

INVITATION TO BIDDERS

NOTICE IS HEREBY GIVEN that sealed bids will be received by the Clerk of the Board for Hamilton County until 2:00 PM, May 28, 2024, at the Hamilton County Court House, PO Box 205, 102 County View Drive, Lake Pleasant, New York 12108. Bids will be opened and publicly read aloud shortly thereafter in the conference room of the Hamilton County Court House. Proposals are for:

MULTICOUPLER FOR INLET TOWER

To purchase, deliver and installed at Inlet Tower site a Custom VHF TX/RX 144-174MHz Rack Mount Combiner for Inlet Tower (Configured by TX RX System 74-37-20048-E-IN).

The Hamilton County Board of Supervisors reserves the right to reject any and all bids.



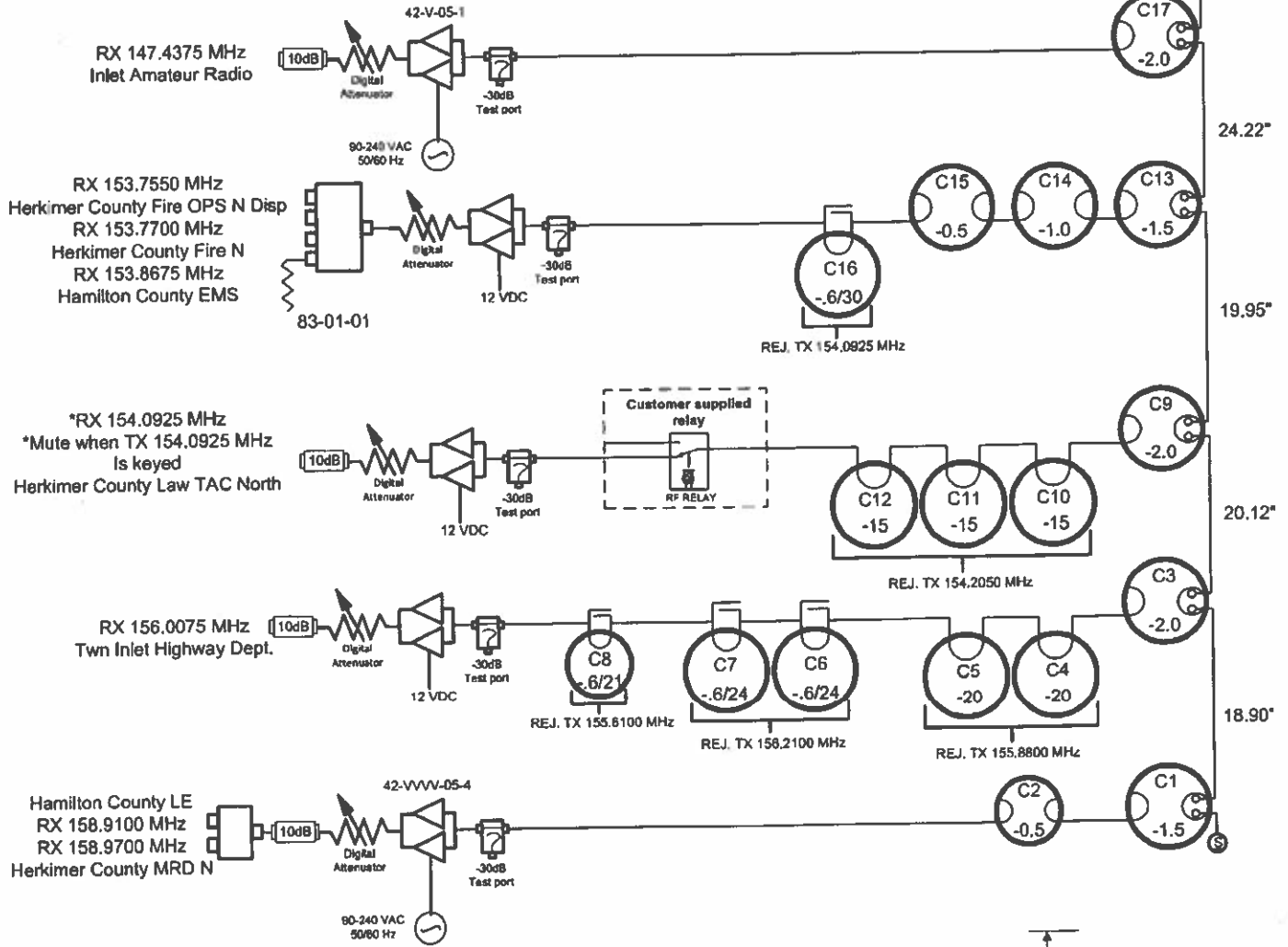
COMBILENT Group

74-37-20048-E-HCIN
 Custom VHF TX/RX T-Pass Combiner/Multicoupler

