EBI Consulting
environmental | engineering | due diligence

Radio Frequency Compliance Predictive Modeling Report

Client:	**AT&T Mobility**
Site Address:	**Various Locations** **Manhattan Beach, CA**
Report Date:	**December 16, 2016** **Revised October 4, 2017**

PREPARED BY EBI CONSULTING FOR AT&T MOBILITY
CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION

1. Introduction

The electromagnetic spectrum includes various forms of electromagnetic energy from extremely low frequency energy, with very long wavelengths, to x-rays and gamma rays, which have very high frequencies and short wavelengths. In between are radio waves, microwaves, infrared, visible light and ultraviolet, for example.

As depicted in Figure 1-1, the frequencies from telecommunications equipment emit non-ionizing energy. The effects of non-ionizing energy are non-cumulative. Non-ionizing energy can turn into heat, if absorbed. (By comparison, ionizing energy is generally cumulative and can cause chemical and biological changes).

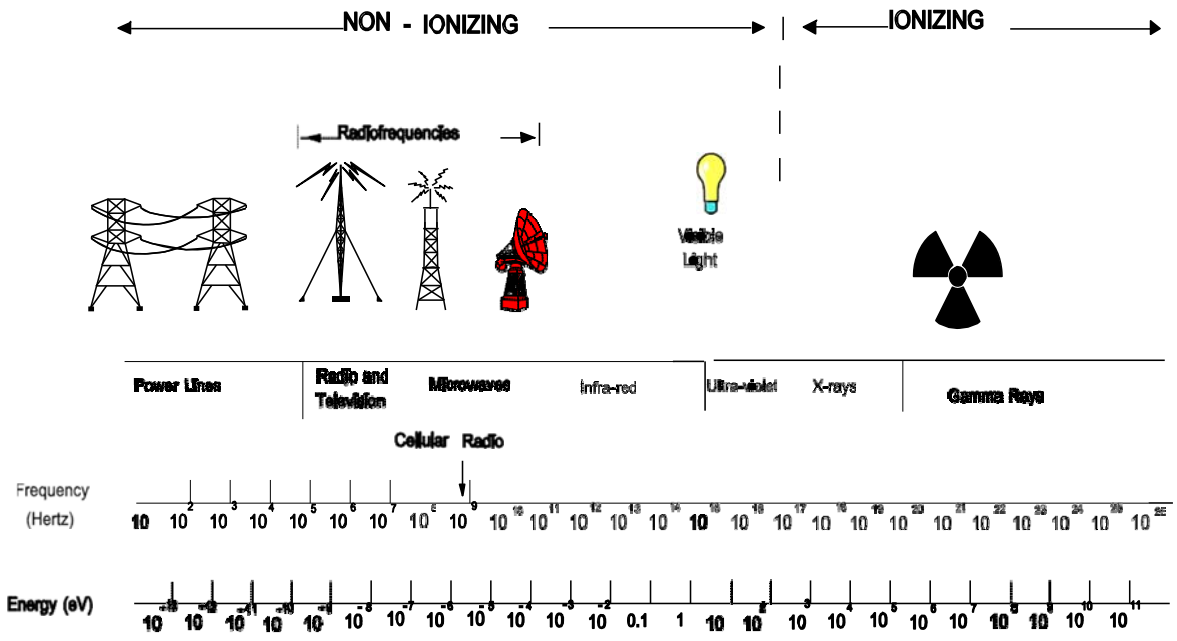


Figure 1-1.
(FCC OET Bulletin 56, Fourth Ed.)

