



# FCC PART 15 TEST REPORT No. 23T04Z70506-08

for

**Samsung Electronics Co., Ltd.**

**Multi-band WCDMA/LTE/5GNR Tablet with Bluetooth, WLAN**

**SM-X218U**

**FCC ID: ZCASM218U**

with

**Hardware Version: REV1.0**

**Software Version: X218U.001**

**Issued Date: 2023-11-01**

**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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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
23T04Z70506-08	Rev.0	1st edition	2023-11-01

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 (BDA)

Address: No. 18A, Kangding Street, Beijing Economic-Technology  
Development Area, Beijing, 100176, P.R. China

### **1.3. Testing Environment**

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

### **1.4. Project date**

Testing Start Date: 2023-09-11

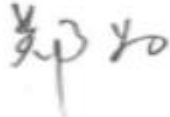
Testing End Date: 2023-11-01

## 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)

## 2. Client Information

### 2.1 Applicant Information

Company Name: Samsung Electronics Co., Ltd.  
Address: 19 Chapin Rd., Building D Pine Brook, NJ 07058  
City: New Jersey  
Postal Code: /  
Country: US  
Telephone: +1-201-937-4203  
Fax: /

### 2.2 Manufacturer Information

Company Name: Samsung Electronics Co., Ltd.  
Address: Samsung R5, Maetan dong 129, Samsung ro  
Youngtong gu, Suwon city 443 742, Korea  
City: Suwon  
Postal Code: /  
Country: Korea  
Telephone: +82-10-2722-4159  
Fax: /

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

#### **3.1. About EUT**

Description	Multi-band WCDMA/LTE/5G NR Tablet with Bluetooth, WLAN
Model name	SM-X218U
FCC ID	ZCASM218U
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	4.40V
Extreme Low Voltage	3.55V

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

<b>EUT ID*</b>	<b>SN or IMEI</b>	<b>HW Version</b>	<b>SW Version</b>	<b>Date of receipt</b>
UT12a	2370506UT12a	REV1.0	X218U.001	2023-09-24
UT28a	2370506UT28a	REV1.0	X218U.001	2023-09-24

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

UT28a is used for Conduction test, UT12a is used for Radiation test.

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

<b>AE ID*</b>	<b>Name</b>	<b>Model</b>	<b>Manufacturer</b>
AE1	Battery	WT-S-W11	SCUD (Fujian) Electronics Co., Ltd.
AE2*	Adapter	EP-T1510	DONGGUAN DONGWON ELECTRONICS CO.,LTD.
AE3-1	Date Cable1 C-C	EP-DN980BWE	Guangxi Broad Telecommunication Co.,Ltd.
AE3-2	Date Cable2 C-C	EP-DN980BWE	RFTECH Co., Ltd.
AE3-3	Date Cable3 C-C	EP-DN980BWE	CRESYN HANOI Co., Ltd
4.AE5*	Headset	ESH61ASFWE	/

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

\*AE2 and A5 are not the AE for EUT, provided by the client for relevant tests.

#### **4.1. General Description**

The Equipment under Test (EUT) is a model of Multi-band WCDMA/LTE/5G NR Tablet with Bluetooth, WLAN 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.

## **4.2. 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

## **5. Reference Documents**

### **5.1. Documents supplied by applicant**

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

### **5.2. 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

## **6. Laboratory Environment**

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.



## 7. Test Results

### 7.1. 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

### 7.2. 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.

### 7.3. 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%

## 8. 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	Attenuator	10dB/2W	/	Rosenberger	/	/
4	Shielding Room	S81	/	ETS-Lindgren	/	/

#### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	100376	R&S	1 year	2024-06-29
2	Test Receiver	ESW44	103015	R&S	1 year	2024-01-14
3	Loop Antenna	HFH2-Z2	829324/007	R&S	1 year	2023-12-22
4	EMI Antenna	VULB9163	9163-235	Schwarzbeck	1 year	2024-06-10
5	EMI Antenna	3117	00119021	ETS-Lindgren	1 year	2024-06-24
6	EMI Antenna	LB-180400 -25-C-KF	21100840000 06	A-INFO	1 year	2024-03-02

#### AC Power Line Conducted Emission

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	LISN	ENV216	101459	R&S	1 year	2024-02-29
2	Test Receiver	ESCI	100766	R&S	1 year	2024-03-30

## 9. 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

#### Radiated (k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	4.92
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.73
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.62
$18\text{GHz} \leq f \leq 40\text{GHz}$	3.37

### 8.6 AC Power-line Conducted Emission

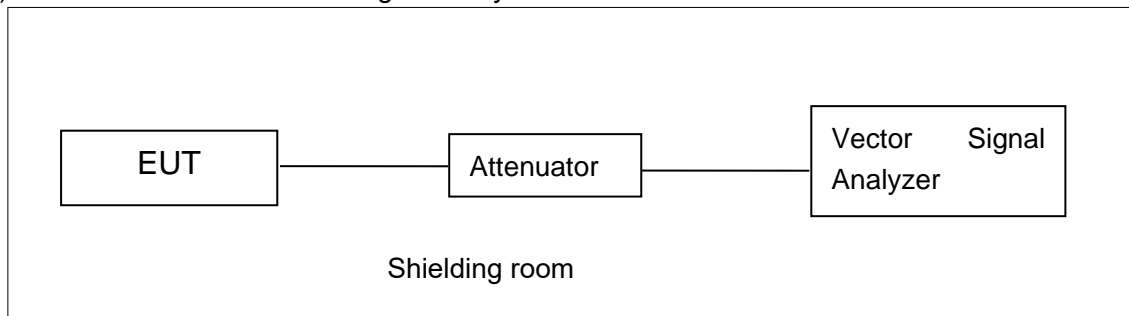
Measurement Uncertainty: 3.10dB, k=2

## **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 -1.52 dBi and the value is supplied by the applicant or manufacturer.

### A.2.2 Maximum output Power-Conducted

EUT ID: UT28a

### Measurement Results:

#### 802.11a mode

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	18.43	17.36	17.31	17.54	16.88	16.34	16.38	15.13
	5200MHz	18.86	/	/	/	/	/	/	/
	5240MHz	19.16	/	/	/	/	/	/	/
	5260MHz	19.30	/	/	/	/	/	/	/
	5280MHz	19.25	/	/	/	/	/	/	/
	5320MHz	19.46	/	/	/	/	/	/	/
	5500MHz	19.39	/	/	/	/	/	/	/
	5580MHz	18.89	/	/	/	/	/	/	/
	5700MHz	19.37	/	/	/	/	/	/	/
	5720MHz	19.35	/	/	/	/	/	/	/

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	18.36	17.24	18.14	17.03	16.97	16.53	16.53	15.42
	5200MHz	18.83	/	/	/	/	/	/	/
	5240MHz	19.08	/	/	/	/	/	/	/
	5260MHz	19.27	/	/	/	/	/	/	/
	5280MHz	19.25	/	/	/	/	/	/	/
	5320MHz	19.34	/	/	/	/	/	/	/

	5500MHz	19.36	/	/	/	/	/	/	/
	5580MHz	18.87	/	/	/	/	/	/	/
	5700MHz	19.34	/	/	/	/	/	/	/
	5720MHz	18.63	/	/	/	/	/	/	/

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	18.43	17.25	18.26	17.42	17.41	16.42	16.56	15.29	15.44
	5200MHz	18.19	/	/	/	/	/	/	/	/
	5240MHz	18.59	/	/	/	/	/	/	/	/
	5260MHz	18.81	/	/	/	/	/	/	/	/
	5280MHz	18.79	/	/	/	/	/	/	/	/
	5320MHz	18.83	/	/	/	/	/	/	/	/
	5500MHz	18.94	/	/	/	/	/	/	/	/
	5580MHz	18.39	/	/	/	/	/	/	/	/
	5700MHz	18.80	/	/	/	/	/	/	/	/
	5720MHz	18.36	/	/	/	/	/	/	/	/

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	17.21	16.00	16.01	16.20	15.22	15.44	15.21	14.08
	5230MHz	17.79	/	/	/	/	/	/	/
	5270MHz	17.77	/	/	/	/	/	/	/
	5310MHz	17.83	/	/	/	/	/	/	/
	5510MHz	17.87	/	/	/	/	/	/	/
	5550MHz	17.94	/	/	/	/	/	/	/
	5670MHz	17.52	/	/	/	/	/	/	/
	5710MHz	17.89	/	/	/	/	/	/	/

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
802.11ac (VHT40)	5190MHz	17.22	16.00	16.02	16.37	15.41	15.47	15.56	13.87	14.12
	5230MHz	17.80	/	/	/	/	/	/	/	/
	5270MHz	17.83	/	/	/	/	/	/	/	/
	5310MHz	17.87	/	/	/	/	/	/	/	/
	5510MHz	17.93	/	/	/	/	/	/	/	/
	5550MHz	17.98	/	/	/	/	/	/	/	/
	5670MHz	17.44	/	/	/	/	/	/	/	/
5710MHz	17.88	/	/	/	/	/	/	/	/	

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

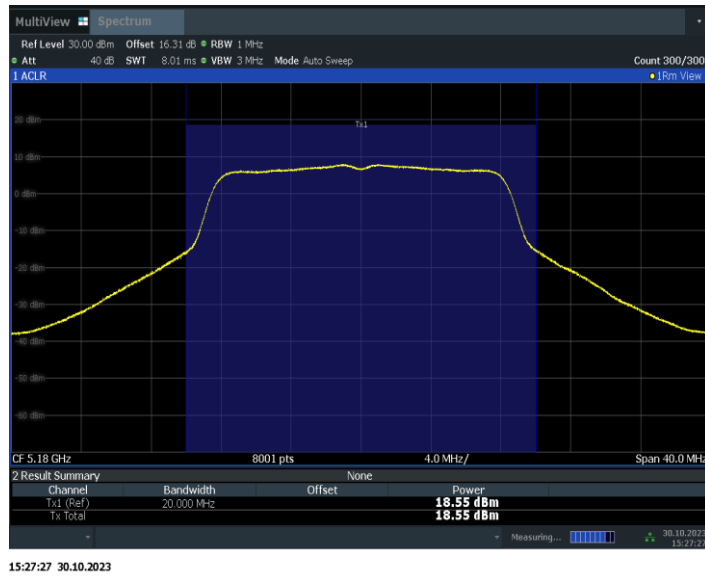
**802.11ac-VHT80 mode**

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (VHT80)	5210MHz	16.07	15.66	15.84	15.74	15.78	15.42	15.17	14.05	14.64	13.54
	5290MHz	16.74	/	/	/	/	/	/	/	/	/
	5530MHz	16.84	/	/	/	/	/	/	/	/	/
	5610MHz	16.05	/	/	/	/	/	/	/	/	/
	5690MHz	16.30	/	/	/	/	/	/	/	/	/

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 99%

**Maximum output Power:  
802.11a, 5180MHz**



**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: UT28a

#### Measurement Results:

Mode	Frequency	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180 MHz	8.07	P
	5200 MHz	8.36	P
	5240 MHz	8.90	P
	5260 MHz	8.83	P
	5280 MHz	8.75	P
	5320 MHz	9.17	P
	5500 MHz	8.92	P
	5580 MHz	8.26	P
	5700 MHz	9.06	P
	5720 MHz	8.82	P
802.11n HT20	5180 MHz	8.11	P
	5200 MHz	8.18	P
	5240 MHz	8.53	P
	5260 MHz	8.46	P
	5280 MHz	8.58	P
	5320 MHz	8.59	P
	5500 MHz	8.81	P
	5580 MHz	8.04	P
	5700 MHz	8.72	P
	5720 MHz	8.25	P
802.11ac VHT40	5190 MHz	3.24	P
	5230 MHz	3.81	P
	5270 MHz	3.94	P
	5310 MHz	4.06	P
	5510 MHz	3.96	P
	5550 MHz	4.21	P
	5670 MHz	3.45	P
	5710 MHz	4.14	P
802.11ac	5210 MHz	-0.74	P

VHT80	5290 MHz	-0.35	P
	5530 MHz	0.18	P
	5610 MHz	-0.69	P
	5690 MHz	-0.17	P

**Peak Power Spectral Density:**

**802.11a, 5180MHz**



**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
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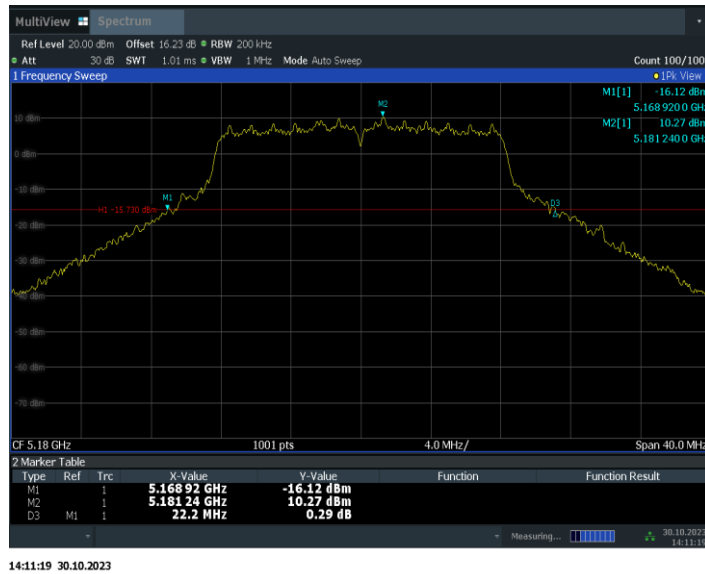
**EUT ID: UT28a**

##### **Measurement Result:**

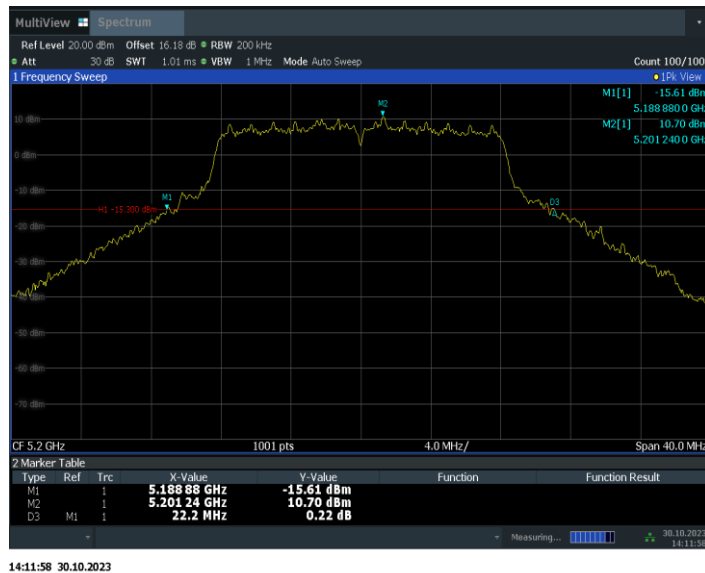
Mode	Frequency	26dB Emission Bandwidth ( MHz)		conclusion
		Fig.	Value	
802.11a	5180 MHz	Fig.1	22.20	P
	5200 MHz	Fig.2	22.20	P
	5240 MHz	Fig.3	22.20	P
	5260 MHz	Fig.4	22.24	P
	5280 MHz	Fig.5	22.16	P
	5320 MHz	Fig.6	22.24	P
	5500 MHz	Fig.7	22.24	P
	5580 MHz	Fig.8	22.24	P
	5700 MHz	Fig.9	22.12	P
	5720 MHz	Fig.10	22.24	P
802.11n HT20	5180 MHz	Fig.11	22.72	P
	5200 MHz	Fig.12	22.40	P
	5240 MHz	Fig.13	22.12	P
	5260 MHz	Fig.14	22.44	P
	5280 MHz	Fig.15	22.12	P
	5320 MHz	Fig.16	22.60	P
	5500 MHz	Fig.17	22.28	P
	5580 MHz	Fig.18	22.40	P
	5700 MHz	Fig.19	22.24	P
	5720 MHz	Fig.20	22.40	P
802.11ac VHT40	5190 MHz	Fig.21	41.84	P
	5230 MHz	Fig.22	42.40	P
	5270 MHz	Fig.23	41.92	P
	5310 MHz	Fig.24	42.00	P
	5510 MHz	Fig.25	42.00	P
	5550 MHz	Fig.26	41.52	P
	5670 MHz	Fig.27	42.24	P
	5710 MHz	Fig.28	42.32	P
802.11ac	5210MHz	Fig.29	84.64	P

