AB158x Series HA/PSAP/VividPT RACE Command Specification

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Version History

Version	Date	Description
1.0	2023-09-01	First release
1.1	2023-09-19	Modified title and document content.

Table of Contents

List of Tables

1 Introduction

The Race Command (RCMD) packet is used to send commands to the Airoha IoT SDK for BT-Audio device from the host (external MCU or PC tool) or receive events (notifications or responses) from the Airoha IoT SDK for BT-Audio device. Any Airoha IoT SDK for BT-Audio device is able to accept RCMD with up to 1000 bytes of data excluding the RCMD header and length field.

This document focuses on the RCMD related to the AB158x series of HA/PSAP/Vivid PT. For more information about other RCMD please refer to the Airoha RACE Command Specification html located in SDK path/doc/mcu.

2 RACE command packet

2.1 RCMD Packet Format

2.1.1 RCMD Command Format

Table 2-1. RCMD command format

Command							
Channel	Type	Length	ID		Payload		
1 byte	1 byte	2 bytes	2 bytes		1 byte	2 bytes	Varied
0x05	0x5A 0x5C #1	#2	0x87	0x2C	Action type 0x01: Set 0x02: Get	Event ID	Parameter #3

#1 0x5A: Command needs a response, 0x5C: Command does not need a response

#2 ID + Payload

#3 Command parameters

#4 Little Endian used for multi-bytes area

2.1.2 RCMD Receive Format

Table 2-2. RCMD receive format

Response								
Channel	Type	Length	ID		Payload			
1 byte	1 byte	2 bytes	2 bytes		1 byte	1 byte	2 bytes	Varied
0x05	0x5B	#1	0x87	0x2C	Status 0x00: Success Else: Fail	Action type 0x01: Set 0x02: Get	Event ID	Parameter #2

#1 ID + Payload

#2 Response parameters

#3 Little Endian used for multi-bytes area

2.1.3 RCMD Notification Format

Table 2-3. RCMD notification format

Notification						
Channel	Type	Length	ID		Payload	
1 byte	1 byte	2 bytes	2 bytes		2 bytes	Varied
0x05	0x5D	#1	0x87	0x2C	Event ID	Parameter #2

#1 ID + Payload

#2 Notification parameters

#3 Little Endian used for multi-bytes area

3 RACE command

Table 3-1 shows the definition for the event ID.

Table 3-1. RCMD event list

Event	Event ID	SET	GET
HA_PSAP_LEVEL_INDEX	0x0002	V	V
HA_PSAP_LEVEL_SYNC_SWITCH	0x0003	V	V
HA_PSAP_LEVEL_MODE_VOLUME_MAXCOUNT	0x0004		V
HA_PSAP_VOLUME_INDEX	0x0005	V	V
HA_PSAP_VOLUME_SYNC_SWITCH	0x0006	V	V
HA_PSAP_MODE_INDEX	0x0007	V	V
HA_PSAP_SPECIFIC_MODE_TABLE	0x0008	V	V
HA_WNR_SWITCH	0x000A	V	V
HA_PSAP_BEAMFORMING_SETTINGS	0x000B	V	V
HA_PSAP_AFC_CONFIG	0x000C	V	V
HA_INR_CONFIG	0x000D	V	V
HA_PSAP_USEREQ_SWITCH	0x000E	V	V
HA_PSAP_USEREQ_GAIN	0x000F	V	V
HA_PSAP_SPEAKER_REFERENCE	0x0010		V
HA_PSAP_PURETONE_GENERATOR	0x0011	V	V
HA_PSAP_MULTIMEDIA_TOTALSETTING	0x0012	V	V
HA_PSAP_HEARINGTUNINGMODE_SWITCH	0x0013	V	V
HA_PSAP_MPTESTMODE_SWITCH	0x0014	V	V
HA_PSAP_RESTORE_SETTING	0x0015	V	
HA_PSAP_INEAR_DETECTION	0x001A	V	V
HA_PSAP_MIC_CONTROL	0x001C	V	V
HEAR_THROUGH_SWITCH	0x1001	V	V
HEAR_THROUGH_MODE	0x1002	V	V
VIVIDPT_AFC_SWITCH	0x2001	V	V
VIVIDPT_LDNR_SWITCH	0x2002	V	V

