NETCOM®
RF & MICROWAVE TECHNOLOGY

Model 5555-5 - Tunable Filter
1.5 - 30MHz

Specifications

FEATURES

Netcom's 5555 is a tunable filter covering the frequency range of 1.5MHz to 30MHz.

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.

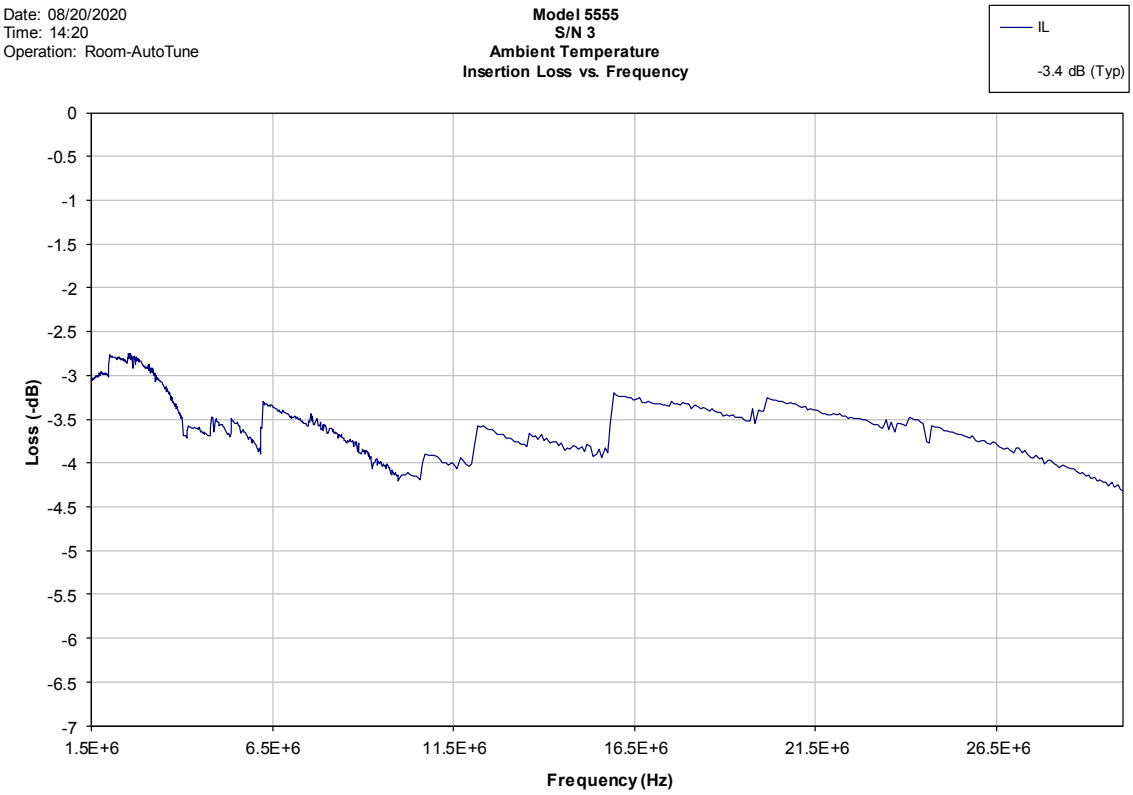
The following table shows the typical performance of the filter at a bandwidth of 5%. Options are available upon request for different bandwidths.

Frequency Range	1.5 to 30 MHz
BW (Typical)	5.3%
Impedance (Input /Output) - Typical	50 Ω
Fc ± 10% Selectivity - Typical	< -19dBc
2Fc	< -60dBc
Tuning Speed	< 200 µs
Insertion Loss Typical	3.5 dB
Insertion Loss Max	4.5 dB
Return Loss Min	8.5 dB
Tuning Channels	
1.5MHz – 4MHz	250
4.0MHz – 10MHz	249
10MHz – 30MHz	249
RF Input Power (P1dB)	
1.5MHz – 4MHz	20dBm
4MHz – 10MHz	27dBm
10MHz – 30MHz	28dBm
In Band Power Handing Max	30dBm
Out of Band Power Handing	33dBm
IP3	
1.5MHz – 4MHz	31dBm
4MHz – 10MHz	38dBm
10MHz – 30MHz	39dBm
Vcc	4.5 - 5.5V
Vbb	93V - 125V
DC Current Max	260 mA
Operating Temperature Range	-40 to +85°C
Control Interface	SPI Interface
Dimensions [L x W x H]	2.2 x 2.2 x 0.5 inches 55.9 x 55.9 x 12.7 mm

