



正基科技股份有限公司

產品規格書

SPECIFICATION

PRODUCT NAME : AP12356

SPEC. NO. : _____ REV : 0.7

DATE : 10.11.2016

| PREPARED | REVIEW | | APPROVED | DCC ISSUE |
|----------|--------|----|----------|-----------|
| | PM | QA | | |
| | | | | |

AMPAK

AP12356

2x2 Wi-Fi + Bluetooth4.1 Module
with PCI-e Half-Mini Card
Spec Sheet

Revision History

| Date | Revision Content | Revised By | Version |
|------------|---|------------|---------|
| 2016/01/22 | - Initial Released | Morris | 0.0 |
| 2016/03/16 | - Add Sample Picture | Morris | 0.1 |
| 2016/04/01 | - 3.1 Add PCIE and USB ID - 3.2.1 Operating Temperature | Morris | 0.2 |
| 2016/05/12 | - 7. Package Information - 6.2 Physical Dimensions | Morris | 0.3 |
| 2016/05/20 | - 6.2 Physical Dimensions - 6.3 Sample Picture (Label Diagram) | Morris | 0.4 |
| 2016/06/21 | - 6.3 Sample Picture (Label Diagram) | Morris | 0.5 |
| 2016/08/02 | - 7. Package Information | Morris | 0.6 |
| 2016/10/11 | - 7. Package Information | Rue | 0.7 |
| | | | |

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2. Introduction

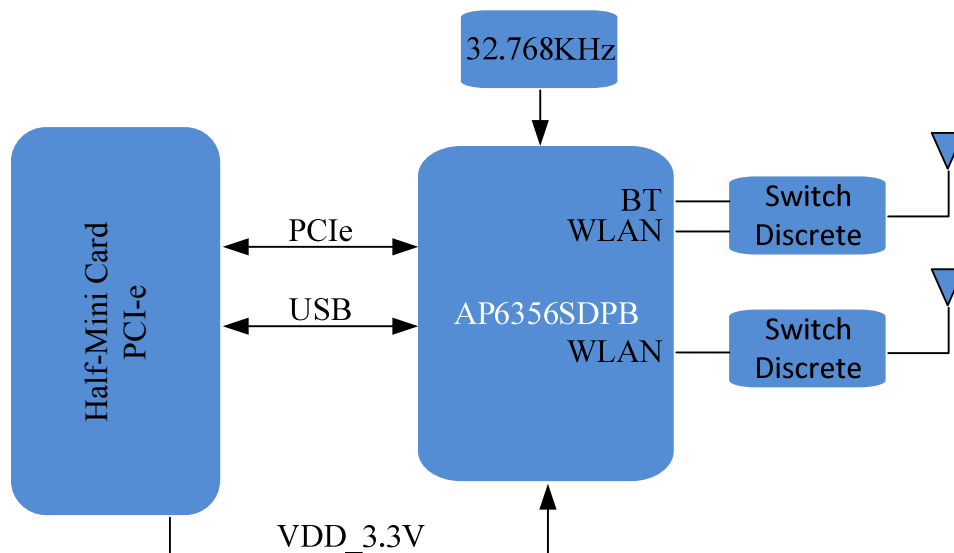
AMPAK Technology would like to announce a low-cost and low-power consumption module which has all of the Wi-Fi and Bluetooth functionalities. The highly integrated module makes the possibilities of web browsing, VoIP, Bluetooth headsets and other applications. With seamless roaming capabilities and advanced security, also interact with different vendors' 802.11a/b/g/n/ac 2x2 Access Points in the wireless LAN.

The wireless module complies with IEEE 802.11a/b/g/n/ac 2x2 MIMO standard and it can achieve up to a speed of 867Mbps with dual stream in 802.11n to connect the wireless LAN. The integrated module provides PCI-e interface for WiFi, USB interface for Bluetooth.

3. Features

- Lead Free design which is compliant with ROHS requirements.
- 802.11a/b/g/n/ac dual-band radio with virtual-simultaneous dual-band operation
- Dual-stream spatial multiplexing up to 867 Mbps data rate.
- Supports 20, 40, 80 MHz channels with optional SGI(256 QAM modulation)
- Supports IEEE 802.11 ac/n beam forming.
- Supports IEEE 802.15.2 external coexistence interface to optimize bandwidth utilization with other co-located wireless technologies such as LTE, GPS, or WiMAX.
 - Supports standard PCI-e interfaces.
- BT host interface:
 - USB
- Support Bluetooth 4.1 compliant with Bluetooth 3.0, Bluetooth 2.1+EDR and Low Energy (BLE).
- Complies with Bluetooth Core Specification Version 4.1 with provisions for supporting future specifications. With Bluetooth Class1 or Class2 transmitter operation.

A simplified block diagram of the module is depicted in the figure below.



