USTL
UHF Link System

The USTL is a UHF studio to transmitter link providing the transmission and reception of one stereo audio as Stereo L & R or multiplex.
The system consists of a UHF transmitter EX-STL and UHF receiver RX1-RBR MKII, with UHF front-end option. The UHF links can be supplied at any frequency between 300-950MHz. The higher frequency from 800 to 950 MHz The high band is supplied in the 5W version. the lower band fup to 15W.
[yagi antennas and cable are required to complete the system and can be provided by BSE].

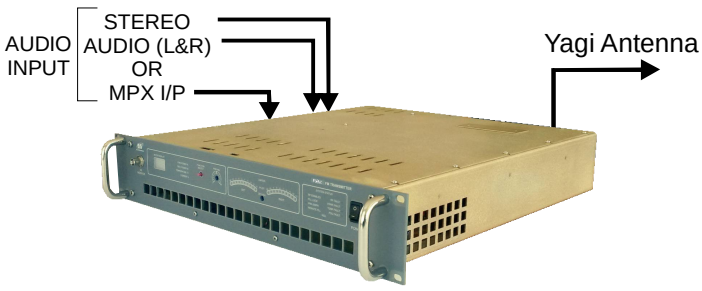
NOTE: The equipment is supplied configured for the operating frequency in a 20MHz band.

The EX-STL UHF transmitter is normally supplied in the multiplex (wideband) version. Stereo audio input is possible as an option with the addition of a stereo encoder built into the transmitter.
The RX1-RBR UHF version is supplied as standard with MPX and stereo audio L & R outputs.

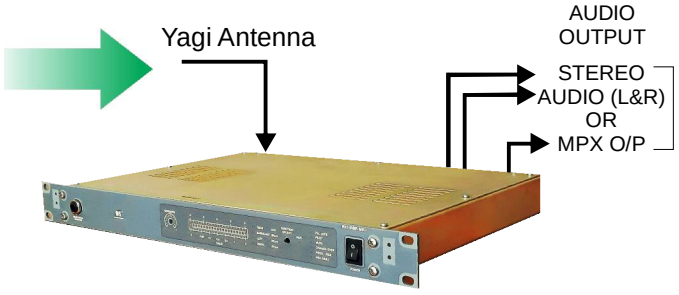
The USTL system has a baseband of 100kHz, allowing two sub-carriers to be carried on the link. For example RDS and SCA.

The EX-STL can function with the FMT-xxx UHF to FM Translators for a Low Power FM Transmitter link applications, which does not require the RX1-RBR as the UHF down-converter is built into the Translator.

Refer to the Equipment configuration table below



EX-STL UHF Stereo Transmitter



RX1-RBR UHF Receiver

Features

- Superior audio performance
- Stereo decoded audio signal VU meter (L & R)
- Integrated Stereo Encoder and audio limiter (option 1)
- Wideband (MPX), SCA / RDS auxiliary I/P (standard)
- 2U UHF Transmitter, lightweight, rack mount, forced air cooled
- Internal RDS (option2)
- Wideband operation (100kHz baseband)
- Digital display for Metered Parameters (EX-STL)

Frequency / RF Power Options

Frequency Range MHZ	Max RF Power	Comments
300 - 400	max 15W	
400 - 470	Max 15W	
800 - 870	Max 5W	
910 - 950	Max 5W	USA Band

NOTE: Operating Frequency must be provided with order

TECHNICAL SPECIFICATIONS

PARAMETER - UHF Transmitter

RF SPECIFICATION

Frequency range	300MHz - 950MHz (see frequency table on front page)
Modulation type	F3E and F8E (direct carrier)
Frequency synthesizer	PLL with Local/Remote control
Frequency increments	100 kHz
Frequency stability	2ppm
RF output power	> 5W (800-950MHz) (10MHz range) >10W (300-470MHz) (10MHz range)
RF spurious/harmonics	< -70dBc
Asynchronous AM	< -60dB
Synchronous AM	< -50dB
RF output connector	N-Type (female) 50 Ohm
RF monitor connector	BNC (female) 50 ohm
Max VSWR	2.5:1 (adjustable)

POWER SUPPLY

AC power input	115V/230V (via internal Switch)
AC Frequency	47Hz to 63Hz
Mains variation	+/-15%
Consumption	30-60VA
DC power input	+24V battery Max. 2.2A (optional)

ENVIRONMENTAL

Operating temperature	-10 to +45 °C
Operating altitude	<2800 metres
Humidity	<90% (non condensing)

