Electro-Voice

903E

903E-2

en Customer Maintenance Manual

1 Introduction

Description

The Electro-Voice model 903E noise-canceling condenser handheld microphone is designed for use in high noise environments where high speech intelligibility is desired such as in aircraft cockpits, passenger cabins, control towers, or terminal areas.

The electret element virtually eliminates EMI, RFI, and magnetic signals channeling the full power of your communications system into crisp, articulate voice transmission with the RTCA frequency response.

The microphone is recommended for advanced technology air transports employing flight instrumentation systems (glass cockpits). Its proven electret technology will not deteriorate in any way over extended periods.

Features

- Highly reliable
- EMI and RFI protected
- Tailored voice response for high articulation per RTCA/DO-214A
- Immune to aircraft generated magnetic fields
- Greater durability
- Lightweight
- 903-2341 (with PJ-068 connector) - F.01U.396.090
- 903-2342 (with A4M connector) - F.01U.396.091
- Heavy duty coil cord that extends up to three meters

Warranty

For warranty terms and conditions, visit www.telex.com.

2 Operation

Notice!
Inspect the hand mic for signs of damage. Do not use the hand mic if signs of damage evident.

1. Plug the **hand mic** into the aircraft console.
2. Hold the **microphone** so that the front side (EV logo showing) is facing your mouth and placed near your lips.
3. Depress the **push-to-talk button** on the side of the microphone and speak into the circular opening near the top of the front side.

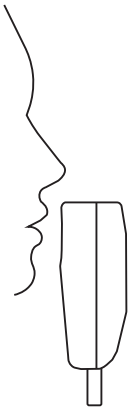


Figure 2.1: Mouth to Mic position

3 Overhaul Instructions

There are no special tools needed to perform an overhaul.

Disassembly

1. Remove the **four screws** that hold the front and rear case halves together.
2. Remove the **mic head assembly** from the front case half.
3. (Optional) Remove the **switch plate** if you need to remove the S/A cable.

Inspection

1. Inspect the **switch contacts** for signs of excessive wear.
2. Examine the **unit** for damage or dried-out wiring or sleeving.
3. Check all **solder connections** for good contacts.
4. Check **cable** for signs of damage, such as cuts and cracks.

Cleaning

1. Thoroughly clean all dust and dirt from **microphone** using dry, compressed air to dislodge dirt from inaccessible corners.
2. Clean each **part** with a lint-free cloth or brush.
3. Remove **pits** from switch contacts by burnishing.
4. (Optional) Remove the **PCBA** by removing the screw if it requires cleaning underneath.

Repair or Replace

1. Replace any **damaged parts**.

NOTE: The mic head assembly is sealed and not repairable replace mic head assembly (F.01U.401.392), if defective.

Reassembly

- Reassembly is the **reverse of disassembly**.

Check Microphone Output

- The 903E electret microphone has a speech output of approximately 0.2 volts and is optimal when used with the DO-214A test circuit or an aircraft intercom.

Check Switch Operation

With the switch released:

1. Configure a multi-meter to read resistance.
2. Check the **resistance** between the red and black shield leads. (Tip and sleeve on the PJ068 plug; pin 1 and 2 on the A4M.) It should be infinite.
3. Check the **resistance** between the white and black leads. (Ring and sleeve on the PJ068 plug; Pin 3 and 4 on the A4M.) It should be infinite.

With the switch depressed:

- With the multi-meter still configured to read resistance, check the resistance between the red and the black / shield leads. (Tip and sleeve on the PJ068 plug; pins 1 and 2 on the A4M.) It should be 2 Ohms or less

Configure a multi-meter to read DC milliamps

1. Using the test circuit shown in figure 3.5, insert the multi-meter in series with the power supply positive lead. (A connection to the audio output of the circuit is not needed.)
2. Attach the **test circuit ground to the PJ068 plug sleeve or XLR pin 4**.
3. Attach the **test circuit positive to the ring of the PJ068 or XLR pin 3**.
4. Check the switch operation:
   - Without the switch depressed, the current measured should be zero.
   - With the switch depressed, the current measured should be approximately 1.5 to 6.0 mA, depending on the power supply voltage setting (8 - 16 VDC).

