Existing Verizon Wireless PCS Coverage
Willington, CT and Surrounding Area
*(*Map Scale is 1:30,000)*

Coverage plot assumes 55% site loading on the Cellco system

WILLINGTON
TOLLAND
COVENTRY
MANSFIELD
ASHFORD
CHAPLIN
Nye Holman State Forest
Natchaug State Forest
Natchaug State Forest
Natchaug State Forest
Natchaug State Forest
Horse Hill 715 Ft. AMSL
Summer Hill 784 Ft. AMSL
Three Mile Hill 777 Ft. AMSL
776 Ft. AMSL
665 Ft. AMSL
751 Ft. AMSL
738 Ft. AMSL
662 Ft. AMSL
525 Ft. AMSL
487 Ft. AMSL
Orchard Hill 652 Ft. AMSL
Stowell Pond
Zaicek Pond
Knowlton Pond
Leander Pond
Hansens Pond
Eagleville Pond
Wangumeaug Lake
Mansfield Hollow
Proposed Facility
Willington Mansfield 4 Corners
Ashford West 2
Mansfield North
Mansfield
Storrs
UConn East
Uconn
Willimantic
74
84
89
32
320
195
44
31
275
198
Tony Rd
Anthony Rd
Old Gulph Rd S
Metcalf Rd
Willington Hill Rd
London Rd
Jared Bowen Rd
Burnap Rd
Thomas Meadow Rd
Seckar Rd
Howard Rd
Gilbert Bidwell Rd
Ellithorpe Rd
Gurley Rd
Dunham Rd
Goodwin Rd
Wormwood Hill Rd
Stearns Rd
Union Rd
Howard Rd
Mason Rd
Knowlton Hill Rd
Varga Rd
Bidwell Rd
Dog Trap Rd
Grant Hill Rd
Broad Way
Marrow Rd
Forest Rd
Ducat Rd
Horsebarn Hill Rd
Barrows Hill Rd
Gurleyville Rd
Mount Hope Rd
Woodland Rd
Southbury Rd
Mansfield City Rd
Old Gurleyville Rd
Middle Turnpike
Ruby Mountain Rd
Carpenter Rd
Silver St
Cross Hill Rd
Eagleville Rd
Cooper Ln
Dodd Rd
Maple Rd
River Rd
Mount Hope River
Hickory Ln
Pudman Rd
Bedlam Rd
Farrell Rd
Bear Hill Rd
Pumpkin Hill Rd
Thompson Rd
Ferguson Rd
Slack Rd
James Rd
Weatherbee Hill Rd
Natchaug Trail
Hall Rd
Miller Rd
S Bear Hill Rd
Woodland Rd
Nipmuc Rd
Nipmuc Lodge Rd
Bone Mill Rd
Gurleyville Rd
Mount Hope Rd
Hall Rd
Miller Rd
Old Gulph Rd S
Wormwood Hill Rd
Union Rd
Howard Rd
Knowlton Hill Rd
Varga Rd
Bidwell Rd
Dog Trap Rd
Mason Rd
Gilbert Bidwell Rd
Ellithorpe Rd
Gurley Rd
Dunham Rd
Goodwin Rd
Wormwood Hill Rd
Stearns Rd
Union Rd
Howard Rd
Mason Rd
Knowlton Hill Rd
Varga Rd
Bidwell Rd
Dog Trap Rd
Grant Hill Rd
Broad Way
Marrow Rd
Forest Rd
Ducat Rd
Horsebarn Hill Rd
Barrows Hill Rd
Gurleyville Rd
Mount Hope Rd
Woodland Rd
Southbury Rd
Mansfield City Rd
Old Gulph Rd
Middle Turnpike
Ruby Mountain Rd
Carpenter Rd
Silver St
Cross Hill Rd
Eagleville Rd
Cooper Ln
Dodd Rd
Maple Rd
River Rd
Mount Hope River
Hickory Ln
Pudman Rd
Bedlam Rd
Farrell Rd
Bear Hill Rd
Pumpkin Hill Rd
Thompson Rd
Ferguson Rd
Slack Rd
James Rd
Weatherbee Hill Rd
Natchaug Trail
Hall Rd
Miller Rd
S Bear Hill Rd
Woodland Rd
Nipmuc Rd
Nipmuc Lodge Rd
Bone Mill Rd
Gurleyville Rd
Mount Hope Rd
Hall Rd
Miller Rd
Old Gulph Rd S

*Note: The original 1:30,000 plot was generated in an approximate 24" by 36" layout and has been reduced to 11" by 17" for the purposes of this application. Refer to graphic scale on lower portion of the map.

Legend

- Existing Verizon Wireless Facilities
- Proposed Facility

Existing Verizon Wireless PCS Coverage

- -75 dBm
- -85 dBm

- Interstate Highway
- Major Roads
- Local Streets
- Open Water
- State Forest (CT)
- Town Line

N

0 0.5 1 2 Miles

VHB

verizonwireless

d:\mobile\projects\41240.50\graphics\figures\MansfieldNorth_Existing_PCS.pdf

*Existing Verizon Wireless PCS Coverage With Proposed Facility At 97 Feet AGL Willington, CT and Surrounding Area (*Map Scale is 1:30,000)*

Coverage plot assumes 55% site loading on the Cellco system

WILLINGTON
TOLLAND
ASHFORD
COVENTRY
MANSFIELD
CHAPLIN
Nye Holman State Forest
Natchaug State Forest
Horse Hill 715 Ft. AMSL
Summer Hill 784 Ft. AMSL
Three Mile Hill 777 Ft. AMSL
776 Ft. AMSL
665 Ft. AMSL
751 Ft. AMSL
738 Ft. AMSL
662 Ft. AMSL
525 Ft. AMSL
487 Ft. AMSL
Orchard Hill 652 Ft. AMSL
Stowell Pond
Zaicek Pond
Knowlton Pond
Leander Pond
Hansens Pond
Eagleville Pond
Wangumeaug Lake
Mansfield Hollow
Proposed Facility
Willington Mansfield 4 Corners
Mansfield North
Ashford West 2
Mansfield
Storrs
UConn East
Uconn
Willimantic River
Mount Hope River
Tolland Turnpike
Stafford Rd
Tory Rd
Metcalf Rd
Anthony Rd
Old Lehmann Rd
Lehman Rd
Whitehead Hill Rd
Hall Rd
Gilman Bridge Rd
Eldredge Rd
Orcutt Rd
Dunham Rd
Mason Rd
Cedar Swamp Rd
Fern St Rd
Dog Rd
Griffith Path Rd
Bone Mill Rd
Timbuctoo Loop Rd
Ruby Mountain Rd
Cooper Hill Rd
Ruby Hill Rd
Cooper Ln
Reed Rd
Old Eagleville Rd
Maple Rd
Mansfield City Rd
Goodwin Rd
Wormwood Hill Rd
Howard Rd
Knowlton Hill Rd
Varga Rd
Pumpkin Hill Rd
Packinghouse Rd
Slack Rd
Union Rd
Cooks Rd
Howley Rd
Zaicek Rd
Westford Hill Rd
James Rd
Gurleyville Rd
Mount Hope Rd
Woodman Rd
Tower Hill Rd
Pollard Rd
Hatchery Ln
Bedlam Rd
Miller Rd
S Bear Hill Rd
Grant Hill Rd
Marrow Rd
Broad Way
Miller Rd
Clapman Rd
Storrs St
Chaffee Rd
Natchaug State Forest
74
84
195
32
320
44
31
275
89
198

*Note: The original 1:30,000 plot was generated in an approximate 24" by 36" layout and has been reduced to 11" by 17" for the purposes of this application. Refer to graphic scale on lower portion of the map.

