



Test report No. : 4788637943-US-R0-V0
Page : 1 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

RADIO TEST REPORT

Product : Skin scanner-Lumos
Model Name : BDEM-01
FCC ID : SXE-BDEM01
Test Regulation : FCC 47 CFR Part 15 Subpart C (Section 15.247)
Received Date : Aug. 28, 2018
Test Date : Sep. 14, 2018 ~ Nov 27, 2018
Issued Date : Oct. 2, 2019

Applicant : Barco NV
President Kennedypark 35, 8500 Kortrijk, Belgium

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 apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.

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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 2 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

REVISION HISTORY

Original Test Report No.: 4788637943-US-R0-V0

[illegible]

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 / 2.0



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	10
6.3. Test Condition	11
6.4. Description Of Available Antennas	11
6.5. Test Mode Applicability and Tested Channel Detail.....	12
6.6. Duty cycle	13
7. Test Equipment.....	14
8. Description of Test Setup	16
9. Test Results	17
9.1. 6dB Bandwidth	17
9.2. Conducted output power	21
9.3. Power Spectral Density	24
9.4. Conducted Out of Band Emission.....	28
9.5. Radiated Spurious Emission	37
9.6. AC Power Line Conducted Emission	57
Appendix I Radiated Band Edge Measurement	63
Appendix II Radiated Spurious Emission Measurement	71



Test report No. : 4788637943-US-R0-V0
Page : 4 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

1. Attestation of Test Results

APPLICANT: Barco NV
President Kennedypark 35, 8500 Kortrijk, Belgium

MANUFACTURER Barco NV
President Kennedypark 35, 8500 Kortrijk, Belgium

EUT DESCRIPTION: Skin scanner-Lumos

BRAND: Barco

MODEL: BDEM-01

SAMPLE STAGE: Identical Prototype

DATE of TESTED: Sep. 14, 2018 ~ Nov 27, 2018

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. Measurement Uncertainties were not taken into account and are published for informational purposes only. 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:

Evelyn Lee
Project Handler

Date : Oct. 2, 2019

Approve By:

Stanley Wu
Senior Project Engineer

Date : Oct. 2, 2019

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 / 2.0



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

Note:

1. For the Radiated Band Edge test plots were recorded in Appendix I, the Radiated Emissions test plots were recorded in Appendix II.

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 / 2.0



3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with FCC CFR 47 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. The full scope of accreditation can be viewed at http://accreditation.taftw.org.tw/taf/public/basic/viewApplyItems.action?unitNo=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 / 2.0



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 $k=2$.

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	2.6
RF Conducted	9 kHz - 40GHz	2	1.0
Radiated disturbance below 30MHz	9 kHz - 30 MHz	2	2.4
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	2	5.5
Radiated disturbance above 1GHz	1GHz ~ 40GHz	2	5.0

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

Doc No: 17-EM-F0876 / 2.0



6. Equipment under Test

6.1. Description of EUT

Product	Skin scanner-Lumos
Brand Name	Barco
Model Name	BDEM-01
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: 19.26 dBm 802.11g: 17.65 dBm 802.11n (HT20): 17.61 dBm 802.11n (HT40): 17.55 dBm
Normal Voltage	100~240Vac for adapter 3.7Vdc for battery
Hardware Version	N/A
Software Version	Android version : 8.1.0 Kernel version : 3.18.71-g18d2fa8 (gcc version 4.9.x 20150123 (prerelase) (GCC)) Snapdragon Camera Version 2.0.002

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 / 2.0



Note:

1. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

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 EUT contains following accessory devices

Product	Brand	Model	Description
CPU	Qualcomm	APQ8053(2.0 GHz)	ARM Cortex-A53 microprocessor cores at 2.0 GHz
RAM	SK Hynix	H9TQ26ACLTC UR (4GB)	F1nm 64Gb MLC x 4
HDD	SK Hynix	H9TQ26ACLTC UR (32GB)	2nm 8Gb LPDDR3 x 4
Power Supply (Li-Battery)	Apack	APP00281	2670mAh
		APP00280	5000mAh
Adapter	ADAPTER TECH.	ATM012T-W051V	Input : AC 100-240V, 50- 60Hz Output : DC 5V, 3A
Docking	BARCO	K9302003A	Input: DC 5V/3A Output: DC 5V/3A
Battery grip	BARCO	K9302002A	Controller with battery 5000mAh

3. 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

Doc No: 17-EM-F0876 / 2.0



6.2. Channel List

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

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

7 channels are provided for 802.11n (HT40):

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

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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 11 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

6.3. Test Condition

Test Item	Test Site No.	Environmental Condition	Input Power	Test Date	Tested by
Antenna Port Conducted Measurement	SR4	24~26°C / 63~65%RH	120Vac / 60 Hz	Sep. 14, 2018 ~ Nov. 26, 2018	Wayne Chen
Radiated Spurious Emission	966-2	25~27°C / 58~62%RH	120Vac / 60 Hz	Sep. 14, 2018 ~ Nov. 27, 2018	Wayne Chen
AC power Line Conducted Emission	SR1	24~26°C / 52~56%RH	120Vac / 60 Hz	Oct. 12, 2018 ~ Nov. 15, 2018	Wayne Chen

FCC Test Firm Registration Number: 498077

6.4. Description Of Available Antennas

Antenna	Brand Name	Model Name	Antenna Type	Antenna Gain(dBi)
0	INPAQ	WA-F-LB-02-145	FPCB	1.27

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 / 2.0



6.5. Test Mode Applicability and Tested Channel Detail

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	1.0
	802.11g	OFDM	BPSK	1 to 11	1,6,11	6.0
	802.11n(HT20)	OFDM	BPSK	1 to 11	1,6,11	MCS0
	802.11n(HT40)	OFDM	BPSK	3 to 9	3,6,9	MCS0
Radiated Emissions (Below 1GHz)	802.11n(HT40)	OFDM	BPSK	3 to 9	9	MCS0
AC Power Line Conducted Emission	802.11n(HT40)	OFDM	BPSK	3 to 9	9	MCS0
Antenna Port Conducted Measurement	802.11b	DSSS	DBPSK	1 to 11	1,6,11	1.0
	802.11g	OFDM	BPSK	1 to 11	1,6,11	6.0
	802.11n(HT20)	OFDM	BPSK	1 to 11	1,6,11	MCS0
	802.11n(HT40)	OFDM	BPSK	3 to 9	3,6,9	MCS0

Note:

1. 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).
2. 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.
3. 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.
4. The fundamental of the EUT was investigated in three orthogonal axes X/Y/Z and charging cradle mode, it was determined that charging cradle mode was worst-case . Therefore, all final radiated testing was performed with charging cradle mode.
5. For 9 kHz to 30 MHz, the loop antenna is studied in three polarization parallel/vertical/ground parallel directions, and parallel polarization has been determined to be the worst case of pre-scan radiation.

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



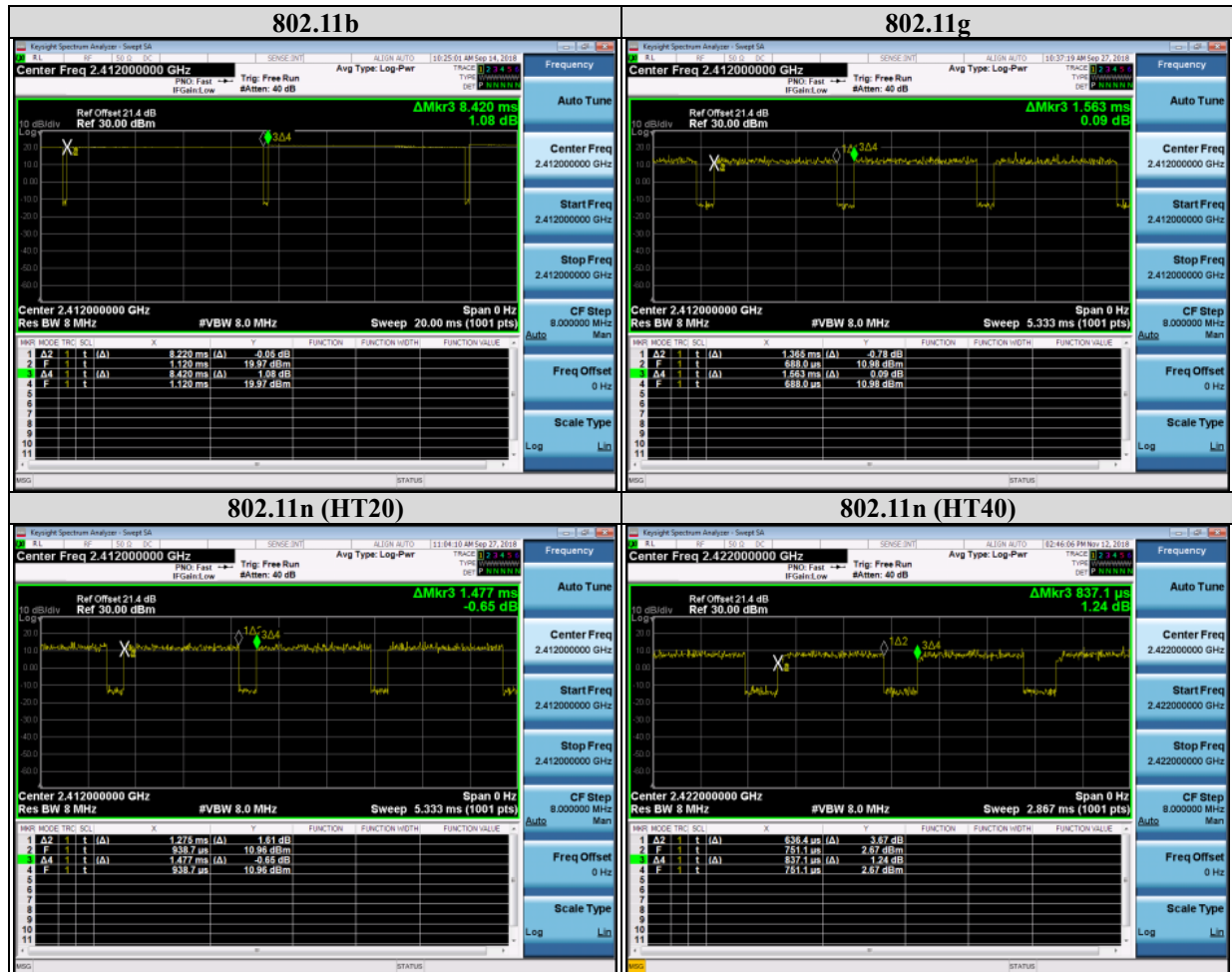
6.6. Duty cycle

802.11b: Duty cycle = $8.22/8.42 = 0.976$, Duty factor = $10 * \log(1/0.976) = 0.10$

802.11g: Duty cycle = $1.365/1.563 = 0.873$, Duty factor = $10 * \log(1/0.873) = 0.59$

802.11n (HT20): Duty cycle = $1.275/1.477 = 0.863$, Duty factor = $10 * \log(1/0.863) = 0.64$

802.11n (HT40): Duty cycle = $0.6364/0.8371 = 0.760$, Duty factor = $10 * \log(1/0.760) = 1.19$





7. Test Equipment

Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070827	Nov. 28, 2017	1 year
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	Nov. 28, 2017	1 year
Loop Antenna	ETS lindgren	6502	00213440	Dec. 7, 2017	1 year
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	Feb. 12, 2018	1 year
Horn Antenna (1-18 GHz)	Schwarzbeck	BBHA 9120 D	01690	Jan. 23, 2018	1 year
Horn Antenna(18-40 GHz)	Schwarzbeck	BBHA 9170	781	Jan.12, 2018	1 year
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	Feb. 1, 2018	1 year
Preamplifier (1-18 GHz)	EMCI	EMC051835BE	980406	Feb. 2, 2018	1 year
Preamplifier (18-40GHz)	EMCI	EMC184040SE E	980426	Apr. 26, 2018	1 year
RF Cable (9 KHz~18 GHz)	UltraPhase & EMC Instrument	A1K50-UP0358-A1K50-1500&EMC106-NM-SM-2500/7000	170111-4&170219/170102	Feb. 1, 2018	1 year
RF Cable (18 GHz~40 GHz)	UltraPhase	K1K50-UP0264-K1K50-2500/2500/600	170214-2/170214-6/170111-1	Feb. 1, 2018	1 year

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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 15 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
Antenna Port Conducted Measurement					
Spectrum Analyzer	Keysight	N9010A	MY56070834	Nov. 20, 2017	1 year
				Nov. 8, 2018	1 year
Pulse Power Sensor	Anrisu	MA2411B	1531202	Dec. 14, 2017	1 year
Power Meter	Anrisu	ML2495A	1645002	Dec. 14, 2017	1 year
AC power Line Conducted Emission					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	Nov. 28, 2017	1 year
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	Aug. 5, 2018	1 year
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	Aug. 2, 2018	1 year
Cables	Huber+Suhner	RG 214/U	FCC-BCICF-4_RF	Feb. 1, 2018	1 year

Note:

1. The first calibration date for the spectrum analyzer (N9010A) is November 20, 2017, and the second calibration date is November 8, 2018, and both calibration dates are within the test date range (September 14, 2018 to November 26, 2018).

UL Software

Description	Name	Version
Radiated measurement	EZ EMC	1.1.4.2
Conducted measurement	Keysight.TestSystem	1.0.0.0
AC power Line Conducted Emission	EZ EMC	1.1.4.2

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 / 2.0



8. Description of Test Setup

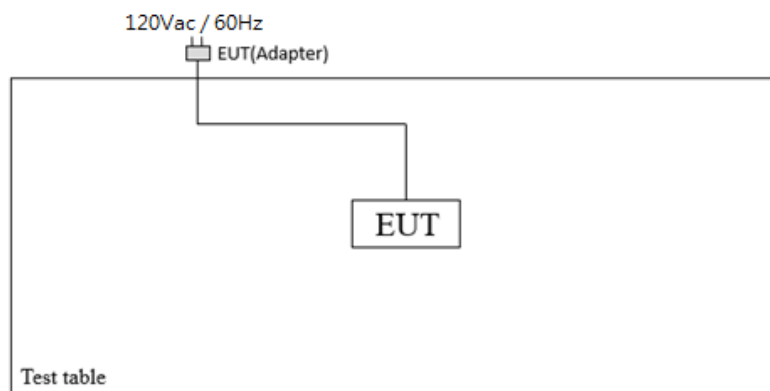
Support Equipment

Item	Equipment	Brand Name	Model Name	P/N
1	Notebook	DELL	Latitude E5470	3JFKWF2

Test Setup

Controlled using a bespoke application (QRCT) 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



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 / 2.0



9. Test Results

9.1. 6dB Bandwidth

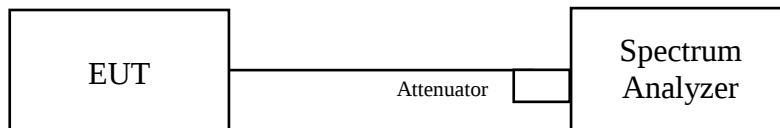
Requirements

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.



