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# FFT5M100



## User Manual Volume 1

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Manufactured by  Italy



**File Name:** 03\_FFT5M100\_1.1.indd

**Version:** 1.1

**Date:** 09/05/2014

## Revision History

## Document History

Date	Version	Reason	Editor
13/06/2008	1.0	First Edition	E. Montagna
09/05/2014	1.1	Product Image modified	J. H. Berti

FFT5M100 - User Manual  
Version 1.1

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**IMPORTANT**


The lightning flash with arrowhead, within a triangle, is intended to alert the user of the presence of dangerous voltage that may constitute a risk of electric shock.




The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the equipment.


## 1. Preliminary Instructions

### • General Warnings


This equipment should only be operated, installed and maintained by “trained” or “qualified” personnel who are familiar with risks involved in working on electric and electronic circuits. “Trained” means personnel who have technical knowledge of equipment operation and who are responsible for their own safety and that of other unqualified personnel placed under their supervision when working on the equipment. “Qualified” means personnel who are trained in and experienced with equipment operation and who are responsible for their own safety and that of other unqualified personnel placed under their supervision when working on the equipment.

 **WARNING: Residual voltage may be present inside the equipment even when the ON/OFF switch is set to Off. Before servicing the equipment, disconnect the power cord or switch off the main power panel and make sure the safety earth connection is connected. Some service situations may require inspecting the equipment with live circuits. Only trained and qualified personnel may work on the equipment live and shall be assisted by a trained person who shall keep ready to disconnect power supply at need.**


R.V.R. Television shall not be liable for injury to persons or damage to property resulting from improper use or operation by trained/untrained and qualified/unqualified persons.


 **WARNING: The equipment is not water resistant. Any water entering the enclosure might impair proper operation. To prevent the risk of electrical shock or fire, do not expose this equipment to rain, dripping or moisture.**

Please observe local codes and fire prevention rules when installing and operating this equipment.

 **WARNING: This equipment contains exposed live parts involving an electrical shock hazard. Always disconnect power supply before removing any covers or other parts of the equipment.**

Ventilation slits and holes are provided to ensure reliable operation and prevent overheating; do not obstruct or cover these slits. Do not obstruct the ventilation slits under any circumstances. The product must not be incorporated in a rack unless adequate ventilation is provided or the manufacturer’s instructions are followed closely.

 **WARNING: This equipment can radiate radiofrequency energy and, if not installed in compliance with manual instructions and applicable regulations, may cause interference with radio communications.**

 **WARNING: This equipment is fitted with earth connections both in the power cord and for the chassis. Make sure both are properly connected.**

Operation of this equipment in a residential area may cause radio interference, in which case the user may be required to take adequate measures.

The specifications and data contained herein are provided for information only and are subject to changes without prior notice. **R.V.R. Television** disclaims all warranties, express or implied. While R.V.R. Television attempts to provide accurate information, it cannot accept responsibility or liability for any errors or inaccuracies in this manual, including the products and the software described herein. **R.V.R. Television** reserves the right to make changes to equipment design and/or specifications and to this manual at any time without prior notice.

### • Notice concerning product intended purpose and use limitations.

This product is a radio transmitter suitable for frequency-modulation audio radio broadcasting. Its operating frequencies are not harmonised in designated user countries. Before operating this equipment, user must obtain a licence to use radio spectrum from the competent authority in the designated user country. Operating frequency, transmitter power and other characteristics of the transmission system are subject to restrictions as specified in the licence.

## 2. Warranty

La **R.V.R. Television** warrants this product to be free from defects in workmanship and its proper operation subject to the limitations set forth in the supplied Terms and Conditions. Please read the Terms and Conditions carefully, as purchase of the product or acceptance of the order acknowledgement imply acceptance of the Terms and Conditions. For the latest updated terms and conditions, please visit our web site at [WWW.RVR.IT](http://WWW.RVR.IT). The web site may be modified, removed or updated for any reason whatsoever without prior notice. The warranty will become null and void in the event the product enclosure is opened, the product is physically damaged, is repaired by unauthorised persons or is used for purposes other than its intended use, as well as in the event of improper use, unauthorised changes or neglect. In the event a defect is found, follow this procedure:

- 1 Contact the seller or distributor who sold the equipment; provide a description of the problem or malfunction for the event a quick fix is available.

Sellers and Distributors can provide the necessary information to troubleshoot the most frequently encountered problems. Normally, Sellers and Distributors can offer a faster repair service than the Manufacturer would. Please note that Sellers can pinpoint problems due to wrong installation.

