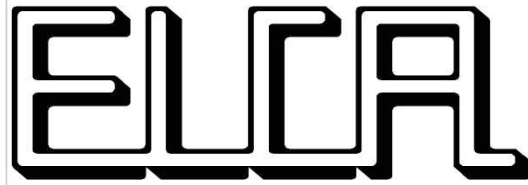


DLT2G DLR2G

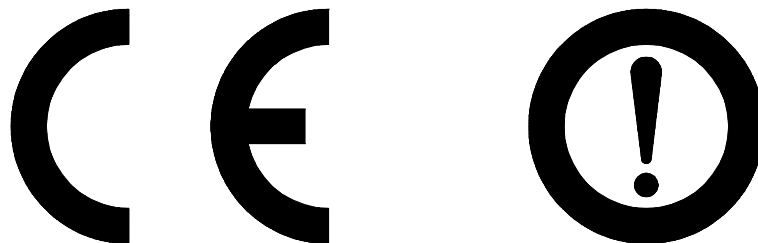
studio transmitter link



EL.CA Electronic Systems Srl
via Adda 5
21057 Olgiate O. VA ITALY



ACCORDING TO **R&TTE** RULES



STATO	RESTRIZIONI ALL'USO	RANGE DI FREQUENZA (in MHz)
ITALIA	Richiesta la licenza individuale e massima potenza ammessa 2W	2367-2372/2440-2450/2468- 2483.5

DLT2G STL TRANSMITTER***TRANSMITTER SPECIFICATIONS***

TYPE	solid state direct FM frequency synthesized crystal referenced thermal compensated
FREQUENCY STABILITY	better than 2ppm-----0°-+40°C ±1000Hz/year
FREQUENCY RANGE	1300-2500MHz in 30MHz steps.
FREQUENCY SETTING	in 50 or 100kHz steps
INTERNAL SETTING MODE	by encoder
RF OUTPUT PW	0 up to 5W directly digitally programmable (1.35-2GHz) 0 up to 4.5W directly digitally programmable (2-2.5GHz)
PW RESOLUTION SETTING	0.1W
PW CONTROL LIMIT SETTING	0.1 to 5W 1.35-2GHz 0.1 to 4.5W 2-2.5GHz
PW CONTROL STABILITY	<0.1dB
REV. OUTPUT PW CONTROL LIMIT	2W
HARMONICS	<-60dBc
SPURIOUS EMISSION	<-90dBc
CARRIER REDUCTION PW	>35dB (carrier enable OFF)
ASYNCHRONOUS AM S/N RATIO	better than 40dB
SYNCHRONOUS AM S/N RATIO	better than 60dB
MODULATION TYPE	direct VCO frequency modulation
NOMINAL FREQUENCY DEVIATION	±75kHz
DEVIATION LINEARITY	±0.1dB
PEAK DETECTOR ERROR	<0.1dB
MODULATION CAPABILITY	
	MONO (left or right) -----30Hz to 15kHz
	STEREO (by internal Stereo Generator) -----30Hz to 53kHz
	SCA (two channels) ----- 30Hz to 100kHz
	COMPOSITE----- MONO or STEREO + SCA

CHARACTERISTICS IN MONO (OPTION A)

Signal input -----	Left + Right
Input connector -----	XLR
Input impedance-----	600Ω (balanced) or 10kΩ (unbalanced)
Unbalance rejection-----	>40dB
Input level -----	0 up to +13dBm
Pre-emphasis-----	75 or 50μs, selectable by a jumper

Audio frequency response(30Hz to 15kHz) ----- <0.1dB
Audio frequency response(19kHz to 100kHz) ----- <-40dB

INTERNAL STEREO CHARACTERISTICS (OPTION A)

Signal inputs ----- Left or Right
Input connector ----- XLR
Input impedance----- 600Ω (balanced) or 10kΩ (unbalanced)
Unbalance rejection----- >40dB
Input level ----- -0 to +13dBm
Pre-emphasis----- 0, 50 or 75μs, selectable by jumper
Cross-talk between left and right channel----- >50dB
Stereo separation between left and right channel ----- >50dB
Distortion at frequency deviation of 75kHz ----- <0.05%
Distortion at frequency deviation of 100kHz ----- <0.05%
Suppression of 38kHz ----- >70dB
Spurious suppression outside band----- in according to ETS 300-384
Pilot reference for RDS encoder (19kHz out) ----- 1Vpp

SCA CHARACTERISTICS

Input SCA ----- BNC unbalanced
Input impedance----- 10kΩ
Distortion----- <0.1%
Modulation capability ----- 0-10%

COMPOSITE AMPLITUDE RESPONSE

Mono ±0.15 dB - typ. 0.12dB ----- 30Hz-5kHz
<-40dB - typ. <-50dB ----- 19kHz-100kHz
Int. Stereo (L/R Ch) ±0.15 dB - typ. 0.12dB ----- 30Hz-15kHz
<-40dB ----- 50kHz-100kHz
Ext. Stereo (MPX) <±0.15 dB ----- 30Hz-5kHz
SCA 1, 2 <±0.1 dB ----- 50kHz-100kHz

COMPOSITE FM S/N RATIO

(referred to ΔF=±75kHz and 50μS de-emph.)

Mono >70 dB----- 30Hz-20kHz filter bandwidth
Int. Stereo >70 dB ----- L-R, decoded, 30Hz-20kHz filter bandwidth
Ext. Stereo (MPX) >70 dB----- L-R, decoded. 30Hz-20kHz filter bandwidth

TOTAL HARM. DISTORTION

(referred to ΔF=±75kHz and 50μs de-emph.)

