Seattle Fire Prevention Division
220 3rd Avenue S
Seattle, WA 98104-2608
Email: SFD_FMO_SystemsTesting@seattle.gov

REPORT OF SYSTEM INSTALLATION

Please contact the PSERN project at DAS-PSERN@kingcounty.gov to arrange to borrow radios and schedule uplink testing several days prior to testing. Radio and testing information here: https://psern.org/confidential-resources

Distributed Antenna Systems (DAS)	COMMISSIONING TEST RESULTS	
	☐ Accepted/White Tagged	☐ Not Accepted

Occupancy Information (All Fields Mandatory)

Building Name:		Building Address:	
Contact Name:		Contact Phone:	
Contact Address:		Contact Email:	
Central Station Monitoring:	☐ Yes ☐ No	Monitoring Required:	☐ Yes ☐ No
Monitoring Company Name:		Monitoring Company Phone:	

DAS Inventory (All Fields Mandatory)

Update inventory information below. For commissioning: All fields are mandatory. For annual test: enter any missing values using results from the current annual test, otherwise do not change commissioning values. Upload grid square diagrams and other information using upload feature at end of inventory. After leaving this page, you will not be able to edit inventory, except by creating a new report.

System Make:		
System Model:		
Design Firm of Record:		
Electrical Permit Application Date:		
Electrical Permit Number:		
Location of System in Building:		
Applicable Code & Year (e.g. IFC 2021):		
Is this a shared system (shared with cellular phone carriers and/or internal radios?)	☐ Yes	☐ No
Is this a fiber/active or a coax/passive system?	☐ Active	☐ Passive
PSERN Retune Completed?	☐ Yes	☐ No
Grid square testing diagram and results uploaded to TCE?	☐ Yes	
Diagram(s) uploaded to TCE showing location of BDA/DAS control equipment, amplifiers, signal boosters, backup battery systems, and any outdoor antennas, and a wiring schematic.	☐ Yes	
Antenna Type:		
ERP to Donor Site (dBm):		

Testing shall be done using a PSERN public safety radio held at face level and placed in transmit mode, transmitting within 3' of the antenna predicted to have the lowest loss to the BDA (based on distance from the BDA equipment). The output power of the BDA shall than be measured with a calibrated power meter or spectrum analyzer. Using the measured power, and the estimated feedline loss plus antenna gain, shall be used to calculate the Estimated Radiated Power (ERP).

Antenna Gain (dBd):		
Antenna Coordinates (NAD83):		
Antenna Azimuth (degrees true) (DAS vendor may select the antenna unless directed to a specific antenna by the PSERN Operator):		
Uplink Gain Setting:	Gain Setting:	db
	Power:	dbm
Downlink Gain Setting:	Gain Setting:	db
	Power:	dbm

Signal Level Received at Donor Site (-dBm):

The signal level received at the donor site shall be measured by the PSERN Project - see the DAS vendor information at https://psern.org/confidential-resources. You will also borrow radios from PSERN for your testing. A test signal shall be generated from a public safety radio held at face level and placed in transmit mode, transmitting within 3' of the antenna predicted to have the lowest loss to the BDA (based on distance from the BDA equipment).

Signal Level Received from Donor Site (-dBm):

Measure active control channel, w/20 KHz resolution bandwidth, at the jumper that connects to the DAS head-end donor port.

Channelized Donor Site Name (to be selected by the DAS vendor unless directed by the PSERN project to a specific donor site):

Channelized or Broadband (Note: new broadband systems are not accepted on PSERN): ☐ Channelized ☐ Broadband

List of Critical Areas in Building (for coverage testing requirements). Critical areas from NFPA 1225 and the Fire Code are: the fire command center(s), the fire pump room(s), interior exit stairways, exit passageways, elevator lobbies, standpipe cabinet:

Attach grid square diagrams, and diagram of location of equipment and devices.

Testing Company Information (All Fields Mandatory)

Company Name:	Phone:
Address:	Emergency Phone:
	Email:

Technician/Tester Information (All Fields Mandatory)

Technician Name:

Technician FCC Certification/GROL#:

Technician performing testing has received approved certification and manufacturer training or other equivalent: ☐ Yes

Specify manufacturer training received and year: Training:_____ Yr: 20____

Testing Equipment (All Fields Mandatory)

Spectrum analyzer make/model**:

Spectrum analyzer calibration date:

Calibration performed by firm (qualified firm name):

*** Use of a calibrated spectrum analyzer, with a current calibration, is required for this testing.*

Test Information (Mandatory)

Date of Test:

The items on the checklists below shall be inspected and tested. This list does not constitute all of the required inspecting and testing requirements for BDA/DAS. Refer to the CURRENT FIRE CODE AND REFERENCED NFPA STANDARD and the MANUFACTURER'S INSTRUCTIONS for weekly, monthly, and/or quarterly inspecting and testing requirements.