1.0 Site Conditions/FCC RF-EME Compliance Summary

AT&T has installed and operates sixteen (16) outdoor Distributed Antenna System (DAS) antenna nodes at the locations included in Table 1 below:

SITE ID
Manhattan Beach, CA oDAS System

Facility Type:	Outdoor Distributed Antenna System (DAS)
Access Restriction(s):	None – Exterior, Publicly Accessible Locations
RF Signage	
Type(s):	None
Location(s):	See photos (Appendix C)
Facility Area Classification:	Uncontrolled
Recommended Mitigation Measures	See Section 3.0
Predictive Modeling Results	
Max RF Level in Accessible Areas :	9.4% of the FCC General Population MPE Limit
FCC Compliance Conclusion:	The site is in compliance with FCC limits and guidelines; recommended mitigation measures are provided

2.1 Maximum Predicted Emissions

EBI has performed theoretical modeling using RoofView® software to estimate the worst-case power density at the site ground-level resulting from operation of the antennas. RoofView® is a widely-used predictive modeling program that has been developed by Richard Tell Associates to predict both near field and far field RF power density values for roof-top and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

EBI has conducted predictive modeling on the installed antennas, utilizing data provided by the AT&T Mobility. For purposes of this modeling, the antennas were modeled assuming simultaneous operation of the LTE 700

MHz frequency, GSM 850 MHz frequency, PCS 1900 MHz frequency, and AWS 2100 MHz frequency, with a maximum total Effective Radiated Power (ERP) of 653 watts per node, divided as indicated below:

- 700 MHz: 123 Watts
- 850 MHz: 148 Watts
- PCS 1900 MHz: 200 Watts
- AWS 2100 MHz: 123 Watts

This analysis included a total of sixteen (16) individual DAS antenna nodes, at the locations and heights indicated in Table 1 below. The worst-case predicted Maximum Permissible Exposure (MPE) level for each node is also provided in Table 1. Modeling specifications are shown in the RoofView export files for the site provided in Appendix B.

Table 1: Node Locations/Maximum Predicted RF Emissions

Node	Lat (N)	Long (W)	Address	Azimuths	Z[1]	Max. Predicted MPE [2]
MBCH01	33.89943	-118.41821	Manhattan Ave-36th Street	160/340	22.75	7.1%
MBCH02	33.89779	-118.41638	Highland Ave-32nd Place	160/340	26.75	5.1%
MBCH03	33.89566	-118.41672	Manhattan Ave-29th Street	160/340	23.75	6.5%
MBCH04	33.89426	-118.41481	Bayview Drive-26th Street	160/340	22.75	7.1%
MBCH05	33.89135	-118.41451	Marine Ave-Bayview Drive	160/340	24.75	6.0%
MBCH06	33.89018	-118.41269	Highland Ave-19th Street	160/340	28.33	4.6%
MBCH07	33.88467	-118.4109	Manhattan Ave-4th Street	160/340	19.75	9.4%
MBCH08	33.88055	-118.40869	Manhattan Ave-5th Place	160/340	23.16	6.9%
MBCH09	33.88114	-118.40506	Ingleside Drive-5th Place	160/340	24.25	6.2%
MBCH13	33.87888	-118.40601	Morningside Dr-2nd Street	160/340	23.75	6.5%
MBCH14	33.89659	-118.41492	Alma Ave-28th Street	160/340	23.75	6.5%
MBCH15	33.88793	-118.41313	Ocean Drive-18th Street	160/340	22.83	7.2%
MBCH16	33.88375	-118.40601	N. Valley Drive-9th Place	290/130	34.58	3.4%
MBCH17	33.87967	-118.40271	2nd Street-N. Ardmore Ave	160/340	23.75	6.5%
MBCH18	33.874289	-118.40337	13th Street-Church Street	160/340	36.75	3.3%
MBCH20	33.895337	-118.40295	Pacific Ave/Valley Drive	70/250	22.66	9.0%

[1] The Z dimension references the height of the antennas above ground level used for modeling
[2] Expressed as a % of the FCC's Maximum Permissible Emission (MPE) Limit for members of the general public

Workers that may be elevated in front of the antennas should maintain a minimum 8-foot horizontal setback from the antennas, based upon the antenna specifications provided for this analysis. This setback applies to all trained and untrained workers in RF emissions who are accessing the nodes or nearby elements.

For the general public, the same 8-foot horizontal setback applies to adjacent structures. Any structures outside of the 8 foot setback will not be subject to emission levels that are above the FCC General Public limits.

