

MILITARY SPECIFICATION SHEET

FILTERS, BAND PASS, TELEMETRY, TYPE FR7RX22ZZ1

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The complete requirements for procuring the filters described herein shall consist of this document and the latest issue of Specification MIL-F-18327.

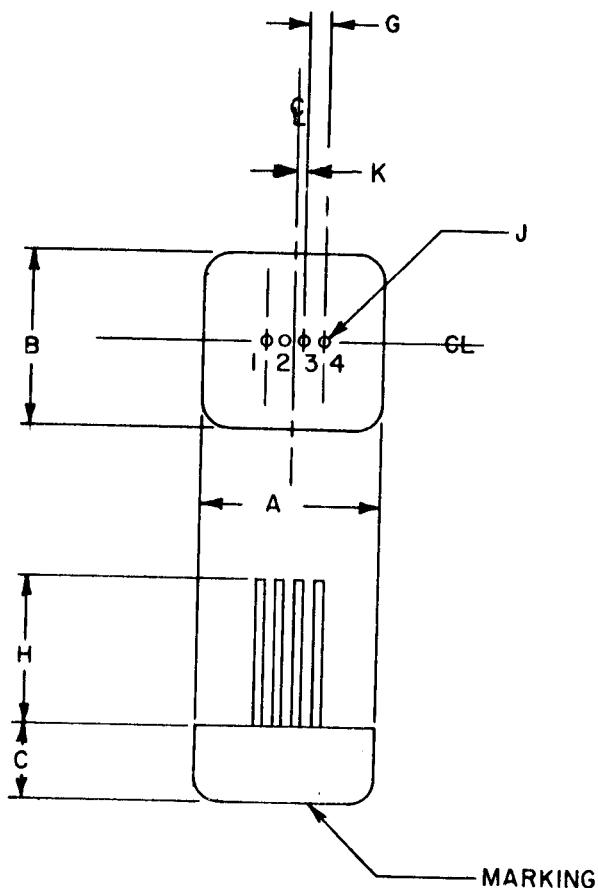


FIGURE 1. Case and mounting dimensions.

Type designation	Part number M18327/046	Dimensions							Weight (oz)	K
		A	B	C	G (Typ)	H	J (Dia. 4 reqd)			
FR7RX22ZZ1	001	1.219(30.96) 1.157(29.39)	1.219(30.96) 1.157(29.39)	.531(13.49) .406(10.31)	.210(5.33) .190(4.83)	1.125(28.58) .875(22.22)	.025(.64)	1	.105(2.67) .095(2.41)	
	002	.734(18.64) .672(17.07)	.734(18.64) .672(17.07)	.531(13.49) .406(10.31)	.110(2.79) .090(2.29)			.25	.055(1.40) .045(1.14)	
	003	.734(18.64) .672(17.07)	.734(18.64) .672(17.07)	.36 (9.1) .30 (7.6)	.110(2.79) .090(2.29)			.20	.055(1.40) .045(1.14)	
	004	1.219(30.96) 1.157(29.39)	1.219(30.96) 1.157(29.39)	.531(13.49) .406(10.31)	.210(5.33) .190(4.83)				.105(2.67) .095(2.41)	
	005									
	006									
	007									
	008									
	009									
	010									
	011									
	012									
	013									
	014	1.219(30.96) 1.157(29.39)	1.219(30.96) 1.157(29.39)		.210(5.33) .190(4.83)			.20		
	015	.734(18.64) .672(17.07)	.734(18.64) .672(17.07)		.110(2.79) .090(2.29)			.33	.055(1.40) .045(1.14)	
	016									
	017									
	018									
	019									
	020									
	021									
	022									
	023									
	024									
	025									
	026									
	027									
	028									
	029									
	030									
	031									
	032									
	033									
	034									
	035									
	036									

## NOTES:

1. Dimensions are in inches.
2. Metric equivalents are in parentheses.
3. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
4. Terminal identification: 1-2 input; 3-4 output, these filters are electrically symmetrical and may be installed in reverse position without changing the performance characteristics.
5. Where values are written one over the other, they represent maximum and minimum values respectively.

FIGURE 1. Case and mounting dimensions - Continued.

**REQUIREMENTS:**

Dimensions and configuration: See figure 1.

Case: Metal (5 sides) with terminals side encapsulated.

Terminals: Solderable pin.

Weight: See figure 1.

Terminal strength: Method 211, MIL-STD-202. Test condition A (pull), 2 pounds.

Solderability: Method 208, MIL-STD-202. All terminations of each filter to be tested.

Solder dip dwell time: 5 seconds  $\pm 1/2$  second.

Examination of terminations: At 10X magnification.

**Dielectric withstanding voltage:**

Terminals to case:

At atmospheric pressure: Method 301, MIL-STD-202. 500 Vrms between each terminal and case.

At reduced pressure: Method 301, MIL-STD-202, and Method 105, test condition B, MIL-STD-202. 300 Vrms between each terminal and case.

Input to output: Method 301, MIL-STD-202. The following details shall apply:

Magnitude and nature of test voltage: 50 Vdc.

