INSTRUCTION MANUAL

FOR

MX385 NAV/COMM TRANSCEIVER

		11/16/98	1/15/02	07/29/08		
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TKM, INC
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PART # IMN385, REV. 5
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I. INTRODUCTION

This manual contains information on the Michel MX385, manufactured by TKM, Inc. The information includes operational, mechanical, electrical descriptions, alignment and test considerations.

A. Purpose of Equipment

The equipment is a 760 channel communication (COMM) transceiver for use in aviation services and a 200 channel navigation (NAV) receiver to provide VOR/LOC signals to navigational converters. The NAV receiver also provides frequency selection for remote mounted Distance Measuring Equipment and Glideslope Receivers.

The MX385 is designed to be used as a direct replacement for the Cessna/ARC RT385A. The unit is dimensionally identical to the ARC units and can therefore use existing aircraft installations. Except for improved performance characteristics, the unit is electrically interchangeable with the ARC unit and will provide the proper audio, navigation signal and channeling signals for existing installations. New installations can be made using RT385A installation kits.

B. Equipment Description

The unit features digital (LED) displays for active (yellow) frequency channel and standby (red) frequency channel for both COMM and NAV.

For channel selection a MHz knob and a KHz knob are provided. For 25 KHz increments in COMM, a 25 KHz button is provided. To activate COMM or NAV frequency selection, an N/C button is provided; a ‘tic’ appears in the selected standby channel display.

Channel selection operates on the standby channel only. When the desired channel is indicated in the standby display it may be placed into the active position by depressing the ‘Flip-Flop’ button located to the left of the displays; the active channel is then placed into the standby position.

The NAV receiver features a VC/ID button to permit selection of voice or Ident reception. In the Ident condition a ‘tic’ is displayed on the active NAV channel display.

The COMM transceiver features a test button, which overrides the squelch to verify proper receiver operation and to allow reception of weak signals. Also provided on the active COMM display, is a ‘tic’ to indicate transmitter power output.

The master power switch is integrated with the COMM volume control.

A VOR test button (VT) is provided for testing navigational systems; depressing the button provides a ground on the appropriate rear panel contact.

The adjustment hole (D) by the MHz switch permits operator adjustment of the display dimmer range for optimum nighttime viewing. The adjustment hole (S) by the KHz switch permits operator adjustment of the squelch threshold.

The MX385 is comprised of eight replaceable subassemblies; five of the subassemblies are contained in shielded modules to reduce radio frequency interference. The five modules are the NAV receiver, the NAV synthesizer, the COMM receiver, the COMM synthesizer, and the Transmitter.

The remaining three subassemblies are the Rear Panel Assembly, the Front Panel Assembly and the Computer Board. The Rear Panel Assembly contains the Audio Amplifier, the power converter, the Power Line Filter, and the T/R switching. The Front Panel Assembly contains the digital displays and associated driver circuits, the functional select switches and the volume controls. The Computer Board contains the microprocessor, the memory, the Program storage, and the Channeling circuitry.

Also contained on the computer board are the audio processing circuits.

The subassemblies are interconnected with plugs to facilitate module replacement. For equipment repair it is recommended that complete subassemblies be replaced.

As an aid to locating the defective subassembly a set of analog test points are provided. The analog test points include the receiver tuning voltages, the synthesizer control voltages and the AGC lines.

C. SPECIFICATIONS

MX385 TRANSCEIVER

Mounting:	Panel mounted, no shock mounting required.
Size:	6.312 x 2.50 x 11.1 inches w/ connectors but excluding knobs.
Weight:	6.0 lbs excluding external connector and harness.
Power Requirements:	27.5 Vdc at 0.7 Amp
Max COMM Total w/ Transmit (Tone)	3.0 Amp

COMM TRANSCEIVER

Crystal Controlled:	760 Channel
Frequency Range:	118.00 to 135.975 MHz
Frequency Stability:	+/- .003%. –20 to 50 C

TRANSMITTER

VHF Power Output:	8 watts minimum, 50 ohm
Modulation:	85% capability with 90% limiting provided.
Microphone:	Dynamic mike containing transistorized pre-amp or carbon (must provide at least 120 mV rms into 500 ohm load)
Sidetone:	Adjustable up to 40 mw into 500 ohm headphones.
Duty Cycle:	1 minute on, 4 minutes off (20%)

RECEIVER

Sensitivity:	1.5 uv (soft) will provide a 6 db minimum signal plus noise ratio (KHz, 30% mod).
Selectivity:	Typical 6 db at +/- 7.5 KHz, 65 db at +/- 17.5 KHz, 90 db at +/- 25 KHz.
Spurious Responses:	Down at least 70 db
Ident Filter:	15 db minimum
AGC Characteristics:	From 2 to 100.000 uV audio output will not vary more than 1 db.
NAV Receiver Accuracy:	Two sigma limit, +/- 1 degree
NAV Output:	With LOC adjusted for 0.35 Vrms VOR = 0.5 Vrms (typical) into 20K ohms or greater load impedance.
DME Channeling:	2 x 5
G/S Channeling:	2 x 5

AUDIO

Auxiliary Audio Inputs:	Eight 500 ohms with 30 db isolation between any two.
Frequency Response:	Within 6 db from 350 Hz to 2500 Hz
Headphone Output:	40 mw into 500 ohm
Speaker Output:	4.5 Vrms into auxiliary input produces 5 watts audio output.

II. INSTALLATION

The MX385 is designed to be an exact replacement for the ARC RT385A and similar units. As a replacement unit, the MX385 is inserted directly into the mounting tray for the RT385A and tightened down with a long (11" shaft by .150" diameter) standard screwdriver.

For new installations, 'Installation Instructions' for the RT385A should be used.

To remove the MX385 from the mounting tray it is important to note that the Channel Selector knobs should not be used. The first step in removal is to ensure that the mounting screw has been fully disengaged by rotating the mounting screw counterclockwise with the tool described above. The unit should then easily slide forward by grasping the sides of the front panel.

NOTICE TO INSTALLER

The TKM MX385 NAV/COMM is authorized by the FAA to TSO C34e, C36e, C37d, C38d, and C40c. The product is an incomplete system. In order to achieve a complete TSO quality system, the MX385 **must** be installed to configure in conjunction a TSO C37/C38 authorized antenna and a TSO C34 authorized navigation receiver. It is the responsibility of the installer to ensure proper installation.

CONTINUED AIRWORTHINESS (HBA 98-18)

Permission is hereby given to installers approved by the recognized aviation authority to reference relevant excerpts from the installation instructions provided by TKM, Inc. in order to fulfill documentation requirements for Instructions for Continued airworthiness. Adequacy of the documents should not be assumed by this permission. Responsibility for ICA documentation rests solely with the applicant. The MX385 product is 'Repair on Condition Only'.

III. HOW TO OPERATE

Operating controls for the MX385 are located on the unit front panel or are remote inputs through the rear panel.

The unit front panel is shown in fig. 1. The upper left-hand (yellow) COMM readout indicates the active COMM frequency and the right-hand (red) COMM readout indicates standby COMM frequency. The lower left-hand (yellow) readout indicates the active NAV frequency and the right-hand (red) NAV readout indicates the standby NAV frequency. A 'tic' readout is provided on the upper left-hand corner of the first digit of each of the four frequency readouts.

The active COMM 'tic' indicates the presence of transmitter power.

The standby COMM 'tic' indicates that the Frequency Selection knobs will control COMM standby frequency.

The active NAV 'tic' indicates that the NAV receiver is in the Ident mode.

The standby NAV 'tic' indicates that the Frequency Selector knobs will control NAV standby frequency.

Power Application. The COMM volume control contains the master power switch and activates both the NAV and COMM functions.

Frequency Selection. Then N/C button is used to activate either the COMM or the NAV frequency selection as indicated by the appropriate "'tic'" display. The MHz and KHz controls can then be used to select a desired standby channel. In COMM the '25' button is used to advance the frequency by 25 KHz.

After the desired standby frequency is selected it may be transferred to the active position by pressing the Flip-flop button to the left of the ACTIVE display. The active and standby channels will be interchanged each time the button is pressed.

Ident/Voice Selection. The ID\VC button can be used to select a tone filter in order to receive voice signals on the NAV receiver. The switch is also used for frequency storage as described below.

Test. The TEST button is a dual function switch. In normal operation, it is used to override the squelch to verify receiver operation and to receive weak signals. The switch is also used for frequency storage as described below.

Frequency Storage. The MX385 NAV COMM allows up to 50 NAV and 50 COMM preset frequencies to be stored in the memory for recall. The use of memory presets is described in the following sections.

Clearing all frequency presets. To erase all frequency presets with one operation, simply turn on the power to the radio while holding the TEST button depressed.

Examining/Changing/Inserting/Deleting frequency presets. These operations on individual frequency presets are accomplished in EDIT mode. To enter EDIT mode, turn on the power to the radio while holding the VT button depressed. When the radio is in EDIT mode, the ACTIVE displays show the reference number of the preset and the standby displays show the actual preset frequency. After the 'clearing all frequency presets' operation as described above, the only presets of 121.5 and the default NAV preset of 112.0 are displayed.

EDIT mode operations are performed on either the COMM or NAV preset list, according to where the tuning 'tic' indicator is displayed. The tuning 'tic' appears immediately to the left of the COMM or NAV standby displays. Pressing the N/C button toggles between NAV and COMM preset editing.

Examining presets (EDIT MODE). Pressing the COMM F-F button will step to the next frequency in the preset list. Pressing the TEST button will step to the previous frequency in the preset list. Pressing COMM F-F when the last preset is displayed will cause the first preset to display. Similarly, pressing TEST when the first preset is displayed will cause the last preset to display. Warning: When there is only one preset in the list, the radio will not appear to "do anything" when the COMM F-F or TEST is pressed. This is because the current, previous, and next presets are all the same preset.

Changing a preset (EDIT MODE). Press COMM F-F or TEST until the preset to be changed is displayed. Dial in the new preset frequency using the tuning controls and press either COMM F-F or TEST.

Inserting (Adding) a preset (EDIT MODE). Press COMM F-F or TEST until the desired insert point is displayed (the new preset will be inserted AFTER this insert point). Dial in the desired frequency using the tuning controls and press NAV F-F. Remember that a preset list may contain a maximum of 50 entries. Inserting presets that would exceed this limit are ignored.

Deleting a preset (EDIT MODE). Press COMM F-F or TEST until the preset to be deleted is displayed. Then press the VC-ID switch to delete. If the deleted preset was not at the end of the list, all the presets that followed it are renumbered. Each preset list (NAV and COMM) must always contain at least one entry. If there is only one entry remaining in a preset list, it may not be deleted (It can, however, be changed to another frequency).

Frequency preset normal operation. At any time the radio is in normal operation (NOT EDIT MODE), COMM preset frequencies may be called into the standby frequency display by pressing COMM F-F while the TEST button is depressed. During the time that both buttons are held simultaneously depressed, the reference number for the preset appears in the ACTIVE window. Each time this operation is repeated, it will copy the next preset to the COMM standby frequency.

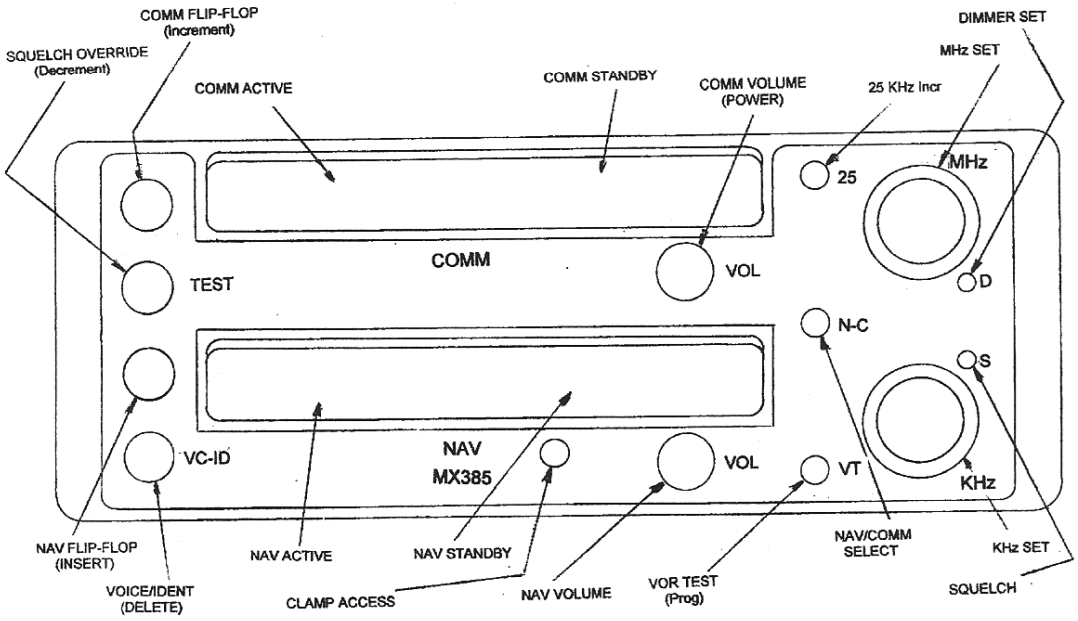
NAV preset operation is similar, with the exception that presets are retrieved by pressing NAV F-F while the VC-ID button is depressed.

Transmit. The transmit mode on the transceiver is selected by grounding the MIC Key line on the unit's rear panel

Channel Reset. If it is desired to clear memory, a system reset may be accomplished by turning off the main power switch, pressing and holding the TEST button and turning on the main power switch, after reset the COMM Active frequency will be set to 121.500 MHz.

Display Dimmer Adjustment. The dark end of the automatic display dimmer range is adjustable through the front panel hole by the MHz switch marked 'D'.

Squelch Adjustment. The squelch threshold can be adjusted through the front panel 'S' hole by turning the screw clockwise for less sensitivity.



IV. Theory of Operation

For ease of service the MX385 has been designed into 8 replaceable modules. The modules are:

A. Front Panel Assembly
B. Rear Panel Assembly
C. Computer Board
D. NAV Receiver
E. COMM Receiver
F. NAV Synthesizer
G. COMM Synthesizer
H. Transmitter

A block diagram is shown in drawing AT1900, Top Assembly

A. Front Panel Assembly (Dwg. SS1930)

The front panel includes the four frequency displays, a photocell for automatic brightness control, 7 push buttons, two volume controls (the COMM control incorporates the power switch) and two frequency selection switches. The displays and controls are connected to the display driver board through pin and socket connectors and to the computer board with a ribbon cable

.

B. Rear Panel Assembly (Dwgs. SS1945, SS1940)

The rear panel includes the power converter, the audio circuits and T/R switching circuits.

The audio is amplified in IIA and then selected with Q13. The audio is inverted in IIB and further amplified in Q3 and Q4. IIC is used to monitor the DC current flowing in Q3 and Q4 and adjust the bias so that the current is 0.20 Adc.

The modulation amplifier consists of I4, Q11 and Q12. Diodes D19 and D20 provide peak to peak limiting of the microphone input signal to prevent modulation splatter. C2, C25 and C28 provide high frequency roll-off to prevent adjacent channel interference. Q2, Q8, Q9, Q10 and Q13 are all used in the T/R switching.

Q15 drives the PIN diode in the T/R switch so that in the transmit mode the drive impedance is very high and in the receive mode 5 mA of turn-on current is provided.

Q14 is an FET Power Switch controlled by the front panel power switch. When Q1 is switched on Q1 is also switched on to provide external NAV power.

I3 is a switching regulator that drives Q7 and converts the input line voltage (20 –32 vdc) to a regulated 5.2 vdc. Q5 and Q6 form a free-running inverter and supply approximately +20 vdc. The +20 vdc supply is regulated by I2 to provide a stable +15 vdc supply.

The T/R Switch (Dwg. SS1921) contains switching diode D1 and a low pass filter L1, C2, L2, C3. In receive mode, the diode is forward biased to couple the receiver to the

antenna. In transmit, the T/R line is open circuited to permit the transmitter signal to generate a reverse bias on the diode to the peak value of the transmit signal.

C. Computer Board (Dwg. SS1967)

The computer board contains 3 basic sections:

1. Computer
2. Analog Processing
3. Channeling Circuits

1. Computer

The computer is comprised of the processor (I6), the Program Prom (I5), the Memory Ram (I4), the address decoder (I7, the oscillator (I3), and the read-write decoder (I8). The Ram contains a lithium battery that will support the memory indefinitely.

2. Analog Processing

The Analog Processing functions include noise detection, phone amplification, tracking, squelch, Ident code filtering and transmitter monitoring.

I12B is an adjustable gain amplifier used to track receiver tuning to synthesizer frequency. I12A and I12D is a 2-pole bandpass filter to separate noise from audio signals. The noise is detected with D4. The noise level is used to inhibit the carrier squelch threshold as determined by I13B.

I13A detects the voltage on the T/R switch. When a large negative voltage is detected, an active signal is applied to I1 to turn on the transmit 'tic'.

I11 is the NAV phone amplifier. I18 provides volume compression for the COMM audio and I19 is the COMM phone amplifier.

3. Channeling Circuits

The channeling circuits are comprised of digital latches and output drivers. I16 provides MHz output signals, the ILS Energize Signal and the VOR Test signal. I15 provides KHz output signals. NPN transistors are used as output drivers. For Glideslope channeling the drivers are connected directly to the output pins, for DME channeling isolation diodes are provided in each line.

D and E. NAV (Dwg. SS1867) and COMM (SS1866) Receivers

The NAV and COMM receivers are functionally the same. The only difference between the two receivers is the RF tuning, the AGC time constant and a tuning voltage sensor in the COMM receiver which reduces the receiver gain during Transmitter actuation.

COMM Receiver tuning:

1. Connect a Synthesizer and Receiver combination to a NAV/COMM assembly.

2. Using a Spectrum Analyzer with a tracking generator align RF filters to have a symmetrical response centered at 136.9 MHz when NAV/COMM unit is tuned to 136.9 MHz. Peak gain shall be 15 +/- 1.5 DB when output is measured at mixer input.
3. Apply –99 dbm at 136.9 MHz with 30% modulation. Peak the IF coil and adjust the AGC pot for 6.0 volts on the AGC line. Adjust the Audio gain pot for 4.0 vp-p on Audio Output.

NAV Receiver tuning:
1. Use the COMM Receiver procedure except use 117.9 MHz for the test channel.

F and G. NAV (Dwg. SS2714) and COMM (SS2716) Synthesizers
The NAV and COMM synthesizers are identical except for tuning and an additional output is provided in the COMM synthesizer to drive the transmitter.

COMM Synthesizer tuning
1. Connect COMM Synthesizer to an operating NAV/COMM assembly and monitor receiver and transmitter outputs with RF Voltmeter. Monitor Tuning voltage with a DC Voltmeter and Transmitter output with a Sideband Monitoring system capable of measuring 25 KHz sideband signals.
2. Set NAV/COMM assembly to 136.95 MHz in Receive mode. Adjust tuning voltage with R8 to 10.0 vdc.
3. Verify a tuning voltage of about 6 vdc at 118.7 MHz.
4. Receiver RF output shall be 9.0 +/- 1 db.
5. Select transmit mode and Transmit RF shall be 9.0 +/- 2 db.
6. Adjust R7 to null 25 KHz sidebands on the Transmitter output.

NAV Synthesizer tuning
1. Connect NAV Synthesizer to NAV/COMM Assembly and monitor tuning voltage and RF output.
2. Select channel frequency of 117.95 MHz and adjust turn spacing on synthesizer for 7.0 vdc on tuning line.
3. RF output shall be 9.0 +/- 1 db.

H. Transmitter (Dwg. SS1881)
The transmitter consists of 4 RF power amplifiers. The first amplifier Q4 is gated on by power received from the frequency synthesizer. Q1, Q2, and Q3 form a broad-band collector modulated transmitter chain.

V. Alignment and Test Specifications

Adjustments are made on the complete unit during final test basis and upon installation basis. Installation adjustments are accessible without removing the cover and include a side tone level adjustment, a microphone gain adjustment, and an audio gain adjustment.

Other adjustments which are not normally adjusted on installation but may require adjustment different from factory set levels include the squelch level, the dimmer and the NAV demod level.

A spectrum analyzer is required only for frequency alignment of the Synthesizer module. If Synthesizer repair is made on a replacement basis, it is not necessary to have a spectrum analyzer for field service.

Module Alignment

A. Front Panel Assembly (Dwg. SS1930)

The front panel requires no alignment

B. Rear Panel Assembly (Dwgs. SS1945, SS1940)

The rear panel contains three potentiometers which are adjusted as follows:

1. Audio Gain: Apply 3 v rms at 1000 Hz to an aux. audio input and adjust R5 (Audio Gain) for 5 Watts into a 4 ohm load on the speaker output.

1. Microphone Gain: (R46): Apply .30 Vrms at 1000 Hz to pin 13 of P1. Adjust R46 so

that 12 v p-p is output to the transmitter modulation line.

2. Sidetone Level (R1). Apply .30 vrms at 1000 Hz to pin 13 of P1 and adjust R1 so that 1.0 vrms appears across a 500 ohm load connected to pin 18 of P1.

C. Computer Board (Dwg. SS1967)

The computer board contains mostly system alignment adjustments which can be set only with a complete unit. The clock frequency, however, can be set on the board level.

1. Clock Frequency (C5):Adjust C5 so that frequency measured on pin 8 of I2 is 1,000,000 +/- 10 Hz at 70 degrees F room temperature.

D. NAV Receiver (Dwg. SS1867)

1. Apply +15 vdc and –30 vdc to appropriate input leads, local oscillator signal at 3.0 + 2 dbm and a 0 to 14 vdc variable voltage source to Vt.

2. IF Alignment (L2, L3, L4). Apply +7.0 vdc to Vt, 117.90 MHz at –90 dbm to RF in and 96.50 MHz at +3 dbm to L.O. Adjust L2, L3 and L4 for minimum voltage reading on Vagc. Apply amplitude modulation of 30% and monitor DMD output. As the modulation frequency is adjusted from 1.0 to 12.0 Khz the DMD level shall be constant +/- 1 db. Adjust L2 and L3 as necessary to keep DMD level constant.

3. RF Alignment (T1, T2, L1, T3). With conditions the same as in IF Alignment, but modulation set to 0, adjust turn spacing on T1, T2, L1, and T3 so that Vagc reading is a minimum.

4. Change RF to 108.00 MHz and L.O. to 86.60 MHz. Adjust Vt for minimum Vagc.

5. DMD Level (R25). With conditions the same as in IF Alignment apply a standard centered LOC modulation and adjust R25 for .35 Vrms on DMD output.

E. COMM Receiver (Dwg. SS1866)

1. Apply +15 vdc and –30 vdc to appropriate input leads, set local oscillator signal to 3 +/-2 dbm and a 1 to 15 vdc variable voltage source to Vt.

2. IF Alignment (L2, L3, L4). Apply +10 vdc to Vt, 135.975 MHz at –90 dbm to RF and 157.175 MHz to L.O. Adjust L2, L3 and L4 for minimum voltage reading on Vagc. Apply amplitude modulation of 30% and frequency is adjusted from 1.0 to 12.0 KHz the DMD level shall be constant +/- 1 db. Adjust L2 and L3 as necessary to keep DMD level constant.

3. RF Alignment (T1, T2, L1, T3). With conditions the same as in IF Alignment but modulation set to 0, adjust turn spacing on T1, T2, L1 and T3 so that Vagc reading is a minimum.

F. NAV Synthesizer (Dwg. SS2714)

1. Apply +15 vdc and 1 MHz to appropriate module input. Set R3 to midrange. Digitally input, using Computer board or equivalent, the proper coding for 96.50 MHz. Verify correct output frequency. Adjust turn spacing on T1 so that Vt = 7.00 vdc. Digitally input coding for 86.60 MHz. Vt shall be 2.50 +/- .30 vdc.

2. Digitally input coding for 91.60 MHz and monitor output on a spectrum analyzer. Adjust R3 so that 50 KHz sidebands are nulled.

G. COMM Synthesizer (Dwg. SS2716)

1. Apply +15 vdc and 1 MHz to appropriate module input. Set R3 to midrange. Digitally input, using Computer board or equivalent, the proper coding for 157.30 MHz. Verify correct output frequency. Adjust turn spacing on T1 so that Vt = 10.00 vdc. Digitally input coding for 139.40 MHz. Vt shall be 5.00 +/- .50 vdc.

2. Digitally input coding for 149.00 MHz and monitor output on a spectrum analyzer. Adjust R3 so that 25 KHz sidebands are nulled.

H. Transmitter (Dwg. SS1881)

The Transmitter does not normally require alignment but tests should be performed to verify proper operation.

1. Connect the transmitter to a properly aligned COMM Synthesizer and connect a 50 ohm load to the Transmitter output. Monitor the output power level to verify that it is at least 9.0 watts without modulation across the frequency range of 118 to 136 MHz. Apply at least 80% modulation at 1.0 KHz and monitor the output with a spectrum analyzer to verify that no parasitic oscillation is present. If problems are encountered, consult the factory.

System Alignment

When all modules are aligned and assembled into a system, it is necessary to make receiver tracking, VOR/LOC converter and squelch adjustments.

COMM receiver tracking is accomplished by selecting 118.00 MHz as the active channel, applying a 10 uV RF input signal at 118.00 MHz, and adjusting R49 on the Computer board for minimum reading on COMM AGC line.

NAV receiver tracking is accomplished by selecting 108.00 MHz and adjusting R33 on the Computer board for a minimum reading on NAV AGC.

Carrier squelch is adjusted by applying an unmodulated carrier at 2.0 uV to the COMM receiver and adjusting R29 on Computer board, to just break squelch.

Noise inhibit is adjusted by applying a carrier with 30% modulation at 6.666 KHz to the COMM receiver and adjusting R31 on the Computer board so that a 10 uV signal will just break squelch.

Demod output level is set by R71 (Demod Level).

The 1020 Hz Filter is adjusted by monitoring the audio output and applying a 1020 Hz modulation to the NAV Receiver input. With 'Voice' selected, adjust R12 (1020 Hz) for minimum tone output.

VI. Mechanical Disassembly

The first step in mechanical disassembly is to remove the top cover by removing the nine screws around the sides and rear of the cover. The cover may then be pried up at either rear corner lifted slightly and slid away from the front panel.

The computer board is removed by first disengaging the connectors and then removing the six spacers holding the computer board. The board may then be lifted from the unit.

The front panel may be disengaged by removing four screws from the sides and bottom, and disconnecting the connectors.

The rear panel is removed by removing two screws on the bottom of the unit and one screw from each side of the unit, and disconnecting the connectors. The transmitter power lead can be removed by loosening the attaching screw.

The RF modules may be removed by removing the mounting screws from the bottom of the unit and disconnecting the connectors.

SECTION VII

TEST PROCEDURES

TKM, INC.
14811 North 73RD Street
Scottsdale, AZ 85260

TA 0001-1	APPROVED:	DATE: April 10, 2004

Final Test Procedure for the following TKM Radios:
MX11, MX12, MX170B, MX170C, MX300, MX385

The following procedure shall be used to verify compliance of TKM radios to TSO approval requirements, and may be run concurrently with TA 0002.

1. Prior to any test verify that the radio is completely assembled except for the cover and nameplates.

2. Connect radio with appropriate cable to the 1505 interface assembly and 1500 Signal Generator. Connect the MC60 if the radio includes a Nav Rcv. Apply the proper A+ (13.7 vdc for all units except MX385. MX385 requires 27.5 vdc).

3. Set radio and generator for 118.0 MHz in COMM with –99 dbm rf level and 30% AM at 1 KHz. Adjust COMM tracking pot for minimum COMM agc voltage. Adjust the squelch pot so that audio just comes on. Set radio and generator for 136.9 MHz and apply –85 dbm rf level and 30% AM at 6666 Hz. Adjust the NOISE SQUELCH pot so that the audio just comes on. Repeat this complete step until both squelch levels are met.

4. Activate transmitter and apply 0.12 vrms @ 1 KHz to MIC input. Adjust microphone gain for 40 +/- 3% modulation. Verify that the frequency error is less than 3.5 KHz and that the power level is greater than 8 watts and supply current is less than 6 amps. Deactivate transmitter.

5. Apply a standard VOR signal at 108 MHz and –67 dbm and select the same channel on the radio. Adjust the IDENT filter pot so that the 1020 Hz tone is minimized when the Ident tone is deactivated. Set the DEMOD level pot to obtain the VOR signal levels as indicated on Final Test Report (FTR – 1).

6. Verify proper VOR operation on the MC60. Set the RF level to – 107 dbm and adjust the NAV tracking pot for a minimum on the NAV agc line. Verify proper VOR operation.

7. Apply a centered LOC signal at – 67 dbm and verify a centered LOC display. Apply a .094 dbm LOC signal and verify a 60% deviation (6 dots) on the MC60. Small adjustments of DEMOD level may be made to obtain 6 dots.

8. Initiate Final Test Route card for the production lot and place the entire production lot in the –20 C freezer for the required cold soak period.

9. After the cold soak period remove the radio from the freezer and immediately measure receiver sensitivity (NAV & COMM) transmitter power and frequency. If receiver sensitivity is greater than 3 db out of spec or transmitter power is less than 8 watts or if the transmitter frequency error is greater than 3.5 Khz a NON-CONFORMANCE tag shall be applied to the unit.

10. The production lot shall then be put into burn-in. The units shall be stacked and power applied for the required period. After the required period the measurements described in step 9 shall be repeated.

Corrective actions shall be made as required.

11. The units shall be operated at room temperature for at least 30 minutes and measurements as indicated in the Final Test Report (FTR – 1) shall be made. Discrepancies shall be noted on a non-conformance tag and corrective action shall be taken.

12. After a unit passes all tests a serial number shall be assigned and entered on the Final Test Route card. Nametags shall be applied and the cover shall be placed on the unit.

REVISION RECORD FOR AT0001

Rev#	Date	Description	By
NONE	3-9-2002	ORIGINAL ISSUE	WSL
-1	4-10-2004	ADDED MX170C	WSL

TKM, INC.
14811 North 73RD Street
Scottsdale, AZ 85260

TA 0002 -1	APPROVED:	DATE: April 10, 2004

PRETEST AND TEMPRATURE TEST Procedure for the following TKM Radios:
MX11, MX12, MX170B, MX170C, MX300, AND MX385

The following procedures shall be used to verify compliance of TKM radios to TSO approval requirements,

1. Prior to any test verify that the radio is completely assembled except for the cover and nameplates.

2. Connect radio with appropriate cable to the 1505 interface assembly and 1500 Signal Generator. Connect the MC60 if the radio includes a Nav Rec. Apply the proper A+ (13.7 vdc for all units except MX385. MX385 requires 27.5 vdc).

3. Set radio and generator for 118.0 MHz in COMM with –99 dbm rf level and 30% AM a 1 KHz. Adjust COMM tracking pot for minimum COMM agc voltage. Adjust the squelch pot so that audio just comes on. Set radio and generator for 136.9 MHz and apply –90 dbm rf level and 30% AM at 6666 Hz. Adjust the NOISE SQUELCH pot so that the audio just comes on. Repeat this complete step unit both squelch levels are met.

4. Activate transmitter and apply 0.12 vrms @ 1 KHz to MIC input. Adjust microphone gain for 40 +/- 3% modulation. Verify that the frequency error is less than 3.5 KHz and that the power level is greater than 8 watts and supply current is less than 6 amps. Deactivate transmitter.

5. Apply a standard VOR signal at 108 MHz and –67 dbm and select the same channel on the radio. Adjust the IDENT filter pot so that the 1020 Hz tone is minimized when the Ident tone is deactivated. Set the DEMOD level pot to obtain the VOR signal levels as indicated on Final Test Report (FTR-1).

6. Verify proper VOR operation on the MC60. Set the RF level to –107 dbm and adjust the NAV tracking pot for a minimum on the NAV agc line. Verify proper VOR operation.

7. Apply a standard LOC signal at 108.1 MHz and –67 dbm and verify a centered LOC display. Apply a .094 dbm LOC signal and verify a 60% deviation (6dots) on the MC60. Small adjustments of DEMOD level may be made to obtain 6 dots.

8. Initiate Final Test Route card for the production lot and place the entire production lot in the –20 C freezer for the required cold soak period.

9. After the cold soak period remove the radio from the freezer and immediately measure receiver sensitivity (NAV & COMM) transmitter power and frequency. If

receiver sensitivity is greater than 3 db out of spec or transmitter power is less than 8 watts or if the transmitter frequency error is greater than 3.5 KHz a NON-CONFORMANCE tag shall be applied to the unit.

10. The production lot shall then be put into burn-in. Power supplied to the units shall be 12V-14V for MX11, MX12, MX170(B/C), and MX300and 24V-28V for MX385. Units shall be placed in hot test for a minimum of 7 hours at a minimum of 65 degrees C. Upon completion of the test, measurements described in step 9 shall be repeated. Corrective actions shall be made as required.

REVISION RECORD FOR AT0002

Rev#	Date	Description	By
NONE	3-22-2001	ORIGINAL ISSUE	WK
-1	4-10-2004	ADDED MX170C, CHANGED STEP 10	WK

TKM, INC.
14811 North 73RD Street
Scottsdale, AZ 85260

TSA001
Page 1 of 1

TRANSMITTER TEST PROCEDURE

1). Connect unit to + 9dbm R.F. source with a frequency range of 118 to 137 MHz.

2). Apply the appropriate voltage from chart below to the modulation line.

3). Monitor output power with a R.F. power meter.

4). Output power level shall be 8 watts minimum and modulation line current shall be 3.0 amps (max) across the full frequency ranges. Adjust L18 as required to meet the above limits.

Type of Radio	DC Voltage to Apply
MX11	11.75 VDC
MX12	11.75 VDC
MX170B	12.5 VDC
MX300	12.5 VDC
MX385	13.75 VDC

Approved _____ Date 3/20/01

TKM, INC.
14811 North 73RD Street
Scottsdale, AZ 85260

TEST FOR DRIVERS AND DISPLAYS

MX12, MX170(), MX300, MX385
----FOR MX11 USE TSA007----

1) Turn on power and verify all display segments light up.
2) Verify operation of dimmer function.
3) Verify that COMM/NAV flip-flop buttons change displays from standby to active and back again.
4) Verify that VC/ID button functions in the appropriate segment.
5) Verify that 25KHz button cycles frequency through 0-2-5-7 in extreme right COMM standby segment.
6) Verify N/C button flips from NAV to COMM and back.
7) Verify ability of MHz and KHz switches to properly cycle.
8) Verify power switch function by turning power off, and display goes dark.
9) Initial back of PC Board and sign off Router Card.

Approved: [signature]
4/1/99

TKM, INC.
14811 North 73RD Street
Scottsdale, AZ 85260

SYNTHESIZER TEST PROCEDURE

Date: Nov 12,1995

Connect Comm Synthesizer to an operating Nav Comm Assembly and monitor Receiver and transmitter outputs with RF Voltmeter. Monitor Tuning voltage with a DC Voltmeter and Transmitter output with a Sideband Monitoring system capable of measuring 25 KHz sideband signals.

1. Set Nav Comm Assembly to 136.95 MHz in Receive mode. Adjust tuning voltage with R8 to 10.0 vdc.

2. Verify a tuning voltage of about 6 vdc at 118.7 MHz.

3. Receiver RF output shall be 9.0 +/- 1 db.

4. Select transmit mode and Transmit RF output shall be 9.0 +/- 2 db.

5. Adjust R7 to null 25 KHz sidebands on the Transmitter output.

6. Initial and date board.

Connect NAV Synthesizer to NAV COMM Assembly and monitor tuning voltage and RF output.

1. Select channel frequency of 117.95 MHz and adjust turn spacing on synthesizer for 7.0 vdc on tuning line.

2. RF output shall be 9.0 +/- 1 db.

3. Initial and date board.

Approved: RSRW
4/1/99

TKM, INC.
14811 North 73RD Street
Scottsdale, AZ 85260

REAR PANEL TEST PROCEDURE

Date: JAN 8, 1995

Connect Rear Panel with appropriate Cable to the REAR PANEL TEST SET. Apply appropriate A+ Voltage.

1. Monitor DC Voltages: +5 shall be 5.30 +/- .15 vdc.
   +15 shall be 15.0 +/- .3 vdc.
   -20 shall be -19.2 +/- .8 vdc. A/R

2. T/R Voltage in receive mode shall be:
   7.60 +/- .30 vdc for the MX300 and MX170B
   14.5 +/- .40 vdc for the MX385 and MX12

3, T/R Voltage in transmit mode shall be:
   -19.2 +/- .7 vdc. OR 6

4. With 4.0 Vrms at 1000 Hz applied to Test Set AUDIO INPUT adjust the microphone gain on the REAR PANEL to 15 vp-p while monitoring the transmitter A+ pin. On the MX12 the dc voltage shall be 11.8 +/- .5 and on the MX385 the dc voltage shall be 13.7 +/- .4.

5. With 4.0 vrms applied to Test Set AUDIO INPUT monitor he speaker output. On the MX300 adjust the speaker output to 22 vp-p with the audio gain control. On the MX385 adjust the level to 3.0 vp-p with the audio gain control. On the MX12 the speaker level shall be 20 +/- 3 vp-p. On the MX170 reduce the input level to .40 vrms and the speaker level shall be 18.0 +/2.0 vp-p.

6. Initial and date the unit.

Approved: [signature]
4/1/96

TKM, INC.
14811 North 73RD Street
Scottsdale, AZ 85260

RECEIVER TEST PROCEDURE

Date: SEPT. 21, 1996

Connect a Synthesizer and Receiver combination to a NAV COMM assembly.

COMM Receiver

1. Using a Spectrum Analyzer with a tracking generator align RF filters to have a symetrical response centered at 136.9 MHz when NAV COMM unit is tuned to 136.9 MHz. Peak gain shall be 15 +/- 1.5 DB. when output is measured at mixer input.

2. Apply -99 dbm at 136.9 MHz with 30% modulation. Peak the IF coil and adjust the AGC pot for 6.0 volts on the AGC line. Adjust the Audio gain pot for 4.0 vp-p on Audio Output.

NAV Receiver

1. Use the COMM Receiver procedure except use 117.9 MHz for the test channel.

Approved: [signature]
4/1/99

TKM, INC.
14811 North 73RD Street
Scottsdale, AZ 85260

TSA006-1
Page 1 of 1

TEST PROCEDURE FOR COMPUTER BOARDS
(MX12, MX170(), MX300, MX385)

1) Hook up the computer board to the rear panel and the front panel, then attach the COMM Synthesizer to the appropriate plug. Put the power supply to 13V-15V.

   NOTE: For an MX385, set the power supply to 27V-29V. Test the MX12 at both the higher and lower voltages.

2) Turn the power on, make sure the display lights up and the current goes to .5A +/-.2A

3) Set multi-meter to volts, hook ground lead to ground on rear panel. Take the positive lead and check out the voltage on the COMM Synthesizers.

   (a) Place the lead on pin 14 of the COMM and make sure the voltage cycles from 6V to 8V as you push the COMM flip-flop switch on the front panel.

   NOTE: Voltage level will be determined by what you have the Active NAV/COMM set at (the higher the frequency, the higher the voltage, the lower the frequency, the lower the lower the voltage.

4) Initial the board to indicate that the board has been tested, and by whom.

Approved: [signature] 11-19-2001

REVISION RECORD FOR AT0006

Rev#	Date	Description	By
-NONE	4-1-1999	INITIAL ISSUE	[signature]
-1	12-15-2005	EDITED FOR CLARITY-NO TECHNICAL CHANGE	[signature]

SCHEMATICS, LAYOUTS AND PARTS LISTS

MX385 Interconnect

The following table lists the pin description for the MX385 interconnect.

