RFcore

RCP0525C

High Power Wide Band Load Return Loss Detector

RCP0525C

Features

- Unique coupler structure for wide band high directivity operation.
- Internal Detector and comparator with variable trip voltage for R/L measurement and high VSWR alarm. Alarm and ~Alarm for convenient use.
- Wide dynamic range owing to log-slope detector
- R/L (dB) indicated by voltage output.
- Independent forward and reverse power monitor in log slope.

Specifications subject to change without notice.

Customer Service: Tel. 82-31-708-7575

Email: kijeon@rfcore.com

http://www.rfcore.com

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This material is not to be supplied by other party than RFcore co., LTD

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Electrical Specification RCP0525C

Parameter	Symbol	Typical	Units/Remarks
Bandwidth		500~2500	MHz
Maximum handling power	Pw	150	Watt
Dynamic Range		3~150	Watts
Insertion Loss	IL	< 0.7	dB
Input VSWR,	VSWR	1.5:1	
Output VSWR	VSWR	1.5:1	
Return Loss Detector Slope	SRL	0.1	V / dB
Ripple of detector at Rating Power		TBD	mVp-p
Detector Accuracy		TBD	
Detector flatness over band		TBD	
Detector Linearity vs power input		TBD	
Detector Stability over Temperature		TBD	
Detector Response time		TBD	
Forward/Reverse Power Detector slope	SDEC	0.05	V/dB
Input Voltage	Vdc	5 +/-0.5	V
Current Consumption	Idc	200	mA
Alamr/~Alarm output		TTL	
Alarm Response Time		TBD	nsec
Detector port output impedance		1	kohm
RF Connector Type		SMA	female
Size (w/o Connector Extension)		86 x 74 x 27	mm
Operating Case Temperature		-30~70	degree C
Storage Temperature		-40~90	degree C
Vibration Condition		TBD	

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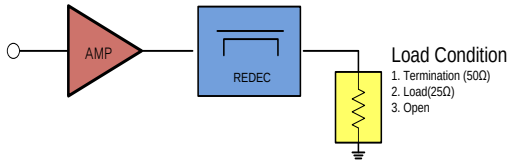
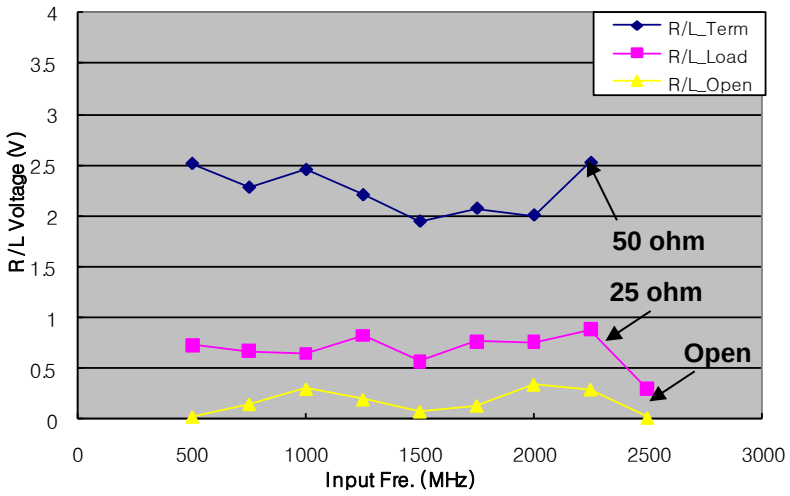
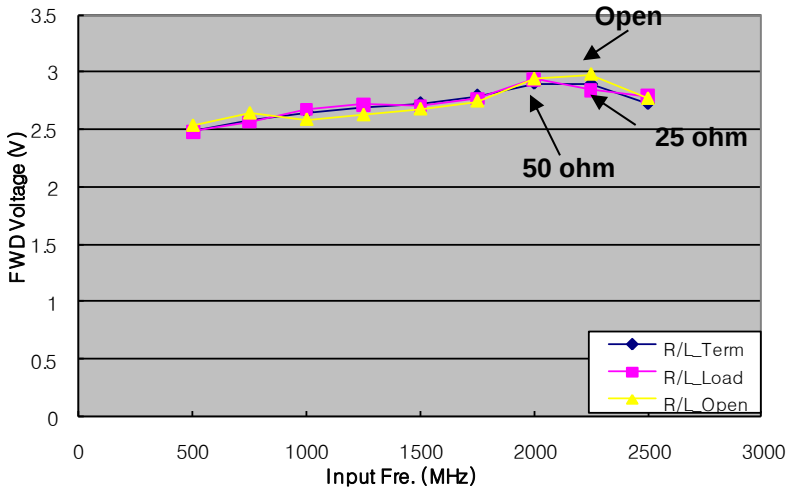
Typical Measured Data of RCP0525C



