

RF Exposure Evaluation Declaration

Product Name : Hex Sense
Trade Name : Origin Wireless Taiwan Corporation
Model No. : Hex Sense
FCC ID : 2AW26TR-WIFISEN-X

Applicant : Origin Wireless Taiwan Corp.

Address : 3F A1-1 No. 1, Lixing 1st. Rd., Easr Dist.
Hsinchu City 300, Taiwan

Date of Receipt : Sep. 07, 2020

Date of Declaration : Nov. 19, 2020

Report No. : 2090185R-E3082100013

Report Version : V1.0



The test results relate only to the samples tested.

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RF Exposure Evaluation Declaration

Issued Date : Nov. 19, 2020

Report No. : 2090185R-E3082100013



Product Name : Hex Sense

Applicant : Origin Wireless Taiwan Corp.

Address : 3F A1-1 No. 1, Lixing 1st. Rd., Easr Dist. Hsinchu City 300,
Taiwan

Manufacturer : WNC VIETNAM CO., LTD.

Address : Factory H2, Lot G1-3-4-6-8, Que Vo Industrial Park, Van Duong
Ward, Bac Ninh City, Bac Ninh Province, Vietnam

Trade Name : Origin Wireless Taiwan Corporation

Model No. : Hex Sense

FCC ID : 2AW26TR-WIFISEN-X

EUT Voltage : AC 120V/60Hz

Testing Voltage : AC 120V/60Hz

Applicable Standard : FCC 47 CFR Part 2.1091 Radiofrequency radiation exposure
evaluation: mobile devices.

Test Lab : Hsin Chu Laboratory

Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu
County 310, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958

Test Result : Complied

Tested By

:



(Scott Chang / Senior Engineer)

Approved By

:



(Louis Hsu / Deputy Manager)

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Nov. 19, 2020

1.1. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required	Test Site
Temperature (°C)	Peak Output Power	15 - 35	1
Humidity (%RH)		25 - 75	

Note: Test site information refers to Laboratory Information.

Laboratory Information

USA	:	FCC Registration Number: TW3024
Canada	:	IC Registration Number: 22397-1 / 22397-2 / 22397-3

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <http://www.dekra.com.tw>

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
Email address	info.tw@dekra.com
Website	http://www.dekra.com.tw

1.2. List of Test Equipment

Peak Output Power / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2019/12/02	2020/12/01
Pulse Power Sensor	Anritsu	MA2411B	1531043	2019/12/02	2020/12/01
Pulse Power Sensor	Anritsu	MA2411B	1531044	2019/12/02	2020/12/01
Power Meter	Keysight	8990B	MY51000248	2020/05/20	2021/05/19
Power Sensor	Keysight	N1923A	MY57240005	2020/05/20	2021/05/19

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

1.3. Uncertainty

Test item	Uncertainty
Peak Output Power	± 1.27 dB

Note: Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2. RF Exposure Evaluation

2.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

RF Field Strength Limits for Controlled Use Devices (Controlled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-1023	170	180	-	Instantaneous*
0.1-10	-	1.6/ f	-	6**
1.29-10	193/ f 0.5	-	-	6**
10-20	61.4	0.163	10	6
20-48	129.8/ f 0.25	0.3444/ f 0.25	44.72/ f 0.5	6
48-100	49.33	0.1309	6.455	6
100-6000	15.60 f 0.25	0.04138 f 0.25	0.6455 f 0.5	6
6000-15000	137	0.364	50	6
15000-150000	137	0.364	50	616000/ f 1.2
150000-300000	0.354 f 0.5	9.40 x 10 ⁻⁴ f 0.5	3.33 x 10 ⁻⁴ f	616000/ f 1.2
Note: f is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, $1 mW/cm^2$. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

2.3. Test Result of RF Exposure Evaluation

Product	Hex Sense
Test Mode	Transmit Mode
Test Condition	RF Exposure Evaluation

Antenna Gain: The maximum antenna gain is 3.28 dBi for WiFi 5GHz and 0.44 dBi for Bluetooth.

Output Power into Antenna & RF Exposure Evaluation Distance:

WLAN Function					
5GHz Band					
Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	mW		
802.11a	5180	19.690	93.111	0.039	1.000
	5220	19.550	90.157	0.038	1.000
	5240	19.610	91.411	0.039	1.000
	5260	19.510	89.331	0.038	1.000
	5300	19.450	88.105	0.037	1.000
	5320	18.750	74.989	0.032	1.000
	5500	19.380	86.696	0.037	1.000
	5580	19.750	94.406	0.040	1.000
	5700	16.750	47.315	0.020	1.000
	5745	19.460	88.308	0.037	1.000
	5785	19.570	90.573	0.038	1.000
	5825	19.660	92.470	0.039	1.000
802.11n (20MHz)	5180	19.370	86.497	0.037	1.000
	5220	19.420	87.498	0.037	1.000
	5240	19.490	88.920	0.038	1.000
	5260	19.330	85.704	0.036	1.000
	5300	19.220	83.560	0.035	1.000
	5320	18.360	68.549	0.029	1.000
	5500	18.330	68.077	0.029	1.000
	5580	19.610	91.411	0.039	1.000
	5700	16.470	44.361	0.019	1.000
	5745	19.380	86.696	0.037	1.000
	5785	19.550	90.157	0.038	1.000
	5825	19.770	94.842	0.040	1.000

Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	mW		
802.11n (40MHz)	5190	16.210	41.783	0.018	1.000
	5230	18.670	73.621	0.031	1.000
	5270	18.390	69.024	0.029	1.000
	5310	15.610	36.392	0.015	1.000
	5510	15.510	35.563	0.015	1.000
	5550	19.150	82.224	0.035	1.000
	5670	17.710	59.020	0.025	1.000
	5755	18.460	70.146	0.030	1.000
	5795	18.770	75.336	0.032	1.000
Bluetooth (BLE)	2402	-2.190	0.604	0.0001	1.000
	2440	-2.200	0.603	0.0001	1.000
	2480	-2.210	0.601	0.0001	1.000

Note:

1. The antenna information is from the customer declaration.
2. The results are evaluated using the maximum power.