3. General Specification

3.1 General Specification

| | |
|-----------------------|---|
| Model Name | AP12356 |
| Product Description | Support Wi-Fi / Bluetooth functionalities |
| Dimension | L x W x H: 29.85(±0.15) x 26.65(±0.15) x 2.64(±0.2) mm |
| WiFi Interface | Support PCI-e with Half-Mini Card |
| BT Interface | USB with Half-Mini Card |
| Operating temperature | -10°C to 65°C |
| Storage temperature | -40°C to 85°C |
| Humidity | Operating Humidity 10% to 95% Non-Condensing Storage Humidity 5% to 95% Non-Condensing |
| WiFi PCIE VID | 0x14E4 |
| WiFi PCIE PID | 0x43EC |
| WiFi PCIE SVID | 0x17F9 |
| WiFi PCIE SSID | 0x0035 |
| BT USB VID | 0x2B54 |
| BT USB PID | 0x5600 |

3.2 Voltages

3.2.1 Recommended Operating Rating

| | Min. | Typ. | Max. | Unit |
|-----------------------|------|------|------|-------|
| Operating Temperature | -10 | 25 | 65 | deg.C |
| VDD | 3.0 | 3.3 | 3.6 | V |

4. WiFi RF Specification

4.1 2.4GHz RF Specification

Conditions : VDD=3.3V ; Temp:25°C

| Feature | Description |
|---|--|
| WLAN Standard | IEEE 802.11a/b/g/n/ac WiFi compliant |
| Frequency Range | 2.400 GHz ~ 2.497 GHz (2.4 GHz ISM Band) |
| Number of Channels | 2.4GHz : Ch1 ~ Ch14 |
| Modulation | 802.11b : DQPSK, DBPSK, CCK 802.11g/n : OFDM /64-QAM,16-QAM, QPSK, BPSK |
| Output Power | 802.11b /11Mbps : 16 dBm ± 1.5 dB @ EVM ≤ -9dB |
| | 802.11g /54Mbps : 15 dBm ± 1.5 dB @ EVM ≤ -25dB |
| | 802.11n /MCS7 : 14 dBm ± 1.5 dB @ EVM ≤ -28dB |
| SISO Receive Sensitivity (11b,20MHz) @8% PER | - 1Mbps PER @ -91 dBm, typical |
| | - 2Mbps PER @ -89 dBm, typical |
| | - 5.5Mbps PER @ -87 dBm, typical |
| | - 11Mbps PER @ -84 dBm, typical |
| SISO Receive Sensitivity (11g,20MHz) @10% PER | - 6Mbps PER @ -88 dBm, typical |
| | - 9Mbps PER @ -87 dBm, typical |
| | - 12Mbps PER @ -86 dBm, typical |
| | - 18Mbps PER @ -84 dBm, typical |
| | - 24Mbps PER @ -80 dBm, typical |
| | - 36Mbps PER @ -77 dBm, typical |
| | - 48Mbps PER @ -72 dBm, typical |
| - 54Mbps PER @ -70 dBm, typical | |
| MIMO Receive Sensitivity (11g,20MHz) @10% PER | - 6Mbps PER @ -89 dBm, typical |
| | - 9Mbps PER @ -89 dBm, typical |
| | - 12Mbps PER @ -88 dBm, typical |
| | - 18Mbps PER @ -87 dBm, typical |
| | - 24Mbps PER @ -83 dBm, typical |
| | - 36Mbps PER @ -80 dBm, typical |
| | - 48Mbps PER @ -75 dBm, typical |
| - 54Mbps PER @ -73 dBm, typical | |
| SISO Receive Sensitivity (11n,20MHz) @10% PER | - MCS=0 PER @ -88 dBm, typical |
| | - MCS=1 PER @ -85 dBm, typical |
| | - MCS=2 PER @ -83 dBm, typical |

| | |
|---|--------------------------------------|
| | - MCS=3 PER @ -79 dBm, typical |
| | - MCS=4 PER @ -77 dBm, typical |
| | - MCS=5 PER @ -71 dBm, typical |
| | - MCS=6 PER @ -70 dBm, typical |
| | - MCS=7 PER @ -68 dBm, typical |
| MIMO Receive Sensitivity (11n,20MHz) @10% PER | - MCS=0 PER @ -89 dBm, typical |
| | - MCS=1 PER @ -88 dBm, typical |
| | - MCS=2 PER @ -87 dBm, typical |
| | - MCS=3 PER @ -83 dBm, typical |
| | - MCS=4 PER @ -79 dBm, typical |
| | - MCS=5 PER @ -74 dBm, typical |
| | - MCS=6 PER @ -72 dBm, typical |
| | - MCS=7 PER @ -69 dBm, typical |
| | - MCS=8 PER @ -86 dBm, typical |
| | - MCS=15 PER @ -67 dBm, typical |
| SISO Receive Sensitivity (11n,40MHz) @10% PER | - MCS=0 PER @ -85 dBm, typical |
| | - MCS=1 PER @ -81 dBm, typical |
| | - MCS=2 PER @ -80 dBm, typical |
| | - MCS=3 PER @ -77 dBm, typical |
| | - MCS=4 PER @ -73 dBm, typical |
| | - MCS=5 PER @ -69 dBm, typical |
| | - MCS=6 PER @ -67 dBm, typical |
| | - MCS=7 PER @ -66 dBm, typical |
| MIMO Receive Sensitivity (11n,40MHz) @10% PER | - MCS=0 PER @ -87 dBm, typical |
| | - MCS=1 PER @ -85 dBm, typical |
| | - MCS=2 PER @ -83 dBm, typical |
| | - MCS=3 PER @ -80 dBm, typical |
| | - MCS=4 PER @ -76 dBm, typical |
| | - MCS=5 PER @ -72 dBm, typical |
| | - MCS=6 PER @ -74 dBm, typical |
| | - MCS=7 PER @ -69 dBm, typical |
| | - MCS=8 PER @ -85 dBm, typical |
| | - MCS=15 PER @ -66 dBm, typical |
| SISO Receive Sensitivity (11ac,20MHz) @10% PER | - MCS=0, NSS1 PER @ -87 dBm, typical |
| | - MCS=1, NSS1 PER @ -84 dBm, typical |
| | - MCS=2, NSS1 PER @ -83 dBm, typical |
| | - MCS=3, NSS1 PER @ -79 dBm, typical |

