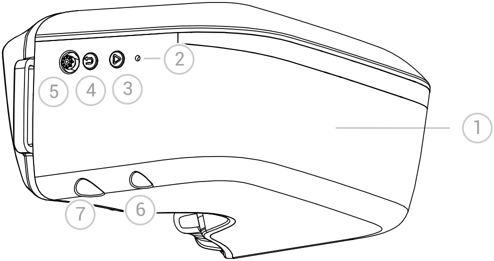
AVATAR GOGGLES L

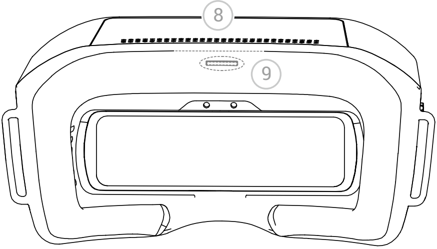
Quick Start Guide

V1.1

Introduction

This product is a wireless image transmission head-mounted display device, compatible with Avatar HD System series air unit products, and can achieve long-distance, low-latency, high-definition wireless image transmission. In the document, the terms VTX, Air unit, etc. refer to Avatar image transmission camera products. In the document, the terms VRX, Goggles, etc. refer to Avatar image transmission display products.





1: Built-in Antenna
2: Link Button
(Short press to enter the linking state, long press for 8 seconds to enter the upgrade state)
3: Record Button
(Press to start or stop video recording)
4: Back Button
(Press to return to the previous menu or exit the current mode)
5: 5D Button
(Toggle the button to scroll through the menu. Press the button to confirm)
6: 3.5mm Port
7: Power Port
(Voltage range: 6V-25.2V, DC 5.5*2.1)
8: Heat dissipation outlet
9: Micro SD Card Slot

Linking

1. Connect the VTX and the power of the Goggles.
2. Press the link button of the VTX and Goggles respectively (as shown in the picture), when the VTX enters the pairing state The indicator light turns red, and the Goggles end is a DI... DI... DI...
3. After the link is successful, the indicator light on the VTX turns solid green, the beeping sound on the Goggles stops and the screen is displayed.

Upgrade

Please go to the official website to download the upgrade firmware, AvatarLite_Gnd_X.X.X.img is the Goggles file, copy it to the SD card, be careful not to change the file name.

1. Copy the upgrade file to the root directory of the SD card, connect to the power supply and wait for the device to initialize (delete the old firmware file first if there in one).
2. Press and hold the link button on the Goggles for 8 seconds, and the Goggles automatically restart and emit a beep...beep...beeper sound. (Do not power off during the upgrade process, the upgrade time on the goggle is about 6 minutes)
3. After the upgrade is successful,and the beeping sound stops after the Goggles beeps for 5 seconds.

Status indication

Goggles Buzzer Status	
Link state	DI.... DI.... DI.... DI....
Upgrade firmware	DI...... DI...... DI...... DI——
Upgrade failed (No SD card or firmware detected)	DI.. DI.. DI.. DI..
Boot failure (Reboot or re–upgrade)	DI.. DI...... DI.. DI......

Operating channel

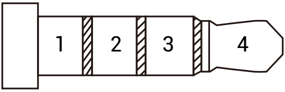
Central frequency(MHz)	Channel1	Channel2	Channel3	Channel4	Channel5	Channel6	Channel7	Channel8
FCC	5660	5695	5735	5770	5805	5878	5914	5839
CE/SRRC	5735	5770	5805	-	-	-	-	5839
MIC	5665	5705	-	-	-	-	-	5750

Make sure you fully understand and abide by local laws and regulations before using this product. An amateur radio license may be needed in FCC regions when using channels 1,2,6or 7, as they are amateur frequency bands. Users who use the amateur frequency bands with a modified or cracked version or without a license may be punished for breaking local laws or regulations.

Precautions

1. This is a sophisticated product. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property. It must be operated with caution and common sense and requires some basic mechanical knowledge.
2. The transmit power of VTX and Goggles is only 10mW when the standby mode is on.
3. There are up to eight channels for the goggles depending on the region (FCC: eight, CE/SRRC: four, MIC: three). Each channel has a bandwidth of 20 MHz. The public channel is 8, which is the default channel when the equipment is powered on. The channel can be changed manually to avoid interference from other devices.
4. It is recommended to upgrade VTX and Goggles to the latest firmware before first use.