VHT80	5290MHz	Fig.30	84.80	P
	5530MHz	Fig.31	84.48	P
	5610 MHz	Fig.32	84.64	P
	5690MHz	Fig.33	84.48	P

Test graphs as below:



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



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



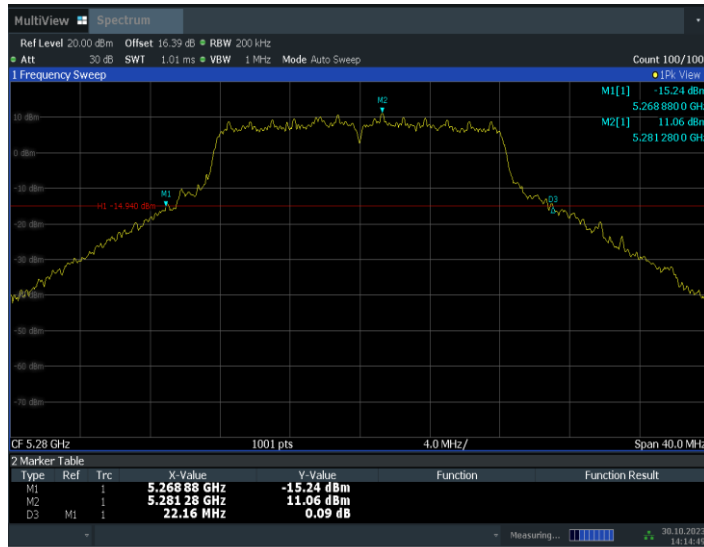
14:12:38 30.10.2023

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



14:14:11 30.10.2023

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



14:14:49 30.10.2023

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



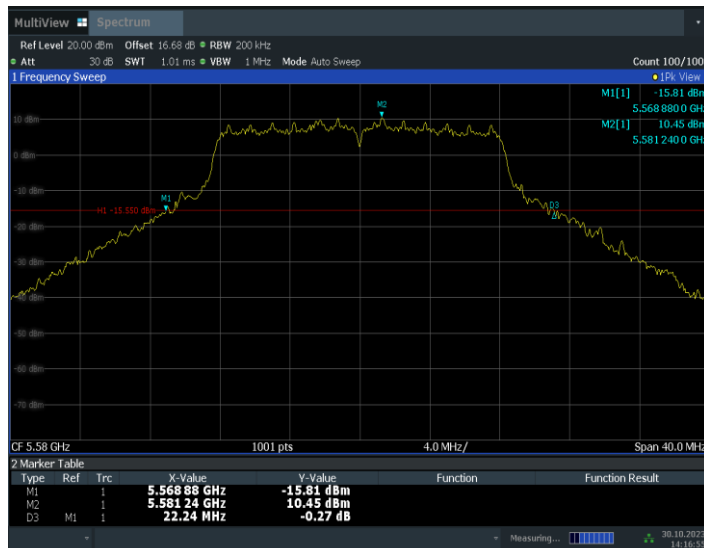
14:15:35 30.10.2023

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



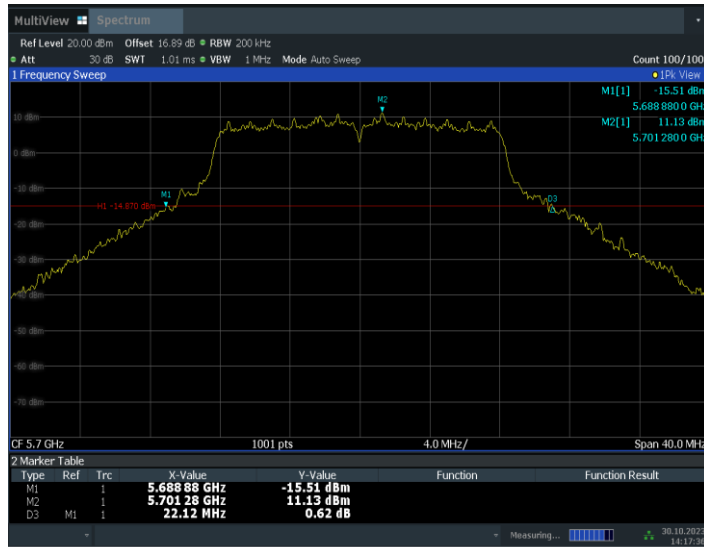
14:16:15 30.10.2023

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



14:16:55 30.10.2023

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



14:17:37 30.10.2023

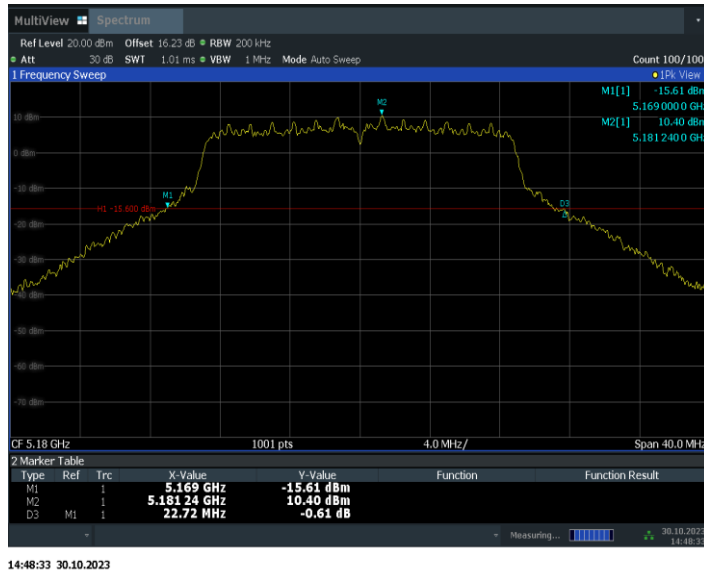
**Fig.9 26dB Emission Bandwidth (802.11a, 5700MHz)**



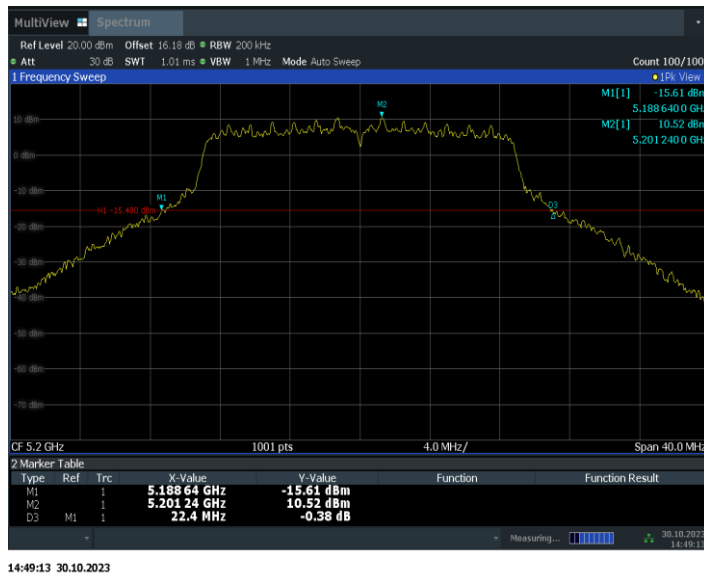
14:18:13 30.10.2023

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

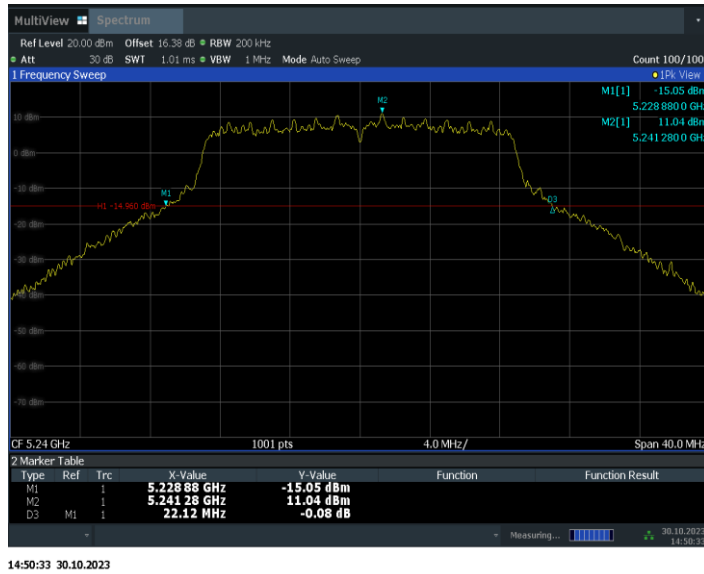




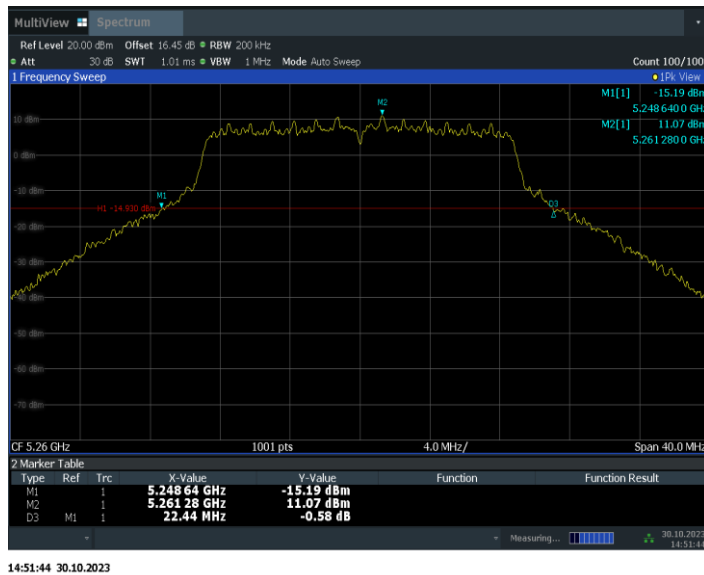
**Fig.11 26dB Emission Bandwidth (802.11n-HT20, 5180MHz)**



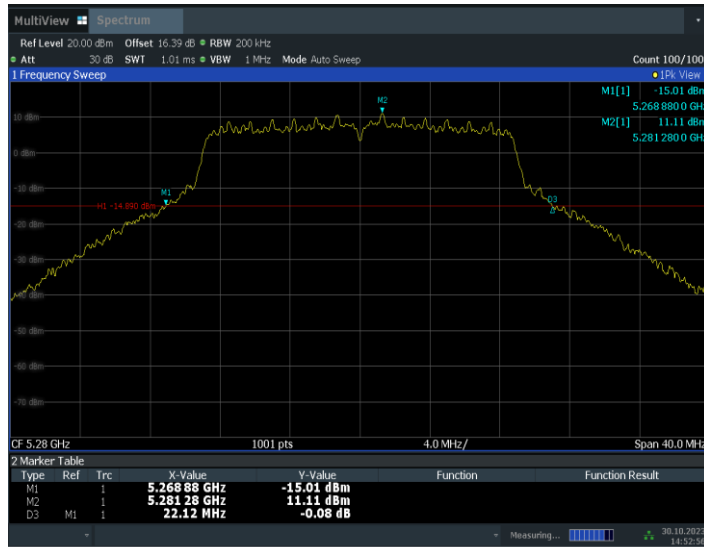
**Fig.12 26dB Emission Bandwidth (802.11n-HT20, 5200MHz)**



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



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



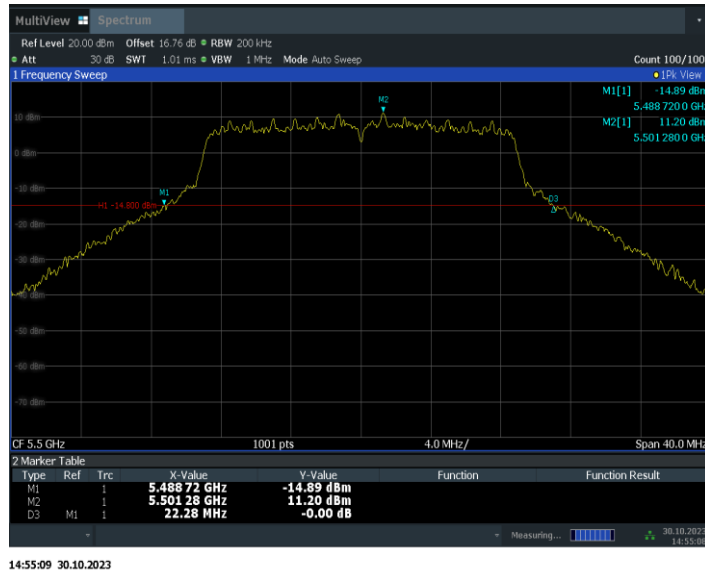
14:52:57 30.10.2023

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

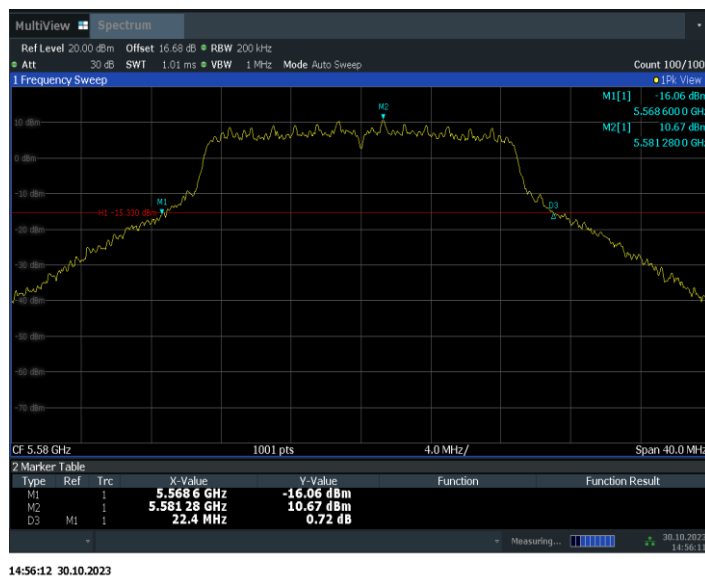


14:54:07 30.10.2023

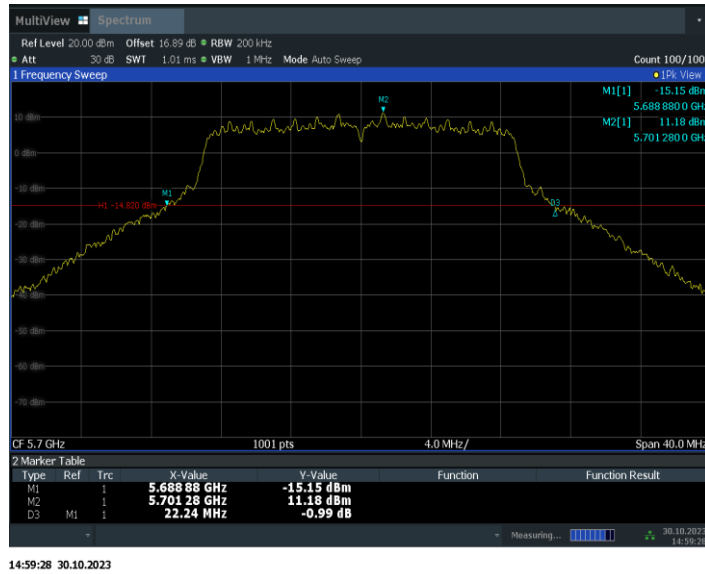
**Fig.16 26dB Emission Bandwidth (802.11n-HT20, 5320MHz)**