Test Data

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	8.55	0.5	Pass
6	2437	9.03	0.5	Pass
11	2462	8.58	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.35	0.5	Pass
6	2437	16.32	0.5	Pass
11	2462	16.35	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 / 2.0



802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	17.31	0.5	Pass
6	2437	17.58	0.5	Pass
11	2462	17.55	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	35.1	0.5	Pass
6	2437	35.16	0.5	Pass
9	2452	35.16	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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 20 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

Spectrum Plot of Worst Value

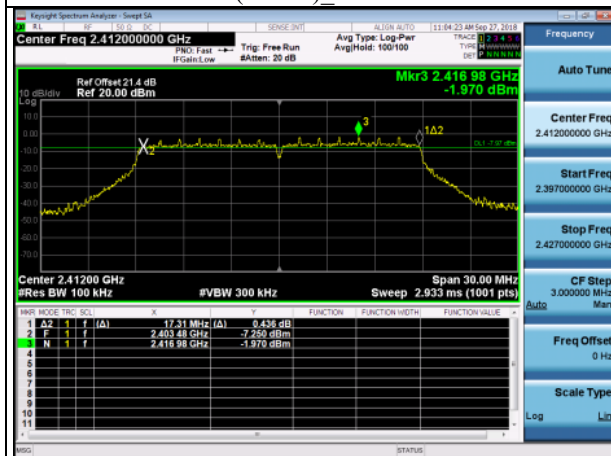
802.11b_Chain 0 / CH1



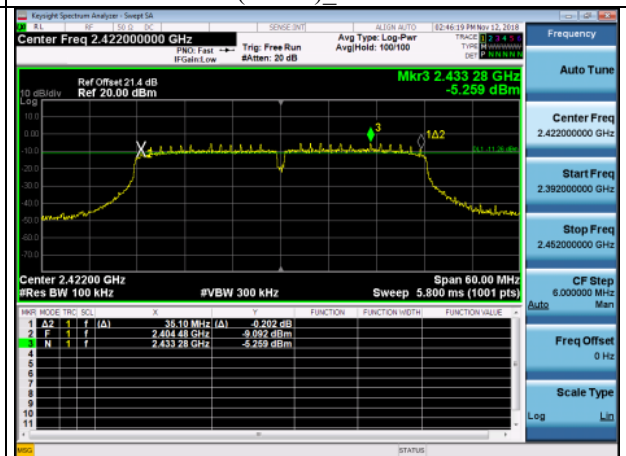
802.11g_Chain 0 / CH6



802.11n (HT-20)_Chain 0 / CH1



802.11n (HT-40)_Chain 0 / CH3



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 / 2.0



9.2. Conducted output power

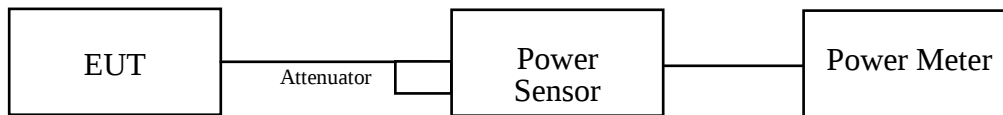
Requirements

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.

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 / 2.0



Test Data

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	80.35	19.05	30	Pass
6	2437	84.33	19.26	30	Pass
11	2462	79.98	19.03	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	55.34	17.43	30	Pass
6	2437	58.21	17.65	30	Pass
11	2462	56.36	17.51	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 / 2.0



802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	54.95	17.40	30	Pass
6	2437	57.68	17.61	30	Pass
11	2462	55.85	17.47	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	54.45	17.36	30	Pass
6	2437	56.89	17.55	30	Pass
9	2452	55.08	17.41	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 / 2.0



9.3. Power Spectral Density

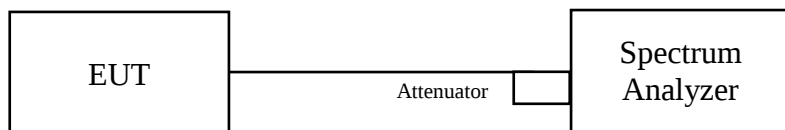
Requirements

The Maximum of Power Spectral Density Measurement is 8dBm in any 3 kHz.

Test procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- 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.

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 / 2.0



Test Data

802.11b

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-5.732	8	Pass
6	2437	-4.939	8	Pass
11	2462	-6.297	8	Pass

802.11g

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-16.373	8	Pass
6	2437	-15.360	8	Pass
11	2462	-15.520	8	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 / 2.0



802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-16.320	8	Pass
6	2437	-15.519	8	Pass
11	2462	-15.790	8	Pass

802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
3	2422	-19.734	8	Pass
6	2437	-19.582	8	Pass
9	2452	-19.686	8	Pass

Underwriters Laboratories Taiwan Co., Ltd.

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

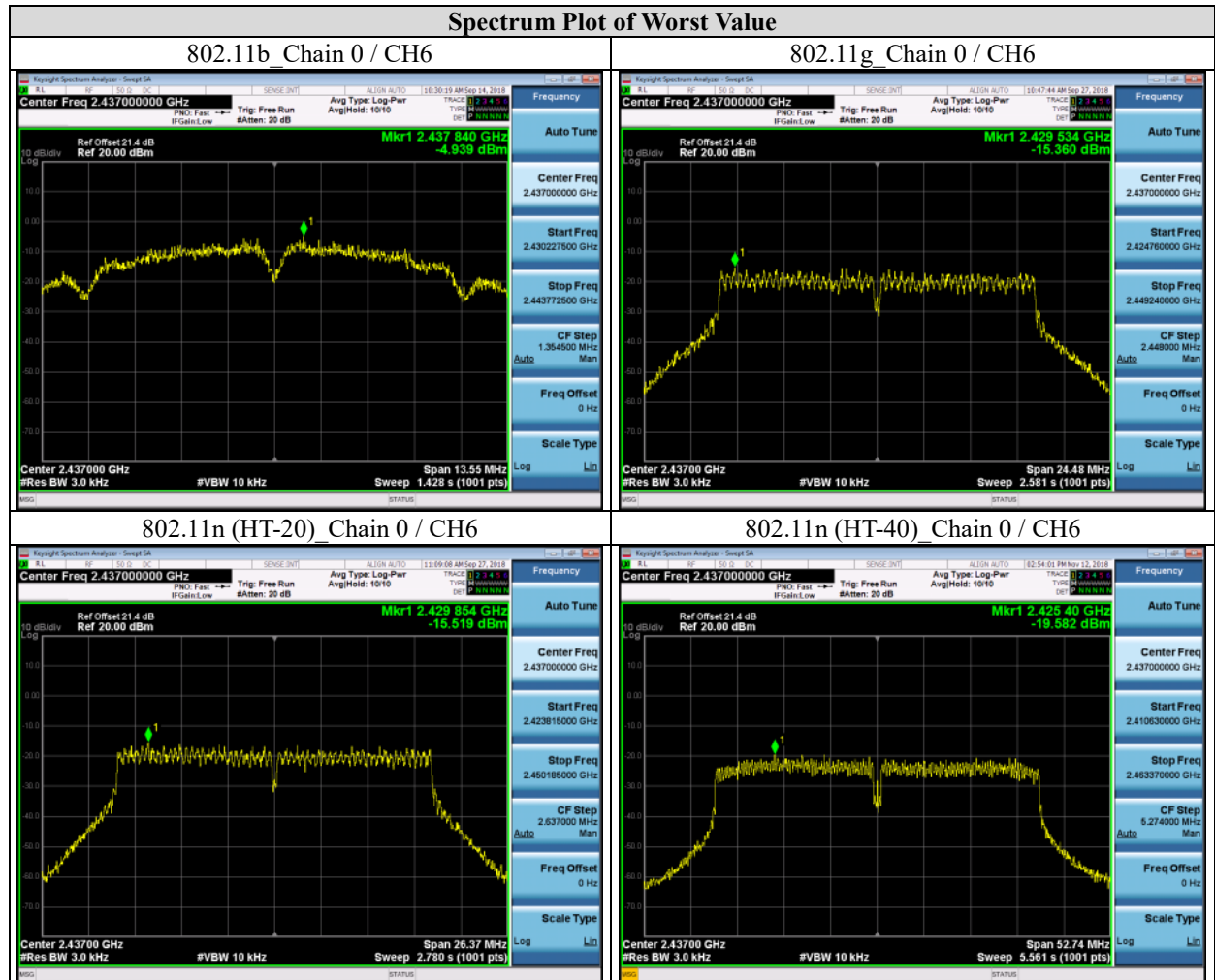
Telephone :+886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 27 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01



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 / 2.0



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

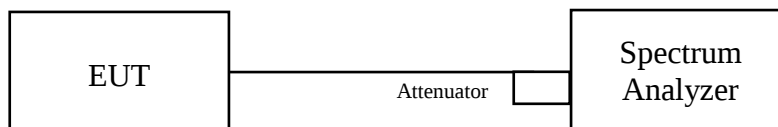
Measurement Procedure REF

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

Doc No: 17-EM-F0876 / 2.0



Test Data

802.11b



Underwriters Laboratories Taiwan Co., Ltd.

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

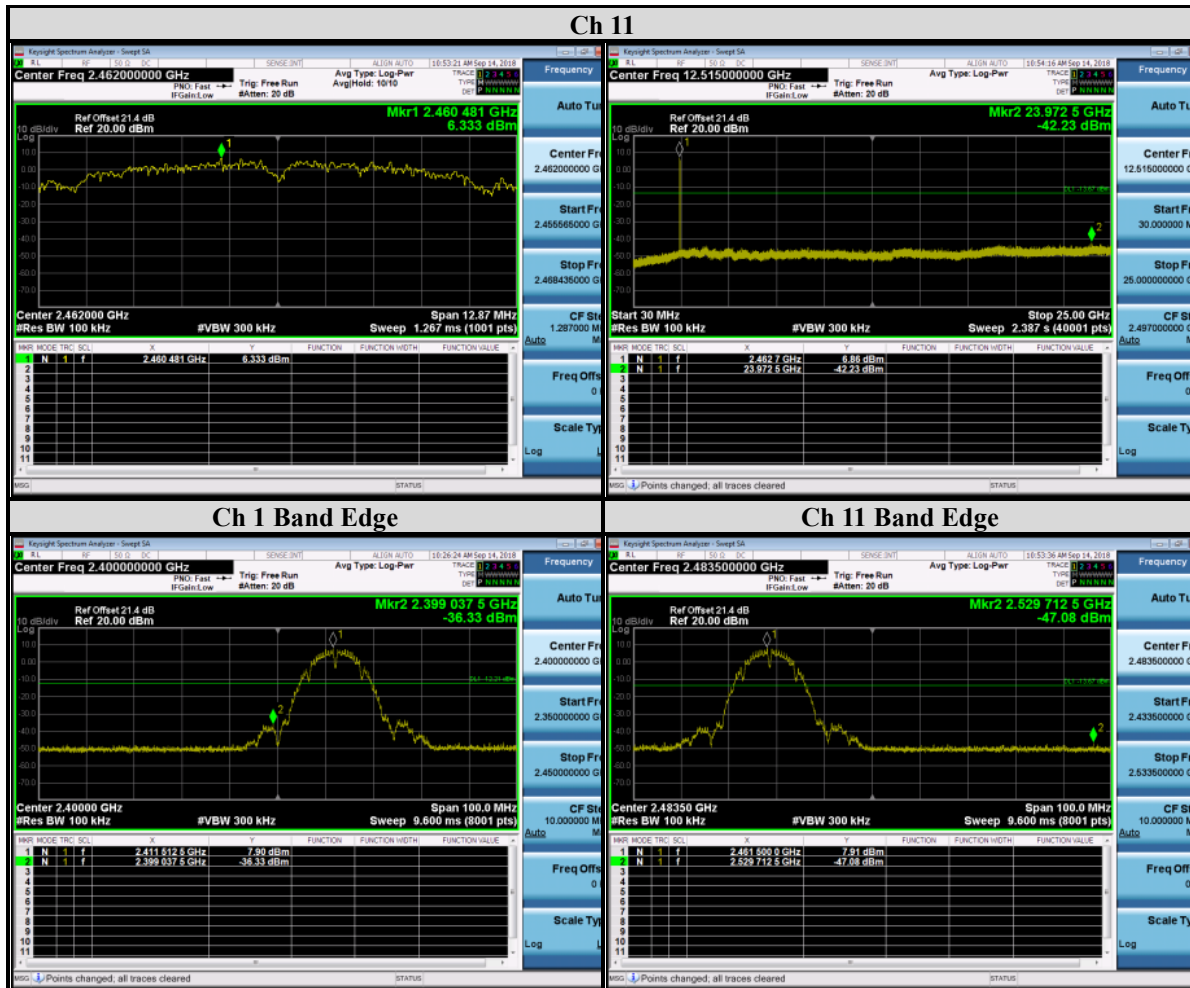
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 30 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01



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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 31 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

802.11g



Underwriters Laboratories Taiwan Co., Ltd.