3.1 HA_PSAP_LEVEL_INDEX

Table 3-2. HA/PSAP level index parameters

Length	Description	Remark
2	Byte 0: Level index(L) Byte 1: Level index(R)	Level index range: 0 ~ Level max count – 1 Ex: Level max count = 4, Max level index = 3

Table 3-3. Setting HA/PSAP level index command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	2 bytes
0x07	0x00	0x87	0x2C	Action type	Event ID	Parameter

				0x01: Set	0x02	0x00	Table 3-2. HA/PSAP level index parameters

Table 3-4. Response of the setting HA/PSAP level index command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x02	0x00

Table 3-5. Getting HA/PSAP level index command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x02	0x00

Table 3-6. Response of the getting HA/PSAP level index command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		2 bytes
0x08	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x02	0x00	Table 3-2. HA/PSAP level index parameters

Table 3-7. HA/PSAP level index notification

Notification (0x055D)						
Length		ID		Payload		
2 bytes		2 bytes		2 bytes		2 bytes
0x06	0x00	0x87	0x2C	Event ID		Parameter
				0x02	0x00	Table 3-2. HA/PSAP level index parameters

3.2 HA_PSAP_LEVEL_SYNC_SWITCH

Table 3-8. HA/PSAP level sync switch parameters

Length	Description	Remark
1	Byte 0: Level sync switch	Level sync switch: 0x00(Off), 0x01(On)

Table 3-9. Setting HA/PSAP level sync switch command

Command (0x055A)

Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x03	0x00	Table 3-8. HA/PSAP level sync switch parameters

Table 3-10. Response of the setting HA/PSAP level sync switch command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x03	0x00

Table 3-11. Getting HA/PSAP level sync switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x03	0x00

Table 3-12. Response of the getting HA/PSAP level sync switch command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x03	0x00	Table 3-8. HA/PSAP level sync switch parameters

3.3 HA_PSAP_LEVEL_MODE_VOLUME_MAXCOUNT

Table 3-13. HA/PSAP level, mode, volume max count parameters

Length	Description	Remark
3	Byte 0: Level max count Byte 1: Mode max count Byte 2: Volume max count	

Table 3-14. Getting HA/PSAP level, mode, volume max count command

Command (0x055A)					
Length		ID		Payload	
2 bytes		2 bytes		1 byte	2 bytes
0x05	0x00	0x87	0x2C	Action type	Event ID

				0x02: Get	0x04	0x00

Table 3-15. Response of the getting HA/PSAP level, mode, volume max count command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	3 bytes
0x09	0x00	0x87	0x2C	Status	Action type	Event ID	Parameter
				0x00: Success Else: Fail	0x02: Get	0x04 0x00	Table 3-13. HA/PSAP level, mode, volume max count parameters

3.4 HA_PSAP_VOLUME_INDEX

Table 3-16. HA/PSAP volume index parameters

Length	Description	Remark
2	Byte 0: Volume index(L) Byte 1: Volume index(R)	Volume index range: 0 ~ Volume max count – 1 Ex: Volume max count = 4, Max volume index = 3

Table 3-17. Setting HA/PSAP volume index command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	2 bytes
0x07	0x00	0x87	0x2C	Action type	Event ID	Parameter
				0x01: Set	0x05 0x00	Table 3-16. HA/PSAP volume index parameters

Table 3-18. Response of the setting HA/PSAP volume index command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x05	0x00

Table 3-19. Getting HA/PSAP volume index command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x05	0x00

Table 3-20. Response of the getting HA/PSAP volume index command

Response (0x055B)

Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		2 bytes
0x08	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x05	0x00	Table 3-16. HA/PSAP volume index parameters

Table 3-21. HA/PSAP volume index notification

Notification (0x055D)						
Length		ID		Payload		
2 bytes		2 bytes		2 bytes		2 bytes
0x06	0x00	0x87	0x2C	Event ID		Parameter
				0x05	0x00	Table 3-16. HA/PSAP volume index parameters

