

### FEATURES

Netcom's -- is a Multi-Tune High pass/Low pass tunable filter which covers the frequency range of 450MHz to 750MHz.

This filter offers 32 tuning states which are available on both the High pass and Lowpass sections.

The filter can be controlled by the USB . The cutoff frequency  $f_1$  of the High pass filter and the cutoff frequency  $f_2$  of the Lowpass filter can be tuned independently through the USB interface.

The following table shows the typical performance of the filter.

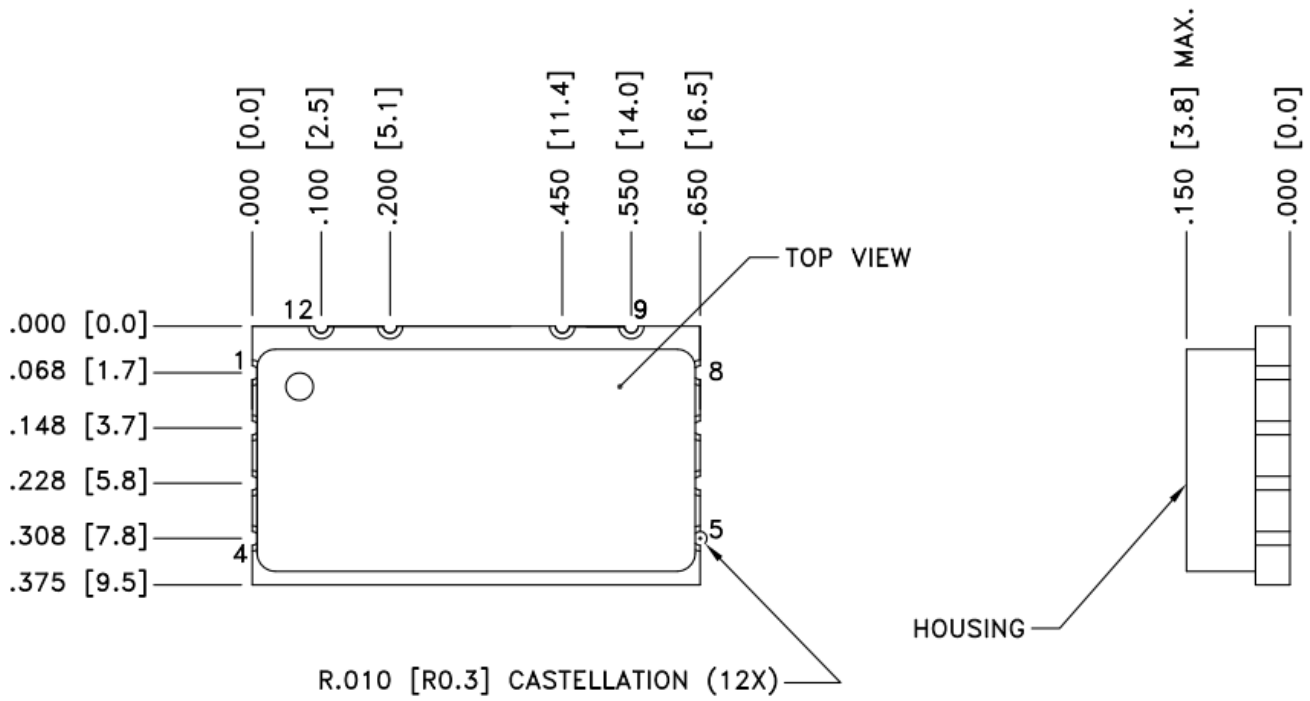
## Specifications

Frequency Range	450 to 750 MHz
Highpass Cutoff Frequency Range ( $f_1$ )	450 - 670 MHz
Lowpass Cutoff Frequency Range ( $f_2$ )	450 - 750 MHz
Center Frequency*	$(f_1 + f_2) / 2$
Passband Bandwidth (1dB BW)	$f_2 - f_1$
Passband Insertion Loss for BW > 50MHz	4.0dB max
Rejection at $f_1 - 20\%$ from 1dB point	25dB min
Rejection at $f_2 + 20\%$ from 1dB point	16dB min
Impedance (Input/Output)	50 $\Omega$
Passband VSWR	2:1
RF Power Handling	+27dBm
IIP3	+40 dBm
Switching Speed, 90% RF Power (typical)	10 $\mu$ sec
DC Power	
DC Voltage	5.0V
DC Current	50 mA
Operating Temperature Range	-40 to +85°C
Control Interface	SPI interface
Dimensions	0.650 x 0.375 x 0.150 inches 16.510 x 9.525 x 3.810 mm

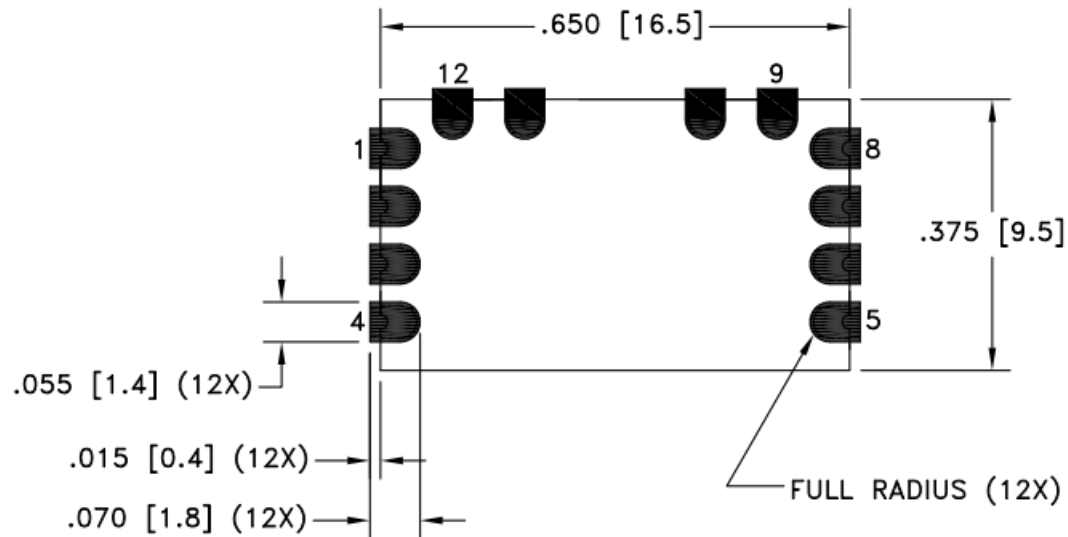
\*See Center Frequency Table Pages 10 and 11

