

February 7, 2017

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification
21 East Main Street (a/k/a 1 Central Square), Plainville, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the top of the existing 81-foot tower at 21 East Main Street (a/k/a 1 Central Square) in Plainville, Connecticut (the “Property”). The tower and underlying property are owned by the Town of Plainville. The Council approved Cellco’s shared use of this tower in 2004. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700/2100 MHz antennas and three (3) model SBNHH-1D65B, 1900 MHz antennas, all at the same level on the tower. Cellco also intends to replace three (3) remote radio heads (“RRHs”) and install six (6) new RRHs, behind its antennas and install one (1) new HYBRIFLEX™ antenna cable. Included in Attachment 1 are specifications for the replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Plainville Town Council and Robert E. Lee, Plainville Town Manager. A copy of this letter is also being sent to Mark S. DeVoe, Director of Planning and Economic Development for the Town Plainville.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas and RRHs will be located at the top of the existing 81-foot tower.

16123961-v1

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2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for each of Cellco's operating frequencies are included behind Attachment 2. The Far Field calculations demonstrate that Cellco's modified facility will operate well within the RF emissions limits established by the FCC.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The tower and its foundation can support Cellco's proposed modifications. (*See Structural Analysis Report included in Attachment 3*).

A copy of the Plainville Assessor's Parcel Map and property owner information is included in Attachment 4.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Robert E. Lee, Plainville Town Manager
Mark S. DeVoe, Plainville Director of Planning and Economic Development
Tim Parks

ATTACHMENT 1



SBNHH-1D65B

Multiband Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

| Frequency Band, MHz | 698–806 | 806–896 | 1695–1880 | 1850–1990 | 1920–2200 | 2300–2360 |
|--------------------------------------|------------|------------|------------|------------|------------|------------|
| Gain, dBi | 14.9 | 14.7 | 17.7 | 18.2 | 18.6 | 18.6 |
| Beamwidth, Horizontal, degrees | 68 | 66 | 69 | 66 | 63 | 58 |
| Beamwidth, Vertical, degrees | 12.1 | 10.7 | 5.6 | 5.2 | 5.0 | 4.5 |
| Beam Tilt, degrees | 0–14 | 0–14 | 0–7 | 0–7 | 0–7 | 0–7 |
| USLS (First Lobe), dB | 14 | 13 | 15 | 15 | 15 | 13 |
| Front-to-Back Ratio at 180°, dB | 27 | 29 | 28 | 28 | 28 | 27 |
| Isolation, dB | 25 | 25 | 25 | 25 | 25 | 25 |
| Isolation, Intersystem, dB | 30 | 30 | 30 | 30 | 30 | 30 |
| VSWR Return Loss, dB | 1.5 14.0 | 1.5 14.0 | 1.5 14.0 | 1.5 14.0 | 1.5 14.0 | 1.5 14.0 |
| PIM, 3rd Order, 2 x 20 W, dBc | -153 | -153 | -153 | -153 | -153 | -153 |
| Input Power per Port, maximum, watts | 350 | 350 | 350 | 350 | 350 | 300 |
| Polarization | ±45° | ±45° | ±45° | ±45° | ±45° | ±45° |
| Impedance | 50 ohm | 50 ohm | 50 ohm | 50 ohm | 50 ohm | 50 ohm |

Electrical Specifications, BASTA*

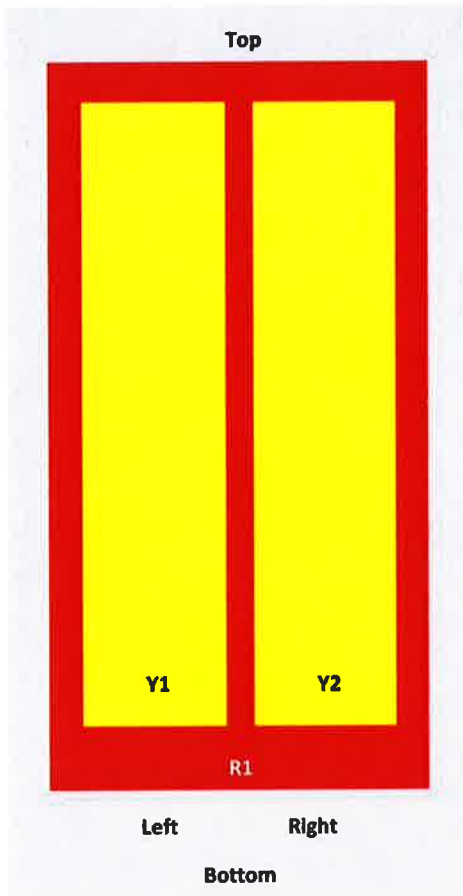
| Frequency Band, MHz | 698–806 | 806–896 | 1695–1880 | 1850–1990 | 1920–2200 | 2300–2360 |
|---|------------|------------|-----------|-----------|-----------|-----------|
| Gain by all Beam Tilts, average, dBi | 14.5 | 14.3 | 17.4 | 17.9 | 18.2 | 18.3 |
| Gain by all Beam Tilts Tolerance, dB | ±0.5 | ±0.8 | ±0.4 | ±0.3 | ±0.5 | ±0.3 |
| Gain by Beam Tilt, average, dBi | 0° 14.6 | 0° 14.5 | 0° 17.4 | 0° 17.8 | 0° 18.1 | 0° 18.2 |
| | 7° 14.6 | 7° 14.4 | 3° 17.5 | 3° 17.9 | 3° 18.3 | 3° 18.4 |
| | 14° 14.2 | 14° 13.6 | 7° 17.4 | 7° 17.9 | 7° 18.2 | 7° 18.4 |
| Beamwidth, Horizontal Tolerance, degrees | ±2.2 | ±3.4 | ±2 | ±4.6 | ±5.7 | ±4.3 |
| Beamwidth, Vertical Tolerance, degrees | ±0.8 | ±1 | ±0.3 | ±0.2 | ±0.3 | ±0.2 |
| USLS, beampeak to 20° above beampeak, dB | 16 | 14 | 16 | 16 | 16 | 15 |
| Front-to-Back Total Power at 180° ± 30°, dB | 25 | 26 | 27 | 26 | 26 | 26 |
| CPR at Boresight, dB | 22 | 23 | 21 | 20 | 20 | 22 |
| CPR at Sector, dB | 13 | 11 | 16 | 12 | 11 | 4 |

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

Array Layout

SBNHH-1D65B

SBNHH 65



| Array | Freq (MHz) | Coors | RET (MRET) | AISG RET UID |
|-------|------------|-------|------------|-----------------------|
| R1 | 698-896 | 1-2 | 1 | ANXXXXXXXXXXXXXXXXX.1 |
| Y1 | 1695-2360 | 3-4 | 2 | ANXXXXXXXXXXXXXXXXX.2 |
| Y2 | 1695-2360 | 5-6 | | |

View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

General Specifications

| | |
|--------------------------|---------------------------------|
| Operating Frequency Band | 1695 – 2360 MHz 698 – 896 MHz |
| Antenna Type | Sector |
| Band | Multiband |
| Performance Note | Outdoor usage |

Mechanical Specifications

| | |
|----------------------------------|-----------------|
| RF Connector Quantity, total | 6 |
| RF Connector Quantity, low band | 2 |
| RF Connector Quantity, high band | 4 |
| RF Connector Interface | 7-16 DIN Female |

SBNHH-1D65B

| | |
|-----------------------|--|
| Color | Light gray |
| Grounding Type | RF connector inner conductor and body grounded to reflector and mounting bracket |
| Radiator Material | Aluminum Low loss circuit board |
| Radome Material | Fiberglass, UV resistant |
| Reflector Material | Aluminum |
| RF Connector Location | Bottom |
| Wind Loading, frontal | 618.0 N @ 150 km/h 138.9 lbf @ 150 km/h |
| Wind Loading, lateral | 197.0 N @ 150 km/h 44.3 lbf @ 150 km/h |
| Wind Loading, rear | 728.0 N @ 150 km/h 163.7 lbf @ 150 km/h |
| Wind Speed, maximum | 241 km/h 150 mph |

Dimensions

| | |
|----------------------------------|---------------------|
| Length | 1851.0 mm 72.9 in |
| Width | 301.0 mm 11.9 in |
| Depth | 180.0 mm 7.1 in |
| Net Weight, without mounting kit | 18.4 kg 40.6 lb |

Remote Electrical Tilt (RET) Information

| | |
|---|-----------------------------------|
| Input Voltage | 10–30 Vdc |
| Internal RET | High band (1) Low band (1) |
| Power Consumption, idle state, maximum | 2.0 W |
| Power Consumption, normal conditions, maximum | 13.0 W |
| Protocol | 3GPP/AISG 2.0 (Multi-RET) |
| RET Interface | 8-pin DIN Female 8-pin DIN Male |
| RET Interface, quantity | 1 female 1 male |

Packed Dimensions

| | |
|-----------------|---------------------|
| Length | 2025.0 mm 79.7 in |
| Width | 390.0 mm 15.4 in |
| Depth | 296.0 mm 11.7 in |
| Shipping Weight | 31.0 kg 68.3 lb |

Regulatory Compliance/Certifications

| | |
|----------------------------|--|
| Agency | Classification |
| RoHS 2011/65/EU | Compliant by Exemption |
| China RoHS SJ/T 11364-2006 | Above Maximum Concentration Value (MCV) |
| ISO 9001:2008 | Designed, manufactured and/or distributed under this quality management system |



SBNHH-1D65B

Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.



The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

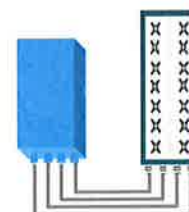
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R
or
2x60W with 2T4R
Can be switched between
modes via SW w/o site
visit

TECHNICAL SPECIFICATIONS

| Features & performance | |
|--|---|
| Number of TX/RX paths | 4 duplexed (either 4T4R or 2T4R by SW) |
| Frequency band | U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz |
| Instantaneous bandwidth - #carriers | 10MHz – 1 LTE carrier (in 10MHz occupied bandwidth) |
| LTE carrier bandwidth | 10 MHz |
| RF output power | 2x60W or 4x30W (by SW) |
| Noise figure – RX Diversity scheme | 2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity |
| Sizes (HxWxD) in mm (in.) | 550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield) |
| Volume in L | 38 (with solar shield) |
| Weight in kg (lb) (w/o mounting HW) | 26 (57.2) (with solar shield) |
| DC voltage range | -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption |
| DC power consumption | 550W typical @100% RF load (In 2Tx or 4TX mode) |
| Environmental conditions | -40°C (-40°F) / +55°C (+131°F) IP65 |
| Wind load (@150km/h or 93mph) | Frontal:<200N / Lateral :<150N |
| Antenna ports | 4 ports 7/16 DIN female (50 ohms) VSWR < 1.5 |
| CPRI ports | 2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber |
| AISG interfaces | 1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2) |
| Misc. Interfaces | 4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins) |
| Installation conditions | Pole and wall mounting |
| Regulatory compliance | 3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 |

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ALCATEL-LUCENT B25 RRH4X30

Alcatel-Lucent Band 25 Remote Radio Head 4x30W is the new addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B25 RRH4x30 allows operators to have a compact radio solution to deploy LTE in the PCS band (1.9 GHz, 3GPP band 25), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B25 RRH4x30 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity, LTE carriers from 3 MHz up to 20 MHz and up to 65 MHz instantaneous bandwidth.

