
Wireless Telecom Group (NYSE/WTT)

BUY - Current Price \$1.82 /Price Target: \$3.00

*Wireless Telecom Group makes electronic components and related software to allow wireless carriers to develop, deploy and test wireless networks.**December 3, 2018**Barry M. Sine*

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Enabling the Development, Deployment and Testing of Wireless Networks

- We initiate coverage of Wireless Telecom Group (WTG) with a Buy rating and a \$3 price target.
- The company manufactures highly technical electronic hardware essential to the design, deployment and operation of wireless networks.
- Supported network applications include mobile, public safety, wifi, commercial, satellite and military.
- The company was founded in 1985 by a Turkish immigrant, but its oldest business unit dates to 1949. Its individual product brands (Microlab, Boonton Electronics, Noisecom and CommAgility) are well-known and well respected in the industry.
- Industry technology trends such as more localized and in-building cell sites and use of higher, gigahertz frequencies play to the company's strengths which are more relevant now than they were in the past. The industry is moving in WTG's direction.
- Wireless industry capital spending trends including 5G deployment in the developed world and 4G in developing countries, in-building network deployment, utilization of higher frequencies and integration of multiple frequencies into single network deployments all play to the company's strengths.
- WTG is on a hot streak with revenue up 20% for the first nine months of 2018 driven by recently acquired CommAgility.
- The company's business is highly cyclical with U.S. government spending ramping up as its fiscal year ends in September and with wireless network construction peaking during the warm weather months in 2Q and 3Q. As a result, the company has posted weaker orders and backlog in recent quarters. We think this creates a buying opportunity as multiple macro trends appear to be working in the company's favor and should lead to renewed growth in orders.
- Risks are headlined by the fact that the company does face some competitors who are significantly larger, but WTG's focus on low volumes and heavy customization makes its business less attractive to the giants.


Wireless Telecom Group, Inc.

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Rating	BUY	Earnings Per Share				
Target Price	\$3.00	Normalized to exclude unusual items				
Ticker Symbol	WTT	FYE - December	2017	2018E	2019E	2020E
Market	NYSE	1Q - March	(\$0.06)	\$0.02 A	\$0.01	\$0.01
Stock Price	\$1.82	2Q - June	(\$0.07)	(\$0.01) A	\$0.01	\$0.01
52 wk High	\$2.64	3Q - September	\$0.03	\$0.03 A	\$0.01	\$0.01
52 wk Low	\$1.52	4Q - December	(\$0.12)	(\$0.01)	\$0.01	\$0.01
		Year	(\$0.22)	\$0.03	\$0.04	\$0.05
Shares Outstanding:	21.0 M	Revenue (\$mm)	\$46.1	\$52.7	\$58.8	\$66.7
Public Market Float:	18.2 M	EV/Rev	0.8X	0.7X	0.6X	0.6X
Avg. Daily Volume	24,951	EBITDA (\$mm)	\$3.6	\$5.0	\$4.8	\$5.0
Market Capitalization:	\$38 M	EV/EBITDA	10.3X	7.5X	7.8X	7.4X
Institutional Holdings:	27.3%					
Dividend Yield:	0.0%					

Senior Executives		Common Ownership Profile		
		Shareholder	Shares ('000)	% of Total
Timothy Whelan	Chief Executive Officer	Hollow Brook Wealth Management LLC	1,859.6	8.9%
Daniel Monopoli	Chief Technology Officer	Renaissance Technologies LLC	986.6	4.7%
Michael Kandell	Chief Financial Officer	Dimensional Fund Advisors LP	615.4	2.9%
		The Vanguard Group, Inc.	558.7	2.7%
		Fidelity Management & Research Co.	354.8	1.7%
		Directors and Officers	3,798	18.1%

Capitalization		
Market Value Basis ('000)	11/29/2018	%
Long-Term Debt	\$3,080	8.2%
Market Value of Equity	38,184	101.9%
Less: cash	-3,774	-10.1%
Enterprise Value	\$37,490	100.0%
Book Value Basis ('000)	09/30/2018	%
Long-Term Debt	\$3,080	6.6%
Other Liabilities	10,647	22.8%
Book Value of Equity	32,869	70.5%
Total Capital	\$46,596	100.0%



Source: Company reports, FactSet Data Systems and Dawson James estimates.

Enabling the Development, Deployment and Testing of Wireless Networks

We initiate coverage of Wireless Telecom Group (WTG) with a Buy rating and \$3 price target. We believe that the company is ideally situated to benefit from a surge in wireless telecom network spending over the next decade as carriers deploy new 5G networks. It should also benefit from increased military wireless spending and major US telecom network projects such as AT&T's FirstNet build and T-Mobile's onboarding of Sprint's spectrum to its network once that acquisition closes next year.

This is a good time to buy the stock as WTG is in a lull between contract cycles. While overall revenue grew 11.6% in 3Q, two of its three segments posted down revenue and bookings were seasonally light. This is to be expected as telecom network building peaks in the warmer 2Q/3Q period and the federal government's fiscal year ends in September.

We value WTT shares at 12x times our 2020 EBITDA forecast. As a small niche player, the company has no true direct comps, but it does compete with small portions of the businesses of larger players such as CommScope and Qualcomm. The fact that WTG is a smaller player with higher growth prospects would suggest a higher multiple while the company's small size and the stock's illiquidity suggest a discount. We assume that the two net each other out, and value the stock in line with comps.

