PUBLIC NOTICE

Federal Communications Commission
445 12th St., S.W.
Washington, D.C. 20554

DA 15-1193
OMB Control No. 1161
October 16, 2015

WIRELESS TELECOMMUNICATIONS BUREAU ESTABLISHES ELECTRONIC MAP FORMAT FOR COVERED 700 MHz BAND LICENSEE CONSTRUCTION NOTIFICATIONS

By this Public Notice, the Wireless Telecommunications Bureau (Bureau) establishes the format for filing electronic maps associated with certain 700 MHz[1] construction notifications. Currently, Covered 700 MHz Band Licensees are required to submit notifications of construction at the interim and end-of-term construction deadlines to demonstrate compliance with performance requirements.[2] The vast majority of Covered 700 MHz Band Licensees must meet the interim benchmark by June 13, 2016, or later,[3] and have not yet filed their requisite notifications of construction. Covered 700 MHz Band Licensees filing construction notifications on or after October 16, 2015, must contain the electronics maps and other supporting documentation described in this Public Notice.

The Commission delegated the responsibility for establishing specifications for filing maps to the Bureau.[4] Effective immediately, Covered 700 MHz Band Licensee construction notifications must contain a shapefile map, a PDF map, and a technical narrative, as described below. The Bureau requires licensees to file electronic maps in the shapefile format because it allows Bureau staff to use software to rapidly compare, validate, and analyze construction notifications with accuracy and efficiency. This capability is essential to enable the Bureau to perform the review necessary to determine whether licensees comply with the unique 700 MHz Band construction requirements, which include significant consequences if not met.[5]

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[1] This electronic map filing requirement applies to 700 MHz Band licensees holding authorizations on the following blocks: Block A in the 698–704 MHz and 728–734 MHz bands, Block B in the 704–710 MHz and 734–740 MHz bands, Block E in the 722–728 MHz band, Block C in the 746–757 MHz and 776–787 MHz bands (Covered 700 MHz Band Licensees). *See* In the Matter of Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, *Second Report and Order,* 22 FCC Rcd 15289, 15352, ¶¶ 166-167 (2007) (*700 MHz Band Second Report and Order*).

[2] 47 C.F.R. §§ 1.946(d) and 27.14(k).

[3] *See* In the Matter of Promoting Interoperability in the 700 MHz Commercial Spectrum, *Report and Order and Order of Proposed Modification,* 28 FCC Rcd 15122, 15147-15148, 15151, ¶¶ 56, 64 (2013). The Commission waived the interim deadline for Lower 700 MHz Band A Block licensees that must protect Channel 51 licensees. *See id.,* 28 FCC Rcd 15122, 15151-15152, ¶ 65.

[4] *See 700 MHz Band Second Report and Order,* 22 FCC Rcd 15289, 15352, ¶ 166.

[5] If a licensee fails to provide signal coverage and offer service to the required percentage of its geographic area or population of its license authorization by its interim benchmark, that licensee's authorization will be reduced by two years and such licensee may be subject to enforcement action and may lose authority to operate in the areas where it is not providing service. *See* 47 C.F.R. §§ 27.14(g)(1); (h)(1); and (i)(1). If a licensee fails to provide signal coverage and offer service to the required percentage of its geographic area or population of its license authorization

The shapefiles format will allow staff to more readily determine where the construction notification depicts coverage of government lands[6] and specify license boundaries in the case that a licensee does not meet its final construction deadline.[7]

With respect to construction notifications pending as of the date of this Public Notice, we encourage licensees to amend their filings to include shapefiles and other required exhibits described below (if not already on file), which will expedite Commission review.

700 MHz Band Construction Notifications – Required Exhibits

To ensure construction notifications are complete, Covered 700 MHz Band Licensees must include the following with the construction notification:

- Shapefile map: an electronic coverage map that is filed in the format, and includes the content, described in Attachment A.

