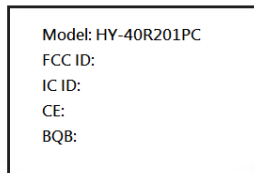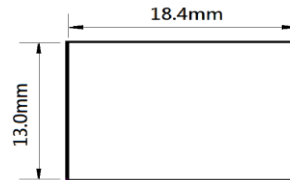HY-40R201PC / WMD40R201SR6PC BLE 5.0 Bluetooth module
(PCB IFA Antenna,40 pin, with shield case) specifications:

(1).IC : TTC2640R2 6*6mm 48pin package IC ; Use TI CC2640R2 die chip

(2.HY-40R201PC model FCC ID & IC ID Print Format on the Shield Case :

Model: HY-40R201PC
FCC ID:
IC ID:
CE:
BQB:

Word Type: Calibri
Direction : Horizon
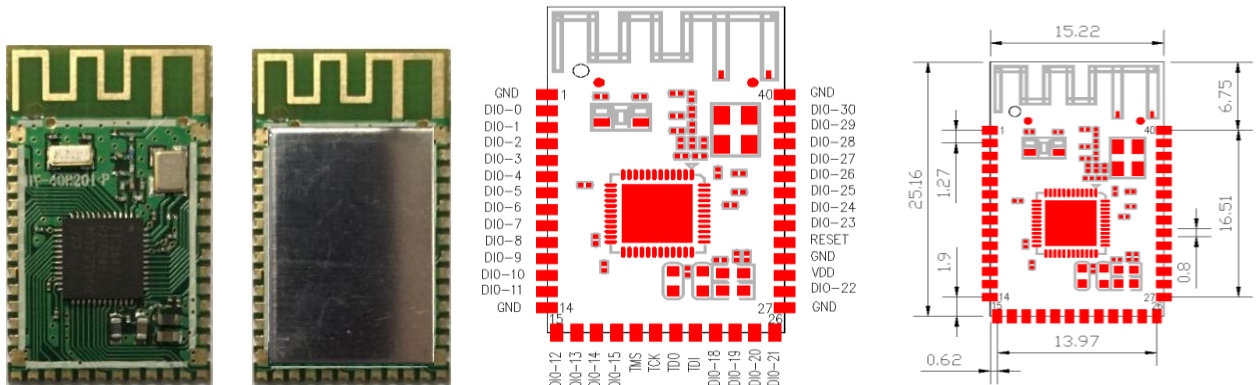
18.4mm

13.0mm

Shield Case Size:
13.0*18.4*1.5mm

1st row: Mode: HY-40R201PC
◆2nd row: FCC ID : 2ADXE-HY-40R201PC

(3): HY-40R201PC / WMD40R201SR6PC PCB IFA Antenna, with shield case ;
      (PCBA dimension size : 25.16*15.22*2.6 mm).

(4). Pin function table (input and output ports description)

Pin	Name	Type	Function Description
1	GND	Power GND	Ground
2	DIO_0	Digital I/O	GPIO, Sensor Controller (I:4mA max)
3	DIO_1	Digital I/O	UART RX; GPIO, Sensor Controller (I:4mA max)
4	DIO_2	Digital I/O	UART TX; GPIO, Sensor Controller (I:4mA max)
5	DIO_3	Digital I/O	GPIO, Sensor Controller (I:4mA max)
6	DIO_4	Digital I/O	WAKE UP; Don't floating GPIO, Sensor Controller (I:4mA max)
7	DIO_5	Digital I/O	GPIO, Sensor Controller, high-drive capability (8mA max).

