

Operational Description

GAMING TABLE MANAGEMENT SYSTEM (GTMS)

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Chapter 1 Description of how the device works.

Product Description

The GTMS is composed of one PM and many TMs as described in the following:.

- Table Module (TM)
TM is installed on a gaming table. When a dealer pushed a key or other information is ready to go, the TM sends data to a PC Module (PM) via wireless connection.
- PC Module (PM)
PM is installed in a management room. It is connected to a PC with RS-232C cable. The PM gathers data from TM's and uploads them to the PC.

Drawing of Modules

1. TM



2. PM



Description of operation

- The TM on each gaming table collects two types of information; revenue-related data and service calls. The revenue data include the dealer's I.D., number of hands processed for a certain period by the dealer and amount of chips collected by the dealer. There are two packets defined for these events:
 1. A packet that is transmitted when a dealer comes in to a table by sliding his or her I.D. card through the TM. The packet includes only a dealer I.D.
 2. A packet that is transmitted when a dealer leaves the table by sliding his or her I.D. card through the TM. The packet includes a dealer I.D., number of hands handled by the dealer, amount of chips collected by the dealer.

The other type of information, service calls, is a third type of packet that is transmitted whenever a dealer pushed a service call button. Currently five buttons are supported. Typical example of services is: 'Chip Exchange Request', 'Food Request', 'Seat Open', 'Floor person Call', and 'Cancel'.

Each TM has its own network address that is three bytes long and is included in the packet so that the TM sends a packet including this network address or MAC (Medium Access Control) address.

When the PM receives a packet from a TM, it reads TM's MAC address and check if it is on the registration list. It discards the packet whose MAC

address is not in the registration list.

The PC GTMS software downloads a table of TM MAC addresses to the PM at the initialization of the software that comes with the GTMS. The PC software also provides registration of TMs, registration of dealers, and revenue management functions.

From a network configuration perspective, the GTMS system is an N-to-1 system. There are N TM's that send packets independently to the PM. In case there happens a data collision that is inevitable in any LAN, retrieval of transmission is done by a similar rule defined in IEEE802.11 standard.

The TM uses a single carrier frequency, 451.1875MHz, and narrow-band FSK modulation is used. The encoding we used guarantees that DC level is zero. Symbol rate is 1kbps, though bit rates varies from 1kbps to 2kbps.

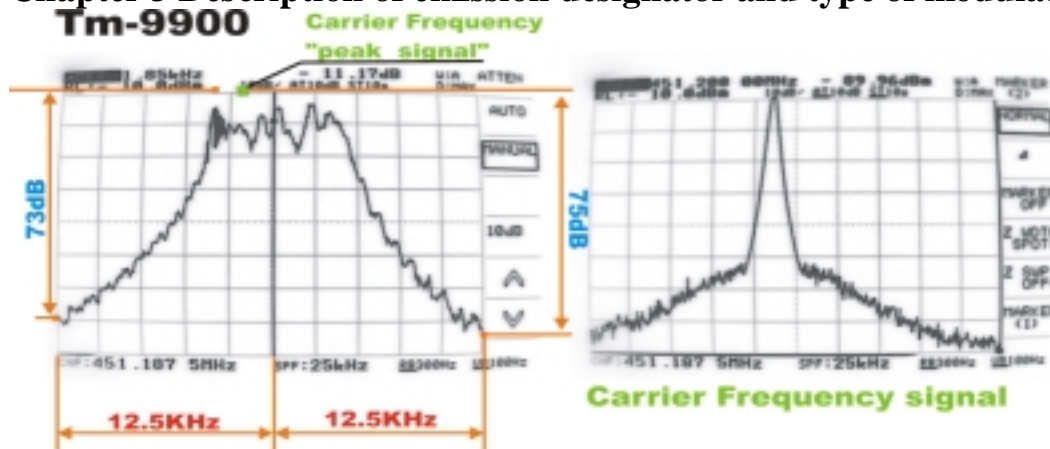
One PM can have up to two RF channels for maximum capacity. The two RF channels may use the same or different carrier frequency. Each channel can handle 80 TM's so total of 160 TM's can be handled by one PM.

Chapter 2 Necessary Bandwidth Calculation

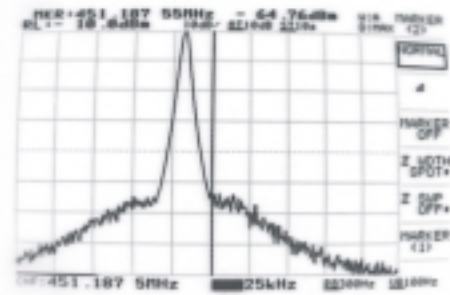
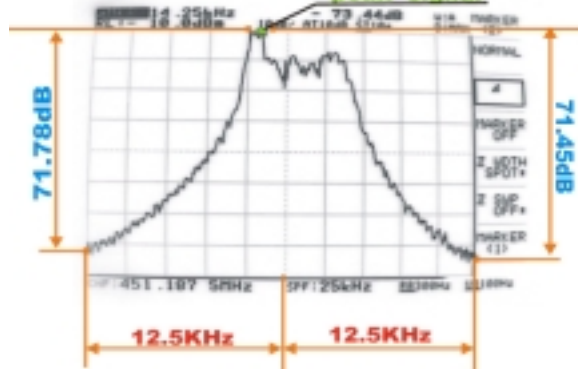
From the graph below, we obtained the bandwidths as follows:

- Bandwidth of data swing: 4kbps
- Bandwidth of carrier frequency including noise at 73dB down from peak : 25kbps

Chapter 3 Description of emission designator and type of modulation



Pm-9900 Carrier Frequency "peak signal"



Carrier Frequency signal

Chapter 4 Description of circuitry required by 2.1033(b)(4)

(Refer Chapter 1. Additional description of the ground system and antenna is included here)

The following figure shows how the antenna is connected to the PCB (PM). The ground is connected to the steel case so that unnecessary radiation is minimized.

