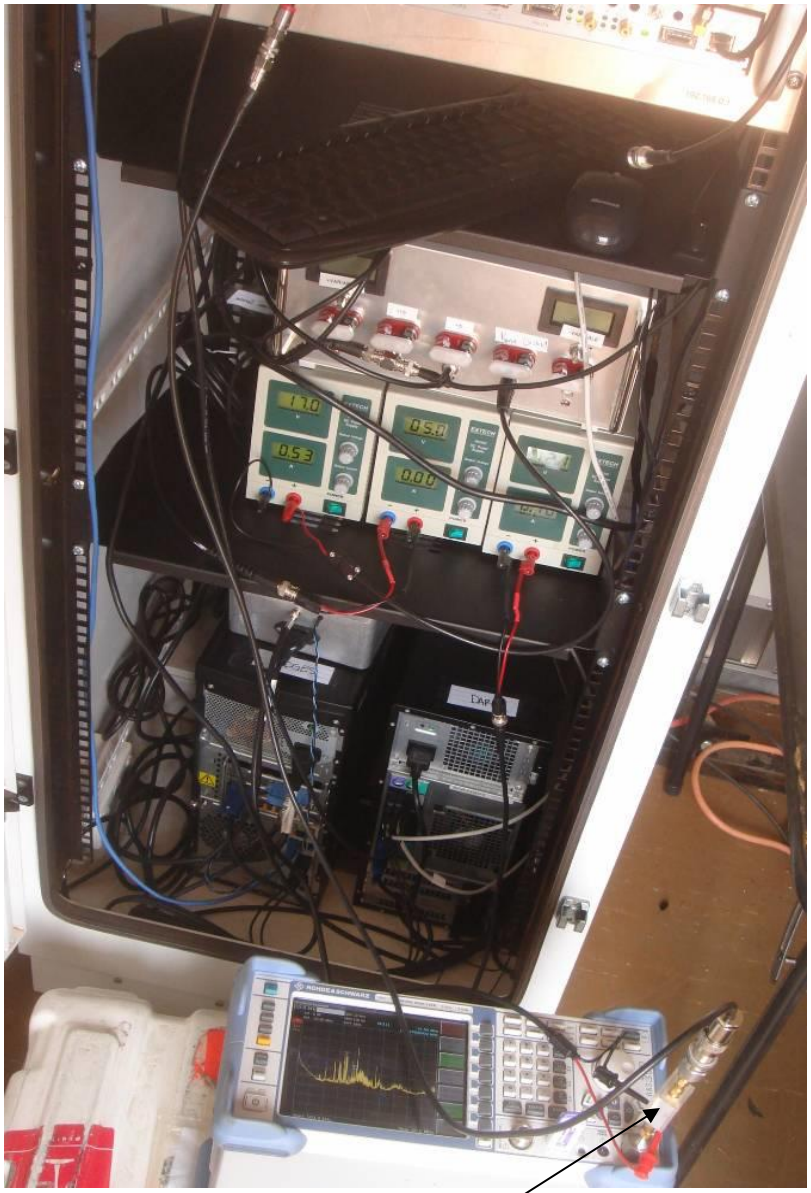
DARE MRO Expedition:

Deployment and Initial Measurements

03/2012



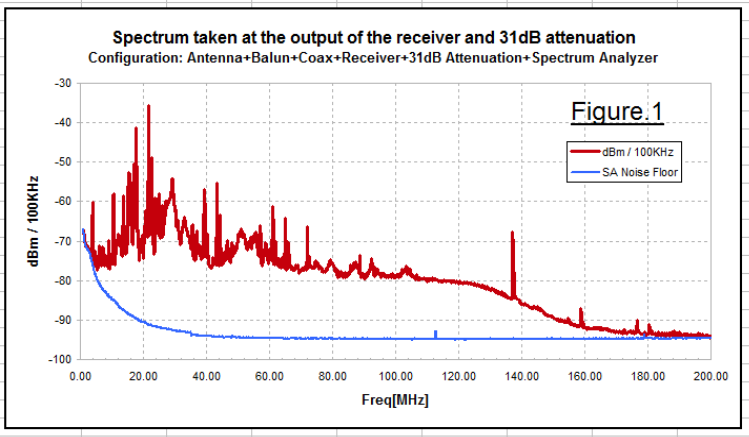
Signal from DARE front end amplified with a
Minicircuits amplifier and connected to
A spectrum analyzer