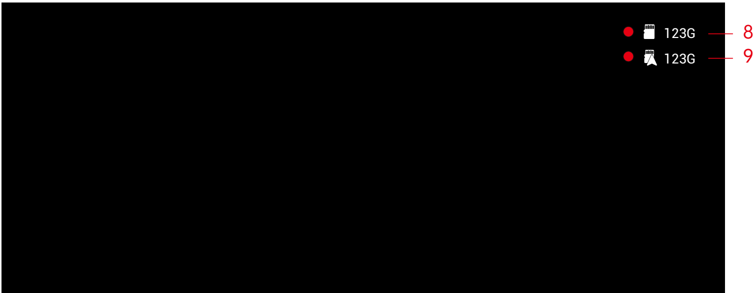
3.5mm Port Definition

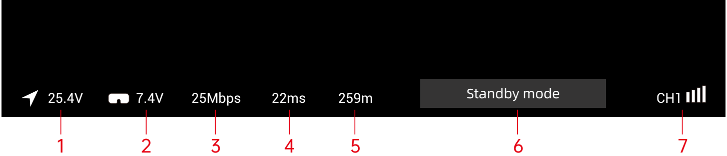


1. GND
2. NC
3. Head tracking upgrade port
4. PPM (Head tracking output)

Software interface

Main interface-1





1-VTX input voltage:

Detect VTX voltage, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, and alarm in red font when the voltage is too low.

2-Goggles input voltage:

Detect Goggles low battery alarm, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, red font and buzzer alarm when the voltage is too low.

3-Real-time bit rate

Display real–time transmission code rate, two display modes of 25.0Mbps and 50.0Mbps.

4-Time delay:

Displays the total delay from the transmission of images captured by the VTX camera to the ground end.

5-Ranging mode:

The function of calculating the transmission distance from Goggles to VTX according to the wireless transmission delay, the signal is interfered will lead to error amplification。

6-Status prompt:

The text prompts information that needs attention in the current state.

7-Current channel:

Display the current setting channel, the signal grid has 5 states, 4 grids, 3 grids, 2 grids, 1 grid, and blank.

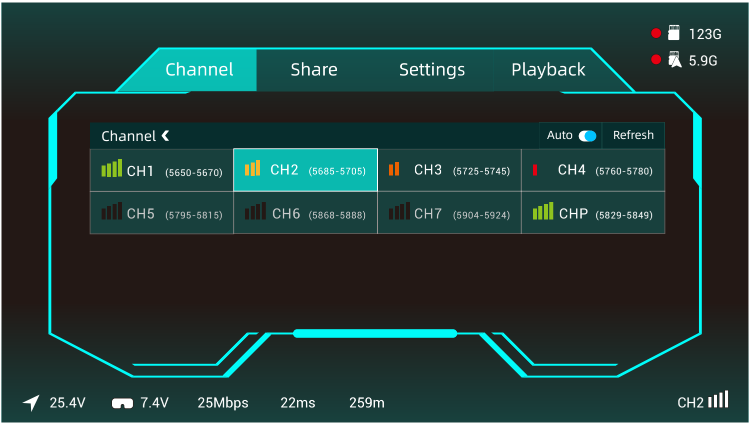
8-Goggles SD card status:

Display the status and remaining capacity of the Goggles SD card. When recording, the red circle flashes to prompt, the status of the SD card not detected is displayed as NO SD, and the status of the memory is full is displayed as –.

9-VTX storage status:

Display the status and remaining capacity of the VTX storage, When recording, the red circle flashes to prompt, the status of the storage not detected is displayed as NO SD, and the status of the memory is full is displayed as –.

