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THE EVALUATION RESULTS OF SIGNAL PROCESSOR SECTION OF THE SATELLITE COMMUNICATION FACILITIES UNDER CONDITION OF A VERY ROUGH RADIO ENVIRONMENT

Abstract

In the optical space communication between the satellite and the earth station, it is effective to select the earth station that can be communicated by the site diversity by setting up two or more earth stations to secure the telecommunication line from the influence such as the clouds. For this, it is necessary to collect environmental data of the weather etc. by the satellite line for the long term and with stability. We report on the test results, configuration and specifications of the signal processor section of the satellite system developed to ensure the satellite communication even when such a bad environment condition such as depth fading in the satellite communication line and the city noise on ISM band, etc. . Design target configuration of signal processor section of the satellite communication facilities as follows. (1) Equipment composition with flexibility It is preferable to be able to set a lot of parameters voluntarily to do the research that improves the line quality corresponding to a very rough environment. (2) Signal processing circuit consists of the changeable signal processing circuit composition (3) Interference immunity are for the interference immunity in wireless LAN and others. (4) Nonlinear interference immunity in wireless LAN and others are studied. To achieve Design target, the following methods are adopted. (1) BOC method from making of wide capture range and the stability of the carrier recovery. (2) Linear interpolation method from UW of the present and the next frame as Fading Compensation Techniques to compensate the distortion caused in a satellite transmission link on 2.5 GHz band. (3) QPSK and BPSK modulation method by using wide bandwidth modulation with transmission speed 64 9 kbps. (4) LNA with high IIP3(Third Order Input Intercept Point) by the selection of best IIP3 from filtering front end and trade-off of NF characteristic of LNA To evaluate the area interference from another radio system in the city, the field test of interference from the ISM band and 2.5 GHz band are examined. Test location, the three areas in the microwave oven survey of ISM band, the measurement of the 6 area in LAN survey of ISM band, and the measuring 3 point are selected. We also explain the transmission quality degradation of developed signal processor section on the interference condition from another radio systems from the area interference test results.