Considerations about the Pre 2 function.

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It is strange that with a lot of discussions on the various forums in the world Ham, nobody noticed by Rob and Adam measures that there is no pre 2 between input RX antenna and ADC input.
From my summary table comparing Perseus and IC 7300 (You see pdf: High speed ADC "*One that no one had ever told you"* you can see that the difference between Pre 1 on and Pre 2 on, is only 1 dB sensitivity's gain.

COMPARISON ONLY NF AND **CLIP LEVEL OF RX OF PERSEUS** (MEASURED BY I2VGO- 2008) AND **IC7300** (MEUSURED BY NC0B. 4/10/2016 EMAIL TO I2VGO) **AT 14.2 MHZ.**		
With bench filter preselector		
Pre 1 On		
Noise Figure BDR @10kHz	19 dB. ?	6dB ?
Clip Level	-7 dBm	-22 dBm
Pre 2 On		
Noise Figure BDR @10kHz	----------	5 dB ?
Clip Level		-26 dB
Pre off with IP+Off		
Noise Figure BDR @10kHz	--	14 dB 81 dB
Clip Level		-9 dBm
year supply	September 2007	April 2016

I ask myself how can you think that the ICOM engineers after putting a analog Pre-amplifier to bring at 6 dB the receiver NF (-141 dBm @ 500 Hz) and than have added another Pre 2, in front of ADC to get a insignificant - 142 dBm @ 500 Hz, losing 4 dB of clip level: (-22 dBm-)- 27 dBm=4 dB ?
It is not, that the ICOM engineers have used, as all Linear Technology's ADC, the programmable gain amplifier, PGA inside the S&H block?
They have two input voltage full scale, FS, settings, 2.25Vpp (0 dB gain) or 1.5Vpp (3.5 dB gain).

On all IC7300 's configurations for default, the ADC is always with PGA= 0 when you insert Pre 2 you send a command PGA = 1 and you increase a gain inside the S&H block of 3.5 dB getting an improvement in sensitivity between 1.3 to 1.6 dB.

If someone measures with more carefully, under the same conditions, should find a difference of levels clip with and without pre 2 of 3.5 dB (20 log 2.25 /1.5) and not 4 dB as Rob and Adam have found.

MEASURED VALUES OF IC 7300 BY ROB ON 4 APRIL 2016 IN BRACKETS RED BY ADAM ON 14 APRIL 2016		
Pre off and bench filter preselect or at 14,2 MHz @ 500 Hz Bandwith		
	Input Antenna	Input ADC
Pre 1 On. It's inserts a Pre- amplifier with 13 dB gain before driver amplifier.		
Noise Figure Noise floor = MDS at (S+N)/N = 3dB S/N = 0dB	6 (5) dB -141(-142) dBm	
Clip Level	-22 (- 23) dBm	PGA = 0 2,25 Vpp
Pre 2 On. It's command PGA= 1.		
Noise Figure Noise floor = MDS at (S+N)/N = 3dB S/N = 0dB	5 (4) dB -142 (-143) dBm	
Clip Level	-26 (- 27) dBm	PGA = 1 1,5 Vpp

Acronyms used.

ADC -Analog to Digital Converter
BDR- Blocking Dynamic Range.
FS - Full Scale ADC
PGA- Programmable Gain Amplifier,
S/N . Signal to noise ratio.
Vpp- Volt peak to peak

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