Hardware Comparison Review

Top 15 Digital Data Collection Devices

Best rugged tablets comparison Summary

Hardware:

A total of 105 devices were considered in this review, as well as a range of device accessories. Devices considered include: 31 rugged tablets, 27 rugged smartphones, 10 PDAs, 37 non-rugged devices (including smartphones and tablets: 29/37 of these devices were only reviewed in terms of their CyberTracker compatibility) and 14 device-cases.
The Top 15 Hardware options in regards to the below specifications are included in this review.

Hardware was reviewed based on the following requirements:
1. Ruggedness
2. Battery life
3. GNSS location-tracking
4. Sunlight readable display
5. Supported OS

Limitations of research
Being a desktop research exercise, the reviewer was unable to test specific devices to offer more reliable and relevant information. Refining the search to devices with a purchase price within a specific bracket wasn't possible as Ranger groups have a range of budgets – and the review has actually borne out that this wouldn't be ideal anyway, as device performance, longevity and pre and post-purchase support options are equally, if not more, important in than sale price.

Disclaimer
This review does not necessarily reflect the views of the North Australian Indigenous Land and Sea Management Alliance Ltd.
This information is provided as a guide to what is available and does not aim to provide any recommended software or hardware. Although NAILSMA has identified that CyberTracker continues to be the best data collection method for our requirements, we acknowledge that each individual user has their own unique set of circumstances that will impact on their choice as to what software or hardware will be most suitable.
The costs of hardware are estimates, and all other specifications have been identified from information available at the time of this review.

Top 7 Hardware Snapshot

Device, specs	Samsung Galaxy Tab Active 2 (Nov 2017)	Algiz RT7 (Jan 2017 update)	Getac ZX70 (May 2017)	Panasonic Toughbook FZ-L1 (July 2018)	Algiz 8X (Feb 2017)	Xplore XSlate D10 (April 2017)	Getac F110 (2018 release)
OS	Android	Android	Android	Android	Windows	Android	Windows
Ruggedness/5	4	4	5	3.5	5	5	Best
Screen size	8"	7"	7"	7"	8"	10.1"	11.6"
Sunlight readability	Medium	High	High	Medium	High	High	High
Rugged touch	Medium to High	Medium to High	High	High	High	High	High
GNSS quality	High	High	High	Medium	High	Med-High - little info	Optional - medium
Camera & mic	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SD slot (max size)	Micro (256GB)	SDHC (32GB)	Micro (32GB)	Micro	Micro	Micro	Optional
Battery sufficient	Yes	Yes	Yes	Yes	Yes	Yes	Only with 2
Key notes	**Strong internal GPS accuracy, solid ruggedness, best value. No port-protectors.**	Semi-matte rather than gloss screen is good for sunlight readability and anti-smudge.	Value, GNSS, display, battery. High quality & future-proofing shown by **Sept 2018 partnership with Leica**.	New device so limited review information. Average/poor display, GNSS, value.	More expensive than RT7, but advantages should be worth cost if budget allows. Wifi model will be cheaper.	High quality and rugged but costly, limited info on GNSS, borderline battery. **Ports protected** by hinged rubber covers	High performing but unsuited to requirements and costly.
Reviews	81% (Notebook Check, Dec 2017)	Rugged PC Review, May 2016	80% (Tech Radar, Sep 2017)	71% (Gizmo China, Aug 2018) - low quality review info	Rugged PC Review, May 2017	ZD Net, Sep 2016	80% (PC Mag, Aug 2015)
Quote ($AU)	615 (AU suppliers)	1,149 (AU supplier)	1,188 (AU supplier)	1,680 (US supply)	1,999 (4G model)	2,600 (AU supplier)	3,000 (AU supplier)

