TECHNICAL SPECIFICATIONS FOR DGPS (TWO SETS)

Dt:- 26 .08.2013.

(TO UP LOAD FOR NOTIFICATION OF "VENDOR MEET")

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Tender specifications				
SL. NO	**Specifications**	**BASE**	**ROVER**	**Remarks**
1.	**Receivers**	**Two** for **BASEs.**	**SIX** for **ROVERs.**	
a..	Frequency L1 measurements L2 measurements	Dual L1 and L2. C/A Code, P-code measurement full wave carrier phase. Carrier phase full wave length with C-code and P-code ((AS off)	Dual L1 and L2. C/A Code, P-code measurement full wave carrier phase. Carrier phase full wave length with C-code and P-code ((AS off)	
b.	Measuring modes	Static, rapid static, Kinematic on the fly L1 + L2 code, phase real time. RTK standard. Post processing DGPS / RTCM standard survey, geodetic and real time RTK applications.	Carrier phase full wave length with C- L1 + L2 code, phase real time. RTK standard. Post processing DGPS/RTCM standard survey, geodetic and real time RTK applications.	
c.	No. of Channels	GPS, GLONASS,(L1 and L2)GALILEO 72Channels with triple frequency	GPS, GLONASS,(L1 and L2)GALILEO 72Channels with triple frequency	
d.	Upgradeability	Receivers should be upgradeable to any further enhancements in satellite constellations.	Receivers should be upgradeable to any further enhancements in satellite constellations.	
e.	**Accuracy** Base line accuracy after post processing static Rapid static Stop and go kinematic	 3 mm + 0.6 ppm for long lines long observations (Horizontal and vertical) 5 mm + 0.5 ppm 10 mm + 1 ppm	 3 mm + 0.6 ppm for long lines long observations (Horizontal and vertical) 5 mm + 0.5 ppm 10 mm + 1 ppm	
f.	Initialization	Real time on the fly initialization 10 seconds.	Real time on the fly initialization 10 seconds.	
g.	Measurement techniques	Multi path rejection and interference rejection as standard feature	Multi path rejection and interference rejection as standard feature	
h.	OTF / RTK Range	-	30 kms under normal conditions with signals from base. In case any repeaters are required shall be provided without any addl. Cost to all the six Rovers	
i	Memory	Data storage thorough removable USB of 1GB or more.	Data storage thorough removable USB of 1GB or more.	
j.	Data Recording Time	Selectable from 0.1 to 60 sec. without any degradation of accuracy. Accuracy should remain same whether data recording is done at 20 HZ or more.	Selectable from 0.1 to 60 sec. without any degradation of accuracy. Accuracy remains same whether data recording is done at 20 HZ or more	
k.	Data format	Data compatible to any Total Station with data carriers and data format identical to Total Station for free data exchange needs no extra adopter or software. Only Just by exchanging memory cards.	Data compatible to any Total Station with data carriers and data format identical to Total Station for free data exchange needing no extra adopter or software and just by exchanging memory cards.	
l	Data down loading	Data downloading through RS 232 cable / Flash card or SD slots / card reader.	Data downloading through RS 232 cable / Flash or SD card slots / card reader.	
2.	**GPS Antenna** **Type**	2 Nos. (One for each Base). ALSO Choke ring Antenna for base station with mounting facility on tripod for best multi path rejection.	L1 / L2 Antenna with built in ground plane for Rover with mounting facility on Tripod / Pole / Backpack.	
3.	**Terminal / Controller**			