3.5 HA_PSAP_VOLUME_SYNC_SWITCH

Table 3-22. HA/PSAP volume sync switch parameters

Length	Description	Remark
1	Byte 0: Volume sync switch	Volume sync switch: 0x00(Off), 0x01(On)

Table 3-23. Setting HA/PSAP volume sync switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID	Parameter
				0x01: Set	0x06 0x00	Table 3-22. HA/PSAP volume sync switch parameters

Table 3-24. Response of the setting HA/PSAP volume sync switch command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x06	0x00

Table 3-25. Getting HA/PSAP volume sync switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x06	0x00

Table 3-26. Response of the getting HA/PSAP volume sync switch command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x06	0x00	Table 3-22. HA/PSAP volume sync switch parameters

3.6 HA_PSAP_MODE_INDEX

Table 3-27. HA/PSAP mode index parameters

Length	Description	Remark
1	Byte 0: Mode index(L)	Mode index range: 0 ~ Mode max count – 1 Ex: Mode max count = 4, Max mode index = 3

Table 3-28. Setting HA/PSAP mode index command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x07	0x00	Table 3-27. HA/PSAP mode index parameters

Table 3-29. Response of the setting HA/PSAP mode index command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x07	0x00

Table 3-30. Getting HA/PSAP mode index command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x07	0x00

Table 3-31. Response of the getting HA/PSAP mode index command

Response (0x055B)			
Length		ID		Payload

2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
				Status	Action type	Event ID		Parameter
0x07	0x00	0x87	0x2C	0x00: Success Else: Fail	0x02: Get	0x07	0x00	Table 3-27. HA/PSAP mode index parameters

Table 3-32. HA/PSAP mode index notification

Notification (0x055D)						
Length		ID		Payload		
2 bytes		2 bytes		2 bytes		1 byte
				Event ID		Parameter
0x05	0x00	0x87	0x2C	0x07	0x00	Table 3-27. HA/PSAP mode index parameters

3.7 HA_PSAP_SPECIFIC_MODE_TABLE

Table 3-33. HA/PSAP specific mode table setting parameters

Length	Description		Remark
4	Byte 0: Mode index		Mode index range: 0 ~ Mode max count – 1 Ex: Mode max count = 4, Max mode index = 3 Low cut switch: 0x00(Off), 0x01(On) NR switch: 0x00(Off), 0x01(On) Beamforming switch: 0x00(Off), 0x01(On) NR level range: 0~9
	Byte 1	Bit 0~Bit 1: Reserved Bit 2: Low cut switch(L) Bit 3: Low cut switch(R) Bit 4: NR switch Bit 5: Beamforming switch Bit 6~Bit 7: Reserved	
	Byte 2: NR level Byte 3: Reserved		

Table 3-34. Setting HA/PSAP specific mode table command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	4 bytes
				Action type	Event ID	Parameter
0x09	0x00	0x87	0x2C	0x01: Set	0x08 0x00	Table 3-33. HA/PSAP specific mode table setting parameters

Table 3-35. Response of the setting HA/PSAP specific mode table command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
				Status	Action type	Event ID	
0x06	0x00	0x87	0x2C	0x00: Success Else: Fail	0x01: Set	0x08	0x00

Table 3-36. HA/PSAP specific mode table getting parameters

Length	Description	Remark
1	Byte 0: Mode index	Mode index range: 0 ~ Mode max count – 1 Ex: Mode max count = 4, Max mode index = 3

Table 3-37. Getting HA/PSAP specific mode table command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x02: Get	0x08	0x00	Table 3-36. HA/PSAP specific mode table getting parameters

Table 3-38. Response of the getting HA/PSAP specific mode table command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		4 bytes
0x0A	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x08	0x00	Table 3-33. HA/PSAP specific mode table setting parameters

3.8 HA_WNR_SWITCH

Table 3-39. HA WNR switch parameters

Length	Description	Remark
1	Byte 0: WNR switch	WNR switch: 0x00(Off), 0x01(On)

Table 3-40. Setting HA WNR switch command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x0A	0x00	Table 3-39. HA WNR switch parameters

