

# User of IEEE Assigned Manufacturer Identifier with Cellular Digital Packet Data Network

## General

The IEEE Registration Authority assigned 'company\_id' is the 24 bit high order value of the CDPD Equipment Identifier (EUI-48) defined in the Cellular Digital Packet Data System Specification. The unique word shall be a 48 bit long data pattern that is used to guarantee that Temporary Equipment Identifier assignments requests sent by any two Mobile End Systems are different. EUI-48 consists of the 24 bit company\_id (assigned by the IEEE/RAC) and a 24 bit unique CDPD M-ES number (assigned by the manufacturer).

EUI-48 is used in the following messages:

1. Identity Request Message (Part 403, Section 6.7.5.4)
2. Identity Assign Message (Part 403, Section 6.7.5.5)
3. Identity Check Response Message (Part 403, Section 6.7.5.7)

EUI-48 is further optionally used in the following Mobile Network

Registration Protocol Messages:

1. End System Bye (Part 407, Section 4.2.2)

EUI-48 is further optionally used in the following Mobile Network Location Protocol Messages:

1. Redirect Expiry (Part 501, Section 4.2.1)
2. Redirect Flush (Part 501, Section 4.2.3)
3. Redirect Expiry (Part 501, Section 4.2.4)

## Bit Transmission Ordering

EUI-48 are encoded with the messages as a sequence of 6 octets. The octets are transmitted in ascending numerical order; inside an octet, the least significant bit (bit 1) is the first bit to be transmitted.

For example, if your IEEE/RAC-assigned company\_id value is ACDE48(base 16) and the manufacturer's extension identifier is 234567(base 16), the EUI-48 value generated from these two values is ACDE48234567(base 16), whose byte and bit representations and data-transmission ordering are illustrated below:

## CDPD Manufacturer Identifier Tutorial

```

                                identifier representation
most significant                    least significant
1010 1100 1101 1110 0100 1000 0010 0011 0100 0101 0110 0111
   byteA      byteB      byteC      byteD      byteE      byteF

```

(most-through-least significant byte, least-through-most significant bit)

```

                                last bit-->|
|<--first bit                                |
00110101 01111011 00010010 11000100 10100010 11100110
LSB  MSB  LSB  MSB  LSB  MSB  LSB  MSB  LSB  MSB  LSB  MSB
byteA      byteB      byteC      byteD      byteE      byteF

```

An alternative way of illustrating how the EUI-48 identifier is transmitted is shown below:

```

                                (bit transmission order)
                                |<- last bit    first bit ->|
Bit                               | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
-----+-----+-----+-----+-----+-----+-----+-----+
Octet N+0 | 1  0  1  0  1  1  0  0 |
-----+-----+-----+-----+-----+
Octet N+1 | 1  1  0  1  1  1  1  0 |
-----+-----+-----+-----+-----+
Octet N+2 | 0  1  0  0  1  0  0  0 |
=====+=====+=====+=====+=====+=====+=====+=====+
Octet N+3 | 0  0  1  0  0  0  1  1 |
-----+-----+-----+-----+-----+
Octet N+4 | 0  1  0  0  0  1  0  1 |
-----+-----+-----+-----+-----+
Octet N+5 | 0  1  1  0  0  1  1  1 |
-----+-----+-----+-----+-----+
                                Block structure

```

company\_id  
(assigned by IEEE/RAC)

-----

CDPD M-ES number  
(assigned by manufacturer)

### Manufacturer Identifier

CDPD System Specification Release 1.0 provides for the use of unique word in conjunction with Identity Assignment, Mobile Network Registration and Mobile Network Location messages. A unique EUI-48 word is a sequence of 48 bits. The high order 24 bits take the value of the company\_id (assigned by the IEEE/RAC) and the following 24 bits are administered by the manufacturing identifier assignee in accordance with policies and procedures set forth by the CDPD Network Information Center.

### Unique Word Administration

The company\_id referenced in your IEEE Registration Authority letter is an integral part of the 48 bit CDPD Equipment Identifier (EUI-48).

A manufacturer identifier assignment allows the assignee to generate approximately 16 million unique words, by varying the last 24 bits. IEEE will not assign another manufacturer identifier to any part of your company until you have consumed, in product, the preponderance (more than 95%) of this block of potential unique words. It is incumbent upon your company administration to ensure that large portions of the unique word block are not left unused in manufacturing.