PATTERSON GROUP SERVICES
POWERED BY APi GROUP

Bi-Directional Amplifier (BDA) System

Signal Boosting Solution designed to enhance in-building radio frequency (RF) Signal Coverage for Public Safety Radios

Submittal Data For:

Cape Fear Valley Health

225 Brightwater Drive

Lillington, NC 27546

Harnett County

1824 Douglas Drive, Sanford, N.C. 27330 • (P)(919) 776-2403 • (F)(919) 718-6091

CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546

Estimate Number: F12744 Rev 1.0
TYPE: ERRCS DESIGN
ORIGINAL DATE: 01/19/2024

DESIGN CRITERIA

ASSUMPTIONS:

- -70 dBm OR BETTER SIGNAL AVAILABLE AT THE PROPOSED DONOR ANTENNA LOCATION.
- AT LEAST 20DB GREATER THAN THE MAX. BDA GAIN OF ISOLATION BETWEEN INDOOR AND OUTDOOR ANTENNAS.
- 20 CHANNELS FOR 700MHz and 20 CHANNELS FOR 800MHz SYSTEM.
- ALL EQUIPMENT AND CABLING CAN BE INSTALLED AS DESIGNED.
- FINAL ANTENNA LOCATIONS TO BE DETERMINED BY SYSTEM INTEGRATOR.
- INSTALLER TO HAVE A VARIETY OF ATTENUATORS ON HAND TO BALANCE SYSTEM DURING COMMISSIONING STAGE

NOTES

INSTALLATION SCOPE OF WORK SHALL COMPLY WITH ALL APPLICABLE LOCAL CODES AND AHJ REQUIREMENTS.

INSTALLER SHALL VERIFY THE REQUIRED FIRE SURVIVABILITY OF THE RISER(S) AND EQUIPMENT LOCATION(S).

BATTERY BACKUP IS PROVIDED. REFER TO BATTERY CALCULATION SHEET.

ALL PASSIVE DEVICES (DIRECTIONAL COUPLERS, SPLITTERS) ARE INSTALLED INSIDE JUNCTION BOXES WITH PROPER SPACING FOR CONNECTIONS, IF CABLE IS REQUIRED TO BE INSTALED IN A METAL RACEWAYS.

DONOR ANTENNA AND ALL POWERED EQUIPMENT SHALL BE CONNECTED TO THE BUILDING GROUNDING SYSTEM.

DONOR ANTENNA SHALL BE CONNECTED TO LIGHTNING PROTECTION SYSTEM (IF EXISTING IN THE BUILDING).

THE DESIGN WAS BASED ON SURVEY DATA (IF AVAILABLE) AND FAST RAY TRACING PREDICTION MODEL.

THE DESIGN SHALL BE REVIEWED AND APPROVED BY A PROFESSIONAL ENGINEER, IF REQUIRED.

THE SYSTEM SHALL NOT BE POWERED UNTIL IT HAS BEEN APPROVED BY THE AHJ.

REVISIONS

VERSION 1.0: ORIGINAL, DATE: 01/19/2024

CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546

Design Plan Legend - Reference Only

Antennas

Donor Antenna, Yagi Directional 763-869MHz, 14dBi
BDA-YDA763869-14-1

Omni indoor 698-869MHz 3dBi, Low Profile
BDA-OIA-698869-3-1

Directional Panel indoor 763-869MHz 6dBi
BDA-PIA-763869-6-1

Passives

RF TAPPER, 136-960 MHz, 13dB, 300W
BDA-TPx-L2

DUAL BAND COMBINER,
Variable Frequency Ranges,
BDA-DBC-x2

POWER SPLITTER, 698-2700 MHz.
Broadband power splitter, 2 way, 50W
BDA-PS2-W2

Reject FIlter, FirstNet and/or SMR800,
Low PIM
BDA-FBPxS-xx

POWER SPLITTER, 136 - 870 MHz.
Broadband power splitter, 2 way, 50W
BDA-PS2-L2

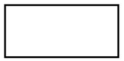
ATTENUATOR, 5W, Variable dB,
N TYPE CONNECTORS
BDA-NATTEN-05xx

Coaxial Cable Grounding Kit
BDA-GNDKIT1

Donnor Antenna Monitoring kit
BDA-ANT-MONKIT-001

Weatherproofing Silicone Coldshrink
for EOL Assembly, 9.8"L
BDA-WPK-ATBC40_01

Coaxial RF Surge Protector, DC - 6GHz,
90W, IP67, 60 V Max
BDA-P8AX09-6G-N/FF

Symbol	Tapper Loss (dB)	Part Number
	4.8	BDA-TP3-L2
	7	BDA-TP6-L2
	7.8	BDA-TP7-L2
	10.4	BDA-TP10-L2
	13.2	BDA-TP13-L2
	15.1	BDA-TP15-L2
	20.1	BDA-TP20-L2
	30.1	BDA-TP30-L2

Cables

Coaxial Cable Jumper NM-NM 1/4" Superflex, Outdoor UV, 51"
BDA-NM-RG8-13-NM

Jumper Cable - RG58 - 48" - N Male to N Female
BDA-NM-RG58-12-NF

Jumper Cable - RN400 - 37" - N Male to N Male
BDA-NM-RN4P-10-NM

1/2in Plenum coax cable Rated/ Indoor/ Outdoor Usage/ Color Red
BDA-AP6012J50RD-1

AirCell® In-Conduit.1ft, 1/2", 50 Ohm, Black, Corrugated, UV Rated Polyethylene Jacket
BDA-AC012J50-1

Represents physical connection of Attenuator to a Passive Port.

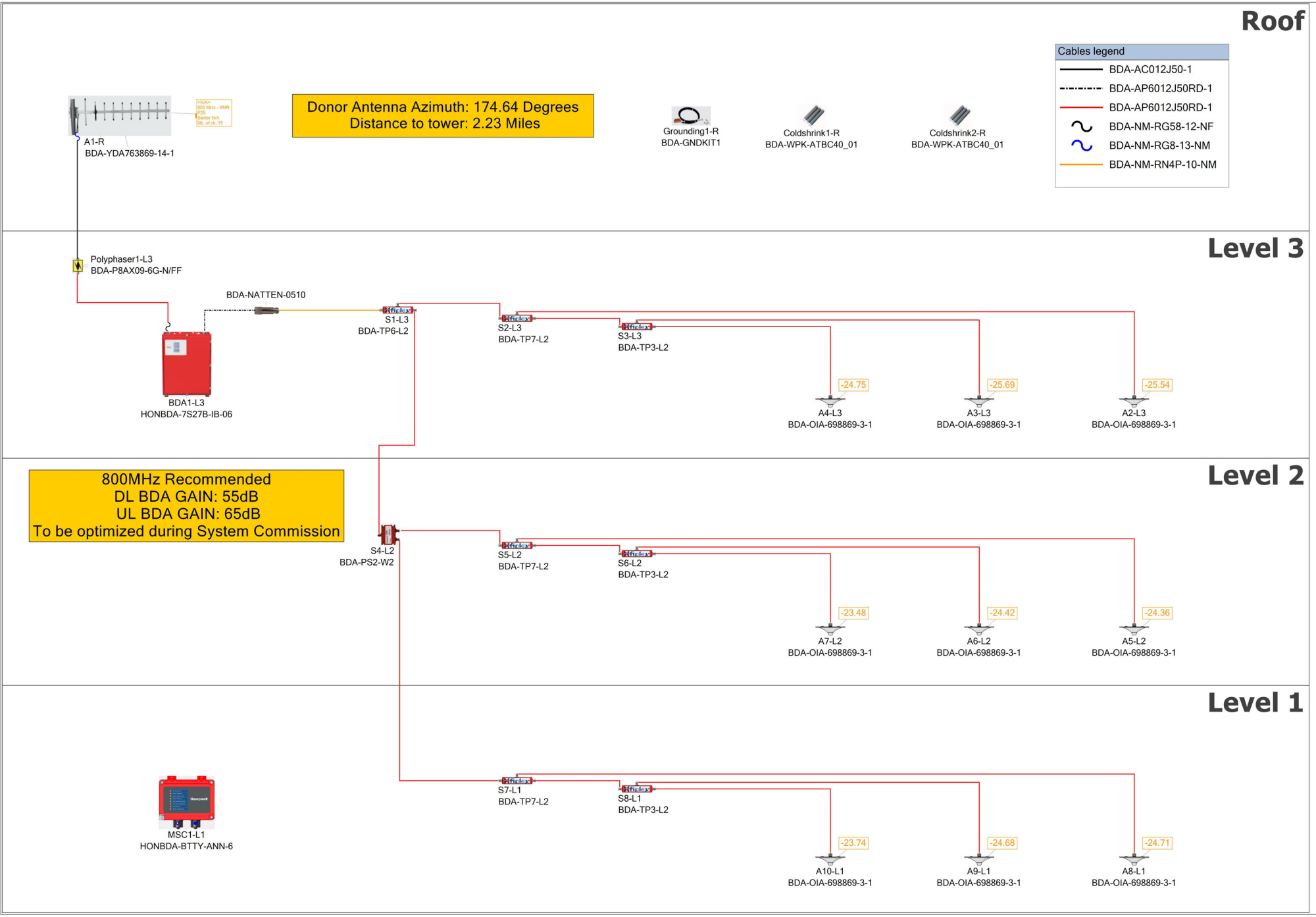
Actives

700/800MHz BDA, Class B, 0.5W, DC
HONBDA-D-7S27B

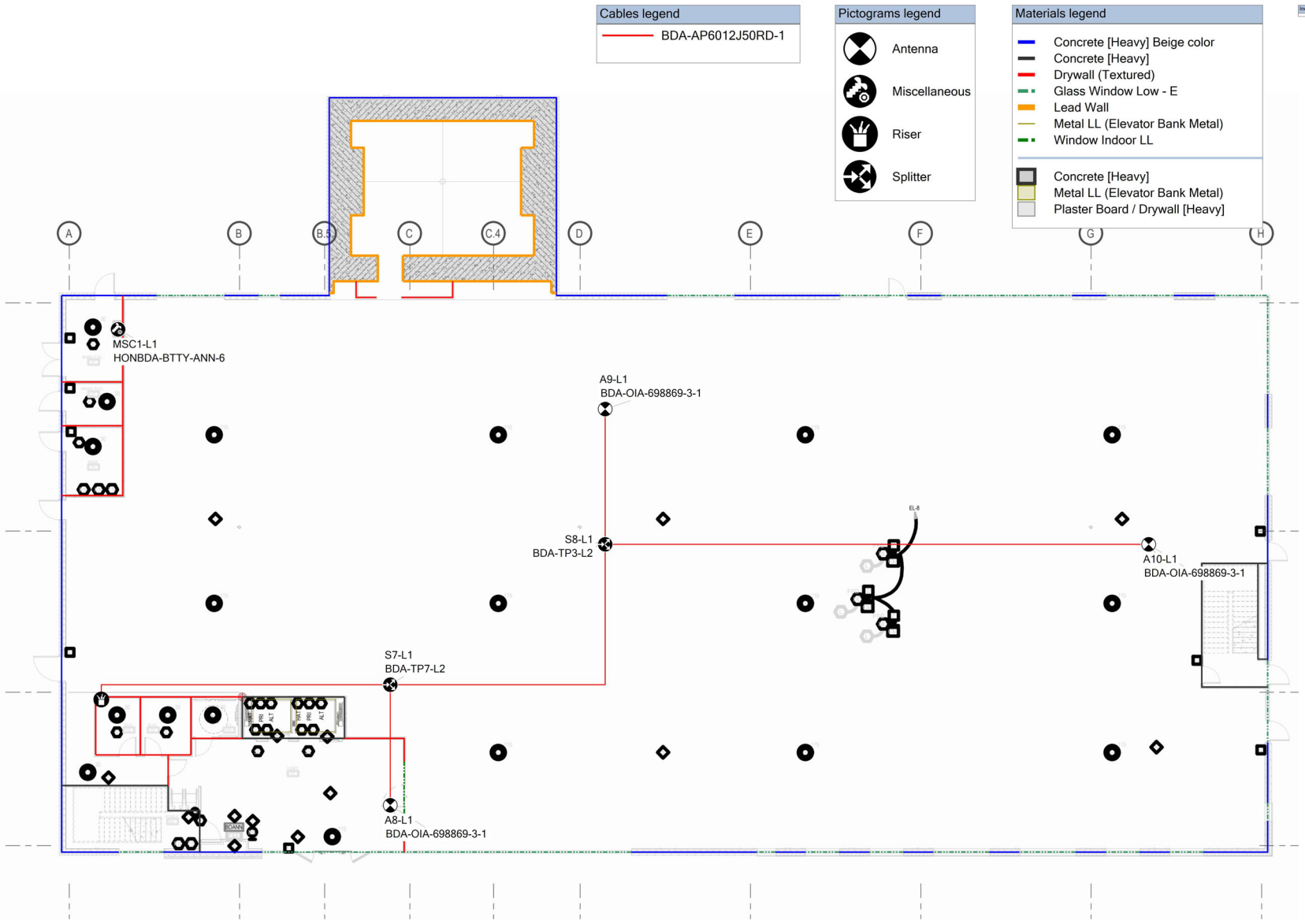
All-in-One Integrated BDA + BBU + Annunciator, 0.5W/27dBm,
800 (excludes ESMR) + 700 (excludes Band 14), CLASS B
HONBDA-7S27B-IB-06

