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WHITE PAPER

Low Power Technology White Paper

Low Power Technology

1. Background

Many regions in the world, such as the Middle East, Africa, Australia, and etc., are vast and sparsely populated. The outdoor environment in these regions needs to be monitored via network cameras. However, it is hard to achieve due to the expensive cables wiring cost. Therefore, a network camera which can transmit data wirelessly without power supply after its installation is required. In Europe, the construction cost and labor cost of wiring are very expensive due to the large number of historical buildings and streets. At the same time, what the clients want is to monitor the scenes such as roads, garbage stations, and periphery of the fence by installing wireless products.

2. Technology Introduction

Low power technology is mainly achieved through the following ways:

1) Lower SOC GHz

SOC refers to the G5 platform chip. When the camera SOC is powered on and working, the camera reduces the frame rate of the video by lowering the frequency of the SOC, reduces the power consumption of the camera by adjusting the 4G network to the sleep mode, and at the same time, responds to the user's request to operate the device in real time. After reducing the power consumption, the operating power consumption of the SOC can be reduced by about 20%. When 4G is in a sleep mode while SOC is in a low power mode, the power consumption of a 4G solar camera is 60% of that of a normal camera.

2) Hardware Low Power Design

With high-performance, low-power main control SOC, the camera that applies hardware low power consumption technology has strong computing power and low power consumption.

With high-performance, low-power 4G module, the camera that applies hardware low power consumption technology supports sleep mode, stand-by mode and alive mode, saving 4G power consumption effectively.

With high-performance MCU control chip, the camera that applies hardware low power consumption technology supports multiple consumption modes, and has ultra-low static operating current. A high-performance power conversion solution adopted, the power supply performance is thus improved by more than 15% compared with that of ordinary

economical products. The power supply of each module is controlled by MCU intelligent management, hence, unnecessary power consumption can be saved.

1) 4G Sleep Mode

Our camera has three power modes: full consumption mode, low consumption real-time mode, and sleep mode. In the sleep mode, normally, SOC is in a power off sleep mode while the 4G is in a sleep mode, whose power consumption remains 0.01-0.1W. After the user configures the event, the camera captures the picture and wakes up the 4G module, and reports the alarm picture to the Hik-Connect server or ISUP protocol server, and then the 4G module goes back to the sleep mode. When the user initiates a request to operate the device on the Hik-Connect client or ISUP protocol client, the 4G module will be awakened to respond to the user's request. After the user stops accessing the device, the 4G module goes back to the sleep mode.

2) Configurable Threshold of Low Power Sleep Mode

The configuration parameter of the low power sleep mode threshold is designed to range from 15 to 50, and the default value is 20. The user can configure this parameter. When the actual power is lower than the parameter set by the user, the camera will enter extremely low power mode, which can effectively reduce the operating power consumption by dynamically adjusting the operating power consumption of the camera.

3) Configurable Timing Sleep Time

Timing sleep time can be configured to report data to the platform at the interval of picture capturing, thereby improving efficiency. Eight sleep time periods can be configured per day, and the default configuration is empty; during the sleep time period, the wake-up interval can be configured, and the default interval is 30 minutes. After entering the sleep time period configured by the user, the SOC enters a sleeping state, and the MCU establishes a connection with the Hik-Connect server or ISUP server through the 4G module to keep the camera alive.

4) Support eMMC/SD to Store Local Video Pictures

The pictures of local recording and timing snapshots are supported to be stored in eMMC and SD card.

5) Quick Preview

By introducing ECM dialing, the 4G dialing function is optimized. With the speed accelerated, 4G dialing can be completed within 6-7s. When powering on, the MCU controls the hardware pins of the SOC and powers on the SOC. The SOC establishes a connection with the server in a short time to respond to the user's requests for preview, parameter configuration and etc. In this way, SOC running time is reduced and user experience is improved. When processing user requests, SOC will prioritize core functions such as drawing and alarming, optimize startup process, and reduce the time to start drawing.

6) Battery Power Reporting Platform

The battery power reporting platform can perform power calculating, analyze power consumption trends, and then adjust the orientation of solar panels or the overall sleep strategy to increase running time.