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



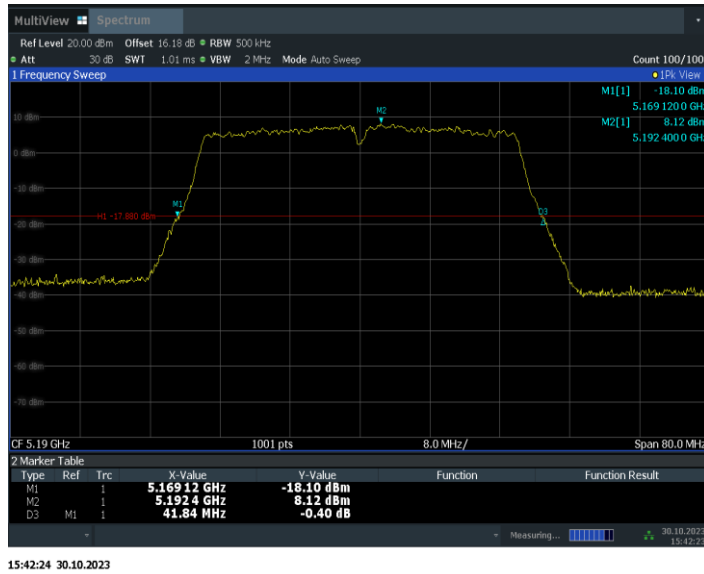
**Fig.18 26dB Emission Bandwidth (802. 11n-HT20, 5580MHz)**



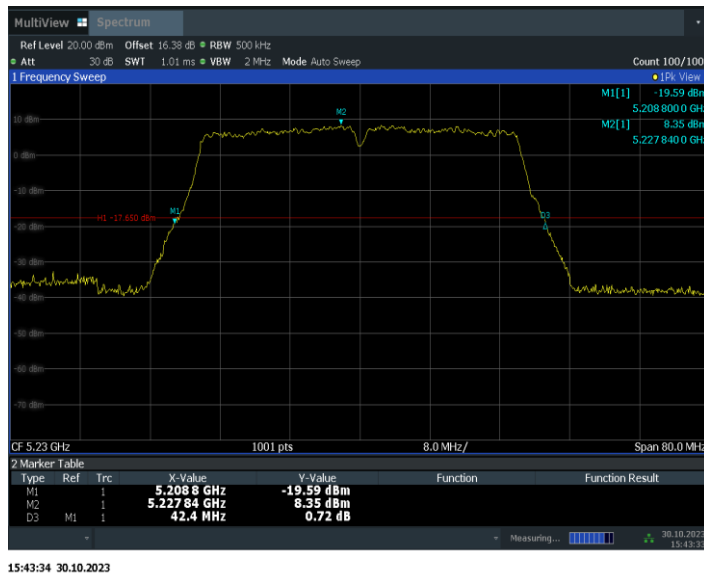
**Fig.19 26dB Emission Bandwidth (802. 11n-HT20, 5700MHz)**



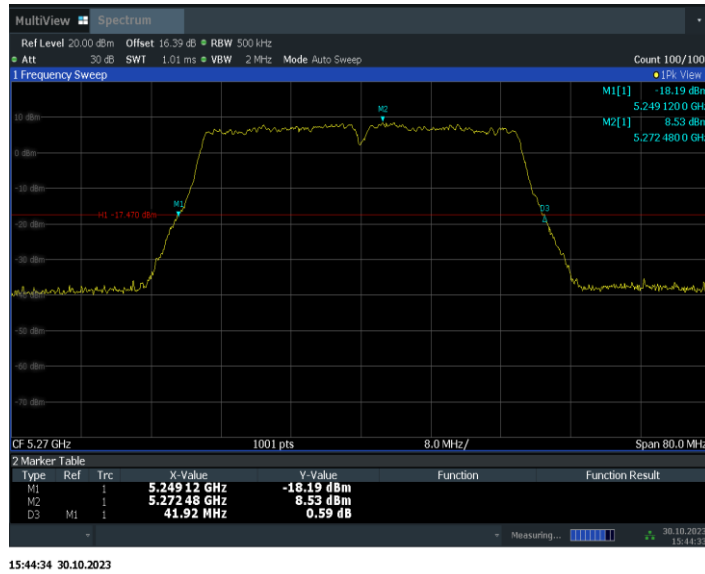
**Fig.20 26dB Emission Bandwidth (802. 11n-HT20, 5720MHz)**



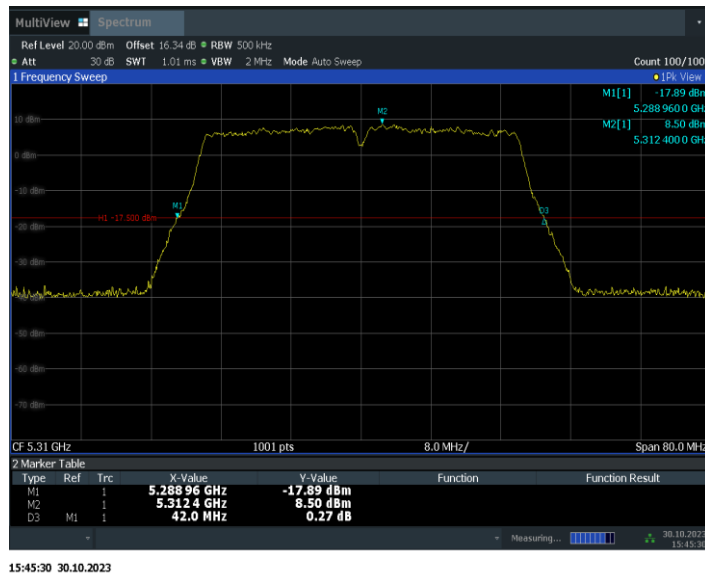
**Fig.21 26dB Emission Bandwidth (802.11ac-VHT40, 5190MHz)**



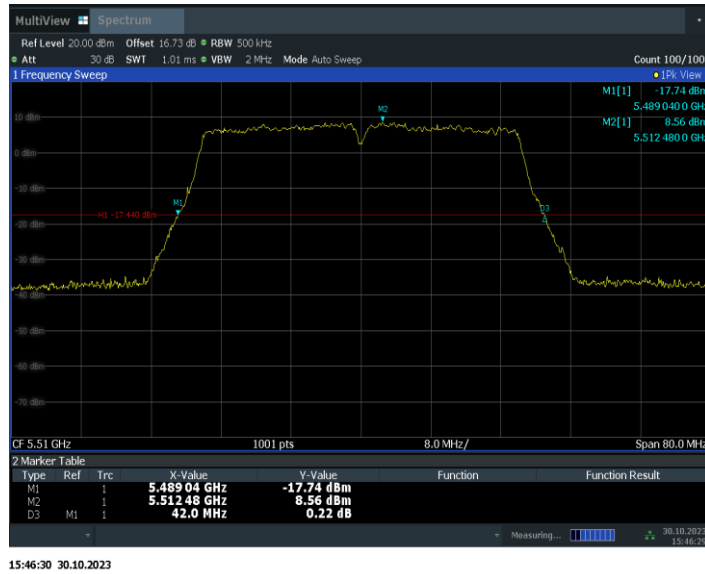
**Fig.22 26dB Emission Bandwidth (802.11ac-VHT40, 5230MHz)**



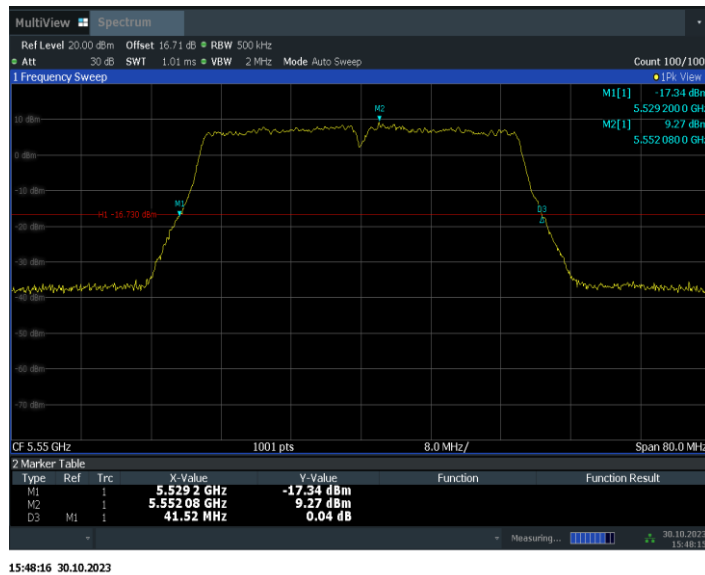
**Fig.23 26dB Emission Bandwidth (802.11ac-VHT40, 5270MHz)**



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

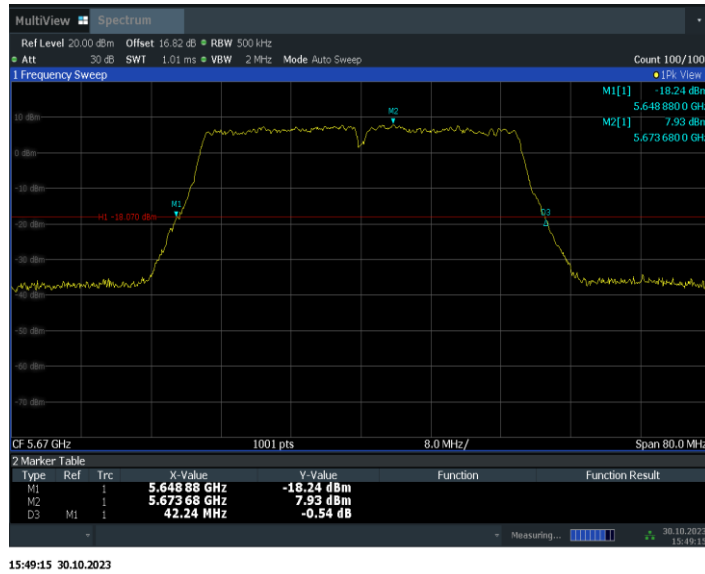


**Fig.25 26dB Emission Bandwidth (802. 11ac-VHT40, 5510MHz)**

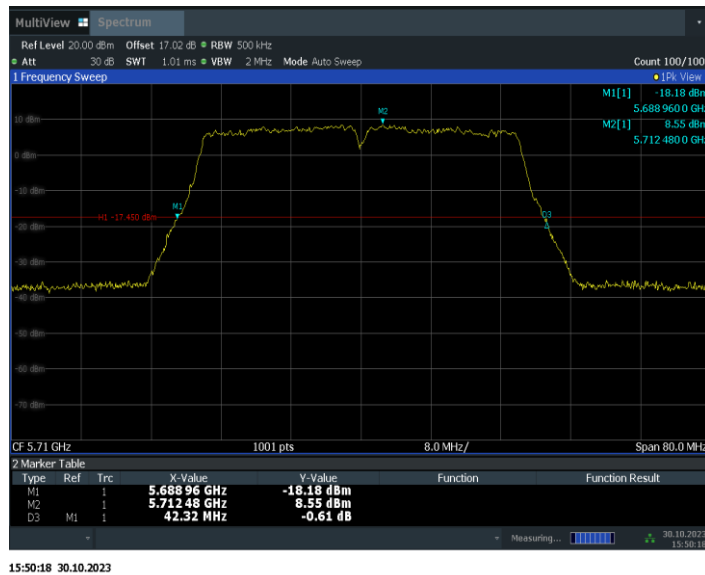


**Fig.26 26dB Emission Bandwidth (802. 11ac-VHT40, 5550MHz)**

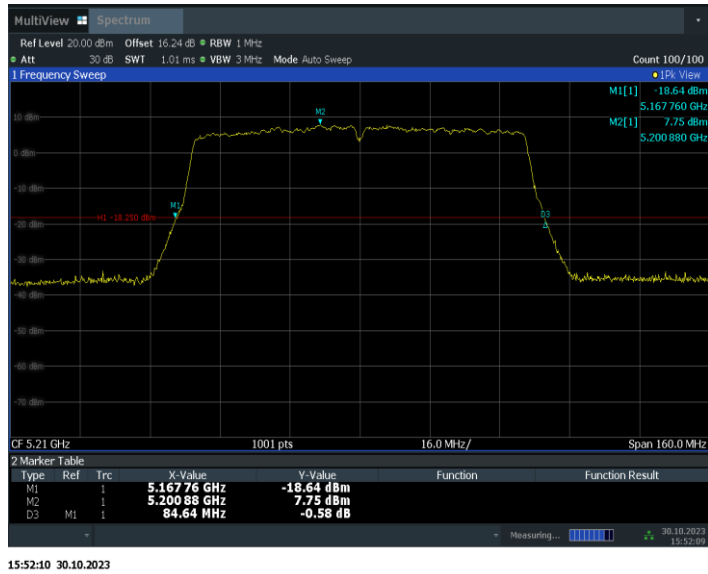




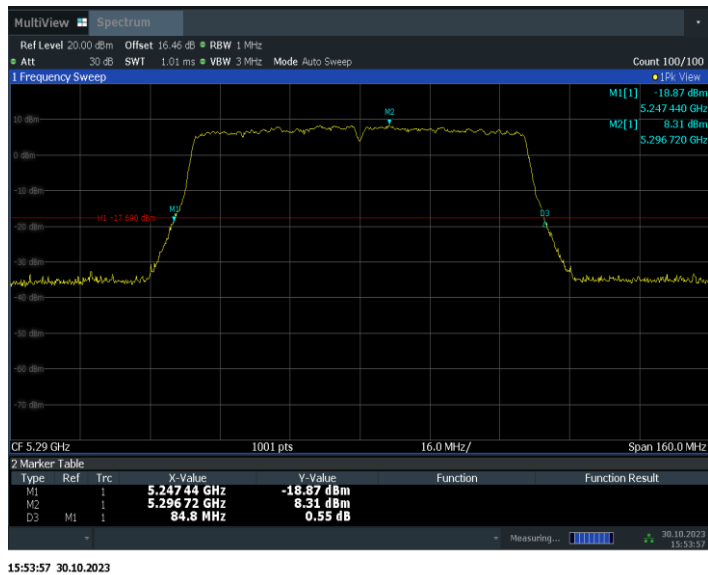
**Fig.27 26dB Emission Bandwidth (802.11ac-VHT40, 5670MHz)**



