FCC PART 15E
TEST REPORT
No.24T04Z200327-002

for

Samsung Electronics Co., Ltd.

Multi-band GSM/WCDMA/LTE Tablet with Bluetooth,WLAN

SM-X117U

FCC ID:ZCASMX117U

with

Hardware Version: REV1.0

Software Version: X117U.001

Issued Date: 2025-02-12

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
24T04Z200327-002	Rev.0	1st edition	2025-02-12

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

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

1.2. Testing Location

Conducted testing Location: CTTL(Huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China100191

Radiated testing Location: CTTL (BDA)

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

1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project date

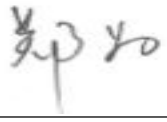
Testing Start Date: 2024-12-18

Testing End Date: 2025-02-12

1.5. Signature

Yao Xingyu

(Prepared this test report)



Zheng Wei

(Reviewed this test report)

Pang Shuai

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Samsung Electronics Co., Ltd.
Address:	19 Chapin Rd.,Building D Pine Brook, NJ 07058
Contact:	Jenni Chun
Email:	j1.chun@samsung.com
Telephone:	+1-201-937-4203
Fax:	/

2.2. Manufacturer Information

Company Name:	Samsung Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea
Contact:	Kobe Cho
Email:	ggobi.cho@samsung.com
Telephone:	+82 - 10 - 2722 - 4159
Fax:	/

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

3.1. About EUT

Description	Multi-band GSM/WCDMA/LTE Tablet with Bluetooth,WLAN
Model name	SM-X117U
FCC ID	ZCASMX117U
WLAN Frequency Band	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Normal Voltage	3.82V
Extreme High Voltage	4.4V
Extreme Low Voltage	3.45V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
UT20a	2404200327UT20a	REV1.0	X117U.001	2025-01-09
UT06a	2404200327UT06a	REV1.0	X117U.001	2024-12-18

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

UT20a is used for Conduction test, UT06a is used for Radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Name	Model	Manufacturer
AE1	Battery	HQ-6739SDS	SCUD(Fujian) Electronics Co., LTD.
AE2*	Adapter	EP-T1510	DONGYANG
AE3	Date Cable C-C	EP-DN980BWE	Cresyn Electronics(Dongguan)co;Ltd.

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

*AE2 is not the AE for EUT, provided by the lab for relevant tests.

3.4. General Description

The Equipment under Test (EUT) is a model of Multi-band GSM/WCDMA/LTE 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
UNII: KDB 789033 D02	General U-NII Test Procedures New Rules v02r01	2017-12

Note:UNII: KDB 789033 D02 is not in the scope of ISO/IEC 17025 accreditation by A2LA.

5. Laboratory Environment

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. Test Results

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
Maximum Output Power	15.407	/	**P**
Peak Power Spectral Density	15.407	/	**P**
26dB Emission Bandwidth	15.403	/	**P**
Radiated Unwanted Emission	15.407, 15.205, 15.209	/	**P**
AC Powerline Conducted Emission	15.107, 15.207	/	**P**
99% Occupied bandwidth	/	/	**P**
Transmit Power Control	15.407	/	**NA**

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

Terms used in Verdict column

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

6.2. Statements

CTTL has evaluated the test cases as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.

This report only deals with the WLAN function among the features described in section 3.

6.3. Test Conditions

For this report, all the test cases are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	26°C
Voltage	3.82V
Humidity	44%

7. Test Facilities Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2025-08-11
2	Vector Signal Analyzer	FSW67	104051	Rohde & Schwarz	1 year	2025-04-30
3	Attenuator	10dB/2W	/	Rosenberger	/	/
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESU26	100376	R&S	1 year	2025-06-06
2	Test Receiver	ESW44	103015	R&S	1 year	2025-02-18
3	Loop Antenna	HFH2-Z2	829324/007	R&S	2 years	2026-01-04
4	EMI Antenna	VULB9163	235	Schwarzbeck	1 year	2025-08-27
5	EMI Antenna	3117	00058888	ETS-Lindgren	1 year	2025-09-18
6	EMI Antenna	LB-180400-25-C-KF	2110084000006	A-INFO	1 year	2025-05-15

AC Power Line Conducted Emission

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	LISN	ENV216	101459	R&S	1 year	2025-05-16
2	Test Receiver	ESCI	100766	R&S	1 year	2025-04-18

8. Measurement Uncertainty

8.1 Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

8.2 Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

8.3 26dB Emission Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

8.4 Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

8.5 Spurious Emissions

Conducted (k=1.96)

Frequency Range	Uncertainty(dB)
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

8.6 Radiated Unwanted Emission

Frequency Range	Uncertainty(dB) (k=2)
9kHz-30MHz	3.96
30MHz ≤ f ≤ 1GHz	5.73
1GHz ≤ f ≤18GHz	5.62
18GHz ≤ f ≤40GHz	3.52

8.7 AC Power-line Conducted Emission

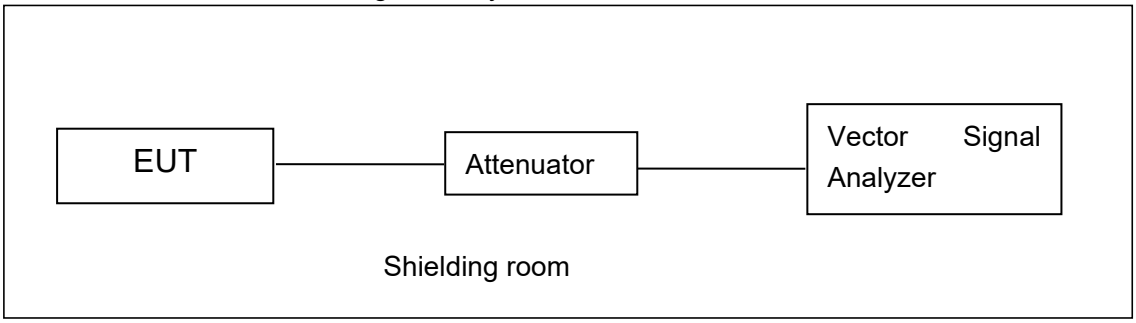
Measurement Uncertainty: 3.10dB, k=2

ANNEX A: Detailed Test Results

A.1. Measurement Method

A.1.1. Conducted Measurements

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



A.1.2. Radiated Emission Measurements

Measurement performed according to Clause 6.4, 6.5, 6.6 in ANSI C63.10 and II.G.4, II.G.5, II.G.6 in KDB 789033.

The radiated emission test is performed in semi-anechoic chamber. The EUT was placed on a non-conductive table with 80cm above the ground plane for measurement below 1GHz and 1.5m above the ground plane for measurement above 1GHz. The measurement antenna was placed at a distance of 3 meters from the EUT. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated from 0° to 360°and the measurement antenna is moved from 1m to 4m to get the maximization result. The maximization process was repeated with the EUT positioned in each of its three orthogonal orientations

A.2. Maximum output Power

Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	24dBm
	5250MHz~5350MHz	24dBm or 11+10logB
	5470MHz~5725MHz	24dBm or 11+10logB

Limit use the less value, and B is the 26dB bandwidth.

The measurementmethod SA-2 is made according to KDB 789033

A.2.1 Antenna Gain

Antenna gain is -1.2dBi and the value is supplied by the applicant or manufacturer.

A.2.2 Maximum output Power-Conducted

EUT ID: UT20a

Measurement Results:

802.11a mode

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	14.69	14.62	14.63	14.65	14.66	14.45	14.68	14.66
	5200MHz	15.08	/	/	/	/	/	/	/
	5240MHz	15.06	/	/	/	/	/	/	/
	5260MHz	15.10	/	/	/	/	/	/	/
	5280MHz	15.02	/	/	/	/	/	/	/
	5320MHz	15.03	/	/	/	/	/	/	/
	5500MHz	13.01	/	/	/	/	/	/	/
	5580MHz	13.04	/	/	/	/	/	/	/
	5700MHz	13.71	/	/	/	/	/	/	/
	5720MHz	13.39	/	/	/	/	/	/	/

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	14.56	14.52	14.46	14.36	14.55	14.53	14.52	14.33
	5200MHz	14.87	/	/	/	/	/	/	/
	5240MHz	14.96	/	/	/	/	/	/	/
	5260MHz	14.98	/	/	/	/	/	/	/
	5280MHz	14.81	/	/	/	/	/	/	/
	5320MHz	14.85	/	/	/	/	/	/	/

	5500MHz	12.81	/	/	/	/	/	/	/	/
	5580MHz	12.93	/	/	/	/	/	/	/	/
	5700MHz	13.47	/	/	/	/	/	/	/	/
	5720MHz	13.06	/	/	/	/	/	/	/	/

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

802.11ac-VHT20 mode

Mode	Frequency	Test Result (dBm)								
		Data Rate								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
802.11ac (VHT20)	5180MHz	14.60	14.50	14.43	14.52	14.48	14.57	14.01	14.00	13.26
	5200MHz	14.86	/	/	/	/	/	/	/	/
	5240MHz	14.93	/	/	/	/	/	/	/	/
	5260MHz	14.94	/	/	/	/	/	/	/	/
	5280MHz	14.81	/	/	/	/	/	/	/	/
	5320MHz	14.79	/	/	/	/	/	/	/	/
	5500MHz	12.78	/	/	/	/	/	/	/	/
	5580MHz	12.89	/	/	/	/	/	/	/	/
	5700MHz	13.46	/	/	/	/	/	/	/	/
	5720MHz	13.08	/	/	/	/	/	/	/	/

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

802.11n-HT40 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz	15.16	15.12	14.97	15.08	15.15	15.13	15.11	15.16
	5230MHz	15.13	/	/	/	/	/	/	/
	5270MHz	15.19	/	/	/	/	/	/	/
	5310MHz	15.20	/	/	/	/	/	/	/
	5510MHz	12.50	/	/	/	/	/	/	/
	5550MHz	12.18	/	/	/	/	/	/	/
	5670MHz	12.93	/	/	/	/	/	/	/
	5710MHz	13.11	/	/	/	/	/	/	/

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

802.11ac-VHT40 mode

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (VHT40)	5190MHz	15.19	15.13	15.18	15.17	14.83	14.97	14.59	14.14	13.86	13.61
	5230MHz	15.14	/	/	/	/	/	/	/	/	/
	5270MHz	15.18	/	/	/	/	/	/	/	/	/
	5310MHz	15.16	/	/	/	/	/	/	/	/	/
	5510MHz	12.37	/	/	/	/	/	/	/	/	/
	5550MHz	12.16	/	/	/	/	/	/	/	/	/
	5670MHz	12.85	/	/	/	/	/	/	/	/	/
	5710MHz	13.09	/	/	/	/	/	/	/	/	/

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

802.11ac-VHT80 mode

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (VHT80)	5210MHz	14.90	14.89	14.62	14.86	14.71	14.81	14.83	14.77	14.57	14.82
	5290MHz	14.96	/	/	/	/	/	/	/	/	/
	5530MHz	13.38	/	/	/	/	/	/	/	/	/
	5610MHz	13.23	/	/	/	/	/	/	/	/	/
	5690MHz	13.73	/	/	/	/	/	/	/	/	/

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

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Maximum output Power：11a CH52

The duty cycle of all mode

Mode	802.11a	802.11n20	802.11ac20	802.11n40	802.11ac40	802.11ac80
Duty Cycle	98%	97%	97%	94%	94%	90%

Duty cycle

Conclusion: PASS

A.3. Peak Power Spectral Density (conducted)

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	11
	5250MHz~5350MHz	11
	5470MHz~5725MHz	11

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

EUT ID: UT20a

Measurement Results:

TestMode	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	5180	4.35	≤11.00	PASS
	5200	5.03	≤11.00	PASS
	5240	5.07	≤11.00	PASS
	5260	4.99	≤11.00	PASS
	5280	4.92	≤11.00	PASS
	5320	4.75	≤11.00	PASS
	5500	2.65	≤11.00	PASS
	5580	2.95	≤11.00	PASS
	5700	3.55	≤11.00	PASS
	5720	3.41	≤11.00	PASS
11N20SISO	5180	4.30	≤11.00	PASS
	5200	4.66	≤11.00	PASS
	5240	4.56	≤11.00	PASS
	5260	4.58	≤11.00	PASS
	5280	4.44	≤11.00	PASS
	5320	4.50	≤11.00	PASS
	5500	2.34	≤11.00	PASS
	5580	2.64	≤11.00	PASS
	5700	3.06	≤11.00	PASS
	5720	2.93	≤11.00	PASS
11N40SISO	5190	2.29	≤11.00	PASS
	5230	1.97	≤11.00	PASS
	5270	1.93	≤11.00	PASS
	5310	2.03	≤11.00	PASS
	5510	-0.90	≤11.00	PASS
	5550	-1.05	≤11.00	PASS
	5670	-0.22	≤11.00	PASS
	5710	-0.04	≤11.00	PASS
11AC80SISO	5210	-1.58	≤11.00	PASS
	5290	-1.35	≤11.00	PASS

	5530	-2.92	≤11.00	PASS
	5610	-2.94	≤11.00	PASS
	5690	-2.28	≤11.00	PASS

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Peak Power Spectral Density:11a CH48

Conclusion: PASS

A.4. 26dB Emission Bandwidth (conducted)

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.403 (i)	/

The measurement is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

EUT ID: UT20a

Measurement Result:

TestMode	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	5180	20.08	5170.04	5190.12	---	---
	5200	19.92	5190.04	5209.96	---	---
	5240	19.92	5230.12	5250.04	---	---
	5260	19.96	5250.00	5269.96	---	---
	5280	19.92	5270.08	5290.00	---	---
	5320	20.04	5309.96	5330.00	---	---
	5500	19.92	5490.04	5509.96	---	---
	5580	20.08	5570.04	5590.12	---	---
	5700	20.04	5690.00	5710.04	---	---
	5720	19.84	5710.12	5729.96	---	---
11N20SISO	5180	20.24	5169.92	5190.16	---	---
	5200	20.20	5189.84	5210.04	---	---
	5240	20.20	5229.92	5250.12	---	---
	5260	20.24	5249.88	5270.12	---	---
	5280	20.20	5269.92	5290.12	---	---
	5320	20.28	5309.88	5330.16	---	---
	5500	20.20	5489.96	5510.16	---	---
	5580	20.28	5569.92	5590.20	---	---
	5700	20.16	5689.92	5710.08	---	---
	5720	20.16	5709.92	5730.08	---	---
11N40SISO	5190	41.12	5169.36	5210.48	---	---
	5230	40.96	5209.44	5250.40	---	---
	5270	40.96	5249.60	5290.56	---	---
	5310	40.96	5289.36	5330.32	---	---
	5510	40.64	5489.68	5530.32	---	---
	5550	41.20	5529.44	5570.64	---	---
	5670	41.12	5649.52	5690.64	---	---
	5710	41.12	5689.44	5730.56	---	---
11AC80SISO	5210	81.92	5169.20	5251.12	---	---
	5290	81.44	5249.20	5330.64	---	---

	5530	81.28	5489.36	5570.64	---	---
	5610	81.28	5569.36	5650.64	---	---
	5690	81.60	5649.20	5730.80	---	---

Test graphs as below:

11A_5180

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11A_5200

17:20:17 17.01.2025

11A_5240

17:07:35 17.01.2025

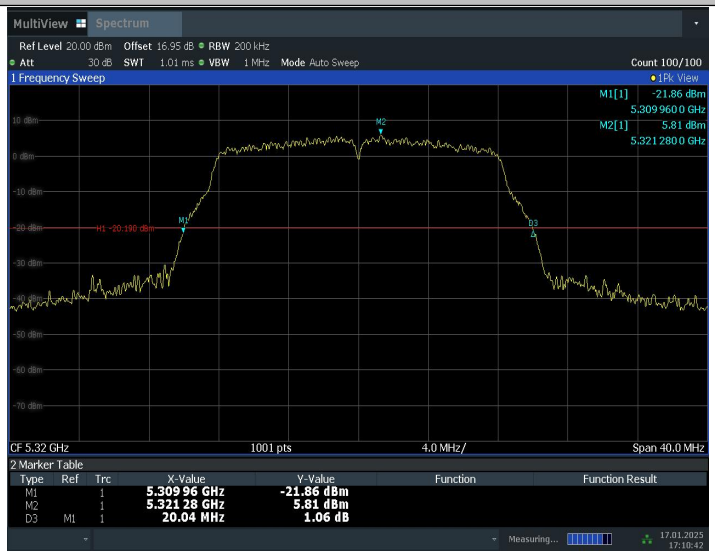
11A_5260

17:08:38 17.01.2025

11A_5280

17:09:41 17.01.2025

11A_5320



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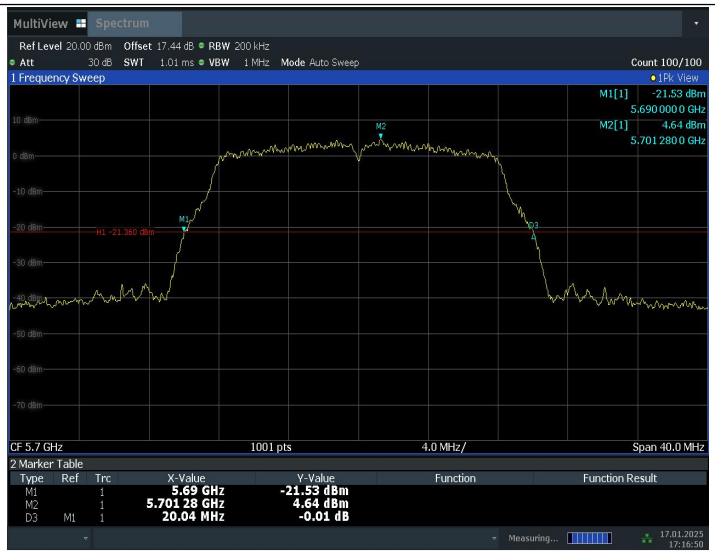
11A_5500

