



## [IK-CSR8645] Bluetooth Module for Audio

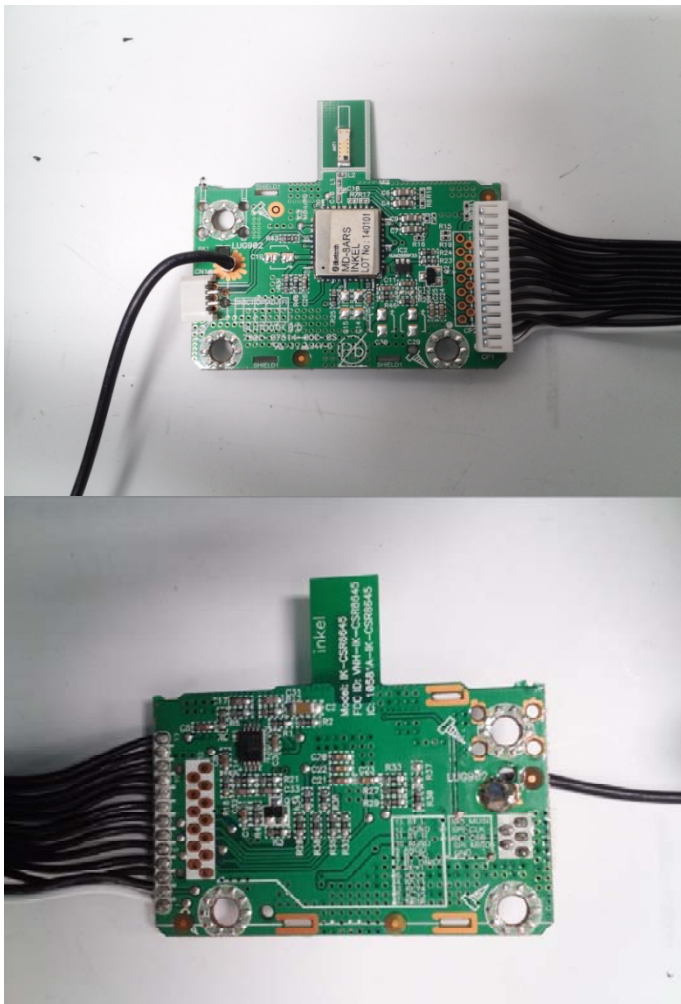
### Features

- Dual-mode Bluetooth / Bluetooth low energy radio
- Stereo codec with 2 microphone inputs
- Fast Charging support up to 200mA with no external components
- Multipoint support for A2DP connection to 2 A2DP source for music playback
- aptX, SBC, MP3, AAC and Fast stream decoder
- Built-in Reference Clock: 26MHz
- RoHS Compliant

