REPORT No. : SZ15120141S01

RF EXPOSURE EVALUATION REPORT

APPLICANT	:	SHENZHEN ANTOP TECHNOLOGY CO.,LTD.
PRODUCT NAME	:	Router Antenna
MODEL NAME	:	MV-9818
TRADE NAME	:	N/A
BRAND NAME	:	N/A
FCC ID	:	2AG6P09818
STANDARD(S)	:	47CFR 2.1091 KDB 447498 D01 General RF Exposure Guidance v06
ISSUE DATE	:	2016-01-18

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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DIRECTORY

Change History		
Issue	Date	Reason for change
1.0	2016-01-18	First edition

TEST REPORT DECLARATION

Applicant	SHENZHEN ANTOP TECHNOLOGY CO.,LTD.
Applicant Address	301, No.1 Workshop, Longqiaohua Industrial Zone, Luotian Forest Farm, Songgang Street, Baoan District, 518100 Shenzhen City, Guangdong Province, People's Republic Of China
Manufacturer	SHENZHEN ANTOP TECHNOLOGY CO.,LTD.
Manufacturer Address	301, No.1 Workshop, Longqiaohua Industrial Zone, Luotian Forest Farm, Songgang Street, Baoan District, 518100 Shenzhen City, Guangdong Province, People's Republic Of China
Product Name	Router Antenna
Model Name	MV-9818
Brand Name	N/A
HW Version	V1.0
SW Version	V1.0
Test Standards	47CFR 2.1091; KDB 447498 D01 General RF Exposure Guidance v06
Issue Date	2016-01-18
SAR Evaluation	Not Required

Tested by : Liu Jun
Liu Jun

Reviewed by : Zhu Zhan
Zhu Zhan

Approved by : Zeng Dexin
Zeng Dexin

1. TECHNICAL INFORMATION

Note: the following data is based on the information by the applicant.

1.1. Identification of Applicant

Company Name:	SHENZHEN ANTOP TECHNOLOGY CO.,LTD.
Address:	301, No.1 Workshop, Longqiaohua Industrial Zone, Luotian Forest Farm, Songgang Street, Baoan District, 518100 Shenzhen City, Guangdong Province, People's Republic Of China

1.2. Identification of Manufacturer

Company Name:	SHENZHEN ANTOP TECHNOLOGY CO.,LTD.
Address:	301, No.1 Workshop, Longqiaohua Industrial Zone, Luotian Forest Farm, Songgang Street, Baoan District, 518100 Shenzhen City, Guangdong Province, People's Republic Of China

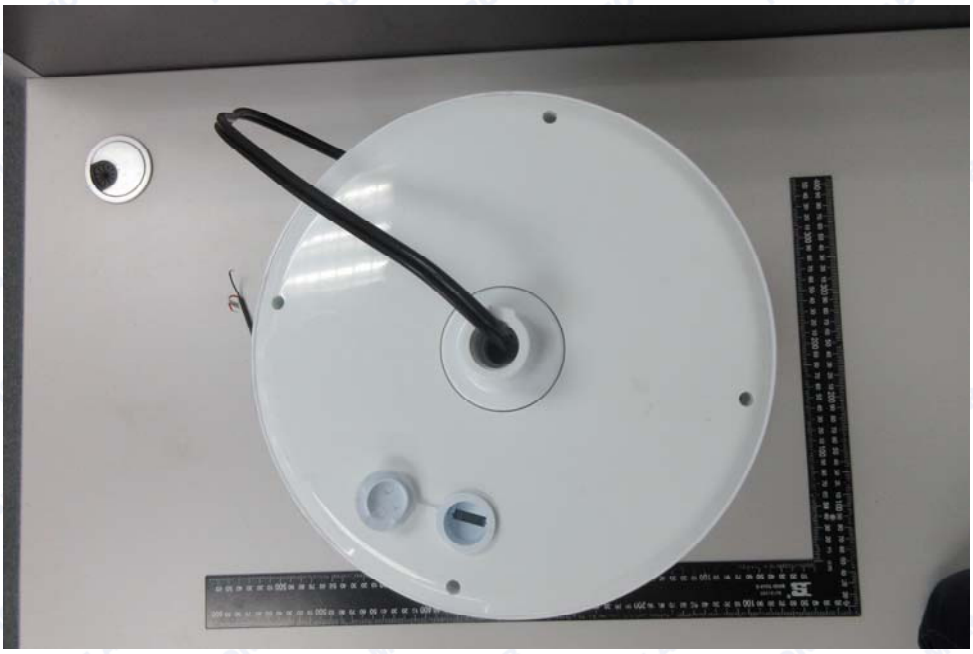
1.3. Equipment Under Test (EUT)

