

MMPF0100 and MMPF0200 Frequency Margining

1 Introduction

The switching regulators in the PF0100 and PF0200 operate at a default switching frequency of 2 MHz in the PWM mode. The switching frequency is derived from an internal 16 MHz master clock. These devices are powered by SMARTMOS technology. For applications sensitive to noise interference from the switching regulators, the 16 MHz can be changed to move the switching frequency away from sensitive bands. In this application note, the procedure to change the 16 MHz clock is explained.

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1.1 Trimming Explained

Table 1 gives the 16 MHz clock specification for the PF0100 (or PF0200).

Table 1. 16MHz Clock Specification

Parameter	Symbol	Min	Typ	Max	Unit
Frequency	F _{16MHZ}	14.7	16.0	17.2	MHz

Due to variations in the semiconductor manufacturing processes, at the outset not every device manufactured has its 16 MHz clock frequency between the specifications in **Table 1**. During ATE (automated test equipment) testing of the device, the 16 MHz clock is fine tuned to as close to 16 MHz as possible to ensure it fits in the specifications in **Table 1**. This fine tuning of the 16MHz (and other crucial parameters) is referred to as trimming. It is achieved by one-time-programming 5 non-volatile bits which control the 16 MHz clock. The final setting of these 5 bits which results in the clock frequency being closest to 16 MHz is referred to as "programmed trim code".

During power up, the final trim code is loaded into a volatile register which now controls the 16 MHz frequency. By accessing and changing the contents of this volatile register, it is possible to margin the 16 MHz clock.

2 Frequency Margining in the PF0100 and PF0200

The 16 MHz clock can be margined by following the below steps. These steps can be easily implemented in software.

1. Read programmed trim code

- WRITE_I2C:7F:02 // Write 0x02 to address 0x7F to access extended page 2
- READ_I2C:DF // Read register 0xDF to obtain programmed trim code for 16MHz oscillator

2. Access the look up table corresponding to the result obtained in step 1.

The 16 MHz clock is trimmed using 5 bits. The programmed trim code can thus be any value from 0 to 31 (decimal) or 0x00 to 0x1F (hexadecimal). Based on the programmed trim code value, select the appropriate table in the section "[Appendix: Look-Up Tables for Frequency Margining](#)". **Table 2** gives the look up table number for a given programmed trim code.

Table 2. Index of Look up Tables

Programmed Trim Code	Look up Table Number
0x00	Table 18
0x01	Table 17
0x02	Table 16
0x03	Table 15
0x04	Table 14
0x05	Table 13
0x06	Table 12
0x07	Table 11
0x08	Table 10
0x09	Table 9
0x0A	Table 8
0x0B	Table 7
0x0C	Table 6
0x0D	Table 5

Table 2. Index of Look up Tables (continued)

Programmed Trim Code	Look up Table Number
0x0E	Table 4
0x0F	Table 3
0x10	Table 34
0x11	Table 33
0x12	Table 32
0x13	Table 31
0x14	Table 30
0x15	Table 29
0x16	Table 28
0x17	Table 27
0x18	Table 26
0x19	Table 25
0x1A	Table 24
0x1B	Table 23
0x1C	Table 22
0x1D	Table 21
0x1E	Table 20
0x1F	Table 19

3. Look up trim code necessary for required frequency

From the table selected in Step 2, determine the trim code that is needed to set the frequency to the desired value.

For example, if the programmed trim code is read as 0x1F in Step 1, go to [Table 19](#) as per Step 2. Say, it is desired to change the switching frequency of regulators from 2 MHz to 2.225 MHz. That corresponds to changing the 16 MHz clock frequency from 16 MHz to 17.8 MHz. In [Table 19](#), the closest frequency to 17.8 MHz is 17.778 MHz and that corresponds to a trim code of 0x04. The hex value 0x04 is the trim code necessary to get to the required frequency.

4. Determine value to be written to frequency control register

- Add 0x20 to the trim code determined in Step 3. The resulting value is used in Step 5. From above example, (0x04 + 0x20) = 0x24

5. Execute commands to change the clock frequency

- `WRITE_I2C:7F:02 // Write 0x02 to address 0x7F to access extended page 2`
- `WRITE_I2C:8E:(Value determined in Step 4) // Enable overriding final trim code with selected trim code. Clock frequency changes after this command is executed`
- Continuing the above example, writing 0x24 to register 8E will change the switching frequency to 2.225 MHz.

Note that the values in the look up tables are typical numbers. There can be up to 5% tolerance in these values.

