

RADIO TEST REPORT

Product : VISION X10

Model Name : VISION X10

FCC ID : 2BUP5FG1101A

Test Regulation : FCC 47 CFR Part 15 Subpart E (Section 15.407)

Received Date : 2026/3/5

Test Date : 2026/03/07 ~ 2026/03/21

Issued Date : 2026/4/24

Applicant : Vexilar LLC
6667 West Old Shakopee Rd, #101, Minneapolis, MN 55438
USA

Issued By : Underwriters Laboratories Taiwan Co., Ltd.
Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd.,
Zhudong Township, Hsinchu County, Taiwan

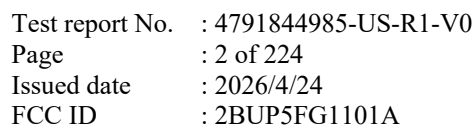


The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report are responsible of the test sample(s) provided by the client only and are not to be used to indicate applicability to other similar products.

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Telephone : +886-2-7737-3000
Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1



Original Test Report No.: 4791844985-US-R1-V0

[illegible]

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Telephone :+886-2-7737-3000
Facsimile (FAX) :+886-3-583-7948 Doc No: Form-ULID-004739 (DCS

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Table of Contents

1. Attestation of Test Results	4
2. Summary of Test Results	5
3. Test Methodology and Reference Procedures	6
4. Facilities and Accreditation	6
5. Measurement Uncertainty	7
6. Equipment under Test.....	8
6.1. Description of EUT	8
6.2. Channel List	10
6.3. Test Condition.....	12
6.4. Description of Available Antennas	13
6.5. Test Mode Applicability and Tested Channel Detail.....	14
6.6. Duty cycle	16
7. Test Equipment	17
8. Description of Test Setup	19
9. Test Results	21
9.1. 6dB Bandwidth	21
9.2. 26dB Bandwidth	26
9.3. Occupied Bandwidth.....	31
9.4. Conducted output power	36
9.5. Power Spectral Density	39
9.6. Frequency Stability	58
9.7. Radiated Spurious Emission	60
9.8. AC Power Line Conducted Emission	221

1. Attestation of Test Results

APPLICANT: Vexilar LLC
6667 West Old Shakopee Rd, #101, Minneapolis, MN 55438 USA

MANUFACTURER: Qisda Corporation
No. 157, Shan-Ying Road, Shan-Ting Li, Gueishan Dist., Taoyuan
333, Taiwan

EUT DESCRIPTION: VISION X10

BRAND: Vexilar LLC

MODEL: VISION X10

SAMPLE STAGE: Design Verification Test Sample

DATE of TESTED: 2026/03/07 ~ 2026/03/21

APPLICABLE STANDARDS	
STANDARD	Test Results
FCC 47 CFR PART 15 Subpart E (Section 15.407)	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:



Sally Lu
Project Handler

Date : 2026/4/24

Approved and Authorized By:



Eric Lee
Senior Laboratory Engineer

Date : 2026/4/24

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

2. Summary of Test Results

Summary of Test Results		
FCC Clause	Test Items	Result
15.407(e)	6dB Bandwidth	PASS
15.403(i)	26dB Bandwidth	PASS
2.1049	Occupied Bandwidth	See Note1
15.407(a)(1/2/3)	Conducted Output Power	PASS
15.407(a)(1/2/3)	Power Spectral Density	PASS
15.407(g)	Frequency Stability	PASS
15.407(b) (1/2/3/4/5/9)	Radiated Emissions and Band Edge Measurement	PASS
15.407(b)(9)	AC Power Conducted Emission	PASS
15.203	Antenna Requirement	PASS
15.407(h)	Dynamic Frequency Selection & Transmit power control	See Note2

Note:

1. The Occupied Bandwidth was reference only.
2. The “Dynamic Frequency Selection & Transmit power control measurement” was recorded in Report No.: 4791844985-US-R2-V0.

3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2, KDB 789033 D02 General UNII Test Procedure New Rules v02r01, KDB414788 D01 Radiated Test Site v01r01, ANSI C63.10-2020+Cor.1-2023 and KDB 662911 D01 Multiple Transmitter Output v02r01.

4. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.
Address	Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Accreditation Certificate	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398.

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

5. Measurement Uncertainty

For statement of conformity, Simple acceptance (Section 3.1.4 of IEC Guide 115) was applied as decision rule for measurement in this test report.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k=2$.

Determining compliance based on the results of the compliance measurement, not considering measurement instrumentation uncertainty.

Measurement	Frequency	Uncertainty
Conducted disturbance at mains terminals ports	150kHz ~ 30MHz	3.0 dB
RF Conducted	9 kHz - 40GHz	2.4 dB
Radiated disturbance below 30MHz	9 kHz - 30 MHz	1.9 dB
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	5.6 dB
Radiated disturbance above 1 GHz	1GHz ~ 40GHz	4.6 dB

6. Equipment under Test

6.1. Description of EUT

Product	VISION X10
Brand Name	Vexilar LLC
Model Name	VISION X10
Normal Voltage	12Vdc from DC source

Operating Frequency	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz, 5745 ~ 5825MHz
Modulation	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Transfer Rate	802.11a: up to 54 Mbps
	802.11n: up to MCS15
	802.11ac: up to MCS9
Device Type	Client
Maximum Output Power	5180 ~ 5240 MHz: 16.29 dBm
	5260 ~ 5320 MHz: 17.32 dBm
	5500 ~ 5700 MHz: 23.92 dBm
	5745 ~ 5825 MHz: 26.36 dBm
Sample ID	Conducted Test:9497462
	Radiated Test:9497461

Note:

1. EUT provides a complete 2Tx port and 2Rx port. Please refer to the following working transmission conditions:

Modulation Mode	Tx Function	Rx Function
802.11a	2Tx	2Rx
802.11n (HT20)	2Tx	2Rx
802.11n (HT40)	2Tx	2Rx
802.11ac (VHT20)	2Tx	2Rx
802.11ac (VHT40)	2Tx	2Rx
802.11ac (VHT80)	2Tx	2Rx

*The modulation and bandwidth are similar for 802.11n mode, 802.11ac mode, for 20MHz, 40MHz, 80MHz, bandwidth system, therefore investigated one worst case to representative mode in test report.

2. The EUT contains following accessory devices:

Product	Brand	Model	Description
Sonar Sensor	vexilar	VISION XDRC	Shield cable: 4.5m
DC Power cable	vexilar	N/A	Shield cable: 2m

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer the manufacturer's or user's manual, the laboratory shall not be held responsible.

6.2. Channel List

FOR 5180 ~ 5240MHz

4 channels are provided for 5G WLAN 20MHz bandwidth system:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

2 channels are provided for 5G WLAN 40MHz bandwidth system:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

1 channel is provided for 5G WLAN 80MHz bandwidth system:

Channel	Frequency (MHz)
42	5210

FOR 5260 ~ 5320MHz

4 channels are provided for 5G WLAN 20MHz bandwidth system:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
56	5280	64	5320

2 channels are provided for 5G WLAN 40MHz bandwidth system:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	62	5310

1 channel is provided for 5G WLAN 80MHz bandwidth system:

Channel	Frequency (MHz)
58	5290

FOR 5500 ~ 5700MHz

11 channels are provided for 5G WLAN 20MHz bandwidth system:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	132	5660
104	5520	136	5680
108	5540	140	5700
112	5560	-	-
116	5580	-	-
120	5600	-	-
124	5620	-	-
128	5640	-	-

5 channels are provided for 5G WLAN 40MHz bandwidth system:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	126	5630
110	5550	134	5670
118	5590	-	-

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

3 channel are provided for 5G WLAN 80MHz bandwidth system:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610
-	-	-	-

FOR 5745 ~ 5825MHz:

5 channels are provided for 5G WLAN 20MHz bandwidth system:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	161	5805
153	5765	165	5825
157	5785	-	-

2 channels are provided for 5G WLAN 40MHz bandwidth system:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

1 channel is provided for 5G WLAN 80MHz bandwidth system:

Channel	Frequency (MHz)
155	5775

6.3. Test Condition

Test Item	Test Site No.	Environmental	Input Power	Test Date	Tested by
Antenna Port Conducted Measurement	SR4	24°C/ 62%RH	12Vdc	2026/03/20	Rex Chen
Radiated Spurious Emission	966-2	22~26°C/ 62~68%RH	12Vdc	2026/03/07~ 2026/03/19	Rex Chen
AC power Line Conducted Emission	SR1	21~25°C/ 62~67%RH	120Vac/ 60Hz	2026/03/09~ 2026/03/21	Rex Chen

Sample Calculation:

Antenna Port Conducted Measurement:

- Where relevant, the follow sample calculation is provided:
Result Value (dBm) = Reading Value (dBm) + Attenuator Factor (dB) + Cable Loss (dB).
Example: Result Value (10dBm) = Reading Value (-2dBm) + Attenuator Factor (10dB) + Cable Loss(2dB).
*Test plot only shown the “Result Value”.

Radiated Spurious Emission:

- Where relevant, the follow sample calculation is provided:
Result Value (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
Example: Result Value (34.5dBuV/m) = Reading Value (40.1dBuV) + Antenna Factor (18.7dB/m) + Cable Loss (4.2dB) - Preamp Factor (28.5dB).

AC power Line Conducted Emission:

- Where relevant, the follow sample calculation is provided:
Result Value (dBuV) = Reading Value (dBuV) + Correction Factor (dB).
Correction Factor (dB) = Insertion loss(dB) + Cable loss(dB).
Example: Result Value (53.7dBuV) = Reading Value (35.1dBuV) + Insertion loss(18.1dB) + Cable loss(0.5dB).

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Telephone :+886-2-7737-3000
Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

6.4. Description of Available Antennas

Ant. No.	Transmitter Circuit	Frequency Range	Brand Name	Model Name	Maximum Gain (dBi)	Ant. Type	Connector Type
WiFi 0	Chain0	5150 ~ 5850 MHz	INPAQ	RFPCA401531IMLB401	5.05	Dipole	i-pex(MHF)
WiFi 1	Chain1	5150 ~ 5850 MHz	INPAQ	RFPCA401517IMLB401	5.66	Dipole	i-pex(MHF)

Note: The above antenna information was provided from customer and for more detailed features description, please refer the manufacturer's specification or user's manual, the laboratory shall not be held responsible.

6.5. Test Mode Applicability and Tested Channel Detail

Test Item	Mode	Frequency Range(MHz)	Modulation Type	Available Channel	Test Channel	Data Rate
Radiated Bandedge	802.11a	5180-5240	OFDM	36 to 48	36, 44, 48	6 Mbps
	802.11ac (VHT20)			36 to 48	36, 44, 48	MCS0 Nss1
	802.11ac (VHT40)			38 to 46	38, 46	MCS0 Nss1
	802.11ac (VHT80)			42	42	MCS0 Nss1
	802.11a	5260-5320	OFDM	52 to 64	52, 60, 64	6 Mbps
	802.11ac (VHT20)			52 to 64	52, 60, 64	MCS0 Nss1
	802.11ac (VHT40)			54 to 62	54, 62	MCS0 Nss1
	802.11ac (VHT80)			58	58	MCS0 Nss1
	802.11a	5500-5700	OFDM	100 to 140	100, 116, 140	6 Mbps
	802.11ac (VHT20)			100 to 140	100, 116, 140	MCS0 Nss1
	802.11ac (VHT40)			102 to 134	102, 110, 134	MCS0 Nss1
	802.11ac (VHT80)			106 to 122	106, 122	MCS0 Nss1
	802.11a	5745-5825	OFDM	149 to 165	149, 157, 165	6 Mbps
	802.11ac (VHT20)			149 to 165	149, 157, 165	MCS0 Nss1
	802.11ac (VHT40)			151 to 159	151, 159	MCS0 Nss1
	802.11ac (VHT80)			155	155	MCS0 Nss1
Radiated Emissions (Above 1GHz)	802.11a	5180-5240	OFDM	36 to 48	36, 44, 48	6 Mbps
	802.11ac (VHT20)			36 to 48	36, 44, 48	MCS0 Nss1
	802.11ac (VHT40)			38 to 46	38, 46	MCS0 Nss1
	802.11ac (VHT80)			42	42	MCS0 Nss1
	802.11a	5260-5320	OFDM	52 to 64	52, 60, 64	6 Mbps
	802.11ac (VHT20)			52 to 64	52, 60, 64	MCS0 Nss1
	802.11ac (VHT40)			54 to 62	54, 62	MCS0 Nss1
	802.11ac (VHT80)			58	58	MCS0 Nss1
	802.11a	5500-5700	OFDM	100 to 140	100, 116, 140	6 Mbps
	802.11ac (VHT20)			100 to 140	100, 116, 140	MCS0 Nss1
	802.11ac (VHT40)			102 to 134	102, 110, 134	MCS0 Nss1
	802.11ac (VHT80)			106 to 122	106, 122	MCS0 Nss1
	802.11a	5745-5825	OFDM	149 to 165	149, 157, 165	6 Mbps
	802.11ac (VHT20)			149 to 165	149, 157, 165	MCS0 Nss1
	802.11ac (VHT40)			151 to 159	151, 159	MCS0 Nss1
	802.11ac (VHT80)			155	155	MCS0 Nss1

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Test Item	Mode	Frequency Range(MHz)	Modulation Type	Available Channel	Test Channel	Data Rate
Radiated Emissions (Below 1GHz)	802.11ac (VHT20)	5500-5700	OFDM	100 to 140	100	MCS0 Nss1
AC Power Line Conducted Emission	802.11ac (VHT40)	5745-5825	OFDM	151 to 159	159	MCS0 Nss1
Antenna Port Conducted Measurement	802.11a	5180-5240	OFDM	36 to 48	36, 44, 48	6 Mbps
	802.11ac (VHT20)			36 to 48	36, 44, 48	MCS0 Nss1
	802.11ac (VHT40)			38 to 46	38, 46	MCS0 Nss1
	802.11ac (VHT80)			42	42	MCS0 Nss1
	802.11a	5260-5320	OFDM	52 to 64	52, 60, 64	6 Mbps
	802.11ac (VHT20)			52 to 64	52, 60, 64	MCS0 Nss1
	802.11ac (VHT40)			54 to 62	54, 62	MCS0 Nss1
	802.11ac (VHT80)			58	58	MCS0 Nss1
	802.11a	5500-5700	OFDM	100 to 140	100, 116, 140	6 Mbps
	802.11ac (VHT20)			100 to 140	100, 116, 140	MCS0 Nss1
	802.11ac (VHT40)			102 to 134	102, 110, 134	MCS0 Nss1
	802.11ac (VHT80)			106 to 122	106, 122	MCS0 Nss1
	802.11a	5745-5825	OFDM	149 to 165	149, 157, 165	6 Mbps
	802.11ac (VHT20)			149 to 165	149, 157, 165	MCS0 Nss1
	802.11ac (VHT40)			151 to 159	151, 159	MCS0 Nss1
	802.11ac (VHT80)			155	155	MCS0 Nss1

- The EUT was evaluated in two positions: lay and stand. Based on the investigation, the stand orientation represented the worst-case scenario. All final radiated emission tests were conducted with EUT positioned accordingly.
- In the transmit mode, 802.11ac (VHT40) channel 159 has the highest RF output power. Therefore, the AC conduction was performed using this worst-case mode.
- In the transmit mode, 802.11ac (VHT20) channel 100 has the worst case of Tx spurious emission (above 1GHz). Therefore, all final tests for the spurious emission (below 1GHz) were performed using this worst-case mode.
- For Antenna Port Conducted Measurement, this item includes all test value of each mode but only includes spectrum plot of worst value of each mode.
- For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

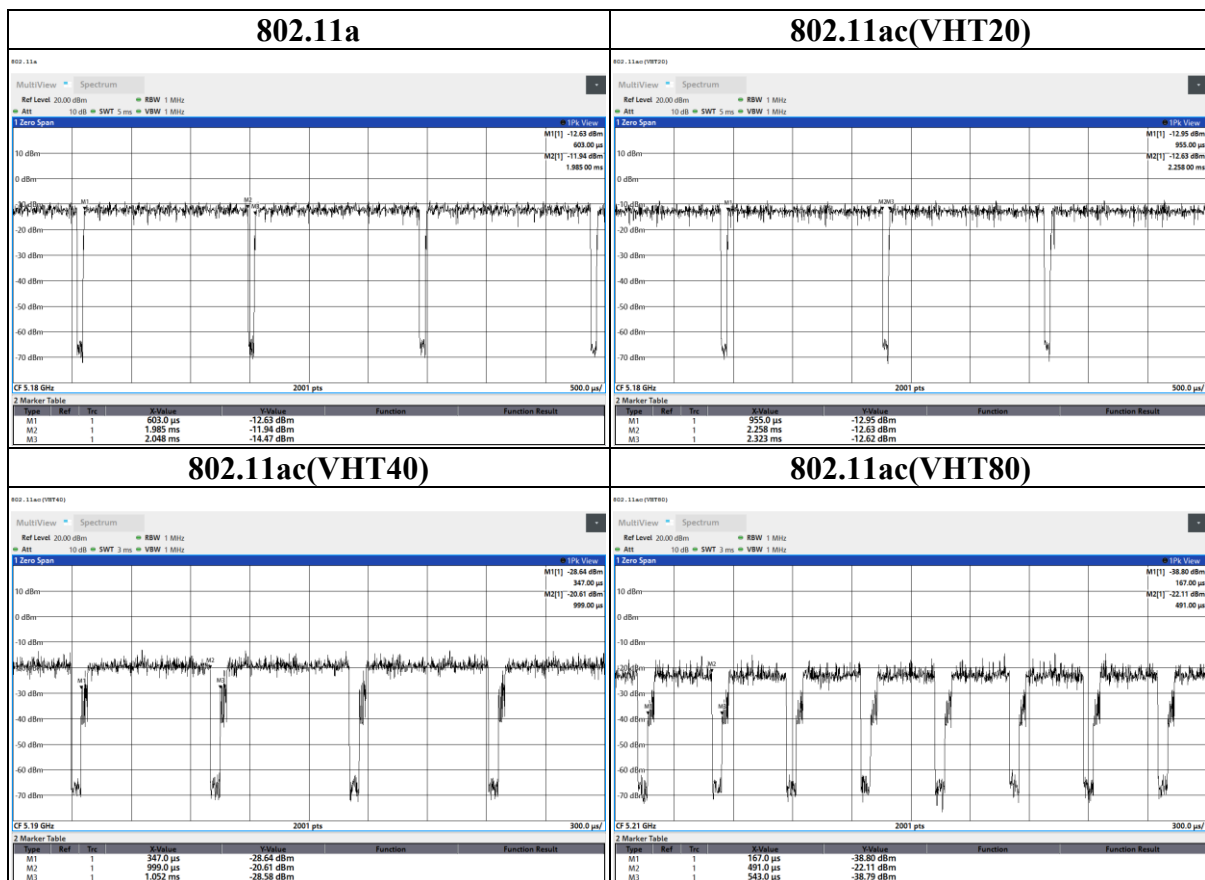
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

6.6. Duty cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle	Duty Factor (dB)	VBW Set (above 1GHz)
802.11a	1.382	1.445	0.9564	0.19	1kHz
802.11ac(VHT20)	1.303	1.368	0.9525	0.21	1kHz
802.11ac(VHT40)	0.652	0.705	0.9248	0.34	2kHz
802.11ac(VHT80)	0.324	0.376	0.8617	0.65	5.1kHz



7. Test Equipment

Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Expired date
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070818	2026/2/9	2027/2/8
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	2025/12/9	2026/12/8
Loop Antenna	ETS lindgren	6502	00213440	2025/11/14	2026/11/13
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	2025/12/23	2026/12/22
Horn Antenna (1-18 GHz)	Schwarzbeck	BBHA 9120 D	01690	2025/11/18	2026/11/17
Horn Antenna (18-40 GHz)	Schwarzbeck	BBHA 9170	781	2025/12/2	2026/12/1
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	2025/5/12	2026/5/11
Preamplifier (1-18 GHz)	EMCI	EMC051835BE	980406	2025/12/26	2026/12/25
Preamplifier (18-40GHz)	EMCI	EMC184040SEE	980426	2025/4/7	2026/4/6
Cables (9k-18 GHz)	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	2025/11/21	2026/11/20
Cables (18-40GHz)	Hanyitek	K1K50-UP0264-K1K50-2500	170214-1 & 170214-2	2025/11/21	2026/11/20

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Expired date
Antenna Port Conducted Measurement					
Signal Analyzer	Rohde & Schwarz	FSVA3044	101281	2026/2/2	2027/2/1
Signal Analyzer	Rohde & Schwarz	FSV40	101490	2025/6/17	2026/6/16
Attenuator	EMCI	EMC-40ATK2W10	17002	2025/10/28	2026/10/27
USB Power Sensor	Anritsu	MA24408A	12031	2025/6/24	2026/6/23
Temperature & Humidity Test Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA1701-010	2026/2/2	2027/2/1
AC power Line Conducted Emission					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2025/9/18	2026/9/17
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2025/5/27	2026/5/26
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2025/8/27	2026/8/26
Cables	TITAN	CFD200	T0732ACFD 20020A300-2	2025/4/21	2026/4/20

UL Software		
Description	Name	Version
Radiated measurement	e3	6.191211 (V6)
Conducted measurement	RF-Conducted-FCC 15407	ver 1.1
AC power Line Conducted Emission	EZ EMC	UL-3A1.2

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

8. Description of Test Setup

Tx Mode

Support Equipment

ID	Equipment	Brand Name	Model Name	S/N	Remark
A	Sonar Sensor	vexilar	VISION XDRC	N/A	Supplied by Client
B	Micro SD Card	Lexar	1066x 64GB V30 A2	N/A	Provided by Lab
C	Laptop	MSI	MS-13Q2	K2402N0015485	Provide by Lab
D	DC Power Supply	Gwinstek	GPD-2303S	N/A	Provided by Lab

I/O Cables

ID	Equipment	Brand Name	Model Name	Length (m)	Remark
1	DC Cable	vexilar	N/A	2	Supplied by Client
2	Micro USB Cable	WONDER	WA-W07UA	1	Provided by Lab

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

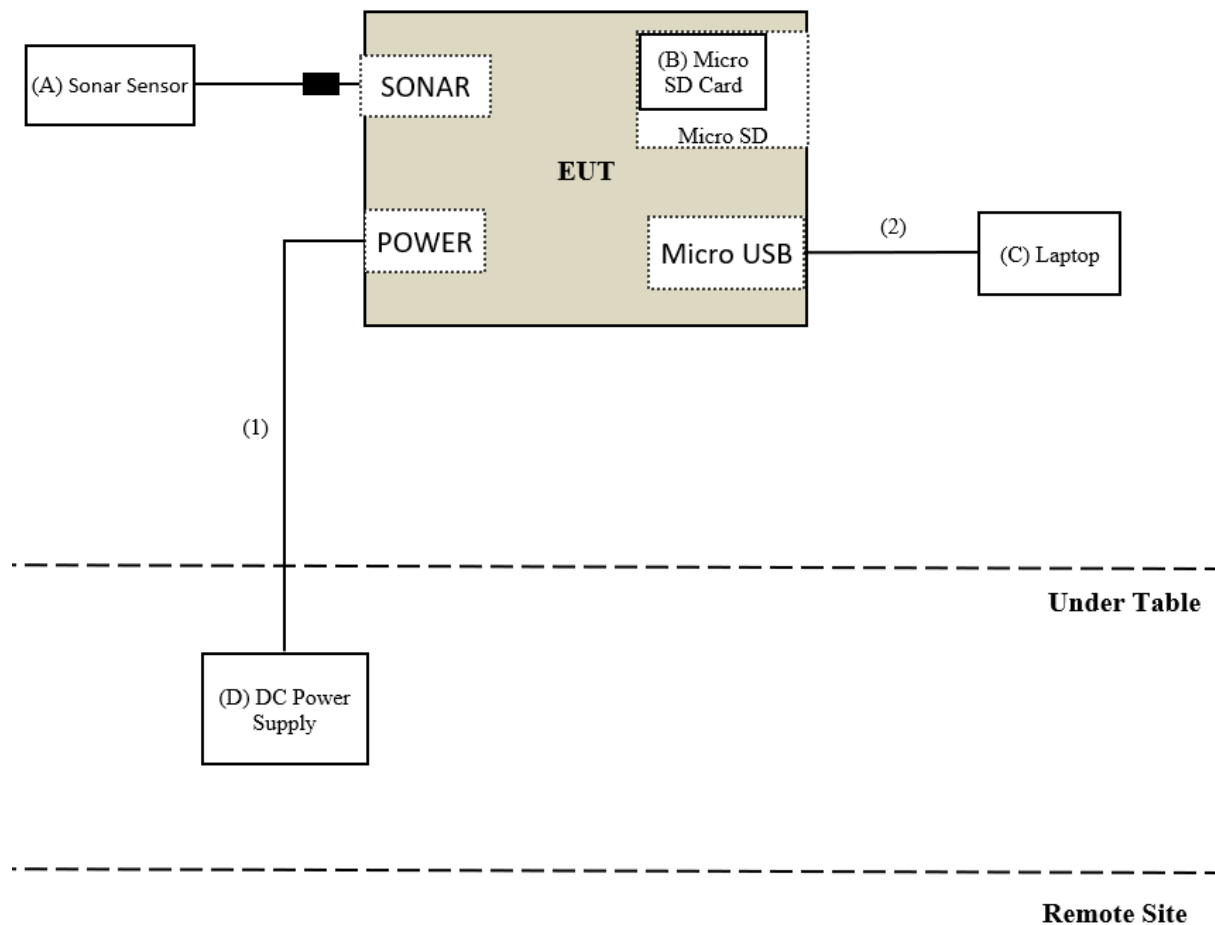
Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Test Setup

Controlled using a bespoke application (Android Debug Bridge version 1.0.41) on a test Notebook. The application was used to enable a continuous transmission mode and to select the test channels, data rates, modulation schemes and power setting as required.

