

RF Exposure Evaluation Report

APPLICANT : Nokia Shanghai Bell Co., Ltd.
EQUIPMENT : Nokia FastMile 5G Gateway 12
BRAND NAME : Nokia
MODEL NAME : 5G31-03W-B
FCC ID : 2ADZR5G3103WB
STANDARD : 47 CFR Part 2.1091
FCC KDB 447498 D01 v06

The product evaluation date was started from Sep. 03, 2024 and completed on Sep. 03, 2024. We, Sporton International Inc. (Kunshan), would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.



Approved by: Si Zhang

Sporton International Inc. (Kunshan)

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA432101-03	Rev. 01	Initial issue of report.	Sep. 11, 2024



1. Administration Data

1.1. Testing Laboratory

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS	CN1257	314309

Applicant	
Company Name	Nokia Shanghai Bell Co., Ltd.
Address	388#, Ningqiao Road, China (Shanghai) Pilot Free Trade Zone, Shanghai 201206, China

Manufacturer	
Company Name	Nokia Solutions and Networks Oy
Address	Karakaari 7, 02610 Espoo, Finland

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Nokia FastMile 5G Gateway 12
Brand Name	Nokia
Model Name	5G31-03W-B
FCC ID	2ADZR5G3103WB
Wireless Technology and Frequency Range	LTE Band 2 : 1850 MHz ~ 1910 MHz LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 5 : 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12 : 699 MHz ~ 716 MHz LTE Band 13 : 777 MHz ~ 787 MHz LTE Band 25 : 1850 MHz ~ 1915 MHz LTE Band 26 : 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n26 : 814 MHz ~ 849 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n48 : 3550 MHz ~ 3700 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz WLAN 6GHz U-NII-5: 5925 MHz ~ 6425 MHz WLAN 6GHz U-NII-6: 6425 MHz ~ 6525 MHz WLAN 6GHz U-NII-7: 6525 MHz ~ 6875 MHz WLAN 6GHz U-NII-8: 6875 MHz ~ 7125 MHz
Mode	LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR : CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ax HE20/HE40 WLAN 2.4GHz 802.11be EHT20/EHT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac/ax VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 WLAN 5GHz 802.11be EHT20/EHT40/EHT80/EHT160 WLAN 6GHz 802.11ax HE20/HE40/HE80/HE160/HE320 WLAN 6GHz 802.11be EHT20/EHT40/EHT80/EHT160/EHT320
Antenna Type	WWAN: <Ant 0/1>: Dipole Antenna; <Ant 2/3/8/9>: Dipole Antenna; WLAN2.4GHz/5GHz: Dipole Antenna; WLAN6GHz: Monopole Antenna
HW Version	3TG03021Exxx (x may be from A to Z)
SW Version	5GGW-QCOM7X_D240300B31T0601E0138
EUT Stage	Identical Prototype

Remark:

- The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



- 5GNR n2/5/12/25/41/66/71/77 supports NSA and SA mode, and 5GNR n7/26/38/48 supports SA mode only.
- This device supports intra-band ULCA, due to intra-band ULCA and non-CA power is same, so non-CA MPE analysis can represent ULCA MPE analysis.
- The intra-band/inter-band ULCA and EN-DC mode combination could be referred to the product spec.
- This device supports HPUE for LTE Band 38/41/42 and 5GNR n41/77 with class 2, so HPUE has been performed to do MPE analysis.
- The device supports HPUE (power class 2) under SISO mode and HPUE (power class 1.5) under UL MIMO mode for 5G NR n41/n77, so HPUE (power class 1.5) has been performed MPE calculation.
- 5GNR n2/n5/n7/n25/n66/n71/n38/n41/n48/n77 support SISO/MIMO mode, only MIMO tune up power was chosen to perform MPE calculation conservatively for MIMO power is higher.
- This device support beamforming for WLAN 2.4GHz 802.11 ax/be HE20/HE40/EHT20/EHT40 and WLAN 5GHz 802.11 ac/ax/be VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160/EHT20/EHT40/EHT80/EHT160, and WLAN 6GHz 802.11 ax/be HE20/HE40/HE80/HE160/HE320/EHT20/EHT40/EHT80/EHT160/EHT320.
- WLAN2.4GHz/WLAN5GHz/WLAN6GHz all support SISO and MIMO mode, MIMO tune up power was chosen to perform MPE calculation conservatively.
- For WLAN CDD&Beamforming mode, the MPE calculation performed separately.
- This report is certified with the HW version: 3TG03021EABA.
- This is a variant report for 5G31-03W-B, the change note could be referred to the 5G31-03W-B_Class II Permissive Change letter which is exhibit separately. According to the change, therefore the MPE analysis of WLAN bands was re-evaluated based on original report (Sporton Report Number FA432101-01).