Return Loss Voltage



Forward Detector Voltage



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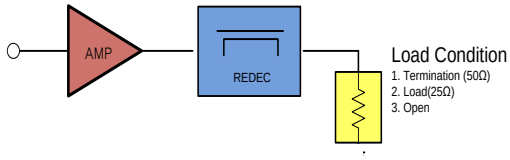
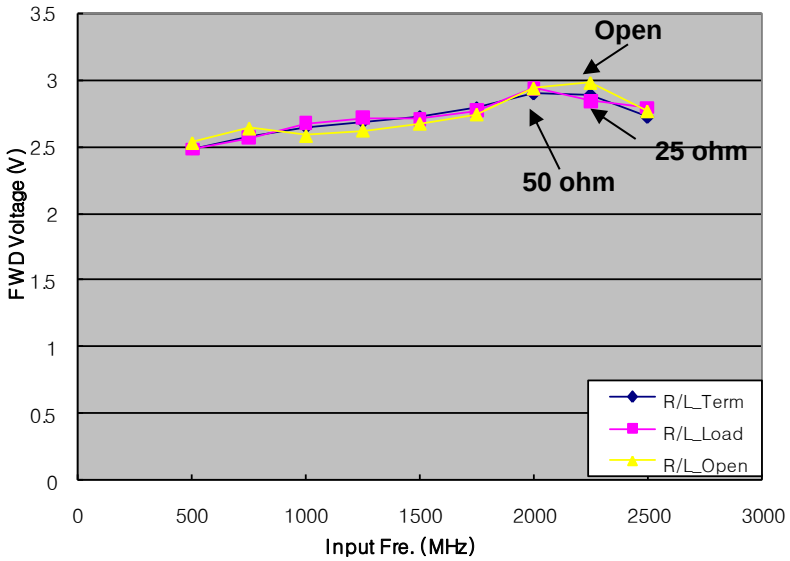
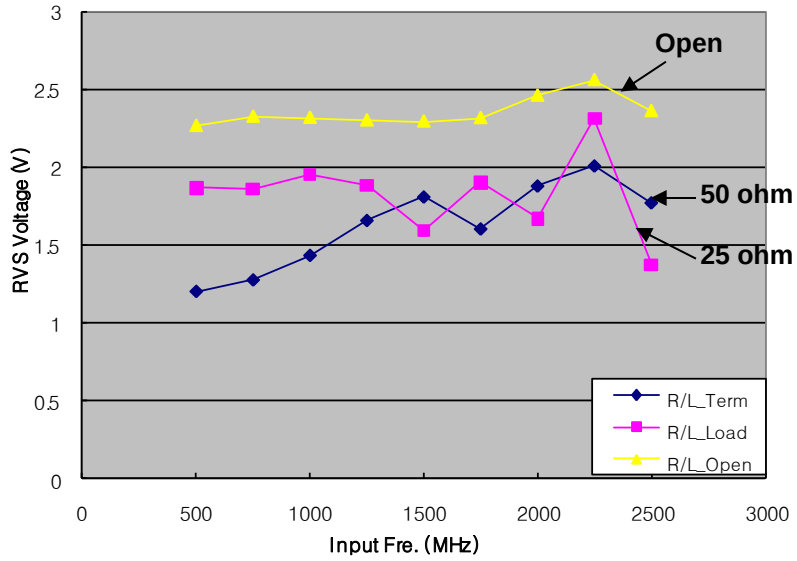
Typical Measured Data of RCP0525C