The Alcatel-Lucent B25 RRH4x30 is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

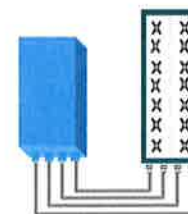


FEATURES

- Supporting LTE in 1.9 GHz band (PCS, 3GPP band 2 & 25)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- Ready for 3, 5, 10, 15 or 20MHz LTE carrier operation with 4Rx Diversity
- Ready to support up to 4 carriers anywhere in 65MHz instantaneous bandwidth
- Convection-cooled (fan-less)
- Supports AISG 2.0 devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in PCS band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Full flexibility for multiple carriers operation over entire PCS spectrum
- Improves downlink spectral efficiency and cell edge throughput through MIMO4
- Increases LTE coverage thanks to 4-way Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options (Pole or Wall)



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between modes via SW w/o site visit

TECHNICAL SPECIFICATIONS

| Features & performance | |
|---|--|
| Number of TX/RX paths | 4 duplexed (either 4T4R or 2T4R by SW) |
| Frequency band | 3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz |
| Instantaneous bandwidth - #carriers | 65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth) |
| LTE carrier bandwidth | 3, 5, 10, 15 or 20 MHz |
| RF output power | 2x60W or 4x30W (by SW) |
| Noise figure (3GPP band 2) | 2.0 dB typ. (<2.5 dB max) |
| RX Diversity scheme | 2 or 4 way Rx diversity |
| Sizes (HxWxD)(w/ solar shield) in mm (in.) | 538 x 304 x 182 (21.2" x 12.0" x 7.2") |
| Volume (w/ solar shield) in L | 30 |
| Weight (w/ solar shield) in kg (lb) | 24 (53) |
| DC voltage range | -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption |
| DC power consumption | 580W typical @100% RF load |
| Environmental conditions | -40°C (-40°F) / +55°C (+131°F) IP65 |
| Wind load (@150km/h or 93mph) | Frontal: <200N / Lateral : <150N |
| Antenna ports | 4 ports 7/16 DIN female (50 ohms) VSWR < 1.5 (> 14dB) |
| CPRI ports | 2 CPRI ports (HW ready for Rate7 / 9.8 Gbps) |
| AISG interfaces | 1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2) |
| Misc. Interfaces | 1 external alarms connector (4 alarms) 4 RF Tx & 4 RF Rx monitor ports 1 DC connector (2 pins) |
| Installation conditions | Pole and wall mounting |
| Regulatory compliance | 3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 |

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ALCATEL-LUCENT B66A RRH4X45

The Alcatel-Lucent B66a Remote Radio Head 4x45 is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering. Its operational range covers beyond that of B4 (AWS) and B10 (AWS+).

Supporting 2Tx/4Tx MIMO and 2-way/4-way Rx diversity, the Alcatel-Lucent B66a RRH4x45 allows operators to have a compact radio solution to deploy LTE in the 2100 band (3GPP band 4, 10, and 66), providing them with the means to achieve high capacity, high quality, high reliability, large instantaneous bandwidth, and high coverage with minimum site requirements.

The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.



The Alcatel-Lucent B66a RRH4x45 is a compact (near zero-footprint) solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

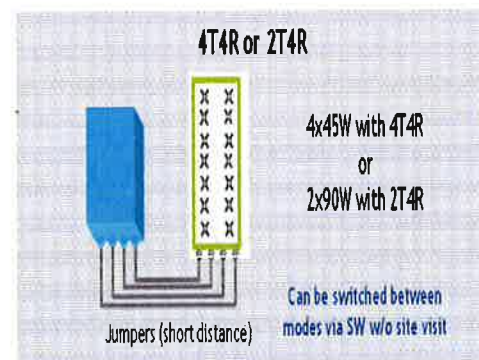
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 2110 - 2180 MHz band/DL, 1710-1780MHz/UL (3GPP band 4, 10, and 66a)
- LTE 2Tx or 4Tx MIMO (SW selectable)
- Configuration: 2T2R/2T4R/4T4R
- Output power: Up to 2x90W or 4x45W (SW configurable)
- 70MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in AWS 1-3 band
- Selection of MIMO configuration (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through 4Tx MIMO
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



TECHNICAL SPECIFICATIONS

| Features & Performance | |
|---|--|
| Number of TX/RX paths | 4 duplexed (either 4T4R or 2T4R selectable by SW) |
| Frequency band | AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz |
| Instantaneous bandwidth - #carriers | 70 MHz – 4 LTE MIMO carriers (in 70 MHz occupied bandwidth) |
| LTE carrier bandwidth | 5, 10, 15, 20 MHz |
| RF output power | 2x90W or 4x45W (selectable by SW) |
| Noise figure – RX Diversity scheme Receiver Sensivity (FRC A1-3) | 2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum |
| Sizes (HxWxD) in mm (in.) | 655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield) |
| Volume in Liters | 35.5 (with solar shield) 29.7 (without solar shield) |
| Weight in kg (lb) (w/o mounting HW) | 25.8kg (56.8lb) (with solar shield) |
| DC voltage range | Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption |
| DC power consumption | 750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG |
| Environmental conditions | -40°C (-40°F) / +55°C (+131°F) UL50E Type 4 Enclosure |
| Wind load (@150km/h or 93mph) | 250N (56lb) Frontal/150N (34lb) Lateral |
| Antenna ports | 4 ports 4.3-10 female (50 ohms) VSWR < 1.5 |
| CPRI ports | 2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF) |
| AISG interfaces | 1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2) |
| Misc. Interfaces | 4 external alarms (1 connector) 1 DC connector (2 pins) |
| Installation conditions | Pole and wall mounting |
| Regulatory compliance | 3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE |

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HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics - minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding - Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design - Decreases tower loading
- Robust cabling - Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH - Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable - Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket - Ensures long-lasting cable protection

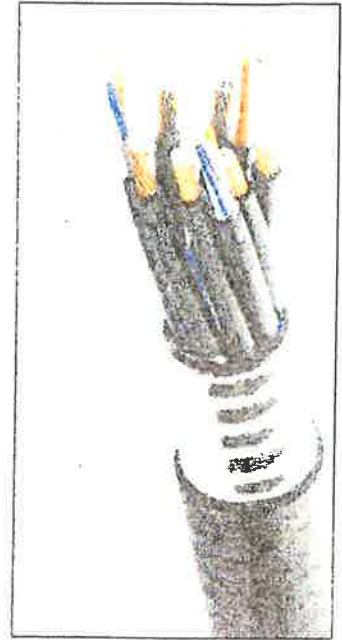


Figure 1: HYBRIFLEX Series

Technical Specifications

| | | | |
|--|--------------------------------|-------------------|---|
| Outer Conductor Armor | Corrugated Aluminum | [mm (in)] | 46.5 (1.83) |
| Jacket | Polyethylene, PE | [mm (in)] | 50.3 (1.98) |
| UV-Protection | Individual and External Jacket | | Yes |
| Weight and Dimensions | | | |
| Weight, Approximate | | [kg/m (lb/ft)] | 1.9 (1.30) |
| Minimum Bending Radius, Single Bending | | [mm (in)] | 200 (8) |
| Minimum Bending Radius, Repeated Bending | | [mm (in)] | 500 (20) |
| Recommended/Maximum Clamp Spacing | | [m (ft)] | 1.0 / 1.2 (3.25 / 4.0) |
| Electrical Properties | | | |
| DC-Resistance Outer Conductor Armor | | [Ω/km (Ω/1000ft)] | 068 (0.205) |
| DC-Resistance Power Cable, 8.4mm²(8AWG) | | [Ω/km (Ω/1000ft)] | 2.1 (0.307) |
| Optical Properties | | | |
| Version | | | Single-mode OM3 |
| Quantity, Fiber Count | | | 16 (8 pairs) |
| Core/Clad | | [μm] | 50/125 |
| Primary Coating (Acrylate) | | [μm] | 245 |
| Buffer Diameter, Nominal | | [μm] | 900 |
| Secondary Protection, Jacket, Nominal | | [mm (in)] | 2.0 (0.08) |
| Minimum Bending Radius | | [mm (in)] | 104 (4.1) |
| Insertion Loss @ wavelength 850nm | | dB/km | 3.0 |
| Insertion Loss @ wavelength 1310nm | | dB/km | 1.0 |
| Standards (Meets or exceeds) | | | UL94-V0, UL1666 RoHS Compliant |
| Optical Cable Construction | | | |
| Size (Power) | | [mm (AWG)] | 8.4 (8) |
| Quantity, Wire Count (Power) | | | 16 (8 pairs) |
| Size (Alarm) | | [mm (AWG)] | 0.8 (18) |
| Quantity, Wire Count (Alarm) | | | 4 (2 pairs) |
| Type | | | UV protected |
| Strands | | | 19 |
| Primary Jacket Diameter, Nominal | | [mm (in)] | 6.8 (0.27) |
| Standards (Meets or exceeds) | | | NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant |
| Operating Conditions | | | |
| Installation Temperature | | [°C (°F)] | -40 to +65 (-40 to 149) |
| Operation Temperature | | [°C (°F)] | -40 to +65 (-40 to 149) |

* This data is provisional and subject to change

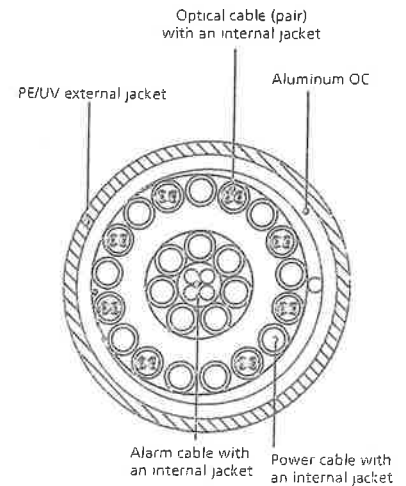


Figure 2: Construction Detail

All information contained in the present datasheet is subject to confirmation at time of ordering.

