

**Narrative Statement**  
**Description of Proposed Antenna Usage**

**Exhibit 2**  
**Wisper ISP**  
**St. Louis, MO**

The following antennas will be deployed in the proposed system:

Base Station: MTI MT-40403017N (360° beam width): The base station will utilize a Omni Directional antenna system for initial testing. Since the Antenna will be below the top of the building it will be mounted to it will not have 360 degree coverage, and will be limited to about 270 degree field of view. This will allow for signal testing in major metropolitan environment without transmitting in full view of the area. The specific azimuths, beam tilts and polarities for each placement of the Omni will be determined and adjusted as part of the system test.

Base Station: MTI MT-30105 (120° beam width) The base station will utilize a sectorized antenna system utilizing one sector. The specific azimuths, beam tilts and polarities for each placement of the sector will be determined and adjusted as part of the system test.

Remote/CPE: MTI Wireless Edge MT-30080/A: This antenna has a beam width of approximately 18°.

Remote/CPE: MTI Wireless Edge MT- MT-30093: This antenna has a beam width of approximately 8°.

All antennas will be mounted on existing Communication Towers and Municipal Water Towers.

Radiation pattern information provided by the manufacturer for these antennas is provided on the following pages.

## Specifications:



# MTi Wireless Edge 10.5 dBi Omni Antenna with N-type Female, 3.3-3.8 GHz

Manufact PN # MT-403017N

### Electrical

|                          |                                                |
|--------------------------|------------------------------------------------|
| FREQUENCY RANGE          | 3.3 – 3.8 GHz                                  |
| GAIN                     | 10.5 ±0.5 dBi                                  |
| VSWR                     | 3.3-3.4 2.5 : 1 (typ)<br>3.4-3.8 1.7 : 1 (max) |
| 3 dB AZIMUTH BEAMWIDTH   | Omni                                           |
| 3 dB ELEVATION BEAMWIDTH | 4° (typ)                                       |
| POLARIZATION             | Vertical                                       |
| E-PLANE SIDELOBES LEVEL  | -9dB (typ)                                     |
| INPUT IMPEDANCE          | 50 (ohm)                                       |
| INPUT POWER              | 4 W (max)                                      |
| LIGHTNING PROTECTION     | DC Ground                                      |

### Mechanical

|              |                                           |
|--------------|-------------------------------------------|
| HEIGHT       | 1150 mm (max)                             |
| DIAMETER     | 75 mm                                     |
| WEIGHT       | 2.5 (kg) (max)                            |
| CONNECTOR    | N-type Female                             |
| RADOME       | Plastic, UV Resistant                     |
| BASE PLATE   | Aluminum with chemical conversion coating |
| MOUNTING KIT | MT-120018                                 |

### Environmental

|                   |                     |
|-------------------|---------------------|
| Temperature Range | -45°C +70°C         |
| Humidity          | 95%                 |
| ICE AND SNOW      | 25mm Radial         |
| WIND SPEED        | SURVIVAL: 220 Km/h  |
|                   | OPERATION: 160 Km/h |

## Specifications:



# MTi Wireless Edge 12 dBi Base Station 120 degree Sector Antenna with N- Type Female Connector, Vertical Polarization, 3.4- 3.7 GHz

Manufacturer PN # MT-30105

### Electrical

|                      |                           |
|----------------------|---------------------------|
| FREQUENCY RANGE      | 3.3-3.7 GHz               |
| GAIN                 | 12 dBi (min)              |
| VSWR                 | 1.5:1 (typ) 1.7 : 1 (max) |
| 3 dB BEAMWIDTH       | Az 120° (typ)             |
|                      | El 12° (typ)              |
| POLARIZATION         | Linear Vertical           |
| SIDELOBES LEVEL      | -25 dB (max)              |
| CROSS POLARIZATION   | -17 dB (max)              |
| F/B RATIO            | -24 dB                    |
| INPUT IMPEDANCE      | 50 (ohm)                  |
| INPUT POWER          | 6W (max)                  |
| LIGHTNING PROTECTION | DC Ground                 |