- PDF Map

  o Defined Geographic Service Area
  o Partitioned Area (if applicable)
  o Coverage area specifying the minimum received signal level
  o Transmitter sites
  o Distance scale (in miles)
  o Projection
  o Labeled latitude and longitude lines
  o Identify excluded Federal and/or State lands (CMA & EA Licenses)
  o Legend accurately identifying all map layers
  o Title identifying licensee name, call sign, and market designation
  o Letter size; portrait or landscape orientation
  o Resolution of 350 dpi or greater
  o If possible, create GeoPDF, which includes geographic and attribute data

- Technical narrative explaining each of the following:

  o Engineering methodology

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by the end of the license term, that licensee's authorization will terminate automatically in the areas where it is not providing service. *See* 47 C.F.R. §§ 27.14(g)(2); (h)(2); and (i)(2).

[6] 700 MHz Band licensees with a geographic service area construction benchmark are permitted to exclude government lands as part of the relevant service area when complying with geographic construction benchmarks. However, if a licensee chooses to employ a signal level and offer service to government lands, the licensee may count this land area and coverage as part of its service area for purposes of measuring compliance with the construction benchmarks, but it also must add the covered government land to the total geographic area used for measurement purposes. *See 700 MHz Band Second Report and Order,* 22 FCC Rcd 15289, 15350-51, ¶¶ 160-161; *See* 47 C.F.R. § 27.14(g).

[7] If a licensee does not provide service to the entire licensed area, the map must clearly and accurately display boundaries of areas not being served. *See 700 MHz Band Second Report and Order,* 22 FCC Rcd 15289, 15352, ¶ 167.

- o Propagation model used for prediction
- o Coverage area calculation (provide values and resulting percentage):
  1. Area covered (in sq miles)/Total market or partitioned area (in sq miles) for CMA and EA licenses; or
  2. Pops covered/Total Pops in each EA for REAG licenses.
- o Census data used (if population benchmark is required)
- o Identify data source for excluded Federal and/or State lands
- o Type of service (fixed and/or mobile)
- o Technology and bandwidth
- o If providing two-way communication services, provide the Forward and Reverse path link budget tables and assumptions including:
  1. Minimum target downlink and uplink data rates corresponding to each link budget;
  2. Minimum Signal to Interference plus Noise Ratio (SINR) for target data rates;
  3. Minimum acceptable received signal levels for target data rates in terms of Received Signal Strength Indicator (RSSI); and
  4. Maximum Allowable Path Loss (MAPL) for downlink and uplink based on the target data rates in the link budget and consistent with the coverage maps.
- o RSSI value should be used to depict signal coverage on map
- o Explanation describing how the system design supports the respective target data rates

For further information, contact **Jeremy Reynolds**, Mobility Division, Wireless Telecommunications Bureau, at (202) 418-0447, Jeremy.Reynolds@fcc.gov.

For assistance filing in ULS contact the licensing customer support at (877) 480-3201 (TTY 202-414-1255) and select Option #2, Forms or Licensing Assistance. Hours are from 8 a.m. to 6:00 p.m. Eastern Time, Monday through Friday (except Federal holidays). To provide quality service and ensure security, all telephone calls are recorded. You may also so submit requests via the web at: http://esupport.fcc.gov.

Action taken under delegated authority pursuant to Sections 0.131, 0.331, and 1.913 of the Commission's rules, 47 C.F.R. §§ 0.131, 0.331, 1.913.[8]

Action by the Chief, Mobility Division, Wireless Telecommunications Bureau.

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[8] *See also* Biennial Regulatory Review Amendments of Parts 0, 1, 13, 22, 24, 26, 27, 80, 87, 90, 95, 97 and 101 of the Commission's Rules to Facilitate the Development of the Universal Licensing System in the Wireless Telecommunications Services, *Report and Order,* 13 FCC Rcd 21037, 21094, ¶ 150 (1998); Biennial Regulatory Review Amendments of Parts 0, 1, 13, 22, 24, 26, 27, 80, 87, 90, 95, 97 and 101 of the Commission's Rules to Facilitate the Development of the Universal Licensing System in the Wireless Telecommunications Services, *Memorandum Opinion and Order on Reconsideration,* 14 FCC Rcd 11476, 11492, ¶ 41 (1999).