Battery Backup (BBU) 100AH, 24VDC
HONBDA-BTTY-100100

Remote annunciator without dry contacts (ANN1)
HONBDA-BTTY-ANN-4



CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546



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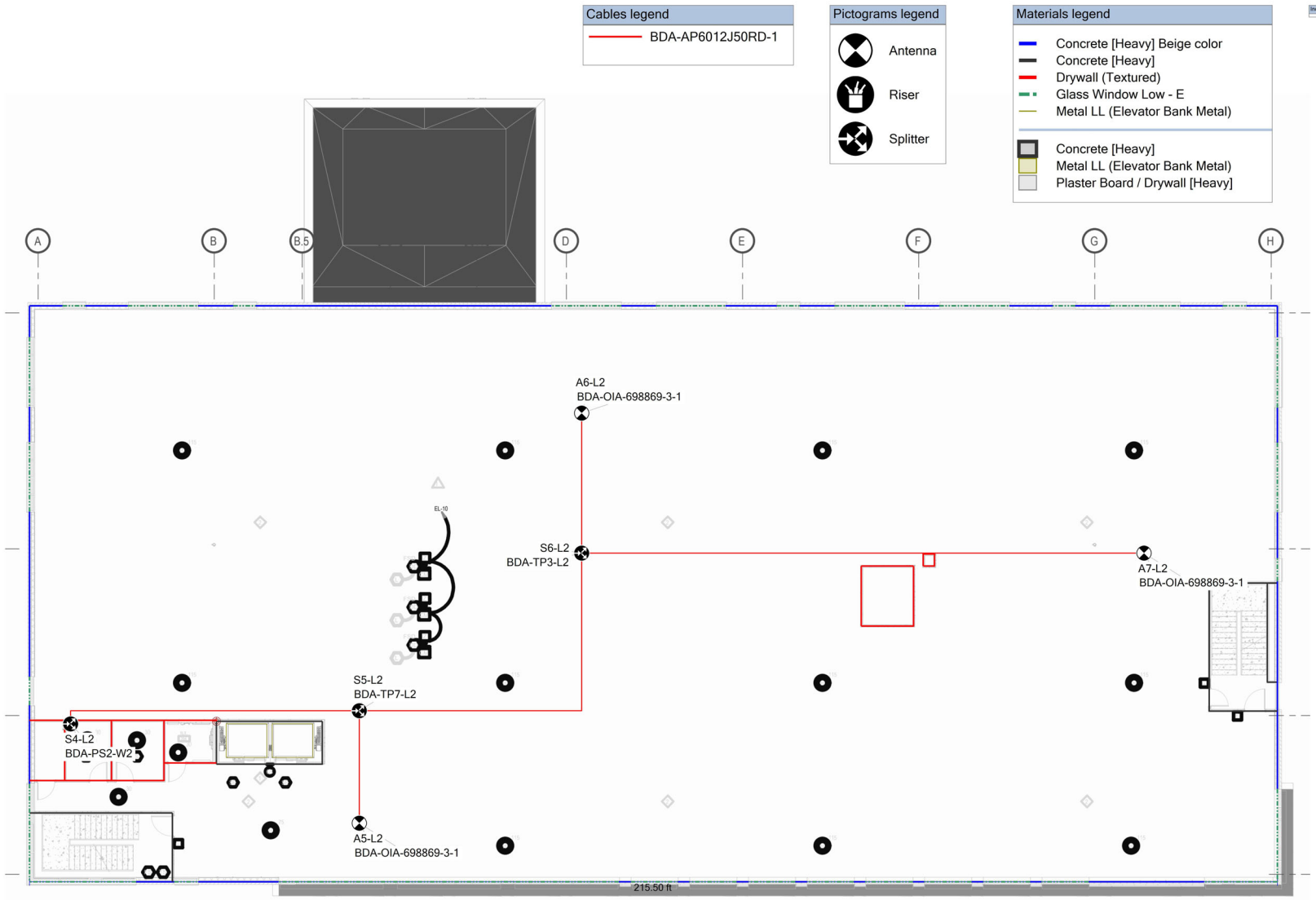
CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546

Level 1

21,500 SQFT



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CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546

Level 2

21,500 SQFT

Cables legend
BDA-AC012J50-1
BDA-AP6012J50RD-1
BDA-AP6012J50RD-1
BDA-NM-RG58-12-NF
BDA-NM-RN4P-10-NM

Pictograms legend
Antenna
Attenuator
BDA
Polyphaser
Riser
Splitter

Materials legend
Concrete [Heavy] Beige color
Concrete [Heavy]
Drywall (Textured)
Glass Window Low - E
Metal LL (Elevator Bank Metal)
Concrete [Heavy]
Metal LL (Elevator Bank Metal)
Plaster Board / Drywall [Heavy]

Indoor prediction legend

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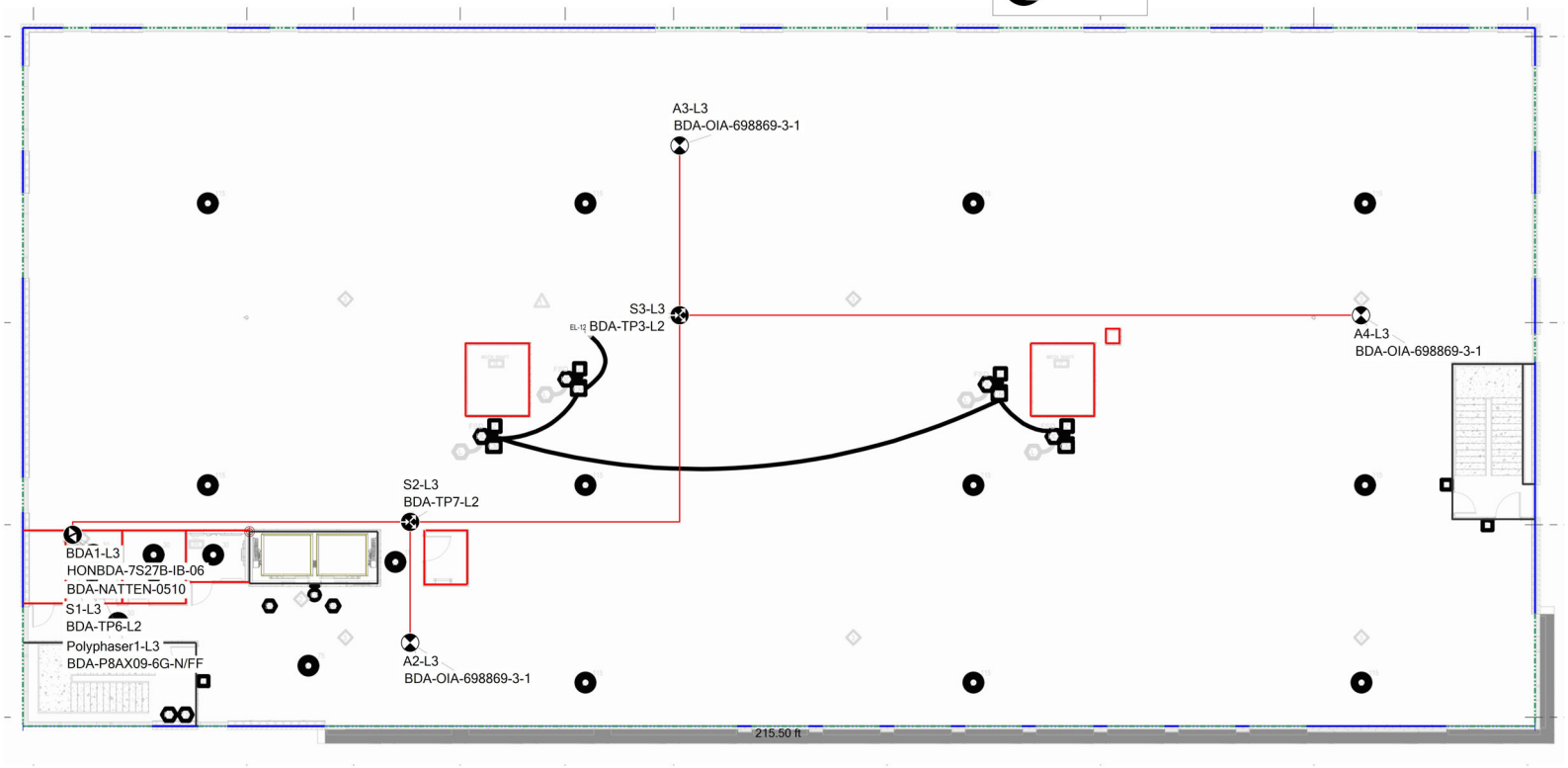

CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546

N

Level 3

100.00 ft

21,500 SQFT

Cables legend	
	BDA-AC012J50-1
	BDA-NM-RG8-13-NM

Pictograms legend
Antenna
Coldshrink
Grounding
Riser

Materials legend
Concrete [Heavy] Beige color
Concrete [Light]

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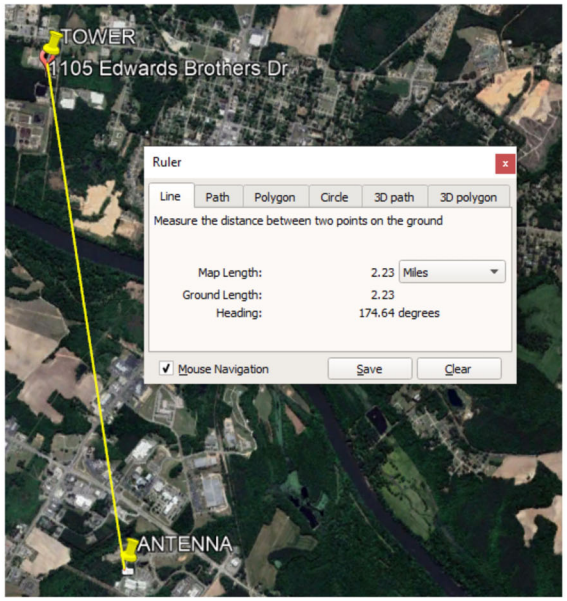
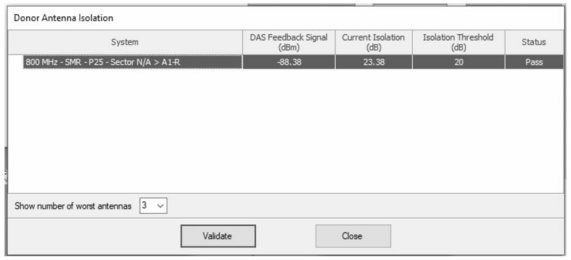
Donor Antenna Azimuth: 174.64 Degrees
Distance to tower: 2.23 Miles

A1-R
BDA-YDA763869-14-1
Grounding1-R
BDA-GNDKIT1
Coldshrink1-R
BDA-WPK-ATBC40_01
Coldshrink2-R
BDA-WPK-ATBC40_01



