

Model	FLX150-VC0(MOD)						1998.10.20	1/2		
回路番号	品名	部品番号	規格 / 仕様	定	格	メーカー	数量	来歴		
C 1	セラミックコンデンサ	GRM39CH050C50	50V 5pF CH	MURATA	1					
C 2	セラミックコンデンサ	GRM39CK020C50	50V 2pF CK	MURATA	1					
C 3	セラミックコンデンサ	GRM39CH470J50	50V 47pF CH	MURATA	1					
C 4	セラミックコンデンサ	GRM39CK0R5D50	50V 0.5pF CK	MURATA	1					
C 5	セラミックコンデンサ	GRM39CH101K50	50V 100pF CH	MURATA	1					
C 6	セラミックコンデンサ	GRM39CH150J50	50V 15pF CH	MURATA	1					
C 7	セラミックコンデンサ	GRM39CH150J50	50V 15pF CH	MURATA	1					
C 8	セラミックコンデンサ	GRM39B 102K50	50V 1000pF B	MURATA	1					
C 9	セラミックコンデンサ	GRM39CH220J50	50V 22pF CH	MURATA	1					
C 10	セラミックコンデンサ	GRM39CH101K50	50V 100pF CH	MURATA	1					
C 11	セラミックコンデンサ	GRM39B 102K50	50V 1000pF B	MURATA	1					
C 12	セラミックコンデンサ	GRM39B 102K50	50V 1000pF B	MURATA	1					
C 13	セラミックコンデンサ	GRM39CH470J50	50V 47pF CH	MURATA	1					
C 14	セラミックコンデンサ	GRM39CH220J50	50V 22pF CH	MURATA	1					
C 15	セラミックコンデンサ	GRM39CH101K50	50V 100pF CH	MURATA	1					
C 16	セラミックコンデンサ	GRM39CH470J50	50V 47pF CH	MURATA	1					
C 17	セラミックコンデンサ	GRM39F 104Z50	50V 0.1μF F	MURATA	1					
C 18	セラミックコンデンサ	GRM39B 102K50	50V 1000pF B	MURATA	1					
D 1	ダクト	HVU 202A		HITACHI	1					
D 2	ダクト	HVU 202A		HITACHI	1					
L 1	インダクタ	KE-07107			1					
L 2	インダクタ	LQN21AR22K04	220nH	MURATA	1					
L 3	インダクタ	LQN21AR22K04	220nH	MURATA	1			98' 11.13 追加		
L 4	インダクタ	LQN21A33NK04	33nH	MURATA	1			98' 11.13 変更		
Q 1	トランジスタ	2SC3356(Rors)		N E C	1					
Q 2	トランジスタ	2SC3356(Rors)		N E C	1					