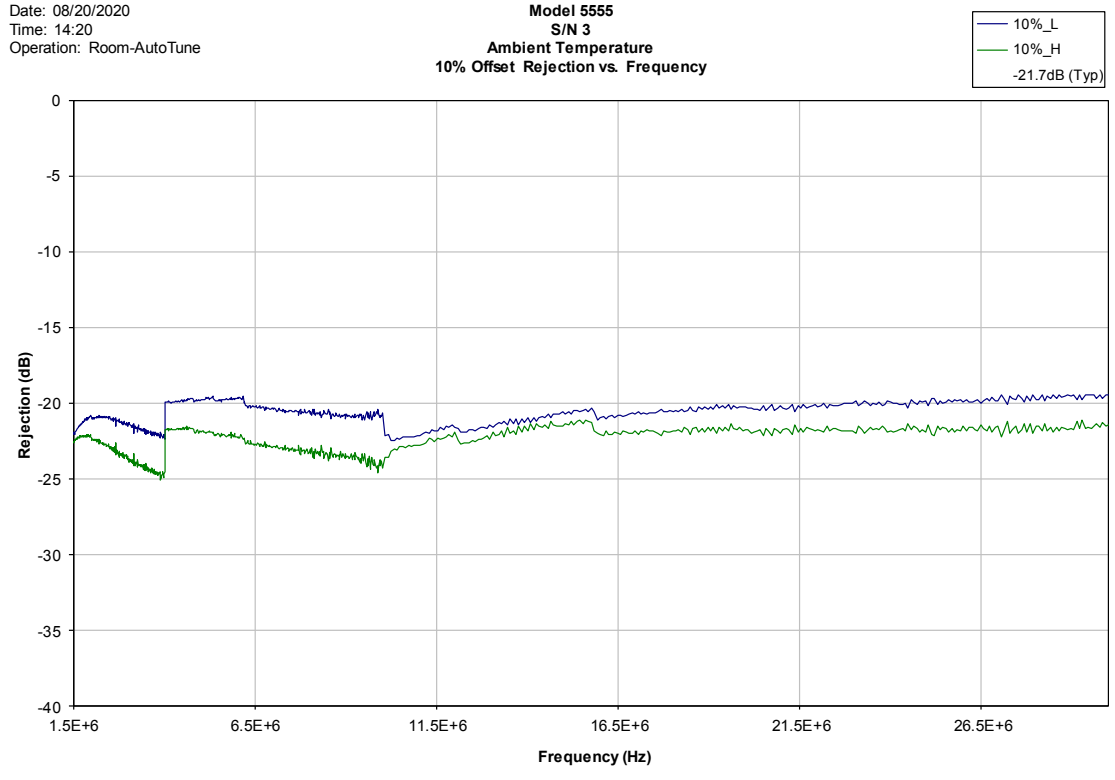
RoHS COMPLIANT

Performance

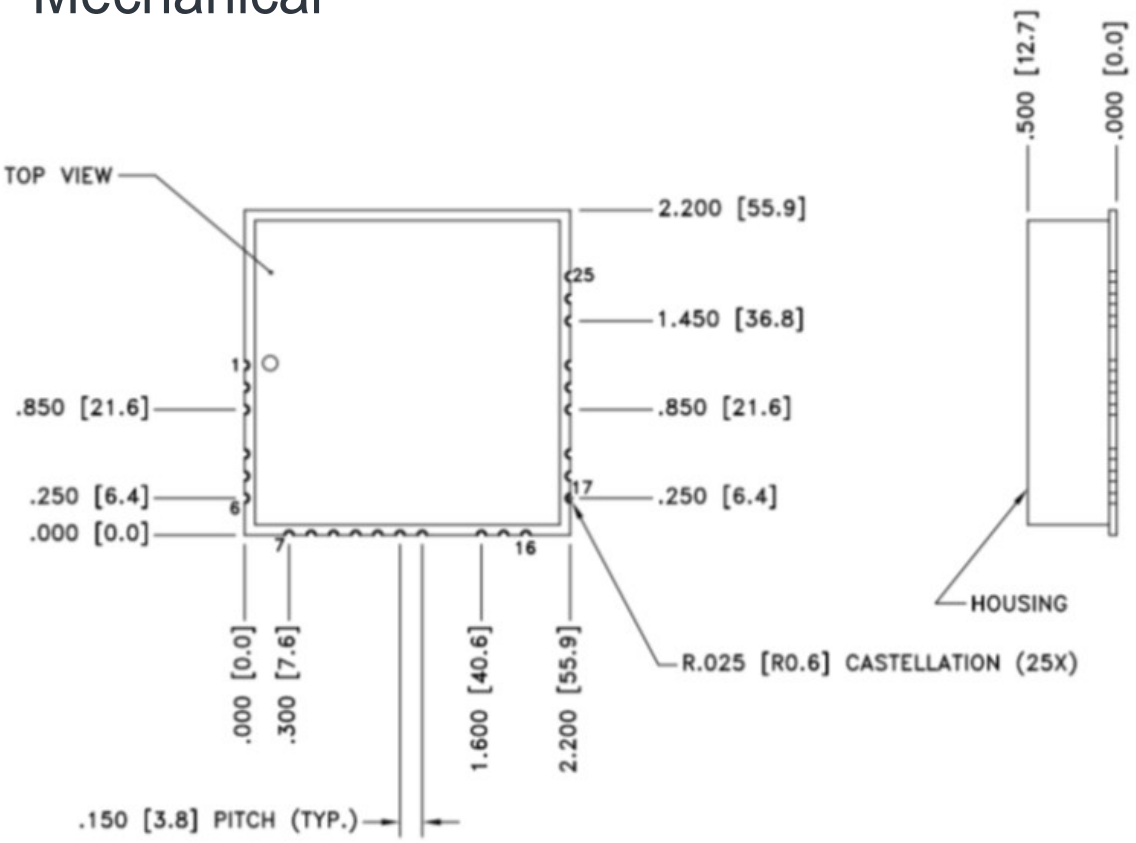
Insertion Loss

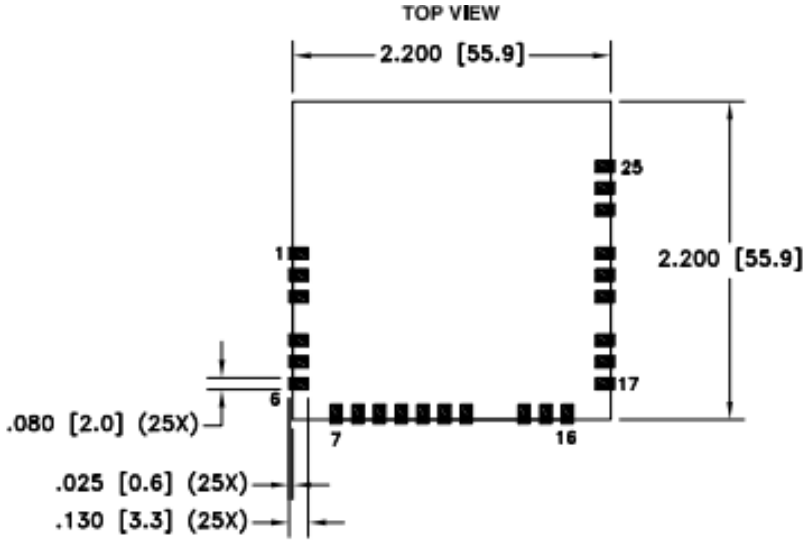


10% Rejection



Mechanical





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	N/C		18	N/C
6	N/C		19	Vbb
7	TUNE_READY		20	GND
8	N/C		21	RF OUT
9	N/C		22	GND
10	N/C		23	GND
11	N/C		24	Vcc
12	N/C		25	GND
13	GND			

N/C = NO CONNECT

NOTES:
1. TOLERANCES ±.010 [0.25] UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE INCHES [mm].

