



 COMPLETE-COMS  
www.complete-coms.com



# ABOUT US

## Liam Bingham

Liam has been designing and deploying solutions in the telco and comms space for over 25 years. Following roles as a technician, engineer, project manager, consultant and general manager Liam started Complete-coms with a focus on delivering solutions for remote comms sites. Liam focusses on a pragmatic approach to delivery of solutions gained from hands on experience in technology across projects in over 35 countries.

Complete-coms allows Liam to focus on his passion for technology design, delivery and training.

- Mobile: +64 21 963 395
- Email: [liam@complete-coms.com](mailto:liam@complete-coms.com)
- LinkedIn Profile: <https://www.linkedin.com/in/liam-bingham>



## Neil de Wit

Neil started his technology career as a Radio Technician with the NZPO before moving into investing/owning/operating several telco related businesses. These technology business included CityLink, the Wgtn CBD fibre optic loop (which was originally formed by Wellington City Council). Neil led an MBO to purchase CityLink along with Teamtalk /Vital. Over the last decade, Neil has undertaken several senior consulting assignments before joining Liam & Complete-coms in 2018.

Complete-coms utilises Neil's long business & commercial experience, financial management and customer support systems.

- Mobile: +64 21 429 121
- Email: [neil@complete-coms.com](mailto:neil@complete-coms.com)
- LinkedIn Profile: <https://www.linkedin.com/in/neil-de-wit>



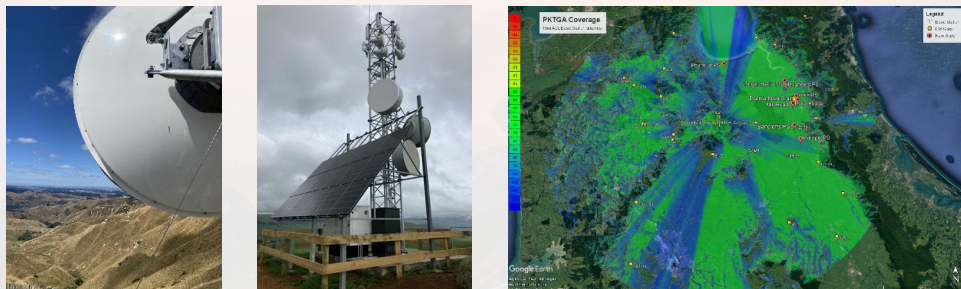
# WHAT WE DO

Formed in 2011, Complete-coms mission is to support the wider Telecommunications, Public Safety, Utility and Local Government sectors with equipment supply, integration and professional services.

Our primary focus is on designing and supplying connectivity and site solutions for network operators.

We work across a wide range of network connectivity technology, including microwave radio (DMR), SCADA and telemetry narrowband radio, optical transport, satellite and cellular.

Complete-coms also provide key hardware for site builds like enclosures, power systems, wind turbines, modular foundation systems, poles & towers, cabling solutions and surge protection.



- **DESIGN AND SUPPLY OF MICROWAVE RADIO NETWORKS:**  
Complete-Coms has in house RF engineers who cover design, licensing and support of microwave linking solutions.
- **DESIGN AND SUPPLY OF SCADA RADIO NETWORKS:**  
Complete-Coms provide detailed coverage maps for vhf and uhf networks as part of our standard engagement.
- **DESIGN AND SUPPLY OF POWER SYSTEMS:**  
Complete-Coms design robust, customised power solutions for a range of on-grid and off-grid requirements including solar and wind generation, energy storage, power conditioning and conversion.
- **SITE BUILD SOLUTIONS:**  
Complete-Coms design and supply equipment enclosures, poles and mounting/foundation options for a range of applications and environmental requirements.
- **TRAINING SOLUTIONS:**  
Complete-Coms are certified trainers for NEC microwave products, 4RF radio products and create tailored training solutions for targeted learning outcomes.
- **FAT AND PROOF OF CONCEPT TESTING:**  
Complete-Coms are able to create and complete application specific testing using a complete range of specialised test equipment for RF, IP and data equipment.
- **TECHNOLOGY INTEGRATION:**  
Complete-Coms focus on providing solutions that deliver great outcomes for our customers.