Mono <0.03% ----- 30Hz-20kHz bandwidth
Int. Stereo (L/R Ch) <0.03% ----- 30Hz-20kHz bandwidth
Ext. Stereo (MPX) <0.03% ----- 30Hz-20kHz bandwidth

AUDIO SWITCH (OPTION C)

MPX1 / MPX2 ----- Local or Remote control

READOUT ON LCD DISPLAY (40x4 characters)

Forward power resolution -----0.1W
Reverse power resolution -----0.1W
Modulation resolution----- 1kHz
Power amplifier voltage resolution-----1V
Heatsink temperature resolution ----- 1°C

REMOTE CONTROL (OPTION C)

LAN for internet connection -----two RJ45 with Ethernet switch
Local or remote BROWSER ----- WEB (Explorer , Mozilla , ...) or SNMP

POWER SUPPLY and TEMPERATURE RANGE

AC operating voltage -----100-250V_{ac} ±15%
DC operating voltage ----- 20-26V_{dc} ±10%
Line power ----- <75VA
Nominal temperature range ----- -5° to 40°
Operating temperature range ----- -10° to 45°
Storage temperature range ----- -40° to 50°

MECHANICAL SPECIFICATION

19" rack mount ----- 485x86x320mm
Weight -----5kg

OPTIONS

Option A ----- STEREO GENERATOR
Option C ----- REMOTE CONTROL
Option D ----- INSULATOR

DLR2G STL RECEIVER***RECEIVER SPECIFICATIONS***

FREQUENCY RANGE	1300-2500MHz in 30MHz steps.
LOCAL OSCILLATOR TYPE	direct (Fi +/- 10.7MHz) FM frequency synthesized crystal referenced thermal compensated
FREQUENCY STABILITY	better than 2 ppm -----0°-+40°C ±1000Hz/year
FREQUENCY SETTING	in 50 or 100 kHz steps
INTERNAL SETTING MODE	by encoder
SENSITIVITY Stereo	-66dBm or less required for 60dB SNR (left or right channel demodulated, decoded and de-emph.)
Mono	-86dBm or less required for 60dB SNR (20Hz±20kHz and de-emph)
SELECTIVITY (wide IF bandwidth)	
STATIC	3dB IF bandwidth -----±100kHz
(IF bandwidth)	50dB IF bandwidth -----±250kHz
	60dB IF bandwidth -----±280kHz
DYNAMIC	±100kHz -----45dB
(according to ITU-BS412)	±200kHz ----- -10dB
	±300kHz ----- -30dB
	±600kHz ----- >-40dB
SELECTIVITY (narrow IF bandwidth)	
STATIC	3dB IF bandwidth -----±100kHz
(IF bandwidth)	50dB IF bandwidth -----±200kHz
	60dB IF bandwidth -----±220kHz
DYNAMIC	±100kHz -----45dB
(according to ITU-BS412)	±200kHz ----- -20dB
	±300kHz ----- -35dB
	±600kHz ----- >-45dB
SQUELCH THRESHOLD	-90dBm to -10dBm, directly digitally programmable with 1dB increment step.
RF INPUT SIGNAL DINAMIC	-100dBm to 0dBm.
MODULATION OUTPUT	MPX, two BNC connectors, 0-12dBm, bal, unbal., Zout<100Ω MONO, L&R XLR connectors, 0-12dBm, bal, Zu=<100Ω
FREQUENCY RESPONSE (wide IF bandwidth)	
MPX OUTPUT	±0.1dB----- 40Hz-53kHz
	±0.5dB----- 53-75kHz
	-0.5dB ----- 75-100kHz
	<-60dB ----->140kHz

STEREO SEPARATION (wide IF bandwidth)

MPX out	>50dB or better -----	40Hz-5kHz
	>50dB or better -----	5kHz-15kHz
L & R DECODED (OPT. A)	>50dB or better -----	40Hz-5kHz
	>50dB or better -----	5kHz-15kHz

FREQUENCY RESPONSE (narrow IF bandwidth)

MPX OUTPUT	±0.3dB-----	40Hz-53kHz
	±0.5dB-----	53-75kHz
	-50 dB -----	90kHz
	<-60dB -----	>100kHz

STEREO SEPARATION (narrow IF bandwidth)

MPX out	>45dB or better -----	40Hz-5kHz
	>40dB or better -----	5kHz-15kHz
L & R DECODED (OPT.A)	>45dB or better -----	40Hz-5kHz
	>40dB or better -----	5kHz-15kHz

STEREO CROSSTALK	MPX out	>40dB or better -----	40Hz÷15kHz
DISTORTION THD	MPX	<0.1%-----	(L or R decoded & de-emph.)40Hz-5kHz
	L&R	<0.1 % -----	40Hz-5kHz

DE-EMPHASIS (MONO output) 50 or 75µs factory set.

DE-EMPHASIS (L-R Ch. decoded)
(OPTION A) 0 - 50 - 75µs by Software

ALARM
(one reed contact)

carrier detect
internal power supply
external power supply
lock detect.

REMOTE CONTROL

field
frequency
external battery level
alarms
squellch threshold
modulation

REMOTE CONTROL (OPTION A)

LAN for internet connection -----two RJ45 with Ethernet switch
Local or remote BROWSER ----- WEB (Explorer , Mozilla , ...) or SNMP protocol

POWER SUPPLY and TEMPERATURE RANGE

AC operating voltage-----	85-240V _{ac} ±15%	<50VA
DC operating voltage-----	20-28V _{dc} ±10%	<1A
Line power -----		<50VA
Nominal temperature range-----		-5° to 40°
Operating temperature range -----		-10° to 45°
Storage temperature range-----		-40° to 50°

MECHANICAL SPECIFICATION

19" rack mount -----	485x86x320mm
Weight -----	5kg

OPTIONS

Option A-----	REMOTE CONTROL - STEREO DECODER - MONO, MPX and, RDS REGENERATION, BB FFT via WEB	-
---------------	--	---

DIFFERENCES BETWEEN THE OLD AND THE NEW STL 2GHz

TRANSMITTER DLT2G

The new DLT2G transmitter features electrical characteristics similar to the previous one. However, regarding to the quality of the emitted signal, it differs from the previous one for the following points:

- 1) Its construction is much more simple, therefore is much more reliable.
- 2) It's totally made in SMD multilayer circuits using the latest generation components.
- 3) A single powerful microprocessor controls the entire transmitter.
- 4) It can be provided with the optional fully digital STEREO CODER board made with DSP technology.
- 5) It can be provided with the optional control board and software similar to the ones designed for the STAR series with Ethernet switch on board.
- 6) It can be provided by an audio switch (MPX1/MPX2) with control in both local and remote mode.
- 7) The synthesized oscillator works on the fundamental frequency. Therefore all the RF circuits are broadband and don't require band calibration. Moreover the transmitter spurious frequencies aren't measurable.

