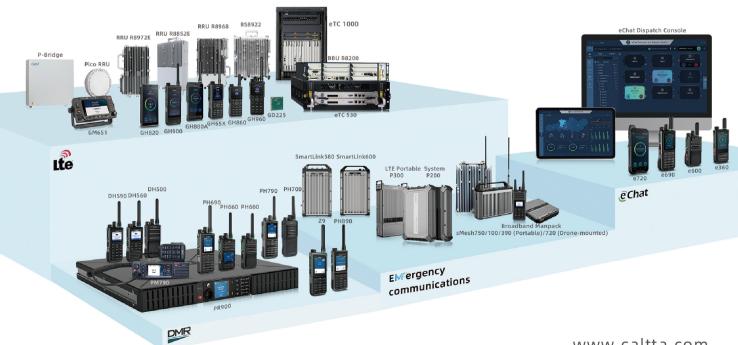


Caltta Product Portfolio





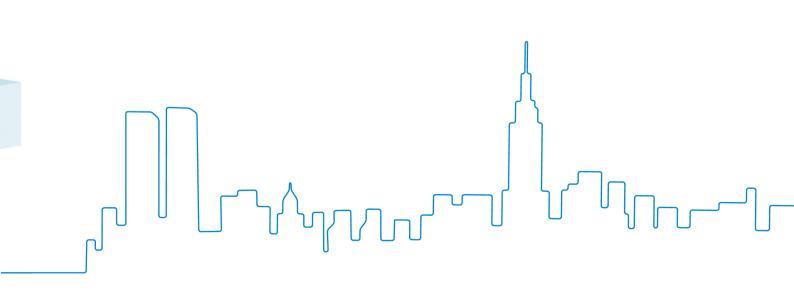
www.caltta.com

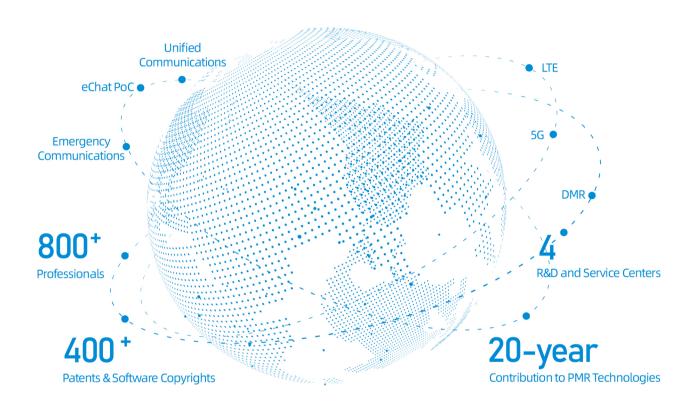
Vision: Leading the Convergence of Global PMR Communications

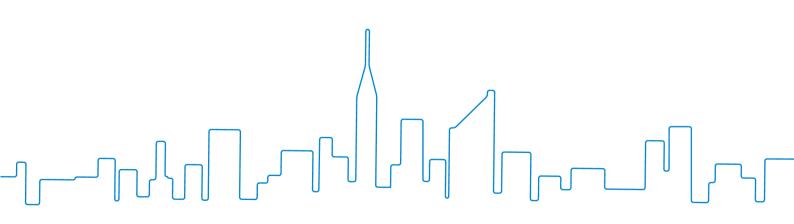
Value: Professional Innovative Efficient Cooperative

Mission: Make Communications Safer and Richer

As a leading provider of critical communication solutions, Caltta provides efficient and high-quality services, and creates a Win-win cooperation with industry partners to bring more value to global customers.







4 R&D and Service Centers



Beijing R&D Center

Shenzhen R&D Center

Nanjing R&D Center

Xi'an Service Center

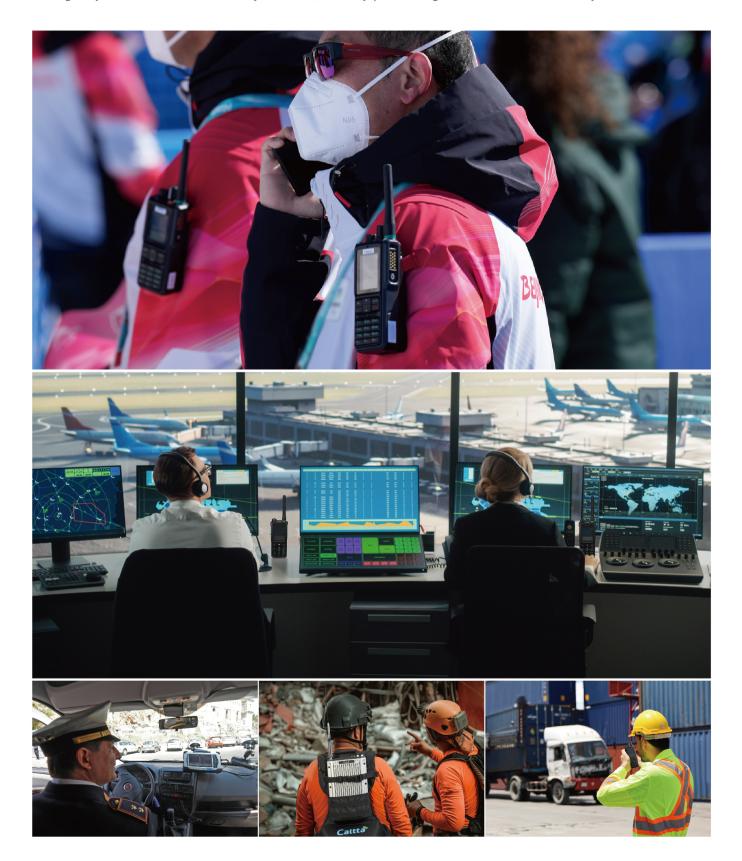
Advanced Technology

- The first tri-mode smart radio in the world GH900
- The first ultra-thin business dual-mode radio GH820
- IIC hydrogen-class explosion-proof radio PH990Ex
- The most integrated DMR communication module PU100
- The first SDR highly-integrated narrowband trunking base station
- Self-developed 5G end-to-end product series
- The industry's first 5G intelligent and explosion-proof radio NH970Ex



Industry Recognition

Developing over 20 years, Caltta has won many awards at industry, ministry and even national levels. Currently, it is a member of DMR Association, TCCA, PDT Association, B-TrunC Industry Alliance, and Emergency Communication Industry Alliance, actively promoting the evolution of industry standards.





Multiple Options To Suit Any Radio Communication System

Caltta solutions are designed based on individual requirements - such as coverage, scale, service and budget, which ensure the most suitable radio system to be designed and deployed in each specific use case.

Various Scenario and Coverage Requirement

There may be individual requirements to be met: Indoor or outdoor, temporary or permanent installation, additional number of users and operational range.

Different Industrial Customization

Different industries require differently designed systems. This design element can accommodate individual operating needs, required security levels and take into account any environmental characteristics the system may have to endure.

System Feature

Voice call, SMS, MMS, GIS, Video Calling, Visualized Dispatch etc. Every system is designed around the users requirements.

Different budget

Based on the financial budget, various system options can be offered, ensuring a good balance between economics and optimum performance is always met.

Caltta promises to deliver a fully - customized radio system that meets your requirements perfectly.



Caltta provides a series of DMR conventional products comprising of a full range of DMR Tier II radios and repeaters including a feature-rich dispatch console option.



Based on advanced SDR architecture, Caltta provides full Tier III DMR systems, base stations and core networks. Other dedicated radios and system products make up the range, providing complete end to end DMR Tier III solutions.



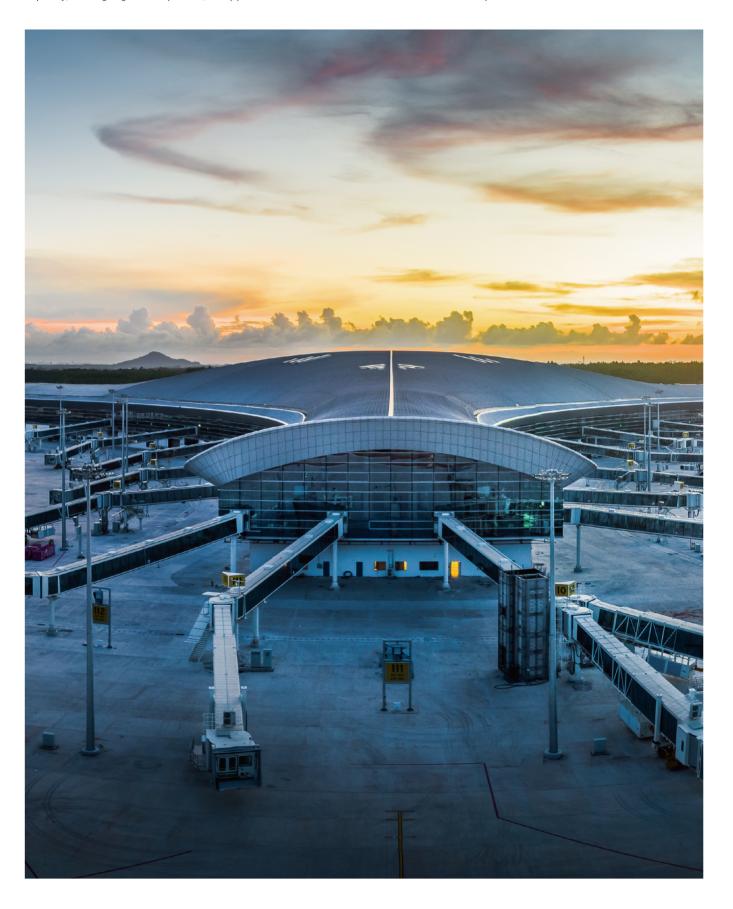
As one of the leading developers of the ITU LTE trunking standard, Caltta has developed LTE trunking network technology into our base stations and terminals. Already our LTE products are widely used in the enterprise markets.

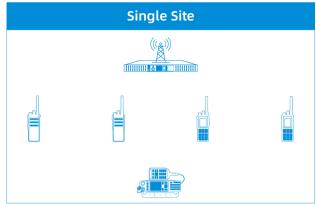


By leveraging the wide experience gained through network operator projects, Caltta has developed its PoC system architecture to accommodate the massive capacity and reliability requirements of commercial users and public safety organizations.

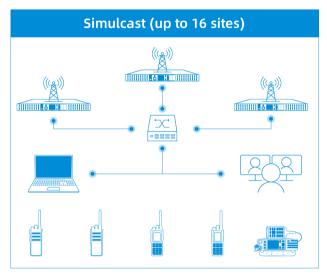
DMR Tier II Conventional System

Caltta DMR Tier II conventional system consists of repeaters, radios, and dispatch console. Featuring wider coverage, dual call capacity, analog digital compatible, it supports rich voice and data services for different requirements.

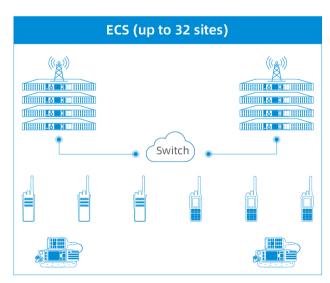




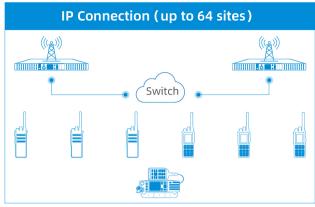
- Increased DMR coverage using repeater
- 1-50W power output and high sensitivity



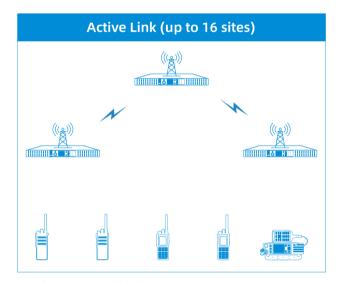
- Use limited frequency to cover large area
- Automatic roaming and handover across sites



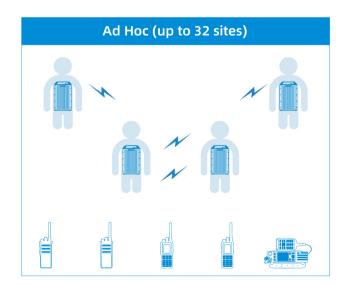
- Dynamic channel allocation on repeaters
- Greatly increase communication capacity



- Wide coverage saves CAPEX and OPEX
- Smart digital-analog auto detection



- Wide coverage without transmission resources
- Popular for forestry, motorway, pipeline and river coverage



- \bullet Light and portable for man pack and fast onsite deployment
- Flexible networking of chain, star, tree and hybrid

PR900

DMR Repeater

- Slim and Compact with 1U Design
- Easy Operation and Configuration with Screen and Buttons
- Digital-Analog Auto Detection
- High Security and Reliability with Rich Services
- Multiple Networking Solutions for Various Scenarios



General	6
Protocol	ETSI TS 102 361-1, -2, -3
Frequency	UHF1: 400-470MHz UHF3: 350-400MHz VHF: 136-174MHz
Channel Capacity	1024
Channel Spacing	12.5kHz/20KHz/25KHz
Max Duty Cycle	100%
Operating Voltage	AC100-240V @50/60Hz DC13.6V±15%
Backup Power Supply	Support
Size (W*H*D)	436×44.5×366.4mm (Standard 19-inch 1U height frame)
Weight	8.5Kg
Screen	2.0-inch HD LCD, 220×176, 10 status LEDs

Transmitter	0
Frequency Stability	±0.5ppm
Power Output	1W - 50W (UHF1/UHF3/VHF)
FM Modulation	12.5KHz :11K0F3E /25KHz:16K0F3E
4FSK Digital	12.5KHz Data Only: 7K60FXD
Modulation	12.5KHz Voice and Data: 7K60FXE
Conducted/ Radiated Emission	-36dBm≤1GHz;-30dBm>1GHz
Modulation Limiting	±2.5KHz @12.5KHz /±5.0KHz @25KHz
Adjacent Channel Power	-60dB@12.5KHz , -70dB@/25kHz
FM Hum and Noise	-40dB@12.5kHz, - 45dB@/25kHz
Audio Response	+1 ~ -3dB(TIA603D)
Audio Distortion	≤3%

Receiver		0
Sensitivity (Analog)	0.14uV (12dB SINAD)	
Sensitivity (Digital)	0.14uV (5% BER)	
Adjacent Channel	65dB@12.5 kHz/75dB@25 kHz (TIA-603D)	
Selectivity	65dB@12.5 kHz/75dB@25 kHz (ETSI)	
Intermodulation	75 dB (TIA603D)	
memodulation	70dB (ETSI)	
Spurious Rejection	80dB (TIA603D)	
Spullous Rejection	80dB (ETSI)	
Blocking or	98dB (TIA603D)	
Desensitization	95dB (ETSI)	
Hum and Noise	-40 dB@12.5KHz / -45 dB@25KHz	
Audio Distortion	≤3% (Typical)	
Conducted Spurious Emission	-57 dBm (TIA603D)	
Audio Response	+1 ~ -3dB (TIA603D)	
Audio Distortion	≤3%	

Environmental		0
Operating Temperature	-30°C ~ +60°C	
Storage Temperature	-40°C ~ +85°C	

General Disclaimer: the specifications in this document are in accordance with the applicable standard test. Due to the continuous technology development, Caltta may change the specifications without timely notice.

