SIM-APDU-Analyzer
사용 매뉴얼 v3.1

2024.01.16

문서 이력

버전	일시	업데이트 내용	팀 명	담당자
v1.2	2022.07.04	최초 작성	모바일디바이스개발팀	안주석
v3.0	2024.01.15	v3.0 업데이트, File System 탭 분석 방법 추가	모바일디바이스개발팀	안주석
V3.1	2024.01.16	v3.1 업데이트, Shannon DM 로그 분석 방법 추가	모바일디바이스개발팀	안주석

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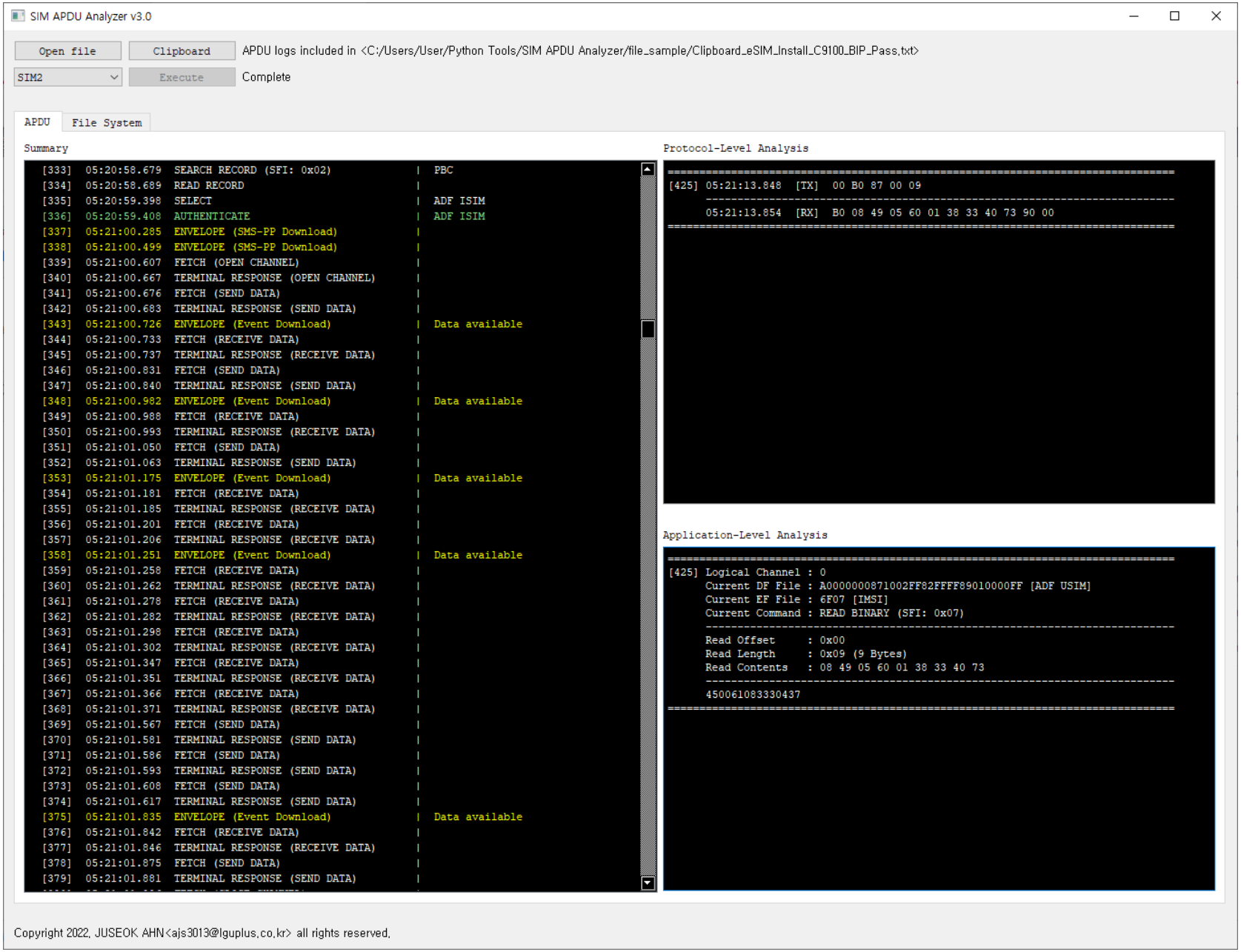
(5) Shannon DM 로그 분석 방법