Table 3-41. Response of the setting HA WNR switch command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x0A	0x00

Table 3-42. Getting HA WNR switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x0A	0x00

Table 3-43. Response of the getting HA WNR switch command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x0A	0x00	Table 3-39. HA WNR switch parameters

3.9 HA_PSAP_BEAMFORMING_SETTINGS

Table 3-44. HA/PSAP beamforming setting parameters

Length	Description		Remark
1	Byte 0	Bit 0: Beamforming switch Bit 1: Beamforming mode control switch Bit 2~Bit 7: Reserved	Beamforming switch: 0x00(Off), 0x01(On) Beamforming mode control switch: 0x00(Off), 0x01(On)

Table 3-45. Setting HA/PSAP beamforming setting command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID	Parameter
				0x01: Set	0x0B 0x00	Table 3-44. HA/PSAP beamforming setting parameters

Table 3-46. Response of the setting HA/PSAP beamforming setting command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x0B	0x00

Table 3-47. Getting HA/PSAP beamforming setting command

Command (0x055A)

Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x0B	0x00

Table 3-48. Response of the getting HA/PSAP beamforming setting command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x0B	0x00	Table 3-44. HA/PSAP beamforming setting parameters

Table 3-49. HA/PSAP beamforming setting notification

Notification (0x055D)						
Length		ID		Payload		
2 bytes		2 bytes		2 bytes		1 byte
0x05	0x00	0x87	0x2C	Event ID		Parameter
				0x0B	0x00	Table 3-44. HA/PSAP beamforming setting parameters

3.10 HA_PSAP_AFC_CONFIG

Table 3-50. HA/PSAP AFC config parameters

Length	Description		Remark
1	Byte 0	Bit 0: AFC switch(L) Bit 1: AFC switch(R) Bit 2~Bit 7: Reserved	AFC switch: 0x00(Off), 0x01(On)

Table 3-51. Setting HA/PSAP AFC config command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x0C	0x00	Table 3-50. HA/PSAP AFC config parameters

Table 3-52. Response of the setting HA/PSAP AFC config command

Response (0x055B)				
Length	ID	Payload		
2 bytes	2 bytes	1 byte	1 byte	2 bytes

0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x0C	0x00

Table 3-53. Getting HA/PSAP AFC config command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x0C	0x00

Table 3-54. Response of the getting HA/PSAP AFC config command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x0C	0x00	Table 3-50. HA/PSAP AFC config parameters

3.11 HA_INR_CONFIG

Table 3-55. HA INR config parameters

Length	Description		Remark
4	Byte 0	Bit 0: INR switch(L) Bit 1~Bit 4: INR sensitivity(L) Bit 5~Bit 7: Reserved	INR switch: 0x00(Off), 0x01(On) INR sensitivity range: 0 ~ 15 INR strength range: 0 ~ 3
	Byte 1	Bit 0~Bit 1: INR strength(L) Bit 2~Bit 7: Reserved	
	Byte 2	Bit 0: INR switch(R) Bit 1~Bit 4: INR sensitivity(R) Bit 5~Bit 7: Reserved	
	Byte 3	Bit 0~Bit 1: INR strength(R) Bit 2~Bit 7: Reserved	

Table 3-56. Setting HA INR config command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		4 bytes
0x09	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x0D	0x00	Table 3-55. HA INR config parameters

Table 3-57. Response of the setting HA INR config command

Response (0x055B)		
Length	ID	Payload

2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x0D	0x00

Table 3-58. Getting HA INR config command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x0D	0x00

Table 3-59. Response of the getting HA INR config command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		4 bytes
0x0A	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x0D	0x00	Table 3-55. HA INR config parameters

3.12 HA_PSAP_USEREQ_SWITCH

Table 3-60. HA/PSAP user EQ switch parameters

Length	Description		Remark
1	Byte 0	Bit 0: User EQ switch(L) Bit 1: User EQ switch(R) Bit 2~Bit 7: Reserved	User EQ switch: 0x00(Off), 0x01(On)

Table 3-61. Setting HA/PSAP user EQ switch command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x0E	0x00	Table 3-60. HA/PSAP user EQ switch parameters