a.	Functions	Controls GPS and GLONASS receivers / Sensors steers survey operation, logs data, data management, display status of receive other information.	Controls GPS and GLONASS receivers / Sensors steers survey operation, logs data, data management, display status of receive other information.	
b.	Display	Quadrant VGA display with 240 X 320 pixels display should be in color with very good visibility in broad day light.	Quadrant VGA display with 240 X 320 pixels display should be in color with very good visibility in broad day light.	
c.	Key board	Complete fully numeric and Alphanumeric keys. with entry with a single key click.	Complete fully numeric and Alphanumeric keys with entry with a single key click.	
d.	Graphical display	Controller should be capable of creating complete points, lines and polygons in the field which will be displayed graphically on the screen	Controller should be capable of creating complete points, lines and polygons in the field which will be displayed graphically on the screen	
e.	Weight	Less than 1.00 Kg. (including internal battery)	Less than 1.00 Kg. (including internal battery)	
f.	On board programme	Automatic recording points with user defined time or distance, Hidden point measurements.	Automatic recording points with user defined time or distance, Hidden point measurements.	
g.	Displayed information	All information displayed : status, tracking, data logging, data base, RTK, DGPS, navigation, surveys, stakeout, quality, time power, geographical, Cartesian, grid co-ordinates etc.,	All information displayed : status, tracking, data logging, data base, RTK, DGPS, navigation, surveys, stakeout, quality, time power, geographical, Cartesian, grid co-ordinates etc.,	
h.	Data management	User definable job management, point identifiers, co-ordinates, codes, attributes etc., search, filter and display routines, multi point averaging.	User definable job management, point identifiers, co-ordinates, codes, attributes etc., search, filter and display routines, multi point averaging.	
i.	Application programme	Full range of COGO functions, Hidden point, Reference line, DTM stakeout, Cross Section survey.	Full range of COGO functions, Hidden point, Reference line, DTM stakeout, Cross Section survey.	
j.	Single point positioning	Capable of computing single point position in real time for reference station.	Capable of computing single point position in real time for reference station.	
k	Setting out mode	A real time setting out mode for points, lines and offsets. Numerical information in polar, orthometric and Graphical information with automatic zoom.	A real time setting out mode for points, lines and offsets. Numerical information in polar, optometric and Graphical information with automatic zoom.	
l	mapping	Graphical representation of points lines and Areas. Application result plots, creation of curves, spline and Arcs should be present.	Graphical representation of point's lines and Areas. Application result plots, creation of curves, sp line and Arcs should be present.	
m	Icons	Icons indicating the current status of measure modes setting battery etc., it should be possible to configure or see status of the iconed devices by touching on the screen.	Icons indicating the current status of measure modes setting battery etc., it should be possible to configure or see status of the iconed devices by touching on the screen.	
n	Function keys	Direct function keys for quick and easy operation.	Direct function keys for quick and easy operation.	
o.	Configuration sets	Ability to store and transfer all instrument and application configuration settings for different operations. Survey tasks etc.,	Ability to store and transfer all instrument and application configuration settings for different operations. Survey tasks etc.,	
p.	Free coding	Recording codes with optional attributes between measurements. Manual code entry or selection from a user defined code list.	Recording codes with optional attributes between measurements. Manual code entry or selection from a user defined code list.	
q.	Thematic coding	Coding points, lines and areas with optional attributes when measuring. Manual code entry or selection from a user defined code list.	Coding points, lines and areas with optional attributes when measuring. Manual code entry or selection from a user defined code list.	
r.	Quick coding	Recording a measurement with a point code or free code by entering a numerical quick code from user defined code list.	Recording a measurement with a point code or free code by entering a numerical quick code from user defined code list.	

