FCC PART 15
TEST REPORT
No.I23Z70209-IOT02

for

Client name: Samsung Electronics Co., Ltd.

Product name: Tablet with Bluetooth, WLAN

Model name: SM-X210

With

FCC ID: ZCASMX210

Hardware Version: REV1.0

Software Version: X210.001

Issued Date: 2023-08-29

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I23Z70209-IOT02	Rev.0	1st edition	2023-08-29

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1. TEST LATORATORY

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 (CN5017), 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

CTTL(huayuan North Road)

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

1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project date

Testing Start Date: 2023-07-24

Testing End Date: 2023-08-28

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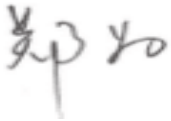
1.5. Signature

Yao Xingyu

(Prepared this test report)



Zheng Wei

(Reviewed this test report)

Pang Shuai

(Approved this test report)

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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:	U.S.
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:	/

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3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARYEQUIPMENT(AE)

3.1. About EUT

Description	Tablet with Bluetooth, WLAN
Model name	SM-X210
FCC ID	ZCASMX210
WLAN Frequency Band	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Voltage	3.85V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
UT05a	2370209UT05a	REV1.0	X210.001
UT09a	2370209UT09a	REV1.0	X210.001

*EUT ID: is used to identify the test sample in the lab internally.
UT05a is used for Conduction test, UT09a is used for Radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Name	Model	Manufacturer
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
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.

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3.4. General Description

The Equipment under Test (EUT) is a model of 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.

3.5. Interpretation of the Test Environment

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

Measurement Uncertainty

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

4. REFERENCE DOCUMENTS

4.1. Documents supplied by applicant

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

4.2. Reference Documents for testing

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

FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	2021
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
KDB 558074 D01	Federal Communications Commission Office of Engineering and Technology Laboratory Division GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES	2019

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5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
Maximum Output Power	15.407	/	**P**
Peak Power Spectral Density	15.407	/	**P**
Occupied 26dB Bandwidth	15.403	/	**P**
Band edge compliance (Radiated)	15.209	/	**P**
Transmitter spurious emissions (Radiated)	15.407	/	**P**
AC Powerline Conducted Emission (150kHz- 30MHz)	15.407	/	**P**
Frequency Stability	15.407	/	**P**
99% Occupied bandwidth	/	/	**P**
Transmit Power Control	15.407	/	**NA**

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NM	Not measured, The test was not measured by CTTL
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

CTTL has evaluated the test cases requested by the client/manufacturer 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 4.1.

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%

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7. TEST EQUIPMENTS 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	Attenuator	10dB/2W	/	Rosenberger	/	/
3	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	2023-09-22
2	Test Receiver	ESW44	103015	R&S	1 year	2024-01-14
3	Test Receiver	ESW44	103144	R&S	1 year	2023-10-25
4	Test Receiver	FSV40	101047	R&S	1 year	2024-06-25
5	Loop Antenna	HFH2-Z2	829324/007	R&S	1 year	2023-12-22
6	EMI Antenna	VULB9163	01177	Schwarzbeck	1 year	2023-09-03
7	EMI Antenna	3117	00139065	ETS-Lindgren	1 year	2023-10-05
8	EMI Antenna	LB-180400 -25-C-KF	2110084000006	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

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8. Measurement Uncertainty

8.1 Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

8.2 Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

8.3 Occupied Channel Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

8.4 Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

8.5 Spurious Emissions

Conducted (k=1.96)

Frequency Range	Uncertainty(dB)
30MHz ≤ f ≤ 2GHz	1.22
2GHz ≤ f ≤3.6GHz	1.22
3.6GHz ≤ f ≤8GHz	1.22
8GHz ≤ f ≤12.75GHz	1.51
12.75GHz ≤ f ≤26GHz	1.51
26GHz ≤ f ≤40GHz	1.59

Radiated (k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	4.92
30MHz ≤ f ≤ 1GHz	5.73
1GHz ≤ f ≤18GHz	5.62
18GHz ≤ f ≤40GHz	3.37

8.6 AC Power-line Conducted Emission

Measurement Uncertainty : 3.10,k=2

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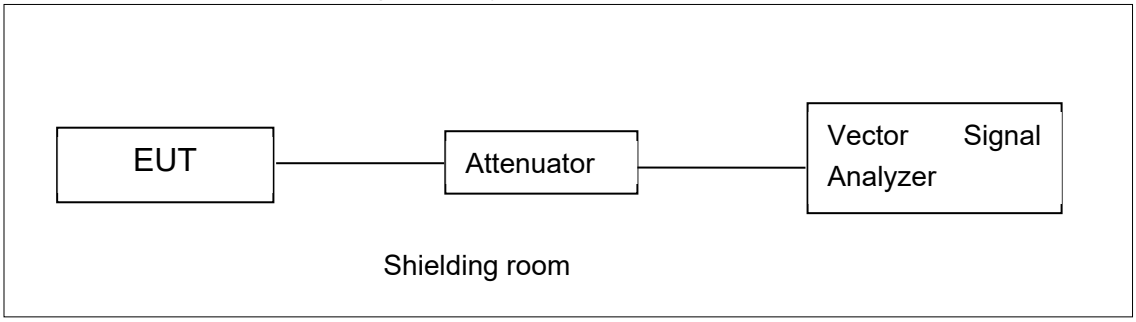
ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

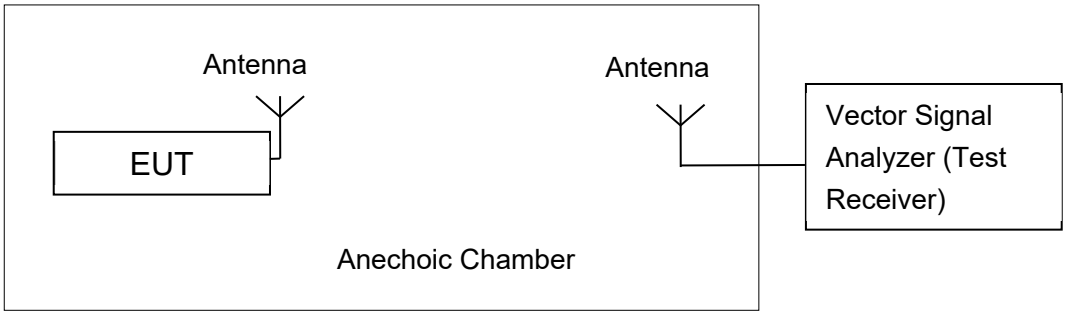
A.1.1. Conducted Measurements

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 KDB 789033
The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

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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 measurementmethod SA-2 is made according to KDB 789033

Measurement Results:

802.11a mode

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	17.31	/	/	/	/	/	/	/
	5200MHz	17.43	/	/	/	/	/	/	/
	5240MHz	16.65	/	/	/	/	/	/	/
	5260MHz	17.22	/	/	/	/	/	/	/
	5280MHz	16.67	/	/	/	/	/	/	/
	5320MHz	17.68	16.69	16.65	16.11	16.19	15.89	15.76	15.26
	5500MHz	17.28	/	/	/	/	/	/	/
	5580MHz	17.42	/	/	/	/	/	/	/
	5700MHz	17.47	/	/	/	/	/	/	/
	5720MHz	16.96	/	/	/	/	/	/	/

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	17.40	16.87	16.74	16.34	16.26	15.56	15.54	15.22
	5200MHz	17.27	/	/	/	/	/	/	/
	5240MHz	17.28	/	/	/	/	/	/	/
	5260MHz	17.36	/	/	/	/	/	/	/
	5280MHz	17.33	/	/	/	/	/	/	/
	5320MHz	17.43	/	/	/	/	/	/	/
	5500MHz	16.78	/	/	/	/	/	/	/
	5580MHz	16.53	/	/	/	/	/	/	/
	5700MHz	16.49	/	/	/	/	/	/	/
	5720MHz	16.77	/	/	/	/	/	/	/

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

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this condition.

802.11ac-HT20 mode

Mode	Frequency	Test Result (dBm)								
		Data Rate								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
802.11ac (HT20)	5180MHz	17.43	16.76	16.68	16.33	16.33	15.67	15.54	15.21	14.77
	5200MHz	17.27	/	/	/	/	/	/	/	/
	5240MHz	17.29	/	/	/	/	/	/	/	/
	5260MHz	17.39	/	/	/	/	/	/	/	/
	5280MHz	17.40	/	/	/	/	/	/	/	/
	5320MHz	17.52	/	/	/	/	/	/	/	/
	5500MHz	16.81	/	/	/	/	/	/	/	/
	5580MHz	16.59	/	/	/	/	/	/	/	/
	5700MHz	16.61	/	/	/	/	/	/	/	/
	5720MHz	16.84								

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

802.11n-HT40 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz	16.81	15.66	15.78	15.67	15.33	14.69	14.65	14.40
	5230MHz	16.62	/	/	/	/	/	/	/
	5270MHz	16.83	/	/	/	/	/	/	/
	5310MHz	16.89	/	/	/	/	/	/	/
	5510MHz	16.43	/	/	/	/	/	/	/
	5550MHz	16.23	/	/	/	/	/	/	/
	5670MHz	15.87	/	/	/	/	/	/	/
	5710MHz	16.26	/	/	/	/	/	/	/

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

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802.11ac-HT40 mode

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (HT40)	5190MHz	16.85	16.30	16.28	15.88	15.79	14.98	14.89	14.67	12.76	11.69
	5230MHz	16.66	/	/	/	/	/	/	/	/	/
	5270MHz	16.80	/	/	/	/	/	/	/	/	/
	5310MHz	16.90	/	/	/	/	/	/	/	/	/
	5510MHz	16.44	/	/	/	/	/	/	/	/	/
	5550MHz	16.28	/	/	/	/	/	/	/	/	/
	5670MHz	15.91	/	/	/	/	/	/	/	/	/
	5710MHz	16.28									

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

802.11ac-HT80 mode

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (HT80)	5210MHz	16.59	15.70	14.67	14.77	13.88	13.35	13.20	12.40	11.55	10.88
	5290MHz	16.72	/	/	/	/	/	/	/	/	/
	5530MHz	16.25	/	/	/	/	/	/	/	/	/
	5610MHz	16.09	/	/	/	/	/	/	/	/	/
	5690MHz	15.87	/	/	/	/	/	/	/	/	/

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

Duty Cycle

Mode	802.11a	802.11n20	802.11n40	802.11ac20	802.11ac40	802.11ac80
Duty Cycle	98%	99%	98%	99%	98%	99%

Conclusion: PASS

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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

Measurement Results:

Mode	Frequency	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180 MHz	6.60	P
	5200 MHz	6.39	P
	5240 MHz	6.40	P
	5260 MHz	6.48	P
	5280 MHz	6.44	P
	5320 MHz	6.57	P
	5500 MHz	5.93	P
	5580 MHz	5.75	P
	5700 MHz	5.77	P
	5720 MHz	5.90	P
802.11ac VHT20	5180 MHz	6.50	P
	5200 MHz	6.37	P
	5240 MHz	6.36	P
	5260 MHz	6.43	P
	5280 MHz	6.40	P
	5320 MHz	6.53	P
	5500 MHz	5.93	P
	5580 MHz	5.77	P
	5700 MHz	5.69	P
	5720 MHz	5.91	P
802.11ac VHT40	5190 MHz	2.85	P
	5230 MHz	2.77	P
	5270 MHz	2.82	P
	5310 MHz	2.86	P
	5510 MHz	2.47	P
	5550 MHz	2.28	P
	5670 MHz	1.91	P
	5710 MHz	2.28	P
802.11ac VHT80	5210MHz	-0.68	P
	5290MHz	-0.45	P
	5530MHz	-0.95	P

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	5610MHz	-0.98	P
	5690 MHz	-1.31	P

Conclusion: PASS

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A.4. Occupied 26dB 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

Measurement Result:

Mode	Frequency	Occupied 26dB Bandwidth (MHz)		conclusion
802.11a	5180 MHz	Fig.1	22.48	P
	5200 MHz	Fig.2	22.44	P
	5240 MHz	Fig.3	22.52	P
	5260 MHz	Fig.4	22.24	P
	5280 MHz	Fig.5	22.52	P
	5320 MHz	Fig.6	22.92	P
	5500 MHz	Fig.7	22.68	P
	5580 MHz	Fig.8	22.52	P
	5700 MHz	Fig.9	22.32	P
	5720 MHz	Fig.10	22.56	P
802.11ac VHT20	5180 MHz	Fig.11	22.92	P
	5200 MHz	Fig.12	22.52	P
	5240 MHz	Fig.13	22.36	P
	5260 MHz	Fig.14	22.64	P
	5280 MHz	Fig.15	22.56	P
	5320 MHz	Fig.16	22.48	P
	5500 MHz	Fig.17	22.80	P
	5580 MHz	Fig.18	22.72	P
	5700 MHz	Fig.19	22.72	P
	5720 MHz	Fig.20	22.52	P
802.11ac VHT40	5190 MHz	Fig.21	41.68	P
	5230 MHz	Fig.22	42.00	P
	5270 MHz	Fig.23	42.00	P
	5310 MHz	Fig.24	42.08	P
	5510 MHz	Fig.25	42.08	P
	5550 MHz	Fig.26	42.08	P
	5670 MHz	Fig.27	42.16	P
	5710 MHz	Fig.28	41.76	P
802.11ac VHT80	5210MHz	Fig.29	84.64	P
	5290MHz	Fig.30	84.96	P

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	5530MHz	Fig.31	84.80	P
	5610MHz	Fig.32	84.32	P
	5690 MHz	Fig.33	83.68	P

Conclusion: PASS

Test graphs as below:

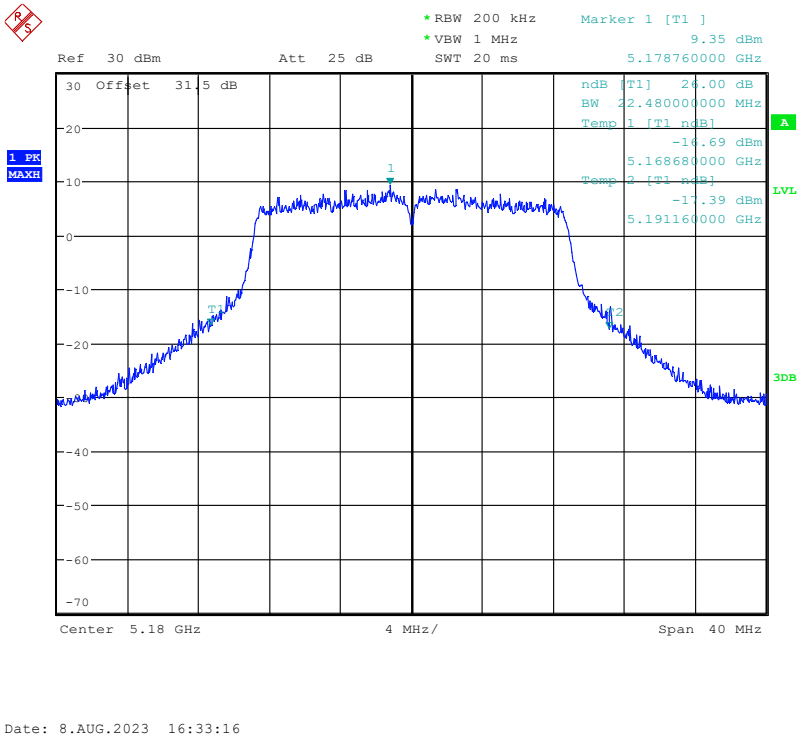

Fig.1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

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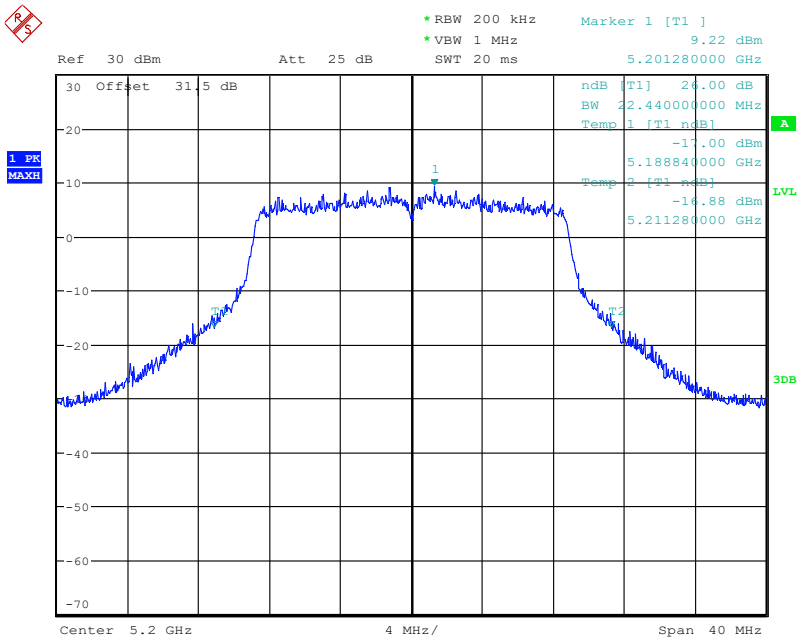

Fig.2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

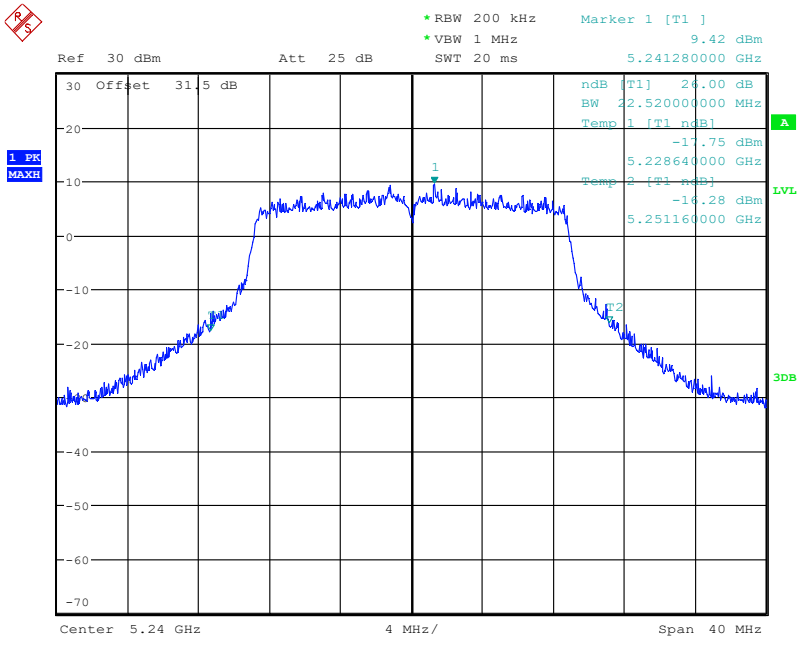

Fig.3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

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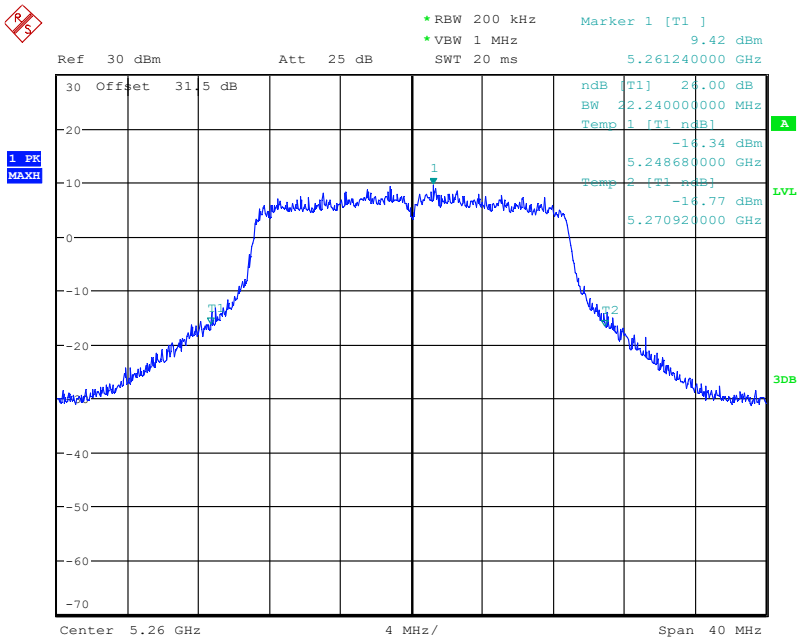

Fig.4 Occupied 26dB Bandwidth (802.11a, 5260MHz)

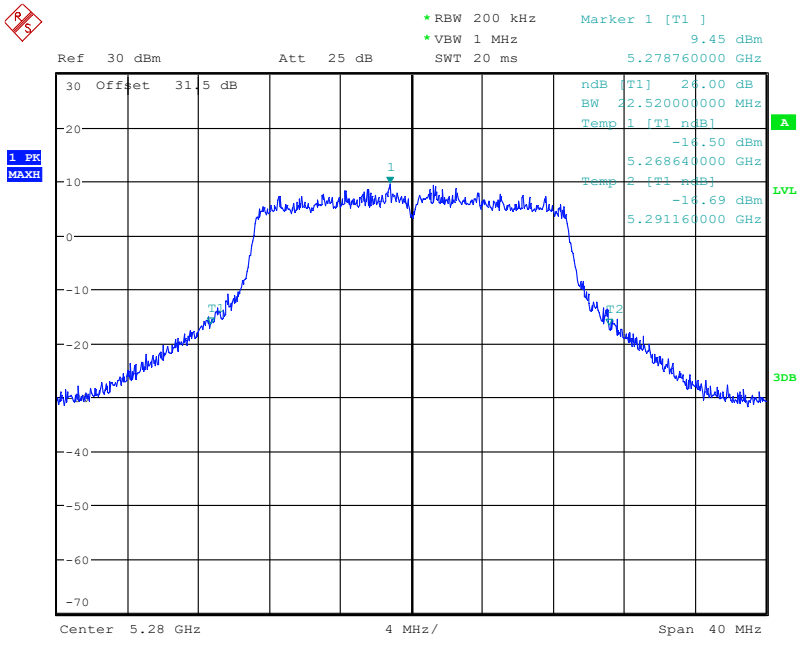

Fig.5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

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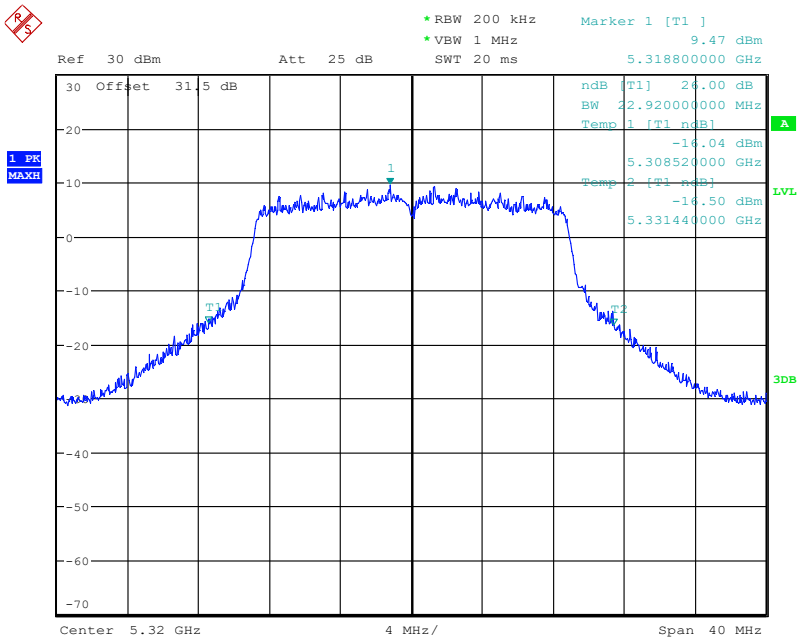

Fig.6 Occupied 26dB Bandwidth (802.11a, 5320MHz)

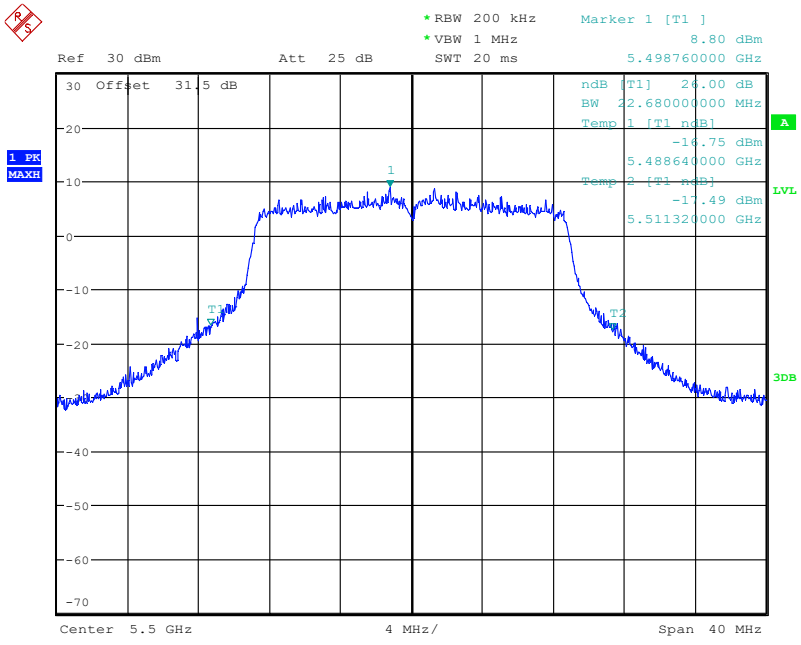

Fig.7 Occupied 26dB Bandwidth (802.11a, 5500MHz)