J1

Pin #	Description	Pin #	Description
1	Phn sidetone in	14	Phn sidetone out
2	Isol. Audio input	15	Speaker
3	Spare	16	Speaker
4	Aux audio input	17	Mic key
5	Aux audio input	18	Comm phn audio
6	Aux audio input	19	Sidetone out
7	Aux audio input	20	+ 28v audio
8	Aux audio input	21	Comm phn audio
9	NAV audio input	22	+ 28v comm
10	COMM audio input	23	+ 28v nav
11	Ground	24	Ground
12	Spare	25	Spare
13	Mic audio input	26	Spare

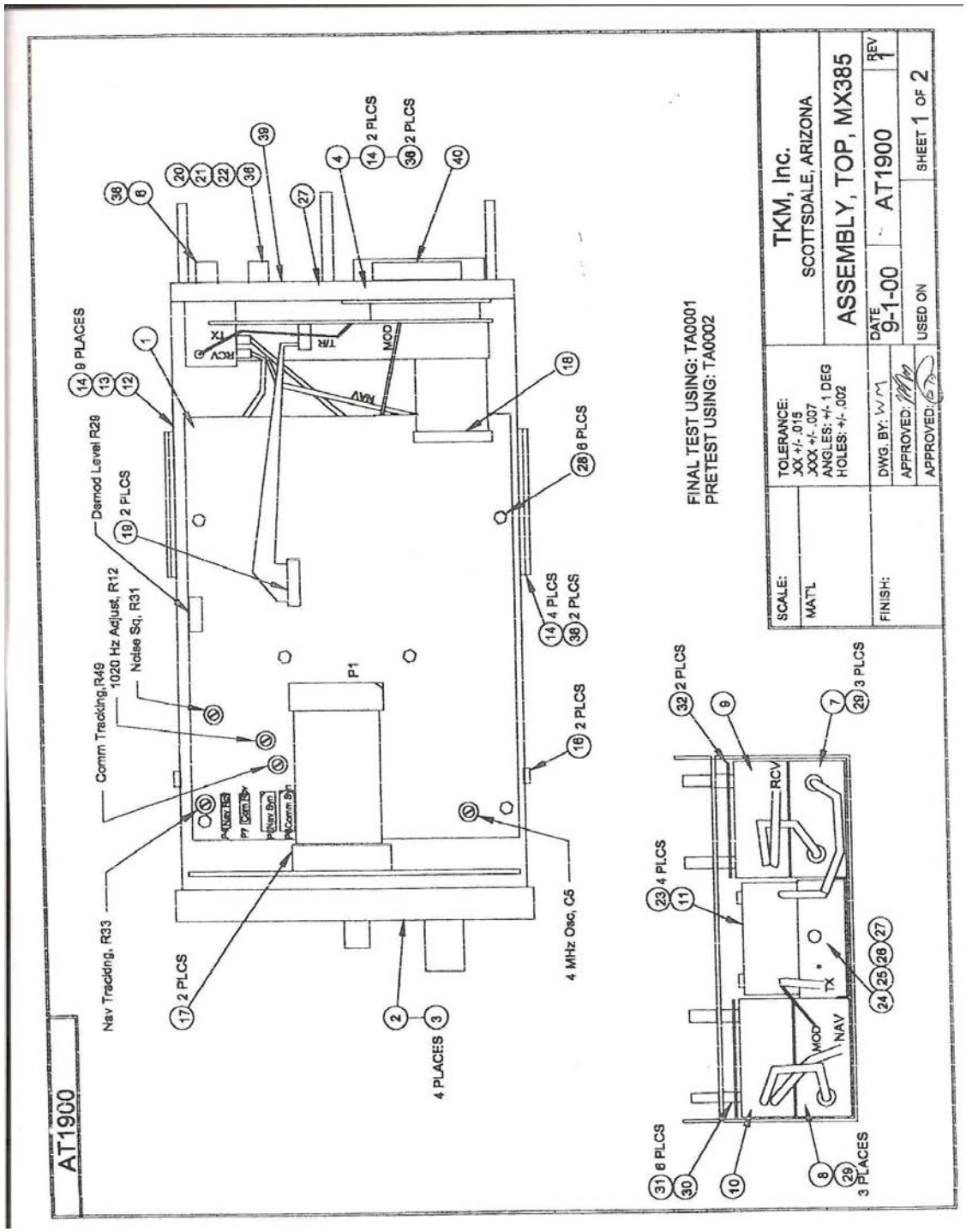
J2

Description	Pin #	Computer Board Pin #
DME Common	33	32
DME 1 MHz A	14	22
DME 1 MHz B	13	19
DME 1 MHz C	28	17
DME 1 MHz D	29	20
DME 1 MHz E	30	23
DME 100 KHz A	32	20
DME 100 KHz B	50	33
DME 100 KHz C	11	13
DME 100 KHz D	17	31
DME 100 KHz E	12	16
DME 50 KHz	31	26
GS Common	26	11
GS 1 MHz A	25	9
GS 1 MHz B	39	7
GS 1 MHz C	43	12
GS 1 MHz D	44	15
GS 1 MHz E	48	27
GS 100 KHz A	46	21
GS 100 KHz B	45	18
GS 100 KHz C	27	14
GS 100 KHz D	16	28
GS 100 KHz E	49	30
GS 50 KHz	47	24
ILS Enable	15	25
Nav Composite	18	2
NAV Phone	1	1
+28v Switched	37	5
NAV test	41	8
COMM flip-flop	10	10
Ground	4	3
Ground	21	4
Ground	38	6

INDENTURED DRAWING LIST MODEL MX385

AT1900 REV 1	MX385 TOP ASSEMBLY
SM1901 REV 4	CASE; MX385
SM1902 REV 1	COVER; MX385
HM1906 REV 1	CASE GUIDE; MX385
HM1904 REV 2	HOOD, COAX; MX385
HM1905 REV 1	CONNECTOR MNT; MX385
HM1912 REV 2	BLOCK, TX, REAR; MX385
HM1914 REV 2	BLOCK, TX, FNT; MX385
MP1901 REV 2	NAMEPLATE, FCC; MX385
MP1738 REV 1	NAMEPLATE, TSO; MX385
SS1967 REV 6	COMPUTER ASSY; MX385
PC1967 REV 6	PCB, COMPUTER; MX12, MX385
LF1752 NONE	CHOKE, FILTER
SS1930 REV 4	FNT PANEL ASSY; MX385
PE1901 NONE	FNT PANEL, ENGRAVED; MX385
PL1900 REV 2	FNT PANEL, PLASTIC; MX385
PL1777 NONE	FILTER, LOWER; MX12, MX170Q, MX385
PL1778 NONE	FILTER, UPPER; MX12, MX1700, MX385
HM1814 REV l.	SPACER, FNT PANEL
SS1925 REV 3	DISPLAY; MX12, MX385
PC1925 REV 3	PCB, DISPLAY; MX12, MXI70(), MX385
HM1725REV 2	SWITCH CAP
SS1922 REV 4	DRIVERASSY; MX12, MX1700, MX385
PC1922 REV 4	PCB, DRIVER; MX12, MXI70(), MX385
SS1945 REV 5	ASSY, REAR PANEL; MX385
HM1911 REV l.	GUIDE PIN; MX385
HM1902 REV 1	REAR BRACE; MX385
HM1913 REV 2	CLAMP BLOCK; MX385
HM1918 NONE	CLAMP SCREW; MX385
HM1920 REV l.	COLLAR; MX385
CA1925 NONE	CHANNELING CABLE; MX385
HMI921 NONE	GUIDE PIN; MX385
SM1903 REV 2	REAR PANEL; MX385
SS1940 REV 5	SUB-ASSY, REAR PANEL ASSY; MX385
PC 1940 REV 5	PCB REAR PANEL; MX385
LF1701 REV 1	CHOKE, INVERTER; MX385
LF1722 NONE	CHOKE FILTER, 6AMP
TP1801 REV 1	TRANSFORMER INVERTER
SS1939 REV 3	CONNECTOR BOARD ASSY; MX385
PC1939 REV 3	PCB, CONNECTOR ASSY; MX385
SS1921 REV 3	T/R SWITCH ASSY; MX385
SM1905 REV 1	T/R CASE; MX385
SM 1906 REV 1	T/R COVER; MX385
EC1022 NONE	COAX, FLARED; MX170C, MX385
SM1907 REV 1	SPACER, T/R; MX385

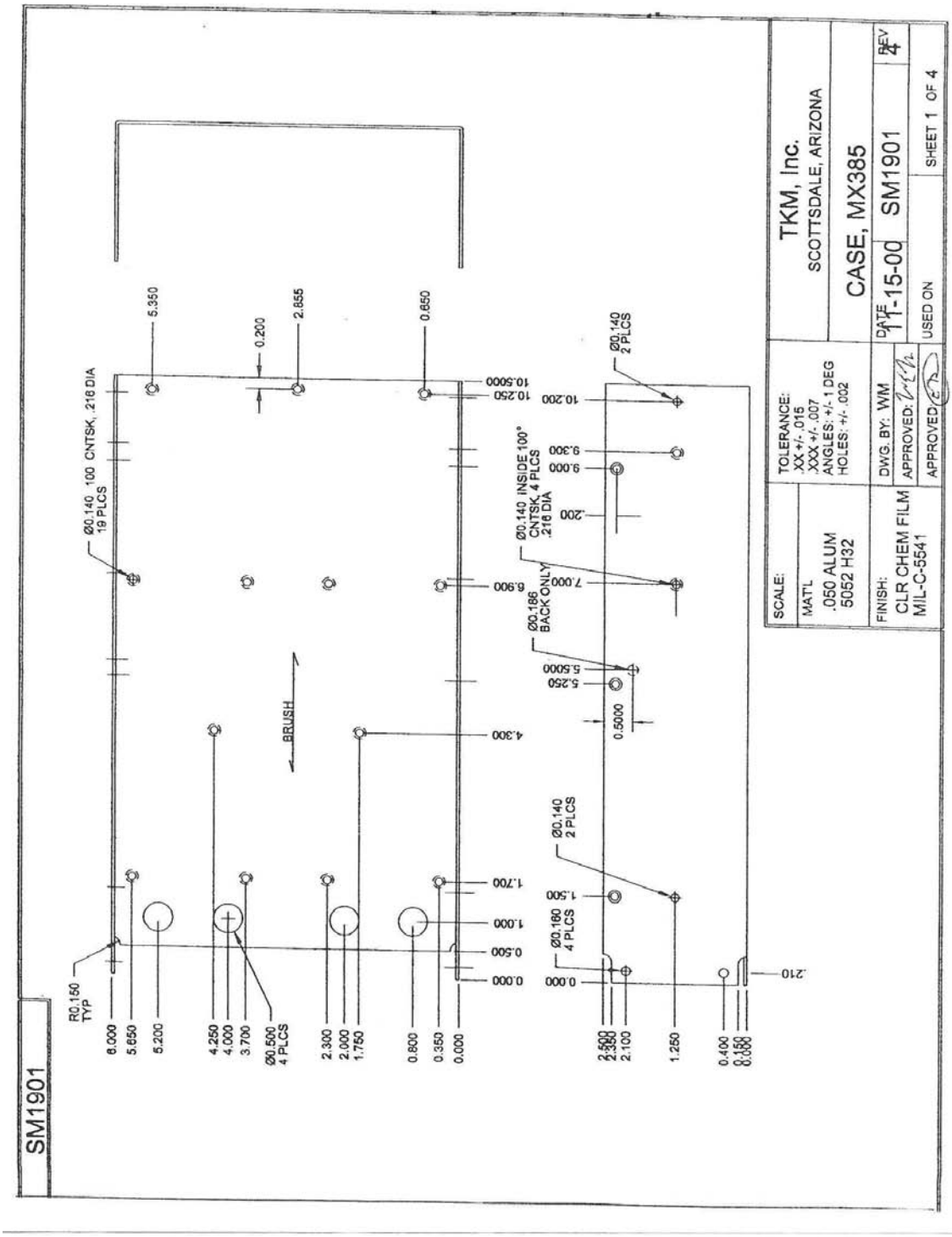
SS1866 REV C	RECEIVER ASSY; COMM (GREEN)
PC 1866 REV C	PCB, RECEIVER
SM1840 REV 3	CASE, MODULE
SM1841 REV 3	COVER, MODULE
SM1 812 REV 2	GND BRACKET; RX
CA1803 NONE	CABLE ASSY, COAX
CA1866 NONE	CABLE, COMM RECEIVER
CA1804 REV 1	CABLE ASSY, COAX
LFST4N NONE	INDUCTOR, RF
LFST5N NONE	INDUCTOR, RF
SS2716 REV A	COMM SYNTHESIZER ASSY
PC2716 REV A	PCB, SYNTHESIZER; COMM
SM1840 REV 3	CASE, MODULE
NB400I NONE	INSERT, EXTENDED
SM1841 REV 3	COVER, MODULE
SM1814 NONE	GND BRACKET; SYNTH
SS1881 REV C	TRANSMITTER, TOP ASSY
PC1881 REV C	PCB TRANSMITTER
SM1883 REV 9	BASE, TRANSMITTER
SM1813 REV 2	COVER, TRANSMITTER
CA1802 NONE	CABLE ASSY, COAX
CA18O1 NONE	CABLE ASSY, COAX
LFS7TN NONE	INDUCTOR, RF
LFS2TN NONE	INDUCTOR, RF
LFS4TN NONE	INDUCTOR, RF
RN0002 NONE	RESISTOR, METAL FILM
SS1867 REV C	RECEIVER ASSY; NAV (BLUE)
PC1866 REV C	PCB, RECEIVER
SM1840 REV 3	CASE, MODULE
SM1841 REV 3	COVER, MODULE
SM1 812 REV 2	GND BRACKET; RX
CA1803 NONE	CABLE ASSY, COAX
CA1867 NONE	CABLE, NAV RECEIVER
CA1804 NONE	CABLE ASSY, COAX
LFST4N NONE	INDUCTOR, RF
LFST5N NONE	INDUCTOR, RF
SS2714 REV B	NAV SYNTHESIZER ASSY
PC2714 REV B	PCB, SYNTHESIZER; NAV
SM1840 REV 3	CASE, MODULE
SM1841 REV 3	COVER, MODULE
NB400I NONE	INSERT, EXTENDED

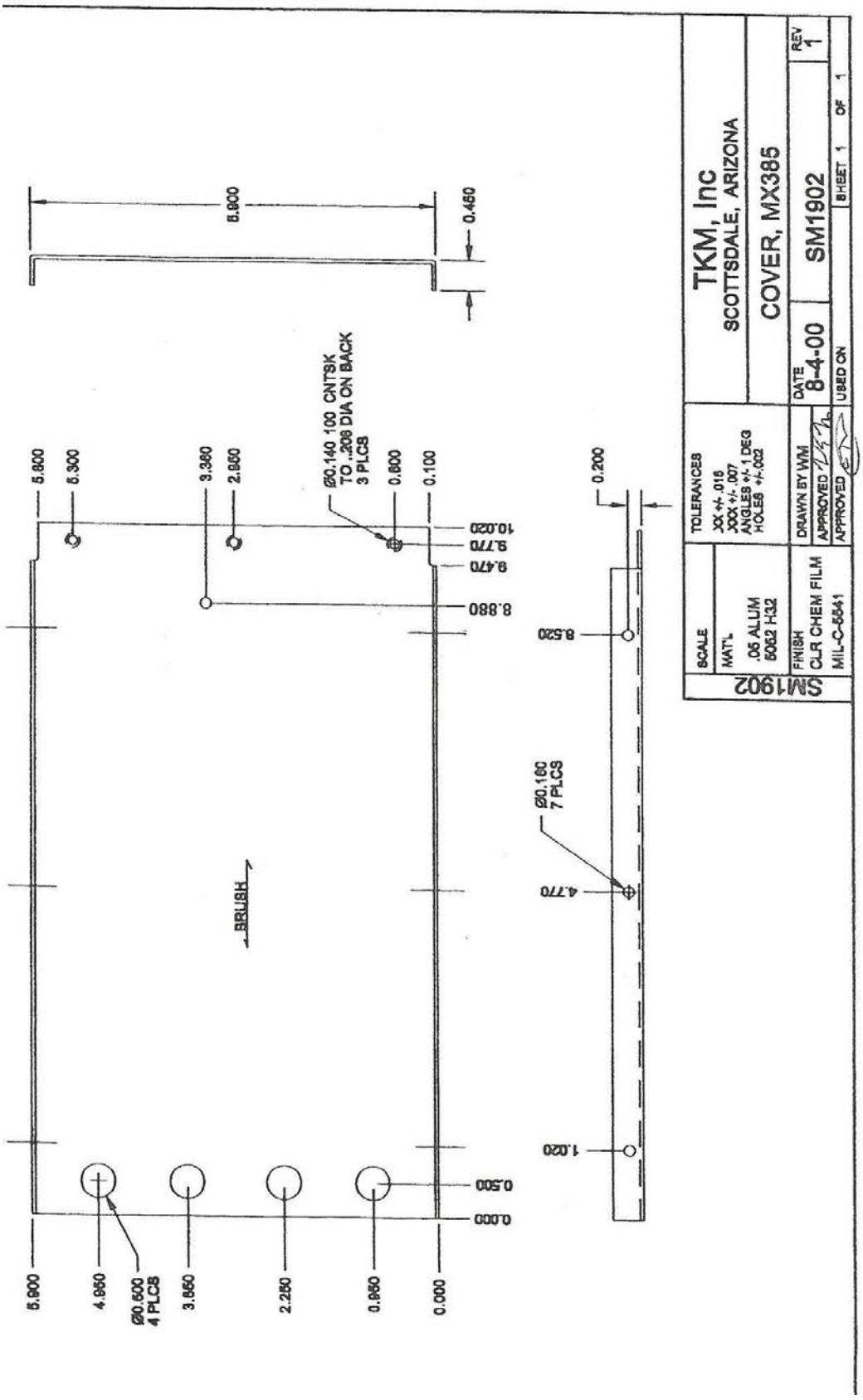

AT1900
TKM, Inc.
SCOTTSDALE, ARIZONA
ASSEMBLY, TOP, MX385
AT1900
REV 1
SHEET 1 OF 2
SCALE:
MATL
TOLERANCE:
XX +/- .015
XXX +/- .007
ANGLES: +/- 1 DEG
HOLES: +/- .002
FINISH:
DWG. BY: WM
DATE 9-1-00
APPROVED:
APPROVED:
USED ON
FINAL TEST USING: TA0001
PRETEST USING: TA0002
14 8 PLACES
Demod Level R28
19 2 PLCS
Comm Tracking, R49
1020 Hz Adjust, R12
Noise Sq, R31
Nav Tracking, R33
17 2 PLCS
2
3
4 PLACES
4 MHz Osc, C5
16 2 PLCS
14 4 PLCS
38 2 PLCS
28 6 PLCS
18
4 14 2 PLCS
38 2 PLCS
39
27
40
36 6
20 21 22 38
1
RCV
TX
TR
MOD
NAV
P1
32 2 PLCS
9
7 29 3 PLCS
23 4 PLCS
11
24 25 26 27
31 6 PLCS
30
10
8
29 3 PLACES

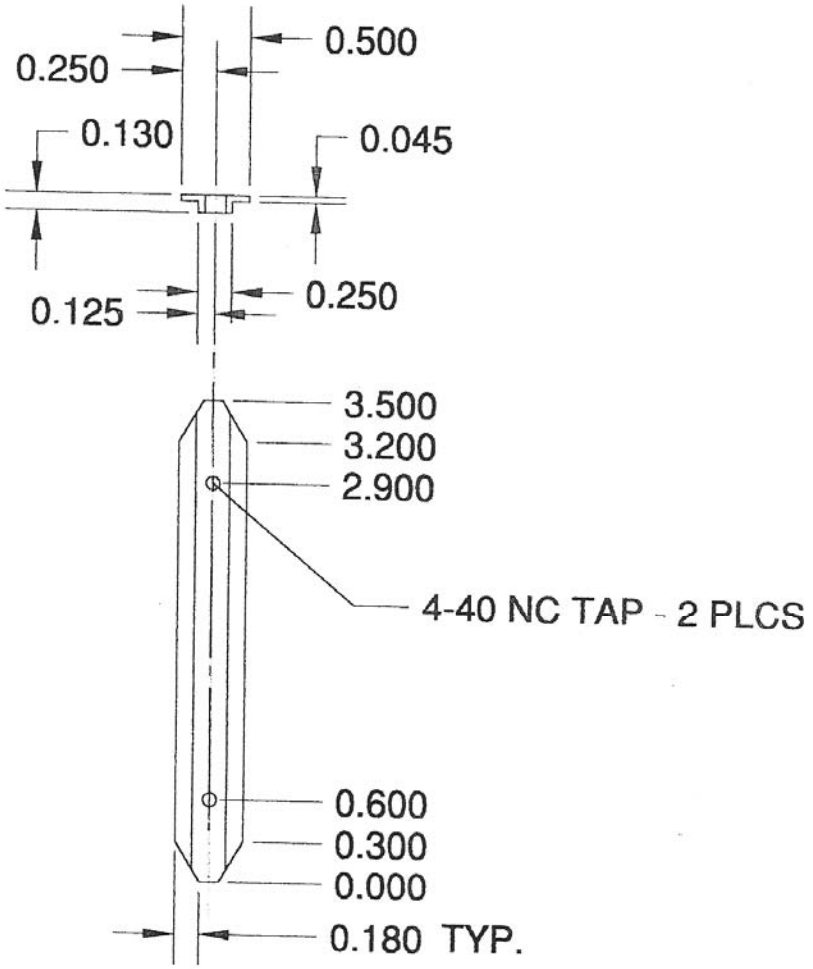
TOP ASSEMBLY; MX385 AT1900-1 page 1

* indicates parts requiring soldermask.

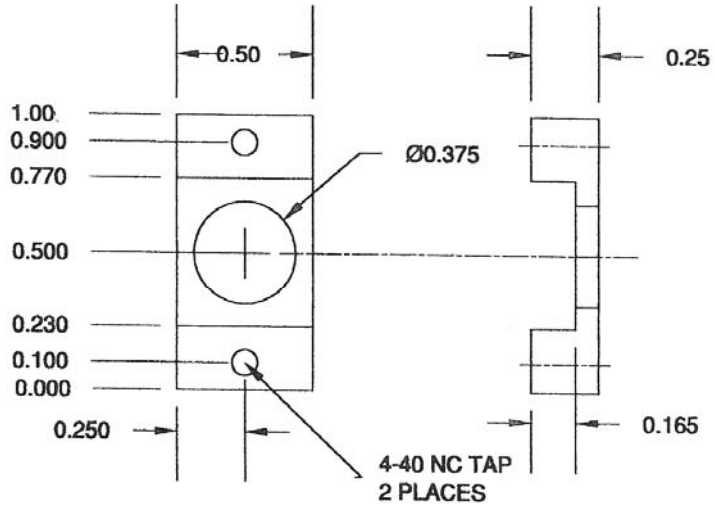
Ref #	Part #	Description	Qty
01	SS1967-6	SUB-ASSEMBLY COMPUTER ASSY; MX385	1
02	SS1930-4	SUB-ASSEMBLY Front Panel 12, 385	1
03	NB407F-	FASTENERS 4-40x7/16 P100 SS	4
04	SS1945-5	SUB-ASSEMBLY REAR PANEL, MX385	1
06	SS1921-3	SUB-ASSEMBLY T/R SWITCH; MX385	1
07	SS2716-A	SUB-ASSEMBLY COMM SYNTHESIZER ASSY	1
08	SS2714-B	SUB-ASSEMBLY NAV SYNTHESIZER ASSY	1
09	SS1866-C	SUB-ASSEMBLY RECEIVER ASSEMBLY COMM(Green)	1
10	SS1867-C	SUB-ASSEMBLY RECIVER ASSEMBLY NAV(blue)	1
11	SS1881-C	SUB-ASSEMBLY TRANSMITTER ASSY	1
12	SM1901-4	SHEET METAL CASE; MX385	1
13	SM1902-1	SHEET METAL COVER; MX385	1
14	NB403F-	FASTENERS 4-40x3/16 P100 SS	15
16	HM1813-	HARDWARE; MACHINE GUIDE; CASE	2
17	EC1005-	CONNECTOR 40 PIN; RIBBON CONN	2
19	EC1001-	CONNECTOR 10 PIN; RIBBON CONN	2
20	HM1904-2	HARDWARE; MACHINE HOOD; COAX; MX385/11	1
21	HM1905-1	HARDWARE; MACHINE Mount; Connector	1
22	EC1804-	CONNECTOR COAX CONN; 79-59	1
23	NB416P-	FASTENERS 4-40x1 PP SS	4
24	HM1912-1	HARDWARE; MACHINE BLOCK; TX; REAR	1
25	HM1914-	HARDWARE; MACHINE BLOCK; TX; FRONT	1
26	HM1915-	HARDWARE; MACHINE TUBE, .187 DIA X 7.90 ALUM	1
27	NB404F-	FASTENERS 4-40x1/4 P100 SS	5
28	HS1000-	SPACER 3/16H X 1/2" 4-40 THD	6
29	NB416F-	FASTENERS 4-40x1 P100 SS	6
30	NB408A-	FASTENERS 4-40x1/2 ASET SS	6
31	NB400K-	FASTENERS 4-40 KEPS NUT SS	6
32	MP1704-	MISC. PARTS Insulator; Computer Bd.	2
36	NB404P-	FASTENERS 4-40x1/4 PP SS	2
38	HM1906-	HARDWARE; MACHINE GUIDE; CASE MX385	2
39	MP1901-2	MISC. PARTS NAMEPLATE; MX385	1
40	MP1738-1	MISC. PARTS TSO NAMEPLATE-MX385	1
41	NB403P-	FASTENERS 4-40x3/16 PP SS	2


SM1901
TKM, Inc.
SCOTTSDALE, ARIZONA
CASE, MX385
SCALE:
MATL
.050 ALUM
5052 H32
TOLERANCE:
XX +/- .015
XXX +/- .007
ANGLES: +/- 1 DEG
HOLES: +/- .002
FINISH:
CLR CHEM FILM
MIL-C-5541
DWG. BY: WM
APPROVED:
APPROVED:
DATE
11-15-00
SM1901
REV
4
USED ON
SHEET 1 OF 4
Ø0.140 .100 CNTSK, .216 DIA
19 PLCS
R0.150
TYP
Ø0.500
4 PLCS
BRUSH
Ø0.140 INSIDE 100°
CNTSK, 4 PLCS
.216 DIA
Ø0.186
BACK ONLY
Ø0.140
2 PLCS
Ø0.160
4 PLCS
.210

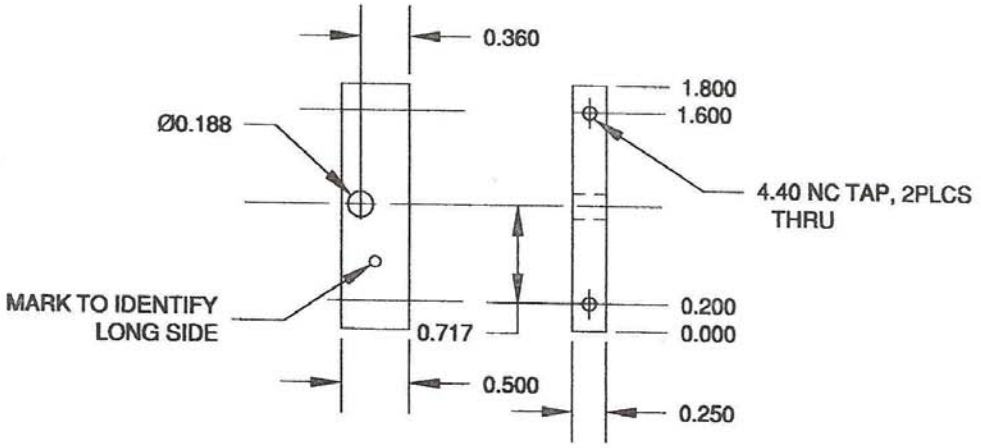

TKM, Inc
SCOTTSDALE, ARIZONA
COVER, MX385
SM1902
REV 1
DATE 8-4-00
DRAWN BY WM
APPROVED
APPROVED
USED ON
SHEET 1 OF 1
TOLERANCES
.XX +/- .015
.XXX +/- .007
ANGLES +/- 1 DEG
HOLES +/- .002
SCALE
MAT'L .05 ALUM 5052 H32
FINISH CLR CHEM FILM MIL-C-5541
SM1902
6.800
0.450
Ø0.140 100 CNTSK TO .206 DIA ON BACK 3 PLCS
5.800
5.300
3.380
2.880
0.600
0.100
10.020
9.770
9.470
8.880
0.200
8.520
Ø0.160 7 PLCS
4.770
1.020
BRUSH
0.500
0.000
5.900
4.950
Ø0.600 4 PLCS
3.950
2.250
0.950
0.000



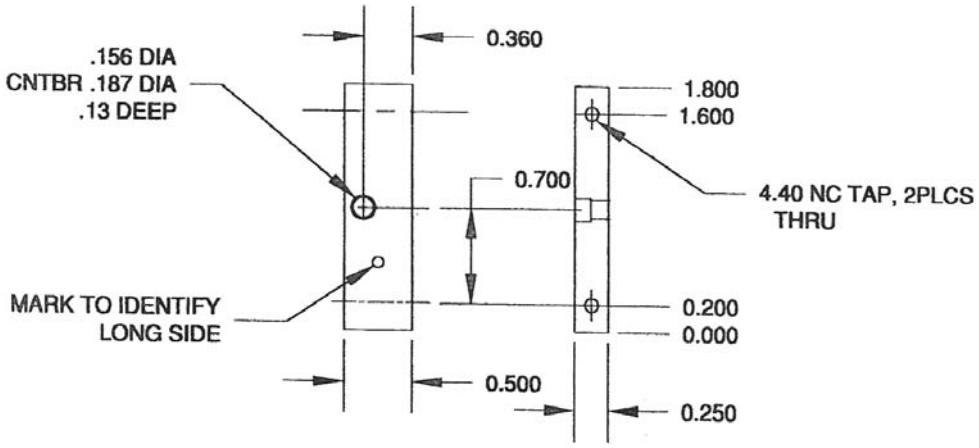
HM1906	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA
	MAT'L ALUM 6061 T6		GUIDE, CASE
	FINISH CLR CHEM FILM MIL-C-5541	DRAWN BY WM APPROVED APPROVED	DATE 2-25-00 | HM1906 | REV 1 USED ON MX385 | SHEET 1 OF 1



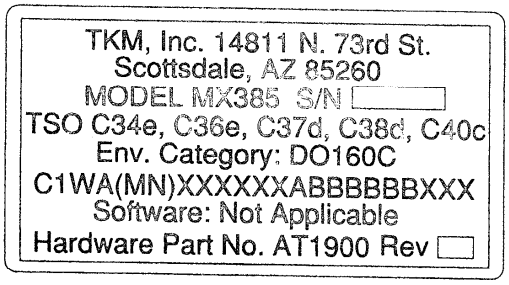
HM1905	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L ALUM 6061 T6		MOUNT, CONNECTOR	
	FINISH CLR CHEM FILM MIL C 5541	DRAWN BY WM APPROVED APPROVED	DATE 8-7-00	HM1905 REV 1
			USED ON MX385	SHEET 1 OF 1



HM1912	SCALE	TOLERANCES	TKM, Inc		
	MAT'L .25 X .50 ALUM BAR	.XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG HOLES +/- .002	SCOTTSDALE, ARIZONA		
			BLOCK, TX, REAR		
	FINISH CLR CHEM FILM MIL-C-5541	DRAWN BY WM APPROVED WEB APPROVED	DATE 8-9-99	HM1912	REV 2
			USED ON MX385	SHEET 1 OF 1	



HM1914	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L .25 X .50 ALUM BAR	.XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG HOLES +/- .002	BLOCK, TX, FRONT	
	FINISH CLR CHEM FILM MIL-C-5541	DRAWN BY WM APPROVED APPROVED	DATE 8-9-99	HM1914 REV 2
			USED ON MX385	SHEET 1 OF 1



NOTES

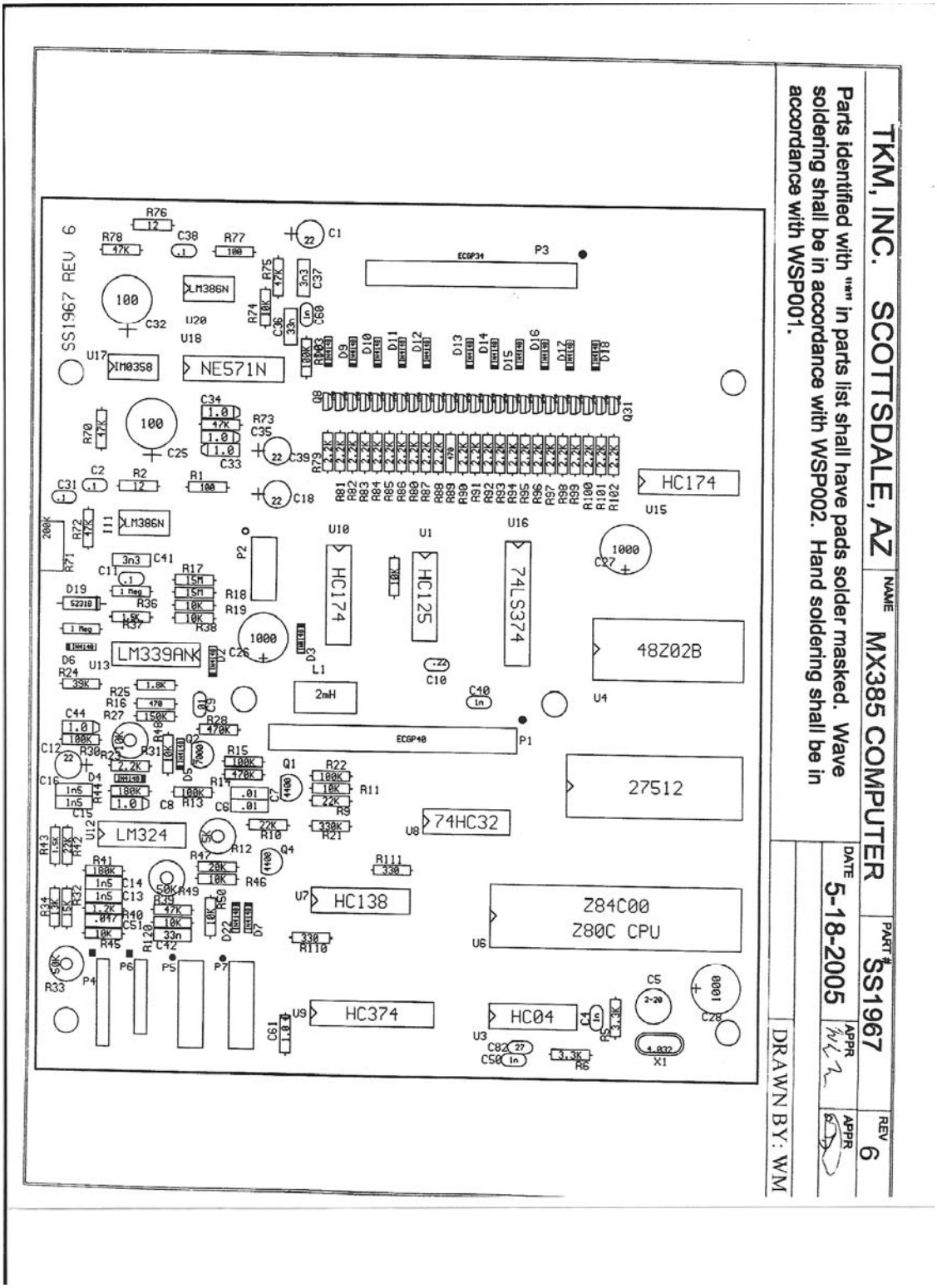
LABEL TO BE 2.00 X 1.00
LETTERING TO BE SCALED AS SHOWN
LETTERING AND BORDER TO BE BLACK
ADHESIVE TO BE 3M-467
EACH LINE TO BE CENTERED
SERIAL NUMBER TO BE 5 DIGITS

MP1738	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L .003 ALUM		TSO NAMEPLATE - MX385		
	FINISH	DRAWN BY WM	DATE 4/1/04	MP1738	REV 1
		APPROVED			
		APPROVED	USED ON	SHEET 1 OF 1	

FCC ID: C9L7I5MX385
ARIZONA AVIONICS, INC.
MX385 NAV-COMM
27.5 vdc, 3.5 A max, Weight: 6 lbs
Mfg by TKM, Inc. 14811 N. 73rd St.
Scottsdale, AZ 85260
Recivers comply with Part 15
Subpart C of FCC Rules and Regulations

NOTES
1. LETTERING TO BE ARIAL .07 HIGH ON FIRST LINE. .03 ON SECOND LINE, .05 ON REMAINING LINES
2. LETTERING TO BE BLACK.
3. ADHESIVE TO BE 3M-467
4. CENTER EACH LINE.
5. SIZE TO BE 1.50 X .75
6. CORNERS APPROX .05 RADIUS.

MP1901	SCALE	TOLERANCES	TKM, Inc		
	MAT'L .003 ALUM	.XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG HOLES +/- .002	SCOTTSDALE, ARIZONA		
			FCC NAMEPLATE, MX385		
	FINISH	DRAWN BY WM	DATE 1-25-06	MP1901	REV 2
		APPROVED			
		APPROVED	USED ON	SHEET 1 OF 1	


TKM, INC. SCOTTSDALE, AZ
NAME MX385 COMPUTER
PART # SS1967
REV 6
DATE 5-18-2005
APPR
APPR
DRAWN BY: WM
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.
SS1967 REV 6
LM386N
NE571N
LM339ANK
LM324
HC174
HC125
74LS374
48Z02B
27512
74HC32
HC138
Z84C00
Z80C CPU
HC374
HC04
ECSP34
ECSP40
2mH
4.032

COMPUTER; MX385 SS1967-6 page 1

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
01	PC1967-6	PCB COMPUTER; MX385/12	1
02	ES1001-	IC SOCKET; DIP 8 PIN; DIP	3
03	ES1002-	IC SOCKET; DIP 14 PIN; DIP	5
04	ES1003-	IC SOCKET; DIP 16 PIN; DIP	4
05	ES1004-	IC SOCKET; DIP 20 PIN; DIP	2
06	ES1005-	IC SOCKET; DIP 24 PIN; DIP	1
07	ES1006-	IC SOCKET; DIP 40 PIN;DIP	1
08	ES1008-	IC SOCKET; DIP 28 PIN DIP	1
C1	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C10	CR2242-	CAP; MONO-CERAMIC .22 uF; 100V	1
C11	CR1043-	CAP; MONO-CERAMIC .1uF; 50V	1
C12	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C13	CF1523-	CAPACITOR; FILM .0015/63V	1
C14	CF1523-	CAPACITOR; FILM .0015/63V	1
C15	CF1523-	CAPACITOR; FILM .0015/63V	1
C16	CF1523-	CAPACITOR; FILM .0015/63V	1
C18	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C2	CR1043-	CAP; MONO-CERAMIC .1uF; 50V	1
C25	CE1012-	CAP; ALUM ELECT. 100/16-25V; RADIAL	1
C26	CE1081-	CAP; ALUM ELECT. 1000/6.3-10V; RADIAL	1
C27	CE1081-	CAP; ALUM ELECT. 1000/6.3-10V; RADIAL	1
C28	CE1081-	CAP; ALUM ELECT. 1000/6.3-10V; RADIAL	1
C31	CR1043-	CAP; MONO-CERAMIC .1uF; 50V	1
C32	CE1012-	CAP; ALUM ELECT. 100/16-25V; RADIAL	1
C33	CT1051-	CAP; TANTALUM 1.0/35V; AXIAL	1
C34	CT1051-	CAP; TANTALUM 1.0/35V; AXIAL	1
C35	CT1051-	CAP; TANTALUM 1.0/35V; AXIAL	1
C36	CF3333-	CAPACITOR; FILM .033/63V	1
C37	CF3323-	CAPACITOR; FILM .0033/63V	1
C38	CR1043-	CAP; MONO-CERAMIC .1uF; 50V	1
C39	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C4	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
C40	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
C41	CF3323-	CAPACITOR; FILM .0033/63V	1
C42	CF3333-	CAPACITOR; FILM .033/63V	1
C44	CT1051-	CAP; TANTALUM 1.0/35V; AXIAL	1
C5*	CB2006-	CAPACITOR; TRIMMER 1-20 PF	1
C50	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
C51	CF4733-	CAPACITOR; FILM .047/63V	1
C6	CF1033-	CAPACITOR; FILM .01/63	1
C60	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
C61	CT1051-	CAP; TANTALUM 1.0/35V; AXIAL	1
C7	CF1033-	CAPACITOR; FILM .01/63	1
C8	CT1051-	CAP; TANTALUM 1.0/35V; AXIAL	1
C9	CR1033-	CAP; MONO-CERAMIC .01uF; 100V	1

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
D10	DD4148-	DIODE 1N4148	1
D11	DD4148-	DIODE 1N4148	1
D12	DD4148-	DIODE 1N4148	1
D13	DD4148-	DIODE 1N4148	1
D14	DD4148-	DIODE 1N4148	1
D15	DD4148-	DIODE 1N4148	1
D16	DD4148-	DIODE 1N4148	1
D17	DD4148-	DIODE 1N4148	1
D18	DD4148-	DIODE 1N4148	1
D19	DD5231-	DIODE ZENER; 1N5231	1
D2	DD4148-	DIODE 1N4148	1
D22	DD4148-	DIODE 1N4148	1
D3	DD4148-	DIODE 1N4148	1
D4	DD4148-	DIODE 1N4148	1
D5	DD4148-	DIODE 1N4148	1
D6	DD4148-	DIODE 1N4148	1
D7	DD4148-	DIODE 1N4148	1
D8	DD4148-	DIODE 1N4148	1
D9	DD4148-	DIODE 1N4148	1
L1	LF1752-	INDUCTOR; FIXED CHOKE,FILTER	1
P1	MP1053-	MISC. PARTS PIN HEADERS; GOLD; DUAL ROW	1
P2	MP1053-	MISC. PARTS PIN HEADERS; GOLD; DUAL ROW	1
P3	MP1053-	MISC. PARTS PIN HEADERS; GOLD; DUAL ROW	1
P4	MP1044-	MISC. PARTS PIN HEADER; GOLD; SINGLE	1
P5	MP1053-	MISC. PARTS PIN HEADERS; GOLD; DUAL ROW	1
P6	MP1044-	MISC. PARTS PIN HEADER; GOLD; SINGLE	1
P7	MP1053-	MISC. PARTS PIN HEADERS; GOLD; DUAL ROW	1
Q1	QX4401-	TRANSISTOR PNP- 2N4401	1
Q10	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q11	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q12	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q13	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q14	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q15	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q16	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q17	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q18	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q19	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q2	QX7000-	TRANSISTOR 2N7000	1
Q20	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q21	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q22	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q23	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q24	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1

* indicates parts requiring soldermask.