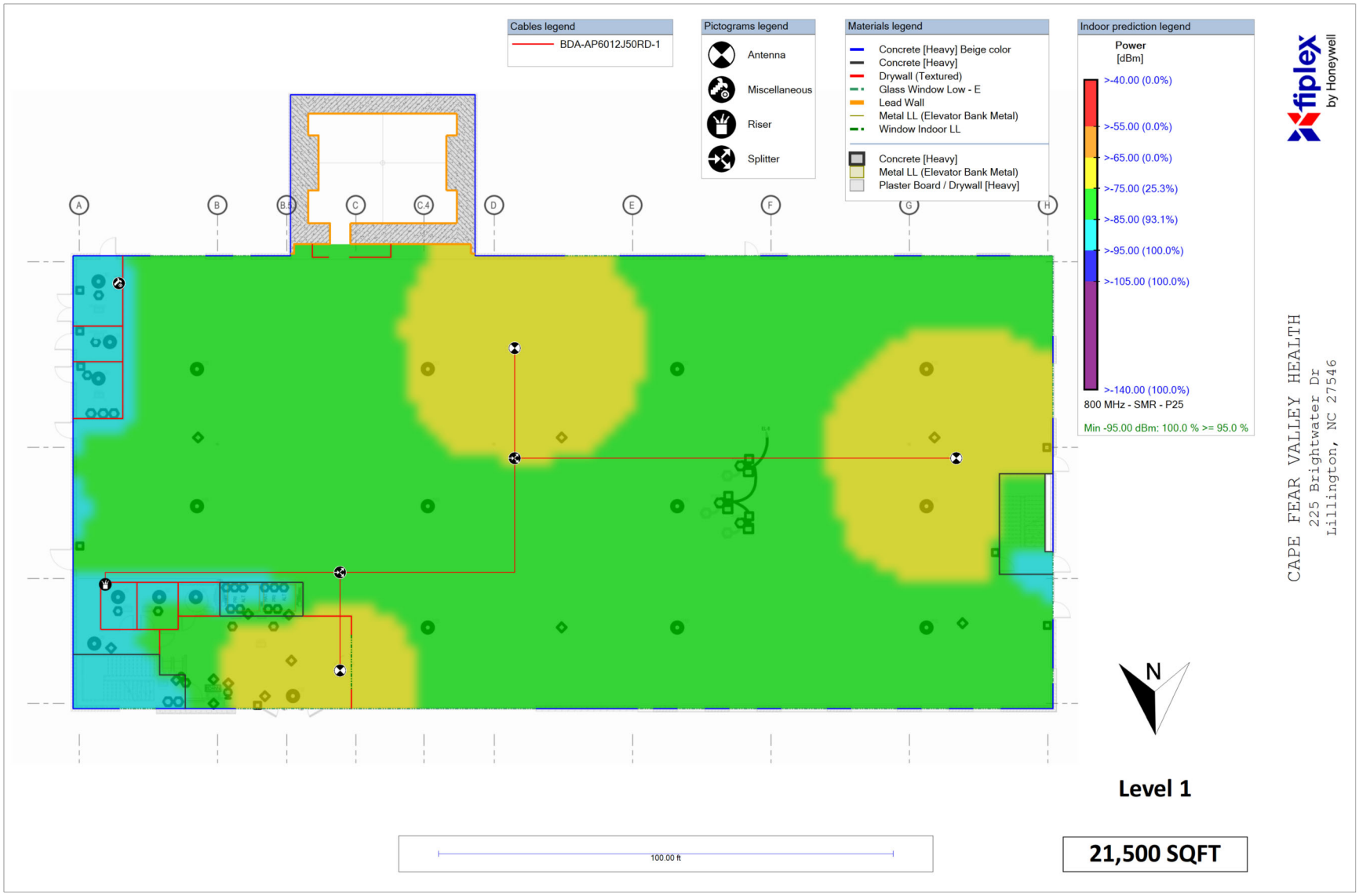


CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546

N

Roof

100.00 ft


Cables legend
BDA-AP6012J50RD-1
Pictograms legend
Antenna
Miscellaneous
Riser
Splitter
Materials legend
Concrete [Heavy] Beige color
Concrete [Heavy]
Drywall (Textured)
Glass Window Low - E
Lead Wall
Metal LL (Elevator Bank Metal)
Window Indoor LL
Concrete [Heavy]
Metal LL (Elevator Bank Metal)
Plaster Board / Drywall [Heavy]
Indoor prediction legend
Power
[dBm]
>-40.00 (0.0%)
>-55.00 (0.0%)
>-65.00 (0.0%)
>-75.00 (25.3%)
>-85.00 (93.1%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-140.00 (100.0%)
800 MHz - SMR - P25
Min -95.00 dBm: 100.0 % >= 95.0 %
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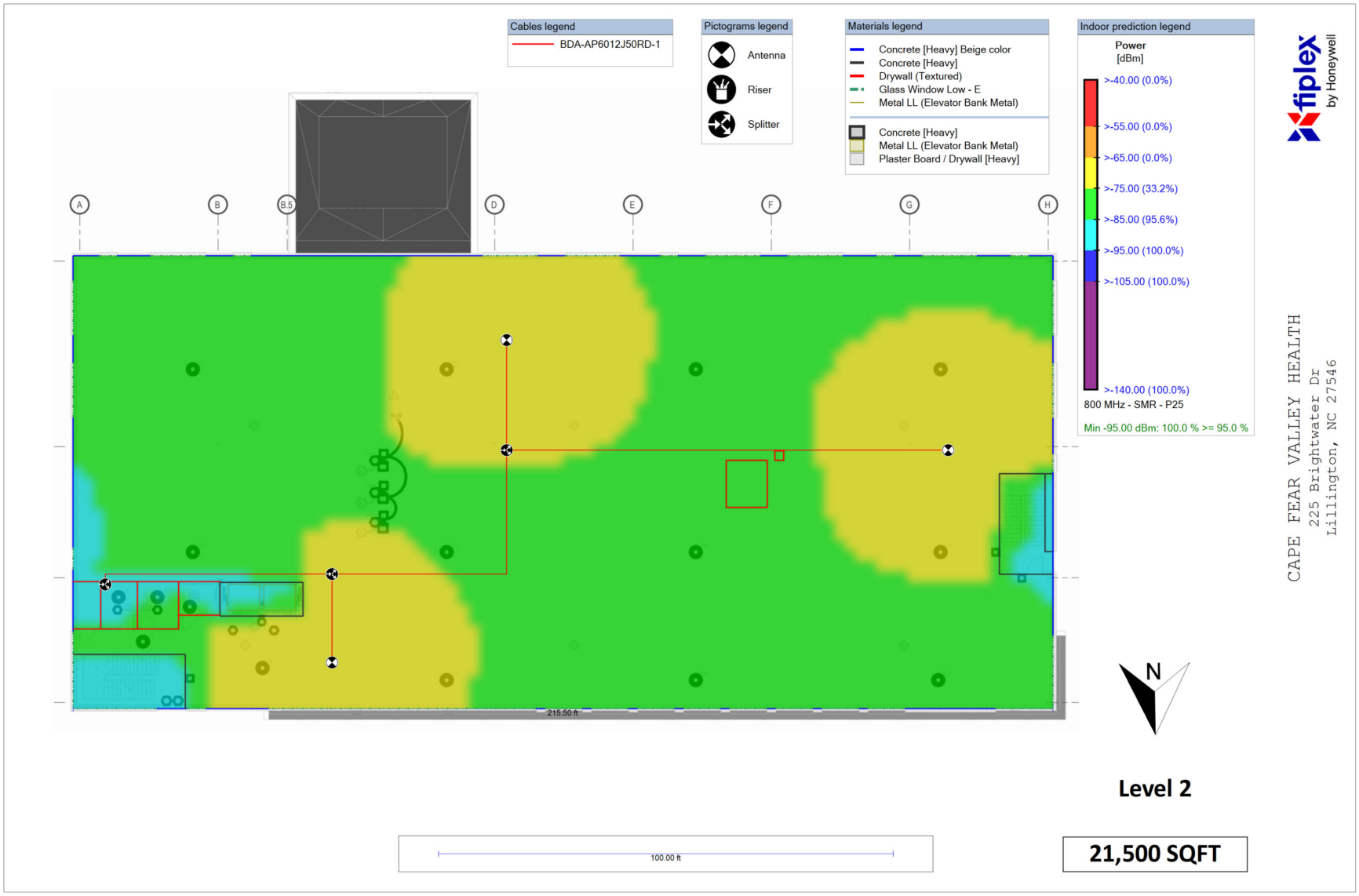
CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546
N
Level 1
100.00 ft
21,500 SQFT


Cables legend
BDA-AP6012J50RD-1
Pictograms legend
Antenna
Riser
Splitter
Materials legend
Concrete [Heavy] Beige color
Concrete [Heavy]
Drywall (Textured)
Glass Window Low - E
Metal LL (Elevator Bank Metal)
Concrete [Heavy]
Metal LL (Elevator Bank Metal)
Plaster Board / Drywall [Heavy]
Indoor prediction legend
Power
[dBm]
>-40.00 (0.0%)
>-55.00 (0.0%)
>-65.00 (0.0%)
>-75.00 (33.2%)
>-85.00 (95.6%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-140.00 (100.0%)
800 MHz - SMR - P25
Min -95.00 dBm: 100.0 % >= 95.0 %
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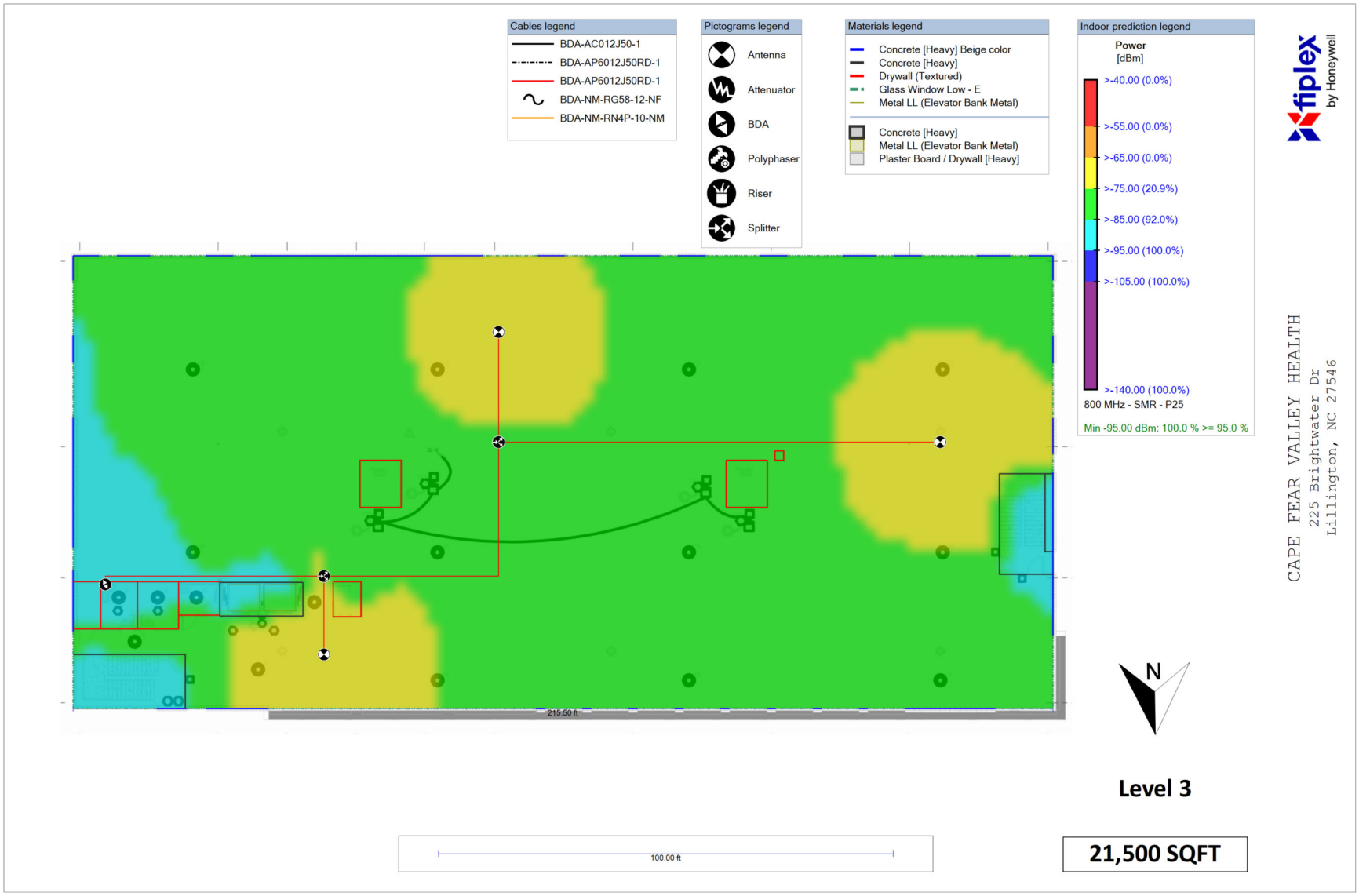
CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546
A
B
B.5
D
E
F
G
H
215.50 ft
N
Level 2
100.00 ft
21,500 SQFT


Cables legend
BDA-AC012J50-1
BDA-AP6012J50RD-1
BDA-AP6012J50RD-1
BDA-NM-RG58-12-NF
BDA-NM-RN4P-10-NM
Pictograms legend
Antenna
Attenuator
BDA
Polyphaser
Riser
Splitter
Materials legend
Concrete [Heavy] Beige color
Concrete [Heavy]
Drywall (Textured)
Glass Window Low - E
Metal LL (Elevator Bank Metal)
Concrete [Heavy]
Metal LL (Elevator Bank Metal)
Plaster Board / Drywall [Heavy]
Indoor prediction legend
Power
[dBm]
>-40.00 (0.0%)
>-55.00 (0.0%)
>-65.00 (0.0%)
>-75.00 (20.9%)
>-85.00 (92.0%)
>-95.00 (100.0%)
>-105.00 (100.0%)
>-140.00 (100.0%)
800 MHz - SMR - P25
Min -95.00 dBm: 100.0 % >= 95.0 %
215.50 ft
N
Level 3
100.00 ft
21,500 SQFT
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CAPE FEAR VALLEY HEALTH
225 Brightwater Dr
Lillington, NC 27546

KNOX GATE & KEY SWITCH™

Eliminate perimeter barriers that delay emergency response with the Knox Gate & Key Switch. Override electronic gates and lower voltage equipment to allow emergency access into communities, apartment complexes, parking garages, pedestrian gates, industrial receiving areas and much more.

Dual Gate & Key Switch on Mounting Plate
Model #3503

Single Gate & Key Switch on Mounting Plate
Model #3502

Single Gate & Key Switch
Model #3501

FEATURES

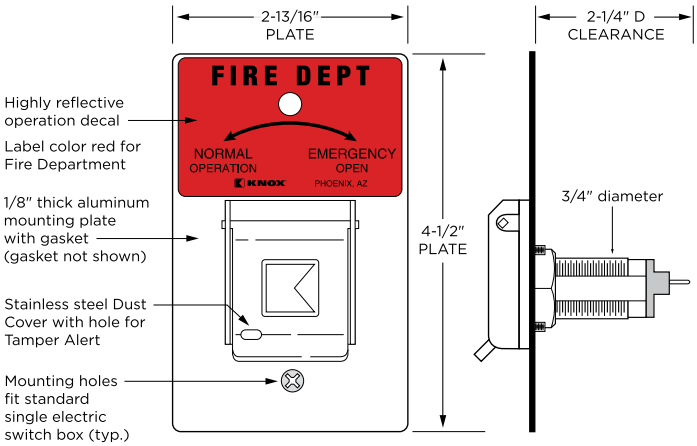
- One position, two position or momentary switch
- Face plate and lock cover ensure weather resistant operation
- Dual locks enable shared access with other agencies

BENEFITS

- Gain rapid access through electronic gates without forced entry
- Overrides electronic gates, motorized doors, electrical switches
- Can share access with multiple agencies
- Utilizes Knox Master Key solution

OPTIONS

- Single or dual key switch
- Fire, EMS, security or law enforcement identification labels



ELECTRICAL DATA

- Switch: SPDT or DPDT
- 7 A resistive, 4 A inductive, (sea level), 28 VDC
- 7 A resistive, 2.5 A inductive, (50,000 ft.), 28 VDC
- 7 A resistive or inductive, 115 VAC, 60 Hz
- UL® and CSA listed: 7 A, 250 VAC
- Temperature tolerance up to +180° F

ORDERING SPECIFICATIONS

To insure procurement and delivery of the Knox Gate & Key Switch, it is suggested that the following specification paragraph be used:

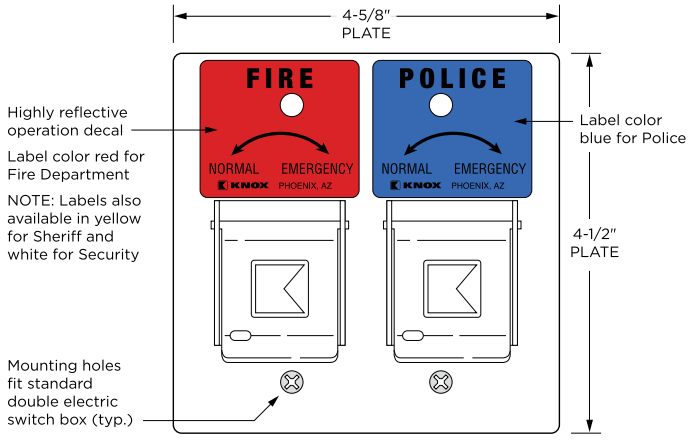
Dimensions: Requires 2 1/4" recessed depth x 3/4" diameter

Switch: SPDT or DPDT; 7 A resistive, 4 A inductive, key removable two position

Mounting: Key switch is designed to be recess mounted

P/N: 3500 Series Knox Gate & Key Switch (mfr's cat. ID)

Mfr's Name: KNOX COMPANY



ABOUT KNOX COMPANY

Over forty years ago, a unique concept in rapid access for emergency response was born. The KnoxBox®, a high-security key lock box, was designed to provide rapid access for emergency responders to reduce response times, minimize injuries and protect property from forced entry.

Today, one revolutionary lock box has grown into a complete system providing rapid access for public safety agencies, industries, military, and property owners across the world. The Knox Company is trusted by over 14,000 fire departments, law enforcement agencies, and governmental entities.

1601 W. DEER VALLEY RD. PHOENIX, AZ 85027 | T. 800-552-5669 | F. 623-687-2290 | INFO@KNOXBOX.COM | KNOXBOX.COM

FLEX Series BDA
PS700-PS800 Digital Signal Boosters

HONBDA-A-7S27B & HONBDA-D-7S27B

Product Features

- Supports Public Safety 700 & 800MHz dual band version
- FirstNet™ Band 14 available
- Upgradeable options: Class B to Class A & 0.5W/27dBm to 2W/33dBm
- Fully digital, FPGA-based
- Auto Diagnostic
- Automatic gain control per band; Per channel and per time slot on channel selective mode
- Oscillation detection with alarm and auto-shutdown.
- Antenna Isolation measurement feature
- Antenna Isolation Alarm
- Weatherproof enclosure, NEMA4
- NFPA compliant with dry contact alarms
- Uplink and downlink squelch, per channel and per time slot on channel selective mode
- Assisted GUI wizard with Automatic Calibration features (Patent Pending) to reduce the uplink noise
- User adjustable gain control, UL and DL independent, per band, per channel and per time slot on channel selective mode
- 3-years Warranty
- Buy American Compliant: Meets the definition of Domestic Construction Material under the Buy American Act
- FCC (Federal Communications Commission-US)
- IC Approved
- IFC 2015, 2018, 2021 Edition Standards
- ISO 9001 Compliant
- NFPA 72 2013 Edition, NFPA 1221 2016 2019 Edition
- RoHS Compliant
- UL2524 2nd Edition Listing with SGS, Nationally Recognized Testing Laboratory (NRTL) approved by OSHA for UL2524.SGS-C US

Applications

- For P25 Phase I & Phase II, DMR, NXDN and Conventional Systems
- Indoor coverage: buildings, schools, hospitals, casinos, tunnels, metro stations
- Outdoor coverage: oil rigs, stadiums, dense urban areas, rural areas