Legend

- Existing Verizon Wireless Facilities
- Proposed Facility

Proposed Verizon Wireless PCS Coverage

- -75 dBm
- -85 dBm

- Interstate Highway
- Major Roads
- Local Streets
- Open Water
- State Forest (CT)
- Town Line

N

0 0.5 1 2 Miles

VHB

verizonwireless

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Existing Verizon Wireless Cellular Coverage
Willington, CT and Surrounding Area
*(*Map Scale is 1:30,000)*

Coverage plot assumes 55% site loading on the Cellco system

WILLINGTON
TOLLAND
COVENTRY
MANSFIELD
ASHFORD
CHAPLIN
Nye Holman State Forest
Natchaug State Forest
Natchaug State Forest
Natchaug State Forest
Natchaug State Forest
Horse Hill 715 Ft. AMSL
Summer Hill 784 Ft. AMSL
Three Mile Hill 777 Ft. AMSL
776 Ft. AMSL
665 Ft. AMSL
751 Ft. AMSL
738 Ft. AMSL
662 Ft. AMSL
525 Ft. AMSL
487 Ft. AMSL
Orchard Hill 652 Ft. AMSL
Stowell Pond
Zaicek Pond
Knowlton Pond
Leander Pond
Hansens Pond
Eagleville Pond
Wangumeaug Lake
Mansfield Hollow
Mansfield North
Ashford West 2
Proposed Facility
Willington Mansfield 4 Corners
Mansfield
Storrs
UConn East
Uconn
Willimantic
Tolland Turnpike
Old Stafford Rd S
Tolland Stage Rd
Tony Rd
Metcalf Rd
Anthony Rd
Lenihan Rd
Wahnidge Hill Rd
Grant Hill Rd
Broad Way
Marrow Rd
N Eagleville Rd
Carpenter Rd
Silver St
Ripley Hill Rd
Crooker Ln
Gurleyville Rd
Mount Hope Rd
Woodland Rd
Mount Hope River
Tower Hill Rd
Palmer Rd
Pumpkin Hill Rd
Bedlam Rd
S Bear Hill Rd
Hall Rd
Miller Rd
Hunting Lodge Rd
Bone Mill Rd
Forest Rd
Birch Rd
Goodwin Forest Rd
Mansfield City Rd
Maple Rd
Daleville Rd
Gurley Rd
Howard Rd
Dunham Rd
Cowles Rd
Ellithorpe Rd
Knowlton Hill Rd
Varga Rd
Slocum Rd
Bedlington Rd
Pumpkin Hill Rd
Hemenway Rd
Natchaug Trail
Gilead Church Rd
Jared Sparks Rd
Thomas Hazardville Rd
Seckard Rd
Burnap Rd
Wawaroad Rd
Zaicek Rd
Westford Hill Rd
James Rd
Old Eagleville Rd
Daleville Rd
Gurley Rd
Howard Rd
Knowlton Hill Rd
Mixson Rd
Ellithorpe Rd
Dunham Rd
Cowles Rd
Slocum Rd
Bedlington Rd
Pumpkin Hill Rd
Hemenway Rd
Natchaug Trail
Gilead Church Rd
Jared Sparks Rd
Thomas Hazardville Rd
Seckard Rd
Burnap Rd
Wawaroad Rd
Zaicek Rd
Westford Hill Rd
James Rd
74
84
89
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320
44
31
275
198

*Note: The original 1:30,000 plot was generated in an approximate 24" by 36" layout and has been reduced to 11" by 17" for the purposes of this application. Refer to graphic scale on lower portion of the map.

Legend

- Existing Verizon Wireless Facilities
- Proposed Facility

Existing Verizon Wireless Cellular Coverage

- -75 dBm
- -85 dBm

- Interstate Highway
- Major Roads
- Local Streets
- Open Water
- State Forest (CT)
- Town Line

N

0 0.5 1 2 Miles

VHB

verizonwireless

cm/data/projects/432ab.55/graphics/figures/Mansfield_Existing_8_55.pdf

*Existing Verizon Wireless Cellular Coverage With Proposed Facility At 97 Feet AGL Willington, CT and Surrounding Area (*Map Scale is 1:30,000)*

Coverage plot assumes 55% site loading on the Cellco system

WILLINGTON
TOLLAND
ASHFORD
COVENTRY
MANSFIELD
CHAPLIN
Nye Holman State Forest
Natchaug State Forest
Natchaug State Forest
Natchaug State Forest
Natchaug State Forest
Horse Hill 715 Ft. AMSL
Summer Hill 784 Ft. AMSL
Three Mile Hill 777 Ft. AMSL
776 Ft. AMSL
665 Ft. AMSL
751 Ft. AMSL
738 Ft. AMSL
662 Ft. AMSL
525 Ft. AMSL
487 Ft. AMSL
Orchard Hill 652 Ft. AMSL
Stowell Pond
Zaicek Pond
Knowlton Pond
Leander Pond
Hansens Pond
Eagleville Pond
Wangumeag Lake
Mansfield Hollow
Willimantic
Mount Hope River
Proposed Facility
Willington Mansfield 4 Corners
Mansfield North
Ashford West 2
Mansfield
Storrs
UConn East
Uconn
74
84
89
195
32
320
44
31
275
198
Tony Rd
Metcalf Rd
Anthony Rd
Old Gulph Rd S
Wellsridge Hill Rd
London Rd
Hannah Rd
Elderidge Rd
Gilmer Eldredge Rd
Jared Sparks Rd
Thomas Meadow Rd
Stockwell Rd
Dunn Rd
Hosley Rd
Zaicek Rd
Weatherbee Hill Rd
James Rd
Crawford Rd
Union Rd
Slade Rd
Pumpkin Hill Rd
Bassett Rd
Knowlton Hill Rd
Howard Rd
Bishop Rd
Mason Rd
Varga Rd
Gurleyville Rd
Mount Hope Rd
Woodland Rd
Woodwood Hill Rd
Tower Hill Rd
Federal Rd
Hosley Ln
R Hosley Rd
Bedlam Rd
Mills Rd
S Bear Hill Rd
Grant Hill Rd
Broad Way
Marrow Rd
N Eagleville Rd
Riley Mountain Rd
Separator Rd
Stafford St
Lewis Hill Rd
Ripley Hill Rd
Cougan Ln
River
Route 89
Old Eagleville Rd
Maple Rd
Mansfield City Rd
Dunham Rd
Grove Rd
Fern Rd
Birch Rd
Hunting Lodge Rd
Bone Mill Rd
Gurleyville Rd
Mount Hope Rd
Woodland Rd
Woodwood Hill Rd
Tower Hill Rd
Federal Rd
Hosley Ln
R Hosley Rd
Bedlam Rd
Mills Rd
S Bear Hill Rd
Grant Hill Rd
Broad Way
Marrow Rd
N Eagleville Rd
Riley Mountain Rd
Separator Rd
Stafford St
Lewis Hill Rd
Ripley Hill Rd
Cougan Ln
River
Route 89
Old Eagleville Rd
Maple Rd
Mansfield City Rd
Dunham Rd
Grove Rd
Fern Rd
Birch Rd
Hunting Lodge Rd
Bone Mill Rd

*Note: The original 1:30,000 plot was generated in an approximate 24" by 36" layout and has been reduced to 11" by 17" for the purposes of this application. Refer to graphic scale on lower portion of the map.

Legend

- Existing Verizon Wireless Facilities
- Proposed Facility
- **Proposed Verizon Wireless Cellular Coverage**
  - -75 dBm
  - -85 dBm
- Interstate Highway
- Major Roads
- Local Streets
- Open Water
- State Forest (CT)
- Town Line