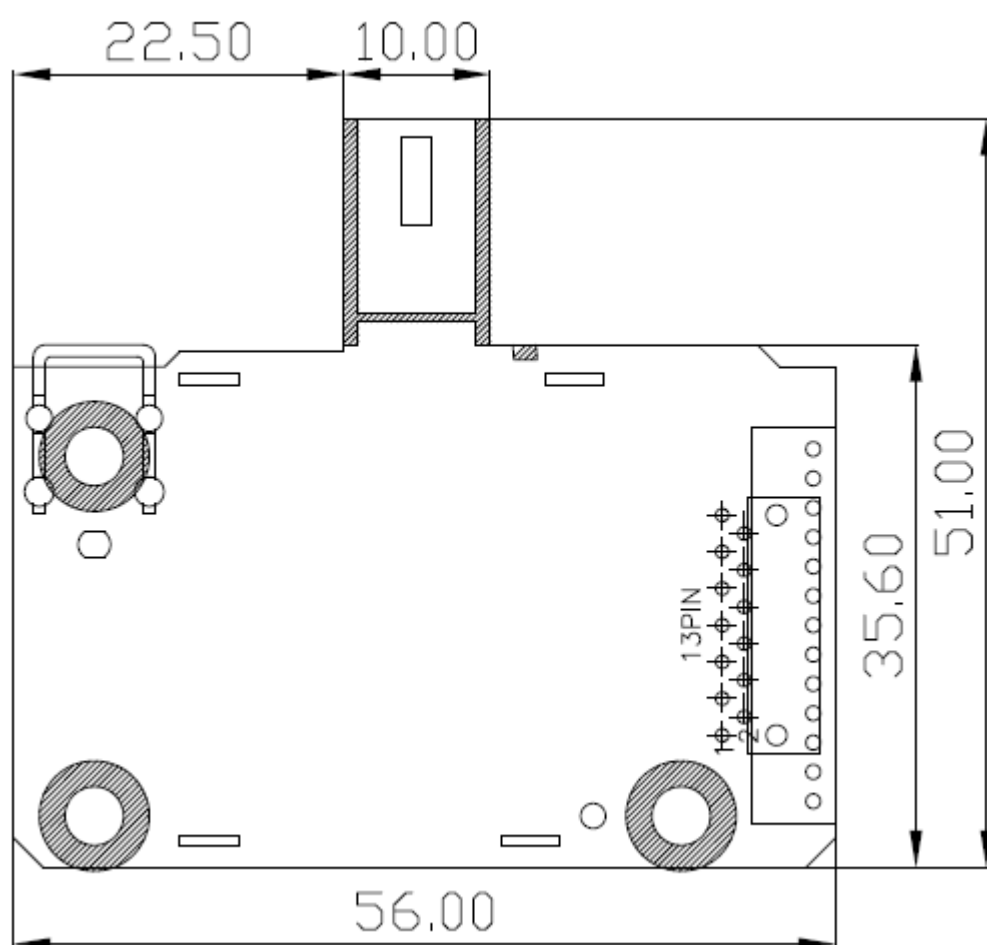
### Applications

- Stereo headsets
- Wired stereo headset and headphones
- Portable stereo speakers

