RF Test Report

Applicant	:	EDIMAX TECHNOLOGY CO., LTD.
Product Type	:	11ac Wireless Dual-Band Selectable USB Adapter
Trade Name	:	EDIMAX
Model Number	:	EW-7822UNC, EW-7822ULC
Applicable Standard	:	ETSI EN 300 328 V2.2.2 (2019-07) Clause section 4.3.2.11
Received Date	:	Apr. 10, 2020
Test Period	:	Apr. 15, 2020
Issued Date	:	Apr. 30, 2020

Issued by

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Taiwan Accreditation Foundation accreditation number: 1330

Note:

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3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Revisions	Revised By
00	Apr. 30, 2020	Initial Issue	Tobey Cheng

Verification of Compliance

Issued Date: Apr. 30, 2020

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Product Type	:	11ac Wireless Dual-Band Selectable USB Adapter
Trade Name	:	EDIMAX
Model Number	:	EW-7822UNC, EW-7822ULC
EUT Rated Voltage	:	DC 5.0 V
Test Voltage	:	DC 5.0 V
Applicable Standard	:	ETSI EN 300 328 V2.2.2 (2019-07) Clause section 4.3.2.11
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade District, Taoyuan City 33465, Taiwan (R.O.C.) Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

The above equipment has been tested by A Test Lab Techno Corp., and found compliance with the requirements set forth in the RED: Directive 2014/53/EU and technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved By : Fly Lu

(Manager) (Fly Lu)

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1 General Information

1.1. EUT Description

Applicant	EDIMAX TECHNOLOGY CO., LTD. No.278, Xinhu 1st Rd., Neihu Dist., Taipei City, Taiwan			
Manufacturer	EDIMAX TECHNOLOGY CO., LTD. No.278, Xinhu 1st Rd., Neihu Dist., Taipei City, Taiwan			
Product Type	11ac Wireless Dual-Band Selectable USB Adapter			
Trade Name	EDIMAX			
Model Number	EW-7822UNC, EW-7822ULC			
Model Different Description	Those model numbers differ from each other in selling region.			
Operate Freq. Band	Frequency Range (MHz)	Modulation	Channel Bandwidth	Data Rate
IEEE 802.11b	2412 ~ 2472	DSSS	20 MHz	Up to 11 Mbps
IEEE 802.11g	2412 ~ 2472	OFDM	20 MHz	Up to 54 Mbps
IEEE 802.11n 2.4 GHz 20 MHz	2412 ~ 2472	OFDM(256QAM)	20 MHz	Up to 173.4 Mbps
IEEE 802.11n 2.4 GHz 40 MHz	2422 ~ 2462	OFDM(256QAM)	40 MHz	Up to 400 Mbps
Antenna Delivery	see section 1.3			
Antenna Information	Antennna	Model	Type	Max. Gain (dBi)
	ANT-0 (Main)	GY197HT632-003	Monopole Antenna	1.81
	ANT-1 (AUX)	GY197HT632-003	Monopole Antenna	0.36
Maximum e.i.r.p.	IEEE 802.11b: 19.11 dBm IEEE 802.11g: 18.66 dBm IEEE 802.11n 2.4 GHz 20 MHz: 18.97 dBm IEEE 802.11n 2.4 GHz 40 MHz: 19.12 dBm			
	Beamforming on			
	IEEE 802.11n 2.4 GHz 20 MHz: 19.78 dBm IEEE 802.11n 2.4 GHz 40 MHz: 19.83 dBm			
Temperature Range	0 ~ +40 ℃			

1.2. Mode of Operation

In the test report use EUT model: EW-7822UNC to operate testing.

ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode	Antenna Delivery	Test Channel	Data Rate (Mbps)
Mode 1: IEEE 802.11b Mode	1TX / 1RX	1, 7, 13	1
Mode 2: IEEE 802.11g Mode	1TX / 1RX	1, 7, 13	6

Software used to control the EUT for staying in continuous transmitting mode was programmed.

