

Figure 11 – CXXX-8. 8-Ch Internal Combiner Filter Unit.

### 3.4.10 TLM - Through Line Module

Where external combining is required, which would typically be in the output channels of the downlink, and sufficient band pass filtering is provided within an optional external combiner, then a TLM can be bolted to the output of the RFBE instead of the BPFM. The form dimensions and connector arrangement of the TLM is the same as the BPFM. It is very important to provide band pass filtering in the external combiner equivalent or better than the filtering provided by the BPFM in order to maintain the required frequency spectral purity.

## 3.5 Band and Channel Configurations

The DSPbR architecture facilitates band and channel flexibility with in-field upgradability.

At the rear of the DSPbR sub rack frame are 10 slot apertures numbered sequentially from the left.

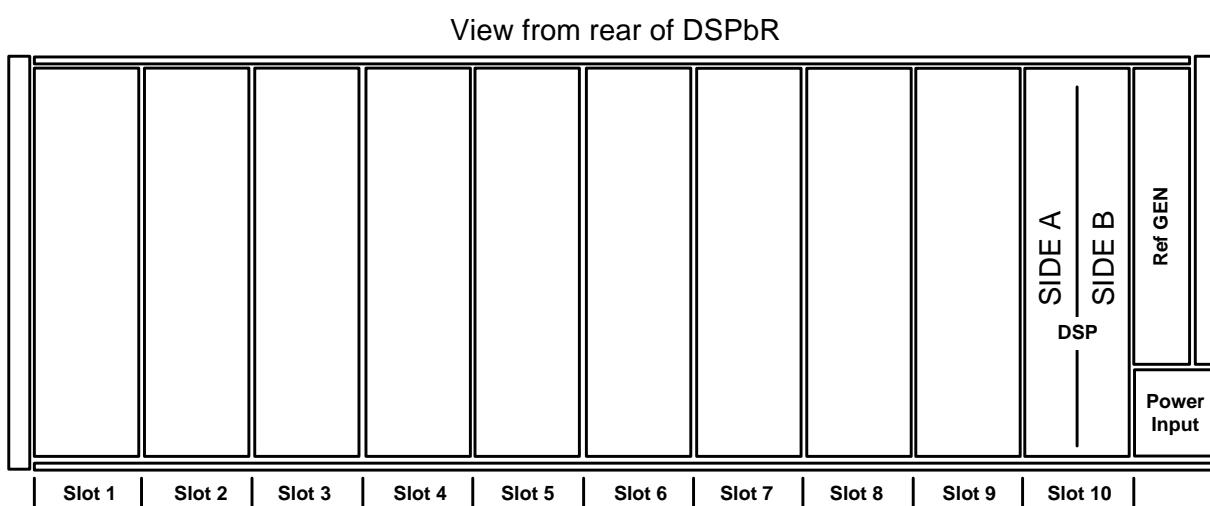


Figure 12 – Slot Allocation Architecture

**Slot allocation architecture;**

Slots 1-6 allocated to RFBE’s only.

Slots 9 allocated to RFFE only.

Slots 7 & 8 allocated to either RFFE’s or RFBE’s.

Slot 10 allocated to a DSP module.

Typically slots 1-4 or 5-8 are used for an 8-Ch Internal combiner filter unit, however the combiner unit can fit across any 4 continuous RFBE slot block.

RFBE modules can be configured such that side “A” is an uplink channel and side “B” is a downlink channel.

When RFBE modules are configured in this way, the use of an internal combiner is not possible.

Alternatively, RFBE modules can be configured with both side “A” and side “B” as uplink or downlink. This configuration option along with the corresponding slot block allocation permits the fitting of the internal combiner unit.

Refer to **Appendix “A”** - Single Sub Rack Frame, DSPbR Slot Architecture – Typical Configurations.

### 3.6 Internal up link and down link RFBE combining

Internal RFBE output combining of uplink and or downlink channels is optional, however the slot and uplink / downlink configuration has to be in accordance with the following simple rules.

Rule 1. Both side “A” and side “B” within the RFBE module have to be configured as either uplink or downlink RFBE boards.

Rule 2. Combined channels must occupy 4 contiguous slots, i.e. slots 1-4, 3-6 or 5-8.

The 8-channel combiner filter unit uses a hybrid coupler technique to cater for combining frequencies that are adjacent or at any frequency within the allocated 20MHz bandwidth. Isolators and a band pass filter are incorporated within the combiner unit supporting good transmitter combining engineering practices.

The 8-channel combiner filter unit fits directly into the back of the RFBE modules, effectively replacing the individual BPF modules at the outputs of the RFBE’s. The N female single output connector is accessible from the rear of the unit. Caution must be taken when touching the combiner module from the rear when in service as heat is likely to have been generated through this combining technique.

Both uplink and or downlink output combining is possible within a single sub rack frame.

The 8-Channel internal combiner has a single output and is not tuneable.

Should this style of combining not be suitable for an application, external combining is recommended. When internal combining is not required, each RFBE module will be bolted to a corresponding BPFM, where the output N female connectors for both boards are presented at the rear of the sub rack.

### **3.7 Frequency Bands**

RFFE, RFBE, BPFM and 8-Ch combiner units are available for the following bands;  
400-420MHz, 450-470MHz, 470-490MHz, 805-825MHz, 850-870MHz

RFI will add additional frequency bands to this product series under our product development program. Please consult with our offices should there be a specific frequency range that you would be interested in which has not been listed.

### **3.8 System Expansion**

The DSPbR is expandable once the available slots have been utilised in a single sub rack frame. This is achieved by daisy chaining additional sub rack frames.

