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February 28, 2011

VIA ECFS

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

**Re: Supplement to Proposal to be Designated TV Band Device Database  
Manager, ET Docket No. 04-186**

Dear Ms. Dortch:

Airity, Inc. (f/k/a WSdb, LLC) (“Airity”),<sup>1</sup> by its attorneys, hereby submits the instant supplement (“Supplement”) to its January 4, 2010 proposal (“Proposal”) to be designated as a television band database administrator (“Authorized Database Administrator”). The Supplement is submitted in response to the January 26, 2011 public notice (“Public Notice”) of the Federal Communications Commission (“FCC” or “Commission”) designating Airity as one of nine entities to serve as Authorized Database Administrators, subject to the fulfillment of certain enumerated conditions.<sup>2</sup>

First, Airity accepts the designation by the Commission to serve as an Authorized Database Administrator. As required by the Order, Airity confirms that Adam Drobot (primary designee) and Eli Salomon will attend the workshops to be conducted by the FCC’s Office of Engineering and Technology to address issues relevant to Authorized Database Administrators. Adam Drobot (primary designee) and Eli Salomon also will be the individuals responsible for ensuring Airity’s compliance with the conditions set forth in the Public Notice. Arun Sobti will serve as an additional contact for Airity.

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<sup>1</sup> On February 23, 2011, WSdb, LLC changed its name to Airity, Inc. pursuant to a Plan of Conversion (“Plan”) filed with the State of Texas. Pursuant to the Plan, WSdb, LLC was converted from a limited liability company to a corporation. The Plan had no impact on the ownership or control of Airity, which continues to be funded by 2M Companies, Inc. (“2M Companies”) as described in the Proposal. 2M Companies was founded by Morton Meyerson, who serves as its Chief Executive Officer and Chairman of the Board of Directors. Biographies of the current management and staff of Airity are set forth at Appendix C hereto. Through this Supplement, Airity deletes Attachment 1(a) to its Proposal in its entirety and replaces it with Appendix C.

<sup>2</sup> See Unlicensed Operation in the TV Broadcast Bands, *Order*, ET Docket No. 04-186, 26 FCC Rcd 554 (2011) (“Order”).

Ms. Marlene H. Dortch  
February 28, 2011  
Page 2

Second, as demonstrated in the Supplement, Airity's proposed database service will comply with all applicable Commission rules, as amended.<sup>3</sup> The Supplement and attachments update the Proposal to demonstrate how Airity's proposed database complies with the Commission's current requirements governing the operation of unlicensed devices in the television bands.<sup>4</sup> The Supplement focuses on how Airity's proposal complies with those requirements that were modified or clarified by the Commission in its *Second Memorandum Opinion and Order* in which it finalized its rules for white spaces devices, and includes a discussion of Airity's compliance with certain other requirements relevant to its proposed database.<sup>5</sup> Appendix B is a compliance matrix which sets forth the areas in which the Supplement changes or clarifies the Proposal.<sup>6</sup>

Third, Airity confirms by this Supplement that it will cooperate with any steps that OET deems necessary to ensure compliance with the FCC's rules for Authorized Database Administrators.<sup>7</sup> Finally, Airity agrees that it will not engage in any discriminatory or anti-competitive practices, or any practices that may compromise the privacy of its users.<sup>8</sup>

Respectfully submitted,

/s/ Tom W. Davidson  
Tom W. Davidson

## Enclosures

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<sup>3</sup> See Unlicensed Operation in the TV Broadcast Bands, *Second Memorandum Opinion and Order*, ET Docket No. 04-186, 25 FCC Rcd 18661 (2010) ("Second Memorandum Opinion and Order"); Office of Engineering and Technology ("OET") Invites Proposals from Entities Seeking to be Designated TV Band Device Database Managers, *Public Notice*, ET Dkt. 04-186, 24 FCC Rcd 14136 (2009).

<sup>4</sup> A complete compilation of the FCC's requirements for Authorized Database Administrators is set forth at Appendix A to the Supplement.

<sup>5</sup> The instant Supplement provides sufficient detailed information to demonstrate that Airity's proposal complies with the rule changes and clarifications adopted by the FCC in its September 23, 2010 decision without compromising the proprietary or confidential aspects of its proposed database service.

<sup>6</sup> See Appendix B to the Supplement.

<sup>7</sup> See Order at ¶ 19.

<sup>8</sup> *Id.*

**Table of Contents:**

**Proposal of Airity, Inc.**

1. Information That Must Be Provided to the Database by TVBDs.....1-2

2. Information Delivered by the Database.....2-5

3. Accessing the Database.....5-10

4. Data Stored in the Database.....10-18

5. Interference Protection.....18

6. Synchronization Requirements.....19

7. Security Requirements.....19-20

8. Term Requirements.....21

Appendix A: Requirements Breakdown Structure.....22-35

Appendix B: Compliance Matrix.....36-70

Appendix C: Business Structure & Biographies (Governance, Management, Staff)...71-79

## **1. INFORMATION THAT MUST BE PROVIDED TO THE DATABASE BY THE TVBDs**

**Requirement 1.1:** Fixed TVBDs must register with the Database.

**Response:** In registering, TVBDs must provide the following information prior to initial operation or after changing location:

- FCC ID of the TVBD
- Manufacturer's serial number of the TVBD
- TVBD's geographic coordinates (latitude and longitude [NAD 83] accurate to +/- 50m)
- TVBD's antenna height above ground level (meters)
- Name of the individual or business that owns the TVBD
- Name of a contact person responsible for the TVBD's operation
- Address for the contact person
- E-mail address for the contact person
- Phone number for the contact person

The Database will store the Fixed TVBD registration data. The server(s) implemented as part of Airity's database design will process messages from TVBDs that are a sequence of fixed-sized data fields that contain the above registration information.

Airity respectfully requests that the FCC adopt a rule requiring a professional installer to certify any antenna upgrade and to update any changes in height with the database.

**Requirement 1.2:** Portable Mode II must provide a defined set of information to the Database.

**Response:** Portable Mode II TVBDs must provide the Database with the following:

- FCC Identifier, consisting of:
  - The Grantee Code (three characters consisting of Arabic numerals, capital letters, or combination thereof)
  - The equipment product code (a series of Arabic numerals, capital letters or a combination thereof, and may include the dash or hyphen (-). The total of Arabic numerals, capital letters and dashes or hyphens may not exceed 14)
- Serial Number: Portable Mode II TVBD serial numbers assigned by the manufacturer
- The TVBD's geographic coordinates:
  - Geographic coordinates will be in latitude and longitude (NAD 83) accurate to +/- 50m. TVBDs using enhanced mobile services should seek to operate with accuracy of one arc second in latitude by one arc second in longitude, "1" by "1". If a TVBD

seeks to load channel availability information from the Database beyond such TVBD's current position, such TVBD must be certified for mobility by the Database. The Database will develop procedures to determine whether TVBDs requesting channel availability information beyond their current position are certified for such functionality.

**Requirement 1.3:** Mode II or Fixed TVBDs providing channel lists to Mode I TVBDs must provide a defined set of information to the Database.

**Response:** Mode II or Fixed TVBDs providing channel lists to Mode I TVBDs may only do so after the following:

- TVBD contacts the Database to provide the FCC ID of the Mode I TVBD
- The Database subsequently confirms that the FCC ID is valid for operation
- The Database ensures that such channel list is accurate

We have incorporated all of the above requirements in the design of the Database. The Database will also store and maintain any additional information that Airity believes could be beneficial to the operation of an efficient and scalable White Spaces database. Airity may provide enhanced services not specifically required by the FCC rules. In conjunction with such enhanced services, the Database will store and maintain any additional information that Airity believes will be beneficial to such services.

The specific format of the data will impact the interchange of data between the White Spaces Database Administrators. We have initiated work with the other Administrators and the FCC to achieve a common format that facilitates the interoperability of the databases.

Airity is currently evaluating several options to ensure that all of the above requirements are fully met. As we are sensitive to the performance of the operation of mobile services that may be provided by TVBDs, we are also evaluating methods that will achieve sufficiently low jitter and latency to make such services possible.

## **2. INFORMATION DELIVERED BY THE DATABASE**

**Requirement 2.1.1:** The Database shall provide to authorized TVBDs an accurate listing of the TV channels available at the location provided by such TVBD to the Database.

**Response:** The Database design and communication protocols will ensure that the channel listing provided to TVBDs is accurate. A description of the security design of Airity's database is provided in Section 7 of this document.

**Requirement 2.1.2:** Available channels delivered by the Database to the TVDBs will be only those channel numbers that the TVDB is permitted to operate on.

**Response:** Airity’s database design will include a function to enable the provision of a list of available channels to TVDBs (“*Channel List Serving Function*”).

In response to all queries from TVDBs for available channel lists, the Channel List Serving Function will provide to the requesting TVBD a complete list of channels, together with the status of each channel (*i.e.*, available or unavailable), depending upon whether transmission by a TVBD on a particular channel would comply with the interference protection requirements set forth in Section 15.712 of the FCC’s rules. The design of the Database will ensure the accuracy of the channel listings provided to TVDBs.

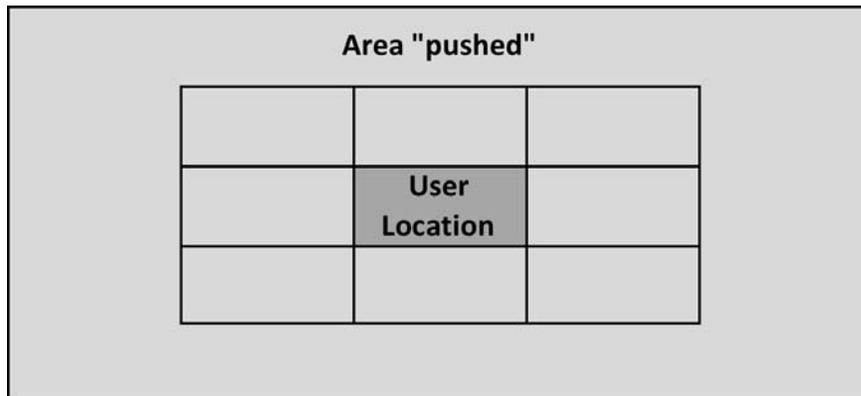
Such available channels will be those channel numbers that the TVBD is permitted to operate on, as follows:

- Unless otherwise prohibited, any TVBD may operate on available channels in the frequency bands 512-608 MHz (channels 21-36) and 614-698 MHz (TV channels 38-51).
- Unless otherwise prohibited, Fixed TVBDs communicating with other Fixed TVBDs may operate on available channels in 54-60 MHz (channel 2), 76-88 MHz (channels 5 and 6), 174-216 MHz (channels 7-13) and 470-512 MHz (channels 14-20)
- Operation of TVBDs is prohibited on the first channel above and the first channel below 608-614 MHz (channel 37) that are not occupied by an authorized service
- The TVBD is not permitted to operate on channels that are unavailable as a result of a protected station/location in the Database
- The TVBD is not permitted to operate on channels that have interference protection at the current location of the TVBD

**Requirement 2.1.3:** The database has the option, but not the requirement, of “pushing” updated channel information from the database to the TVDBs.

**Response:** The Channel List Serving Function in the Airity Database will have a “push” capability to provide TVDBs with updates as to channel availability on a real-time basis.

As a user moves from bound area to bound area, Airity will be “pushing” to the user the available channel list for the surrounding areas. Information provided will include areas beyond the areas immediately adjacent to the user. In order to support an extended mobility service for compliant devices supporting such functionality, we will load such surrounding channels. This is depicted in the graph below:



**Figure 2.1.** Bounded area coverage of available channel information “pushed” by the Database

As TVBDs cross the boundary of an area, they will have the responsibility to switch to the right channel in the new bound area. Airity is working with several device manufacturers to ensure that this requirement is met. The Database will notify the TVBD that a channel is no longer valid, or which alternate channel is available, if any. A session can then be terminated if no channel is available or suspended and resumed on another channel through the appropriate mechanism when an alternate channel is present.

**Requirement 2.1.4:** All information required by the rules to be included in Airity’s Database must be made publicly available for inspection.

**Response:** Airity will fully comply with this requirement.

All information required by the rules to be included in the Database will be made publicly available for inspection, including fixed TV bands device registrations and voluntarily submitted protected entity information, e.g. cable headends information.

The Database will allow prospective operators of TVBDs to query the Database and determine whether there are vacant channels at a particular location. Operators of TV bands devices may use information from the database to voluntarily coordinate their channel usage to avoid conflicts.

Information stored to support additional services will not be made publicly available for inspection, provided such disclosure is not required by the FCC rules.

**Requirement 2.1.5:** The Database will make its services available to all unlicensed TVBD users on a non-discriminatory basis.

**Response:** Airity will comply with this requirement and make its services available to all unlicensed TVBD users on a non-discriminatory basis.

**Requirement 2.1.6:** The Database may charge fees for the provision of channel lists to fixed and personal/portable TVBDs and for registering fixed TVBDs. Airity will not charge to register temporary low power auxiliary links.

**Response:** Airity will comply with this requirement. Specifically, the Database will maintain a billing system that is scalable and that can be modified as necessary to respond to evolutions in the market for database services. A detailed description of the Billing Function of the Airity Database is provided in Attachment 2(a), section DB-11, in our January 4, 2010 proposal (“Proposal”) to be designated as a Television Band Database Administrator.

**Requirement 2.1.7:** The Database may provide enhanced services not specifically required by the FCC rules. In conjunction with such enhanced services, the Database will store and maintain any additional information that Airity believes it will be beneficial to such services.

**Response:** Airity will comply with this requirement. Access to this additional information will be made publicly available only to the extent required by the FCC; we will provide this information, in some fashion, to users using the extended service.

### **3. ACCESSING THE DATABASE**

#### **3.1 Fixed TVBD access to the Database**

**3.1.1** Except in instances excluded by the FCC, Fixed TVBDs shall contact the Database over the Internet to determine the TV channels that are available at the Fixed TVBD’s geographic coordinates.

**Response:** Upon receiving a query from a Fixed TVBD over the Internet, the Airity Database will request, among other pieces of information, geographic coordinates (if not supplied with the original query). Based upon these coordinates and after verifying the registration and rights of the querying device, the Database will send allowable channels for communications to the Fixed TVBD.

Airity respectfully submits a proposal for the FCC’s consideration that the Database also send along information that could be useful in the unlikely event of a catastrophe to provide an emergency broadcast capability. Coordination of the broadcast and TVBD

use should proceed along organized lines until the catastrophic event is over. Airity is available to discuss this proposal with the FCC at the FCC's convenience.

**3.1.1.1** The Database shall provide channel availability schedule information for the 48-hour period beginning at the time the TVBD queries the Database for channels.

**Response:** The response to the query from the Fixed TVBD to the Database regarding available channels will contain not only channels available at the time of the query, but also a scheduling of any changes that the Database knows will occur in the 48 hour period following the query.

Airity respectfully submits to the FCC that this 48 hour period of channel availability may unnecessarily constrain the available channels for the 48 hours. Actual trials could determine the optimal time period that the FCC should consider for ensuring that there is no interference that they wish to eliminate.

**3.1.1.2** The Database shall take into consideration the Fixed TVBD's antenna height prior to the initial service transmission at a given location.

**Response:** The response to the query from the Fixed TVBD to the Database regarding available channels will take into consideration the Fixed TVBD's antenna height as stored in its Database. To ensure that there has been no modification to this antenna height, the Database mechanism will contain rules for verifying the height. In verifying the Fixed TVBD's height, the Database will use data from the Fixed TVBD's original registration, and where permissible by FCC rules, any additional information that the Database has available regarding the antenna height.