Setup Diagram for Test

Tx Mode



Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

9. Test Results

9.1. 6dB Bandwidth

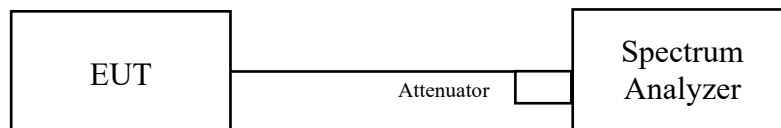
Requirements

The minimum 6 dB bandwidth shall be at least 500 kHz.

Test procedure

- Set resolution bandwidth (RBW) = 1 Range of 1% to 5% of the OBW but not less than 100 kHz.
* Since using 100kHz yields the smallest bandwidth, 100kHz was selected for this evaluation.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
- The plot of the test result only shows the worst case of channels as a representative.

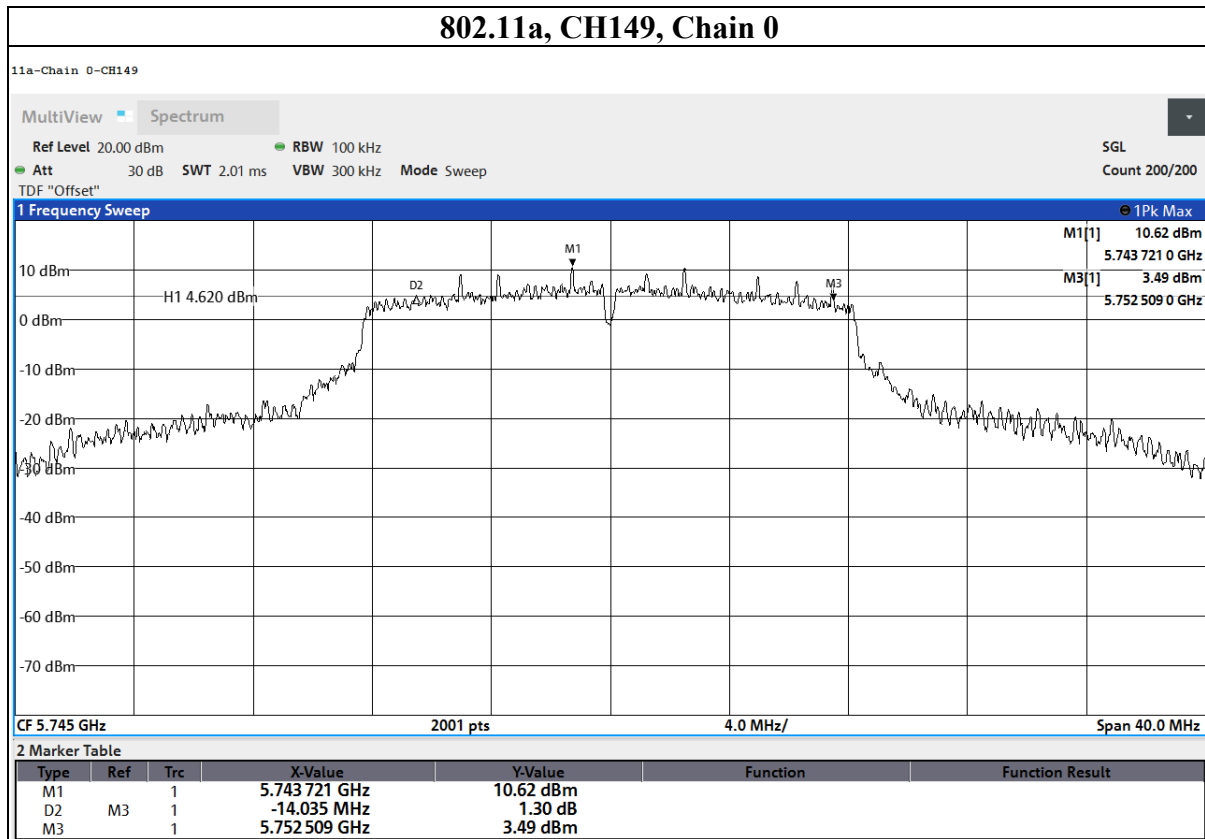
Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

Mode	CH	Freq (MHz)	6dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11a	149	5745	14.035	15.102	0.5	PASS
	157	5785	15.043	15.115	0.5	PASS
	165	5825	15.309	15.097	0.5	PASS



Underwriters Laboratories Taiwan Co., Ltd.

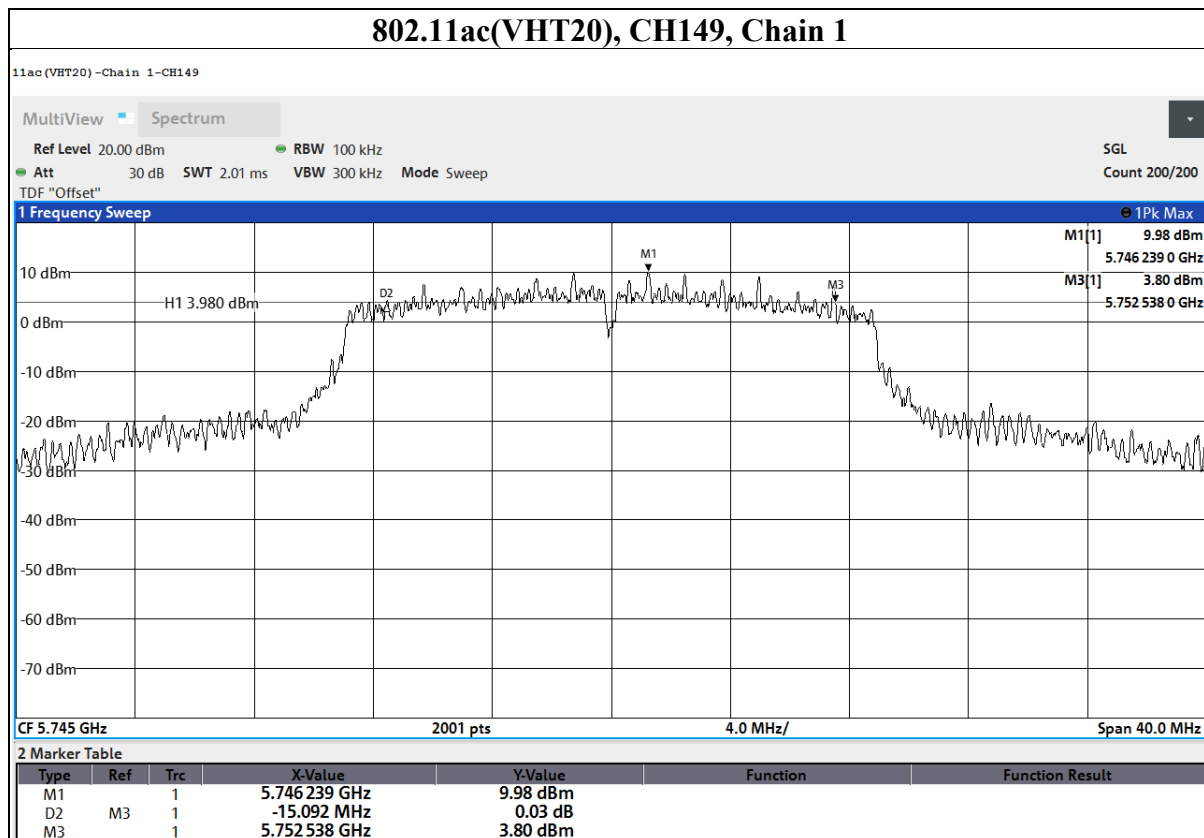
Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

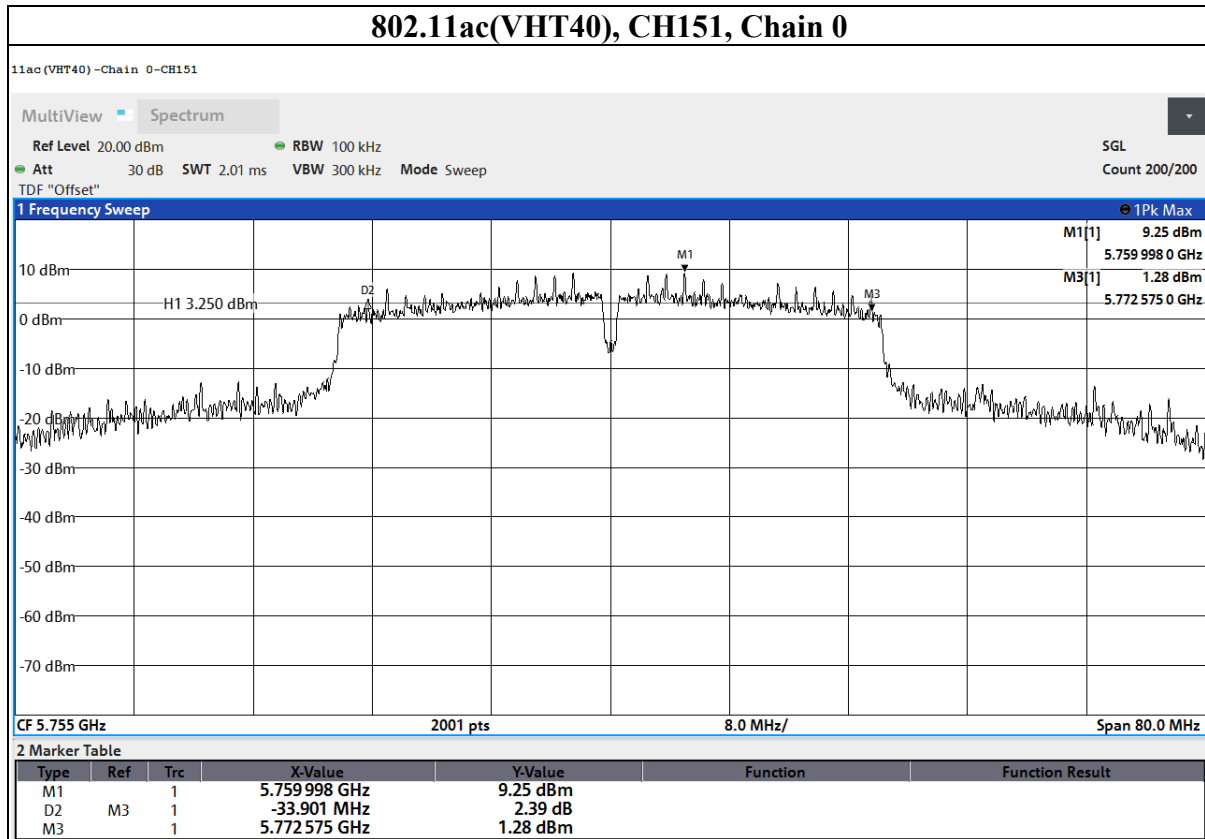
Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

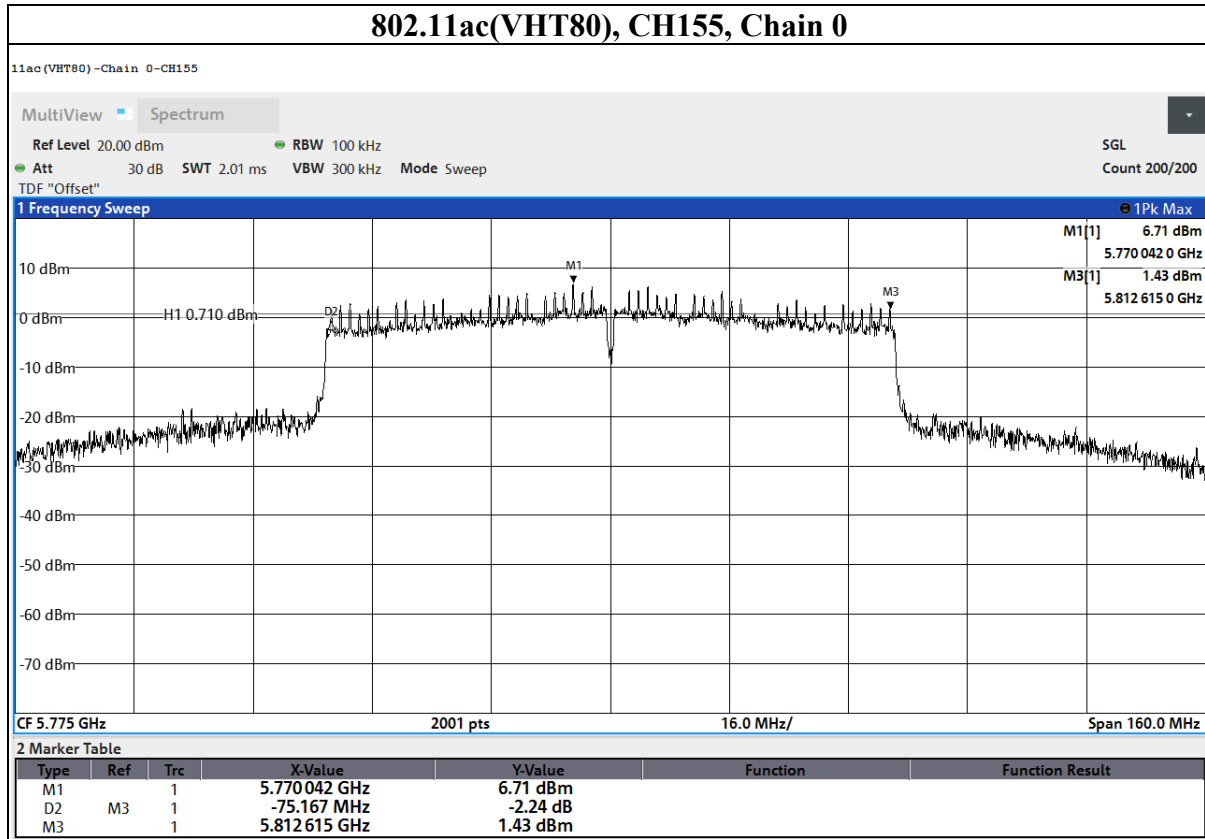
Mode	CH	Freq (MHz)	6dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ac(VHT20)	149	5745	15.111	15.092	0.5	PASS
	157	5785	15.101	15.461	0.5	PASS
	165	5825	15.166	16.319	0.5	PASS



Mode	CH	Freq (MHz)	6dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ac(VHT40)	151	5755	33.901	35.025	0.5	PASS
	159	5795	35.115	34.491	0.5	PASS



Mode	CH	Freq (MHz)	6dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ac(VHT80)	155	5775	75.167	75.226	0.5	PASS

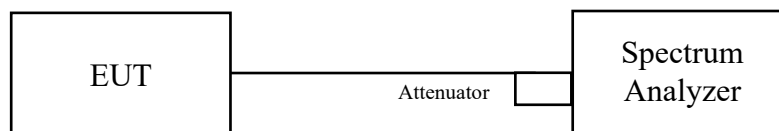


9.2. 26dB Bandwidth

Test procedure

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
- The plot of the test result only shows the worst case of channels as a representative.

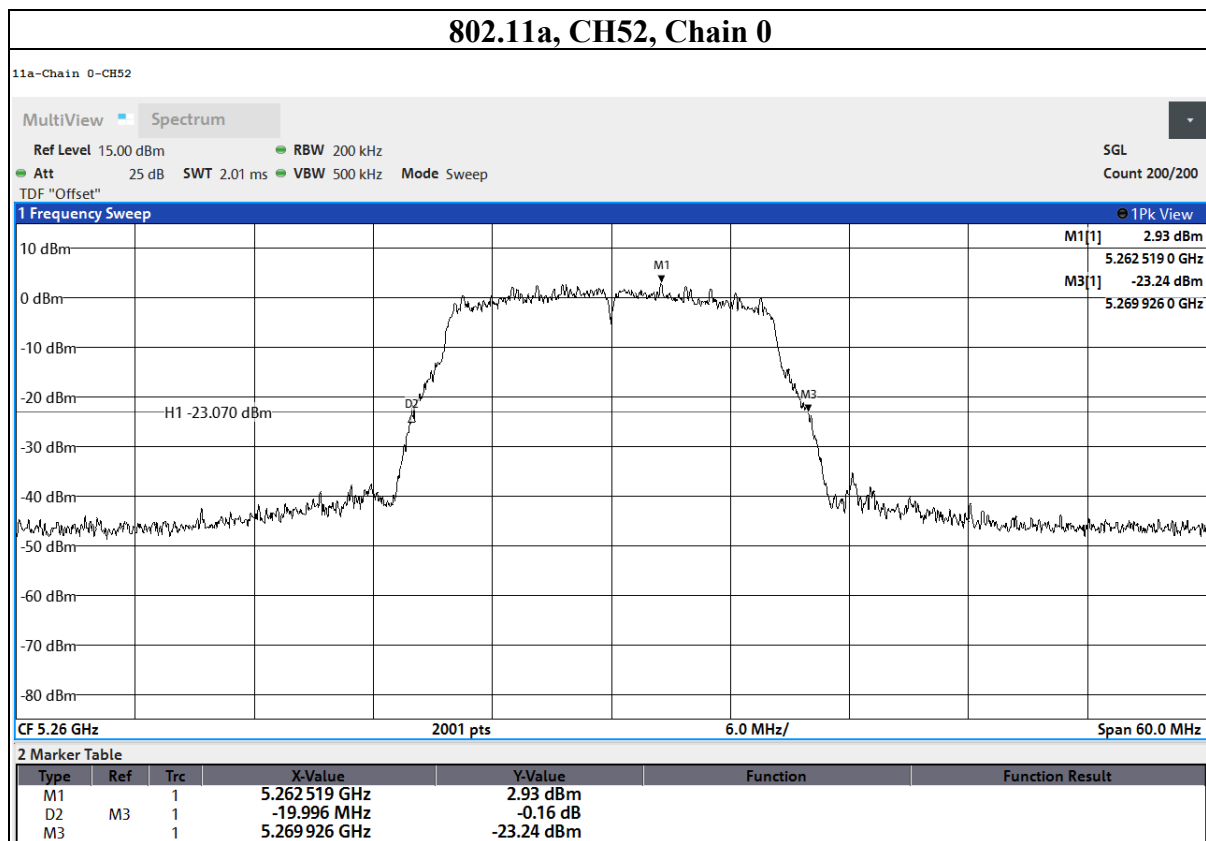
Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

Mode	CH	Freq (MHz)	26dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11a	36	5180	19.647	19.309	N/A	PASS
	44	5220	19.59	19.167	N/A	PASS
	48	5240	19.479	19.509	N/A	PASS
	52	5260	19.996	19.701	N/A	PASS
	60	5300	19.876	19.777	N/A	PASS
	64	5320	19.787	19.792	N/A	PASS
	100	5500	19.78	19.582	N/A	PASS
	116	5580	19.899	19.933	N/A	PASS
	140	5700	19.85	19.752	N/A	PASS



Underwriters Laboratories Taiwan Co., Ltd.

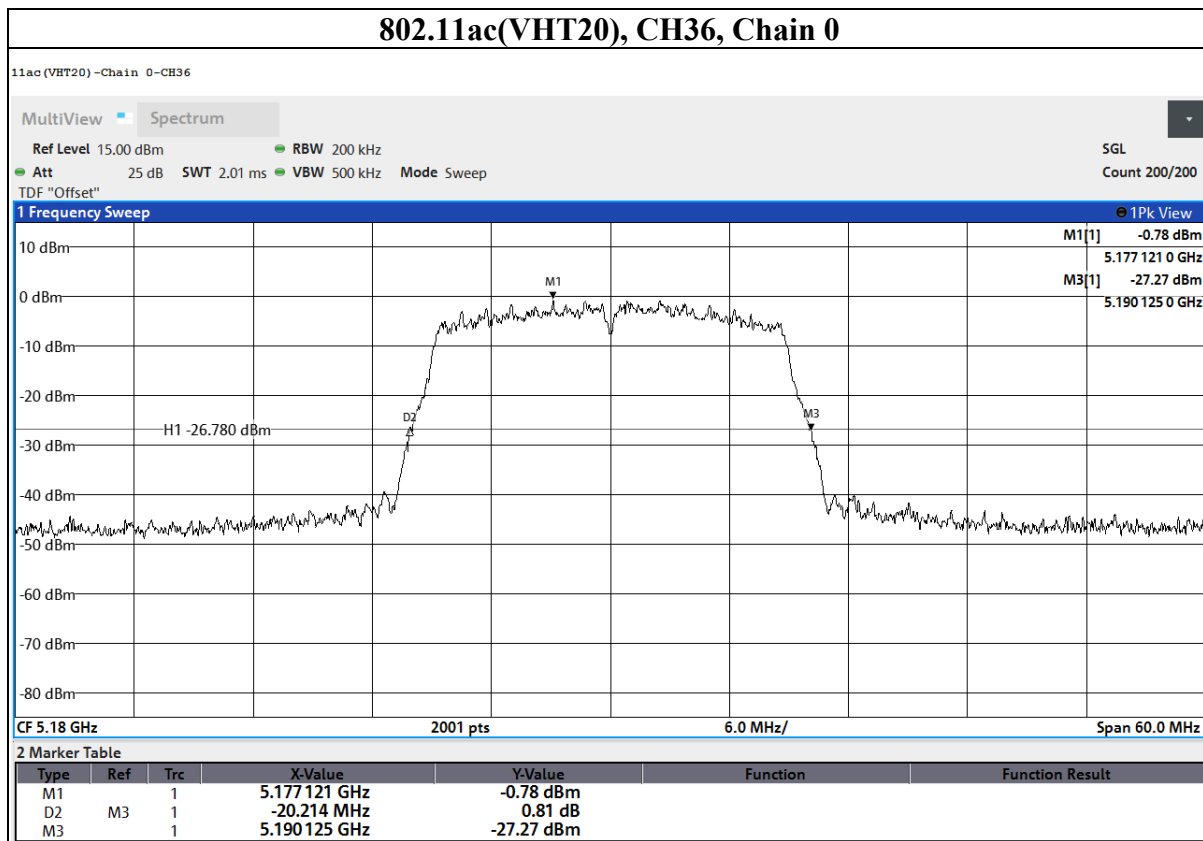
Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

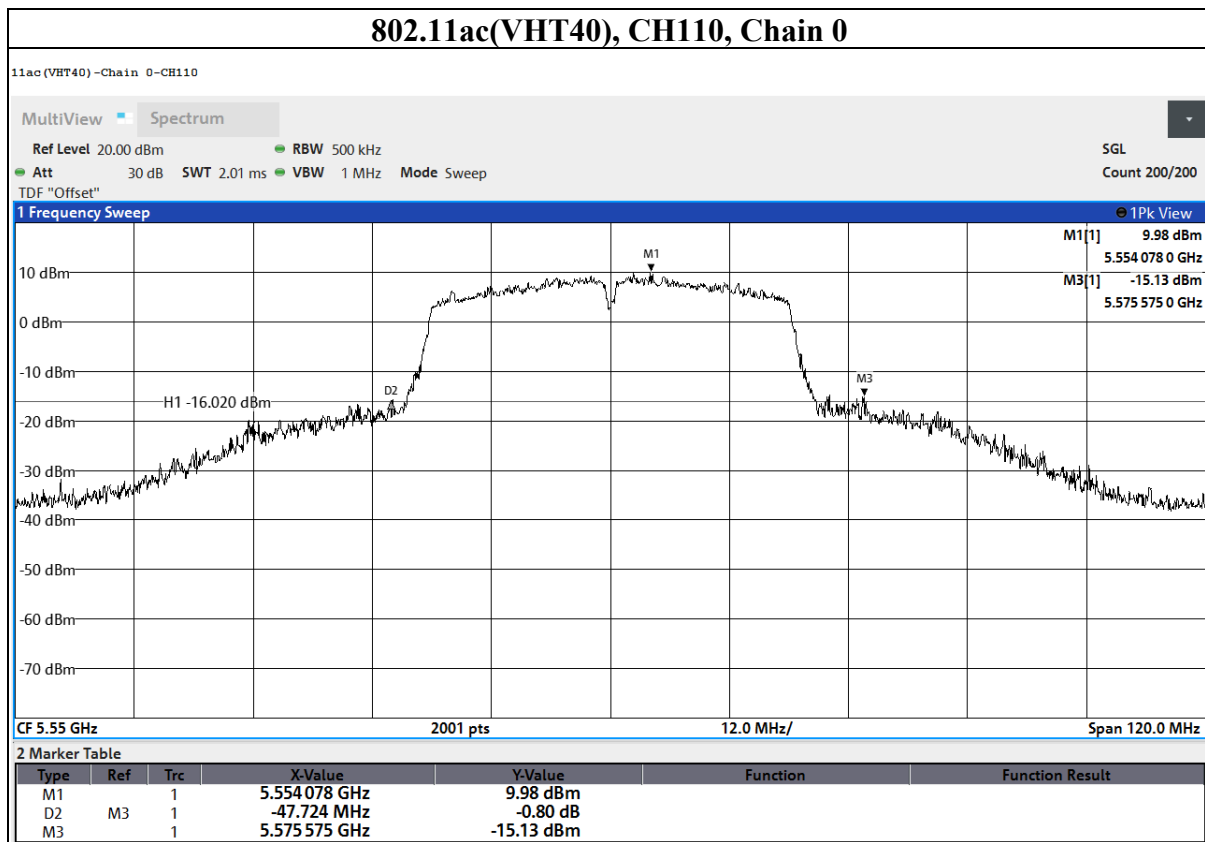
Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

