Survey of Pakistan
Technical Evaluation Committee-II
Technical Evaluation of bid for Procurement of Modern UAVs for Aerial Photographic Survey

Evaluation UAV System with Accessories

Sl#	Specification		M/S Wah Industries	M/S App IN SNAP	M/S Sandhu Engineering &Trading Company	M/S Public Surveying System
	Component	**Specification**	**Quoted specification**	**Quoted specification**	**Quoted specification**	**Quoted specification**
1.	Type of UAV	Fixed Wing (PPK enabled)	WingtraOne Empty GEN II PPK Enabled	**MMC Griflion M9 UAV** Fixed Wing, PPK Enabled (Refer Heading 5.1.1)	ORIGIN OH 1804 Fixed Wing PPK Enabled	VIM fixed Wing
2.	Material	Light weight material such as Fiber, glass, carbon, EPP foam or plywood	Glass Fiber	Carbon Fiber Frame (Refer Heading 5.5)	Fiber Glass	Light weight (EPP Foam)
3.	Take off/ landing	(VTOL) Vertical Take-Off & Landing	VTOL	VTOL (Refer Heading 5.1.1 Sr# 2	VTOL	VTOL
4.	Launch and Landed method	Preferably VTOL due to space limitation in Urban Areas	VTOL	VTOL (Refer Heading 5.1.1 Sr# 2	VTOL max required is 2 x 2 m space	VTOL
5.	Cruise speed	50 - 60 Km/hour	57km/h	(20 m/s or 72 Km/h)	72km/hour	30m/sec (108Km/hour)
6.	Overlap	Minimum 60 % Side overlap & 80 % Forward overlap	Minimum 60% Side overlap & 80 % Forward overlap	Yes complied, Minimum 60 % Side overlap & 80 % Forward overlap	Capable of 70 % Side and 80% Forward Overlapp	60% 80%
7.	Productivity: Max area coverage	2 Km^2 at Altitude of < 250 meters in single flight **with 3-5 cm GSD**	2 Km2 at Altitude of < 250 meters in single flight with 3-5 cm GSD	Yes, 2 Km^2 at Altitude of < 250 meters in single flight with 3-5 cm GSD Max sailing time available	> 4Km^2	2 Km^2 at Altitude of < 250 meters in single flight **with 3-5 cm GSD**

8.	On Board GNSS for PPK	Multi Constellation	GPS+Glonass+Beidou+Galileo	PPK MODULE -BDS, GPS, GLONASS & Galileo (refer heading 5.1.3)	GPS, GLONASS, BiDou	Multi Constellation GPS/BDS
9.	Deployment time	5 – 8 minutes	05 mins	3 MIN	<5min	3-5 min
10	Endurance	Flight time 1 hour +	59 min. theoretically but practically 50-54 min	150 min	90min	2 hours
11.	GNSS for GCP's and PPK	1 X Base, 1 X Rover with Tablet for Field GCP and PPK having RTK range of 10 Km with Internal Radio	SOKKIA GRX3 GPS GNSS Full RTK System with Internal Radio Package	PPK MODULE ADDED (heading 5.1.3	SINO GNSS COMNAV N5 RTK with 10 Km Internal Radio Range	1 X Base, 1 X Rover with Tablet for Field GCP and PPK having RTK range of 10 Km with Internal and external Radios Hi target China
12	Performance Characteristics	Telemetry range > 3 km Horizontal Absolute Accuracy < 2cm when using PPK Fully autonomous Flight Enhanced compatibility with Industry Standard software (camera parameters already automatically recognized)	Telemetry Range:10KM Horizontal Accuracy:1cm with PPK Fully autonomous Flight	Yes, Telemetry range > 3 km Yes, Horizontal Absolute Accuracy < 2cm when using PPK Heading 5.4 Yes, Enhanced compatibility with Industry Heading 5.4, 5.3 and 5.2 Yes, Standard software (camera parameters already automatically recognized)	> 3 Km <2 cm with PPK Fully autonomous flight Fully compatible with industry standard SW like PIX4D Agi Soft and camera parameters	Telemetry range > 3 km PPK + RTK Horizontal / vertical accuracy < 2cm Fully autonomous Flight Enhanced compatibility with Industry Standard software (camera parameters already automatically recognized)Control System with Autopilot Software
13	Temperature Resistence	-20° C to 45° C	-10 to +40 °C	(- 20 °C to 60° C)	-20° C to 45° C	-20° C to 45° C

