COMPLIANCE MATRIX OF LC BAND PASS FILTER

INDENT SPECIFICATION	REMARKS
A. DEVICES DETAILS	
The Electrical/Mechanical Specifications of the Band Pass Filter are as per attached Annexure-1.	
B. QUALITY REQUIREMENTS	
1. The filters shall be designed and manufactured on a Hi-rel line for space grade parts.	
2. All the materials used in realizing the Filter should be capable of meeting the Out gassing specification as per ASTM E595 with TML<1%, with CVCM <0.1%.	
a. Passive elements used in the fabrication shall be of the following:	
i. ER Series of MIL with failure rate level 'R' or better.	
ii. Processed to manufacturers internal Hi-rel flow with element evaluation to Class 'K' of MIL-PRF-38534.	
b. Package evaluation shall be performed as per Table C-VI of MIL-PRF-38534.	
3. All the devices shall be serialized and Screened as per attached Table-1 of Annexure-2.	
4. Quote separately for each subgroup of QCI test. Five samples drawn from the deliverable screened lot shall be subjected to QCI test as per Table-2 of Annexure-2.	
C. DATA PACK REQUIREMENTS	
The following Data in soft copy (compact disk) shall be supplied along with the devices:	
1. Device processing and assembly traveler sheet.	
2. Element Evaluation Report.	
3. Screening results by attributes and variables.	
4. QCI test Report (including Life test & Internal visual report), if ordered.	
5. Certificate of Conformance issued by the manufacturer.	
D. OTHER REQUIREMENTS	
1. Name of the Manufacturer and the data sheets shall be provided as part of the offer.	
2. Devices shall be supplied from lots with same date code. The devices shall be drawn from lots manufactured within 2 year of the date of shipment.	
3. Devices shall be packed in ESD safe individual package.	
4. Report to URSC all NCR/DCN (Document Change Notice) during procurement/Testing.	
5. Parts quoted shall have space heritage in operational class of satellites. Provide details for the same along with the quote.	
6. Only Vendors/Suppliers authorized to source above Space Grade components from the Manufacturer will be considered. Necessary Certificate from the Manufacturer shall be enclosed along with the offer.	

ANNEXURE – 1

ELECTRICAL/MECHANICAL SPECIFICATION OF LC FILTER

ITEM-1

SL.NO	PARAMETERS	SPECIFICATIONS	REMARKS
1.	Center frequency (Fo)	**9.207MHz**	
2.	3dB Bandwidth	± 1.75MHz	
3.	Insertion Loss	5 dB max at Fo	
4.	Pass band return loss	Better than 14 dB at Fo In/Out	
5.	40dBc Bandwidth	± 4.375 MHz max	
6.	Rejection at 180MHz to 200MHz	30 dB min	
7.	Input Power	0.5 Watts max	
8.	Impedance	50Ω	
9.	Operating Temperature Range	-30°C to +60°C	
10.	Storage Temp. Range	-55°C to +125°C	
11.	Package Size	Miniature PCB mountable as per Fig-1	

ITEM:2

SL.NO	PARAMETERS	SPECIFICATIONS	REMARKS
1.	Center frequency (Fo)	**9.207 MHz**	
2.	1 dB Bandwidth	± 1.1 MHz	
3.	3 dB Bandwidth	± 3.25 MHz	
4.	Insertion Loss	5 dB max at Fo	
5.	Pass band return loss	Better than 14 dB at Fo In/Out	
6.	40dBc Bandwidth	± 8 MHz max	
7.	Rejection at 180MHz to 200MHz	30 dB min	
8.	Input Power	0.5 Watts max	
9.	Impedance	50Ω	
10.	Operating Temperature Range	-30°C to +60°C	
11.	Storage Temp. Range	-55°C to +125°C	
12.	Package Size	Miniature PCB mountable as per Fig-1	