Hamilton County
 Inlet Combiner

TK36747
 JG
 12/02/2022
 TK37148 Rev 1
 JG
 04/17/2023

RX ANT



Design assumes approx.
 20" tip-bottom vertical
 antenna separation;
 approx. 53 dB isolation

| Specifications | | |
|---------------------------------------|--------------|-------------|
| Item | Requirements | As Designed |
| TX to RX ANTENNA ISOLATION | -38 dB | -38 dB |
| TX to RX ISOLATION | -100 dB | ≥ -100 dB |
| RX to TX ISOLATION | -100 dB | ≥ -100 dB |
| INSERTION LOSS | | |
| See Drawing for Designed Channel Loss | | |
| Extra Options | | |

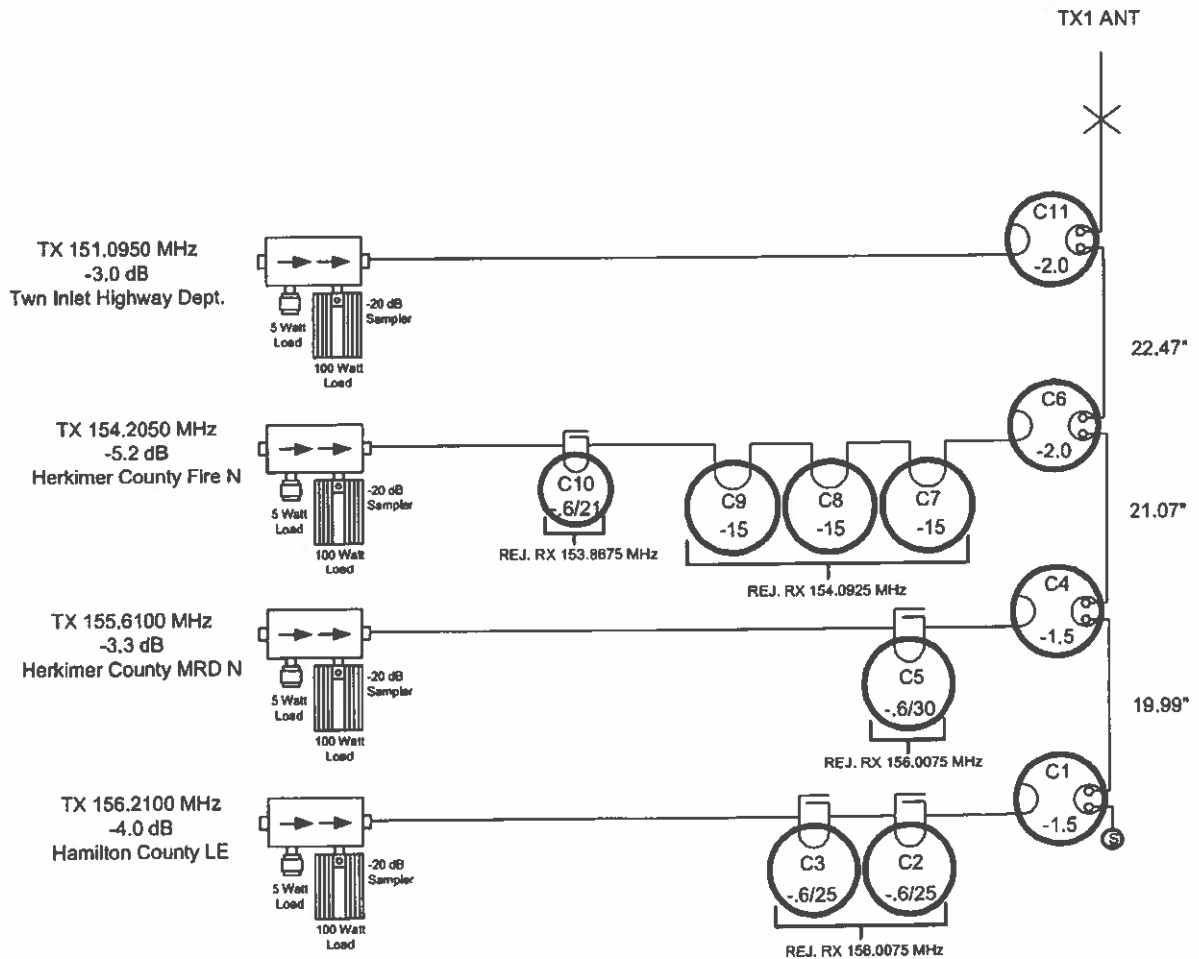
DUPLEXERS • CAVITY FILTERS • MULTICOUPLER SYSTEMS • RF SYSTEM PRODUCTS
 TX RX SYSTEMS INC. 8625 INDUSTRIAL PARKWAY, ANGOLA, NY 14006-9696
 TELEPHONE 716-549-4700 FAX 716-549-4772 (24 HRS.)



