Shenzhen KSD Digital Co., Limited

KSD2853_Antenna module SPEC

Latest Version：0.2

2023-08-10

List of Contents

Features

- 32bit RISC processor Core, up to240MHz
- Internal 203KB RAM for data and program storage
- Internal 2MByte Nor flash
- Support 24MHz OSC with on-chip PLL
- Internal 32KHz RC oscillator
- 8-channel ordinary DMA, support for transmission in burst 8 mode
- Support Bluetooth V5.3, compatible with Bluetooth V5.0/4.2/4.2 LE/4.0/2.1 + EDR system
- Compatible with AVRCP Profile V1.6.2
- Compatible with A2DP Profile V1.3.2
- Compatible with HFP Profile V1.8
- Built-in stereo 24bit sigma-delta DAC
- DAC supports sample rate of 8k/11.025k /12k/16k/22.05k/24k/32k/44.1k/48k/88.2k/96 kHz
- Built-in stereo 20mW PA for headphone
- Built-in stereo 24bit sigma-delta ADC
- ADC supports sample rate of 8k/11.025k /12k/16k/22.05k/24k/32k/44.1k/48k/88.2k/96 kHz
- Support 3 pairs input 0/1/2; each pair can be formed as mix or differential input.
- Support 2 DMIC input
- I2S TX&RX support master and slave mode separately, and support sample rate of 192k/96k/48k/44.1k/32k/24k/22.05k/16k/12k /11.025k/8k
- Support SPDIF TX , SPDIF RX and CEC
- Rich Interfaces support: SD,MMC/eMMC,USB2.0FS, 2xUART, 2xTWI, 1xSPI, IR RX, 9xPWM, support LCD with 8bit CPU interface, 1/3Bias, 3COM、4 COM , maximum 9SEG SEG_LCD Driver,7/8pin LED
- 24 Programmable GPIOs, and 10 analog IOs can also configure as GPIOs.
- PCB Dimension:
- L27×W14×H2.5 ± 0.1 mm

ATS2853 BT Module With ANT

Bluetooth Audio Solution

Wireless Audio Applications

MMC/SD Card Audio Playback

Bluetooth car audio unit
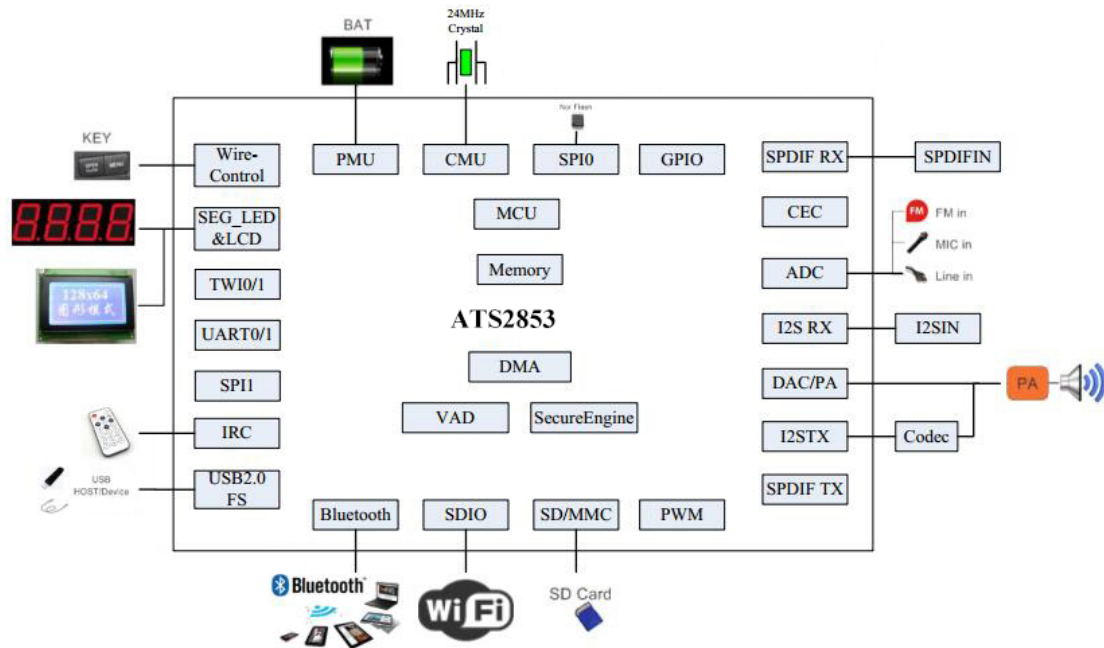
Sound Bar

Bluetooth V5.3

Applications

- Wireless Audio Application
- MMC/SD Card Audio Playback
- Bluetooth car audio unit
- Sound Bar

Application Diagram

Specifications

Operating Frequency Band	2.4GHz ~ 2.4835GHz unlicensed ISM band
Bluetooth Specification	V5.3
Bluetooth Protocol	A2DP,AVRCP,HFP
Output Power Class	Class 2
Operating Voltage	Core :1.2V, IO:3.1V, BAT:3.4V~4.3V
Operating temperate range	（-20 ℃ ~ 70℃）
External Interface	UART,SPI,TWI,I2S TX/RX,IR,SD Card, USB,DMIC,SPDIF TX/RX

Electrical Characteristics

Absolute Maximum Ratings				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Temperature	Storage temperature (Tstg)	-55	+150	°C
ESD Stress voltage	VESD (Human body model)	4000	--	V
Supply Voltage	VCC/AVCC/SVCC	2.7	3.6	V
	VD15	1.0	1.7	V
	BAT	3	5	V
Input Voltage	3.3V IO	2.7	VCC+0.2	V
	ONOFF	-	5	V

Recommended Power Supply				
Supply Voltage	**Min**	**Typ**	**Max**	**Unit**
BAT (Li)	3.3	3.7	4.5	V
VCC/SVCC	3.0	3.1	3.6	V
AVCC	2.9	2.95	3.25	V
VD15	1.2	1.5	1.7	V

Regulators Maximum Output Current		
Block Name	**Output Voltage**	**Load Capacity**
VCC	3.1V	300mA
AVCC	2.95V	40mA
SVCC	3.1V	100mA

