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*\*\*Please read the Technical & Submittal Requirements before completing/submitting your application.\*\**

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**REGIONAL WIRELESS COOPERATIVE**  
Radio Amplification System  
Rebroadcast Authorization Application

Pursuant to the Regional Wireless Cooperative (RWC) Radio Amplification Systems Policy, Section 5.1; and 47CFR 90.219, entities desiring to operate radio amplification systems on the RWC's licensed frequencies and within the service area of the RWC network must obtain written consent and approval from the licensee. Upon successful initial review of this document the RWC will provide a separate written acceptance of plans for construction. Following the successful completion of a field test by the RWC this signed document shall serve as written consent and approval to rebroadcast on RWC Spectrum.

**PAGE 1 – APPLICANT INFORMATION (To be completed by applicant)**

**Proposed ERRCS Site Information:** **Date Submitted:** \_\_\_\_\_

Location Name: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

**Facility Owner Contact Information**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**Facility Occupant Contact Information**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**Engineering Agent/Vendor Contact Information**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Expected system activation date: \_\_\_\_\_

ERRCS System Latitude: \_\_\_\_\_

ERRCS System Longitude: \_\_\_\_\_

Donor Antenna Height Above Ground \_\_\_\_ Ft.

AHJ Contact Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**Items to include with application:**

- Facility floor plan for all building levels including square footage of each floor.
- System design including block diagram and itemized list of system components including manufacturer and make/model numbers.
- Pre-treatment test report.

**Submit Application and Attachments to (Completed by RWC):**

Email to: [rwcazerrcs@phoenix.gov](mailto:rwcazerrcs@phoenix.gov)

CC Email to: \_\_\_\_\_



**REGIONAL WIRELESS COOPERATIVE**  
Radio Amplification System  
Rebroadcast Authorization Application

**PAGE 2 - LICENSEE AUTHORIZATION (To be completed by licensee)**

**Donor Site Information:**

Donor Site: \_\_\_\_\_ Simulcast: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ FCC Call Sign: \_\_\_\_\_

Donor Site Lat/Long: ° \_\_\_\_\_

Donor Antenna Site Distance \_\_\_\_\_ Miles. Donor Antenna Site Azimuth \_\_\_\_\_ Degrees

**LICENSEE AUTHORIZATION**

In consideration of review of the information and requirements provided on this application, the authorized agent of the licensee operating on a RWC Member's licensed frequencies and within the service area of the RWC network hereby consents and approves activation of the radio amplification system as documented herein.

This authorization shall remain in effect as long as the ERRC system described in this document is properly maintained in accordance with RWC policy. Changes to the RWC P-25 network may require alterations to this ERRC system. RWC policy requires a current local point of contact to facilitate access in the event of radio interference caused by this device.

Current fire codes governing ERRC's deployments require annual inspections to be completed. Scheduling of annual inspections is the sole responsibility of the system owner or their designated representative. System owners should consult with their local Authority Having Jurisdiction (AHJ) for questions regarding annual inspection requirements.

For questions about the RWC, its policies and donor site info see: <https://rwcaz.org>

Authorized Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Print Name: \_\_\_\_\_

Entity: \_\_\_\_\_

Date: \_\_\_\_\_



## **RWC Technical Requirements for ERRCS**

For new BDA's either due to new construction or retrofits/repairs:

- Class A amplifiers (see FCC 47 CFR 90.219 (a)) must be used for any ERRCS installed to operate on the RWC 700 MHz P25 network
- Existing Class B amplifiers must continue to be maintained on an annual basis. If an existing Class B amplifier fails, it must be replaced with a Class A amplifier
- The BDA shall support uplink squelch
- The BDA must have AGC – Automatic Gain Control

## **BDA Configuration**

- BDA maximum uplink and downlink gain settings shall be 20dB less than isolation measured between donor antenna and the DAS.
- All appropriate RWC frequencies shall be programmed into the BDA
- Typical filter configuration shall be 12.5 kHz unless approved by the RWC
- Uplink Squelch should be enabled

## **Donor Antenna**

- The donor antenna shall be a directional antenna.
- The donor antenna frequency range shall support 700 MHz public safety band, 769-775 MHz (downlink) and 799-805MHz (uplink)
- For DAS projects requesting design approval after August 1, 2024, the donor antenna shall support:
  - A horizontal beamwidth of 30 degrees or less
  - A vertical beamwidth of 30 degrees or less
  - A front-to-back ratio of 27db or greater

Antennas that meet this requirement listed below. If other antennas are discovered that meet these requirements, please feel free to update us.