Menu Channel-2

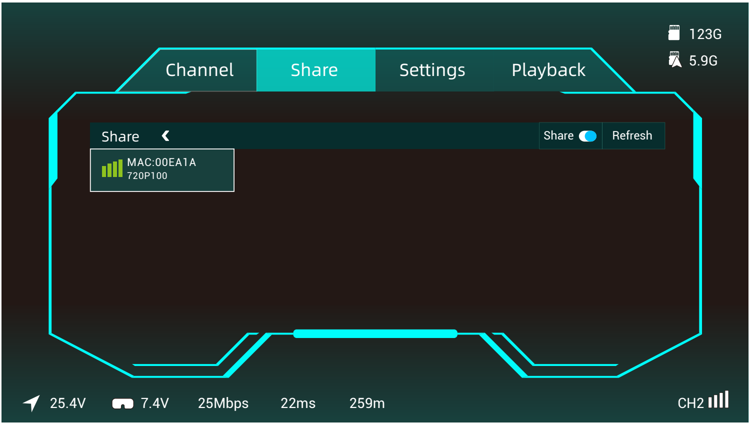


1、Display the interference situation of each channel. The signal strength is divided into 4 grids, 3 grids, 2 grids, 1 grid, and a space. The signal display space is occupied and cannot be selected. The white stroke is the selection box. Press the middle button to confirm the current channel and highlight it.

2、 Channel working logic: When switching between standard bit rate and high bit rate, the current channel will be set to CHP, and the channel needs to be reselected. CHP is a public channel, which is easy to be interfered and is not recommended for flight work; Auto is a channel that automatically refreshes the signal interference situation of all channels; Refresh is the channel of manual refresh.

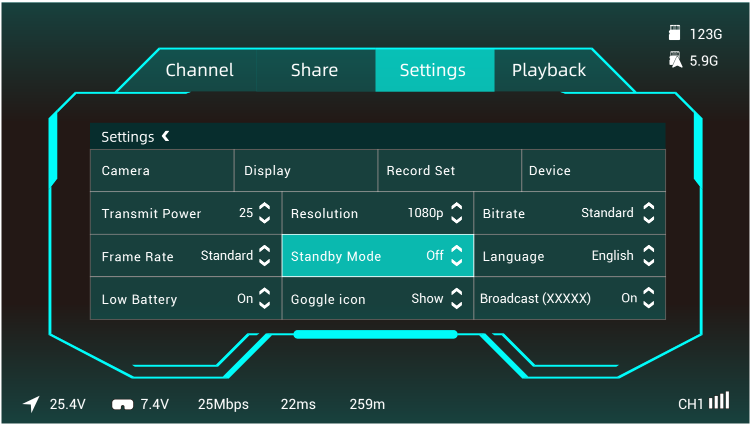
3、Channel display of each country: FCC standard displays 8 channels (CH1/2/3/4/5/6/7/P), CE/SRRC standard displays 4 channels (CH1/2/3/P), MIC standard displays 3 channels (CH1/2/P). Only in FCC mode, the high bit rate mode can be turned on, and the 8 channels become 4 channels CH1, CH2, CH3, CHP.

Share Channel-3



1、When the broadcast option is turned on in the menu settings Broadcast (XXXXX) On , The VTX unique ID number is in brackets, Other Avatar VRX devices can receive the local image transmission through share mode.

Menu Settings-4



Transmit Power 25
Resolution 1080p
Bitrate Standard
Frame Rate Standard
Standby Mode Off
Language English
Low Battery On
Goggle icon Show
Broadcast (XXXXX) On

1-Camera:

The adjustable contents of the camera are scene preset, EV value, saturation, sharpness, white balance, rotate, ratio, 3D DNR, Shutter, and Max ISOsettings.

2-Display:

Display adjustable content is Debug, brightness, focalization mode, custom OSD, OSD position, font upgrade, custom font, viewfinder, viewfinder edit settings.

3-Record set:

The recording can be adjusted as VTX REC resolution, REC device, takeoff REC, REC loop, format SD card, format VTX, Built-in EIS, REC Time, REC Format, Color, Saturation, Sharpness.

4-Device:

The adjustable contents of the device are buzzer volume, Ranging mode, Weak signal, Reset all, Device information, Instruction, and Switch mode.

5-Transmit Power:

The default transmit power can be 25mW, 200mW, 500mW, 700mW.

6-Resolution:

The resolution can choose 720P and 1080P.

7-Bitrate:

Standard bit rate and high bit rate can be selected to obtain different image quality, and high bit rate can only be enabled in FCC mode.

8-Frame Rate:

The standard frame rate is equal to 60fps.