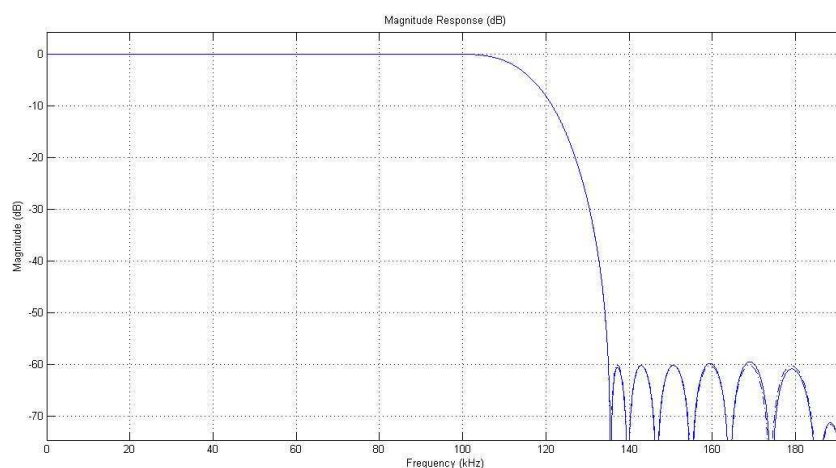
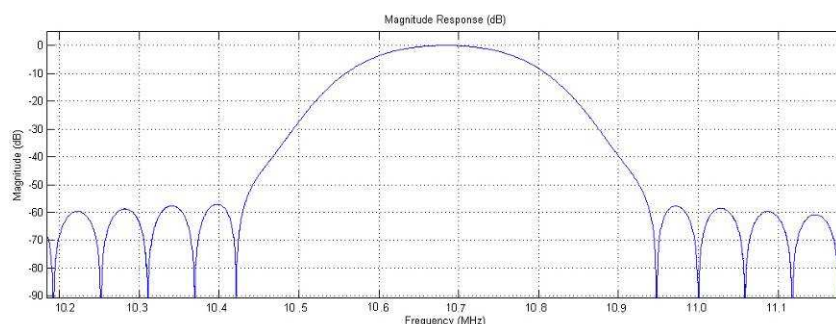
RECEIVER DLR2G

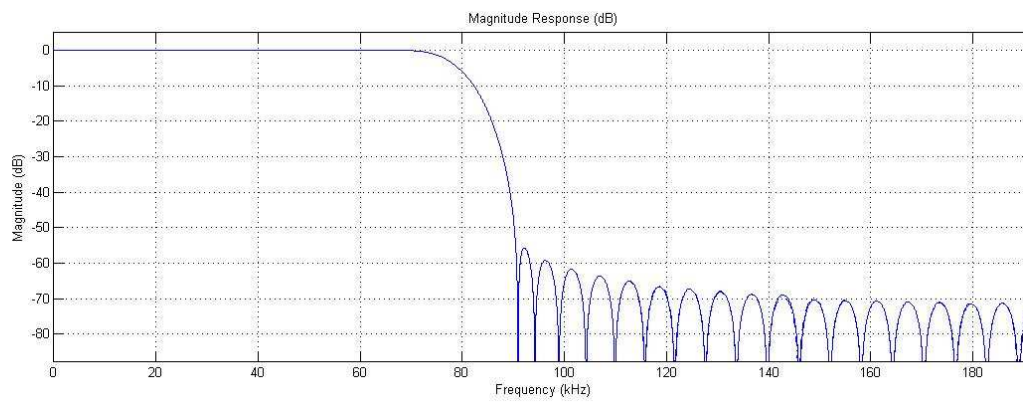
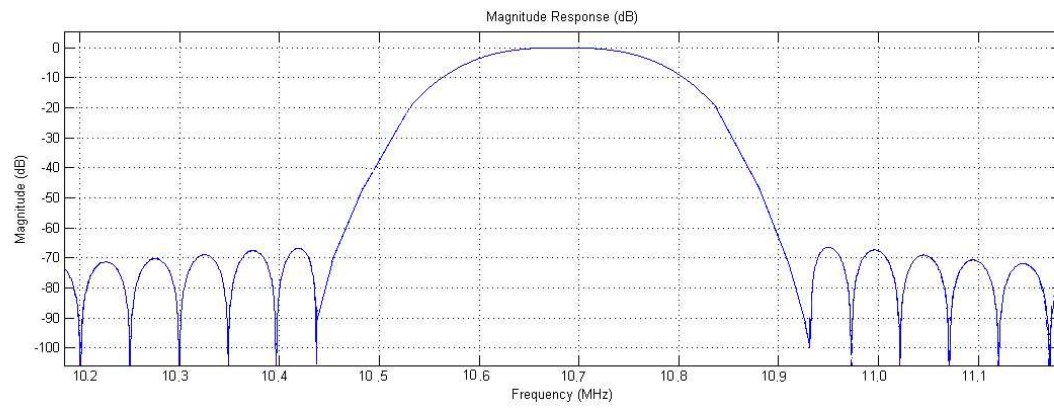
The new DLR2G receiver is totally different from the previous one for the quality of the received signal, for its construction and for the digital technology used to filter and demodulate the received RF signal (DSP). The main features are:

- 1) The input RF circuits features a very low noise figure ($NF < 1\text{dB}$) and high dynamic ($IP3 > 35\text{dB}$).
- 2) Easily tunable and very selective ($BW = 5\text{MHz}$) input filter.
- 3) High level (17dB) mixer for a low intermodulation and simple conversion at 10.7 MHz , allowed by a remarkable selectivity of the input filter.
- 4) Three automatic gain control circuits for a high linearity even for very strong signals.
- 5) Input dynamic greater than 100 dB .
- 6) Totally digital intermediate frequency; linear phase IF filters not achievable with analogue circuits, and digital demodulator
- 7) It can be provided with two really narrow IF filters (wide, narrow), much more narrow than the ceramic analogue ones, and featuring with very low signal distortion characteristics.
- 8) Excellent adjacent signal rejection at $200\text{--}400\text{ kHz}$.
- 9) Excellent low signal intermodulation at $400\text{--}3000\text{ kHz}$.
- 10) Minimum loss of quality between the wide and narrow filter: however, with the narrow one the quality is always higher than the one of a good analogue receiver provided with a much wider IF filter.
- 11) Unlike analogue filters which have problems of adjustment, stability and repeatability, the digital ones are absolutely stable and all equal. They are easily editable by software for special applications and do not require adjustment. They feature a perfectly linear phase, and this simplifies the demodulation of the stereophonic signal.