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

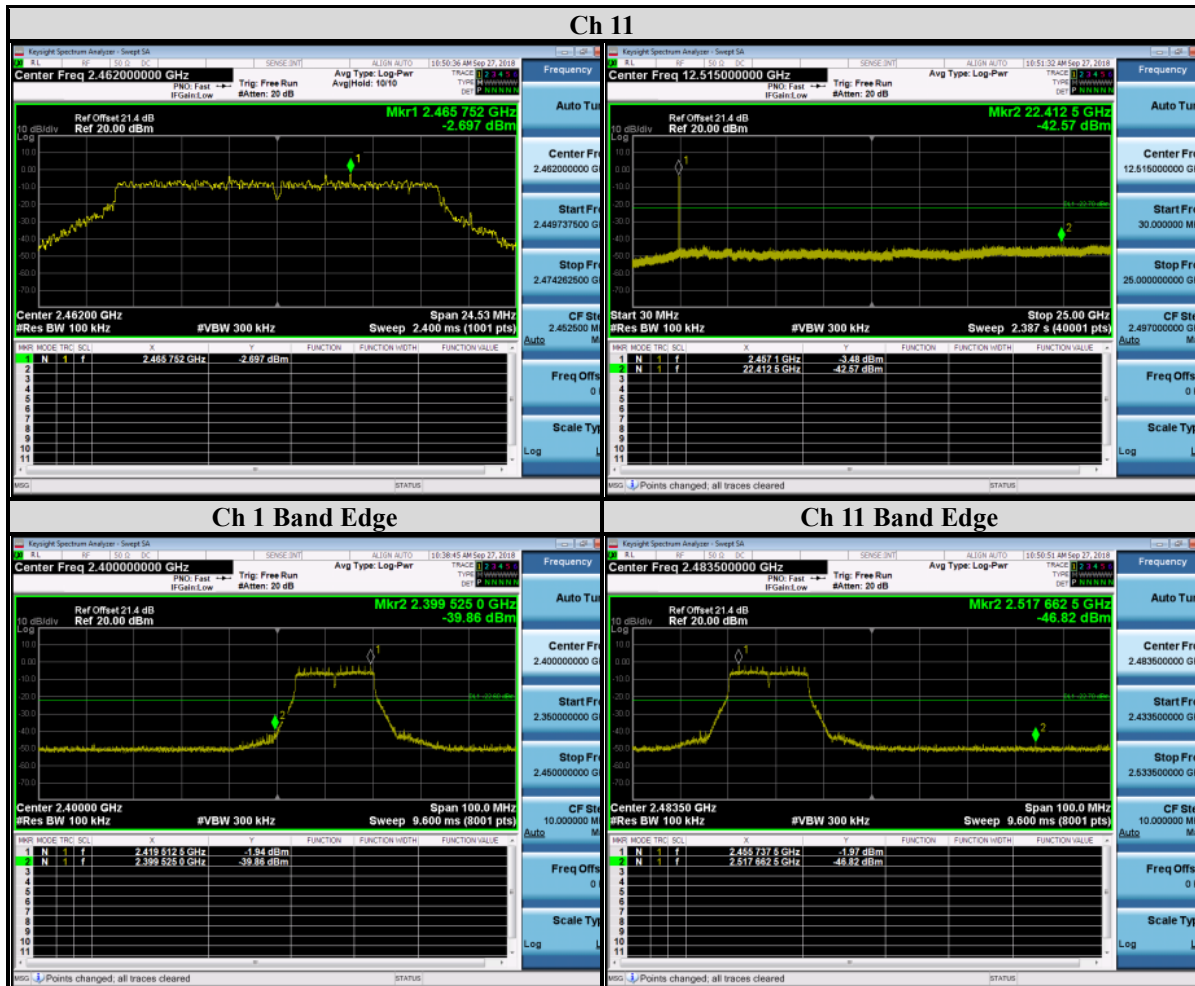
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 32 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01



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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 33 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

802.11n (HT20)



Underwriters Laboratories Taiwan Co., Ltd.

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

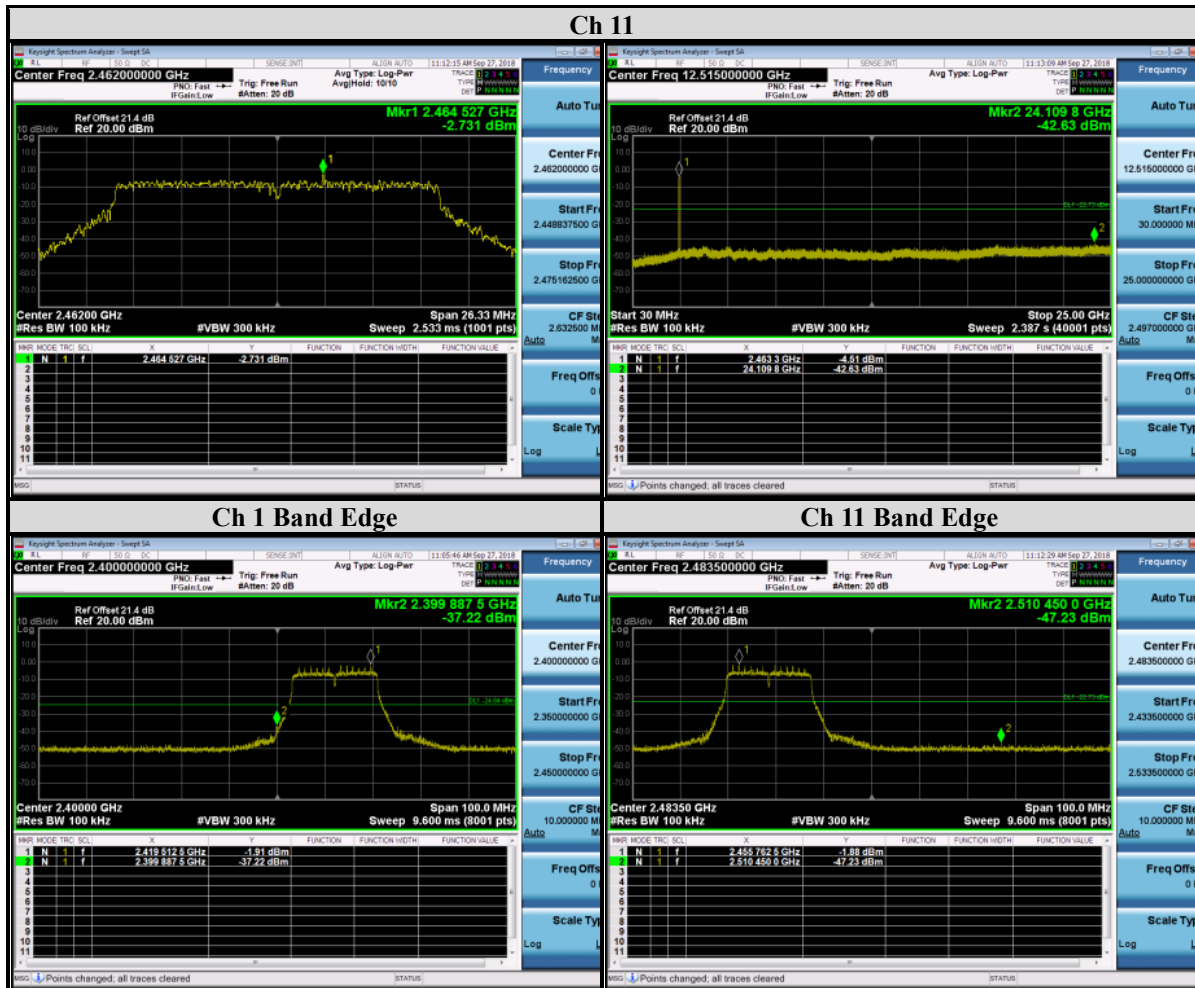
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 34 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01



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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 35 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

802.11n (HT40)



Underwriters Laboratories Taiwan Co., Ltd.

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

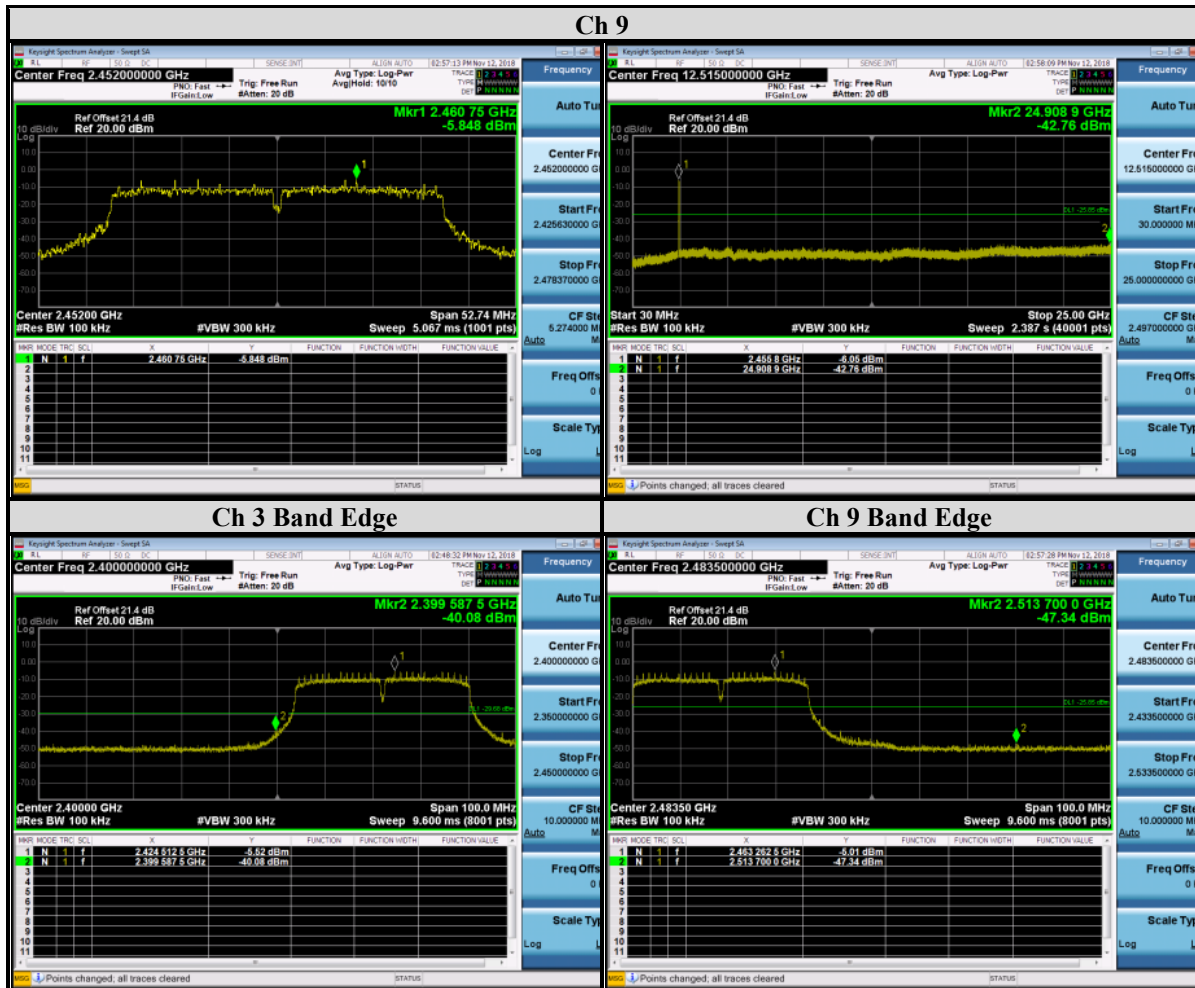
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 36 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01



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 / 2.0



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 / 2.0



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 / 2.0



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	1 kHz
802.11g		1 kHz
802.11n (HT20)		1 kHz
802.11n (HT40)		2 kHz

Note: Refer to section 6.6 for duty cycle.

- d. All modes of operation were investigated and the worst-case emissions are reported.

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

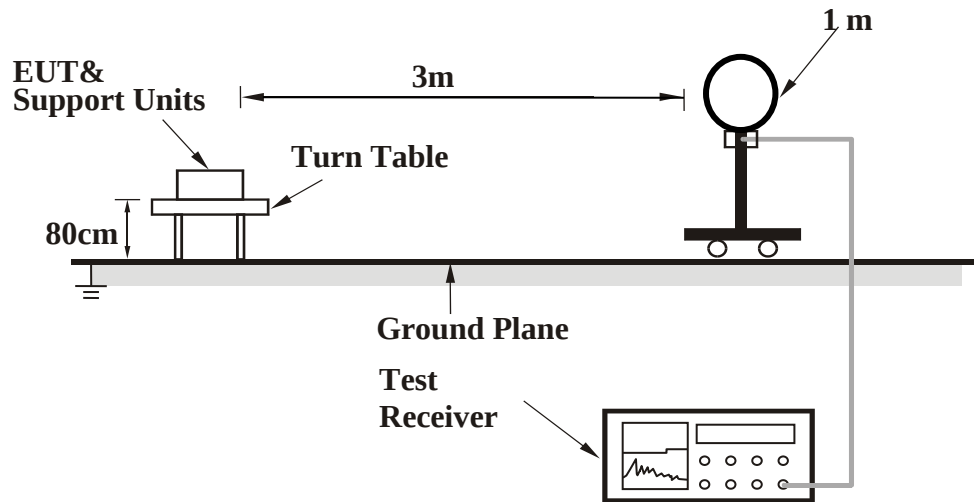
Facsimile (FAX) :+886-3-583-7948

Doc No: 17-EM-F0876 / 2.0

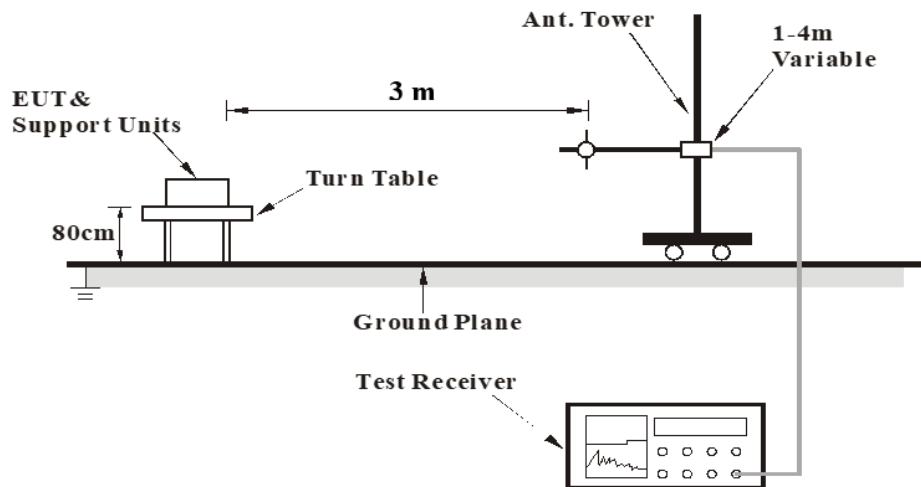


Test Setup

<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

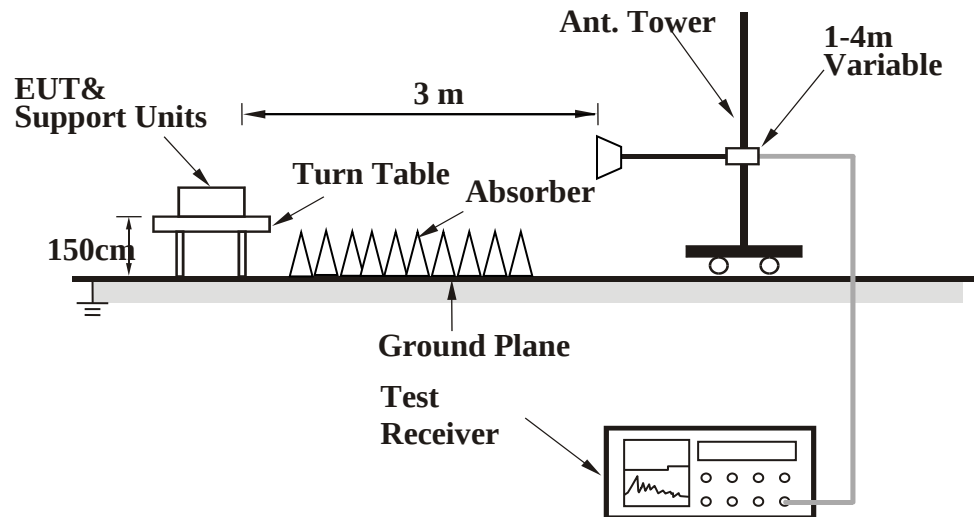
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



