



#### **Safe Harbor**

This presentation contains statements concerning Ceragon's future prospects that are "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995. Such forward-looking statements are based on the current beliefs, expectations and assumptions of Ceragon's management. Examples of forward-looking statements include: projections of demand, revenues, net income, gross margin, capital expenditures and liquidity, competitive pressures, order timing, growth prospects, product development, financial resources, cost savings and other financial matters. You may identify these and other forward-looking statements by the use of words such as "may", "plans", "anticipates", "believes", "estimates", "targets", "expects", "intends", "potential" or the negative of such terms, or other comparable terminology. These forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially, including risks relating to the concentration of a significant portion of Ceragon's business in certain geographic regions and particularly in India, where two customers currently represent a significant portion of its revenues; risks associated with a decline in demand from the single market segment on which we focus; risks associated with any failure to effectively compete with other wireless equipment providers; risk relating to certain guarantees granted by Ceragon on behalf of Orocom to FITEL, in the framework of the FITEL project; and other risks and uncertainties detailed from time to time in Ceragon's Annual Report on Form 20-F and Ceragon's other filings with the Securities and Exchange Commission, that represent our views only as of the date they are made and should not be relied upon as representing our views as of any subsequent date. We do not assume any obligation to update any forward-looking statements.





### **Ceragon Snapshot**

- Ceragon is the leading provider of wireless backhaul solutions to mobile operators and private networks globally
- 20+ years of technology R&D driving significant barriers to entry; founded in 1996 and headquartered in Tel Aviv, Israel
- Leading market position is driven by its strong technology advantage:
  - Vertically integrated solution from chipset to system drives unmatched performance
  - Ceragon's solutions have been adopted by Tier 1 mobile operators and leading private networks globally













- Strong execution has driven strong net income growth and significant margin expansion:
  - 2018 was 4th consecutive year of increasing net income
  - Gross margins have increased from 25.2% to 33.9% (b)

313	
+2,000	total customers
+1,000,000	systems deployed
+140	countries with systems deployed
~900	employees globally
\$2.58-\$5.04	52 week low/high <sup>(a)</sup>
North America  F. Mobile-  Sprint  EDITOR BEIL	Europe  Signartifen  pro%imus  Orquiva
Pigicel Latin America	Africa India  Pairtet Jio
oRocom  Sector Century Link	telecom

**GLOBAL SCALE** 

- (a) Source: Nasdaq as of 5/3/1
- Represents non-GAAP gross margin in FY2014 and FY2018

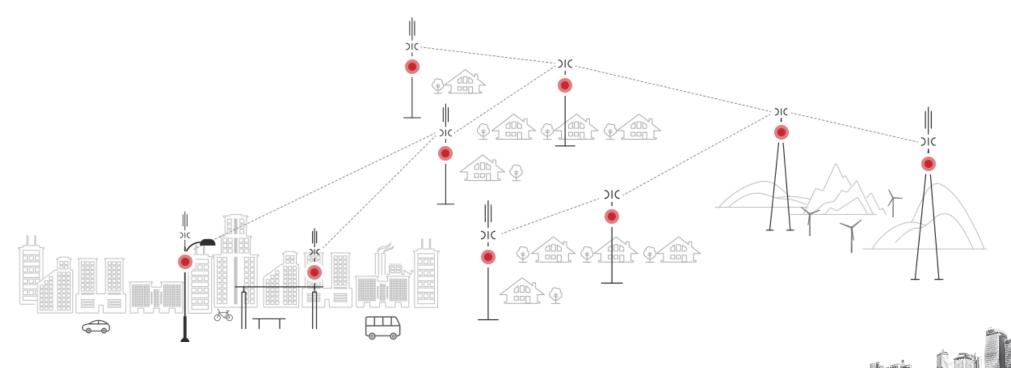




# Wireless Backhaul

#### Critical Technology to Gigabit-LTE and 5G Networks

- Wireless backhaul serves as an alternative to fiber-optic networks and a primary solution for network densification
- Critical since it is a faster and more cost effective deployment vs. fiber based deployment
- Connects approximately 50% of all backhaul networks
- Proportion of fiber vs. wireless backhaul is expected to remain fairly constant through the evolution to 5G networks