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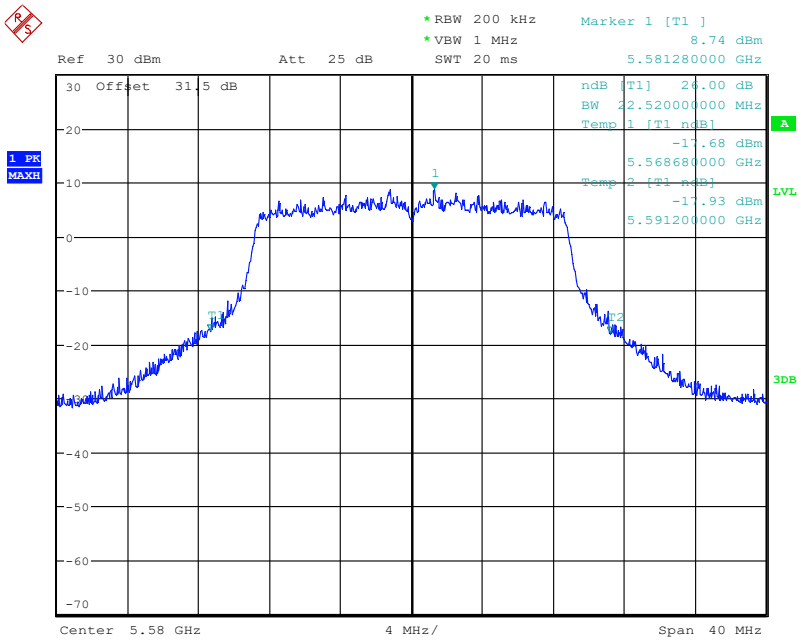

Fig.8 Occupied 26dB Bandwidth (802.11a, 5580MHz)

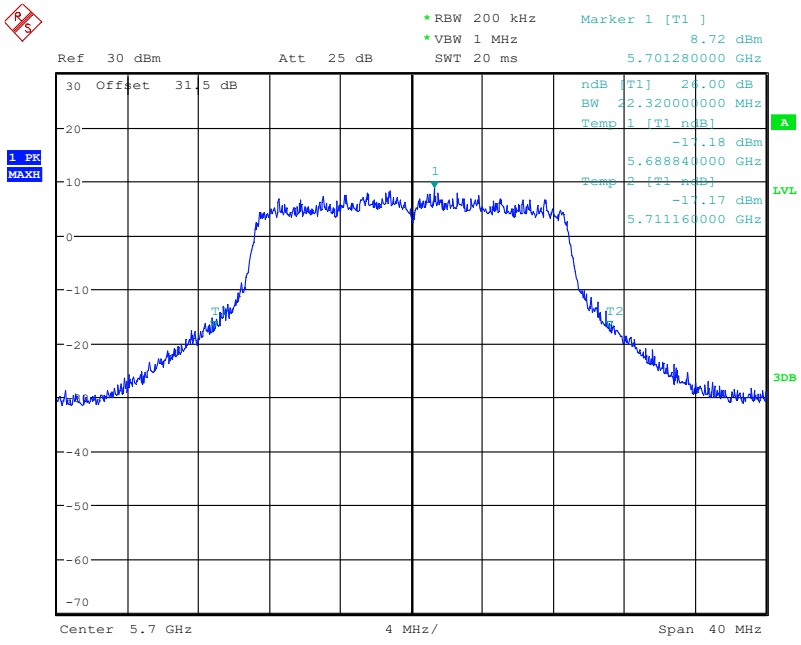

Fig.9 Occupied 26dB Bandwidth (802.11a, 5700MHz)

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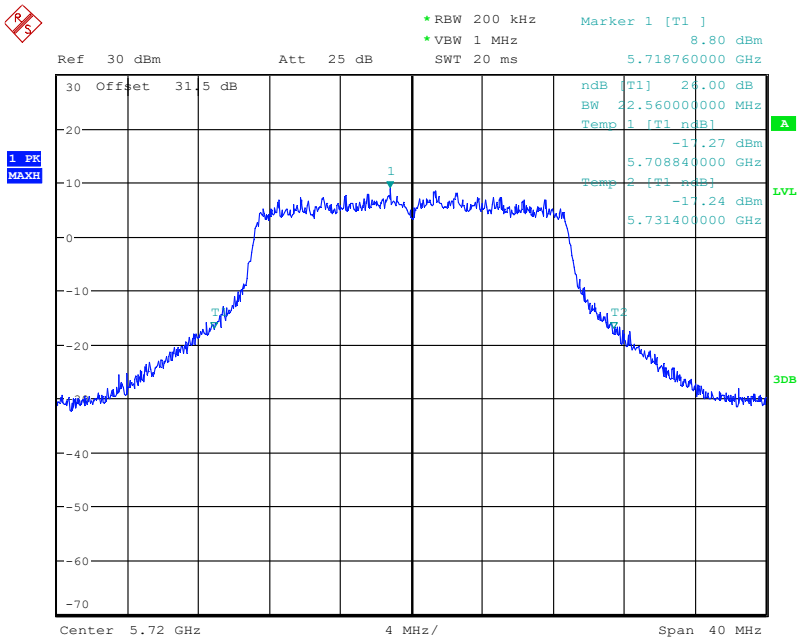

Fig.10 Occupied 26dB Bandwidth (802.11a, 5720MHz)

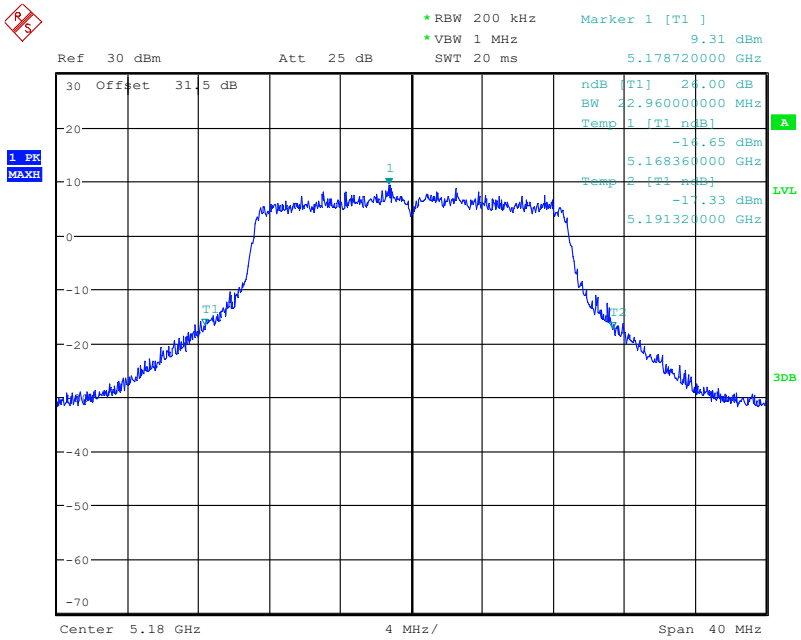

Fig.11 Occupied 26dB Bandwidth (802.11ac-HT20, 5180MHz)

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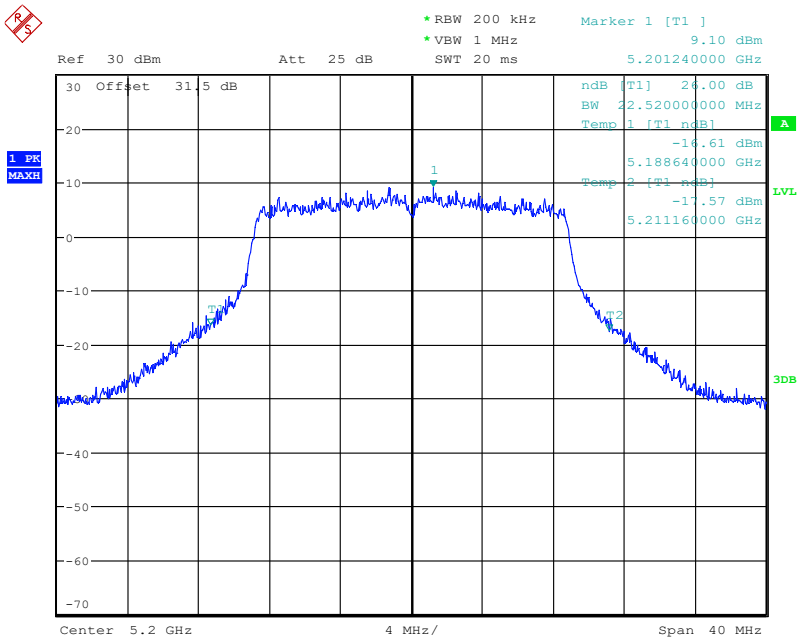

Fig.12 Occupied 26dB Bandwidth (802.11ac-HT20, 5200MHz)

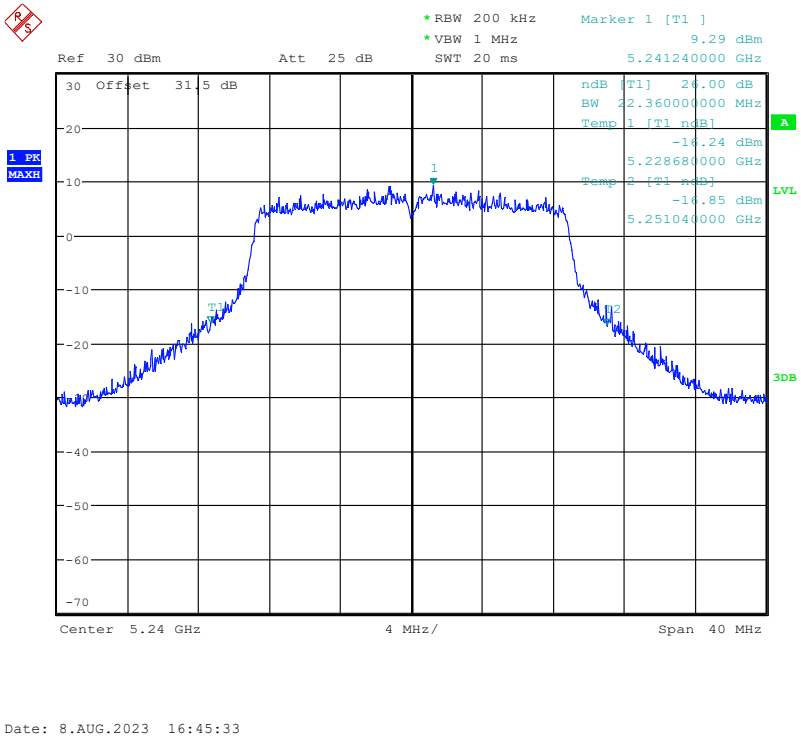

Fig.13 Occupied 26dB Bandwidth (802.11ac-HT20, 5240MHz)

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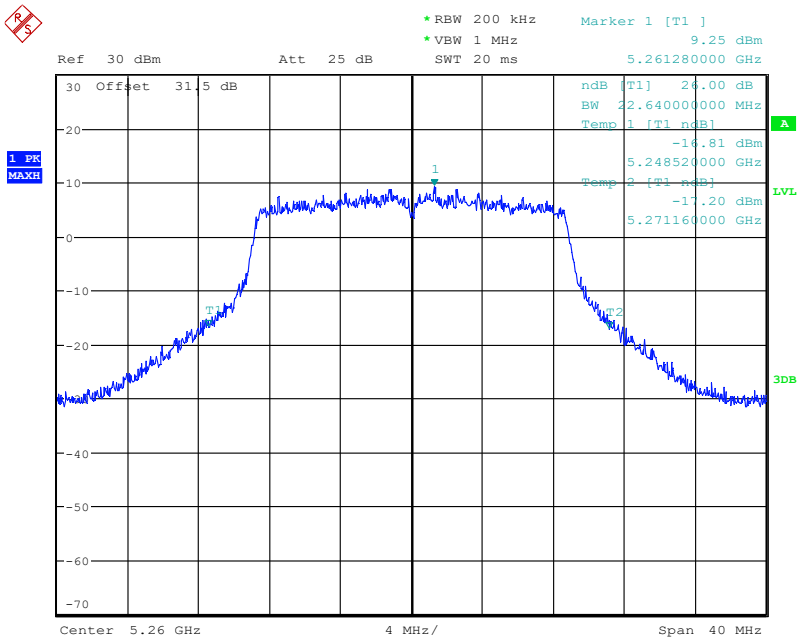

Fig.14 Occupied 26dB Bandwidth (802.11ac-HT20, 5260MHz)

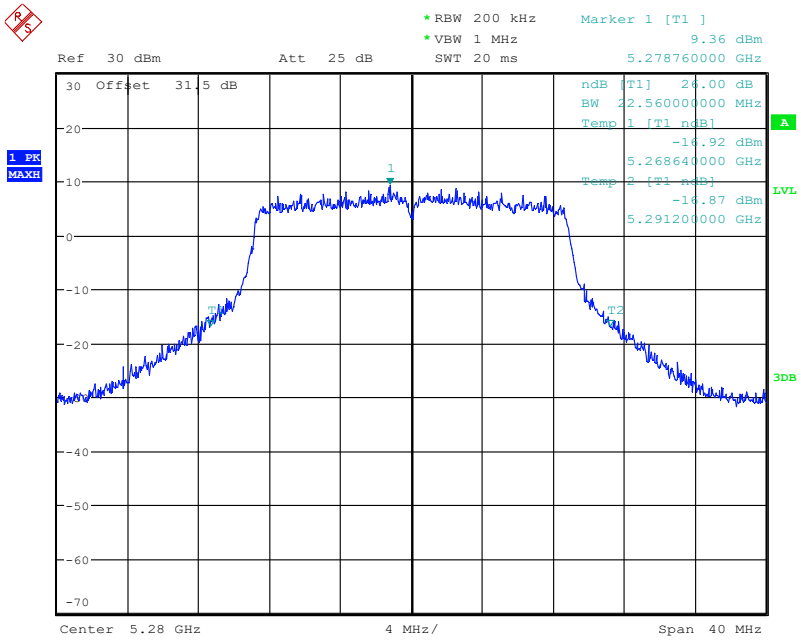

Fig.15 Occupied 26dB Bandwidth (802.11ac-HT20, 5280MHz)

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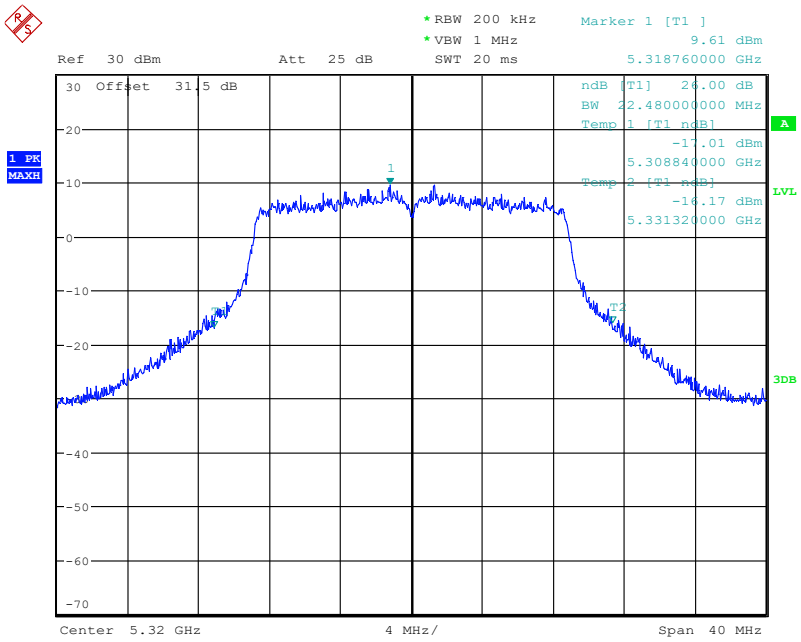

Fig.16 Occupied 26dB Bandwidth (802.11ac-HT20, 5320MHz)

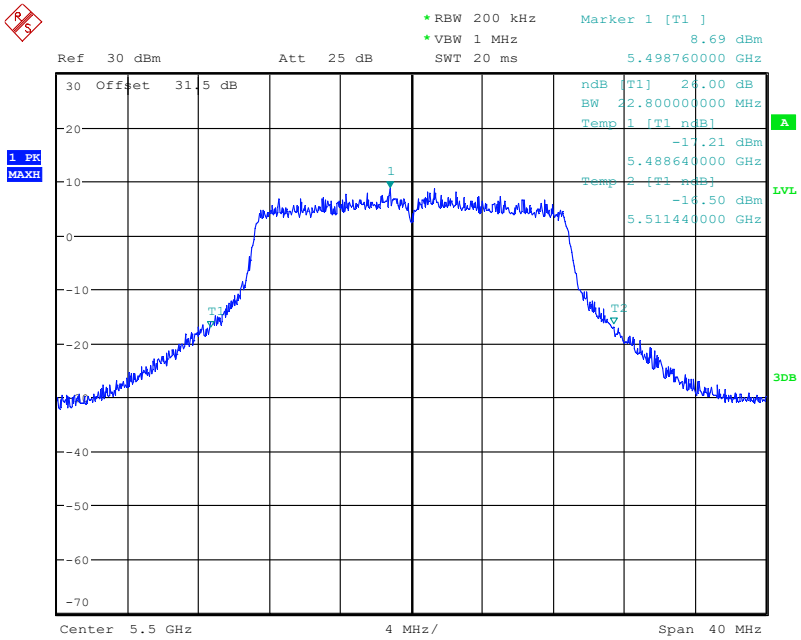

Fig.17 Occupied 26dB Bandwidth (802. 11ac-HT20, 5500MHz)

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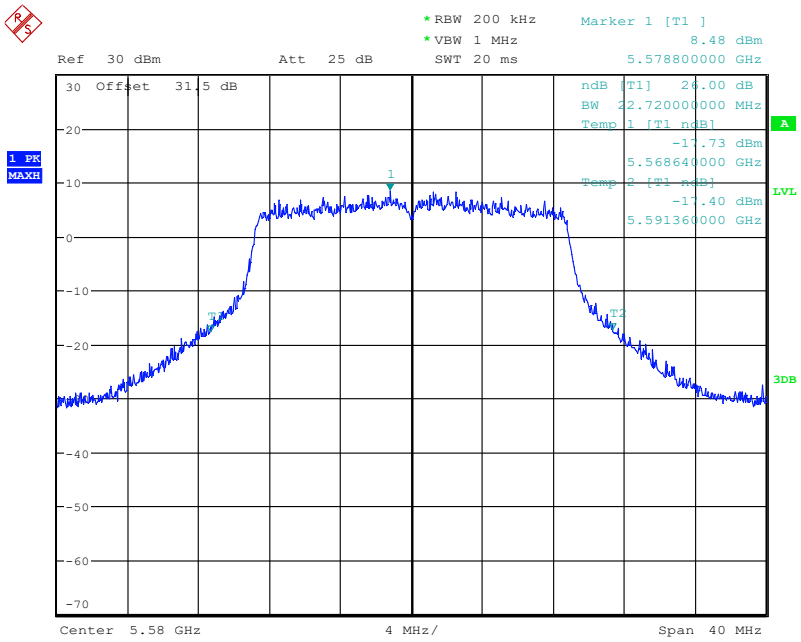

Fig.18 Occupied 26dB Bandwidth (802. 11ac-HT20, 5580MHz)

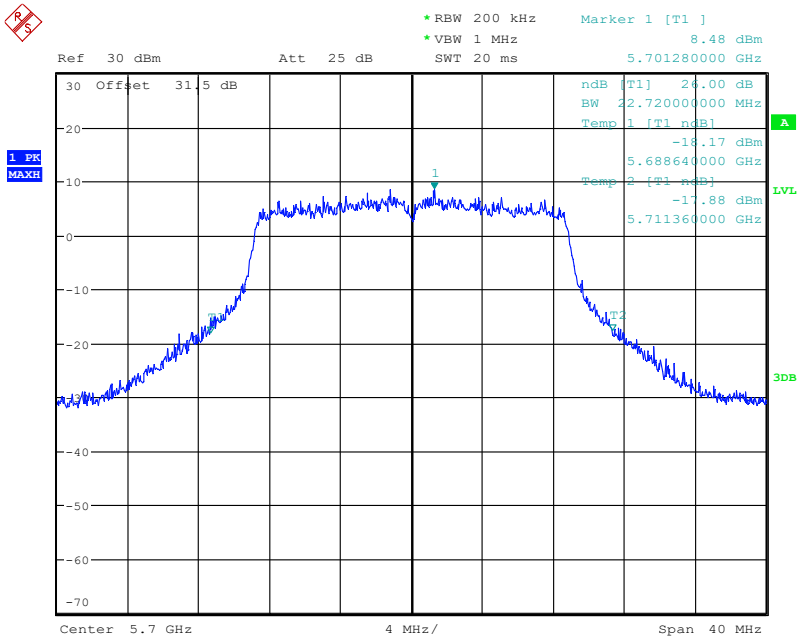

Fig.19 Occupied 26dB Bandwidth (802. 11ac-HT20, 5700MHz)

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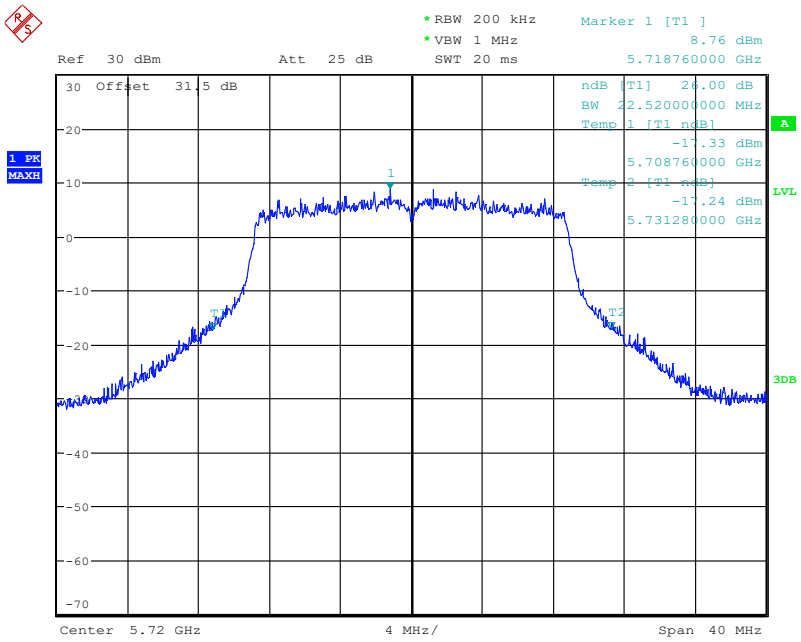

Fig.20 Occupied 26dB Bandwidth (802. 11ac-HT20, 5720MHz)

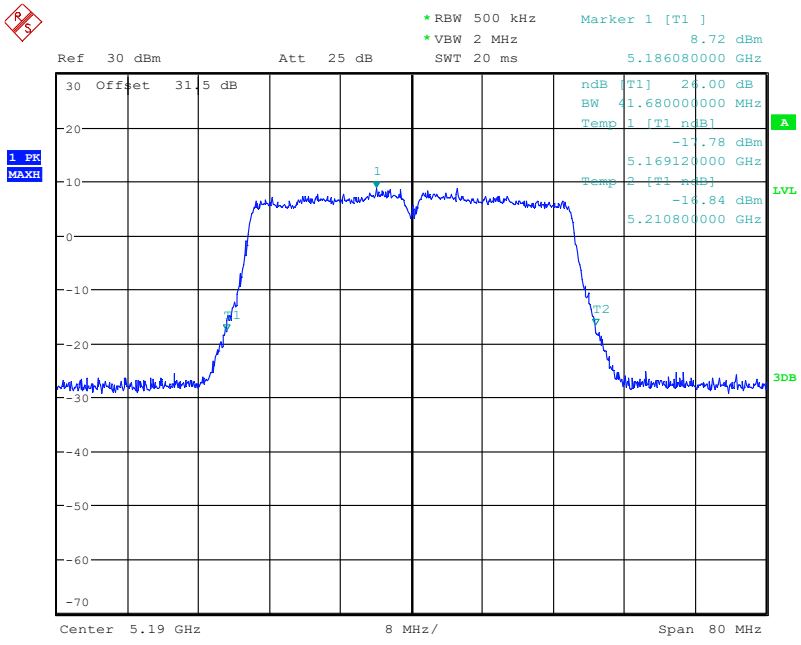

Fig.21 Occupied 26dB Bandwidth (802.11ac-HT40, 5190MHz)