s.	Averaging	Averaging of multiple points within user defined averaging limit.	Averaging of multiple points within user defined averaging limit.	
t	**Power specifications -**			
i.	Internal Battery	4 Internal rechargeable battery should be supplied with each of more than 1.8 Ah.	4 Nos. of Internal rechargeable battery should be supplied with each of more than 1.8 Ah.	
ii.	Chargers	2 No. charger to be supplied(each for one)		
iii.	External power supply	Suitable cables for running the Bases on external power supply like car battery should be provided.	Suitable cables for running the Rovers on external power supply like car battery should be provided.	
iv.	Continuous operating time	Internal batteries and external battery should work continuously 7 hrs to 12 hrs respectively.	Internal batteries and external battery should work continuously 7 hrs to 12 hrs respectively.	
u.	Corrections	RTCM corrections for DGPS applications and also outputting NMEA sentences. RINEX output option.	RTCM corrections for DGPS applications and also outputting NMEA sentences. RINEX output option.	
v.	Communication link	System should support radio, GSM mobile phones for communication link between base and rover.	System should support radio, GSM mobile phones for communication link between base and rover.	
w.	Setup configuration	GPS system should be able to set up on a tripod, back pack and all on range pole configuration.	GPS system should be able to set up on a tripod, back pack and all on range pole configuration.	
4.	**Radio modems**			
a.	Type	Any external high power Radio should be supplied with Base and Rover with Radio Linking Baud rate selectable and programmable. The radios should pair with the existing radios which are available with us.	Any external high power Radio should be supplied with Base and Rover with Radio Linking Baud rate selectable and programmable. The radios should pair with the existing radios which are available with us.	
b.	Base & Rover	High Power Radio with power output of 25 Watt with the facility to increase the Radio Antenna Height.	Radio built into housing being clipped on to the base of the controller having facility to increase the Radio Antenna height with suitable attachments should be provided.	
c.	Cables	Suitable cables for interfacing Base Radio to the Bases should be provided.	Suitable cables for interfacing Base Radio to the Rovers should be provided.	
5.	**Software**	Capable of importing the RAW data logged from GPS with Maps created in the field to be downloaded.	Capable of importing the RAW data logged from with Maps created in the field to be downloaded.	
a.	Import	Capable of importing the RAW data logged from GPS and RINEX format with Maps created in the field to be downloaded.	Capable of importing the RAW data logged from GPS and RINEX format with Maps created in the field to be downloaded	
b.	Export	Capable of exporting the data in RINEX format as well as capable of transferring the field created maps directly to CAD with the code lists enabling the symbol to be attached without manual editing.	Capable of exporting the data in RINEX format as well as capable of transferring the field created maps directly to CAD with the code lists enabling the symbol to be attached without manual editing.	
c.	Reporting	Softwares should be capable of generating HTML style reports directly for the Surveyed data.	Software should be capable of generating HTML style reports directly for the Surveyed data.	
d.	Processing options	The softwares should have capability to process GPS and GLONASS data and should have Datum and map module, adjustment module, RINEX, Import and Export option. 2 sets of software.	The soft wares should have capability to process GPS and GLONASS data and should have Datum and map module, adjustment module, RINEX, Import and Export option.	
e	COGO calculations	The Soft wares should have capability for computing the co-ordinates of unknown points using reference points and co-ordinate geometry.	The Soft wares should be capable for computing the co-ordinates of unknown points using reference points and co-ordinate geometry.	
f.	Arc, Area & Line creations	The software should be capable of creating line and area for the surveyed data.	The software should be capable of creating line and area for the surveyed data.	
	Upload options	Capable of uploading Auto Cad dxf maps directly on to the GPS.	Capable of uploading Auto Cad dxf maps directly on to the Rovers.	
6.	**Environment**			
a.	Temperature range for Receivers, Controller / Terminals Antennas and all other parts	Operation - Upto + 60^0 C Storage - Upto +70^0 C	Operation - Upto + 60^0 C Storage - Upto +70^0 C	

b.	Protection against water, humidity, dust for all the equipments.	As per IP standard: IP67.	As per IP standard: IP67.	
7.	**Accessories**			
a.	Packs			
b.	Charger	Quick chargers for batteries, one each for Base (2 nos.).	Quick chargers for batteries, one each for Rover (6 nos.).	
c.	Tripod	Wooden Telescopic Tripod assembly with each Base (2 nos.).	Wooden Telescopic Tripod assembly with each Rover(6 nos.).	
d.	Quick Stand		6 nos.	
e.	Height measurement device	One each for Base(2 nos.).	One each for Rover(6 nos.).	
f.	Memory card	Removable Universal memory card (Flash/SD) each one for Base (2 nos.).	Removable Universal memory card (Flash/SD) universal memory cards each one for Rover(6 nos.).	
g.	Card Reader	Suitable card reader 2 nos..	Suitable card reader 6 nos.	
h.	Cables	Cables for data downloading 2 Nos.	Cables for data downloading 6 Nos.	
i.	Other Cables	All necessary cables for Bases. and Antennas etc.,	All necessary cables for Rovers and Antennas etc.	
j.	Adopters	All necessary adopters.	All necessary adopters.	
k.	Poles		6 nos. One each Rover. (6nos. Poles with level bubbles)	
8.	**Training**			
a.		A Group of 6/8 Survey Officers in three batches shall be trained in three SCCL Areas with the DGPS for one week each.		
b.		On completion of 3 months, 1st refresher training should be given for 3 days to each batch.		
9.	**General**			
a.		Cost of the DGPS sets including all the accessories should be called as **one unit** only.		
b.		Bidders have to arrange field demonstrations with their respective DGPS at SCCL site at their own cost whenever they are called for.		
c.		Successful Bidder has to obtain all the necessary permissions from Govt. agencies and supply to SCCL to use the DGPS RTK radio license with in six months, full payment only be done after supply.		
d.		Two sets of DGPS considering 1Base and 3 Rovers as one set. Bases and Receivers Should be of same Make/Model and must have flexibility to use each other as Base or Rover vis-versa.		
10.	**Warranty**	The warranty for all the equipments shall be for two years including replacement of spare parts if any at free of cost.		

GENERAL MANAGER(SURVEY)