

**Additional Antenna Information**

The Astro Digital earth station is comprised of one UHF antenna array comprised of 4 phased individual Yagi antennas. The system operates in half-duplex mode such that the antennas, working with a T/R switch, alternate between transmit mode and receive mode. The antennas are held in position relative to one another by an H-Frame structure with a single cross-mast. The antenna system is oriented by an Az-El rotator positioned at the center of the H frame. This is more clearly shown in Figures A-1 and A-2 of this attachment. The characteristics of each Yagi antenna are given in Table A-1 and the characteristics of the overall antenna array are given in Table A-2. The antenna pattern of the array is provided in Figure A-3.

**Table A-1: Single UHF Yagi Characteristics:**

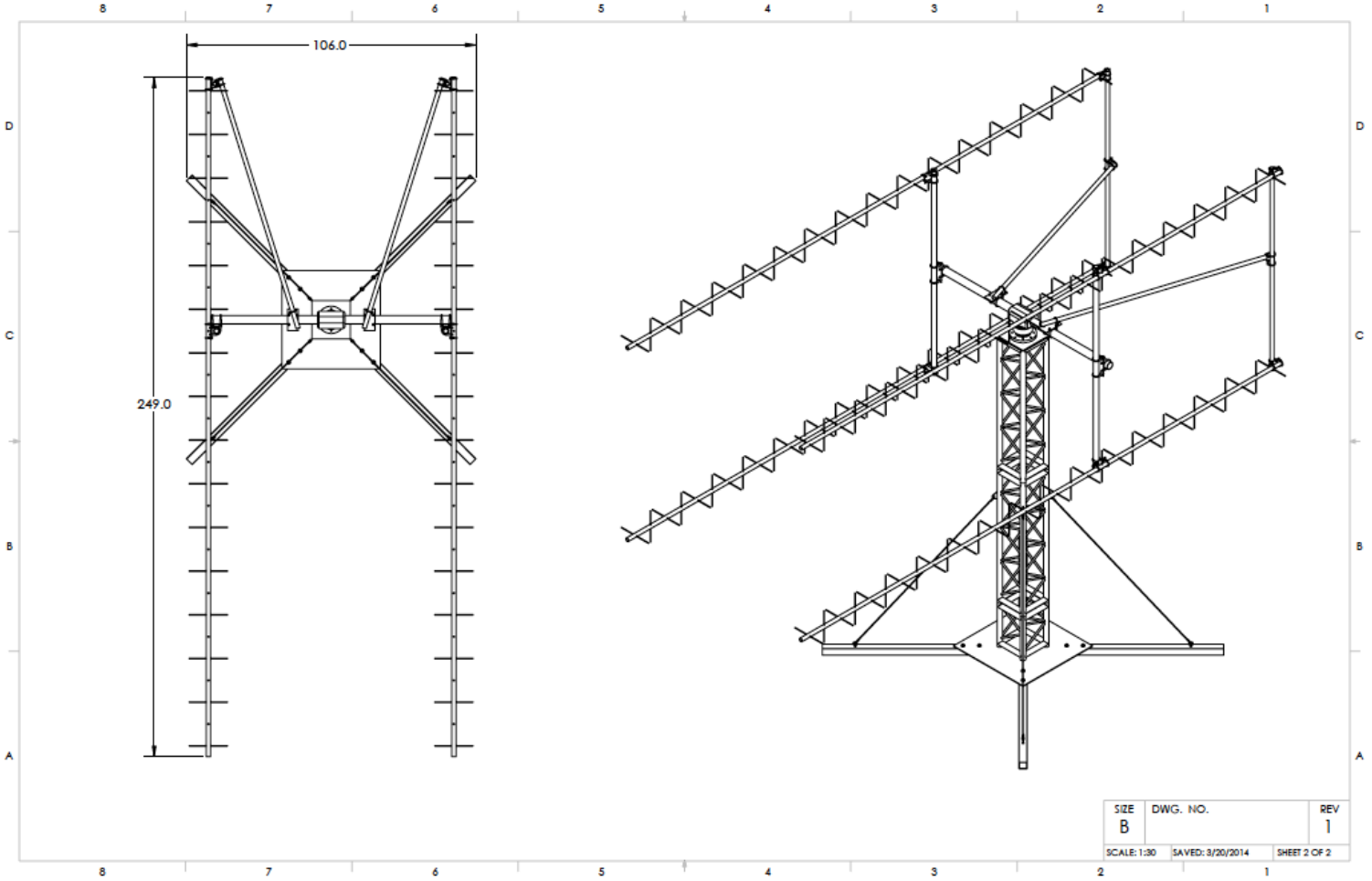
<i>Parameter:</i>	<i>Value:</i>
Manufacturer:	M <sup>2</sup> Antenna Systems, Inc.
Model:	402CP42
Frequency Range:	399.5 – 408.0 MHz <sup>1</sup>
Gain:	18.7 dBi
Beamwidth:	23.0°
Front-to-Back Ratio:	16.2 dB
Axial Ratio:	1.5 dB
Polarization:	RHCP
Feed Type:	Folded Dipole
Feed Impedance:	50 Ohms (Unbalanced)
Maximum VSWR:	1.5:1
Boom Length:	245" (6.22 m)
Max. Element Length:	14.5 " (0.368 m)
Turning Radius:	148" (3.76 m)