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).

1.3. Test Instruments

For Conducted

Test Period: Apr. 15, 2020

Testing Engineer: Andy Lu

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Wlan Test Set	Anritsu	MT8860C	1227002	03/26/2019	2 years
MXG Vector Signal Generator	Keysight	N5182B	MY53052569	01/15/2020	1 year

Note: N.C.R. = No Calibration Request.

1.4. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	15-25
Humidity (%RH)	25-75	45-75

1.5. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT: This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

Parameter	Uncertainty
Occupied Channel Bandwidth	±4.75 %
RF output power, conducted	±0.58 dB
Power Spectral Density, conducted	±0.75 dB
Unwanted Emissions, conducted	±0.93 dB
All emissions, radiated	±5.92 dB
Temperature	±0.6 °C
Supply voltages	±0.1 %
Time	±0.95 %

Decision Rule

■ Uncertainty is not included.

□ Uncertainty is included.

1.6. Summary of Test Result

Receiver Parameters			
Description	Clause	Result	Remark
Receiver Blocking	4.3.2.11	Pass	---

Note：Update applicable standard version：ETSI EN 300 328 V2.1.1 (2016-11) update to ETSI EN 300 328 V2.2.2 (2019-07).

2 Measurement Procedure

2.1. Receiver Blocking Test

■ Limit

While maintaining the minimum performance criteria as defined in clause 4.3.2.11.3, the blocking levels at specified frequency offsets shall be equal to or greater than the limits defined for the applicable receiver category provided in table 14, table 15 or table 16.

Table 14: Receiver Blocking Parameters for Receiver Category 1 equipment

	Wanted signal mean power from companion device (dBm) (see notes 1 and 4)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 4)	Type of blocking signal
■	P_{min} + 26 dB (see note 2)	2 380 2 504	-34	CW
□	(-133 dBm + 10 × $\log_{10}$(OCBW)) (see note 2)			
□	-68 dBm (see note 2)			
■	P_{min} + 20 dB (see note 3)	2 300 2 330 2 360 2 524 2 584 2 674	-34	CW
□	(-139 dBm + 10 × $\log_{10}$(OCBW)) (see note 3)			
□	-74 dBm (see note 3)			

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 20 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dB antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

Table 15: Receiver Blocking parameters for receiver Category 2 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)		Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
■	P_{min} + 26 dB (see note 2)	2 300 2 380 2 504 2 584	-34	CW
□	(-139 dBm + 10 × $\log_{10}$(OCBW)) (see note 2)			
□	-74 dBm (see note 2)			

NOTE 1: OCBW is in Hz..