### Device Overview



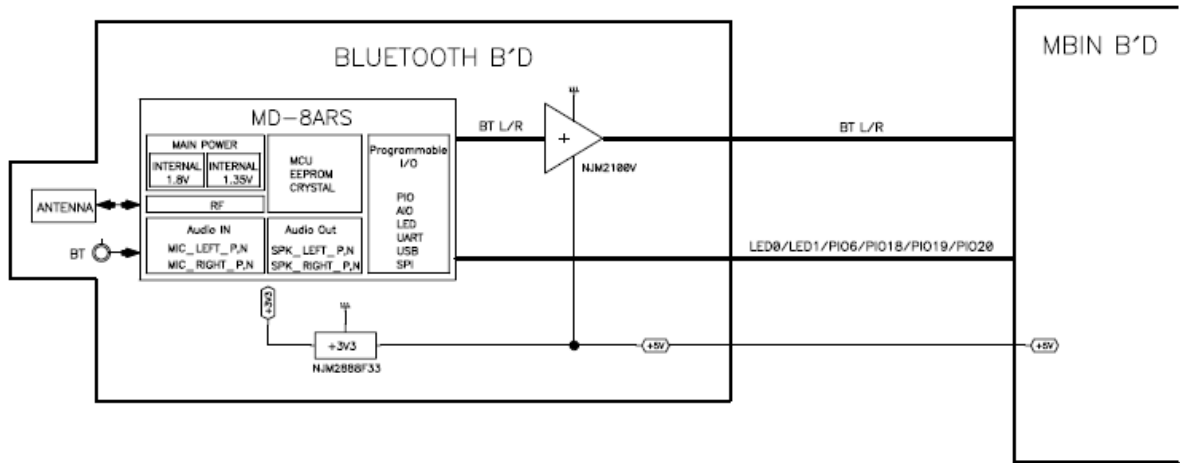
## Dimensions



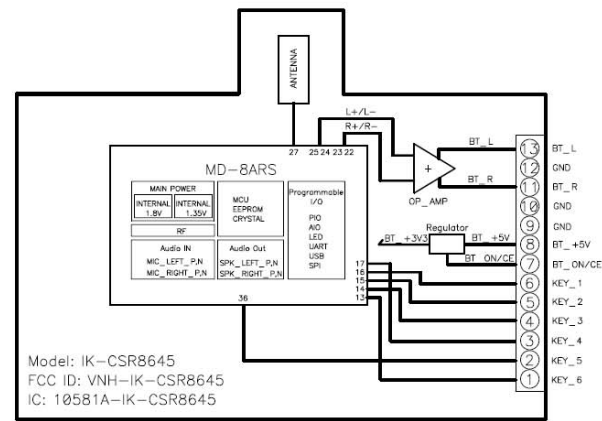
## RF specification

| Parameter (BDR transmitter)                   |                                               | Min  | Typ     | Max     | Bluetooth Spec               | Unit |
|-----------------------------------------------|-----------------------------------------------|------|---------|---------|------------------------------|------|
| Maximum Transmit Power                        |                                               | -    | -       | -       | -6 ~ +4                      | dBm  |
| Power Density                                 |                                               | -    | -       | -       | -                            | dBm  |
| Power Control                                 |                                               |      |         | -       | -                            |      |
| Frequency Range                               |                                               | 2402 | -       | 2480    |                              | MHz  |
| 20dB Bandwidth for modulation carrier         |                                               | -    | 925     | 1000    | $\leq 1000$                  | kHz  |
| Adjacent Channel power                        | $F=F_0 \pm 2\text{MHz}$                       | -    | -36     | -20     | $\leq -20$                   | dBm  |
|                                               | $F=F_0 \pm 3\text{MHz}$                       | -    | -42     | -40     | $\leq -40$                   | dBm  |
|                                               | $F=F_0 \pm \geq 3\text{MHz}$                  | -    | $< -60$ | -40     | $\leq -40$                   | dBm  |
| Modulation Characteristics                    | $\Delta F_{\text{avg}}$                       | 140  | 165     | 175     | $140 < F_{\text{avg}} < 175$ | kHz  |
|                                               | $\Delta F_{\text{max}}$                       | 115  | 135     | -       | $\geq 115$                   | kHz  |
|                                               | $\Delta F_{\text{avg}}/\Delta F_{\text{avg}}$ | 0.8  | 0.9     | -       | $\geq 0.80$                  | -    |
| Initial Carrier Frequency Tolerance           |                                               | -75  | -       | 75      | $\pm 75$                     | kHz  |
| Carrier Frequency Drift                       | -                                             | -    | 5       | 20      | $\leq 20$                    | kHz  |
|                                               | Single slot packet                            | -    | 6       | 25      | $\leq 25$                    | kHz  |
|                                               | Five slot packet                              | -    | 7       | 40      | $\leq 40$                    | kHz  |
| Parameter (BDR receiver)                      |                                               | Min  | Typ     | Max     |                              | Unit |
| Sensitivity level(at 0.1% BER)                |                                               | -    | 82      | -88     | $\leq -70$                   | dBm  |
| Maximum received signal(at 0.1% BER)          |                                               | -    | -20     | $> -10$ | $\geq -20$                   | dBm  |
| C/I co-channel                                |                                               | -    | 5       | 11      | $\leq 11$                    | dB   |
| Maximum level of intermodulation interface    |                                               | -39  | -30     | -       | $\geq -39$                   | dBm  |
| Parameter (EDR transmitter)                   |                                               | Min  | Typ     | Max     |                              | Unit |
| Relative transmit power                       |                                               | -4   | -1      | -       | -4 to 1                      | dB   |
| $\pi/4$ DQPSK max carrier frequency stability | $I \omega_0 I$                                | -    | 1       | 10      | $\leq 10$ for all blocks     | kHz  |
|                                               | $I \omega_i I$                                | -    | 1       | 75      | $\leq 75$ for all packets    |      |
|                                               | $I \omega_0 + \omega_i I$                     | -    | 2       | 75      | $\leq 75$ for all blocks     |      |
| 8 DPSK max carrier Frequency stability        | $I \omega_0 I$                                | -    | 1       | 10      | $\leq 10$ for all blocks     | kHz  |
|                                               | $I \omega_i I$                                | -    | 1       | 75      | $\leq 75$ for all packets    |      |
|                                               | $I \omega_0 + \omega_i I$                     | -    | 1.5     | 75      | $\leq 75$ for all blocks     |      |
| $\pi/4$ DQPSK modulation                      | RMS DEVM                                      | -    | 6       | 20      | $\leq 20$                    | %    |
|                                               | 99% DEVM                                      | -    | 12      | 30      | $\leq 30$                    |      |
|                                               | Peak DEVM                                     | -    | 16      | 35      | $\leq 35$                    |      |
| 8DPSK modulation Accuracy                     | RMS DEVM                                      | -    | 6       | 13      | $\leq 13$                    |      |
|                                               | 99% DEVM                                      | -    | 12      | 20      | $\leq 20$                    |      |
|                                               | Peak DEVM                                     | -    | 15      | 25      | $\leq 25$                    |      |
| In-band spurious Emissions                    | $F > F_0 + 3\text{MHz}$                       | -    | $< -60$ | -40     | $\leq -40$                   | dBm  |
|                                               | $F < F_0 - 3\text{MHz}$                       | -    | $< -60$ | -40     | $\leq -40$                   |      |
|                                               | $F = F_0 - 3\text{MHz}$                       | -    | $< -38$ | -35     | $\leq -40$                   |      |
|                                               | $F = F_0 - 2\text{MHz}$                       | -    | -28     | -20     | $\leq -20$                   |      |
|                                               | $F = F_0 - 1\text{MHz}$                       | -    | -32     | -26     | $\leq -26$                   | dB   |
|                                               | $F = F_0 + 1\text{MHz}$                       | -    | -32     | -26     | $\leq -26$                   | dB   |
|                                               | $F = F_0 + 2\text{MHz}$                       | -    | -31     | -20     | $\leq -20$                   | dBm  |
|                                               | $F = F_0 + 3\text{MHz}$                       | -    | -45     | -40     | $\leq -40$                   |      |