<Frequency Range above 1 GHz>



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



Test Data

Above 1GHz Data

802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2386.947	68.47	-8.47	60.00	74.00	-14.00	peak
@	2410.760	110.07	-8.49	101.58	-	-	peak
-	2387.280	60.29	-8.47	51.82	54.00	-2.18	AVG
@	2411.260	106.74	-8.49	98.25	-	-	AVG
*	4824.000	44.92	-4.36	40.56	74.00	-33.44	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2385.947	49.77	-8.47	41.30	74.00	-32.70	peak
@	2410.827	103.20	-8.49	94.71	-	-	peak
-	2387.547	36.81	-8.46	28.35	54.00	-25.65	AVG
@	2411.293	100.25	-8.49	91.76	-	-	AVG
*	4824.000	42.30	-4.36	37.94	74.00	-36.06	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. " * ": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 43 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	52.71	-8.47	44.24	74.00	-29.76	peak
@	2435.633	110.56	-8.50	102.06	-	-	peak
-	2483.500	51.94	-8.55	43.39	74.00	-30.61	peak
-	2390.000	46.00	-8.47	37.53	54.00	-16.47	AVG
@	2436.273	107.33	-8.50	98.83	-	-	AVG
-	2483.500	43.57	-8.55	35.02	54.00	-18.98	AVG
*	4874.000	44.74	-4.24	40.50	74.00	-33.50	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	48.11	-8.47	39.64	74.00	-34.36	peak
@	2435.740	102.73	-8.50	94.23	-	-	peak
-	2483.500	49.10	-8.55	40.55	74.00	-33.45	peak
-	2390.000	35.69	-8.47	27.22	54.00	-26.78	AVG
@	2436.293	99.21	-8.50	90.71	-	-	AVG
-	2483.500	36.12	-8.55	27.57	54.00	-26.43	AVG
*	4874.000	45.30	-4.24	41.06	74.00	-32.94	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "*": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 44 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2463.127	109.77	-8.52	101.25	-	-	peak
-	2483.500	62.08	-8.55	53.53	74.00	-20.47	peak
@	2462.767	106.50	-8.52	97.98	-	-	AVG
-	2483.500	57.14	-8.55	48.59	54.00	-5.41	AVG
*	4924.000	43.82	-4.13	39.69	74.00	-34.31	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2463.167	101.35	-8.52	92.83	-	-	peak
-	2483.500	49.80	-8.55	41.25	74.00	-32.75	peak
@	2462.807	97.38	-8.52	88.86	-	-	AVG
-	2483.500	40.27	-8.55	31.72	54.00	-22.28	AVG
*	4924.000	44.86	-4.13	40.73	74.00	-33.27	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. " * ": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	77.89	-8.47	69.42	74.00	-4.58	peak
@	2418.280	108.74	-8.49	100.25	-	-	peak
-	2390.000	56.61	-8.47	48.14	54.00	-5.86	AVG
@	2405.387	98.64	-8.47	90.17	-	-	AVG
*	4824.000	42.32	-4.36	37.96	74.00	-36.04	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	51.42	-8.47	42.95	74.00	-31.05	peak
@	2406.460	99.87	-8.47	91.40	-	-	peak
-	2390.000	36.79	-8.47	28.32	54.00	-25.68	AVG
@	2406.387	89.50	-8.47	81.03	-	-	AVG
*	4824.000	40.67	-4.36	36.31	74.00	-37.69	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "*": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 46 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	50.89	-8.47	42.42	74.00	-31.58	peak
@	2433.600	110.29	-8.50	101.79	-	-	peak
-	2483.500	50.79	-8.55	42.24	74.00	-31.76	peak
-	2390.000	36.71	-8.47	28.24	54.00	-25.76	AVG
@	2431.100	99.98	-8.49	91.49	-	-	AVG
-	2483.500	38.19	-8.55	29.64	54.00	-24.36	AVG
*	4874.000	41.78	-4.24	37.54	74.00	-36.46	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	49.27	-8.47	40.80	74.00	-33.20	peak
@	2430.233	98.06	-8.50	89.56	-	-	peak
-	2483.500	49.00	-8.55	40.45	74.00	-33.55	peak
-	2390.000	35.41	-8.47	26.94	54.00	-27.06	AVG
@	2430.567	88.00	-8.49	79.51	-	-	AVG
-	2483.500	35.82	-8.55	27.27	54.00	-26.73	AVG
*	4874.000	41.87	-4.24	37.63	74.00	-36.37	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. " * ": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 47 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2464.507	108.64	-8.52	100.12	-	-	peak
-	2483.500	76.34	-8.55	67.79	74.00	-6.21	peak
@	2463.860	98.53	-8.52	90.01	-	-	AVG
-	2483.500	55.27	-8.55	46.72	54.00	-7.28	AVG
*	4924.000	41.30	-4.13	37.17	74.00	-36.83	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2466.433	96.11	-8.52	87.59	-	-	peak
-	2483.500	54.89	-8.55	46.34	74.00	-27.66	peak
@	2464.793	86.01	-8.52	77.49	-	-	AVG
-	2483.500	38.07	-8.55	29.52	54.00	-24.48	AVG
*	4924.000	42.36	-4.13	38.23	74.00	-35.77	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. " * ": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



802.11n (HT-20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	80.03	-8.47	71.56	74.00	-2.44	peak
@	2408.120	108.51	-8.48	100.03	-	-	peak
-	2390.000	60.51	-8.47	52.04	54.00	-1.96	AVG
@	2404.873	98.79	-8.48	90.31	-	-	AVG
*	4824.000	42.33	-4.36	37.97	74.00	-36.03	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	52.28	-8.47	43.81	74.00	-30.19	peak
@	2413.060	98.60	-8.48	90.12	-	-	peak
@	2407.013	89.88	-8.48	81.40	-	-	AVG
-	2390.000	39.50	-8.47	31.03	54.00	-22.97	AVG
*	4824.000	41.64	-4.36	37.28	74.00	-36.72	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "*": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 49 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	51.20	-8.47	42.73	74.00	-31.27	peak
@	2431.233	109.01	-8.49	100.52	-	-	peak
-	2483.500	49.67	-8.55	41.12	74.00	-32.88	peak
-	2390.000	38.43	-8.47	29.96	54.00	-24.04	AVG
@	2429.340	100.26	-8.50	91.76	-	-	AVG
-	2483.500	39.48	-8.55	30.93	54.00	-23.07	AVG
*	4874.000	42.02	-4.24	37.78	74.00	-36.22	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	48.76	-8.47	40.29	74.00	-33.71	peak
@	2430.033	101.28	-8.50	92.78	-	-	peak
-	2483.500	48.37	-8.55	39.82	74.00	-34.18	peak
-	2390.000	37.46	-8.47	28.99	54.00	-25.01	AVG
@	2430.660	91.89	-8.49	83.40	-	-	AVG
-	2483.500	37.92	-8.55	29.37	54.00	-24.63	AVG
*	4874.000	41.46	-4.24	37.22	74.00	-36.78	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "*": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 50 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2465.780	108.59	-8.53	100.06	-	-	peak
-	2483.500	81.48	-8.55	72.93	74.00	-1.07	peak
@	2464.447	99.05	-8.52	90.53	-	-	AVG
-	2483.500	60.63	-8.55	52.08	54.00	-1.92	AVG
*	4924.000	41.04	-4.13	36.91	74.00	-37.09	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2466.060	97.77	-8.53	89.24	-	-	peak
-	2483.500	71.16	-8.55	62.61	74.00	-11.39	peak
@	2466.033	89.13	-8.53	80.60	-	-	AVG
-	2483.500	52.45	-8.55	43.90	54.00	-10.10	AVG
*	4924.000	41.62	-4.13	37.49	74.00	-36.51	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. " * ": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 51 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

802.11n (HT-40)

EUT Test Condition		Measurement Detail	
Channel	Channel 3	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2385.267	79.81	-8.46	71.35	74.00	-2.65	peak
@	2427.487	108.24	-8.49	99.75	-	-	peak
-	2390.000	60.14	-8.47	51.67	54.00	-2.33	AVG
@	2428.900	96.52	-8.50	88.02	-	-	AVG
*	4844.000	42.84	-4.30	38.54	74.00	-35.46	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	56.77	-8.47	48.30	74.00	-25.70	peak
@	2427.920	99.59	-8.49	91.10	-	-	peak
-	2390.000	40.54	-8.47	32.07	54.00	-21.93	AVG
@	2427.387	88.93	-8.49	80.44	-	-	AVG
*	4844.000	40.98	-4.30	36.68	74.00	-37.32	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "*": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 52 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2378.140	70.59	-8.46	62.13	74.00	-11.87	peak
@	2431.360	107.90	-8.49	99.41	-	-	peak
-	2485.467	80.29	-8.54	71.75	74.00	-2.25	peak
-	2390.000	50.12	-8.47	41.65	54.00	-12.35	AVG
@	2429.467	97.92	-8.50	89.42	-	-	AVG
-	2483.500	61.78	-8.55	53.23	54.00	-0.77	AVG
*	4874.000	40.96	-4.24	36.72	74.00	-37.28	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2390.000	50.30	-8.47	41.83	74.00	-32.17	peak
@	2429.873	100.39	-8.50	91.89	-	-	peak
-	2484.867	68.94	-8.54	60.40	74.00	-13.60	peak
-	2390.000	38.03	-8.47	29.56	54.00	-24.44	AVG
@	2429.567	91.32	-8.50	82.82	-	-	AVG
-	2483.500	50.30	-8.55	41.75	54.00	-12.25	AVG
*	4874.000	41.48	-4.24	37.24	74.00	-36.76	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "*": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 53 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

EUT Test Condition		Measurement Detail	
Channel	Channel 9	Frequency Range	1 GHz ~ 26 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2464.287	105.58	-8.52	97.06	-	-	peak
-	2483.500	78.88	-8.55	70.33	74.00	-3.67	peak
@	2461.453	94.48	-8.52	85.96	-	-	AVG
-	2483.500	62.10	-8.55	53.55	54.00	-0.45	AVG
*	4904.000	40.90	-4.16	36.74	74.00	-37.26	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2462.320	97.56	-8.53	89.03	-	-	peak
-	2483.500	62.92	-8.55	54.37	74.00	-19.63	peak
@	2461.287	85.39	-8.52	76.87	-	-	AVG
-	2483.500	46.69	-8.55	38.14	54.00	-15.86	AVG
*	4904.000	40.84	-4.16	36.68	74.00	-37.32	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. " * ": The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



9 kHz ~ 30 MHz Data:

For 9 kHz to 30 MHz radiated emission have performed all modes of operation were investigated. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

No non-compliance noted:

KDB 414788 D01 OATS and Chamber Correlation Justification

- Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

- OATs and chamber correlation testing had been performed and chamber measured test results is the worst case test result.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

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 / 2.0

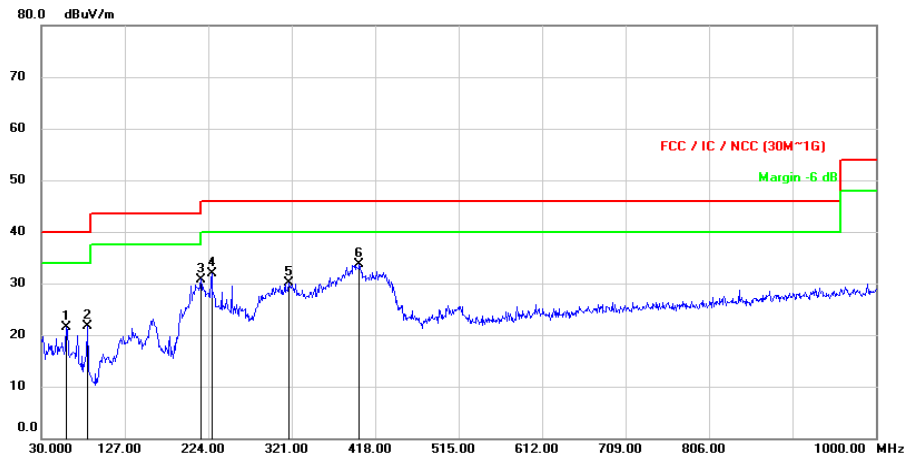


30 MHz ~ 1 GHz Data

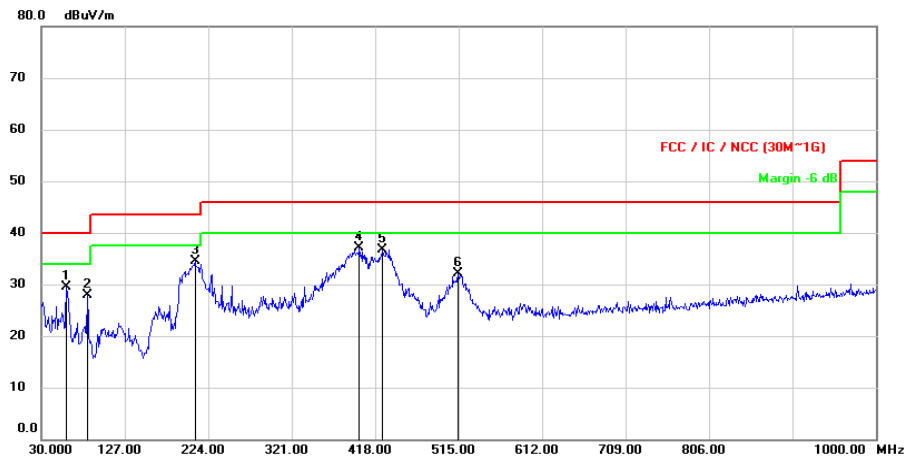
802.11n (HT-40)