Forward Detector Voltage



Reverse Detector Voltage



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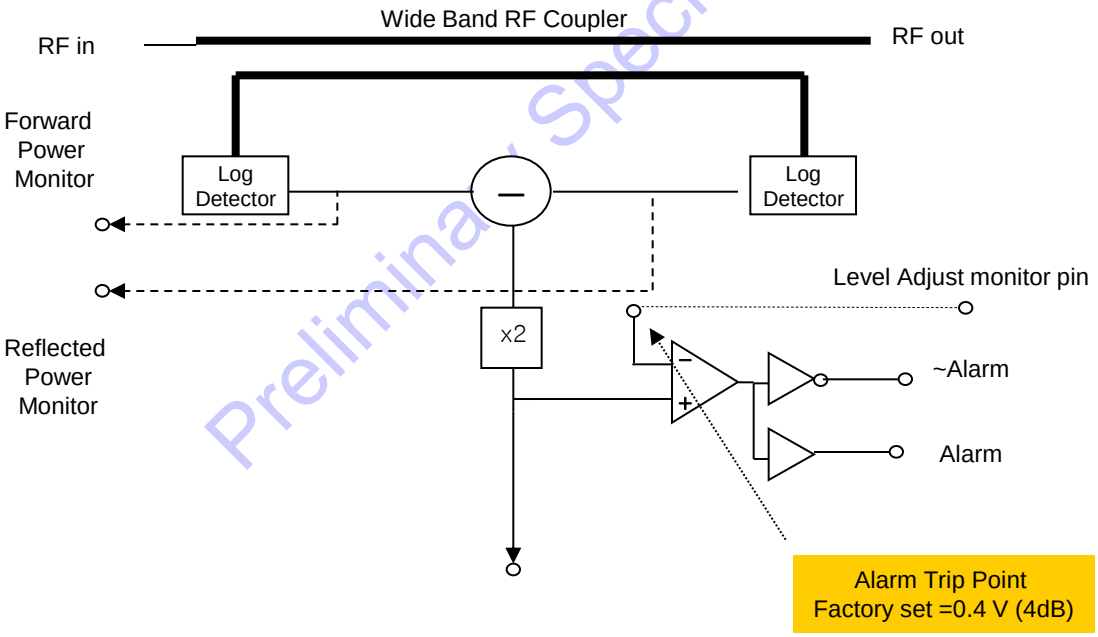
Descriptions

RCP0525C measures Return loss of Load connected output port by using directional coupler with high directivity.
RCP0525C indicates measured Return Loss by voltage as bellow

$$V_{R/L(return\ loss)} = \text{Return Loss(dB)} * 0.1 \pm 0.15V$$

For example, if the return loss of antenna is 10 dB, the $V_{R/L}$ is 1.0V.
This module also deliver alarm and alarm with adjustable trip level.
This adjustment can be done by user turning potentio-meter.

Preliminary Specification



Vout (pin #4) = Retrun Loss of Load in dB * 0.1 (V)

Simplified Block Diagram

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Wide band directional coupler samples forward and reverse power at once and independently. Directivity of this coupler affects significantly on REDEC performance. Detector voltages for F/R are provided thru Molex pin for the purpose of power monitoring. Difference of Detector voltage is exactly physical quantity of Return Loss. For better comprehension, x 2 value come out thru Molex pin. Note that this device does not have accuracy as power meter or network analyzer.
It has limitation on dynamic range, frequency flatness, detector linearity and accuracy. Frequency flatness was improved by utilizing frequency equalizer. It is not depicted in the block diagram for clearance. The accuracy and dynamic range will be supplied after further development.