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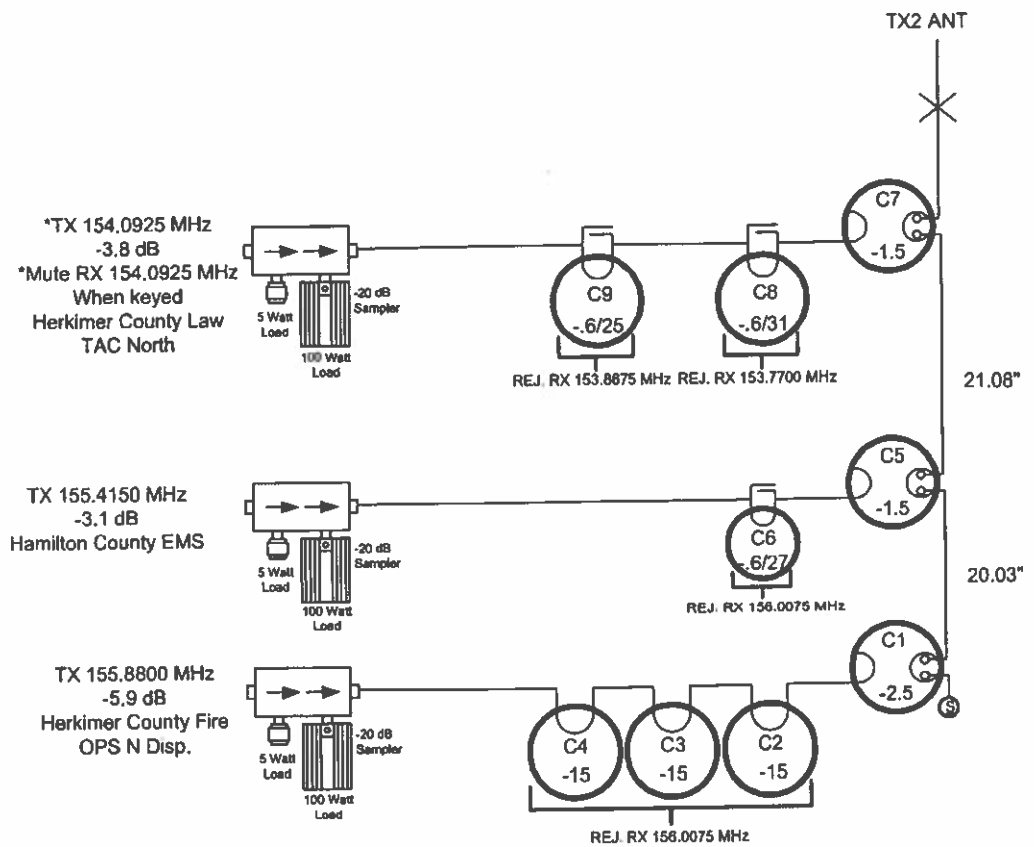