3 Appendix: Look-Up Tables for Frequency Margining

Table 3. Look-up Table for Final Trim Code of 0x0F

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	16.000	15.686	15.385	15.094	14.815	14.545	14.286	14.035
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	13.793	13.559	13.333	13.115	12.903	12.698	12.500	12.308
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	12.121	11.940	11.765	11.594	11.429	11.268	11.111	10.959
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	10.811	10.667	10.526	10.390	10.256	10.127	10.000	9.877

Table 4. Look-up Table for Final Trim Code of 0x0E

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	16.327	16.000	15.686	15.385	15.094	14.815	14.545	14.286
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	14.035	13.793	13.559	13.333	13.115	12.903	12.698	12.500
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	12.308	12.121	11.940	11.765	11.594	11.429	11.268	11.111
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	10.959	10.811	10.667	10.526	10.390	10.256	10.127	10.000

Table 5. Look-up Table for Final Trim Code of 0x0D

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	16.667	16.327	16.000	15.686	15.385	15.094	14.815	14.545
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	14.286	14.035	13.793	13.559	13.333	13.115	12.903	12.698
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	12.500	12.308	12.121	11.940	11.765	11.594	11.429	11.268
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	11.111	10.959	10.811	10.667	10.526	10.390	10.256	10.127

Table 6. Look-up Table for Final Trim Code of 0x0C

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	17.021	16.667	16.327	16.000	15.686	15.385	15.094	14.815
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	14.545	14.286	14.035	13.793	13.559	13.333	13.115	12.903
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	12.698	12.500	12.308	12.121	11.940	11.765	11.594	11.429
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	11.268	11.111	10.959	10.811	10.667	10.526	10.390	10.256

Table 7. Look-up Table for Final Trim Code of 0x0B

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	17.391	17.021	16.667	16.327	16.000	15.686	15.385	15.094
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	14.815	14.545	14.286	14.035	13.793	13.559	13.333	13.115
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	12.903	12.698	12.500	12.308	12.121	11.940	11.765	11.594
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	11.429	11.268	11.111	10.959	10.811	10.667	10.526	10.390

Table 8. Look-up Table for Final Trim Code of 0x0A

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	17.778	17.391	17.021	16.667	16.327	16.000	15.686	15.385
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	15.094	14.815	14.545	14.286	14.035	13.793	13.559	13.333
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	13.115	12.903	12.698	12.500	12.308	12.121	11.940	11.765
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	11.594	11.429	11.268	11.111	10.959	10.811	10.667	10.526

Table 9. Look-up Table for Final Trim Code of 0x09

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	18.182	17.778	17.391	17.021	16.667	16.327	16.000	15.686
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	15.385	15.094	14.815	14.545	14.286	14.035	13.793	13.559
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	13.333	13.115	12.903	12.698	12.500	12.308	12.121	11.940
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	11.765	11.594	11.429	11.268	11.111	10.959	10.811	10.667

Table 10. Look-up Table for Final Trim Code of 0x08

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	18.605	18.182	17.778	17.391	17.021	16.667	16.327	16.000
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	15.686	15.385	15.094	14.815	14.545	14.286	14.035	13.793
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	13.559	13.333	13.115	12.903	12.698	12.500	12.308	12.121
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	11.940	11.765	11.594	11.429	11.268	11.111	10.959	10.811

Table 11. Look-up Table for Final Trim Code of 0x07

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	19.048	18.605	18.182	17.778	17.391	17.021	16.667	16.327
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	16.000	15.686	15.385	15.094	14.815	14.545	14.286	14.035
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	13.793	13.559	13.333	13.115	12.903	12.698	12.500	12.308
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	12.121	11.940	11.765	11.594	11.429	11.268	11.111	10.959

Table 12. Look-up Table for Final Trim Code of 0x06

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	19.512	19.048	18.605	18.182	17.778	17.391	17.021	16.667
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	16.327	16.000	15.686	15.385	15.094	14.815	14.545	14.286
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	14.035	13.793	13.559	13.333	13.115	12.903	12.698	12.500
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	12.308	12.121	11.940	11.765	11.594	11.429	11.268	11.111

Table 13. Look-up Table for Final Trim Code of 0x05

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	20.000	19.512	19.048	18.605	18.182	17.778	17.391	17.021
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	16.667	16.327	16.000	15.686	15.385	15.094	14.815	14.545
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	14.286	14.035	13.793	13.559	13.333	13.115	12.903	12.698
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	12.500	12.308	12.121	11.940	11.765	11.594	11.429	11.268

Table 14. Look-up Table for Final Trim Code of 0x04

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	20.513	20.000	19.512	19.048	18.605	18.182	17.778	17.391
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	17.021	16.667	16.327	16.000	15.686	15.385	15.094	14.815
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	14.545	14.286	14.035	13.793	13.559	13.333	13.115	12.903
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	12.698	12.500	12.308	12.121	11.940	11.765	11.594	11.429