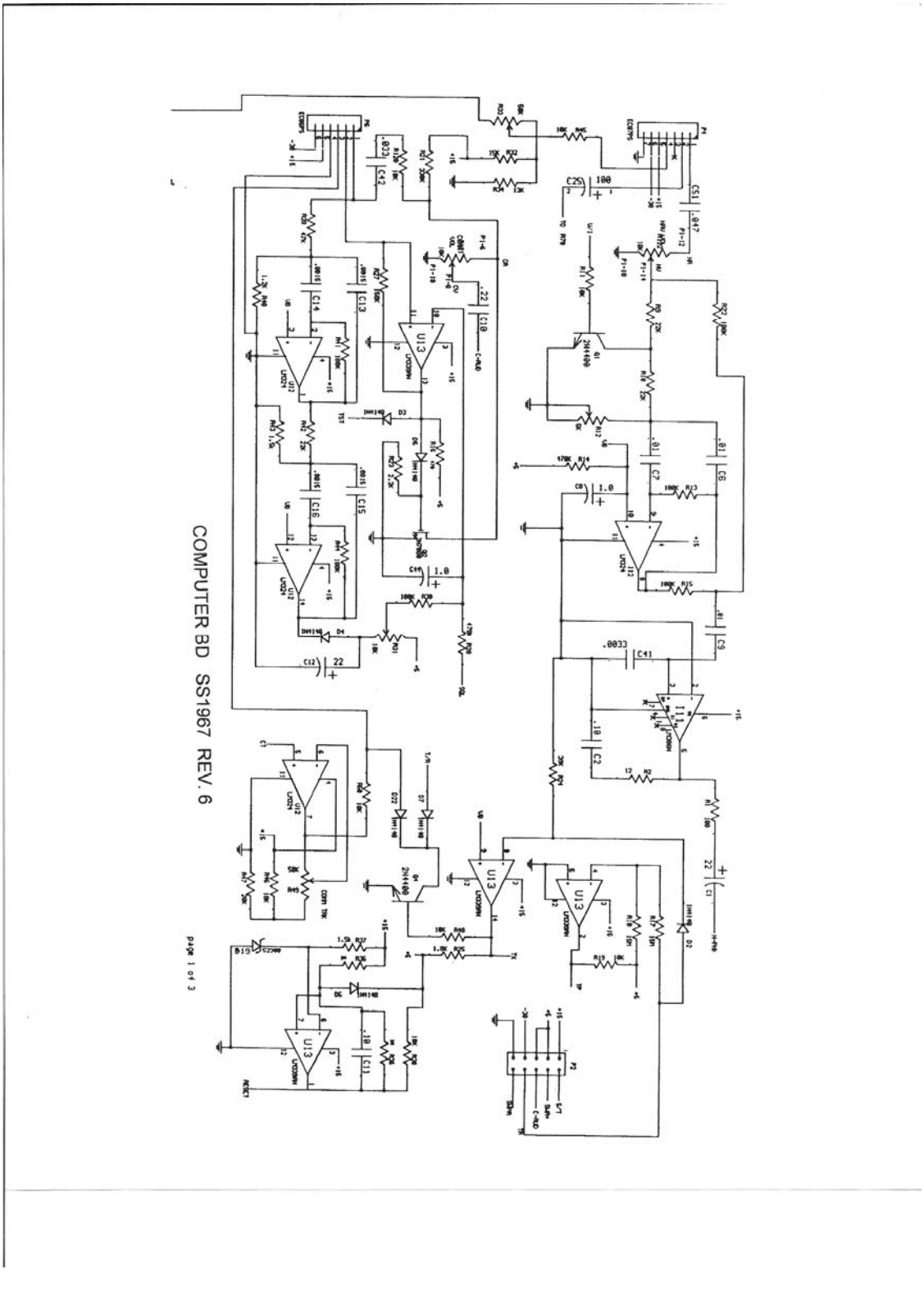
Ref #	Part #	Description	Qty
Q25	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q26	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q27	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q28	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q29	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q30	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q31	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q4	QX4401-	TRANSISTOR PNP- 2N4401	1
Q8	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
Q9	QX1741-	TRANSISTOR NPN SWICHING; 50 V	1
R1	RC0101-	RESISTOR; CARB. 100 Ohm; 5%; 1/4 watt	1
R10	RC0223-	RESISTOR; CARB. 22 Kohm; 5%; 1/4 watt	1
R100	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R101	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R102	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R103	RC0104-	RESISTOR; CARB. 100K 5% 1/4W	1
R11	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R110	RC0331-	RESISTOR; CARB. 330 Ohm; 5%; 1/4 watt	1
R111	RC0331-	RESISTOR; CARB. 330 Ohm; 5%; 1/4 watt	1
R12	PW0502-	Top Adj. .3 dia 5K	1
R120	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R13	RC0104-	RESISTOR; CARB. 100K 5% 1/4W	1
R14	RC0474-	RESISTOR; CARB. 470K 1/4W 5%	1
R15	RC0104-	RESISTOR; CARB. 100K 5% 1/4W	1
R16	RC0471-	RESISTOR; CARB. 470 Ohm; 5%; 1/4 watt	1
R17	RC0156-	RESISTOR; CARB. 15 Megohm; 5%; 1/4 watt	1
R18	RC0156-	RESISTOR; CARB. 15 Megohm; 5%; 1/4 watt	1
R19	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R2	RC0120-	RESISTOR; CARB. 12 Ohm; 5%; 1/4 watt	1
R21	RC0334-	RESISTOR; CARB. 330K 1/4W 5%	1
R22	RC0104-	RESISTOR; CARB. 100K 5% 1/4W	1
R23	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R24	RC0393-	RESISTOR; CARB. 39 Kohm; 5%; 1/4 watt	1
R25	RC0182-	RESISTOR; CARB. 1.8 Kohm; 5%; 1/4 watt	1
R27	RC0154-	RESISTOR; CARB. 150K 1/4W 5%	1
R28	RC0474-	RESISTOR; CARB. 470K 1/4W 5%	1
R30	RC0104-	RESISTOR; CARB. 100K 5% 1/4W	1
R31	PW0103-	Top Adj. .3 dia 10 K	1
R32	RC0153-	RESISTOR; CARB. 15 Kohm; 5%; 1/4 watt	1
R33	PW0503-	Top Adj. .3 dia 50K	1
R34	RN1302-	RESISTOR; METAL FILM 13K; 1/4W; 1%	1
R35	RC0105-	RESISTOR; CARB. 1 Megohm; 5%; 1/4 watt	1
R36	RC0105-	RESISTOR; CARB. 1 Megohm; 5%; 1/4 watt	1
R37	RC0152-	RESISTOR; CARB. 1.5 Kohm; 5%; 1/4 watt	1

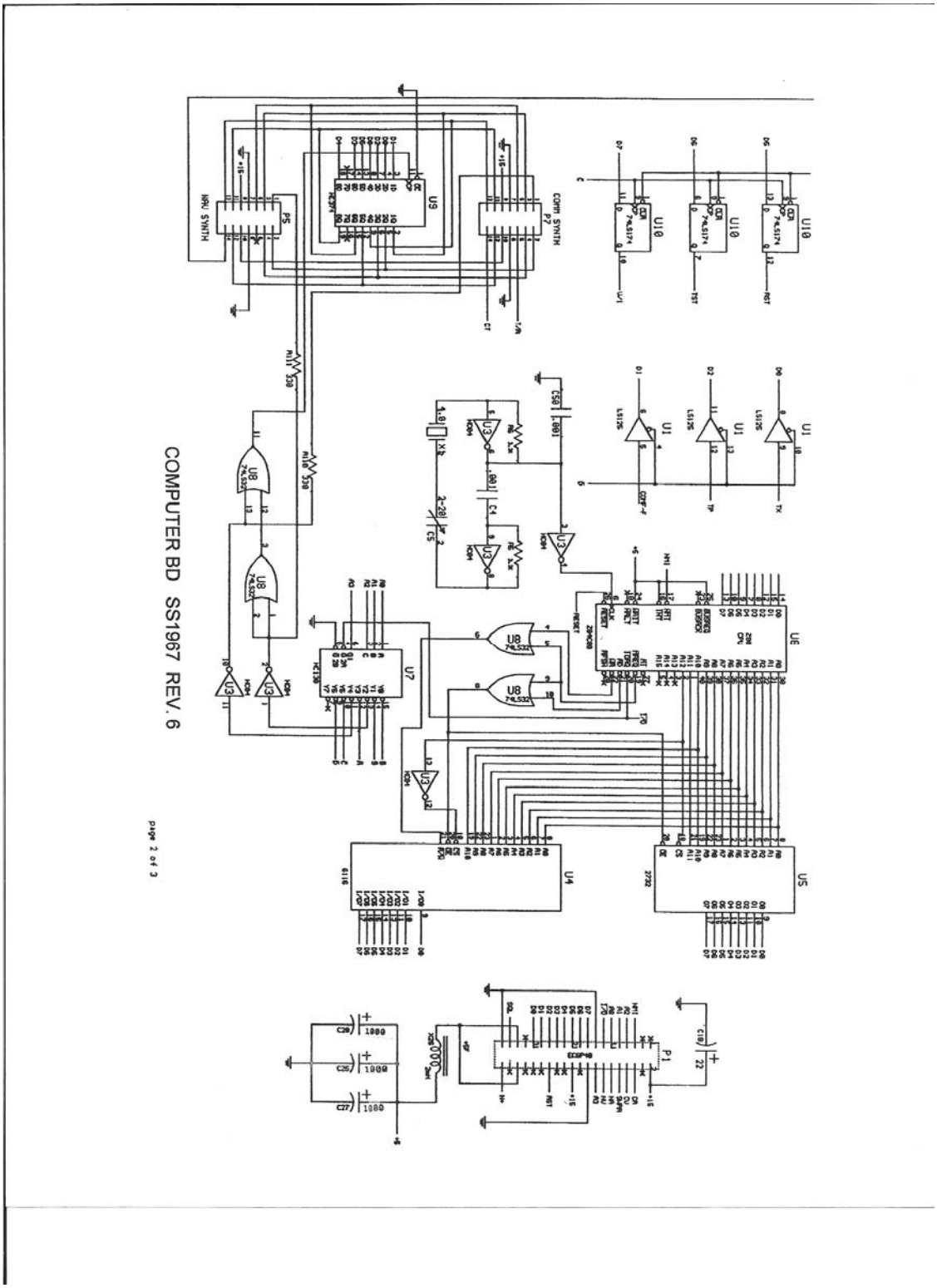
* indicates parts requiring soldermask.

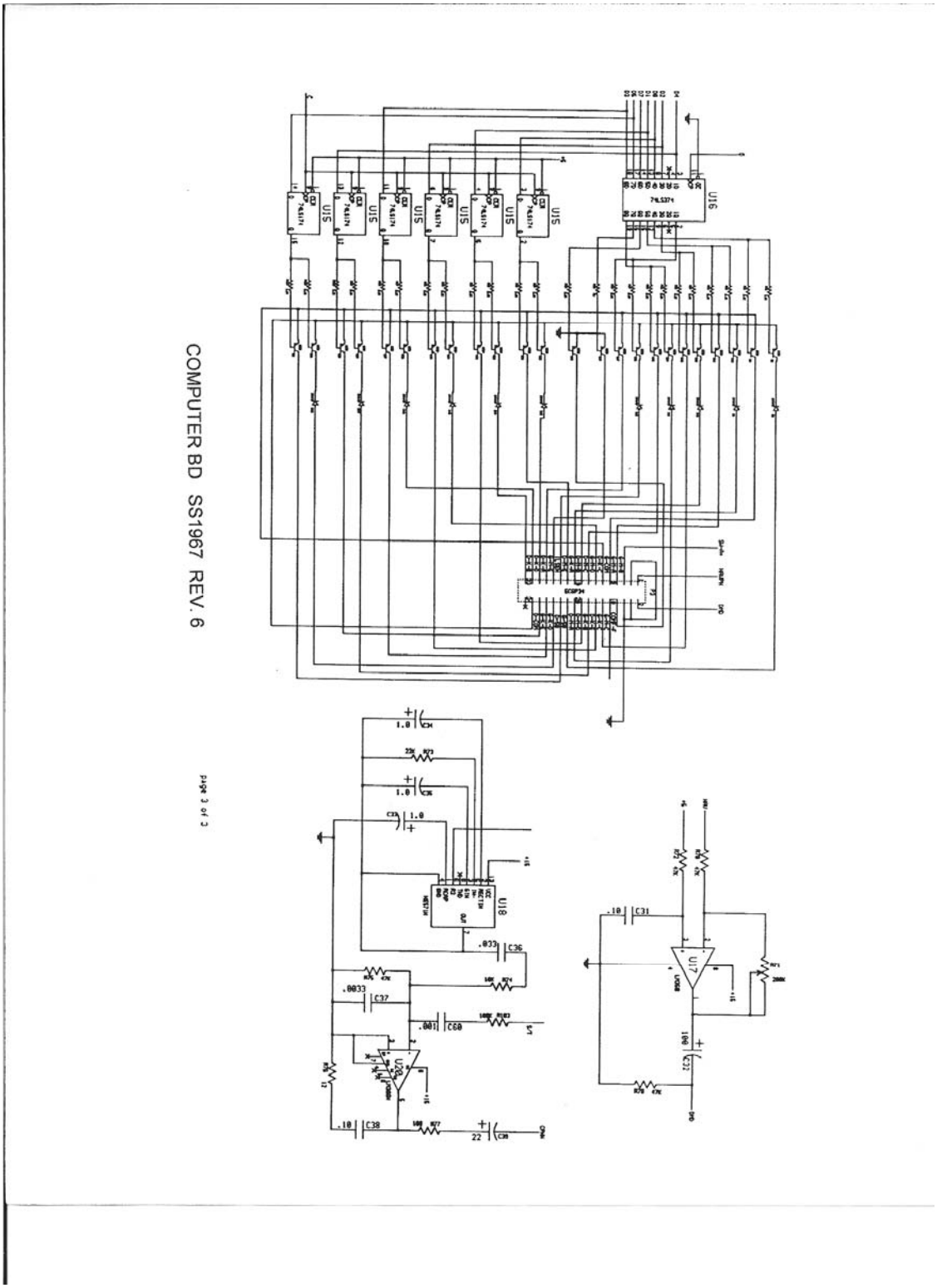
Ref #	Part #	Description	Qty
R38	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R39	RC0473-	RESISTOR; CARB. 47 Kohm; 5%; 1/4 watt	1
R4	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R40	RC0122-	RESISTOR; CARB. 1.2 Kohm; 5%; 1/4 watt	1
R41	RC0184-	RESISTOR; CARB. 180K 1/4W 5%	1
R42	RC0223-	RESISTOR; CARB. 22 Kohm; 5%; 1/4 watt	1
R43	RC0152-	RESISTOR; CARB. 1.5 Kohm; 5%; 1/4 watt	1
R44	RC0184-	RESISTOR; CARB. 180K 1/4W 5%	1
R45	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R46	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R47	RN2002-	RESISTOR; METAL FILM 20K; 1/4W; 1%	1
R48	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R49	PW0503-	Top Adj. .3 dia 50K	1
R5	RC0332-	RESISTOR; CARB. 3.3 Kohm; 5%; 1/4 watt	1
R50	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R6	RC0332-	RESISTOR; CARB. 3.3 Kohm; 5%; 1/4 watt	1
R70	RC0473-	RESISTOR; CARB. 47 Kohm; 5%; 1/4 watt	1
R71	PR0204-	TRIMMER; SIDE ADJ 200K POT TRIMMER SIDE ADJ.	1
R72	RC0473-	RESISTOR; CARB. 47 Kohm; 5%; 1/4 watt	1
R73	RC0473-	RESISTOR; CARB. 47 Kohm; 5%; 1/4 watt	1
R74	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R75	RC0473-	RESISTOR; CARB. 47 Kohm; 5%; 1/4 watt	1
R76	RC0120-	RESISTOR; CARB. 12 Ohm; 5%; 1/4 watt	1
R77	RC0101-	RESISTOR; CARB. 100 Ohm; 5%; 1/4 watt	1
R78	RC0473-	RESISTOR; CARB. 47 Kohm; 5%; 1/4 watt	1
R79	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R80	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R81	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R82	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R83	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R84	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R85	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R86	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R87	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R88	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R89	RC0471-	RESISTOR; CARB. 470 Ohm; 5%; 1/4 watt	1
R9	RC0223-	RESISTOR; CARB. 22 Kohm; 5%; 1/4 watt	1
R90	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R91	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R92	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R93	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R94	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R95	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R96	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1

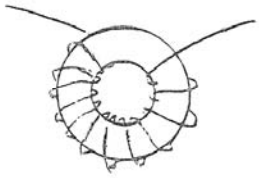
* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
R97	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R98	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
R99	RC0222-	RESISTOR; CARB. 2.2 Kohm; 5%; 1/4 watt	1
U1*	IH7525-	INT. CKT.; HI SPEED CMOS 74HC125	1
U10*	IH7574-	INT. CKT.; HI SPEED CMOS	1
U11*	IM0386-	INT. CKT.; MISC. LM386	1
U12*	IM0324-	INT. CKT.; MISC. LM324; DIP	1
U13*	IM0339-	INT. CKT.; MISC. LM339	1
U15*	IH7574-	INT. CKT.; HI SPEED CMOS	1
U16*	IH7774-	INT. CKT.; HI SPEED CMOS 74HC374	1
U17*	IM0358-	INT. CKT.; MISC. LM358N (not ST)	1
U18*	IM0571-	INT. CKT.; MISC. 571	1
U20*	IM0386-	INT. CKT.; MISC. LM386	1
U3*	IH7404-	INT. CKT.; HI SPEED CMOS 74HC04	1
U4*	IMZ02B-	INT. CKT.; MISC. RAM; M48Z02-150PC1	1
U5*	IMC512-	INT. CKT.; MISC. 64K X 8 EPROM	1
U6*	IM0080-	INT. CKT.; MISC. Z80	1
U7*	IH7538-	INT. CKT.; HI SPEED CMOS 74HC138	1
U8*	IH7432-	INT. CKT.; HI SPEED CMOS	1
U9*	IH7774-	INT. CKT.; HI SPEED CMOS 74HC374	1
X1	XT4032-	CRYSTAL; QUARTZ 4.032 MHz; HC18A/U	1
~1	MP1037-	MISC. PARTS CORE; TORROID (Lg)	1


COMPUTER BD SS1967 REV. 6
page 1 of 3

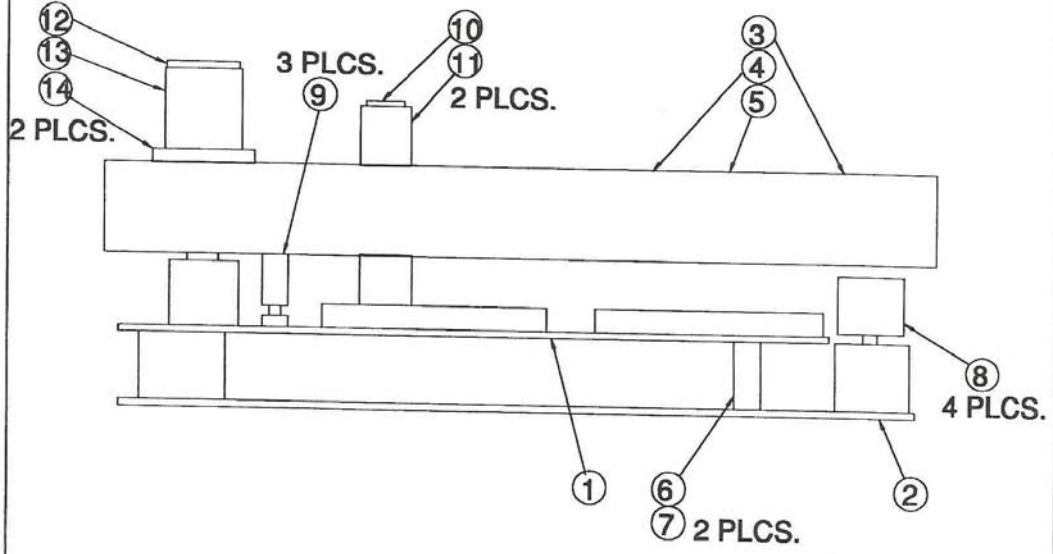

COMPUTER BD SS1967 REV. 6
Page 2 of 3


COMPUTER BD SS1967 REV. 6
Page 3 of 3



WIND 12 TURNS,
#22 AWG ON MP1037
(MICROMETALS P/N 5943001101)

LF1752	SCALE NONE	TOLERANCES .XX ± .016 .XXX ± .008 ANGLES ± 1 DEG. FRACT. ± 1/32	MICHEL avionics prods SCOTTSDALE, ARIZONA
	MAT'L		CHOKE, FILTER
	FINISH	DRAWN BY WM	DATE 10-11-92
		APPROVED	LF1752 REV
		APPROVED	USED ON MX11,12,170(),385 COMP BD MX12 REAR PANEL SHEET OF

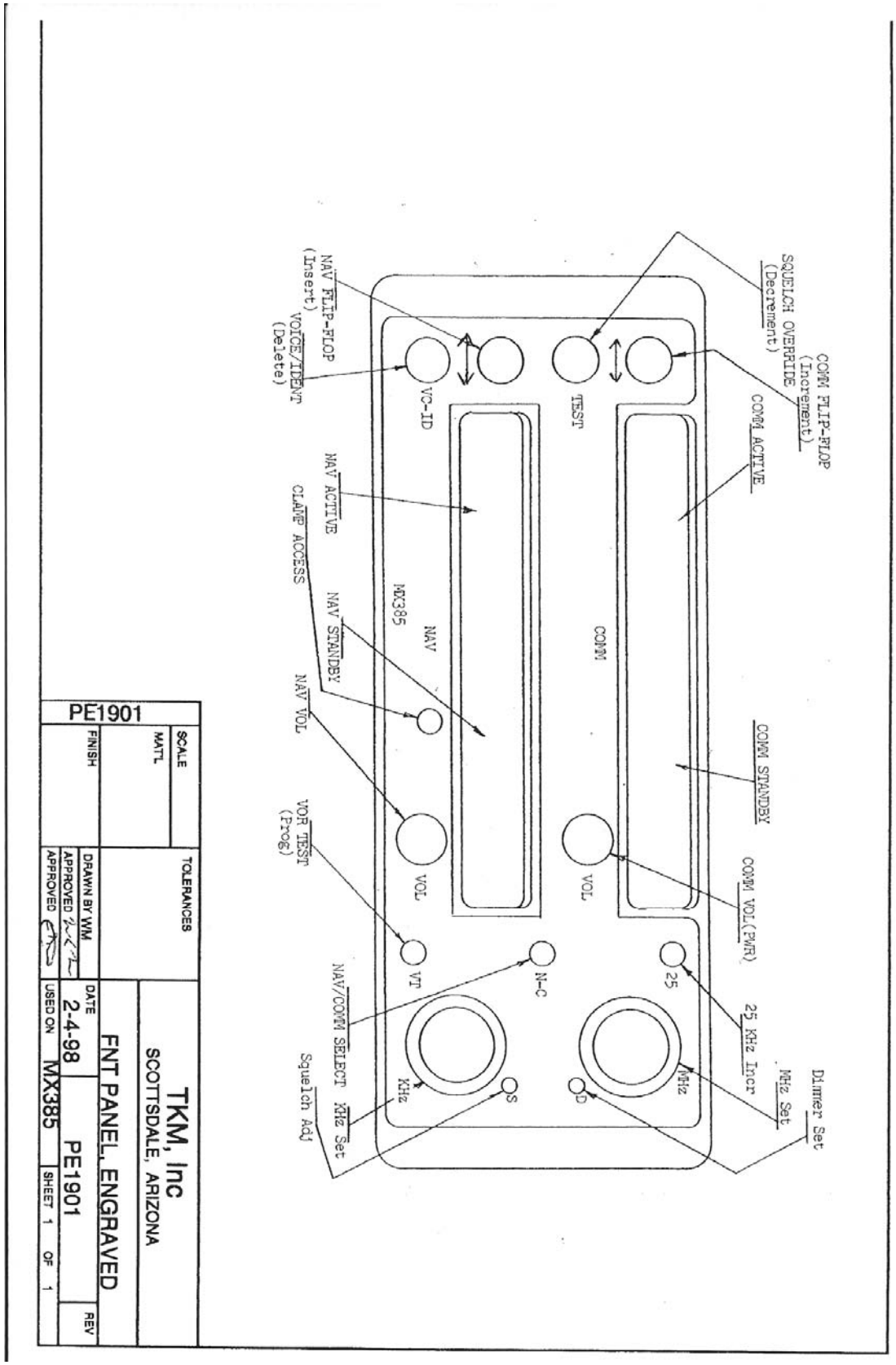


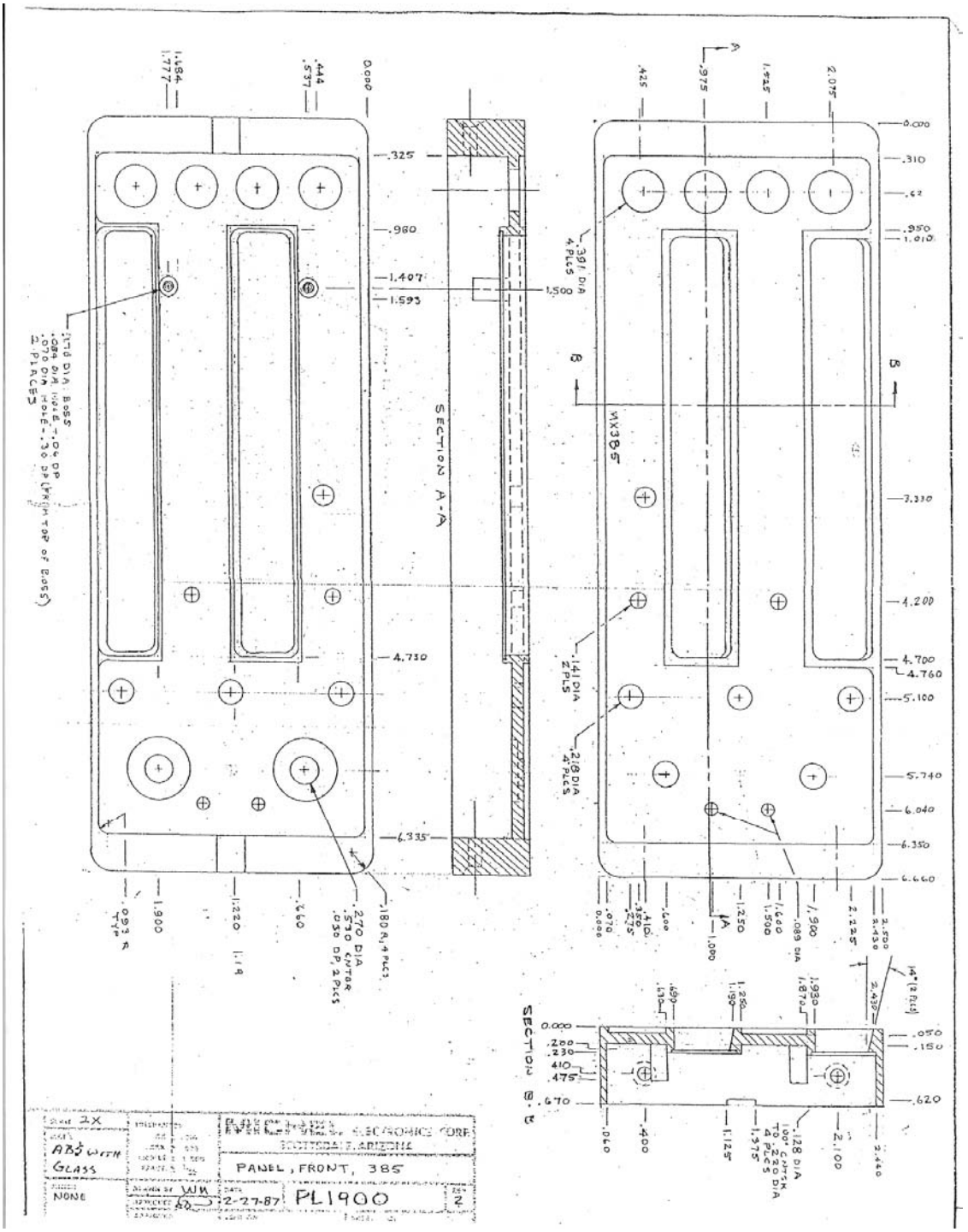
SS1930	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L		FRONT PANEL - MX385		
	FINISH	DRAWN BY WM	DATE 5-18-05	SS1930	REV 4
		APPROVED			
		APPROVED	USED ON	SHEET	

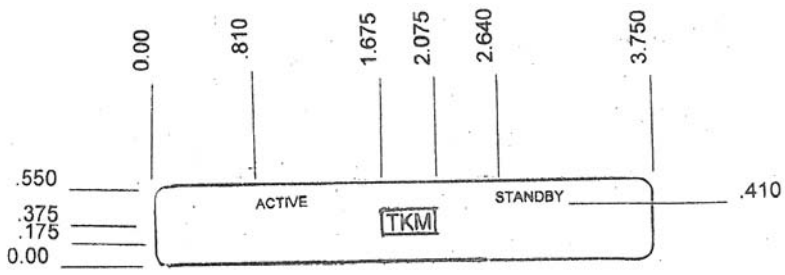
FRONT PANEL; 385; 12 SS1930-4 page 1

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
01	SS1925-3	SUB-ASSEMBLY DISPLAY; 385; 12	1
02	SS1922-4	SUB-ASSEMBLY DRIVER ASSY; 170B, 385, 12	1
03	PE1901-	FRONT PANEL Front panel; MX 385 Black	1
04	PL1777-	PLASTIC FILTER, DISPLAY, UPPER	1
05	PL1778-	PLASTIC FILTER, DISPLAY, LOWER	1
06	HM1814-1	HARDWARE; MACHINE Spacer, Front Panel	2
07	NB216P-	FASTENERS 2-56x1 PP SS	2
08	MP1800-	MISC. PARTS BUTTON; SQUARE WHT	4
09	HM1725-2	HARDWARE; MACHINE SWITCH CAP	3
10	MP1146-	MISC. PARTS KNOB CAP; 10mm BLACK	2
11	MP1046-	MISC. PARTS KNOB; 10mm BLACK	2
12	MP1245-	MISC. PARTS NUT COVER; BLACK (14.5mm)	2
13	MP1045-	MISC. PARTS KNOB; 14.5mm BLACK	2
14	MP1145-	MISC. PARTS KNOB CAP 14.5 mm	2

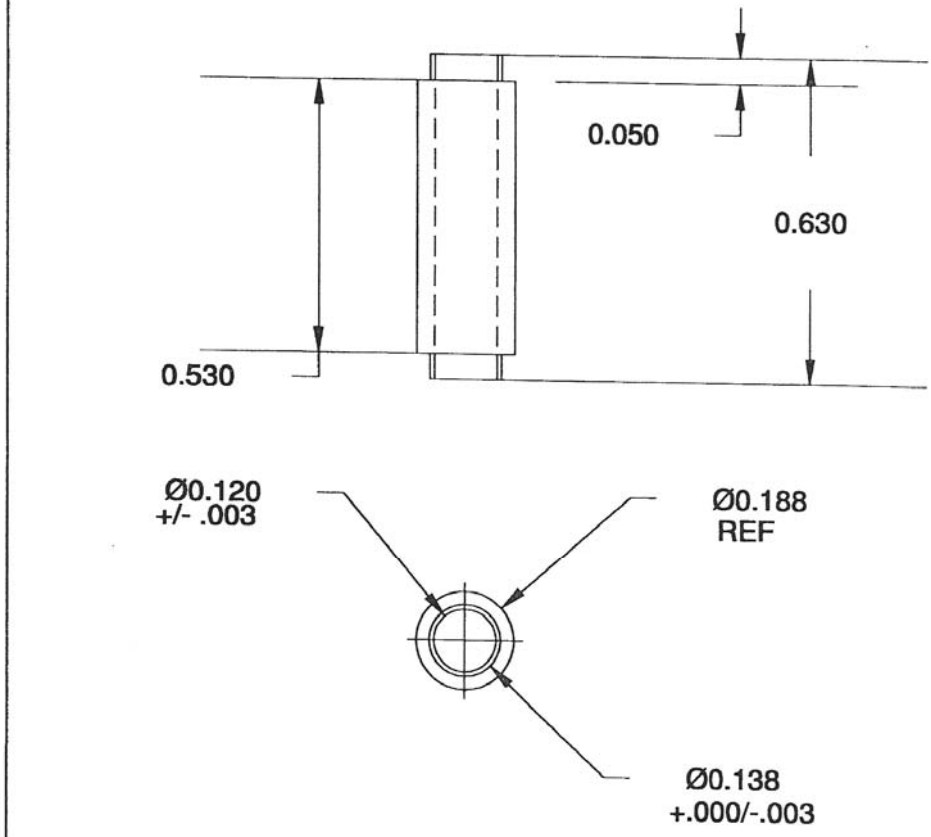

COMM FLIP-FLOP
(Increment)
SQUELCH OVERRIDE
(Decrement)
COMM ACTIVE
COMM STANDBY
COMM VOL(PWR)
25 KHz Incr
Dimmer Set
MHz Set
Squelch Adj
KHz Set
NAV/COMM SELECT
NAV FLIP-FLOP
(Insert)
VOICE/IDENT
(Delete)
VC-ID
TEST
NAV ACTIVE
CLAMP ACCESS
NAV STANDBY
NAV VOL
VOR TEST
(Prog)
MX385
NAV
COMM
VOL
VT
N-C
25
MHz
KHz
S
D
PE1901
SCALE
MATL
FINISH
TOLERANCES
DRAWN BY WM
APPROVED
DATE
2-4-98
USED ON MX385
TKM, Inc
SCOTTSDALE, ARIZONA
FNT PANEL, ENGRAVED
PE1901
REV
SHEET 1 OF 1


SECTION A-A
SECTION B-B
WX385
PANEL, FRONT, 385
PL1900
2-27-87
ABS WITH GLASS
NONE



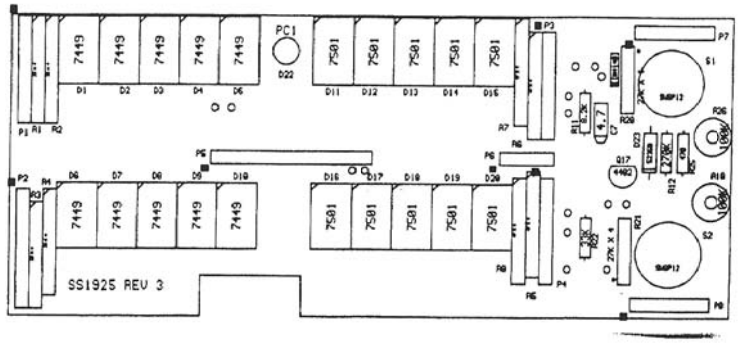
1. LETTERING TO BE PAINTED WITH GLOSS WHITE PAINT ON SCRATCH RESISTANT SURFACE.
2. 'ACTIVE' AND 'STANDBY' TO BE .060 HIGH, 'TKM' TO BE .13 HIGH, CENTERED IN BOX.
3. LETTERING IS BOTTOM CENTER JUSTIFIED ON INDICATED DIMENSIONS.

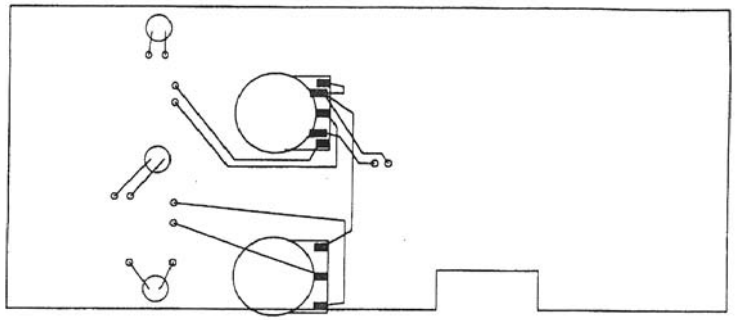
PL1777	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L PANELGRAPHIC A21,PC,901AG 54 .03 THICK	.XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	PLASTIC FILTER, DISPLAY, LOWER	
	FINISH	DRAWN BY WM	DATE 12-28-02	PL1778 REV
		APPROVED	USED ON MX12, 170( ), 385	SHEET 1 OF 1
		APPROVED		



HM1814	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG FRACT +/- 1/32	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L 3/16 DIA ALUM ROD		SPACER, FRONT PANEL		
	FINISH CLR CHEM FILM MIL C 5541A	DRAWN BY WM APPROVED WM APPROVED	DATE 8-9-99	HM1814	REV 1
			USED ON	SHEET 1 OF 1	

TKM, INC. SCOTTSDALE, AZ	NAME DISPLAY -MX385, MX12	PART # SS1925	REV 3
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.	DATE 5/5/05	APPR MC	APPR
			DRAWN BY: WM





BACKSIDE INTERCONNECT
USE #24 WIRE WITH SLEEVING.
THREE SMALL SWITCHES DO NOT
REQUIRE SLEEVING.

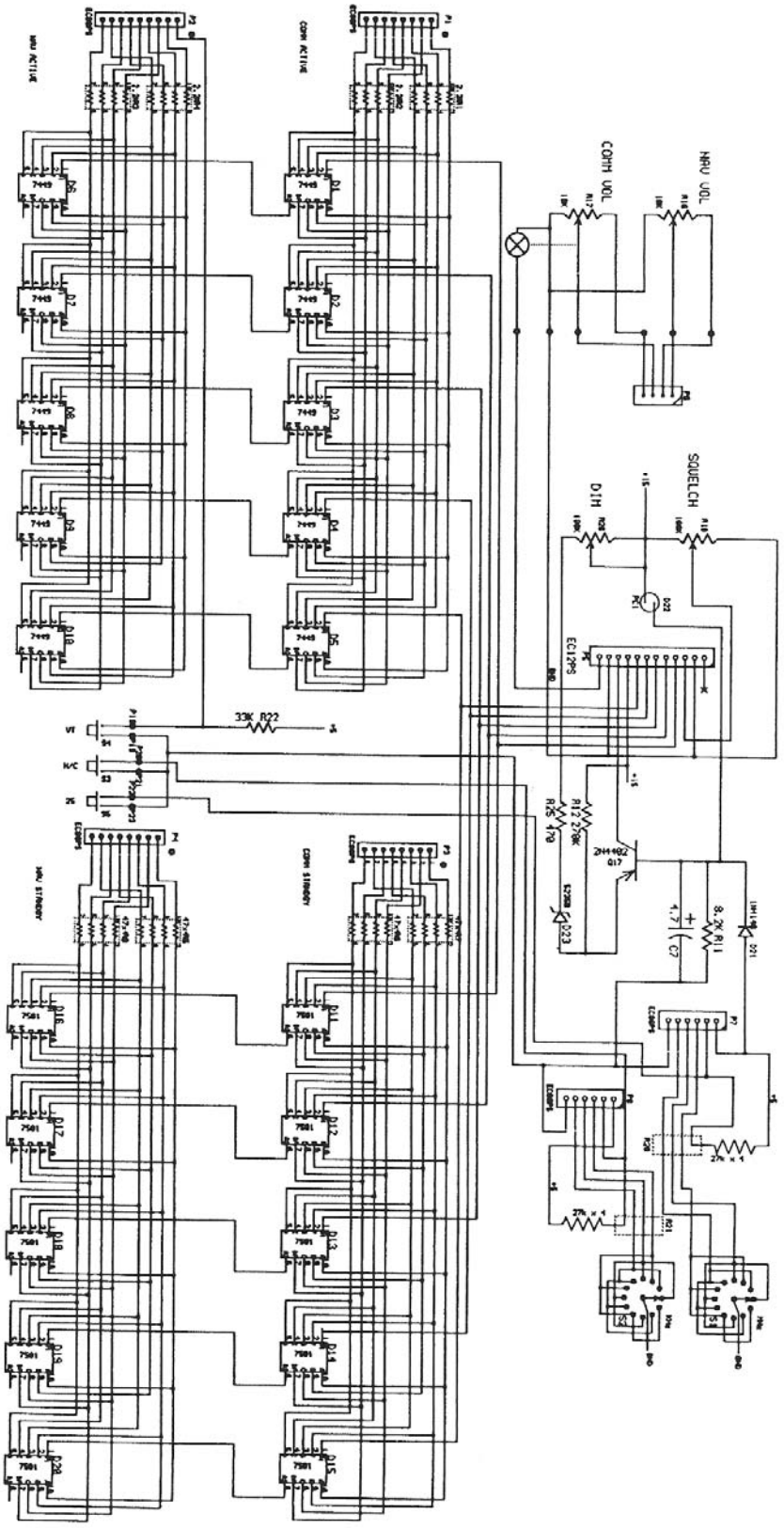
DISPLAY; 385; 12 SS1925-3 page 1

* indicates parts requiring soldermask.

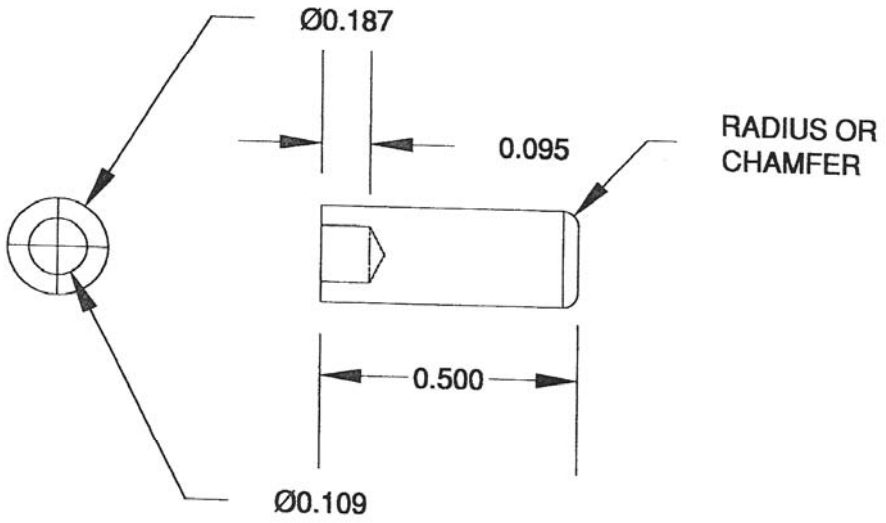
Ref #	Part #	Description	Qty
01	PC1925-3	PCB DISPLAY; 170B/385/12	1
02*	HM1725-2	HARDWARE; MACHINE SWITCH CAP	3
03*	HM1814-1	HARDWARE; MACHINE Spacer, Front Panel	2
04	MP1036-	MISC. PARTS BEAD; FERRITE	1
C7	CT4751-	CAP; TANTALUM 4.7UF/20V; AXIAL	1
D1	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
D10	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
D11	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D12	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D13	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D14	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D15	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D16	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D17	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D18	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D19	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D2	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
D20	DL7501-	OPTICAL RED; 7 SEGMENT LED	1
D21	DD4148-	DIODE 1N4148	1
D22*	DD1700-	DIODE PHOTOCELL	1
D23	DD5235-	DIODE ZENER; 1N5235	1
D3	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
D4	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
D5	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
D6	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
D7	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
D8	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
D9	DL7401-	OPTICAL YELLOW; 7 SEG. LED	1
Q17	QX4403-	TRANSISTOR PNP 2N4403	1
R1	RR2204-	RESISTOR NETWORK NETWORK; 22 OHM X 4(1S0)	1
R10*	RV1803-	POT; PANEL MOUNT 10K;NAV VOLUME	1
R11	RC0822-	RESISTOR; CARB. 8.2 Kohm; 5%; 1/4 watt	1
R12	RC0274-	RESISTOR; CARB. 270K 1/4W 5%	1
R18*	PW0104-	Top Adj. .3 dia 100K	1
R2	RR2204-	RESISTOR NETWORK NETWORK; 22 OHM X 4(1S0)	1
R20	RR2734-	RESISTOR NETWORK 27K X 4	1
R21	RR2734-	RESISTOR NETWORK 27K X 4	1
R22	RC0333-	RESISTOR; CARB. 33 Kohm; 5%; 1/4 watt	1
R25	RC0471-	RESISTOR; CARB. 470 Ohm; 5%; 1/4 watt	1
R26*	PW0104-	Top Adj. .3 dia 100K	1
R3	RR2204-	RESISTOR NETWORK NETWORK; 22 OHM X 4(1S0)	1
R4	RR2204-	RESISTOR NETWORK NETWORK; 22 OHM X 4(1S0)	1
R5	RR4704-	RESISTOR NETWORK NETWORK; 47 OHM, X4(ISO)	1
R6	RR4704-	RESISTOR NETWORK NETWORK; 47 OHM, X4(ISO)	1
R7	RR4704-	RESISTOR NETWORK NETWORK; 47 OHM, X4(ISO)	1

* indicates parts requiring soldermask.

