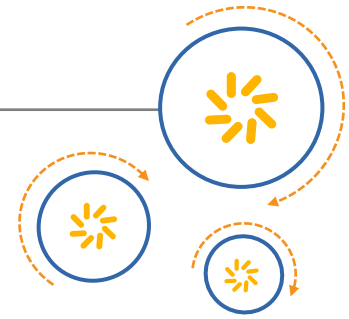




Qualcomm Technologies, Inc.



Qualcomm® Snapdragon™ 600E processor

APQ8064E GPIO Pin Assignment Spreadsheet

LM80-P0598-13 Rev. B

September 21, 2016

© 2015-2016 Qualcomm Technologies, Inc. All rights reserved.

Qualcomm Snapdragon is a product of Qualcomm Technologies, Inc. Other Qualcomm products referenced herein are products of Qualcomm Technologies, Inc. or its other subsidiaries.

DragonBoard, Qualcomm and Snapdragon are trademarks of Qualcomm Incorporated, registered in the United States and other countries. Other product and brand names may be trademarks or registered trademarks of their respective owners.

This technical data may be subject to U.S. and international export, re-export, or transfer ("export") laws. Diversion contrary to U.S. and international law is strictly prohibited.

Use of this document is subject to the license set forth in Exhibit 1.

Qualcomm Technologies, Inc.
5775 Morehouse Drive
San Diego, CA 92121
U.S.A.

Revision history

Revision	Date	Description
B	September 2016	Updated to 'E' part
A	November 2015	Initial release