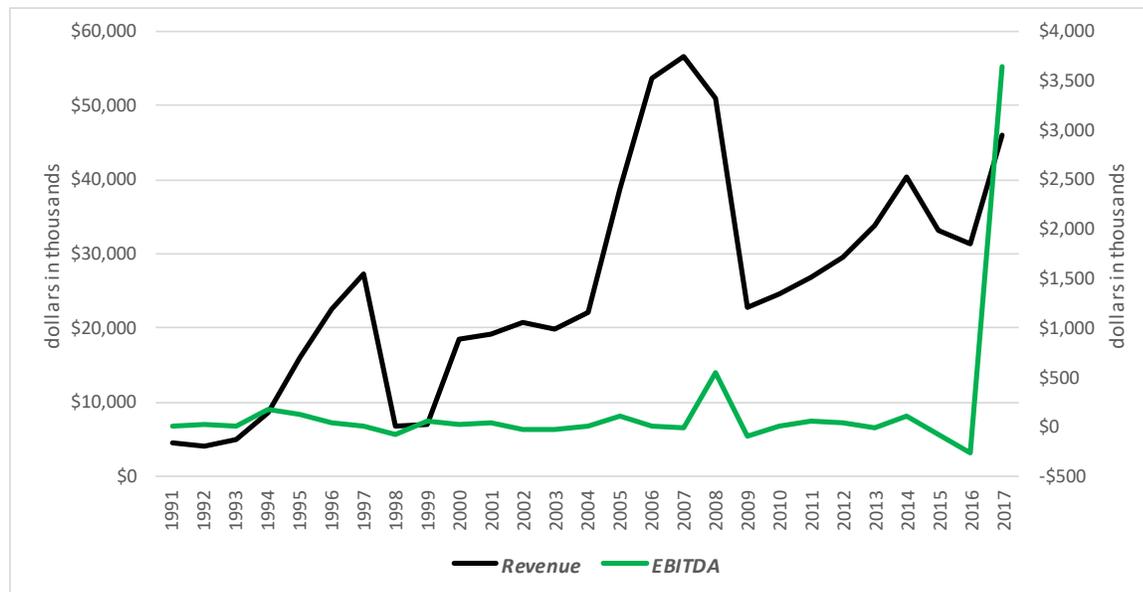
In terms of risk factors, as noted, the company does compete with several larger players who could significantly disrupt the company's business. It seeks to protect itself by offering significant customization particularly of the software and services that it often sells with hardware. WTG also sells mainly niche products with small addressable markets, such as noise generators, that are unlikely to attract the attention of larger competitors.

The Company Was Founded in a Hackensack Basement by a Turkish Immigrant

The company was founded as Noise Com in a basement in Hackensack in 1985 by Turkish immigrant Karabet "Gary" Simonyan. Its original products were noise source devices used for testing military communications equipment. The Noisecom brand and business is still alive and well inside of WTG and its products are now also used for jamming enemy wireless signals. The company went public in 1991 first trading at \$0.77 per share, versus the most recent price of \$1.82. In 1994 the company changed its name to the present Wireless Telecom Group and began to expand its product portfolio via acquisitions as the founder transitioned out of the CEO role but stayed on the board of directors until 2005. The company completed three acquisitions in short order: Boonton Electronics for \$4.5 mm in 2000, Microlab for \$3.8 mm in 2001 and Willtek for \$28.4 mm in 2004. The Willtek acquisition proved disastrous as it was sold just ten years later for only \$2.75 mm to Plainview, NY-based Aeroflex. Ironically, Aeroflex, which was itself acquired in 2014, was a 10% customer in 2017.

Sales peaked in 2007 at \$56.6 mm then fell sharply to \$22.8 mm in 2009 due to the Willtek sale. They climbed again to \$40.4 mm in 2014, but again began declining. In 2015, the board was rejuvenated with new members, including current CEO Tim Whelan who then took over in 2016 and assembled his own team including current CFO Mike Kandell who worked with Whelan when both were employed at accounting firm Ernst & Young in the 1990s.

Under New Management, Revenue Finally Generating Profitability



Source: FactSet Data Systems

In our conversations with Whelan he noted his experience at IPC Systems where he rose to president. During his fourteen years at IPC he saw four different owners and fourteen M&A deals, twelve where it was the acquirer and two that were divestitures. Three owners were private equity and one was Global Crossing which sold IPC to Goldman Sachs’ private equity arm just before filing for bankruptcy. With his industry experience, knowledge of M&A and year-long stint on the board, he took over with a good insight into the industry and what needed to be done at WTG.

After becoming CEO in 2016, Whelan’s first major move was the acquisition of CommAgility of Loughborough, England for \$31.25 mm (including all potential earn outs). Key aspects of the deal were that its management team stayed with the company, and up to 40% of the purchase price was structured as an earn out, based on the continued success of the business. Mr. Whelan explained to us that he likes these aspects of the deal, and would seek to replicate them in future transactions. Fortunately, CommAgility has been a grand slam home run, with revenue up 93% in the most recent quarter and a strong 46% gross margin. In fact, we believe that CommAgility is presently carrying the rest of the business as it goes through cyclicality, and supporting the stock price. The synergy that WTG brought to CommAgility was its global distribution capability and the revenue results that we are seeing seem to suggest that this is one of those rare corporate acquisitions where management promises of synergies are not only borne out, but exceeded. From a strategic perspective, this acquisition achieved three goals: it expanded the company’s geographic presence and diversity outside of the U.S., it diversified the product line and added higher margin software and services and it brought the company greater scale with \$53 mm in revenue expected in 2018.