EUT Test Condition		Measurement Detail	
Channel	Channel 9	Frequency Range	30 MHz ~ 1 GHz

Horizontal



Vertical



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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 56 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	60.0377	37.32	-15.88	21.44	40.00	-18.56	peak
-	84.0613	42.38	-20.61	21.77	40.00	-18.23	peak
-	215.8520	48.74	-17.94	30.80	43.50	-12.70	peak
-	227.9123	49.24	-17.41	31.83	46.00	-14.17	peak
-	318.4780	44.12	-14.07	30.05	46.00	-15.95	peak
-	400.0550	45.56	-11.91	33.65	46.00	-12.35	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	60.0377	45.38	-15.88	29.50	40.00	-10.50	peak
-	84.0613	48.57	-20.61	27.96	40.00	-12.04	peak
-	208.8033	52.48	-17.97	34.51	43.50	-8.99	peak
-	400.4430	49.03	-11.90	37.13	46.00	-8.87	peak
-	427.5060	47.93	-11.20	36.73	46.00	-9.27	peak
-	514.5473	41.56	-9.55	32.01	46.00	-13.99	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The other emission levels were very low against the 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

Doc No: 17-EM-F0876 / 2.0



9.6. AC Power Line Conducted Emission

Requirements

Frequency (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

Test Procedures

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

Underwriters Laboratories Taiwan Co., Ltd.

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

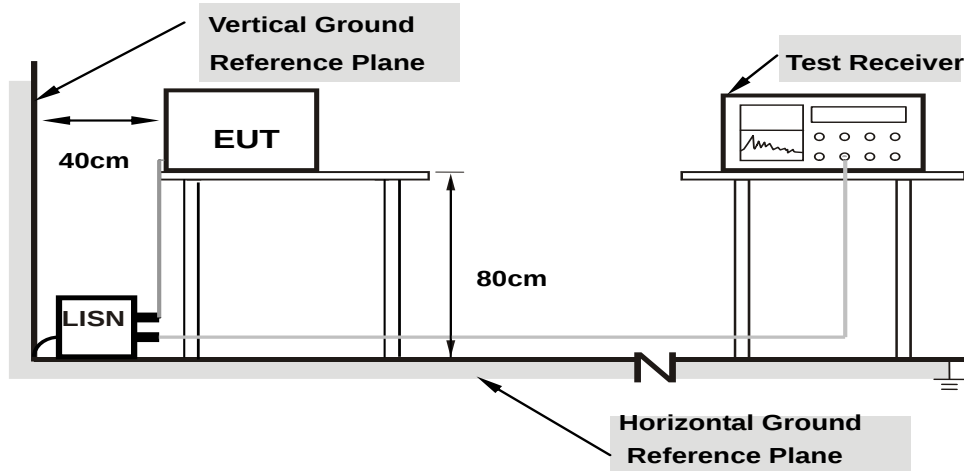
Telephone :+886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Test Setup



Note: 1.Support units were connected to second LISN.

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

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 / 2.0

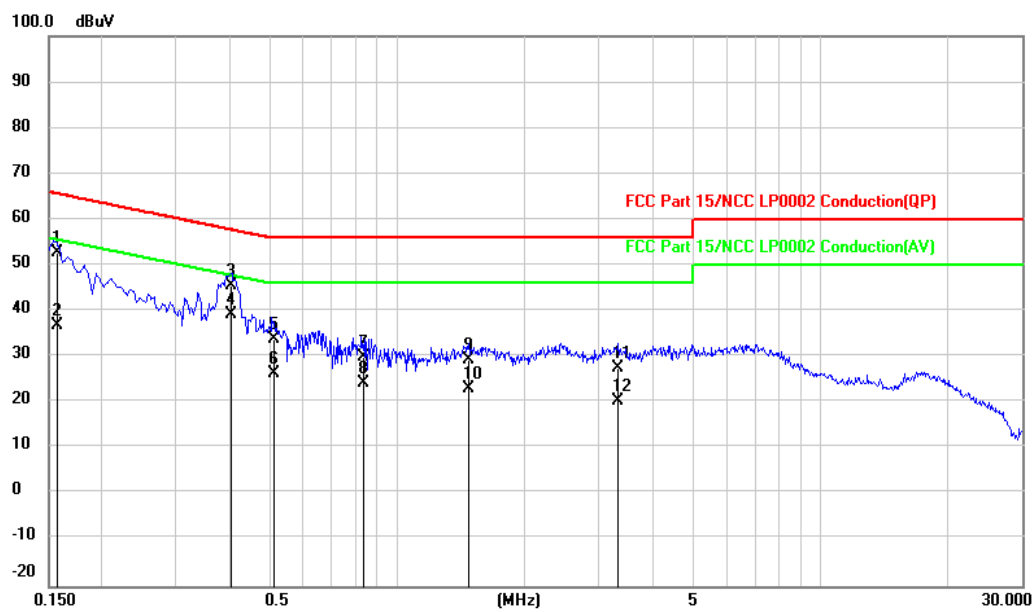


Test Data

802.11n (HT-40)

EUT Test Condition		Measurement Detail	
Channel	Channel 9	Frequency Range	150 kHz ~ 30 MHz

Phase of Power : Line (L)



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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 60 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.1566	33.27	19.55	52.82	65.64	-12.82	QP
2	0.1566	17.23	19.55	36.78	55.64	-18.86	AVG
3	0.4058	25.89	19.53	45.42	57.73	-12.31	QP
4	0.4058	19.61	19.53	39.14	47.73	-8.59	AVG
5	0.5110	14.30	19.53	33.83	56.00	-22.17	QP
6	0.5110	6.95	19.53	26.48	46.00	-19.52	AVG
7	0.8364	10.47	19.54	30.01	56.00	-25.99	QP
8	0.8364	4.86	19.54	24.40	46.00	-21.60	AVG
9	1.4752	9.80	19.55	29.35	56.00	-26.65	QP
10	1.4752	3.60	19.55	23.15	46.00	-22.85	AVG
11	3.3353	7.98	19.56	27.54	56.00	-28.46	QP
12	3.3353	0.92	19.56	20.48	46.00	-25.52	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

Underwriters Laboratories Taiwan Co., Ltd.

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

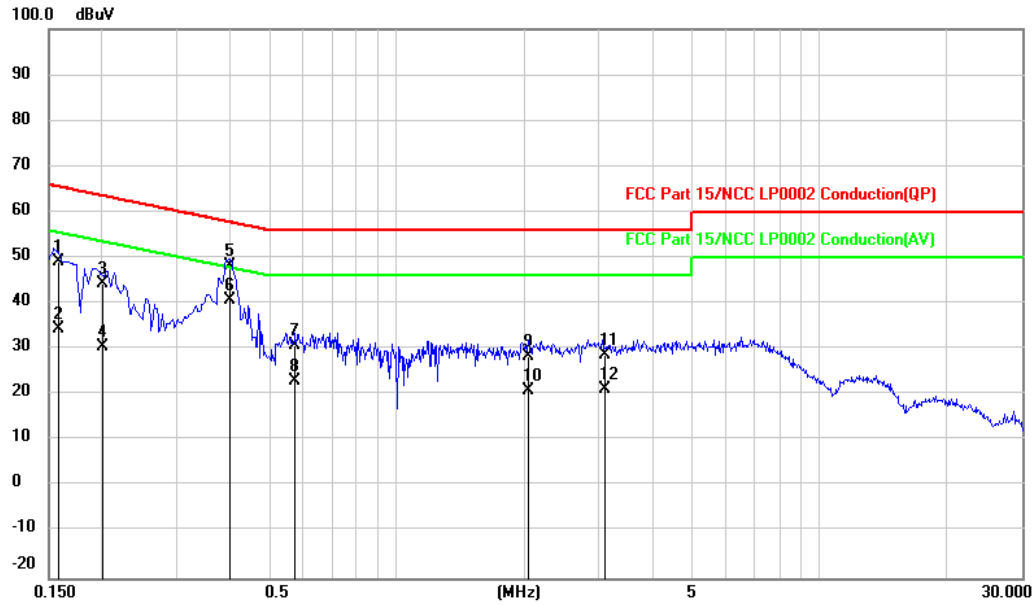
Telephone :+886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Phase of Power : Neutral (N)



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 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 62 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.1585	29.68	19.54	49.22	65.54	-16.32	QP
2	0.1585	14.89	19.54	34.43	55.54	-21.11	AVG
3	0.2012	24.76	19.54	44.30	63.56	-19.26	QP
4	0.2012	10.95	19.54	30.49	53.56	-23.07	AVG
5	0.4020	28.71	19.53	48.24	57.81	-9.57	QP
6	0.4020	21.10	19.53	40.63	47.81	-7.18	AVG
7	0.5747	11.40	19.53	30.93	56.00	-25.07	QP
8	0.5747	3.47	19.53	23.00	46.00	-23.00	AVG
9	2.0360	8.82	19.56	28.38	56.00	-27.62	QP
10	2.0360	1.39	19.56	20.95	46.00	-25.05	AVG
11	3.1074	9.19	19.56	28.75	56.00	-27.25	QP
12	3.1074	1.62	19.56	21.18	46.00	-24.82	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the 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

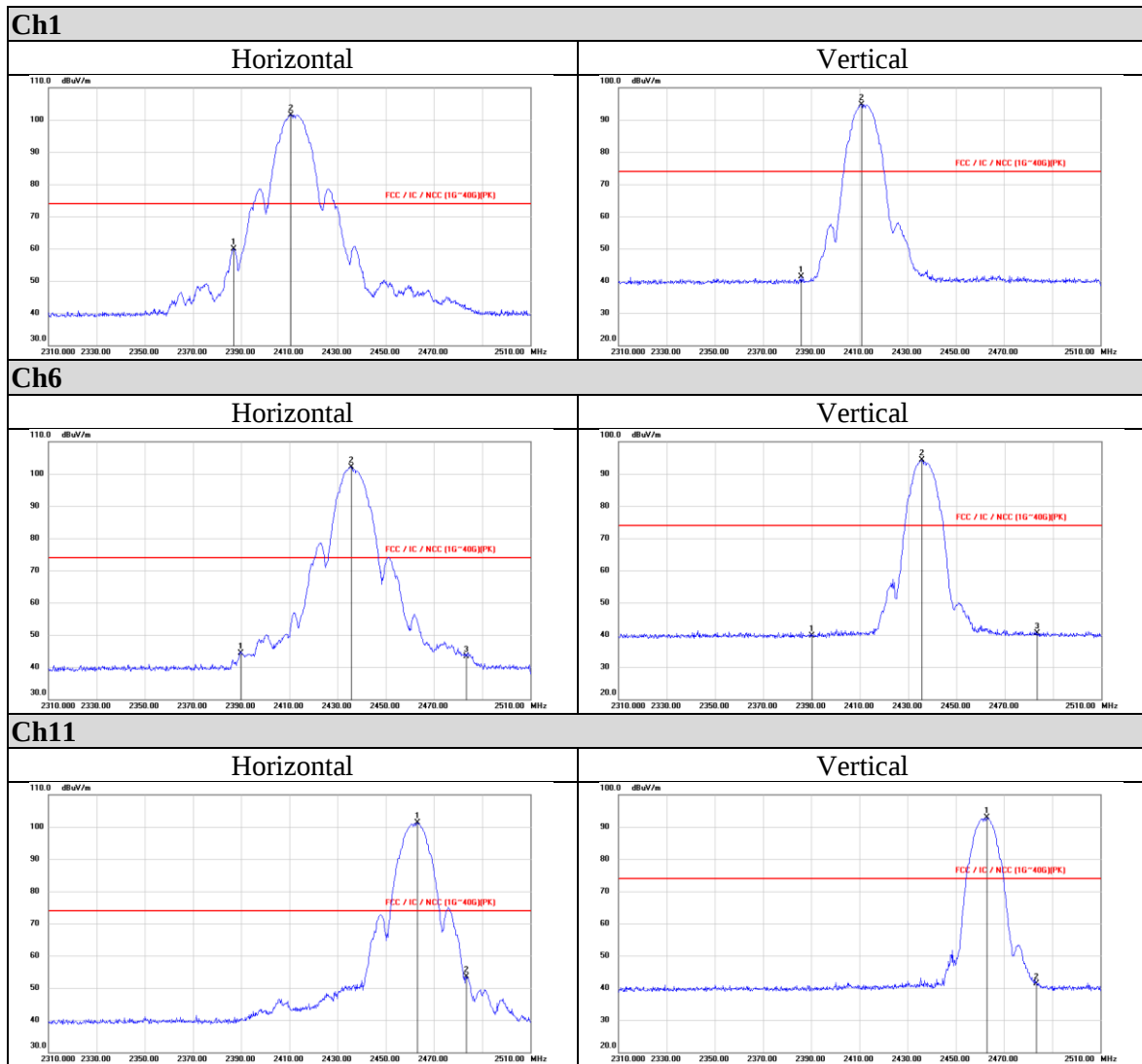
Doc No: 17-EM-F0876 / 2.0



Appendix I Radiated Band Edge Measurement

802.11b

Peak



Underwriters Laboratories Taiwan Co., Ltd.