- 12) Digital IF signal demodulation with extremely low phase and amplitude distortion, mainly due to the bandwidth of the IF filters slightly reducing the energy of the received signal.
- 13) Two selectable low-pass filters on the demodulated signal, the first at 70kHz and the second at 100kHz. Both filters feature an out-of-band attenuation of 60dB and an in-band ripple of only 0.05dB. If implemented with analog circuitry, these filters would have required the use of many high Q inductances and capacitors followed by complicated phase equalizers.
- 14) On the first intermediate frequency, the receiver is equipped with a surface wave filter with BW=0.5MHz. At the first conversion stage, a 20dB attenuator is also fitted between the antenna filter and the low-noise amp. (NF<1dB): such device is used for dealing with very strong or interfering input signals, and can be controlled by software both manually and automatically.
- 15) The receiver can be supplied with an optional board (Option A) featuring the following characteristics:
 - a) Same REMOTE function as implemented in the STAR series transmitters, with dual RJ45 (Ethernet switch)
 - b) Digital STEREO DECODER with electronically filtered Left/Right output levels adjustable from -12dBm to +13dBm
 - c) Regenerated MPX achieved by a new DIGITAL CODER with decoded and filtered L/R inputs
 - d) Filtered RDS signal, which is decoded, recoded and then regenerated
 - e) Completely regenerated composite output signal (MPX+RDS) with no out-of-band noise, adjustable from -12dBm to +13dBm
 - f) The RDS signal can be removed from the regenerated composite output in order to inject a different local RDS signal

The diagrams of the digital filters are shown below.





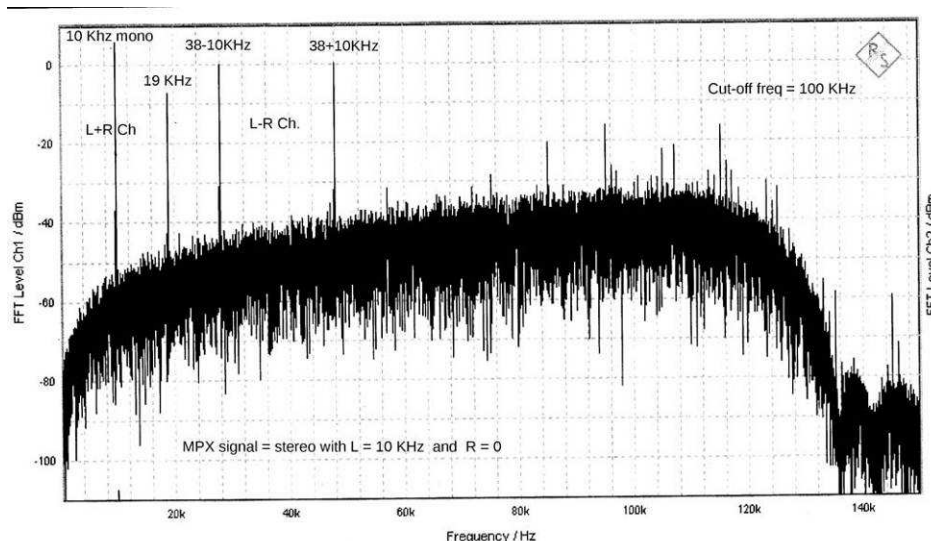
TESTING THE NEW DLR2G

A comparison of the demodulated MPX output signal was made between the old analog receiver and the new digital receiver with signal regeneration; the test was carried out using the same signal at the same frequency for both receivers.

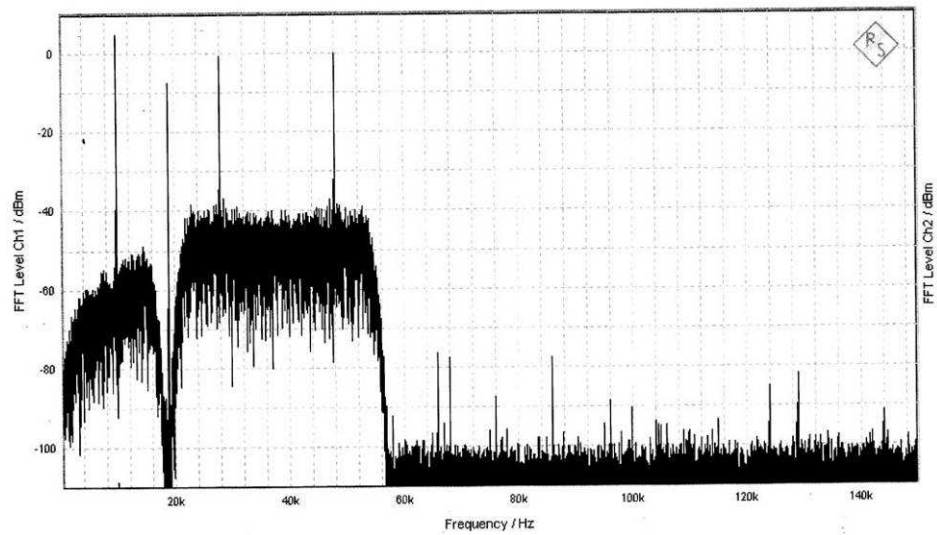
In order to achieve a low signal to noise ratio, a very low RF input signal was used; the audio signal spectrum was measured at the two MPX outputs (analog and digital); the difference in quality between the two signal is highly remarkable:

- 1) The stereo subcarrier is very pure ($\text{SNR} > 80\text{dB}$ Vs 30dB), which ensures a continuous stereo lock not intermitted even with weak signals or interferences coming from the adjacent channel.
- 2) The cutoff frequency of the MPX signal is exactly 53 KHz; any noise beyond this value was eliminated, thus increasing the SNR of the RF signal in order to transmit a much cleaner signal.
- 3) The receiver installed in a car will receive a signal which is much easier to decode, with lower noise level.
- 4) This allows for a higher number of links in cascade, with the resulting signal at the end of the chain still complying with the regulations.
- 5) Enabling a filter which eliminates the incoming RDS signal, which also allows injecting a different local RDS signal, can be done by software.
- 6) Switching to an external MPX, for example a signal from a satellite, can be done by software as well.
- 7) The new DLR2G is equipped with two squelches. The first one is the usual “mute” circuit, whereas the second one switches the receiver from STEREO to MONO in case of weak signals, with a 20dB SNR gain achieved by losing the stereophonic sound. Both thresholds can be adjusted from -10dBm to -90dBm .

