Hermes-Lite testing: <vk3pe>

Basic RF board V1.2

Testing to see levels of 2.4MHz and other low level spurs compared to wanted 29MHz using a BW of 50MHz on the SA.

Test setup: V1.2 pcb with <mark>re-construction filter 100p, 330n, 200p, 390n, 200p, 330n, 100p</mark>, T1 to Wiki.

Driven using PowerSDR. Rigol SA, type DSA815-TG with quality 20dB attenuator in line. Ie all measurements shown on the pictures should have 20dB added to them for absolute levels. [The green line represents +10dBm]

First test was at 29MHz with drive set to '100' to achieve approx. +10dBm output. (+9dBm actual)

RIG	OL		11:2	21:46 2015-12-13	+++ (Local	BW/Det
Status	0 Ref 0.00 dB	m At	t 10 dB		Marker4 29.916 MHz -80.97 dB	^m RBW
Av Peak	-10			2	DL -10.00 dBr	n 1.000 kHz Auto Manual
TRIG	-20					VBW
Free	-30 -40 RBV	v				1.000 kHz Auto Manual
SWP Cont		° 0 kHz				V/R Ratio
	-60					1.0000000
	-70			3 4		Det Type
		Iserney/Set //Sys	ter by manufactory	with mark the second	Municipalitica	Pos Peak 🕨
PA	-100 Center Freq # RBW		VBW	1.000 kHz	Span 50.000 MH SWT 50.000	I Filter Type
∧∕ ₩ c.₩.		r Table	0.048	1.000 KHZ		
AAAA Blank	Marker	Trace	Туре	X Axis	Amp	
201	1D	1	Frequency	2.416666 MHz	-70.56 dBm	
∧∕\√ Blank	2D	1	Frequency	29.000000 MHz	-10.62 dBm	
.A	3D	1	Frequency	28.083333 MHz	-77.44 dBm	
Math	4D	1	Frequency	29.916666 MHz	-80.97 dBm	1/1

Figure 1 29MHz drive at '100', output approx +10dBm

The level at 2.4MHz is about 60dB down from wanted 29MHz level..

Another measurement was taken with the output at 29MHz reduced by 10dB, to see if the 2.4MHz level also drops by 10dB.

RIGO			11:1	2:29 2015-12-13		+++ Local	BW/Det
Status	0 Ref 0.00 d	Bm A	tt 10 dB		Marker4 29.916 MH	lz -88.01 dBm DL -10.00 dBm	RBW 1.000 kHz
Peak TRIG	-20			2			Auto Manual
Free SWP	-30 -40 RB						1.000 kHz Auto Manual
Cont	-50 1.00 -60	00 kHz					V/R Ratio 1.0000000
Corr	-70			3			Det Type
-D-	-90 \~4/h~1/~~	UserKey-Set: ///Sys	stern human	manun Milling	mahanahan	www.	Pos Peak >
∧ ₩	- ¹⁰⁰ Center Fred * RBW	1.000 kHz	VBW	1.000 kHz	Span SWT	50.000 MHz 50.000 s	Gauss EMI
	Marke	er Table					
Blank	Marker	Тгасе	Туре	X Axis	Amp		
A	1D	1	Frequency	2.416666 MHz	-87.40 dBm		
A∕\√ Blank	2D	1	Frequency	29.000000 MHz	-19.73 dBm		
CA.	3D	1	Frequency	28.083333 MHz	-84.23 dBm		
Math	4D	1	Frequency	29.916666 MHz	-88.01 dBm		1/1

Figure 2 29MHz reduced drive to '32' in order to reduce 29MHz by ~10dB

As you can see from the picture above, the 2.4MHz level has actually dropped by ~17dB. All the other spurs except those around 29MHz (markers 3&4) have dropped into the noise floor of the SA. This indicates this 2.4MHz and other 'spurs' are heavily influenced by drive level from the AD9866.

The levels at markers 3 & 4 have dropped by around 10-11dB or so. A more linear response.

13th Dec, 2015