**BONAFIDE CERTIFICATE**

Certified that this project report **“CHANNEL DECODING AND PERIPHERAL CONFIGURATION (PORTING) FOR DRM RECEIVER”** is the bonafide work of “**M.SHARON PREETHI”** who carried out the project work under my supervision.

**SIGNATURE SIGNATURE**

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Submitted for the Full Semester Viva Voce held on ……………………….

**Internal Examiner External Examiner**

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**ABSTRACT**

Radio needs to remain relevant in a digital interactive world. Digital Radio has better audio quality when compared to analog radio. DRM is a set of digital audio broadcasting technologies design to work over the frequency bands currently used for AM. It can deliver FM comparable sound quality on frequencies below 30MHz. The encoding and decoding can be performed with digital signal processing, so that a cheap embedded computer with conventional transmitter and receiver can perform the rather complex encoding and decoding.

This project gives the basic idea of channel decoding in digital radio. This process is cross compiled from Blackfin platform to Jacinto 5 platform. The project deals with the porting of the decoding process on J5 platform as it is a Multi processor and also had EDMA 3, while the previous versions of processors have EDMA 2 or EDMA 1.

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**LIST OF ABBREVIATIONS**

AFS - Alternative Frequency Switching

AM - Amplitude Modulation

CRC - Cyclic Redundancy Check

DRM - Digital Radio Mondiale

EEP - Equal Error Protection

FAC - Fast Access Channel

FM - Frequency Modulation

HF - High Frequency

HMmix - mixed Hierarchical Mapping

HMsym - symmetrical Hierarchical Mapping

LF - Low Frequency

MF - Medium Frequency

MSb - Most Significant bit

MSC - Main Service Channel

OFDM - Orthogonal Frequency Division Multiplexing

OIRT - Organisation Internationale de Radiodiffusion et de Télévision

Pan - Panorama

PRBS - Pseudo-Random Binary Sequence

QAM - Quadrature Amplitude Modulation

rfa - reserved for future addition

rfu - reserved for future use

SDC - Service Description Channel

SM - Standard Mapping

SPP - Standard Protected Part

UEP - Unequal Error Protection

VSPP - Very Strongly Protected Part

**LIST OF SYMBOLS**

*fR -* reference frequency of the emitted signal

*K -* number of active carriers in the OFDM symbol

*K*max *-* carrier index of the upper active carrier in the OFDM signal

*K*min *-* carrier index of the lower active carrier in the OFDM signal

*LMUX -* number of input bits per multiplex frame for the multilevel encoding

*NMUX  -* number of MSC cells (QAM symbols) per multiplex frame

*T -* elementary time period, equal to 831/3 μs (1/12 kHz)

*Tf  -* duration of the transmission frame

*Tg -* duration of the guard interval

*Ts  -* duration of an OFDM symbol

*Tsf  -* duration of the transmission super-frame built from the set of

Transmission frames

*Tu -* duration of the useful (orthogonal) part of an OFDM symbol, excluding the guard interval

*X\* -* complex conjugate of value X

*-* round towards plus infinity

*-* round towards minus infinity