



## GA300 Full Wide Fingerprint Identification System



## Full Wide Fingerprint Identification System

# GA300

### Feature

- Scientific pole SCMOS image sensor;
- **Spectral range:** 200nm~1000nm;
- **Resolution/Pixels:** 2048X2048, 4 million pixels;
- 7 inch IPS HD, 1280\*800 pixels.;
- **Heat dissipation method:** Fan cooling
- **Image processing:** with the image processing button, can adjust the image contrast, adjust the exposure intensity, image zoom and other parameters;
- **Data transfer:** with wireless real-time transmission function;
- **Macro shooting:** imaging distance $\geq$ 10cm
- **Intelligent recognition:** identify the fingerprint on the photo, do a certain enhancement algorithm;
- Full spectrum parallel light source;
- Extremely high sensitivity in the full UV region;
- For different objects (such as lime wall, glass door, paint door, thermal paper, etc.), the left fingerprint has a high sensitivity to search and identify the ability, has a powerful search and evidence collection function.

### Application

- Public security material evidence collection;
- The system of searching, recording and collecting occult blood traces of dark fabric
- Biometric trace acquisition and recording system.

### Description

In the process of crime scene investigation, in order to find more biometric materials, potential fingerprints, tool traces and other traces, and obtain more investigation clues and criminal evidence, the investigators need to use a variety of technical means to conduct a detailed investigation of the crime scene. In order to find more biometric materials, potential fingerprints, tool traces and other traces, and obtain more investigation clues and criminal evidence, the investigators need to use a variety of technical means to conduct a detailed investigation of the crime scene. The scene investigators need to carry a variety of exploration equipment in the process of handling cases, such as: SLR camera, video recorder, UV camera, UV light source, light source, etc, and need to be frequently switched between a variety of equipment, cumbersome operation, low exploration efficiency.

GA300 Full Wide Fingerprint Identification System is a portable field trace material evidence non-destructive search equipment, its spectral range is 200nm-1000nm, belonging to the ultra-wide spectral response. It has many common functions optical exploration instruments, and advantages of powerful function, light volume, simple operation and easy to carry. Its launch freed on-site investigators from cumbersome equipment switching, successfully reduced the burden on law enforcement officers, effectively improved the efficiency of case handling.

Model	Feature
GA300	Basic series
GA300AF	Auto-focus



## 1. Introduction

The ultra-wide spectrum trace search, recording and evidence collecting instrument is a portable device for crime scene investigation, recording and evidence collecting, and is also a professional trace inspection equipment for physical evidence laboratory. The device adopts the most ultraviolet high-photosensitive science-grade SCMOS chip, and has an ultra-wide spectral response range. It has excellent spectral response capability in ultraviolet, visible and near-infrared bands, and can quickly conduct spectral search, display, recording and collect evidence for traces of various biological materials at the crime scene. To dark specimens can be found at the scene of the crime (dark cotton, chemical fiber fabrics and other black object, such as tires, plastic, etc.), according to different objects (such as lime wall, door, paint door, thermal paper, etc.) the legacy of the drops of blood "blood search to identify ability, with high sensitivity is a powerful search collect evidence function, improve the efficiency of the investigators field exploration.

## 2. Feature

- 1) 4K Ultra HD Video Quality: 2048×2048 pixel resolution.
- 2) The system adopts the back light type high pixel, high sensitivity and low illumination chip, can take pictures and video, button easily switch.
- 3) Integrated design, single finger operation; Crime scene and laboratory tests shall apply. A revolutionary new device for digital forensics.
- 4) It can search for potential fingerprints on semi-permeable walls at distances greater than 5 meters.
- 5) Sharp spectral effect, trace searching and evidence collection of biometric materials can be completed in one step. For the traces covered by blood, it has a powerful function of searching and collecting evidence. Extremely high sensitivity in full ultraviolet region, sensitivity never attenuates.
- 6) Large screen high-definition display, fingerprint, footprint, fine spots, sweat, occulting blood, seal text and other details magnify, continuous image RAW lossless compression format material evidence recording and ultra clear image output, suitable for criminal science crime scene investigation material evidence search recording system.
- 7) Customized sensor, light source and filter system for high-definition material evidence shooting and ultra clear material evidence imaging in criminal science scene, with integrated human design, it is the most practical and practical recording imaging system for crime scene investigation and

evidence collection.

