

Quickstart: DSS-900-KT Surveillance System

Quickstart guides the experienced surveillance professional in rapid setup and use of the DSS-900-KT. The following table guides you through set up of the TX, RX and recording functions of the DSS-900-KT.

Step No.	Step Reference	Quickstart Action	For Details See Page
1.	Select power source.	Connect the RX to either an external AC or DC source.	6
2.	Install RX antenna.	Connect directional high-gain patch antenna, or omni-directional disguised cellular magnetic mount antenna to RX.	12
3.	Choose agent's microphone.	Use the built-in top fire mike on the TX, or plug in one of the external mikes.	13
4.	Get a tape.	Load tape into the Marantz. Make sure that: <ul style="list-style-type: none"> • The tape is fully rewound. • You are not about to overwrite an existing recording. • The tape is not write protected. 	8
5.	Enable recorder.	Turn the Marantz power ON.	14
6.	Select headsets <i>or</i> the speaker.	Decide to use the speaker, or plug one or two headsets into the matching jacks. This disables the speaker.	9
7.	Turn TX on.	Slide TX power to ON .	13, 14
8.	Set sound intensity.	Set the VOLUME to mid-range.	7

Step No.	Step Reference	Quickstart Action	For Details See Page
9.	Select a method for recorder control by using the POWER switch in the RX RECORDER section.	MANUAL: Record Mode activate is controlled at the Marantz. AUTO: Record Mode activate is controlled by audio squelch level on the DSS-900-KT RX.	8
10.	Utilize extra outputs for additional original audio recordings.	Connect extra recorders to VCR and SPARE RECRDR output jacks.	14
11.	Choose your alarm type with the MODE SELECT switch in the RANGE section of the RX.	OFF: Latching ALARM LED only. No beep tone; no alarm tone. BEEP TONE: The higher the beep pitch, the closer the range. ALARM ONLY: Steady audible alarm if the RX loses lock on the TX signal. You can reset the tone only by rotating the MODE SELECT switch to OFF or by regaining adequate signal strength.	10
12.	Check the vertical string of alarm LEDs.	Keep as many LEDs lit - green, yellow and red - as possible.	11
13.	LEDs drop to the yellow zone.	Immediately close range to the agent.	15
14.	If <i>red</i> LEDs only appear.	Reposition agent or get RX closer. You are about to lose all audio!	11

System Overview

Your DTC-900-KT enables communication *from* a bodywire or internal microphone on the battery powered TX (transmitter) unit *to* a briefcase receiver/recorder. The DSS, digital spread spectrum, transmission technique is explained in detail in the DSS-900-KT Product Data Sheet. You can obtain a copy of this sheet from your DTC representative, but you do not need to know these details to use the equipment.

However, there is one point of major importance that you must know when using digital spread spectrum transmission device:

CAUTION



With digital spread spectrum, the signal *does not* degrade slowly with range: Audio is present and perfect, or it's gone!

This go/no-go situation is diagrammed in Figure 1.

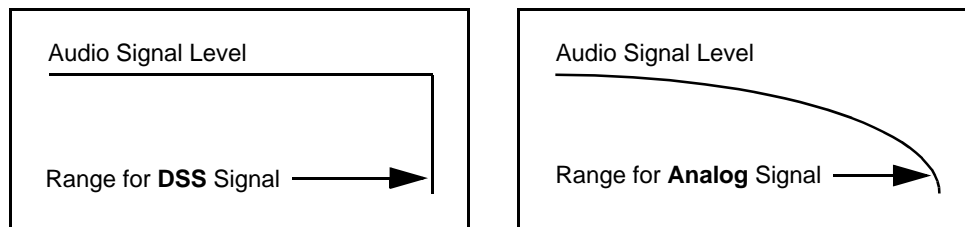


Figure 1 Reception Distances for DSS and Analog Transmission

With an Analog Signal, the quality of reception shown in the right side of Figure 1 gradually drops off as you move further away from the transmitting point or when the transmitter and receiver antennas are not pointed at each other.