17:11:44 17.01.2025

11A_5580

17:14:58 17.01.2025

11A_5700



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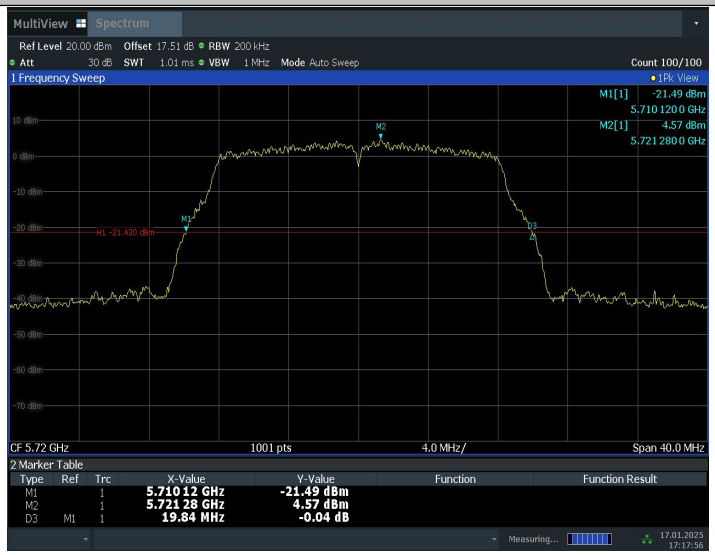

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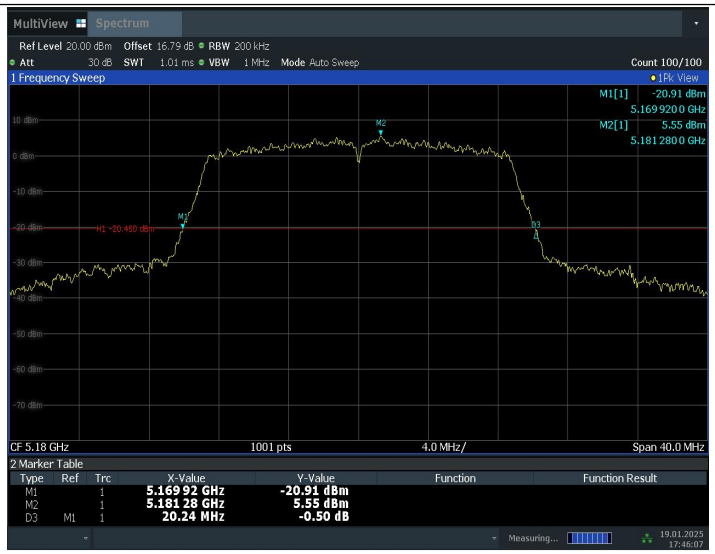

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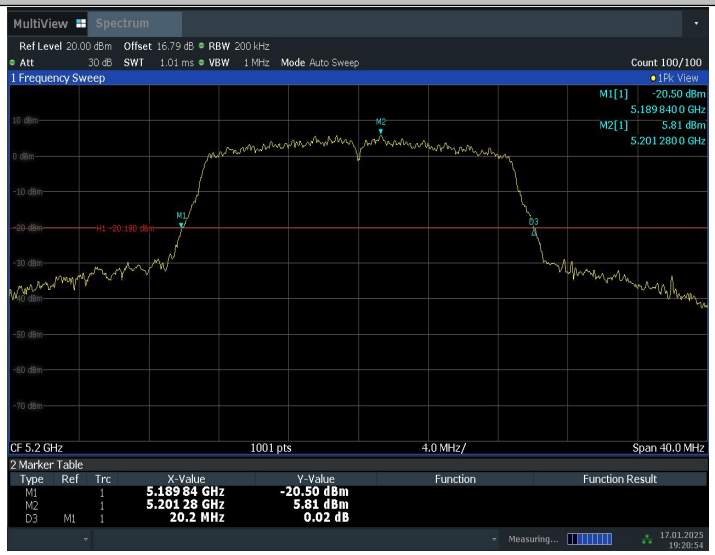
11N20SISO_5200



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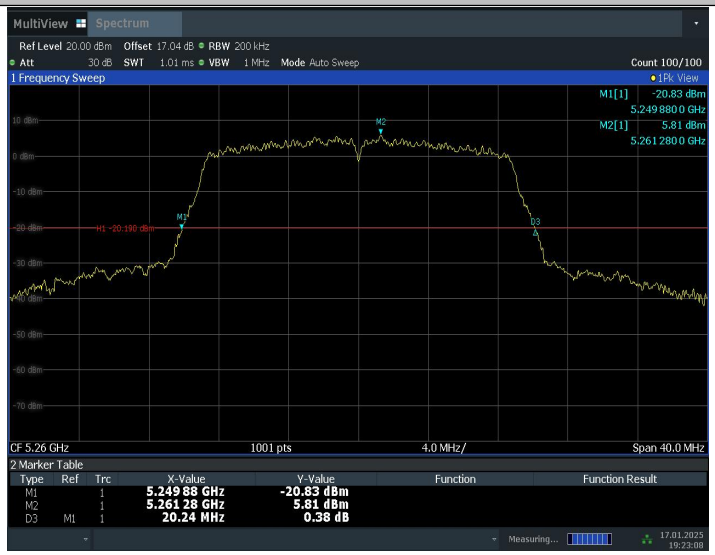

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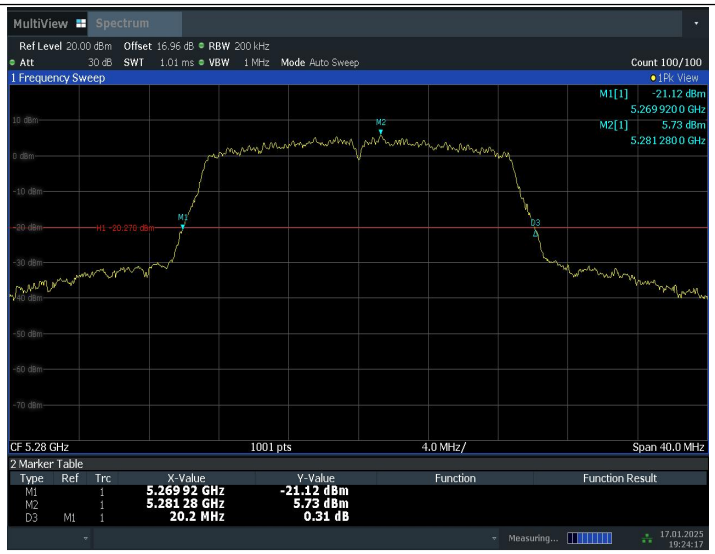

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19:25:20 17.01.2025

11N20SISO_5500

19:26:26 17.01.2025

11N20SISO_5580

19:27:31 17.01.2025

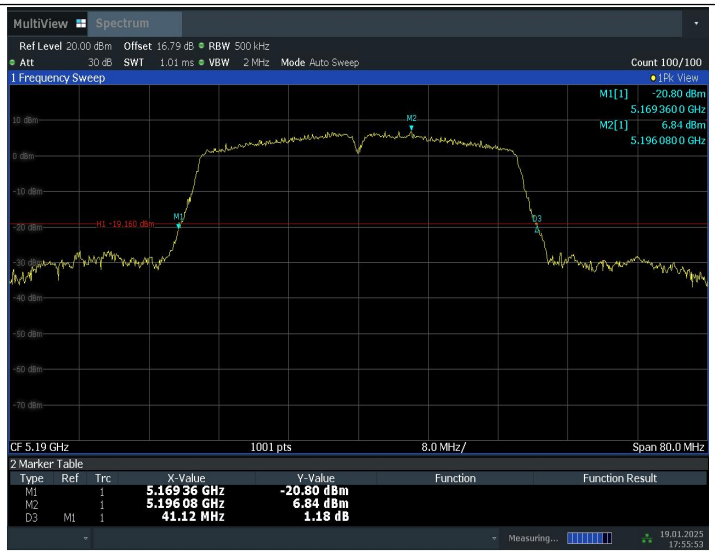
11N20SISO_5700

19:28:39 17.01.2025

11N20SISO_5720

19:29:42 17.01.2025

11N40SISO_5190



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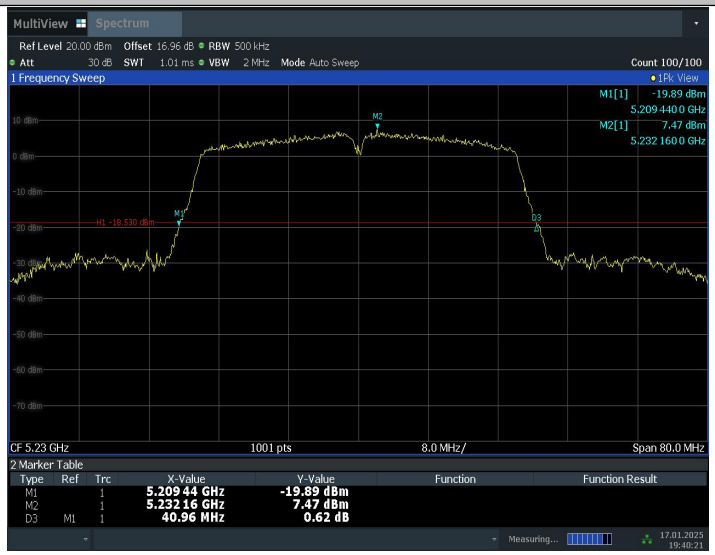

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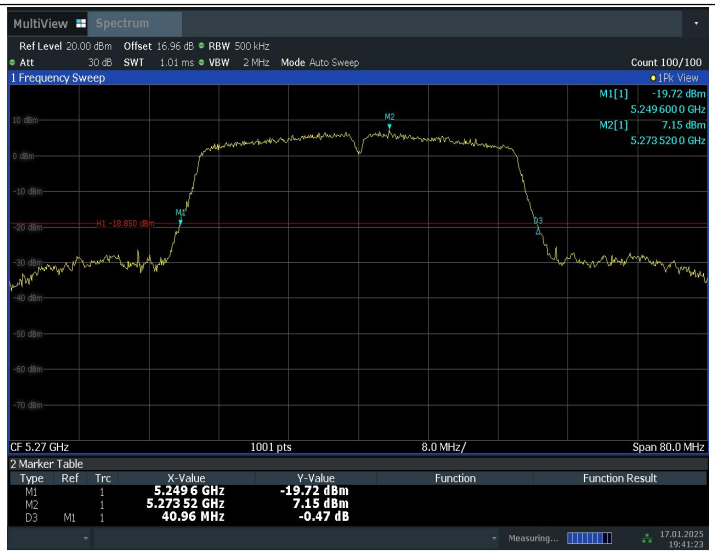

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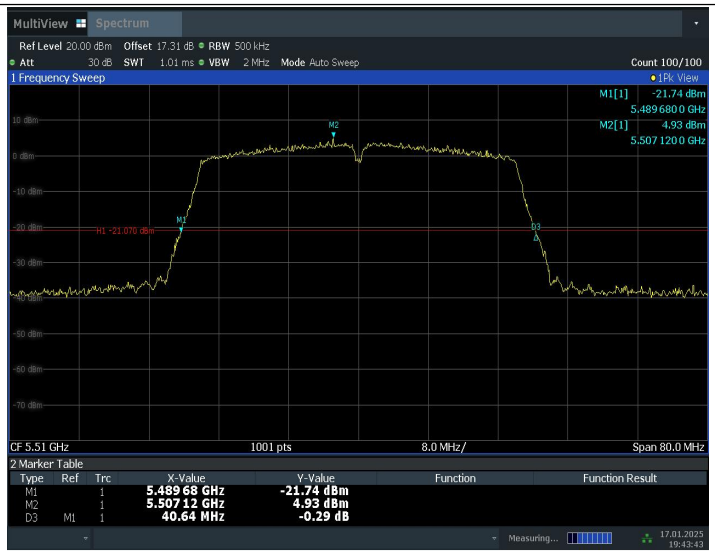
19:42:25 17.01.2025

11N40SISO_5510



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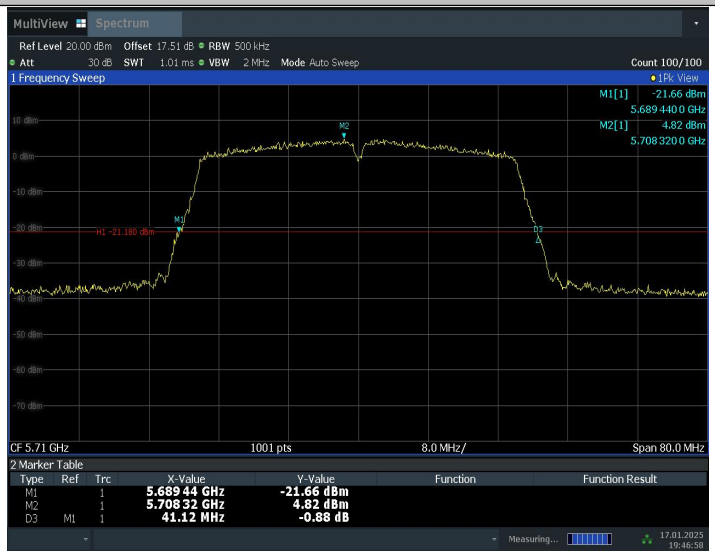
19:45:52 17.01.2025

11N40SISO_5710



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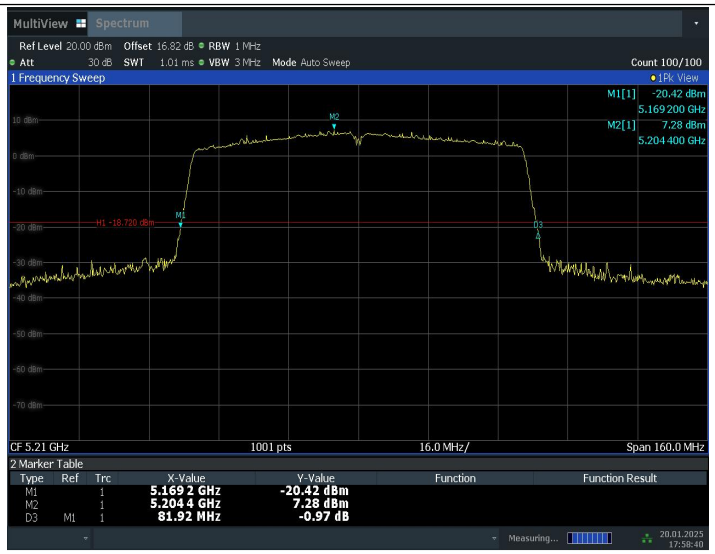

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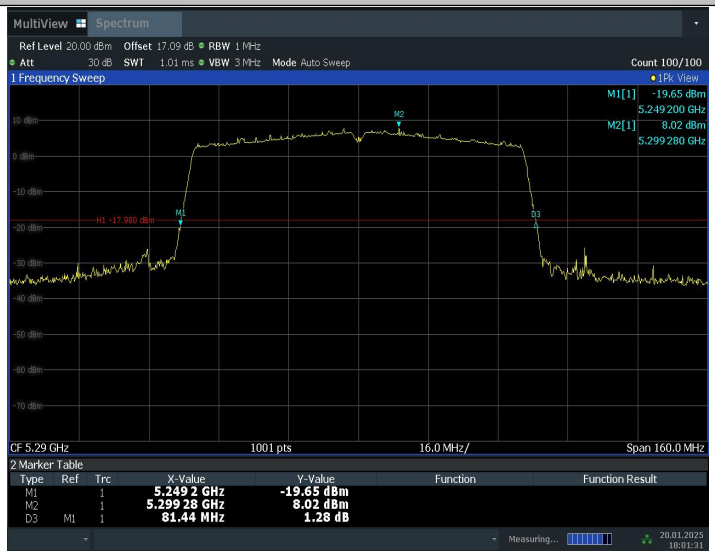

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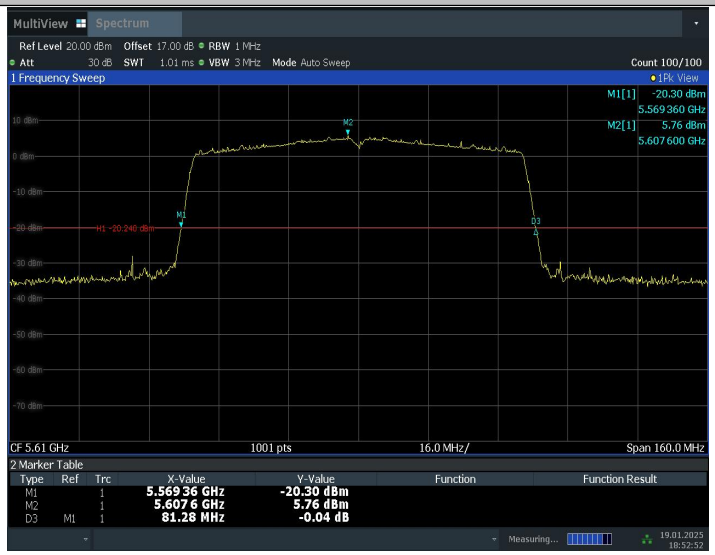

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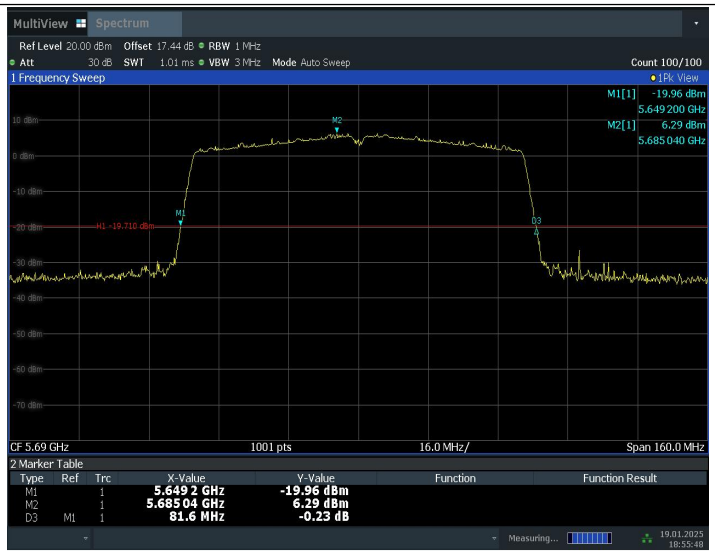

18:55:49 19.01.2025

Conclusion: PASS

A.5. Radiated Unwanted Emission

A.5.1 Limits

Unwanted Emissions in the unrestricted bands shall not exceed the limits that shown in 15.407:

Standard	Limit
FCC 47 CFR Part 15.407	(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz. (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

Frequency (MHz)	Field strength(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

Note: When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor (as defined in KDB 789033 II.G.2.d).

