

Specifications



FEATURES

Netcom's 5670-7-C is a tunable filter covering 30 MHz to 520 MHz frequency range.

The filter has been designed using three bands of tunable filters. This tri-band filter is offered in a small integrated SMT package to support applications where compact design, power requirements, and board layout flexibility are important. It meets the vibration and shock requirements of systems used in ground-mobile and airborne environments.

The following table shows the typical performance of the filter at a bandwidth of 7%.

10% bandwidth option is also available.

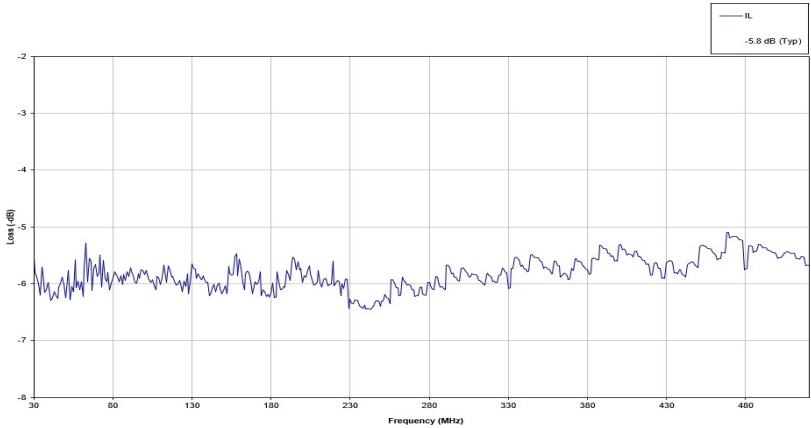
Frequency Range	30 to 520 MHz
Available BW (Typical)	7.0%
*Ftune +/- 10% Rejection (Typical)	-21 dB
*Ftune +/- 15% Rejection (Typical)	-27 dB
*Ftune +/- 20% Rejection (Typical)	-30 dB
Insertion Loss (Typical)	6.0 dB
Impedance (Input /Output)	50 Ω
Tuning Speed	< 30 μ s
Tuning Resolution*8	125KHz
Max Power Handling	1.25Watt
Max Out Of Band Power Handling	5Watts
IIP3 (+18dBm input)	+42 dBm
Noise Figure	1.0dB above IL
DC Power	
DC Voltage	3.3 VDC +/- 0.3 VDC
DC Current Max	30 mA
Operating Temperature Range	-40 to +85°C
Control Interface	- SPI Serial Input
Dimensions	1.20 x 1.20 x 0.25 inches 30.60 x 30.60 x 6.35 mm

*Referenced at 0dB

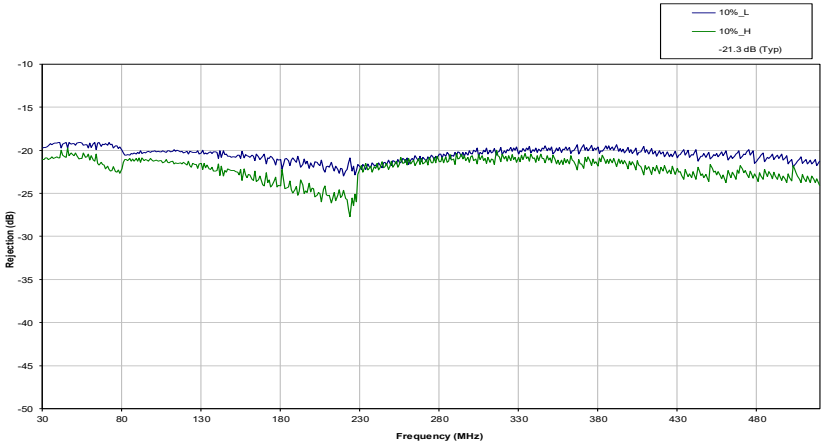
** See Serial Address Input Timing Diagram for details