**3.1.1.2.1** A Fixed TVBD located at a site where the ground level height above average terrain (HAAT) calculated employing the methodology in 47 CFR (§) 73.684(d) is greater than 76 meters shall not be provided a list of available channels.

**Response:** The Database will check its record to verify that the height above average terrain (HAAT) is not greater than 76 meters prior to providing available channels.

Airity respectfully submits to the FCC that actual trials should determine if the 76-meter limitation should be enforced. Latest technology in antenna beam forming could potentially alleviate this 76-meter limitation.

**3.1.1.3** If a Fixed TVBD does not have a direct connection to the Internet and has not yet been initialized and registered with the Database, but can receive transmissions of another Fixed TVBD, the Fixed TVBD needing initialization may transmit over the following channels to the other Fixed TVBD to register its location and receive a list of channels that are available for its use on either:

- A channel that the other TVBD has transmitted on
- A channel which the other TVBD indicates is available for use to access the Database

**Response:** For a Fixed TVBD that does not have a direct connection to the Internet and has not yet been initialized and registered with the Database but wishes to communicate, there are a few options. The Fixed TVBD can either receive transmissions of another Fixed TVBD that is transmitting on (i) a particular channel, or (ii) which that Fixed TVBD indicates is available for use to access the Database, then the Fixed TVBD can initialize with the Database on that channel.

**3.1.1.4** Except in instances excluded by the FCC, a Fixed TVBD may not obtain lists of available channels from another Fixed TVBD as provided by the Database for the latter Fixed TVBD.

**Response:** Except in instances excluded by the FCC, although a Fixed TVBD can receive information for communicating to the Database from another Fixed TVBD, it will not be allowed to obtain lists of available channels from this Fixed TVBD. Only the Database can provide these available channels.

**3.1.1.4.1** The requirement that Fixed TVBDs access the Database over the Internet does not restrict such TVBDs from doing so by contacting the Database through other TVBDs.

**Response:** A Fixed TVBD can access the Database by accessing the Internet, OR, by accessing other Fixed TVBDs. Only the Database will provide channels for the requesting Fixed TVBD.

**3.1.1.4.1.1** Any such request by a Fixed TVBD through another TVBD must ensure, except in the instance of initial initialization and registration, that the Database provide the channel list applicable to the requesting TVBD, not the TVBD the request is being routed through.

**Response:** Only the Database can provide a channel list for a Fixed TVBD, but it will allow a Fixed TVBD that is being routed through another Fixed TVBD to conduct the initial initialization and registration.

**3.1.1.4.1.2** If a Fixed TVBD accesses the Database through another TVBD, it must:

- Follow the FCC's rules applicable to such Fixed TVBD and its access to the Database
- Use the appropriate protocol for interacting with the other TVBD
- Send its geographic coordinates

- Send any other information required
- Operate only on channels listed as available by the Database

**Response:** Any Fixed TVBD that accesses the Database will only be served if it follows the rules set for such communications, follows the appropriate protocol, and sends its geographic coordinates, its identification numbers and other such required information and then only provide channels to communicate designated as available by the Database. At the current time, the applicable protocols have not been finalized. We will fully participate in a cooperative process with all applicable parties, including the FCC and device manufacturers, to ensure the timely development of all applicable protocols.

### 3.2 Mode II personal/portable TVBD access to the Database

**3.2.1** Mode II personal/portable TVBDs shall contact the Database over the Internet to determine the TV channels that are available at their geographic coordinates prior to their initial service transmission in such geographic location.

**Response:** Upon receiving a query from a Mode II personal/portable TVBD over the Internet, the Airity Database will request geographic coordinates (if not supplied with the original query). Based upon these coordinates and after verifying the registration and rights of the querying device, the Database will send allowable channels for communications to the Mode II personal/portable TVBD.

Airity respectfully submits a proposal for the FCC's consideration that the Database also send along information that could be useful in the unlikely event of a catastrophe so that coordination of the broadcast and TVBD use should proceed along organized lines until the catastrophic event is over. Airity is available to discuss this proposal with the FCC at the FCC's convenience.

**3.2.1.1.1** The requirement that Mode II personal/portable TVBDs access the Database over the Internet does not restrict such TVBDs from doing so by contacting the Database through other TVBDs.

**Response:** A Mode II personal/portable TVBD can access the Database either through the Internet or through other TVBDs.

**3.2.1.1.1.1** Any such request by a Mode II personal/portable TVBD through another TVBD must ensure that the Database provide the channel list applicable to the requesting TVBD, not the TVBD the request is being routed through.

**Response:** If a request for available channel lists is received by the Database from a Mode II personal/portable TVBD through another TVBD, then the Database will ensure that this list is provided for the original Mode II personal/portable TVBD and not for the relaying TVBD. The verification of the transfer of information from Mode II to Mode I devices is described below.

**3.2.1.1.1.2** If a Mode II personal/portable TVBD accesses the Database through another TVBD, it must:

- Follow the rules applicable to such Mode II personal/portable TVBD and its access to the Database
- Use the appropriate protocol
- Send its geographic coordinates
- Send any other information required
- Operate only on channels listed as available by the Database

**Response:** Any Mode II personal/portable TVBD that accesses the Database will only be served if it follows the rules set for such communications, follows the appropriate protocol, sends its geographic coordinates, its identification numbers, and other such information and then only be allowed to communicate on channels designated as available by the Database. The verification of the transfer of information from Mode II to Mode I devices is an issue that requires further discussion. The specifications and standards for performing these tasks have not been finalized by the Database administrators and the manufacturers of Mode I and Mode II devices. We have been in discussions with the other conditionally designated administrators to determine how these interactions will be resolved.

**3.2.2** The Database shall provide channel availability schedule information for the 48-hour period beginning at the time the TVBD queries the Database for channels.

**Response:** The response to the query from the Mode II personal/portable TVBD to the Database regarding available channels will contain not only channels available at the time of the query, but also for a 48 hour period following the query.

Airity respectfully submits to the FCC that this 48-hour period of channel availability may severely constrain the available channels for the 48 hours. Actual trials could determine the optimal time period that the FCC should consider for ensuring that there is no interference that they wish to eliminate.

**3.2.3** The Database may provide channel availability information for multiple locations in the vicinity of its current location (i.e. for mobility).

**Response:** The Database will provide channel availability information for multiple locations in the vicinity of the current location of a Mode II personal/portable TVBD to account for mobility of the requesting TVBD.

**3.2.3.1** In cases where available channels within a bounded area will be different at different locations in that area, the TVBD may only operate on channels available at all locations within the bounded area.

**Response:** For Mode II personal/portable TVBDs that receive available channels within a bounded area from the Database, the available channels may differ in locations within the bounded area. In such cases, the TVBD will only be allowed

to operate on channels that are available in all locations within the bounded area. We propose to address this requirement by executing a rule within our Database processing scheme that automatically selects only those channels that are available throughout a complete bounded area. We propose to perform this task on an area as small as one arc second in latitude by one arc second in longitude, “1” by 1” ”.

### 3.3 Mode I TVBD access to the Database

**3.3.1** Either a Fixed or Mode II personal/portable TVBD may send a list of available channels to a Mode I TVBD.

**Response:** Mode I or client TVBDs may receive information from the Database through Fixed or Mode II personal/portable (independent) TVBDs.

**3.3.1.1** The list of channels provided to the Mode I TVBD must be the same as the list of channels that are available to a Fixed or Mode II TVBD, except that:

- A Fixed TVBD may also obtain from the Database a separate list of available channels that includes adjacent channels that would be available to a Mode I TVBD
- A Fixed TVBD may provide such separate list to the Mode I TVBD

**Response:** The Database will send a list of channels for the Mode I TVBD that is the same list as are available for a Fixed or Mode II personal/portable TVBD. In the case of a query by a Fixed TVBD, the Database could also provide a separate list of available channels for the Mode I TVBD that includes adjacent channels. The Fixed TVBD may in turn provide such a separate list to the Mode I TVBD.

## 4. DATA STORED IN THE DATABASE

### 4.1 Facilities already recorded in the FCC database

- The protected coordinates of all protected facilities already recorded in the FCC’s databases must be included in the Database
- Identifying and local information will come from the FCC database
- The protected facilities include:
  - Digital TV Stations
  - Digital and analog Class A TV Stations
  - Low power TV stations
  - TV translator and booster stations
  - Broadcast Auxiliary Service stations (including receive only sites), except low power auxiliary stations

- PLMRS/CMRS base stations located more than 80 km from the geographic centers of the metropolitan areas and on the channels defined in 47 CFR §90.303(a)
- Offshore Radiotelephone Service Stations

**Response:** Airity acknowledges the need for the Database to record all of the items from the FCC database listed above and the Database shall include ALL of the requirements listed in this section and enumerated in Appendix A.

**4.2 Facilities not found in the FCC database**

**4.2.1** Identifying and location information must be included in the Database for the following items, which are subject to current and future FCC guidance:

**4.2.1.1** Cable TV headends

**4.2.1.2** Fixed Broadcast Auxiliary Service Links

**4.2.1.3** Low Power TV/Class A, Multi-Video Programming

Distributor (MVPD), and TV translator receive sites outside of the protected contour of the station being received

**4.2.1.3.1** The above may be registered only if they are no farther than 80 km outside the nearest edge of the protected contour of a television station being received

**4.2.1.3.1.1** The 80 km rule may be waived by the FCC if it approves a waiver pursuant to Paragraph 42 of the Second Memorandum Opinion and Order

**4.2.1.3.1.1.1** Such waiver requests would involve shifting the 20km adjacent channel protection distance so that it is measured from the actual receive site

**Response:** Airity understands the requirement of including all of the facilities listed above that are not covered by the FCC database in its Database, and is currently ensuring that all of the above mentioned items are included in its Database as identified in Appendix A.

**4.2.1.3.2** Only channels received over the air and used as part of the service of the MVPD, TV translator station or low power/Class A TV station may be registered

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.2.1.4** Sites where low power auxiliary stations, including wireless microphones, wireless assist video devices, and MVPD receive sites covered under 47 CFR §§74.801-882 are used and their schedule for operations will be included in the Database

**4.2.1.4.1** Use of licensed low power auxiliary stations at well defined times and locations may be registered with the Database directly

**4.2.1.4.2** Multiple registrations that specify more than one point in the facility may be entered for very large sites

**4.2.1.4.3** Registrations will be valid for no more than one year, after which they may be renewed

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.2.1.5** Fixed TVBDs

**4.2.1.6** Metropolitan Areas covered under 47 CFR §90.303(a)

**4.2.1.7** Border Areas near Canada and Mexico

**4.2.1.8** Unlicensed Wireless microphones that are properly registered

**4.2.1.8.1** Sites of eligible event venues using unlicensed wireless microphones must be registered with the FCC

- Registration with FCC must occur at least 30 days in advance
- FCC will provide registration information to the Database managers
- Registration is valid for one year
- Registration may be renewed

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.2.1.8.2** Registration is limited to:

- Well-defined times
- Well-defined locations

- Multiple registrations that specify more than one point in the facility may be entered for very large sites

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.2.1.8.2.3** Registration by the FCC is limited to unlicensed wireless microphones satisfying the following:

- At venues of events and productions/shows
- Such venues use large numbers of wireless microphones
  - As a benchmark, at least 6-8 microphones should be operating in each channel used at such venues (both licensed and unlicensed count towards this number)
  - Such microphones cannot be accommodated in the two reserved channels unavailable to TVBDs
  - Other channels available to the wireless microphone that are not available for use by TVBDs do not exist at the location

**Response:** The Database will synchronize with the FCC's database to obtain unlicensed wireless microphone registration information in a timely fashion consistent with the FCC rules. The Database will subsequently use such registration information in the algorithms for determining available channel lists. Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

#### **4.2.1.9** Radio Astronomy Services

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

### **4.3** Identifying and local information to be stored

**4.3.1** The Database shall contain identifying and location information for Digital television stations, digital and analog Class A, low power, translator and booster stations, including information on stations in Canada and Mexico in border areas as protected services within these countries

**4.3.1.1** The information entered in the Database for the aforementioned facilities is as follows:

- Transmitter coordinates (latitude and longitude in NAD 83)

- Effective radiated power (ERP)
- Height above average terrain of the transmitting antenna (HAAT)
- Horizontal transmit antenna pattern (if the antenna is directional)
- Amount of electrical and mechanical beam tilt (degrees depression below horizontal) and orientation of mechanical beam tilt (degrees azimuth clockwise from true north)
- Channel number
- Station call sign

**Response:** Airtity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.1.2** The only source of this information shall be station license or license application records

- In cases where a station has records for both a license application and a license, the Database should include the information from the license application rather than the license
- In cases where there are multiple license application records or license records for the same station, the Database shall include the most recent records, with license applications taking precedence over licenses

**Response:** Airtity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.2** The Database shall contain the following identifying and location information for Broadcast Auxiliary Service stations (including receive only sites), except low power auxiliary stations:

- Transmitter coordinate (latitude and longitude in NAD 83)
- Receiver coordinates (latitude and longitude in NAD 83)
- Channel number
- Call sign

**Response:** Airtity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.3** The Database shall contain the following identifying and location information for MVPD receive sites that are registered:

- Name and address of MVPD company

- Location of MVPD receive site (latitude and longitude in NAD 83, accurate to +/- 50m)
- Channel number for each television channel received, subject to the following:
  - Channels for which the MVPD receive site is located within the protected contour of that channel's transmitting station are not eligible for registration in the Database
- Call sign of each television channel received and eligible for registration
- Location (latitude and longitude) of the transmitter of each television channel received

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.4** The Database shall contain the following identifying and location information for television translator, low power TV and Class A TV station receive sites that are registered:

- Call sign of the TV translator station
- Location of the TV translator receive site (latitude and longitude in NAD 83, accurate to +/- 50m)
- Channel number of the re-transmitted television station, subject to the following condition:
  - A channel for which the television translator receive site is located within the protected contour of that channel's transmitting station is not eligible for registration in the Database

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.4.1** Call sign of the retransmitted television station

**4.3.4.2** Location (latitude and longitude) of the transmitter of the retransmitted television station

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.5** The Database shall contain the following identifying and location information for licensed low power auxiliary stations, including wireless microphones and wireless assist video devices, that are registered:

- Name of the individual or business responsible for the low power auxiliary device(s)
- An address for the contact person
- An email address for the contact person (optional)
- A phone number for the contact person
- Coordinates where the device(s) are used (latitude and longitude in NAD 83, accurate to +/- 50 m)
- Channels used by the low power auxiliary devices operated at the site
- Specific months, weeks, days of the week and times when the device(s) are used (on dates when microphones are not used the site will not be protected)
- The stations call sign

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.6** The Database shall contain the following identifying and location information for unlicensed wireless microphones :

- Name of the individual or business that owns the unlicensed wireless microphones
- An address for the contact person
- An email address for the contact person (optional)
- A phone number for the contact person
- Coordinates where the device(s) are used (latitude and longitude in NAD 83, accurate to +/- 50m)
  - The coordinates of multiple locations at an event site could be specified in the Database by either designating multiple locations in a single site record or by including a separate record in the Database for each of the multiple locations
- Channels used by the wireless microphones operated at the site and the number of wireless microphones used in each channel
- Specific months, weeks, days of the week and times when the device(s) are used (on dates when microphones are not used the site will not be protected)
- The name of the venue

**Response:** Airity understands and appreciates the requirements listed in this section and its Database currently under consideration will comply with these requirements. A point of clarification would be to standardize between +/- 50 meters and 1 arc second as mentioned in other parts of the requirements.