| | |
|---|--------------------------------------|
| | - MCS=4, NSS1 PER @ -76 dBm, typical |
| | - MCS=5, NSS1 PER @ -71 dBm, typical |
| | - MCS=6, NSS1 PER @ -69 dBm, typical |
| | - MCS=7, NSS1 PER @ -68 dBm, typical |
| | - MCS=8, NSS1 PER @ -65 dBm, typical |
| MIMO Receive Sensitivity (11ac,20MHz) @10% PER | - MCS=0, NSS1 PER @ -87 dBm, typical |
| | - MCS=1, NSS1 PER @ -86 dBm, typical |
| | - MCS=2, NSS1 PER @ -85 dBm, typical |
| | - MCS=3, NSS1 PER @ -83 dBm, typical |
| | - MCS=4, NSS1 PER @ -79 dBm, typical |
| | - MCS=5, NSS1 PER @ -74 dBm, typical |
| | - MCS=6, NSS1 PER @ -73 dBm, typical |
| | - MCS=7, NSS1 PER @ -71 dBm, typical |
| | - MCS=8, NSS1 PER @ -67 dBm, typical |
| | - MCS=0, NSS2 PER @ -87 dBm, typical |
| - MCS=8, NSS2 PER @ -63 dBm, typical | |
| SISO Receive Sensitivity (11ac,40MHz) @10% PER | - MCS=0, NSS1 PER @ -84 dBm, typical |
| | - MCS=1, NSS1 PER @ -83 dBm, typical |
| | - MCS=2, NSS1 PER @ -80 dBm, typical |
| | - MCS=3, NSS1 PER @ -77 dBm, typical |
| | - MCS=4, NSS1 PER @ -73 dBm, typical |
| | - MCS=5, NSS1 PER @ -69 dBm, typical |
| | - MCS=6, NSS1 PER @ -67 dBm, typical |
| | - MCS=7, NSS1 PER @ -66 dBm, typical |
| | - MCS=8, NSS1 PER @ -61 dBm, typical |
| - MCS=9, NSS1 PER @ -60 dBm, typical | |
| MIMO Receive Sensitivity (11ac,40MHz) @10% PER | - MCS=0, NSS1 PER @ -86 dBm, typical |
| | - MCS=1, NSS1 PER @ -85 dBm, typical |
| | - MCS=2, NSS1 PER @ -83 dBm, typical |
| | - MCS=3, NSS1 PER @ -80 dBm, typical |
| | - MCS=4, NSS1 PER @ -75 dBm, typical |
| | - MCS=5, NSS1 PER @ -72 dBm, typical |
| | - MCS=6, NSS1 PER @ -70 dBm, typical |
| | - MCS=7, NSS1 PER @ -69 dBm, typical |
| | - MCS=8, NSS1 PER @ -65 dBm, typical |
| | - MCS=9, NSS1 PER @ -63 dBm, typical |
| | - MCS=0, NSS2 PER @ -84 dBm, typical |

| | |
|---------------------|---------------------------------------|
| | - MCS=9, NSS2 PER @ -59 dBm, typical |
| Maximum Input Level | 802.11b : -10 dBm |
| | 802.11g/n : -20 dBm |
| Antenna Reference | Small antennas with 0~2 dBi peak gain |

