



Test report No. : 4790314698-US-R0-V0
Page : 1 of 77
Issued date : 2022/4/22
FCC ID : NDD9577112201

RADIO TEST REPORT

Product : AIOT Wi-Fi Module

Model Name : EW-7711MAN

FCC ID : NDD9577112201

Test Regulation : FCC 47 CFR Part 15 Subpart C (Section 15.247)

Received Date : 2022/2/24

Test Date : 2022/3/1 ~ 2022/3/11

Issued Date : 2022/4/22

Applicant : Edimax Technology Co., Ltd.
No.278, Xinhu 1st Rd., Neihu Dist, Taipei City, Taiwan

Issued By : Underwriters Laboratories Taiwan Co., Ltd.
Building B and Building 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 B and Building 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: 17-EM-F0876 / 6.0



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	9
6.3. Test Condition.....	10
6.4. Description of Available Antennas	10
6.5. Test Mode Applicability and Tested Channel Detail.....	11
6.6. Duty cycle	12
7. Test Equipment.....	13
8. Description of Test Setup.....	15
9. Test Results.....	17
9.1. 6dB Bandwidth	17
9.2. Conducted Output Power	22
9.3. Power Spectral Density	25
9.4. Conducted Out of Band Emission.....	30
9.5. Radiated Spurious Emission	43
9.6. AC Power Line Conducted Emission	74

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



1. Attestation of Test Results

APPLICANT: Edimax Technology Co., Ltd.
No.278, Xinhua 1st Rd., Neihu Dist, Taipei City, Taiwan

MANUFACTURER: Edimax Technology Co., Ltd.
No.278, Xinhua 1st Rd., Neihu Dist, Taipei City, Taiwan

EUT DESCRIPTION: AIOT Wi-Fi Module

BRAND: Edimax

MODEL: EW-7711MAN

SAMPLE STAGE: Engineering Verification Test Sample

DATE of TESTED: 2022/3/1 ~ 2022/3/11

APPLICABLE STANDARDS	
STANDARD	Test Results
FCC 47 CFR PART 15 Subpart C (Section 15.247)	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:

Cindy Hsin
Project Handler

Date : 2022/4/22

Approved and Authorized By:

Eric Lee
Senior Project Engineer

Date : 2022/4/22

Underwriters Laboratories Taiwan Co., Ltd.

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



2. Summary of Test Results

Summary of Test Results		
FCC Clause	Test Items	Result
15.247(a)(2)	6dB Bandwidth	PASS
15.247(b)	Conducted Output Power	PASS
15.247(e)	Power Spectral Density	PASS
15.247(d)	Antenna Port Emission	PASS
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS
15.207	AC Power Conducted Emission	PASS
15.203	Antenna Requirement	PASS

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2, KDB558074 D01 Meas Guidance v05r02, KDB414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013.

4. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.
Address	Building B and Building 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 B and Building 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: 17-EM-F0876 / 6.0



5. Measurement Uncertainty

For statement of conformity, accuracy method (Section 8.2.4 and 8.2.5 of ISO Guide 98-4) 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 $k=2$.

Measurement	Frequency	Uncertainty
Conducted disturbance at mains terminals ports	150kHz ~ 30MHz	± 3.1 dB
RF Conducted	9 kHz - 40GHz	± 1.9 dB
Radiated disturbance below 30MHz	9 kHz - 30 MHz	± 1.9 dB
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	± 5.4 dB
Radiated disturbance above 1 GHz	1GHz ~ 40GHz	± 4.7 dB

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



6. Equipment under Test

6.1. Description of EUT

Product	AIOT Wi-Fi Module
Brand Name	Edimax
Model Name	EW-7711MAN
Operating Frequency	2412MHz ~ 2462MHz
Modulation	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Transfer Rate	802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n: up to MCS7
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Maximum Output Power	802.11b: 25.83dBm 802.11g: 27.41dBm 802.11n (HT20): 27.23dBm 802.11n (HT40): 25.76dBm
Normal Voltage	12Vdc from adapter
Sample ID	Conducted Test: 4702579 Radiated Test: 4702579

Note:

1. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitters and one receivers.

Modulation Mode	Tx,Rx Function
802.11b	1TX,1RX
802.11g	1TX,1RX
802.11n (HT20)	1TX,1RX
802.11n (HT40)	1TX,1RX

2. The above EUT information is declared by manufacturer and for more detailed features description, please refer the manufacturer's or user's manual.

Underwriters Laboratories Taiwan Co., Ltd.

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



6.2. Channel List

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	-	-

7 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437	-	-

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



6.3. Test Condition

Test Item	Test Site No.	Environmental Condition	Input Power	Test Date	Tested by
Antenna Port Conducted Measurement	SR4	20~26°C/ 50~68%RH	120Vac/ 60Hz	2022/03/01~ 2022/03/11	Rex Chen
Radiated Spurious Emission	966-2	20~26°C/ 50~68%RH	120Vac/ 60Hz	2022/03/01~ 2022/03/11	Rex Chen
AC power Line Conducted Emission	SR1	20~26°C/ 50~68%RH	120Vac/ 60Hz	2022/03/01~ 2022/03/11	Rex Chen

FCC Test Firm Registration Number: 498077

6.4. Description of Available Antennas

Ant. No.	Brand Name	Model Name	Ant. Type	Maximum Gain (dBi)
1	Cortec	AN2450-6703BRS	Dipole	3.15

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.

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



6.5. Test Mode Applicability and Tested Channel Detail

- The fundamental of the dipole antenna was investigated in two orthogonal (lay and stand), it was determined that stand mode was worst-case. Therefore, all final radiated testing was performed with the dipole antenna in stand 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.
- For below 1 GHz radiated emission and AC power line conducted emission have performed all modes of operation were investigated and the worst-case emissions are reported.
- 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).

Test item	Mode	Modulation Technology	Modulation Type	Available Channel	Test Channel	Data Rate
Radiated Emissions (Above 1GHz)	802.11b	DSSS	DBPSK	1 to 11	1,6,11	1 Mbps
	802.11g	OFDM	BPSK	1 to 11	1,6,11	6 Mbps
	802.11n20	OFDM	BPSK	1 to 11	1,6,11	MCS0
	802.11n40	OFDM	BPSK	3 to 9	3,6,9	MCS0
Radiated Emissions (Below 1GHz)	802.11b	DSSS	DBPSK	1 to 11	6	1 Mbps
AC Power Line Conducted Emission	802.11b	DSSS	DBPSK	1 to 11	6	1 Mbps
*Antenna Port Conducted Measurement	802.11b	DSSS	DBPSK	1 to 11	1,6,11	1 Mbps
	802.11g	OFDM	BPSK	1 to 11	1,6,11	6 Mbps
	802.11n20	OFDM	BPSK	1 to 11	1,6,11	MCS0
	802.11n40	OFDM	BPSK	3 to 9	3,6,9	MCS0

*Note: For Antenna Port Conducted Measurement item, Inner channels only test Power and Conducted Out of Band Emission.

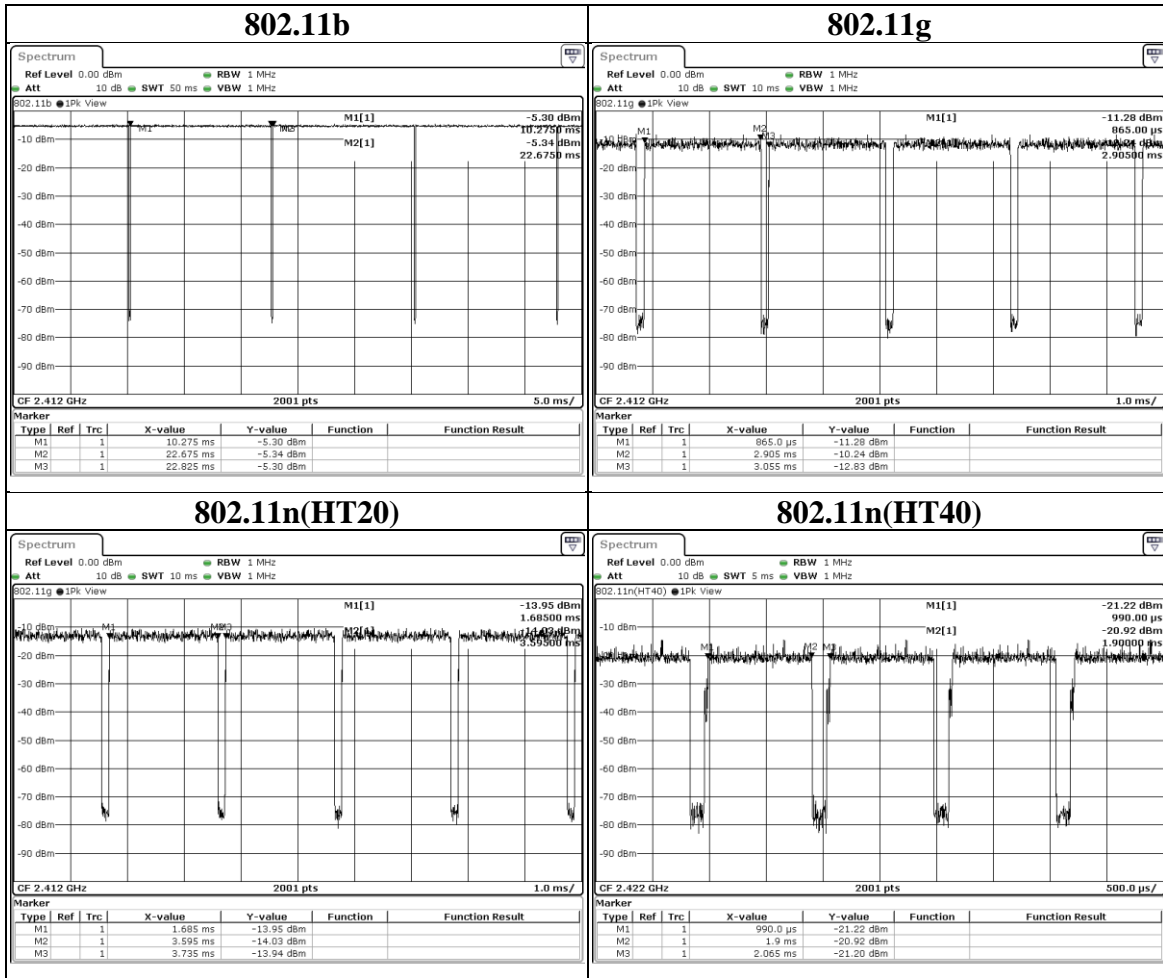
Underwriters Laboratories Taiwan Co., Ltd.

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



6.6. Duty cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle	Duty Factor (dB)	VBW Set (above 1GHz)
802.11b	12.400	12.550	0.99	N/A	10Hz
802.11g	2.040	2.190	0.93	0.31	510Hz
802.11n(HT20)	1.910	2.050	0.93	0.31	1kHz
802.11n(HT40)	0.910	1.075	0.85	0.72	2kHz



Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



7. Test Equipment

Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Expired date
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070827	2021/11/9	2022/11/8
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	2021/12/10	2022/12/9
Loop Antenna	ETS lindgren	6502	00213440	2021/12/23	2022/12/22
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	2022/2/8	2023/2/7
Horn Antenna (1-18 GHz)	Schwarzbeck	BBHA 9120 D	01690	2021/12/13	2022/12/12
Horn Antenna (18-40 GHz)	Schwarzbeck	BBHA 9170	781	2021/12/17	2022/12/16
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	2021/6/8	2022/6/7
Preamplifier (1-18 GHz)	EMCI	EMC051835BE	980406	2022/2/16	2023/2/15
Preamplifier (18-40GHz)	EMCI	EMC184040SEE	980426	2021/5/19	2022/5/18
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	2021/12/3	2022/12/2
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-1 & 170214-2	2021/12/3	2022/12/2

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Expired date
Antenna Port Conducted Measurement					
Spectrum Analyzer	Keysight	N9010A	MY56070834	2021/10/29	2022/10/28
Pulse Power Sensor	Anritsu	MA2411B	1531202	2021/12/22	2022/12/21
Power Meter	Anritsu	ML2495A	1645002	2021/12/22	2022/12/21
AC power Line Conducted Emission					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2021/11/15	2022/11/14
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2021/8/30	2022/8/29
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2021/8/26	2022/8/25
Cables	TITAN	CFD200	T0732ACFD20 020A300-2	2021/4/7	2022/4/6

UL Software		
Description	Name	Version
Radiated measurement	e3	6.191211 (V6)
Conducted measurement	RF Conducted Test Tools	ver 2.4.0.620b
AC power Line Conducted Emission	EZ_EM C	UL-3A1.2

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



8. Description of Test Setup

Support Equipment

ID	Equipment	Brand Name	Model Name	S/N	Remark
A	Test Tool	ECOBERA	AI-W2004	100-AIW2004MD	Supplied by client
B	Adapter	DVE	DSA-12PFT-12 FUS 120100	NA	Supplied by client

I/O Cables

ID	Equipment	Brand Name	Model Name	Length (m)	Remark
1	DC Cable	DVE	DSA-12PFT-12 FUS 120100	1.45	Supplied by client

Test Setup

Controlled using a bespoke application (AmebaD_mptool_2V2) 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.

Underwriters Laboratories Taiwan Co., Ltd.

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

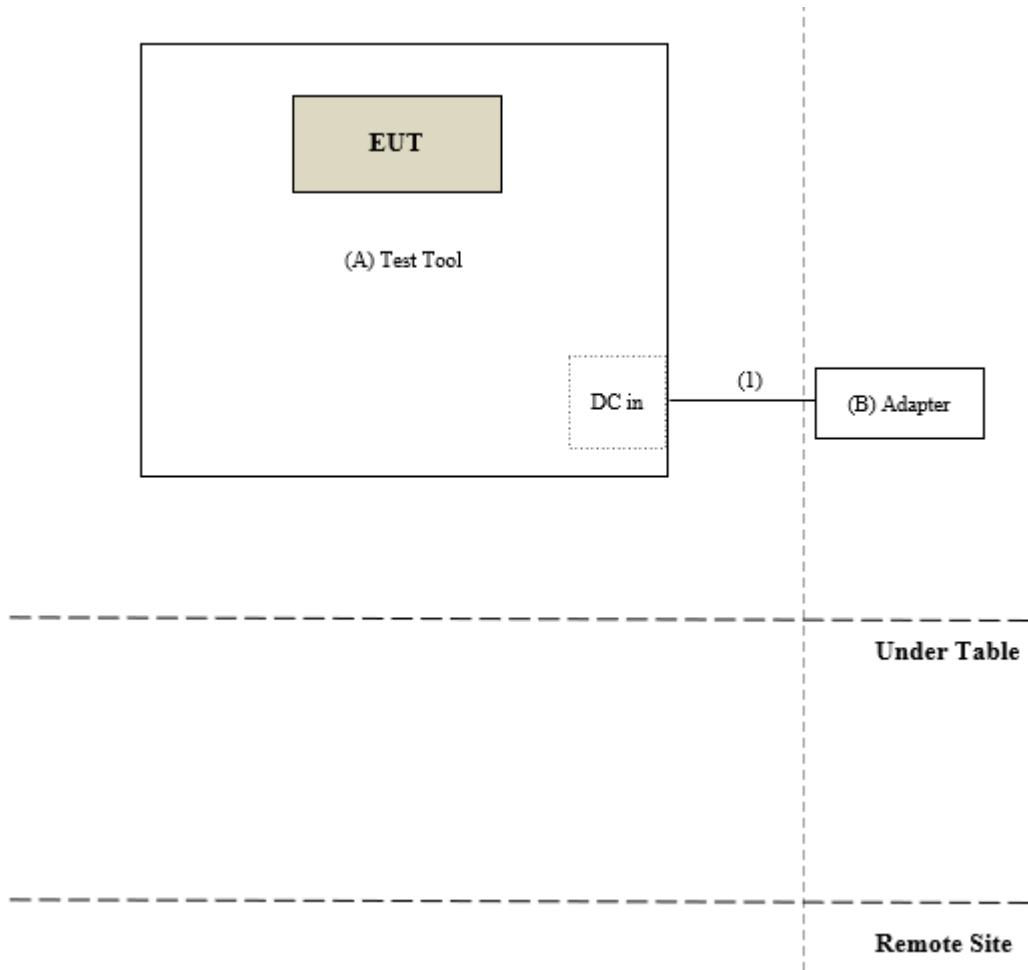
Telephone :+886-2-7737-3000

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

Doc No: 17-EM-F0876 / 6.0



Setup Diagram for Test



Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



9. Test Results

9.1. 6dB Bandwidth

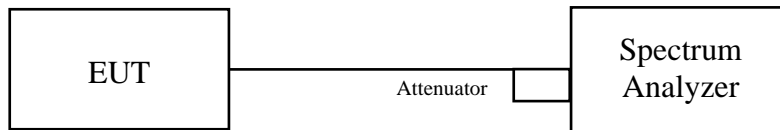
Requirements

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

Test procedure

- Set resolution bandwidth (RBW) = 100kHz.
- 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.