# APPLICATIONS & SOLUTIONS

## Services

- Radio & Power Planning
- Technology Training
- Install & Commissioning

## Connectivity

- Digital SCADA Radio
- Microwave (DMR) Backhaul
- Optical Transport
- SD-WAN over Anything
- Antennas, Cables & Accessories
- RF & Ethernet Analysers

## Site Power & Build

- AC & DC Power Systems
- Smart Lithium Batteries (SLB)
- Micro-wind Turbines: 350W
- Ruggedised Energy Systems
- Remote Site Monitoring & Control
- Surge Protection
- Outdoor Cabinets
- Concrete Free Foundations



# SERVICES

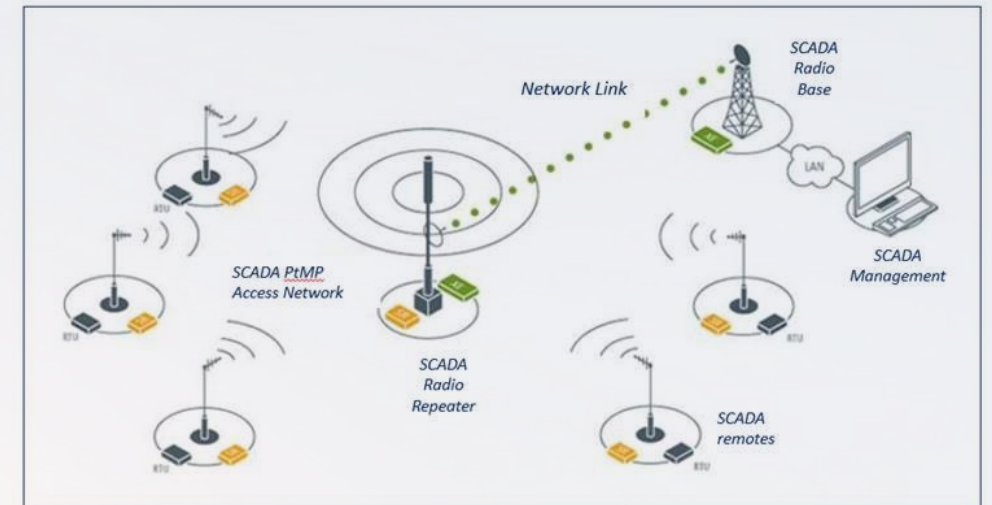
- Network review and resilience planning
- Radio, Optical & Power system design
- Radio coverage & link planning
  - VHF, UHF, microwave
  - PtP, PtMP
- Training for Radio & Power
  - Certified trainers for 4RF, NEC, ELTEK & Polarium
  - Customised training workshops for projects & applications
- Equipment pre-staging and configuration
- Site auditing
- System commissioning and integration



# DIGITAL SCADA RADIO



- NZ based company, local R&D and manufacturing
- Digital SCADA transport:
  - PtP & PtMP radio designed for SCADA & telemetry
- Future Proof:
  - supporting serial and IP interfaces
  - Expandable capacity for future requirements (e.g. CCTV)
- Cost effective, easy to use & support
- Software defined functionality, one radio element can perform multiple functions
  - Minimised spares holding
- Secure with industry leading encryption & authentication
- VHF, UHF & LTE Bands



**4RF** when it comes to your **CRITICAL ASSETS**  
you can't afford **ANYTHING LESS** 4RF SCADA radios

# MICROWAVE BACKHAUL

# NEC

- 6-80GHz Bands with sub-band free ODU options in most bands
- Split-mount or all-outdoor radio designs
- Low Power consumption
- Highest system gain available from any vendor
  - Smaller antennas for same distance
  - Higher capacity
- Smallest form factor ODUs of any vendor
- Branching options with >8 ODUs per antenna
- 5 year extended manufacturer warranty
- MTBF of 50+ years
- Standard operating range -33 to +55°C
- Made in Japan: 3,000,000+ shipped

