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Chinese Independent OEMs' Telematics Products Report, 2021

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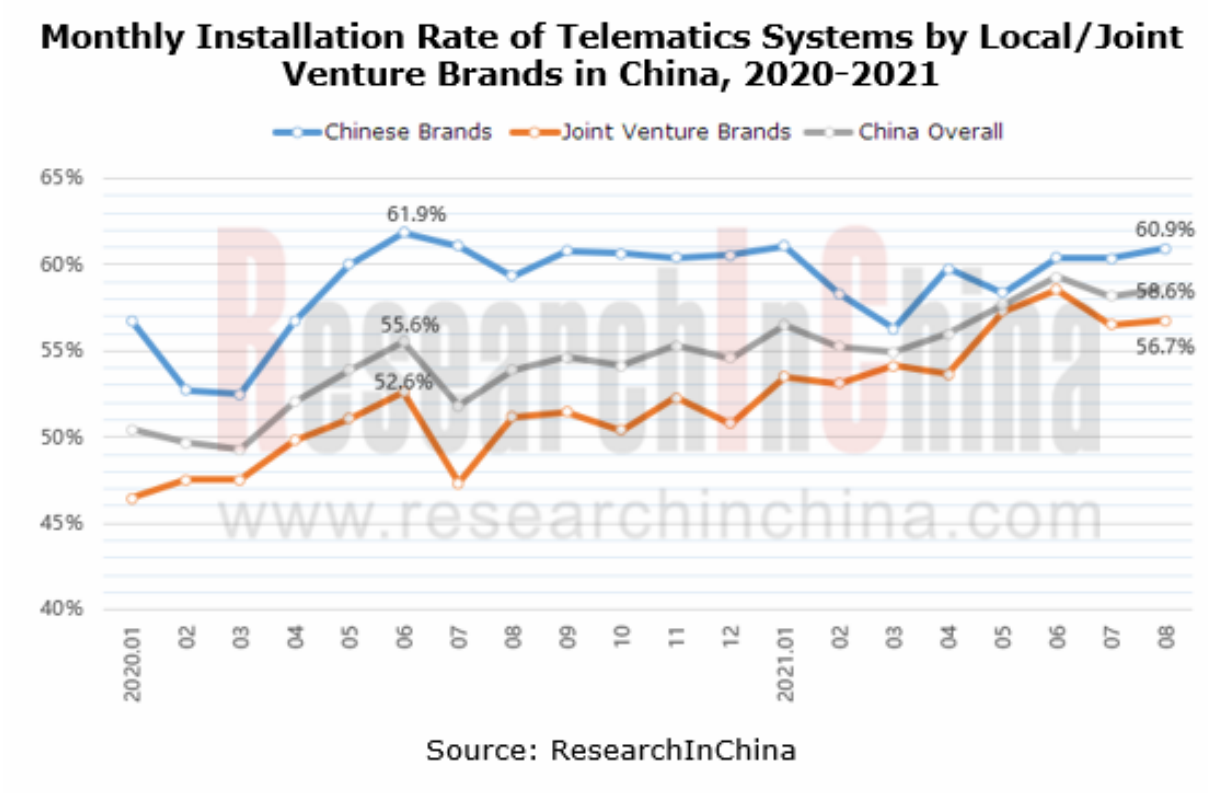
High computing power chips promote the integration of telematics with AI

Chinese OEMs' telematics research: high computing power chips promote the integration of telematics with AI

In the first eight months of 2021, 57.1% of new passenger cars in China installed telematics systems, 4.6 percentage points higher than in the same period of the previous year, of which Chinese brand passenger cars boasted a 59.6% installation rate, up 1.2 percentage points.



Source: ResearchInChina

Telematics System Installation of Main Chinese Brands

The steadily rising penetration of telematics systems in Chinese brands is benefited from the launch of intelligent platforms and creation of high-end intelligent brands, as well as close collaborations between industry chain partners. ResearchInChina surveyed that in the first eight months of 2021, all the homegrown high-end brands like Geely Lynk & Co, Great Wall WEY, Great Wall Tank, SAIC R CAR, Dongfeng Voyah, and BAIC ARCFOX boasted an over 98% installation of telematics systems.