- 8) Focus multiplier noise reduction: using low illumination sensor on large target surface, noise separation through multi-point sampling noise reduction technology, can obtain continuous high-definition image trace.

## 3. Specification

Detector	
Model	Scientific-grade, backlit CMOS image sensor
Imaging components	Using low illumination photoelectric imaging components
Pixels size	11μm×11μm
Effective imaging area	22.5mm(H)×22.5mm(V)
Max. frame frequency	48fps
Max. SNR	49dB
Max. power	<650mW
Sensitivity	1.6e-
Dark noise	<0.2e-/s/pix @ -50°C
Parameter	
Camera	F30mm/F90mm wide spectrum high resolution imaging lens
Screen	4K Ultra HD video quality
Resolution/Pixels	2048×2048, 4 million pixels
Spectral range	UV-VIS-NIR (200nm~1000nm)
Frame rate	15~80 fps/s
Shutter type	Electronic shutter, picture: 1/8000-30s; short film: 1/8000-1/4 step
Photo images	2048*2048, output format JPEG
Video output	>60 fps/s real-time image output. Output format:MP4
Video/Image output	SD Card /USB Interface
Dimensions	128×95×60mm (Excluding protrusions)
Weight	582 g
Working time	≥4 hours

## 4. Advantages

- 1) **Wide spectral trace search light source:** Small size, portable design, directly installed in the front

of the host lens, built-in double light source, direct blood spots, fingerprint trace light contact search.

- 2) **Portable directional reflection deshadow camera device:** Portable light source integrated darkroom design, not by the interference of external light; Directly installed in the front of the main lens for trace identification. It is easy and quick to pick up fingerprint image on complex background interface. The power is 16W, the spectral range is 365nm, the light source life is  $\geq 50000$ h, the form of light source: smooth surface light source. The light source Angle is  $90^\circ$ , and the mirror can be fine-tuned  $\pm 5$  degrees for uneven interface to ensure the vertical orientation of the photographic axis and the trace interface.
- 3) **Biometric material trace fluorescence excitation optical device.**
- 4) **Dark fabric occult blood and blood searching optical device.**
- 5) **Full spectrum parallel light source:** Using the combination of imported LED and photoelectric technology, single lamp output red, orange red, green, cyan green, blue, blue white, yellow, magenta, cyan, white light (6000K) band spectrum. Direct excitation trace appearance, change the disadvantage of using filter absorption trace filter.
- 6) **Screen:** 7 inch IPS HD, 1280\*800 pixels.
- 7) **Remake system:** 60\*70cm professional remake platform.
- 8) **Macro stents:** Professional adjustable macro stand.
- 9) **Protective glasses:** Equipped with cut-off filter protection glasses.
- 10) **Portable connection module:** Handheld and connecting plate for portable.
- 11) **Packaging:** Portable three-proof box.