PR680

Manpack DMR Repeater

- Light and Portable for Front-line Application
- Easy Extension and Flexible Networking
- High Rx Sensitivity for Better Coverage
- Wired or Wireless IP Link Available
- Convenient Operation with Screen
- Concurrent Dual Audio Interface
- Palm RSM and Earphone for PTT
- Large Battery for Longer Standby
- IP67 and MIL-STD-810G Standard



General	0
Protocol	ETSI TS 102 361-1,-2,-3
Frequency	UHF1: 400-470MHz (default: 409-413MHz/419-423MHz) VHF: 136-174MHz (default: 164-166MHz/169.8-171.8MHz)
Channel Spacing	12.5kHz
Size (H×W×D)	320×190×70mm (With Handle)
Weight	3.7 kg (With Antenna and Battery)
Battery Capacity	236Wh @ 14.8V
Power Supply	Internal Replaceable Battery External Power Adaptor
Charging	Charging with Repeater Standalone Battery Charging
Standby Current	< 0.55A
Tx Current	10W Tx Power < 4A 25W Tx Power < 5A
Location	GPS
Display	2.0 inch 220×176 Color LCD , 10 LED Indicators
Keypad	Functional Keypad
Audio Accessory	Remote Speaker Microphone, Earpiece
IP Link	Support
Vocoder	AMBE++

Transmitter	•
Frequency Stability	±0.5ppm
Output Power	1 ~ 25W Continual Adjustment
FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz:16K0F3E
4FSK Digital Modulation	12.5KHz Data Only: 7K60F1D&7K60FXD 12.5KHz Voice And Data: 7K60F1W
4FSK Digital Modulation	12.5KHz Data Only: 7K60F1D&7K60FXD 12.5KHz Voice And Data: 7K60F1W
FM Modulation Emission	-36dBm ≤1GHz ; -30dBm >1GHz
Modulation Limiting	±2.5KHz @12.5KHz /±5.0KHz @25KHz
Hum and Noise	-40 dB@12.5KHz /-45 dB @20/25KHz
Adjacent Channel Power	60dB@12.5KHz/70dB@20/25kHz
Audio Response	+1 ~ -3dB
Audio Distortion	≤3%

Receiver		0
Frequency Stability	±0.5ppm	
Sensitivity (Analog)	0.18uV(12dB SINAD)	
Sensitivity(Digital)	0.18uV (5% BER)	
Adjacent Channel Selectivity	65 dB@12.5KHz / 75 dB@25KHz (TIA603D) 65 dB@12.5KHz / 75 dB@25KHz (ETSI)	
Intermodulation	75 dB (TIA603D) 70 dB (ETSI)	
Spurious Rejection	80dB (TIA603D) 80dB (ETSI)	
Blocking or Desensitization	98dB (TIA603D) 95dB (ETSI)	
Hum and Noise	-40 dB@12.5KHz / -45 dB@25KHz	
Conducted Spurious Emission	-57 dBm (TIA603D)	
Audio Response	+1 ~ -3dB (TIA603D)	
Audio Distortion	≤3%	

Environmental		0
Operating Temperature	-30°C ~ +60°C	
Storage Temperature	-40°C ~ +85°C	
Dust and Water Resistance	IP67	
Reliability	MIL-STD-810G	

GPS Location		0
Accuracy specs are for long-term tracking (95th percentile values>5 satellites visible at nominal -130 dBm signal strength)		
TTFF (Time To First Fix) Cold Start	<60s	
TTFF (Time To First Fix) Hot Start	<10s	
Horizontal Accuracy	<10m	

General Disclaimer: the specifications in this document are in accordance with the applicable standard test. Due to the continuous technology development, Caltta may change the specifications without timely notice.

SmartLink580

Fixed DMR Ad-Hoc Repeater

- Flexible and Dynamic Ad-Hoc Networking
- Compact for Easy Installation
- Optimized RF for Better Coverage
- IP Link Avaliable
- Remote Speaker Microphone for PTT
- IP67 and MIL-STD-810G Standard



General	9	Receiver	9	
Protocol	ETSI TS 102 361-1,-2,-3	Frequency Stability	±0.5ppm	
	UHF1: 400-470MHz	Sensitivity (Digital)	0.14uV (5% BER)	
Frequency	UHF3: 350-400MHz VHF:136-174MHz	Intermodulation	75dB (TIA603D) 70dB (ETSI)	
Channel Spacing	12.5kHz	Adjacent Channel	65dB@12.5 kHz (TIA603D)	
Ad-Hoc Network Maximum Nodes	Up to 32 Nodes in chain mode	Selectivity Spurious Rejection	65dB@12.5 kHz (ETSI) 80dB (TIA603D)	
Size (H×W×D)	320×190×70mm		80dB (ETSI)	
Weight	3.2Kg	Blocking or Desensitization	≥ 98dB (TIA603D) ≥ 95dB (ETSI)	
Power Supply	External power adaptor External backup battery	Hum and Noise	-40 dB@12.5KHz / -45 dB@25KHz	
	External solar power supply	Conducted Spurious Emission	-57 dBm	
Stand-by Current	<0.55A	Audio Response	+1~-3dB	
Transmission Current	10W Tx Power < 4A 25W Tx Power < 5A	Audio Distortion	≤3%	
Location	GPS	Environmental		
Vocoder	AMBE++	Operating		
		Temperature	-40°C ~ +60°C	
Transmitter	•	Storage Temperature	-50°C ~ +85°C	
Frequency Stability	±0.5ppm	Dust and Water Resistance		
Output Power	1W~ 25W	Reliability	MIL-STD-810G	
4FSK Digital Modulation	12.5KHz Data: 7K60FXD 12.5KHz Voice and Data: 7K60FXE	GPS Location		
Conducted/Radiated Emission	-36dBm≤1GHz -30dBm>1GHz	Accuracy specs for long-term tracking (95th percentile values>5 satellites visible at nominal -130 dBm signal strength)		
Modulation Limiting	±2.5KHz @12.5KHz	TTFF (Time To First Fix) Cold Start <60s		
Adjacent Channel Power	60dB@12.5KHz	TTFF (Time To First Fix) Hot Start <10s		
FM Hum and Noise	-40dB@12.5kHz	Horizontal Accuracy <10m		
Audio Response	+1 ~ -3dB	General Disclaimer: the specifications in this document are in accordance		
Audio Distortion	≤3%	applicable standard test. Due to the continuous technology development, change the specifications without timely notice.		

SmartLink600

Manpack DMR Ad-Hoc Repeater

- Flexible and Dynamic Ad-Hoc Networking
- Light and Portable
- Optimized RF for Better Coverage
- Convenient Operation with Screen
- IP Link Avaliable
- Large Battery with Capacity Indicator
- Remote Speaker Microphone for PTT
- IP67 and MIL-STD-810G Standard



General	0	Receiver		6
Protocol	ETSI TS 102 361-1,-2,-3	Frequency Stability	±0.5ppm	
	UHF3: 350-400MHz	Sensitivity (Digital)	0.14uV (5% BER)
Frequency	UHF1: 400-470MHz VHF:136-174MHz	Intermodulation	75dB (TIA 70dB (E1	
Channel Spacing	12.5kHz	Adjacent Channel		.5 kHz (TIA603D)
Ad-Hoc Network Maximum Nodes	Up to 32 Nodes in chain mode	Selectivity Spurious Rejection	80dB (TIA	.5 kHz (ETSI) A603D)
Size (H×W×D)	320×190×70mm		80dB (ET:	
Weight	3.7Kg	Blocking or Desensitization	≥ 98dB (1 ≥ 95dB (E	
Power Supply	Internal Replaceable Battery External Power Adaptor	Hum and Noise	-40 dB@1	2.5KHz
Charging	Charging with Repeater/Standalone Charging	Conducted Spurious Emission	-57 dBm	
Internal Battery		Audio Response	+1 ~ -3dB	
Capacity	236Wh @ 14.8V	Audio Distortion	≤3%	
Standby Current	< 0.55A Environmental			
Transmission Current	10W Transmission Power < 4A 25W Transmission Power < 5A	Operating	-30°C ~ +6	50°C
Location	GPS	Temperature	-30 6 15 46	
Display	2.0 inch 220×176 Color LCD 10 LED Indicator	Storage Temperature Dust and Water	-40°C ~ +8	35℃
Keypad	Functional Keypad	Resistance	IP67	
Audio Accessory	Remote Speaker Microphone, Earpiece	Reliability MIL-STD-810G		810G
Vocoder	AMBE++	GPS Location		•
Transmitter	•	Accuracy specs for long- visible at nominal -130 d		g (95th percentile values>5 satellites rength)
Frequency Stability	±0.5ppm	TTFF (Time To First Fix) Co	old Start	<60s
Output Power	1W~ 25W	TTFF (Time To First Fix) Ho	ot Start	<10s
4FSK Digital Modulation	12.5KHz Data: 7K60FXD 12.5KHz Voice and Data: 7K60FXE	Horizontal Accuracy <10m		<10m
Conducted/Radiated Emission	-36dBm ≤1GHz -30dBm >1GHz	General Disclaimer: the specifications in this document are in accordance wi cable standard test. Due to the continuous technology development, Caltta the specifications without timely notice.		uous technology development, Caltta may change
Modulation Limiting	±2.5KHz @12.5KHz	the specifications without timely notice.		•
Adjacent Channel Power	60dB@12.5KHz			
FM Hum and Noise	-40dB@12.5kHz			
Audio Response	+1 ~ -3dB			
Audio Distortion	≤3%			

PD200

Dispatch Console

- Modular Design
- Unification and Interconnection
- Unified Management
- Professional Network Management
- Multi-level Dispatch
- Multi-screen Dispatch



Configuration Requirement of Hardware				
	CPU	3GHz		
Server PC	Memory	8GB		
	Hard Disk	1T		
	Operation System	64 bit windows operation system		
	CPU	2GHz		
	Memory	8GB		
Client	Hard Disk	500GB		
	Operation System	32/64 bit windows operation system		
	Accessories	Microphone, speaker, or headset required		
Performance				
Max. User Number	CS: 10000/ECS: 20000			
Max. Group Number	CS: 2000/ECS: 4000			
Max. Concurrent Call Number	128			
Max. Concurrent Record Number	128			
Max. Dispatch Console Client Number	64			
Max. Repeater Number	CS: 512/ECS: 2048			

Functions	
	1 Server
	1 Client
Davis Davis va	4 PR900 Repeaters
Basic Package	100 Radios
	Voice dispatch
	Positioning
Optional Functions	Recording
Optional Functions	On line/off line map
	Patrol system

DH500/DH560

DMR Portable Radio

- Compact and Portable
- Digital-and-analog Compatible
- Large-capacity Battery
- Loud and Clear Voice
- Rugged and Reliable
- Abundant Services





General	0
Protocol	ETSI TS 102 361-1,-2,-3
Frequency	UHF1: 400-470MHz VHF: 136-174MHz
Channel Capacity	512 (DH560) /64* (DH500)
Zone Capacity	32 (DH560) /4* (DH500)
Channel Spacing	12.5kHz/20KHz/25KHz
Frequency Stability	±0.5ppm
Operating Voltage	7.4V
Battery Capacity	2500mAh (standard)
Battery Life	Analog: 16 Hours Digital: 20 Hours (5: 5: 90 working cycle, high power transmission)
Size (H x W x D, with battery, without antenna)	116.4x54.5x35.5mm (DH560) 116.5x54.5x36.5mm (DH500)
Weight(with battery and antenna)	285g (DH560) 275g (DH500)
Screen	1.75-inch Blue/White LCD,160*128 (DH560)
Vocoder	AMBE++
Layout	Top: volume/switch knob x l, channel knob x l, SOS key x l Side: PTT key x l, programmable key x 2 Front: 6-keys keypad (DH560)
External Interface	18-pin waterproof interface, support audio/programming
VOX	Support
Roaming	Support
Real-time Clock	Support (DH560)
Encryption	Support 40/128/256bit private encryption

Transmitter		•
Low Power Output	1 W	
High Power Output	4W(UHF1)/5W(VHF)	
FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E	
	12.5KHz Data Only: 7K60F1D&7K60FXD	
4FSK Digital Modulation	12.5KHz Voice Only: 7K60F1E&7K60FXE	
	12.5KHz Voice And Data: 7K60F1W	
Conducted/ Radiated Emission	-36dBm ≤1GHz;-30dBm>1GHz	
Modulation Limiting	±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz	
FM Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz	
Adjacent Channel Power	60 dB@12.5KHz /70 dB @20/25KHz	
Audio Response	+1 ~ -3dB(TIA603D)	
Audio Distortion	≤3%	

Receiver	6	
Sensitivity (Analog)	0.18uV(12dB SINAD)	
Sensitivity (Digital)	0.18uV (5% BER)	
Adjacent Channel	60 dB@12.5KHz/70 dB@20/25KHz (TIA603A)	
Selectivity	60dB@12.5KHz /70 dB@20/25KHz (ETSI)	
Intermodulation	70 dB (TIA603D)	
memodatation	65 dB (ETSI)	
Spurious Rejection	70 dB (TIA603D)	
Spanous rejection	70 dB (ETSI)	
Blocking	80dB(TIA603D)	
Dioening	84dB(ETSI)	
Co-channel Rejection	-12~0 dB @12.5KHz/-8~0 dB @20/25KHz	
Hum and Noise	-40 dB@12.5KHz /-43 dB@20KHz /-45 dB@25KHz	
Rated Audio Power	0.5W	
Max Audio Power	2.0W	
Conducted Spurious Emission	-57 dBm (TIA603D)	
Audio Response	+1 ~ -3dB (TIA603D)	
Audio Distortion	≤3%	
Environmental	•	

Environmental		0
Operating Temperature	-30°C ~ +60°C	
Storage Temperature	-40°C ~ +85°C	
ESD	IEC 61000-4-2 (level 4) ±8kV (Contact) ±15kV (Air)	
Dust and Water Resistance	IP67	
Reliability	MIL-STD-810H	

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 $^{^{\}star}$ To realize 64 channel capacity and 4 zone capacity, users need to upgrade the firmware to V1.06 or above.

DH590

DMR Portable Radio

- Digital and Analog Compatible
- Compact and Portable
- Loud and Clear Voice
- Abundant Services
- Large-capacity Battery
- IP67 and MIL-STD-810H Standard



General	
Protocol	ETSI T5 102 361-1,-2,-3
Frequency	UHF1: 400-470MHz VHF: 136-174MHz
Channel Capacity	512
Zone Capacity	32
Channel Spacing	12.5kHz/20KHz/25KHz
Operating Voltage	7.4V
Battery Capacity	2500mAh(standard)
Battery Life	Analog: 16 Hours Digital: 20 Hours (5: 5: 90 working cycle, high power transmission)
Size (H x W x D, with battery, without antenna)	116.5x54.5x35.5mm
Weight(with battery and antenna)	285g
Screen	1.75-inch Blue/White LCD, 160*128
Vocoder	AMBE++
Layout	Top: volume/switch knob x1, channel knob x1 Side: PTT key x1, programmable key x2, SOS key x1 A full keypad Front: Full Keypad
External Interface	18-pin water proof interface, support audio/programming
VOX	Support
Roaming	Support
Real-time Clock	Support
Encryption	Support 40/128/256bit private encryption

Transmitter	•
Low Power Output	1 W
High Power Output	4W(UHF1)/5W(VHF)
FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E
	12.5KHz Data Only: 7K60F1D&7K60FXD
4FSK Digital Modulation	12.5KHz Voice Only: 7K60F1E&7K60FXE
	12.5KHz Voice And Data: 7K60F1W
Conducted/ Radiated Emission	-36dBm ≤1GHz ; -30dBm >1GHz
Modulation Limiting	±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz
FM Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz
Adjacent Channel Power	60 dB@12.5KHz /70 dB @20/25KHz
Audio Response	+1 ~ -3dB(TIA603D)
Audio Distortion	≤3%

Receiver	9
Sensitivity (Analog)	0.18uV(12dB SINAD)
Sensitivity (Digital)	0.18uV (5% BER)
Adjacent Channel	60 dB@12.5KHz/70 dB@20/25KHz (TIA603A)
Selectivity	60dB@12.5KHz /70 dB@20/25KHz (ETSI)
Intermodulation	70 dB (TIA603D)
memodulation	65 dB (ETSI)
Courieus Deiestien	70 dB (TIA603D)
Spurious Rejection	70 dB (ETSI)
Blocking	80dB(TIA603D)
Бюскинд	84dB(ETSI)
Co-channel Rejection	-12~0 dB @12.5KHz/-8~0 dB @20/25KHz
Hum and Noise	-40 dB@12.5KHz /-43 dB@20KHz /-45 dB@25KHz
Rated Audio Power	0.5W
Max Audio Power	2.0W
Conducted Spurious Emission	-57 dBm (TIA603D)
Audio Response	+1 ~ -3dB (TIA603D)
Audio Distortion	≤3%

Environmental		•
Operating Temperature	-30°C ~ +60°C	
Storage Temperature	-40°C ~ +85°C	
ESD	IEC 61000-4-2 (level 4) ±8kV (Contact) ±15kV (Air)	
Dust and Water Resistance	IP67	
Reliability	MIL-STD-810H	