**IPASOLINK VR4**




**IAG Type ODU**



**IAP / IHG Type ODU**



- 4096 QAM
- L2 path 80 Gbps
- 10 G Optical
- Universal slot Modules



- All Outdoor Solution
- 6-42GHz RF Band Selection
- Carrier Class Packet Switch
- 4096 QAM
- 2ch Aggregation
- Dual Polarized Double Capacity



**IAG ODU**



**IAP ODU**

- Up to 3X More Power
- Up to 2X Less Energy
- Up to 2X Less Volume
- 2048 4096 QAM
- Over 1Gbps
- GaN & GaAs



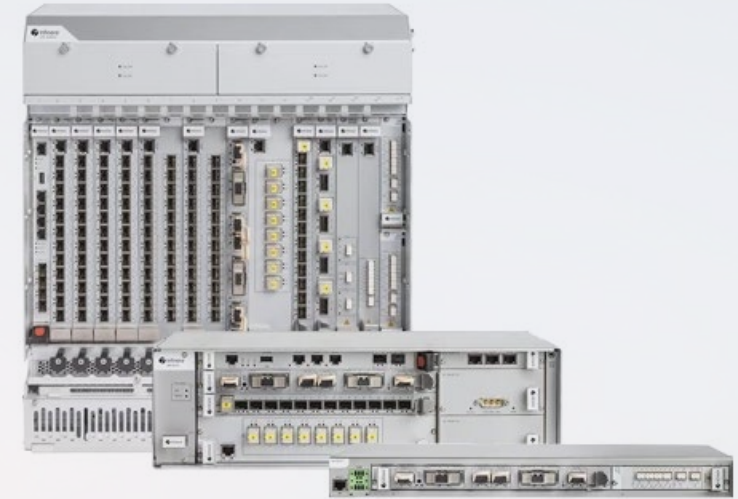
- 10 Gbps
- Compact Light -weight
- AMBR
- Feature - rich L2 Switch

# OPTICAL TRANSPORT



Infinera's solutions are powered by the world's best embedded and pluggable optical engines that are application-optimized for the edge, metro, long-haul, and submarine networks.

- © High density, low power design
- © Up to 75%\* power savings vs competing packet-optical solutions
- © Multi-reach, up to 2000 km
- © Multi-service, e.g. Ethernet, CPRI, SONET/SDH, OTN, Fibre Channel
- © Flexible, cost efficient and scalable
- © SDN Enabled
- © Standard operating range -33 to +55°C
- © Over 50,000 XTM series nodes deployed in over 50 countries







# SD-WAN & UNBREAKABLE CONNECTIVITY

Connect Anytime, Anywhere over Anything

Software-Defined Wide Area Networking (SD-WAN) using centrally controlled and managed WAN virtualization.

- Ⓢ Real time services like VoIP and video can be sent via the lowest latency link.
- Ⓢ Intelligent failover and active/active configurations can be used to guarantee reliability even when a WAN link fails.
- Ⓢ Secure WAN connectivity can be added as and when required to provide agility.

By using encrypted VPNs, remote locations gain secure, local network access to cloud resources.

SD-WAN makes these remote VPNs faster, more reliable and more affordable by combining the bandwidth of multiple connections into a single logical WAN connection.



