GWK5Ux 2.4GHz Wireless Audio Module

1. General Description

GWK5Ux is the AFH version of Gigawit GWK5 family wireless digital audio products. As the 2.4GHz devices increase dramatically, co-existence becomes a major challenge and it is critical for each 2.4GHz device.

By adopting AFH and error correction algorithms, GWK5Ux maintains a good co-existence among others, from Wi-Fi, Bluetooth, Microwave oven, to Cordless phone, and the proprietary products. GWK5Ux has a improved audio performance by introducing a Hi-Fi audio codec, This enables GWK5Ux to be built into the Wireless Speakers, Headphones that requires a strict audio quality. Due its high-speed Baseband processor, GWK5Ux also offers add value functions as Volume, Treble/Bass controls.

GWK5Ux inherits the major benefits from its family products, this including the Small form-factor, Low power consumption, Flexible IO design, Rapid customization function by software, etc.
GWK5Ux is the most competitive 2.4GHz wireless audio solution in the industry, by leveraging its high performance, technical advantage, competitive prices, and the in-depth technical support.

2. Applications

- 5.1 Speakers
- Headphones
- Surround Speakers
- Microphones
- CD Player, DVD Player
- Stereo Audio Dongles

3. Features

- 2.4GHz AFHSS Solution
- Co-existence: small foot-print(2MHz bandwidth) enabling better 2.4GHz co-existence
- AFH and Error correction algorithms for robust audio link.
- None-compression Audio transmission.
- Low Power: ATX: 100mA/3.3V @ 20dBm, 50mA/3.3V @ 0dBm, ARX: 55mA/3.3V
- RF Range(Indoor LOS): 15m @0dBm, 30m @20dBm
- Support 4 Slaves with backward remote control
- Built-in Treble/Bass, Volume, Balance Control
- I2S digital audio interface support most audio ADCs and DACs, Supporting Sample rate 32KHz, 44.1KHz, 48KHz
- low latency < 20ms
- Power management function for battery powered applications
- Auto muting function when suffering interference or at poor receiving conditions
- Flexible design, custom functions supported

4. GWK5Ux Outlook

Figure [1]: GWK5UO

Figure [2]: GWK5UP

5. Block Diagram

There are 2 RF power versions for GWK5Ux: GWK5UO and GWK5UP. GWK5UO is 0dBm and GWK5UP is 20dBm for extend range. GWK5Ux incorporates most of the components and made it a plug and play solution for wireless digital audio.