14	Weather resistance	Wind speed Up to 10 m/s , can fly cross the wind and during moderate rain	10m/s	IP 54 wind resistance level 6 IP 54 moderate Rain	12m/s	≤ 10.7m/sec
15	Storage	Solid state drive (SSD) built into aircraft electronics board for photo and data storage enabling 6 hours of data to be collected	SD CARD	128gb High-speed solid-state drive, Yes 6 hours of data can be collected	Built into Aircraft can store > 6 hours of Data at 5 cm GSD	Solid state drive (SSD) built into aircraft electronics board for photo and data storage enabling 6
16	Flight Planning Software	Windows/Android-based flight planning software on portable rugged tablet Flight planning software capable of a. planning multiple separate surveying areas at once b. importing .kml files importing custom Digital Terrain Models (DTM) for up to date terrain	Windows/Android-based fligh planning software on portable rugged tablet Flight planning software capable of a. planning multiple separate surveying areas at once b. importing .kmI files importing custom DigitalTerrain Models (DTM) for up to date terrain	• Yes, Windows/ Android-based flight planning software on portable rugged tablet. • Windows 10 pro. • Yes, Capable of planning multiple separate surveying areas at once • Yes, Capable of importing .kml files importing custom Digital Terrain Models (DTM) for up to date terrain	Fully Support windows flight planning SW Flight planning software capable of a. planning multiple separate surveying areas at once b. importing .kml files importing custom Digital Terrain Models (DTM) for up to date terrain	Windows/Android-based flight planning software on portable rugged tablet Flight planning software capable of a. planning multiple separate surveying areas at once b. importing .kml files importing custom Digital Terrain Models (DTM) for up to date terrain
17	Batteries	8 batteries per UAS to have 4 mission minimum in 1 Day	8 Batteries	1 Battery runs for 150 Mins. 4x batteries per flight	Quoted with 8 Batteries per UAV	8 batteries per UAS
18	UAV Hardware (accessories)	• Wingspan<1.3 to 1.7m for easy portability • Glass fiber/ Composite • Carbon body for superior aerodynamics and	• Wingspan<1.3 to 1.7m for easy portability • Glass fiber body • Exchangeable cameras between RGB and Multispectral (OPTI) • Extension cable for in field	• 3378 mm end to end (both wings) • yes Glass Fiber/ Composite • Yes, Carbon Body for Superior Aerodynamic and more stable flight	• Wingspan 2.5m • Glass fiber body • Exchangeable Cameras • MS Camera quoted as option • Batteries can be charged in field	• Wing span 1.7 m • EPP foam • EPP foam • Exchangeable cameras between RGB and