9-Standby Mode:

When in standby mode, the transmission power of VTX terminal and Goggles terminal is 10dbm, and the current set transmission power will be output only after exiting standby mode or turning off the standby mode switch. Turning on the standby mode requires the air unit serial port to be correctly connected to the flight controller. When the goggles receive the drone's unlock signal, it will automatically exit the standby mode. If there is no flight controller support, you can choose to turn off this function.

10-Language:

Language switching English/中文.

11-Low Battery:

Detect Goggles low battery alarm, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, red font and buzzer alarm when the voltage is too low.

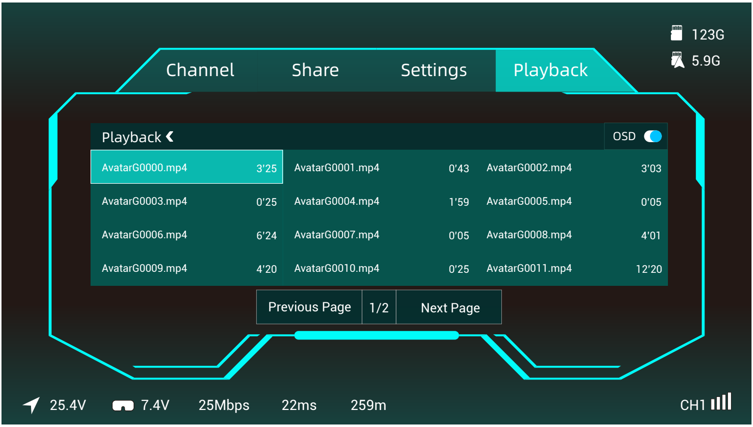
12-Goggle icon:

You can choose to display or hide the icons on the main menu interface.

13-Broadcast:

After turning on the broadcast switch, others can receive your video transmission through the Avatar system, The 6 characters in brackets are the unique identification number of VTX.

Menu Playback-5



AvatarG0000.mp4	3'25	AvatarG0001.mp4	0'43	AvatarG0002.mp4	3'03
AvatarG0003.mp4	0'25	AvatarG0004.mp4	1'59	AvatarG0005.mp4	0'05
AvatarG0006.mp4	6'24	AvatarG0007.mp4	0'05	AvatarG0008.mp4	4'01
AvatarG0009.mp4	4'20	AvatarG0010.mp4	0'25	AvatarG0011.mp4	12'20

1、The OSD switch can be turned on or off. When it is turned on, the flight control OSD information (if any) and the flight information of the main interface will be superimposed on the playing video interface. When the selection box stays in the video list, press and hold the Goggles confirmation key to open the multi-selection function, and the menu box will display function settings (delete, select all) , cancel), press the return key again to exit the multi-selection mode.

2、On the playback interface, click the middle button to pause/play, and the left and right arrow keys to adjust rewind/fast forward

Specifications

Name	Goggles L
Communication Frequency	5.725–5.850GHz
Transmitter Power(EIRP)	FCC:<30dBm; CE:<14dBm; SRRC:<20dBm; MIC:<25dBm
I/O Interface	4Pin 3.5mm Plug, DC5.5*2.1mm Micro SD Card Slot,
Gyro	Nine–axis gyroscope
Transmission Resolution	1080p60fps, 720p60fps
Code Rate	Max 50 Mbps
Min. Latency	Average 32ms
Average Gain	4.9dBi
Polarization	LHCP
Transmission Distance	＞4km
Channel	8
Screen Resolution	1920*1080/60Hz
Screen Material	LCD
Screen Size	4.5 Inch
Power Input	6V–25.2V(2S–6S)
SD card	Support 256G
System	Avatar HD system

