

**GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE  
SPACE APPLICATIONS CENTRE (SAC)  
AHMEDABAD**

**Tender for RF SPDT SWITCH**

**Bids to be submitted online**

**Tender No.: SAC/CPUR/SA202100182901 dated 09-10-2021**

## A. Tender Details

Tender No : **SAC/CPUR/SA202100182901**

Tender Date : **09-10-2021**

Tender Classification: **GOODS**

Purchase Entity : **CPUR**

Centre : **SPACE APPLICATIONS CENTRE (SAC)**

### Procurement of RF SPDT SWITCH

(a) SAC invites two part e-procurement bids for procurement of RF SPDT SWITCH. The detailed schedule for submission of bid is available with the tender document.

(b) Tender Type: Global Tender (Two Part)

(c) Evaluation Criteria: Overall technically suitable lowest offer. Bidder has to quote for all the items as per Tender. However, High Power Test, High Power Set up test charges, Multipaction test charges may or may not be ordered.

(d) GeMAR&PTS ID: GEM/GARPTS/11022021/WOFE2DQBTA72

(e) Class-I / Class-II/ Non Local Supplier shall be eligible to bid against this tender as defined in make in India order.

(f) Any clarification with respect to this tender shall be raised against clarification window in the EGPS. No mail enquiries shall be entertained.

(g) Please do not upload/disclose price related information of any nature with your bid documents. As this is two part tender, the uploaded document should only contains techno commercial details. Price details shall be entered in system defined price bid template only. In case of uploading /disclosure of price of any nature in uploaded documents, the bid will be rejected and will not be considered further.

### A.1 Tender Schedule

Bid Submission Start Date : **09-10-2021 13:19**

Bid Clarification Due Date : **29-10-2021 12:19**

Bid Submission Due Date : **05-11-2021 09:19**

Bid Opening Date : **05-11-2021 14:19**

Price Bid Opening Date :

**30-11-2021 12:20**

## **B. Tender Attachments**

### **Technical Write-up/Drawings**

[Document : R&QA-Annexure-2](#)

[Document : RFP-Annexure-1](#)

### **Instructions To Vendors**

## C. Bid Templates

### C.1 Technical Bid - RF SPDT SWITCH

1. Co-axial Switches RF SPDT SWITCH (with 1W power)

2. Co-axial Switches RF SPDT SWITCH (with 20W power) including high power test charges for these switches

3. Co-axial Switches LAT Charges

4. Co-axial Switches Multipaction test charges of individual switch

5. Co-axial Switches High Power and Multipaction test setup charges

#### Common Specifications (Applicable for all items)

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Frequency Range	1 MHz to 15 GHz	Yes / No / Explain		
2	Insertion Loss	0.25 dB (Max.) 1 MHz to < 12 GHz 0.40 dB (Max.) 12 GHz to 15 GHz	Yes / No / Explain		
3	VSWR (all ports)	1.25 (Max.) 1 MHz to < 12 GHz 1.30 (Max.) 12 GHz to 15 GHz	Yes / No / Explain		
4	RF Power handling capability	20 Watts CW (min.), from 1 MHz to 4.8 GHz 1 Watt CW (min) from > 4.8 GHz to 15 GHz	Yes / No / Explain		
5	Isolation (between ports)	70 dB min	Yes / No / Explain		
6	Input/ Output Impedance	50 ohms	Yes / No / Explain		
7	Shielding Effectiveness	-75 dBi	Yes / No / Explain		

8	Dielectric Withstanding Voltage	> 500 VDC	Yes / No / Explain		
9	Isolation Resistance	> 100 M ohms	Yes / No / Explain		
10	Switching Time	< 50 ms	Yes / No / Explain		
11	Coil Energization Voltage	+24 to +43 volts pulse	Yes / No / Explain		
12	Coil Current	200 mA at 43V dc	Yes / No / Explain		
13	Pulse Duration	1) 50 msec (Min.) 2) Switch should operate when given a pulse, having any duration between ranges of 50 msec to 5 seconds. 3) Vendor to provide maximum safe operating pulse width of command pulse @ rated voltage 4) Switch should not operate for a pulse having duration of < 0.5 milliseconds for rated pulse voltage (24 – 43 Volts)	Yes / No / Explain		
14	Minimum and Maximum coil current	To be provided by the vendor	Yes / No / Explain		
15	Maximum switching (change over) time	To be provided by the vendor	Yes / No / Explain		
16	The reverse voltage breakdown of diodes across coil	To be provided by the vendor	Yes / No / Explain		
17	Whether simultaneous voltage pulse can be applied on two coils without damaging the switch	To be provided by the vendor	Yes / No / Explain		
18	The contact resistance for TLM path	To be provided by the vendor	Yes / No / Explain		
19	RF Contacts	Break Before Make	Yes / No / Explain		

