RF EMISSIONS COMPLIANCE REPORT

T-Mobile

Site ID: VA70330D
Site: Universal Wireless-Greenlawn
700 Greenlawn Ave
Hampton, VA
3/31/2018

Report Status:

T-Mobile Is Compliant

COMMONWEALTH OF VIRGINIA
KLAUS BENDER
No. 39384
PROFESSIONAL ENGINEER

4/4/2018

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Engineering Statement in Re:
Electromagnetic Energy Analysis
T-Mobile
Hampton, VA

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Sitesafe, LLC. in Arlington, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by T-Mobile (See attached Site Summary and Carrier documents), and that T-Mobile's installations involve communications equipment, antennas and associated technical equipment at a location referred to as the "Universal Wireless-Greenlawn" ("the site"); and

That T-Mobile proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by T-Mobile and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and (2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of T-Mobile's operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed T-Mobile operation is no more than 0.616% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 0.616% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that T-Mobile's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

T-Mobile
Universal Wireless-Greenlawn
Site Summary

Carrier	Area Maximum Percentage MPE
T-Mobile (Proposed)	0.18 %
T-Mobile (Proposed)	0.292 %
T-Mobile (Proposed)	0.145 %
Composite Site MPE:	0.616 %

T-Mobile (Proposed)
Universal Wireless-Greenlawn
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.79511	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.17951	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	30	2313	0.407118	0.040712	0.465067	0.046507
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	30	2313	0.407118	0.040712	0.465067	0.046507
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	120	2313	0.407118	0.040712	0.465067	0.046507
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	120	2313	0.407118	0.040712	0.465067	0.046507
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	200	2313	0.406963	0.040696	0.465066	0.046507
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	200	2313	0.406963	0.040696	0.465066	0.046507
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	300	2313	0.407118	0.040712	0.465067	0.046507
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	300	2313	0.407118	0.040712	0.465067	0.046507

T-Mobile (Proposed)
Universal Wireless-Greenlawn
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	2.91762	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.29176	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	30	2313	1.756057	0.175606	1.756057	0.175606
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	120	2313	1.756057	0.175606	1.756057	0.175606
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	200	2313	1.756057	0.175606	1.756057	0.175606
Ericsson	AIR KRD901146-1_B66A_B2A(Octa)	165	300	2313	1.756057	0.175606	1.756057	0.175606

T-Mobile (Proposed)
Universal Wireless-Greenlawn
Carrier Summary

Frequency:	700	MHz
Maximum Permissible Exposure (MPE):	466.67	µW/cm^2
Maximum power density at ground level:	0.67723	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.14512	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVAA24-43-U-A20	165	30	1497	0.33718	0.072253	0.539936	0.115701
RFS	APXVAA24-43-U-A20	165	120	1497	0.33718	0.072253	0.539936	0.115701
RFS	APXVAA24-43-U-A20	165	200	1497	0.33718	0.072253	0.539936	0.115701
RFS	APXVAA24-43-U-A20	165	300	1497	0.33718	0.072253	0.539936	0.115701