



NCC RADIO EXPOSURE TEST REPORT

Equipment : Radar Sensor
Brand Name : APTIV
Model Name : B4TR
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 Sep. 22, 2020, and testing was started from Oct. 15, 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: Sam Chen

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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Report Template No.: CB-A1_1 Ver1.0



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: Cindy Peng



1 General Description

1.1 EUT General Information

RF General Information				
Bandwidth (MHz)	Frequency Range (GHz)	Operating Frequency Range (GHz)	Test Frequency (GHz)	Modulation
175	76-77	76.152-76.861	76.152	FMCW
			76.531	
			76.861	
300	76-77	76.235-76.780	76.235	FMCW
			76.556	
			76.780	
425	76-77	76.322-76.686	76.322	FMCW
			76.579	
			76.686	

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
3-30	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

Test Bandwidth: 175 MHz

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	76.152	17.31	53.82	0.011	1.00	PASS
20	76.531	17.46	55.75	0.011	1.00	PASS
20	76.861	17.54	56.76	0.011	1.00	PASS

Test Bandwidth: 300 MHz

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	76.235	17.11	51.39	0.010	1.00	PASS
20	76.556	17.42	55.15	0.011	1.00	PASS
20	76.780	17.49	56.12	0.011	1.00	PASS

Test Bandwidth: 425 MHz

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	76.322	17.20	52.47	0.010	1.00	PASS
20	76.579	17.36	54.43	0.011	1.00	PASS
20	76.686	17.51	56.37	0.011	1.00	PASS

—————THE END—————