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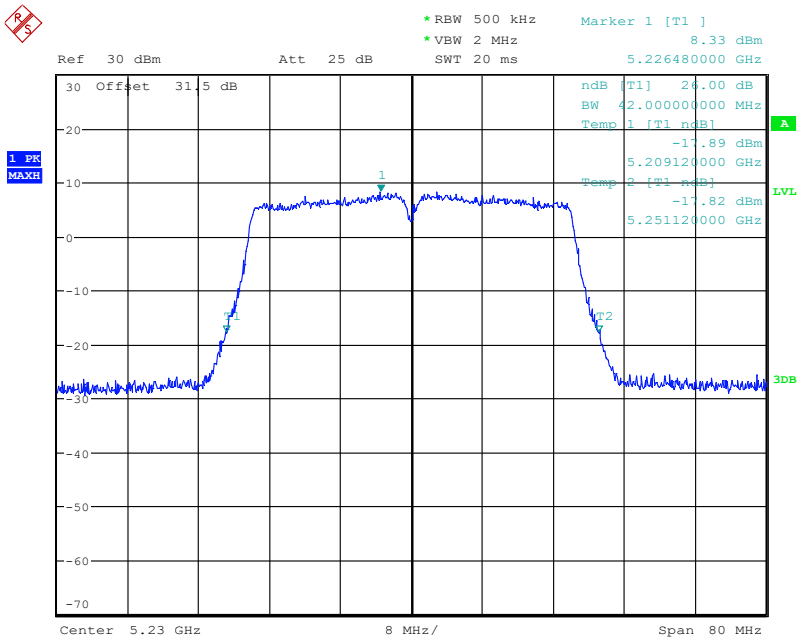

Fig.22 Occupied 26dB Bandwidth (802.11ac-HT40, 5230MHz)

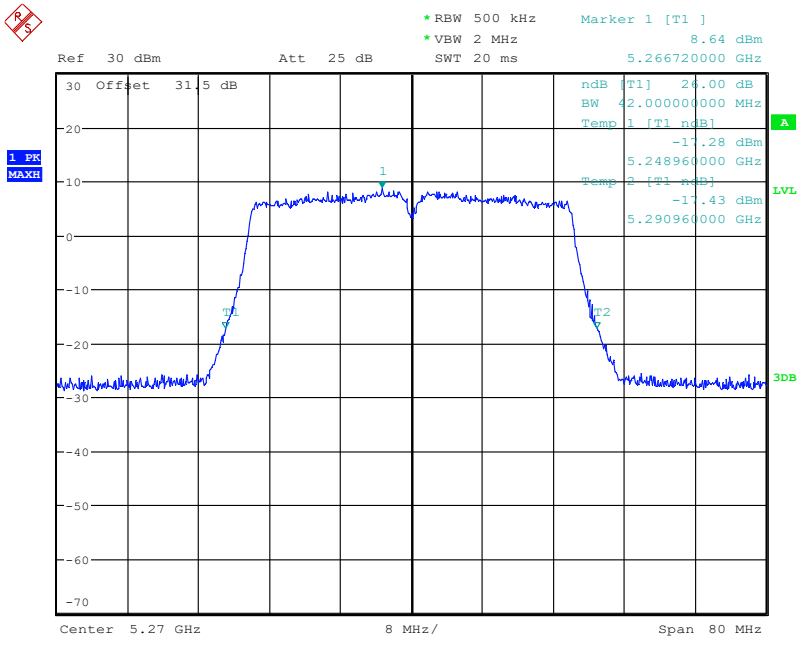

Fig.23 Occupied 26dB Bandwidth (802.11ac-HT40, 5270MHz)

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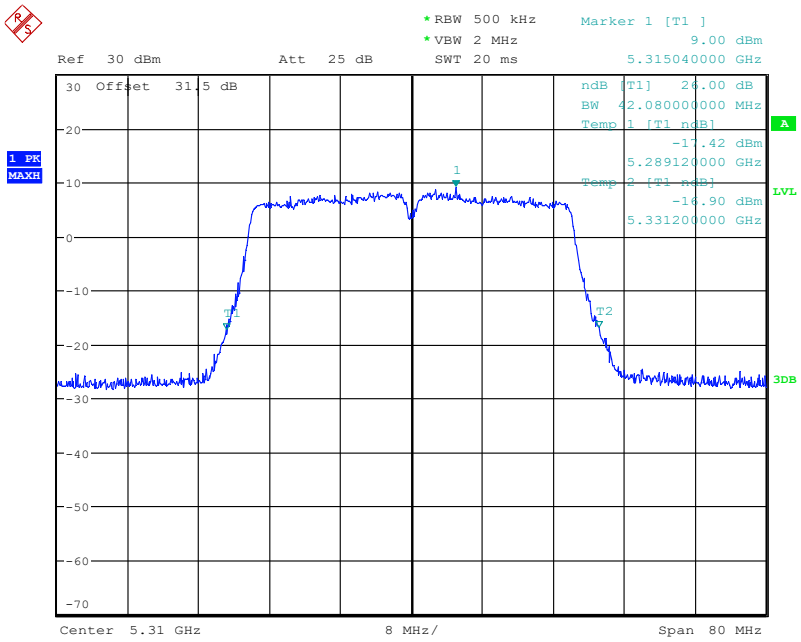

Fig.24 Occupied 26dB Bandwidth (802.11ac-HT40, 5310MHz)

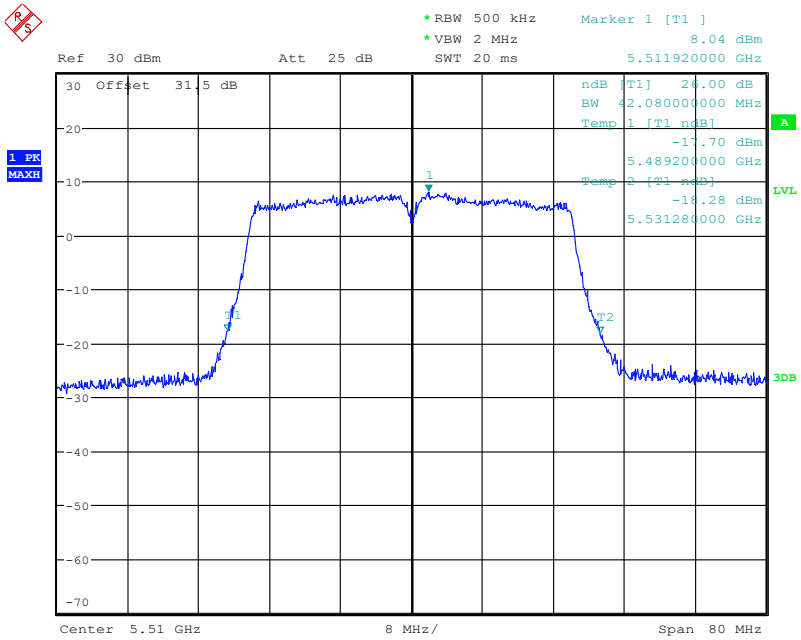

Fig.25 Occupied 26dB Bandwidth (802. 11ac-HT40, 5510MHz)

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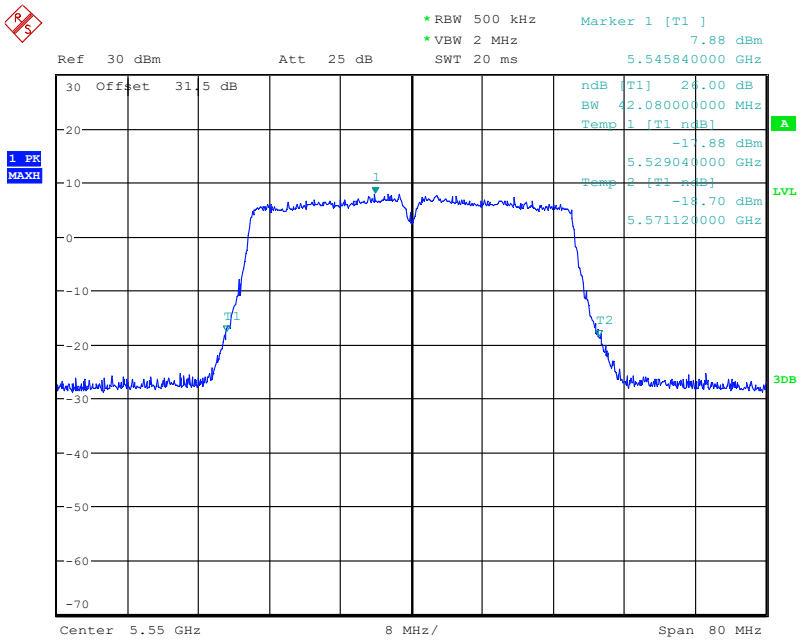

Fig.26 Occupied 26dB Bandwidth (802. 11ac-HT40, 5550MHz)

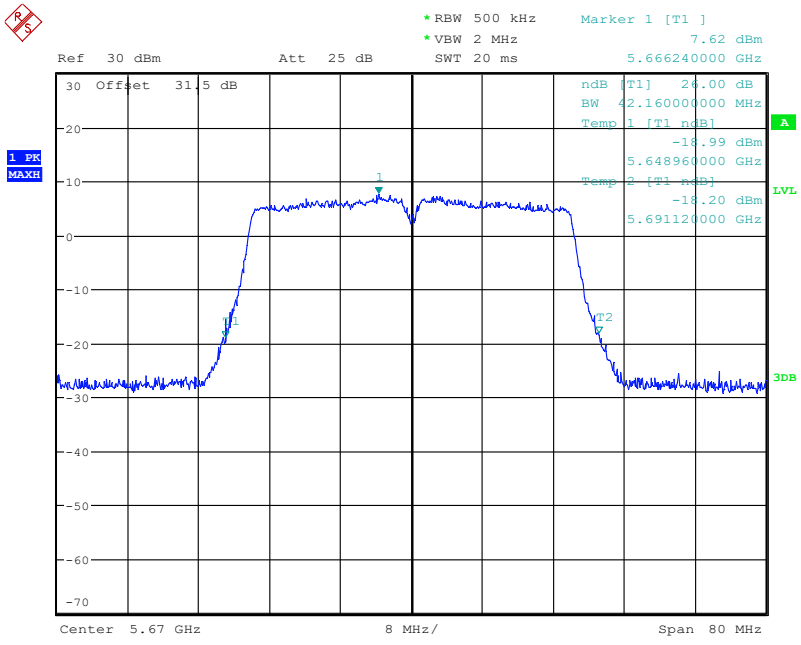

Fig.27 Occupied 26dB Bandwidth (802. 11ac-HT40, 5670MHz)

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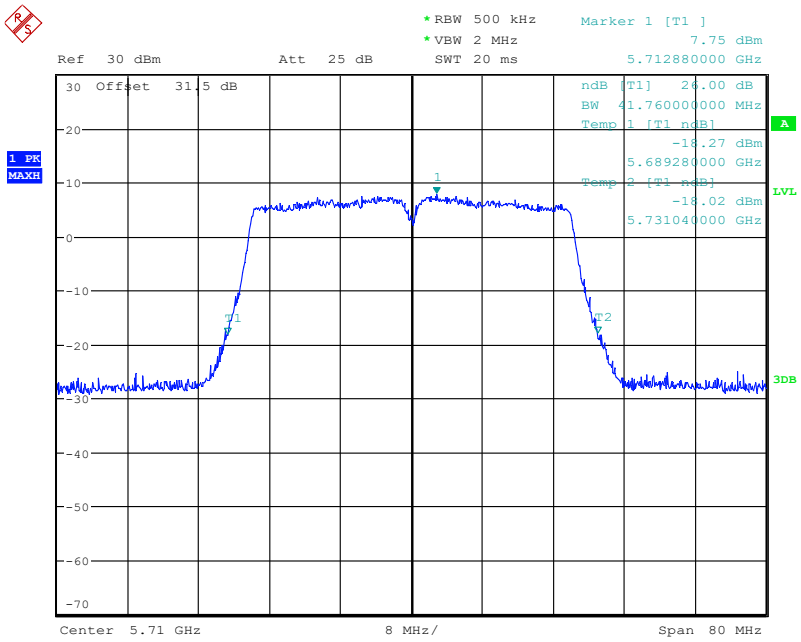

Fig.28 Occupied 26dB Bandwidth (802. 11ac-HT40, 5710MHz)

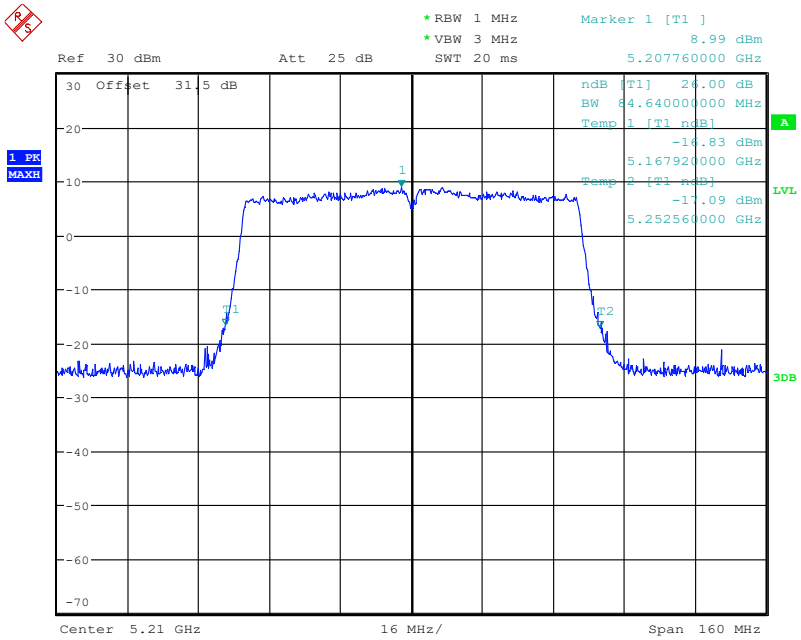

Fig.29 Occupied 26dB Bandwidth (802. 11ac-HT80, 5210MHz)

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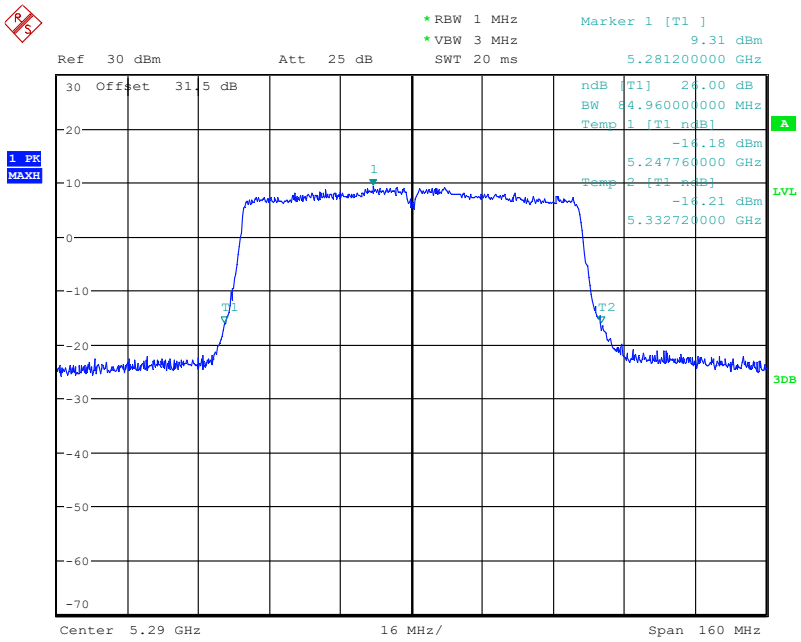

Fig.30 Occupied 26dB Bandwidth (802. 11ac-HT80, 5290MHz)

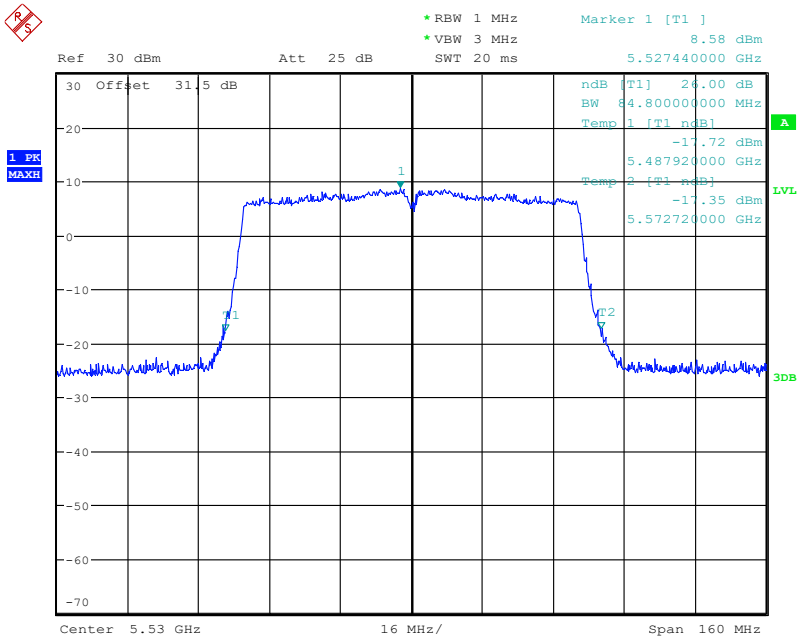

Fig.31 Occupied 26dB Bandwidth (802. 11ac-HT80, 5530MHz)

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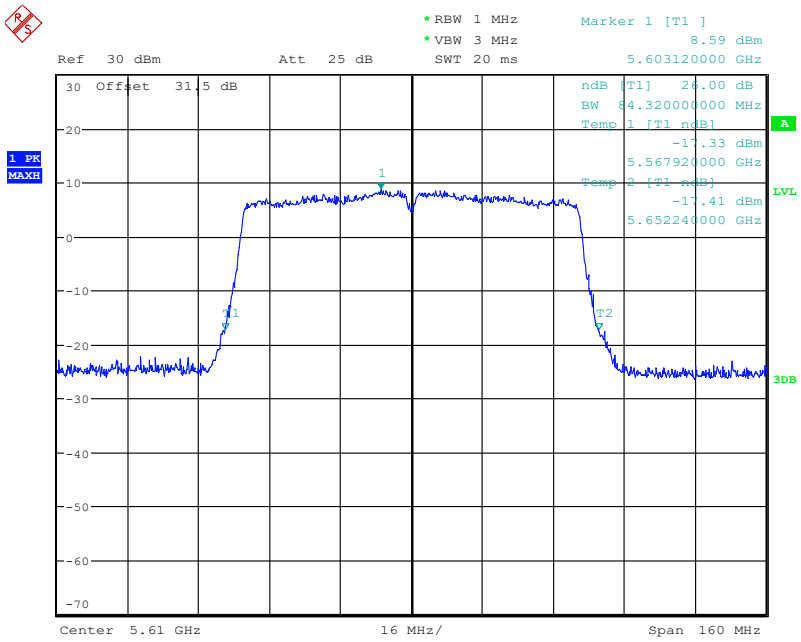

Fig.32 Occupied 26dB Bandwidth (802. 11ac-HT80, 5610MHz)

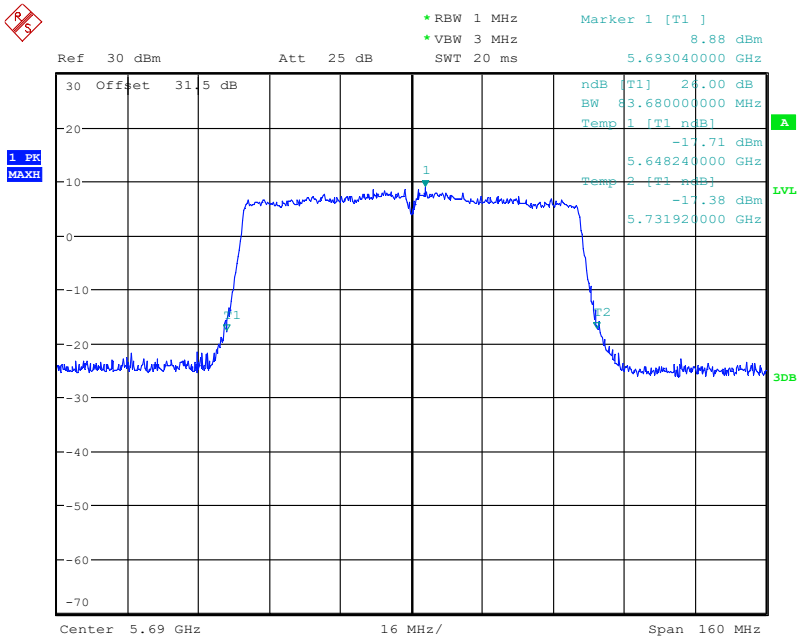

Fig.33 Occupied 26dB Bandwidth (802. 11ac-HT80, 5690MHz)

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A.5. Band Edges Compliance

A5.1 Band Edges - Radiated

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407	-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 of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)	Measurement distance(m)
Above 960	500	54	3

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

Set up:

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m and the table height shall be 1.5 m.
The EUT and transmitting antenna shall be centered on the turntable.

