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**Reply to an OET Inquiry Response****Currently Displaying Inquiry Tracking Number: 944034****Contact Information:**

Customer First Name: Sophia  
Customer Last Name: Li  
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State:  
Zip Code: 51800  
Country: China

**Inquiry Details on 02/28/2019:**

First category: RF Exposure \*  
Second category: Test Procedures (RF Exposure)  
Third category:  
Subject: Camera SAR test method  
Inquiry: Dear Expert;  
We have a 360° camera ,it' is now under SAR investigation as a new product that will apply FCC ID. we are not sure how to test SAR and what's the test distances of SAR testing for EACH SIDE of the camera.  
i will share all the necessary documents as attachments for your technical evaluation.  
We are intend is to test SAR with minimum 15mm distance since the camera's UM (page 58-62) and QSG clearly show that the camera is used with accessories-mounts, grip, helmet, etc. as below, all the usage cases will have minimum 15mm far from camera.

for more information about all the accessories you can refer the link as below for details:

Grip: <https://shop.gopro.com/mounts/fusion-grip/ASBHM-001.html>

Mounts: <https://shop.gopro.com/mounts/fusion-mounts/ASBMB-001.html>

Helmet: <https://shop.gopro.com/mounts/helmet-front-plus-side-mount/AHFMSM-001.html>

<https://shop.gopro.com/mounts/nvg-mount/ANVGM-001.html>

Let me know if you have more questions and I'd like to support you for all need.

FCC Response on 03/05/2019:

Thank you for your inquiry. To provide you with appropriate guidance, more information is needed.

1. Please identify all wireless technologies utilized by the device. Please include information about frequency band and modulation, if applicable.
2. Please provide the conducted output powers with tune-up tolerance for each wireless technology, per frequency band.
3. Please provide a diagram showing the dimensions of the device.
4. Please provide a diagram showing the distance of each antenna to each surface and edge of the device.
5. Does the device support any power reduction mechanisms or simultaneous transmission?
6. Does the camera have viewfinder? Would there be an exposure scenario during normal operation where the user's head or body would be in close proximity to the device?
7. Can the user mount the camera to his/her clothing or use the device with a strap or lanyard?

---Reply from Customer on 03/06/2019---

Thanks and see my response in blue ink:

1. Please identify all wireless technologies utilized by the device. Please include information about frequency band and modulation, if applicable.  
Sophia: Frequency/Band: 2.4G BT(2402-2480MHz), 2.4G WIFI(2412-2462MHz), 5G WIFI full bands, , 5745-5825MHz; U-NII-1(5180-5320MHz), U-NII-2A(5500-5700MHz), U-NII-2C(5500-5700MHz), U-NII-3(5745-5825MHz). Modulation types: BT BR/EDR: GFSK,  $\pi/4$ -DQPSK, 8-DPSK; BLE: GFSK; WLAN: 802.11b:BPSK, QPSK, CCK; 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM; 802.11ac:BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM.

2. Please provide the conducted output powers with tune-up tolerance for each wireless technology, per frequency band.  
Sophia: this product is now in development phase and we are sorry that we can't provide all powers for each wireless technology/band, but according to our product wireless design, the 2.4G WIFI b mode has(will have) the max conducted power 19.9dBm for all wireless technology, based on our preliminary prescan result; and, other all wireless power should be lower than 2.4G WIFI b mode.
3. Please provide a diagram showing the dimensions of the device.  
Sophia: See attached product dimensions that is highly critical confidential info at current product development phase, please keep confidential AFTER this product's long/short term confidentiality deadline.
4. Please provide a diagram showing the distance of each antenna to each surface and edge of the device.  
Sophia: the same as above, on page 3 & 4
5. Does the device support any power reduction mechanisms or simultaneous transmission?  
Sophia: No, this product does NOT have power sensor or TPC(Transmitting power control).
6. Does the camera have viewfinder? Would there be an exposure scenario during normal operation where the user's head or body would be in close proximity to the device?  
Sophia: No viewfinder. According to our use cases, the distance between device and user's body/head will be minimum 10mm, and we are prefer to use 10mm for SAR test distance, i just found i made a typo on last word as 15mm, so sorry for that, please help to consider is it ok to use 10mm for sar testing.
7. Can the user mount the camera to his/her clothing or use the device with a strap or lanyard?  
Sophia: No, currently all accessories of this camera do not support users to mount cameras to clothing or use device with straps/lanyards.

FCC Response on 03/07/2019:

Thank you for the information. Upon consideration, please apply the following guidance. Since the camera does not contain an eyepiece (camera is not held up to the eye/next to head to aim when taking photos), then it is appropriate to utilize the test procedures in KDB 941225 D07. Test all surfaces and side edges with a transmitting antenna located at  $\leq$  25 mm from that surface or edge. This publication can be found online at <https://apps.fcc.gov/oetcf/kdb/reports/GuidedPublicationList.cfm>.

A 15 mm test separation distance is too large considering the small size and form factor of this device. A test separation distance of 5 or 10 mm should be used. In this particular case, we do not have a preference in utilizing either 5 mm or 10 mm test separation distance for 1g SAR compliance. If you choose 5 mm for 1g SAR, then 10g extremity SAR will not be required. If you choose 10 mm for 1g SAR, then you are required to also test for 10g extremity SAR at 0 mm test distance.

---Reply from Customer on 04/29/2019---

Now we will test 1-g SAR at 10mm and 10-gSAR at 0mm.

To test the Head SAR with Flat phantom used head liquid.

To test the body SAR with Flat phantom used body liquid.

Is the test set-up correct?

We test the conduct power for 802.11b is 17.44dBm, 802.11g: 20.38dBm, HT20: 20.33dBm, HT40: 21.26dBm, Which mode shall be tested? MAX output power mode or b mode? Please see the attachment.

FCC Response on 04/29/2019:

The flat phantom filled with head tissue simulating liquid with a test separation distance of 10 mm should be used for the 1-g SAR tests. The flat phantom filled with body tissue simulating liquid with a test separation distance of 0 mm should be used for the 10-g SAR tests. As for which channels and modes to test, please refer to FCC KDB Publication 248227 D01. This KDB Publication can be found online at <https://apps.fcc.gov/oetcf/kdb/reports/GuidedPublicationList.cfm>.

**Attachment List:**

[Quick start Guide](#)  
[output power](#)

[Enter any additional comments below:](#)

\* (This is a text only field. Users will be able to upload attachments after clicking on the "Proceed" button below)

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