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1.0 ELECTRICAL SPECIFICATIONS

- 1.1 Number of channels: TX: 7; RX: 8
1.2 Return Loss: TX inputs: 18 dB (min); RX outputs: 14 dB (min)
1.3 Insertion Loss: TX IL may vary by +0.5/-1.0 dB between the design and the actual measurements.
1.4 TX Input Power: 150 W/Ch CW (max)
1.5 Noise Figure: Amplifier NF: 1.5 dB (max) () 42-XX-05-X; 2.7 dB (max) (X) 42-XXXX-05-X
1.6 RX System Gain (design goal): NET 3-5dB
1.7 3rd Order Output Intercept (Amplifier Only): 40 dBm (typ)
1.8 Main Power Requirements: 90 to 240 VAC, 50 W (max)
1.9 Alarm terminals: 2 Form-C contacts. Alarms are for 42-XX-05-X only.()

2.0 MECHANICAL SPECIFICATIONS

- 2.1 Racks: 93-00-08 19" Relay Rack(s) 0 PEGRACK(s) 2
2.2 Overall dimensions per rack (subject to change at time of assembly): Height: 87 inches (typ); Width: 24 inches (typ); Depth: 40 Inchs 9typ
2.3 Cavity Information: T-Pass and Series-notch cavities are 6" dia. 1/4 wavelength. Bandpass and Varinotch are 4" and 6" dia. 1/4 wavelength
2.4 Connectors: TX Inputs: N-female; RX Outputs: BNC-female (), N-female (X); RX ANT Port: N-female; TX ANT Port: N-female

3.0 REVISIONS

Table with 4 columns: Revision, Date, TK number, Reason. Row 1: Rev 1, Date: 12/02/2022, TK number: 36747, Reason: Original. Row 2: Date: 04/17/2023, TK number: 37148, Reason: Antenna spacing vertical. Also update model number

4.0 DESIGNER: Jim Grotke

SPECIAL NOTE:

IM Study revealed the presence 3rd order IM products. The involved frequencies are on separate antennas which lowers the risk of IM interference.

TX RX SYSTEMS, INC.
T-PASS MULTICOUPLER SYSTEM DESIGN
132-174 MHz, 8.825" 1/4-WAVE CAVITIES

Customer: Hamilton County Inlet Combiner
 Multicoupler: 74-37-20048-E-HCIN RX Antenna Rev 1

By: JG
 Date: 4/17/23
 Serial No:
 File: 74-37-20048-E-HCIN RX Rev1 TK37148

Cable: RG-214 (Poly) T-Pass Loop P/N: 3-2890

| Ch. No. | CHANNEL DATA | | Comp Losses (dB) | | | Channel Loss (dB) | | Cnnctr dL(In) | Length Adjust | Old TL Cable | Input (Watts) | Output (Watts) |
|---------|--------------|-----------|------------------|-------|-------|-------------------|----------|------------------|---------------|-----------------------------|---------------|----------------|
| | Type/ID | Frequency | Cav. | Isol. | Other | Estimated | Measured | | | New TL Cable | | |
| 20 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 19 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 18 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 17 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 16 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 15 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 14 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 13 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 12 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 11 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 10 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 9 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 8 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 7 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 6 | | | 0.00 | -0.80 | 0.00 | | | 3-1754 +0.084 | 0.00 | | | |
| 5 | RX | 147.4375 | -2.00 | 0.00 | 0.00 | -2.28 | -2.28 | 3-1755 +0.084 | 0.00 | L 5 = 24.22 | | 0.00 |
| 4 | RX | 153.7975 | -1.50 | 0.00 | -2.40 | -4.27 | -4.27 | 3-1755 +0.084 | 0.00 | L 4 = 19.95 | | 0.00 |
| 3 | RX | 154.0925 | -2.00 | 0.00 | -2.40 | -4.88 | -4.88 | 3-1755 +0.084 | 0.00 | L 3 = 20.12 | | 0.00 |
| 2 | RX | 156.0075 | -2.00 | 0.00 | -3.90 | -6.18 | -6.18 | 3-1755 +0.084 | 0.00 | L 2 = 18.90 | | 0.00 |
| 1 | RX | 158.9400 | -1.50 | 0.00 | -0.60 | -2.38 | -2.38 | | | Short Circuit L 1 = 0.60 | | 0.00 |



