Radio Frequency (RF) Installation and Support

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Welcome to GameTech International, Inc. (GTI)

Purpose of this Guide

This manual is designed to be used by GTI staff. It provides the instructions for using TED® and TED^{2}C™ RF on the Diamond system.

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Overview

With radio frequency (RF), TED® and/or TED²C™ users can enjoy the advantages of playing with wireless electronics. Depending on the mode being used, users can enjoy from a fully automatic mode of play which does all the daubing, game and session changes to a game change only mode which notifies the unit of game and session changes only and requires the user to manually daub numbers.

Modes of Operation

There are five modes of operation available with an RF installation as listed below however, it is the responsibility of the technician to be aware of any jurisdictional or state laws governing the use of RF and, which method is approved in their jurisdiction.

The following information is the same or similar regardless of which mode of operation is being used. More specific information pertaining to the specific modes follow.

In all modes of operation...(*Exception: Game Change Only.*)

- the units will enter sleep mode when left inactive for a period of time. (*Exception: Fully Automatic mode.*)
- players can *CHOOSE* to manually enter numbers in all modes of operation and they will be accepted by the TED® and/or TED²C™ units. (This is enabled by the customer through a menu option.)

Note: Numbers MUST be entered manually if the RF signal has been lost.

- the unit displays "Bingo Pending" after it has received the RF signal and will bingo after the customer has pressed enter.
  - *Exception*: In the Fully Automatic mode this will be the case only if the customer has chosen to enter numbers manually.
  - *Exception*: In the Manual Daub #3 Mode units can bingo on manually entered numbers.
- if the TED® and/or the TED²C™ unit is on the wrong game or session, it is corrected automatically when the next RF signal is received.
- in addition to game information, the RF signal sends out session information. This supports halls selling more than one session at a time.
- the units will display "RF MODE," ball-calls (in the order received), number of cards and number away on the main screen.

1) Fully Automatic

In the fully automatic mode, *everything is done automatically* without user intervention.

- **Ball calls, game numbers, patterns and session information** is sent and received by the TED® and/or TED²C™ unit **each time a signal is received.**
- The TED® and/or TED²C™ units will **not enter sleep mode or shut off** when using the fully automatic mode.

2) Manual Daub #1

In the manual daub #1 mode, the *enter button must be pressed to daub cards*.

- Pressing enter will **catch the player up to all ball calls, game, and session** information should the player not press enter each time.
- **Incorrect manual entries are corrected** when the next RF signal is received.

3) Manual Daub #2

In the manual daub #2 mode, the *enter button will daub **ONE NUMBER** at a time only*.

- Pressing enter a **second time** will **daub numbers in the order they were called.**
- If the customer misses the **last five ball calls, enter would have to pressed five times** to catch up. The player will be able to see what numbers are missing by going to the units' flashboard.
- **Incorrect manual entries are corrected** when the next RF signal is received.

4) Manual Daub #3

In the manual daub #3 mode, the *enter button will daub **ONE NUMBER** at a time only.*

- Pressing enter a **second time** will **daub numbers in the order they were called.**
- If the customer misses the **last five ball calls, enter would have to pressed five times** to catch up. The player will be able to see what numbers are missing by going to the units' flashboard.
- Units can bingo on manually entered numbers.

5) Game Change Only

In the game change only mode, the *only RF information received is when the caller changes the game or session.*

RF Signals

The following information pertains specifically to RF signals received by the TED® and/or TED²C™ units.

- The single frequency RF system utilizes frequencies at 915 MHz ISM (Instrumentation, Scientific, Medical) band. The RF energy in this band acts more like light instead of radio waves and this ultra high frequency RF energy will bounce off walls and can be absorbed or blocked by human bodies or obstructions.

Attention: As a general rule, each RF TED® and/or TED²C™ needs to be able to "see" at least two transmitters to avoid dead spots.

Note: Dead Spots: In certain situations when RF energy bounces off objects, the two signals called the incident and the reflected can reach a receiver at the same time. This phenomenon is called "multi-path." When the reflected wave is 180 degrees out of phase with the incident wave, the two signals can cancel and produce a "dead spot." It is for this reason that multiple transmitters are used.