8	DIO_6	Digital I/O	GPIO, Sensor Controller, high-drive capability (8mA max).
9	DIO_7	Digital I/O	GPIO, Sensor Controller, high-drive capability (8mA max).
10	DIO_8	Digital I/O	GPIO (I: 4mA max)
11	DIO_9	Digital I/O	GPIO (I: 4mA max)
12	DIO_10	Digital I/O	GPIO (I: 4mA max)
13	DIO_11	Digital I/O	GPIO (I: 4mA max)
14	GND	Power GND	Ground
15	DIO_12	Digital I/O	GPIO (I: 4mA max)
16	DIO_13	Digital I/O	GPIO (I: 4mA max)
17	DIO_14	Digital I/O	GPIO (I: 4mA max)
18	DIO_15	Digital I/O	GPIO (I: 4mA max)
19	JTAG TMSC	Digital I/O	JTAG TMSC; high-drive capability
20	JTAG TCKC	Digital I/O	JTAG TCKC
21	DIO_16 TDO	Digital I/O	GPIO, JTAG_TDO; high-drive capability(8mA max).
22	DIO_17 TDI	Digital I/O	GPIO, JTAG_TDI; high-drive capability(8mA max).
23	DIO_18	Digital I/O	GPIO (I: 4mA max)
24	DIO_19	Digital I/O	GPIO (I: 4mA max)
25	DIO_20	Digital I/O	GPIO (I: 4mA max)
26	DIO_21	Digital I/O	GPIO (I: 4mA max)
27	GND	Power GND	Ground
28	DIO_22	Digital I/O	GPIO (I: 4mA max)
29	VDD	Power	+2.4V to +3.0V Power Supply
30	GND	Power GND	Ground
31	RESET	Digital input	Reset, active-low. Module have pull up.
32	DIO_23	Digital I/O	GPIO, Sensor Controller, Analog(I: 4mA max)
33	DIO_24	Digital I/O	GPIO, Sensor Controller, Analog(I: 4mA max)
34	DIO_25	Digital I/O	GPIO, Sensor Controller, Analog(I: 4mA max)
35	DIO_26	Digital I/O	GPIO, Sensor Controller, Analog(I: 4mA max)
36	DIO_27	Digital I/O	GPIO, Sensor Controller, Analog(I: 4mA max)
37	DIO_28	Digital I/O	GPIO, Sensor Controller, Analog(I: 4mA max)
38	DIO_29	Digital I/O	GPIO, Sensor Controller, Analog(I: 4mA max)
39	DIO_30	Digital I/O	GPIO, Sensor Controller, Analog(I: 4mA max)
40	GND	Power GND	Ground

(5). Electrical characteristics

(With Ta = 25 ℃, VDD = 3.0V with internal DC-DC converter, standard measure:1Mbps GFSK modulation ,F$_{RF}$ = 2440MHz Bluetooth Low energy mode.)

10-1. Modulation Mode: GFSK

10-2. Frequency range: 2402~2480MHZ (2.4G ISM band)

10-3. Transmit power setting Range: -21 ~ +5 dBm typical
　　　(programmable by software)

10-4. Operating ambient temperature range: -40 ℃ ~ + 85 ℃

10-5. The storage temperature range: -40 ℃ ~ + 100 ℃

10-6. The power supply voltage: 2.4 ~ 3.3 VDC

10-7. Receiver sensitivity: - 95dBm typical, SMA connector PER 30.8 % .

10-8. Receiving mode current (high gain setting): 6.1 mA (typical)

10-9. Transmit mode current (at +5 dBm output setting): 9.1 mA (typical)

10-10. Idle. Supply Systems and RAM powered. : 550uA (Typical)

10-11. Stand by . With Cache, RTC, CPU, RAM and partial register
　　　retention. XOSC_LF: 3.0 uA (typical).

10-12. Shut down. No clocks running, no retention: 150 nA (Typical)

(6). GPIO DC Characteristics TA = 25° C, VDDS = 3.0 V

PARAMETER	TEST CONDITIONS	Typical	UNIT
GPIO VOH at 8-mA load	IOCURR = 2, high-drive GPIOs only	2.68	V
GPIO VOL at 8-mA load	IOCURR = 2, high-drive GPIOs only	0.33	V
GPIO VOH at 4-mA load	IOCURR = 1	2.72	V
GPIO VOL at 4-mA load	IOCURR = 1	0.28	V

(7). Timing Requirements

Description		MIN	NOM	MAX	UNIT
Rising supply-voltage slew rate		0		100	mV/uS
Falling supply-voltage slew rate		0		20	mV/uS
Falling supply-voltage slew rate, with low-power flash settings(1)				3	mV/uS
Positive temperature gradient in standby(2)	No limitation for negative temperature gradient, or outside standby mode			5	° C/s
CONTROL INPUT AC CHARACTERISTICS(3)					
RESET_N low duration		1			uS

(1) For smaller coin cell batteries, with high worst-case end-of-life equivalent source resistance, a 22-μ F VDDS input capacitor must be used to ensure compliance with this slew rate.