# **Best-of-Breed Strategy: Sell Customer Value**

#### Seek Best-of-Breed Focused Deals

- Focus on service providers seeking the best wireless backhaul solution as main factor for vendor selection
- Focus on those customers that invest resources to assess vendors' ability to address their network-specific challenges
- Most private network customers are part of this category

#### Avoid Bundled/Price Focused Deals

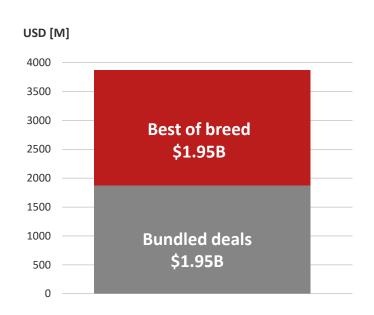
- Avoid end-to-end network bundling, with no specific vendor selection process for wireless backhaul
- De-emphasize customers that lack the skills/ resources for thorough evaluation of wireless backhaul vendors
- Avoid situations where price is the primary or only factor to determine vendor selection



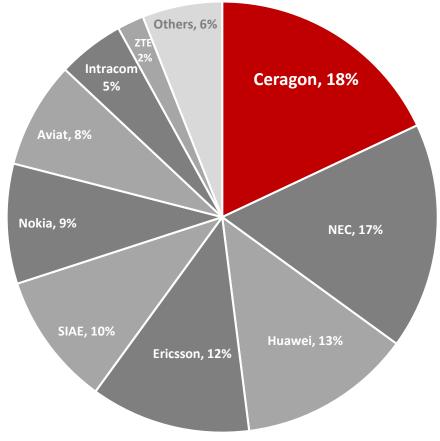


### **Largest Specialist Serving the Best of Breed**

Global Wireless Backhaul Market (2018)



Best-of-Breed Market Segment (2018)

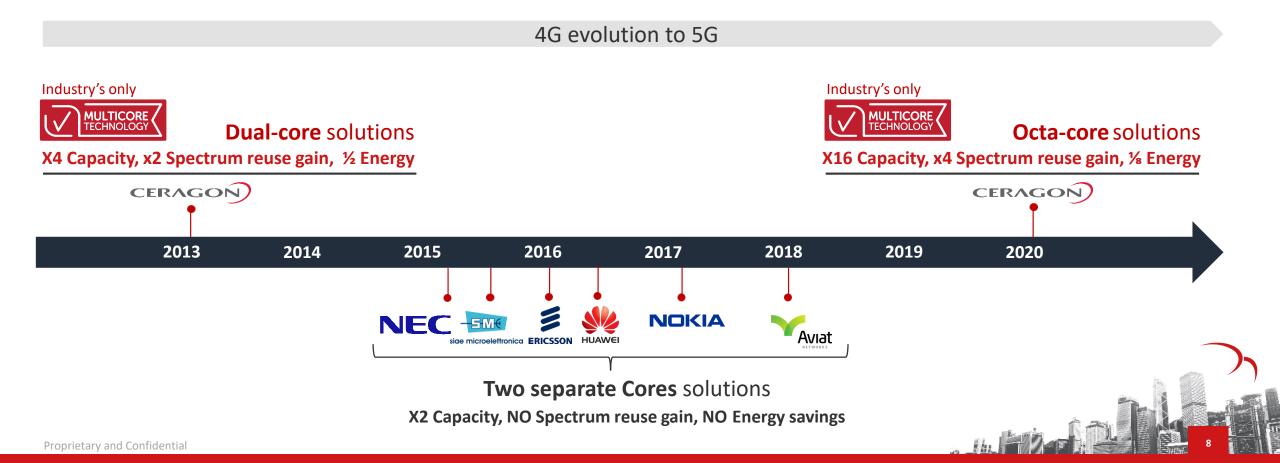




### **Technological Industry Leadership**

Ceragon's Multicore technology resolves the key challenges associated with wireless backhaul as networks transition to 5G