Sweep Response

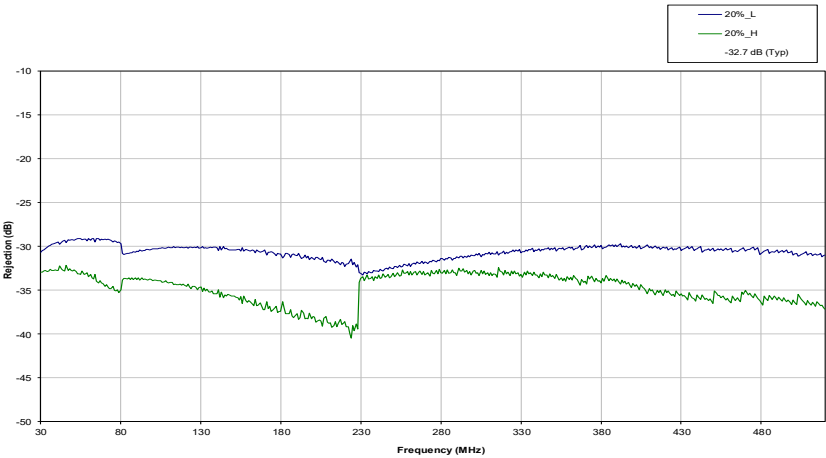
IL Sweep



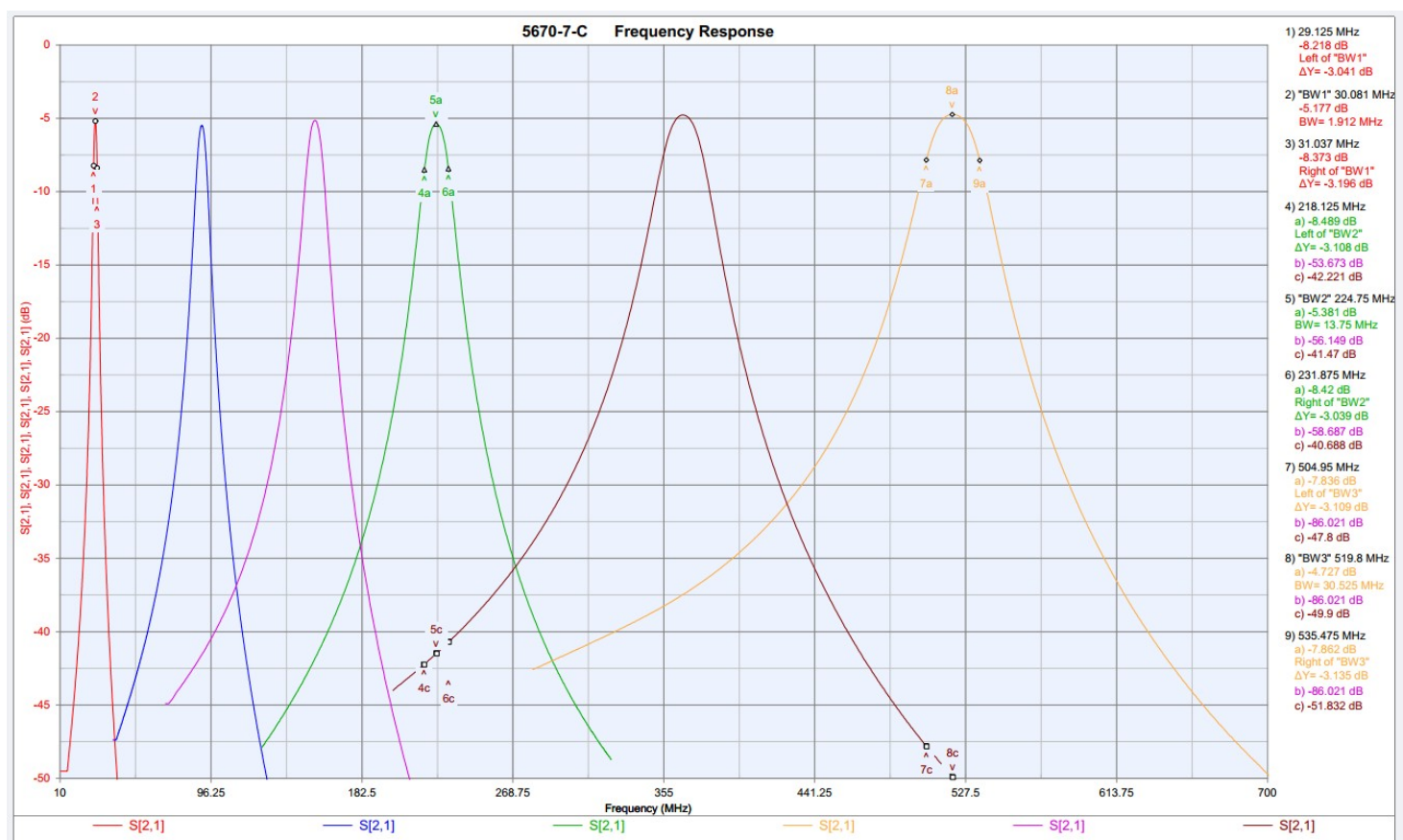
10% Rejection



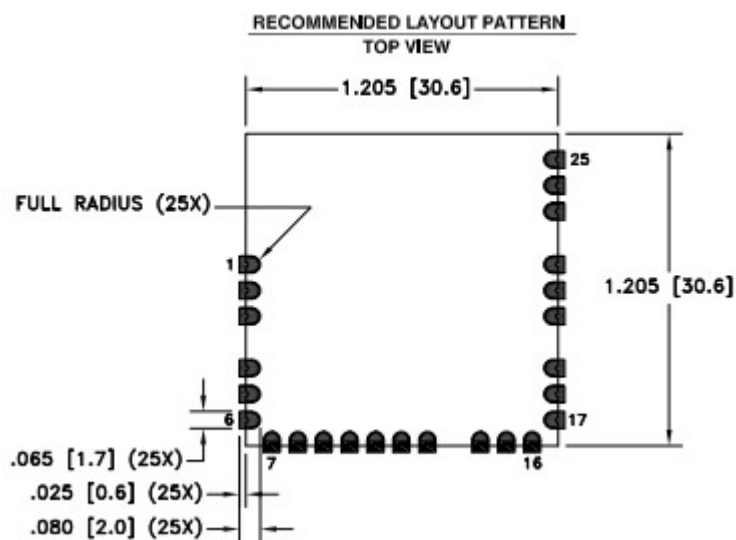
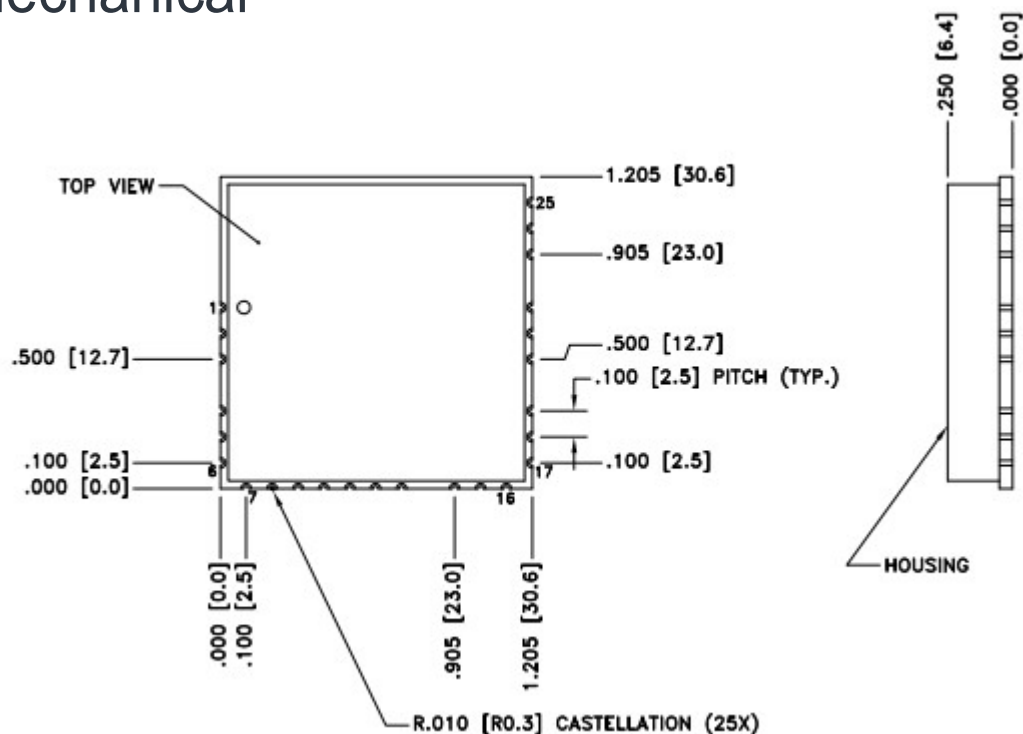
20% Rejection



Channel Responses (Various Frequencies)



Mechanical



- NOTES:**
1. TOLERANCES ± 0.010 [0.25] UNLESS OTHERWISE SPECIFIED.
 2. DIMENSIONS ARE INCHES [mm].

