

HL3430SG WiFi+LCD Module Specification

1. General Description

HL3430SG module is a low-power, high-reliability Wi-Fi+LCD module for Smart home appliance products. This module uses BK7256 solution, support 802.11 b/g/n/ax, 1T1R, Wi-Fi antenna using onboard antenna, support URAT interface. This module adopts a single WiFi chip to achieve intelligent functions such as networking and TFT LCD display, which has cost advantages

2. Features

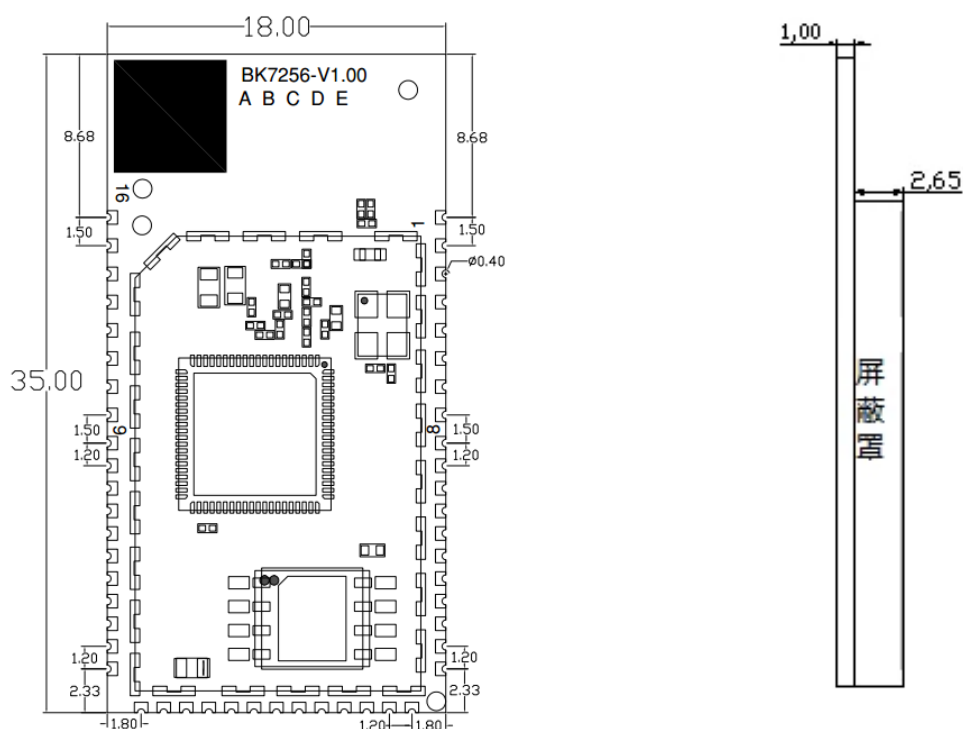
2.1. System Function

Main Chipset	BK7256
Operating Frequency	2402MHz—2480MHz
Wi-Fi Standard	IEEE802.11 b/g/n/ax, 1T1R
Bluetooth	BLE 5.2
Modulation	WiFi: 802.11b:DBPSK,DQPSK,CCK for DSSS 802.11g:BPSK,QPSK,16QAM,64QAM for OFDM 802.11n:BPSK,QPSK,16QAM,64QAM for OFDM 802.11ax: BPSK,QPSK,16QAM,64QAM for OFDMA
Interface Definition	51Pin LCC
Host Interface	UART
Dimension	35 (mm) *18 (mm) *3.65(mm) (tolerance +/-0.3)
Antenna	PCB antenna
Operation Temperature	3.3V±0.3V