**4.3.7** The Database shall contain the following identifying and location information for Metropolitan Areas covered under 47 CFR §90.303 (a):

- Region name
- Channel(s) reserved for use in the region
- Geographic center of the region (latitude and longitude in NAD 83)
- Call Sign

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.8** The Database shall contain the following identifying and location information for PLMRS/CMRS base station located more than 80 km from the geographic centers of the metropolitan areas defined in 47 CFR §90.303(a):

- Transmitter location (latitude and longitude in NAD 83) or geographic area of operations
- Effective radiated power
- Transmitter height above average terrain (if specified)
- Antenna height above ground level (if specified)
- Call sign

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.9** The Database shall contain the following identifying and location information for Offshore Radiotelephone Service for each of the four regions where the service operates:

- Geographic boundaries of the region (latitude and longitude in NAD 83 for each point defining the boundary of the region), as described in 47 CFR §22.1007
- Channel(s) used by the service in that region

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.10** The Database shall contain the following location information for Offshore Radio Astronomy Services:

**4.3.10.1** The Radio Astronomy Service locations listed in 47 CFR §15.712(h)(3)

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.3.11** The Database shall contain the following location information with respect to 608-614 MHz (channel 37):

**4.3.11.1** The first channel above and the first channel below 608-614 MHz (channel 37) in any given location that are not occupied by a licensed service must be identified. If no channel is available on one side of channel 37, the first two channels nearest to channel 37 will be the reserved channels.

**Response:** Airity understands and appreciates this requirement and its Database currently under consideration shall comply with these requirements. Details are available in Appendix A.

**4.4** Registering facilities entitled to protection but not in the FCC database

- The Database must establish a process for registering the following facilities:
  - Facilities entitled to protection but not contained in the FCC database
    - These include MVPD and TV translator receive sites
  - Facilities where Part 74 low power auxiliary stations are used on a regular basis

**Response:** Airity understands and appreciates this requirement and its Database currently under construction shall comply with these requirements. Details are available in Appendix A.

## **5. INTERFERENCE PROTECTION**

At a high level, the requirements for interference protection are translated into rules which drive the pre-processing step in our algorithms as described in Section 3 of our original proposal. We will be incorporating all of the specific new rules and changes in these rules to fully comply with the Second Order of 23 September 2010 and the Order of 23 January 2011. This includes the incorporation of the protected contours for TV stations in Canada and Mexico. It also includes the specifications for specific channels where TVBDs are not allowed to operate. It further includes all geographic restrictions stated in all three Orders as either specific areas, specific distances from protected sites, or areas surrounding specific facilities or distances from such areas.

## 6. SYNCHRONIZATION REQUIREMENTS

These are described in Sections 3 and 3b of our previous proposal. We have made the provisions to comply with the requirements. A detailed implementation still awaits the resolution of specific mechanisms through which we would synchronize our database and further cooperate with the FCC and the other database administrators.

We have been participating with several standards organizations and with the other administrators to accelerate the processes for coordination to develop the detailed content of all required interfaces. We will continue to participate in such activity until a satisfactory resolution is achieved for all issues related to synchronization.

## 7. SECURITY METHODS

**Requirement 7.1.1:** The Database must be capable of complying with security measures required by TVBDs.

**Response:** The Database will include protocols and procedures to ensure that TVBDs are only communicating with authorized Databases. Communications and interactions between TVBDs (including both Fixed and Mode II TVDBs) and the Airity Database will be:

- Accurate
- Secure
- Protected against unauthorized modification
- Not corrupted
- Not intercepted

This requirement will include communications of channel availability and other spectrum access information between fixed and Mode II devices. The Database security design will ensure to Fixed and Mode II TVBDs that the channel availability data they receive is authorized.

The Database security design will specially ensure that:

- Unauthorized parties cannot access or alter the list of available channels sent to TVDBs
- Communication with databases operated by other Administrators or other databases are secure to prevent corruption or unauthorized interception of the data

**Requirement 7.1.2:** The Database must be protected from the following:

- Unauthorized access
- Unauthorized data input
- Unauthorized alteration of stored data
- Any other event that might otherwise affect the Database system or TVBDs in performing their intended functions or in providing adequate interference protections to authorized services operating in the TV band

**Response:** Airity will fully comply with these requirements.

The security design for the Airity Database is based on a three-layered architecture, consisting of:

1. Device Authentication
2. Relationship Authentication
3. Message Authentication

This three-layered design will fully address all access and communication security requirements for the Airity Database.

The Database Security Design is described in detail in Attachment 5(b) of Airity's original submission document. We will ensure that the Security Design complies with all FCC-mandated security requirements for Database Administrators, including but not limited to the requirements described in this section.

**Requirement 7.1.3:** The Database must not provide lists of available channels to uncertified TV bands devices for purposes of operation.

**Response:** The Airity Database will fully comply with this request.

The Database will verify that the FCC ID of a device seeking access to its services, including the FCC ID of a Mode I TVBD provided by a Fixed or Mode II TVBD, is valid and for a certified device. The list of devices with valid FCC IDs and the FCC IDs of these devices will be obtained from the FCC's Equipment Authorization System.

**Requirement 7.1.4:** The Database will be able, upon request from the FCC, to indicate that no channels are available when queried by a specific TVBD or model of TVBDs.

**Response:** The Airity Database will fully comply with this request.

## **8. TERM REQUIREMENTS**

As described in the business plan in our first proposal, Airity is prepared to meet the FCC requirement to provide services for a full five-year term. Throughout the term, Airity is committed to the employment of competent personnel, consistent adherence to the rules and regulations, and adherence to appropriate business behavior. We await the FCC's direction from the 10 March 2011 Workshop to further guide our participation in trials and certification activities.

## APPENDIX A

### **REQUIREMENT BREAKDOWN STRUCTURE (“RBS”) DETAILING THE REQUIREMENTS OF WHITE SPACES DATABASE ADMINISTRATORS PURSUANT TO TITLE 47 PART 15 OF THE CODE OF FEDERAL REGULATIONS, AS AMENDED PURSUANT TO THE SECOND MEMORANDUM OPINION AND ORDER BEFORE THE FEDERAL COMMUNICATIONS COMMISSION, SEPTEMBER 23, 2010, AND FCC ORDER DA 11-131 ADOPTED AND RELEASED JANUARY 26, 2011**

*Numerical Entries herein marked "D" represent "Derived Requirements." These are requirements that, while not explicitly specified by the FCC, will be required in order to operate the Database.*

1. INFORMATION THAT MUST BE PROVIDED TO THE DATABASE BY TVBDs
  - 1.1 Fixed TVBDs must register with the Database
    - 1.1.1 The Database shall establish a process for registering Fixed TVBDs
    - 1.1.2 In registering, TVBDs must provide the following information prior to initial operation or after changing location:
      - 1.1.2.1 FCC ID of the TVBD
      - 1.1.2.2 Manufacturer’s serial number of the TVBD
      - 1.1.2.3 TVBD’s geographic coordinates (latitude and longitude (NAD 83) accurate to +/- 50 m)
      - 1.1.2.4 TVBD’s antenna height above ground level (meters)
      - 1.1.2.5 Name of the individual or business that owns the TVBD
      - 1.1.2.6 Name of a contact person responsible for the TVBD’s operation
      - 1.1.2.7 Address for the contact person
      - 1.1.2.8 E-mail address for the contact person
      - 1.1.2.9 Phone number for the contact person
    - 1.1.3 The Database shall store the Fixed TVBD registration data
    - 1.1.4 The Database may charge a fee for the registration of a Fixed TVBD
  - 1.2 Portable Mode II TVBDs must provide the Database with the following:
    - 1.2.1 FCC Identifier, which consists of:
      - 1.2.1.1 The Grantee Code (three characters consisting of Arabic numerals, capital letters, or combination thereof)
      - 1.2.1.2 The equipment product code (a series of Arabic numerals, capital letters or a combination thereof, and may include the dash or hyphen (-). The total of Arabic numerals, capital letters and dashes or hyphens may not exceed 14)
    - 1.2.2 Serial Number
      - 1.2.2.1 Portable Mode II TVBD serial numbers are assigned by the manufacturer
    - 1.2.3 The TVBD’s geographic coordinates
      - 1.2.3.1 Geographic coordinates are in latitude and longitude (NAD 83) accurate to +/- 50m
      - 1.2.3.2 TVBDs using enhanced mobile services should seek to operate with accuracy of +/- one arc second in latitude by one arc second in longitude, “ 1” by 1” ”.

- 1.2.4D If a TVBD seeks to load channel availability information from the Database beyond such TVBD's current position, such TVBD must be certified for mobility by the Database
  - 1.2.4.1D The Database shall develop procedures to determine whether TVBDs requesting channel availability information beyond their current position are certified for such functionality
- 1.3 Mode II or Fixed TVBDs that provide channel lists to Mode I TVBDs
  - 1.3.1 A Mode II or Fixed TVBDs providing channel lists to Mode I TVBDs may only do so after the following:
    - 1.3.1.1 Such providing TVBD contacts the Database to provide the FCC ID of the Mode I TVBD
    - 1.3.1.2 The Database subsequently confirms that the FCC ID is valid for operation
    - 1.3.1.3 The Database ensures that such channel list is accurate
- 2. INFORMATION DELIVERED BY THE DATABASE
  - 2.1 The Database shall provide to authorized TVBDs a listing of the TV channels available at the location provided by such TVBD to the Database
    - 2.1.1 The channel listing provided by the Database to authorized TVBDs shall be accurate
    - 2.1.2 Such available channels are those channel numbers that the TVBD is permitted to operate on
      - 2.1.2.1 Unless otherwise prohibited, any TVBD may operate on available channels in the frequency bands 512-608 MHz (channels 21-36) and 614-698 MHz (TV channels 38-51).
      - 2.1.2.2 Unless otherwise prohibited, Fixed TVBDs communicating with other Fixed TVBDs may operate on available channels in 54-60 MHz (channel 2), 76-88 MHz (channels 5 and 6), 174-216 MHz (channels 7-13) and 470-512 MHz (channels 14-20)
      - 2.1.2.3 Operation of TVBDs is prohibited on the first channel above and the first channel below 608-614 MHz (channel 37) that are not occupied by an authorized service
        - 2.1.2.3.1 If a channel is not available both above and below channel 37, operation is prohibited on the first two channels nearest to channel 37
      - 2.1.2.4 The TVBD is not permitted to operate on channels that are unavailable as a result of a protected station/location in the Database
      - 2.1.2.5 The TVBD is not permitted to operate on channels that have interference protection at the current location of the TVBD
    - 2.1.3 The Database has the option, but not the requirement, of pushing updated channel availability information from the Database to TVBDs
      - 2.1.3.1 The operation of any such "push" system must be described in the application for certification
    - 2.1.4 The Database may distribute lists of available channels by means other than contact with TVBDs to provide lists of channels for operation
      - 2.1.4.1 All information required by the rules to be in the Database must be made publicly available for inspection

- 2.1.4.1.1 The Database may allow prospective operators of TVBDs to query the Database and determine whether there are vacant channels at a particular location
- 2.1.4.2 Information stored to support additional services does not need to be made publicly available for inspection, provided such information is not required to be stored per the rules
- 2.1.5 The Database must make its services available to all unlicensed TVBD users on a non-discriminatory basis
- 2.1.6 The Database may charge a fee for provision of lists of available channels to TVBDs
  - 2.1.6.1D The Database must maintain a billing system with the following characteristics:
    - 2.1.6.1.1D Scalable
    - 2.1.6.1.2D Can be modified as necessary to respond to evolutions in the market for Database services
  - 2.1.7D The Database may provide enhanced services not specifically required by the rules
    - 2.1.7.1D In conjunction with such enhanced services, the Database shall store and maintain any additional information that it believes could be beneficial to such services

### 3. ACCESSING THE DATABASE

#### 3.1 Fixed TVBD access to the Database

- 3.1.1 Except in excluded instances, Fixed TVBDs shall contact the Database over the Internet to determine the TV channels that are available at the Fixed TVBD's geographic coordinates
  - 3.1.1.1 The Database shall provide channel availability schedule information for the 48 hour period beginning at the time the TVBD queries the Database for channels
  - 3.1.1.2 The Database shall take into consideration the Fixed TVBD's antenna height, prior to the initial service transmission at a given location
    - 3.1.1.2.1 A Fixed TVBD located at a site where the ground level height above average terrain (HAAT) calculated employing the methodology in 47 CFR §73.684(d) is greater than 76 meters shall not be provided a list of available channels
  - 3.1.1.3 If a Fixed TVBD does not have a direct connection to the Internet and has not yet been initialized and registered with the Database, but can receive transmissions of another Fixed TVBD, the Fixed TVBD needing initialization may transmit over the following channels to the other Fixed TVBD to register its location and receive a list of channels that are available for its use on either:
    - 3.1.1.3.1 A channel that the other TVBD has transmitted on
    - 3.1.1.3.2 A channel which the other TVBD indicates is available for use to access the Database.
  - 3.1.1.4 Except in excluded instances, a Fixed TVBD may not obtain lists of available channels from another Fixed TVBD as provided by the Database for the latter Fixed TVBD

- 3.1.1.4.1 The requirement that Fixed TVBDs access the Database over the Internet does not restrict such TVBDs from doing so by contacting the Database through other TVBDs
  - 3.1.1.4.1.1 Any such request by a Fixed TVBD through another TVBD must ensure, except in the instance of initial initialization and registration, that the Database provide the channel list applicable to the requesting TVBD, not the TVBD the request is being routed through
  - 3.1.1.4.1.2 If a Fixed TVBD access the Database through another TVBD, it must:
    - 3.1.1.4.1.2.1 Follow the rules
    - 3.1.1.4.1.2.2 Use the appropriate protocol
    - 3.1.1.4.1.2.3 Send its geographic coordinates
    - 3.1.1.4.1.2.4 Send any other information required
    - 3.1.1.4.1.2.5 Operate only on channels listed as available by the Database
- 3.2 Mode II personal/portable TVBD access to the Database
  - 3.2.1 Mode II personal/portable TVBDs shall contact the Database over the Internet to determine the TV channels that are available at their geographic coordinates prior to their initial service transmission in such geographic location
    - 3.2.1.1.1 The requirement that Mode II personal/portable TVBDs access the Database over the Internet does not restrict such TVBDs from doing so by contacting the Database through other TVBDs
      - 3.2.1.1.1.1 Any such request by a Mode II personal/portable TVBD through another TVBD must ensure that the Database provide the channel list applicable to the requesting TVBD, not the TVBD the request is being routed through
      - 3.2.1.1.1.2 If a Mode II personal/portable TVBD accesses the Database through another TVBD, it must:
        - 3.2.1.1.1.2.1 Follow the rules
        - 3.2.1.1.1.2.2 Use the appropriate protocol
        - 3.2.1.1.1.2.3 Send its geographic coordinates
        - 3.2.1.1.1.2.4 Send any other information required
        - 3.2.1.1.1.2.5 Operate only on channels listed as available by the Database
    - 3.2.2 The Database shall provide channel availability schedule information for the 48 hour period beginning at the time the TVBD queries the Database for channels
    - 3.2.3 The Database may provide channel availability information for multiple locations in the vicinity of its current location (i.e. for mobility)
      - 3.2.3.1 In cases where available channels within a bounded area will be different at different locations in that area, the TVBD may only operate on channels available at all locations within the bounded area
  - 3.3 Mode I TVBD access to the Database
    - 3.3.1 Either a Fixed or Mode II personal/portable TVBD may send a list of available channels to a Mode I TVBD
      - 3.3.1.1 The list of channels provided to the Mode I TVBD must be the same as the list of channels that are available to a Fixed or Mode II TVBD, except that:

- 3.3.1.1.1 A Fixed TVBD may also obtain from the Database a separate list of available channels that includes adjacent channels that would be available to a Mode I TVBD
- 3.3.1.1.2 A Fixed TVBD may provide such separate list to the Mode I TVBD

#### 4. DATA STORED IN THE DATABASE

##### 4.1 Facilities already recorded in the FCC database

- 4.1.1 The protected coordinates of all protected facilities already recorded in the FCC's databases must be included in the Database
- 4.1.2 Identifying and local information will come from the FCC database
- 4.1.3 The protected facilities include:
  - 4.1.3.1 Digital TV Stations
  - 4.1.3.2 Digital and analog Class A TV Stations
  - 4.1.3.3 Low power TV stations
  - 4.1.3.4 TV translator and booster stations
  - 4.1.3.5 Broadcast Auxiliary Service stations (including receive only sites), except low power auxiliary stations
  - 4.1.3.6 PLMRS/CMRS base stations located more than 80 km from the geographic centers of the metropolitan areas and on the channels defined in 47 CFR §90.303(a)
  - 4.1.3.7 Offshore Radiotelephone Service Stations

##### 4.2 Facilities not found in the FCC database

- 4.2.1 Identifying and location information must be included in the Database for the following items, which are subject to current and future FCC guidance:
  - 4.2.1.1 Cable TV headends
  - 4.2.1.2 Fixed Broadcast Auxiliary Service Links
  - 4.2.1.3 Low Power TV/Class A, Multi-Video Programming Distributor (MVPD), and TV translator receive sites outside of the protected contour of the station being received
    - 4.2.1.3.1 The above may be registered only if they are no farther than 80 km outside the nearest edge of the protected contour of a television station being received
      - 4.2.1.3.1.1 The 80 km rule may be waived by the FCC if it approves a waiver pursuant to Paragraph 42 of the Second Memorandum Opinion and Order
        - 4.2.1.3.1.1.1 Such waiver requests would involve shifting the 20km adjacent channel protection distance so that it is measured from the actual receive site
    - 4.2.1.3.2 Only channels received over the air and used as part of service of the MVPD, TV translator station or low power/Class A TV station may be registered
  - 4.2.1.4 Sites where low power auxiliary stations, including wireless microphones, wireless assist video devices, and MVPD receive sites covered under 47 CFR §§74.801-882 are used and their schedule for operations

- 4.2.1.4.1 Use of licensed low power auxiliary stations at well defined times and locations may be registered with the Database directly
  - 4.2.1.4.2 Multiple registrations that specify more than one point in the facility may be entered for very large sites
  - 4.2.1.4.3 Registrations will be valid for no more than one year, after which they may be renewed
  - 4.2.1.5 Fixed TVBDs
  - 4.2.1.6 Metropolitan Areas covered under 47 CFR §90.303(a)
  - 4.2.1.7 Border Areas near Canada and Mexico
  - 4.2.1.8 Unlicensed Wireless microphones that are properly registered
    - 4.2.1.8.1 Sites of eligible event venues using unlicensed wireless microphones must be registered with the FCC
      - 4.2.1.8.1.1 Registration with FCC must occur at least 30 days in advance
      - 4.2.1.8.1.2 FCC will provide registration information to the Database managers
      - 4.2.1.8.1.3 Registration is valid for one year
      - 4.2.1.8.1.4 Registration may be renewed
    - 4.2.1.8.2 Registration is limited to:
      - 4.2.1.8.2.1 Well-defined times
      - 4.2.1.8.2.2 Well-defined locations
        - 4.2.1.8.2.2.1 Multiple registrations that specify more than one point in the facility may be entered for very large sites
      - 4.2.1.8.2.3 Registration is limited to unlicensed wireless microphones satisfying the following:
        - 4.2.1.8.2.3.1 At venues of events and productions/shows
        - 4.2.1.8.2.3.2 Such venues use large numbers of wireless microphones
          - 4.2.1.8.2.3.2.1 As a benchmark, at least 6-8 microphones should be operating in each channel used at such venues (both licensed and unlicensed count towards this number)
        - 4.2.1.8.2.3.3 Such microphones cannot be accommodated in the two reserved channels unavailable to TVBDs
        - 4.2.1.8.2.3.4 Other channels available to the wireless microphone that are not available for use by TVBDs do not exist at the location
  - 4.2.1.9 Radio Astronomy Services
- 4.3 Identifying and local information to be stored
  - 4.3.1 The Database shall contain identifying and location information for Digital television stations, digital and analog Class A, low power, translator and booster stations, including stations in Canada and Mexico, that are registered
    - 4.3.1.1 The information entered in the Database for the aforementioned facilities is as follows:
      - 4.3.1.1.1 Transmitter coordinates (latitude and longitude in NAD 83)
      - 4.3.1.1.2 Effective radiated power (ERP)
      - 4.3.1.1.3 Height above average terrain of the transmitting antenna (HAAT)
      - 4.3.1.1.4 Horizontal transmit antenna pattern (if the antenna is directional)

- 4.3.1.1.5 Amount of electrical and mechanical beam tilt (degrees depression below horizontal) and orientation of mechanical beam tilt (degrees azimuth clockwise from true north)
- 4.3.1.1.6 Channel number
- 4.3.1.1.7 Station call sign
- 4.3.1.2 The only source of this information shall be station license or license application records
  - 4.3.1.2.1 In cases where a station has records for both a license application and a license, the Database should include the information from the license application rather than the license
  - 4.3.1.2.2 In cases where there are multiple license application records or license records for the same station, the Database shall include the most recent records, with license applications taking precedence over licenses
- 4.3.2 The Database shall contain the following identifying and location information for Broadcast Auxiliary Service stations (including receive only sites), except low power auxiliary stations:
  - 4.3.2.1 Transmitter coordinate (latitude and longitude in NAD 83)
  - 4.3.2.2 Receiver coordinates (latitude and longitude in NAD 83)
  - 4.3.2.3 Channel number
  - 4.3.2.4 Call sign
- 4.3.3 The Database shall contain the following identifying and location information for MVPD receive sites that are registered:
  - 4.3.3.1 Name and address of MVPD company
  - 4.3.3.2 Location of MVPD receive site (latitude and longitude in NAD 83, accurate to +/- 50m)
  - 4.3.3.3 Channel number for each television channel received, subject to the following:
    - 4.3.3.3.1 Channels for which the MVPD receive site is located within the protected contour of that channel's transmitting station are not eligible for registration in the Database
  - 4.3.3.4 Call sign of each television channel received and eligible for registration
  - 4.3.3.5 Location (latitude and longitude) of the transmitter of each television channel received
- 4.3.4 The Database shall contain the following identifying and location information for television translator, low power TV and Class A TV station receive sites that are registered:
  - 4.3.4.1 Call sign of the TV translator station
  - 4.3.4.2 Location of the TV translator receive site (latitude and longitude in NAD 83, accurate to +/- 50m)
  - 4.3.4.3 Channel number of the re-transmitted television station, subject to the following condition:
    - 4.3.4.3.1 A channel for which the television translator receive site is located within the protected contour of that channel's transmitting station is not eligible for registration in the Database
  - 4.3.4.4 Call sign of the retransmitted television station

- 4.3.4.5 Location (latitude and longitude) of the transmitter of the retransmitted television station
- 4.3.5 The Database shall contain the following identifying and location information for licensed low power auxiliary stations, including wireless microphones and wireless assist video devices, that are registered:
  - 4.3.5.1 Name of the individual or business responsible for the low power auxiliary device(s)
  - 4.3.5.2 An address for the contact person
  - 4.3.5.3 An email address for the contact person (optional)
  - 4.3.5.4 A phone number for the contact person
  - 4.3.5.5 Coordinates where the device(s) are used (latitude and longitude in NAD 83, accurate to +/- 50 m)
  - 4.3.5.6 Channels used by the low power auxiliary devices operated at the site
  - 4.3.5.7 Specific months, weeks, days of the week and times when the device(s) are used (on dates when microphones are not used the site will not be protected)
  - 4.3.5.8 The stations call sign
- 4.3.6 The Database shall contain the following identifying and location information for unlicensed wireless microphones :
  - 4.3.6.1 Name of the individual or business that owns the unlicensed wireless microphones
  - 4.3.6.2 An address for the contact person
  - 4.3.6.3 An email address for the contact person (optional)
  - 4.3.6.4 A phone number for the contact person
  - 4.3.6.5 Coordinates where the device(s) are used (latitude and longitude in NAD 83, accurate to +/- 50m)
    - 4.3.6.5.1 The coordinates of multiple locations at an event site could be specified in the Database by either designating multiple locations in a single site record or by including a separate record in the Database for each of the multiple locations
  - 4.3.6.6 Channels used by the wireless microphones operated at the site and the number of wireless microphones used in each channel
  - 4.3.6.7 Specific months, weeks, days of the week and times when the device(s) are used (on dates when microphones are not used the site will not be protected)
  - 4.3.6.8 The name of the venue
- 4.3.7 The Database shall contain the following identifying and location information for Metropolitan Areas covered under 47 CFR §90.303 (a):
  - 4.3.7.1 Region name
  - 4.3.7.2 Channel(s) reserved for use in the region
  - 4.3.7.3 Geographic center of the region (latitude and longitude in NAD 83)
  - 4.3.7.4 Call Sign
- 4.3.8 The Database shall contain the following identifying and location information for PLMRS/CMRS base station located more than 80 km from the geographic centers of the metropolitan areas defined in 47 CFR §90.303(a):

- 4.3.8.1 Transmitter location (latitude and longitude in NAD 83) or geographic area of operations
- 4.3.8.2 Effective radiated power
- 4.3.8.3 Transmitter height above average terrain (if specified)
- 4.3.8.4 Antenna height above ground level (if specified)
- 4.3.8.5 Call sign
- 4.3.9 The Database shall contain the following identifying and location information for Offshore Radiotelephone Service for each of the four regions where the service operates:
  - 4.3.9.1 Geographic boundaries of the region (latitude and longitude in NAD 83 for each point defining the boundary of the region), as described in 47 CFR §22.1007
  - 4.3.9.2 Channel(s) used by the service in that region
- 4.3.10 The Database shall contain the following location information for Offshore Radio Astronomy Services:
  - 4.3.10.1 The Radio Astronomy Service locations listed in 47 CFR §15.712(h)(3)
- 4.3.11 The Database shall contain the following location information with respect to 608-614 MHz (channel 37):
  - 4.3.11.1 The first channel above and the first channel below 608-614 MHz (channel 37) in any given location that are not occupied by a licensed service must be identified
    - 4.3.11.1.1 If no channel is available on one side of channel 37, the first two channels nearest to channel 37 will be the reserved channels
- 4.4 Registering facilities entitled to protection but not in the FCC database
  - 4.4.1 The Database must establish a process for registering the following facilities:
    - 4.4.1.1 Facilities entitled to protection but not contained in the FCC database
      - 4.4.1.1.1 These include MVPD and TV translator receive sites
    - 4.4.1.2 Facilities where Part 74 low power auxiliary stations are used on a regular basis

## 5. INTERFERENCE PROTECTION

- 5.1 The following interference protection requirements limit the available channels that the Database may provide to a TVBD at a given location
  - 5.1.1 Operation of TVBDs is prohibited on all channels within 2.4km of the Radio Astronomy Service locations listed in 47 CFR §15.712(h)(3)
    - 5.1.1.1 The 2.4 km protection zone is from a rectangular area of 19 miles by 22.5 miles around the Radio Astronomy Receive Sites
  - 5.1.2 A TVBD cannot operate on channels 15-18 for each of the four regions where the Offshore Radiotelephone Service operates, as detailed in 47 CFR §22.1007
  - 5.1.3 TVBDs shall comply with the required separation distances with respect to protected contours of TV stations in Canada and Mexico that are within the border coordination areas specified in 47 CFR §73.1650
    - 5.1.3.1 TVBDs are not required to comply with these separation distances from portions of the protected contours of Canadian or Mexican TV stations that fall within the US
  - 5.1.4 TVBDs are not permitted to operate on the first channel on each side of TV channel 37 (608-614MHz) that is not occupied by a licensed service

- 5.1.4.1 If a channel is not available both above and below channel 37, operation is prohibited on the first two channels nearest to channel 37
- 5.1.5 Low power auxiliary station sites including wireless microphones, wireless assist video devices, and MVPD receive sites covered under 47 CFR §§74.801-882
  - 5.1.5.1 Fixed TVBDs cannot operate within 1km of the coordinates of registered low power auxiliary station sites on the registered channels during the designated times they are used
  - 5.1.5.2 Personal/portable TVBDs cannot operate within 400 meters of the coordinates of registered low power auxiliary station sites on the registered channels during the designated times they are used
  - 5.1.5.3 Unlicensed wireless microphones properly registered with the FCC shall receive the same geographic spacing protections afforded to licensed wireless microphones
    - 5.1.5.3.1 In cases where multiple locations are specified for a site, the Database shall treat each of the locations registered for a large site as separate locations that must be protected
- 5.1.6 TVBDs may not operate at the following distances from the protected coordinates and channels of Metropolitan Areas in 47 CFR §90.303(a)
  - 5.1.6.1 Less than 134km for co-channel operation
  - 5.1.6.2 Less than 131km for adjacent channel operation
- 5.1.7 If PLMRS/CMRS operation is authorized by waiver outside of metropolitan areas in 47 CFR §90.303(a), TVBDs may not operate from a base station, as follows:
  - 5.1.7.1 Co-channel TVBDs may not operate closer than 54km
  - 5.1.7.2 Adjacent channel TVBDs may not operate closer than 51km
- 5.1.8 TVBDs must protect digital and analog TV services within the contours provided in 47 CFR §15.712(a)(1)
  - 5.1.8.1 These contours are calculated using the following methodologies:
    - 5.1.8.1.1 The methodology described in 47 CFR §73.684
    - 5.1.8.1.2 The R-6602 curves contained in 47 CFR §73.699
  - 5.1.8.2 TVBDs must be located outside the contours specified in 47 CFR §15.712(a)(1) of co-channel and adjacent channel stations by at least the minimum distances specified in 47 CFR §15.712(a)(2)
  - 5.1.8.3 Personal/Portable Mode II TVBDs must comply with the separation distances specified for an unlicensed device with an antenna height of less than 3 meters
    - 5.1.8.3.1 Personal/Portable Mode II TVBDs may operate at closer separation distances, including the contour of adjacent channel stations, provided the power level is reduced to 40 mW or less
- 5.1.9 For a line between a registered receive site (TV translator, Low Power TV (including Class A) and MVPD receive sites) and the contour of the TV station being received in the direction of the station's transmitter:
  - 5.1.9.1 TVBDs may not operate within an arc of +/- 30 degrees from such line between a registered receive site and the contour of the TV station being received in the direction of the station's transmitter as follows:

- 5.1.9.1.1 Operation may not occur at a distance of up to 80km from the edge of the protected contour of the received TV station for co-channel operation
- 5.1.9.1.2 Operation may not occur at a distance of up to 20km from the registered receive site for adjacent channel operation
- 5.1.9.1.3 The protection distance shall not exceed the distance from the receive site to the protected contour
- 5.1.9.2 Outside this +/- 30 degree arc, TVBDs may not operate as follows:
  - 5.1.9.2.1 Within 8km from the receive site for co-channel operation
  - 5.1.9.2.2 Within 2km from the receive site for adjacent channel operation
- 5.1.9.3 A TV station being received may include a full power station, TV translator station or low power TV/Class A TV station
- 5.1.10 For permanent BAS receive sites appearing in the FCC's Universal Licensing System or temporary BAS receive sites registered in the TV Bands database:
  - 5.1.10.1 TVBDs may not operate within an arc of +/- 30 degrees from a line between the BAS receive site and its associated permanent transmitter as follows:
    - 5.1.10.1.1 Within a distance of 80 km from the receive site for co-channel operation
    - 5.1.10.1.2 Within a distance of 20 km from the receive site for adjacent channel operation
  - 5.1.10.2 Outside the 30 degree arc, TVBDs may not operate as follows:
    - 5.1.10.2.1 Within 8km from the receive site for co-channel operation
    - 5.1.10.2.2 Within 2km from the receive site for adjacent channel operation
- 5.1.11 TVBDs may not operate on channels used by the Offshore Radio Service within the geographic areas follows:
  - 5.1.11.1 Operation on channels 15, 16, 17 or 18 in the following areas is prohibited (West Longitude and North Latitude are abbreviated as W.L. and N.L. respectively):
    - 5.1.11.1.1 On Channel 15: west of 92DEG00' W.L.; east of 98DEG30' W.L.; and south of a line extending due west from 30DEG30' N.L., 92DEG00' W.L. to 30DEG30' N.L., 96DEG00' W.L.; and then due southwest to 28DEG00' N.L., 98DEG30' W.L.
    - 5.1.11.1.2 On Channel 16: west of 86DEG40' W.L.; east of 96DEG30' W.L.; and south of a line extending due west from 31DEG00' N.L., 86DEG40' W.L. to 31DEG00' N.L., 95DEG00' W.L. and then due southwest to 29DEG30' N.L., 96DEG30' W.L.
    - 5.1.11.1.3 On Channel 17: west of 86DEG30' W.L.; east of 96DEG00' W.L.; and south of a line extending due west from 31DEG00' N.L., 86DEG30' W.L. to 31DEG30' N.L., 94DEG00' W.L. and then due southwest to 29DEG30' N.L., 96DEG00' W.L.
    - 5.1.11.1.4 On Channel 18: west of 87DEG00' W.L.; east of 95DEG00' W.L.; and south of 31DEG00' N.L.
- 5.1.12 TVBDs may not operate on any channel within 2.4 kilometers of the following facilities:
  - 5.1.12.1 The Naval Research Observatory in Sugar Grove, WV
  - 5.1.12.2 The Table Mountain Radio Receiving Zone

5.1.12.2.1 Located at 40DEG07'50''N and 105DEG15'40'' W.

## 6. SYNCHRONIZATION REQUIREMENTS

- 6.1 The Database shall establish a process for downloading information from the FCC's databases
  - 6.1.1 The Database shall store such downloaded information
  - 6.1.2 The Database shall synchronize with the FCC databases at least once a week
    - 6.1.2.1 Such synchronization shall include downloading the following:
      - 6.1.2.1.1 Newly licensed facilities
      - 6.1.2.1.2 Changes to licensed facilities
- 6.2 The Database or the administrators must respond in a timely manner to verify, correct and/or remove data in the event that the FCC or a party brings a claim of inaccuracies to the administrator's attention
  - 6.2.1 This requirement only applies for information that is required to be stored by the Database, not optionally stored information
  - 6.2.2 The Database shall implement a function to provide the FCC with information contained in the Database
    - 6.2.2.1 Such function shall also enable the FCC to promptly correct and/or remove information from the Database at its request
    - 6.2.2.2 Such function shall be implemented through a secure web interface accessible only to the FCC
    - 6.2.3D The Database shall maintain appropriate staff to respond to telephone and email requests and inquiries by the FCC
- 6.3 The Database shall develop a standardized process for providing data collected for protected sites not listed in the FCC's database to all other databases to ensure consistency in the records of protected facilities
  - 6.3.1 Such process shall occur on a daily basis (or more often, if appropriate)
  - 6.3.2 The Database must support capabilities that the OET deems necessary to ensure that any changes in registration of protected facilities in one database are rapidly reflected in all others
  - 6.3.3 Database administrators should cooperate with one another to ensure compliance with requirements for Database coordination

## 7. SECURITY REQUIREMENTS

- 7.1 The Database must be capable of complying with security measures required by TVBDs
  - 7.1.1 The Database shall develop protocols and procedures to ensure that:
    - 7.1.1.1 TVBDs are only communicating with authorized databases
    - 7.1.1.2 Communications and interactions between TVBDs and databases are:
      - 7.1.1.2.1 Accurate
      - 7.1.1.2.2 Secure
      - 7.1.1.2.3 Not modified in an unauthorized fashion
        - 7.1.1.2.3.1 The Database shall establish communications authentication procedures that allow the Fixed or Mode II TVBDs to be assured that the data they receive is authorized

- 7.1.1.2.4 Uncorrupted
- 7.1.1.2.5 Not intercepted
  - 7.1.1.2.5.1 The Database must specifically ensure that unauthorized parties cannot access or alter the list of available channels sent to TVBDs
- 7.1.1.3 Communications between databases and other databases shall be secure to prevent corruption or unauthorized interception of data
- 7.1.2 The Database must be protected from the following:
  - 7.1.2.1 Unauthorized access
  - 7.1.2.2 Unauthorized data input
  - 7.1.2.3 Unauthorized alteration of stored data
  - 7.1.2.4 Any other event that might otherwise affect the Database system or TVBDs in performing their intended functions or in providing adequate interference protections to authorized services operating in the TV band
- 7.1.3 The Database must not provide lists of available channels to uncertified TV bands devices for purposes of operation
  - 7.1.3.1 The Database must verify that the FCC ID of a device seeking access to its services, including the FCC ID of a Mode I TVBD provided by a Fixed or Mode II TVBD, is valid and for a certified device
  - 7.1.3.2 The list of devices with valid FCC IDs and the FCC IDs of those devices is to be obtained from the FCC's Equipment Authorization System
- 7.1.4 The Database must be able, upon request from the FCC, to indicate that no channels are available when queried by a specific TVBD or model of TVBDs

## 8. TERM REQUIREMENTS

- 8.1 The database shall provide services for a five-year term
  - 8.1.1 The Database administrators shall perform the following prior to the Database being made generally available for use by TVBDs:
    - 8.1.1.1 The Database administrator shall attend workshops to be conducted by OET
      - 8.1.1.1.1 The Database administrator shall designate a responsible party from its organization who will attend the workshops and ensure that the organization complies with all of the appropriate conditions
      - 8.1.1.1.2 The Database administrator must cooperate with any steps OET deems necessary to ensure that the Database provides accurate and consistent lists of protected services and available channels
      - 8.1.1.1.3 At the workshops, the Database administrator will demonstrate that the Database has the following attributes:
        - 8.1.1.1.3.1 Robust security features
        - 8.1.1.1.3.2 Established methods to remedy any security threats or breaches
    - 8.1.1.2 The Database administrators shall subject the Database to real-world testing to ensure provision of accurate results
      - 8.1.1.2.1 The Database shall be subject to a trial period of not less than 45 days before it is made available for actual use by TVBDs
        - 8.1.1.2.1.1 Interested parties will be provided an opportunity to check that the database is providing accurate results

- 8.1.1.3 The Database administrator shall demonstrate an ability to construct a working database that complies with all of the requirements in the rules
- 8.1.2 During the five-year term, the Database shall coordinate closely with the FCC to ensure the following:
  - 8.1.2.1 Competency
  - 8.1.2.2 Consistency
  - 8.1.2.3 Compliance with the rules and the database trials
- 8.1.3 The Database administrator shall not use information collected to engage in anti-competitive practices
  - 8.1.3.1 The prohibition on anti-competitive behavior applies not only to the Database administrator, but also to third parties provided by the Database administrator with such collected information
  - 8.1.3.2 The Database administrator must agree not to use its capacity as Database manager to engage in the following practices:
    - 8.1.3.2.1 discriminatory practices
    - 8.1.3.2.2 anti-competitive practices
    - 8.1.3.2.3 practices compromising the privacy of users
- 8.1.4 The five-year term can be renewed at the FCC's discretion
- 8.1.5 In the event that the Database does not continue as administrator at the end of its term, it shall transfer its database to another designated entity
  - 8.1.5.1 In conjunction with transferring the database to another designated entity, the Database shall transfer the IP addresses and URLs used to access the database and the list of registered Fixed TVBDs
  - 8.1.5.2 The Database may charge a reasonable price for such conveyance

APPENDIX B

**COMPLIANCE MATRIX OUTLINING CHANGES TO WSDb'S 1/4/10 FCC PROPOSAL**

**FILED UNDER ET DOCKET 04-186**

**This Compliance Matrix is intended to be read in the following fashion:**

**Column 1 indicates specific rules and requirements provided by prior FCC guidance, which are identified in the Requirements Breakdown Structure set forth in Appendix A.**

**Column 2 references the sections in our January 4, 2010 Proposal, in which we addressed the rules and requirements specified in Column 1.**

**Column 3 indicates the pages and paragraphs in the instant Supplement in which we address the rules and requirements specified in Column 1, as well as any changes from our Proposal filed with the FCC on January 4, 2010.**

**Column 4 indicates whether references to the instant Supplement in Column 3 are with respect to items that were added, clarified or changed as a result of the Second Memorandum Opinion and Order of September 23, 2010 and the Order of January 26, 2011.**

<b>Requirements Breakdown Section Reference</b>	<b>Location of Responses in 1/4/10 Proposal</b>	<b>Location of Responses in 2/28/11 Supplement</b>	<b>Status of Requirement</b>
<b>1</b>			
<b>1.1</b>	<b>Attachment 2(a): DB-6 Fixed TVBD Registration, Attachment 5(b) Introduction (2)</b>	<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.1</b>	<b>Attachment 2(a): DB-6 Fixed TVBD Registration</b>	<b>Page 1, Paragraphs 1-3</b>	<b>Changed</b>
<b>1.1.2</b>	<b>Attachment 5(a)</b>	<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.2.1</b>		<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>

<b>1.1.2.2</b>		<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.2.3</b>		<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.2.4</b>		<b>Page 1, Paragraphs 1-3</b>	<b>Added</b>
<b>1.1.2.5</b>		<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.2.6</b>		<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.2.7</b>		<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.2.8</b>		<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.2.9</b>		<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.3</b>	<b>Attachment 5(b): Device Authentication (5)</b>	<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.1.4</b>	<b>Application, §I(c), Attachment 1(c)</b>	<b>Page 1, Paragraphs 1-3</b>	<b>Clarified</b>
<b>1.2</b>			
<b>1.2.1</b>	<b>Attachment 5(a), Attachment 5(b): Device Authentication (3)</b>	<b>Page 1, Paragraphs 4-5;  Page 2, Paragraph 1</b>	<b>Clarified</b>

<b>1.2.1.1</b>		<b>Page 1, Paragraphs 4-5;  Page 2, Paragraph 1</b>	<b>Clarified</b>
<b>1.2.1.2</b>		<b>Page 1, Paragraphs 4-5;  Page 2, Paragraph 1</b>	<b>Clarified</b>
<b>1.2.2</b>	<b>Attachment 5(a), Attachment 5(b): Device Authentication (3)</b>	<b>Page 1, Paragraphs 4-5;  Page 2, Paragraph 1</b>	<b>Clarified</b>
<b>1.2.2.1</b>		<b>Page 1, Paragraphs 4-5;  Page 2, Paragraph 1</b>	<b>Clarified</b>
<b>1.2.3</b>	<b>Attachment 5(a)</b>	<b>Page 1, Paragraphs 4-5;  Page 2, Paragraph 1</b>	<b>Clarified</b>
<b>1.2.3.1</b>	<b>Attachment 3(b)(A)(1)</b>	<b>Page 1, Paragraphs 4-5;  Page 2, Paragraph 1</b>	<b>Clarified</b>
<b>1.2.3.2D</b>	<b>Attachment 3(b)(A)(1)</b>	<b>Page 1,</b>	<b>Clarified</b>

		Paragraphs 4-5; Page 2, Paragraph 1	
1.2.4D		Page 1, Paragraphs 4-5; Page 2, Paragraph 1	Added
1.2.4.1D		Page 1, Paragraphs 4-5; Page 2, Paragraph 1	Added
1.3		Page 2, Paragraphs 3-6	Clarified
1.3.1	Attachment 5(b): Equipment Authorization of Mode I P/P TVBDs	Page 2, Paragraphs 3-6	Changed
1.3.1.1	Attachment 5(b): Device Authentication (3), Attachment 5(b): Equipment Authorization of Mode I P/P TVBDs	Page 2, Paragraphs 3-6	Changed
1.3.1.2	Attachment 5(b): Equipment Authorization of Mode I P/P TVBDs	Page 2, Paragraphs 3-6	Changed
1.3.1.3		Page 2, Paragraphs 3-6	Added
2			
2.1	Attachment 2(a): DB-7	Page 2,	Clarified

	<b>Channel List Serving</b>	<b>Paragraphs 7-8; Pages 3-5</b>	
<b>2.1.1</b>		<b>Page 2, Paragraphs 7-8</b>	<b>Added</b>
<b>2.1.2</b>		<b>Page 4, Paragraphs 1-5</b>	<b>Added</b>
<b>2.1.2.1</b>		<b>Page 4, Paragraphs 1-5</b>	<b>Added</b>
<b>2.1.2.2</b>		<b>Page 4, Paragraphs 1-5</b>	<b>Added</b>
<b>2.1.2.3</b>		<b>Page 4, Paragraphs 1-5</b>	<b>Added</b>
<b>2.1.2.3.1</b>		<b>Page 4, Paragraphs 1-5</b>	<b>Added</b>
<b>2.1.2.4</b>		<b>Page 4, Paragraphs 1-5</b>	<b>Added</b>
<b>2.1.2.5</b>	<b>Attachment 2(a): DB-7 Channel List Serving</b>	<b>Page 4, Paragraphs 1-5</b>	<b>Clarified</b>
<b>2.1.3</b>	<b>Attachment 2(a): DB-7 Channel List Serving</b>	<b>Page 3, Paragraphs 7-8; Page 4, Fig. 2.1, Paragraph 1</b>	<b>Changed</b>
<b>2.1.3.1</b>		<b>Page 3, Paragraphs 7-8; Page 4,</b>	<b>Changed</b>

		<b>Fig. 2.1, Paragraph 1</b>	
<b>2.1.4</b>		<b>Page 4, Paragraphs 2-5</b>	<b>Changed</b>
<b>2.1.4.1</b>	<b>Attachment 2(a): Introduction</b>	<b>Page 4, Paragraphs 2-5</b>	<b>Changed</b>
<b>2.1.4.1.1</b>		<b>Page 4, Paragraphs 2-5</b>	<b>Changed</b>
<b>2.1.4.2</b>		<b>Page 4, Paragraphs 2-5</b>	<b>Changed</b>
<b>2.1.5</b>		<b>Page 5, Paragraph 1-2</b>	<b>Added</b>
<b>2.1.6</b>	<b>Application, §1(c), Attachment 1(c), Attachment 2(a): DB-11 Billing Function</b>	<b>Page 5, Paragraphs 3-4</b>	<b>Clarified</b>
<b>2.1.6.1D</b>	<b>Attachment 1(c), Attachment 2(a): DB-11 Billing Function</b>	<b>Page 5, Paragraphs 3-4</b>	<b>Added</b>
<b>2.1.6.1.1D</b>	<b>Attachment 1(c), Attachment 2(a): DB-11 Billing Function</b>	<b>Page 5, Paragraphs 3-4</b>	<b>Added</b>
<b>2.1.6.1.2D</b>	<b>Attachment 1(c), Attachment 2(a): DB-11 Billing Function</b>	<b>Page 5, Paragraphs 3-4</b>	<b>Added</b>
<b>2.1.7D</b>	<b>Attachment 2(a): DB-1 Data Repository</b>	<b>Page 5, Paragraphs 5-6</b>	<b>Added</b>
<b>2.1.7.1D</b>	<b>Attachment 2(a): DB-1 Data Repository</b>	<b>Page 5, Paragraphs 5-6</b>	<b>Changed</b>

