DLA Piper LLP (US)
500 8th Street, N.W.
Washington, D.C. 20004
www.dlapiper.com

Tony Lin
tony.lin@us.dlapiper.com
T 202.799.4450
F 202.799.5450

April 11, 2024

VIA ELS
Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street, NE
Washington, DC 20554

Re: HawkEye 360, Inc.
ELS File No. 0006-EX-CM-2024 (Call Sign WN2XSB)

Dear Ms. Dortch:

HawkEye 360, Inc. ("HE360"), through its counsel, submits information in the above-referenced proceeding, regarding the power flux density ("PFD") calculations for the 8291 MHz, 8297 MHz, 8302 MHz, 8075 MHz, 8210 MHz, and 8090 MHz center frequency transmissions. This information was previously submitted in the underlying application proceeding associated with Call Sign WN2XSB (0790-EX-CN-2023) and remains accurate.

/s/Tony Lin

Tony Lin
Counsel to HawkEye 360, Inc.

Attachment

Attachment

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500 8th Street, N.W.
Washington, D.C. 20004
www.dlapiper.com

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tony.lin@us.dlapiper.com
T 202.799.4450
F 202.799.5450

August 21, 2023

VIA ELS
Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street, NE
Washington, DC 20554

Re: HawkEye 360, Inc.
ELS File No. 0790-EX-CN-2023

Dear Ms. Dortch:

HawkEye 360, Inc. ("HE360"), through its counsel, submits this letter supplementing the above-referenced pending application. Pursuant to the FCC's request, HE360 provides the power flux density ("PFD") calculations for its 8291 MHz, 8297 MHz, 8302 MHz, 8075 MHz, 8210 MHz, and 8090 MHz center frequency transmissions.

The X-band PFD calculations are provided in Table 1 below. As explained in the application narrative, the testing will take place indoors within a cleanroom in an office building with walls comprised of two layers of masonry blocks and a roof comprised of corrugated metal, with insulation backing and a rubber-rock membrane. The X-band transmitter is mounted on a tripod 1.5 meters above ground level, and the X-band receiver is approximately 1 meter away. Under such a testing environment, HawkEye 360 does not anticipate any harmful RF interference to authorized users in the band.

To be clear, no part of this experimental application involves transmissions from any aircraft or spacecraft. We understand that some text in the application was confusing in that regard. *See* Application, at 1 ("Testing is required to ensure the validity and reliability of the radio frequency ("RF") systems that *will fly* on the HawkEye 360 Constellation.") (emphasis added). That phrase was included only to convey that the X-band transmitter being tested would eventually be placed on the spacecraft (which are separately licensed). Please feel free to disregard that phrase, which is not material to the testing operations.

As explained in the application narrative, within 1000 ft (~305 m) in all directions of HawkEye 360's cleanroom, there are at least two additional walls (and many more in some instances) which provide additional attenuation. HawkEye 360 has assumed -20 dB of building penetration loss from exiting the lab facility and an additional -40 dB of building penetration loss from passing through nearby facilities. The analysis shows compliance with the International Telecommunication Union PFD standards in Table 21-4 of Article 21 of the Radio Regulations in the best case at distances equal to or greater than 400 m to the transmit site and in the worst case at distances equal to or greater than ~1.5 km, depending on the signal bandwidth, as can be seen in the images below.

Moreover, HawkEye 360 has carefully reviewed all structures within 1.5 km of the testing sites and has been unable to identify any government buildings with evidence of a Fixed Service ("FS") antenna, towers with FS antennas, or any large Earth station antenna (as would be associated with an X-band Earth station). Accordingly, HawkEye 360 believes there would be no impact to authorized X-band users in the relevant vicinity of the testing.

If there are any concerns about a particular facility in the vicinity, HawkEye 360 will calculate the potential impact and/or take steps to mitigate potential interference to that facility.

	XBAND2	XBAND	XTLM	Units
Carrier Frequencies	8090, 8210	8075, 8165, 8255	8291, 8297, 8303	MHz
Emission Bandwidth	105	8	0.128	MHz
EIRP Density	-27.2	-21.1	-17.1	dBW/4 kHz
Building Exit Loss (dB)	20	20	20	dB
Building Passthrough Loss (dB)	40	40	40	dB
PFD @ 50m	-92.2	-86.1	-82.0	dBW/m^2/4kHz
PFD @ 100m	-98.2	-92.1	-88.0	dBW/m^2/4kHz
PFD @ 200m	-104.2	-98.1	-94.1	dBW/m^2/4kHz
PFD @ 400m	-150.2	-144.1	-140.1	dBW/m^2/4kHz
PFD @ 800m	-156.2	-150.2	-146.1	dBW/m^2/4kHz
PFD @ 1500m	-161.7	-155.6	-151.6	dBW/m^2/4kHz
PFD @ 4km	-170.2	-164.1	-160.1	dBW/m^2/4kHz
PFD @ 8km	-176.2	-170.2	-166.1	dBW/m^2/4kHz
PFD @ 16km	-182.3	-176.2	-172.1	dBW/m^2/4kHz
PFD @ 32km	-188.3	-182.2	-178.1	dBW/m^2/4kHz
PFD @ 64km	-194.3	-188.2	-184.2	dBW/m^2/4kHz

Assumptions	At 50m, RF exited lab building At 400m, RF passed through another building Only Line of Sight PFD computed (aside from building) Not including any Earth curvature effects

Table 1

/s/Tony Lin

Tony Lin
Counsel to HawkEye 360, Inc.