Primarily, the CAN bus is extended to the required additional sub frame racks where the first rack would be nominated as the “Master” sub rack. Following sub racks are referred to as “Slaves”.

This expandability accommodates additional bands and channels not possible utilising a single sub rack frame. The scope of this user manual does not cover DSPbR sub rack expansion in detail. Systems requiring additional sub racks frames in this manner will be provided project specific documentation.

## 4. Installation

### 4.1 Unpacking

The DSPbR is heavy and considered a two-man lift.

The 19" sub rack frame will have been packed into a robust cardboard box container. All modules ordered with the initial order will have been fitted and fastened into the appropriate slots within the sub rack frame. The appropriate AC mains voltage power cord, Ethernet jumper cable and module extraction tool along with this User Manual in a hard and softcopy CD will have been packed into the same cardboard box container.

There are no feet on the underside of the unit and therefore careful placement “right side up” on a flat surface prior to mounting is required.

### 4.2 Mechanical

A single DSPbR sub rack frame will occupy 4RU of 19" rack height. The minimum un-obstructed depth required within the 19" rack, excluding the additional space required to fit cable terminated coaxial connectors is 439mm. Top and bottom and side covers of the sub rack frame are not required to be removed for field servicing and therefore we discourage any attempt to do so

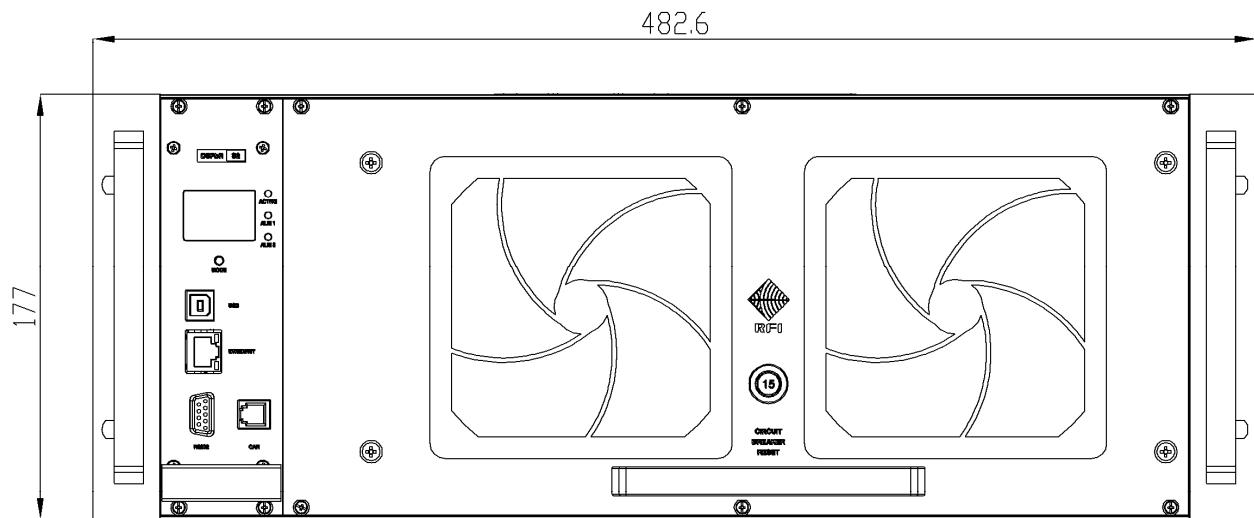


Figure 13 – DSPbR Dimensions Front View

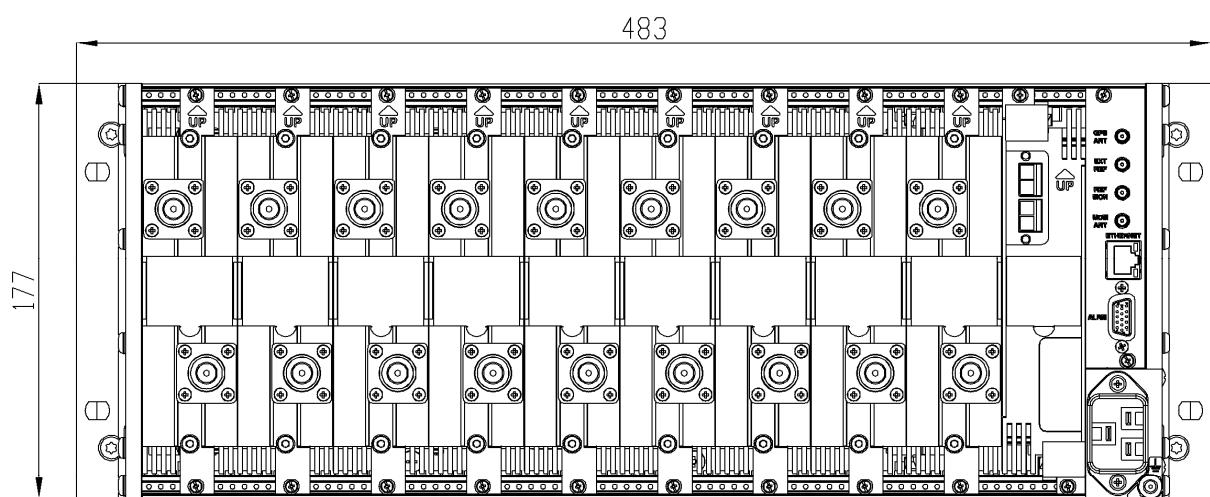


Figure 14 – DSPbR Dimensions Rear View