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

Telephone :+886-2-7737-3000

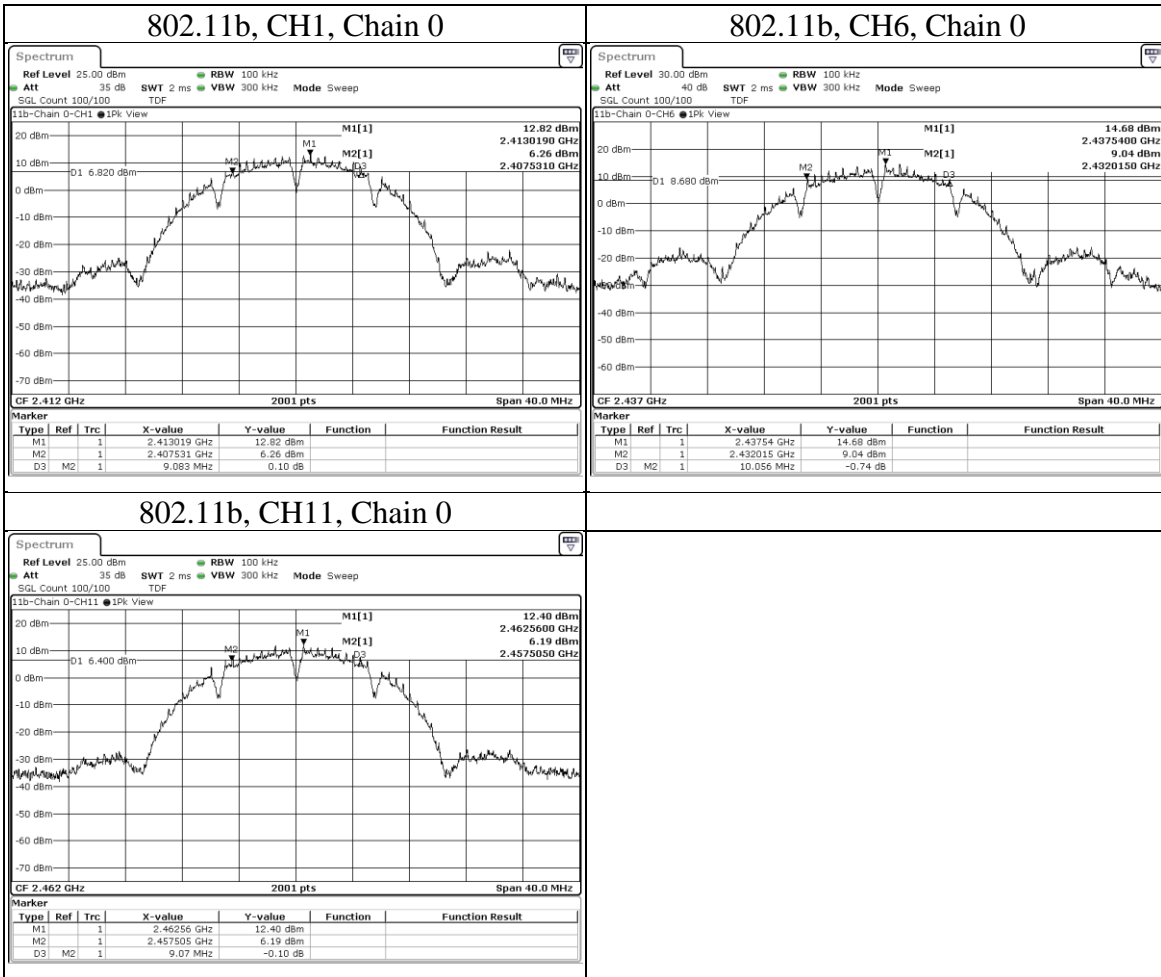
Facsimile (FAX) :+886-3-583-7948

Doc No: 17-EM-F0876 / 6.0



Test Data

Mode	CH	Freq (MHz)	6dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11b	1	2412	9.083	0.5	Pass
	6	2437	10.056	0.5	Pass
	11	2462	9.070	0.5	Pass



Underwriters Laboratories Taiwan Co., Ltd.

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

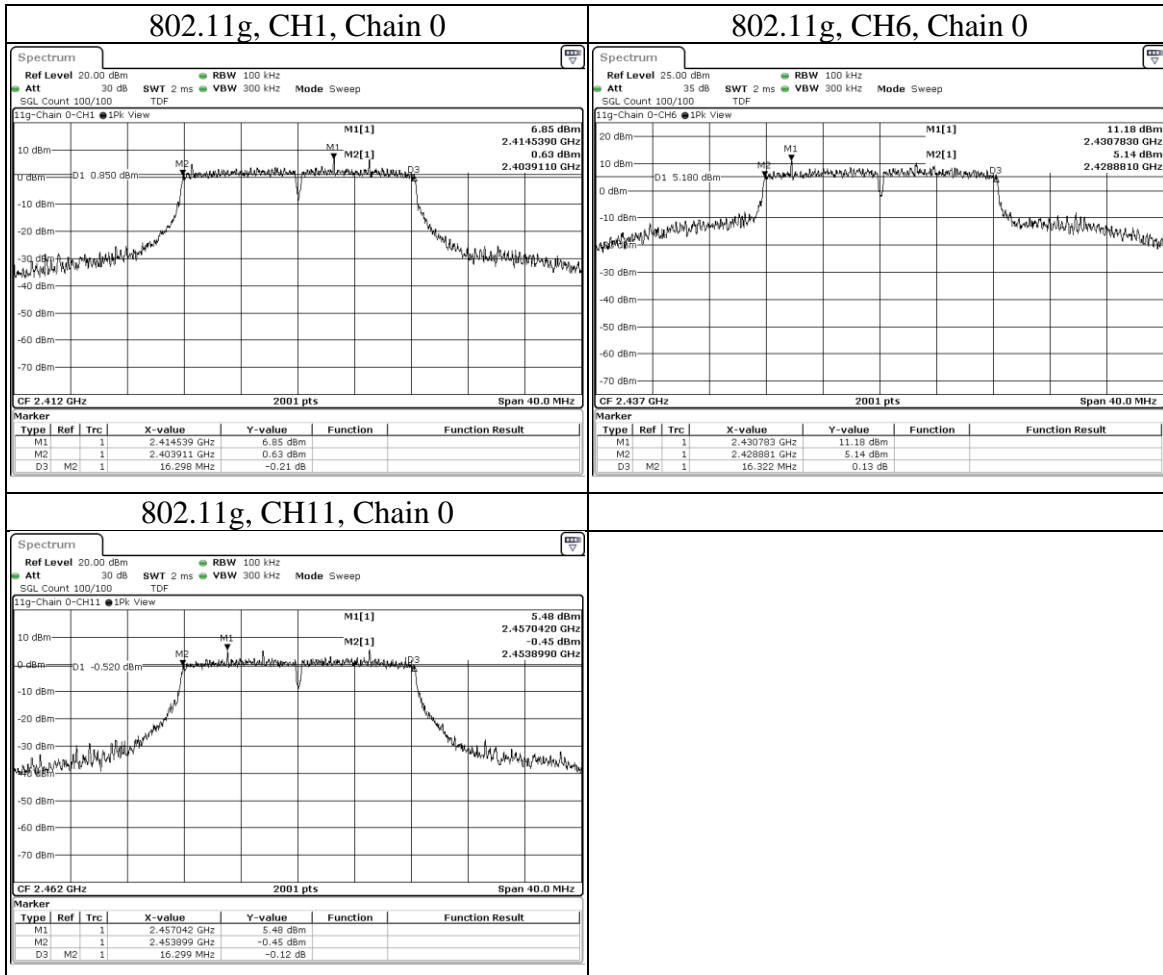
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 6.0



Mode	CH	Freq (MHz)	6dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11g	1	2412	16.298	0.5	Pass
	6	2437	16.322	0.5	Pass
	11	2462	16.299	0.5	Pass



Underwriters Laboratories Taiwan Co., Ltd.

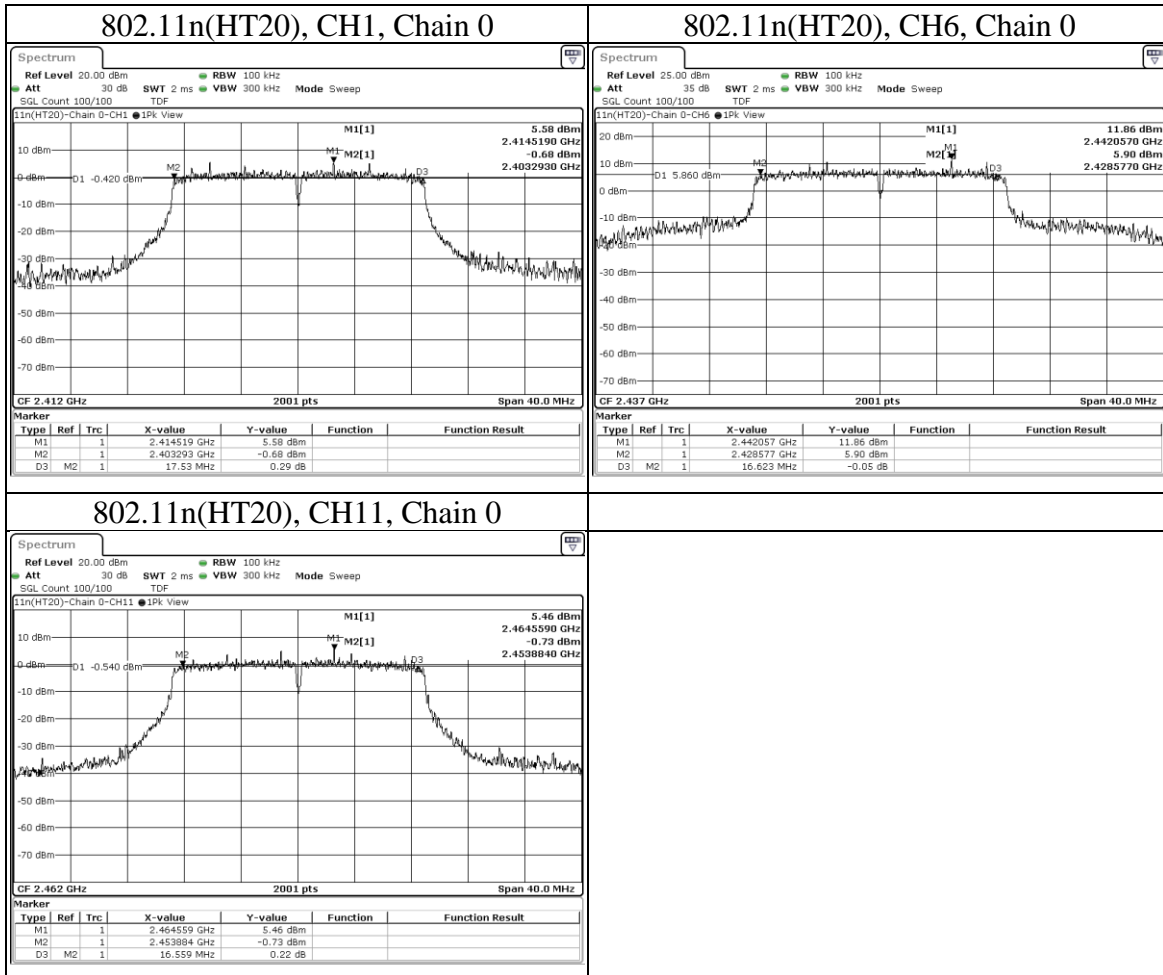
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

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



Mode	CH	Freq (MHz)	6dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11n(HT20)	1	2412	17.530	0.5	Pass
	6	2437	16.623	0.5	Pass
	11	2462	16.559	0.5	Pass



Underwriters Laboratories Taiwan Co., Ltd.

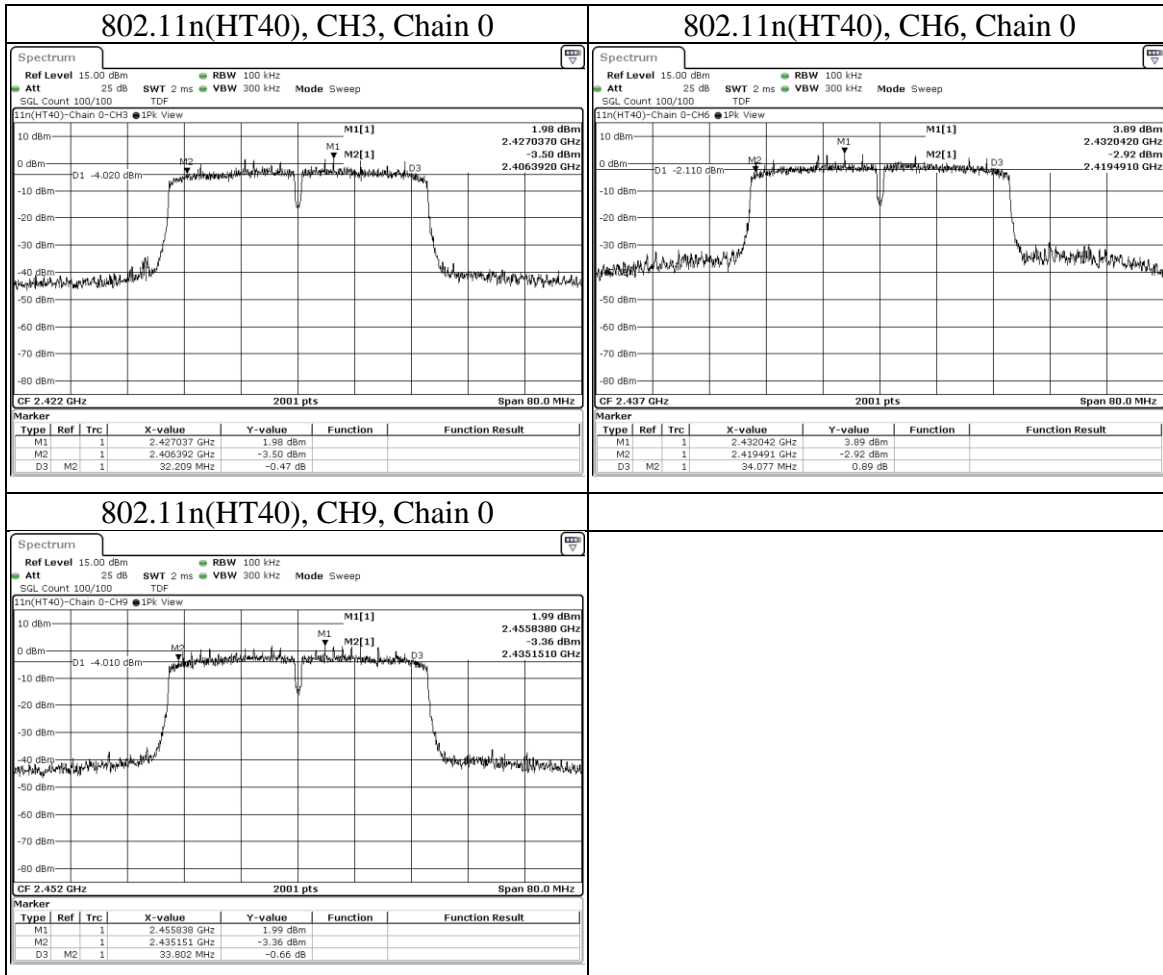
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

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



Mode	CH	Freq (MHz)	6dB BW (MHz)	Limit (MHz)	Result
			Chain 0		
802.11n(HT40)	3	2422	32.209	0.5	Pass
	6	2437	34.077	0.5	Pass
	9	2452	33.802	0.5	Pass



Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



9.2. Conducted Output Power

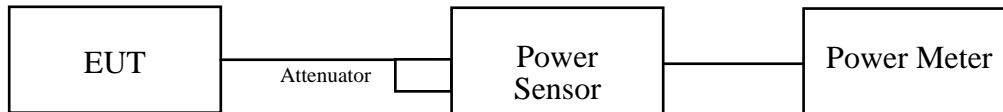
Requirements

For systems using digital modulation in the 2400-2483.5 MHz bands: 1 Watt.

