# Model Number: 22277-F7F7

RF Engineering
and Custom Build

# *Hybrid 16-way L-band Active Splitter & Combiner*

With dual redundant amplifiers, LNB Powering, dual redundant 10MHz Source and Ethernet Monitoring


Front View of Model 22277-F7F7

This high resilience hybrid unit comprises a 16-way L-band active splitter and a 16-way L-band active combiner in a 2U, 19" rack chassis. The unit benefits from dual redundant amplifiers and dual redundant power supplies. LNB and BUC referencing is provided on the common port via an internal dual redundant 10MHz source. 18V DC LNB Powering is also available.

Amplifier current sensing triggers the automatic switchover to the (cold standby) redundant amplifier. Front panel LED's provide a visual status of the power supplies , amplifiers in the splitter and combiner modules, and internal 10MHz source. A dry contact alarm port for PSU failure and an Ethernet port on the rear panel offer monitoring of the power supplies and amplifier status.


Rear View of Model 22277-F7F7

The 10MHz reference signal is available on the 10MHz OPS ports and if required, can be injected on to the output of the combiner or the input of the splitter using the supplied U-Link.

This particular unit is supplied with 75 ohm F-type RF connectors, but other impedances and connector types are available (model numbers will vary).

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Technical specifications and operating parameters

## RF Parameters

| SPLITTER | | | |
|---|---|---|---|
| Capacity | | 16-way | |
| Frequency Range | | 850 -2150 MHz | |
| Gain | | 0 dB ± 2 dB | |
| Flatness | 850-2150MHz | ± 1.5 dB | |
| | Any 36MHz | ± 0.75 dB | |
| 1dB Compression | | +3 dBm | |
| Noise Figure | | 12 dB | |
| Input Return Loss | | 10 dB | |
| Output Return Loss | | 10 dB | |
| LNB Power | | 18V dc | switchable on/off from rear panel |
| 10MHz Injection | | On to Common Port | Internal or External via U-Link |
| Amp Redundancy | | 1-to-1 redundant | cold redundancy & current sensing |

| COMBINER | | | |
|---|---|---|---|
| Capacity | | 16-way | |
| Frequency Range | | 850-2150 MHz (L-band) | |
| Gain | | 0 dB ± 2 dB | |
| Flatness | 850-2150MHz | ± 1.5 dB | |
| | Any 36MHz | ± 0.75 dB | |
| 1dB Compression | | +12 dBm | |
| Noise Figure | | 24 dB | |
| Input Return Loss | | 10 dB typical | |
| Output Return Loss | | 10 dB typical | |
| BUC Power | | None | |
| 10MHz Injection | | On to Common Port | Internal or External via U-Link |
| Amp Redundancy | | 1-to-1 redundant | cold redundancy & current sensing |

## RF Parameters

| 10MHz Source | | | |
|---|---|---|---|
| 10MHz Ref Source | | **U-links on rear panel to select internal/external.** The 10MHz reference is injected onto the common L-band port. | 2 x 50 ohm BNC's on rear panel for 10MHz external IN and internal OUT, with a U-Link supplied. **There is no 10MHz injection if the U-link is removed and the port is terminated (i.e. no external source supplied).** |
| Frequency | | 10MHz | Factory setting is to ± 1ppm, ±10Hz for 10MHz source |
| Output Level | | +1.5 ± 1.5 dBm typical, ± 2.5 dBm worst case | Fundamental frequency (10MHz) under all operational conditions |
| Redundancy | | Cold redundant pair. Switch over if configured nominal level is exceeded by 2.5 ± 1dB | Nominal level is "learned" by system during configuration. |
| Output type | | Sine Wave | |
| Harmonic & Spurii Levels | | -60 dBc typical, -50 dBc worst case | With respect to 10MHz harmonics (non related spurii levels <-80 dBm max) |
| Frequency Stability | Over Temp | ± 1 x $10^{-8}$ | Typical over 0-55°C |
| | Over Time | ± 5 x $10^{-7}$ / year typical | |
| | Short Term Stability | < ± 1 x $10^{-11}$ / sec | |
| | Load Change | < ± 5 x $10^{-9}$ | |
| | Power supply variations | < ± 5 x $10^{-9}$ | |
| Ageing | Per day | ± 5 x $10^{-10}$ typical | |
| | Per year | ± 5 x $10^{-8}$ typical | |
| | Over temp | ± 3 x $10^{-8}$ | |
| Phase Noise | 1Hz | <-85 dBc / Hz | |
| | 10Hz | <-115 dBc / Hz | |
| | 100Hz | <-140 dBc / Hz | |
| | 1000Hz | <-150 dBc / Hz | |
| | 10000Hz | <-155 dBc / Hz | |
| Warm up Time | | < 2 minutes | At 25°C to < ± 1 x $10^{-7}$ |

## Physical

| | |
|---|---|
| Input / Output Connector | F-type |
| Input / Output Impedance | 75Ω |
| Dimensions | 3U high x 350mm deep x 19" wide |
| Weight | 12 kg |
| Colour | White 00-E-55 semi-gloss |

## System Control

| | |
|---|---|
| Display | LED's at front panel. Connectors at rear panel. |
| Alarms | Dry contact and Ethernet RJ45 connector to show alarm status for PSU failure and /or either amplifier failure in redundant amplifier modules |

## Power

| | |
|---|---|
| AC Power | 85-264Vac 50/60Hz |
| LNB Power | 18 V dc |
| PSU | Dual redundant Diode OR |

## Environmental

| | |
|---|---|
| Operating temp | 0 to 45˚C |
| Location | Indoor use only |
| Storage temp | -20˚C to +75˚C |
| Humidity | 85% non-condensing |

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