Performance to Specifications

NOTE: Electrical conformance to DO-214A requires special equipment and an artificial voice.

Diagrams

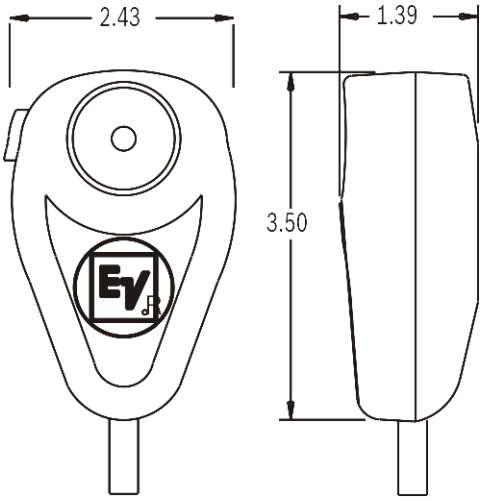
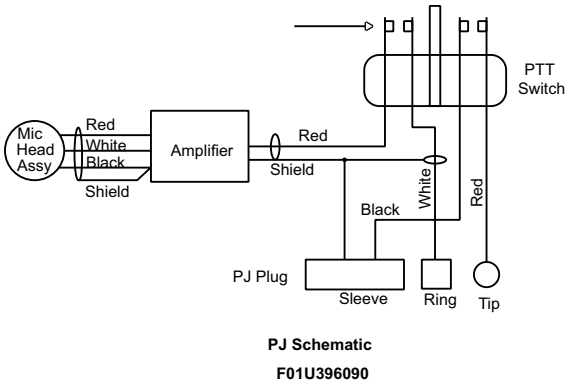
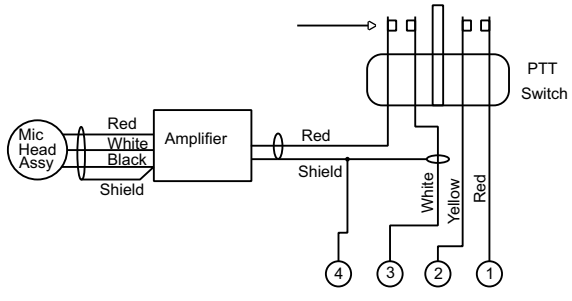


