



U. S. Department
of Transportation

Federal Aviation
Administration

Small Airplane Directorate
Chicago Aircraft Certification Office
2300 E. Devon Avenue
Des Plaines, IL. 60018

September 21, 2005

Mr. Leonard Spector
Otto Engineering
Otto Controls Division
2 East Main Street
Carpentersville, IL 60110

Dear Mr. Spector:

This is in response to Otto Engineering letter, dated September 13, 2005, requesting Technical Standard Order (TSO) authorization for Microphone, Part Numbers VM-888DTMF() and VM-889DTMF(). The Statement of Conformance to TSO-C58a and data submitted are accepted. Effective this date, you are authorized to identify the following Microphones with the marking requirements defined in 14 Code of Federal Regulations (CFR) Section 21.607(d) and in TSO-C58a:

| <u>Part Number</u> | <u>Description</u> |
|--------------------|--|
| VM-888DTMF() | VM, DTMF Aviation Microphone with PJ-058 Connector |
| VM-889DTMF() | VM, DTMF Aviation Microphone with A4M Type Connector |

Your Quality Control System as defined in Otto Controls Document Number 1QA000001, Rev. AD, dated September 19, 2005, is considered satisfactory for production of this equipment at your Carpentersville, Illinois, manufacturing facility.

The following statement must be furnished with each manufactured unit:

“The conditions and tests required for TSO approval are minimum performance standards. It is the responsibility of those installing this article either on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the TSO standards. TSO articles must have separate approval for installation in an aircraft. The article may be installed only if performed under 14 CFR part 43 or the applicable airworthiness requirements.”

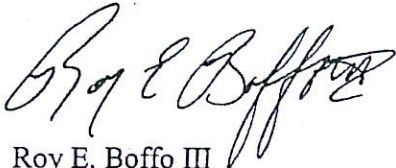
We acknowledge part numbers VM-888DTMF and VM-889DTMF, as the first in a series as defined by your email message, dated September 16, 2005. A letter of TSO design approval issued under 14 CFR § 21.617 is not transferable and is effective until surrendered, withdrawn or otherwise terminated by the FAA (14 CFR § 21.621).

Any design change to this TSO article must be forwarded to this office as outlined in 14 CFR § 21.611 with minor change submittal intervals not to exceed six months. Also, as recipient of this authorization, you are required to report any failure, malfunction, or defect relating to this authorization in accordance with the provisions of 14 CFR § 21.3.

This authorization is not transferable to another person or location and is effective until surrendered, withdrawn, or otherwise terminated by the Administrator. Please note that technical data retained by the FAA may be subject to Freedom of Information Act (FOIA) request. As such, this office will notify you of all such request pertaining to your data and afford you the opportunity to defend the release of the data.

If there are any questions, please feel free to have your staff contact Roy Boffo at (847) 294-7564.