PRE-TEST CHECKS

1	**Take precautions to avoid preventable alarms.** The Central Station Monitoring Service was notified that DAS testing is occurring and will be generating supervisory signals.	☐	Yes
2	A copy of the completed Rebroadcast Agreement with PSERN is available in the emergency responder radio system enclosure.	☐	Yes
3	Electrical permit is signed off.	☐	Yes
4	A copy of the following documents is stored in the emergency responder radio system enclosure and/or the building engineer's office, and an additional copy has been provided to the PSERN Operator.		

	a. Grid diagram for each floor, showing test signal strengths in each floor, and indicating location of each critical area. Include information on location of fire-resistance-rated pathways. This document has also been uploaded to TCE.	☐	Yes
	b. A diagram showing location of BDA/DAS control equipment, amplifiers, signal boosters, backup battery systems, and any outdoor antennas, and a wiring schematic. This document has also been uploaded to TCE.	☐	Yes
	c. Manufacturer specifications for all BDA/DAS systems components including amplifiers, signal boosters, antennas, coax, couplers, splitters, combiners, filters, or any other passive components included.	☐	Yes
	d. Data sheets for the backup battery and charging system (if utilized), and include calculations to ensure the backup power requirements are met.	☐	Yes
	e. A certification letter stating that the BDA/DAS has been installed and tested per code and that the system is complete and fully functional.	☐	Yes
ACTIVE COMPONENTS			
5	Signal booster is within a NEMA 4, IP66-type waterproof cabinet or equivalent.	☐	Yes
6	Battery is within a NEMA 3R, IP65-type waterproof cabinet or equivalent.	☐	Yes
7	Equipment is FCC certified.	☐	Yes
8	Signage at Fire Alarm Panel "This building is equipped with an Emergency Responder Radio Coverage System. Control equipment located in room ___", and signage on or adjacent to the door of the room containing the main system components stating: "Emergency Responder Radio Coverage System Equipment".	☐	Yes
9	Donor antenna(s) are installed in a manner that meets applicable requirements in the International Building Code for weather protection of the building envelope, and are permanently affixed on the highest possible position on the building or where approved by the fire code official, with a sign stating "Movement or repositioning of the antenna is prohibited without approval from the fire code official".	☐	Yes
10	Active components checked to verify operation within manufacturers' specifications:		
	a. Equipment alarm log checked for recurring or substantial alarms and addressed as per manufacturer's recommendations.	☐	Yes
	b. Isolation testing performed and measured system isolation is at least 20 db above the total downlink and the total uplink gain (whichever is greater) between least isolated DAS antenna and the donor antenna.	☐	Yes
	c. Active RF emitting equipment shall have built-in oscillation detection and control circuitry.	☐	Yes
DISTRIBUTION SYSTEM AND COVERAGE			
11	Perform in-building coverage test/grid test as required by 2021 local Fire Code Section 510.5.4 using a calibrated spectrum analyzer: Signal strength remains stronger than (less negative than) -95 dBm for 95% of grids on each floor in non-critical areas (for a 20 grid square test, this means that at least 19 of the grids must pass for the floor to pass).	☐	Yes
12	The list of critical areas to be provided coverage in this building is complete (list is stored with inventory information above).	☐	Yes
13	Critical areas are provided with 99% floor area radio coverage with coverage stronger than -95 dBm.	☐	Yes

14	Perform functional (talk-back) testing in each critical area using one radio in the building and one radio outside the building - radios function sufficiently for communications with a DAQ of 3 or higher?	☐	Yes
15	Perform functional (talk-back) testing between each critical area in the building to fire command center, or if no command center, fire alarm control panel - radios function sufficiently for communications with a DAQ of 3 or higher?	☐	Yes
16	Perform functional (talk-back) testing between a radio at the fire alarm control panel and a radio at each landing in each stairwell - radios function sufficiently for communications with a DAQ of 3 or higher?	☐	Yes
17	Spectrum analyzer or other suitable test equipment has been utilized and confirms that no spurious oscillations are being generated by the subject signal booster.	☐	Yes
BATTERIES/SECONDARY POWER			
18	Backup batteries and secondary power supply tested under load for one hour and meets requirements.	☐	Yes
ALARM PANEL MONITORING			
19	The fire alarm system is supervising the DAS.	☐	Yes
20	Communications link between the fire alarm system and the in-building emergency responder communications enhancement system is monitored for integrity.	☐	Yes
21	A supervisory signal was received at Central Station Monitoring company.	☐	Yes
22	The fire alarm panel either (1) separately annunciates the following conditions, or (2) the fire alarm panel has a single DAS supervisory signal annunciating a DAS deficiency with an additional panel at the DAS in the enclosure that displays status for all of the following conditions; and, the annunciation was tested and functioning properly:		
a.	Donor antenna malfunction.	☐	Yes
b.	Active RF emitting device failure.	☐	Yes
c.	Low battery capacity indication when 70% of 12-hour operating capacity has been depleted.	☐	Yes
d.	System component failure.	☐	Yes
e.	Loss of normal AC power.	☐	Yes
f.	Failure of battery charger.	☐	Yes
FINAL CHECKS			
23	If building includes a fire alarm system, inform alarm monitoring company that testing is complete.	☐	Yes
SIGNATURES AND REPORTING			
24	I will attach a white service label after this system is inspected by the Fire Department inspector.	☐	Yes
25	I will provide a copy of the acceptance test report to the responsible party after the system is inspected by the Fire Department inspector.	☐	Yes
26	I have submitted this report to the Fire Department through TCE.	☐	Yes

By accepting this statement I attest that I am properly qualified under the Seattle Fire Code and PSERN rules to perform this work. I further attest that the DAS has been properly installed and tested to meet the current Fire Code (FC) used by the department that has jurisdiction and NFPA Standards adopted by the FC for this system.

☐ I accept.	☐ I am authorized to submit this report for the certified technician who has accepted this statement.	(Initials of Employee)

SIGNATURE (OPTIONAL)

Signature of Technician
Signature of Building Representative

This Document Is For Informational Purposes Only

To submit reports to SFD, use the online forms at www.thecomplianceengine.com.