



FCC form 442

Attachment

Exhibit 1

FRN: 0006-413-39

Experimentation Description

6 March, 2002

-IdeaLogiX-



Revision History

Version	Date	Name	Comment
0.2	6-Mar-02	Mike Sullivan	Wireless Camera description

Company information

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1 Introduction

This document describes a Radio Frequency communications system for a wireless video camera units and their video receiver unit. This document is submitted by ideaLogix inc as an attachment to FCC form 442.

2 Extension of Radio Art

The new wireless video communications system under development by ideaLogix inc extends the radio art of these types of wireless cameras by adding a separate 902-928MHz ISM band FCC 47cfr part 15 subpart C section 15.249 type wireless 20Kbits/sec FSK modulated command channel between the video receiver unit and the camera units and by adding microcontrollers to the camera units and video receiver unit to control the system.

3 System Description

The 902-928MHz command channel from the ideaLogix inc video receiver unit to the multiple camera units is referred to as the “*command channel*”. The video receiver unit contains an 8 channel 902-928MHz ISM band 20Kbit/sec FSK modulated transmitter and a 4 channel 2.4GHz FM tuner video receiver for video. Each camera contains an 8 channel 902-928MHz FSK video receiver, an NTSC analog camera, a 4 channel 2.4GHz ISM band FM modulated transmitter and microcontroller.

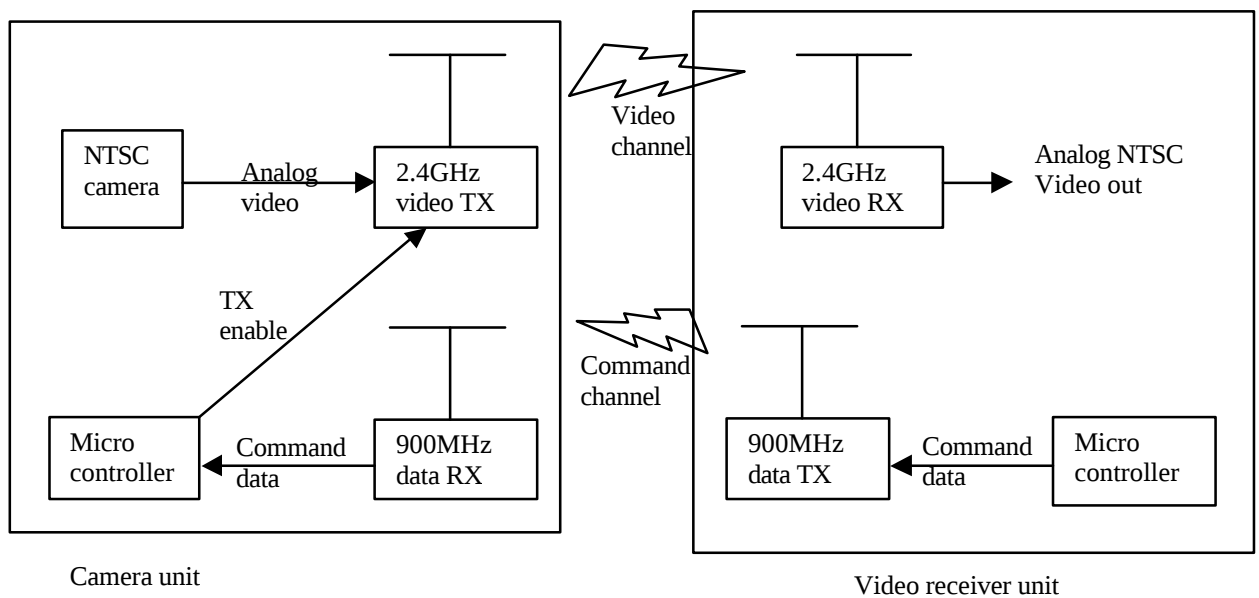


Figure 1 System block diagram

3.1 Wireless camera system main components.

- ✍ Multiple wireless camera units
- ✍ One video receiver/controller unit



The 2.4GHz analog video link is referred to as the *video channel* while the 900MHz data link is referred to as the *command channel*. The direction perspective is referenced to the camera units.