N

0 0.5 1 2 Miles

VHB

verizonwireless

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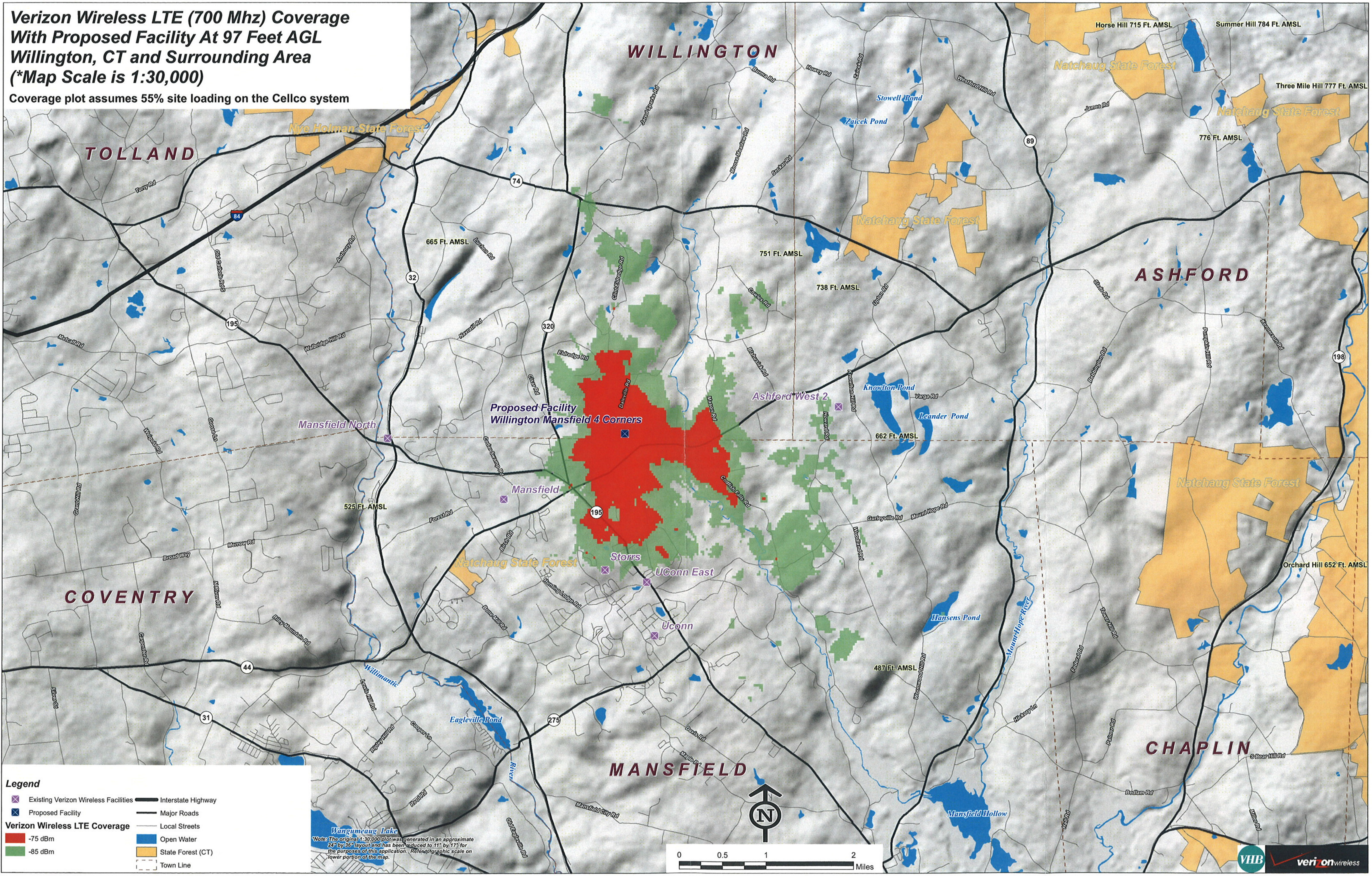
*Verizon Wireless LTE (700 Mhz) Coverage With Proposed Facility At 97 Feet AGL Willington, CT and Surrounding Area (*Map Scale is 1:30,000)*

Coverage plot assumes 55% site loading on the Cellco system



*Note: The original 1:30,000 plot was generated in an approximate 24" by 36" layout and has been reduced to 11" by 17" for the purposes of this application. Refer to graphic scale on lower portion of the map.

ctmiddat\projects\41240.50\graphics\figures\Mansfield_Proposed_LTE.pdf

Vertically Polarized, Log Periodic 63° / 14.5 dBd

LPA-80063/6CF ___

When ordering replace "___" with connector type.

Mechanical specifications

Length	1800	mm	70.9	in
Width	380	mm	15.0	in
Depth	332	mm	13.1	in
Depth with z-bracket	372	mm	14.6	in
[4] Weight	12.3	kg	27.0	lbs
Wind Area				
Fore/Aft	0.68	m^2	7.4	ft^2
Side	0.60	m^2	6.5	ft^2
Rated Wind Velocity (Safety factor 2.0)	>219	km/hr	>136	mph
Wind Load @ 100 mph (161 km/hr)				
Fore/Aft	993	N	223	lbs
Side	872	N	196	lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

Mounting and Downtilting

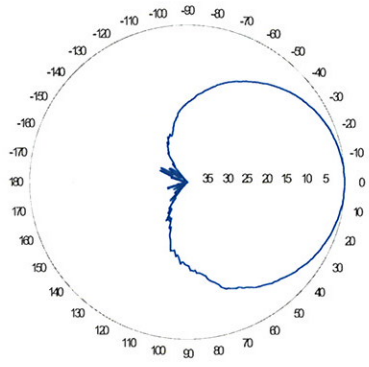
Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in). If the lock-down brace is used, the maximum diameter is Ø88.9 mm (3.5 in)

Mounting Bracket & Downtilt Bracket Kit #21699999

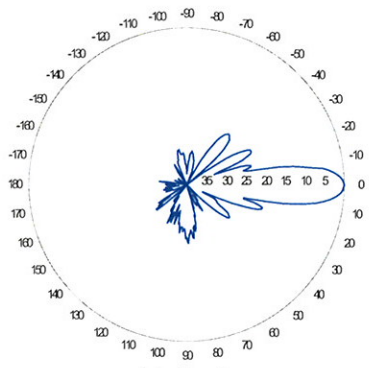
Electrical specifications

Frequency Range	806-960 MHz
Impedance	50Ω
[3] Connector(s)	NE or E-DIN 1 port / center
[1] VSWR	≤ 1.4:1
Polarization	Vertical
[1] Gain	14.5 dBd
[2] Power Rating	500 W
[1] Half Power Angle	
H-Plane	63°
E-Plane	10°
[1] Electrical Downtilt	0°
[1] Null Fill	10%
Lightning Protection	Direct Ground

Radiation pattern[1]



Horizontal

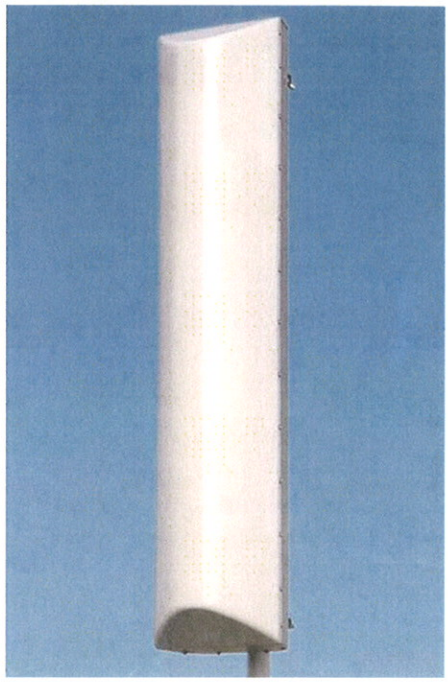


Vertical

Featuring upper side lobe suppression.

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back ratio.



Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- True log-periodic design allows for superior front-to-side characteristics to minimize sector overlap.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad band-width and superior performance.
- Air as insulation for virtually no internal signal loss.

This Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.

Antenna available with center-fed connector only.

CF Denotes a Center-Fed Connector.

806-960 MHz

[1] Typical values.
[2] Power rating limited by connector only.
[3] NE indicates an elongated N connector. E-DIN indicates an elongated DIN connector.
[4] The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Amphenol Antel, Inc. 1300 Capital Drive Rockford, Illinois 61109 USA Tel. (815) 399-0001
Toll-Free (888) 417-9562 Fax. (815) 399-0156 antel@antelinc.com www.antelinc.com

Revision Date: 6/17/08

Vertically Polarized, Log Periodic 63° / 18.5 dBi

LPA-185063/12CF __ 2°

When ordering replace "___" with connector type.

Mechanical specifications

Length	1806	mm	71.1	in
Width	167	mm	6.6	in
Depth	148	mm	5.8	in
Depth with t-bracket	176	mm	6.9	in
[4] Weight	6.1	kg	13.5	lbs
Wind Area				
Fore/Aft	0.30	m^2	3.3	ft^2
Side	0.27	m^2	2.9	ft^2
Rated Wind Velocity (Safety factor 2.0)	>224	km/hr	>139	mph
Wind Load @ 100 mph (161 km/hr)				
Fore/Aft	479	N	107.6	lbs
Side	434	N	97.6	lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

Mounting and Downtilting

Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in).

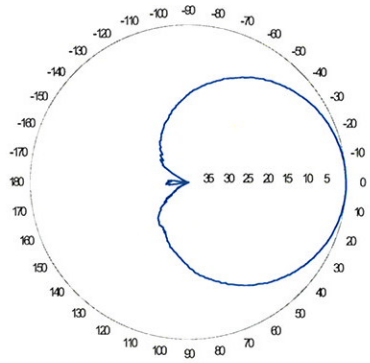
Mounting bracket kit #26799997
Downtilt bracket kit #26799999

The downtil bracket kit includes the mounting bracket kit.

