RF Front-End DSP

A THESIS

Submitted by

SAMEER MATHAD

EE17M022

for the award of the degree

of

MASTER OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL ENGINEERING

INDIAN INSTITUTE OF TECHNOLOGY MADRAS

CHENNAI-600036

THESIS CERTIFICATE

This is to certify that the thesis titled “RF Front-End DSP”, submitted by Sameer Mathad (EE17M022), to the Indian Institute of Technology, Madras, for the award of the degree of Master of Technology, is a bona fide record of the project work done by her under my supervision. The contents of this thesis, in full or in parts, have not been submitted to any other Institute or University for the award of any degree or diploma.

Dr. Radhakrishna Ganti

Project Guide
Professor
Dept. of Electrical Engineering
IIT-Madras, 600 036

Place: Chennai

Date: 5th May 2019

ACKNOWLEDGEMENTS

I would like to thank my guide Prof. Radhakrishna Ganti for his continuous support and extreme patience throughout my project. I would also to thank my faculty advisor Prof. David Koilpillai for teaching courses which came to my aid during the project and guiding me throughout my M.Tech. I would like to thank all members of 5G lab. And a special thanks to my family and friends who supported me throughout my academic career.

ABSTRACT

ADRV9009 is a dual-channel RF transmitter and receiver with an observation receiver that operates over a frequency range of 75 MHz to 6 GHz with a high speed ADC/DAC running at 2 GSPS. The device supports up to 450 MHz of synthesis bandwidth on its transmitters and a dual-channel receiver that supports bandwidths up to 200 MHz. This thesis provides a description of all the blocks inside the ADRV9009 and a way to configure each of them.

Due to confidentiality issues only abstract is uploaded. Complete thesis has been submitted to **Dr. Radha Krishna Ganti**. Kindly contact the professor for full thesis.

REFERENCES

1) ADRV9009 Hardware Referance Manual.
2) P. Vaidyanathan and Truong Nguyen, "A 'trick' for the design of FIR half-band filters," in *IEEE Transactions on Circuits and Systems*, vol. 34, no. 3, pp. 297-300, March 1987.