As the left side of Figure 1 shows, a Digital Signal provides perfect reception until a threshold is reached, and then audio is totally lost. The DTC-900-KT RX has signal strength LEDs on its front panel as well as an audible alarm that must be monitored to keep you within listening range and direction.

Remember. Watch the green, yellow and red string of LEDs, and do not disable the audible tone except when security so requires. When the LEDs drop into the yellow zone, you may lose audio at any time. Close the range to the agent.

Kit Components

The system is packaged in a rugged carrying case (Figure 2) and in a fabric accessory pouch mounted on the outside of the case cover.

COMPONENTS IN THE BASE

1. RX panel
2. TX and components:
AAA alkaline batteries, qty. 5
External microphone
3. Frequency-Channel No. label
4. Cover-mounted accessory pouch
5. Marantz tape recorder

COMPONENTS IN THE ACCESSORY POUCH

- RX patch antenna with Mafer universal clamp
- Cable for RX patch antenna
- Magnetic mount RX antenna
- Stereo headset
- AC and DC power cables
- Marantz recorder manual and this User's Manual

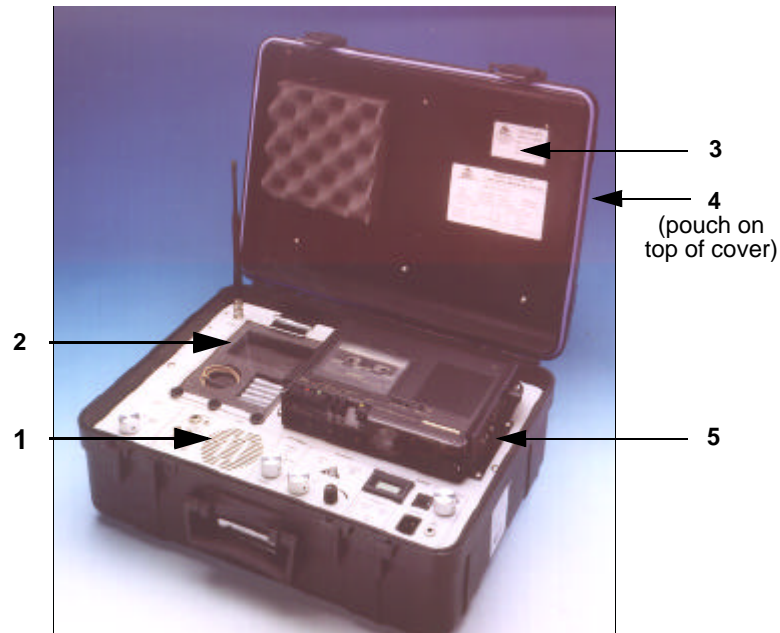


Figure 2 Principal Components in the Carrying Case

Using the Receiver

Receiver Controls

The main panel within the case of the DSS-900-KT is divided into eight segments as called out in the photograph of Figure 3.

1. Power segment
2. Receiver segment
3. Recorder segment
4. Audio segment
5. Range/Alarm segment
6. TX, microphone and batteries
7. RX Antenna connector
8. Marantz tape recorder

