FCC 47 CFR MPE REPORT

Continental Automotive GmbH

CAR RADIO

Model Number: CRD4512UBA-OR

Additional Model: CR4512UBA-OR, TR4512UBA-OR, CRD4512UBA/AGC,

CR4512UBA/AGC, CR4511UA-OR, CRD4512UBA/KOM,

CRD4512UBA/CLA, CR4512UBA/CLA, CRD4512UBA/SDF,

CR4512UBA/SDF, CRD4612UBA, CR4612UBA, CRD4612UBA/KOM,

CRD4612UBA/PRI

FCC ID: Y7O-CRD4512UBA-OR

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Maximum Permissible Exposure

1. Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

(a) Limits for Occupational / Controlled Exposure

Frequency	Electric Field	Magnetic	Power	Averaging
Range (MHz)	Strength E)	Field Strength	Density (S)	Times E
	(V/m)	(H) (A/m)	(mW/cm2)	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)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-10000			5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency	Electric Field	Magnetic	Power	Averaging
Range (MHz)	Strength E)	Field Strength	Density (S)	Times E
	(V/m)	(H) (A/m)	(mW/cm2)	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)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-10000			1.0	30

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

2. MPE Calculation Method

E (V/m) = (30*P*G) 0.5/d Power Density: Pd (W/m2) = E2/377

E = Electric Field (V/m)

P = Peak 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 = (30*P*G) / (377*d2)

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained



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3. Conducted Power Result

Mode				Target	Antenna gain	
	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	power (dBm)	(dBi)	(Linear)
	2402	4.29	2.69	4 ± 2	0	1
GFSK	2441	6.38	4.35	6±2	0	1
	2480	6.69	4.67	6±2	0	1
8-DPSK	2402	2.24	1.67	2 ± 2	0	1
	2441	4.83	3.04	5±2	0	1
	2480	5.21	3.32	5±2	0	1
BLE	2402	6.05	4.03	6±2	0	1
	2440	7.04	5.06	7±2	0	1
	2480	7.26	5.32	7±2	0	1

4. Calculated Result and Limit

	Antenna gain			Limited		
Mode	Target power (dBm)	(dBi)	(Linear)	Power Density (S) (mW /cm2)	of Power Density (S) (mW /cm2)	
2.4G Band						
GFSK	8	0	1	0.00126	1	Compiles
8-DPSK	7	0	1	0.00100	1	Compiles
BLE	9	0	1	0.00158	1	Compiles



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