



# FCC PART 15E TEST REPORT No.24T04Z100077-004

for

**TCL Communication Ltd.**

**GSM/UMTS/LTE Mobile phone**

**T433E**

**FCC ID: 2ACCJB218**

with

**Hardware Version: 05**

**Software Version: BM35**

**Issued Date: 2024-03-01**

**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.

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No.24T04Z100077-004

## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
24T04Z100077-004	Rev.0	1st edition	2024-03-01

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: 2024-01-22

Testing End Date: 2024-03-01

### 1.5. Signature



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**Dong Jiaxuan**  
( Prepared this test report )



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**Zheng Wei**  
(Reviewed this test report)



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**Pang Shuai**  
(Approved this test report)



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## **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  
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  
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	GSM/UMTS/LTE Mobile phone
Model name	T433E
FCC ID	2ACCJB218
WLAN Frequency Band	ISM Band: 5725MHz~5850MHz
Type of modulation	OFDM
Nominal Voltage	3.85V

#### **3.2. Internal Identification of EUT used during the test**

<b>EUT ID*</b>	<b>IMEI</b>	<b>HW Version</b>	<b>SW Version</b>	<b>Date of receipt</b>
UT09a	355518370201990/ 355518370202006	05	BM35	2024-01-31
UT03a	355518370000178/ 355518370000186	05	BM35	2024-01-31

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

UT03a is used for Conduction test, UT09a is used for Radiation test.

#### **3.3. Internal Identification of AE used during the test**

<b>AE ID*</b>	<b>Description</b>	<b>Note</b>	<b>Manufacturer</b>
AE1-1	Battery	TLi028C9	Fenhua New EnergyCo.,Ltd
AE1-2	Battery	TLi028CB	Shenzhen Aerospace Electronic Co., Ltd.
AE2-5	Charger	UT-681E-5100UY	Shenzhen Baijunda Electronic Co.,Ltd
AE2-6	Charger	UT-681A-5100UY	Shenzhen Baijunda Electronic Co.,Ltd
AE2-7	Charger	UT-681B-5100UY	Shenzhen Baijunda Electronic Co.,Ltd
AE2-8	Charger	UT-580S-5100UY	Shenzhen Baijunda Electronic Co.,Ltd
AE3	USB cable	HE1501-000354-000	Shenzhen Xinchengyuteng Co.,Ltd
AE4	Headset	HE0501-000316-000	Shenzhen Xinchengyuteng Co.,Ltd

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

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

#### **3.4. General Description**

Equipment Under Test (EUT) is a model of GSM/UMTS/LTE Mobile phone with integrated antenna.

It consists of normal options: Battery and Charger.

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

Samples undergoing test were selected by the Client.

## **4. Reference Documents**

### **4.1. Documents supplied by applicant**

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

### **4.2. Reference Documents for testing**

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

FCC Part15	FCC CFR 47, Part 15, Subpart C and E: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.407 General technical requirements	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 Peak Output Power	15.407 (a)	/	<b>P</b>
Peak Power Spectral Density	15.407 (a)	/	<b>P</b>
Occupied 6dB Bandwidth	15.407 (e)	/	<b>P</b>
Band Edges Compliance - Conducted& Radiated	15.407 (b)	/	<b>P</b>
Transmitter Spurious Emission - Radiated	15.407, 15.205, 15.209	/	<b>P</b>
AC Powerline Conducted Emission	15.107, 15.207	/	<b>P</b>

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	R&S	1 Year	2024-06-04
4	Test Receiver	ESCI	100344	R&S	2 years	2025-02-20
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	R&S	1 year	2024-11-26
2	EMI Antenna	VULB 9163	01222	SCHWARZBECK	2 years	2025-01-28
3	EMI Antenna	3115	6914	ETS-Lindgren	1 year	2024-05-07
4	EMI Antenna	3116	2663	ETS-Lindgren	2 years	2024-11-22

Test Item	Software	Manufacturer
Conducted emission	EMC32 V8.53.0	R&S
Radiated emission	EMC32 V11.50.00	R&S

## 8. Measurement Uncertainty

### 8.1. Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

### 8.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

### 8.3. 6dB Emission Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

### 8.4. Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

### 8.5. Spurious Emissions

#### Conducted (k=1.96)

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

#### Radiated (k=2)

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

### 8.6. AC Power-line Conducted Emission

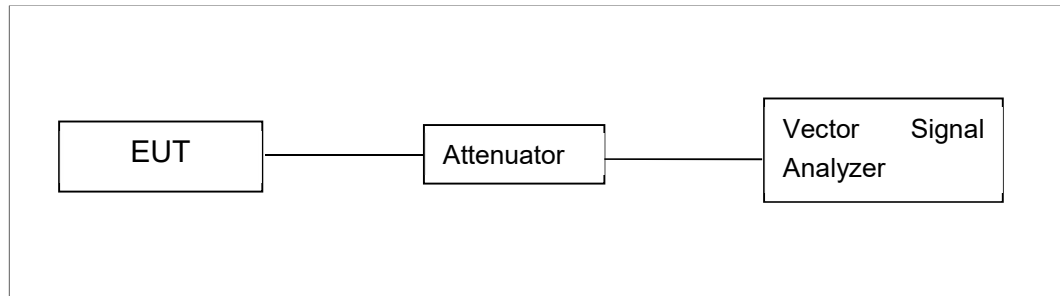
Measurement Uncertainty : 3.08dB,k=2

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1. Measurement Method**

#### **A.1.1. Conducted Measurements**

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

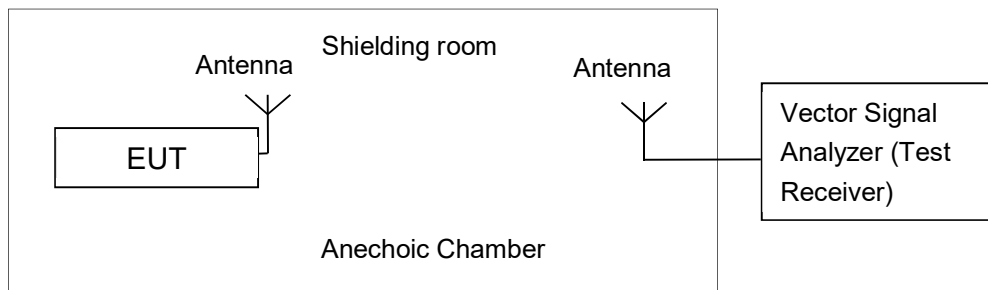


#### **A.1.2. Radiated Emission Measurements**

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 ANSI C63.10.

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 Peak Output Power**

### **Measurement Limit and Method:**

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

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

Set RBW = 1 MHz.

Set VBW ≥ 3 MHz.

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

Sweep time = auto.

Detector = power averaging (rms)

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

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

### **A.2.1 Antenna Gain**

Antenna gain is -1.27dBi and the value is supplied by the applicant or manufacturer.

### **A.2.2. Maximum Average Output Power-Conducted**

**EUT ID: UT03a**

### **Measurement Results:**

#### **802.11a mode**

<b>Mode</b>	<b>Data Rate (Mbps)</b>	<b>Test Result (dBm)</b>		
		<b>5745MHz (Ch149)</b>	<b>5785MHz (Ch157)</b>	<b>5825MHz (Ch165)</b>
802.11a	6	12.71	13.17	13.17
	9	\	\	\
	12	\	\	\
	18	\	\	\
	24	\	\	\
	36	\	\	\
	48	\	\	\
	54	\	\	\

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

**802.11n-HT20 mode**

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11n (20MHz)	MCS0	10.06	10.18	10.30
	MCS1	\	\	\
	MCS2	\	\	\
	MCS3	\	\	\
	MCS4	\	\	\
	MCS5	\	\	\
	MCS6	\	\	\
	MCS7	\	\	\

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

**802.11ac-HT20 mode**

Mode	Data Rate (Index)	Test Result (dBm)		
		5745MHz (Ch149)	5785MHz (Ch157)	5825MHz (Ch165)
802.11ac (20MHz)	MCS0	10.68	10.78	10.74
	MCS1	\	\	\
	MCS2	\	\	\
	MCS3	\	\	\
	MCS4	\	\	\
	MCS5	\	\	\
	MCS6	\	\	\
	MCS7	\	\	\
	MCS8	\	\	\

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

**802.11n-HT40 mode**

Mode	Data Rate (Index)	Test Result (dBm)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11n (40MHz)	MCS0	10.50	10.14
	MCS1	\	\
	MCS2	\	\
	MCS3	\	\
	MCS4	\	\
	MCS5	\	\
	MCS6	\	\
	MCS7	\	\

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

**802.11ac-HT40 mode**

Mode	Data Rate (Index)	Test Result (dBm)	
		5755MHz (Ch151)	5795MHz (Ch159)
802.11ac (40MHz)	MCS0	9.72	9.71
	MCS1	\	\
	MCS2	\	\
	MCS3	\	\
	MCS4	\	\
	MCS5	\	\
	MCS6	\	\
	MCS7	\	\
	MCS8	\	\
	MCS9	\	\

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

**802.11ac-HT80 mode**

Mode	Data Rate (Index)	Test Result (dBm)
		5775MHz (Ch155)
802.11ac (80MHz)	MCS0	10.07
	MCS1	\
	MCS2	\
	MCS3	\
	MCS4	\
	MCS5	\
	MCS6	\
	MCS7	\
	MCS8	\
	MCS9	\

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%.



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**Maximum output Power: 11a 5745**

**Conclusion: PASS**



### A.3. Peak Power Spectral Density

#### Measurement Limit:

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

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

Set RBW = 500 kHz.

Set VBW  $\geq$  3 MHz.

Number of points in sweep  $\geq 2 \times$  span / RBW.

Sweep time = auto.