- 2 If your Seller cannot help you, contact **R.V.R. Television** and describe the problem; if our staff deems it appropriate, you will receive an authorisation to return the equipment along with suitable instructions;
- 3 When you have received the authorisation, you may return the unit. Pack the unit carefully before shipment; use the original packaging whenever possible and seal the package perfectly. The customer bears all risks of loss (i.e., R.V.R. shall not be liable for loss or damage) until the package reaches the R.V.R. factory. For this reason, we recommend insuring the goods for their full value. Returns must be sent on a C.I.F. basis (PREPAID) to the address stated on the authorisation as specified by the R.V.R. Service Manager.



Units returned without a return authorisation may be rejected and sent back to the sender.

- 4 Be sure to include a detailed report mentioning all problems you have found and copy of your original invoice (to show when the warranty period began) with the shipment.

Please send spare and warranty replacement parts orders to the address provided below. Make sure to specify equipment model and serial number, as well as part description and quantity.



R.V.R. Television  
Via del Fonditore, 2/2c  
40138 BOLOGNA ITALY  
Tel. +39 051 6010506

## 3. First Aid

All personnel engaged in equipment installation, operation and maintenance must be familiar with first aid procedures and routines.

### 3.1 Electric shock treatment

#### 3.1.1 If the victim is unconscious

Follow the first aid procedures outlined below.

- Lay the victim down on his/her back on a firm surface.
- the neck and tilt the head backwards to free the airway system (**Figure 1**).

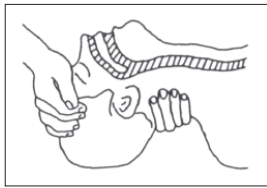


Figure 1

- If needed, open the victim's mouth and check for breathing.
- If there is no breathing, start artificial respiration without delay (**Figure 2**) as follows: tilt the head backwards, pinch the nostrils, seal your mouth around the victim's mouth and give four fast rescue breaths.



Figure 2

- Check for heartbeat (**Figure 3**); if there is no heartbeat, begin chest compressions immediately (**Figure 4**) placing your hands in the centre of the victim's chest (**Figure 5**).

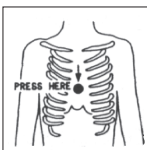
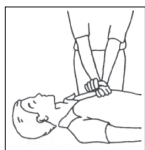
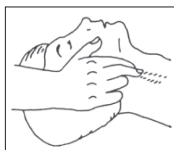


Figure 3

Figure 4

Figure 5

- One rescuer: give 2 quick rescue breaths after each 15 compressions.
- Two rescuers: one rescue breath after each 5 compressions.

- Do not stop chest compressions while giving artificial breathing.
- Call for medical help as soon as possible.

#### 3.1.2 If the victim is conscious

- Cover victim with a blanket.
- Try to reassure the victim.
- Loosen the victim's clothing and have him/her lie down.
- Call for medical help as soon as possible.

### 3.2 Treatment of electric burns

#### 3.2.1 Large burns and broken skin

- Cover affected area with a clean cloth or linen.
- Do not break any blisters that have formed; remove any clothing or fabric that is stuck to the skin; apply adequate ointment.
- Administer adequate treatment for the type of accident.
- Get the victim to a hospital as quickly as possible.
- Elevate arms and legs if injured.

If medical help is not available within an hour, the victim is conscious and is not retching, administer a solution of table salt and baking soda (one teaspoon of table salt to half teaspoon of baking soda every 250 ml of water).

Have the victim slowly drink half a glass of solution for four times during a period of 15 minutes.

Stop at the first sign of retching.

Do not administer alcoholic beverages.

#### 3.2.2 Minor burns

- Apply cold (not ice cold) strips of gauze or dress wound with clean cloth.
- Do not break any blisters that have formed; remove any clothing or fabric that is stuck to the skin; apply adequate ointment.
- If needed, have the victim change into clean, dry clothing.
- Administer adequate treatment for the type of accident.
- Get the victim to a hospital as quickly as possible.
- Elevate arms and legs if injured.

## 4. Introduction

The filter is made up of five resonance lines in comb-line configuration.

## 5. Tools

- Blocking Spanner:

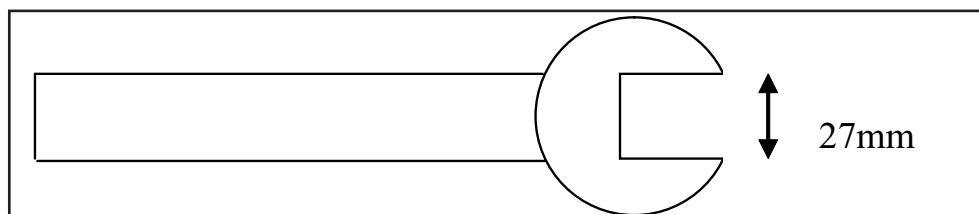


Figure 1

## 6. Calibration of single filter

The short circuit plug, placed into the lower connector, is necessary for the calibration of each single filter.

