Errata list for master thesis “Design and Fabrication of on-chip heating for Electric Substitution Radiometer”

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This is a list of corrections for the master thesis “Design and Fabrication of on-chip heating for Electric Substitution Radiometer”. Errors in the text, simulations result, figure, and reference error are included in this list.

Abbreviation for different type of corrections:

Cor - Correction of language

Cit – Correction of reference source

Table 1 Corrections of significant errors.

Page	Line	Type of correction	Original text	Corrected text
30	20	Cor	Figure 1. Illustrates resistor chip thickness and epoxy thickness in COMSOL model.	Figure 11. Illustrates side view of COMSOL model with details.
57	2	Cor	Figure 37 shows measured resistance value of resistor chips by heating from 296 °K to 320 °K and finally 340 °K. The results show that, the resistance value of the resistor chips, were dropping in each heating cycle to 200 ohms. The estimated TCR are shown on Table X.	Figure 37 shows measured resistance value of resistor chips by heating from 296 °K to 320 °K and finally 340 °K. The results show that, the resistance value of the resistor chips, were dropping in each heating cycle. The estimated TCR are shown on Table X.
63	12	Cor	Figure 45 Shows the simulated non-equivalence between optical heating and electrical that done by increasing the emissivity of TiW from 0.1 to 1. Figure 46 Shows the simulated non-equivalence between optical heating and electrical that done by increasing the thickness of resistor chip from 20 µm to 100 µm. These results were not expected as	Figure 45 Shows the simulated non-equivalence between normal conductive heat flux and radiative heat flux in optical and electrical modes by increasing the emissivity of TiW from 0.1 to 1. The non-equivalence value as function of emissivity for normal conductive heat flux is 109 ppm at the beginning and it rises to 197 ppm at

			the non-equivalence values as function of emissivity and resistor chip thickness have around 240 ppm and 300 ppm differences at the beginning and increasing to 450 ppm and 350 ppm respectively. However, it is likely that the reason for this is the epoxy cylinder diameter which leads to generation of a different temperature gradient than optical beam.	the end. The non-equivalence value as function of emissivity for radiative heat flux is 64 ppm. Despite drop at the end, the overall trend shows an increasing trend.
66	4	Cor	The amount of heat is generated	The amount of heat generated
66	8	Cor	The acceptable range values agreed was more than 1 kΩ	The acceptable resistance value of fabricated resistor had to be more than 1 kΩ
67	5	Cor	Which by decreasing the radius of epoxy cylinder to less than 1.5 mm, the non-equivalence will increase. It is likely it affects the unexpected results of non-equivalence as a function of emissivity and chip thickness.	By decreasing the radius of epoxy cylinder to less than 1.5 mm, the non-equivalence will increase.
30	20	Cor	Figure 2. Illustrates resistor chip thickness and epoxy thickness in COMSOL model.	Figure 11. Illustrates side view of COMSOL model with details.
69	22	Cor	Measurement TiW layer emissivity on resistor chip.	Measurement of TiW layer emissivity on resistor chip.
71	10	Cit	Marit Ulset Nordsveen, E.B., Carlo Pepe,Roberto Filippo, Mauro Rajteri, Meelis-Mait Sildoja, Toomas Kubarsepp, Julian Gieseler, Jarle Gran, Room temperature dual-mode measurements to 100 ppm uncertainty. 2021.	Bardalen et. al. Room temperature mode detector with non-equivalence lower than 100 ppm. To be published

There were mistakes in some of simulation results (Figure 44, 45, and 46) also missed details in Figure 6 The corrected figures are shown below. The figures have the same number as in the report.

Page 21:

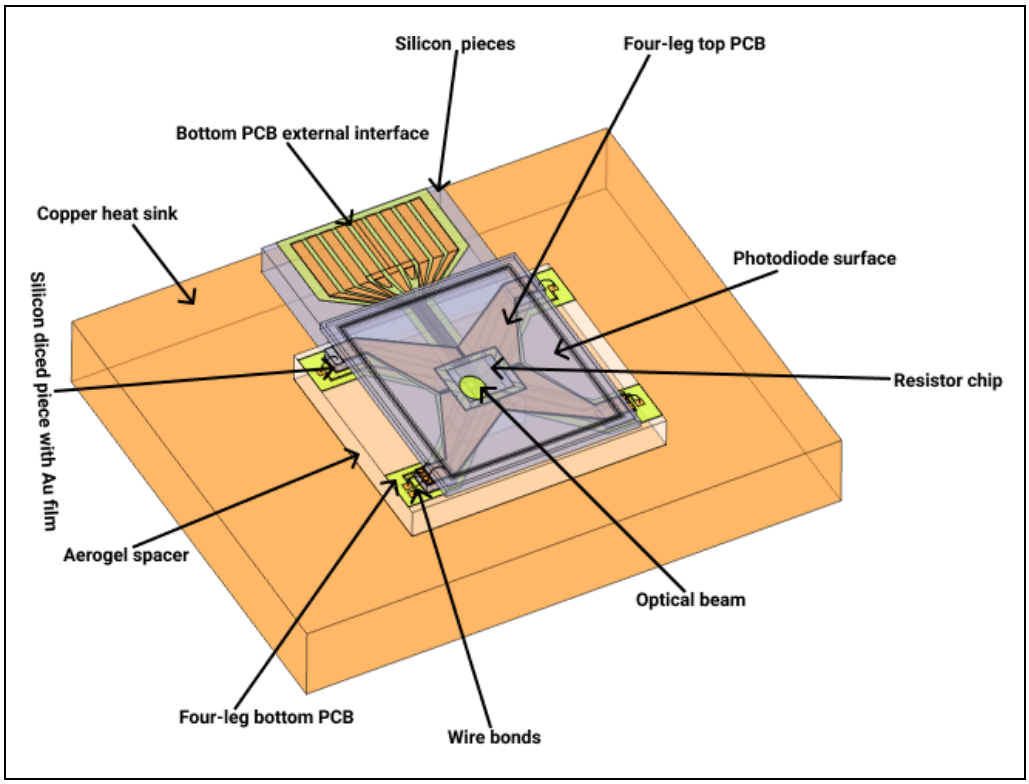

Figure 6. The Dual Mode Detector Module.

Page 63:

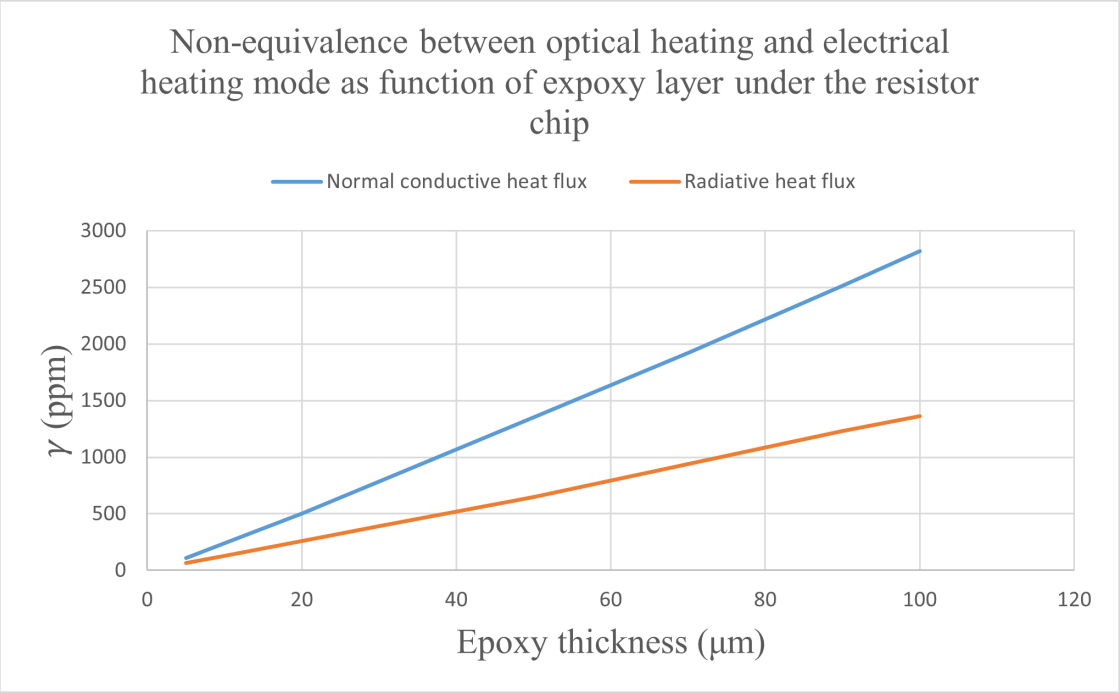

Figure 44. Non-equivalence between optical heating and electrical heating mode as function of epoxy layer under the resistor chip.