Figure 3.1: 903E Dimensions



PJ Schematic

F01U396090



A4M Schematic

F01U396091

Figure 3.2: 903-2341 and 903-2342 Schematics

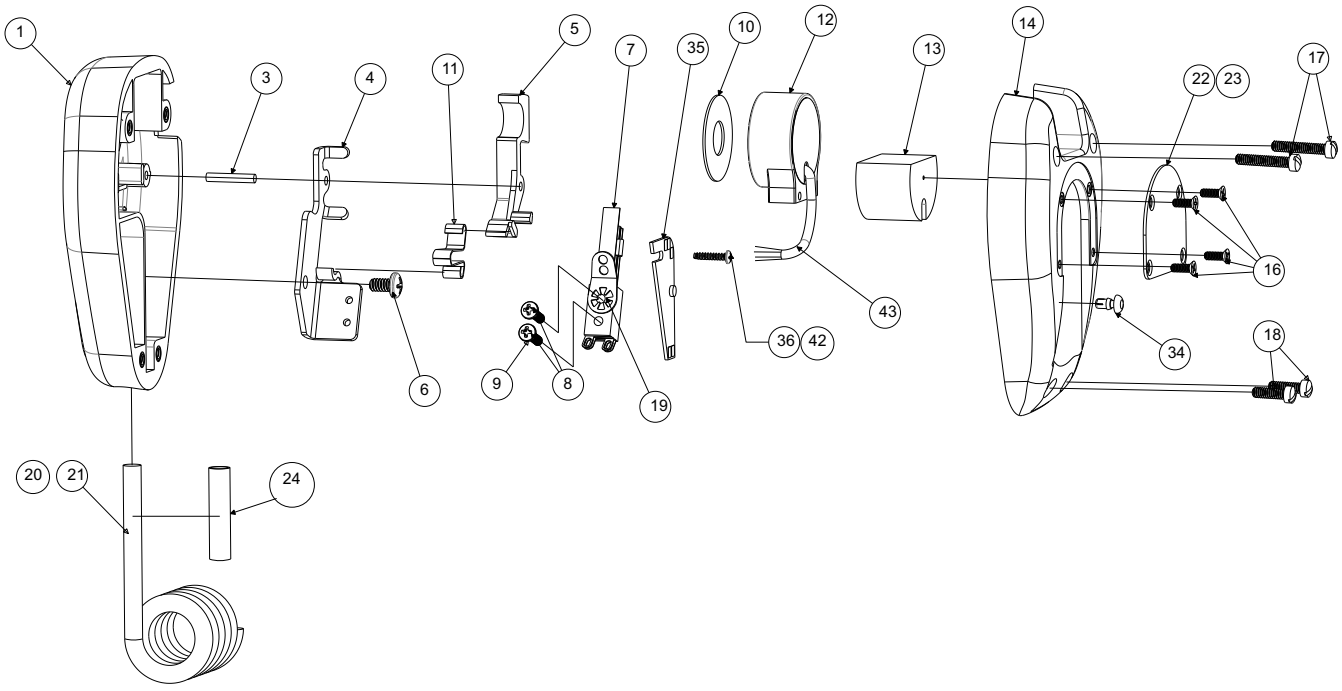


Figure 3.3: 903E Parts Assembly

Item	Spare Part Number	Qty	Description
1	F01U110585	1	ASSY 903 HAND MICROPHONE FRONT CASE ASSY
3	F01U332937	1	PIN, PIVOT, CAD PL-YEL CHART
4	F01U318382	1	PLATE, SW, ZINC/PL,CHROMATE
5	F01U153290	1	CMP 903 HAND MIC ACTUATOR
6	F01U298411	1	SCR, 6-20, X 1/4, PNH,XREC,SLD, BT25,CAD
7	F01U138580	1	SWITCH, LEAF
8	F01U332935	2	SCR, 3-48 X 3/8, PNH, XREC, NIC PL,C REQ
9	F01U147444	1	WSHR, LOCK, #3, INT TOOTH, (C OF C REQ)
10	F01U147159	1	GASKET, NEOPRENE
11	F01U145820	1	SPRING, SPCL, STL, ZI
12	F01U415606	1	ASSY 903E MIC, MIC HEAD
13	F01U152871	1	SPACER, .94OD, FOAM
14	F01U415127	1	ASSY 903E MIC, CASE, BACK
16	F01U415602	4	SCR, 2-56 X 1/4, FLT HD, XREC
17	F01U109917	2	SCR, 4-40 X 9/16, FIL HD, SLTD, C REQ
18	F01U415598	2	SCR, 4-40 X 3/8, FIL HD, SLTD, C REQ
19	F01U146312	1	LUG, #4, SOLDER, SHAKEPROOF, #2304-04-00
20	F01U110555	1	CABLE ASSEMBLY, PJ-068

21	F01U126476	1	CABLE ASSEMBLY, A4M, XLR
22	F01U415131	1	CMP 903E Handmic Nameplate 903-2341
23	F01U415132	1	CMP 903E Handmic Nameplate 903-2342
24	F01U327244	1	TUBING, 3/32ID, THERMOFIT, 3/8,BLK
34	F01U415129	1	RIVET solid PA Black OD .2 WALL .04 .13
35	F01U415130	1	PCBA 903E AMP
36	F01U109505	1	SCR pan St ZN 2-28 1/4 phil
42	F01U147444	1	WSHR, LOCK, #3, INT TOOTH, (C OF C REQ)