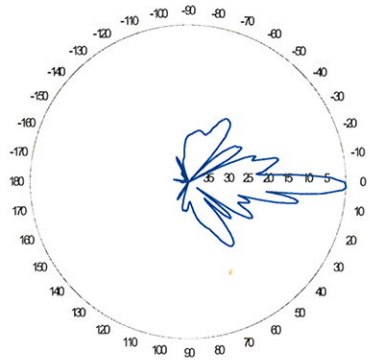
Electrical specifications

	Frequency Range	1850-1990 MHz
	Impedance	50Ω
[3]	Connector(s)	NE or E-DIN 1 port / center
[1]	VSWR	≤ 1.4:1
	Polarization	Vertical
[1]	Gain	18.5 dBi
[2]	Power Rating	250 W
[1]	Half Power Angle	
	H-Plane	63°
	E-Plane	5°
[1]	Electrical Downtilt	2°
[1]	Null Fill	10%
	Lightning Protection	Direct Ground

Radiation pattern[1]



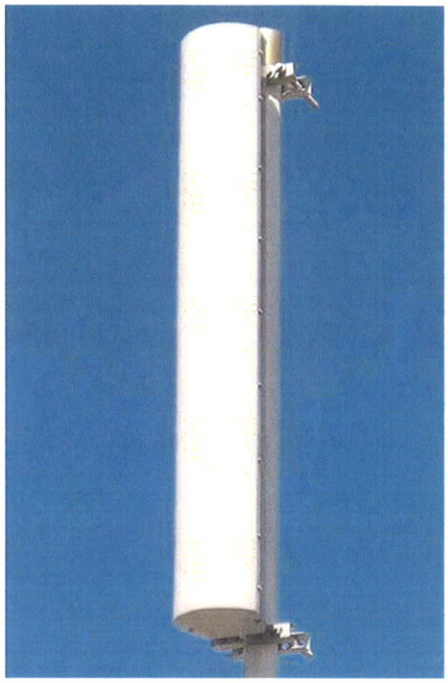
Horizontal



Vertical

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back ratio.



Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- True log-periodic design allows for superior front-to-side characteristics to minimize sector overlap.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad band-width and superior performance.
- Air as insulation for virtually no internal signal loss.

This Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.

Antenna available with center-fed connector only.

1) Typical values.
2) Power rating limited by connector only.
3) NE indicates an elongated N connector.
   E-DIN indicates an elongated DIN connector.
4) The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

CF Denotes a Center-Fed Connector.

1850-1990 MHz

Amphenol Antel, Inc. 1300 Capital Drive Rockford, Illinois 61109 USA Tel. (815) 399-0001
Toll-Free (888) 417-9562 Fax. (815) 399-0156 antel@antelinc.com www.antelinc.com

Revision Date: 712/07

Slant ±45° Dual Polarized FET Panel 63° / 14.5 dBd
696-900 MHz

BXA-70063/6CF __
When ordering replace "__" with connector type.

Mechanical specifications

Length	1804	mm	71.0	in
Width	285	mm	11.2	in
Depth	114	mm	4.5	in
Depth with z-bracket	154	mm	6.1	in
Weight [4]	7.9	kg	17.0	lbs
Wind Area Fore/Aft	0.51	m^2	5.5	ft^2
Wind Area Side	0.21	m^2	2.2	ft^2
Max Wind Survivability	>201	km/hr	>125	mph
Wind Load @ 100 mph (161 km/hr)				
Fore/Aft	753	N	169	lbf
Side	351	N	79	lbf

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiber-glass radome.

Mounting & Downtilting

Mounting hardware attaches to pipe diameter Ø50-160 mm; Ø2.0-6.3 in

Mounting Bracket Kit	36210002
Downtilt Bracket Kit	36114003

Electrical specifications

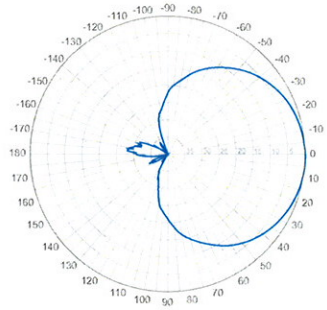
Frequency Range	696-900 MHz
Impedance	50Ω
Connector [3]	NE or E-DIN Female 2 ports / Center
VSWR [1]	≤ 1.35:1
Polarization	Slant ±45°
Isolation Between Ports [1]	< -25 dB
Gain [1]	14.5 dBd 16.5 dBi
Power Rating [2]	500 W
Half Power Angle [1]	
Horizontal Beamwidth	63°
Vertical Beamwidth	11°
Electrical downtilt [5]	0°
Null fill [1]	5%
Lightning protection	Direct ground

Patented Dipole Design: U.S. Patent No. 6,608,600 B2

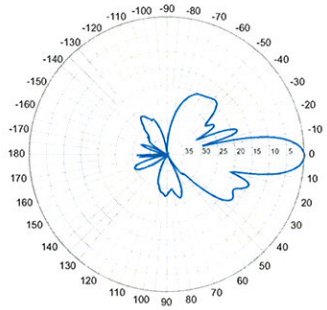
1) Typical values.
2) Power rating limited by connector only.
3) NE indicates an elongated N connector. E-DIN indicates an elongated DIN connector.
4) Antenna weight does not include brackets.
5) Add'l downtilts may be available. Check website for details.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Radiation-pattern[1]
750 MHz

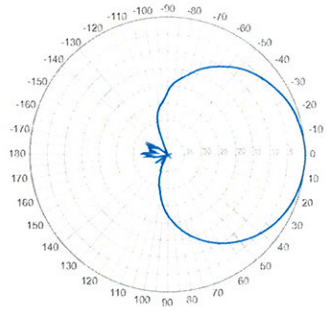


Horizontal

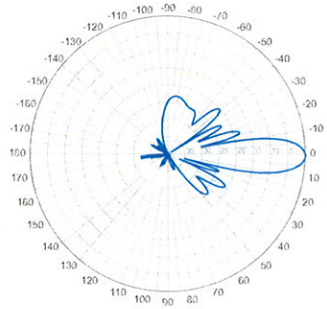


Vertical

850 MHz

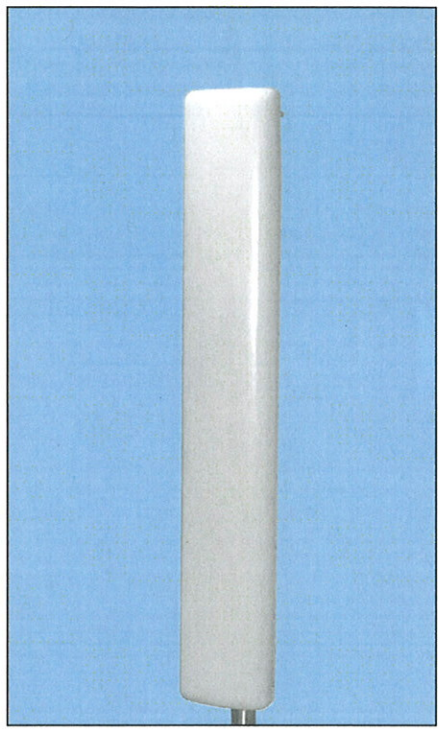


Horizontal



Vertical

696-900 MHz



Featuring our Exclusive 3T Technology™ Antenna Design:

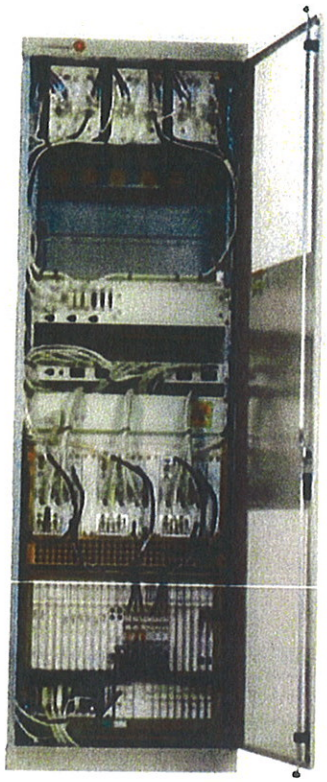
- Watercut brass feedline assembly for consistent performance.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad band-width and superior performance.
- Air as insulation for virtually no internal signal loss.

Warranty:
This antenna is under a five-year limited warranty for repair or replacement.

