Ameba-Z EFUSE Calibration Data Spec

Version: 0.1

Modification History

Version	Data	Author	Change
0.1	2016/11/16	Chaoming_li	Initial version.

1. Calibration Data Spec

■ Total 512 bytes:

<table>
<tr><th>Bytes</th><th>Contents</th><th>Description</th><th>Value</th></tr>
<tr><td>00h</td><td>95h</td><td rowspan="2">These 2 bytes contain the ID code word for the RTL8195A. The RTL8195A will load the contents of the eFuse into the corresponding location if the ID word is correct.</td><td rowspan="2">8195h</td></tr>
<tr><td>01h</td><td>81h</td></tr>
<tr><td>02h ~ 1Fh</td><td>Reserved</td><td>Reserved for Realtek. Do not change this field without Realtek’s approval.</td><td>-</td></tr>
<tr><td>20h</td><td rowspan="6">Path A 2.4G CCK-1TX Power Index (Absolute Value)</td><td>Path A CCK Power Index for Ch 1,2, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>21h</td><td>Path A CCK Power Index for Ch 3, 4, 5, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>22h</td><td>Path A CCK Power Index for Ch 6, 7, 8, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>23h</td><td>Path A CCK Power Index for Ch 9, 10, 11, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>24h</td><td>Path A CCK Power Index for Ch 12, 13, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>25h</td><td>Path A CCK Power Index for Ch 14, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>26h</td><td rowspan="5">Path A 2.4G BW40-1S TX Power Index (Absolute Value)</td><td>Path A 2G BW40-1S Power Index for Ch 1, 2, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>27h</td><td>Path A 2G BW40-1S Power Index for Ch 3, 4, 5, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>28h</td><td>Path A 2G BW40-1S Power Index for Ch 6, 7, 8, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>29h</td><td>Path A 2G BW40-1S Power Index for Ch 9, 10, 11, Range 0~63.</td><td>2Dh</td></tr>
<tr><td>2Ah</td><td>Path A 2G BW40-1S Power Index for Ch 12, 13, 14 Range 0~63.</td><td>2Dh</td></tr>
<tr><td>2Bh</td><td>Path A 2.4G BW20-1S TX Power Index Difference OFDM-1 TX Power Index Difference</td><td>Power Index Difference between BW20-1S and BW40-1S.
Bit[7:4] : Path A 2G Offset, Range –8~7.
Power Index Difference between OFDM-1Tx and BW40-1S.
Bit[3:0] : Path A 2G Offset, Range –8~7.</td><td>02h</td></tr>
<tr><td>2Ch~C7h</td><td>Reserved</td><td>Reserved for Realtek.</td><td>-</td></tr>
<tr><td>C8h</td><td>Channel Plan</td><td>Bit[7]: Software configure mode
0h: Enable software configure(refer to Channel Plane Domain Code)
1h: Disable software configure(can't change Channel Plan Setting)
Bit[6:0]: Channel Plan
<table>
<tr><th>Domain Code</th><th>Value</th><th>Channels</th><th>Description</th></tr>
<tr><td>2G_WORLD</td><td>20h</td><td>1~13</td><td>Worldwird 13</td></tr>
<tr><td>2G_ETSI1</td><td>21h</td><td>1~13</td><td>Europe 2G</td></tr>
<tr><td>2G_FCC1</td><td>22h</td><td>1~11</td><td>US 2G</td></tr>
<tr><td>2G_MKK1</td><td>23h</td><td>1~13, 14</td><td>Japan 2G</td></tr>
<tr><td>2G_ETSI2</td><td>24h</td><td>10~13</td><td>France 2G</td></tr>
<tr><td>2G_FCC2</td><td>2Ah</td><td>1~13</td><td>US 2G</td></tr>
</table></td><td>20h</td></tr>
<tr><td>C9h</td><td>Crystal Calibration</td><td>XTAL_K Value
Bit[5:0], Xi=Xo Range 0~3F h.
Bit[7:6]: reserved
FF h = 00 h</td><td>20h</td></tr>
</table>

