

LandMark Spatial Solutions Windows & Windows Mobile Decision-Making Guide

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Current GPS Units we
recommend for use
under canopy:



handheld



JANAM



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F4 Devices – Forge



- 1-3 Meter DGPS Internal Antenna
- **Good Numeric Keypad**
- 5 MP Camera
- Fully Ruggedized - IP 67
- 8 GB Storage
- ~~\$1299~~ **\$1169**

10%
Discount



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Janam XM5



- **RESISTIVE SCREEN**
- **Qwerty Keypad and directional keys**
- 2-5 meter GPS
- 5 MP Camera
- 1 GB Processor
- IP 65 Ruggedness
- \$1399



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Handhelds – Nautiz X8



- **1.5 GHz Dual Core Processor**
- **1 GB RAM**
- **4.7" FWVGA Chemically-Strengthened Screen**
- **8 MP Camera**
- Fully Ruggedized - IP 67
- 4 GB Storage
- **\$1399**
- 2-5 Meter DGPS Internal Antenna



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F4 Devices – Forge Echo



- **Ultrasound technology for borderline tree determination**
- 1-3 Meter DGPS Internal Antenna
- **Good Numeric Keypad**
- 5 MP Camera
- Fully Ruggedized - IP 67
- 8 GB Storage
- **\$1699** **\$1529**

10%
Discount



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Trimble T-41 XGR



**Sold
Out**

- **Enhanced 1-2 meter GPS**
- **“Unbreakable” Gorilla Glass**
- **4.3” display**
- **8 MP Camera**
- 1 GHz Processor
- **IP 68 Ruggedness**
- **32 GB Storage**
- Integrated RFID Scanner
- ~~\$2599~~ **\$1799**



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Juniper Systems – Archer 2



**Sold
Out**

- **4.3" High Visibility, Scratch Resistant Screen**
- Numeric Keypad
- **20 hour battery**
- **Tracks GPS + Glonass**
- 1 GHz Processor
- **Fully Ruggedized - IP 68**
- 8 GB Storage
- Mini and USB Host data slots
- \$1995



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Juniper Systems – Mesa 3



- **Full Windows 10 tablet OS**
- **7" High Visibility, Scratch Resistant Screen**
- **10 or 15 hour battery**
- **2-4 m GPS + Glonass**
- **Fully Ruggedized - IP 68**
- **Quad Core Pentium N4200 Processor**
- **8 GB RAM, 128 or 256 GB Flash Storage**
- **USB 3.0 Host and Micro USB slots**
- **8 MP rear and 2 MP front cameras**
- **\$2632**

Trimble GeoExplorer 7



Discontinued

- XT Model – < 1 m accuracy realtime, 50 cm pp
- XH model – 10 cm accuracy realtime with H-Star or pp
- Floodlight Technology – tracks GLONASS
- XT ~ \$6995
- XH ~ \$8195



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Trimble PG200 GNSS Receiver



- External, Bluetooth
- Windows, Windows Mobile, iOS, and Android
- Tracks GPS, SBAS, GLONASS, Galileo, QZSS & BeiDou
- Global sub-meter accuracy
- ip65 rugged
- \$2495



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Juniper Systems Geode GNSS2



- External, Bluetooth
- **Windows, Windows Mobile, Android, iOS**
- Tracks GPS, SBAS, GLONASS
- SBAS: <30 cm RMS and <60 cm 2DRMS
- 10 hr battery
- ip65 rugged
- **\$2032**



