9 Channel Center, Floor 7
Boston, MA 02210

Purpose of Request

The Tomorrow Companies Inc. ("Tomorrow.io") requests Special Temporary Authority (STA) to conduct limited-duration testing of a prototype Ka-band precipitation radar in support of engineering validation. The requested authorization will permit evaluation of system performance under controlled conditions prior to production deployment.

Description of Radar Instrument and Experimental Operation

The experimental system is a beamformed Ka-band precipitation radar operating within the 35.5–36.0 GHz frequency band. The radar employs a high-gain antenna producing an approximately 0.5° pencil beam. During operation, the antenna elevation angle remains fixed while the beam is electronically scanned over an azimuth sector of up to ±20° about boresight.

The radar transmits pulsed linear frequency modulated (LFM) waveforms with a nominal pulse duration up to 10 μs and an instantaneous chirp bandwidth of approximately 1.2 MHz. Pulse amplitudes are shaped using a Von Hann window to reduce spectral sidelobes. The transmitted center frequency is varied on a pulse-to-pulse basis through frequency hopping within the authorized 35.5–36.0 GHz operating band. The maximum transmitter peak output power is 24 W, and the maximum transmitter duty cycle will not exceed 35%.

The purpose of the experimental operation is to verify the radar's configuration and establish a beamforming performance baseline. Testing will be conducted transmitting in vertical or near-vertical beam orientation to obtain simple echo measurements from precipitation and/or clouds directly above the radar. Measurements will be used to verify baseline radar configurations, timing and ranging parameters, beam steering capability and overall transmitting and receiving RF and digital chains.

The radar will be rolled out of the company office building in its mounting fixture for short periods of operation time (below 1h).

The test location is a private parking lot and the operation will be conducted only within its boundaries, where access can be managed during testing. The selected location will provide sufficient separation from public areas to minimize the potential for uncontrolled RF exposure.

The radar will be operated only within the authorized frequency band of 35.5–36.0 GHz and within the near-vertical to vertical antenna pointing directions identified in this application. Operation is limited to engineering testing and system characterization. Appropriate operational controls, including restricted site access, controlled antenna pointing, and

established exclusion zones as necessary, will be implemented to ensure compliance with the applicable FCC requirements for RF exposure.

Directional Antenna Information:

Width of beam in degrees at the half power point:	0.5 deg
Orientation in the horizontal plane:	0 to 360 deg
Orientation in vertical plane:	90 +/- 20 deg

Frequency Information:

Frequency:	35.5-36.0 GHz
Station Class:	FX
Output Power / ERP	24.00W / 0.92MW
Mean Peak:	P
Frequency Tolerance (+/-):	0.00100000%
Emission Designator:	1M23Q0N
Modulating Signal	LFM chirped radar pulses (up tp 10 µs, 1.2 MHz sweep) with Von Hann amplitude windowing and pulse-to-pulse frequency hopping over 35.5–36.0 GHz

Testing Location:

Location: Tomorrow.io office building parking lot area.
Latitude: 39.742618 deg N
Longitude: -105.160943 deg W
Radius of Operations: Within the location boundaries
Address: 14123 Denver West Parkway, Golden, CO 80401

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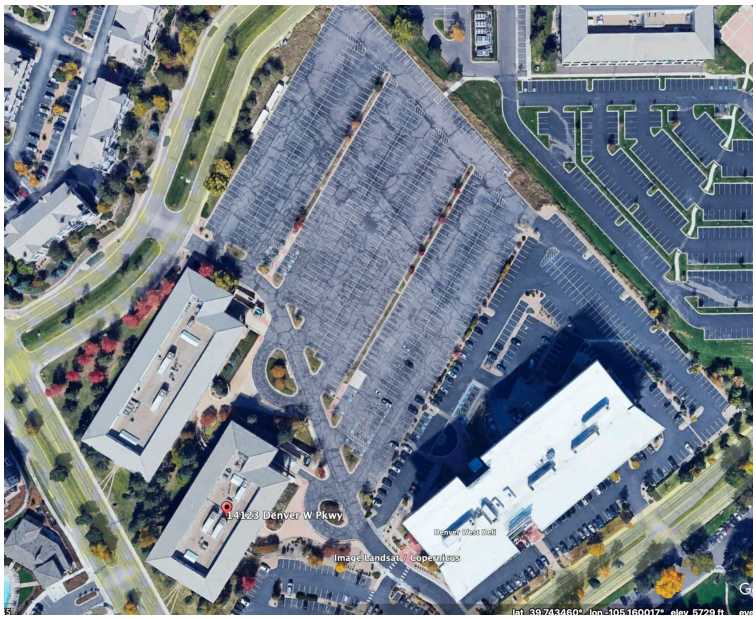

Testing will be conducted under the control of qualified personnel. Operations will cease immediately upon notification of harmful interference. The equipment will operate only within the authorized parameters, and all reasonable precautions will be taken to avoid interference to authorized spectrum users.

Stop Buzzer POC:
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