Test Procedure

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Test Setup



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



Test Data

Peak Power

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	339.625	25.31	30	PASS
6	2437	382.825	25.83	30	PASS
11	2462	282.488	24.51	30	PASS

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	459.198	26.62	30	PASS
6	2437	550.808	27.41	30	PASS
11	2462	379.315	25.79	30	PASS

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	354.813	25.50	30	PASS
6	2437	528.445	27.23	30	PASS
11	2462	311.172	24.93	30	PASS

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	272.27	24.35	30	PASS
6	2437	376.704	25.76	30	PASS
9	2452	366.438	25.64	30	PASS

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



Average Power (Reference Only)

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	207.97	23.18
6	2437	248.313	23.95
11	2462	169.824	22.30

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	65.615	18.17
6	2437	187.068	22.72
11	2462	49.888	16.98

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	52.602	17.21
6	2437	185.78	22.69
11	2462	44.361	16.47

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
3	2422	38.371	15.84
6	2437	57.28	17.58
9	2452	41.976	16.23

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0

9.3. Power Spectral Density

Requirements

The Maximum of Power Spectral Density Measurement is 8dBm in any 3 kHz (If $G_{TX} > 6$ dBi, then $PSD = 8 - (G_{TX} - 6)$).

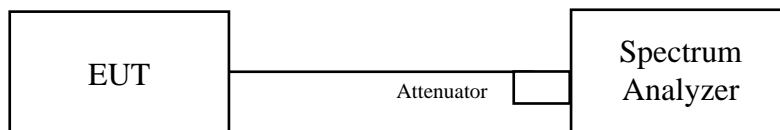
Note:

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.

Test procedure

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d. Set the VBW $\geq 3 \times \text{RBW}$.
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.

Test Setup



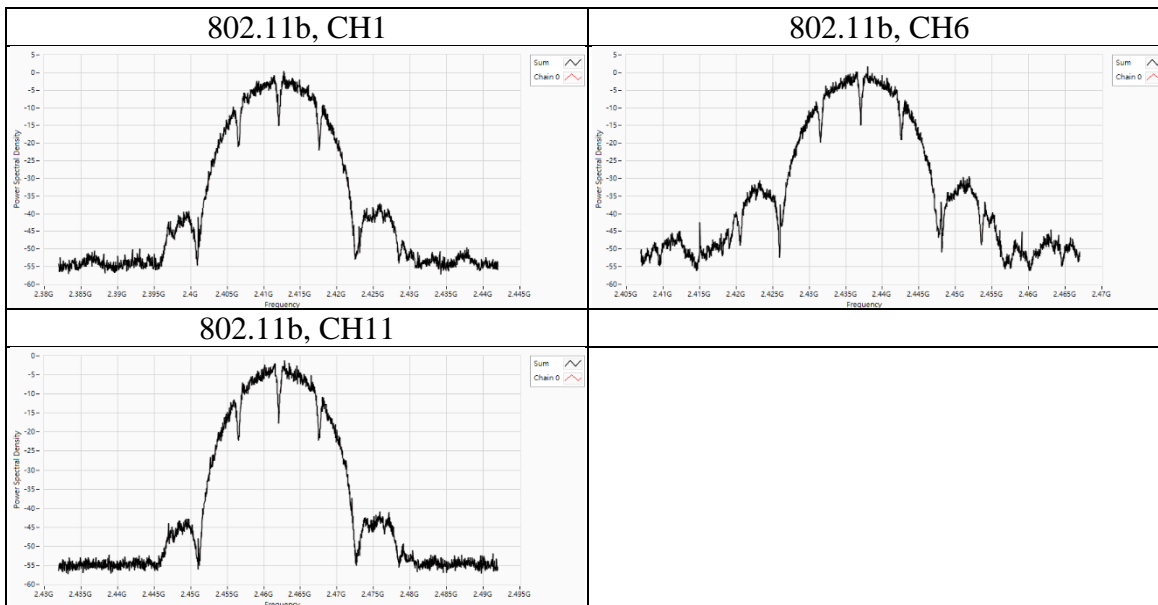
The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.



Test Data

Mode	CH	Freq (MHz)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Directional Gain (dBi)	Result
802.11b	1	2412	0.253	8	3.15	Pass
	6	2437	1.59	8	3.15	Pass
	11	2462	-1.165	8	3.15	Pass

Mode	CH	Freq (MHz)	PSD per Chain (dBm/MHz)
			Chain 0
802.11b	1	2412	0.253
	6	2437	1.59
	11	2462	-1.165



Underwriters Laboratories Taiwan Co., Ltd.

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

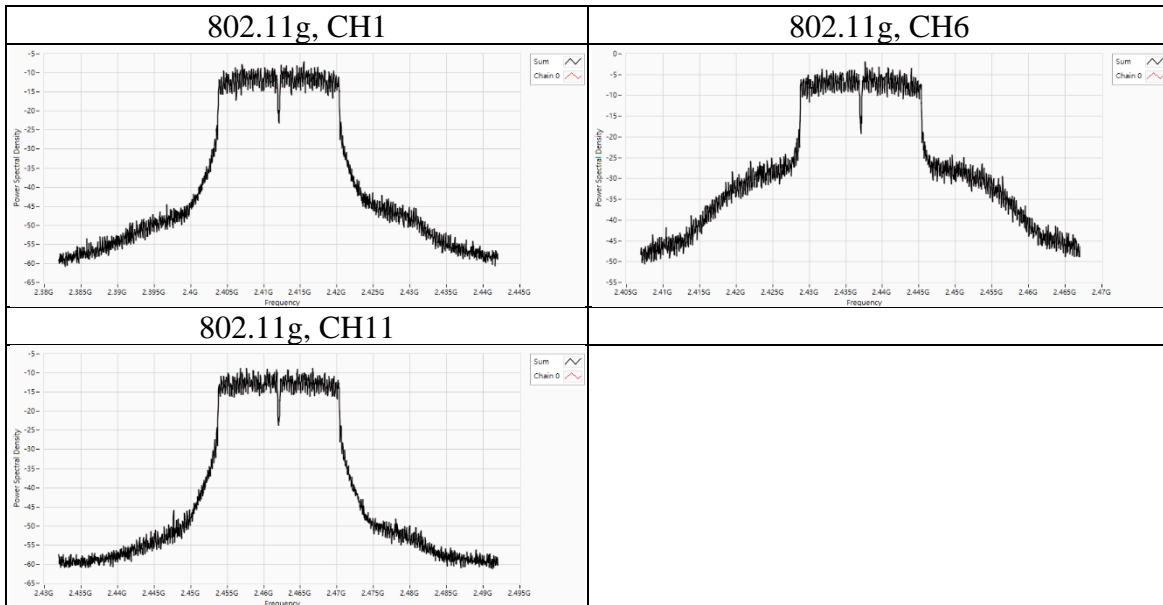
Telephone :+886-2-7737-3000

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



Mode	CH	Freq (MHz)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Directional Gain (dBi)	Result
802.11g	1	2412	-7.066	8	3.15	Pass
	6	2437	-1.926	8	3.15	Pass
	11	2462	-8.699	8	3.15	Pass

Mode	CH	Freq (MHz)	PSD per Chain (dBm/MHz) Chain 0
802.11g	1	2412	-7.066
	6	2437	-1.926
	11	2462	-8.699



Underwriters Laboratories Taiwan Co., Ltd.

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

Telephone :+886-2-7737-3000

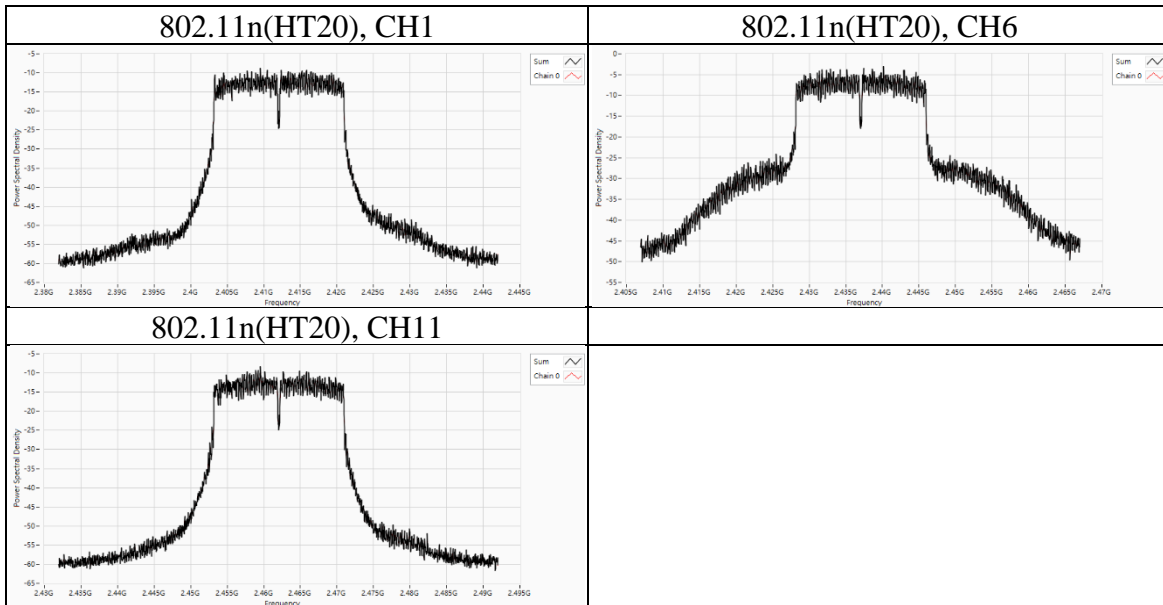
Facsimile (FAX) :+886-3-583-7948

Doc No: 17-EM-F0876 / 6.0



Mode	CH	Freq (MHz)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Directional Gain (dBi)	Result
802.11n(HT20)	1	2412	-8.804	8	3.15	Pass
	6	2437	-3.069	8	3.15	Pass
	11	2462	-8.308	8	3.15	Pass

Mode	CH	Freq (MHz)	PSD per Chain (dBm/MHz) Chain 0
802.11n(HT20)	1	2412	-8.804
	6	2437	-3.069
	11	2462	-8.308



Underwriters Laboratories Taiwan Co., Ltd.

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

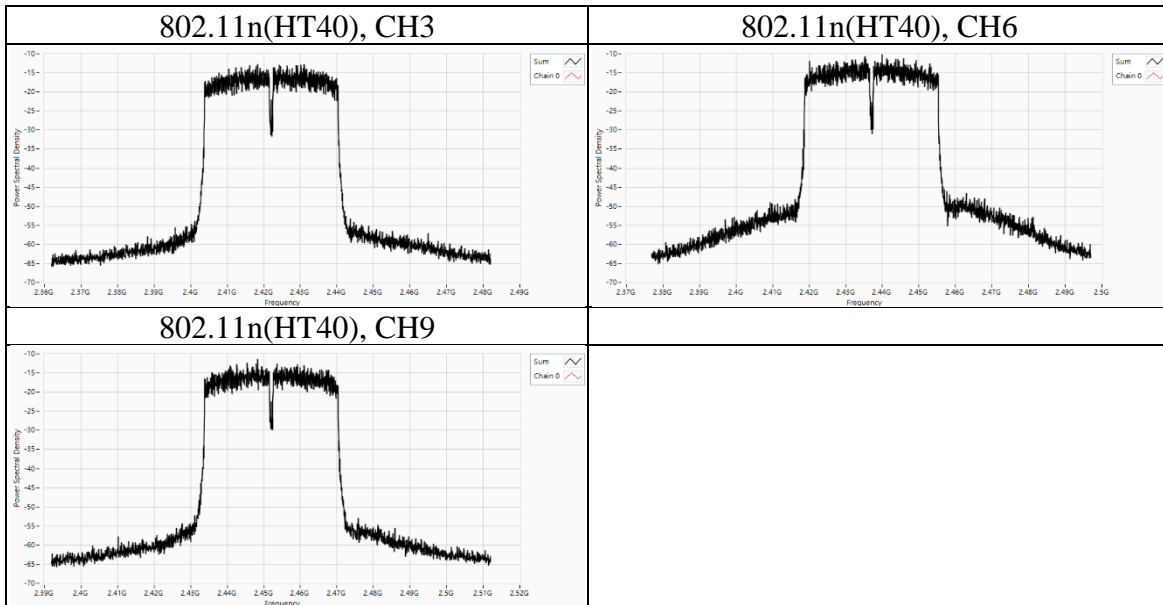
Telephone : +886-2-7737-3000

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



Mode	CH	Freq (MHz)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Directional Gain (dBi)	Result
802.11n(HT40)	3	2422	-12.689	8	3.15	Pass
	6	2437	-10.141	8	3.15	Pass
	9	2452	-11.408	8	3.15	Pass

Mode	CH	Freq (MHz)	PSD per Chain (dBm/MHz) Chain 0
802.11n(HT40)	3	2422	-12.689
	6	2437	-10.141
	9	2452	-11.408



Underwriters Laboratories Taiwan Co., Ltd.

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

Telephone :+886-2-7737-3000

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



9.4. Conducted Out of Band Emission

Requirements

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b) (3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209 (a) is not required.

Test procedure

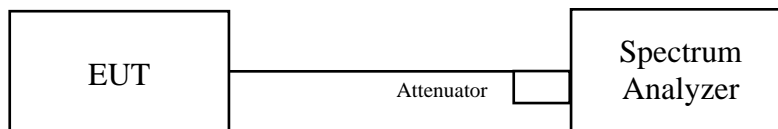
Measurement Procedure REF

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Set the span to 1.5 times the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

Measurement Procedure OOBE

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

Test Setup



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

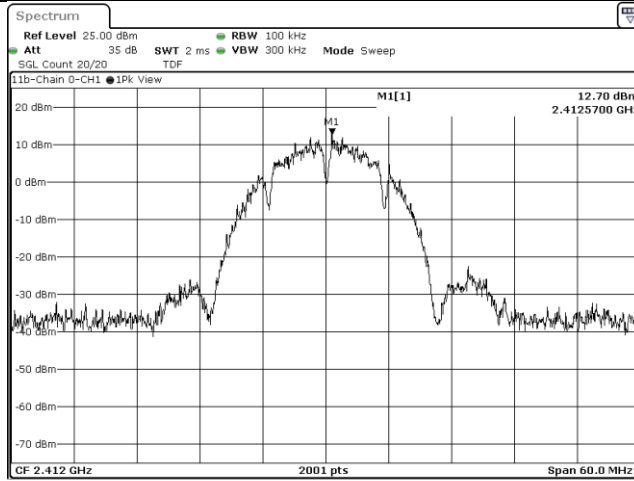
Underwriters Laboratories Taiwan Co., Ltd.

