

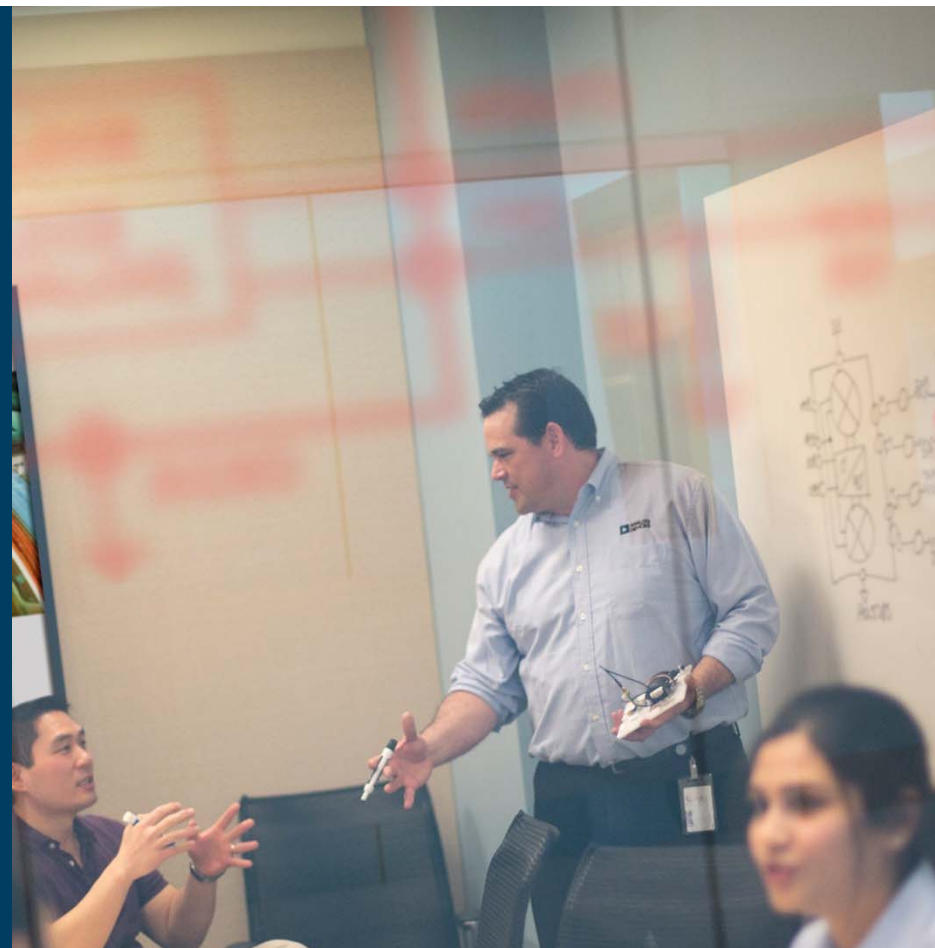


AHEAD OF WHAT'S POSSIBLE™

ADIS16210 User alignment values stored in flash memory?