ATTACHMENT A

Shapefile Map Submission

Covered 700 MHz Band Licensees must submit shapefiles with construction notifications in the format (including the content) described in this attachment.

Covered 700 MHz Band Licensees must attach electronically filed GIS Map Files[9] to the construction notification in the Universal Licensing System (ULS) using compatible software and the map-file format. Shapefile maps must comply with the requirements listed in this attachment, and then <u>must be converted into a Zip-file format prior to attaching to the application</u>.[10] After a map is properly formatted, in the ULS attachment utility, use the drop-down box to select the "GIS Map Files" option. Use the "Browse" button and select the relevant zipped GIS map files. Provide a brief description of these files in the "Description" field. Click the "Add Attachment" button to upload the zipped map files to attach the map to the construction notification.

Shapefile Format

The map files must be submitted in shapefile format and include the content described in this attachment. The table structure and naming convention must be submitted as outlined below, and at a minimum, the following "Types" must be included in the submission:

Signal Coverage: The minimum acceptable received signal level used to provide signal coverage.
Format: Polygons
File Naming: Market_ Block_ Callsign__Signal_Coverage _MapDate –i.e.,
CMAxxx_A_ABCD123_signal_coverage_20150101[11]

Excluded Federal/State Government Lands: Federal/State Government Lands excluded from the geographic service area (if the licensee chooses to exclude).
Format: Polygons
File Naming: Market_ Block_ Callsign _Ex_Fed_State_Land_MapDate –i.e.,
CMAxxx_A_ABCD123_ex_fed_state_land_20150101

Transmitter Site(s): Transmitter site(s) that contribute to the signal coverage within the relevant geographic service area.
Format: Points
File Naming: Market_ Block_ Callsign _Transmit_Sites_MapDate –i.e.,
CMAxxx_A_ABCD123_transmit_sites_20150101

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[9] A shapefile is a type of GIS Map File.

[10] The Zip-file format is a data compression and archive format available in the public domain.

[11] If an ESRI product is used to produce the map files, please add region and point to the feature class (CMAxxx_A_ABCD123_signal_coverage_20150101_region and CMAxxx_A_ABCD123__transmit_sites_2015_01_01_point). If MapInfo is used to produce the map files (prior to submitting via ULS), label as above. The Universal Translator will add region and point to the end of the file name.

Data Fields

The following data fields must accompany **each** polygon/point on the map. The field names must appear in the shapefile attribute table exactly as shown below:

Signal Coverage Attributes

Field Name	Contents	Description	Type	Example
LICENSEE	Licensee Name	Name of the entity providing coverage in this area.[12]	text (200)	Eastern Wireless
FRN	FCC Registration Number	A 10-digit number that is assigned to a business or individual used to identify the registrants' business dealings with the FCC.	text (12)	0002505283
CALL_SIGN	Call Sign	A combination of letters and numbers that identify an FCC license.	text (10)	WQJU644
RS	Radio Service Code	A unique 2-letter code used in ULS to designate each wireless radio service. The valid codes are: WU - 700 MHz Upper Band (Block C) WX - 700 MHz Guard Band WY - 700 MHz Lower Band (Blocks A, B & E) WZ - 700 MHz Lower Band (Blocks C, D).	text (2)	WY
BLOCK	Channel Block	A group of channels assigned together, not individually.	text (4)	A
MARKET	Market Designation	A standard geographic area used by the FCC for administrative convenience in the licensing of systems.	text (6)	CMA323
MAP_DATE	Map Date	The date the map was created.	date	06/15/2015
TYPE	Type of GIS File	The type of GIS file. The valid code is: SC= Signal Coverage.	text (2)	SC
TECH	Technology of Transmission	Code for the technology used for the provision of service. The valid codes are: 80 WCDMA/UMTS/HSPA	numeric (2)	81

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[12] Substitute all special characters and whitespaces with underscores. There should be no leading or trailing whitespaces.