Duration of application of test voltage: 5  $\pm 1$  second. The test voltage shall be raised from 0 to the specified value within 1 second maximum.

Points of application of test voltage: Between terminals 1 and 2 tied together and 3 and 4 tied together. Test shall be repeated with reverse voltage polarity.

Limiting of surge current: 30 to 50 mA.

Examinations after test: Filters shall be examined for evidence of breakdown and damage.

Insulation resistance: Method 302, test condition B, MIL-STD-202. Not less than 10,000 megohms when measured between each terminal and case.

**Stability at temperature extremes:**

1 hour at  $-55^{\circ} +0^{\circ}$ ,  $-3^{\circ}\text{C}$ .

1 hour at  $+105^{\circ} +3^{\circ}$ ,  $-0^{\circ}\text{C}$ .

**Measurements at  $25^{\circ}\text{C}$  after test:**

Dielectric withstanding voltage - At atmospheric pressure.

Electrical characteristics - As specified in table I.

Electrical characteristics: See table I.

DC operating voltage: Zero volts.

Life: Method 108, test condition F, MIL-STD-202.

Test temperature  $105^{\circ} +10^{\circ}$ ,  $-5^{\circ}\text{C}$ .

Signal input level - See table I.

Measurements at  $25^{\circ}\text{C}$  after test:

Dielectric withstanding voltage - At atmospheric pressure.

Insulation resistance - Not less than 1,000 megohms between each terminal and case.

Electrical characteristics - As specified in table I.

Temperature rise: Not applicable.

Vibration, high frequency: Method 204, test condition B, MIL-STD-202.

Electrical load not applicable.

Measurements at 25°C after test:

Dielectric withstanding voltage - At atmospheric pressure.

Electrical characteristics - As specified in table I.

Shock (specified pulse): Method 213, test condition I, MIL-STD-202.

Measurements at 25°C after test:

Dielectric withstanding voltage - At atmospheric pressure.

Electrical characteristics - As specified in table I.

Thermal shock: Method 107, test condition A, MIL-STD-202, except that the temperature at step 3 shall be 105°C.

Exposure time - 30 minutes.

Measurements at 25°C after test:

Dielectric withstanding voltage - At atmospheric pressure.

Insulation resistance - Not less than 10,000 megohms between each terminal and case.

Immersion: Method 104, test condition A, MIL-STD-202. After final cycle, filters shall be washed under running tap water and dried. After the drying period, the filters shall be subjected to the following:

Measurements at 25°C.

Dielectric withstanding voltage - At atmospheric pressure.

Insulation resistance - Not less than 10,000 megohms between each terminal and case.

Moisture resistance: Method 106, MIL-STD-202.

Measurements at 25°C after test:

Dielectric withstanding voltage - At atmospheric pressure.

Insulation resistance - Not less than 10,000 megohms between each terminal and case.

Flammability: Method 111, MIL-STD-202. Duration of visible flame shall not exceed 3 minutes after removal of the applied flame. There shall be no explosion nor any violent burning which results in an explosive type flame. There shall be no dripping of flaming material from the filter under test.

Part number: M18327/046-(dash number from table I).

TABLE I. Electrical characteristics.

Type designation	Dash number	Impedance (uhms)	Reference frequency (Hz)	Insertion loss (dB)	Frequency range (Hz)	Discrimination (dB)	Signal input level (volts to source)		IRID Channel 1
							Min	Max	
			Source	Load					
IFR7RX22ZZ1	001	10K	10K	400	8 max	228	40	2.0	1
						300	15		
						370	4		
						430	4		
						500	15		
						700	40		
	002			7,350	8 max	4,190	40		11
						5,512	15		
						6,799	4		
						7,901	4		
						9,188	15		
						12,863	40		
	003			93,000	6 max	53,940	40		10
						69,750	15		
						86,025	4		
						99,975	4		
						116,250	15		
						162,750	40		
	004			560	8 max	325	40		2
						420	15		
						512	4		
						602	4		
						700	15		
						980	40		
	005			730	8 max	423	40		3
						548	15		
						675	4		
						785	4		
						913	15		
						1,278	40		
	006			960	6 max	557	40		4
						720	15		
						888	4		
						1,032	4		
						1,200	15		
						1,680	40		
	007			1,000	6 max	580	40		N/A
						750	15		
						925	4		
						1,075	4		
						1,250	15		
						1,750	40		
	008			1,300	6 max	754	40		5
						975	15		
						1,202	4		
						1,398	4		
						1,625	15		
						2,275	40		

See footnote at end of table.

TABLE I. Electrical characteristics - Continued.