Telematics System Installations and Installation Rate of Main Chinese Brands, Jan.-Aug. 2021

	Brand	Installations (Units)	Installation Rate
1	Geely	505,630	76.5%
2	Changan	496,505	80.2%
3	Haval	316,761	64.6%
4	BYD	293,109	82.8%
5	Roewe	194,373	80.6%
6	Lynk & Co	141,716	99.6%
7	Hongqi	118,262	73.8%
8	MG	93,427	92.8%
9	Baojun	79,924	46.1%
10	ORA	73,027	99.9%
11	GAC Trumpchi	72,025	35.3%
12	NIO	55,657	100.0%
13	Changan Oushang	54,623	35.7%
14	Chery	53,706	26.6%
15	GAC AION	53,609	82.0%
16	Li Auto	48,752	100.0%
17	Xpeng Motors	44,680	100.0%
18	BEIJING	44,454	60.3%
19	TANK	41,232	100.0%
20	WEY	39,813	100.0%

Source: ResearchInChina

Latest Telematics System and IVI System Chips of Chinese Brands

In 2021, local brands in China race to roll out their new-generation telematics systems, highlighting the following:

1. ***The installation of high computing power master chips in vehicles helps to realize much greater human-computer interaction capability and far better ecological service experience.***

The automotive chips developed by Qualcomm, MediaTek, Horizon Robotics, NXP among others have been seen in the telematics systems of Chinese brands. Wherein, the sought-after Qualcomm Snapdragon SA8155P with super computing power so far have found application in mass-produced models including Geely Xingyue L, Lynk & Co 09, AION LX, Haval H6S/Shenshou, WEY Mocha, WEY Macchiato, ORA Cat, and LiXiang P5, Weltmeister W6 and NIO ET7.

Latest Telematics Systems and IVI System Chips of Chinese Brands, 2021

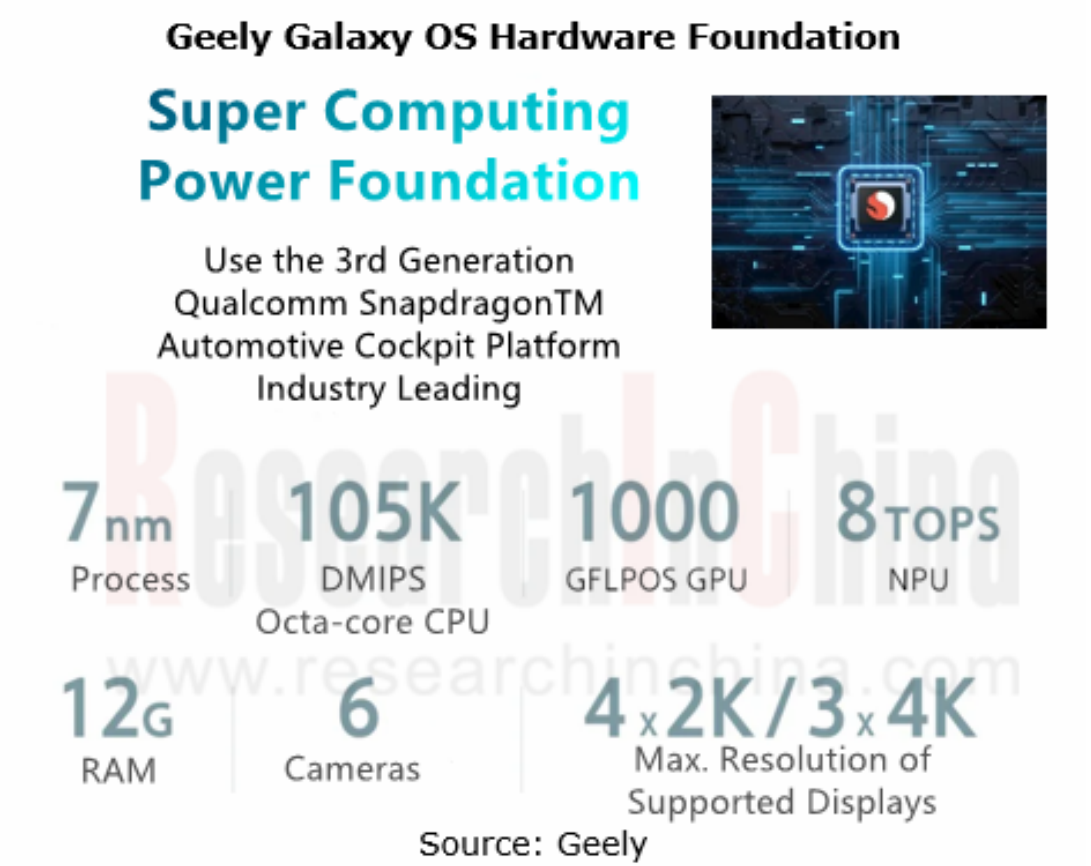
Brand	Typical Model	Telematics System	Chip
Geely	Xingyue L	Galaxy OS	Qualcomm Snapdragon SA8155P
Lynk & Co	09	New-generation Telematics System	Qualcomm Snapdragon SA8155P
Haval	H6S	Coffee Intelligence Cockpit System (GC-OS)	Qualcomm Snapdragon SA8155P
WEY	Mocha	MO.Life 1.0	Qualcomm Snapdragon SA8155P
ORA	Hao Mao GT Mulan Edition	Coffee Intelligence Vehicle Control System	Qualcomm Snapdragon SA8155P
Changan	UNI-K	Interactive Monitoring System (IMS)	Super fast, based on Horizon Journey 2
Oushang	X7 PLUS	Onstyle 3.0 PLUS	MediaTek Octa-core
Aion	Aion Y	ADiGO 4.0	Horizon Journey 2
Trumpchi	GS4 PLUS	Super Sensing Interactive Smart Cockpit	Horizon Journey 2
Voyah	FREE	Hicar System	NXP i.MX8 QM
ARCFOX	ARCFOX αS Huawei HI	HarmonyOS	Kirin 990A
Hongqi	E-HS9	Hongqi Connect 3.0 (Smile 1.0)	Qualcomm 9150 C-V2X

