

IP to 8x FM Module – EdgeFM

TANGRAM GT22C

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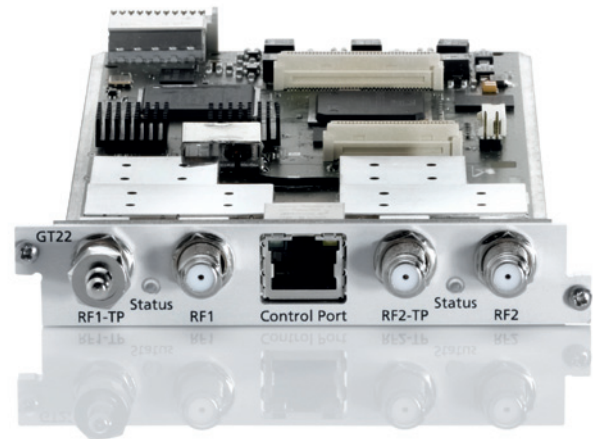
The GT22C module is part of the TANGRAM product portfolio. GT22C is a high performance edge module which is allowing you to add up to 8 channels in FM format per module to your network. TANGRAM is a very high density and highly flexible solution for all kinds of networks. The WISI Tangram chassis uses a fully redundant concept.

High-density EdgeFM

The IP to FM module for TANGRAM platform enables flexible receiving, multiplexing of SPTS and MPTS streams for modulation into analogue FM signals.

Features

- HIGH QUALITY IP TO ANALOGUE FM MODULATION
- UP TO 8 FM CHANNELS ON 1 RF PORTS
- ADVANCED MPEG DECODING
- OUTSTANDING SIGNAL PARAMETERS BY DIRECT DIGITAL MODULATION
- HIGH DENSITY 48 FM CHANNELS IN 1 RU
- RTP/IP INPUT STREAMING WITH FEC ERROR CORRECTION
- RDS EXTRACTION AND INSERTION
- FOR MEASUREMENT/MONITORING TEST PORTS OF THE OUTPUT SIGNAL
- IP INPUT REDUNDANCY WITH UP TO THREE ALTERNATIVE INPUTS



Solutions with TANGRAM



CHANNEL PROCESSING

Headends for residential, regional and national networks.



HOUSING INDUSTRY

Headends for housing complexes, hotels and hospitals.



RF OVERLAY

Solutions for video services in GPON and Active Ethernet networks.

Technical Information

| Audio and RDS Processing | |
|---|---|
| Audio Decoder | ISO 13818-3 MPEG-1 (L1/L2) (Musicam) MPEG-2 (L1/L2) |
| Audio language | ISO 639 |
| Audio format | Mono / Stereo / Joint-Stereo |
| RDS Insertion (dynamic and static) | UECP SPB490 |
| Pilot tone frequency | 19 kHz (± 2 kHz) |
| Pilot tone phase stability | $< \pm 3^\circ$ |
| Pilot tone level | 6,75 kHz ($\pm 0,75$ kHz) |
| RDS carrier frequency | 57 kHz (± 6 Hz) |
| RDS carrier level | 2,5 kHz ($\pm 0,25$ kHz) |
| RDS carrier phase stability | $< \pm 10^\circ$ |
| 38 kHz supression | ≥ 42 dB |
| Audio reference level (DVB = 40kHz FM dev.) | -6 dBFS (-5dB audio deviation) |
| Audio level range | ± 6 dB |
| Audio level step size | 1 dB |
| Amplitude response (40 Hz – 15 kHz) | $\leq \pm 0,5$ dB |
| 15 kHz low pass filter | > 40 dB (> 19 kHz) |
| Total harmonic distortion | $< 0,2$ % (75 kHz dev.) |
| S/N ratio (unweighted) | > 60 dB (75 kHz dev.) |
| (weighted ITU-R BS 468,4) | > 60 dB (75 kHz dev.) |
| L/R channel level difference (40 Hz – 15 kHz) | < 1 dB |
| L/R phase difference (40 Hz – 15 kHz) | $< 10^\circ$ |
| L/R separation (300 Hz – 4 KHz) | > 43 dB |
| Preemphasis characteristics | 50 μ s ± 2 μ s |

| Related Software Options | |
|--------------------------|--|
| GTM1 | Service Level Agreement extension 1 year |
| GTM3 | Service Level Agreement extension 3 years |
| GTFEC | Enabling IP streaming with FEC in per module |
| GTRED | Enabling IP input redundancy |

| RF Parameters | |
|-----------------------------|--------------------------------------|
| Output ports | 1 |
| Channels per port | up to 8 |
| Output impedance | 75 Ohm |
| Output frequency | 87,5 ... 108 MHz |
| Output frequency steps | 1 kHz |
| Output level (each RF port) | 102 dB μ V |
| Test port at each output | -20 dB ± 1 dB |
| Output level stability | ± 1 dB |
| Output return loss | ≥ 14 dB (45 MHz) -1,5 dB/Octave |
| Output level setting | 0...30 dB (0,5 dB steps) |
| Spectral purity | > 66 dB |
| Broadband noise | < -120 dBm/Hz |

| IP Streaming | |
|---|---|
| Max. SPTS/MPTS input streams per module | 8 (CBR or VBR) |
| Max. streaming capacity per module | < 800 Mbit/s |
| Communication protocol | Unicast and Multicast, SPTS and MPTS, IGMPv2 and IGMPv3 |
| Packet Format | MPEG over RTP/UDP |
| Packet Size | 188 byte |
| Time stamp & de-jitter | yes |
| Jitter tolerance | ± 100 ms |
| Remultiplexing | yes |
| PID remapping and filtering | yes |

| General Data | |
|--------------------------------|--|
| Signaling | Multicolor LEDs (Power on - green, Error - red) |
| Front Ethernet connector | RJ45 (only for local management) |
| RF connectors | 2x F-Connector (RF-Output) 2x F-Connector (Test-Output) |
| Power consumption | $\leq 19,2$ W |
| Operating temperature range | -5°C to +45 °C (ETSI EN 300 019-1-3 Class 3.1) |
| Nominal temperature range | 15°C ... +35°C |
| Max. humidity (non condensing) | 95 % |
| EMV | EN 50083-2 |

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