# VS6621S80

## IEEE 802.11a/b/g/n/ac/ax 1T1R+Bluetooth 5.4

## Combo Module

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# 1. Device Overview

## 1.1 Descriptions

The VS6621S80 is a highly integrated module that supports 1T1R 802.11 a/b/g/n/ac/ax with Wireless LAN (WLAN) SDIO (SDIO 1.1/2.0/3.0) interface controller and Bluetooth 5.4 HS-UART interface controller. The
high speed FFT/IFFT paths, combined with BPSK, QPSK, 16QAM, 64QAM, 256QAM and up to 1024QAM modulation of the individual subcarriers, and compatible coding rate of 1/2, 2/3, 3/4, 5/6, provide up to 600Mbps for IEEE 802.11ax. The VS6621S80 MAC supports 802.11e for multimedia applications, 802.11i and WAPI for security.The VS6621S80 provides a complete solution for a high-performance integrated wireless and Bluetooth device. It suitable for STB,TVs,tablets,phones,IPC and other fields such as consumer electronic devices, and can also be applied to the fields with high reliability requirements,such as industrial interconnection.

## 1.2 Features

### 1.2.1 General Features

- Supports 3.3V power supply
- Supports SDIO 3.0
- MAC, Baseband PHY and RF in a single module for IEEE 802.11a/b/g/n/ac/ax compatible WLAN
- IEEE 802.11i (WPA, WPA2, WPA3). Open, shared key, and pair-wise key authentication services
- 12.0mm*12.0mm LGA-44pin package

### 1.2.2 Wi-Fi Key Features

- Supports IEEE 802.11a/b/g/n/ac/ax wave-2
- Supports IEEE 802.11 d/e/h/i/k/mc/r/v/w
- Supports Wi-Fi STA, AP, P2P, TDLS modes
- Supports LDPC,STBC
- Supports UL/DL OFDMA, DL MU-MIMO
- Supports QoS, WFA WMM, WMM PS
- Supports WPA, WPA2, WPA3 encryption, WAPI
- Supports BSS Color, Spatial Reuse
- Supports TWT, Intra-PPDU PS, VHT txop PS
- Supports WOW
- Supports 2.4Ghz and 5Ghz band channels
- 20MHz / 40MHz / 80MHz bandwidth transmission
- Maximum data rate up to 600Mbps in 802.11ax

- OFDM with BPSK, QPSK, 16QAM, 64QAM and 256QAM and 1024QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble

### 1.2.3 Bluetooth Key Features

- Supports Bluetooth (Classic BT+BLE) v2.1、v3.0、v4.2、v5.0、v5.4
- Enhanced BT/Wi-Fi Coexistence Control to improve transmission quality in different profiles
- Supports BR/EDR/LE 1M/LE 2M/LE LR
- Supports sco and esco link
- Supports HS-UART /SDIO interface for BT transfer
- Supports SSP/Secure Connection
- PCM interface for audio data transmisson via Bluetooth controller

