



GlobalTop Technology

Company Profile



Smart Positioning Solutions

Contents

Company Overview

Product Portfolio

Product Roadmap

Quality Assurance

Company Overview



- Based in Tainan, Taiwan
- Established in 2006
- Located at Prestigious Tainan Science-based Industrial Park

- Part of TSMC Group of Companies
- 4500 sqm manufacturing facility
- Over 50 employees

Wireless Business Unit

- One of the leading suppliers of GNSS modules worldwide
- Strategic and award-winning partner of Mediatek
- Most comprehensive positioning portfolio in the industry
- Extensive customization support
- ISO 9001:2008 certified, CE, FCC, ROHS, UL certified products

GNSS

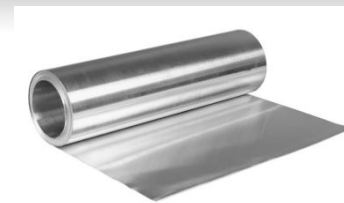
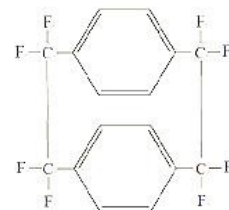
GPS | GALILEO | GLONASS | BEIDOU



INTERNET
OF THINGS

Applied Materials Business Unit

- Focused on Thermal conductivity Solutions
- Products include :
- Aluminum Nitride (ALN) Powder
- Parlyne AF4 Coating Solutions
- High Quality Pyrolytic Graphite Sheets



About the Group

- **TSMC (Taiwan Styrene Monomer Corp)** was founded in 1979.
- TSMC has a working capital of 211 million USD, and it is the largest Petro-Chemical by-product manufacturer in Taiwan
- The TSMC Group is a billion USD \$ conglomerate with many affiliated companies all across the globe working in a wide variety of industries including petro-chemical, electronics, real-estate etc.
- TSMC Group includes companies such as :
 - G-Vision, a US-based Digital Signage Solutions Provider
 - HugeTemp(H), a Graphite Sheet vendor(with 20+ patents), that supplies to companies such as Asus, Lenovo, Samsung, LG, AUO, Quanta etc..
 - Yuan-Shin (YS), the only company in the world that can mass produce Parylene AF4.
 - Thrutek (TR), a producer of Aluminum Nitride Powder.



Taiwan Styrene Monomer Corporation



Yuan-Shin Materials Technology Corp. Ltd.

