

# Historic Architectural Review Commission

## Agenda Packet

January 26, 2010 – 3:00 p.m.

City Commission Chamber  
Old City Hall, 510 Greene Street



## Item 5.b.5.

CL5- Request for installation of exterior antenna at top of building- #1435 Simonton Street- Verizon Wireless-(H10-01-15-41)- Installation of exterior antenna and internal transmit antenna.

CL5- Request for installation of exterior antenna at top of building - #1435  
**Simonton Street- Verizon Wireless (H10-01-15-41)**  
Installation of exterior antenna and internal transmit antenna.

The proposed installation of an antenna for wireless communication will be at the top roof of the three story building known as The Reach Hotel. This building is not listed in the survey. The proposed equipment is a donor antenna that will be mounted on the roof, on the west side facing Simonton Street. The antenna will be 45 feet height from ground level. The antenna will be mounted on a steel mast 2" by 2' tall pipe. The antenna will measure 3" (r) by 19" long and will not exceed in height the existing side gable roof.

Guidelines that should be reviewed for this application;

- Air conditioning units, antennas, trash facilities and satellite dishes (pages 42-43);
  - *Guideline 5*  
*Exterior air conditioning units, television dishes and antennas should be mounted out of sight of the public right of way and obscured behind landscaping or fencing whenever possible.*

It is staff believes that the proposed donor antenna will be seen from the right of way. Nevertheless the existing landscape and the size of the antenna will minimize any effect to the historic context.

The applicant included in the submittal an email from the Florida State Historic Preservation Office, Florida Division of Historical Resources, with their findings that there will be no visual or direct adverse effect on historic properties in the Area of Potential Effect.

Staff understands that this undertaking will have no adverse effect on the surrounding properties. The installation of the proposed antenna complies with the guidelines. Staff recommends to this Commission to **approve** the installation as proposed.

# Application

12 January 2010

City of Key West, H.A.R.C.  
604 Simonton Street, First Floor  
Key West, Florida 33040  
Attn. Ms. Enid Torregrosa,  
Historic Preservation Planner

*Submitted on behalf of:*

Verizon Wireless  
777 Yamato Road, 6<sup>th</sup> Floor  
Boca Raton, FL 33431  
Attn: Ms. Josephine Conde  
Leasing and Contracts Administrator

**RE: CERTIFICATE OF APPROPRIATENESS – REACH RESORT  
1435 Simonton Street, Key West, Florida 33040**

Dear Ms. Torregrosa,

EnviroDesign Associates, Inc. (EDA) presents the enclosed on behalf of Verizon Wireless for the Certificate of Appropriateness application at the Reach Resort facility. The purpose of this package is to provide sufficient information to allow the City of Key West Architectural Review Committee to approve the Certificate of Appropriateness for the collocation of a communications “donor” antenna centrally located on the southwest facing rooftop of the Reach Resort, as approved by the State Historic Preservation Office (SHPO) on December 18, 2009.

*The following is included as part of this application:*

- Certificate of Appropriateness Application
- SHPO Letter
- Historic Properties Map
- Historic Properties Photos
- Donor Antenna Location Drawing (Figure – 1)
- Donor Antenna Photo Depiction
- Antenna Drawings

Should you have any questions please feel free to call or email.

Sincerely yours,  
**EnviroDesign Associates, Inc.**

Scot Wehmeyer  
Project Manager



**CITY OF KEY WEST  
BUILDING DEPARTMENT  
CERTIFICATE OF APPROPRIATENESS  
APPLICATION # \_\_\_\_\_**

HISTORIC ARCHITECTURAL REVIEW APPLICATION

OWNER'S NAME: Key West Beach Owners LLC DATE:   
c/o Wynchham International Inc

OWNER'S ADDRESS: 1950 Stemmons Freeway #6001 PHONE #:   
Dallas, TX 75207

APPLICANT'S NAME: Verizon Wireless PHONE #:

APPLICANT'S ADDRESS: 777 Yamato Rd. #600  
Boca Raton, FL 33431

ADDRESS OF CONSTRUCTION: 1435 Simonton St., Key West FL 33040 # OF UNITS:

THERE WILL BE A FINAL INSPECTION REQUIRED UNDER THIS PERMIT

DETAILED DESCRIPTION OF WORK: Installation of exterior antenna and internal transmit antenna

*Chapter 837.06 F.S.-False Official Statements – Whoever knowingly makes a false statement in writing with the intent to mislead a public servant in the performance of his or her official duty shall be guilty of a misdemeanor of the second degree punishable as provided for in s. 775.082 or 775.083*

This application for Certificate of Appropriateness must precede applications for building permits, right of way permits, variances, and development review approvals. Applications must meet or exceed the requirements outlined by the Secretary of the Interior's Standards for Rehabilitation and Key West's Historic Architectural Guidelines.

Once completed, the application shall be reviewed by staff for completeness and either approved or scheduled for presentation to the Historic Architectural Review Commission at the next available meeting. The applicant must be present at this meeting. The filing of this application does not ensure approval as submitted.

Applications that do not possess the required Submittals will be considered incomplete and will not be reviewed for approval.

Date: 11/23/09

Applicant's Signature:   
 (RAMESH TOOLSIE, Dir. Network Eng.)

**Required Submittals**

	TWO SETS OF SCALED DRAWINGS OF FLOOR PLAN, SITE PLAN AND EXTERIOR ELEVATIONS (for new buildings and additions)
	TREE REMOVAL PERMIT (if applicable)
	PHOTOGRAPHS OF EXISTING BUILDING (repairs, rehabs, or expansions)
	PHOTOGRAPHS OF ADJACENT BUILDINGS (new buildings and additions)
	ILLUSTRATIONS OF MANUFACTURED PRODUCTS TO BE USED SUCH AS SHUTTERS, DOORS, WINDOWS, PAINT COLOR CHIPS, AND AWNING FABRIC SAMPLES

**Staff Use Only**

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

Staff Approval: \_\_\_\_\_

Fee Due: \$ \_\_\_\_\_

## Scot Wehmeyer

---

**From:** Lucy D. Jones [ldjones@floridahistoryllc.com]  
**Sent:** Friday, December 18, 2009 1:25 PM  
**To:** 'Scot Wehmeyer'  
**Subject:** FW: Reply to Proposed Tower Structure (Notification ID: 57787) - Email ID #2374012

-----Original Message-----

From: Lucy D. Jones [mailto:ldjones@floridahistoryllc.com]  
Sent: Tuesday, December 15, 2009 12:55 PM  
To: 'Scot Wehmeyer'  
Subject: FW: Reply to Proposed Tower Structure (Notification ID: 57787) - Email ID # 2374012

-----Original Message-----

From: towernotifyinfo@fcc.gov [mailto:towernotifyinfo@fcc.gov]  
Sent: Tuesday, December 15, 2009 9:33 AM  
To: Lucy Jones  
Subject: Reply to Proposed Tower Structure (Notification ID: 57787) - Email ID #2374012

Dear Lucy D Jones,

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this email is to inform you that an authorized user of the TCNS has replied to a proposed tower construction notification that you had submitted through the TCNS.