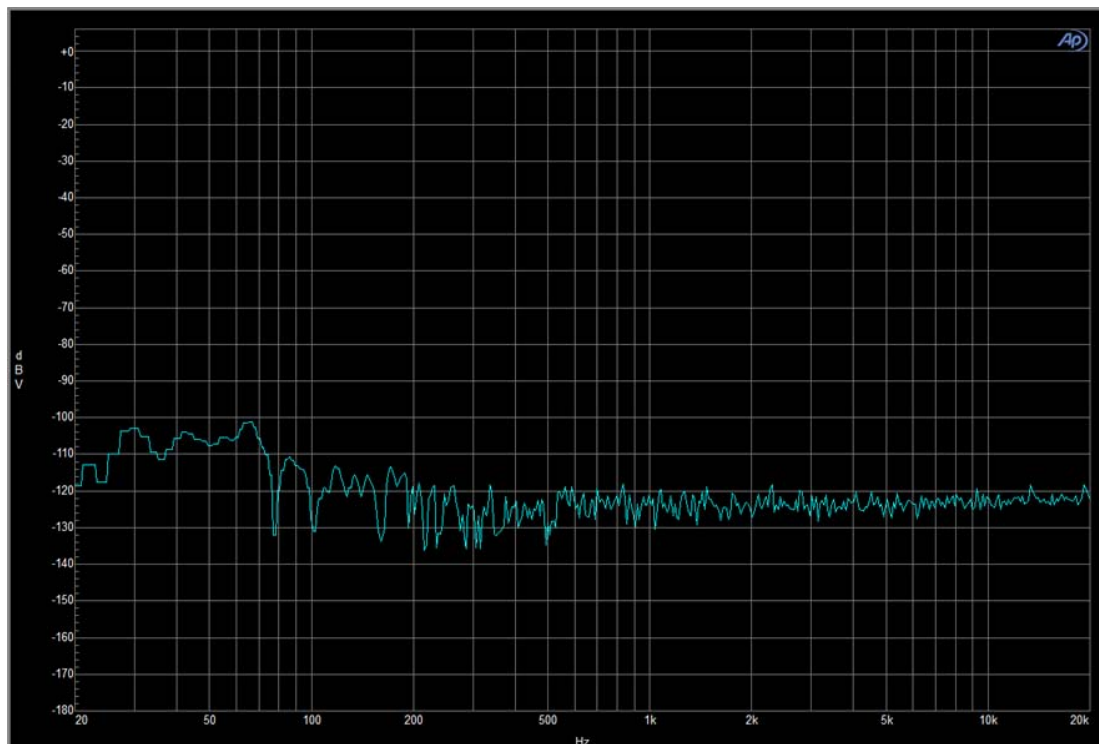Note: The output voltages are precisely within ±2%.
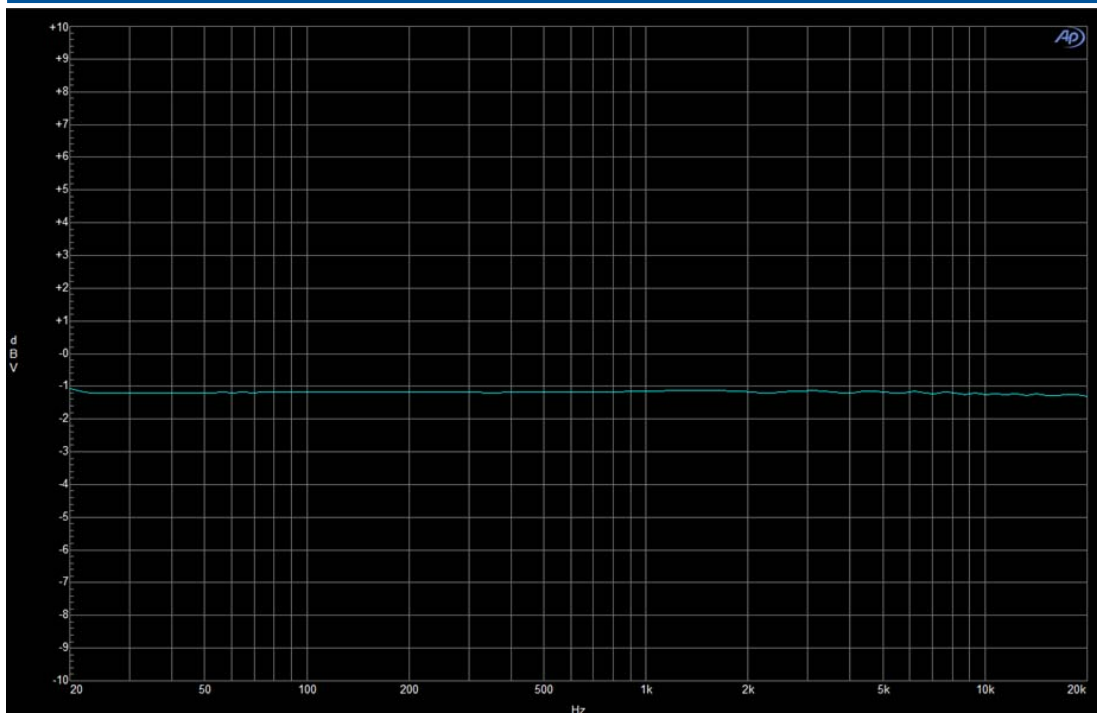
AUDIO Features

Test Condition: Power BAT=3.8V, Analog audio output AOUTL/R, Load = 10K ohm,
BW=20Hz ~ 20 KHz, Test equipment: AP2722.

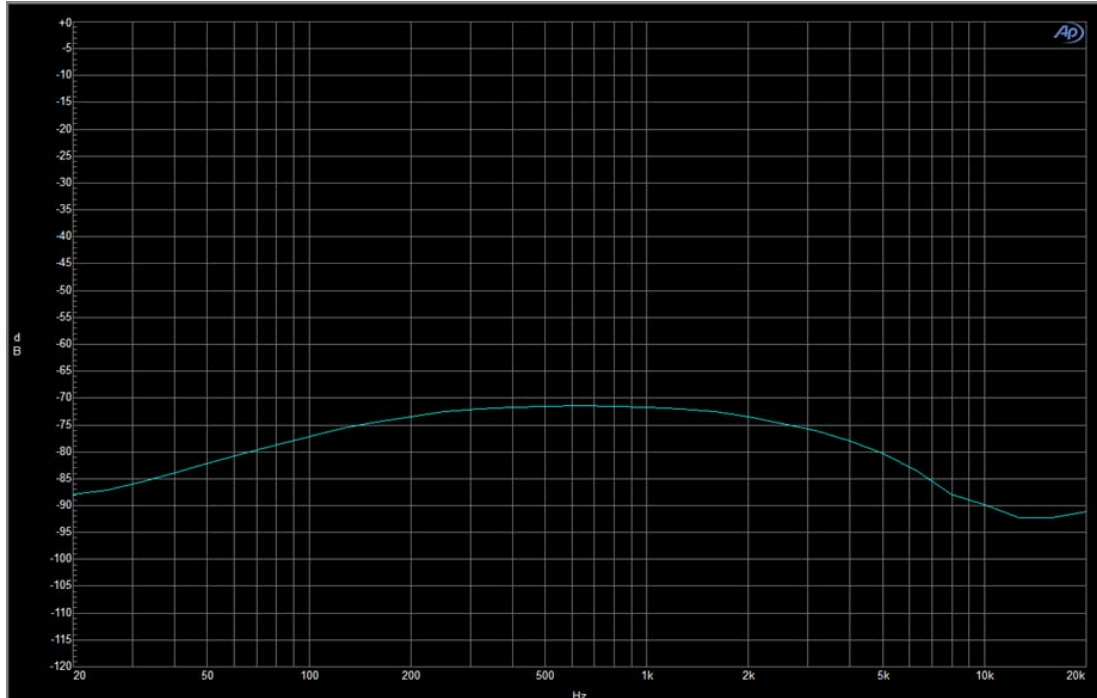## DAC/ADC audio output performance chart:

Line in Input Mode:

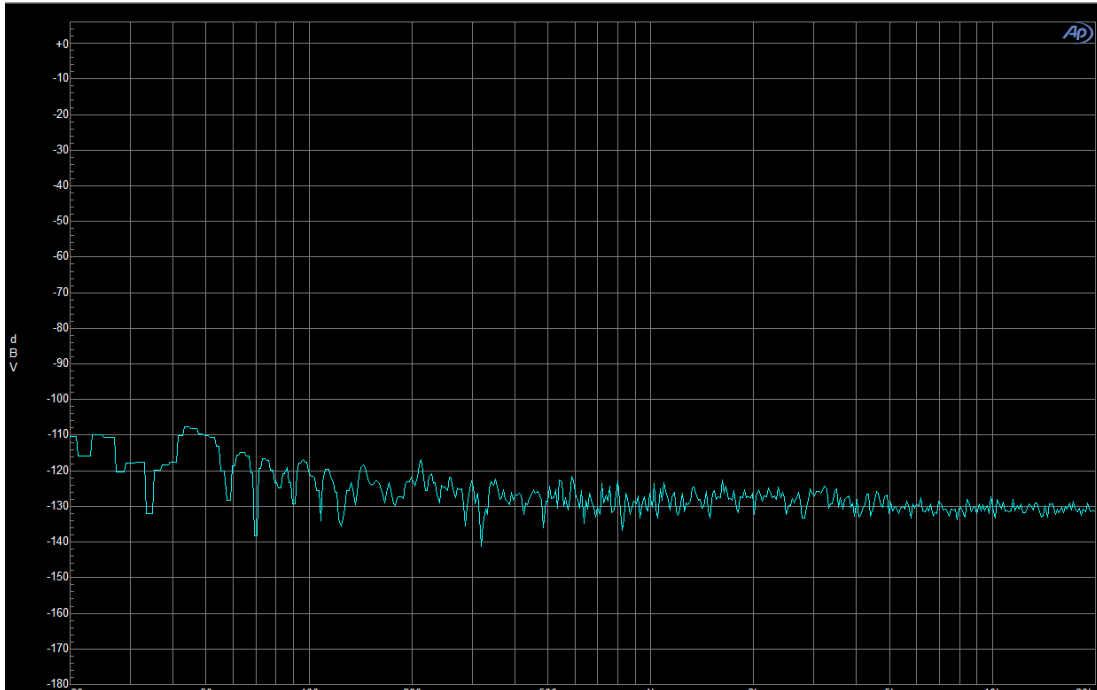Line in Input player: 0KHz FFT 20Hz ~ 20 KHz