# TELEMETRY & MESSAGING RADIO SOLUTIONS

- Ⓢ Designed & built in New Zealand
- Ⓢ Suitable for telemetry and LEO satellite networks
- Ⓢ Remote site monitoring
  - Ⓢ Analogue inputs for voltage & current measurement
  - Ⓢ Support for a range of standard and specialised sensors
- Ⓢ Remote site control and advanced PLC options
- Ⓢ Local & Remote measurements
- Ⓢ Support for multiple serial and IP based protocols locally
- Ⓢ Very low power consumption
- Ⓢ Flexible and low cost



# ANTENNAS, CABLES & ACCESSORIES

- © Antenna options from UHF to E-band
- © Cost-effective and premium lines
- © Coaxial Cables, to length or pre-terminated
- © Copper power cables
- © Ethernet and Data cables
- © RF Duplexers and Filters
- © Waveguide adaptors
- © RF attenuators and connectors



# POWER SYSTEMS



High efficiency power systems designed for demanding telco and Industrial sites that reduce the cost and environmental footprint of energy usage, and that reduce the cost of ownership of power systems

- Ⓢ Grid connected & Off-grid solar power solutions
- Ⓢ High-efficiency AC-DC or DC-DC conversion
- Ⓢ Rectifier UPS systems for protected AC/DC loads
- Ⓢ Modular design, Stand-alone or DIN rail mount
- Ⓢ Remote site monitoring & control
- Ⓢ Advanced network surveillance, management and reporting
- Ⓢ Simple, scalable systems from 120W to >24kW
- Ⓢ Certified for Polarium BMS integration

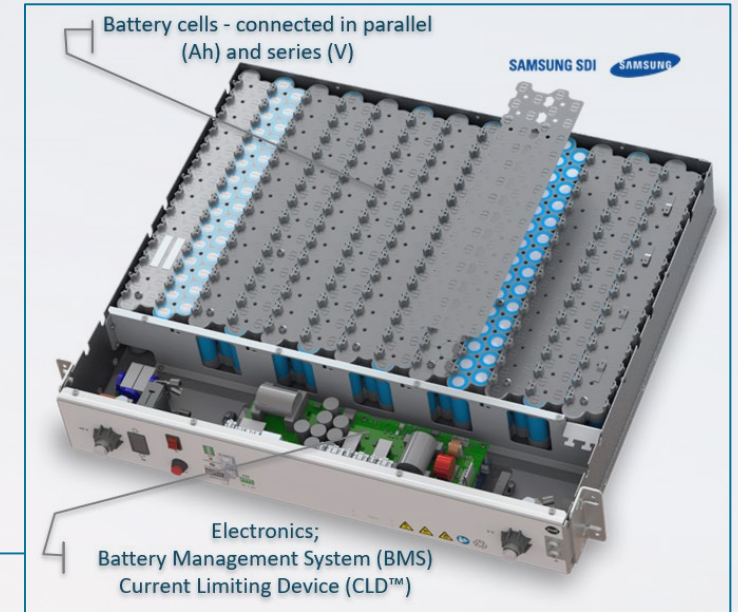


# SMART LITHIUM-ION BATTERIES

# Polarium

Polarium Smart Lithium Battery™ (SLB) is designed for the telco and off-grid market and with its challenges in mind. The SLB™ products come in both indoor and outdoor versions so you can simply switch your lead acid batteries for our smart lithium modules. Just connect the cables, turn on power – and walk away.

- © Integrated intelligent BMS; built-in charge control
- © Designed for safety. Multiple levels of safety, short circuit and reverse polarity protection
- © Industry leading energy density
- © 48Vdc Output
- © 50Ah in 2RU space
- © 100/150/200/250Ah in 4RU
- © Scalable/stackable



# 12V LITHIUM-ION BATTERIES



With 100Ah of lithium power packed into the same sized case as a lead-acid 80Ah and a greater depth of discharge, it's no wonder that these batteries are becoming the first port of call to those with a tighter space to squeeze their battery into – and you're getting more bang for your buck with the higher power density in the same footprint too.

Also lighter than other alternatives, these Vision batteries are perfect for applications where weight can be an issue.