A.5.2 Test setup

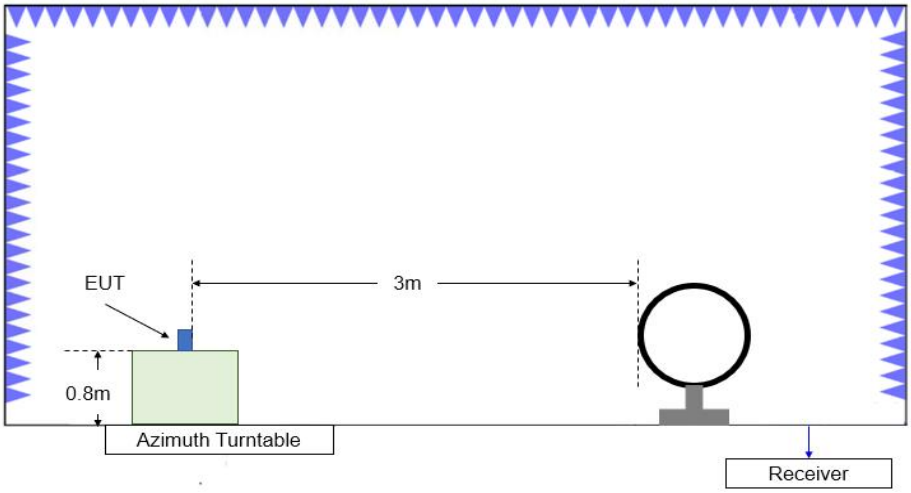

Figure A.5.1. Test Site Diagram (9kHz-30MHz)

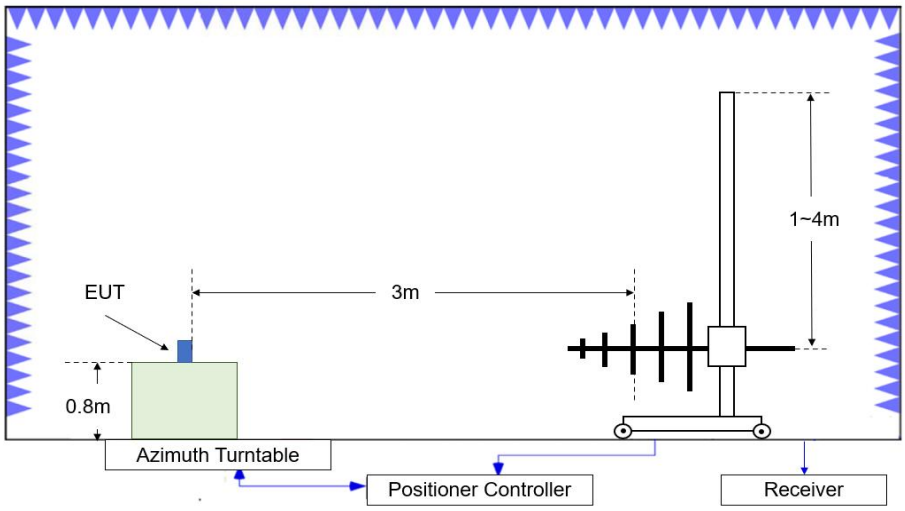

Figure A.5.2. Test Site Diagram (30MHz-1GHz)

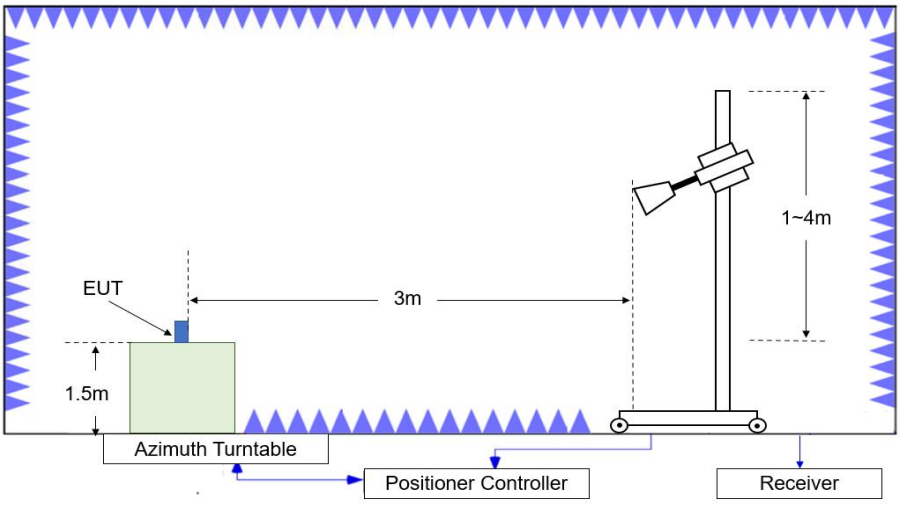

Figure A.5.3. Test Site Diagram (1GHz-40GHz)

A.5.3 Test Procedures

Radiated unwanted emissions from the EUT were measured according to ANSI C63.10and KDB 789033.

Test setting

Frequency of emission (MHz)	RBW/VBW
30-1000	100kHz/300kHz
1000-4000	1MHz/3MHz
4000-18000	1MHz/3MHz
18000-26500	1MHz/3MHz
26500-40000	1MHz/3MHz

A.5.4 Calculation

1. The measurement results reported below is calculated by:

Measurement Results (dBμV/m) = $P_{measurement}$ (dBμV) + Cable Loss(dB) + Antenna Factor (dB/m)

Where: $P_{measurement}$ is the field strength recorded from the instrument

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

E=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

Test note

1. The EUT is operating at its maximum duty cycle and its maximum power control level.
2. Investigation has been done on all modes and modulations/data rates. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.
3. Spurious emissions for all channels were investigated and almost the same below 1GHz. According to FCC 47 CFR §15.31, emission levels are not report much lower than the limit by over 20dB
4. Measurement frequencies were performed from 9 kHz to 40GHz.

A.5.5 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)
5129.250	46.5	-22.6	34.3	34.80	54.0	7.5	V
5142.000	46.5	-23.1	34.3	35.40	54.0	7.5	H
11861.500	38.7	-28.1	38.5	28.30	54.0	15.3	V
15540.000	38.5	-24.9	40.1	23.32	54.0	15.5	V
17746.500	42.7	-23.7	41.8	24.55	54.0	11.3	H
17922.000	42.2	-23.4	42.0	23.62	54.0	11.8	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)
5358.125	47.1	-22.8	34.4	35.51	54.0	6.9	V
5363.875	46.7	-22.6	34.5	34.90	54.0	7.3	V
10640.000	36.1	-28.6	37.7	26.97	54.0	17.9	H
15960.000	39.4	-24.3	40.7	22.99	54.0	14.6	V
17766.000	42.1	-23.5	41.9	23.78	54.0	11.9	V
17921.000	42.1	-23.4	42.0	23.59	54.0	11.9	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)
5373.500	45.9	-22.7	34.5	34.05	54.0	8.1	V
5432.750	45.6	-22.7	34.7	33.68	54.0	8.4	V
11000.000	35.3	-29.5	37.9	26.85	54.0	18.7	V
15811.000	41.6	-23.8	40.6	24.75	54.0	12.4	V
17766.500	42.9	-23.5	41.9	24.50	54.0	11.1	H
17832.500	42.4	-23.4	41.9	23.82	54.0	11.6	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)
5427.750	45.9	-22.4	34.5	33.84	54.0	8.1	V
5459.750	46.2	-22.6	34.7	34.15	54.0	7.8	V
11160.000	34.4	-30.3	37.9	26.74	54.0	19.6	H
15811.500	40.9	-23.8	40.6	24.12	54.0	13.1	V
17756.500	42.3	-23.5	41.9	23.95	54.0	11.7	H
17928.000	42.0	-23.2	41.9	23.31	54.0	12.0	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)
5370.250	45.7	-22.5	34.5	33.63	54.0	8.3	V
5374.250	45.5	-22.7	34.5	33.75	54.0	8.5	V
11400.000	35.2	-30.1	38.1	27.21	54.0	18.8	H
15814.500	41.0	-23.9	40.6	24.37	54.0	13.0	V
17752.500	42.3	-23.6	41.9	24.05	54.0	11.7	H
17928.500	41.6	-23.2	41.9	22.83	54.0	12.4	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)
5375.250	45.5	-22.8	34.5	33.74	54.0	8.5	V
5418.875	45.3	-22.6	34.6	33.24	54.0	8.7	V
11440.000	35.4	-30.1	38.1	27.45	54.0	18.6	V
17708.500	42.4	-23.6	41.8	24.19	54.0	11.6	V
17795.500	42.7	-23.4	41.9	24.18	54.0	11.3	H
17930.000	42.7	-23.2	41.9	23.91	54.0	11.3	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)
5123.125	46.2	-23.0	34.2	34.96	54.0	7.8	H
5138.375	46.4	-23.0	34.3	35.09	54.0	7.6	V
11862.000	38.3	-28.1	38.5	27.95	54.0	15.7	V
15540.000	38.7	-24.9	40.1	23.44	54.0	15.3	H
17791.000	42.1	-23.5	41.9	23.71	54.0	11.9	H
17890.500	42.1	-23.9	42.0	23.95	54.0	11.9	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)
5369.375	46.5	-22.5	34.5	34.50	54.0	7.5	V
5377.625	46.5	-22.9	34.5	34.95	54.0	7.5	V
10640.000	36.1	-28.6	37.7	26.97	54.0	17.9	H
15960.000	40.2	-24.3	40.7	23.75	54.0	13.8	V
17756.500	42.3	-23.5	41.9	23.90	54.0	11.7	H
17930.000	42.1	-23.2	41.9	23.36	54.0	11.9	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)
5442.375	46.3	-23.0	34.7	34.53	54.0	7.7	V
5456.500	46.2	-22.4	34.7	34.00	54.0	7.8	V
11000.000	35.7	-29.5	37.9	27.33	54.0	18.3	V
15806.500	41.6	-23.7	40.6	24.70	54.0	12.4	V
17758.000	42.7	-23.5	41.9	24.31	54.0	11.3	V
17928.000	42.6	-23.2	41.9	23.88	54.0	11.4	H

Channel 140

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5370.500	45.7	-22.5	34.5	33.68	54.0	8.3	V
5402.500	45.6	-22.9	34.6	33.87	54.0	8.4	V
11400.000	35.4	-30.1	38.1	27.40	54.0	18.6	H
15804.500	40.9	-23.7	40.6	23.99	54.0	13.1	V
17754.500	42.2	-23.5	41.9	23.88	54.0	11.8	H
17928.500	42.0	-23.2	41.9	23.29	54.0	12.0	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)
5367.500	45.5	-22.5	34.5	33.53	54.0	8.5	V
5406.625	45.6	-22.8	34.6	33.80	54.0	8.4	V
11440.000	35.4	-30.1	38.1	27.43	54.0	18.6	H
17721.000	42.6	-23.4	41.8	24.17	54.0	11.4	V
17797.000	42.4	-23.4	41.9	23.85	54.0	11.6	H
17924.000	42.6	-23.3	42.0	23.97	54.0	11.4	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)
5148.125	49.0	-23.4	34.3	38.10	54.0	5.0	V
5148.875	49.5	-23.4	34.3	38.65	54.0	4.5	V
11860.500	38.4	-28.1	38.5	28.02	54.0	15.6	H
15570.000	39.1	-25.1	40.2	24.00	54.0	14.9	V
17745.000	42.4	-23.7	41.8	24.24	54.0	11.6	V
17832.000	42.2	-23.3	41.9	23.63	54.0	11.8	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)
5352.000	49.1	-23.0	34.4	37.70	54.0	4.9	V
5353.500	48.7	-23.0	34.4	37.28	54.0	5.3	V
10620.000	33.9	-29.6	37.7	25.87	54.0	20.1	V
15930.000	39.4	-24.1	40.7	22.86	54.0	14.6	V
17753.500	42.2	-23.6	41.9	23.95	54.0	11.8	H
17834.000	42.1	-23.4	41.9	23.57	54.0	11.9	V

Channel 102

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5438.000	45.8	-22.9	34.7	34.04	54.0	8.2	V
5457.125	46.2	-22.4	34.7	33.98	54.0	7.8	V
11020.000	36.7	-28.8	37.9	27.63	54.0	17.3	H
15809.500	41.4	-23.7	40.6	24.52	54.0	12.6	V
17757.000	42.3	-23.5	41.9	23.93	54.0	11.7	H
17840.000	42.3	-23.6	41.9	23.90	54.0	11.7	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)
5373.875	46.0	-22.7	34.5	34.17	54.0	8.0	V
5418.625	45.9	-22.6	34.6	33.92	54.0	8.1	V
11180.000	36.0	-29.5	37.9	27.56	54.0	18.0	H
15809.500	41.4	-23.7	40.6	24.50	54.0	12.6	H
17926.000	42.5	-23.3	41.9	23.79	54.0	11.5	H
17940.000	42.5	-23.4	41.9	24.00	54.0	11.5	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)
5448.000	45.6	-22.9	34.7	33.79	54.0	8.4	V
5458.875	45.6	-22.3	34.7	33.23	54.0	8.4	V
11340.000	35.4	-29.8	38.0	27.12	54.0	18.6	V
15803.000	41.5	-23.6	40.6	24.51	54.0	12.5	V
17763.000	42.2	-23.5	41.9	23.79	54.0	11.8	H
17917.500	42.0	-23.4	42.0	23.42	54.0	12.0	H