Test Procedure

The EUT was placed on a non-conductive table. 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 360° and the measurement antenna is moved from 1m to 4m to get the maximization result. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The receiver references:

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;
Sweep frequency from 1 GHz to 40GHz, RBW = 1MHz, VBW = 3MHz

Sample Calculations

1. Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:
E=EIRP- 20log (*D*) +104.77 Where:
E is the field strength in dBμV/m
D is the measurement distance in meters
EIRP is the equivalent isotropically radiated power in dbm

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Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.34	P
	5320 MHz	Fig.35	P
	5500 MHz	Fig.36	P
	5700 MHz	Fig.37	P
802.11n HT20	5180 MHz	Fig.38	P
	5320 MHz	Fig.39	P
	5500 MHz	Fig.40	P
	5700 MHz	Fig.41	P
802.11n HT40	5190 MHz	Fig.42	P
	5310 MHz	Fig.43	P
	5510 MHz	Fig.44	P
	5670 MHz	Fig.45	P
802.11ac HT20	5180 MHz	Fig.46	P
	5320 MHz	Fig.47	P
	5500 MHz	Fig.48	P
	5700 MHz	Fig.49	P
802.11ac HT40	5190 MHz	Fig.50	P
	5310 MHz	Fig.51	P
	5510 MHz	Fig.52	P
	5670 MHz	Fig.53	P
802.11ac HT80	5210MHz	Fig.54	P
	5290MHz	Fig.55	P
	5530MHz	Fig.56	P
	5610MHz	Fig.57	P

Conclusion: PASS

Test graphs as below:

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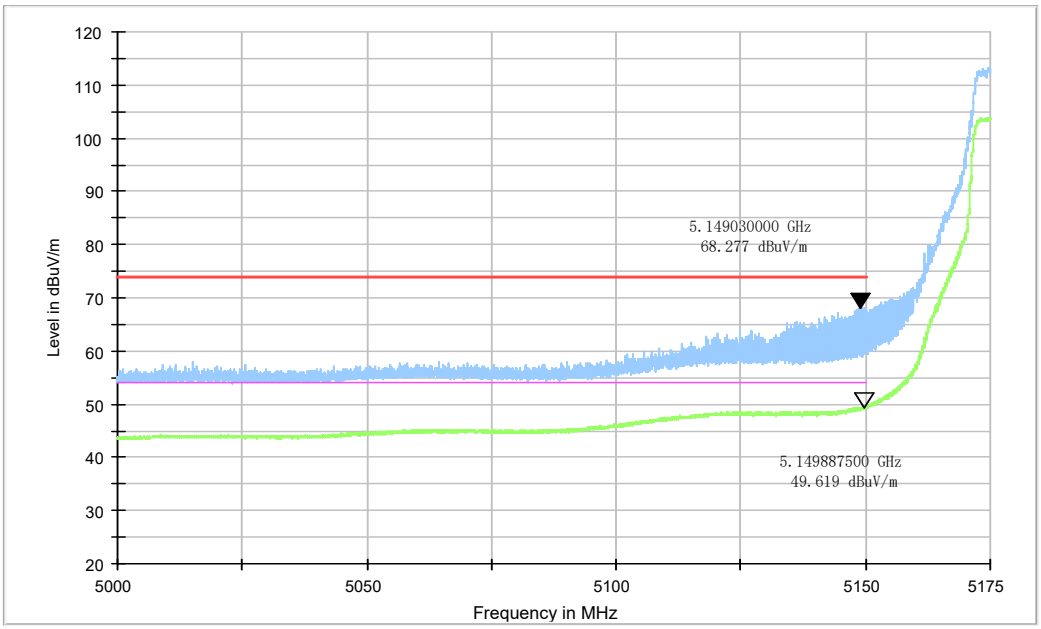

Fig.34 Band Edges (802.11a Ch36, 5180MHz)

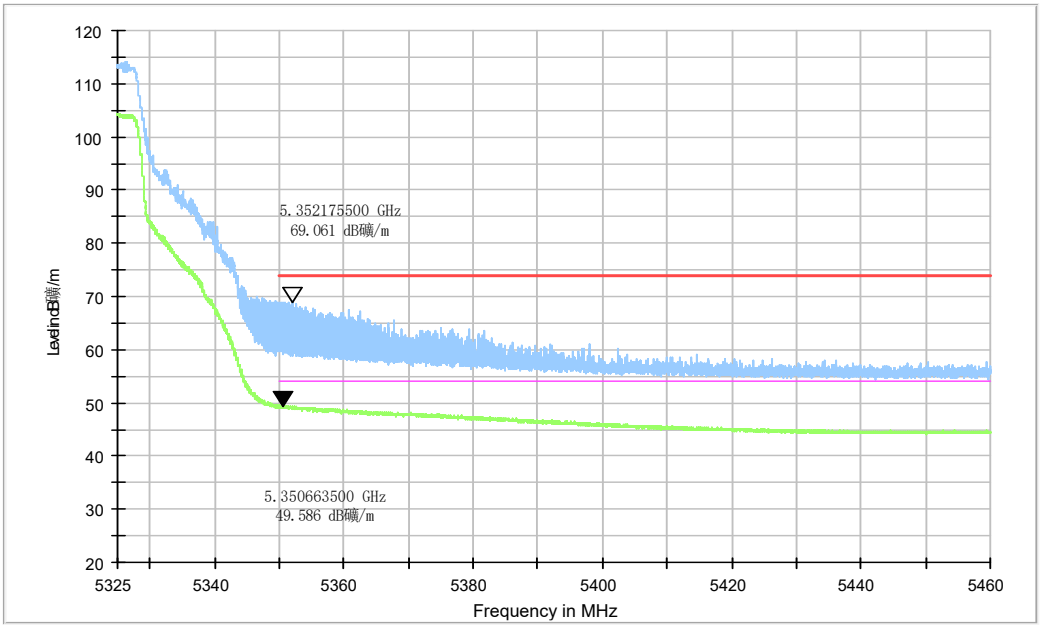

Fig.35 Band Edges (802.11a Ch64, 5320MHz)

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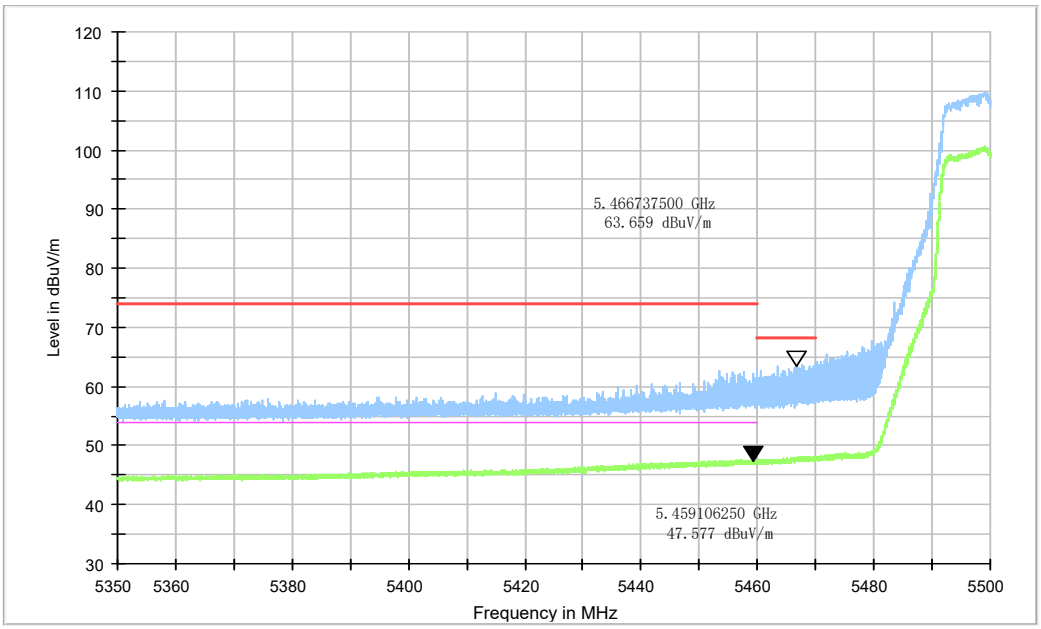

Fig.36 Band Edges (802.11a Ch100, 5500MHz)

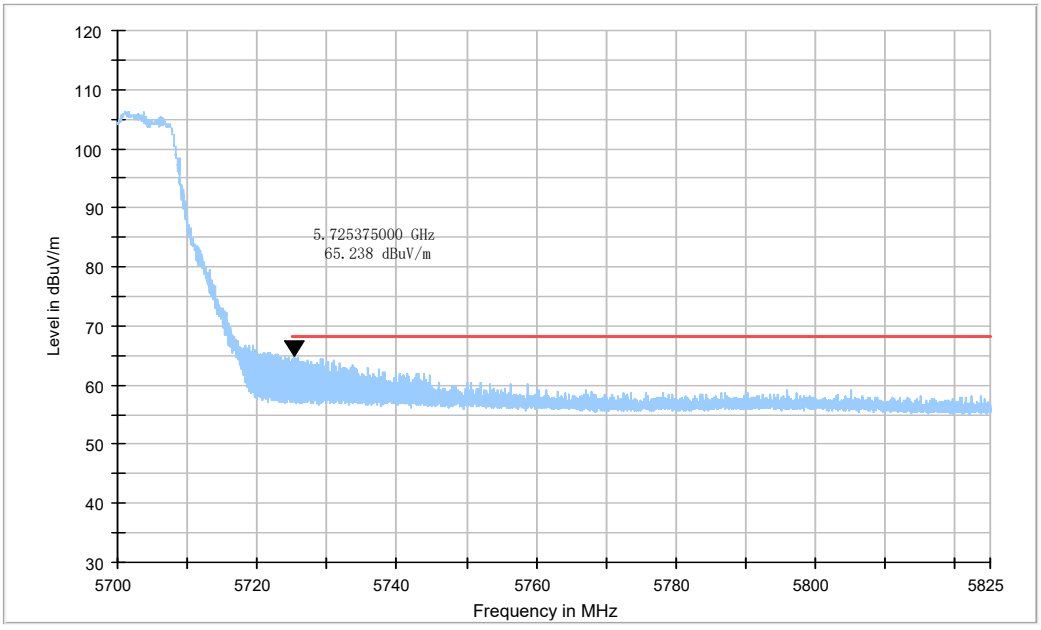

Fig.37 Band Edges (802.11a Ch140, 5700MHz)

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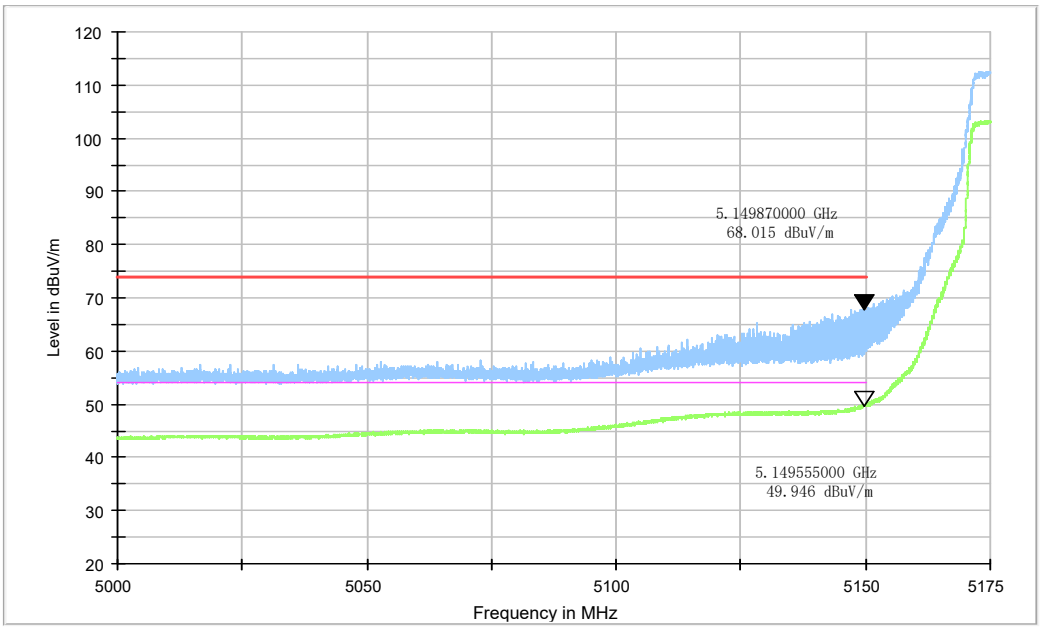

Fig.38 Band Edges (802.11n-HT20 Ch36, 5180MHz)

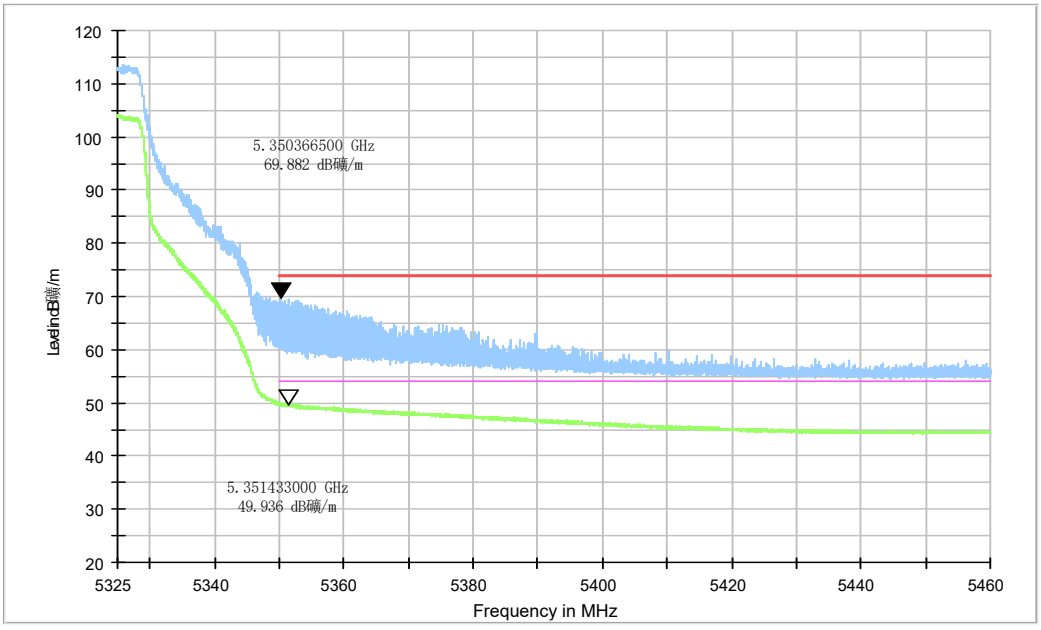

Fig.39 Band Edges (802.11n-HT20 Ch64, 5320MHz)

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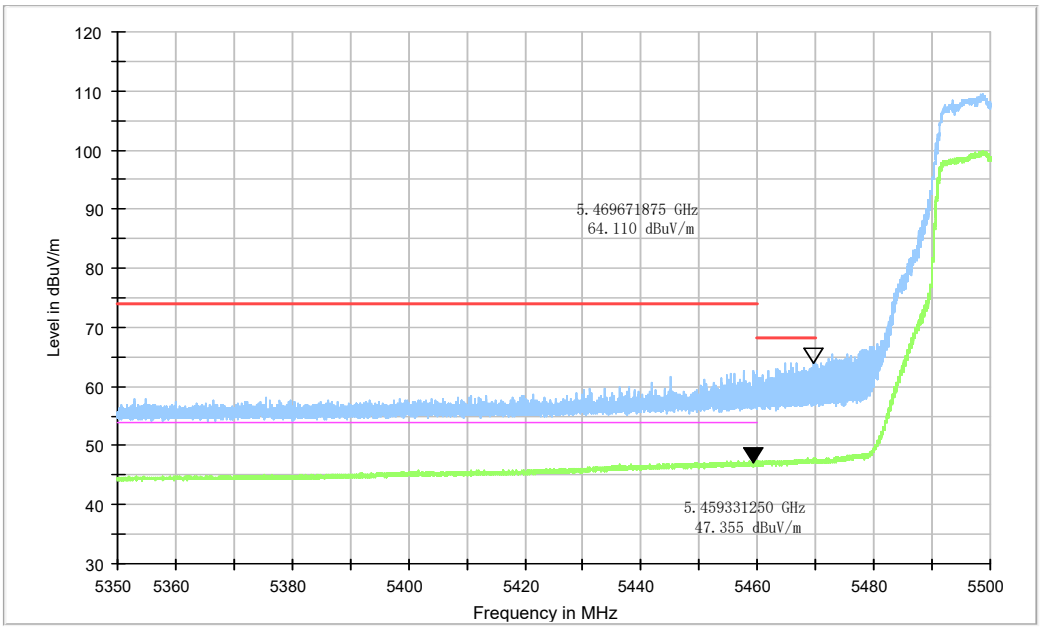

Fig.40 Band Edges (802.11n-HT20 Ch100, 5500MHz)

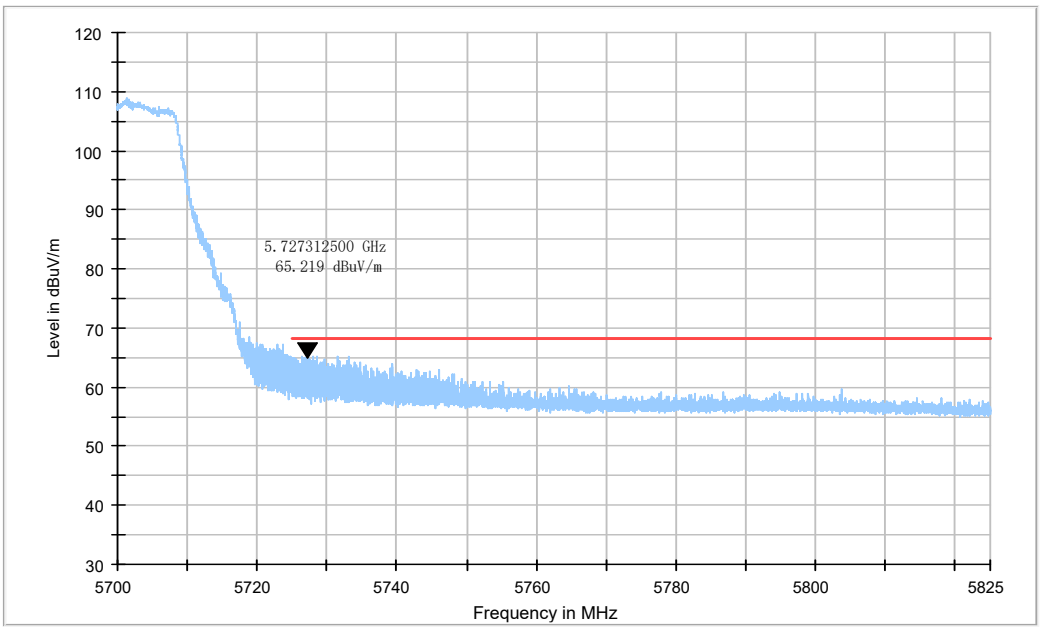

Fig.41 Band Edges (802.11n-HT20 Ch140, 5700MHz)

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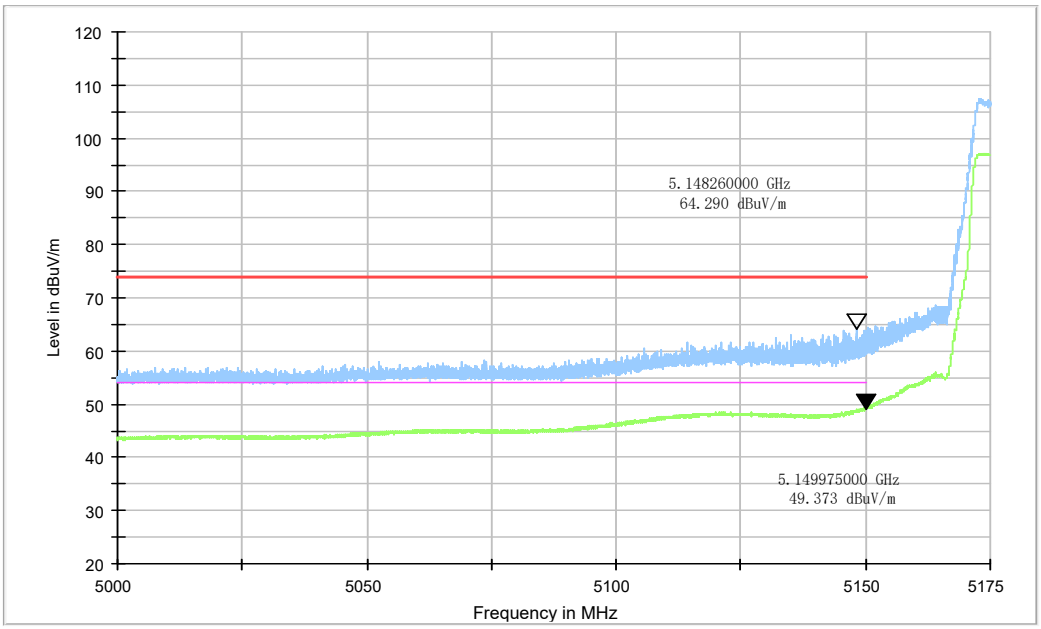

Fig.42 Band Edges (802.11n-HT40 Ch38, 5190MHz)

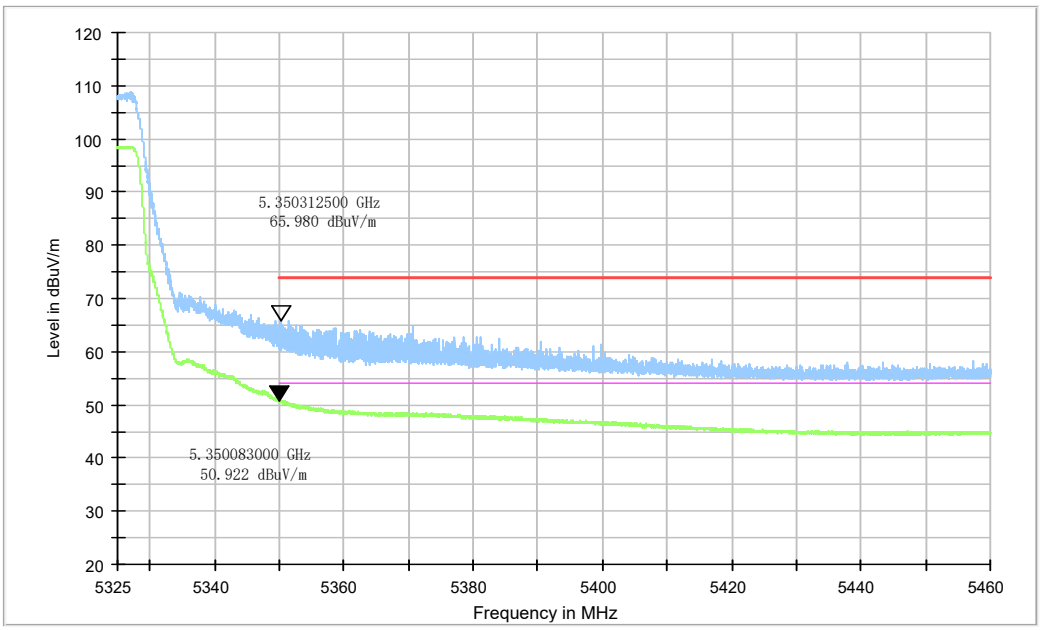

Fig.43 Band Edges (802.11n-HT40 Ch62, 5310MHz)

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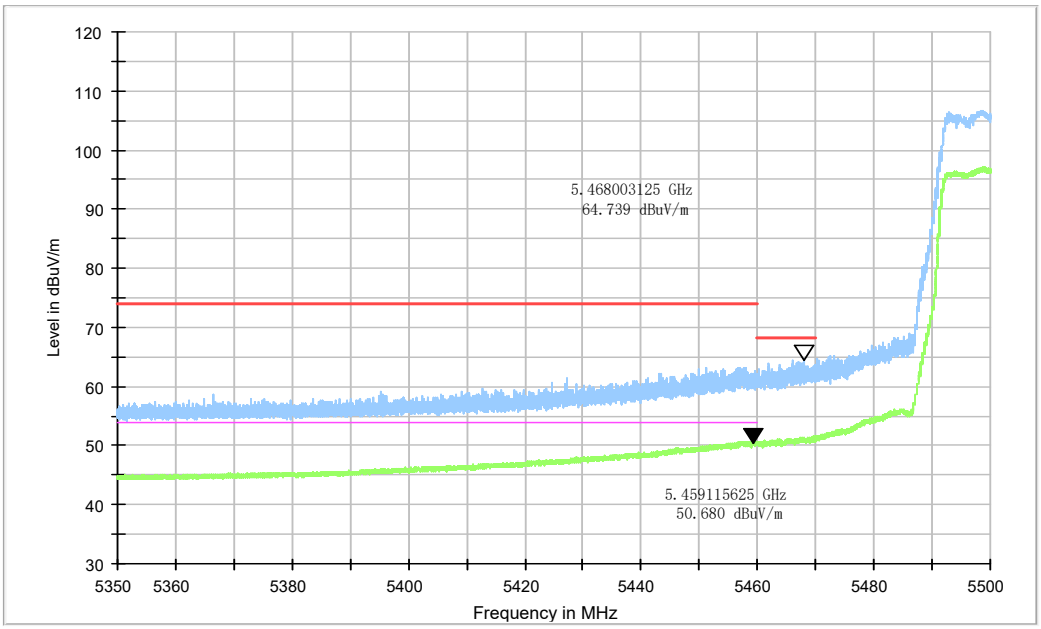

Fig.44 Band Edges (802.11n-HT40 Ch102, 5510MHz)

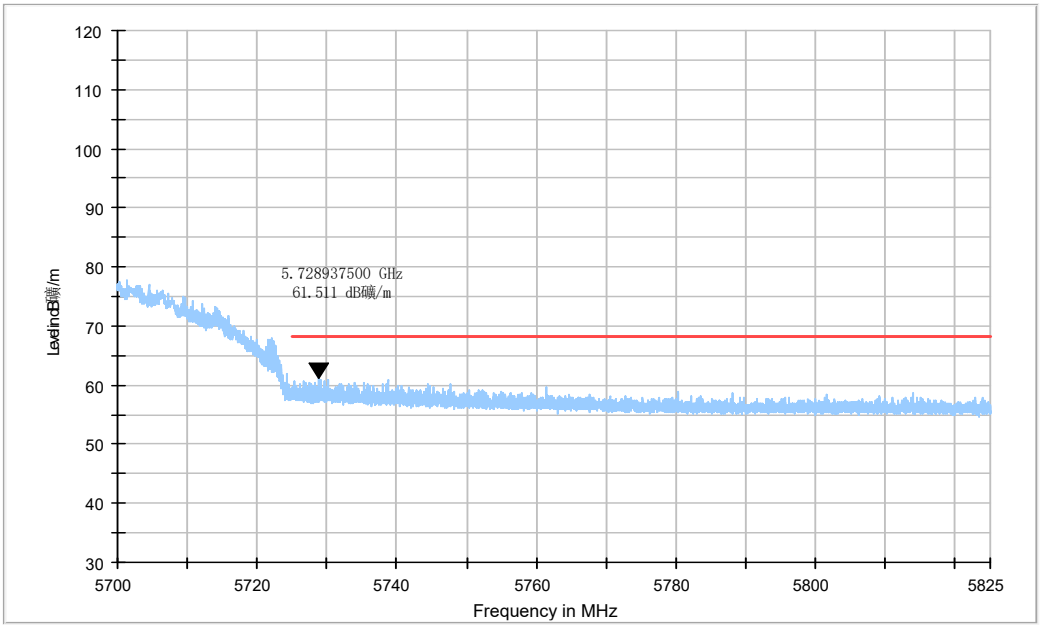

Fig.45 Band Edges (802.11n-HT40 Ch134, 5670MHz)