Field Name	Contents	Description	Type	Example
		81 HSPA+ 82 EVDO/EVDO Rev A 83 LTE 84 WiMAX 85 CDMA 86 GSM 87 Analog 88 Other		
MIN_DOWN	Minimum Advertised Downlink Target Data Rate	The minimum advertised downlink target data rate users should expect to receive in the coverage area, in Mbps. You may enter up to 3 places after the decimal (*e.g.*, 768 kbps would be entered as 0.768).	numeric (6,3)	3
MIN_UP	Minimum Advertised Uplink Target Data Rate	The minimum advertised uplink target data rate users should expect to transmit in the coverage area, in Mbps. You may enter up to 3 places after the decimal (*e.g.*, 768 kbps would be entered as 0.768).	numeric (6,3)	0.768
COV_AREA	Coverage Area	The licensed area in sq miles covered with a reliable signal. Rounded to the nearest 100th. For CMA & EA licenses only.	numeric (9,2)	1230.45
TOTAL_AREA	Total Area	The total licensed area in sq miles. Rounded to the nearest 100th. For CMA & EA licenses only.	numeric (9,2)	2543.62
PCCOV_AREA	Percentage of Area Covered	Percent of area covered with a reliable signal. Rounded to the nearest 10th.	numeric (4,1)	73.2
POP_COV	Population Covered	The 2010 population covered with a reliable signal. Per EA for REAG licenses only.	numeric (9)	54231
TOTAL_POP	Total Population	The total population of the market in which service is being provided using 2010 census. Per EA for REAG licenses only.	numeric (9)	79589
PCPOP_COV	Percentage of Population Covered	Percentage of 2010 population covered with a reliable signal. Rounded to the nearest 10th.	numeric (4,1)	67.4

Field Name	Contents	Description	Type	Example
LAT_DD	Latitude in Decimal Degrees	The latitude associated with the polygon, point, or polyline.	numeric (10,6)	45.567823
LON_DD	Longitude in Decimal Degrees	The longitude associated with the polygon, point, or polyline.	numeric (10,6)	-120.568234

Federal/State Government Land Attributes

Field Name	Contents	Description	Type	Example
LICENSEE	Licensee Name	Name of the entity providing coverage in this area.	text (200)	Eastern Wireless
FRN	FCC Registration Number	A 10-digit number that is assigned to a business or individual used to identify the registrants' business dealings with the FCC.	text (12)	0002505283
CALL_SIGN	Call Sign	A combination of letters and numbers that identify an FCC license.	text (10)	WQJU644
RS	Radio Service Code	A unique 2-letter code used in ULS to designate each wireless radio service. The valid codes are: WU - 700 MHz Upper Band (Block C) WX - 700 MHz Guard Band WY - 700 MHz Lower Band (Blocks A, B & E) WZ - 700 MHz Lower Band (Blocks C, D).	text (2)	WY
BLOCK	Channel Block	A group of channels assigned together, not individually.	text (4)	A
MARKET	Market Designation	A standard geographic area used by the FCC for administrative convenience in the licensing of systems.	text (6)	CMA323
MAP_DATE	Map Date	The date the map was created.	date	06/15/2015
TYPE	Type of GIS File	The type of GIS file The valid codes are: F=Federal Government Land S=State Government Land.	text (2)	F
DES_NAME	Designation Name	The name of the Federal and/or State government land being excluded.	text (200)	Navy DOD
GIS_SOURCE	GIS Source	The source of Federal and/or State government lands being	text (200)	DOA

Field Name	Contents	Description	Type	Example
		excluded.		
DAT_SOURCE	Date Source	The year of the source used for Federal and/or State government lands.	text (4)	2007
GOV_AREA	Government Area	The Federal and/or State government land area in square miles being excluded from the total market area. For CMA and EA licenses only.	numeric (10)	278