Revision Date: 01/08/09

815.399.0001 • antel@antelinc.com • www.antelinc.com

Lucent CDMA Modular Cell 4.0B Indoor
For CDMA Networks



Lucent CDMA Modular Cell 4.0B is a high capacity base station equipped with the state-of-the-art technologies developed by Bell Labs. The product brings you outstanding carrier density and immediate OPEX savings. This indoor product can support up to 8 carriers/3 sectors per frame. It is twice the density of Modular Cell 4.0 (indoor). Modular Cell 4.0B offers full spectrum coverage in a single frame, dramatically simplifying growth patterns. As the leader in spread spectrum technology, Lucent Technologies continues to introduce innovations to the market: Multi-Carrier Radio (15MHz), Block Filters/Wideband Filters, and 40W Power Amplifier Modules are the latest assets integrated in the base station.

Features

The Modcell 4.0B indoor version offers a small footprint with exceptional carrier density in a standard ETSI cabinet.

- Indoor Single Frame Configuration
- 1-8 carriers per frame at 3 sectors (will support up to 11 carriers with Auxiliary Amplifier Frame)
- Dual Band: one cell to the ECP & mobile
- Close Loop Gain Control
- Timing and Controller Redundancy
- Integrated Power option
- Support CDMA2000™1X, and EV-DO Rev.0, with future support to EV-DO Rev. A
- IP Backhaul and Ethernet Backhaul capable
- 6-Sector option ready
- Intelligent Antenna option ready

Benefits

- Optimized for highest carrier density, smooth growth in one frame
- Conserves indoor footprint, reducing hardware and floor space requirements
- Minimizes configuration complexity
- Software-Only Carrier Add at certain carrier counts
- Flexible channel growth planning
- Designed to use existing power supply
- Grow CDMA carriers on only 2 antennas/sector
- Multi-Carrier Radio (15MHz), Block Filters/ Wideband Filters, and 40W Power Amplifier Modules

Lucent Technologies
Bell Labs Innovations

Technical Specifications

Description	Specification
1. **Configurations**	
a. Sectors	3, 4 and 6
b. Carriers	1–8 per frame at 3 sectors (up to 11 with Auxiliary Amplifier Frame)
2. **CDMA Channel Card Capacity**	12 slots; CMU IVB capable
3. **T1, E1 Facilities**	Maximum of 20 per cabinet when equipped with URC-II's
4. **User Alarms**	7 Power Alarms, 25 User Alarms
5. **GPS Antenna**	Yes
6. **Air Interface Standards**	T1A/E1A 95-A plus TSB-74; T1A/E1A 95-B for 850 MHz; CDMA 2000
7. **Frequency Bands**	850MHz/1900 MHz; 300 to 2100 MHz capable
8. **Vocoder**	8 Kbps; 8 Kbps EVRC; 13 Kbps; SMV-ready
9. **Environmental Cabinet Housing**	Standard ETSI cabinet; UL50 compliant; zero rear clearance
10. **Cabinet Access**	Front Access
11. **Operating Temperature Range**	Range: -5 to +40°C (continuous)
12. **Dimensions**	600 mm W x 600 mm D x 1880 mm H (23.6 x 23.6 x 74) inches
13. **Estimated Installed Weight**	365 kg (785 lbs.) DC [8 carriers in one cabinet]
14. **Power Options**	Integrated Power, AC 120/240 Volt Input, -48V or +24 V DC Conversion Non-integrated Power requires either + 24 VDC Input or - 48 VDC Input
15. **Power Consumption**	
a. 3 Carrier/3 Sectors	2167 W
b. 6 Carrier/3 Sectors	5449 W
c. 11 Carrier/3 Sectors	10026 W
16. **RF Power (at J4)**	25 W per carrier (850) FCC Rated short-term average 20 W per carrier (850) FCC Rated long-term average 20 W per carrier (1900) FCC Rated short-term average 16 W per carrier (1900) FCC Rated long-term average
17. **Minimal Antenna Configuration**	2 antennas/sector
18. **Filter**	Block and Wide Band Dual Duplex
19. **Growth Frame**	PCS AUX Frame, Dual Band Growth Frame
20. **Operational Accessories**	Integrated Power
21. **Channel Elements**	Channel pooling across sectors or carriers

To learn more about our comprehensive portfolio, please contact your Lucent Technologies Sales Representative or visit our web site at http://www.lucent.com.

MOB-Mod4B-i 0106

Lucent Technologies
Bell Labs Innovations

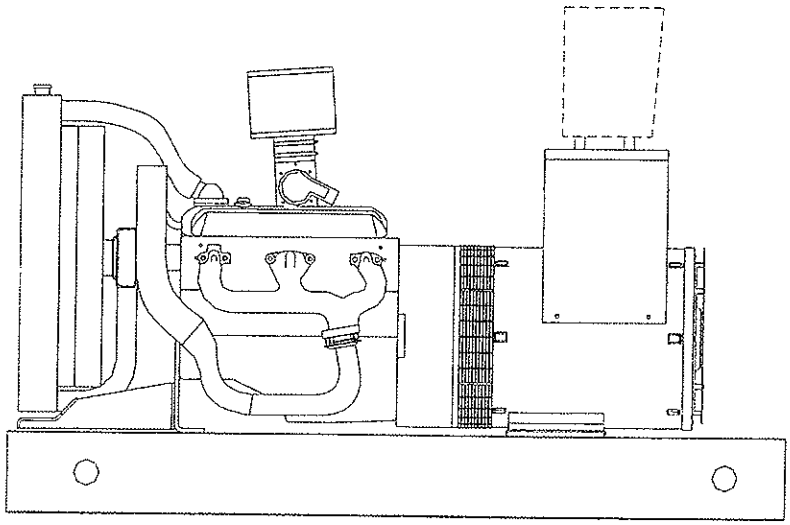
KATOLIGHT CORPORATION

LPG/NG

60 kW @ 60 Hz. Stand-By Power

60F*G4

45 kW @ 60 Hz. Prime Power



- Katolight's commitment to quality has been an industry standard since 1952
- Katolight specializes in custom designing any application to meet the most difficult specifications
- Each and every unit is factory tested. This can eliminate costly startup and installation delays
- Katolight supplies a broad range of accessories to match any requirement worldwide
- Katolight generator sets come standard with a 2 year, 1500 hour limited warranty
- Optional warranty periods are also available, contact factory for details
- This model accepts 100% of nameplate rating, per NFPA 110

Model #	Volts	Hz	Phase	Power Factor	Natural Gas Standby Ratings		Natural Gas Prime Ratings		LP Gas Standby Ratings		LP Gas Prime Ratings		Connection
					Amps	kW/kVA	Amps	kW/kVA	Amps	kW/kVA	Amps	kW/kVA	
60FRG4	277/480	60	3	0.8	90	60/75	68	45/56.25	90	60/75	68	45/56.25	12 LEAD HI WYE
60FPG4	120/208	60	3	0.8	208	60/75	156	45/56.25	208	60/75	156	45/56.25	12 LEAD LOW WYE
60FJG4	120/240	60	3	0.8	180	60/75	135	45/56.25	180	60/75	135	45/56.25	12 LEAD HI DELTA
60FNG4	347/600	60	3	0.8	72	60/75	54	45/56.25	72	60/75	54	45/56.25	4 LEAD WYE
60FGG4	120/240	60	1	1.0	250	60/60	188	45/45	250	60/60	188	45/45	12 LEAD ZIG-ZAG
60FDG4	120/240	60	1	1.0	250	60/60	188	45/45	250	60/60	188	45/45	4 LEAD

KATOLIGHT CORPORATION

STANDARD EQUIPMENT

CONTROL PANEL

- Model #45 control panel
- AC voltmeter, 3 ½", 2% accuracy
- AC ammeter, 3 ½", 2% accuracy
- Combination VM/AM selector switch, 4 position
- Frequency meter, 3 ½", 55-65 Hz.
- Vibration shock mounts (4)
- Engine control - KASSEC-12 VDC, with cyclic cranking timer
- 4 engine shutdowns with separate failure lights
  - High water temperature
  - Low oil pressure
  - Engine overspeed
  - Engine overcrank
- Engine gauges - 2"
  - Battery voltmeter
  - Water temperature
  - Oil pressure
  - Running time meter - 5 digits
- 3 position mode switch (auto-off-manual)

ENGINE

- Air cleaner
- Oil pump
- Full flow oil filter
- Jacket water pump
- Thermostat
- Exhaust manifold – dry
- Blower fan & fan drive
- Radiator - unit mounted
- Vibration isolators - pad type
- Electric starting motor - 12V

ENGINE (cont.)

