

Part Number: AMC-RFCRFS005B-A

Features:

- Dual Port for Diversity
- Universal operation for cellular 4G LTE, 600MHz, 2.45GHz, 433MHz, 900MHz ISM bands.
- 10kV Electrical isolation
- UL 94V-0 PCB and UL 746-E rated solder mask coating

Application

This patented dual-port RF coupler kit is a *low-loss, high isolation*, external antenna isolator/radio frequency (RF) coupler. It is designed for use specifically for the Aclara/(GE) kV2C SMART electric utility SMART meter as shown in fig 1.0.



Fig 1.0
AMC-RFCRFS005B-A
RF Coupler Installed in kV2C Meter

Its broad operating frequency range makes it ideal for most AMI RF communications modules; however this design is specifically optimized for the 4G LTE bands; 600/700/850/900/1700/1800/1900/2170MHz as well as the 2.45GHz ISM band. It has two dedicated input and output RF ports making it suitable for two separate modules (cellular plus ISM band) or a cellular main and diversity modem routing to two external antennas.

The 10kV electrical isolation enables safe routing of the RF signal from the NIC (wireless modem RF outputs) to suitable remote external antennas via the onboard SMT MMCX jack outputs. The two RG178/U pig-tail coaxial cables to the NIC end are terminated in a MMCX straight plug and are soldered down and tie wrapped to the rear side J3 and J4 connections on the RF coupler PCB. External antenna cables for connection to SMT MMCX jacks are not included.

Electrical Properties: * loss includes 130mm/123mm RG178/U modem-side cables for J3/J4 respectively, tested free space (not in meter) and with straight SMA-MMCX plug on J1/J2.

Operating Frequencies:	433MHz (ISM band) 600MHz (5G/NB IoT band) 698-793MHz (LTE A-E bands) 824-960MHz (GSM 850/900) 1710-1990MHz (GSM1700/1800/1900) 1920MHz-2170MHz (WCDMA/3G) 2.45GHz (ISM band)
Input/Output Impedance:	50 Ohms (nominal)
Max VSWR:	<2.0:1
Typical Insertion Loss: * <i>Cable routed straight out of J1/J2 MMCX jacks, no loops.</i>	<1.2dB @ 698-960MHz <2.0dB @ 1710-2170MHz <3.0dB @ 2.45GHz
Electrical Isolation (DC)	10kV (no damage)
RF J1-J2 Port Isolation	>20dB typical
Max RF power:	2 Watts(+33dBm)

Mechanical Properties:

RF Coupler PCB Max Dimensions:	56.6mm +/-0.1mm x 70.0mm +0.1/-0.0mm x 0.8mm (nom)
PCB Dielectric:	FR4 and solder mask coating to UL 746-E
PCB Finish/Coating:	UL 94V-0 rated. Pad finish is Lead Free/HASL
RF Coupler:	Front- Qty 2 SMD MMCX straight jack* (J1/J2)
PCB Terminations (in/out):	Rear – Qty 2 RG178U w/ MMCX plug* tie wrapped with UL 94-V2 tie wraps
RF Coupler Rear: Cable 1 Black: (J3)	129.5mm, RG178U RF Cable terminated with MMCX plug* tie wrapped with UL 94-V2 tie wrap.
RF Coupler Rear: Cable 2 White: (J4)	123.3mm, RG178U RF Cable terminated with MMCX plug* tie wrapped with UL 94-V2 tie wrap.
Heat shrink Tubing, cable 1: (J3)	Dunbar, W1635F. 600V, VW-1, UL244, Black, 1/8" (3.175mm).
Heat shrink Tubing, cable 2: (J4)	Dunbar, 1635F. 600V, VW-1, UL244, White, 1/8" (3.175mm).
Cable Ties:	Panduit # PLT.6SM-M0 or equivalent. (L) 71mm x (W) 1.8mm.
Antenna Output RF Cable/Connector:	Not supplied

*Gold plated body and center pin

Environmental:

Operating Temperature:	-40°C to +85°C
RoHS Compliant Assembly and PCB	YES

Dual-Port RF Coupler Isolator Kit for Aclara (GE) kV2C C&I SMART Utility Meter

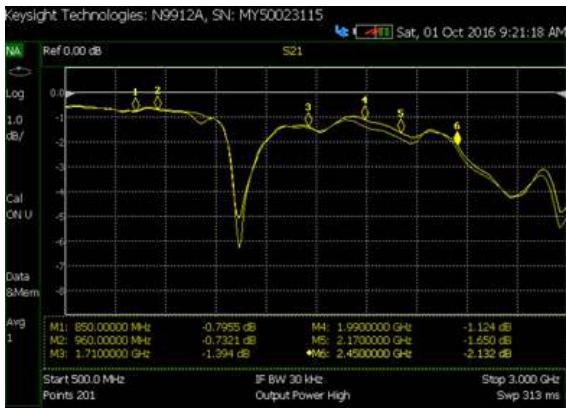


Fig 2.0 RF Coupler J1-J3 & J2-J4 S21 (Typical)



Fig 3.0 RF Coupler VSWR J1/J2/J3/J4 (Typical)

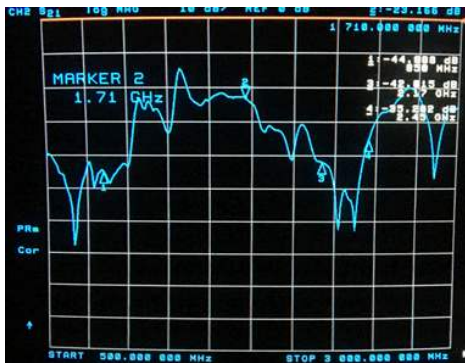


Fig 4.0 RF Coupler J1-J2 Isolation (Typical)

AMC-RFCRFS005B-A - RF Coupler PCB Kit - Mechanical Assembly



Fig 5.0
AMC-RFCRFS005B-A Front Artwork
(Artwork subject to change)



Fig 6.0
AMC-RFCRFS005B-A
Assembly with pig tail cables
attached

Packaging Specification

- Individual bubble bag



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Safety warning/disclaimer:

Customer is advised that the electrical isolation performance (front/back) of the RF coupler PCB and the RF insertion loss can be adversely degraded if improper routing and installation methods are used in the meter, for example if the input RF cables are allowed to cross paths with the output RF cables or the RF output cables are installed in such a manner so as to degrade the creepage and clearance set by the RF coupler PCB geometry. If the customer decides to supply its own antenna-side RF output cables Alpha Micro Components Limited and RFST LLC shall not be held liable for any failure of the device to operate as specified.

Approvals/Signatures

The below customer authorized signature confirms that the customer has reviewed and agreed with the attached specification.

Name: _____

Title: _____

Signature: _____

Date: ____/____/____