

## **RADIO FREQUENCY ELECTROMAGNETIC FIELDS EXPOSURE REPORT**

**Prepared for AT&T**

**c/o WesTower Communications**

**Site Name:** [Commonwealth](#)  
**Site ID:** [LX5013](#)  
**USID:** [64393](#)  
**FA ID:** [10037569](#)  
**Site Type:** [Stadium Light Standard](#)  
**M-RFSC:** [David Neely](#)

**Located at:**

**1560 University Drive  
Lexington, KY 40502  
Latitude: 38.0226 / Longitude: -84.5066**

**Report Date:** [8/17/2012](#)  
**Report By:** [Christopher Stollar](#)

**Based on FCC Rules and Regulations, AT&T Mobility can be compliant.**

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## 1. GENERAL SUMMARY

Dtech Communications, LLC (“Dtech”) has been retained by WesTower Communications, contractors to AT&T, to determine whether its wireless communications facility complies with the Federal Communications Commission (“FCC”) Radio Frequency (“RF”) Safety Guidelines. This report contains a computer-simulated analysis of the Electromagnetic Fields (“EMF”) exposure resulting from the facility. The table below summarizes the result at a glance:

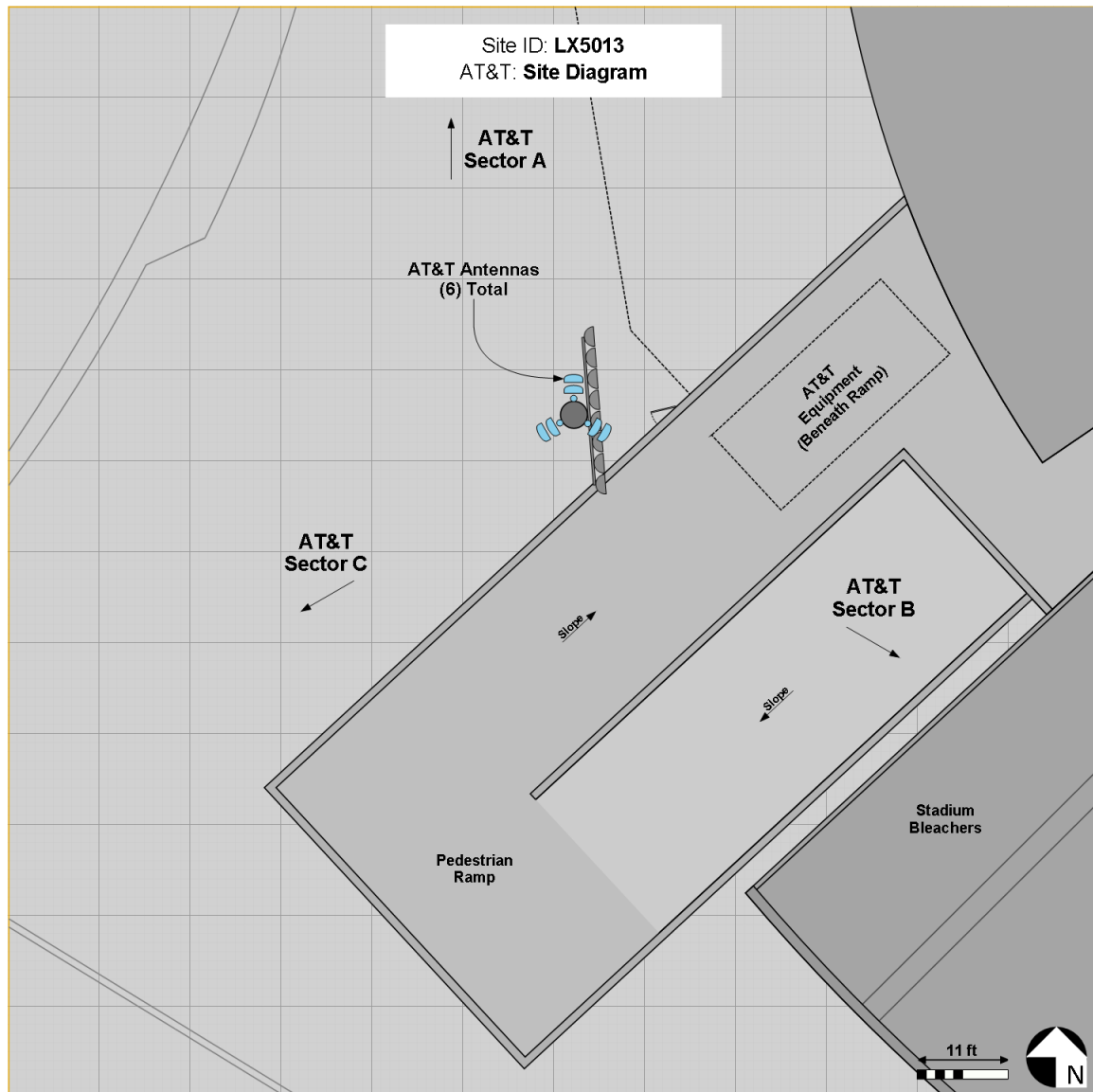
*Table 1: EMF Summary*

AT&T	Summary
<b>Access Type</b>	Walk-Up
<b>Access to antennas locked</b>	NA
<b>RF Sign(s) @ access point(s)</b>	Information 1, Caution (to be posted)
<b>RF Sign(s) @ antennas</b>	None
<b>Barrier(s) @ sectors</b>	NA
<b>Max cumulative simulated EMF Level on Ground</b>	2.7% General Population

The wireless telecommunication facility is located on the ground. The antennas are mounted on a stadium light tower and connected to the equipment via coaxial cables.

## 2. SITE SCALE MAP

*Figure 1: Site Diagram*



### 3. ANTENNA INVENTORY

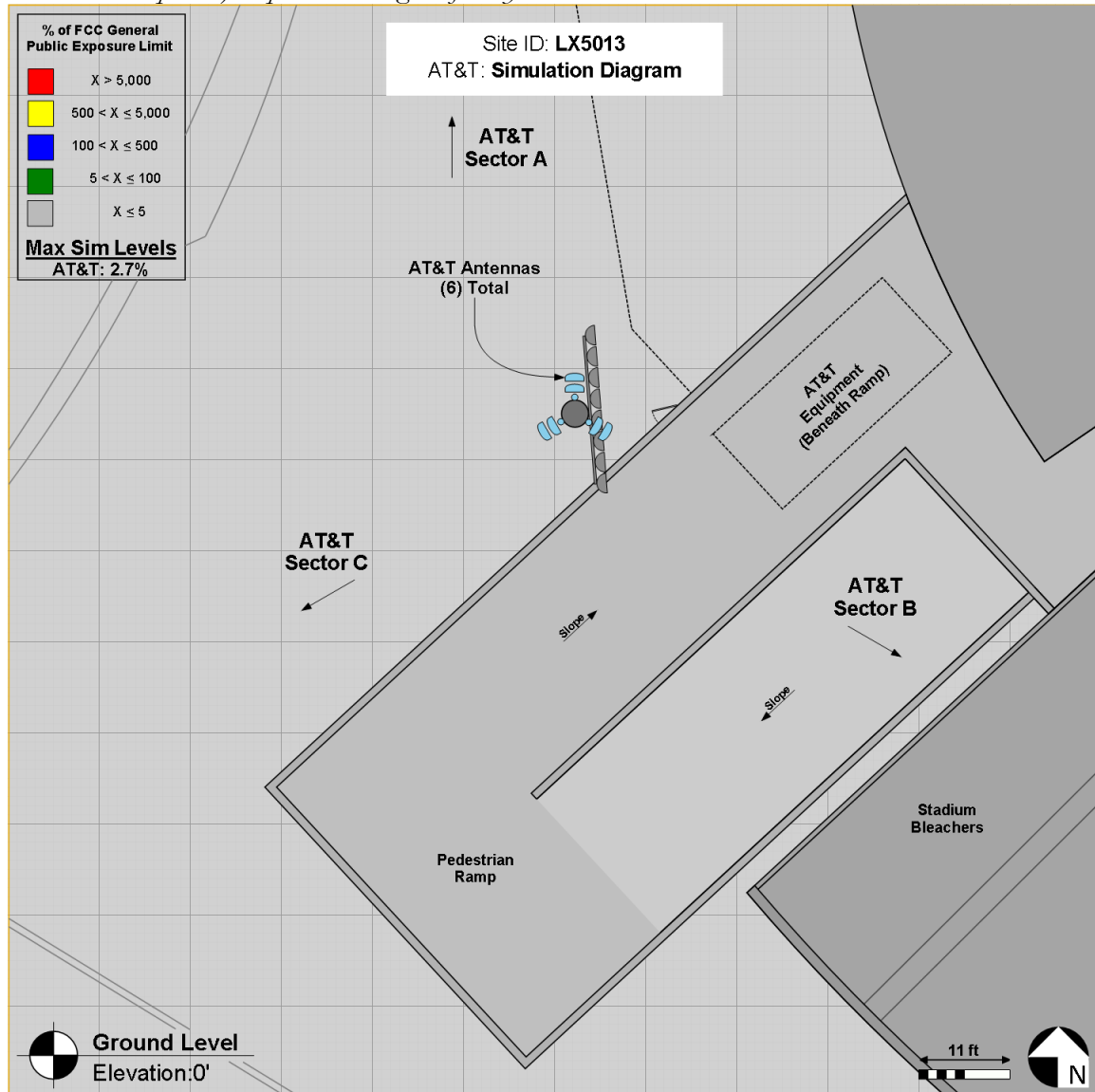
Technical specifications provided below are gathered from physical field surveys where possible, provided drawings and/or other documents provided by our clients, site/building managers and other licensees at this facility. “Generic”, “Others”, “Unknown” and conservative estimates are used where information is not available.

