RF SOLUTIONS

CONNECTING to THE WORLD

www.inpaq.com.tw
www.inpaqgp.com
INPAQ (Taiwan) established

INPAQ (Suzhou) established

HQ moved to Hsinchu-Science-Based Industrial Park

Merger of E-Tronic Corporation

INPAQ (Korea) established

New Production Facility in Taichung-Science-Based Industrial Park

HQ moved to Chunan

IPO in Taiwan Stock Market (6284)

New Production Facility in Chunan, Miaoli County, Taiwan

New Production Facility in Wuxi, China

New Production Facility in Taichung, Taiwan for LTCC & mmWave

INPAQ.com.tw

INPAQgp.com
INPAQ Facts

**Quick Response**
with service package
1. Technical team support
2. Applications analysis
3. Selection of specific antenna designs
4. Simulation to meet target performance
5. Evaluation for performance vs cost analysis

**Market Leader**
Top 1 global market share of GPS antenna and automotive navigation.

**Multiple Antenna Technologies** to global tier 1 customers:
patent design approved value for GNSS, Cloud-LTE, Networking, NFC/RFID

**Global Support**
24H responsiveness/worldwide distribution

**Quality Guarantee**
- ISO 14001:2015
- OHSAS 18001:2007
- QC 080000
- IATF 16949:2016
- QC 9001:2015

**Environment**
- QC 080000
- OHSAS 18001:2007
- ISO 14001:2015

**Social Responsibility**
- OHSAS 18001:2007

**Established in 1998**
20 years
**2017 Sales Revenue**
125 Million USD
**Global Employees**
2350
**Factories**
4
**Anechoic Chambers**
10
**Intellectual Properties**
100
**Brand Customers**
100

**5 days**
5 days

**Top 1 global market share of GPS antenna and automotive navigation.**
Main Topics of INPAQ

- Smart Home
  - Smart Speaker
  - Smart Plug
  - Smart Meter
  - Security, Doorbell
  - Connected Home Device

- Phone & Wearable
  - Smart Phone/Watch
  - Mobile Pay (NFC)
  - Smart Shoes/Glasses
  - Smart Textile
  - Smart Accessories
  - Wireless Power Charging

- Consumer Electronics
  - Gaming
  - VR/AR/MR
  - NB/PC/Tablet
  - Rugged PC/Tablet

- Smart Healthcare
  - Wearable
  - Baby Monitor
  - Home Care/Diagnose
  - Medical Monitor

- Automotive
  - Autonomous Car
  - Car Entertainment
  - Telematics Control Unit
  - V2X/DSRC/ETC
  - GNSS/cm-level GNSS
  - ADAS
  - Wireless Power Charging

- Internet of Things
  - LoRa
  - NB-IoT
  - LTE Cat M1
  - Networked Devices
  - AP Router
  - NFC
  - RFID Reader & Tags

- 5G
  - mmWave
  - Sub-6G
  - 10 Gbps for next Telecommunications
  - Femtocell
  - Smart Industry
Frequency Allocation

**Application**

- **GNSS/Inmarsat**
- **WiFi/BT**
- **Cloud System/Sub-6G**
- **SDARS**
- **NFC**
- **WPC**
- **Radio (AM/FM)**
- **Unlicensed315/433/LoRa**
- **mmWave**
- **V2X/DSRC**

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- **WPC** 105–205 KHz
- **AirFuel** 6.78 MHz
- **Unlicensed433** 433 MHz
- **GSM900 EU** 880–960 MHz
- **Inmarsat** 1525–1545 MHz
- **LTE2300** 2300–2400 MHz
- **WiFi/BT 2.4** 2332.5–2345 MHz
- **NFC**
- **WPC**

- **FM** 64–108 MHz
- **LTE600** 617–698 MHz
- **LoRa868** 868 MHz
- **GSM1900 US** 1850–1990 MHz
- **XM** 2332.5–2345 MHz
- **V2X/DSRC** 3300–3900 MHz
- **WiFi/BT**

- **AM LF** 144–288 KHz
- **Unlicensed315** 315 MHz
- **LTE700** 704–824 MHz
- **LoRa915** 915 MHz
- **GSM1800 EU** 1710–1880 MHz
- **Sirius** 2320–2332.5 MHz
- **Sub-6G** 3300–3900 MHz

- **AM MF** 522–1710 KHz
- **LTE850** 824–894 MHz
- **GNSS L5** 1164–1214 MHz
- **GNSS L1** 1559–1610 MHz
- **GSM1900 US** 1920–2170 MHz
- **GNSS S** 2484–2500 MHz
- **Sub-6G** 5150–5875 MHz

- **LoRa915** 315 MHz
- **WCDMA 2100** 1920–2170 MHz
- **GSM850 US** 1710–1880 MHz
- **GNSS L6** 1260–1300 MHz
- **GNSS S** 2484–2500 MHz
- **5G Mobile** 57–66 GHz