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PH600/PH660

DMR Portable Radio

- Digital and Analog Compatible
- Robust and Lightweight
- Loud and Clear Audio
- 2600mAh Battery Capacity
- IP68 and MIL-STD-810G





Personancy	General		Receiver	•
	Protocol	ETSI TS102 361-1, -2, -3, -4(optional)	Sensitivity (Analog)	0.18uV(12dB SINAD)
Adjacet Cannel		UHF1: 400-470MHz	Sensitivity (Digital)	0.18uV (5% BER)
Selectivity	Frequency		Adiacent Channel	60 dB@12.5KHz/70 dB@20/25KHz (TIA603A)
2006 Capacity Ca	Channel Canacity			60dB@12.5KHz /70 dB@20/25KHz (ETSI)
Teacher Teac				70 dB (TIA603D)
Page			Intermodulation	65 dB (ETSI)
Part				70 dB (TIA603D)
Analog: 16 Hours Blocking B			Spurious Rejection	
Analog				
Analog: 16 Hours Co-channel Rejection -12-0 db @12.5KHz/-6-0 db @20.25KHz	Battery Capacity	2600mAh(standard)	Blocking	
Secretary Life			Co-channel Pajection	
high power transmission Rated Audio Power 0.5W	Battery Life		,	
Size (H x W x D, with 100x54.5x36.5mm (PH660) 270g (PH600)		high power transmission)		
conducted Spurious provided antennal 100x34.5x37.5mm (PH600)	Size (H x W x D, with	100x54.5x36.5mm (PH660)		
## Process	battery, without antenna)	100x54.5x37.5mm (PH600)		2.0W
Audio Response #1-3dB (TIA663D) Audio Pesponse #1-3dB (TIA663D) Audio Distortion \$3% Audio Pice Properature \$40°C \$480°C Audio A	Weight(with battery	270g (PH600)		-57 dBm (TIA603D)
Addio Distortion \$3% Addio Distortion \$40% Addio Distortion	and antenna)	290g (PH660)	Audio Response	+1 ~ -3dB (TIA603D)
AMBE++ Sluctooth BT4.0 (optional) Societion GP5 (optional) Support Gupton Support Supp	Screen	1.75-inch transflective LCD, 240×180 (PH660)	Audio Distortion	≤3%
AMBE++ BT4.0 (optional) BT4.0 (optional) Storage Temperature -30°C ~ +60°C Storage Temperature -30°C ~ +60°C Storage Temperature -40°C ~ +85°C EC 61000-4-2 (level 4) ±8kV (Contact) ±15kV (Air) ESD	VOX	Support	E. Sarana dal	
Storage Temperature -40°C - +85°C Cocation GPS (optional) Man down Support ESD IEC 61000-4-2 (level 4) ±8kV (Contact) ±15kV (Air) Support Uptivation Support Dust and Water Resistance IP68 Encryption 128/256bit AES encryption is optional P68 Cover Power Output 1 W Accuracy specs for long-term tracking (95th percentile values >5 satellites visible at nominal -130 dBm signal strength) Transmitter Modulation 12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E (Cod Start Start) 12.5KHz Voice And Data: 7K60F1BA7K60FXD (Cod Start Start) TIFF (Time to First Fix) (Cod Start Start) 12.5KHz Voice And Data: 7K60F1W (Conducted) 12.5KHz Voice And Data: 7K60F1W (Conducted) Toducted/ Start S	Vocoder	AMBE++		9
GPS (optional) Support Support Support Support Support Support Adbit basic encryption; 128/256bit AES encryption is optional Fransmitter Support Advit basic encryption is optional Fransmitter Support Advit basic encryption; 128/256bit AES encryption is optional Fransmitter Support Advit basic encryption; 128/256bit AES encryption is optional Fransmitter Support Advit basic encryption; 128/256bit AES encryption is optional Fransmitter Support Advit basic encryption; 128/256bit AES encryption is optional Fransmitter Support Advit basic encryption; 128/256bit AES encryption is optional Fransmitter Support Advit basic encryption; 128/256bit AES encryption is optional Fransmitter Support Advit basic encryption; 128/256bit AES encryption is optional Fransmitter Support Advit basic encryption; 128/256bit AES encryption is optional Fransmitter Fransmitter Accuracy specs for long-term tracking (95th percentile values >5 satellites visible at nominal -130 dBm signal strength) Fransmitter Tref (Time to First Fix) Cold Start Cold Start Fransmitter Support Advit basic encryption; 128/256bit AES encryption is optional Fransmitter Fransmitter Fransmitter Accuracy specs for long-term tracking (95th percentile values >5 satellites visible at nominal -130 dBm signal strength) Fransmitter Tref (Time to First Fix) Cold Start Cold Start Fransmitter Fra	Bluetooth	BT4.0 (optional)	Operating Temperature	-30℃ ~ +60℃
Support Suppor	Location	GPS (optional)	Storage Temperature	-40°C ~ +85°C
Support 40bit basic encryption; 128/256bit AES encryption is optional Transmitter Sow Power Output I W Accuracy specs for long-term tracking (95th percentile values >5 satellites visible at nominal -130 dBm signal strength) TFF (Time to First Fix) 12.5KHz Data Only: 7K60F1D&7K60FXD 12.5KHz Voice Only: 7K60F1B&7K60FXD TFF (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W Conducted/ Radiated Emission Addiated Emission Addiated Emission Addiacent Channel Power 40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz Addiacent Channel Power Addiacent Channel Power Addia Response 413dB(TIA603D)	Man down	Support	ESD	
Support 40bit basic encryption; 128/256bit AES encryption is optional Transmitter Low Power Output 1 W Accuracy specs for long-term tracking (95th percentile values >5 satellites visible at nominal - 130 dBm signal strength) TIFF (Time to First Fix) 12.5KHz Data Only: 7K60F1D&7K60FXB TIFF (Time to First Fix) 12.5KHz Voice Only: 7K60F1E&7K60FXB 12.5KHz Voice And Data: 7K60F1W TIFF (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W TIFF (Time to First Fix) 12.5KHz Voice And Data: 7K60FXB TIFF (Time to First Fix) Addiated Emission 36eneral Disclaimer: the specifications in this document are in accordance with the applicable standard test. Due to the continuous technology development, Caltta me change the specifications without timely notice. * To realize 64 channel capacity and 4 zone capacity, users need to upgrade the firmware to V5.0 or above.	Vibration	Support	Dust and Water	(contact) = 15KV (All)
Transmitter Low Power Output 1 W Accuracy spees for long-term tracking (95th percentile values >5 satellites visible at nominal -130 dBm signal strength) TIFF (Time to First Fix) 12.5KHz Data Only: 7K60F1D&7K60FXD 12.5KHz Voice Only: 7K60F1E&7K60FXD 12.5KHz Voice Only: 7K60F1E&7K60FXE 12.5KHz Voice And Data: 7K60F1W Conducted/ Acdiated Emission Addiated Emission Addiated Emission Addiacent Channel Power 60 dB@12.5KHz /70 dB @20/25KHz Addiacent Channel Power Addio Response 41 ~-3dB(TIA603D)	- Factorian	Support 40bit basic encryption;		IP68
Accuracy specs for long-term tracking (95th percentile values >5 satellites visible at nominal -130 dBm signal strength) THE Modulation 12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E THE (Time to First Fix) Cold Start (20KHz: 14K0F1D&7K60FXD) 12.5KHz Voice Only: 7K60F1D&7K60FXE 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) Hot Start (10s) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) Hot Start (10s) THE (Time to	Encryption	128/256bit AES encryption is optional	Reliability	MIL-STD-810G
Accuracy specs for long-term tracking (95th percentile values >5 satellites visible at nominal -130 dBm signal strength) THE (Time to First Fix) 12.5KHz Data Only: 7K60F1D&7K60FXD 12.5KHz Voice Only: 7K60F1E&7K60FXE 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W THE (Time to First Fix) 12.5KHz Voice And Data: 7K60F1W The Start To SaddBm signal strength) TO SaddBm signal strength) THE (Time to First Fix) 10.5 TO SaddBm signal strength) TO SaddBm signal strength) TO SaddBm signal strength) THE (Time to First Fix) 10.5 TO SaddBm signal strength) TO SaddBm signal strength) THE (Time to First Fix) 10.5 TO SaddBm signal strength) THE (Time to First Fix) 10.5 TO SaddBm signal strength) 10.5 THE (Time to First Fix) 10.5 THE (Time to F	Transmitter	•	CDC	
## Modulation 12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E TTFF (Time to First Fix) <60s	Low Power Output	1 W		
12.5KHz Data Only: 7K60F1D&7K60FXD 12.5KHz Voice Only: 7K60F1E&7K60FXE 12.5KHz Voice And Data: 7K60F1W 13.5KHz Voice And Data: 7K60F1W 14.5KHz Voice And Data: 7K60F1W 15.5KHz Voice And Data: 7K60F1W 16.5KHz Voice And Data: 7K60F1W 17.5KHz Voice And Data: 7K60F1W 18.5KHz Voice And Data: 7K60F1W 19.5KHz Voice And Data: 7K60F1W 10.5KHz Voice And Data: 7K	High Power Output	4W(UHF1)/5W(VHF)		
12.5KHz Data Only: 7K60F1D&7K60FXD 12.5KHz Voice Only: 7K60F1E&7K60FXE 12.5KHz Voice And Data: 7K60F1W 13.5KHz Voice And Data: 7K60F1W 14.5KHz Voice And Data: 7K60F1W 15.5KHz Voice And Data: 7K60F1W 16.5KHz Voice And Data: 7K60F1W 17.5KHz Voice And Data: 7K60F1W 18.5KHz Voice And Data: 7K60F1W 19.5KHz Voice And Data: 7K60F1W 10.5KHz Voice And Data: 7	FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E	TTFF (Time to First Fix)	
TTFF (Time to First Fix) 12.5KHz Voice And Data: 7K60F1E&7K60FXE 12.5KHz Voice And Data: 7K60F1W 12.5KHz Voice And Data: 7K60F1W Hot Start 12.5KHz Voice And Data: 7K60F1W -36dBm ≤1GHz; -30dBm >1GHz #Modulation Limiting ±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz #Modulation Limiting ±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz #Modulation Limiting -40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz Adjacent Channel Power #To realize 64 channel capacity and 4 zone capacity, users need to upgrade the firmware to V5.0 or above. Addio Response +1 ~ -3dB(TIA603D)		12.5KHz Data Only: 7K60F1D&7K60FXD	Cold Start	<60s
12.5KHz Voice And Data: 7K60F1W Findulation Limiting ±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz Horizontal Accuracy General Disclaimer: the specifications in this document are in accordance with the applicable standard test. Due to the continuous technology development, Caltta mand Noise 4.0 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz Adjacent Channel Power Audio Response +1 ~ -3dB(TIA603D)	4FSK Digital Modulation	12.5KHz Voice Only: 7K60F1E&7K60FXE	TTFF (Time to First Fix)	<10c
-36dBm ≤1GHz; -30dBm >1GHz #2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz #3.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz #4.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz #4.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz #4.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz #5M Hum and Noise #5M Hum and Noise #5M Hum and Noise #60 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz #5M Hum and Noise #5M Hu		12.5KHz Voice And Data: 7K60F1W	Hot Start	V105
applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development, Caltta machine applicable standard test. Due to the continuous technology development that the continuous te	Conducted/ Radiated Emission	-36dBm ≤1GHz ; -30dBm >1GHz	Horizontal Accuracy	<10m
-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz change the specifications without timely notice. * To realize 64 channel capacity and 4 zone capacity, users need to upgrade the firmware to V5.0 or above. Audio Response +1 ~-3dB(TIA603D)	Modulation Limiting	±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz	applicable standard test. Due to the continuous technology development, Caltta change the specifications without timely notice. * To realize 64 channel capacity and 4 zone capacity, users need to upgrad	
Audio Response +1 ~ -3dB(TIA603D) 60 dB@12.5KHz /70 dB @20/25KHz firmware to V5.0 or above.	FM Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz		
	Adjacent Channel Power	60 dB@12.5KHz /70 dB @20/25KHz		
Audio Distortion ≤3%	Audio Response	+1 ~ -3dB(TIA603D)		
	Audio Distortion	≤3%		

PH690

DMR Portable Radio

- Digital and Analog Compatible
- Loud and Clear Voice
- 2600mAh Battery Capacity
- 2.0" Color LCD Display with Full Keypad
- IP68 and MIL-STD-810G



General	•	
Protocol	ETSI TS102 361-1, -2, -3, -4(optional)	
Frequency	UHF1: 400-470MHz UHF3: 350-400MHz VHF: 136-174MHz	
Channel Capacity	1024	
Zone Capacity	64	
Channel Spacing	12.5kHz/20KHz/25KHz	
Frequency Stability	±0.5ppm	
Operating Voltage	7.4V	
Battery Capacity	2600mAh(standard)	
Battery Life	Analog: 16 Hours Digital: 20 Hours (5: 5: 90 working cycle, high power transmission)	
Size (H x W x D)	126×54.5×36.5 (without antenna)	
Weight	310g (with antenna and battery)	
Screen	2.0-inch LCD, 240×320, 6-line text	
Vocoder	AMBE++	
VOX	Support	
Bluetooth	BT 4.0 (optional)	
Location	GPS (optional)	
Vibration	Support	
Man down	Support	
Real-time Clock	Support	
Encryption	Support 40bit basic encryption; 128/256bit AES encryption is optional	

Real-time Clock	Support
Encryption	Support 40bit basic encryption;
71	128/256bit AES encryption is optional
Transmitter	•
Low Power Output	1W
High Power Output	4W (UHF1/UHF3) / 5W (VHF)
FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E
	12.5KHz Data Only: 7K60F1D&7K60FXD
4FSK Digital Modulation	12.5KHz Voice Only: 7K60F1E&7K60FXE
	12.5KHz Voice And Data: 7K60F1W
Conducted/ Radiated Emission	-36dBm ≤1GHz ; -30dBm >1GHz
Modulation Limiting	±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz
FM Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz
Adjacent Channel Power	60 dB@12.5KHz /70 dB @20/25KHz
Audio Response	+1 ~ -3dB(TIA603D)
Audio Distortion	≤3%

Receiver	•
Sensitivity (Analog)	0.18uV(12dB SINAD)
Sensitivity (Digital)	0.18uV (5% BER)
Adjacent Channel	60 dB@12.5KHz/70 dB@20/25KHz (TIA603A) -1T
Selectivity	60dB@12.5KHz /70 dB@20/25KHz (ETSI)
Intermodulation	70 dB (TIA603D)
intermodutation	65 dB (ETSI)
Spurious Rejection	70 dB (TIA603D)
spurious Rejection	70 dB (ETSI)
Blocking	80dB(TIA603D)
Blocking	84dB(ETSI)
Co-channel Rejection	-12~0 dB @12.5KHz/-8~0 dB @20/25KHz
Hum and Noise	-40 dB@12.5KHz /-43 dB@20KHz /-45 dB@25KHz
Rated Audio Power	0.5W
Max Audio Power	2.0W
Conducted Spurious Emission	-57 dBm (TIA603D)
Audio Response	+1 ~ -3dB (TIA603D)
Audio Distortion	≤3%
Environmental	9

Environmental	6
Operating Temperature	-30°C ~ +60°C
Storage Temperature	-40°C ~ +85°C
ESD	IEC 61000-4-2 (level 4) ±8kV (Contact) ±15kV (Air)
Dust and Water Resistance	IP68
Reliability	MIL-STD-810G

dr 5		
Accuracy specs for long-term visible at nominal -130 dBm si	tracking (95th percentile values >5 satellites ignal strength)	
TTFF (Time to First Fix) Cold Start	<60s	
TTFF (Time to First Fix) Hot Start	<10s	
Horizontal Accuracy	<10m	

General Disclaimer: the specifications in this document are in accordance with the applicable standard test. Due to the continuous technology development, Caltta may change the specifications without timely notice.