FFT of a good analogue RX



FFT of the digital DLR2G receiver



TRANSMITTER SETTINGS

Before turning the TX on, make sure that the mains voltage is within the operating range specified for the equipment (100-240V_{AC}) and the power cable is properly connected to the ground. Then connect the equipment to an antenna or dummy load capable of handling a power of more than 5W.

TURNING ON THE TRANSMITTER

When the equipment is turned on, a page appears which remains displayed for just a few seconds, the time required for the transmitter to stabilize at the factory settings.

After a few seconds, the page shown below is displayed, which contains the current operating parameters of the equipment.



By operating the encoder knob you can move the cursor to the needed setting.

When the cursor reaches the bottom of the page, it changes its shape to allow access to the next menu pages, which provide further information about the equipment.

The last two lines at the bottom appear on every page of any submenu, and indicate whether an alarm condition exists for the equipment, along with the current time.

FORWARD POWER

Move the cursor to the **Frw Pwr** setting and press the knob to enter this menu: the following page will appear.



In this page you can set the output power in 0.1W steps and turn the output power off by software putting the TX in stand-by mode.

The PW OUT can also be turned off by hardware through the **Carrier Enable** contact available on the **DB9 Measure** connector located on the rear panel: the PW OUT is turned off by grounding pin 8 and restored by removing the ground connection. When the C.E. is enabled, a caption appear on the

first page.

To operate these commands you must move the cursor to the relevant menu item and press the knob: the parameter can now be set to the needed value.

To exit the page and return to the main menu, press and hold the knob for a few fractions of a second.

FREQUENCY

Move the cursor to the **Frequency** setting and press the knob to enter this menu: the following page will appear.



By operating the knob as before explained you can select a different frequency from the one currently set, obviously provided that it falls within the allowed range: by moving the cursor you can change the frequency value, expressed initially in kHz and then in MHz. At the end of the operation, the caption “**pres**” is displayed. To switch the equipment to the new frequency just briefly press the knob.

By moving the cursor to the **FINE** setting and then pressing the knob, the fine adjust of the frequency value is available

if necessary. This allows to make the TX frequency value set on the transmitter exactly matching with the one read on a frequency meter.

As usual, hold down the knob for a few fractions of a second to exit the current menu page and return to the previous one..

MODULATION

Move the cursor to the **Modulation** setting and press the knob to enter this menu: the following page will appear.



Here you can check the audio level and change it to the needed value: all input levels between -1dBm and +13dBm are allowed.

If, for example, an input audio level of 0 dBm has been set for the device but you need to use a +6dBm input signal, you should move the cursor to the **LEVEL** setting and change the value to the needed one.

If the set value is the same of MPX input one at BNC connector, the bottom bar will stop at the 0 value and a reading of 0.0dB will be displayed. However, if the two values are different, the bar won't stop at the 0 value and the difference, expressed in dB, will be displayed beside the bar. For example, if a +6dBm signal is applied at the input and the **LEVEL** setting for the device is set to 0dBm, the bar fills up to the +6 value and a reading of +6.0dB is displayed.

You can exit this menu by following the same procedure described before: holding down the knob for a few fractions of a second brings you back to the previous menu.

By accessing the **Sca1 Level Adj** submenu you can adjust the level of deviation of the signal that is available at the BNC SCA input.

Since no accurate reference is available for this input, the subcarrier level must be checked with a spectrum analyzer, increasing or decreasing the value (number) displayed in this page until it matches the needed value.

OPTIONS

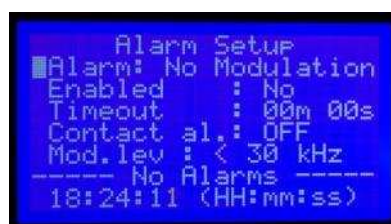


By accessing this menu page you can check a number of available options: **Remote-Stereo-Insulator**, the installed **Firmware** release and the equipment **Serial N.**, which is particularly important in case the REMOTE option is installed, because it enables the user to set the parameters when in **Remote** mode.

The page appears as per the figure on the left. To exit, proceed in the usual way by holding down the knob for a few fractions of a second.

N. LOG ALARM

This menu allows to check and set all the available alarm options.



The first two lines of the submenu, **AC Events Log** and **TX Events Log**, are used to check the alarms currently stored in memory: for each of them the date, time and type of the alarm is recorded, along with the date and time in which the system returned to its normal operating condition. The equipment can store in memory up to 100 alarm events. When this value is reached, a FIFO policy is used which deletes the oldest alarm and places the newest one at the top of the stack.

Moving the cursor to the **Events Log Setup** setting, and pressing the knob, gives access to the relevant submenu, where the pages in the figure above are shown in sequence.

Except the **AC-Alarm** option, which can only be enabled, all other available alarms can be enabled with the **ENABLE** setting as well as delayed by setting the relevant **TIMEOUT**. Finally, the alarm relay can also be enabled: its N.C./N.O. contacts are available on pins 4 and 5 of the DB9 MEASURE connector, located on rear panel.

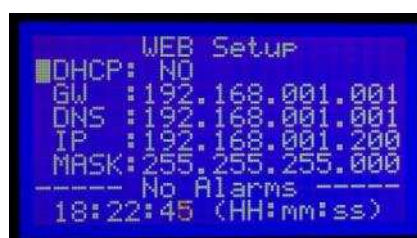
The **NO MODULATION** alarm also includes the **MOD. LEV.** setting, whose factory setting is <30KHz in order to take into account the stereo + RDS subcarriers.

CLOCK ADJ



In this page the system date and time can be set.

REMOTE SETTING



Provided that the REMOTE option is available in the equipment, by moving the cursor to the *Setting* menu and clicking on it, you gain access to the *Remote setting* submenu where, with the *Status* setting on the first line of the page, you can select whether the settings should be available in *Local* or *Remote* mode.