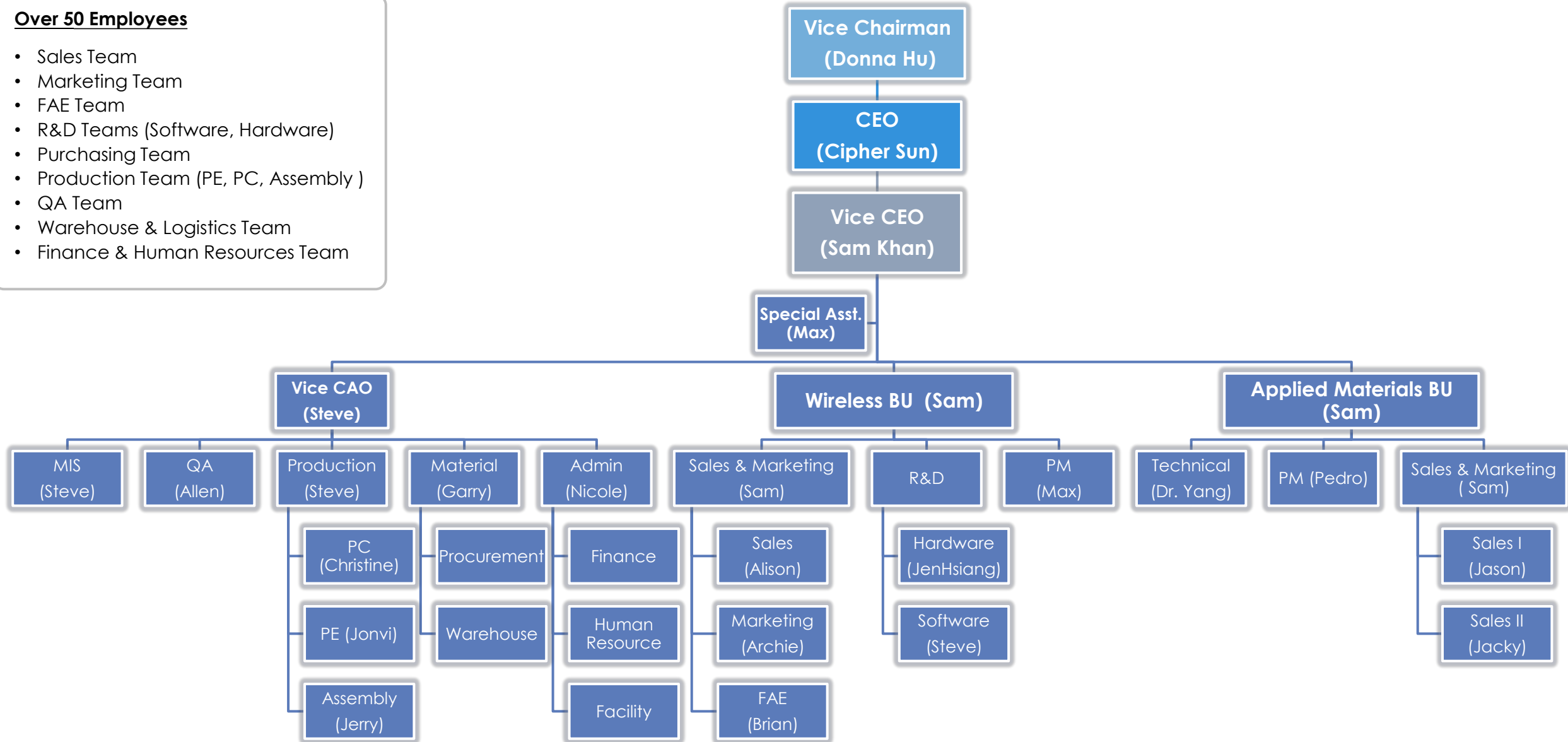


CONFIDENTIAL

Company Structure

Over 50 Employees

- Sales Team
- Marketing Team
- FAE Team
- R&D Teams (Software, Hardware)
- Purchasing Team
- Production Team (PE, PC, Assembly)
- QA Team
- Warehouse & Logistics Team
- Finance & Human Resources Team



Global Sales Network

Americas

- USA
- Mexico
- Colombia

Europe

- United Kingdom
- Sweden
- Norway
- Denmark
- Netherlands
- Germany
- France
- Italy
- Spain
- Poland
- Turkey
- Russia

Asia

- India
- Japan
- Korea



Global Recognition



Hobby / UAV :

- Eagle Free, 3D Robotics, Adafruit



Sports :

- Latitude, Atech, Yupiteru



Tracker & Fleet Management :

- DCT, Bury Technologies



Network Synchronization :

- Cambium, PureWave



Military and Rescue :

- ACR, Raytheon



EMS :

