



FCC PART 15 TEST REPORT No.23T04Z80001-17

for

TCL Communication Ltd.

Tablet PC

9136R, 9136K

FCC ID:2ACCJB210

with

Hardware Version: 05

Software Version: 7WS2

Issued Date: 2023-11-03

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:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
23T04Z80001-17	Rev.0	1st edition	2023-11-03

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

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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%

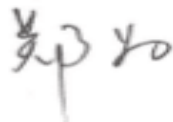
1.4. Project date

Testing Start Date: 2023-09-05
Testing End Date: 2023-11-03

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: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Telephone: +86 755 3661 1621
Fax: +86 755 3661 2000-81722

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
Postal Code: /
Country: China
Telephone: +86 755 3661 1621
Fax: +86 755 3661 2000-81722

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

3.1. About EUT

Description	Tablet PC
Model name	9136R, 9136K
FCC ID	2ACCJB210
WLAN Frequency Band	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Nominal Voltage	3.85V
Extreme High Voltage	4.35V
Extreme Low Voltage	3.5V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
EUT1	016486000002009	05	7WS2	2023-10-07
EUT2	016486000001043	05	7WS2	2023-09-05

*EUT ID: is used to identify the test sample in the lab internally.
 EUT2 is used for Conduction test, EUT1 is used for Radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Description
AE1	Battery
AE2	Charger
AE3	Data Cable
AE1	
Model	TLp040M7
Manufacturer	Veken
Capacity(mAh)	4080mAh
AE2	
Model	CBA005AAGNC5
Manufacturer	PUAN
Length of cable	/
AE3	
Model	CDA0000124C1
Manufacturer	JUWEI
Length of cable	/

*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 Tablet PC 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

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
Band edge compliance (Radiated)	15.209	/	P
Transmitter spurious emissions (Radiated)	15.407	/	P
AC Powerline Conducted Emission (150kHz- 30MHz)	15.407	/	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	3.85V
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	2024-07-04
2	Vector Signal Analyzer	FSW67	104051	Rohde & Schwarz	1 year	2024-03-06
3	LISN	ENV216	101200	Rohde & Schwarz	1 year	2024-06-05
4	Test Receiver	ESCI	100344	Rohde & Schwarz	1 year	2024-02-28
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	103144	Rohde & Schwarz	1 year	2023-10-25
2	EMI Antenna	VULB9163	01222	Schwarzbeck	1 year	2024-02-28
3	EMI Antenna	3115	6914	ETS-Lindgren	1 year	2024-04-25
4	EMI Antenna	3116	2661	ETS-Lindgren	1 year	2024-01-30

※NOTE: The Test Receiver with series number of 103144 did not exceed the CAL.DUE.DATE when used.

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 Occupied Channel Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

8.4 Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

8.5 Spurious Emissions

Conducted (k=1.96)

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

Radiated (k=2)

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

8.6 AC Power-line Conducted Emission

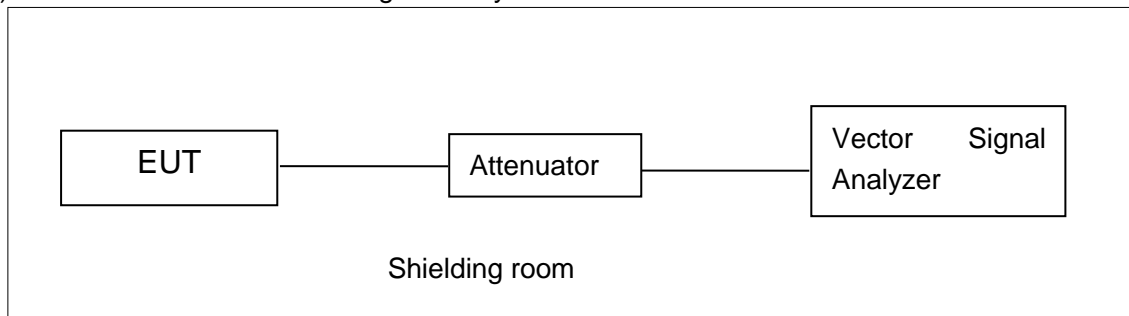
Measurement Uncertainty : 3.08dB,k=2

ANNEX A: 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

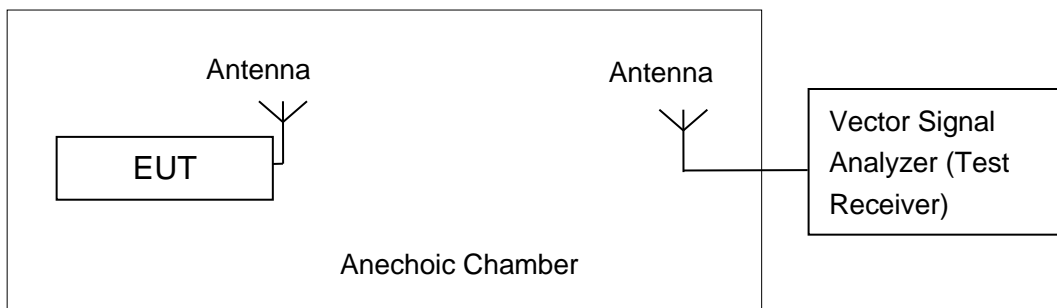


A.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 3MHz;



The measurement is made according to KDB 789033

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. 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 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

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 0.75dBi and the value is supplied by the applicant or manufacturer.

A.2.2 Maximum output Power-Conducted

EUT ID: EUT2

Measurement Results:

802.11a mode

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	16.67	/	/	/	/	/	/	/
	5200MHz	16.81	/	/	/	/	/	/	/
	5240MHz	16.74	/	/	/	/	/	/	/
	5260MHz	16.75	/	/	/	/	/	/	/
	5280MHz	16.81	/	/	/	/	/	/	/
	5320MHz	17.09	/	/	/	/	/	/	/
	5500MHz	15.23	/	/	/	/	/	/	/
	5580MHz	15.26	/	/	/	/	/	/	/
	5700MHz	15.81	/	/	/	/	/	/	/
	5720MHz	15.65	/	/	/	/	/	/	/

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	15.32	/	/	/	/	/	/	/
	5200MHz	15.39	/	/	/	/	/	/	/
	5240MHz	15.57	/	/	/	/	/	/	/
	5260MHz	15.69	/	/	/	/	/	/	/
	5280MHz	15.64	/	/	/	/	/	/	/
	5320MHz	15.65	/	/	/	/	/	/	/

	5500MHz	15.57	/	/	/	/	/	/	/
	5580MHz	15.58	/	/	/	/	/	/	/
	5700MHz	15.74	/	/	/	/	/	/	/
	5720MHz	15.83	/	/	/	/	/	/	/

The data rate MSC0 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	14.65	/	/	/	/	/	/	/	/
	5200MHz	14.50	/	/	/	/	/	/	/	/
	5240MHz	14.45	/	/	/	/	/	/	/	/
	5260MHz	14.69	/	/	/	/	/	/	/	/
	5280MHz	14.67	/	/	/	/	/	/	/	/
	5320MHz	14.72	/	/	/	/	/	/	/	/
	5500MHz	15.13	/	/	/	/	/	/	/	/
	5580MHz	15.26	/	/	/	/	/	/	/	/
	5700MHz	14.87	/	/	/	/	/	/	/	/
	5720MHz	14.46	/	/	/	/	/	/	/	/

The data rate MSC0 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	12.21	/	/	/	/	/	/	/
	5230MHz	12.27	/	/	/	/	/	/	/
	5270MHz	12.39	/	/	/	/	/	/	/
	5310MHz	12.47	/	/	/	/	/	/	/
	5510MHz	12.50	/	/	/	/	/	/	/
	5550MHz	12.37	/	/	/	/	/	/	/
	5670MHz	12.35	/	/	/	/	/	/	/
	5710MHz	12.30	/	/	/	/	/	/	/

The data rate MSC0 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	13.25	/	/	/	/	/	/	/	/	/
	5230MHz	13.14	/	/	/	/	/	/	/	/	/
	5270MHz	13.44	/	/	/	/	/	/	/	/	/
	5310MHz	13.46	/	/	/	/	/	/	/	/	/
	5510MHz	13.58	/	/	/	/	/	/	/	/	/
	5550MHz	13.45	/	/	/	/	/	/	/	/	/
	5670MHz	13.27	/	/	/	/	/	/	/	/	/
	5710MHz	13.16	/	/	/	/	/	/	/	/	/

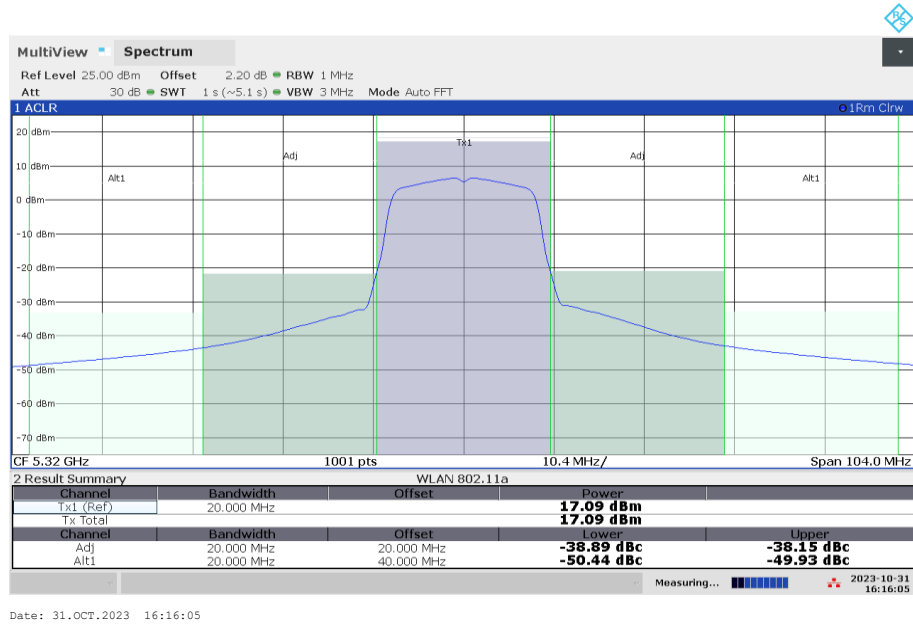
The data rate MSC0 is selected as worst condition, and the following cases are performed with this condition.

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	13.27	/	/	/	/	/	/	/	/	/
	5290MHz	13.41	/	/	/	/	/	/	/	/	/
	5530MHz	13.66	/	/	/	/	/	/	/	/	/
	5610MHz	13.17	/	/	/	/	/	/	/	/	/
	5690MHz	13.79	/	/	/	/	/	/	/	/	/

The data rate MSC0 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:11a CH64

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: EUT2

Measurement Results:

Mode	Frequency	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180 MHz	5.93	P
	5200 MHz	6.17	P
	5240 MHz	6.75	P
	5260 MHz	6.46	P
	5280 MHz	6.53	P
	5320 MHz	6.20	P
	5500 MHz	4.53	P
	5580 MHz	3.80	P
	5700 MHz	4.37	P
	5720 MHz	4.39	P
802.11n HT20	5180 MHz	3.66	P
	5200 MHz	3.99	P
	5240 MHz	4.03	P
	5260 MHz	4.12	P
	5280 MHz	4.51	P
	5320 MHz	4.47	P
	5500 MHz	4.67	P
	5580 MHz	3.90	P
	5700 MHz	4.47	P
	5720 MHz	4.34	P
802.11ac VHT40	5190 MHz	-1.00	P
	5230 MHz	-0.42	P
	5270 MHz	-0.19	P
	5310 MHz	-0.47	P
	5510 MHz	0.31	P
	5550 MHz	-0.30	P
	5670 MHz	-0.42	P
	5710 MHz	-0.07	P
802.11ac	5210 MHz	-3.90	P

VHT80	5290 MHz	-3.09	P
	5530 MHz	-3.18	P
	5610 MHz	-3.82	P
	5690 MHz	-3.68	P



Peak Power Spectral Density:11a CH48

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: EUT2

Measurement Result:

Mode	Frequency	26dB Emission Bandwidth (MHz)		conclusion
		Fig.	Value	
802.11a	5180 MHz	Fig.1	22.56	P
	5200 MHz	Fig.2	20.00	P
	5240 MHz	Fig.3	20.20	P
	5260 MHz	Fig.4	20.12	P
	5280 MHz	Fig.5	20.12	P
	5320 MHz	Fig.6	20.24	P
	5500 MHz	Fig.7	20.08	P
	5580 MHz	Fig.8	19.96	P
	5700 MHz	Fig.9	20.00	P
	5720 MHz	Fig.10	19.92	P
802.11n HT20	5180 MHz	Fig.11	20.36	P
	5200 MHz	Fig.12	20.48	P
	5240 MHz	Fig.13	20.40	P
	5260 MHz	Fig.14	20.36	P
	5280 MHz	Fig.15	20.28	P
	5320 MHz	Fig.16	20.60	P
	5500 MHz	Fig.17	20.32	P
	5580 MHz	Fig.18	20.44	P
	5700 MHz	Fig.19	20.32	P
	5720 MHz	Fig.20	20.56	P
802.11ac VHT40	5190 MHz	Fig.21	40.88	P
	5230 MHz	Fig.22	41.04	P
	5270 MHz	Fig.23	41.28	P
	5310 MHz	Fig.24	41.12	P
	5510 MHz	Fig.25	40.88	P
	5550 MHz	Fig.26	40.80	P
	5670 MHz	Fig.27	40.88	P
	5710 MHz	Fig.28	41.28	P
802.11ac	5210 MHz	Fig.29	81.76	P