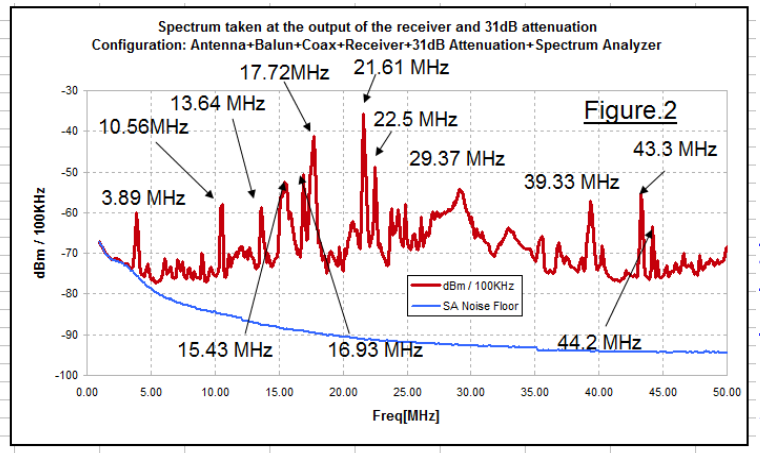
DARE Antenna

EDGS/DARE Instruments HUT

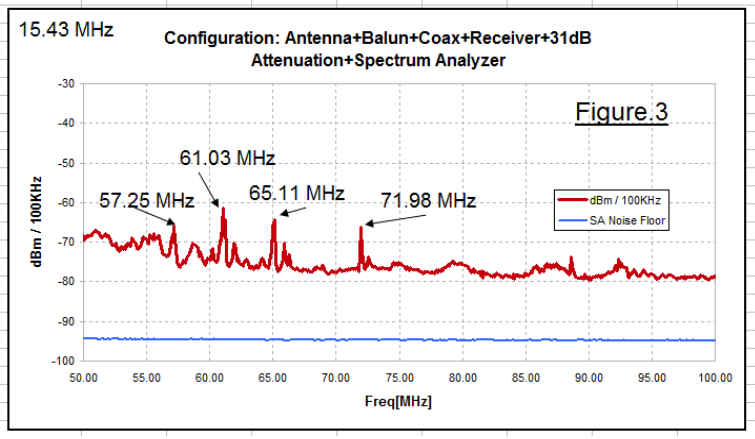
Spectrum taken at the Output of the receiver

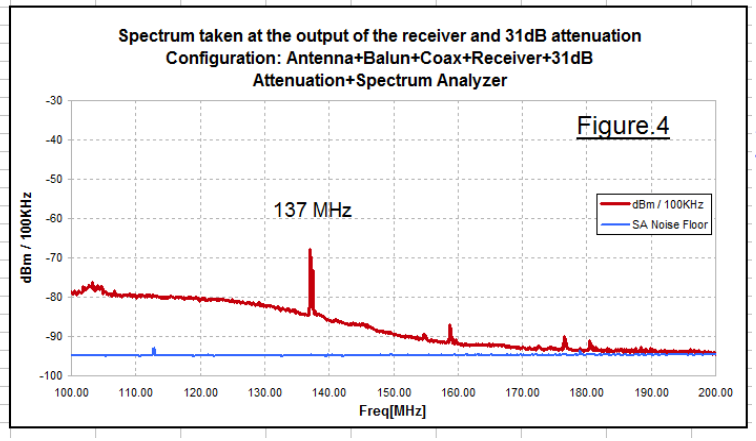
Configuration: Antenna→Front-End→Coax→Receiver→31dB Attenuation→ Spectrum Analyzer





Channel Power:
Total Power in the
200MHz Bandwidth
Corrected for spectrum
Analyzer Noise:

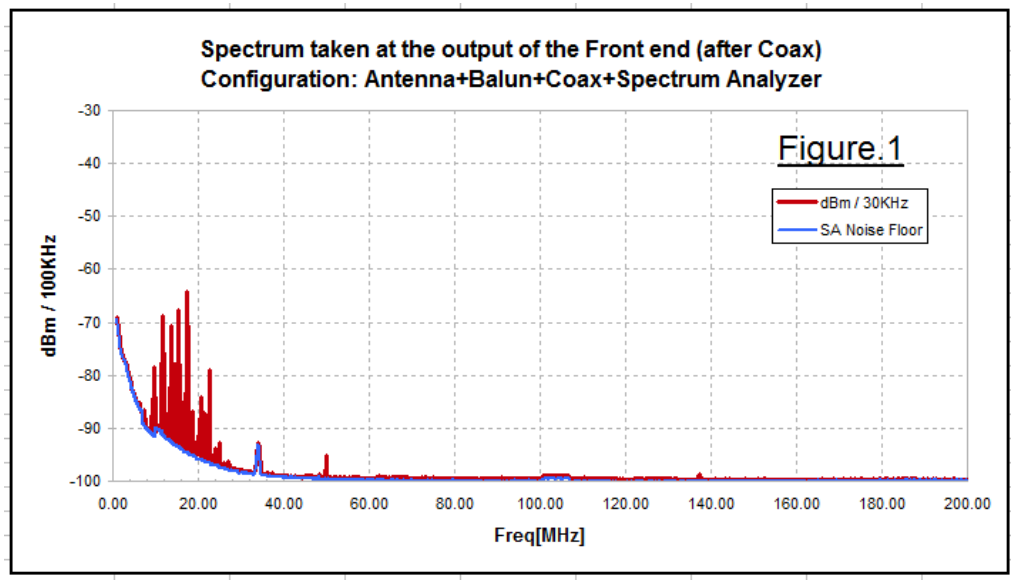


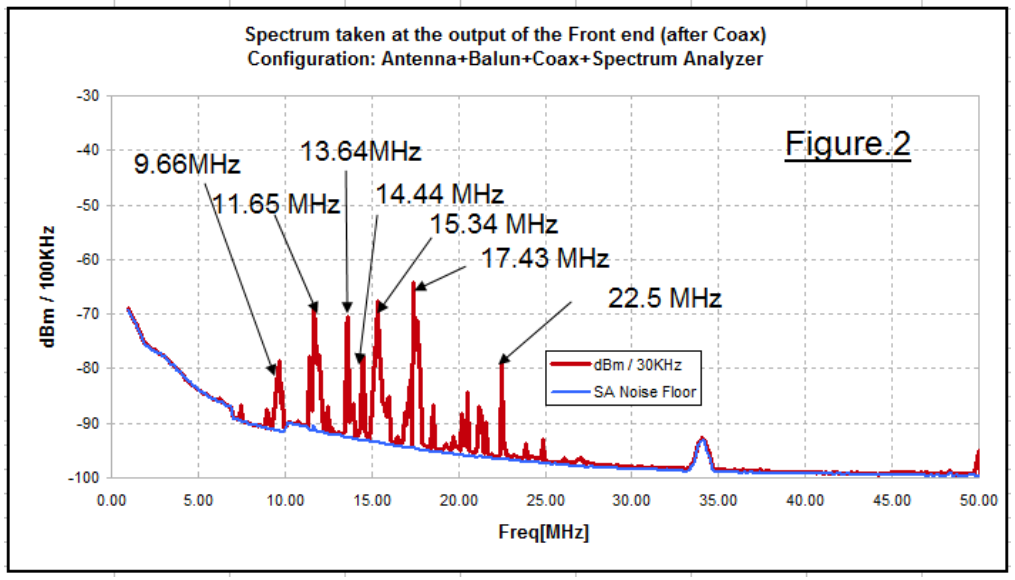


-31.66 dBm
(or about 0dBm
At the output of
The receiver)

Spectrum taken at the Output of the FRONT END (or INPUT of RECEIVER)

Configuration: Antenna→Front-End→Coax→ Spectrum Analyzer





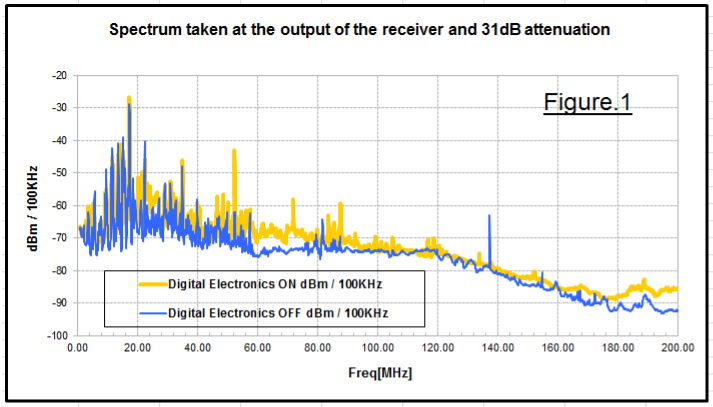
Measurement sensitive only to Strong signals since the signal is dominated by the noise of the analyzer as shown on Fig1 and 2.