4.2 5GHz RF Specification

Conditions : VDD=3.3V ; Temp:25°C

| Feature | Description |
|--|--|
| WLAN Standard | IEEE 802.11a/n 2x2, WiFi compliant |
| Frequency Range | 4.900 GHz ~ 5.845 GHz (5.0 GHz ISM Band) |
| Number of Channels | 5.0GHz : Please see the table ¹ |
| Modulation | 802.11a : OFDM /64-QAM, 16-QAM, QPSK, BPSK 802.11n : OFDM /64-QAM, 16-QAM, QPSK, BPSK 802.11ac : OFDM /256-QAM |
| Output Power | 802.11a /54Mbps : 13 dBm ± 1.5 dB @ EVM ≤ -25dB |
| | 802.11n /MCS7 : 12 dBm ± 1.5 dB @ EVM ≤ -28dB |
| | 802.11ac /MCS9 : 10 dBm ± 1.5 dB @ EVM ≤ -32dB |
| SISO Receive Sensitivity (11a,20MHz) @10% PER | - 6Mbps PER @ -88 dBm, typical |
| | - 9Mbps PER @ -87 dBm, typical |
| | - 12Mbps PER @ -85 dBm, typical |
| | - 18Mbps PER @ -82 dBm, typical |
| | - 24Mbps PER @ -79 dBm, typical |
| | - 36Mbps PER @ -76 dBm, typical |
| | - 48Mbps PER @ -71 dBm, typical |
| | - 54Mbps PER @ -69 dBm, typical |
| MIMO Receive Sensitivity (11a,20MHz) @10% PER | - 6Mbps PER @ -88 dBm, typical |
| | - 9Mbps PER @ -88 dBm, typical |
| | - 12Mbps PER @ -87 dBm, typical |
| | - 18Mbps PER @ -85 dBm, typical |
| | - 24Mbps PER @ -82 dBm, typical |
| | - 36Mbps PER @ -79 dBm, typical |
| | - 48Mbps PER @ -74 dBm, typical |
| | - 54Mbps PER @ -70 dBm, typical |
| SISO Receive Sensitivity (11n,20MHz) @10% PER | - MCS=0 PER @ -87 dBm, typical |
| | - MCS=1 PER @ -84 dBm, typical |
| | - MCS=2 PER @ -82 dBm, typical |

| | |
|---|--------------------------------------|
| | - MCS=3 PER @ -79 dBm, typical |
| | - MCS=4 PER @ -75 dBm, typical |
| | - MCS=5 PER @ -70 dBm, typical |
| | - MCS=6 PER @ -69 dBm, typical |
| | - MCS=7 PER @ -67 dBm, typical |
| MIMO Receive Sensitivity (11n,20MHz) @10% PER | - MCS=0 PER @ -88 dBm, typical |
| | - MCS=1 PER @ -87 dBm, typical |
| | - MCS=2 PER @ -85 dBm, typical |
| | - MCS=3 PER @ -82 dBm, typical |
| | - MCS=4 PER @ -78 dBm, typical |
| | - MCS=5 PER @ -73 dBm, typical |
| | - MCS=6 PER @ -72 dBm, typical |
| | - MCS=7 PER @ -70 dBm, typical |
| | - MCS=8 PER @ -87 dBm, typical |
| | - MCS=15 PER @ -67 dBm, typical |
| SISO Receive Sensitivity (11n,40MHz) @10% PER | - MCS=0 PER @ -84 dBm, typical |
| | - MCS=1 PER @ -81 dBm, typical |
| | - MCS=2 PER @ -79 dBm, typical |
| | - MCS=3 PER @ -76 dBm, typical |
| | - MCS=4 PER @ -72 dBm, typical |
| | - MCS=5 PER @ -68 dBm, typical |
| | - MCS=6 PER @ -66 dBm, typical |
| | - MCS=7 PER @ -65 dBm, typical |
| MIMO Receive Sensitivity (11n,40MHz) @10% PER | - MCS=0 PER @ -86 dBm, typical |
| | - MCS=1 PER @ -84 dBm, typical |
| | - MCS=2 PER @ -82 dBm, typical |
| | - MCS=3 PER @ -79 dBm, typical |
| | - MCS=4 PER @ -75 dBm, typical |
| | - MCS=5 PER @ -71 dBm, typical |
| | - MCS=6 PER @ -69 dBm, typical |
| | - MCS=7 PER @ -68 dBm, typical |
| | - MCS=8 PER @ -84 dBm, typical |
| | - MCS=15 PER @ -65 dBm, typical |
| SISO Receive Sensitivity (11ac,20MHz) @10% PER | - MCS=0, NSS1 PER @ -85 dBm, typical |
| | - MCS=1, NSS1 PER @ -83 dBm, typical |
| | - MCS=2, NSS1 PER @ -81 dBm, typical |
| | - MCS=3, NSS1 PER @ -78 dBm, typical |