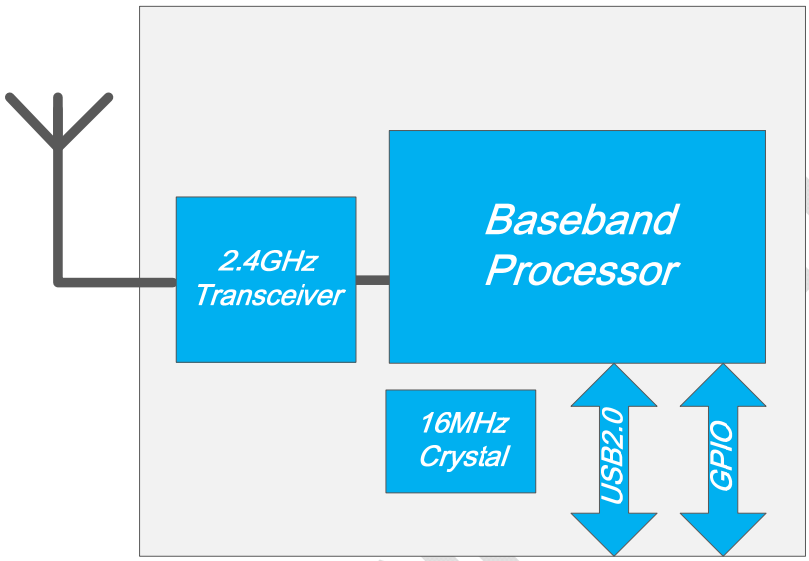


Figure [2]: GWK5UO Block Diagram

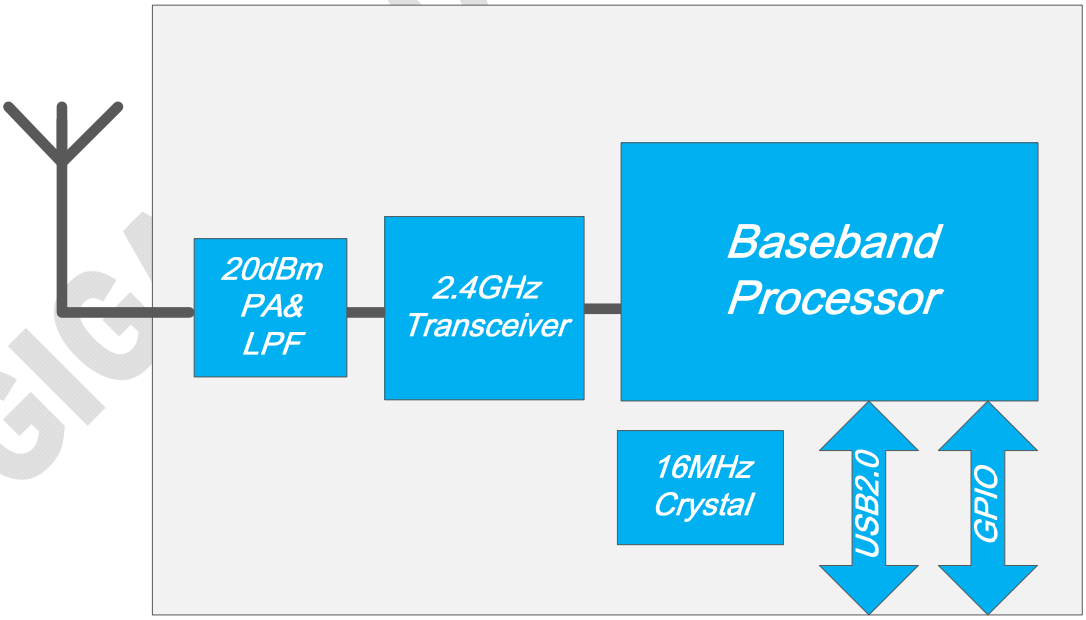


Figure [3]: GWK5UP Block Diagram

6. Electrical Specification

	Description	Min/Typical/Max
General	Supply voltage	5V
	Supply current	TX: 100mA (GWK5UP), 50mA (GWK5UO)
	Operation temperature	-10 ~ +60℃
RF	RF Frequency	2400 ~ 2483MHZ
	Modulation	GFSK
	Data rate	2M bps
	TX Power	0dBm (GWK5UO)
	RF Range (indoor)	15m (GWK5UO) 30m (GWK5UP)
Audio	Frequency Response	20~20KHz
	S/N	85dB @ 20~20KHz
	THD+N	< 0.01% @ 20~20KHz
	Dynamic range	80dB
	Digital Audio Format	I2S, Left Justify, Right Justify
	Latency	Fixed 18ms or application dependent

