



FCC RADIO EXPOSURE TEST REPORT

FCC ID : ZPNUNIVERSALTABSD
Equipment : 77GHz TA BSD Radar Module
Brand Name : Cub
Model Name : A009-007
Applicant : CUB ELECPARTS INC
No.6,Lane 546, Sec. 6, Changlu Road, Fuhsin
Township, Changhua County, Taiwan 506
Manufacturer : CUB ELECPARTS INC
No.6,Lane 546, Sec. 6, Changlu Road, Fuhsin
Township, Changhua County, Taiwan 506
Standard : 47 CFR Part 2.1091

The product was received on Oct. 16, 2020, and testing was started from Oct. 27, 2020 and completed on Nov. 30, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications 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 report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Cliff Chang

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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Photographs of EUT v01



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: Viola Huang



1 General Description

1.1 EUT General Information

RF General Information			
Frequency Range (GHz)	Operating Frequency Range (GHz)	Operating Frequency (MHz)	Modulation Type
76-81	76.15-76.75	76.45	FMCW

1.2 Testing Location

Testing Location		
☐	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

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	Test Freq. (GHz)	EIRP-Average (dBm)	Tune-up	EIRP-Average (mW)	Power Density(S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Result
Host 1	76.45	9.10	9.60	9.13	0.00182	1.00	PASS
Host 2	76.45	9.14	9.64	9.21	0.00183	1.00	PASS
Host 3	76.45	9.23	9.73	9.41	0.00187	1.00	PASS
Host 4	76.45	8.65	9.15	8.23	0.00164	1.00	PASS

Simultaneous Transmission Analysis Mode:

Host 2 (module*2)

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)	Ratio (S/Limit)
Host	11.71	-2.57	9.14	0.50	9.64	0.00920	20	0.00183	1.00000	0.00183
Host	11.71	-2.57	9.14	0.50	9.64	0.00920	20	0.00183	1.00000	0.00183
									Sum Ratio	0.00366
									Ratio Limit	1

Host 4 (module*2)

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)	Ratio (S/Limit)
Host	11.71	-3.06	8.65	0.50	9.15	0.00822	20	0.00164	1.00000	0.00164
Host	11.71	-3.06	8.65	0.50	9.15	0.00822	20	0.00164	1.00000	0.00164
									Sum Ratio	0.00328
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

—————THE END—————