VHT80	5290 MHz	Fig.30	81.76	P
	5530 MHz	Fig.31	81.60	P
	5610 MHz	Fig.32	81.60	P
	5690 MHz	Fig.33	81.60	P

Test graphs as below:

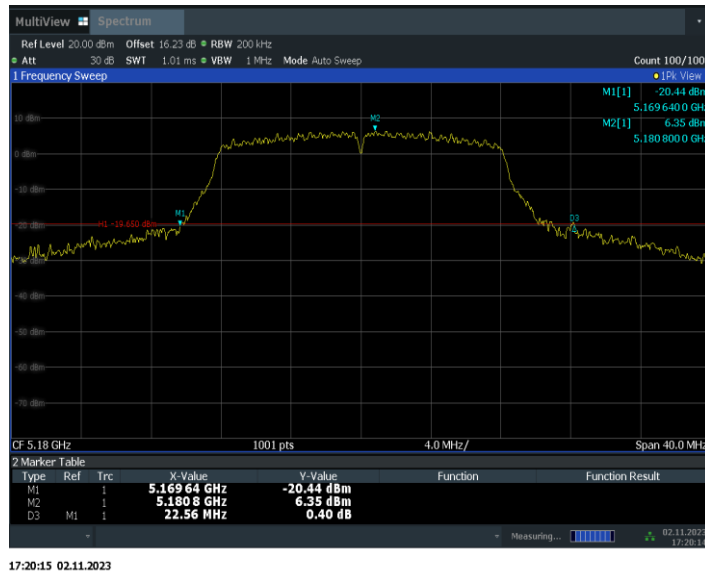


Fig.1 26dB Emission Bandwidth (802.11a, 5180MHz)

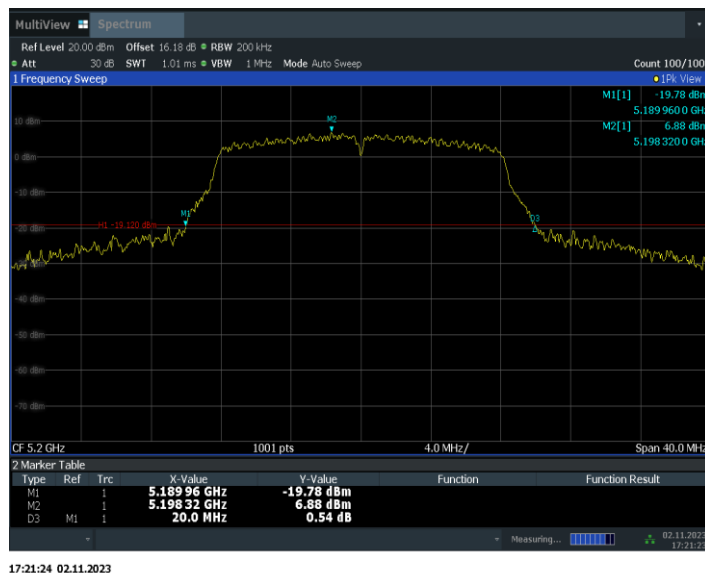
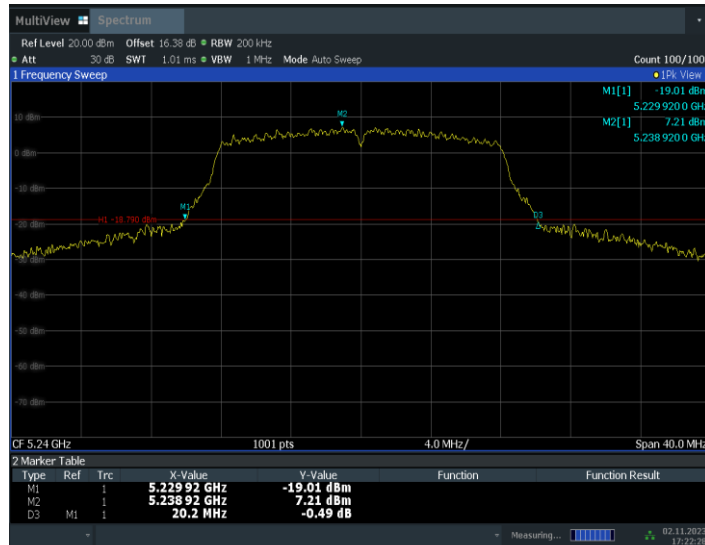
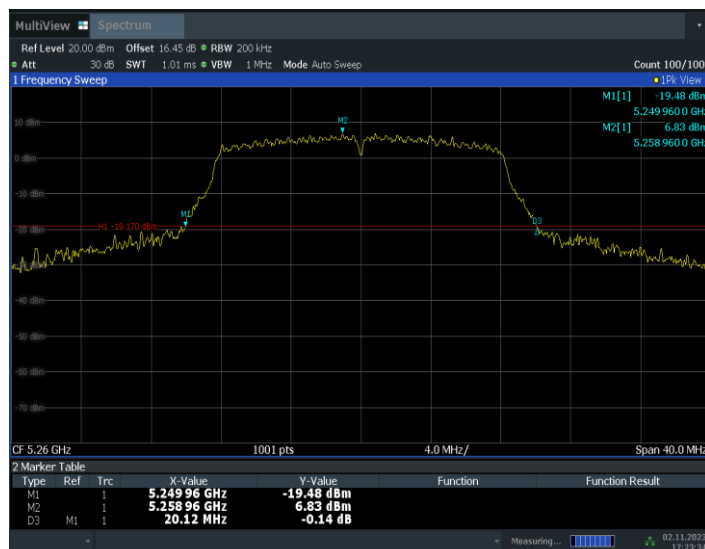


Fig.2 26dB Emission Bandwidth (802.11a, 5200MHz)



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Fig.3 26dB Emission Bandwidth (802.11a, 5240MHz)



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Fig.4 26dB Emission Bandwidth (802.11a, 5260MHz)

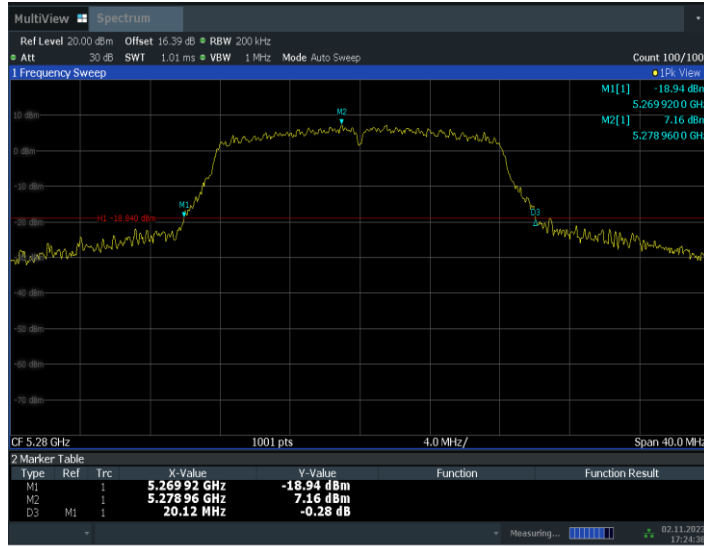


Fig.5 26dB Emission Bandwidth (802.11a, 5280MHz)

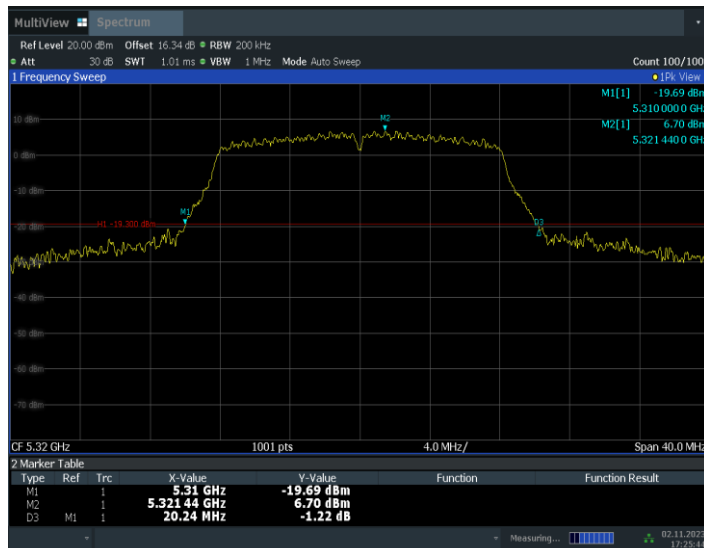
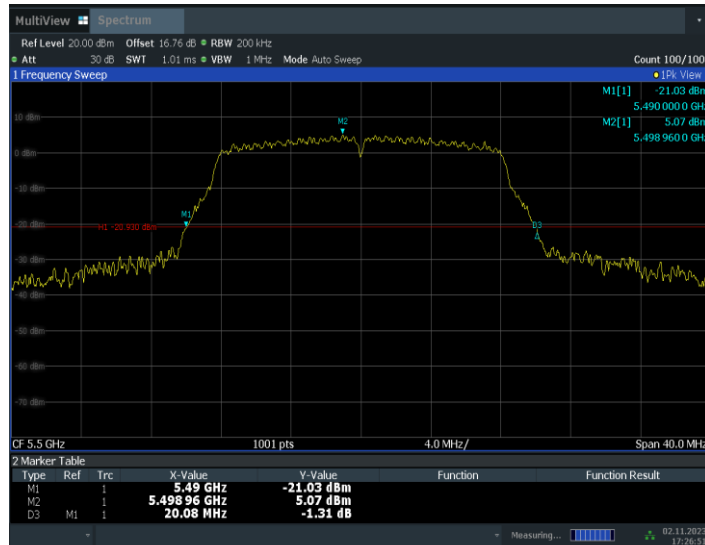
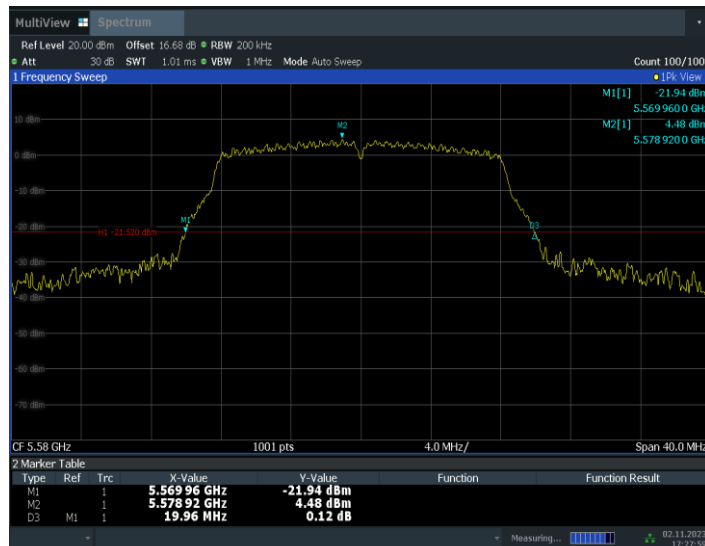


Fig.6 26dB Emission Bandwidth (802.11a, 5320MHz)



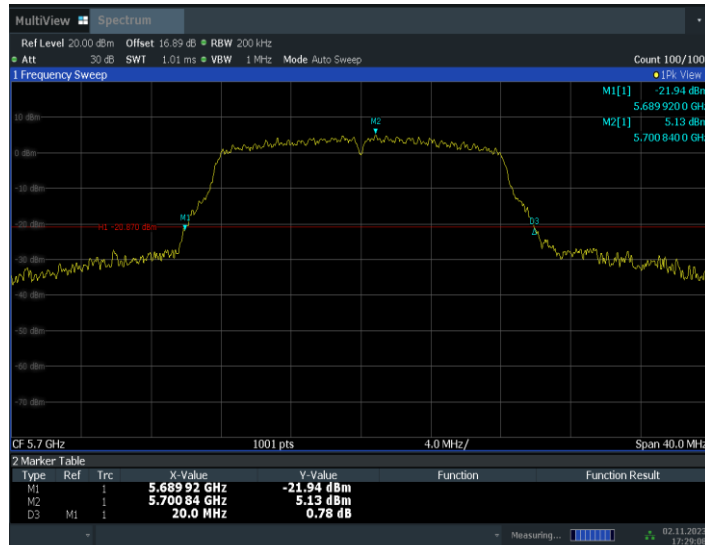
17:26:52 02.11.2023

Fig.7 26dB Emission Bandwidth (802.11a, 5500MHz)