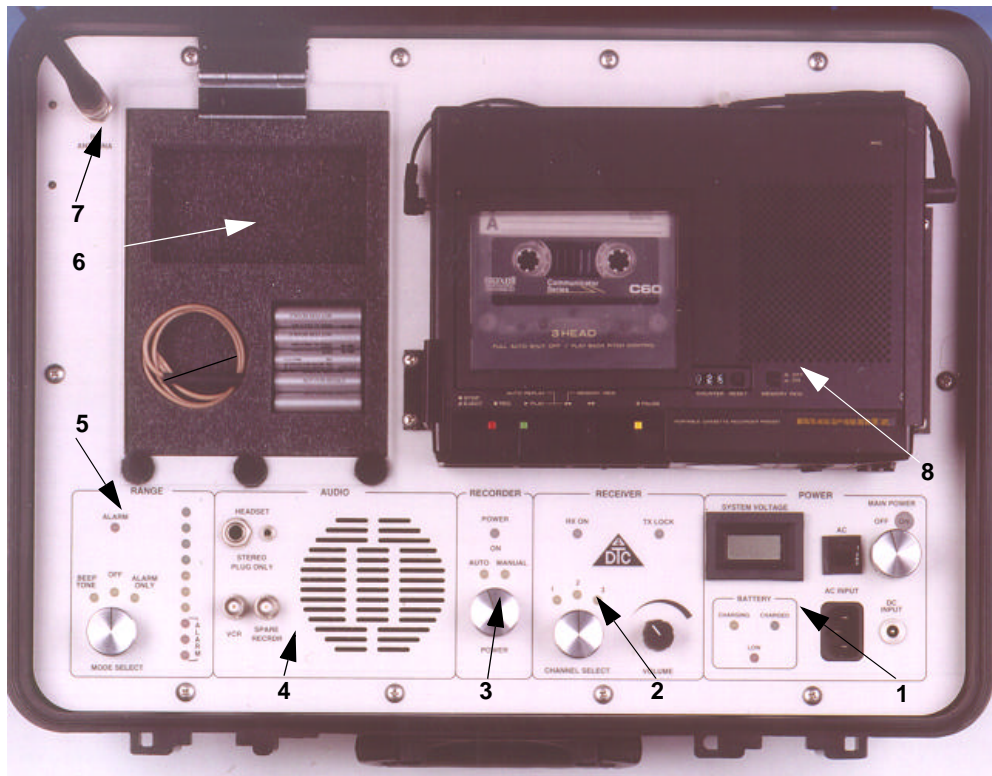
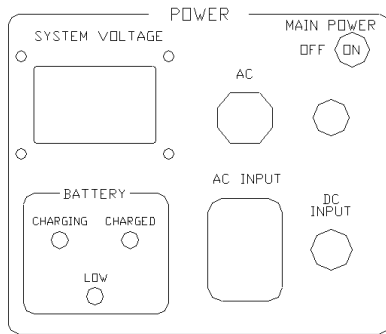


Figure 3 Main Panel of the DSS-900-KT



1. Power

- The main power **OFF** and **ON** switch controls power to all RX subsystems including the Marantz tape recorder. The recorder must be activated as shown in the accompanying Marantz operator manual.
- The **AC INPUT** power receptacle is located in the lower center. An external DC voltage source (11 to 16 VDC) can be introduced to the system at the **DC INPUT** jack with the regulated cigarette power adaptor cord. This adaptor is fused for 5 A.
- The **SYSTEM VOLTAGE** LCD shows you the DC voltage available to the electronics in the DSS-900-KT. The acceptable range for this display is 11 to 14 VDC. If the external source or battery voltages drop below 11 VDC, the equipment operation will be compromised.
- Whenever the unit is plugged into an active AC or DC source, the internal batteries are being charged.
- The three LEDs in the **BATTERY** section of the power segment tell you the charge status of the internal RX Battery.

CHARGING

Illuminates only if either AC or DC power is being supplied to the system and the batteries are being charged. The batteries are always on charge when there is external power available.

CHARGED

The internal batteries are fully charged.

LOW

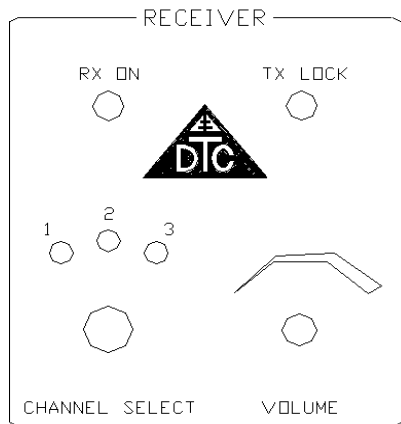
The internal batteries need to be charged.

CAUTION



1. When the **LOW** light comes on, locate a new power source immediately. The batteries will only power the RX for 1/2-hour, even when fully charged, and you can lose contact with the agent without further warning.