Ordering Information

Model Number	(-)	Bandwidth	(-)	Options	Add “-EB” for Unit Mounted on Evaluation Board	
5555	(-)	5	(-)		(-)	EB

Options:

A:
B:
C:

Available Bandwidths

*Options available upon request
Bandwidth options are available in increments of 1% step size

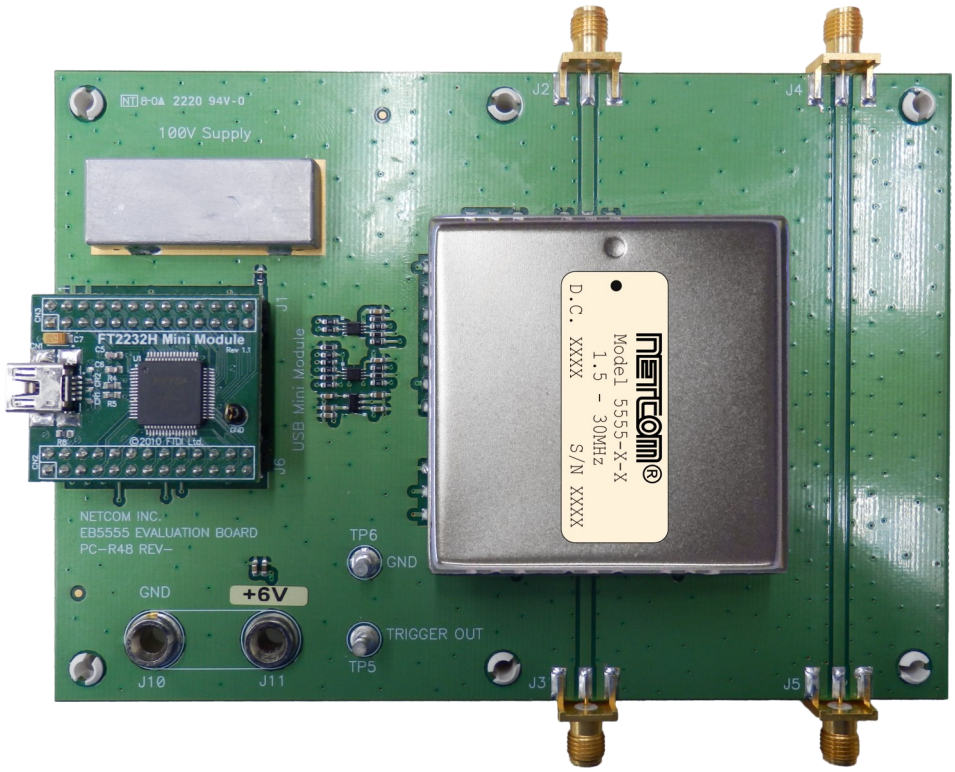
Frequency Range	1.5 to 30 MHz		
Available BW	3%	5%	7%
*Ftune +/- 10% Selectivity (Typical)	-28.5dBc	-19dBc	TBD
*Ftune +/- 15% Selectivity (Typical)	-35.5dBc	TBD	TBD
*Ftune +/- 20% Selectivity (Typical)	-41.0dBc	TBD	TBD
Insertion Loss (Typical)	5.8 dB	3.5 dB	TBD

Corresponding Evaluation Board

Model 5555 series filters are tunable bandpass filters that can be tuned over the frequency range of 1.5 to 30MHz.

The EB5555 Evaluation Board is designed to test and evaluate Netcom's Model 5555 frequency agile filter. The evaluation board will also work for future frequency agile filters within the 5555 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 EB5555 Evaluation Board in the form of frequency tune words. The EB5555 uses a USB input and user interface program to provide frequency tuning control for the 5555 frequency agile filter. The EB5555 Evaluation Board includes a separate RF thru path for calibration of test equipment to improve the accuracy of RF measurements.

