RF EXPOSURE EVALUATION REPORT

FCC ID	:	2AEUPBHASC081
Equipment	:	Stick Up Cam Pro
Brand Name	:	ring
Model Name	:	5E72E9
Applicant	:	Ring LLC 12515 Cerise Ave, Hawthorne, CA 90250, USA
Manufacturer	:	Ring LLC 12515 Cerise Ave, Hawthorne, CA 90250, USA
Standard	:	47 CFR Part 1.1307 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 1.1307, 47 CFR Part 2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

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Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA261635	Rev. 01	Initial issue of report	Oct. 27, 2022
FA261635	Rev. 02	Updated section1	Mar. 22, 2023
FA261635	Rev. 03	Updated section4.1	Mar. 31, 2023

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Stick Up Cam Pro
Brand Name	ring
Model Name	5E72E9
FCC ID	2AEUPBHASC081
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.5GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5855 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz LoRa(DTS): 902 MHz ~ 926.5 MHz LoRa(FHSS): 902.2 MHz ~ 927.8 MHz 24GHz Radar: 24.05GHz ~ 24.25GHz
Mode	WLAN: 802.11a/b/g/n HT20 Bluetooth LE LoRa: DTS/FHSS 24GHz Radar: FMCW
SW Version	1.12.21
HW Version	B6
EUT Stage	Identical Prototype

Reviewed by: Jason Wang

Report Producer: Carlie Tsai

2. Maximum RF average output power among production units

Mode	Tune-Up Limit (dBm)
24GHz Radar	3.7

Mode	Channel	Frequency (MHz)	Tune-Up Limit (dBm)
LoRa (DTS)	Ch 1	902.5MHz	22.5
LoRa (DTS)	Ch 16	914.5MHz	22.5
LoRa (DTS)	Ch 31	926.5MHz	22.5
LoRa (FHSS)	Ch 1	902.2MHz	22.5
LoRa (FHSS)	Ch 65	915MHz	22.5
LoRa (FHSS)	Ch 129	927.8MHz	22.5

Mode	Channel	Frequency (MHz)	Tune-Up Limit (dBm)
BT5.0	CH 00	2402 MHz	2.0
BT5.0	CH 19	2440 MHz	2.0
BT5.0	CH 39	2480 MHz	2.0
BT5.0	CH 00	2402 MHz	2.0
BT5.0	CH 19	2440 MHz	2.0
BT5.0	CH 39	2480 MHz	2.0

Band	Channel	Frequency (MHz)	Tune-Up Limit (dBm)
802.11b	CH 01	2412 MHz	15.0
802.11b	CH 06	2437 MHz	15.0
802.11b	CH 11	2462 MHz	13.0
802.11g	CH 01	2412 MHz	15.5
802.11g	CH 06	2437 MHz	17.0
802.11g	CH 11	2462 MHz	16.5
802.11n HT20	CH 01	2412 MHz	14.0
802.11n HT20	CH 06	2437 MHz	17.0
802.11n HT20	CH 11	2462 MHz	15.5

Band	Channel	Frequency (MHz)	Tune-Up Limit (dBm)
802.11a	CH 036	5180 MHz	14.0
802.11a	CH 044	5220 MHz	14.0
802.11a	CH 048	5240 MHz	14.0
802.11n HT20	CH 036	5180 MHz	14.0
802.11n HT20	CH 044	5220 MHz	14.0
802.11n HT20	CH 048	5240 MHz	14.0

Band	Channel	Frequency (MHz)	Tune-Up Limit (dBm)
802.11a	CH 052	5260 MHz	14.0
802.11a	CH 060	5300 MHz	14.0
802.11a	CH 064	5320 MHz	14.0
802.11n HT20	CH 052	5260 MHz	14.0
802.11n HT20	CH 060	5300 MHz	14.0
802.11n HT20	CH 064	5320 MHZ	14.0