2. The DSS-900-KT is designed for AC or DC operation. The internal batteries are for temporary emergency use only.



2. Receiver

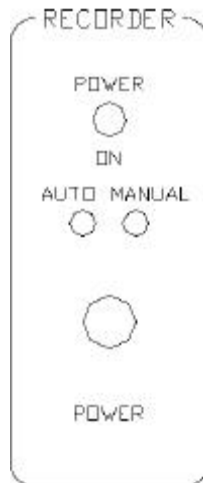
The **RECEIVER** section on the front panel contains two LEDs and two controls.

- **RX ON** LED tells you that power is applied to the RX and that the tape recorder power is enabled. It does not mean that the RX is necessarily receiving a signal from the TX,
- **TX LOCK** LED tells you that the RX is receiving a signal from the TX and that the signal is of sufficient strength to be locked on.
- **CHANNEL SELECT** enables you to switch the RX to the frequency printed on the TX in use. Use the label on the inside of the top cover of the case to convert TX frequency to **CHANNEL SELECT** number. If the RX is on and set to the correct channel, and if the TX is on and supplying a strong signal, the **TX LOCK** LED will be lighted. Unless otherwise requested at the time of purchase, the TX standard factory setting is Channel 2.
- **VOLUME** sets the volume of the front panel speaker or of the headset if plugged in. Remember, if a headset is plugged into either jack in the **AUDIO** section of the front panel, the speaker is automatically disabled. You may use both headset jacks.

CAUTION



Be sure that the receiver is set to the channel number matching the frequency of the TX.



3. Recorder

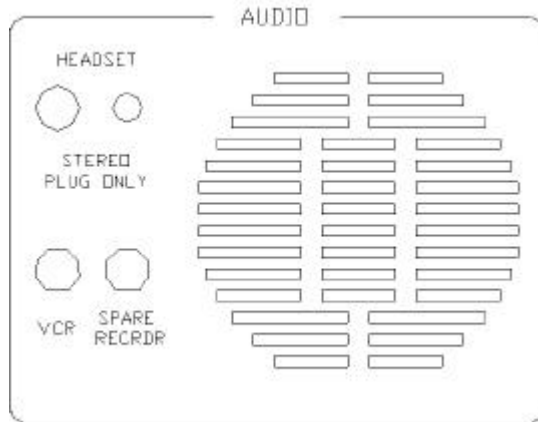
The **RECORDER** section contains a single LED and single switch, both of which relate to the Marantz tape recorder built into your DSS-900-KT.

- **POWER ON** lights up when the **POWER** switch located below it is in **MANUAL** or when the audio level is above squelch and the **AUTO** mode has enabled the recorder power.
- In the **AUTO** mode [*carrier activation* mode in surveillance terms], the Marantz will activate if the audio signal rises above the squelch level set on the recorder front panel. For this to happen, the TX and RX have to be locked together on the TX signal, and the Marantz tape recorder has to be set to **RECORD**.
- In the **MANUAL** mode, the recorder is always powered up and will run if so commanded from its front panel.

Drawings and photos of the Marantz tape recorder as well as complete operating instructions are given in the Marantz operator manual that accompanies your DSS-900-KT system. The manual is stored in the accessory pouch of the DSS-900-KT.

Whenever loading a tape into the Marantz recorder, make sure that:

- The tape is fully rewound.
- You are not about to overwrite an existing recording.
- The tape is not write protected.



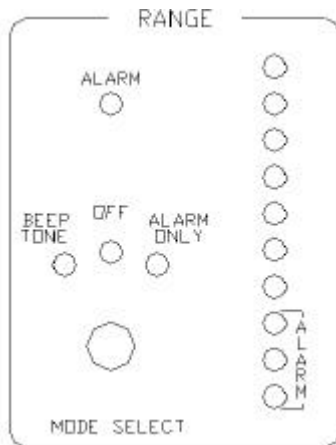
4. Audio

The **AUDIO** section has five outputs:

- A speaker set behind the grillwork.
- Two **HEADSET** jacks.
On the left, a jack for a 1/4 inch connector.
On the right, a jack for the 3.5 mm mini-jack Sony headset that is supplied with your DSS-900-KT.