Line in Input Player: Frequency Response 20Hz ~ 20 KHz

Line in Input player: THD+N (A-Weighting) 20Hz ~ 20 KHz

Bluetooth Player Music Mode:

Bluetooth A2DP Player: 0Hz FFT 20Hz ~ 20 KHz
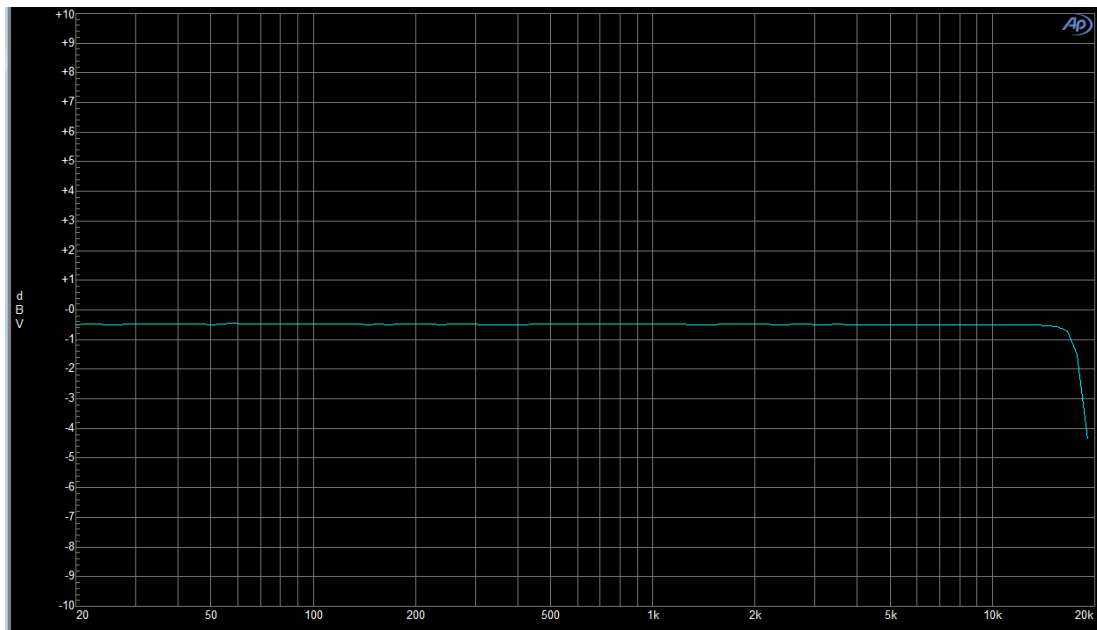
Bluetooth A2DP Player: Frequency Response 20Hz ~ 20 KHz
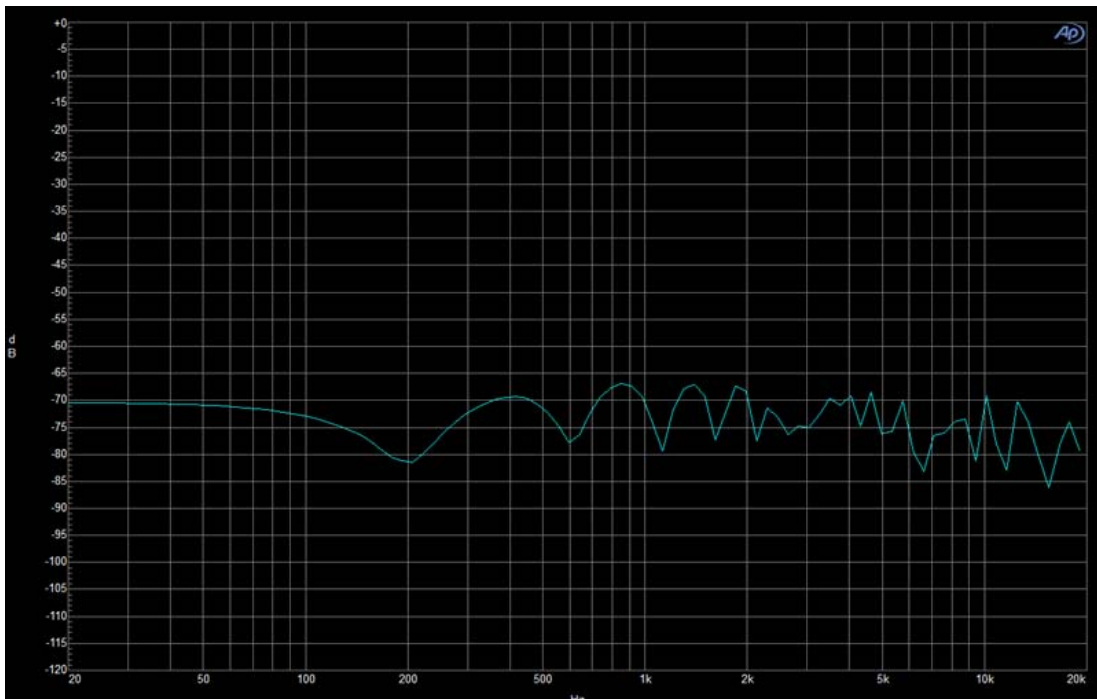
Bluetooth A2DP Player: THD+N 20Hz ~ 20 KHz

RF Characteristics

BT Protocols	A2DP/AVRCP/HFP	A2DP1.3.2
		AVRCP1.6.2
		HFP1.8
Power Consumption	A2DP	Typical : 18.1mA NOTE1
	HFP	Typical : 20.8mA NOTE1
	Sniff	Typical : 2.1mA NOTE2
	Standby	Typical : 20uA NOTE3

NOTE1:Vbat = 3.8V,10K load, related to SDK.

NOTE2:Vbat = 3.8V,BLE broadcast is on.

NOTE3:Vbat = 3.8V.