Comments and Explanations:

- The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
- The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.

For Antenna Gain:

Technical	Band	ANT0 Gain (dBi)	ANT1 Gain (dBi)	ANT2 Gain (dBi)	ANT3 Gain (dBi)	ANT8 Gain (dBi)	ANT9 Gain (dBi)	MIMO Gain (dBi)
4G LTE	Band 2	3.6	/	/	/	/	/	/
	Band 4	2.1	/	/	/	/	/	/
	Band 5	2.4	/	/	/	/	/	/
	Band 7	/	/	/	/	/	4.5	/
	Band 12	2.6	/	/	/	/	/	/
	Band 13	3.3	/	/	/	/	/	/
	Band 25	3.6	/	/	/	/	/	/
	Band 26	2.4	/	/	/	/	/	/
	Band 38	/	/	/	/	/	5.0	/
	Band 41	/	/	/	/	/	6.0	/
	Band 42	/	3.8	/	/	/	/	/
	Band 48	/	3.4	/	/	/	/	/
	Band 66	2.1	/	/	/	/	/	/
	Band 71	2.0	/	/	/	/	/	/
5G NR	FR1 n2	3.6	2.7	/	/	/	/	2.1
	FR1 n5	2.4	0.8	/	/	/	/	0.0
	FR1 n7	/	/	/	/	5.8	4.5	3.3
	FR1 n12	2.6	1.2	/	/	/	/	/
	FR1 n25	3.6	2.7	/	/	/	/	2.1
	FR1 n26	2.4	/	/	/	/	/	/
	FR1 n66	2.1	3.2	/	/	/	/	1.5
	FR1 n71	2.0	1.7	/	/	/	/	0.5
	FR1 n38	/	/	/		6.0	/	3.8
	FR1 n41	/	/	/		6.0	/	3.8
	FR1 n48	/	3.4	/	/	/	/	1.7
	FR1 n77	/	4.0	/	/	/	/	1.7



Radio	Band	Sub Frequency	TX Antenna gain (dBi)								non-beformation gain	Beamforming Gain
			W1	W2	W3	W4	W5	W6	W7	W8		
WIFI 2.4G	NA	2412	NA	NA	4.34	5.11	NA	NA	NA	NA	5.11	3.92
		2417	NA	NA	4.34	5.11	NA	NA	NA	NA	5.11	3.92
		2437	NA	NA	4.34	5.11	NA	NA	NA	NA	5.11	3.92
		2457	NA	NA	4.34	5.11	NA	NA	NA	NA	5.11	3.92
		2462	NA	NA	4.34	5.11	NA	NA	NA	NA	5.11	3.92
WIFI 5G	U-NII-1	5180	NA	NA	NA	NA	5.49	4.94	3.93	4.49	5.49	7.23
		5240	NA	NA	NA	NA	5.49	4.94	3.93	4.49	5.49	7.23
	U-NII-2A	5320	NA	NA	NA	NA	5.49	4.94	4.45	5.14	5.49	7.23
	U-NII-2C	5500	NA	NA	NA	NA	4.57	5.09	4.45	5.14	5.14	7.23
		5600	NA	NA	NA	NA	4.57	5.09	4.45	5.14	5.14	7.23
	U-NII-3	5700	NA	NA	NA	NA	4.51	5.09	4.03	4.16	5.09	7.23
		5825	NA	NA	NA	NA	4.51	5.09	4.03	4.16	5.09	7.23
WIFI 6G	U-NII-5	5955	4.56	4.06	NA	NA	NA	NA	NA	NA	4.56	4.71
		6175	4.56	4.06	NA	NA	NA	NA	NA	NA	4.56	4.71
		6415	4.56	4.06	NA	NA	NA	NA	NA	NA	4.56	4.71
	U-NII-6	6435	4.12	4.05	NA	NA	NA	NA	NA	NA	4.12	4.71
		6515	4.12	4.05	NA	NA	NA	NA	NA	NA	4.12	4.71
	U-NII-7	6535	4.12	4.36	NA	NA	NA	NA	NA	NA	4.36	4.70
		6695	4.12	4.36	NA	NA	NA	NA	NA	NA	4.36	4.70
		6855	4.12	4.36	NA	NA	NA	NA	NA	NA	4.36	4.70
	U-NII-8	6875	4.10	4.36	NA	NA	NA	NA	NA	NA	4.36	4.98
		6995	4.10	4.36	NA	NA	NA	NA	NA	NA	4.36	4.98
		7115	4.10	4.36	NA	NA	NA	NA	NA	NA	4.36	4.98