Note: Parameters subject to change

# Mechanical Filter (Preliminary)



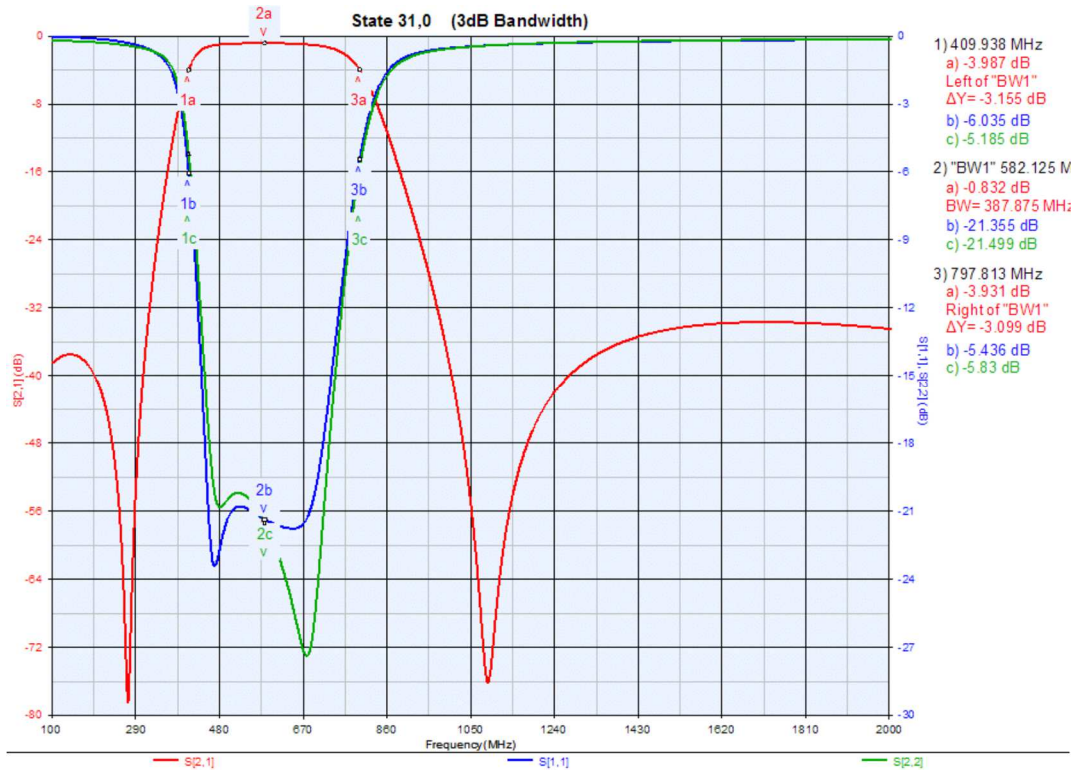
## RECOMMENDED LAYOUT PATTERN TOP VIEW



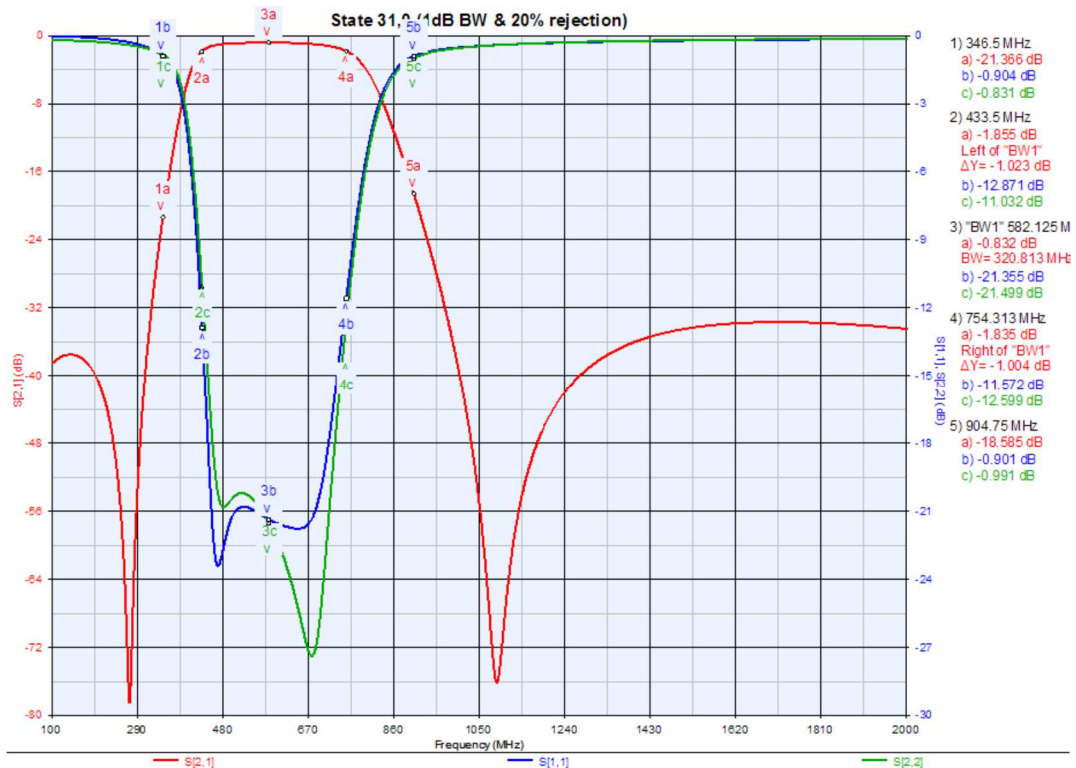
PIN DESIGNATORS	
PIN NUMBER	DESCRIPTION
1	SENS_1
2	GND
3	RF_IN
4	GND
5	GND
6	RF_OUT
7	GND
8	SENS_2
9	3.3V
10	SDATA
11	SCLK
12	GND

