

RF Exposure Evaluation Declaration

Product Name : SD Card Mobile DVR

Model No. : RCM-MDR301WDG

FCC ID: 2ABFI-RCM30113

Applicant : Shenzhen Richda Technology Co., Ltd

Address : 3rd Floor, NO64 Building, Longguan West Road, Longhua,
Shenzhen

Date of Receipt : 04/12/2013

Issued Date : 17/01/2014

Report No. : UL05420131204FCC003-4

Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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Address : 3rd Floor, NO64 Building, Longguan West Road, Longhua, Shenzhen

Manufacturer : Shenzhen Richda Technology Co., Ltd

Address : 3rd Floor, NO64 Building, Longguan West Road, Longhua, Shenzhen

Model No. : RCM-MDR301WDG

EUT Voltage : Extreme Low:6V, Nominal:12V, Extreme High:48V

Brand Name : N/A

Applicable Standard : FCC OET Bulletin 65 Supplement C (Edition 01-01)

Test Result : Complied

Performed Location : Unilab (Shanghai) Co.,Ltd.

FCC 2.948 register number is 714465

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(Technical Engineer: Andy Wei)

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(Supervisor: Eva Wang)

1. EUT Description

Product Name:	SD Card Mobile DVR
Model Name:	RCM-MDR301WDG
Hardware Version:	v0022
Software Version:	V101230
RF Exposure Environment:	Uncontrolled
GSM/ EDGE	
Support Band:	GSM850/PCS1900
EDGE Class:	12
Tx Frequency Range:	GSM 850: 824.2MHz to 848.8MHz PCS 1900: 1850.2MHz to 1909.8MHz
Rx Frequency Range:	GSM 850: 869.2MHz to 893.8MHz PCS 1900: 1930.2MHz to 1989.8MHz
Type of modulation:	GSM/GPRS: GMSK EDGE:8PSK
Antenna Type:	Internal
Antenna Peak Gain:	GSM 850: 2.1dBi PCS 1900: 2.1dBi
WCDMA	
Support Band:	WCDMA Band II
Tx Frequency Range:	WCDMA Band II : 1850MHz ~1910MHz
Rx Frequency Range:	WCDMA Band II : 1930MHz ~1990MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Internal
Antenna Peak Gain:	WCDMA Band II : 2.6dBi
Support Band:	WCDMA Band V
Tx Frequency Range:	WCDMA Band V: 824MHz ~849MHz
Rx Frequency Range:	WCDMA Band V: 869MHz ~894MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Internal
Antenna Peak Gain:	WCDMA Band V: 2.6dBi
WLAN	
Frequency Range:	2400MHz~2483.5MHz
Type of Modulation:	DSSS(BPSK/QPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM) MIMO-OFDM(BPSK/QPSK/16QAM/64QAM)
Channel Number:	13
Antenna Type:	Internal
Antenna Peak Gain:	3.0dBi

2. RF Exposure Evaluation

2.1 Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range(MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A)Limits for Occupation/Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B)Limits for General Occupation/UnControlled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Formula

transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 22°C and 45% RH.

2.3. Test Result of RF Exposure Evaluation

This device is evaluated by mobile device with general population/uncontrolled exposure condition
For this device, the calculation is using the most conservative values, and the results are as follows:

Test Mode	ERP (dBm)	EIRP (dBm)	Peak EIRP (mW)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm ²)	MPE Limit (mW/cm ²)
GSM850	29.87	32.02	1592	200.45	0.16	0.55
PCS1900	/	28.45	349	88.10	0.02	1.00
EDGE850	29.06	31.21	1321	166.34	0.03	0.55
EDGE1900	/	28.39	690	86.90	0.02	1.00

Test Mode	ERP (dBm)	EIRP (dBm)	Peak EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm ²)	MPE Limit (mW/cm ²)
WCDMA Band V	20.32	22.47	176.60	0.04	0.55
WCDMA Band II	/	21.78	150.66	0.03	1.00

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm ²)	MPE Limit (mW/cm ²)
GSM850	2.1	35	3162.28	645.65	0.13	0.55
PCS1900	2.1	32	1584.89	323.59	0.07	1.00
EDGE850	2.1	35	3162.28	645.65	0.13	0.55
EDGE1900	2.1	32	1584.89	323.59	0.07	1.00

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum Output Power From Antenna (mW)	Calculated RF Exposure at d = 20cm (mW/cm ²)	MPE Limit (mW/cm ²)
WCDMA Band V	2.6	25	575.44	0.12	0.55
WCDMA Band II	2.6	25	575.44	0.12	1.00

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum Output Power From Antenna (mW)	Calculated RF Exposure at d = 20cm (mW/cm2)	MPE Limit (mW/cm2)
WLAN 2.4G	3.0	20	199.53	0.04	1.00

This device can pass RF exposure limit.