## 1.3 Functional Block Diagram

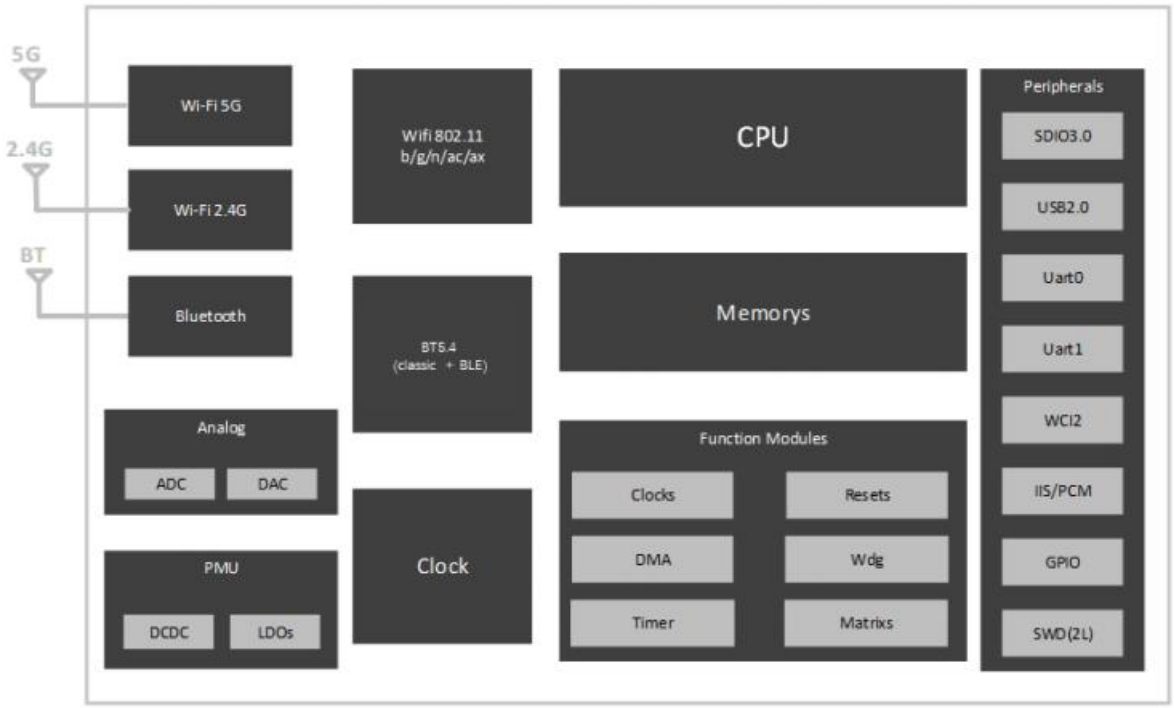



Figure 1. Block Diagram of VS6621S80&40

# 2. Pin Configuration and Functions

## 2.1 Module Pin Diagram

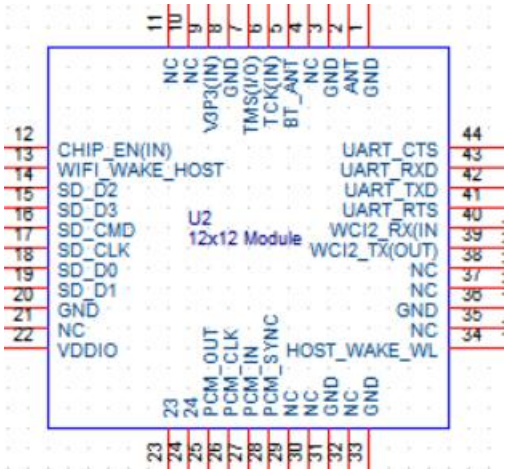



Figure 2.Pin Diagram of VS6621S80&40

## 2.2 Pin Functions

| Pin | Name | Description |
|---|---|---|
| 1 | GND | Ground |
| 2 | ANT | WLAN and BT RF input/output port |
| 3 | GND | Ground |
| 4 | NC | No connect, keep floating |
| 5 | GND | Ground |
| 6 | TCK(IN) | No connect |
| 7 | TMS(I/O) | MTMS BT wake host and to on/off host power |

| | | |
|---|---|---|
| 8 | NC | No connect, keep floating |
| 9 | V3P3 | 3.3V power supply |
| 10 | NC | No connect, keep floating |
| 11 | NC | No connect, keep floating |
| 12 | CHIP_EN | Chip Enable pin(high enable/ low disable) |
| 13 | WL_WAKE_HOST | WLAN wake up Host |
| 14 | SDIO_DATA_2 | SDIO port data 2 |
| 15 | SDIO_DATA_3 | SDIO port data 3 |
| 16 | SDIO_CMD | SDIO Command line |
| 17 | SDIO_CLK | SDIO Clock line |
| 18 | SDIO_DATA_0 | SDIO port data 0 |
| 19 | SDIO_DATA_1 | SDIO port data 1 |
| 20 | GND | Ground |
| 21 | NC | No connect, keep floating |
| 22 | VDDIO | I/O power supply |
| 23 | NC | No connect, keep floating |
| 24 | NC | No connect, keep floating |
| 25 | PCM_OUT | PCM data output |
| 26 | PCM_CLK | PCM clock |
| 27 | PCM_IN | PCM data input |
| 28 | PCM_SYNC | PCM sync signal |
| 29 | NC | No connect, keep floating |
| 30 | NC | No connect, keep floating |
| 31 | GND | Ground |
| 32 | NC | No connect, keep floating |
| 33 | GND | Ground |
| 34 | HOST_WAKE_WL | Host wake up WLAN |
| 35 | NC | No connect, keep floating |
| 36 | GND | Ground |
| 37 | NC | No connect, keep floating |
| 38 | NC | No connect, keep floating |

| | | |
|---|---|---|
| 39 | NC | No connect, keep floating |
| 40 | NC | No connect, keep floating |
| 41 | UART_RTS | UART1 TX |
| 42 | UART_TXD | High-Speed UART0 TX |
| 43 | UART_RXD | High-Speed UART0 RX |
| 44 | UART_CTS | UART1 RX |

# 3. Specifications

## 3.1 General Characteristics

| Category | Descriptions |
|---|---|
| Dimension | L*W*H :12.0mm (±0.2mm)*12.0mm (±0.2mm)*1.5mm (±0.2mm) |
| MODEL | VS6621S80 80M |
| | VS6621S40 40M |
| Chip-set | SWT6621-S/SWT6621-SH |
| Standard | IEEE 802.11a/b/g/n/ac/ax+BT 5.0 |
| Modulation Type | CCK, OFDM (16 QAM/64 QAM/256 QAM/1024 QAM),OFDMA |
| Frequency Band | 2400~2500MHz,4900-5845MHz |
| Interface | WLAN& Bluetooth: SDIO |
| Data Security | WPA/WPA2/WPA3 |
| Transmit Power | 2.4G:<br>11b 11M:20±2dBm<br>11g 54M:18±2dBm<br>11n HT20 MCS7:17±2dBm<br>11n HT40 MCS7:17±2dBm<br>11ax HE20 MCS11 13±2dBm<br>11ax HE40 MCS11 13±2dBm<br>5G:<br>11a 54M:18±2dBm<br>11n HT20 MCS7:16±2dBm<br>11n HT40 MCS7:16±2dBm<br>11ac VHT20 MCS8:16±2dBm<br>11ac VHT40 MCS9:15±2dBm<br>11ac VHT80 MCS9:15±2dBm<br>11ax HE20 MCS11 13±2dBm<br>11ax HE40 MCS11 13±2dBm<br>11ax HE80 MCS11 13±2dBm |