EBI has also evaluated the potential for RF emissions to exceed allowable levels at the nearest adjacent structures to each node. There are no areas at the antenna face height on these adjacent structures that exceed the FCC's most stringent limit to protect members of the general public. A graphic of exposure levels is included in appendix B based on the highest power lowest mounted node which is representative of all nodes.

Because of the short wavelength of personal telecom services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of these facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

3.0 Recommended RF Signage and RF Hazard Mitigation Measures

There are no areas at ground level requiring any RF safety mitigation measures, as there are no publicly-accessible areas that exceed the applicable FCC RF safety limit to protect members of the general public. Utilities construction and maintenance staff and contractors requiring access to the elevated utility pole areas directly in front of the installed antennas should not access areas within 8 feet directly in front of the antennas and follow proper RF safety mitigation measures, including job planning to minimize RF exposures when accessing these locations. As per AT&T's signage installation policy, two (2) AT&T Yellow "Caution" Signs are recommended for installation on opposite sides of the utility pole, 3-5 feet below the bottom of the antennas. Above this height, workers on the utility pole may be exposed to power densities above the FCC Occupational limit. Workers that may be elevated in front of the antennas should be informed of the recommended setback measures and the locations of RF hazard signage.

4.0 Statement of Compliance

Based on onsite RF measurements as well as worst-case predictive modeling, there are no modeled exposures on any accessible ground-level walking/working surface related to the installed equipment in the area that exceed the FCC's occupational and/or general public exposure limits at this site. As such, the facility project is in compliance with FCC rules and regulations; recommended RF mitigation measures are provided in Section 4.0.

5.1 Certification

This report was prepared for AT&T Mobility and serves as certification for compliance of the existing wireless telecommunications facility. The analysis and information provided herein is based on applicable FCC regulations concerning RF safety and the control of human exposure to RF emissions. The information and analysis contained in this report are accurate and complete to the best knowledge and belief of the undersigned.

Report Prepared by:

_____October 6, 2017

Kevin McManus
Senior Program Director

Preparer Certification

I, Kevin McManus, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified "occupational" under the FCC regulations.
- I am familiar with the FCC rules and regulations as well as OSHA regulations both in general and as they apply to RF-EME exposure.
- I have reviewed the data provided by the client and field survey personnel and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.

References

- FCC OET Bulletin 65 "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields," (Edition 97-01, dated August 1997).
- FCC OET Bulletin 56 "Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields," (Fourth Edition, dated August 1999).
- FCC "Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation", ET Docket 93-62, Report and Order, FCC 96-326, adopted August 1, 1996. 61 Federal Register 41006 (1996).
- Federal Communications Commission (FCC), Telecommunication Act of 1996, Title VII, Section 704, Facilities Siting; Radio Frequency Emissions Standards.
- National Council on Radiation Protection and Measurements (NCRP), "Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields", NCRP Report No. 119, 1993.
- American National Standards Institute (ANSI), "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1-1992 (previously issued as IEEE C95.1-1991).
- American National Standard Institute (ANSI), "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, (300 kHz to 100 GHz), ANSI C95.1-1982.

Appendix A
FCC Policy on Human Exposure to RF Emissions

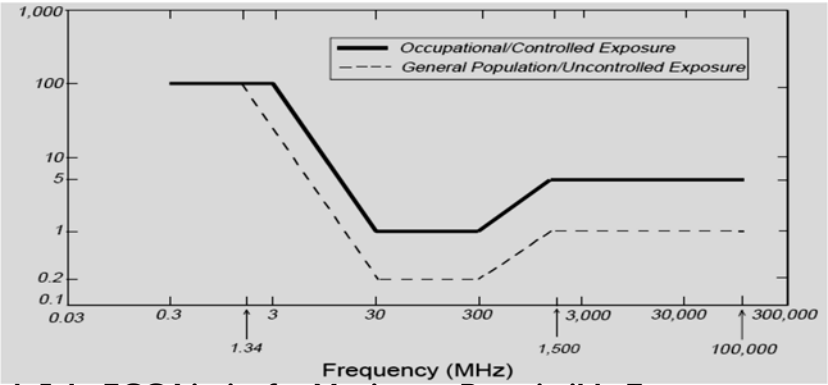
Appendix A: FCC Policy on Human Exposure to RF Emissions