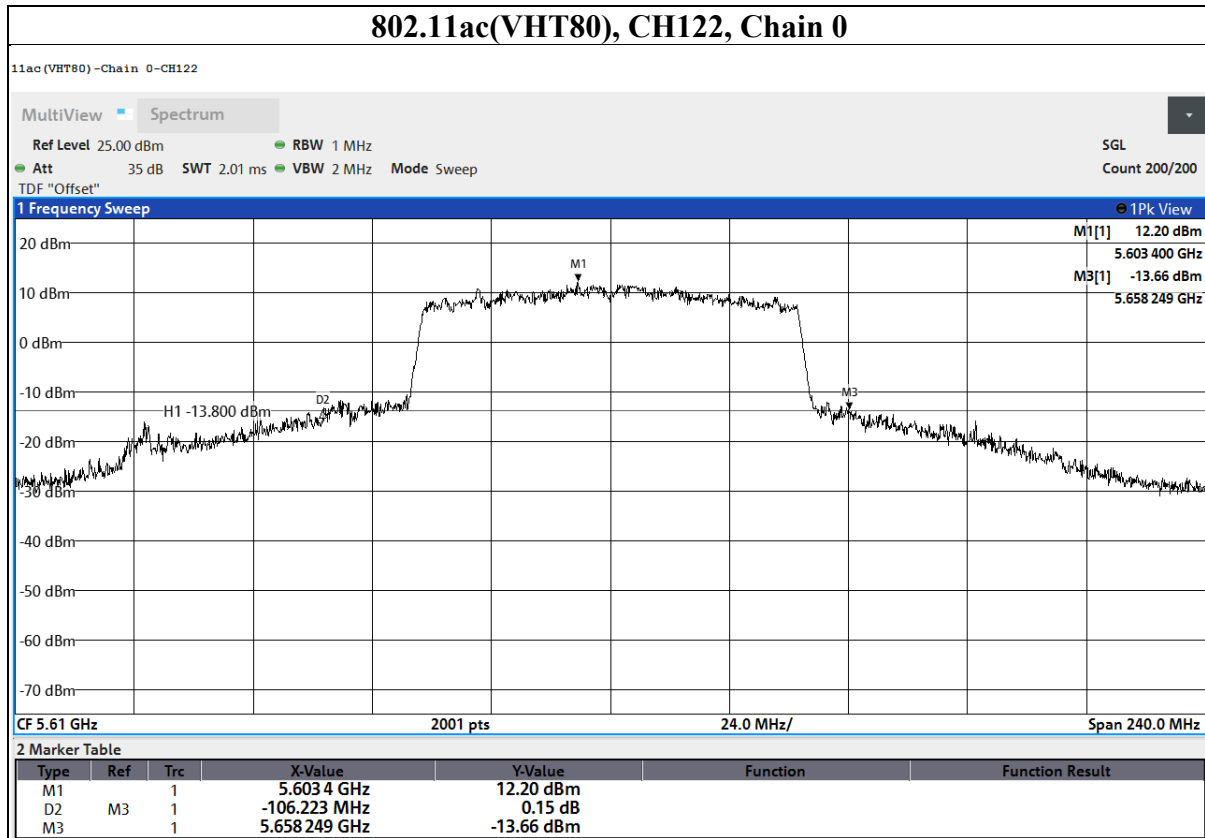
Mode	CH	Freq (MHz)	26dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ac(VHT20)	36	5180	20.214	19.893	N/A	PASS
	44	5220	19.963	19.763	N/A	PASS
	48	5240	19.89	19.916	N/A	PASS
	52	5260	19.985	19.871	N/A	PASS
	60	5300	19.91	19.992	N/A	PASS
	64	5320	19.987	19.976	N/A	PASS
	100	5500	20.071	19.947	N/A	PASS
	116	5580	20.181	19.993	N/A	PASS
	140	5700	20.016	19.96	N/A	PASS



Mode	CH	Freq (MHz)	26dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ac(VHT40)	38	5190	40.573	40.193	N/A	PASS
	46	5230	40.686	39.832	N/A	PASS
	54	5270	40.766	39.773	N/A	PASS
	62	5310	40.544	40.028	N/A	PASS
	102	5510	40.579	40.654	N/A	PASS
	110	5550	47.724	40.163	N/A	PASS
	134	5670	47.497	40.341	N/A	PASS



Mode	CH	Freq (MHz)	26dB BW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ac(VHT80)	42	5210	81.62	80.463	N/A	PASS
	58	5290	81.682	80.294	N/A	PASS
	106	5530	81.508	80.432	N/A	PASS
	122	5610	106.223	92.83	N/A	PASS

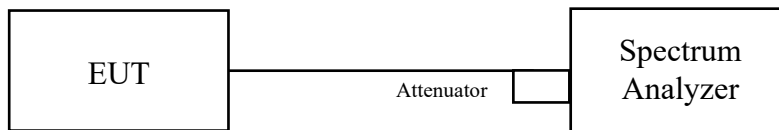


9.3. Occupied Bandwidth

Test procedure

- Set center frequency to the nominal EUT channel center frequency.
- Set span = 1.5 times to 5.0 times the OBW.
- Set RBW = 1% to 5% of the OBW
- Set VBW $\geq 3 \times$ RBW
- 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.
- Use the 99% power bandwidth function of the instrument (if available).
- If the instrument does not have a 99% power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the 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% occupied bandwidth is the difference between these two frequencies.
- The plot of the test result only shows the worst case of channels as a representative.

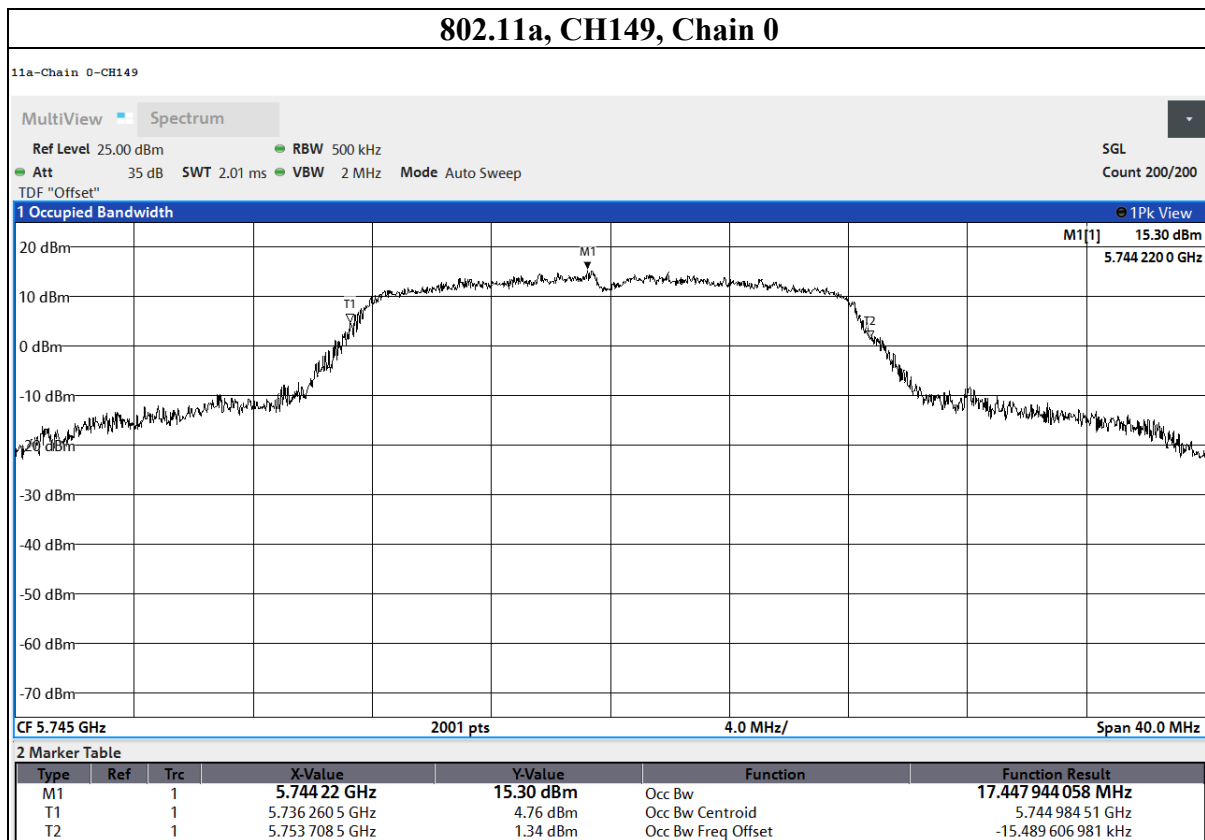
Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

Mode	CH	Freq (MHz)	OBW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11a	36	5180	17.04	16.689	N/A	PASS
	44	5220	17.055	16.638	N/A	PASS
	48	5240	16.973	16.635	N/A	PASS
	52	5260	17.039	16.738	N/A	PASS
	60	5300	17.052	16.742	N/A	PASS
	64	5320	16.999	16.769	N/A	PASS
	100	5500	17.013	17.143	N/A	PASS
	116	5580	17.061	16.794	N/A	PASS
	140	5700	17.098	16.723	N/A	PASS
	149	5745	17.448	17.119	N/A	PASS
	157	5785	17.054	16.841	N/A	PASS
	165	5825	17.076	16.722	N/A	PASS



Underwriters Laboratories Taiwan Co., Ltd.

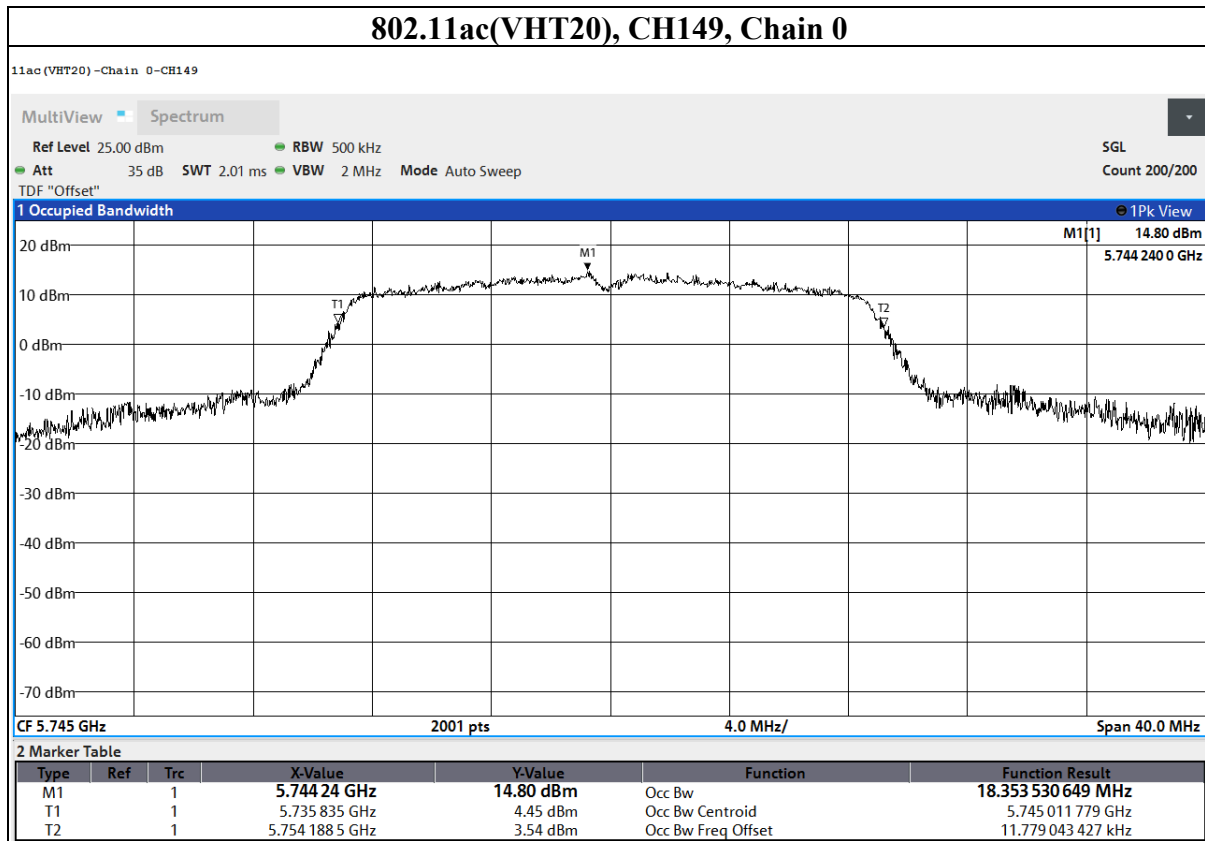
Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

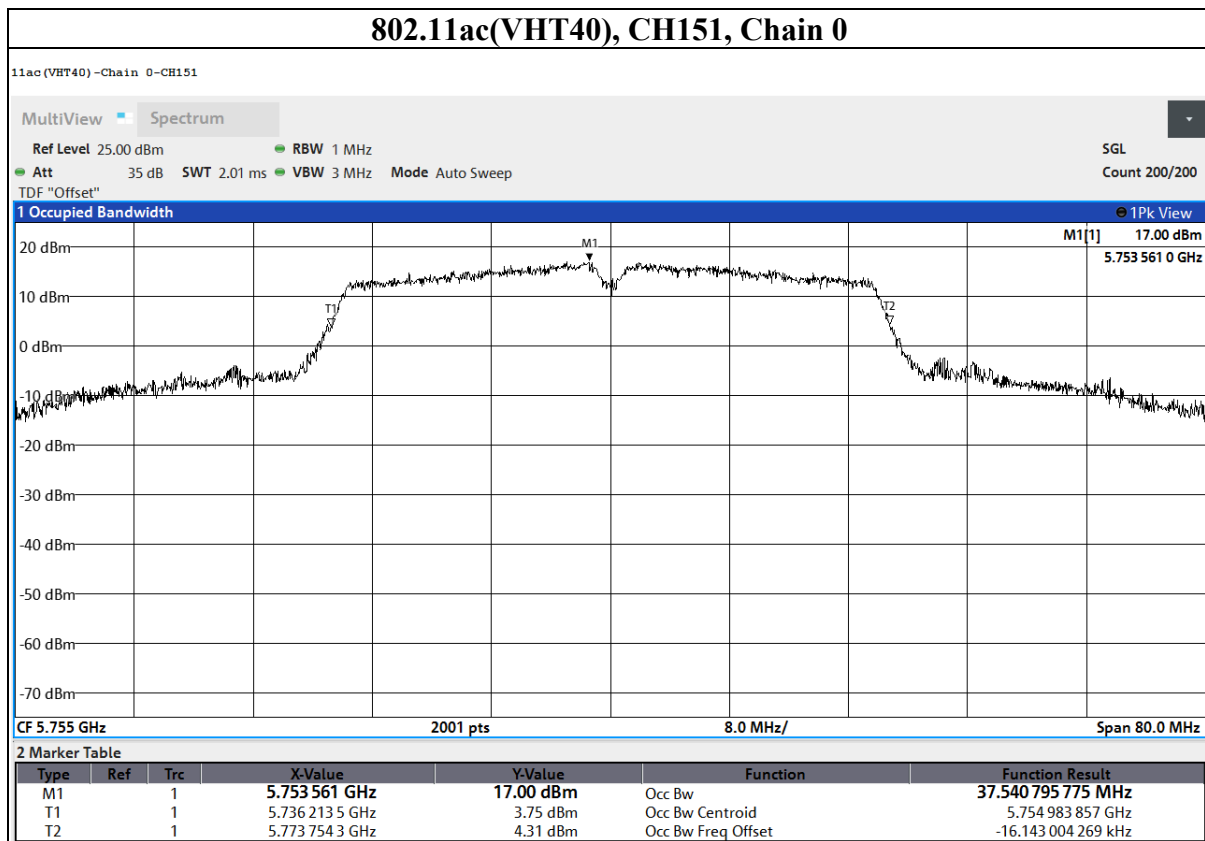
Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

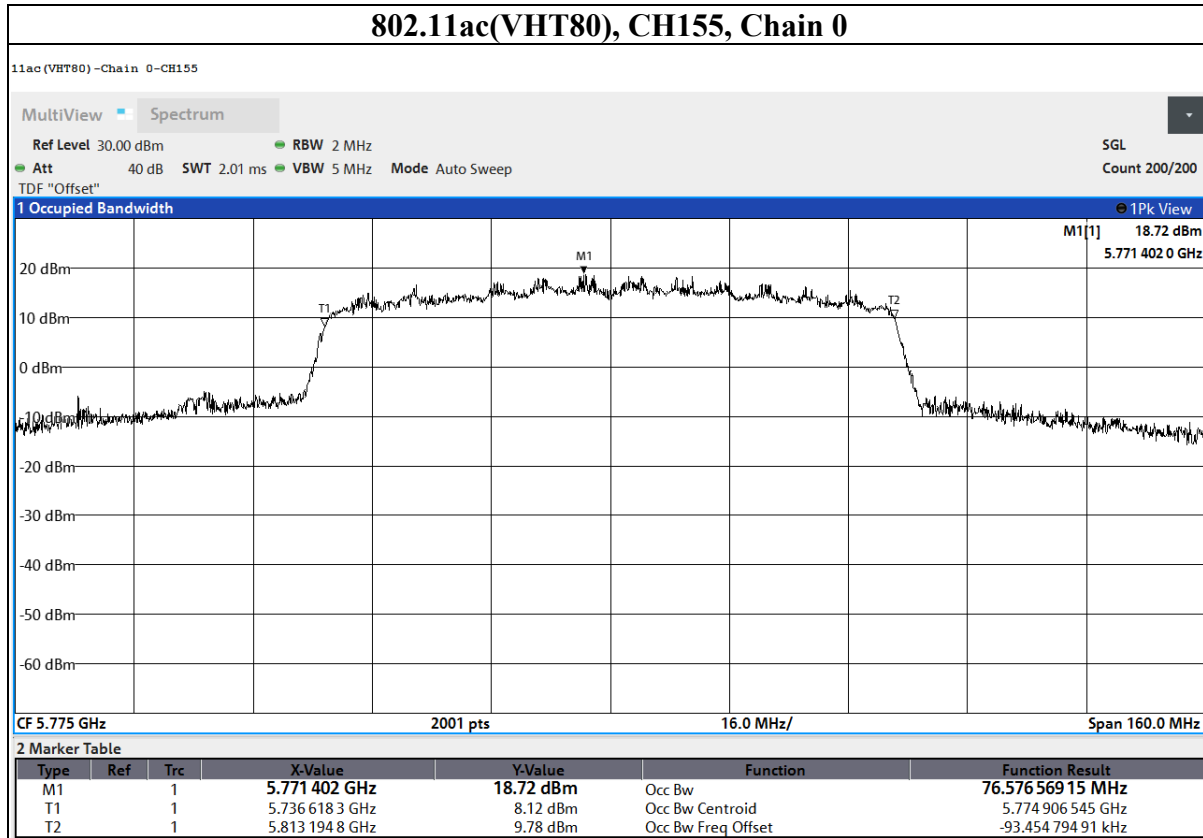
Mode	CH	Freq (MHz)	OBW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ac(VHT20)	36	5180	17.916	17.647	N/A	PASS
	44	5220	17.917	17.63	N/A	PASS
	48	5240	17.892	17.61	N/A	PASS
	52	5260	17.914	17.675	N/A	PASS
	60	5300	17.939	17.685	N/A	PASS
	64	5320	17.946	17.702	N/A	PASS
	100	5500	17.906	17.969	N/A	PASS
	116	5580	18.027	17.687	N/A	PASS
	140	5700	17.976	17.658	N/A	PASS
	149	5745	18.354	17.995	N/A	PASS
	157	5785	17.917	17.717	N/A	PASS
	165	5825	17.92	17.696	N/A	PASS



Mode	CH	Freq (MHz)	OBW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ac(VHT40)	38	5190	36.074	36.471	N/A	PASS
	46	5230	36.101	36.23	N/A	PASS
	54	5270	36.121	36.183	N/A	PASS
	62	5310	36.065	36.365	N/A	PASS
	102	5510	36.086	36.583	N/A	PASS
	110	5550	36.403	36.381	N/A	PASS
	134	5670	36.386	36.516	N/A	PASS
	151	5755	37.541	37.275	N/A	PASS
	159	5795	37.416	37.485	N/A	PASS



Mode	CH	Freq (MHz)	OBW (MHz)		Limit (MHz)	Result
			Chain 0	Chain 1		
802.11ac(VHT80)	42	5210	75.658	75.517	N/A	PASS
	58	5290	75.76	75.028	N/A	PASS
	106	5530	75.612	75.391	N/A	PASS
	122	5610	76.494	75.807	N/A	PASS
	155	5775	76.577	76.203	N/A	PASS



9.4. Conducted output power

Requirements

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$
		Fixed point-to-point Access Point	1 Watt (30 dBm) If $G_{TX} > 23$ dBi, then $P_{Out} = 30 - (G_{TX} - 23)$
		Indoor Access Point	1 Watt (30 dBm) If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$
	√	Client device	250mW (24 dBm) If $G_{TX} > 6$ dBi, then $P_{Out} = 23.98 - (G_{TX} - 6)$
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B* If $G_{TX} > 6$ dBi, then $P_{Out} = 23.98 - (G_{TX} - 6)$
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B* If $G_{TX} > 6$ dBi, then $P_{Out} = 23.98 - (G_{TX} - 6)$
U-NII-3	√		For Point-to-multipoint systems (P2M): 1 Watt (30 dBm). If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ For Point-to-point systems (P2P): 1 Watt (30 dBm)

Note:

1. P_{Out} = maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi, B is the 26 dB emission bandwidth in megahertz
2. If EUT with Multiple Transmitter Output:
 - a. Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{Gn/20})^2 / N_{\text{ant}}]$ dBi.
Nant: Number of Transmit Antennas
G1, G2,..., Gn: Gain of Individual Antennas
Example: two antenna and gain 5 dBi / 3dBi, so if it was used for TxBF power measurement
Directional Gain = $10 \log[(105/20 + 103/20)^2 / 2]$ dBi = 7.07 dBi
 - b. Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices, CDD
Array Gain = 0 dB (i.e., no array gain) for $N_{\text{ANT}} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;
Array Gain = $5 \log(N_{\text{ANT}}/N_{\text{SS}})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{\text{ANT}} \geq 5$.
Example: Maximum antenna gain = 5 dBi and $N_{\text{ANT}} \leq 4$, so if it was used for CDD power measurement
Directional Gain = 5 dBi + Array Gain = 5 dBi + 0 dB = 5 dBi
 - c. For power measurement of KDB 662911 is used with multiple transmitter output. Total conducted power is the sum of the conducted power levels measured at the various output ports.

Test Procedure

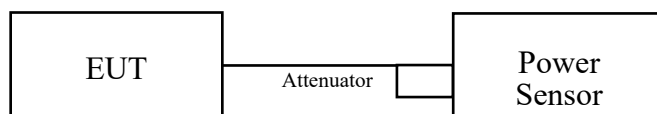
For Average Power Measurement

Test method PM

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to AVERAGE. Duty factor is not added to measured value.

Test Setup

For Average Power Measurement



The loss between RF output port of the EUT and the input port of the Power Meter has been taken into consideration.