Channel 142

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5371.875	45.2	-22.6	34.5	33.30	54.0	8.8	V
5430.625	45.4	-22.7	34.7	33.36	54.0	8.6	V
11415.500	35.4	-30.4	38.1	27.64	54.0	18.6	H
17799.500	42.3	-23.3	41.9	23.78	54.0	11.7	V
17872.500	42.1	-23.7	42.0	23.80	54.0	11.9	V
17918.500	42.9	-23.4	42.0	24.34	54.0	11.1	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)
5121.875	46.0	-23.1	34.2	34.85	54.0	8.0	V
5129.875	46.2	-22.5	34.3	34.46	54.0	7.8	V
11861.000	39.0	-28.1	38.5	28.64	54.0	15.0	H
15540.000	38.5	-24.9	40.1	23.29	54.0	15.5	H
17784.000	42.4	-23.6	41.9	24.04	54.0	11.6	V
17920.500	42.0	-23.4	42.0	23.42	54.0	12.0	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)
5359.375	46.7	-22.8	34.4	35.04	54.0	7.3	V
5370.500	46.6	-22.5	34.5	34.61	54.0	7.4	V
10640.000	36.7	-28.6	37.7	27.60	54.0	17.3	V
15960.000	39.3	-24.3	40.7	22.89	54.0	14.7	V
17718.500	42.5	-23.4	41.8	24.04	54.0	11.5	V
17832.000	42.3	-23.3	41.9	23.68	54.0	11.7	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)
5435.125	45.9	-22.8	34.7	34.05	54.0	8.1	V
5457.125	46.0	-22.4	34.7	33.78	54.0	8.0	V
11000.000	35.2	-29.5	37.9	26.81	54.0	18.8	H
15863.000	41.2	-24.4	40.6	24.99	54.0	12.8	V
17755.500	42.1	-23.5	41.9	23.79	54.0	11.9	H
17969.500	42.0	-23.6	41.9	23.69	54.0	12.0	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)
5457.375	46.2	-22.4	34.7	33.89	54.0	7.8	V
5374.125	46.2	-22.7	34.5	34.45	54.0	7.8	V
11160.000	34.8	-30.3	37.9	27.10	54.0	19.2	V
15810.500	41.0	-23.8	40.6	24.16	54.0	13.0	V
17710.500	42.3	-23.6	41.8	24.07	54.0	11.7	V
17980.500	41.8	-23.5	41.8	23.41	54.0	12.2	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)
5364.375	45.7	-22.6	34.5	33.83	54.0	8.3	V
5370.125	45.7	-22.5	34.5	33.65	54.0	8.3	V
11400.000	35.5	-30.1	38.1	27.46	54.0	18.5	V
15816.000	41.3	-24.0	40.6	24.73	54.0	12.7	V
17747.500	42.6	-23.7	41.8	24.43	54.0	11.4	V
17930.000	42.3	-23.2	41.9	23.52	54.0	11.7	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)
5364.750	45.6	-22.6	34.5	33.76	54.0	8.4	V
5373.625	45.4	-22.7	34.5	33.60	54.0	8.6	V
11440.000	35.5	-30.1	38.1	27.51	54.0	18.5	H
17721.500	42.7	-23.4	41.8	24.26	54.0	11.3	V
17796.000	42.7	-23.4	41.9	24.24	54.0	11.3	V
17924.000	43.1	-23.3	42.0	24.47	54.0	10.9	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)
5148.125	49.8	-23.4	34.3	38.86	54.0	4.2	V
5149.625	50.4	-23.4	34.3	39.54	54.0	3.6	V
11927.000	39.2	-28.0	38.5	28.62	54.0	14.8	H
15570.000	39.6	-25.1	40.2	24.57	54.0	14.4	H
17759.500	42.9	-23.4	41.9	24.41	54.0	11.1	V
17923.500	43.3	-23.3	42.0	24.70	54.0	10.7	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)
5350.750	49.8	-23.1	34.4	38.44	54.0	4.2	V
5352.000	49.1	-23.0	34.4	37.72	54.0	4.9	V
10620.000	33.9	-29.6	37.7	25.87	54.0	20.1	V
15930.000	39.4	-24.1	40.7	22.86	54.0	14.6	V
16869.000	42.2	-24.4	42.8	23.86	54.0	11.8	H
17208.500	42.1	-23.5	41.8	23.85	54.0	11.9	V

Channel 102

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5438.000	45.8	-22.9	34.7	34.04	54.0	8.2	V
5457.125	46.2	-22.4	34.7	33.98	54.0	7.8	V
11020.000	36.7	-28.8	37.9	27.63	54.0	17.3	H
15809.500	41.4	-23.7	40.6	24.52	54.0	12.6	V
17757.000	42.3	-23.5	41.9	23.93	54.0	11.7	H
17840.000	42.3	-23.6	41.9	23.90	54.0	11.7	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)
5448.000	45.6	-22.9	34.7	33.79	54.0	8.4	V
5458.875	45.6	-22.3	34.7	33.23	54.0	8.4	V
11340.000	35.4	-29.8	38.0	27.12	54.0	18.6	V
15803.000	41.5	-23.6	40.6	24.51	54.0	12.5	V
17763.000	42.2	-23.5	41.9	23.79	54.0	11.8	H
17917.500	42.0	-23.4	42.0	23.42	54.0	12.0	H

Channel 142

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5355.625	45.2	-22.9	34.4	33.62	54.0	8.8	V
5371.375	45.4	-22.5	34.5	33.43	54.0	8.6	V
11420.000	35.4	-30.5	38.1	27.72	54.0	18.6	H
17746.000	42.5	-23.7	41.8	24.35	54.0	11.5	H
17788.500	42.6	-23.5	41.9	24.27	54.0	11.4	V
17914.500	43.0	-23.4	42.0	24.41	54.0	11.0	H

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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)
5148.625	50.2	-23.4	34.3	39.27	54.0	3.8	V
5149.625	50.7	-23.4	34.3	39.79	54.0	3.3	V
11930.000	38.5	-28.0	38.5	27.92	54.0	15.5	H
15630.000	39.2	-24.4	40.3	23.39	54.0	14.8	V
17702.000	42.3	-23.5	41.8	24.05	54.0	11.7	H
17800.500	42.2	-23.3	41.9	23.69	54.0	11.8	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)
5350.250	49.8	-23.1	34.4	38.43	54.0	4.2	V
5350.875	49.9	-23.1	34.4	38.51	54.0	4.1	V
12608.000	39.1	-27.6	39.0	27.68	54.0	14.9	H
15630.000	38.7	-24.4	40.3	22.86	54.0	15.3	H
17752.000	42.1	-23.6	41.9	23.82	54.0	11.9	V
17918.000	41.6	-23.4	42.0	23.03	54.0	12.4	V

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)
5457.375	46.8	-22.4	34.7	34.49	54.0	7.2	V
5458.875	46.8	-22.3	34.7	34.43	54.0	7.2	V
11060.000	35.4	-29.7	38.0	27.13	54.0	18.6	H
15812.500	41.1	-23.8	40.6	24.30	54.0	12.9	V
17749.000	42.5	-23.7	41.8	24.29	54.0	11.5	H
17920.500	41.8	-23.4	42.0	23.23	54.0	12.2	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)
5367.875	45.7	-22.5	34.5	33.73	54.0	8.3	V
5454.375	45.6	-22.6	34.7	33.51	54.0	8.4	V
11220.000	37.7	-30.1	37.9	29.89	54.0	16.3	V
15809.500	40.9	-23.7	40.6	24.04	54.0	13.1	H
17756.000	41.9	-23.5	41.9	23.60	54.0	12.1	H
17832.000	42.0	-23.3	41.9	23.40	54.0	12.0	V

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)
5431.500	45.3	-22.7	34.7	33.32	54.0	8.7	V
5458.750	45.7	-22.3	34.7	33.29	54.0	8.3	V
11380.000	35.8	-30.1	38.1	27.81	54.0	18.2	V
17801.000	42.2	-23.4	41.9	23.70	54.0	11.8	H
17852.500	42.2	-23.5	42.0	23.83	54.0	11.8	V
17934.500	42.8	-23.3	41.9	24.20	54.0	11.2	H

PEAK Results:

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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)
5143.500	57.9	-23.2	34.3	-68.99	74.0	16.1	V
5144.875	57.7	-23.3	34.3	-68.71	74.0	16.3	V
10360.000	45.7	-29.9	37.8	-53.60	68.2	22.5	V
15540.000	48.8	-24.9	40.1	-64.04	74.0	25.2	V
16908.500	53.6	-23.6	42.7	-72.74	68.2	14.6	H
17238.000	53.9	-24.1	41.8	-71.56	68.2	14.3	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)
5350.375	62.0	-23.1	34.4	50.64	74.0	12.0	H
5350.875	61.4	-23.1	34.4	50.06	74.0	12.6	V
10640.000	45.6	-28.6	37.7	36.48	74.0	28.4	H
15960.000	49.6	-24.3	40.7	33.13	74.0	24.4	H
16744.500	53.3	-24.2	42.6	34.86	68.2	14.9	H
16893.000	53.1	-24.0	42.8	34.37	68.2	15.1	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)
5464.375	58.0	-22.5	34.6	45.89	68.2	10.2	H
5466.125	57.9	-22.6	34.6	45.88	68.2	10.3	H
11000.000	45.2	-29.5	37.9	36.76	74.0	28.8	V
16500.000	49.9	-24.9	41.6	33.26	68.2	18.3	V
16753.500	53.3	-24.0	42.7	34.71	68.2	14.9	V
16870.500	53.1	-24.4	42.8	34.77	68.2	15.1	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)
5550.000	58.4	-22.8	34.5	46.79	68.2	9.8	H
5606.000	57.4	-22.5	34.7	45.18	68.2	10.8	V
11160.000	44.8	-30.3	37.9	37.16	74.0	29.2	H
16740.000	50.8	-24.3	42.6	32.52	68.2	17.4	H
17039.500	53.0	-23.7	42.5	34.21	68.2	15.2	V
17277.000	53.0	-23.8	41.7	35.04	68.2	15.2	H

Channel 140

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5725.500	62.0	-22.6	34.7	50.00	68.2	6.2	V
5731.375	59.2	-22.7	34.7	47.21	68.2	9.0	H
11400.000	45.0	-30.1	38.1	37.00	74.0	29.0	V
17100.000	50.1	-24.2	42.1	32.15	68.2	18.1	H
17245.000	53.5	-24.2	41.8	35.91	68.2	14.7	H
17634.500	53.3	-24.0	41.8	35.48	68.2	14.9	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)
5692.500	57.2	-22.5	34.6	45.04	68.2	11.0	H
5696.500	57.2	-22.4	34.6	44.96	68.2	11.0	H
11440.000	45.0	-30.1	38.1	37.01	74.0	29.0	V
16753.500	53.2	-24.0	42.7	34.57	68.2	15.0	V
16914.000	53.3	-23.5	42.7	34.11	68.2	14.9	H
17162.500	52.1	-23.7	41.9	33.91	68.2	16.1	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)
5148.500	59.5	-23.4	34.3	-70.38	74.0	14.5	V
5149.375	59.0	-23.4	34.3	-69.89	74.0	15.0	V
10360.000	46.0	-29.9	37.8	-53.85	68.2	22.2	V
15540.000	48.4	-24.9	40.1	-63.61	74.0	25.6	V
16695.500	53.4	-23.6	42.5	-72.23	68.2	14.8	H
17200.000	53.2	-23.7	41.8	-71.24	68.2	15.0	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)
5354.250	58.2	-22.9	34.4	46.71	74.0	15.8	V
5363.875	58.9	-22.6	34.5	47.03	74.0	15.1	H
10640.000	46.3	-28.6	37.7	37.18	74.0	27.7	V
15960.000	50.7	-24.3	40.7	34.29	74.0	23.3	V
17075.500	53.7	-23.8	42.2	35.24	68.2	14.5	V
17208.500	52.6	-23.5	41.8	34.31	68.2	15.6	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)
5463.500	57.6	-22.4	34.6	45.37	68.2	10.6	H
5467.250	58.0	-22.7	34.6	46.05	68.2	10.2	V
11000.000	45.3	-29.5	37.9	36.90	74.0	28.7	H
16500.000	50.1	-24.9	41.6	33.42	68.2	18.1	V
17217.500	53.2	-23.9	41.8	35.31	68.2	15.0	V
17341.000	53.3	-23.7	41.7	35.37	68.2	14.9	H

Channel 140

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5725.000	61.6	-22.6	34.7	49.57	68.2	6.6	V
5725.875	61.6	-22.6	34.7	49.55	68.2	6.6	V
11400.000	44.9	-30.1	38.1	36.92	74.0	29.1	H
17100.000	50.9	-24.2	42.1	32.93	68.2	17.3	V
17296.000	53.7	-23.5	41.7	35.45	68.2	14.5	V
17496.000	52.5	-24.1	41.7	34.91	68.2	15.7	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)
5635.000	57.3	-22.4	34.8	44.87	68.2	10.9	H
5663.000	56.8	-22.2	34.8	44.25	68.2	11.4	H
11440.000	45.0	-30.1	38.1	37.06	74.0	29.0	H
16755.500	53.5	-24.0	42.7	34.84	68.2	14.7	H
16910.500	53.4	-23.5	42.7	34.12	68.2	14.8	H
17161.000	51.4	-23.8	41.9	33.28	68.2	16.8	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)
5148.875	66.5	-23.4	34.3	-77.35	74.0	7.5	V
5149.250	66.6	-23.4	34.3	-77.45	74.0	7.4	V
10380.000	45.9	-29.8	37.8	-53.94	68.2	22.3	V
15570.000	48.8	-25.1	40.2	-63.83	74.0	25.2	V
16839.000	53.0	-24.2	42.8	-71.56	68.2	15.2	V
17073.500	52.9	-23.7	42.3	-71.46	68.2	15.3	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)
5350.125	68.5	-23.1	34.4	57.18	74.0	5.5	V
5352.625	66.7	-23.0	34.4	55.31	74.0	7.3	V
10620.000	44.5	-29.6	37.7	36.49	74.0	29.5	V
15930.000	48.9	-24.1	40.7	32.38	74.0	25.1	V
16784.000	52.7	-24.1	42.8	34.05	68.2	15.5	V
16911.500	53.2	-23.5	42.7	33.95	68.2	15.0	V

Channel 102

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5466.250	61.7	-22.6	34.6	49.71	68.2	6.5	H
5469.250	63.0	-22.8	34.6	51.17	68.2	5.2	H
11020.000	46.4	-28.8	37.9	37.31	74.0	27.6	V
16530.000	49.6	-24.0	41.7	31.92	68.2	18.6	V
17257.000	53.2	-24.1	41.7	35.54	68.2	15.0	V
17338.000	53.0	-23.7	41.7	34.98	68.2	15.2	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)
5532.500	57.8	-22.4	34.5	45.68	68.2	10.4	H
5657.500	57.4	-22.3	34.9	44.83	68.2	10.8	H
11180.000	45.6	-29.5	37.9	37.17	74.0	28.4	H
16770.000	51.0	-24.1	42.7	32.39	68.2	17.2	V
17278.000	52.9	-23.8	41.7	35.04	68.2	15.3	H
17673.000	52.9	-23.4	41.8	34.51	68.2	15.3	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)
5743.125	58.7	-22.5	34.7	46.50	68.2	9.5	V
5752.375	58.5	-22.5	34.7	46.32	68.2	9.7	V
11340.000	45.6	-29.8	38.0	37.38	74.0	28.4	V
17010.000	49.1	-24.4	42.6	30.94	68.2	19.1	V
17275.500	53.4	-23.8	41.7	35.42	68.2	14.8	V
17585.500	53.5	-23.7	41.8	35.39	68.2	14.7	V

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)
5617.500	57.0	-22.6	34.8	44.92	68.2	11.2	V
5658.500	57.6	-22.3	34.8	44.96	68.2	10.6	V
11420.000	44.8	-30.5	38.1	37.15	74.0	29.2	H
16524.000	52.4	-24.2	41.7	34.88	68.2	15.8	H
16833.000	54.8	-24.1	42.8	36.12	68.2	13.4	V
17130.000	51.2	-24.3	42.0	33.47	68.2	17.0	V

802.11ac-HT20

Channel 36

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5142.375	58.1	-23.2	34.3	-69.26	74.0	15.9	H
5148.000	57.8	-23.4	34.3	-68.73	74.0	16.2	V
10360.000	45.2	-29.9	37.8	-53.09	68.2	23.0	V
15540.000	49.3	-24.9	40.1	-64.50	74.0	24.7	V
16727.500	53.0	-24.5	42.6	-71.11	68.2	15.2	H
16919.000	53.3	-23.5	42.7	-72.48	68.2	14.9	V

Channel 64

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5350.000	58.7	-23.1	34.4	47.34	74.0	15.3	H
5353.500	57.8	-23.0	34.4	46.40	74.0	16.2	H
10640.000	46.2	-28.6	37.7	37.08	74.0	27.8	H
15960.000	50.3	-24.3	40.7	33.85	74.0	23.7	V
16805.000	53.0	-23.8	42.8	34.03	68.2	15.2	H
17039.500	51.8	-23.7	42.5	32.98	68.2	16.4	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)
5463.125	57.9	-22.4	34.6	45.63	68.2	10.3	V
5463.875	57.6	-22.5	34.6	45.45	68.2	10.6	V
11000.000	44.5	-29.5	37.9	36.12	74.0	29.5	V
16500.000	48.2	-24.9	41.6	31.56	68.2	20.0	V
17830.000	53.5	-23.3	41.9	34.89	68.2	14.7	V
17243.500	54.4	-24.2	41.8	36.83	68.2	13.8	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)
5459.000	57.4	-22.3	34.7	45.01	68.2	10.8	H
5540.000	57.1	-22.4	34.5	44.95	68.2	11.1	H
11160.000	44.5	-30.3	37.9	36.81	74.0	29.5	V
16740.000	51.9	-24.3	42.6	33.54	68.2	16.3	H
17271.000	53.0	-23.7	41.7	34.95	68.2	15.2	H
17513.000	52.5	-24.1	41.7	34.88	68.2	15.7	H