- 1) ADRF: AD-PA-700-900-DIN-X
  - 2) Gamma Nu: F16V28DHFB
  - 3) Ventev: VHG-VL3015-ODNF
- The donor antenna must be placed and oriented with unobstructed view of the donor site. This criterion is concerned principally with near field obstructions such as parapets, HVAC units, ducting, screen walls, etc. Antennas need to be secured clearly above any near field obstacles. Wind loading should be considered when installing and securing antennas. Line of sight buildings or other obstructions will be considered by the RWC during uplink testing.



- The donor antenna must be oriented at the pre-approved donor site mentioned in the plan's acceptance document given with plans approval.

### **RWC DAS Technical Requirements**

- Filtration to remove nearby saturating cellular noise or other signals may be required.

### **Fiber DAS**

- For new DAS projects and DAS projects added to campuses or developments with the following characteristics must incorporate the new building's DAS into the fiber DAS, rather than adding a new BDA with a new donor antenna.
  - Building campuses with one address or parcel identified by the county assessor's office.
  - Buildings are connected or within 1000' and are of the same ownership.
- If a building requires more than a single BDA, per the manufacture installation recommendations, then an ERRCS fiber DAS system installation would be required.

# Regional Wireless Cooperative (RWC)

## Plan Submittal Requirements (**\*\*for RWC use only\*\***)

1		Purpose of Requirements	
		<ul style="list-style-type: none"> <li>• To protect the integrity of the RWC Radio Network from interference sources.</li> <li>• To eliminate unapproved equipment or undesirable design decisions.</li> <li>• To better align RWC approval with AHJ requirements.</li> </ul>	
2		Submittal Review	Comments
2.1	Submittals	<input type="checkbox"/> Qualifications <input type="checkbox"/> Construction floor plans <input type="checkbox"/> One-line diagram <input type="checkbox"/> Equipment list <input type="checkbox"/> Equipment cut sheets <input type="checkbox"/> Riser Diagram <input type="checkbox"/> Baseline pre-treatment signal level report with proper RWC donor site and channel data <input type="checkbox"/> RWC Radio Amplification System Authorization Form	
2.2	Qualifications	<input type="checkbox"/> FCC GROL (Required by Fire) <input type="checkbox"/> Certificate issued by the manufacturer of the active RF equipment being installed <input type="checkbox"/> NICET certifications for both designer and qualified staff performing the commissioning	
2.3	Construction Floor Plans	<input type="checkbox"/> Show the location with unique labels of each cable, splitter, coupler, tapper, antenna, BDA, fiber-fed remote, and donor antenna	
2.4	One-line Diagram	<input type="checkbox"/> Must present the cable connections between all DAS antennas and the donor antenna, including connections to external	

		<p>filters, splitters, directional couplers, tappers, fiber-fed remotes, the BDA, and lightning arrestors</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Must include unique labels for each component</li> </ul>	
2.5	Equipment List	<p>DAS equipment list shall include the following components, if present:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> BDA</li> <li><input type="checkbox"/> Fiber-fed remote</li> <li><input type="checkbox"/> Coaxial Cable</li> <li><input type="checkbox"/> Donor Antenna</li> <li><input type="checkbox"/> DAS/Service Antennas</li> <li><input type="checkbox"/> Lightning arrestor</li> <li><input type="checkbox"/> Splitters/Couplers/Tappers</li> <li><input type="checkbox"/> External Filters</li> </ul> <p>For each component in the equipment list, please provide:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Manufacturer</li> <li><input type="checkbox"/> Model number</li> </ul>	
2.6	Equipment Cut Sheets	<ul style="list-style-type: none"> <li><input type="checkbox"/> Manufacturer information sheets shall be provided for each item on the DAS equipment list</li> </ul>	
2.7	Riser Diagram	<ul style="list-style-type: none"> <li><input type="checkbox"/> Riser diagram to include splitters and service antennas, donor antenna, BDA</li> <li><input type="checkbox"/> Riser diagram to show all floors of a project that is treated with DAS</li> </ul>	
2.8	Baseline Signal Levels	<ul style="list-style-type: none"> <li><input type="checkbox"/> Pre-treatment grid test (if possible) including the proper frequencies for the project location</li> </ul>	
2.9	RWC Form	<ul style="list-style-type: none"> <li><input type="checkbox"/> Page one of the RWC Radio Amplification System Authorization Form filled out</li> </ul> <p><b><i>**The form can be found on page two of this packet.**</i></b></p>	