- The TED® and/or TED²C™ units play automatically as soon as the Caller advances to game one.
- Cell phones have no effect on GTI RF units.
- Players are notified when the TED® and/or TED²C™ unit receives a signal. This assures the customer that the unit is receiving.
- If a unit looses the RF signal (for 10 seconds (not adjustable)) it has a visual flashing message displaying "Manual Entry Required for Last Ball" and an audio alarm requiring customer acknowledgement. "RF MODE" will not display.
  - If a unit alarms and then the alarm stops, it is again receiving a signal.
  - If any key is pressed while the unit is alarming, it will go into manual mode and ball calls can be entered manually. Once the signal resumes, it will go back into RF mode.
- When a unit is voided, the RF signal ensures all cards are erased.
- If the TED® and/or the TED²C™ are missing, a locate feature on the POS will make the unit beep until it has been located and a button on the unit is pressed.
- The unit will display status information to the player such as cards getting close to a bingo and how many numbers they are away from a bingo.


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Operational Information

The following list explains some of the additional features of RF play.

- RF TED® and TED²C™ units are marked as RF capable on the case. In addition, RF TED® units are two-tone colored and all TED²C™ units are marked as RF capable.

Note: Although TED® and TED²C™ units are RF capable, they may be used in a non-RF hall.

- Supported Games:
  - Callers Choice
  - Hard Luck (for progressive games).
  - Play with Paper
  - Speed Games (With two-second ball calls as required by some jurisdictions.)
- When games come up in a session that the player has not purchased cards for, the electronics will display "No cards" or "No cards for this Game" depending on whether the unit is a TED® or TED²C. (Based on available display space.)

How it Works

- The Diamond master provides information to the Base Station Controller (BSC) via a 9-Pin RS-232 connection...(The master must have a working com port.)
- the Base Station Controller (BSC) provides information to the transmitters via a CAT5 cable connection...

Note: The transmitters also receive power from the Base Station Controller.

- the Transmitters (XMTR) (usually four) provide information to the TED® and/or TED²C™ units via an RF signal which loops three times per second.

Note: Currently this is a one-way communication. When two-way has completed development, the TED® and/or TED²C™ unit will be able to communicate information back to the Diamond™ system via an RF signal. The CAT5 cable provides bidirectional communication and power from the BSC to the XMTRs.


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Jurisdictional Restrictions

As with many aspects of bingo operations, RF may not be legal in some jurisdictions or, if legal, may require setup variations to ensure the legality of the installation. The hall technician has the responsibility of being knowledgeable and implementing RF to conform to these jurisdictional guidelines. For information on guidelines, the technician should contact their immediate supervisor.

FCC Compliance Statement

Unauthorized modifications or changes made to this device not expressly approved by the party responsible for compliance could void the users authority to operate the equipment.


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System Installation

Required Hardware

The GameTech 900 MHz RF TED® and TED²C™ system contains three basic components as follows:

Base Station Controller (BSC)

The BSC should be installed within close proximity of the ball call PC (up to 25') and within 6' of an AC power plug.

Note: The BSC should remain within easy access. If transmission problems occur, a reset may be required.

Transmitters (XMTR)

- There are four transmitters that should be strategically placed around the hall to ensure full line of sight coverage from at least two transmitters to the TED® units over the entire playing floor. (Range: 100' radius, 200' diameter.)
- The XMTRs can be placed right-side up or upside down but, the antenna must be perpendicular to the floor for maximum coverage over the playing area.
- The CAT5 cables should be routed from each XMTR to the BSC and connected to ensure a clean installation.

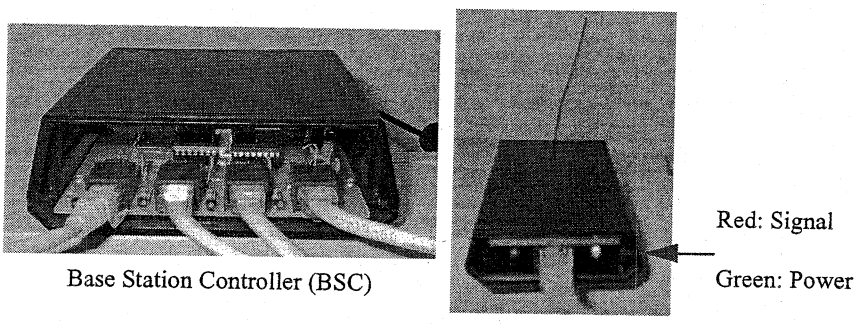


Figure 1. Base Station Controller and Transmitter

Note: The Transmitter and the Battery Powered Transmitter visually appear to be exactly the same however, when the battery is plugged into each unit, they will respond differently as follows:

- **Transmitter** - Green light will be on, red light will not.
- **Battery Powered Transmitter** (used for site survey only) - Green light will be on indicating power, red light blinks at one second intervals.