Table 3-62. Response of the setting HA/PSAP user EQ switch command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x0E	0x00

Table 3-63. Getting HA/PSAP user EQ switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x0E	0x00

Table 3-64. Response of the getting HA/PSAP user EQ switch command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x0E	0x00	Table 3-60. HA/PSAP user EQ switch parameters

3.13 HA_PSAP_USEREQ_GAIN

Table 3-65. HA/PSAP user EQ gain parameters

Length	Description	Remark
102	Byte 0: EQ overall(L) Byte 1~Byte 50: EQ value(L) Byte 51: EQ overall(R) Byte 52~Byte 101: EQ value(R)	EQ overall range: 0xE0(-32dB) ~ 0x20(32dB) EQ value range: 0xE0(-32dB) ~ 0x20(32dB) Frequency list: Byte 1、Byte 52：0 Hz Byte 2、Byte 53：250 Hz Byte 3、Byte 54：500 Hz Byte 4、Byte 55：750 Hz … Byte 50、Byte 101：12250 Hz

Table 3-66. Setting HA/PSAP user EQ gain command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		102 bytes
0x6B	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x0F	0x00	Table 3-65. HA/PSAP user EQ gain parameters

Table 3-67. Response of the setting HA/PSAP user EQ gain command

Response (0x055B)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	1 byte	2 bytes
0x06	0x00	0x87	0x2C	Status	Action type	Event ID

				0x00: Success Else: Fail	0x01: Set	0x0F	0x00

Table 3-68. Getting HA/PSAP user EQ gain command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x0F	0x00

Table 3-69. Response of the getting HA/PSAP user EQ gain command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	102 bytes
0x6C	0x00	0x87	0x2C	Status	Action type	Event ID	Parameter
				0x00: Success Else: Fail	0x02: Get	0x0F 0x00	Table 3-65. HA/PSAP user EQ gain parameters

3.14 HA_PSAP_SPEAKER_REFERENCE

Table 3-70. HA/PSAP speaker reference parameters

Length	Description	Remark
20	Byte 0~Byte 9: Speaker reference(L) Byte 10~Byte 19: Speaker reference(R)	Frequency list: Byte 0、Byte 10：64Hz Byte 1、Byte 11：125Hz Byte 2、Byte 12：250Hz Byte 3、Byte 13：500Hz Byte 4、Byte 14：1000Hz Byte 5、Byte 15：2000Hz Byte 6、Byte 16：4000Hz Byte 7、Byte 17：6000Hz Byte 8、Byte 18：8000Hz Byte 9、Byte 19：12000Hz

Table 3-71. Getting HA/PSAP speaker reference command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x10	0x00

Table 3-72. Response of the getting HA/PSAP speaker reference command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		20 bytes
0x1A	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x10	0x00	Table 3-70. HA/PSAP speaker reference parameters

3.15 HA_PSAP_PURETONE_GENERATOR

Table 3-73. HA/PSAP pure tone generator parameters

Length	Description		Remark
7	Byte 0	Bit 0: Switch(L) Bit 1: Switch(R) Bit 2~Bit 7: Reserved	Switch: 0x00(Off), 0x01(On) Frequency range: 0x0000(0Hz: Mute) ~ 0x30D4(12500Hz) dBFS range: 0x80(-128dBFS) ~ 0x00(0dBFS)
	Byte 1~Byte 2: Frequency(L) Byte 3: dBFS(L) Byte 4~Byte 5: Frequency(R) Byte 6: dBFS(R)		

Table 3-74. Setting HA/PSAP pure tone generator command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		7 bytes
0x0C	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x11	0x00	Table 3-73. HA/PSAP pure tone generator parameters

Table 3-75. Response of the setting HA/PSAP pure tone generator command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x11	0x00

Table 3-76. Getting HA/PSAP pure tone generator command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x11	0x00

Table 3-77. Response of the getting HA/PSAP pure tone generator command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		7 bytes
				Status	Action type	Event ID		Parameter
0x0D	0x00	0x87	0x2C	0x00: Success Else: Fail	0x02: Get	0x11	0x00	Table 3-73. HA/PSAP pure tone generator parameters