APQ8064E GPIO map					Alternate functions							
Pad #	GPIO	RPM interrupt	Pad	Pull (default: options)	Alternate function	Alternate function	Alternate function	Alternate function	Alternate function	Alternate function	Alternate function	Alternate function
AP4	0		P3	B-PD:nppukp		MDP_VSYNC_P	VFE_CAMIF_TIMER6_B					
AP2	1		P3	B-PD:nppukp		MDP_VSYNC_S	VFE_CAMIF_TIMER7_B					
B36	2		P3	B-PD:nppukp	GP_MN	CAM_MCLK2	VFE_CAMIF_TIMER1_A		BOOT_FROM_ROM			
D38	3		P3	B-PD:nppukp	GP_CLK_0A		VFE_CAMIF_TIMER2		WDOG_DISABLE		ETM_TRACE_B_DATA(15)	
C37	4		P3	B-PD:nppukp	GP_CLK_1A	CAM_MCLK1	VFE_CAMIF_TIMER3_A		BOOT_CONFIG[6]			
B38	5		P3	B-PD:nppukp			CAM_MCLK0		BOOT_CONFIG[5]			
D24	6	►	P3	BH-PD:nppukp	GPS_PPS_IN	GPS_PPS_OUT	VFE_CAMIF_TIMER4_C	GSBI1_SPI_CS2A_N	SSBI_TS	GSBI3_3		
E23	7	►	P3	BH-PD:nppukp		TS_EOC	GSBI1_SPI_CS3B_N	GSBI1_SPI_CS1A_N		GSBI3_2	ETM_TRACE_B_DATA(14)	
C25	8		P3	B-PD:nppukp						GSBI3_1		
E25	9		P3	B-PD:nppukp						GSBI3_0		
B26	10	►	P3	BH-PD:nppukp			VFE_CAMIF_TIMER6_C	GSBI1_SPI_CS1B_N		GSBI4_3	ETM_TRACE_CTL	
D26	11	►	P3	BH-PD:nppukp	MDP_VSYNC_E		VFE_CAMIF_TIMER7_C	GSBI1_SPI_CS2B_N		GSBI4_2	ETM_TRACE_CLK	
B28	12		P3	B-PD:nppukp						GSBI4_1	ETM_TRACE_A_DATA(0)	
C29	13		P3	B-PD:nppukp						GSBI4_0	ETM_TRACE_A_DATA(1)	
AN5	14		P3	B-PD:nppukp		SSBI_FM				GSBI6_3	ETM_TRACE_A_DATA(15)	
AM2	15	►	P3	BH-PD:nppukp		SFM_SDI				GSBI6_2	ETM_TRACE_A_DATA(14)	
AM4	16		P3	B-PD:nppukp		BT_CTL				GSBI6_1	ETM_TRACE_A_DATA(13)	
AL5	17		P3	B-PD:nppukp		BT_DATA_STROBE				GSBI6_0	ETM_TRACE_A_DATA(12)	
D30	18	►	P3	BH-PD:nppukp		GP_PDM_0B	VFE_CAMIF_TIMER1_B			GSBI1_3	ETM_TRACE_A_DATA(5)	
E31	19	►	P3	BH-PU:nppukp			VFE_CAMIF_TIMER5_B			GSBI1_2	ETM_TRACE_A_DATA(4)	
D32	20		P3	B-PD:nppukp						GSBI1_1	ETM_TRACE_A_DATA(3)	
C33	21		P3	B-PD:nppukp						GSBI1_0	ETM_TRACE_A_DATA(2)	
B32	22	►	P3	BH-PU:nppukp		GP_PDM_1A				GSBI2_3		
E33	23	►	P3	BH-PD:nppukp						GSBI2_2		
D34	24		P3	B-PD:nppukp						GSBI2_1		
F34	25		P3	B-PD:nppukp		GP_CLK_2B				GSBI2_0		
B30	26	►	P3	BH-PD:nppdkp		TS_PENIRQ_N						
BB34	27		P3	B-PD:nppukp	MI2S_WS							
BD30	28		P3	B-PD:nppukp	MI2S_SCLK							
BC31	29	►	P3	BH-PD:nppukp	MI2S_DATA_SD3							
BF38	30	►	P3	BH-PD:nppukp	MI2S_DATA_SD2		AUD_SB1_DATA_B					
BA33	31		P3	B-PD:nppukp	MI2S_DATA_SD1		AUD_SBI_CLK_B					
BD32	32	►	P3	BH-PD:nppukp	MI2S_DATA_SD0	GP_CLK_2A						
BF32	33		P3	B-PD:nppukp	MI2S_MCLK	GP_PDM_2B			BOOT_CONFIG[4]			
AG5	34	►	P3	BH-PD:nppukp	CODEC_MIC_I2S_MCLK	GP_CLK_0B			BOOT_CONFIG[3]			
AF2	35		P3	B-PD:nppukp	CODEC_MIC_I2S_SCK							
AF6	36	►	P3	BH-PD:nppukp	CODEC_MIC_I2S_WS		USB_FS1_OE_B_N	GSBI1_SPI_CS1C_N				
AF4	37		P3	B-PD:nppukp	CODEC_MIC_I2S_DIN0		USB_FS1_DAT_B					
AE5	38	►	P3	BH-PD:nppukp	CODEC_MIC_I2S_DIN1	GP_PDM_0A	USB_FS1_SE0_B					
BA31	39	►	P3	BH-PD:nppukp	CODEC_SPKR_I2S_MCLK		AUD_SB1_MCLK		BOOT_CONFIG[2]			
BF40	40		P3	B-PD:nppukp	CODEC_SPKR_I2S_SCK		AUD_SB1_CLK_A				ETM_RIVA_TRACESYNC_B	
BE39	41	►	P3	BH-PD:nppukp	CODEC_SPKR_I2S_DOUT		AUD_SB1_DATA_A				ETM_RIVA_PIPESTAT_B(2)	
