Overview of Software AFC

The software-controlled BFO uses a 10 MHz reference for AFC. Software-controlled AFC is now enabled for a microcontroller. The reference signal is applied to the mixer in the receiver. The mixer output is then filtered and amplified. The filtered signal is then applied to the comparator, which compares it to a reference signal. If the two signals are not equal, the comparator output goes high, and if they are equal, the comparator output goes low. The comparator output is then fed into a loop filter, which adjusts the phase of the reference signal.

Variable BFO in Software

Any of the eight-bit registers of the Software AFC, CONTROL, can be changed to control the frequency of the BFO. This allows for fine-tuning of the frequency of the BFO, which is useful for tracking slow changes in the frequency of the transmitted signal. When used in conjunction with the variable BFO, the Software AFC provides a means of frequency stabilization.

AFC in Software

The AFC software section of the processor includes a digital BFO, which is used to compensate for any frequency drift in the carrier. The AFC algorithm compares the received signal with a reference signal, and adjusts the BFO frequency to minimize the difference between the two signals. This process is repeated continuously to maintain a constant carrier frequency.

Part II of this article discusses the mathematical algorithms used in the AFC software section of the processor.
Before scan and steps in software

Typically less than 0.5 seconds, the microprocessor is ready to display a new frequency. Setting to a new frequency is completed in the software routine. The software routine is called when the controller displays the new frequency. When the controller displays a new frequency, it sends the command to the microprocessor to display the new frequency. The microprocessor then displays the new frequency on the display.

Figure 1: Flow chart of software arc control
The microprocessor sends a control signal to the W7845 during operation. Upon receipt of this signal, the W7845 produces a control signal to the module. The signal is received by the processor, which then initiates the necessary actions.

**Figure 5: Flowchart**

- **Step 1:** Initial setup
- **Step 2:** Read input data
- **Step 3:** Process input data
- **Step 4:** Output result
- **Step 5:** End

**Figure 4: 10 MHz SYNTHESIZER**

- **Input:** 10 MHz reference frequency
- **Output:** 50 MHz synthesized signal
- **Components:** Dividers, multipliers, filters

The 10 MHz reference frequency is multiplied, divided, and filtered to produce the final 50 MHz synthesized signal.
When end-of-scan is not detected, the IOC 10G video AD is on, the IOC diagnostic test is executed. 

The test results are compared with the logic block diagram. If the results do not match, a fault is indicated.

Diagnoses

Overview of Receiver

The overview of the receiver section in the receiver's block diagram shows the different sections of the receiver. The sections are labeled from top to bottom as follows:

1. Basic Interface
2. Preamplifier
3. Equalizer
4. Demultiplexer
5. Demultiplexer Buffer
6. Data Recovery
7. Frame Synchronizer
8. Protocol Decoder
9. Event Processor

Each section is responsible for a specific function, and together they form the complete receiver system.
Each bandwidth is measured and compared with the desired value. PM channel reception is set to zero for all

Software

The AGC loop is used to control the receiver's gain. When the signal strength is low, the gain is increased; when the signal strength is high, the gain is decreased.

The AGC loop is also used to control the receiver's bandwidth. When the signal is weak, the bandwidth is increased to improve sensitivity. When the signal is strong, the bandwidth is decreased to reduce interference.

The AGC loop is also used to control the receiver's noise figure. When the signal is weak, the noise figure is increased to reduce the effect of noise. When the signal is strong, the noise figure is decreased to improve the signal-to-noise ratio.

The AGC loop is also used to control the receiver's dynamic range. When the signal is weak, the dynamic range is increased to improve sensitivity. When the signal is strong, the dynamic range is decreased to reduce distortion.

The AGC loop is also used to control the receiver's sensitivity to different types of signals. When the signal is a narrowband signal, the sensitivity is increased to improve the accuracy of the receiver. When the signal is a wideband signal, the sensitivity is decreased to reduce the effect of interference.

The AGC loop is also used to control the receiver's selectivity. When the signal is weak, the selectivity is increased to improve the accuracy of the receiver. When the signal is strong, the selectivity is decreased to reduce the effect of interference.

The AGC loop is also used to control the receiver's stability. When the signal is weak, the stability is increased to improve the accuracy of the receiver. When the signal is strong, the stability is decreased to reduce the effect of interference.

The AGC loop is also used to control the receiver's linearity. When the signal is weak, the linearity is increased to improve the accuracy of the receiver. When the signal is strong, the linearity is decreased to reduce the effect of distortion.

The AGC loop is also used to control the receiver's efficiency. When the signal is weak, the efficiency is increased to improve the accuracy of the receiver. When the signal is strong, the efficiency is decreased to reduce the effect of interference.

The AGC loop is also used to control the receiver's power consumption. When the signal is weak, the power consumption is increased to improve the accuracy of the receiver. When the signal is strong, the power consumption is decreased to reduce the effect of interference.

The AGC loop is also used to control the receiver's range. When the signal is weak, the range is increased to improve the accuracy of the receiver. When the signal is strong, the range is decreased to reduce the effect of interference.

The AGC loop is also used to control the receiver's noise reduction. When the signal is weak, the noise reduction is increased to improve the accuracy of the receiver. When the signal is strong, the noise reduction is decreased to reduce the effect of interference.

The AGC loop is also used to control the receiver's noise shaping. When the signal is weak, the noise shaping is increased to improve the accuracy of the receiver. When the signal is strong, the noise shaping is decreased to reduce the effect of interference.

The AGC loop is also used to control the receiver's noise filtering. When the signal is weak, the noise filtering is increased to improve the accuracy of the receiver. When the signal is strong, the noise filtering is decreased to reduce the effect of interference.

The AGC loop is also used to control the receiver's noise cancellation. When the signal is weak, the noise cancellation is increased to improve the accuracy of the receiver. When the signal is strong, the noise cancellation is decreased to reduce the effect of interference.
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Conclusion