3.16 HA_PSAP_MULTIMEDIA_TOTALSETTING

Table 3-78. HA/PSAP multimedia total setting parameters

Length	Description		Remark
9	Byte 0	Bit 0: A2DP mix mode switch Bit 1~Bit 2: Reserved Bit 3: A2DP DRC switch(L) Bit 4: A2DP DRC switch(R) Bit 5~Bit 7: Reserved	A2DP/SCO/VP mix mode switch: 0x00(Off), 0x01(On) A2DP/SCO/VP DRC switch: 0x00(Off), 0x01(On) HA/PSAP gain range: 0xF4(-12dB) ~ 0x0C(12dB)
	Byte 1: HA/PSAP gain with A2DP mix mode(L) Byte 2: HA/PSAP gain with A2DP mix mode(R)		
	Byte 3	Bit 0: SCO mix mode switch Bit 1: SCO DRC switch(L) Bit 2: SCO DRC switch(R) Bit 3~Bit 7: Reserved	
	Byte 4: HA/PSAP gain with SCO mix mode(L) Byte 5: HA/PSAP gain with SCO mix mode(R)		
	Byte 6	Bit 0: VP mix mode switch Bit 1: VP DRC switch(L) Bit 2: VP DRC switch(R) Bit 3~Bit 7: Reserved	
	Byte 7: HA/PSAP gain with VP mix mode(L) Byte 8: HA/PSAP gain with VP mix mode(R)		

Table 3-79. Setting HA/PSAP multimedia total setting command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		9 bytes
				Action type	Event ID		Parameter
0x0E	0x00	0x87	0x2C	0x01: Set	0x12	0x00	Table 3-78. HA/PSAP multimedia total setting parameters

Table 3-80. Response of the setting HA/PSAP multimedia total setting command

Response (0x055B)

Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x12	0x00

Table 3-81. Getting HA/PSAP multimedia total setting command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x12	0x00

Table 3-82. Response of the getting HA/PSAP multimedia total setting command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	9 bytes
0x0F	0x00	0x87	0x2C	Status	Action type	Event ID	Parameter
				0x00: Success Else: Fail	0x02: Get	0x12 0x00	Table 3-78. HA/PSAP multimedia total setting parameters

3.17 HA_PSAP_HEARINGTUNINGMODE_SWITCH

Table 3-83. HA/PSAP hearing tuning mode switch parameters

Length	Description		Remark
1	Byte 0	Bit 0: Hearing tuning mode switch(L) Bit 1: Hearing tuning mode switch(R) Bit 2~Bit 7: Reserved	Hearing tuning mode switch: 0x00(Off), 0x01(On)

Table 3-84. Setting HA/PSAP hearing tuning mode switch command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x13	0x00	Table 3-83. HA/PSAP hearing tuning mode switch parameters

Table 3-85. Response of the setting HA/PSAP hearing tuning mode switch command

Response (0x055B)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	1 byte	2 bytes
0x06	0x00	0x87	0x2C	Status	Action type	Event ID

				0x00: Success Else: Fail	0x01: Set	0x13	0x00

Table 3-86. Getting HA/PSAP hearing tuning mode switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x13	0x00

Table 3-87. Response of the getting HA/PSAP hearing tuning mode switch command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x13	0x00	Table 3-83. HA/PSAP hearing tuning mode switch parameters

Table 3-88. HA/PSAP hearing tuning mode switch notification

Notification (0x055D)						
Length		ID		Payload		
2 bytes		2 bytes		2 bytes		1 byte
0x05	0x00	0x87	0x2C	Event ID		Parameter
				0x13	0x00	Table 3-83. HA/PSAP hearing tuning mode switch parameters

3.18 HA_PSAP_MPTESTMODE_SWITCH

Table 3-89. HA/PSAP MP test mode switch parameters

Length	Description	Remark
1	Byte 0: MP test mode switch	MP test mode switch: 0x00(Off), 0x03(On)

Table 3-90. Setting HA/PSAP MP test mode switch command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x14	0x00	Table 3-89. HA/PSAP MP test mode switch parameters