The following message has been sent to you from Historic Preservationist Samantha Earnest of the Florida Division of Historical Resources in reference to Notification ID #57787:

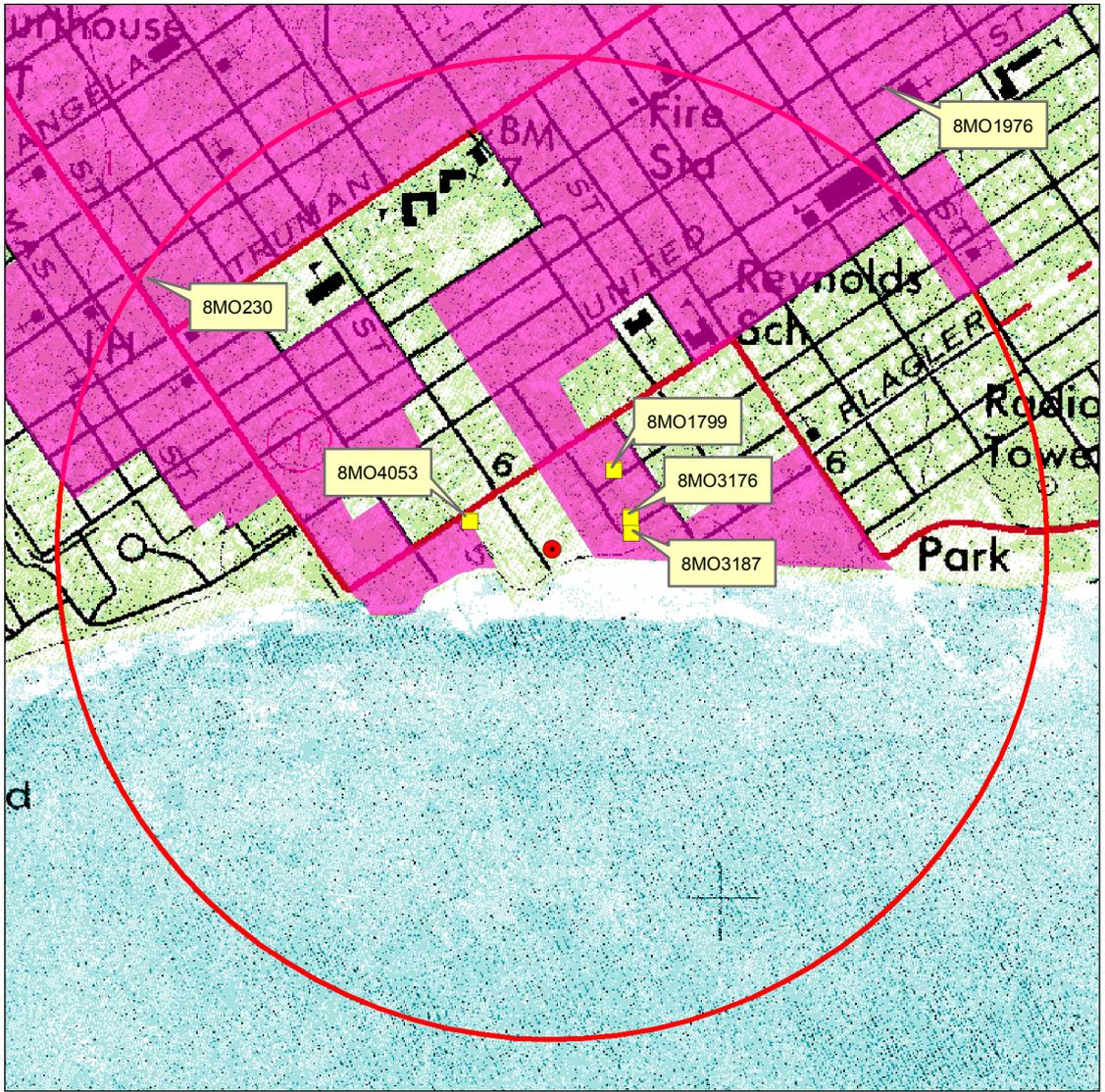
THE PROPOSED PROJECT WILL HAVE NO EFFECT DIRECTLY ON HISTORIC PROPERTIES AND NO ADVERSE EFFECT VISUALLY.

For your convenience, the information you submitted for this notification is detailed below.

Notification Received: 11/09/2009  
Notification ID: 57787  
Tower Owner Individual or Entity Name: Verizon Services Corporation d/b/a Verizon  
Consultant Name: Lucy D Lucy  
Street Address: 12157 W. Linebaugh Ave #167  
City: Tampa  
State: FLORIDA  
Zip Code: 33626  
Phone: 813-891-6340  
Email: ldjones@floridahistoryllc.com

Structure Type: B - Building  
Latitude: 24 deg 32 min 48.3 sec N  
Longitude: 81 deg 47 min 39.6 sec W  
Location Description: 1435 Simonton Street  
City: Key West  
State: FLORIDA  
County: MONROE  
Ground Elevation: 1.5 meters

Support Structure: 14.0 meters above ground level  
Overall Structure: 14.0 meters above ground level  
Overall Height AMSL: 15.5 meters above mean sea level



**Legend:**

- Proposed Tower Location
- 1/2-mile APE
- NRHP-listed Resource
- Representative Buildings Photographed



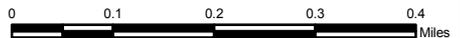
**Reach Resort**

Monroe County, Florida

Township 68 South, Range 25 East

Base Map: Key West, Fla. 1971

USGS 7.5' topographic quadrangle



## Historic Property within Area of Potential Effect for Visual Effects

8MO1976 (Key West Historic District), consisting of 187 buildings, is partially located within the ½-mile APE for visual effects for the Reach Resort Tower. The Key West Historic District (8MO1976) was listed on the National Register of Historic Places in 1971, and meets the definition of historic property for antenna collocation projects.

The antenna is to be placed on an elevator shaft roof of the 4-story Reach Resort, constructed in 1985, and will not be visible from the street or the ground. Given the proposed location, small size, and unobtrusive design of the antenna, there will be no effect on historic properties.

Four historic structures located within 500 ft. of the proposed antenna location and the Key West Historic District were photographed for this project.



8MO1799 (El Albury House [701 Washington St]), facing north-northwest (10/15/09)



Viewshed from 8MO1799 (El Albury House [701 Washington St]), back towards proposed antenna location, facing southwest (10/15/09)



8MO3176 (701 Waddell Street), facing north-northwest (10/15/09)



Viewshed from 8MO3176 (701 Waddell Street), back towards proposed antenna location, facing west-southwest (10/15/09)



8MO3187 (Louis Backyard Building [700 Waddell Ave]) facing east-southeast (10/15/09)



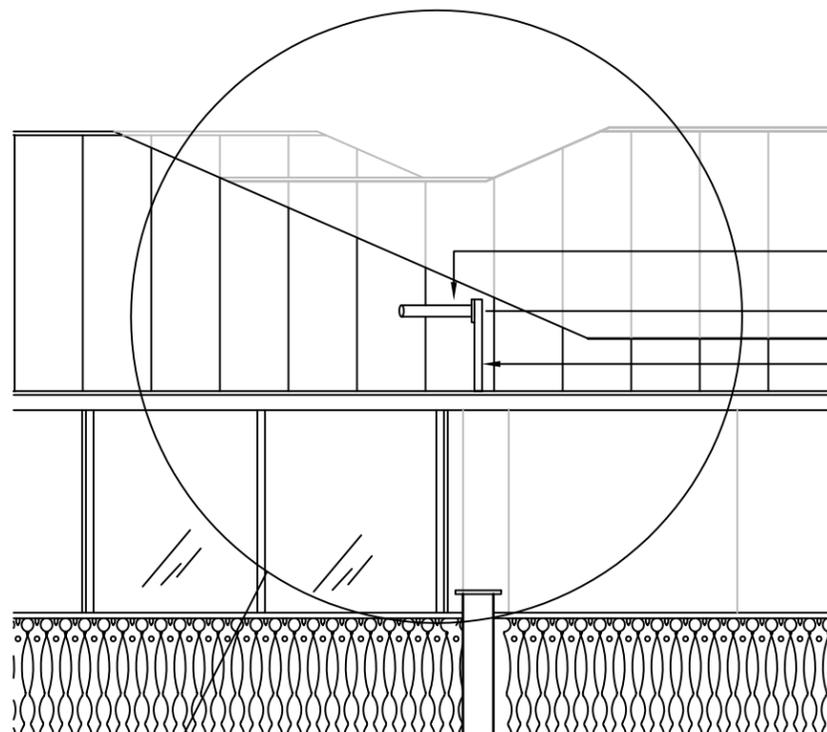
Viewshed from 8MO3187 (Louis Backyard Building [700 Waddell Ave]), back towards proposed antenna location, facing west (10/15/09)