Channel 140

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5725.000	62.0	-22.6	34.7	49.98	68.2	6.2	H
5726.750	60.4	-22.6	34.7	48.38	68.2	7.8	V
11400.000	44.6	-30.1	38.1	36.57	74.0	29.4	V
17100.000	49.6	-24.2	42.1	31.64	68.2	18.6	H
17378.500	52.9	-24.0	41.6	35.25	68.2	15.3	H
17672.500	53.3	-23.4	41.8	34.94	68.2	14.9	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)
5630.000	58.8	-22.1	34.8	46.04	68.2	9.4	V
5655.500	58.0	-22.4	34.9	45.58	68.2	10.2	V
11440.000	44.7	-30.1	38.1	36.73	74.0	29.3	V
16766.500	53.5	-24.0	42.7	34.82	68.2	14.7	H
17160.000	50.7	-23.8	41.9	32.54	68.2	17.5	H
17458.500	53.5	-23.6	41.7	35.45	68.2	14.7	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)
5147.875	65.7	-23.4	34.3	-76.60	74.0	8.3	H
5149.375	66.5	-23.4	34.3	-77.37	74.0	7.5	V
10380.000	46.8	-29.8	37.8	-54.85	68.2	21.4	V
15570.000	49.7	-25.1	40.2	-64.75	74.0	24.3	H
16761.500	55.2	-23.9	42.7	-74.03	68.2	13.0	V
17387.000	53.9	-24.0	41.6	-71.48	68.2	14.3	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)
5352.500	65.8	-23.0	34.4	54.36	74.0	8.2	H
5354.125	66.6	-22.9	34.4	55.09	74.0	7.4	H
10620.000	43.8	-29.6	37.7	35.74	74.0	30.2	V
15930.000	50.2	-24.1	40.7	33.64	74.0	23.8	H
16869.000	52.9	-24.4	42.8	34.51	68.2	15.3	H
17208.500	53.2	-23.5	41.8	34.95	68.2	15.0	H

Channel 102

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5468.750	61.5	-22.8	34.6	49.63	68.2	6.7	V
5470.125	64.8	-22.9	34.6	53.04	68.2	3.4	V
11020.000	46.0	-28.8	37.9	36.90	74.0	28.0	H
16530.000	49.8	-24.0	41.7	32.06	68.2	18.4	H
16802.000	53.6	-23.7	42.8	34.55	68.2	14.6	H
17330.500	52.8	-23.8	41.7	34.94	68.2	15.4	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)
5726.875	58.3	-22.7	34.7	46.31	68.2	9.9	H
5741.125	58.2	-22.5	34.7	46.05	68.2	10.0	V
11340.000	44.5	-29.8	38.0	36.19	74.0	29.5	V
17010.000	50.1	-24.4	42.6	31.91	68.2	18.1	V
17353.000	53.5	-24.0	41.6	35.87	68.2	14.7	H
17586.000	53.3	-23.7	41.8	35.17	68.2	14.9	H

Channel 142

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
5594.000	56.9	-22.5	34.7	44.80	68.2	11.3	H
5627.000	57.3	-22.3	34.8	44.80	68.2	10.9	V
11420.000	44.6	-30.5	38.1	37.01	68.2	23.6	H
16827.500	54.3	-24.1	42.8	35.60	74.0	19.7	H
17129.000	51.2	-24.3	42.0	33.52	68.2	17.0	V
17449.000	53.1	-23.4	41.6	34.91	68.2	15.1	H

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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)
5145.250	62.9	-23.3	34.3	51.90	74.0	11.1	H
5150.000	62.8	-23.4	34.3	51.98	74.0	11.2	V
10420.000	46.3	-30.2	37.9	38.64	68.2	21.9	H
15630.000	48.5	-24.4	40.3	32.72	74.0	25.5	V
16869.500	53.6	-24.4	42.8	35.24	68.2	14.6	H
17213.000	52.5	-23.7	41.8	34.40	68.2	15.7	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)
5353.125	64.5	-23.0	34.4	53.08	74.0	9.5	H
5356.750	63.6	-22.9	34.4	52.06	74.0	10.4	V
10580.000	46.6	-28.9	37.7	37.89	68.2	21.6	H
15870.000	49.6	-24.5	40.6	33.45	74.0	24.4	V
16786.500	53.7	-24.1	42.8	34.99	68.2	14.5	H
17285.000	53.2	-23.7	41.7	35.13	68.2	15.1	V

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)
5466.375	59.9	-22.6	34.6	47.88	68.2	8.3	H
5469.375	59.2	-22.8	34.6	47.38	68.2	9.0	H
11060.000	45.1	-29.7	38.0	36.82	74.0	28.9	H
16590.000	49.1	-24.7	41.9	31.98	68.2	19.1	V
16838.500	54.0	-24.2	42.8	35.42	68.2	14.2	H
17160.500	53.2	-23.8	41.9	35.04	68.2	15.0	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)
5725.875	58.1	-22.6	34.7	46.09	68.2	10.1	V
5755.000	58.4	-22.5	34.7	46.22	68.2	9.8	V
11220.000	44.6	-30.1	37.9	36.74	74.0	29.4	H
16830.000	51.4	-24.1	42.8	32.64	68.2	16.8	H
17193.500	53.0	-23.7	41.8	34.82	68.2	15.2	V
17382.500	53.0	-24.0	41.6	35.37	68.2	15.2	V

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)
5474.500	56.9	-22.9	34.6	45.25	68.2	11.3	V
5532.000	57.3	-22.4	34.5	45.23	68.2	10.9	V
11380.000	44.7	-30.1	38.1	36.74	74.0	29.3	H
16754.500	54.1	-24.0	42.7	35.45	68.2	14.1	H
17070.000	50.9	-23.6	42.3	32.26	68.2	17.3	V
17337.000	53.0	-23.7	41.7	35.08	68.2	15.2	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

Band edge compliance

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.1	P
	5320 MHz	Fig.2	P
	5500 MHz	Fig.3	P
	5700 MHz	Fig.4	P
802.11n HT20	5180 MHz	Fig.5	P
	5320 MHz	Fig.6	P
	5500 MHz	Fig.7	P
	5700 MHz	Fig.8	P
802.11n HT40	5190 MHz	Fig.9	P
	5310 MHz	Fig.10	P
	5510 MHz	Fig.11	P
	5670 MHz	Fig.12	P
802.11ac HT20	5180 MHz	Fig.13	P
	5320 MHz	Fig.14	P
	5500 MHz	Fig.15	P
	5700 MHz	Fig.16	P
802.11ac HT40	5190 MHz	Fig.17	P
	5310 MHz	Fig.18	P
	5510 MHz	Fig.19	P
	5670 MHz	Fig.20	P
802.11ac HT80	5210MHz	Fig.21	P
	5290MHz	Fig.22	P
	5530MHz	Fig.23	P
	5610MHz	Fig.24	P

Conclusion: PASS

Test graphs as below:

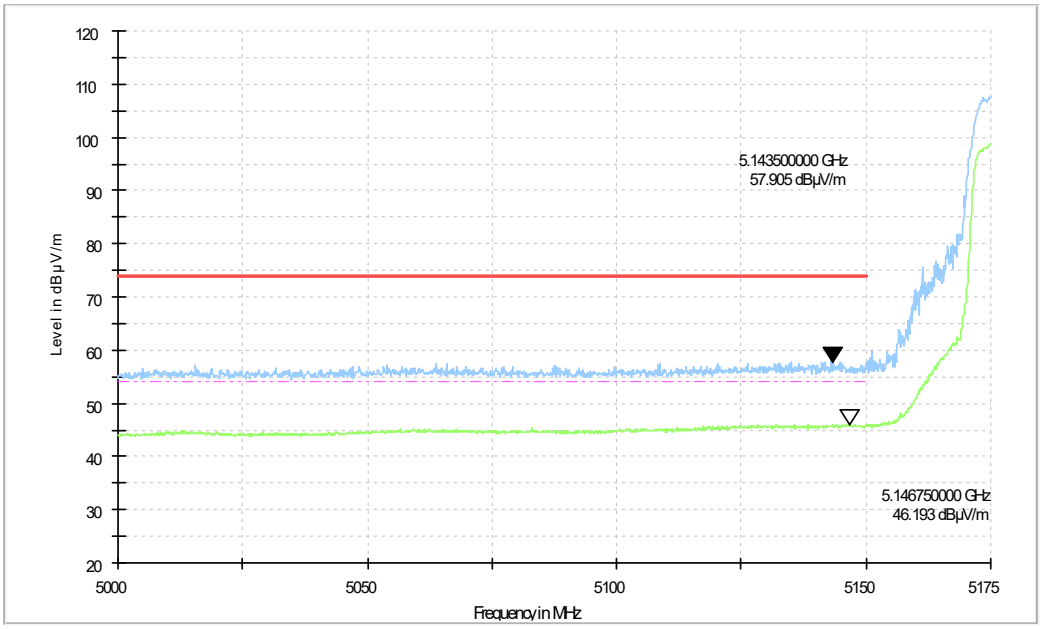


Fig. 1 Band Edges (802.11a Ch36, 5180MHz)

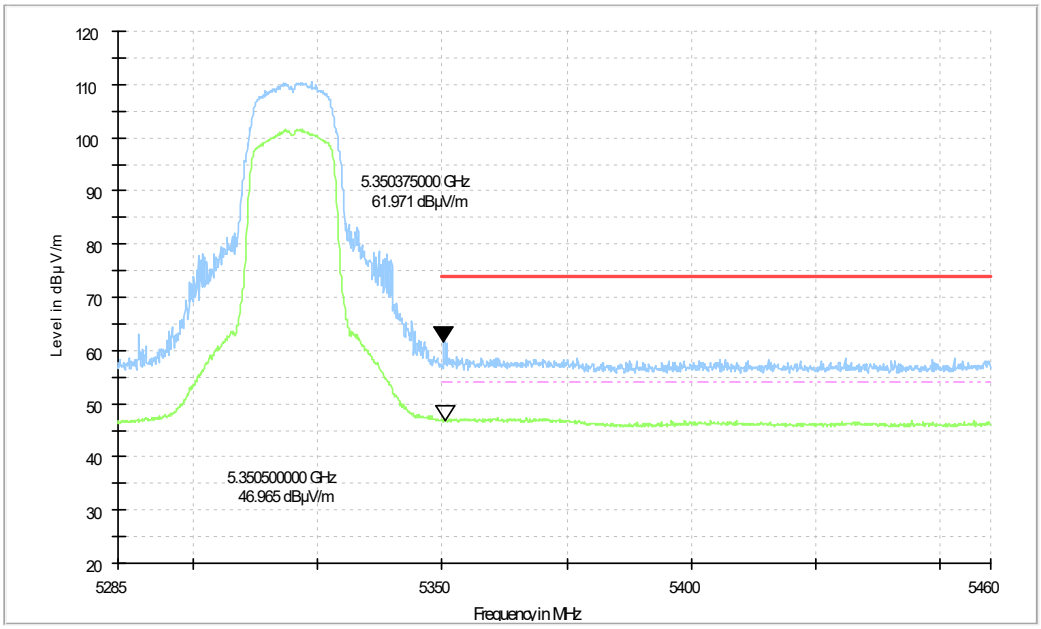


Fig. 2 Band Edges (802.11a Ch64, 5320MHz)

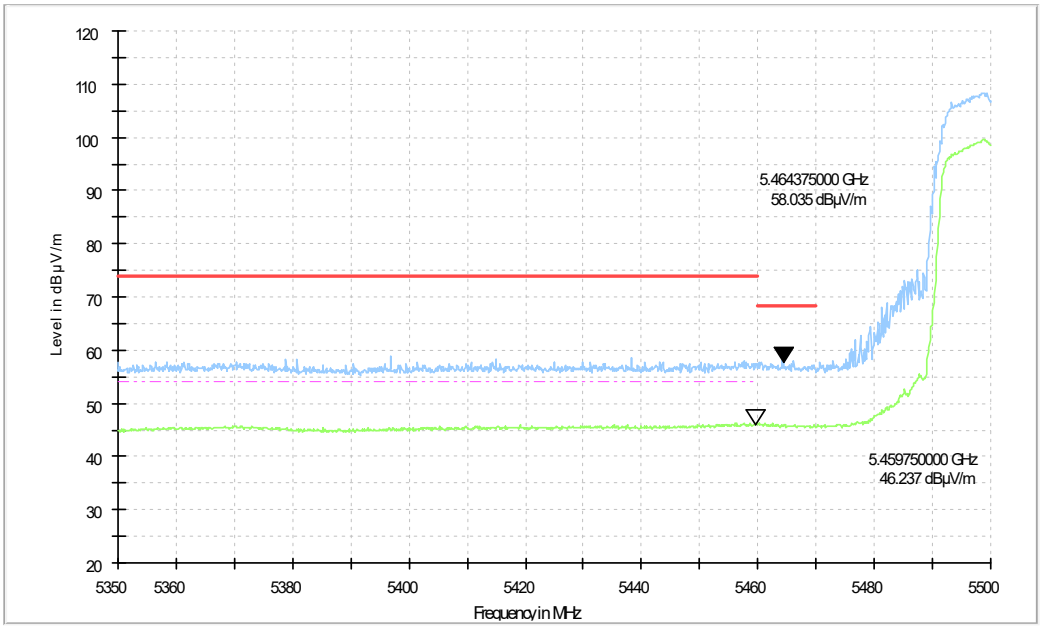


Fig. 3 Band Edges (802.11a Ch100, 5500MHz)

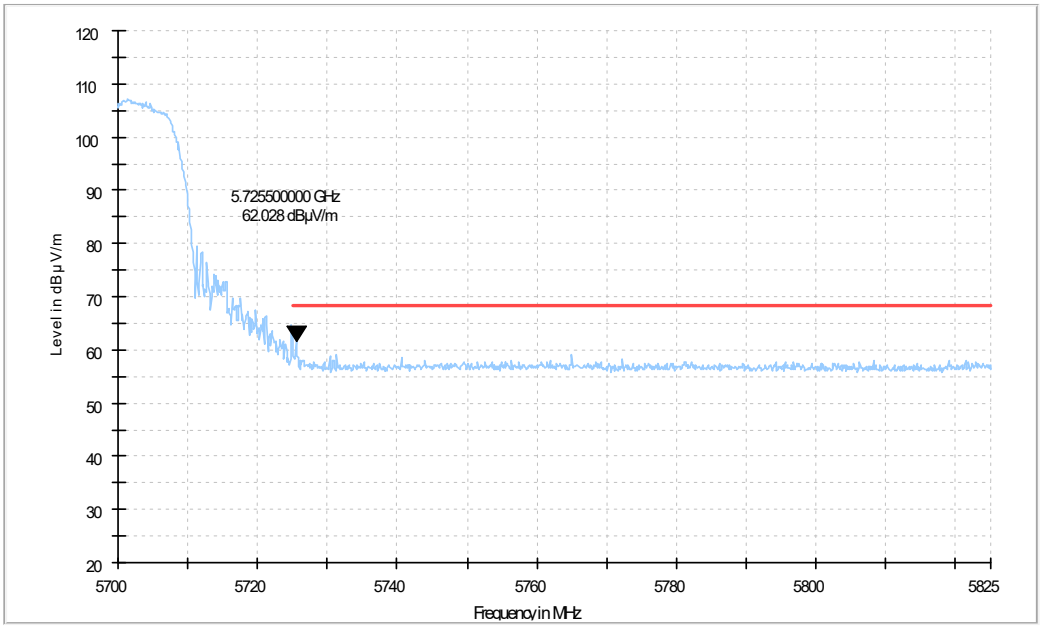


Fig. 4 Band Edges (802.11a Ch140, 5700MHz)

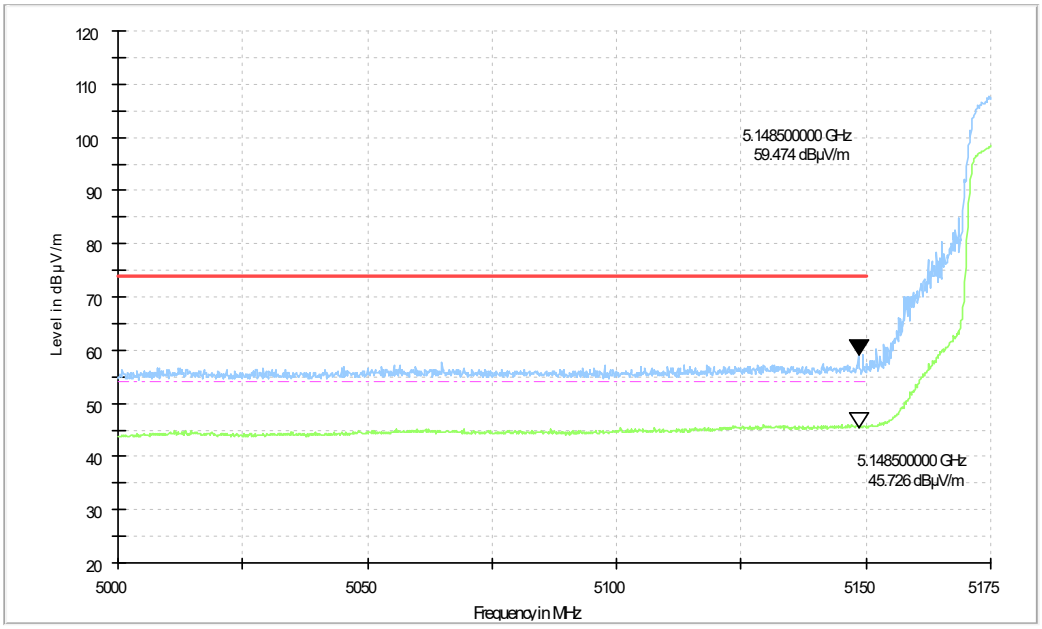


Fig. 5 Band Edges (802.11n-HT20 Ch36, 5180MHz)