(2) Applications using RCOSC_LF as sleep timer must also consider the drift in frequency caused by a change in temperature .
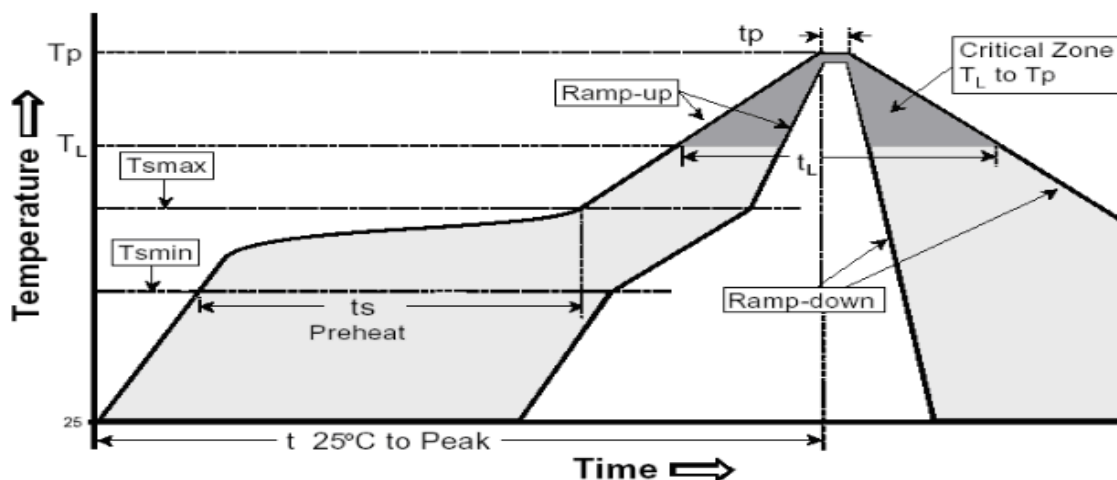
(8). Switching Characteristics
Measured with Tc = 25° C, VDDS = 3.0 V, unless otherwise noted.

PARAMETER	TEST CONDITIONS	MIN	Typ	MAX	UNIT
WAKEUP AND TIMING					
Idle → Active			14		uS
Standby → Active			151		uS
Shutdown → Active			1015		uS

(9). Recommend Reflow profile (Use Leadless: Sn 96.5%, Ag 3%, Cu 0.5%)

soldering reflow profile

Profile Feature	Sn-Pb Eutectic Assembly		Pb-Free Assembly	
	Large Body	Small Body	Large Body	Small Body
Average ramp-up rate (T_L to Tp)	3°C/second max.		3°C/second max.	
Preheat – Temperature Min (Ts_{min}) – Temperature Max (Ts_{max}) – Time (min to max) (ts)	100°C 150°C 60-120 seconds		150°C 200°C 60-180 seconds	
Tsmax to T_L – Ramp-up Rate			3°C/second max	
Time maintained above: – Temperature (T_L) – Time (t_L)	183°C 60-150 seconds		217°C 60-150 seconds	
Peak Temperature (Tp)	225 +0/-5°C	240 +0/-5°C	245 +0/-5°C	250 +0/-5°C
Time within 5°C of actual Peak Temperature (tp)	10-30 seconds	10-30 seconds	10-30 seconds	20-40 seconds
Ramp-down Rate	6°C/second max.		6°C/second max.	
Time 25°C to Peak Temperatur	6 minutes max.		8 minutes max.	

soldering reflow profile

(10). FCC Statements

(OEM) Integrator has to assure compliance of the entire end-product incl. the integrated RF Module. For 15 B (§15.107 and if applicable §15.109) compliance, the host manufacturer is required to show compliance with 15 while the module is installed and operating.

Furthermore the module should be transmitting and the evaluation should confirm that the module's intentional emissions (15C) are compliant (fundamental / out-of-band). Finally the integrator has to apply the appropriate equipment authorization (e.g. Verification) for the new host device per definition in §15.101.

Integrator is reminded to assure that these installation instructions will not be made available to the end-user of the final host device.

The final host device, into which this RF Module is integrated" has to be labeled with an auxiliary label stating the FCC ID of the RF Module, such as "Contains FCC ID: 2ADXE-HY-40R201PC

"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."

"Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment."

the Integrator will be responsible to satisfy SAR/ RF Exposure requirements, when the module integrated into the host device.

Module statement

　　The single-modular transmitter is a self-contained, physically delineated, component for which compliance can be demonstrated independent of the host operating conditions, and which complies with all eight requirements of § 15.212(a)(1) as summarized below.

　　1) The radio elements have the radio frequency circuitry shielded.
　　2) The module has buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.
　　3) The module contains power supply regulation on the module.
　　4) The module contains a permanently attached antenna.
　　5) The module demonstrates compliance in a stand-alone configuration.
　　6) The module is labeled with its permanently affixed FCC ID label.
　　7) The module complies with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.
　　8) The module complies with RF exposure requirements.

　　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

　　This equipment could not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with the FCC multi-transmitter product procedures.