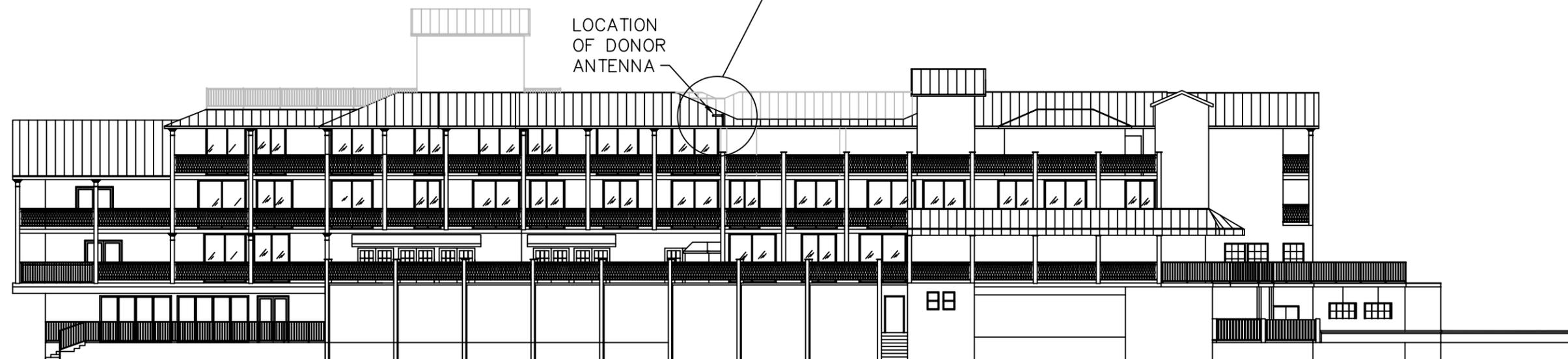
8MO4053 (404 South Street) facing south (10/15/09)



Viewshed from 8MO4053 (404 South Street) back towards proposed antenna location, facing southeast  
(10/15/09)

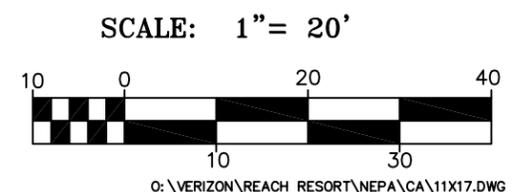


NOTES:  
 ANTENNA DIMENSIONS 3" X 19"  
 ELEVATION 45' ABOVE GROUND LEVEL  
 STEEL MAST 2" X 2' PIPE



LOCATION OF DONOR ANTENNA

© COPYRIGHT 2010 BY ENVIRODESIGN ASSOCIATES, INC.  
 THIS DRAWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY,  
 UNLESS SIGNED AND SEALED BY A REGISTERED PROFESSIONAL  
 ENGINEER REPRESENTING ENVIRODESIGN ASSOCIATES, INC.



<p><b>DONOR ANTENNA LOCATION</b>  <b>Reach Resort</b>  <b>1435 Simonton Street</b>  <b>Key West, FL 33040</b></p>		
 <p>EnviroDesign          Associates Inc.          www.envdesign.com</p>	<p>298 Pineapple Grove Way,          Delray Beach, Florida          Phone (561) 274-6500          Fax (561) 274-8558</p>	
	<p>Drawn By:          SEW</p>	<p>January 2010          Project No.: reach resort</p>

The Reach  
Resort

The Reach Resort  
Key West

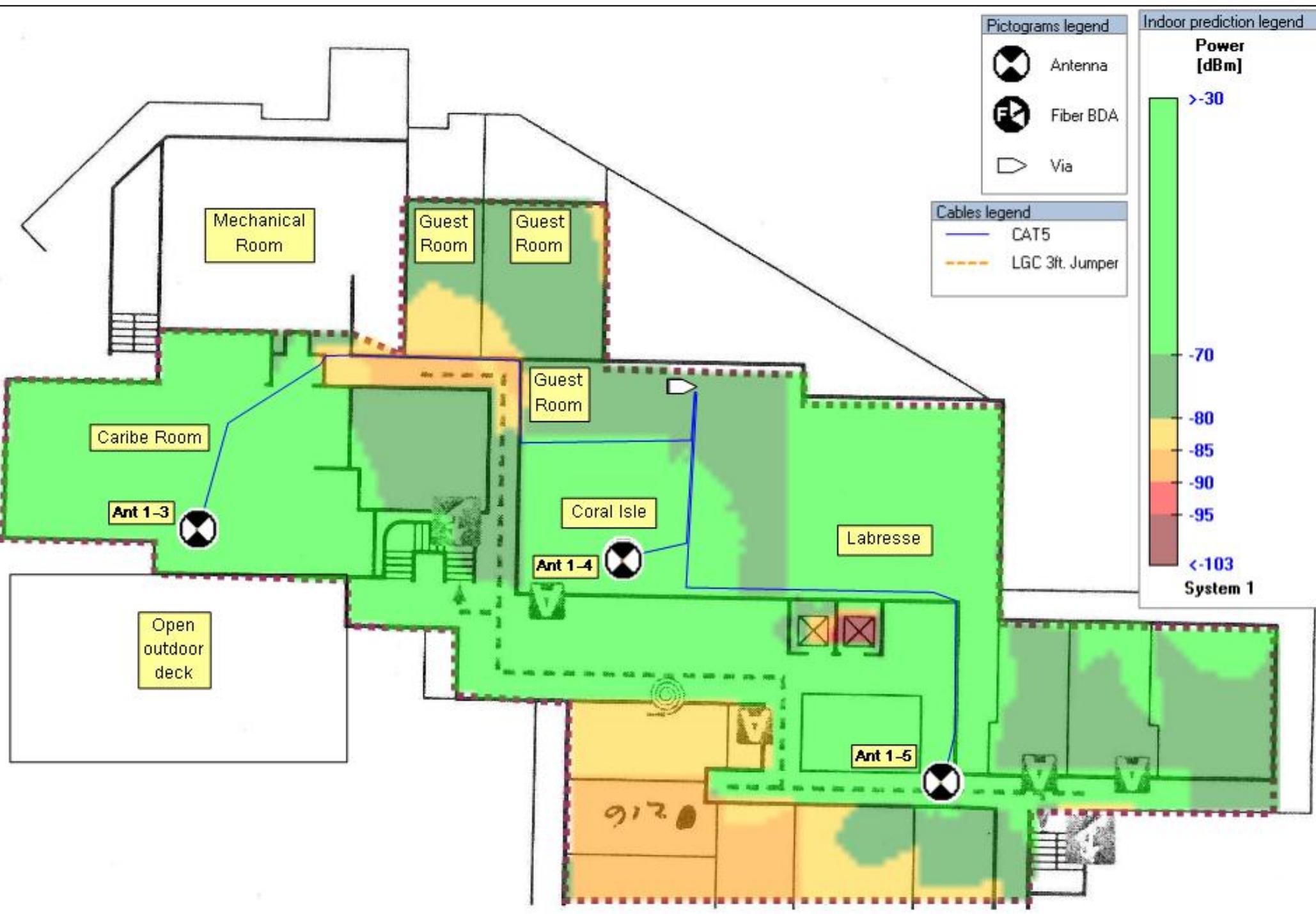


Donor Antenna location



Donor Antenna  
actual picture





50 ft

Coverage Objective

 THE REACH RESORT THE RINDORFAIZOR COLLECTION	TITLE	2nd Floor	DESIGNER	
		The Reach Resort Key West		Jeff Burdenski
	COMPANY	Verizon Wireless	DATE	7/10/2009

# The Reach Resort Key West

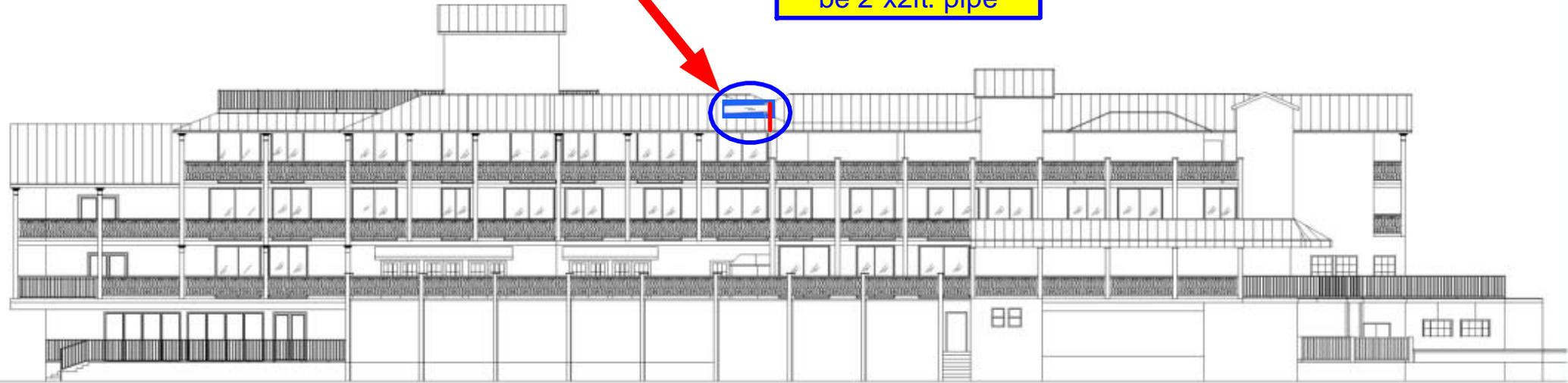


Donor Antenna south view from corner of Simonton & South Streets - antenna will be attached to side of The Reach Resort wall behind these trees above tree line and behind the telephone pole. The antenna cannot be seen from this view.