NEVADAMARK

6/30/2015



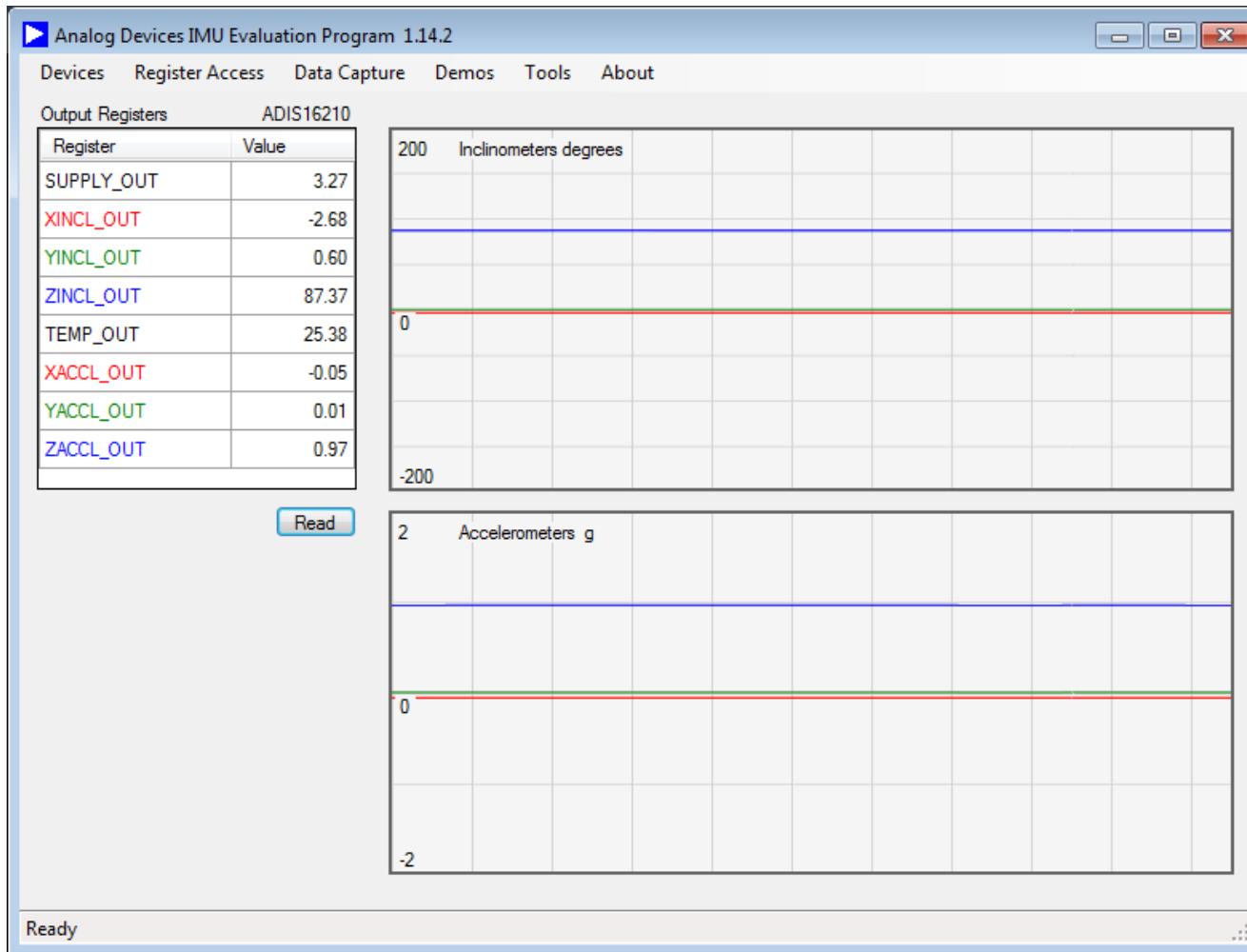
Does the flash update automatically from user alignment?

Test hardware/software

- ▶ ADIS16210/PCBZ connected to EVAL-ADIS via J1
- ▶ IMU Evaluation Software v1.14.2
- ▶ Summary of results:
 - User alignment registers store into flash on a manual flash update command
 - User alignment registers do not store into flash automatically, when setting `GLOB_CMD[0] = 1`.
- ▶ NOTES:
 - IMU Evaluation waveform screen wraps around
 - Arrows point towards point on waveform that are relevant for each point