- **AM LF**
- **LTE700**
- **GSM850 US** 824–894 MHz
- **GNSS L5** 1164–1214 MHz
- **GNSS L1** 1559–1610 MHz
- **WCDMA 2100** 1920–2170 MHz
- **LTE2700** 2500–2690 MHz

- **Radar 24** 21.65–26.65 GHz

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**Radar 24** 21.65–26.65 GHz

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**WiGig 60** 57–66 GHz

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**Radar 77** 76–81 GHz

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**Sub-6G** 76–81 GHz
Cable Assembly

**Connector:** HRS/I-PEX, SMA, SMB, MCX, MMCX, Fakra, GT5, GT16 assemblies in different genders and mounting styles.

**Coaxial Cable:** 0.81, 1.13, 1.32, 1.37, RG174, RG316, 1.5DS, CFD200 cable in any length

Please feel free to contact us for more connectors & cables.
Application Design

Smart Home

Doorbell

Smart Speaker

Smart Plug/WiFi Repeater

3G/LTE (for data exchange)

WiFi (for data exchange)

NFC (for pairing or payment)

Photo
Unlock
Hold to talk
Video
Alarm
Back

HDTV
Fan
Washing machine
Music-player

On
Off
On
Off

3G/LTE
WiFi
NFC

InPaq
NFC
(for pairing or payment)

WPC
(power charging with better waterproof)

LCT
(laser circuit technology, antenna formed on ceramic or plastic housing)

BT+WiFi

LTE

Div

RX WPC

RX WPC+NFC

Smart Phone

Mobile
INPAQ

Smart Wearable

Watch

- **WPC** (power charging with better waterproof)
- **BT/WiFi chip** (for data exchange)
- **GPS patch** (for location information)
- **NFC chip/coil** (for pairing or payment)
- **LCT** (laser circuit technology, antenna formed on ceramic or plastic housing)
- **3G/LTE** (for data exchange)

Meet me for coffee at cafe? May 28 AM 15°
NB-IoT GPS Tracker

LoRa, NB-IoT
(for data exchange)

GPS
(for location information)

GPS+WLAN Combo
(for data exchange and location information)

LTE+WLAN Combo
(for data exchange)

Bluetooth
(for data exchange)

NFC
(for pairing or payment)
Smart Healthcare

Pressure Therapy Device

3G/LTE
(for data exchange)

Bluetooth/WiFi
(for data exchange)

NFC as a reader
(for recall personal configuration and BT/WiFi pairing)

LCT
(laser circuit technology, antenna formed on ceramic or plastic housing)

INPAQ
3G/LTE
(for data exchange)

NFC as a reader
(for recall personal configuration and BT/WiFi pairing)

LCT
(laser circuit technology, antenna formed on ceramic or plastic housing)
NFC tag chip/coil
(for save personal configuration)

WPC
(power charging with better waterproof)

Bluetooth/WiFi
(for data exchange)

Power Station

Mask

Remote Alarm

TX 5W

TX 15W

RX WPC

RX WPC+NFC

My Options

MAX

Mute

Level Check

Charging

Off    On

O      I DC In/Out

Smart Vehicle

- **GPS patch & active**
  (for location information)

- **3G/LTE**
  (for data exchange)

- **Bluetooth/WiFi**
  (for data exchange)

- **NFC reader**
  (for payment/identification)

- **WPC**
  (power charging with better waterproof)

- **TX 15W**
- **RX 15W**
Base Station

**Bluetooth/WiFi**
(for data exchange)

**3G/LTE**
(for data exchange)

**NFC**
(for pairing)

**GPS patch & active**
(for timing synchronization)

**Array element**
(single/dual polarization)
<table>
<thead>
<tr>
<th>Product Code</th>
<th>Dimensions</th>
</tr>
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<tbody>
<tr>
<td>PA1590MQ5G-XXX-XX</td>
<td>13x13x5mm</td>
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<tr>
<td>PA1590MR6G-XXX-XX</td>
<td>12x12x6mm</td>
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<tr>
<td>PA1590MR4G-XXX-XX</td>
<td>12x12x4mm</td>
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<tr>
<td>PA1575MQ4S-123-1Z</td>
<td>10x10x4mm</td>
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<tr>
<td>PA1575MQ4S-124-1Z</td>
<td>9x9x4mm</td>
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<tr>
<td>PA1575MQ4S-125-1Z</td>
<td>6x6x4mm</td>
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**GNSS Circular Pol.**