**The Reach Resort  
Key West  
Simonton St. view**

Donor Antenna location

Donor Antenna  
dimensions: 3"x19"  
and steel mast will  
be 2"x2ft. pipe



Beach →

# COMTELCO

## Technical Specification

Y441912

### 1850/1990 MHz YAGI

### YAGI ANTENNA

**High Performance:** This 12 element yagi antenna provides 12dBi/10dBd gain with excellent wide band performance.

**Rugged and weatherproof:** Our enclosed radome construction provides excellent weather protection for our solid element U channel yagi antennas. The radome is constructed of UV inhibited ABS. The heavy duty mounting plate is extruded aluminum. Stainless steel V bolts are provided for long term reliability and resistance to corrosion.

**Lightweight and Durable:** This yagi antenna is easily installed by one person, yet is designed to withstand 125 MPH winds.

#### Termination Options:

**Type A:** 12" Teflon pigtail with N connector.



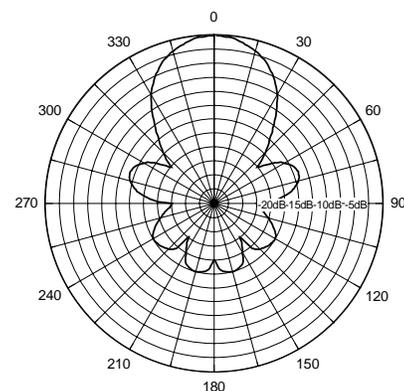
### ELECTRICAL SPECIFICATIONS

<b>GAIN:</b>	12dBi / 10dBd
<b>FREQUENCY:</b>	1850-1990MHz
<b>F to B RATIO:</b>	20dB
<b>BANDWIDTH:</b>	140MHz
<b>VSWR:</b>	<2:1
<b>VERT BEAMWIDTH:</b>	35°
<b>HORIZ BEAMWIDTH:</b>	38°
<b>POWER RATING:</b>	150 watts
<b>IMPEDANCE:</b>	50 ohms

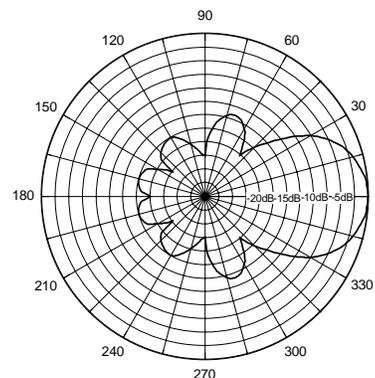
### MECHANICAL SPECIFICATIONS

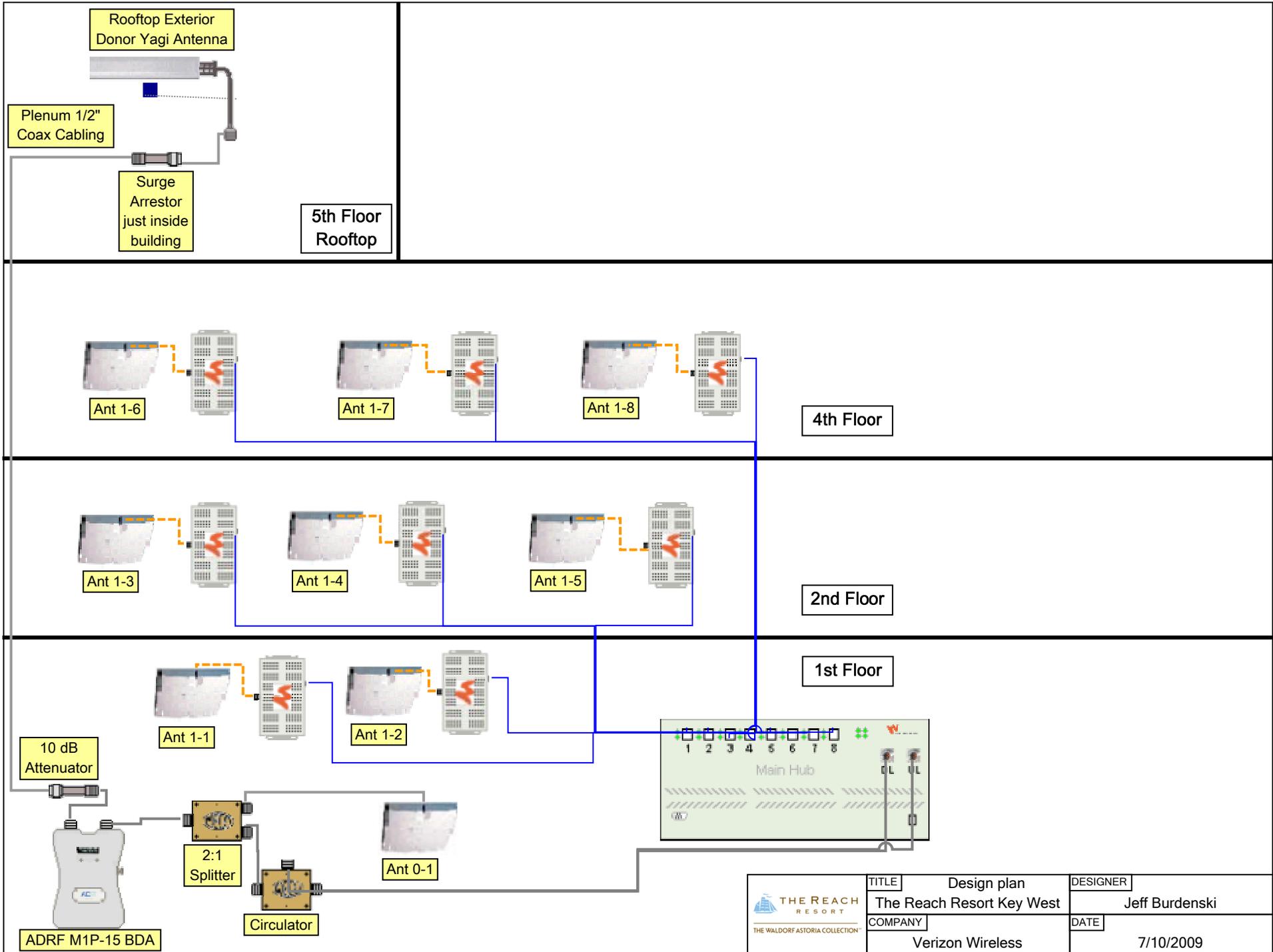
<b>MATERIAL:</b>	1/2" aluminum U channel boom 3/16" solid elements
<b>RADOME:</b>	3" UV inhibited ABS
<b>LENGTH:</b>	19"
<b>WEIGHT:</b>	2 lb.
<b>MOUNTING:</b>	2 1/2" mast maximum
<b>FLAT PLATE AREA:</b>	.26 ft <sup>2</sup>
<b>WIND RATING:</b>	125 MPH
<b>WIND LOAD:</b>	17.6 lbs.