ATTACHMENT 2

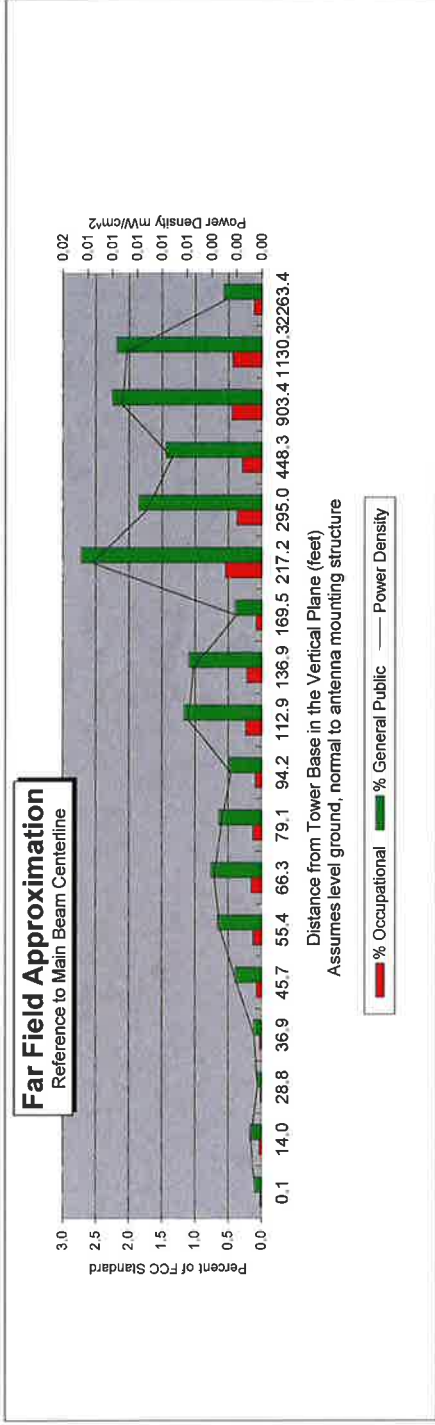
Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



| | |
|------------|-----------------------------|
| Location: | PLAINVILLE 3, CT |
| Site #: | |
| Date: | 02/03/17 |
| Name: | Mark Brauer |
| File Name: | Plainville 3, CT - FF Power |

| | |
|-----------------------|--------|
| Operating Freq. (MHz) | 746.0 |
| Antenna Height (ft) | 82.0 |
| Antenna Gain (dBi) | 14.8 |
| Antenna Size (in.) | 72.0 |
| Downtilt (degrees) | 0.0 |
| Feedline Loss (dB) | 0.0 |
| Power @ J4 (w) | 2200.0 |
| Number of Channels | 1 |



| | 90.0 | 80.0 | 70.0 | 65.0 | 60.0 | 55.0 | 50.0 | 45.0 | 40.0 | 35.0 | 30.0 | 25.0 | 20.0 | 15.0 | 10.0 | 5.0 | 4.0 | 2.0 |
|--|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| Calc. Angle | 79.0 | 80.2 | 84.1 | 87.2 | 91.2 | 96.5 | 103.2 | 111.8 | 123.0 | 137.8 | 158.1 | 187.0 | 231.1 | 305.4 | 455.2 | 906.9 | 1133.1 | 2264.8 |
| Solve for r, dx to antenna | | | | | | | | | | | | | | | | | | |
| Distance from Antenna Structure Base in Horizontal plane | 0.1 | 14.0 | 28.8 | 36.9 | 45.7 | 55.4 | 66.3 | 79.1 | 94.2 | 112.9 | 136.9 | 169.5 | 217.2 | 295.0 | 448.3 | 903.4 | 1130.3 | 2263.4 |
| Angle from Main Beam (reference to horizontal plane) | 90 | 80 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 4 | 2 |
| dB down from centerline (referenced to centerline) | 36.76 | 34.35 | 38.52 | 35.34 | 29.54 | 26.8 | 25.59 | 25.63 | 25.99 | 21.21 | 20.29 | 23.24 | 13.03 | 12.3 | 9.92 | 2 | 0.2 | 0 |
| Reflection Coefficient (1 to 4, 2.56 typical) | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 |
| Power Density (mW/cm ²) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 |
| Percent of Occupational Standard | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.5 | 0.4 | 0.3 | 0.4 | 0.4 | 0.1 |
| Percent of General Population Standard | 0.1 | 0.2 | 0.1 | 0.1 | 0.4 | 0.7 | 0.8 | 0.6 | 0.5 | 1.2 | 1.1 | 0.4 | 2.7 | 1.9 | 1.4 | 2.2 | 2.2 | 0.6 |

Antenna Type: SBNHH-1D65B
Max%: 2.73%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power.
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

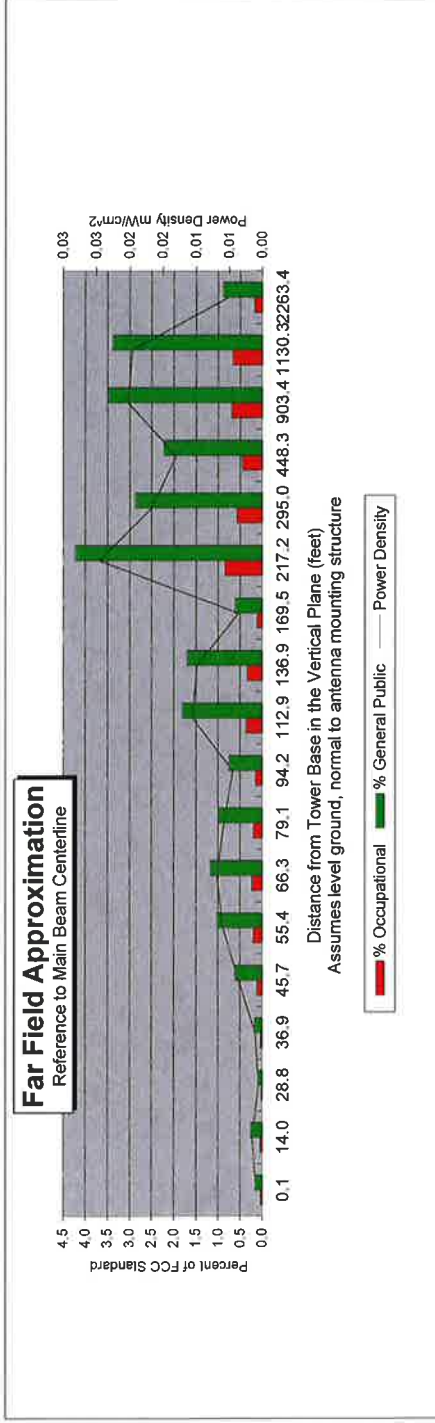
Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



| | |
|------------|-----------------------------|
| Location: | PLAINVILLE 3, CT |
| Site #: | |
| Date: | 02/03/17 |
| Name: | Mark Brauer |
| File Name: | Plainville 3, CT - FF Power |

| | |
|-----------------------|--------|
| Operating Freq. (MHz) | 869.0 |
| Antenna Height (ft): | 82.0 |
| Antenna Gain (dBi): | 15.0 |
| Antenna Size (in.): | 48.0 |
| Downtilt (degrees): | 0.0 |
| Feedline Loss (dB): | 0.0 |
| Power @ J4 (w): | 3795.0 |
| Number of Channels | 9 |



| Calc Angle | 90.0 | 80.0 | 70.0 | 65.0 | 60.0 | 55.0 | 50.0 | 45.0 | 40.0 | 35.0 | 30.0 | 25.0 | 20.0 | 15.0 | 10.0 | 5.0 | 4.0 | 2.0 |
|--|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| Solve for r. dx to antenna | 79.0 | 80.2 | 84.1 | 87.2 | 91.2 | 96.5 | 103.2 | 111.8 | 123.0 | 137.8 | 158.1 | 187.0 | 231.1 | 305.4 | 455.2 | 906.9 | 1133.1 | 2264.8 |
| Distance from Antenna Structure Base in Horizontal plane | 0.1 | 14.0 | 28.8 | 36.9 | 45.7 | 55.4 | 66.3 | 79.1 | 94.2 | 112.9 | 136.9 | 169.5 | 217.2 | 295.0 | 448.3 | 903.4 | 1130.3 | 2263.4 |
| Angle from Main Beam (reference to horizontal plane) | 90 | 80 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 4 | 2 |
| dB down from centerline (referenced to centerline) | 36.76 | 34.35 | 38.52 | 35.34 | 29.54 | 26.8 | 25.59 | 25.63 | 25.99 | 21.21 | 20.29 | 23.24 | 13.03 | 12.3 | 9.92 | 2 | 0.2 | 0 |
| Reflection Coefficient (1 to 4, 2.56 typical) | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 |
| Power Density (mW/cm²) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | 0.01 |
| Percent of Occupational Standard | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.3 | 0.1 | 0.8 | 0.6 | 0.4 | 0.7 | 0.7 | 0.2 |
| Percent of General Population Standard | 0.2 | 0.3 | 0.1 | 0.2 | 0.6 | 1.0 | 1.2 | 1.0 | 0.8 | 1.8 | 1.7 | 0.6 | 4.2 | 2.9 | 2.2 | 3.5 | 3.4 | 0.9 |

Distance in feet below:

Antenna Type BXA-70063-4CF
Max% 4.24%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pov
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

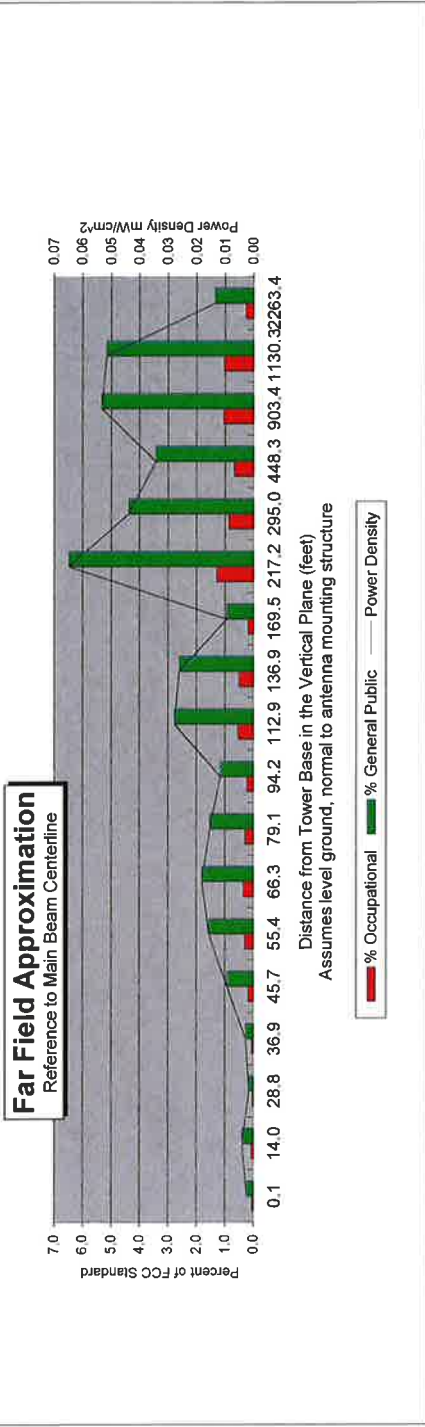
Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



| | |
|------------|-----------------------------|
| Location: | PLAINVILLE 3, CT |
| Site #: | |
| Date: | 02/03/17 |
| Name: | Mark Brauer |
| File Name: | Plainville 3, CT - FF Power |

| | |
|-----------------------|--------|
| Operating Freq. (MHz) | 1970.0 |
| Antenna Height (ft): | 82.0 |
| Antenna Gain (dBi): | 18.1 |
| Antenna Size (in.): | 72.0 |
| Downtilt (degrees): | 0.0 |
| Feedline Loss (dB): | 0.0 |
| Power @ J4 (w): | 4900.0 |
| Number of Channels | 1 |



| Calc Angle | Distance in feet below: | | | | | | | | | | | | | | | | | |
|--|-------------------------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| | 90.0 | 80.0 | 70.0 | 65.0 | 60.0 | 55.0 | 50.0 | 45.0 | 40.0 | 35.0 | 30.0 | 25.0 | 20.0 | 15.0 | 10.0 | 5.0 | 4.0 | 2.0 |
| Solve for r, dx to antenna | 79.0 | 80.2 | 84.1 | 87.2 | 91.2 | 96.5 | 103.2 | 111.8 | 123.0 | 137.8 | 158.1 | 187.0 | 231.1 | 305.4 | 455.2 | 906.9 | 1133.1 | 2264.8 |
| Distance from Antenna Structure Base in Horizontal plane | 0.1 | 14.0 | 28.8 | 36.9 | 45.7 | 55.4 | 66.3 | 79.1 | 94.2 | 112.9 | 136.9 | 169.5 | 217.2 | 295.0 | 448.3 | 903.4 | 1130.3 | 2263.4 |
| Angle from Main Beam (reference to horizontal plane) | 90 | 80 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 4 | 2 |
| dB down from centerline (referenced to centerline) | 36.76 | 34.35 | 38.52 | 35.34 | 29.54 | 26.8 | 25.59 | 25.63 | 25.99 | 21.21 | 20.29 | 23.24 | 13.03 | 12.3 | 9.92 | 2 | 0.2 | 0 |
| Reflection Coefficient (1 to 4, 2.56 typical) | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 |
| Power Density (mW/cm²) | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.02 | 0.02 | 0.02 | 0.01 | 0.03 | 0.03 | 0.01 | 0.06 | 0.04 | 0.03 | 0.05 | 0.05 | 0.01 |
| Percent of Occupational Standard | 0.0 | 0.1 | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.3 | 0.2 | 0.6 | 0.5 | 0.2 | 1.3 | 0.9 | 0.7 | 1.1 | 1.0 | 0.3 |
| Percent of General Population Standard | 0.2 | 0.4 | 0.1 | 0.3 | 0.9 | 1.6 | 1.8 | 1.5 | 1.2 | 2.8 | 2.6 | 0.9 | 6.5 | 4.4 | 3.4 | 5.3 | 5.2 | 1.4 |