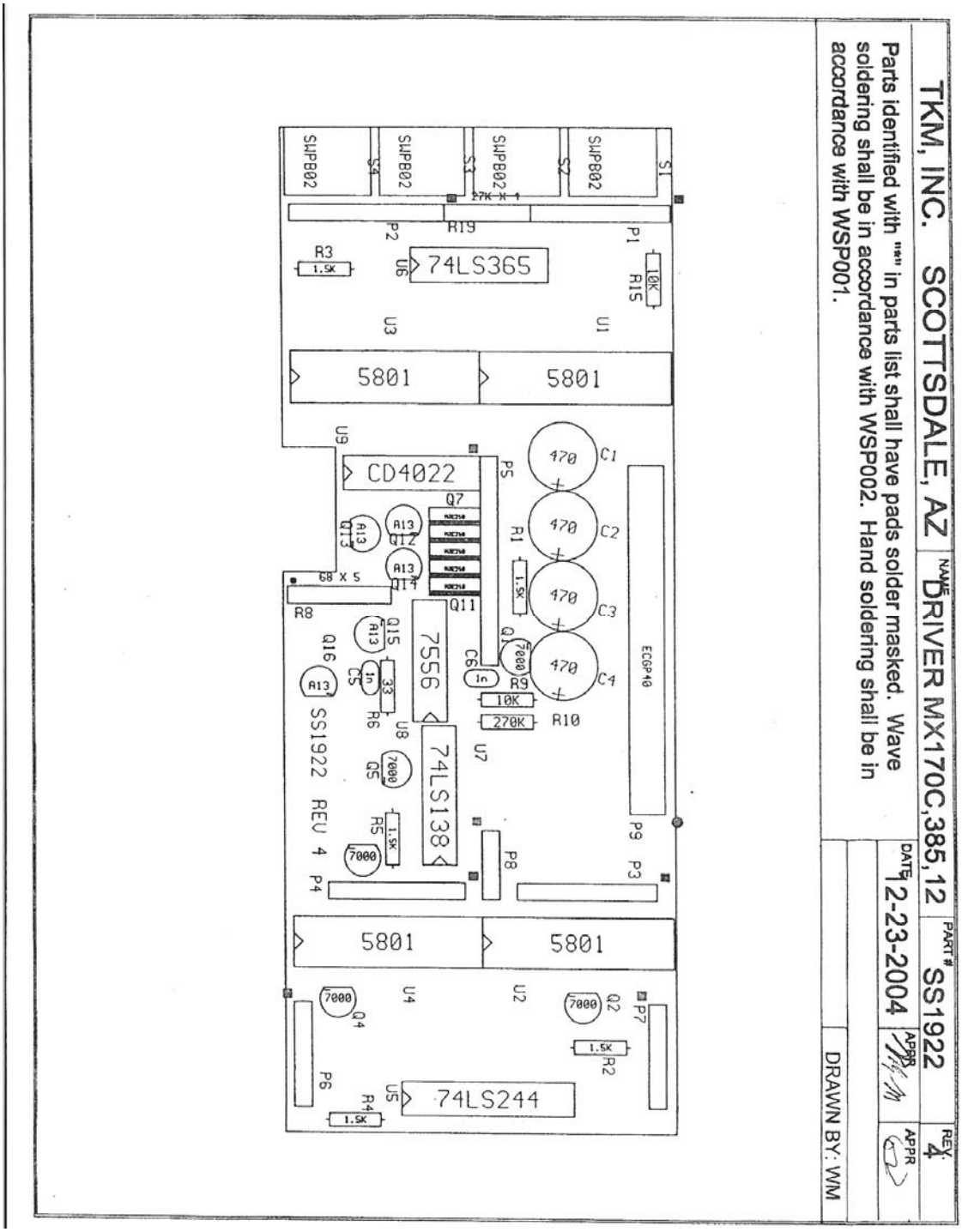
Ref #	Part #	Description	Qty
R8	RR4704-	RESISTOR NETWORK NETWORK; 47 OHM, X4(ISO)	1
R9*	RV1814-	POT; PANEL MOUNT 10K /FRONT PANEL	1
S01*	SW1700-1	SWITCHES 12 POS; ROTARY	1
S02*	SW1700-1	SWITCHES 12 POS; ROTARY	1
S03*	SW1701-	SWITCHES PUSH BUTTON; MINI	1
S04*	SW1701-	SWITCHES PUSH BUTTON; MINI	1
S05*	SW1701-	SWITCHES PUSH BUTTON; MINI	1



DISPLAY BOARD SS1925 REV 3



HM1725	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L NYLON ROD WHITE	.XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	CAP, SWITCH	
	FINISH NONE	DRAWN BY WM APPROVED APPROVED	DATE 8-28-00	HM1725 REV 2
			USED ON	SHEET 1 OF 1


TKM, INC. SCOTTSDALE, AZ
NAME DRIVER MX170C,385,12
PART # SS1922
REV 4
DATE 12-23-2004
APPR
APPR
DRAWN BY: WM
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.
SS1922 REV 4
74LS365
74LS138
74LS244
CD4022
7556
5801
SWPB02
ECGP10
R3 1.5K
R19 27K
R15 10K
R1 1.5K
R10 270K
R9 10K
R6 33
R5 1.5K
R2 1.5K
R4 1.5K
R8 68 X 5
C1 470
C2 470
C3 470
C4 470
C6 .1
C5 .1n
Q7
Q11
Q12
Q13
Q14
Q15
Q16
Q1
Q2
Q3
Q4
Q5
Q6
7000
A13
U1
U2
U3
U4
U5
U6
U7
U8
U9
P1
P2
P3
P4
P5
P6
P7
P8
P9
S1
S2
S3
S4

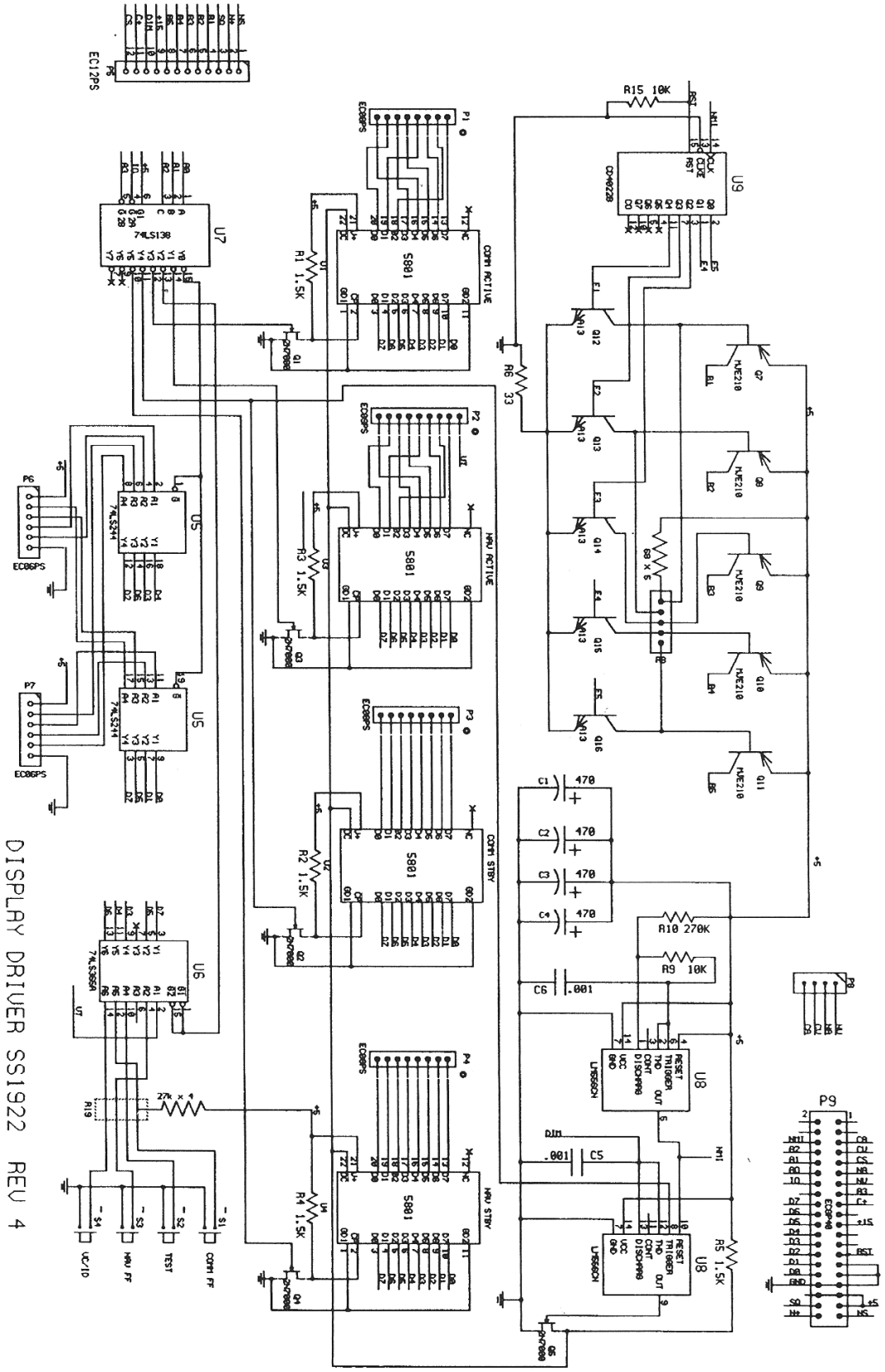
DRIVER; MX170B, 385, 12 SS1922-4 page 1

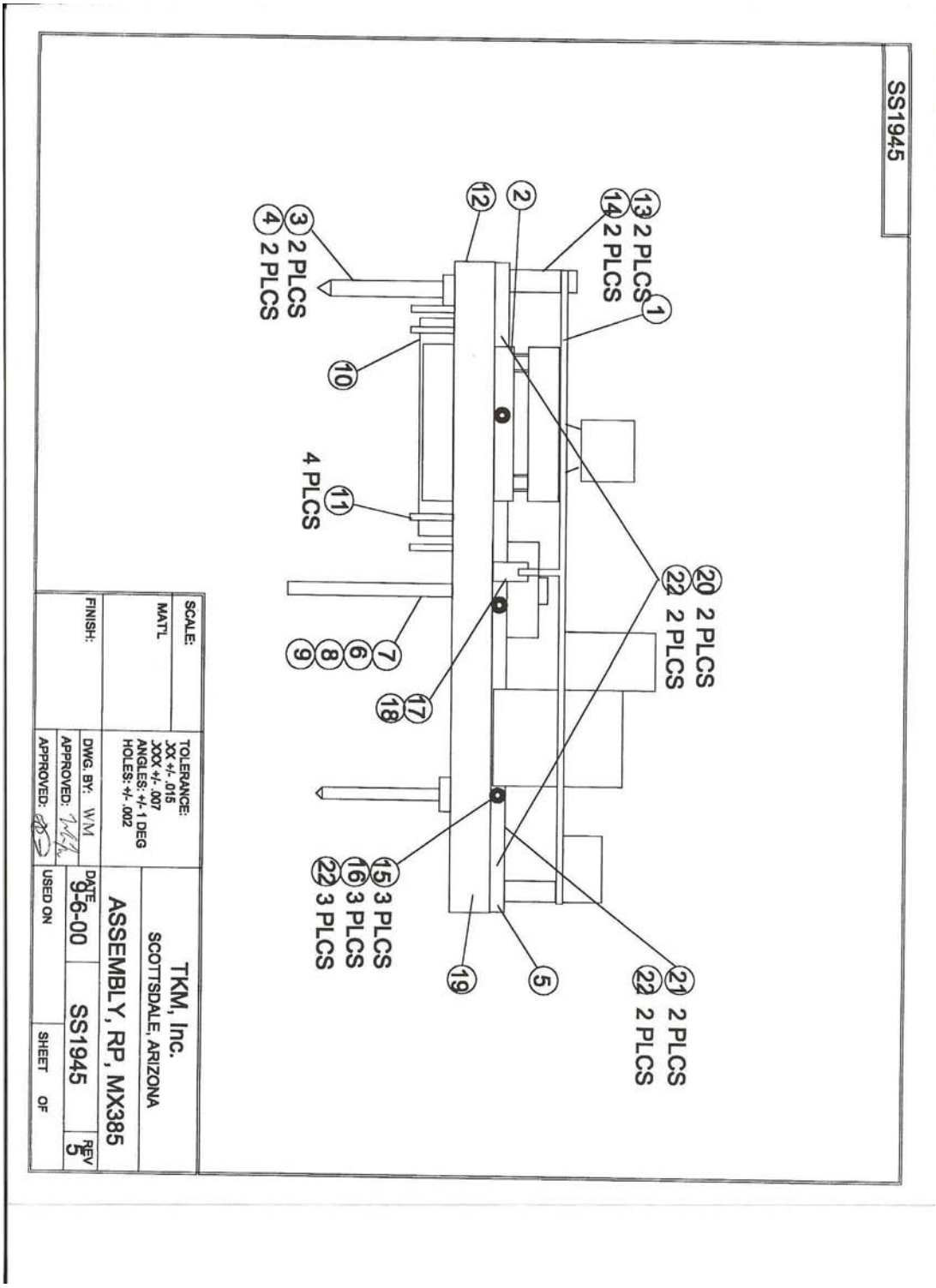
* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
	-		1
01	PC1922-4	PCB DRIVER; 170B/385/12	1
02	ES1002-	IC SOCKET; DIP 14 PIN; DIP	1
03	ES1004-	IC SOCKET; DIP 20 PIN; DIP	1
04*	MP1801-	MISC. PARTS SWITCH CAP; ROUND/WHT	4
05*	HS1814-	SPACER FRONT PANEL;SPACER	2
C1	CE4772-	CAP; ALUM ELECT. 470/6.3-10V; RADIAL	1
C2	CE4772-	CAP; ALUM ELECT. 470/6.3-10V; RADIAL	1
C3	CE4772-	CAP; ALUM ELECT. 470/6.3-10V; RADIAL	1
C4	CE4772-	CAP; ALUM ELECT. 470/6.3-10V; RADIAL	1
C5	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
C6	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
P1	MP1043-	MISC. PARTS SOCKET STRIP; GOLD	1
P2	MP1043-	MISC. PARTS SOCKET STRIP; GOLD	1
P3	MP1043-	MISC. PARTS SOCKET STRIP; GOLD	1
P4	MP1043-	MISC. PARTS SOCKET STRIP; GOLD	1
P5	MP1043-	MISC. PARTS SOCKET STRIP; GOLD	1
P6	MP1043-	MISC. PARTS SOCKET STRIP; GOLD	1
P7	MP1043-	MISC. PARTS SOCKET STRIP; GOLD	1
P8	MP1043-	MISC. PARTS SOCKET STRIP; GOLD	1
P9	MP1053-	MISC. PARTS PIN HEADERS; GOLD; DUAL ROW	1
Q1	QX7000-	TRANSISTOR 2N7000	1
Q10*	QX0210-	TRANSISTOR MJE210	1
Q11*	QX0210-	TRANSISTOR MJE210	1
Q12	QX0A13-	TRANSISTOR MPSA13	1
Q13	QX0A13-	TRANSISTOR MPSA13	1
Q14	QX0A13-	TRANSISTOR MPSA13	1
Q15	QX0A13-	TRANSISTOR MPSA13	1
Q16	QX0A13-	TRANSISTOR MPSA13	1
Q2	QX7000-	TRANSISTOR 2N7000	1
Q3	QX7000-	TRANSISTOR 2N7000	1
Q4	QX7000-	TRANSISTOR 2N7000	1
Q5	QX7000-	TRANSISTOR 2N7000	1
Q7	QX0210-	TRANSISTOR MJE210	1
Q8	QX0210-	TRANSISTOR MJE210	1
Q9	QX0210-	TRANSISTOR MJE210	1
R1	RC0152-	RESISTOR; CARB. 1.5 Kohm; 5%; 1/4 watt	1
R10	RC0274-	RESISTOR; CARB. 270K 1/4W 5%	1
R15	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R19	RR2734-	RESISTOR NETWORK 27K X 4	1
R2	RC0152-	RESISTOR; CARB. 1.5 Kohm; 5%; 1/4 watt	1
R3	RC0152-	RESISTOR; CARB. 1.5 Kohm; 5%; 1/4 watt	1
R4	RC0152-	RESISTOR; CARB. 1.5 Kohm; 5%; 1/4 watt	1
R5	RC0152-	RESISTOR; CARB. 1.5 Kohm; 5%; 1/4 watt	1
R6	RC0330-	RESISTOR; CARB. 33 OHM; 1/4W 5%	1

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
R8	RR6801-	RESISTOR NETWORK 68 OHM X 5	1
R9	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
S1*	SW1800-	SWITCHES PUSH BUTTON	1
S2*	SW1800-	SWITCHES PUSH BUTTON	1
S3*	SW1800-	SWITCHES PUSH BUTTON	1
S4*	SW1800-	SWITCHES PUSH BUTTON	1
U1	IM5801-	INT. CKT.; MISC. UCN5801	1
U2	IM5801-	INT. CKT.; MISC. UCN5801	1
U3	IM5801-	INT. CKT.; MISC. UCN5801	1
U4	IM5801-	INT. CKT.; MISC. UCN5801	1
U5*	IL7644-	INT. CKT.; LPSHTK 74LS244	1
U6	IL7765-	INT. CKT.; LPSHTK 74LS365	1
U7	IL7538-	INT. CKT.; LPSHTK 74LS138	1
U8*	IM7556-	INT. CKT.; MISC. 7556	1
U9	IC4022-	INT. CKT; CMOS 14022	1

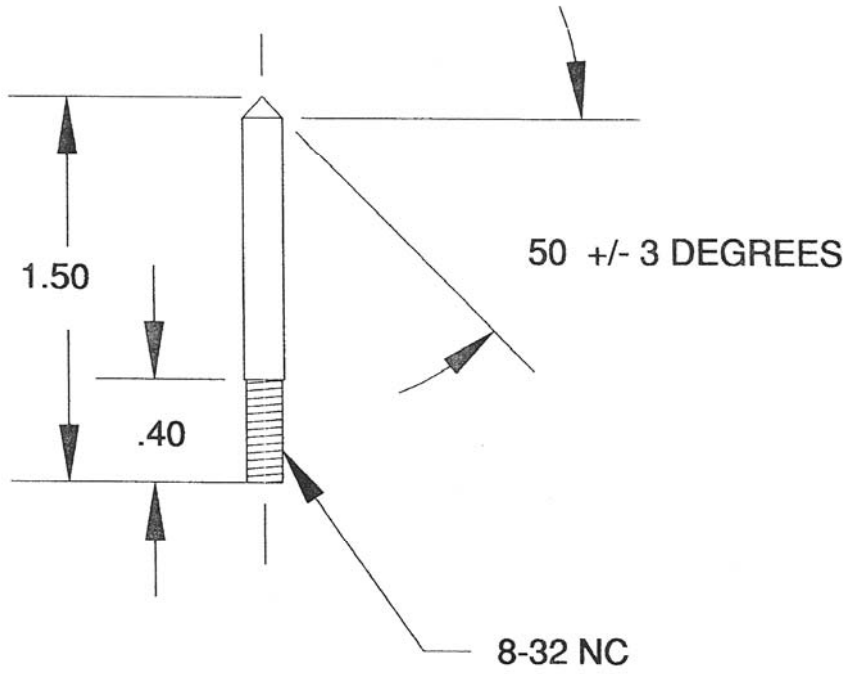

DISPLAY DRIVER SS1922 REV 4
EC12PS
EC08PS
EC06PS
74LS138
74LS244
74LS368A
S881
CC4028
LM555CN
R15 10K
R10 270K
R9 10K
R6 33
R5 1.5K
R1 1.5K
R2 1.5K
R3 1.5K
R4 1.5K
R19 27K x 4
C1 470
C2 470
C3 470
C4 470
C6 .001
C5 .001
DIN
HV1
HV2
HV3
HV4
HV5
-S1
-S2
-S3
-S4
COMM FF
TEST
HV FF
UC/ID


SS1945
13 2 PLCS
14 2 PLCS
1
12
2
3 2 PLCS
4 2 PLCS
10
4 PLCS
11
20 2 PLCS
22 2 PLCS
7
6
8
9
17
18
15 3 PLCS
16 3 PLCS
22 3 PLCS
19
5
21 2 PLCS
22 2 PLCS
SCALE:
MAT'L
TOLERANCE:
XX +/- .015
XXX +/- .007
ANGLES: +/- 1 DEG
HOLES: +/- .002
FINISH:
TKM, Inc.
SCOTTSDALE, ARIZONA
ASSEMBLY, RP, MX385
DWG. BY: WM
DATE 9-6-00
SS1945
REV 5
APPROVED:
USED ON
SHEET OF
APPROVED:

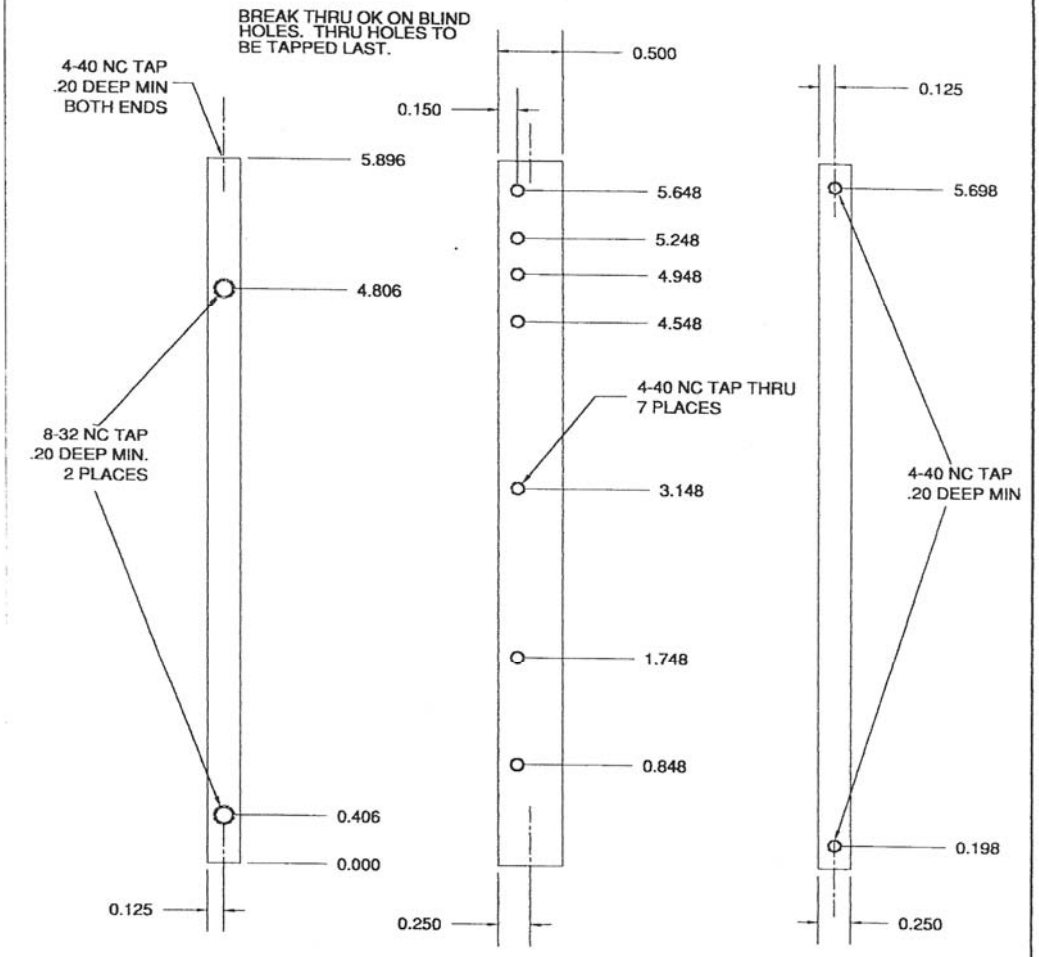
ASS'Y REAR PANEL MX385 SS1945-5 page 1

* indicates parts requiring soldermask.

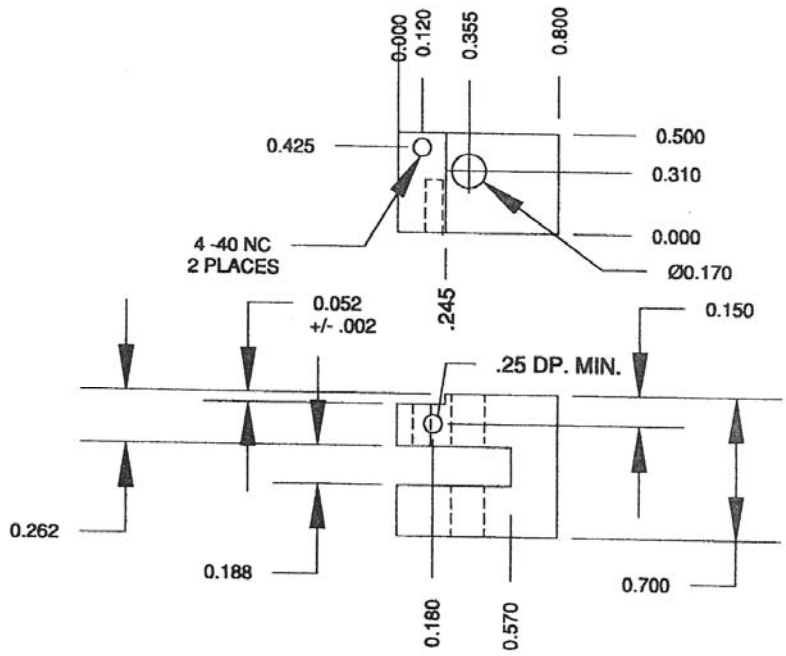
Ref #	Part #	Description	Qty
01	SS1940-5	SUB-ASSEMBLY REAR PANEL ASSY; MX385	1
02	SS1939-3	SUB-ASSEMBLY CONNECTOR ASSY; MX385	1
03	HM1911-	HARDWARE; MACHINE GUIDE PIN; MX385	2
04	NB800N-	FASTENERS 8-32 NUT, SS	2
05	HM1902-2	HARDWARE; MACHINE BRACE; REAR MX385	1
06	HM1913-1	HARDWARE; MACHINE BLOCK; CLAMP MX385	1
07	HM1918-	HARDWARE; MACHINE CLAMP SCREW	1
08	HM1920-1	HARDWARE; MACHINE COLLAR; MX385	1
09	NB402A-	FASTENERS 4-40x1/8 ASET PNT SS	1
10	CA1925-	CABLE; RIBBON 34 COND. MX385 CHAN.	1
11	HM1921-	HARDWARE; MACHINE GUIDE PIN; MX385	4
12	NB400K-	FASTENERS 4-40 KEPS NUT SS	1
13	NB408P-	FASTENERS 4-40x1/2 PP SS	2
14	HS1005-	SPACER 3/16 HEX x.312; THRU	2
15	MP1052-	MISC. PARTS MICA INSULATOR	3
16	MP1051-	MISC. PARTS NYLON SHOULDER WASHER	3
17	NB403P-	FASTENERS 4-40x3/16 PP SS	1
18	NB1488-	FASTENERS #4 SOLDER LUG	1
19	SM1903-2	SHEET METAL REAR PANEL; MX385	1
20	NB402W-	FASTENERS #4 SPLIT LOCK WASHER SS	2
21	NB401W-	FASTENERS #4 NYLON FLAT WASHER	2
22	NB404P-	FASTENERS 4-40x1/4 PP SS	7
~1	EC1902-	CONNECTOR 50 PIN D-SUB; MALE/SOLDER CUP	1
~2	EC1004-	CONNECTOR 34 PIN ; RIBBON CONN	1
~3	MP1039-	MISC. PARTS POT CORE, 2616 3C8	4
~4	MP1139-	MISC. PARTS BOBBIN; 2616	2
~5	MP1041-	MISC. PARTS POT CORE; 1811	2
~6	MP1141-	MISC. PARTS BOBBIN; 1811	1
~7	NB8322-	FASTENERS 8-32x2.5 SP SS	1



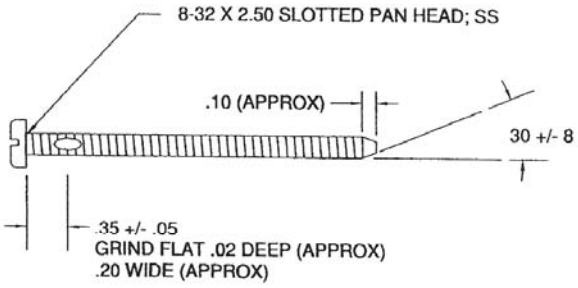
SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA		
MAT'L .156 DIA ROD STAINLESS STEEL	.XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG FRACT +/- 1/32	PIN, GUIDE		
FINISH DETERGENT WASH	DRAWN BY WM APPROVED APPROVED	DATE 8-3-99	HM1911	REV 1
		USED ON MX385	SHEET 1 OF 1	



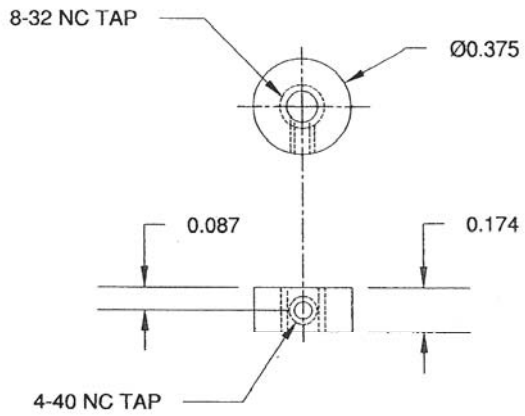
HM1902	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L .25 X .50 ALUM BAR 6061 T6		BRACE, REAR	
	FINISH CLR CHEM FILM MIL-C-5541	DRAWN BY WM APPROVED APPROVED	DATE 5-5-00	HM1902 REV 1 USED ON MX385 SHEET 1 OF 1



HM1913	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG FRACT +/- 1/32	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L ALUM ALLOY 6061 T6		BLOCK, CLAMP		
	FINISH CLR CHEM FILM MIL-C-5541	DRAWN BY WM APPROVED APPROVED	DATE 8-9-99	HM1913	REV 2
			USED ON MX385	SHEET 1 OF 1	



HM1918	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L		CLAMP SCREW		
	FINISH	DRAWN BY WM	DATE 3-10-01	HM1918	REV
		APPROVED			
		APPROVED	USED ON MX385	SHEET 1 OF 1	

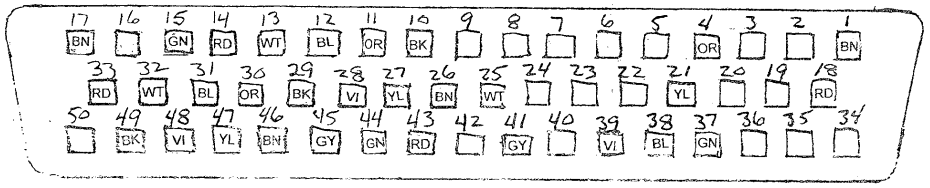


HM1920	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L ALUM 6061 T6		COLLAR		
	FINISH CLR CHEM FILM	DRAWN BY WM	DATE 2-26-04	HM1920	REV 1
		APPROVED			
		APPROVED	USED ON MX385	SHEET 1 OF 1	

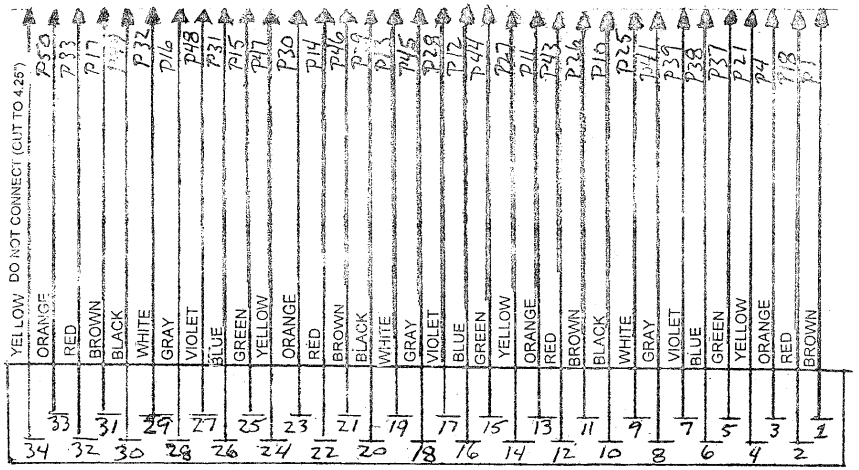
ABBREVIATIONS

BK = BLACK
BN = BROWN
RD = RED
OR = ORANGE
YL = YELLOW
GN = GREEN
VI = VIOLET
BL = BLUE
GY = GRAY
WT = WHITE

50 PIN MALE 'D-SUB' CONNECTOR/SOLDER
(USE EC1902)



4.5" +/- .5"/0



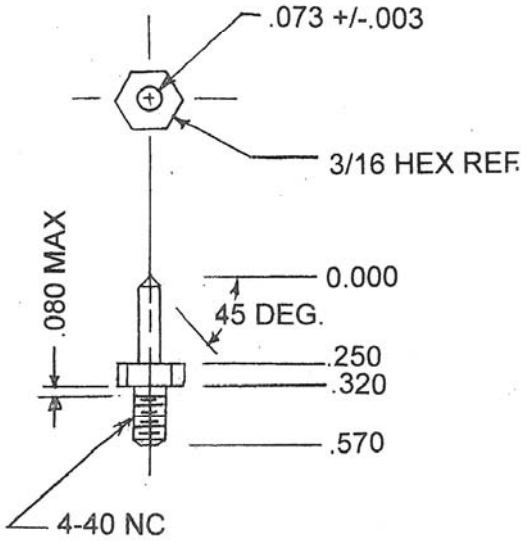
34 PIN RIBBON CONNECTOR
(USE EC1004)

SOCKET HOLES
DOWN

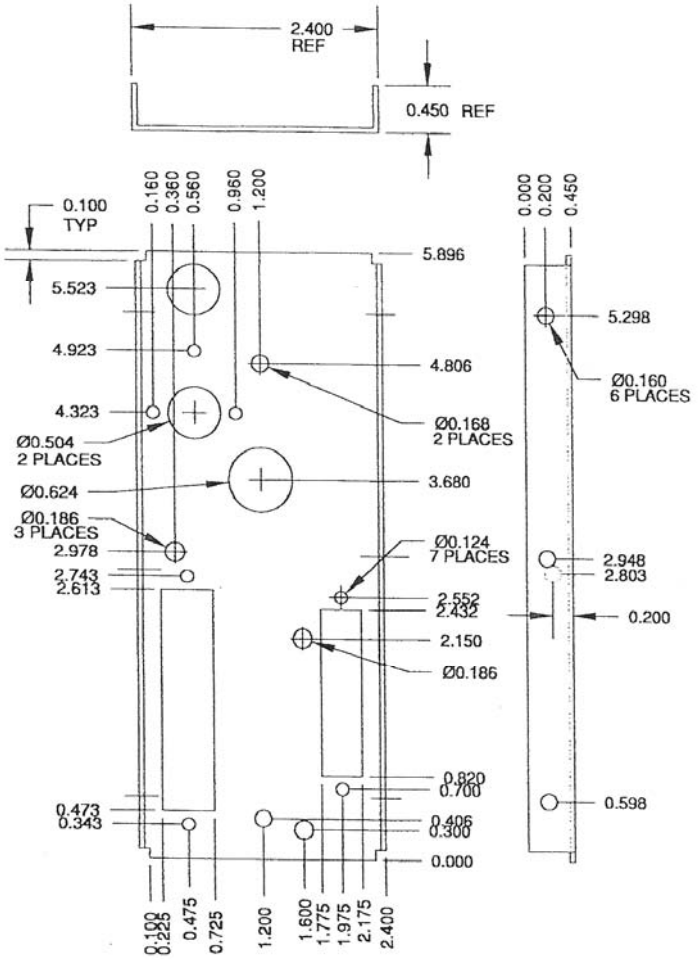
ASSEMBLY NOTES

1. USE 34 WIRE RIBBON CABLE
2. CUT 34 WIRE RIBBON CABLE TO 6" +/- .5"/0
3. DO NOT CONNECT #34 (YELLOW) WIRE
4. SEPARATE WIRES APPX. .75" AT ENDS
5. SOLDER PER TKM DOC. #WSP001

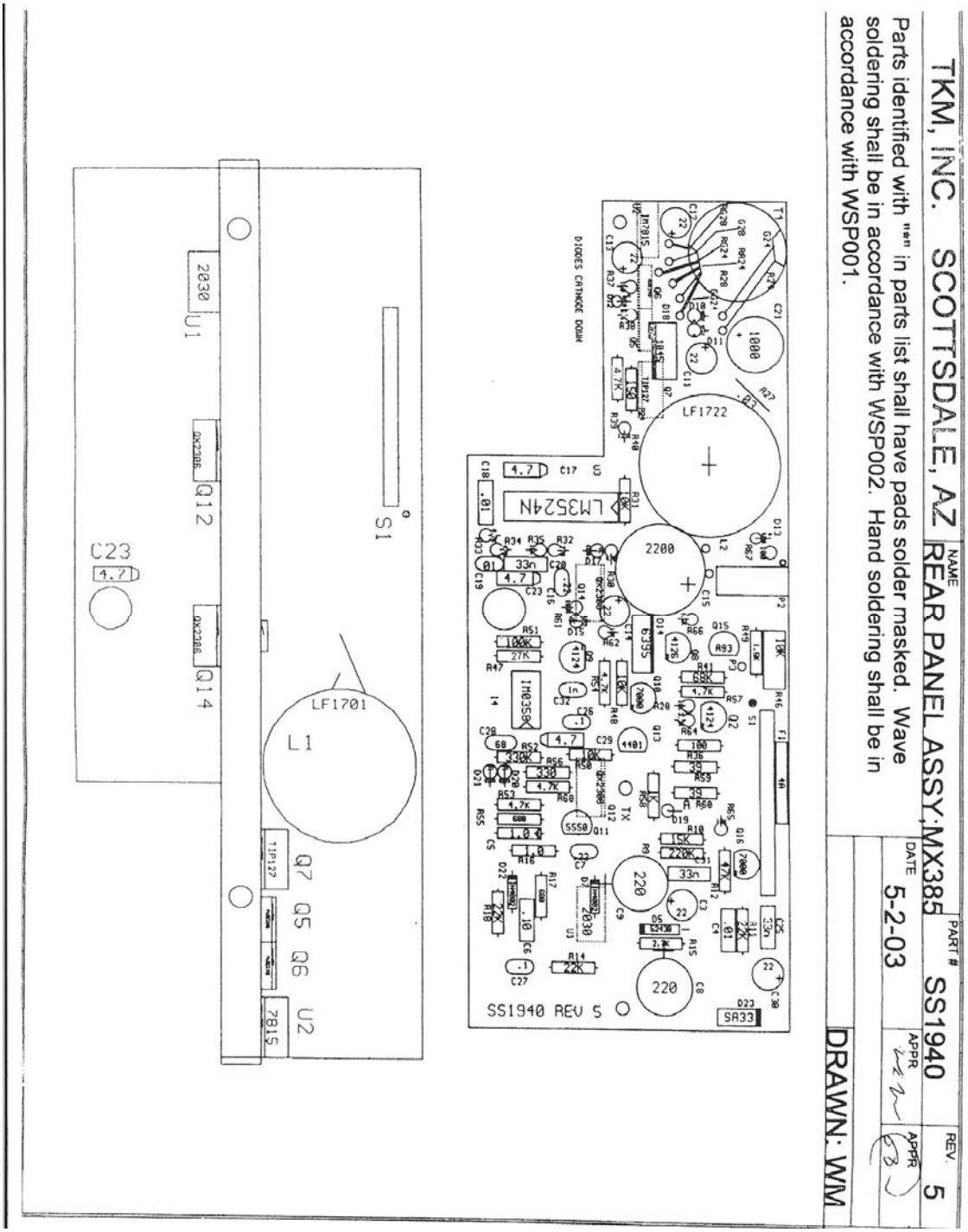
CA1925	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA
	MAT'L		CHANNELING CABLE; MX385
	FINISH	DRAWN BY WM	DATE 8-3-89 — CA1925 — REV
		APPROVED	
		APPROVED	USED ON MX385 REAR PNL — SHEET 1



HM1921	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L 3/16" HEX STAINLESS STEEL		GUIDE PIN	
	FINISH DETERGENT WASH	DRAWN BY WM APPROVED APPROVED	DATE 8-2-99	HM1921 REV
			USED ON MX385	SHEET 1 OF 1



SM1903	SCALE	TOLERANCES XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA	
	MATL .050 ALUM 5052 H32		PANEL, REAR, MX385	
	FINISH CLR CHEM FILM MIL-C-5541	DRAWN BY WM APPROVED APPROVED	DATE 8-20-99 USED ON	SM1903 SHEET 1 OF 1
				REV 2


TKM, INC. SCOTTSDALE, AZ
NAME REAR PANEL ASSY;MX385
PART # SS1940
REV. 5
DATE 5-2-03
APPR
APPR
DRAWN: WM
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.
SS1940 REV 5
LF1722
LM352N
LF1701
L1
S1
Q12
Q14
Q7 Q5 Q6 U2
U1
C23
2030
7815

REAR PANEL; MX385 SS1940-5 page 1

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
01	PC1940-5	PCB REAR PANEL - MX385	1
03*	SS1939-3	SUB-ASSEMBLY CONNECTOR ASSY; MX385	1
04*	SS1921-3	SUB-ASSEMBLY T/R SWITCH; MX385	1
05*	NB800N-	FASTENERS 8-32 NUT, SS	2
06*	HM1902-2	HARDWARE; MACHINE BRACE; REAR MX385	1
07*	HM1913-1	HARDWARE; MACHINE BLOCK; CLAMP MX385	1
08*	NB8322-	FASTENERS 8-32x2.5 SP SS	1
09*	HM1920-1	HARDWARE; MACHINE COLLAR; MX385	1
10*	NB402A-	FASTENERS 4-40x1/8 ASET PNT SS	1
11*	CA1925-	CABLE; RIBBON 34 COND. MX385 CHAN.	1
12*	HM1921-	HARDWARE; MACHINE GUIDE PIN; MX385	4
13*	NB400K-	FASTENERS 4-40 KEPS NUT SS	3
14*	NB408P-	FASTENERS 4-40x1/2 PP SS	1
15*	HS1005-	SPACER 3/16 HEX x.312; THRU	2
16*	MP1052-	MISC. PARTS MICA INSULATOR	3
17*	MP1051-	MISC. PARTS NYLON SHOULDER WASHER	4
18*	NB403P-	FASTENERS 4-40x3/16 PP SS	2
19*	NB1488-	FASTENERS #4 SOLDER LUG	1
20*	SM1903-2	SHEET METAL REAR PANEL; MX385	1
21*	NB402W-	FASTENERS #4 SPLIT LOCK WASHER SS	3
22*	NB401W-	FASTENERS #4 NYLON FLAT WASHER	4
23*	NB404P-	FASTENERS 4-40x1/4 PP SS	7
24*	EC1902-	CONNECTOR 50 PIN D-SUB; MALE/SOLDER CUP	1
25*	EC1004-	CONNECTOR 34 PIN ; RIBBON CONN	1
26*	NB8NYW-	FASTENERS #8 NYLON FLAT WASHER	2
27*	HM1911-	HARDWARE; MACHINE GUIDE PIN; MX385	2
C11	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C12	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C13	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C14	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C15*	CE2283-	CAP; ALUM ELECT. 2200/35-50V; RADIAL	1
C16	CR2242-	CAP; MONO-CERAMIC .22 uF; 100V	1
C17	CT4751-	CAP; TANTALUM 4.7UF/20V; AXIAL	1
C18	CF1033-	CAPACITOR; FILM .01/63	1
C19	CR1033-	CAP; MONO-CERAMIC .01uF; 100V	1
C20	CF3333-	CAPACITOR; FILM .033/63V	1
C21	CE1081-	CAP; ALUM ELECT. 1000/6.3-10V; RADIAL	1
C23	CT4751-	CAP; TANTALUM 4.7UF/20V; AXIAL	1
C25	CF3333-	CAPACITOR; FILM .033/63V	1
C26	CR1043-	CAP; MONO-CERAMIC .1uF; 50V	1
C27	CR1043-	CAP; MONO-CERAMIC .1uF; 50V	1
C28	CR6804-	CAP; MONO-CERAMIC 68PF; 200V	1
C29	CT4752-	CAP; TANTALUM 4.7UF/20V; RADIAL	1
C3	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C30	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1

REAR PANEL; MX385 SS1940-5 page 2

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
C31	CF3333-	CAPACITOR; FILM .033/63V	1
C32	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
C4	CF1033-	CAPACITOR; FILM .01/63	1
C5	CT1052-	CAP; TANTALUM 1.0/35V; RADIAL	1
C6	CF1044-	CAPACITOR; FILM .1/63V	1
C7	CR2242-	CAP; MONO-CERAMIC .22 uF; 100V	1
C8	CE2211-	CAP; ALUM ELECT. 220/50V; RADIAL	1
C9	CE2211-	CAP; ALUM ELECT. 220/50V; RADIAL	1
D10	DD4934-	DIODE 1N4934	1
D11	DD4934-	DIODE 1N4934	1
D12	DD5819-	DIODE 1N5819	1
D13	DD5235-	DIODE ZENER; 1N5235	1
D14	DD6395-	DIODE SCR; 2N6395 or 2N6504	1
D15	DD5250-	DIODE ZENER; 1N5250	1
D17	DD5250-	DIODE ZENER; 1N5250	1
D18	DD1045-	DIODE MBR1045	1
D19	DD4148-	DIODE 1N4148	1
D20	DD5243-	DIODE ZENER; 1N5243	1
D21	DD5243-	DIODE ZENER; 1N5243	1
D22	DD4002-	DIODE 1N4002	1
D23	DDSA33-	DIODE SURGE, P6KE39A	1
D5	DD5243-	DIODE ZENER; 1N5243	1
D7	DD4002-	DIODE 1N4002	1
F1	MP1708-	MISC. PARTS FUSE RESETTABLE 4 A	1
L1*	LF1701-1	INDUCTOR; FIXED TRANSFORMER INVERTER	1
L2*	LF1722-	INDUCTOR; FIXED TRANSFORMER INVERTER	1
P2	MP1053-	MISC. PARTS PIN HEADERS; GOLD; DUAL ROW	1
Q10	QX7000-	TRANSISTOR 2N7000	1
Q11	QX5550-	TRANSISTOR 2N5550	1
Q12*	QX2306-	TRANSISTOR 23P06	1
Q13	QX4401-	TRANSISTOR PNP- 2N4401	1
Q14*	QX2306-	TRANSISTOR 23P06	1
Q15	QX0A93-	TRANSISTOR MPSA93	1
Q16	QX7000-	TRANSISTOR 2N7000	1
Q2	QX4124-	TRANSISTOR 2N4124	1
Q5	QX0210-	TRANSISTOR MJE210	1
Q6	QX0210-	TRANSISTOR MJE210	1
Q7	QX0127-	TRANSISTOR TIP127, PNP Darlington, 100V	1
Q8	QX4126-	TRANSISTOR 2N4126	1
Q9	QX4124-	TRANSISTOR 2N4124	1
R10	RC0153-	RESISTOR; CARB. 15 Kohm; 5%; 1/4 watt	1
R11	RC0223-	RESISTOR; CARB. 22 Kohm; 5%; 1/4 watt	1
R12	RC0473-	RESISTOR; CARB. 47 Kohm; 5%; 1/4 watt	1
R14	RC0223-	RESISTOR; CARB. 22 Kohm; 5%; 1/4 watt	1

REAR PANEL; MX385 SS1940-5 page 3

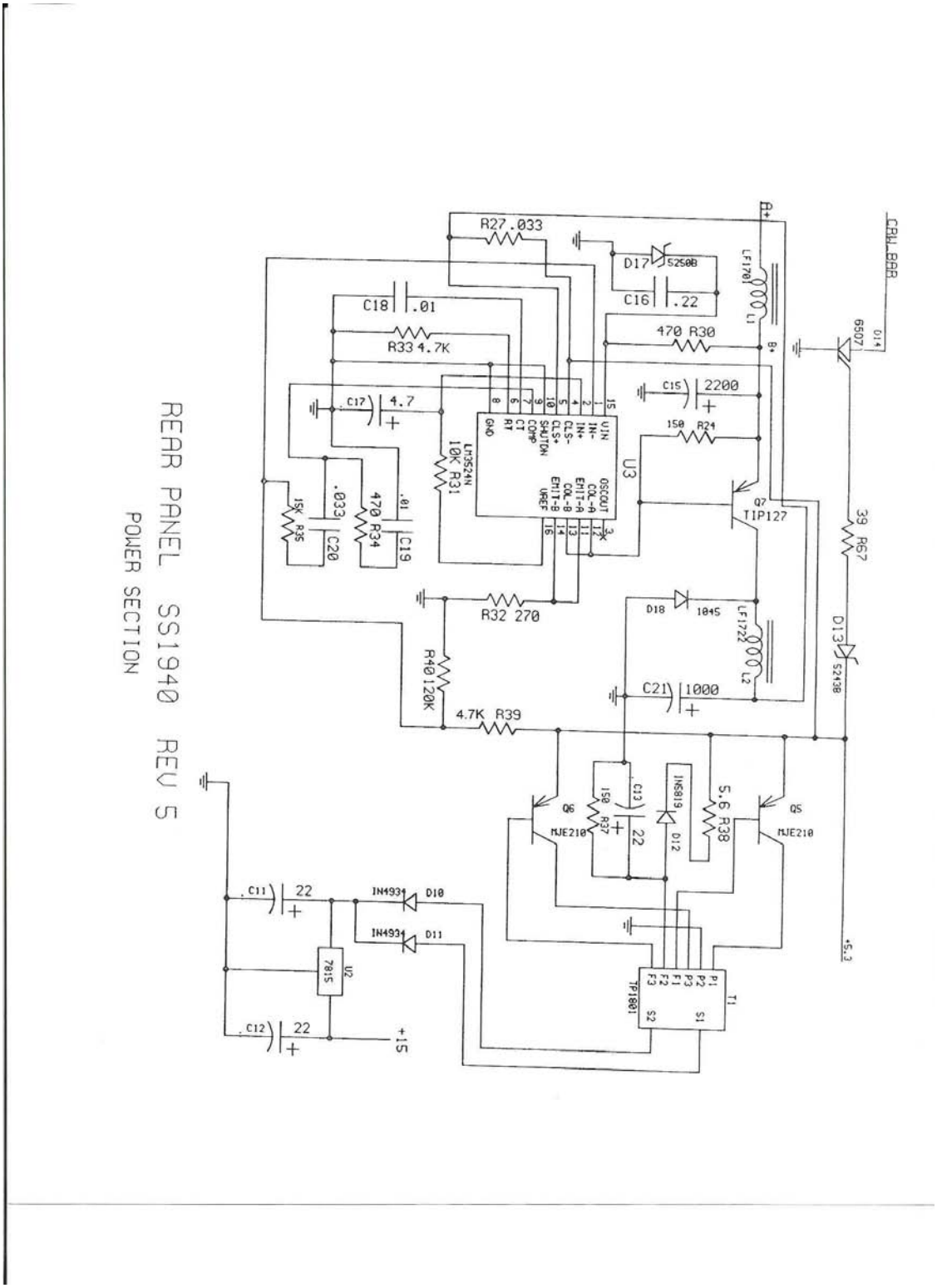
* indicates parts requiring soldermask.