**Horizontal Pattern**



**Vertical Pattern**





TITLE	Design plan
COMPANY	The Reach Resort Key West
	Verizon Wireless

DESIGNER	Jeff Burdinski
DATE	7/10/2009

ATLANTIC OCEAN

GAZEBO

REACH RESORT

ATLANTIC OCEAN

BEACH

BEACH

REACH RESORT TO CASA MARINA PEDESTRIAN ACCESS

BAREFOOT BILLY'S

POOL

STRIP HOUSE RESTAURANT

Ant 1-1

Ant 1-2

FITNESS CENTER

Ant 0-1

COURTYARD (PEDESTRIAN ACCESS ONLY)

2ND & 4TH FLOORS

2ND LEVEL

ENTRANCE

EXIT

AUTOMOBILE RAMP DOWN

AUTOMOBILE RAMP DOWN

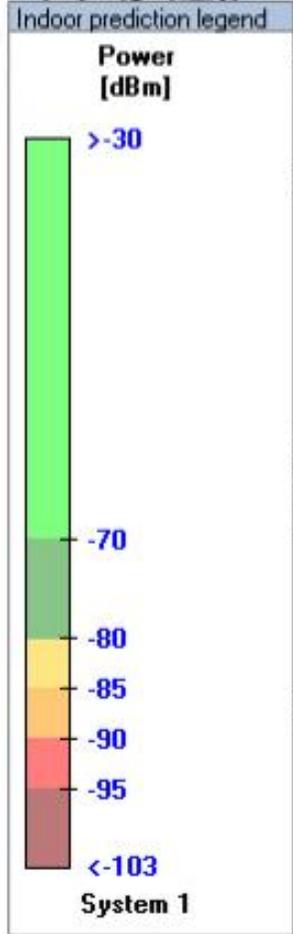
STAIRWAY

ELEVATOR

ICE MACHINE

VENNON STREET

CLAYTON STREET



- Pictograms legend**
- Antenna
  - Attenuator
  - Fiber BDA
  - Fiber BDA Hub
  - Filter
  - Repeater
  - Splitter
  - Via

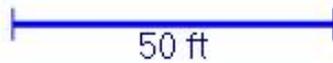
- Cables legend**
- 1/2" 50-ohm Coax -Plenum
  - CAT5
  - LGC 3ft. Jumper
  - RG-142 NM-NM-3'

**Systems information legend**

System 1: Verizon Wireless / 1xEV-DO  
 1900 MHz - PCS Band / B Block / Nb. of channels: 11 / Nb. of sources: 1

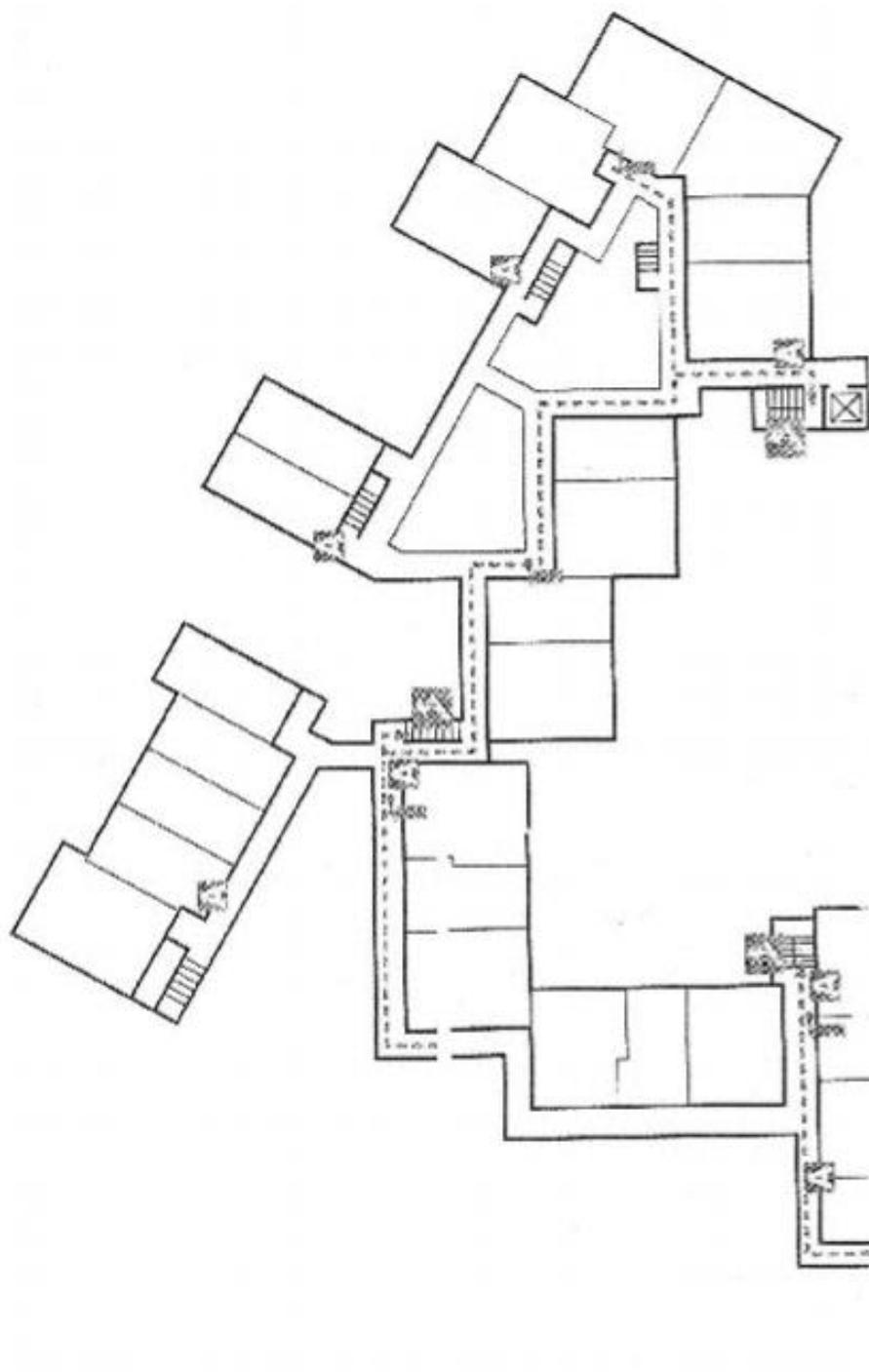
Both Antenna 0-1 is split directly off the BDA, NO RAU needed