*Table 2: Site Technical Specifications*

Antenna ID	Operator	Antenna Mfg	Antenna Model	Type	Frequency (MHz)	Orientation (°T)	Horizontal BWidth (°)	Antenna Aperture (ft)	Antenna Gain (dBd)	3G/UMTS Radios	4G/LTE Radios	Total ERP (Watts)	X	Y	Bottom Tip Height Above Ground (Z) (ft)
A1	AT&T	Andrew	SBNH-1D6565B	Panel	850	0	67	6.1	13.1	2		46.2	62	78	124.9
A1	AT&T	Andrew	SBNH-1D6565B	Panel	1900	0	57	6.1	16.1	2		68.8	62	78	124.9
A2	AT&T	Andrew	SBNH-1D6565B	Panel	700	0	70	6.1	12.9		2	600	62	79	116.9
B1	AT&T	Andrew	SBNH-1D6565B	Panel	850	120	67	6.1	13.1	2		46.2	64	74	124.9
B1	AT&T	Andrew	SBNH-1D6565B	Panel	1900	120	57	6.1	16.1	2		68.8	64	74	124.9
B2	AT&T	Andrew	SBNH-1D6565B	Panel	700	120	70	6.1	12.9		2	600	65	73	116.9
C1	AT&T	Andrew	SBNH-1D6565B	Panel	850	240	67	6.1	13.1	2		46.2	60	74	124.9
C1	AT&T	Andrew	SBNH-1D6565B	Panel	1900	240	57	6.1	16.1	2		68.8	60	74	124.9
C2	AT&T	Andrew	SBNH-1D6565B	Panel	700	240	70	6.1	12.9		2	600	59	73	116.9

#### 4. EMISSIONS PREDICTIONS

Figure 2: Results- The top (bird's eye) view of the resulting FCC General Population MPE (Maximum Permissible Exposure) map surrounding the facility.



## 5. STATEMENT OF COMPLIANCE

Calculations for AT&T's site resulted in exposure levels below the applicable FCC's General Population MPE Limits.