Specification	Value
Type	Dual Band Digital Signal Booster
Frequency Range	758-775 / 788-805 MHz or 764-776 / 794-806 MHz (software adjustable) & 806-824 / 851-869MHz
Passband BW. min	100KHz to full band or Channel Selective (After Upgrade to Class A)
Number of Passband	2 BWA per band or 32 channel filters + 2 BWA per band (After Upgrade to Class A)
Channel Filter Options	150KHz, 100Khz, 75KHz, 62.5KHz, 50KHz, 37.5KHz, 25KHz and 12.5KHz (After Upgrade to Class A)
BWA Filters	Adjustable from 100KHz to full band in step in steps of 50KHz
Gain, maximum	85 dB
Passband ripple	+/- 2.0 dB
Gain, manual control	30dB range, digitally controlled in 1dB steps, per link, per band
Antenna isolation	Max Gain + 20dB
Composite output power, DL	+27dBm or +33dBm (After Upgrade to 2W) per band
Composite output power, UL	+27dBm
IMD	< -13dBm
Noise Figure	9.0dB max
Group Delay	Band Selective: 3.5 to 6.5µS, depending on BWA • Or After Class A upgrade • Channel Selective 150KHz, 11.5µS • Channel Selective 100KHz, 13.5µS • Channel Selective 75KHz, 16.0µS • Channel Selective 62.5KHz, 18.0µS • Channel Selective 50KHz, 21.0µS • Channel Selective 37.5KHz, 25.5µS • Channel Selective 25KHz, 35.0µS • Channel Selective 12.5KHz, 61.5µS

fiplex by Honeywell

FLEX Series BDA

PS700-PS800-Digital Signal Boosters

HONBDA-A-7S27B & HONBDA-D-7S27B

Specification	Value
Maximum input power, no damage	+5dBm (UL), +5dBm (DL)
Maximum input power, normal operation	0dBm (UL), 0dBm (DL)
Connectors	N(f) as standard
RF Input/Output impedance	50Ω
Uplink squelch function	Yes, user selectable, to avoid UL noise when no carriers present, per band, per time slot and per channel (on Class A mode)
Self-diagnostic platform	Microprocessor based
Alarms	Yes, amplifiers status, power amplifiers status, power supply failure, temperature, AGC, RF overload, donor antenna failure, VSWR Indoor, oscillation.
Local management and supervising	Local access via USB
RoHS compliance	Yes
Power Supply	AC 110 VAC, 50/60 Hz or DC +24VDC (depending on configuration)
Power Consumption	65W or 80W (After Upgrade to 2W)
Housing	NEMA 4
Temperature Range	-13º to 131º F • -25º to +55º C
Cooling	Natural convection
Weight	52.9 lbs • 24 kg
Dimension	17.7 x 17.3 x 5.1 in • 450 x 440 x 130 mm
Mounting	Wall or pole mounting (Rack mounting option available)
MTBF	250,000 hours
FCC ID for HONBDA-A & HONBDA-D "Class B"	P3TDH7S-00X
FCC ID for HONBDA-A & HONBDA-D "Class A"	P3TDH7S-00XA

* Value valid for non duplexed units. This value can change depending on the filtering insertion loss of the duplexer.

WARNING: This is NOT a CONSUMER device. It is designed for installation by the FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of $100,000 for each continuing violation.

Ordering Information

HONBDA-A-7S27B: 0.5W/27dBm, 800 + 700 + FirstNet CLASS B, Upgradeable to Class A, 2W/33dBm options, AC
HONBDA-D-7S27B: 0.5W/27dBm, 800 + 700 + FirstNet CLASS B, Upgradeable to Class A, 2W/33dBm options, DC

Upgraded License Part Numbers

HONBDA-LIC-D27B-D27A: From 0.5W/27dBm Class B to 0.5W/27dBm Class A (HONBDA-A-7S27A & HONBD-D-7S27A)
HONBDA-LIC-D27B-D33B: From 0.5W/27dBm Class B to 2W/33dBm Class B (HONBDA-A-7S33B & HONBDA-D-7S33B)
HONBDA-LIC-D27B-D33A: From 0.5W/27dBm Class B to 2W/33dBm Class A (HONBDA-A-7S33A & HONBDA-D-7S33A)
HONBDA-LIC-D27A-D33A: From 0.5W/27dBm Class A to 2W/33dBm Class A (HONBDA-A-7S33A & HONBDA-D-7S33A)
HONBDA-LIC-D33B-D33A: From 2W/33dBm Class B to 2W/33dBm Class A (HONBDA-A-7S33A & HONBDA-D-7S33A)

STANDARDS AND CODES

The HONBDA-A/D-7S27B units comply with the following standards and codes.

- Buy American Compliant: Meets the definition of Domestic Construction Material under the Buy American Act
- FCC (Federal Communications Commission-US
- IC Approved
- IFC 2015, 2018, 2021 Edition Standard
- NFPA 72 2013 Edition, NFPA 1221 2016 2019 Edition Standard
- ROHS Compliant
- SGS C-UL Compliant
- UL2524 2nd Edition Standard with SGS, Nationally Recognized Testing Laboratory (NRTL) approved by OSHA for UL2524

Fiplex
2101 NW 79th Avenue,
Miami, FL 33122
305 884-8991
www.fiplex.com

fiplex by Honeywell

FLEX Series BBU
Battery Backup Systems

HONBDA-BTTY SERIES

Product Features

- NFPA Compliant
- Up to 24 hour version
- Batteries included
- AC Input, 24 Volt DC Output
- NEMA-4 Rated BBU Enclosure
- Up to 4 Annunciators may be connected to one BBU
- Tamper Proof with Lock and Key Accessibility
- Flush Wall Mounted Annunciators
- Buy American Compliant: Meets the definition of Domestic Construction Material under the Buy American Act
- IFC & NFPA compliance; UL2524 2nd Edition Listing with SGS, Nationally Recognized Testing Laboratory (NRTL) approved by OSHA for UL2524
- ISO-9001 Approved
- RoHS Compliant
- SGS-C UL Approved
- UL2524 2nd Edition Standard with SGS, Nationally Recognized Testing Laboratory (NRTL) approved by OSHA for UL2524

Specification	Value
Type	Battery Backup Unit
Input	120 VAC 50/60 Hz
Size	24 x 20 x 10 in (609.6 x 508 x 25.4mm)
Maximum operating temperature	131 ° F - 55° C
Specifications	**BTTY-100050**
Storage Capacity	100W / 12hs
Annunciator	• AC Power Normal • AC Power Failure • Battery Capacity <30% • Battery Charger Fail • Donor Antenna Disconnection • Donor Antenna Malfunction • RF Emitter Fail • System Component Fail
Maximum Load	200 W (contact Fiplex for the battery duration at different loads)
Batteries	Included
BDA Annunciator	Built-in, port for additional external annunciators
Weight (batteries included)	150lbs
Specifications	**BTTY-100100**
Storage Capacity	100 W / 24 hours or 200 W / 12 hours
Annunciator	• AC Power Normal • AC Power Failure • Battery Capacity <30% • Battery Charger Fail • Donor Antenna Disconnection • Donor Antenna Malfunction • RF Emitter Fail • System Component Fail
Maximum Load	200 W (Contact Fiplex for information on the battery duration at different loads).
Batteries	Included
BDA Annunciator	Built-in, port for additional external annunciators
Weight (batteries included)	210lbs 95.25 kg

fiplex by Honeywell

Ordering Information

HONBDA-BTTY-100055: BBU with built-in annunciator, 55AH, 24VDC, batteries included. NFPA compliant, UL2524 2nd Edition Listed HONEYWELL BBU

HONBDA-BTTY-100100: BBU with built-in annunciator, 100AH, 24VDC, batteries included. NFPA compliant, UL2524 2nd Edition Listed HONEYWELL BBU

HONBDA-BTTY100055N: BBU with built-in annunciator, 55AH, 24VDC, batteries not included. NFPA compliant, UL2524 2nd Edition Listed HONEYWELL BBU

HONBDA-BTTY100100N: BBU with built-in annunciator, 100AH, 24VDC, batteries not included. NFPA compliant, UL2524 2nd Edition Listed HONEYWELL BBU

STANDARDS AND CODES

The HONBDA-BTTY Series complies with the following standards and codes.

- Buy American Compliant: Meets the definition of Domestic Construction Material under the Buy American Act
- IFC 2015, 2018, 2021 Edition Standard
- NFPA 72 2013 Edition, NFPA 1221 2016 2019 Edition Standard
- ISO 9001 Approved
- OSHA Approved
- ROHS Compliant
- SGS C-UL Compliant
- UL2524 2nd Edition Standard with SGS, Nationally Recognized Testing Laboratory (NRTL) approved by OSHA for UL2524

Fiplex
2101 NW 79th Avenue
Miami, FL 33122
305 884-8991
www.fiplex.com

Country of Origin: USA

fiplex by Honeywell

fiplex by Honeywell	SPECIFICATION DATA		
	FLEX HONBDA-BTTY-100100 Battery Run Time and Heat Load Calculations for 700/800 BDA's		
FLEX 700/800/FN BDAs	Date	Models	Document Author
	2-28-2023	Flex Series	SAK/MRD

FLEX HONBDA-BTTY-100100 BATTERY RUN TIME AND HEAT LOAD CALCULATIONS FOR 700/800 BDA'S

FLEX BDA: 27dBm (0.5W) Dual Band 700/800MHz Class A/B

Part Numbers:
HONBDA-D-7S27B
HONBDA-D-7S27A (HONBDA-D-7S27B + BDA-LIC-D27B-D27A)

- BDA Current Draw = 2.71A
- BDA Voltage = 24VDC
- BDA Power Consumption = 65.0W
- BBU Charger Efficiency = 85% (15% of power dissipated as heat)

Battery Backup Unit BBU
HONBDA-BTTY-100100

- Battery Backup Capacity = 100Ah
- Battery Backup Voltage = 24VDC

Runtime Calculations:

- $Backup\ Run\ Time(h) = \frac{Battery\ Capacity(Ah)}{Current(A)}$
- $Runtime\ (h) = 100Ah/2.71A$
- $Runtime\ (h) = 36.9h$

Heat Load Calculations(BBU + BDA):

- $Heat\ Load\ (BTU/hr) = Heat\ Load\ (BBU) + Heat\ Load\ (BDA)$
- $Heat\ Load\ (BTU/hr) = (BDA\ Power\ x\ 0.15\ x\ 3.41) + (BDA\ Power\ x\ 3.41)$
- $Heat\ Load\ (BTU/hr) = (65\ x\ 0.15\ x\ 3.41) + (65\ x\ 3.41)$
- $Heat\ Load\ (BTU/hr) = 33.25 + 221.7 = 254.95 BTU/hr$

Honeywell Building Technologies
715 Peachtree Street NE
Atlanta, GA 30308
305 884 8991
www.honeywell.com

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fiplex by Honeywell	SPECIFICATION DATA		
	FLEX HONBDA-BTTY-100100 Battery Run Time and Heat Load Calculations for 700/800 BDA's		
FLEX 700/800/FN BDAs	Date	Models	Document Author
	2-28-2023	Flex Series	SAK/MRD

FLEX BDA: 33dBm (2W) Dual Band 700/800MHz Class A/B

Part Numbers:
HONBDA-D-7S33B
HONBDA-D-7S33B (HONBDA-D-7S27B + BDA-LIC-D27B-D33B)
HONBDA-D-7S33A (HONBDA-D-7S27B + BDA-LIC-D27B-D33A)

- BDA Current Draw = 3.33A
- BDA Voltage = 24VDC
- BDA Power Consumption = 80.0W
- BBU Charger Efficiency = 85% (15% of power dissipated as heat)

Battery Backup Unit BBU
HONBDA-BTTY-100100

- Battery Backup Capacity = 100Ah
- Battery Backup Voltage = 24VDC

Runtime Calculations:

- $Backup\ Run\ Time(h) = \frac{Battery\ Capacity(Ah)}{Current(A)}$
- $Runtime\ (h) = 100Ah/3.33A$
- $Runtime\ (h) = 30h$

Heat Load Calculations(BBU + BDA):

- $Heat\ Load\ (BTU/hr) = Heat\ Load\ (BBU) + Heat\ Load\ (BDA)$
- $Heat\ Load\ (BTU/hr) = (BDA\ Power\ x\ 0.15\ x\ 3.41) + (BDA\ Power\ x\ 3.41)$
- $Heat\ Load\ (BTU/hr) = (80\ x\ 0.15\ x\ 3.41) + (80\ \text{x}\ 3.41)$
- $Heat\ Load\ (BTU/hr) = 40.92 + 272.8 = 313.72BTU/hr$

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fiplex by Honeywell	SPECIFICATION DATA		
	FLEX HONBDA-BTTY-100100 Battery Run Time and Heat Load Calculations for 700/800 BDA's		
FLEX 700/800/FN BDAs	Date	Models	Document Author
	2-28-2023	Flex Series	SAK/MRD

FLEX BDA: 27/33dBm (0.5W/2W) Single Band 700MHz or 800MHz Class A 64 Channel High Capacity

Part Numbers:
HONBDA-D-727AH
HONBDA-D-733AH
HONBDA-D-S27AH
HONBDA-D-S33AH

- BDA Current Draw = 2.71A
- BDA Voltage = 24VDC
- BDA Power Consumption = 65.0W
- BBU Charger Efficiency = 85% (15% of power dissipated as heat)

Battery Backup Unit BBU
HONBDA-BTTY-100100

- Battery Backup Capacity = 100Ah
- Battery Backup Voltage = 24VDC

Runtime Calculations:

- $Backup\ Run\ Time(h) = \frac{Battery\ Capacity(Ah)}{Current(A)}$
- $Runtime\ (h) = 100Ah/2.71A$
- $Runtime\ (h) = 36.9h$

Heat Load Calculations(BBU + BDA):

- $Heat\ Load\ (BTU/hr) = Heat\ Load\ (BBU) + Heat\ Load\ (BDA)$
- $Heat\ Load\ (BTU/hr) = (BDA\ Power\ x\ 0.15\ x\ 3.41) + (BDA\ Power\ x\ 3.41)$
- $Heat\ Load\ (BTU/hr) = (65\ x\ 0.15\ x\ 3.41) + (65\ x\ 3.41)$
- $Heat\ Load\ (BTU/hr) = 33.25 + 221.7 = 254.95 BTU/hr$

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fiplex by Honeywell	SPECIFICATION DATA		
	FLEX HONBDA-BTTY-100100 Battery Run Time and Heat Load Calculations for 700/800 BDA's		
FLEX 700/800/FN BDAs	Date	Models	Document Author
	2-28-2023	Flex Series	SAK/MRD

FLEX BDA: 37dBm (5W) Single Band 700MHz or 800MHz Class A 64 Channel High Capacity

Part Numbers:
HONBDA-D-737AH
HONBDA-D-S37AH

- BDA Current Draw = 4.167A
- BDA Voltage = 24VDC
- BDA Power Consumption = 100.0W
- BBU Charger Efficiency = 85% (15% of power dissipated as heat)

Battery Backup Unit BBU
HONBDA-BTTY-100100

- Battery Backup Capacity = 100Ah
- Battery Backup Voltage = 24VDC

Runtime Calculations:

- $Backup\ Run\ Time(h) = \frac{Battery\ Capacity(Ah)}{Current(A)}$
- $Runtime\ (h) = 100Ah/4.167A$
- $Runtime\ (h) = 24h$

Heat Load Calculations(BBU + BDA):