# Maximum Passband Response

3dB Bandwidth =  
387.875MHz



1dB Bandwidth =  
320.813MHz



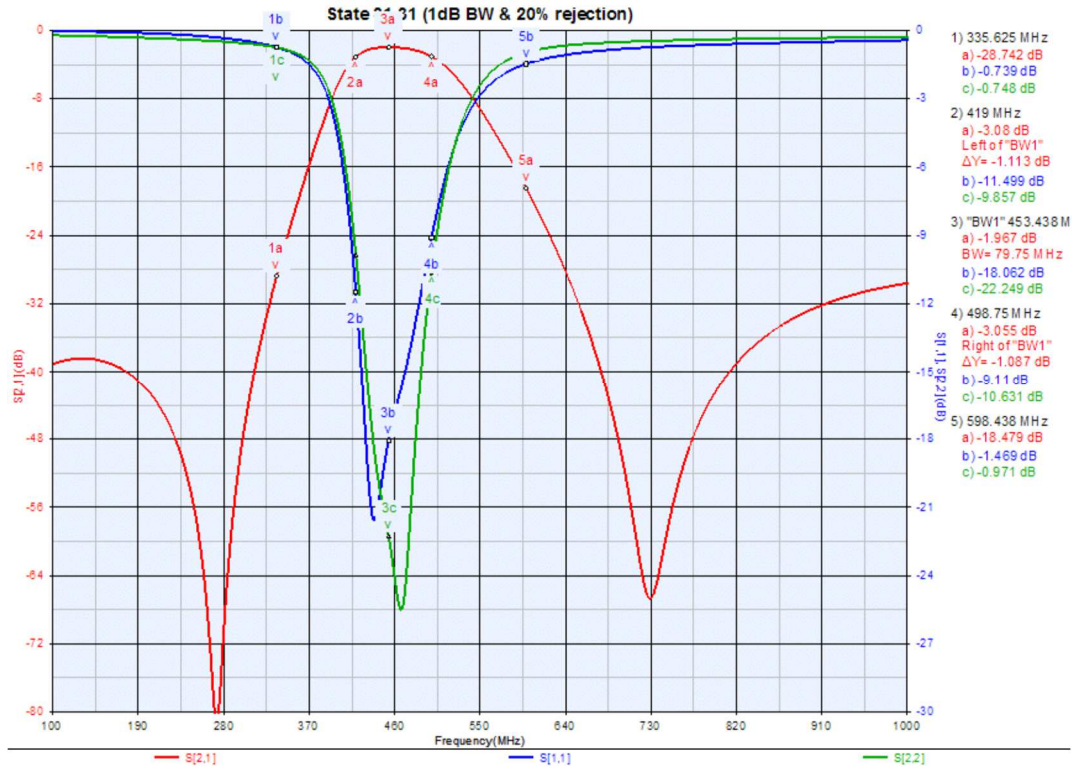
Note: Tuning State HPF Channel, LPF Channel