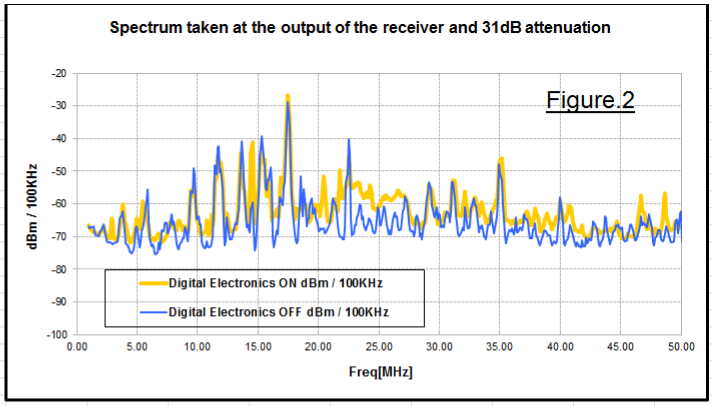
Channel Power:
Total Power in the 200MHz Bandwidth
Corrected for spectrum Analyzer Noise:

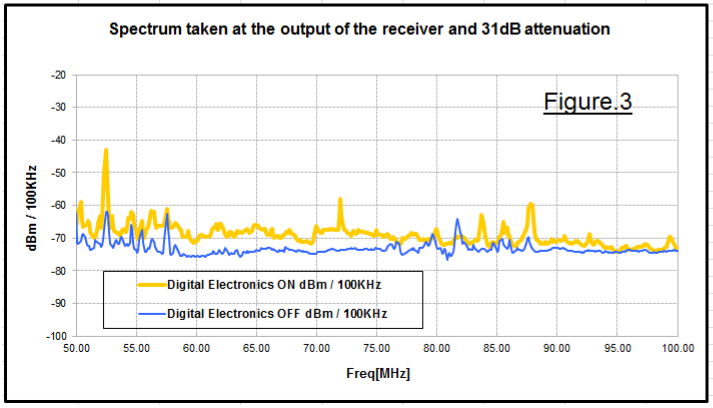
-59 dBm

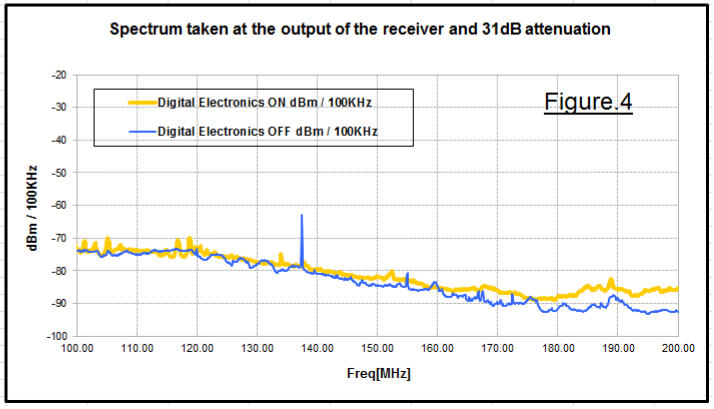
The receiver Gain can be computed as
Pout – Pin = 0 – (-59)= 59dB

Self generated RFI: No indication of RF leakage from the Instruments Hut to the Antenna