**Capacity | Spectrum | Energy | Real-estate** 





### Key to Innovation is Vertical Integration

Enables us to introduce features that keep pace with the evolution to 5G

- Chip design
- Software design
- Hardware design
- Systems

Full Vertical Integration

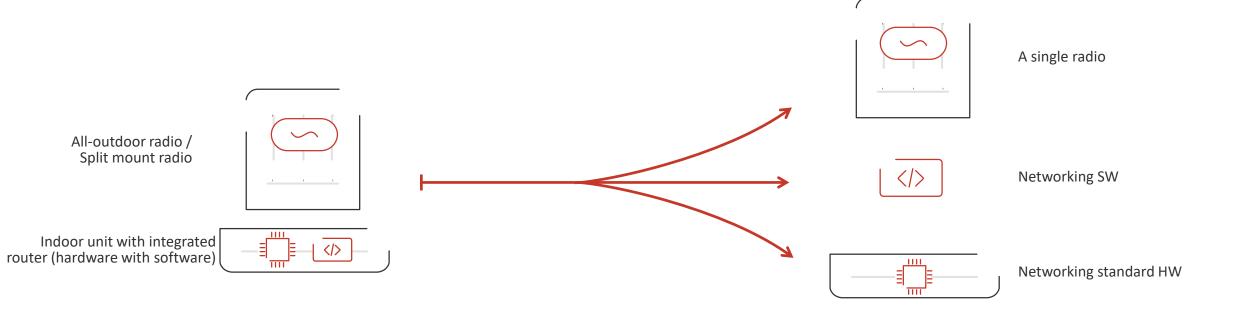


# FIBEAIR IP-20 PLATFORM MULTICORE EVERYWHERE - IN ALL DEPLOYMENT SCENARIOS





# Disaggregated IP50 wireless backhaul resolves growing 5G challenges



Breaking proprietary hardware-software combinations from generalist vendors

Separating software from hardware in order to innovate both more rapidly



# IP-20 All-outdoor solutions lead the market since 2013

#### Increasing demand for all-outdoor wireless backhaul

- Simplified site acquisition
- Fast installation and commissioning
- Efficient use of limited spectrum
- Super-fast capacity upgrade path



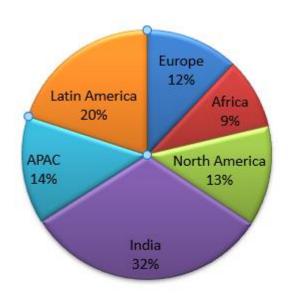
Proportion of Ceragon's equipment shipments represented by all-outdoor units has increased significantly to >60%, compared to <50% all-outdoor units in the overall best of breed market





### **Global Reach and Strong Customer Base**

- Over 1 million radios installed in over 140 countries
- Supplier for major global Tier 1 operators





#### **Revenue by Geography — Last 12 months**

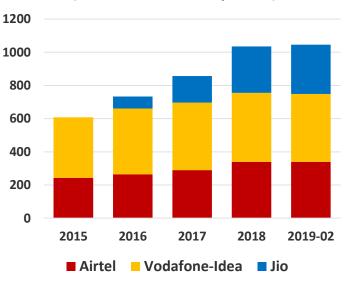
- Presence in all regions
- Purchasing decisions made both centrally and regionally



#### 50% share of best of breed in India

- BIG-3 operators' net subscriber growth in 2018: 178M
- Aggressive network expansion & densification initiatives due to hypercompetitive market
- All-outdoor addresses key challenges at scale: network complexity, site acquisition, spectrum availability, energy, speed of installation and upgrades
- Similar pattern of all-outdoor adoption in other hyper-competitive markets
- Key relationships, IP-20 technology enabled

# India subscribers (millions, at end of period)



\* Source: Telecom Regulatory Authority of India (TRAI)

