1. GPS On/Off

- GPS ON

    system("echo gpson | nc localhost 60000 &");

- GPS OFF

    system("echo gpsoff | nc localhost 60000 &");

2. GPS data format

- GPS data와 modem 상태에 대해서도 전달함

(추후 LED 시나리오에 따라 modem status 사용 가능)

2.1. FIXED 된 경우(GPS data 수신)
$$GPS,(UTC) 날짜, 시/분/초,위도,경도,속도, 방향, A, LTE 통신 Status, EMM reject, ESM reject, 신호세기, 위성개수, 위성 ID-신호세기, 위성 ID-신호세기, 위성 ID-신호세기, 위성 ID-신호세기

2.2 FIXED 안된 경우(GPS data 미수신 상태)
– "날짜, 시/분/초,위도,경도,속도, 방향"에 대해서 정보 없이 null로 표시
$$GPS,,,,,,,V, LTE 통신 Status, EMM reject, ESM reject, 신호세기, 위성개수, 위성 ID-신호세기, 위성 ID-신호세기, 위성 ID-신호세기, 위성 ID-신호세기

참고 :
- LTE 통신 Status
    2 : 연결, 그 외 : 연결 안됨
- EMM reject, ESM reject : LTE 연결 안된 원인 표시
- 신호세기 : LTE 신호세기

예)
$$GPS,20161112,065657,3753431,12699114, 26, 84,A,2,255,255,-34,18,5-30,5-28,13-31,1538

설명)
$$GPS,20161112, 065657, 3753431, 12699114, 26, 84, A
(UTC) 날짜, 시/분/초, 위도, 경도, 속도, 방향, 측위성공 여부,
, 2, 255, 255, -34, 18, 5-30,
LTE 통신 Status, EMM reject, ESM reject, 신호세기 위성갯수, 위성 ID-신호세기,
5-28, 13-31, 15-38
위성 ID-신호세기, 위성 ID-신호세기, 위성 ID-신호세기

3. GPS data를 가져가기 위한 Client 예제

```c
#define GNSS_SOCKET_PATH "/tmp/gnss_sock"
#define GNSS_DATA_SIZE 1024

void gnss_sock_recv()
{
    int sockfd = 0;
    int clilen;
    char gnss_data[GNSS_DATA_SIZE] = {0,};
    struct sockaddr_un ca, sa;
    socklen_t addr_len = sizeof(struct sockaddr_un);

    sockfd = socket(AF_UNIX, SOCK_DGRAM, 0);
    if (sockfd < 0)
    {
        printf("socket error : \n");
        return;
    }
    unlink(GNSS_SOCKET_PATH);
    bzero(&sa, sizeof(sa));
    sa.sun_family = AF_UNIX;
    strcpy(sa.sun_path, GNSS_SOCKET_PATH);

    if (bind(sockfd, (struct sockaddr *)&sa, sizeof(sa)) < 0)
    {
        printf("bind error : \n");

    if (sockfd)
        close(sockfd);
        return;
    }

    while(1)
```

```
    {
        recvfrom(sockfd, (void *)gnss_data, GNSS_DATA_SIZE, 0, (struct sockaddr *)&ca,
&addr_len);
        printf("rx string --> %s\n", (char*)gnss_data);
    }
}
```

4 UART 연결을 통한 GPS 데이터 수신

AT COMMAND용 UART를 통한 GPS 데이터 수신 방법

4.1 설정

시작 : AT$$GPS

중지 : AT$$GPSSTOP

4.2 형식

- CH 2. GPS data format 내용 참조.

4.3 주기

- 1초 간격으로 GPS 데이터를 UART 연결을 통해 출력

4.4 예시

4.4.1 FIXED 안된 상태

```
AT$$GPS
OK
$$GPS,,,,,,,V,0,255,255,0,0,0-0,0-0,0-0,0-0
$$GPS,,,,,,,V,0,255,255,0,0,0-0,0-0,0-0,0-0
$$GPS,,,,,,,V,0,255,255,0,0,0-0,0-0,0-0,0-0
$$GPS,,,,,,,V,0,255,255,0,0,0-0,0-0,0-0,0-0
$$GPS,,,,,,,V,0,255,255,0,0,0-0,0-0,0-0,0-0
AT$$GPSSTOP
OK
```