ITEM:3

SL.NO	PARAMETERS	SPECIFICATIONS	REMARKS
1.	Center frequency (Fo)	**199 MHz**	
2.	1dB Bandwidth	± 3.1 MHz	
3.	3dB Bandwidth	± 5 MHz	
4.	Insertion Loss	10 dB max at Fo	
5.	Pass band return loss	Better than 14 dB at Fo In/Out	
6.	30dBc Bandwidth	±12.5 MHz max	
7.	Input Power	0.5 Watts max	
8.	Impedance	50Ω	
9.	Operating Temperature Range	-30°C to +60°C	
10.	Storage Temp. Range	-55°C to +125°C	
11.	Package Size	Miniature PCB mountable as per Fig-1	

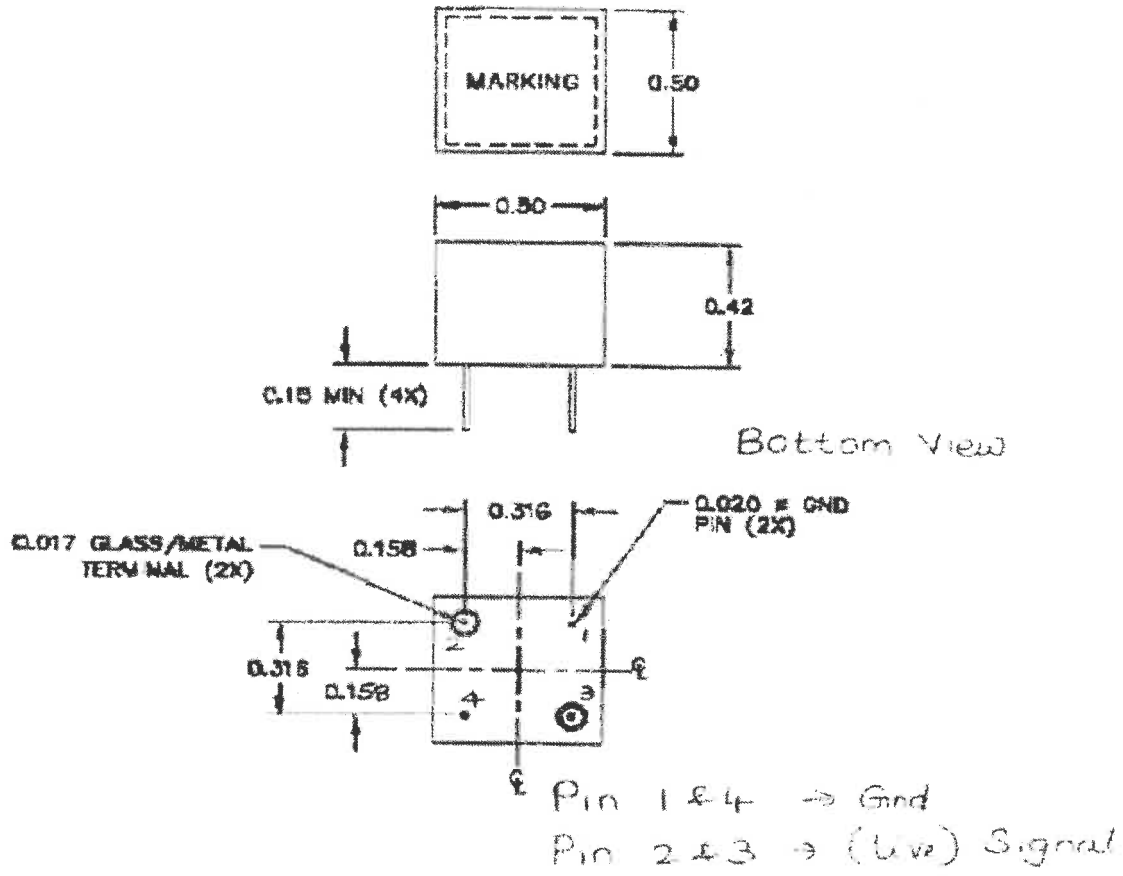
ITEM:4

SL.NO	PARAMETERS	SPECIFICATIONS	REMARKS
1.	Center frequency (Fo)	**193 MHz**	
2.	1dB Bandwidth	±3.1 MHz	
3.	3dB Bandwidth	±5 MHz	
4.	Insertion Loss	10 dB max at Fo	
5.	Pass band return loss	Better than 14 dB at Fo In/Out	
6.	30dBc Bandwidth	±12.5 MHz max	
7.	Input Power	0.5 Watts max	
8.	Impedance	50Ω	
9.	Operating Temperature Range	-30°C to +60°C	
10.	Storage Temp. Range	-55°C to +125°C	
11.	Package Size	Miniature PCB mountable as per Fig-1	

ITEM:5

SL.NO	PARAMETERS	SPECIFICATIONS	REMARKS
1.	Center frequency (Fo)	**196 MHz**	
2.	1dB Bandwidth	±3.1 MHz	
3.	3dB Bandwidth	±5 MHz	
4.	Insertion Loss	10 dB max at Fo	
5.	Pass band return loss	Better than 14 dB at Fo In/Out	
6.	30dBc Bandwidth	±12.5 MHz max	
7.	Input Power	0.5 Watts max	
8.	Impedance	50Ω	
9.	Operating Temperature Range	-30°C to +60°C	
10.	Storage Temp. Range	-55°C to +125°C	
11.	Package Size	Miniature PCB mountable as per Fig-1	

Figure-1. Package Drawing



All Dimensions are in inches

Note: All pin assignments (Input, Output and GNDs) should be marked on top of the package

ANNEXURE-2

TABLE-1. SCREENING TESTS

SL.NO.	SCREENING TESTS	METHOD/CONDITION	REMARKS
1	External visual and Mechanical inspection	MIL-F-18327F, Para 4.7.1.1	