PHYSICAL

Dimensions (mm)	485W x 445D x 88.2H (2U)
Weight	6kg

TELEMETRY

Alarms (voltage free)	Forward, Reflected, Temp, PSU
Command inputs	Mono/Stereo, RF enable
DC Outputs	Forward, Reflected, +12V (jig)

COMPOSITE SPECIFICATION

W/B amplitude response	+/- 0.2dB (30Hz to 100kHz)
W/B stereo separation	>60dB (typical 67dB) 30Hz to 15kHz (decoded)
W/B stereo crosstalk	>50dB (30Hz to15kHz) L+R into L-R
Total harmonic distortion	<0.1% (Typical 0.035%) 30Hz to 15kHz (decoded)
FM S/N ratio (stereo)	>75dB (30Hz to 15kHz)
I/P impedance	10k ohm unbalanced
Deviation sensitivity	3.5V p-p (adjustable)

STEREO OPERATION (with 50uS de-emphasis)

AF amplitude response	+/-0.2dB (30Hz to 15kHz)
Stereo separation	>60dB 30Hz to 15kHz (decoded)
Mono/Stereo crosstalk	>50dB (30Hz to15kHz)
Stereo distortion	<0.1% (30Hz to15kHz)
Stereo S/N ratio	>75dB (30Hz to 20kHz)
Input impedance	600 ohm balanced (XLR)
Deviation sensitivity	+6dBm for +/-40kHz deviation (adj)
Pre-emphasis	50 or 75uS (internal link)

STEREO LIMITER (Option 1)

Audio limiter sensitivity	10dBm nom. for 68kHz deviation
Attack time	< 2mS for increased 10dB I/P step
Decay time	>80mS for decreased 10dB I/P step
Limiter distortion	< 0.25% (10dB into limiting)
Limiter threshold	Internally adjustable

RDS ENCODER

Internally fitted Option	Factory Programmed PI, PS, AF only

STANDARDS

Complies with CCIR Recommendation BS.450-1 (1), 412-5 (3), 468-4 ETS 300, 384. FCC Certified for the USA market.

PARAMETER - UHF Receiver

RF SPECIFICATION

Frequency range	300MHz - 950MHz (see frequency table on front page)
Input sensitivity	150µV for 60dB S/N ratio
Frequency synthesizer	Dual PLL (down-converted)
Frequency steps	100kHz (local/remote)
Frequency stability	+/- 2ppm
Frequency deviation	+/- 75kHz peak
RF input connector	N-type (female) 50 Ohm
Baseband O/P's	BNC
Diversity I/P	BNC (loop through)

POWER SUPPLY

AC power input	230V / 50Hz or 115V / 60Hz
DC power input	+24V (battery)
Mains variation	+10% - 15%

ENVIRONMENTAL

Operating temperature	-10 to +45 °C
Operating altitude	<2800 metres
Humidity	<90% (non condensing)

PHYSICAL

Dimensions (mm)	485W x 350D x 44H (1U)
Weight	3kg

TELEMETRY

Alarms (voltage free)	Receiver muted, PSU Mono/Stereo, PLL lock.

BASEBAND OPERATION

Stereo separation	>50dB 30Hz to 15kHz (decoded)
Stereo crosstalk	>45dB (60 dB at 1kHz , typical
Stereo distortion	<0.25% (typical 0.08% at 1kHz)
Stereo S/N ratio	>70dB (30Hz to 20kHz) 50us de-emph.

STEREO DECODER

Stereo decoder	75kHz for +10dBm. De-emph 50us standard
Stereo separation	>35dB 30Hz to 7.5kHz (50dB at 1kHz)
Stereo distortion	<0.25% (typical 0.1% at 1kHz)
Stereo S/N ratio 1mV input	>70dB
Headphone level	-3dBm / 600 ohm

Dynamic selectivity (wanted to unwanted) for 54dB

0kHz	-46dB
100kHz	-37dB
200kHz	0dB
300kHz	33dB

For more detail refer to selectivity parameters on front page of the brochure.

TELEMETRY

Alarms (voltage free)	Receiver muted, PSU, Forced changeover, Alarms (open collector) PLL lock, Program loss.

FRONT PANEL METERING

EX1-STL	Amplifier status (Fwd, Refl, Temp), Power supply status, Demodulated audio, Deviation
RX1-RBR U	Receiver status (mute), Power supply status, Received audio level, Received field strength

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