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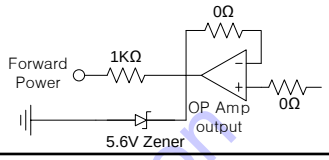
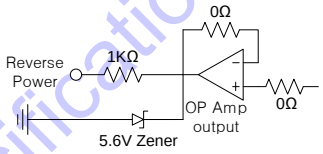
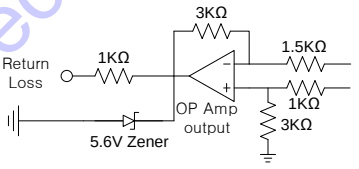
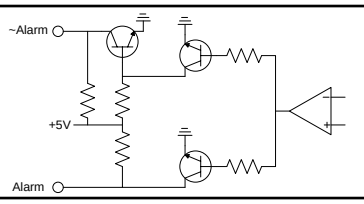
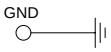
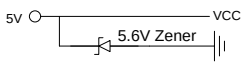
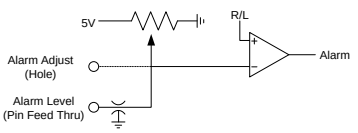
Pin Description

Pin Name	Pin Description	Interface Schematic
RF Input	N type	
RF Output	N type	
Forward Power (Molex Pin1)	Forward Power Monitor with 0.05V/ dB	
Reverse Power (Molex Pin2)	Reverse Power Monitor with 0.05V/ dB	
Return Loss (Molex Pin3)	Return Loss in 0.1V/dB	
~Alarm (Molex Pin4)	~Alarm : 0V when R/L go over trip setting (Pin*) 5V @ normal	
Alarm (Molex Pin5)	Alarm : 5V when R/L go over trip setting (Pin*) 0V @ normal	
GND (Molex Pin6)	GND	
5V (Molex Pin7)	5V	
Alarm Level (Pin Feed Thru)	Adjust Trip Level Monitor	
Alarm Adjust (Hole)	Adjust Alarm Level	

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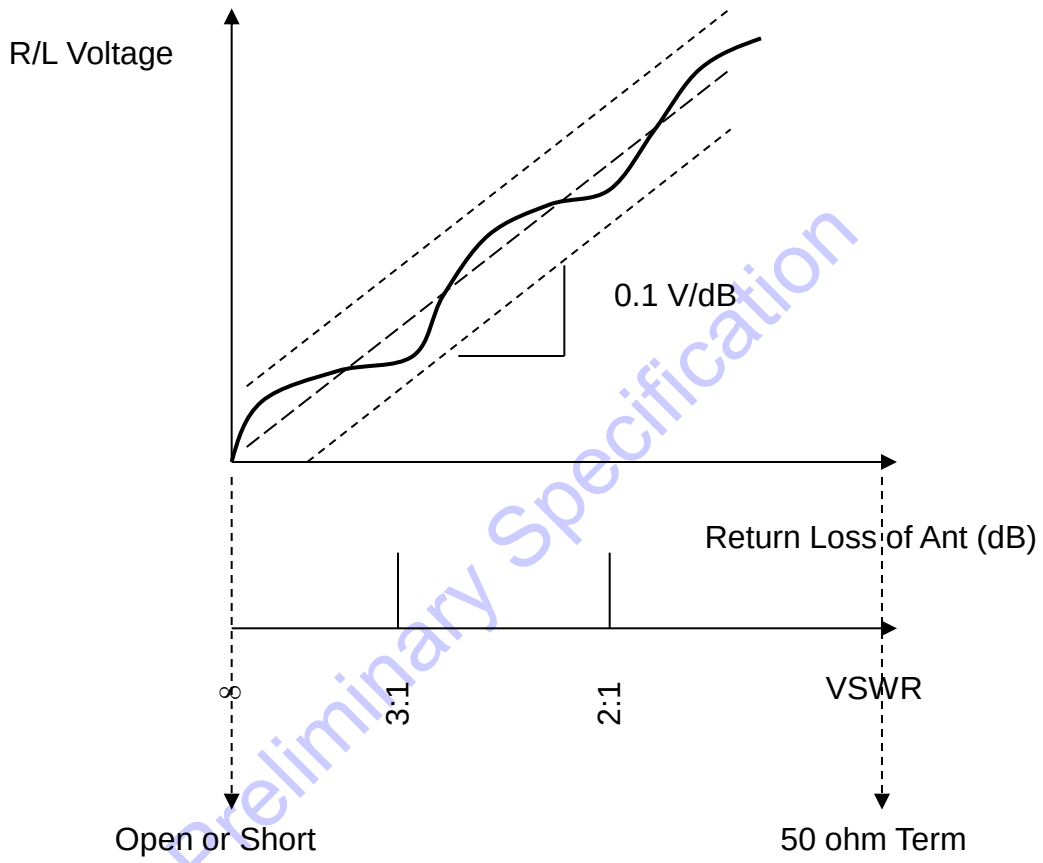
Conceptual drawing of $V_{R/L}$ VS. Load Return Loss