Three Business Units Operate Under Four Brands With One Logo

	Brand(s)	Founded	Pct. Of Revenue	3Q18 Growth	3Q18 G.M.
Network Solutions					
	Microlab www.microlabtech.com	1949	43.0%	-6.1%	43.8%
RF and microwave components					
Test and equipment					
	Boonton Electronics https://www.boonton.com/	1947	26.3%	-5.6%	50.2%
RF and microwave test instrumentation and sensors					
	Noisecom https://www.noisecom.com/	1985			
Noise test equipment for commercial and military networks					
Embedded Solutions					
	CommAgility https://www.commagility.com/	2006	30.7%	92.8%	45.9%
Signal processing hardware and software for 4g and 5G networks					
Total			100.0%	11.6%	46.1%

Source: Company reports

Today, WTG operates three business segments: Network Solutions which operates under the Microlab brand, Test and Measurement which operates under both the Noisecom and Boonton Electronics brands, and Embedded Solutions which is comprised of CommAgility. While it has four disparate brands to retain the strong niche identity of its predecessor companies, all share the same parent logo. About 85% of revenue is from commercial customers and 15% from the U.S. military. Its only 10% customer is Aeroflex, which represents about half of CommAgility’s revenue, at 10.4% of consolidated revenue.

In its February 2017 presentation on the acquisition of CommAgility the company outlined its long-term strategy which is to become a \$100 mm revenue business over four to six years - now closer to two to four years. The math they outlined was 10% to 20% organic growth, which they are achieving, and about \$40 million in revenue from M&A. We believe that their M&A sweet spot is companies in the \$10 mm to \$20 mm range, so this implies two to four acquisitions. While the balance sheet presently looks adequate to support acquisitions, in our opinion the equity price is presently too low to use as acquisition currency. The CEO noted to us that they like to have around half a dozen targets they are thinking about at any one time and noted that companies usually have to consider multiple potential targets for every one they complete. So, M&A is an ongoing process.

Both the inorganic and organic growth strategies involve expanding the product set, increasing the addressable market and creating operating scale. Having toured the company’s headquarters, which houses the operations of two of its three segments, we can see the ability to support more revenue on the current footprint, which should expand the operating margin as the company ramps towards its aspiration of \$100 mm in revenue.

All of the business units provide tools used in wireless networks but there is limited integration today, with only about a 15% customer overlap. We see this as a key opportunity and management agreed with this assessment as WTG can cross sell its solutions across the board to each segment's current customer roster. The company's recent slide deck neatly sums up the company's strategic vision under Whelan and how it addresses network operator needs. The CommAgility products in its embedded solutions segment address network development particularly in 4G and 5G. Its Microlab products in its network solutions segment address deployments particularly for small cell sites and in building sites. It's Boonton and NoiseCom products in its test and measurement segment address network testing requirements particularly for the U.S. military.

The company's largest segment is **Network Solutions** at 43% of revenue. It operates under the Microlab brand which was acquired in 2001. This unit grew 14% last year, but growth has halted with revenue declining 6% YoY in 3Q. It carries a relatively high gross margin of 44%. Its product set is pretty geeky but to boil it down, it makes products that combine or split different radio frequencies for wireless carriers. Over the decades since the introduction of cellular services in the 1980s, the FCC in this country and its counterparts overseas have issued additional wireless licenses to help carriers cope with increasing demand. However, these new licenses are at different frequencies, depending on where open frequencies exist. Microlab's equipment combines signals from different frequencies as the signal moves from a cell site into the carrier's network, and then de-combines it. Its products are mainly used in small cell or DAS networks. DAS stands for distributed antenna systems and are used in large commercial buildings such as sports arenas. With a DAS system, multiple carriers using different frequencies can share an in-building network. Microlab has sold equipment recently into US Bank Stadium in Minneapolis – home of the NFL Vikings – and Hard Rock Stadium in Miami Gardens, Florida – which is home to the NFL Dolphins. Hard Rock is scheduled to host Super Bowl LIV in 2020 so the company's equipment is sure to be put to the test. This network is currently under construction with Microlab shipping product in 4Q to support it.

Microlab is in the company's Parsippany, New Jersey headquarters and benefits from renovations last year which upgraded the office work space, product development and testing area and manufacturing area. Microlab is best known for passive intermodulation or PIM hardware. Intermodulation refers to the combining of two radio frequencies. Many wireless carriers have licenses at a variety of frequencies, and in some cases, such as shared antenna systems, frequencies from multiple carriers must be combined. Passive refers to the fact that the hardware is not changing or manipulating the frequency in which case it would be referred to active. As noted, Microlab is very active in supplying hardware in sports arenas. This equipment is also important in commercial buildings, where municipal codes are starting to require that buildings be equipped with in-building radio networks to support first responders. Landlords are also starting to see that deploying in-building networks to serve tenants' data requirements is a new, incremental source of recurring revenue.

When we toured the company's facilities and met with management, they were very excited about the potential for their DCC and MCC equipment. DCC stands for DAS carrier conditioner. MCC stands for modular carrier conditioner. Microlab's most basic products are things like combiners, couplers or splitters which all do as their names imply with radio frequencies. Customers can buy these individual components to do what Microlab's DCC or MCC products do but it would take up more space and require significantly more technician time. So, in effect, the MCC and DCC are a replacement for expensive technician labor and for space, which can be at a premium in many locations.

