Seattle Fire Prevention Division
220 3rd Avenue South
Seattle, WA 98104
SFD_FMO_SystemsTesting@seattle.gov

SYSTEM TEST REPORT
ACCEPTANCE TEST

Please call the Seattle Radio Shop at 206-386-1213 to arrange to borrow portable radios for the testing and schedule an appointment to confirm signal level received by Radio Shop.

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

Occupancy Information (All Fields Mandatory)	
Building Name:	Building Address:
Contact Name: Contact Address:	Contact Phone: Contact Email:
Central Station Monitoring: ☐ Yes ☐ No Monitoring Company Name:	Monitoring Required: ☐ Yes ☐ No Monitoring Company Phone:

DAS Inventory (All Fields Mandatory)			
System Make		System Model	
Design Firm of Record:		Electrical Permit Application Date:	
Location of System in Building:		Applicable Code & Year (e.g. SFC 2018):	
Is this a hybrid system (shared with cellular phone carriers and/or internal radios?)		☐ Yes	☐ No
Is this an active or a passive system?		☐ Active	☐ Passive
Rebanding Retune Completed?	☐ Yes ☐ No		
PSERN Retune Completed?	☐ Yes ☐ No		

Testing Company Information (All Fields Mandatory)	
Company Name: Address:	Phone: Emergency Phone: Email:

Technician/Tester Information (All Fields Mandatory)		
Technician Name:		
Technician FCC Certification/GROL#:		
Technician performing testing has received manufacturer training or other equivalent:	☐ Yes	☐ No
Specify manufacturer training received and year:	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	A copy of the completed Seattle IT "Request for Authorization: BDA/DAS Installation" form is available in the emergency responder radio system enclosure and an additional copy has been provided to the City of Seattle's Radio System Manager (or the Puget Sound Emergency Radio Network [PSERN] Operator once PSERN has replaced the King County Radio System).	☐ Yes	☐ No
2	Electrical permit is signed off.	☐ Yes	☐ No

3	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 City of Seattle's Radio System Manager (or the Puget Sound Emergency Radio Network [PSERN] Operator once PSERN has replaced the King County Radio System):		
	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.	☐ Yes	☐ No
	b. A diagram showing location of BDA/DAS control equipment, amplifiers, signal boosters, backup battery systems, and any outdoor antennas, and a wiring schematic.	☐ Yes	☐ No
	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	☐ No
	d. Data sheets for the backup battery and charging system (if utilized), and include calculations to ensure the backup power requirements are met.	☐ Yes	☐ No
	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	☐ No
4	**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	☐ No

DAS SPECIFICATIONS/PERFORMANCE AT COMMISSIONING		
DAS Specification/Performance Element Note: if commissioning/prior info is not available, leave "At Commissioning" column blank and only provide current results. Results from this test will be stored for future reference.	**Value At Commissioning (enter once, will auto-populate in TCE in subsequent annual tests)**	
Antenna Type:		
ERP to Donor Site (dBm): *Testing shall be done using 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). 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) (provided by Seattle IT to Building Owner or Designee in the Request for Authorization):		
Uplink Gain Setting:	Gain Setting: Power:	db dbm
Downlink Gain Setting:	Gain Setting: Power:	db dbm
Signal Level Received at Donor Site (-dBm): *The signal level received at the donor site shall be measured by the City of Seattle Communications shop. Call 206-386-1213 at least two days in advance to borrow radios and arrange a testing time. 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 (provided by Seattle IT to Building Owner or Designee in the Request for Authorization):			
Channelized or Broadband (Note: new broadband systems are not allowed in Seattle and will likely not be accepted on PSERN):			
ACTIVE COMPONENTS			
5	Signal booster is within a NEMA 4, IP66-type waterproof cabinet or equivalent.	☐ Yes	☐ No
6	Battery is within a NEMA 3R, IP65-type waterproof cabinet or equivalent.	☐ Yes	☐ No
7	Equipment is FCC certified. If no, list corrections required:	☐ Yes	☐ No
8	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	☐ No
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	☐ No
c.	Active RF emitting equipment shall have built-in oscillation detection and control circuitry.	☐ Yes	☐ No
9	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	☐ No
10	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	☐ No
DISTRIBUTION SYSTEM			
11	Perform in-building coverage test/grid test as required by 2018 Seattle Fire Code Section 510.5.3 using a calibrated spectrum analyzer: Signal strength remains stronger than (less negative than) -95 dBm for 90% of grids on each floor in non-critical areas (for a 20 grid square test, this means that at least 18 of the grids must pass for the floor to pass). If no, location(s) of failed grids:	☐ Yes	☐ No
12	Create/verify list of critical areas in this building (once list is correct, select Yes):	☐ Yes	☐ No

13	Critical areas are provided with 99% floor area radio coverage with coverage stronger than -95 dBm. If no, location(s) of critical areas that do not meet threshold:	☐ Yes	☐ No
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? If no, location(s) of non-acceptable communications:	☐ Yes	☐ No
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? If no, location(s) of non-acceptable communications:	☐ Yes	☐ No
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? If no, location(s) of non-acceptable communications:	☐ Yes	☐ No
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	☐ No
BATTERIES/SECONDARY POWER			
18	Backup batteries and secondary power supply tested under load for one hour and meet requirements.	☐ Yes	☐ No
ALARM PANEL MONITORING			
19	The fire alarm system is supervising the DAS.	☐ Yes	☐ No
20	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 displays status for all of the following conditions; and, the annunciation was tested and functioning properly:		
a.	Donor antenna malfunction.	☐ Yes	☐ No
b.	Active RF emitting device failure.	☐ Yes	☐ No
c.	Low battery capacity indication when 70% of 12-hour operating capacity has been depleted.	☐ Yes	☐ No
d.	System component failure.	☐ Yes	☐ No
e.	Loss of normal AC power.	☐ Yes	☐ No
f.	Failure of battery charger.	☐ Yes	☐ No
21	Communications link between the fire alarm system and the two-way radio communications enhancement system is monitored for integrity.	☐ Yes	☐ No

22	A supervisory signal was received at Central Station Monitoring company.	☐ Yes	☐ No	
FINAL CHECKS				
23	If building includes a fire alarm system, inform alarm monitoring company that testing is complete.	☐ Yes	☐ No	
SIGNATURES AND REPORTING				
24	A current red, yellow or white tag was placed on the system indicating the system's status and test date consistent with my inspection today and SFD Administrative Rule 9.02.	☐ Yes	☐ No	
	The color of the tag is:	☐ Red	☐ Yellow	☐ White
25	I will provide a copy of the confidence test report to the owner.	☐ Yes	☐ No	
26	I will submit this test report within seven days of the date of the test to the fire department through TCE.	☐ Yes	☐ No	

By accepting this statement I, the certified technician shown on this form, certify that this fire protection system(s) has been properly inspected for functional operation in accordance with the current Fire Code (FC) used by the department that has jurisdiction and NFPA Standards adopted by the FC for this system. Any deficiencies found are noted in the report and have been reported to the building Owner/Manager for corrective action.

☐ 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

System Testing Reports Must Be Submitted Online

Submit reports to http://www.thecomplianceengine.com/