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Test Data

Mode	CH	Freq. (MHz)	AVG Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
			Chain0	Chain1						
802.11a	36	5180	10.5	9.79	20.749	13.17	23.98	18.83	30	Pass
	44	5220	10.26	9.74	20.045	13.02	23.98	18.68	30	Pass
	48	5240	10.41	9.75	20.417	13.1	23.98	18.76	30	Pass
	52	5260	13.98	14.18	51.168	17.09	23.94	22.75	30	Pass
	60	5300	14.22	14.3	53.333	17.27	23.96	22.93	30	Pass
	64	5320	14.23	14.39	53.951	17.32	23.96	22.98	30	Pass
	100	5500	17.29	17.31	107.399	20.31	23.91	25.97	30	Pass
	116	5580	17.34	17.6	111.686	20.48	23.98	26.14	30	Pass
	140	5700	17.07	17.33	104.954	20.21	23.95	25.87	30	Pass
	149	5745	21.73	22	307.61	24.88	30	30.54	36.02	Pass
	157	5785	16.79	17.08	98.855	19.95	30	25.61	36.02	Pass
802.11ac(VHT20)	165	5825	17.21	17.61	110.154	20.42	30	26.08	36.02	Pass
	36	5180	10.5	9.75	20.654	13.15	23.98	18.81	30	Pass
	44	5220	10.27	9.91	20.417	13.1	23.98	18.76	30	Pass
	48	5240	10.34	9.82	20.417	13.1	23.98	18.76	30	Pass
	52	5260	13.83	14.13	50.003	16.99	23.98	22.65	30	Pass
	60	5300	14.13	14.47	53.827	17.31	23.98	22.97	30	Pass
	64	5320	14.23	14.34	53.703	17.3	23.98	22.96	30	Pass
	100	5500	17.01	17.32	104.232	20.18	23.98	25.84	30	Pass
	116	5580	17.18	17.55	109.144	20.38	23.98	26.04	30	Pass
	140	5700	16.75	17.36	101.859	20.08	23.98	25.74	30	Pass
	149	5745	21.54	22.06	303.389	24.82	30	30.48	36.02	Pass
802.11ac(VHT40)	157	5785	16.69	17.17	98.855	19.95	30	25.61	36.02	Pass
	165	5825	17.15	17.69	110.662	20.44	30	26.1	36.02	Pass
	38	5190	13.4	13.12	42.364	16.27	23.98	21.93	30	Pass
	46	5230	13.47	13.08	42.56	16.29	23.98	21.95	30	Pass
	54	5270	14.17	14.29	52.966	17.24	23.98	22.9	30	Pass
	62	5310	14.29	14.31	53.827	17.31	23.98	22.97	30	Pass
	102	5510	19.46	19.74	182.39	22.61	23.98	28.27	30	Pass
	110	5550	19.99	20.27	206.063	23.14	23.98	28.8	30	Pass
	134	5670	20.16	20.55	217.27	23.37	23.98	29.03	30	Pass
	151	5755	23.03	23.47	423.643	26.27	30	31.93	36.02	Pass
	159	5795	23.19	23.51	432.514	26.36	30	32.02	36.02	Pass
802.11ac(VHT80)	42	5210	13.16	13.37	42.462	16.28	23.98	21.94	30	Pass
	58	5290	13.87	14.05	49.774	16.97	23.98	22.63	30	Pass
	106	5530	16.17	16.49	85.901	19.34	23.98	25	30	Pass
	122	5610	20.74	21.08	246.604	23.92	23.98	29.58	30	Pass
	155	5775	22.1	22.57	342.768	25.35	30	31.01	36.02	Pass

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

9.5. Power Spectral Density

Requirements

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz If $G_{TX} > 6$ dBi, then $PSD = 17 - (G_{TX} - 6)$
		Fixed point-to-point Access Point	17dBm/ MHz If $G_{TX} > 23$ dBi, then $PSD = 17 - (G_{TX} - 23)$
		Indoor Access Point	17dBm/ MHz If $G_{TX} > 6$ dBi, then $PSD = 17 - (G_{TX} - 6)$
	√	Client device	11dBm/ MHz If $G_{TX} > 6$ dBi, then $PSD = 11 - (G_{TX} - 6)$
U-NII-2A	√		11dBm/ MHz If $G_{TX} > 6$ dBi, then $PSD = 11 - (G_{TX} - 6)$
U-NII-2C	√		11dBm/ MHz If $G_{TX} > 6$ dBi, then $PSD = 11 - (G_{TX} - 6)$
U-NII-3	√		For Point-to-multipoint systems (P2M): 30dBm/ 500kHz. If $G_{TX} > 6$ dBi, then $PSD = 30 - (G_{TX} - 6)$ For Point-to-point systems (P2P): 30dBm/ 500kHz

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Note:

1. PSD = power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz
2. G_{TX} = the maximum transmitting antenna directional gain in dBi.
3. If EUT with Multiple Transmitter Output:
 - a. Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{Gn/20})^2 / Nant]$ dBi.
Nant: Number of Transmit Antennas
G1, G2,..., Gn: Gain of Individual Antennas
Example: two antenna and gain 5 dBi / 3dBi, so if it was used for power density measurement
Directional Gain = $10 \log[(10^{5/20} + 10^{3/20})^2 / 2]$ dBi = 7.07 dBi
 - b. "PSD per chain" of the report shown is maximum value for each chain, at the "Total PSD" is summing entire spectra across corresponding frequency bins on the various outputs by computer, refer KDB 662911 Method a) for calculating total power density.
 - c. Method a) of power density measurement of KDB 662911 is used for calculating total power density with multiple transmitter output. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
4. Refer to section 6.6 for duty cycle spectrum plot. (If duty cycle<98%)

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Test procedure

For U-NII-1, U-NII-2A, U-NII-2C band:

Using method as below:

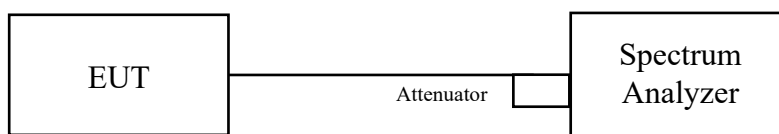
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz, Set VBW $\geq$ 3 RBW, Detector = RMS
- Sweep time = auto, trigger set to “free run”.
- Trace average at least 100 traces in power averaging mode.
- Record the max value. (if Duty cycle <98 %, add 10 log (1/duty cycle))
- The plot of the test result only shows the worst case of channels as a representative.

For U-NII-3 band:

Using method as below:

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz, Set VBW $\geq$ 1 MHz, Detector = RMS
- Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
- Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10 \log (500 \text{ kHz}/300\text{kHz})$
- Sweep time = auto, trigger set to “free run”.
- Trace average at least 100 traces in power averaging mode.
- Record the max value. (if Duty cycle <98 %, add 10 log (1/duty cycle))
- The plot of the test result only shows the worst case of channels as a representative.

Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

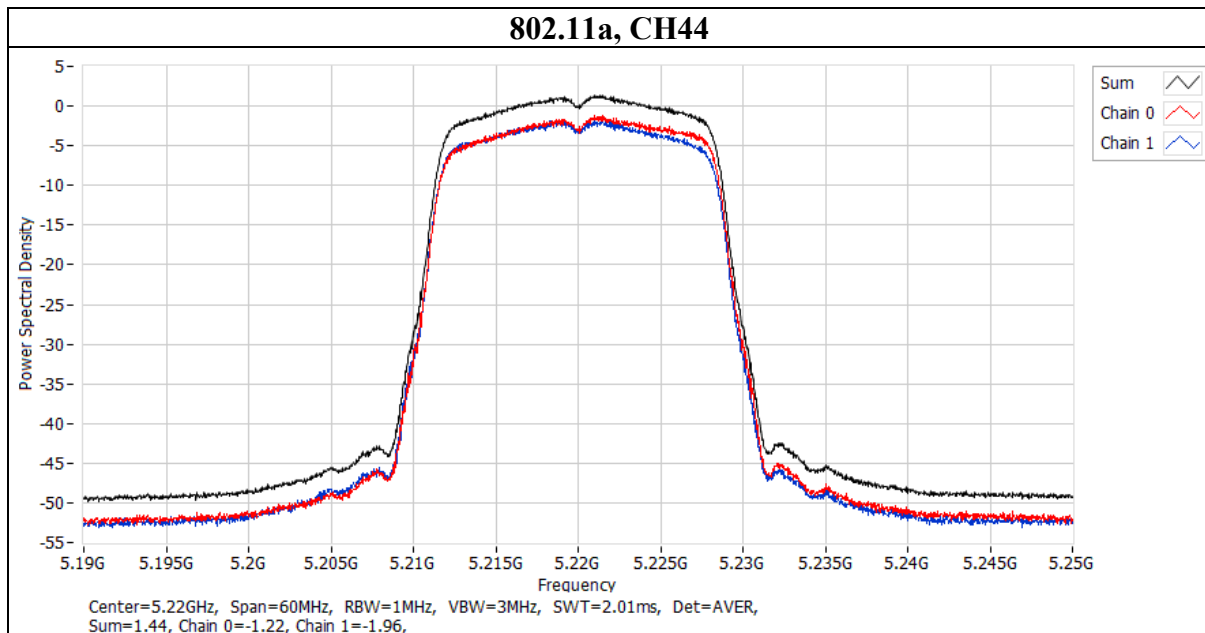
Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Test Data

Mode (U-NII-1)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	36	5180	8.37	1.37	7.63	PASS
	44	5220	8.37	1.44	7.63	PASS
	48	5240	8.37	1.43	7.63	PASS

Mode (U-NII-1)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11a	36	5180	-1.04	-1.96
	44	5220	-1.22	-1.64
	48	5240	-1.28	-1.85



Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

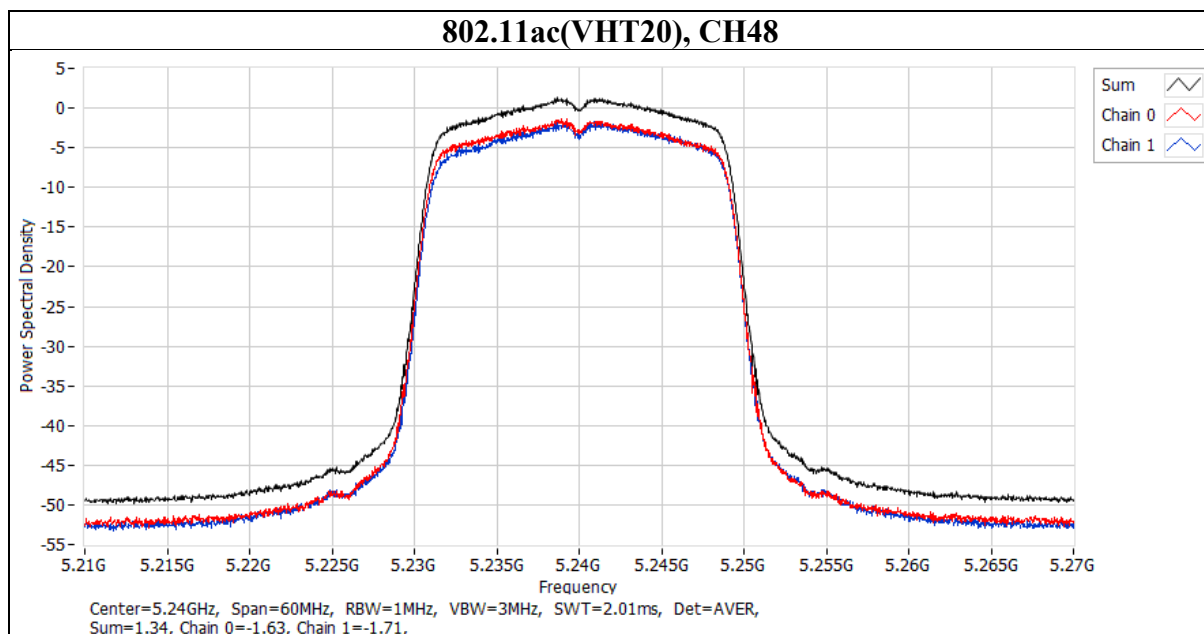
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

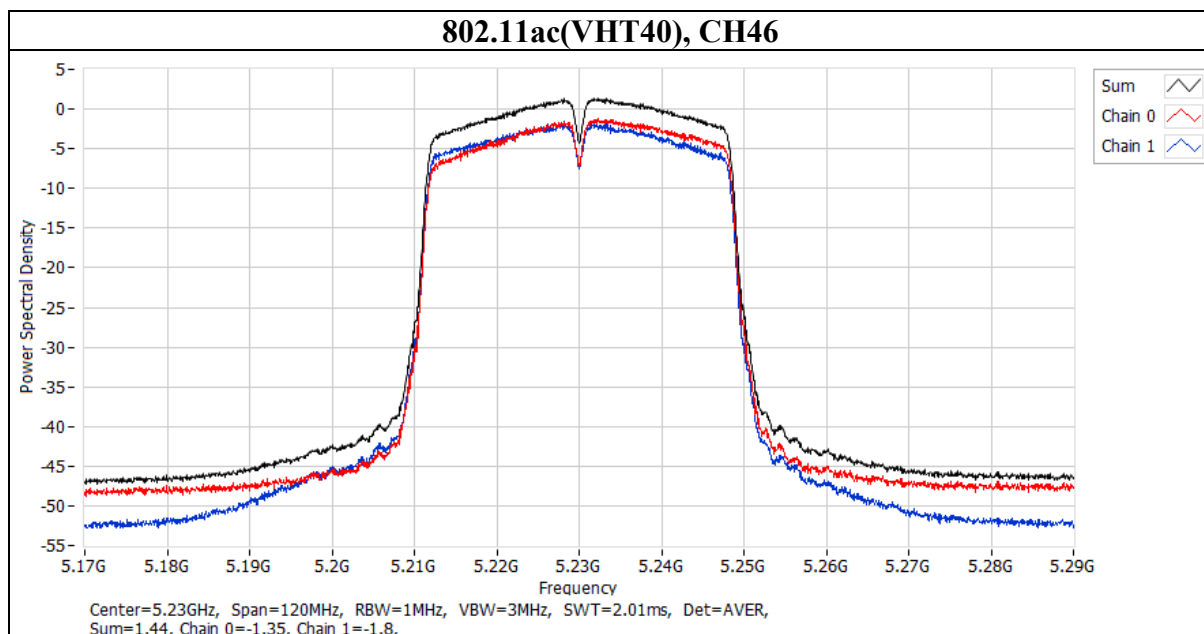
Mode (U-NII-1)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT20)	36	5180	8.37	1.33	7.63	PASS
	44	5220	8.37	1.3	7.63	PASS
	48	5240	8.37	1.34	7.63	PASS

Mode (U-NII-1)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ac(VHT20)	36	5180	-1.16	-1.92
	44	5220	-1.3	-1.76
	48	5240	-1.33	-1.71



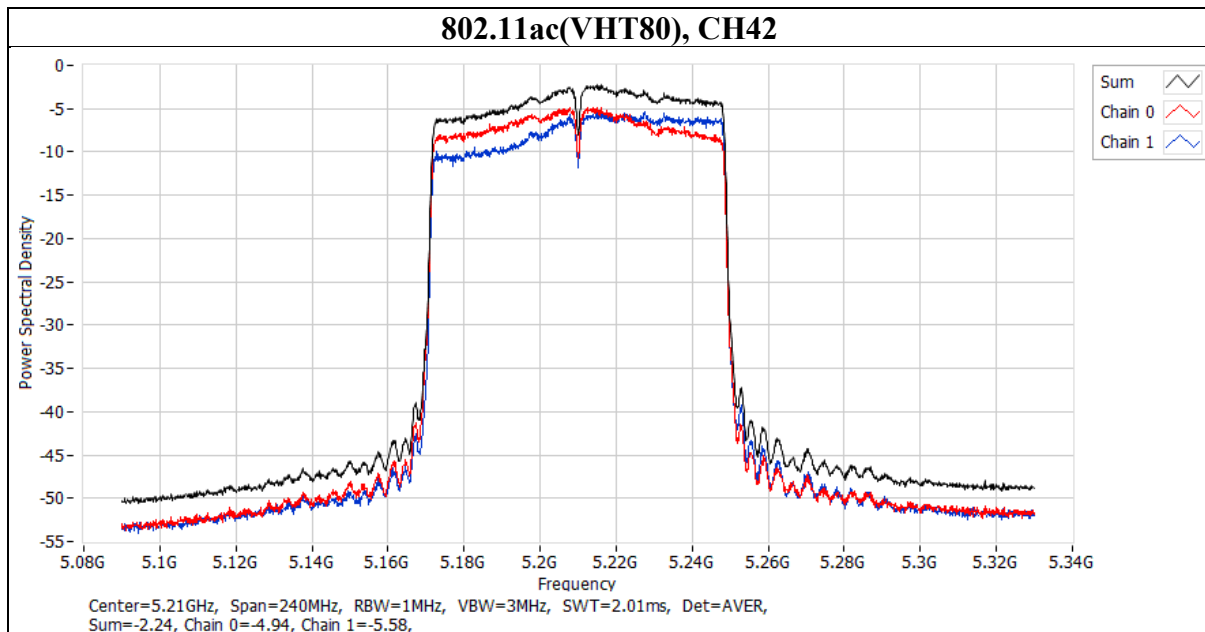
Mode (U-NII-1)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT40)	38	5190	8.37	1.35	7.63	PASS
	46	5230	8.37	1.44	7.63	PASS

Mode (U-NII-1)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ac(VHT40)	38	5190	-1.3	-1.54
	46	5230	-1.17	-1.59



Mode (U-NII-1)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT80)	42	5210	8.37	-2.24	8.63	PASS

Mode (U-NII-1)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ac(VHT80)	42	5210	-4.82	-5.42



Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

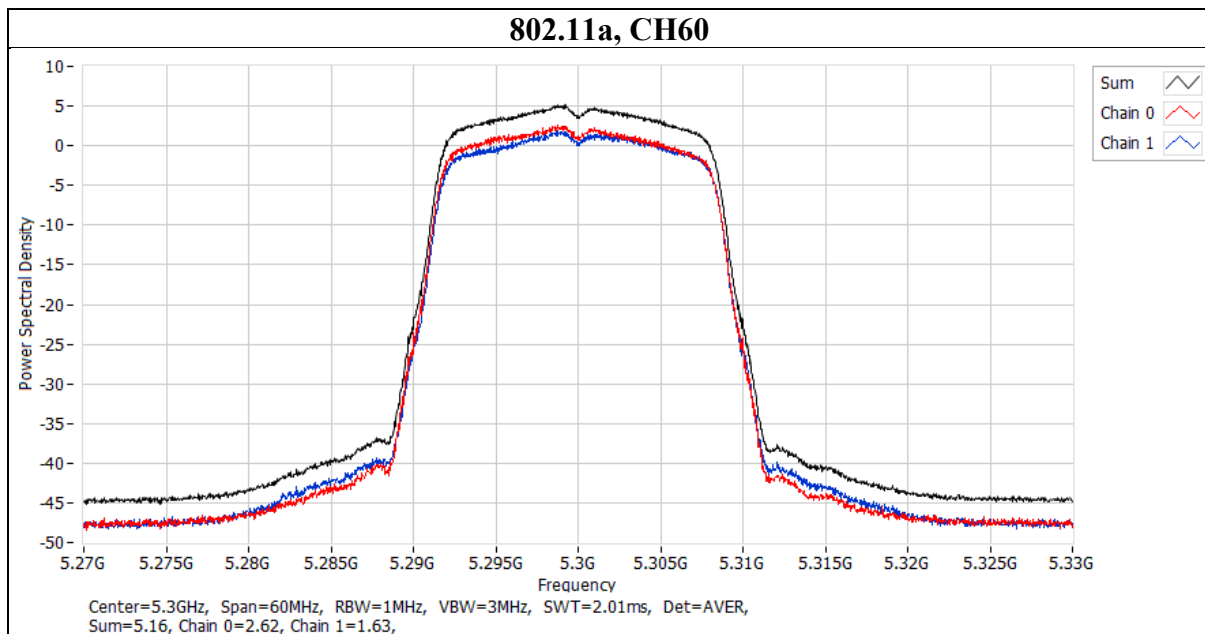
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

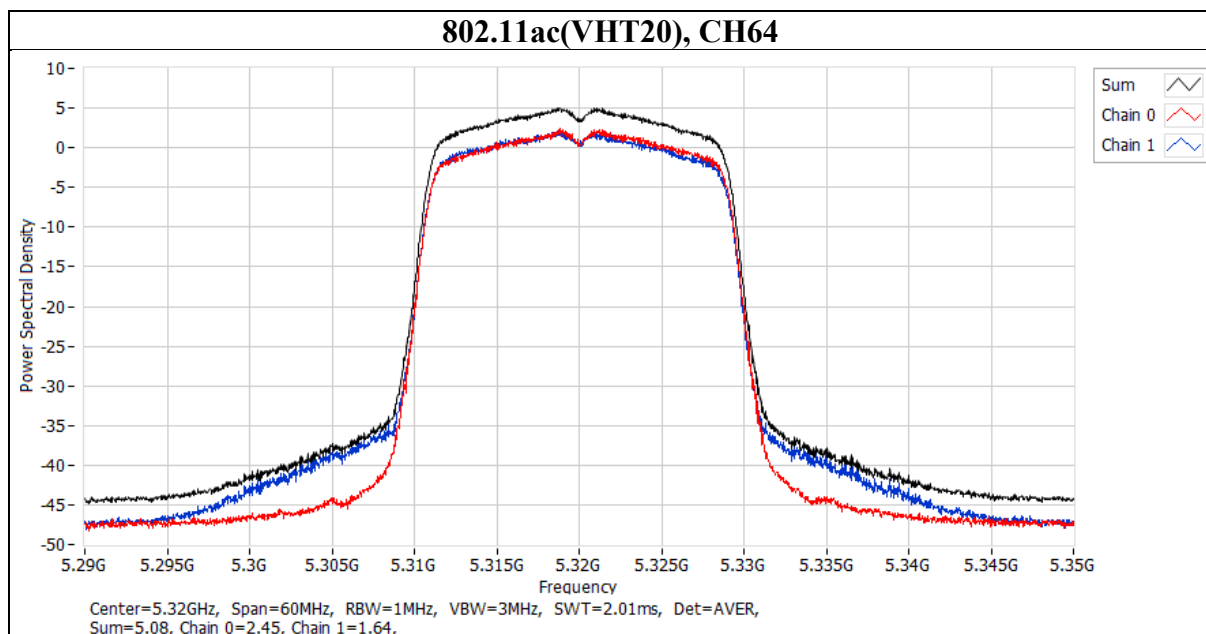
Mode (U-NII-2A)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	52	5260	8.37	5.12	8.63	PASS
	60	5300	8.37	5.16	8.63	PASS
	64	5320	8.37	4.98	8.63	PASS

Mode (U-NII-2A)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11a	52	5260	2.44	1.92
	60	5300	2.62	1.89
	64	5320	2.54	1.83



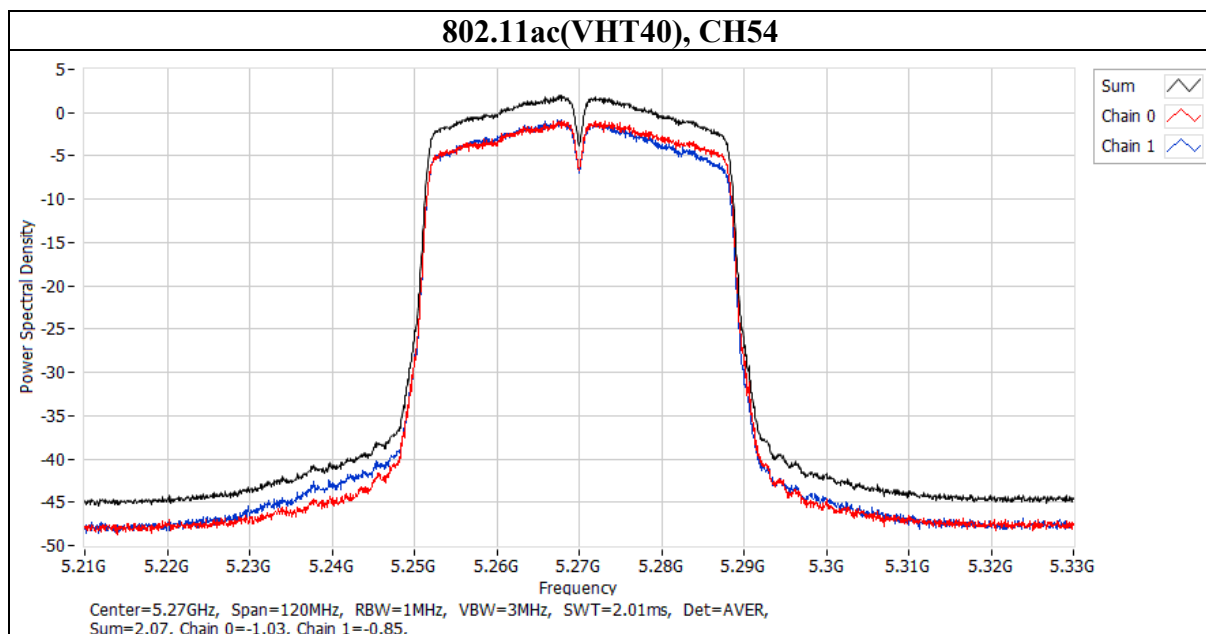
Mode (U-NII-2A)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT20)	52	5260	8.37	4.88	8.63	PASS
	60	5300	8.37	5.01	8.63	PASS
	64	5320	8.37	5.08	8.63	PASS

Mode (U-NII-2A)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ac(VHT20)	52	5260	2.41	1.86
	60	5300	2.3	1.88
	64	5320	2.45	2.01



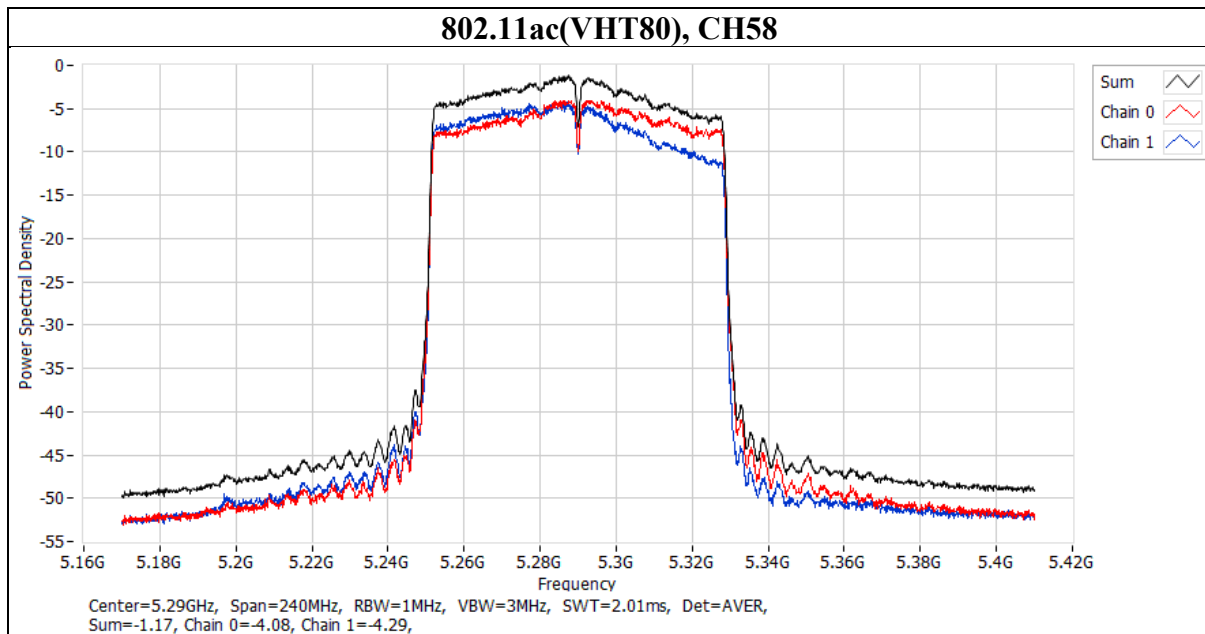
Mode (U-NII-2A)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT40)	54	5270	8.37	2.07	8.63	PASS
	62	5310	8.37	1.89	8.63	PASS

Mode (U-NII-2A)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ac(VHT40)	54	5270	-0.99	-0.84
	62	5310	-0.75	-1.2



Mode (U-NII-2A)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT80)	58	5290	8.37	-1.17	8.63	PASS

Mode (U-NII-2A)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ac(VHT80)	58	5290	-4.04	-4.22



Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

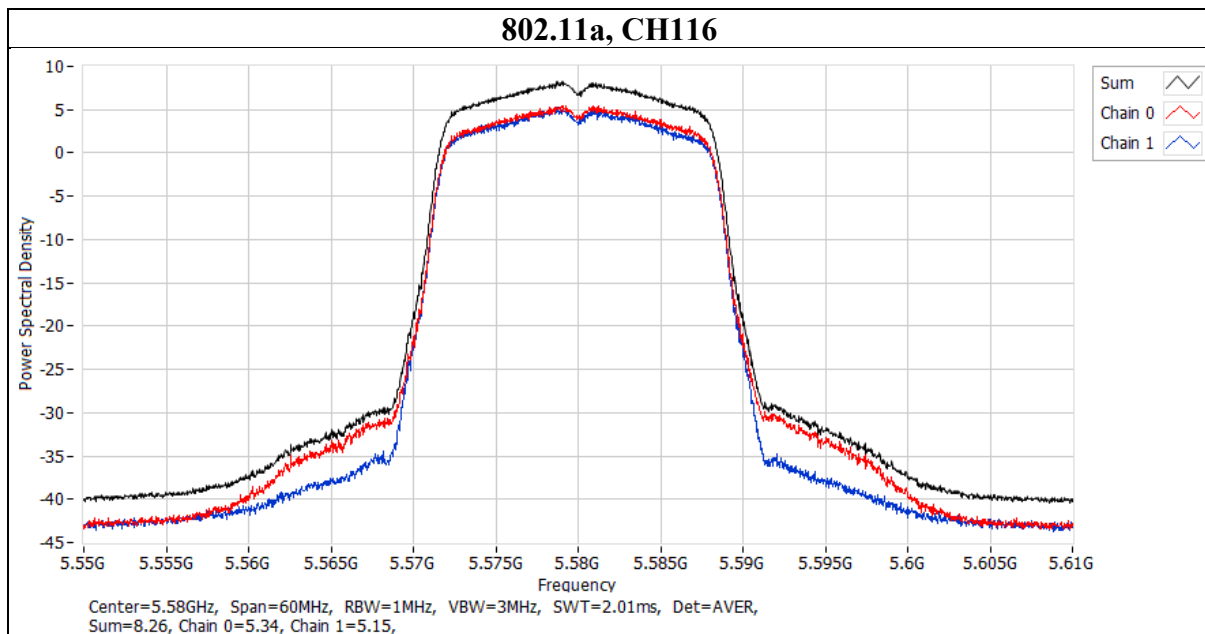
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Mode (U-NII-2C)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	100	5500	8.37	8.08	8.63	PASS
	116	5580	8.37	8.26	8.63	PASS
	140	5700	8.37	8.16	8.63	PASS

Mode (U-NII-2C)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11a	100	5500	5.36	4.99
	116	5580	5.45	5.28
	140	5700	5.47	5.08



Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

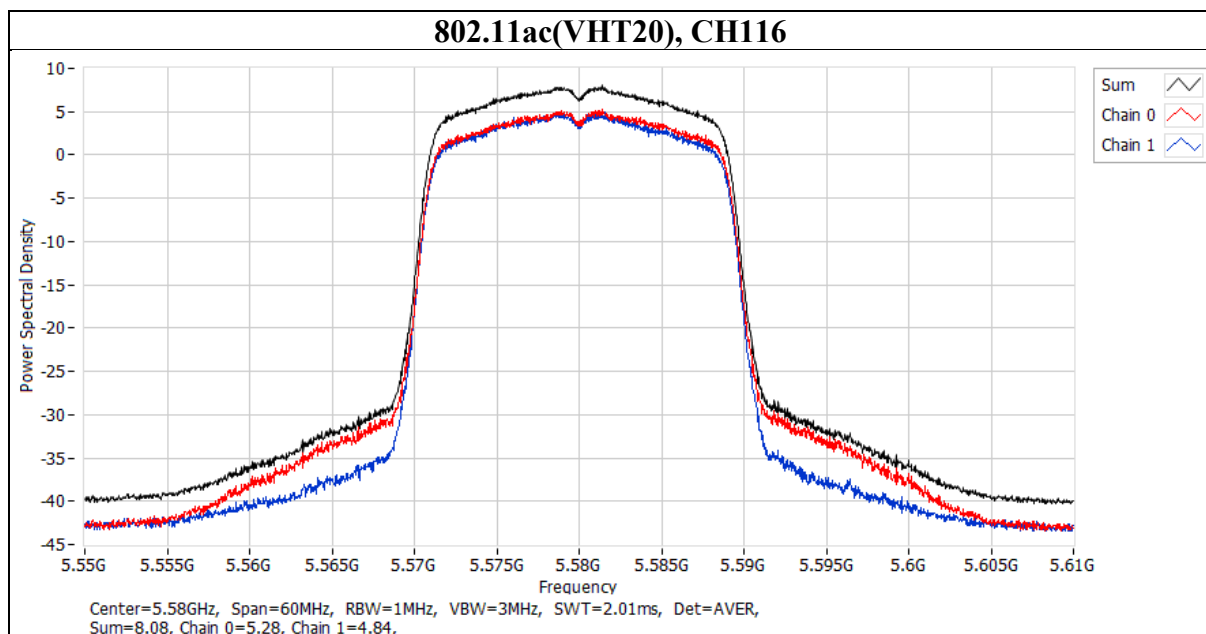
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

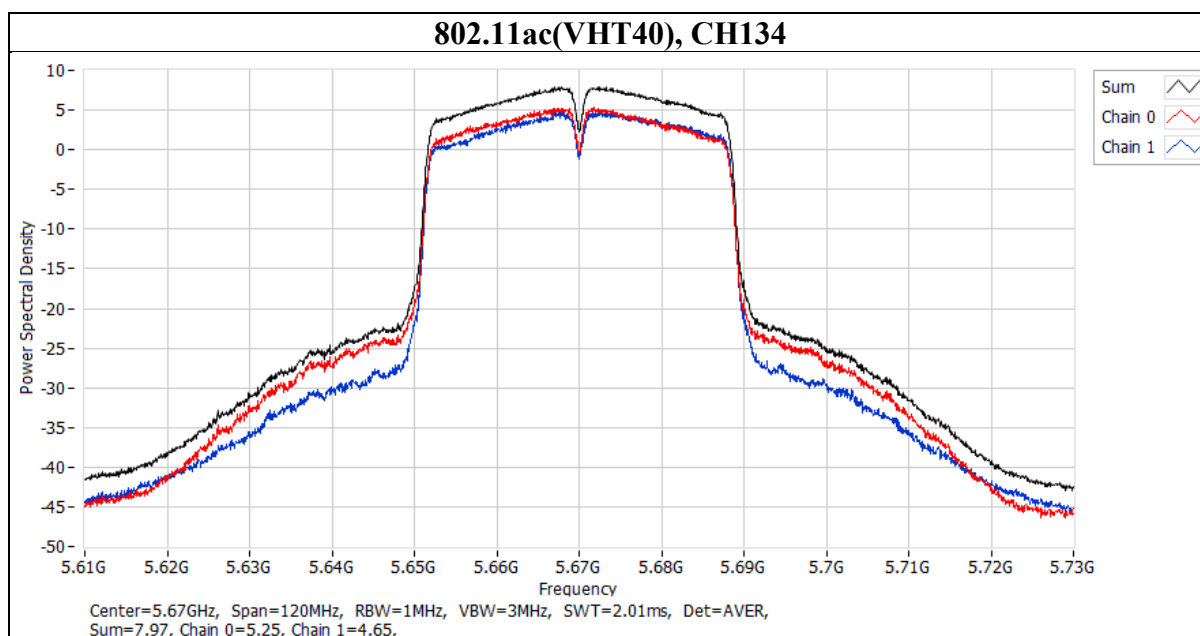
Mode (U-NII-2C)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT20)	100	5500	8.37	8.04	8.63	PASS
	116	5580	8.37	8.08	8.63	PASS
	140	5700	8.37	8	8.63	PASS

Mode (U-NII-2C)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ac(VHT20)	100	5500	5.16	5.14
	116	5580	5.28	4.92
	140	5700	5.09	5



Mode (U-NII-2C)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT40)	102	5510	8.37	7.18	8.63	PASS
	110	5550	8.37	7.63	8.63	PASS
	134	5670	8.37	7.97	8.63	PASS

Mode (U-NII-2C)	CH	Freq (MHz)	PSD per Chain (dBm/MHz)	
			Chain 0	Chain 1
802.11ac(VHT40)	102	5510	4.58	3.99
	110	5550	4.81	4.79
	134	5670	5.27	4.81



Mode (U-NII-2C)	CH	Freq (MHz)	Directional Gain (dBi)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11ac(VHT80)	106	5530	8.37	0.92	8.63	PASS
	122	5610	8.37	5.55	8.63	PASS

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

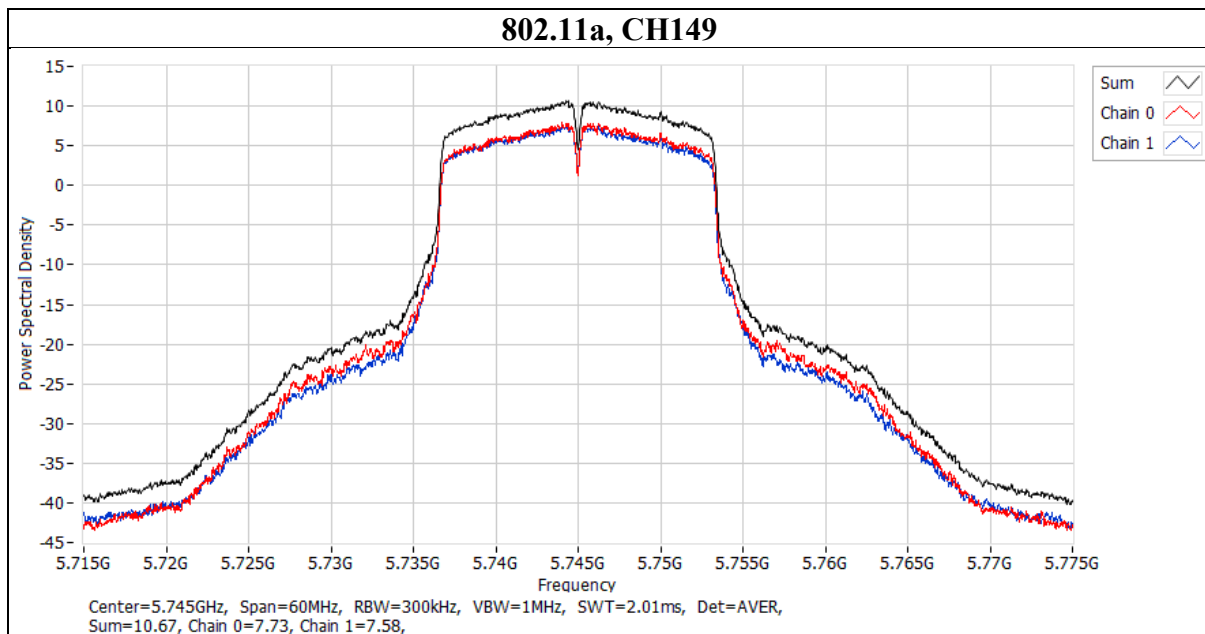
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

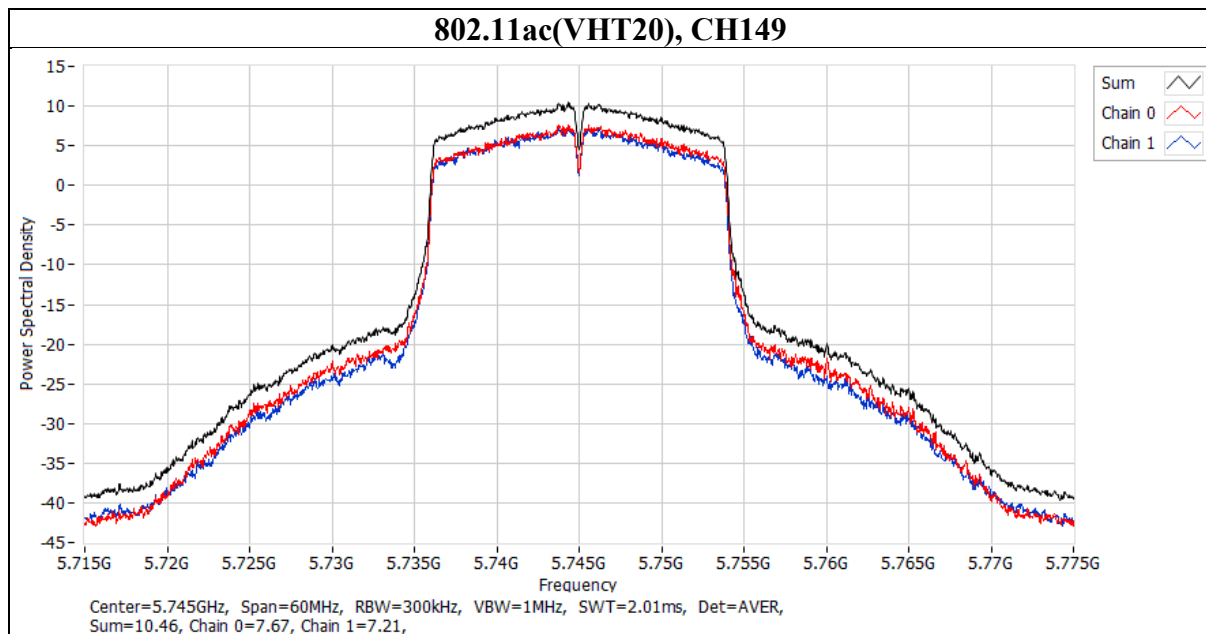
Mode (U-NII-3)	CH	Freq (MHz)	BWCF	Directional Gain (dBi)	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11a	149	5745	2.22	8.37	12.88	27.63	PASS
	157	5785	2.22	8.37	7.8	27.63	PASS
	165	5825	2.22	8.37	8.27	27.63	PASS

Mode (U-NII-3)	CH	Freq (MHz)	PSD per Chain (dBm/500kHz)	
			Chain 0	Chain 1
802.11a	149	5745	7.91	7.58
	157	5785	2.82	2.82
	165	5825	3.19	3.22



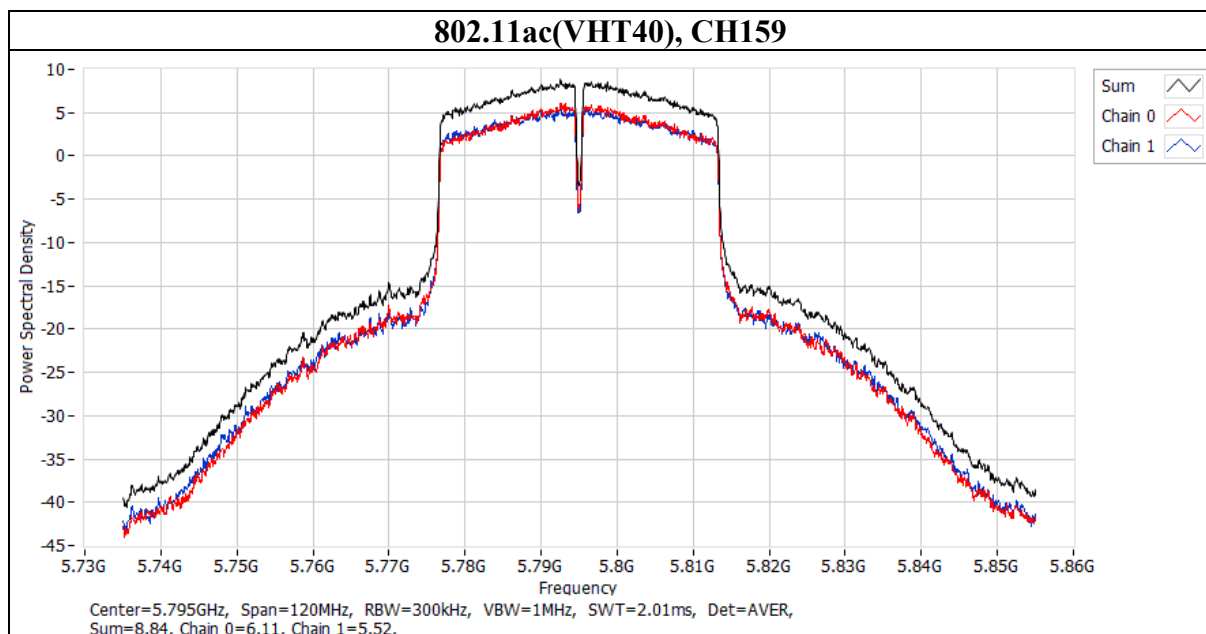
Mode (U-NII-3)	CH	Freq (MHz)	BWCF	Directional Gain (dBi)	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11ac(VHT20)	149	5745	2.22	8.37	12.68	27.63	PASS
	157	5785	2.22	8.37	7.63	27.63	PASS
	165	5825	2.22	8.37	8.06	27.63	PASS

Mode (U-NII-3)	CH	Freq (MHz)	PSD per Chain (dBm/500kHz)	
			Chain 0	Chain 1
802.11ac(VHT20)	149	5745	7.67	7.28
	157	5785	2.68	2.38
	165	5825	3	2.98



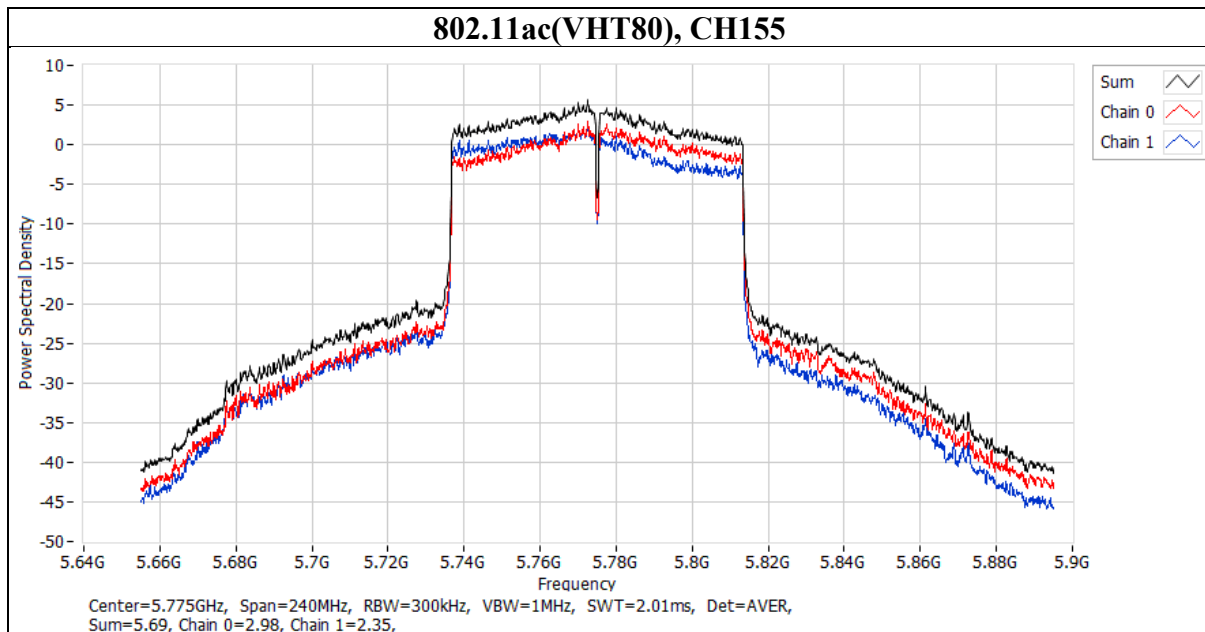
Mode (U-NII-3)	CH	Freq (MHz)	BWCF	Directional Gain (dBi)	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11ac(VHT40)	151	5755	2.22	8.37	10.93	27.63	PASS
	159	5795	2.22	8.37	11.06	27.63	PASS

Mode (U-NII-3)	CH	Freq (MHz)	PSD per Chain (dBm/500kHz)	
			Chain 0	Chain 1
802.11ac(VHT40)	151	5755	5.77	5.81
	159	5795	6.11	5.6



Mode (U-NII-3)	CH	Freq (MHz)	BWCF	Directional Gain (dBi)	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11ac(VHT80)	155	5775	2.22	8.37	7.91	27.63	PASS

Mode (U-NII-3)	CH	Freq (MHz)	PSD per Chain (dBm/500kHz)	
			Chain 0	Chain 1
802.11ac(VHT80)	155	5775	2.98	2.35



9.6. Frequency Stability

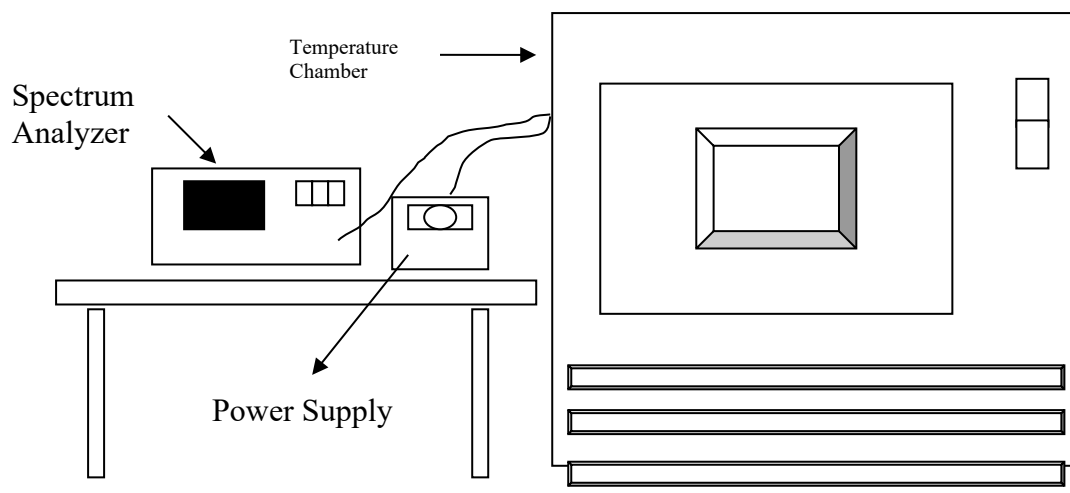
Requirements

The frequency of the carrier signal shall be maintained within band of operation.

Test procedure

- The EUT was placed inside the environmental test chamber and powered by nominal voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

Test Setup



Test Data

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)
55	120	5179.991	-1.74	5179.9937	-1.22	5179.9908	-1.78	5179.9936	-1.24
50	120	5180.0048	0.93	5180.0034	0.66	5180.0059	1.14	5180.0044	0.85
40	120	5179.9918	-1.58	5179.995	-0.97	5179.9936	-1.24	5179.9962	-0.73
30	120	5179.973	-5.21	5179.9725	-5.31	5179.9746	-4.90	5179.9757	-4.69
20	120	5180.0059	1.14	5180.0064	1.24	5180.0073	1.41	5180.0073	1.41
10	120	5179.9975	-0.48	5179.9964	-0.69	5179.9942	-1.12	5179.993	-1.35
0	120	5180.0102	1.97	5180.0082	1.58	5180.0081	1.56	5180.0083	1.60
-10	120	5180.0146	2.82	5180.0174	3.36	5180.0161	3.11	5180.0179	3.46
-20	120	5180.016	3.09	5180.0153	2.95	5180.0146	2.82	5180.015	2.90
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)
20	138	5180.0052	1.00	5180.007	1.35	5180.0078	1.51	5180.0078	1.51
20	120	5180.0059	1.14	5180.0064	1.24	5180.0073	1.41	5180.0073	1.41
20	102	5180.0055	1.06	5180.007	1.35	5180.0074	1.43	5180.0067	1.29

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

9.7. Radiated Spurious Emission

Requirements

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequency(MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Limits of unwanted emission out of the restricted bands

Applicable To		Limit	
789033 D02 General UNII Test Procedure New Rules v02r01		Field Strength at 3m	
		PK:74 (dBμV/m)	AV:54 (dBμV/m)
Frequency Band	Applicable To	EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
5250~5350 MHz	15.407(b)(2)		
5470~5725 MHz	15.407(b)(3)		
5725~5850 MHz	15.407(b)(4)(i)	PK:-27 (dBm/MHz) ^{*1} PK:10 (dBm/MHz) ^{*2} PK:15.6 (dBm/MHz) ^{*3} PK:27 (dBm/MHz) ^{*4}	PK: 68.2(dBμV/m) ^{*1} PK:105.2 (dBμV/m) ^{*2} PK: 110.8(dBμV/m) ^{*3} PK:122.2 (dBμV/m) ^{*4}
	^{*1} beyond 75 MHz or more above of the band edge. ^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. ^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. ^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		
5850~5895 MHz	RSS-247 clause 6.2.5.3	5725 MHz and below: PK:27 (dBm/MHz) ^{*1} PK:15.6 (dBm/MHz) ^{*2} PK:10 (dBm/MHz) ^{*3} PK:-27 (dBm/MHz) ^{*4} 5895 MHz and above: AV:-27 (dBm/MHz) ^{*a} AV:15&-7 (dBm/MHz) ^{*b} AV:-5&-27 (dBm/MHz) ^{*c}	5725 MHz and below: PK:122.2 (dBμV/m) ^{*1} PK:110.8 (dBμV/m) ^{*2} PK:105.2 (dBμV/m) ^{*3} PK:68.2 (dBμV/m) ^{*4} 5895 MHz and above: AV: 68.2 (dBμV/m) ^{*a} AV:110.2&88.2 (dBμV/m) ^{*b} AV:90.2&68.2 (dBμV/m) ^{*c}
	^{*1} 5 MHz below the 5725 MHz band edge. ^{*2} 5 MHz below the 5725 MHz band edge decreasing linearly to 10 dBm/MHz at 25 MHz below ^{*3} 25 MHz below the 5725 MHz band edge decreasing linearly to -27 dBm/MHz at 75 MHz below ^{*4} More than 75 MHz below the 5725 MHz band edge. ^{*a} Fixed outdoor access points and fixed outdoor client devices shall not exceed -27 dBm/MHz e.i.r.p. spectral density at or above the 5895 MHz band edge. ^{*b} Indoor access points or indoor subordinate devices shall not exceed 15 dBm/MHz e.i.r.p. spectral density at the 5895 MHz band edge and shall decrease linearly to not exceed -7 dBm/MHz e.i.r.p. spectral density at or above 5925 MHz. ^{*c} Client devices shall not exceed -5 dBm/MHz e.i.r.p. spectral density at the 5895 MHz band edge and shall decrease linearly to not exceed -27 dBm/MHz e.i.r.p. spectral density at or above 5925 MHz.		

