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CRRD-TA19.001	Technical Advisory	May 28, 2019
Emergency Responder Radio Coverage (ERRC) 2012 IFC, Section 510	RF Survey Test	

APPLICABILITY:

The purpose of this Technical Advisory is to provide the guideline and technical guidance to conduct the in-building RF survey to determine if an emergency responder radio coverage system is required. This test shall be conducted for:

1. All new construction where the owner is not predesigning the building to accommodate the ERRC equipment.
2. All existing buildings with a square footage of 10,000 or more to determine if radio coverage compliance is met without amplification.
3. Where radio coverage signal strength levels are not consistent with minimum signal strength level requirement as determined by the fire code official.
4. An approved survey shall be conducted every 5 years to determine the building's public safety radio signal strength meets requirements.
5. In the event frequency changes are required by the FCC or additional frequencies are made available by the FCC.

RESPONSIBILITY:

The building owner is responsible for arrangement of and for all costs of performing these tests.

MINIMUM QUALIFICATIONS OF TEST PERSONNEL:

The minimum qualifications of personnel conducting emergency responder radio coverage tests and certification shall have possession of:

1. A valid FCC-issued General Radio Operators License (GROL) and;
2. Certification of in-building system training issued by one of the following:
 - a. Associated Public Safety Communications Officials (APCO)
 - b. Personal Communications Industry Association (PCIA)
 - c. Land Mobile Radio manufacturers, or
 - d. the manufacturer of the equipment being installed.

TESTING:

Testing for ERRC compliance shall be conducted after the completion of the building envelope; this includes, but is not limited to all doors, windows, interior walls, and exterior openings. In buildings with significant internal signal impairments such as rack storage, wire mesh security screens or other interior or exterior features, all internal construction shall be completed prior to compliance testing.

A signal strength test shall be run on a 20 equal areas grid block per floor. Maximum of 2 nonadjacent areas may fail the test per floor. In the event that 3 areas fail the test, the owner may retest by dividing the floor into 40 equal area grid block. In such case, a maximum of 4 nonadjacent areas are

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allowed to fail the test. This allows for a more statistically accurate test results. After the 40 area test, if the building still fails, the ERRC system shall be installed to meet requirements.

A spot located approximately in the center of a grid area will be selected. Once the spot has been selected, prospecting for a better spot is not permitted.

The minimum acceptable radio signal coverage shall include a measurement of signal strength in decibel milliwatt (dBm) that meet or exceed all of the following:

DOWNLINK SIGNAL – the minimum acceptable signal strength of -95 dBm shall be receivable in 95% of area on each floor within the building when transmitted from the Regional Wireless Cooperative (RWC) Simulcast G Channels.

Exception:

The following critical areas shall be provided with 99 percent of floor area radio coverage;

1. As required by the fire code official.
2. Fire command center(s)
3. Fire equipment room
4. Fire pump room
5. Elevator lobby
6. Interior exit stairways
7. Exit passageways
8. Standpipe locations
9. Rescue air filling stations
10. Sprinkler sectional valve locations

UPLINK SIGNAL – the minimum outbound signal strength shall be based on Delivered Audio Quality (DAQ) rating of 3.0 as defined by the following table.

Signal strength and intelligibility scale

Signal Strength	Audio Intelligibility
0 – no detectable signal	0 – unintelligible
1 – barely detectable	1 - intelligible with extreme difficulty (requires multiple repetitions)
2 - detectable with difficulty	2 - intelligible with difficulty (required repetition)
3 - detectable at all times	3 – intelligible (seldom requires repetitions)
4 - detectable at all times (strong signal)	4 – intelligible at all times

Surprise Fire-Medical Community Risk Reduction personnel will perform DAQ scale test from the same spot location used for signal strength testing.

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SYSTEM FREQUENCIES:

The full list of Simulcast G frequencies is available from the FCC web site under the call signs WQJY471, WQKN967, WQPK323, WQPK324, WQZS652.

The FCC General Menu Reports web link for call sign <http://fjallfoss.fcc.gov/General Menu Reports/>

The control frequency required for in-building testing will be one of the following:

Control Frequency	Channel Number	Call Sign
771.56875	1	WQJY471,WQKN967,WQPK323, WQPK324, WQZS652
771.61875	2	WQJY471,WQKN967,WQPK323, WQPK324, WQZS652
771.06875	3	WQJY471,WQKN967,WQPK323, WQPK324, WQZS652
771.86875	4	WQJY471,WQKN967,WQPK323, WQPK324, WQZS652

REPEATER SITE LOCATIONS:

Simulcast G utilizes a nine-tower system as documented below:

Site Name	Address	Call Sign	Latitude	Longitude
FS 195	23100 N Lake Pleasant Rd	WQKN967 WQKP324	33:41:34	112:16:43
Glendale PD	6835 N 57th Dr	WQKN967 WQKP324	33:32:15	112:10:56
Agua Fria	9490 W Lone Mountain Parkway	WQKP323 WQJY471	33:44:23	112:15:52
Greenway	7300 W Greenway Road	WQKP324 WQJY471	33:37:35	112:12:51
Peoria Tech Center	7300 W Greenway Road	WQKP323 WQJY471	33:34:37	112:14:17
Lake Pleasant	41835 N Castle Hot Springs Road	WQKP323 WQJY471	33:50:48	112:16:38
Cashion	11328 W Buckeye Road	WQKP324 WQJY471	33:26:10	112:18:12
Luke AFB	Super Saber Street Luke, AFB	WQKN967 WQKP324	33:31:51	112:22:01
Pyramid Peak WTP	28355 N Pyramid Peak Parkway	WQZS652	33:44:15	112:11:34

TEST RESULTS

Upon successfully satisfying all testing criteria, the FCC licensed RF Engineer shall provide a copy of the completed test report. The test report shall be a bound or stapled document of 8 ½ x 11 sheets (fold out sheets of 8 ½ x 17 may be used for floor plan diagrams). Content shall include;

1. A summary signed by the party responsible for the testing which includes testing procedures followed, the dates, names of the parties involved in the testing and their respective companies, and the results, i.e. passing or failing of the performance requirements (DAQ), and signal strength requirements.
2. Floor plans of the building with testing grids and measurements for performance (DAQ) and signal strength.
3. An electronic copy of all the information listed above in PDF format.