2	Stabilization Baking	At max. rated temperature for 48 Hrs	
3	Thermal Shock	MIL-STD-202, Method 107, @ extreme temperature, 10 Cycles, 15min dwell time	
4	Pre-Burn-in Electrical Measurements	@ ambient including the following a. Dielectric withstanding voltage b. Insulation resistance c. Electrical characteristics (As per specification)	
5	Burn-in	@ maximum rated temperature & voltage for 240Hrs.	
6	Post Burn-in Electrical Measurements	@ ambient and temperature extremes including the following a. Dielectric withstanding voltage b. Insulation resistance c. Electrical characteristics (As per specification	
7	Seal leak test	MIL-F-18327F, Para 4.7.5	
8	External visual	MIL-F-18327F, Para 4.7.1.1	

TABLE-2. QCI TEST

Tests	MIL-STD-202		Quantity (accept no.)	Remarks
	Method	Condition		
Subgroup 1				
Vibration	204	D, 1-2000Hz, 20G peak, 12 cycles in each of the 3 perpendicular directions. Cycle time: 20 min/cycle (10Hz-2000Hz-10Hz)	2(0)	
Shock	213	I		
Thermal Shock	107	A, 100cycles		
Immersion	104	B		
Acceleration	212	B, 10,000g		
Electrical Characteristics		As per the applicable data sheet		
External Visual Inspection		MIL-F-18327F, Para 4.7.1.1		
Resistance to solvents	215			
Visual & Mechanical inspection (Internal)		MIL-F-18327F, Para 4.7.1.2		
Subgroup 2				
Life test	108	D and MIL-F-18327F, Para 4.7.10.	2(0)	
Electrical Characterization		At +25°C including the following a. Dielectric withstanding voltage b. Insulation resistance		
Subgroup 3				
Terminal strength	211	A and MIL-F-18327F, Para 4.7.2.1	1(0)	
Solderability	208			
Resistance to soldering heat	210	B		
Seal		MIL-F-18327F, Para 4.7.5		
Electrical Characterization		At +25°C including the following a. Dielectric withstanding voltage b. Insulation resistance		