Antenna Type: SBNHH-1D65B
Max%: 6.47%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBi to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density.
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

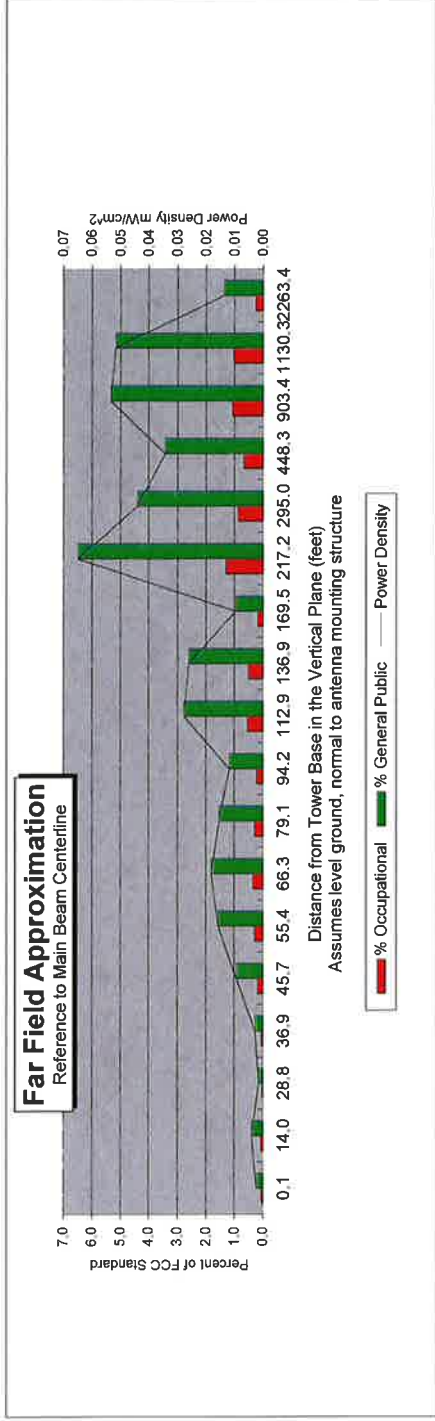
Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



| | |
|------------|-----------------------------|
| Location: | PLAINVILLE 3, CT |
| Site #: | |
| Date: | 02/03/17 |
| Name: | Mark Brauer |
| File Name: | Plainville 3, CT - FF Power |

| | |
|-----------------------|--------|
| Operating Freq. (MHz) | 2110.0 |
| Antenna Height (ft): | 82.0 |
| Antenna Gain (dBi): | 18.2 |
| Antenna Size (in.): | 72.0 |
| Downtilt (degrees): | 0.0 |
| Feedline Loss (dB): | 0.0 |
| Power @ J4 (w): | 4800.0 |
| Number of Channels | 1 |



| | | 90.0 | 80.0 | 70.0 | 65.0 | 60.0 | 55.0 | 50.0 | 45.0 | 40.0 | 35.0 | 30.0 | 25.0 | 20.0 | 15.0 | 10.0 | 5.0 | 4.0 | 2.0 |
|--|-----|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Calc Angle | | 79.0 | 80.2 | 84.1 | 87.2 | 91.2 | 96.5 | 103.2 | 111.8 | 123.0 | 137.8 | 158.1 | 187.0 | 231.1 | 305.4 | 455.2 | 906.9 | 1133.1 | 2264.8 |
| Solve for r. dx to antenna | | 79.0 | 80.2 | 84.1 | 87.2 | 91.2 | 96.5 | 103.2 | 111.8 | 123.0 | 137.8 | 158.1 | 187.0 | 231.1 | 305.4 | 455.2 | 906.9 | 1133.1 | 2264.8 |
| Distance from Antenna Structure Base in Horizontal plane | 0.1 | 14.0 | 28.8 | 36.9 | 45.7 | 55.4 | 66.3 | 79.1 | 94.2 | 112.9 | 136.9 | 169.5 | 217.2 | 295.0 | 448.3 | 903.4 | 1130.3 | 2263.4 | |
| Angle from Main Beam (reference to horizontal plane) | | 90 | 80 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 4 | 2 |
| dB down from centerline (referenced to centerline) | | 36.76 | 34.35 | 38.52 | 35.34 | 29.54 | 26.8 | 25.59 | 25.63 | 25.99 | 21.21 | 20.29 | 23.24 | 13.03 | 12.3 | 9.92 | 2 | 0.2 | 0 |
| Reflection Coefficient (1 to 4, 2.56 typical) | | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 | 2.56 |
| Power Density (mW/cm²) | | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.02 | 0.02 | 0.02 | 0.01 | 0.03 | 0.03 | 0.01 | 0.06 | 0.04 | 0.03 | 0.05 | 0.05 | 0.01 |
| Percent of Occupational Standard | | 0.0 | 0.1 | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.3 | 0.2 | 0.6 | 0.5 | 0.2 | 1.3 | 0.9 | 0.7 | 1.1 | 1.0 | 0.3 |
| Percent of General Population Standard | | 0.2 | 0.4 | 0.1 | 0.3 | 0.9 | 1.6 | 1.8 | 1.5 | 1.2 | 2.8 | 2.6 | 0.9 | 6.5 | 4.4 | 3.4 | 5.3 | 5.2 | 1.4 |

Distance in feet below:

Antenna Type SBNHH-1D65B
Max% 6.48%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBi to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density.
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

ATTACHMENT 3

STRUCTURAL ANALYSIS REPORT

For

PLAINVILLE 3 CT

1 CENTRAL SQUARE
PLAINVILLE, CT

81-ft Monopole

Prepared for:

verizon^v

99 East River Road, 9th Floor
East Hartford, CT 06108

Dated: January 16, 2017

Prepared by:



1600 Osgood Street Bldg. 20N Suite 3090
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com





SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by Verizon to conduct a structural evaluation of the 81' monopole supporting the existing and proposed Verizon's antennas located at elevation 81' & 82' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of Verizon's existing and proposed antennas listed below.

Record drawings of the existing monopole were not available for our use. The previous structural analysis report prepared by Centek Engineering, dated April 6, 2015, was available and obtained for our use.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole **IS IN CONFORMANCE** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at 96.0% - (Pole section L3 from EL.25' to EL.37.54' Controlling).



APPURTENANCES CONFIGURATION:

| Tenant | Appurtenances | Elev. | Mount |
|----------------|---------------------------------|-------|----------------|
| VERIZON | (3) APX75-866514 Antennas | 81' | Steel Platform |
| VERIZON | (3) BXA-70063-4CF Antennas | 82' | Steel Platform |
| VERIZON | DB-T1-6Z-8AB-0Z | 81' | Steel Platform |
| VERIZON | (6) SBNHH-1D65B Antennas | 81' | Steel Platform |
| VERIZON | (3) RRH 2X60-700U | 81' | Steel Platform |
| VERIZON | (3) RRH 2X60 PCS | 81' | Steel Platform |
| VERIZON | (3) RRH 2X90 AWS | 81' | Steel Platform |
| VERIZON | DB-T1-6Z-8AB-0Z | 81' | Steel Platform |
| | 20' Dipole | 62.5' | Steel Platform |
| | (2) 4' Omni | 62.5' | Steel Platform |
| | 10' Omni | 62.5' | Steel Platform |
| | (3) 10' Dipole | 42.5' | Steel Platform |
| | (2) 3' Yagi | 42.5' | Steel Platform |
| | 10' Omni | 42.5' | Steel Platform |

**Proposed VERIZON Appurtenances shown in Bold.*

VERIZON EXISTING/PROPOSED COAX CABLES:

| Tenant | Coax Cables | Elev. | Mount |
|----------------|------------------------|-------|-----------------|
| VERIZON | (12) 1 1/4" Cables | 81' | Inside Monopole |
| VERIZON | (1) Fiber Cable | 81' | Inside Monopole |
| VERIZON | (1) Fiber Cable | 81' | Inside Monopole |

**Proposed VERIZON Coax Cables shown in Bold.*

ANALYSIS RESULTS SUMMARY:

| Component | Max. Stress Ratio | Elev. of Component (ft) | Pass/Fail | Comments |
|------------------------|-------------------|-------------------------|-----------|--------------------|
| Pole Section-L1 | 93.0 % | 47.54 – 81 | PASS | |
| Pole Section-L2 | 79.8 % | 37.54 – 47.54 | PASS | |
| Pole Section-L3 | 96.0 % | 25 – 37.54 | PASS | Controlling |
| Pole Section-L4 | 94.9 % | 0 – 25 | PASS | |



DESIGN CRITERIA:

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures
County: Hartford
Wind Load: 105 mph (3 second gust)
Structural Class: II
Exposure Category: B
Topographic Category: I
Ice Thickness: 1.0 inch
2. Approximate height above grade to proposed antennas: 81' & 82'

Calculations and referenced documents are attached

ASSUMPTIONS:

1. The monopole dimensions, member sizes and material strength are as indicated in the previous structural analysis report prepared by Centek Engineering, dated April 6, 2015.
2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Centek Engineering, dated April 6, 2015. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
3. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.
5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

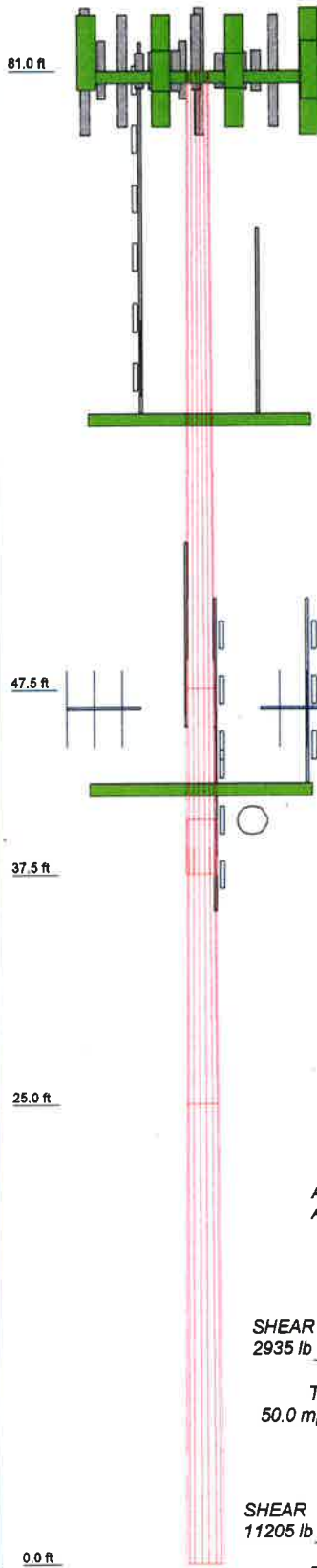
SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, RRHs and distribution box be mounted on the existing steel platform supported by the monopole.