BE31	42	►	P3	BH-PD:nppukp	CODEC_SPKR_I2S_WS						ETM_RIVA_PIPESTAT_B(1)	
BF34	43		P3	B-PD:nppukp	AUDIO_PCM_DOUT						ETM_RIVA_PIPESTAT_B(0)	
BF36	44	►	P3	BH-PD:nppukp	AUDIO_PCM_DIN	GP_PDM_1B					ETM_RIVA_PIPESTAT_A(2)	
BD36	45	►	P3	BH-PD:nppukp	AUDIO_PCM_SYNC						ETM_RIVA_TRACESYNC_A	
BC35	46		P3	B-PD:nppukp	AUDIO_PCM_CLK		VFE_CAMIF_TIMER4_A				ETM_RIVA_TRACEPKT_A(0)	
BB30	47	►	P3	BH-PD:nppukp	SPKR_I2S_SCK		VFE_CAMIF_TIMER5_A					
BA29	48		P3	B-PD:nppukp	SPKR_I2S_WS		VFE_CAMIF_TIMER7_A					
BF30	49	►	P3	BH-PD:nppukp	SPKR_I2S_DOUT		GSBI1_SPI_CS2C_N					
BC29	50	►	P3	BH-PD:nppukp	SPKR_I2S_MCLK	GP_CLK_1B	GP_PDM_2A				ETM_TRACE_A_DATA(11)	
BF28	51		P3	B-PD:nppukp	MIC_I2S_DIN				BOOT_CONFIG[1]		ETM_TRACE_A_DATA(10)	
BD28	52	►	P3	BH-PD:nppukp	MIC_I2S_SCK		VFE_CAMIF_TIMER6_A			GSBI5_3	ETM_TRACE_A_DATA(9)	
BE27	53		P3	B-PD:nppukp	MIC_I2S_WS	(USB_UICC_DP)	USB_FS1_OE_A_N			GSBI5_2	ETM_TRACE_A_DATA(8)	
BF26	54		P3	B-PD:nppukp	MIC_I2S_MCLK	(USB_UICC_DM)	USB_FS1_DAT_A			GSBI5_1	ETM_TRACE_A_DATA(7)	
AY2	55	►	P3	BH-PD:nppukp			USB_FS1_SE0_A			GSBI5_0	ETM_TRACE_A_DATA(6)	
AY4	56	►	P3	BH-PD:nppukp			TSIF1_CLK				ETM_TRACE_B_DATA(13)	
AW5	57		P3	B-PD:nppukp			TSIF1_EN	GSBI1_SPI_CS3A_N			ETM_TRACE_B_DATA(12)	
AW3	58	►	P3	BH-PD:nppukp	SDC2_CMD		TSIF1_DATA				ETM_TRACE_B_DATA(11)	
AV2	59		P3	B-PD:nppukp	SDC2_DATA[3]		TSIF2_SYNC				ETM_TRACE_B_DATA(10)	
AT4	60		P3	B-PD:nppukp	SDC2_CLK		TSIF2_CLK				ETM_TRACE_B_DATA(9)	
AT2	61	►	P3	BH-PD:nppukp	SDC2_DATA[2]		TSIF2_EN				ETM_TRACE_B_DATA(8)	
AR3	62		P3	B-PD:nppukp	SDC2_DATA[1]		TSIF2_DATA				ETM_TRACE_B_DATA(7)	
BD40	63	►	P3	BH-PD:nppukp	SDC2_DATA[0]		TSIF1_SYNC				ETM_TRACE_B_DATA(6)	
BC39	64		P3	B-PD:nppukp	SDC4_DATA[3]	SSBI_BT						
BA37	65	►	P3	BH-PD:nppukp	SDC4_DATA[2]	WLAN_DATA[2]						
BB38	66		P3	B-PD:nppukp	SDC4_DATA[1]	WLAN_DATA[1]						
BD34	67		P3	B-PD:nppukp	SDC4_DATA[0]	WLAN_DATA[0]						
BC33	68		P3	B-PD:nppukp	SDC4_CMD	WLAN_CMD						
AD4	69		P3	B-PU:nppdkp	SDC4_CLK	WLAN_CLK						
AC3	70		P3	B-PU:nppdkp	HDMI_CEC							
AC5	71		P3	B-PU:nppdkp	HDMI_DDC_CLOCK							
AB4	72	►	P3	BH-PD:nppukp	HDMI_DDC_DATA							
M2	73	►	P3	BH-PU:nppdkp	HDMI_HOT_PLUG_DETECT							
M4	74	►	P3	BH-PU:nppdkp		PMIC1_SEC_INT_N						
L3	75	►	P3	BH-PU:nppdkp		PMIC1_USR_INT_N						
K2	76	►	P3	BH-PU:nppdkp		PMIC_MDM_INT_N						
J5	77	►	P3	BH-PU:nppdkp		PMIC2_SEC_INT_N						
H4	78		P3	B-PD:nppukp		PMIC2_USR_INT_N						
H2	79		P3	B-PD:nppukp	PS_HOLD							
B34	80		P3	B-PD:nppukp	SSBI_PMIC2							
AR5	81	►	P3	BH-PD:nppukp	GPS_BLANKING							
D20	82		P3	B-PD:nppukp	SSBI_EXT_GPS							
B22	83	►	P3	BH-PD:nppukp	PCI_E_RST_N					GSBI7_3		
C21	84	►	P3	BH-PD:nppukp	PCI_E_WAKE_N					GSBI7_2		
D22	85		P3	B-PD:nppukp	PCI_E_PRSNT_2_N					GSBI7_1		
B24	86		P3	B-PD:nppukp	PCI_E_PWREN_N					GSBI7_0		
B20	87		P3	B-PD:nppukp	PCI_E_PWRFLT_N							
AB2	88	►	P4	BH-PD:nppukp	SATA_LED				BOOT_CONFIG[0]			
Y4	89		P4	B-PD:nppukp	USB2_HSIC_STROBE		VFE_CAMIF_TIMER4_B					
					USB2_HSIC_DATA		VFE_CAMIF_TIMER3_B					

