

Special Temporary Authorization
File No.:0661-EX-ST-2012

**Exhibit 1: Spectrum Requirements, Antenna Pointing
Information, and Stop Buzzer Contacts**

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Applicant Background:

The purpose of this project is to test and demonstrate fixed point-to-point link in government-exclusive band, as well as, test and demonstrate commercially-available data link equipment for application to government/military communication system needs. Our intent for this demonstration is to provide a representative system for testing and integration purposes. In addition, it is our intent to exercise the entire system as much as possible as a system level test of the functionality. This effort will begin with an initial integration phase and end with a demonstration phase that will allow us to compare and contrast the vendor solutions. The end state of the demonstration will be once Ultra has completed the final test and enough data is collected to make accurate decisions on the vendor proposed systems.

Spectrum Requirements and Test Scheduling:

The maximum necessary bandwidth of any of the waveforms planned for transmission is 28.7 MHz. However, the radio manufacturer (Cambium Networks) states that the "30 MHz transmission" (i.e., 28M7D1D) operates in a 40 MHz channel within the government's 4400-4940 MHz band plan. Given the manufacturer's specifications for the PTP45600, the valid center frequencies of these channels are 4420 MHz, 4460 MHz, 4500 MHz, 4540 MHz, and 4580 MHz. Any of those center frequencies and associated 28.7 MHz bandwidth is sufficient for the planned tests. We can use whichever of these is least likely to cause interference to other users. We assume that operation will be on a non-interference basis. Test schedules will be coordinated with other identified users prior to any radiation.

Location of Testing and Antenna Pointing:

All testing covered by this STA will be performed in the vicinity of Nogales, Arizona, within Santa Cruz County. The locations of the antennas are shown in a Google Earth map in Figure 1, and listed along with angles and ranges in Table I. The application shows 6 antennas, all operating concurrently (ring redundant). The pairings are antenna 1 operating in a time-division duplex link with antenna 2, antenna 3 operating in a time-division duplex link with antenna 4, and antenna 5 operating in a time-division duplex link with antenna 6. The antenna azimuth orientations provided in the STA application reflect these pairings. Elevation angles are all relative to zero degrees horizontal, and will not be varied.

Table 1. Antenna Locations and pointing angles

	Latitude	Longitude	Site Elev. (m)	Range (km)	Azimuth (deg)	Elevation Angle (deg)
Link 1						
Antenna 1	31° 21' 15" N	110° 55' 27" W	1197	10.18	320	-0.2
Antenna 2	31° 25' 27" N	110° 59' 36" W	1160	10.18	140	+0.2
Link 2						
Antenna 3	31° 25' 27" N	110° 59' 36" W	1160	7.19	117	+1.5
Antenna 4	31° 23' 40" N	110° 55' 34" W	1335	7.19	297	-1.5
Link 3						
Antenna 5	31° 21' 15" N	110° 55' 27" W	1197	4.48	358	+1.9
Antenna 6	31° 23' 40" N	110° 55' 34" W	1335	4.48	178	-1.9

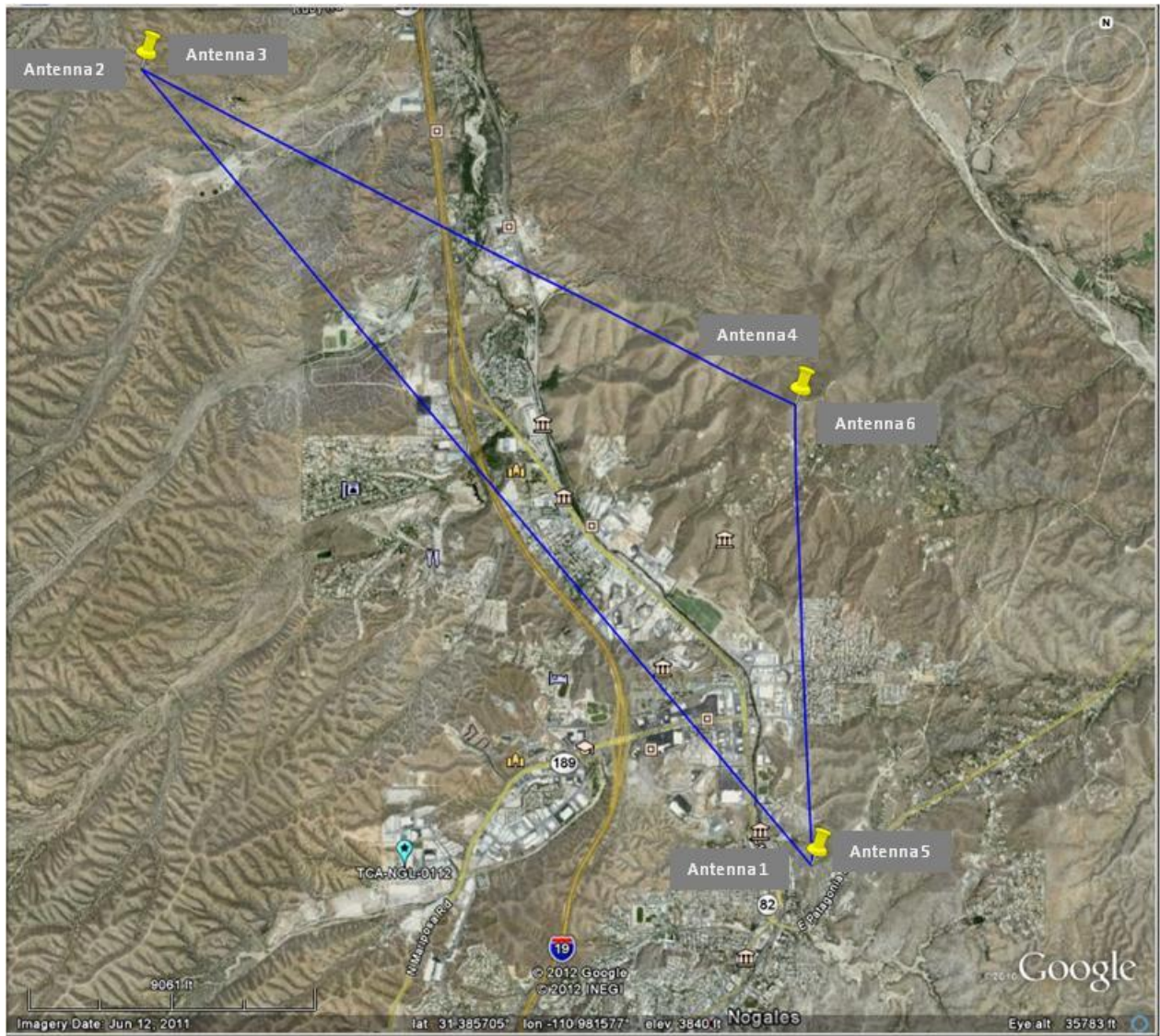


Figure 1. Antenna Locations

Stop Buzzer Contacts:

In the event of interference caused by the experiment, the following individuals will be responsible for ensuring that transmissions cease as soon as possible after notification:

Primary: Rick Kunz (801)628-3602 (cell)

Backup: Bing Shen (801)706-0270 (cell)