Detector = power averaging (rms)

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

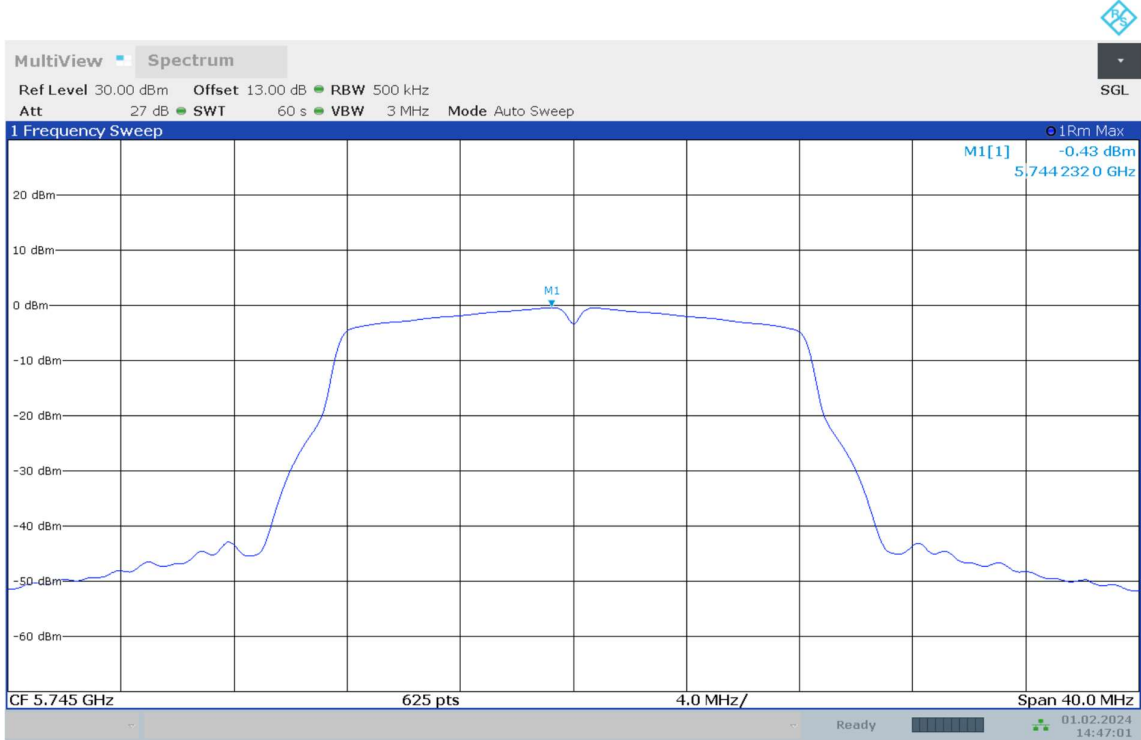
#### Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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#### EUT ID: UT03a

#### Measurement Results:

Mode	Channel	Power Spectral Density ( dBm/500kHz )	Conclusion
802.11a	149	-0.43	P
	157	-1.23	P
	165	-1.21	P
802.11ac HT20	149	-4.01	P
	157	-3.81	P
	165	-4.27	P
802.11n HT40	151	-6.65	P
	159	-6.26	P
802.11ac HT80	155	-9.83	P



**Peak Power Spectral Density:11a 5745**

**Conclusion: PASS**

#### **A.4. 6dB Emission Bandwidth**

**Measurement Limit:**

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

Set RBW = 100 kHz.

Set the video bandwidth (VBW) ≥ 3 × RBW.

Detector = Peak.

Trace mode = max hold.

Sweep = auto couple.

Allow the trace to stabilize.

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

**Measurement Uncertainty:**

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

**EUT ID: UT03a**

**Measurement Result:**

Mode	Channel	6dB Emission Bandwidth ( MHz)		conclusion
802.11a	149	Fig.1	16.30	P
	157	Fig.2	16.30	P
	165	Fig.3	16.30	P
802.11ac (VHT20)	149	Fig.4	17.55	P
	157	Fig.5	17.54	P
	165	Fig.6	17.56	P
802.11n HT40	151	Fig.7	36.31	P
	159	Fig.8	35.00	P
802.11ac (VHT80)	155	Fig.9	75.91	P

**Test graphs as below:**

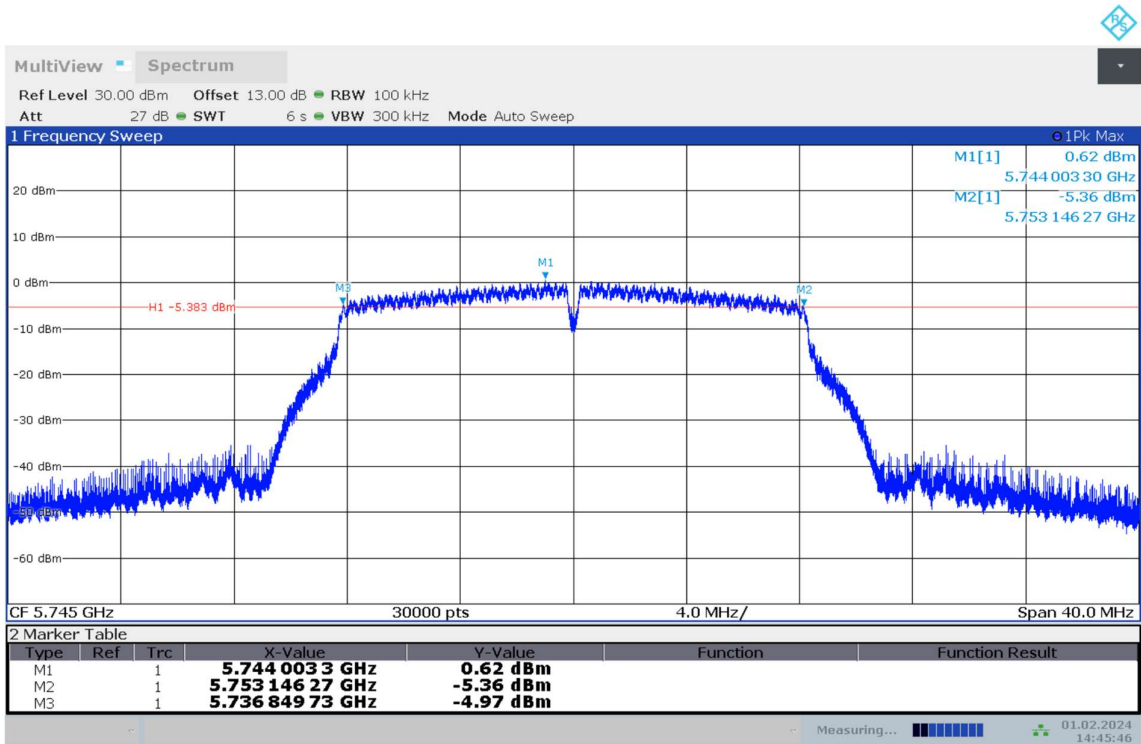


Fig. 1 6dB Emission Bandwidth (802.11a, Ch 149)

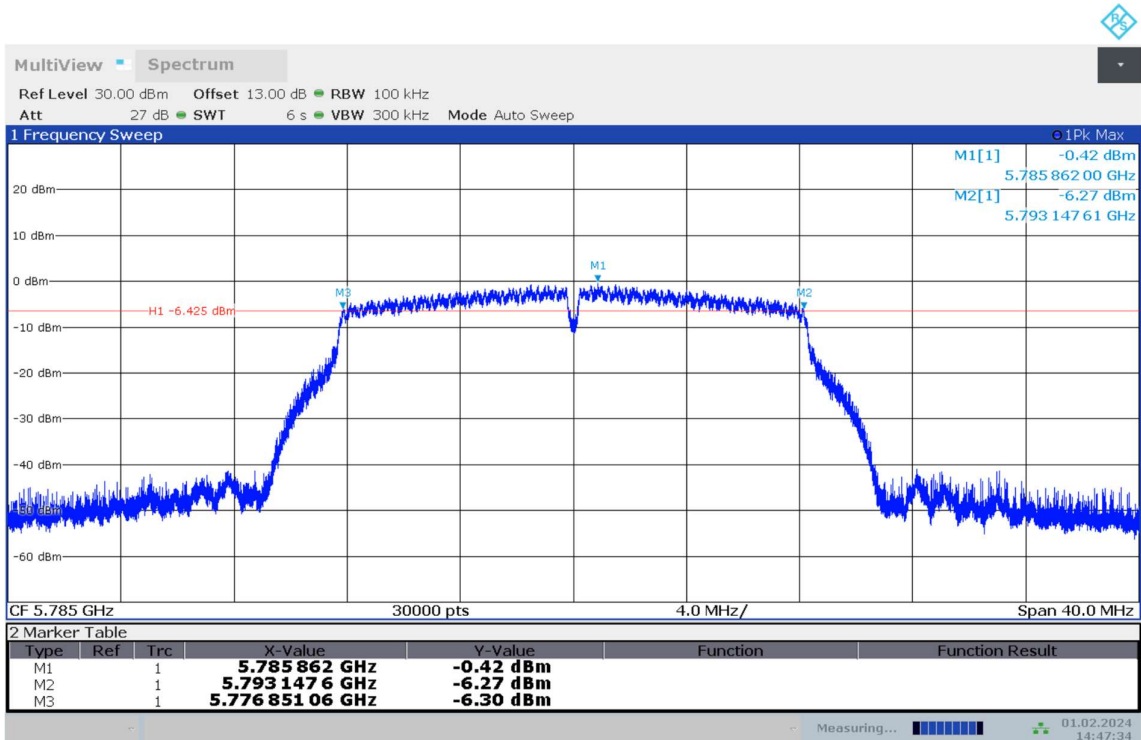


Fig. 2 6dB Emission Bandwidth (802.11a, Ch 157)