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

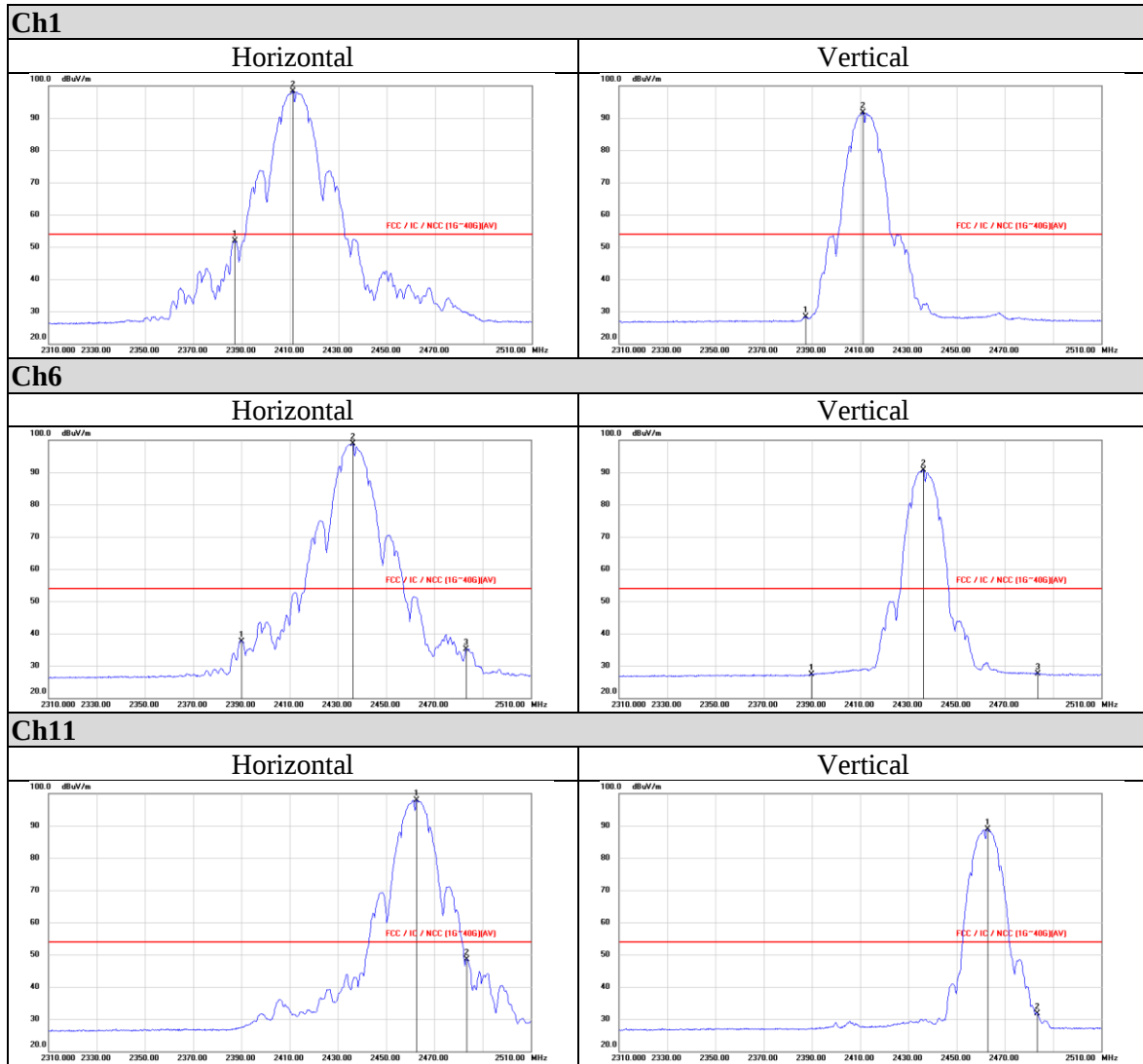
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Average



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

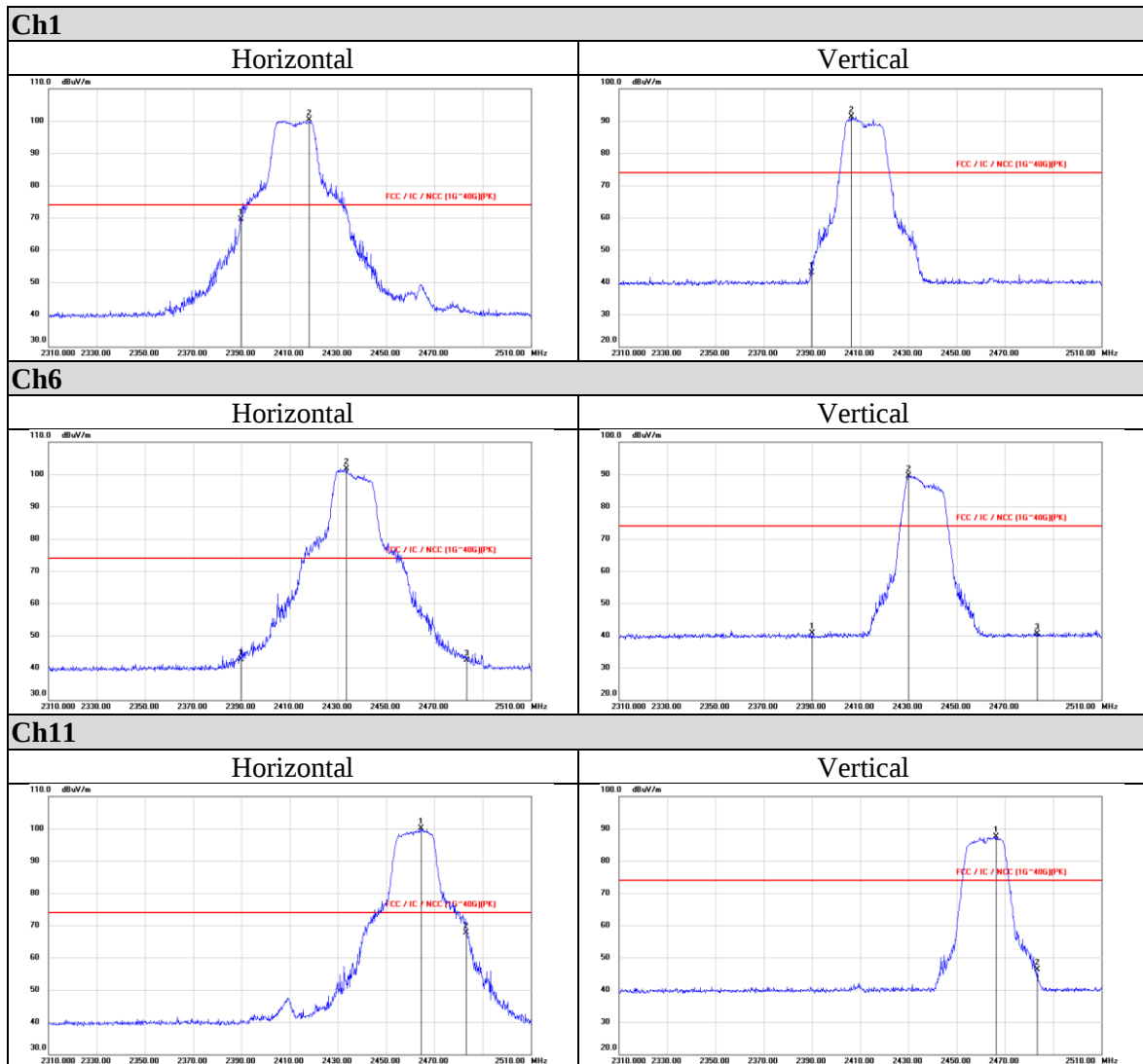
Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0876 / 2.0



802.11g

Peak



Underwriters Laboratories Taiwan Co., Ltd.

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

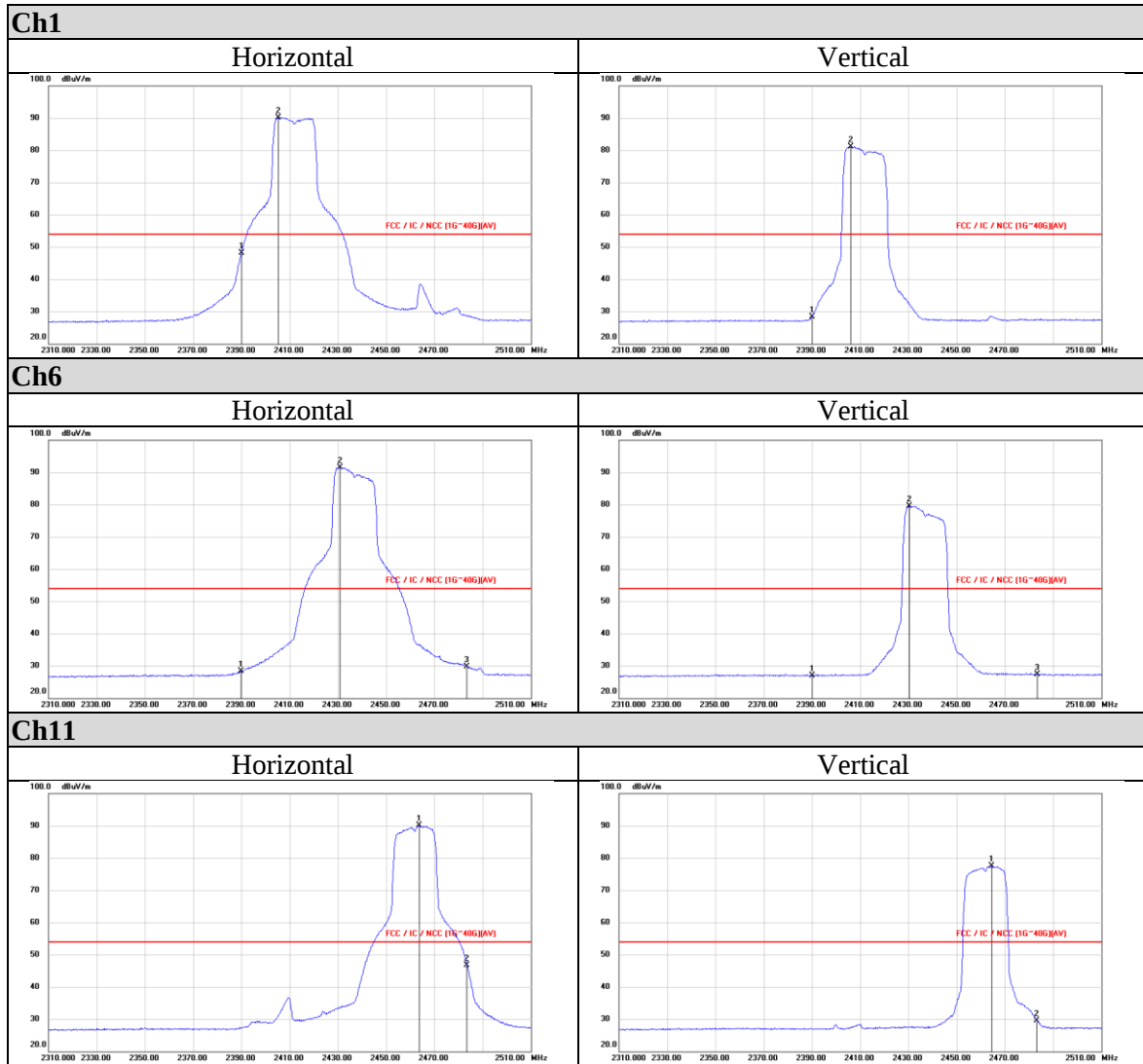
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Average



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

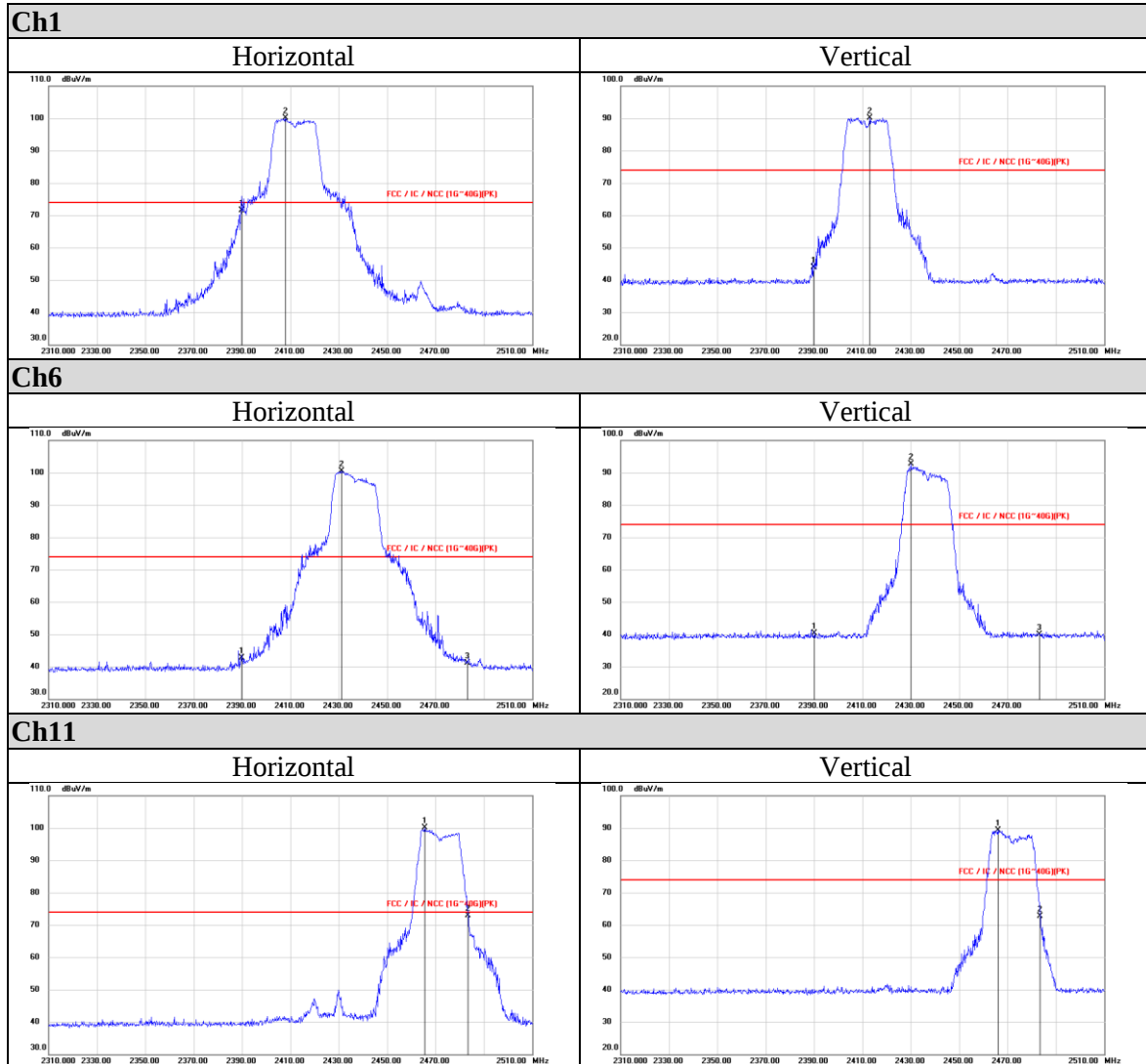
Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0876 / 2.0



802.11n (HT-20)

Peak



Underwriters Laboratories Taiwan Co., Ltd.

