Instruction For Use (IFU) for Wireless Audio set AD905W

a) Unpack all parts: transmitter, receiver/amplifier, 14V adapter, table stand
b) Connect the rear speakers terminals to the appropriate connector sockets of the receiver/amplifier.
c) Place the receiver/amplifier unit at a minimum of 30cm above ground to avoid bad wave propagation; use the table stand as shown in the picture
d) Connect receiver/amplifier to mains by use of power cord.
e) Green led receiver/amplifier should light
f) If led is not lighting, shift small power switch next to the connectors to the ON position. Green led should light now.
g) Place the transmitter unit at a minimum of 30cm above ground to avoid bad wave propagation. Make sure transmitter and receiver are not closer than 2m from each other.
h) Connect the 14V power adapter to the transmitter
i) Connect transmitter-inputs to DVD surround – output. Be sure to connect right input to right output connector of DVD, idem for left channel? Mach the Blue and Grey colour.
j) Power up the transmitter. Red led of transmitter unit should light now.
k) Make sure that transmitter and Receiver/amplifier are using same audio transmitting/receiving channel. Please select same channel by use of the 4-position switch on both units.
l) Start the audio source, be sure that surround- mode is enabled. Set volume to position 5; surround sound should be audible in the rear speakers.
m) Rotate antenna of both receiver/amplifier and transmitter into vertical position for good reception
n) Red led on transmitter is on for at least 4 minutes. After switching off the DVD player, the transmitter goes automatically to standby mode after 4 minutes= red led off; when there is an incoming audio-signal from the DVD, the transmitter starts automatically. The transmitter is also enabled at power – up for at least 4 minutes.
o) Receiver-amplifier combination is always on for at least 10 minutes = green led on. When the transmitter stops (red led off), the receiver-amplifier will mute, green led stays on, and after ten minutes the amplifier-receiver goes into sleep-mode = red led on
p) When distorted audio is noticed, please select different channel as the interference could be caused by other equipment in your house using same freq. channel or even by one of your neighbours.
q) The metal table stand can be used for slightly upright position of the receiver/amplifier unit. If used, make sure you rotate the antenna towards vertical position.

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

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1. GENERAL

The Mark-3 transmitter is designed specifically for use with a TV set as a surround signal (Digital Dolby or ProLogic) transmitter towards wireless surround speakers.
As such the transmitter can be connected via a cable assy. towards the TV set. Audio, supply and I²C signals can be extracted out of the TV chassis. The transmitter is designed for high quality stereo audio from 20Hz to 20kHz and has a compander to enable high S/N ratios.
The basic version is intended for the European freq. band of 863-865 MHz. Derived versons are available for 433 and 914 MHz.
The pilot and subcarrier frequency have been set to 23.4375 kHz and 46.875 kHz. (3th harmonic related to 15.625 kHz). This way interference whistling in TV sets with 15625 Hz is avoided.
Further the translitter has improved pulling behaviour which results in additional immunity to picking up stray EM-fields from the TV hardware.
The Mark-3 module needs proper I²C signals from the host controller at hex C6 to properly set the synthesiser and other functions on board of the Tx. For details on I^2C commands to send refer to our document " I^2C commands for Mark-3 Transmitter" archived under 3104 217 07110 sheet 112.

2. USED TECHNOLOGIES AND DIMENSIONS

The design platform is MentorGraphics with CE design rules acc. UAND1829 & UAND1833.
The pb technology used is class 5 on FR4 1.6mm thickness, 2 layers

Component management system :	LSDB
Archiving system :	PALS / CORDIS
Stuffing technologies :	SMD in 0603/0805 size and SMD elcaps manual for some remaining components

The pb is set up as 1/6 of a 141 by 240 mm workboard .
The exact dimensioning is 80mm by 62.5mm per unit. See last sheet for sketch drawing.