- Pegatron, Flextronics, Gemtek, Laird

Contents

Company Overview

Product Portfolio

Product Roadmap

Quality Assurance

GNSS Product Portfolio

Standalone GPS

Ivory Series



- Compact size
- Low-power Consumption.
- Cost Efficient

Standalone Dual-Mode

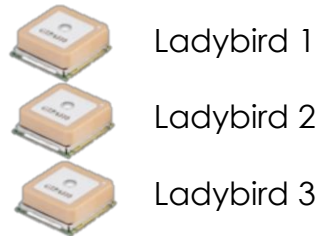
Firefly Series



- Multi GNSS
- Faster TTFF
- High Position Accuracy

Patch Antenna GPS

Ladybird Series



- Fast Time To Market
- Compact Size
- Cost Efficient
- Low-Power Cons

Patch Antenna Dual-Mode

Titan Series



- Fast Time to Market
- Multi-GNSS
- High Position Accuracy

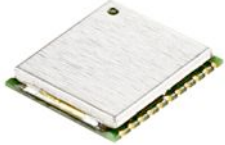


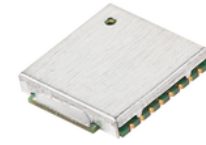
Chip Antenna Dual-Mode

Carrion Series



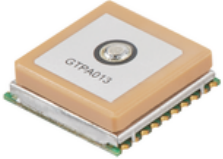



- Compact Size
- Low weight / height
- Fast Time to Market
- GPS/Glonass/Beidou

Standalone Module Comparison

	Ivory 3	Ivory 4	Firefly 1	Firefly 1b
Picture				
Ordering Code	GMM-U2P	SL3C	GMM-G3	GMM-G3(B)
GNSS Engine	MT3339	MT3339	MT3333	MT3333
Frequency Band	GPS	GPS	GPS + GLONASS	GPS + BEIDOU
Dimensions (mm)	12.7 × 9.0 × 2.1 mm	11.5 × 13 × 2.1 mm	11.5 × 13 × 2.1 mm	11.5 × 13 × 2.1 mm
Weight (g)	1.0 g	1.0 g	1.0 g	1.0 g
Operation Temp	-40°C~ +85°C	-40°C~ +85°C	-40°C~ +85°C	-40°C~ +85°C
Input Voltage	3.0 ~ 4.3 v	3.0 ~ 4.3 v	3.0 ~ 4.3 v	3.0 ~ 4.3 v
Interfaces	UART, RTCM, Reset, 1PPS, 3D Fix	UART, RTCM, Reset, 1PPS, 3D Fix	UART, RTCM, Reset, 1PPS, 3D Fix	UART, RTCM, Reset, 1PPS, 3D Fix
Product Features	DGPS (SBAS), AGPS, Logger, Anti-Jamming,	DGPS (SBAS), AGPS, Logger, Anti-Jamming,	DGPS (SBAS), AGPS, Logger, Anti-Jamming,	DGPS (SBAS), AGPS, Logger, Anti-Jamming,
Position Accuracy	2.5m	2.5m	2.5m	2.5m
TTF (Hot Start)	1s	1s	1s	1s
Tracking	Sensitivity	- 165 dBm	- 165 dBm	- 165 dBm
	Power Cons	15 mA	20 mA	29 mA
Certifications	CE, FCC, E911, ROHS, REACH	CE, FCC, E911, ROHS, REACH	CE, FCC, E911, ROHS, REACH	CE, FCC, E911, ROHS, REACH

** Pin-compatible

Antenna Module Comparison

	Ladybird 1	Ladybird 3	Titan 2	Titan 3
Picture				
Ordering Code	PA6H	PA6C	GMS-G6	GMS-G9
GNSS Engine	MT3339	MT3339	MT3333	MT3333
Frequency Band	GPS	GPS	GPS + GLONASS	GPS + GLONASS
Dimensions (mm)	16 × 16 × 4.7 mm	16 × 16 × 6.2 mm	16 × 16 × 6.8 mm	19.5 × 19.5 × 7.2 mm
Weight (g)	4.0 g	6.0 g	6.0 g	8.0 g
Operation Temp	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Input Voltage	3.0 ~ 4.3 v	3.0 ~ 4.3 v	3.0 ~ 4.3 v	3.0 ~ 4.3 v
Interfaces	UART, RTCM, Reset, 1PPS, Ext Antenna	UART, 1PPS, 3D Fix	UART, RTCM, Reset, 1PPS, 3D Fix	UART, RTCM, Reset, 1PPS, 3D Fix
Product Features	DGPS (SBAS), AGPS, Logger, Anti-Jamming,	DGPS (SBAS), AGPS, Logger, Anti-Jamming,	DGPS (SBAS), AGPS, Logger, Anti-Jamming,	DGPS (SBAS), AGPS, Logger, Anti-Jamming,
Position Accuracy	2.5m	2.5m	2.5m	2.5m
TTF (Hot Start)	1s	1s	1s	1s
Tracking	Sensitivity	- 165 dBm	- 165 dBm	- 165 dBm
	Power Cons	20 mA	20 mA	29 mA
Certifications	CE, FCC, E911, ROHS, REACH	CE, FCC, E911, ROHS, REACH	CE, FCC, E911, ROHS, REACH	CE, FCC, E911, ROHS, REACH