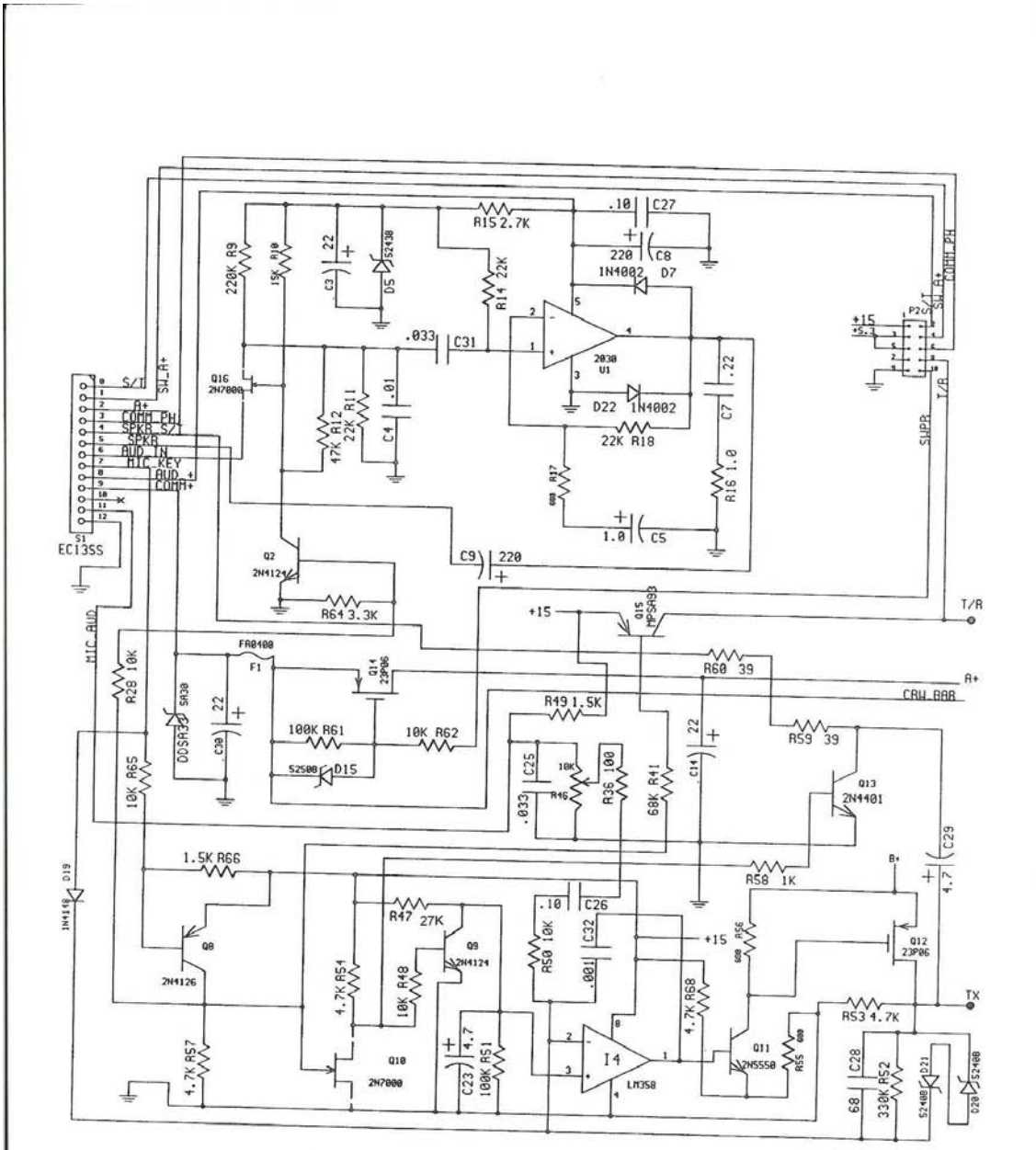
Ref #	Part #	Description	Qty
R15	RC0272-	RESISTOR; CARB. 2.7 Kohm; 5%; 1/4 watt	1
R16	RC01R0-	RESISTOR; CARB. 1 Ohm; 5%; 1/4 watt	1
R17	RC0681-	RESISTOR; CARB. 680 Ohm; 5%; 1/4 watt	1
R18	RC0223-	RESISTOR; CARB. 22 Kohm; 5%; 1/4 watt	1
R24	RC0151-	RESISTOR; CARB. 150 Ohm; 5%; 1/4 watt	1
R27	RN0001-	RESISTOR; METAL FILM .03 Ohm; 1" long	1
R28	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R30	RC0471-	RESISTOR; CARB. 470 Ohm; 5%; 1/4 watt	1
R31	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R32	RC0271-	RESISTOR; CARB. 270 Ohm; 5%; 1/4 watt	1
R33	RC0472-	RESISTOR; CARB. 4.7 Kohm; 5%; 1/4 watt	1
R34	RC0471-	RESISTOR; CARB. 470 Ohm; 5%; 1/4 watt	1
R35	RC0153-	RESISTOR; CARB. 15 Kohm; 5%; 1/4 watt	1
R36	RC0101-	RESISTOR; CARB. 100 Ohm; 5%; 1/4 watt	1
R37	RC0151-	RESISTOR; CARB. 150 Ohm; 5%; 1/4 watt	1
R38	RC05R6-	RESISTOR; CARB. 5.6 Ohm; 5% 1/4 watt	1
R39	RC0472-	RESISTOR; CARB. 4.7 Kohm; 5%; 1/4 watt	1
R40	RC0124-	RESISTOR; CARB. 120K 1/4W 5%	1
R41	RC0683-	RESISTOR; CARB. 68 Kohm; 5%; 1/4 watt	1
R46	PQ0103-	POT; TRIMMER SIDE ADJ. 10K	1
R47	RS0273-	RES; SMT; FILM; 27K; 1/4W 5%; 1206	1
R48	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R49	RC0152-	RESISTOR; CARB. 1.5 Kohm; 5%; 1/4 watt	1
R50	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R51	RC0104-	RESISTOR; CARB. 100K 5% 1/4W	1
R52	RC0334-	RESISTOR; CARB. 330K 1/4W 5%	1
R53	RC0472-	RESISTOR; CARB. 4.7 Kohm; 5%; 1/4 watt	1
R54	RC0472-	RESISTOR; CARB. 4.7 Kohm; 5%; 1/4 watt	1
R55	RC0681-	RESISTOR; CARB. 680 Ohm; 5%; 1/4 watt	1
R56	RC0681-	RESISTOR; CARB. 680 Ohm; 5%; 1/4 watt	1
R57	RC0472-	RESISTOR; CARB. 4.7 Kohm; 5%; 1/4 watt	1
R58	RC0102-	RESISTOR; CARB. 1 Kohm; 5%; 1/4 watt	1
R59	RC0390-	RESISTOR; CARB. 39 OHM; 1/4WATT 5%	1
R60	RC0390-	RESISTOR; CARB. 39 OHM; 1/4WATT 5%	1
R61	RC0104-	RESISTOR; CARB. 100K 5% 1/4W	1
R62	RC0103-	RESISTOR; CARB. 10 Kohm; 5%; 1/4 watt	1
R64	RC0332-	RESISTOR; CARB. 3.3 Kohm; 5%; 1/4 watt	1
R66	RC0152-	RESISTOR; CARB. 1.5 Kohm; 5%; 1/4 watt	1
R67	RC0101-	RESISTOR; CARB. 100 Ohm; 5%; 1/4 watt	1
R68	RC0472-	RESISTOR; CARB. 4.7 Kohm; 5%; 1/4 watt	1
R9	RC0224-	RESISTOR; CARB. 220K 1/4W 5%	1
S1*	MP1043-	MISC. PARTS SOCKET STRIP; GOLD	1
T1*	TP1801-1	TRANSFORMER INVERTER	1
U1*	IM2030-	INT. CKT.; MISC. TDA2030	1

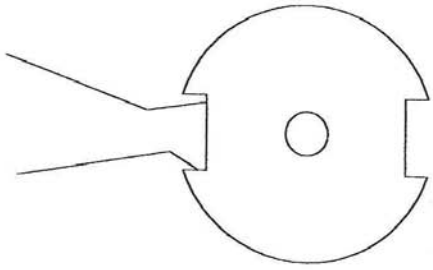
REAR PANEL; MX385 SS1940-5 page 4

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
U2*	IM7815-	INT. CKT.; MISC. REGULATOR; 15V 7815	1
U3	IM3524-	INT. CKT.; MISC. VOLTAGE REG LM3524DN	1
U4	IM0358-	INT. CKT.; MISC. LM358N (not ST)	1
~1*	MP1039-	MISC. PARTS POT CORE, 2616 3C8	2
~2*	MP1139-	MISC. PARTS BOBBIN; 2616	1
~3*	MP1041-	MISC. PARTS POT CORE; 1811	2
~4*	MP1141-	MISC. PARTS BOBBIN; 1811	1

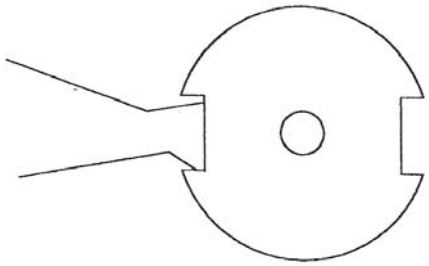

REAR PANEL SS1940 REV 5
POWER SECTION
R27 .033
D17 5250B
C16 .22
C18 .01
R33 4.7K
470 R30
C15 2200
C17 4.7
LM3524N
10K R31
U3
150 R24
Q7 TIP127
.033 C20
470 R34
.01 C19
15K R35
R32 270
D18 1045
R40 120K
4.7K R39
C21 1000
39 R67
D13 5243B
Q6 MJE210
150 R37
C13 22
IN5819 D12
5.6 R38
Q5 MJE210
C11 22
IN4934 D10
IN4934 D11
7815 U2
C12 22
+15
TIP1801
T1
+5.3
6507 D14


R15 2.7K
.10 C27
220 C8
1N4002 D7
220K R9
15K R10
C3 22
D5 S2438
R14 22K
.033 C31
2030 U1
Q16 2N7000
47K R12
22K R11
C4 .01
D22 1N4002
22K R18
C7 .22
R16 1.0
R17
1.0 C5
C9 220
Q2 2N4124
R64 3.3K
S1 EC13SS
S/T
SW_A+
A+
COMM PH
SPKR S/T
SPKR
AUD IN
MIC KEY
AUD -
COMM+
P2
+15
SW A+
COMM PH
T/R
SWPR
MIC AUD
R20 10K
FR0100 F1
D0SA30 SA30
C30 22
100K R61
10K R62
S2500 D15
Q14 2SP06
R49 1.5K
R60 39
R59 39
Q13 2N4401
C25 .033
R46 10K
R36 100
R41 68K
C14 22
A+
CRW BAR
10K R65
1.5K R66
D19 1N4148
Q8 2N4126
R47 27K
Q9 2N4124
4.7K R54
10K R48
Q10 2N7000
C23 4.7
100K R51
C26 .10
R50 10K
C32 .001
I4 LM358
4.7K R68
+15
R56
Q12 2SP06
B+
R58 1K
C29 4.7
TX
R53 4.7K
Q11 2N5550
R55
4.7K R57
C28 68
R52 330K
D21 S2408
D20 S2408
REAR PANEL SS1940 REV 5
AUDIO SECTION



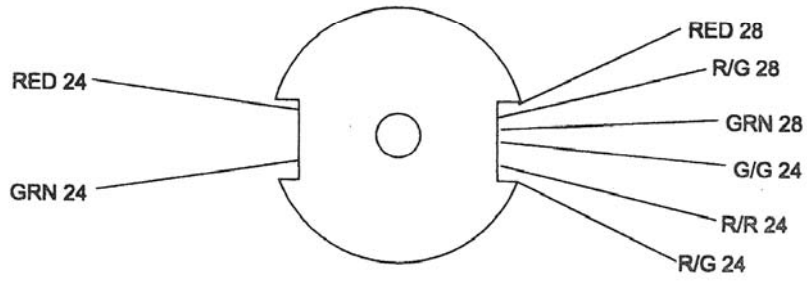
1. WIND 48 TURNS OF #22 AWG ON 2616 FID BOBBIN.
2. INSTALL INTO 2 EA 2616-3B7 CORES WITH .007 MYLAR SPACER.
3. SLEEVE LEADS WITH .5" LONG TUBING.
4. LEADS TO BE 2" LONG.

LF1701	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L		CHOKE, INV.		
	FINISH	DRAWN BY WM	DATE 7-21-00	LF1701	REV 1
		APPROVED			
		APPROVED	USED ON (RP)MX170C,300,385	SHEET 1 OF 1	



1. WIND 18 TURNS 18 AWG ON BOBBIN 2616 FID.
2. INSTALL IN 2 EA. 2616-3B7 WITH .003 MYLAR SPACER.
3. SLEEVE LEADS WITH .5" LONG TUBING.
4. LEADS TO BE 2" LONG.

LF1722	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L		CHOKE FILTER,6 AMP		
	FINISH	DRAWN BY WM	DATE 7-21-00	LF1722	REV
		APPROVED			
		APPROVED	USED ON 1700/MX385 RP, 300PWR BD	SHEET 1 OF 1	

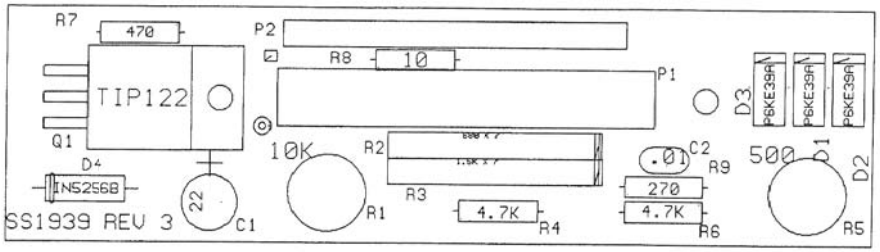


1. WIND 14.5 TURNS OF #24 RED AWG SPN ON BOBBIN 1811 F1D AND FORM A TAP .75" LONG.
2. WIND 5 MORE TURNS AND FORM A .75" TAP WITH #24 GREEN AWG SPN.
3. WIND 5 TURNS OF THE GREEN WIRE AND FORM A .75" TAP.
4. WIND 14.5 TURNS OF THE GREEN WIRE.
5. Q-DOPE
6. WIND 2 TURNS OF #28 AWG RED SPN AND FORM A TAP WITH #28 GREEN AWG SPN AND WIND 2 TURNS OF THE GREEN WIRE.
7. Q-DOPE AND TAPE WITH TWO LAYERS OF MYLAR.
8.INSTALL IN2 EA.1811-3B7 CUP CORES.

TP1801	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L		TRANSFORMER, 20 V	
	FINISH	DRAWN BY WM	DATE 7-21-00	TP1801 REV 1
		APPROVED		
		APPROVED	USED ON MX11(COMP),12,170C,300,385(RP) 1 OF 1	

TKM, INC. SCOTTSDALE, AZ	NAME CONNECTOR, BOARD	PART # SS1939	REV. 3
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.	DATE 7-12-2004	AAPR	APPR
	DRAWN BY: WM		

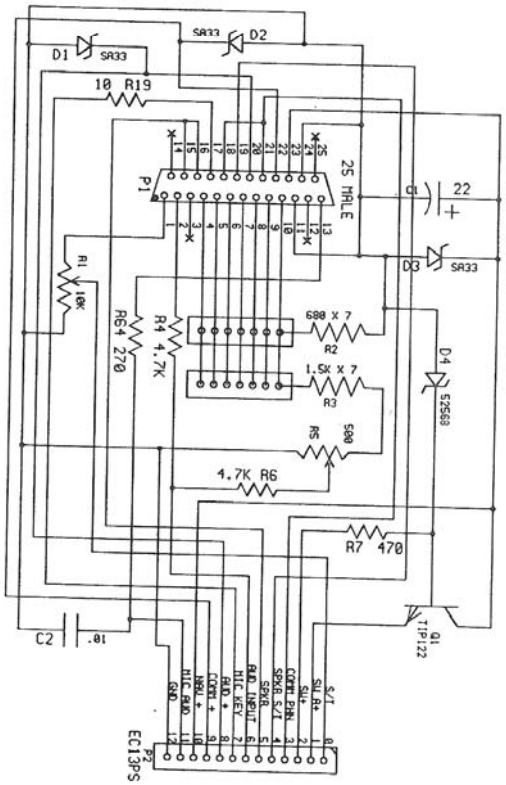
MOUNT Q1 WITH NB404P
SHOULDER WASHER
MICA INSULATOR
4-40 X 1/4 SPACER



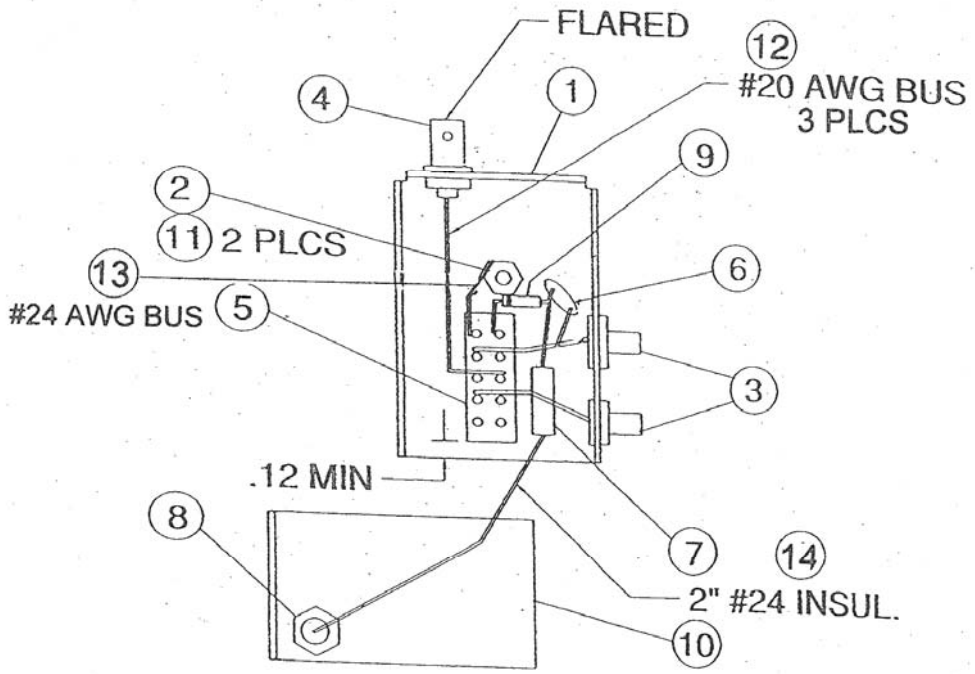
CONN BOARD; MX385 SS1939-3 page 1

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
01	PC1939-3	PCB PCB; 385 CONN	1
02	NB403P-	FASTENERS 4-40x3/16 PP SS	1
03	HS1012-	SPACER 3/16 HEX X .312; 4-40 THD	2
04	NB402W-	FASTENERS #4 SPLIT LOCK WASHER SS	2
05	NB404P-	FASTENERS 4-40x1/4 PP SS	1
06	MP1051-	MISC. PARTS NYLON SHOULDER WASHER	1
C1	CE2262-	CAP; ALUM ELECT. 22/50V;RADIAL	1
C2	CR1033-	CAP; MONO-CERAMIC .01uF; 100V	1
D1	DDSA33-	DIODE SURGE, P6KE39A	1
D2	DDSA33-	DIODE SURGE, P6KE39A	1
D3	DDSA33-	DIODE SURGE, P6KE39A	1
D4	DD5256-	DIODE ZENER; 1N5256	1
P1*	EC1901-	CONNECTOR 25 PIN D-SUB; MALE/PC MOUNT	1
P2	MP1044-	MISC. PARTS PIN HEADER; GOLD; SINGLE	1
Q1	QX0122-	TRANSISTOR TIP122	1
R1*	PW0103-	Top Adj. .3 dia 10 K	1
R2	RR6817-	RESISTOR NETWORK 680 OHM X 7	1
R3	RR1527-	RESISTOR NETWORK 1.5K X 7	1
R4	RC0472-	RESISTOR; CARB. 4.7 Kohm; 5%; 1/4 watt	1
R5*	PW0501-	Top Adj. .3 dia 500 Ohm	1
R6	RC0472-	RESISTOR; CARB. 4.7 Kohm; 5%; 1/4 watt	1
R7	RC0471-	RESISTOR; CARB. 470 Ohm; 5%; 1/4 watt	1
R8	RC0100-	RESISTOR; CARB. 10 Ohm; 5%; 1/4 watt	1
R9	RC0271-	RESISTOR; CARB. 270 Ohm; 5%; 1/4 watt	1



CONNECTOR BOARD – SS1939 REV. 3



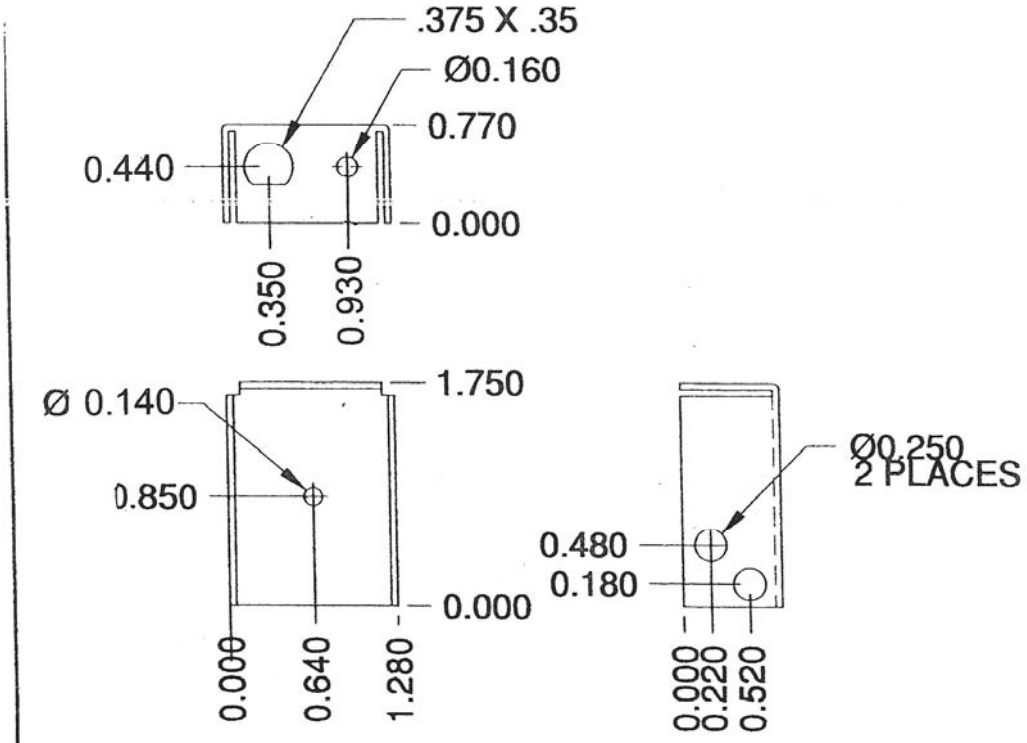
GLUE RELAY IN PLACE WITH SUPER GLUE

SS1921	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L		SWITCH, T/R, MX385		
	FINISH	DRAWN BY WM	DATE 02-02-01	SS1921	REV 3
		APPROVED			
		APPROVED	USED ON	SHEET OF	

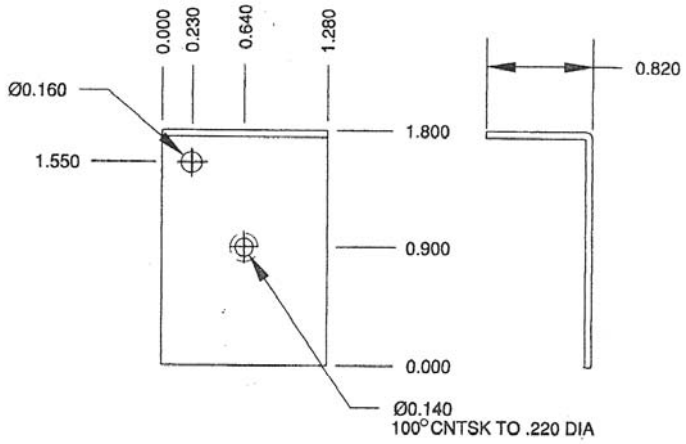
T/R SWITCH; MX385 SS1921-3 page 1

* indicates parts requiring soldermask.

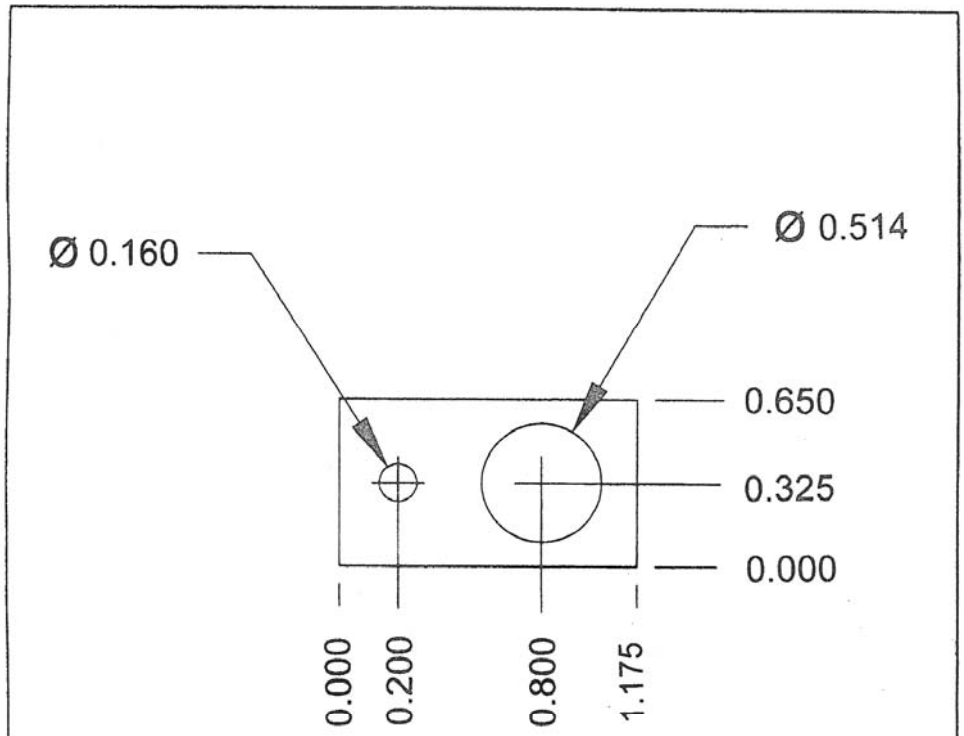
Ref #	Part #	Description	Qty
01	SM1905-1	SHEET METAL CASE; T/R MX385	1
02	HS1816-2	SPACER STANDOFF; 4-40 THD	1
03	EC1703-	CONNECTOR CONN; SMA; PANEL MT.	2
04	EC1022-	CONNECTOR COAX CONN; UG/1094; SHORT	1
05	KA1805-	RELAY 12V T/R RELAY	1
06	CR2R73-	CAP; MONO-CERAMIC 2.7 Pf; 200V; Radial	1
07	LF01R0-	INDUCTOR; FIXED 1.0 uH AXIAL	1
08	CD1023-	CAPACITOR; FEED THRU 1000 pF	1
09	DD4148-	DIODE 1N4148	1
10	SM1906-1	SHEET METAL COVER; T/R MX385	1
11	NB403P-	FASTENERS 4-40x3/16 PP SS	2
12	WI20BR-	WIRE 20 AWG BUS WIRE	3
13	WI24BR-	WIRE 24 AWG BUS WIRE	1



SM1905	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG FRACT +/- 1/32	TKM, Inc SCOTTSDALE, ARIZONA		
	MATL .050 5052 H32		HOUSING, T/R		
	FINISH CLR CHEM FILM MIL-C-5541	DRAWN BY WM APPROVED APPROVED	DATE 8-9-99	SM1905	REV 1
			USED ON MX385	SHEET 1 OF 1	



SM1906	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L ALUM ALLOY 5052 H32 .050 THICK	.XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG FRACT +/- 1/32	COVER, T/R		
	FINISH CHEM FILM MIL-C 5541	DRAWN BY WM	DATE 5-21-99	SM1906	REV 1
		APPROVED	USED ON MX385	SHEET 1 OF 1	
		APPROVED			

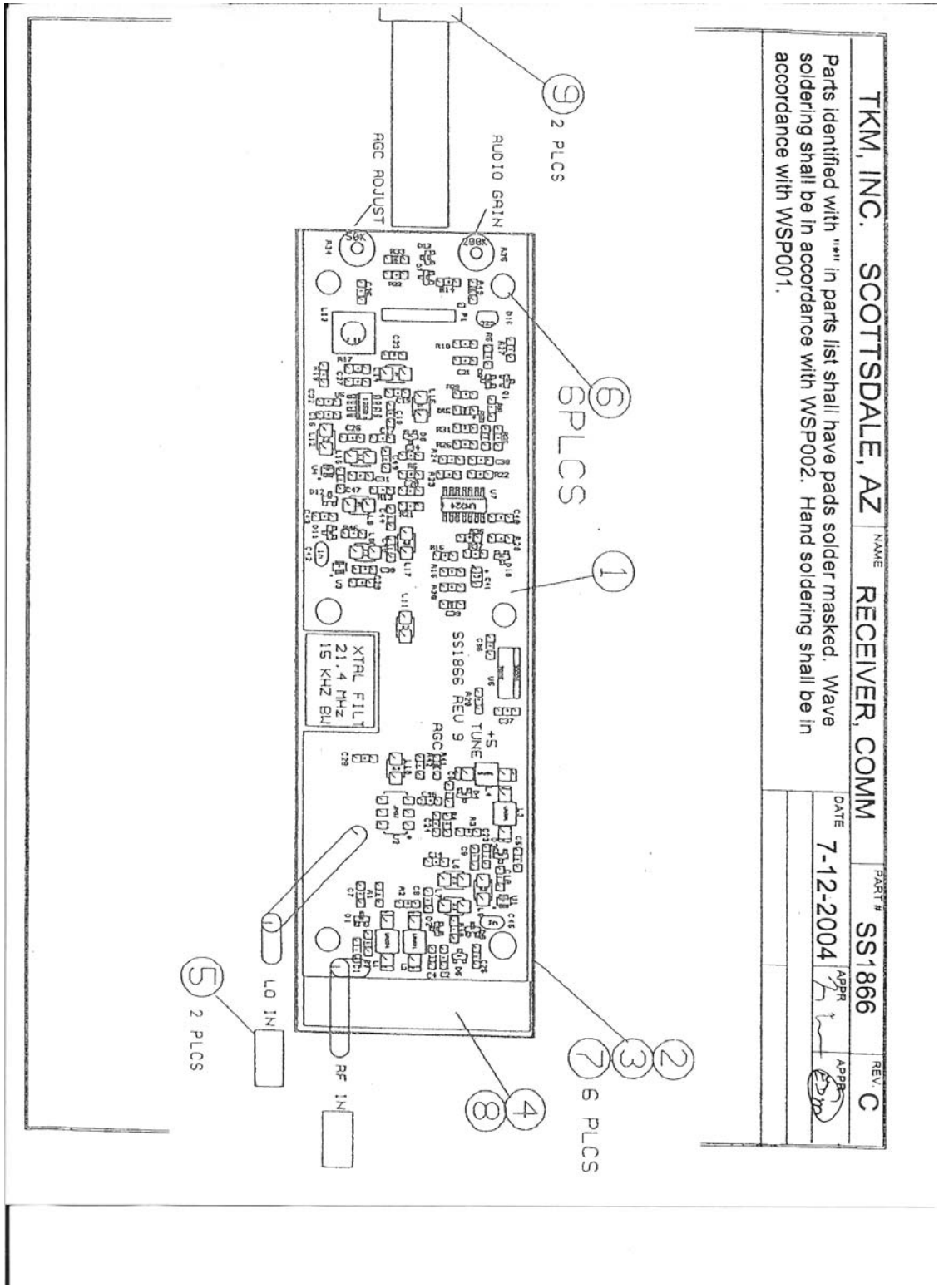


SM1907	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L .09 ALUM 5052 H32	.XXX +/- .015 ANGLES +/- 1 DEG Hole dia:+/-.002	SPACER, T/R	
	FINISH CLR CHEM FILM MIL-C-5541	DRAWN BY WM APPROVED APPROVED	DATE 8-20-99	SM1907 REV 1 USED ON MX385 SHEET 1 OF 1

INDENTURED DRAWING LIST

MODULE SS1866 – COMM RECEIVER

SS1866	REV C		RECEIVER ASSY; COMM (GREEN)
	PC1866	REV C	PCB, RECEIVER
	SM1840	REV 3	CASE, MODULE
	SM1841	REV 3	COVER, MODULE
	SM1812	REV 2	GND BRACKET; RX
	CA1803	NONE	CABLE ASSY, COAX
	CA1866	NONE	CABLE, COMM RECEIVER
	CA1804	REV 1	CABLE ASSY, COAX
	LFST4N	NONE	INDUCTOR, RF
	LFST5N	NONE	INDUCTOR, RF


TKM, INC. SCOTTSDALE, AZ
NAME RECEIVER, COMM
PART # SS1866
REV. C
DATE 7-12-2004
APPR
APPR
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.
9 2 PLCS
AGC ADJUST
50K
AUDIO GAIN
200K
6 6PLCS
1
2 3 7 6 PLCS
4 8
5 2 PLCS
LO IN
RF IN
XTAL FIL 21.4 MHZ 15 KHZ BW
SS1866 REV 9
TUNE
+5
AGC

RECEIVER; COMM (GREEN) SS1866-C page 1

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
01	PC1866-C	PCB RECEIVER; COMM-GREEN, NAV-BLUE	1
02*	HS1816-2	SPACER STANDOFF; 4-40 THD	6
03*	SM1840-3	SHEET METAL CASE; MODULE	1
04*	SM1841-3	SHEET METAL COVER; MODULE	1
05*	SM1812-2	SHEET METAL GND BRACKET; RX	1
06*	MP1044-	MISC. PARTS PIN HEADER; GOLD; SINGLE	1
07*	CA1803-	CABLE; RIBBON ASSEMBLY,COAX CONN RG188	2
08*	EC1709-	CONNECTOR HOUSING; 6 PIN	2
09*	EC1806-	CONNECTOR CRIMP PINS; SMALL	5
10*	NB403F-	FASTENERS 4-40x3/16 P100 SS	6
11*	NB404S-	FASTENERS #4 X 1/4 SS Sheet Metal	1
12*	CA1866-	CABLE; RIBBON RECEIVER,COMM 6 COND.	1
13*	CA1804-	CABLE; RIBBON COAX ASSY CABLE	0
C1	CS05R6-	CAP; SMT; CER; 5.6pF; 100V; 1206	1
C10	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C14	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C16	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C17	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C18	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C19	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C2	CS05R6-	CAP; SMT; CER; 5.6pF; 100V; 1206	1
C20	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C21	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C23	CS0101-	CAP; SMT; CER; 100PF; 100V; 1206	1
C24	CS0101-	CAP; SMT; CER; 100PF; 100V; 1206	1
C25	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C26	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C27	CS0270-	CAP; SMT; CER; 27 PF; 50V; 1206	1
C28	CS0270-	CAP; SMT; CER; 27 PF; 50V; 1206	1
C29	CS0270-	CAP; SMT; CER; 27 PF; 50V; 1206	1
C3	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C30	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C31	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C32	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C33	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C34	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C35	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C36	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C37	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C38	CS0472-	CAP; SMT; CER; .0047; 100V; 1206	1
C39	CS0333-	CAP; SMT; CER; .033 uF; 100V; 1206	1
C4	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C40	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C41	CX0105-	CAP; SMT; TANT 1.0 uF; 35 V	1
C42	C60102-	CAP; SM; 1000 Pf	1

* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
C43	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C44	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C45*	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
C46	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C47	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C48	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C49	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C5	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C6	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C7	CS0181-	CAP; SMT; CER; 180PF; 100V; 1206	1
C8	CS0181-	CAP; SMT; CER; 180PF; 100V; 1206	1
C9	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
D1	DS0109-	DIODE; SMT MMBV109	1
D10	DS0016-	DIODE; SMT SWITCHING	1
D11	DS3401-	DIODE; SMT MMBV3401	1
D12	DS3401-	DIODE; SMT MMBV3401	1
D13	DS0101-	DIODE; SMT MMBD101	1
D15	DS5230-	DIODE; SMT 1N5230; SMT	1
D16*	DD0329-	DIODE LM329	1
D2	DS0109-	DIODE; SMT MMBV109	1
D3	DS0109-	DIODE; SMT MMBV109	1
D4	DS0109-	DIODE; SMT MMBV109	1
D5	DS3401-	DIODE; SMT MMBV3401	1
D6	DS3401-	DIODE; SMT MMBV3401	1
D7	DS0101-	DIODE; SMT MMBD101	1
D8	DS0101-	DIODE; SMT MMBD101	1
D9	DS0016-	DIODE; SMT SWITCHING	1
L09	LS0270-	IND; FIXED; SMT 27 uH; 10% SMT	1
L1*	LFS4TN-	INDUCTOR; FIXED	0
L10	LS02R2-	IND; FIXED; SMT 2.2 uH; 10%; SMT	1
L11	LS02R2-	IND; FIXED; SMT 2.2 uH; 10%; SMT	1
L12	LS02R2-	IND; FIXED; SMT 2.2 uH; 10%; SMT	1
L13*	LA1701-	COIL/COILFORM 3.3 uH; RX	1
L14	LS0270-	IND; FIXED; SMT 27 uH; 10% SMT	1
L15	LS0270-	IND; FIXED; SMT 27 uH; 10% SMT	1
L16	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L17	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L19	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L2*	LFS4TN-	INDUCTOR; FIXED	0
L20	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L3*	LFS5TN-	INDUCTOR; FIXED	0
L4*	LFS5TN-	INDUCTOR; FIXED	0
L5	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L6	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1