The DCC hardware combines the individual components into a single box combining frequencies and allowing for power level adjustments. DCC is great, but if the network requirements change, such as AT&T or Verizon adding gigahertz band frequencies for 5G or for T-Mobile to add Sprint's frequencies to its network, the hardware must be replaced.

MCC is, as the M stands for, modular. It has slots for eight filter cards, each one of which performs the functions of a single DCC box. This is great for network environments which may have to support multiple carriers, e.g., AT&T, Verizon and T-Mobile or for carriers adding new frequencies to their networks to increase capacity. Unlike DCC, when requirements change, Microlab's customers can add more cards to their system or replace old cards with new cards, so the system is much more future proof. As you move up the Microlab PIM product line, prices increase and Microlab's margins expand, but its customers deployment costs go down.

While the carrier market is strong presently, with significant demand expected for many years as networks evolve, the commercial market is also a great opportunity. Microlab's equipment is used for setting up in-building wireless networks. These environments may not have quite the demand of a large sports arena with tens of thousands of people streaming video on their devices simultaneously, but they do represent a sizable market.

There are also increasing public safety requirements that building owners support public safety networks in buildings and also monitor these systems so they are alerted if they fail, for example due to renovation work in the building. San Francisco already makes monitoring a requirement and fire codes are being updated across the country to test to ensure that large buildings have functioning in-building public safety radio networks before granting certificates of occupancy.

The company's in-building GPS network equipment is a new product portfolio. GPS, or global positioning system, is increasingly important for wireless applications. It is best known as providing location data. But GPS also provides very precise timing information and precision is necessary for modern network technologies that allocate usage based on precise time slots. These systems require timing to be as precise as 0.000000001 seconds or even finer in some cases. But GPS signals are generated from geosynchronous satellites orbiting the earth 26,199 miles high and the signal cannot penetrate tall buildings or tunnels. Microlab's GPS hardware uses active technology to capture GPS signals on building rooftops, transmit them over fiber through a building and retransmit them in the building so wireless devices or network equipment can receive them. Since there is some latency in doing so, and since the receiving hardware requires extreme precision, Microlab's hardware adjusts for this slight delay or latency when retransmitting the signal in the building.

Test and Equipment represented 26% of revenue in the most recent quarter and is comprised of two businesses operating under separate sub-brands. This was a strong grower in 2017 with revenue up 46% but like network solutions, revenue declined 6% in the most recent quarter. It too carries a relatively high gross margin of over 50% since its niche products face little to no competition and are a very small part of customers' budgets. This segment includes the original Noisecom business which makes equipment used by commercial and military customers for measuring noise in their networks. Think about bad network experiences you have had with cell phones and you understand how frustrating and how much of an issue noise is on a telecom network. To carriers, it is a serious issue since customers resolve it by cancelling their service and switching to another carrier. The U.S. military is also concerned with noise in its networks, but they also use Noisecom products to intentionally generate noise to jam enemy signals.

The test and measurement segment includes the Boonton and Noisecom brands and are also based in the company's Parsippany headquarters. We noted increasing synergies between these two product families. Boonton makes radio frequency and microwave frequency test equipment. It is widely used by the military, defense contractors, and commercial communications companies. The equipment is used to test radar, avionics, electronic warfare, satellite and wireless communications. On the walls at its headquarters, the company displays posters of the USS Ronald Reagan aircraft carrier and the F-35 Lighting Joint Strike Fighter as examples of applications of where the products are used.

Noisecom makes radio frequency and microwave frequency noise generating equipment. All of its products start with a basic electronic diode which is used to generate a noise source. Noise is a bad thing in a telecom network, so Noisecom's products generate noise in the network to allow electronics manufacturers to test and optimize their equipment to better tolerate or eliminate noise. Noisecom's equipment can operate in frequencies between 10 MHz and 110 GHz, whereas its competitors generally do not make equipment for the higher frequency ranges. This is becoming more important as the higher frequencies are increasingly being used in applications like space and 5G, whereas previously electronics equipment could not reliably use these frequencies. So the technology world is moving in Noisecom's direction, demanding hardware that operates in a wider range of frequencies.

The satellite industry is a great example of increasing use of higher frequencies, which in turn creates more demand for Noisecom equipment. From the earliest days of satellite communications with the launch of Sputnik in 1957 until the present day, most communications satellites operated at high geosynchronous altitudes receiving signals from the earth and rebroadcast them to other locations on the planet. Starting with the Iridium network in the 1990s, satellite constellation operators launched satellites at much lower altitudes only a few hundred miles high. The benefit of these LEO (low earth orbit) constellations was much reduced latency but the drawback was the need for many more satellites to cover the earth – 66 in the case of Iridium. SpaceX's Starlink constellation is planned to have around 7,000 satellites. These constellations use gigahertz frequencies to communicate with each other and send signals around the earth so that someone say in Montana calling a person in Japan might have their call routed through multiple satellites. Because there is no interference in space, gigahertz frequencies are feasible. Since they offer greater bandwidth, they can transmit more data. With this explosion in the usage of gigahertz frequencies in space, we expect more demand for Noisecom products.

Noisecom also counts several semiconductor manufacturers as customers including Qorvo, Intel, Qualcomm and Broadcom. With wireless devices becoming smaller, but containing more components, the need to measure and manage interference becomes greater. A modern Samsung or Apple device can contain bluetooth, wifi and cellular radios, all of which operate at different frequencies which may interfere with one another. So Noisecom equipment is essential in testing new semiconductors and devices. With technology developments such as MIMO – multiple in, multiple out – referring to the number of frequencies, Noisecom is even more relevant. Chipsets now integrate multiple on-board power amplifiers and antennas on a single chip. Previously, these were all separate components that could be individually tested. To overcome this, engineers use over the air testing incorporating Noisecom hardware.