GNSS Firmware Customization



GlobalTop Firmware Customization Services

AGPS

fast position fix with preloaded ephemeris

BINARY MODE

output position in binary format for increase efficiency

PERIODIC MODE

saves battery by powering off unused components

DISTANCE

CALCULATION

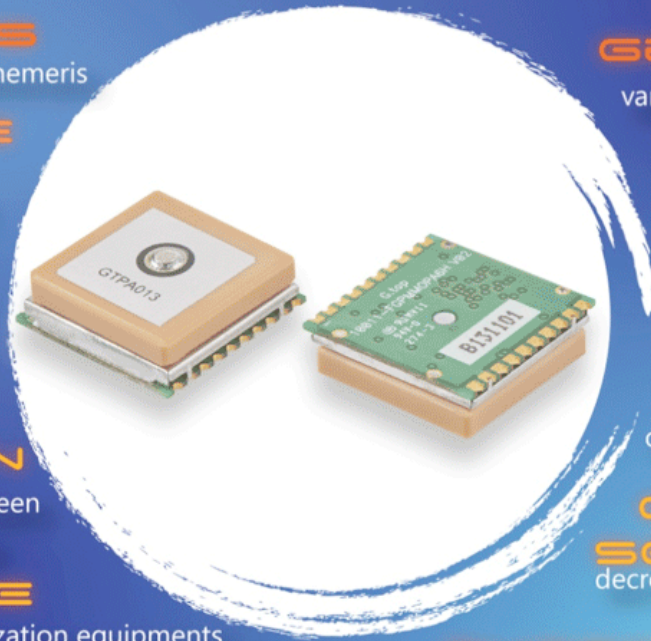
calculates line of sight distance between receiver and other points of interest

TIMING MODE

advanced 1PPS control for synchronization equipments

MAGNETIC VARIATION

Outputs degree of magnetic variation & measured magnetic heading



GEO-FENCING

variable sized circular and polygonal perimeter for in/out of zone warning

10 HZ

UPDATE

fast refresh rate for high speed applications

LAST POSITION

RETENTION

outputs last known position coordinates after losing GPS satellite fix

ONE

SENTENCE

decreases calculation load on processor by simplifying output NMEA sentences

EXTENDED

ALTITUDE

Enables GPS/GNSS module to work beyond 60,000ft (~18,000m) to 164,000ft

GlobalTop Technology is the Alpha testing site of Mediatek for GNSS.

This strategic cooperation allows GTOP to test all new MTK GNSS FW's first, before they are released to others.

Through many years of cooperation, GTOP is now the most experienced MTK based module vendor in the world, offering the most **extensive level of FW customization** on MTK GNSS Chipsets in the entire industry.

GNSS Basic Functions Customization

1) Datum:

- Default: WGS84, Others include Tokyo-M, Tokyo-A etc.
- Please contact us for the complete list.

2) Data digits after the decimal point:

- This option sets the number of digits after decimal points for longitude & latitude data in NMEA.
- Default: 4 digits (You can choose 6 digits instead)

3) DGPS:

- Default: SBAS (requires 5Hz or less update rate to work)
- You can choose RTCM instead on supported models.