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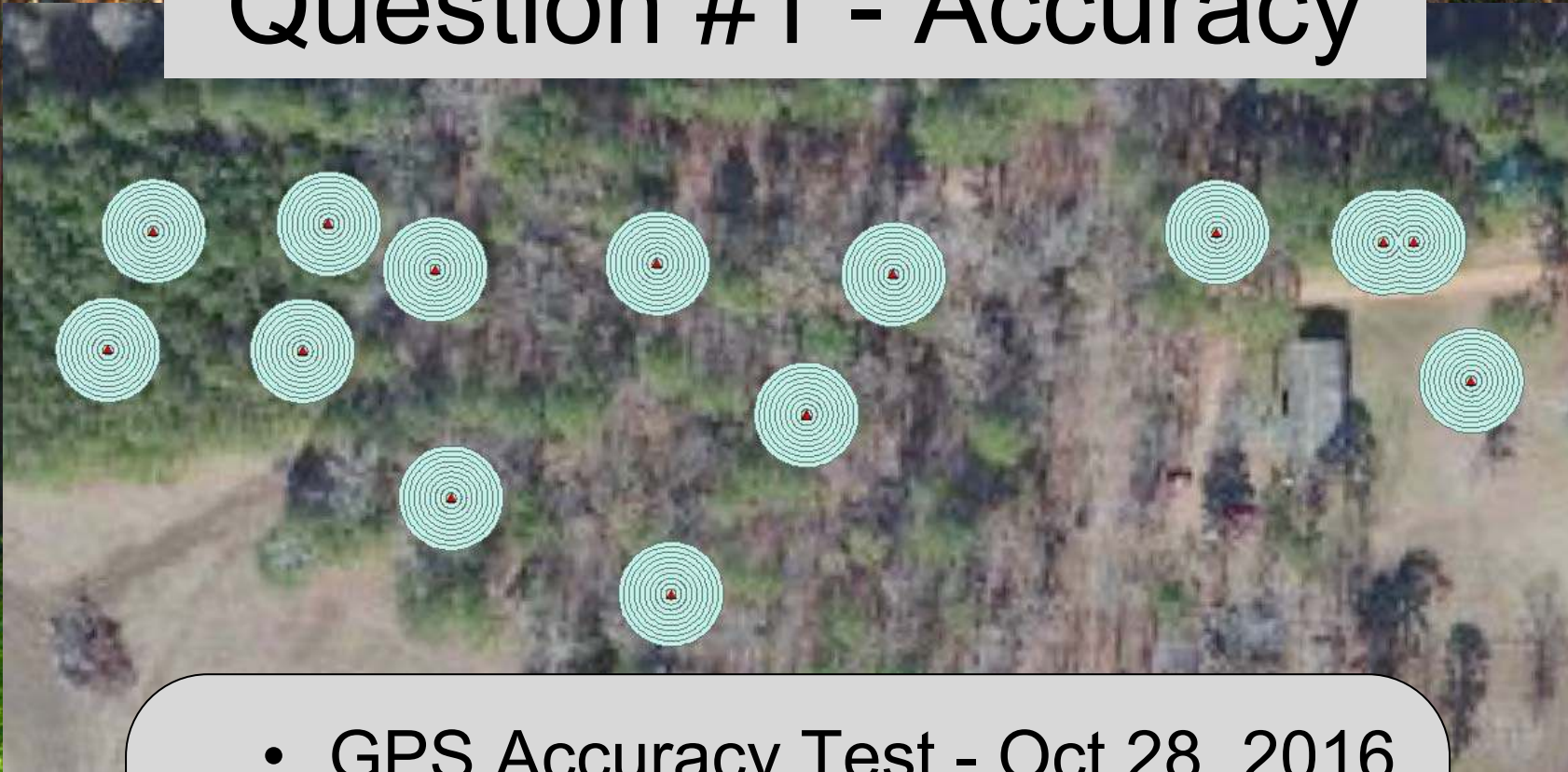
Questions

1. Accuracy? – submeter or 1-3 meter
2. Numeric Keyboard necessary?
3. Screen? – Resistive or Capacitive
4. Speed?
5. Pricing?
6. Rugged or BYOD (Bring Your Own Device?)



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Question #1 - Accuracy



- GPS Accuracy Test - Oct 28, 2016
- Starkville, MS
- GPS Surveyed with VRS to 10 cm
- Estimated Accuracy < 1 foot

GPS Units Tested

Consumer



Mapping(1-3 m)



Professional (Sub-meter)



PP



Test Protocol

- Static Test
 - 30 one second observations on 14 surveyed benchmarks
 - Except for consumer which was a three 1 second observations
 - Computed error for each position
 - Averaged error
 - Analyzed # satellites used for each position
- Dynamic Test
 - One second logging interval
 - Buffered Course – 5 one meter buffers
 - Calculated the % of Positions in each buffer



Static Test Results – All Stations



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Static Test Results – All Stations

GPS Unit	Avg Error (m)	Satellites Used	Key
Trimble Geo7_PP	1.604	16.92	Submeter
Juniper Systems Geode	1.687	14.78	1-3 meter
Trimble PG200	1.717	18.49	Consumer
Trimble Geo7	1.888	16.92	
Trimble T41G	2.290	10.16	
F4 Devices Forge	3.238	9.38	
Juniper Systems Archer2	3.299	12.00	
Geneq iSX_Blue	3.380	15.57	
DT Research 391GS	3.903		
Holux RCV3000	4.227	9.62	
Handheld Nautiz_X8	4.250	10.06	
Trimble Nomad_1050	5.163	8.35	
DT Research 410	5.779		
iPhone 6s	6.483		



Dynamic Test Results – All Stations



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Dynamic Test Results - All Stations