| | |
|---|---|
| | - MCS=4, NSS1 PER @ -74 dBm, typical |
| | - MCS=5, NSS1 PER @ -69 dBm, typical |
| | - MCS=6, NSS1 PER @ -68 dBm, typical |
| | - MCS=7, NSS1 PER @ -67 dBm, typical |
| | - MCS=8, NSS1 PER @ -63 dBm, typical |
| MIMO Receive Sensitivity (11ac,20MHz) @10% PER | - MCS=0, NSS1 PER @ -87 dBm, typical |
| | - MCS=1, NSS1 PER @ -86 dBm, typical |
| | - MCS=2, NSS1 PER @ -84 dBm, typical |
| | - MCS=3, NSS1 PER @ -81 dBm, typical |
| | - MCS=4, NSS1 PER @ -77 dBm, typical |
| | - MCS=5, NSS1 PER @ -72 dBm, typical |
| | - MCS=6, NSS1 PER @ -71 dBm, typical |
| | - MCS=7, NSS1 PER @ -70 dBm, typical |
| | - MCS=8, NSS1 PER @ -67 dBm, typical |
| | - MCS=0, NSS2 PER @ -86 dBm, typical |
| | - MCS=8, NSS2 PER @ -62 dBm, typical |
| | SISO Receive Sensitivity (11ac,40MHz) @10% PER |
| - MCS=1, NSS1 PER @ -80 dBm, typical | |
| - MCS=2, NSS1 PER @ -78 dBm, typical | |
| - MCS=3, NSS1 PER @ -75 dBm, typical | |
| - MCS=4, NSS1 PER @ -72 dBm, typical | |
| - MCS=5, NSS1 PER @ -67 dBm, typical | |
| - MCS=6, NSS1 PER @ -66 dBm, typical | |
| - MCS=7, NSS1 PER @ -65 dBm, typical | |
| - MCS=8, NSS1 PER @ -60 dBm, typical | |
| - MCS=9, NSS1 PER @ -59 dBm, typical | |
| MIMO Receive Sensitivity (11ac,40MHz) @10% PER | - MCS=0, NSS1 PER @ -85 dBm, typical |
| | - MCS=1, NSS1 PER @ -83 dBm, typical |
| | - MCS=2, NSS1 PER @ -83 dBm, typical |
| | - MCS=3, NSS1 PER @ -78 dBm, typical |
| | - MCS=4, NSS1 PER @ -75 dBm, typical |
| | - MCS=5, NSS1 PER @ -70 dBm, typical |
| | - MCS=6, NSS1 PER @ -69 dBm, typical |
| | - MCS=7, NSS1 PER @ -68 dBm, typical |
| | - MCS=8, NSS1 PER @ -63 dBm, typical |
| | - MCS=9, NSS1 PER @ -62 dBm, typical |
| | - MCS=0, NSS2 PER @ -83 dBm, typical |

| | |
|---|---|
| | - MCS=9, NSS2 PER @ -58 dBm, typical |
| SISO Receive Sensitivity (11ac,80MHz) @10% PER | - MCS=0, NSS1 PER @ -80 dBm, typical |
| | - MCS=1, NSS1 PER @ -77 dBm, typical |
| | - MCS=2, NSS1 PER @ -75 dBm, typical |
| | - MCS=3, NSS1 PER @ -71 dBm, typical |
| | - MCS=4, NSS1 PER @ -68 dBm, typical |
| | - MCS=5, NSS1 PER @ -65 dBm, typical |
| | - MCS=6, NSS1 PER @ -63 dBm, typical |
| | - MCS=7, NSS1 PER @ -61 dBm, typical |
| | - MCS=9, NSS1 PER @ -57 dBm, typical |
| | - MCS=9, NSS1 PER @ -55 dBm, typical |
| | MIMO Receive Sensitivity (11ac,80MHz) @10% PER |
| - MCS=1, NSS1 PER @ -80 dBm, typical | |
| - MCS=2, NSS1 PER @ -78 dBm, typical | |
| - MCS=3, NSS1 PER @ -74 dBm, typical | |
| - MCS=4, NSS1 PER @ -72 dBm, typical | |
| - MCS=5, NSS1 PER @ -68 dBm, typical | |
| - MCS=6, NSS1 PER @ -66 dBm, typical | |
| - MCS=7, NSS1 PER @ -64 dBm, typical | |
| - MCS=8, NSS1 PER @ -60 dBm, typical | |
| - MCS=9, NSS1 PER @ -58 dBm, typical | |
| - MCS=9, NSS2 PER @ -54 dBm, typical | |
| Maximum Input Level | 802.11a/n : -30 dBm |
| Antenna Reference | Small antennas with 0~2 dBi peak gain |

5 GHz (20MHz) Channel table

| Band (GHz) | Operating Channel Numbers | Channel center frequencies(MHz) |
|-------------------|----------------------------------|--|
| 5.15GHz~5.25GHz | 36 | 5180 |
| | 40 | 5200 |
| | 44 | 5220 |
| | 48 | 5240 |
| 5.25GHz~5.35GHz | 52 | 5260 |
| | 56 | 5280 |
| | 60 | 5300 |
| | 64 | 5320 |
| 5.5GHz~5.7GHz | 100 | 5500 |
| | 104 | 5520 |
| | 108 | 5540 |
| | 112 | 5560 |
| | 116 | 5580 |
| | 120 | 5600 |
| | 124 | 5620 |
| | 128 | 5640 |
| | 132 | 5660 |
| | 136 | 5680 |
| 5.725GHz~5.825GHz | 140 | 5700 |
| | 149 | 5745 |
| | 153 | 5765 |
| | 157 | 5785 |
| | 161 | 5805 |