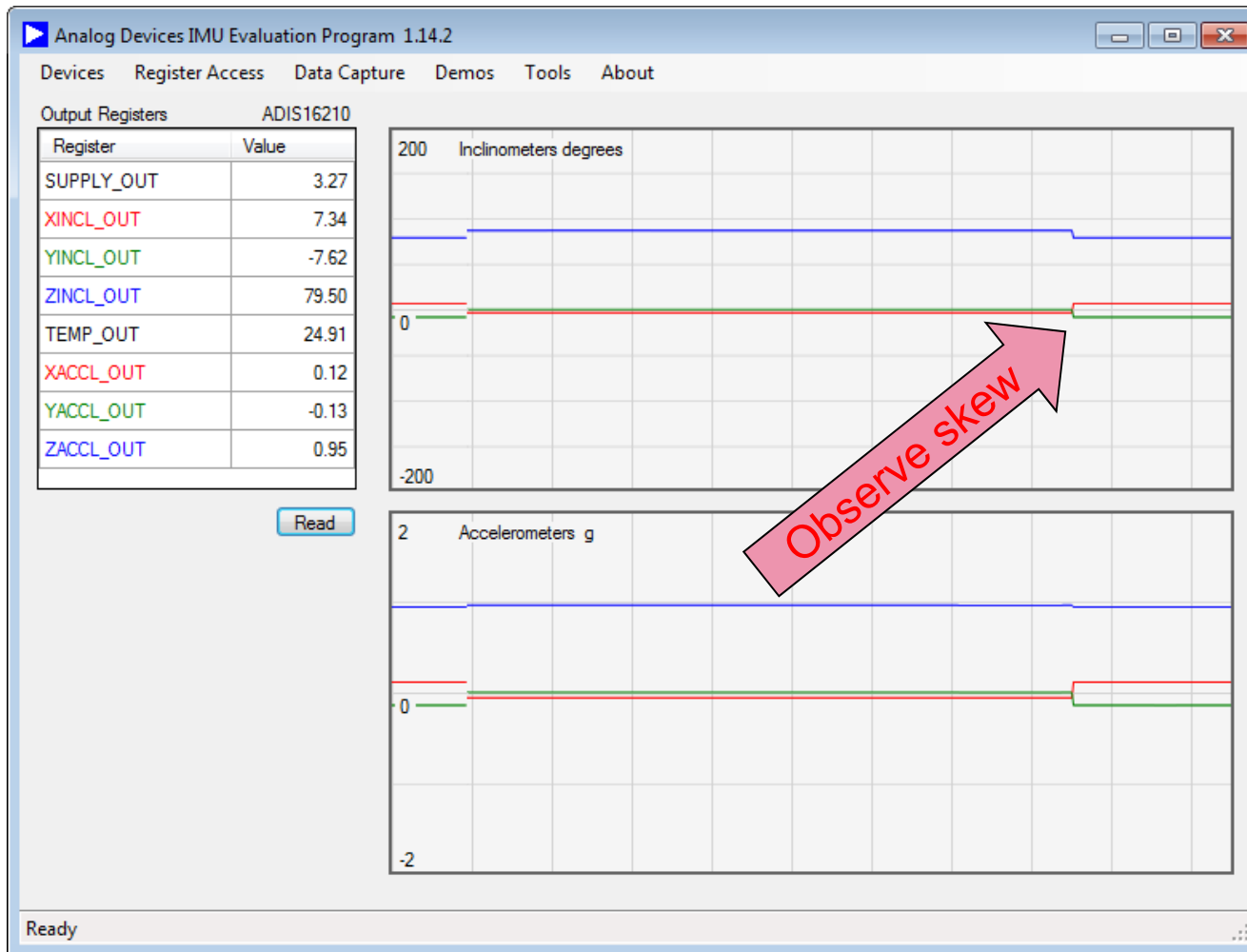
Does the flash update automatically from user alignment?

Step #1 – Initial test



Does the flash update automatically from user alignment?

Step #2 – Impose observable skew angle



Does the flash update automatically from user alignment?