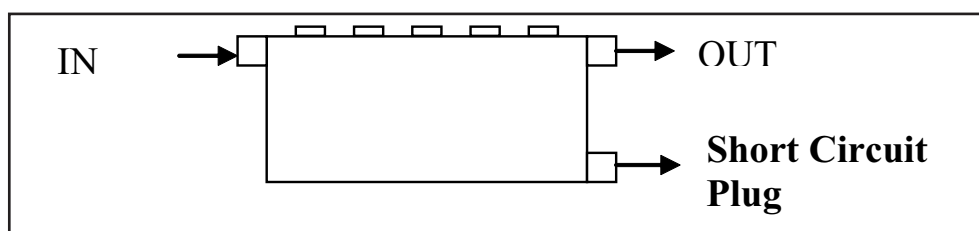


Figure 2

You need also:

- Network analyzer (alternatively you can use a spectrum analyzer with tracking and reflectometric bridge).
- Two cables.
- A passing attenuator with 20dB/30dB of attenuation.

Before connecting the filter to the instrument is necessary to perform the standardization procedure to eliminate undesirable effects on cables. This procedure consists on two points:

- 1) Standardization of S11
- 2) Standardization of S21

The instrument setting is also necessary with the following setting:

- 1) Central frequency (MK1), shoulder -4.2 (MK2), shoulder +4.2 (MK3) - (see appendix A)
- 2) Span 50MHz
- 3) S11 with 5dB/div
- 4) 4- S21 with 10dB/div

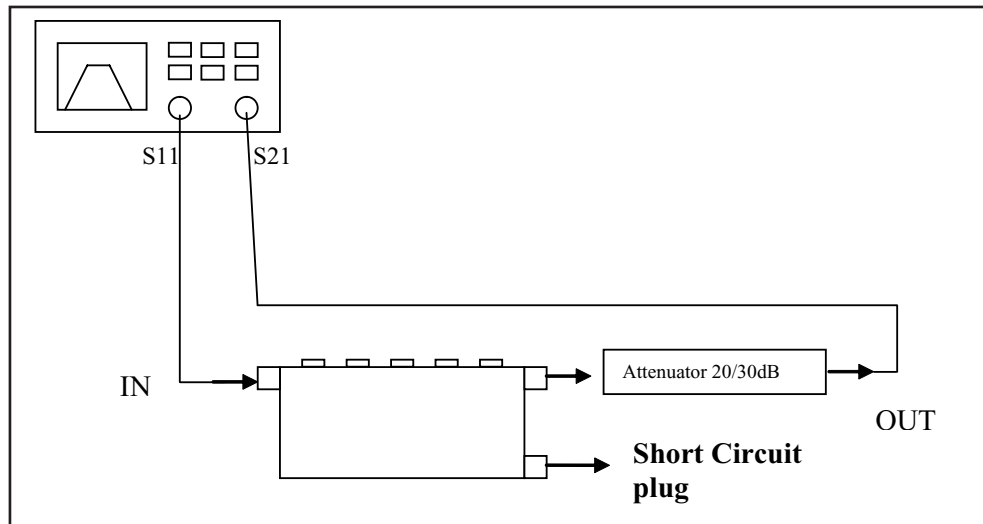


Figure 3

The calibration points of the filter are:

- The five lines of tuning
- The input and output connectors

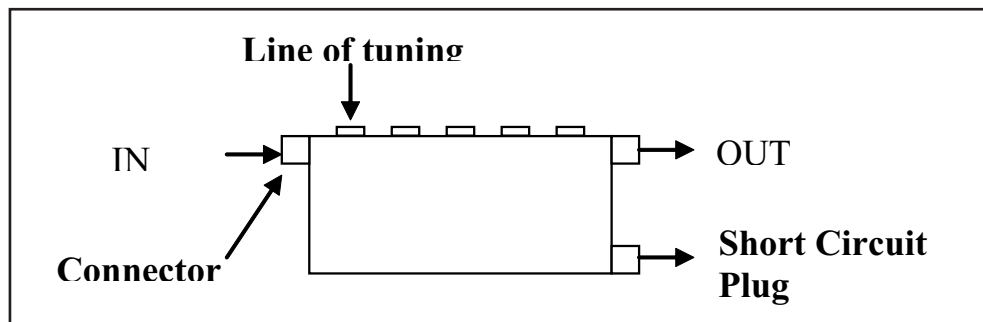


Figure 4

**Line of tuning:** The lines are stretches and the filter tunes on channels lower by rotating clockwise. Vice versa, by rotating counter clockwise, the lines are shorter and the filter tunes on the higher frequency.



