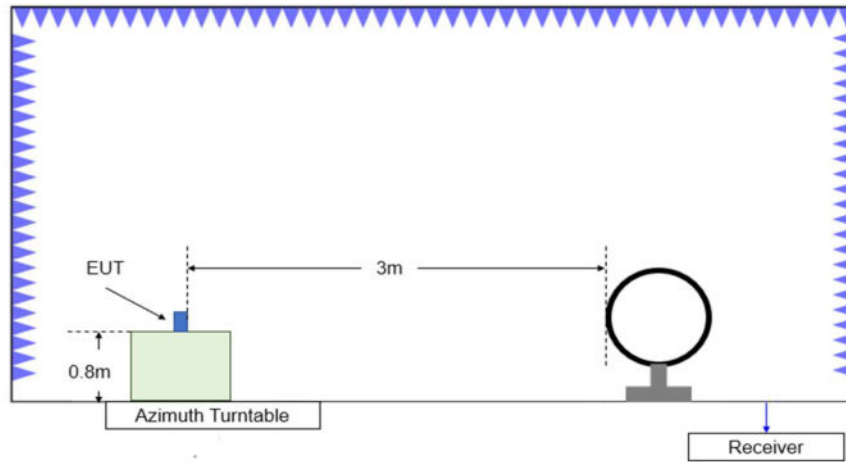


Figure A.5.1. Test Site Diagram (9kHz-30MHz)

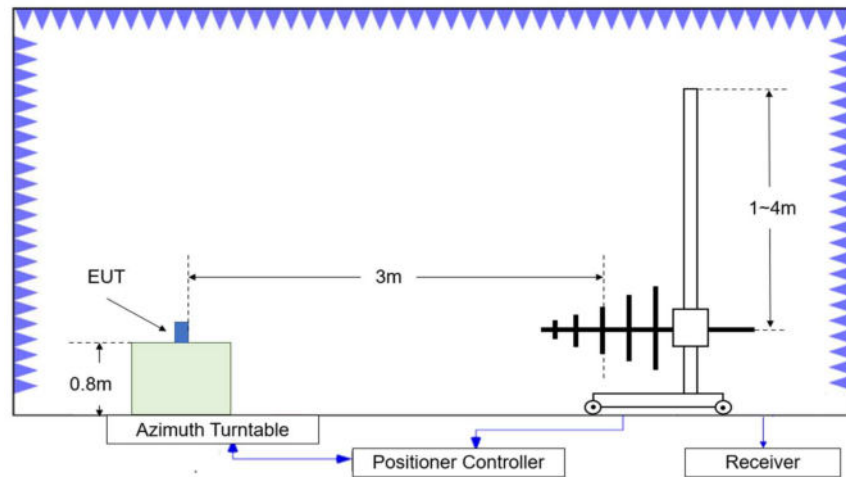


Figure A.5.2. Test Site Diagram (30MHz-1GHz)

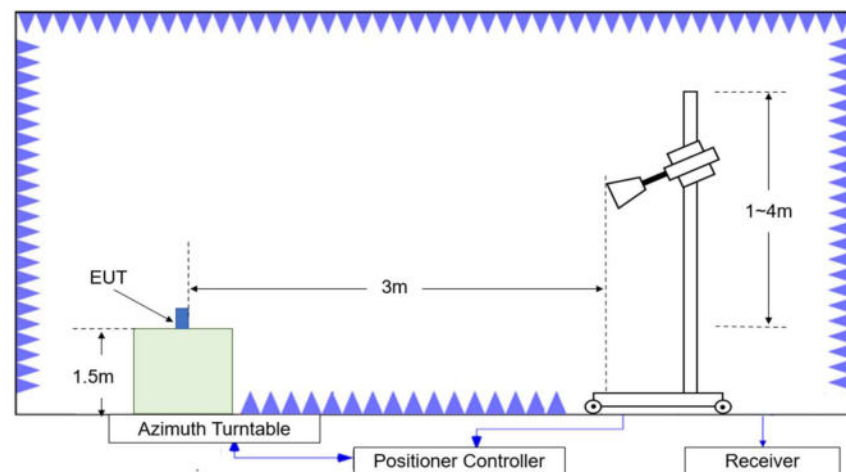


Figure A.5.3. Test Site Diagram (1GHz-40GHz)

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 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	45.40	-25.55	42.30	28.65	54.00	8.60	H
17912.550	45.25	-25.55	42.30	28.50	54.00	8.75	V
13371.200	39.48	-30.08	40.50	29.06	54.00	14.52	H
13273.850	39.24	-29.75	40.30	28.69	54.00	14.76	V
5350.288	53.24	-27.08	33.50	46.82	54.00	0.76	H
5350.272	52.91	-27.08	33.50	46.49	54.00	1.09	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)
17940.050	45.29	-25.55	42.30	28.54	54.00	8.71	V
17915.850	45.14	-25.55	42.30	28.39	54.00	8.86	H
13286.500	39.21	-29.75	40.30	28.66	54.00	14.79	H
13375.050	39.11	-30.08	40.50	28.69	54.00	14.89	H
5457.925	46.71	-27.06	33.70	40.07	54.00	7.29	H
5457.430	46.55	-27.06	33.70	39.91	54.00	7.45	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)
17898.250	45.27	-25.55	42.30	28.52	54.00	8.73	H
17912.550	45.11	-25.55	42.30	28.36	54.00	8.89	H
14497.050	39.07	-28.78	40.00	27.85	54.00	14.93	H
13257.350	38.94	-29.75	40.20	28.49	54.00	15.06	H
5149.420	50.69	-27.27	32.70	45.26	54.00	3.31	H
5149.900	50.61	-27.27	32.70	45.18	54.00	3.39	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)
17921.900	45.53	-25.55	42.30	28.78	54.00	8.47	H
17917.500	45.39	-25.55	42.30	28.64	54.00	8.61	H
13272.200	39.21	-29.75	40.30	28.66	54.00	14.79	V
13269.450	39.05	-29.75	40.30	28.50	54.00	14.95	V
5350.480	53.23	-27.08	33.50	46.81	54.00	0.77	H
5350.384	52.74	-27.08	33.50	46.32	54.00	1.26	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)
17915.850	45.21	-25.55	42.30	28.46	54.00	8.79	H
17920.800	45.11	-25.55	42.30	28.36	54.00	8.89	V
13263.950	38.98	-29.75	40.20	28.53	54.00	15.02	H
13368.450	38.96	-30.08	40.50	28.54	54.00	15.04	V
5459.365	46.69	-27.06	33.70	40.05	54.00	7.31	H
5458.735	46.33	-27.06	33.70	39.69	54.00	7.67	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)
17917.500	45.29	-25.55	42.30	28.54	54.00	8.71	H
17930.150	45.07	-25.55	42.30	28.32	54.00	8.93	H
13276.050	39.21	-29.75	40.30	28.66	54.00	14.79	H
13259.550	38.96	-29.75	40.20	28.51	54.00	15.04	H
5148.980	52.14	-27.27	32.70	46.71	54.00	1.86	H
5149.100	51.39	-27.27	32.70	45.96	54.00	2.61	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)
17909.250	45.46	-25.55	42.30	28.71	54.00	8.54	H
17913.100	45.41	-25.55	42.30	28.66	54.00	8.59	V
13260.100	39.24	-29.75	40.20	28.79	54.00	14.76	H
13273.300	39.05	-29.75	40.30	28.50	54.00	14.95	H
5350.304	52.74	-27.08	33.50	46.32	54.00	1.26	H
5351.056	52.24	-27.08	33.50	45.82	54.00	1.76	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)
17917.500	45.40	-25.55	42.30	28.65	54.00	8.60	H
17924.650	45.30	-25.55	42.30	28.55	54.00	8.70	V
13261.200	39.04	-29.75	40.20	28.59	54.00	14.96	H
13275.500	38.95	-29.75	40.30	28.40	54.00	15.05	H
5454.100	44.17	-27.06	33.70	37.53	54.00	9.83	H
5457.865	43.91	-27.06	33.70	37.27	54.00	10.09	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	45.22	-25.55	42.30	28.47	54.00	8.78	V
17916.400	45.05	-25.55	42.30	28.30	54.00	8.95	H
13289.250	39.16	-29.75	40.30	28.61	54.00	14.84	H
13273.850	39.03	-29.75	40.30	28.48	54.00	14.97	H
5149.960	44.75	-27.27	32.70	39.32	54.00	9.25	H
5149.880	44.60	-27.27	32.70	39.17	54.00	9.40	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)
17912.000	45.32	-25.55	42.30	28.57	54.00	8.68	V
17927.400	45.31	-25.55	42.30	28.56	54.00	8.69	H
13312.350	38.89	-29.75	40.30	28.34	54.00	15.11	H
13311.250	38.87	-29.75	40.30	28.32	54.00	15.13	H
5350.464	45.83	-27.08	33.50	39.41	54.00	8.17	H
5350.480	45.76	-27.08	33.50	39.34	54.00	8.24	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	45.21	-25.55	42.30	28.46	54.00	8.79	V
17900.450	45.08	-25.55	42.30	28.33	54.00	8.92	H
13259.000	38.98	-29.75	40.20	28.53	54.00	15.02	H
13272.750	38.92	-29.75	40.30	28.37	54.00	15.08	V
5459.110	45.06	-27.06	33.70	38.42	54.00	8.94	H
5456.740	44.88	-27.06	33.70	38.24	54.00	9.12	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)
17934.000	45.19	-25.55	42.30	28.44	54.00	8.81	H
17918.050	45.17	-25.55	42.30	28.42	54.00	8.83	V
13312.350	39.10	-29.75	40.30	28.55	54.00	14.90	H
13287.050	38.94	-29.75	40.30	28.39	54.00	15.06	V
5148.920	46.92	-27.27	32.70	41.49	54.00	7.08	H
5149.920	46.49	-27.27	32.70	41.06	54.00	7.51	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)
17929.050	45.57	-25.55	42.30	28.82	54.00	8.43	H
17914.200	45.14	-25.55	42.30	28.39	54.00	8.86	H
14492.650	39.00	-28.78	40.00	27.78	54.00	15.00	H
14489.900	38.95	-28.78	40.00	27.73	54.00	15.05	H
5350.208	50.58	-27.08	33.50	44.16	54.00	3.42	H
5350.432	50.13	-27.08	33.50	43.71	54.00	3.87	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)
17906.500	45.13	-25.55	42.30	28.38	54.00	8.87	H
17929.050	45.01	-25.55	42.30	28.26	54.00	8.99	H
13286.500	39.24	-29.75	40.30	28.69	54.00	14.76	H
13288.150	39.11	-29.75	40.30	28.56	54.00	14.89	H
5459.695	46.54	-27.06	33.70	39.90	54.00	7.46	H
5459.485	46.31	-27.06	33.70	39.67	54.00	7.69	H