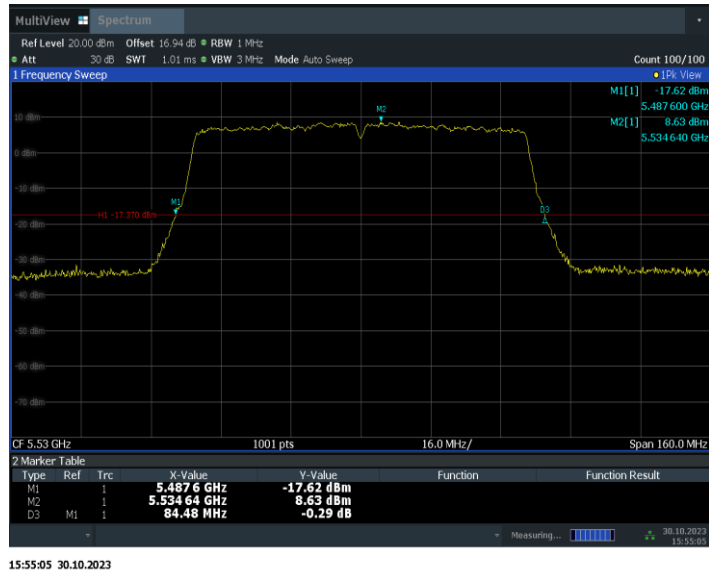
**Fig.28 26dB Emission Bandwidth (802.11ac-VHT40, 5710MHz)**



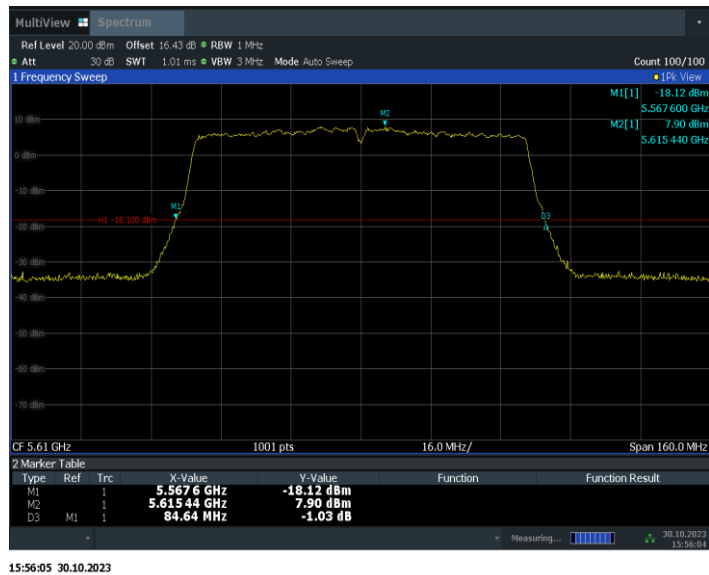
**Fig.29 26dB Emission Bandwidth (802. 11ac-VHT80, 5210MHz)**



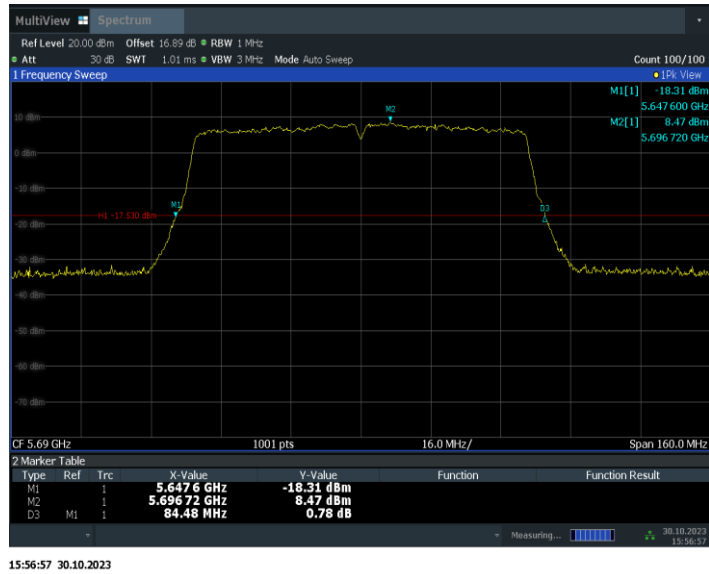
**Fig.30 26dB Emission Bandwidth (802. 11ac-VHT80, 5290MHz)**



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



**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:**

<b>Standard</b>	<b>Limit</b>
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:**

<b>Standard</b>	<b>Limit (dB <math>\mu</math> V/m)</b>	
FCC 47 CFR Part 15.209	Peak	74
	Average	54

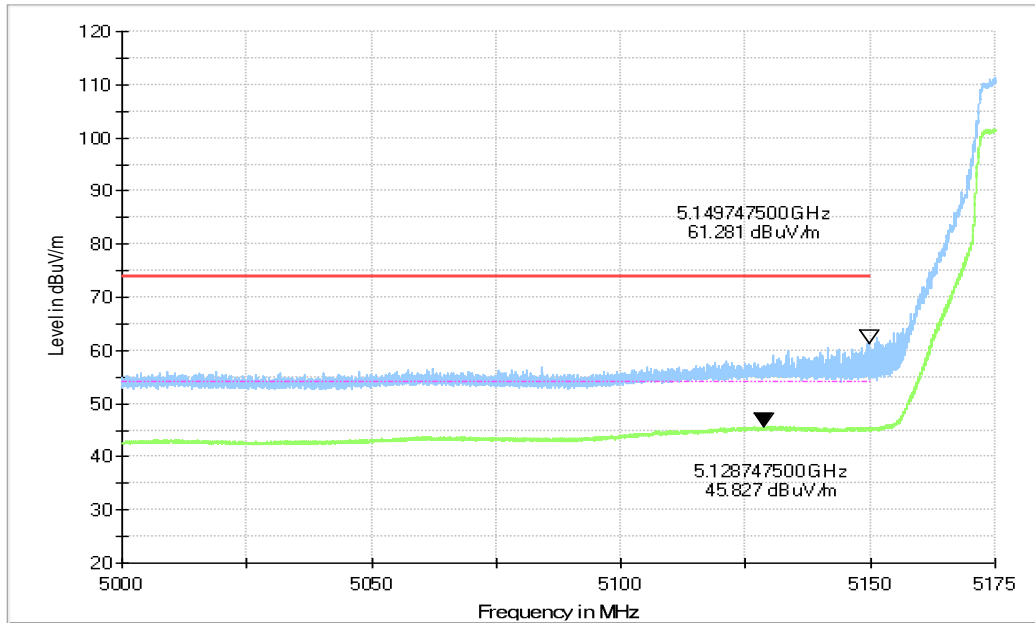
The measurement is made according to ANSI C63.10-2013 and KDB 789033

#### **Measurement Result:**

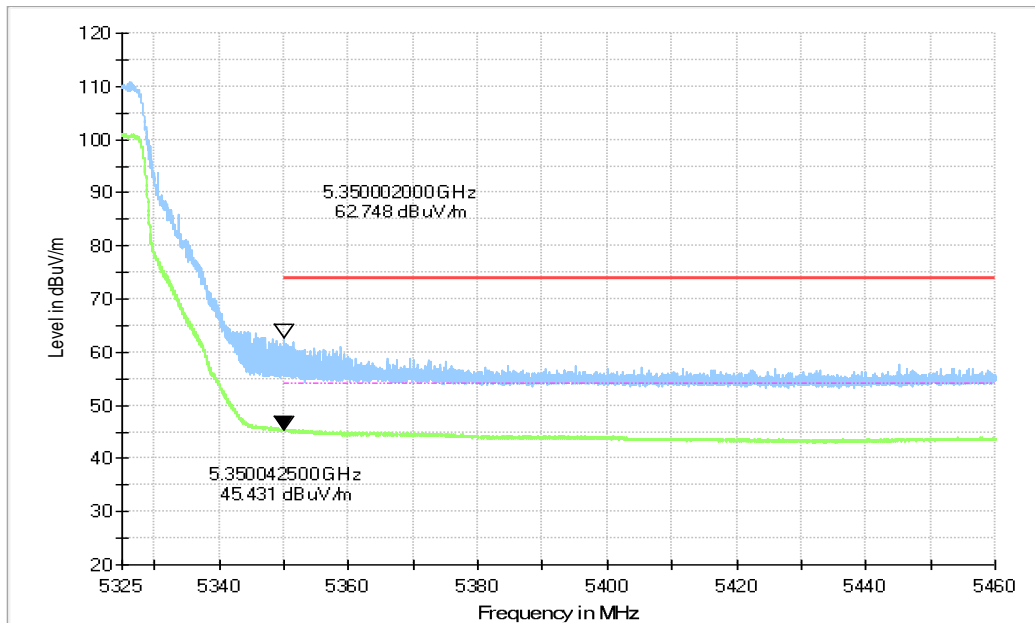
##### **EUT ID: UT12a**

<b>Mode</b>	<b>Channel</b>	<b>Test Results</b>	<b>Conclusion</b>
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 HT80	5210MHz	Fig.54	P
	5290MHz	Fig.55	P
	5530MHz	Fig.56	P
	5610MHz	Fig.57	P

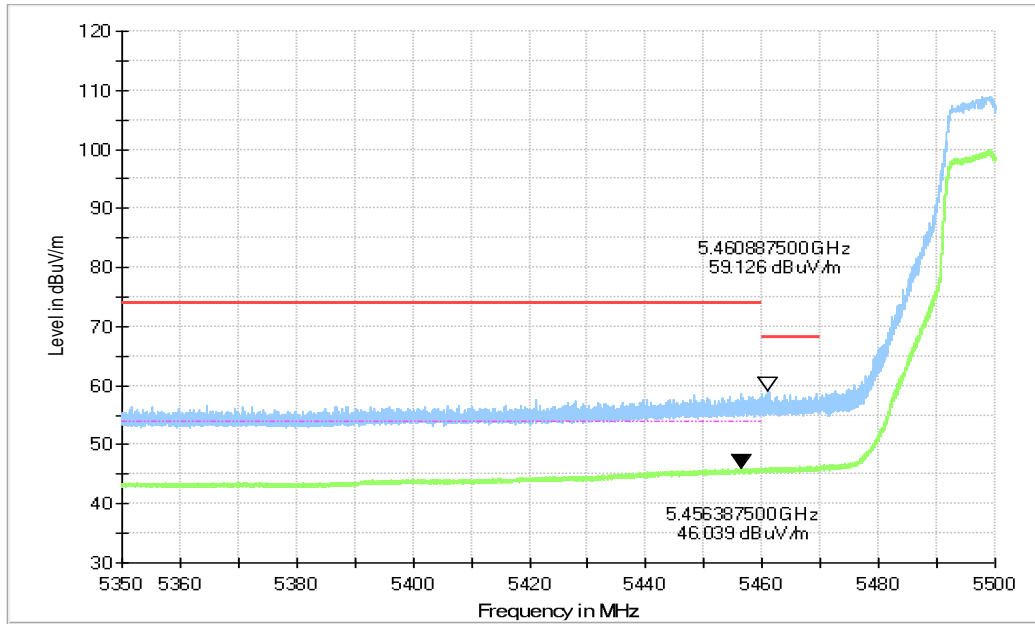
**Conclusion: PASS**  
**Test graphs as below:**



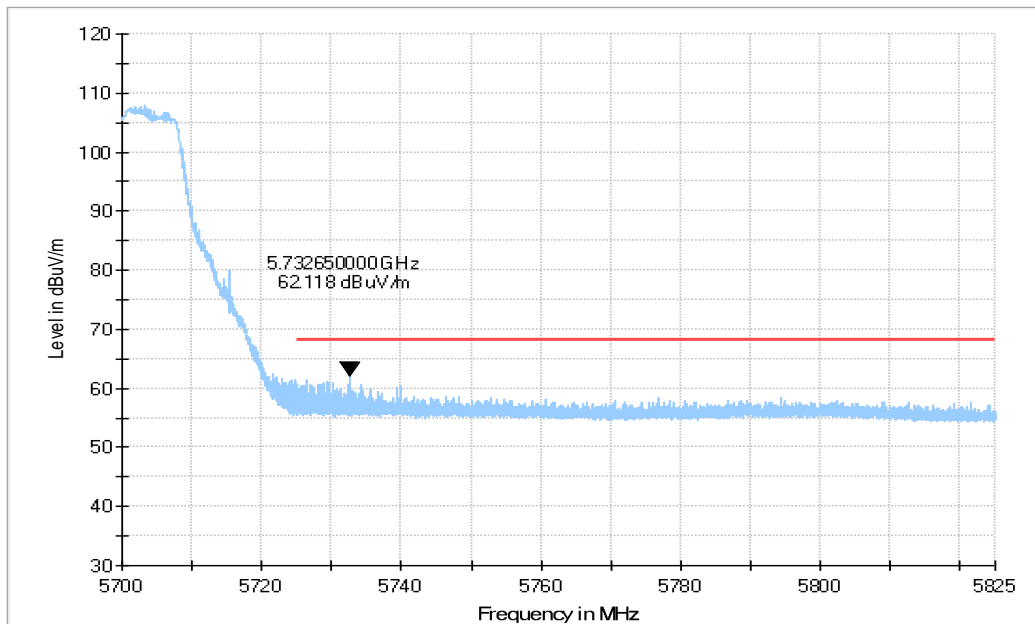
**Fig.34 Band Edges (802.11a Ch36, 5180MHz)**



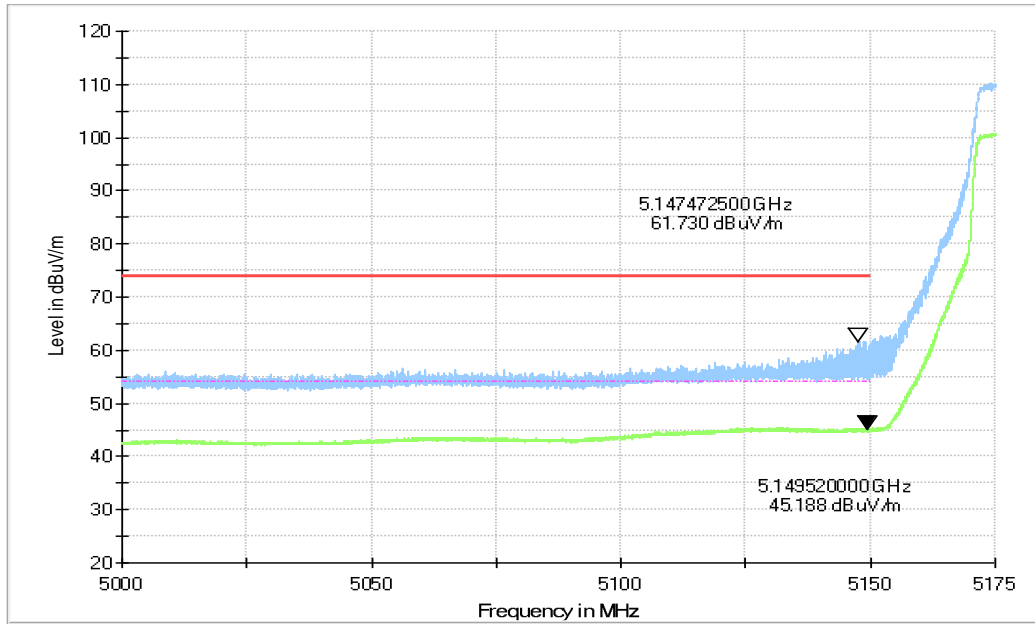
**Fig.35 Band Edges (802.11a Ch64, 5320MHz)**



