

RF Exposure Evaluation Report

APPLICANT : Nextivity, Inc.
EQUIPMENT : SHIELD MegaFi 2
BRAND NAME : Nextivity
MODEL NAME : M4D-UC
FCC ID : YETM4D-UC
STANDARD : 47 CFR Part 2.1091
FCC KDB 447498 D01 v06

The product evaluation date was started from Jan. 17, 2025 and completed on Jan. 17, 2025. 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)

***No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China***



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA492317A	Rev. 01	Initial issue of report.	Feb. 14, 2025



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	Nextivity, Inc.
Address	16550 West Bernardo Drive, Building 5, Suite 550, San Diego, CA 92127 USA

Manufacturer	
Company Name	Asiatelco Technologies Co.
Address	#68 HuaTuo Road, Building-8, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	SHIELD MegaFi 2
Brand Name	Nextivity
Model Name	M4D-UC
FCC ID	YETM4D-UC
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz 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 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25 : 1850 MHz ~ 1915 MHz LTE Band 26 : 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 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 n25 : 1850 MHz ~ 1915 MHz 5G NR n30 : 2305 MHz ~ 2315 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 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 5G NR n78: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz
Mode	RMC 12.2Kbps HSDPA/HSUPA DC-HSDPA HSPA+ (16QAM uplink is not supported) 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 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac/ax VHT20/VHT40/VHT80/HE20/HE40/HE80
Antenna Type	WWAN: Dipole Antenna WLAN: Dipole Antenna
HW Version	1.0
SW Version	1.2.0.0
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 n2/5/7/25/30/38/41/66/71/77/78 supports NSA and SA mode.
- 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.



4. The intra-band/inter-band ULCA and EN-DC mode combination could be referred to the product spec.
5. This device supports HPUE for 5G NR n41/77/78, so HPUE has been performed to do MPE analysis.
6. rformed MPE calculation.
7. 5G NR n38/41/77/78 support SISO/MIMO mode, we only chose SISO tune up power to perform MPE calculation conservatively for SISO power is higher.
8. For WLAN2.4GHz Ant.1 and Ant.2 in this report correspond to WIFI1 and WIFI3, in the antenna report respectively. For WLAN5GHz Ant.1, Ant.2, Ant.3 and Ant.4 in this report correspond to WIFI3, WIFI2 and WIFI1 and W8 in the antenna report respectively.
9. There are two type optional antennas (paddle antenna and sharkfin antenna) provided by manufacturers, and the manufacturer declares that the with the same conducted output power level are the same. And paddle antenna was evaluated to perform MPE calculation in this report, MPE analysis with sharkfin antenna please refer to FA492317B.

Comments and Explanations:

1. 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.
2. 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:

Band	Maximum Single Antenna gain (dBi)
WCDMA Band II	3.0
WCDMA Band IV	3.0
WCDMA Band V	0.2
LTE Band 2	3.0
LTE Band 4	3.0
LTE Band 5	0.2
LTE Band 7	2.0
LTE Band 12	1.2
LTE Band 13	1.2
LTE Band 14	1.2
LTE Band 17	1.2
LTE Band 25	3.0
LTE Band 26	0.2
LTE Band 30	1.6
LTE Band 38	2.0
LTE Band 41	2.0
LTE Band 42	3.6
LTE Band 66	3.0
LTE Band 71	1.5
5G NR n2	3.0
5G NR n5	0.2
5G NR n7	2.0
5G NR n25	3.0
5G NR n30	1.6
5G NR n38	2.0
5G NR n41	2.0
5G NR n66	3.0
5G NR n71	1.5
5G NR n77	3.6
5G NR n78	3.6
WLAN2.4GHz	2.8
WLAN5.2GHz	2.2
WLAN5.8GHz	1.9

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

Mode		Maximum Average power(dBm)
WCDMA	Band II	24.0
	Band IV	24.0
	Band V	24.0

<LTE>

Mode		Maximum Average power(dBm)
LTE	Band 2	23.0
	Band 4	23.0
	Band 5	23.0
	Band 7	22.0
	Band 12	23.0
	Band 13	23.0
	Band 14 PC1	32.0
	Band 17	23.0
	Band 25	23.0
	Band 26	23.0
	Band 30	22.0
	Band 38	22.0
	Band 41	25.0
	Band 42	23.0
	Band 66	24.0
	Band 71	23.0

<5G NR>

Mode		Maximum Average power(dBm)
5G NR	n2	24.0
	n5	23.0
	n7	22.0
	n25	22.0
	n30	22.0
	n38	24.0
	n41 PC2	27.0
	n66	24.0
	n71	24.0
	n77 PC2	26.0
	n78 PC2	26.0

**<MIMO>**

Mode	Maximum Average power(dBm)
n38	23.0
n41	25.0
n77	25.0
n78	25.0

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

<2.4GHz WLAN >

Mode		Maximum Average Power (dBm)
		Ant.1+2
2.4GHz	802.11b	24.0
	802.11g	22.0
	802.11n-HT20	20.0
	802.11n-HT40	18.0
	802.11ax-HE20	20.0
	802.11ax-HE40	18.0