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)
17918.050	45.41	-25.55	42.30	28.66	54.00	8.59	V
17923.550	45.41	-25.55	42.30	28.66	54.00	8.59	H
14498.150	39.24	-28.78	40.00	28.02	54.00	14.76	V
13285.950	39.17	-29.75	40.30	28.62	54.00	14.83	V
5149.420	51.52	-27.27	32.70	46.09	54.00	2.48	H
5149.640	51.15	-27.27	32.70	45.72	54.00	2.85	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)
17913.650	45.45	-25.55	42.30	28.70	54.00	8.55	H
17925.750	45.18	-25.55	42.30	28.43	54.00	8.82	H
13290.900	39.09	-29.75	40.30	28.54	54.00	14.91	V
13281.550	38.95	-29.75	40.30	28.40	54.00	15.05	V
5350.816	53.97	-27.08	33.50	47.55	54.00	0.03	H
5355.296	53.78	-27.08	33.50	47.36	54.00	0.22	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)
17923.550	45.41	-25.55	42.30	28.66	54.00	8.59	V
17916.950	45.26	-25.55	42.30	28.51	54.00	8.74	H
13276.050	39.57	-29.75	40.30	29.02	54.00	14.43	V
13281.550	39.14	-29.75	40.30	28.59	54.00	14.86	V
5453.530	46.97	-27.06	33.70	40.33	54.00	7.03	H
5457.310	46.58	-27.06	33.70	39.94	54.00	7.42	H

PEAK Results:
802.11a

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	56.57	-25.55	42.30	39.82	74.00	17.43	V
17876.250	56.29	-25.55	42.30	39.54	74.00	17.71	H
14078.500	52.25	-28.98	40.50	40.73	68.20	15.95	H
13611.550	51.75	-29.88	40.60	41.03	68.20	16.45	V
5351.808	72.22	-27.08	33.50	65.80	74.00	1.78	H
5351.584	71.49	-27.08	33.50	65.07	74.00	2.51	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)
17915.850	56.67	-25.55	42.30	39.92	74.00	17.33	H
17854.250	56.21	-25.55	42.30	39.46	74.00	17.79	V
14081.250	51.69	-28.98	40.50	40.17	68.20	16.51	H
14166.500	51.68	-28.86	40.40	40.14	68.20	16.52	H
5459.125	62.71	-27.06	33.70	56.07	74.00	11.29	H
5469.805	66.63	-27.06	33.70	59.99	68.20	1.57	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)
17968.650	56.36	-25.55	42.30	39.61	74.00	17.64	H
17902.650	56.32	-25.55	42.30	39.57	74.00	17.68	H
13710.550	51.65	-29.88	40.70	40.83	68.20	16.55	H
14093.350	51.58	-28.98	40.50	40.06	68.20	16.62	V
5149.660	70.05	-27.27	32.70	64.62	74.00	3.95	H
5144.540	69.19	-27.34	32.70	63.83	74.00	4.81	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)
17978.550	56.32	-25.55	42.30	39.57	74.00	17.68	V
17948.850	55.84	-25.55	42.30	39.09	74.00	18.16	H
13754.550	52.08	-29.41	40.70	40.79	68.20	16.12	H
13818.350	51.78	-29.41	40.90	40.29	68.20	16.42	H
5350.944	70.47	-27.08	33.50	64.05	74.00	3.53	V
5350.576	70.19	-27.08	33.50	63.77	74.00	3.81	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)
17909.250	56.06	-25.55	42.30	39.31	74.00	17.94	H
17896.600	55.97	-25.55	42.30	39.22	74.00	18.03	H
13818.900	51.80	-29.41	40.90	40.31	68.20	16.40	H
14165.400	51.49	-28.86	40.40	39.95	68.20	16.71	V
5459.500	63.50	-27.06	33.70	56.86	74.00	10.50	H
5469.010	67.64	-27.06	33.70	61.00	68.20	0.56	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)
17913.100	56.00	-25.55	42.30	39.25	74.00	18.00	H
17914.200	55.83	-25.55	42.30	39.08	74.00	18.17	H
14191.250	52.19	-28.86	40.40	40.65	68.20	16.01	H
14143.400	51.75	-28.86	40.50	40.11	68.20	16.45	V
5149.400	71.14	-27.27	32.70	65.71	74.00	2.86	H
5148.980	70.82	-27.27	32.70	65.39	74.00	3.18	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)
17923.550	56.18	-25.55	42.30	39.43	74.00	17.82	V
17937.850	55.89	-25.55	42.30	39.14	74.00	18.11	V
13762.800	51.51	-29.41	40.90	40.02	68.20	16.69	H
14124.700	51.42	-28.86	40.50	39.78	68.20	16.78	H
5350.304	70.86	-27.08	33.50	64.44	74.00	3.14	H
5350.080	70.48	-27.08	33.50	64.06	74.00	3.52	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)
17876.800	55.94	-25.55	42.30	39.19	74.00	18.06	V
17913.100	55.89	-25.55	42.30	39.14	74.00	18.11	H
13677.000	51.89	-29.88	40.70	41.07	68.20	16.31	H
13714.950	51.79	-29.41	40.70	40.50	68.20	16.41	H
5452.915	59.39	-27.06	33.70	52.75	74.00	14.61	H
5469.820	68.15	-27.06	33.70	61.51	68.20	0.05	H

02.11ac-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)
17918.600	56.00	-25.55	42.30	39.25	74.00	18.00	H
17855.350	55.88	-25.55	42.30	39.13	74.00	18.12	H
13791.950	51.95	-29.41	40.90	40.46	68.20	16.25	V
13706.150	51.81	-29.88	40.70	40.99	68.20	16.39	V
5149.940	62.93	-27.27	32.70	57.50	74.00	11.07	H
5147.900	61.56	-27.34	32.70	56.20	74.00	12.44	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)
17852.600	55.99	-25.55	42.30	39.24	74.00	18.01	H
17930.150	55.93	-25.55	42.30	39.18	74.00	18.07	V
13733.650	51.77	-29.41	40.70	40.48	68.20	16.43	V
13611.000	51.58	-29.88	40.60	40.86	68.20	16.62	V
5353.168	64.53	-27.08	33.50	58.11	74.00	9.47	H
5350.256	62.93	-27.08	33.50	56.51	74.00	11.07	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)
17948.850	56.27	-25.55	42.30	39.52	74.00	17.73	V
17924.100	56.06	-25.55	42.30	39.31	74.00	17.94	V
13762.250	51.48	-29.41	40.70	40.19	68.20	16.72	H
14172.000	51.40	-28.86	40.40	39.86	68.20	16.80	H
5459.815	59.21	-27.06	33.70	52.57	74.00	14.79	H
5469.385	63.72	-27.06	33.70	57.08	68.20	4.48	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)
17926.300	56.18	-25.55	42.30	39.43	74.00	17.82	H
17833.350	56.14	-25.55	42.30	39.39	74.00	17.86	V
13695.150	51.85	-29.88	40.70	41.03	68.20	16.35	H
13717.150	51.62	-29.41	40.70	40.33	68.20	16.58	V
5149.460	66.94	-27.27	32.70	61.51	74.00	7.06	V
5149.560	64.77	-27.27	32.70	59.34	74.00	9.23	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)
17925.750	55.86	-25.55	42.30	39.11	74.00	18.14	V
17905.950	55.85	-25.55	42.30	39.10	74.00	18.15	V
13782.600	52.20	-29.41	40.90	40.71	68.20	16.00	H
14192.350	51.81	-28.86	40.40	40.27	68.20	16.39	H
5356.352	70.29	-27.08	33.50	63.87	74.00	3.71	H
5350.144	67.83	-27.08	33.50	61.41	74.00	6.17	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)
17919.150	56.96	-25.55	42.30	40.21	74.00	17.04	H
17934.000	56.12	-25.55	42.30	39.37	74.00	17.88	V
14209.950	51.46	-28.86	40.40	39.92	68.20	16.74	V
14216.550	51.41	-28.86	40.40	39.87	68.20	16.79	H
5451.190	60.58	-27.06	33.70	53.94	74.00	13.42	H
5468.425	66.68	-27.06	33.70	60.04	68.20	1.52	H

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)
17910.350	56.44	-25.55	42.30	39.69	74.00	17.56	V
17912.550	56.41	-25.55	42.30	39.66	74.00	17.59	H
13763.350	52.04	-29.41	40.90	40.55	68.20	16.16	V
14180.250	51.68	-28.86	40.40	40.14	68.20	16.52	H
5149.880	67.86	-27.27	32.70	62.43	74.00	6.14	H
5134.380	67.75	-27.34	32.70	62.39	74.00	6.25	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)
17902.650	56.22	-25.55	42.30	39.47	74.00	17.78	V
17981.850	56.03	-25.55	42.30	39.28	74.00	17.97	H
13994.350	51.77	-29.33	40.70	40.40	68.20	16.43	V
14116.450	51.58	-28.86	40.50	39.94	68.20	16.62	V
5364.016	68.30	-27.08	33.50	61.88	74.00	5.70	H
5350.576	68.23	-27.08	33.50	61.81	74.00	5.77	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)
17927.950	56.17	-25.55	42.30	39.42	74.00	17.83	V
17936.750	56.04	-25.55	42.30	39.29	74.00	17.96	H
14149.450	51.73	-28.86	40.50	40.09	68.20	16.47	H
14132.950	51.68	-28.86	40.50	40.04	68.20	16.52	V
5454.820	64.88	-27.06	33.70	58.24	74.00	9.12	H
5461.675	67.50	-27.06	33.70	60.86	68.20	0.70	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:

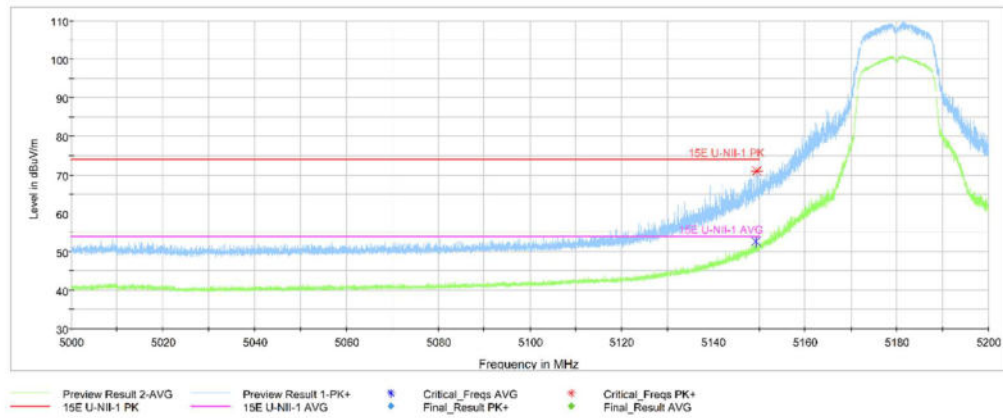


Fig. 1 Band Edges (802.11a Ch36, 5180MHz)