The FCC guidelines for human exposure to RF emissions were derived from the recommendations of two expert organizations, the National Council on Radiation Protection and Measurements ("NCRP") and the Institute of Electrical and Electronics Engineers ("IEEE"). The exposure guidelines are based on thresholds for known adverse effects and they incorporate an appropriate margin of safety. The federal health and safety agencies such as the Environmental Protection Agency ("EPA"), the Food and Drug Administration ("FDA"), the National Institute on Occupational Safety and Health ("NIOSH") and the Occupational Safety and Health Administration ("OSHA") have also been actively involved in monitoring and investigating issues related to RF exposure.

The FCC's Maximum Permissible Exposure ("MPE") limits are based on exposure limits (over a wide range of frequencies) recommended by the NCRP and the exposure limits developed by the IEEE and adopted by the American National Standards Institute ("ANSI"). The limits for localized absorption are based on the recommendations of both the ANSI/IEEE and the NCRP. The potential hazard associated with the RF electromagnetic fields is discussed in OET Bulletin No. 56 "Questions and Answers about the Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields". This document can be obtained on the FCC website at www.fcc.gov. The table and the graph below represent the FCC limits for both occupational and general population exposures to different radio frequencies:

Frequency Range (f) (MHz)	Occupational Exposure (mW/cm^2)	General Public Exposure (mW/cm^2)
0.3 – 1.34	100	100
1.34 - 3.0	100	$180 / f^2$
3.0 - 30	$900 / f^2$	$180 / f^2$
30 – 300	1.0	0.2
300 – 1,500	f / 300	f / 1500
1,500 – 100,000	5.0	1.0

Table 5-1. FCC Limits for Maximum Permissible Exposure



Graph 5-1. FCC Limits for Maximum Permissible Exposure

Discussion of Safety Criteria

Energy levels associated with the RF radiations are not great enough to cause the ionization of atoms and molecules. "Ionization" is a process by which electrons are stripped from atoms and molecules. This process can produce molecular changes that can lead to damage in biological tissue including effects on DNA, the genetic material. This process requires interaction with high levels of electromagnetic energy. Those types of electromagnetic radiation with enough energy to ionize biological material include x-radiation and gamma radiation. Therefore, x-rays and gamma rays are examples of ionizing radiation (see Section 1 for additional information).

RF energy is a type of non-ionizing radiation. Other types of non-ionizing radiation include visible light, infrared radiation and other forms of electromagnetic radiation with relatively low frequencies. Often the term "radiation" is used to apply to ionizing radiation associated with nuclear power plants. Ionizing radiation should not be confused with the lower-energy, non-ionizing radiation with respect to possible biological effects.

The RF emissions from antennas used for wireless telecommunications typically result in exposure levels at the site that are well below the limits recommended by the FCC. These limits were adopted by the FCC based on the recommendations of expert organizations and endorsed by agencies of the Federal Government responsible for health and safety.

Other antennas, such as those used for radio and television broadcast transmissions, use power levels that are generally higher than those used for wireless antennas. Therefore, in some cases, there could be a potential for higher levels of exposure on the site. However, all broadcast stations are also required to demonstrate compliance with the FCC guidelines.

Appendix B
RoofView Export File and Exposure Graphic

StartMapDefinition

Roof Max Y	Roof Max X	Map Max Y	Map Max XY Offset	X Offset	Number of envelope		
200	170	200	190	0	20	1	$AE$21:$G $AE$21:$GR$220

StartSettingsData

Standard	Method	Uptime	Scale Facto	Low Thr	Low Color	Mid Thr	Mid Color	Hi Thr	Hi Color	Over Color	Ap Ht Mult		Ap Ht	
	Method 4		2	1	1	1	1	100	5	1000	2	3	1.5	1