CALCULATIONS

| | | | | | |
|--------------------|---------|---------|---------|---------|--------|
| Section | 1 | 2 | 3 | 4 | |
| Length (ft) | 33.46 | 10.00 | 15.46 | 25.00 | 4122.4 |
| Number of Sides | 18 | 18 | 18 | 18 | |
| Thickness (in) | 0.1875 | 0.2500 | 0.2500 | 0.3000 | |
| Socket Length (ft) | | 2.92 | | 20.9100 | |
| Top Dia (in) | 13.0000 | 17.7500 | 18.2554 | 24.0000 | |
| Bot Dia (in) | 17.7500 | 19.1700 | 20.9100 | 1794.6 | |
| Grade | 1029.1 | 491.7 | 807.0 | 25.0 ft | |
| Weight (lb) | | | | | |



DESIGNED APPURTENANCE LOADING

| TYPE | ELEVATION | TYPE | ELEVATION |
|---|-----------|--------------------------------|-----------|
| BXA-70063-4CF-EDIN w/mount pipe | 82 | RRH2x60 PCS | 81 |
| BXA-70063-4CF-EDIN w/mount pipe | 82 | RRH2x60 PCS | 81 |
| BXA-70063-4CF-EDIN w/mount pipe | 82 | RRH2x60 PCS | 81 |
| APX75-866514 w/mount pipe | 81 | RRH 2X90 AWS | 81 |
| PIROD 13' Low Profile Platform (VERIZON - existing) | 81 | RRH 2X90 AWS | 81 |
| APX75-866514 w/mount pipe | 81 | RRH 2X90 AWS | 81 |
| APX75-866514 w/mount pipe | 81 | RFS DB-T1-6Z-8AB-0Z | 81 |
| RFS DB-T1-6Z-8AB-0Z | 81 | PIROD 13' Low Profile Platform | 82.5 |
| SBNHH-1D65B w/ Mount Pipe (VERIZON - proposed) | 81 | 20' Dipole | 82.5 |
| SBNHH-1D65B w/ Mount Pipe | 81 | Omni 2"x4' | 82.5 |
| SBNHH-1D65B w/ Mount Pipe | 81 | Omni 2"x4' | 82.5 |
| SBNHH-1D65B w/ Mount Pipe | 81 | Omni 3"x10' | 82.5 |
| SBNHH-1D65B w/ Mount Pipe | 81 | PIROD 13' Low Profile Platform | 42.5 |
| SBNHH-1D65B w/ Mount Pipe | 81 | 10' Dipole | 42.5 |
| SBNHH-1D65B w/ Mount Pipe | 81 | 10' Dipole | 42.5 |
| SBNHH-1D65B w/ Mount Pipe | 81 | 10' Dipole | 42.5 |
| RRH2x60-700 | 81 | 3' Yagi antenna | 42.5 |
| RRH2x60-700 | 81 | Omni 3"x10' | 42.5 |
| RRH2x60-700 | 81 | 3' Yagi antenna | 42.5 |

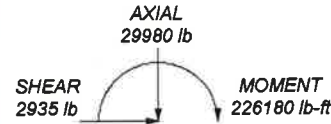
MATERIAL STRENGTH

| GRADE | Fy | Fu | GRADE | Fy | Fu |
|---------|--------|--------|-------|----|----|
| A572-65 | 65 ksi | 80 ksi | | | |

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 96%

ALL REACTIONS
ARE FACTORED




TORQUE 1100 lb-ft
50.0 mph WIND - 1.0000 in ICE



TORQUE 3456 lb-ft
REACTIONS - 105.0 mph WIND

| | |
|--|--------------------------------|
|  Hudson Design Group LLC 1600 Osgood Street Bldg. 20N Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586 | Job: PLAINVILLE 3 CT |
| | Project: 81 ft Monopole |
| | Client: VERIZON |
| | Code: TIA-222-G |
| | Path: _____ |
| Drawn by: kw | App'd: _____ |
| Date: 01/16/17 | Scale: NTS |
| Dwg No. E-1 | |

| | | | | |
|--|----------------|-----------------|--------------------|-------------------|
|  Hudson Design Group LLC 1600 Osgood Street Bldg. 20N Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586 | Job | PLAINVILLE 3 CT | Page | 1 of 8 |
| | Project | 81 ft Monopole | Date | 14:17:56 01/16/17 |
| | Client | VERIZON | Designed by | kw |

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 105.0 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56.0 pcf.

A wind speed of 50.0 mph is used in combination with ice.

Temperature drop of 50.0 °F.

Deflections calculated using a wind speed of 60.0 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.


Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

| Section | Elevation ft | Section Length ft | Splice Length ft | Number of Sides | Top Diameter in | Bottom Diameter in | Wall Thickness in | Bend Radius in | Pole Grade |
|---------|-----------------|----------------------|---------------------|-----------------|--------------------|-----------------------|----------------------|-------------------|---------------------|
| L1 | 81.00-47.54 | 33.46 | 0.00 | 18 | 13.0000 | 17.7500 | 0.1875 | 0.7500 | A572-65 (65 ksi) |
| L2 | 47.54-37.54 | 10.00 | 2.92 | 18 | 17.7500 | 19.1700 | 0.2500 | 1.0000 | A572-65 (65 ksi) |
| L3 | 37.54-25.00 | 15.46 | 0.00 | 18 | 18.2554 | 20.9100 | 0.2500 | 1.0000 | A572-65 (65 ksi) |
| L4 | 25.00-0.00 | 25.00 | | 18 | 20.9100 | 24.0000 | 0.3000 | 1.2000 | A572-65 (65 ksi) |

Feed Line/Linear Appurtenances - Entered As Area

| Description | Face or Leg | Allow Shield | Component Type | Placement ft | Total Number | | C _A A _A ft ² /ft | Weight plf |
|---|-------------|--------------|----------------|-----------------|--------------|----------|--|---------------|
| 1 1/4 (VERIZON - existing) | A | No | Inside Pole | 81.00 - 0.00 | 12 | No Ice | 0.00 | 0.66 |
| | | | | | | 1/2" Ice | 0.00 | 0.66 |
| | | | | | | 1" Ice | 0.00 | 0.66 |
| 1 5/8 Fiber Cable | A | No | Inside Pole | 81.00 - 0.00 | 1 | No Ice | 0.00 | 1.04 |
| | | | | | | 1/2" Ice | 0.00 | 1.04 |
| | | | | | | 1" Ice | 0.00 | 1.04 |
| ***** | | | | | | | | |
| 1 5/8 Fiber Cable (VERIZON - proposed) | A | No | Inside Pole | 81.00 - 0.00 | 1 | No Ice | 0.00 | 1.04 |
| | | | | | | 1/2" Ice | 0.00 | 1.04 |

| | | |
|--|----------------------------------|----------------------------------|
|  Hudson Design Group LLC 1600 Osgood Street Bldg. 20N Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586 | Job PLAINVILLE 3 CT | Page 2 of 8 |
| | Project 81 ft Monopole | Date 14:17:56 01/16/17 |
| | Client VERIZON | Designed by kw |

| Description | Face or Leg | Allow Shield | Component Type | Placement ft | Total Number | C _A A _A | | Weight plf |
|-------------|-------------|--------------|----------------|-----------------|--------------|-------------------------------|------|---------------|
| | | | | | | ft ² /ft | plf | |
| ***** | | | | | | 1" Ice | 0.00 | 1.04 |
| 7/8 | A | No | Inside Pole | 62.00 - 0.00 | 4 | No Ice | 0.00 | 0.54 |
| | | | | | | 1/2" Ice | 0.00 | 0.54 |
| | | | | | | 1" Ice | 0.00 | 0.54 |
| 7/8 | A | No | Inside Pole | 42.00 - 0.00 | 6 | No Ice | 0.00 | 0.54 |
| | | | | | | 1/2" Ice | 0.00 | 0.54 |
| | | | | | | 1" Ice | 0.00 | 0.54 |

Discrete Tower Loads

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment ° | Placement ft | C _A A _A | | Weight lb | |
|--|-------------|-------------|------------|------------|-------------------------|-----------------|-------------------------------|-------------------------|--------------|---------|
| | | | Horz ft | Vert ft | | | Front ft ² | Side ft ² | | |
| PiROD 13' Low Profile Platform (VERIZON - existing) | A | None | | | 0.0000 | 81.00 | No Ice | 15.70 | 15.70 | 1300.00 |
| | | | | | | | 1/2" Ice | 20.10 | 20.10 | 1765.00 |
| | | | | | | | 1" Ice | 24.50 | 24.50 | 2230.00 |
| APX75-866514 w/mount pipe | A | From Face | 3.00 | | 0.0000 | 81.00 | No Ice | 10.04 | 6.61 | 67.20 |
| | | | -6.00 | | | | 1/2" Ice | 10.78 | 7.94 | 138.60 |
| | | | 0.00 | | | | 1" Ice | 11.50 | 9.12 | 218.69 |
| APX75-866514 w/mount pipe | B | From Face | 3.00 | | 0.0000 | 81.00 | No Ice | 10.04 | 6.61 | 67.20 |
| | | | -6.00 | | | | 1/2" Ice | 10.78 | 7.94 | 138.60 |
| | | | 0.00 | | | | 1" Ice | 11.50 | 9.12 | 218.69 |
| APX75-866514 w/mount pipe | C | From Face | 3.00 | | 0.0000 | 81.00 | No Ice | 10.04 | 6.61 | 67.20 |
| | | | -6.00 | | | | 1/2" Ice | 10.78 | 7.94 | 138.60 |
| | | | 0.00 | | | | 1" Ice | 11.50 | 9.12 | 218.69 |
| BXA-70063-4CF-EDIN w/mount pipe | A | From Face | 3.00 | | 0.0000 | 82.00 | No Ice | 5.41 | 3.70 | 28.25 |
| | | | 6.00 | | | | 1/2" Ice | 5.86 | 4.32 | 70.71 |
| | | | 0.00 | | | | 1" Ice | 6.32 | 4.94 | 118.98 |
| BXA-70063-4CF-EDIN w/mount pipe | B | From Face | 3.00 | | 0.0000 | 82.00 | No Ice | 5.41 | 3.70 | 28.25 |
| | | | 6.00 | | | | 1/2" Ice | 5.86 | 4.32 | 70.71 |
| | | | 0.00 | | | | 1" Ice | 6.32 | 4.94 | 118.98 |
| BXA-70063-4CF-EDIN w/mount pipe | C | From Face | 3.00 | | 0.0000 | 82.00 | No Ice | 5.41 | 3.70 | 28.25 |
| | | | 6.00 | | | | 1/2" Ice | 5.86 | 4.32 | 70.71 |
| | | | 0.00 | | | | 1" Ice | 6.32 | 4.94 | 118.98 |
| RFS DB-T1-6Z-8AB-0Z | A | From Face | 2.00 | | 0.0000 | 81.00 | No Ice | 5.60 | 2.33 | 44.00 |
| | | | 0.00 | | | | 1/2" Ice | 5.92 | 2.56 | 80.13 |
| | | | 0.00 | | | | 1" Ice | 6.24 | 2.79 | 120.22 |
| ***** | | | | | | | | | | |
| SBNHH-1D65B w/ Mount Pipe (VERIZON - proposed) | A | From Face | 3.00 | | 0.0000 | 81.00 | No Ice | 8.65 | 7.09 | 66.55 |
| | | | -2.00 | | | | 1/2" Ice | 9.30 | 8.27 | 135.68 |
| | | | 0.00 | | | | 1" Ice | 9.92 | 9.17 | 212.84 |
| SBNHH-1D65B w/ Mount Pipe | A | From Face | 3.00 | | 0.0000 | 81.00 | No Ice | 8.65 | 7.09 | 66.55 |
| | | | 2.00 | | | | 1/2" Ice | 9.30 | 8.27 | 135.68 |
| | | | 0.00 | | | | 1" Ice | 9.92 | 9.17 | 212.84 |
| SBNHH-1D65B w/ Mount Pipe | B | From Face | 3.00 | | 0.0000 | 81.00 | No Ice | 8.65 | 7.09 | 66.55 |
| | | | -2.00 | | | | 1/2" Ice | 9.30 | 8.27 | 135.68 |
| | | | 0.00 | | | | 1" Ice | 9.92 | 9.17 | 212.84 |
| SBNHH-1D65B w/ Mount Pipe | B | From Face | 3.00 | | 0.0000 | 81.00 | No Ice | 8.65 | 7.09 | 66.55 |
| | | | 2.00 | | | | 1/2" Ice | 9.30 | 8.27 | 135.68 |
| | | | 0.00 | | | | 1" Ice | 9.92 | 9.17 | 212.84 |
| SBNHH-1D65B w/ Mount Pipe | C | From Face | 3.00 | | 0.0000 | 81.00 | No Ice | 8.65 | 7.09 | 66.55 |
| | | | -2.00 | | | | 1/2" Ice | 9.30 | 8.27 | 135.68 |