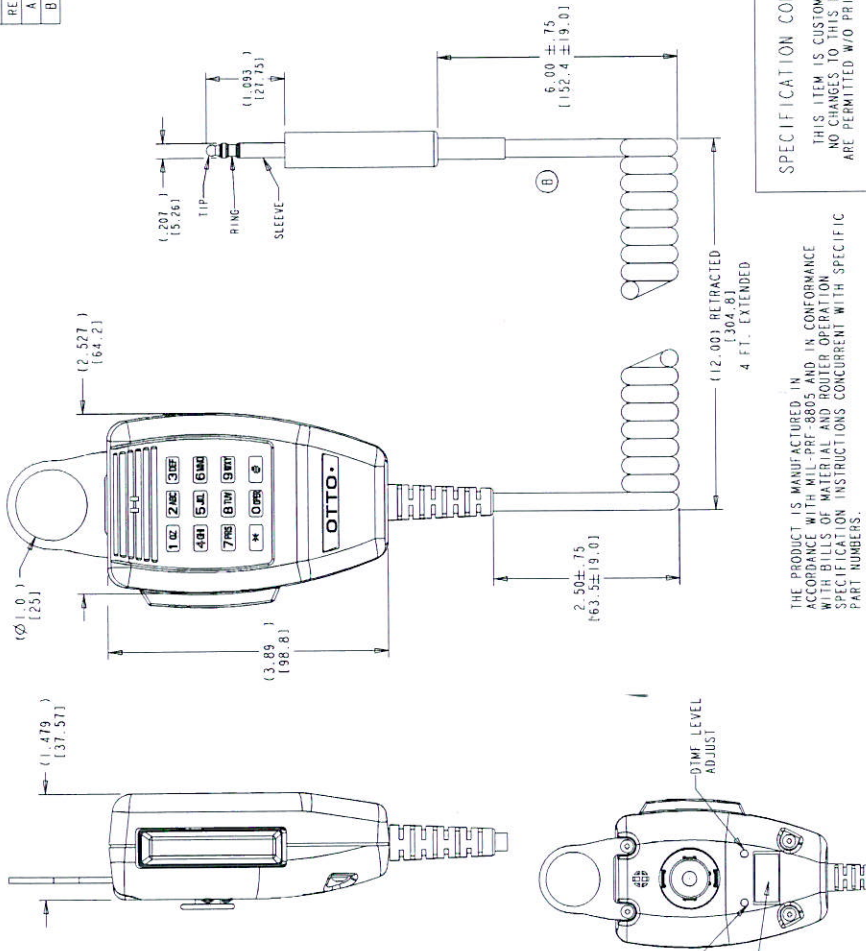
Sincerely,



Roy E. Boffo III
Sr. Systems Engineer
Systems & Flight Test Branch

VM-888DTMF

| REV | QCN # | DATE | APR |
|-----|--------|-----------|-----|
| A | 028662 | 14 SEP 05 | SMP |
| B | 030071 | 14 DEC 05 | SMP |



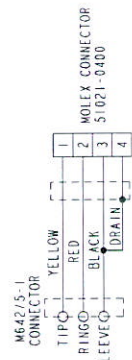
SPECIFICATION CONTROLLED DRAWING
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THE PRODUCT IS MANUFACTURED IN
 ACCORDANCE WITH MIL-PRF-8805 AND IN CONFORMANCE
 WITH BILLS OF MATERIAL AND ROUTER OPERATION
 SPECIFICATION INSTRUCTIONS CONCURRENT WITH SPECIFIC
 PART NUMBERS.

| UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES: .03 XXX ±.010 ANGLES: ±2° DO NOT SCALE | | DESCRIPTION | |
|---|--------|---|-------------|
| OTTO ENGINEERING, INC. DIVISION OF OTTO ENGINEERING, INC. CARPENTERSVILLE, ILLINOIS USA THIS DOCUMENT IS THE CONFIDENTIAL PROPERTY OF OTTO ENGINEERING, INC. IT IS NOT TO BE USED IN ANY WAY WITHOUT THE WRITTEN APPROVAL OF OTTO ENGINEERING, INC. | | VM, DTMF AVIATION MICROPHONE WITH M642/5-1 CONNECTOR | |
| DRWN. JKM | SIZE B | FSCM NO. | DRAWING NO. |
| CHED. JKM | B | 21649 | VM-888DTMF |
| APPD. TDS | | | |
| WT. | | | |

| | |
|---------------|-----------|
| MANUFACTURING | SPC |
| BACK VIEW | SCALE 1:2 |

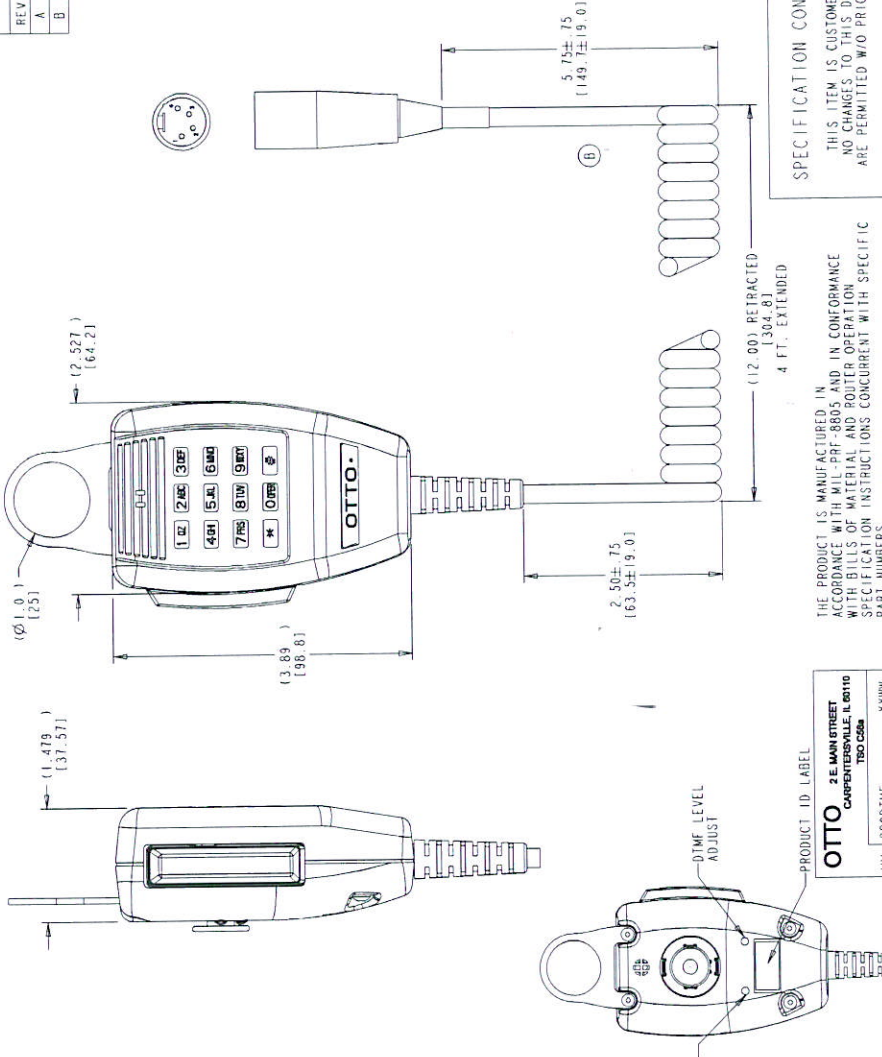
OTTO
 2 E MAIN STREET
 CARPENTERSVILLE, IL 61010
 T80 C888 YYYW
 VM-888DTMF
 MADE IN USA



