



# Telecommunication Tower Checklist RF Engineer Data Requirement for Review

Development/Project Name \_\_\_\_\_

Date: \_\_\_\_\_

## I. Legal

Y N N/A

- A. A statement of actual license data including call sign, area and licensee as listed in the FCC records.
- B. The applicant's d/b/a names and locations.
- C. The FAA study number (if over 200', to be illuminated, or within five miles of a public airport).
- D. The FCC registration number if applicable.

## II. Location

- A. A topographic map with the location of the TOWER clearly marked.
- B. The geographic coordinates given including a statement how they were determined e.g. surveyor, from a USGS topographic map or by differential GPS. Note a standard GPS reading is normally not accurate enough without extensive time averaging.
- C. The datum for the coordinates. Normally it will be NAD 83 but can be NAD 27 especially when FCC data is used for the submittal.
- D. The street address of the site.
- E. A property survey.

## III. Structure

- A. Height
  - 1. The overall height above ground level (AGL) including lighting and lightning rods.
  - 2. The height of tower structure (excluding lighting and lightning rods).
  - 3. Location and description of any residential accessory structures.
- B. Sketch of Structure
  - 1. The applicant's location on the tower.
  - 2. Plan and elevation views, location of hardware such as antennas, feedlines, combiners and amplifiers.
  - 3. Sketches that are either to scale or labeled.
  - 4. The orientation to the North marked.
  - 5. Plans sealed by registered engineer
    - Construction Plans if applicable
    - Geotechnical Plans if applicable
    - Soil Boring Logs if applicable
- C. Type of Structure
  - 1. Monopole.
  - 2. Guyed lattice.

- 3. Self-supporting lattice.
- 4. Water tank.
- 5. Building.
- 6. Alternative tower structure.

D. Design-Plans

- 1. A complete set of drawings including calculations, names and versions of the engineering software used and a statement of all assumptions and methods used to drive the proposed design.
- 2. Technical System Design Parameters  
Provide the following information for the proposed communication site and the closet existing communications sites to the north, south, east and west of the proposed site:
  - a. Antenna make and model
  - b. Antenna centerline mounting height
  - c. Antenna azimuths
  - d. Licensed ERP
  - e. Licensed frequency(s) of operation
  - f. System technology
  - g. Required signal level(s) for system operation
  - h. Subscriber unit specifications

E. Certification by Professional Engineer

- 1. A statement that the engineer is in good standing and is licensed to practice Professional Engineering in-State.
- 2. A statement that the tower is designed for co-location indicating the number of potential co-locaters.
- 3. A statement of the specific standards used to qualify the structure i.e. ASCE -7-88, ASCE -7-95, TIA/EIA standard 222-F.
- 4. A statement that the structure is designed so that debris will fall only on the site.
- 5. A narrative of the method(s) used to confine the debris, e.g. 100% setback, guying schemes.
- 6. The name, date, title and registration number of the engineer.
- 7. The signature of the engineer.
- 8. A map marked with the height(s), orientation(s) and gain(s) of each antenna.
- 9. Maps depicting the contours of adjacent sites along with proposed.
- 10. The model type e.g. Wizard, Planet, date and outcome of validation for the area.
- 11. In cases where a controversy is likely to arise over the tower, narrative statement stating the factors for various demographics such as the assumed C/I for rural, suburban and dense urban.

F. Drive Test data

*[May be submitted in lieu of Propagation Plots]*

- 1. Scaling (if presented in map format).
  - a. A scale of distance.
  - b. A scale of measured parameters, e.g. dBuV/m, dBm.

- 2. The number of passes, period of time e.g. 30 days, daypart e.g. five to six p.m., mid-morning.
- 3. The degree of agreement (in percentage) between drive test data and predicted values.
- 4. A list of any non-functioning or abnormally transmitters during the tests.

G. System Standards

- 1. State which standard is used e.g. AMPS (analog), CDMA, GSM, TDA, etc.
- 2. Give the Authorized Band, e.g. 800 MHz, 1900 MHz.
- 3. State the class of service e.g. ESMR, Cellular, PCS.

IV. Microwave Links *(if used to justify tower height or location)*

- A. The link budget for each path, power inventory, fade margin and path analysis.
- B. The proposed heights of dishes or horns, operating band and modulation type.
- C. The path analysis for elevations ten, twenty, and forty percent below proposed height.
- D. The assumed Fresnal clearance.
- E. The alternative pathways analyzed depicted on a 7.5" USGS Quad.
- F. The maps showing path analysis for the proposed and alternate sites.

V. Broadcast Service

- A. An area-to-locate map showing the proposed site.
- B. The latest engineering filing (application) with the FCC.
- C. The latest authorization issued by the FCC.
- D. The environmental Impact Statement required by the FCC.

VI. RF Radiation

*(This section is to be completed when the structure is less than fifty feet above ground, supports or is a broadcast antenna, or is mounted on an occupied building.)*

- A. The orientation, ERP and beam width of antenna(s).
- B. A statement of when and by which method the applicant predicted the amount of non-ionizing radiation. If the method was by actual measurement provide details concerning coordination to insure that all transmitters were operating at the same time. Provide make, model and serial number of equipment used. Describe method calibration and obtaining data. If the method was by calculation, give the relevant equations and their source(s) i.e. FCC OET 65.
- C. The percentage that the maximum radiation for the site is at the closest public access point to the maximum allowable limit set forth in OET Bulletin 65 August of 1997 or latest revision for the general population.

VII. Certification by RF Engineer

- A. The name, date and title of the RF Engineer
- B. A statement that the facts in the application have been reviewed by the engineer personally and are correct to the best of their knowledge.
- C. The RF engineer's signature.