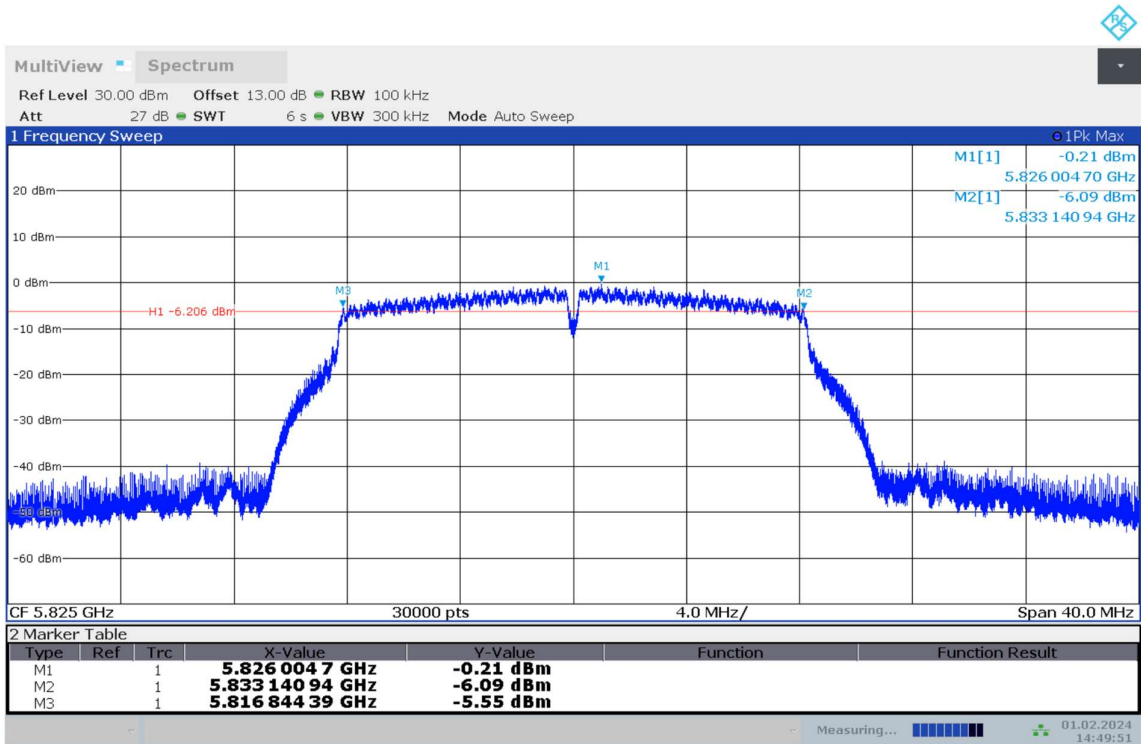


Fig. 3 6dB Emission Bandwidth (802.11a, Ch 165)

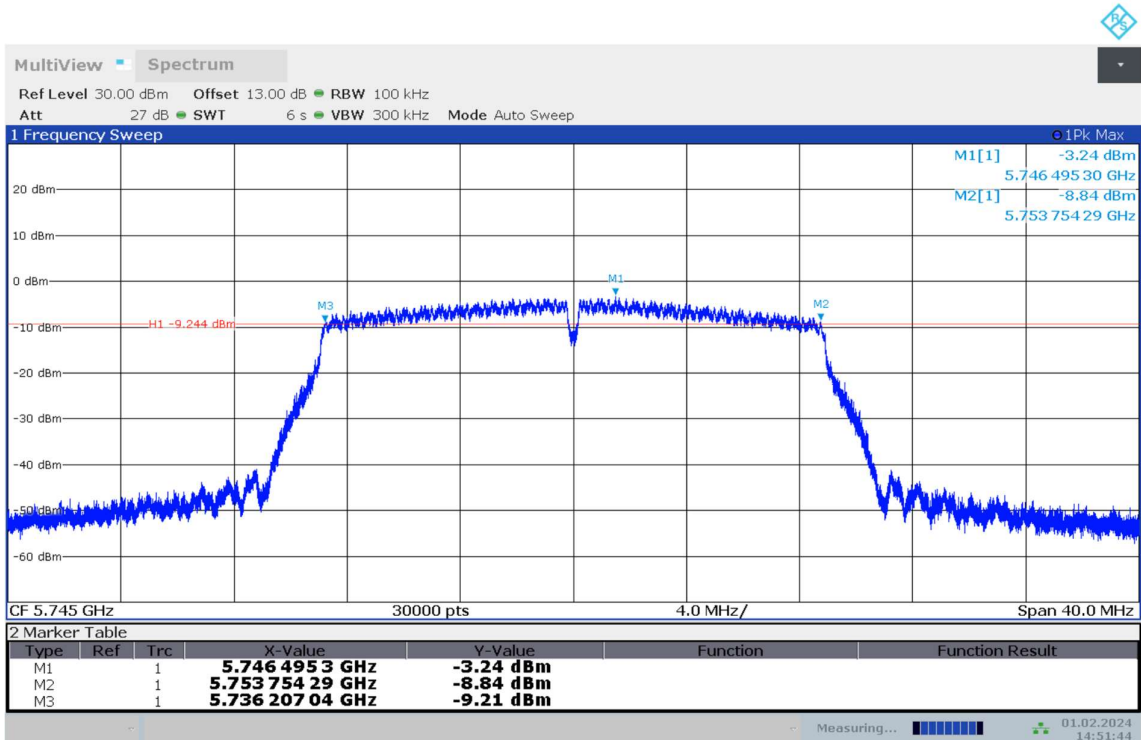


Fig. 4 6dB Emission Bandwidth (802.11ac-VHT20, Ch 149)

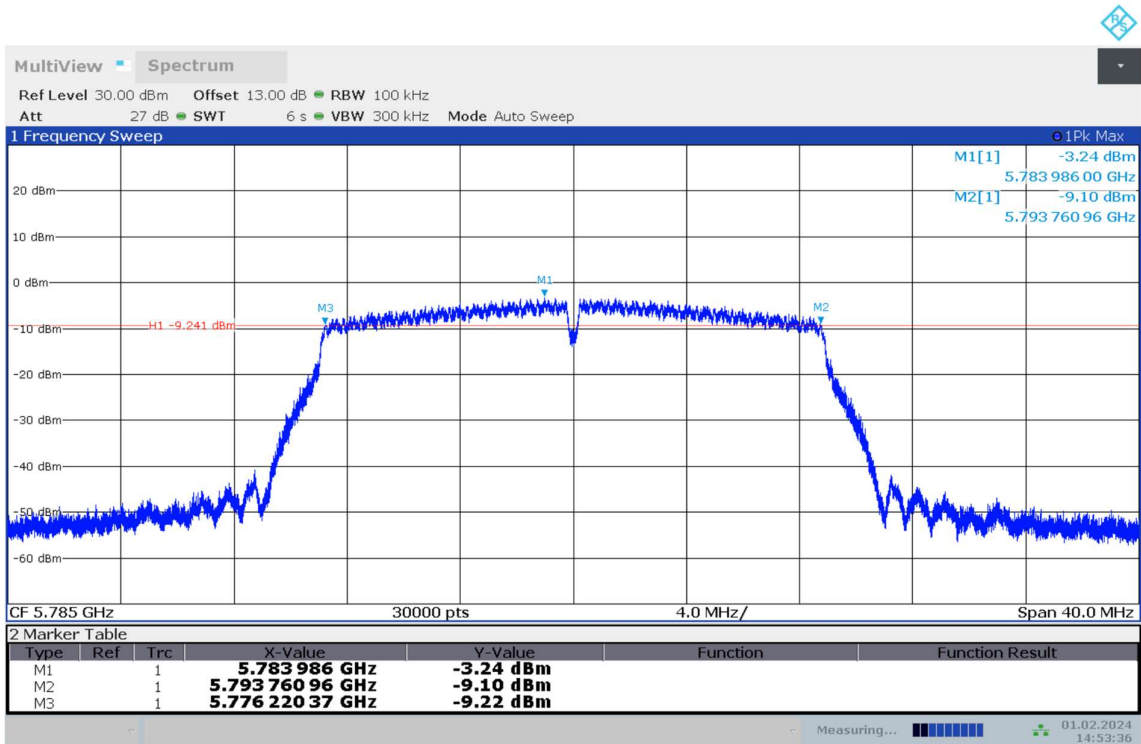


Fig. 5 6dB Emission Bandwidth (802.11ac-VHT20, Ch 157)

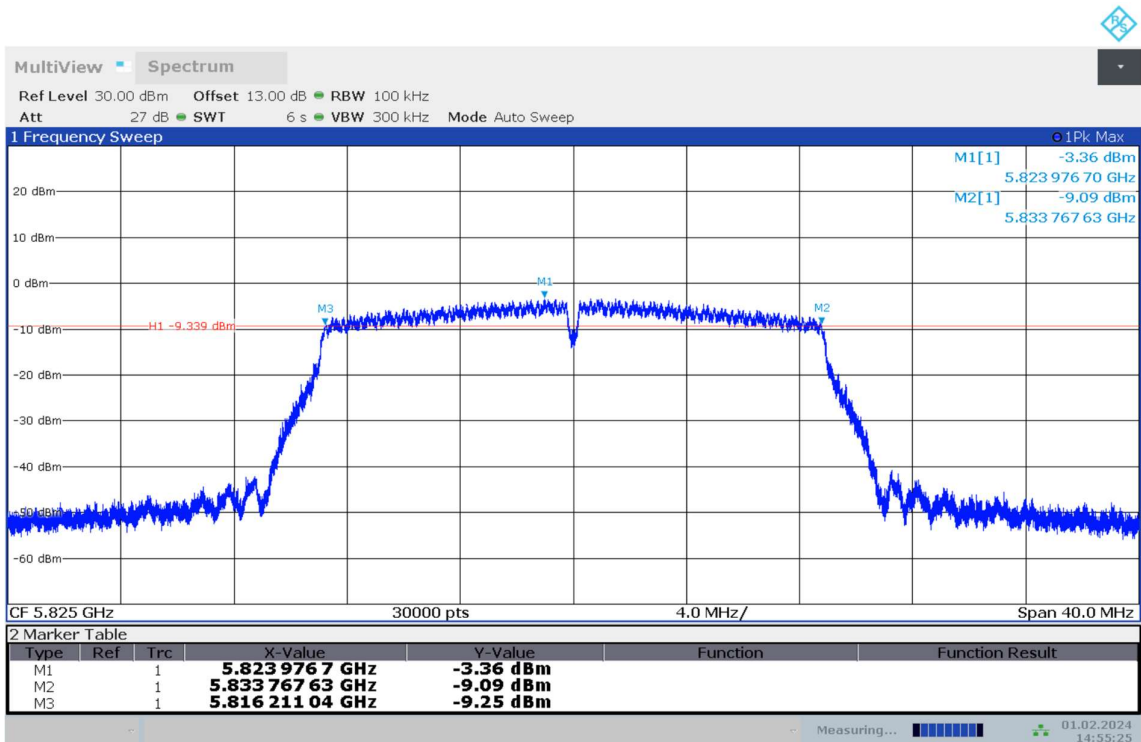


Fig. 6 6dB Emission Bandwidth (802.11ac-VHT20, Ch 165)