Page 64:

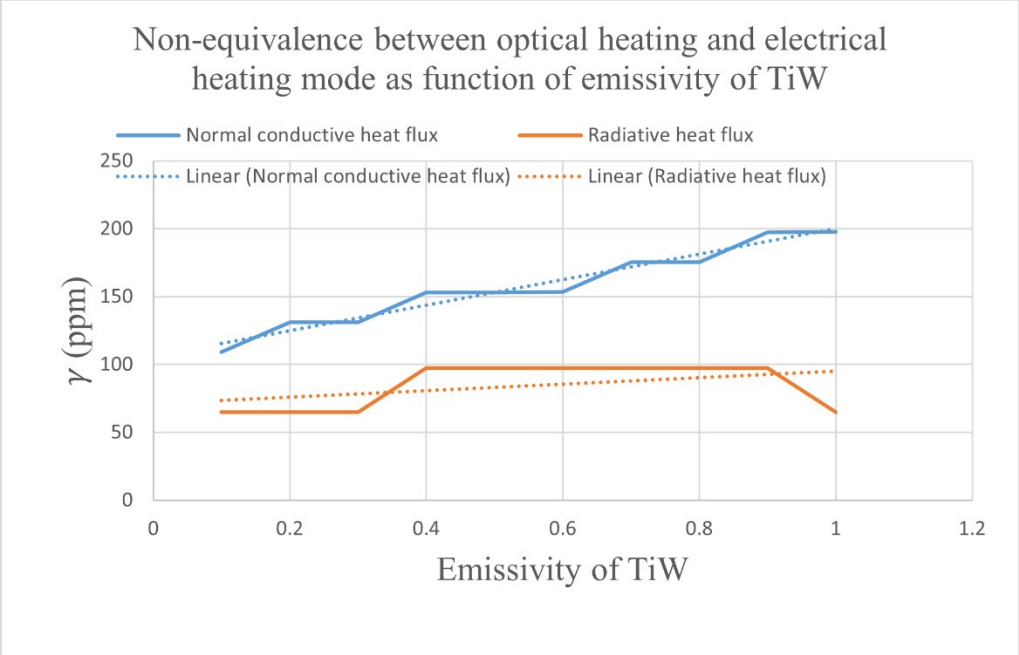

Figure 45. Non-equivalence between optical heating and electrical heating mode as function of emissivity of TiW.

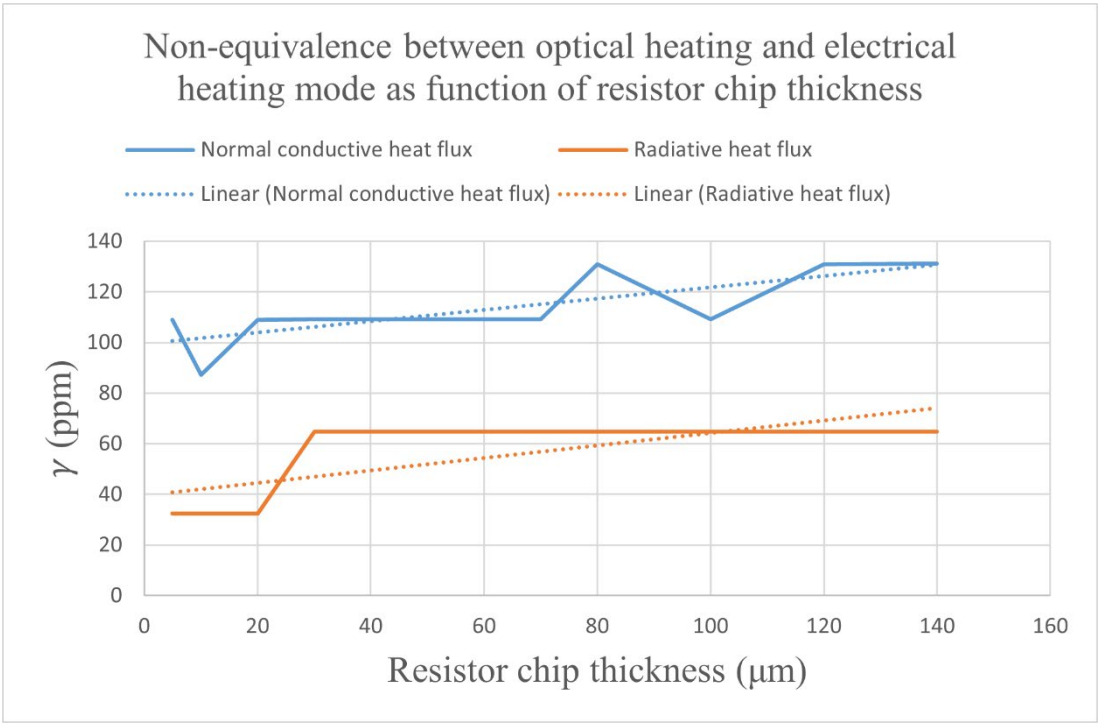

Figure 46. Non-equivalence between optical heating and electrical heating mode as function of resistor chip thickness.