- Two audio signal output connectors.
On the left, **VCR**, a fixed signal level compatible with a standard VCR.
On the right, **SPARE RECRDR**, an identical output for a second, spare recorder.

With these extra connectors, you can make two *original* audio recordings in addition to the recording of the Marantz tape deck.



5. Range

The **RANGE** section is the one you have to watch most closely.

The **RANGE** LEDs warn you that the DSS signal is getting low and audio will be lost unless you reorient the agent or move the RX closer to the agent.

Remember, with digital spread spectrum, there is no in-between zone.

Audio is present and perfect, or it's gone!

Let's start at the top of the **RANGE** section.

ALARM turns on whenever the signal is very low or when you have lost TX lock on the signal. This forces you to recognize that signal is about to be or has been lost and you must take action to maintain or restore the audio link.

The **MODE SELECT** switch has 3 positions.

BEEP TONE during which a continuous beeping takes place; the higher the tone's pitch the closer the range.

The beep sound is not recorded on the tape recorder, nor is any indication of the signal level status recorded.

NOTE



The beep tone can only be stopped by switching to **OFF** or to **ALARM ONLY** settings.

ALARM ONLY produces a continuous tone to warn that an out-of-range situation is likely to or has occurred.

Ten LEDs on the right tell you the status of the signal received from the TX.

- *Green* LEDs - Top **4** greens only come on when the signal is strong and the TX and RX are locked together. Whenever the Green LEDs are on, both the yellow and red LEDs below are also on.
- *Yellow* LEDs - Middle **3** yellows are on with the red LEDs. When the green LEDs flicker off and the yellow are still on, the signal level is getting low and a TX lock is in jeopardy.

CAUTION



Close range to the agent immediately! If using the directional patch antenna, reorient the front of the antenna so the maximum number of LEDs are on.

- *Red* LEDs - Lowest **3**; when only they are on, you have lost the TX signal or are very close to losing it. If yellow and green are off, the **ALARM** LED is triggered and stays on.

6. Transmitter, microphone and batteries

Refer to *Using the Transmitter* on page 13 for details.

7. RX Antenna Connector

Both the 3 dBi omni-directional magnetic mount antenna (Figure 2 on page 4) and the 11 dBi high gain patch antenna are attached at the **RX ANTENNA BNC** connector.

Use the patch antenna with the Mafer clamp whenever you can reasonably expect the wired agent to be within a known general location, such as a particular street corner. The patch antenna is quite directional with a beam width of about 60°. With the patch antenna you will receive at a greater distance than with the omni-directional magnetic mount.

When using the patch, orient it with the Plexiglas side facing toward the expected location of the transmitting bodywire.

CAUTION



Patch antennas are *directional*. Always orient the RX patch toward the TX. On a surveillance mission, the agent should take care, within bounds of security and safety, to be oriented with the TX patch antenna outwards from the agent's body and facing the RX.

TIP



Mount the RX patch antenna as high as possible to provide a better unobstructed path to the TX.

8. Marantz Tape Recorder

For detailed information, refer to the Marantz operator manual that is contained in the accessory pouch mounted on the top of the DSS-900-KT case cover.

Using the Transmitter

Keep in mind that the **TX patch antenna** must be facing away from the agent's body to work properly. The patch antenna is housed in the black plastic-like dome on the TX unit. There is no external antenna on this unit.

- The internal top fire mike is located between the two slide switches (Figure 4-b). It is active unless an external mike is plugged into the gold Lemo connector as shown in Figure 4-a. Two microphones are supplied with the DSS-900-KT; they differ only in color and cable length.