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| | | | |
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| Job | PLAINVILLE 3 CT | Page | 4 of 8 |
| Project | 81 ft Monopole | Date | 14:17:56 01/16/17 |
| Client | VERIZON | Designed by | kw |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} | | Weight | |
|-----------------|-------------|-------------|----------|---------|--------------------|-----------|-----------------|-----------------|--------|-------|
| | | | Horz | Lateral | | | Front | Side | | |
| | | | ft | ft | ° | ft | ft ² | ft ² | lb | |
| 10' Dipole | B | From Face | 3.00 | | 0.0000 | 42.50 | No Ice | 4.00 | 4.00 | 25.00 |
| | | | -5.00 | | | | 1/2" Ice | 4.97 | 4.97 | 53.13 |
| | | | 5.00 | | | | 1" Ice | 5.57 | 5.57 | 87.92 |
| 10' Dipole | B | From Face | 3.00 | | 0.0000 | 42.50 | No Ice | 4.00 | 4.00 | 25.00 |
| | | | -5.00 | | | | 1/2" Ice | 4.97 | 4.97 | 53.13 |
| | | | -2.00 | | | | 1" Ice | 5.57 | 5.57 | 87.92 |
| 3' Yagi antenna | B | From Face | 3.00 | | 0.0000 | 42.50 | No Ice | 0.70 | 0.35 | 10.00 |
| | | | 0.00 | | | | 1/2" Ice | 0.95 | 0.48 | 36.35 |
| | | | 4.00 | | | | 1" Ice | 1.21 | 0.63 | 66.52 |
| Omni 3"x10' | A | From Face | 3.00 | | 0.0000 | 42.50 | No Ice | 3.00 | 3.00 | 20.00 |
| | | | 5.00 | | | | 1/2" Ice | 4.03 | 4.03 | 41.79 |
| | | | 8.00 | | | | 1" Ice | 5.03 | 5.03 | 70.14 |
| 3' Yagi antenna | A | From Face | 3.00 | | 0.0000 | 42.50 | No Ice | 0.70 | 0.35 | 10.00 |
| | | | 0.00 | | | | 1/2" Ice | 0.95 | 0.48 | 36.35 |
| | | | 4.00 | | | | 1" Ice | 1.21 | 0.63 | 66.52 |

Load Combinations

| Comb. No. | Description |
|-----------|--|
| 1 | Dead Only |
| 2 | 1.2 Dead+1.6 Wind 0 deg - No Ice |
| 3 | 0.9 Dead+1.6 Wind 0 deg - No Ice |
| 4 | 1.2 Dead+1.6 Wind 30 deg - No Ice |
| 5 | 0.9 Dead+1.6 Wind 30 deg - No Ice |
| 6 | 1.2 Dead+1.6 Wind 60 deg - No Ice |
| 7 | 0.9 Dead+1.6 Wind 60 deg - No Ice |
| 8 | 1.2 Dead+1.6 Wind 90 deg - No Ice |
| 9 | 0.9 Dead+1.6 Wind 90 deg - No Ice |
| 10 | 1.2 Dead+1.6 Wind 120 deg - No Ice |
| 11 | 0.9 Dead+1.6 Wind 120 deg - No Ice |
| 12 | 1.2 Dead+1.6 Wind 150 deg - No Ice |
| 13 | 0.9 Dead+1.6 Wind 150 deg - No Ice |
| 14 | 1.2 Dead+1.6 Wind 180 deg - No Ice |
| 15 | 0.9 Dead+1.6 Wind 180 deg - No Ice |
| 16 | 1.2 Dead+1.6 Wind 210 deg - No Ice |
| 17 | 0.9 Dead+1.6 Wind 210 deg - No Ice |
| 18 | 1.2 Dead+1.6 Wind 240 deg - No Ice |
| 19 | 0.9 Dead+1.6 Wind 240 deg - No Ice |
| 20 | 1.2 Dead+1.6 Wind 270 deg - No Ice |
| 21 | 0.9 Dead+1.6 Wind 270 deg - No Ice |
| 22 | 1.2 Dead+1.6 Wind 300 deg - No Ice |
| 23 | 0.9 Dead+1.6 Wind 300 deg - No Ice |
| 24 | 1.2 Dead+1.6 Wind 330 deg - No Ice |
| 25 | 0.9 Dead+1.6 Wind 330 deg - No Ice |
| 26 | 1.2 Dead+1.0 Ice+1.0 Temp |
| 27 | 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp |
| 28 | 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp |
| 29 | 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp |
| 30 | 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp |
| 31 | 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp |
| 32 | 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp |
| 33 | 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp |



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| | | | |
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| Job | PLAINVILLE 3 CT | Page | 5 of 8 |
| Project | 81 ft Monopole | Date | 14:17:56 01/16/17 |
| Client | VERIZON | Designed by | kw |

| Comb. No. | Description |
|-----------|--|
| 34 | 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp |
| 35 | 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp |
| 36 | 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp |
| 37 | 1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp |
| 38 | 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp |
| 39 | Dead+Wind 0 deg - Service |
| 40 | Dead+Wind 30 deg - Service |
| 41 | Dead+Wind 60 deg - Service |
| 42 | Dead+Wind 90 deg - Service |
| 43 | Dead+Wind 120 deg - Service |
| 44 | Dead+Wind 150 deg - Service |
| 45 | Dead+Wind 180 deg - Service |
| 46 | Dead+Wind 210 deg - Service |
| 47 | Dead+Wind 240 deg - Service |
| 48 | Dead+Wind 270 deg - Service |
| 49 | Dead+Wind 300 deg - Service |
| 50 | Dead+Wind 330 deg - Service |

Maximum Reactions

| Location | Condition | Gov. Load Comb. | Vertical lb | Horizontal, X lb | Horizontal, Z lb |
|----------|---------------------|-----------------|-------------|------------------|------------------|
| Pole | Max. Vert | 27 | 29979.55 | 0.00 | 2908.09 |
| | Max. H _x | 21 | 9574.28 | 11204.83 | 0.00 |
| | Max. H _z | 2 | 12765.71 | -0.00 | 11048.27 |
| | Max. M _x | 2 | 753702.69 | -0.00 | 11048.27 |
| | Max. M _z | 8 | 765588.58 | -11204.83 | 0.00 |
| | Max. Torsion | 8 | 3456.26 | -11204.83 | 0.00 |
| | Min. Vert | 19 | 9574.28 | 9703.67 | -5524.14 |
| | Min. H _x | 9 | 9574.28 | -11204.83 | 0.00 |
| | Min. H _z | 14 | 12765.71 | -0.00 | -11048.27 |
| | Min. M _x | 14 | -751824.40 | -0.00 | -11048.27 |
| | Min. M _z | 20 | -765739.33 | 11204.83 | 0.00 |
| | Min. Torsion | 20 | -3456.16 | 11204.83 | 0.00 |

Tower Mast Reaction Summary

| Load Combination | Vertical lb | Shear _x lb | Shear _z lb | Overturning Moment, M _x lb-ft | Overturning Moment, M _z lb-ft | Torque lb-ft |
|-----------------------------------|-------------|-----------------------|-----------------------|--|--|--------------|
| Dead Only | 10638.09 | -0.00 | -0.00 | -771.74 | 63.36 | 0.01 |
| 1.2 Dead+1.6 Wind 0 deg - No Ice | 12765.71 | 0.00 | -11048.27 | -753702.69 | 72.57 | 121.52 |
| 0.9 Dead+1.6 Wind 0 deg - No Ice | 9574.28 | 0.00 | -11048.27 | -740813.54 | 51.79 | 123.45 |
| 1.2 Dead+1.6 Wind 30 deg - No Ice | 12765.71 | 5602.41 | -9568.08 | -652803.11 | -382841.96 | -1627.64 |
| 0.9 Dead+1.6 Wind 30 deg - No Ice | 9574.28 | 5602.41 | -9568.08 | -641613.32 | -376419.84 | -1615.65 |
| 1.2 Dead+1.6 Wind 60 deg - No Ice | 12765.71 | 9703.67 | -5524.14 | -377220.18 | -663067.38 | -2936.60 |
| 0.9 Dead+1.6 Wind 60 deg - No Ice | 9574.28 | 9703.67 | -5524.14 | -370665.99 | -651938.99 | -2917.83 |



