specifications

Baseband

Assigned numbers for Baseband identifies the Inquiry Access codes and Class of Device/Service (CoD) fields.

The General- and Device-specific Inquiry Access Codes (DIACs)

The Inquiry Access Code (IAC) is the first level of filtering for finding *Bluetooth*® devices and services. The main purpose of defining multiple IACs is to limit the number of responses when scanning devices within range.

#	LAP Value	Usage
0	0×9E8B33	General/Unlimited Inquiry Access Code (GIAC)
1	0×9E8B00	Limited Dedicated Inquiry Access Code (LIAC)
2 63	0×9E8B01-0×9E8B32, 0×9E8B34-0×9E8B3F	RESERVED FOR FUTURE USE

Table 1: Inquiry Access Codes

The Limited Inquiry Access Code (LIAC) is to be used only for limited periods in scenarios where both sides have been explicitly caused to enter this state, usually by user action. For further explanation of the use of the LIAC, please refer to the Generic Access Profile.

In contrast, it is allowed to continuously scan for the General Inquiry Access Code (GIAC) and respond whenever inquired.

The Class of Device/Service field

The Class of Device/Service (CoD) field has a variable format. The format is indicated using the "Format Type field" within the CoD. The length of the Format Type field is variable and ends with two bits different from "11." The version field starts at the least significant bit of the CoD and may extend upward.

In the "format #1" of the CoD (Format Type field = 00), 11 bits are assigned as a bit-mask (multiple bits can be set), each bit corresponding to a high-level generic category of service class. Currently, seven categories are defined. These are primarily of a "public service" nature. The remaining 11 bits are used to indicate device type category and other device-specific characteristics.Any reserved but otherwise unassigned bits, such as in the Major Service Class field, should be set to zero.

Major Service Classes

The Major and Minor Service classes define the general families of devices with which Bluetooth SIG members want their applications to be associated. No assumptions about the specific functionality or characteristics of any application should be based solely on its inclusion within a Major or Minor device class.

Bit No.	Major Service Class
13	Limited Discoverable Mode [Ref #1]
14	(reserved)
15	(reserved)
16	Positioning (Location identification)
17	Networking (LAN, Ad hoc, ...)
18	Rendering (Printing, Speakers, ...)
19	Capturing (Scanner, Microphone, ...)
20	

	Object Transfer (v-Inbox, v-Folder, ...)
21	Audio (Speaker, Microphone, Headset service, ...)
22	Telephony (Cordless telephony, Modem, Headset service, ...)
23	Information (WEB-server, WAP-server, ...)

Table 2: Major Service Classes

[Ref #1: See Generic Access Profile (please refer to the Generic Access Profile within the respective Core Specification)]

Major Device Classes

The Major Device Class segment is the highest level of granularity for defining a Bluetooth device. A device's main function determines its Major Class assignment. There are 32 major classes. The assignment of this Major Class field is defined in the table.

12	11	10	9	8	Major Device Class
0	0	0	0	0	Miscellaneous [Ref #2]
0	0	0	0	1	Computer (desktop, notebook, PDA, organizer, ...)
0	0	0	1	0	Phone (cellular, cordless, pay phone, modem, ...)
0	0	0	1	1	LAN /Network Access point
0	0	1	0	0	Audio/Video (headset, speaker, stereo, video display, VCR, ...
0	0	1	0	1	Peripheral (mouse, joystick, keyboard, ...)
0	0	1	1	0	Imaging (printer, scanner, camera, display, ...)

0	0	1	1	1	Wearable
0	1	0	0	0	Toy
0	1	0	0	1	Health
1	1	1	1	1	Uncategorized: device code not specified
X	X	X	X	X	All other values reserved

Table 3: Major Device Classes

[Ref #2: Used where a more specific Major Device Class code is not suitable (but only as specified in this document). A device that does not have a major class code assigned can use the all-1 code until "classified."]

The Minor Device Class field

The Minor Device Class field (bits 7 to 2 in the CoD) is interpreted only in the context of the Major Device Class (but independently of the Service Class field). Thus, the meaning of the bits may change, depending on the value of the Major Device Class field. When the Minor Device Class field indicates a device class, then the primary device class should be reported – e.g., a cellular phone that can also work as a cordless handset should use "Cellular" in the Minor Device Class field.

Minor Device Class field - Computer Major Class

7	6	5	4	3	2	Minor Device Class bit no. of CoD
0	0	0	0	0	0	Uncategorized, code for device not assigned
0	0	0	0	0	1	Desktop workstation
0	0	0	0	1	0	Server-class computer

0	0	0	0	1	1	Laptop
0	0	0	1	0	0	Handheld PC/PDA (clamshell)
0	0	0	1	0	1	Palm-size PC/PDA
0	0	0	1	1	0	Wearable computer (watch size)
0	0	0	1	1	1	Tablet
X	X	X	X	X	X	All other values reserved

Table 4: Sub-device Class field for the "Computer" Major Class

Minor Device Class field - Phone Major Class

7	6	5	4	3	2	Minor Device Class bit no. of CoD
0	0	0	0	0	0	Uncategorized, code for device not assigned
0	0	0	0	0	1	Cellular
0	0	0	0	1	0	Cordless
0	0	0	0	1	1	Smartphone
0	0	0	1	0	0	Wired modem or voice gateway
0	0	0	1	0	1	Common ISDN access
X	X	X	X	X	X	All other values reserved

Table 5: Sub-device Classes for the "Phone" Major Class

Minor Device Class field - LAN/Network Access Point Major Class

7	6	5	Minor Device Class bit no. of CoD
0	0	0	Fully available
0	0	1	1% to 17% utilized
0	1	0	17% to 33% utilized
0	1	1	33% to 50% utilized
1	0	0	50% to 67% utilized
1	0	1	67% to 83% utilized
1	1	0	83% to 99% utilized
1	1	1	No service available
X	X	X	All other values reserved

Table 6: The LAN/Network Access Point Load Factor field

The exact loading formula is not standardized. It is up to each LAN/Network Access Point implementation to determine what internal conditions to report as a utilization percentage. The only requirement is for the number to reflect an ever-increasing utilization of communication resources within the box. As a recommendation: a client locating multiple LAN/Network Access Points should attempt to connect to the one reporting the lowest load.

