

BCARC Repeaters, Links, Digipeaters & Gateways

N4RT

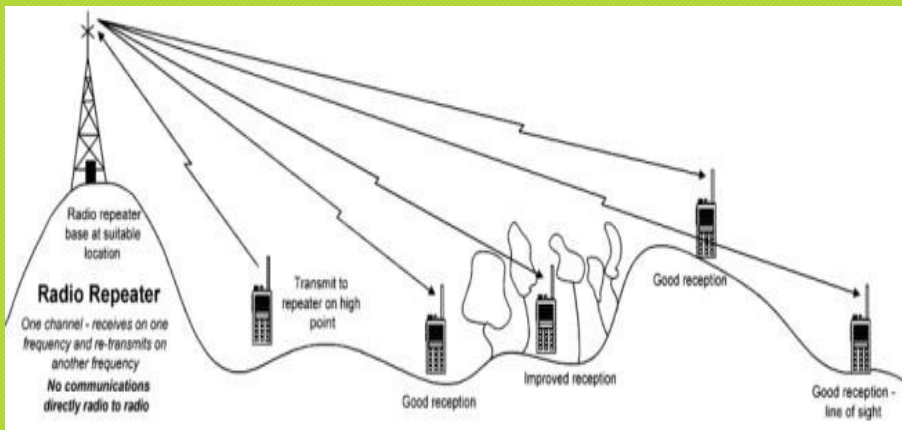
March 20, 2025



Repeater Concept

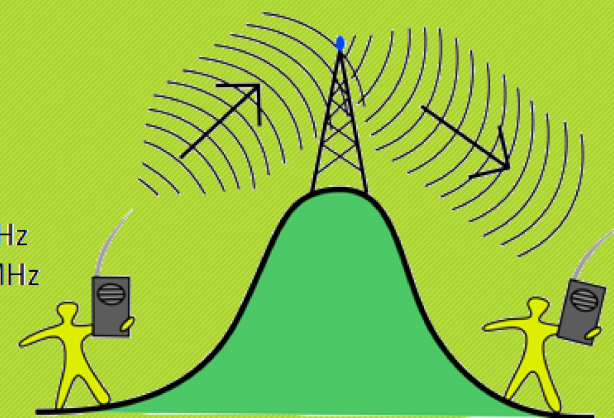


- Extend the range of VHF/UHF communications:



Repeater
Output: 146.76 MHz
Input: 146.16 MHz

Jim
Input: 146.76 MHz
Output: 146.16 MHz

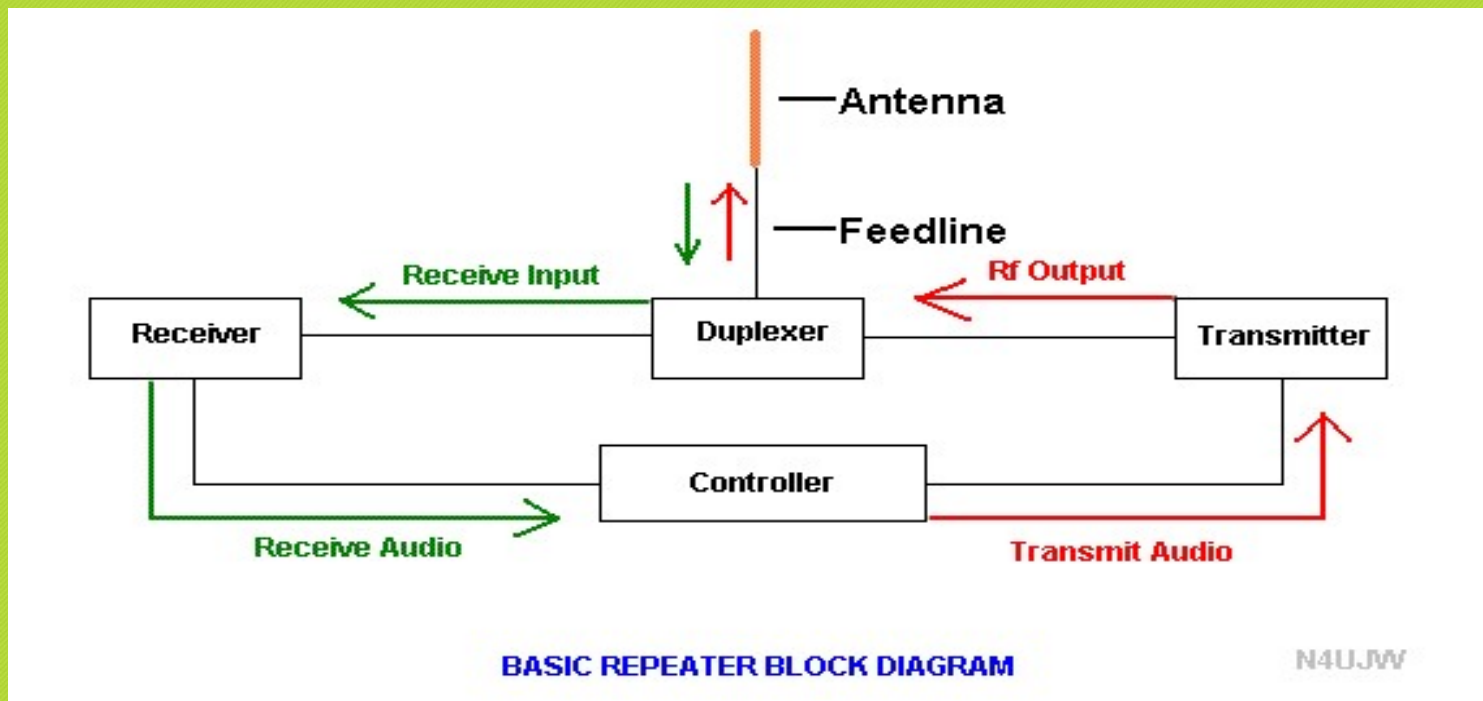


Tony
Input: 146.76 MHz
Output: 146.16 MHz

Repeater Hardware



- A typical VHF/UHF repeater block diagram:



WB4EMA VHF Robertsdale



- Repeater TX Output Freq (Your RX input Freq) = 147.090 MHz
- Subaudible CTCSS Tone (Interference Mitigation) = 82.5 Hz (Encode Only)
- The Standard Repeater Offset on 2m is +/- 600 kHz.
- Repeater RX Input Freq (Your TX output Freq) = 147.690 MHz
- Typical Description you'll see in Repeater Books:

147.0900 +0.6 MHz 82.5 Robertsdale, Baldwin County EMA Baldwin WB4EMA OPEN FM





WB4EMA Front View

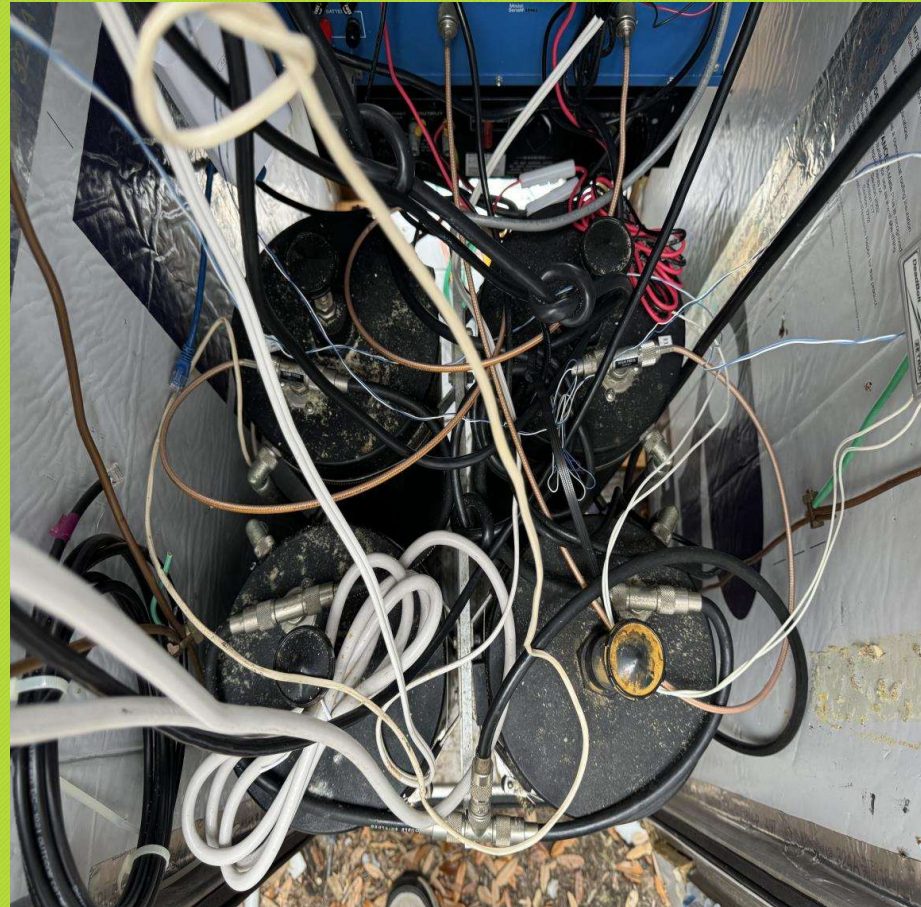


WB4EMA Rear View





2M Cavities



Top of Cavities

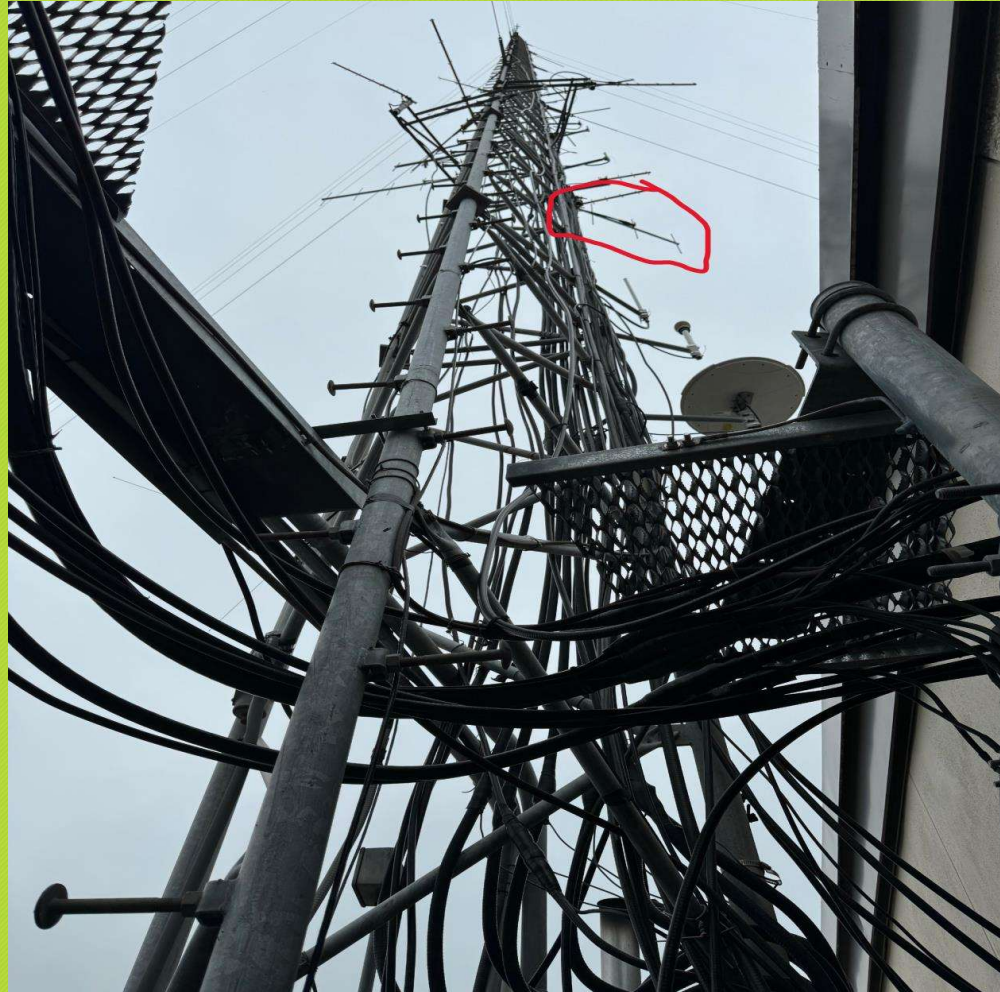


WB4EMA UHF Link System



- UHF Link Freq is 446.350 MHz Simplex
- Subaudible CTCSS Tone = 91.5 MHz (Encode and Decode)
- Uses 5 Element Yagi Antenna Aimed at Rabun Repeater Site (North)
- (Yagi needs to be replaced - missing one director element)