3. INPUTS / OUTPUTS

The connectable transmitter has to be connected to the driving set by a shielded 8 fold flatcable .
Connector type at transmitter side : 8-fold jst type EH vertical

Wire function	Jst on pcb , pin no
R input	1
Signal ground	2
L input	3
Supply input +12V	4
Power ground + shield wire	5
Power ground	6
SCL of I2C	7
SDA of I2C	8

Note : drain wire of shield connected to pin 5 (as wiring of MG98 cable)

Input sensitivity for max deviation (50 kHz) : 0.42 Vrms
Input impedance : typ. 12 kohm
Driving impedance (from TV source) : < 100 ohm

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4. FEATURING

The following main features are installed :
-no spurious RF power output when applying DC power to the Mark-3 module.
-pilot mute possibility to mute the speaker remotely
-pilot mute at power-down (TV set switch off or mains cord pull)
-on board printed aerial that supports 864 and 926 MHz . There is a backup solution with a telescopic aerial (17cm) for 433 MHz versions. (all vertical polarisation)
-build in audio limiter to limit the emitted RF bandwidth to the ETSI requirements .
- 4 RF channels avilable on a 400 kHz grid (all versions)
-the local osc. and power amplifier can be switched off by I²C commands.
-a mono-stereo switch to switch out the DSB spectrum around the subcarrier freq.
-improved load-pull behaviour

Note :
-the host microcontroller needs to send detailed I²C commands to the module because there is no local uP on board for cost saving reasons. For full details on I²C codes to send refer to the Software interface manual sheet 112 of 3104 217 07110.
-there is no audio trigger circuit foreseen in the basic module for BGTV application because the competent body considers the 5min timeout period in the ETSI EN 301 357-1 requirements to be fulfilled when the TV is switched to standby or to off.

5. ENVIRONMENTAL AND EMC

The design meets the technical and legal requirements for the different frequency band executions :

-EN 301 357 : Technical requirements for wireless audio at 25 MHz – 2GHz.
-EN 301 489-9 : EMC for cordless audio and radiomicrophones
-FCC part 15 , subpart C (US 926 MHz version)
-Safety requirements : acc. CE and BGTV requirements.