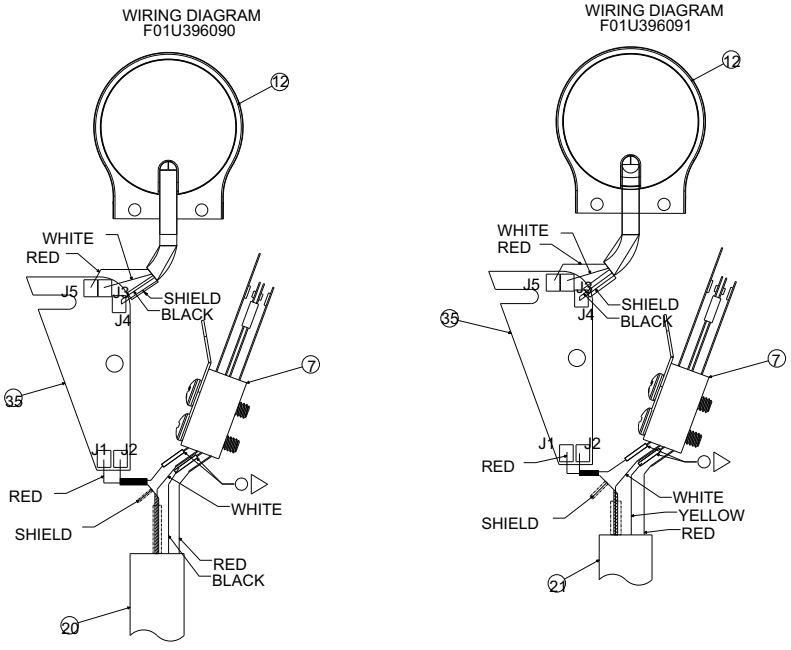


Figure 3.4: Wiring Diagram

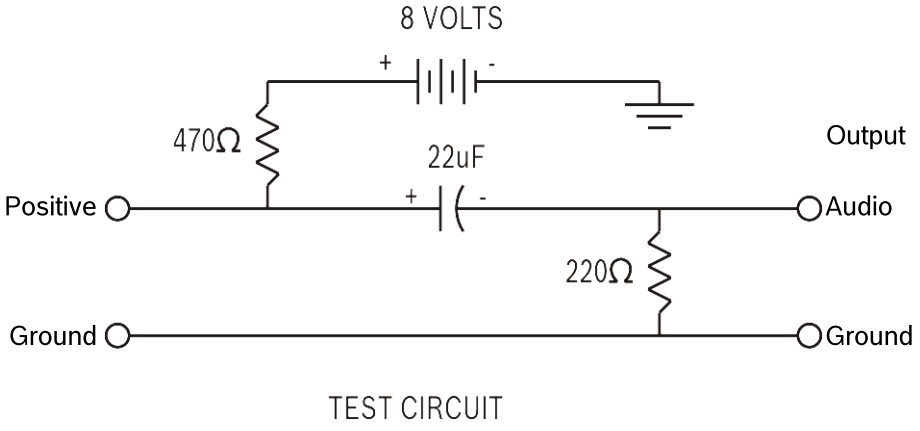


Figure 3.5: Test Circuit

4 Environment Qualifications Form

Microphone, Electret (Handheld 903E)
TSO Number: TSO-C139a

Conditions	DO-160G Paragraph #	Description of Conducted Tests[a]
Low Temperature	4.5.1, 4.5.2	Equipment tested to Category A1
High Temperature	4.5.3, 4.5.4	Equipment tested to Category A1
Altitude[c]	4.6.1	Equipment tested to Category A2
Decompression[c]	4.6.2	Equipment tested to Category A2 at 45,000 ft.
Overpressure[c]	4.6.3	Equipment tested to Category A2
Temperature and Variation	5.0	Equipment tested to Category B
Humidity	6.3.2	Equipment tested to Category B
Operational Shock[c]	7.2.1	Equipment tested to Category B
Crash Safety Shock[c]	7.3.1	Equipment tested to Category B
Vibration[c]	8.4.1.2	Equipment tested to Categories S, R, and H.
Explosion	9.0	No test required
Waterproofness	10.0	No test required
Fluids Susceptibility	11.4.1	Equipment tested to Soda, Coffee, and IPA
Sand and Dust	12.0	No test required
Fungus	13.0	No test required
Salt Spray	14.0	No test required
Magnetic Effect	15.0	No test required
Power Input	16.0	No test required
Voltage Spike Conducted[b]	17.0	Equipment tested to Category A
Induced Signal Susceptibility[b]	19.3.1, 19.3.3, 19.3.4, 19.3.5	Equipment tested to Category ZWE
RF Susceptibility Radiated/Conducted	20.0	Equipment tested to Category R
Emission Radiated/Conducted[b]	21.0	Equipment tested to Category M
Lightening Induced Transient Susceptibility[b]	22.5.1, 22.5.2	Equipment tested to Category B4K3L3
Electrostatic Discharge	25.0	Equipment tested to Category A