The V-LFP12V100AH batteries sport rugged cases that are fully sealed and maintenance free, concealing safer technology along with the added

benefit of an easier recharge thanks to their superior recharge absorptior

- © Integrated BMS; built-in charge control
- © Industry leading energy density
- © Scalable in parallel or series
- © Available in 100Ah or 200Ah



# HYBRID POWER & ENERGY SYSTEMS

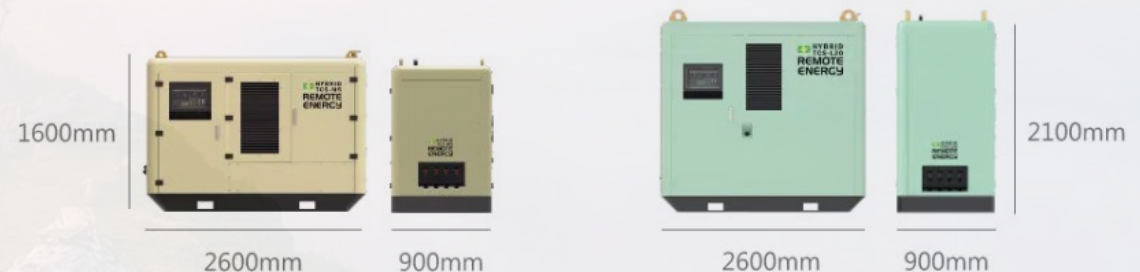
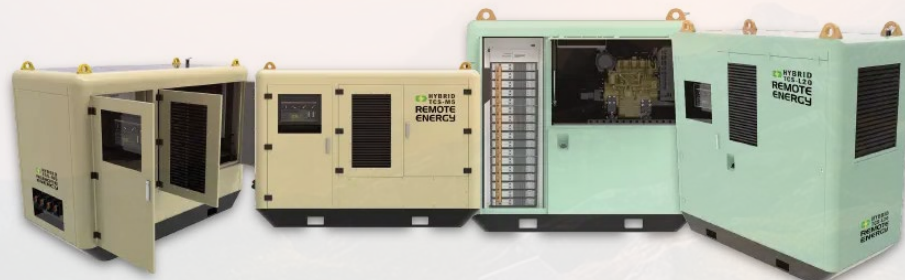


Remote Energy is an Australian based power and energy specialist that designs and builds high performance low and no emission power and energy solutions across a range of industries including mining, telecom, airports and more.

This series is suited to remote off grid, or grid connected sites when high resilience and prolonged uptime is required. Available in six models, utilising two enclosure sizes, a range of DC generators in 5, 10 and 20kW, a variety of energy storage options and complete with a 250 or 500L bunded diesel tank (other custom options available).

These compact and highly reliable systems will offer years of service in any environment with all elements in one envelope making the system easy to deploy and manage.

DESCRIPTION	TCS-M 5	TCS-M 10	TCS-M 20	TCS-L 5	TCS-L 10	TCS-L 20
Maximum Generator Power Out	5kW	10kW	20kW	5kW	10kW	20kW
Nominal Generator DC Voltage Out	48 Vdc	240/415 Vdc	240/415 Vdc	48 Vdc	48 Vdc	48 Vdc
DC Generator Charge Voltage Range	48 - 60Vdc	48 - 60Vdc	48 - 60Vdc	48 - 60Vdc	48 - 60Vdc	48 - 60Vdc
Maximum DC Current Out	100	200	400	100	200	400
Engine Brand/Service Option 2	CAT (500h Service)	CAT (500h Service)	CAT (500h Service)	CAT (500h Service)	CAT (500h Service)	CAT (500h Service)
Rack Space	26RU	26RU	26RU	42RU	42RU	42RU
Battery Storage Capacity (kWh)	Up to 60kWh	Up to 60kWh	Up to 60kWh	Up to 120kWh	Up to 120kWh	Up to 120kWh
Cabinet Air Conditioning/Heating	Yes	Yes	Yes	Yes	Yes	Yes
Cabinet Door Sensors	Yes	Yes	Yes	Yes	Yes	Yes
Cabinet Lighting	Yes	Yes	Yes	Yes	Yes	Yes
Cabinet Lock Fittings	Doors/Fuel Cap	Doors/Fuel Cap	Doors/Fuel Cap	Doors/Fuel Cap	Doors/Fuel Cap	Doors/Fuel Cap
Enclosure Material	Steel	Steel	Steel	Steel	Steel	Steel
Full Tank Capacity	250L	250L	250L	500L	500L	500L
System Dimensions (mm)	2600mm L x 1600mm H x 900mm W	2600mm L x 1600mm H x 900mm W	2600mm L x 1600mm H x 900mm W	2600mm L x 2100mm H x 900mm W	2600mm L x 2100mm H x 900mm W	2600mm L x 2100mm H x 900mm W
Maximum System Weight (Battery Dependent)	1500kg	1500kg	1500kg	2100kg	2100kg	2100kg