Model Name:	MV-9818
Trade Name:	N/A
Brand Name:	N/A
Hardware Version:	V1.0
Software Version:	V1.0
Frequency Bands:	Wifi802.11b/g/n20/n40:2412-2462MHz;
Modulation Mode:	Wifi802.11b: DSSS; Wifi802.11g/n20/n40: OFDM;
Antenna type:	Dedicated Antenna
Development Stage:	Identical prototype

1.3.1. Photographs of the EUT

1. EUT side view

2. EUT top view



1.3.2. Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	V1.0	V1.0

1.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	**47 CFR§2.1091**	Radiofrequency Radiation Exposure Evaluation: mobile devices
2	**KDB 447498 D01v06**	General RF Exposure Guidance

2. DEVICE CATEGORY AND RF EXPOSURE LIMIT

Per user manual, this device is a Wifi router. Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term “fixed location” means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(B) Limits for General Population/Uncontrolled Exposure				
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

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

3. MEASUREMENT OF CONDUCTED PEAK OUTPUT POWER

1. Wifi 2.4G Conducted Average Output Power

ANT 1

Band	Channel	Frequency (MHz)	Output Power(dBm)	
			802.11b (DSSS)	802.11g (OFDM)
WiFi 2.4G	1	2412	17.45	12.89
	6	2437	15.61	12.15
	11	2462	15.65	12.85

ANT 2

Band	Channel	Frequency (MHz)	Output Power(dBm)	
			802.11b (DSSS)	802.11g (OFDM)
WiFi 2.4G	1	2412	15.81	10.62
	6	2437	17.05	13.07
	11	2462	13.98	11.22

Band	Antenna	Channel	Frequency (MHz)	Output Power(dBm)
				802.11n20
WiFi 2.4G (MIMO)	ANT1	1	2412	13.68
		6	2437	12.24
		11	2462	12.52
	ANT2	1	2412	12.24
		6	2437	13.05
		11	2462	10.71
	ANT1+ANT2	1	2412	16.03
		6	2437	15.67
		11	2462	14.72

Band	Antenna	Channel	Frequency (MHz)	Output Power(dBm)
				802.11n40
WiFi 2.4G (MIMO)	ANT1	3	2422	11.15
		6	2437	11.58
		9	2452	11.62
	ANT2	3	2422	11.91
		6	2437	12.08
		9	2452	11.79
	ANT1+ANT2	3	2422	14.56
		6	2437	14.85
		9	2452	14.72

Note: Only 802.11n20 and 802.11n40 support MIMO 2X2.

4. RF EXPOSURE EVALUATION

Standalone transmission MPE evaluation

Bands	Frequency (MHz)	Antenna Gain (dBi)	Conducted Average Power (dBm)	Time-averaging EIRP (mW)	Power density (mW/cm²)	Limit for MPE (mW/cm²)
802.11b	2412	5	17.45	175.79	0.035	1.0

Note:

1. MPE calculation method

$$\text{Power Density} = EIRP/4\pi R^2$$

Where: EIRP = P·G

P = Peak out power

G = Antenna gain

R = Separation distance (20cm)

ANNEX C GENERAL INFORMATION

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

***** END OF REPORT *****