CADDXFPV SUPPORT
email: support@caddxfpv.com

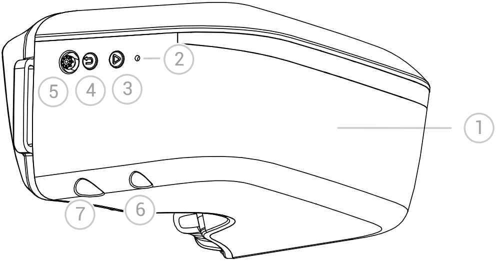
AVATAR GOGGLES L

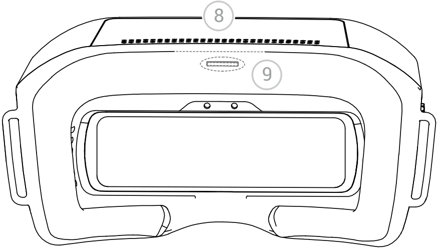
快速入门指南

V1.1

简介

该产品为无线图像传输头戴显示设备，兼容 Avatar HD System 系列天空端产品，可实现远距离低延时高清无线图像传输，文档中描述：VTX、发射端、天空端等词汇代指 Avatar 图传摄像头端产品，文档中描述：VRX、接收端、眼镜端等词汇代指 Avatar 图传显示端产品。





1: 内置天线
2: 对频键
（短按进入对频状态，长按8秒进入升级状态）
3: 录制键
（按下可开始/暂停录像）
4: 返回键
（按下可返回上一级菜单或当前模式）
5: 五维按键
（上下左右控制菜单选择框方向，按下为确认或取消选择）
6: 3.5mm 接口
7: 电源接口
（电压范围: 6V–25.2V，DC 5.5*2.1）
8: 散热口
9: Micro SD卡槽

对频

1. 连接眼镜和 VTX 天空端电源。
2. 等待设备启机后，分别按下眼镜和 VTX 天空端对频按钮，当进入配对状态时，VTX 指示灯变为红色，眼镜端发出滴... 滴... 滴...蜂鸣器提示。
3. 对频成功后，VTX 上的指示灯变为绿色常亮，眼镜蜂鸣器停止并显示图传画面。

升级

请到官网下载最新升级固件，AvatarLite_Gnd_X.X.X.img 对应眼镜端升级固件，拷贝到眼镜端 SD 卡中，注意请勿修改文件名。

1. 将升级文件复制到眼镜端SD 卡的根目录下，连接电源并等待设备启机（如果有，请先删除旧固件文件）。
2. 长按眼镜端对频按钮 8 秒后蜂鸣器长响一秒后松开，等待设备自动重启后发出蜂鸣器提示音滴……滴……滴……(升级时间大约为6分钟，中途请勿断电)
3. 升级成功后，眼镜端蜂鸣器长响5秒后停止并自动重启。

状态指示

眼镜蜂鸣器状态	
对频状态	滴.... 滴.... 滴.... 滴....
升级固件	滴...... 滴...... 滴...... 滴——
升级失败（未检测到SD卡或固件）	滴.. 滴.. 滴.. 滴..
启机失败（重启或重刷固件）	滴.. 滴...... 滴.. 滴......

工作频道

Central frequency(MHz)	Channel1	Channel2	Channel3	Channel4	Channel5	Channel6	Channel7	Channel8
FCC	5660	5695	5735	5770	5805	5878	5914	5839
CE/SRRC	5735	5770	5805	-	-	-	-	5839
MIC	5665	5705	-	-	-	-	-	5750

使用本产品前，请确保您充分了解并遵守当地法律法规。在 FCC 地区使用 1、2、6 或 7 频道时可能需要业余无线电许可证，因为它们是业余频段。使用修改或破解版本或未经许可使用业余频段的用户可能会因违反当地法律或法规而受到处罚。

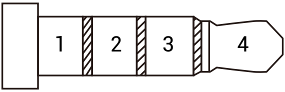
注意事项

1. 该产品使用较为复杂，使用者需具备基本的动手能力以及安全常识，并且需要小心使用。
2. 待机模式开启且飞行器未解锁 VTX 和眼镜发射功率受限于10mW。
3. 眼镜最多支持8 个带宽为20 MHz 的频道（根据地区有所不同，FCC: 8，CE/SRRC: 4，MIC: 3）。其中CHP为公共频道，设备开启后会先进入该频道，