Transmitter Site Attributes

Field Name	Contents	Description	Type	Example
LICENSEE	Licensee Name	Name of the entity providing coverage in this area.	text (200)	Eastern Wireless
FRN	FCC Registration Number	A 10-digit number that is assigned to a business or individual used to identify the registrants' business dealings with the FCC.	text (12)	0002505283
CALL_SIGN	Call Sign	A combination of letters and numbers that identify an FCC license.	text (10)	WQJU644
RS	Radio Service Code	A unique 2-letter code used in ULS to designate each wireless radio service. The valid codes are: WU - 700 MHz Upper Band (Block C) WX - 700 MHz Guard Band WY - 700 MHz Lower Band (Blocks A, B & E) WZ - 700 MHz Lower Band (Blocks C, D).	text (2)	WY
BLOCK	Channel Block	A group of channels assigned together, not individually.	text (4)	A
MARKET	Market Designation	A standard geographic area used by the FCC for administrative convenience in the licensing of systems.	text (6)	CMA323
MAP_DATE	Map Date	The date the map was created.	date	06/15/2015
TYPE	Type of GIS File	The type of GIS file. The valid code is: T=Transmitter Sites.	text (2)	T
LAT_DD	Latitude in Decimal	The latitude associated with the polygon, point, or	numeric (10,6)	45.567823

Field Name	Contents	Description	Type	Example
	Degrees	polyline.		
LON_DD	Longitude in Decimal Degrees	The longitude associated with the polygon, point, or polyline.	numeric (10,6)	-120.568234

Standards

1. Templates and market based boundary files related to the 700 MHz Band service can be found at https://drupaladmin.fcc.gov/encyclopedia/700-mhz-construction-notification-requirements.

2. All map areas must be closed, non-overlapping polygons with a single, unique identifier. If available, run ESRI geoprocessing tool "Repair Geometry" before submitting the shapefile.

3. The shapefile must have an assigned projection with an accompanying .prj file.

4. The shapefile must use WGS_1984_Web_Mercator_Auxiliary_Sphere geographic coordinate system. If not available, then use WGS 1984.

5. The coverage boundaries must have a resolution of 10 meters (approximately three arc-seconds) or better. An arc-second represents the distance of latitude or longitude traversed on the earth's surface while traveling one second (1/3600th of a degree). *See* ESRI Explanation of Measuring in Arc-Seconds. Three arc-seconds is a common resolution of terrain databases. *See* USGS Standards for Digital Elevation Models, Part 1-General, at 1-2, 1-4.

6. Shapefile must be submitted as a *.zip file, which includes SHP, SHX, DBF, and PRJ files type. Multiple shapefiles can be combined into a single zip and uploaded via the attachment module with a program like WinZip or in Windows by selecting the files associated with a shapefile, right-clicking the files, then clicking **"Send to"** then **"Compressed (zipped) folder."**

7. In addition to the shapefile, each submitted *.zip file must include metadata (XML file type) or a plain text "readme" file (TXT file type; the filename must be the same as the shapefile name) that contains a comprehensive explanation of the methodology employed to generate the map layer including any necessary assumptions and an accuracy assessment of the finished product. Although not required, FCC prefers to receive geospatial metadata in the ISO 191** series standards, which includes ISO 19115 and ISO 19139 among others. *See* https://www.fgdc.gov/metadata/geospatial-metadata-tools. http://help.arcgis.com/en/arcgisdesktop/10.0/help/index.html#/Choosing_a_metadata_style/003t00000009000000/. If metadata tools are not implemented, then please provide the following information along with the methodology: core library catalog elements such as Title, Abstract, and Publication Data; geographic elements such as Geographic Extent and Projection Information; and database elements such as Attribute Label Definitions and Attribute Domain Values.

Accessing and Using GIS Map Files

The map files are provided in shapefile format which is compatible with ArcExplorer® produced by ESRI. (Other viewer options compatible with the shapefile format can be used as well.) To get started, download and install an appropriate software package. For example: *ArcExplorer*® can be downloaded from the ESRI download page. To learn more about *ArcExplorer*®, visit the ESRI site. Questions and technical support for the program should be directed to ArcExplorer Support.