FIGURE 8-F – EXCITER BLOCK DIAGRAM

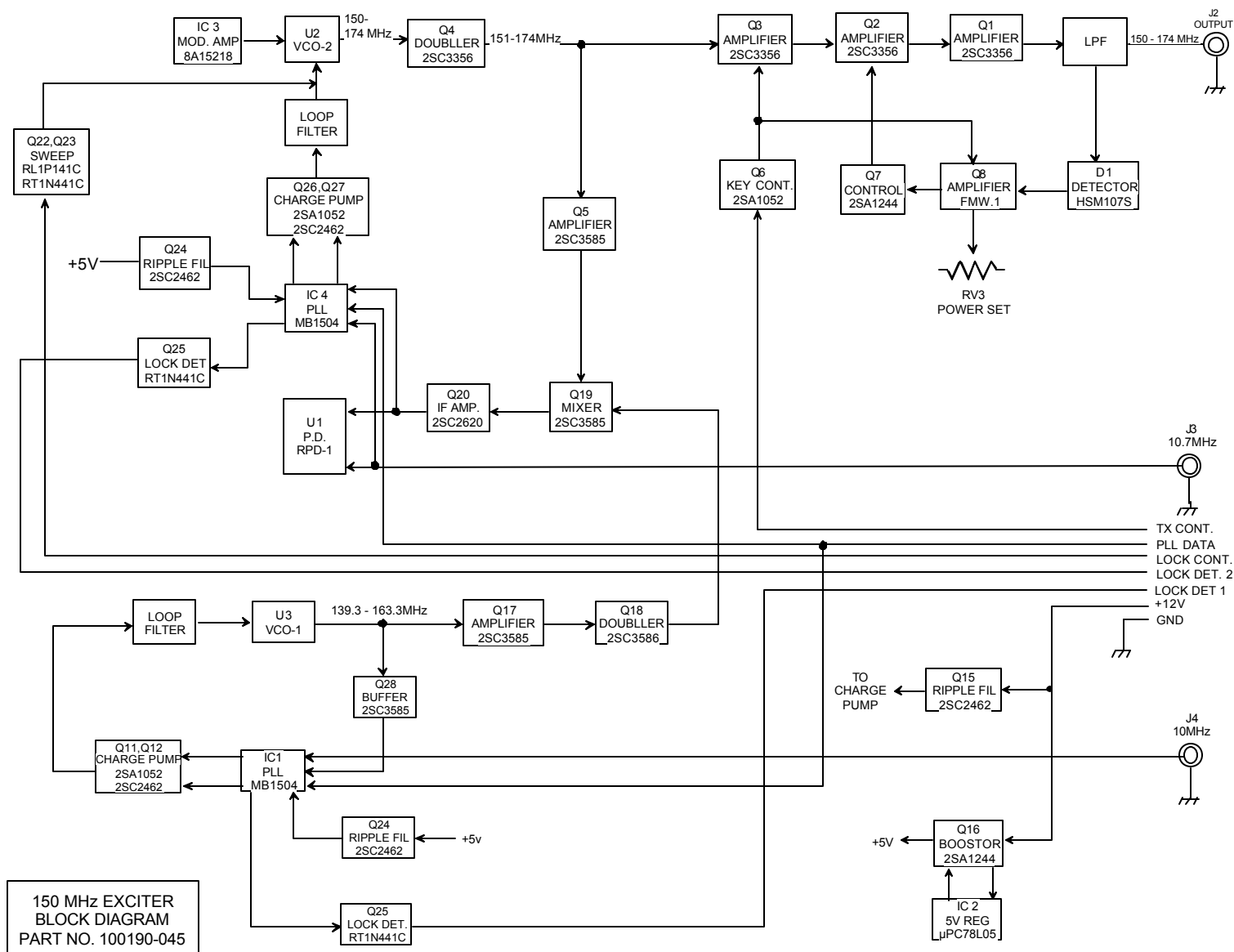


FIGURE 8-G – EXCITER BOARD ALIGNMENT PROCEDURE

1. Connection

Connect the cables from RF unit to J1 (signal and power source), J3 (10.7 MHz) and J4 (10 MHz). Connect a modulation analyzer to J2 (output).

2. Alignment

2-1 VCO

2-1-1. Use a PLL data of the frequency that is actually used for data transmission. Turn power on. While monitoring TP1, adjust the core of the channel VCO for approximately 4V.

2-1-2. While monitoring TP2, adjust the modulation VCO for approximately 4V.

2-2 Modulation

2-2-1. While monitoring TP3, adjust RV1 for 8,5V.

2-2-2. While monitoring a modulated waveform, adjust RV2 for a point where the waveform is sharp and no noise overlapping exists.

2-3 Output Power

While monitoring the output power on the modulation analyzer, adjust RV3 for 0.3W output.

3. Verification

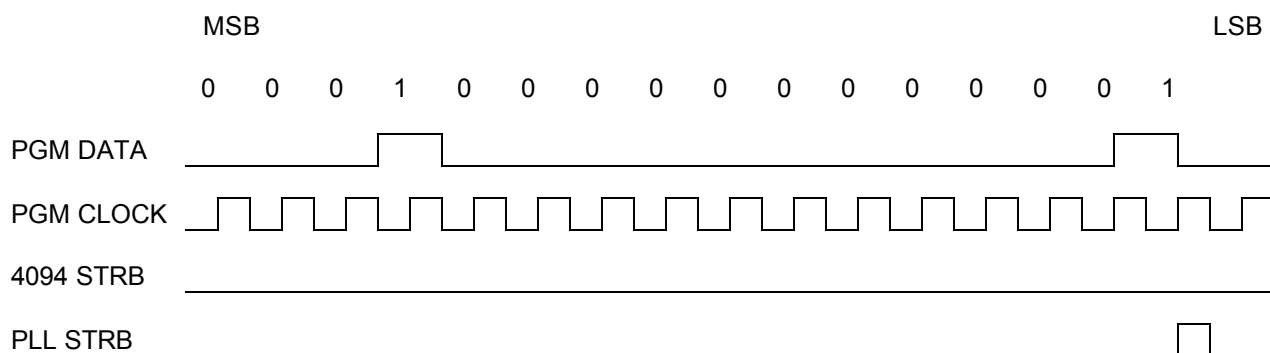
3-1. Make sure that the frequency used for alignment is the one that will actually be used for data transmission.