PIN DESIGNATORS			
PIN NUMBER	DESCRIPTION	PIN NUMBER	DESCRIPTION
1	GND	14	GND
2	RF_IN	15	SPI_CLK
3	GND	16	SPI_MOSI
4	GND	17	SPI_CS
5	NC	18	NC
6	NC	19	GND
7	TUNE_READY	20	GND
8	NC	21	RF_OUT
9	NC	22	GND
10	NC	23	GND
11	NC	24	VCC (+3.3V)
12	NC	25	GND
13	GND		

Ordering Information

Model Number	(-)	Bandwidth	(-)	Options	Add “-EB” for Unit Mounted on Evaluation Board	
5670	(-)	7	(-)	C	(-)	EB

Options:

A: N/A

B: N/A

C: Higher Power 125KHz Step Size

D: Higher Power 1MHz Step Size

Available Bandwidths

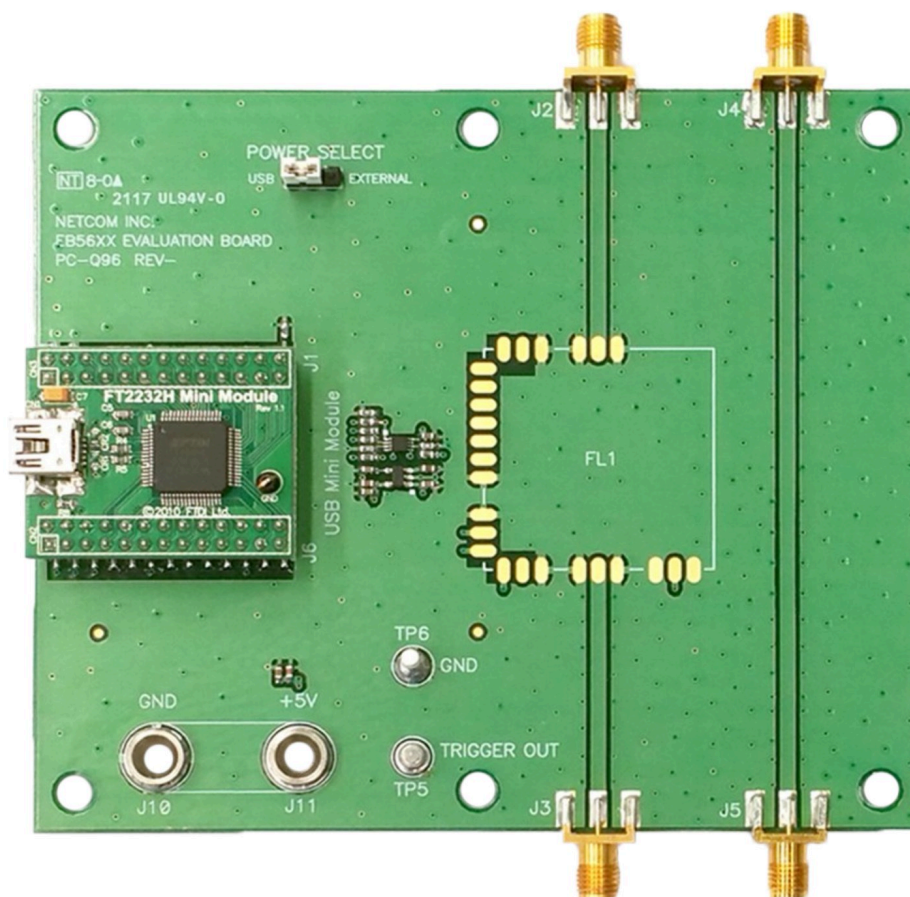
Frequency Range	30 to 520 MHz	
Available BW	7%	10%
*Ftune +/- 10% Rejection (Typical)	-21.0 dB	-15.8 dB
*Ftune +/- 15% Rejection (Typical)	-27.0 dB	-21.5 dB
*Ftune +/- 20% Rejection (Typical)	-30.0 dB	-25.5 dB
Insertion Loss (Typical)	6.0 dB	4.5dB

Corresponding Evaluation Board

Model 5670 series filters are tunable bandpass filters that can be tuned over the frequency range of 30 to 520MHz.

