



## RF Exposure Evaluation Declaration

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**FCC ID:** 2AJ23-HY-W20

**APPLICANT:** QUANZHOU HEYI ELECTRONICS CO., LTD.

**Application Type:** Certification

**Product:** Network Alarm System

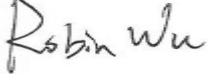
**Model No.:** HY-W20, HY-W5, HY-W6, HY-W7, HY-W21, HY-G20,  
HY-L20, HY-W30, HY-G30, HY-L30


**Brand Name:** HEYI

**FCC Classification:** FCC Part 15 Security/Remote Control Transmitter  
(DSC)  
PCS Licensed Transmitter (PCB)  
Digital Transmission System (DTS)

**FCC Rule Part(s):** FCC CFR 47 §2.1091

**Test Date:** August 14 ~ November 16, 2016

Reviewed By :   
( Robin Wu )

Approved By :   
( Marlin Chen )



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2009. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

## Revision History

Report No.	Version	Description	Issue Date	Note
1608RSU02209	Rev. 01	Initial report	11-16-2016	Valid

## 1. PRODUCT INFORMATION

### 1.1. Equipment Description

Product Name	Network Alarm System
Model No.	HY-W20, HY-W5, HY-W6, HY-W7, HY-W21, HY-G20, HY-L20, HY-W30, HY-G30, HY-L30
433.92MHz Specification	
Frequency Range	433.92 MHz
Type of Modulation	ASK
Antenna Type	Integral Antenna
Antenna Gain	1.0dBi
WLAN Specification	
Frequency Range	802.11b/g/n-HT20: 2412 ~ 2462 MHz 802.11n-HT40: 2422 ~ 2452 MHz
Type of Modulation	802.11b: DSSS 802.11g/n: OFDM
Antenna Gain	2.0dBi
GSM Specification	
T <sub>x</sub> Frequency Range	GPRS 900: 880 ~ 915MHz GPRS 1800: 1710 ~ 1785MHz
R <sub>x</sub> Frequency Range	GPRS 900: 925 ~ 960MHz GPRS 1800: 1805 ~ 1880MHz
Antenna Gain	2.0dBi
Type of Modulation	GPRS: GMSK

### 1.2. Antenna Description

Antenna Type	Frequency Band (MHz)	Manufacturer	Max Peak Gain (dBi)
PCB Antenna	2400~2500	DONGGUAN SENLING INDUSTRIAL CO., LTD	2.0
PIFA Antenna	698~960, 1710~2700	PCTEL, Inc	2.0
Integral Antenna	433.92MHz	PCTEL, Inc	1.0

## 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 <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

**Formula as follows:**

f= Frequency in MHz

Calculation Formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in  $mW/cm^2$

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

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

$P_d$  is the limit of MPE,  $1mW/cm^2$ . 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 Result of RF Exposure Evaluation

Product	Network Alarm System
Test Item	RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0dBi for Wi-Fi band and 2.0dBi for GSM band in logarithm scale.

### For 2.4GHz Band:

Test Mode	Frequency Band (MHz)	Maximum Average Output Power (dBm)	Power Density at r = 20 cm (mW/cm <sup>2</sup> )	FCC Limit (mW/cm <sup>2</sup> )
802.11b	2412 ~ 2462	20.00	0.0315	1
802.11g	2412 ~ 2462	16.50	0.0141	1
802.11n-HT20	2412 ~ 2462	16.00	0.0126	1
802.11n-HT40	2422 ~ 2452	15.50	0.0112	1

### For 2G Band:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Duty Cycle Factor (dB)	Power Density at r = 20 cm (mW/cm <sup>2</sup> )	FCC Limit (mW/cm <sup>2</sup> )
GPRS 850	824 ~ 849	33.00	-6	0.1580	0.549
GPRS 1900	1850 ~ 1910	30.00	-6	0.0792	1

**CONCULISON:**

Both of the WLAN and 2G can transmit simultaneously. Therefore, the Max Power Density at r (20 cm) =  $0.0315\text{mW/cm}^2 + 0.1580\text{mW/cm}^2 = 0.1895\text{ mW/cm}^2 < 0.549\text{mW/cm}^2$ .

So the EUT complies with the FCC requirement.

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The End

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