

# BDA Commissioning Test Suite

FOR THE PCTEL® PUBLIC SAFETY NETWORK TESTING SOLUTION



Configuration/Results

Isolation Test Frequencies (MHz)

Predefined	Selected
769.802650	771.000000

Commissioning Test Summary  
Result: Pass

Test	Test Name	Result
Signal to Building Test	Signal to building 730	Pass
Antenna Verification CW Test	Ant CW verification	Pass
Downlink Isolation Test	Downlink Isolation 730	Pass
Uplink Isolation Test	Uplink Isolation 730	Pass
Uplink Power And Gain Test	Uplink power and gain test 730	Pass
Verify Uplink Noise Test	Verify LI noise 730	Pass
Exterior Leakage Test	Exterior Leakage 730	Pass
Near Far Test	Near Far Test 730	Pass
BDA Filter Configuration Test	DL Filter 800MHz	Pass
BDA Filter Configuration Test	UL Filter 800 730	Pass

Channel/Group: 1 (769.802650 MHz : 12.5 Radio Site ERP (W): 50.00 (46.99 dBm)

Cancel

## Automated Testing & Grading for Compliant BDA Commissioning

Bi-directional amplifiers (BDAs) are crucial for ensuring reliable in-building critical communications. However, poorly commissioned BDAs can interfere with public safety networks, reducing coverage when First Responders need it most. PCTEL's BDA Commissioning Test Suite provides guided, automated testing, grading, and reporting for all RF tests recommended as part of the commissioning process.

### TESTERS & INSTALLERS

- Efficiently perform, grade, and report all RF-based tests for BDA commissioning
- Leverage PCTEL® test equipment also used for grid-based coverage testing
- Demonstrate compliance with FCC and Radio System requirements
- Easily train and supervise personnel
- Submit and track results automatically in SeeHawk® Central

### RADIO SYSTEM OPERATORS

- Receive, review, and track test results for FREE in SeeHawk Central
- Enter and track building and BDA information for FREE in SeeHawk Central
- Minimize interference from in-building radio systems
- Simplify enforcement of FCC requirements

# The BDA Commissioning Tests

PCTEL's solution supports all of the RF-based BDA commissioning recommended by BDA manufacturers, and taught in the Safer Buildings Coalition's industry-standard ERCES Handbook as well as ETA International's Distributed Antenna Systems Technician (DAST) certification program. Read on for an introduction to each test, with illustrations from PCTEL's guided setup and testing process.

## SIGNAL TO BUILDING TEST



**Purpose:** Determine best placement of donor antenna, best donor radio site and acceptable DL noise level

**KPIs:** Network Signal Power and Quality, Downlink Path Loss, Interference

Test Point	Channel	Band	Frequency (MHz)	RSS	SINR	FBER	Result	Screenshot	Comment
TP-1	1	700MHz Control	769.80625	-79.11	33.95	0.00	Pass	No	
TP-2	1	700MHz Control	769.80625	-76.11	34.18	0.00	Pass	No	
TP-3	1	700MHz Control	769.80625	-106.43	9.82		Fail	No	
TP-4	1	700MHz Control	769.80625	-75.91	34.37	0.00	Best	Yes (1)	

## ANTENNA VERIFICATION CW & LIVE SIGNAL TESTS



**Purpose:** Verify proper installation and configuration of antenna systems within the building, at the beginning (CW) and end (Live Signal) of the process

**KPIs:** Signal Power and Quality

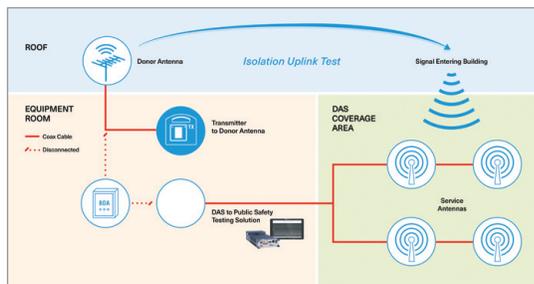
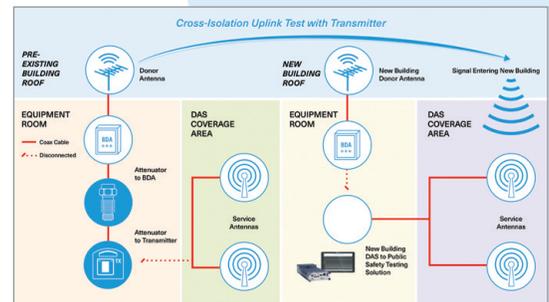
TX ID	Channel/ APT/ Freq/ OSCN	Band	Frequency/ Splat (MHz)	DL Power (dBm)	DL SIN (dB)	DL FBER (%)	DL Signal Power (dBm)	PCC/Power/ PN	Comment
TX-1	1	DL Test	769.80625	-80.48	31.84	0.00			
TX-2	1	DL Test 700	771.00000	-87.76					

## DOWNLINK & UPLINK ISOLATION & CROSS-ISOLATION TESTS



**Purpose:** Ensure that signals do not feed back between indoor DAS and donor antennas, resulting in interference. Cross-building isolation tests may also be performed to ensure there is no interference between nearby BDA/DAS systems