Table 3-91. Response of the setting HA/PSAP MP test mode switch command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x14	0x00

Table 3-92. Getting HA/PSAP MP test mode switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x14	0x00

Table 3-93. Response of the getting HA/PSAP MP test mode switch command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x14	0x00	Table 3-89. HA/PSAP MP test mode switch parameters

3.19 HA_PSAP_RESTORE_SETTING

Table 3-94. HA/PSAP restore setting parameters

Length	Description	Remark
1	Byte 0: Restore settings to default	Restore settings to default: 0x00: Restore all user settings to default 0x01: Keep level and user EQ, restore other user settings to default

Table 3-95. Setting HA/PSAP restore setting command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x15	0x00	Table 3-94. HA/PSAP restore setting parameters

Table 3-96. Response of the setting HA/PSAP restore setting command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x15	0x00

3.20 HA_PSAP_INEAR_DETECTION

Table 3-97. HA/PSAP in ear detection parameters

Length	Description	Remark
1	Byte 0: In ear detection switch	In ear detection switch: 0x00(Off), 0x01(On)

Table 3-98. Setting HA/PSAP in ear detection command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x1A	0x00	Table 3-97. HA/PSAP in ear detection parameters

Table 3-99. Response of the setting HA/PSAP in ear detection command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x1A	0x00

Table 3-100. Getting HA/PSAP in ear detection command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x1A	0x00

Table 3-101. Response of the getting HA/PSAP in ear detection command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID	Parameter

				0x00: Success Else: Fail	**0x02: Get**	**0x1A**	**0x00**	Table 3-97. HA/PSAP in ear detection parameters

3.21 HA_PSAP_MIC_CONTROL

Table 3-102. HA/PSAP mic control parameters

Length	Description	Remark
1	Byte 0: Master mic channel with the beamforming switch off	Master mic channel with the beamforming switch off: 0x01: FF mic 0x02: Talk mic

Table 3-103. Setting HA/PSAP mic control command

Command (0x055A)							
Length		**ID**		**Payload**			
2 bytes		**2 bytes**		**1 byte**	**2 bytes**		**1 byte**
0x06	**0x00**	**0x87**	**0x2C**	**Action type**	**Event ID**		**Parameter**
				0x01: Set	**0x1C**	**0x00**	Table 3-102. HA/PSAP mic control parameters

Table 3-104. Response of the setting HA/PSAP mic control command

Response (0x055B)							
Length		**ID**		**Payload**			
2 bytes		**2 bytes**		**1 byte**	**1 byte**	**2 bytes**	
0x06	**0x00**	**0x87**	**0x2C**	**Status**	**Action type**	**Event ID**	
				0x00: Success Else: Fail	**0x01: Set**	**0x1C**	**0x00**

Table 3-105. Getting HA/PSAP mic control command

Command (0x055A)						
Length		**ID**		**Payload**		
2 bytes		**2 bytes**		**1 byte**	**2 bytes**	
0x05	**0x00**	**0x87**	**0x2C**	**Action type**	**Event ID**	
				0x02: Get	**0x1C**	**0x00**

Table 3-106. Response of the getting HA/PSAP mic control command

Response (0x055B)								
Length		**ID**		**Payload**				
2 bytes		**2 bytes**		**1 byte**	**1 byte**	**2 bytes**		**1 byte**
0x07	**0x00**	**0x87**	**0x2C**	**Status**	**Action type**	**Event ID**		**Parameter**
				0x00: Success Else: Fail	**0x02: Get**	**0x1C**	**0x00**	Table 3-102. HA/PSAP mic control parameters

Table 3-107. HA/PSAP mic control notification

Notification (0x055D)						
Length		ID		Payload		
2 bytes		2 bytes		2 bytes		1 byte
0x05	0x00	0x87	0x2C	Event ID		Parameter
				0x1C	0x00	Table 3-102. HA/PSAP mic control parameters

3.22 HEAR_THROUGH_SWITCH

Table 3-108. Hear through switch parameters

Length	Description	Remark
1	Byte 0: Hear through switch	Hear through switch: 0x00(Off), 0x01(On)