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

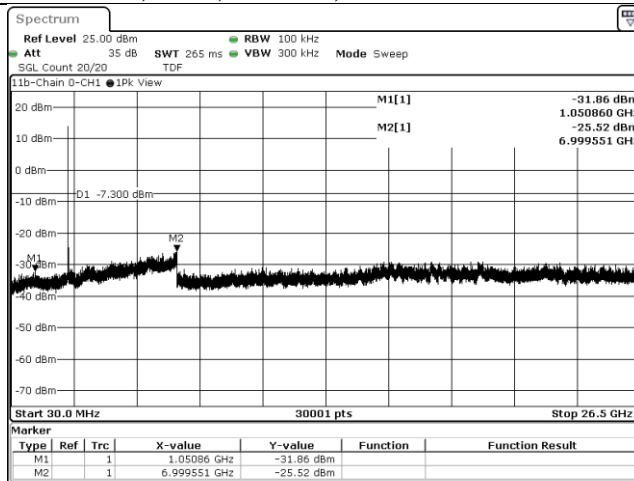


Test Data

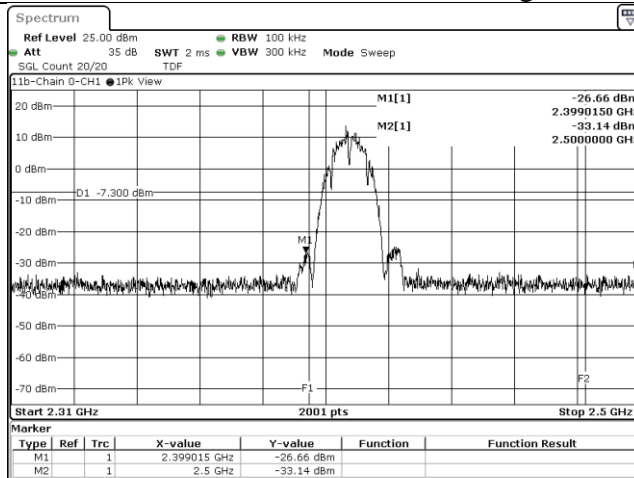
802.11b, CH1, Chain 0, Reference



802.11b, CH1, Chain 0, Conducted Emission



802.11b, CH1, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

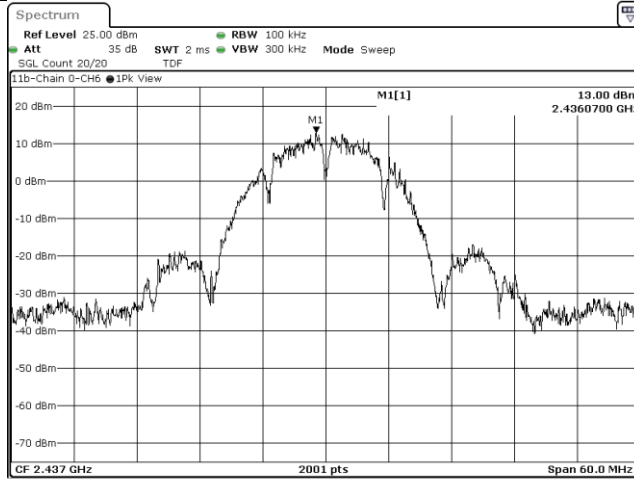
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

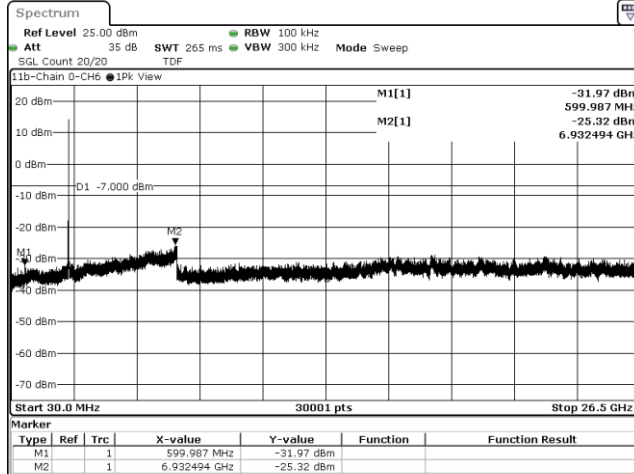
Facsimile (FAX) : +886-3-583-7948



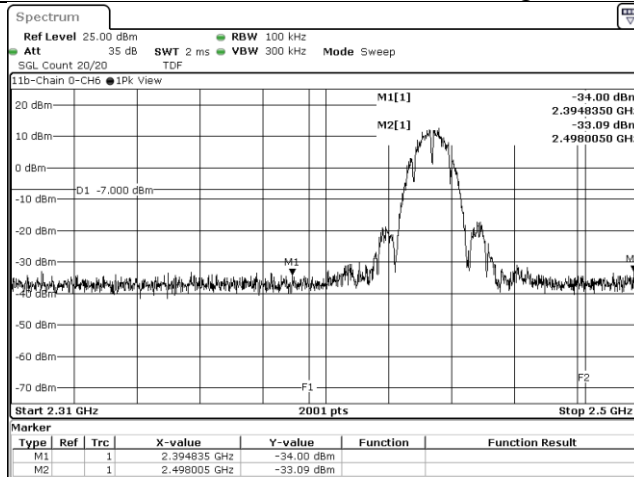
802.11b, CH6, Chain 0, Reference



802.11b, CH6, Chain 0, Conducted Emission



802.11b, CH6, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

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

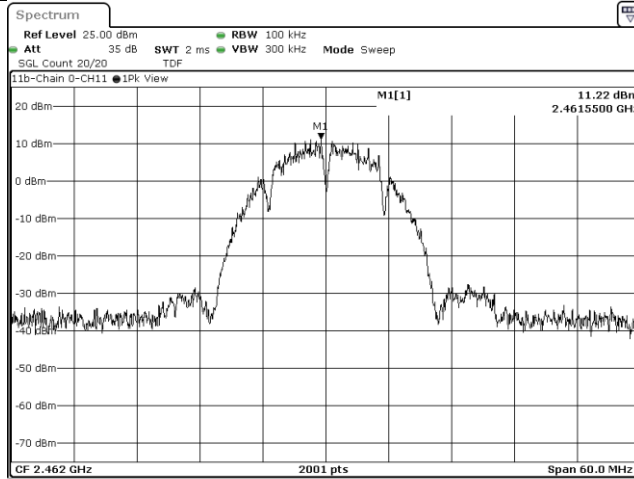
Telephone : +886-2-7737-3000

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

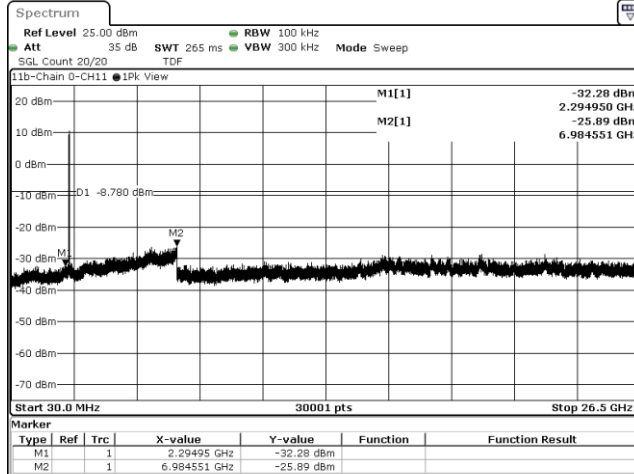
Doc No: 17-EM-F0876 / 6.0



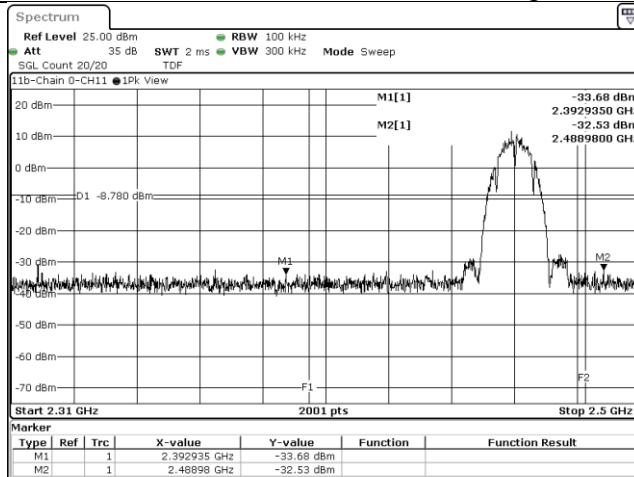
802.11b, CH11, Chain 0, Reference



802.11b, CH11, Chain 0, Conducted Emission



802.11b, CH11, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

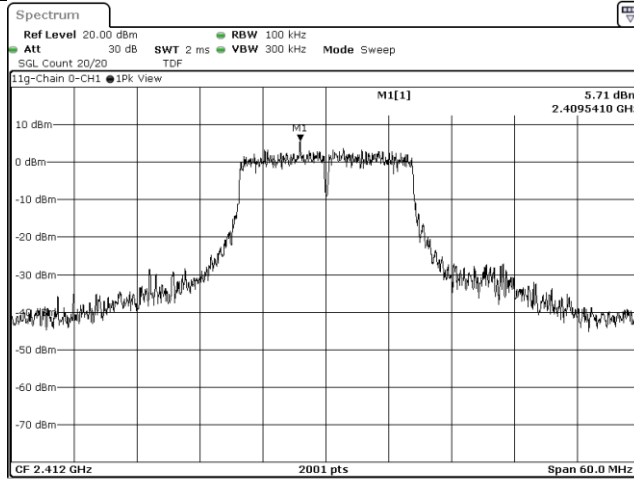
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

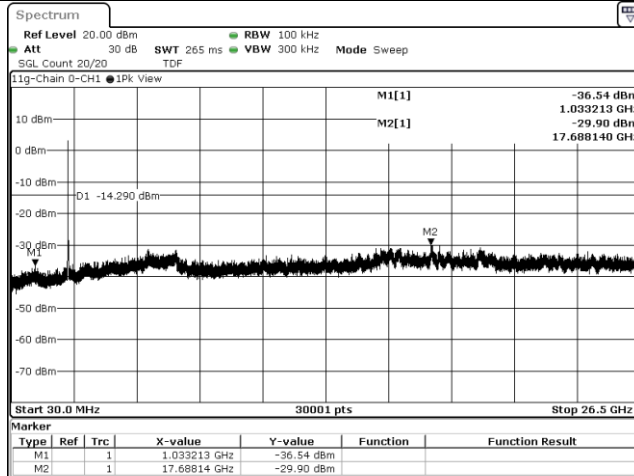
Facsimile (FAX) :+886-3-583-7948



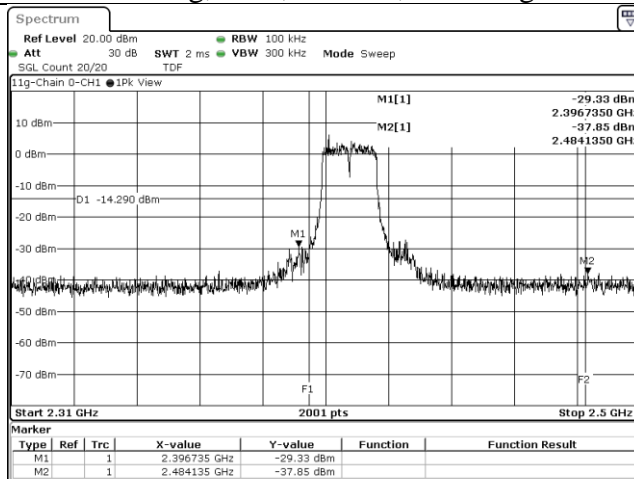
802.11g, CH1, Chain 0, Reference



802.11g, CH1, Chain 0, Conducted Emission



802.11g, CH1, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

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

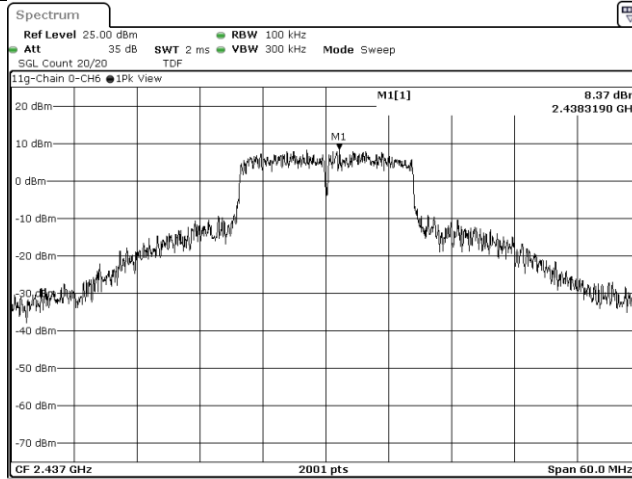
Telephone : +886-2-7737-3000

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

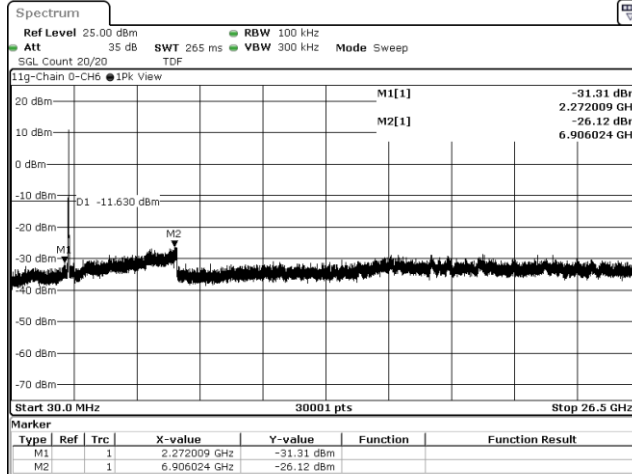
Doc No: 17-EM-F0876 / 6.0



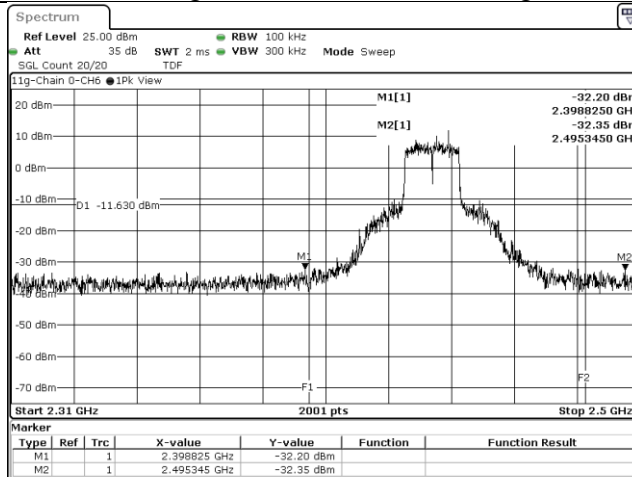
802.11g, CH6, Chain 0, Reference



802.11g, CH6, Chain 0, Conducted Emission



802.11g, CH6, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

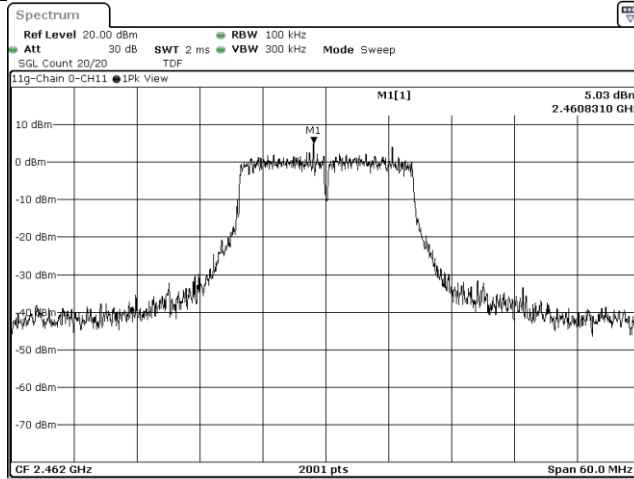
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