Block Diagram



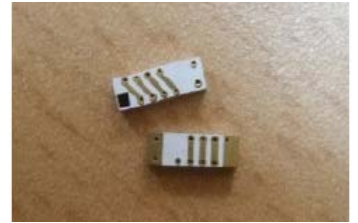
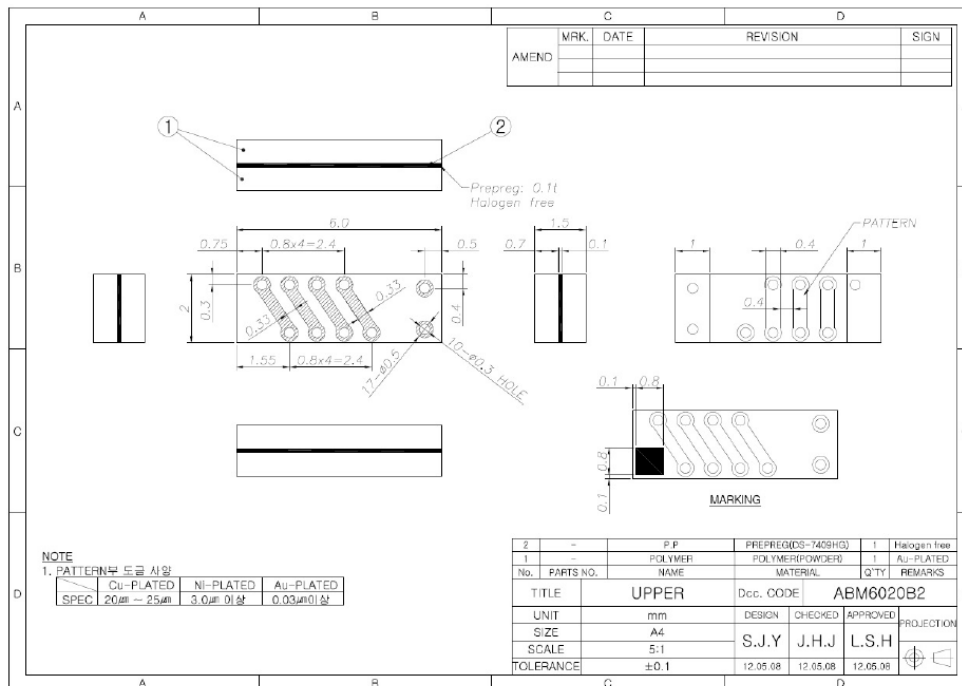
PIN Description



Model: IK-CSR8645  
FCC ID: VNH-IK-CSR8645  
IC: 10581A-IK-CSR8645

| (MOVON_MD-8ARS_MODULE KEY CONTROL) |                  |                  |                  |                |                       |
|------------------------------------|------------------|------------------|------------------|----------------|-----------------------|
|                                    | KEY1<br>(PIO_20) | KEY2<br>(PIO_21) | KEY3<br>(PIO_18) | KEY4<br>(LED2) | KEY5<br>(LED1)        |
| PLAY                               | S                |                  |                  |                |                       |
| PAUSE                              | S                |                  |                  |                |                       |
| STOP                               | L                |                  |                  |                |                       |
| FF                                 |                  | L                |                  |                |                       |
| FR                                 |                  |                  | L                |                |                       |
| FWD SKIP                           |                  | S                |                  |                |                       |
| REV SKIP                           |                  |                  | S                |                |                       |
| PAIRING MODE                       | S                |                  |                  |                |                       |
| BT STATE                           | READY            |                  |                  | L              | L                     |
|                                    | PAIRING          |                  |                  | L              | H                     |
|                                    | CONNECTED        |                  |                  | H              | L                     |
|                                    | PLAYING          |                  |                  | H              | H                     |
| DEC OPEN/CLOSE                     |                  |                  |                  |                | OPEN-->H<br>CLOSE-->L |
| MAIN --> BT                        |                  |                  | BT --> MAIN      |                |                       |

## Antenna / Chip Antenna



Frequency Range : 2 400 ~ 2 483.5 MHz  
Peak Gain : 3.40 dBi

## Regulatory

### USA

The IK-CSR8645 module has been labeled with its own FCC ID number, and if the FCC ID is not visible when the module is installed inside host audio device.

Then the outside of the finished product into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording as follows:

Contains FCC ID: **VNH-IK-CSR8645**

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

A user's manual for the product should include the following statement

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.

The following statement must be included as a CAUTION statement in manuals to alert users of FCC RF exposure compliance:

To satisfy FCC RF Exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

## CANADA

The IK-CSR8645 module has been labeled with its own IC number, and if the IC is not visible when the module is installed inside host audio device.

Then the outside of the finished product into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording as follows:

Contains IC: **10581A-IKCSR8645**

A user's manual for the product should include the following statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.