

EC2x Series

USB Interface Descriptor

Introduction

LTE Standard Module Series

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1 Introduction

This document mainly introduces the USB descriptors of Quectel's EC2x series modules. Host generally identifies USB devices (modules) through descriptors, including device descriptor, configuration descriptor, interface descriptor, endpoint descriptor, and string descriptor (optional).

The applicable modules of this document are as follows:

- EC21 Series
- EC25 Series
- EC20 R2.1

2 Overview

The brief introduction of USB descriptors is as follows.

Table 1: USB Descriptor Introduction

USB Descriptor	Function	Remark
device descriptor	Describes the general information of the USB device, including all device configurations, such as the USB protocol version number used by the USB device, device type, and other parameter information of the device	A device has only one device descriptor.
configuration descriptor	Describes the configuration information of a specific USB device, such as the number of supported interfaces, method of power supply etc.	A device can have multiple configuration descriptors. The number of interfaces supported by a configuration is determined by the <i>bNumInterfaces</i> of the configuration descriptor.
interface descriptor	Describes a specific interface of one specific configuration	When a configuration supports multiple interfaces, all endpoint descriptors of that interface are often returned as part of a configuration descriptor. The interface descriptor cannot be accessed directly using <i>GetDescriptor()</i> or <i>SetDescriptor()</i> .
endpoint descriptor	Describes the general information of USB endpoints	Each endpoint in the USB device has its own endpoint descriptor, the number of which is determined by the <i>bNumEndpoint</i> of the interface descriptor.
string descriptor (optional)	Saves some text information such as supplier name and product serial number	<ul style="list-style-type: none"> The string descriptor consists of three fields in a fixed order. The total length of the descriptor is not fixed, and varies with the number of strings and the length of the information. Optional. If string descriptor is not

supported, all string descriptor indexes in the device, configuration, and interface descriptors must be 0.

When the Host is connected to the EC2x series module, the module defaults to display 6 ports (see 0–5 as shown in the table below). All supported USB ports have different functions, see the table below for details.

Table 2: Module USB Interface Description

Interface No.	Interface Name	Description
0	DM interface	Diagnose port.
1	Modem interface	For PPP connection and AT command transmission
2	NMEA interface	For GPS NMEA sentence outputting
3	AT interface	For AT command transmission
4	USB net interface	For network driver
5	ADB interface	Android debug bridge
6	Audio control interface	For audio controlling
7	Microphone interface	For microphone
8	Speaker interface	For speaker
9	ADB interface	Android debug bridge

For the interface descriptor of USB interfaces, see **Chapter 3.3**.

NOTE

Interfaces 6, 7, 8 and 9 are not listed by default, you can open them by **AT+QCFG="usbcfg"**. For detailed information about this command, see **document [1]**.

3 USB Descriptor

EC2x series modules are all USB composite communication devices. After the module's USB driver is installed in the Windows or Linux operating system, the operating system automatically reads the device descriptor and configuration descriptor of the module, and at the same time creates a specified interface based on the interface descriptor of the configuration descriptor.

This chapter mainly introduces the device descriptor, configuration descriptor, interface descriptor and endpoint descriptor of the EC2x series module (the string descriptor does not need to be used).

NOTES

1. If the dial-up mode of the network card is configured as ECM, the Linux system will automatically read the descriptor information, while the Windows system needs to install the ECM driver to realize the automatic reading of it.
2. If the dial-up mode of the network card is configured as RNDIS, the Linux system needs to install the RNDIS driver to realize the automatic reading of the descriptor information, while the Windows system can automatically read it.

3.1. Device Descriptor

This chapter introduces the USB device descriptor of EC2x series modules.

Table 3: USB Device Descriptor

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	18	0x12	18 bytes
<i>bDescriptorType</i>	Descriptor type	1	0x01	Device descriptor
<i>bcdUSB</i>	Version number of the USB specification for which the device is compliant	512	0x0200	USB version 2.0

<i>bDeviceClass</i>	Device class code	239	0xEF	Hybrid device
<i>bDeviceSubClass</i>	Device subclass code. Assigned by device class code	2	0x02	2
<i>bDeviceProtocol</i>	Protocol code	1	0x01	IAD - Interface Association Descriptor
<i>bMaxPacketSize0</i>	Maximum packet size allowed for endpoint zero (0)	64	0x40	64 bytes
<i>idVendor</i>	Vendor identifier	11388	0x2C7C	AnySmart Technologies Co., Ltd
<i>idProduct</i>	Product identifier	EC21	289	0x121
		EC25	293	0x125
		EC20	288	0x120
<i>bcdDevice</i>	Device factory number	792	0x0318	792
<i>iManufacturer</i>	Index of the string descriptor describing the manufacturer	1	0x01	1
<i>iProduct</i>	Index of the string descriptor describing the product	2	0x02	2
<i>iSerialNumber</i>	Index of the string descriptor containing device's serial number	0	0x00	0
<i>bNumConfigurations</i>	Number of device configuration descriptors	1	0x01	1

3.2. Configuration Descriptor

This chapter introduces the USB configuration descriptor of EC2x series modules.