Source: ResearchInChina

Snapdragon SA8155P-enabled Cockpit Platform

Snapdragon SA8155P, Qualcomm's 3rd-generation automotive cockpit platform, is powered by 7nm process and octa-core CPU, with computing power ten times greater than the previous 820A, and speeds of CPU and GPU 8.5 times and 20 times faster than the previous generation, respectively. The 8155 chip enables multi-screen display, personalized AI, immersive audio and video, 5G connectivity and other capabilities for a number of models.

Xingyue L: run on Geely Galaxy OS, a new-generation vehicle system co-developed by ECARX and Geely, and use Qualcomm 8155 chip with 105K DMIPS CPU, 1000 GFLPOS GPU and 8 TOPS NPU.



Galaxy OS features four major core capabilities

Based on the great hardware foundation, Galaxy OS features four major core capabilities: Human Vehicle Interaction, Intelligent Vehicle Control, Edge AI, and Open Ecosystem.

- **Human Vehicle Interaction:** Xingyue L's four display systems of AR-HUD, dashboard, center console and co-pilot screen enable cross-screen interaction and multi-finger operation. The triple-screen display design of dashboard, center console and co-pilot screens (all 12.3 inches) allow 1/2/3-finger swipe interaction, of which: 1-inger swipe enables quick switch between controls; 2-finger swipe is for center console display split; 3-finger swipe achieve cross-screen interaction.

- **Edge AI:** the information "preloading" technology is used to enable Baidu Apollo with local voice interaction, voice control over all body functions, human voice control in all scenarios, and 24-hour wake-up-free voice interaction at the driver's seat, as well as self-learning and self-evolution capabilities.

- **Intelligent Vehicle Control:** support 1,300+ body signal connections and 170+ body control functions; enable 3D rendering effects in control of air conditioner, seats and other functions.

- **Open Ecosystem:** work with partners like Baidu, Tencent and ByteDance to build a vehicle ecosystem with abundant applications of "speaking, listening, watching and playing", including WeChat vehicle version, Kuwo Music, Ximalaya, Aiquting, Douyin, Bilibili, iQIYI, and National K Songs.

Horizon Journey 2

As well as Qualcomm 8155 automotive chip, Horizon Journey 2 also enables multiple models of Changan, GAC and Chery among others, with a range of intelligent functions such as eye sight screen brightening, distraction warning, fatigue monitoring, gesture recognition, and voice-activated photographing.

- **Changan UNI-K:** the latest Interactive Monitoring System (IMS) for this car carries the Super Fast chip developed on Horizon Journey 2. Booted in just 4.7 seconds, the system realizes 3+1 quad-screen interaction and bears iFLYTEK Feiyu OS 3.0 (a voice interaction system), all-domain gesture interaction system, face recognition, fatigue driving warning, and other features. Wherein, the powerful all-domain gesture interaction system allows the driver to use the camera above the interior rearview mirror for gesture-activated song switch, photographing, and navigation to home or office, and also offers gesture control to rear row passengers.