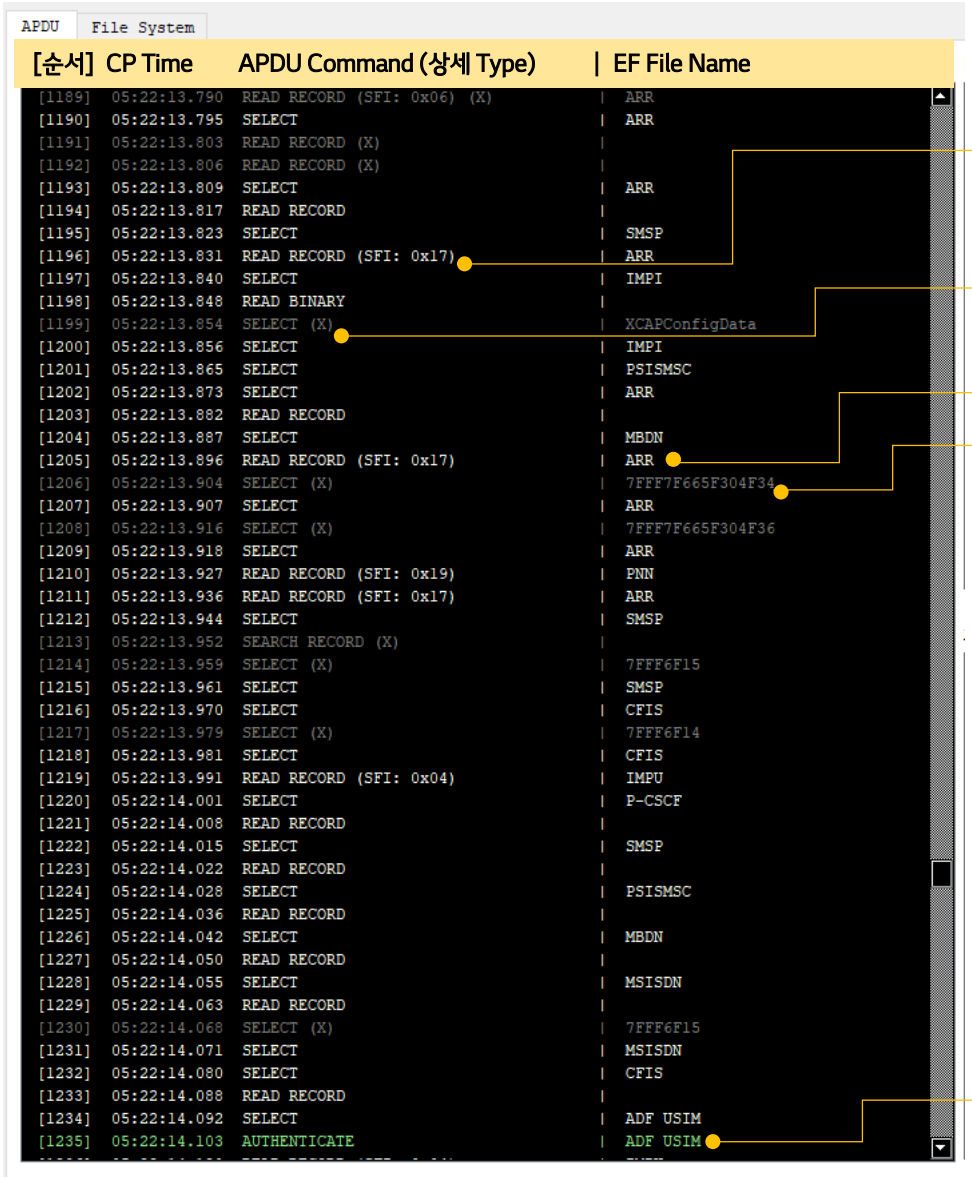
(1) APDU Tab : 화면 구성

(1) APDU Tab : 화면 예시



(1) APDU Tab : 화면 설명

단말 로그에 포함된 APDU 로그 Parsing 결과 요약 출력



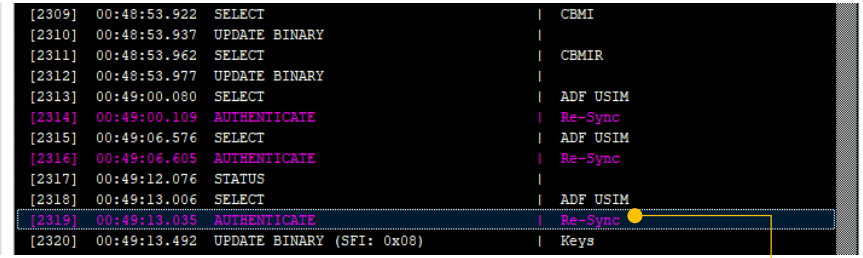
SFI(Short File Identity) 사용 시 SELECT 없이 READ