**Table A-2: Four UHF Yagi Array Characteristics:**

<i>Parameter:</i>	<i>Value:</i>
Frequency Range:	399.5 – 408.0 MHz <sup>2</sup>
Transmit Gain:	24.0 dBi
Receive Gain:	23.5 dBi
TX & RX Half Power Beamwidth:	12°
Polarization:	RHCP

<sup>1</sup> Astro Digital has requested authority only for operations in the 399.0 – 403 MHz frequencies.

<sup>2</sup> See *supra* note 1.



**Figure A-1: Astro Digital 4 Yagi UHF Antenna Array – View 1**

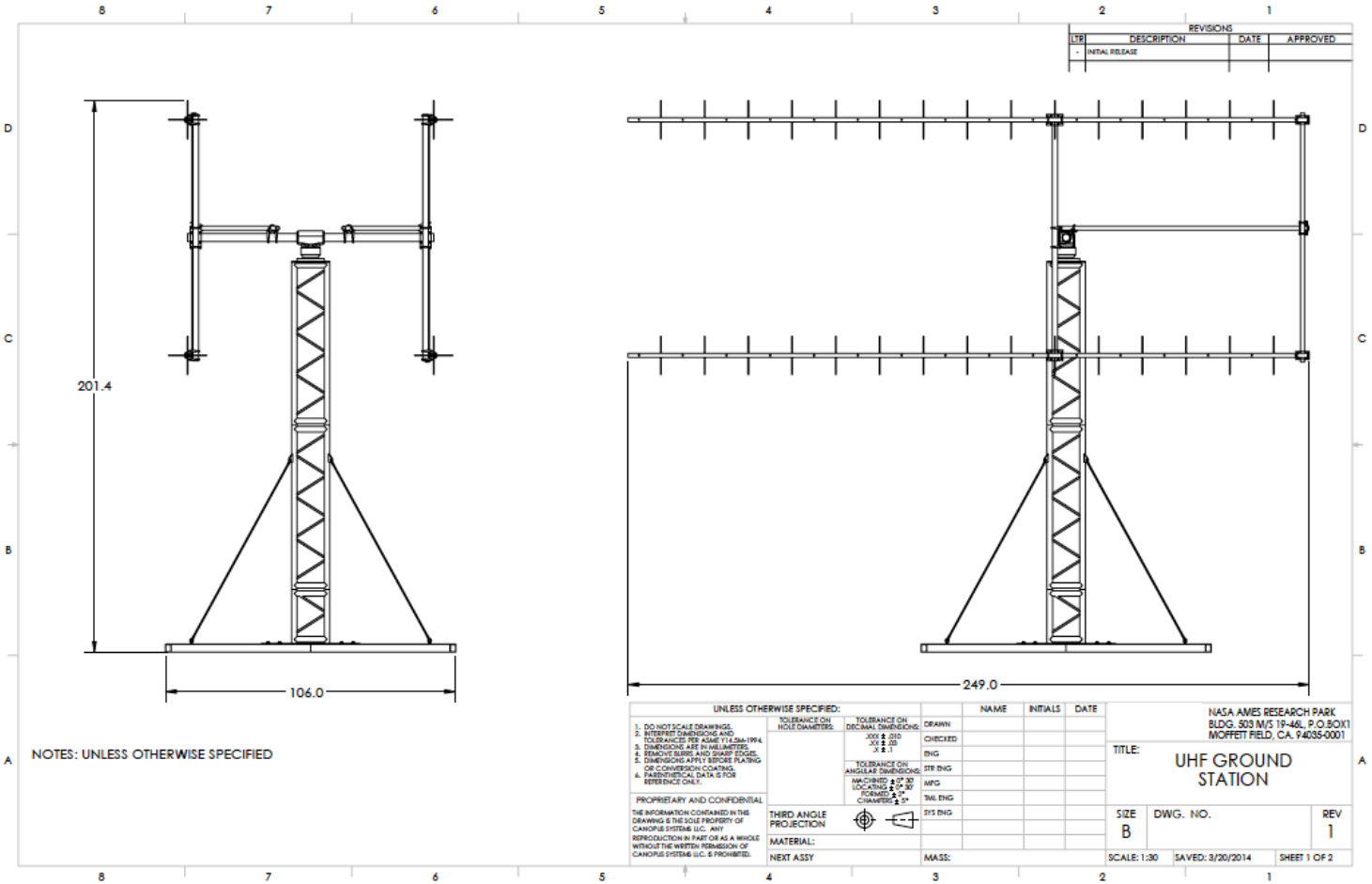


Figure A-2 Astro Digital 4 Yagi UHF Antenna Array - View 2

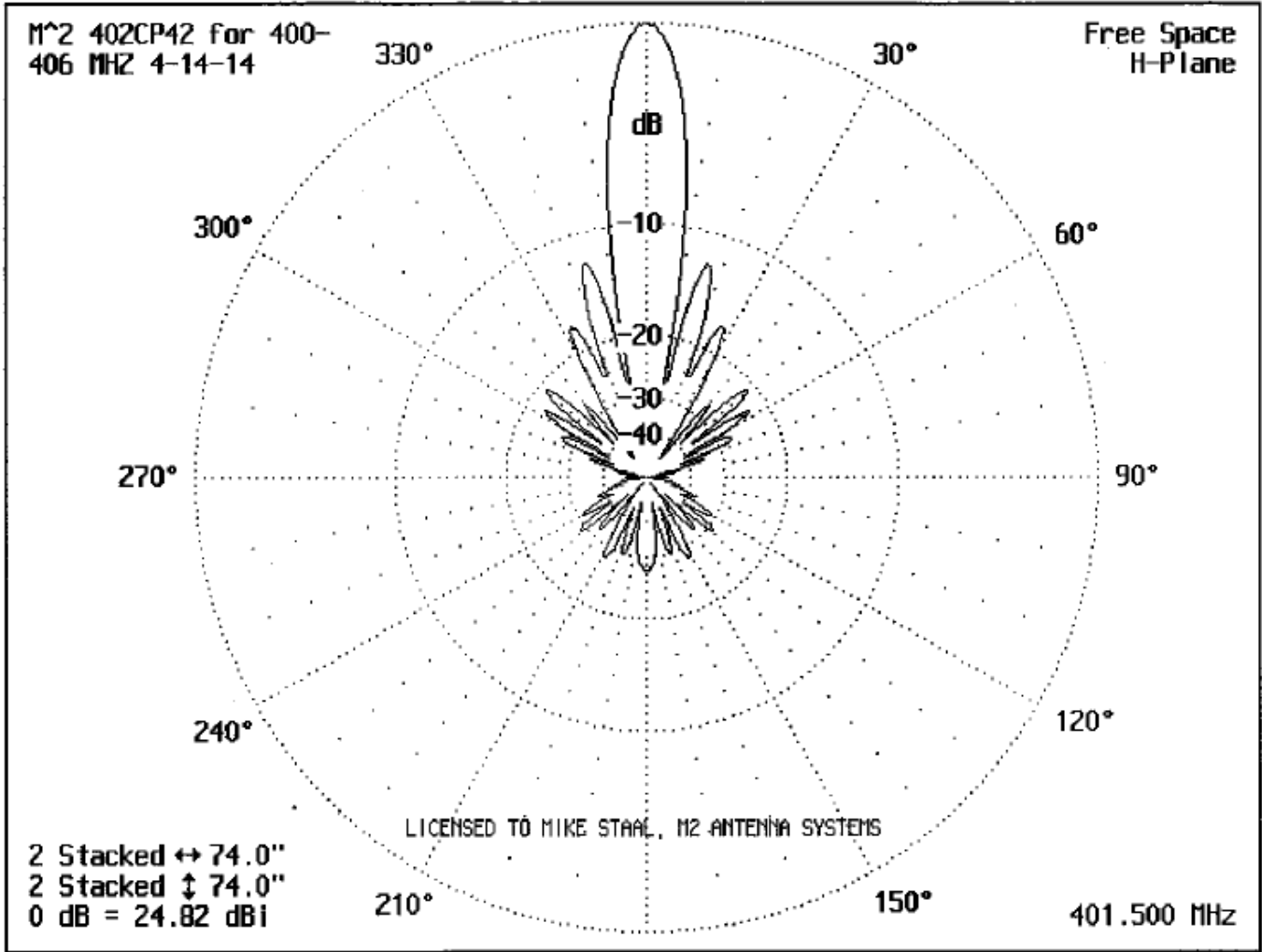


Figure A-3: UHF Array Antenna Pattern