2.2. Product Picture

														
3430SG-2				3430SG-2										
GPIO	16	引脚间距1.5mm			1	引脚间距1.5mm	GND							
USB_DP/GPIO12	15				2		NC							
USB_DN/GPIO13	14				3		RGB565_DR3/LCD_RST/I2C0_SCL/GPIO20							
RGB565_DG4/QSPI_IO1/I2DA/PWM5	13				4		UART0_DL_RX/GPIO10							
CHIP_EN	12	引脚间距1.2mm			5	引脚间距1.2mm	UART0_DL_TX/GPIO11							
PWM7/GPIO33	11				6		UART1_TX/I2C1_SCL/GPIO0							
PWM6/GPIO32	10				7		UART1_RX/I2C1_SDA/GPIO1							
GND	9				8		GND							
GPIO27/QSPI_IO3	17				51		RGB565_DG2/LCD_D7/UART2_RX/GPIO40							
PWM8/GPIO34	18				50		RGB565_DG1/LCD_D6/UART2_TX/GPIO41							
PWM9/GPIO35	19				49		RGB565_DG0/LCD_D5/I2C1_SCL/GPIO42							
PWM10/GPIO36	20				48		RGB565_DB4/LCD_D4/I2C1_SDA/GPIO43							
PWM11/GPIO37	21	引脚间距1.2mm			47	引脚间距1.2mm	RGB565_DB3/LCD_D3/ADC10/GPIO44							
RGB565_DB0/LCD_D0/GPIO47	22				46		RGB565_DB2/LCD_D2/ADC11/GPIO45							
RGB565_DB1/LCD_D1/GPIO46	23				45		RGB565_DR2/LCD_RS/ADC6/I2C0_SDA/ADC6/GPIO21							
PWM1/GPIO7	24				44		RGB565_DR1/LCD_WR/QSPI_CLK/ADC5/GPIO22							
PWM0/GPIO6	25				43		RGB565_DR0/LCD_RD/QSPI_CSN/ADC3/GPIO23							
GPIO5/SPI1_MISO	26				42		RGB565_DG3/QSPI_IO2/GPIO26							
GPIO	27	引脚间距1.2mm					41	GND						
		28	29	30	31	32	33	34	35	36	37	38	39	40
		GPIO4/SPI1_MOSI	GPIO3/SPI1_CSN	GPIO2/SPI1_SCK	VCC_3V3	AUDRP	AUDRN	RGB565_DR4/LCD_C3/GPIO19	RGB565_DCLK/SPI0_SCK/GPIO14	RGB565_DE/SPI0_MOSI/GPIO16	RGB565_DISP_ON/SPI0_CSN/GPIO15	RGB565_HSYN/C/SPI0_MISO/GPIO17	RGB565_VSYN/C/GPIO18	RGB565_DG5/QSPI_IO0/ADC2/PWM4/GPIO24

2.3. Size & PIN Define



SN	Definition	Description
Pin1	GND	Ground
Pin2	NC	
Pin3	RGB565_DR3/LCD_RST/I2C0_SCL/GPIO20	LCD interface
Pin4	UART0_DL_RX/GPIO10	UART communication and program download
Pin5	UART0_DL_TX_GPIO11	UART communication and program download
Pin6	UART1_TX/I2C1_SCL/GPIO0	UART debugging interface
Pin7	UART1_RX/I2C1_SDA/GPIO1	UART debugging interface
Pin8	GND	Ground
Pin9	GND	Ground
Pin10	PWM6/GPIO32	
Pin11	PWM7/GPIO33	
Pin12	CHIP_EN	Reset, low voltage enabled, high voltage off
Pin13	RGB565_DG4/QSPI_IO1/IrDA/PWM5	LCD interface
Pin14	USB_DN/GPIO13	
Pin15	USB_DP/GPIO12	
Pin16	GPIO	
Pin17	GPIO27/QSPI_IO3	
Pin18	PWM8/GPIO34	
Pin19	PWM9/GPIO35	
Pin20	PWM10/GPIO36	
Pin21	PWM11/GPIO37	
Pin22	RGB565_DB0/LCD_D0/GPIO47	LCD interface
Pin23	RGB565_DB1/LCD_D1/GPIO46	LCD interface
Pin24	PWM1/GPIO7	
Pin25	PWM0/GPIO6	
Pin26	GPIO5/SPI1_MISO	
Pin27	GPIO	
Pin28	GPIO4/SPI1_MOSI	
Pin29	GPIO3/SPI1_CSN	
Pin30	GPIO2/SPI1_SCK	
Pin31	VCC_3V3	Power In Typ: 3.3V
Pin32	AUDRP	Audio positive output
Pin33	AUDRN	Audio negative output
Pin34	RGB565_DR4/LCD_CS/GPIO19	LCD interface
Pin35	RGB565_DCLK/SPI0_SCK/GPIO14	LCD interface
Pin36	RGB565_DE/SPI0_MOSI_GPIO16	LCD interface
Pin37	RGB565_DISP_ON/SPI0_CSN/GPIO15	LCD interface