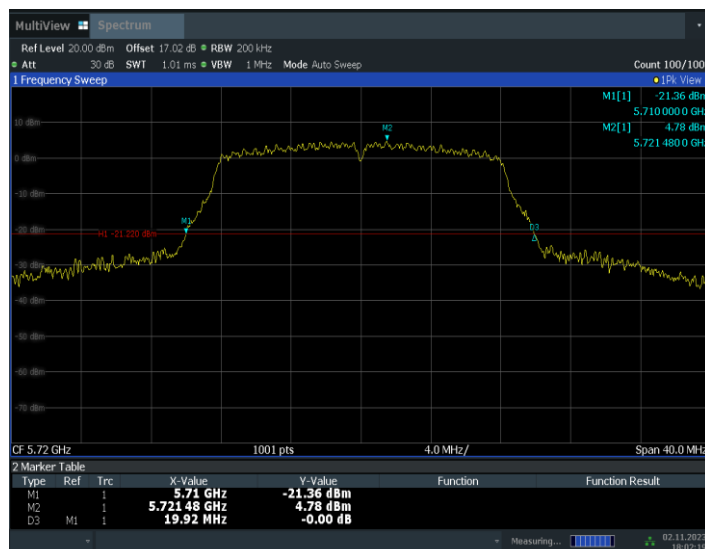
17:28:00 02.11.2023

Fig.8 26dB Emission Bandwidth (802.11a, 5580MHz)



17:29:08 02.11.2023

Fig.9 26dB Emission Bandwidth (802.11a, 5700MHz)



18:02:20 02.11.2023

Fig.10 26dB Emission Bandwidth (802.11a, 5720MHz)

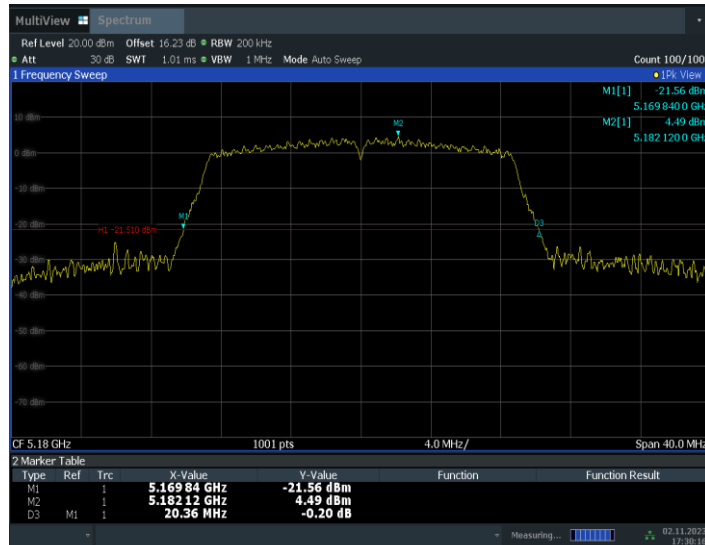


Fig.11 26dB Emission Bandwidth (802.11n-HT20, 5180MHz)

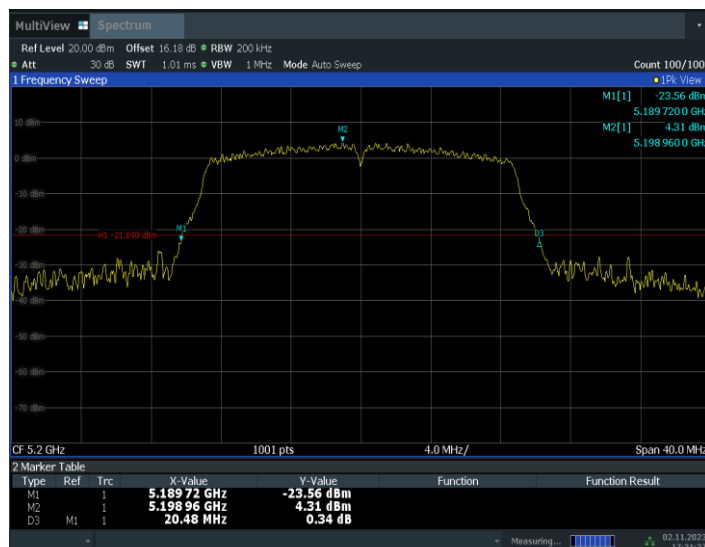
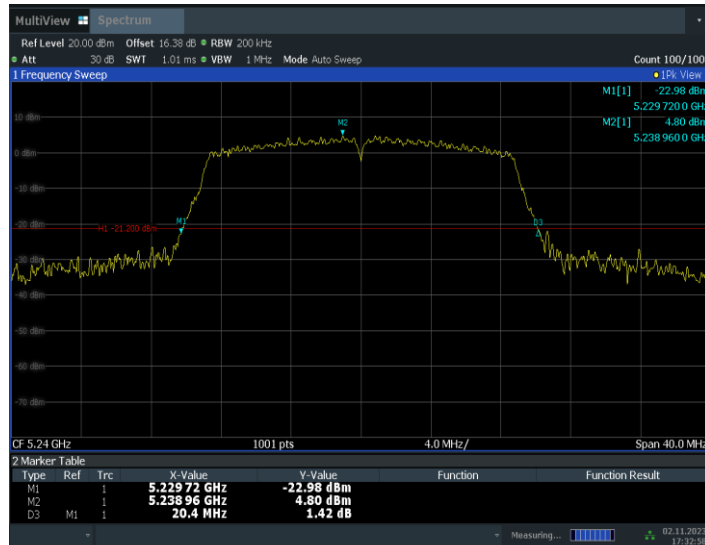
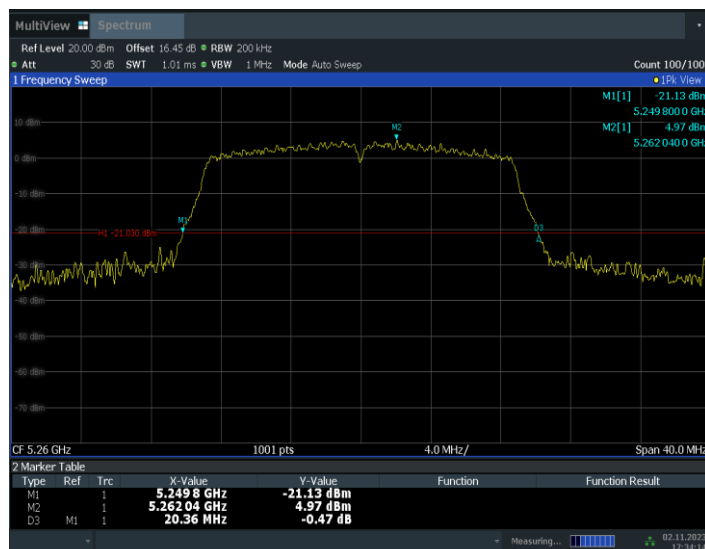


Fig.12 26dB Emission Bandwidth (802.11n-HT20, 5200MHz)



17:32:59 02.11.2023

Fig.13 26dB Emission Bandwidth (802.11n-HT20, 5240MHz)



17:34:15 02.11.2023

Fig.14 26dB Emission Bandwidth (802.11n-HT20, 5260MHz)

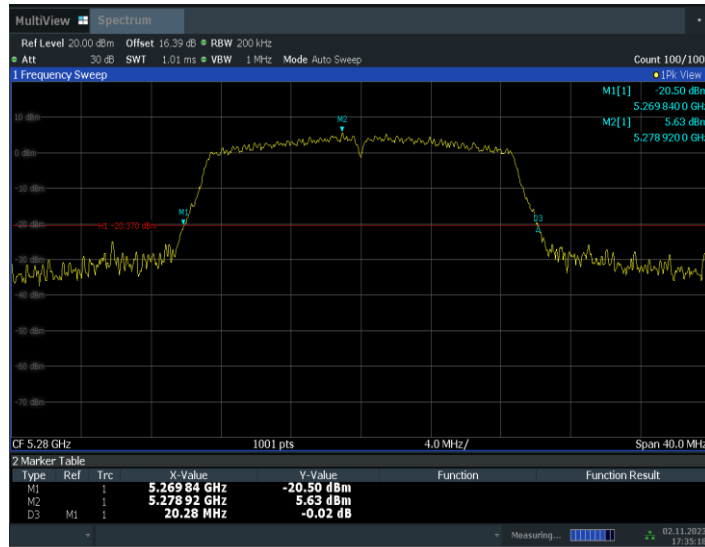


Fig.15 26dB Emission Bandwidth (802.11n-HT20, 5280MHz)



Fig.16 26dB Emission Bandwidth (802.11n-HT20, 5320MHz)



Fig.17 26dB Emission Bandwidth (802. 11n-HT20, 5500MHz)

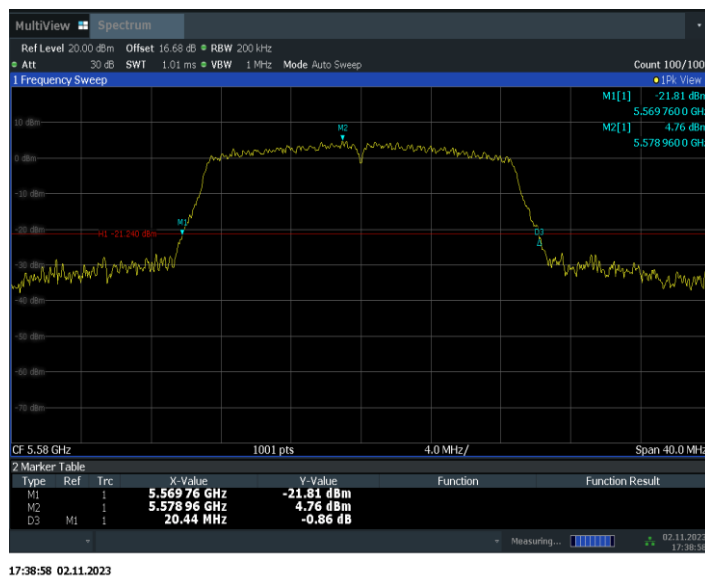
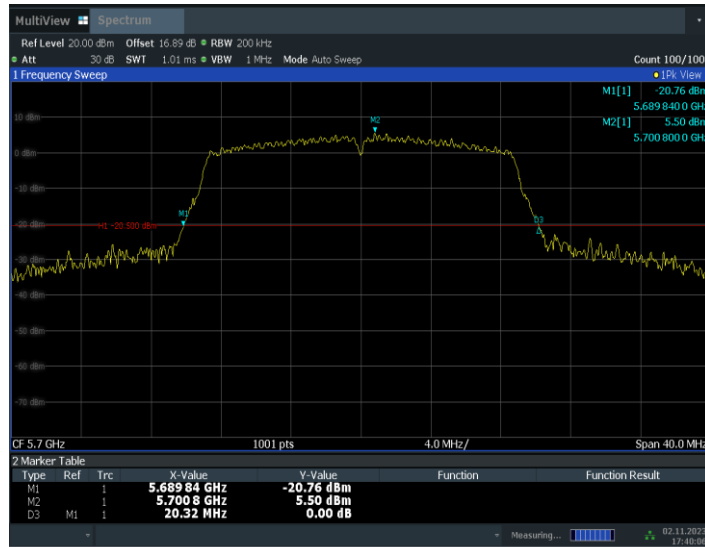
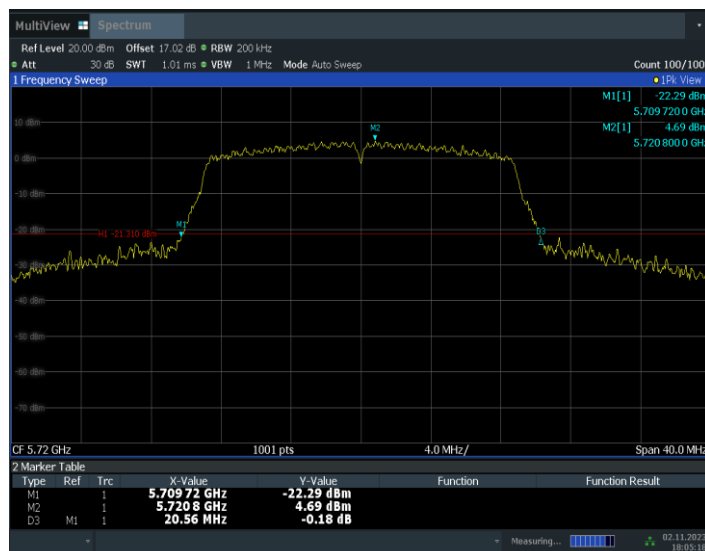


Fig.18 26dB Emission Bandwidth (802. 11n-HT20, 5580MHz)



17:40:06 02.11.2023

Fig.19 26dB Emission Bandwidth (802. 11n-HT20, 5700MHz)



18:05:19 02.11.2023

Fig.20 26dB Emission Bandwidth (802. 11n-HT20, 5720MHz)