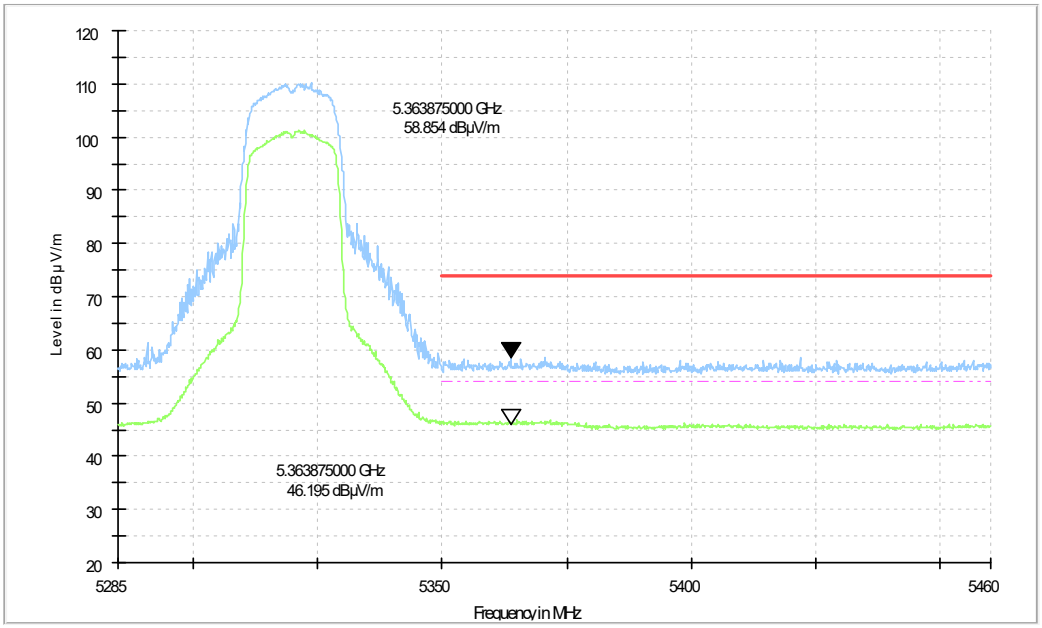


Fig. 6 Band Edges (802.11n-HT20 Ch64, 5320MHz)

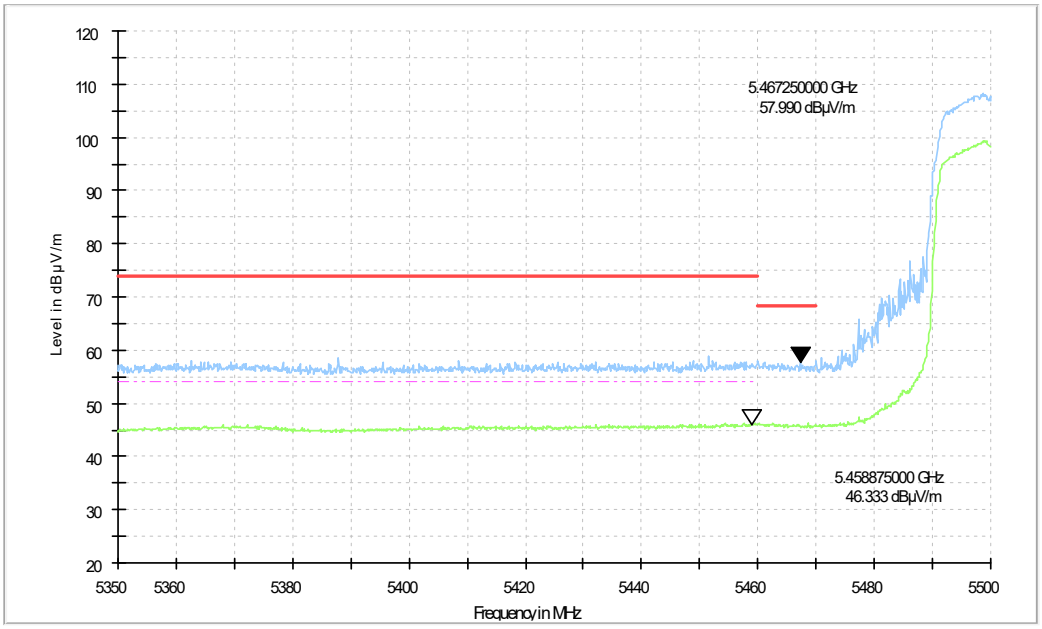


Fig. 7 Band Edges (802.11n-HT20 Ch100, 5500MHz)

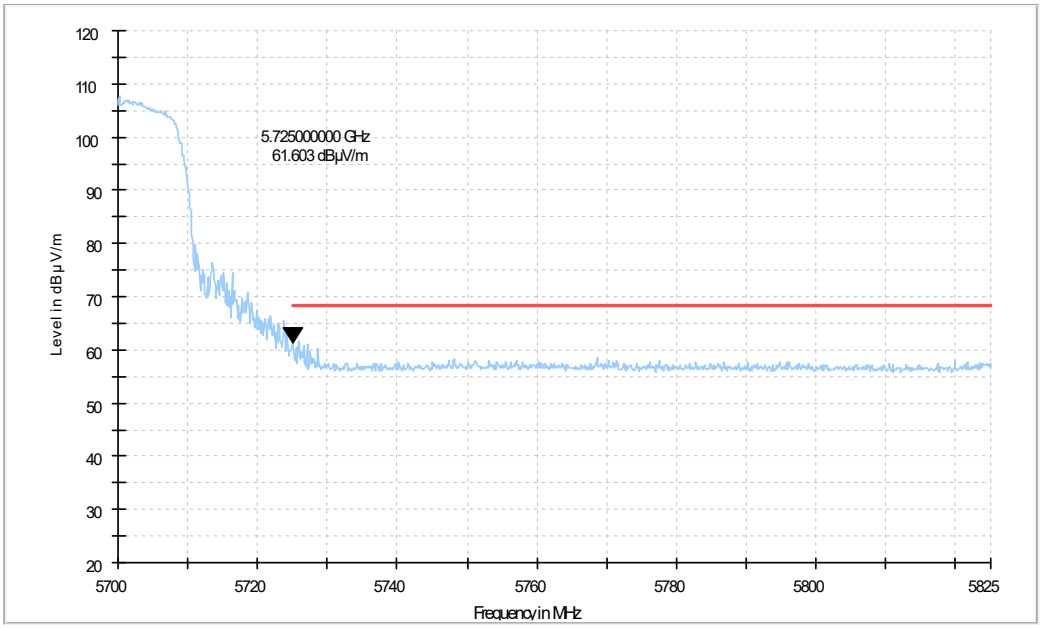


Fig. 8 Band Edges (802.11n-HT20 Ch140, 5700MHz)

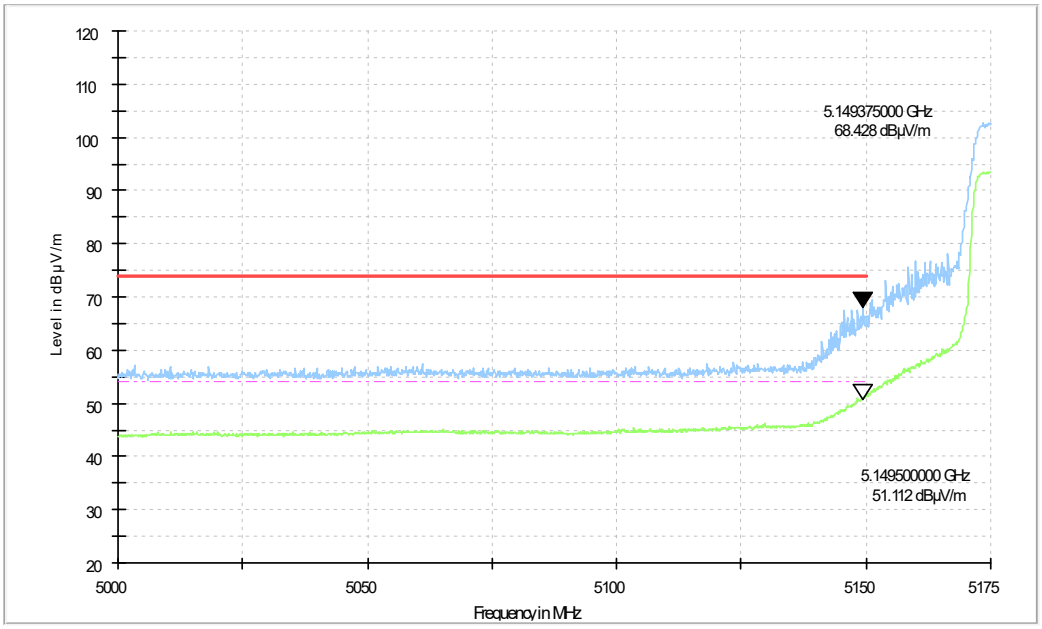


Fig. 9 Band Edges (802.11n-HT40 Ch38, 5190MHz)

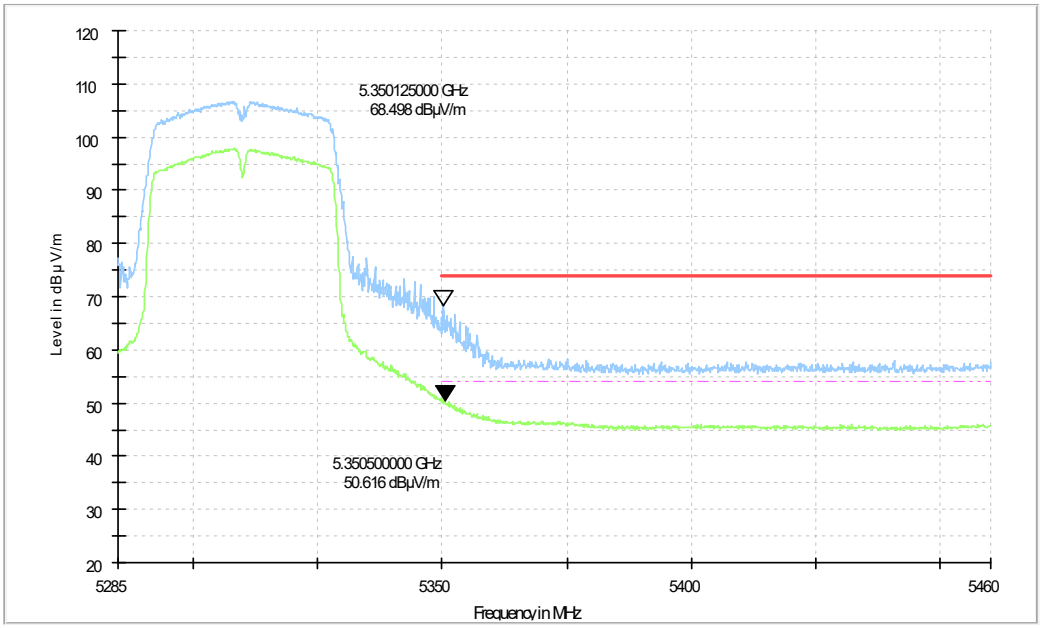


Fig. 10 Band Edges (802.11n-HT40 Ch62, 5310MHz)

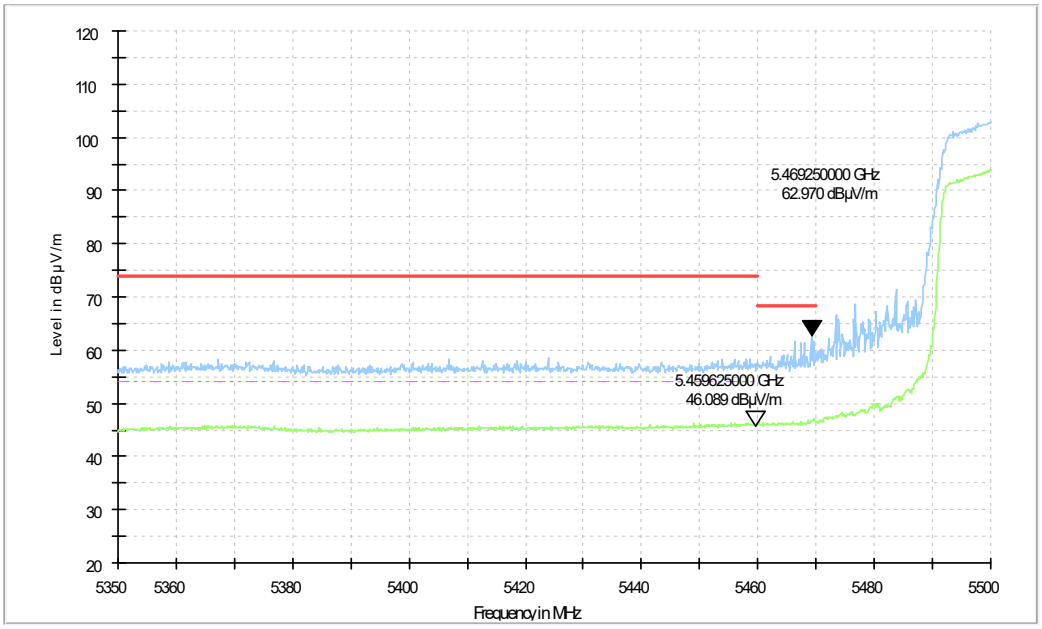


Fig. 11 Band Edges (802.11n-HT40 Ch102, 5510MHz)

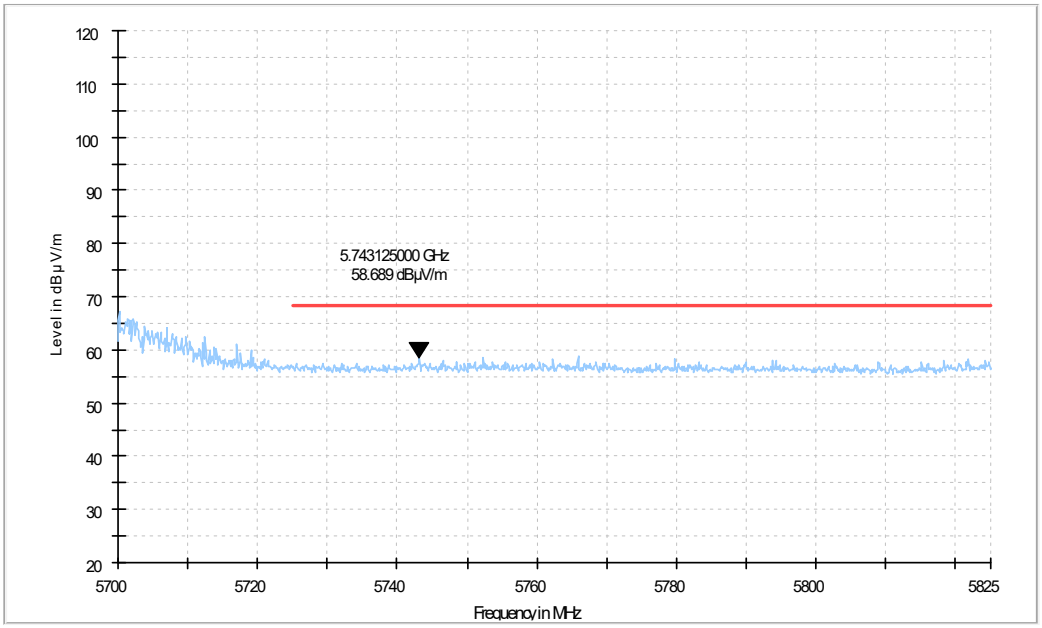


Fig. 12 Band Edges (802.11n-HT40 Ch134, 5670MHz)

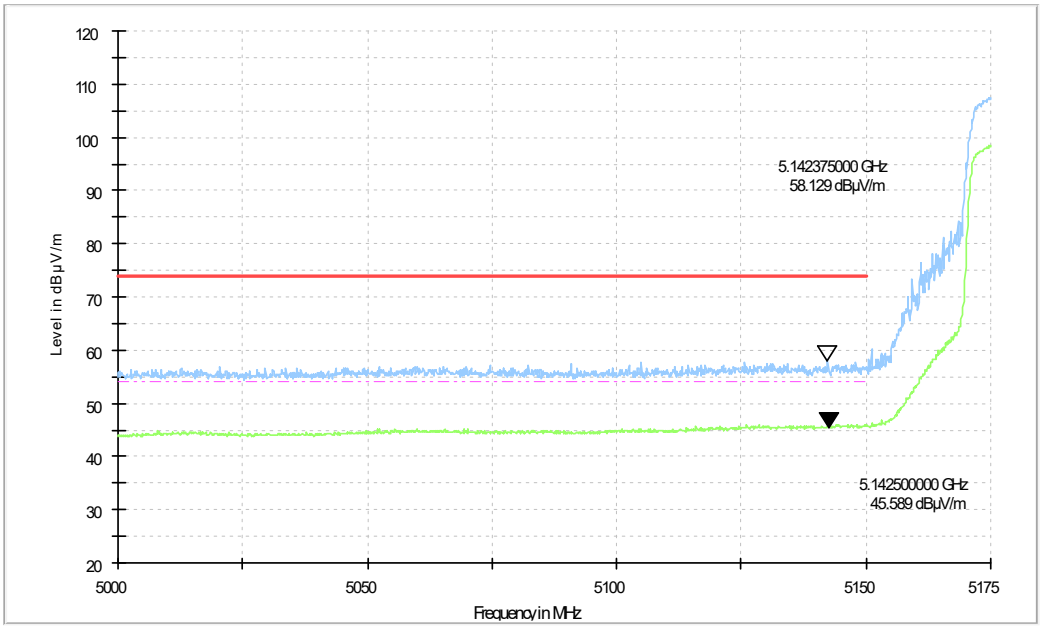


Fig. 13 Band Edges (802.11ac-HT20 Ch36, 5180MHz)

