



December 31, 2014

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: ET Docket No. 08-59
Request for Frequency Coordinator Designation for Medical Body Area Networks
within the 2360-2390 MHz Band

Dear Ms. Dortch:

Pursuant to the provisions of the Federal Communications Commission's ("FCC") Order on Reconsideration and Second Report and Order in the above-referenced proceeding,¹ and further, in response to the frequency coordination "Qualifying Criteria" provided in the FCC's subsequent *Public Notice*,² EWA is pleased to submit this formal request to be designated as an MBAN Frequency Coordinator.

EWA has thoroughly reviewed the record in this matter and understands the frequency coordinator requirements and obligations. Of critical relevance, EWA recognizes the following:

- MBAN devices will be licensed by rule on a secondary basis in the 2360-2390 MHz band and may not cause interference to (and must accept interference from) primary Aeronautical Mobile Telemetry ("AMT") operations;
- MBAN technology will provide a flexible platform for the wireless networking of multiple body transmitters used for measuring and recording physiological parameters and other patient information or for performing diagnostic or therapeutic functions, primarily in health care facilities;
- There are just over 5,720 registered hospitals in the United States, including not-for-profit community, investor-owned for-profit, state and local government, Federal Government, psychiatric, and long term care institutions³;

¹ See *Order on Reconsideration and Second Report and Order*, ET Docket No. 08-59, 27 FCC Rcd 10662 (2014).

² See *Wireless Telecommunications Bureau Opens Filing Window for Requests to be the Frequency Coordinator for Medical Body Area Networks*, *Public Notice*, ET Docket No. 08-59, DA 14-1632 (rel. Nov. 10, 2014).

³ Source, American Hospital Association Annual Survey, 2014.

- It is the FCC's intention to ensure interference-free sharing of the band among AMT and MBAN facilities;
- Health care facilities that intend to operate MBAN devices type-accepted for use in the 2360-2390 MHz band are required to register the device with an MBAN coordinator for purposes of maintaining an accurate and up-to-date database of MBAN installations;
- The specific duties of an MBAN frequency coordinator are set forth in Section 95.1225 of the Commission's rules;
- As an MBAN coordinator, EWA shall determine whether a proposed MBAN location falls within the line of sight of an AMT receiver and, if so, shall work in cooperation with the AMT frequency coordinator (Aerospace and Flight Test Radio Coordinating Council - AFTRCC) and the affected health care facility to mitigate the potential for interference;
- As an MBAN frequency coordinator, EWA shall be required to provide its services on a non-discriminatory nationwide basis, and at a reasonable fee structure that reflects only the actual costs of providing the coordination and registration functions on a not-for-profit basis; and
- As an MBAN designated frequency coordinator, EWA understands that it is required to act in this capacity for 10 years, after which it could elect not to continue as an MBAN coordinator or the FCC could terminate EWA's designation.

EWA Responses to MBAN Coordinator Qualifying Criteria

- (1) Ability to register and maintain a database of MBAN transmitter locations and operational parameters.

As an established FCC-certified frequency advisory committee ("FAC"), EWA currently maintains a state-of-the-art hardware network, extensive proprietary software capabilities, and a database that mirrors the Part 90 Universal Licensing Service ("ULS") records, that enable it to assist applicants and licensees to secure spectrum solutions to accommodate wireless system operational expectations, and to secure licenses in compliance with FCC operational and technical requirements. Certain frequency certifications issued by EWA require processing requests for and receiving concurrences from other frequency advisory committees that have primary spectrum rights over specific channels. System propagation and contour analyses are performed for all requests for frequency coordination, other than for administrative amendments, whether the system to be operated is configured for voice, data, voice and data, conventional, trunked, analog or digital operations. FCC ULS downloads are processed daily, along with the frequency certification results of other Part 90 FACs. EWA's database is secure, maintained off site in Ashburn, Virginia, and backed up daily with a duplicative record maintained in Chicago, Illinois.