<b>3</b>			
<b>3.1</b>	<b>Application, §V(a)</b>	<b>P. 5-8</b>	<b>Clarified</b>
<b>3.1.1</b>		<b>Page 5, Paragraphs 7-9; Page 6-7; Page 8, Paragraphs 1-2</b>	<b>Clarified</b>
<b>3.1.1.1</b>		<b>Page 6, Paragraphs 2-4</b>	<b>Changed</b>
<b>3.1.1.2</b>		<b>Page 6, Paragraphs 5-9</b>	<b>Changed</b>
<b>3.1.1.2.1</b>		<b>Page 6, Paragraphs 7-9</b>	<b>Changed</b>
<b>3.1.1.3</b>		<b>Page 6, Paragraph 10; Page 7, Paragraphs 1-2</b>	<b>Clarified</b>
<b>3.1.1.3.1</b>		<b>Page 6, Paragraph 10; Page 7, Paragraphs 1-2</b>	<b>Clarified</b>
<b>3.1.1.3.2</b>		<b>Page 6, Paragraph 10; Page 7,</b>	<b>Clarified</b>

		<b>Paragraphs 1-2</b>	
<b>3.1.1.4</b>		<b>Page 7, Paragraphs 3-9; Page 8, Paragraphs 1-2</b>	<b>Clarified</b>
<b>3.1.1.4.1</b>		<b>Page 7, Paragraphs 5-9; Page 8, Paragraphs 1-2</b>	<b>Clarified</b>
<b>3.1.1.4.1.1</b>		<b>Page 7, Paragraphs 7-8</b>	<b>Clarified</b>
<b>3.1.1.4.1.2</b>		<b>Page 7, Paragraphs 7-8</b>	<b>Clarified</b>
<b>3.1.1.4.1.2.1</b>		<b>Page 7, Paragraph 9; Page 8, Paragraphs 1-2</b>	<b>Clarified</b>
<b>3.1.1.4.1.2.2</b>		<b>Page 7, Paragraph 9; Page 8, Paragraphs 1-2</b>	<b>Clarified</b>
<b>3.1.1.4.1.2.3</b>		<b>Page 7, Paragraph 9; Page 8, Paragraphs 1-2</b>	<b>Clarified</b>

<b>3.1.1.4.1.2.4</b>		<p>Page 7, Paragraph 9;</p> <p>Page 8, Paragraphs 1-2</p>	<b>Clarified</b>
<b>3.1.1.4.1.2.5</b>		<p>Page 7, Paragraph 9;</p> <p>Page 8, Paragraphs 1-2</p>	<b>Clarified</b>
<b>3.2</b>	<b>Application, §V(a)</b>	<p>Page 8, Paragraphs 3-10;</p> <p>Page 9;</p> <p>Page 10, Paragraph 1</p>	<b>Clarified</b>
<b>3.2.1</b>		<p>Page 8, Paragraphs 4-10;</p> <p>Page 9, Paragraphs 1-3</p>	<b>Clarified</b>
<b>3.2.1.1.1</b>		<p>Page 8, Paragraphs 7-10;</p> <p>Page 9, Paragraphs 1-3</p>	<b>Clarified</b>
<b>3.2.1.1.1.1</b>		<p>Page 8, Paragraphs 9-10</p>	<b>Clarified</b>
<b>3.2.1.1.1.2</b>		<p>Page 9, Paragraphs 1-3</p>	<b>Clarified</b>

<b>3.2.1.1.1.2.1</b>		<b>Page 9, Paragraphs 1-3</b>	<b>Clarified</b>
<b>3.2.1.1.1.2.2</b>		<b>Page 9, Paragraphs 1-3</b>	<b>Clarified</b>
<b>3.2.1.1.1.2.3</b>		<b>Page 9, Paragraphs 1-3</b>	<b>Clarified</b>
<b>3.2.1.1.1.2.4</b>		<b>Page 9, Paragraphs 1-3</b>	<b>Clarified</b>
<b>3.2.1.1.1.2.5</b>		<b>Page 9, Paragraphs 1-3</b>	<b>Clarified</b>
<b>3.2.2</b>		<b>Page 9, Paragraphs 4-6</b>	<b>Changed</b>
<b>3.2.3</b>		<b>Page 9, Paragraphs 7-10; Page 10, Paragraph 1</b>	<b>Changed</b>
<b>3.2.3.1</b>		<b>Page 9, Paragraphs 9-10; Page 10, Paragraph 1</b>	<b>Changed</b>
<b>3.3</b>	<b>Application, §V(a)</b>	<b>Page 10, Paragraphs 2-7</b>	<b>Clarified</b>
<b>3.3.1</b>		<b>Page 10, Paragraphs 2-7</b>	<b>Changed</b>
<b>3.3.1.1</b>		<b>Page 10,</b>	<b>Changed</b>

<b>3.3.1.1.1</b>		<b>Paragraphs 2-7</b>	<b>Changed</b>
<b>3.3.1.1.2</b>		<b>Page 10, Paragraphs 2-7</b>	<b>Changed</b>
<b>4</b>			
<b>4.1</b>	<b>Attachment 2(a): DB-1 Data Repository, Attachment 3(b): DB-1 Data Repository</b>	<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.1.1</b>	<b>Attachment 2(a): DB-1 Data Repository, Attachment 3(b): DB-1 Data Repository</b>	<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.1.2</b>	<b>Attachment 2(a): DB-1 Data Repository, Attachment 3(b): DB-1 Data Repository</b>	<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.1.3</b>	<b>Attachment 2(a): DB-1 Data Repository</b>	<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.1.3.1</b>		<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>

<b>4.1.3.2</b>		<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.1.3.3</b>		<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.1.3.4</b>		<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.1.3.5</b>		<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.1.3.6</b>		<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.1.3.7</b>		<b>Page 10, Paragraphs 8-9; Page 11, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.2</b>	<b>Attachment 2(a): DB-2 Licensed Registration</b>	<b>Page 11,</b>	<b>Clarified</b>

	<b>Function, Attachment 2(a): DB-3 Unlicensed Registration Function</b>	<b>Paragraphs 3-9; Page 12; Page 13, Paragraphs 1-6</b>	
<b>4.2.1</b>	<b>Attachment 2(a): DB-2 Licensed Registration Function, Attachment 2(a): DB-3 Unlicensed Registration Function</b>	<b>Page 11, Paragraphs 3-9; Page 12; Page 13, Paragraphs 1-6</b>	<b>Clarified</b>
<b>4.2.1.1</b>	<b>Attachment 2(a): DB-3 Unlicensed Registration Function</b>	<b>Page 11, Paragraphs 3-8</b>	<b>Clarified</b>
<b>4.2.1.2</b>		<b>Page 11, Paragraphs 3-8</b>	<b>Clarified</b>
<b>4.2.1.3</b>	<b>Attachment 2(a): DB-3 Unlicensed Registration Function</b>	<b>Page 11, Paragraphs 3-8</b>	<b>Clarified</b>
<b>4.2.1.3.1</b>		<b>Page 11, Paragraphs 3-8</b>	<b>Changed</b>
<b>4.2.1.3.1.1</b>		<b>Page 11, Paragraphs 3-8</b>	<b>Changed</b>
<b>4.2.1.3.1.1.1</b>		<b>Page 11, Paragraphs 3-8</b>	<b>Changed</b>
<b>4.2.1.3.2</b>		<b>Page 11, Paragraph 9; Page 12,</b>	<b>Changed</b>

		<b>Paragraph 1</b>	
<b>4.2.1.4</b>	<b>Attachment 2(a): DB-2 Licensed Registration Function</b>	<b>Page 12, Paragraph 3-5</b>	<b>Changed</b>
<b>4.2.1.4.1</b>	<b>Attachment 2(a): DB-2 Licensed Registration Function</b>	<b>Page 12, Paragraph 3-5</b>	<b>Changed</b>
<b>4.2.1.4.2</b>		<b>Page 12, Paragraph 3-5</b>	<b>Changed</b>
<b>4.2.1.4.3</b>		<b>Page 12, Paragraph 3-5</b>	<b>Changed</b>
<b>4.2.1.5</b>	<b>Attachment 2(a): DB-6 Fixed TVBD Registration</b>	<b>Page 12, Paragraphs 6-8</b>	<b>Clarified</b>
<b>4.2.1.6</b>		<b>Page 12, Paragraphs 6-8</b>	<b>Clarified</b>
<b>4.2.1.7</b>		<b>Page 12, Paragraphs 6-8</b>	<b>Changed</b>
<b>4.2.1.8</b>	<b>Attachment 2(a): DB-2 Licensed Registration Function (1)</b>	<b>Page 12, Paragraphs 6-8</b>	<b>Changed</b>
<b>4.2.1.8.1</b>		<b>Page 12, Paragraphs 6-8</b>	<b>Changed</b>
<b>4.2.1.8.1.1</b>		<b>Page 12, Paragraphs 6-8</b>	<b>Changed</b>
<b>4.2.1.8.1.2</b>		<b>Page 12, Paragraphs 6-8</b>	<b>Changed</b>
<b>4.2.1.8.1.3</b>		<b>Page 12,</b>	<b>Changed</b>

		<b>Paragraphs 6-8</b>	
<b>4.2.1.8.1.4</b>		<b>Page 12, Paragraphs 6-8</b>	<b>Changed</b>
<b>4.2.1.8.2</b>		<b>Page 12, Paragraph 9; Page 13, Paragraphs 1-2</b>	<b>Changed</b>
<b>4.2.1.8.2.1</b>		<b>Page 12, Paragraph 9; Page 13, Paragraphs 1-2</b>	<b>Changed</b>
<b>4.2.1.8.2.2</b>		<b>Page 12, Paragraph 9; Page 13, Paragraphs 1-2</b>	<b>Changed</b>
<b>4.2.1.8.2.2.1</b>		<b>Page 12, Paragraph 9; Page 13, Paragraphs 1-2</b>	<b>Changed</b>
<b>4.2.1.8.2.3</b>		<b>Page 13, Paragraphs 3-5</b>	<b>Changed</b>
<b>4.2.1.8.2.3.1</b>		<b>Page 13, Paragraphs 3-5</b>	<b>Changed</b>
<b>4.2.1.8.2.3.2</b>		<b>Page 13, Paragraphs 3-5</b>	<b>Changed</b>

<b>4.2.1.8.2.3.2.1</b>		<b>Page 13, Paragraphs 3-5</b>	<b>Changed</b>
<b>4.2.1.8.2.3.3</b>		<b>Page 13, Paragraphs 3-5</b>	<b>Changed</b>
<b>4.2.1.8.2.3.4</b>		<b>Page 13, Paragraphs 3-5</b>	<b>Changed</b>
<b>4.2.1.9</b>		<b>Page 13, Paragraph 6</b>	<b>Clarified</b>
<b>4.3</b>		<b>Page 13, Paragraphs 7-8; Pages 14-17; Page 18, Paragraphs 1-4</b>	<b>Clarified</b>
<b>4.3.1</b>	<b>Attachment 3(b) DB-2, Attachment 3(b) DB-3</b>	<b>Page 13, Paragraphs 7-8; Page 14, Paragraphs 1-4</b>	<b>Clarified</b>
<b>4.3.1.1</b>		<b>Page 13, Paragraph 8; Page 14, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.1.1.1</b>		<b>Page 13, Paragraph 8; Page 14, Paragraphs 1-2</b>	<b>Clarified</b>

<b>4.3.1.1.2</b>		<b>Page 13, Paragraph 8; Page 14, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.1.1.3</b>		<b>Page 13, Paragraph 8; Page 14, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.1.1.4</b>		<b>Page 13, Paragraph 8; Page 14, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.1.1.5</b>		<b>Page 13, Paragraph 8; Page 14, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.1.1.6</b>		<b>Page 13, Paragraph 8; Page 14, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.1.1.7</b>		<b>Page 13, Paragraph 8; Page 14, Paragraphs 1-2</b>	<b>Changed</b>
<b>4.3.1.2</b>		<b>Page 13,</b>	<b>Clarified</b>

		<p>Paragraph 8;</p> <p>Page 14,</p> <p>Paragraphs 1-2</p>	
4.3.1.2.1		<p>Page 13,</p> <p>Paragraph 8;</p> <p>Page 14,</p> <p>Paragraphs 1-2</p>	Clarified
4.3.1.2.2		<p>Page 13,</p> <p>Paragraph 8;</p> <p>Page 14,</p> <p>Paragraphs 1-2</p>	Clarified
4.3.2		<p>Page 14,</p> <p>Paragraphs 3-4</p>	Clarified
4.3.2.1		<p>Page 14,</p> <p>Paragraphs 3-4</p>	Clarified
4.3.2.2		<p>Page 14,</p> <p>Paragraphs 3-4</p>	Clarified
4.3.2.3		<p>Page 14,</p> <p>Paragraphs 3-4</p>	Clarified
4.3.2.4		<p>Page 14,</p> <p>Paragraphs 3-4</p>	Clarified
4.3.3		<p>Page 14,</p> <p>Paragraphs 7;</p> <p>Page 15,</p> <p>Paragraphs 1-2</p>	Clarified

<b>4.3.3.1</b>		<b>Page 14, Paragraphs 7; Page 15, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.3.2</b>		<b>Page 14, Paragraphs 7; Page 15, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.3.3</b>		<b>Page 14, Paragraphs 7; Page 15, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.3.3.1</b>		<b>Page 14, Paragraphs 7; Page 15, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.3.4</b>		<b>Page 14, Paragraphs 7; Page 15, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.3.5</b>		<b>Page 14, Paragraphs 7; Page 15, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.4</b>		<b>Page 15,</b>	<b>Clarified</b>

		<b>Paragraphs 3-7</b>	
<b>4.3.4.1</b>		<b>Page 15, Paragraphs 5-7</b>	<b>Clarified</b>
<b>4.3.4.2</b>		<b>Page 15, Paragraphs 5-7</b>	<b>Clarified</b>
<b>4.3.4.3</b>		<b>Page 15, Paragraphs 3-7</b>	<b>Clarified</b>
<b>4.3.4.3.1</b>		<b>Page 15, Paragraphs 3-7</b>	<b>Clarified</b>
<b>4.3.4.4</b>		<b>Page 15, Paragraphs 3-7</b>	<b>Clarified</b>
<b>4.3.4.5</b>		<b>Page 15, Paragraphs 3-7</b>	<b>Clarified</b>
<b>4.3.5</b>		<b>Page 15, Paragraphs 8; Page 16, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.5.1</b>		<b>Page 15, Paragraphs 8; Page 16, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.5.2</b>		<b>Page 15, Paragraphs 8; Page 16, Paragraphs 1-2</b>	<b>Clarified</b>