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Dimensions</th>
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<tbody>
<tr>
<td>PA1582MF6G-136-2ZM</td>
<td>36x36x6mm</td>
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<tr>
<td>PA1590MI6G-136-1ZM</td>
<td>25x25x6mm</td>
</tr>
<tr>
<td>LA1575MS4G-XXX-XXX</td>
<td>20.5x6.2x4mm</td>
</tr>
<tr>
<td>LA1575MK4G-XXX-XXX</td>
<td>20.2x6x3.8mm</td>
</tr>
<tr>
<td>GPS434N-ND-00-A</td>
<td>15x15x2mm</td>
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</tbody>
</table>

**GNSS Linear Pol.**

**Curve Patch (GNSS)**
**GNSS L1/L2/L5/L6**

- **PADGPS-I4H10G-101-17**
  - 25x25x4+38x38x10mm
- **PADGPS-I4H4G-101-17**
  - 25x25x4+38x38x4mm
- **PATGPS-I6H10G-101-1ZM**
  - 25x25x6+38x38x10mm
  - (2pin) L1L2L5 or L1L2L6
- **PATGPS-I6H10G-102-1ZM**
  - 25x25x6+38x38x10mm
  - (4pin) L1L2L5 or L1L2L6

**GNSS+SDARS**

- **PAGS-I4F2P2G-XXX-XXX**
  - 25x25x4+36x36x4mm
- **PATGS-I5F4G-100-ZZM**
  - 25x25x5+25x25x4mm

**SDARS**

- **PAS23XXMF4G-XXX-XXX**
  - 36x36x4.2mm
- **PAS2333MF4G-148-1ZS**
  - 28x28x4mm
- **PAS2333MF6G-120-18M**
  - 25x25x6mm

**WiFi 2.4 GHz**

- **PAS23XXMH4G-XXX-XXX**
  - 22.4x22.4x4mm
- **PAS23XXMH4G-XXX-XXX**
  - 36x36x4.2mm
- **PA2400MF4G-157-18M**
  - 25x25x4mm
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<tr>
<td>13x13x4mm</td>
<td>13x13x4mm</td>
<td>13x13x6mm</td>
<td>36x36x6mm</td>
<td>36x36x6mm</td>
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</table>

**WiFi 5 GHz**

**ETC 5.8 GHz**
*(Broadside)*

**V2X/DSRC 5.8 GHz**
*(Omnidirectional)*

**RFID 868 MHz**

**RFID 915 MHz**

**Patch Antenna (SMD)**

**GNSS Circular Pol.**

<table>
<thead>
<tr>
<th><strong>PA1575MZ50J4G-XX-SMD</strong></th>
<th><strong>PA1575MZ50J4G-XX-SMD</strong></th>
<th><strong>PA1575MZ50J4G-XX-SMD</strong></th>
<th><strong>PA1590MS4G-100-SMD-S</strong></th>
<th><strong>PA1590MK4G-100-SMD</strong></th>
<th><strong>PA1575MD3.5G-102-SMD-S</strong></th>
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<tbody>
<tr>
<td>25x25x4mm</td>
<td>18.4x18.4x4mm</td>
<td>18.4x18.4x2mm</td>
<td>18x18x4mm</td>
<td>15x1.5x4mm</td>
<td>12x12x3.5mm</td>
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<tr>
<td>Model</td>
<td>Description</td>
<td>Dimensions</td>
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<tr>
<td>ACA-5036-A2-CC-S</td>
<td>2.4 GHz</td>
<td>5.2x3.7x0.7mm</td>
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<tr>
<td>ACA-3216-A1-CC-S</td>
<td>2.4 GHz</td>
<td>3.2x1.7x0.5mm</td>
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<tr>
<td>ACA-2012-A1-CC-S</td>
<td>2.4 GHz</td>
<td>2.0x1.2x0.55mm</td>
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<tr>
<td>ACA-8010-A1-MC-S</td>
<td>2.4 GHz</td>
<td>8.0x1.0x1.0mm</td>
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<tr>
<td>ACA-5020-A2-MC-S</td>
<td>2.4 GHz</td>
<td>5.0x2.0x0.72mm</td>
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<tr>
<td>ACA-3216-A2-MC-S</td>
<td>2.4 GHz</td>
<td>3.2x1.7x0.5mm</td>
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<tr>
<td>ACL-5036-A0-CC-S</td>
<td>5 GHz</td>
<td>5.2x3.7x0.7 mm</td>
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<tr>
<td>ACL-4516-A1-MC-S</td>
<td>5 GHz</td>
<td>4.5x1.6x1.0 mm</td>
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<tr>
<td>ACM3-5036-A1-CC-S</td>
<td>5 GHz</td>
<td>5.2x3.7x0.7mm</td>
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<tr>
<td>ACM3-3216-A1-CC-S</td>
<td>5 GHz</td>
<td>3.2x1.7x0.5mm</td>
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<tr>
<td>ACM3-9823-A1-MC-S</td>
<td>5 GHz</td>
<td>9.8x2.3x1.0mm</td>
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<tr>
<td>Chip Antenna (automotive)</td>
<td>2.4 GHz</td>
<td>5 GHz</td>
<td>2.4/5 GHz</td>
<td>GNSS</td>
<td>3-4 GHz (KeyFob)</td>
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<tr>
<td>--------------------------</td>
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<tr>
<td>VGAP CLA-AS-A1</td>
<td>5.2x3.7x0.7mm</td>
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<tr>
<td>VGAP CLC-AS-A1</td>
<td>5.2x3.7x0.7mm</td>
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<tr>
<td>VGAP CLB-AS-A1</td>
<td>5.2x3.7x0.7mm</td>
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<tr>
<td>VGAP CG0-AS-A1</td>
<td>5.2x3.7x0.7mm</td>
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<tr>
<td>VGAP CG1-AS-A1</td>
<td>5.2x3.7x0.7mm</td>
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<tr>
<td>VGAP CLK-AS-A1</td>
<td>5.2x3.7x0.7mm</td>
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<tr>
<th>RFID</th>
<th>Ear Tag</th>
<th>868/915 MHz</th>
<th>868 MHz</th>
<th>915 MHz</th>
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<tbody>
<tr>
<td></td>
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<td>36x36x6mm</td>
<td>36x36x6mm</td>
</tr>
</tbody>
</table>
DAM-L8-B-N0-000-03-13
87mm (Gain: 2 dBi)