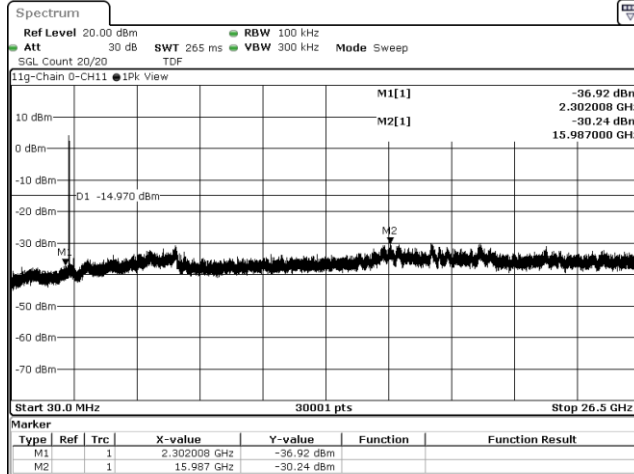
Facsimile (FAX) : +886-3-583-7948



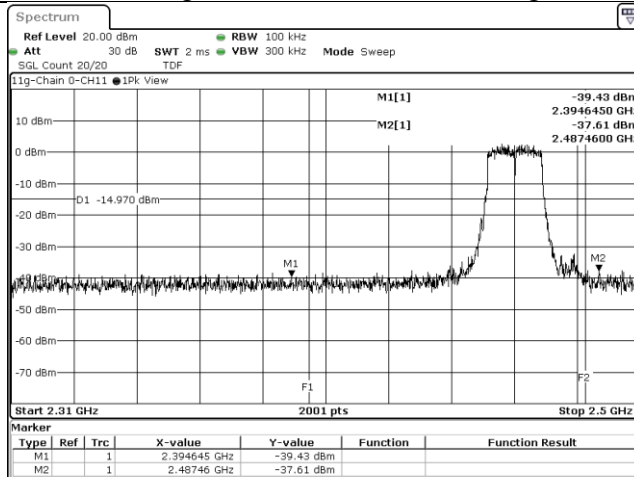
802.11g, CH11, Chain 0, Reference



802.11g, CH11, Chain 0, Conducted Emission



802.11g, CH11, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

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

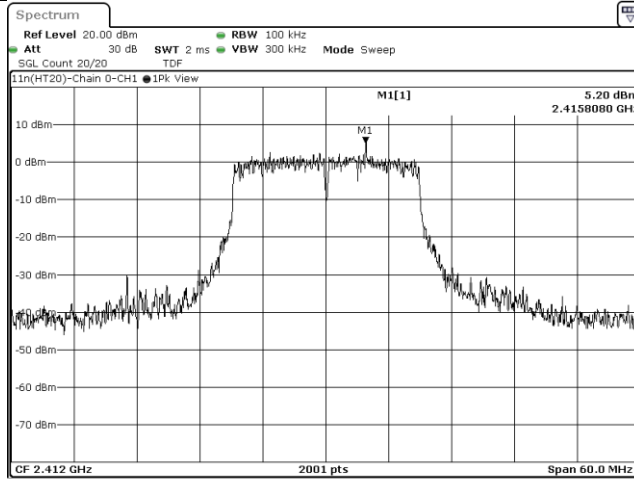
Telephone : +886-2-7737-3000

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

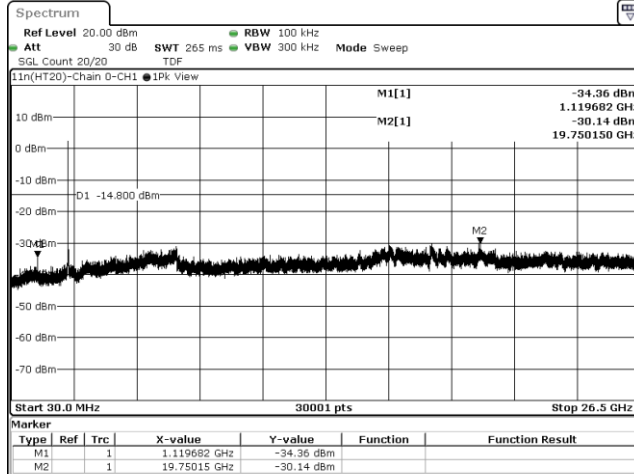
Doc No: 17-EM-F0876 / 6.0



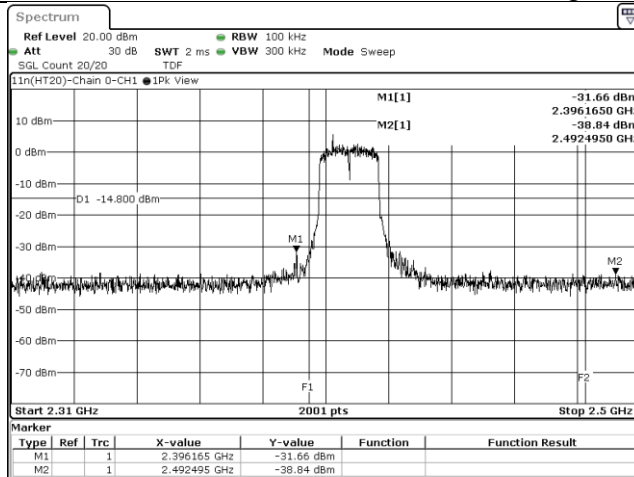
802.11n(HT20), CH1, Chain 0, Reference



802.11n(HT20), CH1, Chain 0, Conducted Emission



802.11n(HT20), CH1, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

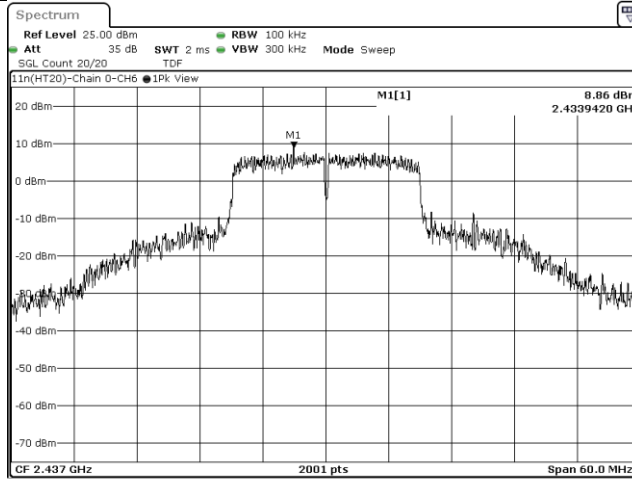
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

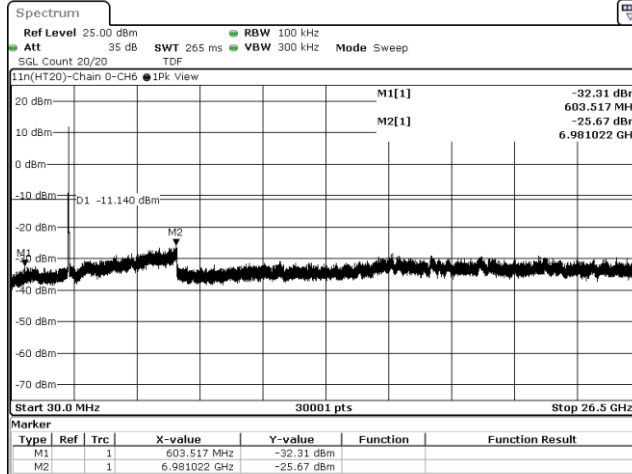
Facsimile (FAX) : +886-3-583-7948



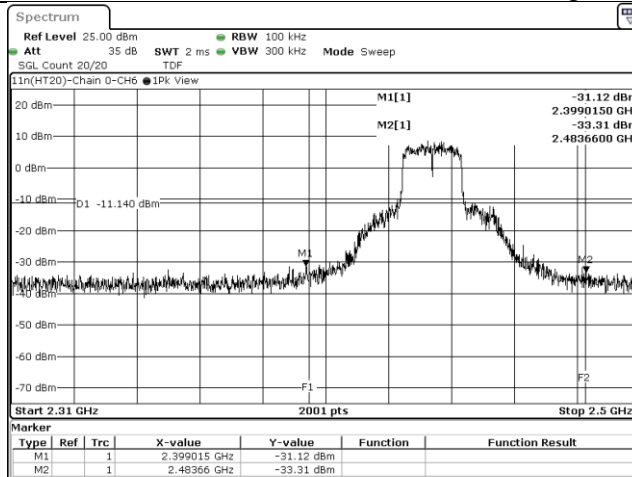
802.11n(HT20), CH6, Chain 0, Reference



802.11n(HT20), CH6, Chain 0, Conducted Emission



802.11n(HT20), CH6, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

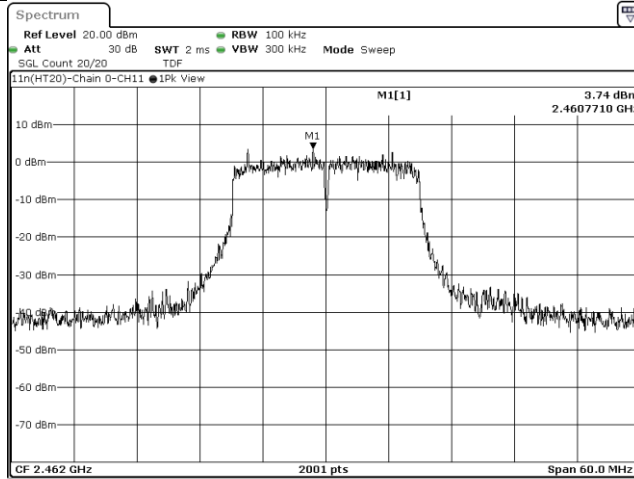
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

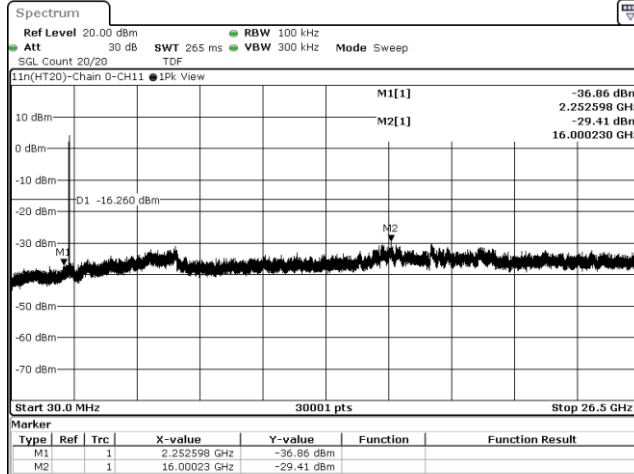
Facsimile (FAX) : +886-3-583-7948



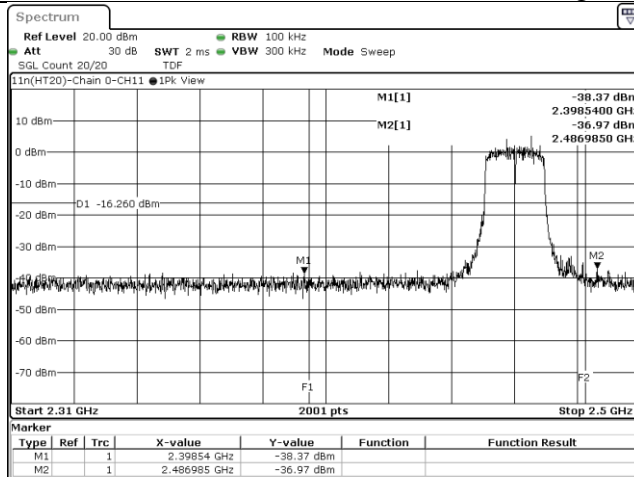
802.11n(HT20), CH11, Chain 0, Reference



802.11n(HT20), CH11, Chain 0, Conducted Emission



802.11n(HT20), CH11, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

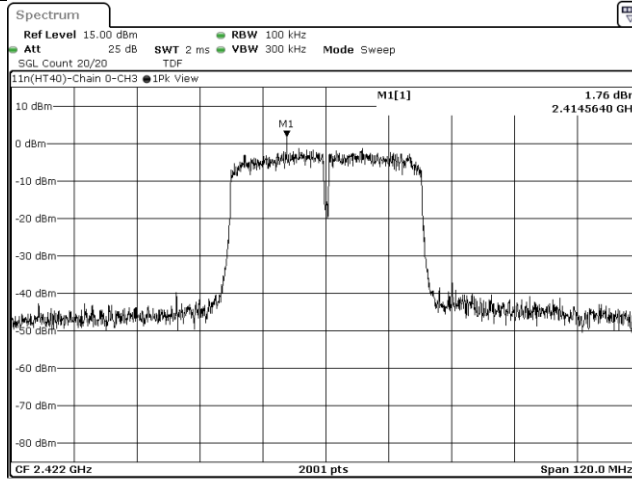
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