The burgeoning deployment of 5G networks is another area that plays into Noisecom's strengths, particularly its ability to operate at the high, gigahertz frequencies which are used in early 5G systems being deployed by carriers such as AT&T and Verizon.

The **Embedded Solutions** segment consists of CommAgility which was acquired in 2017 and is located in the U.K. with software development in Germany. Its hardware supports 4G and 5G networks and is also used in satellite networks. Key customers today include Harris, Lockheed Martin and Aeroflex which makes up about half of CommAgility's revenue. Aeroflex test and measurement was acquired by Viavi Solutions in early 2018 from Cobham plc. Orders from Aeroflex were light in 2017 leading up to the sale but since then Aeroflex has been on a tear with CommAgility revenue up over 90% YoY in the third quarter. CommAgility has recently announced a new satellite hardware and software order from Lockheed Martin. Software is an important part of the equation since it carries much higher gross margins than hardware.

An important industry development for CommAgility is CBRS or commercial broadband radio service. This service is revolutionary since the FCC allows companies to use a portion of the radio waves without buying an expensive license. This makes it feasible for small commercial businesses to build their own networks. Think of CBRS as a cross between CB radios, WiFi and 4G LTE. Like the citizens band radios of the 1970s, anyone can use the frequencies. Similarly, WiFi networks do not require licenses but they operate at very limited power levels, and thus distances, and suffer from performance issues. Broadband 4G LTE wireless radio networks from the big national carriers work great, but it is expensive to use them. CBRS is taking technology designed for carriers, and applying it to unlicensed commercial networks, so they should enjoy similar reliability and performance levels. And again, these networks can be designed using CommAgility's embedded network modules.

We Believe the Company Can Sustain Double-Digit Growth

Our forecast importantly concludes that the company can maintain its recent track record of double-digit growth. This was a key question asked by an institutional investor on the most recent earnings call. In this report, we have cited numerous, positive trends that should benefit the company but we caution that the company does experience seasonality and cyclical growth and looks to weaken in the next quarter or two, before benefiting from the strong macro trends and re-accelerating. Management has provided 4Q guidance, and our estimates are consistent. We expect them to switch to the more conventional annual guidance next quarter, which should project an image of growth, rather than providing 1Q guidance, which might be another light quarter.

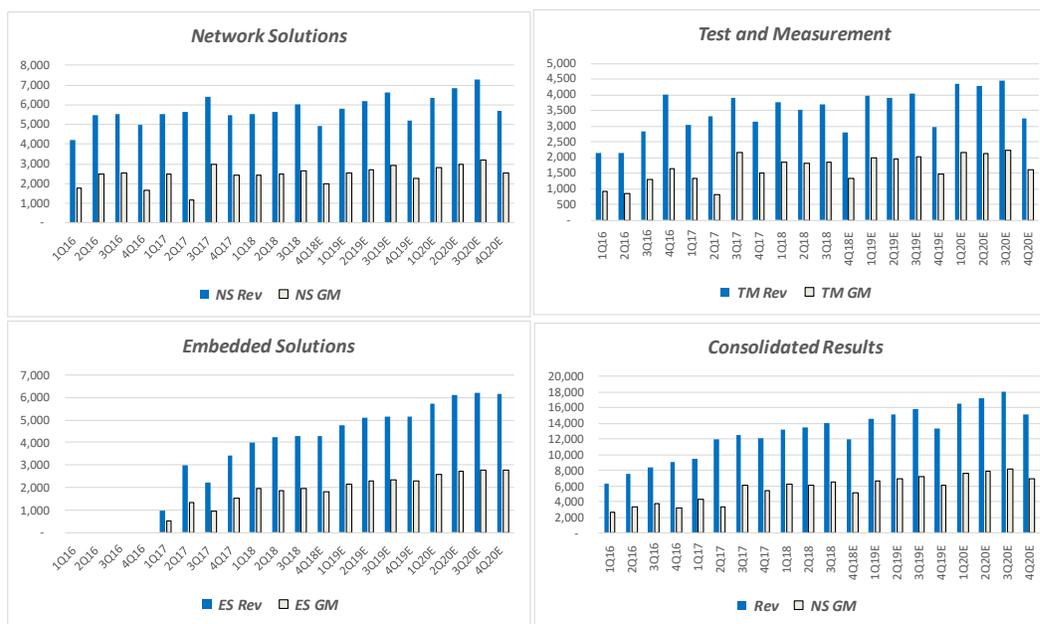
Signs of near-term caution investors should be aware of are:

- 4Q revenue guidance implies a sequential and possible year over year decline in revenue.
- Margin and operating expense guidance imply a down EBITDA quarter as well, which would result in a decline in the important trailing twelve months EBITDA number many investors and quant models use in valuing and trading stocks.
- Revenue for two of three segments was down 6% in 3Q, although 93% growth at the third allowed for strong consolidated growth. It may take some time for the first two to return to growth, while the growth segment is likely to cool somewhat.
- Orders were down 27% marking the second quarter in a row of a book to bill ratio below one.
- The backlog was down 39%.

So all of these factors point to a light fourth quarter, which we expect to also continue into 1Q. The good news is that the company generally has a very short order cycle, so any good news on orders and backlog in 4Q should not take long to show up in the income statement. None of this is reason for alarm, in our opinion. In fact, the more investors understand the seasonality and cyclicity of the business, the less likelihood that a light quarter, as we expect in 4Q, will have on the share price.