3-2 Make sure that the frequency deviation is less than ± 5 KHz.

FIGURE 9 – FREQUENCY DATA STREAM

FREQUENCY DATA STREAM

1. PROGRAMMABLE REFERENCE COUNTER



2. COMPARATIVE FREQUENCY MULTIPLIER

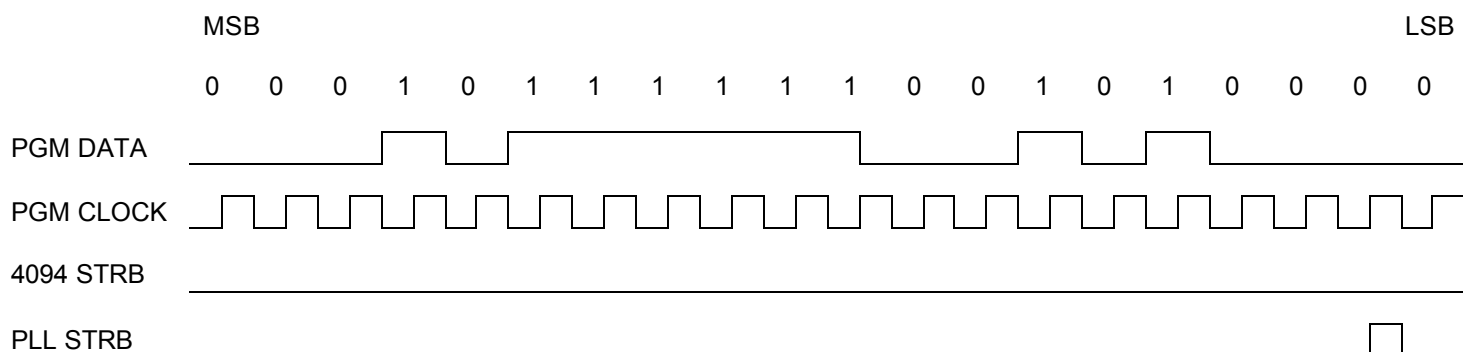
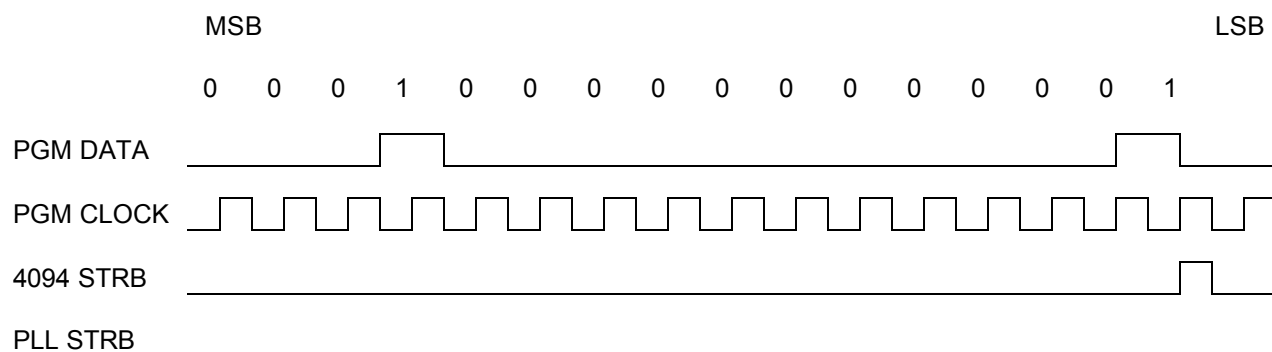