TED® and TED²C™ Units

These units are standard GameTech products that have 900 MHz RF receivers installed. Each unit has hardware modifications to accommodate the RF receivers and special software for using the new source of data from the RF module. These units will be marked as RF capable.

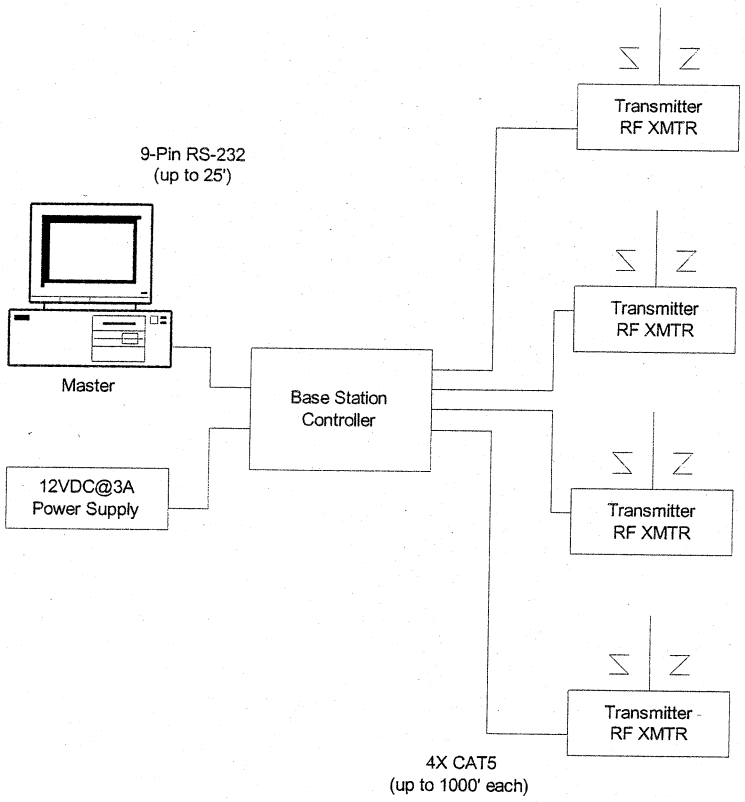


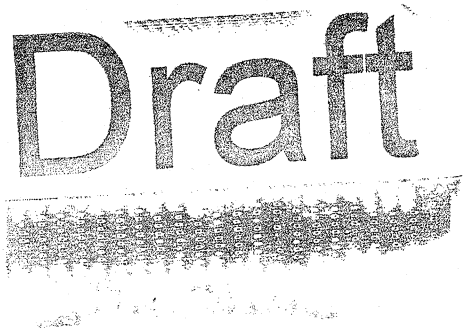
Figure 2. RF Connectivity Diagram

Note: Be aware that the GTI system cannot differentiate between RF and non-RF units which could affect customer billing. RF units should be sold from a separate window to ensure players are getting the type of unit they desire.

RF Test Tools

Suitability of a hall is determined by two factors: **Interference** and **Coverage**. Engineering has developed two tools to help in the evaluation of the hall, a Signal Strength Meter (SSM) and a Standalone Battery Powered Transmitter. (Contact your supervisor to obtain the RF testing tools if you are required to do a site survey, part numbers are listed below.)