(X) File not found (회색 표기)

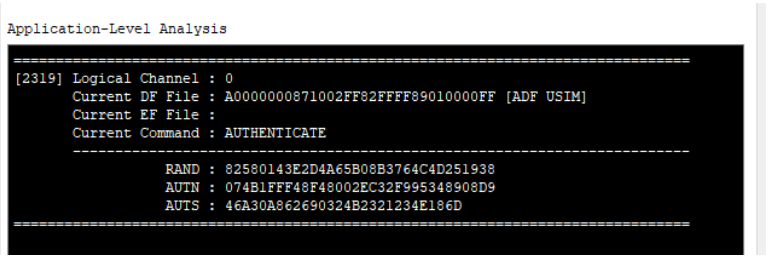
3GPP 스펙에서 확인된 File Name 으로 표기

3GPP 스펙에서 확인되지 않는 File Id 는 직접 표기

USIM 인증 : 성공 (밝은 녹색 표기)



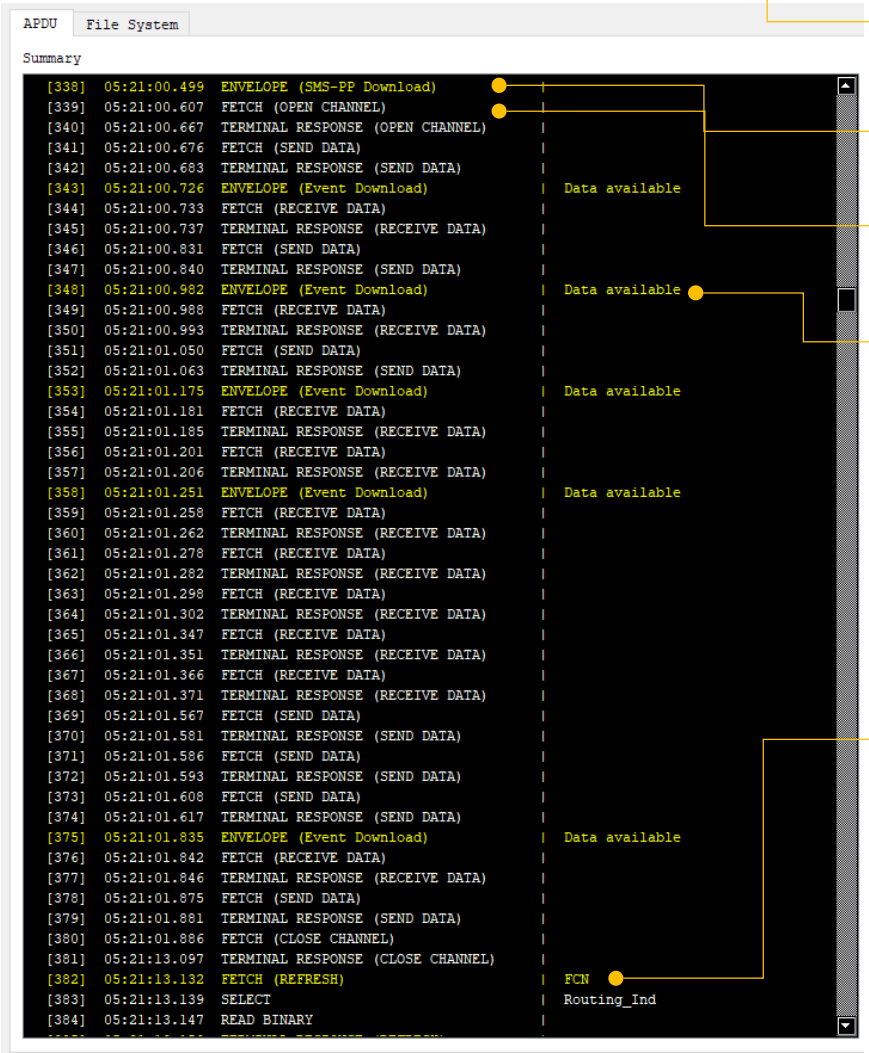
```
[2309]  00:48:53.922  SELECT                              |  CBMI
[2310]  00:48:53.937  UPDATE BINARY                       |
[2311]  00:48:53.962  SELECT                              |  CBMIR
[2312]  00:48:53.977  UPDATE BINARY                       |
[2313]  00:49:00.080  SELECT                              |  ADF USIM
[2314]  00:49:00.109  AUTHENTICATE                        |  Re-Sync
[2315]  00:49:06.576  SELECT                              |  ADF USIM
[2316]  00:49:06.605  AUTHENTICATE                        |  Re-Sync
[2317]  00:49:12.076  STATUS                              |
[2318]  00:49:13.006  SELECT                              |  ADF USIM
[2319]  00:49:13.035  AUTHENTICATE                        |  Re-Sync
[2320]  00:49:13.492  UPDATE BINARY (SFI: 0x08)           |  Keys
```



```
Application-Level Analysis

================================================================================
[2319] Logical Channel : 0
       Current DF File : A0000000871002FF82FFFF89010000FF [ADF USIM]
       Current EF File :
       Current Command : AUTHENTICATE
       --------------------------------------------------------------------------
                  RAND : 82580143E2D4A65B08B3764C4D251938
                  AUTN : 074B1FFF48F48002EC32F995348908D9
                  AUTS : 46A30A862690324B2321234E186D
================================================================================
```