DM660

DMR Mobile Radio

- DMR Tier II
- Compact Design
- Analog/Digital Compatible
- Loud and Clear
- Powerful Communication
- Excellent Man-machine Interface
- Reliable and Robust



General	●
Protocol	ETSI TS 102 361-1,-2,-3
Frequency	UHF1:400-470MHz VHF: 136-174MHz
Channel Capacity	512
Zone Capacity	32
Channel Spacing	12.5kHz/20KHz/25KHz
Frequency Stability	±0.5ppm
Operating Voltage	DC 13.6V ± 15%
Size (H*W*D)	40*166*152mm
Weight	About 1.05Kg
Screen	1.75" TFT LCD, 160*128
Vocoder	AMBE++
GPS	Optional
Real-time Clock	Support
Encryption	Support 40/128/256bit Private Encryption
Accessory Interface	26 Pins Connector

Receiver	9
Sensitivity(Analog Typical)	0.16uV(12dB SINAD)
Sensitivity(Digital Typical)	0.16uV (5% BER)
Adjacent Channel Selectivity	60 dB@12.5KHz /70 dB@20/25KHz (TIA603A) 60dB@12.5KHz /70 dB@20/25KHz (ETSI)
Intermodulation	75 dB (TIA603D) 70 dB (ETSI)
Spurious Rejection	75 dB (TIA603D) 70 dB (ETSI)
Blocking or Desensitization	95dB(TIA603D) 90dB(ETSI)
Co-channel Rejection	-12~0 dB @12.5KHz/-8~0 dB @20/25KHz
Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz
Rated Audio Power	3W (Build-in) & 6W (External)
Max Audio Power	6W (Build-in) & 16W (External)
Audio Distortion @ Rated Audio	≤3%
Audio Response	+1 ~ -3dB(TIA603D)
Conducted Spurious Emission	-57 dBm (TIA603D)

Transmitter	8
Low Power Output	5-25W(UHF1/VHF)
High Power Output	5-45W(UHF1) / 5-50W(VHF)
FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E
4FSK Digital Modulation	12.5KHz Data Only: 7K60F1D&7K60FXD 12.5KHz Voice Only: 7K60F1E&7K60FXE 12.5KHz Voice and Data: 7K60F1W
Conducted/Radiated Emission	-36dBm ≤1GHz;-30dBm>1GHz
Modulation Limiting	±2.5KHz @12.5KHz /±4KHz @20KHz / ±5.0KHz @25KHz
FM Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz
Adjacent Channel Power	60 dB@12.5KHz /70 dB @20/25KHz
Audio Distortion @ Rated Audio	≤3%
Audio Response	+1 ~ -3dB(TIA603D)

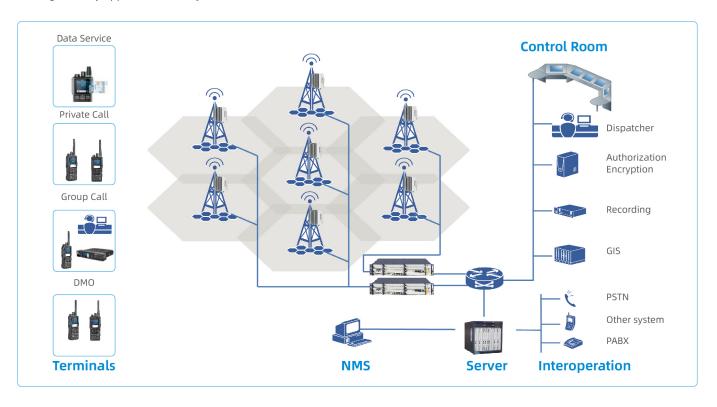
Environmental	6
Operating Temperature	-30°C ~ +60°C
Storage Temperature	-40°C ~ +85°C
ESD	IEC 61000-4-2 (level 4) ±8kV (Contact) ±15kV(Air)
Dust and Water Proof	IP54
Reliability	According to MIL-STD-810H

GPS (optional)		0
Accuracy specs are for long-term tracking (95th percentile values>5satellites visible at nominal -130 dBm signal strength)		
TTFF (Time To First Fix) - Cold Start	<60s	
TTFF (Time To First Fix) - Hot Start	<10s	
Horizontal Accuracy	<10m	

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DMR Tier III Trunking System

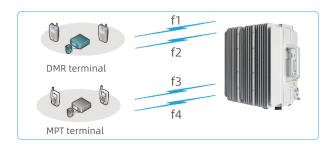
Caltta DMR Tier III professional digital trunking system is based on innovative SDR architecture consisting of separate BBU and RRU modules. It supports full digital-analog compatibility and allows for co-work with LTE and interconnection to third-party systems, making it widely applicable to many different industries.



Advantage

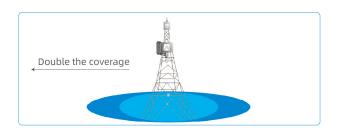
Digital-analog Compatibility

End-to-end hardware encyptlon based on a 256bit high-strength algorithm.



Large Coverage

Industry-leading receiver sensitivity (-125dBm), the installation of the RRU on the tower reduces the feeder loss and greatly improves coverage.



Energy Saving and Environmental Protection

Natural heat dissipation, high efficiency amplifier technology saving 80% energy consumption.



Safe and Reliable

IP65 environmental protection, built-in 20KV lightning protection and built to comply with many other international standards.



DMR Trunking Core Network

- Completely proprietary intellectual property rights
- Open interfaces
- Optimized signaling and data links for trunking services
- High-performance network processors
- High-speed internal data forwarding bus
- Support host and backup, disaster recovery, high reliability

Specifications

	ZXTS eTC 1000	ZXTS eTC 220	ZXTS eTC 100	ZXTS eTC 10
	1			Was a series
Dimensions(H XWX D)	486×483×568 mm	87.5×440×650mm	42.8×434×704.75mm	20×148.5×183 mm
Weight	< 72 kg	< 45 kg	≤33Kg	< 0.3 kg
Power supply	-48V DC/-60V DC	-48V DC/100V~240V AC	-48V DC/100V~240V AC	12VDC
Power Consumption	<1500W	< 850W	AC: ≤750W DC: ≤1100W	100
Call Setup Time	<300ms	< 300ms	<300ms	<300ms
Number of Trunking Users	60,000	60,000	2,000	1000
Number of Groups	6,000(Scalable)	6,000(Scalable)	255	100
Number of Bs	512	256	16	8
Number ofDispatch Console	512	512	10	5
Number ofPSTN and PABX	30 (1xE1)	30 (1xE1)	30 (1xE1)	30 (1xE1)



ZXSDR BS8700 (BBU+RRU)

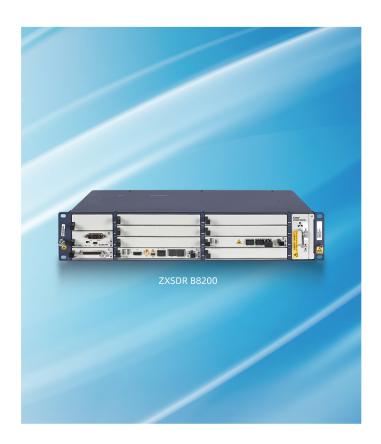
DMR Base Station

BBU: ZXSDR B8200

- SDR Architecture
- Highly Integrated, Supports 16 Carriers Simultaneously
- Quick Deployment, Save More Than 30% on Installation Time
- Highly Reliable, Full Redundancy Design

Specifications

iers
102 (107
m x 482.6 mm x 197 mm
C/ 220 V AC
-50℃
%
300 386 / ETSI TS 125 113



Based on Caltta's advanced SDR platform, DMR ZXSDR BS8700 implements a distributed architecture that separates the baseband from the radio frequency (RF) unit.

ZXSDR BS8700 consists of ZXSDR B8200 and ZXSDR R8881, and is compatible with both digital and analog trunking.

RRU: ZXSDR R8881

- Efficient Amplifier, Natural Heat Dissipation,
 80% Power Saving
- Outdoor Deployment, Minimum Feeder Loss,
 Maximum Coverage Radius
- Adaptable Multi-carrier Technology, Cost-effective
- IP65

Specifications

Frequency	400 ~ 470MHz
Channel Spacing	12.5 kHz
Size (H x W x D)	370 mm x 320 mm x 215 mm
Weight	≤ 20 kg
Working Mode	DMR T2 & T3 / MPT / Simulcast
Power Supply	-48 V DC
Operating Temperature	-40°C~+60°C
Operating Humidity	5% ~ 98 %
Modulation Mode	4 FSK
Digital Sensitivity	-125 dBm (BER 5%)
Diversity Mode	1 ~ 4 Carriers
Output RF Power	≤ 47 dBm





PH700/PH790

DMR Portable Radio

- DMR Tier II / Tier III
- Digital & Analog Compatible
- Loud and Clear Audio
- Excellent Man-Machine Interface
- Long Battery Life
- IP68 and MIL-STD-810G



General	•
Protocol	ETSI TS 102 361-1,-2,-3,-4
Frequency	UHF1:400-470 MHz UHF3:350-400 MHz VHF: 136-174 MHz
Channel Capacity	1024 (PH790) / 64* (PH700)
Zone Capacity	64 (PH790) / 4* (PH700)
Channel Spacing	12.5KHz / 20KHz / 25KHz
Frequency Stability	±0.5 ppm
Operating Voltage	7.4 V
Battery Capacity	2000mAh(Standard)/3200mAh (Optional)
Battery Life (5:5:90)	Analog: 13 Hours Digital: 16 Hours (5: 5: 90 working cycle, high power transmission)
Size (H x W x D, with battery, without antenna)	130×54.5×37.5mm (PH790) 130×54.5×36.5mm (PH700)
Weight(with battery and antenna)	About 360g (PH790) / 340g (PH700)
Screen	2.0-inch transflective LCD, 240×320, 6-line text (PH790)
Vocoder	AMBE++
VOX	Support
Bluetooth	BT 4.0 (optional)
Location	GPS (optional)
Man down	Support
Vibration	Support
Real-time Clock	Support
Encryption	Support 40bit basic encryption; 128/256bit AES encryption is optional

Transmitter	0
Low Power Output	1W
High Power Output	4W (UHF1/UHF3)/5W (VHF)
FM Modulation	12.5KHz: 11K0F3E 20KHz: 14K0F3E 25KHz: 16K0F3E
4FSK Digital Modulation	12.5 KHz Data Only : 7K 60 F1D & 7K 60 FXD 12.5 KHz Voice Only : 7K 60F1E & 7K 60 FXE 12.5 KHz Voice And Data : 7K 60F 1W
Conducted / Radiated Emission	-36 dBm ≤ 1GHz ; -30 dBm >1 GHz
Modulation Limiting	±2.5KHz @ 12.5KHz / ±4KHz @ 20KHz / ±5.0KHz @25KHz
FM Hum and Noise	-40 dB @ 12.5KHz / -43dB @ 20KHz / -45 dB @ 25KHz
Adjacent Channel Power	60 dB @ 12.5KHz / 70 dB @ 20 / 25KHz
Audio Response	+1~- 3 dB (TIA603D)
Audio Distortion	≤3%

Receiver	0
Sensitivity (Analog)	0.18 µV (12dB SINAD)
Sensitivity (Digital)	0.18 μV (5% BER)
Adjacent Channel Selectivity	60 dB @ 12.5KHz / 70 dB @ 20 / 25KHz (TIA603A) 60 dB @ 12.5KHz / 70 dB @ 20 / 25KHz (ETSI)
Intermodulation	70 dB (TIA 603D) 65 dB (ETSI)
Spurious Rejection	70 dB (TIA 603D) 70 dB (ETSI)
Blocking	97 dB (TIA 603D) 94 dB (ETSI)
Co-channel Rejection	-12~0 dB @ 12.5KHz / -8~0 dB @ 20 / 25KHz
Hum and Noise	-40 dB @ 12.5KHz /-43 dB @ 20KHz /-45 dB @25KHz
Rated Audio Power	0.5 W
Max Audio Power	2.0 W
Conducted Spurious Emission	-57 dBm (TIA 603D)
Audio Response	+1~-3dB (TIA 603D)
Audio Distortion	≤3%

Environmental		0
Operating Temperature	-30°C ~ +60°C	
Storage Temperature	-40°C ~ +85°C	
ESD	IEC 61000 - 4 - 2 (level 4) ± 8 kV (Contact) ±15 kV (Air)	
Dust and Water Protection	IP68	
Reliability	MIL-STD-810H (PH790) / MIL-STD-810G (PH700)	

visible at nominal - 130 dBm signal strength)		
TTFF (Time to First Fix) Cold Start	<60s	
TTFF (Time to First Fix) Hot Start	<10s	
Horizontal Accuracy	<10m	

Accuracy specs for long-term tracking(95th percentile values > 5 satellites

GPS

General Disclaimer: the specifications in this document are in accordance with the applicable standard test. Due to the continuous technology development, Caltta may change the specifications without timely notice.

 $^{^{\}star}$ To realize 64 channel capacity and 4 zone capacity, users need to upgrade the firmware to V5.0 or above.

PH890

DMR Portable Radio

- DMR Tier II / Tier III
- Digital & Analog Compatible
- Extended Coverage
- Clear and Loud Audio
- Single Frequency Repeater
- Full Duplex Call
- IP68 and Military Quality



General	
Protocol	ETSI TS 102 361-1,-2,-3,-4
Frequency	UHF1: 400-470MHz UHF3: 350-400MHz
Channel Capacity	1024
Zone Capacity	64
Channel Spacing	12.5kHz/20KHz/25KHz
Operating Voltage	7.4V
Battery Capacity	2000mAh (Standard) / 2600mAh (Optional)
Battery Life	Analog: 14 Hours Digital: 16 Hours (5: 5: 90 working cycle, high power transmission)
Size (H x W x D)	131.5×54.5×29.5mm (without antenna)
Weight	305g (with antenna and battery)
Screen	2.2-inch LCD, 240×320, 6-line text
Vocoder	AMBE++
SFR	Support
Full Duplex Call	Support
VOX	Support
Bluetooth	BT4.0
Location	GPS
Man down	Support
Vibration	Support
Real-time Clock	Support
Encryption	Support 40bit basic encryption; 128/256bit AES encryption is optional

Transmitter		•
Low Power Output	1W	
High Power Output	4W	
FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E	
	12.5KHz Data Only: 7K60F1D&7K60FXD	
4FSK Digital Modulation	12.5KHz Voice Only: 7K60F1E&7K60FXE	
	12.5KHz Voice And Data: 7K60F1W	
Conducted/ Radiated Emission	-36dBm ≤1GHz;-30dBm>1GHz	
Modulation Limiting	±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz	
FM Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz	
Adjacent Channel Power	60 dB@12.5KHz /70 dB @20/25KHz	
Audio Response	+1 ~ -3dB(TIA603D)	
Audio Distortion	≤3%	

Receiver	•
Sensitivity (Analog)	0.18uV(12dB SINAD)
Sensitivity (Digital)	0.18uV (5% BER)
Adjacent Channel	60 dB@12.5KHz/70 dB@20/25KHz (TIA603A)
Selectivity	60dB@12.5KHz /70 dB@20/25KHz (ETSI)
Intermodulation	70 dB (TIA603D)
Intermodulation	65 dB (ETSI)
Spurious Rejection	70 dB (TIA603D)
spurious Rejection	70 dB (ETSI)
Blocking	97dB(TIA603D)
Blocking	94dB(ETSI)
Co-channel Rejection	-12~0 dB @12.5KHz/-8~0 dB @20/25KHz
Hum and Noise	-40 dB@12.5KHz /-43 dB@20KHz /-45 dB@25KHz
Rated Audio Power	0.5W
Max Audio Power	2.0W
Conducted Spurious Emission	-57 dBm (TIA603D)
Audio Response	+1 ~ -3dB (TIA603D)
Audio Distortion	≤3%

Environmental	0
Operating Temperature	-30°C ~ +60°C
Storage Temperature	-40°C ~ +85°C
ESD	IEC 61000-4-2 (level 4) ±8kV (Contact) ±15kV (Air)
Dust and Water Protection	IP68
Reliability	MIL-STD-810 G

Accuracy specs for long-term tracking(95th percentile values > 5satellites visible at nominal - 130 dBm signal strength)		
TTFF (Time to First Fix) Cold Start	<60s	
TTFF (Time to First Fix) Hot Start	<10s	
Horizontal Accuracy	<10m	

GPS

Z9

DMR Portable Radio

- DMR Tier II / Tier III
- Digital & Analog Compatible
- Slim Metal Body
- Extended Coverage
- Clear and Loud Audio
- Single Frequency Repeater
- Full Duplex Call
- IP68 and Military Quality