Basic Data Rate of Transmitter					
Parameter	Condition	Min.	Typ.	Max.	Unit
Maximum RF Transmit Power	-	2	2.6	3.5	dBm
RF Power Control Range	-	2	3.0	4.0	dB
20dB Bandwidth for Modulated Carrier	-	-	928		KHz
Adjacent Channel Transmit	+2 MHz	-	-	-20	dBm
	-2 MHz	-	-	-20	dBm
	+3 MHz	-	-	-40	dBm
	-3 MHz	-	-	-40	dBm
Frequency Deviation	$\Delta f1avg$ Maximum	140	164.35	175	KHz
	$\Delta f2max$ Maximum	115	149	-	KHz
	$\Delta f1avg/\Delta f2avg$	0.8	1.1	-	-
Initial Carrier Frequency Tolerance		-75	±10	75	KHz
Frequency Drift	HD1 Packet	-25	±10	25	KHz
	HD3 Packet	-40	±10	40	KHz
	HD5 Packet	-40	±10	40	KHz
Frequency Drift Rate		-20	3.8	20	KHz/50us

Enhanced Data Rate of Transmitter					
Parameter	Condition	Min.	Typ.	Max.	Unit
Relative Transmit Power	-	-4	-1.5	1	dB
$\pi/4$ DQPSK max carrier frequency stability $|\omega_0|$	-	-10	±3	10	KHz
$\pi/4$ DQPSK max carrier frequency stability $|\omega_i|$	-	-75	±5	75	KHz
$\pi/4$ DQPSK max carrier frequency stability $|\omega_0+\omega_i|$	-	-75	±4	75	KHz
8DPSK max carrier frequency stability $|\omega_0|$	-	-10	±3	10	KHz
8DPSK max carrier frequency stability $|\omega_i|$	-	-75	±5	75	KHz
8DPSK max carrier	-	-75	±5	75	KHz

frequency stability$|\omega_0+\omega_i|$					
π/4 DQPSK Modulation Accuracy	RMS DEVIN	-	-	20	%
	99% DEVM	99	100	-	%
	Peak DEVM	-	-	35	%
In-band spurious emissions	F > F0 + 3MHz	-	-	-40	dBm
	F < F0 - 3MHz	-	-	-40	dBm
	F = F0 + 3MHz	-	-	-40	dBm
	F = F0 - 3MHz	-	-	-40	dBm
	F = F0 + 2MHz	-	-	-20	dBm
	F = F0 - 2MHz	-	-	-20	dBm
	F = F0 + 1MHz	-	-	-26	dB
	F = F0 - 1MHz	-	-	-26	dB
EDR Differential Phase Encoding	-	99	100	-	%

Basic Data Rate of Receiver					
Parameter	Condition	Min.	Typ.	Max.	Unit
Sensitivity at 0.1% BER		-	-90	-	dBm
Maximum Input Power at 0.1% BER		-20	-	-	dBm
		-	-		
Adjacent Channel Selectivity C/I	F = F_0 + 1MHz	-	-	0	dB
	F = F_0 - 1MHz	-	-	0	dB
	F = F_0 + 2MHz	-	-	-30	dB
	F = F_0 - 2MHz	-	-	-30	dB
	F = F_0 + 3MHz	-	-	-40	dB
	F = F_{image}	-	-	-9	dB

Enhanced Data Rate of Receiver					
Parameter	Condition	Min.	Typ.	Max.	Unit
Sensitivity at 0.01% BER	π/4 DQPSK	-	-89	-	dBm
	8DPSK	-	-82	-	dBm
Maximum Input Power at 0.1% BER	π/4 DQPSK	-20	-	-	dBm
	8DPSK	-20	-	-	dBm

Module Pin definitions

ATS2853 Module

```
       1   GND                              WIOO   46
       2   GND                              WIO1   45
       3   GPIO13                           SVCC   44
       4   GPIO12                           GPIO5  43
       5   GPIO0                            GPIO6  42
       6   GPIO1                            GPIO8  41
       7   GPIO2                            GPIO9  40
       8   GPIO14                           AOUTL  39
       9   GPIO15                           AOUTR  38
      10   GPIO16                           VROS   37
      11   GPIO17                           VRO    36
      12   GPIO28                         INPUT2L  35
      13   GPIO20                         INPUT2R  34
      14   GPIO21                         INPUT0L  33
      15   GPIO22                         INPUT0R  32
      16   GPIO23                         INPUT1L  31
      17   GPIO24                         INPUT1R  30
      18   GPIO25                            AVCC  29

           GPIO26 GPIO27 GND USB_DP USB_DM ONOFF VCC BAT GND ANGD
            19    20    21   22     23      24    25  26  27  28
```

Pin Configurations

| PIN NO.	NAME	TYPE	FUNCTION
1	GND	Power ground	Ground
2	GND	Power ground	Ground
3	GPIO13	Bi-directional	General Purpose Input Output 13
4	GPIO12	Bi-directional	General Purpose Input Output 12
5	GPIO0	Bi-directional	General Purpose Input Output 0
6	GPIO1	Bi-directional	General Purpose Input Output 1
7	GPIO2	Bi-directional	General Purpose Input Output 2
8	GPIO14	Bi-directional	General Purpose Input Output 14
9	GPIO15	Bi-directional	General Purpose Input Output 15

| 10	GPIO16	Bi-directional	General Purpose Input Output 16
11	GPIO17	Bi-directional	General Purpose Input Output 17
12	GPIO28	Bi-directional	General Purpose Input Output 28
13	GPIO20	Bi-directional	General Purpose Input Output 20
14	GPIO21	Bi-directional	General Purpose Input Output 21
15	GPIO22	Bi-directional	General Purpose Input Output 22
16	GPIO23	Bi-directional	General Purpose Input Output 23
17	GPIO24	Bi-directional	General Purpose Input Output 24
18	GPIO25	Bi-directional	General Purpose Input Output 25
19	GPIO26	Bi-directional	General Purpose Input Output 26
20	GPIO27	Bi-directional	General Purpose Input Output 27
21	GND	Power ground	Ground
22	USB_DP	Bi-directional	USB D+
23	USB_DM	Bi-directional	USB D-
24	ONOFF	Input	All-purpose hardware switch
25	VCC	Power output	Power for Peripherals, typical voltage:3.1V
26	BAT	Power input	Battery Voltage input
27	GND	Power ground	Ground
28	ANGD	Analog ground	Ground for Analog circuit
29	AVCC	Power output	Power for Analog module, typical voltage:2.95V
30	INPUT1R	Analog input	INPUT1 Right channel input
31	INPUT1L	Analog input	INPUT1 Left channel input
32	INPUT0R	Analog input	INPUT0 Right channel input
33	INPUT0L	Analog input	INPUT0 Left channel input
34	INPUT2R	Analog input	INPUT2 Right channel input
35	INPUT2L	Analog input	INPUT2 Left channel input
36	VRO	Analog output	Direct drive mode bias
37	VRO_S	Analog output	Direct drive mode bias
38	AOUTR	Analog output	Right channel output
39	AOUTL	Analog output	Left channel output
40	GPIO9	Bi-directional	General Purpose Input Output 9
41	GPIO8	Bi-directional	General Purpose Input Output 8
42	GPIO6	Bi-directional	General Purpose Input Output 6
43	GPIO5	Bi-directional	General Purpose Input Output 5
44	SVCC	Power output	Power Supply for Hosc
45	WIO1	Input	Wake up IO1 and LRADC2 input
46	WIO0	Input	Wake up IO0 and LRADC1 input