RECEIVER; COMM (GREEN) SS1866-C page 3

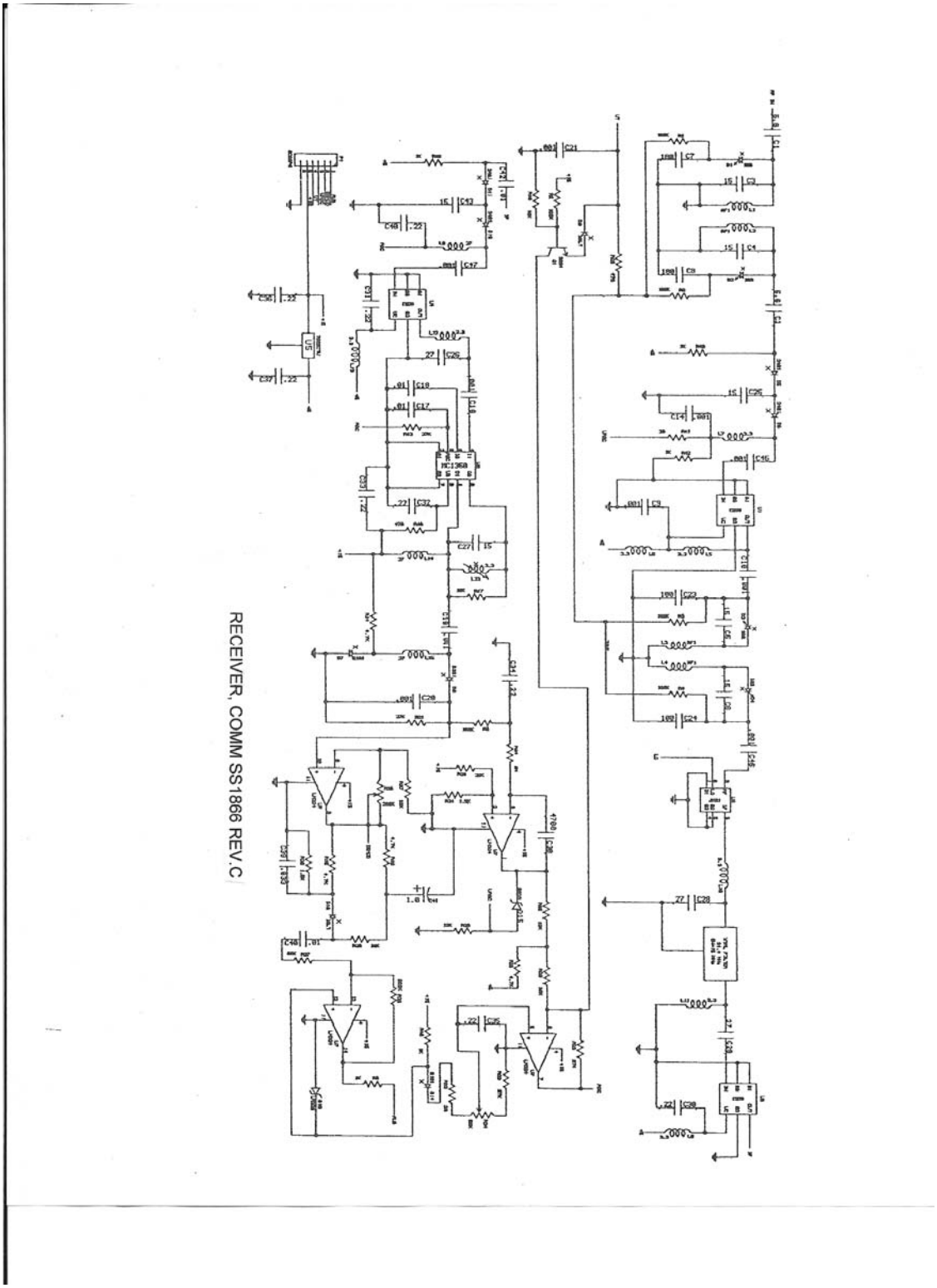
* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
L7	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L8	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
Q1	QS3904-	TRANSISTOR; SMT MMBT3904	1
R1	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
R13	RS0273-	RES; SMT; FILM; 27K; 1/4W 5%; 1206	1
R14	RS0472-	RES; SMT; FILM; 4.7K; 1/4W 5%; 1206	1
R15	RS0472-	RES; SMT; FILM; 4.7K; 1/4W 5%; 1206	1
R16	RS0472-	RES; SMT; FILM; 4.7K; 1/4W 5%; 1206	1
R17	RS0473-	RES; SMT; FILM; 47K; 1/4W 5%; 1206	1
R18	RS0183-	RES; SMT; FILM; 18K; 1/4W 5%; 1206	1
R19	RS0471-	RES; SMT; FILM; 470 OHM; 1/4W 5%; 1206	1
R2	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
R20	RS0471-	RES; SMT; FILM; 470 OHM; 1/4W 5%; 1206	1
R21	RS0273-	RES; SMT; FILM; 27K; 1/4W 5%; 1206	1
R22	RS0183-	RES; SMT; FILM; 18K; 1/4W 5%; 1206	1
R23	RS0273-	RES; SMT; FILM; 27K; 1/4W 5%; 1206	1
R24	RS0105-	RES; SMT; FILM; 1 MEG; 1/4W 5%; 1206	1
R25	RS0123-	RES; SMT; FILM; 12K; 1/4W 5%; 1206	1
R26	RS3922-	RES; SMT; FILM; 39.2K; 1/4W 5%; 1206	1
R27	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R28	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R29	RS0472-	RES; SMT; FILM; 4.7K; 1/4W 5%; 1206	1
R3	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
R30	RS0152-	RES; SMT; FILM; 1.5K; 1/4W 5%; 1206	1
R31	RS0152-	RES; SMT; FILM; 1.5K; 1/4W 5%; 1206	1
R32	RS0273-	RES; SMT; FILM; 27K; 1/4W 5%; 1206	1
R33	RS0390-	RES; SMT; FILM; 39 OHM; 1/4W 5%; 1206	1
R34*	PW0503-	Top Adj. .3 dia 50K	1
R35*	PW0204-	Top Adj. .3 dia 200K	1
R36	RS0684-	RES; SMT; FILM; 680K; 1/4W 5%; 1206	1
R37	RS0683-	RES; SMT; FILM; 68K; 1/4W 5%; 1206	1
R4	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
R40	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R41	RS0390-	RES; SMT; FILM; 39 OHM; 1/4W 5%; 1206	1
R42	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R46	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R49	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R5	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
R50	RS0472-	RES; SMT; FILM; 4.7K; 1/4W 5%; 1206	1
R6	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
R8	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
U1	IS0052-	INT. CKT.; SMT 52063	1
U2	ISADE1-	INT. CKT.; SMT Mixer; 500 MHz	1
U3	IS0052-	INT. CKT.; SMT 52063	1

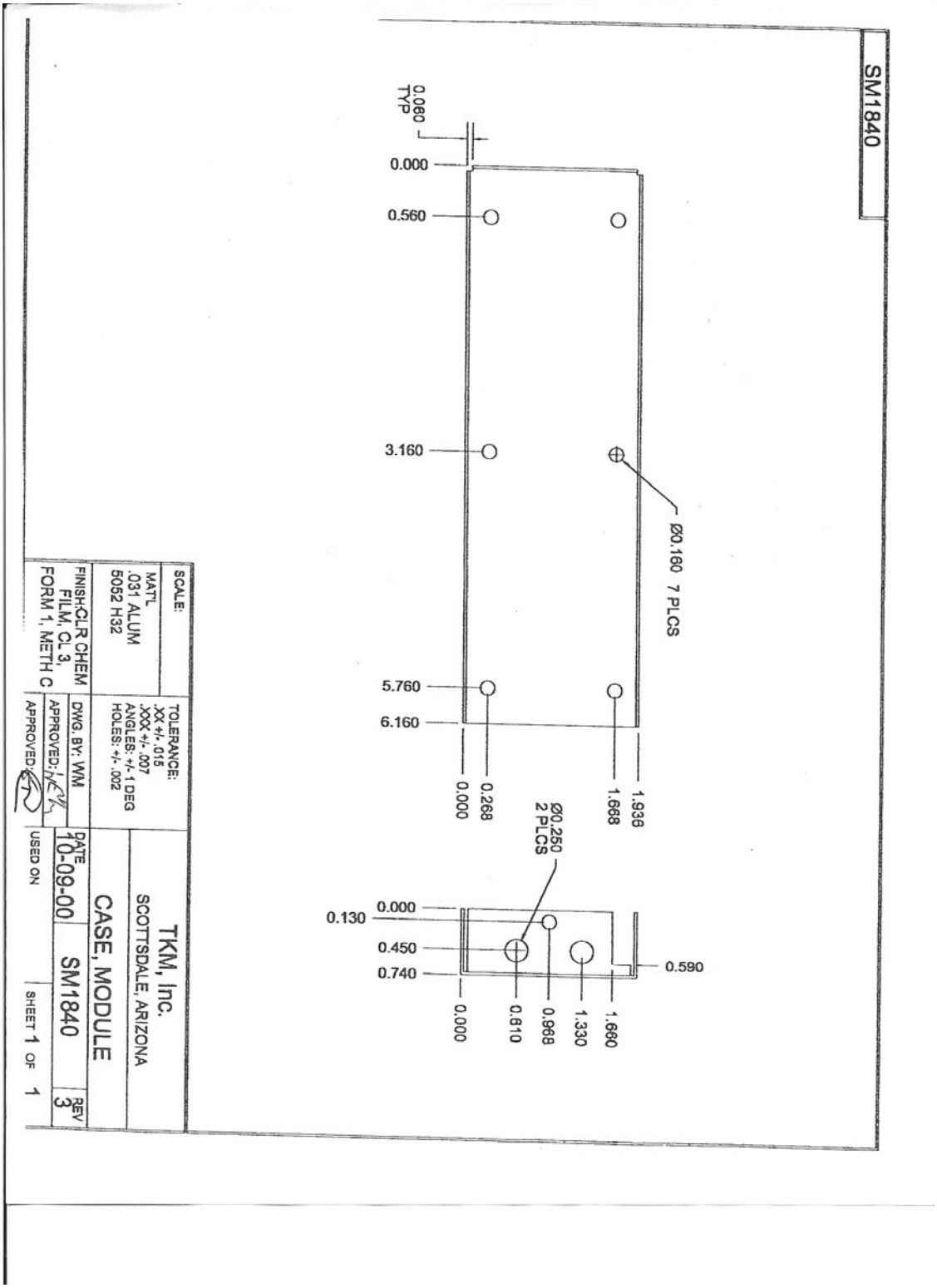
RECEIVER; COMM (GREEN) SS1866-C page 4

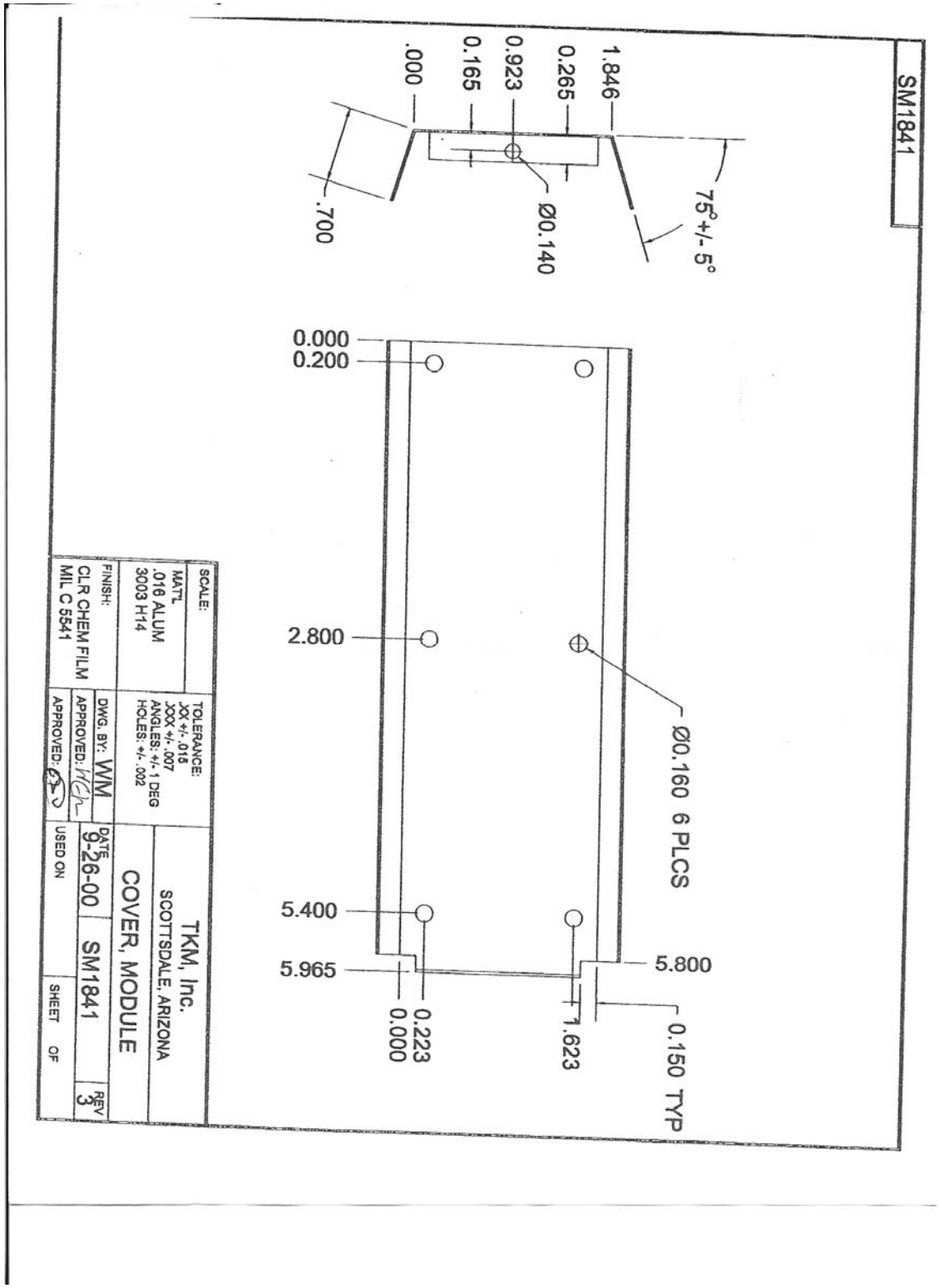
* indicates parts requiring soldermask.

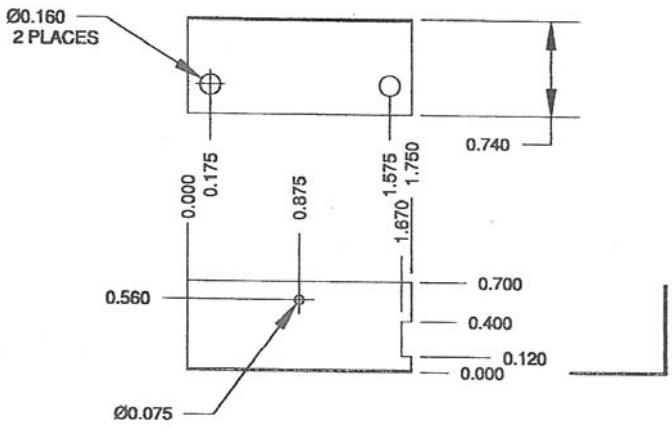
Ref #	Part #	Description	Qty
U4	IS0052-	INT. CKT.; SMT 52063	1
U5*	IM7805-	INT. CKT.; MISC. REGULATOR; 5V 7805	1
U6	IS1350-	INT. CKT.; SMT 1350; SMT	1
U7	IS0324-	INT. CKT.; SMT LM324; SMT	1
X1*	XT2115-	CRYSTAL; QUARTZ FILTER; COMM 15 KHZ	1



RECEIVER, COMM SS1866 REV.C

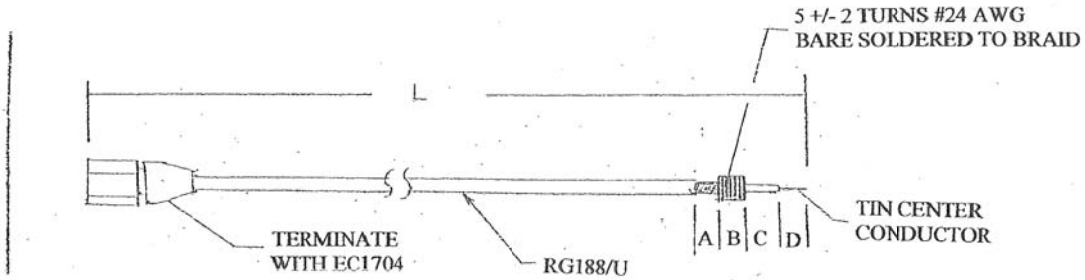

SM1840
0.060 TYP
0.000
0.560
3.160
5.760
6.160
Ø0.160 7 PLCS
0.000
0.268
1.668
1.936
Ø0.250 2 PLCS
0.130
0.000
0.450
0.740
0.590
0.000
0.810
0.968
1.330
1.660
SCALE:
MAT'L .031 ALUM 5052 H32
TOLERANCE: .XX +/- .015 .XXX +/- .007 ANGLES: +/- 1 DEG HOLES: +/- .002
FINISH: CLR CHEM FILM, CL 3, FORM 1, METH C
DWG. BY: WM
APPROVED:
APPROVED:
DATE 10-09-00
TKM, Inc.
SCOTTSDALE, ARIZONA
CASE, MODULE
SM1840
REV 3
USED ON
SHEET 1 OF 1


SM1841
1.846
0.265
0.923
0.165
.000
.700
Ø0.140
75° +/- 5°
0.000
0.200
2.800
5.400
5.965
Ø0.160 6 PLCS
5.800
0.223
0.000
1.623
0.150 TYP
SCALE:
MATL
.016 ALUM
3003 H14
TOLERANCE:
XX +/- .015
XXX +/- .007
ANGLES: +/- 1 DEG
HOLES: +/- .002
FINISH:
CLR CHEM FILM
MIL C 5541
DWG. BY: WM
APPROVED:
APPROVED:
TKM, Inc.
SCOTTSDALE, ARIZONA
COVER, MODULE
DATE
9-26-00
SM1841
REV
3
USED ON
SHEET OF



SM1812	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG FRACT +/- 1/32	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L HALF HARD BRASS		BRACKET, GROUNDING		
	FINISH BRIGHT TIN	DRAWN BY WM APPROVED WM APPROVED	DATE 8-9-99	SM1812	REV 2
			USED ON	SHEET 1 OF 1	

CA1803



NOTES:

DIMENSION(OPEN END)

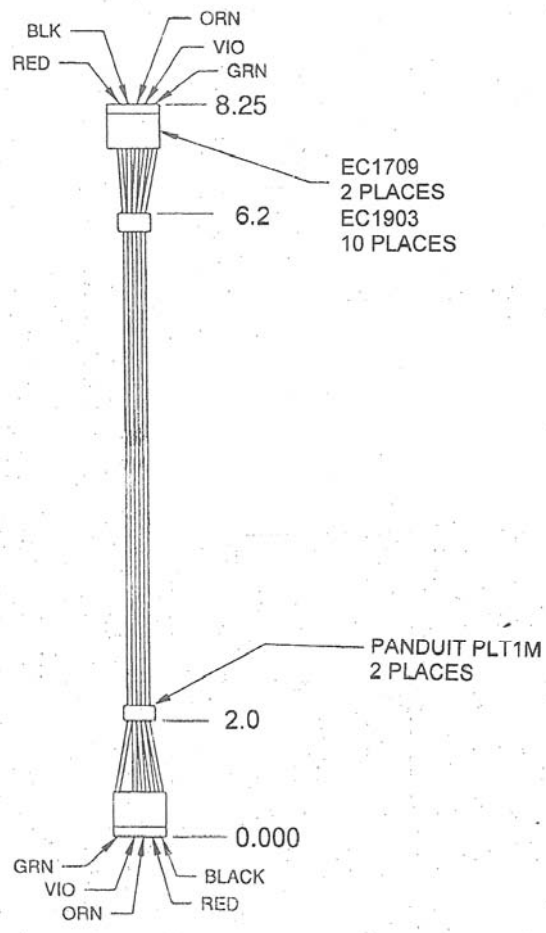
A = .600 +/- .02
B = .100 +/- .02
C = .240 +/- .20
D = .220 +/- .20

DIMENSION(TERMINATED END)

A = .640 +/- .02
B = .140 +/- .02
C = .200 +/- .02
D = .220 +/- .02

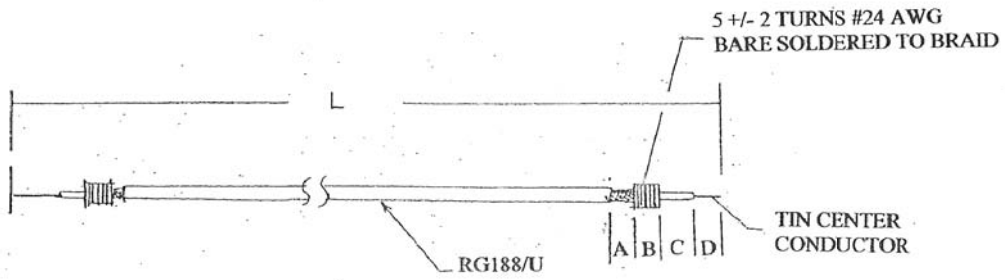
L = 7.50 =/- .040

SCALE:	TOLERANCE:	TKM, Inc. SCOTTSDALE, ARIZONA
MAT'L		CABLE ASSY, COAX
FINISH:	DWG. BY: WM	DATE 5-10-94 CA1803 REV
	APPROVED:	
	APPROVED:	USED ON SS1866 SS1867 SHEET 1 OF 1



CA1866	SCALE	TOLERANCES .XX +/- .030 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L		CABLE, COMM RCV	
	FINISH	DRAWN BY WM	DATE 8-20-99	CA1866 REV
		APPROVED		
		APPROVED	USED ON	SHEET 1 OF 1

CA1804



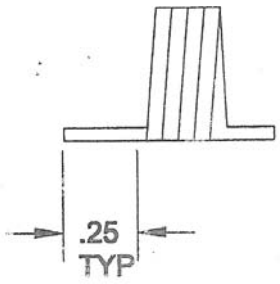
NOTES:
1. PREP EACH END THE SAME

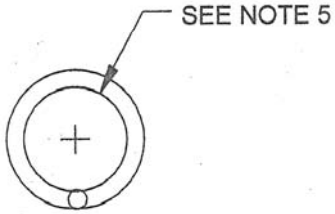
DIMENSION
A = .640 +/- .02
B = .140 +/- .02
C = .200 +/- .02
D = .220 +/- .02
L = 8.50 +/- .40

TERMINATE COMM(1 END ONLY)
ALL RADIOS, USE EC1704

TERMINATE NAV(1 END ONLY)
MX11----------EC1704
MX12----------EC2021 (HM1602)
MX170()----------EC1022 (HM1730)
MX300----------EC1704
MX385-EC1804 (HM1904)(HM1905)

SCALE:	TOLERANCE:	TKM, Inc. SCOTTSDALE, ARIZONA
MAT'L		CABLE ASSY, COAX
FINISH:	DWG. BY: WM	DATE 5-10-94 CA1804 REV
	APPROVED:	USED ON SS1866 SS1867 SHEET 1 OF 1
	APPROVED:	

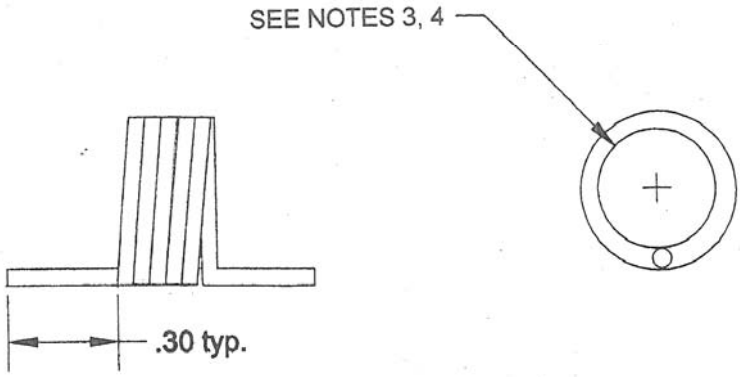




NOTES:

1. 4 TURNS CLOSE WOUND.
2. STRIP BOTH ENDS .200
3. FOR SS1866 & SS1867, USE GREEN #20 AWG SPN.
4. FOR SS1881, USE RED #18 AWG SPN.
5. ID
   SS1866 = .155
   SS1867 = .165
   SS1881 = .125

LFS4TN	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L	.XXX +/- .015 ANGLES +/- 1 DEG Hole dia:+/-.002	INDUCTOR, RF		
	FINISH	DRAWN BY WM	DATE 7-7-00	LFS4TN	REV
		APPROVED			
		APPROVED	USED ON SS1866,SS1867,SS1881	SHEET 1 OF 1	



NOTES:

1. 5 TURNS CLOSE WOUND
2. STRIP BOTH ENDS .200
3. FOR NAV RECEIVER, ID IS .165
4. FOR COMM RECEIVER, ID IS .155

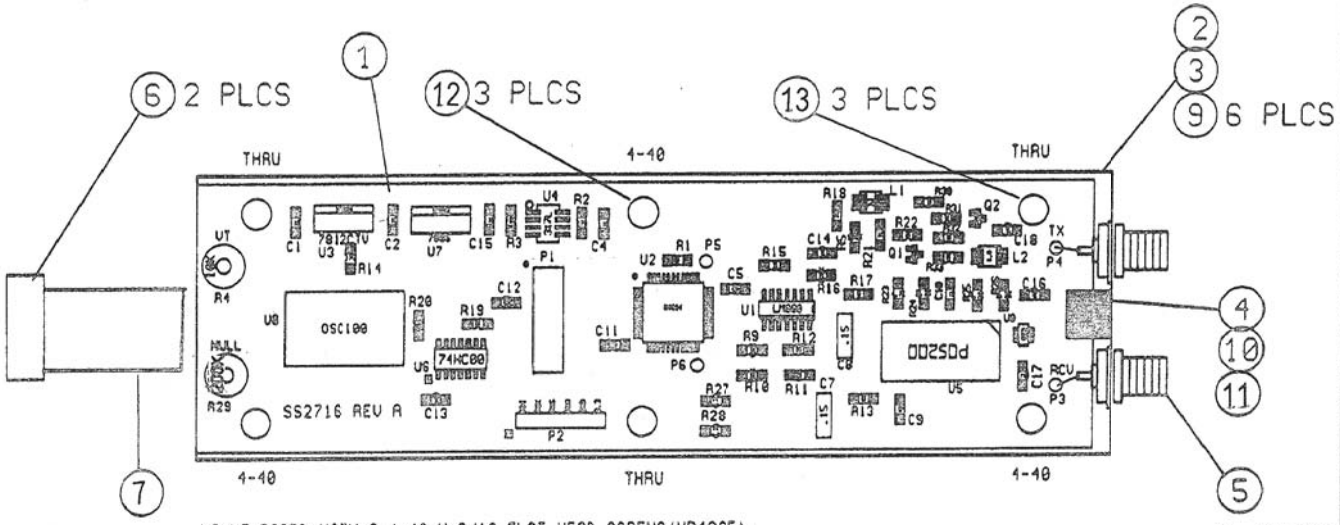
LFS5TN	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L 20 AWG SPN, RED	.XXX +/- .015 ANGLES +/- 1 DEG Hole dia:+/-.002	INDUCTOR, RF	
	FINISH	DRAWN BY WM	DATE 7-7-00	LFS5TN	REV
		APPROVED WM			
		APPROVED	USED ON SS1866, SS1867	SHEET 1 OF 1	

INDENTURED DRAWING LIST

MODULE SS2716 – COMM SYNTHESIZER

SS2716	REV A		COMM SYNTHESIZER ASSY
	PC2716	REV A	PCB, SYNTHESIZER; COMM
	SM1840	REV 3	CASE, MODULE
	NB400I	NONE	INSERT, EXTENDED
	SM1841	REV 3	COVER, MODULE
	SM1814	NONE	GND BRACKET; SYNTH

TKM, INC. SCOTTSDALE, AZ	NAME COMM SYNTHESIZER	PART # SS2716	REV. A
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.	DATE 12-20-04	APPR	APPR
			DRAWN BY: WM



MOUNT BOARD WITH 3 4-40 X 3/16 FLAT HEAD SCREWS(NB403F).
ATTACH COVER WITH 3 4-40 X 3/16 FLAT HEAD SCREWS AND ONE 4-40 X 3/16 PAN HEAD SCREW
SOLDER GROUND STRAP AS SHOWN.

COMM SYNTHESIZER SS2716 REV A

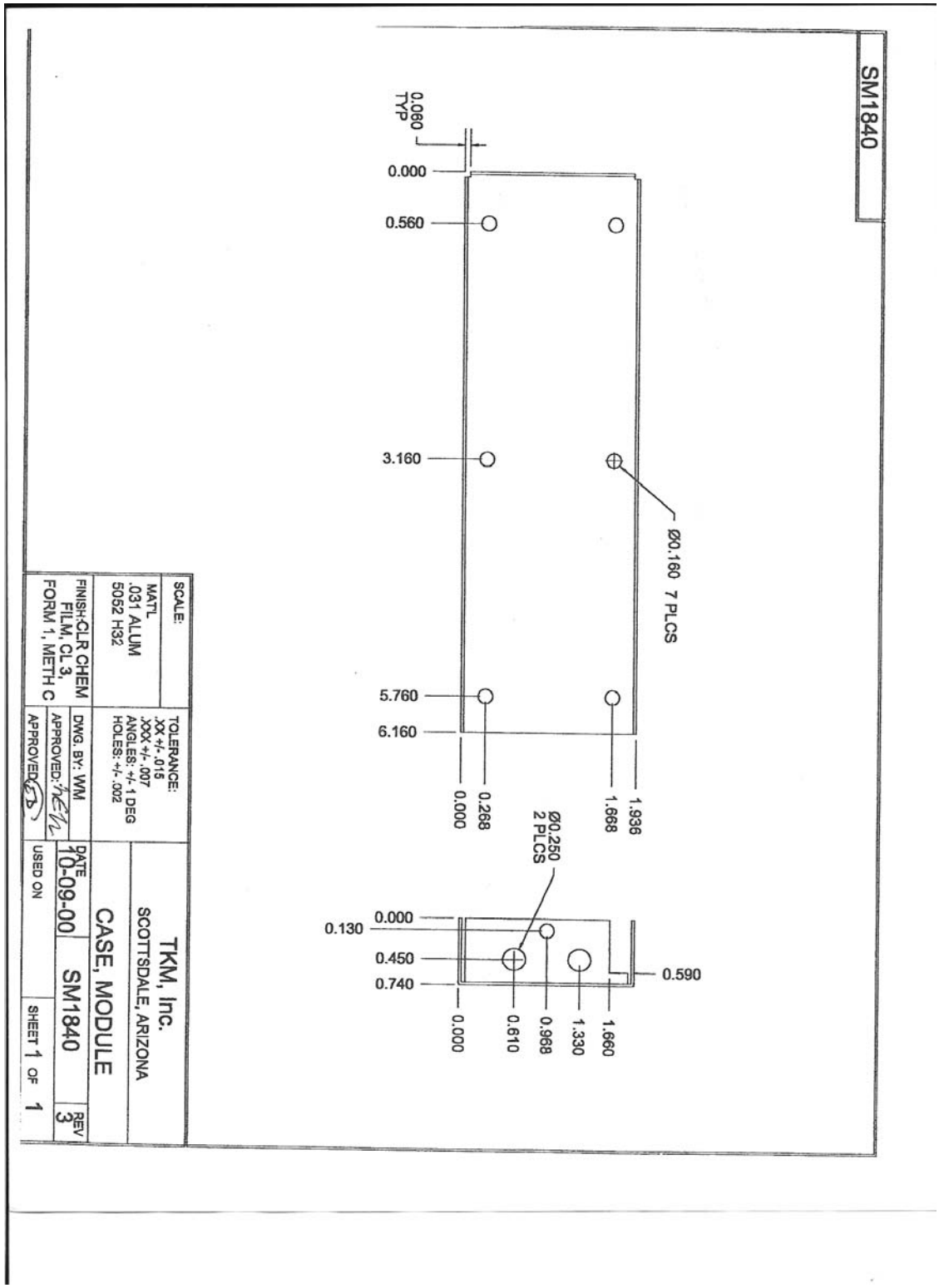
COMM SYNTHESIZER SS2716-A page 1

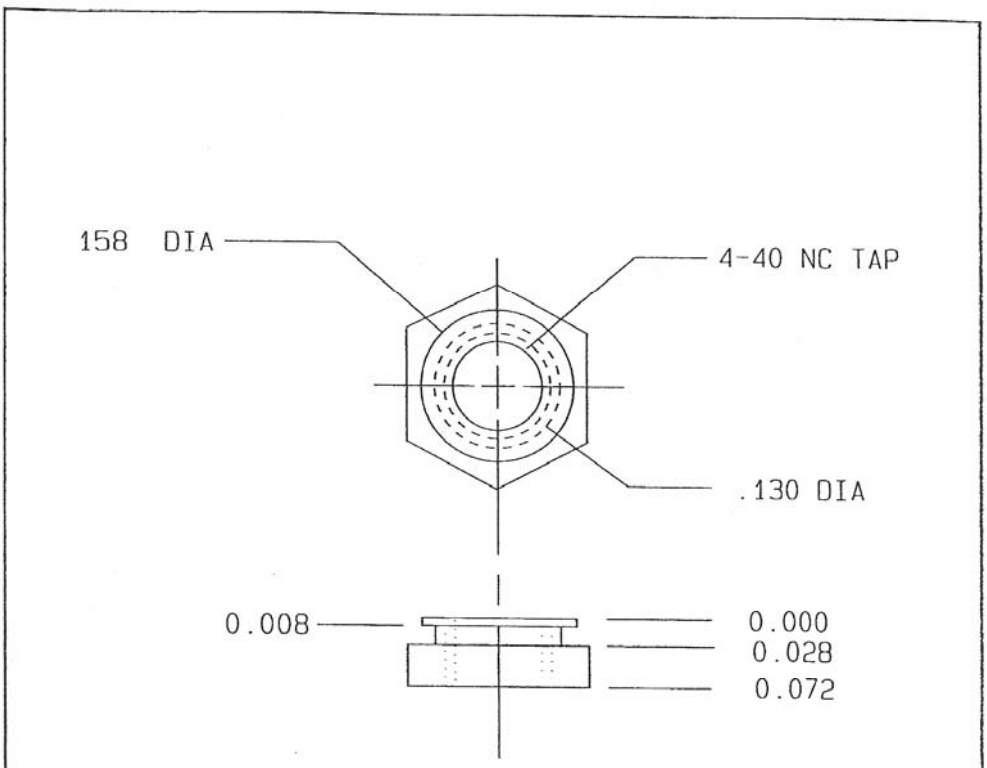
* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
01	PC2716-A	PCB SYNTHESIZER; COMM	1
02*	SM1840-3	SHEET METAL CASE; MODULE	1
03*	SM1841-3	SHEET METAL COVER; MODULE	1
04*	SM1814-	SHEET METAL BRACKET, GROUNDING, SYNTH.	1
05*	EC1703-	CONNECTOR CONN; SMA; PANEL MT.	2
06*	EC1002-	CONNECTOR 14 PIN; RIBBON CONN	2
07*	CA1400-	CABLE; RIBBON 14 CONDUCTOR; GRAY	3
09*	NB403F-	FASTENERS 4-40x3/16 P100 SS	6
10*	NB404P-	FASTENERS 4-40x1/4 PP SS	1
11*	NB400I-	FASTENERS INSERT; EXTENDED	1
12*	HS1816-2	SPACER STANDOFF; 4-40 THD	3
13*	HS1815-3	SPACER STANDOFF; THRU HOLE	3
C1	CS0104-	CAP; SMT; CER; .1 UF 1206	1
C10	CS0104-	CAP; SMT; CER; .1 UF 1206	1
C11	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C12	CS0101-	CAP; SMT; CER; 100PF; 100V; 1206	1
C13	CS0151-	CAP; SMT; CER; 150 pF 1206 5%	1
C14	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C15	CS0104-	CAP; SMT; CER; .1 UF 1206	1
C16	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C17	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C18	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C2	CS0104-	CAP; SMT; CER; .1 UF 1206	1
C4	CS0104-	CAP; SMT; CER; .1 UF 1206	1
C5	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C7*	CF1543-	CAPACITOR; FILM .15/63V	1
C8*	CF1543-	CAPACITOR; FILM .15/63V	1
C9	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
L1	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L2	LS01R0-	IND; FIXED; SMT 1.0 UH, 1210, 10%	1
P1*	MP1053-	MISC. PARTS PIN HEADERS; GOLD; DUAL ROW	1
Q1	QS3906-	TRANSISTOR; SMT PNP 2N3906	1
Q2	QS8133-	TRANSISTOR; SMT RF; 911 REPLACEMENT	1
R1	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R10	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
R11	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R12	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R13	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R14	RS0471-	RES; SMT; FILM; 470 OHM; 1/4W 5%; 1206	1
R15	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R16	RS0184-	RES; SMT; FILM; 180K 5%; 1206	1
R17	RS0471-	RES; SMT; FILM; 470 OHM; 1/4W 5%; 1206	1
R18	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R19	RS0331-	RES; SMT; FILM; 330 Ohm, 5%, 1206	1
R2	RS0271-	RES; SMT; FILM; 270 OHM;1/4W 5%;1206	1

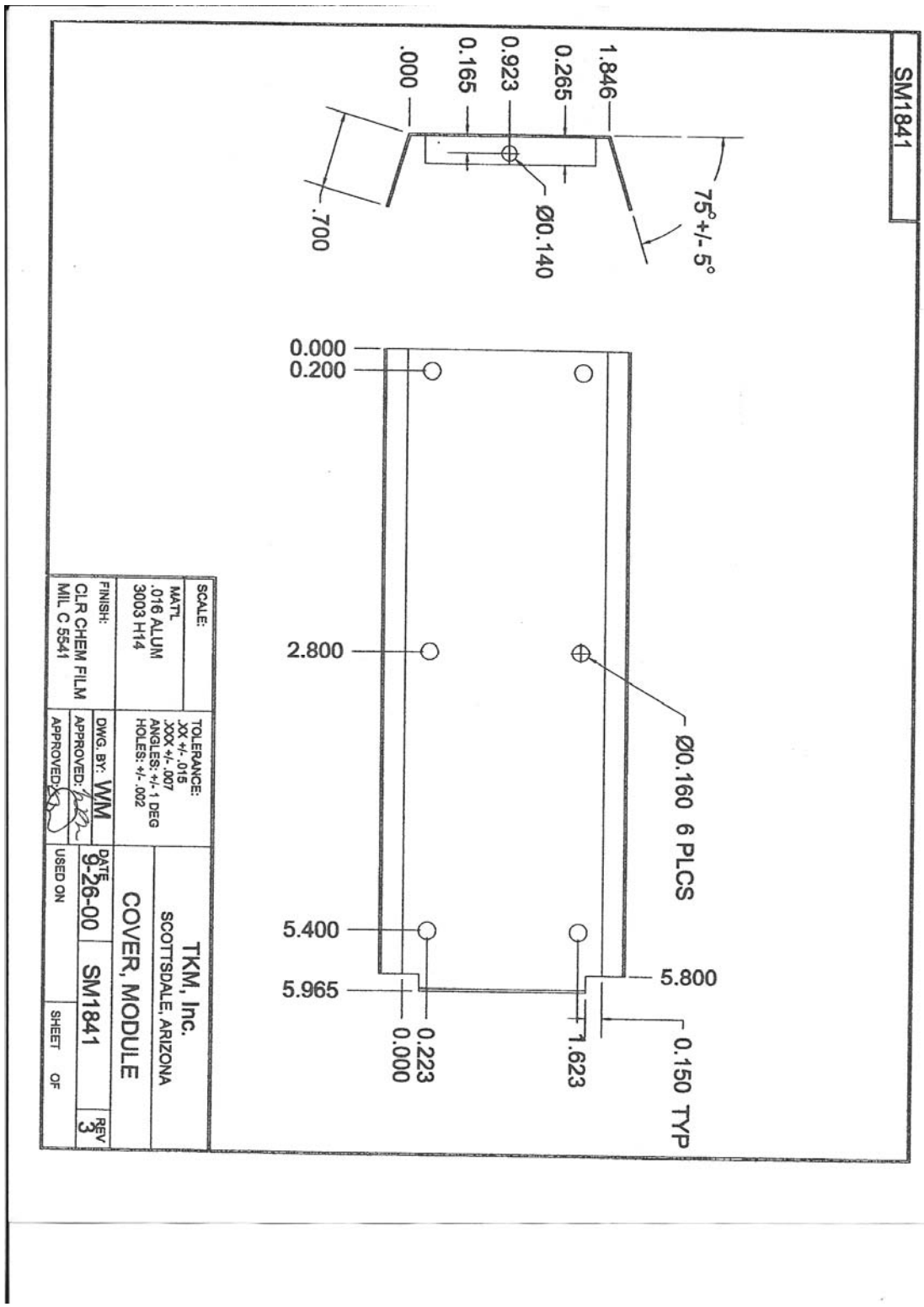
* indicates parts requiring soldermask.