- NOTES: (B)
- PACKAGING AND MARKING: EACH MICROPHONE INDIVIDUALLY BAGGED IN A CLEAR PLASTIC BAG INSIDE A BOX WITH A LABEL ON THE BOX.
 - OPERATING TEMPERATURE: -40 TO 60°C
 STORAGE TEMPERATURE: -54 TO +85°C
 - MICROPHONE SENSITIVITY (ADJUSTABLE):
 FACTORY PRESET: -110dBV (28mv) @ 1KHz
 TEST CONDITIONS PER RTDA DO-214
 BVDC, 470 Ω LOAD, 114dB SPL
 - DC SUPPLY CURRENT:
 8mA NOMINAL
 - DTMF OUTPUT LEVEL (ADJUSTABLE):
 FACTORY PRESET: -128dBV (250mv)
 - LED BACKLIGHTED KEYPAD
 COLOR: RED
 - PIT SWITCH:
 RATING: 1A RESISTIVE @ 28VDC
 LIFE: 100,000 CYCLES
 - NET WEIGHT: 0.75 LBS MAX
 - CONNECTOR: M642/5-1 (3 CONDUCTOR)
 - ENVIRONMENTAL:
 MEETS REQUIREMENTS OF RTCA-DO214
 (CONTACT MANUFACTURER FOR TEST METHODS)
 - THE MODEL VM-888DTMF IS FAA CERTIFIED FOR AIRCRAFT
 USE UNDER FAA TSO-C58A REQUIREMENTS.

VM-889DTMF

| REV | OCN # | DATE | APR |
|-----|--------|-----------|-----|
| A | 078862 | 14 SEP 05 | SMP |
| B | 030071 | 14 DEC 05 | SMP |



NOTES: (B)

- PACKAGING AND MARKING: EACH MICROPHONE INDIVIDUALLY BAGGED IN A CLEAR PLASTIC BAG INSIDE A BOX WITH A LABEL ON THE BOX.
- OPERATING TEMPERATURE: -40 TO +60°C STORAGE TEMPERATURE: -54 TO +85°C
- MICROPHONE SENSITIVITY (ADJUSTABLE): FACTORY PRESET, -114dB (281mV) @ 1kHz TEST CONDITIONS PER RTCA DO-214 8VDC, 470 Ω LOAD, 114dB SPL
- DC SUPPLY CURRENT: 8mA NOMINAL
- DTMF OUTPUT LEVEL (ADJUSTABLE): FACTORY PRESET, -124dB (250mV) COLOR: RED
- LED BACKLIGHTED KEYPAD
- PTT SWITCH: RATING: 1A RESISTIVE @ 28VDC LIFE: 100,000 CYCLES
- NET WEIGHT: 0.75 LBS MAX
- CONNECTOR: A4M TYPE (4 CONDUCTOR)
- ENVIRONMENTAL: MEETS REQUIREMENTS OF RTCA-DO214. (CONTACT MANUFACTURER FOR TEST METHODS)
- THE MODEL VM-889DTMF IS FAA CERTIFIED FOR AIRCRAFT USE UNDER FAA TSO-C58A REQUIREMENTS.

THE PRODUCT IS MANUFACTURED IN ACCORDANCE WITH FAA TSO-C58A AND IN CONFORMANCE WITH THE MATERIAL AND PART NUMBER SPECIFICATION INSTRUCTIONS CONCURRENT WITH SPECIFIC PART NUMBERS.

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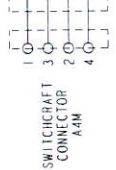
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| | |
|---|--------|
| 1 | YELLOW |
| 2 | RED |
| 3 | BLACK |
| 4 | DRAIN |



SWITCHCRAFT CONNECTOR A4M

BACK VIEW SCALE 1:2

SPECIFICATION CONTROLLED DRAWING
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| DESCRIPTION | |
|--|---------------|
| VM, DTMF AVIATION MICROPHONE WITH A4M TYPE CONNECTOR | |
| DRWN. JKM | SIZE FSCM NO. |
| CHKD. JKM | B 21649 |
| APFD. JDS | VM-889DTMF |
| WT. | Scale NTS |
| Sheet 1 of 2 | |

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| DO NOT SCALE | |

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