5. Bluetooth Specification

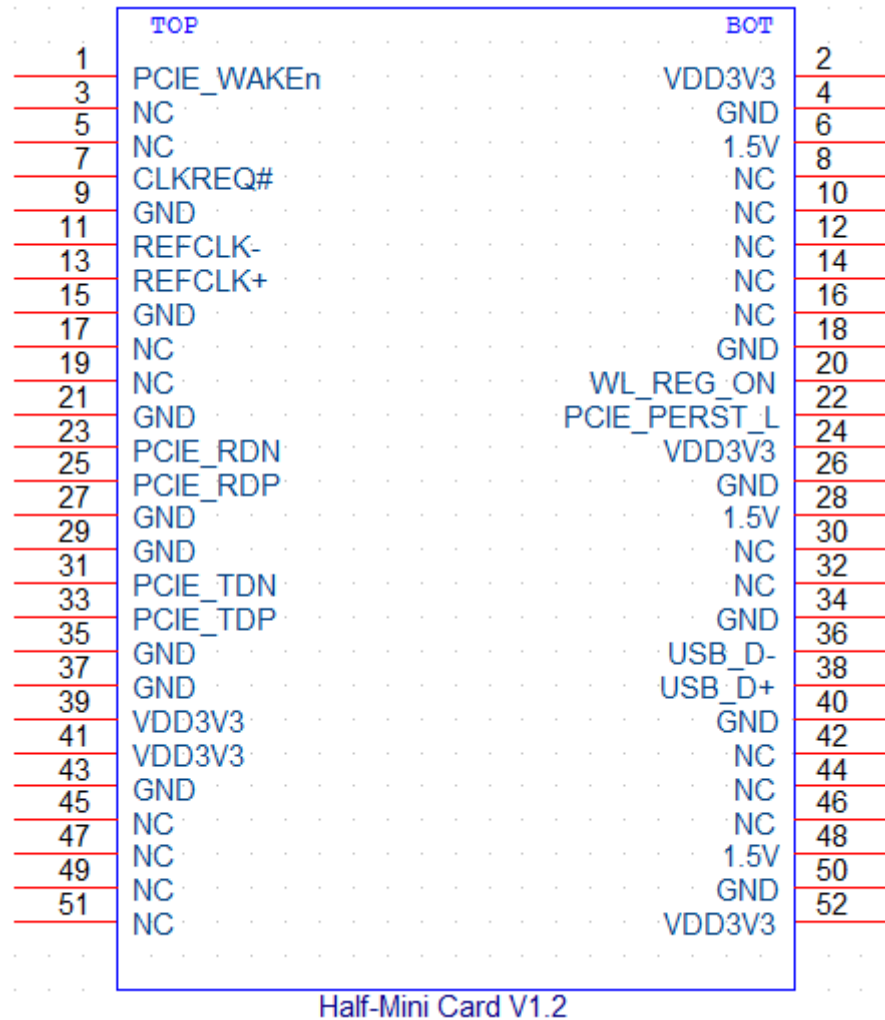
5.1 Bluetooth Specification

Conditions : VDD=3.3V ; Temp:25°C

| Feature | Description | | |
|---|---------------------------------------|-----------------|-------------|
| General Specification | | | |
| Bluetooth Standard | Bluetooth V4.1 of 1, 2 and 3 Mbps. | | |
| Antenna Reference | Small antennas with 0~2 dBi peak gain | | |
| Frequency Band | 2402 MHz ~ 2480 MHz | | |
| Number of Channels | 79 channels | | |
| Modulation | FHSS, GFSK, DPSK, DQPSK | | |
| RF Specification | | | |
| | Min. | Typical. | Max. |
| Output Power (Class 1.5) | | 7 dBm | |
| Output Power (Class 2) | | 2 dBm | |
| Sensitivity @ BER=0.1% for GFSK (1Mbps) | | -80 dBm | |
| Sensitivity @ BER=0.01% for $\pi/4$ -DQPSK (2Mbps) | | -80 dBm | |
| Sensitivity @ BER=0.01% for 8DPSK (3Mbps) | | -78 dBm | |
| Maximum Input Level | GFSK (1Mbps):-20dBm | | |
| | $\pi/4$ -DQPSK (2Mbps) :-20dBm | | |
| | 8DPSK (3Mbps) :-20dBm | | |

6. Pin Assignments

6.1 Pin Definition



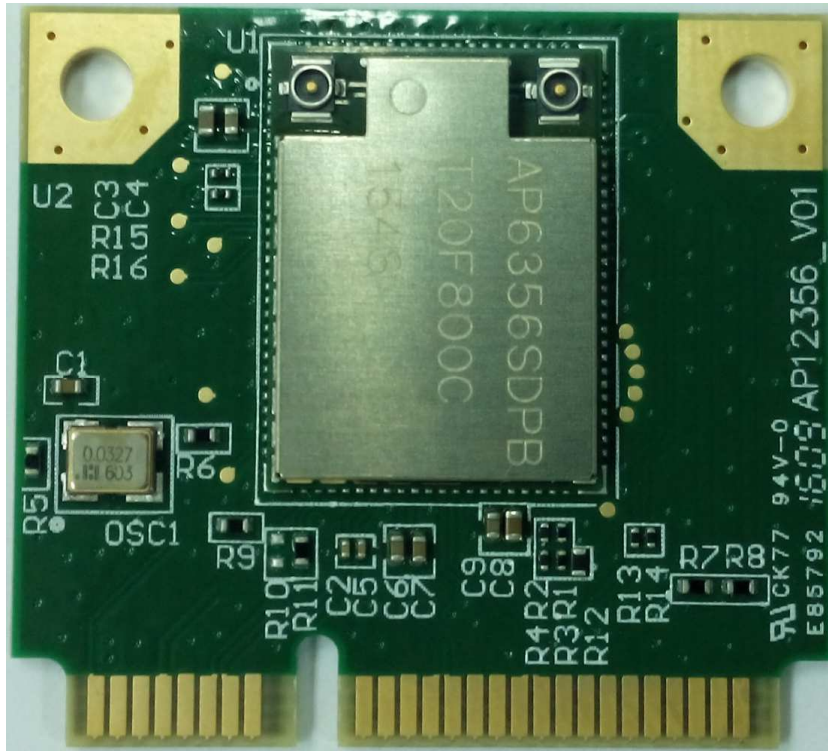
| NO | Name | Type | Description |
|------------|--------------|------|---|
| TOP | | | |
| 1 | PCIE_WAKEn | O | PCIe wake signal |
| 3 | NC | — | No connect |
| 5 | NC | — | No connect |
| 7 | PCIE_CLKREQn | I/O | PCIe clock request |
| 9 | GND | — | Ground connections |
| 11 | PCIE_RCLK_N | I | PCI Express differential clock input-Negative |
| 13 | PCIE_RCLK_P | I | PCI Express differential clock input-Positive |
| 15 | GND | — | Ground connections |
| 17 | NC | — | No connect |
| 19 | NC | — | No connect |