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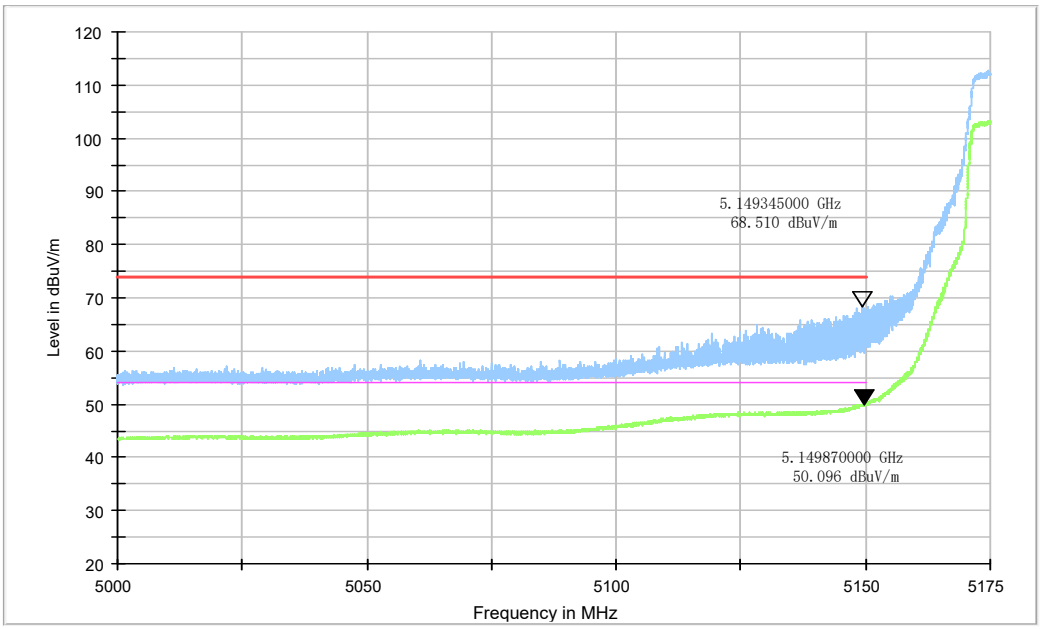

Fig.46 Band Edges (802.11ac-HT20 Ch36, 5180MHz)

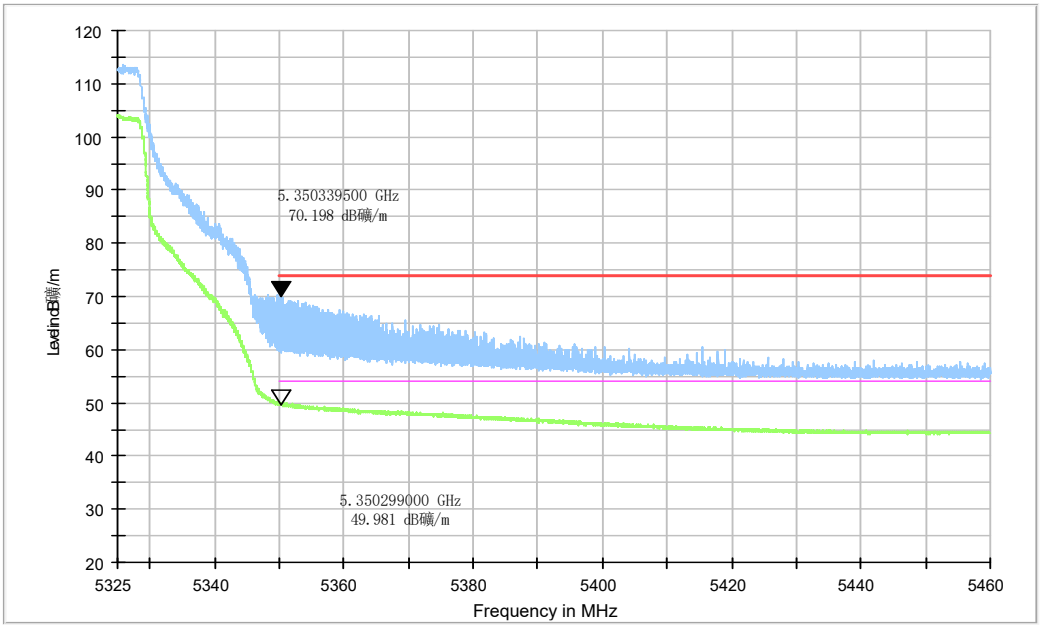

Fig.47 Band Edges (802.11ac-HT20 Ch64, 5320MHz)

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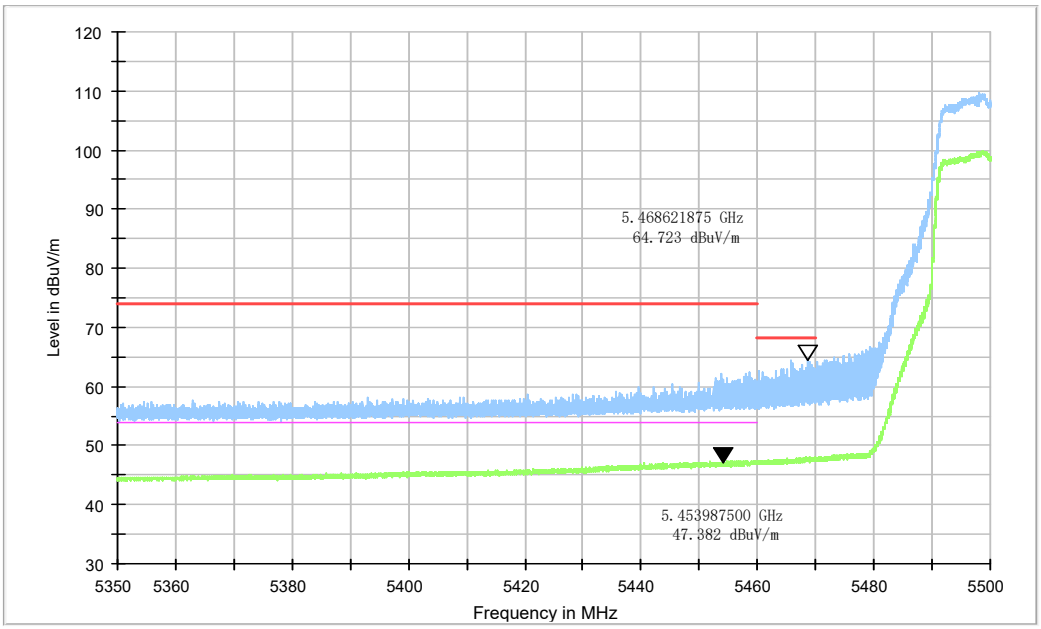

Fig.48 Band Edges (802.11ac-HT20 Ch100, 5500MHz)

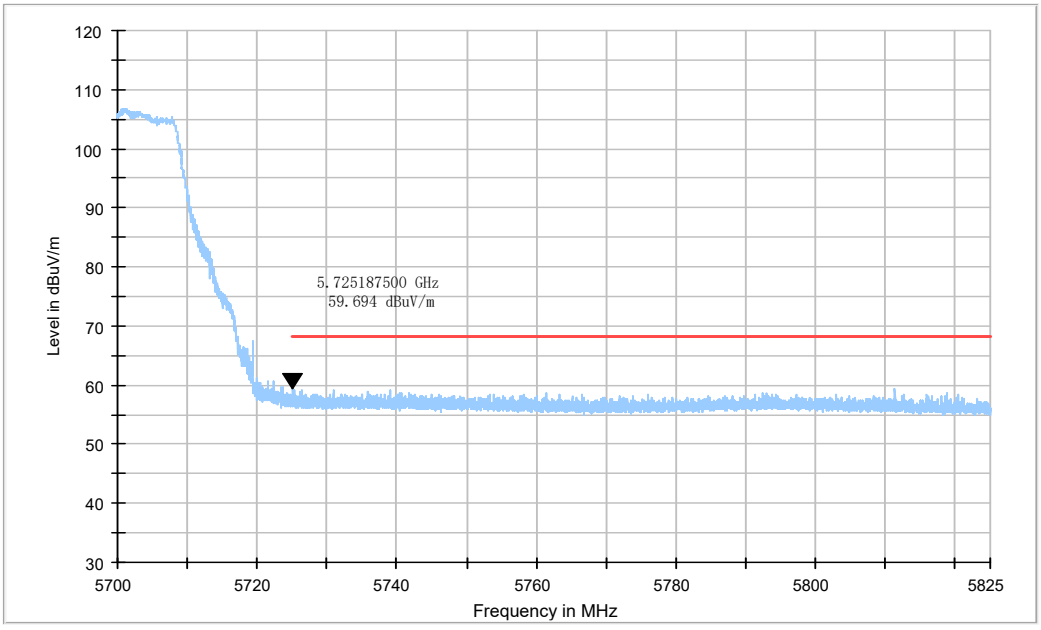

Fig.49 Band Edges (802.11ac-HT20 Ch140, 5700MHz)

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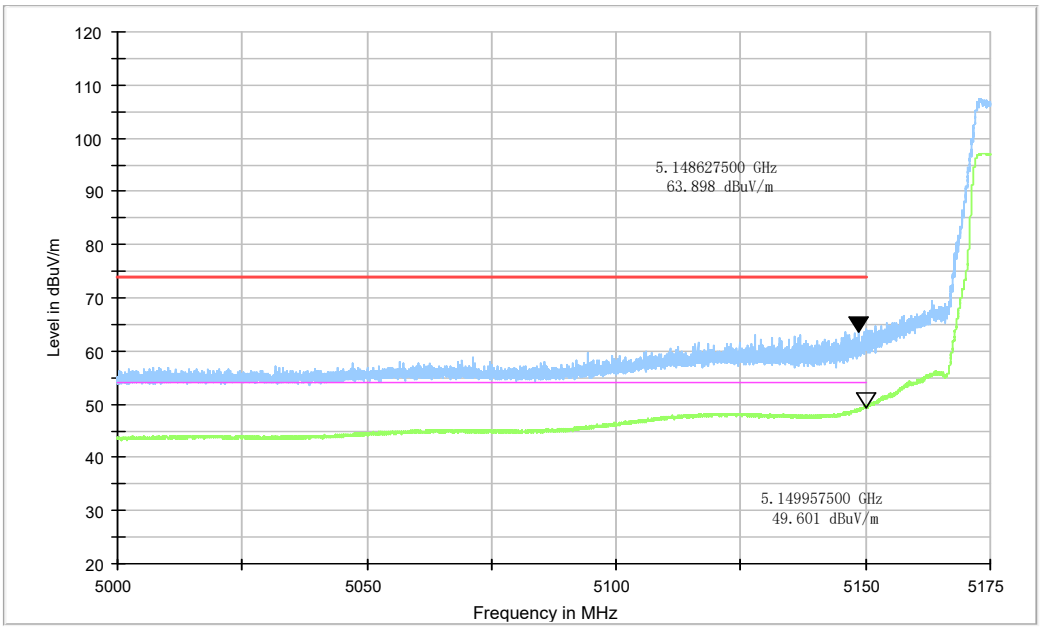

Fig.50 Band Edges (802.11ac-HT40 Ch38, 5190MHz)

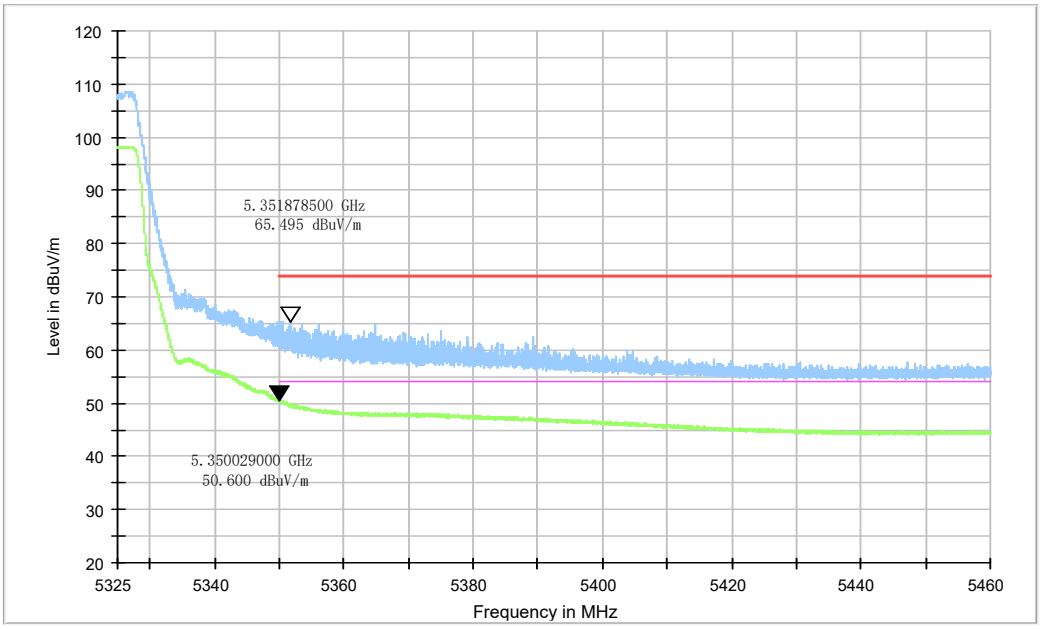

Fig.51 Band Edges (802.11ac-HT40 Ch62, 5310MHz)

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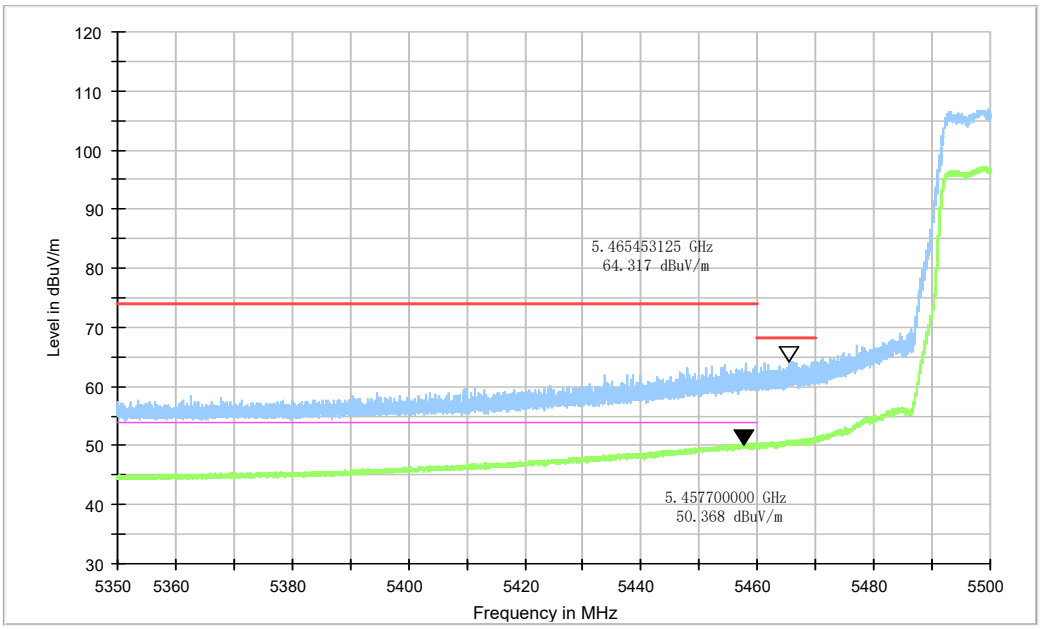

Fig.52 Band Edges (802.11ac-HT40 Ch102, 5510MHz)

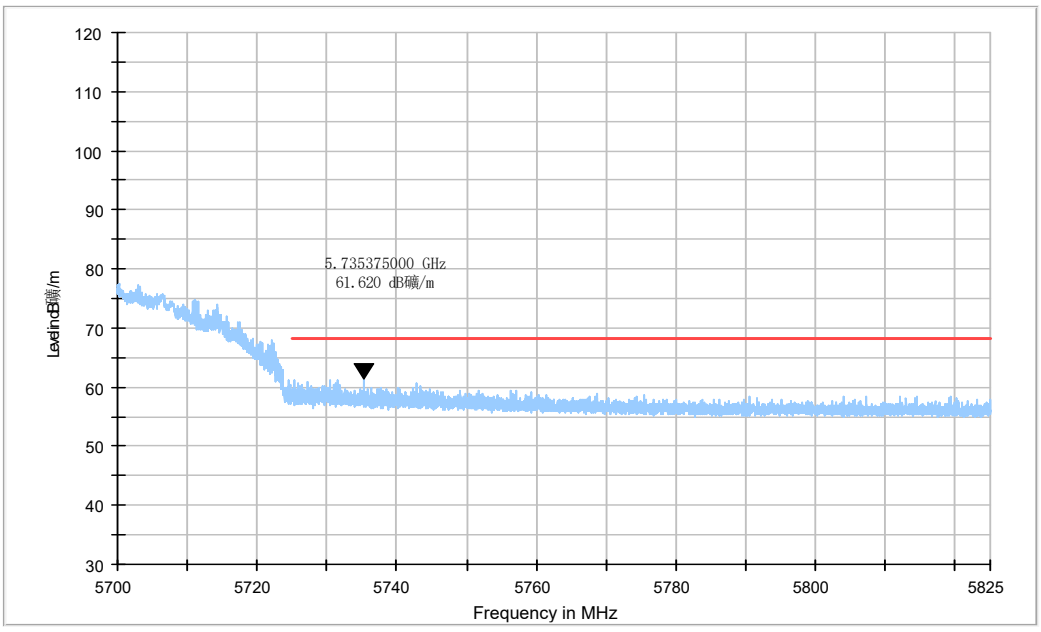

Fig.53 Band Edges (802.11ac-HT40 Ch134, 5670MHz)

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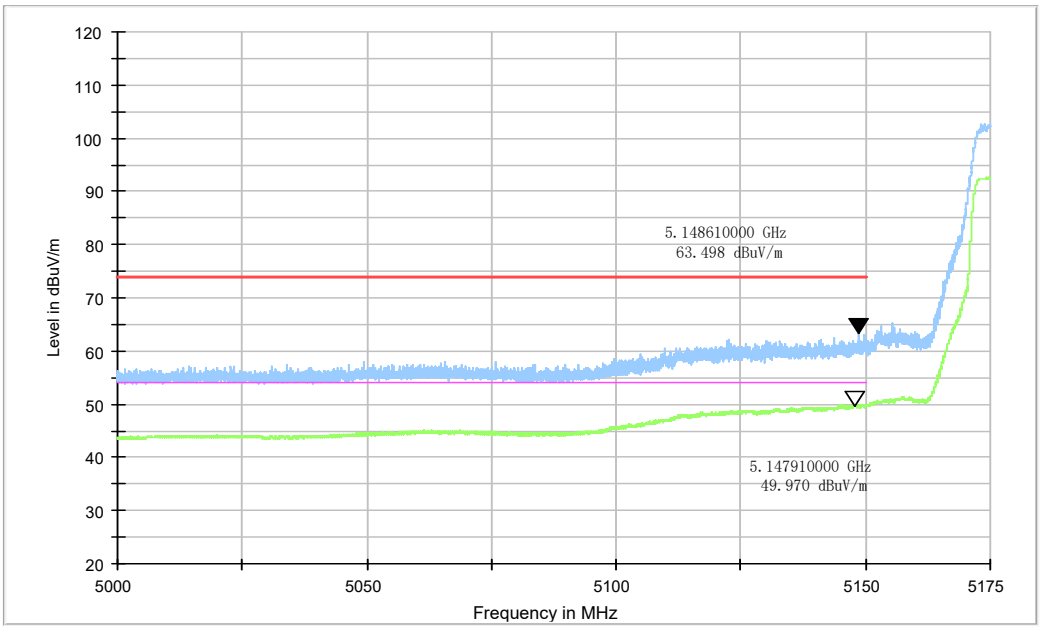

Fig.54 Band Edges (802.11ac-HT80 Ch42 , 5210MHz)

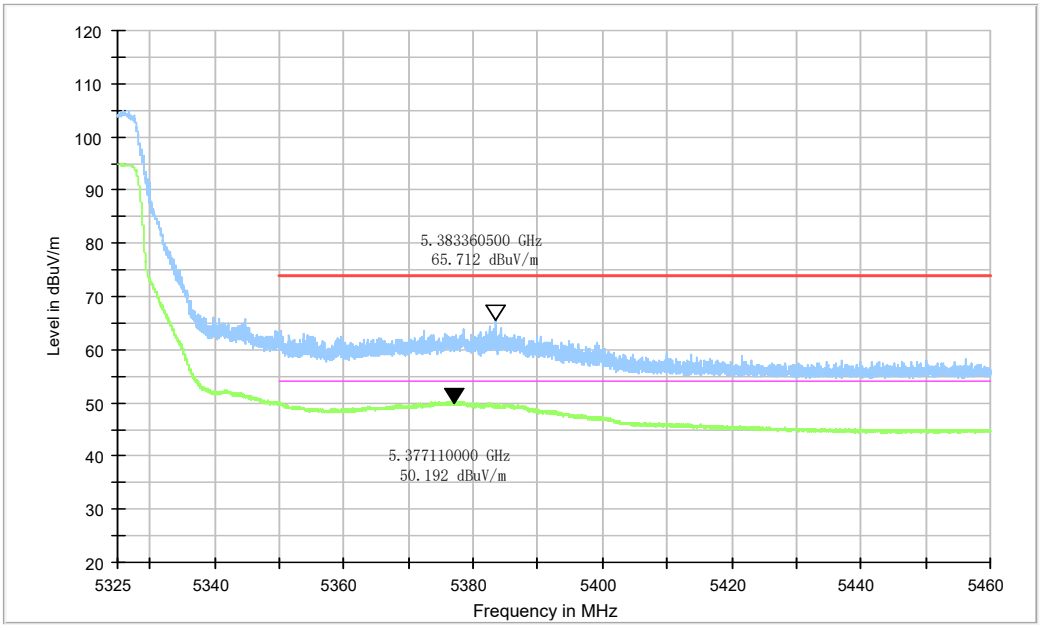

Fig.55 Band Edges (802.11ac-HT80 Ch58, 5290MHz)

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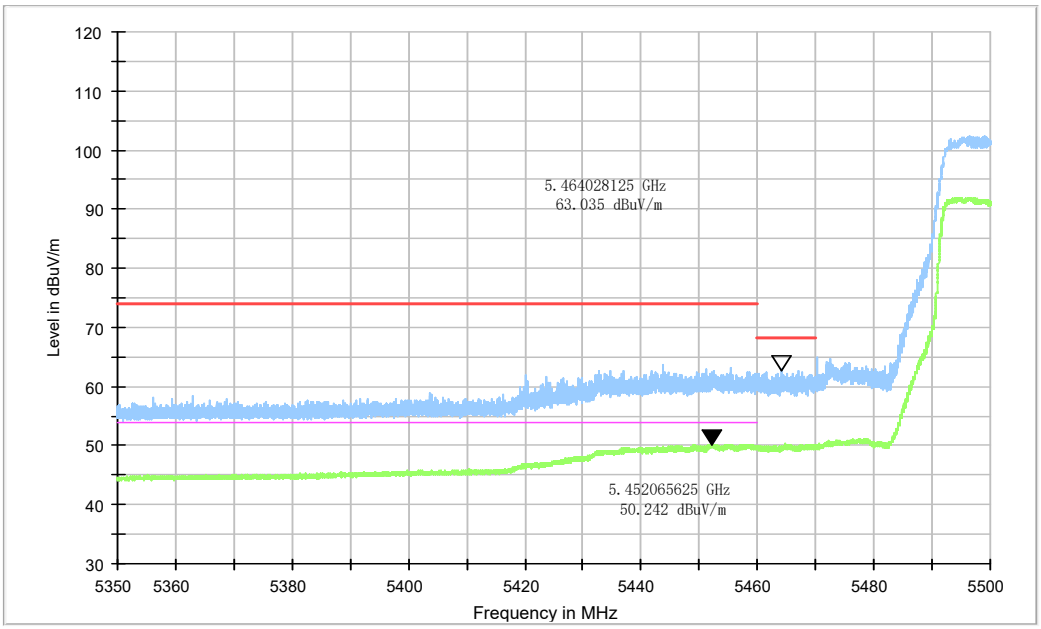

Fig.56 Band Edges (802.11ac-HT80 Ch106, 5530MHz)

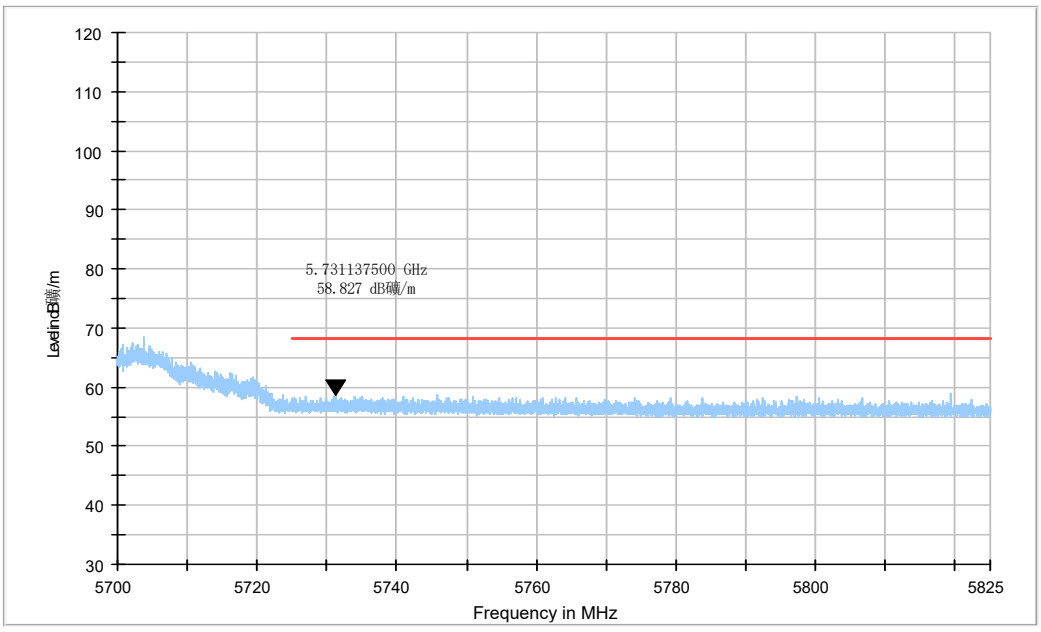

Fig.57 Band Edges (802.11ac-HT80 Ch122, 5610MHz)

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A.6. Transmitter Spurious Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407	-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(μV/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(uV/m)	Field strength(dBuV/m)	Measurement distance(m)
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

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

Set up:

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m

The EUT and transmitting antenna shall be centered on the turntable.