- $Heat\ Load\ (BTU/hr) = Heat\ Load\ (BBU) + Heat\ Load\ (BDA)$
- $Heat\ Load\ (BTU/hr) = (BDA\ Power\ x\ 0.15\ x\ 3.41) + (BDA\ Power\ x\ 3.41)$
- $Heat\ Load\ (BTU/hr) = (100\ x\ 0.15\ x\ 3.41) + (100\ x\ 3.41)$
- $Heat\ Load\ (BTU/hr) = 51.15 + 341 = 392.15 BTU/hr$

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	FLEX HONBDA-BTTY-100100 Battery Run Time and Heat Load Calculations for 700/800 BDA's		
FLEX 700/800/FN BDAs	Date	Models	Document Author
	2-28-2023	Flex Series	SAK/MRD

FLEX BDA: 37dBm (5W) Dual Band 700/800MHz Class A/B

Part Numbers:
HONBDA-D-7S37A
HONBDA-D-7S37B

- BDA Current Draw = 7.08A
- BDA Voltage = 24VDC
- BDA Power Consumption = 170.0W
- BBU Charger Efficiency = 85% (15% of power dissipated as heat)

Battery Backup Unit BBU
HONBDA-BTTY-100100

- Battery Backup Capacity = 100Ah
- Battery Backup Voltage = 24VDC

Runtime Calculations:

- $Backup\ Run\ Time(h) = \frac{Battery\ Capacity(Ah)}{Current(A)}$
- $Runtime\ (h) = 100Ah/7.08A$
- $Runtime\ (h) = 14.12h$

Heat Load Calculations(BBU + BDA):

- $Heat\ Load\ (BTU/hr) = Heat\ Load\ (BBU) + Heat\ Load\ (BDA)$
- $Heat\ Load\ (BTU/hr) = (BDA\ Power\ x\ 0.15\ x\ 3.41) + (BDA\ Power\ x\ 3.41)$
- $Heat\ Load\ (BTU/hr) = (170\ x\ 0.15\ x\ 3.41) + (170\ x\ 3.41)$
- $Heat\ Load\ (BTU/hr) = 86.96 + 579.7 = 666.66 BTU/hr$

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POWER PS SONIC
TRUSTED BATTERY SOLUTIONS

PHR HIGH RATE SERIES

UPS Data Center

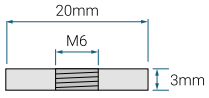
PHR-12400

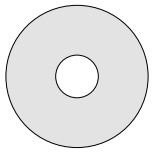
12V 110.0 AH @ 20-hr.
430 W/Cell @ 15-min.

Rechargeable Sealed Lead Acid Battery
PHR – High-Rate Series

TERMINALS: (mm)

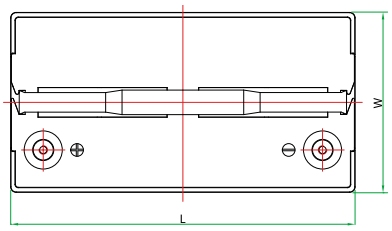
T8: Threaded insert with 6mm stud fastener





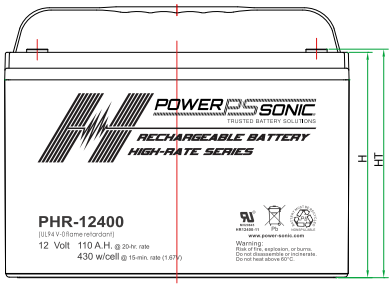
Torque: 3.9~5.4 Nxm

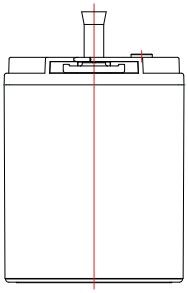
DIMENSIONS: inch (mm)



L: 12.81(326)
W: 6.69 (170)
H: 8.39 (213)
HT: 8.50 (216)

Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.





FEATURES

- Superb high-rate discharge characteristics that ensure reliable performance in UPS applications for up to 10 years
- Specifically designed for UPS and critical power backup applications
- Valve regulated, maintenance free spill proof construction
- Precision plate pasting for higher consistency with 100% load testing to ensure uniform capacity
- Patented dual-paste process for enhanced active material bonding and computer guided volumetric electrolyte control for precision filling
- Rugged vibration and impact resistant ABS case and cover flame retardant to UL94-V0

APPROVALS

- Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified
- U.L recognized
- ISO9001:2015 – Quality management systems

PERFORMANCE SPECIFICATIONS

Nominal Voltage	12 volts (6 cells)
Nominal Power (15 min.)	430 W/Cell
Rated Capacity	
20-hr. (5.5A to 10.80 volts)	110.0 AH
10-hr. (10.7A to 10.50 volts)	107.0 AH
8-hr. (12.9A to 10.50 volts)	103.2 AH
Approximate Weight	69.2 lbs. (31.4 kg)
Internal Resistance (approx.)	3.6 milliohms
Max Discharge Current (5 Sec.)	1650 amperes
Shelf Life (% of nominal capacity at 68°F (20°C)	
1 Month	97%
3 Month	91%
6 Month	83%
Operating Temperature Range	
Charge	5°F (-15°C) to 122°F (50°C)
Discharge	-4°F (-20°C) to 140°F (60°C)
Case and Cover	Flame Retardant ABS Plastic UL94:V-0
Power Sonic Chargers	PSC-1220000-PC

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(USA AND INTERNATIONAL EXCLUDING EMEA)
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power-sonic.com

Rev1: 11/18

POWER PS SONIC
TRUSTED BATTERY SOLUTIONS

PHR HIGH RATE SERIES

PHR-12400

12V 110.0 AH @ 20-hr.
430 W/Cell @ 15-min.

Rechargeable Sealed Lead Acid Battery
PHR – High-Rate Series

CONSTANT CURRENT DISCHARGE (AMPERES) AT 25°C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	216.5	183.3	159.3	136.4	104.9	76.9	61.6	35.8	26.4	21.2	17.8	15.4	12.3	10.3	5.38
1.80V/cell	264.0	210.3	176.9	149.5	112.4	82.9	65.6	37.7	27.6	22.0	18.5	15.9	12.6	10.5	5.50
1.75V/cell	297.0	230.3	193.6	161.7	119.7	86.8	68.9	39.5	28.7	22.6	18.8	16.3	12.9	10.7	5.63
1.70V/cell	335.3	254.1	209.9	173.9	128.0	91.8	72.5	41.1	29.6	23.2	19.3	16.6	13.2	10.9	5.72
1.65V/cell	363.0	275.2	227.0	186.8	135.3	96.5	75.9	42.4	30.4	23.8	19.8	17.0	13.5	11.1	5.82
1.60V/cell	390.7	298.7	243.3	198.3	142.6	100.3	78.4	43.8	31.2	24.6	20.3	17.5	13.8	11.3	5.98

CONSTANT POWER DISCHARGE (WATTS/CELL) AT 25°C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	421.2	358.6	313.4	269.7	208.5	153.4	123.4	71.9	53.3	42.9	36.1	31.4	25.2	21.2	11.1
1.80V/cell	508.2	407.2	344.5	292.7	221.4	164.2	130.4	75.5	55.4	44.4	37.4	32.3	25.8	21.5	11.3
1.75V/cell	565.9	441.9	373.7	313.9	233.7	170.6	136.0	78.5	57.2	45.3	37.8	32.8	26.2	21.8	11.5
1.70V/cell	631.6	482.1	400.4	334.0	247.6	178.7	142.0	81.1	58.7	46.2	38.4	33.3	26.6	22.1	11.6
1.65V/cell	678.3	518.2	430.4	356.5	260.1	186.8	148.0	83.2	60.0	47.2	39.2	33.8	26.9	22.3	11.8
1.60V/cell	721.9	556.4	456.5	374.9	271.3	192.4	151.4	85.1	61.1	48.2	40.0	34.5	27.3	22.5	12.0

CHARGING

Cycle Applications: Apply constant voltage charge at 2.35v/c - 2.45v/c (14.1 – 14.7v for 12v Monobloc) at 20°C. Initial charging current should be set at less than 0.25C Amps. Switch to float charge to avoid overcharging.

"Float" or "Stand-By" Service: Apply constant voltage charge of 2.25v/c – 2.30v/c (13.5 to 13.8 volts for 12v Monobloc at 20°C. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

Temperature Compensation: Charging Voltage for both Cyclic and Standby applications should be regulated in relation to ambient temperature. As temperature rises charging voltage should be reduced to prevent overcharge and increased as temperature falls to avoid undercharge.

For further charging information including temperature compensation factors, see Power Sonic Technical Manual/ Power Sonic Charger specifications.

APPLICATIONS

- High Rate UPS
- Data Centers

CHARGERS

Power Sonic offers a wide range of chargers suitable for batteries with a variety of capacities.

Please refer to our website for more information on our switch mode and transformer type chargers.

Please contact our technical department for advice if you have difficulty in locating a suitable charger.

FURTHER INFORMATION

Please refer to our website **www.power-sonic.com** for a complete range of useful downloads, such as product catalogs, material safety data sheets (MSDS), ISO certification, etc.

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Essex SS11 8YQ
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F: +44 (0)1268 560902
E: salesEMEA@power-sonic.com

FLEX Series BBU
External Annunciator

HONBDA-BTTY-ANN-4

Product Features

- NFPA Compliant
- NEMA 4 Enclosure
- Eight LED alarm indicators
- Form C alarm relays
- Compatible with BBU models
- Quick connection with BBUs
- Country of Origin: USA
- 3-year Warranty
- Buy American Compliant: Meets the definition of Domestic Construction Material under the Buy American Act
- IFC & NFPA compliance; UL2524 2nd Edition Standard
- OSHA Approved for UL2524 2nd Edition Standard
- RoHS Compliant
- SGS C-UL Compliant
- UL2524 2nd Edition Standard Listing with SGS, Nationally Recognized Testing Laboratory (NRTL) approved by OSHA for UL2524

Applications

- For P25 Phase I & Phase II, DMR, NXDN and Conventional Systems
- Indoor coverage: buildings, schools, hospitals, casinos, tunnels, metro stations
- Outdoor coverage: oil rigs, stadiums, dense urban areas, rural areas

Specification	Value
Type	External Annunciator for the BBU
Alarm Display	8 LEDs
Alarms Displayed	• AC Power Normal • AC Fail - Batt Active • Battery Capacity < 30% • Battery Charger Fail • Donor Antenna Disconnect • Donor Antenna Malfunction • RF Emitter Fail • System Component Fail
Audible Alarm	Yes
Mute Button for Audible Alarm	Yes
Maximum Number of Annunciators	4
Relays	Form C Dry Contacts
Quantity of Relays	8
BBU Interconnection	CAT 5/6
Conduit Connector	Yes
Enclosure Rating	NEMA 4
Color	Red
Temperature Range	0 to 50 C
Dimensions	13.3 x 10.4 x 4.1 in (340 x 265 x105 mm)
Weight	6.6 lbs 3 kg

fiplex by Honeywell

Ordering Information

HONBDA-BTTY-ANN-4: BBU External Annunciator with dry contacts. NFPA compliant, UL2524 2nd Edition HONEYWELL Annunciator

STANDARDS AND CODES

The HONBDA-BTTY-ANN-4 complies with the following standards and codes.

- Buy American Compliant: Meets the definition of Domestic Construction Material under the Buy American Act
- IFC 2015, 2018, 2021 Edition Standards
- NFPA Compliant
- OSHA Approved
- ROHS Compliant
- SGS C-UL Compliant
- UL2524 2nd Edition Standard with SGS, Nationally Recognized Testing Laboratory (NRTL) approved by OSHA for UL2524

Fiplex
2101 NW 79th Avenue
Miami, FL 33122
305 884-8991
www.fiplex.com

Country of Origin: USA

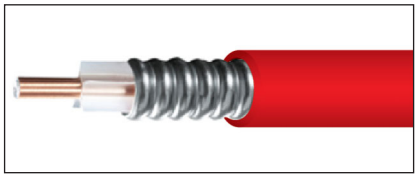
fiplex by Honeywell

PART NUMBER WCW-ICA12-50JPLLR

DESCRIPTION

1/2" ClearFill® Line **ALUMINUM PLENUM-RATED AIR-DIELECTRIC COAXIAL CABLE** for In-Building Applications

ClearFill® Line 1/2" low-loss air dielectric cable, Plenum-rated, CMP



FEATURES/BENEFITS

- *Supports Multiple RF Signals*
- *Complete Shielding.* The solid outer conductor of the ClearFill® Line coaxial cable creates a continuous RFI/EMI shield that minimizes system interference.
- *Outstanding Inter modulation Performance.* RFS coaxial cable's solid inner and outer conductors virtually eliminate inter mods. Inter modulation performance is also confirmed with state-of-the-art equipment at the RFS factory.
- *Wide Range of Applications.* Typical areas of application are feed lines for plenum-space installations within occupied buildings or structures but also suitable for outdoor use due to UV rating.