The charts below illustrate historic and our forecast revenue and gross profit trends for each segment and the company as a whole. Some notable features are the cyclicity and seasonality of the first two, legacy segments, and the strong growth of the new Embedded Solutions segment. The net result has been strong overall growth, but seasonality is still evident.

Revenue and Gross Profit Trends by Segment and Consolidated



Source: Company reports and Dawson James estimates

At 12x Projected 2020 EBITDA, Stock Would be \$3

As noted, we value WTT shares at \$3.00 using a multiple of 12x our 2020 EBITDA estimate. The stock trades at around half this level, so it will take some doing, and likely the better part of a year, to get near this target. The stock currently trades at 0.7x trailing twelve months sales, while comps trade at 3.0x. None trades at less than 1.0x sales, which is a widely used benchmark level. Our target implies a valuation of 0.9x 2020E sales. Note that our \$67 mm 2020 sales estimate, is well below the \$100 mm aspirational level shared by management last year, although they did say that achieving this would likely involve several acquisitions, in addition to organic growth.

On an EBITDA basis, WTT shares trade at 8.5x trailing twelve months EBITDA, whereas comps trade at double this although several trade at similar levels. Our 12x may be aggressive, but our \$5.0 mm 2020 EBITDA estimate is likewise conservative. Security valuation is as much an art as a science but the key point is that WTT shares look inexpensive today, and show room for significant appreciation should its revenue and EBITDA perform as it benefits from the trends we outline in this report.

Our \$3 Target Implies 12x EBITDA Multiple, Representing a Slight Discount to Comps

Company Name	Fiscal Period	Price	Shares Outstanding	Market Value	Enterprise Value	Sales	EBIT	EBITDA	Enterprise Value/Sales	Enterprise Value/EBIT	Enterprise Value/EBITDA
Wireless Telecom Group	09/30/2018	\$1.82	21.0	35.7	35.0	57.6	1.1	4.2	0.7x	16.9x	8.5x
WTT @ 2020E	12/31/20	\$1.82	21.0	35.7	35.0	66.7	1.9	5.0	0.5x	18.5x	6.9x
WTT@ target on 2020E	12/31/20	\$3.00	21.0	62.9	62.2	66.7	1.9	5.0	0.9x	33.0x	12.3x
Anritsu Corporation	09/30/2018	\$16.18	138.2	2,235.3	1,996.3	775.6	47.1	85.8	2.6x	42.3x	23.3x
Advantest Corp.	09/30/2018	\$21.53	199.6	4,296.1	3,282.9	1,869.7	216.0	261.4	1.8x	15.2x	12.6x
Agilent Technologies, Inc.	07/31/2018	\$71.57	318.8	22,814.4	22,486.4	4,472.0	840.0	1,054.0	5.0x	26.8x	21.3x
Cobham plc	06/30/2018	\$1.30	2,391.0	3,117.7	3,186.0	2,643.3	92.0	380.0	1.2x	34.6x	8.4x
CommScope Holding Co., Inc.	09/30/2018	\$17.68	192.2	3,398.5	7,029.9	4,560.6	569.4	922.1	1.5x	12.3x	7.6x
Keysight Technologies Inc	07/31/2018	\$61.52	187.4	11,530.6	12,578.6	3,189.0	246.0	469.0	3.9x	NM	NM
National Instruments Corporation	09/30/2018	\$48.82	132.4	6,465.4	5,983.0	1,289.9	166.3	239.0	4.6x	36.0x	25.0x
Polar Power, Inc.	09/30/2018	\$5.92	10.1	60.0	50.3	14.4	(0.8)	(0.5)	3.5x	-	-
Teledyne Technologies Incorporated	09/30/2018	\$221.69	36.1	7,998.4	8,709.6	2,603.8	363.7	476.7	3.3x	23.9x	18.3x
Teradyne, Inc.	09/30/2018	\$35.37	179.3	6,340.1	5,484.1	2,136.6	539.4	647.5	2.6x	10.2x	8.5x
Average									3.0x	27.9x	16.4x
WTT discount									82%	34%	58%
WTT discount @ target on 2020E									68%	-18%	25%