Pin38	RGB565_HSYNC/SPI0_MISO/GPIO17	LCD interface
Pin39	RGB565_VSYNC/GPIO18	LCD interface
Pin40	RGB565_DG5/QSPI_IO0/ADC2/PWM4/GPIO24	LCD interface
Pin41	GND	
Pin42	RGB565_DG3/QSPI_IO2/GPIO26	LCD interface
Pin43	RGB565_DR0/LCD_RD/QSPI_CSN/ADC3/GPIO23	LCD interface
Pin44	RGB565_DR1/LCD_WR/QSPI_CLK/ADC5/GPIO22	LCD interface
Pin45	RGB565_DR2/LCD_RS/ADC6/I2C0_SDA/ADC6/GPIO21	LCD interface
Pin46	RGB565_DB2/LCD_D2/ADC11/GPIO45	LCD interface
Pin47	RGB565_DB3/LCD_D3/ADC10/GPIO44	LCD interface
Pin48	RGB565_DB4/LCD_D4/I2C1_SDA/GPIO43	LCD interface
Pin49	RGB565_DG0/LCD_D5/I2C1_SCL/GPIO42	LCD interface
Pin50	RGB565_DG1/LCD_D6/UART2_TX/GPIO41	LCD interface
Pin51	RGB565_DG2/LCD_D7/UART2_RX/GPIO40	LCD interface

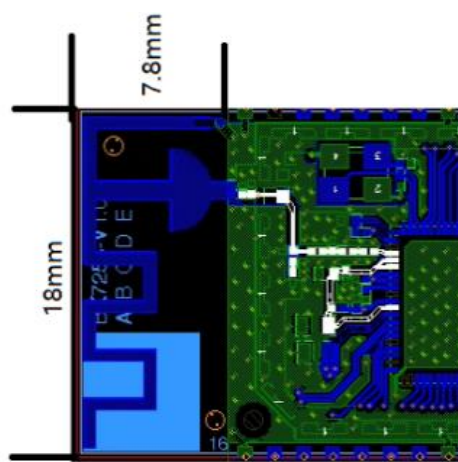
3. RF Specification

number	Item for WiFi	specification
1	Output power	802.11b CCK 11Mbps: 17 (typical) 802.11g OFDM 54Mbps@2.4GHz: 14dBm (typical) 802.11n HT20 MCS7@2.4GHz: 13dBm (typical) 802.11ax HE20 MCS7@2.4GHz: 13dBm (typical)
2	antenna	Gain:1dBi efficiency:50%
3	Frequency Range	2402MHz—2480MHz
4	EVM	802.11b, CCK, 11Mbps: 16% 802.11g, OFDM, 54Mbps: ≤-30dB 802.11n, HT20, MCS7: ≤-30dB 802.11ax, HE20, MCS7: ≤-30dB
5	RS	802.11b @ 11Mbps: (Max) : -84dBm , (Typical) : -87dBm (PER<8%) 802.11g @ 54Mbps: (Max.) : -69dBm , (Typical) : -75dBm (PER<10%) 802.11n @ MCS7 (2.4g HT20): (Max) : -67dBm , (Typical) : -73dBm (PER<10%) 802.11ax @ MCS7 (2.4g HE20): (Max) : -65dBm , (Typical) : -72dBm (PER<10%)
6	Frequency accuracy	≤15×10 ⁻⁶
number	Item for BLE	specification
8	standard	BLE 5.2