| | |
|---|---|
| Rx Sensitivity | 2.4G:<br>11b 11M:-91dBm@8% PER<br>11g 54M: -77dBm@10% PER<br>11n HT20 MCS7: -75dBm@10% PER<br>11n HT40 MCS7: -72dBm@10% PER<br>11ax HE40 MCS11: -61dBm@10% PER<br>5G:<br>11a 54M:-76dBm@10% PER<br>11n HT20 MCS7: -74dBm@10% PER |

| | |
|---|---|
| | 11n HT40 MCS7: -71dBm@10% PER<br>11ac VTH80 MCS9:-62dBm@10% PER<br>11ax HE40 MCS11: -61dBm@10% PER<br>11ax HE80 MCS11: -58dBm@10% PER |
| Data Rate | 802.11b [11,5.5,2 and 1Mbps]<br>802.11g [54,48,36,24,18,12,9&6Mbps]<br>802.11n HT20:up to 72.2Mbps<br>802.11n HT40:up to 150Mbps<br>802.11ac VHT80:up to 433Mbps<br>802.11ax HE20:up to 143.4Mbps<br>802.11ax HE40:up to 286.8Mbps<br>802.11ax HE80:up to 600Mbps |
| Frequency Error | 2.4GHz:<±25 ppm(11b),<±20 ppm(11g/n);5GHz:<±20 ppm |
| Ambient Temperature | -30℃~70℃ |
| Storage Temperature | -40℃~85℃ |
| Antenna | External antenna |
| Operating System | Linux |
| Operating Voltage | VBAT:3.3V VDDIO:3.3V or 1.8V |

## 3.2 RF Characteristics

All measurements are made under nominal supply voltage, room temperature and conducted conditions at each antenna port rather than antenna.

### 3.2.1 Receiver RF Specifications

| Parameter | Conditions | | Min. | Nom. | Max. | Unit |
|---|---|---|---|---|---|---|
| Receive input frequency | | | | | | |
| 2.4GHz | 802.11b/g/n/ax mode | | 2400 | - | 2500 | MHz |
| Receiver sensitivity | | | | | | |
| 802.11b | 1Mbps | FER<8%, Packet size= 1,024bytes | - | - | -82 | dBm |
| | 2Mbps | | - | - | -80 | dBm |
| | 5.5Mbps | | - | - | -78 | dBm |
| | 11Mbps | | - | - | -76 | dBm |
| 802.11g | 6Mbps | PER<10%, Packet size= | - | - | -82 | dBm |
| | 9Mbps | | - | - | -81 | dBm |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 12Mbps | 1,024bytes | - | - | -79 | dBm |
| | 18Mbps | | - | - | -77 | dBm |
| | 24Mbps | | - | - | -74 | dBm |
| | 36Mbps | | - | - | -70 | dBm |
| | 48Mbps | | - | - | -66 | dBm |
| | 54Mbps | | - | - | -65 | dBm |
| 802.11n (HT20) | MCS0. | PER<10%, Packet size= 4,096bytes | - | - | -82 | dBm |
| | MCS1. | | - | - | -79 | dBm |
| | MCS2 | | - | - | -77 | dBm |
| | MCS3. | | - | - | -74 | dBm |
| | MCS4. | | - | - | -70 | dBm |
| | MCS5. | | - | - | -66 | dBm |
| | MCS6. | | - | - | -65 | dBm |
| | MCS7. | | - | - | -64 | dBm |
| 802.11n (HT40) | MCS0. | PER<10%, Packet size= 4,096bytes | - | - | -79 | dBm |
| | MCS1. | | - | - | -77 | dBm |
| | MCS2 | | - | - | -74 | dBm |
| | MCS3. | | - | - | -71 | dBm |
| | MCS4. | | - | - | -67 | dBm |
| | MCS5. | | - | - | -63 | dBm |
| | MCS6. | | - | - | -62 | dBm |
| | MCS7. | | - | - | -61 | dBm |
| 802.11ax (HE20) | MCS0. | PER<10%, Packet size= 4,096bytes | - | - | -82 | dBm |
| | MCS1. | | - | - | -79 | dBm |
| | MCS2 | | - | - | -77 | dBm |
| | MCS3. | | - | - | -74 | dBm |
| | MCS4. | | - | - | -70 | dBm |
| | MCS5. | | - | - | -66 | dBm |
| | MCS6. | | - | - | -65 | dBm |
| | MCS7. | | - | - | -64 | dBm |
| | MCS8. | | - | - | -59 | dBm |
| | MCS9. | | - | - | -57 | dBm |
| | MCS10. | | - | - | -54 | dBm |
| | MCS11. | | - | - | -52 | dBm |
| 802.11ax (HE40) | MCS0. | PER<10%, Packet size= | - | - | -79 | dBm |
| | MCS1. | | - | - | -76 | dBm |

| | | | | | | |
|---|---|---|---|---|---|---|
| | MCS2 | 4,096bytes | - | - | -74 | dBm |
| | MCS3. | | - | - | -71 | dBm |
| | MCS4. | | - | - | -67 | dBm |
| | MCS5. | | - | - | -63 | dBm |
| | MCS6. | | - | - | -62 | dBm |
| | MCS7. | | - | - | -61 | dBm |
| | MCS8. | | - | - | -56 | dBm |
| | MCS9. | | - | - | -54 | dBm |
| | MCS10. | | - | - | -51 | dBm |
| | MCS11. | | - | - | -49 | dBm |
| Maximum input level | | | | | | |
| 802.11b | FER<8% | | -10 | - | - | dBm |
| 802.11g | FER<10% | | -20 | - | - | dBm |
| 802.11n | FER<10% | | -30 | | | dBm |
| 802.11ax | FER<10% | | -20 | | | dBm |

