



ER Diagram Description:

A path represents a radio communications path with references to both the transmit and receiver locations and antennas. There is also a path_type_desc attribute that tells the type of path. A path can be uniquely identified using its unique_system_identifier. This identifier is used by the FCC to uniquely identify each license. A path has at most two associated locations, and at most two associated antennas.

A licensee represents an entity that holds a license. The licensee is identified by their licensee_id and has attributes name, email, street_address, city, and state. A licensee can own multiple paths, and each path must have a single licensee associated with it.

The location table represents a location of transmission and/or a location of reception for a path. Each entry can be identified using the associated path and location number. It has attributes location_address, location_city, location_county, and location_state.

The antenna represents the type of antenna and frequency for antennas used within a path. Each entry can be identified from its associated path and an antenna number. It has attributes antenna_type_code and frequency_assigned.

The coordinate uses a unique id to identify a set of latitude and longitude coordinates. For both latitude and longitude, we have attributes for degrees, minutes, and seconds. A location must be associated with a coordinate, and a coordinate can be associated with 0 or many locations.

Relational Schema:

Licensee(licensee_id:INT [PK], name:VARCHAR(100), email:VARCHAR(100), street_address:VARCHAR(255), city:VARCHAR(100), state:VARCHAR(20))

Path(unique_system_identifier:VARCHAR(10) [PK], path_number:int [PK], transmit_location:INT, receiver_location:INT, transmit_antenna:INT, receiver_antenna:INT, path_type_desc:VARCHAR(255), licensee_id:INT [foreign key to Licensee.licensee_id])

Location(location_number:INT [PK], unique_system_identifier:VARCHAR(10) [foreign key to Path.unique_system_identifier][PK], location_address:VARCHAR(255), location_city:VARCHAR(100), location_county:VARCHAR(100), location_state:VARCHAR(100), coordinate_id:INT [foreign key to Coordinate.id])

Antenna(antenna_number:INT [PK], unique_system_identifier:VARCHAR(10) [foreign key to Path.unique_system_identifier][PK], beamwidth:numeric(4,1), gain:numeric(4,1), height_above_avg_terrain:numeric(5,1), height_to_tip:numeric(5,1), antenna_action_performed:char(1))

Coordinate(id:INT [PK], lat_degrees:INT, lat_minutes:INT, lat_seconds:INT, long_degrees:INT, long_minutes:INT, long_seconds:INT)