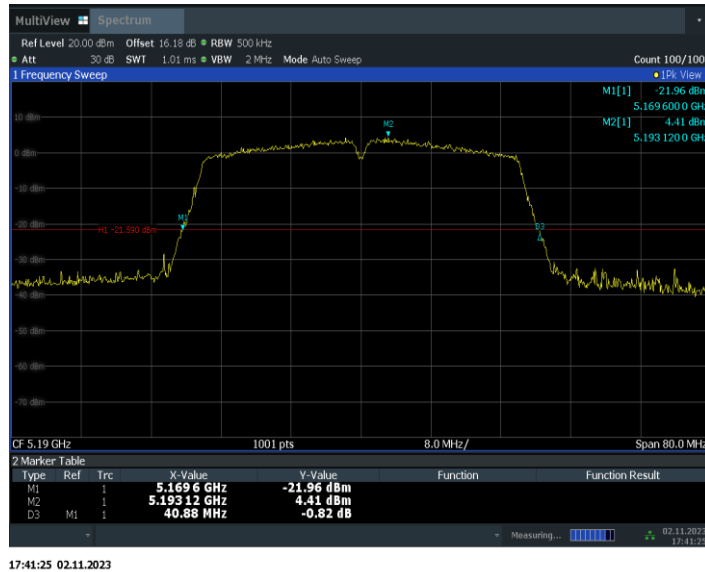


Fig.21 26dB Emission Bandwidth (802.11ac-VHT40, 5190MHz)

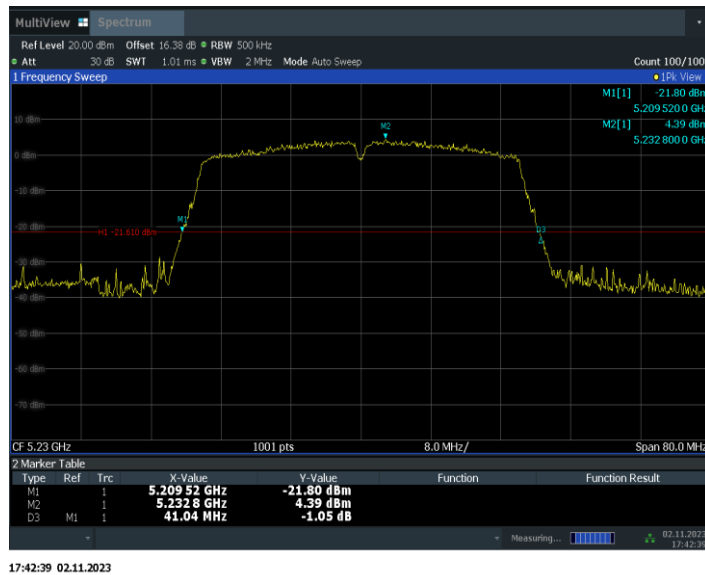
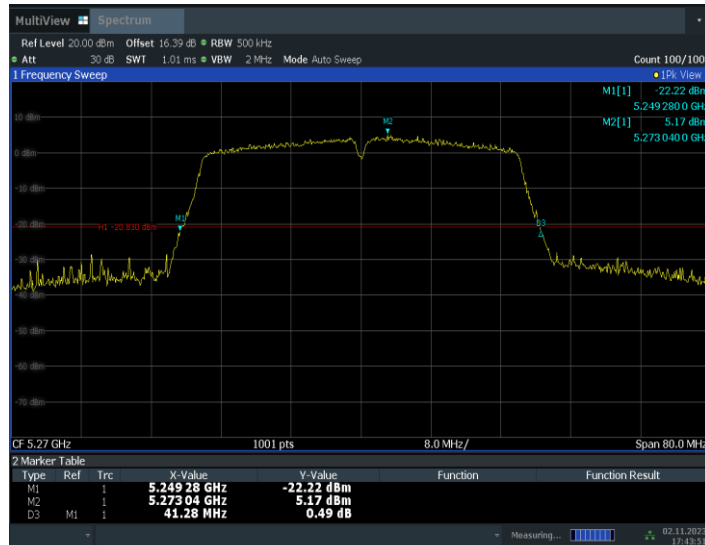
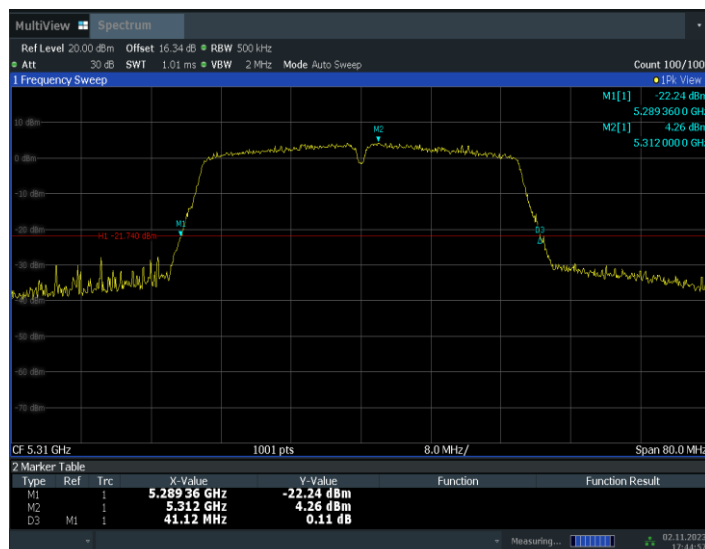


Fig.22 26dB Emission Bandwidth (802.11ac-VHT40, 5230MHz)



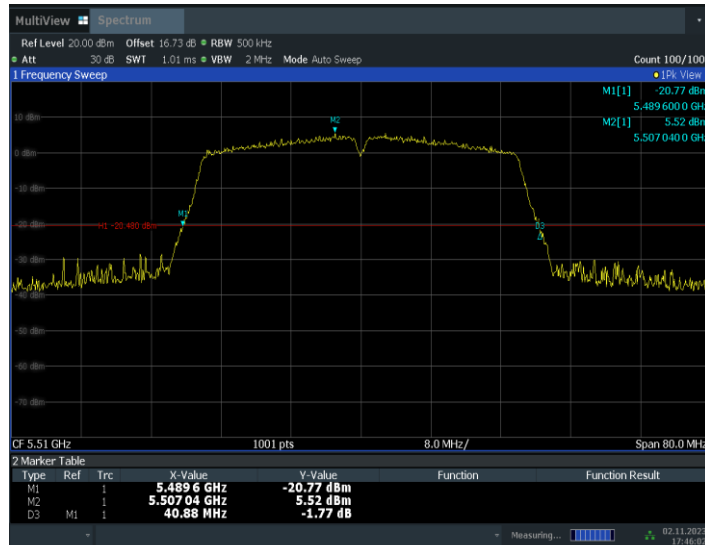
17:43:51 02.11.2023

Fig.23 26dB Emission Bandwidth (802.11ac-VHT40, 5270MHz)



17:44:57 02.11.2023

Fig.24 26dB Emission Bandwidth (802.11ac-VHT40, 5310MHz)



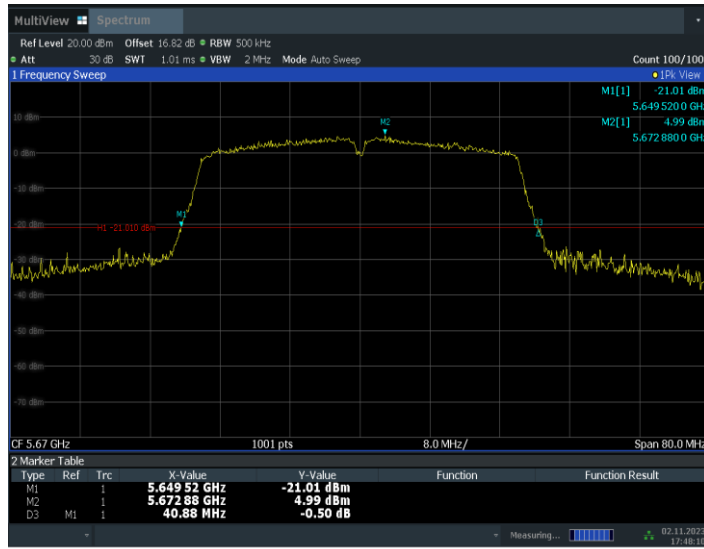
17:46:03 02.11.2023

Fig.25 26dB Emission Bandwidth (802. 11ac-VHT40, 5510MHz)



17:47:08 02.11.2023

Fig.26 26dB Emission Bandwidth (802. 11ac-VHT40, 5550MHz)



17:48:11 02.11.2023

Fig.27 26dB Emission Bandwidth (802. 11ac-VHT40, 5670MHz)



18:06:46 02.11.2023

Fig.28 26dB Emission Bandwidth (802. 11ac-VHT40, 5710MHz)

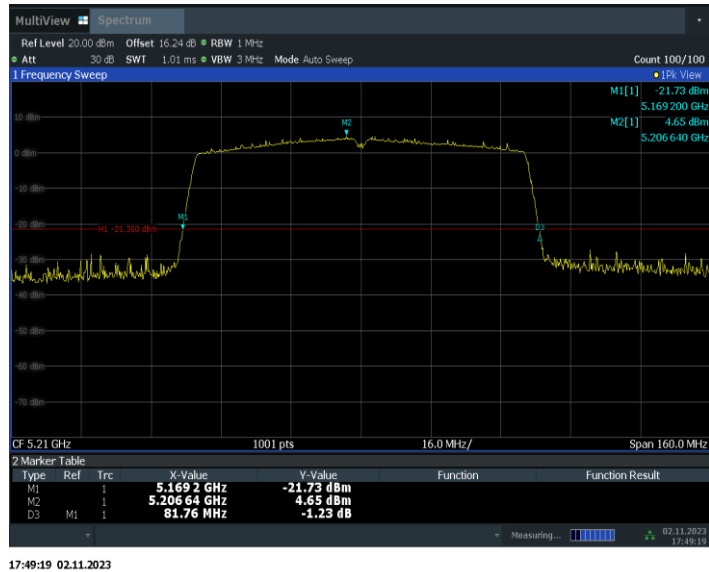


Fig.29 26dB Emission Bandwidth (802. 11ac-VHT80, 5210MHz)

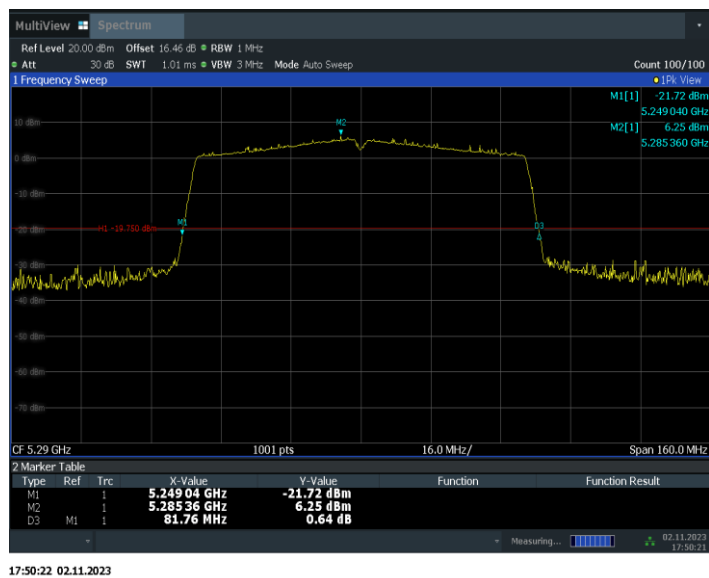
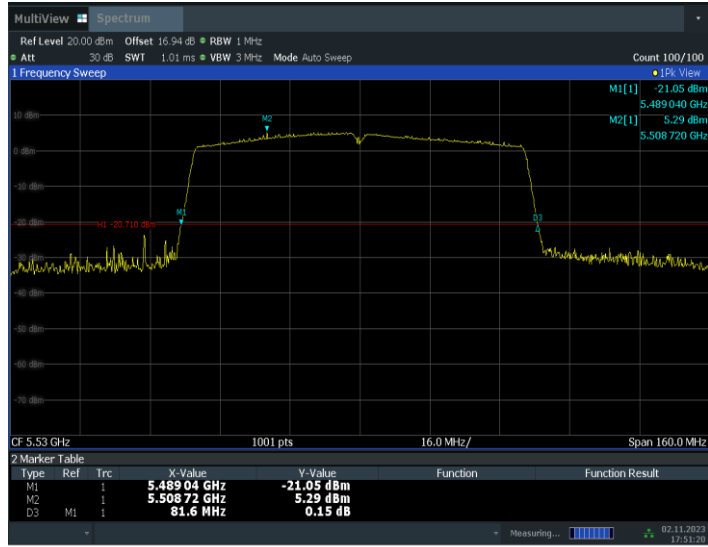
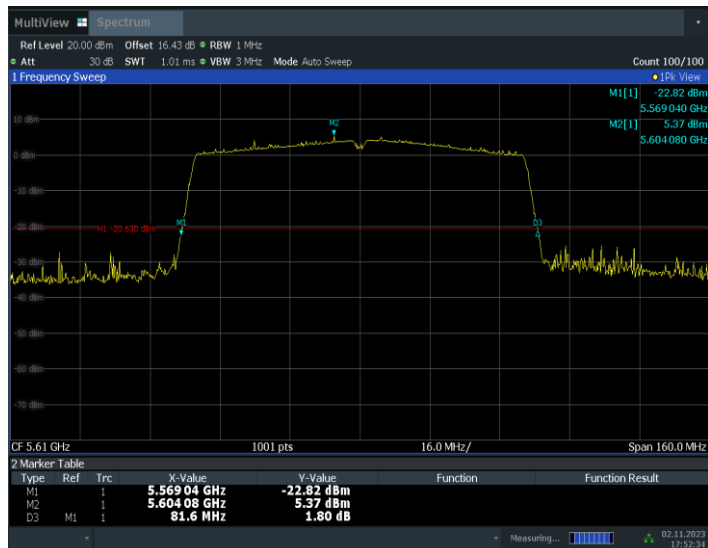