4) 3D Fix Output:

- You can specify "Period" = entire cycle time for high + low level signal, and "Duty cycle" = period of time when the signal is high.
- Default :
 - ✓ No Fix: Period: 2 sec; Duty cycle: ½
 - ✓ Fixed: Period: 0.5 sec; Duty cycle: OFF)

5) 1PPS:

- Sets the length (duration) of the pulse for 1PPS. Default: 100ms (Duty Cycle range 1 ~ 999ms)

6) Timing Mode:

- Select 1PPS output mode.
- Default : Output 1PPS after obtaining 3D fix

7) Baud Rate

- High baud-rate is required for high update rate, as well as for additional NMEA output sentences.
- Default : 9600 bps, (supported from 4800 ~ 115200 bps)

8) Update Rate:

- Default: 1Hz, supported up to 10Hz. (Higher baud-rate is required for a higher update rate)
- For example it's recommended to use : 38400 bps for 5Hz and 115200 bps for 10Hz

9) NMEA Sentence & Interval Period:

- This option sets the output interval period for each of the NMEA sentences.
- Default: GGA(1), GSA(1), GSV(5), RMC(1), VTG(1), GLL(0), ZDA(0)

10) Active Interference Cancellation (AIC):

- Provides effective narrow-band interference and jamming elimination.
- Default : Enabled

11) LOCUS Internal Data Logger

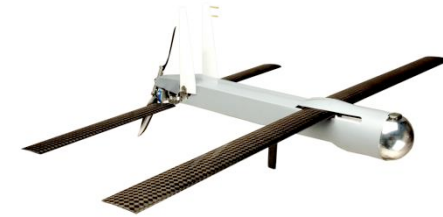
- The auto logger feature saves data in the internal Flash (4kb). Flexible configuration options allow full customization of this feature,
- for example :
 - ✓ Logging Style : Full & Stop or Overlap
 - ✓ Logging Application : Basic, Racing, Searching, Saving, etc..
 - ✓ Logging Mode : Choose speed, distance, interval etc..
- 115200bps baud-rate is recommended for effecting dumping of data from the internal memory to make space for new logging data.

GNSS Advance Functions Customization

1) One-Sentence :

- Output customized sentence in Binary or ASCII mode, or simplify NMEA output to reduce MCU load.
- Other customizations available per customer's requirement or algorithms.
- Default: NMEA

Applications : Security, Wearable's, etc.



2) Last Position Retention:

- You can continue to output the last position in the event of losing GNSS fix.
- Default : Disabled



3) Magnetic variation

- This option outputs degree of magnetic variation & magnetic heading, which is useful for navigation and determining direction.
- Default: Disabled

Applications : Asset Tracking, Vehicle Tracking



GNSS Advance Functions Customization

4) Geo-fencing:

- Allows you to set a radius value around a target position, and informs the user if the receiver is inside or outside this predefined boundary.
- Default: Disabled

Applications : Pet Tracking, Personal Tracking, Security



5) Distance calculation:

- You can calculate direct distance between current location and other points. This calculation is done by the module itself and can decrease load on the users MCU.
- Default : Disabled

Applications : Aviation



6) Navigation mode:

- You can choose different configurations based on your application e.g. : Vehicle, Pedestrian, Aircraft, Air balloon

