

1. RF Exposure Requirements

1.1 General Information

Client Information

Applicant:	Shenzhen Cudy Technology Co., Ltd.
Address of applicant:	7/F, Lepu Tower (West), 66 Xingke Rd, Nanshan, Shenzhen, China
Manufacturer:	Shenzhen Cudy Technology Co., Ltd.
Address of manufacturer:	7/F, Lepu Tower (West), 66 Xingke Rd, Nanshan, Shenzhen, China

General Description of EUT:

Product Name:	BE3600 Dual-Band Mesh Wi-Fi 7 Extender
Trade Name:	Cudy
Model No.:	RE3600
Adding Model(s):	/
Rated Voltage:	Input:100-240V~50/60Hz, 0.3A
Battery Capacity:	/
Power Adapter:	/
FCC ID:	2APRGRE3600
Equipment Type:	Mobile device

Technical Characteristics of EUT:

Wi-Fi 2.4G

Support Standards:	802.11b, 802.11g, 802.11n, 802.11ax, 802.11be
Frequency Range:	2412-2462MHz for 802.11b/g/n/ax/be(HT/HE/EHT20) 2422-2452MHz for 802.11n/ax/be(HT/HE/EHT40)
Max. RF Output Power:	802.11b/g ANT1:15.92dBm (Conducted) 802.11b/g ANT2:15.97dBm (Conducted) 802.11n/ax/be MIMO:16.83dBm (Conducted)
Type of Modulation:	DSSS, OFDM, OFDMA, BPSK, QPSK 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM
Quantity of Channels:	11 for 802.11b/g/n/ax/be(HT/HE/EHT20); 7 for 802.11n/ax/be(HT/HE/EHT40)
Channel Separation:	5MHz
Type of Antenna:	External Antenna
Antenna Gain:	ANT1:1.18dBi ANT2:1.18dBi

Wi-Fi 5G

Support Standards:	802.11a, 802.11n-HT20, 802.11n-HT40, 802.11ac-VHT20/40/80/160, 802.11ax-HE20/40/80/160, 802.11be-EHT20/40/80/160,
Frequency Range:	5180-5250MHz, 5250-5320MHz 5500-5700MHz, 5745-5825MHz

Max. RF Output Power:	5180-5250MHz: 17.31dBm (Conducted)
	5250-5320MHz: 17.57dBm (Conducted)
	5500-5700MHz: 17.69dBm (Conducted)
	5745-5825MHz: 17.86dBm (Conducted)
Type of Modulation:	OFDM, OFDMA, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM
Type of Antenna:	External Antenna
Antenna Gain:	ANT1:1.05dBi
	ANT2:1.05dBi

1.2 RF Exposure Exemption

According to §1.1307(b)(3) and KDB 447498 D04 Interim General RF Exposure Guidance v01, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Option A: FCC Rule Part 1.1307 (b)(3)(i)(A):The available maximum time-averaged power is no more than 1mW, regardless of separation distance.

Option B: FCC Rule Part 1.1307 (b)(3)(i)(B): The available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

Option C: FCC Rule Part 1.1307 (b)(3)(i)(C): The minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters.

Single RF Sources Subject to Routine Environmental Evaluation	
RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R ²
1.34-30	3,450 R ² /f ²
30-300	3.83 R ²
300-1,500	0.0128 R ² f
1,500-100,000	19.2R ²

For Multiple RF sources: FCC Rule Part 1.1307(b)(3)(ii):

- (A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required).
- (B) In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

1.3 Calculated Result

Radio Access Technology	Prediction Frequency (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	Tune-Up Time-Averaged Power (dBm)	ERP (dBm)
WiFi 2.4G MIMO	2412	16.83	1.18	100	17.00	16.03
Wi-Fi 5G MIMO	5180	17.31	1.05	100	18.00	16.90
Wi-Fi 5G MIMO	5250	17.57	1.05	100	18.00	16.90
Wi-Fi 5G MIMO	5500	17.69	1.05	100	18.00	16.90
Wi-Fi 5G MIMO	5745	17.86	1.05	100	18.00	16.90

Frequency (MHz)	Option	Min. Distance (cm)	Max. Power (dBm) (mW)		Exposure Limit (mW)	Ratio	Result Pass/Fail
2412	C	20.00	16.03	40.09	768.00	0.05	Pass
5180	C	20.00	16.90	48.98	768.00	0.06	Pass

5250	C	20.00	16.90	48.98	768.00	0.06	Pass
5500	C	20.00	16.90	48.98	768.00	0.06	Pass
5745	C	20.00	16.90	48.98	768.00	0.06	Pass

Note: 1. Time-Averaged Power=Output Power * Duty Cycle; ERP= Time-Averaged Power+ Antenna gain-2.15dB

2. Option A, B and C refers as clause 1.2.

3. For option B, Max (time-averaged power, effective radiated power (ERP)) converts to Max. Power. For option C, ERP converts to Max. Power;

4. For option B, P_{th} (mW) converts to Exposure Limit (mW); For option C, ERP (W) converts to Exposure Limit (mW).

5. Ratio= Tune-Up ERP (mW)/ Exposure Limit (mW)

Result: Pass

Mode for Simultaneous Multi-band Transmission:

Radio Access Technology	Ratio 1	Ratio 2	Simultaneous Ratio	Limit	Result
					Pass/Fail
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