<5GHz WLAN >

Mode		Maximum Average Power (dBm)
		Ant.1+2+3
5.2GHz	802.11a	16.0
	802.11n-HT20	16.0
	802.11n-HT40	16.0
	802.11ac-VHT20	16.0
	802.11ac-VHT40	16.0
	802.11ac-VHT80	10.0
	802.11ax-HE20	16.0
	802.11ax-HE40	16.0
	802.11ax-HE80	10.0
5.8GHz	802.11a	22.0
	802.11n-HT20	21.0
	802.11n-HT40	22.0
	802.11ac-VHT20	21.0
	802.11ac-VHT40	22.0
	802.11ac-VHT80	20.0
	802.11ax-HE20	21.0
	802.11ax-HE40	22.0
	802.11ax-HE80	20.0



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 30 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 30cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
WCDMA Band 2	1852.4	3.00	24.00	27.000	501.187	0.044	1.000	0.044
WCDMA Band 4	1712.4	3.00	24.00	27.000	501.187	0.044	1.000	0.044
WCDMA Band 5	826.4	0.20	24.00	24.200	263.027	0.023	0.551	0.042
LTE Band 2	1850.0	3.00	23.00	26.000	398.107	0.035	1.000	0.035
LTE Band 4	1710.0	3.00	23.00	26.000	398.107	0.035	1.000	0.035
LTE Band 5	824.0	0.20	23.00	23.200	208.930	0.018	0.549	0.034
LTE Band 7	2500.0	2.00	22.00	24.000	251.189	0.022	1.000	0.022
LTE Band 12	699.0	1.20	23.00	24.200	263.027	0.023	0.466	0.050
LTE Band 13	777.0	1.20	23.00	24.200	263.027	0.023	0.518	0.045
LTE Band 14	788.0	1.20	32.00	33.200	2089.296	0.185	0.525	0.352
LTE Band 17	704.0	1.20	23.00	24.200	263.027	0.023	0.469	0.050
LTE Band 25	1850.0	3.00	23.00	26.000	398.107	0.035	1.000	0.035
LTE Band 26	814.0	0.20	23.00	23.200	208.930	0.018	0.543	0.034
LTE Band 30	2305.0	1.60	22.00	23.600	229.087	0.020	1.000	0.020
LTE Band 38	2570.0	2.00	22.00	24.000	251.189	0.022	1.000	0.022
LTE Band 41	2496.0	2.00	25.00	27.000	501.187	0.044	1.000	0.044
LTE Band 42	3450.0	3.60	23.00	26.600	457.088	0.040	1.000	0.040
LTE Band 66	1710.0	3.00	24.00	27.000	501.187	0.044	1.000	0.044
LTE Band 71	663.0	1.50	23.00	24.500	281.838	0.025	0.442	0.056
5G NR n2	1850.00	3.00	24.00	27.000	501.187	0.044	1.000	0.044
5G NR n5	824.00	0.20	23.00	23.200	208.930	0.018	0.549	0.034
5G NR n7	2500.00	2.00	22.00	24.000	251.189	0.022	1.000	0.022
5G NR n25	1850.00	3.00	22.00	25.000	316.228	0.028	1.000	0.028
5G NR n30	2305.00	1.60	22.00	23.600	229.087	0.020	1.000	0.020
5G NR n38	2570.00	2.00	24.00	26.000	398.107	0.035	1.000	0.035
5G NR n41	2496.00	2.00	27.00	29.000	794.328	0.070	1.000	0.070
5G NR n66	1710.00	3.00	24.00	27.000	501.187	0.044	1.000	0.044
5G NR n71	663.00	1.50	24.00	25.500	354.813	0.031	0.442	0.071
5G NR n77	3450.00	3.60	26.00	29.600	912.011	0.081	1.000	0.081
5G NR n78	3450.00	3.60	26.00	29.600	912.011	0.081	1.000	0.081
2.4GHz WLAN	2412.0	2.80	24.00	26.800	478.630	0.042	1.000	0.042
5.2GHz WLAN	5180.0	2.20	16.00	18.200	66.069	0.006	1.000	0.006
5.8GHz WLAN	5745.0	1.90	22.00	23.900	245.471	0.022	1.000	0.022

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/WLAN bands to perform MPE calculation conservatively.

5.2. Collocated Power Density Calculation

WWAN Power Density / Limit	WLAN2.4 GHz/5GHz Power Density / Limit	$\Sigma(\text{Power Density / Limit})$ of WWAN + WLAN
0.352	0.042	0.394

LTE Power Density / Limit	LTE Power Density / Limit	WLAN2.4 GHz/5GHz Power Density / Limit	$\Sigma(\text{Power Density / Limit})$ of LTE + LTE + WLAN
0.352	0.352	0.042	0.746

5G NR Power Density / Limit	5G NR Power Density / Limit	WLAN2.4 GHz/5GHz Power Density / Limit	$\Sigma(\text{Power Density / Limit})$ of 5G NR + 5G NR + WLAN
0.081	0.081	0.042	0.204

LTE Power Density / Limit	5G NR Power Density / Limit	WLAN2.4 GHz/5GHz Power Density / Limit	$\Sigma(\text{Power Density / Limit})$ of LTE + 5G NR + WLAN
0.352	0.081	0.042	0.475

Note:

1. For 5G NR EN-DC mode, always chose the highest LTE power density and the highest 5G NR power density to sum as EN-DC conservatively.
2. According to the EUT characteristic, WLAN 2.4GHz and WLAN 5GHz can't transmit simultaneously.
3. For colocation analysis, choose the highest (power density/limit) among WLAN 2.4GHz and 5GHz.
4. $\Sigma(\text{Power Density / Limit})$: This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + WLAN.
5. Considering all transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE collocated transmitters is compliant.

Conclusion:

According to 47 CFR §2.1091, the equipment at least 30 cm to show compliance with the power density limit, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

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