Note: For WLAN2.4GHz Ant.1 and Ant.2 in this report correspond to W3 and W4 in the antenna report respectively. For WLAN5GHz Ant.1, Ant.2, Ant.3 and Ant.4 in this report correspond to W5, W6, W7 and W8 in the antenna report respectively. For WLAN6GHz Ant.1 and Ant.2 in this report correspond to W1 and W2 in the antenna report respectively.

**3. Maximum RF average output tune up power among production units****<LTE>**

Mode		Maximum Average power(dBm)
LTE	Band 2	24.0
	Band 4	24.0
	Band 5	24.0
	Band 7	24.0
	Band 12	23.5
	Band 13	23.5
	Band 25	24.0
	Band 26	24.0
	Band 38 PC3	24.0
	Band 38 PC2	27.0
	Band 41 PC3	24.0
	Band 41 PC2	27.0
	Band 42 PC3	24.0
	Band 42 PC2	26.2
	Band 48	19.5
	Band 66	24.0
	Band 71	24.0

<5GNR>

Mode		Maximum Average power(dBm)
5GNR	n2	24.0
	n5	24.0
	n7	24.0
	n12	24.0
	n25	24.5
	n26	24.0
	n38	24.0
	n41 PC3	24.0
	n41 PC2	27.0
	n48	19.5
	n66	24.0
	n71	24.0
	n77 PC3	24.0
	n77 PC2	26.0

**<MIMO>**

Mode	Maximum Average power(dBm)
n2	26.0
n5	26.0
n7	26.0
n25	26.0
n66	25.5
n71	25.5
n38	23.5
n41	28.5
n48	21.0
n77	28.0

Note: WWAN support SISO/MIMO mode, only MIMO tune up power was chosen to perform MPE calculation conservatively for MIMO power is higher.

<For CDD/MIMO Mode>**<2.4GHz WLAN >**

Mode		Maximum Average Power (dBm)
		Ant.1+2
2.4GHz	802.11b	25.00
	802.11g	25.00
	802.11n-HT20	24.00
	802.11n-HT40	23.00
	802.11ax-HE20	25.00
	802.11ax-HE40	23.00
	802.11be-EHT20	25.00
	802.11be-EHT40	23.00

<5GHz WLAN >

Mode		Maximum Average Power (dBm)
		Ant.1+2+3+4
5.2GHz	802.11a	28.00
	802.11n-HT20	28.00
	802.11n-HT40	26.50
	802.11ac-VHT20	28.00
	802.11ac-VHT40	26.50
	802.11ac-VHT80	22.00
	802.11ax-HE20	28.00
	802.11ax-HE40	27.00
	802.11ax-HE80	22.00
	802.11be-EHT20	28.00
	802.11be-EHT40	27.00
	802.11be-EHT80	22.00
5.3GHz	802.11a	21.50