Step #3 – Execute on the user alignment

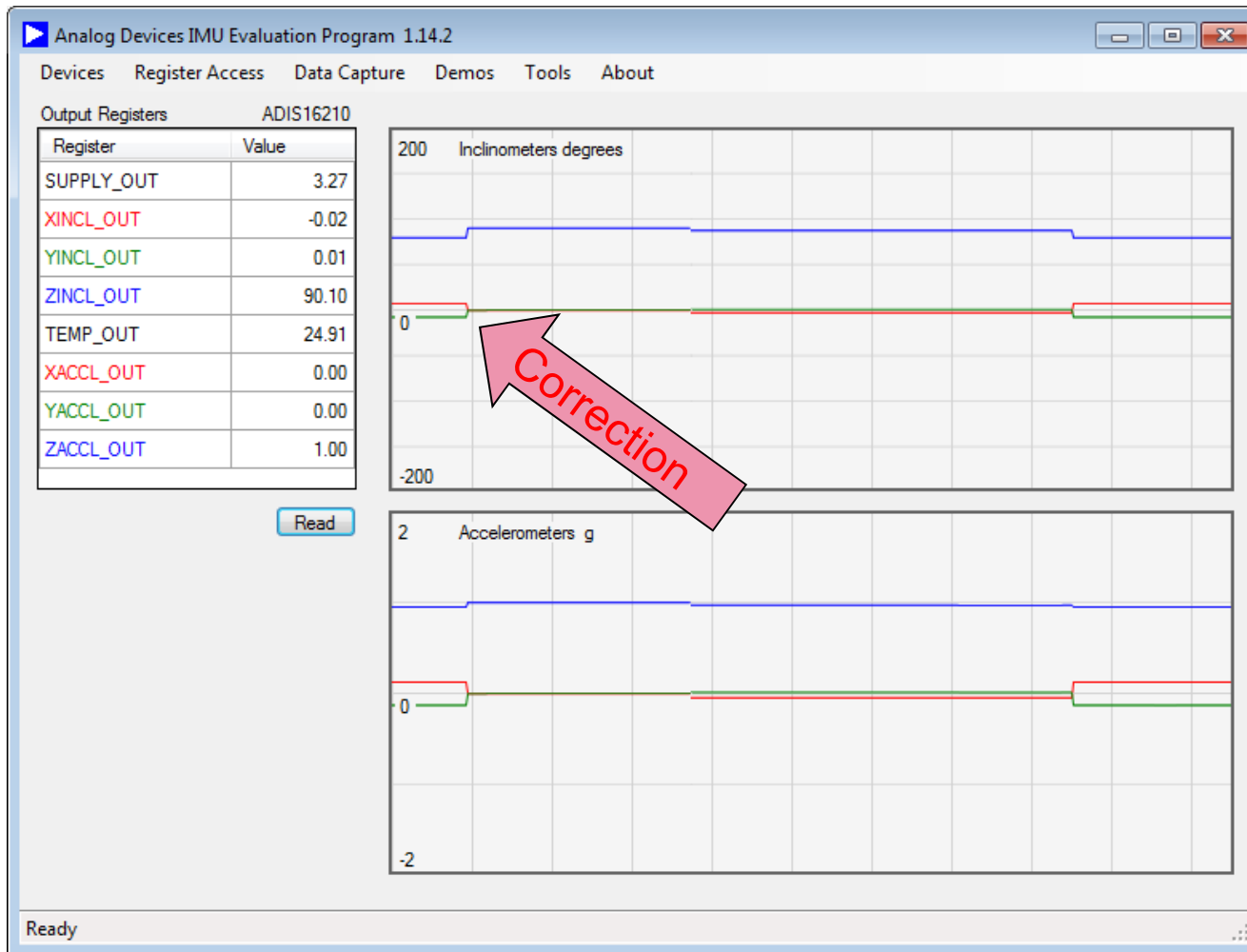
The screenshot shows the 'Register Access' software interface. The 'Select a Category' dropdown is set to 'Control/Status'. The 'Select Register' dropdown is set to 'GLOB_CMD'. The 'Single Register Write' section shows the 'Selected Register' as 'FLASH_CMD', the 'Current Hex Value' as '1A', and the 'New Hex Value' field is empty. The 'Write Register' button is visible. The 'Flash Update' function is highlighted in the 'Function' table, with a red arrow pointing to its 'Write' button and the text 'Click here'.

Register	Addr	Contents
FLASH_CMD	00	1A
ALM_MAG_X	20	00
ALM_MAG_Y	22	00
ALM_MAG_Z	24	00
ALM_MAG_S	26	00
ALM_SMPL_X	28	01
ALM_SMPL_Y	2A	01
ALM_SMPL_Z	2C	01
ALM_CTRL	2E	00
GPIO_CTRL	32	300
MSC_CTRL	34	02
DIO_CTRL	36	07
AVG_CMD	38	09

Value	Mask	Function	Write
100	FFFF	Rotation Matrix Null	Write
80	FFFF	Software Reset	Write
40	FFFF	Flash Update	Write
20	FFFF	Flash Test	Write
10	FFFF	Clear Status	Write
08	FFFF	Factory Restore	Write
04	FFFF	Self Test	Write
02	FFFF	Power Down	Write
01	FFFF	Auto Align	Write