FIGURE 9 – FREQUENCY DATA STREAM CONT'D

FREQUENCY DATA STREAM 2

1. PROGRAMMABLE REFERENCE COUNTER



2. COMPARATIVE FREQUENCY MULTIPLIER

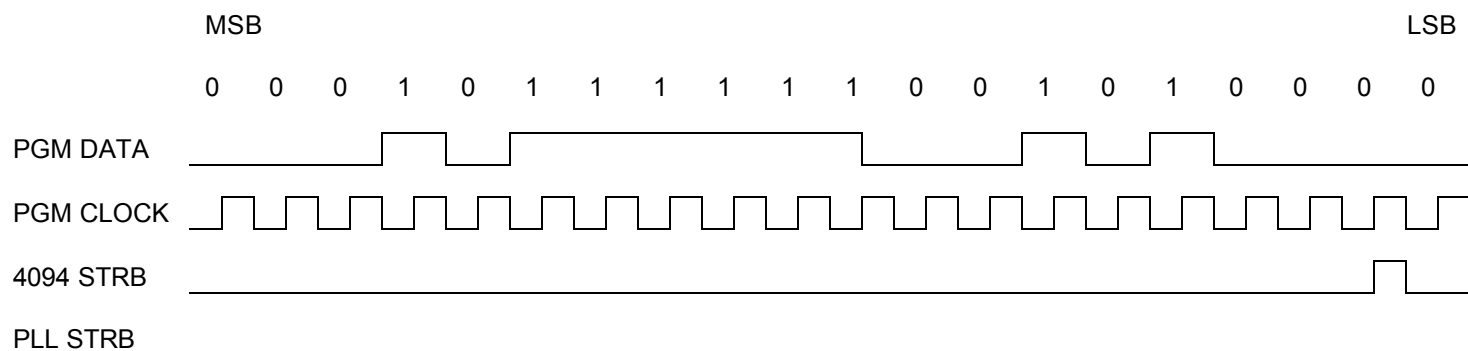


FIGURE 10 – PLL BLOCK DIAGRAM

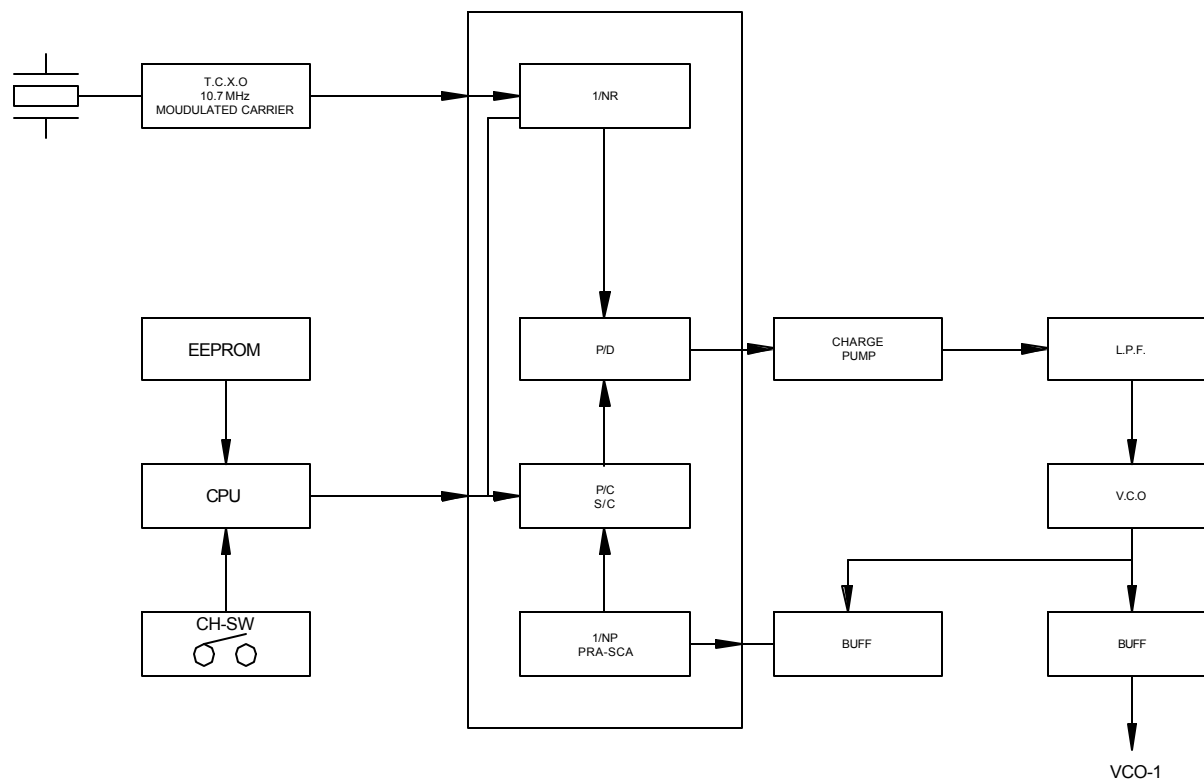


FIGURE 11 - MATHCAD

ENCO synthesizer setup bit values
3FLX150SU.MCD 4-17-02 HAV

"Calculate the binary values to load for the Ft-10.7 Mhz loop"

```

fdes1 := 156.2106
fdesnt1 :=  $\frac{fdes1 - 10.710^6}{steps}$ 
fdesnt1 = 1.94104
fdesn1 :=  $\frac{fdesnt1}{PSV1}$ 
fdesn1 = 303.125
n1 := floor(fdesn1)
n1 = 303
a1 := (fdesn1 - n1)·PSV1
a1 = 8
bvf1 := n1·28 + a1·2
bvf1 = 12f10h
If ERZZ = 1 then a1 not integer error condition
ERZ := floor(a1) - a1
ERZZ := if(0 > ERZ > 0, 1, 0)
ERZZ = 0
If ERVV = 1 then a1 > n1 then error condition
ERV := n1 - a1
ERVV := if(ERV > 0, 0, 1)
ERVV = 0

```

steps := 7500
PSV1 := 64
fref := 3·10⁶
fdesr1 := floor($\frac{fref}{steps}$)
fdesr1 = 400
bvr1 := fdesr1·2 + 1
bvr1 = 321h

If Prescaler = 32 then set 2¹⁵
bvr1 := (if(PSV1 - 32, 0, 2¹⁵)) + fdesr1·2 + 1

"Calculate the binary values to load for the 10.7Mhz modulation loop
where the prescaler is a divide by 32 "

```

fdes2 := 10.7106
fdesnt2 :=  $\frac{fdes2}{steps}$ 
fdesnt2 = 428
fdesn2 :=  $\frac{fdesnt2}{PSV2}$ 
fdesn2 = 13
n2 := floor(fdesn2)