### 6.1 Recommendation(s)

Since the antennas are mounted on a tall tower and therefore not accessible by the general public, compliance actions are not required. It is presumed that AT&T employees and facility owners are aware of the transmitting antennas and will take appropriate precautions when working near them. However, there may be situations where workers i.e. light standard personnel, etc. may find themselves directly in front of the antennas. For the facility to be classified as an Occupational/Controlled environment, the following action(s) are recommended in accordance with the FCC's and AT&T's RF Safety Guidelines<sup>1</sup> (see figure 3):

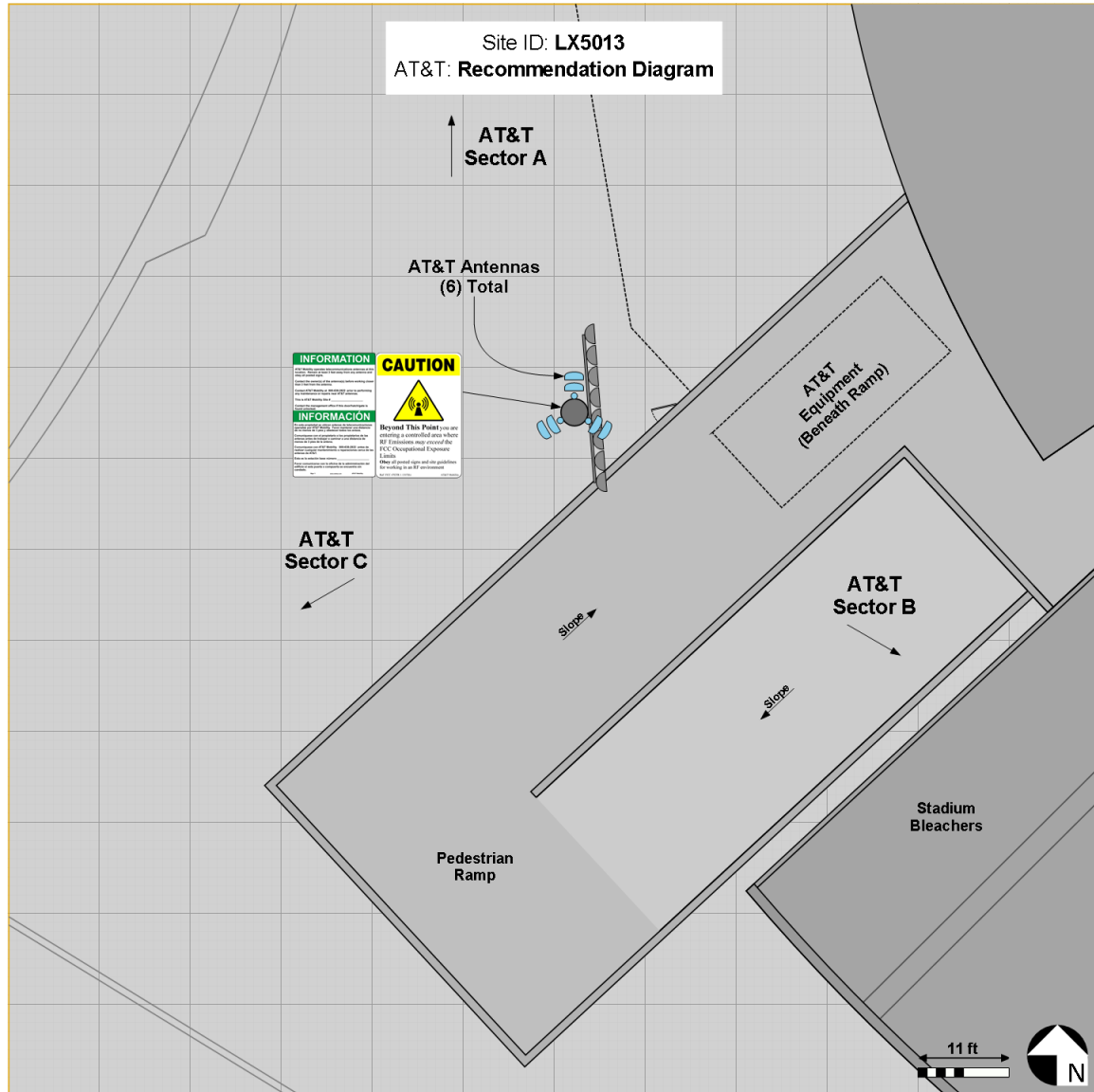
- 1) If possible, CAUTION Sign(s) and INFORMATION Sign 1(s) should be placed near or on each sector of antennas.
  - a. If signage cannot be placed near or on each sector of antennas, then signage must be mounted no lower than 9-10 feet above ground level.
  - b. Reduced-dimension version of the sign may be used.
- 2) Individuals entering the site or working near/in front of antennas must receive appropriate RF safety training<sup>2</sup> and be made aware of the HotZones (areas where RF exposure may potentially exceed FCC safety limits). In addition, contact information should be made available in the event work is required within the HotZones.