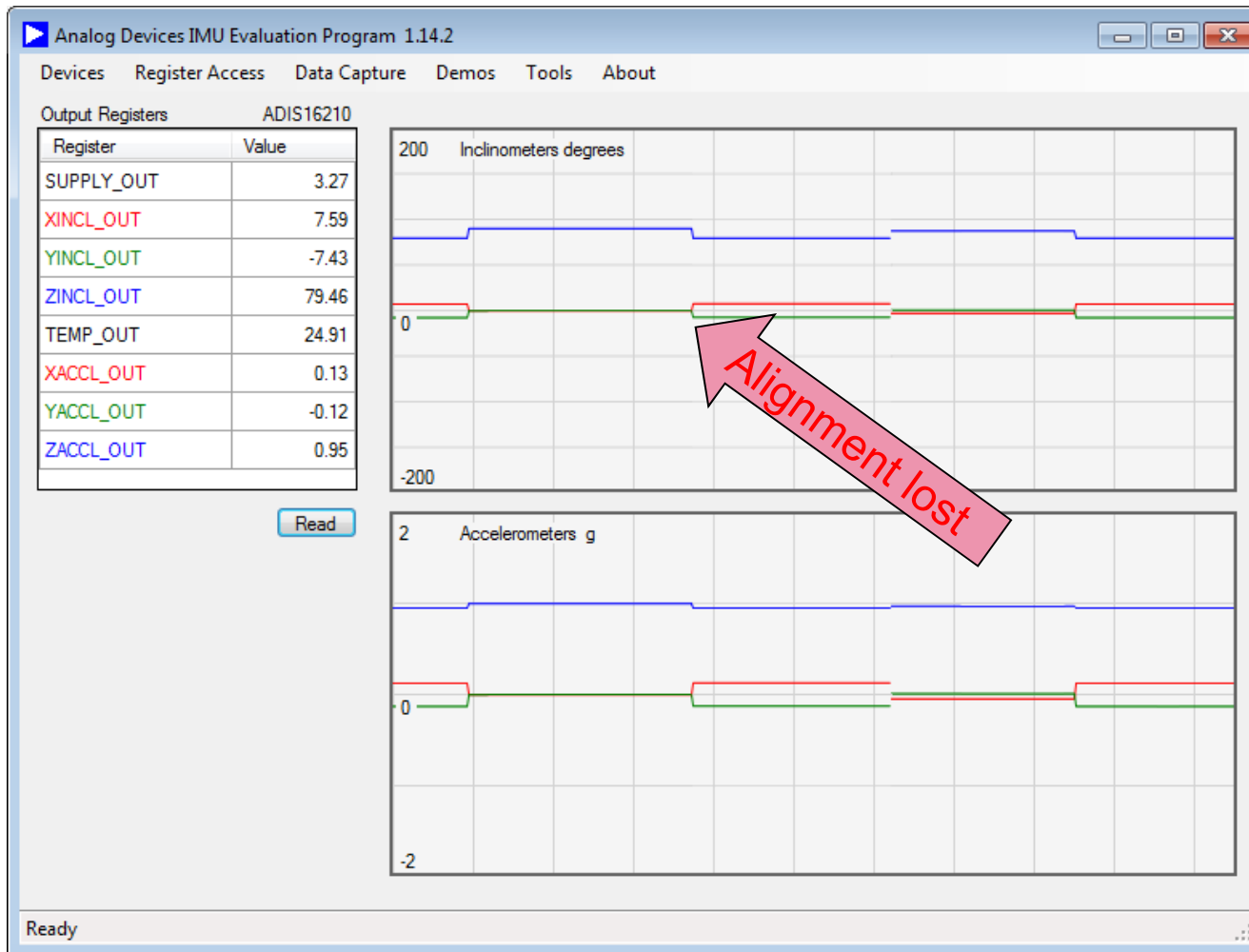
Does the flash update automatically from user alignment?