| Parameter | Conditions | | Min. | Nom. | Max. | Unit |
|---|---|---|---|---|---|---|
| Receive input frequency | | | | | | |
| 5GHz | 802.11a/n/ac/ax mode | | 4900 | - | 5845 | MHz |
| Receiver sensitivity | | | | | | |
| 802.11a | 6Mbps | FER<10%, Packet size= 1,024bytes | - | - | -82 | dBm |
| | 9Mbps | | - | - | -81 | dBm |
| | 12Mbps | | - | - | -79 | dBm |
| | 18Mbps | | - | - | -77 | dBm |
| | 24Mbps | | - | - | -74 | dBm |
| | 36Mbps | | - | - | -70 | dBm |
| | 48Mbps | | - | - | -66 | dBm |
| | 54Mbps | | - | - | -65 | dBm |
| 802.11n (HT20) | 6Mbps | PER<10%, Packet size= 4,096bytes | - | - | -82 | dBm |
| | 9Mbps | | - | - | -79 | dBm |
| | 12Mbps | | - | - | -77 | dBm |
| | 18Mbps | | - | - | -74 | dBm |
| | 24Mbps | | - | - | -70 | dBm |
| | 36Mbps | | - | - | -66 | dBm |
| | 48Mbps | | - | - | -65 | dBm |
| | 54Mbps | | - | - | -64 | dBm |

| | | | | | | |
|---|---|---|---|---|---|---|
| 802.11n (HT40) | MCS0. | PER<10%, Packet size= 4,096bytes | - | - | -79 | dBm |
| | MCS1. | | - | - | -77 | dBm |
| | MCS2 | | - | - | -74 | dBm |
| | MCS3. | | - | - | -71 | dBm |
| | MCS4. | | - | - | -67 | dBm |
| | MCS5. | | - | - | -63 | dBm |
| | MCS6. | | - | - | -62 | dBm |
| | MCS7. | | - | - | -61 | dBm |
| 802.11ac (VHT80) | MCS0. | PER<10%, Packet size= 4,096bytes | - | - | -76 | dBm |
| | MCS1. | | - | - | -73 | dBm |
| | MCS2 | | - | - | -71 | dBm |
| | MCS3. | | - | - | -68 | dBm |
| | MCS4. | | - | - | -64 | dBm |
| | MCS5. | | - | - | -60 | dBm |
| | MCS6. | | - | - | -59 | dBm |
| | MCS7. | | - | - | -58 | dBm |
| | MCS8. | | - | - | -53 | dBm |
| | MCS9. | | - | - | -51 | dBm |
| 802.11ax (HE80) | MCS0. | PER<10%, Packet size= 4,096bytes | - | - | -76 | dBm |
| | MCS1. | | - | - | -73 | dBm |
| | MCS2 | | - | - | -71 | dBm |
| | MCS3. | | - | - | -68 | dBm |
| | MCS4. | | - | - | -64 | dBm |
| | MCS5. | | - | - | -60 | dBm |
| | MCS6. | | - | - | -59 | dBm |
| | MCS7. | | - | - | -58 | dBm |
| | MCS8. | | - | - | -53 | dBm |
| | MCS9. | | - | - | -51 | dBm |
| | MCS10. | | - | - | -48 | dBm |
| | MCS11. | | - | - | -46 | dBm |
| Maximum input level | | | | | | |
| 802.11a | FER<10% | | -30 | - | - | dBm |
| 802.11n | FER<10% | | -30 | - | - | dBm |
| 802.11ac | FER<10% | | -30 | - | - | dBm |
| 802.11ax | FER<10% | | -30 | - | - | dBm |

### 3.2.2 Transmitter RF Specifications

| Parameter | Condition | Min. | Nom. | Max. | Unit. |
|---|---|---|---|---|---|
| Receive input frequency | | | | | |
| 802.11b/g/n/ax | 2.4GHz | 2400 | - | 2500 | MHz |
| Transmit power | | | | | |
| 802.11b | 11Mbps | 18 | 20 | 22 | dBm |
| 802.11g | 54Mbps | 16 | 18 | 20 | dBm |
| 802.11n | HT20, MCS7 | 15 | 17 | 19 | dBm |
| | HT40, MCS7 | 15 | 17 | 19 | dBm |
| 802.11ax | HE20,MCS11 | 11 | 13 | 15 | dBm |
| | HE40,MCS11 | 11 | 13 | 15 | dBm |
| Spectrum mask | | | | | |
| 802.11b | fc-22MHz<f<fc-11MHz&fc+11MHz<f<fc+22MHz | - | - | -30 | dBr |
| | fc-55MHz<f<fc-22MHz&fc+22MHz<f<fc+55MHz | - | - | -50 | dBr |
| 802.11g | fc±9MHz | - | - | 0 | dBr |
| | fc±11MHz | - | - | -20 | dBr |
| | fc±20MHz | - | - | -28 | dBr |
| | fc±30MHz | - | - | -40 | dBr |
| 802.11n | fc±9MHz | - | - | 0 | dBr |
| | fc±11MHz | - | - | -20 | dBr |
| | fc±20MHz | - | - | -28 | dBr |
| | fc±30MHz | - | - | -45 | dBr |
| 802.11ax (HE40) | fc±19.5MHz | - | - | 0 | dBr |
| | fc±20.5MHz | - | - | -20 | dBr |
| | fc±40MHz | - | - | -28 | dBr |
| | fc±60MHz | - | - | -40 | dBr |
| Center frequency tolerance | | | | | |
| 802.11b | | -25 | - | +25 | pmm |
| 802.11g/n/ax | | -20 | - | +20 | pmm |
| EVM (Error Vector Magnitude)* | | | | | |
| 802.11b | 1Mbps | - | - | 35 | % |
| | 2Mbps | - | - | 35 | % |
| | 5.5Mbps | - | - | 35 | % |
| | 11Mbps | - | - | 35 | % |