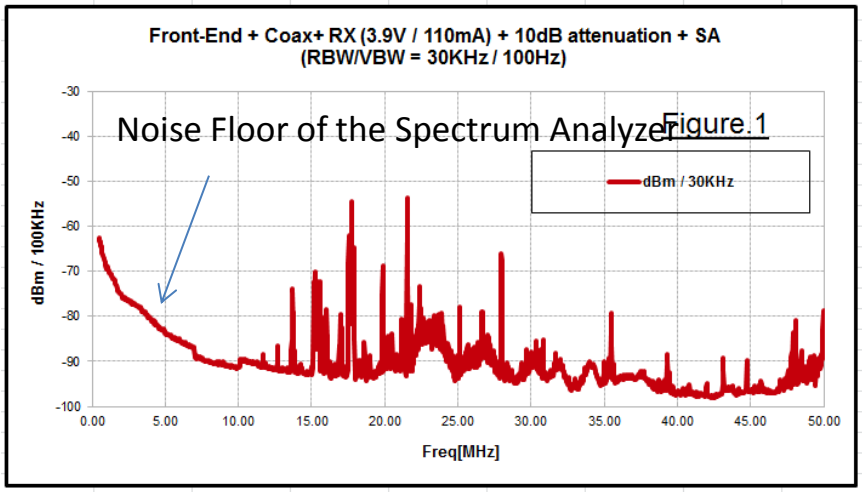


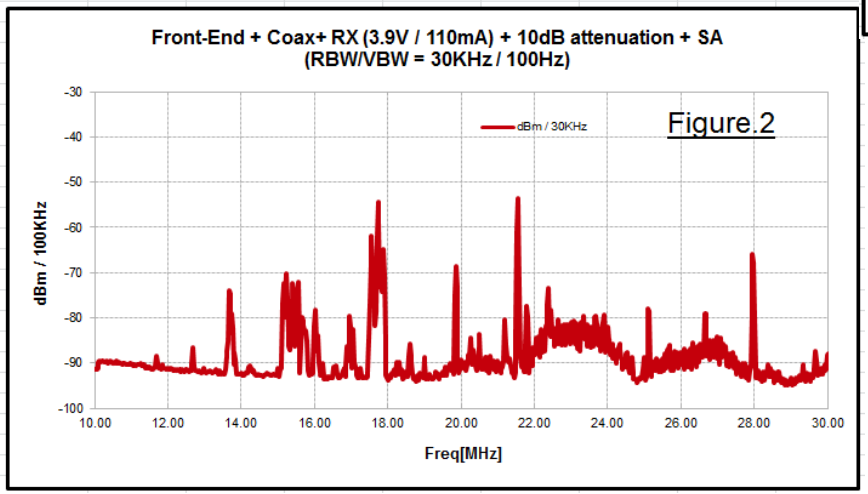


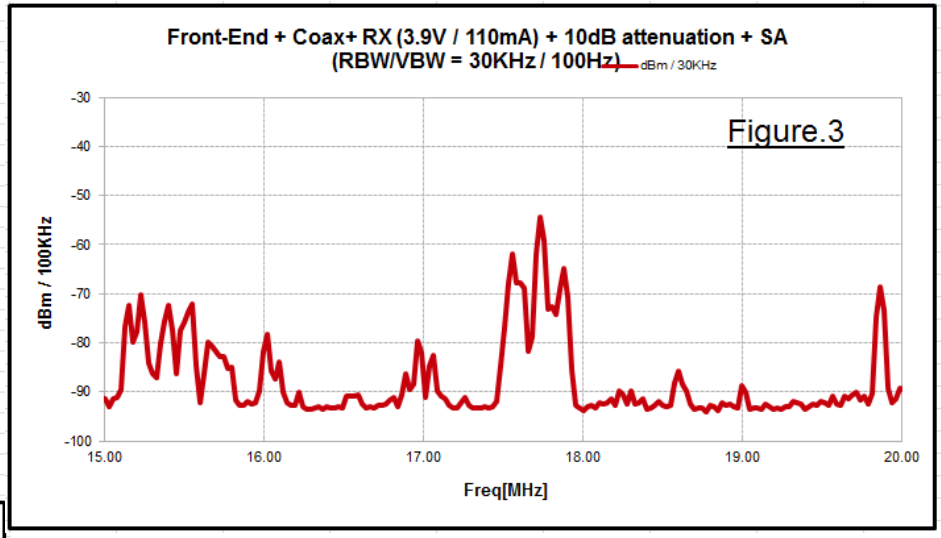


A Spectrum was taken when all the digital electronics were turned on and another spectrum was taken after shutting down all electronics (2 PCs, Digital Spectrometer, LCD screen, Ethernet switch and Ethernet fiber to copper converter): there is no decrease In the level of RFI when the digital instruments were turned OFF.