Step #4 – Observe evidence of alignment execution



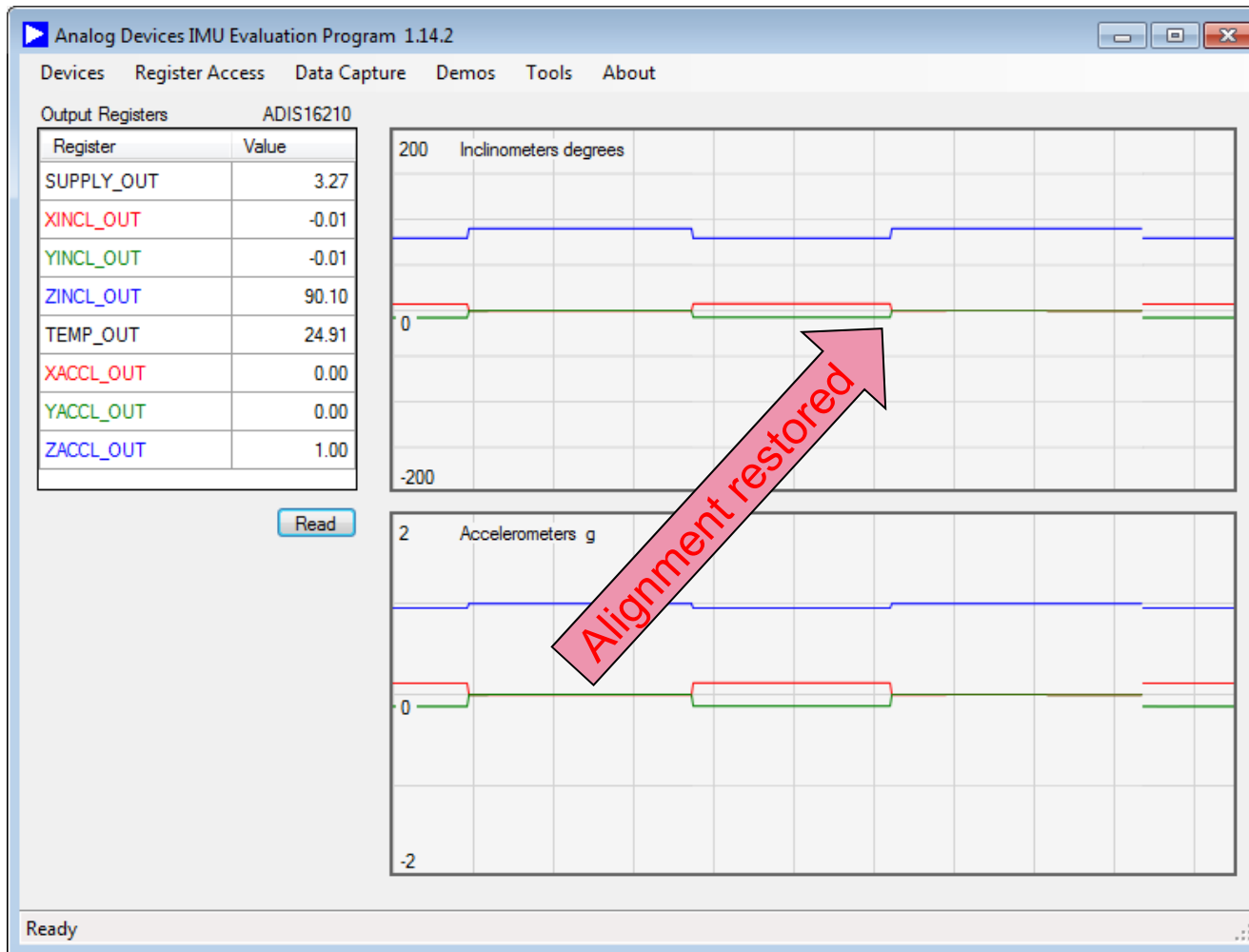
Does the flash update automatically from user alignment?

Step #5 – Remove power and re-test.



Does the flash update automatically from user alignment?

Step #6 – Another user alignment command and re-test



Does the flash update automatically from user alignment?