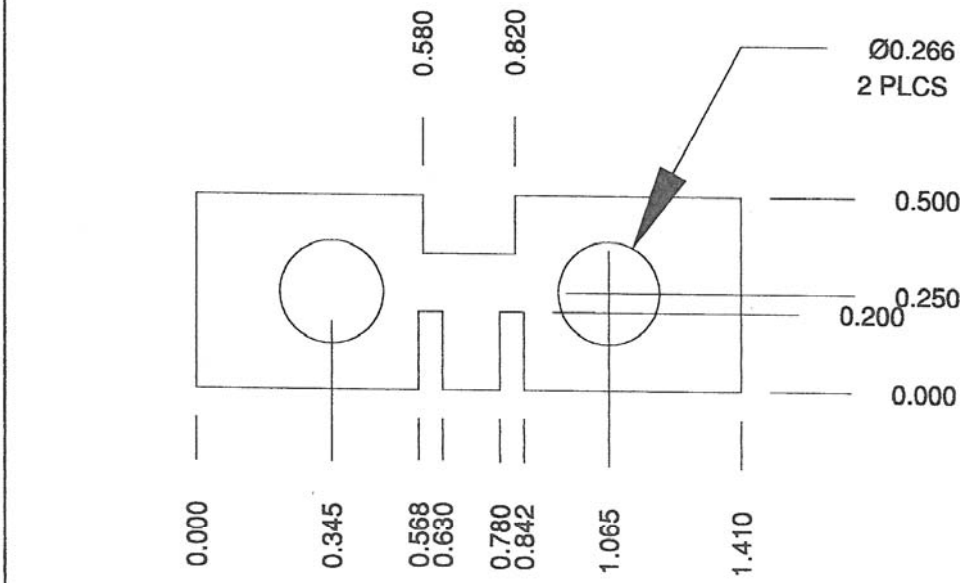
Ref #	Part #	Description	Qty
R20	RS0681-	RES; SMT; FILM; 680 OHM; 1206	1
R21	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R22	RS0331-	RES; SMT; FILM; 330 Ohm, 5%, 1206	1
R23	RS0472-	RES; SMT; FILM; 4.7K; 1/4W 5%; 1206	1
R24	RS0222-	RES; SMT; FILM; 2.2K; 5%; 1206	1
R25	RS0472-	RES; SMT; FILM; 4.7K; 1/4W 5%; 1206	1
R26	RS0222-	RES; SMT; FILM; 2.2K; 5%; 1206	1
R27	RS0475-	RES; SMT; FILM; 4.7 MEGOHM; 1206	1
R28	RS0475-	RES; SMT; FILM; 4.7 MEGOHM; 1206	1
R29*	PW0204-	Top Adj. .3 dia 200K	1
R3	RS4320-	RES; SMT; FILM; 432 ohm; 1206	1
R30	RS0681-	RES; SMT; FILM; 680 OHM; 1206	1
R31	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R32	RS0181-	RES; SMT; FILM; 180 OHM; 1/4W 5%:1206	1
R33	RS0471-	RES; SMT; FILM; 470 OHM; 1/4W 5%; 1206	1
R4*	PW0103-	Top Adj. .3 dia 10 K	1
R5	RS0184-	RES; SMT; FILM; 180K 5%; 1206	1
R9	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
U1	IS0660-	INT. CKT.; SMT LM660 QUAD OP AMP	1
U2	IS4064-	INT. CKT.; SMT CPLD, 5nsec; 3.3V; MACH4000V	1
U3*	IM7812-	INT. CKT.; MISC. REGULATOR; 12V 7812	1
U4	IS317L-	INT. CKT.; SMT VOLTAGE REG	1
U5*	XT1200-	CRYSTAL; QUARTZ POS-200	1
U6	IS7400-	INT. CKT.; SMT QUAD NAND GATE	1
U7*	IM7805-	INT. CKT.; MISC. REGULATOR; 5V 7805	1
U8*	XT1000-	CRYSTAL; QUARTZ 1.0 MHZ OSC.	1
U9	ISG152-	INT. CKT.; SMT SPDT MMIC SWITCH	1


SM1840
0.060 TYP
0.000
0.560
3.160
5.760
6.160
Ø0.160 7 PLCS
0.000
0.268
1.668
1.936
Ø0.250 2 PLCS
0.130
0.000
0.450
0.740
0.590
0.000
0.610
0.968
1.330
1.660
SCALE:
MATL .031 ALUM 5052 H32
TOLERANCE: .XX +/- .015 .XXX +/- .007 ANGLES: +/- 1 DEG HOLES: +/- .002
FINISH: CLR CHEM FILM, CL 3, FORM 1, METH C
DWG. BY: WM
APPROVED:
DATE 10-09-00
TKM, Inc.
SCOTTSDALE, ARIZONA
CASE, MODULE
SM1840
REV 3
USED ON
SHEET 1 OF 1



	SCALE 8X	TOLERANCE .XX +/- .005 .XXX +/- .002 ANGLES +/- 1 DEG. FRACT. +/- 1/32	TKM, INC. SCOTTSDALE, AZ
	MAT'L 3/16 SS ROD		INSERT, EXTENDED
	FINISH	DRAWN BY WEM	DATE 4-5-99 NB400I REV
		APPROVED WEM	USED ON SHEET OF
		APPROVED	


SM1841
1.846
0.265
0.923
0.165
.000
.700
Ø0.140
75°+/- 5°
0.000
0.200
2.800
5.400
5.965
Ø0.160 6 PLCS
5.800
1.623
0.223
0.000
0.150 TYP
SCALE:
MATL
.016 ALUM
3003 H114
TOLERANCE:
.XX +/- .015
.XXX +/- .007
ANGLES: +/- 1 DEG
HOLES: +/- .002
FINISH:
CLR CHEM FILM
MIL C 5541
DWG. BY: WM
APPROVED:
APPROVED:
TKM, Inc.
SCOTTSDALE, ARIZONA
COVER, MODULE
DATE
9-26-00
SM1841
REV
3
USED ON
SHEET OF

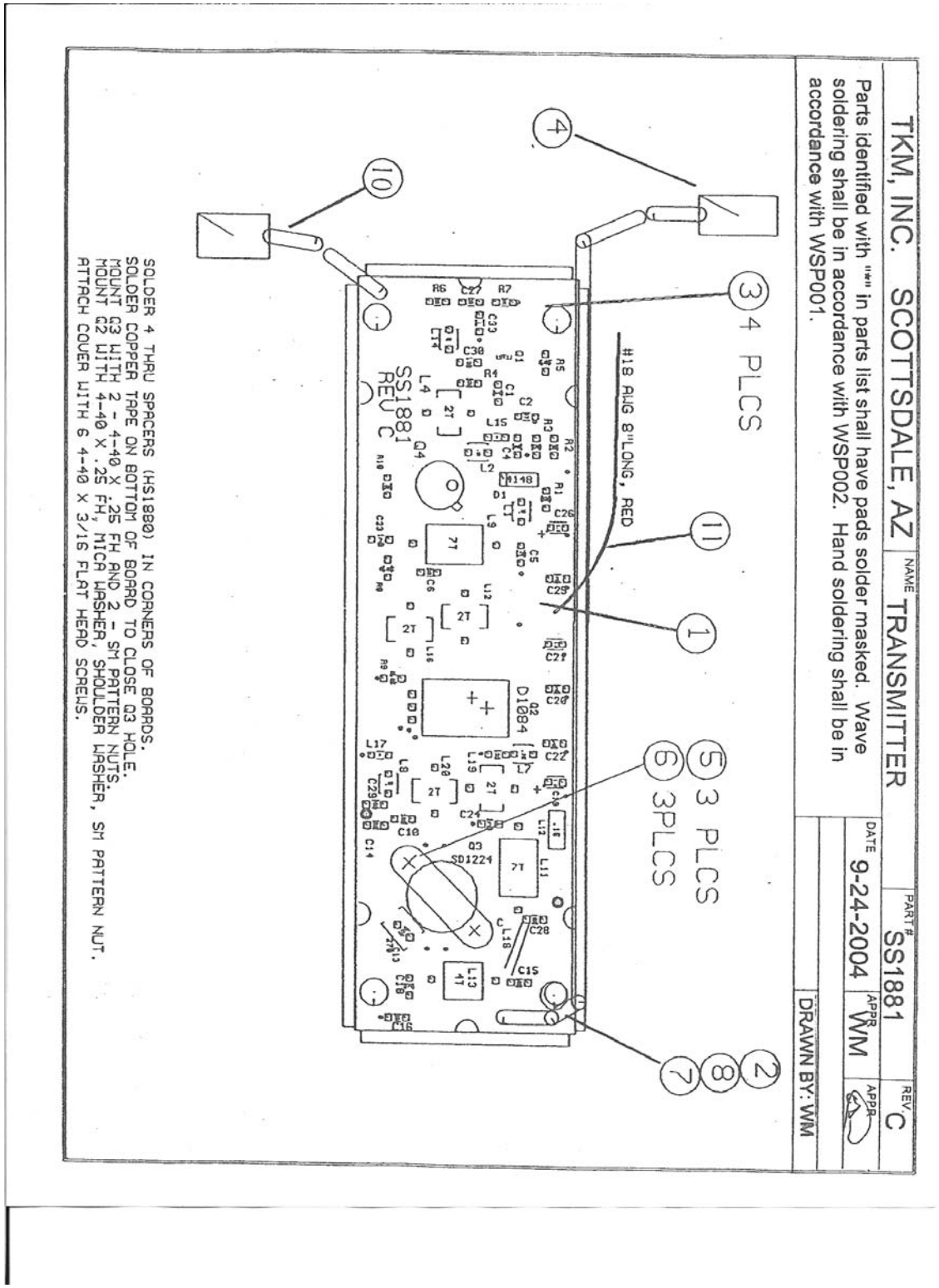


SM1814	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L .016 1/2 HARD BRASS	.XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	BRACKET, GROUNDING	
	FINISH BRIGHT TIN per MIL T 10727	DRAWN BY WM APPROVED APPROVED	DATE 8-20-99	SM1814 REV
			USED ON	SHEET 1 OF 1

INDENTURED DRAWING LIST

MODULE SS1881 - TRANSMITTER

SS1881	REV C	TRANSMITTER, TOP ASSY
PC1881	REV C	PCB TRANSMITTER
SM1883	REV 9	BASE, TRANSMITTER
SM1813	REV 2	COVER, TRANSMITTER
CA1802	NONE	CABLE ASSY, COAX
CA1801	NONE	CABLE ASSY, COAX
LFS7TN	NONE	INDUCTOR, RF
LFS2TN	NONE	INDUCTOR, RF
LFS4TN	NONE	INDUCTOR, RF
RN0002	NONE	RESISTOR, METAL FILM


TKM, INC. SCOTTSDALE, AZ
NAME TRANSMITTER
PART # SS1881
REV C
DATE 9-24-2004
APPR WM
APPR
DRAWN BY: WM
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.
4
10
3 4 PLCS
#18 AWG 8"LONG, RED
11
1
5 3 PLCS
6 3PLCS
2
8
7
SS1881
REV C
SOLDER 4 THRU SPACERS (HS1880) IN CORNERS OF BOARDS.
SOLDER COPPER TAPE ON BOTTOM OF BOARD TO CLOSE Q3 HOLE.
MOUNT Q3 WITH 2 - 4-40 X .25 FH AND 2 - SM PATTERN NUTS.
MOUNT Q2 WITH 4-40 X .25 FH, MICA WASHER, SHOULDER WASHER, SM PATTERN NUT.
ATTACH COVER WITH 6 4-40 X 3/16 FLAT HEAD SCREWS.

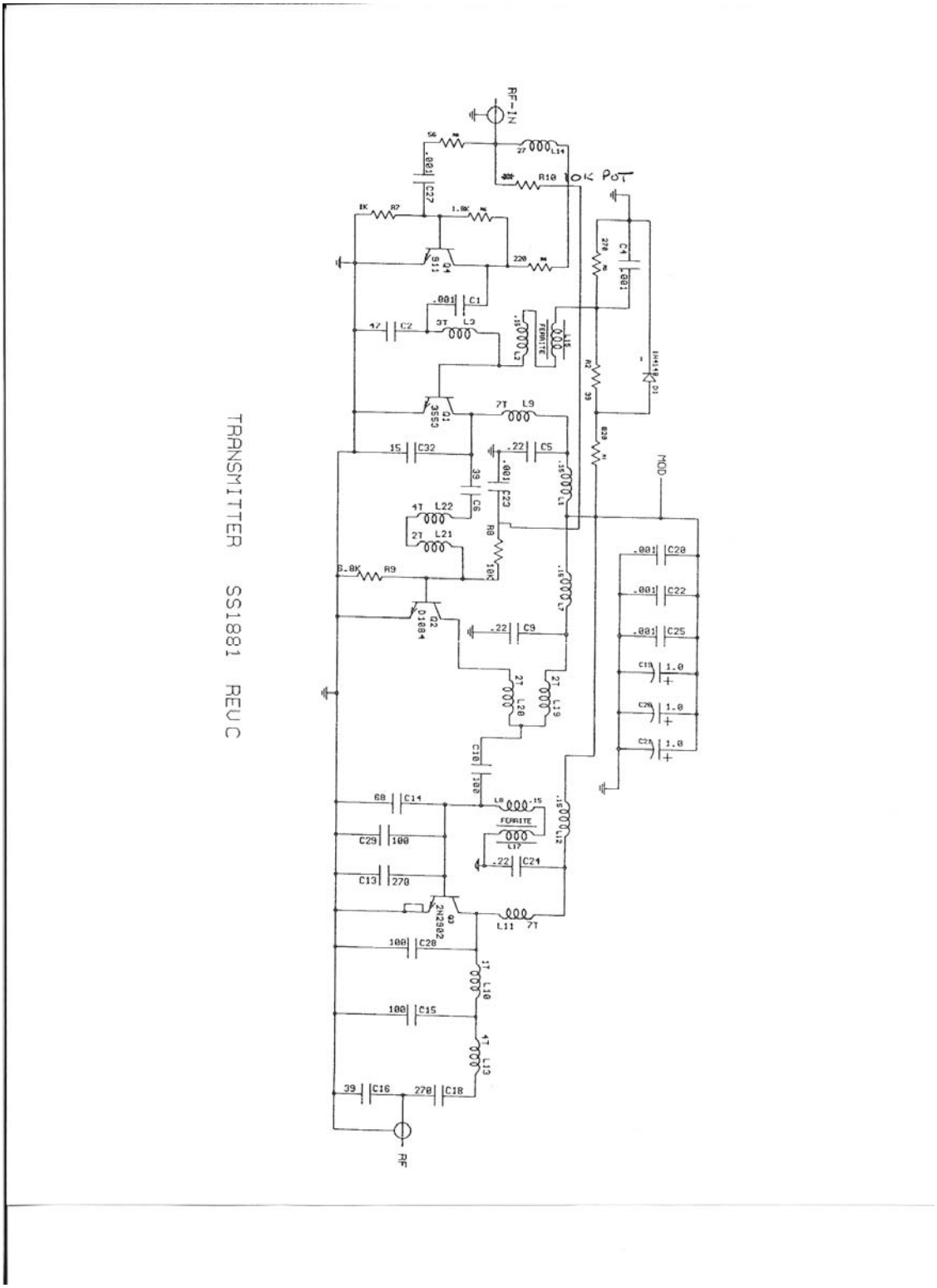
TRANSMITTER SS1881-C page 1

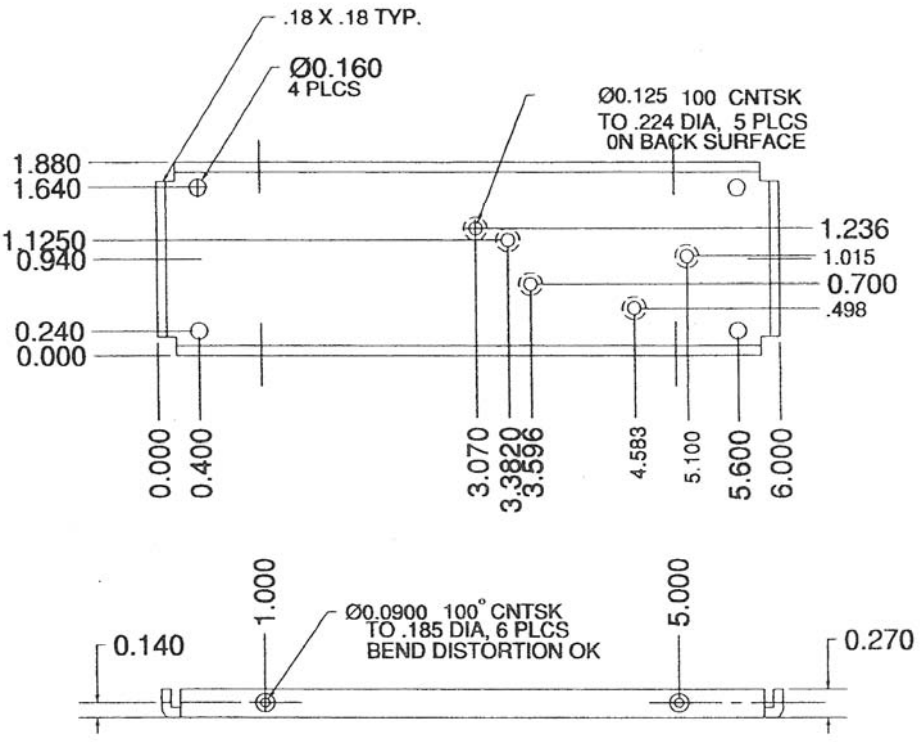
* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
01	PC1881-C	PCB TRANSMITTER	1
02*	SM1883-9	SHEET METAL BASE; TRANSMITTER	1
03*	HS1003-	SPACER 3/16 RD X .660 THRU (TX)	4
04*	CA1802-	CABLE; RIBBON COAX CABLE ASSY	2
05*	NB405F-	FASTENERS 4-40x5/16 P100 SS	3
06*	NB400N-	FASTENERS 4-40 SM NUT SS	3
07*	NB403F-	FASTENERS 4-40x3/16 P100 SS	6
08*	SM1813-3	SHEET METAL Cover, TX	1
09*	MP1051-	MISC. PARTS NYLON SHOULDER WASHER	1
10*	CA1801-	CABLE; RIBBON COAX CABLE ASSY	1
C1	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C10	CG1016-	CAP; CER. CHIP 100 PF; 50 V; 1010	1
C13	CG2716-	CAP; CER. CHIP 270 PF; RF	1
C14	CG1516-	CAP; CER. CHIP 150 PF; 50 V; 1010	1
C15	CG1516-	CAP; CER. CHIP 150 PF; 50 V; 1010	1
C16	CG3906-	CAP; CER. CHIP 39 pF; 50V; .1X.1; 5%	1
C18	CG2716-	CAP; CER. CHIP 270 PF; RF	1
C19	CX0105-	CAP; SMT; TANT 1.0 uF; 35 V	1
C2	CS0470-	CAP; SMT; CER; 47pF; 100V; 1206	1
C20	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C21	CX0105-	CAP; SMT; TANT 1.0 uF; 35 V	1
C22	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C23	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C24*	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
C25	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C26	CX0105-	CAP; SMT; TANT 1.0 uF; 35 V	1
C27	CS0390-	CAP; SMT; CER; 39pF; 100V; 1206	1
C30	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C33	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C4	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C5	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C6	CS0390-	CAP; SMT; CER; 39pF; 100V; 1206	1
C9	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
D1*	DD4148-	DIODE 1N4148	1
L1	LS0154-	IND; FIXED; SMT .15 uH; 10% SMT	1
L11*	LFS7TN-	INDUCTOR; FIXED	1
L12*	LFS2TN-	INDUCTOR; FIXED	1
L13*	LFS4TN-	INDUCTOR; FIXED	1
L14	LS0270-	IND; FIXED; SMT 27 uH; 10% SMT	1
L15	LFRRIT-	INDUCTOR; FIXED BEAD; SMT; 1206	1
L16*	LFS2TN-	INDUCTOR; FIXED	1
L17*	MP1036-	MISC. PARTS BEAD; FERRITE	1
L18*	RN0002-	RESISTOR; METAL FILM 18 AWG BUS WIRE 1" LONG	1
L19*	LFS2TN-	INDUCTOR; FIXED	1
L2	LS0154-	IND; FIXED; SMT .15 uH; 10% SMT	1

* indicates parts requiring soldermask.

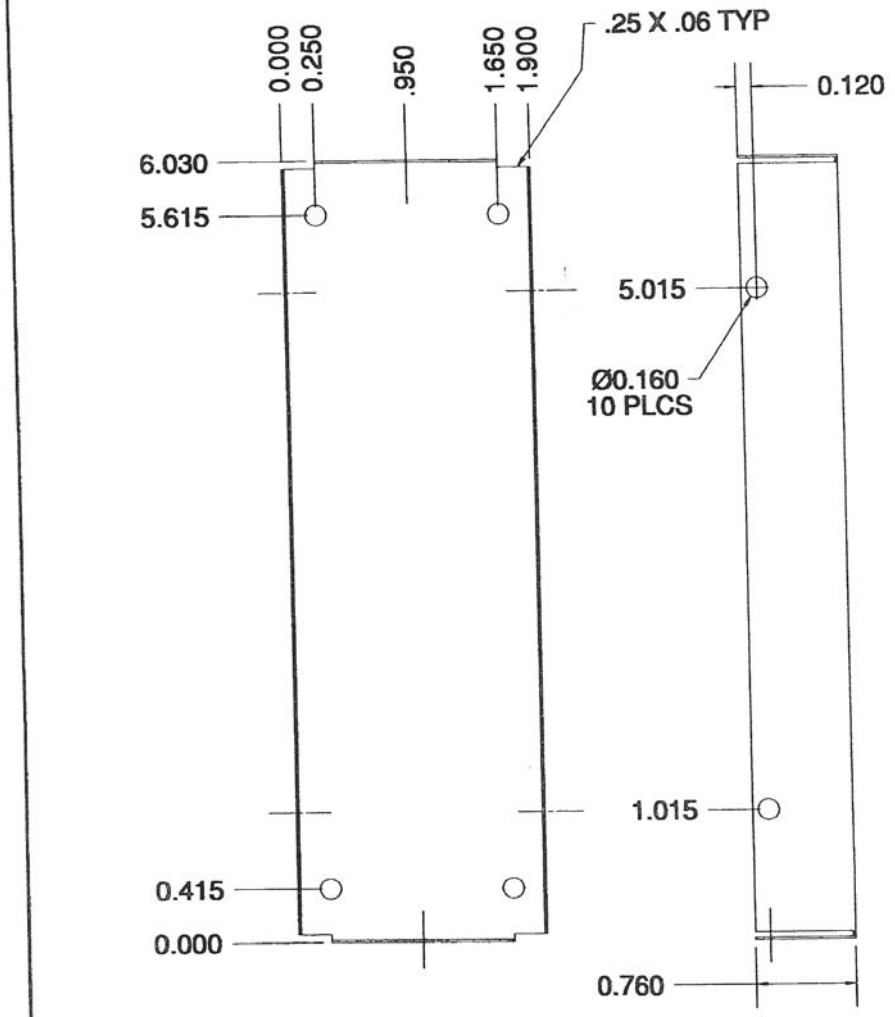
Ref #	Part #	Description	Qty
L20*	LFS2TN-	INDUCTOR; FIXED	1
L4*	LFS2TN-	INDUCTOR; FIXED	1
L5	LS0154-	IND; FIXED; SMT .15 uH; 10% SMT	1
L6*	LFS2TN-	INDUCTOR; FIXED	1
L7	LS0154-	IND; FIXED; SMT .15 uH; 10% SMT	1
L8	LS0154-	IND; FIXED; SMT .15 uH; 10% SMT	1
L9*	LFS7TN-	INDUCTOR; FIXED	1
Q1	QS8133-	TRANSISTOR; SMT RF; 911 REPLACEMENT	1
Q2*	QX1084-	TRANSISTOR RF POWER; 4 W	1
Q3*	QX1224-	TRANSISTOR RF AMP. 40 W	1
Q4*	QX3553-	TRANSISTOR 2N3553	1
R1	RS0821-	RES; SMT; FILM; 820 OHM;1/4W 5%; 1206	1
R11	PS0503-	POT; SMT; 50 Kohm, 3 mm.	1
R2	RS0390-	RES; SMT; FILM; 39 OHM; 1/4W 5%; 1206	1
R3	RS0151-	RES; SMT; FILM; 150 OHM; 5%; 1206	1
R4	RS0221-	RES; SMT; FILM; 220 OHM; 1/4W 5%;1206	1
R5	RS0182-	RES; SMT; FILM; 1.8K; 1/4W 5%; 1206	1
R6	RS0560-	RES; SMT; FILM; 56 OHM;1/4W 5%;1206	1
R7	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R8	RS0472-	RES; SMT; FILM; 4.7K; 1/4W 5%; 1206	1
R9	RS0392-	RES; SMT; FILM; 3.9K; 5%; 1206	1


TRANSMITTER SS1881 REV C
RF-IN
R10 10K POT
MOD
RF



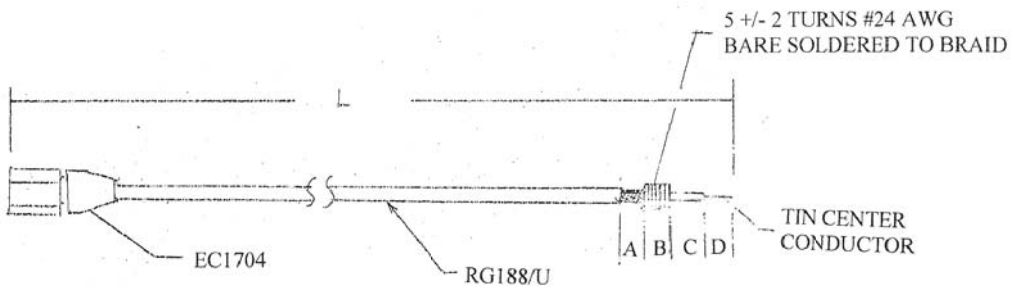
EDGE HOLES TO BE TAPPED 4-40 NC 6 PLACES AFTER FORMING.

SM1883	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG HOLE DIA +/- .002	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L .090 ALUM 5052 H32		BASE, TRANSMITTER		
	FINISH CLR CHEM FILM MIL C 5541	DRAWN BY WM APPROVED APPROVED	DATE 6/1/04	SM1883	REV 9
			USED ON SS1881	SHEET 1 OF 1	



SM1813	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA
	MAT'L .016 ALUM 3003 H14		COVER, TRANSMITTER
	FINISH CLR CHEM FILM MIL C 5541	DRAWN BY WM APPROVED APPROVED	DATE 8-8-00 / SM1813 / REV 3 USED ON SS1881 / SHEET 1 OF 1

CA1802

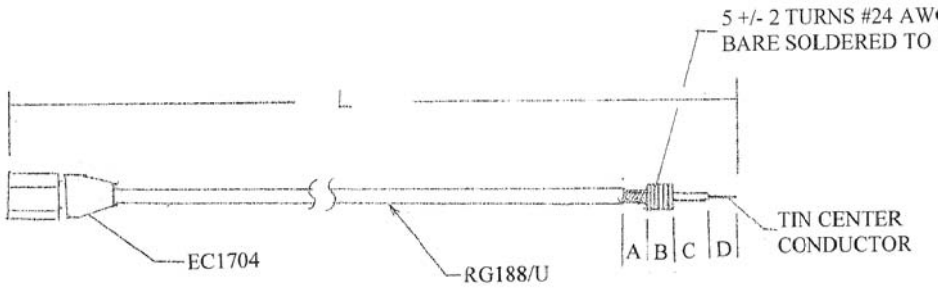


DIMENSION

A = .200 +/- .020
B = .120 +/- .020
C = .300 +/- .020
D = .100 =/- .020
L = 13.5 +/- .040

SCALE:	TOLERANCE:	TKM, Inc. SCOTTSDALE, ARIZONA
MAT'L		CABLE ASSY, COAX
FINISH:	DWG. BY: WM	DATE 5-10-94 / CA1802 / REV
	APPROVED:	
	APPROVED:	USED ON SS1881 / SHEET 1 OF 1

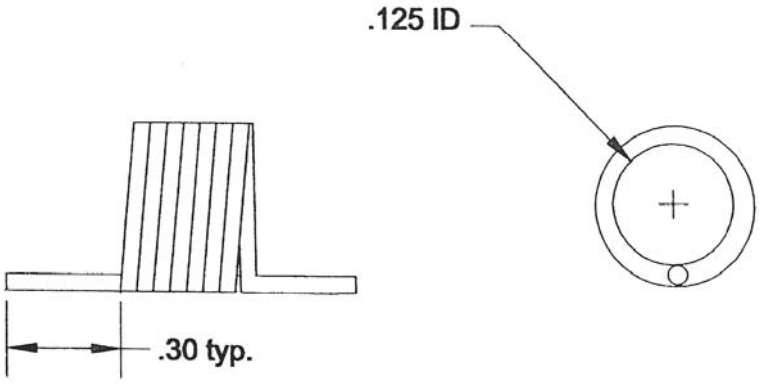
CA1801



DIMENSION

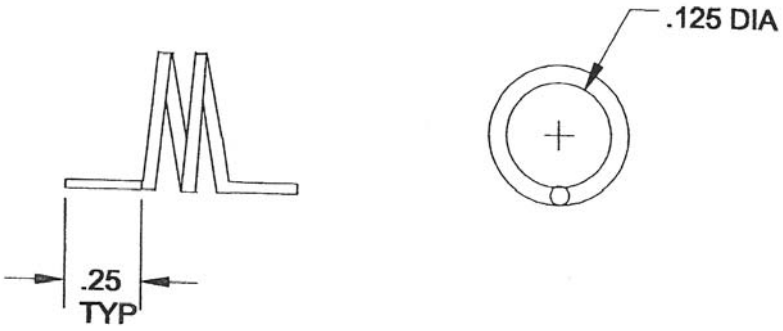
A = .200 +/- .020
B = .120 +/- .020
C = .160 +/- .020
D = .200 =/- .020
L = 5.50 +/- .040

SCALE:	TOLERANCE:	TKM, Inc. SCOTTSDALE, ARIZONA	
MAT'L		CABLE ASSY, COAX	
FINISH:	DWG. BY: WM	DATE 5-10-94	CA1801 REV
	APPROVED:	USED ON SS1881	SHEET 1 OF 1
	APPROVED:		



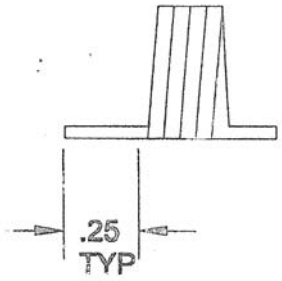
NOTES
1. 7 TURNS CLOSE WOUND
2. STRIP BOTH ENDS .20

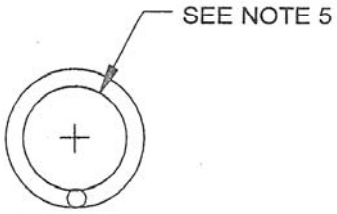
LFS7TN	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L #18 AWG SPN	.XXX +/- .015 ANGLES +/- 1 DEG Hole dia:+/-.002	INDUCTOR, RF		
	FINISH	DRAWN BY WM	DATE 7-7-00	LFS7TN	REV
		APPROVED			
		APPROVED	USED ON SS1881(TX)	SHEET 1 OF 1	



NOTES
1. 2 TURNS; .2 LENGTH
2. STRIP BOTH ENDS .20

LFS2TN	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L #18 AWG SPN	.XXX +/- .015 ANGLES +/- 1 DEG Hole dia:+/-.002	INDUCTOR, RF	
	FINISH	DRAWN BY WM	DATE 7-7-00	LFS2TN REV
		APPROVED		
		APPROVED	USED ON SS1881(TX)	SHEET 1 OF 1

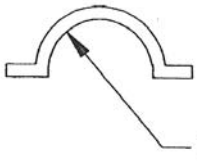




NOTES:

1. 4 TURNS CLOSE WOUND.
2. STRIP BOTH ENDS .200
3. FOR SS1866 & SS1867, USE GREEN #20 AWG SPN.
4. FOR SS1881, USE RED #18 AWG SPN.
5. ID
   SS1866 = .155
   SS1867 = .165
   SS1881 = .125

LFS4TN	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L	.XXX +/- .015 ANGLES +/- 1 DEG Hole dia:+/-.002	INDUCTOR, RF		
	FINISH	DRAWN BY WM	DATE 7-7-00	LFS4TN	REV
		APPROVED			
		APPROVED	USED ON SS1866,SS1867,SS1881	SHEET 1 OF 1	



NOTES
1. OVERALL LENGTH OF WIRE TO BE 1.0

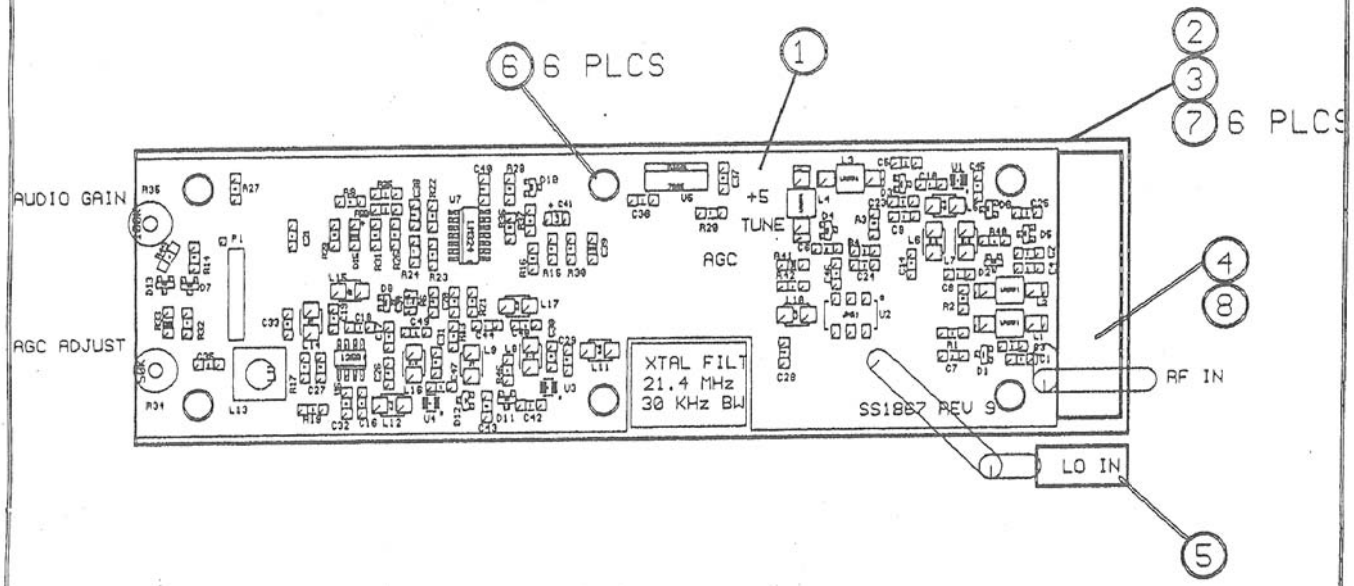
RN0002	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L #18 AWG BARE TINNED	.XXX +/- .015 ANGLES +/- 1 DEG Hole dia:+/-.002	RESISTOR, METAL FILM		
	FINISH	DRAWN BY WM	DATE 7-7-00	RN0002	REV
		APPROVED			
		APPROVED	USED ON SS1881(TX)	SHEET 1 OF 1	

INDENTURED DRAWING LIST

MODULE SS1867 – NAV RECEIVER (BLUE)

SS1867	REV C	RECEIVER ASSY; COMM (GREEN)
PC1866	REV C	PCB, RECEIVER
SM1840	REV 3	CASE, MODULE
SM1841	REV 3	COVER, MODULE
SM1812	REV 2	GND BRACKET; RX
CA1803	NONE	CABLE ASSY, COAX
CA1867	NONE	CABLE, NAV RECEIVER
CA1804	NONE	CABLE ASSY, COAX
LFST4N	NONE	INDUCTOR, RF
LFST5N	NONE	INDUCTOR, RF

TKM, INC. SCOTTSDALE, AZ	NAME RECEIVER, NAV	PART # SS1867	REV. C
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.		DATE 7-12-2004 APPR	APPR
			DRAWN BY: WM



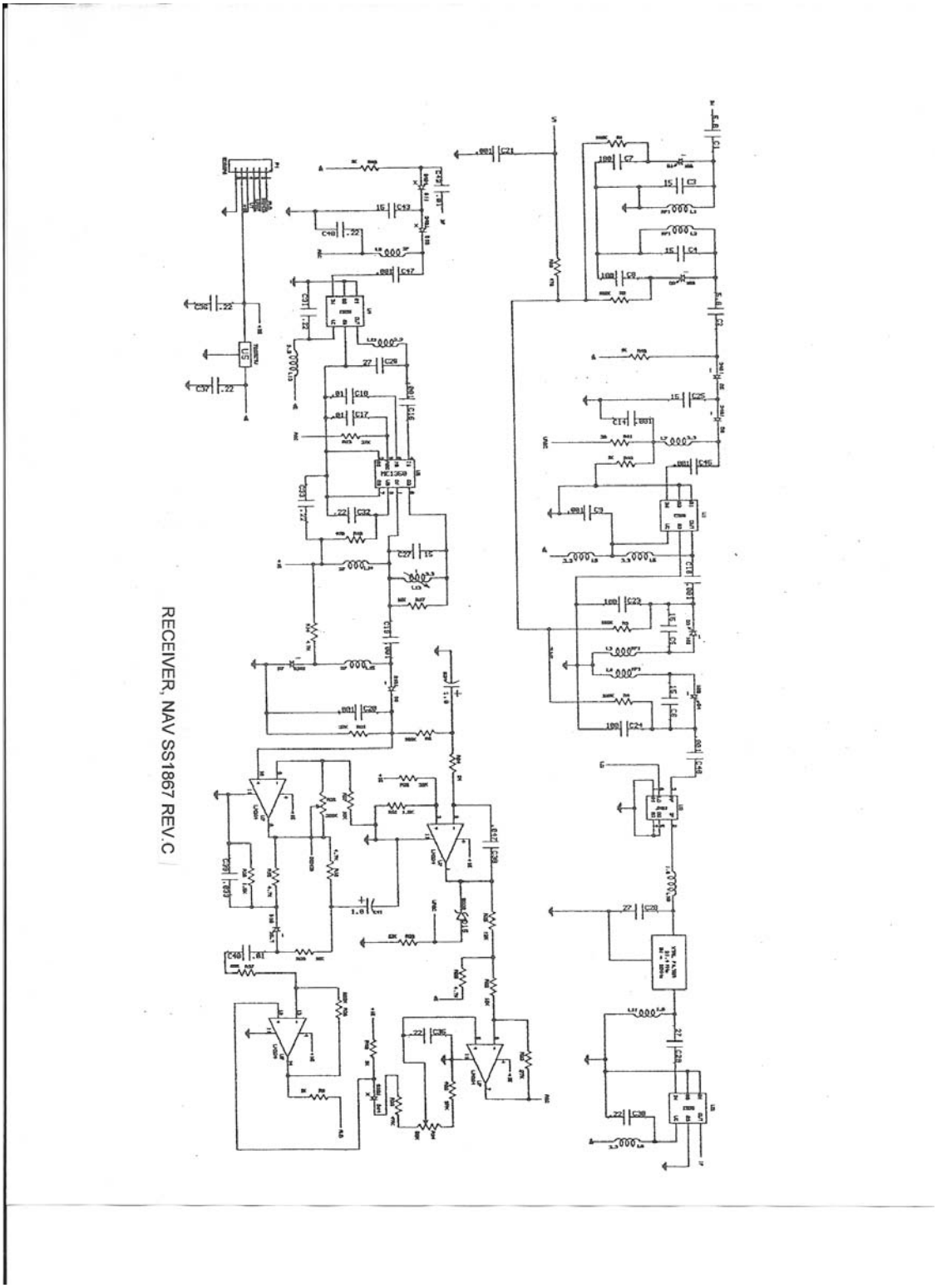
RECEIVER; NAV SS1867-C page 1

* indicates parts requiring soldermask.