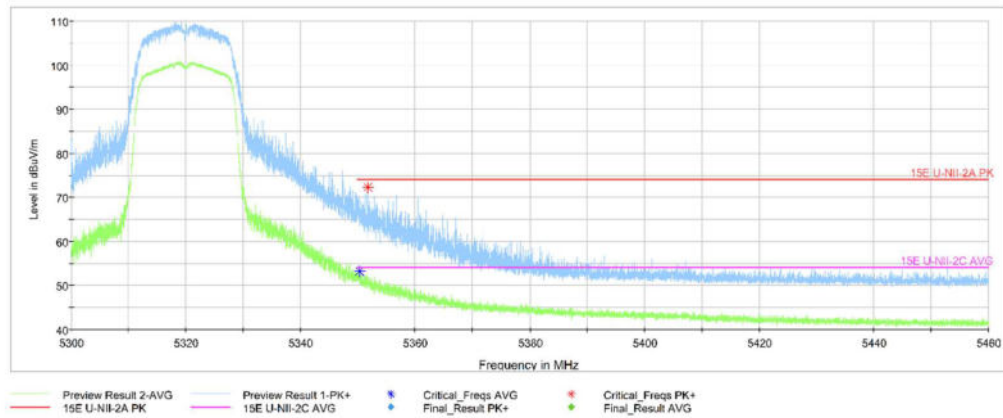


Fig. 2 Band Edges (802.11a Ch64, 5320MHz)

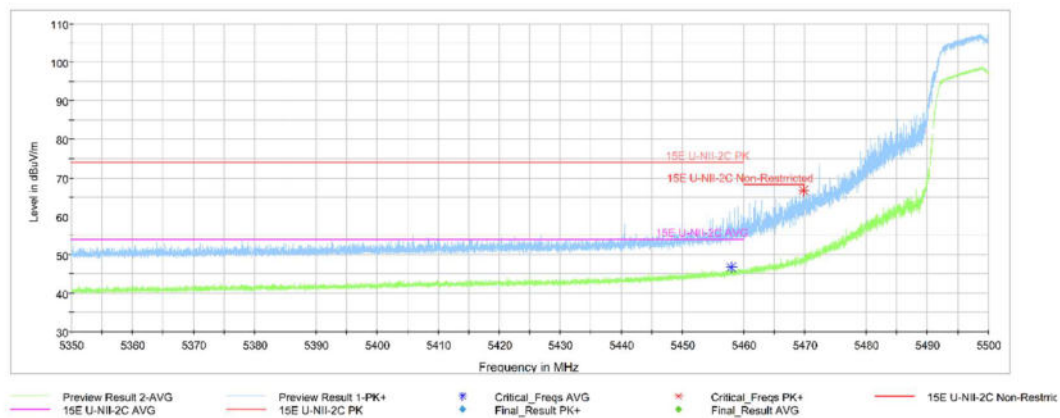


Fig. 3 Band Edges (802.11a Ch100, 5500MHz)

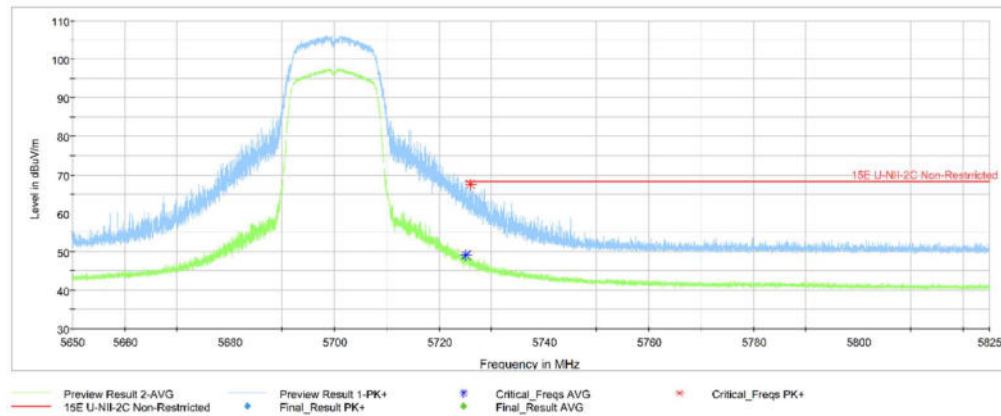


Fig. 4 Band Edges (802.11a Ch140, 5700MHz)

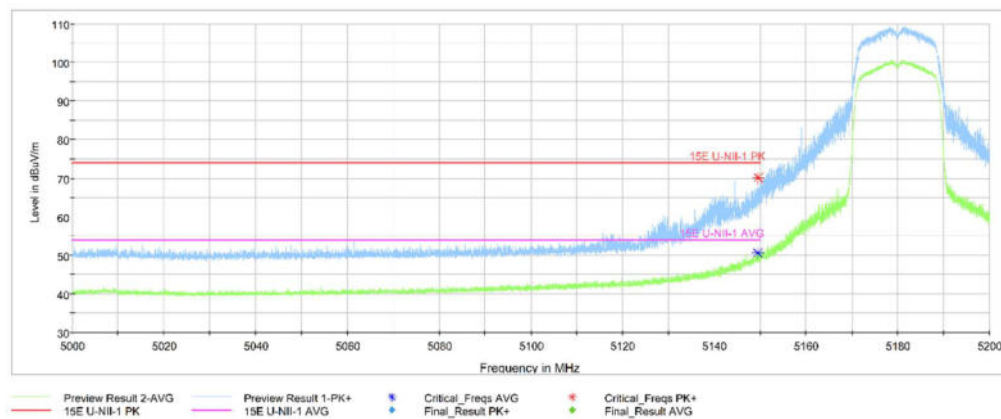


Fig. 5 Band Edges (802.11n-HT20 Ch36, 5180MHz)

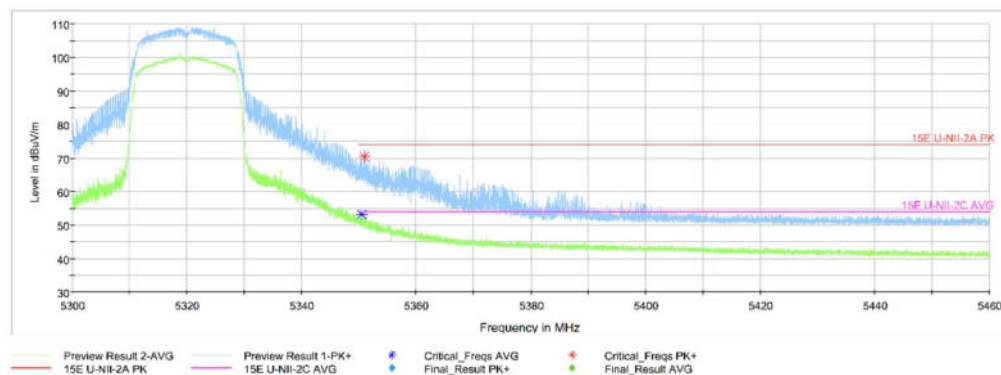


Fig. 6 Band Edges (802.11n-HT20 Ch64, 5320MHz)

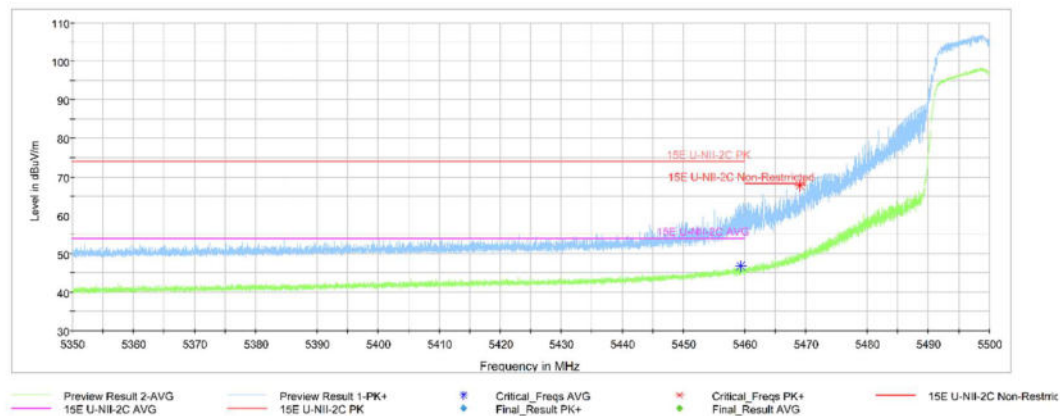


Fig. 7 Band Edges (802.11n-HT20 Ch100, 5500MHz)

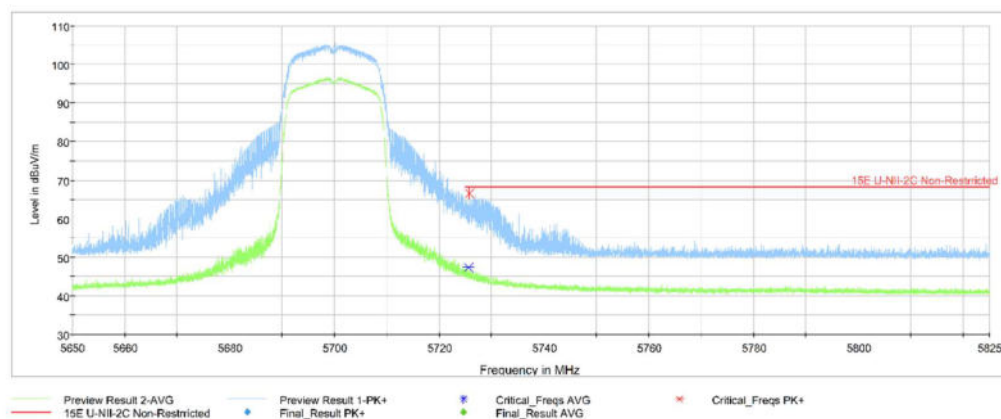


Fig. 8 Band Edges (802.11n-HT20 Ch140, 5700MHz)

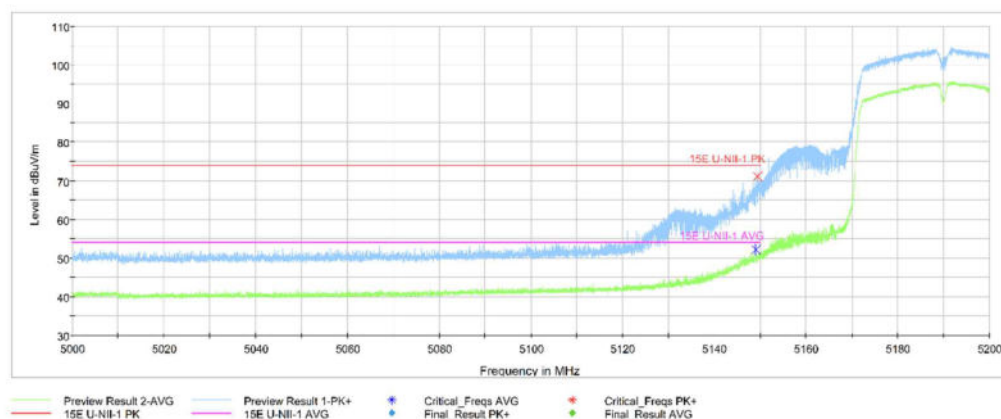


Fig. 9 Band Edges (802.11n-HT40 Ch38, 5190MHz)