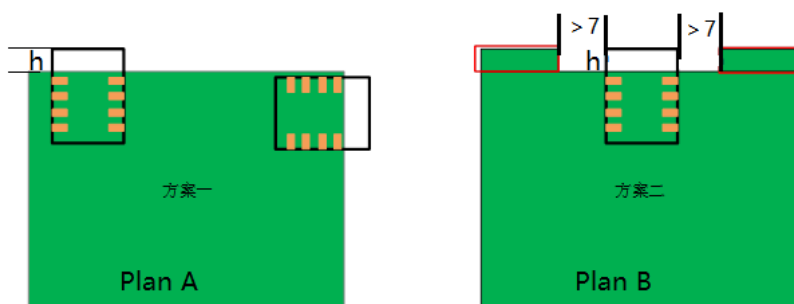
9	Frequency Range	2402MHz—2480MHz
10	Data rate	1Mbps,2Mbps
11	modulation	GFSK
12	Output power	6dBm (typical)
13	RS	BLE1M: -95dBm (typical) ; BLE2M: -92dBm (typical)

4. Antenna

4.1. Antenna Characteristic



4.2. Antenna Position Requirements



Note:

Plan A: WiFi module is placed on the side of the power board.

1. The antenna part extends out of the power board side height, $h=7.8\text{mm}$.
2. Do not enclose the antenna with a metal shell and do not place metal components close to the antenna within 15mm.

Plan B: The WiFi module is placed in the power board, and the antenna is hollowed out around.

1. The distance between the antenna and the power board edge, $d>7\text{mm}$.
2. The antenna part extends out of the power board side height, $h=7.8\text{mm}$.
3. Do not enclose the antenna with a metal shell and do not place metal components close to the antenna within 15mm.

FCC&IC regulatory compliance statement

FCC Warning :

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

IC Warning:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux CNR exempts de licence d'Innovation, Sciences et Développement économique Canada. L'exploitation est soumise aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage,
- (2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

ce matériel est conforme aux limites de dose d'exposition aux rayonnements, CNR-102 énoncée dans un autre environnement. Cette équipement devrait être installé et exploité avec distance minimale de 20 entre le radiateur et votre corps.

CAN ICES-3 (B)/NMB-3(B)

Information to user

Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

RF Exposure compliance statement

This Module complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body. This

transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Labelling Instruction for Host Product Integrator

Please notice that if the FCC and IC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. For FCC, this exterior label should follow “Contains FCC ID: 2A4A3-HL3430”. In accordance with FCC KDB guidance 784748 Labeling Guidelines. For IC, this exterior label can use wording “Contains IC: 32735-HL3430”.

§ 15.19 Labelling requirements shall be complied on end user device.

Labelling rules for special device, please refer to §2.925, § 15.19 (a)(5) and relevant KDB publications. For E-label, please refer to §2.935.

Installation Notice to Host Product Manufacturer

The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

The module is limited to installation in mobile application, a separate approval is required for all other operating configurations, including portable configurations with respect to §2.1091 and difference antenna configurations.

Antenna Change Notice to Host manufacturer

If you desire to increase antenna gain and either change antenna type or use same antenna type certified, a Class II permissive change application is required to be filed by us, or you (host manufacturer) can take responsibility through the change in FCC ID&IC ID (new application) procedure followed by a Class II permissive change application.

FCC other Parts, Part 15B Compliance Requirements for Host product manufacturer

This modular transmitter is only FCC authorized for the specific rule parts listed on our grant, host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

Host manufacturer in any case shall ensure host product which is installed and operating with the module is in compliant with Part 15B requirements.

Please note that For a Class B or Class A digital device or peripheral, the instructions furnished the user manual of the end-user product shall include statement set out in §15.105 *Information to the user* or such similar statement and place it in a prominent location in the text of host product manual. Original texts as following:

For Class B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.*
- Increase the separation between the equipment and receiver.*
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- Consult the dealer or an experienced radio/TV technician for help.*

For Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.