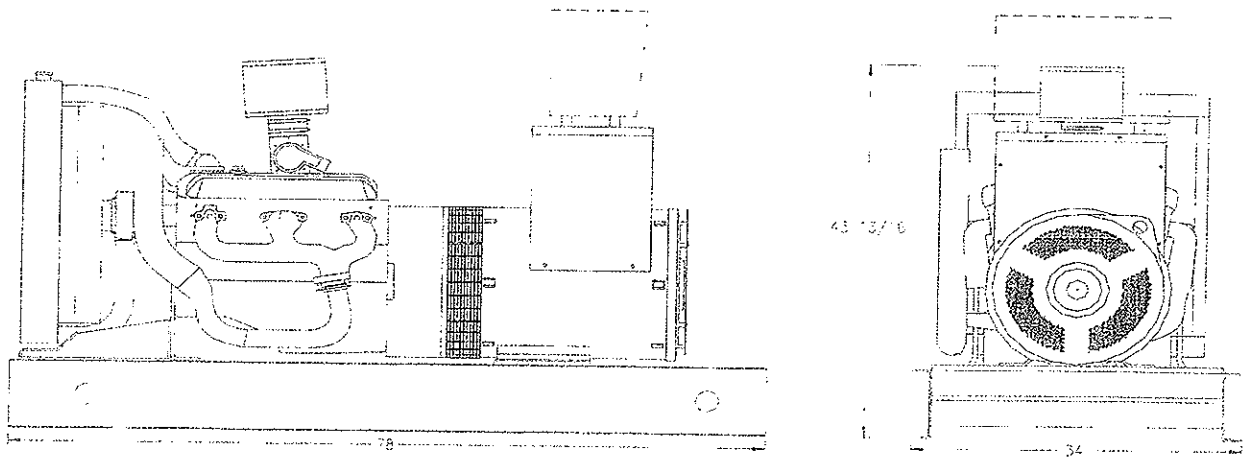
- Governor – Electric Isochronous
- Base - formed steel
- Flywheel & Enclosure
- Charging alternator - 12V
- Battery box & cables
- Flexible fuel & exhaust connectors

GENERATOR

- A.C. Generator
- Brushless design
- Single bearing
- Direct connection with flex plate
- Class H insulation
- All models manufactured to meet NEMA MG1- 22.4 and CSA standards
- Telephone influence factor is well within NEMA standards
- Wave form deviation factor is no more than 5%, well within NEMA standards
- Harmonic content is 3.0% maximum
- Permanently lubricated ball type bearings
- Generator is self-ventilated
- Drip-proof construction

VOLTAGE REGULATOR

- Voltage adjust rheostat
- EMI filter (Internal Electromagnetic Interference)
- Underspeed protection
- Overexcitation protection
- Fully encapsulated
- Regulation - 1%



Drawing above for illustration purposes only, based on standard open power 480 volt generator. Lengths may vary with other voltages.

KATOLIGHT CORPORATION

60F*G4 LPG/NG Gen-Set

ENGINE TECHNICAL DATA

	60 Hz	
Model:	5.7L	
Type:	4-Cycle	
Aspiration:	Naturally	
Cylinder Arrangement: (Number, inline, V. etc.)	8-V	
Displacement - Cu. In. (lit)	350 (5.7)	
Bore - in. (cm) x stroke - in. (cm)	4.0 (10.2) x 3.5 (8.8)	
Compression Ratio:	9.1:1	
Rated RPM	1800	
Rating	Standby	Prime
BMEP: psi (kPa)	110 (758)	107 (737)
Maximum Power at Rated RPM - bhp (kW)	88 (66)	85 (64)

INSTALLATION DATA *

Exhaust System		
Gas Temp. (Stack): °F (°C)	1,403 (762)	1,306 (708)
Gas Volume at Stack Temp. CFM (m^3/min)	571 (16.2)	532 (15.1)
Maximum Allowable Back Pressure: in. H_2O (kPa)	40.7 (10.1)	40.7 (10.1)
Cooling System		
Ambient Capacity of Radiator: °F (°C)	122 (50)	122 (50)
Maximum Allowable Static Pressure on Rad. Exhaust: in. H_2O (kPa)	1.5 (0.37)	1.5 (0.37)
Water Pump Capacity: gpm (lit/min)	31 (117)	31 (117)
Heat Rejection to Coolant: BTUM (kW)	2,999 (52.7)	2,793 (49.1)
Heat Radiated to Ambient: BTUM (kW)	2,429 (42.7)	2,328 (40.9)
Air Requirements		
Aspirating: CFM (m^3/min)	180 (5.1)	172 (4.9)
Air Flow Required for Rad. Cooled Unit: CFM (m^3/min)	7,115 (201)	7,059 (200)
Air Flow Required for Heat Exchanger/Remote Rad. based on 20°F Rise: CFM (m^3/min)	6,747 (191)	6,467 (183)

Fuel Consumption: (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)	NG	LPG	NG	LPG
At 100% of Power Rating: ft^3/hr (m^3/hr)	748 (21.2)	299 (8.5)	726 (20.6)	291 (8.2)
At 75% of Power Rating: ft^3/hr (m^3/hr)	639 (18.1)	256 (7.2)	615 (17.4)	246 (7.0)
At 50% of Power Rating: ft^3/hr (m^3/hr)	510 (14.4)	204 (5.8)	486 (13.8)	194 (5.5)

Sound Level Data ■ Sound level at:	Full Load	No Load	Full Load	No Load
23 ft (7m) opu w/ critical grade muffler (dBA)	79	75	78	75
23 ft (7m) Sound Attenuated Enclosure (dBA)	73	68	72	68

Dimensions & Weight

Length: in. (cm)	78 (198)
Width: in. (cm)	34 (86)
Height: in. (cm)	43.8 (111)
Weight (dry): lb. (kg)	1,366 (620)

Liquid Capacity

Total oil system: gal (lit)	1.6 (6.1)
Engine jacket water capacity: gal (lit)	2.0 (7.6)
System coolant capacity: gal (lit)	5.3 (20.1)

Fuel Inlet

Fuel connection size:	¾" NPT
Fuel supply pressure in H_2O (mm H_2O)	7-11 (178-279)

Electrical System

Electric volts DC	12
Cold cranking Amps under 0°F (-17.8°C)	600

Remote Radiator System

Connection sizes:	
Jacket water radiator inlet in. (cm)	2 (5.1)
Jacket water radiator outlet in. (cm)	2 (5.1)
Static head allowable above engine ft H_2O (kPa)	17 (50.8)
Total system friction pressure max. allowable psi (kPa)	C/F

Heat Exchanger System

Connection sizes:	
Heat ex. inlet in. (cm)	1.5 (3.8)
Heat ex. outlet in. (cm)	1.5 (3.8)
Water consumption: @ 60°F (16°C) gpm (lit/min)	7 (26.5)

*Installation data based on 480 volt, 60 HZ. application and open power unit.
■ For sound level readings with other enclosures, please contact factory.
Sound level data acquired per Test Method SAE J1074. Installation factors and site conditions can affect sound levels.
Deration Factor: Altitude: Derate: 3% per 1,000 ft (305 m) above 328 ft (100 m). Temperature: Derate: 1% per 10°F (5.5°C) above 77°F (25°C)

KATOLIGHT CORPORATION

Control Panel

** NOTE: #45 series control panel is standard on all units. see page 2 of spec sheet for standard features.

- o Model #45 Series Control Panel Options
  - o Emergency stop button
  - o Alarm buzzer with silencing switch
  - o Auxiliary relay for dry contacts (2 max.)
  - o A separate low water level light is optional
  - o Hooded panel lights (2) and on/off switch
  - o NEMA 12 Panel Face
  - o Additional LED lights (4 max.) One or two of the following conditions may be indicated:
    - ☐ unit not in auto
    - ☐ low fuel level
    - ☐ low water level
    - ☐ low water temp.
    - ☐ EPS supplying load
    - ☐ pre-alarm oil
    - ☐ pre-alarm temp.
    - ☐ charger malfunction
- o Model #50 Series Control Panel
  STANDARD FEATURES: same as #45 series control panel except for these added features:
  - o Hooded panel lights (2) and on/off switch
  - o 4 Engine shutdowns
  - o 12 light engine control package meeting NFPA-110 requirement
  - o Repetitive alarm buzzer and silencing switch
  - o Light and alarm press to test