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| | | | |
|----------------|-----------------|--------------------|-------------------|
| Job | PLAINVILLE 3 CT | Page | 6 of 8 |
| Project | 81 ft Monopole | Date | 14:17:56 01/16/17 |
| Client | VERIZON | Designed by | kw |

| Load Combination | Vertical lb | Shear _y lb | Shear _z lb | Overturning Moment, M _x lb-ft | Overturning Moment, M _z lb-ft | Torque lb-ft |
|--|----------------|--------------------------|--------------------------|--|--|-----------------|
| 1.2 Dead+1.6 Wind 90 deg - No Ice | 12765.71 | 11204.83 | -0.00 | -885.22 | -765588.58 | -3456.26 |
| 0.9 Dead+1.6 Wind 90 deg - No Ice | 9574.28 | 11204.83 | -0.00 | -649.33 | -752745.84 | -3435.80 |
| 1.2 Dead+1.6 Wind 120 deg - No Ice | 12765.71 | 9703.67 | 5524.14 | 375422.82 | -663022.07 | -3051.31 |
| 0.9 Dead+1.6 Wind 120 deg - No Ice | 9574.28 | 9703.67 | 5524.14 | 369348.06 | -651906.52 | -3034.55 |
| 1.2 Dead+1.6 Wind 150 deg - No Ice | 12765.71 | 5602.41 | 9568.08 | 650951.82 | -382796.60 | -1831.20 |
| 0.9 Dead+1.6 Wind 150 deg - No Ice | 9574.28 | 5602.41 | 9568.08 | 640256.75 | -376387.34 | -1822.61 |
| 1.2 Dead+1.6 Wind 180 deg - No Ice | 12765.71 | 0.00 | 11048.27 | 751824.40 | 72.60 | -121.45 |
| 0.9 Dead+1.6 Wind 180 deg - No Ice | 9574.28 | 0.00 | 11048.27 | 739437.63 | 51.81 | -123.40 |
| 1.2 Dead+1.6 Wind 210 deg - No Ice | 12765.71 | -5602.41 | 9568.08 | 650954.45 | 382943.18 | 1620.63 |
| 0.9 Dead+1.6 Wind 210 deg - No Ice | 9574.28 | -5602.41 | 9568.08 | 640258.64 | 376491.96 | 1608.67 |
| 1.2 Dead+1.6 Wind 240 deg - No Ice | 12765.71 | -9703.67 | 5524.14 | 375425.47 | 663171.42 | 2929.47 |
| 0.9 Dead+1.6 Wind 240 deg - No Ice | 9574.28 | -9703.67 | 5524.14 | 369349.96 | 652013.15 | 2910.80 |
| 1.2 Dead+1.6 Wind 270 deg - No Ice | 12765.71 | -11204.83 | -0.00 | -885.16 | 765739.33 | 3456.16 |
| 0.9 Dead+1.6 Wind 270 deg - No Ice | 9574.28 | -11204.83 | -0.00 | -649.30 | 752853.48 | 3435.73 |
| 1.2 Dead+1.6 Wind 300 deg - No Ice | 12765.71 | -9703.67 | -5524.14 | -377222.76 | 663216.73 | 3058.34 |
| 0.9 Dead+1.6 Wind 300 deg - No Ice | 9574.28 | -9703.67 | -5524.14 | -370667.85 | 652045.63 | 3041.50 |
| 1.2 Dead+1.6 Wind 330 deg - No Ice | 12765.71 | -5602.41 | -9568.08 | -652805.71 | 382988.51 | 1838.27 |
| 0.9 Dead+1.6 Wind 330 deg - No Ice | 9574.28 | -5602.41 | -9568.08 | -641615.20 | 376524.45 | 1829.62 |
| 1.2 Dead+1.0 Ice+1.0 Temp | 29979.55 | -0.00 | -0.03 | -7100.28 | 50.51 | 0.48 |
| 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp | 29979.55 | -0.00 | -2908.09 | -226180.17 | 46.84 | -29.29 |
| 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp | 29979.55 | 1467.58 | -2518.36 | -196846.62 | -110792.27 | -575.35 |
| 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp | 29979.55 | 2541.92 | -1453.98 | -116642.25 | -191925.91 | -967.07 |
| 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp | 29979.55 | 2935.29 | -0.01 | -7088.55 | -221591.90 | -1099.37 |
| 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp | 29979.55 | 2541.92 | 1453.97 | 102456.84 | -191914.73 | -937.12 |
| 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp | 29979.55 | 1467.58 | 2518.36 | 182648.18 | -110780.95 | -523.62 |
| 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp | 29979.55 | -0.00 | 2908.08 | 211977.44 | 47.23 | 30.29 |
| 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp | 29979.55 | -1467.58 | 2518.36 | 182650.37 | 110876.65 | 576.19 |
| 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp | 29979.55 | -2541.92 | 1453.97 | 102459.13 | 192012.56 | 967.84 |
| 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp | 29979.55 | -2935.29 | -0.01 | -7088.27 | 221690.45 | 1100.28 |
| 1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp | 29979.55 | -2541.92 | -1453.98 | -116644.03 | 192023.35 | 938.22 |
| 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp | 29979.55 | -1467.58 | -2518.36 | -196848.51 | 110887.29 | 524.75 |




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 North Andover, MA 01845
 Phone: (978) 557-5553
 FAX: (978) 336-5586

| | | | |
|----------------|-----------------|--------------------|-------------------|
| Job | PLAINVILLE 3 CT | Page | 7 of 8 |
| Project | 81 ft Monopole | Date | 14:17:56 01/16/17 |
| Client | VERIZON | Designed by | kw |

| Load Combination | Vertical lb | Shear _x lb | Shear _z lb | Overturning Moment, M _x lb-ft | Overturning Moment, M _z lb-ft | Torque lb-ft |
|-----------------------------|----------------|--------------------------|--------------------------|---|---|-----------------|
| Dead+Wind 0 deg - Service | 10638.09 | 0.00 | -2017.41 | -137377.71 | 64.14 | 20.75 |
| Dead+Wind 30 deg - Service | 10638.09 | 1023.00 | -1747.13 | -119078.70 | -69419.46 | -304.64 |
| Dead+Wind 60 deg - Service | 10638.09 | 1771.88 | -1008.70 | -69080.00 | -120284.08 | -548.30 |
| Dead+Wind 90 deg - Service | 10638.09 | 2045.99 | -0.00 | -781.75 | -138901.03 | -644.94 |
| Dead+Wind 120 deg - Service | 10638.09 | 1771.88 | 1008.70 | 67515.75 | -120282.81 | -568.77 |
| Dead+Wind 150 deg - Service | 10638.09 | 1023.00 | 1747.13 | 117512.94 | -69418.19 | -340.30 |
| Dead+Wind 180 deg - Service | 10638.09 | 0.00 | 2017.41 | 135811.24 | 64.14 | -20.73 |
| Dead+Wind 210 deg - Service | 10638.09 | -1023.00 | 1747.13 | 117513.02 | 69546.52 | 304.40 |
| Dead+Wind 240 deg - Service | 10638.09 | -1771.88 | 1008.70 | 67515.83 | 120411.22 | 548.05 |
| Dead+Wind 270 deg - Service | 10638.09 | -2045.99 | -0.00 | -781.74 | 139029.48 | 644.95 |
| Dead+Wind 300 deg - Service | 10638.09 | -1771.88 | -1008.70 | -69080.07 | 120412.49 | 569.06 |
| Dead+Wind 330 deg - Service | 10638.09 | -1023.00 | -1747.13 | -119078.77 | 69547.79 | 340.58 |

Solution Summary

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|-----------|-----------|------------------|----------|-----------|---------|
| | PX lb | PY lb | PZ lb | PX lb | PY lb | PZ lb | |
| 1 | 0.00 | -10638.09 | 0.00 | 0.00 | 10638.09 | 0.00 | 0.000% |
| 2 | 0.00 | -12765.71 | -11048.27 | -0.00 | 12765.71 | 11048.27 | 0.000% |
| 3 | 0.00 | -9574.28 | -11048.27 | -0.00 | 9574.28 | 11048.27 | 0.000% |
| 4 | 5602.41 | -12765.71 | -9568.08 | -5602.41 | 12765.71 | 9568.08 | 0.000% |
| 5 | 5602.41 | -9574.28 | -9568.08 | -5602.41 | 9574.28 | 9568.08 | 0.000% |
| 6 | 9703.67 | -12765.71 | -5524.14 | -9703.67 | 12765.71 | 5524.14 | 0.000% |
| 7 | 9703.67 | -9574.28 | -5524.14 | -9703.67 | 9574.28 | 5524.14 | 0.000% |
| 8 | 11204.83 | -12765.71 | 0.00 | -11204.83 | 12765.71 | 0.00 | 0.000% |
| 9 | 11204.83 | -9574.28 | 0.00 | -11204.83 | 9574.28 | 0.00 | 0.000% |
| 10 | 9703.67 | -12765.71 | 5524.14 | -9703.67 | 12765.71 | -5524.14 | 0.000% |
| 11 | 9703.67 | -9574.28 | 5524.14 | -9703.67 | 9574.28 | -5524.14 | 0.000% |
| 12 | 5602.41 | -12765.71 | 9568.08 | -5602.41 | 12765.71 | -9568.08 | 0.000% |
| 13 | 5602.41 | -9574.28 | 9568.08 | -5602.41 | 9574.28 | -9568.08 | 0.000% |
| 14 | 0.00 | -12765.71 | 11048.27 | -0.00 | 12765.71 | -11048.27 | 0.000% |
| 15 | 0.00 | -9574.28 | 11048.27 | -0.00 | 9574.28 | -11048.27 | 0.000% |
| 16 | -5602.41 | -12765.71 | 9568.08 | 5602.41 | 12765.71 | -9568.08 | 0.000% |
| 17 | -5602.41 | -9574.28 | 9568.08 | 5602.41 | 9574.28 | -9568.08 | 0.000% |
| 18 | -9703.67 | -12765.71 | 5524.14 | 9703.67 | 12765.71 | -5524.14 | 0.000% |
| 19 | -9703.67 | -9574.28 | 5524.14 | 9703.67 | 9574.28 | -5524.14 | 0.000% |
| 20 | -11204.83 | -12765.71 | 0.00 | 11204.83 | 12765.71 | 0.00 | 0.000% |
| 21 | -11204.83 | -9574.28 | 0.00 | 11204.83 | 9574.28 | 0.00 | 0.000% |
| 22 | -9703.67 | -12765.71 | -5524.14 | 9703.67 | 12765.71 | 5524.14 | 0.000% |
| 23 | -9703.67 | -9574.28 | -5524.14 | 9703.67 | 9574.28 | 5524.14 | 0.000% |
| 24 | -5602.41 | -12765.71 | -9568.08 | 5602.41 | 12765.71 | 9568.08 | 0.000% |
| 25 | -5602.41 | -9574.28 | -9568.08 | 5602.41 | 9574.28 | 9568.08 | 0.000% |
| 26 | 0.00 | -29979.55 | 0.00 | 0.00 | 29979.55 | 0.03 | 0.000% |
| 27 | 0.00 | -29979.55 | -2907.91 | 0.00 | 29979.55 | 2908.09 | 0.001% |
| 28 | 1467.56 | -29979.55 | -2518.32 | -1467.58 | 29979.55 | 2518.36 | 0.000% |
| 29 | 2541.88 | -29979.55 | -1453.96 | -2541.92 | 29979.55 | 1453.98 | 0.000% |
| 30 | 2935.11 | -29979.55 | 0.00 | -2935.29 | 29979.55 | 0.01 | 0.001% |
| 31 | 2541.88 | -29979.55 | 1453.96 | -2541.92 | 29979.55 | -1453.97 | 0.000% |
| 32 | 1467.56 | -29979.55 | 2518.32 | -1467.58 | 29979.55 | -2518.36 | 0.000% |
| 33 | 0.00 | -29979.55 | 2907.91 | 0.00 | 29979.55 | -2908.08 | 0.001% |
| 34 | -1467.56 | -29979.55 | 2518.32 | 1467.58 | 29979.55 | -2518.36 | 0.000% |
| 35 | -2541.88 | -29979.55 | 1453.96 | 2541.92 | 29979.55 | -1453.97 | 0.000% |
| 36 | -2935.11 | -29979.55 | 0.00 | 2935.29 | 29979.55 | 0.01 | 0.001% |
| 37 | -2541.88 | -29979.55 | -1453.96 | 2541.92 | 29979.55 | 1453.98 | 0.000% |
| 38 | -1467.56 | -29979.55 | -2518.32 | 1467.58 | 29979.55 | 2518.36 | 0.000% |
| 39 | 0.00 | -10638.09 | -2017.41 | -0.00 | 10638.09 | 2017.41 | 0.000% |

| | | | | |
|--|----------------|-----------------|--------------------|-------------------|
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| | Project | 81 ft Monopole | Date | 14:17:56 01/16/17 |
| | Client | VERIZON | Designed by | kw |