General	0
Protocol	ETSI TS 102 361-1,-2,-3,-4
Frequency	UHF1: 400-470MHz UHF3: 350-400MHz
Channel Capacity	1024
Zone Capacity	64
Channel Spacing	12.5kHz/20KHz/25KHz
Operating Voltage	7.4V
Battery Capacity	1500mAh (Standard)
Battery Life	Analog: 12 Hours Digital: 14 Hours (5: 5: 90 working cycle, high power transmission)
Size (H x W x D)	132×55×24mm (without antenna)
Weight	300g (with antenna and battery)
Body Material	Metal + engineering plastic
Screen	2.2-inch LCD, 240×320, 6-line text
Vocoder	AMBE++
SFR	Support
Full Duplex Call	Support
VOX	Support
Bluetooth	Bluetooth chip, Bluetooth audio BT4.0/PTT/Positioning
Location	GPS
Man down	Support
Vibration	Support
Real-time Clock	Support
Encryption	Support 40bit basic encryption; 128/256bit AES encryption is optional

Transmitter		0
Low Power Output	1W	
High Power Output	4W	
FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E	
	12.5KHz Data Only: 7K60F1D&7K60FXD	
4FSK Digital Modulation	12.5KHz Voice Only: 7K60F1E&7K60FXE	
. roddadion	12.5KHz Voice and Data: 7K60F1W	
Conducted/ Radiated Emission	-36dBm ≤1GHz ; -30dBm >1GHz	
Modulation Limiting	±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz	
FM Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz	
Adjacent Channel Power	60 dB@12.5KHz /70 dB @20/25KHz	
Audio Response	+1 ~ -3dB(TIA603D)	
Audio Distortion	≤3%	

Receiver	e.
Sensitivity (Analog)	0.18uV(12dB SINAD)
Sensitivity (Digital)	0.18uV (5% BER)
Adjacent Channel	60 dB@12.5KHz/70 dB@20/25KHz (TIA603A) -1T
Selectivity	60dB@12.5KHz /70 dB@20/25KHz (ETSI)
	70 dB (TIA603D)
Intermodulation	65 dB (ETSI)
	70 dB (TIA603D)
Spurious Rejection	70 dB (ETSI)
81 11	97dB(TIA603D)
Blocking	94dB(ETSI)
Co-channel Rejection	-12~0 dB @12.5KHz/-8~0 dB @20/25KHz
Hum and Noise	-40 dB@12.5KHz /-43 dB@20KHz /-45 dB@25KHz
Rated Audio Power	0.5W
Max Audio Power	2.0W
Conducted Spurious Emission	-57 dBm (TIA603D)
Audio Response	+1 ~ -3dB (TIA603D)
Audio Distortion	≤3%

Environmental		•
Operating Temperature	-30°C ~ +60°C	
Storage Temperature	-40°C ~ +85°C	
ESD	IEC 61000-4-2 (level 4) ±8kV (Contact) ±15kV (Air)	
Dust and Water Protection	IP68	
Reliability	MIL-STD-810 G	

GPS		•
Accuracy specs for long-term tracking(95th percentile values > 5satellites visible at nominal - 130 dBm signal strength)		
TTFF (Time to First Fix) Cold Start	<60s	
TTFF (Time to First Fix) Hot Start	<10s	
Horizontal Accuracy	<10m	

PH910Ex/PH990Ex

High-level IIC explosion-proof digital radio

- Explosion-proof with ATEX standard
- Slim & Portable Design, Industry Leading
- 0.18uV Sensitivity, Expand Communication Distance
- Built-in Bluetooth, More Functions Expansion
- Support GPS, High-precision Location
- Local Recording, Secure and Reliable
- IP68 Protection, Robust and Reliable
- Rich Accessories, Suitable for Various Scenarios





Protocol	ETSI TS 102 361-1,-2,-3,-4
Trotocot	
Anti-explosion	ATEX Gas Protection: Class II 2G Ex ib IIC T4 Gb Dust Protection: Class II 2D Ex ib IIIC T130℃ Db
Levels	Mining Protection : Class I M2 Ex ib I Mb
	UHF1: 400-470 MHz
requency	UHF3: 350-400 MHz VHF: 136-174 MHz
Channel Capacity	1024 (PH990Ex) 32 (PH910Ex)
C !!	64 (PH990Ex)
Zone Capacity	2 (PH910Ex)
Channel Spacing	12.5kHz/20KHz/25KHz
Operating Voltage	7.4V
Battery Capacity	1960mAh (Standard)
,,	Analog: 16 hours
Battery Life	Digital: 18 hours (PH990Ex) / 19 hours (PH910Ex)
	(5:5:90 work cycle)
Size (H x W x D, with pattery, without	129.7x55.6x37.6mm (PH990Ex)
antenna)	129.7x55.6x36.8mm (PH910Ex)
Weight(with battery	About 410g (PH990Ex)
and antenna)	About 390g (PH910Ex)
Screen	1.8" transflective color screen
Screen	240*180, 4 lines (PH990Ex)
Vocoder	AMBE++
Real-time Clock	Support
Man Down	Support
Bluetooth	BT4.0 (Optional)
Positioning	GPS
Encryption	Optional
Recording	Optional
nterface	18 pin dedicated explosion-proof interface,
	support audio/programming
- - - - - - - - - - - - - - - - - - -	
Dutput	1 W
-M Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E
	12.5KHz Data Only: 7K60F1D&7K60FXD
_	12.5KHz Voice Only: 7K60F1E&7K60FXE
_	12.5KHz Voice Only: 7K60F1E&7K60FXE 12.5KHz Voice And Data: 7K60F1W
4FSK Digital Modulation Conducted/ Radiated Emission	

±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz

-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz

60 dB@12.5KHz /70 dB @20/25KHz

+1 ~ -3dB(TIA603D)

Modulation Limiting
FM Hum and Noise

Channel Power

Audio Response

Audio Distortion

Receiver		©
Sensitivity (Analog)	0.16uV (12dB SINAD typical)	
Sensitivity (Digital)	0.18uV (5% BER typical)	
Adjacent Channel Selectivity	60 dB@12.5KHz/70 dB@20/25KHz (TIA603A) 60dB@12.5KHz /70 dB@20/25KHz (ETSI)	
Intermodulation	70 dB (TIA603D) 65 dB (ETSI)	
Spurious Rejection	70 dB (TIA603D) 70 dB (ETSI)	
Blocking or Desensitization	97dB (TIA603D) 94dB (ETSI)	
Co-channel Rejection	-12~0 dB @12.5KHz/-8~0 dB @20/25KHz	
Hum and Noise	-40 dB@12.5KHz /-43 dB@20KHz /-45 dB@25KHz	
Rated Audio Power	0.5W	
Conducted Spurious Emission	-57 dBm (TIA603D)	
Audio Response	+1 ~ -3dB (TIA603D)	
Audio Distortion	≤3%	
Environmental		0

Environmental		0
Operating Temperature	-20°C ~ +50°C	
Storage Temperature	-40°C ~ +85°C	
ESD	IEC 61000-4-2 (level 4) ±8kV (Contact) ±15kV (Air)	
Dust and Water Protection	IP68	
Reliablity	MIL-STD-810 G	

GPS				
Accuracy specs for lo	ng-term tracking es>5 satellites visible at nominal -130 dBm signal strength)			
TIFF	<60s (Time To First Fix) - Cold Start			
TIFF	<10s (Time To First Fix) - Hot Start			
Horizontal Accuracy	<10m			

GH900

Tri-mode & Dual-screen High-end Smart Radio

- Triple-mode-in-one, Communication Anytime Anywhere
- Smart Dual-screen, Expand Vision
- Excellent Configuration, Various Services
- Military Quality, Robust and Reliable



General			
Protocol	DMR/Analog trunking and conventional mode Private network LTE Public network LTE/WCDMA/GSM		
Frequency	DMR/Analog: 400-470M (UHF1) Private LTE: TDD 1.8G (1785~1805MHz) TDD 1.4G (1447~1467MHz) Public TDD: B38/B39/B40/B41 FDD: B1/B3/B5/B7/B8 WCDMA: B1 GSM: B2/B3/B5/B8		
Size (H x W x D)	150*68*27mm (with standard battery)		
Weight	390g		
Screen	Main: 4.0 inch color LCD, 800×480, glove operation Top: 0.9 inch B&W LCD, 128x64		
Key	PTT, Power, Dial, Hang up, Programmable×3, Android virtual key×3, SOS		
Battery	4000mAh@7.6V (Standard battery)		
External Interface	18pin waterproof contact interface (for USB, audio, serial port)		
Operation System	Deeply customized smart and secure OS (based on Android)		
CPU	Quad-core 2.3GHz processor		
Memory (RAM+ROM)	3GB+128GB		
External Memory	Support TF, Up to 128GB		
Camera	Rear: 13M Pixels, auto focus, CMOS, with flash Front: 13M Pixels, fixed focus, CMOS		
Bluetooth	BT4.0		
WLAN	Wi-Fi 802.11 b/g/n, 2.4G, Wi-Fi Hotspot		
Location	GPS, AGPS		
NFC	Support		
Speaker	Front: 30×40mm professional speaker		
Microphone	Support multi-mic noise reduction		
Sensor	Gravity, distance, light, gyroscope, geomagnetic		
Card Slot	Private SIM x 1, public SIM x 1, encryption x1, TF x 1		
Charging	Desktop charger		
OTG	Support, expandable USB camera and other devices		

Receiver		0		
Sensitivity (Analog)	0.18uV(12dB SINAD)			
Sensitivity (Digital)	0.18uV (5% BER)			
Adjacent Channel Selectivity	60 dB@12.5KHz/70 dB@20/25KHz (TIA603A) 60dB@12.5KHz /70 dB@20/25KHz (ETSI)			
Intermodulation	70 dB (TIA603D) 65 dB (ETSI)			
Spurious Rejection	70 dB (TIA603D) 70 dB (ETSI)			
Blocking	97dB(TIA603D) 94dB(ETSI)			
Co-channel Rejection	-12~0 dB @12.5KHz/-8~0 dB @20/25KHz			
Hum and Noise	-40 dB@12.5KHz /-43 dB@20KHz /-45 dB@25KHz			
Rated Audio Power	0.5W			
Max Audio Power	2.0W			
Conducted Spurious Emission	-57 dBm (TIA603D)			
Audio Response	+1 ~ -3dB (TIA603D)			
Audio Distortion	≤3%			

Transmitter	9
Low Power Output	1 W
High Power Output	4W
FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E
4FSK Digital Modulation	12.5KHz Data Only: 7K60F1D&7K60FXD 12.5KHz Voice Only: 7K60F1E&7K60FXE 12.5KHz Voice And Data: 7K60F1W
Conducted/ Radiated Emission	-36dBm ≤1GHz ; -30dBm >1GHz
Modulation Limitation	±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz
FM Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz
Adjacent Channel Power	60 dB@12.5KHz /70 dB @20/25KHz
Audio Response	+1 ~ -3dB(TIA603D)
Audio Distortion	≤3%

Environmental		•
Operating temperature	-20°C - +60°C (Standard battery) -30°C - +60°C (Low-temperature battery)	
Storage temperature	-40°C ~ +85°C	
ESD	IEC 61000-4-2 (level4)±8kV (Contact)±15kV (Air)	
Dust and Water Resistance	IP68	
Reliability	MIL-STD 810 G	

PM790

DMR Mobile Radio

- Digital & Analog Compatible
- 1DIN Size for Vehicle
- Multiple External Interfaces
- Excellent Ergonomics
- Loud and Clear Audio
- IP54 and Military Quality



General	0
Protocol	ETSI TS 102 361-1,-2,-3,-4
Frequency	UHF1: 400-470MHz UHF3: 350-400MHz VHF: 136-174MHz
Channel Capacity	1024
Zone Capacity	64
Channel Spacing	12.5kHz/20KHz/25KHz
Operating Voltage	DC 13.6V±15%
Size (H x W x D)	49*178*156mm(1DIN)
Weight	about 1.3Kg
Screen	2.0-inch LCD, 220×176, 4-line text
Vocoder	AMBE++
Real-time Clock	Support
Bluetooth	BT4.0
Location	GPS
Encryption	Supports 40bit basic encryption. 128/256bit AES encryption is optional.

Transmitter		0
Low Power Output	1W-25W(UHF3); 5-25W(UHF1/VHF)	
High Power Output	5-45W(UHF1/ UHF3); 5-50W(VHF)	
FM Modulation	12.5KHz: 11K0F3E / 20KHz: 14K0F3E / 25KHz: 16K0F3E	
	12.5KHz Data Only: 7K60F1D&7K60FXD	
4FSK Digital Modulation	12.5KHz Voice Only: 7K60F1E&7K60FXE	
	12.5KHz Voice and Data: 7K60F1W	
Conducted/ Radiated Emission	-36dBm ≤1GHz ; -30dBm >1GHz	
Modulation Limiting	±2.5KHz @12.5KHz /±4KHz @20KHz /±5.0KHz @25KHz	
FM Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz	
Adjacent Channel Power	60 dB@12.5KHz /70 dB @20/25KHz	
Audio Response	+1 ~ -3dB(TIA603D)	
Audio Distortion	≤3%	

Receiver	•		
Sensitivity (Analog)	0.20uV(12dB SINAD)		
Sensitivity (Digital)	0.20uV (5% BER)		
Adjacent Channel	60 dB@12.5KHz /70 dB@20/25KHz (TIA603A)		
Selectivity	60dB@12.5KHz /70 dB@20/25KHz (ETSI)		
Intermodulation	75 dB (TIA603D)		
intermodutation	70 dB (ETSI)		
Spurious Rejection	75 dB (TIA603D)		
Spullous Rejection	70 dB (ETSI)		
Blocking	97dB(TIA603D)		
Blocking	95dB(ETSI)		
Co-channel Rejection	-12~0 dB @12.5KHz/-8~0 dB @20/25KHz		
Hum and Noise	-40 dB@12.5KHz /-43dB@20KHz /-45 dB@25KHz		
Rated Audio Power	3W (Built-in)		
Max Audio Power	6W (Built-in)		
Conducted Spurious Emission	-57 dBm (TIA603D)		
Audio Response	+1~-3dB(TIA603D)		
Audio Distortion	≤3%		

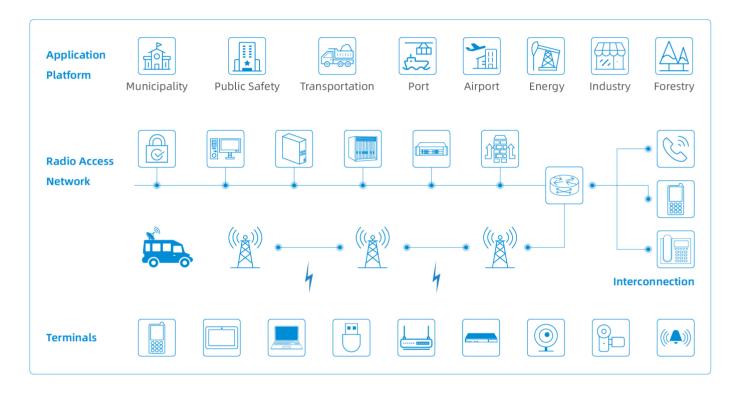
Environmental	•
Operating Temperature	-30°C ~ +60°C
Storage Temperature	-40°C ~ +85°C
ESD	IEC 61000-4-2 (level 4) ±8kV (Contact) ±15kV (Air)
Dust and Water Resistance	IP54
Reliability	MIL-STD-810G

GPS			
Accuracy specs for long-term tracking (95th percentile values >5 satellites visible at nominal -130 dBm signal strength)			
TTFF (Time to First Fix) Cold Start <60s			
TTFF (Time to First Fix) Hot Start	<10s		
Horizontal Accuracy	<10m		

LTE Wireless Broadband Multimedia Communication System

Based on LTE technology and B-TrunC standard, Caltta's LTE wireless broadband multimedia communication system provides voice, trunking, location, SMS, data collection, information exchange, video transmission, video pull, and other multimedia services, enabling not only 'Push-to-Talk' and also 'Push-to-X'.

The system has been widely used in municipality, public safety, transportation, utilities, energy and industry etc., which opens up a new era of private communication.



Highlights

One Network, Multipile Services

Supporting Voice, PTT, location, SMS, data collection, video transmission, video pull and other multimedia services.