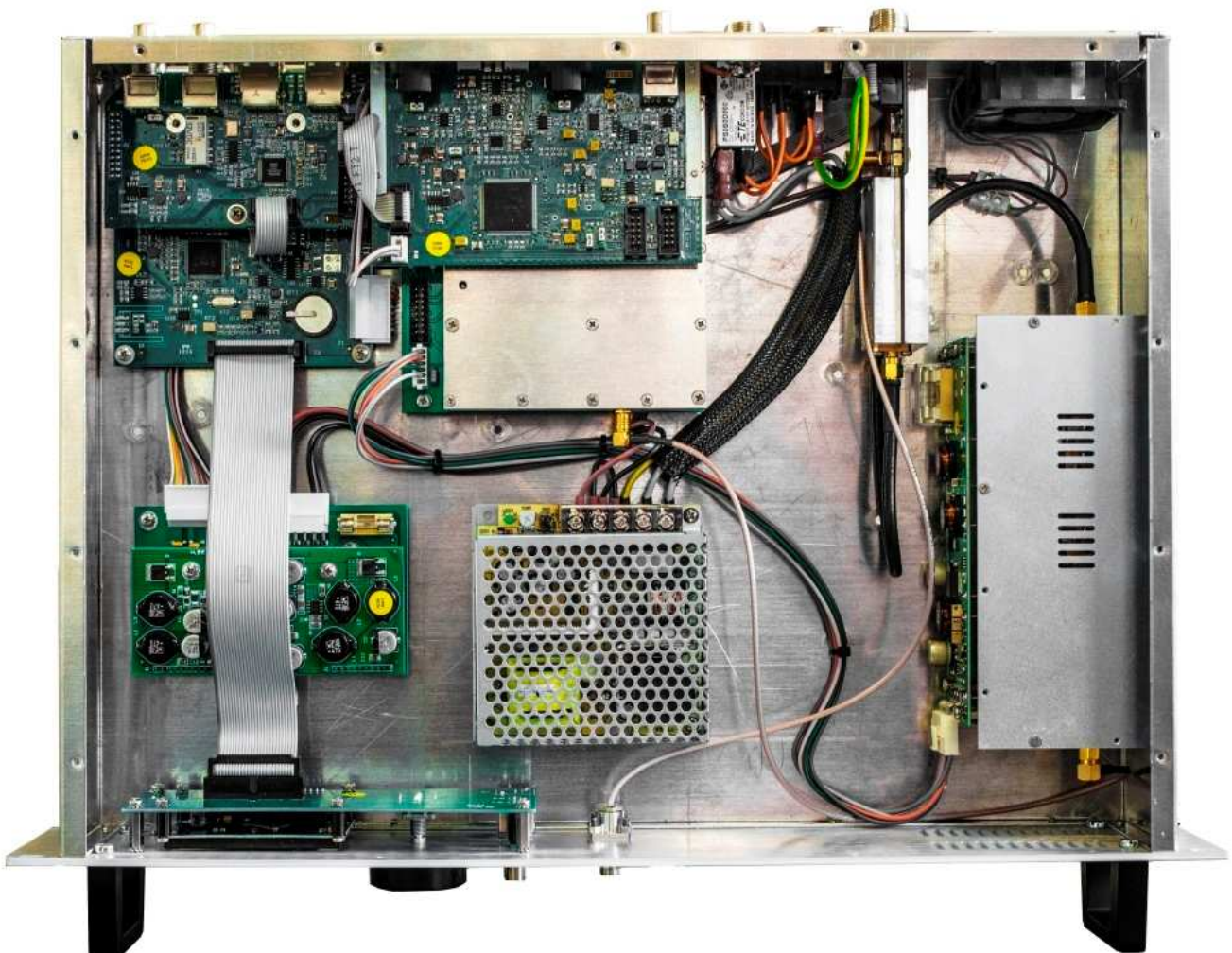
As a rule, *Local* is selected when testing the equipment in a laboratory or at the station, but be sure to remember to switch the setting to *Remote* afterwards, so you can remotely control the equipment over the web.

Through the *WEB Setup* setting on the second line, you can set the configuration parameters of the available WEB SERVER or LAN.

DLT2G FRONT PANEL



DLT2G INSIDE VIEW



DLT2G REAR PANEL



DLT2G REAR PANEL (STEREO and REMOTE OPTION)



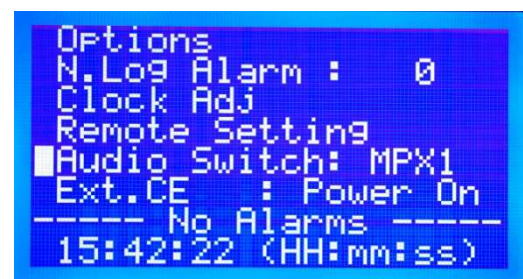
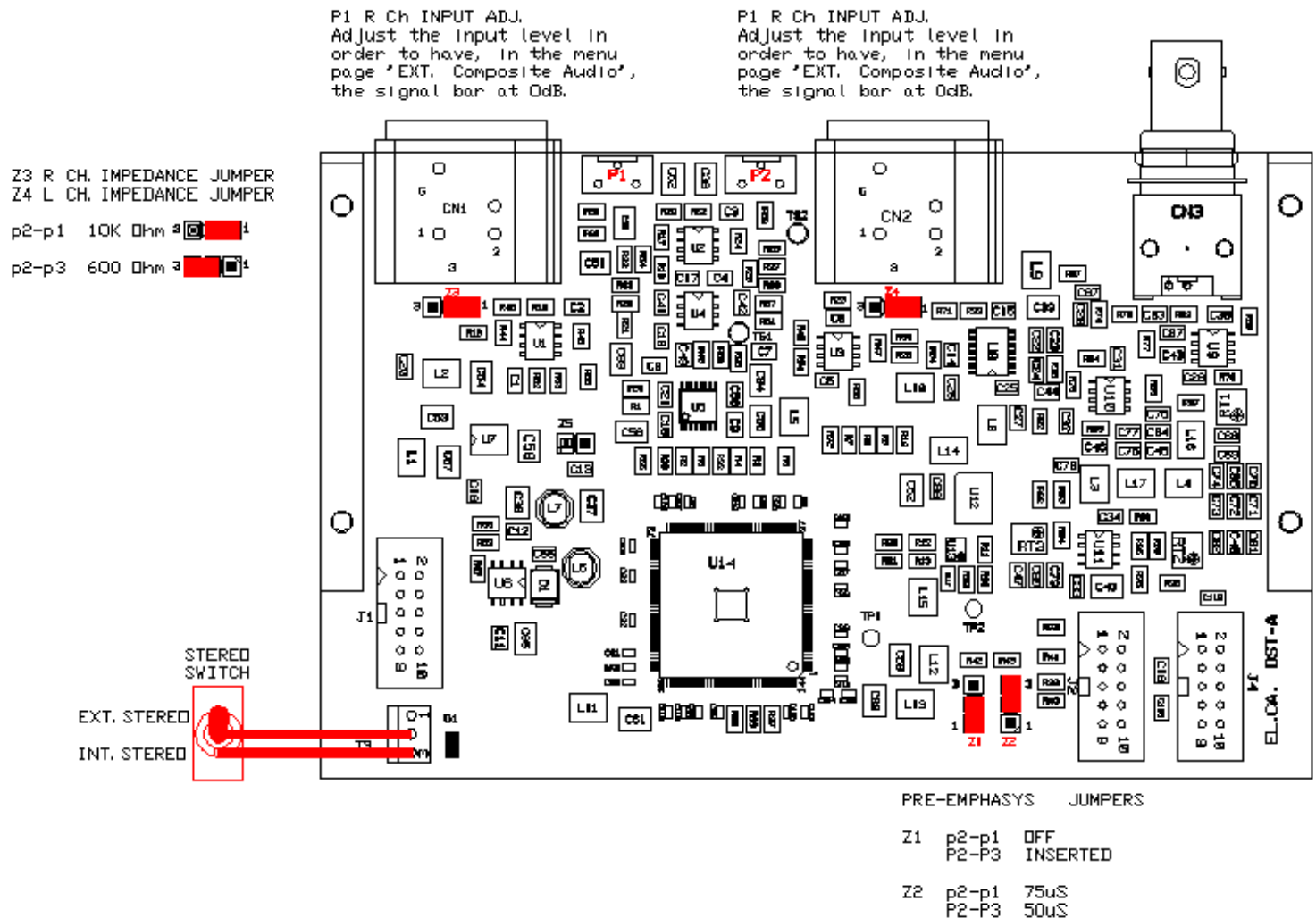
STEREO SECTION: (option A)