Module Package Information

ATS28353 Module：
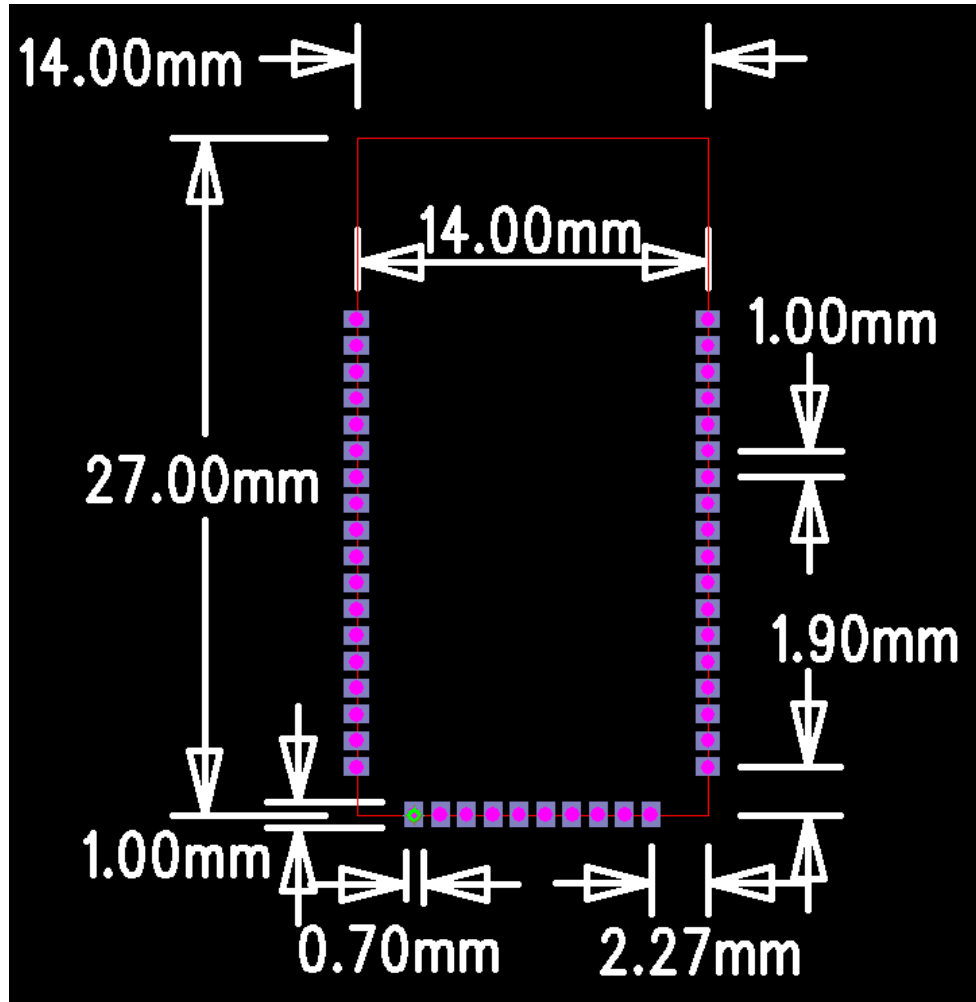
Module Dimension (Top View)
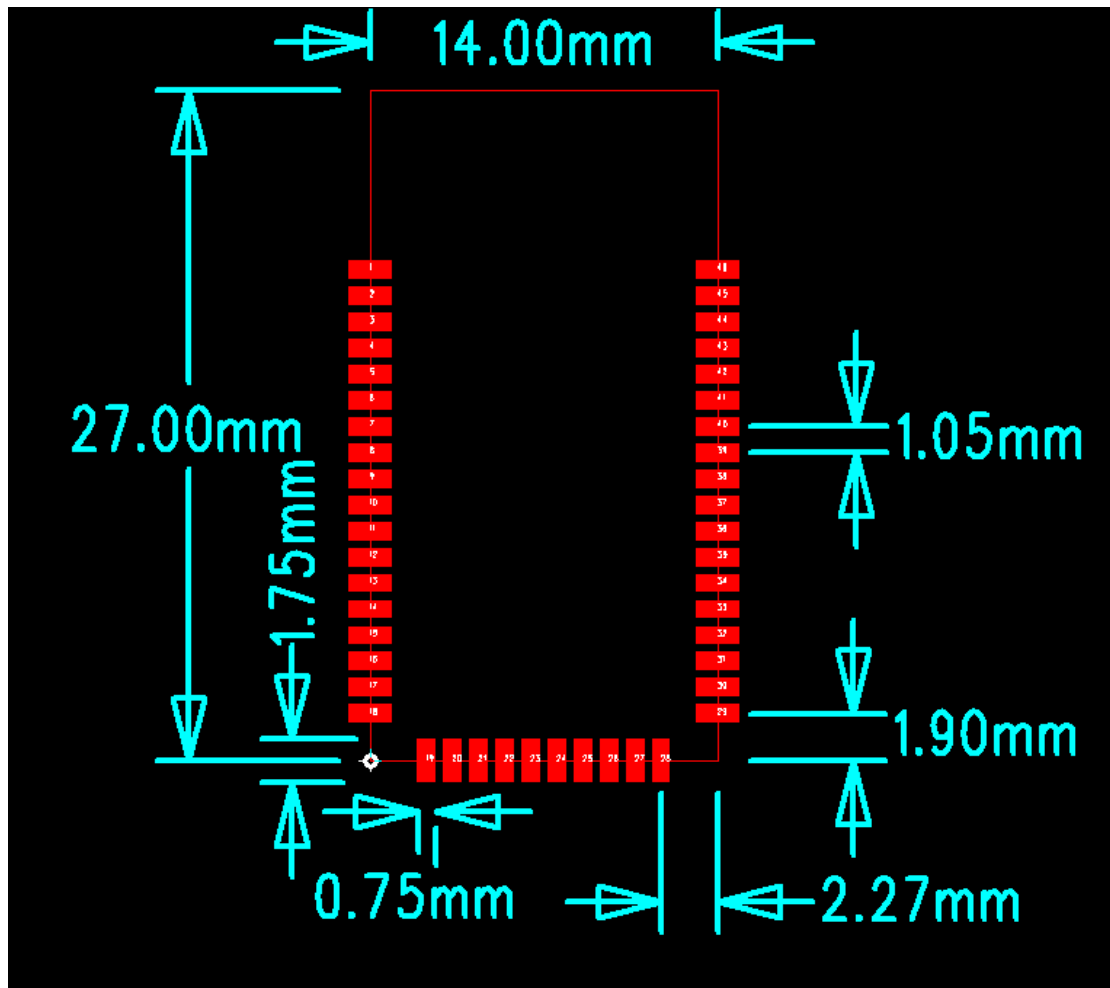
**Recommended PCB layout**

Power on sequence
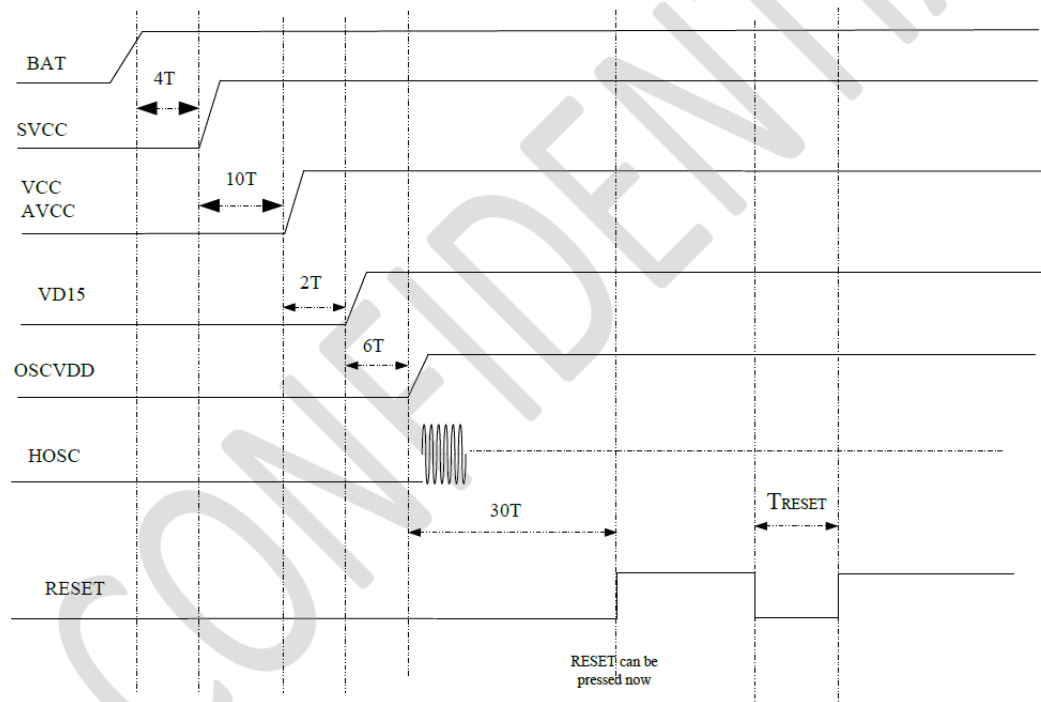
Symbol	Parameter	Minimum	Typical	Maximum	Unit
T	Unit time	0.5	1	2	ms
T_{RESET}	RESET(ONOFF PULL UP) PULSE WIDTH	30			ms

