Absolute Radiometric Calibration of FORMOSAT-2 Satellite Imagery

After detector sensitivity and dark current correction by in-flight radiometric calibration of FORMOSAT-2, the radiometric model for signal conversion process could be expressed in the following formula:

$$DN_k = A_k(t)G_{mk}L_k$$

Where:

DN_k is the digital number (DN)

K is the spectrall band number

A_k is the absolute calibration coefficient (see below)

G_{mk} (=$(\sqrt{2})^{m-1}$) is the electronic gain and m is the gain number (ϵ[1,10])

L_k is the band-averaged radiance:

$$L_k = \frac{\int_{\lambda_1}^{\lambda_2} S(\lambda)L(\lambda)d\lambda}{\int_{\lambda_1}^{\lambda_2} S(\lambda)d\lambda} (W \bullet m^{-2} \bullet sr^{-1} \bullet \mu m^{-1})$$

Where:

L() is the spectral radiance

S() is the spectral sensitivity of the sensor

The latest update of the absolute calibration coefficients values (for Gain 1 only) are given in the following table and these coefficients are also could be found in the product's Dimap file:

Pan	MS Band 1	MS Band 2	MS Band 3	MS Band 4
1.928409	1.881574	2.006462	2.040042	1.732235

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