



Excellence in Compliance Testing

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## **Certification Exhibit**

**FCC ID: VEYXAPR1**

**FCC Rule Part: 15.247**

**ACS Project Number: 14-2006**

Manufacturer: xG Technology, Inc.  
Model: xAP

## **RF Exposure**

**General Information:**

Applicant: xG Technology, Inc.  
ACS Project: 14-2006  
Device Category: Base Station  
Environment: General Population/Uncontrolled Exposure

**Transmitter Signal Correlation Information:**

The xAP 900 MHz output signals are correlated using cyclic delay diversity (CDD). The maximum output power listed corresponds to the summation of the output power at both TX antenna ports. The directional gain is calculated per FCC KDB Publication No. 662911 D01 Multiple Transmitter Output v02r01.

$$\text{Directional Gain} = G_{\text{ANT}} + \text{Array Gain}$$

$$\text{Array Gain} = 10 * \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dB}$$

Where,

$G_{\text{ANT}}$  = Antenna Gain

$N_{\text{ANT}}$  = number of transmit antennas and

$N_{\text{SS}}$  = number of spatial streams. (Assume  $N_{\text{SS}} = 1$  unless you have specific information to the contrary.)

The xAP is professionally installed and uses different antenna gains. The transmitter RF output power is adjusted based on the antenna configuration. The technical information for the xAP for each output power / antenna configuration is provided below.

**Technical Information:**<sup>1</sup>

Antenna Type: Monopole  
Individual Antenna Gain: 5 dBi  
Directional Antenna Gain: 8.01 dBi  
Maximum Transmitter Conducted Power: 27.39 dBm, 548.28 mW  
Maximum System EIRP: 35.4 dBm, 3467.6 mW  
Exposure Conditions: Greater than 22 centimeters

Antenna Type: 2x2 Mimo Sector Antenna  
Antenna Gain: 13.8 dBi  
Directional Antenna Gain: 13.8 dBi (Based on cross-polarization of TX antennas)  
Maximum Transmitter Conducted Power: 21.6 dBm, 144.54 mW  
Maximum System EIRP: 35.4 dBm, 3467.37 mW  
Exposure Conditions: Greater than 22 centimeters

Antenna Type: 4x2 Mimo Panel Antenna  
Antenna Gain: 11.3 dBi  
Directional Antenna Gain: 11.3 dBi (Based on cross-polarization of TX antennas)  
Maximum Transmitter Conducted Power: 24.23 dBm, 264.85 mW  
Maximum System EIRP: 35.53 dBm, 3572.7284 mW  
Exposure Conditions: Greater than 22 centimeters

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<sup>1</sup> The antenna and power information provided includes the antennas and power levels reported during the original filing.

**MPE Calculations**

The Power Density (mW/cm<sup>2</sup>) is calculated as follows:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

**Table 1: xAP 900 MHz MPE Calculations 5 dBi Omni/Monopole Antenna**

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure*							
Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/Cm2)	Radio Power (mW)	Antenna Gain (dBi)	Antenna Gain (mW eq.)	Distance (cm)	Power Density (mW/cm^2)
900	27.39	0.60	548.28	8.01	6.324	22	0.570

**Table 2: xAP 900 MHz MPE Calculations 13.8 dBi Sector Antenna**

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure*							
Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/Cm2)	Radio Power (mW)	Antenna Gain (dBi)	Antenna Gain (mW eq.)	Distance (cm)	Power Density (mW/cm^2)
900	21.6	0.60	144.54	13.8	23.988	22	0.570

**Table 3: xAP 900 MHz MPE Calculations 11.3 dBi Panel Antenna**

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure*							
Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/Cm2)	Radio Power (mW)	Antenna Gain (dBi)	Antenna Gain (mW eq.)	Distance (cm)	Power Density (mW/cm^2)
900	24.23	0.60	264.85	11.3	13.490	22	0.587

**Installation Guidelines**

The installation manual should contain text similar to the following advising how to install the equipment to maintain compliance with the FCC RF exposure requirements:

**RF Exposure**

In accordance with FCC requirements of human exposure to radio frequency fields, the radiating element shall be installed such that a minimum separation distance of 22 centimeters will be maintained.

**Conclusion**

This device complies with the MPE requirements by providing adequate separation between the device, any radiating structure and the general population.