USIM 인증 Re-Sync (분홍색 표기)



APDU | File System

Summary

```
[338]  05:21:00.499  ENVELOPE (SMS-PP Download)          |
[339]  05:21:00.607  FETCH (OPEN CHANNEL)                |
[340]  05:21:00.667  TERMINAL RESPONSE (OPEN CHANNEL)    |
[341]  05:21:00.676  FETCH (SEND DATA)                   |
[342]  05:21:00.683  TERMINAL RESPONSE (SEND DATA)       |
[343]  05:21:00.726  ENVELOPE (Event Download)           |  Data available
[344]  05:21:00.733  FETCH (RECEIVE DATA)                |
[345]  05:21:00.737  TERMINAL RESPONSE (RECEIVE DATA)    |
[346]  05:21:00.831  FETCH (SEND DATA)                   |
[347]  05:21:00.840  TERMINAL RESPONSE (SEND DATA)       |
[348]  05:21:00.982  ENVELOPE (Event Download)           |  Data available
[349]  05:21:00.988  FETCH (RECEIVE DATA)                |
[350]  05:21:00.993  TERMINAL RESPONSE (RECEIVE DATA)    |
[351]  05:21:01.050  FETCH (SEND DATA)                   |
[352]  05:21:01.063  TERMINAL RESPONSE (SEND DATA)       |
[353]  05:21:01.175  ENVELOPE (Event Download)           |  Data available
[354]  05:21:01.181  FETCH (RECEIVE DATA)                |
[355]  05:21:01.185  TERMINAL RESPONSE (RECEIVE DATA)    |
[356]  05:21:01.201  FETCH (RECEIVE DATA)                |
[357]  05:21:01.206  TERMINAL RESPONSE (RECEIVE DATA)    |
[358]  05:21:01.251  ENVELOPE (Event Download)           |  Data available
[359]  05:21:01.258  FETCH (RECEIVE DATA)                |
[360]  05:21:01.262  TERMINAL RESPONSE (RECEIVE DATA)    |
[361]  05:21:01.278  FETCH (RECEIVE DATA)                |
[362]  05:21:01.282  TERMINAL RESPONSE (RECEIVE DATA)    |
[363]  05:21:01.298  FETCH (RECEIVE DATA)                |
[364]  05:21:01.302  TERMINAL RESPONSE (RECEIVE DATA)    |
[365]  05:21:01.347  FETCH (RECEIVE DATA)                |
[366]  05:21:01.351  TERMINAL RESPONSE (RECEIVE DATA)    |
[367]  05:21:01.366  FETCH (RECEIVE DATA)                |
[368]  05:21:01.371  TERMINAL RESPONSE (RECEIVE DATA)    |
[369]  05:21:01.567  FETCH (SEND DATA)                   |
[370]  05:21:01.581  TERMINAL RESPONSE (SEND DATA)       |
[371]  05:21:01.586  FETCH (SEND DATA)                   |
[372]  05:21:01.593  TERMINAL RESPONSE (SEND DATA)       |
[373]  05:21:01.608  FETCH (SEND DATA)                   |
[374]  05:21:01.617  TERMINAL RESPONSE (SEND DATA)       |
[375]  05:21:01.835  ENVELOPE (Event Download)           |  Data available
[376]  05:21:01.842  FETCH (RECEIVE DATA)                |
[377]  05:21:01.846  TERMINAL RESPONSE (RECEIVE DATA)    |
[378]  05:21:01.875  FETCH (SEND DATA)                   |
[379]  05:21:01.881  TERMINAL RESPONSE (SEND DATA)       |
[380]  05:21:01.886  FETCH (CLOSE CHANNEL)               |
[381]  05:21:13.097  TERMINAL RESPONSE (CLOSE CHANNEL)   |
[382]  05:21:13.132  FETCH (REFRESH)                     |  FCN
[383]  05:21:13.139  SELECT                              |  Routing_Ind
[384]  05:21:13.147  READ BINARY                         |
```