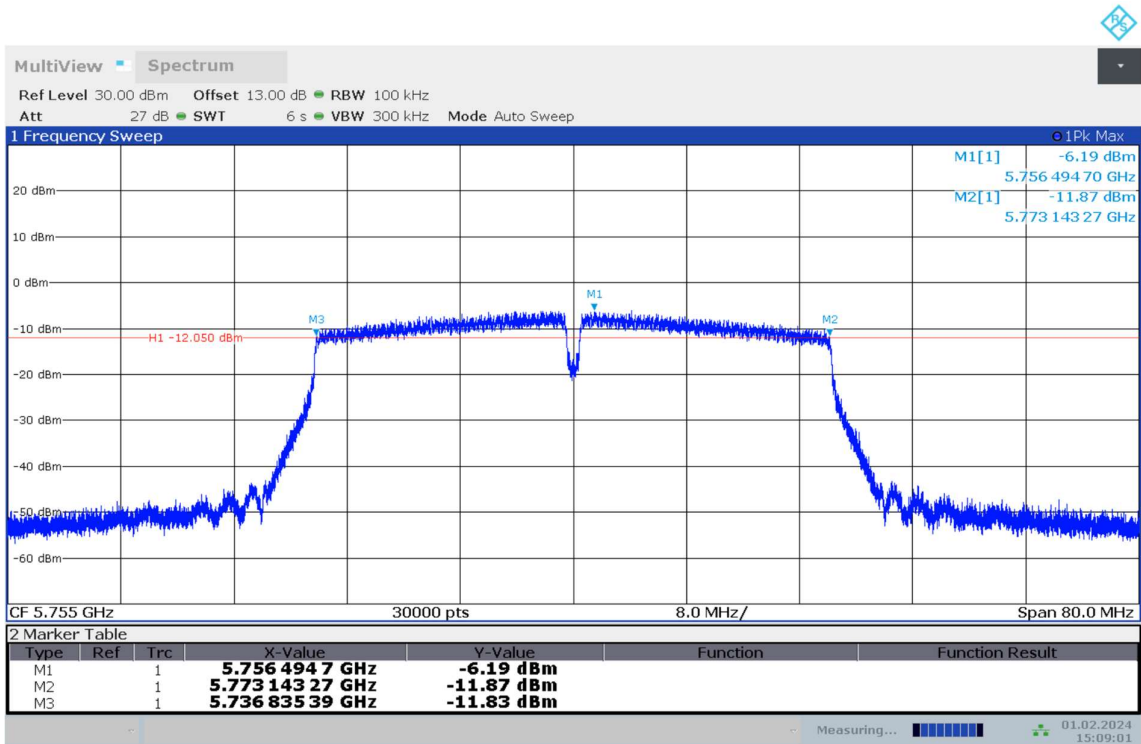


Fig. 7 6dB Emission Bandwidth (802.11n-HT40, Ch 151)

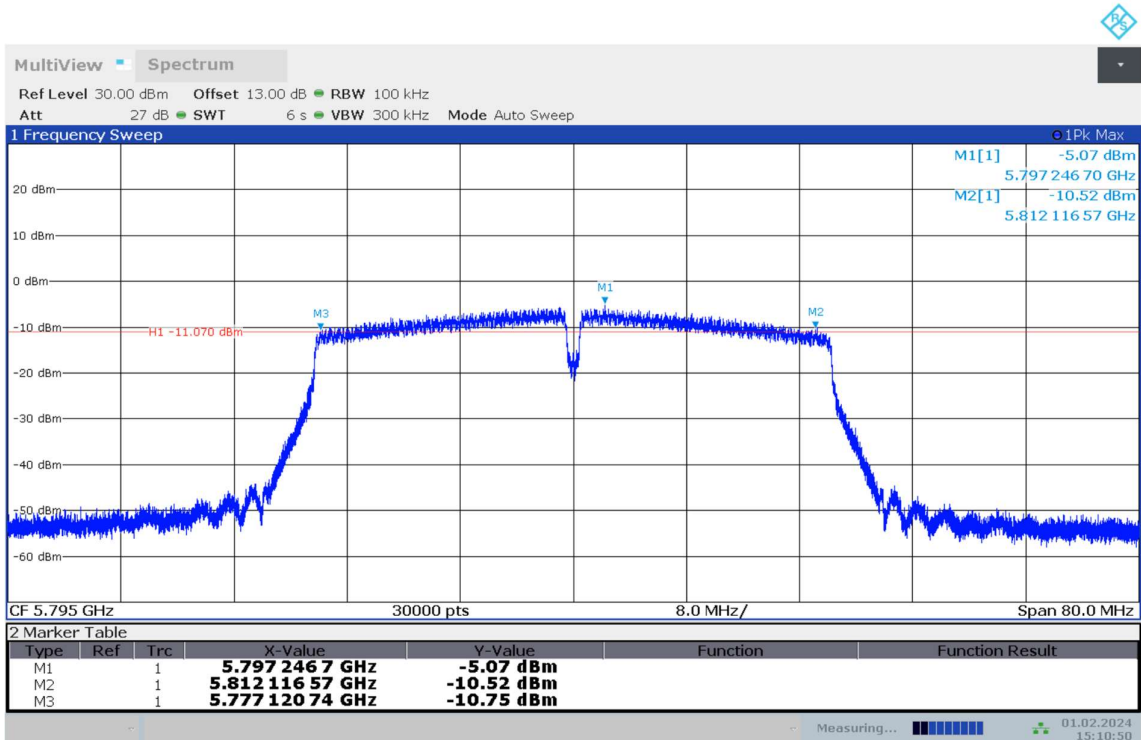


Fig. 8 6dB Emission Bandwidth (802.11n-HT40, Ch 159)

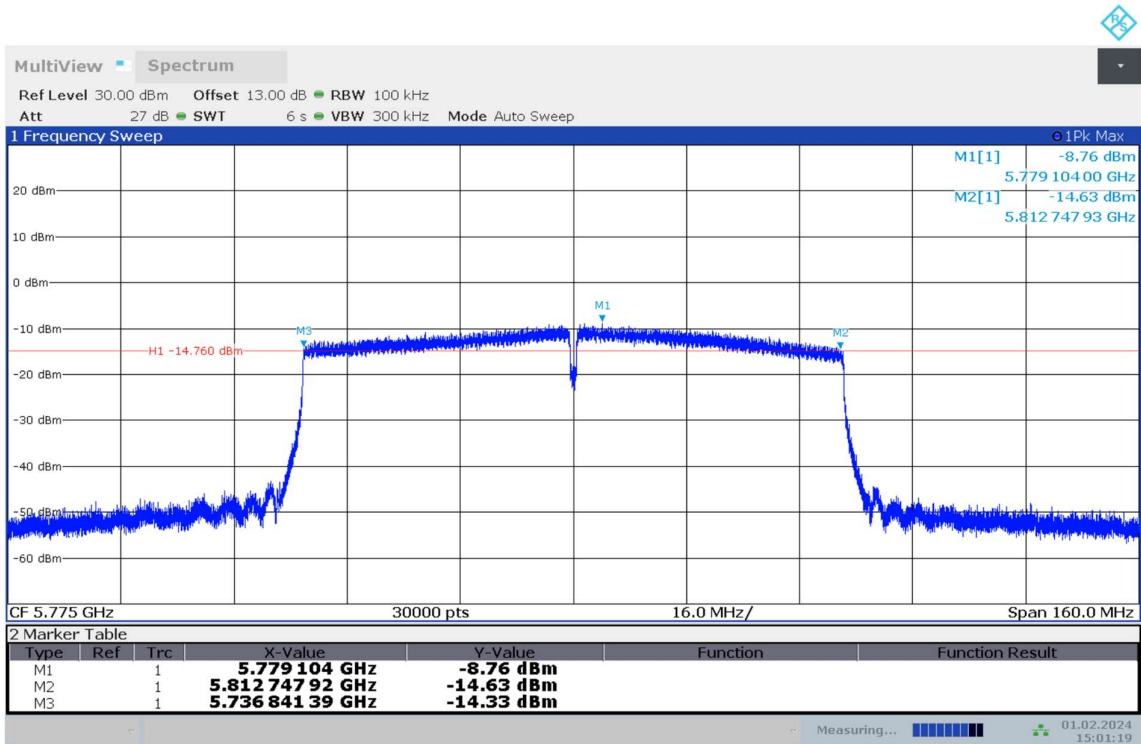


Fig. 9 6dB Emission Bandwidth (802.11ac-VHT80, Ch 155)

Conclusion: PASS



## **A.5. Transmitter Spurious Emission**

### **A.5.1 Transmitter Spurious Emission - Radiated**

#### **Measurement Limit:**

<b>Standard</b>	<b>Frequency (MHz)</b>	<b>Limit (dBm/MHz)</b>
FCC 47 CFR Part 15.407	5725MHz~5850MHz	< -27

The measurement is made according to ANSI C63.10 .