3.2 Video receiver unit subsystems.

- ✍✍ A 4 channel 2.4 to 2.485GHz ISM band FM modulated NTSC analog video receiver tuner
- ✍✍ An 8 channel 902 to 928MHz ISM band FSK 20Kbits/sec modulated data channel transmitter
- ✍✍ A microcontroller to control the radios and generate transmission timing commands

The video receiver is contained in a single enclosure that houses both the 2.4GHz video channel video receive antenna and the 900MHz command channel transmit antenna.

3.3 Wireless camera unit subsystems.

- ✍✍ A 4 channel 2.4 to 2.485GHz ISM band FM modulated NTSC analog video transmitter
- ✍✍ An 8 channel 902 to 928MHz ISM band FSK 20Kbits/sec data channel receiver.
- ✍✍ Microcontroller to control the radios and camera video transmission.

The wireless camera is contained in a single small enclosure that houses both the 2.4GHz video channel transmit antenna and the 900MHz command channel receive antenna.

4 Video Receiver Unit Command Channel Data Transmitter

The command channel data transmitter located in the video receiver unit is used to transmit camera control commands from the video receiver unit to the camera units.

The command channel transmitter located in the video receiver unit will use a LINX HP-II 902-928MHz FM transmitter or equivalent which is designed for FCC 47cfr part 15 subpart C section 15.249 compliance when properly integrated into an OEM product.

http://www.linxtechnologies.com/docs/f_prod.html

Key attributes for the command channel transmitter are as follows.

- ✍✍ 902-928MHz ISM band FCC type 47cfr part 15 subpart C section 15.249 compliant
- ✍✍ 0dBm output power
- ✍✍ Supports manchester encoded FSK modulation at up to a 20Kbits/sec
- ✍✍ 8 selectable channels
- ✍✍ 75KHz p-p FM modulation deviation

4.1 Command channel frequencies

The command channel transmitter may be set to one of 8 frequencies within the 902 to 928MHz ISM band.

Channel frequencies	Channel number
903.37MHz	CH1
906.37MHz	CH2
907.87MHz	CH3
909.37MHz	CH4
912.37 MHz	CH5
915.37 MHz	CH6
919.87 MHz	CH7
921.37 MHz	CH8

4.2 Command channel transmitter antenna

The video receiver unit, which contains the command channel transmitter, will use a ¼ wave 916MHz whip antenna manufactured by Linx Technologies or equivalent.

<http://www.linxtechnologies.com/>

ANT-916-CW-QW	916 MHz RP-SMA Connectorized Antenna
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The antenna will be either permanently wired to the transmitter or will use non-standard reverse SMA connectors such as those provided by Linx Technologies.

The antenna will be mounted on the metal enclosure that houses the video receiver unit.

5 Command Channel Data Receiver

The command channel data receiver is located in the camera unit and is used to receive camera control commands from the video receiver unit.

Key attributes for the command channel receiver are as follows.

- ✍✍902-928MHz ISM band receiver
- ✍✍Supports manchester encoded FSK modulation at up to a 20Kbits/sec
- ✍✍8 selectable channels
- ✍✍Supports 75KHz p-p FM modulation deviation

5.1 Command channel frequencies

The command channel transmitter may be set to one of 8 frequencies within the 902 to 928MHz ISM band.

Channel frequencies	Channel number
903.37MHz	CH1
906.37MHz	CH2
907.87MHz	CH3
909.37MHz	CH4
912.37 MHz	CH5
915.37 MHz	CH6
919.87 MHz	CH7
921.37 MHz	CH8

5.2 Command channel receiver antenna

The camera unit, which contains the command channel receiver, will use a ¼ wave 916MHz whip antenna manufactured by Linx Technologies or equivalent.

<http://www.linxtechnologies.com/>

ANT-916-CW-QW	916 MHz RP-SMA Connectorized Antenna
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The antenna will be either permanently wired to the receiver or will use non-standard reverse SMA connectors such as those provided by Linx Technologies.



The antenna will be mounted on the metal enclosure that houses the camera unit.

6 Video Channel Video Transmitter

The video channel video transmitter is located in each camera unit and is used to transmit the analog camera NTSC video to the video receiver unit.

The video channel video transmitter located in the camera unit will use an ideaLogix inc custom designed transmitter module manufactured by Applied Wireless inc or equivalent which is designed for 47cfr part 15 subpart C section 15.249 compliance.

<http://www.applied-wireless.com/>

Key attributes for the video transmitter are as follows.