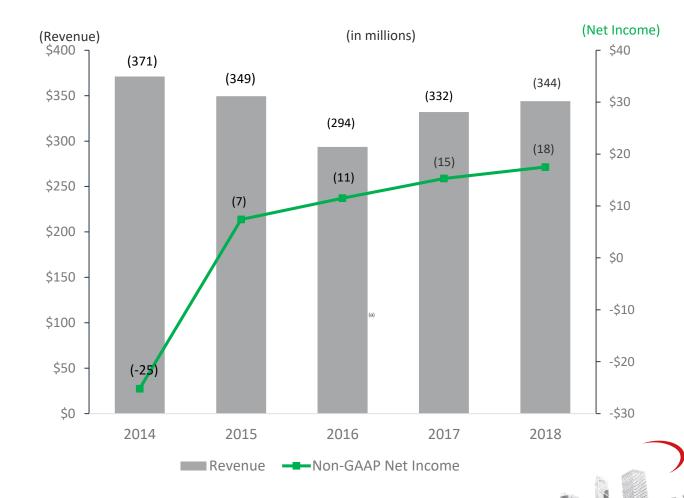






## **Track Record of Execution & Improving Net Income**

- Focus on maximizing gross profit dollars
- Stable, profitable business model
- Goal is to increase net income again in 2019, for the fifth consecutive year



Note: Financial metrics are presented on a non-GAAP basis.



### **Strong Balance Sheet**

- Cash decreased sequentially due to reduced factoring and higher working capital requirements to meet anticipated delivery commitments
- No bank debt; \$40 million unused borrowing capacity
- Credit facility to be used as business tool to accommodate short-term increase in working capital needs

	(U.S. dollars in millions) (Unaudited)
	a/o Mar. 31, 2019
Cash & cash equivalents	29.8
Bank debt	-0-
Inventory	67.4
AR	119.5
DSOs	132





## **Characteristics of Operating Model**

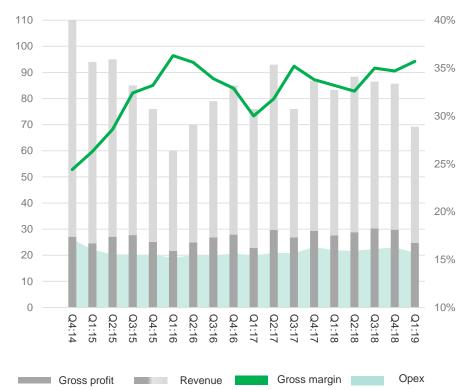
#### Controllable elements are well-controlled

- Deals accepted based on contribution to gross profit dollars
- Tendency toward trade-off between revenue and gross margin
- Stringent operating expense control sustained for 2+ years

# Quarter-to-quarter fluctuations caused by factors difficult to control

- Changes in geographic mix of revenue based on significant variations in GM by region
- Timing of recognizing revenue for various elements of project –
   based on large customers dictating delivery timing of each element
- Currency fluctuations, interest rates, seasonality, orders lumpiness, changes in raw materials and components market

#### Quarterly Operating Model



Note: Financial metrics are presented on a non-GAAP basis.





### 5G evolution, not a single event

#### **Today: Gigabit LTE momentum**

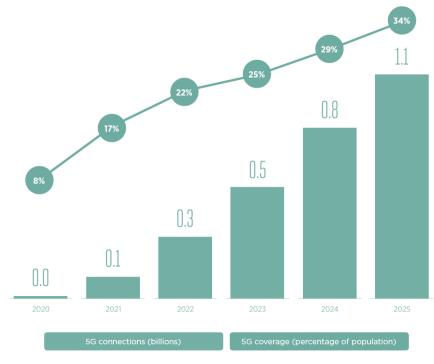
>40 countries, >20 operators



**Gigabit LTE** – enhanced mobile service, based on LTE-Advanced-pro standards, enabling "5G broadband" services

Source: Qualcomm, 2018

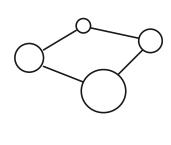
#### **Tomorrow: 5G adoption subscribers**