EWA accepts requests for general spectrum information, rule interpretations, application preparation, and frequency coordination through all available means convenient to its customers. EWA routinely provides spectrum use and activity reports for customers. EWA processes approximately 10,000 such spectrum transactions annually on behalf of Business/Industrial/Land Transportation, public safety and private carrier applicants. These EWA assets and resources will be leveraged to develop a distinct database of MBAN networks consisting, at a minimum, of transmitter locations and operational parameters⁴. EWA's current capabilities to receive and process requests for spectrum solution services expeditiously will be expanded to accommodate requests to register MBAN networks. Experienced EWA staff professionals will be assigned to manage the MBAN registration process. EWA's web site will be updated to provide information and instructions associated with MBAN network registrations.⁵ To facilitate that process, EWA has secured the URL "www.MBANRegistration.org," which will provide access to MBAN registration information, requirements, and procedures.

(2) Knowledge of or experience with medical wireless systems in health care facilities.

While EWA is not at present directly involved in assisting medical institutions to secure access to spectrum in the 1.4 GHz and other bands established for wireless medical telemetry operations, it is familiar with those application processes. It also understands that MBANs, which are the subject of this frequency coordinator designation process, consist of extremely low-powered devices that will be secured on a patient's body to conduct monitoring of critical functions such as heart rate, blood sugar, blood pressure, and brain waves. The devices will transmit to another body-worn or table side device that will operate in a less restrictive frequency band. The useful transmission range of these MBAN devices will be approximately one meter. The maximum effective isotropic radiated power ("EIRP") allowed is 1 mW (one one-thousandth of a watt). These devices are required to remain within the confines of a hospital where the MBAN network has been registered following interference mitigation review between the MBAN frequency coordinator and AFTRCC.

Moreover, in its normal frequency coordination activities, EWA routinely provides frequency coordination and associated spectrum research services for medical institutions. Recently, EWA has provided frequency coordination services to, among others: Concentra Health Services, Addison, Texas; New York Presbyterian Hospital, New York, New York; Johns Hopkins Hospital, Baltimore, Maryland; Harlem Hospital Center, New York, New York; North Shore University Hospital, Plainview, New York; North Shore Health Systems, Great Neck, New York; Medical Center Alliance, Fort Worth, Texas; Medical City Dallas Hospital, Dallas, Texas; New Parkland Hospital, Dallas, Texas; and New York State Department of Mental Health, Albany, New York.

(3) Knowledge of or experience with AMT operations.

There are approximately five hundred (500) AMT facilities in the United States operated by both government and commercial entities and used primarily to obtain telemetry data from aeronautical vehicles in test situations. EWA understand that AFTRCC maintains the only

⁴ EWA would welcome recommendations from interested parties regarding specific data to be retained.

⁵ See www.enterprisewireless.org.

AMT database in the United States. As noted above, it is understood that AMT operations are afforded primary status within the 2360-2390 MHz band. EWA is familiar with primary and secondary use spectrum rights.

- (4) Ability to calculate and measure interference potential between MBAN and AMT operations and to enter into mutually satisfactory coordination agreements with the AMT coordinator based on the requirements in Section 95.1223(c) of the Commission's rules.

EWA is confident that it is capable of successfully working with AFTRCC to identify and implement interference mitigation analyses that ensure AMT operations are protected from interference, while also creating opportunities to deploy MBAN networks to promote health care objectives. There are a number of technical factors that will normally be incorporated within interference prediction analyses between AMT and MBAN systems including, among other variables, MBAN antenna locations within hospitals, terrain and vegetation. Analyses such as line-of-sight and Longley Rice seem appropriate for these purposes, and we would look forward to reviewing these and other approaches with AFTRCC representatives immediately upon FCC designation. For illustrative purposes, EWA generated sample MBAN Area and Path studies which are attached.

- (5) Ability to develop procedures to ensure that registered health care facilities operate an MBAN consistent with the requirements in Section 95.1223.

