Bio-Rad Laboratories

7 rue de Madrid
67300 Schilithgeim
France

To: Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046-1609

Timco Engineering, Inc., an IIA Company
849 NW State Road 45
Newberry, Florida 32669

Gentlemen,

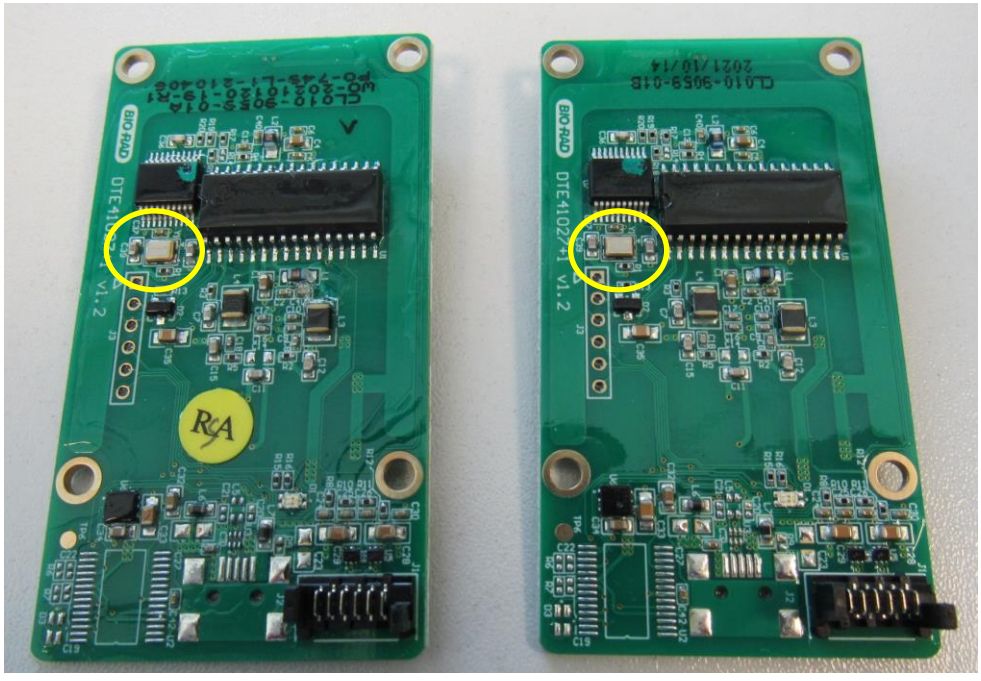
This letter is a request to apply for a Class II Permissive Change for the RFID Reader(BIO-RAD), **FCC ID : 2ABUUDTE41027.**

The change filed under this application is:

Current crystal 7M-13.560MAAE-T (13.56MHz,+/- 30ppm) production shortage requires double sourcing for specific part. We will use crystal 7M-13.560MEEQ-T (13.56MHz, +/- 10 ppm) as a second source.

Material.

DTE41027+1 Curent and updated board



Current electronic

Updated electronic

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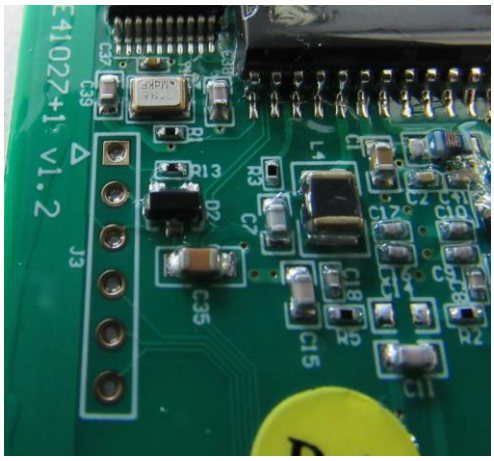
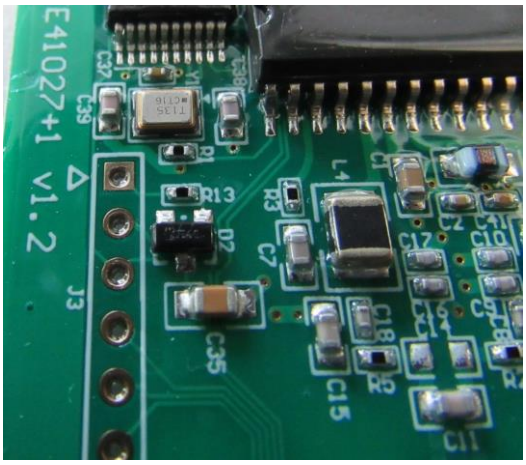
Detail on crystal.



