



RF Exposure Evaluation

FCC ID: 2A3EJ-DCWA02

1. Client Information

Applicant	:	Deeper Network Inc.
Address	:	5200 Great America pkwy, Santa Clara CA USA 95054
Manufacturer	:	Deeper Network Inc.
Address	:	5200 Great America pkwy, Santa Clara CA USA 95054

2. General Description of EUT

EUT Name	:	Deeper Connect Wi-Fi Adapter
Model(s) No.	:	DCWA02
Model Difference	:	----
Product Description	:	Operation Frequency: 2.4GWiFi: 2412MHz~2462MHz U-NII-1: 5180MHz~5240MHz U-NII-2A: 5260MHz~5320MHz U-NII-2C: 5500MHz~5700MHz U-NII-3: 5745MHz~5825MHz
	:	Antenna Gain: 4.19dBi Dipole Antenna for 2.4G WIFI 2.7dBi Dipole Antenna for U-NII-1 3.11dBi Dipole Antenna for U-NII-2A 4.55dBi Dipole Antenna for U-NII-2C 4.71dBi Dipole Antenna for U-NII-3
Power Rating	:	USB Input: 5V/500mA
Software Version	:	----
Hardware Version	:	v1.1
Remark: (1) The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible. (2) The antenna gain provided by the applicant, the adapter and the verified for the RF conduction test provided by TOBY test lab.		

Note: More test information about the EUT please refer the RF Test Report.

The RF Exposure Evaluation for FCC:

SAR Test Exclusion Calculations

1. FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

(1) Clause 4.3: General SAR test reduction and exclusion guidance

Sub clause 4.31: Standalone SAR test exclusion considerations

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance ≤ 5 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] \cdot [\sqrt{f_{\text{GHz}}}] \leq 3.0$ for 1-g SAR

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] \cdot [\sqrt{f_{\text{GHz}}}] \leq 7.5.0$ for 10-g SAR

2. Summary simultaneous transmission for SAR Exclusion

The SAR exemption limits outlined in clause 4.3.2(b) of KDB 447498 have been derived based on an approximate SAR value of 0.4 W/kg using half-wave dipole antennas Footnote 1. As such, when simultaneous transmitter SAR evaluations include transmitters that have been exempt from routine SAR evaluation, the SAR must be estimating based on the ratio between the maximum tune-up tolerance limit of the transmitter that has been exempt and the exemption limit at the specific distance and frequency for that transmitter. This ratio must be multiplied by 0.4 W/kg (2.0 W/kg for controlled use and 1.0 W/kg for limb worn devices) in order to calculate the estimated SAR level.

The estimate SAR value is calculated based the following equation:

(maximum power level including tune-up tolerance for transmitter A / maximum power level of exemption at the same frequency and distance) * 0.4W/kg

- 1) $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{GHz}}/x}] \text{ W/kg, for test separation distances } \leq 50 \text{ mm;}$

where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

- 2) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distance* is $> 50 \text{ mm}$.³⁷

The $[\Sigma \text{ of (the highest measured or estimated SAR for each standalone antenna configuration, adjusted for maximum tune-up tolerance) / 1.6 W/kg}] + [\Sigma \text{ of MPE ratios}] \leq 1.0$.

The SAR to peak location separation ratios of all simultaneously transmitting antenna pairs operating in portable device exposure conditions are all ≤ 0.04 , and the $[\Sigma \text{ of MPE ratios}] \leq 1.0$.



3. Calculation:

Test separation: 5mm								
Worst MPE Result								
Test Mode	Antenna	Frequency (MHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.4G b	Ant1	2462	4.78	5±1	6	3.981	1.249	3.0
2.4G g	Ant1	2462	4.65	5±1	6	3.981	1.249	3.0
2.4G n20	Ant1	2462	4.62	5±1	6	3.981	1.249	3.0
2.4G n40	Ant1	2422	4.61	5±1	6	3.981	1.239	3.0
5G a	Ant1	5200	4.88	5±1	6	3.981	1.816	3.0
5G n20	Ant1	5785	4.87	5±1	6	3.981	1.915	3.0
5G n40	Ant1	5795	4.95	5±1	6	3.981	1.917	3.0
5G ac20	Ant1	5580	5.14	5±1	6	3.981	1.881	3.0
5G ac40	Ant1	5230	4.98	5±1	6	3.981	1.821	3.0
5G ac80	Ant1	5530	4.67	5±1	6	3.981	1.872	3.0

Test separation: 5mm								
Worst MPE Result								
Test Mode	Antenna	Frequency (MHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.4G b	Ant2	2437	5.01	5±1	6	3.981	1.243	3.0
2.4G g	Ant2	2462	4.64	5±1	6	3.981	1.249	3.0
2.4G n20	Ant2	2437	4.63	5±1	6	3.981	1.243	3.0
2.4G n40	Ant2	2452	4.66	5±1	6	3.981	1.247	3.0
5G a	Ant2	5745	5.58	6±1	7	5.012	2.403	3.0
5G n20	Ant2	5785	5.07	5±1	6	3.981	1.915	3.0
5G n40	Ant2	5670	5.34	5±1	6	3.981	1.896	3.0
5G ac20	Ant2	5785	5.03	5±1	6	3.981	1.915	3.0
5G ac40	Ant2	5670	5.53	6±1	7	5.012	2.387	3.0
5G ac80	Ant2	5530	4.86	5±1	6	3.981	1.872	3.0

Simultaneous Transmission for SAR Exclusion			
Simultaneous Transmission for SAR Exclusion		Total Calculation Value	Limit
2.4G/5G WIFI Ant1	2.4G/5G WIFI Ant2		
0.2556	0.3203	0.359938	1.0
$\sum \text{of (the highest measured or estimated SAR}_{2.4G/5G \text{ WIFI Ant1}} + \text{SAR}_{2.4G/5G \text{ WIFI Ant2}}) / 1.6 = (0.2556 + 0.3203) / 1.6 = 0.359938 < 1.0;$			

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06.

-----END OF THE REPORT-----