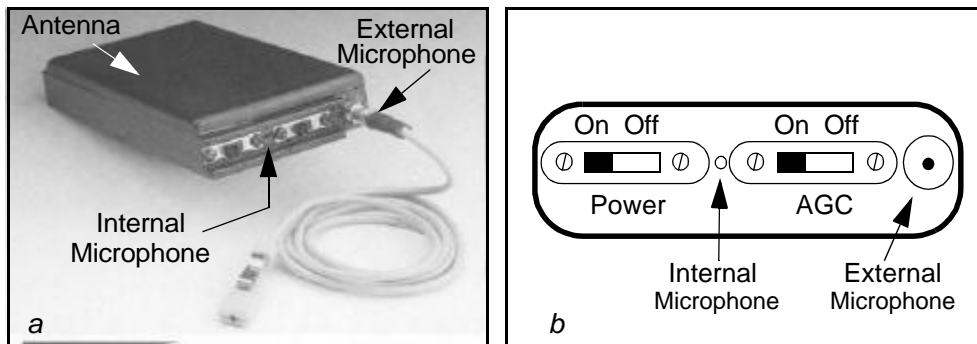


Figure 4 a. TX with External Microphone b. TX Panel

1. Start the surveillance session with fresh TX batteries. Slide the battery holder cover open to insert batteries (Figure 3 on page 5).
2. The TX unit is labelled with its frequency. Use the label on the inside of the DSS-900-KT case cover (see Figure 2 on page 4) to determine the channel number corresponding to the TX frequency.
3. Set **CHANNEL SELECT** on the **RECEIVER** to the same number.
4. Turn the TX **ON** using the slide switch at the top of the unit.
5. Set the AGC **ON**. This provides optimum audio at the RX. Set the AGC **OFF** if a loud, interfering noise, such as a jukebox, is near the agent.

TIP



Remind the agent wearing the wire to face *toward the RX* whenever possible during the mission to produce the strongest signal at the RX.

Field Use of the DSS-900-KT

Each control on the RX is explained in *Receiver Controls* starting on page 5 and is shown in Figure 3, also on page 5. The TX and its setup are described in *Using the Transmitter* on page 13. The *Quickstart: DSS-900-KT Surveillance System* on page 1 contains an information overview on field use.

1. Verify that the transmitter is switched on.
2. Connect either the **DC INPUT** or **AC INPUT** to the appropriate power source.
 - The **SYSTEM VOLTAGE** will rise to about 14 VDC. It must not be outside the range of 11 to 16 VDC.
 - The **RX ON** LED will illuminate.
 - The **CHARGING** LED will turn on and stay on as long as there is power at either power input.
 - If **LOW** turns on, the internal battery is discharged and you must find an alternate power source. Do not begin a mission. The battery will fully charge in 4 hours.

CAUTION



The DSS-900-KT is designed for AC or DC operation. The internal batteries in the RX are for temporary emergency use only.

3. Check that a receiving antenna, either the patch or the mag mount, is connected at the **RX ANTENNA** BNC jack on the RX panel.
4. If you intend to use a headset for monitoring, plug in one or two headsets now. The speaker will be disabled.
 - Use *only stereo headsets* at these jacks.
5. If you want to make additional original recordings of the mission, plug the extra recorders into the **VCR** and **SPARE RECRDR** jacks.

6. If the TX has not yet been deployed, check its channel number and switch **CHANNEL SELECT** on the RX to that number.
 - If the TX is already harnessed to the agent, move the **CHANNEL SELECT** switch until you see the **TX LOCK** light turn on. This indicates that the agent has activated the TX and you are receiving audio.
7. Adjust the **VOLUME** control, which affects the speaker and the headsets only. It does not affect the recording.
8. Set the recorder to **AUTO** unless you specifically do not want automatic on/off of the tape.
 - The **POWER ON LED** in the **RECORDER SECTION** will light up when the squelch level is exceeded by the audio, or whenever you switch to **MANUAL**.
9. In the **RANGE** section, switch **MODE SELECT** to the alarm output you want. Refer back to *Range* on page 10 to remind yourself what this switch does.
10. Verify that **TX LOCK** is illuminated on the **RECEIVER** section of the RX. If this LED is not on, take the following steps.
 - Make sure you are using fresh batteries in the TX.
 - Make sure that TX and RX are on the same channel.
 - Close range to the agent.
 - Reorient the RX patch antenna so it is directed more accurately toward the agent. This antenna has a 60° beam width, so if the agent is outside that cone, you are losing a great deal of the available signal.
 - Double-check that the RX is turned on, system voltage is in the acceptable range, and that all connections are secure.