EWA currently provides a number of communications and helpful educational reminders to applicants and licensees alike regarding ongoing operational obligations and FCC filing requirements associated with construction requirements. EWA would be willing to provide similar communications to assist registered care facilities with their obligations pursuant to FCC Rule Section 90.1223. EWA also would seek to collaborate in this effort with the American Society for Healthcare Engineering of the American Hospital Association ("ASHE").

Other EWA Obligations/Assertions

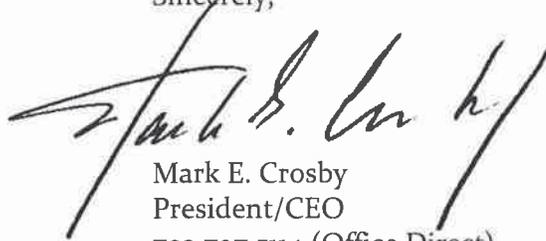
- (1) Reliance on Third Parties – EWA does not intend to rely on any third parties for the performance of its obligations as an MBAN frequency coordinator.
- (2) Description of the Entity and Qualifications – EWA is a national, not-for-profit association organized under the laws of the District of Columbia. EWA's tax-exempt status is provided under IRS Code 501(c)(6). EWA is an FCC-certified FAC that processes approximately 10,000 requests for frequency coordination annually. EWA maintains substantial, proprietary computing resources that ensure its recommendations are expeditiously processed in compliance with applicable FCC Rules and Regulations. EWA maintains and updates daily its own database of Part 90 licensees and pending applications. EWA has the requisite capacity, ability, and willingness to expand these resources to accommodate the requirements imposed on an MBAN frequency coordinator, should it be selected by the FCC to perform these functions.

- (3) Preventing Conflicts of Interests – In its capacity as an FCC-certified FAC, EWA provides its services on a first-come, first-served and non-discriminatory basis. It is noted that these requirements are specified in accordance with FCC Rule Section 90.1225(c). The MBAN frequency coordinator’s requirements are to register health care facilities that operate MBAN transmitters, maintain a database of these MBAN transmitter locations and operational parameters, and provide the Commission with information contained in the database upon request.⁶ The MBAN coordinator is also required to collaborate with the AMT coordinator to mitigate the potential for interference to AMT sites. Fees for services will be the same no matter the medical institution. EWA does not currently, nor does it plan to, represent hospitals, MBAN device manufacturers, or AMT interests. EWA’s obligations are to the FCC, whose spectrum intentions are to provide interference-free sharing of the 2360-2390 MHz band.
- (4) Length of Time before EWA would be able to begin its duties as an MBAN frequency Coordinator – Interference mitigation protocols must be identified and agreed to with the AMT coordinator, and these protocols must be placed into operation by the MBAN frequency coordinator. EWA would be prepared to contact AFTRCC and other appropriate parties immediately upon its FCC designation, so as to commence MBAN coordination activities as soon as possible. Anticipating cooperative discussions, EWA believes these activities could commence no later than ninety (90) days following designation. Every reasonable effort will be made to expedite service initiation and, of course, EWA would keep all appropriate parties informed as to development progress.
- (5) Willingness to Work with Other MBAN Frequency Coordinators – EWA currently works with other certified Part 90 FACs and is willing to cooperate with other MBAN frequency coordinators should the Wireless Telecommunications Bureau decide to designate one or more additional frequency coordinators(s).
- (6) Reasonable Fee Structure – EWA’s MBAN frequency coordination fee structure will reflect only the actual costs of providing the coordination, interference analyses, and registration functions on a not-for-profit basis. It is unsure at the moment of all actual costs, for example any AFTRCC fees, but EWA is willing to share the basis of its fee schedule with the FCC as soon as possible after its designation as an MBAN coordinator.
- (7) Responsible Party – The undersigned EWA officer is the primary contact person who is familiar with this request to be designated as an MBAN frequency coordinator. Contact information is provided below.

⁶ FCC Rule Section 95.1255(b)(1).