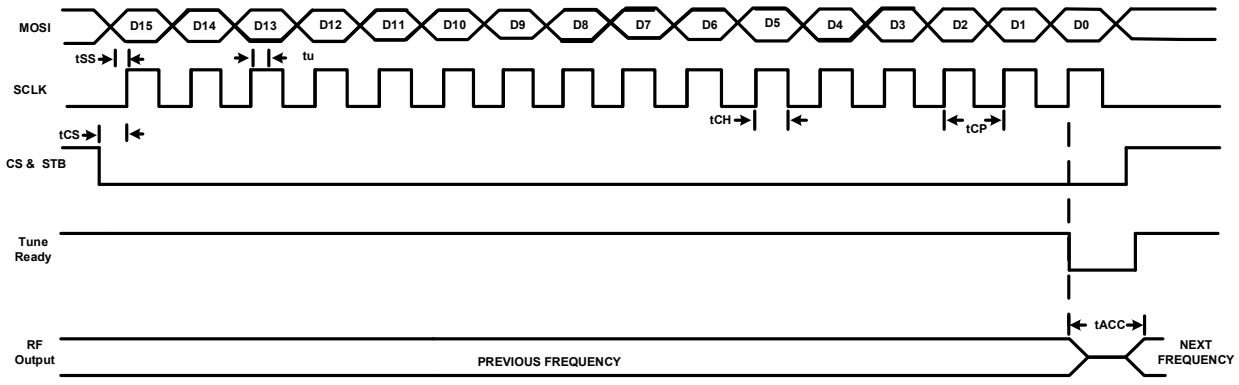


Serial Address Input Timing Diagram

When the SPI_CS line is shifted low, the Tune_Ready line will go high indicating the unit is ready to accept the tune word. Tuning of the filter starts when the last data clock (16th) pulse of the address is sent to the unit while the SPI_CS (Chip Select) is low. When the filter tuning is complete the Tune_Ready line will go low to indicate the filter tuning is complete. Reset the SPI_CS line high after sending the 16th clock bit to allow the unit to reset after the filter tuning is complete.

Symbol	Parameter	Min	Max	Units
tSS	Setup time MOSI Data to SPICLK	50		ns
tu	Hold Time MOSI Data From SPICLK		0	ns
tCH	Clock High Time	125		ns
tCP	Clock Period	250		ns
tCS	Chip Setup Time ($\overline{CS}$ falling edge to SPICLK start)	125		ns
tTR	Tune_Ready indicator		200	us
tACC	Access time from Last (16th) SPICLK edge to Fo		200	us
	Maximum Hop Rate Tune Frequency to next Tuned Frequency		1000	Hz

5555 SERIAL ADDRESS PROTOCOL



Bit Map

Band Switch Byte								Address Byte							
D15 MSB	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0 LSB
0	0	0	0	0	0	B1*	B0*	Filter Tune Address**							

* Refer to Band Switch Table for B1 and B0 codes of Band Switch Byte.
** Refer to Address Table for selected band start and end addresses.

Band Switch Table

Band	B1	B0	Frequency Range
1	0	0	1.5MHz – 4.0MHz
2	0	1	4.0MHz – 10.0MHz
3	1	0	10.0MHz – 30.0MHz
Illegal Selection	1	1	Do Not Select

Address Table

Band	Start Address	End Address	Frequency Range	Step Size
1	0	250	1.50MHz – 4.00MHz	10.00KHz
2	0	249	4.02MHz – 10.00MHz	24.02KHz
3	0	249	10.08MHz – 30.00MHz	80.00KHz

Environmental Specification Standards

Temperature:

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

Vibration:

- MIL-STD-810E Method 514.4 Ground Mobile Test Procedure I, Test Condition I - 3.4.7

Shock:

- MIL-STD-810E Procedure I, Method 516.4 - Functional Shock.

Reflow:

- 218°C Max (30 seconds)

MSL (Moisture Sensitivity Level:

- Level 3

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Note: Parameters may be subject to change