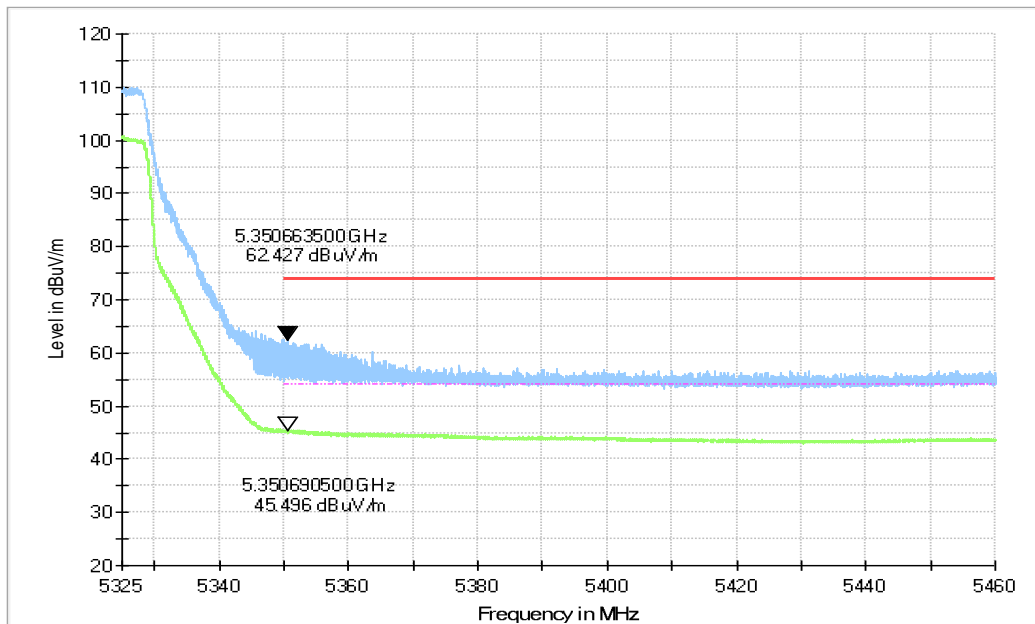
**Fig.36 Band Edges (802.11a Ch100, 5500MHz)**



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

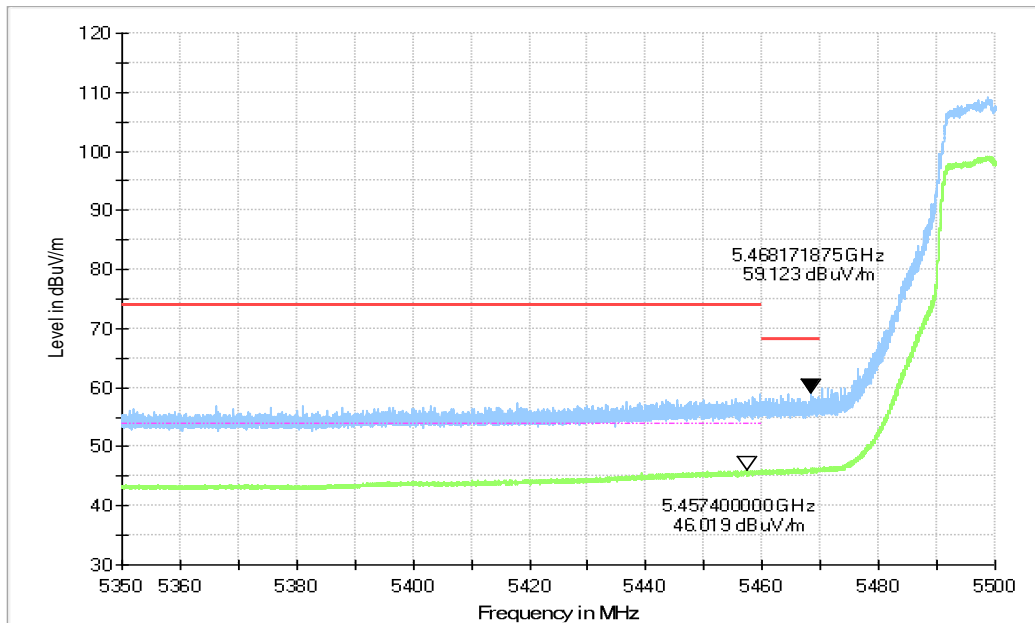


**Fig.38 Band Edges (802.11n-HT20 Ch36, 5180MHz)**

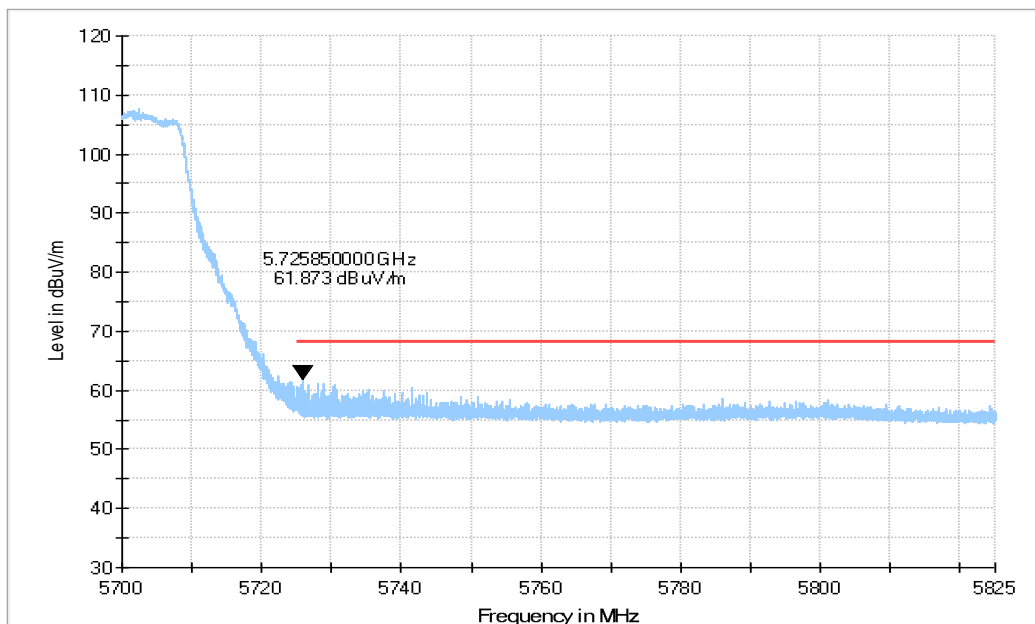


**Fig.39 Band Edges (802.11n-HT20 Ch64, 5320MHz)**

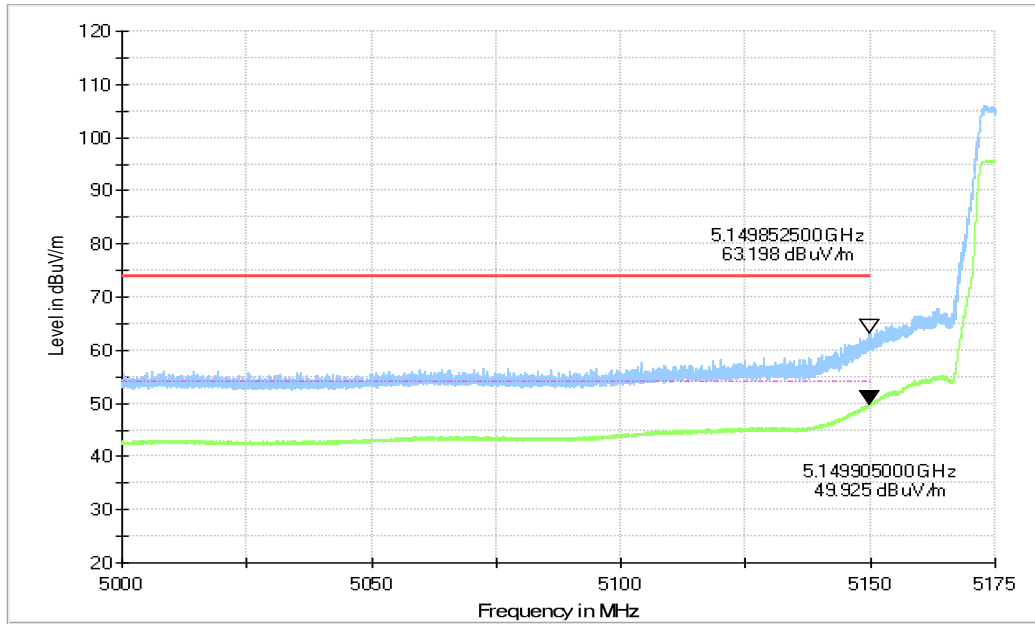




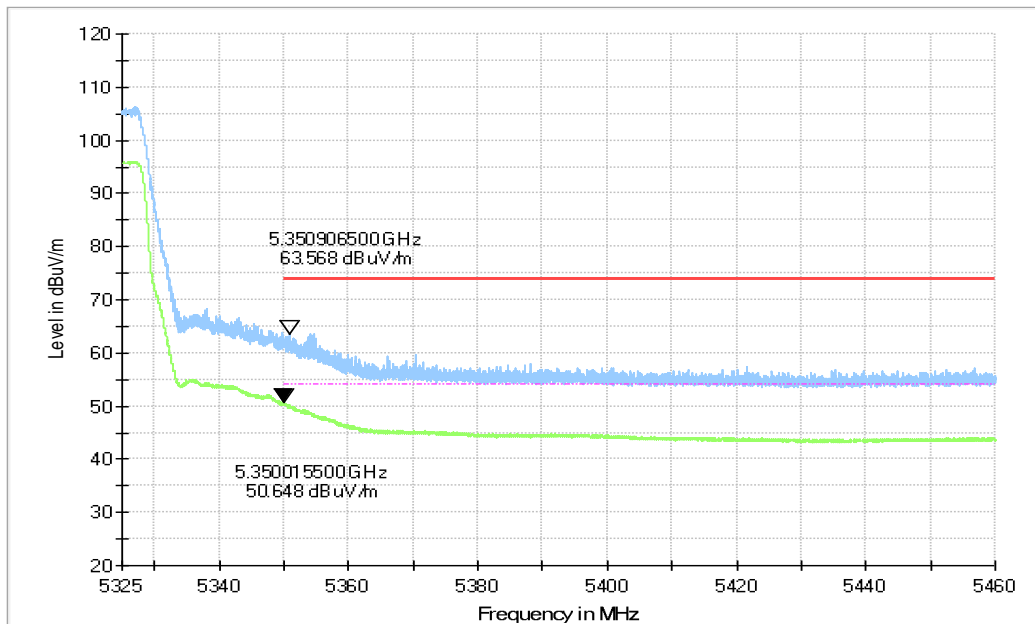
**Fig.40 Band Edges (802.11n-HT20 Ch100, 5500MHz)**



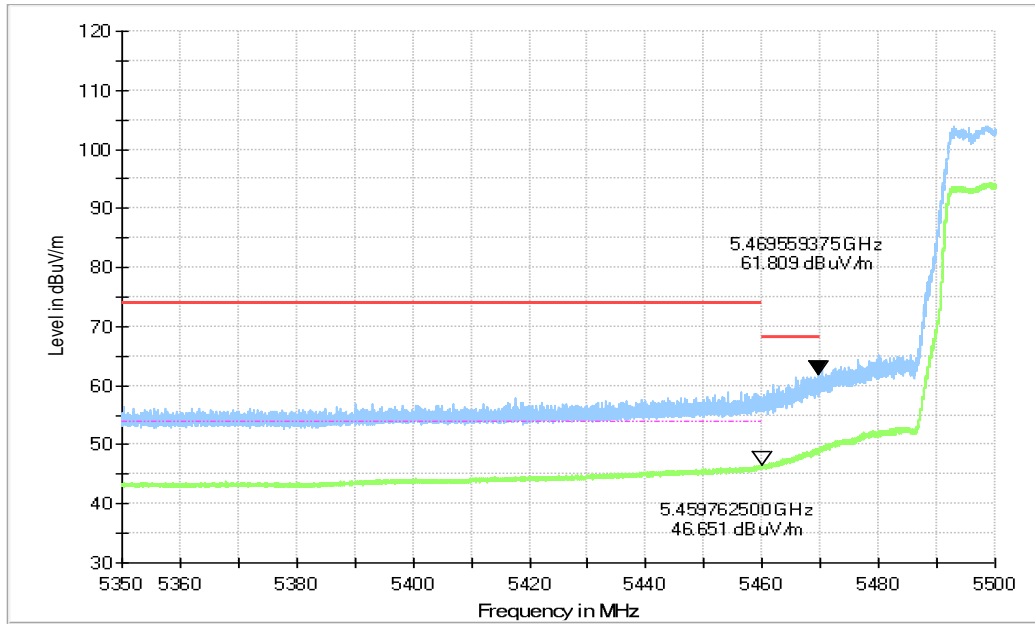
**Fig.41 Band Edges (802.11n-HT20 Ch140, 5700MHz)**



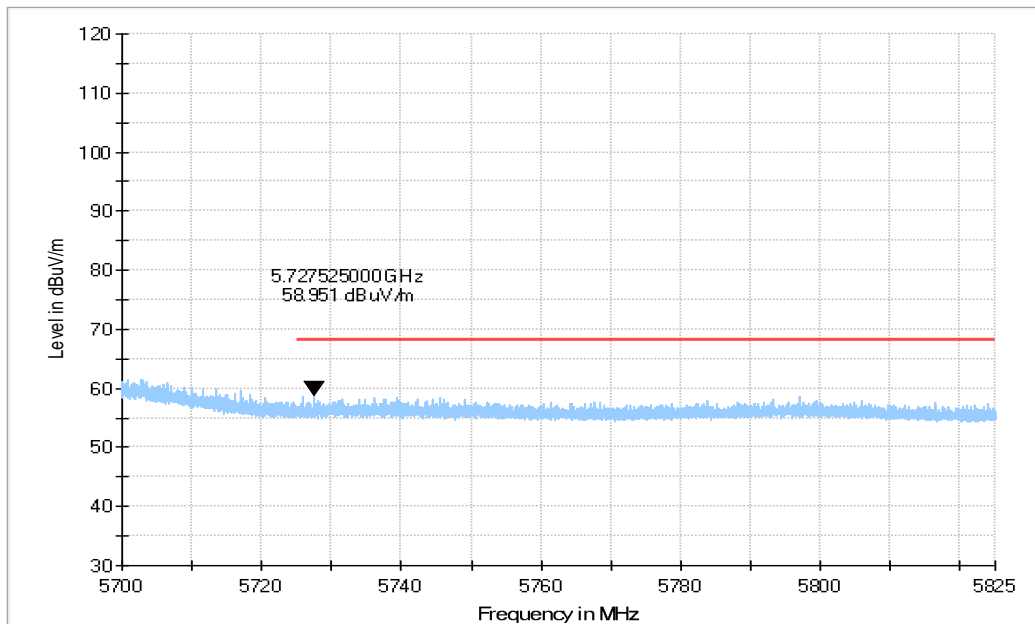
**Fig.42 Band Edges (802.11n-HT40 Ch38, 5190MHz)**