  #50 SERIES OPTIONS
  - o Emergency stop button
  - o Additional space for one 3 ½" meter
  - o Auxiliary relay for dry contacts (2 max.)
  - o A separate low water level light is optional
  - o Additional LED lights (4 max.) One to four additional conditions may be indicated: customer to specify
  - o NEMA 12 Panel Face
- o Model #60 and #80 Series Custom Control Panels
  It may be necessary to use a 60 or 80 series control panel on certain units where numerous options are required.
- o Microprocessor Control Panel – KDGC

GEN-SET OPTIONS

Cooling System

- o Remote Radiator
- o High Ambient Radiator
- o Heat Exchanger Cooling
- o Radiator Duct Flange

DISTRIBUTED BY:

Fuel System

- o Fuel Strainer
- o Dual Fuel
  - o Manual Change-over
  - o Auto Change-over

Exhaust System

- o Residential Grade Muffler
- o Critical Grade Muffler
- o Hospital Grade Muffler
- o Rain Cap

Engine Electrical System

- o Battery
  - o Lead-Acid
  - o NiCad
- o Battery Warmer Plate
- o Battery Rack
- o Battery Charger
  - o Automatic
  - o Trickle
  - o Mounted & Wired

Generator

- o Main Line Circuit Breaker
  - o Shunt trip
  - o Auxiliary switch
- o PMG Excitation & DVR 2000 Regulator
- o Space Heaters 120/240 volt
- o Special Testing
- o Additional Temperature Rise Generators Available (80°C, 105°C, & 130°C)

Additional Optional Equipment

- o Spring vibration isolators
- o Oil Drain Extension
- o Enclosures
  - o Sound Attenuated
  - o Weather Proof
  - o Aluminum
  - o Interior lights AC or DC
  - o Floor Plate
- o Jacket Water Heater
- o Crankcase Oil Heater
- o Remote Annunciator
- o 12 Light Annunciator
  - o Flush Mounted
  - o Surface Mounted
  - o 4 additional lights, if needed
- o Export Boxing
- o Warranties
  - o 2 Year
  - o 5 Year
- o Operating instructions under plexi-glass
- o Service indicator light
- o Wind rated enclosure

Site Search Summary
Willington

Section 16-50j-74(j) of the Regulations of Connecticut State Agencies requires the submission of a statement that describes "the narrowing process by which other possible sites were considered and eliminated." In accordance with this requirement, descriptions of the general site search process, the identification of the applicable search area and the alternative locations considered for development of the proposed telecommunications facility in Willington are provided below.

Site Search Process

To initiate its site selection process in an area where a coverage or capacity problem has been identified, Cellco first establishes a "site search ring" or "site search area." In any search ring or search area, Cellco seeks to avoid the unnecessary proliferation of towers and to reduce the potential adverse environmental effects of the cell site, while at the same time maximizing the quality of service provided from a particular facility. These objectives are achieved by initially locating existing towers and other sufficiently tall structures within and near the site search area. If any such structures are found, they are evaluated to determine whether they are capable of supporting Cellco's telecommunications equipment at a location and elevation that satisfies its technical requirements.

Cellco maintains six (6) existing communications facilities within approximately four (4) miles of the proposed Willington Facility. These facilities, however, cannot provide the coverage or capacity relief needed in the identified problem areas, along Route 44 and local roads in southerly portions of Willington and northern portions of Mansfield. (See Attachment 7).

Existing Cellco Facilities

	OWNER/OPERATOR (CELLCO SITE NAME)	FACILITY TYPE	LOCATION	CELLCO ANTENNA HEIGHT
1.	National Grid (Ashford West 2)	150' Monopole	99 Knowlton Road Ashford, CT	127'
2.	AT&T (Mansfield)	120' Monopole	497 Middle Turnpike Mansfield, CT	109'
3.	UCONN (Storrs)	327' Guyed-Lattice	82 North Eagleville Road Storrs, CT	84'
4.	Storrs Congregational Church (UCONN East)	Church Steeple	2 North Eagleville Road Storrs, CT	85'

	OWNER/OPERATOR (CELLCO SITE NAME)	FACILITY TYPE	LOCATION	CELLCO ANTENNA HEIGHT
5.	UCONN (UCONN)	Roof-Top	855 Bolton Road Mansfield, CT	47'
6.	Town of Mansfield (Mansfield North)	170' Monopole	1725 Stafford Road Mansfield, CT	170'

If existing towers or other tall structures are not available or technically feasible, other locations are investigated where the construction of a new tower is required to provide adequate elevation to satisfy Cellco's requirements. The list of available locations may be further reduced if, after preliminary negotiations, the property owners withdraw a site from further consideration. From among the remaining locations, the proposed sites are selected by eliminating those that have greater potential for adverse environmental effects and fewer benefits to the public (i.e., those requiring taller towers, possibly with lights; those with substantial adverse impacts on densely populated residential areas; and those with limited ability to share space with other public or private telecommunications entities). It should be noted that in any given site search, the weight afforded to factors considered in the selection process will vary depending upon the availability and nature of sites within the search area.

Identification of the Willington Search Area

The purpose of the proposed Willington Facility is to provide reliable cellular and PCS coverage to a significant coverage gap that have been identified along Route 44, as well as local roads in southern Willington and northern Mansfield. These coverage gaps were identified using best server propagation modeling tools. These tools are fine-tuned regularly through the use of base-line drive data.

Cellco issued its Willington search area on July 16, 2006. (See attached Search Area Map). As a matter of practice, Cellco's initial site search effort focuses on municipal or other quasi-public properties that might be available and appropriate locations for a telecommunications facility. If no public properties are available, Cellco investigates private land within or near the designated search area.

Sites Investigated in the Willington Area

In addition to the existing communications facilities listed above, Cellco identified and investigated five (5) sites in the Willington/Mansfield area.

1. 343 Daleville Road, Willington – Cellco investigated and ultimately signed a lease for the use of a portion of this 22-acre parcel. The proposed site would maintain a ground elevation of approximately 496 feet AMSL. Cellco can satisfy its coverage objectives from this location with antennas located 97 feet above ground level.

2. Boston Turnpike, Willington – Vacant Land. Cellco investigated five parcels owned by John and Louise Cawley along Route 44. The property owners have plans to develop these parcels and were not interested in leasing space to Cellco for a tower.

3. Boston Turnpike, Willington – Vacant Land (Map 2, Lot 14A). The landowner did not return telephone calls or respond to correspondence sent by Cellco's real estate consultant.

4. 85-87 Old Turnpike Road, Mansfield – Vacant Land. The landowner did not return telephone calls or respond to correspondence sent by Cellco's real estate consultant.

5. 53 Old Turnpike Road, Mansfield – Vacant Land. The landowner did not return telephone calls or respond to correspondence sent by Cellco's real estate consultant.

Visual Resource Evaluation Report

Proposed Wireless Telecommunications Facility

Willington
343 Daleville Road
Willington, Connecticut

Prepared for 

Prepared by *VHB*/Vanasse Hangen Brustlin, Inc.
54 Tuttle Place
Middletown, CT 06457

June 2008
Revised January 2009

Visual Resource Evaluation

Cellco Partnership (dba Verizon Wireless) seeks approval from the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for the construction of a wireless telecommunications facility ("Facility") to be located on property at 343 Daleville Road in the Town of Willington, Connecticut (identified herein as the "host property"). This Visual Resource Evaluation was conducted to evaluate the visibility of the proposed Facility within a two-mile radius ("Study Area"). In addition to the Town of Willington, portions of the nearby towns of Mansfield and Ashford, Connecticut are also contained within the Study Area.

Project Introduction

The proposed Facility includes the installation of a 100-foot tall monopole with associated ground equipment to be located at its base. Both the proposed monopole and ground equipment would be situated within a fence-enclosed compound. The proposed project area is located at approximately 496 feet Above Mean Sea Level (AMSL). Access to the Facility would be provided via a proposed gravel access drive that would initially follow an existing driveway located on the host property then extend to the project area in an easterly direction.

Site Description and Setting

Identified in the Town of Willington land records as Map 2/ Lot 5, the host property is currently occupied by a single family residential dwelling, a barn, small shed and several horse corrals. The proposed Facility is located on an undeveloped, portion of the host property, roughly 440 feet west of the existing residential structure. Attachment A includes a photograph of the proposed project area. Attachment A also contains a map that depicts the location of the proposed Facility and the limits of the Study Area. Land use within the general vicinity of the proposed Facility and host property consists of low-density residential development and undeveloped woodlands. Segments of Route 44, Route 195 and Route 320 traverse portions of the Study Area. In total, the Study Area features approximately 63 linear miles of roadways.