4	3	2	Minor Device Class bit no. of CoD
0	0	0	Uncategorized (use this value if no others apply)
X	X	X	All other values reserved

Table 7: Reserved sub-field for the LAN/Network Access Point

Minor Device Class field - Audio/Video Major Class

7	6	5	4	3	2	Minor Device Class bit no. of CoD
0	0	0	0	0	0	Uncategorized, code not assigned
0	0	0	0	0	1	Wearable Headset Device
0	0	0	0	1	0	Hands-free Device
0	0	0	0	1	1	(Reserved)
0	0	0	1	0	0	Microphone
0	0	0	1	0	1	Loudspeaker
0	0	0	1	1	0	Headphones
0	0	0	1	1	1	Portable Audio
0	0	1	0	0	0	Car audio
0	0	1	0	0	1	Set-top box
0	0	1	0	1	0	HiFi Audio Device
0	0	1	0	1	1	VCR
0	0	1	1	0	0	Video Camera
0	0	1	1	0	1	Camcorder
0	0	1	1	1	0	Video Monitor
0	0	1	1	1	1	Video Display and Loudspeaker

0	1	0	0	0	0	Video Conferencing
0	1	0	0	0	1	(Reserved)
0	1	0	0	1	0	Gaming/Toy
X	X	X	X	X	X	All other values reserved

Table 8: Sub-device Classes for the "Audio/Video" Major Class

Minor Device Class field - Peripheral Major Class

7	6	Minor Device Class bit no. of CoD
0	0	Not Keyboard / Not Pointing Device
0	1	Keyboard
1	0	Pointing device
1	1	Combo keyboard/pointing device

Table 9: The Peripheral Major Class keyboard/pointing device field

Bits six and seven independently specify mouse, keyboard or combo mouse/keyboard devices. These may be combined with the lower bits in a multifunctional device.

5	4	3	2	Minor Device Class bit no. of CoD
0	0	0	0	Uncategorized device
0	0	0	1	Joystick
0	0	1	0	Gamepad
0	0	1	1	

				Remote control
0	1	0	0	Sensing device
0	1	0	1	Digitizer tablet
0	1	1	0	Card Reader (e.g. SIM Card Reader)
0	1	1	1	Digital Pen
1	0	0	0	Handheld scanner for bar-codes, RFID, etc.
1	0	0	1	Handheld gestural input device (e.g., "wand" form factor)
X	X	X	X	All other values reserved

Table 10: Minor Class bits two to five for Peripheral Major Class

Minor Device Class field - Imaging Major Class

7	6	5	4	Minor Device Class bit no. of CoD
X	X	X	1	Display
X	X	1	X	Camera
X	1	X	X	Scanner
1	X	X	X	Printer
X	X	X	X	All other values reserved

Table 11: The Imaging Major Class bits four to seven

Bits four to seven independently specify display, camera, scanner or printer. These may be combined in a multifunctional device.

3	2	Minor Device Class bit no. of CoD
0	0	Uncategorized, default
X	X	All other values reserved

Table 12: The Imaging Major Class bits two and three

Bits two and three are reserved

Minor Device Class field - Wearable Major Class

The Minor Class segment is the lowest level of granularity for defining a Bluetooth Device. There are 64 different possible minor classes.

7	6	5	4	3	2	Minor Device Class bit no. of CoD
0	0	0	0	0	1	Wristwatch
0	0	0	0	1	0	Pager
0	0	0	0	1	1	Jacket
0	0	0	1	0	0	Helmet
0	0	0	1	0	1	Glasses
X	X	X	X	X	X	All other values reserved

Minor Device Class field - Toy Major Class

7	6	5	4	3	2	Minor Device Class bit no. of CoD
0	0	0	0	0	1	Robot
0	0	0	0	1	0	Vehicle

0	0	0	0	1	1	Doll / Action figure
0	0	0	1	0	0	Controller
0	0	0	1	0	1	Game
X	X	X	X	X	X	All other values reserved

Minor Device Class field - Health

7	6	5	4	3	2	Minor Device Class bit no. of CoD
0	0	0	0	0	0	Undefined
0	0	0	0	0	1	Blood Pressure Monitor
0	0	0	0	1	0	Thermometer
0	0	0	0	1	1	Weighing Scale
0	0	0	1	0	0	Glucose Meter
0	0	0	1	0	1	Pulse Oximeter
0	0	0	1	1	0	Heart/Pulse Rate Monitor
0	0	0	1	1	1	Health Data Display
0	0	1	0	0	0	Step Counter
0	0	1	0	0	1	Body Composition Analyzer
0	0	1	0	1	0	Peak Flow Monitor
0	0	1	0	1	1	Medication Monitor
0	0	1	1	0	0	Knee Prosthesis

0	0	1	1	0	1	Ankle Prosthesis
0	0	1	1	1	0	Generic Health Manager
0	0	1	1	1	1	Personal Mobility Device
X	X	X	X	X	X	All other values reserved