

ALOS-2/PALSAR-2 Calibration and Validation Results

Ver. 2016.10.19

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Content

Products ordered **from Sep. 11, 2014 to Sep. 27, 2016, 7:00 UT**
(PALSAR-2 processing software version: **from 000.001 to 002.021**)

- Updates of evaluation results with increasing the number of samples

Products ordered **after Sep. 28, 2016, 7:00 UT**
(PALSAR-2 processing software version: **002.022**)

- First evaluation results of radiometric accuracy and calibration factor

* Processing software version can be found in the field No. 12 of file descriptor record (CEOS format).

Evaluation results of ALOS-2 PALSAR-2 standard products (1/3)

Products ordered from Sep. 11, 2014 to Sep. 27, 2016, 7:00 UT
(PALSAR-2 processing software version: **from 000.001 to 002.021**)

Items		Observation modes	Results	Number of data	Requirements
Geometric accuracy [m]		Stripmap and Spotlight	6.94 m (L1.1) 6.73 m (L2.1)	174 129	≤ 20 m
		ScanSAR	60.77 m (L1.1) 29.93 m (L2.1)	7 8	≤ 100 m
Radiometric accuracy [dB]	Evaluation using corner reflectors	Stripmap and Spotlight	0.86 dB (1σ) (mean CF: -81.9 dB)	176	≤ 1.0 dB
	Evaluation using images over Amazonian forests	Stripmap and Spotlight	0.41 dB (1σ) (mean γ^0 : -7.5 dB)	30 scenes	
Polarimetry	VV/HH amplitude ratio	Stripmap 6m (polarimetry)	1.004 ($\sigma=0.012$)	14	$\leq 1 \pm 0.047$
	VV/HH phase difference [deg.]		1.42 deg ($\sigma=1.02$)		≤ 5 deg
	Cross talk [dB]		-43.7 dB ($\sigma=6.23$) [HV/HH] -42.6 dB ($\sigma=6.35$) [VH/VV]		≤ -30 dB

Evaluation results of ALOS-2 PALSAR-2 standard products (2/3)

Products ordered from Sep. 11, 2014 to Sep. 27, 2016, 7:00 UT
(PALSAR-2 processing software version: **from 000.001 to 002.021**)

Items		Observation modes	Results	Number of data	Requirements
Resolution [m]		Spotlight	Az. 0.89 ($\sigma=0.278$) Rg. 1.69 ($\sigma=0.016$)	10	Az. 1.00 x 1.1 Rg. 1.78
		Stripmap 3m	Az. 2.83 ($\sigma=0.059$) Rg. 1.71 ($\sigma=0.018$)	68	Az. 2.75 x 1.1 Rg. 1.78
		Stripmap 6m	Az. 4.04 ($\sigma=0.103$) Rg. 3.42 ($\sigma=0.563$)	39	Az. 3.75 x 1.1 Rg. 3.57
		Stripmap 10m	Az. 5.00 ($\sigma=0.127$) Rg. 5.36 ($\sigma=0.186$)	59	Az. 5.00 x 1.1 Rg. 5.36
Sidelobe (dB)	PSLR	All	Az. -15.20 ($\sigma=3.940$) Rg. -12.84 ($\sigma=1.132$)	175	$\leq -13.26+2.00$ dB
	ISLR	All	-8.68 ($\sigma:3.17$)		$\leq -10.16+2.00$ dB