Table 15. Look-up Table for Final Trim Code of 0x03

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	21.053	20.513	20.000	19.512	19.048	18.605	18.182	17.778
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	17.391	17.021	16.667	16.327	16.000	15.686	15.385	15.094
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	14.815	14.545	14.286	14.035	13.793	13.559	13.333	13.115
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	12.903	12.698	12.500	12.308	12.121	11.940	11.765	11.594

Table 16. Look-up Table for Final Trim Code of 0x02

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	21.622	21.053	20.513	20.000	19.512	19.048	18.605	18.182
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	17.778	17.391	17.021	16.667	16.327	16.000	15.686	15.385
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	15.094	14.815	14.545	14.286	14.035	13.793	13.559	13.333
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	13.115	12.903	12.698	12.500	12.308	12.121	11.940	11.765

Table 17. Look-up Table for Final Trim Code of 0x01

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	22.222	21.622	21.053	20.513	20.000	19.512	19.048	18.605
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	18.182	17.778	17.391	17.021	16.667	16.327	16.000	15.686
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	15.385	15.094	14.815	14.545	14.286	14.035	13.793	13.559
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	13.333	13.115	12.903	12.698	12.500	12.308	12.121	11.940

Table 18. Look-up Table for Final Trim Code of 0x00

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	22.857	22.222	21.622	21.053	20.513	20.000	19.512	19.048
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	18.605	18.182	17.778	17.391	17.021	16.667	16.327	16.000
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	15.686	15.385	15.094	14.815	14.545	14.286	14.035	13.793
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	13.559	13.333	13.115	12.903	12.698	12.500	12.308	12.121

Table 19. Look-up Table for Final Trim Code of 0x1F

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	23.529	22.857	22.222	21.622	21.053	20.513	20.000	19.512
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	19.048	18.605	18.182	17.778	17.391	17.021	16.667	16.327
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	16.000	15.686	15.385	15.094	14.815	14.545	14.286	14.035
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	13.793	13.559	13.333	13.115	12.903	12.698	12.500	12.308

Table 20. Look-up Table for Final Trim Code of 0x1E

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	24.242	23.529	22.857	22.222	21.622	21.053	20.513	20.000
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	19.512	19.048	18.605	18.182	17.778	17.391	17.021	16.667
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	16.327	16.000	15.686	15.385	15.094	14.815	14.545	14.286
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	14.035	13.793	13.559	13.333	13.115	12.903	12.698	12.500

Table 21. Look-up Table for Final Trim Code of 0x1D

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	25.000	24.242	23.529	22.857	22.222	21.622	21.053	20.513
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	20.000	19.512	19.048	18.605	18.182	17.778	17.391	17.021
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	16.667	16.327	16.000	15.686	15.385	15.094	14.815	14.545
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	14.286	14.035	13.793	13.559	13.333	13.115	12.903	12.698

Table 22. Look-up Table for Final Trim Code of 0x1C

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	25.806	25.000	24.242	23.529	22.857	22.222	21.622	21.053
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	20.513	20.000	19.512	19.048	18.605	18.182	17.778	17.391
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	17.021	16.667	16.327	16.000	15.686	15.385	15.094	14.815
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	14.545	14.286	14.035	13.793	13.559	13.333	13.115	12.903

Table 23. Look-up Table for Final Trim Code of 0x1B

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	26.667	25.806	25.000	24.242	23.529	22.857	22.222	21.622
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	21.053	20.513	20.000	19.512	19.048	18.605	18.182	17.778
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	17.391	17.021	16.667	16.327	16.000	15.686	15.385	15.094
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	14.815	14.545	14.286	14.035	13.793	13.559	13.333	13.115

Table 24. Look-up Table for Final Trim Code of 0x1A

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	27.586	26.667	25.806	25.000	24.242	23.529	22.857	22.222
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	21.622	21.053	20.513	20.000	19.512	19.048	18.605	18.182
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	17.778	17.391	17.021	16.667	16.327	16.000	15.686	15.385
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	15.094	14.815	14.545	14.286	14.035	13.793	13.559	13.333

Table 25. Look-up Table for Final Trim Code of 0x19

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	28.571	27.586	26.667	25.806	25.000	24.242	23.529	22.857
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	22.222	21.622	21.053	20.513	20.000	19.512	19.048	18.605
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	18.182	17.778	17.391	17.021	16.667	16.327	16.000	15.686
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	15.385	15.094	14.815	14.545	14.286	14.035	13.793	13.559