DAM-L12-B-N0-000-04-14
173mm (Gain: 5 dBi)

DAM-G0-B-M1-180-02-08
102mm (Gain: 2 dBi)

DAM-L8-H-N0-000-03-14
87mm (Gain: 2 dBi)

DAM-C2-H-N0-000-04-02
194mm (Gain: 5 dBi)

DAM-Q4-B-N0-000-04-14
362mm (Gain: 9 dBi)

Dipole Antenna

2.4 GHz

2.4/5 GHz

3G/LTE

Others (433 MHz)
Wireless Power Charger

Coil Tx

MPA2-15W

A11-5W

A13-5W

Wearable

Wearable

Coil Rx

15W

15W (WPC+NFC)

15W

5W

Wearable

Wearable (with magnet)

WPC-W-P-TX-MPA2-001
53x53x5mm
Ferrite: Mn-Zn

WPC-W-P-TX-A11-003
Ø50x3.8mm
Ferrite: Mn-Zn

WPC-W-P-TX-A13-001
56.5x98.3x3.5mm
Ferrite: Ni-Zn

WPC-W-P-TX-CF-001
Ø27x0.76mm
Ferrite: Ni-Zn

WPC-W-P-TX-CF-003
Ø23x2.1mm
Ferrite: Ni-Zn

WPC-W-P-RX-CF-023
50x94.9x0.7mm (FPCB)
Coil Dim: 50x40x0.7mm
Ferrite: Ni-Zn

WPC-W-P-RX-MM-009
52x77.63x0.3mm
Ferrite: Nanocrystalline
(Mn-Zn also available)

WPC-W-P-RX-MM-009
60x78x0.25mm
Ferrite: Mn-Zn

WPC-W-P-RX-MM-009
30x30x0.71mm
Ferrite: Ni-Zn

WPC-W-P-RX-MM-009
16x10x0.8mm
Ferrite: Ni-Zn

WPC-W-P-RX-MM-009
18x24x0.85mm
Ferrite: Amorphous
<table>
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<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Coils</th>
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<tbody>
<tr>
<td>WPC-W-A-TX-MA5-002</td>
<td>62x50x8.9mm (PCBA)</td>
<td>Ø50x4.1mm</td>
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<tr>
<td>WPC-W-A-TX-A11-017</td>
<td>20x45x2.7mm (PCBA)</td>
<td>Ø50x3.8mm</td>
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<tr>
<td>WPC-W-A-TX-A11-015</td>
<td>42.75x32x4.5mm (PCBA)</td>
<td>Ø35x2.5mm</td>
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<tr>
<td>WPC-W-A-RX-CF-009</td>
<td>30x30x2.35mm (PCBA)</td>
<td>33x43x0.8mm</td>
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<tr>
<td>WPC-W-A-RX-CF-001</td>
<td>15x30x1.2mm (PCBA)</td>
<td>48.65x52.5x1mm</td>
</tr>
<tr>
<td>WPC-D-A-RX-CF-001</td>
<td>11.65x52.2x1.16mm (PCBA)</td>
<td>Ø19.5x0.9mm</td>
</tr>
</tbody>
</table>

Module Tx

- Qi Compliance-15W (Support Samsung, Apple Quick Charge 10W)

Module Rx

- Qi Compliance-15W
- Qi Compliance-5W
- Qi Compliance-5W (WPC+PMA+NFC)
- Wearable-1.5W
- Wearable-2.5W