Table [1]: Electrical Specification

7. Pin Assignments

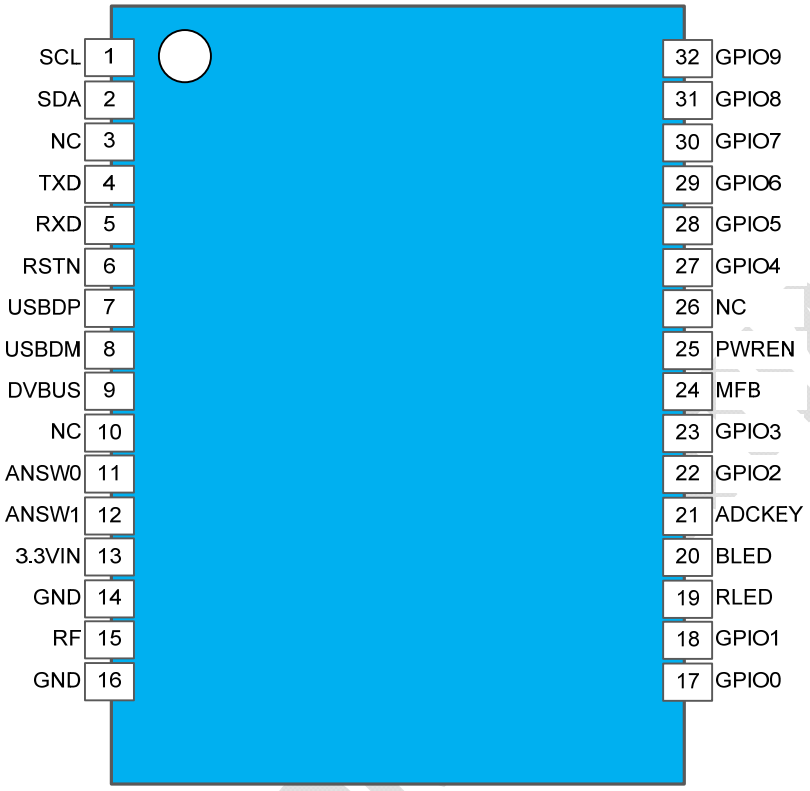


Figure [4] GWK5UO/P Pin Assignments

Pin #	Pin name	Type	Description
1	SCL	I/O	I2C Clock
2	SDA	I/O	I2C Data
3	NC		
4	TXD	I/O	UART TX
5	RXD	I/O	UART RX
6	RSTN	I	Reset input, active low
7	USBDP	USB	USB Differential Signal D+
8	USBDM	USB	USB Differential Signal D-
9	DVBUS	USB	POWER SUPPLY:From USB Host or HUB
10	NC		
11	ANSW0	I/O	Antenna switch control pin
12	ANSW1	I/O	Antenna switch control pin
13	3.3VIN	P	+3.3V Power Input
14	GND	P	Ground Power

15	RF	A	RF
16	GND	P	Ground Power
17	GPIO0	I/O	Load program
18	GPIO1	I/O	Load program
19	RLED	I/O	External red LED Output
20	BLED	I/O	External blue LED Output
21	ADCKEY	I/O	Connect the built-in ADC for KEY
22	GPIO2	I/O	General purpose IO
23	GPIO3	I/O	General purpose IO
24	MFB	I/O	Main Function button input
25	PWREN	I/O	Power Enable Output
26	NC		
27	GPIO4	I/O	General purpose IO
28	GPIO5	I/O	General purpose IO
29	GPIO6	I/O	General purpose IO
30	GPIO7	I/O	General purpose IO
31	GPIO8	I/O	General purpose IO
32	GPIO9	I/O	General purpose IO

Table [2]. GWK5UO/P Pin Description

8. ISP Firmware Updating

GWK5Ux support ISP firmware updating through UART, When TXD pin connected with a 4.7K resistor to the GND, GWK5Ux will enter the ISP mode.