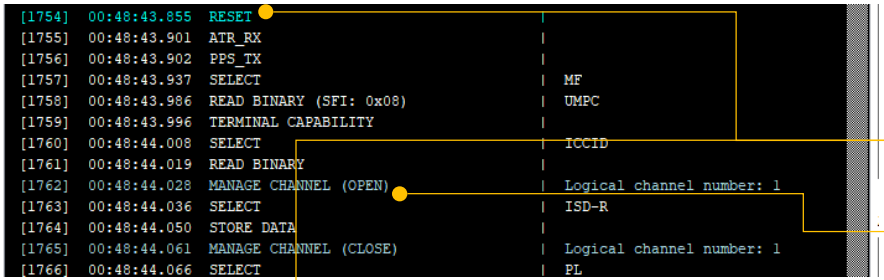
ENVELOPE 메시지에 포함된 ENVELOPE Type 확인 (SMS-PP, Event 등)

FETCH, TERMINAL RESPONSE 메시지의 Proactive Type 확인
(Send data, Receive data, Refresh 등)

Event Download 아이템 확인 (Data available, Location Status, MT Call 등)

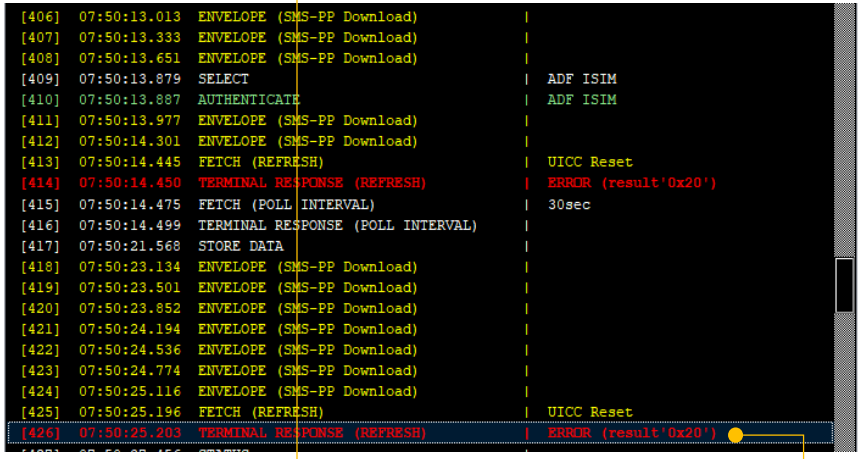
REFRESH Type 확인 (FCN, UICC Reset, Steering of Roaming 등)

OTA 개통(BIP, NAS SMS) 관련 사항 (노란색 표기)

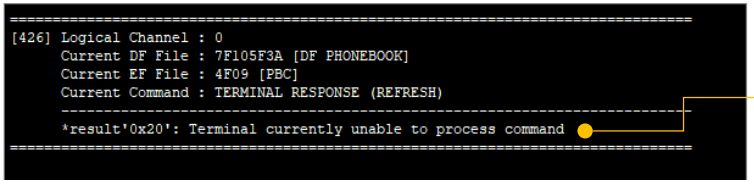


SIM RESET (COLD/WARM) 확인 (하늘색 표기)

Logical Channel 관리 (OPEN/CLOSE) 확인 (옅은 하늘색 표기)