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 (dBµV/m)	Measurement distance(m)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

#### **Measurement Results:**

##### **Note:**

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

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

#### **Conclusion: PASS**

**Average Results:**
**802.11a**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17941.700	35.49	-29.59	45.95	19.13	54.00	18.51	V
17878.500	35.27	-29.59	45.95	18.91	54.00	18.73	V
15949.600	33.57	-29.36	38.30	24.63	54.00	20.43	H
15956.200	33.51	-29.36	38.30	24.57	54.00	20.49	H
10653.600	32.18	-32.67	38.35	26.50	54.00	21.82	V
10720.800	32.18	-33.62	38.40	27.40	54.00	21.82	V

## Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17941.200	35.72	-29.59	45.95	19.36	54.00	18.28	V
17891.100	35.46	-29.59	45.95	19.10	54.00	18.54	V
15954.000	33.99	-29.36	38.30	25.05	54.00	20.01	V
16138.200	33.77	-28.75	38.15	24.37	54.00	20.23	V
11400.000	32.56	-32.58	39.00	26.14	54.00	21.44	V
10613.500	32.55	-33.58	38.30	27.83	54.00	21.45	V

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17908.700	35.50	-29.59	45.95	19.14	54.00	18.50	V
17873.500	35.44	-29.59	45.95	19.08	54.00	18.56	V
16148.100	33.91	-30.14	38.20	25.85	54.00	20.09	V
16145.400	33.62	-30.14	38.20	25.56	54.00	20.38	V
11400.500	32.68	-32.58	39.00	26.26	54.00	21.32	V
10745.000	32.63	-32.42	38.45	26.60	54.00	21.37	V

**802.11n-HT20**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17814.700	34.81	-29.59	45.95	18.45	54.00	19.19	V
17874.600	34.81	-29.59	45.95	18.45	54.00	19.19	V
16141.000	32.99	-30.14	38.20	24.93	54.00	21.01	H
16133.300	32.94	-28.75	38.15	23.54	54.00	21.06	V
11392.900	31.81	-32.58	39.00	25.39	54.00	22.19	V
11400.500	31.77	-32.58	39.00	25.35	54.00	22.23	V

## Channel 157

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)
17817.400	35.03	-29.59	45.95	18.67	54.00	18.97	V
17877.300	34.88	-29.59	45.95	18.52	54.00	19.12	H
15952.400	33.16	-29.36	38.30	24.22	54.00	20.84	V
15968.300	33.02	-29.36	38.30	24.08	54.00	20.98	V
10646.000	31.57	-32.67	38.35	25.89	54.00	22.43	V
11400.000	31.51	-32.58	39.00	25.09	54.00	22.49	V

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17902.100	35.21	-29.59	45.95	18.85	54.00	18.79	V
17878.500	34.86	-29.59	45.95	18.50	54.00	19.14	H
15953.500	33.14	-29.36	38.30	24.20	54.00	20.86	V
16134.400	33.10	-28.75	38.15	23.70	54.00	20.90	V
10752.600	31.77	-32.42	38.45	25.74	54.00	22.23	V
11274.600	31.69	-32.99	38.65	26.03	54.00	22.31	V

**802.11n-HT40**

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17948.800	35.24	-29.59	45.95	18.88	54.00	18.76	V
17944.500	35.14	-29.59	45.95	18.78	54.00	18.86	V
16137.700	33.64	-28.75	38.15	24.24	54.00	20.36	H
15956.200	33.42	-29.36	38.30	24.48	54.00	20.58	V
11387.400	32.23	-32.58	39.00	25.81	54.00	21.77	V
10752.100	32.09	-32.42	38.45	26.06	54.00	21.91	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17878.500	35.45	-29.59	45.95	19.09	54.00	18.55	H
17965.300	35.43	-29.59	45.95	19.07	54.00	18.57	V
16158.600	33.81	-30.14	38.20	25.75	54.00	20.19	V
15957.900	33.52	-29.36	38.30	24.58	54.00	20.48	V
10738.400	32.20	-33.62	38.40	27.42	54.00	21.80	V
11403.900	32.11	-32.58	39.00	25.69	54.00	21.89	V

**802.11ac-HT20**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17927.400	35.18	-29.59	45.95	18.82	54.00	18.82	V
17895.500	35.07	-29.59	45.95	18.71	54.00	18.93	V
16142.600	33.36	-30.14	38.20	25.30	54.00	20.64	V
16141.000	33.20	-30.14	38.20	25.14	54.00	20.80	V
10747.700	32.01	-32.42	38.45	25.98	54.00	21.99	V
11408.200	31.73	-32.58	39.00	25.31	54.00	22.27	V

## Channel 157

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17924.700	35.32	-29.59	45.95	18.96	54.00	18.68	H
17938.400	35.17	-29.59	45.95	18.81	54.00	18.83	H
16145.400	33.29	-30.14	38.20	25.23	54.00	20.71	H
16141.000	33.23	-30.14	38.20	25.17	54.00	20.77	V
11392.900	32.58	-32.58	39.00	26.16	54.00	21.42	V
11400.500	31.96	-32.58	39.00	25.54	54.00	22.04	H

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17915.800	35.54	-29.59	45.95	19.18	54.00	18.46	V
17876.200	35.40	-29.59	45.95	19.04	54.00	18.60	V
16153.600	33.32	-30.14	38.20	25.26	54.00	20.68	V
16035.400	33.19	-29.04	38.20	24.03	54.00	20.81	V
11389.000	31.89	-32.58	39.00	25.47	54.00	22.11	H
10752.100	31.76	-32.42	38.45	25.73	54.00	22.24	V

**802.11ac-HT40**

## Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17876.200	35.54	-29.59	45.95	19.18	54.00	18.46	H
17873.000	35.53	-29.59	45.95	19.17	54.00	18.47	V
15964.500	33.83	-29.36	38.30	24.89	54.00	20.17	H
15980.400	33.81	-29.36	38.30	24.87	54.00	20.19	H
10751.500	32.62	-32.42	38.45	26.59	54.00	21.38	H
11408.200	32.44	-32.58	39.00	26.02	54.00	21.56	H

## Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17960.950	37.44	-29.59	45.95	21.08	54.00	16.56	V
17957.650	36.88	-29.59	45.95	20.52	54.00	17.12	V
14494.850	31.59	-29.56	41.90	19.25	54.00	22.41	H
14488.800	31.02	-29.56	41.90	18.68	54.00	22.98	V
11861.450	29.36	-32.73	39.15	22.94	54.00	24.64	V
11895.000	29.23	-32.53	39.10	22.66	54.00	24.77	V

**802.11ac-HT80**

## Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17890.000	35.86	-29.59	45.95	19.50	54.00	18.14	V
17893.300	35.64	-29.59	45.95	19.28	54.00	18.36	V
16137.700	33.82	-28.75	38.15	24.42	54.00	20.18	H
16154.200	33.75	-30.14	38.20	25.69	54.00	20.25	V
11357.600	32.66	-33.31	38.85	27.12	54.00	21.34	V
11414.900	32.56	-32.58	39.00	26.14	54.00	21.44	V

**Peak Results:**

**802.11a**

Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
16999.500	46.69	-29.38	40.85	35.22	68.30	21.61	V
17418.700	46.68	-29.44	43.80	32.32	68.30	21.62	V
17313.600	46.45	-29.54	42.90	33.09	68.30	21.85	H
16947.800	46.31	-29.68	40.60	35.39	68.30	21.99	V
10335.200	43.47	-33.88	38.00	39.35	68.30	24.83	V
11770.700	42.93	-32.71	39.20	36.44	74.00	31.07	V

Channel 157

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)
16931.300	47.30	-29.68	40.60	36.38	68.30	21.00	H
16959.400	46.98	-29.68	40.60	36.06	68.30	21.32	H
17391.700	46.64	-29.44	43.80	32.28	68.30	21.66	V
17357.000	46.31	-28.74	43.40	31.65	68.30	21.99	H
10733.400	43.17	-33.62	38.40	38.39	74.00	30.83	V
10765.300	43.12	-32.42	38.45	37.09	74.00	30.88	V

Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
16866.500	47.29	-29.50	40.00	36.79	68.30	21.01	H
17332.300	47.03	-28.74	43.40	32.37	68.30	21.27	V
16903.300	46.91	-29.28	40.30	35.89	68.30	21.39	H
17407.700	46.63	-29.44	43.80	32.27	68.30	21.67	H
11400.500	43.12	-32.58	39.00	36.70	74.00	30.88	V
10560.700	43.09	-33.72	38.25	38.56	68.30	25.21	H

**802.11n-HT20**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
16945.700	46.64	-29.68	40.60	35.72	68.30	21.66	V
17430.200	46.61	-28.70	44.20	31.11	68.30	21.69	V
17080.400	46.16	-29.25	41.40	34.01	68.30	22.14	V
16918.700	45.96	-29.28	40.30	34.94	68.30	22.34	V
11296.000	42.76	-32.41	38.70	36.47	74.00	31.24	V
9591.000	42.47	-34.13	37.50	39.10	68.30	25.83	V

## Channel 157

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)
17361.500	46.11	-28.74	43.40	31.45	68.30	22.19	V
17448.900	46.10	-28.70	44.20	30.60	68.30	22.20	V
16941.800	46.09	-29.68	40.60	35.17	68.30	22.21	V
16962.200	46.05	-29.68	40.60	35.13	68.30	22.25	V
11939.500	42.67	-32.42	39.05	36.04	74.00	31.33	H
10520.500	42.33	-33.31	38.20	37.44	68.30	25.97	V

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17354.800	46.85	-28.74	43.40	32.19	68.30	21.45	H
16924.800	46.48	-29.28	40.30	35.46	68.30	21.82	H
17012.800	46.34	-29.38	40.85	34.87	68.30	21.96	H
16935.200	46.13	-29.68	40.60	35.21	68.30	22.17	V
10565.100	42.96	-33.72	38.25	38.43	68.30	25.34	V
10762.000	42.90	-32.42	38.45	36.87	74.00	31.10	V



**802.11n-HT40**

Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17963.700	46.81	-29.59	45.95	30.45	74.00	27.19	V
17012.800	46.41	-29.38	40.85	34.94	68.30	21.89	V
16947.800	46.27	-29.68	40.60	35.35	68.30	22.03	V
16945.100	46.22	-29.68	40.60	35.30	68.30	22.08	V
10610.800	43.04	-33.58	38.30	38.32	74.00	30.96	H
11446.200	42.88	-33.09	39.05	36.92	74.00	31.12	V

Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17305.900	46.76	-29.54	42.90	33.40	68.30	21.54	V
16924.200	46.67	-29.28	40.30	35.65	68.30	21.63	H
17344.400	46.59	-28.74	43.40	31.93	68.30	21.71	V
16891.200	46.15	-29.28	40.30	35.13	68.30	22.15	V
11269.100	43.34	-32.99	38.65	37.68	74.00	30.66	V
11392.300	43.24	-32.58	39.00	36.82	74.00	30.76	H

**802.11ac-HT20**

## Channel 149

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17385.700	46.47	-29.44	43.80	32.11	68.30	21.83	H
16879.700	46.42	-29.50	40.00	35.92	68.30	21.88	V
16933.000	46.30	-29.68	40.60	35.38	68.30	22.00	V
17355.400	46.21	-28.74	43.40	31.55	68.30	22.09	V
11917.500	42.72	-32.53	39.10	36.15	74.00	31.28	H
11903.200	42.71	-32.53	39.10	36.14	74.00	31.29	H

## Channel 157

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)
17358.700	46.63	-28.74	43.40	31.97	68.30	21.67	V
16935.800	46.50	-29.68	40.60	35.58	68.30	21.80	V
17392.200	46.09	-29.44	43.80	31.73	68.30	22.21	V
16968.200	45.96	-29.68	40.60	35.04	68.30	22.34	V
10748.800	42.99	-32.42	38.45	36.96	74.00	31.01	V
11184.400	42.79	-32.61	38.60	36.80	74.00	31.21	V

## Channel 165

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17369.200	46.80	-28.74	43.40	32.14	68.30	21.50	H
17391.200	46.70	-29.44	43.80	32.34	68.30	21.60	V
16928.600	46.64	-29.28	40.30	35.62	68.30	21.66	V
16949.500	46.64	-29.68	40.60	35.72	68.30	21.66	V
11344.500	43.33	-33.31	38.85	37.79	74.00	30.67	V
11365.400	43.03	-33.31	38.85	37.49	74.00	30.97	V

**802.11ac-HT40**

## Channel 151

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17882.800	46.84	-29.59	45.95	30.48	74.00	27.16	H
16864.200	46.75	-29.50	40.00	36.25	68.30	21.55	V
17454.400	46.71	-28.70	44.20	31.21	68.30	21.59	H
16901.700	46.60	-29.28	40.30	35.58	68.30	21.70	H
11367.500	43.33	-33.31	38.85	37.79	74.00	30.67	H
10615.700	43.29	-33.58	38.30	38.57	74.00	30.71	V

## Channel 159

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17945.000	46.80	-29.59	45.95	30.44	74.00	27.20	V
17961.500	46.47	-29.59	45.95	30.11	74.00	27.53	H
14421.700	42.09	-30.03	41.90	30.22	68.20	26.11	V
14058.700	42.00	-31.31	41.60	31.71	68.20	26.20	V
8984.950	39.47	-34.57	37.70	36.34	68.20	28.73	V
11974.750	38.69	-32.42	39.05	32.06	74.00	35.31	V

**802.11ac-HT80**

## Channel 155

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17026.500	46.99	-29.38	40.85	35.52	68.30	21.31	V
17962.600	46.93	-29.59	45.95	30.57	74.00	27.07	H
16962.200	46.79	-29.68	40.60	35.87	68.30	21.51	V
16883.000	46.62	-29.28	40.30	35.60	68.30	21.68	H
10267.000	43.18	-33.82	38.00	39.00	68.30	25.12	V
11820.200	43.18	-32.09	39.20	36.07	74.00	30.82	V

## **A.6. Band Edges Compliance**

### **A6.1 Band Edges - Radiated**

#### **Measurement Limit:**

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

The measurement is made according to KDB 789033 D02

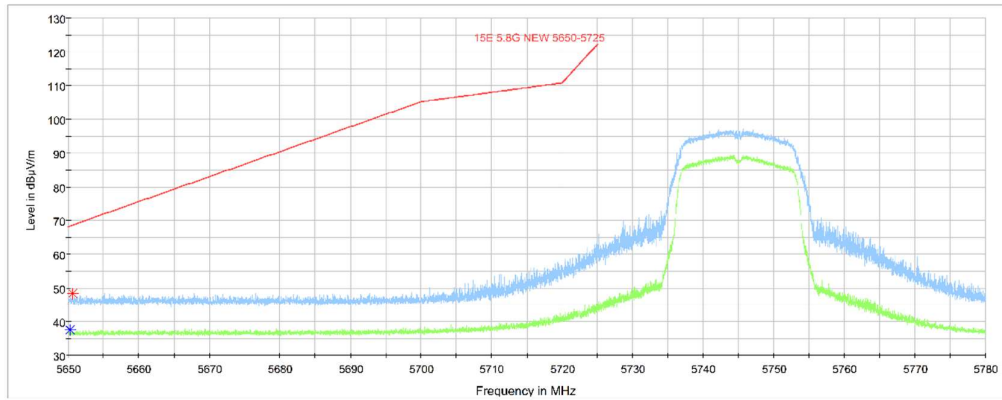
In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

#### **Measurement Result:**

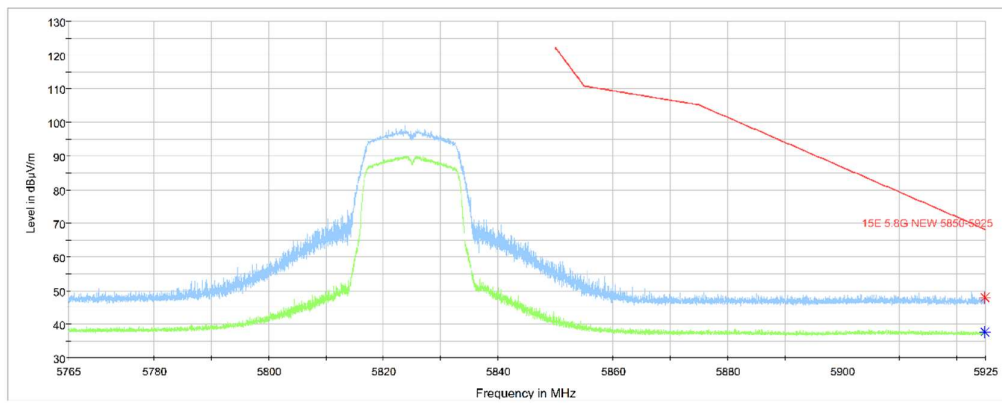
<b>Mode</b>	<b>Channel</b>	<b>Test Results</b>	<b>Conclusion</b>
802.11a	5745 MHz	Fig.10	P
	5825 MHz	Fig.11	P
802.11n HT20	5745 MHz	Fig.12	P
	5825 MHz	Fig.13	P
802.11n HT40	5755 MHz	Fig.14	P
	5795 MHz	Fig.15	P
802.11ac HT20	5745 MHz	Fig.16	P
	5825 MHz	Fig.17	P
802.11ac HT40	5755 MHz	Fig.18	P
	5795 MHz	Fig.19	P
802.11ac HT80	5775 MHz	Fig.20 Fig.21	P

**Conclusion: PASS**

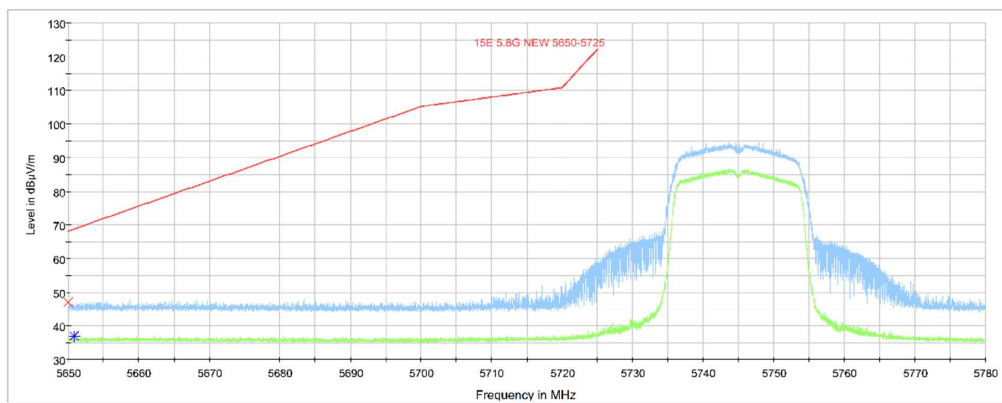
**Test graphs as below:**



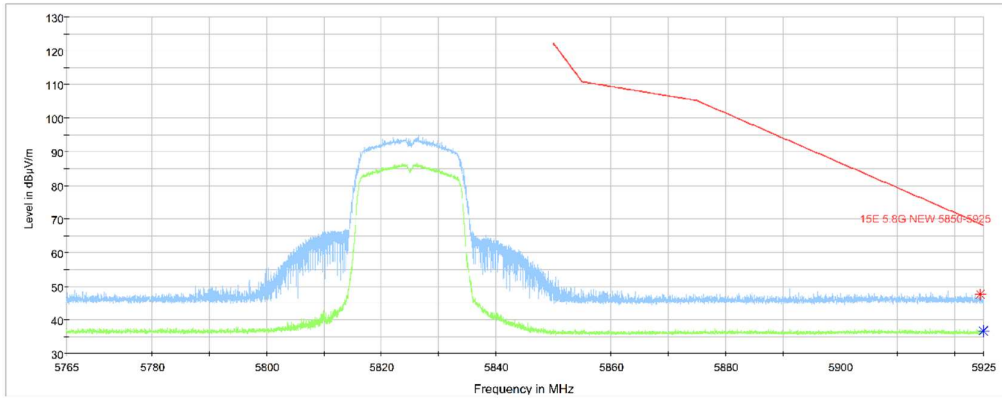
**Fig. 10 Band Edges (802.11a Ch149, 5745MHz)**



