

---

**ANNEX 4 TO TEST REPORT # EMCC-080534JB, 2020-11-17**

---

**RF EXPOSURE EVALUATION****EQUIPMENT UNDER TEST:**

|                   |                                                 |
|-------------------|-------------------------------------------------|
| Trade Name:       | iSYS-5220                                       |
| Serial Number(s): | EUT #1:000015853<br>EUT #2:000015850            |
| Application:      | 24 GHz Radar                                    |
| FCC ID:           | UXS-ISYS-5220                                   |
| ISED Canada IC:   | 6902A-ISYS5220                                  |
| Manufacturer:     | InnoSenT GmbH                                   |
| Address:          | Am Roedertor 30<br>97499 Donnersdorf<br>GERMANY |
| Phone:            | +49 9528 9518-53                                |
| E-Mail:           | waldemar.hartfelder@innosent.de                 |

**RELEVANT STANDARD(S) :**

47 CFR § 15.249  
RSS-210 Issue 10  
RSS-102 Issue 5  
RSS-Gen Issue 5 Amendment 1

**MEASUREMENT PROCEDURE: :**

ANSI C63.10-2013  
KDB 890966 D01 v01r01

## 1 RF EXPOSURE EVALUATION

---

### 1.1 Regulation

#### 1.1.1 RSS-102 2.5.2 Exemption Limits for Routine Evaluation – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $4.49/f^{0.5}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

## Test on InnoSenT GmbH iSYS-5220 to 47 CFR § 15.249 and RSS-210 Issue 10

### 1.1.2 Calculation

#### Duty cycle calculation:

Measurement result from test report chapter 4.3.5

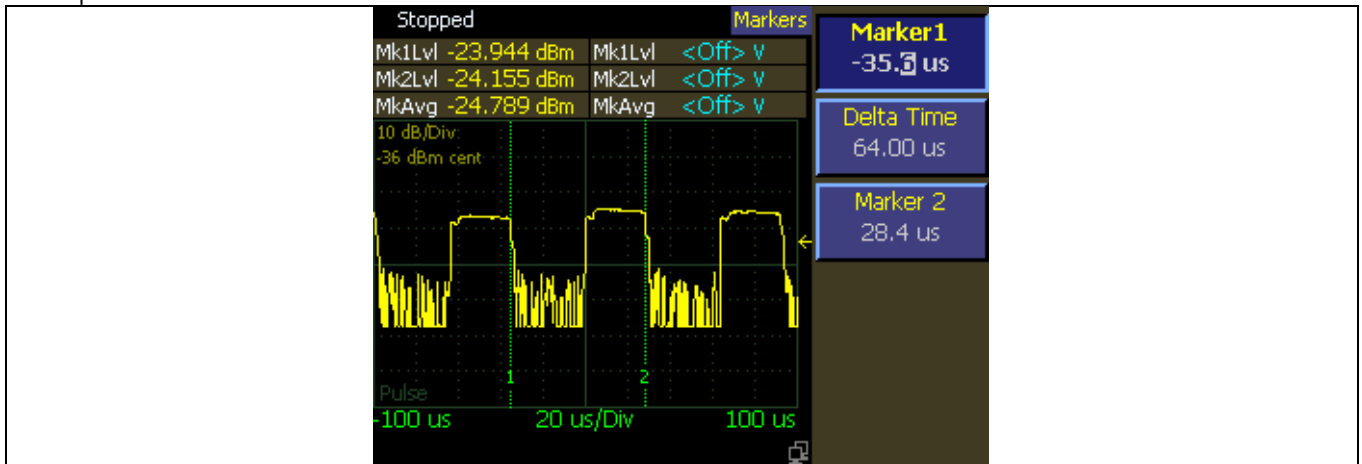
Average factor [dB] =  $10 \log(T_s / \text{cycle time})$

Where:

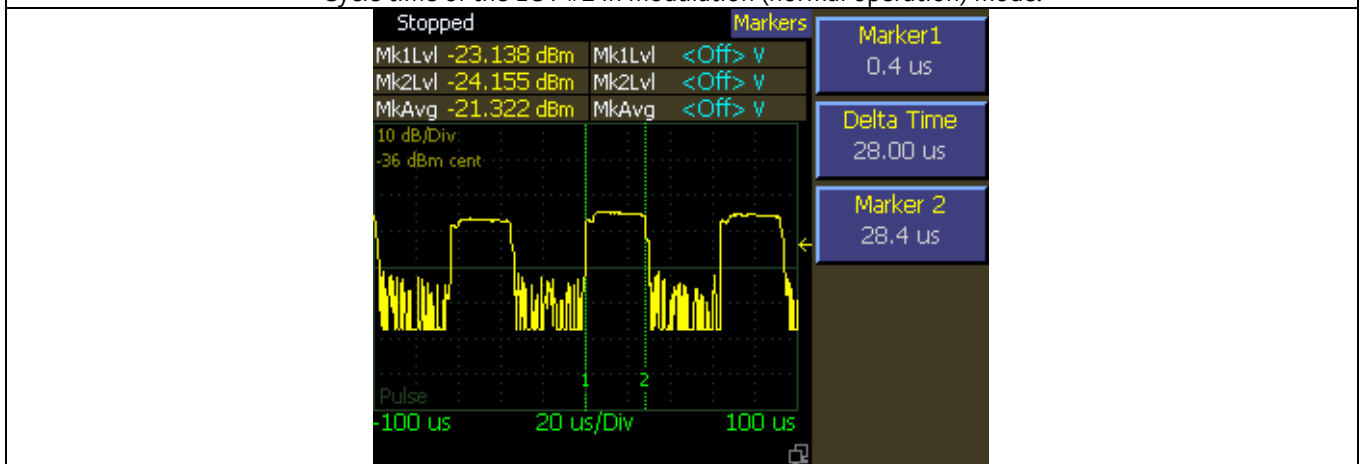
$T_s$  is the signal sweep time in seconds

cycle time is the total time for a complete cycle of the signal including retrace and any other latency times

Sweep time measurements on EUT#2:



Cycle time of the EUT #2 in modulation (normal operation) mode.



Signal sweep time of EUT #2 in modulation (normal operation) mode.

Average factor [dB] =  $10 * \log(28 \mu s / 64 \mu s) = -3.59 \text{ dB}$

## Test on InnoSenT GmbH iSYS-5220 to 47 CFR § 15.249 and RSS-210 Issue 10

**EIRP calculation:**

Measurement result from test report chapter 4.3.7

$$\text{EIRP} = E_{\text{Meas}} + 20 * \log(d_{\text{Meas}}) - 104.7$$

Where:

EIRP is the equivalent isotropically radiated power, in dBm

$E_{\text{Meas}}$  is the field strength of the emission at the measurement distance, in dB $\mu$ V/m

$d_{\text{Meas}}$  is the measurement distance, in m

**Final Result**

| Frequency | Pk Result<br>@ 3m | Average<br>factor | Peak<br>EIRP | Average<br>EIRP | Average<br>EIRP | Limit<br>> 20 cm |
|-----------|-------------------|-------------------|--------------|-----------------|-----------------|------------------|
| [GHz]     | [dB $\mu$ V/m]    | [dB]              | [dBm]        | [dBm]           | [W]             | [W]              |
| 24.07     | 109.5             | -3.59             | 14.3         | 10.8            | 0.0119          | 5.0              |
| 24.154    | 110.0             | -3.59             | 14.8         | 11.3            | 0.0133          | 5.0              |
| 24.238    | 109.5             | -3.59             | 14.3         | 10.8            | 0.0119          | 5.0              |

**1.1.3 Test Result**

Manufacturer: InnoSenT GmbH  
Type: iSYS-5220  
Serial No.: 000015850 mod1  
Test date: 2020-11-17  
Test personnel: Ludwig Kraft

The EUT meets the exemption limits for routine evaluation at a distance of greater than 20 cm.