WB4EMA Tower



WB4EMA VHF Rabun



- Repeater TX Output Freq (Your RX Input Freq) = 147.045 MHz
- Subaudible CTCSS Tone (Interference Mitigation) = 123.0 Hz
- Repeater RX Input Freq (Your TX Output Freq) = 147.645 MHz
- Repeater Book Description:

147.0450

+0.6 MHz 123.0

Bay Minette, Rabun Tower Site

Baldwin

WB4EMA

OPEN

FM





WB4EMA Rabun Repeater



Rabun Shack & Tower showing UHF Yagi



N4MZ VHF



- Repeater TX Output Freq (Your RX Input Freq) = 146.685 MHz
- Subaudible CTCSS Tone (Interference Mitigation) = 82.5 Hz
- Repeater RX Input Freq (Your TX Output Freq) = 146.085 MHz
- Repeater is a Yaesu DR-1X purchased in 2016 runs 12 watts
- Secondary/Backup Repeater is a GE Master II (needs testing)
- Batteries provide Emergency Power at most Repeater Sites
- Repeater Book Description:

146.6850 -0.6 MHz 82.5

Foley

Baldwin N4MZ

OPEN FM Fusion





Weeks Bay Equipment Shack



N4MZ VHF Repeater Rack





GE Master II Backup



VHF Duplexer & Battery Backup



N4MZ UHF



- Repeater TX Output Freq (Your RX Input Freq) = 443.375 MHz
- Subaudible CTCSS Tone (Interference Mitigation) = 82.5 Hz
- The Standard Repeater Offset on 70cm = +5 MHz
- Repeater RX Input Freq (Your TX Output Freq) = 448.375 MHz
- Repeater Book Description:

443.3750

+5 MHz

82.5

Robertsdale, Baldwin County 911

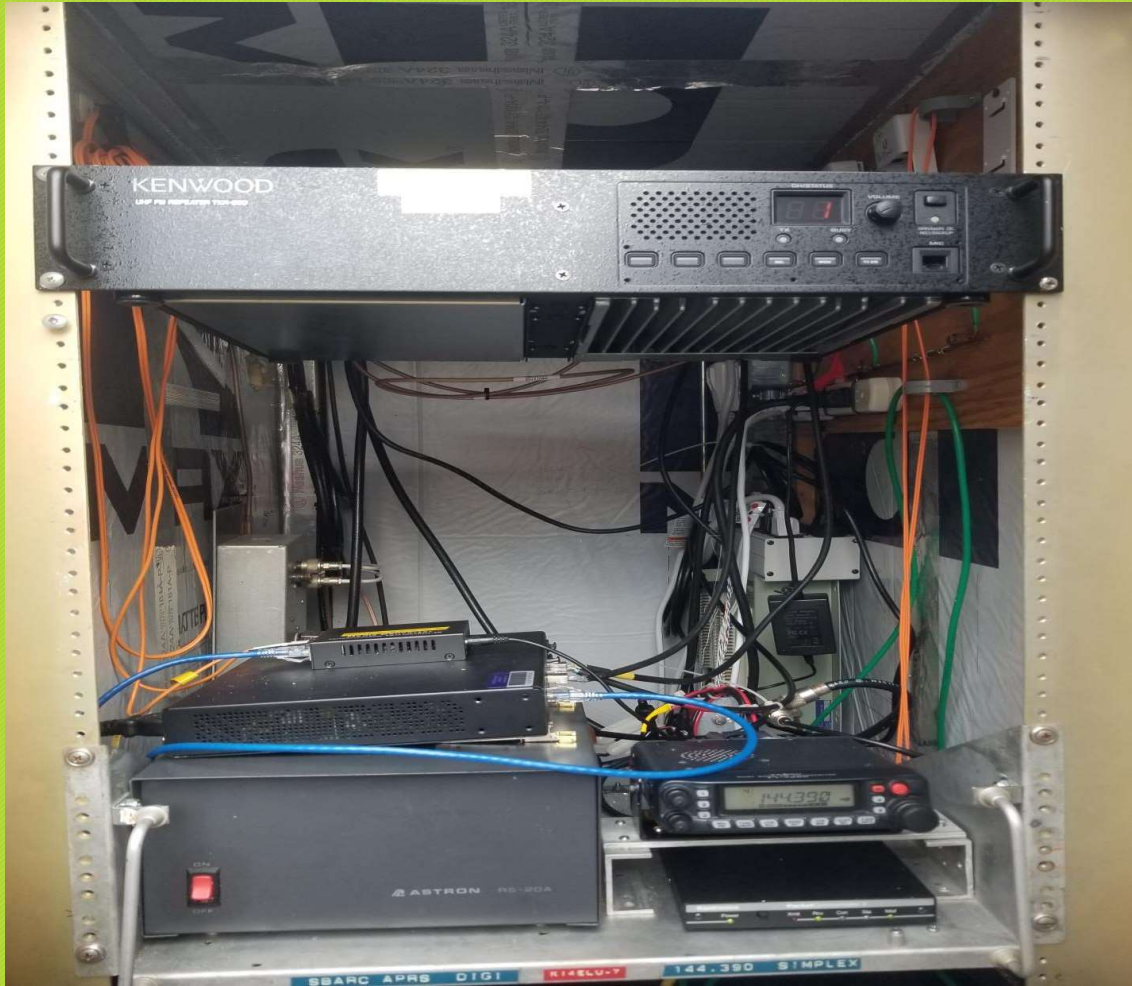
Baldwin

N4MZ

OPEN

FM





N4MZ UHF Repeater

N4MZ-1 APRS Digipeater



- APRS Digipeater Freq is 144.390 MHz Simplex
- System uses VHF XCVR and Hardware Terminal Node Controller (TNC)



WB4EMA WinLink VHF VARA FM Gateway



- WinLink VHF Radio Email System is on 145.020 MHz Simplex
- K4EES Callsign now changed to WB4EMA (Thanks, Chuck & Ken!)
- Hardware Consists of VHF XCVR and “Brick” Computer Running Windows 11 OS, RMS Packet and RMS Relay Software, and VARA FM Software MODEM.
- VARA FM Waveform is NOT compatible with Packet TNCs.
- VARA FM Waveform is Much Faster than Traditional Packet Systems

KI4SAZ VHF/UHF DSTAR



- The DSTAR repeater actually has four nodes
- Node A is 1285 MHz (-12 MHz offset), No Tone
- Node B is 444.300 MHz (+5 MHz offset), No Tone
- Node C is 145.310 MHz (-600 kHz offset), No Tone
- Node D is 1251 MHz Simplex, No Tone, for Digital Data
- Node C defaults to the 058B Reflector used by the State EOC
- Antenna is at 350 ft and has 6db gain for wide coverage

145.3100	-0.6 MHz	Magnolia Springs	US	AL	KI4SAZ	OPEN	DSTAR	+
444.3000	+5 MHz	Magnolia Springs	US	AL	KI4SAZ	OPEN	DSTAR	+
1285.0000	-20 MHz	Magnolia Springs	US	AL	KI4SAZ	OPEN	DSTAR	+



DSTAR Repeater Rack



DSTAR VHF Node C 145.310 MHz





DSTAR B & D Modules below C Module



WB4EMA Winlink VHF VARA FM Gateway



- Frequency is 145.020 MHz Simplex
- Uses small "Brick" computer running Windows 11
- Radio is an Alinco DR-135T running 20 watts
- Internet connection allows transfer of Radio Email
- Gateway call is WB4EMA, Digipeater call is WB4EMA-10
- Provides connectivity with Pensacola, Brewton, Milton, and Mobile
- Working on coordination and connectivity to other systems to the west

Questions, Comments, & Smart Remarks



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