		more stable flight • Exchangeable cameras between RGB and • Multispectral (OPTI) • Extension cable for in field charging available • Capability to charge battery 'in the field' using a car battery • Built in safety lights • 2 Navigation lights, • 2 Anti-collision lights -1km (0.6 miles) of visibility	charging available • Capability to charge battery 'in the field' using a car battery • Built in safety lights • 2 Navigation lights. • 2 Anti-collision lights — 1km [0.6 miles] of visibility	• Yes, Exchangeable cameras between RGB and Multispectral (OPTI) • Will be provided • Yes, Capable of charging using car's battery • Built in Safety lights available • Left red, right green • Yes, 2 Anti-collision lights 1km available 0.6 miles of visibility	using Inverter • Lights are also available of wings of UAV as per requirement	• Multispectral (OPTI) • Extension cable for in field charging available • Capability to charge battery 'in the field' using a car battery • Built in safety lights 2 Navigation lights, 2 Anti-collision lights -1km (0.6 miles) of visibilityTool kiSafetyt, Dual Charger
19	Camera	• 42 MP mapping/ Lidar Camera • Latest technology • Distortion free • Ability to make in-flight adjustments to camera exposure settings • and GPS integrated	RGB61 Ability to make in-fligh adjustments to camera exposure settings and GPS integrated. WingtraPilot can do this only with RGB61 LIDAR not available till Jan, 2024	Yes, 42 MP mapping or better Camera **(Thyea X3 tilt camera)** • Latest model (Refer Heading 5.2)	• Quoted with 42 MP camera as standard. 61 MP optional. • As an Option Lidar (RZ450_ with 24 MP camera for color cloud • Most current models • Capable of making changes • GNSS Integrated	Camera 42 MP (Sony Camera). 61 MP optional. Lidar GS-100M China • Distortion free • Ability to make in-flight adjustments to camera exposure settings • and GPS integrated

20	Authorization	Principal detail & Category	No Authorization from Principal.	Authorization of Principal MMC (MicroMulticopier Aero technology Co, Ltd, China) is available. **Gold Partner Service Provider for all company products**	Authorization of Principal Xiamen Origin Drones Technology Co, Ltd, China) is available. **Gold Partner Category. The CEO of the firm is also trained from Principal for quoted UAV management.**	Authorization of principal (Xi'an Super Sonic Aviation Technology co Ltd) is available. **However no category is mentioned.**
21	Training	One month (flight management, data processing development, trouble shooting etc)	Local Training on purchaser location by officials of Wah Industries	AiS will give at least one month training of quoted approved equipment.	One month Training as per requirement of tender in Rawalpindi	One month Training at Islamabad
22	Pilot Project	One pilot project	One pilot project	Yes, one pilot project will be delivered	Pilot Project in Rawalpindi	Complied
23	Repairing & Maintenance support	• One year free, • Service agreement for 2-3 years (extendable on performance)	FC (OEM Standard TMP+ is enclosed as Annex-4D (Unlimited continuous Warranty, Full accidental damage cover due to technical failure, upgrade drone model after 4 years, Free replacement of consumable)	Yes, One Year Free Repair and Maintenance support For 2nd Year support and maintenance support It shall be quoted if/when requested by the client	Under Warranty repair is free in case of damage parts will be charged SLA for 2 years is possible	Committed for 1x year
24	Documentation	All manuals in English Languages (both in hard & Soft formats)	FC	All manuals in English Languages (both in hard & Soft formats) will be provided as per requirements	Manuals will be in English	Manuals will be in English

Analysis & Conclusion:

i. **04 firms** M/S Wah Industries, M/S App IN SNAP, M/S Sandho Engineering &Trading Company and M/S Public Surveying System have submitted bids

ii. **M/S Wah Industries has quoted Wingtra One UAV system (Swiss brand) but**

a. The quoted UAV does not fulfil the specifications at sl 10,13 & 20

b. The firm has failed to produce legal authorization from Principal OEM to quote this UAV. **Firm has provided Authorization of irrelevant distributor i.e Sigma Dubai who are only authorized distributor of Wingtra in UAE, Qatar, Oman, Iraq and Kuwait till December 2023. Sigma Dubai has authorized Wah Industries to participate in the bid to SoP whereas Sigma Dubai is not authorized for Pakistan.**

iii. **M/S Wah App IN SNAP** has quoted **MMC Griflion M9** UAV system (brand of MicroMultiCopter Aero Technology Co. Ltd, China) and meet all specification parameters

iv. **M/S Sandhu Engineering &Trading Company** has quoted **ORIGIN OH 1804** UAV system (brand of Xiamen Origin Drones Technology Co. Ltd., China) and meet 80% specification parameters.