<table>
<tr><th>Bytes</th><th>Contents</th><th>Description</th><th>Value</th></tr>
<tr><td>CAh</td><td>Thermal Meter</td><td>Thermal Meter Default Value
System maker will calibrate a value and save it in calibration data section .
Bit[7:0]: Thermal Meter Value</td><td>1Ah</td></tr>
<tr><td>CBh</td><td>Reserved</td><td>Reserved for Realtek</td><td>05h</td></tr>
<tr><td>CCh</td><td>Reserved</td><td>Reserved for Realtek.</td><td>00h</td></tr>
<tr><td>CDh</td><td>Reserved</td><td>Reserved for Realtek.</td><td>00h</td></tr>
<tr><td>CEh</td><td>Reserved</td><td>Reserved for Realtek.</td><td>00h</td></tr>
<tr><td>CFh</td><td>Reserved</td><td>Reserved for Realtek.</td><td>FFh</td></tr>
<tr><td>D0h</td><td>CCCR</td><td>Bit[0]: SCSI ,CCCR 0x07[6]
Bit[1]:SDC , CCCR 0x08[0]
Bit[2]:SMB , CCCR 0x08[1]
Bit[3]:S4MI , CCCR 0x08[4]
Bit[4]:SMPC , CCCR 0x12[0]
Bit[5]:SHS , CCCR 0x13[0]
Bit[6]:SSDR50 , CCCR 0x14[0]
Bit[7]:SSDR104 , CCCR 0x14[1]</td><td>3Eh</td></tr>
<tr><td>D1h</td><td>CCCR&FBR</td><td>Bit[0]:SDDR50 , CCCR 0x14[2]
Bit[1]:SDTA , CCCR 0x15[0]
Bit[2]:SDTC , CCCR 0x15[1]
Bit[3]:SDTD , CCCR 0x15[2]
Bit[4]:SAI , CCCR 0x16[0]
Bit[5]: Init_skip, 0:need cmd 0 5 5 3 7 to enable Wifi ,(default)
1:skip
Bit[6~7]:reserve</td><td>00h</td></tr>
<tr><td>D2h</td><td></td><td>Bit[0]: SPS ,FBR 0x102[0]
Bit[1~3]:reserved
Bit[4~7]:PS3 ,FBR 0x102[4~7]</td><td>01h</td></tr>
<tr><td>D3h</td><td>CCCR</td><td><table><tr><th>Bit</th><th>Description</th></tr><tr><td>7:4</td><td>Reserved</td></tr><tr><td>3:0</td><td>CCCR Format Version number
0x02: CCCR/FBR Version 2.00</td></tr></table></td><td>02h</td></tr>
<tr><td>D4h</td><td>SDIO_MODE</td><td><table><tr><th>Bit</th><th>Description</th></tr><tr><td>7:4</td><td>SDx: SD Format Version number
0x02: SD physical Specification Version 2.00</td></tr><tr><td>3:0</td><td>SDIOx: SDIO Format Version number
0x03: SDIO physical Specification Version 2.00</td></tr></table>Note: SDIOx and SDx are in CCCR register.</td><td>23h</td></tr>
<tr><td>D5h~D7h</td><td>OCR</td><td>OCR value. Little Endian order.（This value must be consistent with CIS tuple value）</td><td>FC0000h</td></tr>
<tr><td>D8h~DBh</td><td>Common CIS Data</td><td>Offset 68h~6Bh: CISTPL_MANFID
Value :0x20 04 4C 02</td><td></td></tr>
</table>