Fig.30 26dB Emission Bandwidth (802. 11ac-VHT80, 5290MHz)



17:51:21 02.11.2023

Fig.31 26dB Emission Bandwidth (802. 11ac-VHT80, 5530MHz)



17:52:35 02.11.2023

Fig.32 26dB Emission Bandwidth (802. 11ac-VHT80, 5610MHz)

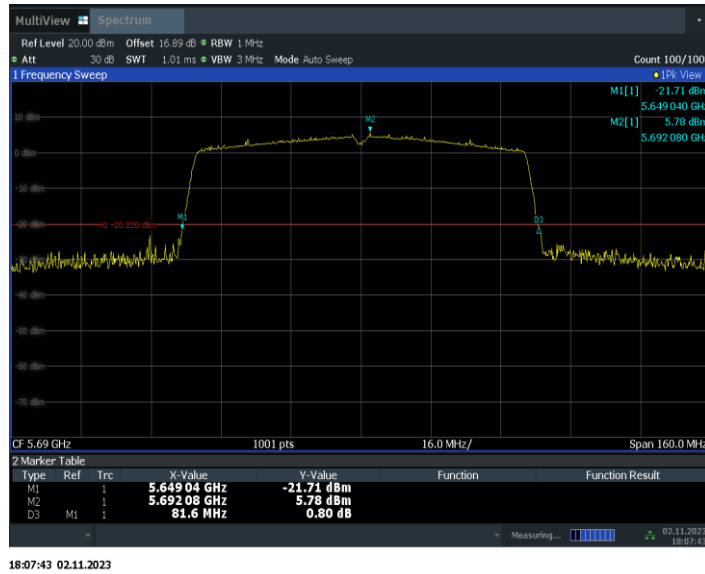


Fig.33 26dB Emission Bandwidth (802. 11ac-VHT80, 5690MHz)

Conclusion: PASS

A.5. Band Edges Compliance

A5.1 Band Edges - Radiated

Measurement Limit:

Standard	Limit (dB μ V/m)	
FCC 47 CFR Part 15.209	Peak	74
	Average	54

The measurement is made according to KDB 789033

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)).

Limit in restricted band:

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

The measurement is made according to ANSI C63.10-2013 and KDB 789033

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.34	P
	5320 MHz	Fig.35	P
	5500 MHz	Fig.36	P
	5700 MHz	Fig.37	P
802.11n HT20	5180 MHz	Fig.38	P
	5320 MHz	Fig.39	P
	5500 MHz	Fig.40	P
	5700 MHz	Fig.41	P
802.11n HT40	5190 MHz	Fig.42	P
	5310 MHz	Fig.43	P
	5510 MHz	Fig.44	P
	5670 MHz	Fig.45	P
802.11ac HT20	5180 MHz	Fig.46	P
	5320 MHz	Fig.47	P
	5500 MHz	Fig.48	P
	5700 MHz	Fig.49	P
802.11ac HT40	5190 MHz	Fig.50	P
	5310 MHz	Fig.51	P
	5510 MHz	Fig.52	P
	5670 MHz	Fig.53	P
802.11ac	5210MHz	Fig.54	P

HT80	5290MHz	Fig.55	P
	5530MHz	Fig.56	P
	5610MHz	Fig.57	P

Conclusion: PASS

Test graphs as below:

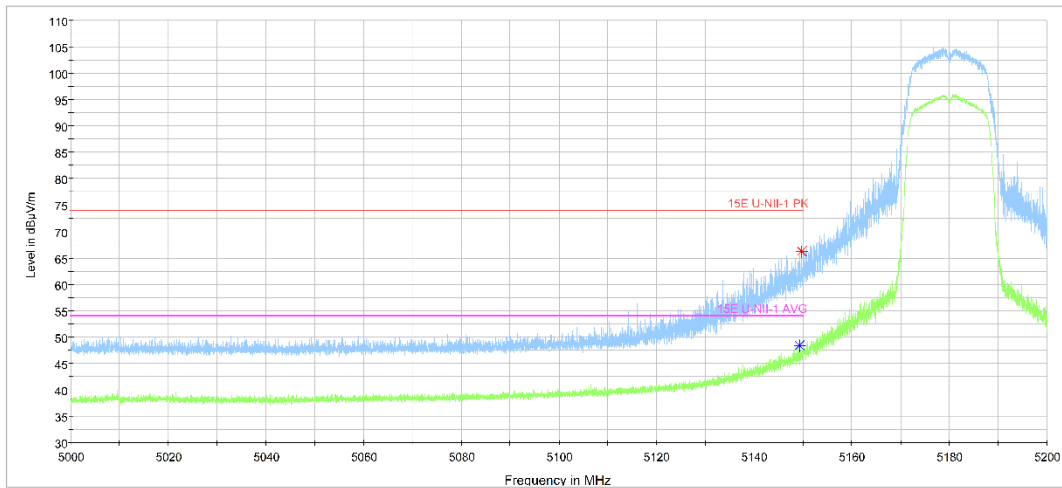


Fig. 34 Band Edges (802.11a Ch36, 5180MHz)

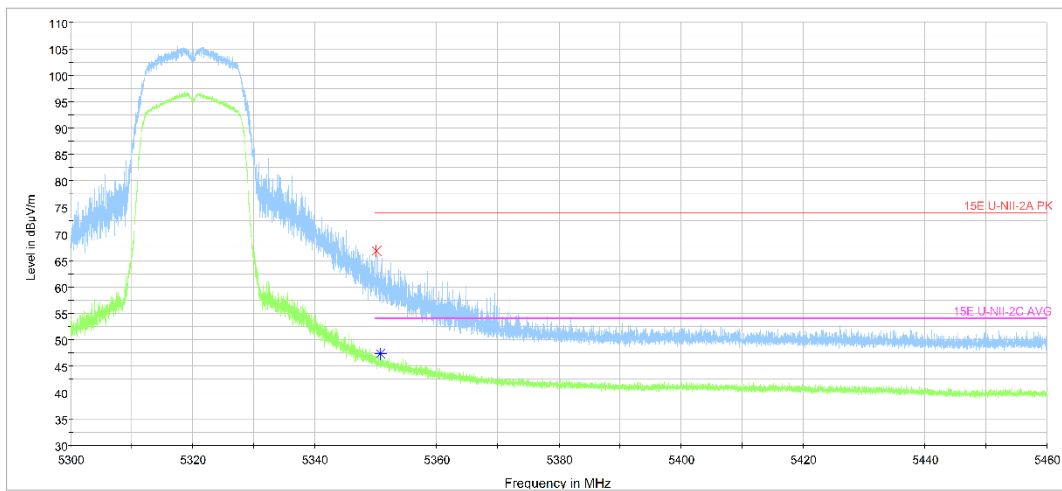


Fig. 35 Band Edges (802.11a Ch64, 5320MHz)

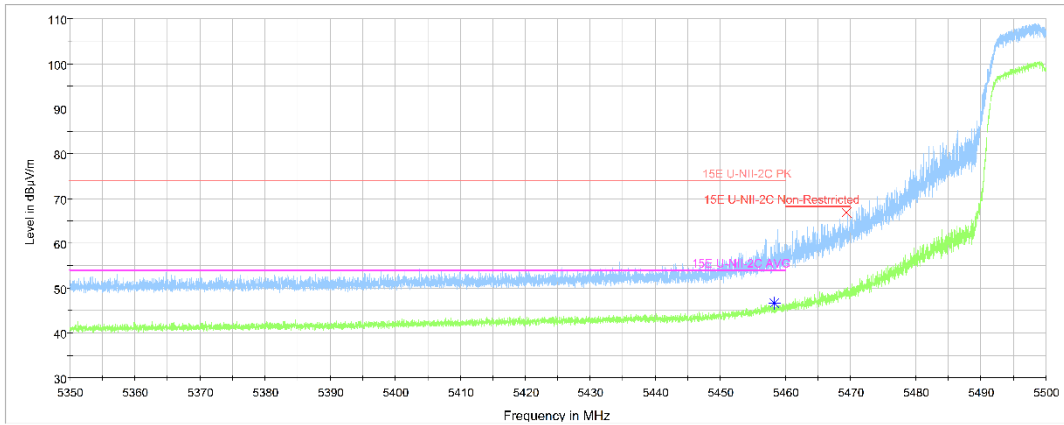


Fig. 36 Band Edges (802.11a Ch100, 5500MHz)

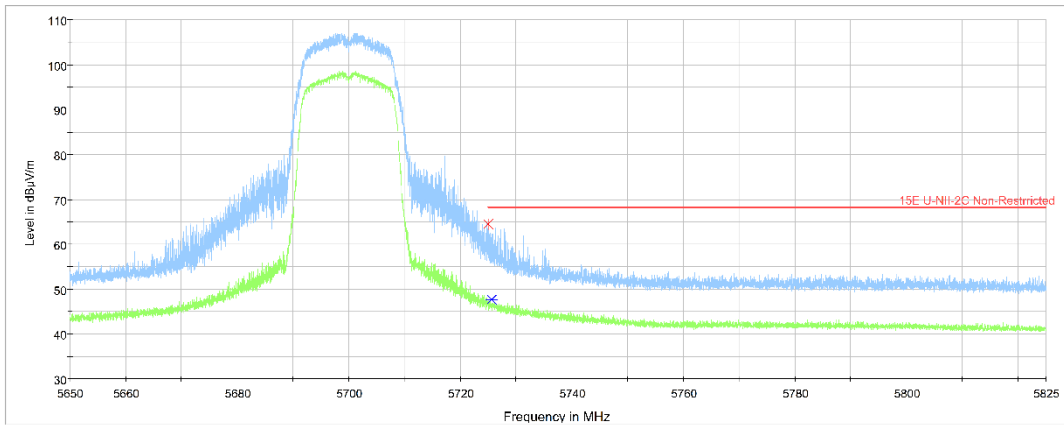


Fig. 37 Band Edges (802.11a Ch140, 5700MHz)

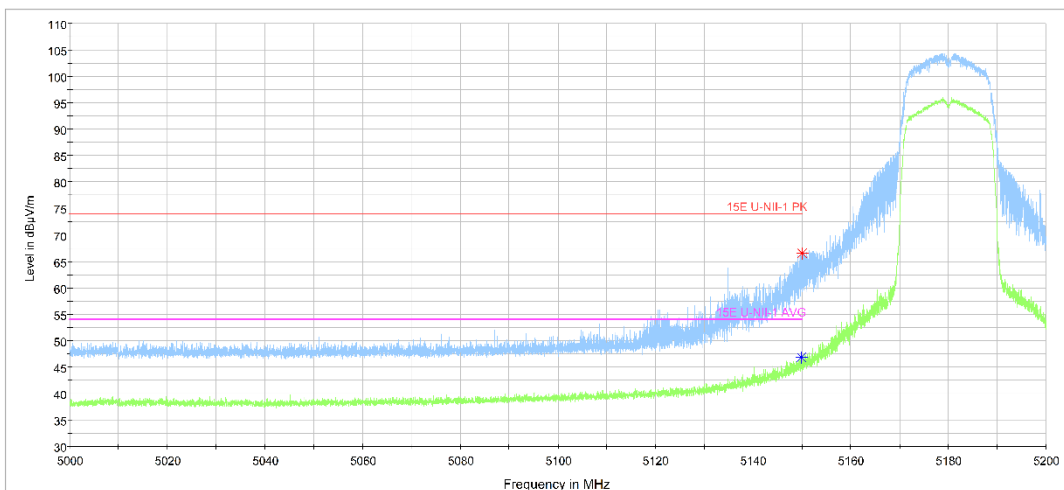


Fig. 38 Band Edges (802.11n-HT20 Ch36, 5180MHz)