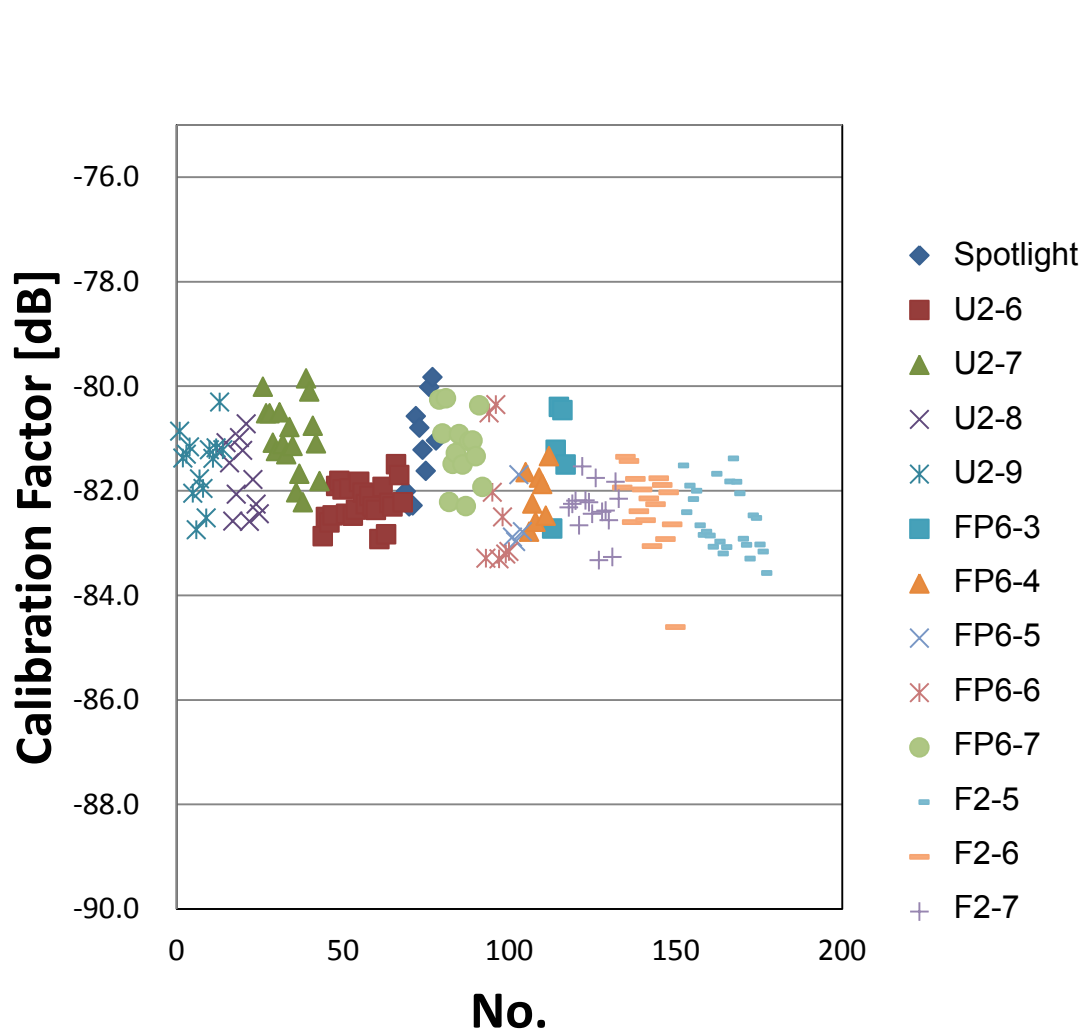
Evaluation results of ALOS-2 PALSAR-2 standard products (3/3)

Products ordered from Sep. 11, 2014 to Sep. 27, 2016, 7:00 UT
(PALSAR-2 processing software version: **from 000.001 to 002.021**)

Items		Observation modes	Results	Number of data	Requirements
NESZ [dB]		Stripmap 3m (U2)	-36.6 (HH)	3	≤ -24.0 dB (scene center)
		Stripmap 6m (FP6-3~7)	-36.0 (HH) -46.0 (HV)	5	≤ -28.0 dB (scene center)
		Stripmap 10m (F2)	-41.1 (HH) -49.2 (HV)	3	≤ -26.0 dB (scene center)
Ambiguity [dB]	Azimuth	All	14-23 dB (ave. 20dB)	7 scenes	$\geq 20-25$ dB
	Range	All	Not visible	7 scenes	$\geq 20-25$ dB

Evaluation results of calibration factor (CF) using corner reflectors

Products ordered **from Sep. 11, 2014 to Sep. 27, 2016, 7:00 UT**
(PALSAR-2 processing software version: from 000.001 to 002.021)



Mode	Mean	SD	Points
Spotlight	-81.170	0.887	10
U2-6	-82.237	0.367	25
U2-7	-80.988	0.677	18
U2-8	-81.747	0.684	11
U2-9	-81.505	0.649	14
FP6-3	-81.262	0.947	5
FP6-4	-82.090	0.512	8
FP6-5	-82.587	0.599	4
FP6-6	-82.298	1.234	8
FP6-7	-81.202	0.661	14
F2-5	-82.550	0.613	26
F2-6	-82.317	0.763	17
F2-7	-82.344	0.474	16
All	-81.917	0.856	176