用户可手动选择其他工作频道以避免设备间的干扰。

4. 首次使用建议将 VTX 和眼镜升级到最新固件。

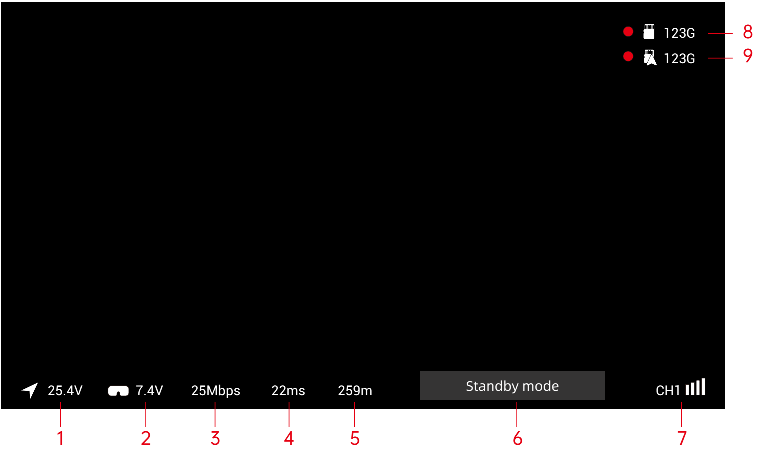
AV-IN 端口定义



1. GND
2. NC
3. 头部追踪升级口
4. PPM（头部跟踪输出）

软件界面

主界面-1


123G
8
123G
9
25.4V
7.4V
25Mbps
22ms
259m
Standby mode
CH1
1
2
3
4
5
6
7

1-天空端输入电压

显示天空端供电电压，智能识别2、3、4、6串LiPo电芯电压，单片电芯低于3.5V红色字体报警提示。

2-地面端输入电压：

显示眼镜供电电压，智能识别2、3、4、6串LiPo电芯电压，单片电芯低于3.5V红色字体和蜂鸣器报警提示。

3-实时码率

显示实时传输码率单位Mbps，25.0Mbps和50.0Mbps两种显示模式。

4-图传延迟:

显示从发射端相机采集图像传输至地面端的总延时。

5-测距功能:

依据无线传输延时计算接收端至发射端传输距离功能，信号被干扰会导致误差放大。

6-状态提示:

文字提示当前需注意的状态提示。

7-当前频道:

显示当前设置频道，信号格共5种状态，4格、3格、2格、1格、空格。

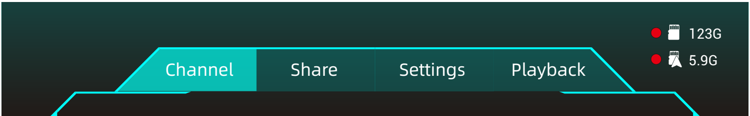
8-地面端SD卡状态:

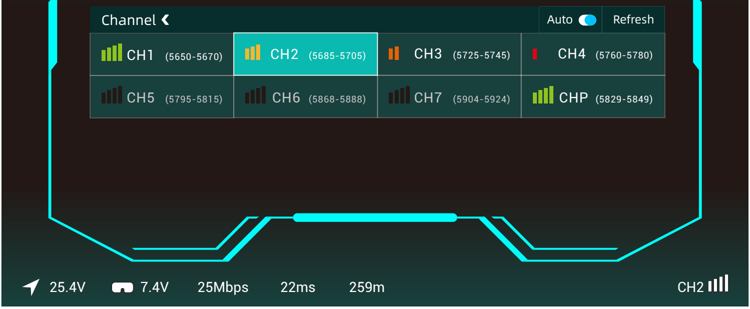
显示眼镜内存卡状态及剩余容量，录像时红圈闪烁提示，不在录制状态不显示红圈，检测不到SD卡状态显示为NO SD，卡满状态显示为–。

9-天空端内存状态:

显示天空端内存状态及剩余容量，录像时红圈闪烁提示，不在录制状态不显示红圈，检测不到内存状态显示为NO SD，卡满状态显示为–。

菜单频道-2


Channel
Share
Settings
Playback
123G
5.9G

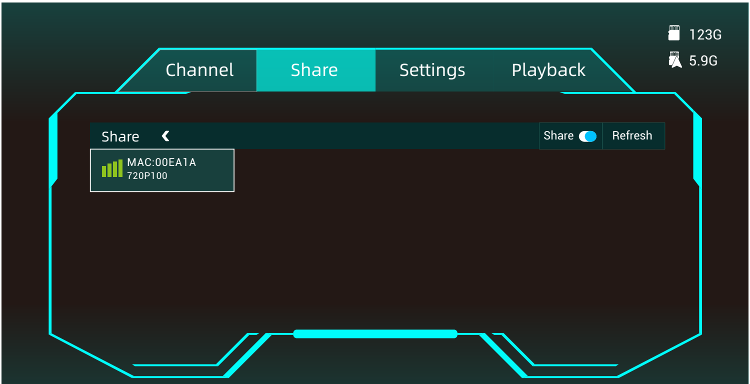

Channel
Auto
Refresh
CH1 (5650-5670)
CH2 (5685-5705)
CH3 (5725-5745)
CH4 (5760-5780)
CH5 (5795-5815)
CH6 (5868-5888)
CH7 (5904-5924)
CHP (5829-5849)
25.4V
7.4V
25Mbps
22ms
259m
CH2

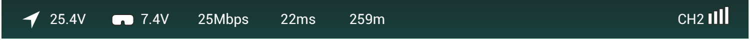
1、显示各频道的干扰情况，信号强度分为4格、3格、2格、1格、空格，信号显示空格为已被占用不可选，白色描边为选择框，按下确认键高亮显示，高亮显示为当前频道。

2、频道工作逻辑，标准码率和高码率切换时会将当前频道设置为 CHP 需重新选择频道，CHP 为公共频道容易被干扰不建议飞行工作使用，Auto 开关为自动刷新全频道信号干扰情况，Refresh 为手动刷新。

3、各国家频道显示，FCC 标准显示8个频道(CH1/2/3/4/5/6/7/P)，CE/SRRC 标准显示 4个(CH1/2/3/P)，MIC 标准显示3个(CH1/2/P)。仅限 FCC 模式可开启高码率模式，且8个频道变成4频道 CH1、CH2、CH3、CHP。

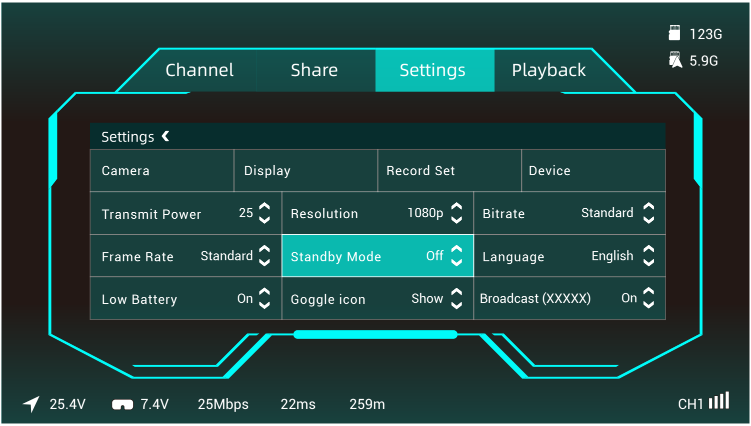
分享频道-3


123G
5.9G
Channel
Share
Settings
Playback
Share
Share
Refresh
MAC:00EA1A
720P100


25.4V
7.4V
25Mbps
22ms
259m
CH2

1、在菜单设置中开启广播选项时 广播 (XXXXX) On ，括号内是 VTX 唯一ID号码，其他 Avatar 地面端设备可以通过分享模式接收到本机的图传画面。

菜单设置-4


123G
5.9G
Channel
Share
Settings
Playback
Settings
Camera
Display
Record Set
Device
25.4V
7.4V
25Mbps
22ms
259m
CH1

Transmit Power	25	Resolution	1080p	Bitrate	Standard
Frame Rate	Standard	Standby Mode	Off	Language	English
Low Battery	On	Goggle icon	Show	Broadcast (XXXXX)	On

1-Camera:
相机可调整内容分别为场景预设、曝光、饱和度、锐度、白平衡、画面旋转、画面比例、3D降噪、快门、最大ISO等设置。

2-Display:
显示可调整内容为 Debug、屏幕亮度、聚焦模式、自定义OSD、OSD位置、升级字体、自定义字体、取景框、取景框设置。

3-Record set：
录像可调整内容为 VTX 发射端分辨率、录像设备、自动启停、循环录制、格式化SD卡、格式化发射端、内置EIS防抖、录像时间、录像格式、颜色、饱和度、锐度。