Professional Trunking, Wireless Broadband

The data rate is more than 100 Mbit/s and the call setup time is less than 250 ms.

Unified Dispatching, Good Interoperability

Interconnection and interworking with the PSTN, PBX, MPT1327, DMR,PDT, TETRA, and other private communication networks.

Information Encryption, High Security

256-bit high-intensity algorithm, safe and reliable air interface.

Rapid Deployment, Green Technology

Small and light, saving 30% to 50% of installation time and reducing 80% of energy consumption.

Deep Customization, Wide Applications

Standard interface, intelligent platform, and rich spectrum available to meet various requirements of industrial users.

LTE Core Network

- Professional Trunking Unified Dispatching, call-setup time less than 250ms.
- Higher Reliability: major boards support 1+1 hot standby, N+1 backup, load sharing and hot swap, NE level disaster recovery.
- Higher Security: support two-way authentication, air interface encryption, VPN and other security-protection functions.
- Easy O&M: client/server architecture, local and remote maintenance operations, multi-level role authorization, and centralized equipment management capabilities.
- Good Scalability: modular hardware design, supports smooth capacity expansion by easy upgrade.

Specifications

	ZXTS eTC 1000	ZXTS eTC 530	ZXTS eTC 200	ZXTS eTC 10
				The state of the s
Dimensions (H x W x D)	11U Height, 486x483x568mm	3U Height, 133x486x434mm	2U Height, 86.8x434x715.5mm	19 x148.5 x183mm
Weight	95 Kg (full config)	20.3 Kg	30 Kg (full config)	0.35 Kg
Power Supply	DC:-40V~-57V	AC: 200V~ 240V	DC:-40.5V~-72V AC: 200V~ 240V	DC: 12V
Power Consumption	1800W (basic config) 4500W (full config)	800W	750W	≤30w
Maximum Number of Users	200,000	100,000	5.000	500
Maximum Number of simultaneously activated bearers	400,000	200,000	10,000	1,000
Maximum Number of Groups	20,000	5,000	1,000	100
Maximum Number of eNodeBs	2048	128	30	10
Maximum Number of Trunking Calls	5000	1000	512	256
Throughput	40 Gbps	6 Gbps	2 Gbps	0.8 Gbps



LTE Base Station

Base Band Unit (BBU)

- SDR-based All-in-one (DMR/LTE)
- B-TrunC Standard Call Setup Time < 250 ms
- High Integration Supports 36 Cells, Data Processing
- Ability of 3.6 Gbps in the Downlink and 1.8 Gbps Uplink
- Quick Deployment 30 50 % Time-saving
- Highly Reliable Redundancy Design
- Eco-friendly Low Power Consumption

Specifications

Indoor BBU: **ZXSDR B8200**

Dimensions (H x W x D)	88.4 mm x 482.6 mm x 197 mm
Weight	< 7.5 kg
Power Consumption	90W (Basic Configuration)
Power supply	- 48V DC /220V AC
Clock synchronization mode	GPS/ GLONASS/ BDS/ 1588
Operating temperature	-10°C+55°C
Operating humidity	5 % RH ~ 95%RH
Max. Cells	Ant.8 BF: 18 2T2R: 36





LTE Base Station

Remote Radio Unit (RRU)

- LTE Technology Multiple Bandwidth (1.4 MHz/3 MHz/5 MHz/10MHz/ 15 MHz /20 MHz) with Uplink Rates of Up to 50 Mbps, and Downlink 110 Mbps
- Rich Frequency 400 MHz/450 MHz/500 MHz/600 MHz/700 MHz/800 MHz /1.4 GHz /1.8 GHz/2.3 GHz/2.6 GHz
- Efficient Amplifier Natural Heat Dissipation, 80% Power-saving
- Multi-Carrier Technology Easy Software Upgrading, Cost-effective
- Flexible Installation Modes Such as Tower-mounted, Pole-mounted Wall-mounted, etc.











R8972E R8504

R8852E R8862A

Specifications

TDD LTE RRU

	R8978	R8972E	R8504
Frequency	1.4GHz/1.8GHz	400 MHZ/500 MHz/600MHZ/1.4 GHz /1.8 GHZ2.3 GHz/2.6 GHz	5.8GHz
Transmit Power	8x 20W	2X40W	4x1W
Number of Paths	8T8R	2T2R	4T4R
Dimension (H × W × D)	430 X 400 x 125 mm	422 x 218 x 126mm	300 x 210 x 86.5mm
Volume	22L	11L	6L
Weight	21 Kg	10 Kg	6Kg
Power Consumption	< 440 W	<160W	<100W
Power Supply	-48 V DC	-48V DC/ 220 V AC	-48V DC/220V AC
Temperature Range	-40°C~+55°C	-40°C~+55°C	-50°C~+70°C
Humidity Range	2%RH~ 100%RH	2 % RH~100 % RH	5 % RH ~ 100 % RH
Protection Rate	IP66	IP66	IP65

FDD LTE RRU

	R8852E	R8862A
Frequency	450MHz	700MHz
Transmit Power	2 x 40W	2 X 60 W /2 x 40 W
Number of Paths	2T2R	2T2R
Dimension (H x Wx D	415 x 296 x 114 mm	415 x 296 x 114 mm
Volume	14L	15L
Weight	18 Kg	17 Kg
Power Consumption	<320 W	<400 W
Power Supply	-48 V DC	-48 V DC/ 220 V AC
Temperature Range	-40°C~+55°C	-40°C~+55°C
Humidity Range	5 % RH~100% RH	5 % RH~100 % RH
Protection Rate	IP65	IP65

P200

Portable Emergency Command System

- Light & Portable
- Convenient Configuration
- Stable & Reliable
- Professional Trunking System
- IP67 protection, reinforced and shock-proof
- Abundant Services



Dispatch Console

Multimedia dispatch

console

Physical Indicator	•	
Main processing unit (MPU)	Dimensions: 475mm×275mm×105mm Weight:10kg Power consumption: 100~150W	
Remote radio unit (RRU)	Dimensions:475mm×275mm×145mm(700M) 475mm×275mm×105mm(1.4G) Weight :20Kg(700M),12Kg(1.4G) Power consumption:100~300W	
Service Indicator	•	
Operating frequency (available for customization)	700M(B28): 703-748MHz/758-803MHz 1.4G (B45): 1447-1467MHz	
Network type	FDD-LTE,TDD-LTE	
Working bandwidth	20M	
Transmit power	2x40W	
Number of paths	2 paths, double transmitting and double receiving , improved coverage	
Upload/download speed	50/100Mbps	
eNB maximum throughput	DL600Mbps, UL300Mbps	
Ethernet port	FE/GE×2	
Fiber optic port	6G	
Clock synchronization	Support GPS/1588V2/SYNCE	
Core network service	CN throughput: 0.8Gbps PTT call establishment time <300ms Maximum user number: 500 Maximum group number: 100 Maximum online PTT call: 256 Maximum base station connection: 10	
Other Indicator	<u> </u>	
мімо	Support MIMO, improved coverage ability	
Multiple signal carriers	Support multiple signal carriers, improved system capacity	
Highly efficient power amplifier technology	CFR/DPD/Doherty, power device power consumption	

Laptop, dispatch console client

software

Terminal	8	
Portable Radio	GH650, GH653, GH880, GH880C	
Mobile Radio	GM653, GM655	
Others	CPE, Dome camera, Box camera, Manpack device	
Antenna	0	
Small antenna	optional, 0.35 meters long with gain of 6dBi, suitable for demonstration	
Portable omnidirectional antenna	Optional in two frequencies: 700M: 1.8 meters long with gain of 7.8dBi 1.4G: 1.2 meters long with gain of 10dBi	
Accessories	6	
Accessories		
Portable backpack	Used to carry portable devices, comfortable and good looking, each set contains two backpacks	
Portable case	One portable case, used to store the whole portable command system	
Portable mast	3m/5m/8m available	
Environmental Suitabili	ity	
Working temperature	-40°C~+60°C	
Storage temperature	-50°C~+70°C	
Air pressure range	70~106 kPa	
Protection rating	IP67	
Power supply	100V~240V AC, 50Hz/60Hz	
Other Indicator	9	
Reliability	Based on Software Defined Radio (SDR) platform, high system reliability	
Wireless resource management	Wireless bearer control, wireless accesscontrol, mobility management, dynamic resource management	
Maintenance	Support remote maintenance, check,recover from failure, remote software download	
General Disclaimer: the specifications in this document are in accordance with the		

P300

Manpack Emergency Command System

- Small in Size & Light Weight
- Quick Deployment
- High Performance
- Multiple Power Supply Modes
- Diverse Terminal Range
- Environment Friendly
- Easy to Operate
- Highly Adaptive
- One-press to Switch Networking Mode
- Rich Services



General	•	
Operating Frequency(optional)	1.4GHz: 1447Mhz~1467Mhz 1.8GHz: 1785MHz~1805MHz 700MHz: UL 733~748 /DL 788~803MHz 500MHz: 566MHz~626MHz	
Bandwidth	5MHz/10MHz/15MHz/20MHz	
Technology	LTE	
Transmitting Standard	B-TrunC	
Time Slot Ratio	Support 1:3,2:2,3:1	
Transmitted Power	5W(1.8GHz) / 10W	
Number of Paths	2 paths, 2T2R	
Uplink/downlink Speed	50/100Mbps	
Dispatch and Transmission Port	IP Ethernet Port	
Clock Synchronization Mode	BDS/GPS/1588V2	
CN Throughput	0.8Gbps	
PTT Call Establishment Time Delay	<300ms	
Max. User Number	500	
Max. Group Number	100	
Max. Online PTT Call Number	256	
Max. Connected Station Number	10	

Physical	0
Size(HxDxW)	505mmx305mmx102mm (with battery and handle)
Weight	<10kg(without battery)
Power Supply	Integrated Battery:4-5 Hours External AC Power Port
Operating Temperature	-40°C~+60°C
Storage Temperature	-50°C~+70°C
Air Pressure Range	70~106 kPa
Dust and Water Resistance	IP67
Anti-vibration Reinforcement	Higher than class 7M2 in GBT 4798.7-2007 Environmental conditions existing in the application of electric and electronic products - Part 7: Portable and non-stationary use
Display & Operation	Highlight LCD & control rotary knob, inquire and modify the primary wireless parameters; support the PAD dispatch console connected through Wi-Fi
O&M	Support remote upgrade and fast launch through USB drive

	Trunking downlink channel sharing improves
Channel Sharing	usage ratio of frequency resource
MIMO	Support 2×2 MIMO, improve frequency bandwidth and coverage capability
Multiple Signal Carriers	Support multiple signal carriers, improve system capacity
RF High Performance	CFR/DPD,improve signal quality Doherty,make high efficient power amplifier
Networking	Support networking for several P300 systems
Interconnection	Support interconnection with PSTN, PLMN,PDT,private LTE,etc.
Dispatch Console	
Multimedia Dispatch Console	Laptop,reinforced laptop, reinforced PAD,professional dispatch software
Terminal	
Handheld Radio	GH900/GH880 GH650/GH360
Portable Dome Camera	HD Dome Camera,CPE,IP Camera
Portable Terminal	Manpack device, video access gateway
Antenna	
Manpack omnidirectional antenna	Small size and connect with P300 directly, suitable for short distance coverage
Portable omnidirectional antenna	Small volume and coordinate with portable mast, suitable for long distance covera
Accessories	
Portable Mast	3 meter fiber portable mast, weights less than 10 (with antenna, feeder cable, land fixation.
Portable Backpack	Used to carry the system, comfortable and good looking
Portable Case	Portable protective draw-bar suitcase, used to package and protect while transporting and transferring

Voice/Video group call, Voice/Video private call, Emergency call Video push, Video transfer, Text message/media message, video record, Dynamic group GIS location, Dispatch on map,Track playback, Floor management, Priority call Late entry, Forced insertion/forced release, Remote kill/remote stun/revive, Trunking call and data concurrency.

ZXIMCU sMesh100/sMesh390/sMesh720/sMesh750

Emergency Command System

- One-click access,"second level" access
- Reliable and stable for hash environments
- Various forms meet different scenarios
- Flexible networking and convenient management
- Real-time frequency scan, interference elimination
- IP67 Protection, low-temperature resistance



General	9	
Frequency	500MHz,1.4GHz Other frequencies can be customized	
Working Form	TDD	
Transmission	COFDM	
Bandwidths	Support 2.5MHz/5MHz/10MHz/20MHz flexible configuration	
Power Output	0.5W-10W	
Rx Sensitivity	≤-105dBm	
Channel	2 channels, 2 Tx and 2 Rx	
Rate	Peak rate not less than 95Mbps	
Networking Mode	Centreless, co-frequency ad hoc network	
Networking Scale	Co-frequency networking not less than 32 nodes	
Number of Hops	Unlimited hops, within 9 hops is recommended	
Encryption	DES/AES128/AES256	
Wi-Fi	2.4GHz/5.8GHz	
Location	BDS/GPS	
Duration	Continuous operation for 12 hours(sMesh100) ≥6h (Tx: Rx: idle=1:1:1(sMesh390) ≥9h sMesh750	
Power Supply	sMesh100:adapter:100~240VAC50/60Hz/DC input:33.6VDC sMesh720: adapter:100~240VAC50/60Hz/DC input:28~33VDC sMesh750: adapter:DC12V-48V	
Size	sMesh100:272x207x68mm(with handle) sMesh390: 67x156 x32mm(with battery no antenna) sMesh720: 217x186x43mm sMesh750:212x270 x120mm(without handle)	
Weight	sMesh100: 4kg(with battery) sMesh390: 430g(with battery no antenna) sMesh720: 2kgs Mesh750: 6kg	

System Expansion (Optional)			
Public/privatenetwork access	Public 4G/Private 4G /Access to public and private networks		
Adaptive frequency hopping	Adaptive frequency hopping and interference avoidance		
External video access	Support HDMI external video source access, realizeexternal video backhaul, support smart terminal video access		
MIMO	Support MIMO, promote data transfer rate		
Multiplexing	Support frequency reuse and improve spectrum utilization		
Environmental	0		
Public/privatenetwork access	-40°C~+60°C (sMesh100, sMesh720, sMesh750) -30C~+65C (sMesh390)		
Storage Temperature	-50°C~+70C (sMesh100, sMesh720, sMesh750) -40°C~+70°C (sMesh390)		
Dust and Water Resistance	IP67		

General Disclaimer: the specifications in this document are in accordance with the applicable standard test. Due to the continuous technology development, Caltta may change the specifications without timely notice.