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

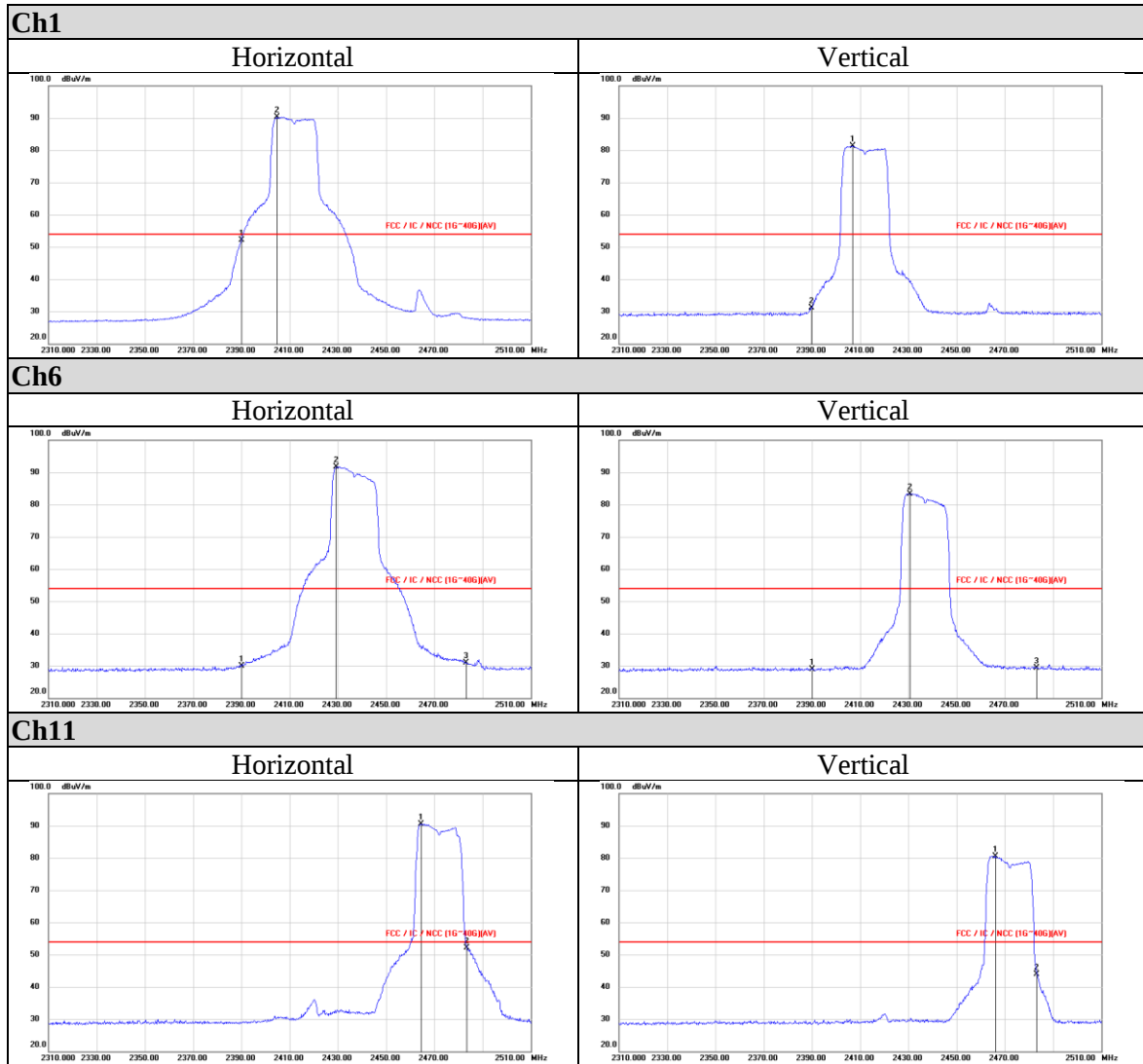
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Average



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

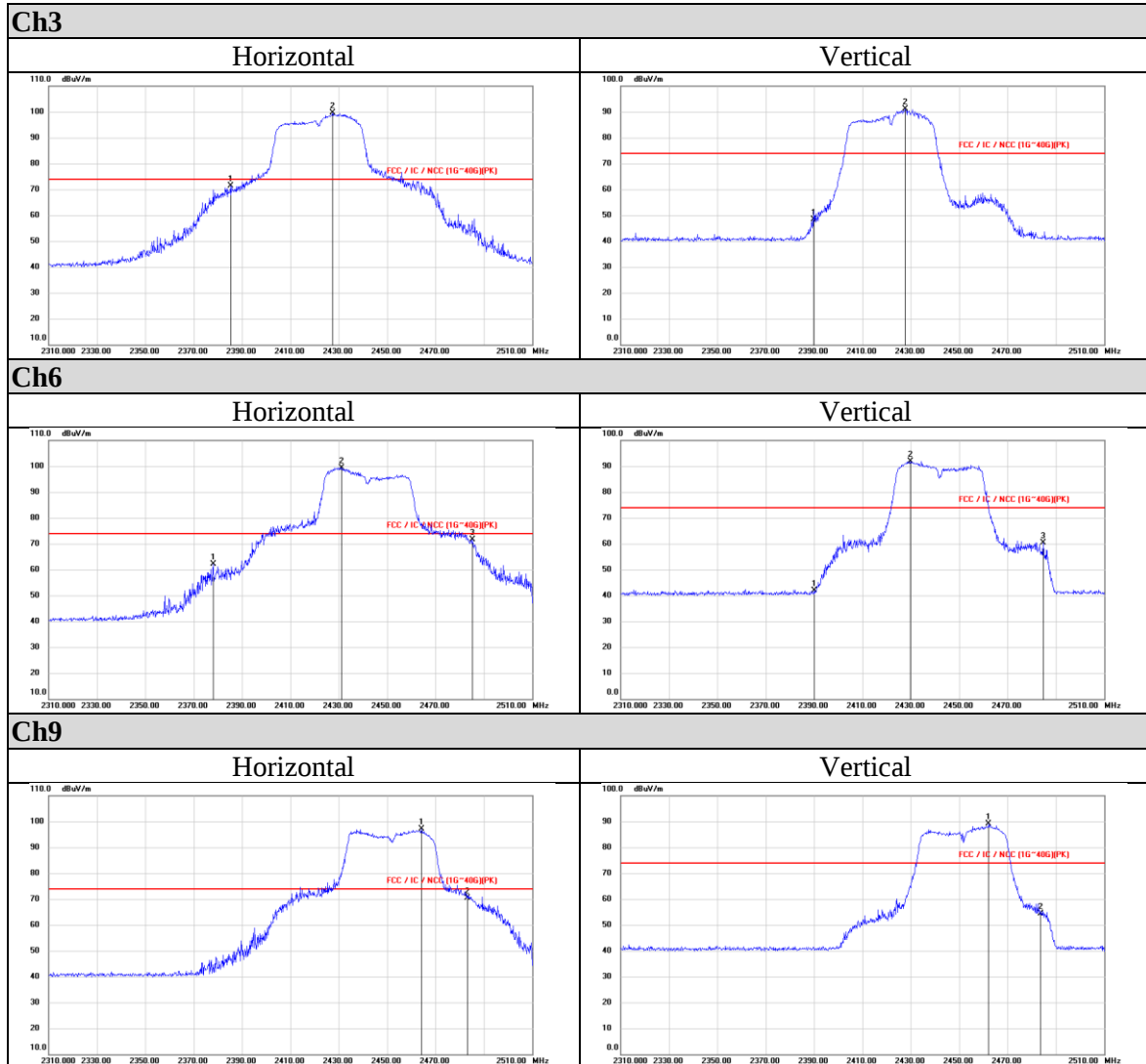
Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0876 / 2.0



802.11n (HT-40)

Peak



Underwriters Laboratories Taiwan Co., Ltd.

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

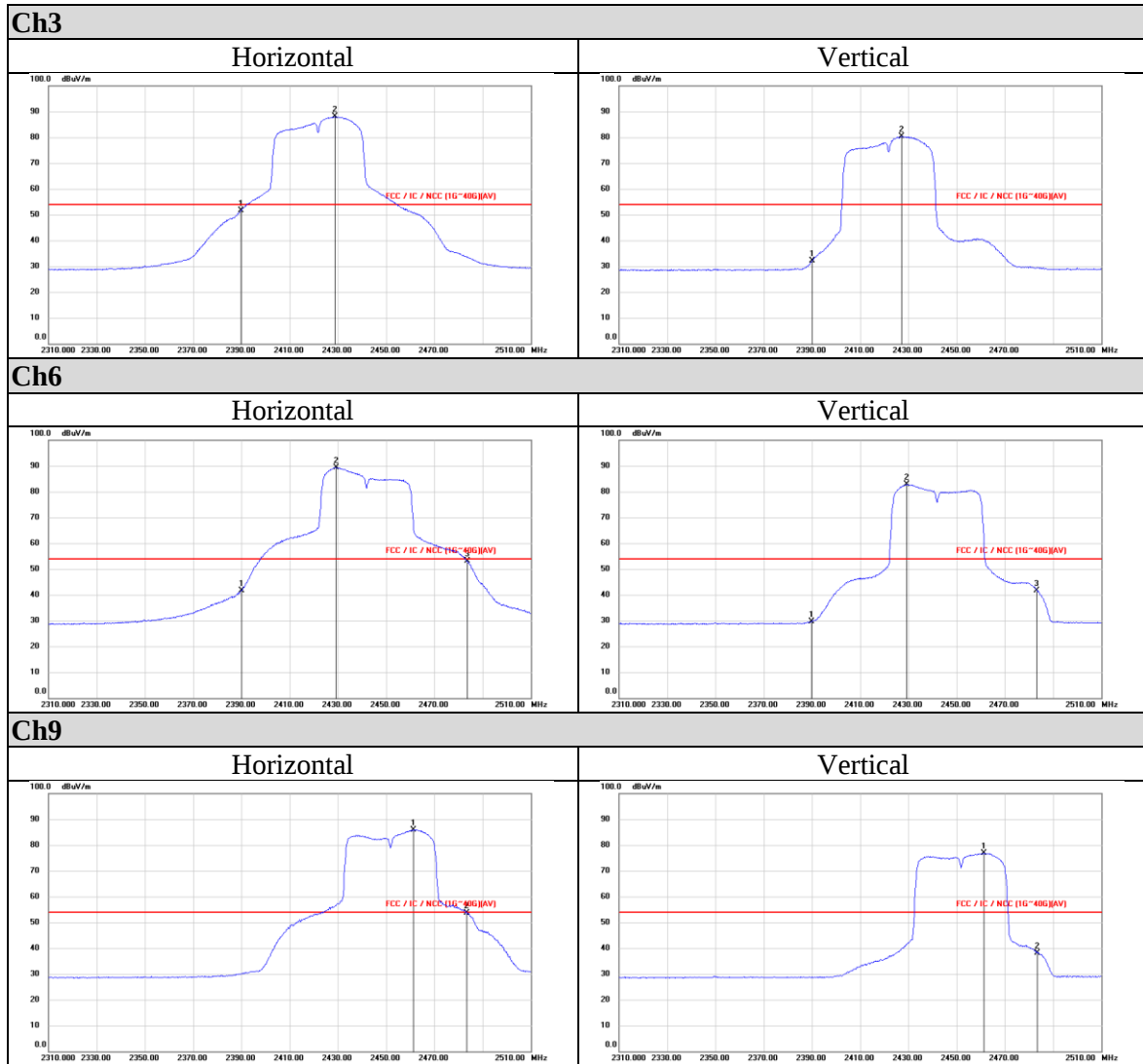
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