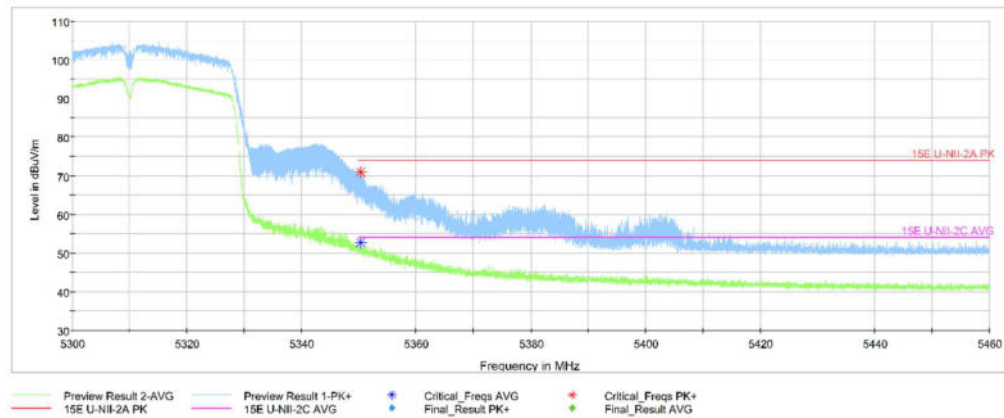


Fig. 10 Band Edges (802.11n-HT40 Ch62, 5310MHz)

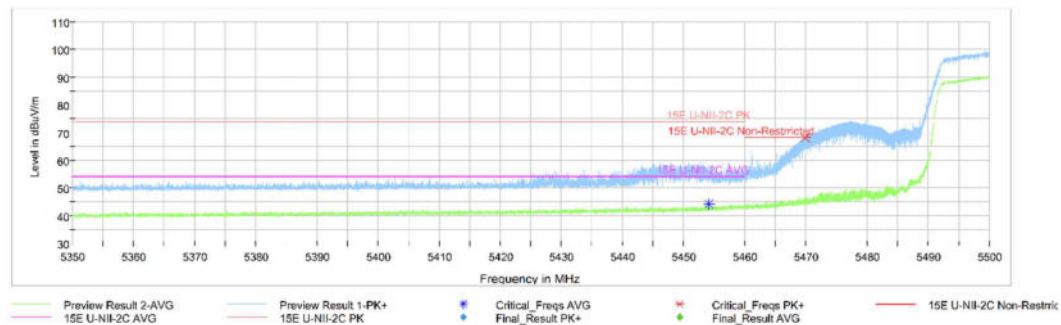


Fig. 11 Band Edges (802.11n-HT40 Ch102, 5510MHz)

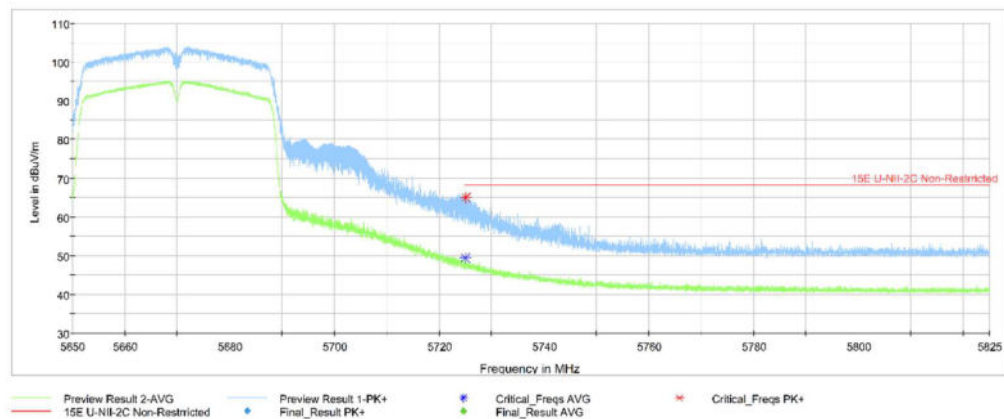


Fig. 12 Band Edges (802.11n-HT40 Ch134, 5670MHz)

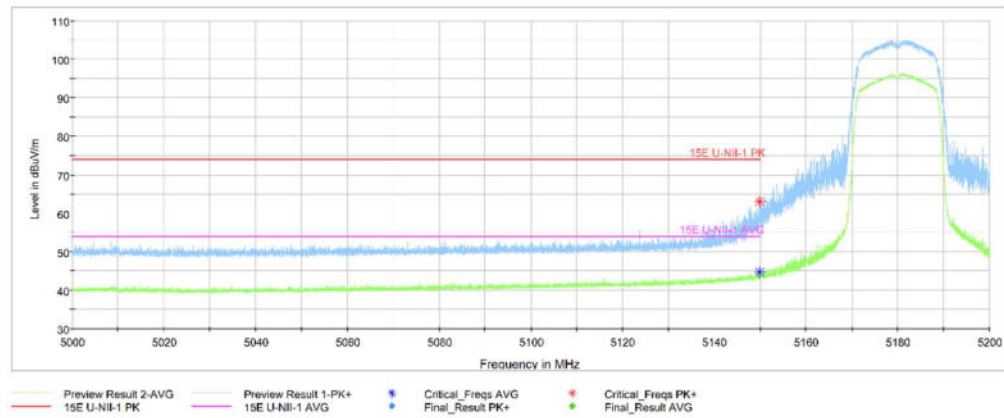


Fig. 13 Band Edges (802.11ac-HT20 Ch36, 5180MHz)

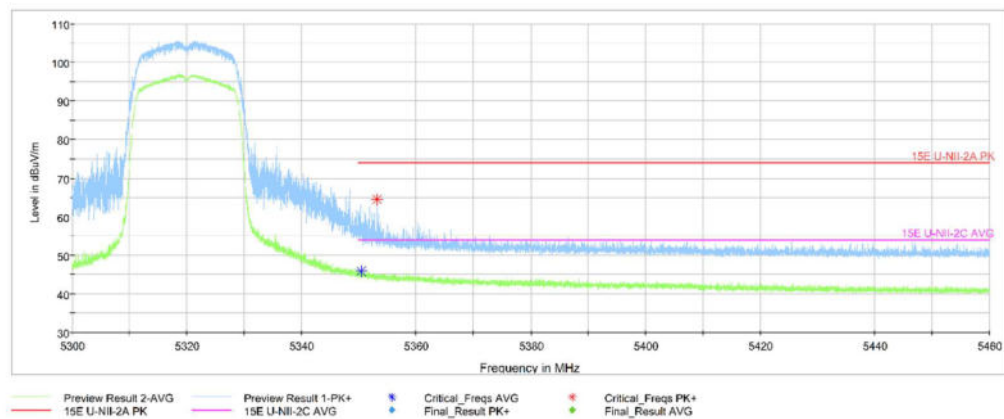


Fig. 14 Band Edges (802.11ac-HT20 Ch64, 5320MHz)

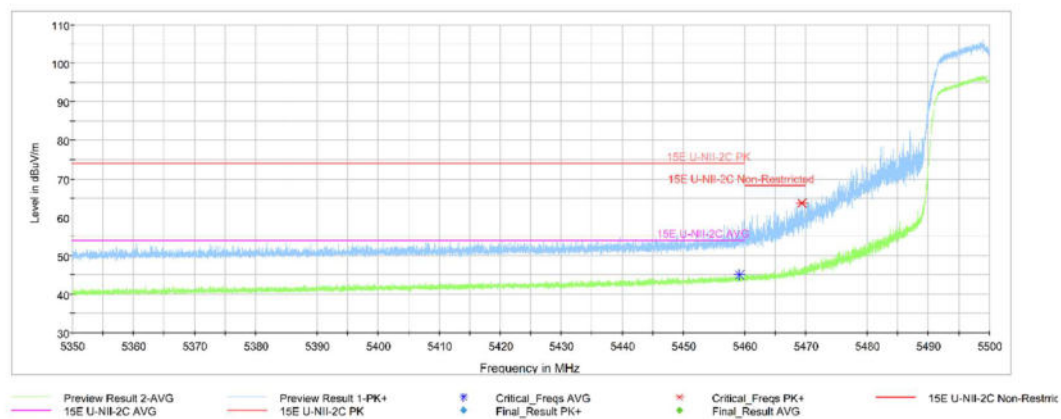


Fig. 15 Band Edges (802.11ac-HT20 Ch100, 5500MHz)

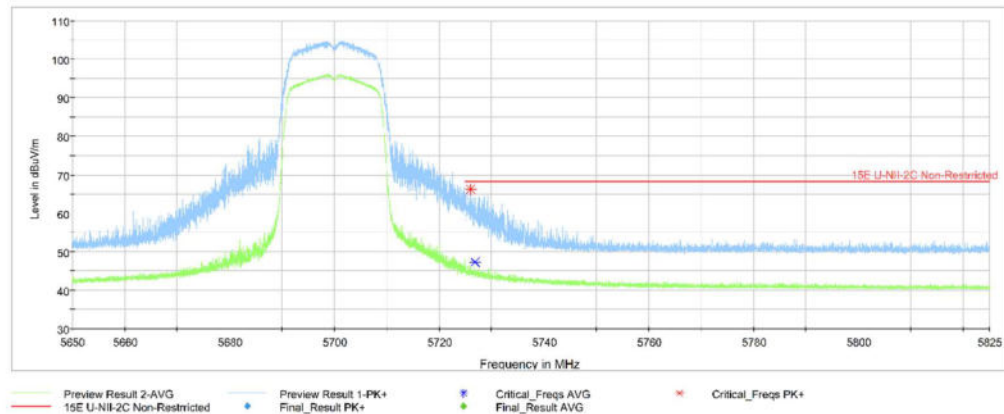


Fig. 16 Band Edges (802.11ac-HT20 Ch140, 5700MHz)

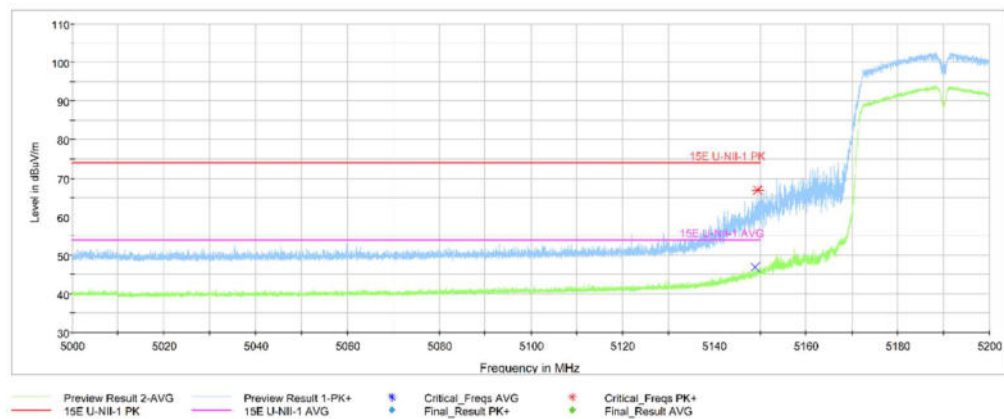


Fig. 17 Band Edges (802.11ac-HT40 Ch38, 5190MHz)