- 99-90000-0001 SF RF Site Survey Kit (consisting of the following):
  - 99-90000-0002 SF RF Survey Receiver
  - 99-90000-0003 SF RF Survey Transmitter
  - 99-56400-0001 SF RF Transmitter Battery Cable



Signal Strength Meter (SSM)

One tool is the handheld RF Signal Strength Meter (SSM) as pictured in Figure 3. The SSM is battery powered (9V) and activated by a push button switch located on the side of the unit and is tuned to the same frequency used by the system. The SSM uses the same receiver that is used in the TED® and TED²C™ units to receive the RF signals and, has seven light emitting diodes (LED) located on the front. The LED's give a visual bar-graph indication similar to that of a volume indicator on the front of a modern stereo to communicate the strength of the signal to the user. There are four green, one yellow and two red LED's located from top to bottom.

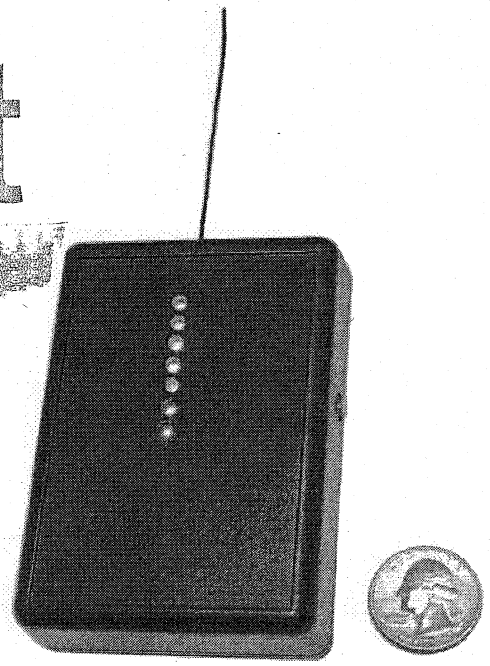


Figure 3. Handheld Signal Strength Meter (SSM)

Standalone Battery-Powered Transmitter

The other tool is the standalone battery powered transmitter as shown in Figure 4. This tool is used to generate an RF signal to help in the measurement of signal coverage in the hall. The standalone transmitter also uses one external 9V battery (with a special harness) and will operate for several hours while the tests are conducted.

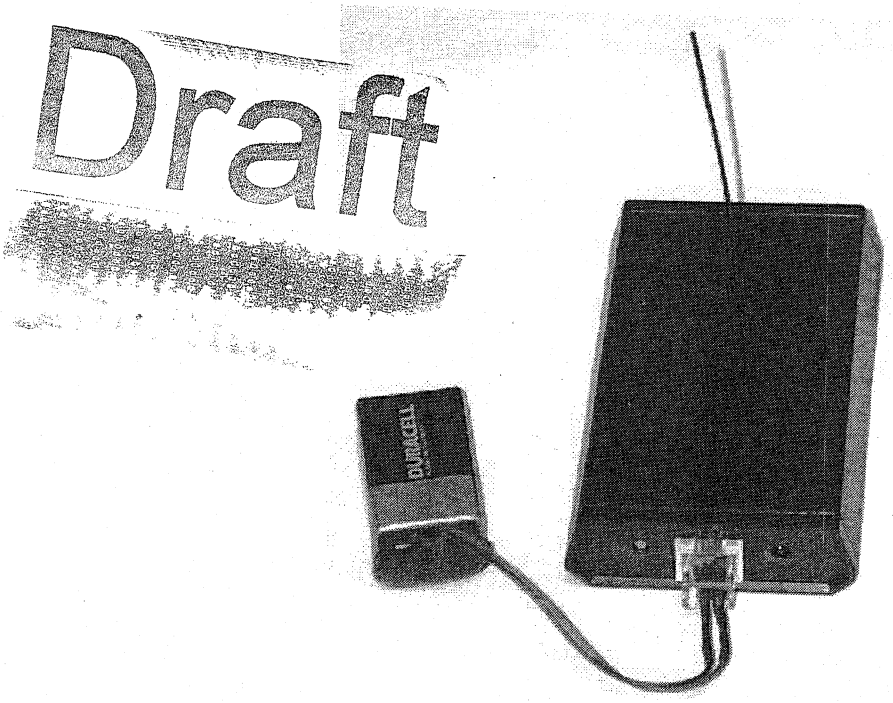


Figure 4. Stand-Alone Battery Powered Transmitter

Note: The Transmitter and the Battery Powered Transmitter visually appear to be exactly the same however, when the battery is plugged into each unit, they will respond differently as follows:

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