第12回知的財産翻訳検定＜第7回和文英訳＞ 1級／電気･電子 【標準解答】

問 1

WHAT IS CLAIMED IS:

1. An image forming system comprising a plurality of image forming apparatuses each capable of forming an image, the plurality of image forming apparatuses being connected together in a daisy chain configuration,

each of the image forming apparatuses including

means for storing own-apparatus speed information regarding an image formation speed of the image forming apparatus,

means for obtaining downstream-apparatus speed information regarding an image formation speed of another image forming apparatus that is connected to and is downstream from the image forming apparatus, the other image forming apparatus and the image forming apparatus being included in image forming apparatuses over which image forming processing is distributed,

means for receiving image formation data including image data for forming an image,

means for determining an amount of image forming processing to be performed by the image forming apparatus in a total amount of image forming processing on the basis of the own-apparatus speed information and the downstream-apparatus speed information, the total amount of image forming processing being included in the image formation data,

means for performing an amount of image forming processing equal to the determined amount of image forming processing, and

means for instructing the other image forming apparatus to perform a remaining amount of image forming processing, excluding the amount of image processing to be performed by the image forming apparatus, in the total amount of image forming processing included in the image formation data.

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Nonlinear acoustic systems typically include a modulator for modulating an ultrasonic carrier signal with a processed audio signal, a driver amplifier for amplifying the modulated carrier signal, and at least one acoustic transducer for directing the ultrasonic signal through the air along a selected projection pathway. As the projected ultrasonic signal passes through the air, it is demodulated because of the nonlinear propagation characteristics of the air, thereby regenerating the audio signal along the selected projection pathway.

One drawback of typical nonlinear acoustic systems is that the regenerated audio signals frequently contain significant levels of distortion. According to a conventional approach to reducing distortion levels in such regenerated audio signals, an audio signal level generated by the nonlinear acoustic process is approximately proportional to the square of the modulation envelope for low levels of the ultrasonic signal, and approximately proportional to the modulation

envelope itself for high levels of the ultrasonic signal. In order to reduce the distortion, the approach employs a processing method that combines taking the square root of the audio signal and multiplying the resultant audio signal by an empirically determined constant before modulation.

Although the approach reduces distortion for specific ultrasonic output levels, this approach has drawbacks in that it generally cannot reduce distortion over a full output level range of the ultrasonic signal.

問3

Fig. 5 is a circuit diagram of a power unit of an active filter according to an embodiment in which a compensation capacitor 6 is implemented using an electrolytic capacitor. Because electrolytic capacitors have a ripple current rating, in a case where an electrolytic capacitor is used as the compensation capacitor 6 illustrated in Fig. 5, the current during the charging operation needs to be within the ripple current rating of the electrolytic capacitor. During the charging operation, a current having a sawtooth waveform that changes rapidly flows. Thus, the active filter is configured such that a high-ripple capacitor 25 (which may be implemented using a film capacitor) is charged and then the compensation capacitor 6 is charged through a smoothing reactor 26 that reduces the ripple current.

As in the above description of Fig. 5, a circuit in which the compensation capacitor 6 is charged through the smoothing reactor 26 after electric charge is stored in the high-ripple capacitor 25 is added to further reduce the ripple current. In the active filter having the above circuit configuration, the peak value of the sawtooth-waveform current can be reduced to $1/\sqrt{2}$ times the peak value in the active filter illustrated in Fig. 1, so that the peak-to-peak ripple current can be reduced. In addition, reduced harmonics of a carrier and reduced radiation noise can be achieved.