EXHIBIT 1

PLEASE READ THIS LICENSE AGREEMENT ("AGREEMENT") CAREFULLY. THIS AGREEMENT IS A BINDING LEGAL AGREEMENT ENTERED INTO BY AND BETWEEN YOU (OR IF YOU ARE ENTERING INTO THIS AGREEMENT ON BEHALF OF AN ENTITY, THEN THE ENTITY THAT YOU REPRESENT) AND QUALCOMM TECHNOLOGIES, INC. ("QTI" "WE" "OUR" OR "US"). THIS IS THE AGREEMENT THAT APPLIES TO YOUR USE OF THE DESIGNATED AND/OR ATTACHED DOCUMENTATION AND ANY UPDATES OR IMPROVEMENTS THEREOF (COLLECTIVELY, "MATERIALS"). BY USING OR COMPLETING THE INSTALLATION OF THE MATERIALS, YOU ARE ACCEPTING THIS AGREEMENT AND YOU AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. IF YOU DO NOT AGREE TO THESE TERMS, QTI IS UNWILLING TO AND DOES NOT LICENSE THE MATERIALS TO YOU. IF YOU DO NOT AGREE TO THESE TERMS YOU MUST DISCONTINUE AND YOU MAY NOT USE THE MATERIALS OR RETAIN ANY COPIES OF THE MATERIALS. ANY USE OR POSSESSION OF THE MATERIALS BY YOU IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH IN THIS AGREEMENT.

1.1 License. Subject to the terms and conditions of this Agreement, including, without limitation, the restrictions, conditions, limitations and exclusions set forth in this Agreement, Qualcomm Technologies, Inc. ("QTI") hereby grants to you a nonexclusive, limited license under QTI's copyrights to use the attached Materials; and to reproduce and redistribute a reasonable number of copies of the Materials. You may not use Qualcomm Technologies or its affiliates or subsidiaries name, logo or trademarks; and copyright, trademark, patent and any other notices that appear on the Materials may not be removed or obscured. QTI shall be free to use suggestions, feedback or other information received from You, without obligation of any kind to You. QTI may immediately terminate this Agreement upon your breach. Upon termination of this Agreement, Sections 1.2-4 shall survive.

1.2 Indemnification. You agree to indemnify and hold harmless QTI and its officers, directors, employees and successors and assigns against any and all third party claims, demands, causes of action, losses, liabilities, damages, costs and expenses, incurred by QTI (including but not limited to costs of defense, investigation and reasonable attorney's fees) arising out of, resulting from or related to: (i) any breach of this Agreement by You; and (ii) your acts, omissions, products and services. If requested by QTI, You agree to defend QTI in connection with any third party claims, demands, or causes of action resulting from, arising out of or in connection with any of the foregoing.

1.3 Ownership. QTI (or its licensors) shall retain title and all ownership rights in and to the Materials and all copies thereof, and nothing herein shall be deemed to grant any right to You under any of QTI's or its affiliates' patents. You shall not subject the Materials to any third party license terms (e.g., open source license terms). You shall not use the Materials for the purpose of identifying or providing evidence to support any potential patent infringement claim against QTI, its affiliates, or any of QTI's or QTI's affiliates' suppliers and/or direct or indirect customers. QTI hereby reserves all rights not expressly granted herein.