Current crystal 7M-13.560MAAE-T



Update crystal 7M-13.560MEEQ-T

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Crystal datasheet.

TXC

7M
MHz Crystal

Features

- Frequency range : 10MHz to 114MHz
- Ceramic SMD package
- Seam sealing
- External dimensions (mm)
  L : 3.2 x W : 2.5 x H : 0.7
- RoHS compliant & Pb free

Applications

- Bluetooth, Wireless LAN
- Cellular phone, Pager, DSC
- Display, TV
- Computer peripherals
- Consumer products

Electrical Characteristics

Item		7M	Conditions
Frequency Range	F_0	10MHz ~ 114MHz	
Frequency Tolerance	F_{tol}	±30ppm, ±20ppm, ±10ppm	at 25°C
Frequency Stability over Operating Temperature Range (refer to 25°C)	F_{stab}	±30 ppm	-20°C ~ +70°C
		±20 ppm	
		±10 ppm	
		±10 ppm	-30°C ~ +85°C
		±30 ppm	-40°C ~ +85°C
		±20 ppm	
		±15 ppm	
		±60 ppm	-40°C ~ +125°C
Operating Temperature Range	T_{OTR}	-20°C ~ +70°C	
		-40°C ~ +85°C	
		-40°C ~ +125°C	
Shunt Capacitance	C_0	3pF Max.	
Drive Level	D_L	1 ~ 200µW (100µW Typ.)	
Load Capacitance	C_L	6pF, 8pF, 9pF, 10pF 12pF, 16pF, 18pF, 20pF	
Aging (at 25°C ± 3°C, first year)	F_{aging}	±3ppm Max.	Note [1]
Storage Temperature Range	T_{STR}	-55°C ~ +125°C	

Notes:
[1] Please contact us for low aging +/-1ppm grade crystals.

Motional Resistance (ESR)

Fundamental	
10 ~ 12 MHz	150Ω Max.
12 ~ 16 MHz	80Ω Max.
16 ~ 20 MHz	60Ω Max.
20 ~ 64 MHz	50Ω Max.

3rd Overtone	
60 ~ 80 MHz	80Ω Max.
80 ~ 114 MHz	60Ω Max.

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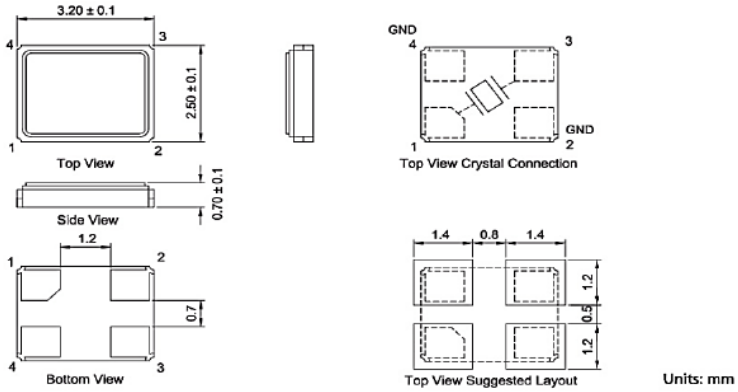
TXC

7M
MHz Crystal

Dimensions



Ordering Information

7M - 20.000M A H E - T

Frequency in Hz
Please contact us for availabl frequencies

Frequency Tolerance (at 25℃)

A	±30 ppm
D	±20 ppm
E	±10 ppm

Frequency Stability (over Temp.)