<b>4.3.5.3</b>		<b>Page 15, Paragraphs 8; Page 16, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.5.4</b>		<b>Page 15, Paragraphs 8; Page 16, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.5.5</b>		<b>Page 15, Paragraphs 8; Page 16, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.5.6</b>		<b>Page 15, Paragraphs 8; Page 16, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.5.7</b>		<b>Page 15, Paragraphs 8; Page 16, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.5.8</b>		<b>Page 15, Paragraphs 8; Page 16, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.6</b>		<b>Page 16,</b>	<b>Changed</b>

		<b>Paragraphs 3-4</b>	
<b>4.3.6.1</b>		<b>Page 16, Paragraphs 3-4</b>	<b>Changed</b>
<b>4.3.6.2</b>		<b>Page 16, Paragraphs 3-4</b>	<b>Changed</b>
<b>4.3.6.3</b>		<b>Page 16, Paragraphs 3-4</b>	<b>Changed</b>
<b>4.3.6.4</b>		<b>Page 16, Paragraphs 3-4</b>	<b>Changed</b>
<b>4.3.6.5</b>		<b>Page 16, Paragraphs 3-4</b>	<b>Changed</b>
<b>4.3.6.6</b>		<b>Page 16, Paragraphs 3-4</b>	<b>Changed</b>
<b>4.3.6.7</b>		<b>Page 16, Paragraphs 3-4</b>	<b>Changed</b>
<b>4.3.6.8</b>		<b>Page 16, Paragraphs 3-4</b>	<b>Changed</b>
<b>4.3.7</b>		<b>Page 17, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.7.1</b>		<b>Page 17, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.7.2</b>		<b>Page 17, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.7.3</b>		<b>Page 17, Paragraphs 1-2</b>	<b>Clarified</b>

<b>4.3.7.4</b>		<b>Page 17, Paragraphs 1-2</b>	<b>Clarified</b>
<b>4.3.8</b>		<b>Page 17, Paragraphs 3-4</b>	<b>Clarified</b>
<b>4.3.8.1</b>		<b>Page 17, Paragraphs 3-4</b>	<b>Clarified</b>
<b>4.3.8.2</b>		<b>Page 17, Paragraphs 3-4</b>	<b>Clarified</b>
<b>4.3.8.3</b>		<b>Page 17, Paragraphs 3-4</b>	<b>Clarified</b>
<b>4.3.8.4</b>		<b>Page 17, Paragraphs 3-4</b>	<b>Clarified</b>
<b>4.3.8.5</b>		<b>Page 17, Paragraphs 3-4</b>	<b>Clarified</b>
<b>4.3.9</b>		<b>Page 17, Paragraphs 5-6</b>	<b>Clarified</b>
<b>4.3.9.1</b>		<b>Page 17, Paragraphs 5-6</b>	<b>Clarified</b>
<b>4.3.9.2</b>		<b>Page 17, Paragraphs 5-6</b>	<b>Clarified</b>
<b>4.3.10</b>		<b>Page 17, Paragraph 7; Page 18, Paragraph 1</b>	<b>Clarified</b>
<b>4.3.10.1</b>		<b>Page 17,</b>	<b>Clarified</b>

		Paragraph 7; Page 18, Paragraph 1	
4.3.11		Page 18, Paragraphs 2-4	Added
4.3.11.1		Page 18, Paragraphs 3-4	Added
4.3.11.1.1		Page 18, Paragraphs 3-4	Added
4.4	Attachment 2(a): DB-2 Licensed Registration Function, Attachment 2(a): DB-3 Unlicensed Registration Function	Page 18, Paragraphs 5-6	Clarified
4.4.1	Attachment 2(a): DB-2 Licensed Registration Function, Attachment 2(a): DB-3 Unlicensed Registration Function	Page 18, Paragraphs 5-6	Clarified
4.4.1.1	Attachment 2(a): DB-2 Licensed Registration Function, Attachment 2(a): DB-3 Unlicensed Registration Function	Page 18, Paragraphs 5-6	Clarified
4.4.1.1.1	Attachment 2(a): DB-2 Licensed Registration Function	Page 18, Paragraphs 5-6	Clarified
4.4.1.2	Attachment 2(a): DB-2 Licensed Registration Function	Page 18, Paragraphs 5-6	Clarified

<b>5</b>			
<b>5.1</b>	<b>Attachment 2(a): DB-4 Calculation of Channel Availability Function, Attachment 3(b): DB-1 (B)(1)(5)</b>	<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.1.1</b>		<b>Page 18, Paragraph 7</b>	<b>Added</b>
<b>5.1.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.3</b>		<b>Page 18, Paragraph 7</b>	<b>Changed</b>
<b>5.1.3.1</b>		<b>Page 18, Paragraph 7</b>	<b>Changed</b>
<b>5.1.4</b>		<b>Page 18, Paragraph 7</b>	<b>Added</b>
<b>5.1.4.1</b>		<b>Page 18, Paragraph 7</b>	<b>Added</b>
<b>5.1.5</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.5.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.5.2</b>		<b>Page 18, Paragraph 7</b>	<b>Added</b>

<b>5.1.5.3</b>		<b>Page 18, Paragraph 7</b>	<b>Changed</b>
<b>5.1.5.3.1</b>		<b>Page 18, Paragraph 7</b>	<b>Added</b>
<b>5.1.6</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.6.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.6.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.7</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.7.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.7.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.8</b>	<b>Attachment 2(a): DB-4 Calculation of Channel Availability Function</b>	<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.8.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.8.1.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.8.1.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>

<b>5.1.8.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.8.3</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.8.3.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.9</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.9.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.9.1.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.9.1.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.9.1.3</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.9.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.9.2.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.9.2.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.9.3</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.10</b>		<b>Page 18,</b>	<b>Clarified</b>

		<b>Paragraph 7</b>	
<b>5.1.10.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.10.1.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.10.1.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.10.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.10.2.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.10.2.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.11</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.11.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.11.1.1</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.11.1.2</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.11.1.3</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>
<b>5.1.11.1.4</b>		<b>Page 18, Paragraph 7</b>	<b>Clarified</b>

5.1.12		Page 18, Paragraph 7	Clarified
5.1.12.1		Page 18, Paragraph 7	Clarified
5.1.12.2		Page 18, Paragraph 7	Clarified
5.1.12.2.1		Page 18, Paragraph 7	Clarified
6			
6.1	Attachment 3(b): DB-1(A)(1)	Page 19, Paragraph 1-2	Clarified
6.1.1	Attachment 3(b): DB-1(A)(1)	Page 19, Paragraph 1-2	Clarified
6.1.2		Page 19, Paragraph 1-2	Clarified
6.1.2.1	Attachment 3(b): DB-1(A)(1)	Page 19, Paragraph 1-2	Clarified
6.1.2.1.1	Attachment 3(b): DB-1(A)(1)	Page 19, Paragraph 1-2	Clarified
6.1.2.1.2	Attachment 3(b): DB-1(A)(1)	Page 19, Paragraph 1-2	Clarified
6.2	Attachment 2(a): DB-8 FCC Request Function	Page 19, Paragraph 1-2	Clarified
6.2.1	Attachment 2(a): DB-8 FCC	Page 19,	Clarified

	<b>Request Function</b>	<b>Paragraph 1-2</b>	
<b>6.2.2D</b>	<b>Attachment 2(a): DB-8 FCC Request Function</b>	<b>Page 19, Paragraph 1-2</b>	<b>Clarified</b>
<b>6.2.2.1D</b>	<b>Attachment 2(a): DB-8 FCC Request Function</b>	<b>Page 19, Paragraph 1-2</b>	<b>Clarified</b>
<b>6.2.2.2D</b>	<b>Attachment 2(a): DB-8 FCC Request Function</b>	<b>Page 19, Paragraph 1-2</b>	<b>Clarified</b>
<b>6.2.3D</b>	<b>Attachment 2(a): DB-8 FCC Request Function</b>	<b>Page 19, Paragraph 1-2</b>	<b>Clarified</b>
<b>6.3</b>	<b>Application, §II(b), Attachment 2(a): DB-5 Synch. Function</b>	<b>Page 19, Paragraph 1-2</b>	<b>Clarified</b>
<b>6.3.1</b>	<b>Application, §II(b), Attachment 2(a): DB-5 Synch. Function</b>	<b>Page 19, Paragraph 1-2</b>	<b>Clarified</b>
<b>6.3.2</b>	<b>Application, §II(b)</b>	<b>Page 19, Paragraph 1-2</b>	<b>Clarified</b>
<b>6.3.3D</b>	<b>Application, §II(b), Application, §II(b), Attachment 2(a): DB-5 Synch. Function</b>	<b>Page 19, Paragraph 1-2</b>	<b>Clarified</b>
<b>7</b>			
<b>7.1</b>	<b>Attachment 5(b)</b>	<b>Page 19  Paragraphs 3-7;  Page 20</b>	<b>Changed</b>
<b>7.1.1</b>	<b>Attachment 5(b): Message Authentication</b>	<b>Page 19</b>	<b>Changed</b>

		Paragraphs 3-7	
7.1.1.1	Attachment 2(a): DB-6 Fixed TVBD Registration, Attachment 5(b): Device Authentication (1)	Page 19 Paragraphs 3-7	Changed
7.1.1.2	Attachment 5(b): Message Authentication	Page 19 Paragraphs 3-7	Changed
7.1.1.2.1		Page 19 Paragraphs 3-7	Changed
7.1.1.2.2	Attachment 5(b): Message Authentication	Page 19 Paragraphs 3-7	Changed
7.1.1.2.3	Attachment 5(b): Message Authentication	Page 19 Paragraphs 3-7	Changed
7.1.1.2.3.1	Attachment 5(b): Message Authentication	Page 19 Paragraphs 3-7	Changed
7.1.1.2.4		Page 19 Paragraphs 3-7	Changed
7.1.1.2.5	Attachment 5(b): Message Authentication	Page 19 Paragraphs 3-7	Changed
7.1.1.2.5.1	Attachment 5(b): Message Authentication	Page 19 Paragraphs 3-7	Clarified
7.1.1.3		Page 19 Paragraphs 3-7	Clarified
7.1.2	Application, §V(b)	Page 20, Paragraphs 1-5	Clarified
7.1.2.1	Application, §V(b), Attachment 5(b): Device	Page 20,	Clarified

	<p><b>Authentication (2), Attachment 5(b): Relationship Authentication (2), Attachment 5(b): Relationship Authentication (3), Attachment 5(b): Relationship Authentication (4), Attachment 2(a): DB-6 Fixed TVBD Registration</b></p>	<p><b>Paragraphs 1-5</b></p>	
7.1.2.2	<p><b>Application, §V(b)</b></p>	<p><b>Page 20, Paragraphs 1-5</b></p>	<p><b>Clarified</b></p>
7.1.2.3	<p><b>Application, §V(b)</b></p>	<p><b>Page 20, Paragraphs 1-5</b></p>	<p><b>Clarified</b></p>
7.1.2.4	<p><b>Application, §V(b)</b></p>	<p><b>Page 20, Paragraphs 1-5</b></p>	<p><b>Clarified</b></p>
7.1.3	<p><b>Attachment 2(a): DB-6 Fixed TVBD Registration, Attachment 5(b): Device Authentication (2), Attachment 5(b): Relationship Authentication (2)</b></p>	<p><b>Page 20 Paragraphs 6-8</b></p>	<p><b>Changed</b></p>
7.1.3.1	<p><b>Attachment 2(a): DB-6 Fixed TVBD Registration, Attachment 5(b): Device Authentication (3), Attachment 5(b): Relationship Authentication (2)</b></p>	<p><b>Page 20, Paragraphs 6-8</b></p>	<p><b>Changed</b></p>
7.1.3.2		<p><b>Page 20, Paragraphs 6-8</b></p>	<p><b>Added</b></p>

<b>7.1.4</b>	<b>Attachment 5(b): Device Authentication (4), Attachment 5(b): Relationship Authentication (2)</b>	<b>Page 20, Paragraphs 9-10</b>	<b>Clarified</b>
<b>8</b>			
<b>8.1</b>		<b>Page 21, Paragraph 1</b>	<b>Clarified</b>
<b>8.1.1</b>		<b>Page 21, Paragraph 1</b>	<b>Changed</b>
<b>8.1.1.1</b>		<b>Page 21, Paragraph 1</b>	<b>Added</b>
<b>8.1.1.1.1</b>		<b>Page 21, Paragraph 1</b>	<b>Added</b>
<b>8.1.1.1.2</b>		<b>Page 21, Paragraph 1</b>	<b>Clarified</b>
<b>8.1.1.1.3</b>		<b>Page 21, Paragraph 1</b>	<b>Added</b>
<b>8.1.1.1.3.1</b>	<b>Attachment 5(b)</b>	<b>Page 21, Paragraph 1</b>	<b>Clarified</b>
<b>8.1.1.1.3.2</b>		<b>Page 21, Paragraph 1</b>	<b>Clarified</b>
<b>8.1.1.2</b>		<b>Page 21, Paragraph 1</b>	<b>Clarified</b>
<b>8.1.1.2.1</b>		<b>Page 21,</b>	<b>Added</b>

		Paragraph 1	
8.1.1.2.1.1		Page 21, Paragraph 1	Added
8.1.1.3	Application, §I(a), Attachment 2(a)	Page 21, Paragraph 1	Clarified
8.1.2		Page 21, Paragraph 1	Clarified
8.1.2.1	Application, §I(a), (b), Attachment 1(b): Five-Year Plan, Attachment 1(a)	Page 21, Paragraph 1	Clarified
8.1.2.2		Page 21, Paragraph 1	Clarified
8.1.2.3		Page 21, Paragraph 1	Clarified
8.1.3		Page 21, Paragraph 1	Clarified
8.1.3.1		Page 21, Paragraph 1	Clarified
8.1.3.2		Page 21, Paragraph 1	Clarified
8.1.3.2.1		Page 21, Paragraph 1	Clarified
8.1.3.2.2		Page 21, Paragraph 1	Clarified
8.1.3.2.3		Page 21,	Clarified

		<b>Paragraph 1</b>	
<b>8.1.4</b>		<b>Page 21, Paragraph 1</b>	<b>Clarified</b>
<b>8.1.5</b>		<b>Page 21, Paragraph 1</b>	<b>Clarified</b>
<b>8.1.5.1</b>		<b>Page 21, Paragraph 1</b>	<b>Clarified</b>
<b>8.1.5.2</b>		<b>Page 21, Paragraph 1</b>	<b>Clarified</b>

## **Attachment C:**

### **Conversion from WSdb, LLC to Airity, Inc.**

Pursuant to a Plan of Conversion filed with the State of Texas and made effective as of February 23, 2011, WSdb, LLC, has converted its legal existence from that of a limited liability company to that of a corporation and has changed its name from WSdb, LLC to Airity, Inc. (the "Conversion"). On and after the effective date of the Conversion, the existence of WSdb, LLC, a Texas limited liability company shall be carried on as Airity, Inc, a Texas corporation ("Airity"). We respectfully request that the Commission amend its records to reflect the Conversion.

The ownership and funding of Airity will remain unchanged. The following material represent the governance, management, and staff of Airity.

### **Biographies**

Below are biographies of certain of the executives, advisors and team members of Airity, Inc.

#### **Adam Drobot**

Adam Drobot serves as President and CEO of Airity. Dr. Drobot joined 2M Companies in July 2010, and also serves as non-executive Chairman of CebaTech, a 2M company that develops acceleration platforms & IP core solutions in data networking & storage systems, and as Science Advisor to 2M Biotech, which partners with research groups, universities, investors, and early stage biotech firms to accelerate the commercialization of products & technologies.