Unit	% of positons within +/- Buffers of True course					Rank at 2M
	1m	2m	3m	4m	5m	
Trimble Geo7 PP	62.24	94.41	99.30	100.00	100.00	1
F4 Devices Forge	55.56	87.09	100.00	100.00	100.00	2
Trimble PG200	47.44	78.85	98.40	99.04	100.00	3
Trimble Geo7	31.83	76.28	89.49	98.20	99.70	4
Handhelds Nautiz X8	39.34	69.97	92.19	96.40	99.70	5
Trimble T41G	24.32	60.18	86.93	98.78	99.70	6
Juniper Systems Geode	39.56	56.70	70.40	94.08	98.44	7
Juniper Systems Archer2	29.88	55.18	79.57	96.65	97.87	8
Trimble Nomad 1050	26.35	48.20	63.77	79.64	86.53	9
Holux RCV3000	24.31	44.71	58.82	87.84	96.47	10
Geneq iSXBlue	16.35	40.13	69.41	90.13	100.00	11
DT Research H410	13.04	40.00	63.48	83.48	92.17	12
DT Research 391GS	10.44	23.42	46.52	60.44	71.20	13

Key
Submeter
1-3 meter
Consumer



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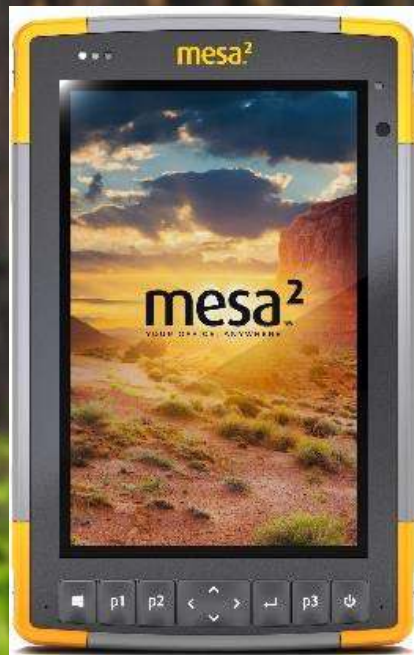
GPS Mapping Conclusions

1. If you need submeter accuracy, the Geode, PG 200, and Geo 7 are all great under canopy, but vary in cost
2. If you can't afford sub-meter, the T41G is amazing for static points under canopy at +/- 2.29 meters avg
3. Consumer GPS – get what pay for



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Question #2 - Keyboard



vs.



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Question #3 - Screen

Resistive



- Older technology
- Stylus Entry
- Not affected by water
- More susceptible to trash and breakage
- Smaller

Capacitive



- New technology
- Fat Stylus or Finger Entry
- Affected by sweat and rain – but most have Rain Mode
- Virtually unbreakable – less Repairs
- Larger, brighter, easier to see



Question #4 - Speed

Slow → Faster → Faster → Fastest



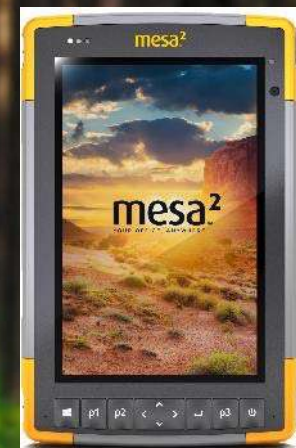
- 800 MHz Processor
- 512 MB RAM
- 8 GB Storage



- 1 GHz Processor
- 512 MB RAM
- 1, 8, and 32 GB Storage respectively



- 1.5 GHz Processor
- 1 GB RAM
- 4 GB Storage



- Quad Processor
- 4 GB RAM
- 64/128 GB Storage



Question #5 - Cost

Least



Most



\$1169



\$1399



\$1399



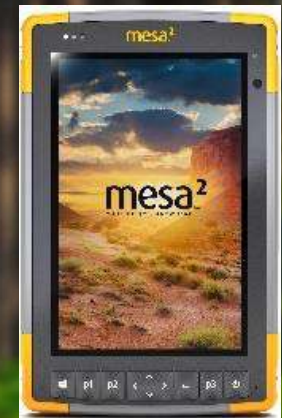
\$1529



\$1799



\$2032



\$2632



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Question #6 – Rugged vs BYOD

Rugged

- Better GPS (unless you use an external GPS)
- All day battery
- Faster data entry
- Rugged – less likely to fail in difficult conditions
- Runs Solo, TCruise, and RTI
- More expensive

BYOD

(Bring Your Own Device)

- Use phone – Pro and Con
- Cheaper to implement
- Use free or cheap apps
- Slower data entry
- Battery is a big issue especially in extreme heat and cold
- More fragile



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Call us at 866-395-5440 with questions or to request a quote!



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