Recommended keepout area information

. It is recommended to place it at the end of the printed circuit board

. Clearance area size: the distance is greater than 2.5mm

Do not place metal objects in front, left, right, up and down positions
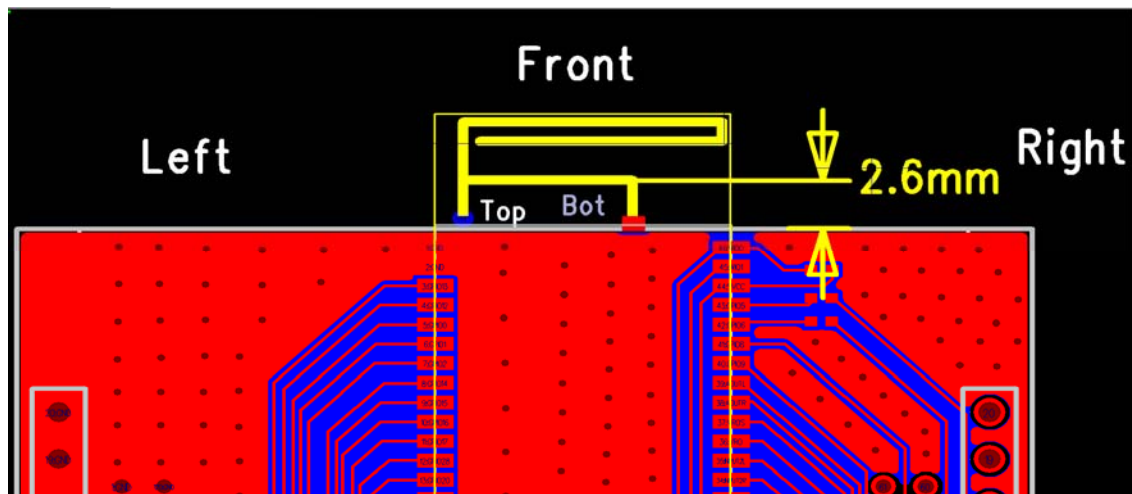
PCB antenna radiation pattern

Gain&Efficiency				
frequency (MHz)	gain (dBi)	mingain (dBi)	efficiency (dBi)	efficiency (%)
2400	-0.79	-18.23	-4.41	36.24
2410	-0.7	-17.58	-4.24	37.69
2420	-0.58	-17.95	-4.08	39.12
2430	-0.75	-18.48	-4.25	37.62
2440	-1.1	-17.68	-4.41	36.23
2450	-1.07	-16.82	-4.35	36.74
2460	-1.53	-16.57	-4.75	33.52
2470	-1.41	-17.09	-4.65	34.31
2480	-1.71	-18.12	-5.05	31.26
2490	-1.92	-18.51	-5.22	30.09
2500	-2.38	-20.09	-5.78	26.40

ACTIVE TEST(free space)