StartAntennaData — It is advisable to provide an ID (ant 1) for all antennas

ID	Name	(MHz) Freq	Trans Power	Trans Count	Coax Len	Coax Type	Other Loss	Input Power	Calc Power	Mfg	Model	(ft) X	(ft) Y	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir	Uptime Profile	ON flag
Node 01 MBCH	ATT-DAS 1A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	22.75	panel	4.5	11.85	65;160		OFF
Node 01 MBCH	ATT-DAS 1A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	22.75	panel	4.5	11.85	65;160		OFF
Node 01 MBCH	ATT-DAS 1A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	22.75	panel	4.5	14.35	65;160		OFF
Node 01 MBCH	ATT-DAS 1A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	22.75	panel	4.5	14.35	65;160		OFF
Node 01 MBCH	ATT-DAS 1B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	22.75	panel	4.5	11.85	65;340		OFF
Node 01 MBCH	ATT-DAS 1B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	22.75	panel	4.5	11.85	65;340		OFF
Node 01 MBCH	ATT-DAS 1B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	22.75	panel	4.5	14.35	65;340		OFF
Node 01 MBCH	ATT-DAS 1B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	22.75	panel	4.5	14.35	65;340		OFF
Node 02 MBCH	ATT-DAS 2A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	26.75	panel	4.5	11.85	65;160		OFF
Node 02 MBCH	ATT-DAS 2A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	26.75	panel	4.5	11.85	65;160		OFF
Node 02 MBCH	ATT-DAS 2A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	26.75	panel	4.5	14.35	65;160		OFF
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Node 02 MBCH	ATT-DAS 2B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	26.75	panel	4.5	14.35	65;340		OFF
Node 03 MBCH	ATT-DAS 3A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	11.85	65;160		OFF
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Node 03 MBCH	ATT-DAS 3B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	14.35	65;340		OFF
Node 04 MBCH	ATT-DAS 4A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	22.75	panel	4.5	11.85	65;160		OFF
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Node 05 MBCH	ATT-DAS 5A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	24.75	panel	4.5	11.85	65;160		OFF
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Node 06 MBCH	ATT-DAS 6A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	28.33	panel	4.5	11.85	65;160		OFF
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Node 07 MBCH	ATT-DAS 7A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	19.75	panel	4.5	14.35	65;160	OFF
Node 07 MBCH	ATT-DAS 7B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	19.75	panel	4.5	11.85	65;340	OFF
Node 07 MBCH	ATT-DAS 7B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	19.75	panel	4.5	11.85	65;340	OFF
Node 07 MBCH	ATT-DAS 7B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	19.75	panel	4.5	14.35	65;340	OFF
Node 07 MBCH	ATT-DAS 7B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	19.75	panel	4.5	14.35	65;340	OFF
Node 08 MBCH	ATT-DAS 8A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	23.16	panel	4.5	11.85	65;160	OFF
Node 08 MBCH	ATT-DAS 8A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	23.16	panel	4.5	11.85	65;160	OFF
Node 08 MBCH	ATT-DAS 8A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	23.16	panel	4.5	14.35	65;160	OFF
Node 08 MBCH	ATT-DAS 8A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	23.16	panel	4.5	14.35	65;160	OFF
Node 08 MBCH	ATT-DAS 8B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	23.16	panel	4.5	11.85	65;340	OFF
Node 08 MBCH	ATT-DAS 8B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	23.16	panel	4.5	11.85	65;340	OFF
Node 08 MBCH	ATT-DAS 8B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	23.16	panel	4.5	14.35	65;340	OFF
Node 08 MBCH	ATT-DAS 8B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	23.16	panel	4.5	14.35	65;340	OFF
Node 09 MBCH	ATT-DAS 9A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	24.25	panel	4.5	11.85	65;160	OFF
Node 09 MBCH	ATT-DAS 9A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	24.25	panel	4.5	11.85	65;160	OFF
Node 09 MBCH	ATT-DAS 9A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	24.25	panel	4.5	14.35	65;160	OFF
Node 09 MBCH	ATT-DAS 9A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	24.25	panel	4.5	14.35	65;160	OFF
Node 09 MBCH	ATT-DAS 9B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	24.25	panel	4.5	11.85	65;340	OFF
Node 09 MBCH	ATT-DAS 9B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	24.25	panel	4.5	11.85	65;340	OFF
Node 09 MBCH	ATT-DAS 9B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	24.25	panel	4.5	14.35	65;340	OFF
Node 09 MBCH	ATT-DAS 9B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	24.25	panel	4.5	14.35	65;340	OFF

