

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 EUT #2:000015850
Application:	24 GHz Radar
FCC ID:	UXS-ISYS-5220
ISED Canada IC:	6902A-ISYS5220
Manufacturer:	InnoSenT GmbH
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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.

1.1.2 Calculation

Duty cycle calculation:

Measurement result from test report chapter 4.3.5

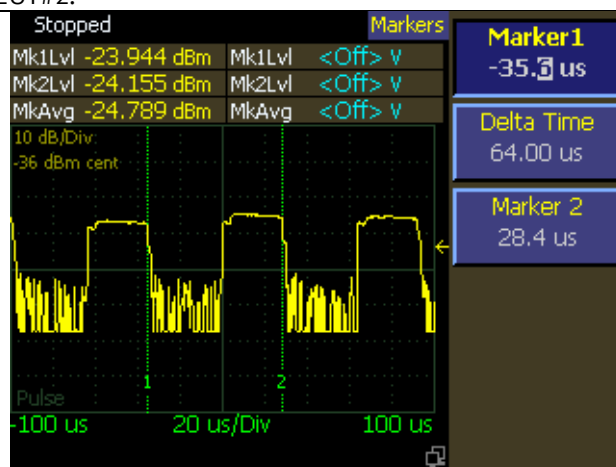
Average factor [dB] = $10 \log(T_s / \text{cycle time})$

Where:

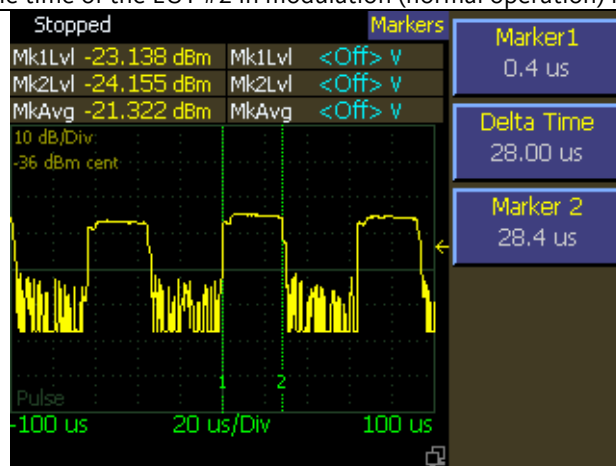
T_s is the signal sweep time in seconds

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_{Meas} is the field strength of the emission at the measurement distance, in dB μ V/m

d_{Meas} is the measurement distance, in m

Final Result

Frequency	Pk Result @ 3m	Average factor	Peak EIRP	Average EIRP	Average EIRP	Limit > 20 cm
[GHz]	[dB μ 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.