Note:

The following formula is used to convert the effective isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Test Procedures

[For 9 kHz ~ 30 MHz]

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 30MHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

[For above 30 MHz]

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
- f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Note:

- a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- b. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- c. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.

Peak

Frequency	RBW	VBW
9 kHz~150 kHz	200 Hz	600 Hz
150 kHz~30 MHz	10 kHz	30 kHz
30 MHz~1 GHz	120 kHz	360 kHz
Above 1GHz	1 MHz	3 MHz

Average for above 1GHz

RBW	VBW
1MHz	Refer to section 6.6 for duty cycle.

- d. All modes of operation were investigated (includes all external accessories) and the worst-case emissions are reported, the other emission levels were low against the limit.
- e. Test data of Result value (dBuV/m) = Reading value (dBuV) + Correction Factor (dB/m).
- f. Test data of Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
- g. Test data of Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
- h. Test data of Notation "@" = Fundamental Frequency
- i. Test data of Notation "*" = Only required peak limit or the peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

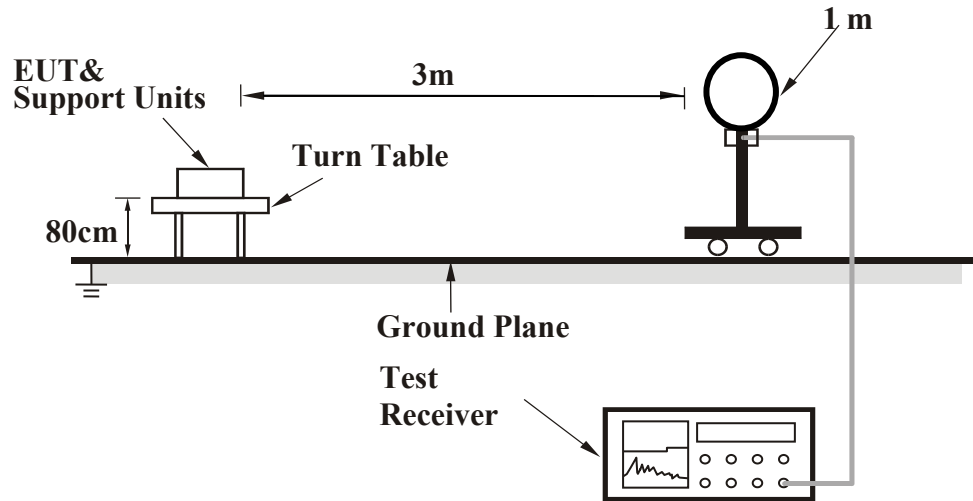
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

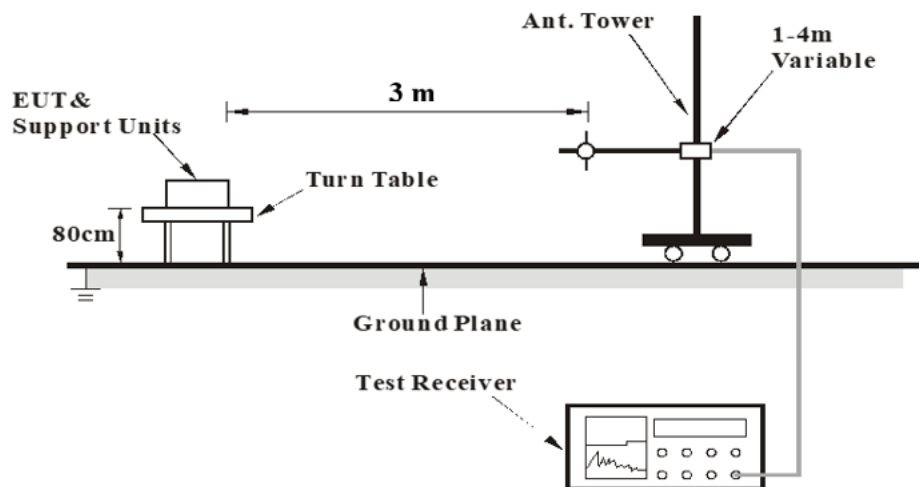
Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

Test Setup

<Frequency Range 9 kHz ~ 30 MHz>



<Frequency Range 30 MHz ~ 1 GHz >



Underwriters Laboratories Taiwan Co., Ltd.

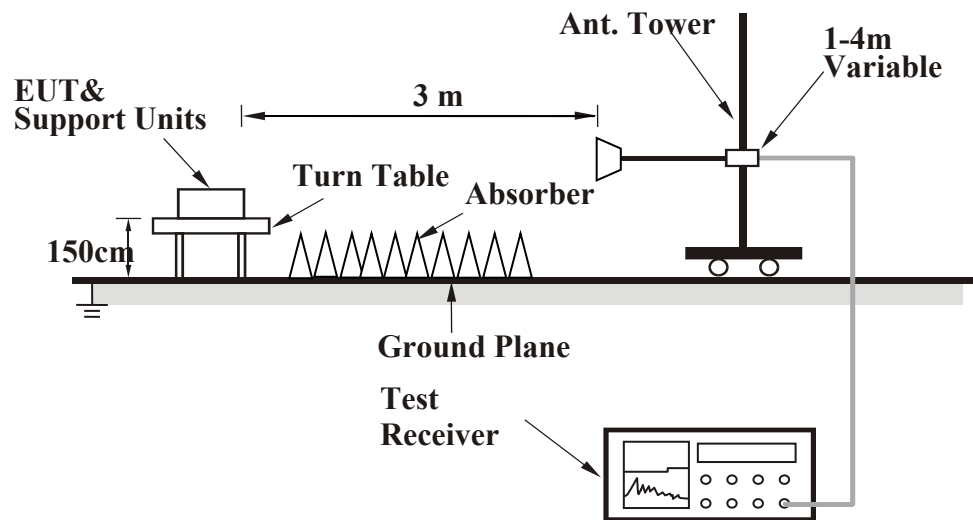
Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

<Frequency Range above 1 GHz>



For the actual test configuration, please refer to the Setup Configurations.

Test Data

Above 1 GHz

Mode	802.11a	Channel	36
------	---------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5148.4	42.85	18.53	61.38	74	-12.62	PK
		5149.45	33.76	18.52	52.28	54	-1.72	AVG
	@	5180	96.46	18.31	114.77	N/A	N/A	PK
	@	5180	90.64	18.31	108.95	N/A	N/A	AVG
Vertical		5069.65	42.79	18.38	61.17	74	-12.83	PK
		5148.4	32.31	18.53	50.84	54	-3.16	AVG
	@	5180	95.15	18.31	113.46	N/A	N/A	PK
	@	5180	88.83	18.31	107.14	N/A	N/A	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

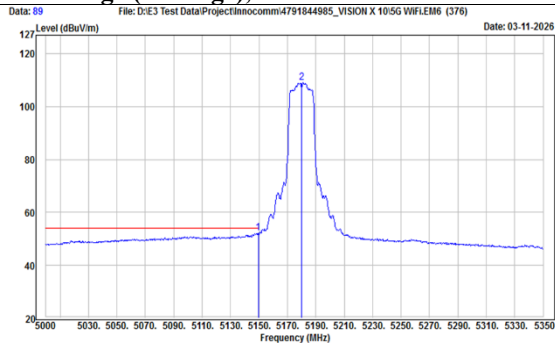
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

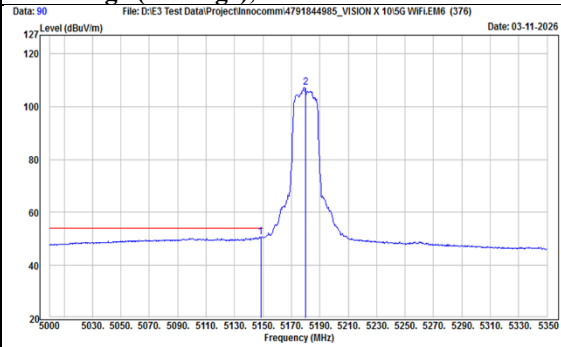
TX, 802.11a (Ch 36)

Band Edge (Average), Horizontal



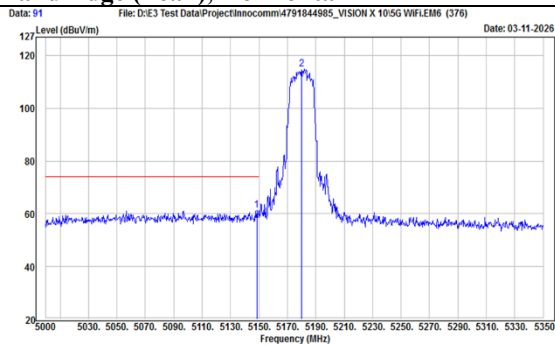
TX, 802.11a (Ch 36)

Band Edge (Average), Vertical



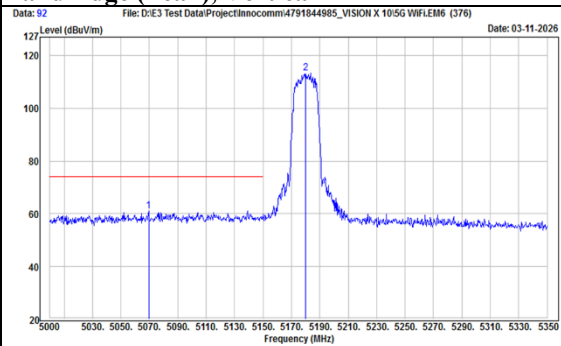
TX, 802.11a (Ch 36)

Band Edge (Peak), Horizontal



TX, 802.11a (Ch 36)

Band Edge (Peak), Vertical



Mode	802.11a	Channel	44
------	---------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5055.65	43.61	18.26	61.87	74	-12.13	PK
		5143.85	32.39	18.53	50.92	54	-3.08	AVG
	@	5220	101.73	18.15	119.88	N/A	N/A	PK
	@	5220	95.37	18.15	113.52	N/A	N/A	AVG
Vertical		5087.85	42.29	18.55	60.84	74	-13.16	PK
		5139.3	31.81	18.54	50.35	54	-3.65	AVG
	@	5220	99.97	18.15	118.12	N/A	N/A	PK
	@	5220	92.81	18.15	110.96	N/A	N/A	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

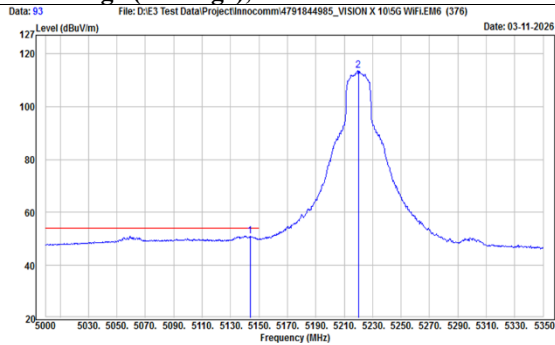
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

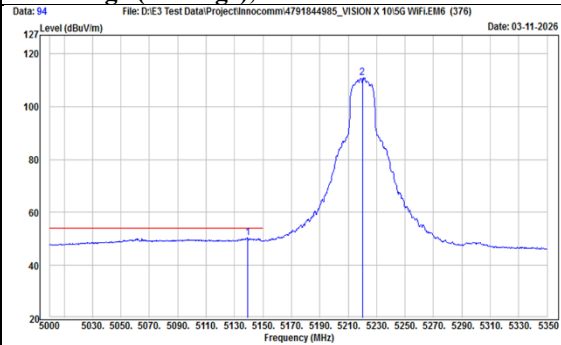
TX, 802.11a (Ch 44)

Band Edge (Average), Horizontal



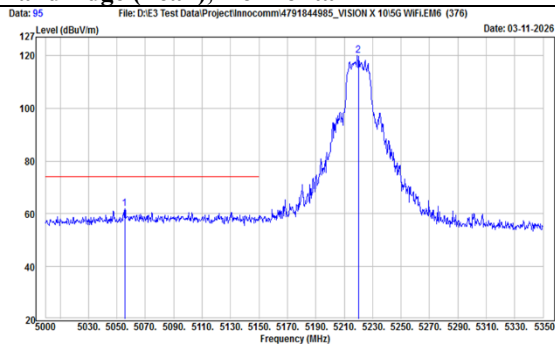
TX, 802.11a (Ch 44)

Band Edge (Average), Vertical



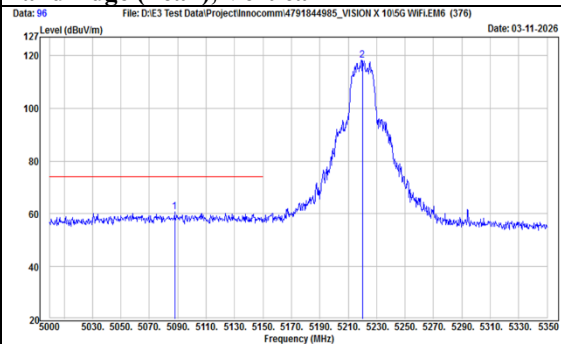
TX, 802.11a (Ch 44)

Band Edge (Peak), Horizontal



TX, 802.11a (Ch 44)

Band Edge (Peak), Vertical



Mode	802.11a	Channel	48
------	---------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5081.2	43.92	18.49	62.41	74	-11.59	PK
		5081.2	32.17	18.49	50.66	54	-3.34	AVG
	@	5240	102.43	18.13	120.56	N/A	N/A	PK
	@	5240	94.97	18.13	113.1	N/A	N/A	AVG
Vertical		5075.6	42.66	18.43	61.09	74	-12.91	PK
		5082.6	31.59	18.5	50.09	54	-3.91	AVG
	@	5240	100.16	18.13	118.29	N/A	N/A	PK
	@	5240	92.78	18.13	110.91	N/A	N/A	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

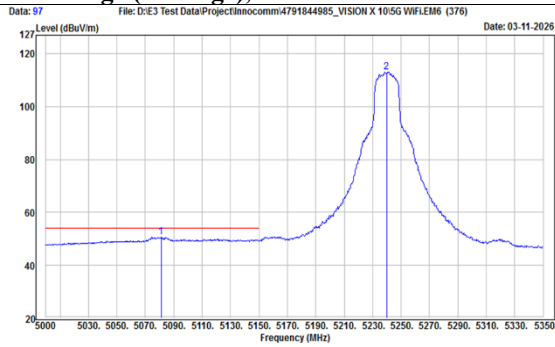
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

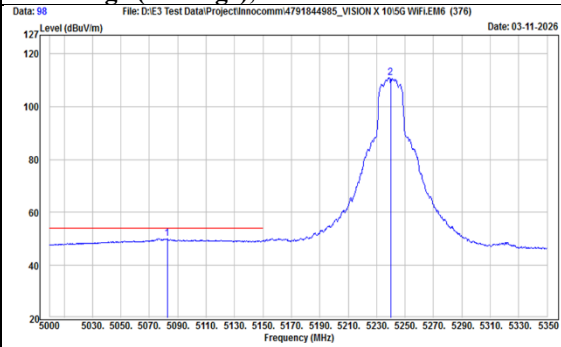
TX, 802.11a (Ch 48)

Band Edge (Average), Horizontal



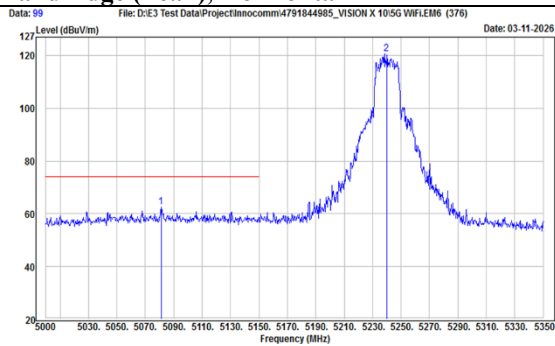
TX, 802.11a (Ch 48)

Band Edge (Average), Vertical



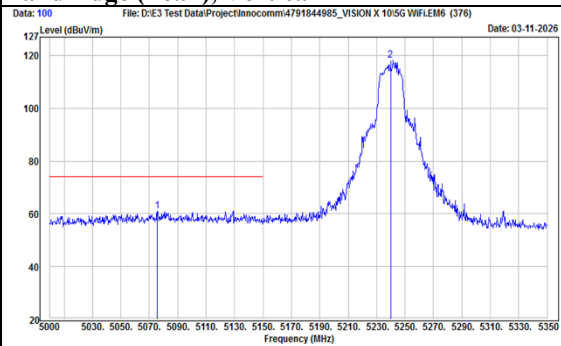
TX, 802.11a (Ch 48)

Band Edge (Peak), Horizontal



TX, 802.11a (Ch 48)

Band Edge (Peak), Vertical



Mode	802.11a	Channel	52
------	---------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	5260	101.99	18.1	120.09	N/A	N/A	PK
	@	5260	95	18.1	113.1	N/A	N/A	AVG
		5403.6	41.37	18.21	59.58	74	-14.42	PK
		5419.2	30.25	18.35	48.6	54	-5.4	AVG
Vertical	@	5260	100.4	18.1	118.5	N/A	N/A	PK
	@	5260	92.85	18.1	110.95	N/A	N/A	AVG
		5384.1	40.6	18.06	58.66	74	-15.34	PK
		5421.3	29.71	18.37	48.08	54	-5.92	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

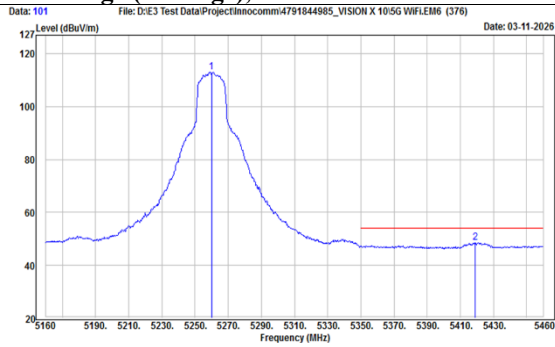
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

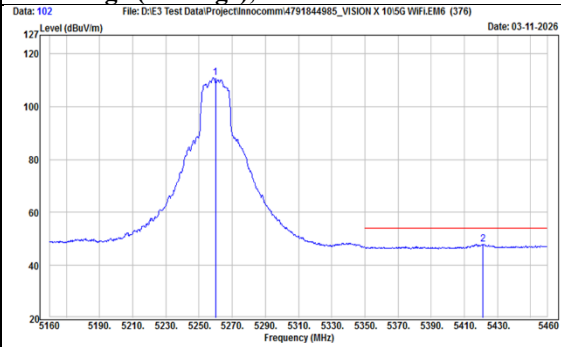
TX, 802.11a (Ch 52)

Band Edge (Average), Horizontal



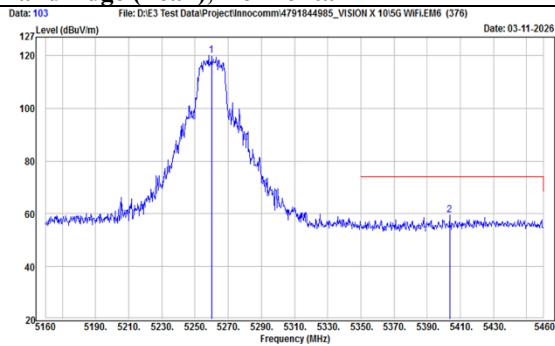
TX, 802.11a (Ch 52)

Band Edge (Average), Vertical



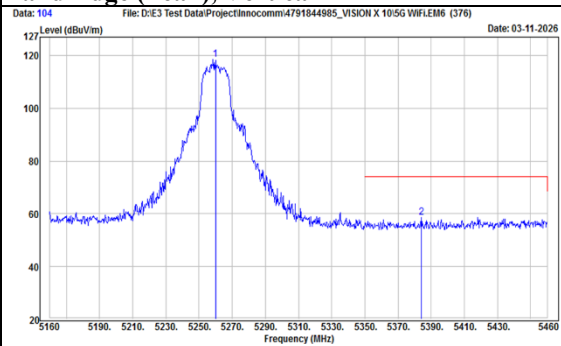
TX, 802.11a (Ch 52)

Band Edge (Peak), Horizontal



TX, 802.11a (Ch 52)

Band Edge (Peak), Vertical



Mode	802.11a	Channel	60
------	---------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	5300	99.36	17.97	117.33	N/A	N/A	PK
	@	5300	93.35	17.97	111.32	N/A	N/A	AVG
		5350.2	40.84	17.82	58.66	74	-15.34	PK
		5350.2	31.66	17.82	49.48	54	-4.52	AVG
Vertical	@	5300	97.47	17.97	115.44	N/A	N/A	PK
	@	5300	90.21	17.97	108.18	N/A	N/A	AVG
		5353.8	41.49	17.85	59.34	74	-14.66	PK
		5381.1	30.55	18.05	48.6	54	-5.4	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

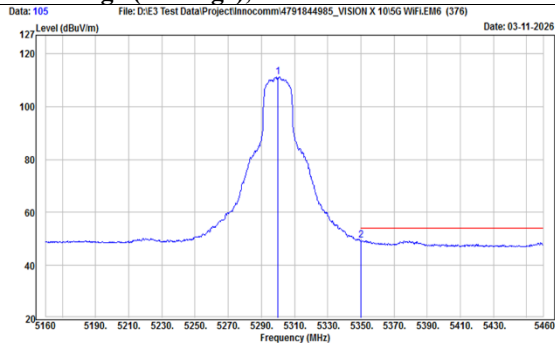
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

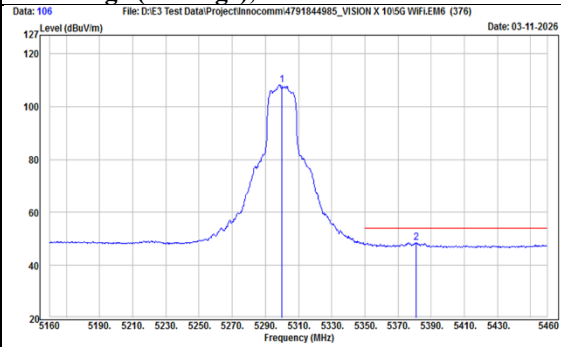
TX, 802.11a (Ch 60)

Band Edge (Average), Horizontal



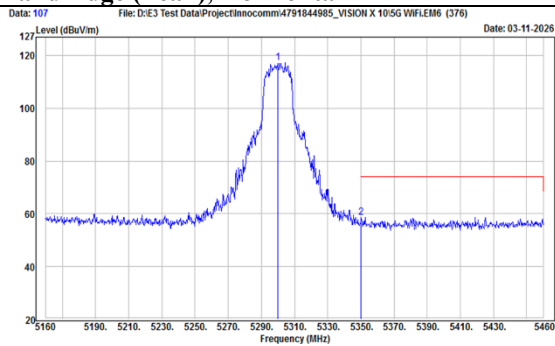
TX, 802.11a (Ch 60)

Band Edge (Average), Vertical



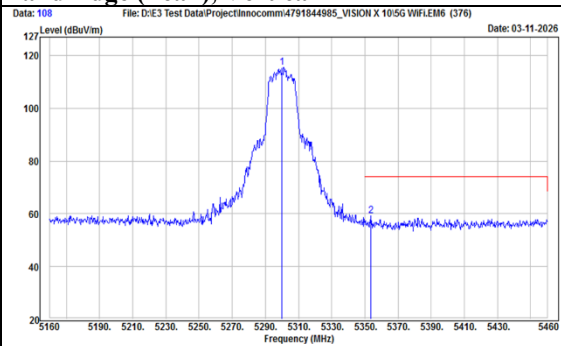
TX, 802.11a (Ch 60)

Band Edge (Peak), Horizontal



TX, 802.11a (Ch 60)

Band Edge (Peak), Vertical



Mode	802.11a	Channel	64
------	---------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	5320	98.71	17.91	116.62	N/A	N/A	PK
	@	5320	91.37	17.91	109.28	N/A	N/A	AVG
		5350.5	46.05	17.82	63.87	74	-10.13	PK
		5350.8	35.35	17.83	53.18	54	-0.82	AVG
Vertical	@	5320	94.85	17.91	112.76	N/A	N/A	PK
	@	5320	88.38	17.91	106.29	N/A	N/A	AVG
		5350.2	33.51	17.82	51.33	54	-2.67	AVG
		5352.3	42.87	17.84	60.71	74	-13.29	PK

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

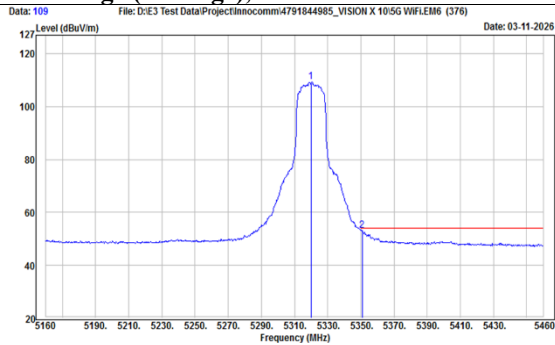
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

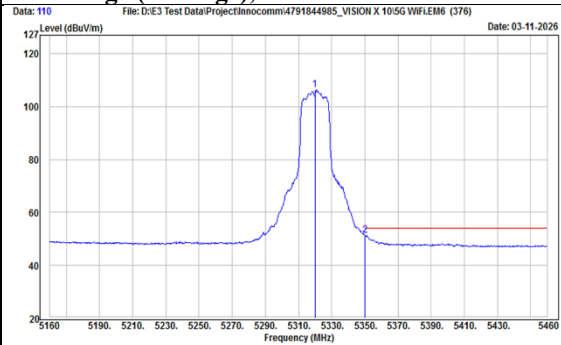
TX, 802.11a (Ch 64)