v. **M/S Public Surveying System** has quoted **V1M** UAV system (brand of Xi'an Super Sonic Aviation Technology Co Ltd, China) and meet 80% specification parameters.

vi. **M/S Wah Industries is not technically qualified due to reasons recorded above.**

vii. **3x firms** M/S App IN SNAP, M/S Sandhu Engineering &Trading Company and M/S Public Surveying System were qualified for demonstration of their product for **performance evaluation in compliance to bid document** reproduced as:

> ***16. The bidders have to give demo (s) of their offered model during Technical Evaluation. The demo procedures/duration shall be determined by the Evaluation Committee. The bidder declared qualified after demo shall be considered technically qualified. The decision of Technical Committee will be final.***

Results of Demonstration

viii. The firms were given notice to prepare for demonstration in 05 working days vide letter No. 2796/40-O-UAV dated **27-10-2023**. The demonstration must cover following aspects:

a) Unboxing of equipment, detail of components/parts
b) Assembling, Mounting, disassembling etc
c) Preparing projects and flight planning
d) Flying in 2x different terrains (one mountainous and one semi hilly/undulated)
e) Down loading and preprocessing
f) Processing of imagery to photogrammetric data development as per specifications given in the bid.
g) Any other in compliance of bid and performance

ix. The firms were invited for demonstration on 07-11-2023 vide this office letter No. 2845/40-O-UAV dated 06-11-2023.

x. All 3x firm delivered demonstration through their technical representatives mentioned below:

Mr. Wajahat Masood	CEO Sandhu Engineering & Trading Company (CETC)

Mr. Ramzan Imam	Manager Sales, Public Surveying System
Mr. Abdul Wasay	Technical Sales Manager APP IN SNAP

xi. M/S App IN SNAP failed to demonstrate on each aspects mentioned under para viii above and to satisfy the committee. The incomplete demonstration and incompetency of the firm was noted by the committee. The firm representative could not properly responded to the queries on missing aspects of the demonstration.

xii. M/S Public Surveying System failed to demonstrate on each aspects mentioned under para viii above. Despite repeated queries by the committee members, the representatives of the firm could not give any justification for the incomplete & dubious demonstration. Hence the firm could not satisfy the Committee.

xiii. M/S Sandhu Engineering &Trading Company (SETC) has given comprehensive demonstration on all required aspects and also addressed & satisfied to all queries of the committee.

Recommendation:

a. **M/S Sandhu Engineering &Trading Company (SETC) has technically qualified. Hence it is recommended for opening its financial proposal and its evaluation**

b. **Others firms could not qualify due to reasons recorded above and their bids are rejected for further proceedings.**

Muhammad Junaid Memon
Assistant Director
Member (TEC-II)

Aftab Nazir Ahmad
Deputy Director
Member (TEC-II)

Muhammad Arshad Iqbal
Director
Chairman (TEC-II)

Annex-A1 (UAV)

Technical Evaluation Parameters –Marks/ Score Sheet

Sr.#	Name of Firm	Assessment Parameters								Total
		50	10	5	5	10	10	5	5	100
		Technical Compliance	Firm relevance Experience	OEM Certification	OEM Authorization from Principal	After sale Repairing & maintenance Support	Training Support	Financial Worth	Equipment brand	
1	**M/S Sandhu Engineering &Trading Company (SETC)**	50	06	05 (gold)	5 (full authorization including training certification)	10	8	01	4	89
2	**M/S APP IN SNAP**	Technically failed to qualify due to the reasons recorded in detail analysis (paras x to xii)								
3	**M/S Public Surveying System**	Technically failed to qualify due to the reasons recorded in detail analysis (paras x to xii)								
4	**M/S Wah Industries**	Could not qualify as quoted brand was below specs and without authorization from OEM								

A Firm must secure 80% marks/score with at least 40% in Technical Compliance will qualify for the next process.

Junaid Memon
Assistant Director
Member (TEC-II)

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Muhammad Arshad Iqbal
Director
Chairman (TEC-II)