### Mechanical

|                    |                                           |
|--------------------|-------------------------------------------|
| DIMENSIONS (LxWxD) | 350 x 150 x 30 mm (max)                   |
| WEIGHT             | 0.7 Kg (max)                              |
| CONNECTOR          | N-type Female                             |
| RADOME             | Plastic                                   |
| BASE PLATE         | Aluminum with chemical conversion coating |
| MOUNTING KIT       | MT-120019                                 |

### Environmental

|                   |                     |
|-------------------|---------------------|
| Temperature Range | -45°C +70°C         |
| Humidity          | 95%                 |
| ICE AND SNOW      | 25mm Radial         |
| WIND SPEED        | SURVIVAL: 220 Km/h  |
|                   | OPERATION: 160 Km/h |

## Specifications:



# MTi Wireless Edge 17 dBi Subscriber Antenna with N- Type Female Connector, 3.60 - 4.02 GHz

Manufact PN # MT-30080/A

### Electrical

|                        |                                 |
|------------------------|---------------------------------|
| FREQUENCY RANGE        | 3.3 - 3.8 GHz                   |
| GAIN                   | 10 dBi                          |
| VSWR                   | 1.5 : 1 (typ), 2.0:1 (max)      |
| 3 dB BEAMWIDTH         | 18° (typ) (Azimuth & Elevation) |
| POLARIZATION           | Dual - Vertical and Horizontal  |
| PORT TO PORT ISOLATION | 25 dB (min)                     |
| CROSS POLARIZATION     | -20 dB (max) -25 dB (nom)       |
| F/B RATIO              | -30 dB (min)                    |
| INPUT IMPEDANCE        | 50 (ohm)                        |
| INPUT POWER            | 1 W (max)                       |
| LIGHTNING PROTECTION   | DC Ground                       |

### Mechanical

|                    |                                           |
|--------------------|-------------------------------------------|
| DIMENSIONS (LxWxD) | 305 x 305 x 25 mm (max)                   |
| WEIGHT             | 1.5 Kg (max)                              |
| CONNECTOR          | 2 X SMA Female                            |
| RADOME             | Plastic                                   |
| BASE PLATE         | Aluminum with chemical conversion coating |
| MOUNTING KIT       | MT-120018                                 |

### Environmental

|                   |                     |
|-------------------|---------------------|
| Temperature Range | -45°C +70°C         |
| Humidity          | 95%                 |
| ICE AND SNOW      | 25mm Radial         |
| WIND SPEED        | SURVIVAL: 220 Km/h  |
|                   | OPERATION: 160 Km/h |



## MTi Wireless Edge 24 dBi Subscriber Antenna with N- Type Female Connector, 3.3- 3.8 GHz Frequency range

Manufact PN # MT-30093

### Electrical

|                      |                                            |
|----------------------|--------------------------------------------|
| FREQUENCY RANGE      | 3.3 - 3.7 GHz                              |
| GAIN                 | 24 dBi                                     |
| VSWR                 | 1.9 : 1 @ 3.3-3.7 GHz, 2 : 1 @ 3.7-3.8 GHz |
| 3 dB BEAMWIDTH       | 8° (typ)                                   |
| POLARIZATION         | Linear (Vertical or Horizontal)            |
| SIDELOBES LEVEL      | ETSI EN 302 085 V.1.1.2 TS1-TS5            |
| CROSS POLARIZATION   | -25                                        |
| F/B RATIO            | -40 dB (typ)                               |
| INPUT IMPEDANCE      | 50 (ohm)                                   |
| INPUT POWER          | 6 W (max)                                  |
| LIGHTNING PROTECTION | DC Ground                                  |

### Mechanical

|                    |                                           |
|--------------------|-------------------------------------------|
| DIMENSIONS (LxWxD) | 600 x 600 x 52mm (max)                    |
| WEIGHT             | 5.0 Kg (max)                              |
| CONNECTOR          | N-Type Female                             |
| RADOME             | Plastic                                   |
| BASE PLATE         | Aluminum with chemical conversion coating |
| MOUNTING KIT       | MT-120019                                 |

### Environmental

|                   |                     |
|-------------------|---------------------|
| Temperature Range | -45°C +70°C         |
| Humidity          | 95%                 |
| ICE AND SNOW      | 25mm Radial         |
| WIND SPEED        | SURVIVAL: 220 Km/h  |
|                   | OPERATION: 160 Km/h |