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

Table 16: Receiver Blocking parameters for receiver Category 3 equipment

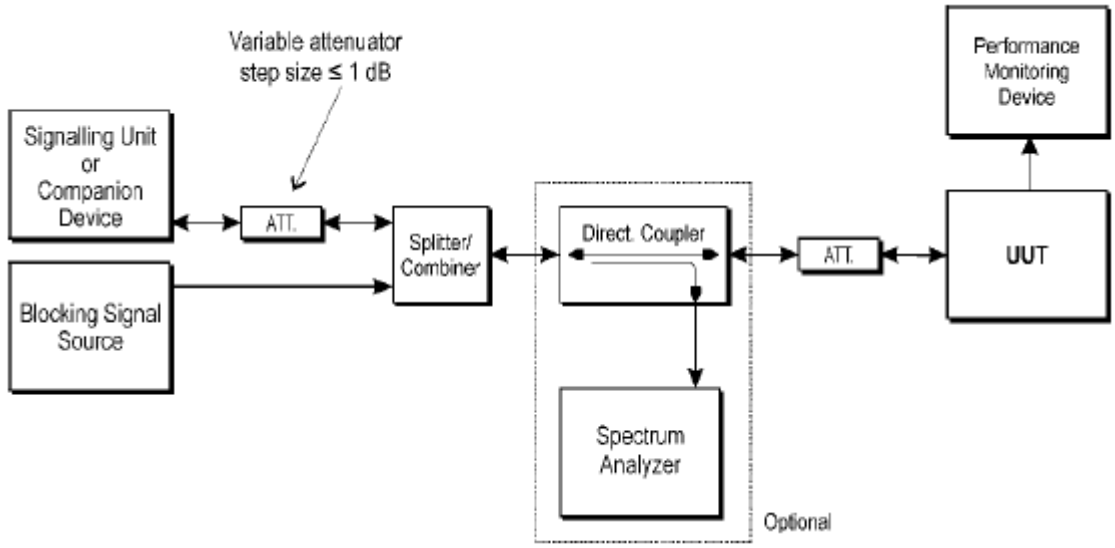
Wanted signal mean power from companion device (dBm) (see notes 1 and 3)		Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
■	P_{min} + 30 dB (see note 2)	2 300 2 380 2 504 2 584	-34	CW
□	(-139 dBm + 10 × $\log_{10}$(OCBW) + 20 dB) (see note 2)			
□	-74 dBm + 20 dB (see note 2)		-34	CW

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative the test may be performed using a wanted signal up to P_{min} + 30 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

- Test Setup



- Test Procedure

1. Please refer to ETSI EN 300 328 (V2.2.2) clause 5.4.11.1 for the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) clause 5.4.11.2 for the test method

3 Test Results

3.1. Receiver Blocking Test

3.1.1. Normal

Test Mode		Mode 1: IEEE 802.11b Mode					
P_{min}	Low	-96.9 dBm					
Wanted signal mean power from companion device (dBm)		Blocking signal frequency (MHz)	Blocking signal power (dBm)	Type of blocking signal	PER (%) Low Channel	PER Limit (%)	Result
-68 dBm		2380	-34	CW	0.20	≦10	PASS
-74 dBm		2300	-34	CW	0.40	≦10	PASS
		2330			0.20		PASS
		2360			0.20		PASS

Test Mode		Mode 1: IEEE 802.11b Mode					
P_{min}	High	-95.9 dBm					
Wanted signal mean power from companion device (dBm)		Blocking signal frequency (MHz)	Blocking signal power (dBm)	Type of blocking signal	PER (%) High Channel	PER Limit (%)	Result
-68 dBm		2504	-34	CW	0.20	≦10	Pass
-74 dBm		2524	-34	CW	0.60	≦10	Pass
		2584			0.20		Pass
		2674			0.40		Pass

Note：

1. In case of conducted measurements, this level has corrected for the (in-band) antenna assembly gain (G).
2. Transmit blocking signal power to end of board.

Test Mode		Mode 2: IEEE 802.11g Mode						
P_{min}	Low	-89.9 dBm						
Wanted signal mean power from companion device (dBm)		Blocking signal frequency (MHz)	Blocking signal power (dBm)	Type of blocking signal	PER (%) Low Channel	PER Limit (%)	Result	
-68 dBm		2380	-34	CW	0.40	≦10	PASS	
-74 dBm		2300	-34	CW	0.80	≦10	PASS	
		2330			0.20		PASS	
		2360			0.20		PASS	

Test Mode		Mode 2: IEEE 802.11g Mode						
P_{min}	High	-88.9 dBm						
Wanted signal mean power from companion device (dBm)		Blocking signal frequency (MHz)	Blocking signal power (dBm)	Type of blocking signal	PER (%) High Channel	PER Limit (%)	Result	
-68 dBm		2504	-34	CW	0.20	≦10	PASS	
-74 dBm		2524	-34	CW	0.20	≦10	PASS	
		2584			0.40		PASS	
		2674			0.40		PASS	

Note：

1. In case of conducted measurements, this level has corrected for the (in-band) antenna assembly gain (G).
2. Transmit blocking signal power to end of board.

---END---