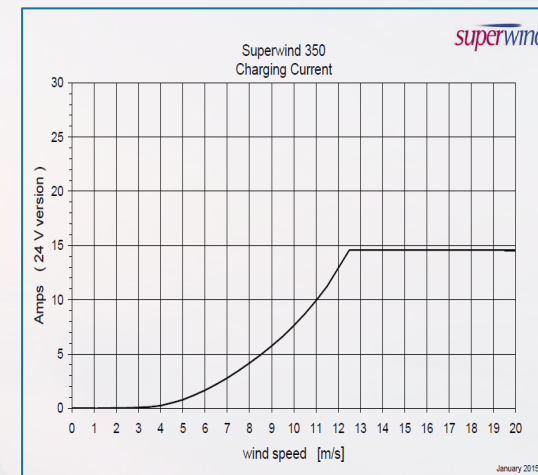


# OFF-GRID MICRO-WIND TURBINE



SuperWind have the ability to truly charge batteries in a wider range than most turbines and are designed to survive high wind storms.

- Designed specifically for off-grid power applications,
  - typically installed to augment a solar/battery installation
- German made, commercial marine grade
  - 3yr manufacturers warranty
  - Zero regular Maintenance
- 350watt, 12, 24 or 48 Vdc options, 1250w option
- Auto-Feathering Overspeed-Avoidance
  - Always electrically loaded design
  - Passive pitch control technology for autonomous operation
  - Performance to 175+kph
- Remote turbine switch-off control; FlexSCADA site monitor system

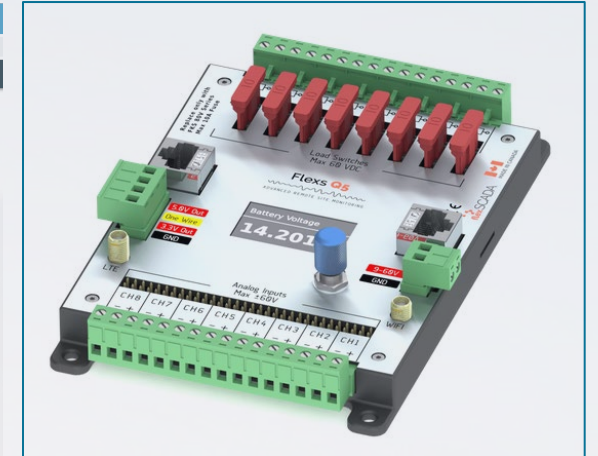
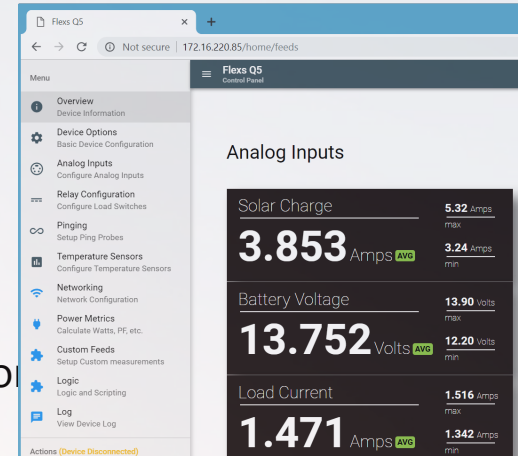