n2 = 13
a2 := (fdesn2 - n2)·PSV2
a2 = 12
bvf2 := n2·28 + a2·2
bvf2 = d18h

```

PSV2 := 32
steps := 25000
fref2 := 10.710⁶
fdesrt2 := floor($\frac{fref2}{steps}$)
fdesrt2 = 428

If Prescale = 32 then set 2¹⁵
bvr2 := (if(PSV2 - 32, 0, 2¹⁵)) + fdesrt2·2 + 1
bvr2 = 8359h

If ERZZ1 = 1 then a2 not integer then error condition
ERZ1 := floor(a2) - a2
ERZZ1 := if(0 > ERZ1 > 0, 1, 0)
ERZZ1 = 0

If ERVV1 = 1 then a2 > n2 then error condition
ERV1 := n2 - a2
ERVV1 := if(ERV1 < 0, 1, 0)
ERVV1 = 0

LIST 1 – EXTEND-A-PAGE TRANSMITTER REAR PANEL CONNECTOR DESCRIPTION**L.1 Extend-A-Page Transmitter Unit System Interface Connector (DB9 to P5 Connector on Motherboard)**

Db9 Pin #	Description
1	– Analog Key (Active Low)
2	– Audio +
3	– Audio -
4	– Digital Key (Active Low)
5	– Digital Data (TTL or RS232)
6	– D-Reset (Active High)
7	– Hotkey (Active Low)
8	– +12VDC Output
9	– Ground

NOTES:

1. Both Digital and Analog Key inputs accepts TTL level 'Low' or Form C relay closure to ground.
2. Digital Data accepts both TTL and RS232 data level.
3. EAP transmitter requires 250-millisecond gap from the application of Key (Analog or Digital) to the transmission of data. This warm up period ensures the transmitter is stable on frequency and on full power.

L.1.2 Antenna

- N Connector to 50 Ω load.