Band Edge (Average), Horizontal



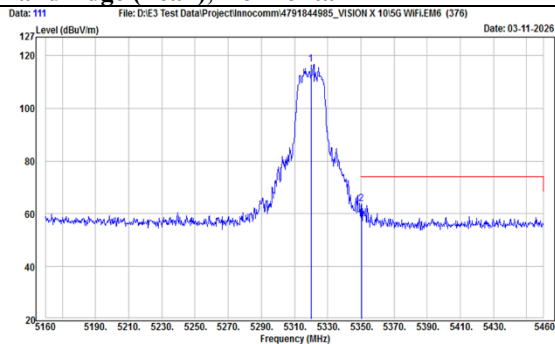
TX, 802.11a (Ch 64)

Band Edge (Average), Vertical



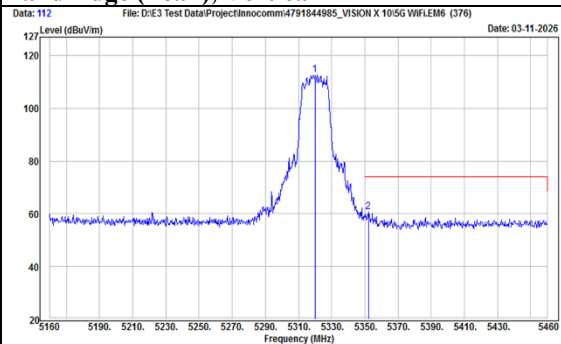
TX, 802.11a (Ch 64)

Band Edge (Peak), Horizontal



TX, 802.11a (Ch 64)

Band Edge (Peak), Vertical



Mode	802.11a	Channel	100
------	---------	---------	-----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5454.25	41.6	18.67	60.27	74	-13.73	PK
		5459.15	32.75	18.68	51.43	54	-2.57	AVG
		5467.55	46	18.76	64.76	68.2	-3.44	PK
	@	5500	97.53	18.98	116.51	N/A	N/A	PK
	@	5500	90.75	18.98	109.73	N/A	N/A	AVG
Vertical		5457.05	41.98	18.68	60.66	74	-13.34	PK
		5457.05	30.6	18.68	49.28	54	-4.72	AVG
		5466.85	44.39	18.74	63.13	68.2	-5.07	PK
	@	5500	94.06	18.98	113.04	N/A	N/A	PK
	@	5500	88.16	18.98	107.14	N/A	N/A	AVG

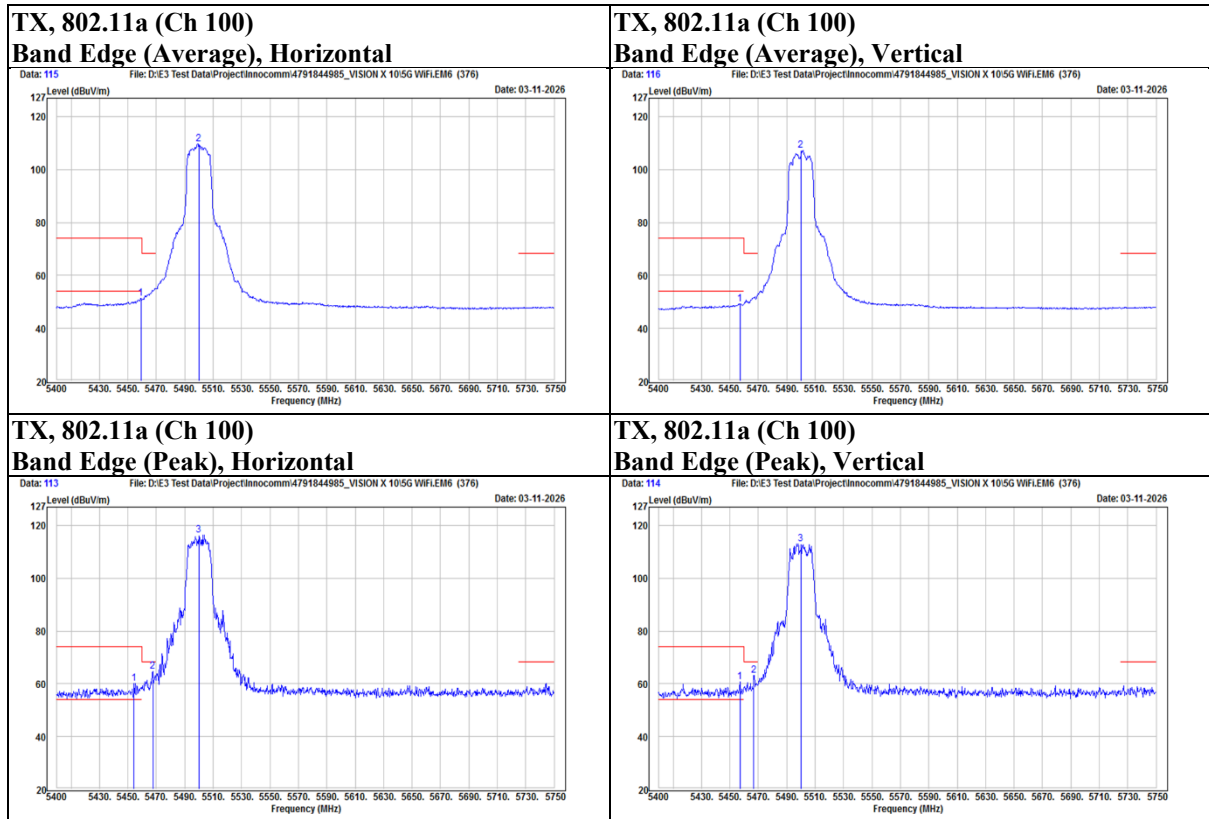
Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1



Mode	802.11a	Channel	116
------	---------	---------	-----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5459.5	29.28	18.69	47.97	54	-6.03	AVG
		5459.85	40.26	18.7	58.96	74	-15.04	PK
		5465.1	39.7	18.73	58.43	68.2	-9.77	PK
	@	5580	95.03	18.74	113.77	N/A	N/A	PK
	@	5580	88.78	18.74	107.52	N/A	N/A	AVG
		5743.7	39.61	18.97	58.58	68.2	-9.62	PK
Vertical		5454.6	40.13	18.67	58.8	74	-15.2	PK
		5459.85	29.16	18.7	47.86	54	-6.14	AVG
		5466.85	39.43	18.74	58.17	68.2	-10.03	PK
	@	5580	95.05	18.74	113.79	N/A	N/A	PK
	@	5580	87.32	18.74	106.06	N/A	N/A	AVG
		5742.65	40.34	18.97	59.31	68.2	-8.89	PK

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

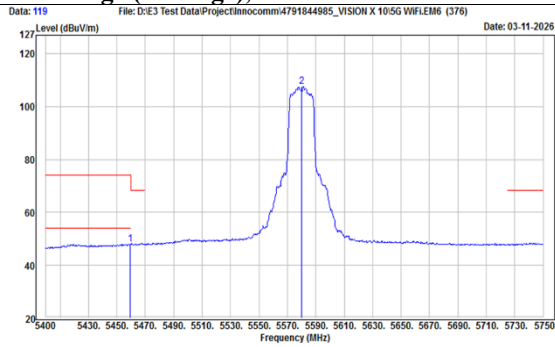
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

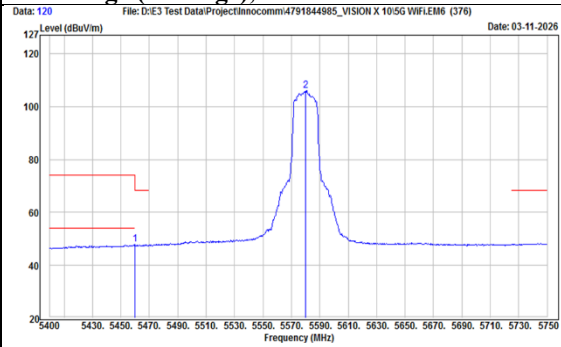
TX, 802.11a (Ch 116)

Band Edge (Average), Horizontal



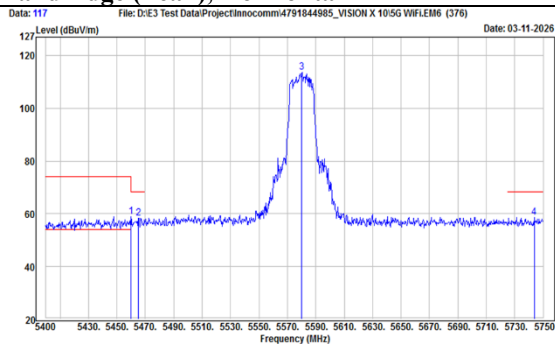
TX, 802.11a (Ch 116)

Band Edge (Average), Vertical



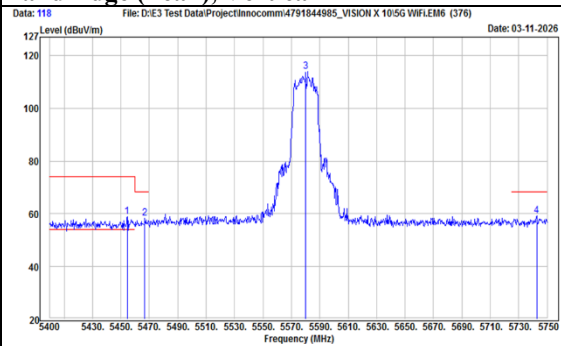
TX, 802.11a (Ch 116)

Band Edge (Peak), Horizontal



TX, 802.11a (Ch 116)

Band Edge (Peak), Vertical



Mode	802.11a	Channel	140
------	---------	---------	-----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5443.05	40.15	18.56	58.71	74	-15.29	PK
		5455.3	28.45	18.67	47.12	54	-6.88	AVG
		5461.6	40.23	18.71	58.94	68.2	-9.26	PK
	@	5700	95.95	18.67	114.62	N/A	N/A	PK
	@	5700	90.23	18.67	108.9	N/A	N/A	AVG
		5725	46.99	18.85	65.84	68.2	-2.36	PK
Vertical		5453.2	39.3	18.66	57.96	74	-16.04	PK
		5454.25	28.55	18.67	47.22	54	-6.78	AVG
		5470	38.75	18.77	57.52	68.2	-10.68	PK
	@	5700	95.62	18.67	114.29	N/A	N/A	PK
	@	5700	89.08	18.67	107.75	N/A	N/A	AVG
		5725	48.44	18.85	67.29	68.2	-0.91	PK

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

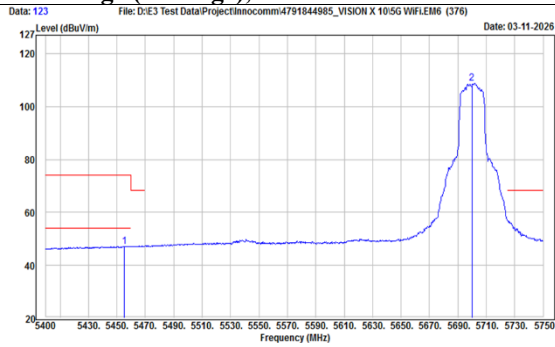
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

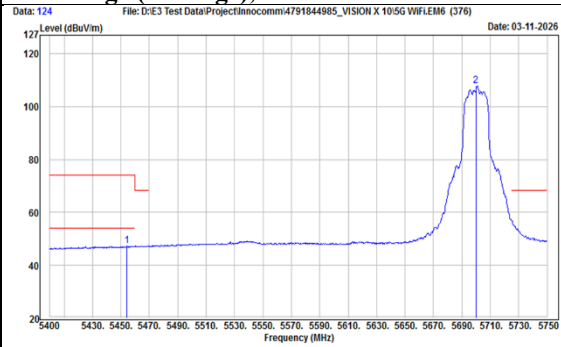
TX, 802.11a (Ch 140)

Band Edge (Average), Horizontal



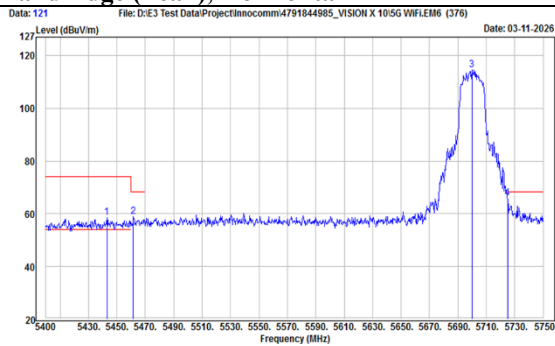
TX, 802.11a (Ch 140)

Band Edge (Average), Vertical



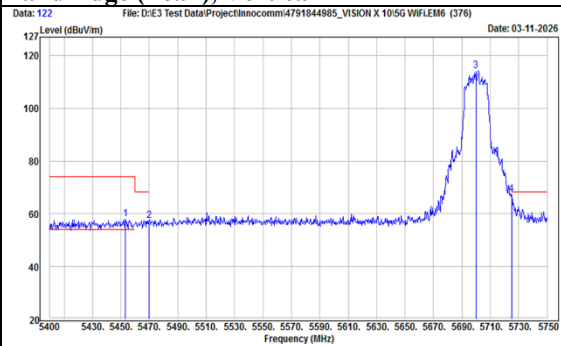
TX, 802.11a (Ch 140)

Band Edge (Peak), Horizontal



TX, 802.11a (Ch 140)

Band Edge (Peak), Vertical



Mode	802.11a	Channel	149
------	---------	---------	-----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5569.5	40.47	18.77	59.24	68.2	-8.96	PK
		5655.5	40.44	18.63	59.07	72.29	-13.22	PK
	@	5745	98.11	18.99	117.1	N/A	N/A	PK
Vertical		5539	40.98	18.86	59.84	68.2	-8.36	PK
		5656	41.36	18.63	59.99	72.66	-12.67	PK
	@	5745	94.72	18.99	113.71	N/A	N/A	PK

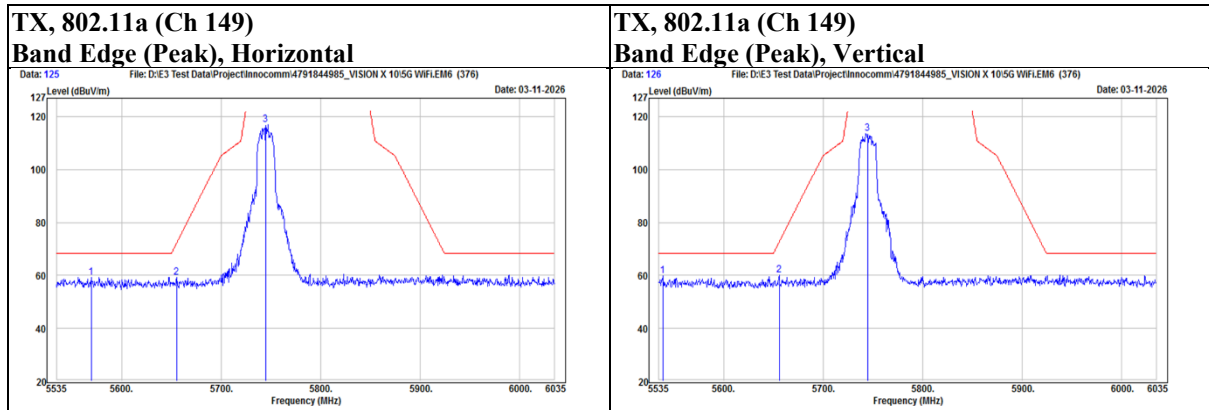
Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1



Mode	802.11a	Channel	157
------	---------	---------	-----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		5550	41.83	18.83	60.66	68.2	-7.54	PK
		5699.5	40.35	18.67	59.02	104.83	-45.81	PK
	@	5785	92.72	19.19	111.91	N/A	N/A	PK
		5884.5	40.45	19.79	60.24	98.15	-37.91	PK
		6031	40.32	19.89	60.21	68.2	-7.99	PK
Vertical		5643	40.85	18.63	59.48	68.2	-8.72	PK
		5672.5	41.05	18.65	59.7	84.89	-25.19	PK
	@	5785	89.08	19.19	108.27	N/A	N/A	PK
		5914	39.71	19.81	59.52	76.31	-16.79	PK
		5943.5	40.82	19.73	60.55	68.2	-7.65	PK

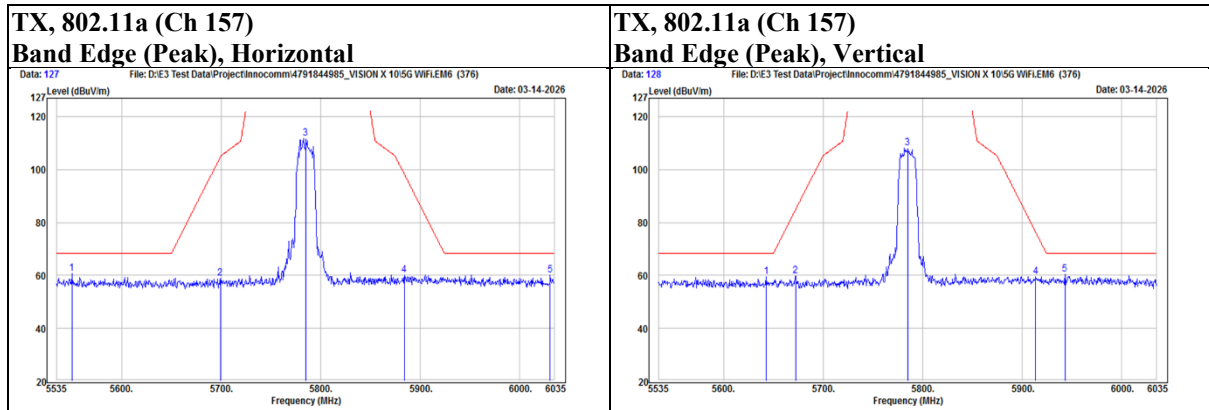
Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1



Mode	802.11a	Channel	165
------	---------	---------	-----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	5825	92.59	19.44	112.03	N/A	N/A	PK
		5905.5	41.76	19.84	61.6	82.59	-20.99	PK
		5942	40.6	19.72	60.32	68.2	-7.88	PK
Vertical	@	5825	89.07	19.44	108.51	N/A	N/A	PK
		5908	40.02	19.84	59.86	80.74	-20.88	PK
		5971	39.91	19.77	59.68	68.2	-8.52	PK

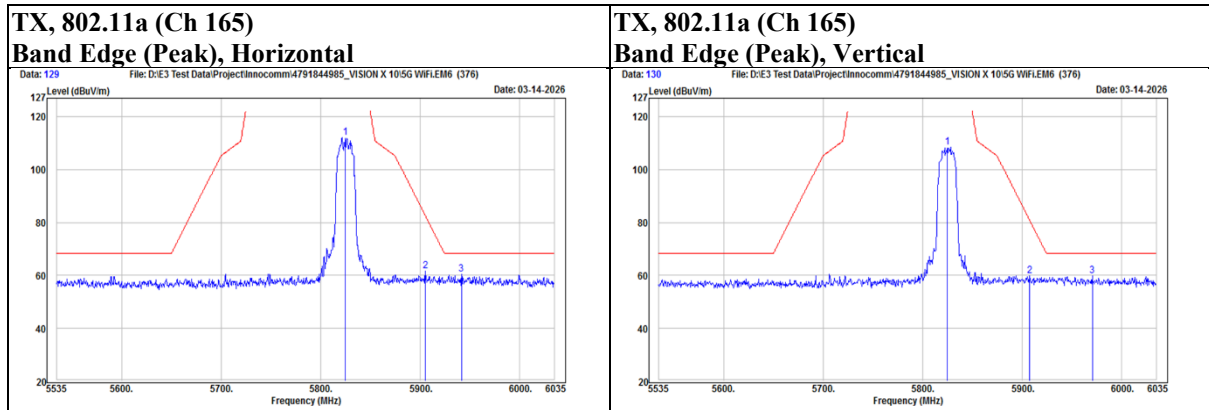
Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1



Mode	802.11a - Emission	Channel	36
------	--------------------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	*	10360	38.48	19.97	58.45	68.2	-9.75	PK
		14500	29.27	28	57.27	68.2	-10.93	PK
		14500	21	28	49	54	-5	AVG
		15700	30.03	25.42	55.45	74	-18.55	PK
		15700	21.2	25.42	46.62	54	-7.38	AVG
	*	20720	39.29	4.98	44.27	74	-29.73	PK
	*	25900	33.67	10.72	44.39	68.2	-23.81	PK
	*	31080	32.84	13.27	46.11	68.2	-22.09	PK
	*	36260	36.55	13.44	49.99	68.2	-18.21	PK
		39376	38.05	17.29	55.34	74	-18.66	PK
		39376	28.21	17.29	45.5	54	-8.5	AVG
Vertical	*	10360	39.49	19.97	59.46	68.2	-8.74	PK
		14500	27.57	28	55.57	68.2	-12.63	PK
		14500	19.3	28	47.3	54	-6.7	AVG
		15565	30.66	25.63	56.29	74	-17.71	PK
		15565	21.83	25.63	47.46	54	-6.54	AVG
	*	20720	44.22	4.98	49.2	74	-24.8	PK
	*	25900	34.56	10.72	45.28	68.2	-22.92	PK
	*	31080	33	13.27	46.27	68.2	-21.93	PK
	*	36260	37.58	13.44	51.02	68.2	-17.18	PK
		39856	37.71	17.85	55.56	74	-18.44	PK
		39856	27.87	17.85	45.72	54	-8.28	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

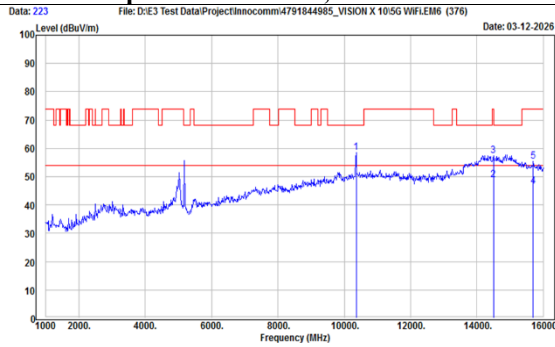
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

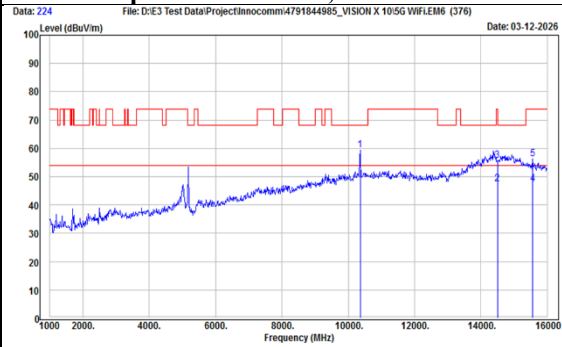
TX, 802.11a - Emission (Ch 36)

Radiated Spurious Emission, Horizontal



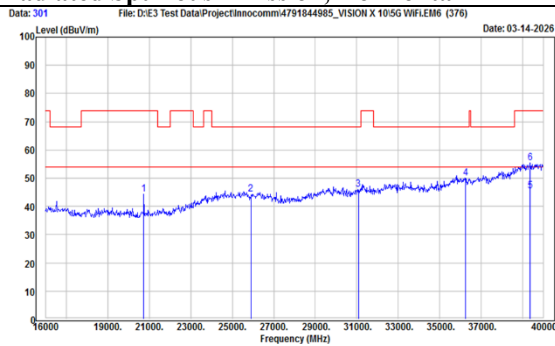
TX, 802.11a - Emission (Ch 36)

Radiated Spurious Emission, Vertical



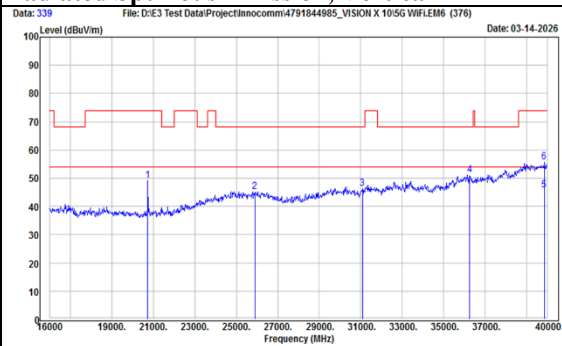
TX, 802.11a - Emission (Ch 36)

Radiated Spurious Emission, Horizontal



TX, 802.11a - Emission (Ch 36)

Radiated Spurious Emission, Vertical



Mode	802.11a - Emission	Channel	44
------	--------------------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	*	10440	44.98	20.28	65.26	68.2	-2.94	PK
		14500	28.82	28	56.82	68.2	-11.38	PK
		14500	20.55	28	48.55	54	-5.45	AVG
		15325	28.89	26.53	55.42	68.2	-12.78	PK
		15325	20.06	26.53	46.59	54	-7.41	AVG
	*	20880	40.24	5.19	45.43	74	-28.57	PK
	*	26100	34.89	10.69	45.58	68.2	-22.62	PK
	*	31320	32.91	14.24	47.15	74	-26.85	PK
	*	36540	37.06	12.59	49.65	68.2	-18.55	PK
		39088	38.67	16.9	55.57	74	-18.43	PK
		39088	28.83	16.9	45.73	54	-8.27	AVG
Vertical	*	10440	47.57	20.28	67.85	68.2	-0.35	PK
		14500	29.05	28	57.05	68.2	-11.15	PK
		14500	20.78	28	48.78	54	-5.22	AVG
		15340	29.59	26.45	56.04	68.2	-12.16	PK
		15340	20.76	26.45	47.21	54	-6.79	AVG
	*	20880	43.25	5.19	48.44	74	-25.56	PK
	*	26100	36.2	10.69	46.89	68.2	-21.31	PK
	*	31320	33.5	14.24	47.74	74	-26.26	PK
	*	36540	37.27	12.59	49.86	68.2	-18.34	PK
		39712	37.83	17.59	55.42	74	-18.58	PK
		39712	27.99	17.59	45.58	54	-8.42	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