Average



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

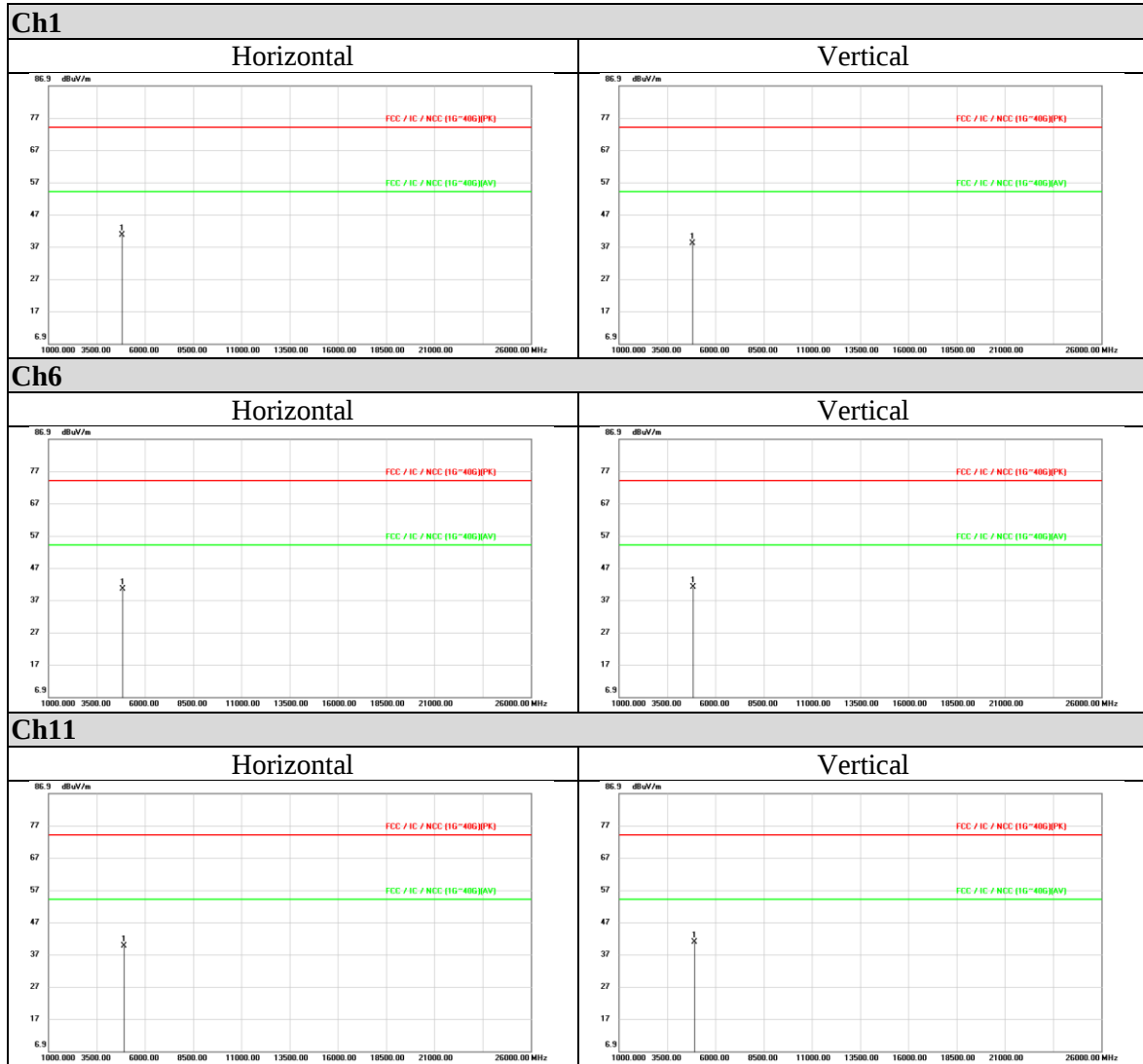
Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0876 / 2.0



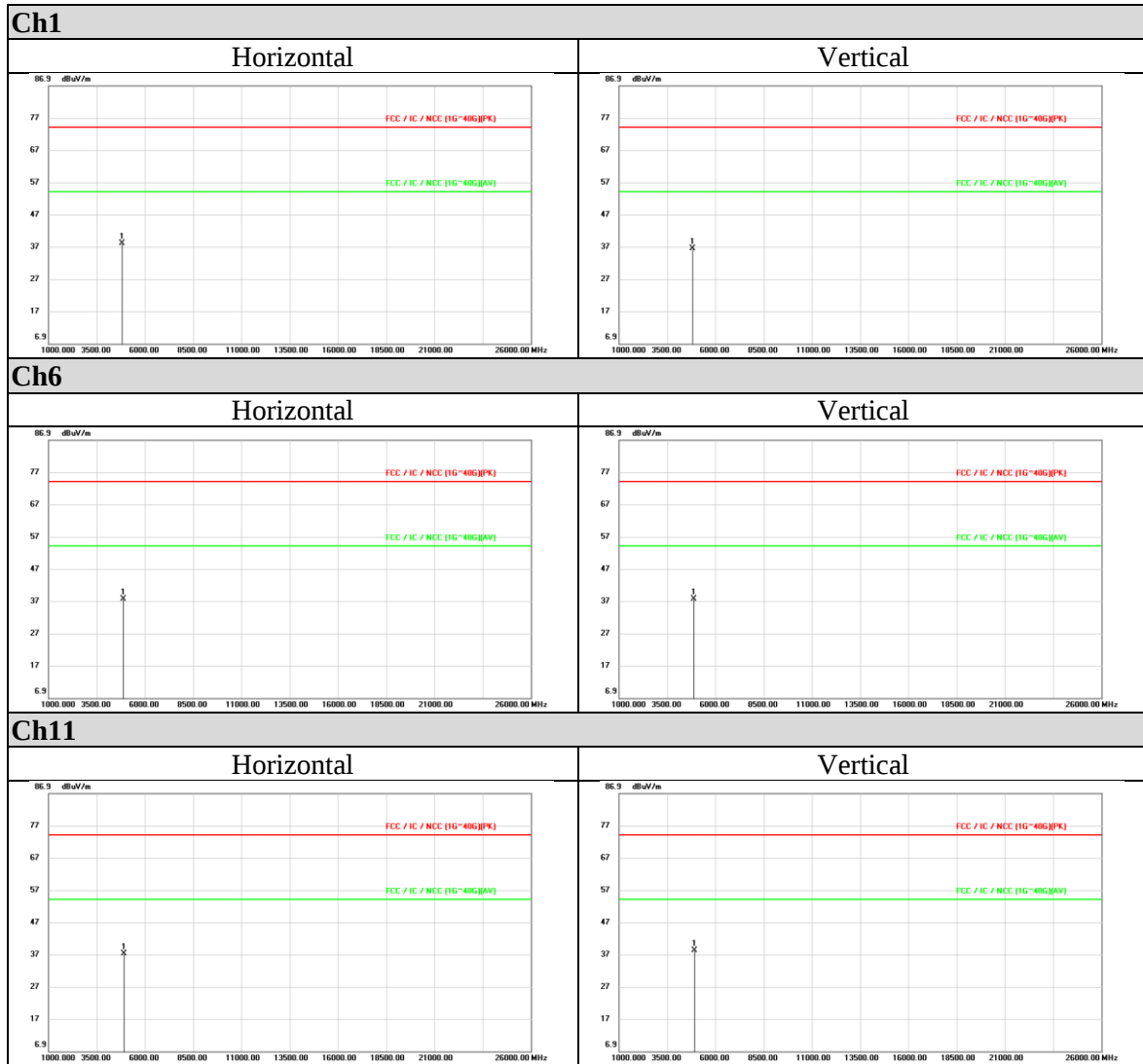
Appendix II Radiated Spurious Emission Measurement

802.11b





802.11g



Underwriters Laboratories Taiwan Co., Ltd.

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

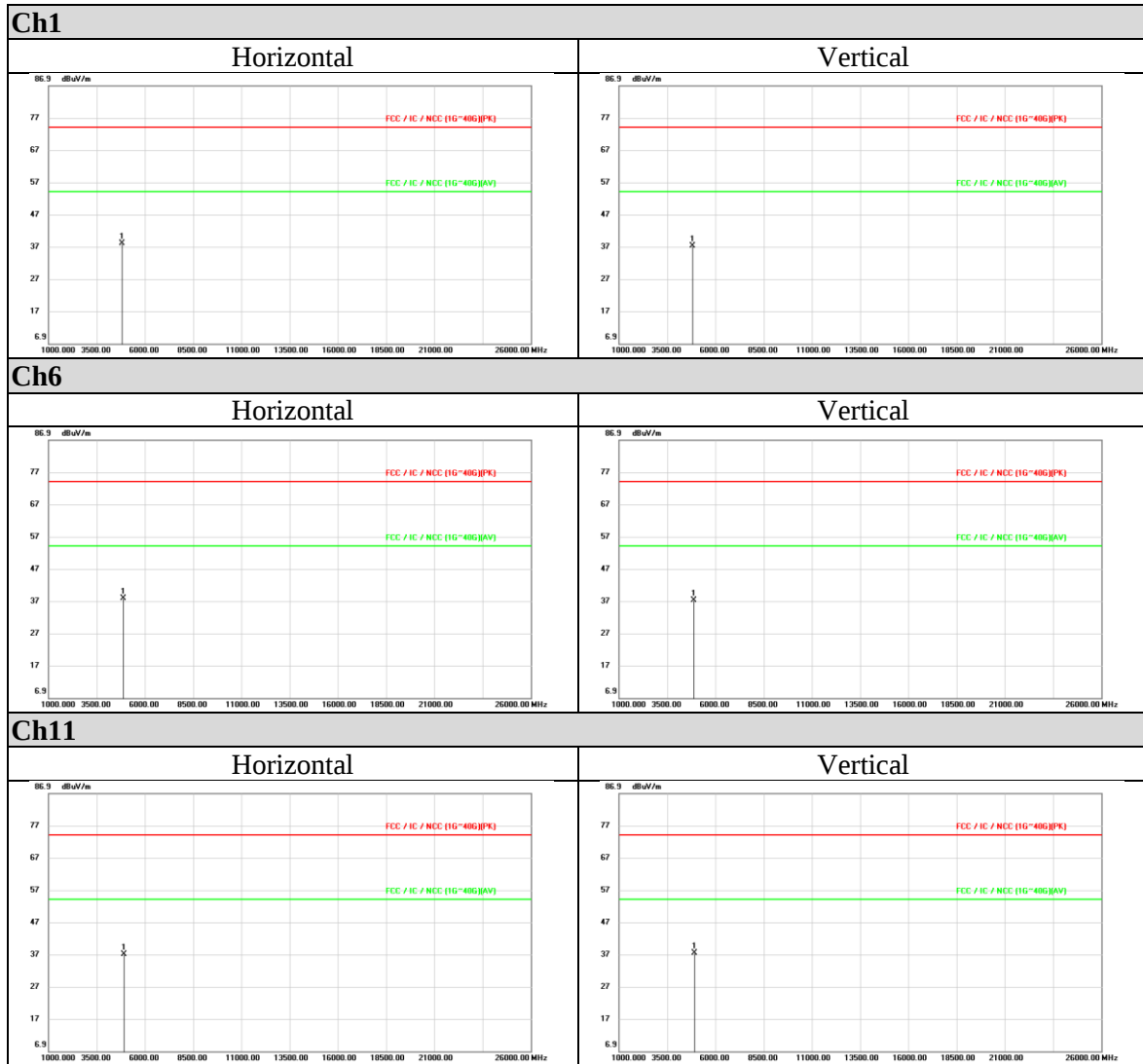
Telephone : +886-2-7737-3000

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

Doc No: 17-EM-F0876 / 2.0



802.11n (HT-20)



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

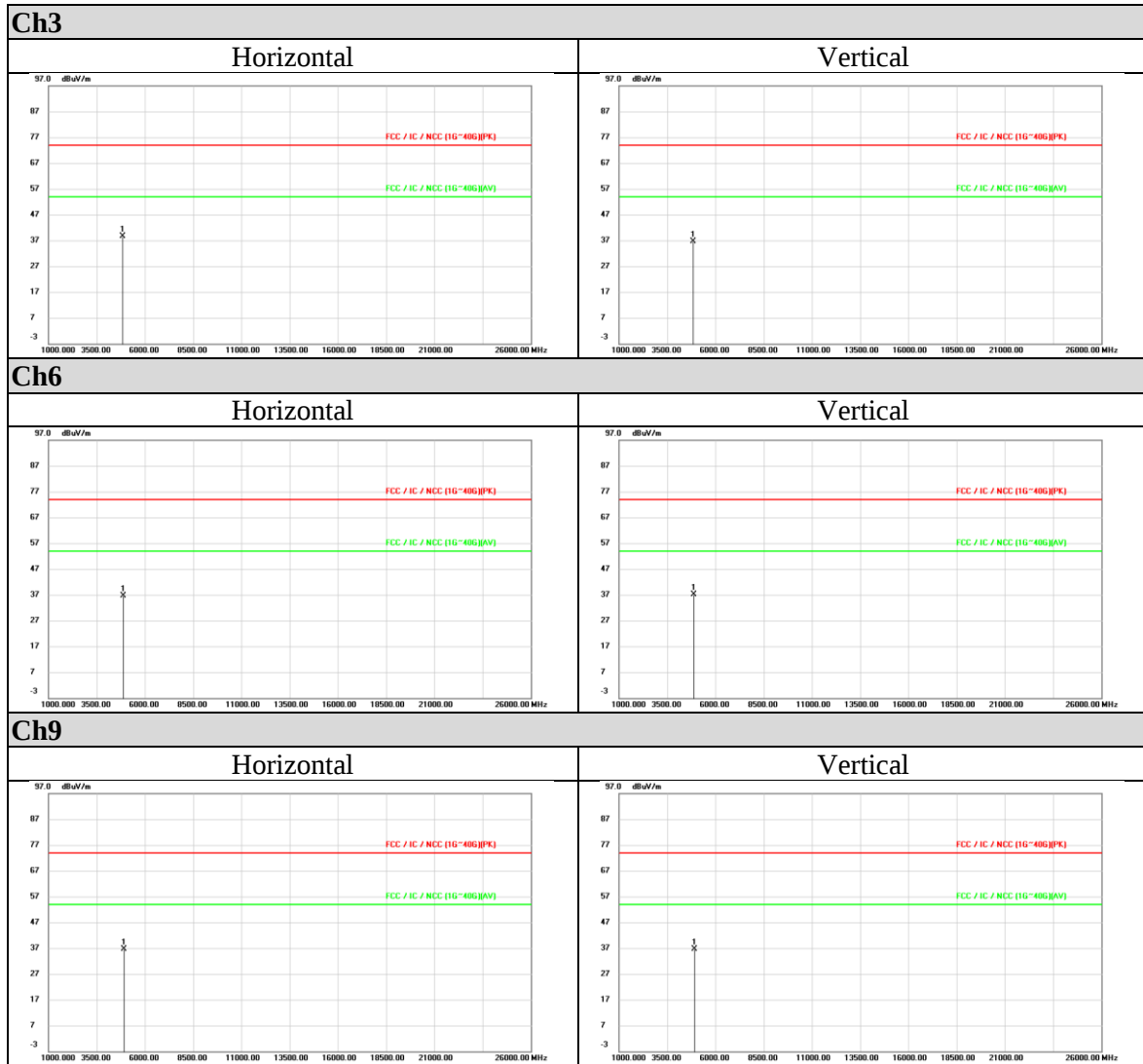
Facsimile (FAX) : +886-3-583-7948

Doc No: 17-EM-F0876 / 2.0



Test report No. : 4788637943-US-R0-V0
Page : 74 of 74
Issued date : Oct. 2, 2019
FCC ID : SXE-BDEM01

802.11n (HT-40)



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 / 2.0