Bytes	Contents	Description	Value
DCh~DDh	Common CIS Data	8195AM Offset 6Ch~6Dh: CISTPL_MANFID Value : **95 81** 8711AF Offset 6Ch~6Dh: CISTPL_MANFID Value : **11 87**	
DEh~E8h	Common CIS Data	Offset 6Eh~71h: CISTPL_FUNCID Value :21 02 0C 00 Offset 72h~78h: CISTPL_FUNCE Value :22 04 00 08 00 32 FF	
E9h~119h	Function 1 CIS Data	Offset 79h~7Ch: CISTPL_FUNCID Value :21 02 0C 00 Offset 7Dh~7Eh:CISTPL_FUNCE Value :22 2A Offset 7Fh~A9h: Value : 01 01 00 00 00 00 00 00 - 00 00 00 00 00 02 00 FF FF 00 00 00 00 00 00 00 - 00 00 00 00 00 00 00 00 00 00 EB 00 6E 01 00 00 - 00 00 FF	
11Ah~11Fh	Function 1 CIS Data MAC Address	MAC Address: After the auto-load command or hardware reset, the *RTL8195A* loads MAC Addresses to MACID of the I/O registers of the *RTL8195A*.	FFFFFFF FFFFFh
120h~130h	Reserved	Reserved for Realtek.	FFh
131h	Board Options	Bit[2:0]: Regulatory selection. 0h: driver-defined maximum power offset for longer communication range. (refer to Power by rate table) 1h: Power limit table-defined maximum power offset range (refer to Power by rate table and Power limit table to take the smaler index value) 2h: not support power offset by rate (Don't refer to Power by rate table) 3h~7h: reserved Bit[3]: reserved Bit[4]: reserved Bit[7:5]: reserved .	01h

Bytes	Contents	Description	Value
132h	Feature Options	Bit[1:0]: function configuration of pin_LED0 and pin_LED1 Bit[3:2]: Link Speed shown in OS 0h: Current Tx PHY Rate 1h: Current Rx PHY Rate 2h: Maximum RX PHY Rate 3h: reserved Bit[4]: power down mode selection 0: radio off 1: power down Bit[5]: Enable bluetooth coexistence 0: Disable 1: Enable Bit[6]: Enable WoWLAN 0: Disable 1: Enable Bit[7]: Enable WAPI support 0: Disable 1: Enable	00h
133h	Antenna Setting	Bit[0]: Total antenna number 0: 2-Antenna (default) 1: 1-Antenna Bit[5:1]: reserved Bit[6]: Single antenna path 0: Single antenna use S1 (default) 1: Single antenna use S0 Bit[7]: reserved	10h
134h	Version	The EEPROM content version.	00h
135h	Customer ID	Customer ID (0x00 and 0xFF are reserved for Realtek)	FFh

Bytes	Contents	Description	Value
136h	2G Tx BB Swing Setting	Bit[1:0]: 2G PathA OFDM 0h: 0dB (default) 1h: -3dB 2h: -6dB 3h: -9dB Bit[3:2]: 2G PathB OFDM 0h: 0dB (default) 1h: -3dB 2h: -6dB 3h: -9dB Bit[5:4]: 2G PathC OFDM 0h: 0dB (default) 1h: -3dB 2h: -6dB 3h: -9dB Bit[7:6]: 2G PathD OFDM 0h: 0dB (default) 1h: -3dB 2h: -6dB 3h: -9dB	00h
137h	Reserved	Reserved for Realtek.	FFh
138h	Tx Power Calibratior Rate	Bit[0]: 2G 40M Tx Power Calibrator Rate. 0h : HT40, MCS7 64QAM (default) Bit[7:1]: reserved	00h
139h	TRx antenna Options	Bit[7:0]: reserved	00h
13Ah	RFE Type	Bit[6:0]: RF Front-end Type 0h~Fh: reserved 10h: reserved 11h: reserved 12h: SPDT with single antenna. 13h: reserved 14h~7Fh: reserved	FFh
13Bh	Country code	ISO 3166-1 Country code. Default 0xFFFF: Driver follows setting according to “0xC8 Channel Plan”	FFh
13Ch	Country code	ISO 3166-1 Country code. Default 0xFFFF: Driver follows setting according to “0xC8 Channel Plan”	FFh
13Dh~13Fh	Reserved	Reserved for Realtek.	FFh