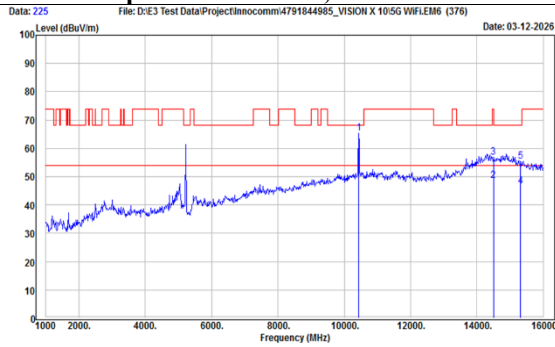
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

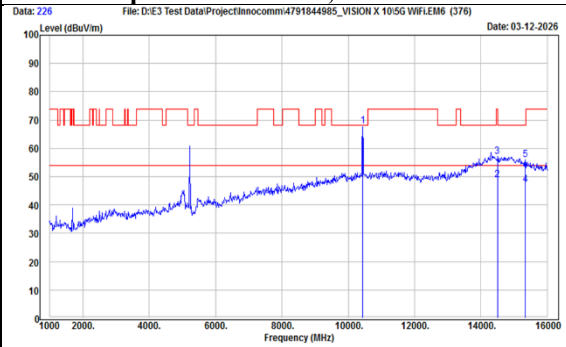
TX, 802.11a - Emission (Ch 44)

Radiated Spurious Emission, Horizontal



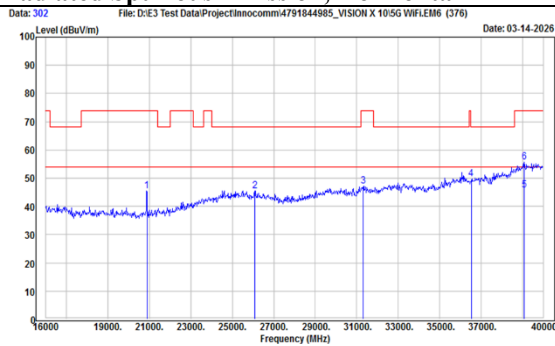
TX, 802.11a - Emission (Ch 44)

Radiated Spurious Emission, Vertical



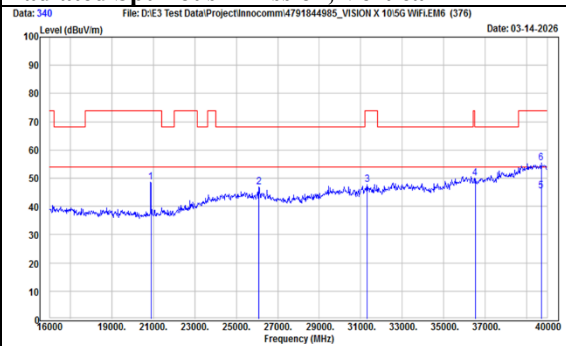
TX, 802.11a - Emission (Ch 44)

Radiated Spurious Emission, Horizontal



TX, 802.11a - Emission (Ch 44)

Radiated Spurious Emission, Vertical



Mode	802.11a - Emission	Channel	48
------	--------------------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	*	10480	40.19	20.38	60.57	68.2	-7.63	PK
		14485	28.54	27.98	56.52	74	-17.48	PK
		14485	20.27	27.98	48.25	54	-5.75	AVG
		15715	31.94	25.39	57.33	74	-16.67	PK
		15715	23.11	25.39	48.5	54	-5.5	AVG
	*	20960	37.65	5.28	42.93	74	-31.07	PK
	*	26200	37.35	10.75	48.1	68.2	-20.1	PK
	*	31440	33.5	13.67	47.17	74	-26.83	PK
	*	36680	37.2	12.83	50.03	68.2	-18.17	PK
		39592	38.41	17.42	55.83	74	-18.17	PK
		39592	28.57	17.42	45.99	54	-8.01	AVG
Vertical	*	10480	47.47	20.38	67.85	68.2	-0.35	PK
		14470	28.71	27.97	56.68	68.2	-11.52	PK
		14470	20.44	27.97	48.41	54	-5.59	AVG
		15715	33.74	25.39	59.13	74	-14.87	PK
		15715	24.91	25.39	50.3	54	-3.7	AVG
	*	20960	43.16	5.28	48.44	74	-25.56	PK
	*	26200	38.93	10.75	49.68	68.2	-18.52	PK
	*	31440	33.22	13.67	46.89	74	-27.11	PK
	*	36680	37.2	12.83	50.03	68.2	-18.17	PK
		39064	38.85	16.84	55.69	74	-18.31	PK
		39064	29.01	16.84	45.85	54	-8.15	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

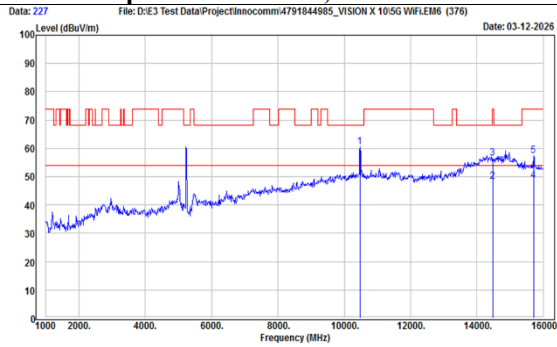
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

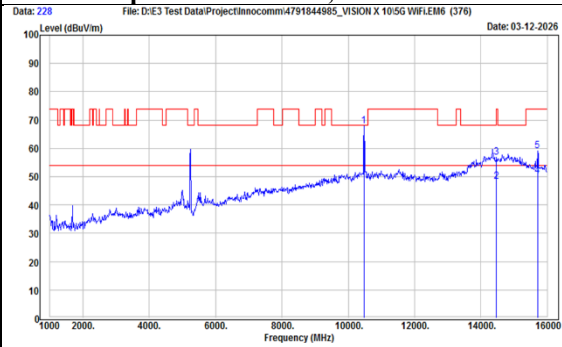
TX, 802.11a - Emission (Ch 48)

Radiated Spurious Emission, Horizontal



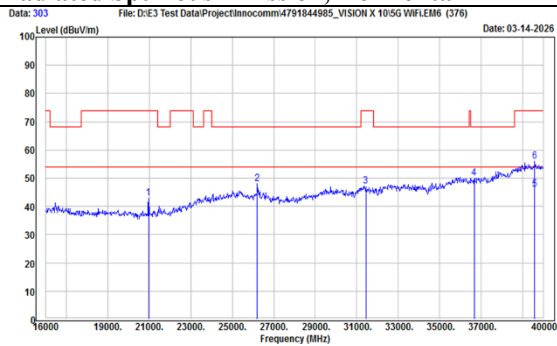
TX, 802.11a - Emission (Ch 48)

Radiated Spurious Emission, Vertical



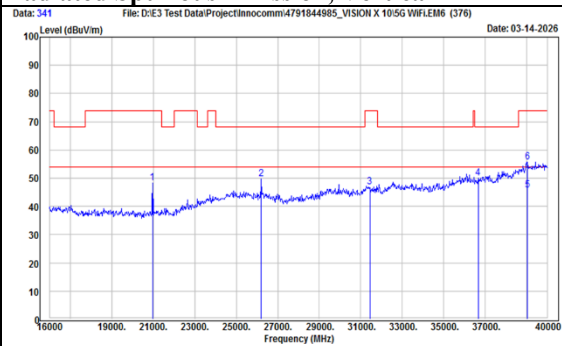
TX, 802.11a - Emission (Ch 48)

Radiated Spurious Emission, Horizontal



TX, 802.11a - Emission (Ch 48)

Radiated Spurious Emission, Vertical



Mode	802.11a - Emission	Channel	52
------	--------------------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	*	10520	41.51	20.42	61.93	68.2	-6.27	PK
		14485	28.58	27.98	56.56	74	-17.44	PK
		14485	20.31	27.98	48.29	54	-5.71	AVG
		15775	36.33	25.3	61.63	74	-12.37	PK
		15775	27.5	25.3	52.8	54	-1.2	AVG
	*	21040	40.17	5.42	45.59	74	-28.41	PK
	*	26300	35.31	10.86	46.17	68.2	-22.03	PK
	*	31560	34.09	13.28	47.37	74	-26.63	PK
	*	36820	38.07	13.12	51.19	68.2	-17.01	PK
		39760	37.5	17.67	55.17	74	-18.83	PK
		39760	27.66	17.67	45.33	54	-8.67	AVG
Vertical	*	10520	47.25	20.42	67.67	68.2	-0.53	PK
		14500	28.83	28	56.83	68.2	-11.37	PK
		14500	20.56	28	48.56	54	-5.44	AVG
		15790	35.49	25.28	60.77	74	-13.23	PK
		15790	26.66	25.28	51.94	54	-2.06	AVG
	*	21040	44.09	5.42	49.51	74	-24.49	PK
	*	26300	38.86	10.86	49.72	68.2	-18.48	PK
	*	31560	33.35	13.28	46.63	74	-27.37	PK
	*	36820	37.5	13.12	50.62	68.2	-17.58	PK
		38944	38.76	16.51	55.27	74	-18.73	PK
		38944	28.92	16.51	45.43	54	-8.57	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

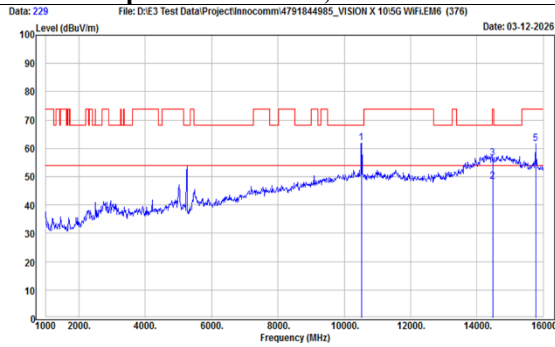
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

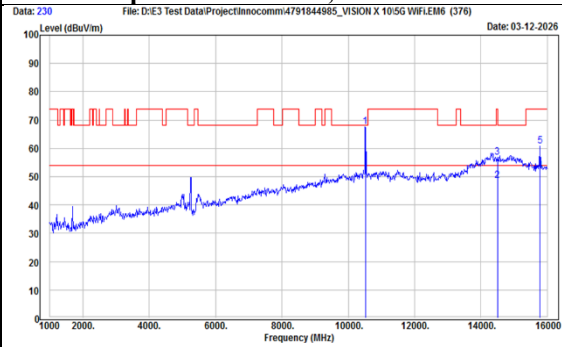
TX, 802.11a - Emission (Ch 52)

Radiated Spurious Emission, Horizontal



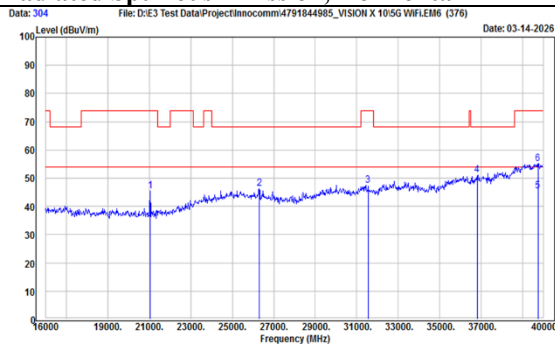
TX, 802.11a - Emission (Ch 52)

Radiated Spurious Emission, Vertical



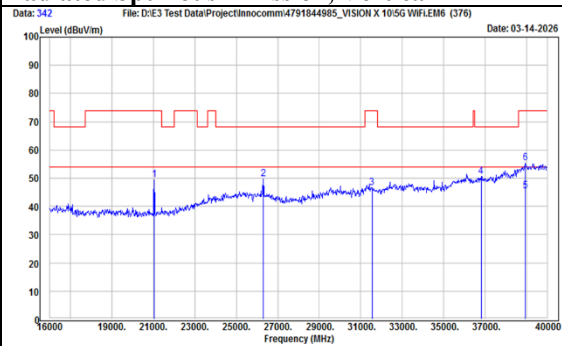
TX, 802.11a - Emission (Ch 52)

Radiated Spurious Emission, Horizontal



TX, 802.11a - Emission (Ch 52)

Radiated Spurious Emission, Vertical



Mode	802.11a - Emission	Channel	60
------	--------------------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		10600	39.39	20.32	59.71	74	-14.29	PK
		10600	27.93	20.32	48.25	54	-5.75	AVG
		14470	29.36	27.97	57.33	68.2	-10.87	PK
		14470	21.09	27.97	49.06	54	-4.94	AVG
		15895	31.57	25.03	56.6	74	-17.4	PK
		15895	22.74	25.03	47.77	54	-6.23	AVG
	*	21200	34.35	5.69	40.04	74	-33.96	PK
	*	26500	33.15	11.14	44.29	68.2	-23.91	PK
	*	31800	34.07	12.89	46.96	68.2	-21.24	PK
	*	37100	37.1	13.59	50.69	68.2	-17.51	PK
		39904	37.45	17.95	55.4	74	-18.6	PK
		39904	27.61	17.95	45.56	54	-8.44	AVG
Vertical		10600	43.46	20.32	63.78	74	-10.22	PK
		10600	33.55	20.32	53.87	54	-0.13	AVG
		14470	29.27	27.97	57.24	68.2	-10.96	PK
		14470	21	27.97	48.97	54	-5.03	AVG
		15895	37.81	25.03	62.84	74	-11.16	PK
		15895	28.58	25.03	53.61	54	-0.39	AVG
	*	21200	42.48	5.69	48.17	74	-25.83	PK
	*	26500	33.39	11.14	44.53	68.2	-23.67	PK
	*	31800	33.98	12.89	46.87	68.2	-21.33	PK
	*	37100	37.91	13.59	51.5	68.2	-16.7	PK
		39664	38.03	17.53	55.56	74	-18.44	PK
		39664	28.19	17.53	45.72	54	-8.28	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

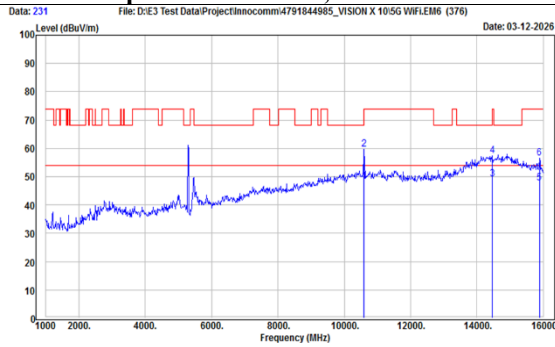
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

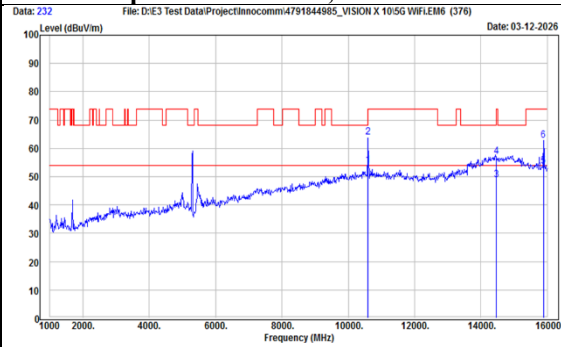
TX, 802.11a - Emission (Ch 60)

Radiated Spurious Emission, Horizontal



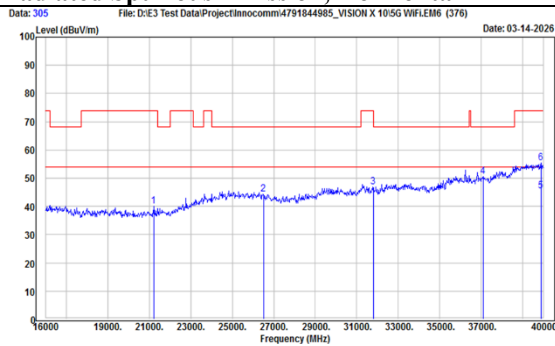
TX, 802.11a - Emission (Ch 60)

Radiated Spurious Emission, Vertical



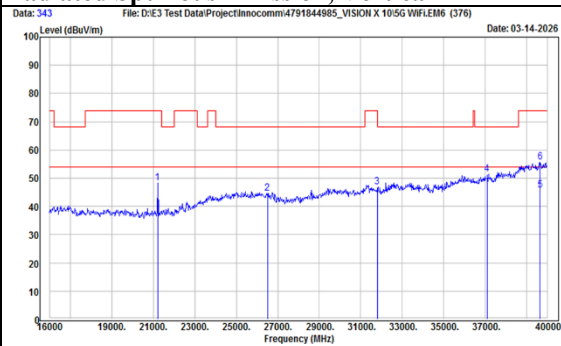
TX, 802.11a - Emission (Ch 60)

Radiated Spurious Emission, Horizontal



TX, 802.11a - Emission (Ch 60)

Radiated Spurious Emission, Vertical



Mode	802.11a - Emission	Channel	64
------	--------------------	---------	----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		10640	36.06	20.24	56.3	74	-17.7	PK
		10640	24.59	20.24	44.83	54	-9.17	AVG
		14485	28.63	27.98	56.61	74	-17.39	PK
		14485	20.36	27.98	48.34	54	-5.66	AVG
		15430	29.64	26.08	55.72	74	-18.28	PK
		15430	20.81	26.08	46.89	54	-7.11	AVG
	*	21280	36.46	5.83	42.29	74	-31.71	PK
	*	26600	33.2	11.15	44.35	68.2	-23.85	PK
	*	31920	32.98	12.66	45.64	68.2	-22.56	PK
	*	37240	36.69	13.62	50.31	68.2	-17.89	PK
		39640	38.29	17.49	55.78	74	-18.22	PK
		39640	28.45	17.49	45.94	54	-8.06	AVG
Vertical		10640	37.77	20.24	58.01	74	-15.99	PK
		10640	26.3	20.24	46.54	54	-7.46	AVG
		14500	27.94	28	55.94	68.2	-12.26	PK
		14500	19.67	28	47.67	54	-6.33	AVG
		15460	28.85	26.02	54.87	74	-19.13	PK
		15460	20.02	26.02	46.04	54	-7.96	AVG
	*	21280	38.46	5.83	44.29	74	-29.71	PK
	*	26600	33.18	11.15	44.33	68.2	-23.87	PK
	*	31920	34.23	12.66	46.89	68.2	-21.31	PK
	*	37240	37.9	13.62	51.52	68.2	-16.68	PK
		39688	37.17	17.56	54.73	74	-19.27	PK
		39688	27.33	17.56	44.89	54	-9.11	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

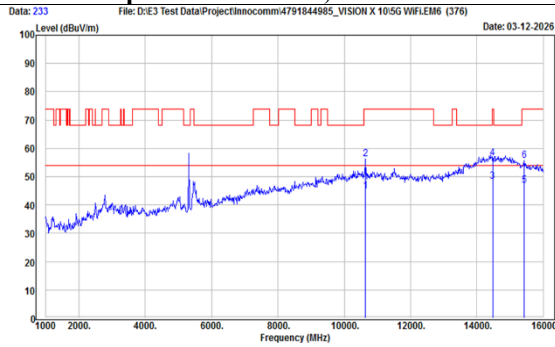
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

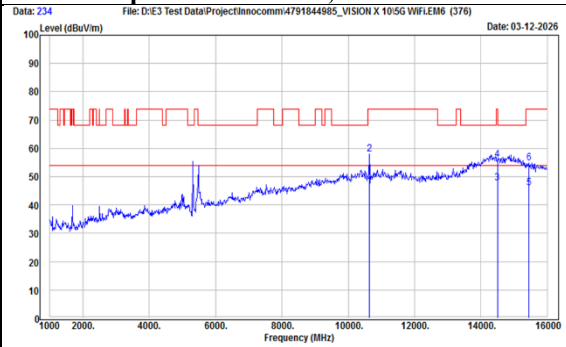
TX, 802.11a - Emission (Ch 64)

Radiated Spurious Emission, Horizontal



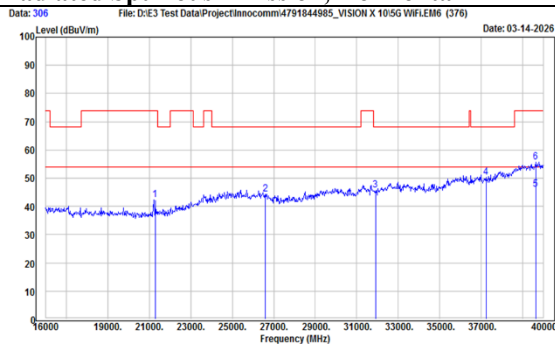
TX, 802.11a - Emission (Ch 64)

Radiated Spurious Emission, Vertical



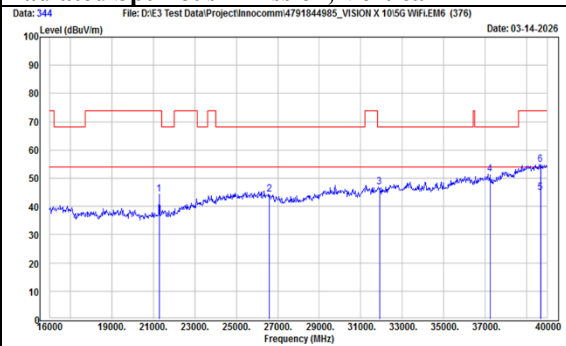
TX, 802.11a - Emission (Ch 64)

Radiated Spurious Emission, Horizontal



TX, 802.11a - Emission (Ch 64)

Radiated Spurious Emission, Vertical



Mode	802.11a - Emission	Channel	100
------	--------------------	---------	-----

Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		11000	41.21	20.45	61.66	74	-12.34	PK
		11000	31.11	20.45	51.56	54	-2.44	AVG
		14500	29.06	28	57.06	68.2	-11.14	PK
		14500	20.79	28	48.79	54	-5.21	AVG
		15415	28.53	26.1	54.63	74	-19.37	PK
		15415	19.7	26.1	45.8	54	-8.2	AVG
	*	16500	52.92	5.32	58.24	68.2	-9.96	PK
	*	22000	32.89	6.26	39.15	68.2	-29.05	PK
	*	27500	32.16	10.61	42.77	68.2	-25.43	PK
	*	33000	34.93	12.63	47.56	68.2	-20.64	PK
	*	38500	37.22	15.29	52.51	68.2	-15.69	PK
		39520	38.02	17.31	55.33	74	-18.67	PK
		39520	28.18	17.31	45.49	54	-8.51	AVG
Vertical		11000	43.09	20.45	63.54	74	-10.46	PK
		11000	33.39	20.45	53.84	54	-0.16	AVG
		14500	29.2	28	57.2	68.2	-11	PK
		14500	20.93	28	48.93	54	-5.07	AVG
		15370	29.23	26.29	55.52	74	-18.48	PK
		15370	20.4	26.29	46.69	54	-7.31	AVG
	*	16500	52.4	5.32	57.72	68.2	-10.48	PK
	*	22000	32.16	6.26	38.42	68.2	-29.78	PK
	*	27500	32.24	10.61	42.85	68.2	-25.35	PK
	*	33000	34.97	12.63	47.6	68.2	-20.6	PK
	*	38500	36.85	15.29	52.14	68.2	-16.06	PK
		38968	39.74	16.58	56.32	74	-17.68	PK
		38968	29.9	16.58	46.48	54	-7.52	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

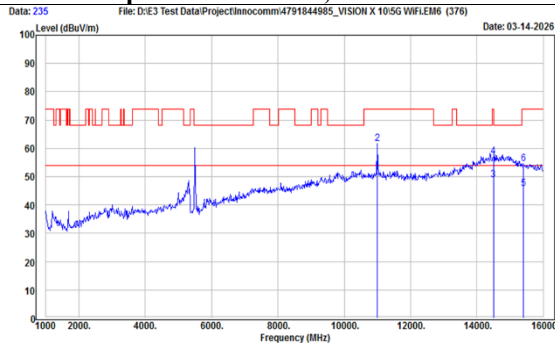
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-3-583-7948

Doc No: Form-ULID-004739 (DCS:17-EM-F0878) / 6.1

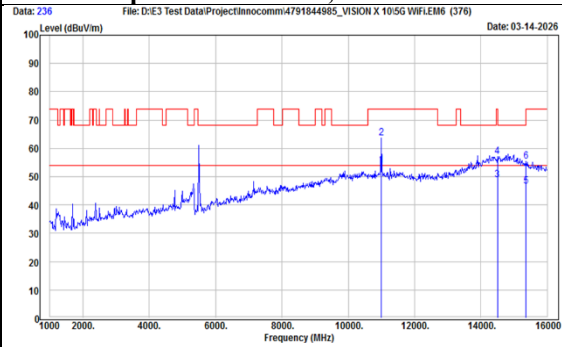
TX, 802.11a - Emission (Ch 100)

Radiated Spurious Emission, Horizontal



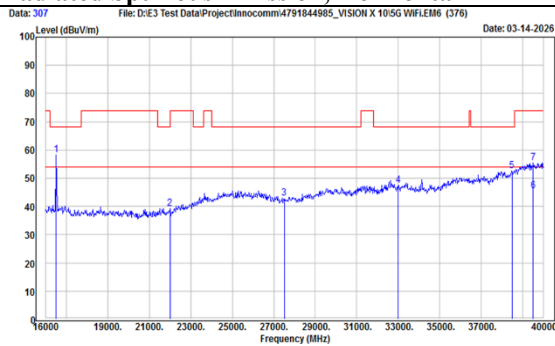
TX, 802.11a - Emission (Ch 100)

Radiated Spurious Emission, Vertical



TX, 802.11a - Emission (Ch 100)

Radiated Spurious Emission, Horizontal



TX, 802.11a - Emission (Ch 100)

Radiated Spurious Emission, Vertical