The EB56XX Evaluation Board is designed to test and evaluate Netcom's Model 5670 frequency agile filter. The evaluation board will also work for future frequency agile filters within the 5670 family. The evaluation board is used to supply power to the filter, provide tuning control, facilitate measurement of the filter's RF parameters, switching speed, and power consumption.

Tuning control of the filter is provided by the EB56XX Evaluation Board in the form of frequency tune words. The EB56XX uses a USB input and user interface program to provide frequency tuning control for the 5670 frequency agile filter. The EB56XX Evaluation Board includes a separate RF thru path for calibration of test equipment to improve the accuracy of RF measurements.

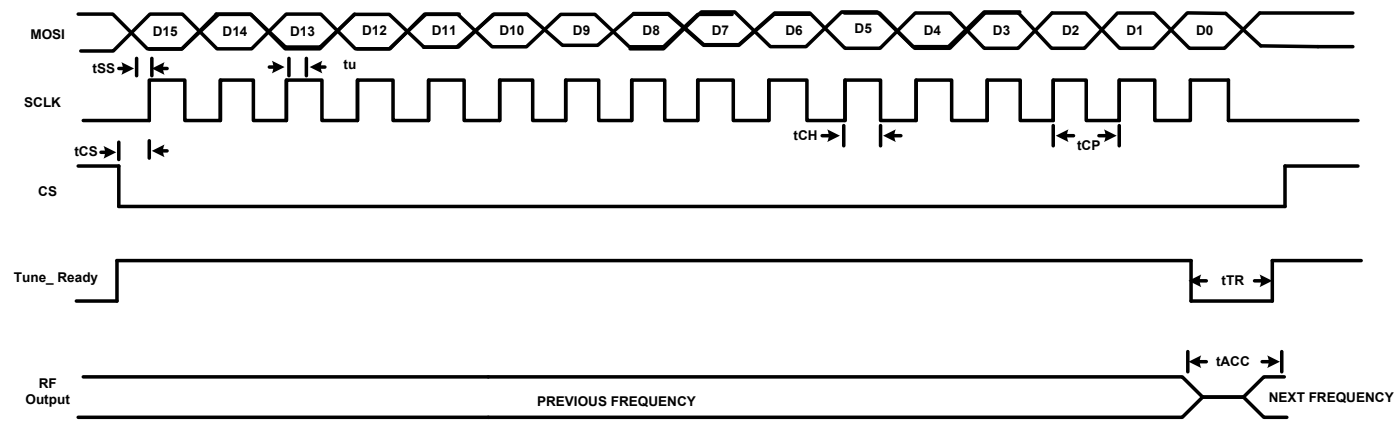


Serial Address Input Timing Diagram

Tuning addresses start at 240 decimal (30MHz) and end at 4160 decimal (520MHz) .
 Tuning resolution is 125KHz from address 240 decimal (30MHz) to 511 decimal (63.875MHz) .
 Tuning resolution is 250KHz from address 512 decimal (64.000MHz) to 1022 decimal (127.750MHz) .
 Tuning resolution is 500KHz from address 1024 decimal (128.000MHz) to 2044 decimal (255.500MHz) .
 Tuning resolution is 1MHz from address 2048 decimal (256MHz) to 4160 decimal (520MHz) .
 Tuning of the filter starts when the last data clock (16th) pulse of the address is sent to the unit while the CS (Chip select) is low.

Symbol	Parameter	Min	Max	Units
tSS	Setup time MOSI Data to SCLK*	50		ns
tu	Hold Time MOSI Data From SCLK		0	ns
tCH	Clock High Time	125		ns
tCP	Clock Period	250		ns
tCS	Chip Setup Time (CS falling edge to SCLK start)	125		ns
tTR	Tune_Ready indicator***		30	us
tACC	Access time from Last (16th) SCLK edge to Fo**		30	us

56XX ADDRESS PROTOCOL



* Data clocked in on SCLK leading edge.
 ** Filter tunes to address on last clock bit of address SCLK.
 *** Tune_Ready at logic low when filter processing tuned address.

Environmental Specification Standards

Temperature:

- High temperature shall meet MIL-STD-810E, Method 501.3, Procedure I to 125°C storage, and procedure II to 85°C operating.
- Low temperature shall meet MIL-STD-810E Method 502.3, Procedure I to -57°C storage, and Procedure II to -40°C operating.