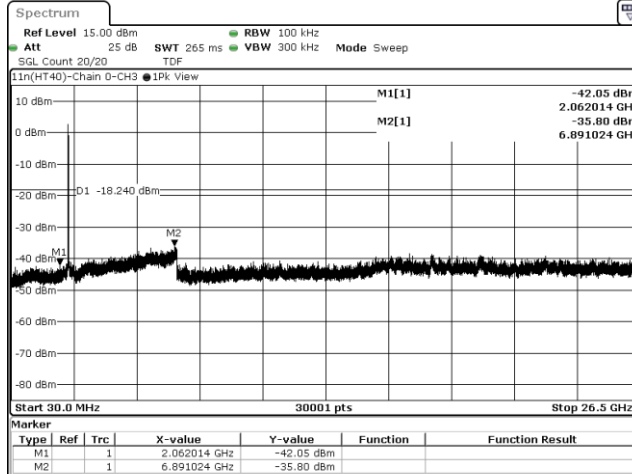
Facsimile (FAX) :+886-3-583-7948



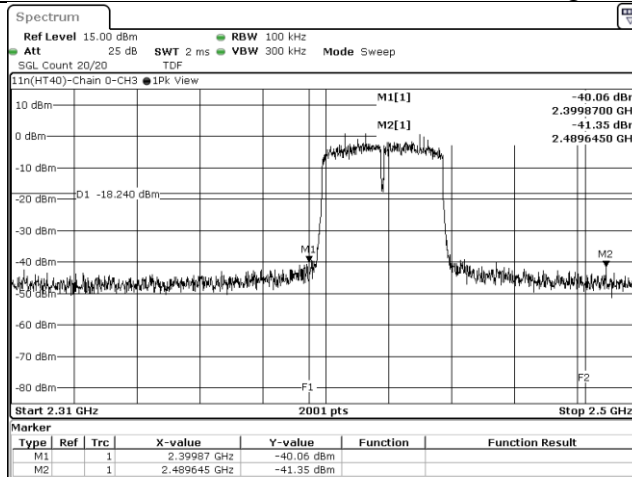
802.11n(HT40), CH3, Chain 0, Reference



802.11n(HT40), CH3, Chain 0, Conducted Emission



802.11n(HT40), CH3, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

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

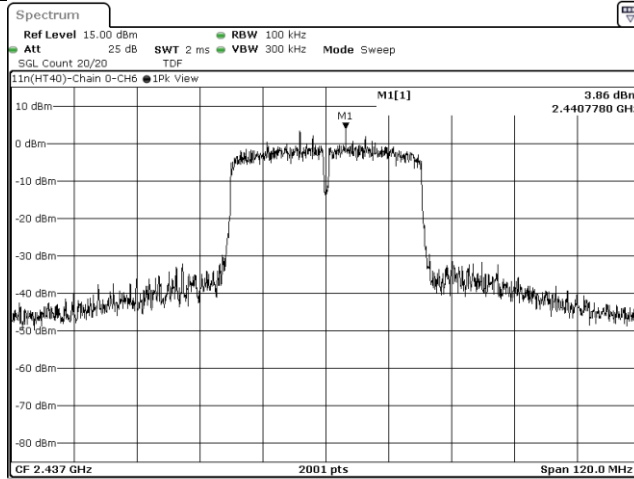
Telephone : +886-2-7737-3000

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

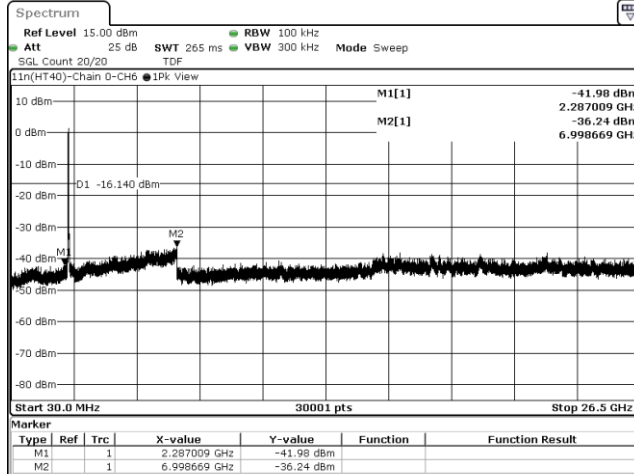
Doc No: 17-EM-F0876 / 6.0



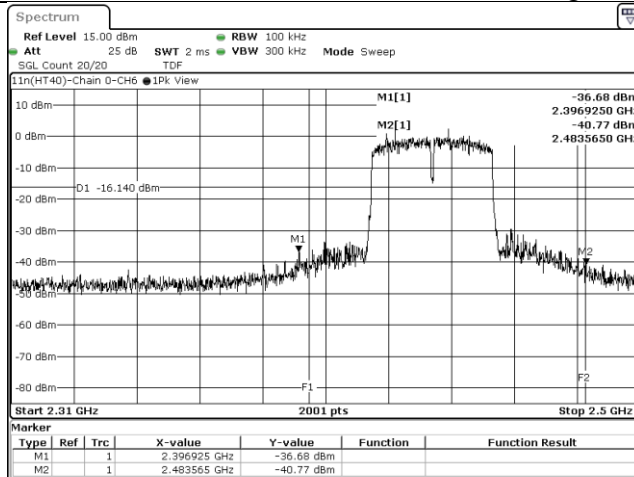
802.11n(HT40), CH6, Chain 0, Reference



802.11n(HT40), CH6, Chain 0, Conducted Emission



802.11n(HT40), CH6, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

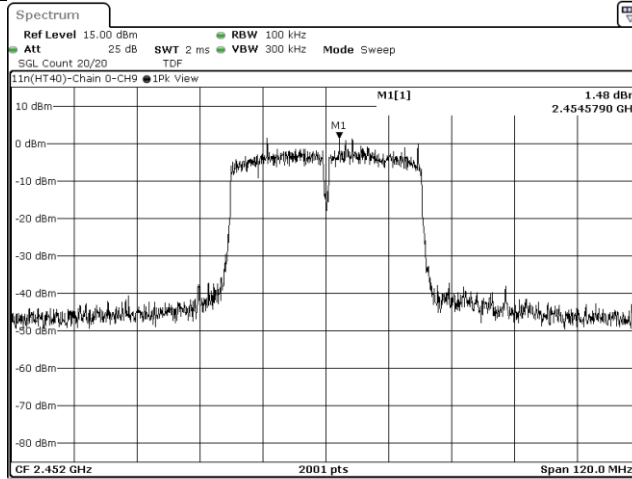
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

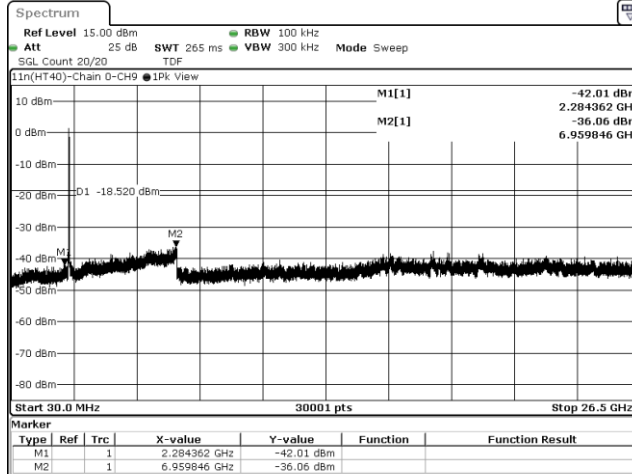
Facsimile (FAX) : +886-3-583-7948



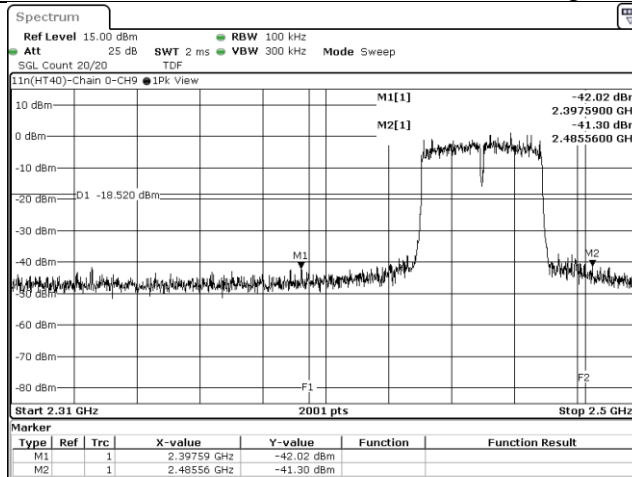
802.11n(HT40), CH9, Chain 0, Reference



802.11n(HT40), CH9, Chain 0, Conducted Emission



802.11n(HT40), CH9, Chain 0, Band edge



Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



9.5. Radiated Spurious Emission

Requirements

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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 B and Building 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: 17-EM-F0876 / 6.0



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 B and Building 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: 17-EM-F0876 / 6.0



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.

Configuration	Average	
	RBW	VBW
802.11b	1MHz	10Hz
802.11g		510Hz
802.11n (HT20)		1kHz
802.11n (HT40)		2kHz

Note: 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/m) + 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 "*" = 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.

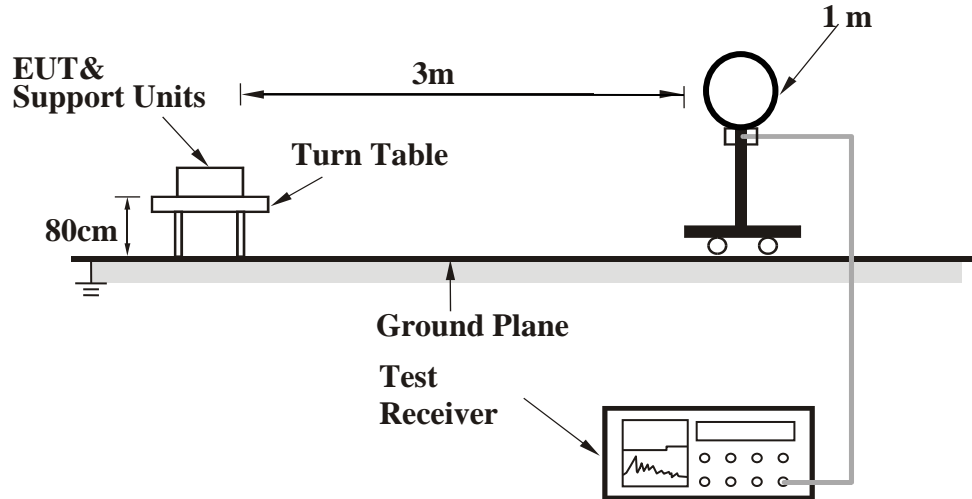
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone :+886-2-7737-3000

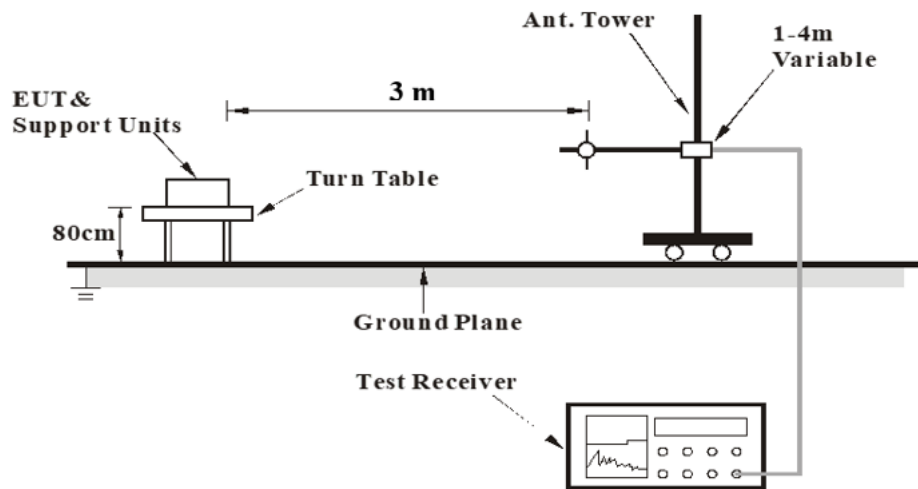
Facsimile (FAX) :+886-3-583-7948

Test Setup

<Frequency Range 9 kHz ~ 30 MHz>



<Frequency Range 30 MHz ~ 1 GHz >



Underwriters Laboratories Taiwan Co., Ltd.

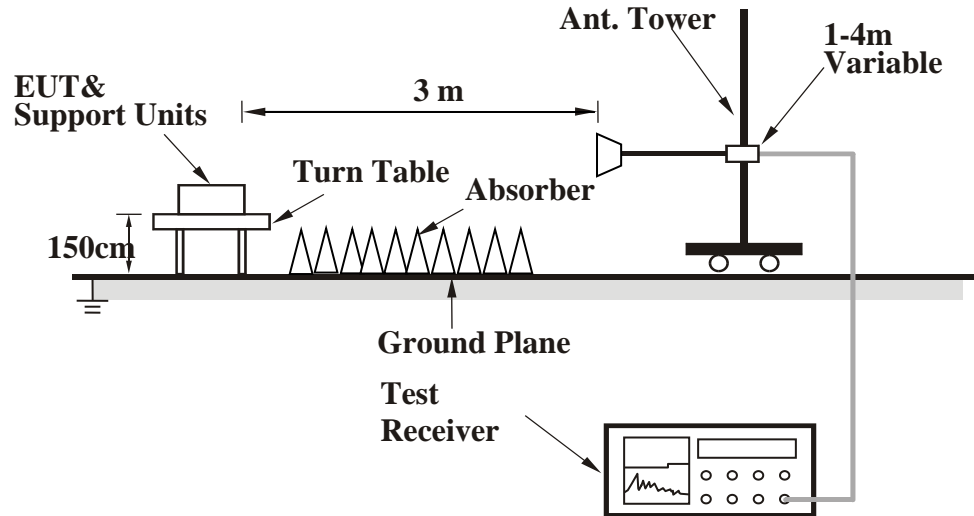
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 6.0

<Frequency Range above 1 GHz>



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



Test Data

Above 1 GHz

Mode	802.11b	Channel	1
------	---------	---------	---

Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal		2387.14	43.44	11.82	55.26	74	-18.74	PK
		2387.33	36.38	11.82	48.2	54	-5.8	AVG
	@	2412	95.09	11.83	106.92	N/A	N/A	PK
	@	2412	91.05	11.83	102.88	N/A	N/A	AVG
	*	4824	47.77	2.35	50.12	74	-23.88	PK
Vertical		2386.76	40.84	11.82	52.66	54	-1.34	AVG
		2387.52	46.78	11.82	58.6	74	-15.4	PK
	@	2412	101.04	11.83	112.87	N/A	N/A	PK
	@	2412	97.21	11.83	109.04	N/A	N/A	AVG
	*	4824	50.39	2.35	52.74	74	-21.26	PK

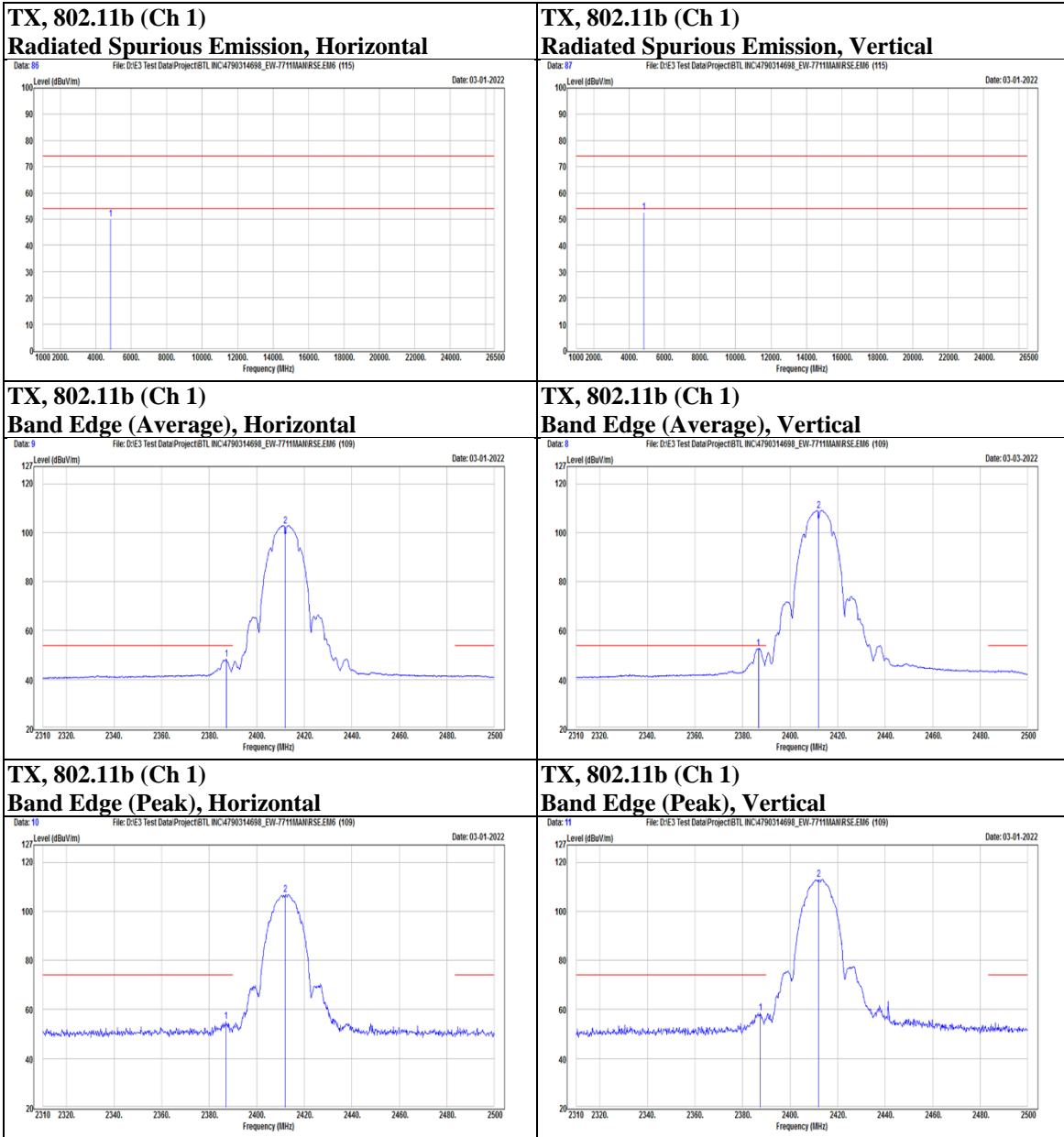
Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0