# REMOTE SITE MONITORING & CONTROL



- Designed & built in Canada
- Suitable for telemetry or LEO satellite networks
- Remote site monitoring
  - Analogue inputs for voltage & current measurement
  - Support for a range of standard and specialised sensors
- Remote site control
  - 8 x Solid State relay contacts
- Local & Remote measurements
  - via web browser or cloud based monitoring platform
  - Handover to existing database or supervisory system
- MODBUS over IP scripting
- Very low power consumption



# SURGE PROTECTION



- © RF surge protection
  - © DC Pass, DC Block, Bias-T and Ultra-Low PIM
  - © TNC or N connectors
- © Data surge protection
  - © Standalone or chassis mounted
  - © GigE and all POE standards supported
  - © DC or AC
- © Installed where you need it
  - © Indoor, outdoor, rack or bulkhead
- © New Zealand Stock



# OUTDOOR EQUIPMENT CABINETS

Complete-Coms designed & manufactured with standard or custom designs

- © 19" adjustable rack frame & shelves
- © Double skin, 20mm PU insulation, Solar hood with lifting eyes
- © Options for stainless steel 316SS and marine grade 5086 aluminium with brushed or powder coating finish
- © Integral anti-tamper lock with standard barrel options and concealed security hinges
- © AC or DC power distribution options
  - © All cabinets come with D.O.C for NZS/AS wiring standards
- © Base/Plinth with lockable access
- © Assembled with Power, ready to install
- © Add customised logos



# POLES AND MASTS

From program-scale for larger carriers to bespoke solutions for smaller organisations, waveconn deliver an innovative and holistic approach. Services include design, fabrication and implementation of telecommunications infrastructure

- © Lattice and Mono designs for larger structures (> 12m)
- © Seesaw masts for smaller structures (up to 9m)
- © Full fabrication drawings and engineering reports supplied
- © Multiple head-frame and mounting options
- © Lad-saf and climbing ladders included



# CONCRETE-FREE FOUNDATIONS



**SUREFOOT™**  
CONCRETE FREE FOOTING SYSTEM

- © Concrete Free and Rapid Install with hand tools
- © Scales for a range of poles, towers, structures and loading requirements
- © We have existing designs for cabinet, shelter, solar frame and pole foundations
- © Reduce foundation cost and complexity, especially in remote locations
- © Suitable for all soil types, including rock
- © PS1, PS3 and PS4 Engineering provided as part of solution
- © Certified for lifespan > 50 years
- © Cyclonic rated



# FIELD TEST & MEASUREMENT



# DEVISER

## ☉ Headquarters in San Jose, USA

- ☉ 24,700 m<sup>2</sup> R&D and manufacturing facility
- ☉ 30yrs of field experience
- ☉ Innovative Engineering
- ☉ Quality Focus, 36 month standard warranty

## ☉ Radio, Ethernet, Fibre and Data Testing

- ☉ Handheld range
- ☉ Wireless & fibre testing in one unit
- ☉ Ethernet: 1Gb, 10Gb
- ☉ Fibre, CWDM

## ☉ Local reference customers

## ☉ Demo units available for RF and Ethernet Testers

## ☉ 3 year Full Manufacturers Warranty

## ☉ All units ship with full accessory kit and case



# CONTACT US

© UNIT 3, 27 RIVERBANK ROAD, OTAKI, KAPITI COAST

## © SALES

© Liam: 021 963 395

© Neil: 021 429 121

© E: [sales@complete-coms.com](mailto:sales@complete-coms.com)

## © ACCOUNTS

© E: [accounts@complete-coms.com](mailto:accounts@complete-coms.com)