Vibration:

- MIL-STD-810E Method 514.4

Shock:

- MIL-STD-810E Procedure VI, Method 516.4

RoHS Compliance:

- Unit is RoHS compliant

Lead Plating:

- ELECTROLESS NICKEL, TYPE 1, CLASS 1, Cu/Ni P7, 100 MICRO INCHES (0.0001 INCHES) MINIMUM, IMMERSION GOLD PLATE 2 TO 6 MICRO INCHES (0.000002 TO 0.000006 INCHES) ON OUTER LAYERS.

Solder Reflow:

- 245°C [max] for 30 seconds [max]

Cleaning:

- Recommend cleaning solvents used which meet ODC (Ozone Depleting Chemical) requirements.
- Solvents containing methylene chloride or other epoxy solvents should be avoided since these will attack the epoxy encapsulation material of some components.
- Ultrasonic cleaning not recommended.
- Filters should be dry prior to assembly.
- Netcom also recommends the customer perform adequate experimentation to ensure their cleaning process is compatible with these filters.

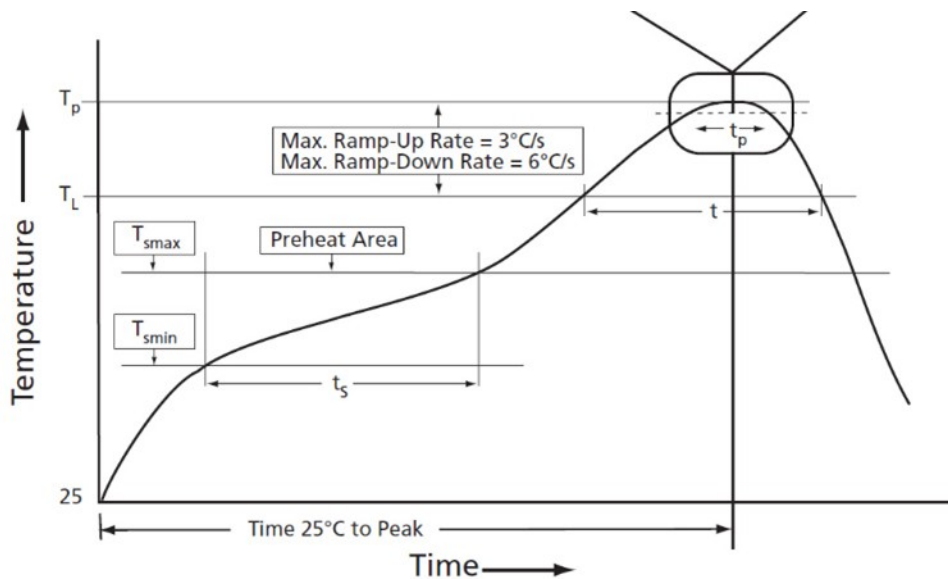
Moisture Sensitivity Level:

- MSL 3

Solder Reflow Profile

Solder reflow recommendation using Pb-Free solder.

The reflow profile of our products depends on the characteristics of the circuit board assembly like thickness, size, and heat transfer. Also affecting the reflow profile is the solder paste type, flux, and density of other components on the circuit board also must be considered. The recommended profile below is at the printed circuit board interface.



Parameter	Description	SnPb Package	Pb-Free
Ramp-Up	Average Ramp-Up Rate (T_{smax} to t_p)	3 °C/second max.	3 °C/second max.
T_{smin}	Preheat Peak Min. Temperature	100 °C	150 °C
T_{smax}	Preheat Peak Max. Temperature	150 °C	200 °C
t_s	Time between and T_{smin} and T_{smax}	60 seconds–120 seconds	60 seconds–120 seconds
T_L	Solder Melting Point	183 °C	217 °C
T_p	Peak Temperature	225 °C	245 °C
t	Time Maintained above T_L	45 seconds – 90 seconds	45 seconds – 70 seconds
t_p	Time within 5 °C of Peak Temperature	30 seconds max	30 seconds max
Ramp-Down	Ramp-Down Rate	6 °C/second max.	6 °C/second max.
$t_{25\text{ °C to } T_p}$	Time from 25 °C to Peak Temperature	4.5 minutes max.	5 minutes max.



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