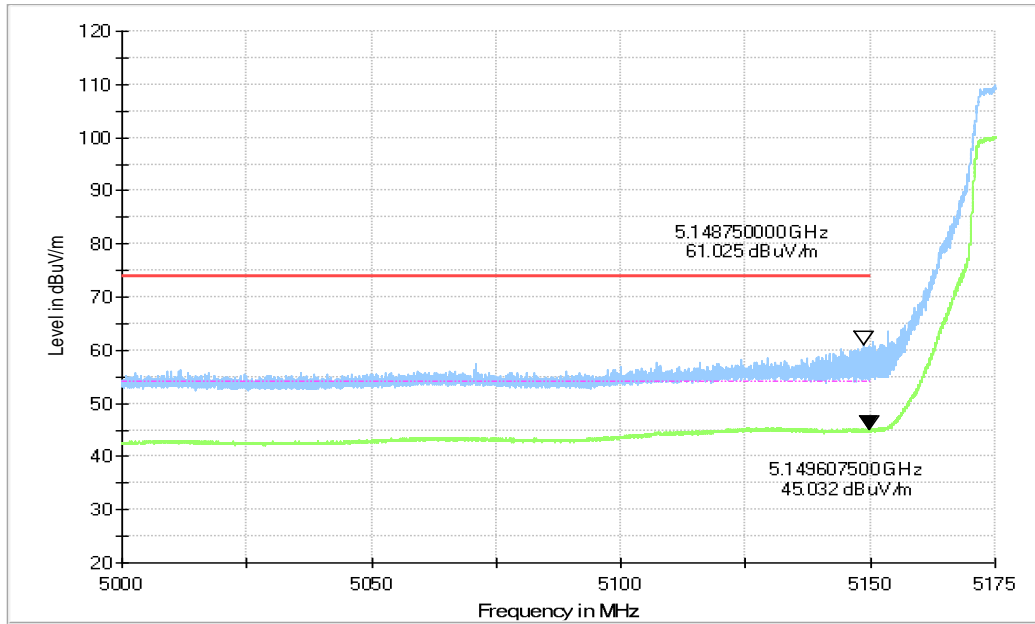
**Fig.43 Band Edges (802.11n-HT40 Ch62, 5310MHz)**



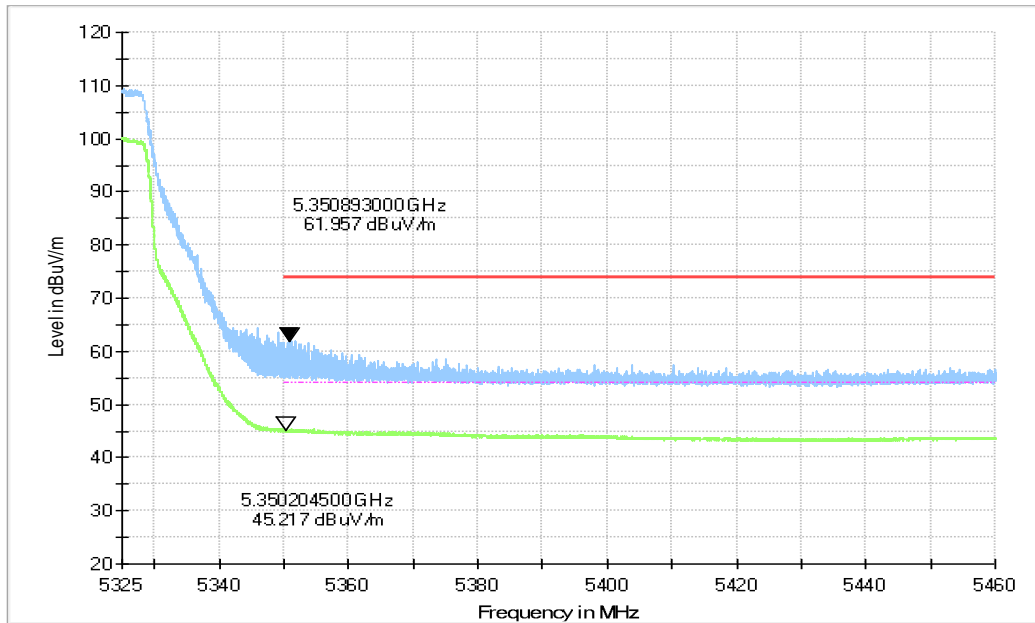
**Fig.44 Band Edges (802.11n-HT40 Ch102, 5510MHz)**



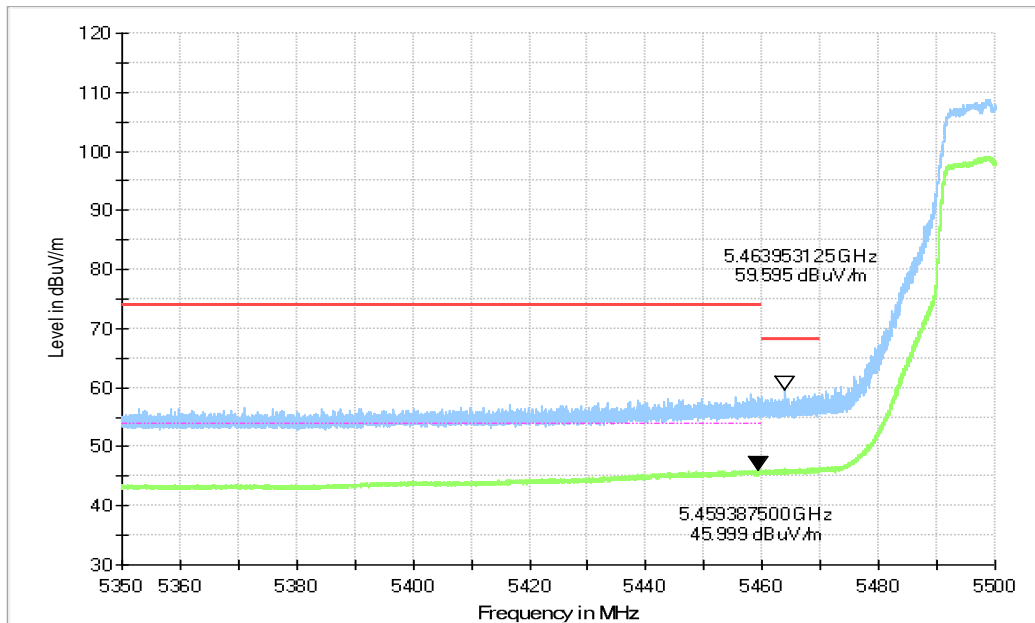
**Fig.45 Band Edges (802.11n-HT40 Ch134, 5670MHz)**



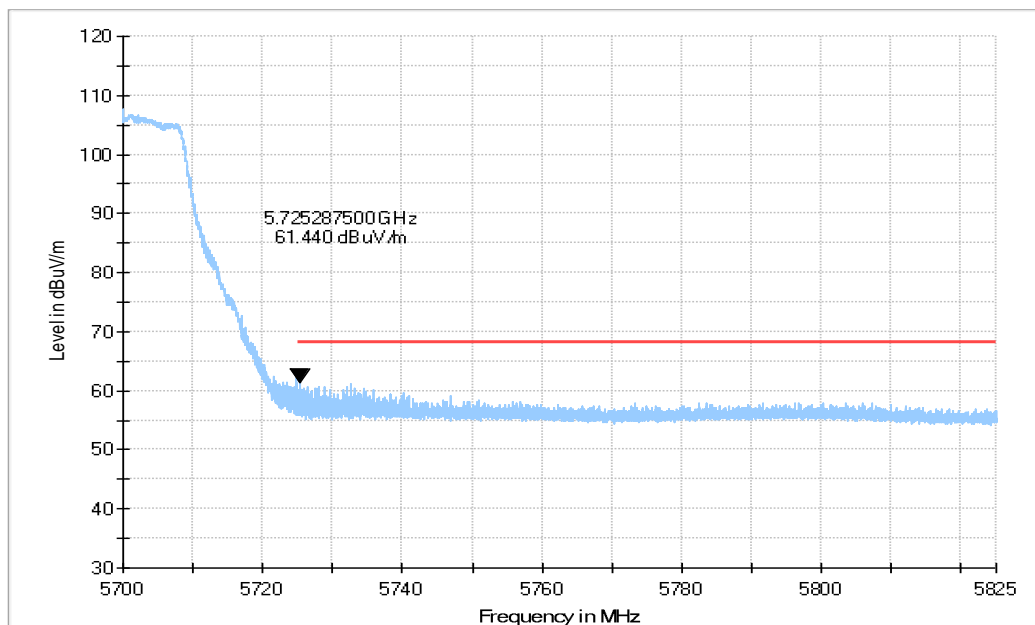
**Fig.46 Band Edges (802.11ac-HT20 Ch36, 5180MHz)**



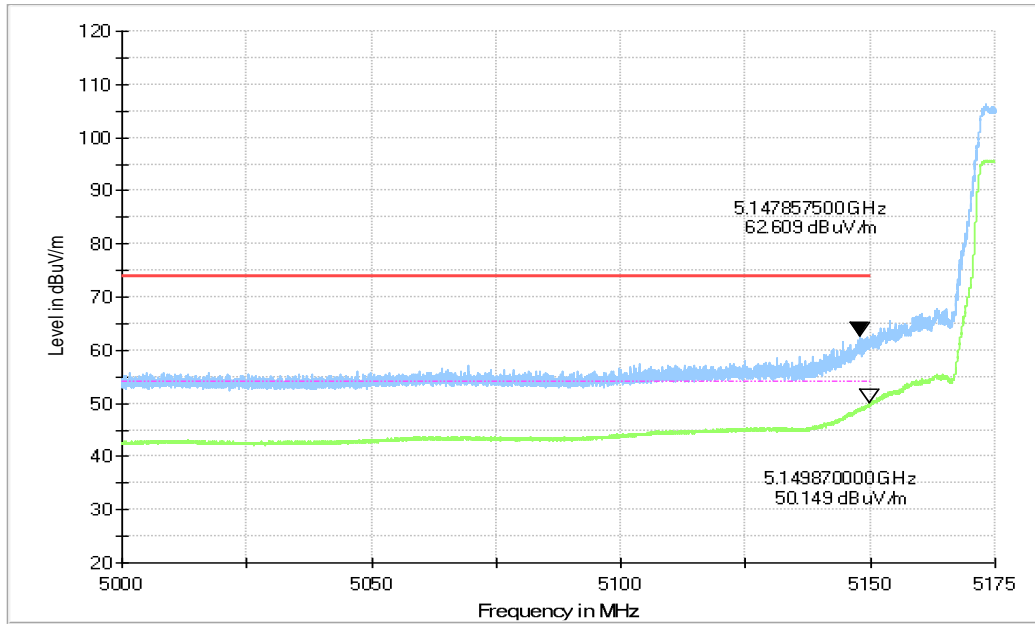
**Fig.47 Band Edges (802.11ac-HT20 Ch64, 5320MHz)**



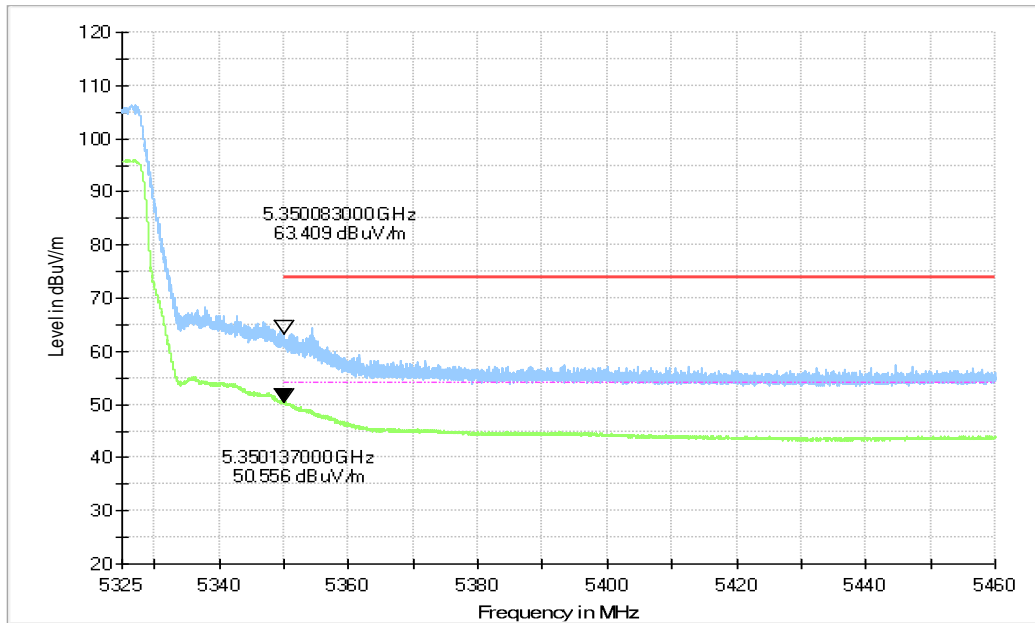
**Fig.48 Band Edges (802.11ac-HT20 Ch100, 5500MHz)**



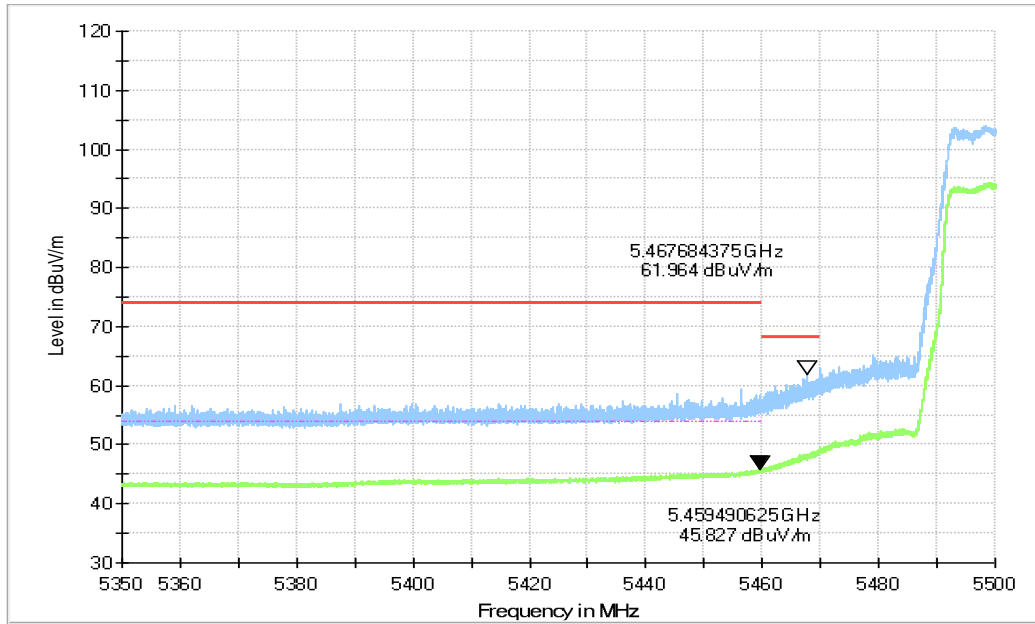
**Fig.49 Band Edges (802.11ac-HT20 Ch140, 5700MHz)**