Source: Company reports and Dawson James estimates

Wireless Telecom Group, Inc. Segment Forecast

Dollars in thousands, except per share data Fiscal years ended March 31		2018E				2019E					2020E				
	1QA	2QA	3QA	4Q	YEAR	1Q	2Q	3Q	4Q	YEAR	1Q	2Q	3Q	4Q	YEAR
Network Solutions															
Revenue	5,511	5,636	6,034	4,943	22,124	5,787	6,200	6,637	5,190	23,813	6,365	6,820	7,301	5,709	26,195
YoY Growth	-0.1%	0.3%	-6.1%	-10.0%	-4.0%	5.0%	10.0%	10.0%	5.0%	7.6%	10.0%	10.0%	10.0%	10.0%	10.0%
Sequential growth															
As a pct. of revenue	41.5%	42.0%	43.0%	41.1%	42.0%	39.8%	40.8%	41.9%	39.1%	40.5%	38.7%	39.6%	40.7%	37.8%	39.3%
Gross profit	2,442	2,468	2,640	1,977	9,527	2,546	2,728	2,920	2,284	10,478	2,801	3,001	3,213	2,512	11,526
As a pct. of revenue	44.3%	43.8%	43.8%	40.0%	43.1%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
Test and measurement															
Revenue	3,763	3,534	3,683	2,813	13,793	3,951	3,887	4,051	2,954	14,844	4,346	4,276	4,456	3,249	16,328
YoY Growth	23.9%	6.6%	-5.6%	-10.0%	3.1%	5.0%	10.0%	10.0%	5.0%	7.6%	10.0%	10.0%	10.0%	10.0%	10.0%
Sequential growth															
As a pct. of revenue	28.4%	26.3%	26.3%	23.4%	26.2%	27.2%	25.6%	25.6%	22.3%	25.2%	26.4%	24.9%	24.8%	21.5%	24.5%
Gross profit	1,845	1,815	1,850	1,350	6,860	1,976	1,944	2,026	1,477	7,422	2,173	2,138	2,228	1,625	8,164
As a pct. of revenue	49.0%	51.4%	50.2%	48.0%	49.7%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Embedded Solutions															
Revenue	3,990	4,244	4,302	4,273	16,809	4,788	5,093	5,162	5,127	20,170	5,746	6,111	6,195	6,152	24,204
YoY Growth	300.2%	41.5%	92.8%	25.0%		20.0%	20.0%	20.0%	20.0%		20.0%	20.0%	20.0%	20.0%	
Sequential growth															
As a pct. of revenue	30.1%	31.6%	30.7%	35.5%	31.9%	33.0%	33.5%	32.6%	38.6%	34.3%	34.9%	35.5%	34.5%	40.7%	36.3%
Gross profit	1,981	1,887	1,974	1,794	7,636	2,155	2,292	2,323	2,307	9,077	2,586	2,750	2,788	2,769	10,892
As a pct. of revenue	49.6%	44.5%	45.9%	42.0%	45.4%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%
Total															
Revenue	13,264	13,414	14,019	12,029	52,726	14,526	15,180	15,851	13,271	58,828	16,457	17,207	17,952	15,111	66,727
YoY Growth	38.9%	12.4%	11.6%	-0.1%	14.4%	9.5%	13.2%	13.1%	10.3%	11.6%	13.3%	13.4%	13.3%	13.9%	13.4%
Sequential growth															
Gross profit	6,268	6,170	6,464	5,122	24,024	6,676	6,963	7,269	6,068	26,976	7,559	7,889	8,228	6,905	30,582
As a pct. of revenue	47.3%	46.0%	46.1%	42.6%	45.6%	46.0%	45.9%	45.9%	45.7%	45.9%	45.9%	45.8%	45.8%	45.7%	45.8%