Test Procedure

The EUT was placed on a non-conductive table. 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 360° and the measurement antenna is moved from 1m to 4m to get the maximization result. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The receiver references:

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100kHz/300kHz	5
1000-7000	1MHz/3MHz	15
7000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

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Sample Calculations

1. Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

E=EIRP- 20log (*D)* +104.77

Where:

E is the field strength in dBμV/m

D is the measurement distance in meters

EIRP is the equivalent isotropically radiated power in dbm

2. The measurement results are obtained as described below:

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

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.

Note:

The range of evaluated frequency is from 9 kHz to 40GHz. Measurement value showed here only up to 6 maximum emissions noted.

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Measurement Results

AVERAGE Results:

802.11a

Channel 36

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5149.400	48.58	-33.57	34.40	47.75	54.00	5.42	V
5149.800	48.62	-33.56	34.40	47.78	54.00	5.38	V
10360.000	40.72	-31.45	37.46	34.70	54.00	13.28	V
15540.000	37.36	-25.79	40.08	23.07	54.00	16.64	H
17740.000	38.52	-25.23	41.30	22.45	54.00	15.48	H
17837.500	38.98	-24.88	41.26	22.59	54.00	15.02	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)
5119.600	44.32	-23.45	34.28	33.49	54.00	9.68	V
5130.000	45.46	-23.38	34.32	34.52	54.00	8.54	V
10399.500	40.67	-31.46	37.50	34.63	54.00	13.33	V
15599.500	38.55	-25.67	40.20	24.02	54.00	15.45	H
17767.000	38.77	-25.13	41.30	22.60	54.00	15.23	V
17815.000	39.13	-24.96	41.28	22.80	54.00	14.87	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)
5362.000	44.03	-23.45	34.50	32.99	54.00	9.97	V
5395.600	43.75	-23.05	34.50	32.30	54.00	10.25	V
10480.000	39.25	-31.46	37.58	33.13	54.00	14.75	H
15717.000	38.70	-25.25	40.33	23.62	54.00	15.30	V
17704.000	38.50	-25.19	41.30	22.39	54.00	15.50	H
17767.000	38.63	-25.13	41.30	22.46	54.00	15.37	V

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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	45.11	-23.60	34.50	34.21	54.00	8.89	V
5351.800	45.10	-23.58	34.50	34.18	54.00	8.90	V
12623.500	36.53	-28.94	39.05	26.42	54.00	17.47	V
15780.000	38.35	-25.08	40.46	22.97	54.00	15.65	H
17967.000	39.70	-24.75	41.20	23.25	54.00	14.30	V
17991.000	39.78	-24.81	41.20	23.39	54.00	14.22	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)
5350.400	46.18	-23.60	34.50	35.27	54.00	7.82	V
5352.000	45.94	-23.58	34.50	35.01	54.00	8.06	V
12686.500	36.59	-28.83	39.17	26.25	54.00	17.41	H
15840.000	38.90	-24.94	40.58	23.25	54.00	15.10	V
17814.500	39.00	-24.96	41.29	22.67	54.00	15.00	V
17967.500	39.76	-24.75	41.20	23.31	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)
5350.200	48.53	-23.60	34.50	37.63	54.00	5.47	V
5352.200	48.47	-23.57	34.50	37.55	54.00	5.53	V
10640.000	39.46	-31.72	37.68	33.50	54.00	14.54	V
15960.000	39.12	-25.04	40.76	23.40	54.00	14.88	V
17816.000	39.13	-24.95	41.28	22.80	54.00	14.87	H
17974.000	39.73	-24.77	41.20	23.30	54.00	14.27	H

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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)
5455.800	46.26	-33.00	34.41	44.84	54.00	7.74	V
5458.000	46.39	-32.96	34.42	44.93	54.00	7.61	V
11000.000	40.95	-30.91	37.80	34.06	54.00	13.05	H
15907.500	39.26	-24.84	40.71	23.40	54.00	14.74	V
17915.000	39.35	-24.60	41.20	22.75	54.00	14.65	V
17989.000	39.80	-24.81	41.20	23.41	54.00	14.20	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)
5396.800	43.73	-23.04	34.50	32.27	54.00	10.27	V
5408.600	43.67	-23.07	34.48	32.25	54.00	10.33	V
11157.000	40.70	-30.77	37.86	33.61	54.00	13.30	V
15919.000	39.35	-24.88	40.72	23.51	54.00	14.65	H
17917.000	39.30	-24.61	41.20	22.71	54.00	14.70	V
17971.000	39.70	-24.76	41.20	23.26	54.00	14.30	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)
5394.800	43.75	-33.14	34.50	42.39	54.00	10.25	V
5406.000	43.74	-33.03	34.49	42.28	54.00	10.26	V
7599.500	38.83	-31.81	35.90	34.74	54.00	15.17	V
11400.000	34.71	-31.15	38.10	27.75	54.00	19.29	V
15908.500	39.41	-24.84	40.71	23.55	54.00	14.59	H
17966.500	39.76	-24.75	41.20	23.30	54.00	14.24	H

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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)
5394.000	43.68	-23.07	34.50	32.24	54.00	10.32	V
5409.400	43.67	-23.07	34.48	32.26	54.00	10.33	V
7626.000	34.59	-31.84	35.90	30.53	54.00	19.41	H
11440.000	33.60	-31.33	38.14	26.79	54.00	20.40	V
15909.500	39.50	-24.85	40.71	23.64	54.00	14.50	V
17987.500	39.77	-24.80	41.20	23.37	54.00	14.23	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)
5148.800	48.78	-33.57	34.40	47.95	54.00	5.22	V
5150.000	49.03	-33.56	34.40	48.19	54.00	4.97	V
10359.500	39.85	-31.45	37.46	33.83	54.00	14.15	H
15540.000	37.78	-25.79	40.08	23.49	54.00	16.22	H
17759.000	38.47	-25.16	41.30	22.33	54.00	15.53	H
17844.000	39.07	-24.85	41.26	22.67	54.00	14.93	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)
5109.000	44.20	-23.52	34.24	33.48	54.00	9.80	V
5378.400	43.53	-23.25	34.50	32.29	54.00	10.47	V
10399.500	40.54	-31.46	37.50	34.50	54.00	13.46	H
15600.000	37.53	-25.66	40.20	22.99	54.00	16.47	H
17781.500	38.80	-25.08	41.30	22.58	54.00	15.20	H
17845.500	39.14	-24.85	41.25	22.73	54.00	14.86	H

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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)
5367.400	44.00	-23.39	34.50	32.89	54.00	10.00	V
5410.400	43.63	-23.07	34.48	32.22	54.00	10.37	V
10479.500	38.45	-31.46	37.58	32.33	54.00	15.55	H
15720.000	38.01	-25.24	40.34	22.91	54.00	15.99	V
17715.000	38.50	-25.21	41.30	22.40	54.00	15.50	H
17755.500	38.61	-25.17	41.30	22.49	54.00	15.39	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)
5351.200	45.09	-23.59	34.50	34.18	54.00	8.91	V
5354.800	44.96	-23.54	34.50	34.00	54.00	9.04	V
12622.500	36.56	-28.94	39.05	26.45	54.00	17.44	V
15780.000	38.25	-25.08	40.46	22.87	54.00	15.75	V
17890.000	39.22	-24.69	41.21	22.70	54.00	14.78	V
17968.000	39.75	-24.75	41.20	23.30	54.00	14.25	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)
5350.600	46.18	-23.59	34.50	35.28	54.00	7.82	V
5354.800	45.99	-23.54	34.50	35.03	54.00	8.01	V
12625.000	36.76	-28.93	39.05	26.64	54.00	17.24	V
15840.000	39.04	-24.94	40.58	23.40	54.00	14.96	H
17881.000	39.31	-24.72	41.22	22.81	54.00	14.69	V
17989.500	39.91	-24.81	41.20	23.52	54.00	14.09	H

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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	49.05	-23.60	34.50	38.14	54.00	4.95	V
5351.200	48.89	-23.59	34.50	37.98	54.00	5.11	V
10639.500	38.98	-31.71	37.68	33.01	54.00	15.02	H
15960.000	39.13	-25.04	40.76	23.41	54.00	14.87	H
17966.500	39.70	-24.75	41.20	23.25	54.00	14.30	V
17989.000	39.79	-24.81	41.20	23.39	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)
5456.200	46.00	-32.99	34.41	44.58	54.00	8.00	V
5459.400	46.11	-32.94	34.42	44.63	54.00	7.89	V
10999.500	39.54	-30.91	37.80	32.65	54.00	14.46	V
16137.000	37.57	-25.59	40.84	22.33	54.00	16.43	V
17752.500	38.52	-25.19	41.30	22.41	54.00	15.48	V
17834.500	38.91	-24.89	41.27	22.54	54.00	15.09	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)
5383.800	43.66	-23.19	34.50	32.35	54.00	10.34	V
5405.000	43.74	-23.06	34.49	32.31	54.00	10.26	V
11159.500	39.31	-30.77	37.86	32.23	54.00	14.69	V
16179.500	37.36	-25.69	40.88	22.17	54.00	16.64	V
17725.000	38.47	-25.22	41.30	22.39	54.00	15.53	V
17812.500	38.99	-24.97	41.29	22.67	54.00	15.01	H

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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)
5373.000	43.72	-33.29	34.50	42.51	54.00	10.28	V
5401.400	43.87	-33.03	34.50	42.41	54.00	10.13	V
7599.500	39.50	-31.81	35.90	35.41	54.00	14.50	H
11400.000	33.73	-31.15	38.10	26.77	54.00	20.27	V
17709.500	38.34	-25.20	41.30	22.24	54.00	15.66	H
17909.000	39.23	-24.62	41.20	22.65	54.00	14.77	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)
5396.200	43.66	-23.04	34.50	32.20	54.00	10.34	V
5412.800	43.60	-23.08	34.47	32.20	54.00	10.40	V
7626.500	34.21	-31.85	35.90	30.15	54.00	19.79	V
11440.000	33.40	-31.33	38.14	26.59	54.00	20.60	V
17721.500	38.39	-25.22	41.30	22.31	54.00	15.61	V
17819.500	39.07	-24.94	41.28	22.73	54.00	14.93	V

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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)
5149.800	48.61	-33.56	34.40	47.78	54.00	5.39	V
5150.000	48.62	-33.56	34.40	47.78	54.00	5.38	V
10380.000	37.79	-31.46	37.48	31.77	54.00	16.21	H
15570.000	37.38	-25.74	40.14	22.98	54.00	16.62	V
17759.500	38.40	-25.16	41.30	22.26	54.00	15.60	V
17807.000	38.95	-24.99	41.29	22.65	54.00	15.05	H

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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)
5367.200	44.12	-23.39	34.50	33.01	54.00	9.88	V
5396.600	43.85	-23.04	34.50	32.39	54.00	10.15	V
10459.500	36.48	-31.46	37.56	30.37	54.00	17.52	H
15690.000	37.91	-25.35	40.29	22.97	54.00	16.09	V
17742.500	38.27	-25.22	41.30	22.19	54.00	15.73	V
17786.500	38.59	-25.06	41.30	22.35	54.00	15.41	H

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)
5350.520	47.21	-23.60	34.50	36.30	54.00	6.79	V
5351.400	47.15	-23.58	34.50	36.23	54.00	6.85	V
12620.000	36.44	-28.95	39.04	26.35	54.00	17.56	H
15810.000	38.39	-25.01	40.52	22.88	54.00	15.61	V
17964.000	39.73	-24.74	41.20	23.26	54.00	14.27	H
17991.500	39.81	-24.82	41.20	23.43	54.00	14.19	V

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	49.93	-33.36	34.50	48.79	54.00	4.07	V
5350.200	49.92	-33.36	34.50	48.77	54.00	4.08	V
10620.000	36.81	-31.65	37.64	30.82	54.00	17.19	H
15930.000	39.25	-24.93	40.73	23.44	54.00	14.75	V
17884.500	39.23	-24.71	41.22	22.72	54.00	14.77	V
17984.000	39.74	-24.79	41.20	23.33	54.00	14.26	V

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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)
5457.600	49.39	-32.97	34.42	47.94	54.00	4.61	V
5458.800	49.40	-32.95	34.42	47.93	54.00	4.60	V
11020.000	38.58	-30.88	37.80	31.65	54.00	15.42	H
15932.500	39.38	-24.94	40.73	23.59	54.00	14.62	V
17966.000	39.57	-24.74	41.20	23.12	54.00	14.43	H
17996.500	39.73	-24.83	41.20	23.36	54.00	14.27	H

Channel 118

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5393.800	43.72	-23.07	34.50	32.29	54.00	10.28	V
5403.600	43.73	-23.06	34.49	32.30	54.00	10.27	V
11180.000	37.45	-30.79	37.88	30.36	54.00	16.55	H
15908.000	39.50	-24.84	40.71	23.64	54.00	14.50	H
17941.000	39.13	-24.67	41.20	22.61	54.00	14.87	V
17991.000	39.69	-24.81	41.20	23.31	54.00	14.31	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)
5392.200	43.70	-23.09	34.50	32.28	54.00	10.30	V
5408.200	43.55	-23.07	34.48	32.13	54.00	10.45	V
7559.500	37.59	-31.97	35.98	33.58	54.00	16.41	V
11340.000	35.53	-30.87	38.10	28.30	54.00	18.47	V
15884.000	39.41	-24.84	40.67	23.58	54.00	14.59	V
17971.500	39.51	-24.76	41.20	23.07	54.00	14.49	H

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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)
5395.000	43.74	-23.05	34.50	32.30	54.00	10.26	V
5409.600	43.59	-23.07	34.48	32.18	54.00	10.41	V
7613.000	39.11	-31.76	35.90	34.96	54.00	14.89	H
11420.000	33.46	-31.24	38.12	26.58	54.00	20.54	V
17725.500	38.45	-25.22	41.30	22.38	54.00	15.55	V
17830.500	39.12	-24.90	41.27	22.75	54.00	14.88	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)
5149.600	49.23	-33.56	34.40	48.40	54.00	4.77	V
5150.000	49.35	-33.56	34.40	48.52	54.00	4.65	V
10359.500	40.26	-31.45	37.46	34.24	54.00	13.74	H
15540.000	37.39	-25.79	40.08	23.10	54.00	16.61	V
17751.000	38.49	-25.19	41.30	22.38	54.00	15.51	V
17814.500	39.01	-24.96	41.29	22.68	54.00	14.99	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)
5099.600	43.67	-23.59	34.20	33.06	54.00	10.33	V
5383.600	43.74	-23.19	34.50	32.43	54.00	10.26	V
10399.500	40.50	-31.46	37.50	34.46	54.00	13.50	H
15600.000	37.34	-25.66	40.20	22.80	54.00	16.66	V
17747.500	38.40	-25.20	41.30	22.30	54.00	15.60	H
17832.000	39.03	-24.90	41.27	22.66	54.00	14.97	H

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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)
5363.200	43.98	-23.44	34.50	32.92	54.00	10.02	V
5375.200	43.84	-23.29	34.50	32.64	54.00	10.16	V
10480.000	38.80	-31.46	37.58	32.68	54.00	15.20	V
15720.000	37.80	-25.24	40.34	22.71	54.00	16.20	V
17726.500	38.37	-25.23	41.30	22.30	54.00	15.63	V
17783.500	38.70	-25.07	41.30	22.47	54.00	15.30	H

Channel 52

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5350.800	45.11	-23.59	34.50	34.20	54.00	8.89	V
5351.800	45.10	-23.58	34.50	34.18	54.00	8.90	V
12624.500	36.76	-28.94	39.05	26.64	54.00	17.24	V
15780.000	38.52	-25.08	40.46	23.14	54.00	15.48	V
17967.000	39.72	-24.75	41.20	23.27	54.00	14.28	V
17994.500	39.82	-24.82	41.20	23.44	54.00	14.18	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)
5350.200	46.31	-23.60	34.50	35.41	54.00	7.69	V
5350.800	46.28	-23.59	34.50	35.37	54.00	7.72	V
12626.000	36.62	-28.93	39.05	26.50	54.00	17.38	H
15840.000	38.86	-24.94	40.58	23.22	54.00	15.14	H
17826.000	39.22	-24.92	41.27	22.86	54.00	14.78	H
17988.000	39.79	-24.81	41.20	23.39	54.00	14.21	V

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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)
5350.200	48.97	-23.60	34.50	38.07	54.00	5.03	V
5352.200	48.77	-23.57	34.50	37.84	54.00	5.23	V
10640.000	38.97	-31.72	37.68	33.01	54.00	15.03	V
15960.000	38.98	-25.04	40.76	23.26	54.00	15.02	H
17874.500	39.14	-24.74	41.23	22.66	54.00	14.86	V
17967.500	39.75	-24.75	41.20	23.30	54.00	14.25	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)
5454.400	46.27	-33.02	34.41	44.88	54.00	7.73	V
5459.600	46.39	-32.93	34.42	44.91	54.00	7.61	V
10999.500	40.40	-30.91	37.80	33.52	54.00	13.60	V
15908.000	39.53	-24.84	40.71	23.66	54.00	14.47	H
17964.000	39.54	-24.74	41.20	23.07	54.00	14.46	V
17993.500	39.65	-24.82	41.20	23.27	54.00	14.35	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)
5395.200	43.70	-23.05	34.50	32.25	54.00	10.30	V
5402.800	43.64	-23.05	34.49	32.20	54.00	10.36	V
11159.500	39.84	-30.77	37.86	32.75	54.00	14.16	V
15890.500	39.44	-24.82	40.68	23.58	54.00	14.56	H
17922.500	39.16	-24.62	41.20	22.58	54.00	14.84	V
17983.500	39.57	-24.79	41.20	23.16	54.00	14.43	H

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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)
5372.600	43.70	-33.28	34.50	42.49	54.00	10.30	V
5412.000	43.67	-33.07	34.48	42.26	54.00	10.33	V
7599.500	39.17	-31.81	35.90	35.07	54.00	14.83	H
11400.000	33.73	-31.15	38.10	26.78	54.00	20.27	V
15921.000	39.40	-24.89	40.72	23.57	54.00	14.60	H
17972.000	39.46	-24.76	41.20	23.02	54.00	14.54	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)
5389.400	43.61	-23.12	34.50	32.23	54.00	10.39	V
5403.600	43.59	-23.06	34.49	32.15	54.00	10.41	V
7626.500	34.02	-31.85	35.90	29.96	54.00	19.98	H
11440.000	33.42	-31.33	38.14	26.61	54.00	20.58	H
17719.500	38.39	-25.21	41.30	22.31	54.00	15.61	V
17815.500	39.21	-24.96	41.28	22.89	54.00	14.79	V

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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)
5149.800	48.78	-33.56	34.40	47.95	54.00	5.22	V
5150.000	48.79	-33.56	34.40	47.95	54.00	5.21	V
10380.000	37.54	-31.46	37.48	31.52	54.00	16.46	V
15570.000	37.26	-25.74	40.14	22.86	54.00	16.74	V
17732.000	38.27	-25.23	41.30	22.20	54.00	15.73	V
17817.000	39.05	-24.95	41.28	22.72	54.00	14.95	V

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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)
5368.200	44.15	-23.38	34.50	33.03	54.00	9.85	V
5386.200	43.80	-23.16	34.50	32.46	54.00	10.20	V
10460.000	36.40	-31.46	37.56	30.29	54.00	17.60	V
15690.000	37.92	-25.35	40.29	22.98	54.00	16.08	V
17722.500	38.35	-25.22	41.30	22.27	54.00	15.65	V
17823.500	39.05	-24.93	41.28	22.70	54.00	14.95	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)
5350.200	47.29	-23.60	34.50	36.39	54.00	6.71	V
5351.400	47.12	-23.58	34.50	36.20	54.00	6.88	V
12648.000	36.20	-28.86	39.10	25.97	54.00	17.80	H
15810.000	38.40	-25.01	40.52	22.89	54.00	15.60	V
17828.500	39.03	-24.91	41.27	22.67	54.00	14.97	V
17965.000	39.66	-24.74	41.20	23.20	54.00	14.34	V

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	49.81	-33.36	34.50	48.67	54.00	4.19	V
5350.200	49.77	-33.36	34.50	48.62	54.00	4.23	V
10620.000	36.74	-31.65	37.64	30.75	54.00	17.26	H
15930.000	39.21	-24.93	40.73	23.41	54.00	14.79	H
17963.500	39.64	-24.74	41.20	23.17	54.00	14.36	H
17990.000	39.77	-24.81	41.20	23.38	54.00	14.23	V

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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)
5457.200	49.06	-32.97	34.41	47.62	54.00	4.94	V
5458.200	49.15	-32.96	34.42	47.69	54.00	4.85	V
11020.000	38.53	-30.88	37.80	31.61	54.00	15.47	H
15947.500	39.16	-24.99	40.75	23.40	54.00	14.84	V
17971.000	39.51	-24.76	41.20	23.07	54.00	14.49	V
17992.500	39.62	-24.82	41.20	23.24	54.00	14.38	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)
5393.200	43.78	-23.08	34.50	32.36	54.00	10.22	V
5415.400	43.77	-23.08	34.47	32.38	54.00	10.23	V
11179.500	37.32	-30.79	37.88	30.23	54.00	16.68	V
15923.000	39.42	-24.90	40.72	23.59	54.00	14.58	V
17970.000	39.57	-24.76	41.20	23.12	54.00	14.43	V
17994.500	39.79	-24.82	41.20	23.41	54.00	14.21	H

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)
5387.800	43.64	-23.14	34.50	32.28	54.00	10.36	V
5404.000	43.66	-23.06	34.49	32.23	54.00	10.34	V
7559.500	37.63	-31.97	35.98	33.62	54.00	16.37	H
11340.000	35.52	-30.87	38.10	28.29	54.00	18.48	H
15921.000	39.43	-24.89	40.72	23.60	54.00	14.57	H
17967.500	39.60	-24.75	41.20	23.15	54.00	14.40	H

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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)
5392.000	43.76	-23.09	34.50	32.35	54.00	10.24	V
5408.800	43.65	-23.07	34.48	32.24	54.00	10.35	V
7613.000	36.30	-31.76	35.90	32.16	54.00	17.70	H
11420.000	35.52	-31.24	38.12	28.64	54.00	18.48	H
17730.500	38.34	-25.23	41.30	22.27	54.00	15.66	H
17829.000	39.13	-24.91	41.27	22.76	54.00	14.87	V

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Channel 42

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5145.200	48.85	-23.30	34.38	37.77	54.00	5.15	V
5149.600	48.76	-23.27	34.40	37.64	54.00	5.24	V
12647.000	36.06	-28.86	39.09	25.83	54.00	17.94	H
15630.000	37.36	-25.56	40.23	22.69	54.00	16.64	V
17962.000	39.61	-24.73	41.20	23.14	54.00	14.39	V
17989.000	39.80	-24.81	41.20	23.41	54.00	14.20	H

Channel 58

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5350.000	49.20	-23.60	34.50	38.30	54.00	4.80	V
5350.400	49.02	-23.60	34.50	38.11	54.00	4.98	V
12631.500	36.62	-28.91	39.06	26.46	54.00	17.38	V
15870.000	39.16	-24.87	40.64	23.39	54.00	14.84	H
17965.500	39.76	-24.74	41.20	23.30	54.00	14.24	H
17989.500	39.85	-24.81	41.20	23.46	54.00	14.15	H

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Channel 106

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5452.400	48.98	-33.05	34.40	47.62	54.00	5.02	V
5455.200	48.97	-33.00	34.41	47.57	54.00	5.03	V
11059.500	36.62	-30.82	37.80	29.63	54.00	17.38	V
15921.000	39.41	-24.89	40.72	23.58	54.00	14.59	H
17962.500	39.47	-24.73	41.20	23.01	54.00	14.53	V
17993.500	39.72	-24.82	41.20	23.34	54.00	14.28	V