Top 15 Rugged Hardware: full specifications

Device, specs	Getac ZX70 (May 2017)	Getac Z710	Getac F110 (2018 release)	Panasonic Toughbook FZ-L1 (July 2018)	Panasonic Toughpad FZ-B2 Mk 2 (2018)	Panasonic Toughpad FZ-M1 (2018)	Samsung Galaxy Tab Active 2 (Oct 2018)	Xplore XSlate D10 (April 2017)	WinBridge -S933L (April 2018)	Vanquisher SV-86 (2017)	Trimble Kenai (2017-18)	Algiz 8X (Feb 2017)	Algiz RT7 (Jan 2017 update)	Estone MJC-100	RuggON Rexstorm PM-521
Available information[1]	High	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Low	Medium	High	Medium	Medium	Medium
Price ($AU)	~1,188	~1,400	~3,000	~1,680	~1,580	~1,640	~615	~2,600	~530	~630	~3,366	~1,999 (4G version)	~1,149	~limited info	~2,280
OS	Android 6.0	Android 4.1	Windows 10 Pro	Android 8.1	Android 6.0	Windows 10 Pro	Android 7.1	Android 6.01	Android 5.1	Windows 10 Home	Windows 10 Pro	Windows 10 Enterprise	Android	Windows 10 Home/Pro	Windows 10 IoT (disctd.)
Weight	780g	800g	1.39kg	422g	540g	450g	415g	1.09kg	590g	650g	1.8kg	990g	650g	1.05kg	1.33kg
Screen size	7"	7"	11.6"	7"	7"	7"	8"	10.1"	7"	8"	10.1"	8"	7"	10.1"	10.1"
Military ruggedness standards	810	810	810, 461	810	810	No	810	810	No	No	810	810	810	810	810
Ingress protection (IP) rating	67	65	65	65	65	65	68	65	68	67	65	65	65	65	65
Non-condensin	95%	95%	95%	Unknown	80%	80%	Unknown	95%	Unknown	95%	90%	95%	95%	95%	95%

[1] The quantity and quality of information about a given device available as of September 2018.

Supplementary: Hardware Comparisons

g humidity²															
Drop-test	1.8m	1.8m	1.8m	1.5m	1.5	1.5m	1.2m	1.5m	No info	1.2m	1.2m	1.22m	1.22m	1.22m	1.5m
Extra-touch	Glove & stylus (capacitive), rain	Glove & stylus (capacitive), rain	Glove & stylus (capacitive), rain	Glove & stylus (capacitive), rain	Glove & stylus (capacitive)	Glove & stylus (capacitive)	Glove & stylus (capacitive)	Glove & stylus (capacitive)	No info	Stylus	Glove & stylus (capacitive), rain	Glove & stylus (capacitive) rain	Capacitive – no mention of glove or stylus funct.	None	Gloves, stylus, rain
Sunlight readability	High (Lumibond 2.0)	High (Lumibond 2.0)	High (Lumibond 2.0)	Medium	Medium	Medium to High	Medium	High	No info	High	High	High	High	Medium to Low	High
Battery capacity³	8,400mAh (>8hrs)	7,600mAh (>8hrs)	2,160mAh (6hrs), x2	3,200mAh (>8 hours)	3,220mAh (8hrs), large option (16)	3,220mAh (8hrs), large option (16)	4.450mAh (>10hrs), removable	39.2Whr (8hrs), x2	7,000mAh (4.5hrs)	7,500mAh (7hrs)	4.5mAh (5hrs) or 9.1mAh (10 hour)	5,200mAh (>8hrs)	6,000mAh (>8hrs)	8,000mAh (>8hrs)	4,500mAh (6hrs), large option (12)
CPU⁴	Intel Atom, 1.44GHz	OMAP, 1GHz	Intel Core i5, 2.2GHZ	Qualcomm, 1.1GHz	Intel Atom, 2.4GHz	Intel Core i5, 1.1GHz	Octa-Core, 1.6GHz	Intel Atom, 1.91Ghz	MTK, 1.3GHz	Intel Atom, 1.44GHz	Intel Atom, 1.46GHz	Intel Pentium, 1.6GHz	Qualcomm, 1.2GHz	Intel Atom, 1.44GHz	Intel Atom, 1.75GHz
RAM	2GB	1GB	4GB	2GB	2GB	4GB	3GB	4GB	2GB	2GB	8GB	4GB	2GB	2-4GB	4-8GB
Internal storage	32-128GB	16GB	128GB - 1TB	16GB	32GB	128GB	16GB	64GB	16GB	32GB	64-256GB	128GB	16GB	32-128GB	128-256GB

² The maximum level of humidity in which a device can remain operational without producing condensation internally or externally.

