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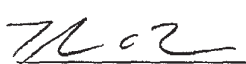
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET	Attorney Docket No.	TIA-001PR3
	First Named Inventor	Kilger

This is a request for filing a **PROVISIONAL APPLICATION FOR PATENT** under 37 CFR 1.53(c)

INVENTOR(S)		
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TITLE OF THE INVENTION (280 characters max)		
Home Network uses Frequencies above CaTV		
ENCLOSED APPLICATION PARTS (check all that apply)		
☒ Specification (Number of Pages 2)	☐ CD(s) (Number)	
☐ Drawing(s) (Number of Sheets)	☒ Application Data Sheet	
☒ Return Receipt Postcard	☐ Other (specify):	
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT		
☐ Applicant claims small entity status.		
☐ A check or money order is enclosed to cover the filing fees.		
☐ The Commissioner is hereby authorized to charge the required fees to Deposit Account No. 20-0531. Enclosed is a copy of this sheet.		
☐ The Commissioner is hereby authorized to charge any additional filing fees or credit any overpayment to Deposit Account Number 20-0531.		
FILING FEE AMOUNT \$ 		
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.		
☒ No.		
☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____		
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Correspondence Information

Correspondence Customer Number :: 021323

Application Information

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Total Drawing Sheets :: 1
Formal Drawings :: No
Application Type :: Provisional
Docket Number :: TIA-001PR3

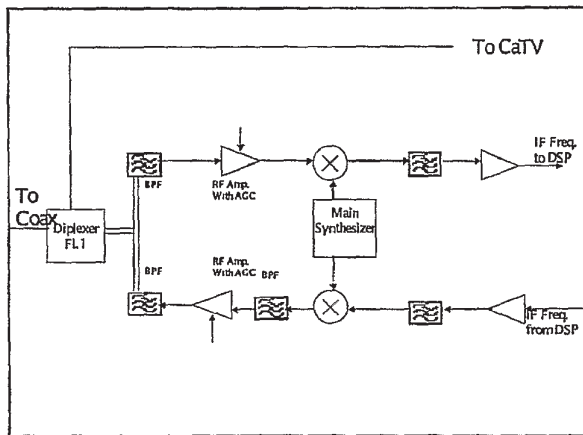
Representative Information

Representative Customer Number :: 021323

Home network uses frequencies above CaTV

In one embodiment of the home network, the home network uses frequencies that are above the frequency band that is used by the Cable TV, i.e. at frequencies above 850 MHz.

A block diagram of a circuit employs this method is shown in Figure 1. An RF circuit is used to up convert and down convert the home network signals. The Digital Signal Processor (DSP) implements all other modem functionalities.



The circuit uses a diplexer to separate the Cable TV signals from the home network signal. The diplexer is a device that has one input/output port in one side and two input/output ports at its other side, one port employs a low pass filter at a certain predetermined frequency, f_c , and the other port employs a high pass filter at the same frequency, f_c . By setting f_c to about 900 MHz, the low pass port transfers TV signals (frequencies of 5-860 MHz), and the high pass port transfers home network signals above 860 MHz. If Satellite TV signals are used inside the house, the f_c frequency is set to about 1200 MHz, to separate the satellite TV signals (1200-2400 MHz) from the home network signals.

In order to allow better frequency efficiency, the home network signal may use efficient line modulation schemes like Quadrature Amplitude Multiplexing (QAM), Multi QAM, Orthogonal Frequency Division Multiplexing (OFDM) or Discrete Multitone (DMT). For example, a 100 Mbps home network that uses QAM 256 (8 bits per symbol) requires only $100/8=12.5$ MHz of bandwidth.

The use of efficient bandwidth modulations has the following advantages:

1. Higher data rates can be achieved for a specific frequency band.
2. Better coexistence and less cross-talk with potentially interfering signals.

3. Flexibility in frequency allocation in the form of dynamically allocated frequency bands allows better coexistence with other signals or potential interferers so that noise is minimize.

Table 1 below summarizes the signals that are allocated to frequencies above 850 MHz. The table refers to signals that are carried over the coax wires, or have potential interaction with them due to ingress (radiation leakage into the home network due to external radiofrequency sources) or egress (radiation from the home network signal that might interfere with other external radiofrequency sources). Such external signals include DBS (Direct Broadcast Satellite), cellular phones, or other aerial or wireless signals that are used in the house, or in its close vicinity.

Frequency Range (MHz)	Signal
870 -896	Cellular mobile phone uplink
896-902	Private land mobile radio
902-928	Amateur radio service reserve
928-932	Domestic public radio service (paging)
944-947	Broadcast radio service (intercity relay)
1200-2400	DBS (Satellite over coax)

Table 1

The table shows that the frequency band between 860-1200 MHz is not in use for signals over the coax wires. However, there exist signals in the house in that band that might interfere with the home networking due to ingress or egress. The frequency band above 960 MHz is free for the home network.

It should be noted that the frequency band between 960 Mhz and 1200 MHz is allocated by FCC for aviation services. This makes it ideal for home networking, since no coexistence is expected with aviation signals.

A desired feature of home network is that it complies with existing low quality splitters that are often found in cable networks used in the average home. These splitters are frequency limited (at frequencies above 1000 MHz their performance degrades significantly), and have poor signal isolation and return loss performance. This causes reflections at the splitters and results in inter-symbol interference to the home network signals. A frequency efficient modem (QAM, multi QAM, OFDM or SMT) can be employed to cope with low quality splitters.