Table 26. Look-Up Table for Final Trim Code of 0x18

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	29.630	28.571	27.586	26.667	25.806	25.000	24.242	23.529
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	22.857	22.222	21.622	21.053	20.513	20.000	19.512	19.048
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	18.605	18.182	17.778	17.391	17.021	16.667	16.327	16.000
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	15.686	15.385	15.094	14.815	14.545	14.286	14.035	13.793

Table 27. Look-up Table for Final Trim Code of 0x17

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	30.769	29.630	28.571	27.586	26.667	25.806	25.000	24.242
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	23.529	22.857	22.222	21.622	21.053	20.513	20.000	19.512
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	19.048	18.605	18.182	17.778	17.391	17.021	16.667	16.327
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	16.000	15.686	15.385	15.094	14.815	14.545	14.286	14.035

Table 28. Look-up Table for Final Trim Code of 0x16

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	32.000	30.769	29.630	28.571	27.586	26.667	25.806	25.000
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	24.242	23.529	22.857	22.222	21.622	21.053	20.513	20.000
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	19.512	19.048	18.605	18.182	17.778	17.391	17.021	16.667
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	16.327	16.000	15.686	15.385	15.094	14.815	14.545	14.286

Table 29. Look-up Table for Final Trim Code of 0x15

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	33.333	32.000	30.769	29.630	28.571	27.586	26.667	25.806
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	25.000	24.242	23.529	22.857	22.222	21.622	21.053	20.513
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	20.000	19.512	19.048	18.605	18.182	17.778	17.391	17.021
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	16.667	16.327	16.000	15.686	15.385	15.094	14.815	14.545

Table 30. Look-up Table for Final Trim Code of 0x14

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	34.783	33.333	32.000	30.769	29.630	28.571	27.586	26.667
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	25.806	25.000	24.242	23.529	22.857	22.222	21.622	21.053
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	20.513	20.000	19.512	19.048	18.605	18.182	17.778	17.391
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	17.021	16.667	16.327	16.000	15.686	15.385	15.094	14.815

Table 31. Look-up Table for Final Trim Code of 0x13

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	36.364	34.783	33.333	32.000	30.769	29.630	28.571	27.586
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	26.667	25.806	25.000	24.242	23.529	22.857	22.222	21.622
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	21.053	20.513	20.000	19.512	19.048	18.605	18.182	17.778
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	17.391	17.021	16.667	16.327	16.000	15.686	15.385	15.094

Table 32. Look-up Table for Final Trim Code of 0x12

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	38.095	36.364	34.783	33.333	32.000	30.769	29.630	28.571
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	27.586	26.667	25.806	25.000	24.242	23.529	22.857	22.222
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	21.622	21.053	20.513	20.000	19.512	19.048	18.605	18.182
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	17.778	17.391	17.021	16.667	16.327	16.000	15.686	15.385

Table 33. Look-up Table for Final Trim Code of 0x11

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	40.000	38.095	36.364	34.783	33.333	32.000	30.769	29.630
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	28.571	27.586	26.667	25.806	25.000	24.242	23.529	22.857
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	22.222	21.622	21.053	20.513	20.000	19.512	19.048	18.605
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	18.182	17.778	17.391	17.021	16.667	16.327	16.000	15.686

Table 34. Look-up Table for Final Trim Code of 0x10

Trim Code (Hex)	0F	0E	0D	0C	0B	0A	9	8
Frequency (MHz)	42.105	40.000	38.095	36.364	34.783	33.333	32.000	30.769
Trim Code (Hex)	7	6	5	4	3	2	1	0
Frequency (MHz)	29.630	28.571	27.586	26.667	25.806	25.000	24.242	23.529
Trim Code (Hex)	1F	1E	1D	1C	1B	1A	19	18
Frequency (MHz)	22.857	22.222	21.622	21.053	20.513	20.000	19.512	19.048
Trim Code (Hex)	17	16	15	14	13	12	11	10
Frequency (MHz)	18.605	18.182	17.778	17.391	17.021	16.667	16.327	16.000

4 References

Following are URLs where you can obtain information on related Freescale products and application solutions:

Document Number and Description		URL
MMPF0100	Data Sheet	www.freescale.com/files/analog/doc/data_sheet/MMPF0100.pdf
MMPF0200	Data Sheet	www.freescale.com/files/analog/doc/data_sheet/MMPF0200.pdf
Freescale.com Support Pages		URL
MMPF0100 Product Summary Page		http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=MMPF0100
MMPF0200 Product Summary Page		http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=MMPF0200
Power Management Home Page		http://www.freescale.com/PMIC
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5 Revision History

Revision	Date	Description
1.0	12/2013	• Initial release

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