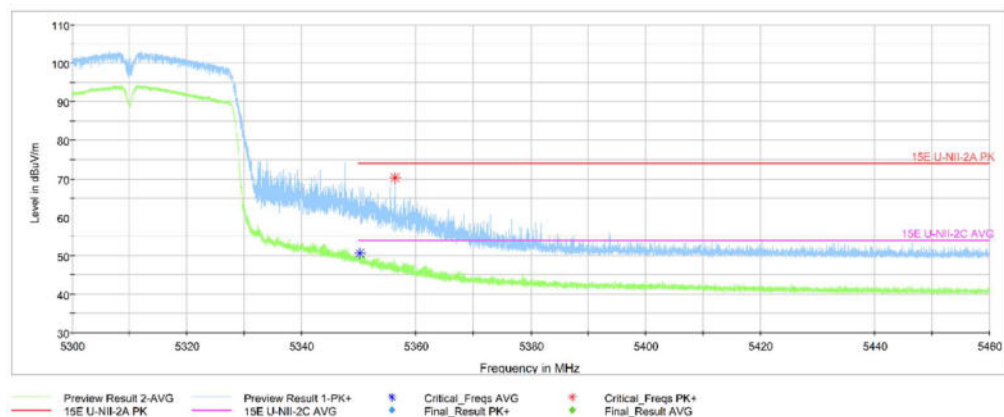


Fig. 18 Band Edges (802.11ac-HT40 Ch62, 5310MHz)

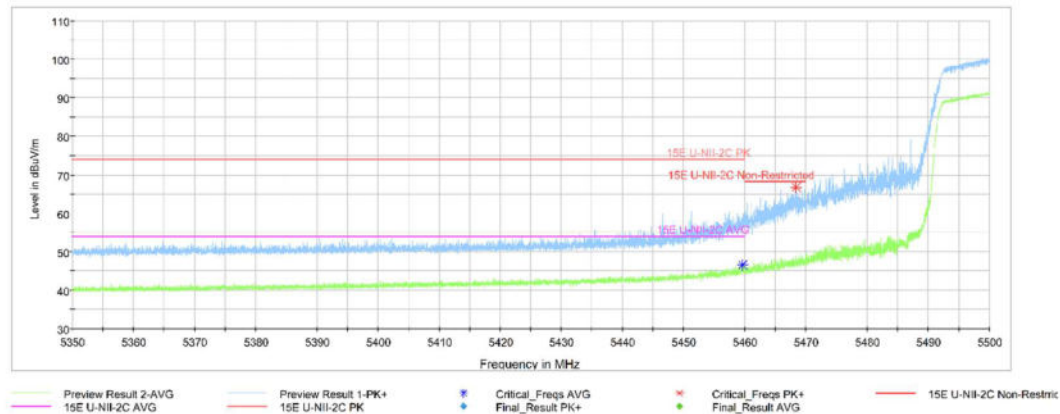


Fig. 19 Band Edges (802.11ac-HT40 Ch102, 5510MHz)

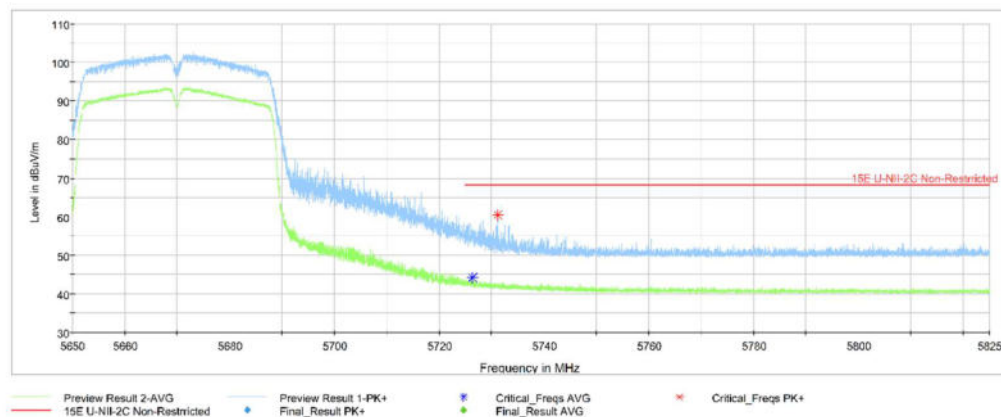


Fig. 20 Band Edges (802.11ac-HT40 Ch134, 5670MHz)

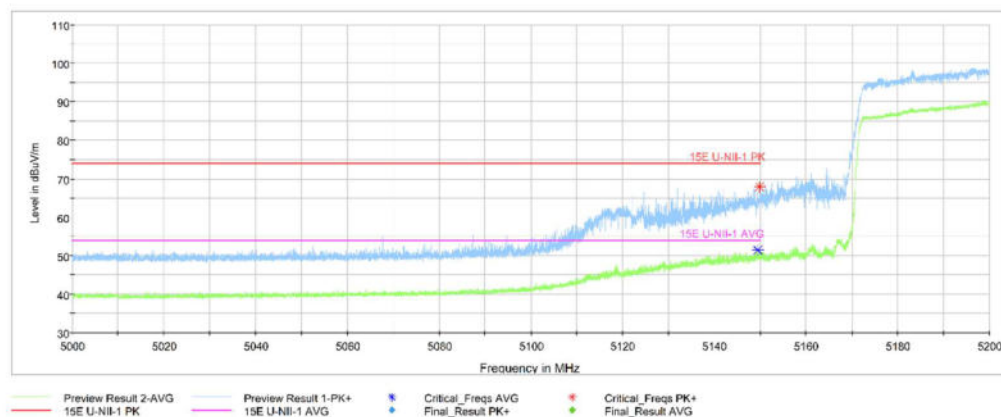


Fig. 21 Band Edges (802.11ac-HT80 Ch42, 5210MHz)

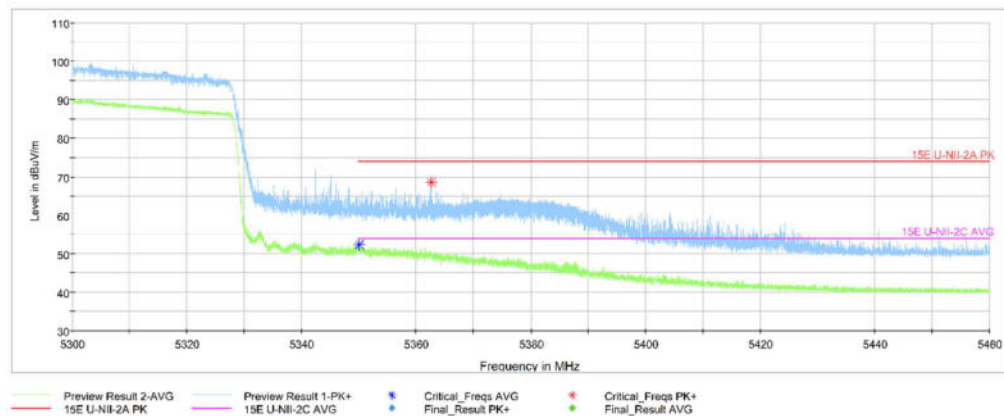


Fig. 22 Band Edges (802.11ac-HT80 Ch58, 5290MHz)

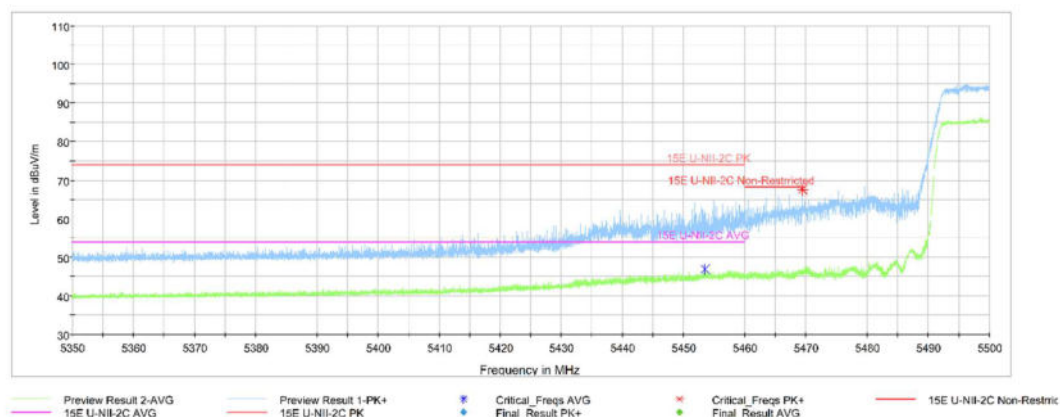


Fig. 23 Band Edges (802.11ac-HT80 Ch106, 5530MHz)

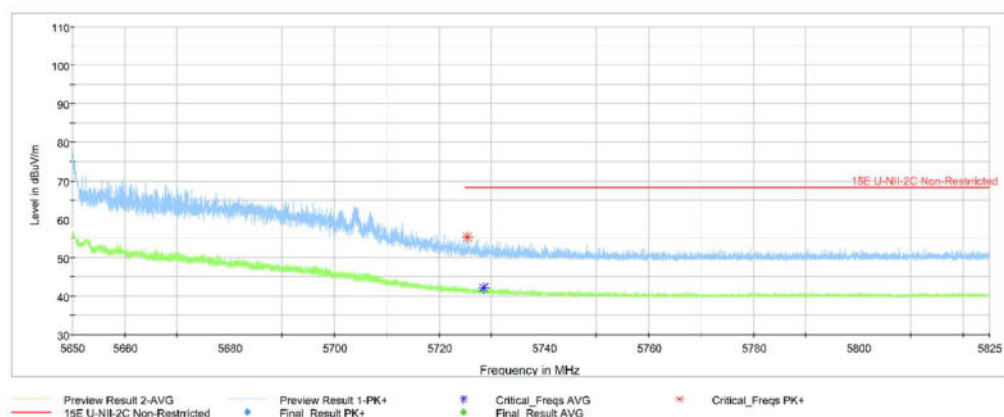


Fig. 24 Band Edges (802.11ac-HT80 Ch122, 5610MHz)

Measurement Result and limit:

WLAN (Quasi-peak Limit)