**Coverage Objective**

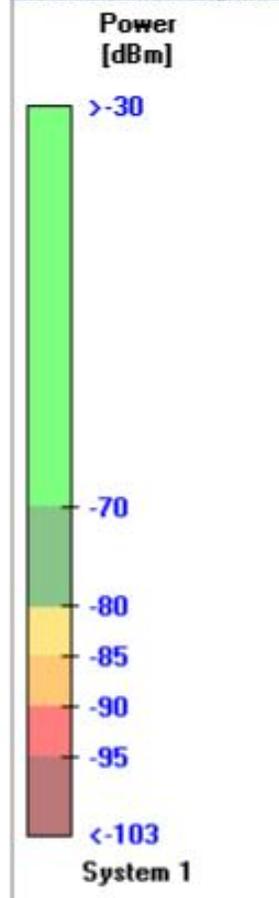


TITLE	1st Floor The Reach Resort Key West
COMPANY	Verizon Wireless

DESIGNER	Jeff Burdenski
DATE	7/10/2009



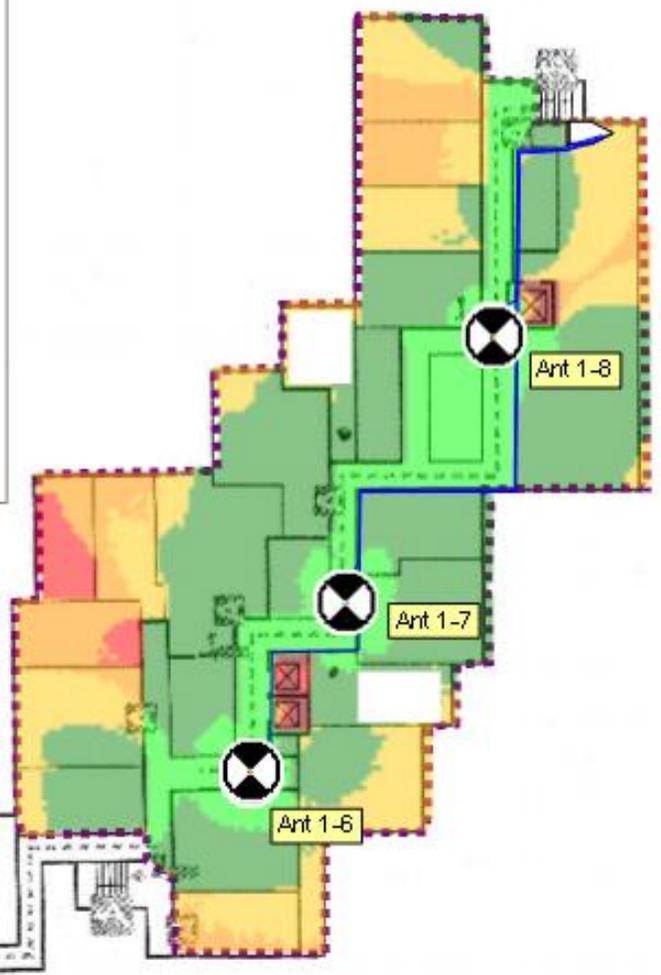
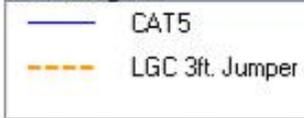
**Indoor prediction legend**



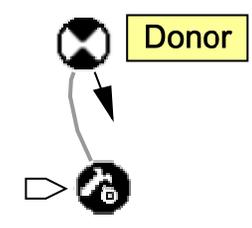
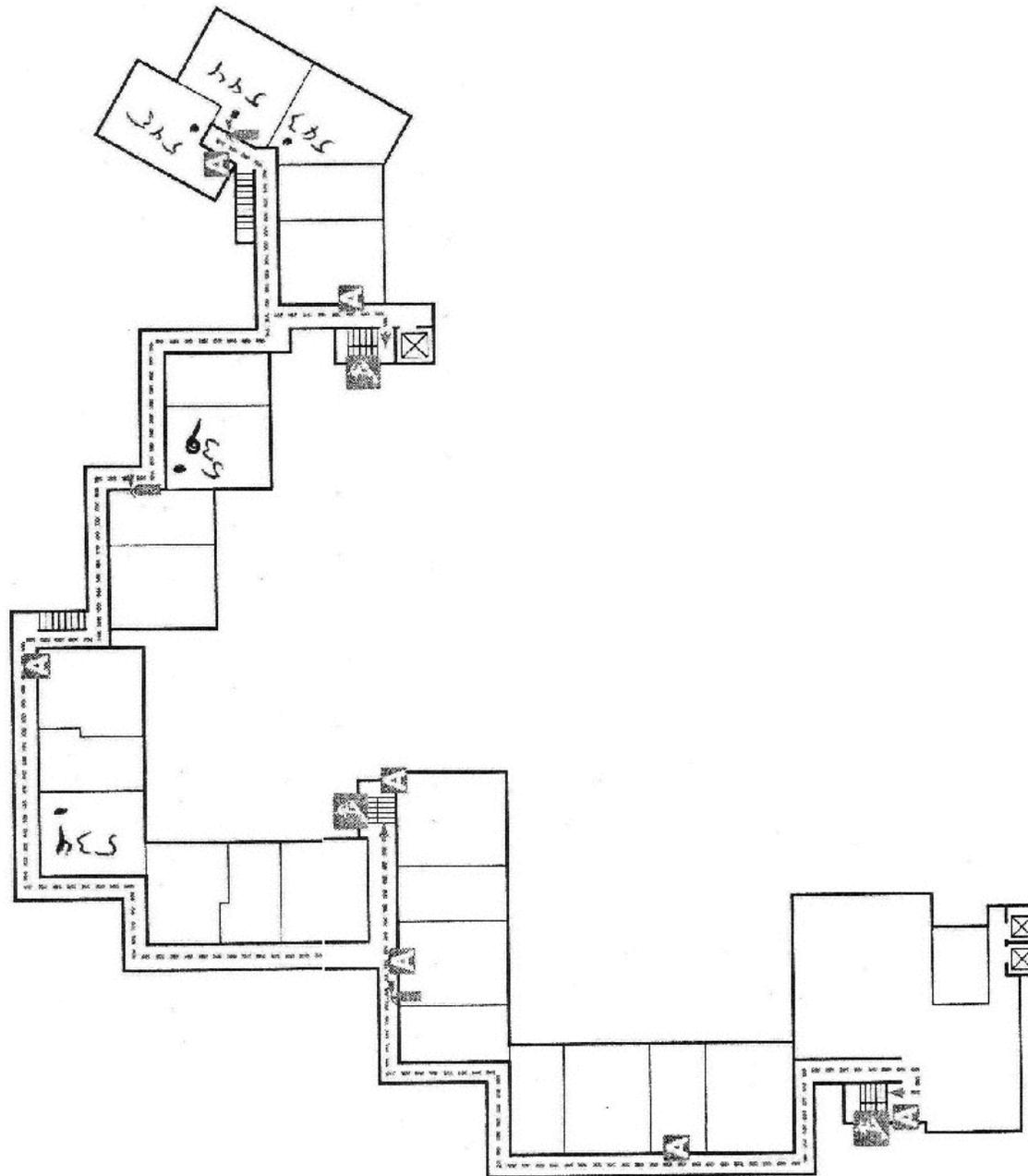
**Pictograms legend**



**Cables legend**



<p>THE REACH RESORT THE WINDSOR AT OCEAN COLLECTION</p>	TITLE	4th Floor	DESIGNER	
		The Reach Resort Key West		Jeff Burdinski
	COMPANY	Verizon Wireless	DATE	7/10/2009



TITLE	5th Floor
	The Reach Resort Key West
COMPANY	Verizon Wireless

DESIGNER	Jeff Burdinski
DATE	7/10/2009

# interReach™ unison Accel



## PCS (TDMA/CDMA/GSM)

### *In-Building Wireless Networking System*

- Delivers in-building wireless voice and data coverage over standard Cat-5/6 cable
- Compatible with all major access protocols used worldwide including GPRS, EDGE, CDMA2000, and WCDMA
- Superior RF performance and high composite power supports more channels and delivers the ability to cover large areas with a minimal amount of equipment
- Software-selectable hub frequency, system gain, and antenna output power
- Requires no electrical power at the remote antennas
- Uses common Cat-5/6 twisted pair wiring for easy, non-disruptive installation
- Intelligent, software-controlled operations, administration and maintenance capabilities support both on-site and remote configuration and monitoring
- FCC, UL and CE Mark approved

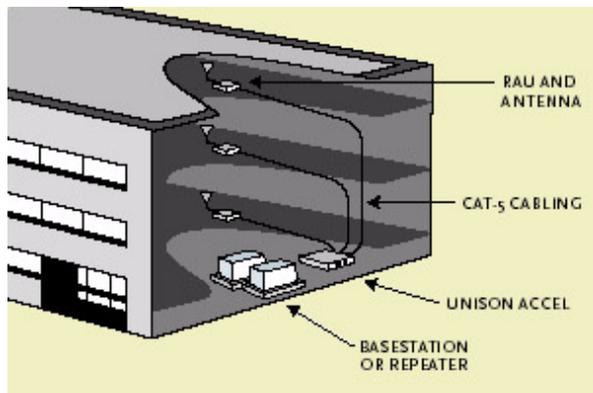
InterReach Unison Accel is the latest addition to LGC's portfolio of Distributed Antenna Systems. It offers the same superior performance and administrative capability as Unison in an easy-to-install and economical package. It is ideal for small to mid-sized structures such as office buildings, regional distribution facilities, small conference centers, and healthcare clinics.

InterReach Unison Accel features an easy-to-deploy hub and spoke architecture with just two types of components: a Hub that connects via Cat-5/6 to up to eight Remote Access Unit (RAUs). The Accel Hub receives its radio frequency (RF) signal from a base station, a MetroReach Focus system, or a repeater. The Hub electrically distributes the signal to the RAUs via twisted pair cabling. Each RAU converts the signal to RF and sends — and receives — the signals via antennas connected to the RAU to the wireless phones and PDAs located within its coverage area.