# Lowest and Highest Frequency Response

Low Frequency Response

$F_c = 453.438\text{MHz}$

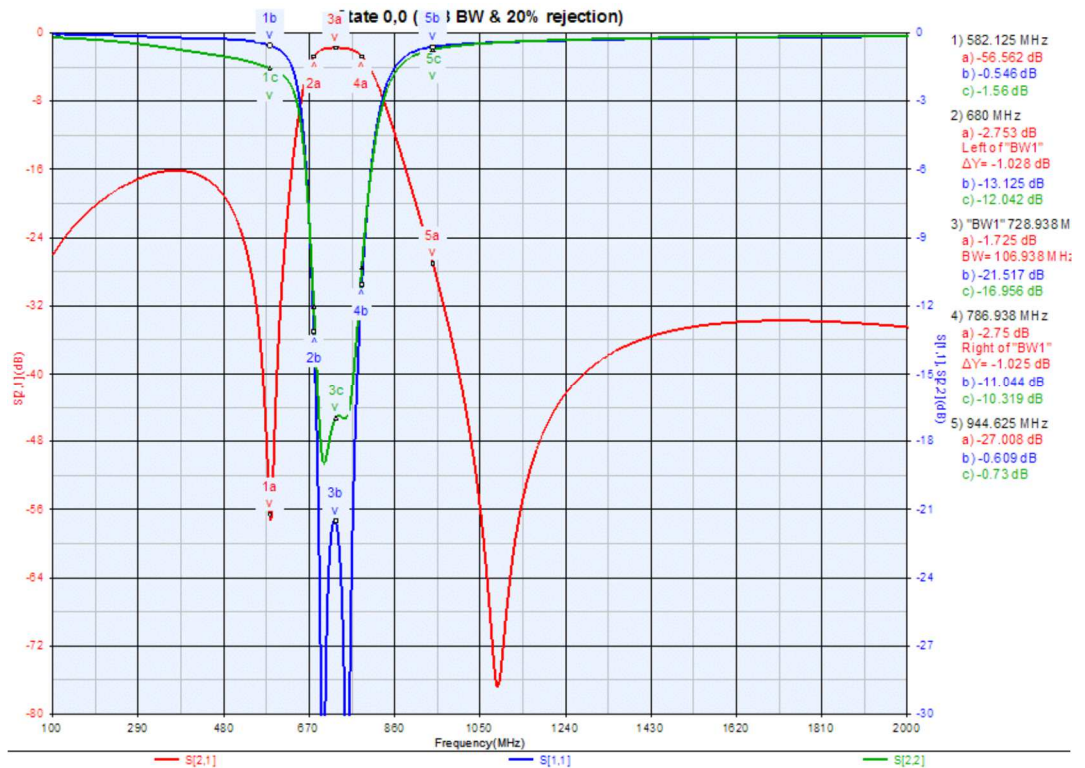
1dB Bandwidth = 79.75MHz



High Frequency Response

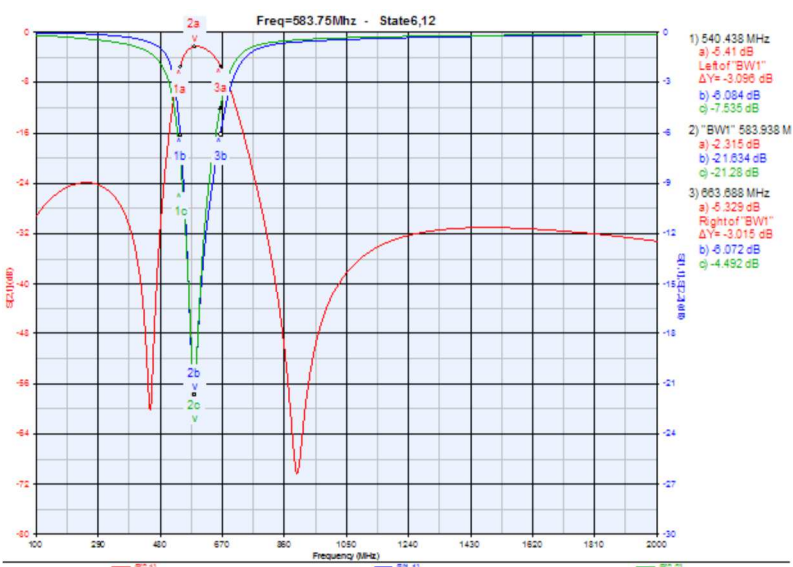
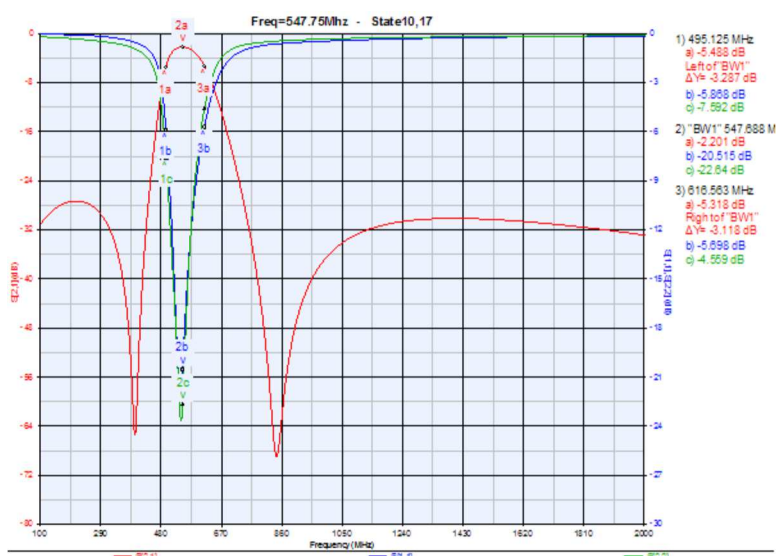
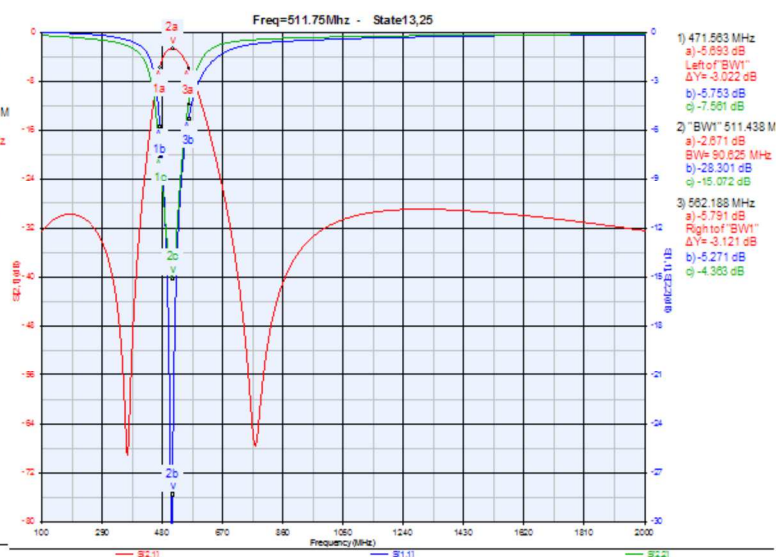
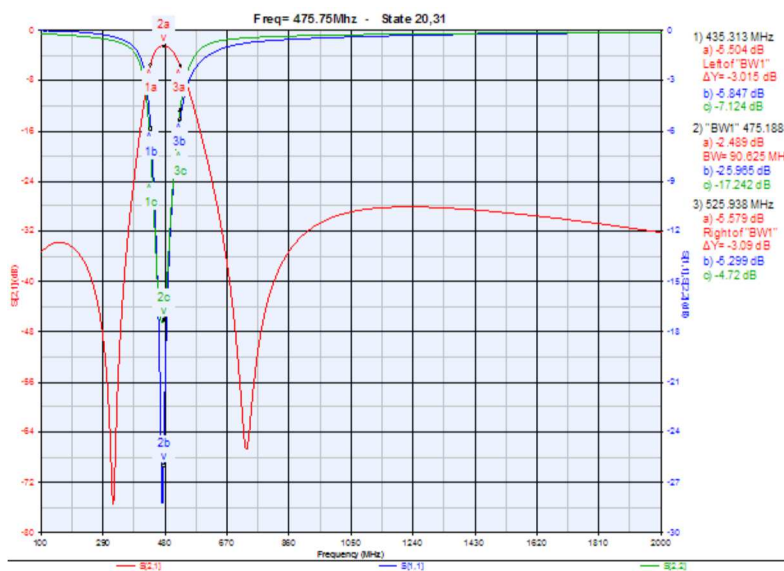
$F_c = 728.938\text{MHz}$

1dB Bandwidth = 106.98MHz

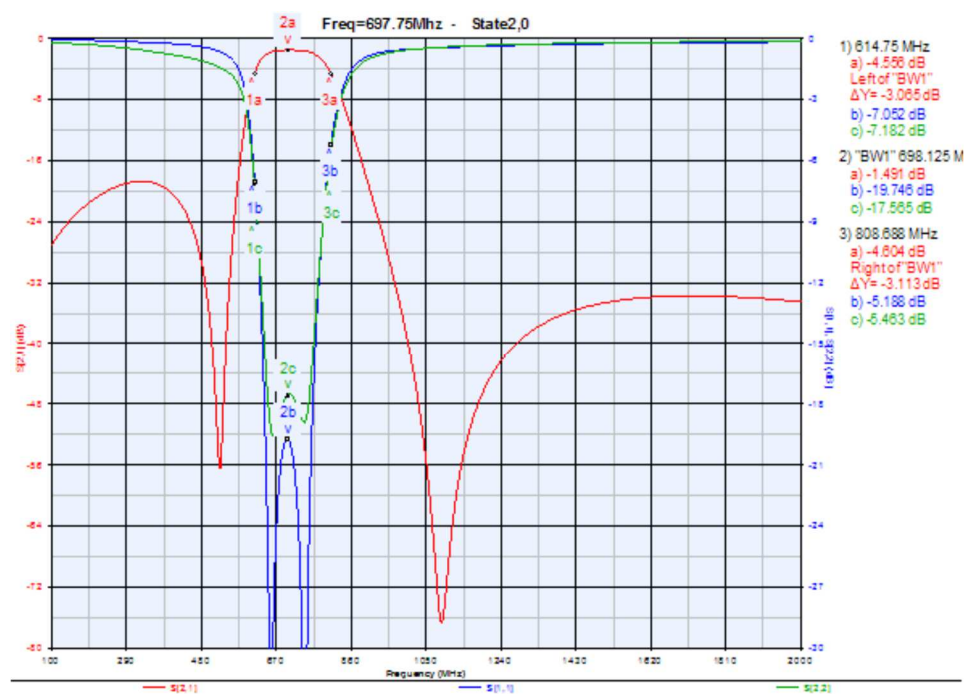
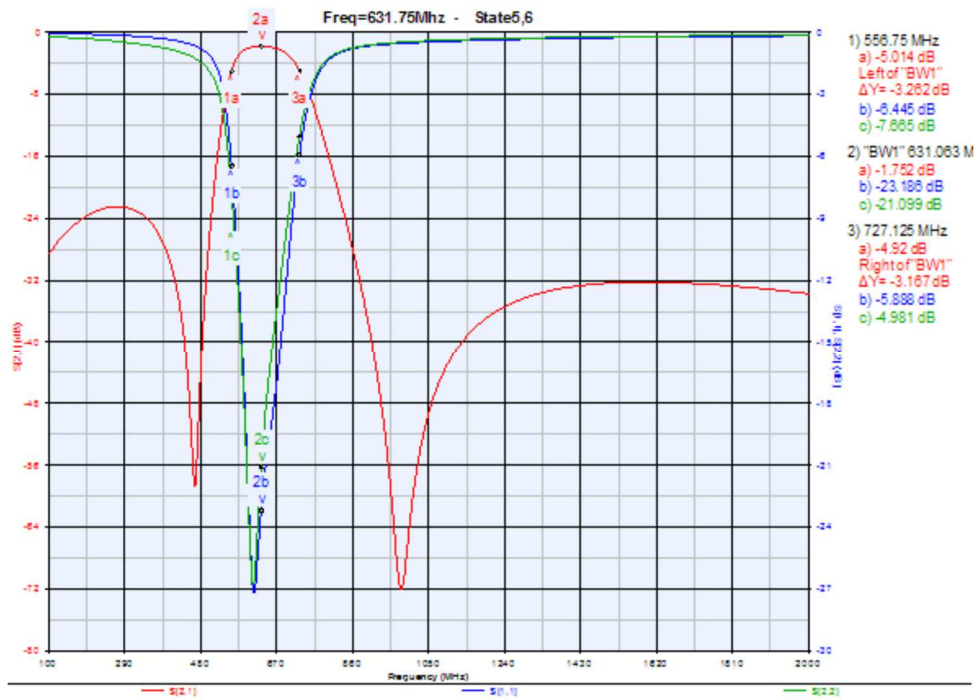