Preliminary Specification

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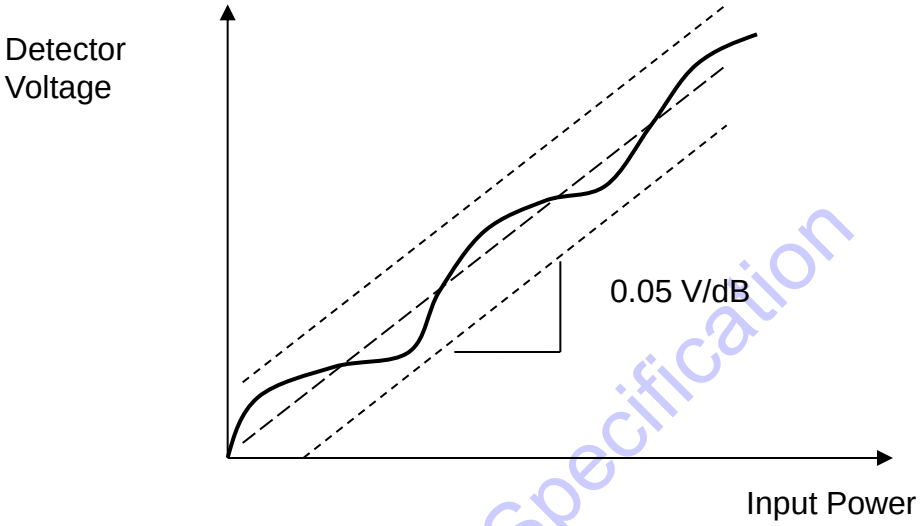
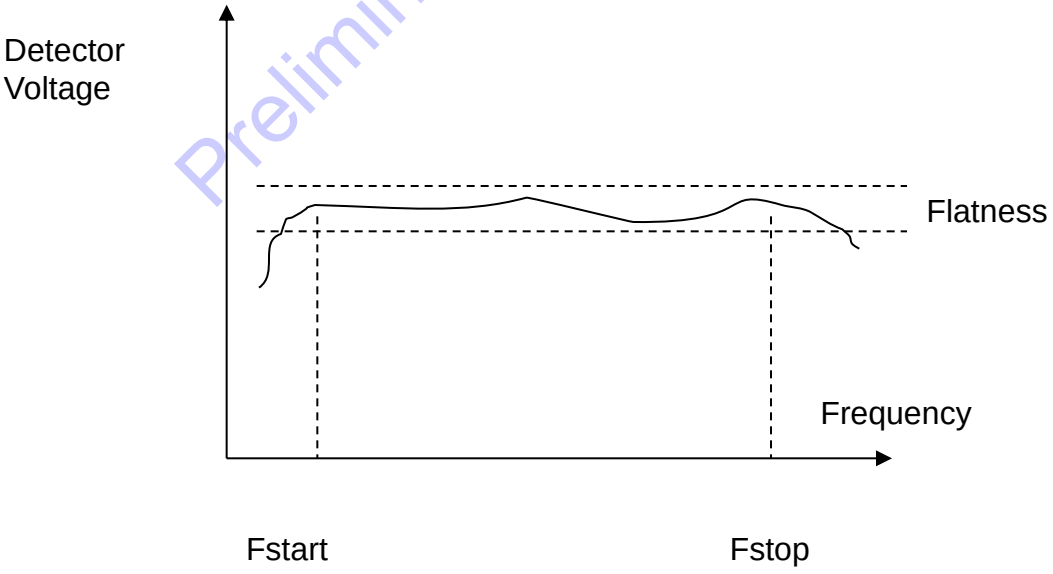
Conceptual drawing of Detector Voltage VS. Input Power @ specific frequency