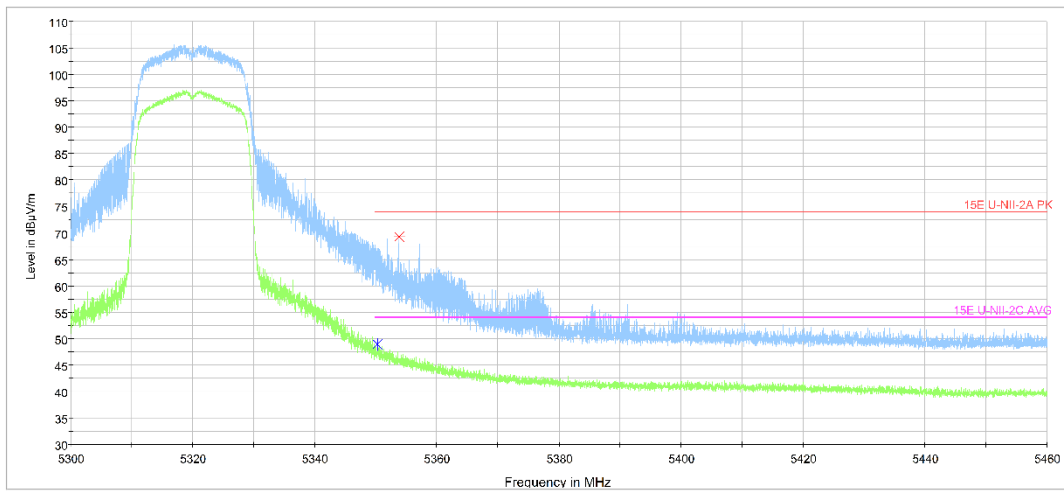


Fig. 39 Band Edges (802.11n-HT20 Ch64, 5320MHz)

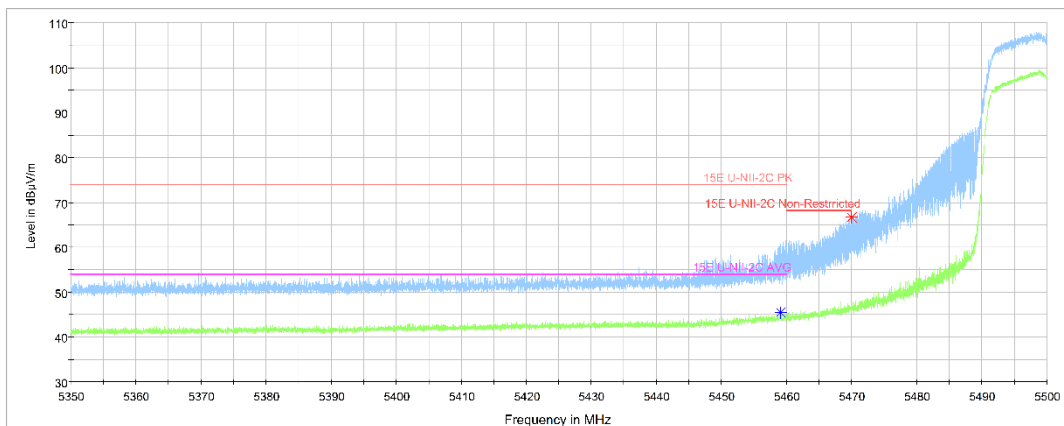


Fig. 40 Band Edges (802.11n-HT20 Ch100, 5500MHz)

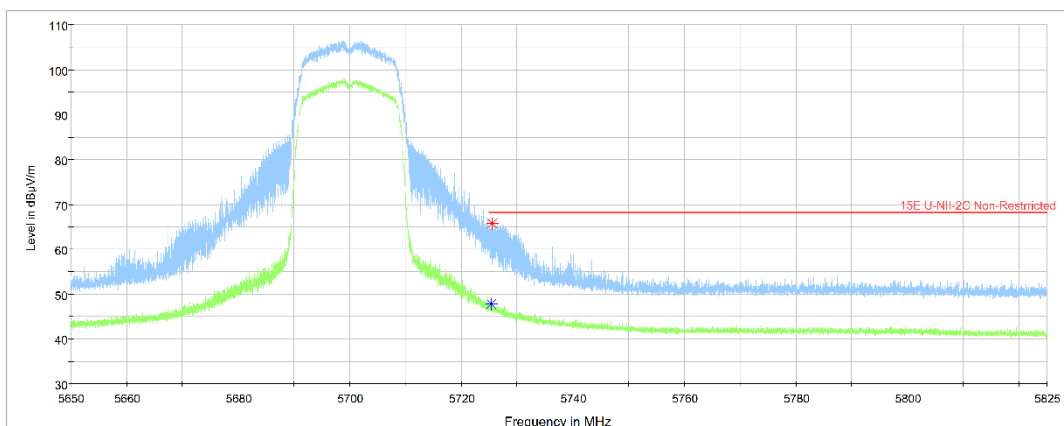


Fig. 41 Band Edges (802.11n-HT20 Ch140, 5700MHz)

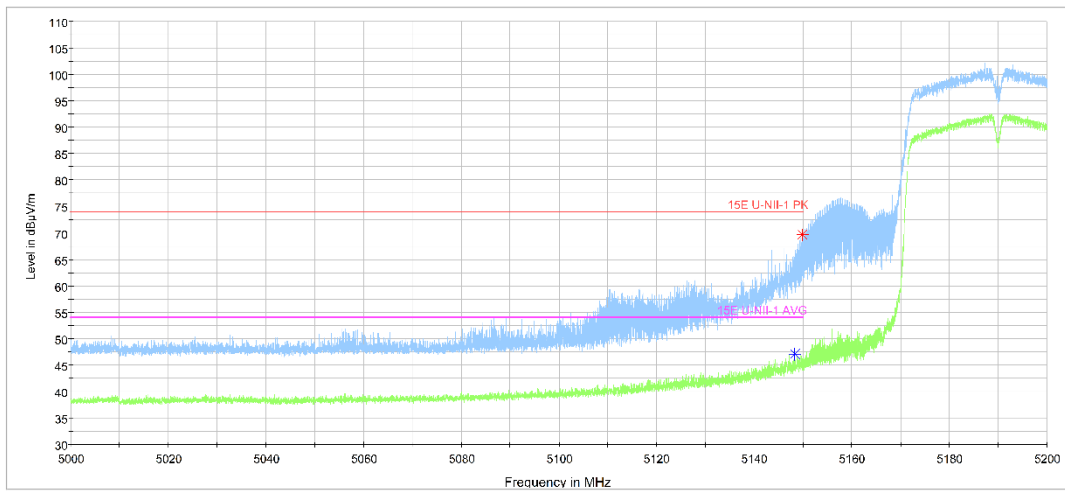


Fig. 42 Band Edges (802.11n-HT40 Ch38, 5190MHz)

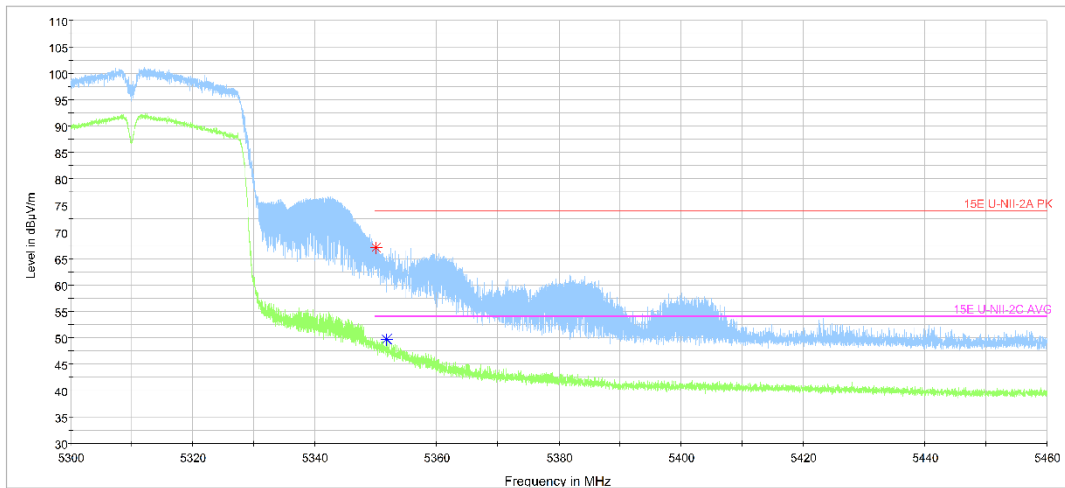


Fig. 43 Band Edges (802.11n-HT40 Ch62, 5310MHz)

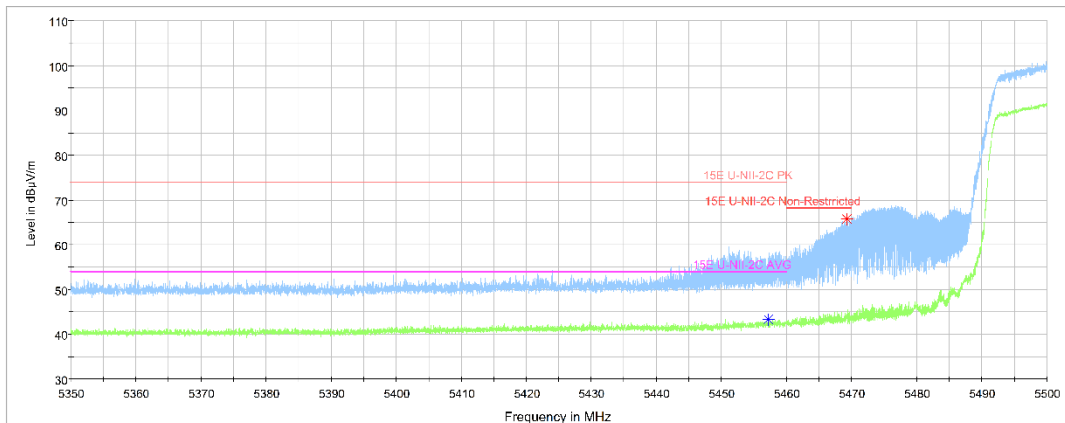


Fig. 44 Band Edges (802.11n-HT40 Ch102, 5510MHz)

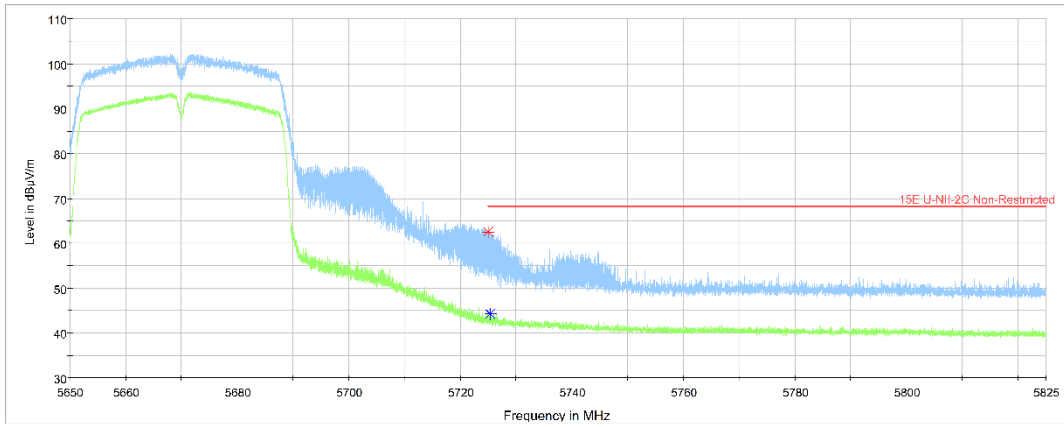


Fig. 45 Band Edges (802.11n-HT40 Ch134, 5670MHz)

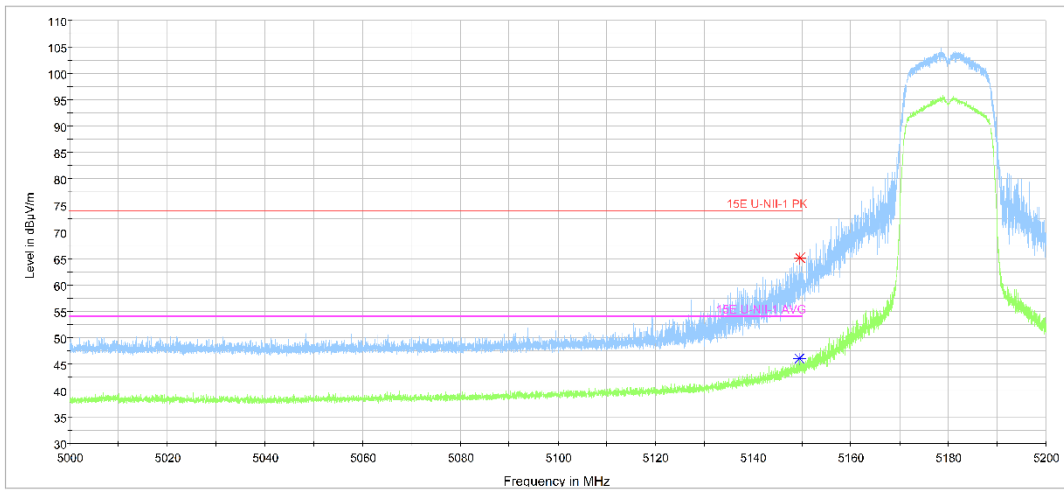


Fig. 46 Band Edges (802.11ac-HT20 Ch36, 5180MHz)