Result	2402	2441	2480
TRP(dbm)	2.69	2.96	2.48
TIS(dbm)	-89.75	-89.98	-89.66

3D
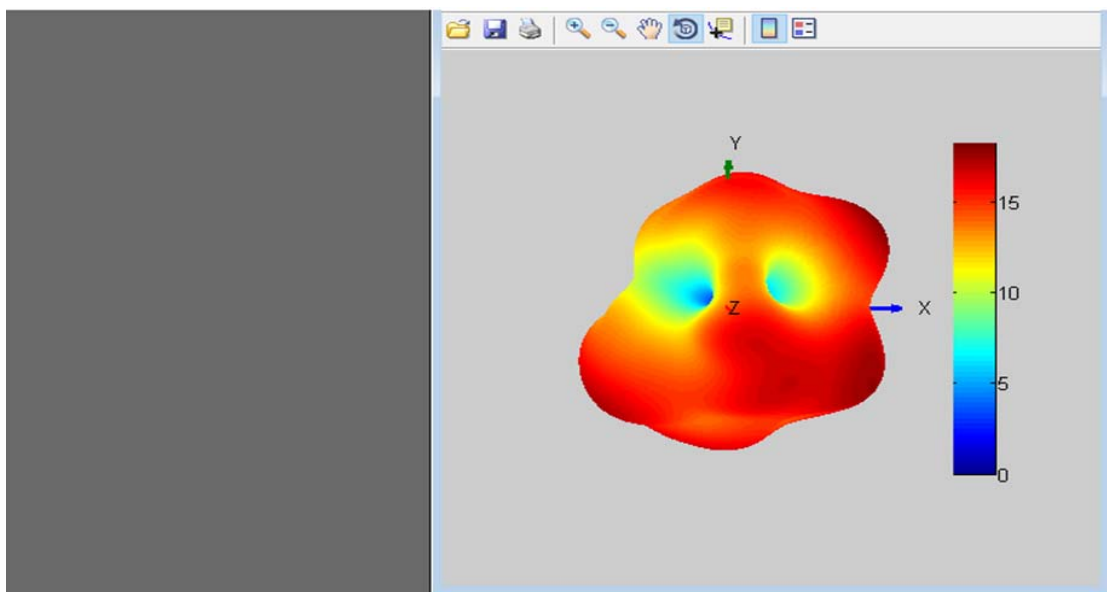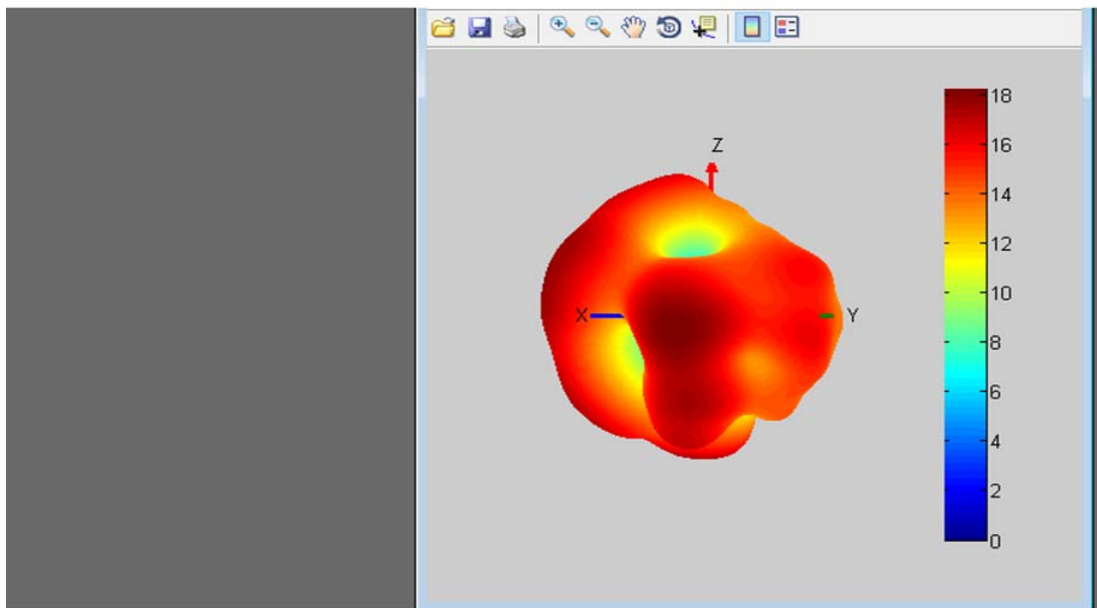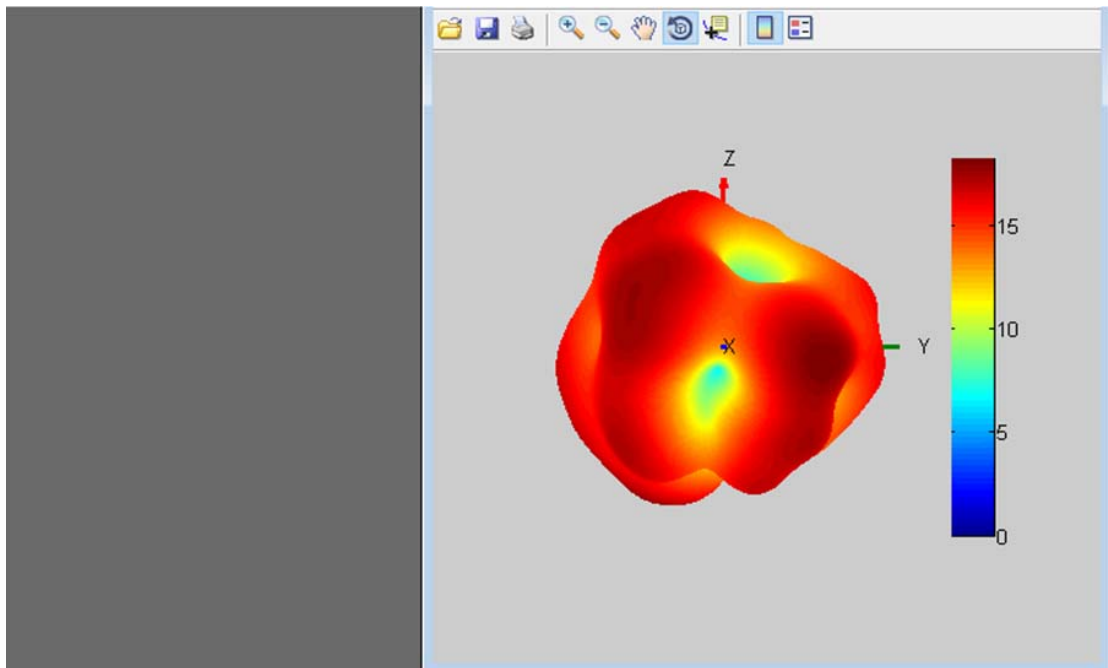
Soldering recommendations
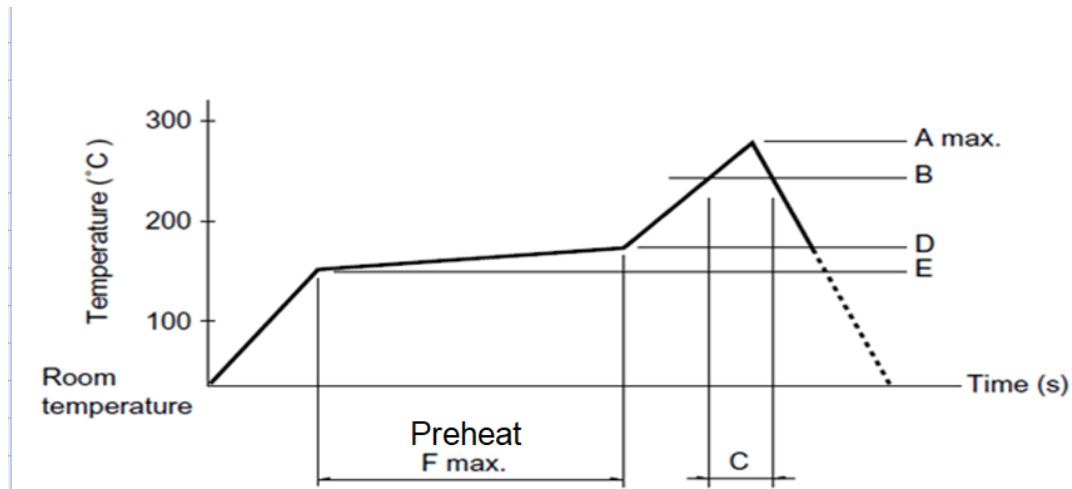
A (℃) 3sec max.	B (℃)	C (sec)	D (℃)	E (℃)	F (sec)
245	225	38	180	150	100

Max number of times for reflowing	Moisture sensitivity level(MSL)
2	40%~70%

Document History

Revision	Date	History
V0.2	2023-8-10	second release

FCC regulatory conformance
FCC ID: SOP426421A
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.
(2) This device must accept any interference received, including interference that may cause undesired operation.

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

NOTE: Unauthorized changes will result in loss of device operating privileges.

RF Exposure
This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

IC regulatory conformance

IC: 9569A-426421A

This device complies with CAN ICES-003 (B)/NMB-003(B).This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme à la norme CAN ICES-003 (B)/NMB-003 (B).

Cet appareil contient des émetteurs / récepteurs exempt (s) de licence qui sont conformes aux RSS exemptes de licence d'Innovation, Sciences et Développement économique Canada. Son fonctionnement est soumis aux deux conditions suivantes:

(1) Cet appareil ne doit pas provoquer d'interférences.

(2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

RF Exposure

This equipment complies with IC RF radiation exposure limits set forth for an uncontrolled environment.

ORIGINAL EQUIPMENT MANUFACTURER (OEM) NOTES

OEM must certify the final end product to comply with unintentional radiators (FCC Sections 07 and 15.109) before declaring compliance of the final product to Part 15 of the FCC rules and regulations. Integration into devices that are directly or indirectly connected to AC lines must add a new grant or SDOC.

The OEM must comply with the FCC labeling requirements. If the module's label is not visible when installed, then an additional permanent label must be applied on the outside of the finished product which states: "Contains transmitter module FCC ID: SOP426421A". Additionally, the following statement should be included on the label and in the final product's user manual: "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 interferences, and

(2) this device must accept any interference received, including interference that may cause undesired operation."

The module is limited to installation in mobile or fixed applications. Separate approval is required for all other operating configurations, including portable configuration with respect to Part 2.1093 and different antenna configurations. A module or modules can only be used without additional authorizations if they have been tested and granted under the same intended end-use operational conditions, including simultaneous transmission operations. When they have not been tested and granted in this manner, additional testing and/or FCC application filing may be required. The most straightforward approach to address additional testing conditions is to have the grantee responsible for the certification of at least one of the modules submit a permissive change application. When having a module grantee file a permissive change is not practical or feasible, the following guidance provides some additional options for host manufacturers. Integrations using modules where additional testing and/or FCC application filing(s) may be required are: (A) a module used in devices requiring additional RF exposure compliance information (e.g., MPE evaluation or SAR testing); (B) limited and/or split modules not meeting all of the module requirements; and (C) simultaneous transmissions for independent collocated transmitters not previously granted together.

This Module is full modular approval, it is limited to OEM installation ONLY. Integration into devices that are directly or indirectly connected to AC lines must a new grant or SDOC. (OEM) Integrator has to assure compliance of the entire end product include the integrated Module. Additional measurements (15B) and/or equipment authorizations (e.g. Verification) may need to be addressed depending on co-location or simultaneous transmission issues if applicable. (OEM) Integrator is reminded to assure that these installation instructions will not be made available to the end user.