## 5. Test Renderings



Figure 1 Fingerprint shooting effect diagram



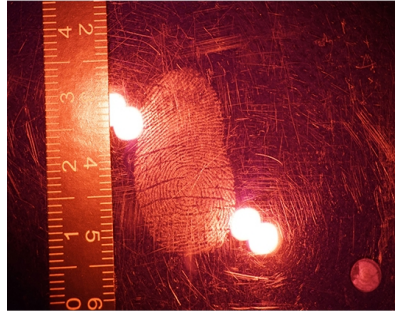


Figure 2 Perspex double-sided overlapping hand prints

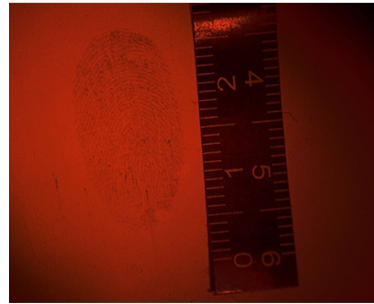


Figure 3 White grey wall observation effect

## 6. Public Safety Product Series


 <p><b>ATR6500</b> <b>785 HandRaman</b></p> <ul style="list-style-type: none"> <li>Narcotics, narcotic precursor</li> <li>Explosives, explosives precursor</li> <li>Inflammable materials Ivory ban</li> </ul>	 <p><b>ATR6600</b> <b>1064 HandRaman</b></p> <p>Narcotics, narcotics precursor (Heroin, Magu, Fentanyl)</p> <ul style="list-style-type: none"> <li>Inflammable materials Ivory ban</li> <li>Inflammable materials Ivory ban</li> </ul>	 <p><b>GA500/GA500-3</b> <b>Handheld Hair Trace Drugs Fast ID ( Triple Reagent Card)</b></p> <ul style="list-style-type: none"> <li>Drugs taken period(1 day to 6months)</li> </ul>	 <p><b>GA500TY</b> <b>Handheld Saliva Trace Drugs Fast ID</b></p> <ul style="list-style-type: none"> <li>Drugs taken period (&lt;3 days)</li> </ul>	 <p><b>GA510</b> <b>Handheld Urine Drugs Fast ID</b></p> <ul style="list-style-type: none"> <li>Drugs taken period(0.5h - 7 days)</li> </ul>	
<div style="background-color: #008000; color: white; padding: 5px; border-radius: 10px; display: inline-block;">Narcotics Control</div>					
 <p><b>GA300</b> <b>Full Wide Scpctrum Evidence Collection System</b></p> <ul style="list-style-type: none"> <li>fingerprint, sperm spot, blood evidence</li> </ul>	 <p><b>GA310</b> <b>Intelligent Footprint Evidence Collection System</b></p>	 <p><b>GA600</b> <b>Raman Microscope for time sequencing of cross lines</b></p>	 <p><b>GA610</b> <b>NIR Raman Microscope for time sequencing of cross lines</b></p> <div style="background-color: #008000; color: white; padding: 5px; border-radius: 10px; display: inline-block;">Forensics</div>	 <p><b>GA900</b> <b>Airborne Forest Patrol and Fire Alarm System</b></p>	 <p><b>GA901</b> <b>Handheld Fire Alarm System</b></p> <div style="background-color: #008000; color: white; padding: 5px; border-radius: 10px; display: inline-block;">Fire Control</div>

Figure 4 Public safety product series produced by Optosky (as of December 2020)

## 1. Company Profile

Optosky company is an first-class spectroscopy solution provider, with the headquarter locates  
~~Product data information is current as of~~  
 publication data. Products conform to specifications per the terms of Optosky Standard warranty.

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in the 7<sup>th</sup> floor of the research institute of the Chinese Academic of Science at an area of 2500 square meter in Xiamen city where successfully held the international 9<sup>th</sup> BRICK summit in 2017. The subsidiary company locates in Wuhu city with an area of 2035 square meter.

The company founder Dr.Hongfei,Liu graduated Doctor degree from Chinese Academic of Science and postdoctoral degree from Xiamen University, by integrating both of top Universities' spectroscopy technology background into Optosky company aiming at developing the leading spectroscopy equipment in the world.

The company bases on unique technologies of Optomechatronics, Spectroscopy Analysis, Process Weak Optical and Electrical Signals, Cloud Computing, and have been developed wide products line of the competitive Raman spectroscopy instruments, micro spectrometer, hyperspectral imager, field spectroradiometer, fluorescence spectroscopy, LIBS etc. Driven by advanced technologies and products, Optosky brand has been well-known to customers all over the world.

Optosky company base on technologies innovation, market driven direction, customer first, provides first-class products and services, and one-stop solutions to many fortune 500 companies in many industries. The company received praise from different industries companies, as well as many innovative intellectual property, software copyright, qualification certification, and winner awards over hundred numbers.

Optosky receives top class A introduced high-tech company to international Xiamen city, the national high-tech and new innovative technology company award. The founder Dr.Hongfei Liu receives the innovation talent award by ministry of science and technology.

The company is currently conducting the exclusive project of major industrialization national oceanic administration with a total fund of five million us dollar. The company in charge of drafting national industry standard of VNIR and SWNIR Field Spectroradiometer, and six national standard drafter, including China National Standard Drafter for Hazmat detector based on Raman spectroscopy, China National Standard Drafter for Buoy-type Monitor eco-environment, China National Standard Drafter for water quality monitor in unmanned boat, China National Standards drafter for online water quality monitor by spectroscopy, China National Standard Drafter for UV-absorbent measure fabrics.