Simulcast A			Simulcast A/B Site Info				Donor site Antenna		ERRCS Location	
700 MHz channels			Site Name	Address	Lat/Long	Call Sign	ERP Watts	Ant Height AGL Ft	Miles	Azimuth degrees
Chnl#	Freq (Mhz)		CTYH	200 W. Washington St	33-26-55.2 N, 112-04-38.5 W	WQSE305	30	338		
1	771.68125	Control Channel	FS34	50 N. 51st Ave	33-26-57.1 N, 112-10-10.8 W	WQSE304	132	95		
2	771.79375	Control Channel	GLEN	4020 W. Glenrosa Ave	33-29-56.2 N, 112-08-46.5 W	WQSE303	52	95		
3	772.18125	Control Channel	AMTN	23060 N. 27th Ave	33-41-43.1 N, 112-07-09.0 W	WQSE288	58	55		
4	772.04375	Control Channel	MGIL	701 W. Carefree Hwy	33-47-31.1 N, 112-05-08.5 W	WQSE280	112	105		
5	771.93125		NMTN	10600 N. 7th St	33-35-08.1 N, 112-04-20.5 W	WQSE298	151	34		
6	772.29375		SQPW	6202 N 24th St	33-31-54.2 N, 112-01-50.5 W	WQSE307	316	80@195°		
7	772.48125		SAPT	3400 E. Sky Harbor Blvd	33-26-07.2 N, 112-00-34.5 W	WQSE309	29	104		
8	772.54375		GNWY	15040 N. Tatum Blvd	33-37-25.3 N, 111-58-43.9 W	WQSE302	50	90		
9	772.73125		DOVE	33003 N. 52nd St	33-47-09.0 N, 111-58-08.0 W	WQSE283	90	130		
10	772.79375		ARCA	5220 E. Thomas Rd	33-28-49.8 N, 111-58-06.1 W	WQSF638	60	75		
11	772.93125		ASUW	4450 W. Sweetwater Rd	33-36-18.8 N, 112-09-18.0 W	WQSE292	60	130		
12	774.73125									
13	773.18125		<b>Special Frequency Programming Plan to fit 32 Filters</b>							
14	773.43125		#	Freq (Mhz)	Filter					
15	774.23125		1	770.83125	12.5 Khz (Chnl B1)					
16	774.48125		2	771.13125	12.5 Khz (Chnl B3)					
<b>Simulcast B</b>			3	771.18125	12.5 Khz (Chnl B2)					
700 MHz channels			4	771.38125	12.5 Khz (Chnl B5)					
Chnl#	Freq (Mhz)		5	771.43125	12.5 Khz (Chnl B4)					
1	770.83125	Control Channel	6	771.63125	12.5 Khz (Chnl B7)					
2	771.18125	Control Channel	7	771.68125	12.5 Khz (Chnl A1)					
3	771.13125	Control Channel	8	771.79375	12.5 Khz (Chnl A2)					
4	771.43125	Control Channel	9	771.88125	12.5 Khz (Chnl B9)					
5	771.38125		10	771.93125	12.5 Khz (Chnl A5)					
6	771.98125		11	771.98125	12.5 Khz (Chnl B6)					
7	771.63125		12	772.04375	12.5 Khz (Chnl A4)					
8	772.23125		13	772.13125	12.5 Khz (Chnl B11)					
9	771.88125		14	772.18125	12.5 Khz (Chnl A3)					
10	772.43125		15	772.23125	12.5 Khz (Chnl B8)					
11	772.13125		16	772.29375	12.5 Khz (Chnl A6)					
12	772.68125		17	772.38125	12.5 Khz (Chnl B13)					
13	772.38125		18	772.45625	75 Khz (A7 & B10)					
14	772.63125		19	772.54375	12.5 Khz (Chnl A8)					
15	772.88125		20	772.63125	12.5 Khz (Chnl B14)					
16	773.13125		21	772.68125	12.5 Khz (Chnl B12)					
17	773.38125		22	772.73125	12.5 Khz (Chnl A9)					
18	773.68125		23	772.79375	12.5 Khz (Chnl A10)					
			24	772.88125	12.5 Khz (Chnl B15)					
			25	772.93125	12.5 Khz (Chnl A11)					
			26	773.15625	75 Khz (A13 & B16)					
			27	773.38125	12.5 Khz (Chnl B17)					
			28	773.43125	12.5 Khz (Chnl A14)					
			29	773.68125	12.5 Khz (Chnl B18)					
			30	774.23125	12.5 Khz (Chnl A15)					
			31	774.48125	12.5 Khz (Chnl A16)					
			32	774.73125	12.5 Khz (Chnl A12)					













