



RADIO EXPOSURE TEST REPORT

FCC ID : NKR-SWA51

Equipment : Wireless Audio Module

Brand Name : WNC

Model Name : SWA51

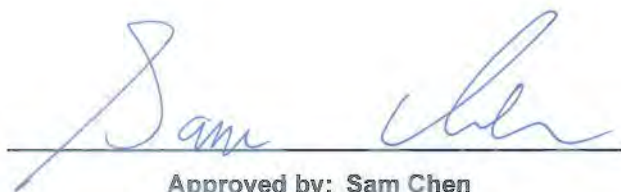
Applicant : Wistron NeWeb Corporation
20 Park Avenue II, Hsinchu Science Park, Hsinchu
308 Taiwan

Manufacturer : Wistron NeWeb Corporation
20 Park Avenue II, Hsinchu Science Park, Hsinchu
308 Taiwan

Standard : 47 CFR Part 2.1091

The product was received on Aug. 18, 2021, and testing was started from Sep. 04, 2021 and completed on Oct. 12, 2021. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.



Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory
No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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History of this test report

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A1_1 Ver1.1

Page Number : 3 of 8
Issued Date : Nov. 09, 2021
Report Version : 01



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Jessie Wei



1 General Description

1.1 EUT General Information

RF General Information			
Frequency Range (MHz)	Bandwidth	Operating Frequency (MHz)	Modulation Type
5150-5250	2MHz	5157.35-5247.35	pi/4-DQPSK
	4MHz	5162.35-5246.35	
5725-5850	2MHz	5726.35-5848.35	
	4MHz	5729.35-5847.35	
5850-5895	2MHz	5850.35-5874.35	
	4MHz	5849.35-5875.35	

1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)		
						UNII 1	UNII 3	UNII 4
1	1	WNC	SWA51	Printed Ant.	N/A	4.10	3.39	3.38
2	2	WNC	SWA51	Printed Ant.	N/A	2.17	3.50	2.90

Note: The above information was declared by manufacturer.

The EUT supports the antenna with TX and RX diversity functions.

Both Port 1 (Ant. 1) and Port 2 (Ant. 2) support transmit and receive functions, but only one of them will be used at one time.

The Port 1(Ant. 1) generated the worst case in UNII 1 and UNII 4, and the Port 2(Ant. 2) generated the worst case in UNII 3, so they were selected to test and record in the report.

1.3 Table for EUT type information

EUT type	Module	Firmware	Description
EUT 1	TX	3.152.15	The variation of EUT is for different firmware.
EUT 2	RX	3.152.1	

Note1: From the above models, EUT 1 was selected as representative model for the test and its data was recorded in this report.

Note2: The above information was declared by manufacturer.



1.4 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA882140

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Changing operating frequency to "5157.35~5247.35 MHz, 5726.35~5848.35 MHz" from "5161.35~5245.35 MHz, 5736.35~5820.35 MHz" for Bandwidth 2MHz of UNII 1, UNII 3. 2. Changing operating frequency to "5162.35~5246.35 MHz, 5729.35~5847.35 MHz" from "5161.35~5245.35 MHz, 5736.35~5820.35 MHz" for Bandwidth 4MHz of UNII 1, UNII 3. 3. Adding the UNII 4 Band.	Exposure evaluation

1.5 Accessories

N/A

1.6 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu (TAF: 3787)	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) TEL: 886-3-656-9065 FAX: 886-3-656-9085 Test site Designation No. TW3787 with FCC. Conformity Assessment Body Identifier (CABID) TW3787 with ISED.



2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	*(100)	<6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1500	-	-	f/300	<6
1500-100,000	-	-	5	<6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f ²)	<30
30-300	27.5	0.073	0.2	<30
300-1500	-	-	f/1500	<30
1500-100,000	-	-	1.0	<30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Method

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
5.2G,2M;G7D	4.10	7.43	11.53	0.50	12.03	0.01596	20	0.00318	1.00000
5.8G,2M;G7D	3.50	7.74	11.24	0.50	11.74	0.01493	20	0.00297	1.00000
5.81G,2M;G7D	3.38	7.38	10.76	0.50	11.26	0.01337	20	0.00266	1.00000

————THE END————