

Question 7 – Purpose of Experiment (Modification to ELS File No. 0024-EX-CN-2017 (filed January 11, 2017))

HawkEye 360, Inc. (“HE360”) is a Delaware corporation with its headquarters and operations located in Herndon, Virginia.

On January 11, 2017, HE360 applied (0024-EX-CN-2017) to the Federal Communication Commission (FCC) for an experimental authorization to test and validate its proprietary cutting-edge satellite technology which will allow for unprecedented detection, analysis and mapping of wireless signals, resulting in more accurate information and advanced Earth Exploration Satellite Service (“EESS”) capabilities for commercial customers when compared to information not currently available through terrestrial detection and image analysis. On February 12, 2018, the FCC granted the application to operate the Pathfinder satellite cluster.¹ The Pathfinder satellite cluster successfully launched on December 3, 2018.

By this filing, HE360 seeks permission to communicate in the X-band (space-to-Earth) and S-band (Earth-to-space) frequencies with two additional ground stations owned by Kongsberg Satellite Services (KSAT) and located in Troll (Antarctica) and Tromsø (Norway). These additional ground stations will increase the number of downlink opportunities, reducing latency and increasing the amount of data we can downlink. HE360 has initiated coordination with relevant federal agencies.

The following chart summarizes the Pathfinder satellite cluster operations, as modified by this application. The text in bold and underlined highlights the proposed modifications:²

Frequency Band	Transmit Frequency (center frequency)	Emission Designator (including Bandwidth)	Output power/ERP (Peak)	Current Use	Proposed Modification to 0024-EX-CN-2017
432-438 MHz (Earth-to-space)	Sat#1 - 435.365 MHz Sat#2 - 435.865 MHz Sat#3 - 436.65 MHz	35K0F1D	100.0W 794.33W	Emergency backup TT&C uplink (Herndon, VA and Svalbard)	No change
2025-2110 MHz (Earth-to-space)	Sat#1 - 2062.7 MHz Sat#2 - 2068.2 MHz Sat#3 - 2077.4 MHz	1M75G1D	10W 30.2kW	Primary uplink (Svalbard)	Primary uplink (Svalbard, <u>Troll & Tromsø</u>)
2200-2290 MHz (space-to-Earth)	Sat#1 - 2240 MHz Sat#2 - 2246 MHz Sat#3 - 2256 MHz	4M00G1D	0.35W 1.56W	Emergency backup TT&C downlink (Svalbard)	No change
2410 MHz (space-to-	Sat#1 - 2410 MHz Sat#2 - 2410 MHz	10K0G1D	100 mW N/A	Cross-link	No change

¹ Grant, ELS File No. 0024-EX-CN-2017 (granted Feb. 12, 2018).

² Separately, the FCC approved the Pathfinder cluster to communicate on the following frequencies for launch and early orbit phase communications (space-to-Earth) with the Herndon ground station: 2238-2242 MHz; 2244-2248 MHz; and 2254-2258 MHz. See ELS File Nos. 1804-EX-ST-2017 (granted Nov. 9, 2018, as revised); 1703-EX-ST-2018 (granted Nov. 9, 2018, as revised).

space)	Sat#3 - 2410 MHz				
8025-8400 MHz (space-to-Earth)	Sat#1 - 8050 MHz Sat#2 - 8175 MHz Sat#3 - 8300 MHz	85M0G1D	2.0W 7.96W	Primary downlink (Svalbard)	Primary downlink (Svalbard, <u>Troll</u> & <u>Tromsø</u>)

The coordinates for the two new KSAT ground stations are as follows:

Troll, Antarctica: 72.0°S, 2.5°E

Tromsø, Norway: 69.6°N, 19.0°E

Specific Objectives Sought to be Accomplished

See Narrative Description in ELS File No. 0024-EX-CN-2017 (filed January 11, 2017).

How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion, or utilization of the radio art, or is along line not already investigated.

See Narrative Description in ELS File No. 0024-EX-CN-2017 (filed January 11, 2017).

Estimated Experiment Duration

There is no change to the estimated experiment duration under ELS File No. 0024-EX-CN-2017.

See Narrative Description in ELS File No. 0024-EX-CN-2017 (filed January 11, 2017).