Note: Tuning State HPF Channel, LPF Channel

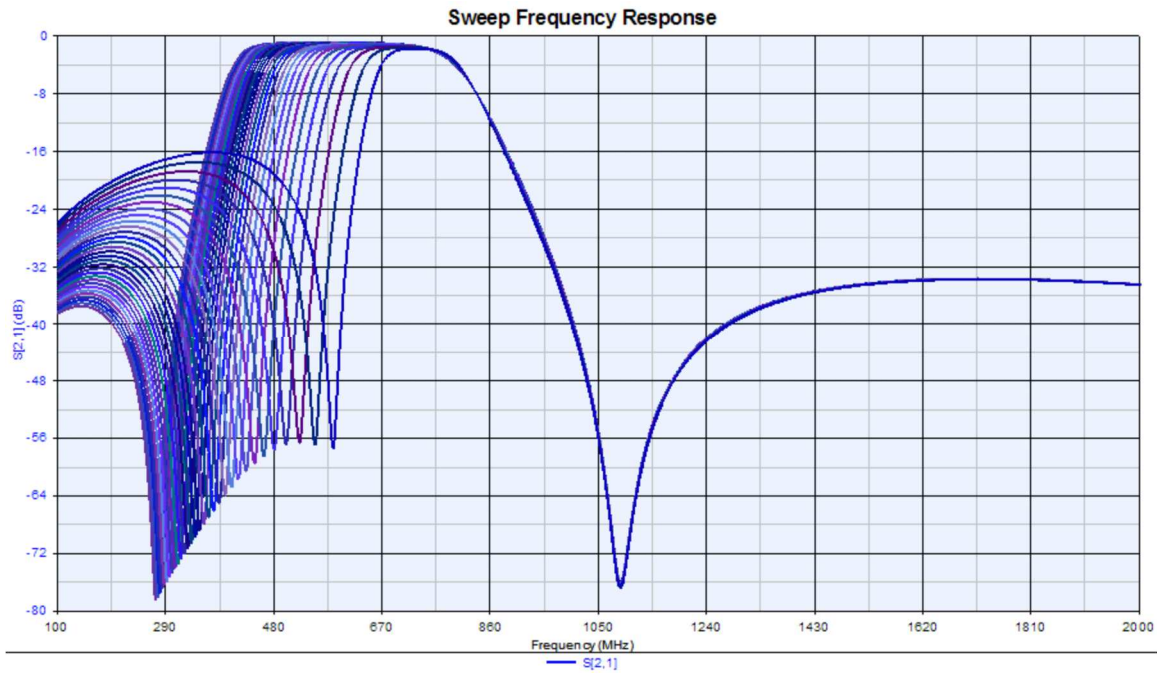
# Samples of Frequency Response in UHF Band - "Audio Carrier Frequencies"



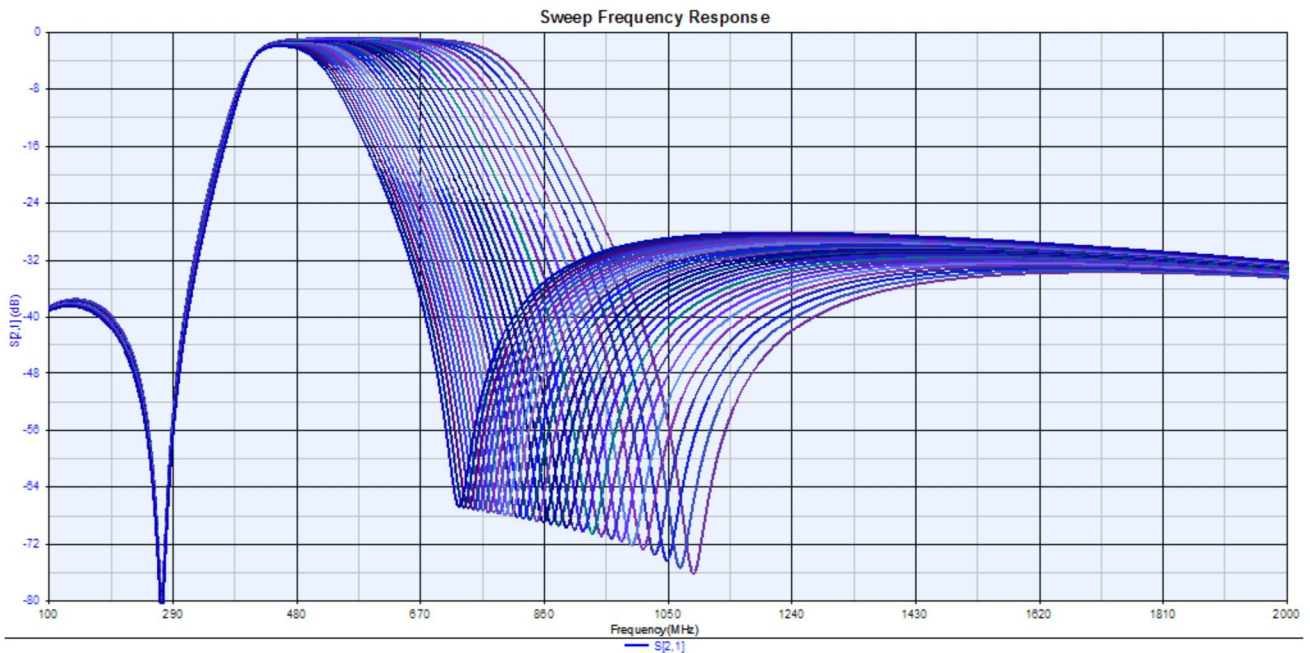
# Samples of Frequency Response in UHF Band - "Audio Carrier Frequencies" (cont.)