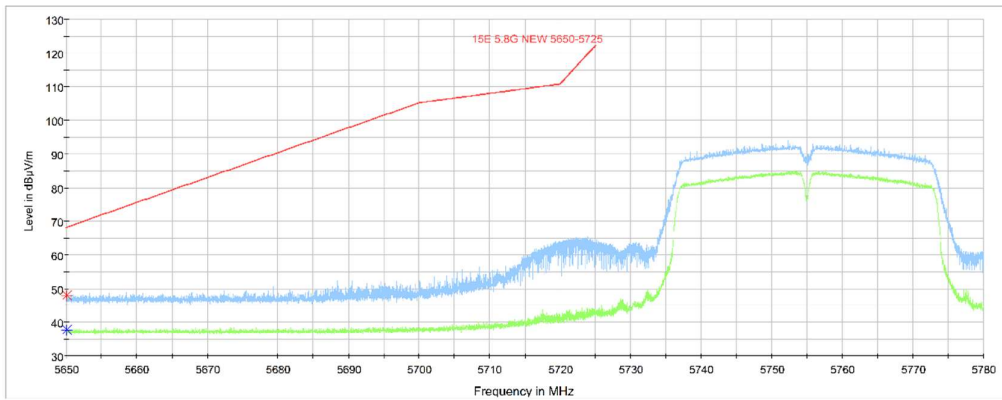
**Fig. 11 Band Edges (802.11a Ch165, 5825MHz)**



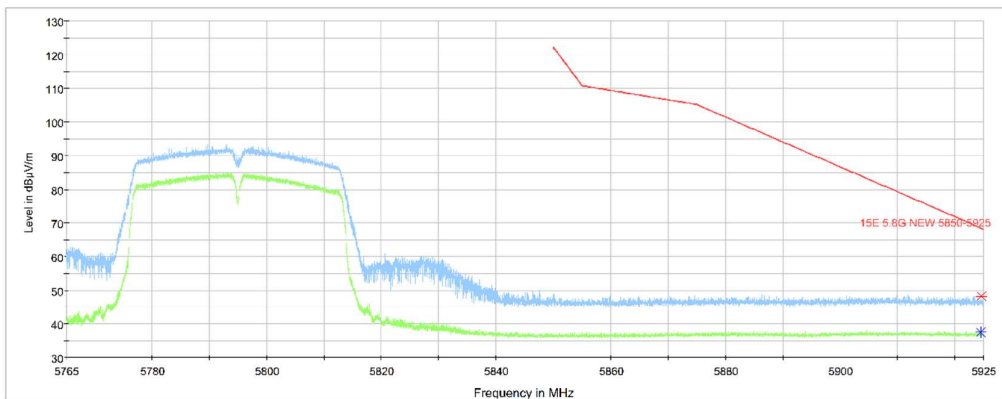
**Fig. 12 Band Edges (802.11n-HT20 Ch149, 5745MHz)**



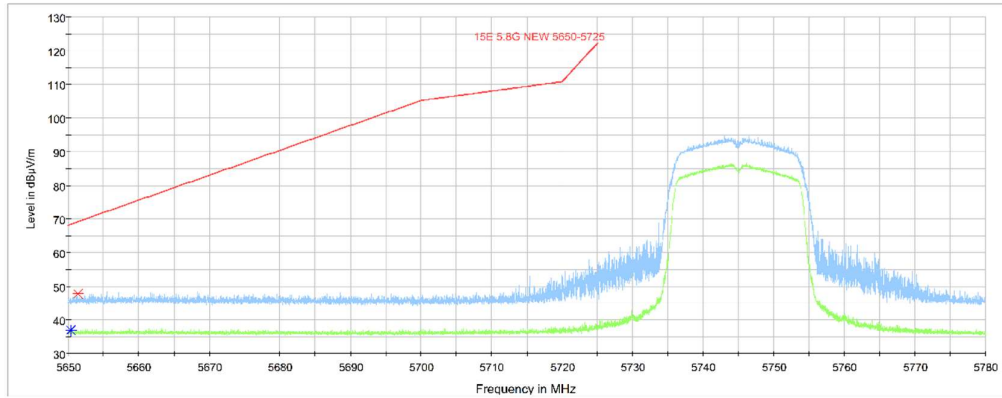
**Fig. 13 Band Edges (802.11n-HT20 Ch165, 5825MHz)**



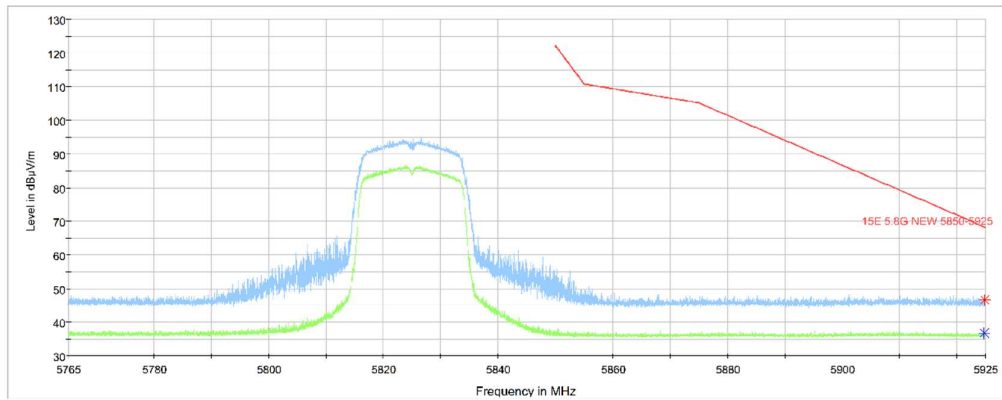
**Fig. 14 Band Edges (802.11n-HT40 Ch151, 5755MHz)**



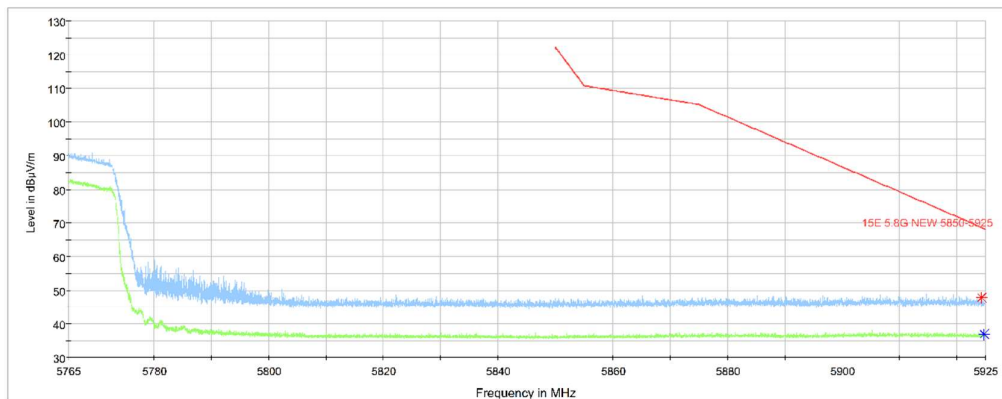
**Fig. 15 Band Edges (802.11n-HT40 Ch159, 5795MHz)**



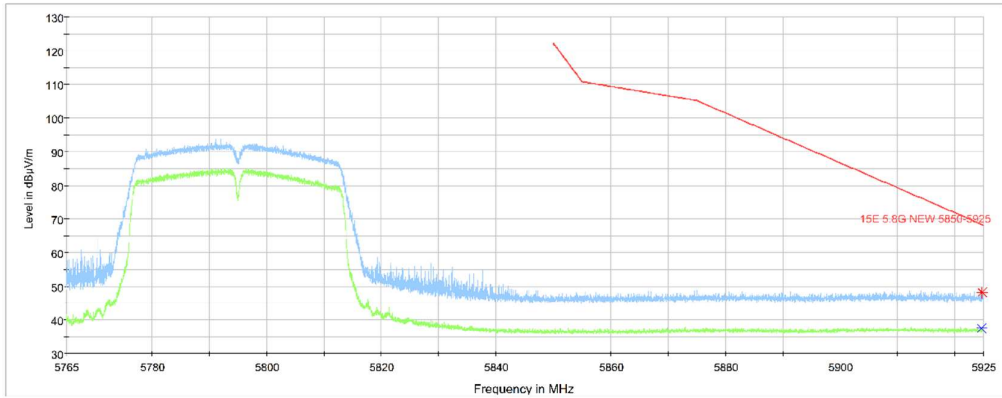
**Fig. 16 Band Edges (802.11ac-HT20 Ch149, 5745MHz)**



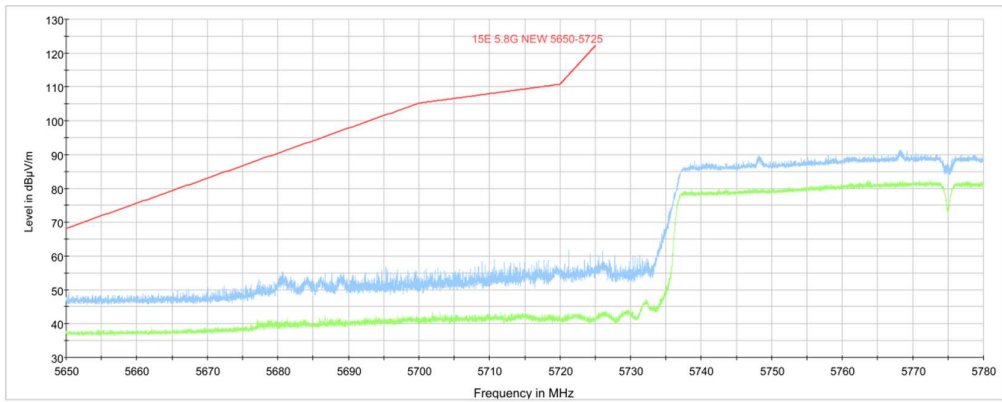
**Fig. 17 Band Edges (802.11ac-HT20 Ch165, 5825MHz)**