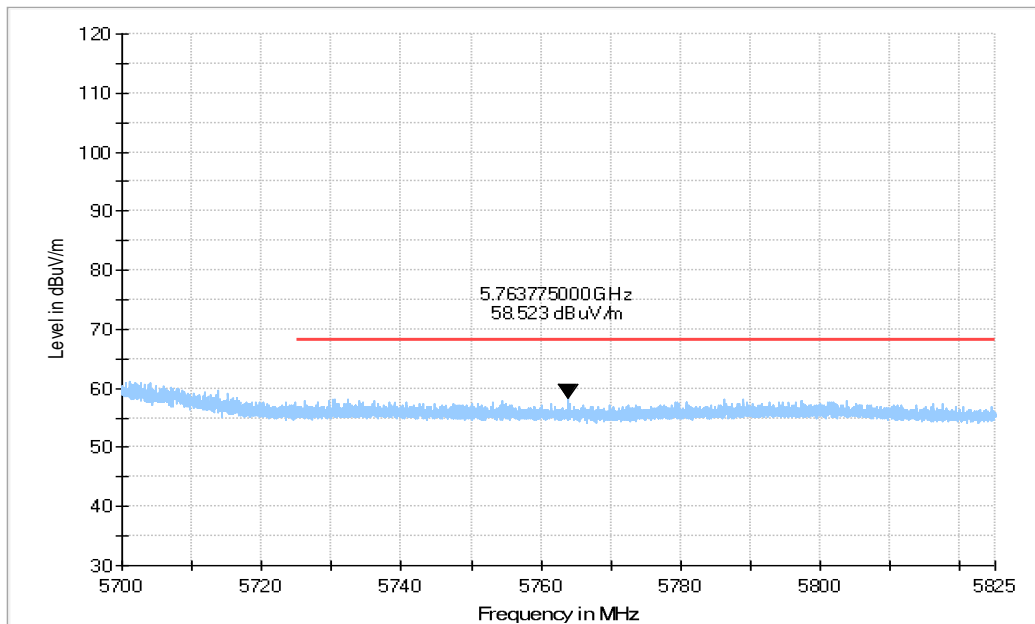
**Fig.50 Band Edges (802.11ac-HT40 Ch38, 5190MHz)**



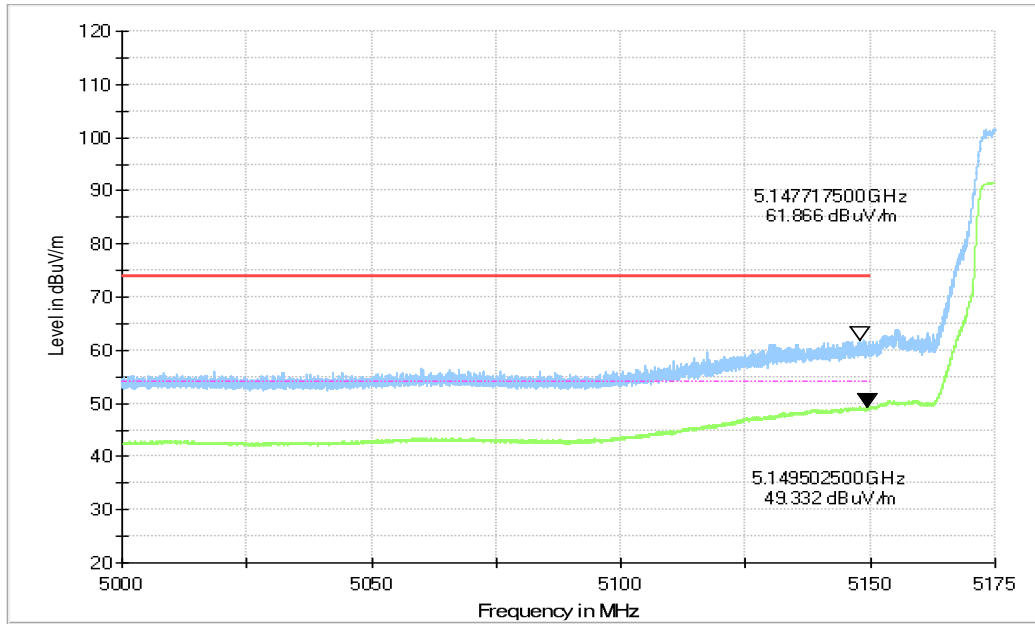
**Fig.51 Band Edges (802.11ac-HT40 Ch62, 5310MHz)**



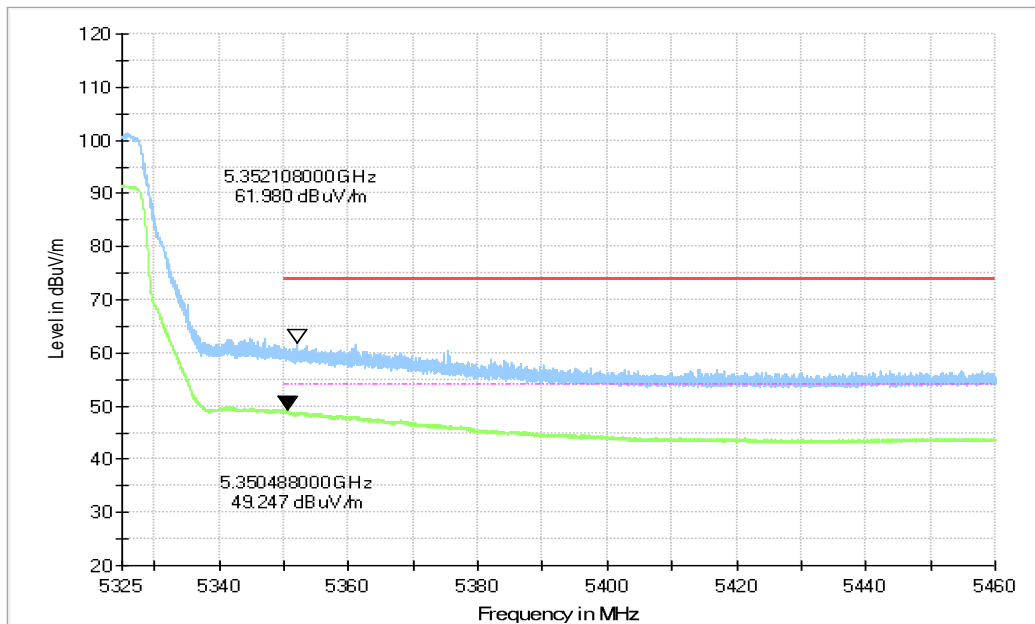
**Fig.52 Band Edges (802.11ac-HT40 Ch102, 5510MHz)**



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

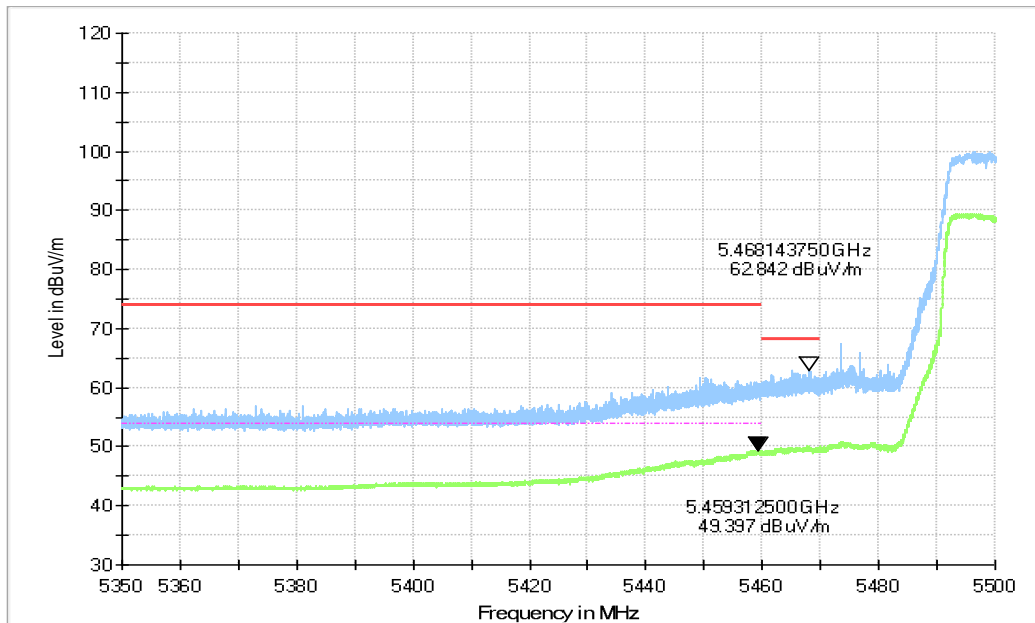


**Fig.54 Band Edges (802.11ac-HT80 Ch42 , 5210MHz)**

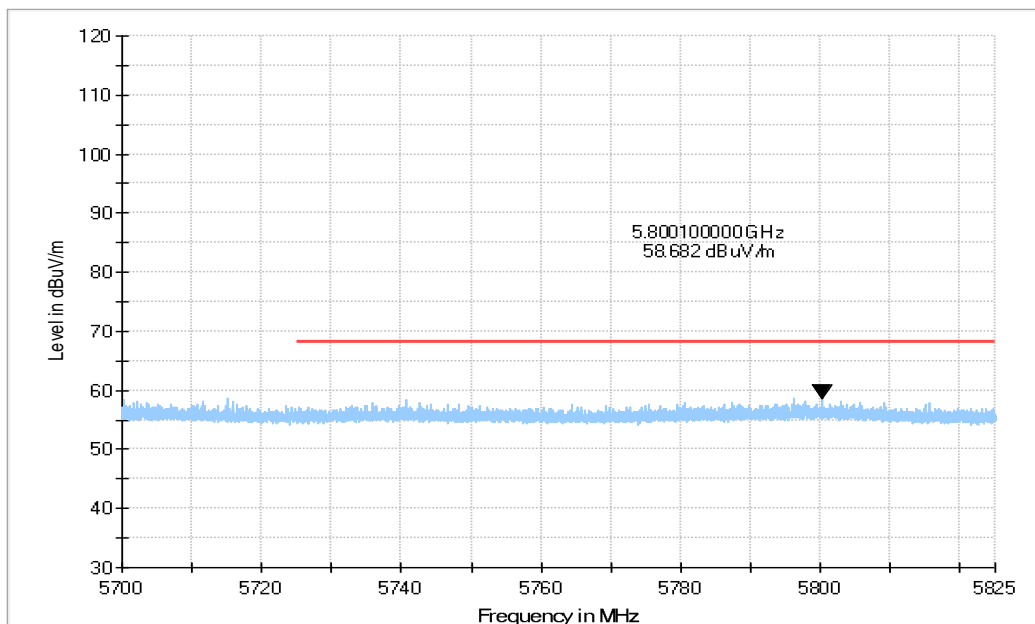


**Fig.55 Band Edges (802.11ac-HT80 Ch58, 5290MHz)**





**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:

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))

Limit in restricted band:

Frequency (MHz)	Field strength( $\mu$ 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 ( $\mu$ 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).

Test setup

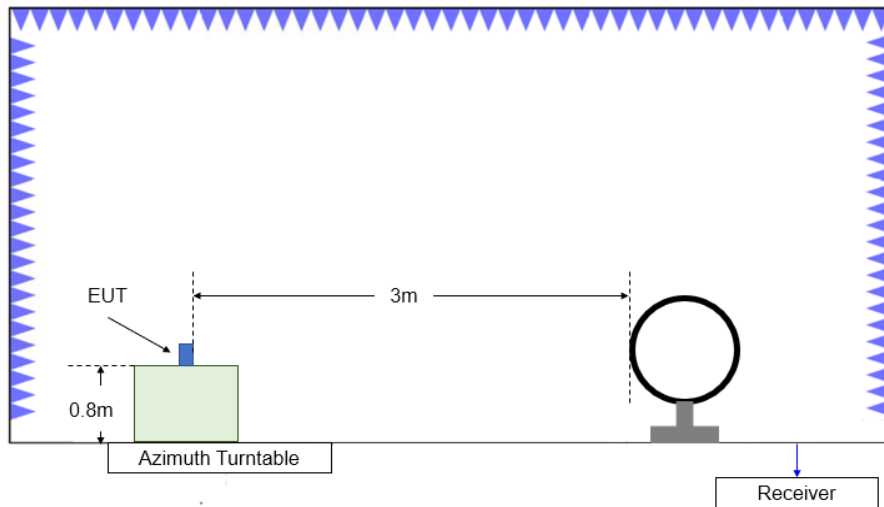


Figure A.6.1. Test Site Diagram (9kHz-30MHz)

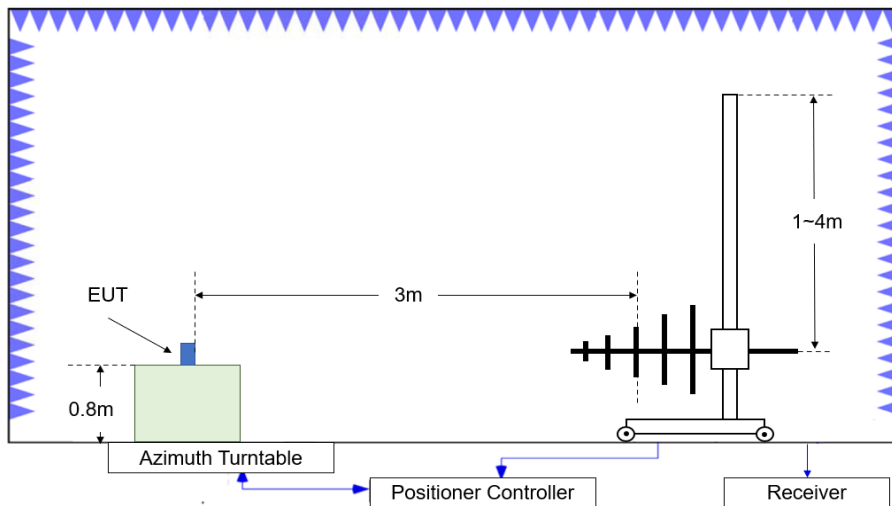


Figure A.6.2. Test Site Diagram (30MHz-1GHz)

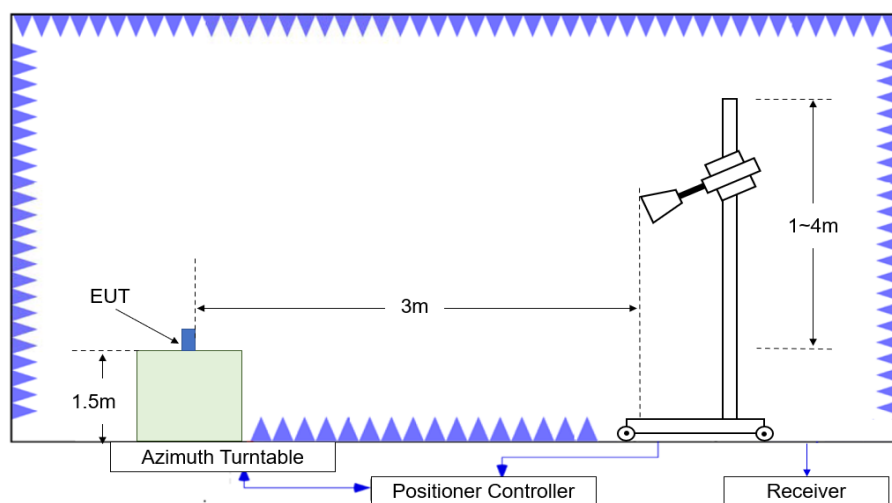


Figure A.6.3. Test Site Diagram (1GHz-40GHz)