We trust this letter is fully responsive to the FCC's requirements for information sufficient to designate EWA as an MBAN frequency coordinator. Should the FCC require clarification or further information, please direct those inquiries to my attention.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark E. Crosby". The signature is fluid and cursive, with a large initial "M" and a long, sweeping underline.

Mark E. Crosby
President/CEO
703.797.5114 (Office Direct)
301.873.6221 (Mobile)
mark.crosby@enterprisewireless.org

EWA MBAN Sample Project

Prop. model 1: Longley-Rice v1.2.2
 Time: 10.0% Loc.: 50.0%
 Prediction Confidence Margin: 0.0dB
 Climate: Continental Temperate
 Land use (clutter): none
 Atmospheric Abs.: none
 K Factor: 1.333

Sites

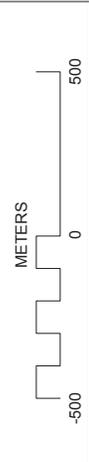
Site: AMT Receive Site
 N37°00'39.75" W121°37'29.15" 75.6 m
 AMT
 Tx.Ht.AGL: 30.0 m
 Model: 1 Isotropic-vertical/0.0° 2375.0000 MHz

Site: Hospital
 N37°01'16.05" W121°35'56.37" 68.0 m
 Hospital Tx.Ht.AGL: 30.0 m Total ERP: 1.00 mW
 Model: 1 Isotropic-vertical/0.0° 2375.0000 MHz

Received Power at remote

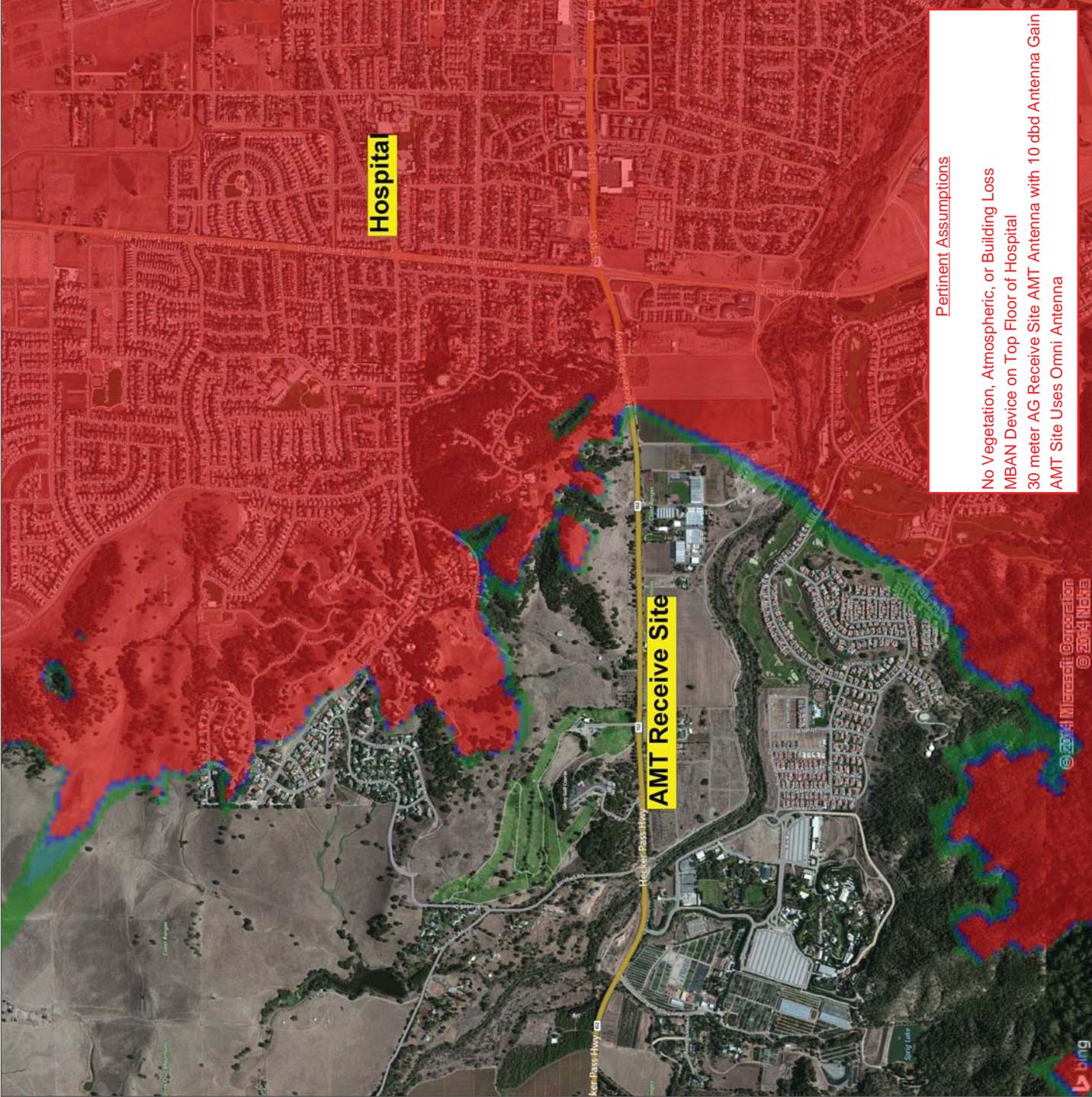
>=	-110.0 dBmW
	-120.0 to -110.0 dBmW
	-130.0 to -120.0 dBmW
	-140.0 to -130.0 dBmW
<	-140.0 dBmW