TECHNICAL FEATURES

APPLICATIONS		
Application		Suitable for plenum in-building/public safety or outdoor usage
STRUCTURE		
Cable Type		Air-Dielectric, Corrugated
Size		1/2"
Inner Conductor	mm (in)	4.8 (0.19) Copper-Clad Aluminum Wire
Dielectric	mm (in)	11.8 (0.464) Extruded Polyethylene
Outer Conductor	mm (in)	13.8 (0.54) Corrugated Aluminum
Jacket	mm (in)	15.93 (0.627) Plenum Rated/Color: Red UV rated to ASTM G155
ELECTRICAL SPECIFICATIONS		
Impedance	Ω	50 +/- 1
Maximum Frequency	GHz	6.0
Velocity	%	91.0
Capacitance	pF/m (pF/ft)	75 (22.86)
Inductance	µH/m (µH/ft)	0.19 (0.058)
Peak Power Rating	kW	40.0
RF Peak Voltage	Volts	2000.0
Jacket Spark	Volt RMS	8000.0
Inner Conductor dc Resistance	Ω/1000m (Ω/1000ft)	1.48 (0.45)
Outer Conductor dc Resistance	Ω/1000m (Ω/1000ft)	2.29 (0.7)
Return Loss (VSWR) Performance		19 (1.25) @ 450-960 MHz 19 (1.25) @ 1395-1432 MHz 19 (1.25) @ 1700-2155 MHz 19 (1.25) @ 2300-2500 MHz
Temperature & Power		High Power Rating
MECHANICAL SPECIFICATIONS		
Cable Weight	1000 lbs.	136 lbs. (+/- 10% tolerance on cable weight)
Minimum Bending Radius, Single Bend	mm (in)	76 (3)
Minimum Bending Radius, Repeated Bends	mm (in)	127 (5)
Bending Moment	Nm (lb*ft)	5.4
Tensile Strength	N (lb)	549 (150)
Recommended/Maximum Clamp Spacing	m (ft)	0.5/0.9 (1.8/3)
Crush Strength	kg/cm² (lb/ln²)	1.25 (70)

PART NUMBER WCW-ICA12-50JPLLR

ATTENUATION AND POWER RATING

FREQUENCY MHz	Attenuation dB/100m	Attenuation dB/100ft	Power kW
0.5	0.16	0.05	40.00
1	0.23	0.071	32.80
1.5	0.28	0.087	26.80
2	0.33	0.101	23.20
10	0.74	0.226	10.30
20	1.06	0.322	7.22
30	1.30	0.395	5.89
50	1.68	0.514	4.55
88	2.25	0.687	3.40
100	2.41	0.734	3.18
108	2.51	0.764	3.05
150	2.98	0.907	2.57
174	3.22	0.98	2.38
200	3.46	1.05	2.21
300	4.29	1.31	1.79
400	5.00	1.52	1.53
450	5.32	1.62	1.44

FREQUENCY MHz	Attenuation dB/100m	Attenuation dB/100ft	Power kW
500	5.63	1.72	1.36
512	5.71	1.74	1.34
600	6.22	1.90	1.23
700	6.76	2.06	1.14
750	7.02	2.14	1.09
800	7.28	2.22	1.06
824	7.40	2.25	1.04
894	7.74	2.36	0.993
900	7.76	2.37	0.99
925	7.88	2.40	0.976
960	8.05	2.45	0.955
1000	8.23	2.51	0.934
1250	9.32	2.84	0.826
1400	9.93	3.03	0.776
1500	10.30	3.15	0.749
1700	11.10	3.38	0.695
1800	11.50	3.49	0.671

FREQUENCY MHz	Attenuation dB/100m	Attenuation dB/100ft	Power kW
2000	12.20	3.71	0.634
2100	12.50	3.81	0.619
2200	12.80	3.92	0.605
2300	13.20	4.02	0.587
2400	13.50	4.12	0.574
2500	13.80	4.22	0.562
2600	14.20	4.31	0.546
2700	14.50	4.41	0.535
3000	15.40	4.69	0.505
3500	16.90	5.14	0.461
3600	17.10	5.22	0.456
4000	18.30	5.56	0.427
4500	19.60	5.97	0.399
5000	20.90	6.36	0.376
5500	22.10	6.74	0.356
6000	23.30	7.11	0.339

Attenuation at 20°C (68°F) cable temperature; tolerance +/- 5% max.;
Mean power rating at 40°C (104°F) ambient temperature

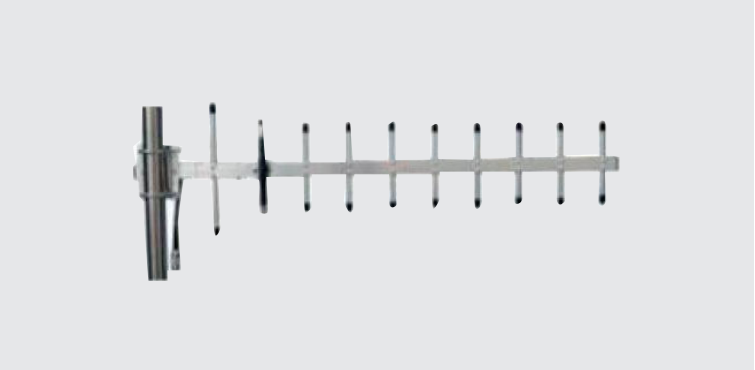
TESTING AND ENVIRONMENTAL	
Fire Performance	Flame Retardant, Plenum-rated, CMP
Regulatory Compliance	NEC Article 800 Communication Circuits ETL Listed to UL444 Canadian CSA C.22.2/FT6
Installation Temperature	-20 to 60 (-4 to 140) °C(°F)
Storage Temperature	-40 to 85 (-40 to 185) °C(°F)
Operation Temperature	-40 to 85 (-40 to 185) °C(°F)

OUTDOOR YAGI ANTENNA
698-869 MHz

BDA-YDA763869-14-1

Product Features

- PS700 & PS800 full band
- High Directivity
- Max Power 100W



Electrical Specifications	Value
Frequency Range	698-869 MHz
F/B Ratio	＞18 dB
Gain	14 dBi
VSWR	≤1.5
Radiation	Direction
Polarization	Vertical or Horizontal
Horizontal Beamwidth	40°
Vertical Beamwidth	32°
Input Impedance	50 Ω
Max. Input Power	100 W
Lightning Protection	DC Ground
Cable Type	RG58U
Cable Length	30cm
Mount way	Pole
Diameter of Installation Pole	Ø30~Ø50mm

Mechanical Specifications	Value
Connector	N Female
Max wind	130 miles/hour
Dimensions	1100x230x45mm
Weight	0.90 kg
Color	White
Radome Material	Aluminum Alloy
Operating Temperature	-40°C to +65 °C

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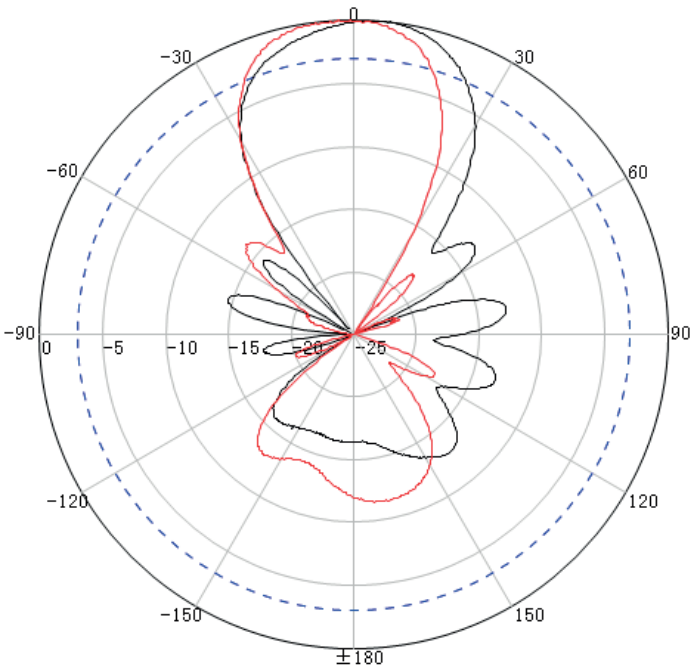
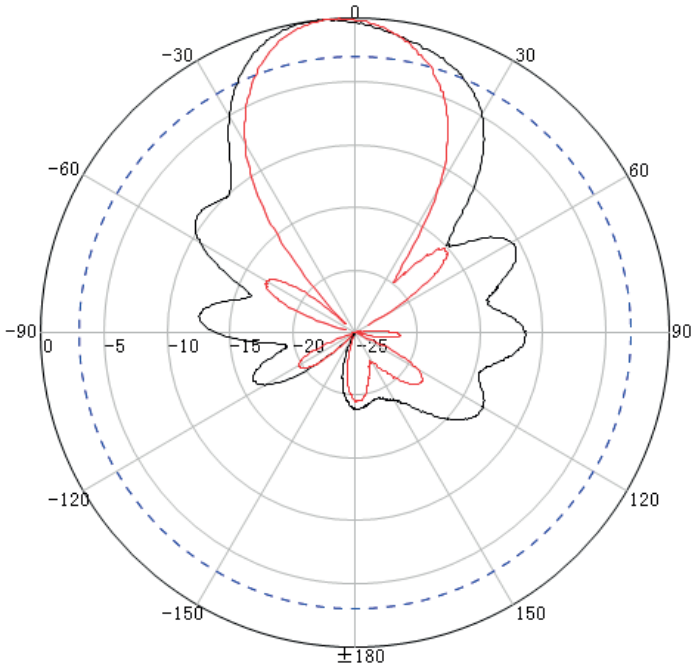
OUTDOOR YAGI ANTENNA
698-869 MHz

BDA-YDA763869-14-1

Radiating Patterns





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INDOOR OMNI CEILING ANTENNA
698-869 MHz

BDA-OIA-698869-3-1

Product Features

- PS700 & PS800 full band
- Omni Directional Ceiling Antenna
- Max Power 100W

Electrical Specifications	Value
Frequency Range	698-869 MHz
Gain	3 dBi
VSWR	≤1.5
Polarization	Vertical
Horizontal Beamwidth	360°
Vertical Beamwidth	55°
Input Impedance	50 Ω
Max. Input Power	100 W
Lightning Protection	DC Ground

Mechanical Specifications	Value
Connector	N Female
Dimensions	Ø165*95mm
Weight	0.25 kg
Color	White
Radome Material	ABS
Operating Temperature	-40°C to +65 °C

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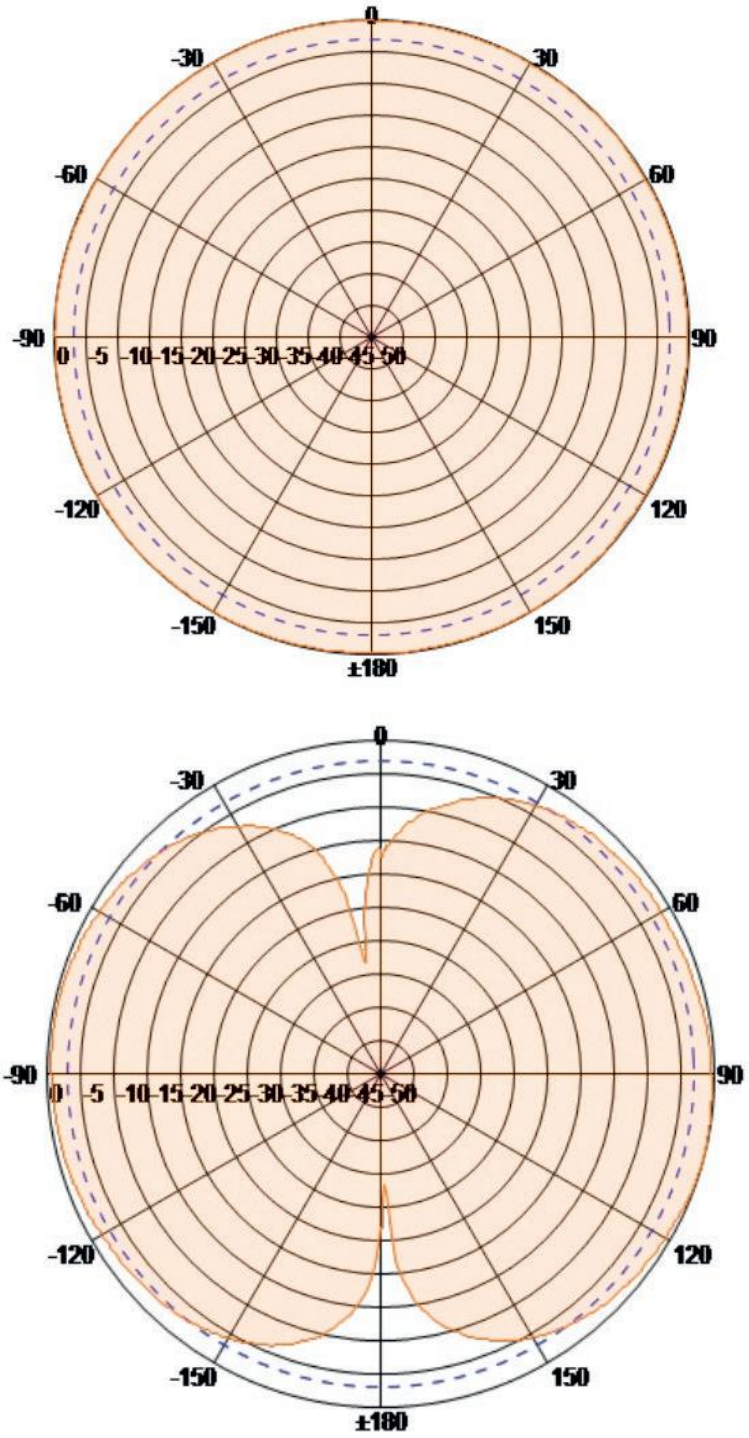
INDOOR OMNI CEILING ANTENNA
698-869 MHz

BDA-OIA-698869-3-1

Radiation Patterns



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GROUNDING KIT
FOR 1/2" COAXIAL CABLE, 500mm

BDA-GNDKIT1

Product Features

- For 1/2" RF Cable
- Copper cable
- PVC Jacket

Product Structure Grounding Kit	Value
Cable Kit	Copper, for 1/2"
Rivet	Copper
Locking Bail Material	Stainless steel
Grounding Cable	16 mm2 Copper wire & PVC, Black
Cable Lug	Tin-Plated Copper(1 hole M8)

Product Structure Hardware	Value
Hexagon Screw	A2 Stainless Steel, M8X25mm
Nut	A2 Stainless Steel, M8
Spring Washer	A2 Stainless Steel, M8
Washer	A2 Stainless Steel, M8

General Specifications	Value
Cable Type	Corrugated
Cable Size	1/2" & 1/2" Low Loss
Lug Type	One-hole lug
Lug Attachment	Factory attached

Cable Specifications	Value
Bonding Conductor Length	500mm
Bonding Conductor Material	Copper
Bonding Conductor Wire Size	16 mm2
Bonding Conductor Jacketing Material	PVC

Electrical Specifications	Value
Current Handling	Tested to withstand 100,000 amps peak current surge
Current Handling Test Method	MIL-STD-1757
Grounding, Bonding and Shielding Test Method	MIL-STD-188-124A
Lightning Protection Test Method	IEC 1024-1

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GROUNDING KIT
FOR 1/2" COAXIAL CABLE, 500mm

BDA-GNDKIT1

Environment Specifications	Value
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +80°C
Immersion Depth	1 m
Immersion Test Mating	Mated
Immersion Test Method	IEC 60529:2001, IP68
Blowing Rain Test Method	MIL-STD-810, Method 506
Corrosion Test Method	MIL-STD-1344, Method 1001
Freezing Rain/Icing Test Method	MIL-STD-810, Method 521
Humidity Test Method	MIL-STD-1344, Method 1002
UV Resistance Test Method	MIL-STD-810, Method 505
Vibration Test Method	IEC 60068-2-6:2007

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COAXIAL SURGE PROTECTOR
DC-7GHz

BDA-P8AX09-6G-N/FF

Product Features

- RF coaxial surge protector
- DC-7 GHz
- 70 W
- Connectors : N
- Low insertion loss
- Removale GDT
- DC-pass
- Bi-directional protection

Electric Specifications	Value
Frequency range	DC-7 GHz
Insertion loss	< 0.2 dB
Return loss	> 19 dB
Impedance	50 ohms
VSWR	<1.25:1
Max. load current	10 A
Operating current(Continious current at Uc)	None
Max. discharge current(max. withstand @ 8/20 µs by pole)	20 kA
Protection mode(s)	Common mode
Protection level (@ In (8/20µs)	< 1100 V
Impulse current(2 x 10/350µs Test - D1 Category)	1 kA
Nominal discharge current(8/20µs Test x 10 - C2 Category)	5 kA
Max Power	70 W
Typical let through energy (50 ohms) input 4kV 1.2/50µs - 2kA 8/20µs)	2.2 mJ
DC Pass	true
Insulation resistance	≥10 GOhms

