



NCC RADIO EXPOSURE TEST REPORT

Equipment : Radar Sensor
Brand Name : APTIV
Model Name : H5TR
Applicant : Aptiv Services Deutschland GmbH
Am Technologiepark 1, 42119 Wuppertal, Germany
Manufacturer : Aptiv Services Deutschland GmbH
Am Technologiepark 1, 42119 Wuppertal, Germany
Standard : NCC LP0002 (Jul. 01, 2020) Section 6.20 (6.20.2)

The product was received on May 28, 2020, and testing was started from Jul. 16, 2020 and completed on Nov. 19, 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 NCC LP0002 (Jul. 01, 2020) Section 6.20 (6.20.2) 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.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 EUT General Information	5
1.2 Testing Location	5
2 Maximum Permissible Exposure	6
2.1 Limit of Maximum Permissible Exposure	6
2.2 MPE Calculation Method.....	6
2.3 Calculated Result and Limit.....	7

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				
Evaluation Mode	Bandwidth (MHz)	Operating Frequency Range (GHz)	Test Frequency (MHz)	Modulation Type
76-77	175	76.165-76.845	76.165, 76.532, 76.845	FMCW
	300	76.230-76.760	76.230, 76.550, 76.760	FMCW
	425	76.330~76.680	76.330, 76.570, 76.680	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

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
3-30	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	-	-	5.0	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	842/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

Bandwidth 175MHz

Distance (cm)	Test Freq. (GHz)	EIRP-Average (dBm)	EIRP-Average (mW)	Power Density(S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Result
20	76.165	16.86	48.54	0.010	1.00	PASS
20	76.532	17.38	54.74	0.011	1.00	PASS
20	76.845	17.01	50.21	0.010	1.00	PASS

Bandwidth 300MHz

Distance (cm)	Test Freq. (GHz)	EIRP-Average (dBm)	EIRP-Average (mW)	Power Density(S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Result
20	76.230	16.50	44.65	0.009	1.00	PASS
20	76.550	17.06	50.87	0.010	1.00	PASS
20	76.760	17.02	50.33	0.010	1.00	PASS

Bandwidth 425MHz

Distance (cm)	Test Freq. (GHz)	EIRP-Average (dBm)	EIRP-Average (mW)	Power Density(S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Result
20	76.330	16.76	47.42	0.009	1.00	PASS
20	76.570	16.95	49.51	0.010	1.00	PASS
20	76.680	17.12	51.52	0.010	1.00	PASS

Note: The above antenna gain was declared by manufacturer.

————THE END————