4.4.2 FIXED 상태

AT$$GPS
OK
$$GPS,,,,,,,V,1,255,255,-58,8,255-33,255-34,255-16,7-35
$$GPS,,,,,,,V,1,255,255,-58,8,255-33,255-34,255-20,7-35
$$GPS,,,,,,,V,1,255,255,-58,8,255-32,255-34,255-20,7-35
$$GPS,,,,,,,V,1,255,255,-58,8,255-32,255-33,255-22,7-35
$$GPS,,,,,,,V,1,255,255,-58,8,255-32,255-33,255-20,7-34
$$GPS,,,,,,,V,1,255,255,-58,8,255-31,255-33,255-21,7-34
$$GPS,,,,,,,V,1,255,255,-58,8,255-30,255-33,255-19,7-35
$$GPS,,,,,,,V,1,255,255,-56,8,255-30,255-33,255-21,7-35
$$GPS,,,,,,,V,1,255,255,-56,8,255-29,255-32,255-21,7-35
$$GPS,,,,,,,V,1,255,255,-56,8,255-28,255-32,255-20,7-35
$$GPS,,,,,,,V,1,255,255,-56,8,255-28,255-32,255-19,7-35
$$GPS,,,,,,,V,1,255,255,-56,8,255-28,255-31,255-19,7-35
$$GPS,,,,,,,V,1,255,255,-56,8,255-28,255-31,255-20,7-35
$$GPS,,,,,,,V,1,255,255,-55,8,255-28,255-31,255-20,7-35
$$GPS,,,,,,,V,1,255,255,-55,8,255-29,255-31,255-23,7-36
$$GPS,,,,,,,V,1,255,255,-55,8,255-28,255-31,255-24,7-35
$$GPS,,,,,,,V,1,255,255,-56,6,255-29,255-32,255-22,7-35
$$GPS,,,,,,,V,1,255,255,-56,9,255-28,255-32,255-24,7-36
$$GPS,,,,,,,V,1,255,255,-56,9,255-29,255-32,255-24,7-36
$$GPS,20180427,064402,3739682,12696930,   0,272,A,1,255,255,-56,9,7-36,8-40,9-36,11-29
$$GPS,20180427,064403,3739683,12696950,   0,272,A,1,255,255,-56,9,7-36,8-40,9-36,11-29
$$GPS,20180427,064404,3739682,12696949,   0,272,A,1,255,255,-56,9,7-37,8-40,9-37,11-28
$$GPS,20180427,064405,3739678,12696943,   0,272,A,1,255,255,-56,9,7-37,8-40,9-37,11-27
$$GPS,20180427,064406,3739675,12696940,   0,272,A,1,255,255,-56,9,7-37,8-40,9-37,11-27
$$GPS,20180427,064407,3739676,12696945,   0,272,A,1,255,255,-56,9,7-37,8-40,9-37,11-26
$$GPS,20180427,064408,3739674,12696942,   0,272,A,1,255,255,-56,9,7-37,8-41,9-37,11-26
$$GPS,20180427,064409,3739673,12696942,   0,272,A,1,255,255,-56,9,7-36,8-40,9-37,11-26
$$GPS,20180427,064410,3739673,12696943,   0,272,A,1,255,255,-56,10,1-30,7-37,8-41,9-37
$$GPS,20180427,064411,3739676,12696948,   0,272,A,1,255,255,-56,10,1-30,7-36,8-40,9-36
$$GPS,20180427,064412,3739677,12696952,   0,272,A,1,255,255,-56,10,1-29,7-35,8-40,9-36
$$GPS,20180427,064413,3739680,12696956,   0,272,A,1,255,255,-56,10,1-29,7-36,8-41,9-36
$$GPS,20180427,064414,3739681,12696958,   0,272,A,1,255,255,-55,10,1-28,7-35,8-40,9-37
$$GPS,20180427,064415,3739683,12696962,   0,272,A,1,255,255,-55,10,1-28,7-35,8-40,9-36
$$GPS,20180427,064416,3739685,12696965,   0,272,A,1,255,255,-55,10,1-29,7-36,8-40,9-37
$$GPS,20180427,064417,3739686,12696968,   0,272,A,1,255,255,-56,10,1-29,7-37,8-41,9-37
$$GPS,20180427,064418,3739687,12696969,   0,272,A,1,255,255,-56,10,1-29,7-36,8-41,9-37
$$GPS,20180427,064419,3739687,12696969,   0,272,A,1,255,255,-56,10,1-29,7-36,8-41,9-37
$$GPS,20180427,064420,3739687,12696969,   0,272,A,1,255,255,-55,10,1-29,7-36,8-41,9-36
$$GPS,20180427,064421,3739687,12696969,   0,272,A,1,255,255,-55,10,1-30,7-36,8-41,9-37
$$GPS,20180427,064422,3739687,12696969,   0,272,A,1,255,255,-55,10,1-30,7-36,8-41,9-37
$$GPS,20180427,064423,3739687,12696970,   0,272,A,1,255,255,-57,10,1-29,7-37,8-41,9-37

```
AT$$GPSSTOP
OK
```