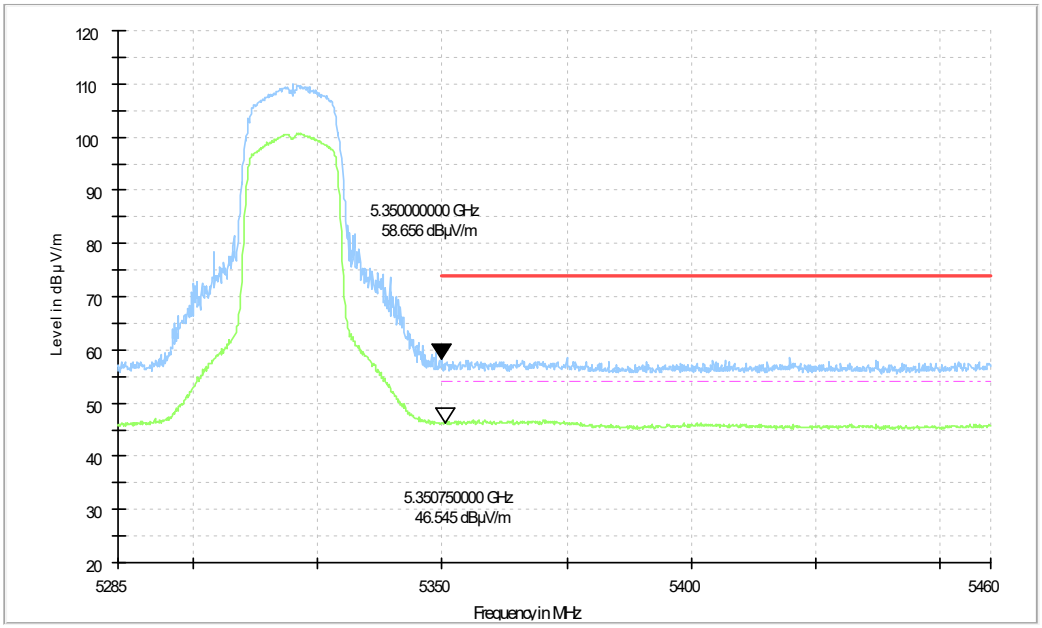


Fig. 14 Band Edges (802.11ac-HT20 Ch64, 5320MHz)

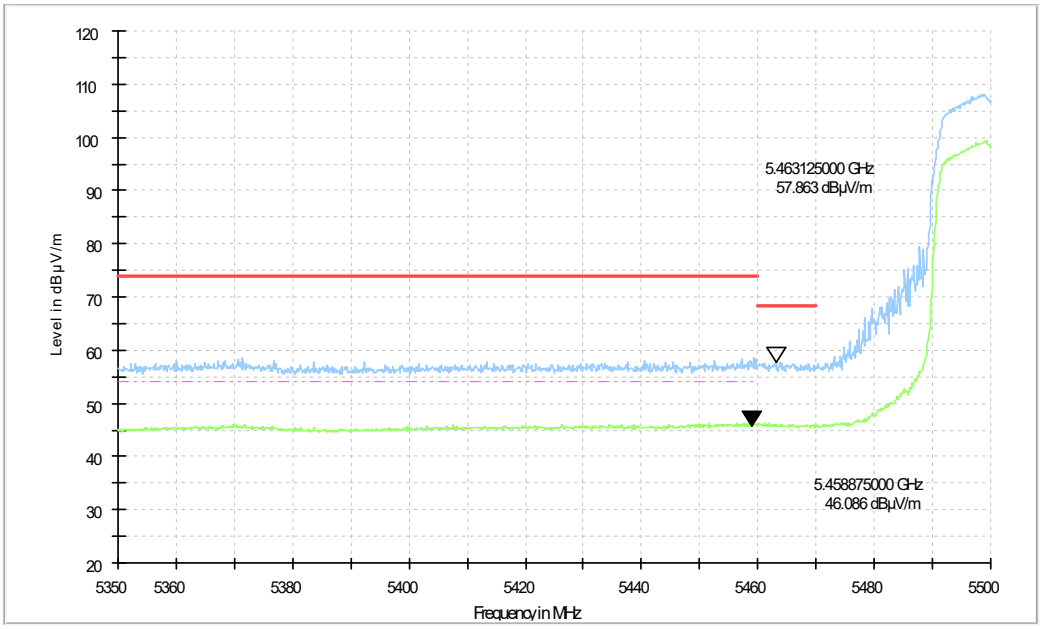


Fig. 15 Band Edges (802.11ac-HT20 Ch100, 5500MHz)

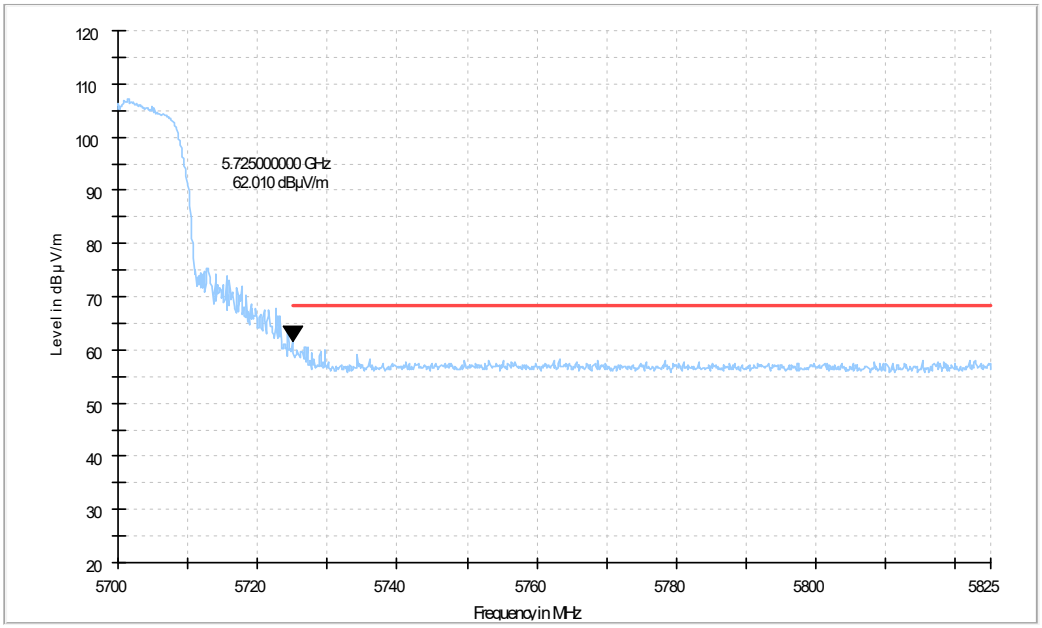


Fig. 16 Band Edges (802.11ac-HT20 Ch140, 5700MHz)

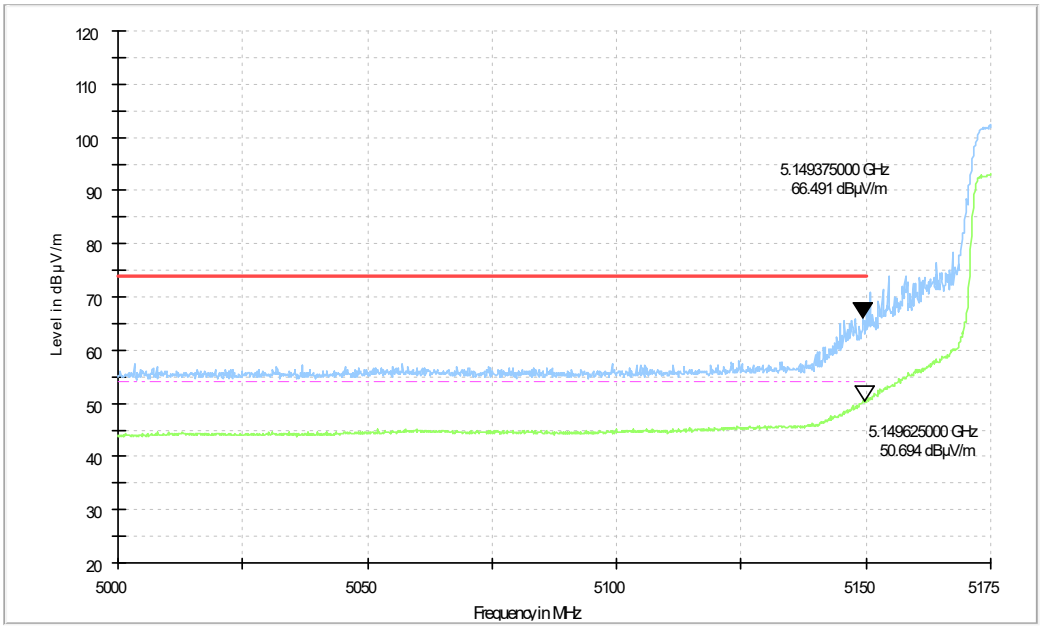


Fig. 17 Band Edges (802.11ac-HT40 Ch38, 5190MHz)

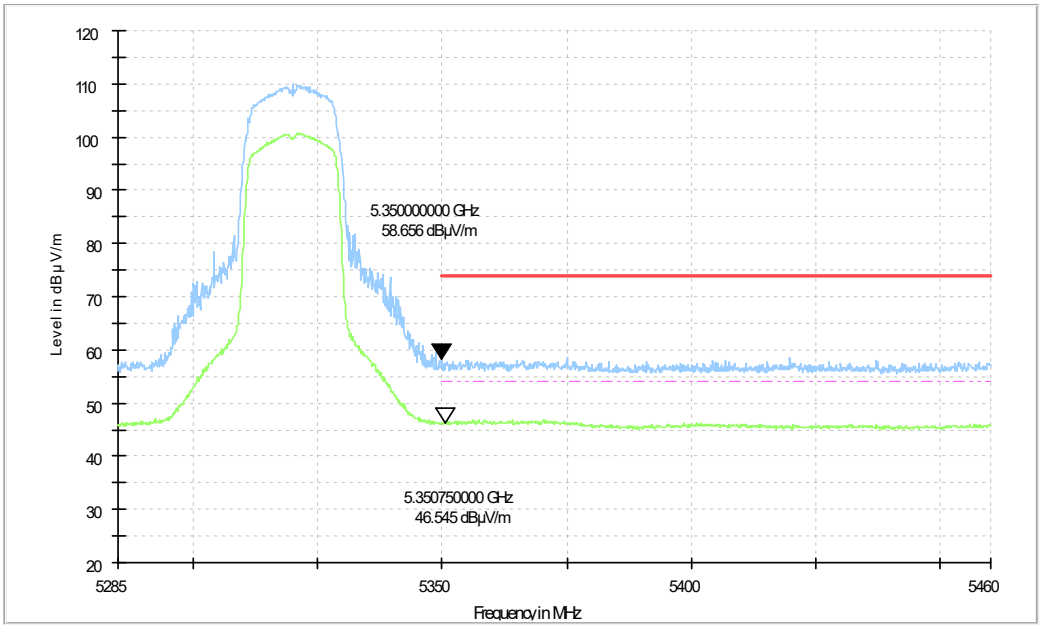


Fig. 18 Band Edges (802.11ac-HT40 Ch62, 5310MHz)

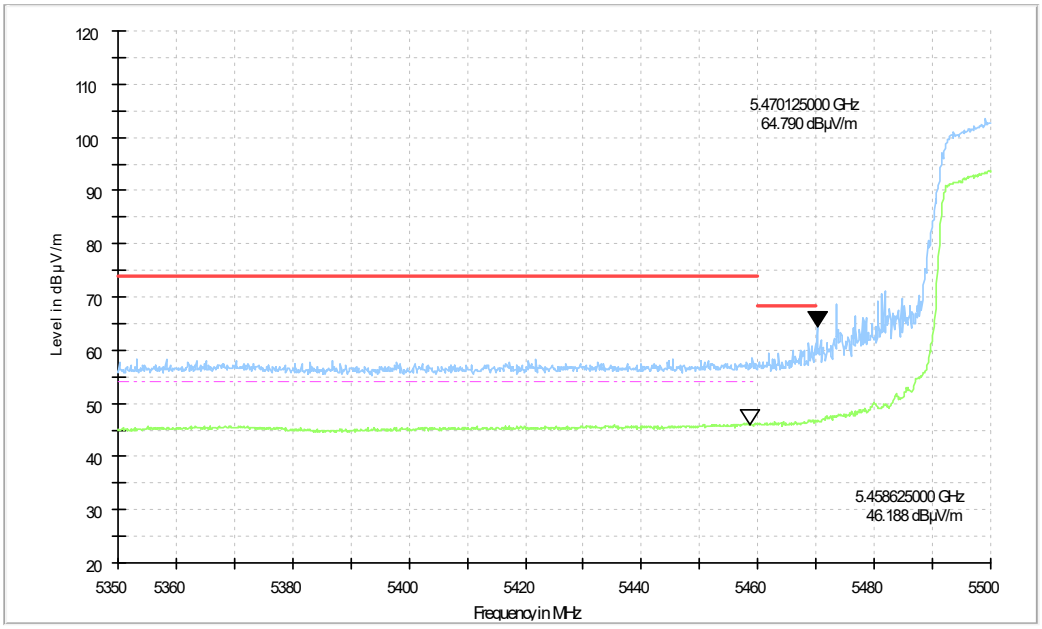


Fig. 19 Band Edges (802.11ac-HT40 Ch102, 5510MHz)

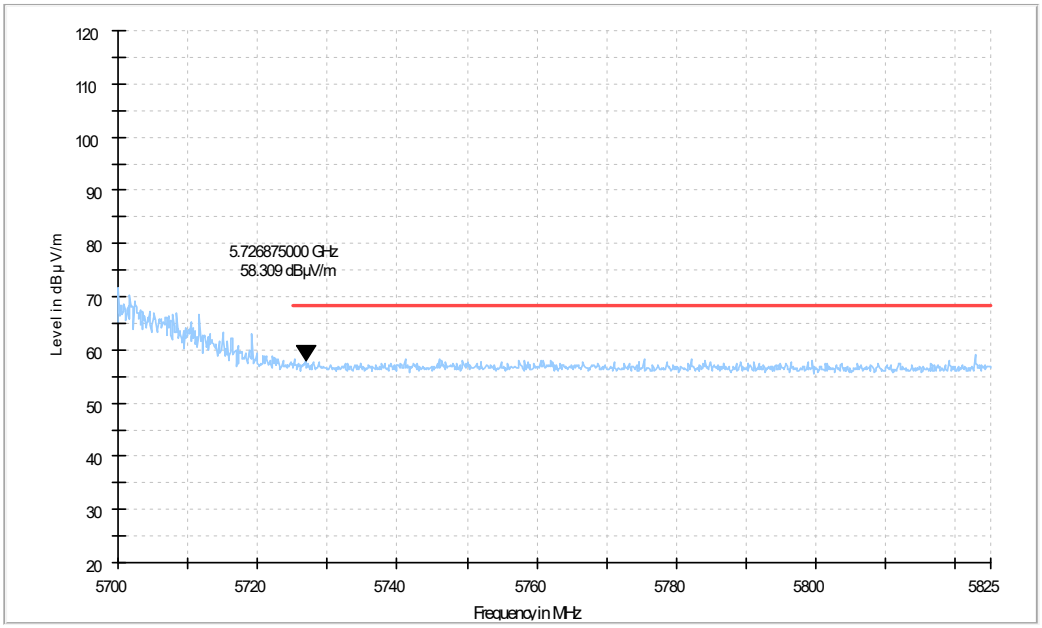


Fig. 20 Band Edges (802.11ac-HT40 Ch134, 5670MHz)