Preliminary Specification

Conceptual drawing of Detector Voltage VS. Frequency @ Constant Power



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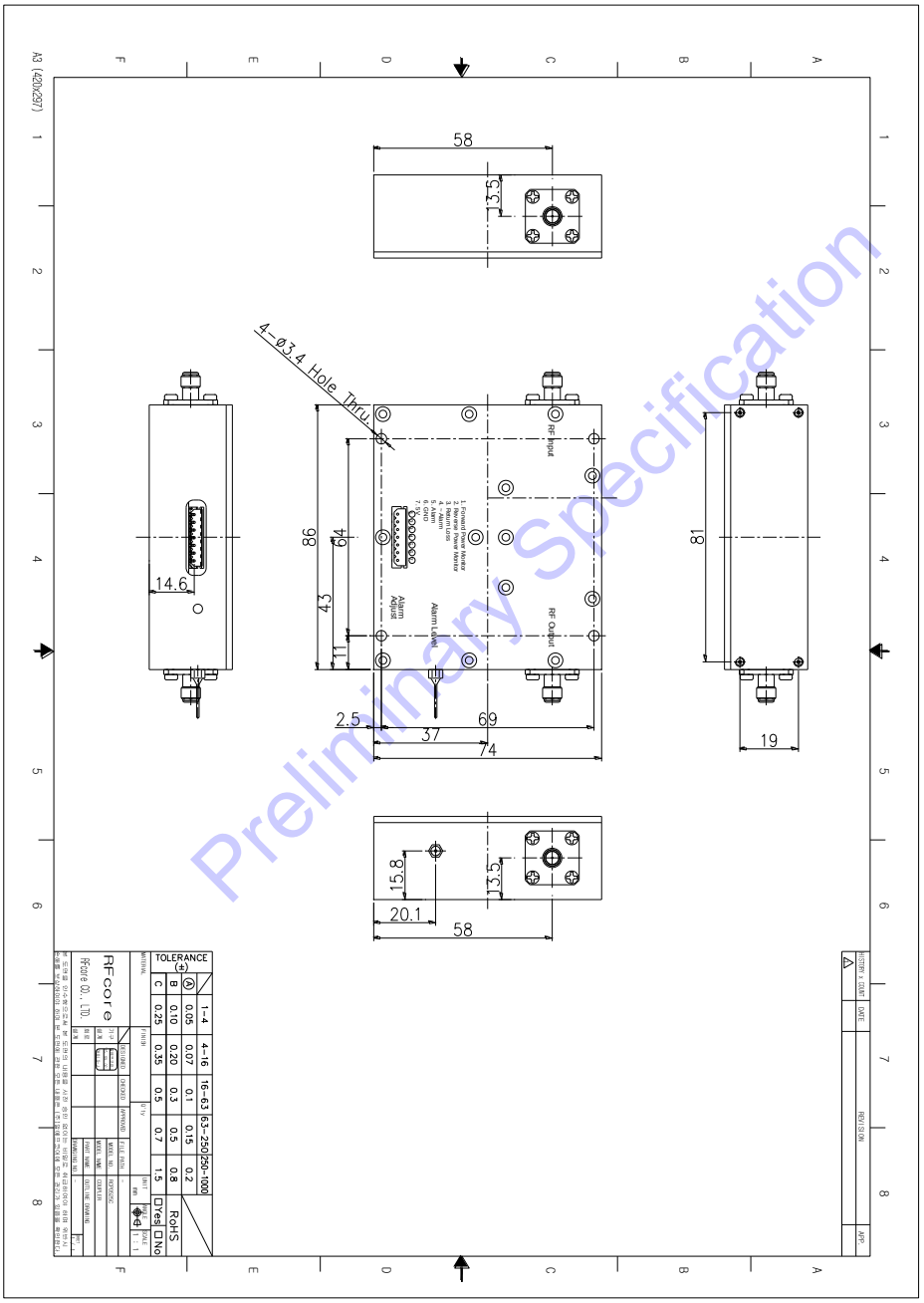
Mechanical Dimensions (86 x 74 x 27 mm) for RCP0525C



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