StartSymbolData

Sym	Map Marker	Roof X	Roof Y	Map Label	Description (notes for this table only)
Sym		5	35	AC Unit	Sample symbols
Sym		14	5	Roof Access	
Sym		45	5	AC Unit	
Sym		45	20	Ladder	

StartMapDefinition

Roof Max Y	Roof Max X	Map Max Y	Map Max XY Offset	X Offset	Number of envelope		List Of Areas
200	170	200	190	0	20	1 $AE$21:$G $AE$21:$GR$220	$AE$21:$GR$220

StartSettingsData

Standard	Method	Uptime	Scale Facto	Low Thr	Low Color	Mid Thr	Mid Color	Hi Thr	Hi Color	Over Color	Ap Ht Mult	Ap Ht Method
4		2	1	1	1	1	100	5	1000	2	3	1.5 1

StartAntennaData

It is advisable to provide an ID (ant 1) for all antennas

ID	Name	(MHz) Freq	Trans Power	Trans Count	Coax Len	Coax Type	Other Loss	Input Power	Calc Power	Mfg	Model	(ft) X	(ft) Y	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir	Uptime Profile	ON flag
Node 13 MBCH	ATT-DAS 13A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	11.85	65;160		OFF
Node 13 MBCH	ATT-DAS 13A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	11.85	65;160		OFF
Node 13 MBCH	ATT-DAS 13A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	14.35	65;160		OFF
Node 13 MBCH	ATT-DAS 13A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	14.35	65;160		OFF
Node 13 MBCH	ATT-DAS 13B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	11.85	65;340		OFF
Node 13 MBCH	ATT-DAS 13B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	11.85	65;340		OFF
Node 13 MBCH	ATT-DAS 13B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	14.35	65;340		OFF
Node 13 MBCH	ATT-DAS 13B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	14.35	65;340		OFF
Node 14 MBCH	ATT-DAS 14A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	11.85	65;160		OFF
Node 14 MBCH	ATT-DAS 14A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	11.85	65;160		OFF
Node 14 MBCH	ATT-DAS 14A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	14.35	65;160		OFF
Node 14 MBCH	ATT-DAS 14A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	14.35	65;160		OFF
Node 14 MBCH	ATT-DAS 14B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	11.85	65;340		OFF
Node 14 MBCH	ATT-DAS 14B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	11.85	65;340		OFF
Node 14 MBCH	ATT-DAS 14B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	14.35	65;340		OFF
Node 14 MBCH	ATT-DAS 14B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	14.35	65;340		OFF
Node 15 MBCH	ATT-DAS 15A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	22.83	panel	4.5	11.85	65;160		OFF
Node 15 MBCH	ATT-DAS 15A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	22.83	panel	4.5	11.85	65;160		OFF
Node 15 MBCH	ATT-DAS 15A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	22.83	panel	4.5	14.35	65;160		OFF
Node 15 MBCH	ATT-DAS 15A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	22.83	panel	4.5	14.35	65;160		OFF
Node 15 MBCH	ATT-DAS 15B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	22.83	panel	4.5	11.85	65;340		OFF
Node 15 MBCH	ATT-DAS 15B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	22.83	panel	4.5	11.85	65;340		OFF
Node 15 MBCH	ATT-DAS 15B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	22.83	panel	4.5	14.35	65;340		OFF
Node 15 MBCH	ATT-DAS 15B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	22.83	panel	4.5	14.35	65;340		OFF
Node 16 MBCH	ATT-DAS 16A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	34.58	panel	4.5	11.85	65;290		OFF
Node 16 MBCH	ATT-DAS 16A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	34.58	panel	4.5	11.85	65;290		OFF
Node 16 MBCH	ATT-DAS 16A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	34.58	panel	4.5	14.35	65;290		OFF