Intermod Study Report

Transmit Frequencies

| Name | Freq. | Antenna | Bw | Exclude |
|---------------------------------|-----------|---------|-------|---------|
| Herkimer County MRD North | 155.61000 | TX1 | 12.50 | |
| Herkimer County Fire North | 154.20500 | TX1 | 12.50 | |
| Herkimer County Fire OPS N Disp | 155.88000 | TX2 | 12.50 | |
| Herkimer County Law TAC North | 154.09250 | TX2 | 12.50 | |
| Hamilton County Law Enforcement | 156.21000 | TX1 | 12.50 | |
| Hamilton County EMS | 155.41500 | TX2 | 12.50 | |
| Town of Inlet Highway Dept | 151.09500 | TX1 | 12.50 | |

Receive Frequencies

| Name | Freq. | Antenna | Bw | Exclude |
|---------------------------------|-----------|---------|-------|---------|
| Herkimer County MRD North | 158.97000 | RX | 12.50 | |
| Herkimer County Fire North | 153.77000 | RX | 12.50 | |
| Herkimer County Fire OPS N Disp | 153.75500 | RX | 12.50 | |
| Herkimer County Law TAC North | 154.09250 | RX | 12.50 | |
| Hamilton County Law Enforcement | 158.91000 | RX | 12.50 | |
| Hamilton County EMS | 153.86750 | RX | 12.50 | |
| Town of Inlet Highway Dept | 156.00750 | RX | 12.50 | |
| Inlet Amateur Radio | 147.43750 | RX | 12.50 | |



System Wide Intermod Results Including External TX & External RX

Q*F (0) - No hits for this equation set

F1+F2+F3 (0) - No hits for this equation set

F1+F2-F3 (4)

| F1 | F2 | F3 | IM | RX | RX-IM | Window |
|-----------|-----------|-----------|-----------|-----------|---------|---------|
| 154.10500 | 155.88000 | 156.21000 | 153.87500 | 153.86750 | 0.00750 | 0.01250 |
| 155.88000 | 154.09250 | 156.21000 | 153.76250 | 153.77000 | 0.00750 | 0.01250 |
| 155.88000 | 154.09250 | 156.21000 | 153.76250 | 153.75500 | 0.00750 | 0.01250 |
| 156.21000 | 155.41500 | 155.61000 | 156.01500 | 156.00750 | 0.00750 | 0.01250 |

Q1*F1+Q2*F2 (0) - No hits for this equation set

Q1*F1-Q2*F2 (4)

| Q1 | F1 | Q2 | F2 | IM | RX | RX-IM | Window |
|----|-----------|----|-----------|-----------|-----------|---------|---------|
| 3 | 155.61000 | -2 | 155.41500 | 156.00000 | 156.00750 | 0.00750 | 0.01250 |
| 3 | 154.09250 | -2 | 154.20500 | 153.86750 | 153.86750 | 0.00000 | 0.01250 |
| 4 | 154.09250 | -3 | 154.20500 | 153.75500 | 153.75500 | 0.00000 | 0.01250 |
| 9 | 155.41500 | -8 | 155.61000 | 153.85500 | 153.86750 | 0.01250 | 0.01250 |