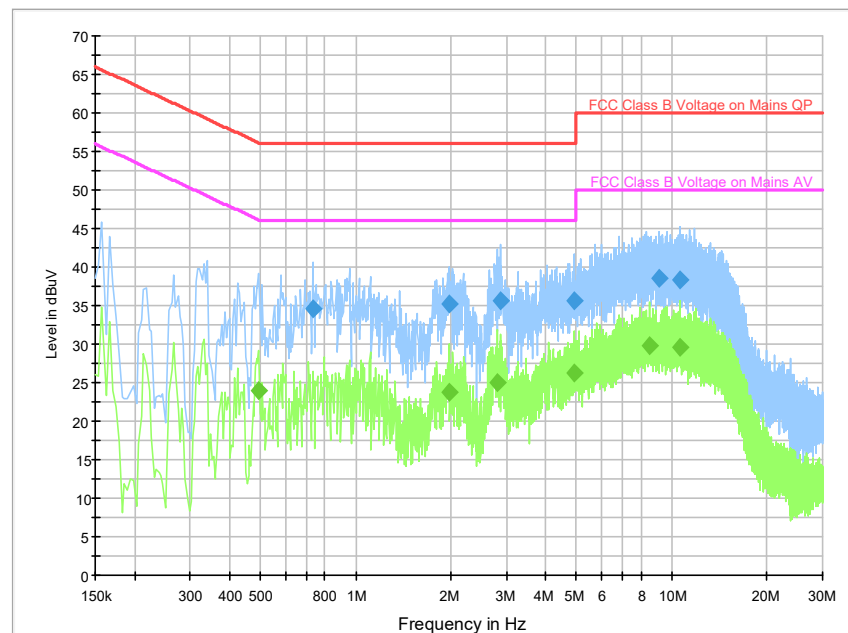
Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.25	Fig.26	P
0.5 to 5	56			
5 to 30	60			

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 (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.730000	34.7	2000.0	9.000	On	L1	20.0	21.3	56.0	
1.974000	35.3	2000.0	9.000	On	L1	19.8	20.7	56.0	
2.870000	35.6	2000.0	9.000	On	L1	19.8	20.4	56.0	
4.914000	35.6	2000.0	9.000	On	L1	19.8	20.4	56.0	
9.154000	38.5	2000.0	9.000	On	L1	19.9	21.5	60.0	
10.650000	38.3	2000.0	9.000	On	L1	19.9	21.7	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.494000	24.0	2000.0	9.000	On	L1	20.0	22.1	46.1	
1.974000	23.9	2000.0	9.000	On	L1	19.8	22.1	46.0	
2.818000	25.1	2000.0	9.000	On	L1	19.8	20.9	46.0	
4.906000	26.3	2000.0	9.000	On	L1	19.8	19.7	46.0	
8.526000	29.7	2000.0	9.000	On	L1	19.9	20.3	50.0	
10.614000	29.5	2000.0	9.000	On	L1	19.9	20.5	50.0	

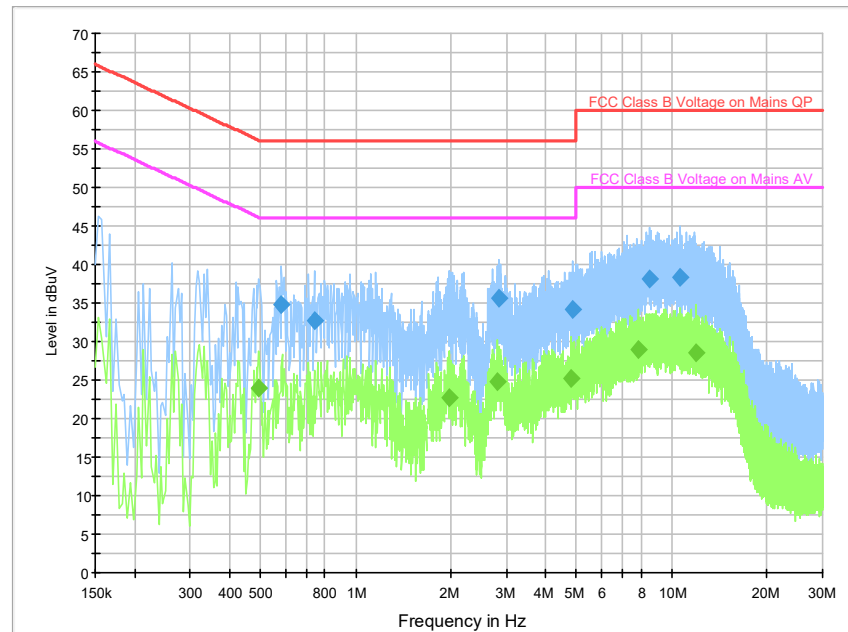


Fig.26 Conducted Emission(802.11a, IDLE)

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.582000	34.8	2000.0	9.000	On	L1	20.0	21.2	56.0	
0.738000	32.7	2000.0	9.000	On	L1	20.0	23.3	56.0	
2.826000	35.7	2000.0	9.000	On	L1	19.8	20.3	56.0	
4.846000	34.2	2000.0	9.000	On	L1	19.8	21.8	56.0	
8.466000	38.2	2000.0	9.000	On	L1	19.9	21.8	60.0	
10.678000	38.3	2000.0	9.000	On	L1	19.9	21.7	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.494000	23.9	2000.0	9.000	On	L1	20.0	22.2	46.1	
1.982000	22.7	2000.0	9.000	On	L1	19.8	23.3	46.0	
2.818000	24.7	2000.0	9.000	On	L1	19.8	21.3	46.0	
4.826000	25.3	2000.0	9.000	On	L1	19.8	20.7	46.0	
7.814000	28.9	2000.0	9.000	On	L1	19.9	21.1	50.0	
11.966000	28.6	2000.0	9.000	On	L1	20.0	21.4	50.0	

A.8. 99% Occupied bandwidth

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

- 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.
- 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.
- 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.
- Step a) through step c) might require iteration to adjust within the specified range.
- 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.
- Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- 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.
- 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:

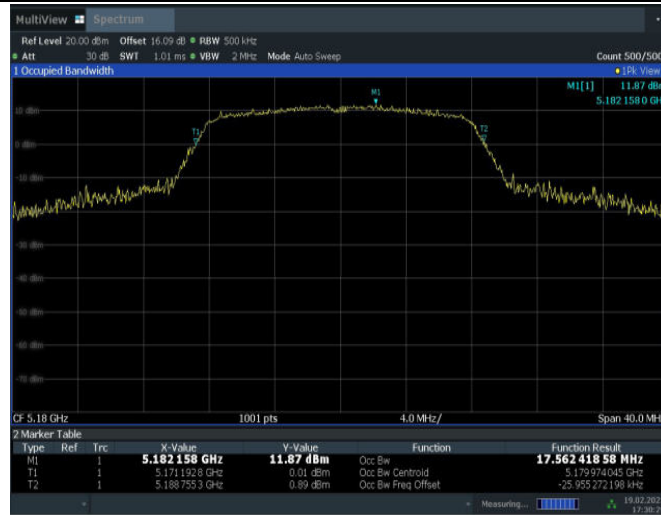
Measurement Uncertainty	60.80Hz
-------------------------	---------

EUT ID: UT07a

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.562	5171.1928	5188.7553	---	---
		5200	17.472	5191.2212	5208.6934	---	---
		5240	17.522	5231.1677	5248.6892	---	---
		5260	17.617	5251.1856	5268.8021	---	---
		5280	17.499	5271.2122	5288.7109	---	---
		5320	17.582	5311.2267	5328.8083	---	---
		5500	17.512	5491.2441	5508.7563	---	---
		5580	17.503	5571.2174	5588.7205	---	---
		5700	17.556	5691.1984	5708.7542	---	---
		5720	17.681	5711.1166	5728.7973	---	---
11N20SISO	Ant1	5180	18.55	5170.6575	5189.2076	---	---
		5200	18.42	5190.7302	5209.1503	---	---
		5240	18.367	5230.7101	5249.0769	---	---

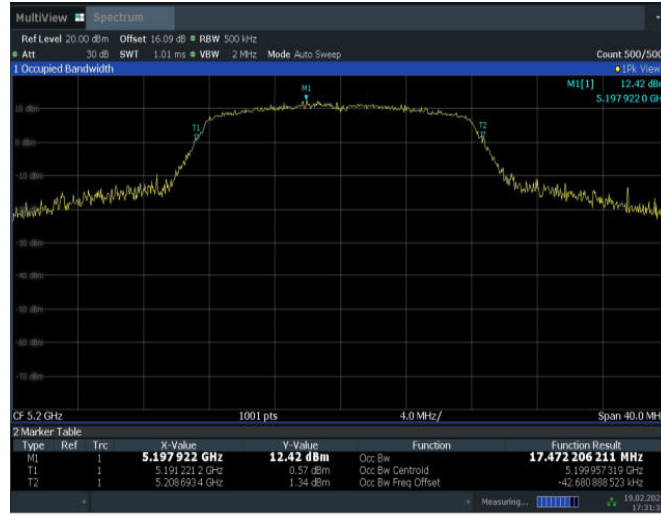
		5260	18.495	5250.7084	5269.2036	---	---
		5280	18.283	5270.7881	5289.0714	---	---
		5320	18.414	5310.7620	5329.1758	---	---
		5500	18.455	5490.7343	5509.1888	---	---
		5580	18.435	5570.7176	5589.1523	---	---
		5700	18.375	5690.7574	5709.1324	---	---
		5720	18.472	5710.6996	5729.1721	---	---
11N40SISO	Ant1	5190	36.973	5171.5163	5208.4889	---	---
		5230	36.87	5211.5289	5248.3988	---	---
		5270	37.034	5251.5392	5288.5728	---	---
		5310	37.256	5291.3404	5328.5964	---	---
		5510	37.001	5491.3936	5528.3949	---	---
		5550	36.96	5531.5115	5568.4712	---	---
		5670	37.245	5651.2833	5688.5286	---	---
11AC80SISO	Ant1	5710	37.042	5691.4167	5728.4588	---	---
		5210	75.28	5172.3375	5247.6179	---	---
		5290	75.434	5252.3041	5327.7382	---	---
		5530	75.547	5492.0917	5567.6391	---	---
		5610	75.617	5572.1173	5647.7339	---	---
		5690	75.522	5652.0918	5727.6136	---	---