Step #7 – Store in flash manually, flash counter increments

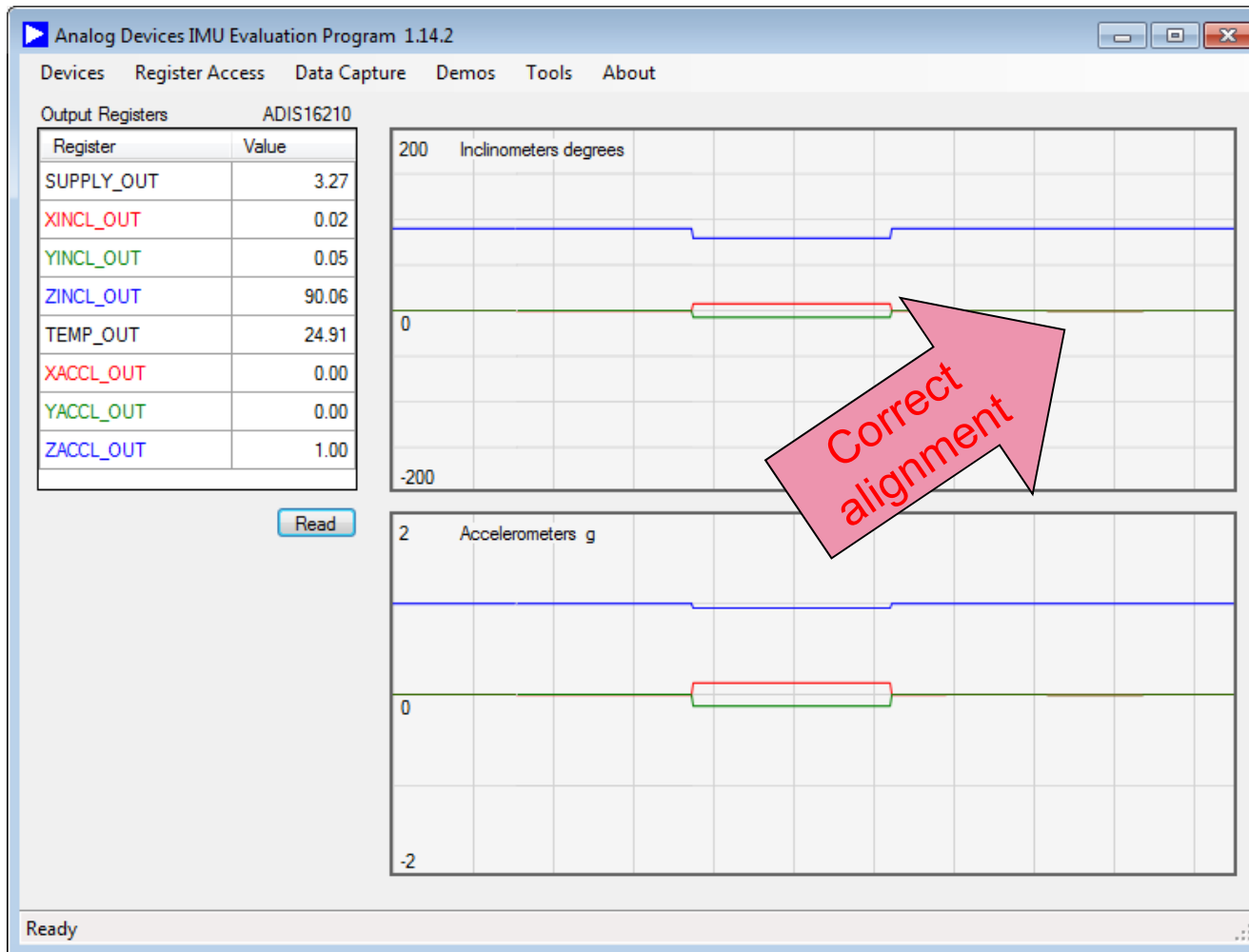
The screenshot shows the 'Register Access' software interface. On the left, a table lists various registers. The 'FLASH_CNT' register at address 00 is selected. In the center, a 'Single Register Write' dialog box is open, with 'FLASH_CNT' selected in the dropdown and '1B' entered in the 'Contents' field. On the right, a table shows the bit fields for the selected 'GLOB_CMD' register. The 'Flash Update' bit at value 40 is highlighted. Two red arrows point to these elements: one to the 'FLASH_CNT' register in the left table and another to the 'Flash Update' bit in the right table.

Register	Addr	Contents
FLASH_CNT	00	1B
ALM_MAG_X	20	00
ALM_MAG_Y	22	00
ALM_MAG_Z	24	00
ALM_MAG_S	26	00
ALM_SMPL_X	28	01
ALM_SMPL_Y	2A	01
ALM_SMPL_Z	2C	01
ALM_CTRL	2E	00
GPIO_CTRL	32	300
MSC_CTRL	34	02
DIO_CTRL	36	07
AVG_CNT	38	09

Value	Mask	Function	Write
100	FFFF	Rotation Matrix Null	Write
80	FFFF	Software Reset	Write
40	FFFF	Flash Update	Write
20	FFFF	Flash Test	Write
10	FFFF	Clear Status	Write
08	FFFF	Fact	Write
04	FFFF		Write
02	FFFF	Power Down	Write
01	FFFF	Auto Align	Write

Does the flash update automatically from user alignment?

Step #8 – Test again



Does the flash update automatically from user alignment?

Step #9 – Remove power and test again