**Input and output connectors:** After loose nut 1 (use the key of figure 1) you can turn the ring nut 2 to insert or remove the coupling link. Typically for high channels they should be more extracts, while for low channels they should be included more.

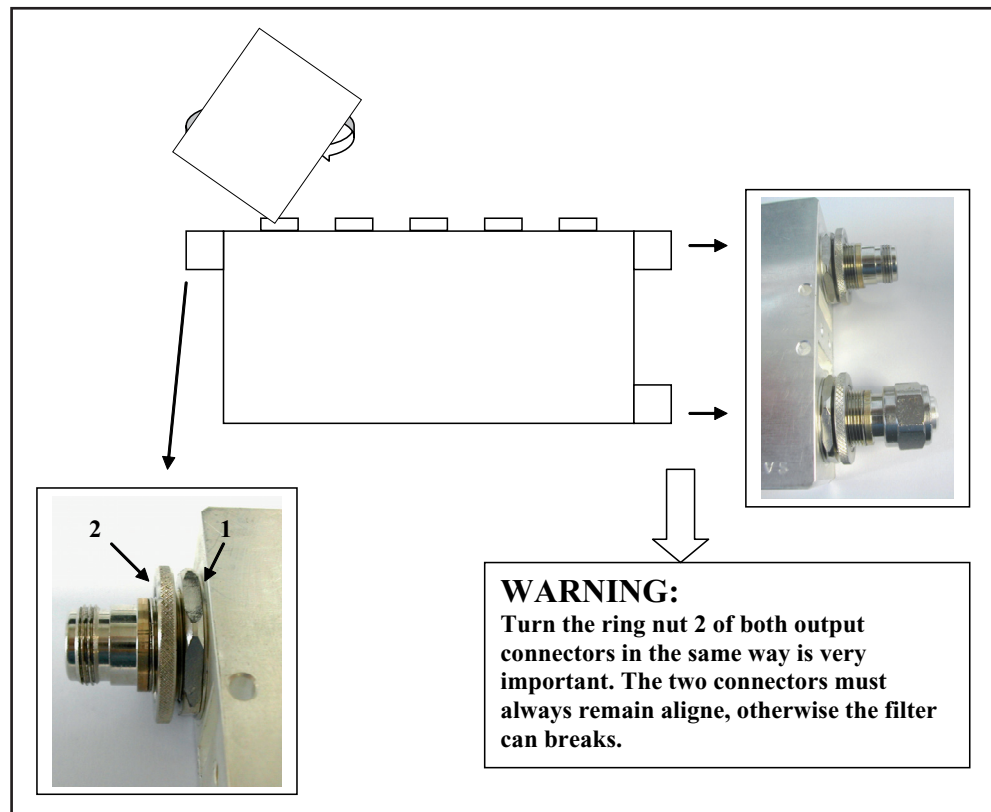


Figure 5

The filter is calibrated when measuring:

- Return loss of about 26dB
- Insertion loss included from 1 to 1.2dB
- The resonances of the five lines are visible