Resistance

GH65X

LTE Portable Radio

- Excellent Industrial Design
- Loud and Clear
- Durable and Rugged
- Professional Trunking Services
- Hardware Encryption



General		9	
Protocol	Private LTE WCDMA/GSM (Only Data) DMO		
Frequency	LTE: GH650: TDD 1.4G (1447~1467MHz)/TDD 1.8G (1785~1805MHz) GH654: TDD 340M (336~346MHz)/TDD 450M (380~450MHz) GH656: TDD 600M (566~626MHz; 606~678MHz) WCDMA: 2100MHz GSM: 900MHz, 1800MHz DMO: 400~470MHz		
Maximum Transmit power	LTE: 23dBm±2dBm WCDMA: 23dBm±2dBm DMO: 30dBm		
Size (H x W x D)	134*55*34.6mm (W	/ithout Antenna)	
Weight	About 360g (With Antenna and Battery)		
Battery	14.8Wh (2000mAh,	14.8Wh (2000mAh, 7.4V)	
Operating System	Android		
CPU	Quad-core A5 processor		
Memory	RAM: 1 GB; ROM: 8 GB		
Camera	Rear camera: 8 megapixels, auto focus, CMOS, fash Front camera: 1.3 megapixels, CMOS		
External interface	17pin Waterproof Connector (for USB, Audio and Serial port) Battery Charging Connector		
WLAN	Wi-Fi 802.11 b/g/n	, 2.4G, Support Wi-Fi hotspot	
Location	GPS	GPS	
Encryption	TF encryption card		
	Photo	Format: JEPG; Maximum size: 2592*1944	
	Video recording	Format: 3GP Maximum resolution: 1080P with 30 fps	
Multimedia	Audio recording	Format: AMR	
	Audio playback	Format: MIDI/AMR/MP3/AAC+/QCP/ WAV/WMA	
	Video playback	Format: MP4/H263/H264/3GP, 720P with 50 fps	

Standby time	Standby time	70 hours
	Voice PTT time	18 hours
	Video PTT time	16 hours
	Full-duplex voice time	7.5 hours
	Full-duplex video time	6 hours
	Charging time	3 hours
	Note: LTE cycle 1280ms, PTT cycle 160ms, automatic screen lock time 15s, 5: 5: 90 mode	
Extended memory	TF card, up to 32 GB	
Sensor	Gravity, proximity, gyroscope, light	
Charging	Desktop charging	
OTG	Support	

Environmental		Θ
Operating Temperature	-20°C - +60°C	
Storage Temperature	-40°C − +85°C	
ESD	IEC 61000-4-2 (level4) ±8kV (Contact) ±15kV (Air)	
Dust and Water Resistance	IP67	
Reliability	MIL-STD 810 C/D/E/F/G	

GH860

LTE Portable Radio

- Public and Private Convergence, Dual-mode Communication
- 50mm Width, Slim and Portable, Ultimate Experience
- Professional Audio Performance, Loud and Clear Voice
- 4400mAh Standard Battery, Long Standby Duration
- Various Configuration, Location/Bluetooth/Wi-Fi/NFC/TF Card Support
- IP68 Protection, Robust and Reliable
- Military Quality, Harsh Environment Test Passed



General	•
Protocol	Private LTE Public LTE/WCDMA/GSM/CDMA2000
Frequency	Private LTE: TDD 1.8G (1785~1805MHz) TDD 1.4G (1447~1467MHz) Public LTE: TDD: B38/B39/B40/B41 FDD: B1/B3/B8/B20 WCDMA: B1/B8 GSM: B3/B8 CDMA2000: BC0
Size (H x W x D)	123 x 50 x 30.5mm (with standard battery)
Weight About	About 240g
Screen	1.78" color OLED screen, 448x368
Key	Front: Full numeric keypad Side: PTT key, SOS key, programmable key x2 Knob: Group selection/volume control
Battery	Standard 4400mAh @ 3.8V
Operation System	Deep Customized Android
CPU	Octa-core A53 processor
Memory (RAM+ROM)	4GB+64GB
Audio	Front 36mm high-power speaker x 1, Receiver x 1 Microphone x 3 (Compatible with dual microphone noise reduction)
Camera	Rear: 13M, AF, CMOS, with Flash Front: 13M, AF, CMOS
External Interface	18pin waterproof contact (supports USB2.0, audio, serial port)
Bluetooth	BT4.2
WLAN	Wi-Fi 802.11 b/g/n, 2.4G/5G, Wi-Fi hotspot
NFC	Support
Location	GPS
External Memory	TF, up to 128GB
Card Slot	Private NANO SIM \times 1, Public NANO SIM \times 1, TF \times 1
Sensor	Gravity, Light
Charging	Desktop charge/ Cable charge
OTG	Support

Environmental		•
Operating Temperature	-20°C − +60°C (standard battery) -33°C − +60°C (low-temperature resistant battery)	
Storage Temperature	-40°C - +85°C	
ESD	IEC 61000-4-2 (level4) ±8kV (Contact) ±15kV (Air)	
Dust and Water Resistance	IP68	
Reliability	MIL-STD 810 G	

GH880X

LTE Portable Radio

- High-resolution Cameras
- Touch Screen
- Dual-mode Design
- Dual Network, Dual Standby
- Durable and Rugged
- Rich Functions



General		0
Protocol	Private LTE Public LTE/WCDMA/GSM/TD-SCDMA/CDMA2000 DMO	
Frequency	Private LTE: GH880 TDD1.4G/1.8G GH880D TDD400M GH880F TDD600M Public LTE: TDD: B38/B39/B40/B41 FDD: B1/B3/B5/B7/B8/B20 WCDMA: B1 GSM: B2/B3/B5/B8 TD-SCDMA: B34/B39 CDMA2000: BC0 DMO: UHF1	
Size (H x W x D)	162x74.4x24mm (V	Vithout Antenna)
Weight	About 400g (With	Antenna and Battery)
Screen	4.8" full screen, 1280x720, capacitive touch, support glove operation	
Battery	16.65Wh (4500 mAh, 3.7V)	
Operation System	Deeply Customized Android OS	
CPU	Quad-core 2.3G processor	
Memory (RAM+ROM)	RAM: 3GB ROM: 128GB	
Camera	Rear camera: 13 megapixels, autofocus, CMOS, and with a flash Front camera: 5 megapixels, and CMOS	
External interface	18pin Connector (USB 2.0, audio and serial extension) Battery Charging Connector	
Bluetooth	BT4.0	
WLAN	Wi-Fi 802.11 b/g/r	ı, 2.4G, Wi-Fi Hotspot
NFC	Support	
Location	GPS/Glonass	
Encryption	TF encryption card	
	Photo	Format: JEPG; Maximum size: 3120×4208
	Video recording	Format: 3GP Maximum resolution: 1080P with 30 fps
Multimedia	Audio recording	Format: AMR
	Audio playback	Format: MIDI, AMR, MP3, AAC+, QCP, WAV, and WMA
	Video playback	Format: MP4, H263, H264, and 3GP Maximum resolution: 1080P with 30 fps

	Standby	80h	
	Voice PTT call	16h	
Power Management	Video call	5h	
	Recharge	Single Charge: 2.5h; Double Charge: 5h	
	Note: LTE cycle: 1280ms; PTT cycle: 640ms; Auto lock screen time: 15s; 5: 5: 90 mode		
Extended memory	TF card, up to 128 GB		
Card Slot	Private SIM × 1, public SIM × 1, TF × 1		
Sensor	Gravity, proximity, gyroscope, light, geomagnetic		
Charging	Desktop charging		
OTG	Support		

Environmental		•
Operating Temperature	-20°C − +60°C	
Storage Temperature	-40°C − +85°C	
ESD	IEC 61000-4-2 (level4) ±8kV (Contact) ±15kV (Air)	
Dust and Water Resistance	IP67	
Reliability	MIL-STD 810 G	

GM65X

LTE Mobile Radio

- Professional Design
- Loud and Clear
- Bluetooth Connection
- Hardware Encryption
- Rich Services
- Durable and Rugged



General	•	
Protocol	Private LTE WCDMA/GSM (Only Data) DMO	
Frequency	Private LTE: GM655 TDD1.4G/1.8G	
Maximum Transmit power	LTE: 23dBm±2dBm (Optional 33dBm) WCDMA: 23dBm±2dBm DMO: 30dBm	
Size (H x W x D)	180 x 100 x 70 mm	
Weight	<1.2kg	
Screen	±0.5ppm	
Operating Voltage	5.0" 960 × 540 QHD, capacitive touch screen	
Operating System	Android	
CPU	Quad-core A5 processor	
Memory	RAM: 1 GB; ROM: 8 GB	
External interface	Power interface, 26-pin data/audio interface, and high-speed ethernet interface	
Antenna interface	LTE × 2, WCDMA × 1, DMO × 1, GPS/GLONASS × 1	
Bluetooth	BT2.1+EDR/4.0	
WLAN	Wi-Fi 802.11 b/g/n, 2.4G, Support Wi-Fi hotspot	
Network	100 Mbps wired network, Ethernet sharing	
Location	GPS	
Encryption	TF card encryption	
Multimedia	Audio recording Audio playback Video playback Format: MP4/H263/H264/3GP, 720P with 50 fps	
Extended memory	TF card, up to 32 GB	
Power	12V DC input, wide voltage design	
Development interface	Serial port support secondary development	
OTG	Support	

Environmental	
Operating Temperature	-20°C − +60°C
Storage Temperature	-40°C − +85°C
ESD	IEC 61000-4-2 (level4)
Dust and Water Resistance	IP54
Reliability	MIL-STD 810 G

GD50X/GD60X

LTE Indoor/Outdoor CPE

- High-speed wireless transmission
- High reliability: uses software watchdog and hardware watchdog for dual-protection
- High security: supports VPN functions
- Versatility: provides various basic functions
- Efficient use: provides traffic management technology and intelligent bandwidth distribution technology
- Ease of maintenance: supports automatic remote software upgrade
- High adaptability, IP66 protection



Hardware	6	Basic Functions	•
	LTE: 3GPP	Configures the remote EMS software and browser	
Protocol	WiFi: IEEE 802.11b/g/n, 300Mbps	Supports the log recor	d function of the local machine and log server
	GD500/GD600: TDD 1.4G/1.8G GD504/GD604: TDD 400M		e, unified network management upgrade, 0X), remote upgrade (GD60X)
Frequency	GD506/GD606: TDD 600M Wi-Fi: 2.4G: 2401–2483MHz	Supports CLI debugging	
		Supports SIM and USIN	1 card
LTE Bandwidth	1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz	Supports the real-time	status display/rate chart (GD50X)
Tx Power	LTE: 23±2dBm Wi-Fi: 17±2dBm	Supports the network	clock synchronization function
Antenna	External antenna, standard configuration,3dBi isotropic	Restores to the factory	settings through the external reset button or software
Ethernet Interface	10/100M auto-sensing Quantity:5 (GD50X)/1 (GD60X)	Supports PLMN selecti	on and cell selection. Scan mode is used for the
Port	1 * RS232, 1 * RS485	cell selection. CPE can	only connect to dedicated cell when cell lock
Storage interface	1 * External Mini SD card (GD50X)	Supports the configura	ation import and exp
Dimensions (W*H*D)	233mmx26mmx113mm (GD50X)	Supports for QoS of GE	BR and Non-GBR Services
Weight	270mmx270mmx67mm (GD60X) 760g (GH50X) N.W:2.3kg,G.W:4.2kg (GD60X)	LTE link keep-alive function	Provides the ICMP heartbeat detection function Provides automatic repair technology after disconnection
Power supply	Φ2.1power plug,DC9–24V Ethernet power supply, DC9-24 V (GD60X)	Supports EMS software	Supports the SNMP protocol and the TR069 protocol or customizes EMS software
Installation mode	Rail mounted/rack-mounted/wall-mounted (GD50X) Pole-mounted (GD60X)	Network status monitoring	Monitors the network status, VPN status, and network service signal quality through the Web
Power consumption	≤6W		
Operating	Operating temperature: -25°C to 60°C (GD50X)/-40°C to 60°C (GD60X)	Firewall	Configures multiple firewall filtering rules to filter the designated IP addresses or interfaces
temperature	Storage temperature: -40°C to 85°C (GD50X/GD60X)	Route management	Configures dynamic routes and adds
Operating humidity	5%–95% No condensation	anagement	
Dust and Water Resistance	IP31 (GD50X)/IP66 (GD60X)	the applicable standar	specifications in this document are in accordance with d test. Due to the continuous technology development, specifications without timely notice.

VPN Functions

PPTP/L2TP/GRE

IPSec

Supports the certificate and pre-shared key Supports the NAT function

Supports the DPD function Supports the AES,DES, 3DES

Supports MD5-HMAC and SHA1-HMAC

Interconnects to the devices of the mainstream VPN manufactures

Supports DDNS

Supports the NAT, Multiple Host & Multiple APN functions

Supports the DHCP server

Supports the MAC address binding function

Supports the DMZ

Supports the interface mapping function

Support VLAN (GD50X)

Emergency Command Vehicle

- Professional trunking
- Diversity
- Wide coverage
- Fast deployment
- Deep customization



Product Introduction

Vehicle

Vehicle provides a secure and stable working environment for personneland equipment, featuring high integrity and mobility, including Vehicle body, Mast system, Power system, Ar-conditioning system, Monitoring system and Lightning Protection & Grounding system, Centralized control system etc.

Large-, medium and small-sized vehicles of multiple brands, such as IVECO, Benz, ISUZU and Toyota, customized to meet customer demands.

Transmission System

The satellite communication system provides reliable communication links between the vehicle and the fixed commanding centers, ensuring stable operation of communications, command and dispatch. It includes satellite ground station, vehicle-mounted satellite and backpack satellite etc.

Aside from VSAT system, the ECV supports other ways of transmission, such as optical fiber, E1, IP. and NLOS Bridge.



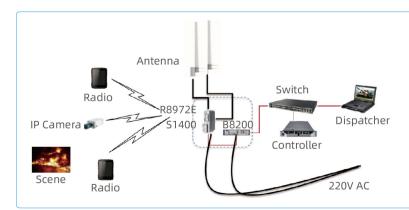


Video Transmission System

The video transmission system can transmit live video signal to the dispatching center via transmission links. It consists of inside and outside cameras, pitching telescope mast, vehicle mounted keyboard and DVR.

Video Conferencing System

Video conferencing system can implement real-time video conference with the commanding center via transmission links like satellite. It consists of HD video conferencing terminal and matrix microphone. The HD video conference terminal, integrated with PTZ camera, access to the ECV transmission system directly. And the microphone is connected to the terminal to provide video conferencing service. The whole system is simple in both connection and operation.



Communications System LTE Trunking Dispatch System

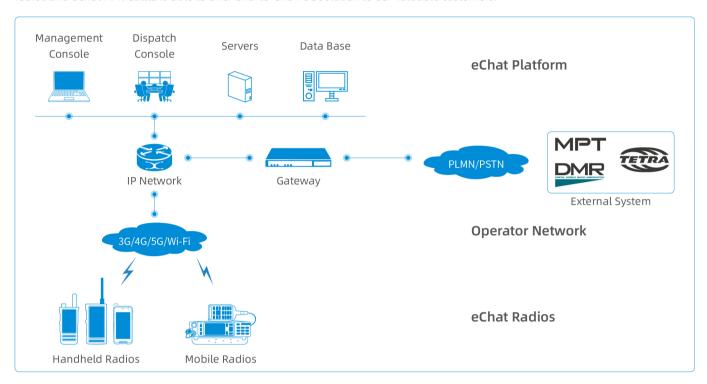
LTE Trunking System is developed by Caltta based on the 4th generation LTE technology, complying with B-TrunC standard. In addition to professional trunking services, the system provides rich applications such as multimedia trunking, video transmission and data transmission.

LTE trunking dispatch system consists of wireless base stations, unified trunking CN and terminals.

eChat PoC System

The eChat System is an advanced PoC (Push-to-talk over Cellular) platform that supports a variety of features and functions. eChat utilizes the carrier's 3G/4G/5G/Wi-Fi infrastructure to provide wide coverage and unlimited channels, to free customers from the small coverage and limited capacity of traditional PTT net works.

Caltta's eChat worldwide PoC communication solution consists of eChat server, dispatching console, management console, eChat radios and eChat APP. Caltta is able to offer end-to-end PoC solution to our valuable customers.



Highlights

Multiple Services

Voice, location, messaging, recording, video, geofence and more.

Easy Deployment

Operation from one server with optional back up. Supports remote configuration.

Flexible Migration

Easy migration to next level eChat solutions.

High-level Security

Uses private control signalling and EVRC codec. Three phase Radio anthentication (IMEI, ICCID and Account).

PoC to DMR Inconnection

Gateway interface allows interconnection between PoC units and Caltta DMR systems.



Dispatch Console

eChat dispatch console is a professional and powerful PoC dispatching software. The C/S architecture design makes it easy to install. Its professional dispatching interface and multi-lingual support greatly facilitate user's operation.