| | | | | | |
|---|---|---|---|---|---|
| 802.11g | 6Mbps | - | - | -5 | % |
| | 9Mbps | - | - | -8 | dB |
| | 12Mbps | - | - | -10 | dB |
| | 18Mbps | - | - | -13 | dB |
| | 24Mbps | - | - | -16 | dB |
| | 36Mbps | - | - | -19 | dB |
| | 48Mbps | - | - | -22 | dB |
| | 54Mbps | - | - | -25 | dB |
| 802.11n | MCS0. | - | - | -5 | dB |
| | MCS1. | - | - | -10 | dB |
| | MCS2 | - | - | -13 | dB |
| | MCS3. | - | - | -16 | dB |
| | MCS4. | - | - | -19 | dB |
| | MCS5. | - | - | -22 | dB |
| | MCS6. | - | - | -25 | dB |
| | MCS7. | - | - | -28 | dB |
| 802.11ax | MCS0. | - | - | -5 | dB |
| | MCS1. | - | - | -10 | dB |
| | MCS2 | - | - | -13 | dB |
| | MCS3. | - | - | -16 | dB |
| | MCS4. | - | - | -19 | dB |
| | MCS5. | - | - | -22 | dB |
| | MCS6. | - | - | -25 | dB |
| | MCS7. | - | - | -27 | dB |
| | MCS8. | - | - | -30 | dB |
| | MCS9. | - | - | -32 | dB |
| | MCS10. | - | - | -35 | dB |
| | MCS11. | - | - | -35 | dB |

Remarks

EVM :

<Test condition>

Method: composite EVM method.

Phase correction: Symbol-by-symbol correction.

Channel estimation: Raw channel estimate Raw Long Symbols.

Symbol timing correction: on.

Frequency Sync: Long training symbol.

| Parameter | Condition | Min. | Nom. | Max. | Unit. |
|---|---|---|---|---|---|
| Receive input frequency | | | | | |
| 802.11a/n/ac/ax | 5GHz | 4900 | - | 5845 | MHz |
| Transmit power | | | | | |
| 802.11a | 54Mbps | 16 | 18 | 20 | dBm |
| 802.11n | HT20, MCS7 | 14 | 16 | 18 | dBm |
| | HT40, MCS7 | 14 | 16 | 18 | dBm |
| 802.11ac | VHT20,MCS8 | 14 | 16 | 18 | dBm |
| | VHT40,MCS9 | 13 | 15 | 17 | dBm |
| | VHT80,MCS9 | 13 | 15 | 17 | dBm |
| 802.11ax | HE20,MCS11 | 11 | 13 | 15 | dBm |
| | HE40,MCS11 | 11 | 13 | 15 | dBm |
| | HE80,MCS11 | 11 | 13 | 15 | dBm |
| Spectrum mask | | | | | |
| 802.11a | fc±9MHz | - | - | 0 | dBr |
| | fc±11MHz | - | - | -20 | dBr |
| | fc±20MHz | - | - | -28 | dBr |
| | fc±30MHz | - | - | -40 | dBr |
| 802.11n | fc±9MHz | - | - | 0 | dBr |
| | fc±11MHz | - | - | -20 | dBr |
| | fc±20MHz | - | - | -28 | dBr |
| | fc±30MHz | - | - | -45 | dBr |
| 802.11ac (VHT80) | fc±39MHz | - | - | 0 | dBr |
| | fc±41MHz | - | - | -20 | dBr |
| | fc±80MHz | - | - | -28 | dBr |
| | fc±120MHz | - | - | -40 | dBr |
| 802.11ax (HE80) | fc±39.5MHz | - | - | 0 | dBr |
| | fc±40.5MHz | - | - | -20 | dBr |
| | fc±80MHz | - | - | -28 | dBr |
| | fc±120MHz | - | - | -40 | dBr |
| Center frequency tolerance | | | | | |
| 802.11a/n/ac/ax | | -20 | - | +20 | pmm |
| EVM (Error Vector Magnitude)* | | | | | |
| 802.11a | 6Mbps | - | - | -5 | % |
| | 9Mbps | - | - | -8 | dB |
| | 12Mbps | - | - | -10 | dB |