The company has over 70 IPs and over 20 innovative patents.

The company received ISO9001:2015 certification, CE certification, Police Administration Certification, FDA approval compliant, IQOQPQ compliant.



Figure 1 Optosky (Xiamen) Photonics Inc. Company Headquarter

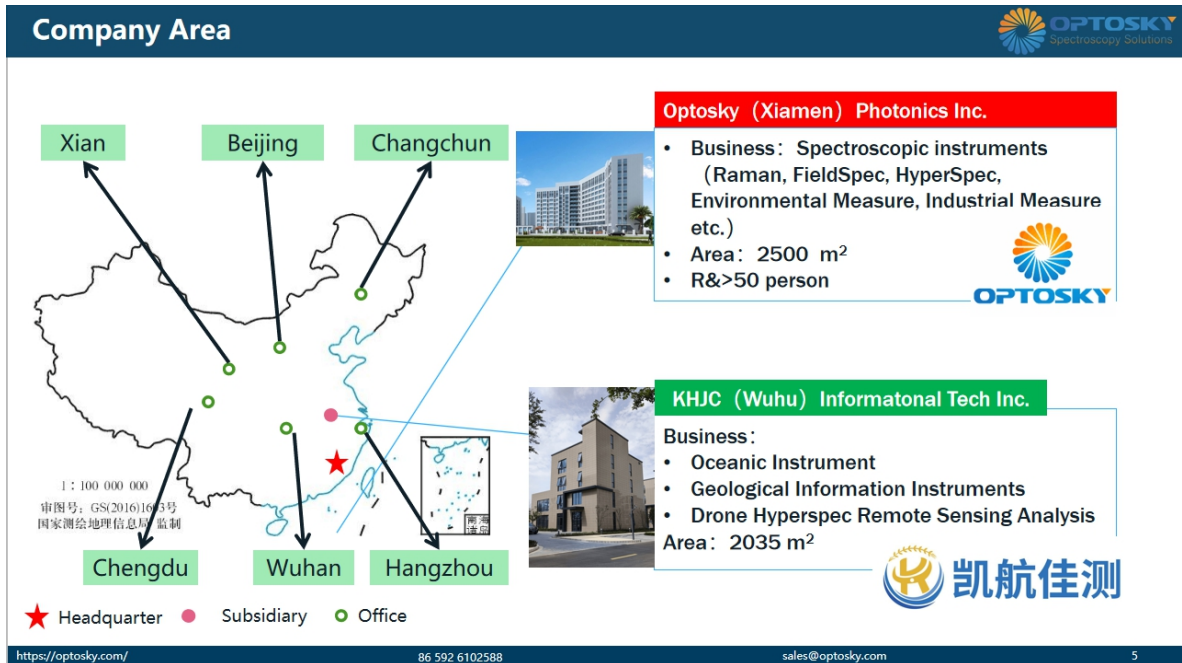


Figure 2 Optosky Company Area



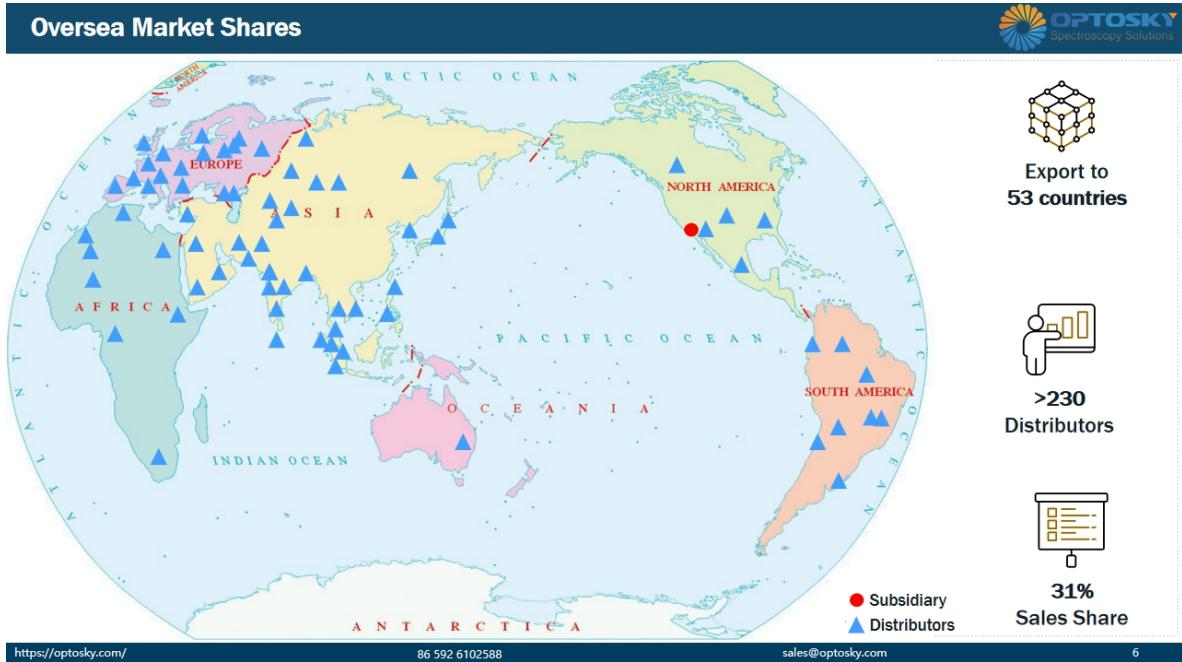


Figure 3 Oversea Market Shares



Figure 4 Optosky Chair and Draft National Standards Lists.