Band	Channel	Frequency (MHz)	Tune-Up Limit (dBm)
802.11a	CH 100	5500 MHz	13.0
802.11a	CH 116	5580 MHz	12.0
802.11a	CH 140	5700 MHz	12.0
802.11a	CH 144	5720 MHz	12.0
802.11n HT20	CH 100	5500 MHz	14.0
802.11n HT20	CH 116	5580 MHz	12.0
802.11n HT20	CH 140	5700 MHz	12.0
802.11n HT20	CH 144	5720 MHz	14.0

Band	Channel	Frequency (MHz)	Tune-Up Limit (dBm)
802.11a	CH 149	5745 MHz	14.0
802.11a	CH 157	5785 MHz	14.0
802.11a	CH 165	5825 MHz	14.0
802.11n HT20	CH 149	5745 MHz	14.0
802.11n HT20	CH 157	5785 MHz	14.0
802.11n HT20	CH 165	5825 MHz	14.0

3. Determination of exemption

Per 1.1307(b)(3), (i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$\text{Pth (mW)} = \text{ERP}_{20cm}\,(d / 20)^{x} \quad \text{for distance } d \le 20cm$$

$$\text{Pth (mW)} = \text{ERP}_{20cm} \quad \text{for distance } 20cm < d \le 40cm$$

$$x = -log10\left(\frac{60}{ERP_{20cm}\sqrt{f}}\right)$$

$$\text{ERP}_{20cm}\text{(mW)} \quad \begin{matrix} 0.3\ GHz \le f < 1.5\ GHz: & 2040\ f \\ 1.5\ GHz \le f \le 6\ GHz: & 3060 \end{matrix}$$

(C) Or using Table 1 and 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. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - 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^2f.
1,500-100,000	19.2R^2.

4. RF Exposure Evaluation

4.1. Standalone assessment

General Note:

1. Pi is mean the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm
2. Pth is mean the exemption threshold power (Pth) according to the § 1.1307(b)(3)(i)(B) and § 1.1307(b)(3)(i)(C) Table 1 formula for fixed, mobile, or portable RF source i.
3. The distance of 20cm is used in the calculation formula of part1.1307(b)(3)(i)(C)
4. In this report was used Part1.1307(b)(3)(i)(B), Part1.1307(b)(3)(i)(C) perfrom RF Exposure evaluation
5. The distance of 20cm is for this device

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
WLAN2.4GHz Band	3.94	17.00	20.9	18.79	124.17	75.68	18.79	75.68	3060.000	0.025
WLAN5GHz Band	3.78	14.00	17.8	15.63	59.98	36.56	15.63	36.56	3060.000	0.012
Bluetooth	4.20	2.00	6.2	4.05	4.17	2.54	4.05	2.54	3060.000	0.001
LoRa (DTS)	-0.30	22.50	22.2	20.05	165.96	101.16	22.50	177.83	1840.080	0.097
LoRa (FHSS)	-0.30	22.50	22.2	20.05	165.96	101.16	22.50	177.83	1840.488	0.097

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(c) Threshold (mW)	Part1.1307 option(c) ERP/ERPth
24GHz Radar	24075.0	2.00	3.70	5.7	3.55	3.72	2.26	3.70	2.34	768.000	0.003

4.2. Simultaneous transmission analysis

General Note:

1. Either MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (*Evaluatedk* term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1).
2. The sum of the ratios of the applicable terms for MPE-based and MPE shall be less than 1, to determine all transmitters simultaneous transmission exposure compliance.

$$\sum_{i=1}^{a}\frac{P_i}{P_{\mathrm{th},i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{\mathrm{th},j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\le 1 \qquad (C.1)$$

Maximum WLAN Pi/Pth Ratio	Maximum Bluetooth Pi/Pth Ratio	Maximum Lora Pi/Pth Ratio	24GHz Radar Pi/Pth Ratio	Σ (P/Pth Ratio) of All Transmitters
0.025	0.001	0.097	0.003	0.126

Conclusion:

According to 47 CFR §1.1307, the RF exposure analysis concludes that the RF Exposure is FCC compliant.