Technical Specifications

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) BASE/ROVER PACKAGE WITH COMPLETE GNSS TERRESTRIAL BUNDLE SOFTWARE

TERMS OF REFERENCE / TECHNICAL SPECIFICATIONS			
LOT	**UNITS**	**Description**	**Compliance**
LOT 1	**1 set**	**GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) BASE/ROVER PACKAGE WITH COMPLETE GNSS TERRESTRIAL BUNDLE SOFTWARE**	*Bidders must state here either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder's statement of compliance or*

				the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.	
				Comply	**Non Comply**
		1. RECEIVER AND BASE			
		1.1 PERFORMANCE			
		Signal tracking:	GPS L1C/A, L2C, L2P, L5; GLONASS L1C/A, L2C/A; BeiDou B1, B2, B3; Galileo E1, E5A, E5B; QZSS L1C/A, L1C, L2C, L5; SBAS (EGNOS, WAAS, MSAS, GAGAN) L1C/A		
		Channels:	576 (minimum)		
		Single Point Positioning Accuracy (RMS):	– Horizontal: 1.5m (maximum) – Vertical: 3.0m (maximum)		
		DGPS Positioning Accuracy (RMS):	– Horizontal: 0.4m (maximum) – Vertical: 0.8m (maximum)		
		SBAS Differential Positioning Accuracy (RMS):	– Horizontal: 0.6m (maximum) – Vertical: 1.2m (maximum)		
		High-Precision Static (RMS):	– Horizontal: 3mm+0.1ppm (maximum) – Vertical: 3.5mm+0.4ppm (maximum)		

		Static & Fast Static (RMS):	– Horizontal: 3mm+0.5ppm (maximum) – Vertical: 5mm+0.5ppm (maximum)		
		Post Processed Kinematic (RMS):	– Horizontal: 8mm+1ppm (maximum) – Vertical: 15mm+1ppm (maximum)		
		Real Time Kinematic (RMS):	– Horizontal: 5mm+0.5ppm (maximum) – Vertical: 10mm+0.8ppm (maximum)		
		Network Real Time Kinematic (RMS)	– Horizontal: 8mm+0.5ppm (maximum) – Vertical: 15mm+0.5ppm (maximum)		
		Observation Accuracy (zenith direction):	– C/A Code: 15cm (maximum) – P Code: 20cm (maximum) – Carrier Phase: 1mm (maximum)		
		Time To First Fix (TTFF):	– Cold Start: <35s (maximum) – Warm Start: <10s (maximum)		
		Reacquisition:	<1s (maximum)		
		Tilt Compensation Accuracy (within 30°)	≤2cm (maximum)		
		Timing Accuracy (RMS):	20ns (maximum)		
		Velocity Accuracy (RMS):	0.03m/s (maximum)		
		Initialization (typical):	<10s (maximum)		
		Initialization Reliability:	>99.9% (maximum)		

			1.2 SYSTEM AND DATA		
			Operating system:	Windows (latest version)		
			Storage:	built-in 16GB (minimum)		
			Data format:	CMR, RTCM 2.X/3.X (minimum)		
			Data output:	RINEX and NMEA-0183 and Binary (minimum)		
			Data update rate:	20Hz (minimum)		
			1.3 PHYSICAL		
			Display:	display must have standard RTK indicator		
			Dimension:	157x157x103mm (minimum)		
			Weight:	≈ 1.2kg (without battery) (minimum) ≈ 1.4kg (with a battery) (minimum)		
			Operating temperature:	-40℃ ~ +75℃ (minimum)		
			Storage temperature:	-55℃ ~ +85℃ (minimum)		
			Relative humidity:	100% not condensed (maximum)		
			Dust & Waterproof:	**Water:** IP67 standard,protected from long time immersion to a depth of 1m, **Dust**: IP67 standard,fully protected against blowing dust		
			Pole drop onto concrete:	2m (maximum)		

1.4 ELECTRICAL

Input voltage:	9~28V DC (maximum)			
Power consumption (typical):	Network or Radio receive mode: ≈ 5W (maximum) Radio transmit mode (0.5W): ≈ 8W (maximum) Radio transmit mode (1W): ≈ 9W (maximum) Radio transmit mode (2W): ≈ 11W (maximum)			
Lithium battery:	7.4V 6400mAh (1 pc for base) 7.4V 6400mAh (1 pc for rover)			