### 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

### Calculation

1. The measurement results reported below is calculated by:

Measurement Results (dB $\mu$ V/m) =  $P_{\text{measurement}}$  (dB $\mu$ 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 $\mu$ 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. Measurement frequencies were performed from 9 kHz to 40GHz

### Measurement Results:

EUT ID: UT12a

**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)
5128.800	44.69	-23.21	32.86	35.04	54.00	9.31	H
5130.800	44.73	-23.28	32.86	35.15	54.00	9.27	V
10749.000	34.41	-30.57	38.70	26.28	54.00	19.59	V
15540.000	35.07	-25.77	38.50	22.35	54.00	18.93	H
17927.500	39.87	-24.05	41.76	22.16	54.00	14.13	V
17984.000	40.21	-24.04	41.87	22.39	54.00	13.79	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)
5145.400	44.07	-23.58	32.89	34.76	54.00	9.93	H
5149.800	44.09	-23.56	32.90	34.75	54.00	9.91	H
10868.000	34.76	-30.50	38.63	26.62	54.00	19.24	V
15600.000	35.03	-25.40	38.50	21.93	54.00	18.97	H
17927.000	39.84	-24.05	41.75	22.14	54.00	14.16	H
17962.500	40.08	-24.04	41.83	22.29	54.00	13.92	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)
5130.600	42.96	-23.28	32.86	33.38	54.00	11.04	V
5146.200	42.75	-23.58	32.89	33.44	54.00	11.25	V
10814.000	34.51	-30.63	38.69	26.45	54.00	19.49	H
15720.000	35.07	-25.41	38.60	21.88	54.00	18.93	H
17771.000	38.94	-24.39	41.73	21.60	54.00	15.06	H
17916.000	39.54	-24.06	41.73	21.86	54.00	14.46	V

## 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)
5350.200	43.19	-23.36	33.10	33.45	54.00	10.81	V
5353.000	43.10	-23.33	33.11	33.32	54.00	10.90	H
10721.000	34.11	-30.64	38.70	26.05	54.00	19.89	V
15780.000	35.96	-25.19	38.60	22.55	54.00	18.04	V
17786.500	39.28	-24.27	41.71	21.84	54.00	14.72	H
17958.000	40.08	-24.04	41.82	22.30	54.00	13.92	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)
5350.400	43.77	-23.35	33.10	34.03	54.00	10.23	V
5350.800	43.79	-23.35	33.10	34.04	54.00	10.21	H
10883.000	35.25	-30.50	38.62	27.14	54.00	18.75	H
15840.000	36.43	-24.90	38.64	22.69	54.00	17.57	V
17775.500	39.03	-24.36	41.72	21.66	54.00	14.97	H
17921.000	39.76	-24.06	41.74	22.07	54.00	14.24	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)
5350.400	44.54	-23.35	33.10	34.79	54.00	9.46	H
5351.200	44.57	-23.35	33.10	34.81	54.00	9.43	H
10747.500	34.48	-30.57	38.70	26.35	54.00	19.52	V
15960.000	36.13	-24.90	38.82	22.21	54.00	17.87	H
17888.000	39.47	-24.12	41.70	21.89	54.00	14.53	H
17954.500	40.11	-24.03	41.81	22.33	54.00	13.89	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)
5455.200	44.15	-23.00	33.61	33.55	54.00	9.85	H
5457.400	44.15	-22.97	33.61	33.50	54.00	9.85	V
11000.000	35.12	-30.34	38.60	26.85	54.00	18.88	H
16000.500	35.79	-25.01	38.90	21.90	54.00	18.21	H
17908.500	39.31	-24.07	41.72	21.66	54.00	14.69	H
17952.500	39.72	-24.03	41.81	21.95	54.00	14.28	V

## Channel 116

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)
5456.200	42.87	-22.99	33.61	32.24	54.00	11.13	V
5458.000	43.01	-22.96	33.62	32.35	54.00	10.99	V
11160.000	34.77	-30.45	38.50	26.72	54.00	19.23	V
16119.500	35.00	-25.53	39.22	21.31	54.00	19.00	H
17884.500	39.20	-24.14	41.70	21.64	54.00	14.80	H
17930.500	39.89	-24.05	41.76	22.18	54.00	14.11	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)
5454.800	42.77	-23.01	33.61	32.17	48.30	5.53	V
5458.600	42.87	-22.95	33.62	32.20	48.30	5.43	H
11400.000	34.95	-29.43	38.80	25.58	48.30	13.35	H
17735.500	38.97	-24.48	41.76	21.69	48.30	9.33	V
17922.500	39.77	-24.06	41.75	22.08	48.30	8.53	V
17965.500	39.99	-24.04	41.83	22.20	48.30	8.30	H

## Channel 144

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)
5448.600	42.61	-23.10	33.59	32.12	48.30	5.69	H
5458.400	42.77	-22.95	33.62	32.10	48.30	5.53	V
11440.000	34.69	-29.65	38.88	25.46	48.30	13.61	H
17732.500	39.10	-24.47	41.77	21.80	48.30	9.20	H
17893.000	39.52	-24.10	41.70	21.92	48.30	8.78	V
17930.000	39.80	-24.05	41.76	22.09	48.30	8.50	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)
5127.000	44.55	-23.15	32.85	34.85	54.00	9.45	H
5131.800	44.53	-23.32	32.86	34.98	54.00	9.47	H
10744.500	34.34	-30.58	38.70	26.23	54.00	19.66	V
15540.000	35.26	-25.77	38.50	22.54	54.00	18.74	H
17902.500	39.26	-24.07	41.71	21.63	54.00	14.74	V
17976.000	40.28	-24.04	41.85	22.47	54.00	13.72	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)
5146.000	44.08	-23.58	32.89	34.77	54.00	9.92	V
5149.800	44.09	-23.56	32.90	34.76	54.00	9.91	H
10891.000	34.58	-30.50	38.61	26.47	54.00	19.42	H
15600.000	35.06	-25.40	38.50	21.96	54.00	18.94	V
17813.500	38.91	-24.19	41.70	21.41	54.00	15.09	H
17941.000	39.39	-24.04	41.78	21.65	54.00	14.61	V



## 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)
5123.400	42.91	-23.02	32.85	33.09	54.00	11.09	V
5128.000	42.88	-23.19	32.86	33.20	54.00	11.12	H
10730.500	33.50	-30.62	38.70	25.42	54.00	20.50	V
15720.000	34.92	-25.41	38.60	21.73	54.00	19.08	V
17723.500	38.86	-24.42	41.78	21.50	54.00	15.14	H
17802.500	39.17	-24.17	41.70	21.64	54.00	14.83	V

## 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)
5351.400	43.15	-23.35	33.11	33.39	54.00	10.85	H
5353.800	43.12	-23.33	33.12	33.33	54.00	10.88	H
10879.000	35.09	-30.50	38.62	26.97	54.00	18.91	V
15780.000	36.03	-25.19	38.60	22.62	54.00	17.97	H
17738.000	39.10	-24.50	41.76	21.84	54.00	14.90	H
17804.000	39.27	-24.17	41.70	21.75	54.00	14.73	V

## 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)
5350.200	43.80	-23.36	33.10	34.05	54.00	10.20	V
5351.400	43.74	-23.35	33.11	33.98	54.00	10.26	V
10844.000	34.62	-30.51	38.66	26.48	54.00	19.38	H
15840.000	36.05	-24.90	38.64	22.30	54.00	17.95	H
17781.500	39.01	-24.31	41.72	21.61	54.00	14.99	V
17901.000	39.33	-24.07	41.70	21.70	54.00	14.67	V

## 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)
5350.000	44.58	-23.36	33.10	34.84	54.00	9.42	V
5350.600	44.52	-23.35	33.10	34.77	54.00	9.48	V
10640.000	33.20	-30.71	38.70	25.21	54.00	20.80	V
15960.000	36.16	-24.90	38.82	22.25	54.00	17.84	H
17759.500	39.13	-24.49	41.74	21.87	54.00	14.87	H
17932.000	39.79	-24.05	41.76	22.08	54.00	14.21	V

## 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)
5453.800	44.20	-23.03	33.61	33.62	54.00	9.80	V
5458.800	44.14	-22.95	33.62	33.47	54.00	9.86	H
11000.000	35.06	-30.34	38.60	26.80	54.00	18.94	H
16213.000	35.10	-25.32	39.34	21.08	54.00	18.90	V
17790.000	39.30	-24.24	41.71	21.83	54.00	14.70	H
17863.500	39.41	-24.22	41.70	21.93	54.00	14.59	H

## Channel 116

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)
5458.000	42.95	-22.96	33.62	32.29	54.00	11.05	V
5458.800	42.86	-22.95	33.62	32.18	54.00	11.14	H
11160.000	34.86	-30.45	38.50	26.81	54.00	19.14	V
16176.000	34.79	-25.34	39.28	20.86	54.00	19.21	H
17737.000	39.06	-24.49	41.76	21.79	54.00	14.94	H
17800.000	39.48	-24.16	41.70	21.94	54.00	14.52	H

**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)
5455.800	42.88	-23.00	33.61	32.26	48.30	5.42	V
5457.200	42.91	-22.97	33.61	32.27	48.30	5.39	V
11400.000	34.91	-29.43	38.80	25.55	48.30	13.38	H
17726.500	38.81	-24.43	41.77	21.47	48.30	9.48	H
17771.000	38.99	-24.39	41.73	21.66	48.30	9.31	V
17843.000	38.92	-24.26	41.70	21.48	48.30	9.38	V

**Channel 144**

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)
5445.400	42.71	-23.13	33.57	32.28	48.30	5.59	V
5459.000	42.88	-22.94	33.62	32.20	48.30	5.42	V
11440.000	34.64	-29.65	38.88	25.40	48.30	13.66	V
17773.500	39.00	-24.37	41.73	21.65	48.30	9.30	V
17885.000	39.27	-24.14	41.70	21.71	48.30	9.03	V
17930.000	39.62	-24.05	41.76	21.91	48.30	8.68	H

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**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)
5149.600	48.80	-23.56	32.90	39.46	54.00	5.20	H
5150.000	49.08	-23.56	32.90	39.74	54.00	4.92	V
10665.000	34.17	-30.68	38.70	26.15	54.00	19.83	H
15570.000	35.25	-25.64	38.50	22.39	54.00	18.75	H
17772.500	39.16	-24.38	41.73	21.82	54.00	14.84	H
17912.500	39.45	-24.06	41.73	21.78	54.00	14.55	H

## Channel 46

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)
5007.400	45.75	-23.46	32.87	36.34	54.00	8.25	H
5452.800	45.26	-23.04	33.61	34.70	54.00	8.74	H
10872.000	35.04	-30.50	38.63	26.91	54.00	18.96	H
15690.000	35.04	-25.58	38.59	22.03	54.00	18.96	V
17766.500	39.14	-24.43	41.73	21.83	54.00	14.86	V
17950.000	39.88	-24.03	41.80	22.11	54.00	14.12	V

## Channel 54

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)
5047.200	45.95	-23.29	32.71	36.53	54.00	8.05	V
5350.200	44.04	-23.36	33.10	34.29	54.00	9.96	V
10880.000	35.17	-30.50	38.62	27.05	54.00	18.83	V
15810.000	35.54	-25.15	38.61	22.08	54.00	18.46	V
17834.000	39.12	-24.24	41.70	21.66	54.00	14.88	V
17924.000	39.91	-24.05	41.75	22.22	54.00	14.09	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)
5350.000	49.44	-23.36	33.10	39.70	54.00	4.56	H
5350.400	49.31	-23.35	33.10	39.56	54.00	4.69	V
10620.000	33.55	-30.79	38.70	25.64	54.00	20.45	H
15930.000	36.34	-25.03	38.76	22.60	54.00	17.66	V
17804.500	39.26	-24.17	41.70	21.73	54.00	14.74	V
17915.500	39.52	-24.06	41.73	21.85	54.00	14.48	V

## 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)
5456.600	44.39	-22.98	33.61	33.76	54.00	9.61	V
5458.600	44.48	-22.95	33.62	33.81	54.00	9.52	V
11020.000	35.32	-30.41	38.58	27.15	54.00	18.68	H
16043.500	35.37	-25.40	39.03	21.74	54.00	18.63	H
17802.500	39.40	-24.17	41.70	21.87	54.00	14.60	V
17956.500	40.02	-24.03	41.81	22.24	54.00	13.98	V

## Channel 118

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5367.200	44.85	-23.26	33.17	34.95	54.00	9.15	H
5453.600	42.85	-23.03	33.61	32.27	54.00	11.15	H
11180.000	34.21	-30.48	38.50	26.19	54.00	19.79	V
16033.000	35.25	-25.31	39.00	21.55	54.00	18.75	H
17796.000	39.41	-24.20	41.70	21.90	54.00	14.59	V
17925.500	39.64	-24.05	41.75	21.94	54.00	14.36	V

## Channel 134

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)
5412.600	42.86	-23.08	33.38	32.56	48.30	5.44	H
5447.200	44.27	-23.12	33.58	33.80	48.30	4.03	V
11340.000	34.45	-30.13	38.74	25.84	48.30	13.84	V
17718.000	39.04	-24.39	41.78	21.65	48.30	9.26	V
17804.000	39.37	-24.17	41.70	21.85	48.30	8.93	V
17952.500	39.85	-24.03	41.81	22.08	48.30	8.45	H

## Channel 142

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)
5452.600	43.16	-23.05	33.61	32.60	48.30	5.14	H
5458.000	43.15	-22.96	33.62	32.49	48.30	5.15	H
11420.000	34.95	-29.54	38.84	25.65	48.30	13.35	V
15845.000	36.22	-24.85	38.65	22.43	48.30	12.08	V
17925.000	39.82	-24.05	41.75	22.12	48.30	8.48	H
17986.000	40.13	-24.04	41.87	22.30	48.30	8.17	H

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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)
5127.600	44.57	-23.17	32.86	34.89	54.00	9.43	H
5130.600	44.61	-23.28	32.86	35.03	54.00	9.39	H
10813.000	34.47	-30.63	38.69	26.41	54.00	19.53	H
15540.000	34.93	-25.77	38.50	22.21	54.00	19.07	H
17801.500	39.23	-24.17	41.70	21.69	54.00	14.77	V
17924.000	39.66	-24.05	41.75	21.96	54.00	14.34	V

## 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)
5145.600	44.15	-23.58	32.89	34.84	54.00	9.85	H
5148.000	44.14	-23.57	32.90	34.82	54.00	9.86	H
10856.000	34.10	-30.49	38.64	25.95	54.00	19.90	V
15600.000	35.15	-25.40	38.50	22.05	54.00	18.85	V
17898.000	39.41	-24.08	41.70	21.80	54.00	14.59	H
17982.500	40.05	-24.04	41.87	22.23	54.00	13.95	H