| | | | | | |
|---|---|---|---|---|---|
| | 18Mbps | - | - | -13 | dB |
| | 24Mbps | - | - | -16 | dB |
| | 36Mbps | - | - | -19 | dB |
| | 48Mbps | - | - | -22 | dB |
| | 54Mbps | - | - | -25 | dB |
| 802.11n | MCS0. | - | - | -5 | dB |
| | MCS1. | - | - | -10 | dB |
| | MCS2 | - | - | -13 | dB |
| | MCS3. | - | - | -16 | dB |
| | MCS4. | - | - | -19 | dB |
| | MCS5. | - | - | -22 | dB |
| | MCS6. | - | - | -25 | dB |
| | MCS7. | - | - | -28 | dB |
| 802.11ac | MCS0. | - | - | -5 | dB |
| | MCS1. | - | - | -10 | dB |
| | MCS2 | - | - | -13 | dB |
| | MCS3. | - | - | -16 | dB |
| | MCS4. | - | - | -19 | dB |
| | MCS5. | - | - | -22 | dB |
| | MCS6. | - | - | -25 | dB |
| | MCS7. | - | - | -27 | dB |
| | MCS8. | - | - | -30 | dB |
| | MCS9. | - | - | -32 | dB |
| 802.11ax | MCS0. | - | - | -5 | dB |
| | MCS1. | - | - | -10 | dB |
| | MCS2 | - | - | -13 | dB |
| | MCS3. | - | - | -16 | dB |
| | MCS4. | - | - | -19 | dB |
| | MCS5. | - | - | -22 | dB |
| | MCS6. | - | - | -25 | dB |
| | MCS7. | - | - | -27 | dB |
| | MCS8. | - | - | -30 | dB |
| | MCS9. | - | - | -32 | dB |
| | MCS10. | - | - | -35 | dB |
| | MCS11. | - | - | -35 | dB |
| Remarks | | | | | |

EVM :
<Test condition>
Method: composite EVM method.
Phase correction: Symbol-by-symbol correction.
Channel estimation: Raw channel estimate Raw Long Symbols.
Symbol timing correction: on.
Frequency Sync: Long training symbol.

### 3.2.3 Bluetooth RF Specifications

| Parameter | | Conditions | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|---|
| Frequency range | | | 2402 | | 2480 | MHz |
| RX sensitivity | | DH5 | - | -95 | - | dBm |
| | | 2DH5 | - | -93 | - | dBm |
| | | 3DH5 | - | -87.5 | - | dBm |
| | | BLE 1M | - | -98 | - | dBm |
| | | BLE 2M | - | -95 | - | dBm |
| Output power | Classic BT | DH5 | - | 10 | - | dBm |
| | | 2DH5 | - | 11 | - | dBm |
| | | 3DH5 | - | 11 | - | dBm |
| | BLE | 2M | - | 12 | - | dBm |
| | | 1M | - | 12 | - | dBm |

