RF EXPOSURE EVALUATION REPORT

FCC ID	:	2ADZR34003800FM20
Equipment	:	FastMile 4G Receiver
Brand Name	:	NOKIA
Model Name	:	4G01-A
Applicant	:	Nokia Shanghai Bell Co., Ltd. 388#, Ningqiao Road, China (Shanghai) Pilot Free Trade Zone, Shanghai 201206, China
Manufacturer	:	Nokia Shanghai Bell Co., Ltd. 388#, Ningqiao Road, China (Shanghai) Pilot Free Trade Zone, Shanghai 201206, China
Standard	:	47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

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Cona Huang

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA9N1515	Rev. 01	Initial issue of report	Feb. 21, 2020

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	FastMile 4G Receiver
Brand Name	NOKIA
Model Name	4G01-A
FCC ID	2ADZR34003800FM20
Wireless Technology and Frequency Range	LTE Band 48: 3552.5 MHz ~ 3697.5 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	LTE: QPSK, 16QAM, 64QAM Bluetooth BR/EDR
HW Version	3FE75113AA
SW Version	FASTMILE2_D010000B11T0101E0181
EUT Stage	Identical Prototype
Remark: 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. 2. The BT module is also integrated into this host and the max power is taken into this report, which can be referred to BACL FCC PART 15.247 TEST REPORT, Report No: RSHD190311004-00B (FCC ID:2ADZR34003800FM20).	

Reviewed by: Jason Wang

Report Producer: Wan Liu

2. Maximum RF average output power among production units

Mode		Maximum Average power(dBm)
LTE	Band 48	23.60

Band / Mode	Average Power (dBm)
	BR / EDR
Bluetooth	7.49

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(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/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 25 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 25cm (mW/cm^2)	Limit (mW/cm^2)	Power Density / Limit
LTE B48	3552.5	15.00	23.60	38.600	7.244	7244.360	0.923	1.000	0.923
Bluetooth	2402.0	5.00	7.49	12.490	0.018	17.742	0.002	1.000	0.002

Note: For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band

4.2. Collocated Power Density Calculation

WWAN Power Density / Limit	Bluetooth Power Density / Limit	Σ(Power Density / Limit) of WWAN+Bluetooth
0.923	0.002	0.925

Note:

1. Σ(Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + Bluetooth.
2. Considering all EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 2 collocated transmitters is compliant

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis was calculated at 25cm that the RF exposure compliance with FCC guidline.