Development of Aftermarket AVN with Built-in Digital Terrestrial TV Tuners for Autumn ’07 in Japan

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Abstract

The transition from conventional analog to digital terrestrial television (hereinafter referred to as DTT) broadcasting is being promoted to be completed in July 2011. Accordingly, DTT receivers have dramatically become widespread as home-use television sets. The demand for DTT tuner units as an in-car product has been growing year after year and they have increasingly become common in vehicle, as seen in the tie-in sales with a car navigation device.

FUJITSU TEN has developed an AVN with built-in DTT tuners having even a B-CAS card slot and commercialized it as an aftermarket AVN (AVN687HD) for autumn ’07. This paper explains its functions and features.
Introduction

Improvement of Operability

Product Outline
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Channel selecting buttons

Selection of buttons arranged on operational screen

Channel setting

Electric Circuit Design

4.1 Conventional Separate DTT Tuner Unit

4.2 Efforts to Have Tuner Built In

1) Miniaturization of receiving circuit portion

2) Integration of tuner control CPU into B/E CPU (an integrated CPU)
4.2.2 Miniaturization of B/E
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4.2.3 Reduction of power consumption

5.1 Design for Small Space

5.2 Design for Heat Dissipation
5.3 EMC and Low-Cost Structure Good for Assembling Work

1) Reducing or eliminating a ground-connecting spring and parts for EMC improvement (Example 1)
2) Simplifying shapes of parts (Example 2)
3) Developing an operating portion of B-CAS card in-house (Example 3 and Example 4)

Example 1: Reducing or eliminating a ground-connecting spring and parts for EMC improvement

Example 2: Simplifying shapes of parts

Example 3: Developing an operating portion of B-CAS card in-house
Example 4: The proposed AVN with built-in digital terrestrial TV tuners for Autumn '07 in Japan.

Example 4:

- Easier operation
  - Same button arrangement as a remote control of a home TV set
  - Display of the three-digit service channel number
  - Display of the frequent-use buttons on the menu screen

- AVN with built-in DTT tuners due to miniaturization
  - Miniaturization of F/E portion (about 70% compared to our conventional one)
  - Miniaturization of B/E portion (about 63% compared to our conventional one)
  - Smaller space by adopting a slim DVD deck and an integrated PCB (17mm thinner than our conventional one)

- Improved reception performance
Conclusion

Profiles of Writers

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Entered the company in 1998. Since then, has engaged in AVN development by way of development of TV tuner units. Currently in the System Engineering Department, Engineering Division 2, CI Group.

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