- **ARCFOX αS Huawei HI:** it is the first car to adopt Huawei Kirin 990A chip and HarmonyOS, of which the Kirin 990A chip with 3.5TOPs computing power allows 5G connectivity and enables multi-display integration, face recognition, gesture recognition, four-voice-area voice recognition, 30-second continuous dialogue without wake-up, and car-home interconnection.

- **Voyah FREE:** as the first model launched by Voyah, Dongfeng's high-end intelligent electric vehicle brand in June 2021, it is based on NXP i.MX8QM and packs the new-generation IVI system co-developed with PATEO and Huawei, which is equipped with a lift type triple-screen integrated display and supports multi-screen interaction and multi-modal interaction (gesture, face, voice, AR navigation, touch, etc.). Soulmate AI intelligent assistant created by PATEO enables four-voice-area voice pickup, multiple rounds of voice dialogue, and active greetings and caring such as congestion prompt, route recommendation, fatigue warning, forgotten child remainder, and last-mile guidance.

Partner with BATH to build an all-scenario ecosystem

In the field of in-vehicle ecosystem, Chinese brands always partner closely with BATH (Baidu, Alibaba, Tencent and Huawei). In 2021, ByteDance (Douyin, Xigua Video, TouTiao, etc.) has joined as well.

Brand	Baidu	Alibaba	Tencent	Huawei	ByteDance
Geely	√ (Co-developed GKUI System and Galaxy OS)		√ (Galaxy OS integrated with TAI 3.0)		√ (Galaxy OS, Volcano Car Entertainment)
Lynk & Co	√ (Co-developed GKUI System and Lynk & Co 09 intelligent cockpit system)			√ (Lynk & Co 05 IVI system, connected with HiCar)	
Roewe		√ (Banma Zhixing System)		√ (Roewe iMAX8, Venus System connected with HiCar)	
MG		√ (Banma Zhixing System)			
MAXUS		√ (Banma Zhixing System)	√ (Spider Connect 2.0 integrated with TAI3.0)		
Changan			√ (Incall 3.0, and UNI Life systems integrated with TAI)		√ (Interactive Monitoring System (IMS), Volcano Car Entertainment)
Oushang			√ (Onstyle 3.0)	√(Onstyle 3.0 PLUS System connected with HiCar)	
Haval	√ (Hi-life system)		√ (Fun-life System integrated with TAI1.0/2.0)		√ (Fun-life System/Coffee Intelligence Cockpit System, Douyin)
WEY					√ (MO.Life 1.0, Douyin)
ORA					√ (ORA Smart Interconnection System/Coffee Intelligence Vehicle Control System, Douyin)
TANK			√ (Tank Smart Sharing Interconnection System, Aiquting)		√ (Tank Smart Sharing Interconnection System, Douyin)
Trumpchi			√ (Qiyun Concept, ADIGO System integrated with TAI)		√ (ADiGO4.0, Volcano Car Entertainment)
AION	√ (Baidu Map)		√ (ADIGO System integrated with TAI)	√ (ADiGO 4.0 connected with HiCar)	√ (ADiGO4.0, Volcano Car Entertainment)
EXEED	√ (Co-developed i-Connect@Lion 4.0 System)				
BYD				√ (DiLink System, Han, connected with HiCar)	
FORTHING			√ (Co-developed with FutureLink 4.0)		
Fengshen	√ (Co-developed with WindLink 6.0)			√ (WindLink 6.0 connected with HiCar)	
Voyah				√ (Voyah HiCar IVI system)	
BEIJING	√ (Darwin System, Baidu Duer OS)				
ARCFOX	√ (vehicle intelligent system (α-OS), Baidu Map)			√ (Harmony OS IVI system, connected with Huawei HiCar, chip, operating system)	
Hongqi	√ (Xiaodu In-Car OS)				
BESTUNE	√ (Xiaodu In-Car OS)	√			

Partner with BATH to build an all-scenario ecosystem

Alibaba: the Banma Zhixing System co-released with SAIC and based on AliOS has been iterated five times so far. The new models like Roewe and MG launched in 2021 are equipped with the VENUS System (Banma Zhixing 4.0), which enables center console interface A/B display, personalized AI image setting and customization, Alibaba's ecosystem and applets access, and car home interconnection. The ecological services introduced in 2021 include NetEase Cloud Music, Bilibili, Banma Interactive Radio, XUEXI.CN, Tmall Genie, and DingTalk vehicle version.

