Maximum Permissible Exposure Evaluation

FCC ID: 2BGJ4-DLB523ACDISH

1. Client Information

Applicant	:	Shenzhen EZL Technology Co.,Ltd
Address	:	301-D24, Xiangjiang Financial Building, No.3046 Xinghai Avenue, Nanshan, Qianhai Shenzhen China 518000
Manufacturer	:	Shenzhen EZL Technology Co.,Ltd
Address	:	301-D24, Xiangjiang Financial Building, No.3046 Xinghai Avenue, Nanshan, Qianhai Shenzhen China 518000

2. General Description of EUT

EUT Name	:	Wireless Bridge
Models No.	:	DLB 5-23ac DISH
Model Different	:	----
Brand Name	:	Ligowave
Sample ID	:	HC-C-202401-0239-01-01-2#
Operation Frequency	:	U-NII-1: 5180MHz~5240MHz; U-NII-2A: 5260MHz~5320MHz U-NII-2C: 5500MHz~5700MHz; U-NII-3: 5745MHz~5825MHz
Modulation Type:		802.11a: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11n: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM (QPSK, BPSK, 16QAM, 64QAM, 256QAM)
Power Rating	:	AC Adapter (POE24G) Input: AC 100-240V~50/60Hz Output: DC 24V⎓750mA
Software Version	:	v1.0.18
Hardware Version	:	Rev1.0

Remark:
(1) The adapter provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.
(2) Antenna information from antenna specification.

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Method of Measurement for FCC

1. Max. Antenna Gain:

Band	Antenna Type	Antenna Gain(dBi)	
		Ant. 1	Ant. 2
5G U-NII-1	Internal	9.0	9.0
5G U-NII-2A		9.0	9.0
5G U-NII-2C		9.0	9.0
5G U-NII-3		9.0	9.0

2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density
P: power input to the antenna
G: power gain of the antenna in the direction of interest relative to an isotropic radiator.
R: distance to the center of radiation of the antenna

Simultaneous transmission MPE Considerations

According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0.
This means that:

∑ of MPE ratios ≤ 1.0

4. Test Result:

5G Wi-Fi Worst MPE Result								
Test Mode	Ant.	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm)[P]	Max. ANT Gain (dBi)[G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]	Limit (mW/ cm^2)
5G a-CDD	Ant1	12.10	12±1	13	9.0	20	0.03153	1
5G n20-MIMO	Ant1	12.53	12±1	13	9.0	20	0.03153	1
5G n40-MIMO	Ant1	14.05	14±1	15	9.0	20	0.04997	1
5G ac20-MIMO	Ant1	12.25	12±1	13	9.0	20	0.03153	1
5G ac40-MIMO	Ant1	14.61	14±1	15	9.0	20	0.04997	1
5G ac80-MIMO	Ant1	14.60	14±1	15	9.0	20	0.04997	1

5G Wi-Fi Worst MPE Result								
Test Mode	Ant.	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm)[P]	Max. ANT Gain (dBi)[G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]	Limit (mW/ cm^2)
5G a-CDD	Ant2	12.15	12±1	13	9.0	20	0.03153	1
5G n20-MIMO	Ant2	12.59	12±1	13	9.0	20	0.03153	1
5G n40-MIMO	Ant2	14.20	14±1	15	9.0	20	0.04997	1
5G ac20-MIMO	Ant2	12.80	12±1	13	9.0	20	0.03153	1
5G ac40-MIMO	Ant2	14.54	14±1	15	9.0	20	0.04997	1
5G ac80-MIMO	Ant2	14.88	14±1	15	9.0	20	0.04997	1

5. Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm^2)
300-1,500	F/1500
1,500-100,000	1.0

For: 5G WIFI
MPE limit S: 1mW/cm^2
The worst MPE is calculated as ***0.04997mW / cm^2 < limit 1mW / cm^2***.

6. Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna		Antenna 1&2 Synchronization Transmit
		Ant. 1	Ant.2	
IEEE 802.11a	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11n HT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11n HT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes

7. Summary simultaneous transmission results

Band	MPE Antenna 1 (mW/cm2)	MPE Antenna 2 (mW/cm2)	∑MPE ratios	Limit	Results
5G WIFI	0.04997	0.04997	0.09994	1.0	PASS

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR 2.1091 (b). The RF Exposure Information page from the manual is included here for reference.

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