Qualification



 <b>ISO9001:2005</b>	 <b>GB/T 23001</b> Informationization & Innovation	 <b>CE, RoHS, LVD</b> 17 models	 <b>Police Approval</b> 11 models
 <b>GB/T 29490</b> IP implementation	 <b>5 Innovative patents</b>	 <b>35 patents</b> new utility design	 <b>32 Software copyright</b>

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Figure 5 Qualification

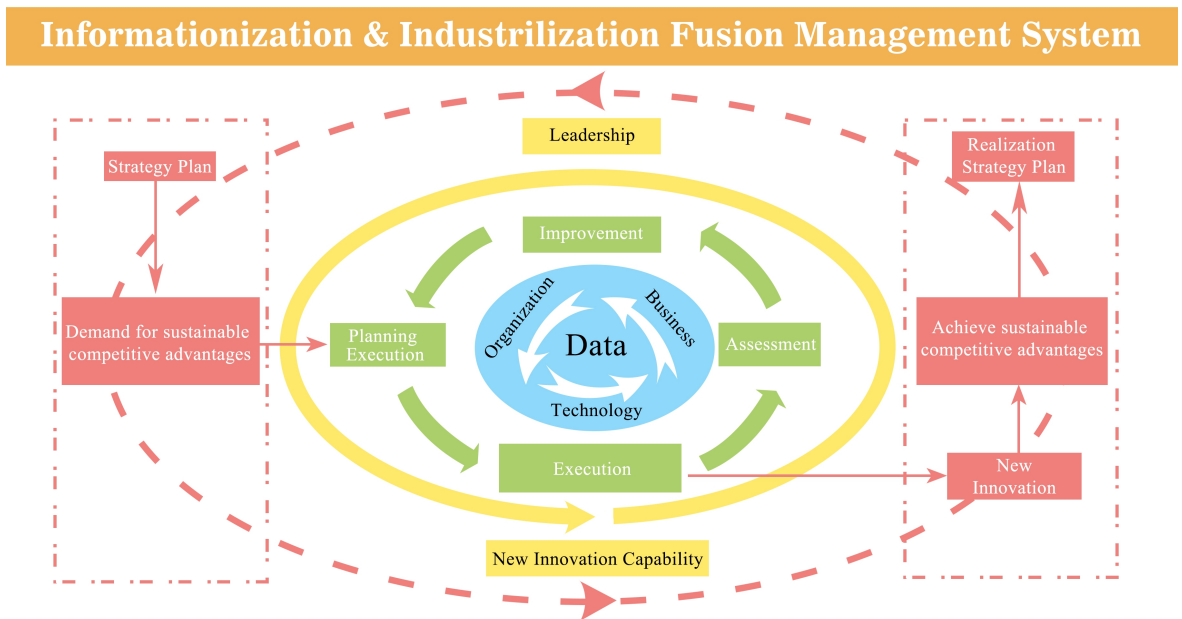


Figure 6 GB/T 23001\_ Informationization & Industrilization Fusion Management System