	802.11n-HT20	22.00
	802.11n-HT40	23.50
	802.11ac-VHT20	22.00
	802.11ac-VHT40	23.50
	802.11ac-VHT80	20.00
	802.11ac-VHT160	20.00
	802.11ax-HE20	22.00
	802.11ax-HE40	23.98
	802.11ax-HE80	20.50
	802.11ax-HE160	20.00
	802.11be-EHT20	22.00
	802.11be-EHT40	23.98
	802.11be-EHT80	20.50
	802.11be-EHT160	20.00
5.5GHz	802.11a	21.50
	802.11n-HT20	22.00
	802.11n-HT40	23.98
	802.11ac-VHT20	22.00
	802.11ac-VHT40	23.98
	802.11ac-VHT80	23.50
	802.11ac-VHT160	21.00
	802.11ax-HE20	22.00
	802.11ax-HE40	23.98
	802.11ax-HE80	23.98
	802.11ax-HE160	21.50
	802.11be-EHT20	22.00
	802.11be-EHT40	23.98
	802.11be-EHT80	23.98
	802.11be-EHT160	21.50
5.8GHz	802.11a	28.00
	802.11n-HT20	28.00
	802.11n-HT40	28.00
	802.11ac-VHT20	28.00
	802.11ac-VHT40	28.00
	802.11ac-VHT80	26.00
	802.11ax-HE20	28.00
	802.11ax-HE40	28.00
	802.11ax-HE80	26.50
	802.11be-EHT20	28.00
	802.11be-EHT40	28.00
	802.11be-EHT80	26.50

**<6GHz WLAN>**

Mode		Maximum Average Power (dBm)
		Ant.1+2
6GHz	802.11ax-HE20	25.44
	802.11ax-HE40	25.44
	802.11ax-HE80	25.44
	802.11ax-HE160	25.44
	802.11ax-HE320	25.44
	802.11be-EHT20	25.44
	802.11be-EHT40	25.44
	802.11be-EHT80	25.44
	802.11be-EHT160	25.44
	802.11be-EHT320	25.44

Note: WLAN2.4GHz/WLAN5GHz/WLAN6GHz all support SISO/MIMO mode, MIMO tune up power was chosen to perform MPE calculation conservatively.

<For Beamforming Mode>**<2.4GHz WLAN >**

Mode		Maximum Average Power (dBm)
		Ant.1+2
2.4GHz	802.11ax-HE20	24.00
	802.11ax-HE40	23.00
	802.11be-EHT20	24.00
	802.11be-EHT40	23.00

<5GHz WLAN >

Mode		Maximum Average Power (dBm)
		Ant.1+2+3+4
5.2GHz	802.11ac-VHT20	27.50
	802.11ac-VHT40	24.00
	802.11ac-VHT80	19.00
	802.11ax-HE20	27.50
	802.11ax-HE40	24.00
	802.11ax-HE80	20.00
	802.11be-EHT20	27.50
	802.11be-EHT40	24.00
	802.11be-EHT80	20.00
5.3GHz	802.11ac-VHT20	21.50
	802.11ac-VHT40	22.00
	802.11ac-VHT80	19.00
	802.11ac-VHT160	19.00
	802.11ax-HE20	22.50
	802.11ax-HE40	22.50
	802.11ax-HE80	20.00
	802.11ax-HE160	19.50
	802.11be-EHT20	22.50



	802.11be-EHT40	22.50
	802.11be-EHT80	20.00
	802.11be-EHT160	19.50
5.5GHz	802.11ac-VHT20	21.00
	802.11ac-VHT40	21.50
	802.11ac-VHT80	22.00
	802.11ac-VHT160	20.00
	802.11ax-HE20	21.50
	802.11ax-HE40	22.50
	802.11ax-HE80	22.50
	802.11ax-HE160	21.00
	802.11be-EHT20	21.50
	802.11be-EHT40	22.50
	802.11be-EHT80	22.50
	802.11be-EHT160	21.00
5.8GHz	802.11ac-VHT20	24.50
	802.11ac-VHT40	26.00
	802.11ac-VHT80	24.00
	802.11ax-HE20	24.50
	802.11ax-HE40	26.50
	802.11ax-HE80	24.00
	802.11be-EHT20	25.00
	802.11be-EHT40	27.00
	802.11be-EHT80	24.00

<6GHz WLAN>

Mode		Maximum Average Power (dBm)
		Ant.1+2
6GHz	802.11ax-HE20	25.02
	802.11ax-HE40	25.02
	802.11ax-HE80	25.02
	802.11ax-HE160	25.02
	802.11ax-HE320	25.02
	802.11be-EHT20	25.02
	802.11be-EHT40	25.02
	802.11be-EHT80	25.02
	802.11be-EHT160	25.02
	802.11be-EHT320	25.02

Note: This device support beamforming for WLAN 2.4GHz 802.11 ax/be HE20/HE40/EHT20/EHT40 and WLAN 5GHz 802.11 ac/ax/be VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160/EHT20/EHT40/EHT80/EHT160, and WLAN 6GHz 802.11 ax/be HE20/HE40/HE80/HE160/HE320/EHT20/EHT40/EHT80/EHT160/EHT320.