# Sweep Frequency Response



LPF Fixed (State 0) and sweep HPF from State 31 to 0



HPF Fixed (State 31) and sweep LPF from State 0 to 31

# Combination Support List (HPF channel 0 to 15)

HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF
0 0	1 0	2 0	3 0	4 0	5 0	6 0	7 0	8 0	9 0	10 0	11 0	12 0	13 0	14 0	15 0	
0 1	1 1	2 1	3 1	4 1	5 1	6 1	7 1	8 1	9 1	10 1	11 1	12 1	13 1	14 1	15 1	
0 2	1 2	2 2	3 2	4 2	5 2	6 2	7 2	8 2	9 2	10 2	11 2	12 2	13 2	14 2	15 2	
	1 3	2 3	3 3	4 3	5 3	6 3	7 3	8 3	9 3	10 3	11 3	12 3	13 3	14 3	15 3	
		2 4	3 4	4 4	5 4	6 4	7 4	8 4	9 4	10 4	11 4	12 4	13 4	14 4	15 4	
		2 5	3 5	4 5	5 5	6 5	7 5	8 5	9 5	10 5	11 5	12 5	13 5	14 5	15 5	
				4 6	5 6	6 6	7 6	8 6	9 6	10 6	11 6	12 6	13 6	14 6	15 6	
				4 7	5 7	6 7	7 7	8 7	9 7	10 7	11 7	12 7	13 7	14 7	15 7	
				4 8	5 8	6 8	7 8	8 8	9 8	10 8	11 8	12 8	13 8	14 8	15 8	
					5 9	6 9	7 9	8 9	9 9	10 9	11 9	12 9	13 9	14 9	15 9	
					5 10	6 10	7 10	8 10	9 10	10 10	11 10	12 10	13 10	14 10	15 10	
						6 11	7 11	8 11	9 11	10 11	11 11	12 11	13 11	14 11	15 11	
						6 12	7 12	8 12	9 12	10 12	11 12	12 12	13 12	14 12	15 12	
						6 13	7 13	8 13	9 13	10 13	11 13	12 13	13 13	14 13	15 13	
							7 14	8 14	9 14	10 14	11 14	12 14	13 14	14 14	15 14	
							7 15	8 15	9 15	10 15	11 15	12 15	13 15	14 15	15 15	
										10 16	11 16	12 16	13 16	14 16	15 16	
										10 17	11 17	12 17	13 17	14 17	15 17	
										10 18	11 18	12 18	13 18	14 18	15 18	
										10 19	11 19	12 19	13 19	14 19	15 19	
										10 20	11 20	12 20	13 20	14 20	15 20	
													13 21	14 21	15 21	
													13 22	14 22	15 22	
													13 23	14 23	15 23	
													13 24	14 24	15 24	
													13 25	14 25	15 25	

HPF State Fixed and sweep LPF from State 0 to 31



# Combination Support List (HPF channel 16 to 31)

HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF	HPF LPF
16 0	17 0	18 0	19 0	20 0	21 0	22 0	23 0	24 0	25 0	26 0	27 0	28 0	29 0	30 0	31 0
16 1	17 1	18 1	19 1	20 1	21 1	22 1	23 1	24 1	25 1	26 1	27 1	28 1	29 1	30 1	31 1
16 2	17 2	18 2	19 2	20 2	21 2	22 2	23 2	24 2	25 2	26 2	27 2	28 2	29 2	30 2	31 2
16 3	17 3	18 3	19 3	20 3	21 3	22 3	23 3	24 3	25 3	26 3	27 3	28 3	29 3	30 3	31 3
16 4	17 4	18 4	19 4	20 4	21 4	22 4	23 4	24 4	25 4	26 4	27 4	28 4	29 4	30 4	31 4
16 5	17 5	18 5	19 5	20 5	21 5	22 5	23 5	24 5	25 5	26 5	27 5	28 5	29 5	30 5	31 5
16 6	17 6	18 6	19 6	20 6	21 6	22 6	23 6	24 6	25 6	26 6	27 6	28 6	29 6	30 6	31 6
16 7	17 7	18 7	19 7	20 7	21 7	22 7	23 7	24 7	25 7	26 7	27 7	28 7	29 7	30 7	31 7
16 8	17 8	18 8	19 8	20 8	21 8	22 8	23 8	24 8	25 8	26 8	27 8	28 8	29 8	30 8	31 8
16 9	17 9	18 9	19 9	20 9	21 9	22 9	23 9	24 9	25 9	26 9	27 9	28 9	29 9	30 9	31 9
16 10	17 10	18 10	19 10	20 10	21 10	22 10	23 10	24 10	25 10	26 10	27 10	28 10	29 10	30 10	31 10
16 11	17 11	18 11	19 11	20 11	21 11	22 11	23 11	24 11	25 11	26 11	27 11	28 11	29 11	30 11	31 11
16 12	17 12	18 12	19 12	20 12	21 12	22 12	23 12	24 12	25 12	26 12	27 12	28 12	29 12	30 12	31 12
16 13	17 13	18 13	19 13	20 13	21 13	22 13	23 13	24 13	25 13	26 13	27 13	28 13	29 13	30 13	31 13
16 14	17 14	18 14	19 14	20 14	21 14	22 14	23 14	24 14	25 14	26 14	27 14	28 14	29 14	30 14	31 14
16 15	17 15	18 15	19 15	20 15	21 15	22 15	23 15	24 15	25 15	26 15	27 15	28 15	29 15	30 15	31 15
16 16	17 16	18 16	19 16	20 16	21 16	22 16	23 16	24 16	25 16	26 16	27 16	28 16	29 16	30 16	31 16
16 17	17 17	18 17	19 17	20 17	21 17	22 17	23 17	24 17	25 17	26 17	27 17	28 17	29 17	30 17	31 17
16 18	17 18	18 18	19 18	20 18	21 18	22 18	23 18	24 18	25 18	26 18	27 18	28 18	29 18	30 18	31 18
16 19	17 19	18 19	19 19	20 19	21 19	22 19	23 19	24 19	25 19	26 19	27 19	28 19	29 19	30 19	31 19
16 20	17 20	18 20	19 20	20 20	21 20	22 20	23 20	24 20	25 20	26 20	27 20	28 20	29 20	30 20	31 20
16 21	17 21	18 21	19 21	20 21	21 21	22 21	23 21	24 21	25 21	26 21	27 21	28 21	29 21	30 21	31 21
16 22	17 22	18 22	19 22	20 22	21 22	22 22	23 22	24 22	25 22	26 22	27 22	28 22	29 22	30 22	31 22
16 23	17 23	18 23	19 23	20 23	21 23	22 23	23 23	24 23	25 23	26 23	27 23	28 23	29 23	30 23	31 23
16 24	17 24	18 24	19 24	20 24	21 24	22 24	23 24	24 24	25 24	26 24	27 24	28 24	29 24	30 24	31 24
16 25	17 25	18 25	19 25	20 25	21 25	22 25	23 25	24 25	25 25	26 25	27 25	28 25	29 25	30 25	31 25
16 26	17 26	18 26	19 26	20 26	21 26	22 26	23 26	24 26	25 26	26 26	27 26	28 26	29 26	30 26	31 26
16 27	17 27	18 27	19 27	20 27	21 27	22 27	23 27	24 27	25 27	26 27	27 27	28 27	29 27	30 27	31 27
	17 28	18 28	19 28	20 28	21 28	22 28	23 28	24 28	25 28	26 28	27 28	28 28	29 28	30 28	31 28
		18 29	19 29	20 29	21 29	22 29	23 29	24 29	25 29	26 29	27 29	28 29	29 29	30 29	31 29
		18 30	19 30	20 30	21 30	22 30	23 30	24 30	25 30	26 30	27 30	28 30	29 30	30 30	31 30
		18 31	19 31	20 31	21 31	22 31	23 31	24 31	25 31	26 31	27 31	28 31	29 31	30 31	31 31