As AliOS IVI system came into service, Banma Zhixing rolled out OS trilogy in early 2020: Intelligent IVI OS, Intelligent Cockpit OS and Intelligent Vehicle OS; Luoshen OS, a heterogeneous integrated intelligent cockpit system launched with SAIC in October 2021, is about to be available to MG ONE and New Roewe RX5 MAX.

Based on Luoshen OS and Qualcomm Snapdragon 8155, MG ONE's intelligent cockpit enables cross-display interaction, 0 seconds to boot, and AI semantics driven by Alibaba DAMO Engine, and has the ability to self-learn and self-evolve in seven days. It also meets young consumers' needs for Bilibili Esport.

Banma Zhixing Luoshen OS First Mounted on MG ONE

Partner with BATH to build an all-scenario ecosystem

Baidu: Carlife, Xiaodu In-Car OS, etc. have been seen in the latest telematics systems of Haval, Trumpchi, EXEED, Dongfeng Fengshen, Dongfeng Venucia, BEIJING, Hongqi and BESTUNE. For example, EXEED Lion 4.0 that packs Xiaodu In-Car OS and Intel quad-core chip is connected with Baidu's ecosystem with 300+ services including IQiyi, QQ Music, Ximalaya FM, EXEED Changba, Qingting FM, Car KTV, Suixinkan, Baidu Map, and Smart Parking.

In August 2021, the new-generation intelligent cockpit system co-developed by Baidu and ECARX for Lynk & Co 09 made a debut. For the system, ECARX provides underlying hardware and upper-layer services; Baidu offers voice interaction, vehicle applications and scenario services. The cockpit system allows intelligent integration between people, ambient light and fragrance system according to the vehicle application scenario, for example, actively opening Burning Moment fragrance to help the driver refresh herself/himself if tired driving is detected, and adjusting the ambient light according to the driving mode.

Tencent: the giant has forged partnerships with automakers like Geely, Changan, Haval, Trumpchi and Dongfeng Forthing. Multiple Tencent products including Tencent Map, Tencent Cloud, Xiaowei Voice, and Tencent Auto Intelligence (TAI) System have been connected. TAI 3.0 combines three features: Aiquting (QQ Music, Ximalaya, WeRead, Tencent Video, Pocket Story, etc.), Tencent Suixing (mobility assistant, and one account for mobile phone, IVI system, WeChat vehicle version, etc.), and Tencent Mini Scenario, which have been integrated into Geely Galaxy OS, Dongfeng Forthing Future Link 4.0, SAIC Maxus Spider Connect 2.0 and other systems.

Huawei: using 5G technology, Huawei HiCar System enables people-car-home interconnection in all scenarios, including smartphone integration, one-click navigation, video call, one-click remote home control, fatigue driving monitoring, gesture interaction, and smartphone application ecosystem sharing, and is also connected with 30+ vehicle ecosystems. So far HiCar System has been available to dozens of brands such as Dongfeng Fengshen, Dongfeng Fengon, Voyah, Lynk & Co, GAC Trumpchi, BYD and SAIC Roewe, with over 500 units expected to be pre-installed at the end of this year.

5G has become available to a range of models

Since 2020 automakers have launched multiple 5G-enabled mass-produced models.

Some 5G-enabled Mass-produced Models of Chinese Brands, 2020-2021

Launch Time	Brand	Model	5G Cooperation and Dynamics
Oct. 2020	BAIC ARCFOX	αT	• Huawei MH5000 5G chip-driven T-BOX
Dec. 2020	AION	AION V	• GAC's self-developed 5G V2X vehicle intelligent communication system • Huawei 5G vehicle module MH5000
Dec. 2020	Hongqi	E-HS9	• Quectel AG15 Module (with built-in Qualcomm 9150 C-V2X chipset)
Feb. 2021	R Car	MARVEL R	• Huawei 5G Balong 5000 chip-driven T-BOX
Apr. 2021	AION	Aion Y	• GAC's self-developed 5G V2X vehicle intelligent communication system • Huawei 5G vehicle module MH5000 • In August, added 5G Doupai capability in OTA updates
Jun. 2021	Voyah	FREE	• Huawei HiCar, supporting Huawei HiLink • Huawei 5G T-BOX
Aug. 2021	BYD	Han EV	• Qualcomm Snapdragon SM6350 chip, supporting 4G/5G dual-mode communication

Source: ResearchInChina

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