- ✂ ✂ 2.400-2.485GHz ISM band FCC type 47cfr15 subpart C section 15.249 compliant
- ✂ ✂ 0dBm output power
- ✂ ✂ FM modulated with analog NTSC video signal
- ✂ ✂ 4 selectable channels
- ✂ ✂ 5MHz p-p FM modulation deviation
- ✂ ✂ Out-band spurious emissions; greater than 50dB 2400~2485GHz
- ✂ ✂ In band spurious emissions; greater than 60dB fp+/-fs against video carrier output

6.1 Video channel frequencies

The video channel transmitter may be set to one of 4 frequencies within the 2.4GHz to 2.485GHz ISM band.

Channel frequencies	Channel number
2.410GHz	CH1
2.431GHz	CH2
2.452GHz	CH3
2.473GHz	CH4

6.2 Video channel transmitter antenna

The camera unit, which contains the video channel video transmitter, will use a 1/2 wave dipole 2.4GHz whip antenna manufactured by Linx Technologies or equivalent.

<http://www.linxtechnologies.com/>

ANT-2400-CW-RCL	2.4 GHz RP-SMA Connectorized Antenna
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The antenna will be either permanently wired to the transmitter or will use non-standard reverse SMA connectors such as those provided by Linx Technologies.

The antenna will be mounted on the metal enclosure that houses the camera unit.

7 Video Channel Video Tuner Receiver

The video tuner receiver is located in the video receiver unit. It is used to receive the analog camera NTSC video from the camera units. Key attributes for the video receiver are as follows.

- ✍✍2.4GHz ISM band
- ✍✍FM modulation
- ✍✍0.5Hz to 5MHz minimum bandwidth
- ✍✍4 channels

7.1 Video channel frequencies

The video channel video tuner receiver may be set to one of 4 frequencies within the 2.4GHz to 2.48GMHz ISM band.

Channel frequencies	Channel number
2.410GHz	CH1
2.431GHz	CH2
2.452GHz	CH3
2.473GHz	CH4

8 Typical Installations

The ideaLogix inc wireless camera systems are intended to be used in three primary installation environments.

- ✍✍Residential, indoor and outdoor
- ✍✍Commercial office, retail store or factory
- ✍✍Commercial Outdoor

The systems may typically vary between 4 cameras and 40 cameras per video receiver unit.

9 Research and Experimentation

9.1 Antennas

Antenna selection and mounting methods will be researched. Choices of materials and system construction will be evaluated to determine the best and most cost effective antenna choices within the constraints of 47cfr part 15 subpart C section 15.249 compliance.

Experiments with RF measurement tools as well as practical system testing will be performed to evaluate and improve system performance.

9.2 Transmitters

Transmitter designs using both commercially available transmitter modules and custom designed circuits will be researched. Choices of materials and system construction will be evaluated to determine the best and most cost effective transmitter design choices within the constraints of 47cfr part 15 subpart C section 15.249 compliance.

Experiments with RF measurement tools as well as practical system testing will be performed to evaluate and improve system performance.

9.3 Receivers

Receiver designs using both commercially available receiver modules and custom designed circuits will be researched. Choices of materials and system construction will be evaluated to determine the best and most



cost effective receiver design choices within the constraints of 47cfr part 15 subpart C section 15.249 compliance.

Experiments with RF measurement tools as well as practical system testing will be performed to evaluate and improve system performance.

9.4 Protocol

The system radio protocol and timing will be researched and designed. Protocol and system timing design will be performed within the constraints of 47cfr part 15 subpart C section 15.249 compliance.

9.5 Range and noise

Practical range and noise testing will be performed within typical indoor and outdoor locations.

9.6 Overall system testing

Prototype systems owned and operated by ideaLogix will be evaluated for overall performance and usefulness in practical and typical target market environments.

Where necessary, ideaLogix will obtain Special Temporary Authority (STA) permission to evaluate the prototype systems outside of the main development location as described in the FCC form 442 application.

9.7 System demonstrations

Prototype systems may need to be demonstrated at industry trade shows.

When necessary, ideaLogix will obtain Special Temporary Authority (STA) permission to demonstrate the prototype systems outside of the main development location as described in the FCC form 442 application.

10 Intellectual Property

All designs and specifications contained in this document are the property of IdeaLogiX Corporation.