Type designation	Dash number	Impedance (ohms)	Reference frequency (Hz)	Insertion loss (dB)	Frequency range (Hz)	Discrimination (dB)	Signal input		IRID STD-106 Channel 1/
							Source	Load	
							Min	Max	
IFR7RX2ZZZ1	009	10K	10K	1,700	6 max	986	40	2.0	6
						1,275	15		
						1,572		4	
						1,828		4	
						2,125	15		
						2,975	40		
	010			2,300		1,334	40		7
						1,725	15		
						2,127		4	
						2,473		4	
						2,875	15		
						4,025	40		
	011			3,000		1,740	40		8
						2,250	15		
						2,775		4	
						3,225		4	
						3,750	15		
						5,250	40		
	012			3,900		2,262	40		9
						2,925	15		
						3,607		4	
						4,193		4	
						4,875	15		
						6,825	40		
	013			4,000		2,320	40		N/A
						3,000	15		
						3,700		4	
						4,300		4	
						5,000	15		
						7,000	40		
	014			5,400		3,132	40		10
						4,050	15		
						4,995		4	
						5,805		4	
						6,750	15		
						9,450	40		
	015			8,000		4,640	40		N/A
						6,000	15		
						7,400		4	
						8,600		4	
						10,000	15		
						14,000	40		
	016			10,500		6,090	40		12
						7,875	15		
						9,712		4	
						11,288		4	
						13,125	15		
						18,375	40		

See footnote at end of table.

TABLE I. Electrical characteristics - Continued.

Type designation	Dash number	Impedance (ohms)		Reference frequency (Hz)	Insertion loss (dB)	Frequency range (Hz)	Discrimination (dB)		Signal input level (volts to source resistor)	IRID STD-106 Channel 1/
		Source	Load				Min	Max		
TFR7RX2ZZZ1	017	10K	10K	12,000	6 max	6,960 9,000 11,100 12,900 15,000 21,000	40 15 4 4	2.0	N/A	
	018			14,500		8,410 10,875 13,412 15,588 18,125 25,375	40 15 4 4		13	
	019			22,000		12,760 16,500 20,350 23,650 27,500 38,500	40 15 4 4		14	
	020			30,000		17,400 22,500 27,750 32,250 37,500 52,500	40 15 4 4		15	
	021			40,000		23,200 30,000 37,000 43,000 50,000 70,000	40 15 4 4		16	
	022			52,500		30,450 39,375 48,562 56,438 65,625 91,875	40 15 4 4		17	
	023			56,000		32,480 42,000 51,800 60,200 70,000 98,000	40 15 4 4		6A	
	024			70,000		40,600 52,500 64,750 75,250 87,500 122,500	40 15 4 4		18	

See footnote at end of table.

TABLE I. Electrical characteristics - Continued.

Type designation	Dash number	Impedance (ohms)		Reference frequency (Hz)	Insertion loss (dB)	Frequency range (Hz)	Discrimination (dB)		Signal input level (volts to source resistor)	IRID STD-106 Channel
		Source	Load				Min	Max		
TFR7RX22ZZ1	025	10K	10K	96,000	6 max	55,680 72,000 88,800 103,200 120,000 168,000	40 15 4 4	2.0	11A	
	026			124,000		71,920 93,000 114,700 133,300 155,000 217,000	40 15 4 4		20	
	027			160,000		92,800 120,000 148,000 172,000 200,000 280,000	40 15 4 4		19A	
	028			165,000		95,700 123,750 152,624 177,375 206,250 288,750	40 15 4 4		21	
	029			22,000	3 max	55,000 33,000 25,300 18,700 11,000 8,800	40 15 4 4		A	
	030			30,000		75,000 45,000 34,500 25,500 15,000 12,000	40 15 4 4		B	
	031			40,000		100,000 60,000 46,000 34,000 20,000 10,000	40 15 4 4		C	
	032			52,500		131,250 78,750 60,375 44,625 26,250 21,000	40 15 4 4		D	

See footnote at end of table.

TABLE I. Electrical characteristics - Continued.

Type designation	Dash number	Impedance (ohms)		Reference frequency (Hz)	Insertion loss (dB)	Frequency range (Hz)	Discrimination (dB)		Signal input level (volts to source resistor)	IRID STD-106 Channel 1/
		Source	Load				Min	Max		
FR7RX22ZZ1	033	10K	10K	70,000	3 max	175,000 105,000 80,500 59,500 35,000 28,000	40 15 4 4	2.0	E	
	034			93,000		205,500 139,500 106,950 <del>79,050</del> 46,500 37,200	40 15 4 4		F	
	035			124,000		310,000 186,000 142,600 105,400 62,000 49,600	40 15 4 4		G	
	036			165,000		412,500 247,500 189,750 124,250 82,500 66,000	40 15 4 4		H	

1/ FM subcarrier channels in accordance with MIL-STD-1572, Telemetry Standards, for information only.

QUALITY ASSURANCE PROVISIONS

Qualification of filters based on similarity to qualified filters. Qualification by similarity may be granted to all parts covered in this specification based on the qualification of one part number. Qualification by similarity shall be restricted to those parts which meet the criteria for a similar filter as specified in MIL-F-18327. The contractor shall provide certification that any parts qualified on the basis of similarity meet the full requirements of this specification and MIL-F-18327.

NOTE: Revision letters are not used to denote changes due to the extensiveness of the changes.

Custodians:

Army - ER  
Navy - EC  
Air Force - 85

Preparing activity:

Navy - EC

Agent:

DLA - ES

Review activities:

Army - AR, MI  
Navy - AS, OS  
Air Force - 11, 17, 99  
DLA - ES

(Project 5915-0218-3)

User activities:

Army - ME  
Navy - MC  
Air Force - 19