Mechanical Specifications	Value
Technology	Gas discharge tube
Connection to Network	connector N Female/Female
Mounting	Feedthrough
Housing material	Brass/Surface plating : Cu Zn Sn
Operating temperature	-40/+85°C
Protection rating	IP66
Outdoor application	Yes
Failsafe mode	Short-circuit
Disconnection indicator	Transmission interrupt
Spare module(s)	2 x BA HF - 90/20
Contacts	Bronze/Surface Au-Ag
Weight	0.165 kg

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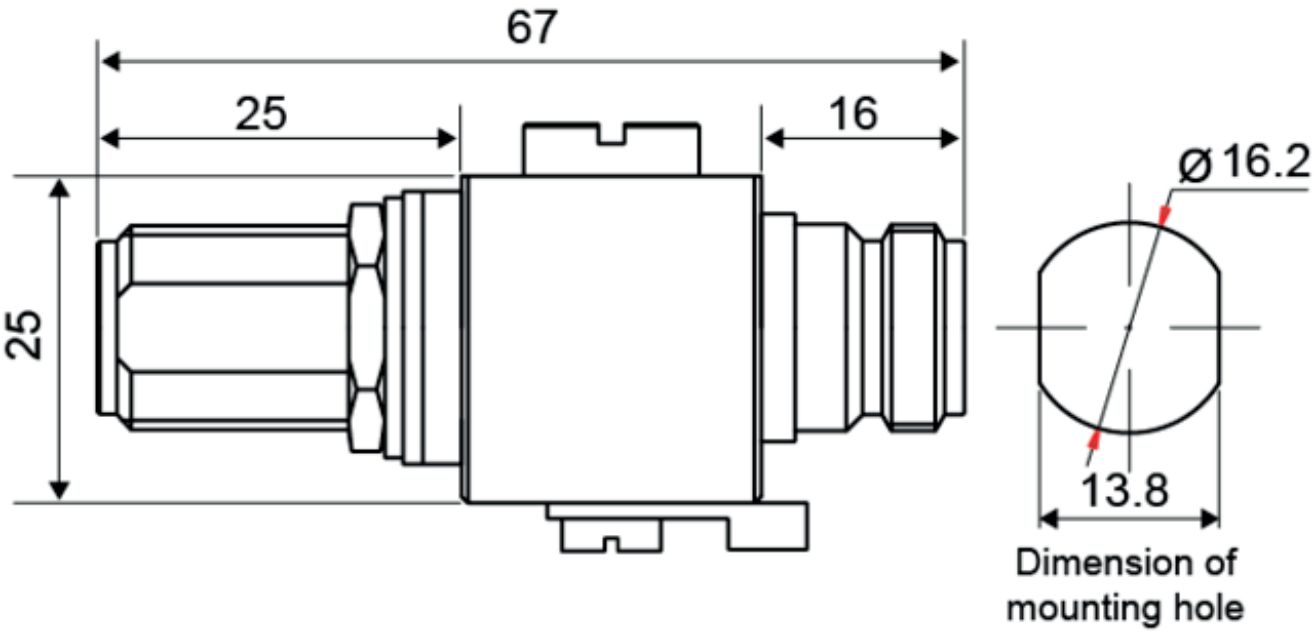
COAXIAL SURGE PROTECTOR
DC-7GHz

BDA-P8AX09-6G-N/FF



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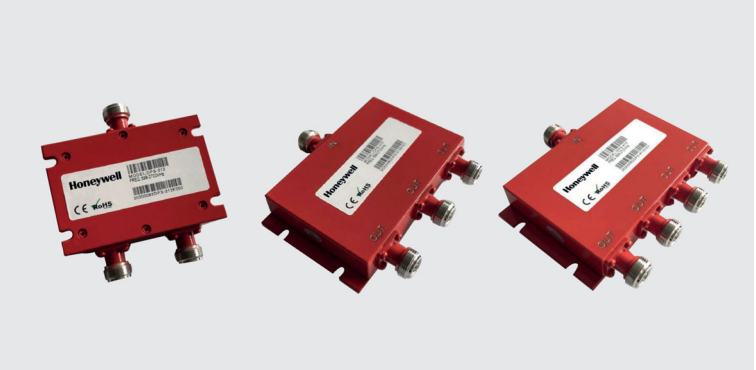
BROADBAND POWER SPLITTERS
698 - 2700 MHz

BDA-PSx-W2

Product Features

- Passive devices designed in a multistage Wilkinson configuration
- Low insertion loss
- Low VSWR ripple
- Two, three and four output ports models available as standard,
others available upon request
- Power input is 50W as splitter, and 1W as combiner, other values
are available upon request



Specification	BDA-PS2-W2	BDA-PS3-W2	BDA-PS4-W2
Type	Broadband power splitters	Broadband power splitters	Broadband power splitters
Frequency range	698 – 2700 MHz	698 – 2700 MHz	698 – 2700 MHz
Number of ways	2	3	4
Split Loss	3 dB	4.8 dB	6 dB
Insertion loss	< 0.5 dB	< 0.7 dB	< 0.7 dB
Power Raiting	50 W Average per port	50 W Average per port	50 W Average per port
VSWR	<=1.25 : 1	<=1.3 : 1	<=1.3 : 1
Isolation between output ports	20 dB min	18 dB min	18dB min
Connectors	N(f)	N(f)	N(f)
Temperature range, storage	-40º to 158º F	-40º to 158º F	-40º to 158º F
	-40º to +70º C	-40º to +70º C	-40º to +70º C
Temperature range, operation	-22º to 149º F	-22º to 149º F	-22º to 149º F
	-30º to +65º C	-30º to +65º C	-30º to +65º C
Environmental	IP60	IP60	IP60
Dimension	2.4 x 3.4 x 0.8 inches	2.7 x 4.8 x 0.88 inches	2.7 x 4.8 x 0.88 inches
	62 x 88 x 22 mm	122 x 71 x 22 mm	71 x 122 x 22 mm
Weight	0.5 lbs • 0.24 kg	0.7 lbs • 0.34 kg	0.79 lbs • 0.36 kg

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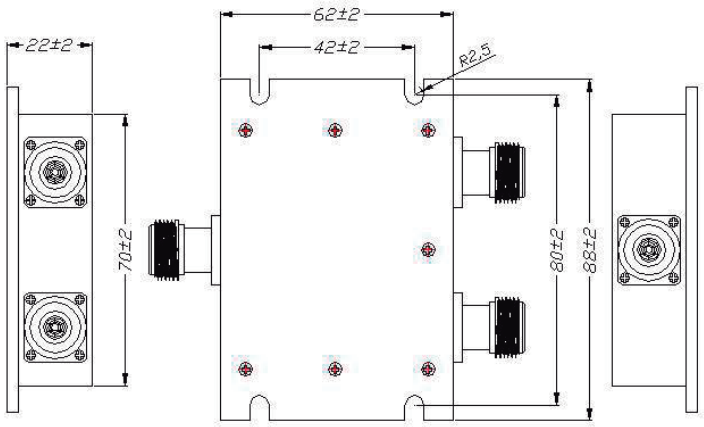
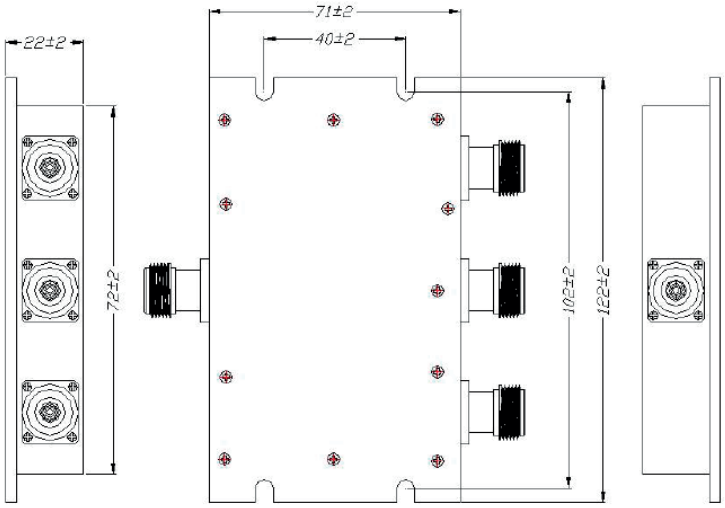
BROADBAND POWER SPLITTERS
698 - 2700 MHz

BDA-PSx-W2

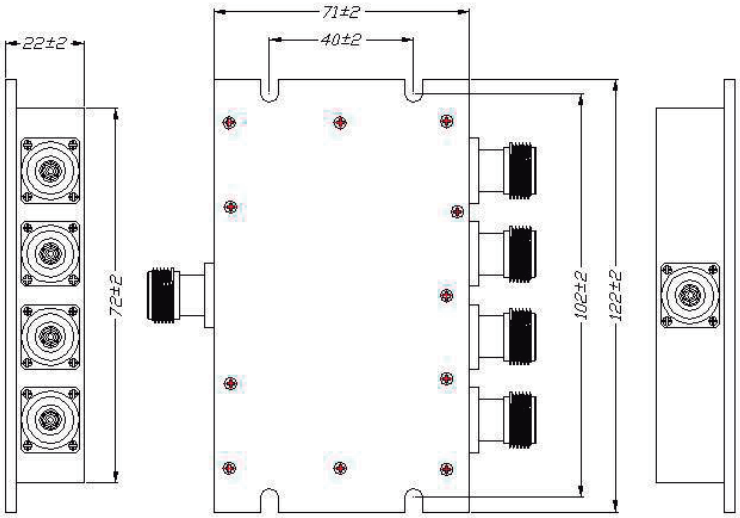
BDA-PS2-W2



BDA-PS3-W2



BDA-PS4-W2



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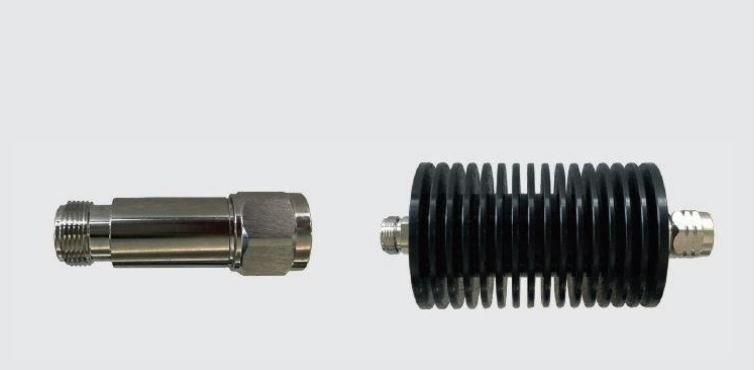
RF COAXIAL FIXED ATTENUATORS
DC - 3000 MHz

BDA-NATTEN-xxxx

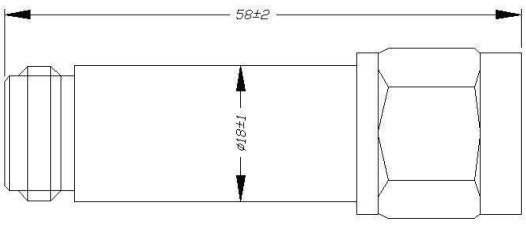
Product Features

- Passive devices designed in a coaxial configuration
- Nominal impedance is 50 ohms
- Power level 5W
- N male type connectors as standard, other types available upon request

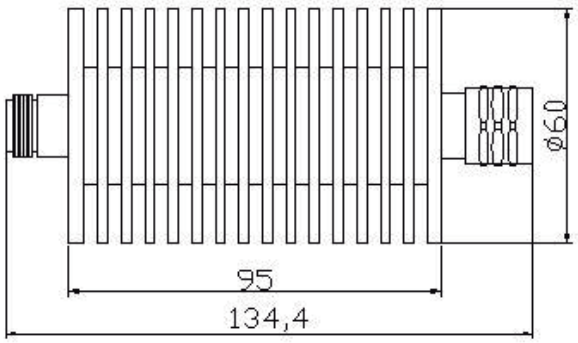


Specification	0503	0505	0510	0515	0520	0530
Attenuation value	3	5	10	15	20	30
Frequency band	DC - 3000 MHz					
Input power	5W: replace "xx" with 05 50W: replace "xx" with 50					
Coolant	Natural convection				Natural convection	
Type	In-line, coaxial				In-line, coaxial	
Impedance	50 Ω				50 Ω	
VSWR	1.20:1 min				1.20:1 min	
Connector	N(m)				N(m)	
Tempearture range	-22º to 149º F -35º to +65º C				-22º to 149º F - 35º to +65º C	
MTBF	>1,000,000 hours				>500,000 hours	
Weight	0.22 lbs • 0.10 kg				1.1lbs • 0.5 kg	
Environmental	IP60				IP60	
Operating position	Any				Any	

AT-05xx



AT-50xx



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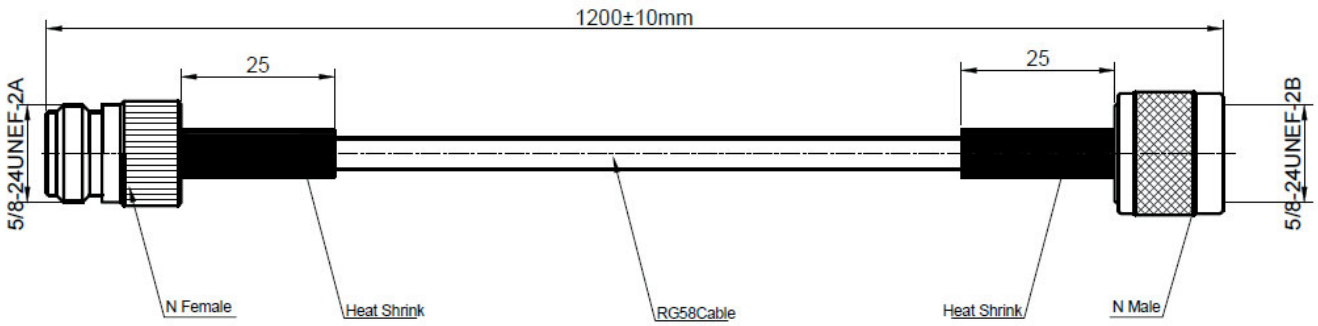
JUMPER RG58 CABLE
N female and N male

BDA-NM-RG58-12-NF

Product Features

- Low VSWR
- Low Insertion Loss
- Robust Design

Specification	Value
Connector	N Male - N Female
Type of Cable	RG58
Length of cable	48 Inch
Center conductor material	Phosphore bronze - Gold plating & Brass - Gold plating
Insulator material	PTFE
Body connector material	Brass - Nickel Plating
Impedance	50 Ohms
Frequency range	0 - 6 GHz
VSWR	< 1.15 (DC-1.5GHz); < 1.20 (1.5-3GHz)