Applications: Vehicle Tracking, Personal Tracking, UAV,

Contents

Company Overview

Product Portfolio

Product Roadmap

Quality Assurance

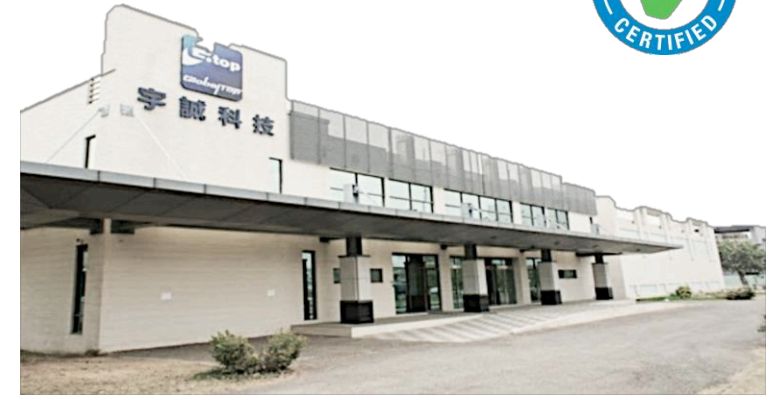
Manufacturing Quality



Manufacturing Quality Control

- 4,500 square meter Manufacturing facilities
- More than 100K pcs per month output
- In house Assembly, packaging line with TQM team
- Annual OEM Quality Audits

Annual Production
Yield Rate **"99.98%"**



ISO 9001:2008 Certified
*TS16949 under planning

CE FC

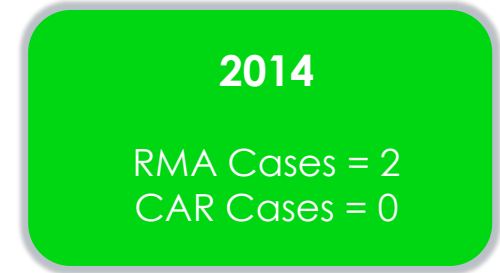


Quality Assurance

RMA Statistics

Quality Assurance

- Incoming (Supplier) Quality Control
- In-Process Quality Check
- 100% functional inspection(each unit is completely checked)
- Incoming & Final Quality Check MIL-STD-105E AQL 0.65%, Normal Inspection, Level 2
- Outgoing Quality Control



Reliability Test Equipment

Instrument Type	Function / Range	Condition
Vibration Test (IEC 68-2-6)	0~100Hz · 11G	10 Hz ~ 55 Hz, 3G, 1 min/cycle, 120 cycles, 3 axis.
Thermal Shock Test (IEC 68-2-14)	-40~100°C	-40°C, 85°C 30 minutes dwell, 30 minutes transition. 6 cycles.
High Temperature Test (IEC 68-2-2)	MAX.200°C	90°C , 288 hrs
Moisture Sensitivity	Moisture Sensitivity Levels Level 4	≤30°C, 60%RH, 96hr, 3 times Reflow.