Table 4: USB Configuration Descriptor

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes

<i>bDescriptorType</i>	Descriptor type	2	0x02	Configuration descriptor
<i>wTotalLength</i>	Total length of data returned for this configuration	428	0x01AC	428 bytes
<i>bNumInterfaxe</i>	Number of interfaces supported by this configuration	10	0x0A	10 interfaces
<i>bConfigurationValue</i>	Configuration value. Only used when the system software of a USB device driver needs it.	1	0x01	Configuration 1
<i>iConfiguration</i>	Index of the string descriptor describing this configuration	0	0x00	No string descriptor
<i>bmAttributes</i>	USB device characteristics	224	0xA0	224
<i>bmAttributes.Reserved D7</i>	The 7th byte of <i>bmAttributes</i> is reserved	1	0x01	1
<i>bmAttributes.SelfPowered</i>	Whether to power the USB device through USB_VBUS	1	0x00	Yes
<i>bmAttributes.RemoteWakeup</i>	Remote wakeup mode	1	0x01	1
<i>bmAttributes.Reserved D4..0</i>	The 4th byte of <i>bmAttributes</i> is reserved	0	0x00	0
<i>bMaxPower</i>	Amount of power required in this configuration when the USB device is fully operational, expressed in units of 2 mA.	250	0xFA	500 mA

3.3. Interface Descriptors

This chapter introduces the USB interface descriptors of EC2x series modules.

3.3.1. Interface 0 (DM Interface)

Table 5: Interface Descriptor of Interface 0

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor
<i>bInterfaceNumber</i>	Interface number	0	0x00	0
<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	2	0x02	2 endpoints
<i>bInterfaceClass</i>	Interface class code	2	0x02	2
<i>bInterfaceSubClass</i>	Interface subclass code	6	0x06	6
<i>bInterfaceProtocol</i>	Interface protocol code	0	0x00	0
<i>iInterface</i>	Index of the string descriptor describing this interface	0	0x00	0

3.3.1.1. Endpoint Descriptor 0

Table 6: Endpoint Descriptor 0 of Interface 0

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor

<i>bEndpointAddress</i>	Address of the endpoint	129	0x81	Direction = IN EndpointID = 129
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.1.2. Endpoint Descriptor 1

Table 7: Endpoint Descriptor 1 of Interface 0

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	1	0x01	Direction = OUT EndpointID = 1
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.2. Interface 1 (NMEA Interface)

Table 8: Interface Descriptor of Interface 1

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor
<i>bInterfaceNumber</i>	Interface number	1	0x01	1
<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	3	0x03	3 endpoints
<i>bInterfaceClass</i>	Interface class code	255	0xFF	255
<i>bInterfaceSubClass</i>	Interface subclass code	0	0x00	0
<i>bInterfaceProtocol</i>	Interface protocol code	0	0x00	0
<i>iInterface</i>	Index of the string descriptor describing this interface	0	0x00	0

3.3.2.1. Endpoint Descriptor 0

Table 9: Endpoint Descriptor 0 of Interface 1

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	131	0x83	Direction = IN EndpointID = 131
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	3	0x03	TransferType = Interrupt
<i>wMaxPacketSize</i>	The maximum packet size	10	0x0A	10 bytes

	that this endpoint can send or receive. Unit: byte.			
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	9	0x09	9 ms

3.3.2.2. Endpoint Descriptor 1

Table 10: Endpoint Descriptor 1 of Interface 1

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	130	0x82	Direction = OUT EndpointID = 130
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.2.3. Endpoint Descriptor 2

Table 11: Endpoint Descriptor 2 of Interface 1

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes

<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	2	0x02	Direction = OUT EndpointID = 2
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.3. Interface 2 (AT Interface)