Evaluation results of ALOS-2 PALSAR-2 standard products

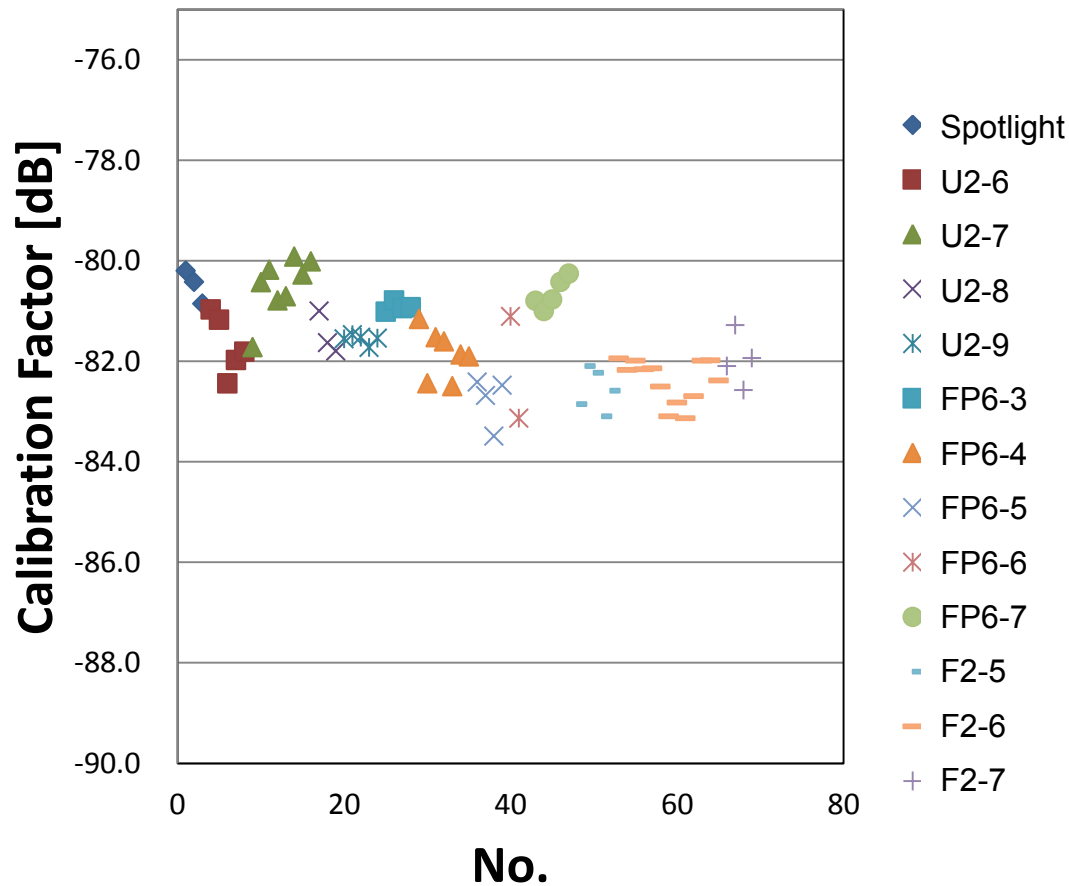
Products ordered **after Sep. 28, 2016, 7:00 UT**
(PALSAR-2 processing software version: **002.022**)

Items		Observation modes	Results	Number of data	Requirements
Radiometric accuracy [dB]	Evaluation using corner reflectors	Stripmap and Spotlight	0.88 dB (1σ) (mean CF: -81.7 dB)	68	≤ 1.0 dB
	Evaluation using images over Amazonian forests	Stripmap and Spotlight	Under evaluation	-	
		ScanSAR	0.16 dB (1σ) (mean γ^0 : -6.3 dB, HH)	12 scenes	

* Other items such as geometric calibration, etc. are now under evaluation. The results will be updated.

Evaluation results of calibration factor (CF) using corner reflectors

Products ordered **after Sep. 28, 2016, 7:00 UT**
(PALSAR-2 processing software version: **002.022**)



Unit: dB

Mode	Mean	SD	Points
Spotlight	-80.494	0.333	3
U2-6	-81.676	0.602	5
U2-7	-80.506	0.580	8
U2-8	-81.479	0.420	3
U2-9	-81.565	0.096	5
FP6-3	-80.919	0.092	4
FP6-4	-81.859	0.484	7
FP6-5	-82.865	0.559	4
FP6-6	-82.124	1.434	2
FP6-7	-80.652	0.303	5
F2-5	-82.574	0.419	5
F2-6	-82.387	0.427	13
F2-7	-81.975	0.532	4
All	-81.666	0.881	68