4. 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/f ²)	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/f ²)	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 29 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



5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Average EIRP (dBm)	Average EIRP (mW)	Power Density at 29cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
LTE Band 2	1850.0	3.60	24.00	27.600	575.440	0.054	1.000	0.054
LTE Band 4	1710.0	2.10	24.00	26.100	407.380	0.039	1.000	0.039
LTE Band 5	824.0	2.40	24.00	26.400	436.516	0.041	0.549	0.075
LTE Band 7	2500.0	4.50	24.00	28.500	707.946	0.067	1.000	0.067
LTE Band 12	699.0	2.60	23.50	26.100	407.380	0.039	0.466	0.083
LTE Band 13	777.0	3.30	23.50	26.800	478.630	0.045	0.518	0.087
LTE Band 25	1850.0	3.60	24.00	27.600	575.440	0.054	1.000	0.054
LTE Band 26	814.0	2.40	24.00	26.400	436.516	0.041	0.543	0.076
LTE Band 38	2570.0	5.00	27.00	32.000	1584.893	0.150	1.000	0.150
LTE Band 41	2496.0	6.00	27.00	33.000	1995.262	0.189	1.000	0.189
LTE Band 42	3450.0	3.80	26.20	30.000	1000.000	0.095	1.000	0.095
LTE Band 48	3550.0	3.40	19.50	22.900	194.984	0.018	1.000	0.018
LTE Band 66	1710.0	2.10	24.00	26.100	407.380	0.039	1.000	0.039
LTE Band 71	663.0	2.00	24.00	26.000	398.107	0.038	0.442	0.085
5G NR n2	1850.00	3.60	24.00	27.600	575.440	0.054	1.000	0.054
5G NR n5	824.00	2.40	24.00	26.400	436.516	0.041	0.549	0.075
5G NR n7	2500.00	5.80	24.00	29.800	954.993	0.090	1.000	0.090
5G NR n12	699.00	2.60	24.00	26.600	457.088	0.043	0.466	0.093
5G NR n25	1850.00	3.60	24.50	28.100	645.654	0.061	1.000	0.061
5G NR n26	814.00	2.40	24.00	26.400	436.516	0.041	0.543	0.076
5G NR n38	2570.00	6.00	24.00	30.000	1000.000	0.095	1.000	0.095
5G NR n41	2496.00	6.00	27.00	33.000	1995.262	0.189	1.000	0.189
5G NR n48	3550.00	3.40	19.00	22.400	173.780	0.016	1.000	0.016
5G NR n66	1710.00	3.20	24.00	27.200	524.807	0.050	1.000	0.050
5G NR n71	663.00	2.00	24.00	26.000	398.107	0.038	0.442	0.085
5G NR n77	3450.00	4.00	26.00	30.000	1000.000	0.095	1.000	0.095

<NR/WLAN MIMO>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Average EIRP (dBm)	Average EIRP (mW)	Power Density at 29cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
5G NR n2	1850.00	2.10	26.00	28.100	645.654	0.061	1.000	0.061
5G NR n5	824.00	0.00	26.00	26.000	398.107	0.038	0.549	0.069
5G NR n7	2500.00	3.30	26.00	29.300	851.138	0.081	1.000	0.081
5G NR n25	1850.00	2.10	26.00	28.100	645.654	0.061	1.000	0.061
5G NR n38	2570.00	3.80	23.50	27.300	537.032	0.051	1.000	0.051
5G NR n41	2496.00	3.80	28.50	32.300	1698.244	0.161	1.000	0.161
5G NR n48	3550.00	1.70	21.00	22.700	186.209	0.018	1.000	0.018
5G NR n66	1710.00	1.50	25.50	27.000	501.187	0.047	1.000	0.047
5G NR n71	663.00	0.50	25.50	26.000	398.107	0.038	0.442	0.085
5G NR n77	3450.00	1.70	28.00	29.700	933.254	0.088	1.000	0.088
WLAN2.4GHz	2412	5.11	25.00	30.110	1025.652	0.097	1.000	0.097
WLAN5.2GHz	5180	5.49	28.00	33.490	2233.572	0.211	1.000	0.211
WLAN5.3GHz	5260	5.49	23.98	29.470	885.116	0.084	1.000	0.084
WLAN5.5GHz	5500	5.14	23.98	29.120	816.582	0.077	1.000	0.077
WLAN5.8GHz	5745	5.09	28.00	33.090	2037.042	0.193	1.000	0.193
WLAN6GHz	5925	4.56	25.44	30.000	1000.000	0.095	1.000	0.095