Mode	802.11b	Channel	6
------	---------	---------	---

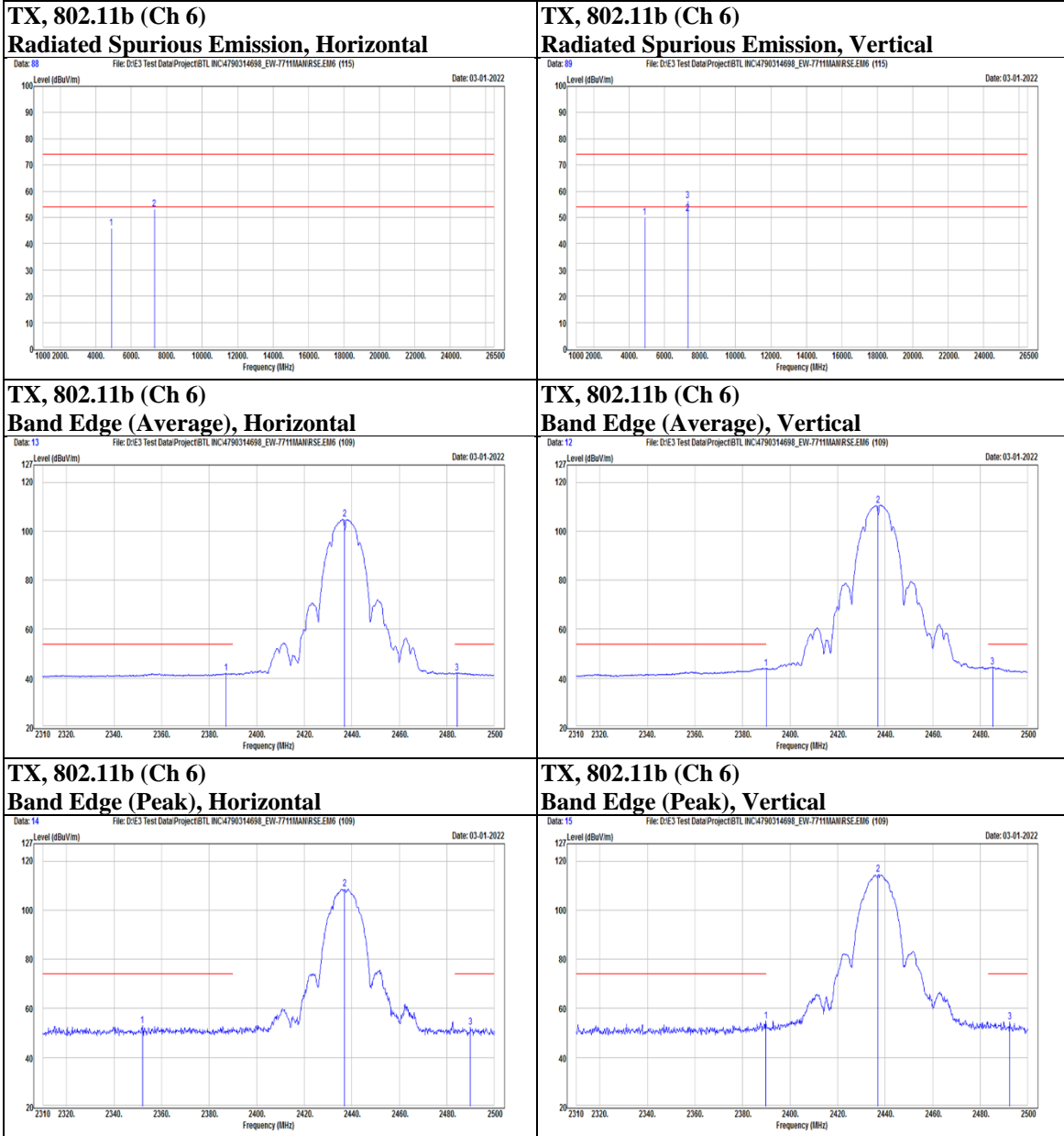
Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal		2351.99	40.94	11.9	52.84	74	-21.16	PK
		2387.14	30.17	11.82	41.99	54	-12.01	AVG
	@	2437	96.61	11.92	108.53	N/A	N/A	PK
	@	2437	92.89	11.92	104.81	N/A	N/A	AVG
		2484.23	30.4	11.68	42.08	54	-11.92	AVG
		2489.93	40.82	11.63	52.45	74	-21.55	PK
	*	4874	43.48	2.4	45.88	74	-28.12	PK
	*	7311	42.88	10.28	53.16	74	-20.84	PK
Vertical		2389.8	42.94	11.82	54.76	74	-19.24	PK
		2389.99	32.17	11.82	43.99	54	-10.01	AVG
	@	2437	102.55	11.92	114.47	N/A	N/A	PK
	@	2437	98.65	11.92	110.57	N/A	N/A	AVG
		2485.18	32.89	11.67	44.56	54	-9.44	AVG
		2492.4	43.03	11.62	54.65	74	-19.35	PK
	*	4874	47.6	2.4	50	74	-24	PK
		7311	45.97	10.28	56.25	74	-17.75	PK
	7311	41.3	10.28	51.58	54	-2.42	AVG	

Underwriters Laboratories Taiwan Co., Ltd.

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

Telephone :+886-2-7737-3000

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





Mode	802.11b	Channel	11
------	---------	---------	----

Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	@	2462	94.36	11.87	106.23	N/A	N/A	PK
	@	2462	90.71	11.87	102.58	N/A	N/A	AVG
		2485.75	42.08	11.67	53.75	74	-20.25	PK
		2487.84	34.51	11.65	46.16	54	-7.84	AVG
	*	4924	45.52	2.4	47.92	74	-26.08	PK
Vertical	@	2462	100.41	11.87	112.28	N/A	N/A	PK
	@	2462	96.55	11.87	108.42	N/A	N/A	AVG
		2487.46	46.04	11.66	57.7	74	-16.3	PK
		2487.84	40.62	11.65	52.27	54	-1.73	AVG
	*	4924	47.2	2.4	49.6	74	-24.4	PK

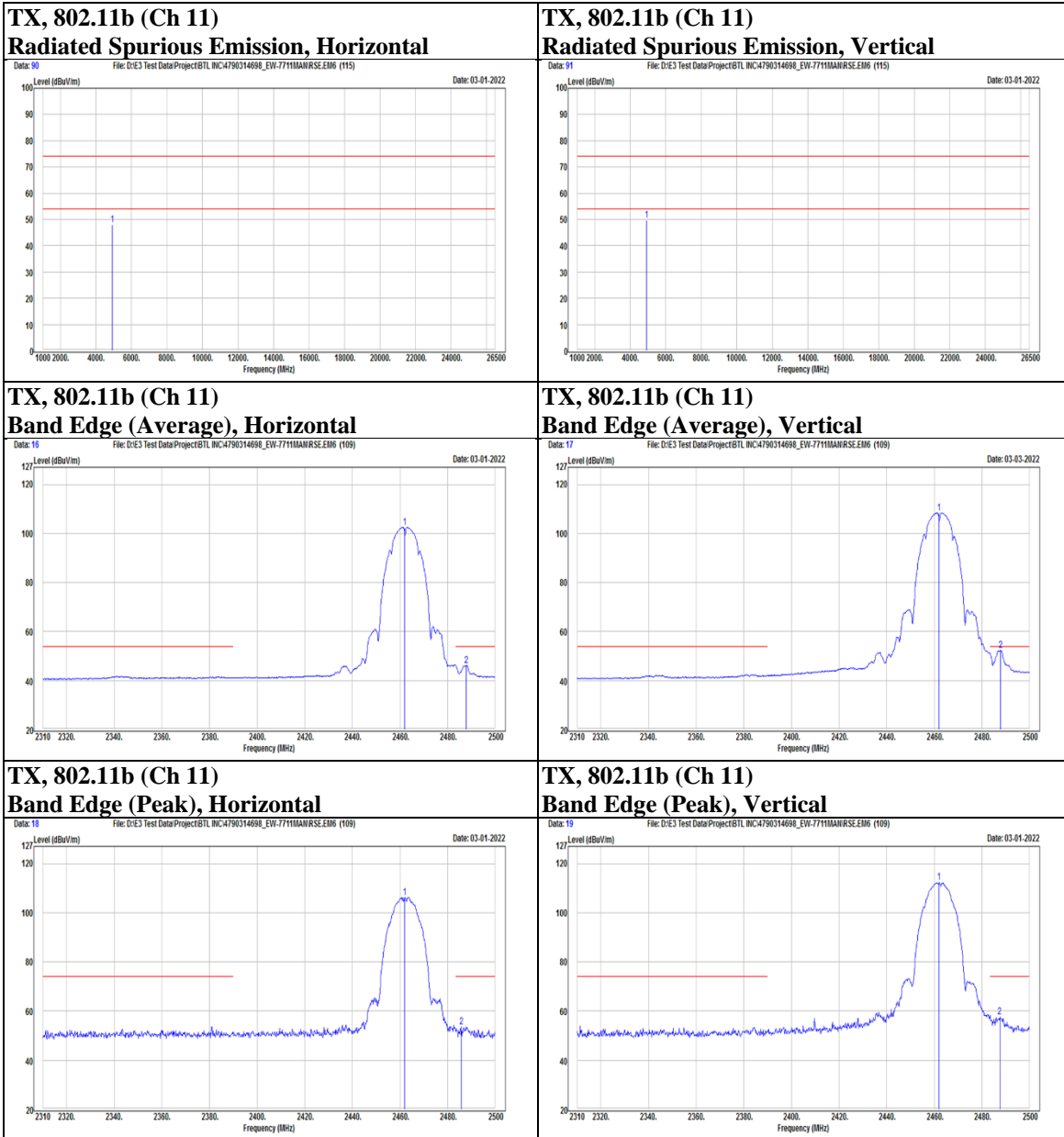
Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0





Mode	802.11g	Channel	1
------	---------	---------	---

Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal		2389.42	51.36	11.82	63.18	74	-10.82	PK
		2389.99	36.91	11.82	48.73	54	-5.27	AVG
	@	2412	92.2	11.83	104.03	N/A	N/A	PK
	@	2412	83.57	11.83	95.4	N/A	N/A	AVG
	*	4824	39.49	2.35	41.84	74	-32.16	PK
Vertical		2389.04	53.72	11.81	65.53	74	-8.47	PK
		2389.99	40.64	11.82	52.46	54	-1.54	AVG
	@	2412	98.95	11.83	110.78	N/A	N/A	PK
	@	2412	89.65	11.83	101.48	N/A	N/A	AVG
	*	4824	41.28	2.35	43.63	74	-30.37	PK

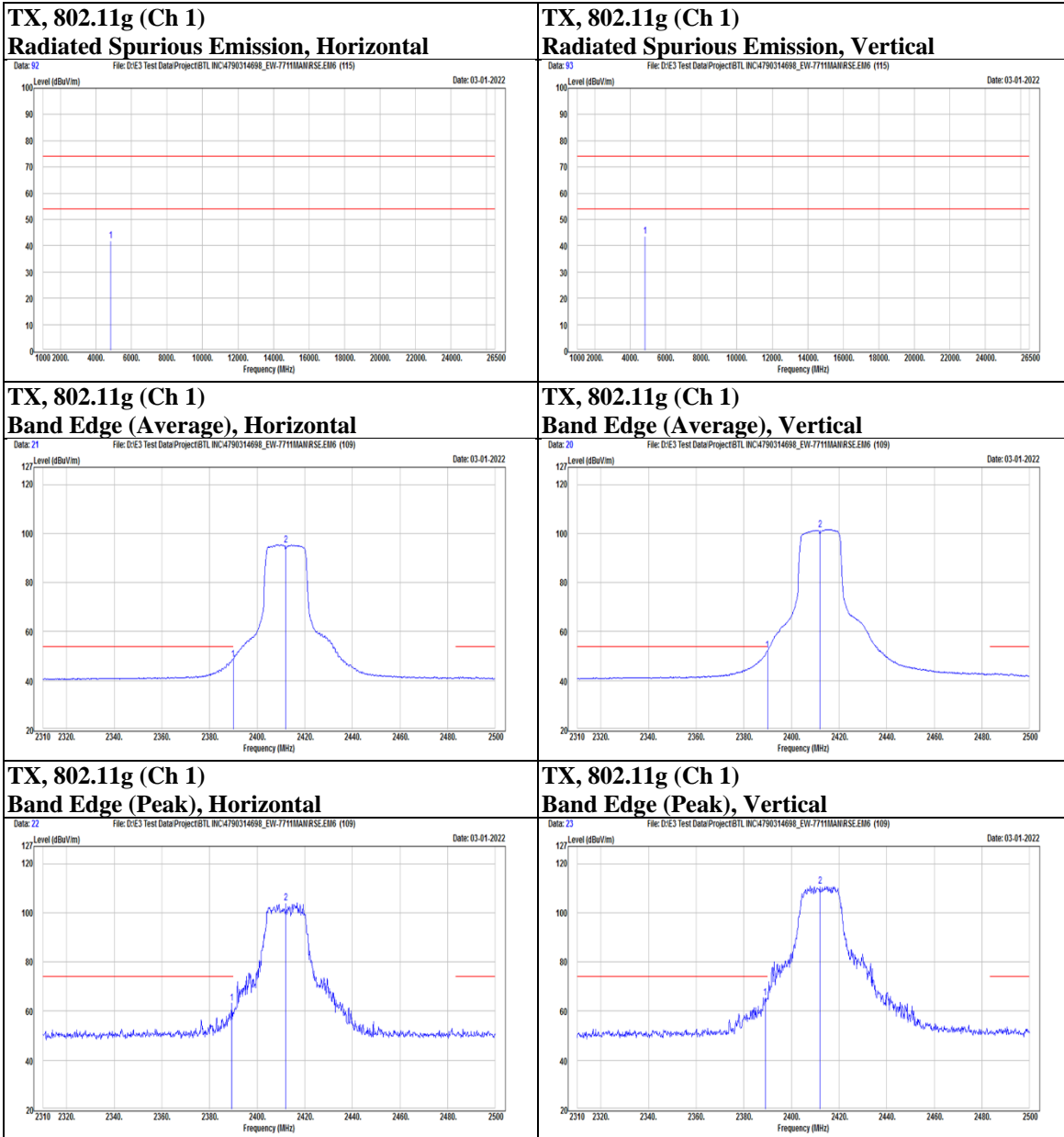
Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



Underwriters Laboratories Taiwan Co., Ltd.