Node 16 MBCH	ATT-DAS 16A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	34.58	panel	4.5	14.35	65;290		OFF
Node 16 MBCH	ATT-DAS 16B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	34.58	panel	4.5	11.85	65;130		OFF
Node 16 MBCH	ATT-DAS 16B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	34.58	panel	4.5	11.85	65;130		OFF
Node 16 MBCH	ATT-DAS 16B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	34.58	panel	4.5	14.35	65;130		OFF
Node 16 MBCH	ATT-DAS 16B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	34.58	panel	4.5	14.35	65;130		OFF
Node 17 MBCH	ATT-DAS 17A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	11.85	65;160		OFF
Node 17 MBCH	ATT-DAS 17A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	11.85	65;160		OFF
Node 17 MBCH	ATT-DAS 17A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	14.35	65;160		OFF
Node 17 MBCH	ATT-DAS 17A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	23.75	panel	4.5	14.35	65;160		OFF
Node 17 MBCH	ATT-DAS 17B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	11.85	65;340		OFF
Node 17 MBCH	ATT-DAS 17B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	11.85	65;340		OFF
Node 17 MBCH	ATT-DAS 17B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	14.35	65;340		OFF
Node 17 MBCH	ATT-DAS 17B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	23.75	panel	4.5	14.35	65;340		OFF
Node 18 MBCH	ATT-DAS 18A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	36.75	panel	4.5	11.85	65;160		OFF
Node 18 MBCH	ATT-DAS 18A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	36.75	panel	4.5	11.85	65;160		OFF
Node 18 MBCH	ATT-DAS 18A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	36.75	panel	4.5	14.35	65;160		OFF
Node 18 MBCH	ATT-DAS 18A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	36.75	panel	4.5	14.35	65;160		OFF
Node 18 MBCH	ATT-DAS 18B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	36.75	panel	4.5	11.85	65;340		OFF
Node 18 MBCH	ATT-DAS 18B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	36.75	panel	4.5	11.85	65;340		OFF
Node 18 MBCH	ATT-DAS 18B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	36.75	panel	4.5	14.35	65;340		OFF
Node 18 MBCH	ATT-DAS 18B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	36.75	panel	4.5	14.35	65;340		OFF
Node 20 MBCH	ATT-DAS 20A 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	60	22.66	panel	4.5	11.85	65;70		OFF
Node 20 MBCH	ATT-DAS 20A 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	60	22.66	panel	4.5	11.85	65;70		OFF
Node 20 MBCH	ATT-DAS 20A PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	60	22.66	panel	4.5	14.35	65;70		OFF
Node 20 MBCH	ATT-DAS 20A AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	60	22.66	panel	4.5	14.35	65;70		OFF
Node 20 MBCH	ATT-DAS 20B 700	700	0	0	0	0	0	8.1	8.1	KMW	AM-X-CD-14-65-00T-RET	60	62	22.66	panel	4.5	11.85	65;250		OFF
Node 20 MBCH	ATT-DAS 20B 850	850	0	0	0	0	0	9.7	9.7	KMW	AM-X-CD-14-65-00T-RET	60	62	22.66	panel	4.5	11.85	65;250		OFF
Node 20 MBCH	ATT-DAS 20B PCS	1900	0	0	0	0	0	7.3	7.3	KMW	AM-X-CD-14-65-00T-RET	60	62	22.66	panel	4.5	14.35	65;250		OFF
Node 20 MBCH	ATT-DAS 20B AWS	2100	0	0	0	0	0	6.7	6.7	KMW	AM-X-CD-14-65-00T-RET	60	62	22.66	panel	4.5	14.35	65;250		OFF

StartSymbolData

Sym	Map Marker	Roof X	Roof Y	Map Label	Description (notes for this table only)
Sym		5	35	AC Unit	Sample symbols
Sym		14	5	Roof Access	
Sym		45	5	AC Unit	
Sym		45	20	Ladder	

Manhattan Beach/Hermosa Beach oDAS Predictive Model for 19' AGL Antenna Centerline Elevation View (90° from Antenna Azimuths)