Source: GSMA, 2017

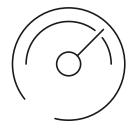


## 5G amplifies & diversifies wireless backhaul challenges



X5

**DEPLOY MORE SITES** 



X100

PROVIDE MORE CAPACITY





**ENABLE 5G USE-CASES** 

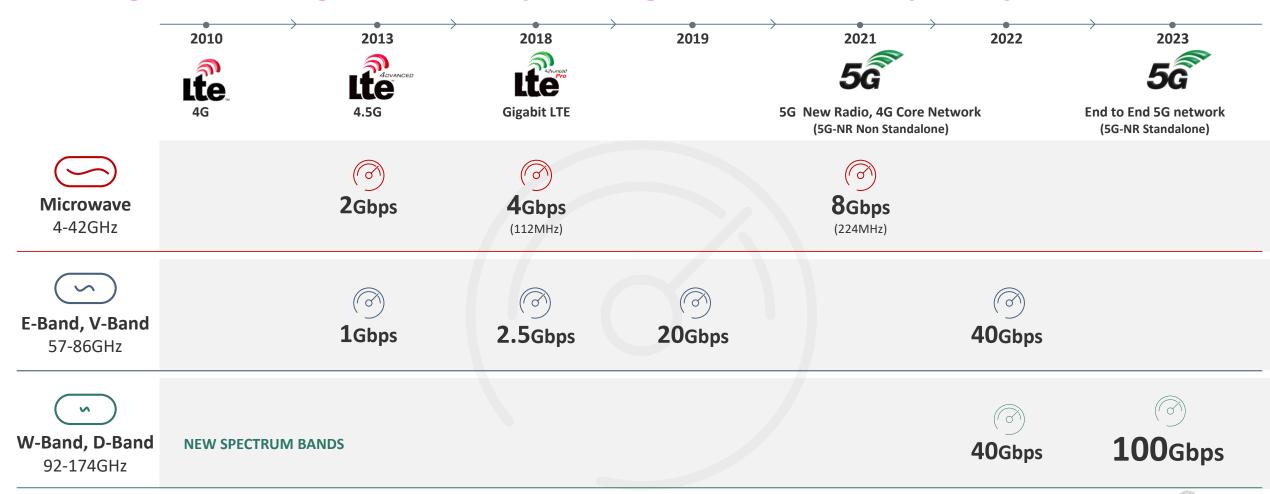


DEAL WITH
MASS DEPLOYMENT





### Ceragon strategic roadmap – single channel capacity



- Multiples of each capacity listed above are achievable using Carrier-Aggregation technology to combine several channels into a single link
- Multi-band technology also allows operator to combine MW and mmW to achieve higher capacity with greater reliability

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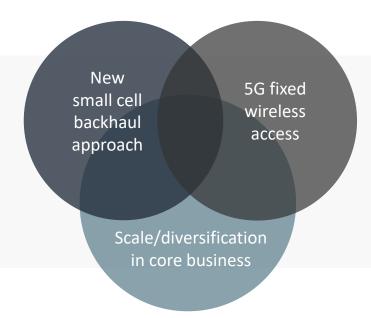


#### Formulating a Broader 5G Strategy

#### Continuously refining both offensive and defensive strategies

#### **Technology Fit/Business Risk Analysis**

- Relevance to core competencies
- Potential competitive advantage
- Market size and maturity
- Market growth potential



#### **Value Creation/Financial Risk Analysis**

- Time to revenue
- Magnitude of investment required
- Inherent profitability (gross margin)
- Impact on cash flow

Seeking best risk-adjusted opportunity to generate profitable growth





- ✓ Leader in premium segment of the market
- **✓** Time-to-market advantage with technologically-advanced IP-20 and IP-50 platforms
- ✓ Competitive strengths provide ability to be selective, obtain major share of highest-value opportunities
- **✓** Financial stability enables continuous innovation and design-to-cost investment
- **✓** Reported 4th consecutive year of profit improvement in 2018; targeting 5th in 2019
- ✓ Positioned to capitalize on network evolution from 4G to 5G to generate long-term profitable growth

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