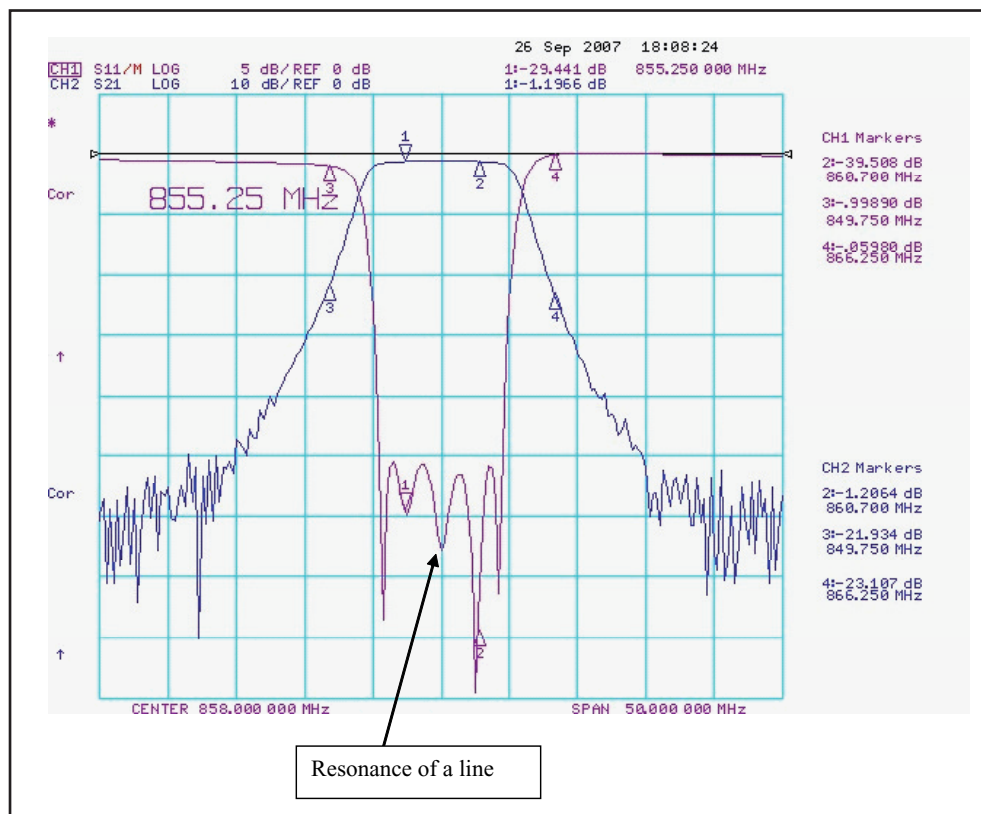


Figure 6

At this point, you can lock the input and output connectors with the blocking spanner supplied (see fig. 1). After this operation the return loss worsens some dB, is recommended to rotate the connector, approximately one counter-clockwise turn, before block with the blocking spanner. This offsets the parasite effect of locking.

## Appendix A Europe channels table CCIR 8MHz

Channel	Central Freq.	Shoulder -4,2	Shoulder +4,2	f. min	f. max
	MK1	MK2	MK3		
21	474,00	469,80	478,20	470,00	478,00
22	482,00	477,80	486,20	478,00	486,00
23	490,00	485,80	494,20	486,00	494,00
24	498,00	493,80	502,20	494,00	502,00
25	506,00	501,80	510,20	502,00	510,00
26	514,00	509,80	518,20	510,00	518,00
27	522,00	517,80	526,20	518,00	526,00
28	530,00	525,80	534,20	526,00	534,00
29	538,00	533,80	542,20	534,00	542,00
30	546,00	541,80	550,20	542,00	550,00
31	554,00	549,80	558,20	550,00	558,00
32	562,00	557,80	566,20	558,00	566,00
33	570,00	565,80	574,20	566,00	574,00
34	578,00	573,80	582,20	574,00	582,00
35	586,00	581,80	590,20	582,00	590,00
36	594,00	589,80	598,20	590,00	598,00
37	602,00	597,80	606,20	598,00	606,00
38	610,00	605,80	614,20	606,00	614,00
39	618,00	613,80	622,20	614,00	622,00
40	626,00	621,80	630,20	622,00	630,00
41	634,00	629,80	638,20	630,00	638,00
42	642,00	637,80	646,20	638,00	646,00
43	650,00	645,80	654,20	646,00	654,00
44	658,00	653,80	662,20	654,00	662,00
45	666,00	661,80	670,20	662,00	670,00
46	674,00	669,80	678,20	670,00	678,00
47	682,00	677,80	686,20	678,00	686,00
48	690,00	685,80	694,20	686,00	694,00
49	698,00	693,80	702,20	694,00	702,00
50	706,00	701,80	710,20	702,00	710,00
51	714,00	709,80	718,20	710,00	718,00
52	722,00	717,80	726,20	718,00	726,00
53	730,00	725,80	734,20	726,00	734,00
54	738,00	733,80	742,20	734,00	742,00
55	746,00	741,80	750,20	742,00	750,00
56	754,00	749,80	758,20	750,00	758,00
57	762,00	757,80	766,20	758,00	766,00
58	770,00	765,80	774,20	766,00	774,00
59	778,00	773,80	782,20	774,00	782,00
60	786,00	781,80	790,20	782,00	790,00
61	794,00	789,80	798,20	790,00	798,00
62	802,00	797,80	806,20	798,00	806,00
63	810,00	805,80	814,20	806,00	814,00
64	818,00	813,80	822,20	814,00	822,00
65	826,00	821,80	830,20	822,00	830,00
66	834,00	829,80	838,20	830,00	838,00
67	842,00	837,80	846,20	838,00	846,00
68	850,00	845,80	854,20	846,00	854,00
69	858,00	853,80	862,20	854,00	862,00

Table 1

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