11A_Ant1_5180



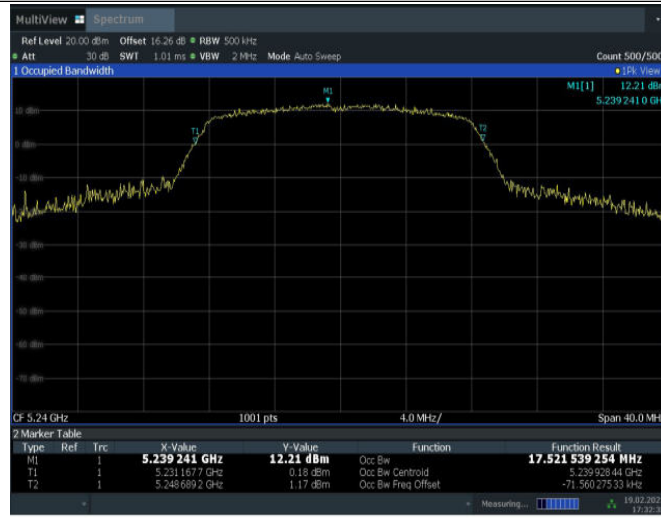
17:30:29 19.02.2025

11A_Ant1_5200



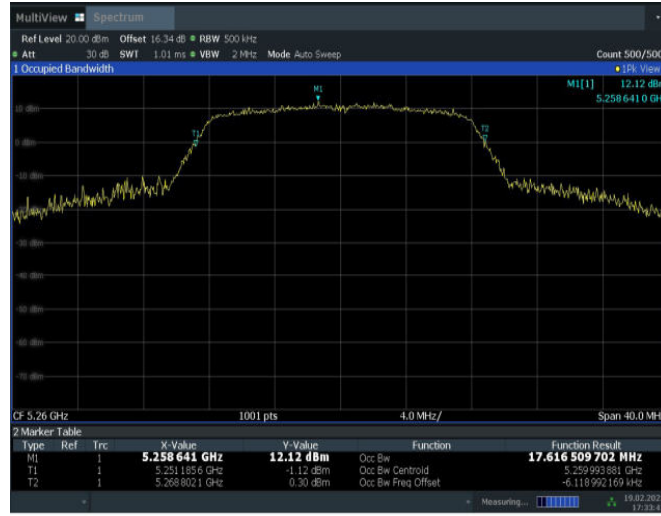
17:31:36 19.02.2025

11A_Ant1_5240



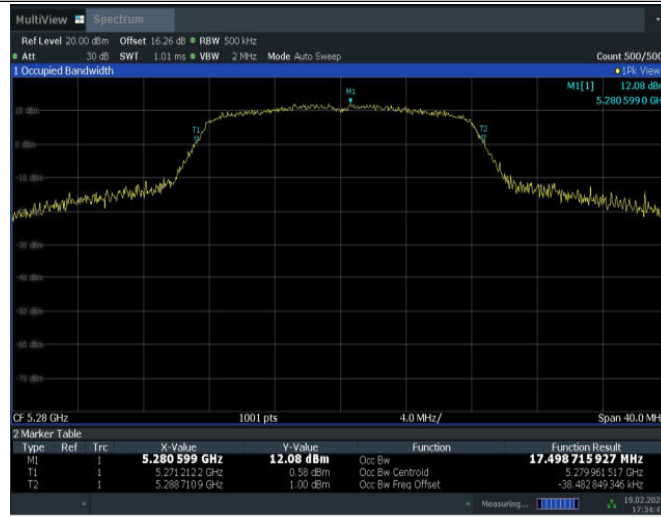
17:32:38 19.02.2025

11A_Ant1_5260



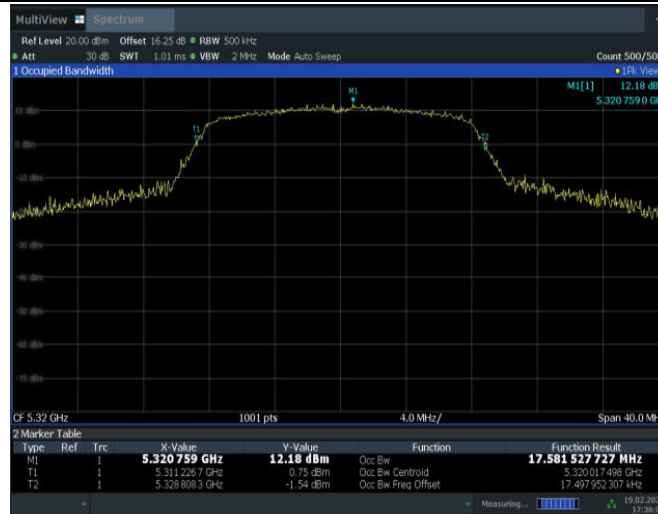
17:33:43 19.02.2025

11A_Ant1_5280



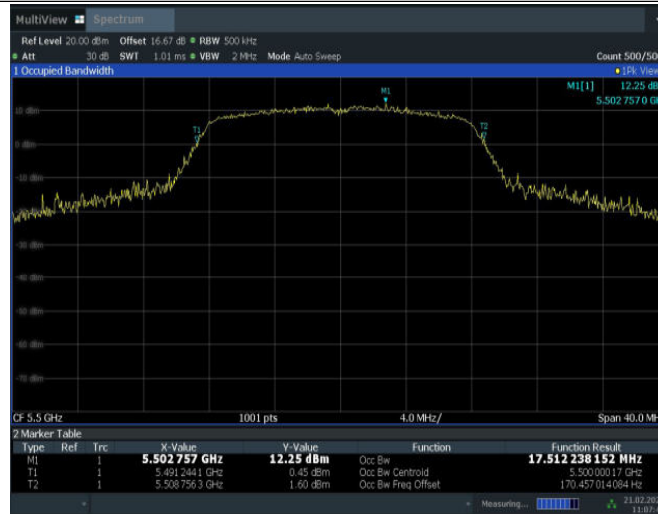
17:34:47 19.02.2025

11A_Ant1_5320



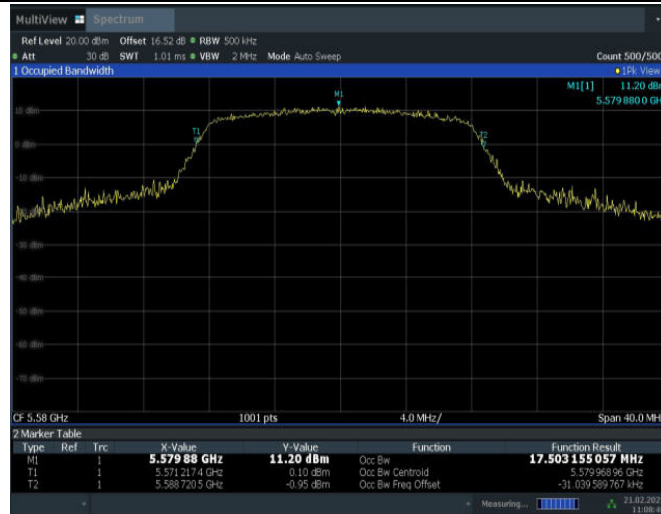
17:36:02 19.02.2025

11A_Ant1_5500



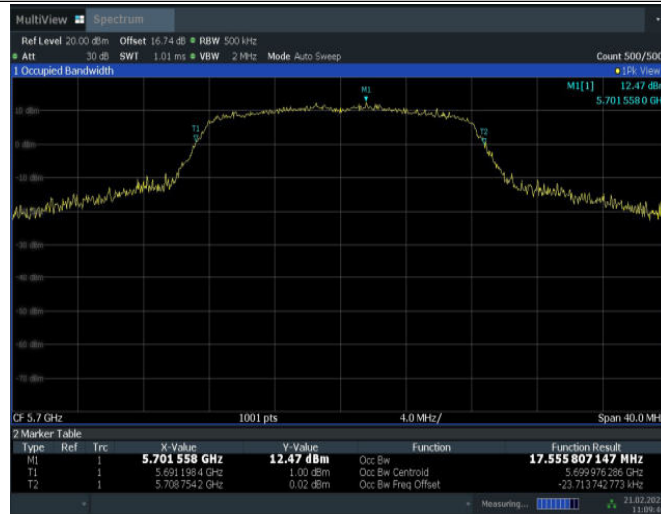
11:07:45 21.02.2025

11A_Ant1_5580



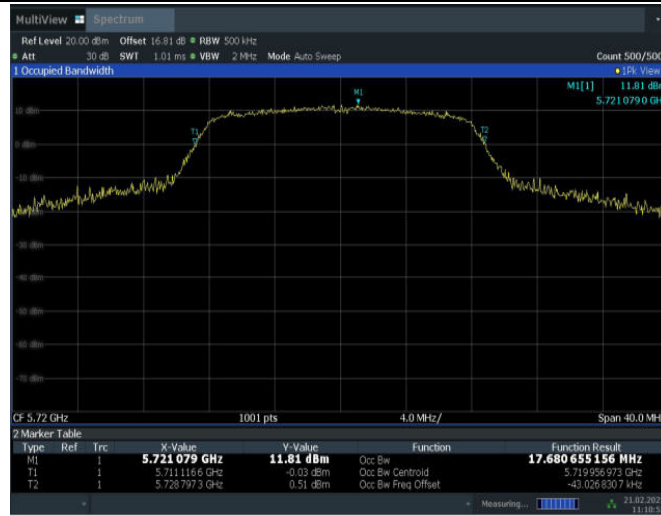
11:08:41 21.02.2025

11A_Ant1_5700



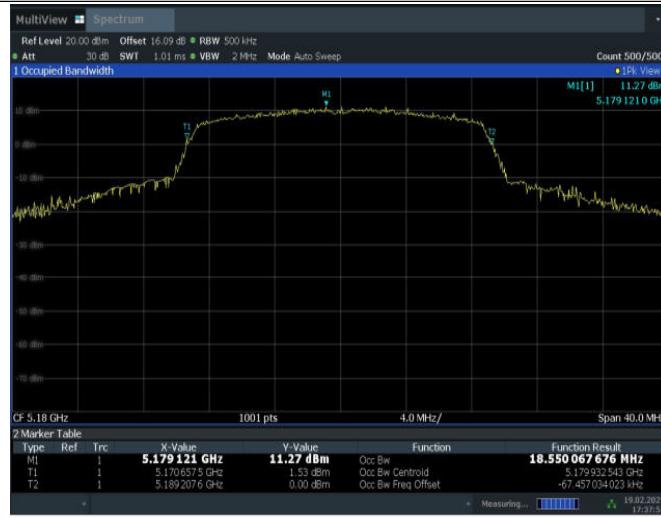
11:09:47 21.02.2025

11A_Ant1_5720



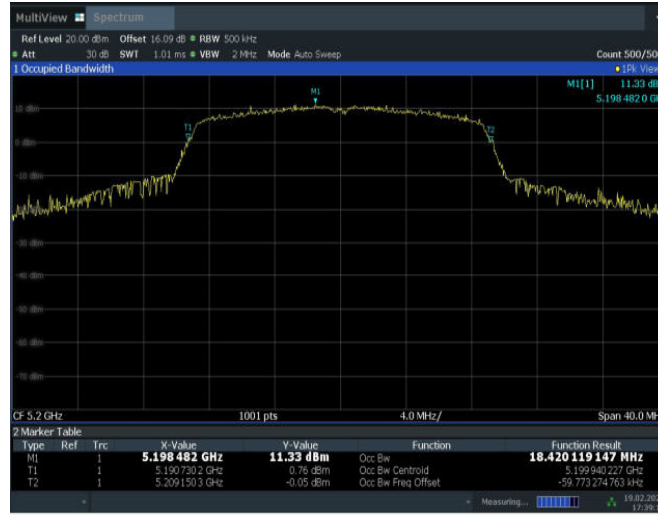
11:10:56 21.02.2025

11N20SISO_Ant1_5180



17:37:55 19.02.2025

11N20SISO_Ant1_5200



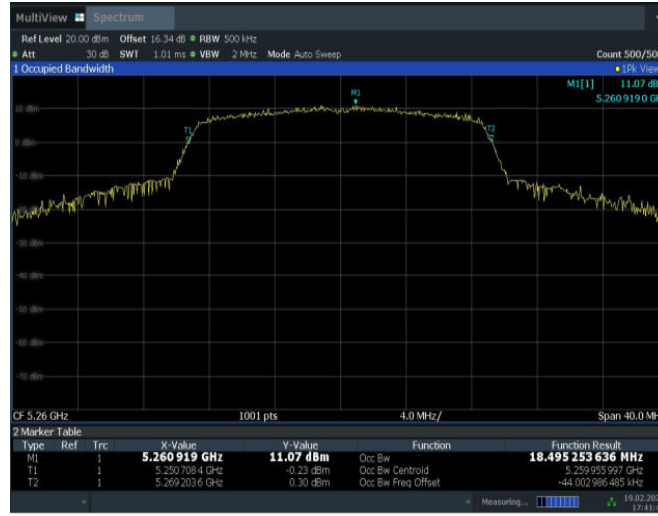
17:39:16 19.02.2025

11N20SISO_Ant1_5240



17:40:32 19.02.2025

11N20SISO_Ant1_5260



17:41:50 19.02.2025

11N20SISO_Ant1_5280