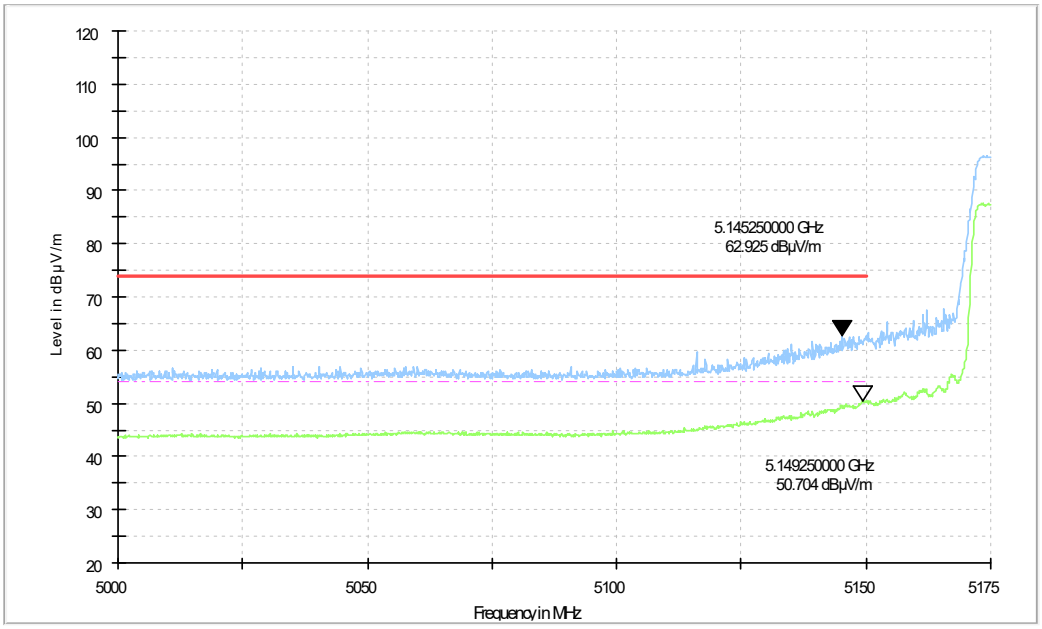


Fig. 21 Band Edges (802.11ac-HT80 Ch42 , 5210MHz)

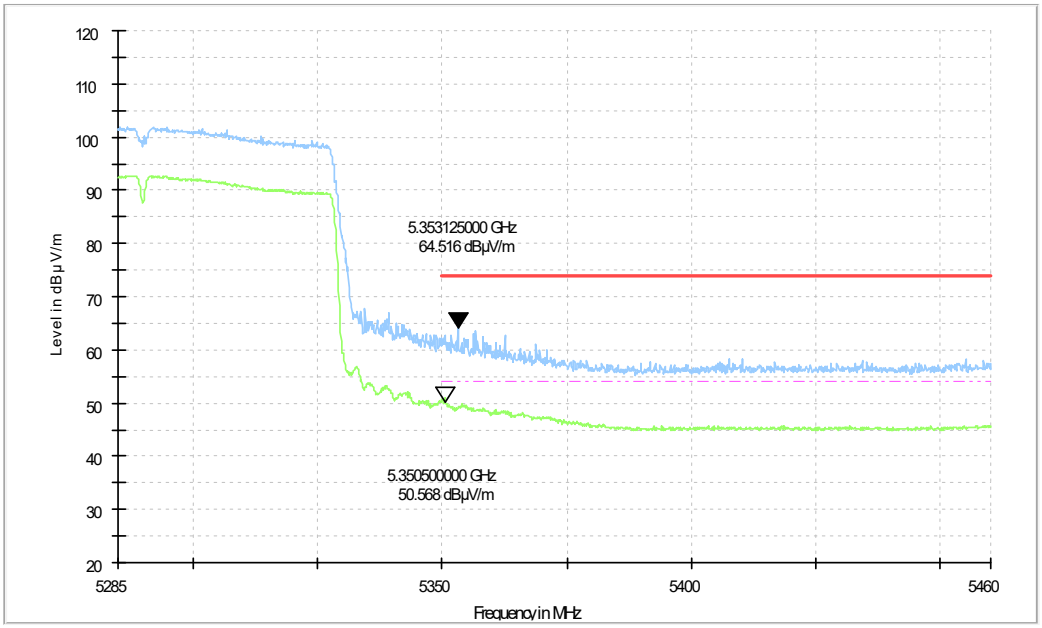


Fig. 22 Band Edges (802.11ac-HT80 Ch58, 5290MHz)

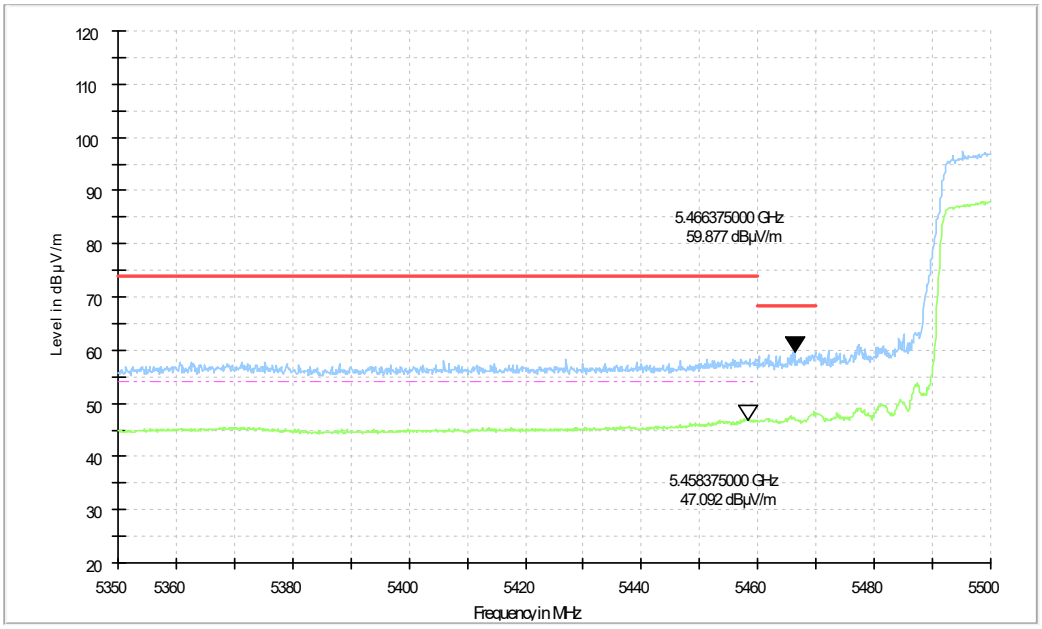


Fig. 23 Band Edges (802.11ac-HT80 Ch106, 5530MHz)

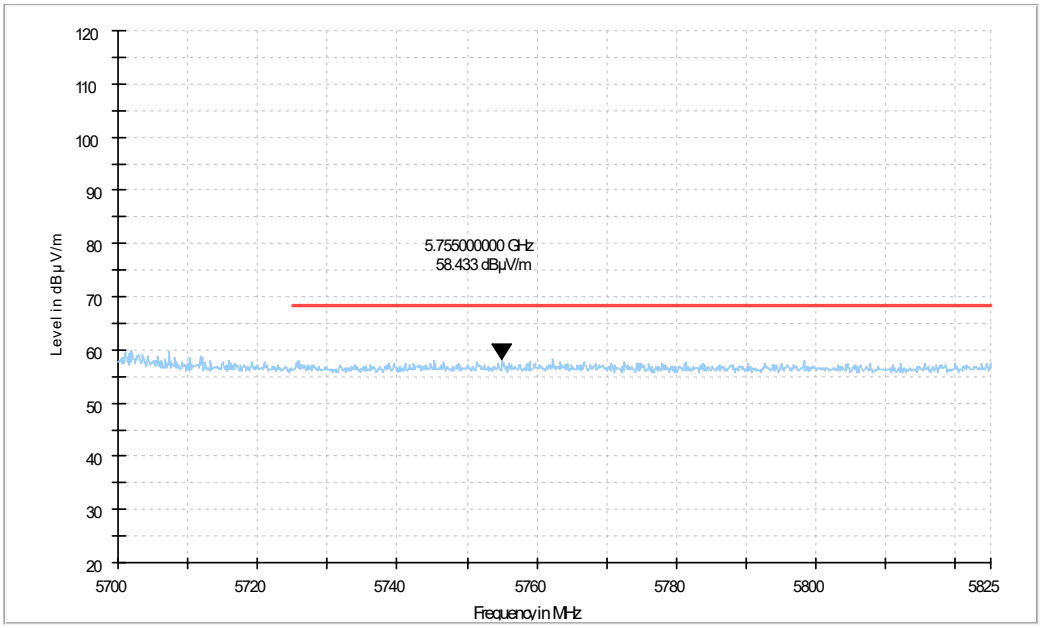


Fig. 24 Band Edges (802.11ac-HT80 Ch122, 5610MHz)

A.6. AC Powerline Conducted Emission (150kHz- 30MHz)

A.6.1 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

A.6.2 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.

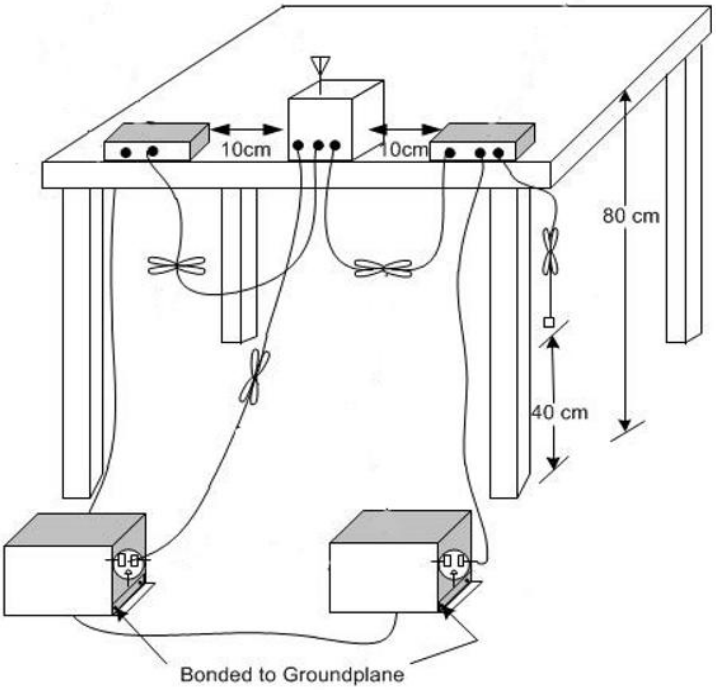
The measurement bandwidth is:

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

A.6.3 Test Condition

Voltage（V）	Frequency（Hz）
120	60

A.6.4 Test setup



Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.25	Fig.26	P
0.5 to 5	56			
5 to 30	60			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.25	Fig.26	P
0.5 to 5	46			
5 to 30	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Conclusion: PASS

Test graphs as below:

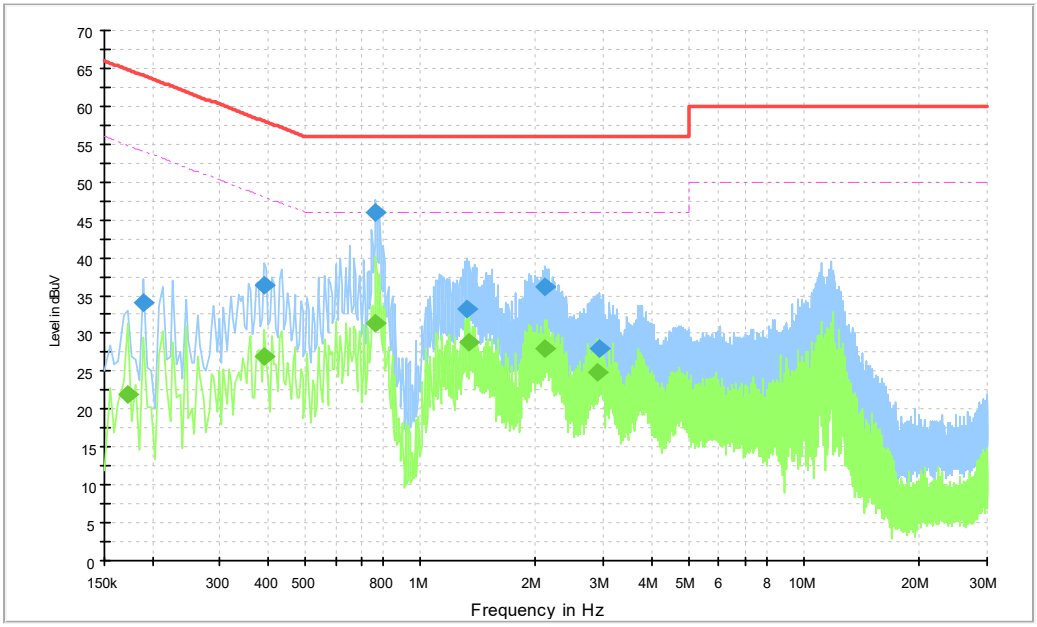


Fig.25 Conducted Emission (802.11a, TX)

Measurement Result:

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190500	34.0	2000.0	9.000	On	N	20.0	30.0	64.0
0.393000	36.3	2000.0	9.000	On	L1	20.0	21.7	58.0
0.766500	46.0	2000.0	9.000	On	L1	20.0	10.0	56.0
1.324500	33.3	2000.0	9.000	On	N	20.0	22.7	56.0
2.121000	36.2	2000.0	9.000	On	L1	19.8	19.8	56.0
2.926500	27.9	2000.0	9.000	On	N	20.0	28.1	56.0

Measurement Result:

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.172500	21.9	2000.0	9.000	On	L1	20.0	32.9	54.8
0.393000	26.9	2000.0	9.000	On	L1	20.0	21.1	48.0
0.766500	31.4	2000.0	9.000	On	N	20.1	14.6	46.0
1.342500	28.8	2000.0	9.000	On	L1	19.9	17.2	46.0
2.121000	27.9	2000.0	9.000	On	L1	19.8	18.1	46.0
2.895000	24.8	2000.0	9.000	On	L1	19.9	21.2	46.0

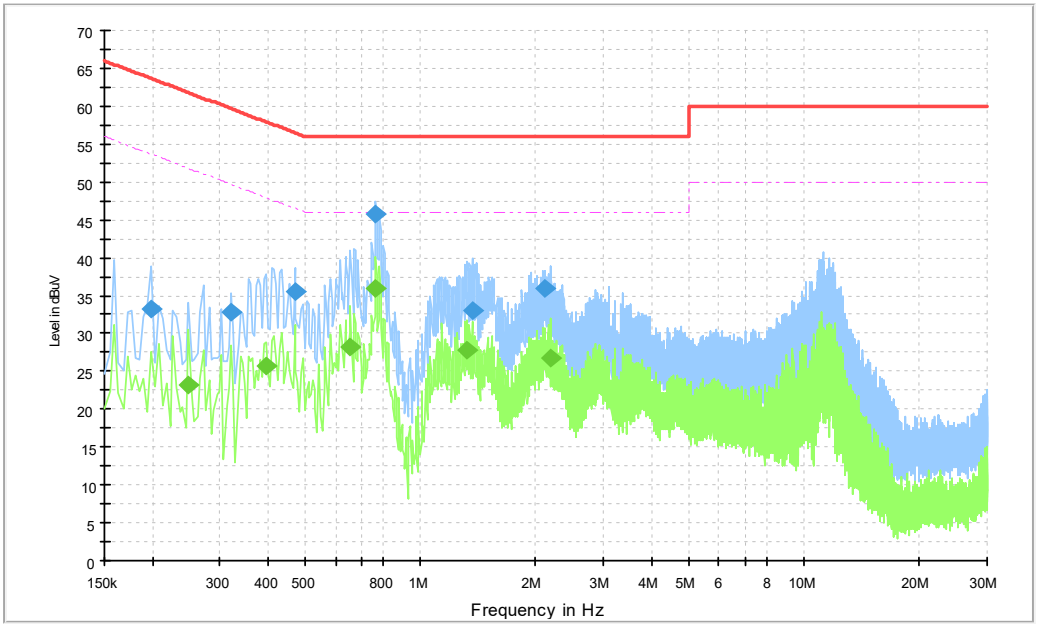


Fig.26 Conducted Emission (802.11a, IDLE)

Measurement Result:

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199500	33.2	2000.0	9.000	On	L1	20.0	30.5	63.6
0.321000	32.8	2000.0	9.000	On	L1	20.0	26.9	59.7
0.469500	35.5	2000.0	9.000	On	L1	20.1	21.0	56.5
0.766500	45.7	2000.0	9.000	On	L1	20.0	10.3	56.0
1.360500	33.1	2000.0	9.000	On	N	20.0	22.9	56.0
2.098500	35.8	2000.0	9.000	On	L1	19.8	20.2	56.0

Measurement Result:

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.249000	23.2	2000.0	9.000	On	L1	20.0	28.6	51.8
0.397500	25.8	2000.0	9.000	On	L1	20.0	22.1	47.9
0.658500	28.2	2000.0	9.000	On	L1	20.0	17.8	46.0
0.766500	36.0	2000.0	9.000	On	L1	20.0	10.0	46.0
1.324500	27.7	2000.0	9.000	On	L1	19.9	18.3	46.0
2.179500	26.8	2000.0	9.000	On	L1	19.8	19.2	46.0

A.7. 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

EUT ID: UT20a

Measurement Result:

TestMode	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	5180	17.174	5171.4439	5188.6174	---	---
	5200	17.081	5191.4674	5208.5481	---	---
	5240	17.104	5231.4618	5248.5657	---	---
11N20SISO	5180	18.044	5170.9996	5189.0440	---	---
	5200	18.003	5190.9822	5208.9856	---	---
	5240	18.061	5230.9859	5249.0469	---	---
11N40SISO	5190	36.372	5171.8430	5208.2155	---	---
	5230	36.406	5211.7952	5248.2017	---	---
11AC80SISO	5210	75.221	5172.4386	5247.6599	---	---