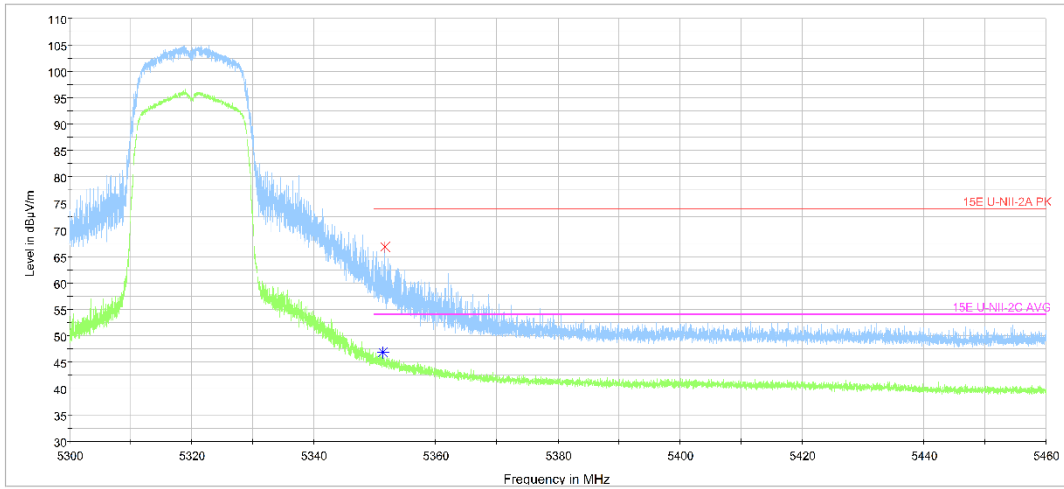


Fig. 47 Band Edges (802.11ac-HT20 Ch64, 5320MHz)

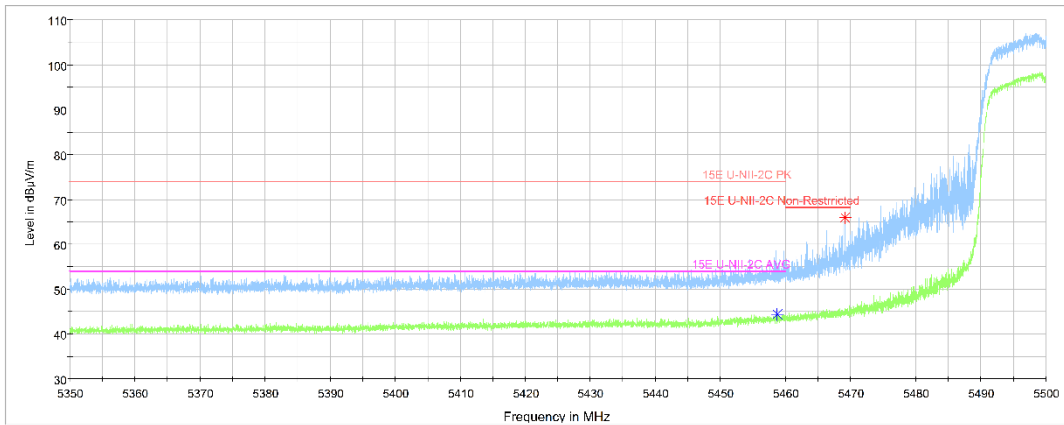


Fig. 48 Band Edges (802.11ac-HT20 Ch100, 5500MHz)

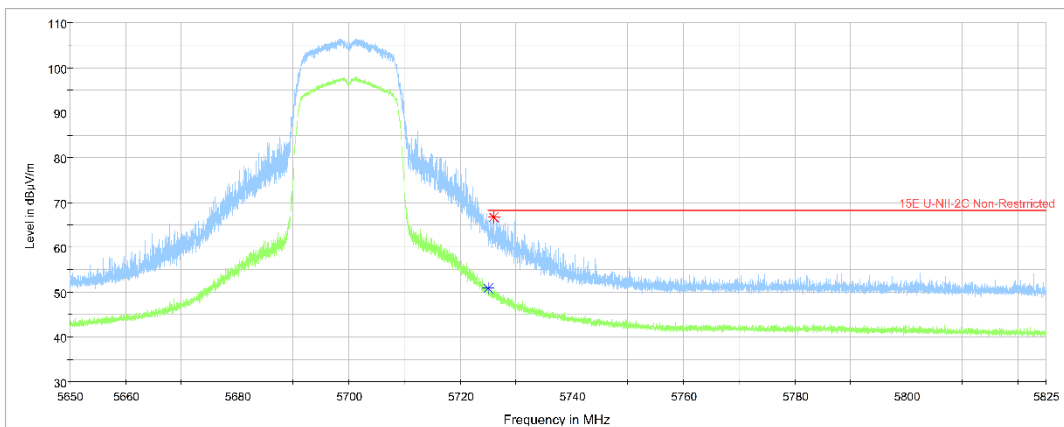


Fig. 49 Band Edges (802.11ac-HT20 Ch140, 5700MHz)

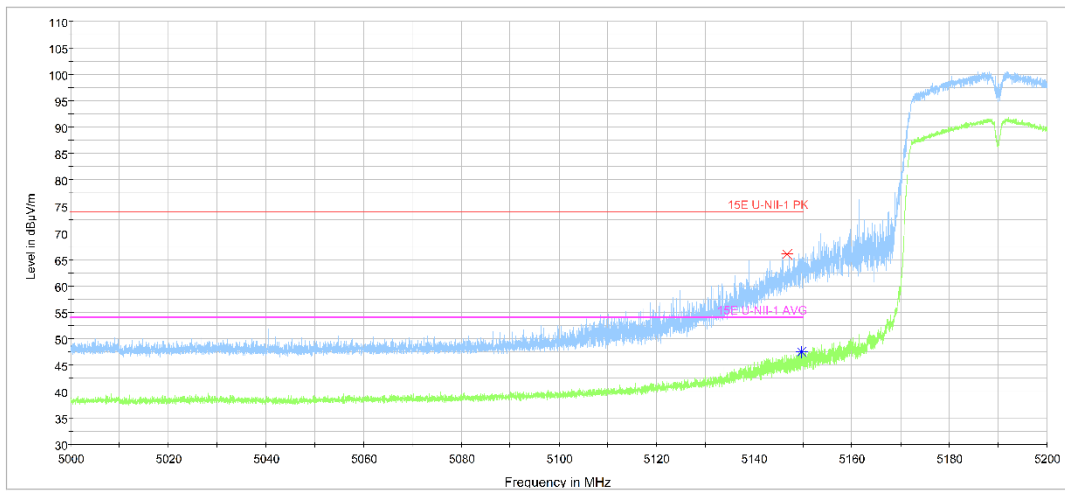


Fig. 50 Band Edges (802.11ac-HT40 Ch38, 5190MHz)

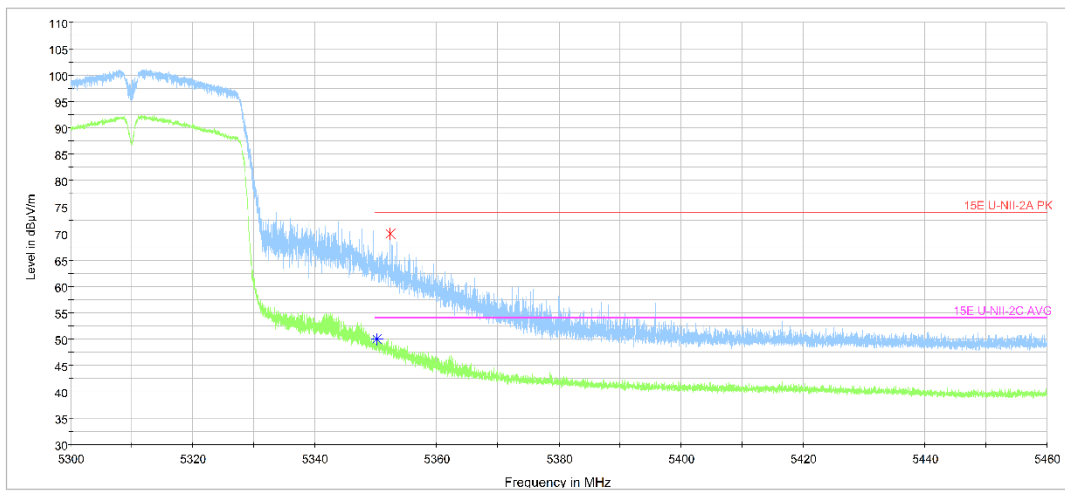


Fig. 51 Band Edges (802.11ac-HT40 Ch62, 5310MHz)

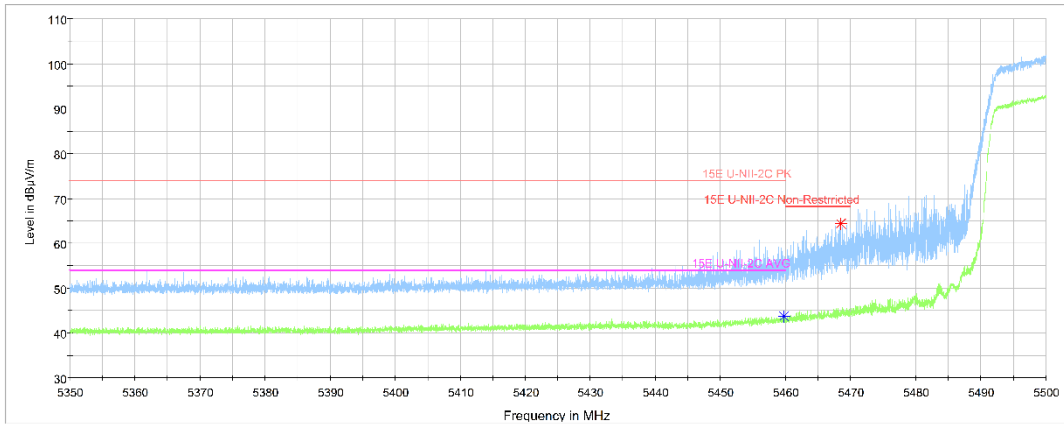


Fig. 52 Band Edges (802.11ac-HT40 Ch102, 5510MHz)

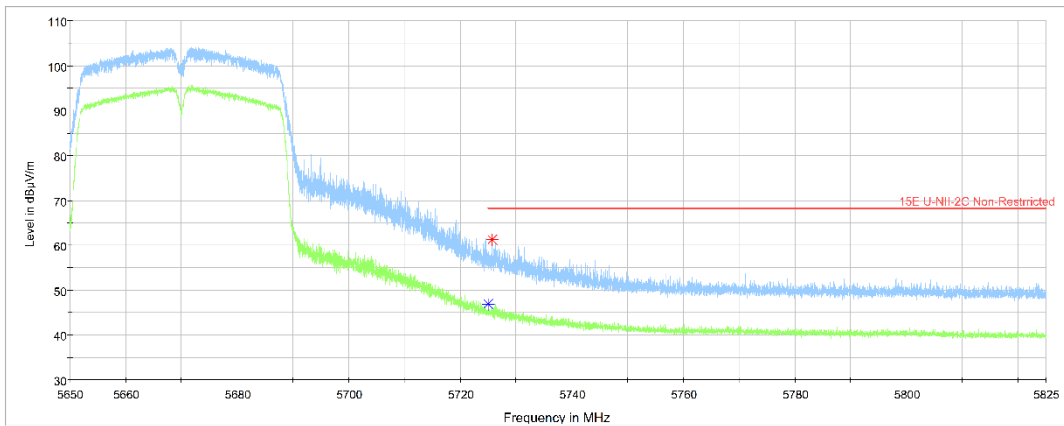


Fig. 53 Band Edges (802.11ac-HT40 Ch134, 5670MHz)

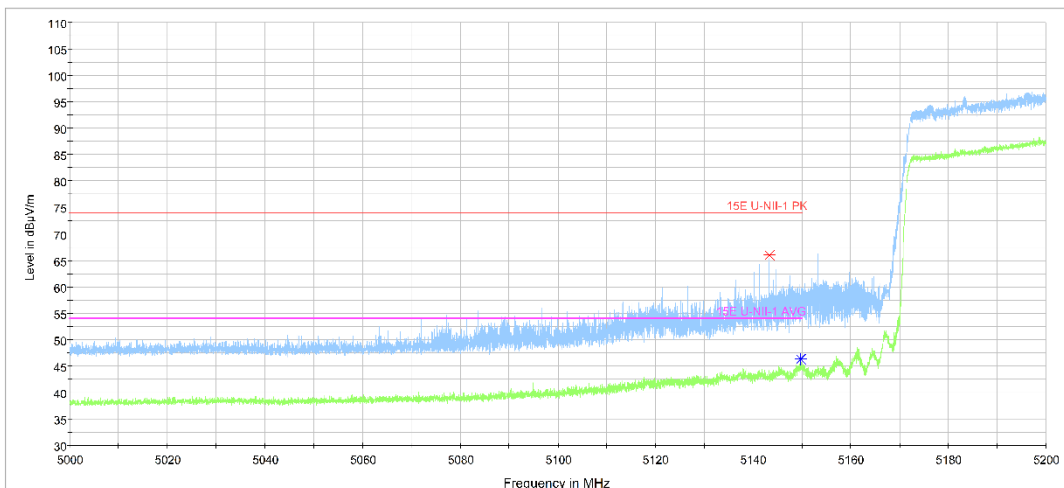


Fig. 54 Band Edges (802.11ac-HT80 Ch42 , 5210MHz)