HUMIDITY & TEMPERATURE CONTROLLER



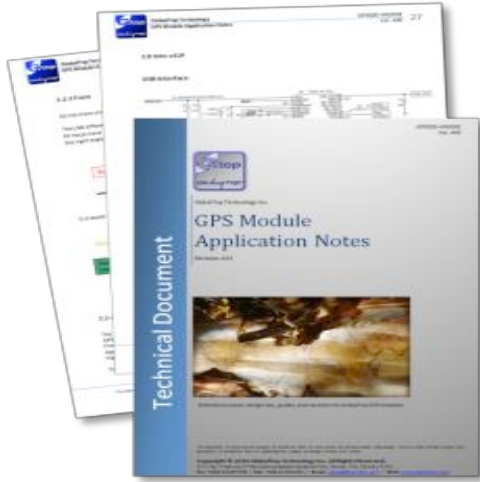
HIGH TEMPERATURE OVEN



VIBRATION TESTING



Design Assistance & Technical Support

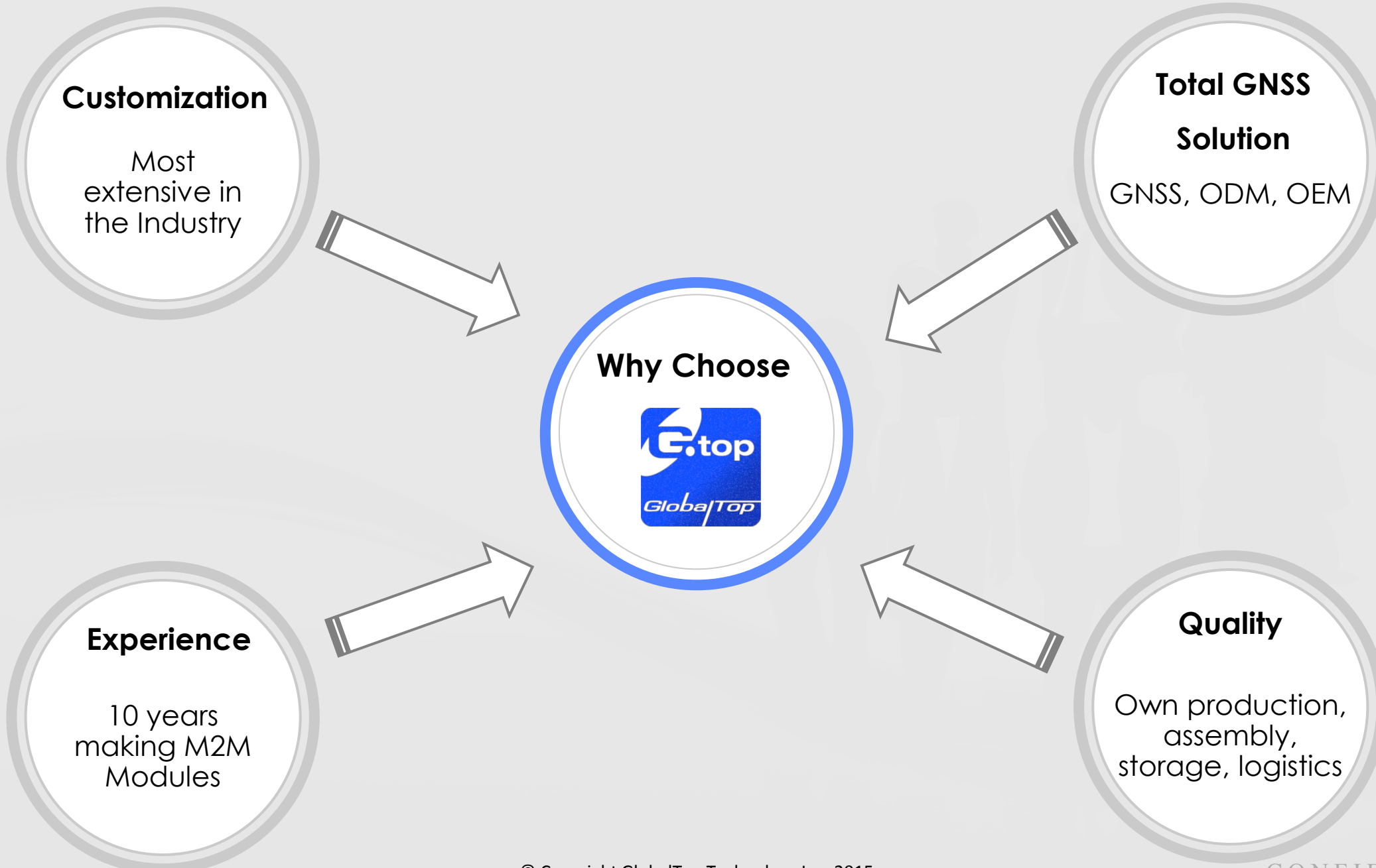


- Customer Application Analysis
- M2M Solution Consultancy
- Quick Email Feedback, within 24 hours

- Customer Schematic & Layout Review
- Product Diagnosis & Testing
- Software Design Support

- FW Customization
- Up to 2 years Warranty
- Strategic Partner of Chip vendor





Thank You



Contact us :

GlobalTop Technology Inc.

No.16, Nan-Ke 9th Road, Science Based
Industrial Park, Tainan 741, Taiwan

Tel : +886-6-5051268

Fax : +886-6-5053381

email : sales@gtop-tech.com