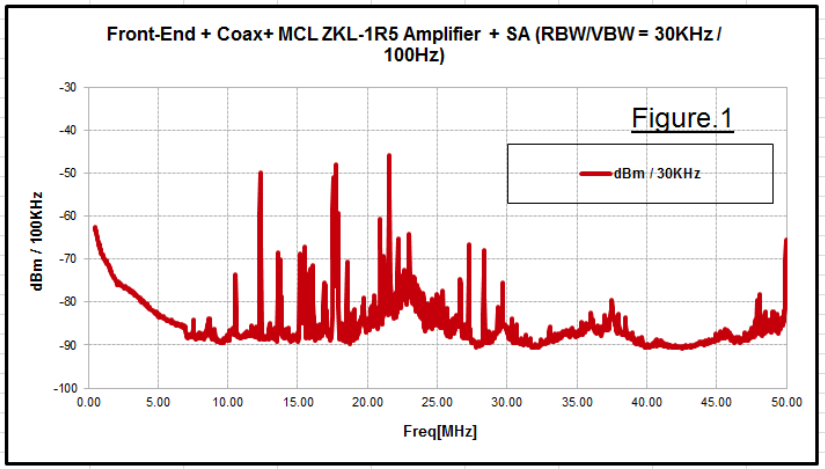
Decreasing the gain of the receiver by lowering the bias voltage: No sign of intermod

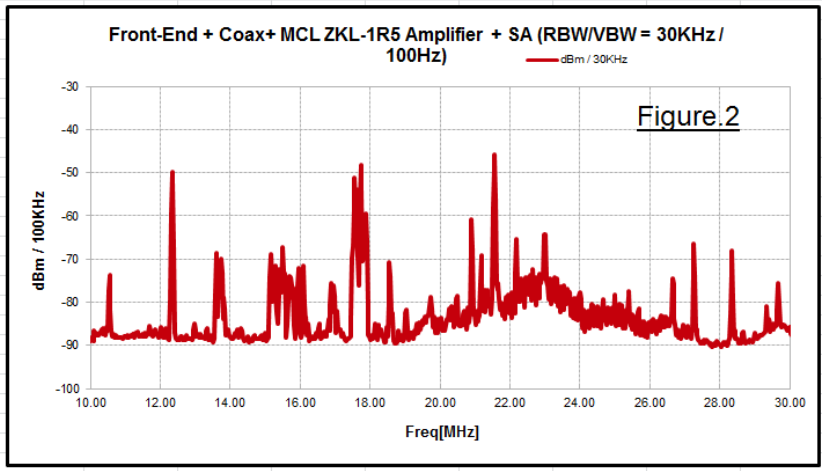






Replacing the DARE receiver with a Mini circuits high dynamic range Amplifier





Coaxial

Amplifier

ZKL-1R5+
ZKL-1R5

50Ω Medium Power 10 to 1500 MHz

Features
- wideband, 10 to 1500 MHz
- high IP3, +31 dBm typ.
- low noise, 3 dB typ.
- high gain, 40 dB typ.
- protected by US Patent, 6,943,629

Applications
- communication systems
- cellular
- satellite distribution
- GSM/ISM

CASE STYLE: BY493

Connectors	Model	Price	Qty.
SMA	ZKL-1R5(+)	$149.95 ea.	(1-9)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

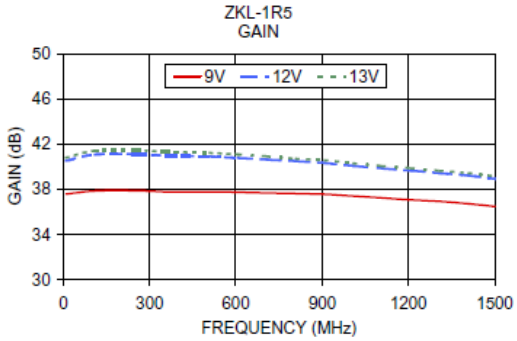
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Amplifier Electrical Specifications

MODEL NO.	FREQUENCY (MHz)		GAIN (dB)			MAXIMUM POWER (dBm)			DYNAMIC RANGE		VSWR (:1) Typ.		DC POWER	
						Output (1 dB Compr.)		Input	NF	IP3			Volt	Current
	f_L	f_U	Typ.	Min.	Flatness Max.	L	U	(no damage)	(dB) Typ.	(dBm) Typ.	In	Out	(V) Nom.	(mA) Max.
ZKL-1R5(+)	10	1500	40	36	±1.2	+15	+15	+13	3.0	+31	1.4	1.6	12	115

Open load is not recommended, potentially can cause damage. With no load derate max input power by 20 dB

L= low range (f_L to $f_U/2$) U= upper range ($f_U/2$ to f_U)



HIGHER FREQUENCY RESOLUTION (10KHz)