| | | | |
|---------------|-------------|-----|--|
| 21 | GND | — | Ground connections |
| 23 | PCIE_TX_N | O | PCI Express transmit data-Negative |
| 25 | PCIE_TX_P | O | PCI Express transmit data-Positive |
| 27 | GND | — | Ground connections |
| 29 | GND | — | Ground connections |
| 31 | PCIE_RX_N | I | PCI Express receive data-Negative |
| 33 | PCIE_RX_P | I | PCI Express receive data-Positive |
| 35 | GND | — | Ground connections |
| 37 | GND | — | Ground connections |
| 39 | VDD_3V3 | I | VDD system power supply input |
| 41 | VDD_3V3 | I | VDD system power supply input |
| 43 | GND | — | Ground connections |
| 45 | NC | — | No connect |
| 47 | NC | — | No connect |
| 49 | NC | — | No connect |
| 51 | NC | — | No connect |
| BOTTOM | | | |
| 2 | VDD_3V3 | I | VDD system power supply input |
| 4 | GND | — | Ground connections |
| 6 | 1.5V (NC) | — | No connect |
| 8 | NC | — | No connect |
| 10 | NC | — | No connect |
| 12 | NC | — | No connect |
| 14 | NC | — | No connect |
| 16 | NC | — | No connect |
| 18 | GND | — | Ground connections |
| 20 | WL_DISABLE | I | Internal regulators power disable |
| 22 | PCIE_PERSTn | I | PCIe host indication to reset the device |
| 24 | VDD_3V3 | I | VDD system power supply input |
| 26 | GND | — | Ground connections |
| 28 | 1.5V (NC) | — | No connect |
| 30 | NC | — | No connect |
| 32 | NC | — | No connect |
| 34 | GND | — | Ground connections |
| 36 | USB_DM | I/O | USB serial differential data Negative |
| 38 | USB_DP | I/O | USB serial differential data Positive |
| 40 | GND | — | Ground connections |

| | | | |
|-----------|-----------|---|-------------------------------|
| 42 | NC | — | No connect |
| 44 | NC | — | No connect |
| 46 | NC | — | No connect |
| 48 | 1.5V (NC) | — | No connect |
| 50 | GND | — | Ground connections |
| 52 | VDD_3V3 | I | VDD system power supply input |

6.3 Sample Picture (Label Diagram)

< TOP VIEW >



< BOT VIEW >



7. Package Information

7.1 Label

Label A→ Carton box label



(QR CODE 用 GTC-27348-000001-RS 來產出)

Label B→ Inner box label .



備註:

Date code 依 YYWW 編碼，YY=西元年後兩碼(00~ 99)，WW=WEEK(01~ 53)

ex.: 2014 年 W51 製作，以 1451 表示。

Lot code 依生產工單號碼編碼，

ex.: T20EC00B

T--> 生產地

2--> 生產型態碼，1 = 量產，2 = 試產

0E--> 生產西元年後兩碼(16 進制)，2014 年= 0E

C--> 生產西元月(16 進制)，12 月= C

00B--> 流程卡子批號(16 進制)，011= 00B

Label C → Carton box label .



備註:

PKG S/N 出貨序號碼，

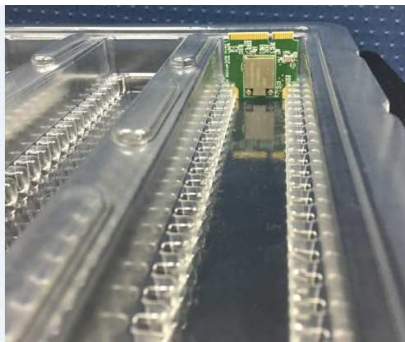
ex.: 2015/ 01/15 出貨的#1 箱--> 9PKG150115000001。