Conditions	DO-160G Paragraph #	Description of Conducted Tests[a]
Other Test[d]		Fire Resistance tests were conducted in accordance with Federal Aviation Regulation, Part 25. Appendix F, F.A.R. 25.853 and F.A.R. 25.1359 (d)

a. Tests performed at Bosch Security Systems, LLC, Burnsville, MN, unless noted otherwise.
b. Tests performed at TUV, New Brighton, MN
c. Tests performed at Element, Minneapolis, MN
d. Tests performed at SGS North America, Farmingdale, NY

5 Technical Specifications

(per RTCA/DO-214A and DO-160G)

Generating element	Electret condenser
Frequency response	300-5000 Hz (See Figure 5.1)
Impedance	Matches standard aircraft input circuit
Sensitivity	-28 ±3 dBV/Pascal at 1 kHz
Total Harmonic Distortion (THD)	<5% at 114 dBSPL in 350 Hz and 6 kHz; and output shall increases at least 5 dB when input is increased from 114 to 120 dBSPL at response peak.
Power requirements	See test circuit in figure 3.5 (per RTCA/DO-214A)
Current Drain	1.5 mA at 8 V 6 mA at 16 V
Case material	Black ABS
Dimensions	91.5 mm (3.6 in) length, less hanger 61.0 mm (2.4 in) width 35.6 mm (1.4 in) depth
Weight	
For F01U396090	181 grams (0.40 lbs) with cord
For F01U396091	200 grams (0.44 lbs) with cord
Accessories supplied	Panel mounting bracket
Certification	FAA TSO C-139a