HPF State Fixed and sweep LPF from State 0 to 31

# Center Frequency Table (HPF channel 0 to 15)

HPF																
LPF	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	729.0	716.3	707.2	690.8	687.3	672.8	667.3	656.4	647.4	645.5	640.1	636.5	625.6	625.6	623.8	623.8
1	719.9	707.0	698.9	683.6	679.6	666.3	661.0	650.7	642.0	639.8	635.0	631.3	620.7	621.0	619.1	618.9
2	710.8	698.0	690.5	676.5	671.9	659.7	654.8	645.1	636.5	634.2	630.0	626.2	615.8	616.5	614.4	614.1
3		689.0	682.2	669.3	664.2	653.2	648.5	639.4	631.1	628.5	624.9	621.0	610.9	611.9	609.7	609.2
4			673.8	662.2	656.5	646.7	642.2	633.7	625.6	622.8	619.8	615.8	606.0	607.3	605.0	604.4
5			665.5	655.0	648.7	640.2	636.0	628.0	620.2	617.1	614.7	610.7	601.2	602.8	600.2	599.5
6					641.0	633.6	629.7	622.4	614.8	611.5	609.7	605.5	596.3	598.2	595.5	594.7
7					633.3	627.1	623.4	616.7	609.3	605.8	604.6	600.3	591.4	593.6	590.8	589.8
8					625.6	620.6	617.1	611.0	603.9	600.1	599.5	595.2	586.5	589.1	586.1	585.0
9						614.0	610.9	605.3	598.4	594.4	594.4	590.0	581.6	584.5	581.4	580.1
10						607.5	604.6	599.7	593.0	588.8	589.4	584.9	576.7	579.9	576.7	575.2
11							598.3	594.0	587.6	583.1	584.3	579.7	571.8	575.4	572.0	570.4
12							592.1	588.3	582.1	577.4	579.2	574.5	566.9	570.8	567.3	565.5
13							585.8	582.6	576.7	571.7	574.1	569.4	562.0	566.2	562.5	560.7
14								577.0	571.2	566.1	569.0	564.2	557.1	561.6	557.8	555.8
15								571.3	565.8	560.4	564.0	559.0	552.3	557.1	553.1	551.0
16											558.9	553.9	547.4	552.5	548.4	546.1
17											553.8	548.7	542.5	547.9	543.7	541.2
18											548.7	543.5	537.6	543.4	539.0	536.4
19											543.7	538.4	532.7	538.8	534.3	531.5
20											538.6	533.2	527.8	534.2	529.6	526.7
21														529.7	524.8	521.8
22														525.1	520.1	517.0
23														520.5	515.4	512.1
24														516.0	510.7	507.3
25														511.4	506.0	502.4
26																
27																
28																
29																
30																
31																

HPF State Fixed and sweep LPF from State 0 to 31

# Center Frequency Table (HPF channel 16 to 31)

HPF																
LPF	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
0	609.0	609.3	603.9	603.9	603.9	603.9	603.9	594.8	594.8	583.9	584.0	583.9	582.1	582.0	582.0	582.1
1	582.0	583.7	581.1	581.6	581.7	582.2	582.4	573.6	573.9	563.1	563.4	563.4	561.9	561.8	561.9	562.0
2	555.0	558.1	558.3	559.3	559.6	560.5	560.8	552.5	553.0	542.3	542.7	542.8	541.7	541.6	541.8	541.9
3	528.0	532.6	535.5	537.0	537.4	538.8	539.3	531.3	532.1	521.4	522.1	522.3	521.6	521.5	521.6	521.7
4	501.0	507.0	512.6	514.8	515.2	517.1	517.8	510.1	511.3	500.6	501.4	501.8	501.4	501.3	501.5	501.6
5	474.0	481.4	489.8	492.5	493.0	495.4	496.3	488.9	490.4	479.8	480.8	481.2	481.2	481.1	481.4	481.5
6	447.0	455.8	467.0	470.2	470.9	473.7	474.7	467.8	469.5	459.0	460.1	460.7	461.0	460.9	461.3	461.4
7	420.0	430.2	444.2	447.9	448.7	452.0	453.2	446.6	448.6	438.1	439.5	440.2	440.8	440.7	441.1	441.2
8	393.0	404.6	421.4	425.6	426.5	430.3	431.7	425.4	427.7	417.3	418.8	419.6	420.7	420.6	421.0	421.1
9	366.0	379.1	398.6	403.3	404.4	408.6	410.2	404.2	406.8	396.5	398.2	399.1	400.5	400.4	400.9	401.0
10	339.0	353.5	375.8	381.1	382.2	386.9	388.6	383.1	386.0	375.7	377.5	378.6	380.3	380.2	380.8	380.9
11	312.0	327.9	353.0	358.8	360.0	365.2	367.1	361.9	365.1	354.9	356.9	358.0	360.1	360.0	360.7	360.8
12	285.0	302.3	330.1	336.5	337.8	343.5	345.6	340.7	344.2	334.0	336.2	337.5	339.9	339.8	340.5	340.6
13	258.0	276.7	307.3	314.2	315.7	321.8	324.1	319.5	323.3	313.2	315.6	317.0	319.8	319.7	320.4	320.5
14	231.0	251.2	284.5	291.9	293.5	300.1	302.5	298.4	302.4	292.4	294.9	296.4	299.6	299.5	300.3	300.4
15	204.0	225.6	261.7	269.6	271.3	278.4	281.0	277.2	281.5	271.6	274.3	275.9	279.4	279.3	280.2	280.3
16	177.0	200.0	238.9	247.4	249.2	256.6	259.5	256.0	260.7	250.7	253.6	255.4	259.2	259.1	260.0	260.1
17	150.0	174.4	216.1	225.1	227.0	234.9	238.0	234.8	239.8	229.9	233.0	234.9	239.0	238.9	239.9	240.0
18	123.0	148.8	193.3	202.8	204.8	213.2	216.4	213.7	218.9	209.1	212.3	214.3	218.8	218.7	219.8	219.9
19	96.0	123.2	170.5	180.5	182.7	191.5	194.9	192.5	198.0	188.3	191.7	193.8	198.7	198.6	199.7	199.8
20	69.0	97.7	147.6	158.2	160.5	169.8	173.4	171.3	177.1	167.4	171.0	173.3	178.5	178.4	179.5	179.6
21	42.0	72.1	124.8	135.9	138.3	148.1	151.9	150.1	156.2	146.6	150.4	152.7	158.3	158.2	159.4	159.5
22	15.0	46.5	102.0	113.7	116.1	126.4	130.3	129.0	135.4	125.8	129.7	132.2	138.1	138.0	139.3	139.4
23	-12.0	20.9	79.2	91.4	94.0	104.7	108.8	107.8	114.5	105.0	109.1	111.7	117.9	117.8	119.2	119.3
24	-39.0	-4.7	56.4	69.1	71.8	83.0	87.3	86.6	93.6	84.2	88.4	91.1	97.8	97.7	99.1	99.2
25	-66.0	-30.3	33.6	46.8	49.6	61.3	65.8	65.4	72.7	63.3	67.8	70.6	77.6	77.5	78.9	79.0
26	-93.0	-55.8	10.8	24.5	27.5	39.6	44.2	44.3	51.8	42.5	47.1	50.1	57.4	57.3	58.8	58.9
27	495.5	-81.4	-12.0	2.2	5.3	17.9	22.7	23.1	30.9	21.7	26.5	29.5	37.2	37.1	38.7	38.8
28		489.7	-34.9	-20.0	-16.9	-3.8	1.2	1.9	10.1	0.9	5.8	9.0	17.0	16.9	18.6	18.7
29			-57.7	-42.3	-39.1	-25.5	-20.3	-19.3	-10.8	-20.0	-14.8	-11.5	-3.1	-3.2	-1.6	-1.5
30			-80.5	-64.6	-61.2	-47.2	-41.9	-40.4	-31.7	-40.8	-35.5	-32.1	-23.3	-23.4	-21.7	-21.6
31			480.6	477.0	475.2	471.6	469.8	466.0	467.3	462.5	460.7	459.9	457.0	457.0	455.3	453.4