L.1.3 Manual Key Switch

- Keys transmitter on (Up) / Off (Down)



LED DESCRIPTION – FRONT PANEL**LEDS**

AKEY	—	Indicates Transmitter Keyed in Analog Mode
DKEY	—	Indicates Transmitter Keyed in Digital Mode
SYS	—	GREEN – System Ready
DATA	—	Indicates Presence of Analog/Digital Data
POWER	—	Indicates Presence of System AC Power



Report 1 – Extend-A-Page Malfunction Report

RMA No. _____ Date Rec'd: _____

Model No. _____ Serial No. _____ Date Returned: _____

1. Describe Malfunction: _____

2. Total Number of Operating Hours: _____

3. Describe the environmental conditions (shock, vibration, high/low ambient temperatures) other than normal handling to which equipment has been subjected:

4. Conditions (if known) prior to failure: _____

5. List any other system elements, which malfunctioned, prior to or simultaneously with product failure: _____

6. Describe previous servicing of unit: _____

7. Other comments: _____

This report must be completed and accompany all units returned to Customer Service, Eagle Wireless International, Inc. for action under any warranty clause.

Signed: _____ Position: _____

Company: _____ Address: _____

City: _____ State: _____ Zip: _____

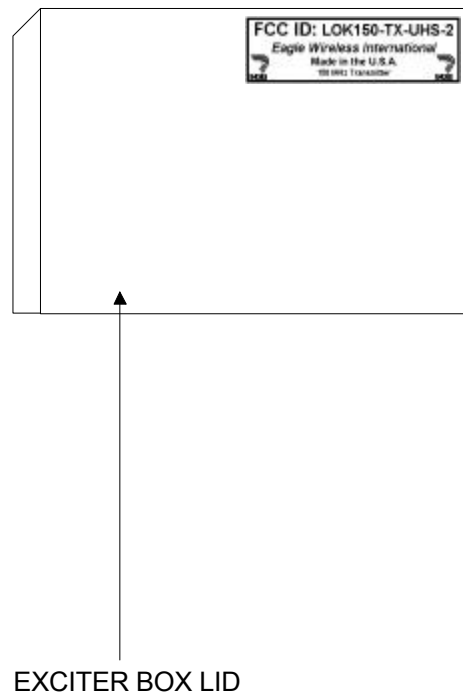
150 MHz Exciter Label

1. Label Drawing



2. Label Placement Drawing

Placed on the Exciter Box Lid



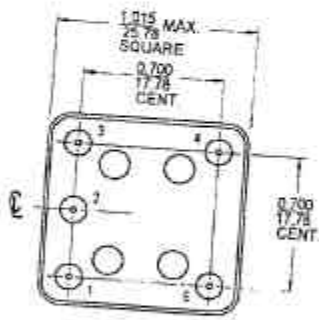
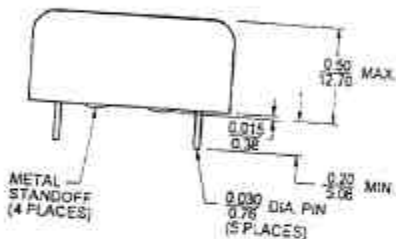
JAN 29 02 04:40P

ISOTEMP RESEARCH

4349771849



(VIEW FROM TOP)



(VIEW FROM BOTTOM)

NUMBERS FOR REFERENCE ONLY
(NOT STAMPED ON UNIT)

PIN CONNECTIONS	
PIN	FUNCTION
1 (See Note 1)	VCO INPUT or NOT CONNECTED
2 (See Note 1)	REFERENCE VOLTAGE or NOT CONNECTED
3	+VDC
4	R.F. OUTPUT
5	0 VOLTS & CASE

Note 1: If the specification does not specify parameters for PIN1 and/or PIN2 then that respective PIN is NOT internally CONNECTED.

ISOTEMP RESEARCH		OSCILLATORS		INCH 25.4 (REFERENCE ONLY)		Charlotteville, Virginia USA	
NAME: OUTLINE DRAWING (TCXO 65/OCXO 143 SERIES)				CODE I.D. NO. 31785		SCALE: 1:1	
DATE: 10-31-1996				DWN BY: JAC		APPRD BY: DAG	
TOLERANCES				UNLESS OTHERWISE SPECIFIED			
ANGLES: 10 DEGREE				FRACTIONS: 1/32 INCH			
DIMENSIONS: 24 & 25.4 DEC & 25.4 INCH				MATERIAL: COLD ROLLED STEEL			
FINISH: BRIGHT NICKEL				MARK: LABEL			
REVISION				BY APP DATE			
LET				DWG: 125-502 REV: E SHT: 1 OF 1			