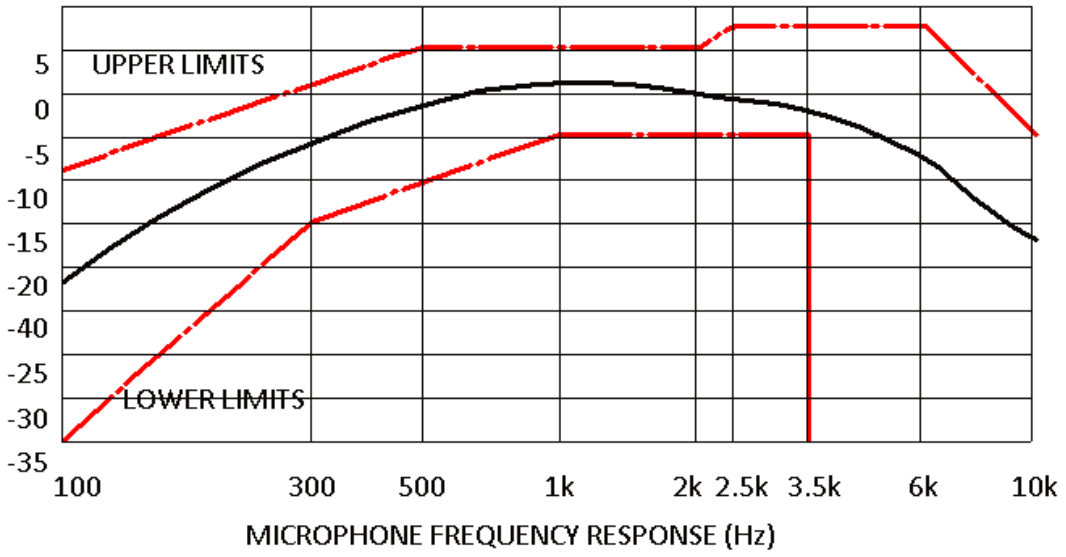
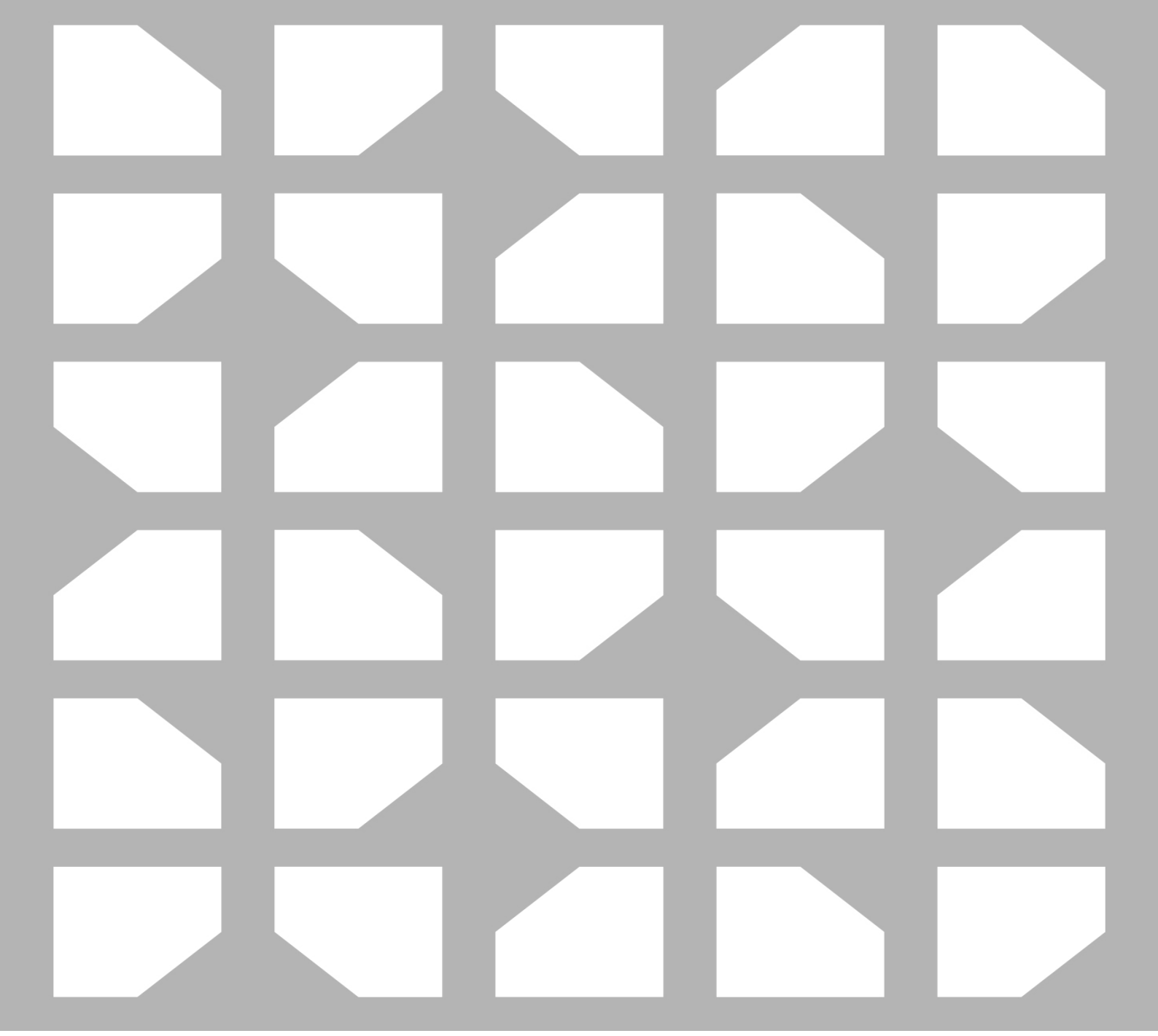


Figure 5.1: 903E Frequency Response



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