委外包裝，出貨日為裝箱日。2015/ 01/15 裝箱的#1 箱--> 9PKG150115000001

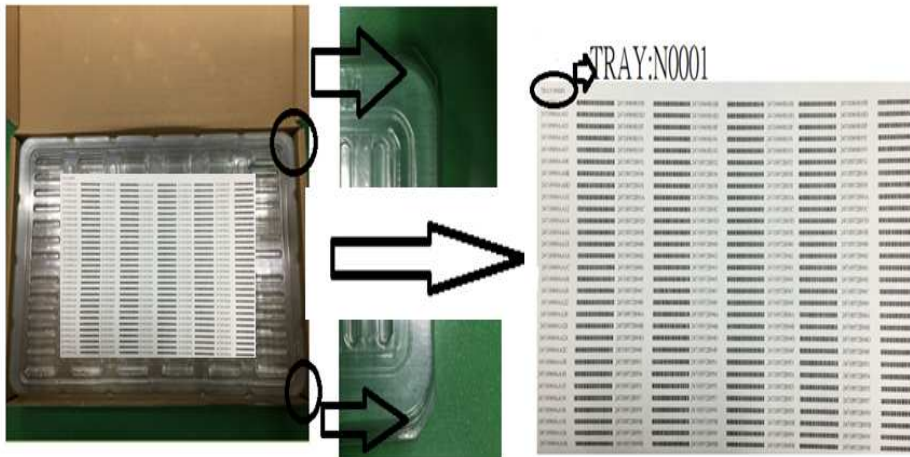
7.2 Package Manner



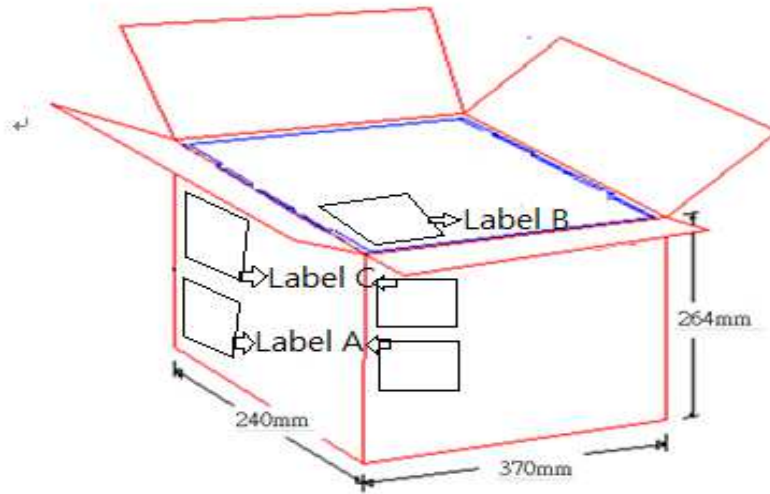
TRAY PLATE 一共 150 格 150PCS , 每格放置 1PCS 產品



放置方向須正確 金手指朝上 正面(SIP)朝前



- 1: TRAY PLATE R 角的部分須朝右邊
- 2: 一個 BOX 必須列印出 每個 TRAY PLATE 的 WIFI MAC 資訊
(一個 BOX 共 300PCS)
- 3: A4 紙 的左上角須註明 TRAY Number(一張 A4 150 個 MAC)
- 4: BOX 內可裝 300PCS(一個 BOX 使用兩個 TRAY PLATE 上下堆疊)




(1carton 裝 4box)

| No | TITLE | P/N |
|----|---|---------------|
| 1 | MSL caution / Storage Condition Label (A) | NA |
| 2 | Box Label (B) 70mmX 50mm | 42P-200-0001R |
| 3 | Carton Label (C) 100mm*70mm | 42P-210-0002R |
| 4 | BOX (352*219*58mm) | 41P-130-0051G |
| 5 | CARTON (264*240*370mm) | 410-120-0030G |
| 6 | TRAY PLATE (HF) AP12356_V01 333mm*214mm*27mm 150UP PET SHENG MEI | 41P-140-0037R |
| 7 | | |
| 8 | | |

8. MSL caution/Storage Condition

10.3 MSL Level / Storage Condition

| | | |
|---|---|--|
|  | <p>Caution This bag contains MOISTURE-SENSITIVE DEVICES</p> | <p>LEVEL 4</p> <p><small>If blank, see adjacent bar code label.</small></p> |
| <p>1. Calculated shelf life in sealed bag: 12 months at <math>40^{\circ}\text{C}</math> and <math><90\%</math> relative humidity (RH)</p> | | |
| <p>2. Peak package body temperature: <u>250</u> $^{\circ}\text{C}$ <small>If blank, see adjacent bar code label.</small></p> | | |
| <p>3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be</p> <p>a) Mounted within: <u>72</u> hours of factory conditions <small>If blank, see adjacent bar code label.</small></p> <p style="padding-left: 40px;">$\leq 30^{\circ}\text{C}/60\% \text{ RH}$, or</p> <p>b) Stored per J-STD-033</p> | | |
| <p>4. Devices require bake, before mounting, if:</p> <p>a) Humidity Indicator Card reads >10% for level 2a-5a devices or >60% for level 2 devices when read at $23 \pm 5^{\circ}\text{C}$</p> <p>b) 3a or 3b are not met.</p> | | |
| <p>5. If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure.</p> | | |
| <p>Bag Seal Date: _____ <small>If blank, see adjacent bar code label.</small></p> | | |
| <p><small>Note: Level and body temperature defined by IPC/JEDEC J-STD-020</small></p> | | |

***NOTE : Accumulated baking time should not exceed 96hrs**