³ The mAh (milliAmpere Hours) capacity rating refers to the storage capacity available for a battery. Higher mAh ratings for the same battery type will generally mean longer run times, but you can't compare battery-life duration across battery-types. WHr is another measure of battery capacity.

⁴ The central-processing unit (CPU) is the 'brain' of the device, which carries out arithmetic, logical, control and input/output (I/O) operations. It determines how well the computer will perform – including running applications. A GHz is a measure of the speed of a processor and represents 1 billion cycles per second. Historically, a higher number meant a faster processor, but advances in technology have made the processor chip more efficient so now they do more with less. Processors with >1GHz capability should be fine to handle requirements.

Supplementary: Hardware Comparisons

GNSS specs.	U-Blox: GPS, SBAS (WAAS) capable	SiRFstar IV [1][2] : GPS	Optional dedicated GPS: SirfStarIV	Qualcomm:GPS, GLONASS	GPS - no further info.	Optional dedicated GPS: 12 channels	Samsung: GPS, GLONASS, all relevant sensors	'Standard GPS' - no further info.	"Support industrial grade GPS". No further info.	U-Blox Neo-7: GPS, GLONASS, QZSS	L1 GPS, GLONASS, BeiDou, DGPS	U-Blox Neo-M8N: GPS, Galileo, GLONASS, BeiDou	U-Blox EVA-7M: GPS, GLONASS, QZSS, with SBAS.	U-Blox-7: GPS. GLONASS & BeiDou optional.	GPS, GLONASS, BeiDou
Rear camera	8MP	5MP	8MP	8MP	8MP	8MP	8MP	5MP	13MP	5MP	8MP	8MP	8MP	8MP	5MP
SD slot	Micro, up to 32GB	Micro	Optional microSD	Micro	Micro	Micro	Micro, up to 256GB	Micro	Unknown	Micro, up to 128GB	No	Micro	SDHC, up to 32GB	No	Micro
USB port	2.0	2.0	3.0	Micro 2.0	3.0	3.0	2.0	3.0 x2	Unknown	3.0	2.0 x2	3.0 x2	Micro & 2.0	3.0	2.0 & 3.0
Stylus	Optional	Yes	Yes	Optional	Optional	Optional	Yes (prop.)	Optional	Unknown	Optional	Yes	Yes - metal	No	No	Yes
Ext antenna connector 5	Yes	Yes	Yes	No	Yes	Optional	No	No	Unknown	No	Yes	Yes	No	No	Yes
Key notes	High quality shown by Sept 2018 partnership with Leica.	Old model. Dec 2015 CT-user report of faulty devices from Kimberley rangers (after a positive review in Feb of that year)	Specs and price not well suited	Speakers	Poor GPS specs	Poor GPS specs.	Strong internal GPS accuracy, great value option. Mixed reports from CT users about GNSS	High quality and rugged but costly. Ports protected by hinged rubber covers	No OS updates since Android 4.0	Poor battery	High performing but heavy & expensive, no SD slot, unnecessary Trimble software.	High quality option, more expensive than RT7.	Matte rather than gloss screen - great for sunlight	Poor readability, no SD slot.	OS (Windows 10 IoT) to be discontinued

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5 This capability is usually listed as 'optional RF antenna pass-through', or something similar, and is often for GPS specifically. This enables a device to link to an external antenna to improve location-tracking.

							performance of Samsung devices – discussed more below.								
Accessories	Optional: hand, wrist & shoulder straps, carry bag & stylus holder. Third-party supplier of accessories.				Case with hand strap & shoulder strap ($139) from Tablet PC. Case w/shoulder strap only option. Hand strap only.		Best (Otterbox utility latch w/hand strap, lanyard, spare battery pocket). $US 50 Rugged case w/hand strap OR rugged case w/kick stand. Either may be compatible w/this shoulder strap.		Hand strap ($102) available from Johnny Appleseed GPS		Hand strap ($80) available from Johnny Appleseed GPS			
Pre & post-purchase support	Pre-purchase support. 3-Year Bumper-to-Bumper Warranty comes standard.				Pre-purchase enquiries. Post-purchase support forum. 24 month warranty incl. (Paid) 'Samsung Care' support option.					Pre-purchase support. Post-purchase Knowledge Base. Standard Warranty (12 mts). Additional cover option – MaxCare Warranty.				