Source: Company reports and Dawson James estimates

Wireless Telecom Group, Inc. Income Forecast

Dollars in thousands, except per share data
Fiscal years ended December 31

	2018E					2019E					2020E				
	1QA	2QA	3QA	4Q	YEAR	1Q	2Q	3Q	4Q	YEAR	1Q	2Q	3Q	4Q	YEAR
Revenue	13,264	13,414	14,019	12,029	52,726	14,526	15,180	15,851	13,271	58,828	16,457	17,207	17,952	15,111	66,727
YoY growth	38.9%	12.4%	11.6%	-0.1%	14.4%	9.5%	13.2%	13.1%	10.3%	11.6%	13.3%	13.4%	13.3%	13.9%	13.4%
Seq growth	10.2%	1.1%	4.5%	-14.2%	438.3%	20.8%	4.5%	4.4%	-16.3%	443.3%	24.0%	4.6%	4.3%	-15.8%	441.6%
Cost of revenue	6,996	7,244	7,555	6,907	28,702	7,849	8,217	8,582	7,203	31,851	8,898	9,318	9,724	8,206	36,146
As a percent of revenue	52.7%	54.0%	53.9%	57.4%	54.4%	54.0%	54.1%	54.1%	54.3%	54.1%	54.1%	54.2%	54.2%	54.3%	54.2%
Gross margin	6,268	6,170	6,464	5,122	24,024	6,676	6,963	7,269	6,068	26,976	7,559	7,889	8,228	6,905	30,582
As a percent of revenue	47.3%	46.0%	46.1%	42.6%	45.6%	46.0%	45.9%	45.9%	45.7%	45.9%	45.9%	45.8%	45.8%	45.7%	45.8%
Research and development	1,157	1,313	1,191	1,203	4,864	1,307	1,366	1,427	1,194	5,294	1,481	1,549	1,616	1,360	6,005
As a percent of revenue	8.7%	9.8%	8.5%	10.0%	9.2%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Sales and marketing	1,910	1,933	1,795	1,684	7,322	2,034	2,125	2,219	1,858	8,236	2,304	2,409	2,513	2,116	9,342
As a percent of revenue	14.4%	14.4%	12.8%	14.0%	13.9%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
General and administrative	2,681	2,678	2,559	2,406	10,324	2,905	3,036	3,170	2,654	11,766	3,291	3,441	3,590	3,022	13,345
As a percent of revenue	20.2%	20.0%	18.3%	20.0%	19.6%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Loss on contingent liability	-	213	-	-	213	-	-	-	-	-	-	-	-	-	-
Operating income	520	33	919	(171)	1,301	430	436	453	361	1,681	483	490	509	408	1,889
Operating margin	3.9%	0.2%	6.6%	-1.4%	2.5%	3.0%	2.9%	2.9%	2.7%	2.9%	2.9%	2.8%	2.8%	2.7%	2.8%
Other income	2	33	(60)	-	(25)	-	-	-	-	-	-	-	-	-	-
Interest expense	(92)	(141)	(115)	(116)	(464)	(116)	(116)	(116)	(116)	(462)	(116)	(116)	(116)	(116)	(462)
Pretax Income	430	(75)	744	(286)	813	315	320	338	246	1,219	367	374	393	292	1,427
Taxes	56	105	186	(72)	275	79	80	84	61	305	92	94	98	73	357
Tax rate	13.0%	-140.0%	25.0%	25.0%	33.9%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Net income to common	374	(180)	558	(215)	537	236	240	253	184	914	275	281	295	219	1,070
Net income margin	2.8%	-1.3%	4.0%	-1.8%	1.0%	1.6%	1.6%	1.6%	1.4%	1.6%	1.7%	1.6%	1.6%	1.4%	1.6%
Diluted shares outstanding	21,633	20,864	21,555	21,655	21,427	21,755	21,855	21,955	22,055	21,905	22,155	22,255	22,355	22,455	22,305
Seq change	1,117.5	(768.7)	690.6	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
EPS diluted - continuing	\$0.02	(\$0.01)	\$0.03	(\$0.01)	\$0.03	\$0.01	\$0.01	\$0.01	\$0.01	\$0.04	\$0.01	\$0.01	\$0.01	\$0.01	\$0.05
EBITDA															
Net income	374	(180)	558	(215)	537	236	240	253	184	914	275	281	295	219	1,070
Taxes	56	105	186	(72)	275	79	80	84	61	305	92	94	98	73	357
D&A	626	610	537	600	2,373	600	600	600	600	2,400	600	600	600	600	2,400
Interest expense	92	141	115	116	464	116	116	116	116	462	116	116	116	116	462
EBITDA	1,148	676	1,396	429	3,649	1,030	1,036	1,053	961	4,081	1,083	1,090	1,109	1,008	4,289
Stock comp expense	188	161	156	150	655	180	180	180	180	720	190	190	190	190	760
ASU 606 adjustment	188	-	158	-	346	-	-	-	-	-	-	-	-	-	-
M&A expense	-	64	-	-	64	-	-	-	-	-	-	-	-	-	-
Integration expense	48	11	-	-	59	-	-	-	-	-	-	-	-	-	-
Inventory impairment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inventory recovery	(8)	(6)	(9)	-	(23)	-	-	-	-	-	-	-	-	-	-
FX (gain)/loss	48	(43)	53	-	58	-	-	-	-	-	-	-	-	-	-
US GAAP purchase accounting	-	213	-	-	213	-	-	-	-	-	-	-	-	-	-
Change in fair value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Restructuring	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adjusted EBITDA	1,612	1,076	1,754	579	5,021	1,210	1,216	1,233	1,141	4,801	1,273	1,280	1,299	1,198	5,049
YoY growth	260.6%	18.6%	20.4%	-30.2%	37.9%	-24.9%	13.0%	-29.7%	97.0%	-4.4%	5.2%	5.2%	5.3%	4.9%	5.2%
EBITDA margin	12.2%	8.0%	12.5%	4.8%	9.5%	8.3%	8.0%	7.8%	8.6%	8.2%	7.7%	7.4%	7.2%	7.9%	7.6%

Source: Company reports and Dawson James estimates

Important Disclosures:



Source: FactSet Data Systems

Price target and ratings changes over the past 3 years:
 Initiated – Buy – December 3, 2018 – Price Target \$3.00

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VALUATION

Our \$3.00 price target is based on a multiple of 12x our 2020 EBITDA estimate.

RISK FACTORS

1. WTG competes to some extent with a small portion of the businesses of much larger companies with greater resources such as Qualcomm and CommScope. Should these companies elect to compete more aggressively, it could damage the company. However, WTG intentionally targets low-volume, high customization applications which larger competitors are likely to find uneconomic to address.
2. The company's business is subject to both long-term and annual cycles, which regularly have a negative impact of revenue. Its large commercial customers go through long cycles of network investment, which can benefit WTG, followed by lighter cycles, which may hurt them. Similarly, U.S. government budget cycles also tend to go through cycles with politicians alternately favoring and then disfavoring military spending. On an annual basis, commercial network construction utilizing the company's products typically peaks in 2Q and 3Q when warmer weather makes outdoor construction easier, and then troughing in 4Q and 1Q.
3. WTT shares are subject to the risks typically associated with smaller, illiquid companies such as lower valuations and difficulty executing larger trades without impacting the stock price. Over time, as revenue increases and the market cap grows, this impact is likely to lessen. WTT shares benefit from trading on the more established New York Stock Exchange.

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Ratings Definitions:

- 1) **Buy:** the analyst believes the price of the stock will appreciate and produce a total return of at least 20% over the next 12-18 months;
- 2) **Neutral:** the analyst believes the price of the stock is fairly valued for the next 12-18 months;
- 3) **Sell:** the analyst believes the price of the stock will decline by at least 20% over the next 12-18 months and should be sold.

The following chart reflects the range of current research report ratings for all companies followed by the analysts of the Firm. The chart also reflects the research report ratings relating to those companies for which the Firm has performed investment banking services in the last twelve months.

Ratings Distribution	Company Coverage		Investment Banking	
	# of Companies	% of Total	# of Companies	% of Totals
Market Outperform (Buy)	35	88%	10	29%
Market Perform (Neutral)	5	13%	0	0%
Market Underperform (Sell)	0	0%	0	0%
Total	40	100%	10	25%

Analyst Certification:

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