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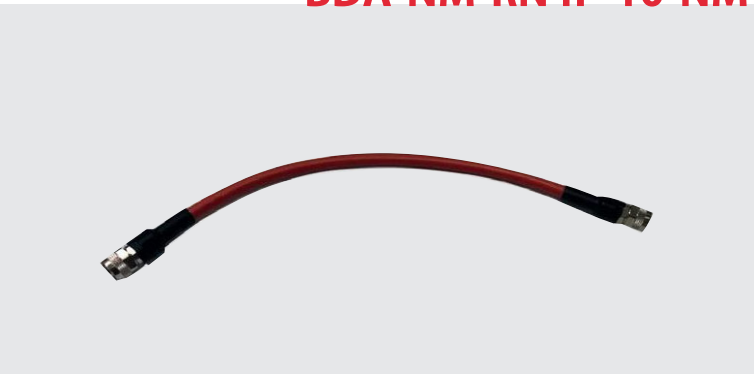
JUMPER RN-400 CABLE
N female and N male

BDA-NM-RN4P-03-NM
BDA-NM-RN4P-05-NM
BDA-NM-RN4P-10-NM

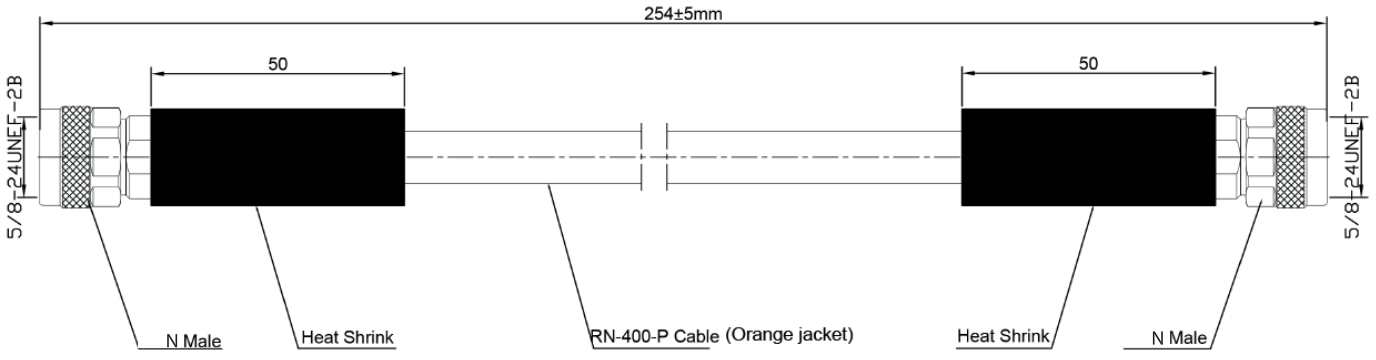
Product Features

- Low VSWR
- Low Insertion Loss
- Robust Design



Specification	03-NM	05-NM	10-NM
Connector	N Male both ends	N Male both ends	N Male both ends
Type of Cable	RN-400-P	RN-400-P	RN-400-P
Length of cable	10 Inch	18 Inch	37 Inch
Center conductor material	Brass - Gold Plating	Brass - Gold Plating	Brass-Gold Plating
Insulator material	PTFE	PTFE	PTFE
Body connector material	Brass - Nickel Plating	Brass - Nickel Plating	Brass-Nickel Plat.
IMmpedance	50 Ohms	50 Ohms	50 Ohms
Frequency range	0 - 6 GHz	0 - 6 GHz	0 - 6 GHz
VSWR	< 1.15 (DC-1.5GHz); < 1.20 (1.5-3GHz)		

NM-RN400P-03-NM



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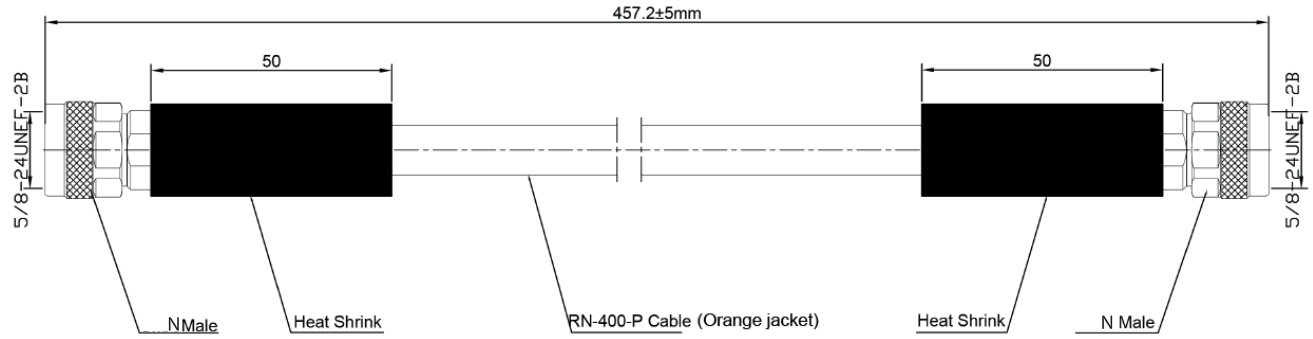
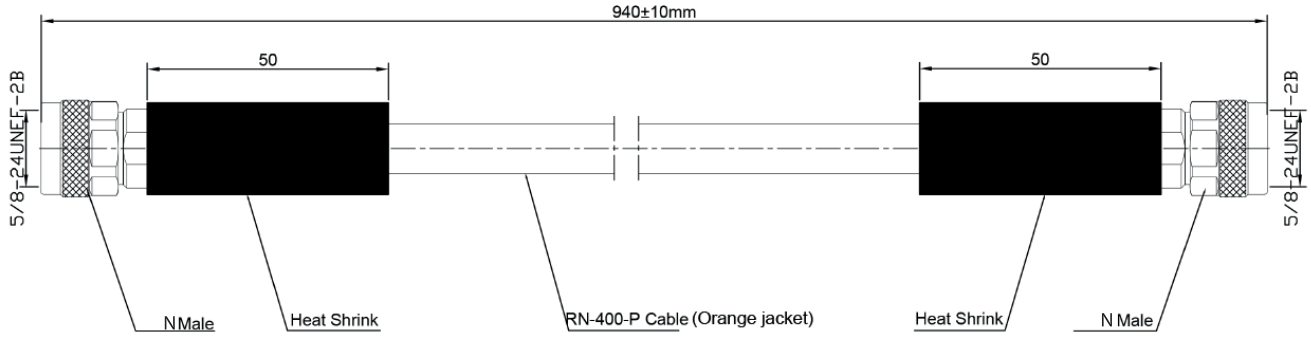
JUMPER RN-400 CABLE
N female and N male

BDA-NM-RN4P-03-NM
BDA-NM-RN4P-05-NM
BDA-NM-RN4P-10-NM

NM-RN400P-05-NM



NM-RN400P-10-NM



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JUMPER RG58
N male and N male

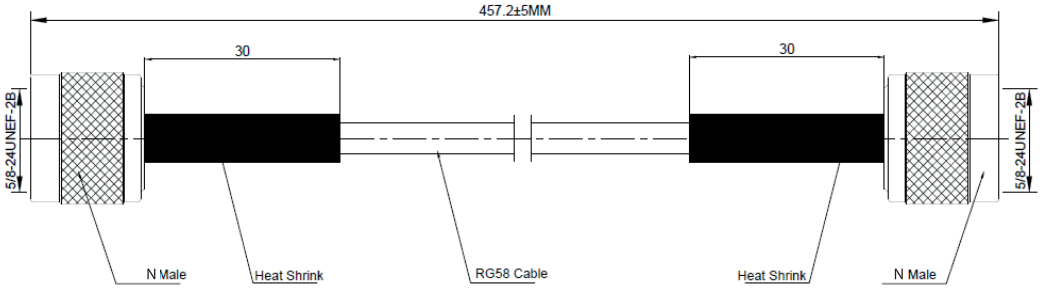
BDA-NM-RG58-05-NM
BDA-NM-RG58-10-NM

Product Features

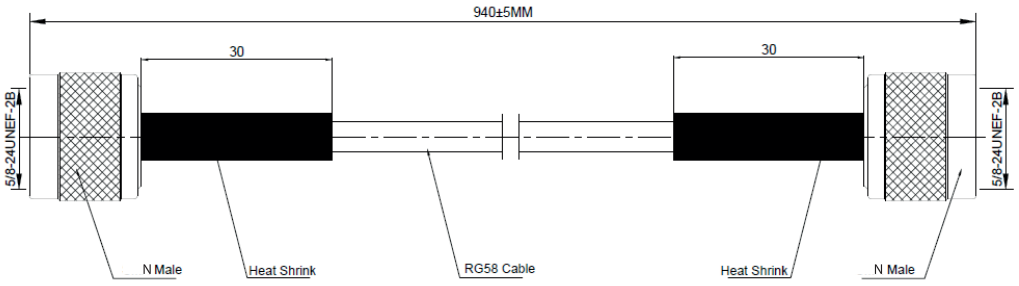
- Low VSWR
- Low Insertion Loss
- Robust Design

Specification	05-NM	10-NM
Connector	N Male both ends	N Male both ends
Type of Cable	RG58	RG58
Length of cable	18 Inch	37 Inch
Center conductor material	Brass - Gold Plating	Brass-Gold Plating
Insulator material	PTFE	PTFE
Body connector material	Brass - Nickel Plating	Brass-Nickel Plat.
IMmpedance	50 Ohms	50 Ohms
Frequency range	0 - 6 GHz	0 - 6 GHz
VSWR	< 1.15 (DC-1.5GHz); < 1.20 (1.5-3GHz)	

NM-RG58-05-NM



NM-RG58-10-NM



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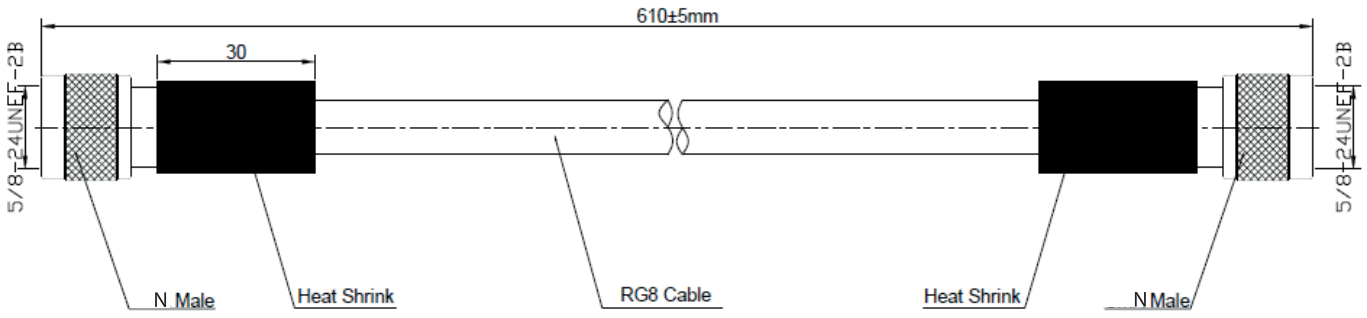
JUMPER RG8
N male and N male

BDA-NM-RG8-08-NM

Product Features

- Low VSWR
- Low Insertion Loss
- Robust Design

Specification	Value
Connector	N Male both ends
Type of Cable	RG8
Length of cable	24 Inch
Center conductor material	Brass - Gold Plating
Insulator material	PTFE
Body connector material	Brass - Nickel Plating
Impedance	50 Ohms
Frequency range	0 - 6 GHz
VSWR	< 1.15 (DC-1.5GHz); < 1.20 (1.5-3GHz)



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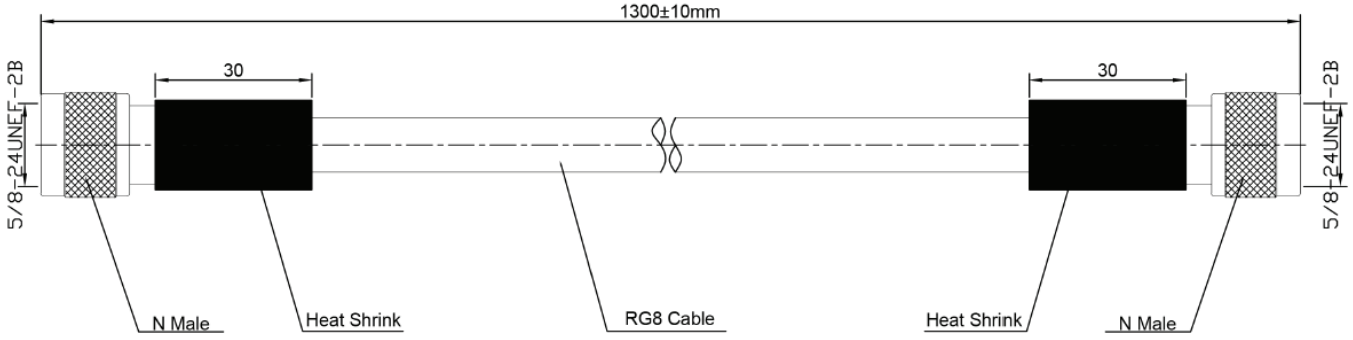
JUMPER 1/4" S
N male and N male

BDA-NM-RG8-13-NM

Product Features

- Low VSWR
- Low Insertion Loss
- Robust Design

Specification	Value
Connector	N Male both ends
Type of Cable	RG8
Length of cable	51 Inch
Center conductor material	Brass - gold Plating
Insulator material	PTFE
Body	Brass - Nickel plating
Impedance	50 Ohms
Frequency range	0 - 6 GHz
VSWR	< 1.15 (DC-1.5GHz); < 1.20 (1.5-3GHz)
Insulation resistance	> = 5000M Ohms



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Honeywell

Certificate of Factory Training

COLE PATTERSON

Patterson Group Services, Inc

has successfully completed training and is hereby certified on

HONEYWELL BDA

Issued: Wednesday,September 8, 2021
Expires: Thursday,September 8, 2024
Certificate #: CL/233-1188-4194-15769/107348

Honeywell

This certificate is valid in the name of the Recipient AND Company together and is rendered Invalid should the two separate OR the distributorship of the Company be revoked for any reason.

Ivan Guerra

Training Leader

Cut Along This Line

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

General Radiotelephone Operator License

Licensee: This is your radio authorization in sizes suitable for your wallet and for framing. Carefully cut the documents along the lines as indicated.

The Commission suggests that the wallet size version be laminated (or another similar document protection process) after signing. The Commission has found, under certain circumstances, laser print is subject to displacement.

PATTERSON, GREGORY C
2124 SOUTHERN RD
SANFORD, NC 27330

FCC Registration Number (FRN): 0028971406

Special Conditions / Endorsements

NONE

Grant Date	Effective Date	Print Date	Expiration Date
02-18-2020	02-18-2020	02-19-2020	

File Number	Serial Number	Date of Birth
0008979843	PG00065596	04-05-1994

THIS LICENSE IS NOT TRANSFERABLE

(Licensee's Signature)

FCC 605-FRC - May 2007

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Serial Number	Grant Date	Expiration Date	File Number	Print Date	Effective Date
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Date of Birth
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NONE

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SANFORD, NC 27330

General Radiotelephone Operator License

FCC 605-FRC - May 2007

(Licensee's Signature)
FEDERAL COMMUNICATIONS COMMISSION

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