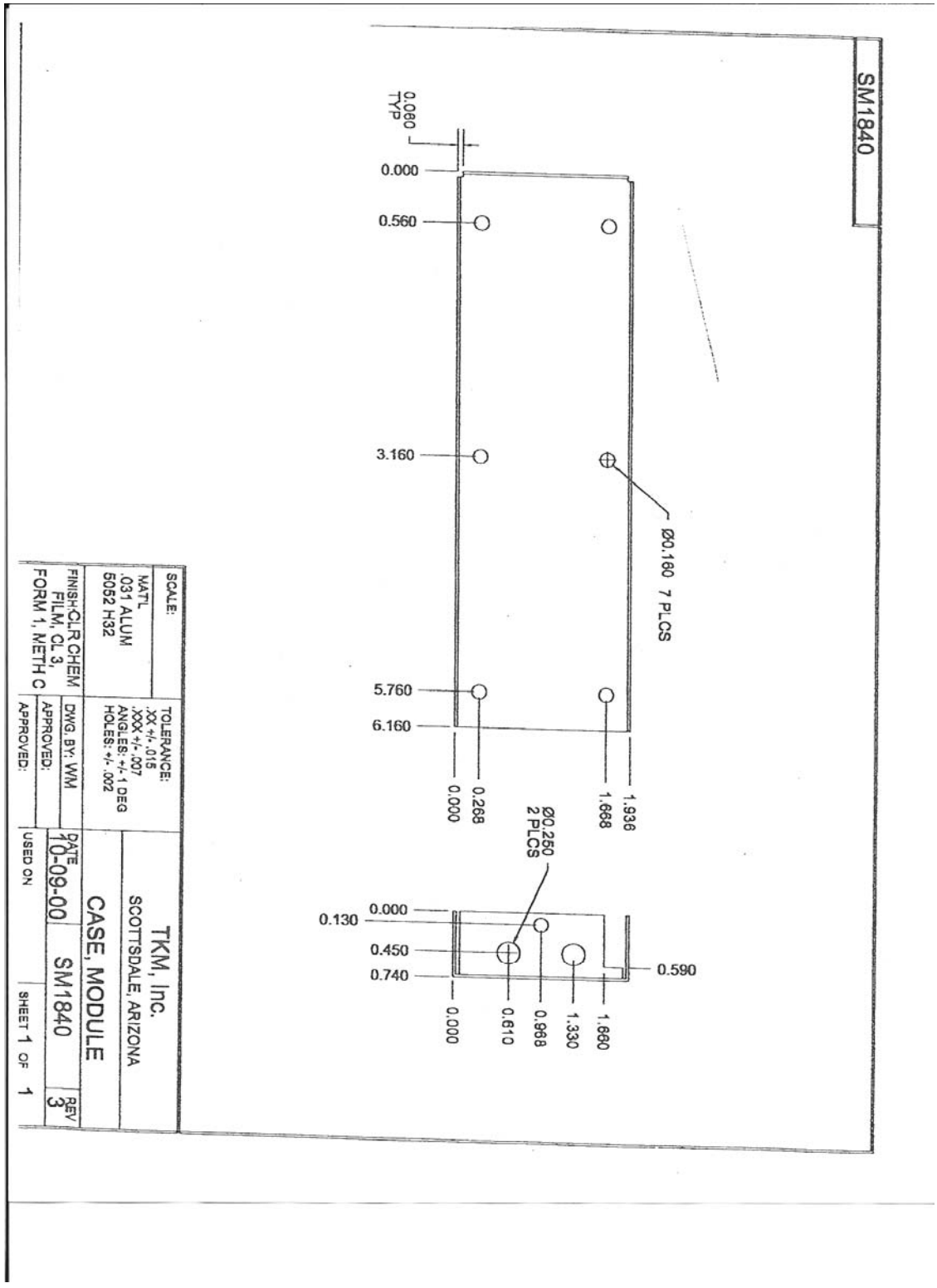
Ref #	Part #	Description	Qty
01	PC1866-C	PCB RECEIVER; COMM-GREEN, NAV-BLUE	1
02*	SM1840-3	SHEET METAL CASE; MODULE	1
03*	SM1841-3	SHEET METAL COVER; MODULE	1
04*	SM1812-2	SHEET METAL GND BRACKET; RX	1
05*	CA1803-	CABLE; RIBBON ASSEMBLY,COAX CONN RG188	2
06*	HS1816-2	SPACER STANDOFF; 4-40 THD	6
07*	NB403F-	FASTENERS 4-40x3/16 P100 SS	6
08*	NB404S-	FASTENERS #4 X 1/4 SS Sheet Metal	1
09*	CA1867-	CABLE; RIBBON Receiver, Nav; 6 cond.	1
10*	MP1044-	MISC. PARTS PIN HEADER; GOLD; SINGLE	1
11*	EC1709-	CONNECTOR HOUSING; 6 PIN	2
12*	EC1806-	CONNECTOR CRIMP PINS; SMALL	6
13*	CA1804-	CABLE; RIBBON COAX ASSY CABLE	0
C1	CS05R6-	CAP; SMT; CER; 5.6pF; 100V; 1206	1
C10	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C14	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C16	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C17	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C18	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C19	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C2	CS05R6-	CAP; SMT; CER; 5.6pF; 100V; 1206	1
C20	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C21	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C23	CS0101-	CAP; SMT; CER; 100PF; 100V; 1206	1
C24	CS0101-	CAP; SMT; CER; 100PF; 100V; 1206	1
C25	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C26	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C27	CS0270-	CAP; SMT; CER; 27 PF; 50V; 1206	1
C28	CS0220-	CAP; SMT; CER; 22 PF; 100V	1
C29	CS0220-	CAP; SMT; CER; 22 PF; 100V	1
C3	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C30	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C31	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C32	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C33	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C34	CX0105-	CAP; SMT; TANT 1.0 uF; 35 V	1
C35	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C36	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C37	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C38*	CF4733-	CAPACITOR; FILM .047/63V	1
C39	CS0333-	CAP; SMT; CER; .033 uF; 100V; 1206	1
C4	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C40	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C41	CX0105-	CAP; SMT; TANT 1.0 uF; 35 V	1
C42	C60102-	CAP; SM; 1000 Pf	1

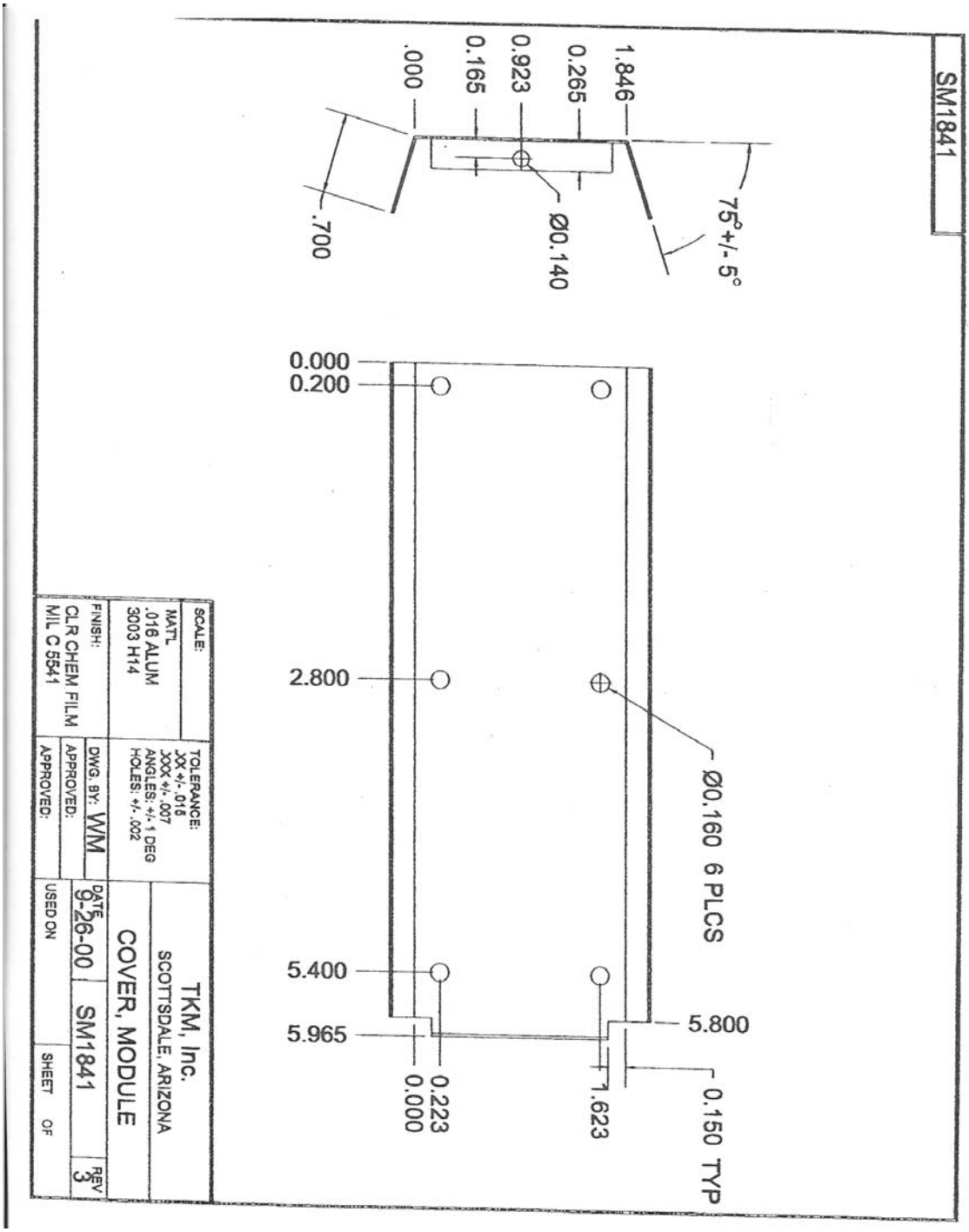
* indicates parts requiring soldermask.

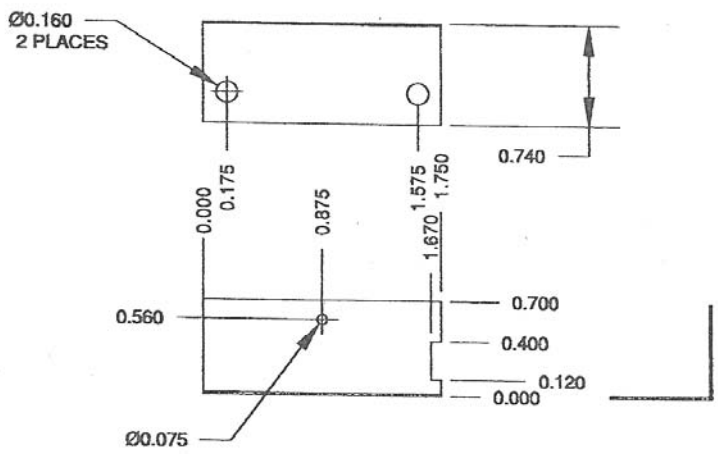
Ref #	Part #	Description	Qty
C43	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C44	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C45*	CR1024-	CAP; MONO-CERAMIC .001uF; 100V	1
C46	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C47	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
C48	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C49	CS0224-	CAP; SMT; CER; .22 uF; 50 V; 1206 case	1
C5	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C6	CS0150-	CAP; SMT; CER; 15pf; 100V; 1206	1
C7	CS0181-	CAP; SMT; CER; 180PF; 100V; 1206	1
C8	CS0181-	CAP; SMT; CER; 180PF; 100V; 1206	1
C9	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
D1	DS0109-	DIODE; SMT MMBV109	1
D10	DS0016-	DIODE; SMT SWITCHING	1
D11	DS3401-	DIODE; SMT MMBV3401	1
D12	DS3401-	DIODE; SMT MMBV3401	1
D13	DS0016-	DIODE; SMT SWITCHING	1
D15	DS5230-	DIODE; SMT 1N5230; SMT	1
D2	DS0109-	DIODE; SMT MMBV109	1
D3	DS0109-	DIODE; SMT MMBV109	1
D4	DS0109-	DIODE; SMT MMBV109	1
D5	DS3401-	DIODE; SMT MMBV3401	1
D6	DS3401-	DIODE; SMT MMBV3401	1
D7	DS0101-	DIODE; SMT MMBD101	1
D8	DS0101-	DIODE; SMT MMBD101	1
L1*	LFS4TN-	INDUCTOR; FIXED	1
L10	LS02R2-	IND; FIXED; SMT 2.2 uH; 10%; SMT	1
L11	LS02R2-	IND; FIXED; SMT 2.2 uH; 10%; SMT	1
L12	LS02R2-	IND; FIXED; SMT 2.2 uH; 10%; SMT	1
L13*	LA1701-	COIL/COILFORM 3.3 uH; RX	1
L14	LS0270-	IND; FIXED; SMT 27 uH; 10% SMT	1
L15	LS0270-	IND; FIXED; SMT 27 uH; 10% SMT	1
L16	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L17	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L19	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L2*	LFS4TN-	INDUCTOR; FIXED	1
L20	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L3*	LFS5TN-	INDUCTOR; FIXED	0
L4*	LFS5TN-	INDUCTOR; FIXED	0
L5	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L6	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L7	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L8	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
L9	LS0270-	IND; FIXED; SMT 27 uH; 10% SMT	1



RECEIVER, NAV SS1867 REV.C

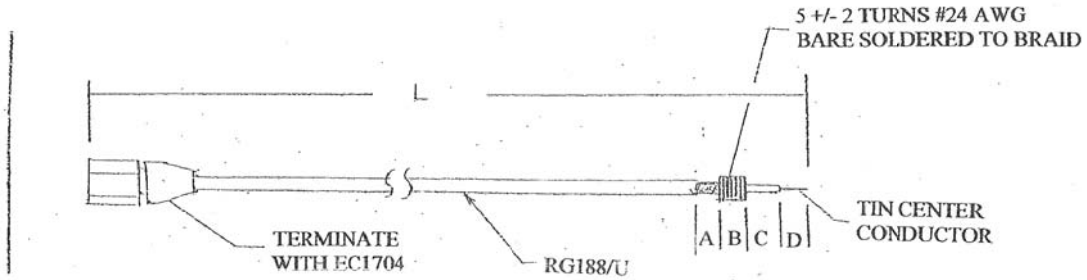

SM1840
0.080 TYP
0.000
0.560
3.160
5.760
6.160
Ø0.160 7 PLCS
0.000
0.268
1.668
1.936
Ø0.250 2 PLCS
0.130
0.000
0.450
0.740
0.590
0.000
0.810
0.988
1.330
1.660
SCALE:
MATL .031 ALUM 5052 H32
TOLERANCE: .XX +/- .015 .XXX +/- .007 ANGLES: +/- 1 DEG HOLES: +/- .002
FINISH: CLR CHEM FILM, CL 3, FORM 1, METH C
DWG. BY: WM
APPROVED:
DATE 10-09-00
APPROVED:
USED ON
TKM, Inc.
SCOTTSDALE, ARIZONA
CASE, MODULE
SM1840
REV 3
SHEET 1 OF 1


SM1841
1.846
0.265
0.923
0.165
.000
.700
Ø0.140
75° +/- 5°
0.000
0.200
2.800
5.400
5.965
Ø0.160 6 PLCS
5.800
1.623
0.223
0.000
0.150 TYP
SCALE:
MATL
.016 ALUM
3003 H14
TOLERANCE:
XX +/- .015
XXX +/- .007
ANGLES: +/- 1 DEG
HOLES: +/- .002
FINISH:
CLR CHEM FILM
MIL C 5541
DWG. BY: WM
APPROVED:
APPROVED:
DATE
9-26-00
TKM, Inc.
SCOTTSDALE, ARIZONA
COVER, MODULE
SM1841
REV
3
USED ON
SHEET OF



SM1812	SCALE	TOLERANCES .XX +/- .015 .XXX +/- .007 ANGLES +/- 1 DEG FRACT +/- 1/32	TKM, Inc SCOTTSDALE, ARIZONA
	MAT'L HALF HARD BRASS		BRACKET, GROUNDING
	FINISH BRIGHT TIN	DRAWN BY WM APPROVED APPROVED	DATE 8-9-99 / SM1812 / REV 2 USED ON / SHEET 1 OF 1

CA1803



NOTES:

DIMENSION(OPEN END)

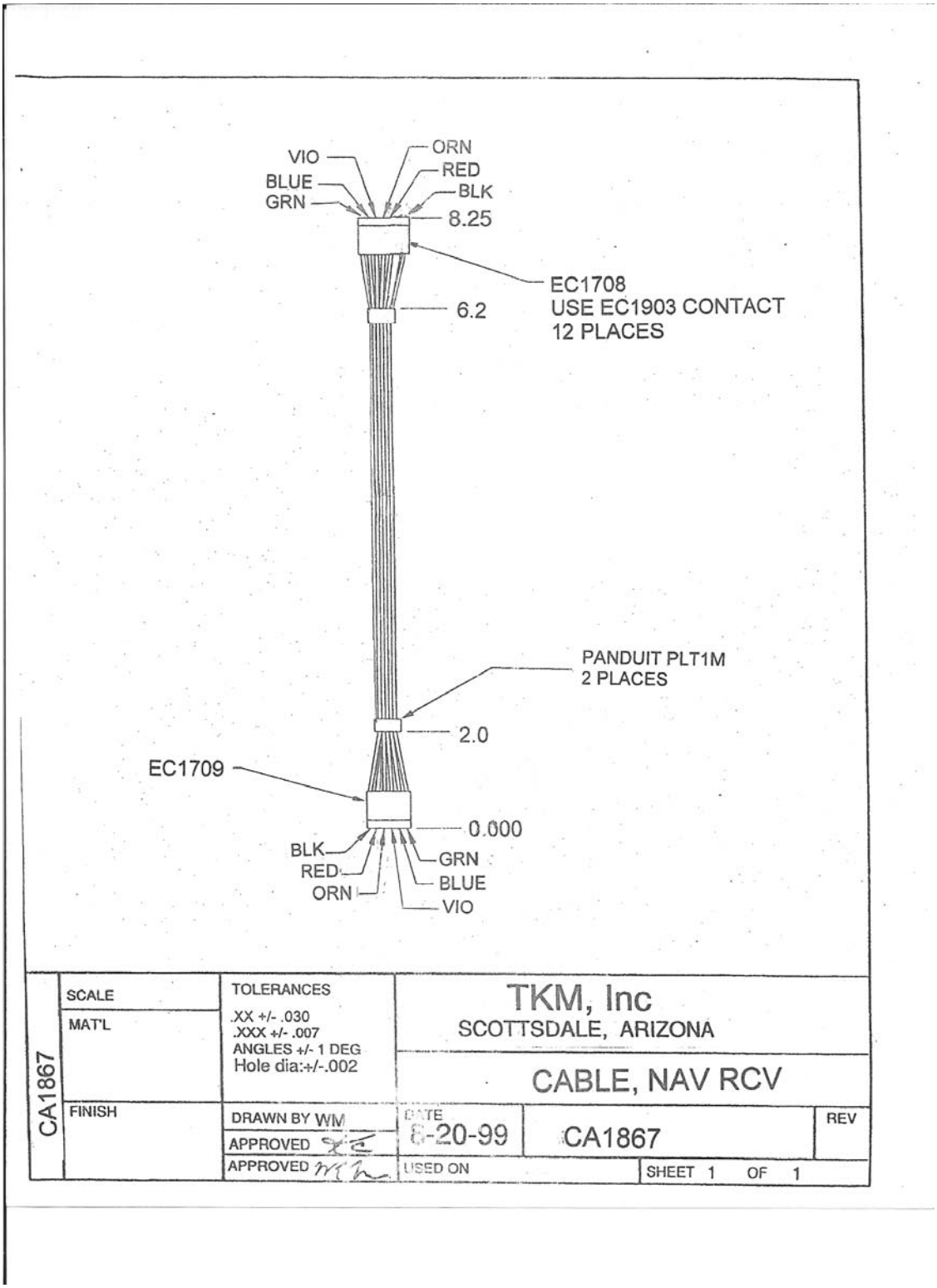
A = .600 +/- .02
B = .100 +/- .02
C = .240 +/- .20
D = .220 +/- .20

DIMENSION(TERMINATED END)

A = .640 +/- .02
B = .140 +/- .02
C = .200 +/- .02
D = .220 +/- .02

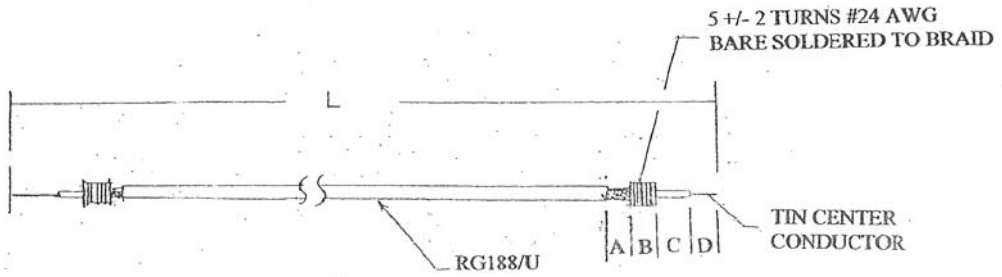
L = 7.50 =/- .040

SCALE:	TOLERANCE:	TKM, Inc. SCOTTSDALE, ARIZONA
MAT'L		CABLE ASSY, COAX
FINISH:	DWG. BY: WM	DATE 5-10-94 CA1803 REV
	APPROVED:	
	APPROVED:	USED ON SS1866 SS1867 SHEET 1 OF 1



CA1867	SCALE	TOLERANCES .XX +/- .030 .XXX +/- .007 ANGLES +/- 1 DEG Hole dia:+/-.002	TKM, Inc SCOTTSDALE, ARIZONA	
	MAT'L		CABLE, NAV RCV	
	FINISH	DRAWN BY WM	DATE 8-20-99	CA1867 REV
		APPROVED		
		APPROVED	USED ON	SHEET 1 OF 1

CA1804



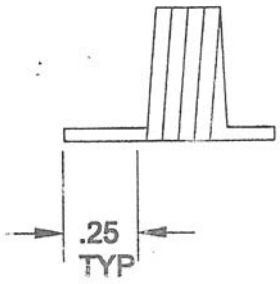
NOTES:
1. PREP EACH END THE SAME

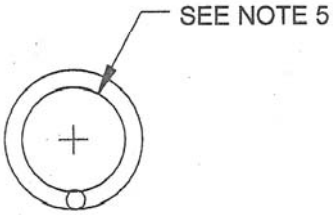
DIMENSION
A = .640 +/- .02
B = .140 +/- .02
C = .200 +/- .02
D = .220 +/- .02
L = 8.50 +/- .40

TERMINATE COMM(1 END ONLY)
ALL RADIOS, USE EC1704

TERMINATE NAV(1 END ONLY)
MX11----------EC1704
MX12----------EC2021 (HM1602)
MX170()----------EC1022 (HM1730)
MX300----------EC1704
MX385-EC1804 (HM1904)(HM1905)

SCALE:	TOLERANCE:	TKM, Inc. SCOTTSDALE, ARIZONA
MAT'L		CABLE ASSY, COAX
FINISH:	DWG. BY: WM	DATE 5-10-94 CA1804 REV
	APPROVED:	USED ON SS1866 SS1867 SHEET 1 OF 1
	APPROVED:	

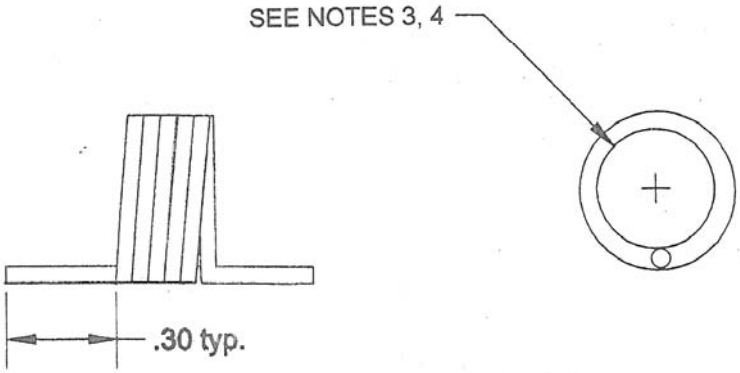




NOTES:

1. 4 TURNS CLOSE WOUND.
2. STRIP BOTH ENDS .200
3. FOR SS1866 & SS1867, USE GREEN #20 AWG SPN.
4. FOR SS1881, USE RED #18 AWG SPN.
5. ID
   SS1866 = .155
   SS1867 = .165
   SS1881 = .125

LFS4TN	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L	.XXX +/- .015 ANGLES +/- 1 DEG Hole dia:+/-.002	INDUCTOR, RF		
	FINISH	DRAWN BY WM	DATE 7-7-00	LFS4TN	REV
		APPROVED			
		APPROVED	USED ON SS1866,SS1867,SS1881	SHEET 1 OF 1	



NOTES:

1. 5 TURNS CLOSE WOUND
2. STRIP BOTH ENDS .200
3. FOR NAV RECEIVER, ID IS .165
4. FOR COMM RECEIVER, ID IS .155

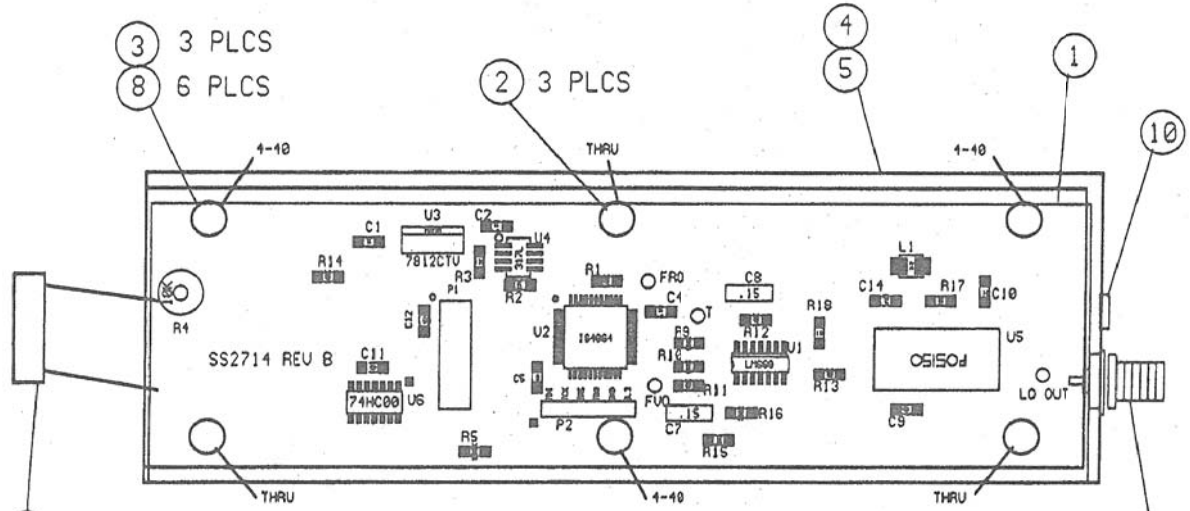
LFS5TN	SCALE	TOLERANCES	TKM, Inc SCOTTSDALE, ARIZONA		
	MAT'L 20 AWG SPN, RED	.XXX +/- .015 ANGLES +/- 1 DEG Hole dia:+/-.002	INDUCTOR, RF		
	FINISH	DRAWN BY WM	DATE 7-7-00	LFS5TN	REV
		APPROVED WM			
		APPROVED	USED ON SS1866, SS1867	SHEET 1 OF 1	

INDENTURED DRAWING LIST

MODULE SS2714 – NAV SYNTHESIZER

SS2714 REV B		COMM SYNTHESIZER ASSY
PC2714	REV B	PCB, SYNTHESIZER; COMM
SM1840	REV 3	CASE, MODULE
SM1841	REV 3	COVER, MODULE
NB400I	NONE	INSERT, EXTENDED

TKM, INC. SCOTTSDALE, AZ	NAME NAV SYNTHESIZER	PART # SS2714	REV B
Parts identified with "*" in parts list shall have pads solder masked. Wave soldering shall be in accordance with WSP002. Hand soldering shall be in accordance with WSP001.	DATE 12-20-04	APPR	APPR
		DRAWN BY: WM	



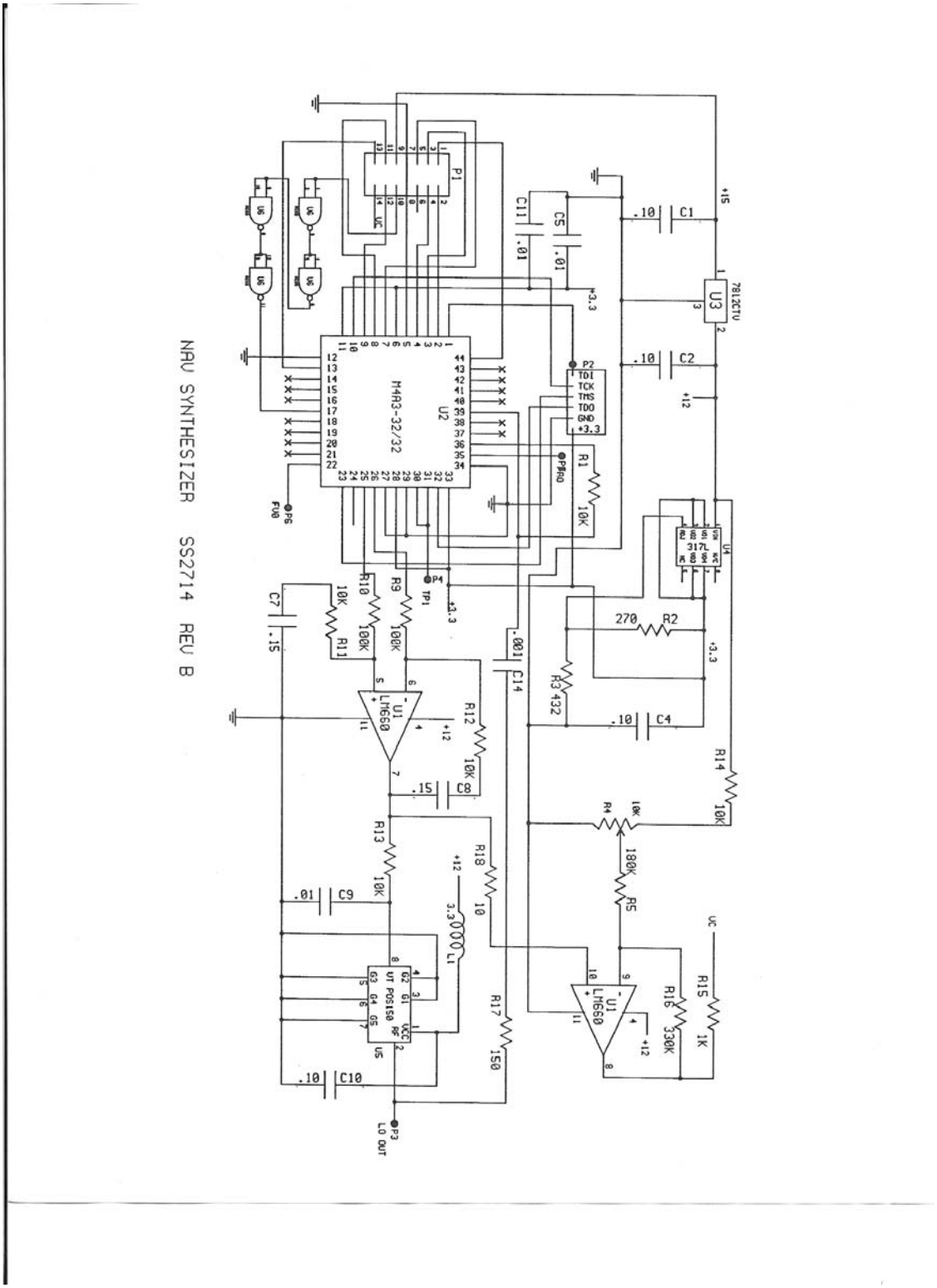
NAV SYNTHESIZER SS2714 REV B

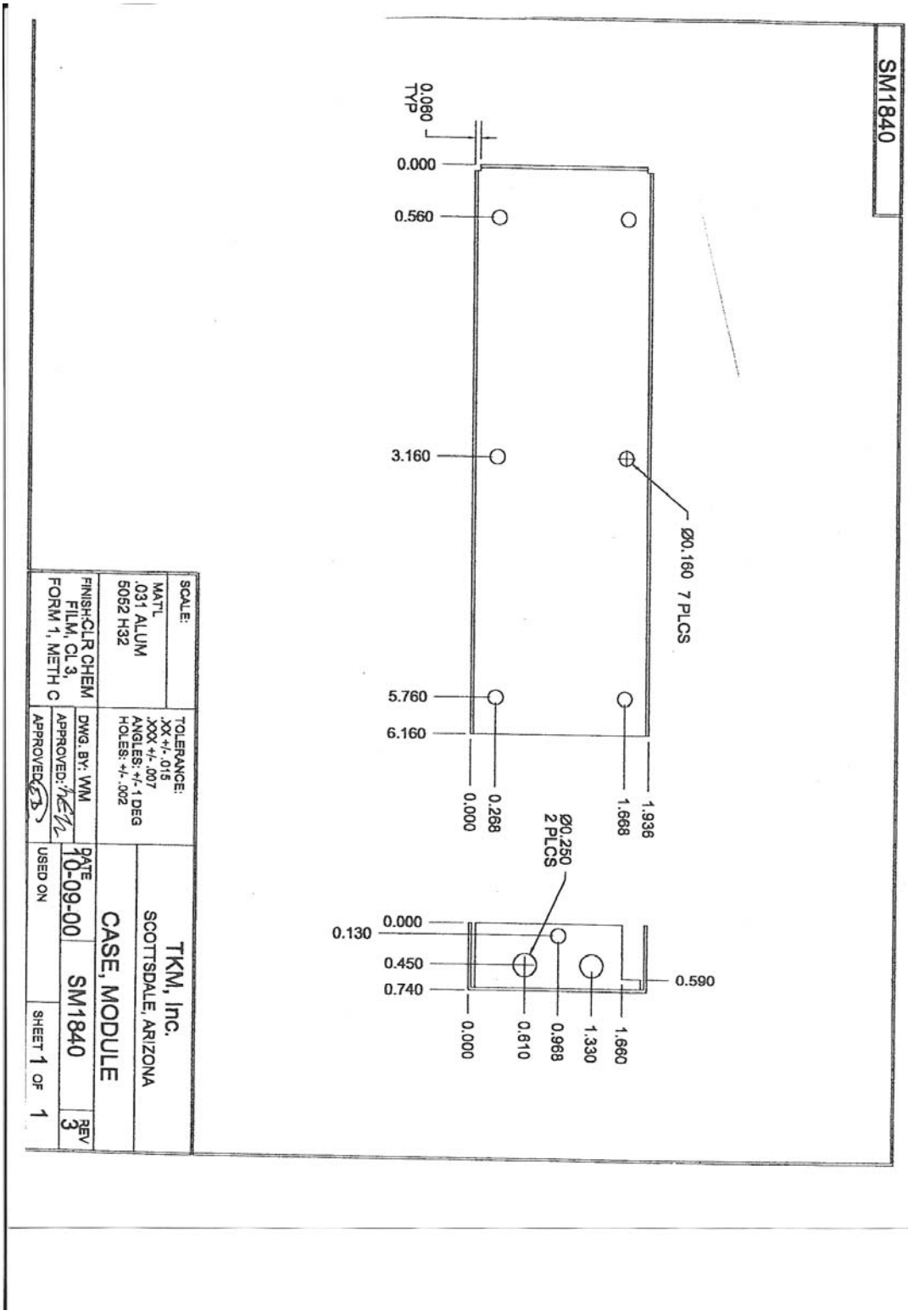
MOUNT BOARD WITH 3 4-40 X 3/16 FLAT HEAD SCREWS(NB403F).
ATTACH COVER WITH 3 4-40 X 3/16 FLAT HEAD SCREWS AND ONE 4-40 X 3/16 PAN HEAD SCREW

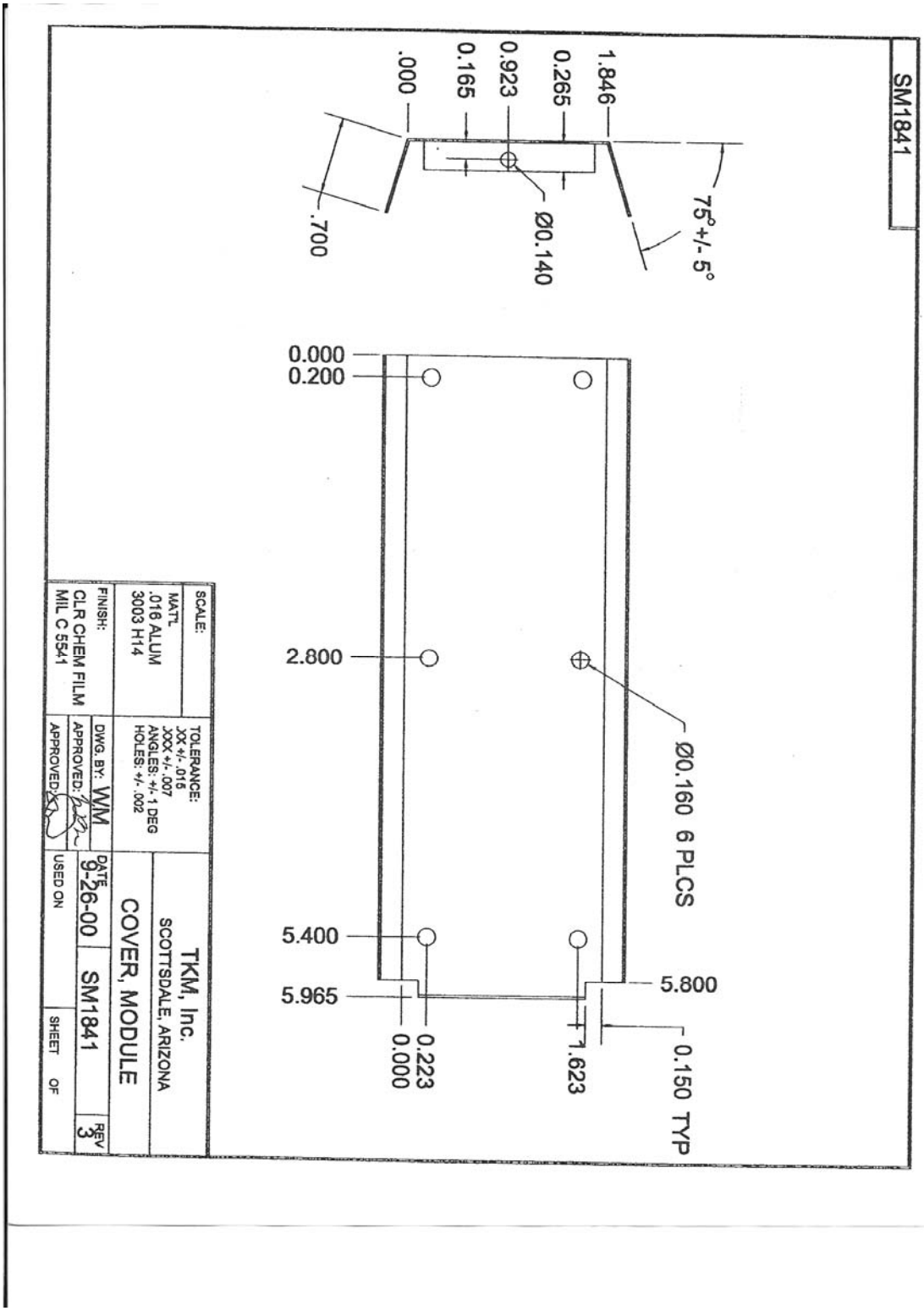
NAV SYNTHESIZER SS2714-B page 1

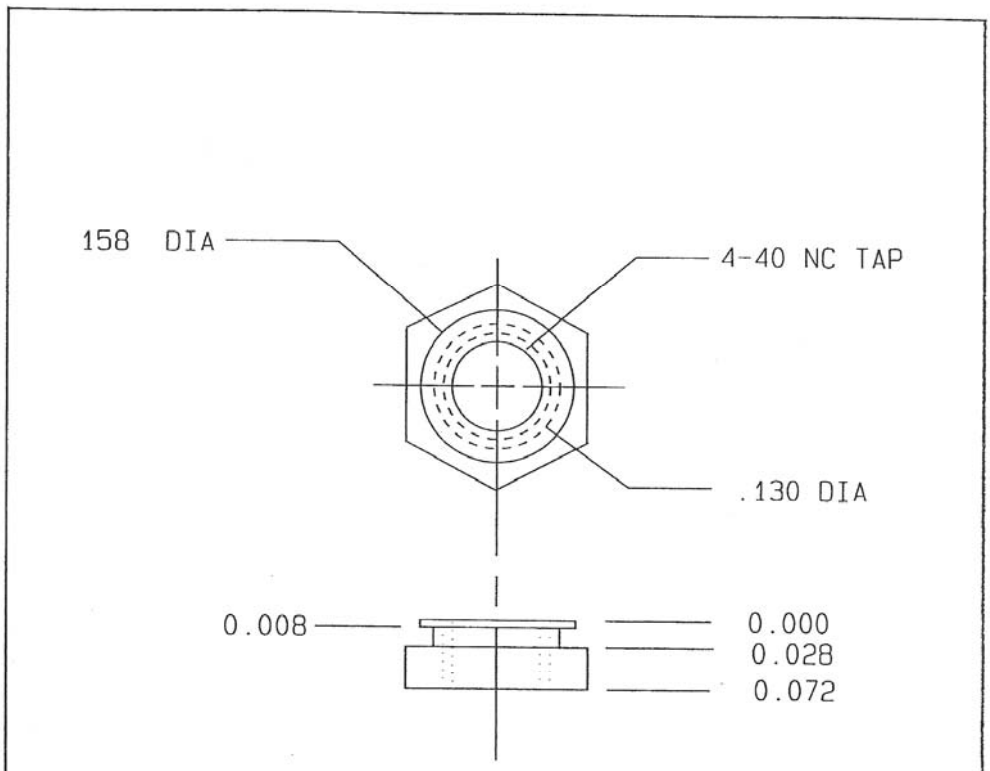
* indicates parts requiring soldermask.

Ref #	Part #	Description	Qty
01	PC2714-B	PCB SYNTHESIZER; NAV	1
02*	HS1815-3	SPACER STANDOFF; THRU HOLE	1
03*	HS1816-2	SPACER STANDOFF; 4-40 THD	1
04*	SM1840-3	SHEET METAL CASE; MODULE	1
05*	SM1841-3	SHEET METAL COVER; MODULE	1
06*	EC1703-	CONNECTOR CONN; SMA; PANEL MT.	1
07*	EC1002-	CONNECTOR 14 PIN; RIBBON CONN	1
08*	NB403F-	FASTENERS 4-40x3/16 P100 SS	1
09*	MP1053-	MISC. PARTS PIN HEADERS; GOLD; DUAL ROW	1
10*	NB403P-	FASTENERS 4-40x3/16 PP SS	1
C01	CS0104-	CAP; SMT; CER; .1 UF 1206	1
C02	CS0104-	CAP; SMT; CER; .1 UF 1206	1
C04	CS0104-	CAP; SMT; CER; .1 UF 1206	1
C05	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C07*	CF1543-	CAPACITOR; FILM .15/63V	1
C08*	CF1543-	CAPACITOR; FILM .15/63V	1
C09	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C10	CS0104-	CAP; SMT; CER; .1 UF 1206	1
C11	CS0103-	CAP; SMT; CER; .01 uF; 100V; 1206	1
C12	CS0560-	CAP; SMT; CER; 56 pF; 50 V	1
C14	CS0102-	CAP; SMT; CER; .001 uF; 100V; 1206	1
L1	LS03R3-	IND; FIXED; SMT 3.3 uH; 10%; SMT	1
P1*	ECGP14-	CONNECTOR 14 PIN Board Plug	1
R01	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R02	RS0271-	RES; SMT; FILM; 270 OHM;1/4W 5%;1206	1
R03	RS4320-	RES; SMT; FILM; 432 ohm; 1206	1
R04*	PW0103-	Top Adj. .3 dia 10 K	1
R05	RS0184-	RES; SMT; FILM; 180K 5%; 1206	1
R09	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
R10	RS0104-	RES; SMT; FILM; 100K; 1/4W 5%;1206	1
R11	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R12	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R13	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R14	RS0103-	RES; SMT; FILM; 10K; 1/4W 5%; 1206	1
R15	RS0102-	RES; SMT; FILM; 1K; 1/4W 5%; 1206	1
R16	RS0334-	RES; SMT; FILM; 330K, 1/4 W, 1206	1
R17	RS0151-	RES; SMT; FILM; 150 OHM; 5%; 1206	1
R18	RS0100-	RES; SMT; FILM; 10 OHM; 5%; 1206	1
U1	IS0660-	INT. CKT.; SMT LM660 QUAD OP AMP	1
U2	IS4064-	INT. CKT.; SMT CPLD, 5nsec; 3.3V; MACH4000V	1
U3*	IM7812-	INT. CKT.; MISC. REGULATOR; 12V 7812	1
U4	IS317L-	INT. CKT.; SMT VOLTAGE REG	1
U5*	XT1500-	CRYSTAL; QUARTZ VCO, 75 to 150 MHz	1
U6	IS7400-	INT. CKT.; SMT QUAD NAND GATE	1


NAV SYNTHESIZER SS2714 REV B
M4A3-32/32
U2
LM660
U1
317L
U4
78L12CTU
U3
P1
P2
P3
P4
P5
P6
TP1
C1
C2
C4
C5
C7
C8
C9
C10
C11
C14
R1
R2
R3
R4
R5
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
10K
270
132
180K
100K
150
330K
1K
.10
.01
.15
.001
+3.3
+12
+15
L1
3.3000
LO OUT


SM1840
0.080 TYP
0.000
0.560
3.160
5.760
6.160
Ø0.160 7 PLCS
0.000
0.268
1.668
1.936
Ø0.250 2 PLCS
0.130
0.000
0.450
0.740
0.590
0.000
0.610
0.968
1.330
1.660
SCALE:
MAT'L .031 ALUM 5052 H32
TOLERANCE: .XX +/- .015 .XXX +/- .007 ANGLES: +/- 1 DEG HOLES: +/- .002
FINISH: CLR CHEM FILM, CL 3, FORM 1, METH C
DWG. BY: WM
APPROVED:
APPROVED
DATE 10-09-00
TKM, Inc.
SCOTTSDALE, ARIZONA
CASE, MODULE
USED ON
SM1840
REV 3
SHEET 1 OF 1


SM1841
1.846
0.265
0.923
0.165
.000
.700
Ø0.140
75° +/- 5°
0.000
0.200
2.800
5.400
5.965
Ø0.160 6 PLCS
5.800
7.623
0.223
0.000
0.150 TYP
SCALE:
MATL
.016 ALUM
3003 H14
FINISH:
CLR CHEM FILM
MIL C 5541
TOLERANCE:
XX +/- .015
XXX +/- .007
ANGLES: +/- 1 DEG
HOLES: +/- .002
DWG. BY: WM
APPROVED:
APPROVED:
DATE
9-26-00
USED ON
TKM, Inc.
SCOTTSDALE, ARIZONA
COVER, MODULE
SM1841
REV
3
SHEET
OF



	SCALE 8X	TOLERANCE .XX +/- .005 .XXX +/- .002 ANGLES +/- 1 DEG. FRACT. +/- 1/32	TKM, INC. SCOTTSDALE, AZ
	MAT'L 3/16 SS ROD		INSERT, EXTENDED
	FINISH	DRAWN BY WEM	DATE 4-5-99 NB400I REV
		APPROVED	USED ON SHEET OF
		APPROVED	