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|-----------|----------|------------------|----------|----------|---------|
| | PX lb | PY lb | PZ lb | PX lb | PY lb | PZ lb | |
| 40 | 1023.00 | -10638.09 | -1747.13 | -1023.00 | 10638.09 | 1747.13 | 0.000% |
| 41 | 1771.88 | -10638.09 | -1008.70 | -1771.88 | 10638.09 | 1008.70 | 0.000% |
| 42 | 2045.99 | -10638.09 | 0.00 | -2045.99 | 10638.09 | 0.00 | 0.000% |
| 43 | 1771.88 | -10638.09 | 1008.70 | -1771.88 | 10638.09 | -1008.70 | 0.000% |
| 44 | 1023.00 | -10638.09 | 1747.13 | -1023.00 | 10638.09 | -1747.13 | 0.000% |
| 45 | 0.00 | -10638.09 | 2017.41 | -0.00 | 10638.09 | -2017.41 | 0.000% |
| 46 | -1023.00 | -10638.09 | 1747.13 | 1023.00 | 10638.09 | -1747.13 | 0.000% |
| 47 | -1771.88 | -10638.09 | 1008.70 | 1771.88 | 10638.09 | -1008.70 | 0.000% |
| 48 | -2045.99 | -10638.09 | 0.00 | 2045.99 | 10638.09 | 0.00 | 0.000% |
| 49 | -1771.88 | -10638.09 | -1008.70 | 1771.88 | 10638.09 | 1008.70 | 0.000% |
| 50 | -1023.00 | -10638.09 | -1747.13 | 1023.00 | 10638.09 | 1747.13 | 0.000% |

Maximum Tower Deflections - Service Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|---------------|---------------------|-----------------|--------|---------|
| L1 | 81 - 47.54 | 17.4346 | 48 | 1.8953 | 0.0161 |
| L2 | 47.54 - 37.54 | 5.9692 | 48 | 1.2014 | 0.0106 |
| L3 | 40.46 - 25 | 4.3213 | 48 | 1.0194 | 0.0091 |
| L4 | 25 - 0 | 1.6178 | 48 | 0.6154 | 0.0046 |

Critical Deflections and Radius of Curvature - Service Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|--------------|---------------------------------|-----------------|---------------|--------|---------|------------------------|
| 82.00 | BXA-70063-4CF-EDIN w/mount pipe | 48 | 17.4346 | 1.8953 | 0.0161 | 10326 |
| 81.00 | PiROD 13' Low Profile Platform | 48 | 17.4346 | 1.8953 | 0.0161 | 10326 |
| 62.50 | PiROD 13' Low Profile Platform | 48 | 10.5375 | 1.5377 | 0.0133 | 2790 |
| 42.50 | PiROD 13' Low Profile Platform | 48 | 4.7674 | 1.0728 | 0.0096 | 2317 |

Section Capacity Table

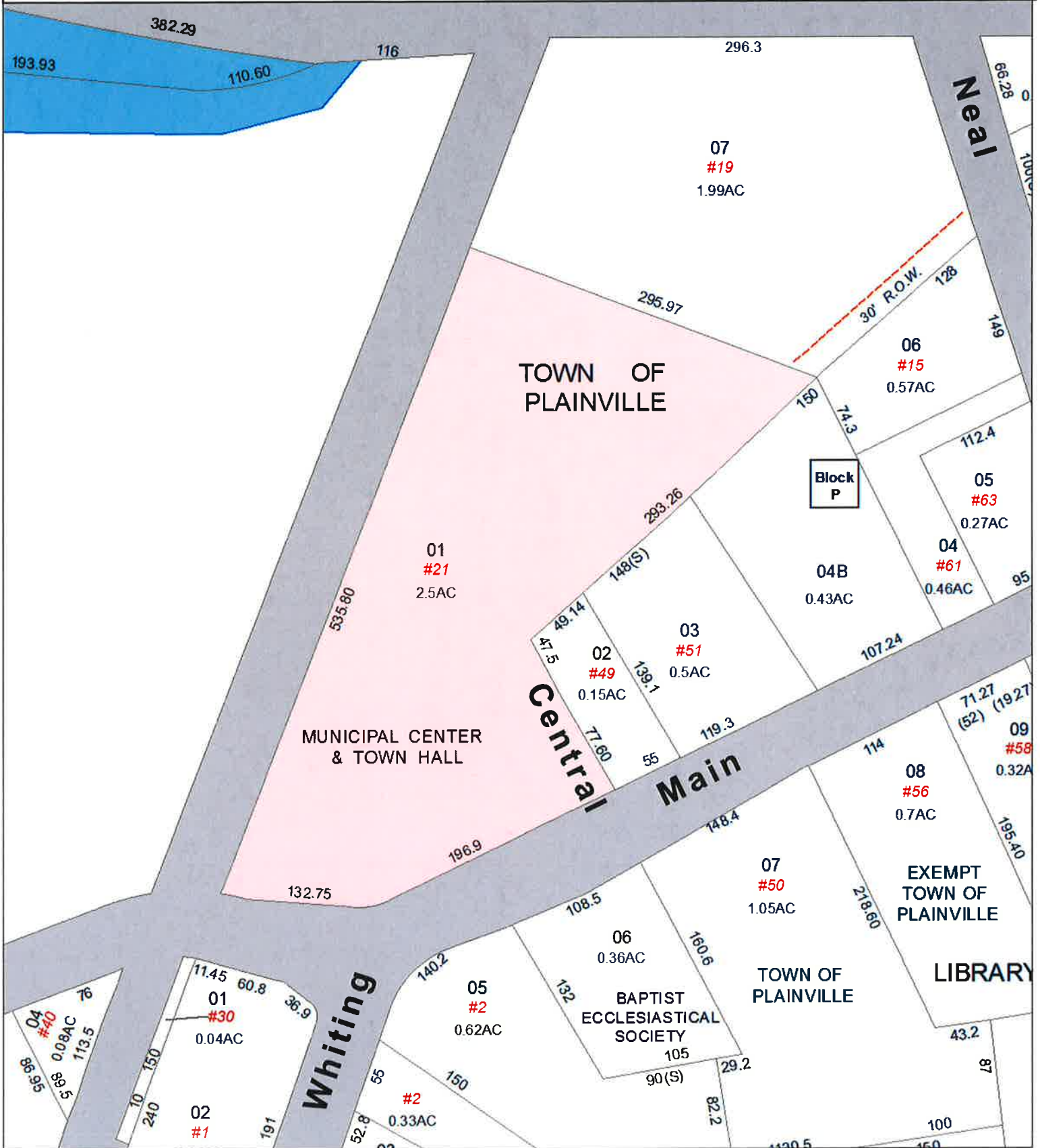
| Section No. | Elevation ft | Component Type | Size | Critical Element | P lb | ϕP_{allow} lb | % Capacity | Pass Fail |
|-----------------|---------------|----------------|----------------------|------------------|-----------|---------------------|-------------|-------------|
| L1 | 81 - 47.54 | Pole | TP17.75x13x0.1875 | 1 | -5489.96 | 776523.00 | 93.0 | Pass |
| L2 | 47.54 - 37.54 | Pole | TP19.17x17.75x0.25 | 2 | -7728.70 | 1090950.00 | 79.8 | Pass |
| L3 | 37.54 - 25 | Pole | TP20.91x18.2554x0.25 | 3 | -9514.33 | 1217970.00 | 96.0 | Pass |
| L4 | 25 - 0 | Pole | TP24x20.91x0.3 | 4 | -12749.00 | 1676630.00 | 94.9 | Pass |
| Summary | | | | | | | | |
| Pole (L3) | | | | | | | 96.0 | Pass |
| RATING = | | | | | | | 96.0 | Pass |

ATTACHMENT 4

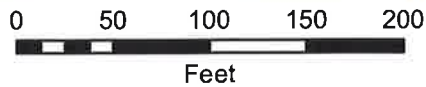
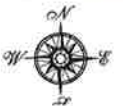
Town of Plainville, Connecticut - Assessment Parcel Map

Parcel: 24-P-01

Address: 21 EAST MAIN ST



Map Produced April 2016



Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Plainville and its mapping contractors assume no legal responsibility for the information contained herein.



**Town of Plainville
Property Listing Report**

Parcel ID **24-P-01**

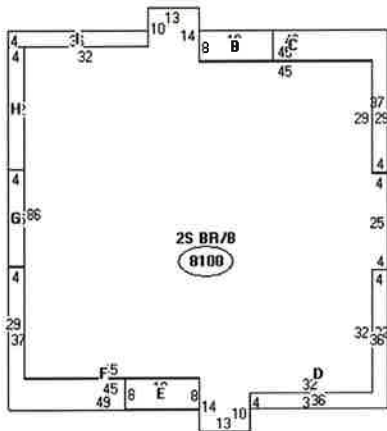
Account

R07119

Property Information

| | |
|------------------------|-----------------------|
| Owner | PLAINVILLE TOWN OF |
| Address | 21 EAST MAIN ST |
| Mailing Address | PLAINVILLE , CT 06062 |
| Land Use | - |
| Land Class | C |

| | |
|--------------------------|---------|
| Census Tract | 4202 |
| Neighborhood | 810 |
| Zoning | CC |
| Acreage | 2.5 |
| Utilities | |
| Lot Setting/ Desc | / LEVEL |



- Descriptor**
- A: 2S BR/B
8100 sqft
 - B: CANDA PY
152 sqft
 - C: 2ND STR
508 sqft
 - D: 2ND STR
272 sqft
 - E: CANDA PY
152 sqft
 - F: 2ND STR
508 sqft
 - G: 2ND STR
100 sqft
 - H: 2ND STR
128 sqft
 - I: 2ND STR
144 sqft

PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

| | Appraised | Assessed |
|---------------------|-----------|----------|
| Buildings | 4090100 | |
| Outbuildings | | |
| Improvements | | |
| Extras | | |
| Land | 320000 | |
| Total | 4410100 | 3087070 |
| Previous | | |

Construction Details

| | |
|---------------------------|------|
| Year Built | |
| Stories | |
| Building Style | |
| Building Use | 0 |
| Building Condition | GOOD |
| Total Rooms | |
| Bedrooms | |
| Full Bathrooms | |
| Half Bathrooms | |
| Bath Style | |
| Kitchen Style | |
| Roof Style | |
| Roof Cover | |

EXTERIOR WALLS:

| | |
|------------------|--|
| Primary | |
| Secondary | |

INTERIOR WALLS:

| | |
|------------------|--|
| Primary | |
| Secondary | |

FLOORS:

| | |
|------------------|--|
| Primary | |
| Secondary | |

HEATING/AC:

| | |
|---------------------|--|
| Heating Type | |
| Heating Fuel | |
| AC Type | |

BUILDING AREA:

| | |
|--------------------------------|--|
| Effective Building Area | |
| Gross Building Area | |
| Total Living Area | |

SALES HISTORY:

| | |
|-------------------|---------|
| Sale Date | 0 |
| Sale Price | 0 |
| Book/ Deed | 173 633 |