4-Device:
设备可调整内容为蜂鸣器音量、测距模式、信号丢失提示、恢复出厂设置、设备信息、操作说明、切换模式、。

5-Transmit Power:

发射功率默认可选择25mW、200mW、500mW、700mW功率。

6-Resolution:
分辨率可以选择720P和1080P。

7-Bitrate:
可选择标准码率和高码率获得不同图像质量，高码率仅支持在FCC模式开启。

8-Frame Rate:
标准帧率等于60fps。

9-Standby Mode:
当处于待机模式时天空端和眼镜端发射功率为10dbm，退出待机模式或关闭待机模式开关才会输出当前设置的发射功率，开启待机模式时此功能需要天空端串口正确连接飞控当眼镜收到飞行器解锁信号时自动退出待机模式，如无飞控支持可选择关闭此功能。

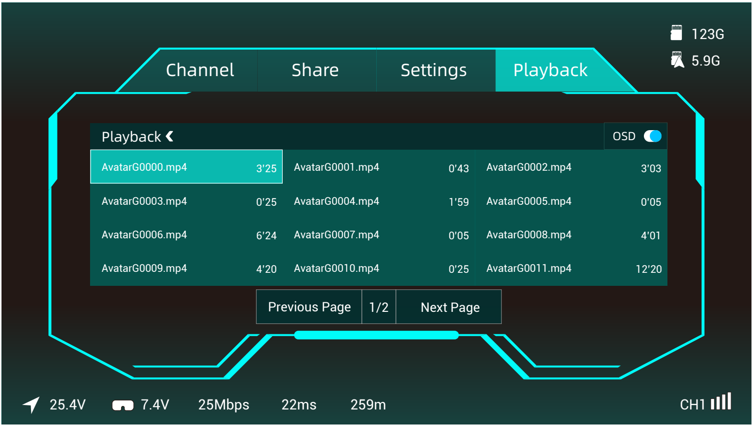
10-Language:
语言切换English/中文。

11-Low Battery:
检测眼镜端低电量警报，电压过低红色字体和蜂鸣器报警提示，可选择开启或关闭。

12-Goggle icon:
可选择菜单主界面图标显示或隐藏。

13-Broadcast:
当开启广播开关后，您的图传画面将可以被他人搜索到，括号内6个字符为VTX天空端唯一识别号。

菜单回放-5


123G
5.9G
Channel
Share
Settings
Playback
Playback
OSD
Previous Page
1/2
Next Page
25.4V
7.4V
25Mbps
22ms
259m
CH1

AvatarG0000.mp4	3'25	AvatarG0001.mp4	0'43	AvatarG0002.mp4	3'03
AvatarG0003.mp4	0'25	AvatarG0004.mp4	1'59	AvatarG0005.mp4	0'05
AvatarG0006.mp4	6'24	AvatarG0007.mp4	0'05	AvatarG0008.mp4	4'01
AvatarG0009.mp4	4'20	AvatarG0010.mp4	0'25	AvatarG0011.mp4	12'20

1、选择框移动到OSD选项可以选择打开或关闭，打开时在播放视频界面叠加飞控OSD信息(如有)和主界面飞行信息，当选择框停留在视频列表中，长按眼镜端确认键打开多选功能，菜单框显示功能设置（删除、全选、取消），再次按下返回键退出多选模式。

2、播放界面单击中键暂停/播放，左右方向键调整快退/快进

规格参数

名称	Goggles L
通信频率	5.725–5.850GHz
发射功率(EIRP)	FCC:<30dBm;CE:<14dBm;SRRC:<20dBm;MIC:<25dBm
接口	4Pin 3.5mm Plug, DC5.5*2.1mm Micro SD Card Slot,
陀螺仪	九轴陀螺仪
传输分辨率	1080p60fps, 720p60fps
图传码率	最大 50 Mbps
最低延迟	平均32ms
天线增益	4.9dBi
天线极化	左旋圆极化 LHCP
传输距离	＞4km
频道	8
屏幕分辨率	1920*1080/60Hz

屏幕材质	LCD
屏幕尺寸	4.5 Inch
宽电源输入	6V–25.2V(2S–6S)
SD卡槽	支持256G
系统	Avatar HD system

CADDXFPV 技术支持
email: support@caddxfpv.com