The Accel Hub is packaged in a 19" rack-mountable unit. The small RAUs, and the antennas connected to them, are typically mounted in ceiling spaces throughout the facility.

The Cat-5/6 cabling between the hub and each of the eight RAUs can be up to 100 meters (328 feet) long. This length can be extended to 170 meters (557 feet) with the optional Cat-5 Extender. By using Cat-5 Extenders, the "wingspan" from one RAU through the hub to an RAU on the other side of the facility can be up to 340 meters (1,114 feet).

With a minimum of components and use of industry-standard Cat-5/6 cabling, InterReach Unison Accel is simple and inexpensive to install, especially compared to heavy, inflexible, and invasive coaxial cabling. In addition, because power for the Remote Access Units is provided over the twisted-pair cabling, no local power is required, further simplifying installation.



## Operating Frequencies

### PCS spectrum in the United States

Bands	Downlink (MHz)	Uplink (MHz)
A	1930 to 1945	1850 to 1865
D	1945 to 1950	1865 to 1870
B	1950 to 1965	1870 to 1885
E	1965 to 1970	1885 to 1890
F	1970 to 1975	1890 to 1895
C	1975 to 1990	1895 to 1910

### Operating Frequencies

Description	InterReach Unison Accel Band	Downlink RF Passband (MHz)	Uplink RF Passband (MHz)
Bands A,D,B (35 MHz)	PCS6	1930–1965	1850–1885
Bands D,B,E,F (30 MHz)	PCS7	1945–1975	1865–1895
Bands E,F,C (25 MHz)	PCS8	1965–1990	1885–1910

## PCS Specifications

Parameter	Typical	
	Downlink	Uplink
Average gain with 75 m Cat-5 at 25°C (77°F) (dB) <sup>a</sup>	15	15
Ripple with 75 m Cat-5 (dB)	2.5	3
Output IP3 (dBm)	38	
Input IP3 (dBm)		-12
Output 1 dB Compression Point (dBm)	26	
Noise Figure 1 Hub-8 RAUs (dB)		16

a. The system gain is adjustable in 1 dB steps from 0 to 15 dB, and the gain of each RAU can be attenuated 10 dB in one step.

## Output Power at RAU

No. of Carriers	Power per Carrier (dBm)			
	TDMA	GSM	Edge	CDMA
1	23.0	26.0	23.0	16.0
2	18.0	20.0	17.5	13.0
3	15.0	16.5	14.0	11.0
4	13.0	14.0	12.0	10.0
5	11.5	12.0	10.5	9.0
6	10.5	11.0	9.5	8.0
7	9.5	10.0	9.0	7.5
8	8.5	9.0	8.0	7.0
9	8.0	8.5	7.5	
10	7.5	8.0	7.0	
11	7.0	7.5	6.5	
12	6.5	7.0	6.0	
13	6.5	6.5	6.0	
14	6.0	6.5	5.5	
15	5.5	6.0	5.0	
16	5.5	5.5	5.0	
20	4.5	4.5	4.0	
30	2.5	3.0	2.0	

maximum composite downlink

Note: Operation at or above these output power levels may prevent Unison from meeting RF performance specifications or FCC Part 15 and EN55022 emissions requirements. Please see the Unison Accel Installation, Operation, and Reference manual for system design information.

### Flexible Output Levels

The system gain can be adjusted from 0 to 15 dB in 1 dB increments. In addition, the output of any individual Remote Access Unit (RAU) can be adjusted by 10 dB to provide controlled coverage in specific building areas.

### Cabling Specifications

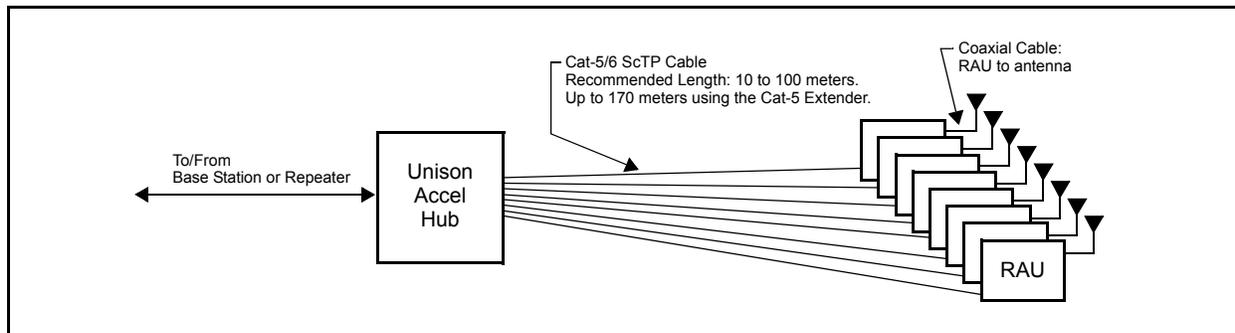
Parameter	Specifications
Cat-5/6	The specifications in this document assume that the Cat-5 screened twisted pair (ScTP) cable is 24-gauge Mohawk/CDT 55986 or Belden 1624P DataTwist® Five cable, or equivalent, with shielded RJ-45 connectors.
Cat-5/6 Lengths	Minimum: 10 meters (33 ft) Maximum: 100 meters (328 ft) Maximum with Cat-5 Extender: 170 meters (558 ft)

### Alarming

Unison Accel monitors over 170 parameters within the system. Three levels of alarms are available:

- LEDs: Each unit has LEDs to indicate a fault in the unit or a unit that is connected to it. For example, if an RAU has a fault its LED will light red, the fault information is sent to the Unison Accel Hub which also displays a red LED at the RAU’s port connector.
- Contact Closures: Connect the Accel Hub to a base station or external monitoring equipment.
- Status, Warning, and Fault messages are displayed on a PC/laptop that is running LGC Wireless AdminManager software.

### System Architecture



## Physical Specifications

Parameter	Unison Accel Hub	Remote Access Unit
RF Connectors	8 shielded RJ-45, female (Cat-5/6)	1 shielded RJ-45, female (Cat-5/6) 1 SMA, male (coaxial)
External Alarm Connector (contact closure)	1 9-pin D-sub, female	—
Serial Interface Connector	1 RS-232 9-pin D-sub, male	—
Power (Volts)	Rating: 115/230V AC, 5.5/3A, 50–60 Hz Operating Range: 90–132V AC/170–250V AC auto-ranging, 4.6–2.3A/3.6–1.6A, 47–63 Hz	36V DC (from the Hub)
Power Consumption (W)	4 RAUs: 150 typ/178 max 4 RAUs & 4 Extenders: 167 typ/202 max 8 RAUs: 200 typ/242 max 8 RAUs & 8 Extenders: 234 typ/290 max	—
Enclosure Dimensions <sup>a</sup> (height × width × depth)	133.5 mm × 438 mm × 305 mm (5.25 in. × 17.25 in. × 12 in.)	44 mm × 305 mm × 158 mm (1.7 in. × 12 in. × 6.2 in.)
Weight	< 8 kg (< 17.5 lb)	< 1 kg (< 2 lb)

a. Excluding angle-brackets for 19" rack mounting of hub.

Note: Unison Accel Hub typical power consumption assumes that the Cat-5/6 cable length is no more than 100 meters without a Cat-5 Extender and no more than 170 meters with a Cat-5 Extender.

## Environmental Specifications

Parameter	Unison Accel Hub	Remote Access Unit
Operating Temperature	0° to +45°C (+32° to +113°F)	–25° to +45°C (–13° to +113°F)
Non-operating Temperature	–20° to +85°C (–4° to +185°F)	–25° to +85°C (–13° to +185°F)
Operating Humidity; non-condensing	5% to 95%	5% to 95%

## Compliance

- Safety: UL 60950 3rd Edition
- EMC: FCC part 15 class A
- Radio: FCC part 24; Industry Canada RSS 131, Issue 1

## Products & Codes

InterReach Unison Accel Hub:  
UNS-ACCEL-1

InterReach Unison PCS Remote Access Unit:  
UNS-PCS-2

AdminManager Software:  
SW-ADM-V

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A11678

# InterReach unison

## Cat-5 Extender

lgcwireless.com

### Contents

- Cat-5/5E/6 Cable Length Requirements
- Change in Unison Specifications
- Physical Specifications
- Environmental Specifications
- Alarms and Performance Monitoring
- Compliance
- Product Code



The Cat-5 Extender is used to increase the length of the Cat-5/5E/6 cable run between the Unison system and Remote Access Unit (RAU).\* The Extender amplifies in the downlink, uplink, and clock signal paths to make up for the cable loss. The DC power for the RAU and the communication signals from the RAU are passed through the Extender. The Extender is plenum-rated.