Table 12: Interface Descriptor of Interface 2

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor
<i>bInterfaceNumber</i>	Interface number	2	0x02	2
<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	3	0x03	3 endpoints
<i>bInterfaceClass</i>	Interface class code	255	0xFF	255
<i>bInterfaceSubClass</i>	Interface subclass code	0	0x00	0x00
<i>bInterfaceProtocol</i>	Interface protocol code	0	0x00	0x00
<i>iInterface</i>	Index of the string descriptor describing this interface	0	0x00	0x00

3.3.3.1. Endpoint Descriptor 0

Table 13: Endpoint Descriptor 0 of Interface 2

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	133	0x85	Direction = IN EndpointID = 133
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	3	0x03	TransferType = Interrupt
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	10	0x0A	10 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	9	0x09	9 ms

3.3.3.2. Endpoint Descriptor 1

Table 14: Endpoint Descriptor 1 of Interface 2

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	132	0x84	Direction = IN EndpointID = 132
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes

<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0
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3.3.3.3. Endpoint Descriptor 2

Table 15: Endpoint Descriptor 2 of Interface 2

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	3	0x03	Direction = OUT EndpointID = 3
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.4. Interface 3 (Modem Interface)

Table 16: Interface Descriptor of Interface 3

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor
<i>bInterfaceNumber</i>	Interface's number	3	0x03	3

<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	3	0x03	3 endpoints
<i>bInterfaceClass</i>	Interface class code	255	0xFF	255
<i>bInterfaceSubClass</i>	Interface subclass code	0	0x00	0
<i>bInterfaceProtocol</i>	Interface protocol code	0	0x00	0
<i>iInterface</i>	Index of the string descriptor describing this interface	0	0x00	0

3.3.4.1. Endpoint Descriptor 0

Table 17: Endpoint Descriptor 0 of Interface 3

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	135	0x87	Direction = IN EndpointID = 135
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	3	0x03	TransferType = Interrupt
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	10	0x0A	10 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	9	0x09	9 ms

3.3.4.2. Endpoint Descriptor 1

Table 18: Endpoint Descriptor 1 of Interface 3

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	134	0x86	Direction = IN EndpointID = 134
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.4.3. Endpoint Descriptor 2

Table 19: Endpoint Descriptor 2 of Interface 3

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	4	0x04	Direction = OUT EndpointID = 4
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes

<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0
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3.3.5. Interface 4 (USB Net Interface)

Table 20: Interface Descriptor of Interface 4

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor
<i>bInterfaceNumber</i>	Interface's number	4	0x04	4
<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	3	0x03	3 endpoints
<i>bInterfaceClass</i>	Interface class code	255	0xFF	255
<i>bInterfaceSubClass</i>	Interface subclass code	255	0xFF	255
<i>bInterfaceProtocol</i>	Interface protocol code	255	0xFF	255
<i>iInterface</i>	Index of the string descriptor describing this interface	0	0x00	0

3.3.5.1. Endpoint Descriptor 0

Table 21: Endpoint Descriptor 0 of Interface 4

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes

<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	137	0x89	Direction = IN EndpointID = 137
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	3	0x03	TransferType = Interrupt
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	8	0x0008	8 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	9	0x09	9 ms

3.3.5.2. Endpoint Descriptor 1

Table 22: Endpoint Descriptor 1 of Interface 4

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	136	0x88	Direction = IN EndpointID = 136
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.5.3. Endpoint Descriptor 2

Table 23: Endpoint Descriptor 2 of Interface 4

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	2	0x02	Direction = OUT EndpointID = 2
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.6. Interface 5 (ADB Interface)

Table 24: Interface Descriptor of Interface 5

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor
<i>bInterfaceNumber</i>	Interface's number	5	0x05	5
<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	2	0x02	2 endpoints

<i>bInterfaceClass</i>	Interface class code	255	0xFF	255
<i>bInterfaceSubClass</i>	Interface subclass code	66	0x42	66
<i>bInterfaceProtocol</i>	Interface protocol code	1	0x01	1
<i>iInterface</i>	Index of the string descriptor describing this interface	7	0x07	7

3.3.6.1. Endpoint Descriptor 0

Table 25: Endpoint Descriptor 0 of Interface 5

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	6	0x06	Direction = IN EndpointID = 6
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.6.2. Endpoint Descriptor 1

Table 26: Endpoint Descriptor 1 of Interface 5

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes

<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	138	0x8A	Direction = IN EndpointID = 138
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type.	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.7. Interface 6 (Audio Control Interface)