OCXO 143-11

1. OUTPUT
 - 1.1. Frequency 10.000 MHz
 - 1.2. Waveform Rectangular
 - 1.3. Level HCMOS
 - 1.4. Load 20 pF
 - 1.5. Duty cycle 40% to 60% @ +2.5 VDC
 - 1.6. Spurious < -60 dBc
2. FREQUENCY STABILITY
 - 2.1. Ambient < $\pm 1 \times 10^{-7}$ from 0°C to +70°C (referenced to +25°C)
 - 2.2. Aging < $\pm 1 \times 10^{-4}$ /day
 - a. At time of shipment < $\pm 1 \times 10^{-4}$ after 30 days
 - b. After indefinite storage < $\pm 1 \times 10^{-4}$
 - i. Daily < $\pm 4 \times 10^{-4}$
 - ii. Yearly < $\pm 3 \times 10^{-4}$ /15% change
 - iii. 10 years < 1×10^{-5} /1 second
 - 2.3. Voltage root Allan variance < $\pm 1 \times 10^{-7}$ in 3 minutes @ +25°C (referenced to 1 hour)
 - 2.4. Short term < -95 dBc
 - 2.5. Warm-up < -120 dBc
 - 2.6. Phase noise < -145 dBc
 - a. @ 10 Hz < -150 dBc
 - b. @ 100 Hz
 - c. @ 1 kHz
 - d. @ 10 kHz
3. ELECTRICAL FREQUENCY ADJUSTMENT (PIN = "VCO INPUT")
 - 3.1. Range > $\pm 10 \times 10^{-4}$
< $\pm 20 \times 10^{-4}$
0 VDC to Vref (+4 VDC) or
a 10 k Ω potentiometer connected
between the "REFERENCE VOLTAGE" pin
and "0 VOLTS & CASE" pin with wiper
connected to "VCO INPUT" pin.
 - 3.2. Control Positive
+2 VDC ± 0.4 VDC
(control voltage at which nominal
frequency occurs at time of shipment)
 - 3.3. Slope < $\pm 10\%$
 - 3.4. Center > 50 k Ω
 - 3.5. Linearity
 - 3.6. Input impedance

ISOTEMP RESEARCH INC. CHARLOTTESVILLE, VA. USA	CODE ID.	PART NO.	PAGE OF TOTAL		DWG. NO.	REV.
	31785	OCXO 143-11	2	3	114-703	C



OCXO 143-11

4. INPUT POWER (PIN = "+VDC")
- 4.1. Voltage +5 VDC $\pm 5\%$
 - 4.2. Current < 700 mA @ turn on
 - 4.3. Steady state < 1.5 Watts @ +25°C
5. REFERENCE VOLTAGE (PIN = "REFERENCE VOLTAGE"), an output
- 5.1. Voltage +4 VDC $\pm 5\%$
 - 5.2. Available current ≤ 1 mA
 - 5.3. Temperature stability < ± 0.010 VDC
(Over temperature range in 2.1.)
6. ENVIRONMENTAL
- 6.1. Storage temperature -55°C to +85°C
 - 6.2. Vibration (non-operating) MIL-STD-202F Method 201A. (0.06" Total p-p, 10 to 55 Hz)
 - 6.3. Shock (non-operating) MIL-STD-202F, Method 213B, Test Condition J.
(30 g, 11 ms half-sine)
 - 6.4. Seal MIL-STD-202F, Method 112C, Test Condition D.
7. MECHANICAL
- 7.1. Applicable series OCXO 143 series
 - 7.2. Model number OCXO 143-11
 - 7.3. Outline drawing 125-502
- NOTES:
1. This unit is available with Sine wave output as OCXO 143-1.
 2. The original package height was nominally 0.400 inches tall. All units manufactured after 12-11-2000 will nominally be 0.460 inches tall. This new height is within the maximum package height of 0.500 inches called out on outline drawing 125-502.

ISOTEMP RESEARCH INC. CHARLOTTESVILLE, VA. USA	CODE ID.	PART NO.	PAGE OF TOTAL		DWG. NO.	REV.
	31785	OCXO 143-11	3	3	114-703	C

PRODUCT NAME: VHF Extend-A-Page Transmitter

MODEL: VEP-02T

APPLICANT / MANUFACTURER: Eagle Wireless International, Inc
101 Courageous Drive
League City, TX 77573