Table 3-109. Setting hear through switch command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x01	0x10	Table 3-108. Hear through switch parameters

Table 3-110. Response of the setting hear through switch command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x01	0x10

Table 3-111. Getting hear through switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x01	0x10

Table 3-112. Response of the getting hear through switch command

Response (0x055B)

Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID	Parameter
				0x00: Success Else: Fail	0x02: Get	0x01 0x10	Table 3-108. Hear through switch parameters

Table 3-113. Hear through switch notification

Notification (0x055D)						
Length		ID		Payload		
2 bytes		2 bytes		2 bytes		1 byte
0x05	0x00	0x87	0x2C	Event ID		Parameter
				0x01	0x10	Table 3-108. Hear through switch parameters

3.23 HEAR_THROUGH_MODE

Table 3-114. Hear through mode parameters

Length	Description	Remark
5	Byte 0: Hear through mode Byte 1~Byte 4: Reserved	Hear through mode: 0x00: Vivid PT 0x01: HA/PSAP

Table 3-115. Setting hear through mode command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	5 bytes
0x0A	0x00	0x87	0x2C	Action type	Event ID	Parameter
				0x01: Set	0x02 0x10	Table 3-114. Hear through mode parameters

Table 3-116. Response of the setting hear through mode command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x02	0x10

Table 3-117. Getting hear through mode command

Command (0x055A)			
Length	ID	Payload	
2 bytes	2 bytes	1 byte	2 bytes

0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x02	0x10

Table 3-118. Response of the getting hear through mode command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	5 bytes
0x0B	0x00	0x87	0x2C	Status	Action type	Event ID	Parameter
				0x00: Success Else: Fail	0x02: Get	0x02 0x10	Table 3-114. Hear through mode parameters

3.24 VIVIDPT_AFC_SWITCH

Table 3-119. Vivid PT AFC switch parameters

Length	Description	Remark
1	Byte 0: Vivid PT AFC switch	Vivid PT AFC switch: 0x00(Off), 0x01(On)

Table 3-120. Setting vivid PT AFC switch command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x01	0x20	Table 3-119. Vivid PT AFC switch parameters

Table 3-121. Response of the setting vivid PT AFC switch command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x01	0x20

Table 3-122. Getting vivid PT AFC switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x01	0x20

Table 3-123. Response of the getting vivid PT AFC switch command

Response (0x055B)

Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x01	0x20	Table 3-119. Vivid PT AFC switch parameters

3.25 VIVIDPT_LDNR_SWITCH

Table 3-124. Vivid PT LDNR switch parameters

Length	Description	Remark
1	Byte 0: Vivid PT LDNR switch	Vivid PT LDNR switch: 0x00(Off), 0x01(On)

Table 3-125. Setting vivid PT LDNR switch command

Command (0x055A)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	2 bytes		1 byte
0x06	0x00	0x87	0x2C	Action type	Event ID		Parameter
				0x01: Set	0x02	0x20	Table 3-124. Vivid PT LDNR switch parameters

Table 3-126. Response of the setting vivid PT LDNR switch command

Response (0x055B)							
Length		ID		Payload			
2 bytes		2 bytes		1 byte	1 byte	2 bytes	
0x06	0x00	0x87	0x2C	Status	Action type	Event ID	
				0x00: Success Else: Fail	0x01: Set	0x02	0x20

Table 3-127. Getting vivid PT LDNR switch command

Command (0x055A)						
Length		ID		Payload		
2 bytes		2 bytes		1 byte	2 bytes	
0x05	0x00	0x87	0x2C	Action type	Event ID	
				0x02: Get	0x02	0x20

Table 3-128. Response of the getting vivid PT LDNR switch command

Response (0x055B)								
Length		ID		Payload				
2 bytes		2 bytes		1 byte	1 byte	2 bytes		1 byte
0x07	0x00	0x87	0x2C	Status	Action type	Event ID		Parameter
				0x00: Success Else: Fail	0x02: Get	0x02	0x20	Table 3-124. Vivid PT LDNR switch parameters

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