Prior to joining 2M, from 2002-2010, Dr. Drobot served as the Chief Technology Officer ("CTO") and President of Advanced Technology Solutions at Telcordia, where he was responsible for the Applied Research (AR) and Government & Public Sector (GPS) Business Units ("BU"s). During that time he oversaw the transition of AR from an internally funded activity to a self supporting R&D business with P&L responsibility. AR is renowned for the development of groundbreaking communications and information systems technologies, with a focus on Internet, broadband and information networking, and software technologies, and has

generated over 1900 patents. The GPS BU plans, develops, and implements system engineering solutions for federal, state and local governments, and is well known for its trusted advice and management capabilities in conducting complex programs. GPS's expertise lies in security, reliability, information assurance, and business processes outsourcing (BPO). As CTO Dr. Drobot represented Telcordia's participation in standards organizations, trade associations, professional bodies, and Government Committees.

From 1975-2002 Dr. Drobot was with Science Applications International Corporation (SAIC), now an \$11B Fortune 250 company, where he held multiple positions. Among these, he was the Senior Vice President for Science and Technology and the manager of the Advanced Technology Group, of which he was the founder. The Group conducted sponsored R&D for Government and Commercial clients in the physical sciences, systems engineering, and information technology. Some of the projects he worked on included: research on energetic plasmas, pulsed power, millimeter waves, and high power microwaves at the Naval Research Laboratory; the development of large scale special weapon effects simulation codes for Lawrence Livermore National Laboratory; advanced accelerator concepts and component simulations for the Stanford Linear Accelerator Center; Simulation Based Design for the Defense Advanced Projects Agency; and the Tethered Satellite Mission which deployed a 20km conducting tether from the NASA's space shuttle. The Advanced Technology Group (ATG) applied deep first principles scientific knowledge and expertise to many problems of national importance ranging from forensic reconstruction of terrorist events to the development of special sensors and support for in field operations.

In his professional capacity Dr. Drobot is well known and highly regarded in multiple areas of science and technology. He has published over 100 journal articles, is a frequent contributor to industry literature, keynote presentations at conferences, and currently holds nineteen patents. He is an active participant in evolving secure, highly-reliability communications across the ICT industry's most complex networks, operations, and systems technologies, and in applying them to new areas such as Telematics, Telemedicine, and the Power Grid. He has also been responsible for developing several large, scientific codes. Dr. Drobot received a BA in Engineering Physics from Cornell University, Ithaca, NY in 1968, and a PhD in Plasma Physics from the University of Texas at Austin in 1975.

Dr. Drobot is a fellow of the American Physics Society, a member of the Institute of Aeronautics and Astronautics, the American Association for the Advancement of Science, the Society of Petroleum Engineers, Sigma Phi Sigma, and Phi Kappa Phi, and is a senior member of the IEEE. He serves on the board of the American Occupational Therapy Foundation and the Telecommunications Industry Association, where he also chairs the Research Division. He is a director of OpenTechWorks Inc., Advanced Green Computing Machines Inc., and is on the external advisory board of the University of Michigan Transportation Research Institute. He was appointed to the DOT Intelligent Transportation Systems Advisory Board in 2010. He has been the organizer and Technical chair for several major IEEE and APS conferences. He previously was on the boards of the Association for Telecommunications Industry Solutions (ATIS), the New Jersey Technology Council, and a member of the FCC's Communications Security Interoperability and Reliability Council (CSIRC).

Dr. Drobot is the 2007 recipient of the IEEE's Managerial Excellence Award in recognition of his leadership excellence in managing innovative research and development in telecommunications. In recognition of his sustained industry contributions, he was presented with the IEEE's 2009 Chairman's Award for Communications Quality and Reliability. He currently serves as the Chairman of the IEEE Communications Society Ad hoc Industry Promotion Committee.

### **Morton Meyerson**

Morton Meyerson is the founder of 2M Companies, Inc. ("2M Companies"), the private investment firm that has provided funding for Airity. Mr. Meyerson serves as non-executive Chairman of Airity and, in this capacity, brings a wealth of technical and business experience to Airity.

Mr. Meyerson began his business career in 1963 at Bell Helicopter. In 1966, he joined Electronic Data Systems, Inc. ("EDS") as a systems engineer trainee, ultimately becoming President and Vice Chairman and managing 45,000 employees. From 1971 through 1974, during his tenure at EDS and at the age of 33, Mr. Meyerson was the Chief Executive Officer and Chairman of duPont Glore Forgan, a Wall Street brokerage firm.

In 1984, Mr. Meyerson played a significant role in the sale of EDS to General Motors ("GM") for \$2.5 billion, becoming the top technology officer at General Motors. Two years after the sale to GM, after growing EDS revenue four-fold, Mr. Meyerson retired. From 1986 through 1992, Mr. Meyerson pursued private investment opportunities with Richard Rainwater. In 1992, at the request of Ross Perot, Mr. Meyerson re-joined the corporate world as Chief Executive Officer and Chairman of Perot Systems Corporation. In 1998, Mr. Meyerson retired from Perot Systems Corporation and resumed private investing.

Mr. Meyerson is currently the Chief Executive Officer and Chairman of 2M Companies, formed in 1985. Since that time, Mr. Meyerson has been actively engaged in investment activities. Mr. Meyerson's investment interests are diverse and have included financing, developing and managing real estate transactions, equity and debt financing for early-stage technology companies, restaurants and retail operations, and trading public equities. Recently, Mr. Meyerson was elected into The American Academy of Arts & Sciences 2007 Class of Fellows. The

Academy honors distinguished scientists, scholars and leaders in public affairs, business and the arts. From time to time, Mr. Meyerson has served on public and private company boards. Currently, Mr. Meyerson is active on the following boards (in addition to Airity):

- Chairman (Non-Executive)—E2M Partners, a value-added real estate investment management firm.
- Chairman (Non-Executive)—Alsbridge Inc., a global outsourcing, shared services and offshoring advisory firm.
- Chairman (Non-Executive)—CebaTech Inc., a software-to-silicon company.
- Director—ChaCha Search, Inc., a provider of human-assisted answer and search services.
- Director—Koll Development Company, a leading commercial real estate development firm.

Mr. Meyerson has tremendous experience developing and managing large government related and private information systems. Of particular relevance, while with EDS, a team led by Mr. Meyerson designed the systems used first by Texas Blue Cross Blue Shield and later by other insurers around the country to process over 50% of the national health care claim transaction volume pursuant to regulations set forth under the newly enacted Medicaid and Medicare programs. Due to the transaction volume and the regulatory requirements, legacy systems were inadequate as a starting point and a paradigm shift in the methodologies and processes was required. Additionally, time constraints imposed by the regulations created an exceptionally short development period. The systems ultimately developed by Mr. Meyerson and his team satisfied the regulatory requirements, were more than sufficient to handle the volume and were robust enough to drive down costs, increase service levels, and provide the unintended benefit of rooting out medical billing fraud.

### **Ian Trumpower**

Ian Trumpower is the interim Chief Financial Officer of Airity, and also serves as a member of Airity's board of directors. Mr. Trumpower also currently serves as the Chief Financial Officer for 2M Companies. In this capacity, Mr. Trumpower manages a broad portfolio of investments focused primarily in the high-tech sector. Additionally, Mr. Trumpower routinely evaluates business plans and entrepreneurs as investment opportunities are presented to 2M Companies.

Prior to joining 2M Companies, Mr. Trumpower served as investment counsel for HBK Capital Management, a multi-billion dollar international hedge fund. While at HBK, Mr. Trumpower focused on public and private equity transactions. Prior to joining HBK, Mr. Trumpower practiced transactional law at Weil, Gotshal & Manges LLP and Akin Gump Strauss Hauer & Feld LLP. Mr. Trumpower specialized in mergers and acquisitions and corporate finance.

Mr. Trumpower holds a J.D., *magna cum laude*, from the University of Illinois College of Law. Mr. Trumpower also holds a Bachelor of Science degree in accounting from the University of Illinois and is a certified public accountant. Mr. Trumpower proudly served in the United States Marine Corps.

### **Antonio Perez Sales**

Antonio Perez Sales has over 25 years of experience helping companies improve their financial and operational performance through the use of information technology and process improvement. Mr. Perez Sales has extensive multinational experience, having worked with global and regional corporations across U.S., Europe and South America in a variety of industries, including financial, manufacturing, transportation and telecommunications.

Prior to joining 2M Companies, Mr. Perez Sales was a Director with AlixPartners, a global management consulting and financial advisory firm, serving clients in the financial and manufacturing industries. Client engagements included roles as interim CIO, leading the turnaround of a troubled information technology organization for a multibillion dollar financial firm, and leading the transformation of the Procurement organization in South America for a multibillion dollar heavy manufacturing corporation.

Prior to AlixPartners, Mr. Perez Sales was a Vice-President with EDS (now HP), where he held a variety of executive and management positions. These included serving as the Enterprise Client Executive for one of the largest global accounts of EDS, serving as Regional President for the EDS Consulting Business Unit in South Europe and serving as President for EDS Mexico.

Prior to EDS, Mr. Perez Sales was a consulting manager with Andersen Consulting (now Accenture), where he led large systems implementation and process reengineering projects.

Mr. Perez Sales holds an M.B.A. from ESADE in Barcelona, and a B.S. in Chemistry from the Universidad Central in Barcelona.

### **Eli Salomon**

Eli Salomon practiced as a real estate lawyer for several years in Fried, Frank's Manhattan office before joining 2M Companies. While at Fried, Frank, Mr. Salomon worked on high profile projects including the acquisition of the John Hancock Tower, in Boston, and the continuing development of Atlantic Yards, in Brooklyn. Mr. Salomon is a board member of the Congress for Jewish Culture, a non-profit dedicated to addressing Yiddish cultural and educational needs in the United States. In addition, Mr. Salomon is a board member of Handcrafting Justice, a non-profit that works in cooperation with women struggling for economic justice and independence in the developing world.

Mr. Salomon has a J.D. from Harvard Law School, an M.A./B.A. in Mathematics and a B.S. in Mathematical Sciences from the Johns Hopkins University.

### **Wojciech Grohman**

Wojciech “Voy” Grohman has over 15 years of experience in the electronic design industry, ranging from automotive, industrial, communication to consumer applications. He has recently led a design team for a distributed HVAC control system named iComfort for Lennox International.

Mr. Grohman obtained his MS degree in Electronic Design from the Silesian Technical University in Poland. He obtained his PhD degree in Engineering Technology from the University of Toledo. His research areas involved pattern recognition and classification of objects in multidimensional spaces. Mr. Grohman has authored several journal and conference

papers on pattern recognition and data mining. He currently holds two US patents and has over 50 additional US and EU patent applications pending in the area of distributed control systems.

## **Arun Sobti**

Dr. Arun Sobti is a veteran with over 40 years in the Telecom industry. He is currently running his own consultancy – Arun Sobti & Associates, LLC. The consultancy provides its clients with recommendations on strategy, technology, operations and management – all in Telecommunications. Recently the consultancy has been advising clients on Cloud Services, mobile broadband, LTE, WiMax, media rich applications, and emerging markets. In addition the firm provides incubation services and mentoring for entrepreneurs.

Dr. Sobti was recently the CEO of Telsima, a WiMax company that he sold to Harris Stratex. Prior to that Dr. Sobti was the CEO and Chairman of IP Unity (now called Movius Interactive), which he took from an idea to a leading global company in messaging, collaboration and media servers. He is currently on the board of Movius.

Prior to joining IP Unity in Silicon Valley, Dr. Sobti was President of the Broadband Access and Network Group at ADC (\$1B). He restructured ADC's portfolio from RF analog solutions to IP based Broadband solutions. Acquisitions of the leading CMTS and ADSL companies at that time were instrumental in this conversion.

Prior to ADC, Dr. Sobti spent 24 years at Motorola where he started in research and rose through the ranks to run global businesses in Private Systems (Trunking Systems for First Responders and Land Mobile Safety Solutions), Data Solutions, Microwave Systems (Backhaul and Point to Point Systems), PC Cards and Control Centers. He was responsible for Motorola's strategy and thrust in the Third Generation (3G) of cellular and was head of the research, and global coordination of standards. He was vice chairman of the Land Mobile Section of TIA.

Dr. Sobti holds 18 issued patents and more that are in process. Some of these patents read directly on mobile devices navigating through systems with interfering signals and with

coordination of frequency reuse systems. He has published in trade journals, delivered key-note addresses at global conferences, and is often asked to speak at universities. He is on the boards of Verimatrix ( DRM and Controlled Access), Alberio (Geo-Spatial Solutions), Movius and just resigned from the board of ATIS. He is an advisor to many start-ups and funds. He was elected to the board of Trustees for the township of South Barrington and is active as an angel investor. He is a charter member of TiE and a mentor to a few start-ups.

Dr. Sobti earned his Masters and Ph.D. (Hons) from The University of Kansas and remains an advisor to the University's electrical engineering program. He lives in South Barrington, a suburb of Chicago.

### **Joe Boyd**

Joe Boyd has extensive experience consulting in business operations, marketing, sales and client services across a variety of industries, including healthcare, manufacturing, finance, telecommunications, energy, travel and information technology. Most recently, Mr. Boyd has been operating his own consulting firm. From 1990 through 2001, Mr. Boyd was employed by Perot Systems Corporation, where he rose to the level of Executive Vice President and North American Chief Operating Officer. Prior to joining Perot Corporation, Mr. Boyd worked at KPMG Peat Marwick, GTE Information Service Corporation, and EDS. Joe also has served on the boards of Healthlink Incorporated (until it was sold to IBM), OnFocus Healthcare, and MediSend International, a non-profit charity. Joe has an M.B.A. and a B.A. from Mississippi State University.

### **Stagg Newman**

Stagg Newman served as the FCC's Chief Technologist from 1997 to 2000, as the Chief Technologist on the National Broadband Plan, and most recently was a Principal at Pisgah Communications Consulting. He has also worked as a consultant at McKinsey & Company.

## **Jonathan Smith**

Jonathan M. Smith is the Olga and Alberico Pompa Professor of Engineering and Applied Science and a Professor of Computer and Information Science at the University of Pennsylvania. He served as a Program Manager at DARPA 2004-2006, and was awarded the OSD Medal for Exceptional Public Service in 2006. He is an IEEE Fellow.

His current research interests range from programmable network infrastructures and cognitive radios to disinformation theory and architectures for computer-augmented immune response.

## **Amadeus Consulting**

Airity has contracted with Amadeus Consulting (“Amadeus”) to assist with programming the database system designed by Airity, as well as to provide consulting services with respect to implementation thereof. Amadeus is a privately held corporation that has provided software development services since 1994<sup>1</sup>. The partnership with Amadeus provides Airity access to a full staff of programmers with a breadth of technical experience. Although Amadeus is assisting with programming and implementation, Airity maintains control over all aspects of the work outsourced to Amadeus (*e.g.*, Airity actively participates in the project management of all work conducted by Amadeus). Moreover, the database design is proprietary to Airity, and Airity will be solely responsible for operation and maintenance of the system once implemented.

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<sup>1</sup> Descriptions of two projects completed by Amadeus that are relevant to Airity’s business are available at <http://www.amadeusconsulting.com/TotalSecurity-Data-Collection-and-Management-Successes.aspx> and <http://www.amadeusconsulting.com/MGMA-Data-Collection-Successes.aspx>.