# 4. Application and Implementation

## 4.1 Application Diagram

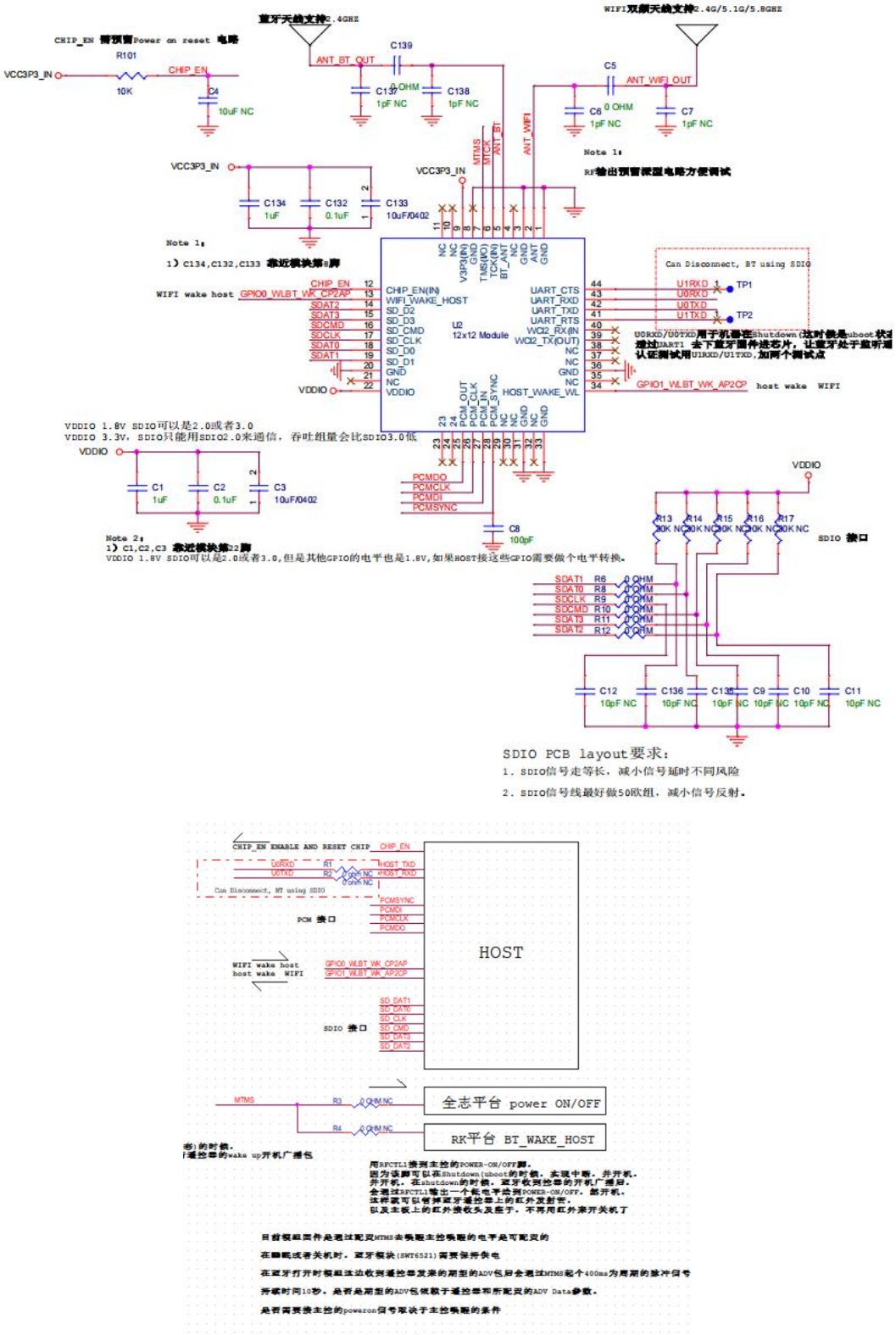



Figure 3. Application Schematic Diagram of VS6621S80&40

## 4.2 Power-up and Power-down Timing

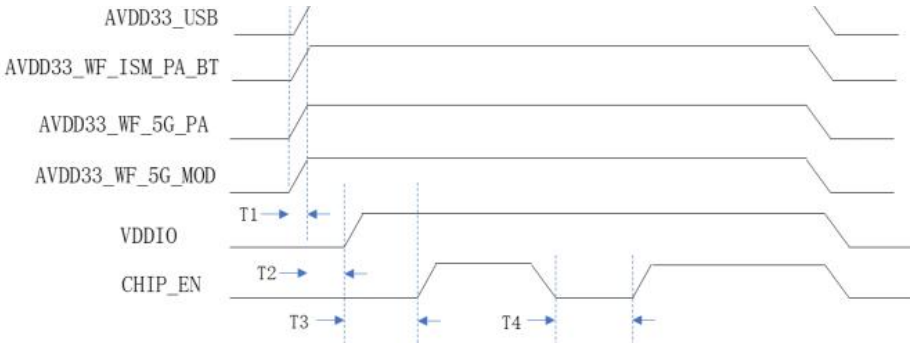
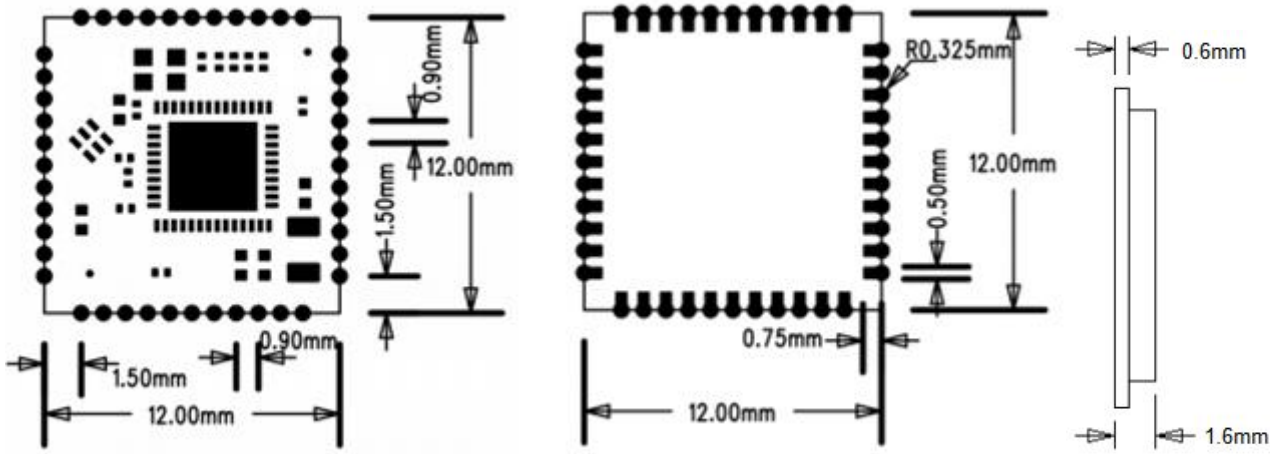



Figure 4. Power-up and Power-down Timing of VS6621S80&40

| | Description | Min | Typical | Max |
|---|---|---|---|---|
| T1 | 3.3V Ramp up time | 200us | 500us | - |
| T2 | VDDIO should be powered on after 3.3V is powered on | 0 | - | - |
| T3 | CHIP_EN should be powered on after VDDIO is powered on | 0 | - | - |
| T4 | CHIP_EN reset time | 50ms | - | - |