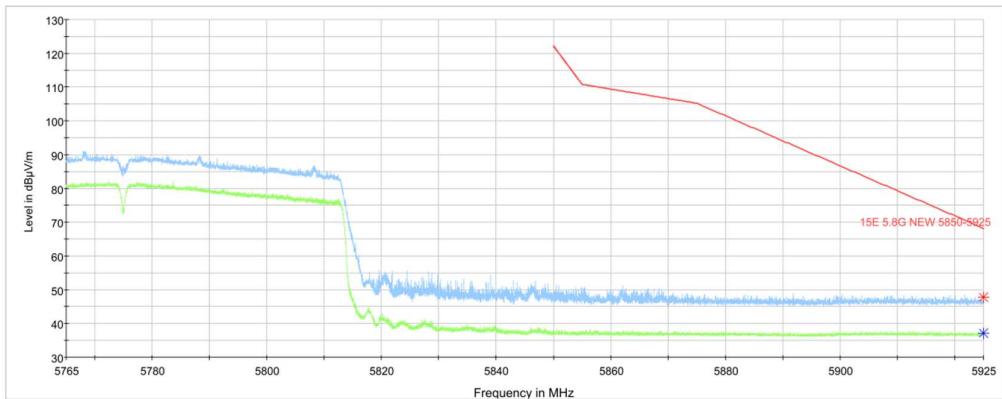
**Fig. 18 Band Edges (802.11ac-HT40 Ch151, 5755MHz)**



**Fig. 19 Band Edges (802.11ac-HT40 Ch159, 5795MHz)**



**Fig. 20 Band Edges (802.11ac-HT80 Ch155, 5775MHz)**



**Fig. 21 Band Edges (802.11ac-HT80 Ch155,, 5775MHz)**



## **A.7. AC Powerline Conducted Emission**

### **Summary**

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

### **Method of Measurement:**

See Clause 6.2 of ANSI C63.10 specifically.

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

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

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

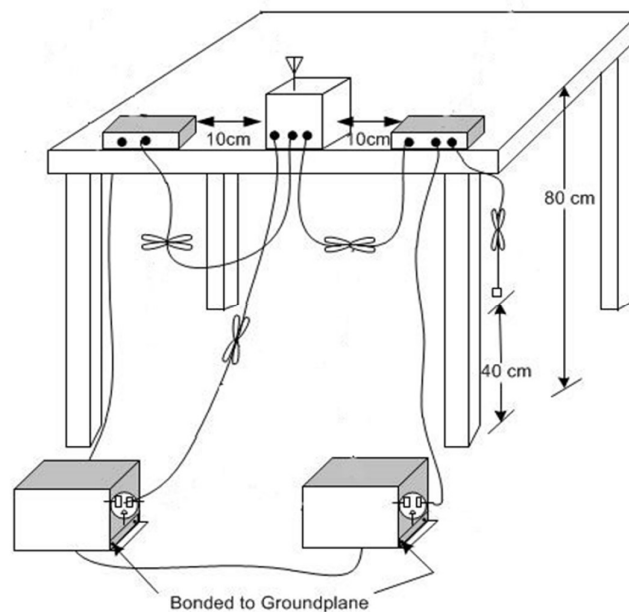
The measurement bandwidth is:

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

### **Test Condition:**

Voltage (V)	Frequency (Hz)
120	60

### **Test setup**



**Measurement Result and limit:**

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.22	Fig.23	<b>P</b>
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.

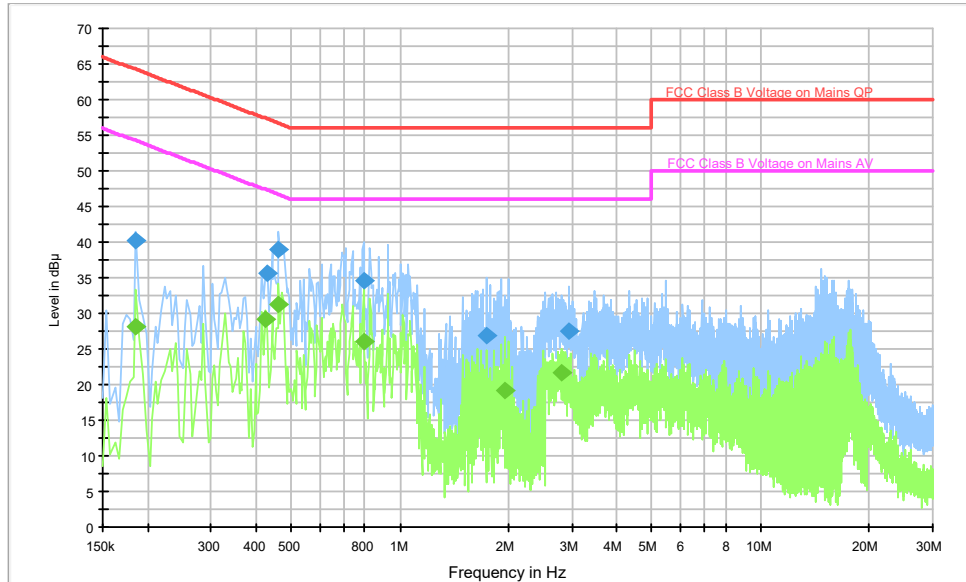
WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	56 to 46	Fig.22	Fig.23	<b>P</b>
0.5 to 5	46			
5 to 30	50			

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

The measurement is made according to ANSI C63.10 .

**Conclusion: PASS**
**Test graphs as below:**



**Fig. 22 AC Powerline Conducted Emission-802.11a**

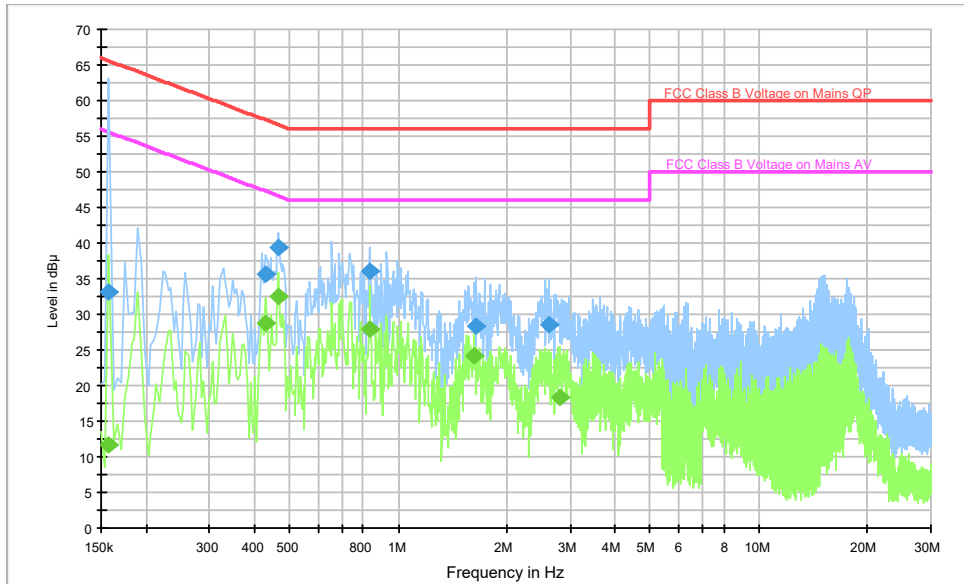
Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Final Result 1**

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.186000	40.2	2000.0	9.000	On	L1	19.7	24.0	64.2
0.430000	35.6	2000.0	9.000	On	L1	19.7	21.7	57.3
0.462000	39.0	2000.0	9.000	On	L1	19.7	17.7	56.7
0.794000	34.5	2000.0	9.000	On	L1	19.7	21.5	56.0
1.734000	26.9	2000.0	9.000	On	N	19.6	29.1	56.0
2.938000	27.4	2000.0	9.000	On	N	19.6	28.6	56.0

**Final Result 2**

Frequency (MHz)	CAverage (dB $\mu$ V)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.186000	28.1	2000.0	9.000	On	L1	19.7	26.1	54.2
0.426000	29.2	2000.0	9.000	On	L1	19.7	18.1	47.3
0.462000	31.3	2000.0	9.000	On	L1	19.7	15.4	46.7
0.794000	26.0	2000.0	9.000	On	L1	19.7	20.0	46.0
1.962000	19.2	2000.0	9.000	On	N	19.6	26.8	46.0
2.802000	21.7	2000.0	9.000	On	L1	19.6	24.3	46.0



**Fig. 23 AC Powerline Conducted Emission-Idle**

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	33.0	2000.0	9.000	On	L1	19.8	32.5	65.6
0.430000	35.6	2000.0	9.000	On	L1	19.7	21.6	57.3
0.466000	39.4	2000.0	9.000	On	L1	19.7	17.2	56.6
0.830000	36.1	2000.0	9.000	On	L1	19.7	19.9	56.0
1.650000	28.3	2000.0	9.000	On	N	19.6	27.7	56.0
2.618000	28.5	2000.0	9.000	On	N	19.6	27.5	56.0

**Final Result 2**

Frequency (MHz)	CAverage (dBµV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	11.8	2000.0	9.000	On	L1	19.8	43.8	55.6
0.430000	28.8	2000.0	9.000	On	L1	19.7	18.5	47.3
0.466000	32.4	2000.0	9.000	On	L1	19.7	14.2	46.6
0.834000	27.9	2000.0	9.000	On	L1	19.7	18.1	46.0
1.622000	24.2	2000.0	9.000	On	L1	19.6	21.8	46.0
2.806000	18.3	2000.0	9.000	On	N	19.6	27.7	46.0

## **ANNEX B: EUT parameters**

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

## **ANNEX C: Accreditation Certificate**



**Accredited Laboratory**

A2LA has accredited

**TELECOMMUNICATION TECHNOLOGY LABS, CAICT**  
*Beijing, People's Republic of China*

for technical competence in the field of  
**Electrical Testing**

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



Presented this 26<sup>th</sup> day of June 2023.



Mr. Trace McInturf, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 7049.01  
Valid to July 31, 2024

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

**\*\*\* END OF REPORT BODY \*\*\***