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<sup>1</sup> ND-00059 RF Exposure: Responsibilities, Procedures & Guidelines – 5.0 September 2010

<sup>2</sup> See Appendix E for Dtech Communication's RF Safety training program - AntennaView

Figure 3: Recommendation(s)



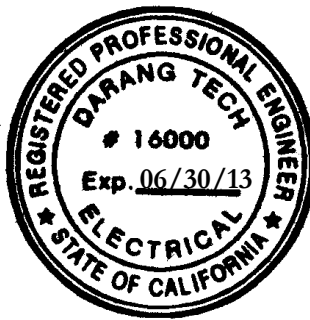
## 6.2 Conclusion

Based on the above results, analysis and recommendation(s), it is the undersigned's professional opinion that AT&T Mobility can be compliant with the FCC's RF Safety Guidelines.

## 6.3 Certification

This report has been prepared by or under the direction of the following Registered Professional Engineer: Darang Tech, holding California registration number 16000, with renewal date of 06/30/13.

  
Darang Tech, P.E.



## Appendix A: Background

Dtech uses the FCC's guidelines described in detail in Office of Engineering & Technology, Bulletin No. 65 ("OET-65") "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Radiation". Table 3 below summarizes the current Maximum Permissible Exposure ("MPE") safety limits classified into two groups: General population and Occupational.

Table 3: FCC MPE Limits (from OET-65)

Frequency (Mhz)	General Population/ Uncontrolled MPE (mW/cm <sup>2</sup> )	Averaging Time (minutes)	Occupational/ Controlled MPE (mW/cm <sup>2</sup> )	Averaging Time (minutes)
30 - 300	0.2	30	1.0	6
300 - 1500	Frequency (Mhz)/1500 (0.2 – 1.0)	30	Frequency (Mhz)/300 (1.0 – 5.0)	6
1500 - 100,000	1.0	30	5.0	6

**General population/uncontrolled** limits apply in situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment, and may not be fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public always fall under this category when exposure is not employment-related.

**Occupational/controlled** limits apply in situations in which persons are exposed as a consequence of their employment, and those persons have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

It is important to understand that the FCC guidelines specify *exposure* limits not *emission* limits. For a transmitting facility to be out of compliance with the FCC's RF safety guidelines an area or areas where levels exceed the MPE limits must, first of all, be in some way *accessible* to the public or to workers. When accessibility to an area where excessive levels is appropriately restricted, the facility or operation can certify that it complies with the FCC requirements.

## **Appendix B: Measurement and/or Computer Simulation Methods**

Spatial averaging measurement technique is used. An area between 2 and 6 feet, approximately the size of an average human, is scanned in single passes from top to bottom in multiple planes. When possible, measurements were made at very close proximity to the antennas and inside the main beam where most of the energy is emitted. The spatial averaged values were recorded.

Dtech uses an industry standard power density prediction computer model<sup>3</sup> to assess the worse-case, cumulative EMF impact of the surrounding areas of the subject site. For purposes of a cumulative study, nearby transmitters are included where possible. In addition, the analysis is performed at 100% duty cycle-all transmitters are active at all times and transmitting at maximum power. The result is a surrounding area map color-coded to percentages of the applicable FCC's MPE Limits. A result higher than 100% exceeds the Limits.

