

MRT Technology (Suzhou) Co., Ltd Phone: +86-512-66308358

Web: www.mrt-cert.com

Report No.: 1708RSU021-U4 Report Version: V01 Issue Date: 02-28-2018

# **RF Exposure Evaluation Declaration**

FCC ID: SFK-140W

**APPLICANT:** CIG Shanghai Co., Ltd.

**Application Type:** Certification

Product: G140WC

Model No.: G-140W-C

Brand Name: Shanghai Nokia bell

Test Procedure(s): KDB 447498 D01

FCC Classification: Digital Transmission System (DTS)

Unlicensed National Information Infrastructure (UNII)

**Test Date:** December 10, 2017 ~ February 28, 2018

Reviewed By : Sury Sur

(Sunny Sun)

Approved By : Marlinchen

( Marlin Chen )





The test results relate only to the samples tested.

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

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# **Revision History**

Report No.	Version	Description	Issue Date	Note
1708RSU021-U4	Rev. 01	Initial Report	02-28-2018	Valid

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### 1. PRODUCT INFORMATION

## 1.1. Equipment Description

Product Name:	G-140W-C
Model No.:	G-140W-C
Brand Name:	Shanghai Nokia bell
Wi-Fi Specification	802.11a/b/g/n/ac

## 1.2. Antenna Description

Antenna	Frequency	TX	Max Peak Gain	CDD Directional Gain (dBi)	
		Paths	(dBi)	For Power	For PSD
PCB Antenna	2.4GHz	2	3.0	3.0	6.01
	5GHz	2	3.0	3.0	6.01

Note1: The EUT supports Cyclic Delay Diversity (CDD) technology for 802.11a/b/g/n/ac mode, and CDD signals are correlated.

Note2: For CDD transmissions, directional gain is calculated as follows,  $N_{ANT} = 2$ ,  $N_{SS} = 1$ .

Three antennas have the same gain,  $G_{ANT}$ , Directional gain =  $G_{ANT}$  + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,
 Array Gain = 10 log (N<sub>ANT</sub>/ N<sub>SS</sub>) dB = 3.01;

For power measurements on IEEE 802.11 devices,
 Array Gain = 0 dB for N<sub>ANT</sub> ≤ 4;

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## 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	Electric Field	Magnetic Field	Power Density	Average Time	
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm <sup>2</sup> )	(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	-	1	30	

f= Frequency in MHz

Calculation Formula:  $Pd = (Pout*G)/(4*pi*r^2)$ 

Where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

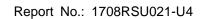
G = gain of antenna in linear scale

Pi = 3.1416

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

Pd is the limit of MPE, 1mW/cm<sup>2</sup>. 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.

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## 2.2. Test Result of RF Exposure Evaluation

Product	G-140W-C
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at $R = 20 \text{ cm}$ $(\text{mW/cm}^2)$	Limit (mW/cm²)
802.11b/g/n	2412 ~ 2462	24.92	0.0618	1
802.11a/n/ac	5180 ~ 5825	28.75	0.1492	1

#### **CONCLUSION:**

The WLAN 2.4GHz and WLAN 5GHz can transmit simultaneously. Therefore, the Max Power Density at R (20 cm) = 0.0618mW/cm<sup>2</sup> + 0.1492mW/cm<sup>2</sup> = 0.2110mW/cm<sup>2</sup> < 1mW/cm<sup>2</sup>. So the EUT complies with the requirement.

The End FCC ID: SFK-140W

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