Channel 122

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)
5392.800	43.70	-23.08	34.50	32.28	54.00	10.30	V
5415.800	43.74	-23.08	34.47	32.36	54.00	10.26	V
11220.000	35.28	-30.82	37.94	28.16	54.00	18.72	V
15890.000	39.43	-24.82	40.68	23.57	54.00	14.57	H
17963.000	39.65	-24.74	41.20	23.18	54.00	14.35	H
17991.000	39.68	-24.81	41.20	23.30	54.00	14.32	H

Channel 138

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)
5394.000	43.69	-23.07	34.50	32.26	54.00	10.31	V
5409.000	43.63	-23.07	34.48	32.22	54.00	10.37	V
7586.500	39.09	-31.86	35.93	35.02	54.00	14.91	H
11420.000	33.46	-31.24	38.12	26.58	54.00	20.54	V
17718.000	38.42	-25.21	41.30	22.33	54.00	15.58	H
17803.500	38.94	-25.00	41.30	22.65	54.00	15.06	V

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PEAK Results:

802.11a

Channel 36

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5149.030	68.28	-33.57	34.40	67.45	74.00	5.72	V
5149.765	68.18	-33.56	34.40	67.34	74.00	5.82	H
10360.000	52.53	-31.45	37.46	46.52	68.30	15.77	V
15540.000	49.79	-25.79	40.08	35.50	74.00	24.21	V
17074.000	53.01	-25.19	41.58	36.62	68.30	15.29	V
17255.500	53.80	-24.77	41.24	37.33	68.30	14.50	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)
5154.000	60.73	-23.25	34.41	49.57	68.30	7.57	H
5255.400	61.31	-23.50	34.61	50.20	68.30	6.98	H
10400.000	52.98	-31.46	37.50	46.94	68.30	15.32	H
15600.000	49.53	-25.66	40.20	34.99	74.00	24.47	V
17391.500	53.42	-24.55	41.20	36.78	68.30	14.88	H
17470.000	52.88	-24.74	41.20	36.42	68.30	15.42	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)
5321.000	59.10	-23.66	34.62	48.15	68.30	9.20	V
5339.600	58.31	-23.69	34.54	47.46	68.30	9.99	V
10481.000	52.02	-31.46	37.58	45.90	68.30	16.28	H
15720.000	51.43	-25.24	40.34	36.33	74.00	22.57	H
17294.500	52.79	-24.70	41.21	36.28	68.30	15.51	H
17528.500	52.62	-24.88	41.20	36.31	68.30	15.68	H

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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)
5208.200	64.91	-23.24	34.52	53.63	68.30	3.39	V
5317.400	64.56	-23.66	34.63	53.59	68.30	3.74	V
10522.500	51.29	-31.48	37.60	45.17	68.30	17.01	H
15780.000	50.20	-25.08	40.46	34.82	74.00	23.80	V
16636.000	52.99	-25.26	41.67	36.58	68.30	15.31	V
17501.000	54.26	-24.82	41.20	37.87	68.30	14.04	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)
5225.000	63.10	-23.35	34.55	51.91	68.30	5.20	H
5330.200	63.79	-23.67	34.58	52.88	68.30	4.51	V
10561.000	51.34	-31.49	37.60	45.23	68.30	16.96	H
15840.000	50.44	-24.94	40.58	34.80	74.00	23.56	H
16621.500	53.28	-25.29	41.64	36.92	68.30	15.02	H
17294.000	54.13	-24.70	41.21	37.63	68.30	14.17	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)
5350.988	68.74	-23.59	34.50	57.83	74.00	5.26	V
5352.176	69.06	-23.57	34.50	58.14	74.00	4.94	H
10632.500	52.51	-31.69	37.67	46.53	74.00	21.49	H
15960.000	50.49	-25.04	40.76	34.77	74.00	23.51	H
16555.000	53.32	-25.43	41.56	37.19	68.30	14.98	H
16821.000	53.25	-25.18	41.80	36.63	68.30	15.05	H

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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)
5466.738	63.66	-32.93	34.43	62.16	68.30	4.64	V
5467.525	63.58	-32.93	34.44	62.08	68.30	4.72	V
10996.500	52.69	-30.92	37.80	45.81	74.00	21.31	V
16500.000	51.13	-25.43	41.50	35.06	68.30	17.17	H
16877.500	52.52	-25.21	41.80	35.93	68.30	15.78	H
17618.000	53.55	-25.05	41.22	37.39	68.30	14.75	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)
5541.000	62.82	-23.19	34.58	51.43	68.30	5.48	V
5618.800	63.21	-23.02	34.64	51.60	68.30	5.09	V
11161.500	54.17	-30.77	37.86	47.08	74.00	19.83	H
16740.000	52.50	-25.13	41.80	35.83	68.30	15.80	H
17298.500	53.72	-24.69	41.20	37.21	68.30	14.58	V
17459.000	53.87	-24.72	41.20	37.39	68.30	14.43	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)
5725.375	65.24	-32.62	34.85	63.01	68.30	3.06	H
5725.900	64.62	-32.62	34.85	62.39	68.30	3.68	H
7599.500	46.43	-31.81	35.90	42.34	74.00	27.57	V
11400.000	45.84	-31.15	38.10	38.89	74.00	28.16	V
17100.000	51.10	-25.12	41.50	34.72	68.30	17.20	H
17294.000	53.93	-24.70	41.21	37.43	68.30	14.37	H

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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)
5660.400	60.60	-22.82	34.72	48.70	68.30	7.70	V
5780.200	62.40	-23.01	35.02	50.40	68.30	5.90	H
11440.000	47.38	-31.33	38.14	40.57	74.00	26.62	H
17160.000	50.45	-24.97	41.38	34.05	68.30	17.85	H
17457.500	52.93	-24.71	41.20	36.44	68.30	15.37	V
17681.500	51.76	-25.15	41.28	35.63	68.30	16.54	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)
5147.227	67.67	-33.58	34.39	66.86	74.00	6.33	V
5149.870	68.02	-33.56	34.40	67.18	74.00	5.98	H
10359.000	53.82	-31.44	37.46	47.81	68.30	14.48	V
15540.000	51.11	-25.79	40.08	36.82	74.00	22.89	H
17379.000	53.13	-24.56	41.20	36.48	68.30	15.17	V
17444.500	52.85	-24.68	41.20	36.33	68.30	15.45	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)
5155.800	61.02	-23.24	34.41	49.85	68.30	7.28	V
5253.600	61.83	-23.49	34.61	50.71	68.30	6.47	V
10404.500	53.72	-31.46	37.50	47.68	68.30	14.58	V
15600.000	49.80	-25.66	40.20	35.26	74.00	24.20	H
17403.000	53.23	-24.58	41.20	36.61	68.30	15.07	V
17602.500	53.27	-25.03	41.20	37.10	68.30	15.03	H

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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)
5167.400	58.15	-23.18	34.43	46.90	68.30	10.15	V
5330.200	59.43	-23.67	34.58	48.52	68.30	8.87	H
10478.000	53.26	-31.46	37.58	47.14	68.30	15.04	V
15720.000	50.48	-25.24	40.34	35.39	74.00	23.52	H
17252.500	52.75	-24.77	41.25	36.27	68.30	15.55	H
17473.500	52.55	-24.75	41.20	36.10	68.30	15.75	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)
5216.200	64.16	-23.30	34.53	52.92	68.30	4.14	V
5305.200	64.38	-23.64	34.68	53.35	68.30	3.92	V
10512.500	51.79	-31.47	37.60	45.66	68.30	16.51	V
15780.000	50.39	-25.08	40.46	35.01	74.00	23.61	H
16502.500	53.00	-25.43	41.50	36.93	68.30	15.30	H
17062.500	53.08	-25.22	41.61	36.68	68.30	15.22	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)
5230.000	65.34	-23.39	34.56	54.16	68.30	2.96	H
5335.200	64.40	-23.68	34.56	53.52	68.30	3.90	V
10556.000	51.55	-31.49	37.60	45.43	68.30	16.75	H
15840.000	51.39	-24.94	40.58	35.75	74.00	22.61	H
16638.000	53.62	-25.26	41.68	37.20	68.30	14.68	H
17372.000	54.25	-24.57	41.20	37.62	68.30	14.05	H

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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)
5350.367	69.88	-23.60	34.50	58.98	74.00	4.12	H
5350.907	69.30	-23.59	34.50	58.39	74.00	4.70	V
10637.500	54.14	-31.71	37.68	48.17	74.00	19.86	V
15960.000	51.67	-25.04	40.76	35.95	74.00	22.33	V
16603.000	52.89	-25.33	41.61	36.61	68.30	15.41	H
17042.000	53.33	-25.26	41.67	36.91	68.30	14.97	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)
5464.619	63.87	-32.93	34.43	62.37	68.30	4.43	V
5469.672	64.11	-32.94	34.44	62.61	68.30	4.19	V
10997.500	53.48	-30.92	37.80	46.60	74.00	20.52	H
16500.000	50.13	-25.43	41.50	34.06	68.30	18.17	V
17356.500	53.83	-24.59	41.20	37.22	68.30	14.47	H
17240.500	53.21	-24.79	41.26	36.75	68.30	15.09	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)
5542.400	63.49	-23.19	34.58	52.10	68.30	4.81	H
5614.200	64.05	-23.04	34.63	52.46	68.30	4.25	H
11157.500	53.64	-30.77	37.86	46.55	74.00	20.36	V
16740.000	50.69	-25.13	41.80	34.02	68.30	17.61	V
17391.000	53.86	-24.55	41.20	37.21	68.30	14.44	V
17499.000	53.52	-24.81	41.20	37.13	68.30	14.78	V

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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)
5727.312	65.22	-32.63	34.85	63.00	68.30	3.08	V
5728.538	65.12	-32.64	34.86	62.90	68.30	3.18	H
7599.500	47.75	-31.81	35.90	43.66	74.00	26.25	V
11400.000	46.20	-31.15	38.10	39.25	74.00	27.80	H
17100.000	50.64	-25.12	41.50	34.27	68.30	17.66	H
17508.000	52.95	-24.83	41.20	36.59	68.30	15.35	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)
5676.400	62.88	-22.77	34.75	50.90	68.30	5.42	V
5768.800	63.81	-22.95	34.98	51.78	68.30	4.49	V
11440.000	45.16	-31.33	38.14	38.34	74.00	28.84	V
17160.000	51.33	-24.97	41.38	34.92	68.30	16.97	V
17443.000	53.31	-24.68	41.20	36.79	68.30	14.99	H
17592.000	51.99	-25.01	41.20	35.80	68.30	16.31	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)
5145.618	63.77	-33.58	34.38	62.97	74.00	10.23	V
5148.260	64.29	-33.57	34.39	63.47	74.00	9.71	H
10381.000	49.84	-31.46	37.48	43.82	68.30	18.45	H
15570.000	49.25	-25.74	40.14	34.85	74.00	24.75	V
17152.500	52.17	-24.99	41.39	35.77	68.30	16.13	V
17391.000	53.00	-24.55	41.20	36.35	68.30	15.30	H

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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)
5319.000	60.18	-23.66	34.62	49.22	74.00	13.82	V
5331.000	58.69	-23.68	34.58	47.79	74.00	15.31	H
10470.000	48.66	-31.46	37.57	42.55	68.30	19.64	V
15690.000	49.57	-25.35	40.29	34.63	74.00	24.43	V
17186.000	53.34	-24.91	41.33	36.92	68.30	14.96	H
17397.500	53.23	-24.57	41.20	36.59	68.30	15.07	H

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)
5208.600	62.41	-23.24	34.52	51.14	68.30	5.89	H
5336.200	64.03	-23.68	34.56	53.15	68.30	4.27	V
10528.000	48.55	-31.48	37.60	42.43	68.30	19.75	V
15810.000	50.01	-25.01	40.52	34.49	74.00	23.99	V
16685.500	53.12	-25.16	41.77	36.51	68.30	15.18	V
17287.500	53.44	-24.71	41.21	36.94	68.30	14.86	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)
5350.312	65.98	-33.35	34.50	64.83	74.00	8.02	V
5351.474	65.77	-33.35	34.50	64.62	74.00	8.23	V
10620.000	50.14	-31.65	37.64	44.15	74.00	23.86	H
15930.000	50.95	-24.93	40.73	35.14	74.00	23.05	V
16734.500	53.45	-25.13	41.80	36.78	68.30	14.85	H
17246.500	53.65	-24.78	41.25	37.18	68.30	14.65	V

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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)
5466.147	64.43	-32.93	34.43	62.93	68.30	3.87	V
5468.003	64.74	-32.93	34.44	63.24	68.30	3.56	H
11019.500	51.15	-30.88	37.80	44.23	74.00	22.85	V
16530.000	50.31	-25.44	41.53	34.23	68.30	17.99	V
16820.500	53.09	-25.18	41.80	36.47	68.30	15.21	V
17311.100	53.56	-24.67	41.20	37.03	68.30	14.74	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)
5537.400	63.09	-23.18	34.57	51.69	68.30	5.21	V
5642.000	64.56	-22.91	34.68	52.79	68.30	3.74	H
11180.000	49.54	-30.79	37.88	42.45	74.00	24.46	H
16770.000	51.35	-25.15	41.80	34.70	68.30	16.95	H
17179.000	53.92	-24.93	41.34	37.50	68.30	14.38	V
17381.500	53.95	-24.55	41.20	37.30	68.30	14.35	H

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)
5728.938	61.51	-22.73	34.86	49.38	68.30	6.79	H
5738.663	60.96	-22.78	34.88	48.87	68.30	7.34	V
11017.000	51.19	-30.88	37.80	44.27	74.00	22.81	V
17010.000	52.16	-25.25	41.77	35.64	68.30	16.14	H
17401.500	54.03	-24.58	41.20	37.40	68.30	14.27	V
17631.000	52.83	-25.07	41.23	36.67	68.30	15.47	V

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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)
5656.800	61.85	-22.84	34.71	49.98	68.30	6.45	H
5766.600	59.97	-22.94	34.97	47.94	68.30	8.33	V
7613.000	46.94	-31.76	35.90	42.80	74.00	27.06	V
11420.000	45.94	-31.24	38.12	39.06	74.00	28.06	H
17130.000	50.67	-25.05	41.44	34.28	68.30	17.63	V
17538.000	53.07	-24.91	41.20	36.78	68.30	15.23	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)
5149.345	68.51	-33.57	34.40	67.68	74.00	5.49	V
5149.677	68.16	-33.56	34.40	67.32	74.00	5.84	H
10358.000	52.98	-31.44	37.46	46.96	68.30	15.32	V
15540.000	48.48	-25.79	40.08	34.19	74.00	25.52	H
17261.500	53.29	-24.76	41.24	36.81	68.30	15.01	V
17398.500	52.89	-24.57	41.20	36.26	68.30	15.41	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)
5156.200	60.72	-23.24	34.41	49.55	68.30	7.58	V
5264.200	58.53	-23.53	34.63	47.43	68.30	9.77	H
10398.000	54.09	-31.46	37.50	48.05	68.30	14.21	V
15600.000	49.39	-25.66	40.20	34.85	74.00	24.61	H
17293.000	51.98	-24.70	41.21	35.48	68.30	16.32	V
17471.000	51.56	-24.74	41.20	35.11	68.30	16.74	H

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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)
5313.400	59.19	-23.65	34.65	48.20	68.30	9.11	H
5324.400	58.55	-23.67	34.60	47.62	68.30	9.75	H
10480.000	51.84	-31.46	37.58	45.71	68.30	16.46	H
15720.000	50.12	-25.24	40.34	35.03	74.00	23.88	V
17583.000	52.86	-25.00	41.20	36.66	68.30	15.44	H
17420.500	53.10	-24.62	41.20	36.52	68.30	15.20	H

Channel 52

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5215.200	64.18	-23.29	34.53	52.94	68.30	4.12	H
5315.400	64.06	-23.66	34.64	53.07	68.30	4.24	H
10513.500	51.16	-31.47	37.60	45.04	68.30	17.14	H
15780.000	50.31	-25.08	40.46	34.93	74.00	23.69	V
16839.000	53.92	-25.19	41.80	37.31	68.30	14.38	V
17329.000	53.71	-24.64	41.20	37.15	68.30	14.59	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)
5226.800	62.65	-23.37	34.55	51.47	68.30	5.65	H
5335.400	64.32	-23.68	34.56	53.44	68.30	3.98	H
10556.000	51.29	-31.49	37.60	45.18	68.30	17.01	H
15840.000	51.72	-24.94	40.58	36.08	74.00	22.28	H
16625.500	53.56	-25.28	41.65	37.19	68.30	14.74	H
17321.500	54.08	-24.65	41.20	37.53	68.30	14.22	V

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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)
5350.340	70.20	-23.60	34.50	59.30	74.00	3.80	V
5350.731	69.58	-23.59	34.50	58.68	74.00	4.42	H
10639.500	52.33	-31.71	37.68	46.37	74.00	21.67	H
15960.000	51.56	-25.04	40.76	35.84	74.00	22.44	H
16959.500	53.28	-25.24	41.80	36.72	68.30	15.02	V
17530.500	53.94	-24.89	41.20	37.62	68.30	14.36	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)
5465.762	64.36	-32.93	34.43	62.86	68.30	3.94	H
5468.622	64.72	-32.93	34.44	63.22	68.30	3.58	V
10998.500	54.20	-30.91	37.80	47.32	74.00	19.80	V
16500.000	50.47	-25.43	41.50	34.40	68.30	17.83	V
17095.000	53.01	-25.14	41.51	36.63	68.30	15.29	H
17554.500	53.91	-24.95	41.20	37.66	68.30	14.39	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)
5542.400	63.28	-23.19	34.58	51.89	68.30	5.02	H
5620.200	64.26	-23.02	34.64	52.63	68.30	4.04	V
11162.500	53.19	-30.77	37.86	46.10	74.00	20.81	H
16740.000	51.05	-25.13	41.80	34.38	68.30	17.25	V
17215.500	53.13	-24.84	41.28	36.69	68.30	15.17	H
17462.500	53.46	-24.72	41.20	36.99	68.30	14.84	H

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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)
5725.188	59.69	-32.62	34.85	57.46	68.30	8.61	H
5726.288	59.13	-32.63	34.85	56.91	68.30	9.17	V
7599.500	46.52	-31.81	35.90	42.43	74.00	27.48	H
11400.000	45.97	-31.15	38.10	39.01	74.00	28.03	V
17100.000	52.07	-25.12	41.50	35.69	68.30	16.23	V
17521.000	53.49	-24.87	41.20	37.16	68.30	14.81	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)
5666.200	62.91	-22.80	34.73	50.97	68.30	5.39	V
5778.200	62.13	-23.00	35.01	50.12	68.30	6.17	H
11440.000	46.47	-31.33	38.14	39.66	74.00	27.53	H
17160.000	50.84	-24.97	41.38	34.44	68.30	17.46	H
17332.000	53.09	-24.64	41.20	36.53	68.30	15.21	V
17456.000	53.56	-24.71	41.20	37.07	68.30	14.74	V

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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)
5148.627	63.90	-33.57	34.39	63.07	74.00	10.10	V
5149.887	63.66	-33.56	34.40	62.83	74.00	10.34	V
10380.000	49.74	-31.46	37.48	43.72	68.30	18.56	V
15570.000	49.17	-25.74	40.14	34.77	74.00	24.83	V
17231.000	52.38	-24.81	41.27	35.92	68.30	15.92	V
17525.000	52.44	-24.88	41.20	36.12	68.30	15.86	V

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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)
5323.200	59.29	-23.67	34.61	48.34	74.00	14.71	V
5331.400	58.94	-23.68	34.57	48.05	74.00	15.06	H
10459.500	48.01	-31.46	37.56	41.91	68.30	20.29	H
15690.000	50.51	-25.35	40.29	35.57	74.00	23.49	H
17070.000	51.70	-25.20	41.59	35.31	68.30	16.60	V
17249.500	52.48	-24.78	41.25	36.01	68.30	15.82	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)
5210.800	63.87	-23.26	34.52	52.61	68.30	4.43	H
5338.400	63.87	-23.69	34.55	53.01	68.30	4.43	H
10536.500	48.57	-31.48	37.60	42.45	68.30	19.73	H
15810.000	50.30	-25.01	40.52	34.79	74.00	23.70	H
16687.000	53.13	-25.16	41.77	36.52	68.30	15.17	H
17335.500	53.20	-24.63	41.20	36.63	68.30	15.10	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)
5350.717	65.14	-33.35	34.50	63.99	74.00	8.86	V
5351.878	65.50	-33.34	34.50	64.34	74.00	8.50	H
10632.000	48.80	-31.69	37.66	42.83	74.00	25.20	H
15930.000	51.36	-24.93	40.73	35.56	74.00	22.64	H
16757.500	53.27	-25.14	41.80	36.61	68.30	15.03	H
17327.500	53.06	-24.64	41.20	36.50	68.30	15.24	V

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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)
5465.453	64.32	-32.93	34.43	62.82	68.30	3.98	V
5466.166	64.30	-32.93	34.43	62.80	68.30	4.00	H
11020.000	38.53	-30.88	37.80	31.61	68.30	29.77	H
15947.500	39.16	-24.99	40.75	23.40	68.30	29.14	V
17971.000	39.51	-24.76	41.20	23.07	68.30	28.79	V
17992.500	39.62	-24.82	41.20	23.24	68.30	28.68	H

Channel 118

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5532.600	60.38	-23.17	34.57	48.98	68.30	7.92	H
5658.200	61.65	-22.83	34.72	49.77	68.30	6.65	V
11188.500	49.48	-30.79	37.89	42.39	74.00	24.52	H
16770.000	50.71	-25.15	41.80	34.06	68.30	17.59	H
17029.500	53.51	-25.26	41.71	37.06	68.30	14.79	V
17569.000	53.40	-24.98	41.20	37.17	68.30	14.90	H

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)
5731.538	61.24	-22.75	34.86	49.12	68.30	7.06	H
5735.375	61.62	-22.77	34.87	49.52	68.30	6.68	V
7559.500	46.70	-31.97	35.98	42.69	74.00	27.30	H
11340.000	47.51	-30.87	38.10	40.28	74.00	26.49	V
17010.000	51.10	-25.25	41.77	34.58	68.30	17.20	H
17631.000	53.27	-25.07	41.23	37.12	68.30	15.02	H

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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)
5654.600	59.39	-22.85	34.71	47.53	68.30	8.91	V
5768.400	61.14	-22.95	34.97	49.11	68.30	7.16	V
7612.500	47.21	-31.76	35.90	43.07	74.00	26.79	V
11420.000	45.72	-31.24	38.12	38.84	74.00	28.28	H
17120.000	50.93	-25.07	41.46	34.54	68.30	17.37	H
17280.000	54.57	-24.73	41.22	38.08	68.30	13.73	V

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Channel 42

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5147.770	62.33	-23.28	34.39	51.22	74.00	11.67	H
5148.540	61.85	-23.28	34.39	50.73	74.00	12.15	H
10429.500	49.41	-31.46	37.53	43.34	68.30	18.89	H
15630.000	48.72	-25.56	40.23	34.05	74.00	25.28	V
16693.500	52.96	-25.14	41.79	36.32	68.30	15.34	H
17371.500	53.43	-24.57	41.20	36.80	68.30	14.87	V

Channel 58

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5350.096	62.52	-23.60	34.50	51.62	74.00	11.48	H
5350.690	63.37	-23.59	34.50	52.46	74.00	10.63	V
10580.000	45.66	-31.52	37.60	39.58	68.30	22.64	H
15870.000	51.29	-24.87	40.64	35.52	74.00	22.71	V
16906.500	53.42	-25.22	41.80	36.84	68.30	14.88	V
17181.000	53.53	-24.92	41.34	37.11	68.30	14.77	V

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Channel 106

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5464.028	63.03	-32.93	34.43	61.54	68.30	5.27	H
5467.103	62.76	-32.93	34.43	61.26	68.30	5.54	H
11060.000	47.30	-30.81	37.80	40.31	74.00	26.70	V
16590.000	50.46	-25.36	41.59	34.23	68.30	17.84	V
17099.000	53.54	-25.13	41.50	37.17	68.30	14.76	H
17471.000	53.83	-24.74	41.20	37.37	68.30	14.47	V

Channel 122

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)
5731.137	58.83	-22.74	34.86	46.71	68.30	9.47	V
5734.062	58.42	-22.76	34.87	46.31	68.30	9.88	V
11220.000	45.83	-30.82	37.94	38.71	74.00	28.17	V
16830.000	50.96	-25.18	41.80	34.34	68.30	17.34	H
17279.500	53.37	-24.73	41.22	36.88	68.30	14.93	V
17128.500	53.52	-25.05	41.44	37.13	68.30	14.77	H

Channel 138

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)
5583.800	63.72	-23.15	34.60	52.26	68.30	4.58	H
5800.200	63.54	-23.05	35.10	51.49	68.30	4.76	H
7586.000	46.55	-31.86	35.93	42.48	74.00	27.45	H
11420.000	46.34	-31.24	38.12	39.46	74.00	27.66	V
17130.000	51.23	-25.05	41.44	34.84	68.30	17.07	H
17449.000	53.09	-24.69	41.20	36.58	68.30	15.21	H

Conclusion: PASS

Note:

1. The spurious emission above 18G is noise only.
2. All emissions below 30MHz are more than 20 dB below the limit

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A.7. AC Powerline Conducted Emission (150kHz- 30MHz)

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.