20	Contacts Finishing	Gold plated (as per standard for space use)	Yes / No / Explain		
21	Switching Operation	Latching, No power required for holding	Yes / No / Explain		
22	Life	1,00,000 operations (Min.)	Yes / No / Explain		
23	External Voltage Fed for Telemetry (Typical)	5 volts DC	Yes / No / Explain		
24	Interface circuit (for Telemetry)	CMOS compatible	Yes / No / Explain		
25	The isolated return of TM from chassis	required	Yes / No / Explain		
26	One chassis / box contact isolated from TC/ TM return	required	Yes / No / Explain		
27	TC return should be isolated from TM return and chassis	required	Yes / No / Explain		
28	Separate return for each Tele command	required	Yes / No / Explain		
29	Dimension (Envelope)	100mm x 80mm x 60mm (Max.) Vendor to provide the ICD of the switch as well as 3D Model in parasolid (.xt) or step (.stp) format	Yes / No / Explain		
30	Mounting holes (for M3/M4 screws)	Mounting holes should be free holes for M3/M4 screws, lay down with multi-pin connector configuration.	Yes / No / Explain		
31	RF Connections	SMA Female on all three ports	Yes / No / Explain		
32	DC Connections	9-pin male D-sub, Gold plated copper alloy for shell & male contact	Yes / No / Explain		
33	Venting for space flight	Suitable Venting Holes should be provided	Yes / No / Explain		

34	Weight	100 gms. Max.	Yes / No / Explain		
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**Supporting Documents required from Vendor**

**1. High power and multipaction test procedure document**

**2. R&QA document**

**3. Mechanical Drawings**

**4. R&QA point by point compliance**

**5. RFP point by point Technical compliance**

**6. Product specification sheet for point by point compliance of technical specifications**

5 additional documents can be uploaded by the vendor



## C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	The above warranty shall continue to be valid for corrected or replaced units until 12 months after the date of final acceptance by SAC/ISRO of the corrected or replaced Switches.	Yes / No / Explain	
2	The warranty shall run for period of 12 months from the date of final acceptance by SAC/ISRO and shall be in addition to any other rights available.	Yes / No / Explain	
3	The vendor shall provide Warranty as given below: "The units supplied here upon shall be free from any defects in material or workmanship and in accordance with the applicable specifications and drawings".	Yes / No / Explain	
4	Maximum three partial shipments are allowed.	Yes / No / Explain	
5	SAC may allow prior/ partial shipment of FM prior to completion of LAT testing; however, final acceptance of FM is subject to successful completion of LAT. If LAT unit fails during testing, entire FM units should be replaced.	Yes / No / Explain	
6	DELIVERY SCHEDULES: Flight Model : WITHIN 8 months after order placed & LAT model: WITHIN 10 months after order placed	Yes / No / Explain	
7	The order will be placed for total requirement including Lot Acceptance and Flight models.	Yes / No / Explain	
8	Specifications should be met over the environment conditions as per R&QA Annexure – II	Yes / No / Explain	
9	Detailed published catalogue/ technical specifications must be provided in support of technical compliance from vendor.	Yes / No / Explain	
10	Vendor must provide the point by point by compliance/non-compliance against individual specifications.	Yes / No / Explain	
11	Delivery Terms	Yes / No / Explain	
12	Delivery Period	Yes / No / Explain	
13	Packing Charges (inclusive/exclusive)	Yes / No / Explain	

14	Payment Terms	Yes / No / Explain	
15	Name and address of the Indian Agent, with e-mail ID and percentage of agency commission (if any)	Yes / No / Explain	
16	Validity of the offer	Yes / No / Explain	
17	Liquidated Damages	Yes / No / Explain	
18	Warranty Period	Yes / No / Explain	
19	Performance Security	Yes / No / Explain	
20	Taxes and other costs, if any	Yes / No / Explain	
21	Country of Origin	Yes / No / Explain	
22	Percentage of Local Content as per MII Order, with detailed break up and place of value addition	Yes / No / Explain	
23	Any other terms and conditions	Yes / No / Explain	
24	Notes:	Yes / No / Explain	

### C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
1	Co-axial Switches	1.0 - 19.0 Nos.		-		
		20.0 - 39.0 Nos.		-		
		40.0 - 59.0 Nos.		-		
		60.0 - 79.0 Nos.		-		
		80.0 - 99.0 Nos.		-		

2	Co-axial Switches RF SPDT SWITCH (with 20W power) including high power test charges for these switches	6.00 Nos.		-		
3	Co-axial Switches LAT Charges	1.00 Lot		-		
4	Co-axial Switches Multipaction test charges of individual switch	4.00 Nos.		-		
5	Co-axial Switches High Power and Multipaction test setup charges	1.00 Nos.		-		