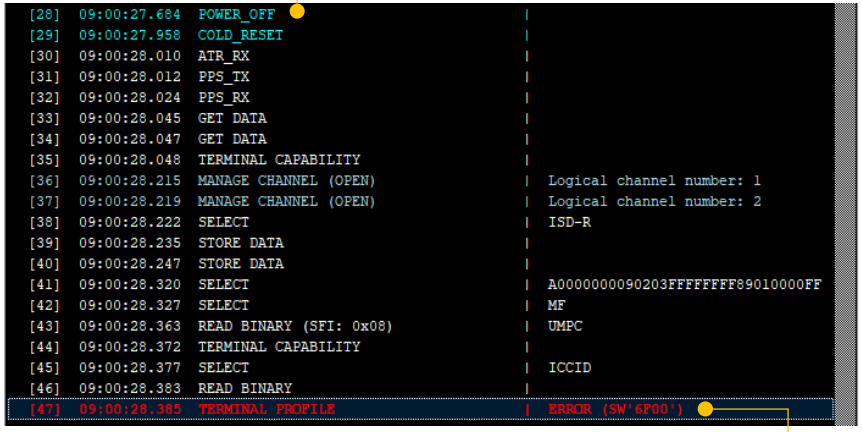


Application-Level Analysis

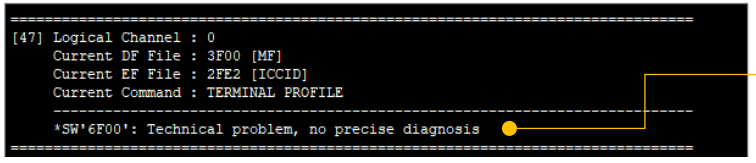


ERROR **원인** 확인

ERROR **처리** 확인 *단말 에러 응답(T/R) 예시 (빨간색 표기)