6. USED KEY COMPONENTS

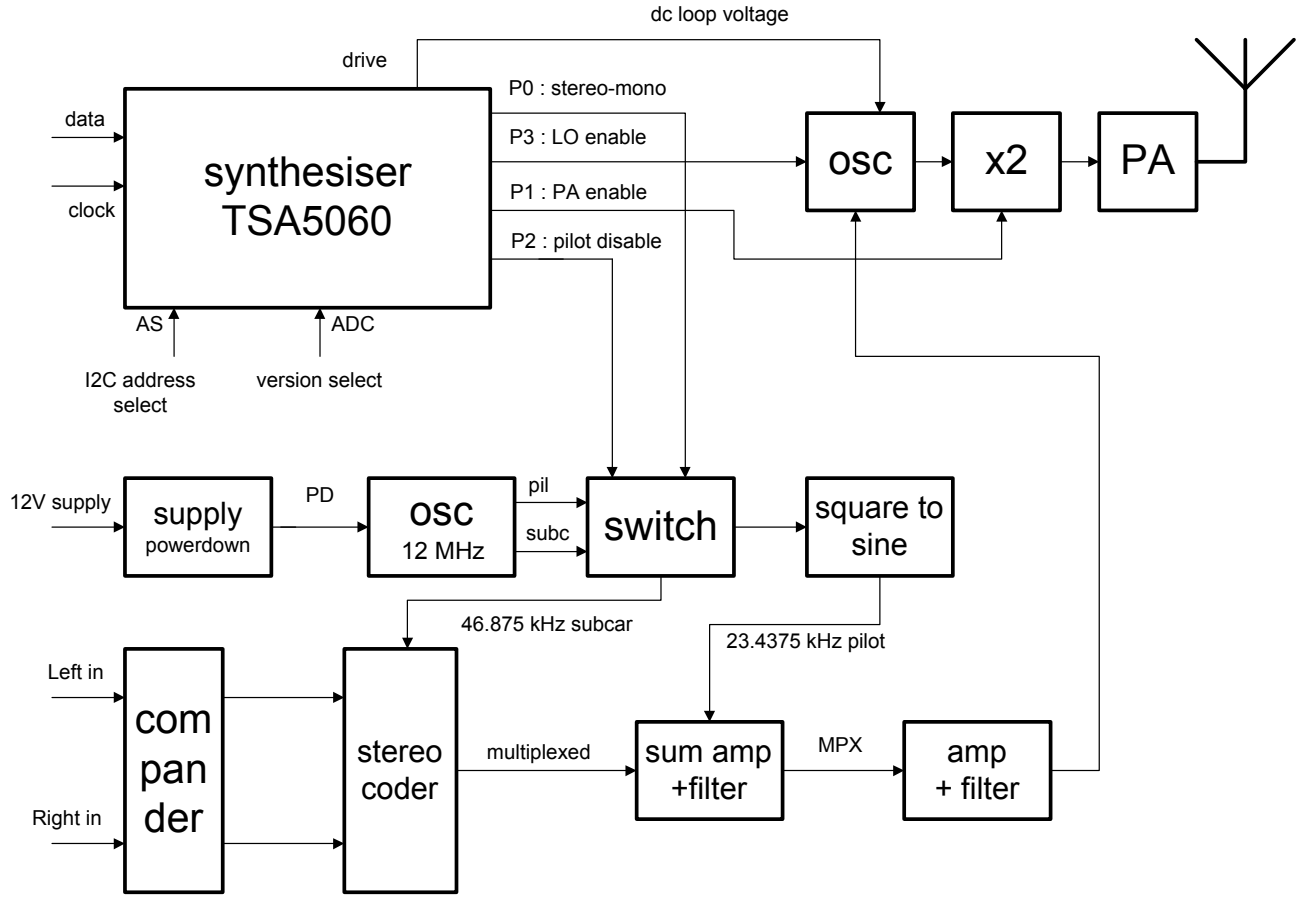
-compander function : SA572D (Philips) and NJM4565M (JRC)
-pilot / subcarrier generator 74HC4060D / 74HC00 (Philips)
-MPX filter : NJM 4565M (JRC)
-synthesiser TSA5060ATS (Philips)

7. FREQUENCY AND CHANNEL INFORMATION

The frequency allocations differ from the previous wireless families.

Channel no	864 MHz	914 MHz	433 MHz
1	863.300	914.100	433.300
2	863.700	914.500	433.700
3	864.100	914.900	434.100
4	864.500	915.300	434.500

8. BLOCKDIAGRAM OF THE MARK-3 TRANSMITTER



3XX000		**Mark 3 Wireless Transmitter**		3104 217 0711	0	2002-02-04		
	1				0	2002-02-22		
	2	**version 0.3**			0	2002-03-05		
	3							
Name: Felix Elsen		PDSL_L	5	190 - 3	10		A4	
PL		Or. date 2002-01-12						

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9. SPECIFICATIONS

-specs are valid on all 4 channels.
-Full signal to noise measurements must be done with the accompanying Mark-3 receiver, equipped with an expander circuit