### Cat-5/5E/6 Cable Length Requirements

Unison system gain remains at 0 to 15 dB in 1 dB increments when conforming to the cable lengths shown below.

Minimum Cat-5/5E/6 Cable Length from Unison System to Extender	Minimum Cat-5/5E/6 Cable Length from Extender to RAU	Maximum Combined Cat-5/5E/6 Cable Length from Unison System to RAU
90 meters 295 feet	20 meters 65 feet	110 to 170 meters 360 to 557 feet

### Change in Unison Specifications

The following table shows the change to system specifications that are stated in the InterReach Unison data sheets when using a Cat-5 Extender between the Unison system and RAU.

Specification	Change
Gain Variation (dB)	increase 0.5
Uplink Noise Figure (dB)	increase 0.5
Output IP3 (dBm)	no change
Output 1 dB Compression Point (dBm)	no change

### Physical Specifications

Parameter	Values
Dimensions (height x width x depth)	36 mm x 110 mm x 140 mm 1.4 in x 4.3 in x 5.5 in

\*NOTE: The Cat-5 Extender is not compatible with LGCell.

## Environmental Specifications

Parameter	Rating
Operating Temperature	-25° to +45°C (-13° to +113°F)
Non-operating Temperature	-25° to +85°C (-13° to +185°F)
Operating Humidity; non-condensing	5% to 95%

## Alarms and Performance Monitoring

The Cat-5 Extender has no alarms or performance monitoring capabilities. It does, however, pass alarms generated in the RAU through to the Unison system. A fault in the Cat-5 Extender will generate a fault which appears to originate in the connected RAU or Unison system port.

## Compliance

- Safety: UL 60950 3rd Edition, UL 2043 (plenum-rated)
- Radio: FCC part 22, 24, and 90
- Europe: CE mark

## Product Code

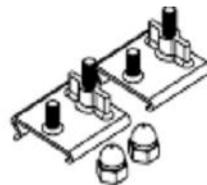
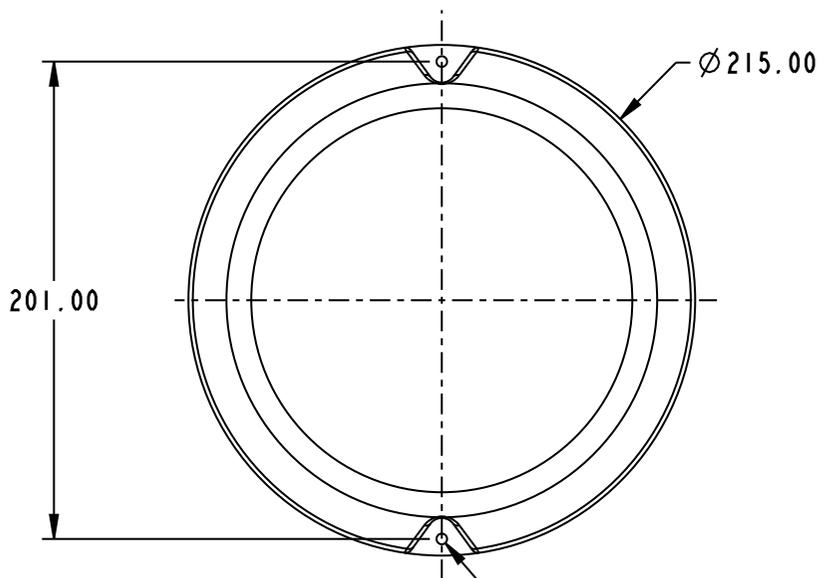
- InterReach Unison Cat-5 Extender: UNS-EX170-1

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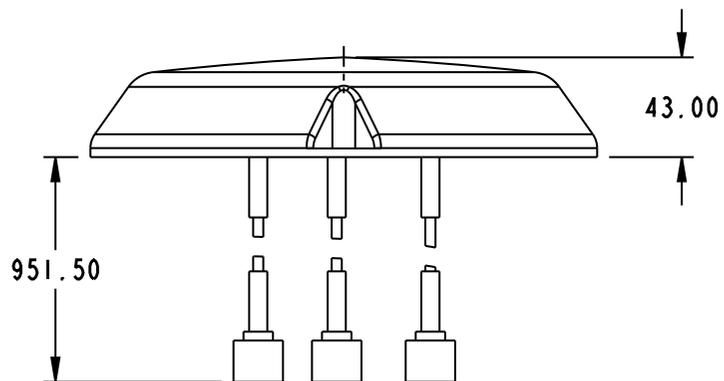
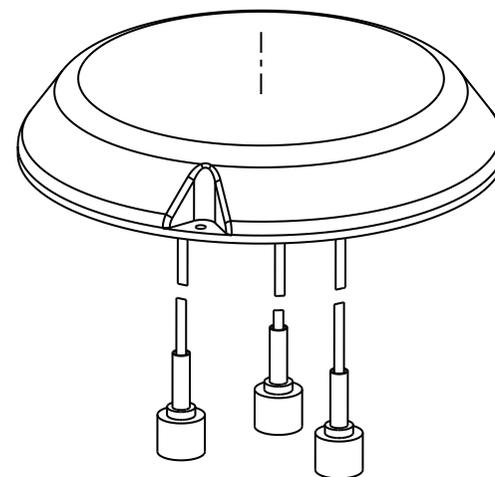
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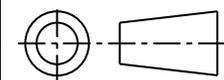


EACH UNIT TO INCLUDE 2 ACORN NUTS AND 2 ADAPTOR CLIPS TO MOUNT WITH STANDARD OR RECESSED TILES



Parameter	Performance		
	Port 1	Port 2	Port 3
Frequency Range	698-806MHz, 1710-2170MHz	824-894MHz, 1850-1990MHz	2500-2700MHz
Gain	3.0 dBi	2.0 dBi	0 dBi
Nominal Impedance	50Ohm		
Polarization	Vertical		
VSWR	<2:1		
Horizontal 3dB Beamwidth	Omni		
Front to Back ratio	8dB		
RF Connector	N Male		
Cable Length	3 feet		
Power	5 Watt		
Weight	Approximate 1.15lb		
ROHs	Compliant		

**APPROVED**

TOLERANCE (UNLESS STATED)	X = ±0.3 XX = ±0.13 ANGULAR = ± 30'	SYM	ECO/DESCRIPTION	DATE	CK	APP	 ANTENNA SUB PENANG, MALAYSIA	DRAWN BY: YT		
		I	INITIAL RELEASE	29/06/09	YT	CH FONG		CHECKED BY: CH FONG		
<ul style="list-style-type: none"> <li>PRODUCT &amp; PROCESS MUST COMPLY TO LT-GES</li> <li>MISSING INFORMATION REFER TO 3D DATA</li> <li>DIMENSIONS ARE IN MILLIMETERS UNLESS STATED OTHERWISE</li> <li>THIS DRAWING WAS GENERATED VIA PRO/ENGINEER</li> <li>PRINT NOT TO SCALE</li> </ul>							<small>CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DOCUMENT IS OF PROPRIETARY NATURE. IT MAY NOT BE REPRODUCED OR USED WITHOUT EXPRESS WRITTEN PERMISSION OF LAIRD TECHNOLOGIES, ANTENNA SUB</small>	DWG. NO. : N/A	PG. 1/1	REV 1
							DESCRIPTION: LGC AGC MOUNTING & OUTLINE	MATERIAL: N/A		
© 2009 LAIRD TECHNOLOGIES							PROJECT NO. LTIW 018	DATE: 30/6/09	SCALE: 0.300	UNITS: MM