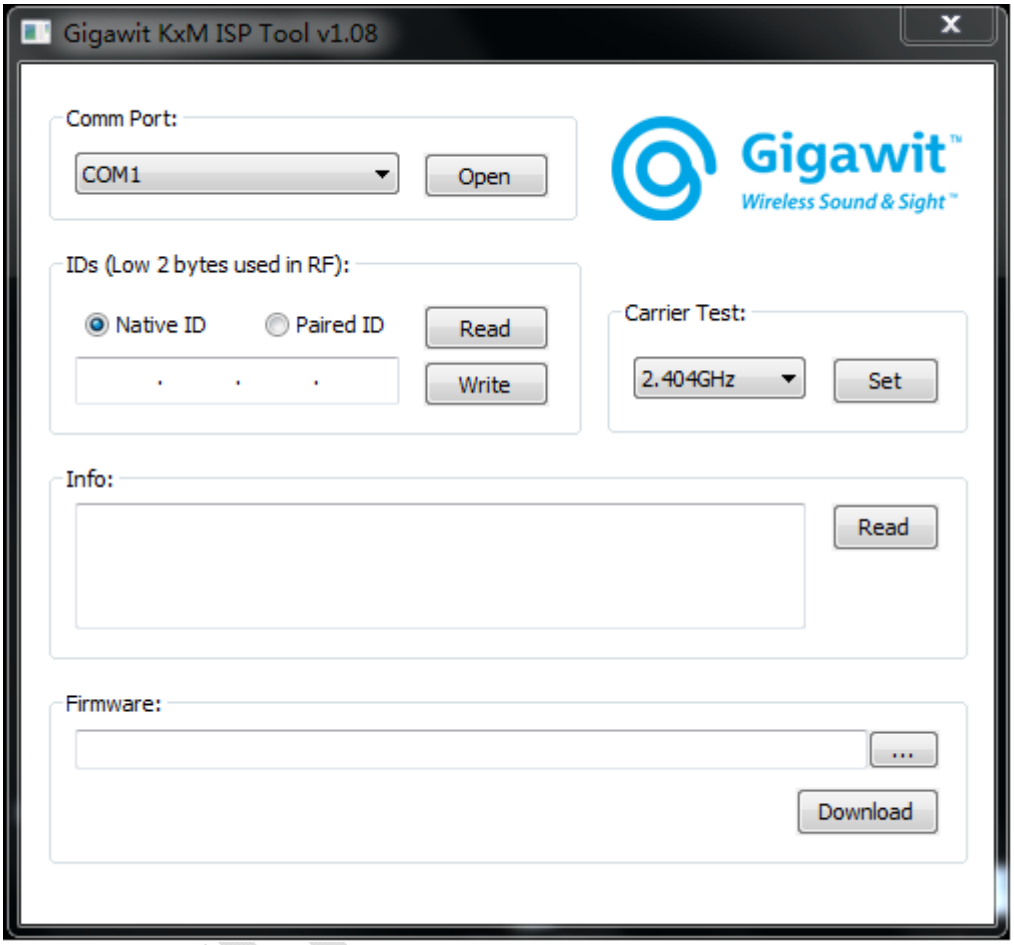


Figure [5]: Gigawit ISP tool

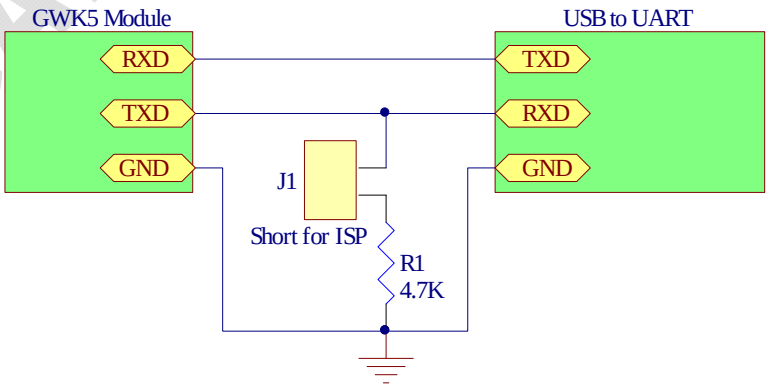


Figure [6]: Gigawit ISP Connection

9. Physical Dimensions

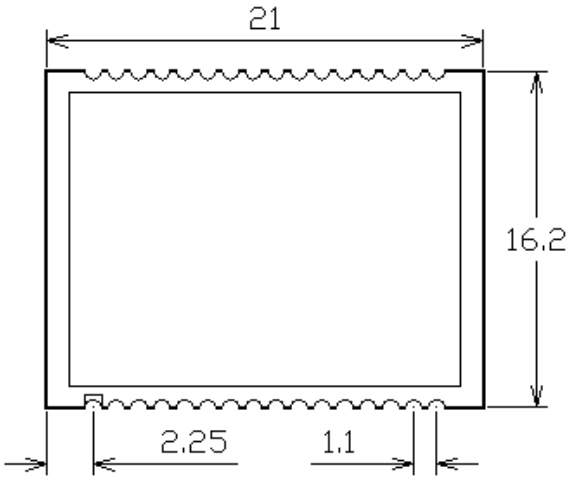


Figure [7]. GWK5UO Dimension

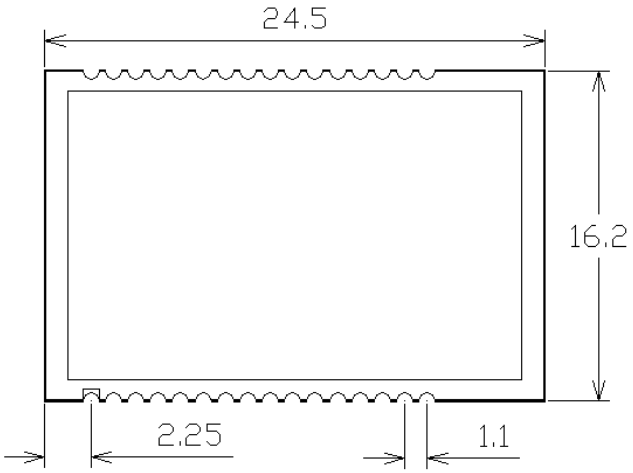


Figure [8]. GWK5UP Dimension

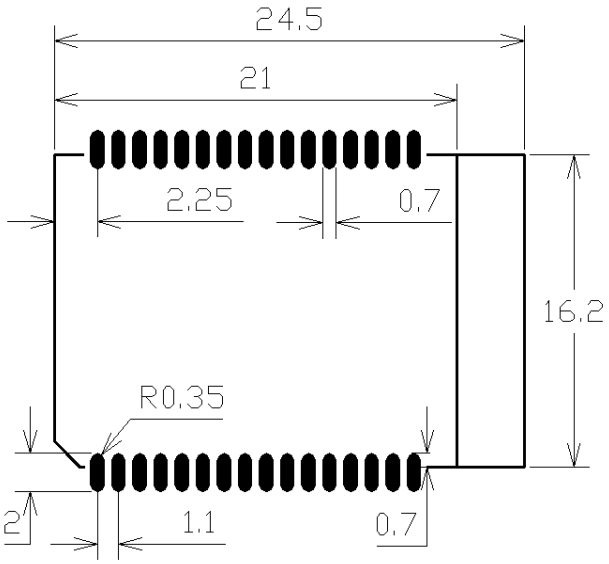
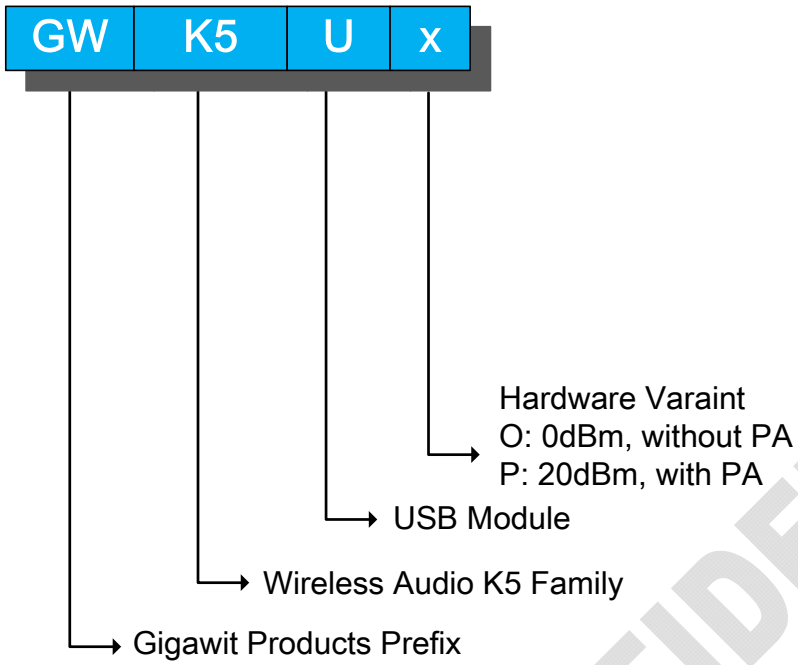


Figure [9]: PCB Land Pattern

10. Naming Rule



11. Ordering Information

Gigawit ID.	Description
GWK5UO	0dBm TX module
GWK5UP	20dBm TX module

12. Contact

捷电科技有限公司 Gigawit Electronics Limited
1003 Overseas Scholars Building, South Keyuan Road
Science Park, Nanshan District, 518057 Shenzhen, China
Tel:+86-755-86329300, Fax:+86-755-86329882
http://www.gigawit.com

13. Revision History

2011-01-12 Version 1.0, Original version

2011-05-07 Version 1.01, Add I2C Interface and ISP firmware update.