The topography within the Study Area is characterized by rolling hills with ground elevations ranging from approximately 290 feet AMSL to approximately 740 feet AMSL. The Study Area contains approximately 50 acres of surface water, mainly associated with the Fenton River which flows through the eastern third of the Study Area. The tree cover within the Study Area consists mainly of mixed deciduous hardwood species interspersed with stands of mature evergreen species. The tree canopy occupies approximately 6,488 acres of the 8,042-acre study area (81%). During the in-field activities associated with this analysis, an infrared laser range finder was used to accurately determine the average tree canopy height throughout the Study Area. Numerous trees were selected for measurement and the average tree canopy was determined to be 65 feet.

■

METHODOLOGY

In order to better represent the visibility associated with the Facility, VHB uses a two-fold approach incorporating both a predictive computer model and in-field analysis. The predictive model is employed to assess potential visibility throughout the entire Study Area, including private property and/or otherwise inaccessible areas for field verification. A "balloon float" and Study Area drive-through reconnaissance are also conducted to obtain locational and height representations, back-check the initial computer model results and provide documentation from publicly accessible areas. Results of both activities are analyzed and incorporated into the final viewshed map. A description of the methodologies used in the analysis is provided below.

Visibility Analysis

Using ESRI's ArcView® Spatial Analyst, a computer modeling tool, the areas from which the top of the Facility is expected to be visible are calculated. This is based on information entered into the computer model, including Facility height, its ground elevation, the surrounding topography and existing vegetation. Data incorporated into the predictive model includes a digital elevation model (DEM) and a digital forest layer for the Study Area. The DEM was derived from the United States Geological Survey (USGS) National Elevation Dataset (NED), a seamless, publicly available elevation dataset with an approximate 30-meter resolution. The forest layer was derived through on-screen digitizing in ArcView® GIS from 2006 digital orthophotos with a 1-foot pixel resolution.

Once the data are entered, a series of constraints are applied to the computer model to achieve an estimate of where the Facility will be visible. Initially, only topography was used as a visual constraint; the tree canopy is omitted to evaluate all areas of potential visibility without any vegetative screening. Although this is an overly conservative prediction, the initial omission of these layers assists in the evaluation of potential seasonal visibility of the proposed Facility. A conservative tree canopy height of 50 feet is then used to prepare a preliminary viewshed map for use during the Study Area reconnaissance. The average height of the tree canopy is determined in the field using a hand-held infrared laser range finder. The average tree canopy height is incorporated into the final viewshed map; in this case, 65 feet was identified as the average tree canopy height. The forested areas within the Study Area were then overlaid on the DEM with a height of 65 feet added and the visibility calculated. As a final step, the forested areas are extracted from the areas of visibility, with the assumption that a person standing among the trees will not be able to view the Facility beyond a distance of approximately 500 feet. Depending on the density of the vegetation in these areas, it is assumed that some locations within this range will provide visibility of at least portions of the Facility based on where one is standing.

Also included on the map is a data layer, obtained from the Connecticut State Department of Environmental Protection ("CTDEP"), which depicts various land and water resources such as parks and forests, recreational facilities, dedicated open space, CTDEP boat launches and other categories. This layer is useful in identifying potential visibility from any sensitive receptors that may be located within the Study Area. Lastly, based on both a review of published information and discussions with municipal officials in Willington and Mansfield, it was determined that are several locally-designated scenic roadways contained within the Study Area and include Old Turnpike Road and Codfish Falls Road. These roadways are depicted on the viewshed map contained in Attachment B.

A preliminary viewshed map (using topography and a conservative tree canopy height of 50 feet) is generated for use during the in-field activity in order to confirm that no significant land use changes have occurred since the aerial photographs used in this analysis were produced and to verify the results of the model in comparison to the balloon float. Information obtained during the reconnaissance is then incorporated into the final visibility map.

Balloon Float and Study Area Reconnaissance

On April 21, 2008 Vanasse Hangen Brustlin Inc., (VHB) conducted a "balloon float" at the proposed Facility location to further evaluate the potential viewshed within the Study Area. The balloon float consisted of raising and maintaining an approximate four-foot diameter, helium-filled weather balloon at the proposed site location at a height of 100 feet. Once the balloon was secured, VHB staff conducted a drive-by reconnaissance along the roads located within the Study Area with an emphasis on nearby residential areas and other potential sensitive receptors in order to evaluate the results of the preliminary viewshed map and to verify where the balloon was, and was not, visible above and/or through the tree canopy. During the balloon float, the temperature was approximately 60 degrees Fahrenheit with calm wind conditions and mostly sunny skies.

On November 7, 2009, VHB representatives visited the host property, proposed Site location and the vicinity to determine if any significant changes had occurred since our initial work in April, 2008. Based on our reconnaissance, no new development, land clearing or other activities that might affect our original findings were identified proximate to the property. As a result, no additional investigations were deemed warranted and, as such, no substantive changes have been made to this report.

Photographic Documentation

During the balloon float, VHB personnel drove the public road system within the Study Area to inventory those areas where the balloon was visible. The balloon was photographed from

a number of different vantage points to document the actual view towards the proposed Facility. Several photographs from locations where the balloon was not visible are also included. The locations of the photos are described below:

1. View from Daleville Road adjacent to house #331.
2. View from Daleville Road north of entrance to Willington Oaks Apartments.
3. View from Old Turnpike Road at Route 44.
4. View from Old Turnpike Road adjacent to house #54.
5. View from Codfish Falls Road south of Ellise Road.
6. View from Route 44.
7. View from Route 195.
8. View from Route 195 at Route 44.
9. View from Daleville Road adjacent to house #19.
10. View from Daleville Road at entrance to Willington Oaks Apartments.

Photographs of the balloon from the view points listed above were taken with a Nikon D-80 digital camera body and Nikon 18 to 135 mm zoom lens. For the purposes of this report, the lens was set to 50mm. "The lens that most closely approximates the view of the unaided human eye is known as the normal focal-length lens. For the 35 mm camera format, which gives a 24x36 mm image, the normal focal length is about 50 mm.[1]"

The locations of the photographic points are recorded in the field using a hand-held GPS receiver and are subsequently plotted on the maps contained in the attachments to this document.

Photographic Simulation

Photographic simulations were generated for the three representative locations where the balloon was visible during the in-field activities. The photographic simulations represent a scaled depiction of the proposed Facility (a monopole) from these locations. The height of the Facility is determined based on the location of the balloon in the photograph and a proportional monopole image is simulated into the photographs. The simulations are contained in Attachment A.

CONCLUSIONS

Based on this analysis, areas from where the proposed 100-foot tall Facility would be visible above the tree canopy comprise approximately 7 acres, or less than one half of one percent of the 8,042-acre Study Area. As depicted on the viewshed map (provided in attachment B), the majority of the year-round visibility associated with the proposed Facility occurs over an open hilltop on the University of Connecticut Campus located approximately 1.45 miles to

[1] Warren, Bruce. *Photography*, West Publishing Company, Eagan, MN, c. 1993, (page 70).

the southeast of the site. Limited and/or passing views of the proposed Facility are also anticipated along an approximate 0.08-mile segment of the Route 44 traffic corridor located roughly 0.75 mile to the southeast of the project area. Such views would be mostly obstructed by vegetation as one traverses this segment of Route 44. Other areas of potential year-round visibility include portions of the host property within the immediate vicinity of the proposed site. Overall, potential views of the proposed Facility would be confined to the areas described above by a combination of the topographic relief and the extent of vegetative cover contained within the Study Area. VHB estimates that select portions of approximately five residential properties may have at least partial year-round views of the proposed Facility. Four of these residences are located along Daleville Road adjacent to the host property and one residence is located off Route 44.

The viewshed map also depicts several additional areas where seasonal (i.e. during "leaf off" conditions) views are anticipated. These areas comprise approximately 23 acres and are mainly located within the immediate vicinity of the host property, extending westward to select portions of Daleville Road and southward to an area just north of Route 44. VHB estimates that seasonal views of the proposed Facility could be achieved from portions of approximately five additional properties within the Study Area. This includes two residential properties along Daleville Road and northerly portions of three properties along Route 44. Such views would mostly be screened by existing vegetation on the host property which includes a significant number of mature evergreen species.

Attachment A

Project Area Photograph, Photolog Documentation Map, Balloon Float Photographs, and Photographic Simulations