Common specification points

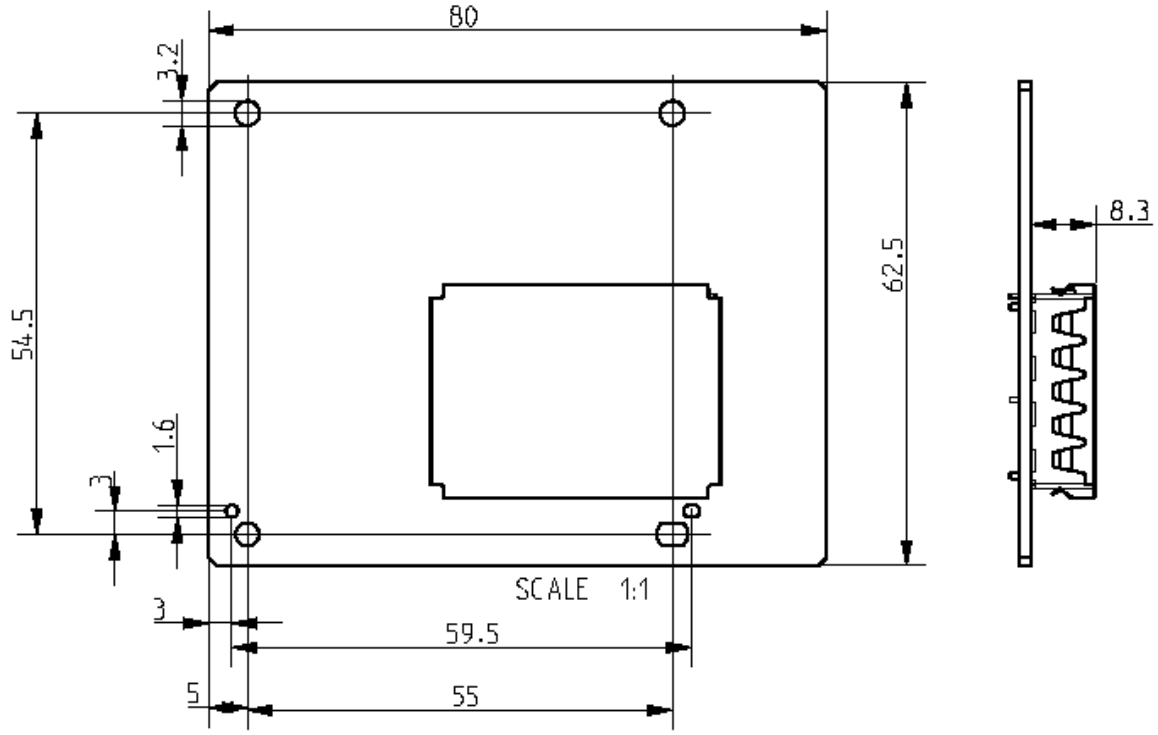
Subject	Minimum	Typical	Maximum
Power supply voltage range	-15%	12.0 V	+10%
Supply current at typical voltage	-	110 mA	120 mA
Power supply ripple rejection (50-300Hz)	65 dB	75 dB	-
Nominal modulation deviation at nom input	45 kHz	50 kHz	55 kHz
Nominal AF input (L&R) for 50 kHz dev		0.41 Vrms	
Loading at input I2C bus (data/clock) without cable With standard cable length		 tbf pF tbf pF	
I²C address		C6 (hex)	

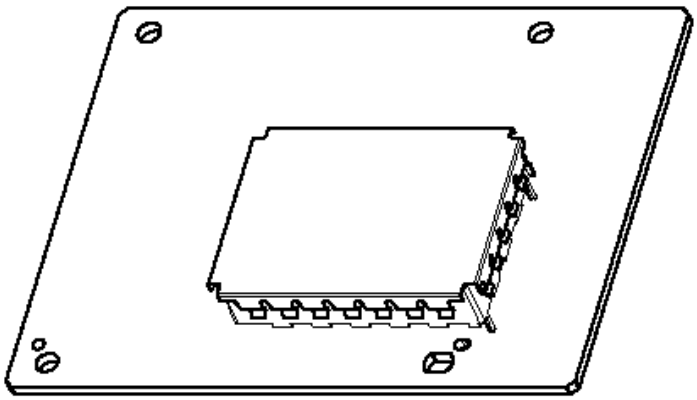
Specific specification points

all values are typical design targets ;
-parameters are valid with a receiver with an expander function.
-parameters are valid without interference from host TV to transmitter.

Subject	864 MHz	914 MHz	433 MHz
RF power radiated output erp at 3 m	6 dBm	-2 dBm	6 dBm
S/N ratio in 200Hz-20 kHz b/w	95 dB	95 dB	95 dB
Crosstalk (1kHz) companded	40 dB	40 dB	40 dB
THD (1kHz) at nom. Input, companded	0.5 %	0.5 %	0.5 %
Frequency response +/- 3 dB	20-20000 Hz	20-20000 Hz	20 –20000 Hz
Pilot injection level	15 %	15 %	15 %

10. MECHANICAL DIMENSIONS





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