**KPIs:** Downlink and Uplink Isolation value, Downlink and Uplink Noise

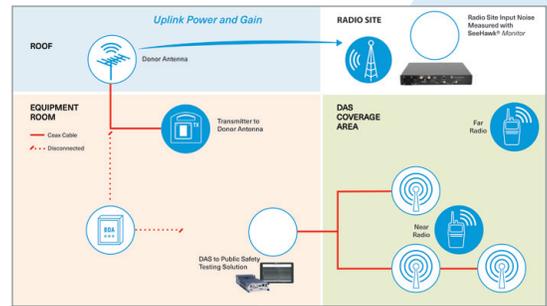


## UPLINK POWER & GAIN TEST



**Purpose:** Determine approved Uplink Power and the minimum gain needed to provide required in-building coverage

**KPIs:** “Far” RSSI, “Near” RSSI, Uplink Power and Gain settings

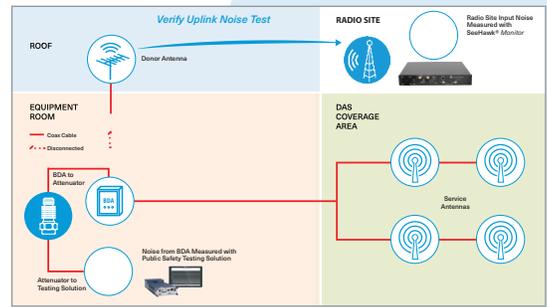


## VERIFY UPLINK NOISE TEST



**Purpose:** Verify the uplink gain meets FCC and jurisdiction noise requirements

**KPIs:** Donor and Radio Site BDA Noise

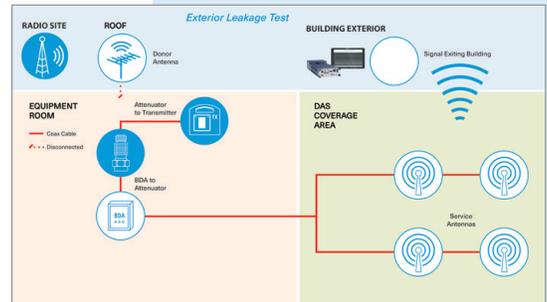


## EXTERIOR LEAKAGE TEST



**Purpose:** Ensure that indoor antenna signals do not interfere with the outdoor radio network

**KPIs:** Network Power Dominance over Leaked DAS Power

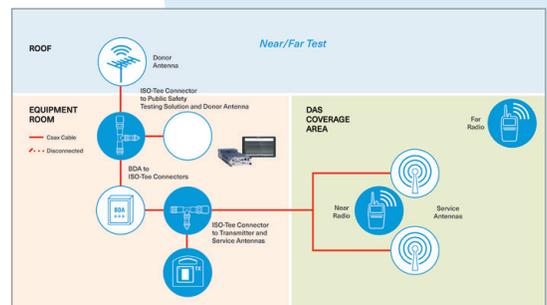


## NEAR-FAR TEST



**Purpose:** Verify that there is sufficient antenna density in the building and that portable radios closer to antennas do not overpower those further away

**KPIs:** Near Performance

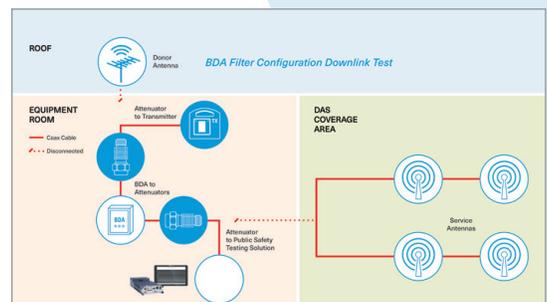


## BDA FILTER CONFIGURATION TEST



**Purpose:** Verify and document BDA has expected power levels and no spurious signals before it is connected

**KPIs:** BDA Filter Configuration and Gain



# How It Works

Tablet-based SeeHawk *Touch* software and cloud-based SeeHawk *Central* automated workflow management platform work together to simplify the testing, grading, and approval process.

- Enables advance preparation and configuration
- Gives guidance to proper execution
- Records all required measurements and information
- Automatically grades the pass-fail status for each test and the complete set of tests
- Submits reports to public safety officials and tracks approval status in SeeHawk *Central*

## TEST EQUIPMENT

PCTEL offers all the tools you need to conduct BDA commissioning testing, leveraging your investment in the same PCTEL test kit used to conduct grid-based coverage testing.

### Public Safety Network Testing Solution

Our standard kit supports grid-based radio coverage testing and includes an IBfl<sup>ex</sup>® scanning receiver, SeeHawk *Touch* software, tablet, and accessories.



### SeeHawk® Central

Cloud-based workflow automation platform for configuring, managing, reviewing, and submitting tests. Subscription included with SeeHawk *Touch* maintenance.



### BDA Commissioning Test Software Option

Adds the BDA Commissioning Test Suite to your SeeHawk *Touch* software.

Add Commissioning Test	
Signal to Building Test	
Antenna Verification CW Test	
Downlink Isolation Test	
Uplink Isolation Test	
Uplink Power and Gain Test	
Verify Uplink Noise Test	
Exterior Leakage Test	
Near-Far Test	
Antenna Verification Live Signal Test	
BDA Filter Configuration Test	

### BDA Hardware Kit for Commissioning Tests

Available as a package from PCTEL, or assemble your own. *Note: Some BDAs may require additional adapters.*



- 2x 30dB 5W attenuators Type N
- 2x 20dB 2W attenuators SMA
- 2x Type N male to SMA male low-loss cable, 1 foot
- 4x Type SMA male to SMA male low-loss cable, 2 foot
- 2x Type N female to SMA male low-loss cable, 1 foot
- 10 W Dummy Load – N Type DC to 3 GHz
- 2x Directional Coupler, 30dB, 0.380-0.960 GHz, N-F, 500W

### Calibrated Test Transmitter

Available through PCTEL.



## TRAINING

PCTEL offers training in the use of the BDA Commissioning Test Suite as part of a growing range of online and in-person training options, including our PCTEL® Certified Public Safety Tester Training.

[Visit \*\*pctel.com/ps-training\*\* to learn more.](https://pctel.com/ps-training)



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