# 5. Mechanical and Package

## 5.1 Mechanical Size




<Top View> <Bottom View> <Side View>

Figure 5. Mechanical Size of VS6621S80&40

## 5.2 Recommended Land Pattern

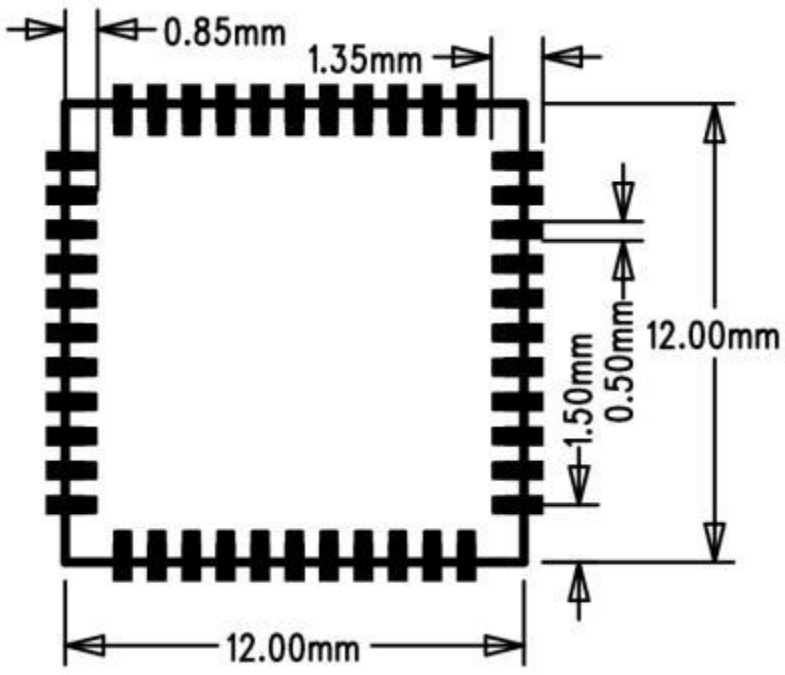



Figure 6. Recommended Land Pattern of VS6621S80&40

### 5.3 Package Information

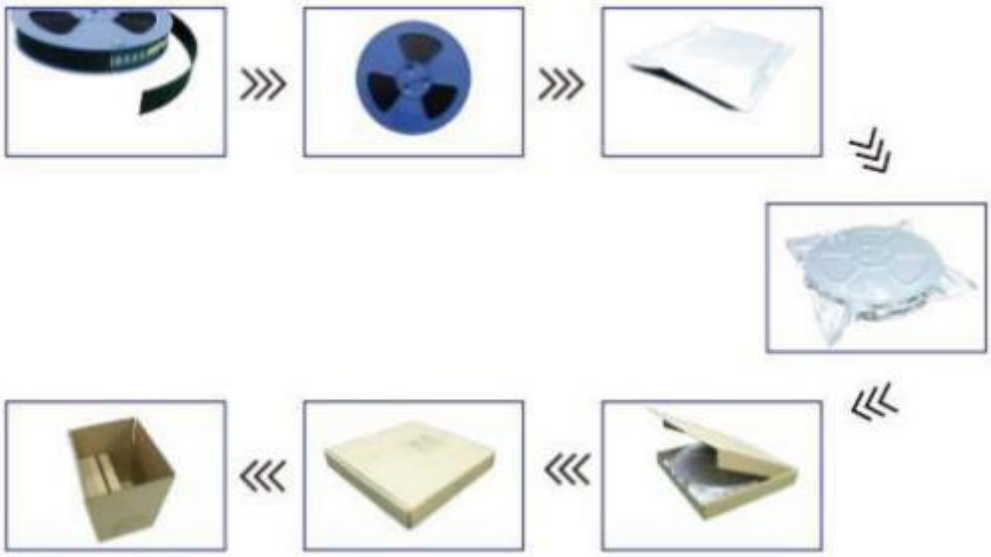


Figure 7. Brief Packaging Process of VS6621S80&40 Modules

## 6. Thermal Reflow

Referred to IPC/JEDEC standard.

Peak temperature: <250°C

Number of times: ≤2

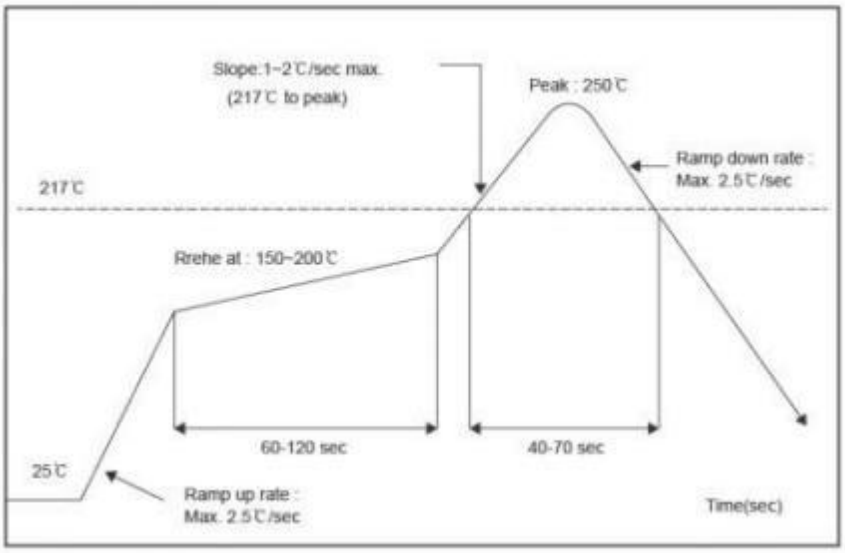



Figure 8. Recommended Reflow for Lead Free Solder

Note: The module is recommended not to go through reflow over twice.

## 7. Ordering Information

| Part NO. | Working Voltage | ANT | Shielding Cover | Remark |
|---|---|---|---|---|
| VS6621S80&40 | 3.3V&1.8V | External antenna | Included | SDIO |

## 8. Revision History

| Version | Change Content | Reviser | Date |
|---|---|---|---|
| V2.0 | Update Pin Diagram & Block Diagram<br>Update Application Schematic Diagram | | 2025.03.12 |
| V2.1 | Update Bluetooth version<br>Update Pin Diagram | hardware | 2025.8.11 |
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