- Support multi-screen display for different services, improving user's command and dispatch efficiency
- Provide instant PTT group or private call between dispatcher and eChat radios. Dispatcher can also create a dynamic group based on radio's location, to improve dispatching efficiency
- Support abundant services including voice call, video,SMS, positioning, recording and so on, meeting the diverse needs of users from different industries
- Emergency call, lone worker, geofence and other ser vices can ensure user safety by receiving information instantly when users are in danger



Applications

eChat is a PTT system based on the public network, which has the advantages of wide coverage, low investment, rapid deployment, easy operation and reduced OPEX. It has been utilized commercially in diverse industries such as transportation, logistics, city management, and utilities:



Security company



City management



Property management



Rail transit



Port & Airport



Taxi company







Logistics



Healthcare

e600

eChat PoC Radio

- Professional Industrial Design
- Multiple Public Networks
- Long Battery Life
- Crystal Clear Voice
- Rich Functions
- IP68 Protection



General	9
Protocol	LTE/WCDMA/GSM
Frequency	LTE TDD: B38/B39/B40/B41 LTE FDD: B1/B3/B5/B7/B8/B20 WCDMA: B1/B8 GSM: B3/B8
Size (H x W x D)	101×54.5×38.5mm
Weight About	240g
Battery Capacity	5100mAh@3.7V
Key	PTT, Fn key × 1, power, SOS, volume knob, channel knob
Interface	18-pin (Data / Audio)
Indicator	Red / Green
OS	Deeply customized Android 8
Chipset	Quad A7 Processor
Memory (RAM+ROM)	512MB + 4GB
Bluetooth	Support
WLAN	Wi-Fi 802.11b/g/n, 2.4G
Location	Support GPS/AGPS
Man Down	Support
Speaker	36mm front speaker
Max Audio Power	2.0W
Card Slot	Nano SIM×1, TF×1
Charging	Desktop Charger/Cable Charger

Environmental		•
Operating Temperature	-20°C — +55°C	
Storage Temperature	-30°C — +70°C	
ESD	IEC 61000-4-2 (level 3) \pm 6kV (Contact) \pm 8kV(Air)	
Dust and Water Resistance	IP68	
Reliability	MIL - STD - 810H	

e690

eChat PoC Radio

- Professional Industrial Design
- Rugged Quality
- HD Color Screen
- Crystal Clear Voice
- Long Battery Life
- Rich Functions



General	•
Protocol	LTE/WCDMA/GSM
Frequency	LTE TDD: B38/B39/B40/B41 LTE FDD: B1/B3/B5/B7/B8/B20 WCDMA: B1/B8 GSM: B3/B8
Size (H x W x D)	126.5×54.5×36mm
Weight About	280g
Screen	2.0-inch LCD, 240×320
Battery Capacity	5100mAh@3.7V
Key	PTT, Fn key × 1, power, SOS, volume knob, channel knob, keypad
Interface	18-pin (Data / Audio)
Indicator	Red / Green
OS	Deeply customized Android 8
Chipset	Quad A7 Processor
Memory (RAM+ROM)	1GB+8GB
Bluetooth	Support
WLAN	Wi-Fi 802.11b/g/n, 2.4G
Location	Support GPS/AGPS
Man Down	Support
Speaker	36mm front speaker
Max Audio Power	2.0W
Card Slot	Nano SIM×1, TF×1
Charging	Desktop Charger/Cable Charger

Environmental		0
Operating Temperature	-20°C — +55°C	
Storage Temperature	-30°C — +70°C	
ESD	IEC 61000-4-2 (level 3) \pm 6kV (Contact) \pm 8kV(Air)	
Dust and Water Resistance	IP68	
Reliability	MIL - STD - 810H	

e720

eChat PoC Radio

- Smart OS
- Rugged Quality
- HD Touch Screen
- Thin and Portable
- Rich Functions
- Crystal Clear Voice
- Long Battery Life



General	6
Protocol	LTE/WCDMA/GSM
Frequency	LTE TDD: B38/B39/B40/B41 LTE FDD: B1/B2/B3/B4/B5/B7/B8/B20/B26/B28A/B28B WCDMA: B1/B8 GSM:B3/B8
VolTE	Support
Size (H x W x D)	141.8 x 70 x 20mm (without antenna)
Weight About	260g
Screen	4.7-inch LCD, 1280x720, support Glove Touch
Battery	4100mAh, 3.8V, replaceable
Key	PTT, power, volume key x 2, programmable key x 2, SOS
Interface	USB Type-C (Data/ Audio/Charging)
OS	Deeply customized Android 11
Chipset	8-core A53 Processor
Memory (RAM+ROM)	4GB+64GB
Bluetooth	BT4.2
WLAN	Wi-Fi 802.11b/g/n, 2.4G/5G, support Wi-Fi hotspot
NFC	Support 13.56M card reader
Location	GPS/AGPS
Speaker	Front professional diaphragm speaker, max 2.5W
MIC	Dual MIC with noise suppression
Sensor	Gravity, Gyroscope, Geomagnetic, Proximity, Light
OTG	Support, extendable for USB drive-free camera and other devices
Charging	USB Type-C, desktop charger (optional)
Vibration	Support
Card Slot	NANO SIMx2, TFx1

Environmental		•
Operating Temperature	-20°C — +60°C	
Storage Temperature	-40°C — +85°C	
ESD	IEC 61000-4-2 (level 3) \pm 6kV (Contact) \pm 8kV(Air)	
Dust and Water Resistance	IP68	
Reliability	MIL - STD - 810H	

DMR Accessories

Antenna								0
	AF940	AF900	AF810	AF701	AF702	AF703	AF704	
84! - !					,	,	,	
Model								
		3	3	3	9	8	a	
Frequency	UHF1 (400-470MHz) Explosion-proof	UHF1 (400-470MHz)	UHF1 (400-470MHz)	VHF (136-150MHz	VHF (150-162MHz)	VHF (162-174MHz)	VHF (144-158MHz)	
Length	9cm	9cm	9cm	16cm	16cm	16cm	16cm	
Match	PH9XXEx	GH900	PH890/Z9	PH700/790	PH700/790	PH700/790	PH700/790	
	AF711	AF730	AF605	AF606	AF607	AF608	AF610	AF611
Model	5							
Frequency	VHF (400-470MHz)	VHF (350-400MHz)	VHF (136-145MHz)	VHF (144-154MHz)	VHF (153-164MHz)	VHF (163-174MHz)	UHF1 (400-470MHz)	UHF1 (400-470MHz)
Length	9cm	9cm	16cm	16cm	16cm	16cm	9cm	9cm
Match	PH700/790	PH700/790	PH600/660/690	PH600/660/690	PH600/660/690	PH600/660/690	PH690	PH600/660
	AF632	AF590	AF504	AF505	AF506	AF507	AF410	AF430
Model								
Frequency	UHF3 (350-400MHz)	UHF1 (400-470MHz)	VHF (136-145MHz)	VHF (144-154MHz)	VHF (153-164MHz)	VHF (163-174MHz)	UHF1 (400-470MHz)	UHF3 (350-400MHz)
Length	9cm	16cm						
Match	PH600/660/690	DH4XX/DH5XX	DH4XX/DH5XX	DH4XX/DH5XX	DH4XX/DH5XX	DH4XX/DH5XX	DH4XX	DH4XX
	AF681	AF682	AF683	AF684	AF685	AF686	AF687	FRP Antenna
Model						61		
Frequency	UHF3 (350-370MHz)	UHF3 (366-386MHz)	UHF1 (403-423MHz)	VHF (136-146MHz)	VHF (145-155MHz)	VHF (154-164MHz)	VHF (164-174MHz)	Customized
Length	50cm	50cm	50cm	70cm	70cm	70cm	70cm	Customized
Match	PR680 SmartLink600	PR680 SmartLink600	PR680 SmartLink600	PR680 SmartLink600	PR680 SmartLink600	PR680 SmartLink600	PR680 SmartLink600	PR680 SmartLink600
	AF760	AF761	AF762	AF763	AF764	AF765	AF780	AF781
Model	250		250					
Frequency	UHF1 (400-420MHz)	UHF1 (410-430MHz)	UHF1 (420-440MHz)	UHF1 (430-450MHz)	UHF1 (440-460MHz)	UHF1 (450-470MHz)	UHF3 (350-370MHz)	UHF3 (370-390MHz)
Length	50cm	50cm	50cm	50cm	50cm	50cm	50cm	50cm
Match	PM790	PM790	PM790	PM790	PM790	PM790	PM790	PM790

	AF790	AF791	AF792	AF793	AF794	AF795	AF796	
Model			00	49			00	
Frequency	UHF3 (352-368MHz)	M90 Magnet Antenna Base BNC + SL16	M110 Magnet Antenna Base BNC + SL16	GPS Antenna SMA	M90 Magnet Antenna Base BNC + SL16	M110 Magnet Antenna Base BNC + SL16	M110 Magnet Antenna Base BNC + SL16	
Length	100cm	3m	3m	3m	5cm	15cm	5cm	
Match Model	PM790	PM790	PM790	PM790	PM790	PM790	PM790	

Programin	g Cable							•
	AP100	AP200	AP302	AP340	AP342	AP351	AP390	TP-3 (TY94/RJ45)
Model	Ø	Q		0	6	5	0	
Interface	17pin to USB	10pin to USB	Rear 18pin to USB	18pin to USB	18pin to USB + UART	18pin to UART	18pin to USB Explosion-proof	9pin to Ether
Match	PH7XX	PM790	PR680 SmartLink600	GH900/Z9 PH890/PH6XX	GH900/Z9/PH890 PH6XX/DH5XX DH4XX	DH4XX/DH5XX	PH9XXEx	PR680 SmartLink600 SmartLink580

Power Ada	Power Adapter and Charger											
	AC700	AC702Ex	AC961	AC960	AM900	AC100	AC683	AC200				
Model	Cost		.001	and the last ten	8		CORD 11					
Туре	Single-unit Charger	Explosion-proof Single-unit Charger	Single-unit Charger	8-Way Charger	Fix Station Power Supply	AC Power Adapter	AC Power Adapter	DC Power Cord				
Match	Z9/PH890/PH7 PM7/PH6/DH5/DH4	PH9/PH6/GH900 Z9/PH890/PH7 DH5/DH4	GH960	Z9/PH890/PH7XX PM790/PH6XX DH5XX/DH4XX	PM790	PH9XXEx/Z9 PH890/PH7XX PM790/PH6XX DH5XX/DH4XX	PR680 SmartLink600 SmartLink580	PM790				

Audio								0
	AA901	AA940	AA950	AA960	AA970	AA972	AA973	
Model	9		6 0		-00		9	
Product Description	II C Explosion- proof C-Style Earpiece	II C Explosion- proof PTT Controller	IIC Explosion-proof Remote Speaker Microphone	IIC Explosion-proof Multi-function Remote Speaker Microphone	IIC Explosion-proof Throat Vibration Earpiece	IIC Explosion-proof Bone Conduction Headphone	IIC Explosion-proof Noise Reduction Headphone	
Match				PH9	XXEx			
	AA100	AA110	AA111	AA112	AA300	AA305	AA610	AA612
Model	10	9		69		NE		
Product Description	C-Style Earpiece	Transparent Acoustic Tube Earpiece	G-Style Earpiece	D-Style Earpiece	Remote Speaker Microphone	Remote Speaker Microphone With 3.5mm Audio Jack	Receive-Only G-Style Earpiece	Receive-Only Transparent Acoustic Tube Earpiece
Match				PH	7XX			

	AA200	AA210	AA211	AA212	AA250	AA255	AA230	
Model	9	Q.		60				
Product Description	C-Style Earpiece	Transparent Acoustic Tube Earpiece	G-Style Earpiece	D-Style Earpiece	Remote Speaker Microphone	Remote Speaker Microphone With 3.5mm Audio Jack	Remote Speaker Microphone	
Match		GH900/Z9/PH890/P	H6XX/DH5XX/DH4XX		GH900/Z9/PH890/PH6XX		DH5XX/DH4XX	
	AA180	AH300	AA303	AA340	AA380	AA410	AA420	AA480
Model	R		100				do	
Product Description	Bluetooth Earphone	Bluetooth PTT Controller	C-Style Earpiece	Remote Speaker Microphone without Screen	Remote Speaker Microphone with Screen	Remote Microphone withFull Keypad	Desktop Microphone	Remote Speaker Microphone with Screen
Match		GH900/Z9 PH890/PH7XX/PH6XX		PR680 SmartLink600		PM790		SmartLink580

Battery								•
	AB993	AB961	AB950	AB900	AB750	AB700	AB660	AB610
Model	Ī					1666	3.45	
Battery Capacity	Li-ion IIC Explosion-proof 1960mAh@7.4V	Li-Poly Battery 2500mAh@7.7V	Li-ion Battery 1500mAh@7.4V	Li-Poly Battery 4000mAh@7.6V	Li-ion Battery 3200mAh@7.4V	Li-ion Battery 2000mAh@7.4V	Li-ion Battery 2600mAh@7.4V	Li-ion Battery 2000mAh@7.4V
Match	PH9XXEx	GH960	Z9	GH900	PH:	7XX	PH890	PH6XX
	AB591	AB681						
Model	9550	0 0						
Battery Capacity	Li-ion Battery 2500mAh@7.4V	Li-ion Battery 236Wh@14.8V						
Match	DH5XX/DH4XX	PR680 SmartLink600						

Carrying						0
	AD210	AD220	AD240			
Model						
Type	Belt Clip	Belt Clip	Rotatable Belt Clip			
Match	PH9XXEx	PH9XXEx DH5XX/DH4XX	DH5XX/DH4XX			

eChat Accessories

Antenna							0
	AF290						
Mandal							
Model							
	•						
Frequency	B1/B3/B5 B7/B8/B20						
Length	4CM						
Match	e600/e690						
Audio							•
	AA500	AA200	AA210	AA211	AA212		
Model	(D)	9		20	00		
Product Description	G-Style Earpiece	C-Style Earpiece	Transparent Acoustic Tube Earpiece	G-Style Earpiece	D-Style Earpiece		
Match	e720		·	/e690			
Pattery							
Battery	AB260	AB720					Ψ.
	AB200	AB720					
Model	5520						
Battery Capacity	Li-ion Battery 5100mAh@3.7V	Li-Poly Battery 4100mAh@3.85V					
Match	e600/e690	e720					
Power Ada	pter and Charg	er					0
1 owel 7 da	AC351	AC260	AC720	AC960			
Model		Conf	Cars	THE REAL PROPERTY.			
Туре	USB Charger (EU)	Desktop Charger	Desktop Charger	8-way Charger			
Match	e600/e690 e720	e600/e690	e720	e600/e690			
Carrying							9
	AD240	AD210	AD220				
Model							
	n	4					
Туре	Rotatable Belt Clip	Belt Clip	Belt Clip				
Match	e690/e720	e600	e690/e720				
Programm							0
	AP720	AP350	AP690				
Model			Q				
Туре	Type-A to Type-C	Type-A to Type-C	18pin to Type-A				
Match	e720	e600/690	e600/690				

LTE Accessories

Antenna							0
	AF880	AF860	AF650	AF654	AF656		
Model		0	4				
Frequency	1.4G/1.8G/400M	1.4G/1.8G	1.4G/1.8G/400M	336-346MHz 380-470MHz	566-626MHz 638-678MHz		
Length	9cm	6cm	9cm	16cm	16cm		
Match	GH880	GH860	GH650	GH880/GH650	GH880/GH650		

Audio								0	
	AA100	AA110	AA111	AA112	AA200	AA210	AA211	AA212	
Model	7 P	9		6	9			60	
Product Description	C-Style Earpiece	Transparent Acoustic Tube Earpiece	G-Style Earpiece	D-Style Earpiece	C-Style Earpiece	Transparent Acoustic Tube Earpiece	G-Style Earpiece	D-Style Earpiece	
Match		G	H65X		GH860				
	AA303	AA340	AA400	AA420					
Model	100			Jo					
Product Description	C-Style Earpiece	Remote Speaker Microphone without Screen	Remote Microphone with Full Keypad	Desktop Microphone					
Match	GH	800	GHM	165X					

Battery						0
	AB880	AB860	AB750	AB700		
Model		Tin tin				
Battery Capacity	Li-Poly Battery 4500mAh@3.85V	Li-ion Battery 4400mAh@3.85V	Li-ion Battery 3200mAh@7.4V	Li-ion Battery 2000mAh@7.4V		
Match	GH880	GH860	GH	65X		

Carrying						•
	AD210	AD220	AD240			
Model						
Туре	Belt Clip	Belt Clip	Rotatable Belt Clip			
Match	GH880/GH65X	GH	860			

Power Adapter and Charger											
	AC960	AC810	AC860	AC700	AC201						
Model	san fan fan 'e		To the state of th		***						
Туре	8-way Charger	Single-unit Charger	Single-unit Charger	Single-unit Charger	DC Power Cord						
Match	GH860/GH65X	GH880	GH860	GH65X	GM65X						

Programing Cable										
	AP100	AP200	AP300	AP301						
Model	O	Q								
Туре	17pin to USB	10pin to USB	Rear 18pin to USB	18pin to USB						
Match	GH65X	GM65X	GH880	GH860						



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