## **Appendix C: Limitations**

Dtech performed this analysis based on data provided by our clients that Dtech believes to be true and correct. Estimates where noted, are based on common industry practices and our best interpretation of available information. As mobile technologies continuously change, these data and results may also change. Therefore, Dtech disclaims all other warranties either expressed or implied. Any use of this document constitutes an agreement to hold Dtech and its employees harmless and indemnify it for any and all liability, claims, demands, litigation expenses and attorneys fees arising from such use. This is a technical document and may contain minor grammatical and/or spelling errors.

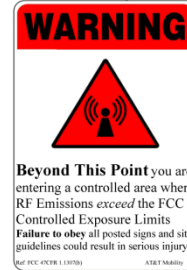
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<sup>3</sup> RoofView Version 4.15, Richard Tell Associates, Inc. © 1996-2000.

## Appendix D: AT&T RF advisory signs



Notice Sign



Warning Sign



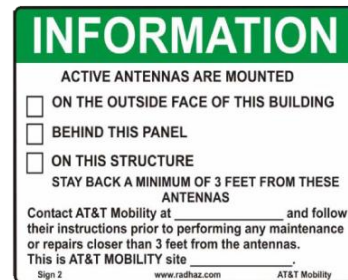
Caution Sign



Caution Sign Alternate for Towers



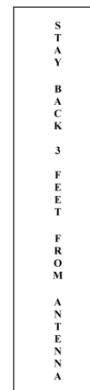
Information Sign 1



Information Sign 2



Information Sign 3

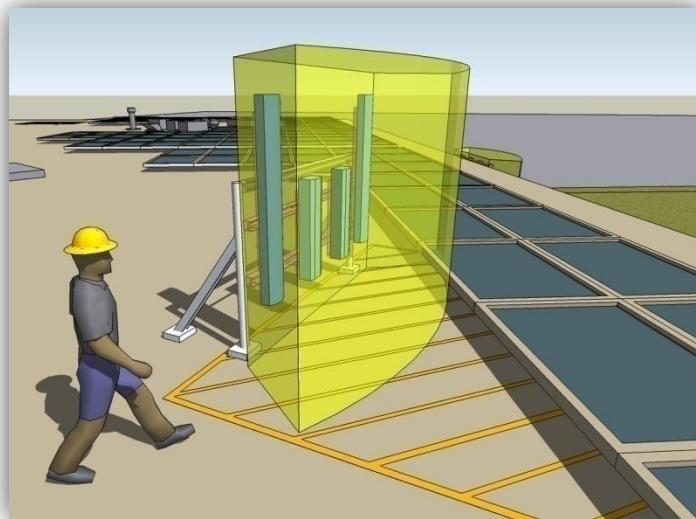


Information Sign 4

## Appendix E: AntennaView®

Dtech Communications offers a unique, online tool (AntennaView®) to train, identify and inform individuals of site-specific HotZones – areas that exceed the FCC's Safety Limits. AntennaView® is an online, interactive training tool that will educate nontechnical people in about ten minutes. It is a site-specific, RF safety training program that requires the end user to sign an online agreement thereby limiting the liability to the landlord and carriers. Some of the advantages include:

- Virtual walk-through in 3-D with corresponding photographs
- Site-specific, interactive, simple to understand
- Delivers pertinent information i.e. HotZones (areas exceeding FCC safety limits), site owners and contact numbers.
- User online agreement = accountability



We invite you to take a quick tour at [www.AntennaView.com](http://www.AntennaView.com) and see how easy to understand and informative AntennaView® is.

*Under Article 47 CFR § 1.1307(b), the FCC & OSHA mandates wireless operators/facility owners to have an RF survey completed including a safety plan and training to ensure that their tenants, employees and contractors who work in or around RF sites are aware of the potential risks posed by RF radiation. Most cell sites are located on building rooftops where HVAC contractors, window washers, painters, etc. routinely work and generally do not know what antennas even look like. Dtech Communications can help with ongoing FCC/OSHA compliance and provide practical training that is easy to understand by anyone regardless of their technical background.*