1.4 WARRANTY DISCLAIMER. YOU EXPRESSLY ACKNOWLEDGE AND AGREE THAT THE USE OF THE MATERIALS IS AT YOUR SOLE RISK. THE MATERIALS AND TECHNICAL SUPPORT, IF ANY, ARE PROVIDED "AS IS" AND WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS OR IMPLIED. QTI ITS LICENSORS AND AFFILIATES MAKE NO WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE MATERIALS OR ANY OTHER INFORMATION OR DOCUMENTATION PROVIDED UNDER THIS AGREEMENT, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR AGAINST INFRINGEMENT, OR ANY EXPRESS OR IMPLIED WARRANTY ARISING OUT OF TRADE USAGE OR OUT OF A COURSE OF DEALING OR COURSE OF PERFORMANCE. NOTHING CONTAINED IN THIS AGREEMENT SHALL BE CONSTRUED AS (I) A WARRANTY OR REPRESENTATION BY QTI, ITS LICENSORS OR AFFILIATES AS TO THE VALIDITY OR SCOPE OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT OR (II) A WARRANTY OR REPRESENTATION BY QTI THAT ANY MANUFACTURE OR USE WILL BE FREE FROM INFRINGEMENT OF PATENTS, COPYRIGHTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF OTHERS, AND IT SHALL BE THE SOLE RESPONSIBILITY OF YOU TO MAKE SUCH DETERMINATION AS IS NECESSARY WITH RESPECT TO THE ACQUISITION OF LICENSES UNDER PATENTS AND OTHER INTELLECTUAL PROPERTY OF THIRD PARTIES.

1.5 LIMITATION OF LIABILITY. IN NO EVENT SHALL QTI, QTI'S AFFILIATES OR ITS LICENSORS BE LIABLE TO YOU FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, INCLUDING BUT NOT LIMITED TO ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL DAMAGES, ARISING OUT OF THE USE OR INABILITY TO USE, OR THE DELIVERY OR FAILURE TO DELIVER, ANY OF THE MATERIALS, OR ANY BREACH OF ANY OBLIGATION UNDER THIS AGREEMENT, EVEN IF QTI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE FOREGOING LIMITATION OF LIABILITY SHALL REMAIN IN FULL FORCE AND EFFECT REGARDLESS OF WHETHER YOUR REMEDIES HEREUNDER ARE DETERMINED TO HAVE FAILED OF THEIR ESSENTIAL PURPOSE. THE ENTIRE LIABILITY OF QTI, QTI'S AFFILIATES AND ITS LICENSORS, AND THE SOLE AND EXCLUSIVE REMEDY OF YOU, FOR ANY CLAIM OR CAUSE OF ACTION ARISING HEREUNDER (WHETHER IN CONTRACT, TORT, OR OTHERWISE) SHALL NOT EXCEED US\$10.

2. COMPLIANCE WITH LAWS; APPLICABLE LAW. You agree to comply with all applicable local, international and national laws and regulations and with U.S. Export Administration Regulations, as they apply to the subject matter of this Agreement. This Agreement is governed by the laws of the State of California, excluding California's choice of law rules.

3. CONTRACTING PARTIES. If the Materials are downloaded on any computer owned by a corporation or other legal entity, then this Agreement is formed by and between QTI and such entity. The individual accepting the terms of this Agreement represents and warrants to QTI that they have the authority to bind such entity to the terms and conditions of this Agreement.

4. MISCELLANEOUS PROVISIONS. This Agreement, together with all exhibits attached hereto, which are incorporated herein by this reference, constitutes the entire agreement between QTI and You and supersedes all prior negotiations, representations and agreements between the parties with respect to the subject matter hereof. No addition or modification of this Agreement shall be effective unless made in writing and signed by the respective representatives of QTI and You. The restrictions, limitations, exclusions and conditions set forth in this Agreement shall apply even if QTI or any of its affiliates becomes aware of or fails to act in a manner to address any violation or failure to comply therewith. You hereby acknowledge and agree that the restrictions, limitations, conditions and exclusions imposed in this Agreement on the rights granted in this Agreement are not a derogation of the benefits of such rights. You further acknowledges that, in the absence of such restrictions, limitations, conditions and exclusions, QTI would not have entered into this Agreement with You. Each party shall be responsible for and shall bear its own expenses in connection with this Agreement. If any of the provisions of this Agreement are determined to be invalid, illegal, or otherwise unenforceable, the remaining provisions shall remain in full force and effect. This Agreement is entered into solely in the English language, and if for any reason any other language version is prepared by any party, it shall be solely for convenience and the English version shall govern and control all aspects. If You are located in the province of Quebec, Canada, the following applies: The Parties hereby confirm they have requested this Agreement and all related documents be prepared in English.