

# **RF Exposure Evaluation Declaration**

- FCC ID: 2ADZR23002690FM20
- APPLICANT: Nokia Shanghai Bell Co., Ltd
- **Application Type:** Certification

Product: FastMile 4G Receiver

Model No.: 4G03-A

- Brand Name: Nokia
- FCC Classification: Licensed Non-Broadcast Station Transmitter (TNB)
  - Part 15 Spread Spectrum Transmitter (DSS)

**Test Procedure(s):** KDB 447498 D01v06

Test Date:

July 28 ~ September 04, 2020

Reviewed By:

Surry Sur

(Sunny Sun)

Approved By:





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  |  |
|---------------|---------|----------------|------------|-------|--|
| 2007RSU064-U2 | Rev. 01 | Initial Report | 10-19-2020 | Valid |  |
|               |         |                |            |       |  |



#### **General Information**

| Applicant:              | Nokia Shanghai Bell Co., Ltd                                  |  |  |
|-------------------------|---|--|--|
|                         | 388#, Ningqiao Road, China (Shanghai) Pilot Free Trade Zone,  |  |  |
| Applicant Address.      | Shanghai 201206, China  |  |  |
| Manufacturer:           | Nokia Shanghai Bell Co., Ltd                                  |  |  |
| Manufaaturar Addrosou   | 388#, Ningqiao Road, China (Shanghai) Pilot Free Trade Zone,  |  |  |
| Manufacturer Address.   | Shanghai 201206, China  |  |  |
| Test Site:              | MRT Technology (Suzhou) Co., Ltd                              |  |  |
| Test Site Address:      | D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Developmer |  |  |
|                         | Zone, Suzhou, China   |  |  |
| Test Device Serial No.: | N/A Droduction Pre-Production Dengineering                    |  |  |

#### **Test Facility / Accreditations**

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is an FCC accredited testing laboratory (MRT Designation No. CN1166) on the FCC website.
- MRT facility is an ISED recognized testing laboratory (MRT Reg. No. CN0001) on the ISED website.
- MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the A2LA under the A2LA Program (Cert. No. 3628.01) and CNAS under the CNAS Program (Cert. No. L10551) in EMC, Safety, Radio, Telecommunications and SAR testing.



## 1. PRODUCT INFORMATION

## 1.1. Equipment Description

| Product Name:                   | FastMile 4G Receiver     |  |
|---------------------------------|--------------------------|--|
| Model No.:                      | 4G03-A                   |  |
| Brand Name:                     | Nokia                    |  |
| Intra-Band:                     | CA_7C, CA_41C            |  |
| Modulation Type:                | QPSK, 16QAM, 64QAM       |  |
| T <sub>X</sub> Frequency Range: | Band 7: 2500 ~ 2570 MHz  |  |
|                                 | Band 41: 2496 ~ 2690 MHz |  |
| R <sub>X</sub> Frequency Range: | Band 7: 2620 ~ 2690 MHz  |  |
|                                 | Band 41: 2496 ~ 2690 MHz |  |



## 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)

| 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                     | 30           |  |

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

f= Frequency in MHz

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

Where

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

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.



## 2.2. Test Result of RF Exposure Evaluation

| Product   | FastMile 4G Gateway    |  |
|-----------|------------------------|--|
| Test Item | RF Exposure Evaluation |  |

| Test Mode   | Frequency Band | Maximum     | Maximum | Safety   | Power                 | Limit                 |
|-------------|----------------|-------------|---------|----------|-----------------------|-----------------------|
|             | (MHz)          | Conducted   | EIRP    | Distance | Density               | (mW/cm <sup>2</sup> ) |
|             |                | Power (dBm) | (dBm)   | (cm)     | (mW/cm <sup>2</sup> ) |                       |
| LTE Band 7  | 2500 ~ 2570    | 25.7        | 38.2    | 50       | 0.2103                |                       |
| LTE Band 41 | 2496 ~ 2690    | 25.7        | 38.2    | 50       | 0.2103                | 1                     |

Note: The max Power Density at R (50 cm) =  $0.2103 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$ .

The End



## Appendix A – EUT Photograph

Refer to "2007RSU064-UE" file.