Display threshold level: -160.0 dBmW
 RX Antenna - Type: ISOTROPIC
 Height: 30.0 m AGL Gain: 10.00 dBi



MBAN Sample Project
 Interference Area
 Figure 1
 Mon Dec 29 12:50:40 2014

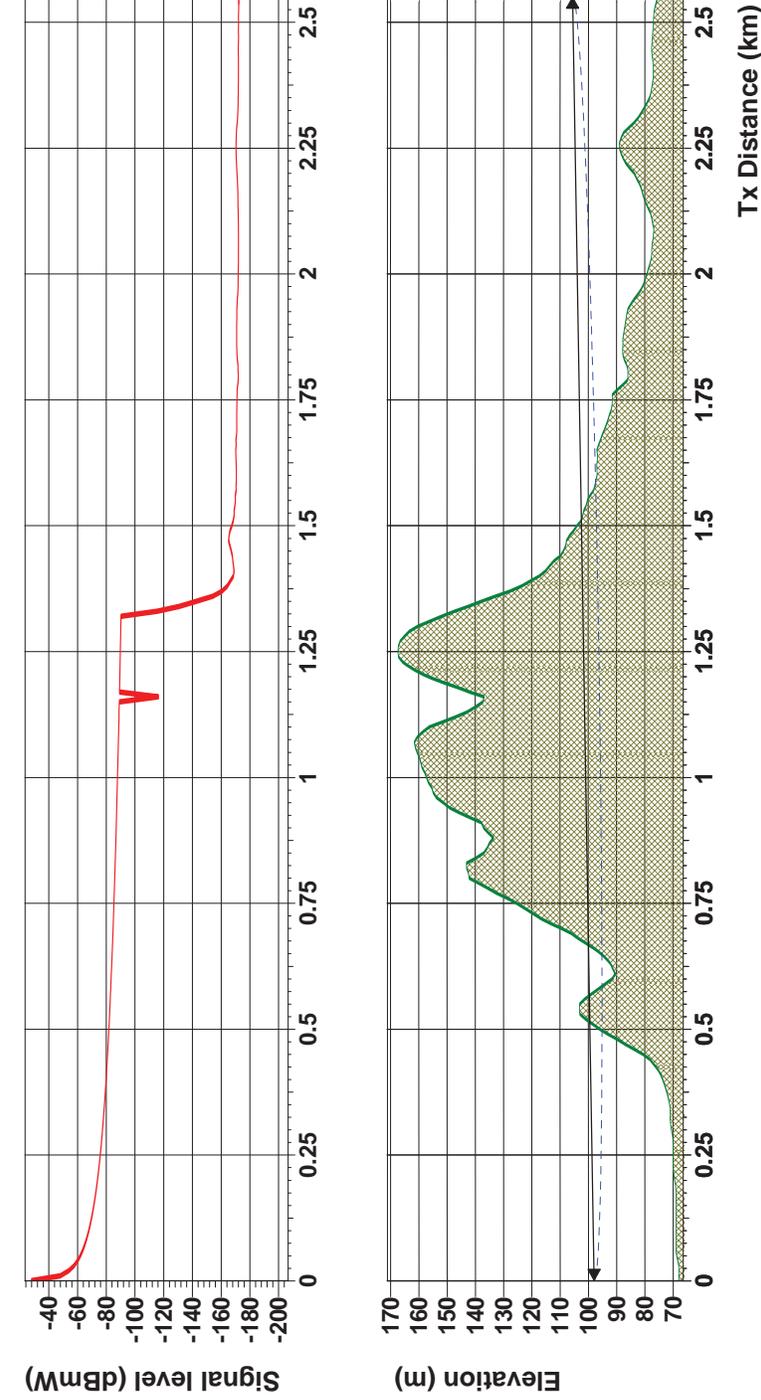
Enterprise Wireless Alliance MBAN Sample Area Study Interference Area Level