HPF State Fixed and sweep LPF from State 0 to 31

# Ordering Information

Model Number	( - )	Bandwidth	( - )	Options	Add "-EB" for Unit Mounted on Evaluation Board	
5692	( - )		( - )		( - )	EB

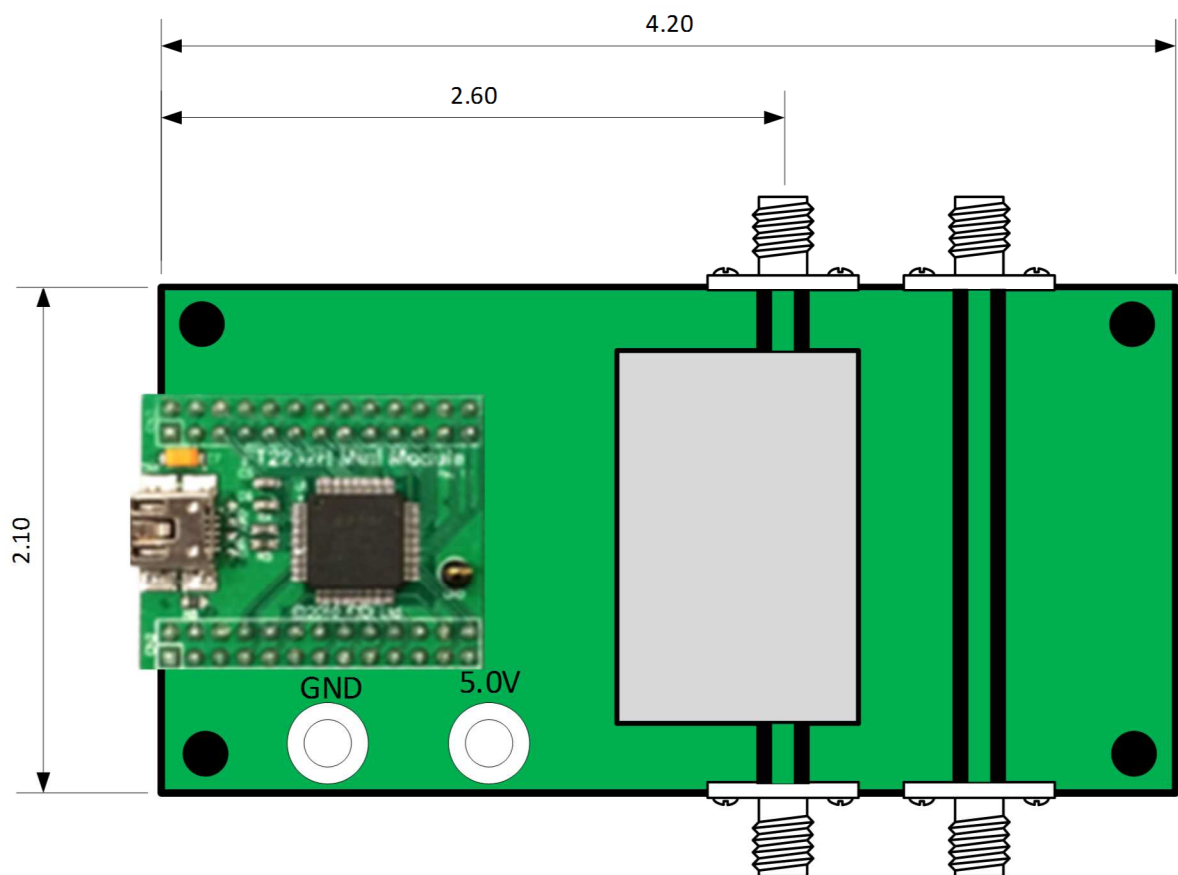
Options:

- A:
- B:
- C:

## Corresponding Evaluation Board

The EB5692 Evaluation Board is designed to test and evaluate Netcom's Model 5692 Multi-Tune Filter. The evaluation board provides the option of using a separate 5 volt power supply input to provide power to the unit and the User USB interface or use of the USB interface to provide the unit power. The Evaluation board provides tuning control to facilitate measurements of the filter's RF parameters.

The EB5692 Evaluation Board includes a separate RF thru path for calibration of test equipment to improve the accuracy of RF measurements.





599 Wheeling Road  
Wheeling, IL 60090  
USA  
Phone 847.537.6300  
Fax 847.537.2700  
[www.netcominc.com](http://www.netcominc.com)