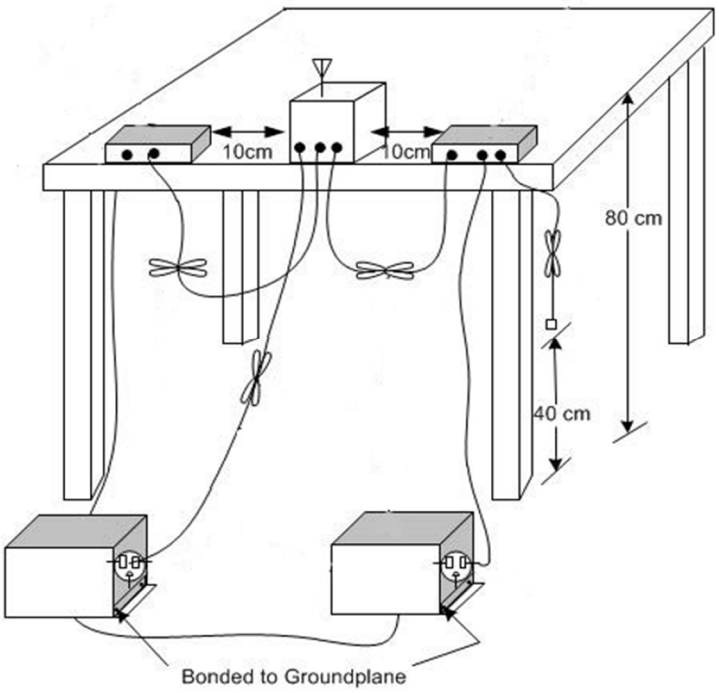
The measurement bandwidth is:

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

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Setup



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Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.58	Fig.59	P
0.5 to 5	56			
5 to 30	60			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	67 56 to 46	Fig.58	Fig.59	P
0.5 to 5	46			
5 to 30	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Conclusion: PASS

Test graphs as below:

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Traffic:

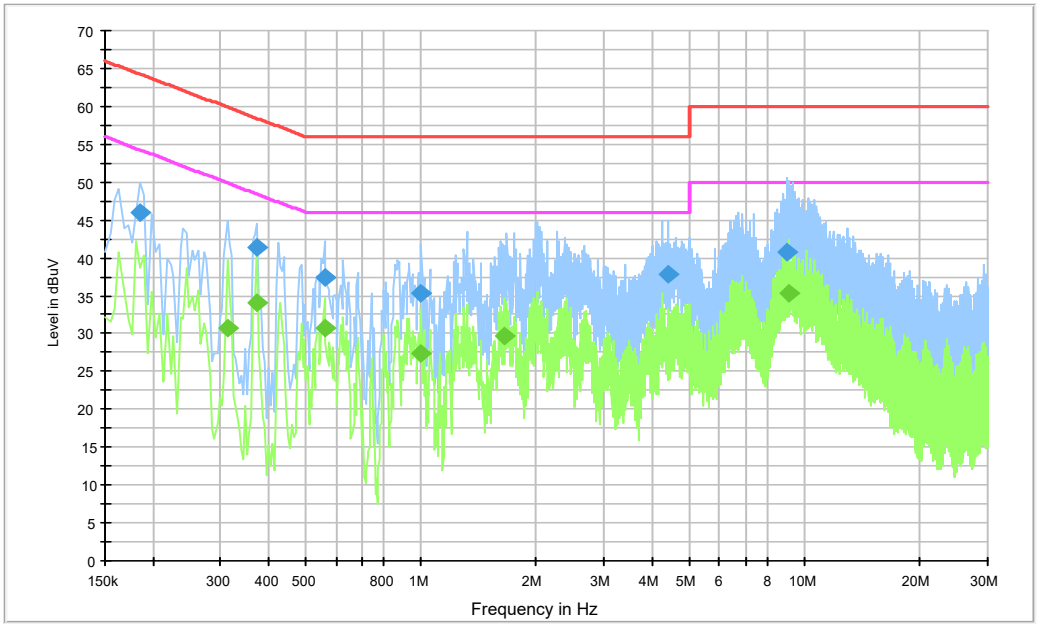

Fig.58 AC Powerline Conducted Emission-Traffic

Note1: 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 (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	46.0	2000.	9.000	N	19.5	18.2	64.2
0.375000	41.4	2000.	9.000	N	19.5	17.0	58.4
0.559500	37.3	2000.	9.000	N	19.5	18.7	56.0
1.000500	35.2	2000.	9.000	L1	19.5	20.8	56.0
4.389000	37.9	2000.	9.000	N	19.6	18.1	56.0
8.965500	40.8	2000.	9.000	L1	19.7	19.2	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.312000	30.7	2000.0	9.000	L1	19.5	19.2	49.9
0.375000	34.2	2000.0	9.000	N	19.5	14.2	48.4
0.559500	30.6	2000.0	9.000	N	19.5	15.4	46.0
1.000500	27.4	2000.0	9.000	L1	19.5	18.6	46.0
1.653000	29.6	2000.0	9.000	N	19.5	16.4	46.0
9.127500	35.3	2000.0	9.000	N	19.7	14.7	50.0

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Idle

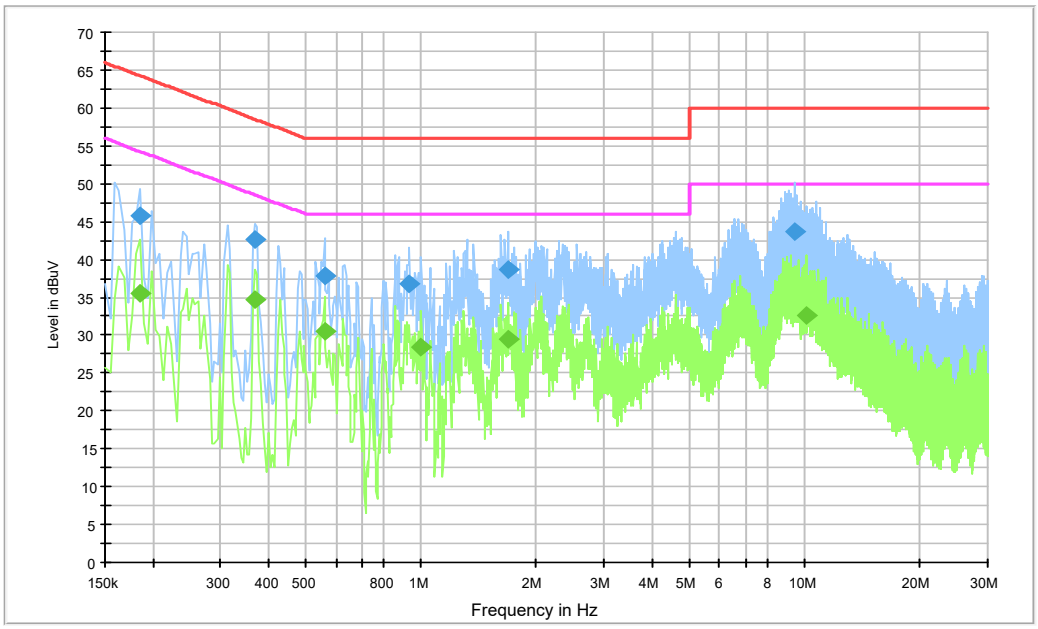

Fig.59 AC Powerline Conducted Emission-Idle

Note1: 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 (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	45.8	2000.	9.000	N	19.5	18.4	64.2
0.370500	42.6	2000.	9.000	L1	19.5	15.9	58.5
0.559500	37.7	2000.	9.000	L1	19.5	18.3	56.0
0.933000	36.8	2000.	9.000	N	19.5	19.2	56.0
1.693500	38.8	2000.	9.000	N	19.5	17.2	56.0
9.393000	43.7	2000.	9.000	N	19.7	16.3	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	35.6	2000.0	9.000	N	19.5	18.6	54.2
0.370500	34.7	2000.0	9.000	L1	19.5	13.8	48.5
0.559500	30.5	2000.0	9.000	L1	19.5	15.5	46.0
1.000500	28.4	2000.0	9.000	N	19.5	17.6	46.0
1.693500	29.5	2000.0	9.000	N	19.5	16.5	46.0
10.158000	32.6	2000.0	9.000	L1	19.7	17.4	50.0

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A.8. 99% Occupied bandwidth

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

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% ofthe total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

Measurement Result:

Mode	Frequency	99% Occupied bandwidth (MHz)		conclusion
802.11a	5180 MHz	Fig.60	18.53	P
	5200 MHz	Fig.61	18.53	P
	5240 MHz	Fig.62	18.53	P
802.11ac HT20	5180 MHz	Fig.63	18.53	P
	5200 MHz	Fig.64	18.53	P
	5240 MHz	Fig.65	18.46	P
802.11ac HT40	5190 MHz	Fig.66	36.54	P
	5230 MHz	Fig.67	36.41	P
802.11ac HT80	5210 MHz	Fig.68	75.90	P

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Conclusion: PASS

Test graphs as below:

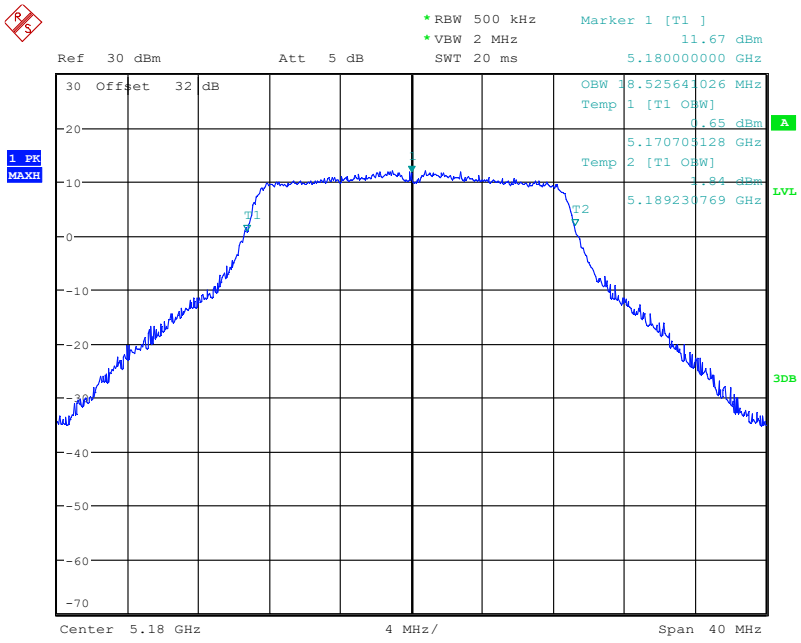

Fig.60 99% Occupied bandwidth (802.11a, 5180MHz)

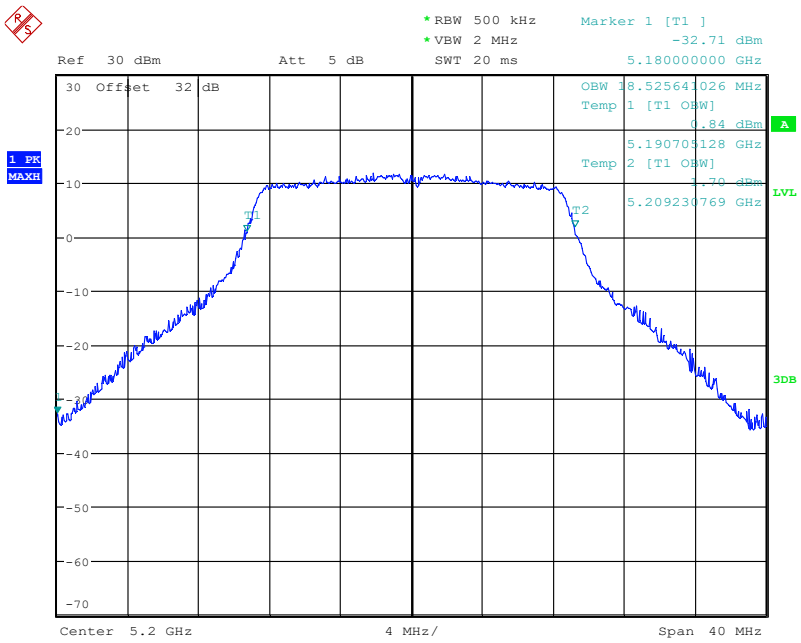

Fig.61 99% Occupied bandwidth (802.11a, 5200MHz)

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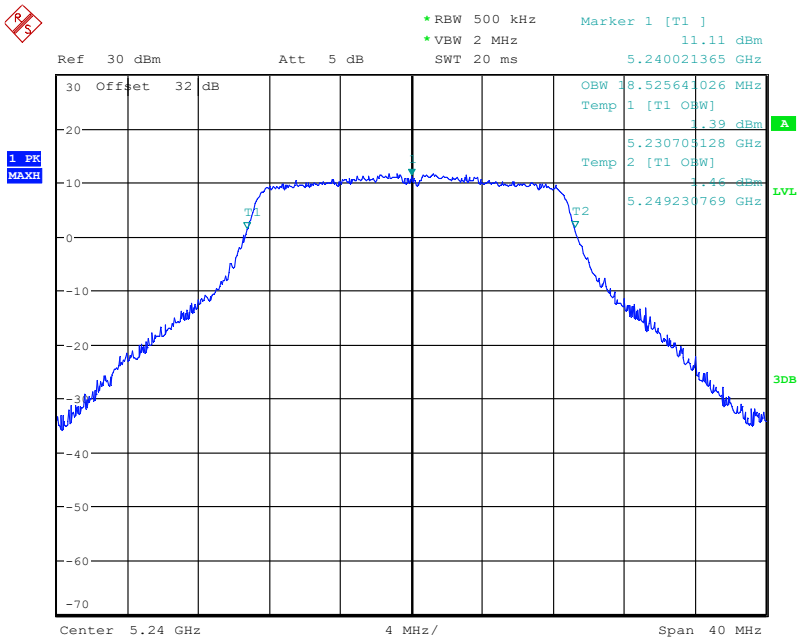

Fig.62 99% Occupied bandwidth (802.11a, 5240MHz)

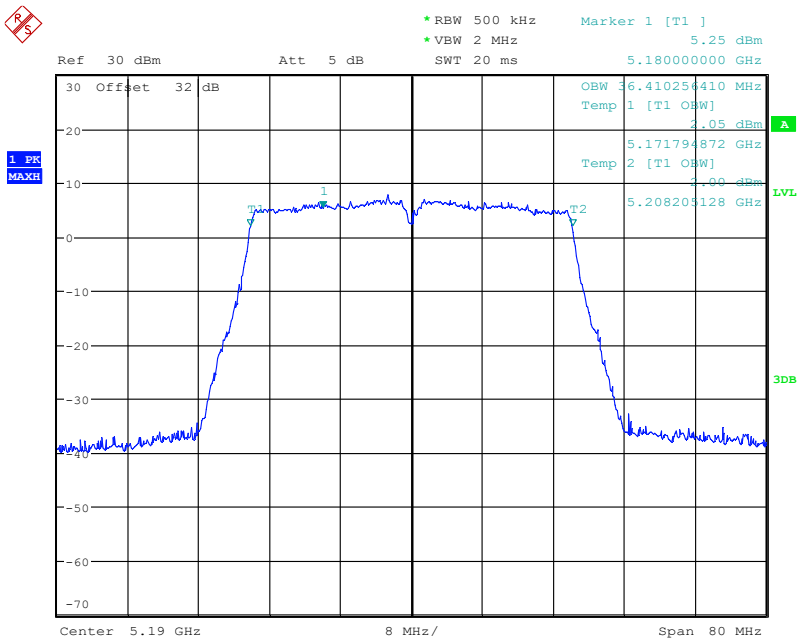

Fig.63 99% Occupied bandwidth (802.11ac-HT20, 5180MHz)

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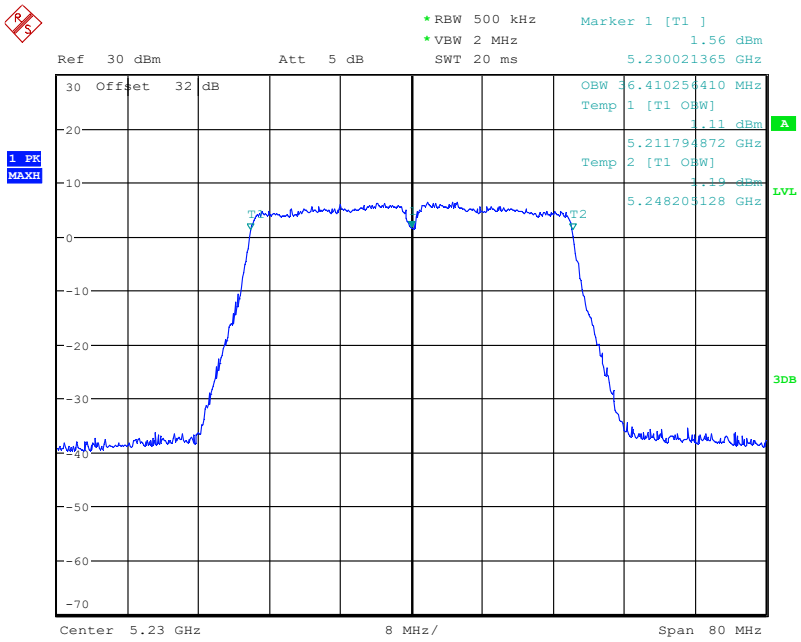

Fig.64 99% Occupied bandwidth (802.11ac-HT20, 5200MHz)

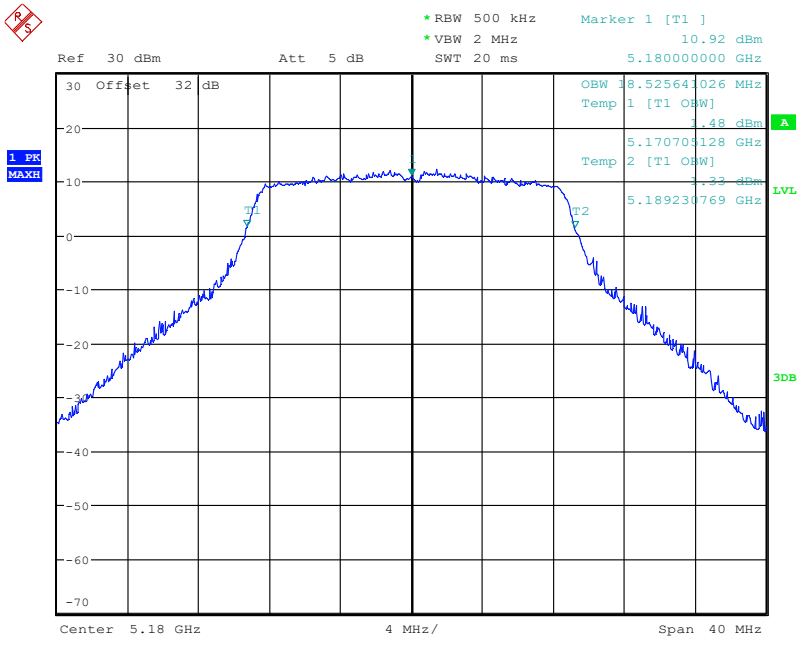

Fig.65 99% Occupied bandwidth (802.11ac-HT20, 5240MHz)

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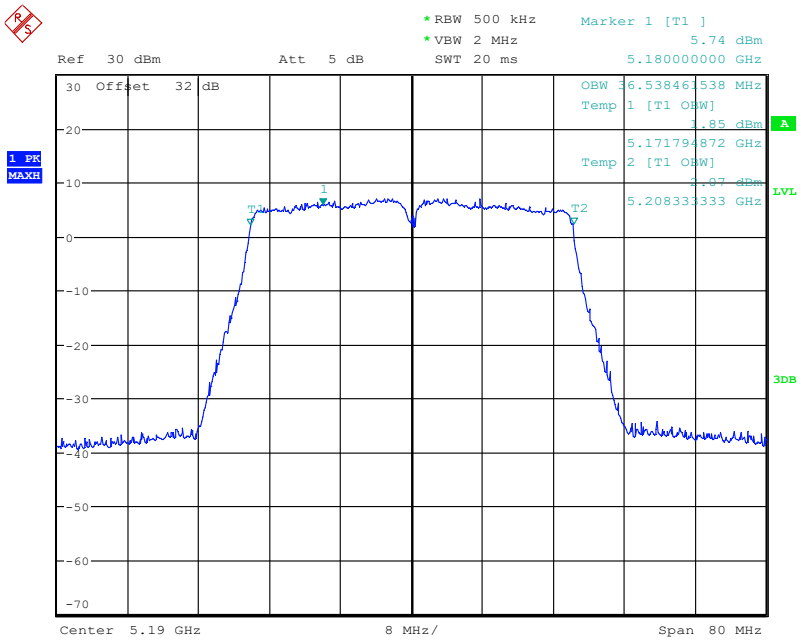

Fig.66 99% Occupied bandwidth (802.11ac-HT40, 5190MHz)

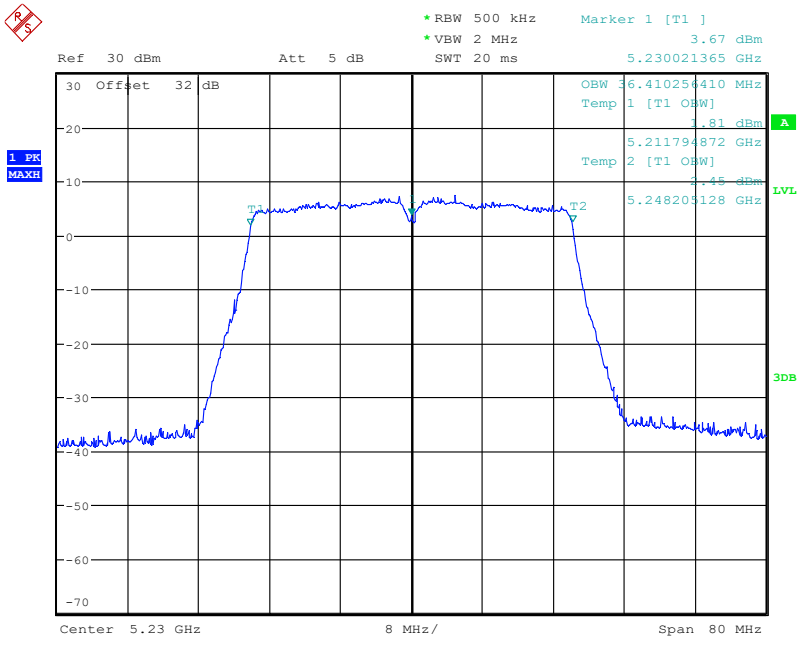

Fig.67 99% Occupied bandwidth (802.11ac-HT40, 5230MHz)

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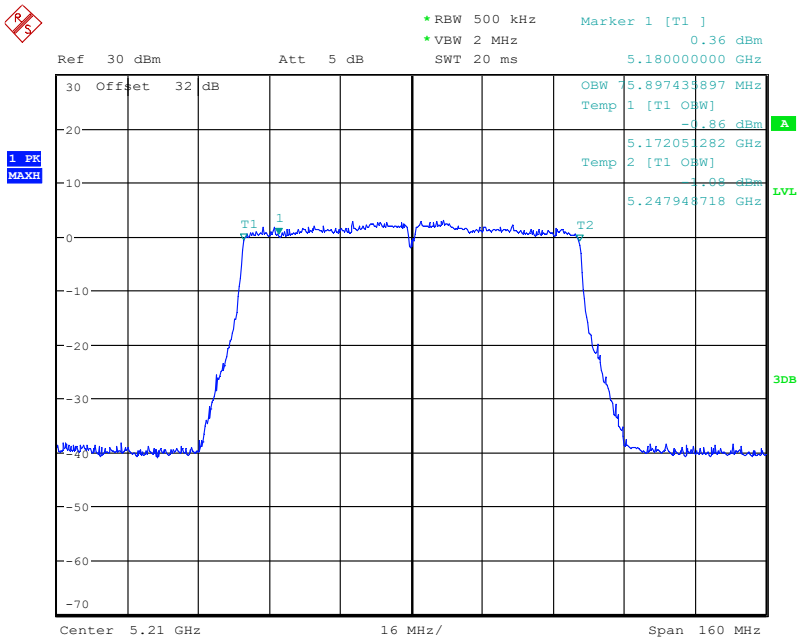

Fig.68 99% Occupied bandwidth (802.11ac-HT80, 5210MHz)

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A.9. Power control

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

ANNEX B: EUT parameters

Disclaimer: The antenna gain 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 26th day of June 2023.

Mr. Trace McInturff, 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 *****

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