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

Telephone : +886-2-7737-3000

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



Mode	802.11g	Channel	6
------	---------	---------	---

Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal		2380.87	47.34	11.84	59.18	74	-14.82	PK
		2388.28	33.09	11.82	44.91	54	-9.09	AVG
	@	2437	97.12	11.92	109.04	N/A	N/A	PK
	@	2437	88.22	11.92	100.14	N/A	N/A	AVG
		2483.66	48.47	11.68	60.15	74	-13.85	PK
		2483.66	34.86	11.68	46.54	54	-7.46	AVG
	*	4874	40.05	2.4	42.45	74	-31.55	PK
		7311	49.22	10.28	59.5	74	-14.5	PK
		7311	35.6	10.28	45.88	54	-8.12	AVG
	Vertical		2388.66	49.62	11.82	61.44	74	-12.56
		2389.99	35.5	11.82	47.32	54	-6.68	AVG
@		2437	102.94	11.92	114.86	N/A	N/A	PK
@		2437	94.03	11.92	105.95	N/A	N/A	AVG
		2483.85	40.84	11.68	52.52	54	-1.48	AVG
		2487.46	53.85	11.66	65.51	74	-8.49	PK
*		4874	42.78	2.4	45.18	74	-28.82	PK
		7311	47.9	10.28	58.18	74	-15.82	PK
		7311	33.4	10.28	43.68	54	-10.32	AVG

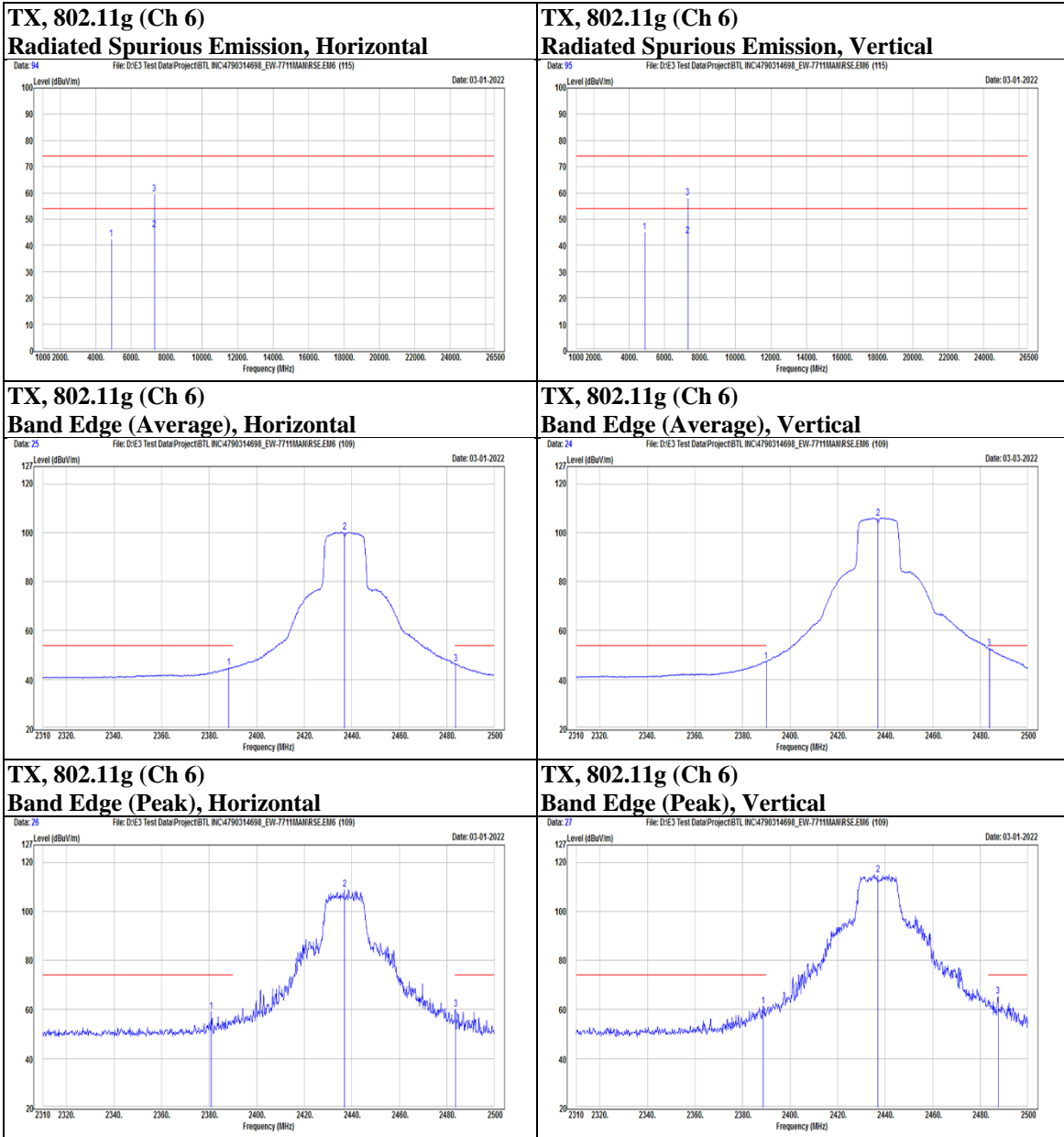
Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



Underwriters Laboratories Taiwan Co., Ltd.

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

Telephone : +886-2-7737-3000

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



Mode	802.11g	Channel	11
------	---------	---------	----

Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	@	2462	91.61	11.87	103.48	N/A	N/A	PK
	@	2462	82.96	11.87	94.83	N/A	N/A	AVG
		2483.66	35.41	11.68	47.09	54	-6.91	AVG
		2484.99	50.3	11.67	61.97	74	-12.03	PK
	*	4924	38.97	2.4	41.37	74	-32.63	PK
Vertical	@	2462	98.23	11.87	110.1	N/A	N/A	PK
	@	2462	88.98	11.87	100.85	N/A	N/A	AVG
		2483.66	41.09	11.68	52.77	54	-1.23	AVG
		2485.18	56.57	11.67	68.24	74	-5.76	PK
	*	4924	41.02	2.4	43.42	74	-30.58	PK

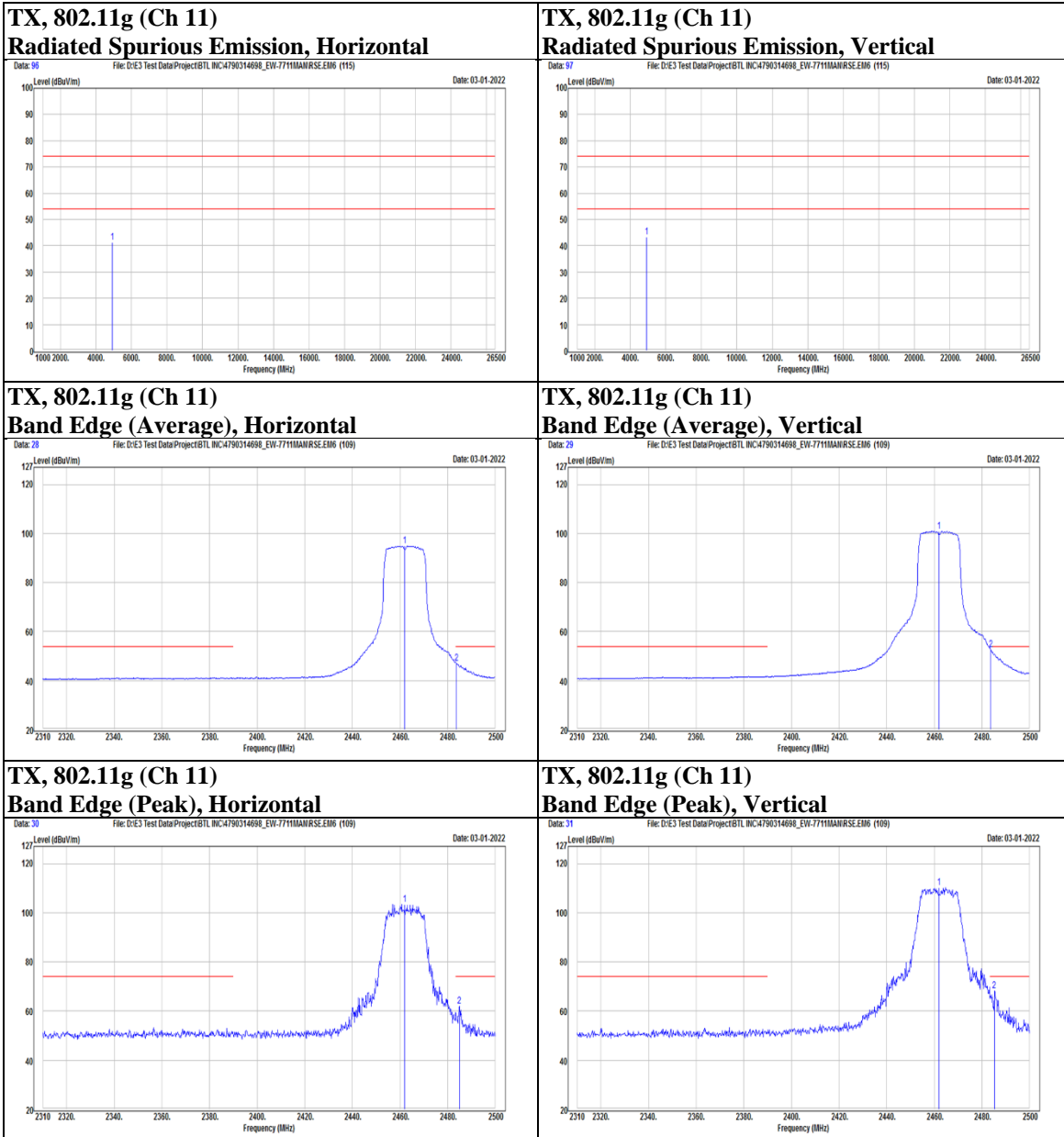
Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0



Underwriters Laboratories Taiwan Co., Ltd.

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

Telephone : +886-2-7737-3000

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



Mode	802.11n(HT20)	Channel	1
------	---------------	---------	---

Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal		2389.99	51.47	11.82	63.29	74	-10.71	PK
		2389.99	35.19	11.82	47.01	54	-6.99	AVG
	@	2412	91.51	11.83	103.34	N/A	N/A	PK
	@	2412	82.35	11.83	94.18	N/A	N/A	AVG
	*	4824	40.04	2.35	42.39	74	-31.61	PK
Vertical		2389.99	54.65	11.82	66.47	74	-7.53	PK
		2389.99	41.02	11.82	52.84	54	-1.16	AVG
	@	2412	97.79	11.83	109.62	N/A	N/A	PK
	@	2412	88.82	11.83	100.65	N/A	N/A	AVG
	*	4824	39.55	2.35	41.9	74	-32.1	PK

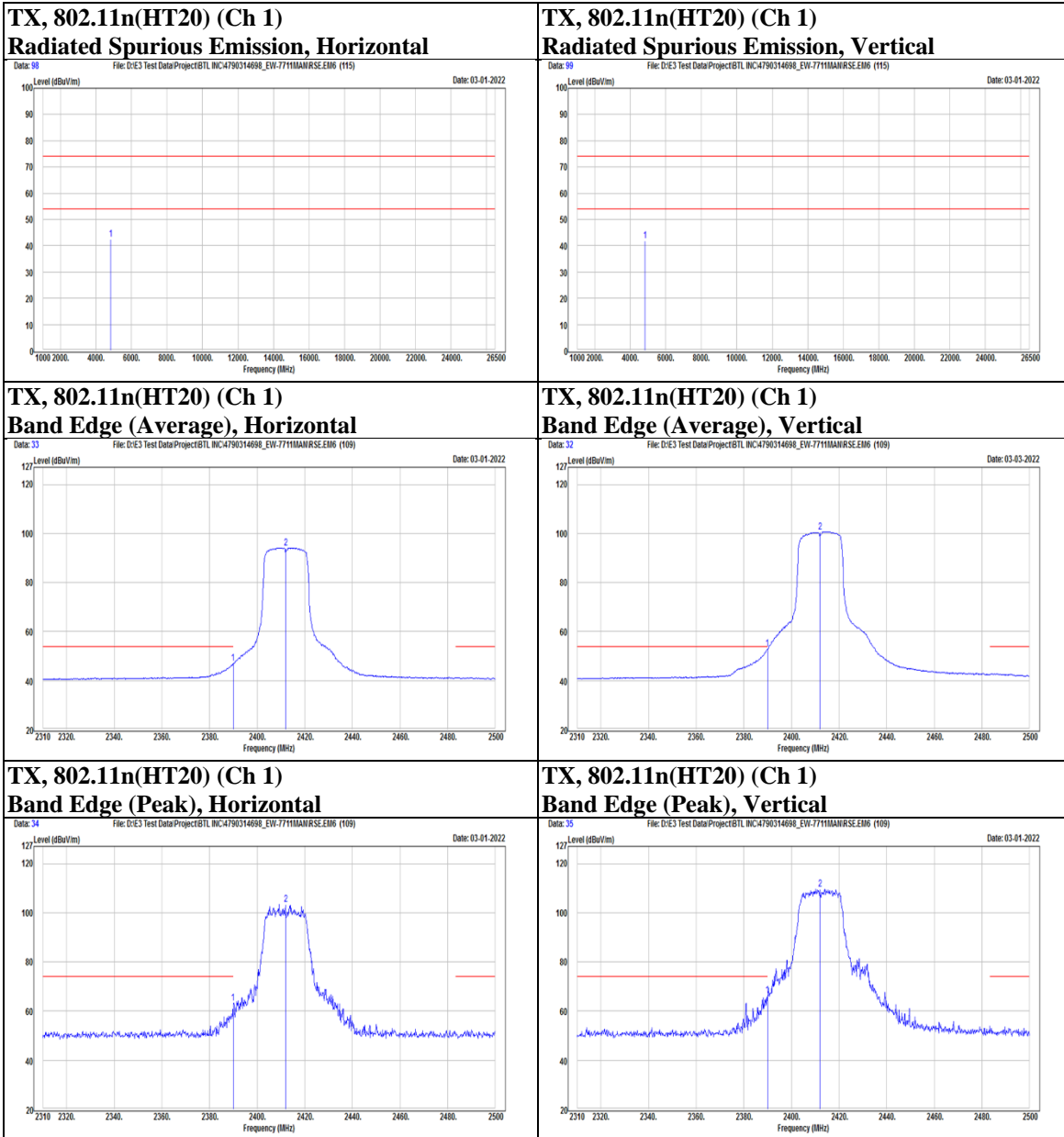
Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0





Mode	802.11n(HT20)	Channel	6
------	---------------	---------	---

Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal		2388.47	43.93	11.82	55.75	74	-18.25	PK
		2389.42	34.27	11.82	46.09	54	-7.91	AVG
	@	2437	96.51	11.92	108.43	N/A	N/A	PK
	@	2437	88.33	11.92	100.25	N/A	N/A	AVG
		2483.66	35.83	11.68	47.51	54	-6.49	AVG
		2484.04	45.79	11.68	57.47	74	-16.53	PK
	*	4874	41.02	2.4	43.42	74	-30.58	PK
		7307	44.56	10.28	54.84	74	-19.16	PK
		7307	35.1	10.28	45.38	54	-8.62	AVG
	Vertical		2385.43	51.35	11.83	63.18	74	-10.82
		2389.61	36.92	11.82	48.74	54	-5.26	AVG
@		2437	102.85	11.92	114.77	N/A	N/A	PK
@		2437	94.07	11.92	105.99	N/A	N/A	AVG
		2483.85	40.49	11.68	52.17	54	-1.83	AVG
		2485.56	51.93	11.67	63.6	74	-10.4	PK
*		4874	43.01	2.4	45.41	74	-28.59	PK
		7311	46.88	10.28	57.16	74	-16.84	PK
		7311	32.38	10.28	42.66	54	-11.34	AVG

Underwriters Laboratories Taiwan Co., Ltd.

Building B and Building 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: 17-EM-F0876 / 6.0