## Co-Founder—Dr. Hongfei Liu



### Postdoctoral Hongfei Liu

- Selected "Innovative Talent" by Science and Technology ministry
- Top Class A Talent by Xiamen City
- CCTV Science & Technology Interview
- Fortune 500 experience in Agilent, II-VI

### Honors

- Selected by science & technology ministry as "Innovation Talent"
- CCTV Science & Technology Interview
- Top Class A Talent credited by Xiamen City
- **Innovation Hero**

### Education

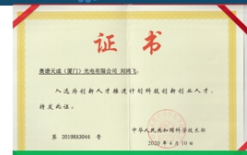
- PhD • Chinese Science of Academic • Prof. Gui-Lin Chen, Originator in spectroscopy
- Postdoctoral • Xiamen University • Prof. Zhong-Qun Tian guided by the SERS founder M.Fleischmann

### Career

- Engineer → R&D Manager → GM
- **Agilent**, Leader of instrument, Fortune 500 company, Job: engineer
- II- VI Incorporated (Nasdaq: IIVI) leader in optical & electrical industries, Job: GM of Instrumentation and Automation

### Academic

- University graduate tutor
- obtain more than 60 IPs, more than 10 Innovation patents;
- Publish more than 20 papers, 2 recorded SCI, 8 recorded EI



Selected "Innovative Talent" by Science and Technology ministry



Top Class A Talent by Xiamen City



Founder & Tutors

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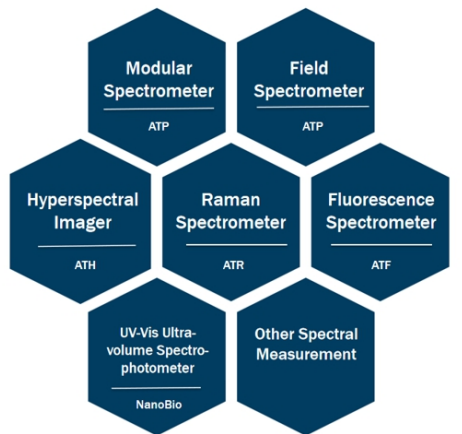
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Figure 7 Optosky's Co-founder\_Dr. Hongfei Liu

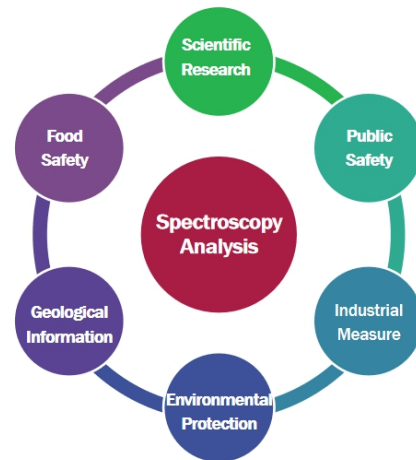
## Category & Application



### Category



### Application



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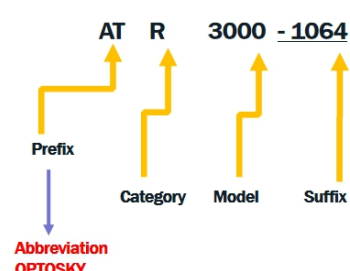
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Figure 8 Category & Application

Model Name Rule

**Model Name Rule:**

- Prefix
- Category
- Model
- Suffix



- **ATR** - Raman Spectrometer
- **ATP** - Micro Spectrometer
- **ATH** - Hyperspectral Imager
- **ATF** - Micro Fluorescence Spectrometer
- **ATL** - LIBS
- **ATW** - Water
- **ATE** - Environment Protect
- **ATFD** - Food Safety
- **GA** - Public Safety (**Gong An**)
- **GF** - Gas Monitor (**Gas Finder**)
- **GY** - Industrial Monitor (**Gong Ye**)

eg:

- Raman Microscope: ATR8300MP-1064
- Hyperspectral Imager: ATH9500

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Figure 9 Model Name Rule