A	±30 ppm	(-20℃ ~ +70℃)
D	±20 ppm	(-20℃ ~ +70℃)
E	±10 ppm	(-20℃ ~ +70℃)
T	±10 ppm	(-30℃ ~ +85℃)
H	±30 ppm	(-40℃ ~ +85℃)
I	±20 ppm	(-40℃ ~ +85℃)
J	±15 ppm	(-40℃ ~ +85℃)
K	±60 ppm	(-40℃ ~ +125℃)

Load Capacitance

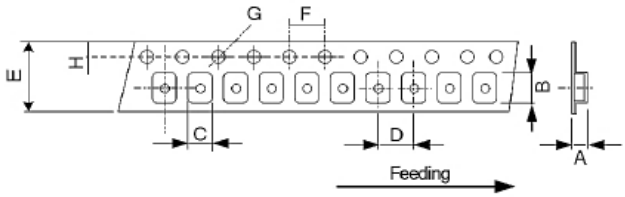
B	6 pF
V	8 pF
C	9 pF
Q	10 pF
E	12 pF
I	16 pF
J	18 pF
K	20 pF

Packaging Method

T	Tape & Reel

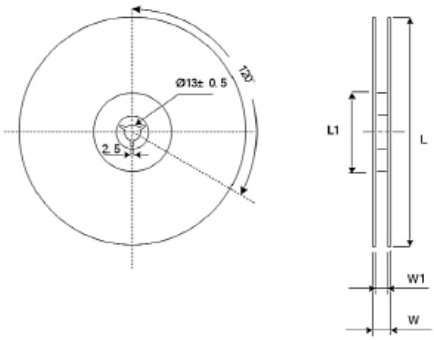
TXC **7M** MHz Crystal

Packing



	A	B	C	D	E	F	G	H
DIMENSIONS	1.65 ±0.10	3.40 ±0.10	2.70 ±0.10	4.00 ±0.10	8.00 ±0.20	4.00 ±0.10	1.55 ±0.05	1.75 ±0.10

(Unit: mm)

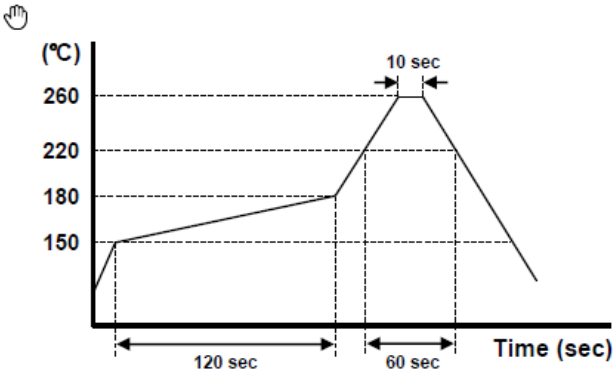


	L	L1	W	W1
DIMENSIONS	178 ±1.00	60.2 ±0.50	11.5 ±0.2	8 ±0.1

(Unit: mm)

Reflow Profile

Solder melting point : 220℃ ± 10℃, 60 sec. Min.
Peak temperature : 260℃ ± 10℃, 10 sec. Min.



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7 rue de Madrid
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Sincerely,

BIO-RAD
Quality Assurance Manager of Instrumentation sites,
Jean-Michel HENRY

Date: 16 march 2022

DocuSigned by:
Jean Michel Henry
Nom du signataire : Jean Michel Henry
Motif de la signature : J'approuve ce document
Heure de signature : 24-mars-2022 | 11:37:01 AM CET
D50FC2D94BFE4E07937D7430F40DCF27