Pertinent Assumptions

- No Vegetation, Atmospheric, or Building Loss
- MBAN Device on Top Floor of Hospital
- 30 meter AG Receive Site AMT Antenna with 10 dbd Antenna Gain
- AMT Site Uses Omni Antenna

Enterprise Wireless Alliance



EWA Path Study

Prop. model: Longley-Rice v1.2.2
 Time: 10.00 % Loc.: 50.00 %
 Margin: 0.00 dB
 Climate: Continental Temperate
 Atm. factor: none
 K factors: 1.333, 1.000, 1.000

Reliability Analysis

Fade outage method: Vigants-Barnett
 C param. for Vigants-Barnett: average prop. conditions: C=1
 ITU-R terrain type: Inland
 ITU-R refract. grad.: 20.0 %
 External interf.: -150.0 dBmW
 Dispersive fade margin: 80.0 dB
 Ant. spacing (diversity): 0.0 m
 Rain outage method: Crane
 Rain region: f

No Hospital Building Loss

MBAN System on Top Floor of Hospital

No Atmospheric or Vegetation Loss

Transmitter Site: Hospital
 Name: Hospital
 Location: N37°01'16.05" W121°35'56.37"
 Site elevation: 68.0 m
 Antenna height: 30.0 m
 Pointing azimuth: 243.9 °
 Transmitter power: 1.00 mW
 Trans. line loss: 0.00 dB
 Other losses: 0.00 dB
 Antenna gain: 0.00 dBi
 Antenna file:
 Total EIRP: 1.00 mW

Name: Hospital ->AMT
 Frequency: 2375.0000 MHz
 Polarization: vertical
 Length: 2.548 km
 Number of obstacles: 0
 Excess path loss: 75.34 dB
 Atm. absorption loss: 0.00 dB
 Path loss for stats: 183.43 dB
 Flat fade margin: -80.65 dB
 Total fade margin: -80.65 dB
 Annual fade outage: N/A
 Annual rain outage:
 Link availability: N/A

Receiver Site: AMT
 Name: AMT
 Location: N37°00'39.75" W121°37'29.15"
 Site elevation: 75.6 m
 Antenna height: 30.0 m
 Pointing azimuth: 63.9 °
 Trans. line loss: 0.00 dB
 Other losses: 0.00 dB
 Antenna gain: 12.15 dBi
 Antenna file:
 Received signal level: -171.28 dBmW

Sample Path Study

Demonstrating Path and No Interference

Enterprise Wireless Alliance