

Additional declaration part according to FCC 15.247 for 902 MHz to 928 MHz FHSS device

The frequency range of this Radio Frequency Identification (RFID) reader, model SF-0102 submitted as FCC ID : 2AY6X is 902.75 MHz to 927.25 MHz.

EGLTEC confirms that this device meets the following FCC requirements :

15.247(a)(1)

Pseudorandom Frequency Hopping Sequence

Describe how the hopping sequence is generated. Provide an example of the hopping sequence channels, in order to demonstrate that the sequence meets the requirement specified in the definition of a frequency hopping spread spectrum system, found in Section 2.1.

In Section 2.1.

..... . The test of a frequency hopping system is that the near term distribution of hops appears random, the long term distribution appears evenly distributed over the hop set, and sequential hops are randomly distributed in both direction and magnitude of change in the hop set.

EGLTEC :

In near term the hops appears random, and in long term (approx. A 240 seconds range) distribution appears evenly distributed over the hop set. (cf. figure)

- SF-0102 operate pseudorandom frequency hopping algorithm.
- Firmware is inserted an array of 50 elements corresponding to 50 channels.
- The first channel is 902.75 MHz and the others are first channel + i*500 kHz

$$F_h = 902.75 + i*0.5 \text{ [MHz]}$$

where, i is the index of the array(0 ~ 49)

- Each time a transmission command start, one of the 50 channels are selected using the pseudorandom number generator routine described as below and the frequency is switched on.

Code:

Pseudorandom number generator routine (getPRN()):

```
unsigned char getPRN() {
    unsigned char i,data;
    for (i = 0; i < 8; i++) {
        prn_value = 0xFFFE & (prn_value << 1);
        if (prn_value & 0x8000)
            prn_value ^= 1;
        if (prn_value & BIT1)
            prn_value ^= 1;
    }
    data = (char) prn_value;
    return data;
}

CH_Number = getPRN() % 50;
Set PseudoSeed routine
void setPseudoSeed ()
```

```

{
    prn_value = TAR; //TAR : MCU Timer
    if (prn_value == 0) prn_value = 1;
}

```

Pseudorandom Channel Debugging Information:

```

Debug = <41,17,34,0,19,24,28,8,12,14,5,
45,31,27,11,41,45,42,27,36,41,
4,2,3,42,32,21,16,18,45,47,
26,21,38,19,12,17,49,35,44,3,
11,22,33,23,14,41,11,3,18,47,
44,12,7,37,9,23,41,29,28,16,
35,40,42,38,6,40,42,14,48,46,
5,40,29,20,0,6,1,43,48,29,
23,34,4,6,40,16,26,31,8,44,
39,26,23,37,38,18,32,29,41,33,
15,37,8,4,30,27,6,23,36,21,
45,24,22,20,29,27,23,47,12,36,
40,11,36,5,17,5,24,31,2,0,
0,41,24,16,30,7,41,7,37,7,
37,3,33,45,9,9,8,21,38,22,
46,6,30,13,18,0,41,12,5,10,
9,24,37,48,33,45,41,2,0,41,
36,24,20,46,21,48,49,18,34,31,
34,3,49,18,38,0,38,27,17,28,
43,48,33,7,21,10,17,13,14,9,
16,35,1,0,49,19,6,48,3,24,
8,44,9,39,2,45,35,43,43,23,
37,14,3,48,0,8,18,30,46,48,
31,39,48,9,7,22,22,38,42,38,
29,40,7,8,41,15,38,6,11,2,
34,22,5,28,46,12,36,25,33,19,
42,44,16,31,48,22,1,21,49,7,
26,42,39,25,12,0,10,3,19,11,
38,1,39,5,23,2,35,32,35,38,
26,17,7,32,32,19,4,21,39,26,
27,18,42,25,5,34,47,41,12,45,
10,18,3,39,23,29,46,37,29,49,
37,16,49,43,45,47,16,36,5,38,
32,5,34,14,1,16,21,36,13,13,
5,35,3,12,8,32,45,13,6,21,
8,46,32,31,44,46,22,29,11,35,
0,23,16,44,9,42,39,3,24,4,
10,45,49,36,13,24,22,18,18,37,
5,8,41,2,25,27,14,14,24,34,
24,22,9,33,20,37,47,18,27,23,
20,13,18,42,35,2,30,13,27,2,
49,27,25,43,24,23,22,11,31,3,
32,5,43,25,31,42,42,22,36,14,
0,37,10,13,24,20,20,35,33,11,
10,46,17,35,0,40,44,45,24,19,
25,26,44,8,2,21,16,28,43,1,
34,18,14,19,2,0,37,10,26,10,
7,20,15,26,27,43,8,14,9,32,
36,15,37,27,24,25,27,29,28,23,
20,2,12,23,46,37,11,45,25,>

```

Equal Hopping Frequency Use

Describe how each individual EUT meets the requirement that each of its hopping channels is used equally on average (e.g., that each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event).

EGLTEC :

The device is given a transmission time of 380ms (default) every 24s on **EACH** channel , so distribution appears evenly distributed in long term view.

15.247(g)

Describe how the EUT complies with the requirement that it be designed to be capable of operating as a true frequency hopping system.

EGLTEC :

The operating frequency of system is jumped randomly and, as long as there are data to be transmit, the next frequency starts to operate, so this is true frequency hopping.

15.247(h)

Describe how the EUT complies with the requirement that it not have the ability to be coordinated with other FHSS systems in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

EGLTEC :

System operating frequency change by internal random number generator controlled entirely by the firmware in the reader, so it can not be coordinated with other FHSS systems.