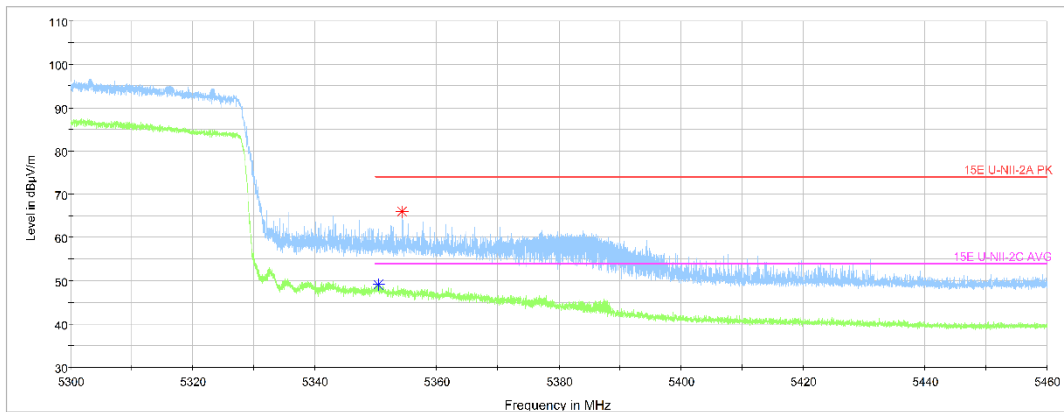


Fig. 55 Band Edges (802.11ac-HT80 Ch58, 5290MHz)

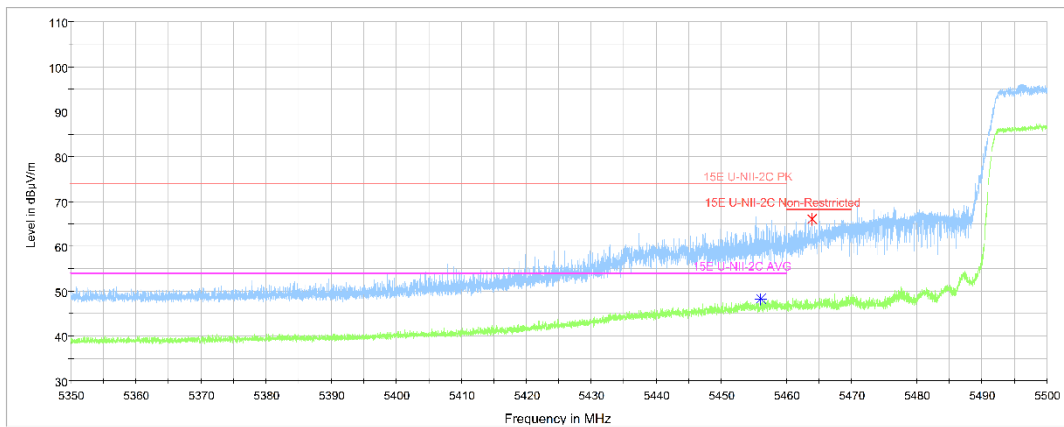


Fig. 56 Band Edges (802.11ac-HT80 Ch106, 5530MHz)

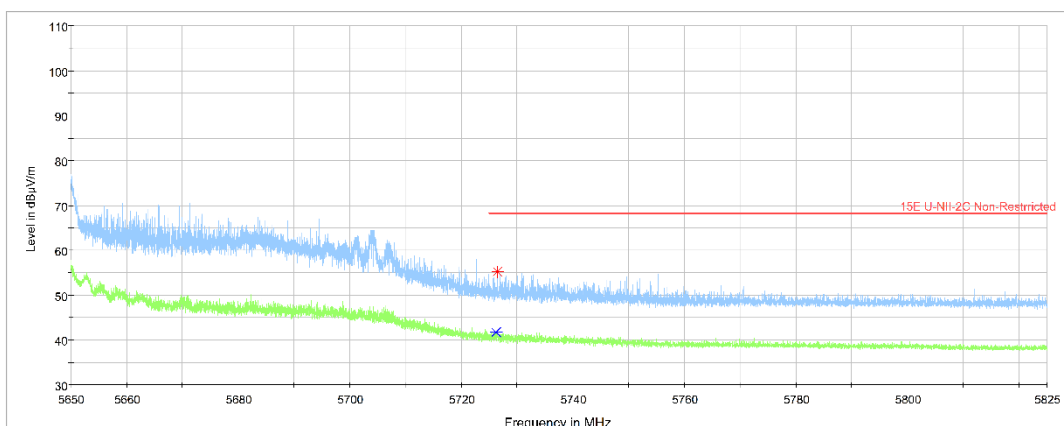


Fig. 57 Band Edges (802.11ac-HT80 Ch122, 5610MHz)

A.6. Transmitter Spurious Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407	-27 dBm/MHz

The measurement is made according to KDB 789033

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)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength(dBμV/m)	Measurement distance(m)
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

Note: for frequency range below 960MHz, the limit in 15.209 is defined in 10m test distance. The limit used above is calculated from 10m to 3m

Note:

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

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

The measurement results are obtained as described below:

$$\text{Result} = P_{Mea} + A_{Rpl} = P_{Mea} + \text{Cable Loss} + \text{Antenna Factor}$$

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)
17959.850	42.48	-29.59	45.95	26.12	54.00	11.52	V
17952.150	42.32	-29.59	45.95	25.96	54.00	11.68	V
14496.500	37.03	-29.56	41.90	24.69	54.00	16.97	V
14473.950	37.00	-29.56	41.90	24.66	54.00	17.00	V
5149.340	48.37	-28.00	34.00	42.37	54.00	5.63	H
5149.100	48.06	-28.00	34.00	42.06	54.00	5.94	H

Channel 40

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)
17967.000	42.67	-29.59	45.95	26.31	54.00	11.33	H
17985.150	42.58	-29.59	45.95	26.22	54.00	11.42	H
14489.900	37.25	-29.56	41.90	24.91	54.00	16.75	V
14499.800	37.22	-29.56	41.90	24.88	54.00	16.78	V
8320.000	36.26	-34.93	37.20	33.99	54.00	17.74	H
8319.450	35.77	-34.93	37.20	33.50	54.00	18.23	H

Channel 48

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)
17969.200	42.53	-29.59	45.95	26.17	54.00	11.47	H
17985.700	42.49	-29.59	45.95	26.13	54.00	11.51	V
8383.800	37.77	-34.42	37.30	34.89	54.00	16.23	H
14498.700	37.08	-29.56	41.90	24.74	54.00	16.92	V
14495.950	36.97	-29.56	41.90	24.63	54.00	17.03	V
8383.250	35.63	-34.42	37.30	32.75	54.00	18.37	H

Channel 52

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)
17985.150	42.40	-29.59	45.95	26.04	54.00	11.60	V
17954.350	42.10	-29.59	45.95	25.74	54.00	11.90	H
14481.650	36.89	-29.56	41.90	24.55	54.00	17.11	V
14495.400	36.79	-29.56	41.90	24.45	54.00	17.21	H
8415.700	36.75	-34.42	37.30	33.87	54.00	17.25	H
8416.250	34.53	-34.69	37.40	31.82	54.00	19.47	H

Channel 56

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17981.300	42.42	-29.59	45.95	26.06	54.00	11.58	H
17986.250	42.38	-29.59	45.95	26.02	54.00	11.62	V
14490.450	37.24	-29.56	41.90	24.90	54.00	16.76	V
14495.400	36.90	-29.56	41.90	24.56	54.00	17.10	V
8447.600	35.90	-34.69	37.40	33.19	54.00	18.10	H
8448.150	34.79	-34.69	37.40	32.08	54.00	19.21	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)
17874.050	42.09	-29.59	45.95	25.73	54.00	11.91	V
17971.950	42.05	-29.59	45.95	25.69	54.00	11.95	H
14498.150	36.96	-29.56	41.90	24.62	54.00	17.04	H
14497.050	36.78	-29.56	41.90	24.44	54.00	17.22	V
5350.720	47.39	-27.82	34.20	41.01	54.00	6.61	H
5350.432	47.30	-27.82	34.20	40.92	54.00	6.70	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)
17975.250	42.94	-29.59	45.95	26.58	54.00	11.06	H
17973.050	42.85	-29.59	45.95	26.49	54.00	11.15	V
14497.050	37.39	-29.56	41.90	25.05	54.00	16.61	V
14495.950	37.33	-29.56	41.90	24.99	54.00	16.67	V
5458.315	46.74	-27.49	34.20	40.03	54.00	7.26	H
5459.770	46.50	-27.49	34.20	39.79	54.00	7.50	H

Channel 120

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)
17949.400	42.94	-29.59	45.95	26.58	54.00	11.06	V
17942.250	42.87	-29.59	45.95	26.51	54.00	11.13	V
14494.850	37.02	-29.56	41.90	24.68	54.00	16.98	V
14497.050	37.00	-29.56	41.90	24.66	54.00	17.00	H
11882.900	34.12	-32.53	39.10	27.55	54.00	19.88	H
11777.300	34.02	-32.71	39.20	27.53	54.00	19.98	V

Channel 140

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)
17991.750	42.61	-29.59	45.95	26.25	54.00	11.39	V
17960.950	42.57	-29.59	45.95	26.21	54.00	11.43	H
14482.750	37.24	-29.56	41.90	24.90	54.00	16.76	V
14489.900	36.97	-29.56	41.90	24.63	54.00	17.03	V
9119.700	34.94	-34.20	37.70	31.44	54.00	19.06	H
11887.850	34.32	-32.53	39.10	27.75	54.00	19.68	V

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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)
17963.150	42.85	-29.59	45.95	26.49	54.00	11.15	H
17953.250	42.59	-29.59	45.95	26.23	54.00	11.41	V
14498.150	37.13	-29.56	41.90	24.79	54.00	16.87	V
14499.800	37.06	-29.56	41.90	24.72	54.00	16.94	V
5149.960	46.79	-28.00	34.00	40.79	54.00	7.21	H
5149.420	46.78	-28.00	34.00	40.78	54.00	7.22	H

Channel 40

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)
17984.050	42.44	-29.59	45.95	26.08	54.00	11.56	V
17892.750	42.42	-29.59	45.95	26.06	54.00	11.58	V
14484.400	37.37	-29.56	41.90	25.03	54.00	16.63	V
14495.400	37.31	-29.56	41.90	24.97	54.00	16.69	V
8320.000	36.92	-34.93	37.20	34.65	54.00	17.08	H
8319.450	36.82	-34.93	37.20	34.55	54.00	17.18	H

Channel 48

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)
17971.400	42.73	-29.59	45.95	26.37	54.00	11.27	V
17953.800	42.53	-29.59	45.95	26.17	54.00	11.47	V
8383.800	37.70	-34.42	37.30	34.82	54.00	16.30	H
14491.000	37.33	-29.56	41.90	24.99	54.00	16.67	V
14486.600	37.04	-29.56	41.90	24.70	54.00	16.96	H
8383.250	35.67	-34.42	37.30	32.79	54.00	18.33	H

Channel 52

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)
17972.500	42.21	-29.59	45.95	25.85	54.00	11.79	V
17946.650	42.17	-29.59	45.95	25.81	54.00	11.83	H
14477.800	36.64	-29.56	41.90	24.30	54.00	17.36	H
14479.450	36.57	-29.56	41.90	24.23	54.00	17.43	H
8415.700	36.32	-34.42	37.30	33.44	54.00	17.68	H
8416.250	34.11	-34.69	37.40	31.40	54.00	19.89	H

Channel 56

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)
17985.150	42.20	-29.59	45.95	25.84	54.00	11.80	V
17967.550	42.15	-29.59	45.95	25.79	54.00	11.85	H
14494.850	36.89	-29.56	41.90	24.55	54.00	17.11	H
14492.650	36.70	-29.56	41.90	24.36	54.00	17.30	V
8447.600	36.43	-34.69	37.40	33.72	54.00	17.57	H
8448.150	34.72	-34.69	37.40	32.01	54.00	19.28	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)
17977.450	42.46	-29.59	45.95	26.10	54.00	11.54	H
17959.300	42.27	-29.59	45.95	25.91	54.00	11.73	V
14475.050	36.82	-29.56	41.90	24.48	54.00	17.18	V
14497.050	36.67	-29.56	41.90	24.33	54.00	17.33	H
5350.336	48.87	-27.82	34.20	42.49	54.00	5.13	H
5351.104	48.67	-27.82	34.20	42.29	54.00	5.33	H