<WLAN Beamforming>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Average EIRP (dBm)	Average EIRP (mW)	Power Density at 29cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
WLAN2.4GHz	2412	3.92	24.00	27.920	619.441	0.059	1.000	0.059
WLAN5.2GHz	5180	7.23	27.50	34.730	2971.666	0.281	1.000	0.281
WLAN5.3GHz	5260	7.23	22.50	29.730	939.723	0.089	1.000	0.089
WLAN5.5GHz	5500	7.23	22.50	29.730	939.723	0.089	1.000	0.089
WLAN5.8GHz	5745	7.23	27.00	34.230	2648.500	0.251	1.000	0.251
WLAN6GHz	5925	4.98	25.02	30.000	1000.000	0.095	1.000	0.095

Note:

1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. Chose the maximum RF output tune up power and the maximum antenna gain of all antennas among same frequency WWAN bands to perform MPE calculation conservatively.
3. The MIMO mode is completely correlated, so selected the MIMO gain among all antennas as MIMO gain to perform MPE calculation.

5.2. Collocated Power Density Calculation

<WWAN+ WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz >:

Maximum WWAN LTE Power Density / Limit	Maximum WLAN 2.4GHz Power Density / Limit	Maximum WLAN 5GHz Power Density / Limit	Maximum WLAN 6GHz Power Density / Limit	Σ (Power Density / Limit) of WWAN + WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz
0.189	0.097	0.281	0.095	0.662

<LTE inter-band ULCA+ WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz >:

Maximum WWAN LTE Power Density / Limit	Maximum WWAN LTE Power Density / Limit	Maximum WLAN 2.4GHz Power Density / Limit	Maximum WLAN 5GHz Power Density / Limit	Maximum WLAN 6GHz Power Density / Limit	Σ (Power Density / Limit) of WWAN LTE + WWAN LTE + WLAN 2.4GHz + WLAN 5GHz+ WLAN 6GHz
0.189	0.189	0.097	0.281	0.095	0.851

<5G NR inter-band ULCA+ WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz >:

Maximum WWAN 5G NR Power Density / Limit	Maximum WWAN 5G NR Power Density / Limit	Maximum WLAN 2.4GHz Power Density / Limit	Maximum WLAN 5GHz Power Density / Limit	Maximum WLAN 6GHz Power Density / Limit	Σ (Power Density / Limit) of WWAN 5G NR + WWAN 5G NR + WLAN 2.4GHz + WLAN 5GHz+ WLAN 6GHz
0.189	0.189	0.097	0.281	0.095	0.851

<LTE + 5GNR + WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz>:

Maximum WWAN LTE Power Density / Limit	Maximum WWAN 5GNR Power Density / Limit	Maximum WLAN 2.4GHz Power Density / Limit	Maximum WLAN 5GHz Power Density / Limit	Maximum WLAN 6GHz Power Density / Limit	Σ (Power Density / Limit) of WWAN LTE + WWAN 5GNR + WLAN 2.4GHz + WLAN 5GHz+ WLAN 6GHz
0.189	0.189	0.097	0.281	0.095	0.851

Note:

1. For colocation analysis, LTE Band 41 is chosen for summation due to the highest (power density/limit) among all LTE Band modes.
2. For colocation analysis, 5GNR FR1 n41 is chosen for summation due to the highest (power density/limit) among all 5GNR FR1 modes.
3. For colocation analysis, choose the highest (power density/limit) among WLAN 2.4GHz/5GHz/6GHz MIMO mode and Beamforming mode respectively.
4. 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 LTE + WWAN 5GNR + WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz and inter-band ULCA (LTE or NR) + WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz.
5. Considering all transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and collocated transmitters is compliant.

Conclusion:

According to 47 CFR §2.1091, the equipment at least 29 cm to show compliance with the power density limit, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

-----THE END-----