IC labeling requirement for the final end product:
The final end product must be labeled in a visible area with the following
"Contains IC: 9569A-426421A"
The Host Marketing Name (HMN) must be indicated at any location on the
exterior of the host product or product packaging or product literature, which
shall be available with the host product or online.

Unauthorized modifications could void the user's authority to operate the
equipment.

This radio transmitter [IC: 9569A-426421A] has been approved by Innovation,
Science and Economic Development Canada to operate with the antenna
types listed below, with the maximum permissible gain indicated. Antenna
types not included in this list that have a gain greater than the maximum gain
indicated for any type listed are strictly prohibited for use with this device.

Frequency range	Manufacturer	Peak gain	Impedance	Antenna type
2400-2483.5MHz	Shenzhen KSD Digital Co., Limited	-0.58dBi	50Ω	PCB Antenna

Requirement per KDB996369 D03

2.2 List of applicable FCC rules

List the FCC rules that are applicable to the modular transmitter. These are the rules that specifically establish the bands of operation, the power, spurious emissions, and operating fundamental frequencies. DO NOT list compliance to unintentional-radiator rules (Part 15 Subpart B) since that is not a condition of a module grant that is extended to a host manufacturer. See also Section 2.10 below concerning the need to notify host manufacturers that further testing is required.3
Explanation: This module meets the requirements of FCC part 15C(15.247).

2.3 Summarize the specific operational use conditions

Describe use conditions that are applicable to the modular transmitter, including for example any limits on antennas, etc. For example, if point-to-point antennas are used that require reduction in power or compensation for cable loss, then this information must be in the instructions. If the use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual. In addition, certain information may also be needed, such as peak gain per frequency band and minimum gain, specifically for master devices in 5 GHz DFS bands.
Explanation: The module has the fixed antennas do not update the antenna trace and antenna type.

2.4 Limited module procedures

If a modular transmitter is approved as a "limited module," then the module manufacturer is responsible for approving the host environment that the limited module is used with. The manufacturer of a limited module must describe, both in the filing and in the installation instructions, the alternative means that the limited module manufacturer uses to verify that the host meets the necessary requirements to satisfy the module limiting conditions.
A limited module manufacturer has the flexibility to define its alternative method to address the conditions that limit the initial approval, such as: shielding, minimum signaling amplitude, buffered modulation/data inputs, or power supply regulation. The alternative method could include that the limited module manufacturer reviews detailed test data or host designs prior to giving the host manufacturer approval.
This limited module procedure is also applicable for RF exposure evaluation

when it is necessary to
demonstrate compliance in a specific host. The module manufacturer must
state how control of the product into which the modular transmitter will be
installed will be maintained such that full compliance of the product is always
ensured. For additional hosts other than the specific host originally granted
with a limited module, a Class II permissive change is required on the module
grant to register the additional host as a specific host also approved with the
module.
Explanation: The module is not a limited module.

2.5 Trace antenna designs

For a modular transmitter with trace antenna designs, see the guidance in
Question 11 of KDB Publication 996369 D02 FAQ – Modules for Micro-Strip
Antennas and traces. The integration information shall include for the TCB
review the integration instructions for the following aspects:
layout of trace design, parts list (BOM), antenna, connectors, and isolation
requirements.
a) Information that includes permitted variances (e.g., trace boundary limits,
thickness, length, width, shape(s),
  dielectric constant, and impedance as applicable for each type of antenna);
b) Each design shall be considered a different type (e.g., antenna length in
multiple(s) of frequency,
the wavelength, and antenna shape (traces in phase) can affect antenna gain
and must be considered);
c) The parameters shall be provided in a manner permitting host
manufacturers to design the printed circuit (PC) board layout;
d) Appropriate parts by manufacturer and specifications;
e) Test procedures for design verification; and
f) Production test procedures for ensuring compliance.
The module grantee shall provide a notice that any deviation(s) from the
defined parameters of the antenna trace, as described by the instructions,
require that the host product manufacturer must notify the module grantee
that they wish to change the antenna trace design. In this case, a Class II
permissive change application is required to be filed by the grantee, or the
host manufacturer can take responsibility through the change in FCC ID (new
application) procedure followed by a Class II permissive change application.
Explanation: Yes, The module has the fixed antennas do not update the
antenna trace and antenna type.

2.6 RF exposure considerations

It is essential for module grantees to clearly and explicitly state the RF exposure conditions that permit a host product manufacturer to use the module. Two types of instructions are required for RF exposure information: (1) to the host product manufacturer, to define the application conditions (mobile, portable – xx cm from a person's body); and (2) additional text needed for the host product manufacturer to provide to end users in their end-product manuals. If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).
Explanation: This module complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This module is designed to comply with the FCC statement, FCC ID is: SOP426421A.

2.7 Antennas

A list of antennas included in the application for certification must be provided in the instructions. For modular transmitters approved as limited modules, all applicable professional installer instructions must be included as part of the information to the host product manufacturer. The antenna list shall also identify the antenna types (monopole, PIFA, dipole, etc. (note that for example an "omni-directional antenna" is not considered to be a specific "antenna type")).
For situations where the host product manufacturer is responsible for an external connector, for example with an RF pin and antenna trace design, the integration instructions shall inform the installer that unique antenna connector must be used on the Part 15 authorized transmitters used in the host product. The module manufacturers shall provide a list of acceptable unique connectors.
Explanation: The module has the fixed antennas do not update the antenna trace and antenna type.
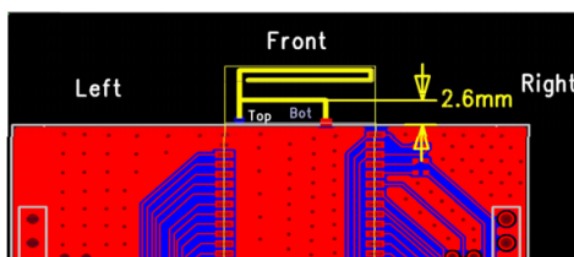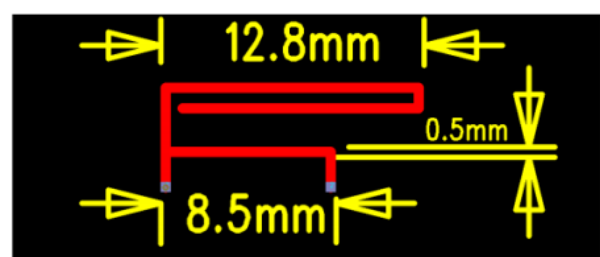
2.8 Label and compliance information

Grantees are responsible for the continued compliance of their modules to the FCC rules. This includes advising host product manufacturers that they need to provide a physical or e-label stating "Contains FCC ID" with their finished product. See Guidelines for Labeling and User Information for RF Devices – KDB Publication 784748.
Explanation: The host system using this module, should have label in a visible area indicated the following texts: "Contains FCC ID: SOP426421A, Contains IC: 9569A-426421A "

2.9 Information on test modes and additional testing requirements5

Additional guidance for testing host products is given in KDB Publication 996369 D04 Module Integration Guide. Test modes should take into consideration different operational conditions for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

The grantee should provide information on how to configure test modes for host product evaluation for different operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host.

Grantees can increase the utility of their modular transmitters by providing special means, modes, or instructions that simulates or characterizes a connection by enabling a transmitter. This can greatly simplify a host manufacturer's determination that a module as installed in a host complies with FCC requirements.

Explanation: Top band can increase the utility of our modular transmitters by providing instructions that simulates or characterizes a connection by enabling a transmitter.

2.10 Additional testing, Part 15 Subpart B disclaimer

The grantee should include a statement that the modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuity), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Explanation: The module without unintentional-radiator digital circuity, so the module does not require an evaluation by FCC Part 15 Subpart B. The host should be evaluated by the FCC Subpart B.