INT. MPX	Internal Stereo Coder is working
EXT. MPX	External MPX Input is working
LEFT Ch. Adj.	Input level adjustment (factory set at +6dBm)
RIGHT Ch. Adj.	Input level adjustment (factory set at +6dBm)
19kHz Sync.	Stereo subcarrier 19kHz output

MEASURE DB9 connector:

pin1	input Audio signal level
pin3	ground
pin4	N.C. alarm out
pin5	N.O. alarm out
pin6	refl. PW
pin8	Carrier Enable
pin9	fwd PW

DST card (Internal Stereo generator)



When the DST card is on board, check that on the proper page the “Audio Switch” is set on “MPX1” (usually factory set).

RECEIVER SETTINGS

After making sure that the power supply and the signal at the “N” input are properly set, you can turn the receiver on.

TURNING THE EQUIPMENT ON

When the equipment is turned on, a page appears which remains displayed for just a few seconds, the time required for the transmitter to stabilize at the factory settings.

After a few seconds, the page shown below is displayed, which contains the current operating parameters of the equipment.



By rotating the encoder knob, you can move the cursor to the needed setting.

When the cursor reaches the bottom of the page, it changes its shape to allow access to the next menu page, which provides further information about the equipment.

The procedure to check the parameters or change their value is the same for any section of menu: rotate the knob to move the cursor to the needed setting, then press and release the knob to enter the submenu. Proceed in the same way to access any sub-settings in the menu.

There are three menu settings that require you to press the knob three times in sequence to confirm the operation: **Frequency**, **AC alarms log erase**, **RX alarms log erase**.

The last two lines at the bottom appear in every page of any submenu, and indicate whether an alarm condition exists for the equipment, along with the current time.

Whenever you need to access a previous page, higher up in the menu hierarchy including the main menu, press and hold the encoder knob for a few fractions of a second.

RF FIELD



This setting shows the value of the signal level received at the antenna input.

With this setting you can access the page which displays the value of other control items, as shown in the figure on the left side.

FREQUENCY

This page allows to set a new operating frequency value or to perform a fine frequency adjustment.



By operating the knob as before explained you can select a different frequency from the one currently set, obviously provided that it falls within the allowed range: by moving the cursor and clicking on the **New** setting, you can directly change the frequency value in 1kHz, 10kHz steps, etc. At the end of the operation, the caption “**pres** “ is displayed. To switch the equipment to the new frequency just briefly press the knob.

By moving the cursor to the **FINE** setting and then pressing the knob, the fine adjust of the frequency value is available if necessary. This allows to make the RX frequency value set on the transmitter exactly matching with the one read on a frequency meter.

As usual, hold down the knob for a few fractions of a second to exit the current menu page and return to the previous one.

MODULATION

By clicking on this setting you get access to the page shown below where, as was the case for the TX, you can check the difference between the set Audio Out Level and the measured one.



By pressing again the knob while in this page, a submenu is accessed where the items for several settings are listed.

In the standard version of the equipment, only the first setting **Audio Out** is active; it allows to set the level of the MPX output signal to the needed value in the -1dBm to +13dBm range.

The other four items in the page are only enabled if the optional DEM board is installed; it provides a completely regenerated audio signal with Left&Right output, 19KHz subcarrier, MPX signal rebuilt through an embedded stereo generator, regeneration of the RDS signal or suppression of the RDS subcarrier, automatic mono-stereo switching below a preset squelch level, etc.

SQUELCH



In the page selected by clicking on the **Squelch** setting, you can check the current levels for several parameters and set new values. Two of them, **St./Mono** and **RDS out**, are only available if Option A is installed.

Mute : this submenu allows to set the value of the squelch threshold.

- Status** : this submenu allows to enable or disable the squelch circuitry.
- Att. 20dB** : this submenu allows to control the operation of an AGC controller located at the RF signal input. In case of verified very strong signal at the antenna, or due to short-range radio link, or some other reason, you can enable the **Att. 20dB** in order to avoid the intermodulation products in the first conversion stage. In any case, the Auto setting is available, in which the system electronics automatically acts according to a criteria developed in years of experience with this kind of devices.
- St./Mono** : provided that the Option A is installed, this setting allows the automatic Stereo-Mono switching whenever the signal level is lower than the RF signal threshold. Conversely, whenever the signal level reaches the RF signal threshold (or is higher), the automatic Mono-Stereo switching will be provided. Let's suppose, for example, that the Mute level is set to -90dBm and the ST./Mono level is set to -70dBm: for levels over -70dBm an MPX signal will be available at the BNC output connector, for levels between -71dBm and -90dBm (a very low level to ensure an MPX signal of acceptable quality) the equipment will apply a Mono signal to the BNC output connector, whereas below the squelch threshold of -91dBm the signal at the BNC output connector will be removed.
- RDS Out** : provided that the Option A is installed, this setting allows to select whether to maintain the RDS subcarrier with its original (regenerated) signal in the reconstructed MPX signal or completely eliminate the RDS subcarrier, in case the connected Tx needs an RDS input with different parameters.