Table 27: Interface Descriptor of Interface 6

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor
<i>bInterfaceNumber</i>	Interface's number	6	0x06	6
<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	0	0x00	0
<i>bInterfaceClass</i>	Interface class code	1	0x01	1
<i>bInterfaceSubClass</i>	Interface subclass code	1	0x01	1
<i>bInterfaceProtocol</i>	Interface protocol code	0	0x00	0
<i>iInterface</i>	Index of the string descriptor describing this interface	8	0x08	8

3.3.8. Interface 7 (Microphone Interface)

Table 28: Interface Descriptor of Interface 7

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor
<i>bInterfaceNumber</i>	Interface's number	7	0x07	7
<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	1	0x01	1 endpoint
<i>bInterfaceClass</i>	Interface class code	1	0x01	1
<i>bInterfaceSubClass</i>	Interface subclass code	2	0x02	2
<i>bInterfaceProtocol</i>	Interface protocol code	0	0x00	0
<i>iInterface</i>	Index of the string descriptor describing this interface	0	0x00	0

3.3.8.1. Endpoint Descriptor 0

Table 29: Endpoint Descriptor 0 of Interface 7

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	139	0x8B	Direction = IN EndpointID = 139
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	5	0x05	TransferType = Isochronous

<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	2047	0x07FF	2047 bytes
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3.3.9. Interface 8 (Speaker Interface)

Table 30: Interface Descriptor of Interface 8

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor
<i>bInterfaceNumber</i>	Interface's number	8	0x08	8
<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	0	0x00	0
<i>bInterfaceClass</i>	Interface class code	1	0x01	1
<i>bInterfaceSubClass</i>	Interface subclass code	2	0x02	2
<i>bInterfaceProtocol</i>	Interface protocol code	0	0x00	0
<i>iInterface</i>	Index of the string descriptor describing this interface	13	0x0D	13

3.3.10. Interface 9 (ADB Interface)

Table 31: Interface Descriptor of Interface 9

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	9	0x09	9 bytes
<i>bDescriptorType</i>	Descriptor type	4	0x04	Interface descriptor

<i>bInterfaceNumber</i>	Interface's number	9	0x09	9
<i>bAlternateSetting</i>	Used to identify different interface descriptors of the same interface	0	0x00	0
<i>bNumEndpoints</i>	Number of endpoints used by this interface	2	0x02	2 endpoints
<i>bInterfaceClass</i>	Interface class code	255	0xFF	255
<i>bInterfaceSubClass</i>	Interface subclass code	66	0x42	66
<i>bInterfaceProtocol</i>	Interface protocol code	1	0x01	1
<i>iInterface</i>	Index of the string descriptor describing this interface	7	0x07	7

3.3.10.1. Endpoint Descriptor 0

Table 32: Endpoint Descriptor 0 of Interface 9

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	8	0x08	Direction = OUT EndpointID = 8
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

3.3.10.2. Endpoint Descriptor 1

Table 33: Endpoint Descriptor 1 of Interface 9

Parameter	Meaning	Value		
		Decimal	Hex	Description
<i>bLength</i>	Descriptor size; Unit: byte	7	0x07	7 bytes
<i>bDescriptorType</i>	Descriptor type	5	0x05	Endpoint descriptor
<i>bEndpointAddress</i>	Address of the endpoint	140	0x8C	Direction = IN EndpointID = 140
<i>bmAttributes</i>	Two-bitmap describing the endpoint transfer type	2	0x02	TransferType = Bulk
<i>wMaxPacketSize</i>	The maximum packet size that this endpoint can send or receive. Unit: byte.	512	0x0200	512 bytes
<i>bInterval</i>	The interval between polling endpoints when a data transmission interruption occurs. Unit: milliseconds.	0	0x00	0

4 Appendix A References

Table 34: Related Documents

SN	Document Name	Remark
[1]	Quectel_EC2x&EG9x&EG2x-G&EM05_Series_QCFG_AT_Commands_Manual	QCFG AT commands manual applicable for EC2x series, EG9x series, EG2x-G and EM05 series modules

Table 35: Terms and Abbreviations

Abbreviation	Description
ADB	Android Debug Bridge
CDC	Communications Device Class
ECM	Ethernet Networking Control Model
GPS	Global Positioning System
IAD	Interface Association Descriptor
LTE	(Long-Term Evolution) a 4G mobile communications standard
NMEA	NMEA (National Marine Electronics Association) 0183 Interface Standard
PPP	Point to Point Protocol
RNDIS	Remote Network Driver Interface Specification
USB	Universal Serial Bus