17:43:05 19.02.2025

11N20SISO_Ant1_5320



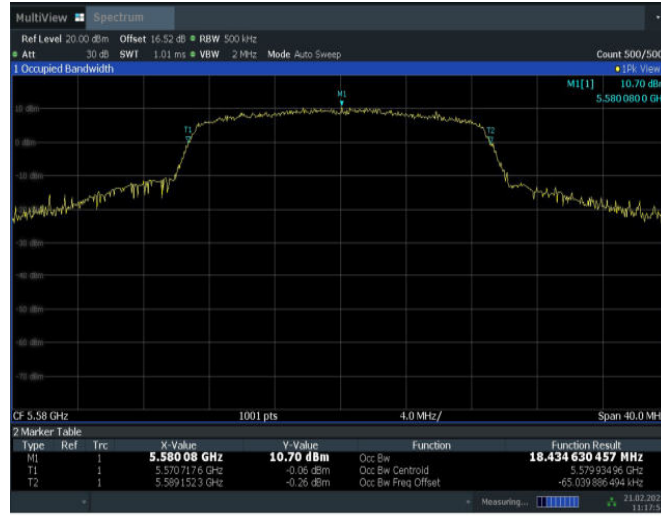
17:44:29 19.02.2025

11N20ISO_Ant1_5500



11:16:34 21.02.2025

11N20ISO_Ant1_5580



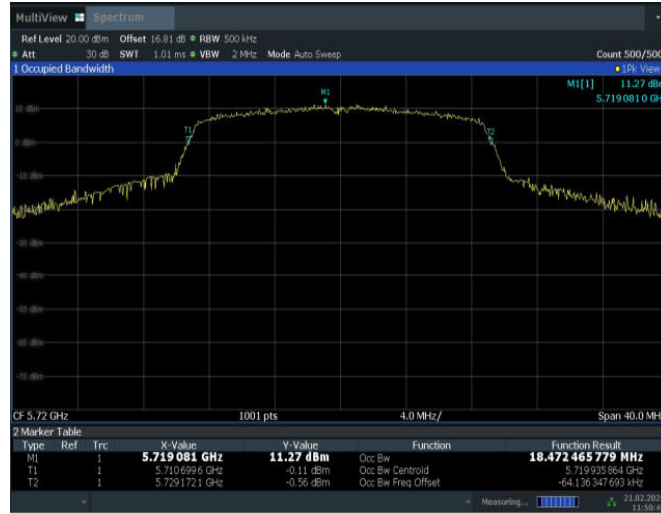
11:17:55 21.02.2025

11N20SISO_Ant1_5700



11:18:56 21.02.2025

11N20SISO_Ant1_5720



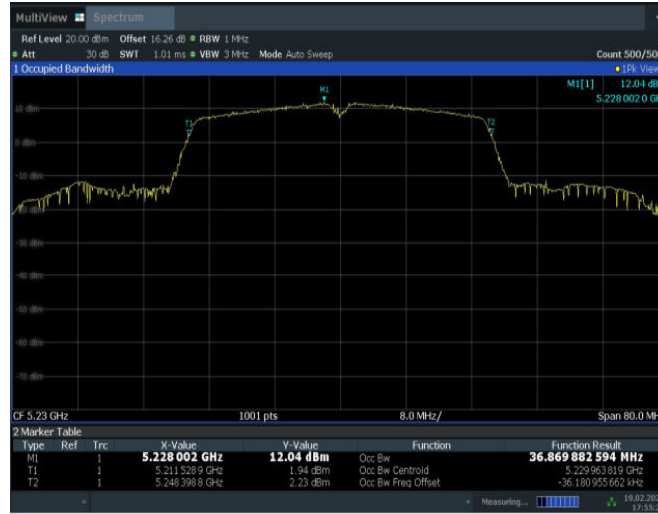
11:50:49 21.02.2025

11N40SISO_Ant1_5190



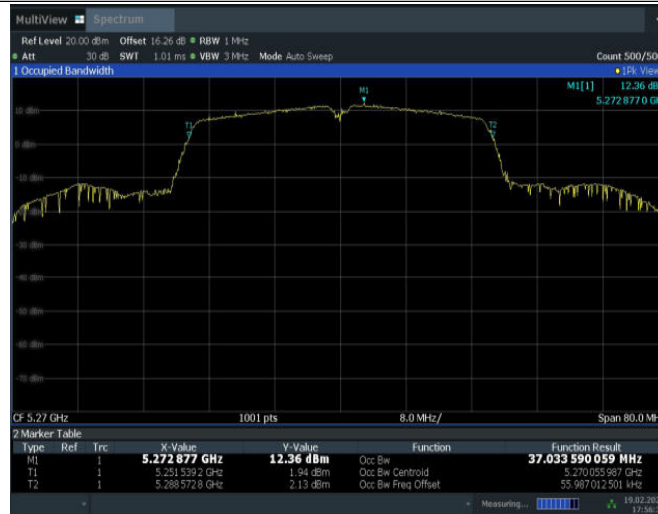
17:54:20 19.02.2025

11N40SISO_Ant1_5230



17:55:28 19.02.2025

11N40ISO_Ant1_5270



17:56:32 19.02.2025

11N40ISO_Ant1_5310



17:57:50 19.02.2025

11N40ISO_Ant1_5510



11:25:08 21.02.2025

11N40ISO_Ant1_5550



11:26:08 21.02.2025

11N40SISO_Ant1_5670



11:27:11 21.02.2025

11N40SISO_Ant1_5710



11AC80SISO_Ant1_5210



11AC80SISO_Ant1_5290



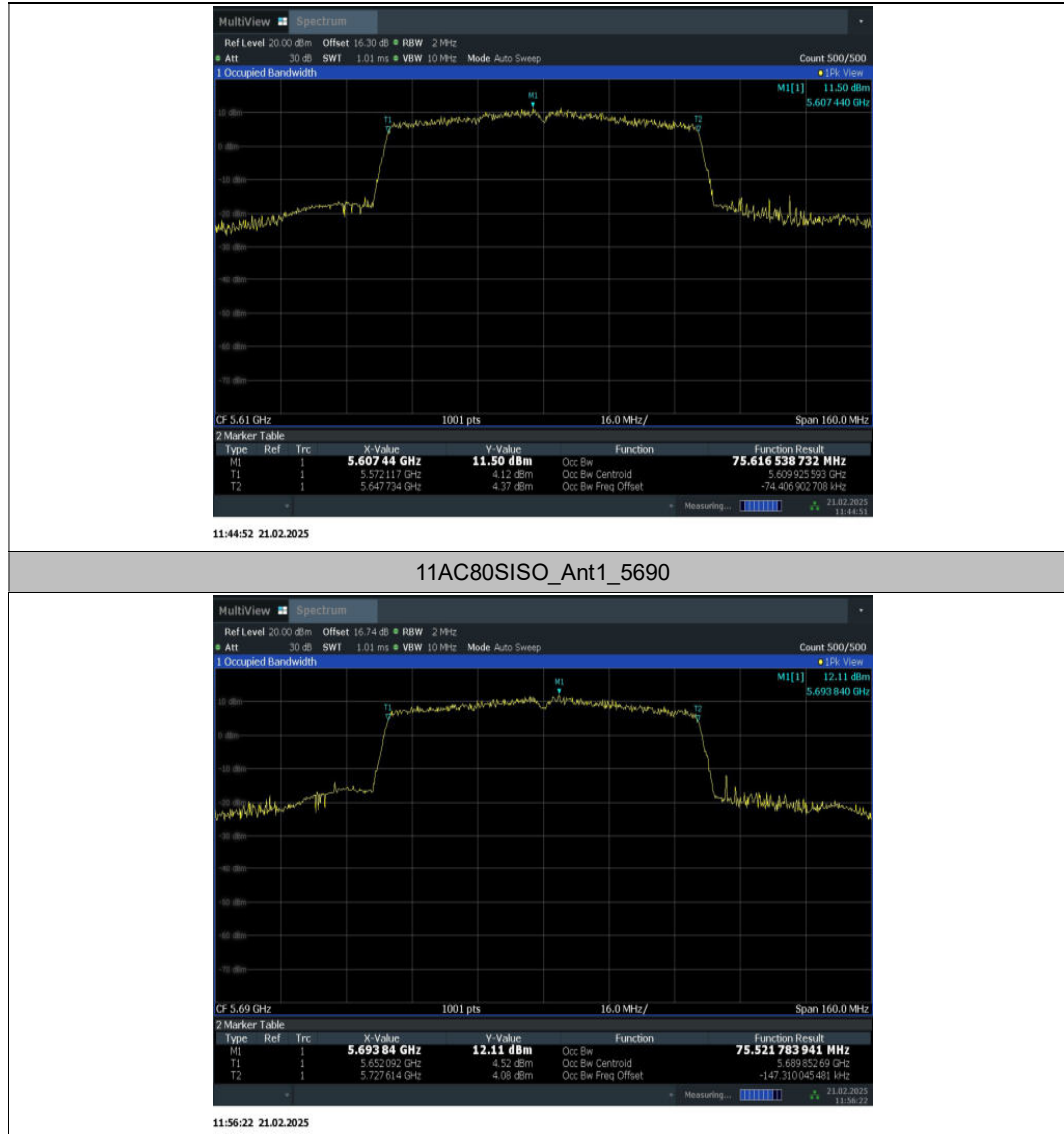
11:42:48 21.02.2025

11AC80SISO_Ant1_5530



11:43:49 21.02.2025

11AC80SISO_Ant1_5610



Conclusion: PASS

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).

A.10. 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 ***