IF FILTER

By entering this submenu, you can set the narrow IF filter bandwidth in case of the presence of "dirty" adjacent signals.



When the cursor is placed on the Mode setting, three options are displayed in sequence:

- Wide** : this is the factory default setting. In this case, the bandwidth of the IF filter is such as to ensure an optimal performance for the composite signal. Although the filter bandwidth is the same as in repeaters that use analog demodulation, the very sharp slopes, only achievable with digital technology, remarkably increase the signal quality.
- Narrow** : in case of adjacent signals which tend to degrade the quality the composite signal, digital demodulation techniques allows to use a narrower IF filter while maintaining a good quality of the MPX output signal. Enabling this filter reduces stereo separation from 57 dB to 47 dB, but increases immunity to adjacent signals by 6-7dB.
- Narrow Mono** : only used for MONO signals at the BNC output.

CLOCK ADJ.



In this page the system date and time can be set.

REMOTE SETTING

Provided that the REMOTE option is available in the equipment, in this page you can select whether the settings should be available in **Local** or **Remote** mode by acting on the second setting, *Status*.



As a rule, **Local** is selected when testing the equipment in a laboratory or at the station, but be sure to remember to switch the setting to **Remote** afterwards, so you can remotely control the equipment over the web.

Through the **WEB Setup** setting on the second line, you can set the configuration parameters of the available WEB SERVER or LAN.

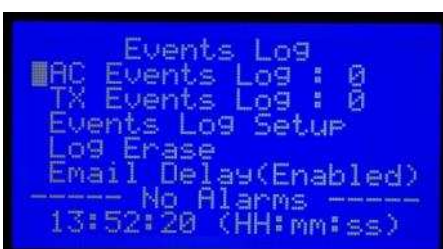
OPTIONS



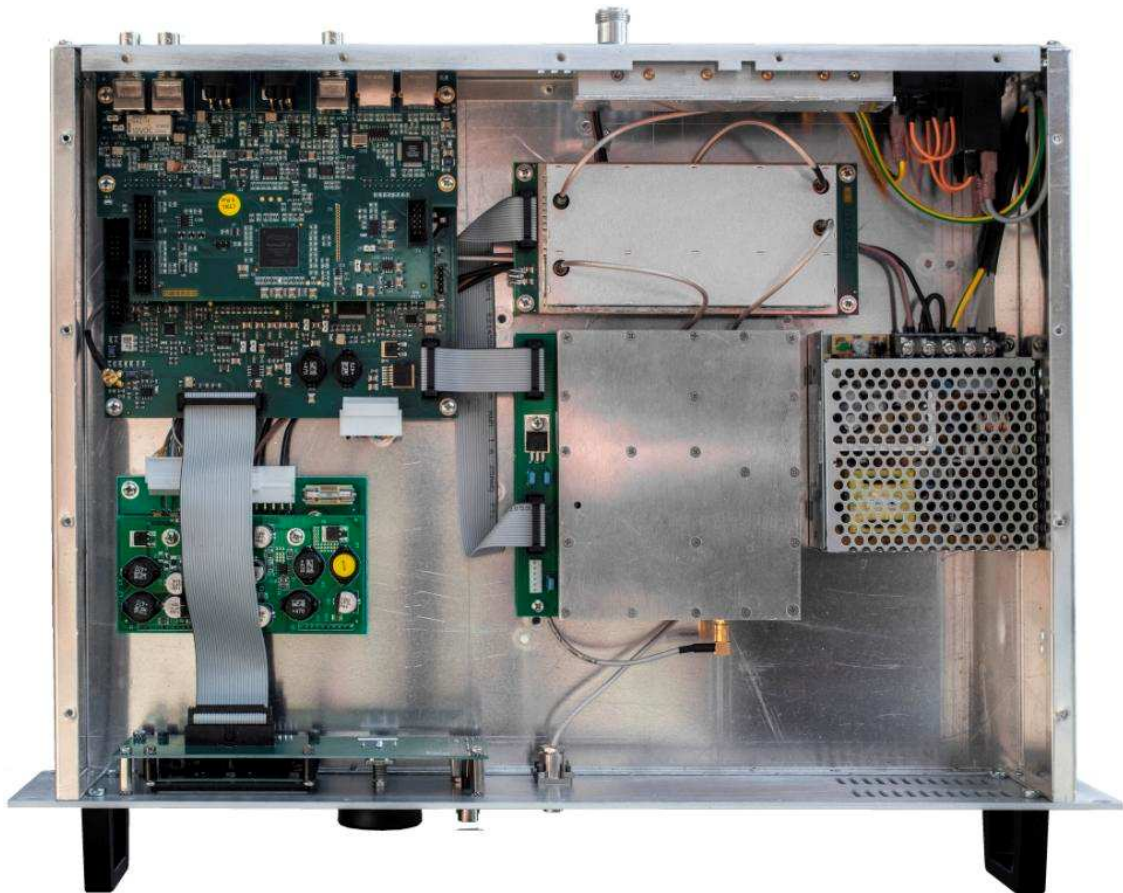
By accessing this menu page you can check a number of available options, the installed software release and the equipment Serial Number, which is particularly important in case the REMOTE option is installed.

The page is shown in the screenshot on the left. To exit the page, proceed in the usual way by holding down the knob for a few fractions of a second.

ALARMS LOG



The description is the same as for the TX.

DLR2G FRONT PANEL**DLR2G INSIDE VIEW**

DLR2G REAR PANEL



DLR2G REAR PANEL (OPTION A)



Option A section:

LEFT	Left Ch. decoded output
RIGHT	Right Ch. decoded output
OUT 19kHz	19kHz subcarrier
REG. MPX	Re-generated MPX output
EXT. MPX	Reserve External MPX input (will be switch when the equipment is in alarm status)
EXT. RDS	External RDS input. It must be adjusted for the proper level

DB9 MEASURE:

pin1	output Audio signal level
pin3	ground
pin4	N.C. alarm out
pin5	N.O. alarm out

REMOTE CONTROL VIA WEB

FIRST PAGE