1.5 COMMUNICATION

CELLULAR

Cellular:	3G and 4G LTE/TD-SCDMA/WCDMA/GPRS/GSM			
Cellular bands (EU version):	LTE FDD B1/B2/B3/B4/B5/B8/B20 WCDMA B1/B2/B5/B8 GSM/GPRS 1900/1800/900/850MHz			
Network protocols:	Ntrip Client and Ntrip Server			
Wi-Fi:	802.11b/g (version)			
Bluetooth:	latest version			

INTERNAL RADIO

RF transmit power:	0.5W/1W/2W (minimum)			
Frequency range:	Within the range of 410MHz ~ 470MHz			
Operating mode:	Half-duplex (minimum)			

			Channel spacing:	Within the range of 12.5KHz / 25KHz		
			Modulation type:	GMSK, 4FSK (minimum)		
			Air baud rate:	4800 or 9600 or 19200bps (maximum)		
			Distance (Typical) from Base to Rover:	>5km (maximum)		
			WIRED COMMUNICATION			
			USB OTG:	Latest Version		
			Serial ports:	RS232 x1 (minimum)		
			COM baud rate:	Minimum 9600bps up to 921600bps (maximum))		
			2. FIELD CONTROLLER			
			2.1 SPECIFICATIONS			
			High visibility screen	• Sun-light readable • HD resolution 1280*720 (minimum)		
			Processor	• 8 core 2.0GHz (minimum) • 4GB RAM + 64GB ROM (minimum) • Driven by Android 8.1 (Upgraded to 10 or more) (minimum)		
			Robust industrial design	• IP65 protection from dust and water (minimum) • 1m Drop Test onto the ground (maximum)		
			Environmental	• Operating: -20oC to + 60oC • Storage: -40oC to +70oC		
			Weight	• 370g (including battery) (minimum)		

		Integrated versatile features	• 13 MP rear camera+ 5 MP front camera (minimum) • BT 4.1 BLE (minimum) • Wi-Fi IEEE 802.11 a/b/g/n/ac (minimum) • Mobile network 2G/3G/4G (minimum) • NFC • Minimum 7,000 mA battery for full working day and minimum 16 hours under normal conditions		
		Extended productivity	• Points, lines, polylines and surfaces (minimum) • For topographic survey, stakeout, road, earthworks, and more (minimum) • Features, codes, on-site drawing, and some other latest CAD features		
		3. ADDITIONAL ACCESSORIES			
2 pcs		Rover Pole			
1 pc		Base Tripod			
2 pcs		BiPod			
2 pcs		Hard case for the GNSS equipment			
4 pcs		Extra batteries			
2 pcs		Extra charger for the main GNSS			
		4. COMPLETE GNSS TERRESTRIAL BUNDLE SOFTWARE Complete GNSS & Terrestrial Bundle, Includes:			
		Basic data-processing			
		TPS data-processing			
		Level data-processing + Adjustments 1D			
		Surface & Scanning			
		Adjustments 3D			
		Imaging			
		GNSS Multi Frequency data processing			

			With one (1) perpetual license		
			5. WARRANTY		
			a. The product shall be covered by a warranty of a minimum of one year (1) year effective from the date of acceptance. Such warranty must include: ● 24/7 on-premise service support and diagnostics ● Free Parts, Services and Labor Costs ● Free Firmware Upgrades		
			b. Full replacement of defective units should be immediately done from receipt of notice. If full replacement is not yet possible, a service unit shall be provided by the supplier within 48 hours from receipt of notice of defective unit/s.		
			c. The obligation for the warranty shall be covered by Retention money in an amount equivalent to one percent (1%) of total contract price. The said amount shall only be released one year after the issuance of Certificate of Completion and Acceptance.		
			6. TRAINING		
			The supplier must provide free of charge a minimum of 5-day RTK-GNSS Training Course for at least eight (8) BCDA survey technical personnel together with training materials.		
			7. OTHER REQUIREMENTS:		
			a. The supplier must have at least two (2) years of experience in using the latest GNSS Survey Equipment.		
			b. The supplier must be an authorized distributor of the equipment and software. They must submit a Certification.		
			c. The supplier must have a partner Authorized Local Service Center within Metro Manila or Central Luzon area and must submit a Certification.		

		d. The supplier must submit a Certification or other pertinent documents as to the availability of an in-house factory-trained Service Technician.		
		e. The supplier must conduct actual test and mock/simulation projects prior to acceptance of the equipment.		

Bidder's Authorized Representative:

Name: _____

Legal capacity: _____

Signature: _____

Duly authorized to sign the Bid for and behalf of: _____

Date: _____