Application-Level Analysis

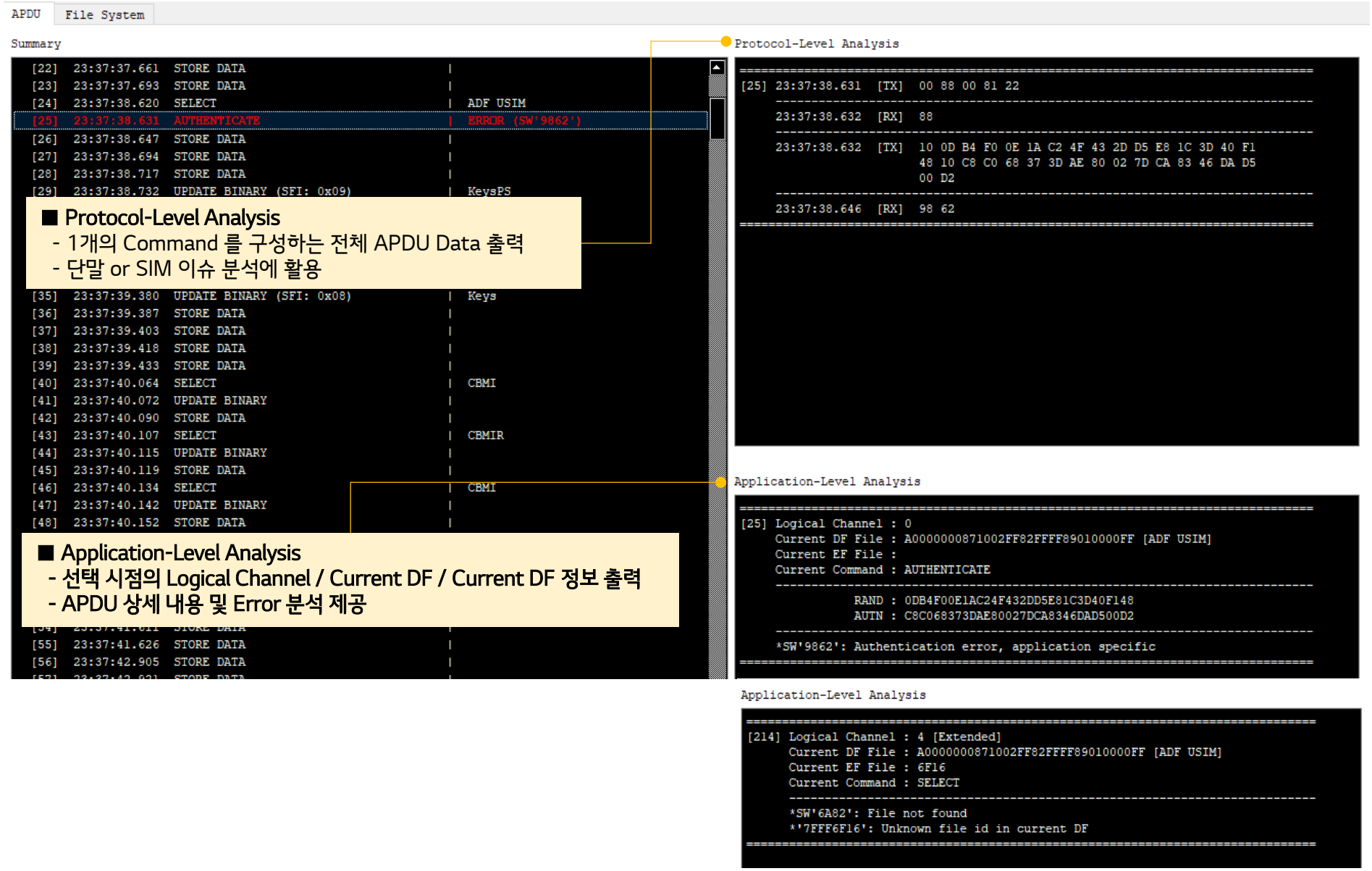


ERROR **원인** 확인

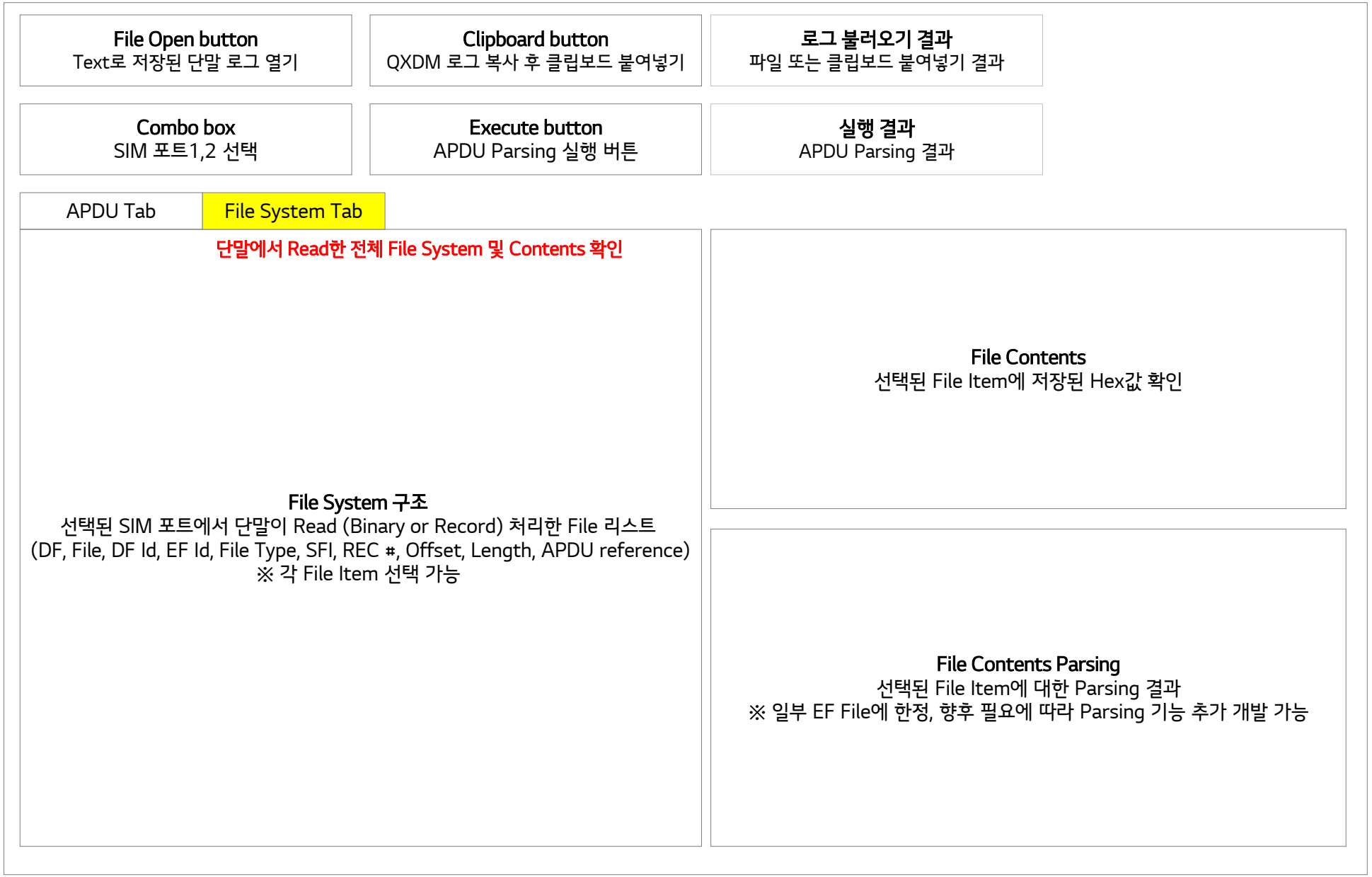
ERROR **처리** 확인 *SIM 에러 응답(SW) 예시 (빨간색 표기)

(1) APDU Tab : Protocol / Application-Level 분석

Summary 창에서 로그를 선택 시 Protocol / Application-Level Analysis 창에 상세 내용 출력됨



(2) File System Tab : 화면 구성



(2) File System Tab : 화면 예시 및 설명

단말이 READ BINARY / RECORD 처리로 읽은 모든 EF File Contents 및 Parsing 제공

APDU | File System

DF	File	DF_Id	File_Id	Type	SFI	REC#	OFS	LEN	ref

DF	EF name	DF ID	EF ID	LF/TF	SFI	REC#	Offset	Length	APDU 위치
MF	PL	3F00	2F05	TF	-	-	00	14	[128]
MF	UMPC	3F00	2F08	TF	08	-	00	05	[123]
MF	ICCID	3F00	2FE2	TF	-	-	00	0A	[126]
ADF USIM	LI	AID	6F05	LF	-	-	00	14	[153]
ADF USIM	ARR	AID	6F06	LF	17	01	-	36	[297]
ADF USIM	ARR	AID	6F06	LF	-	01	-	36	[646]
ADF USIM	ARR	AID	6F06	LF	17	03	-	36	[284]
ADF USIM	ARR	AID	6F06	LF	-	04	-	36	[263]
ADF USIM	ARR	AID	6F06	LF	17	06	-	36	[291]
ADF USIM	IMSI	AID	6F07	TF	07	-	00	09	[190]
ADF USIM	IMSI	AID	6F07	TF	07	-	00	09	[545]
ADF USIM	Keys	AID	6F08	TF	08	-	00	21	[196]
ADF USIM	KeysPS	AID	6F09	TF	09	-	00	21	[197]
ADF USIM	HPPLMN	AID	6F31	TF	12	-	00	01	[222]
ADF USIM	ACMmax	AID	6F37	TF	-	-	00	03	[238]
ADF USIM	UST	AID	6F38	TF	-	-	00	19	[193]
ADF USIM	ACM	AID	6F39	LF	1C		-		[234]
ADF USIM	ACM	AID	6F39	LF	-	01	-	03	[236]
ADF USIM	MSISDN	AID	6F40	LF	-	01	-	1E	[266]
ADF USIM	MSISDN	AID	6F40	LF	-	01	-	1E	[634]
ADF USIM	MSISDN	AID	6F40	LF	-	02	-	1E	[315]
ADF USIM	MSISDN	AID	6F40	LF	-	03	-	1E	[329]
ADF USIM	SMSP	AID	6F42	LF	-	01	-	2C	[309]
ADF USIM	SMSP	AID	6F42	LF	-	02	-	2C	[322]
ADF USIM	SMSS	AID	6F43	TF	-	-	00	02	[260]
ADF USIM	SMSS	AID	6F43	TF	-	-	00	04	[355]
ADF USIM	CBMI	AID	6F45	TF	-	-	00	32	[333]
ADF USIM	CBMI	AID	6F45	TF	-	-	00	32	[687]
ADF USIM	SPN	AID	6F46	TF	-	-	00	11	[204]
ADF USIM	CBMID	AID	6F48	TF	-	-	00	10	[233]
ADF USIM	SDN	AID	6F49	LF	-	01	-	1E	[375]
ADF USIM	CBMIR	AID	6F50	TF	-	-	00	10	[340]
ADF USIM	EST	AID	6F56	TF	-	-	00	0C	[219]
ADF USIM	START-HFN	AID	6F5B	TF	0F	-	00	06	[198]
ADF USIM	THRESHOLD	AID	6F5C	TF	10	-	00	03	[199]
ADF USIM	PLMNwAcT	AID	6F60	TF	-	-	00	64	[226]
ADF USIM	OPLMNwAcT	AID	6F61	TF	-	-	00	FF	[228]
ADF USIM	OPLMNwAcT	AID	6F61	TF	-	-	FF	F5	[229]
ADF USIM	HPLMNwAcT	AID	6F62	TF	-	-	00	32	[224]
ADF USIM	PSLOCI	AID	6F73	TF	0C	-	00	0E	[195]
ADF USIM	ACC	AID	6F78	TF	06	-	00	02	[191]
ADF USIM	ACC	AID	6F78	TF	06	-	00	02	[546]
ADF USIM	FPLMN	AID	6F7B	TF	-	-	00	3C	[231]
ADF USIM	LOCI	AID	6F7E	TF	0B	-	00	0B	[194]
ADF USIM	LOCI	AID	6F7E	TF	0B	-	00	0B	[549]

EF File Id 순 오름차순

File Contents

```
98FF9CFFE7FE5F0040C3000400000078010000000000000000
```

APDU 탭의 로그 위치 확인

개별 Item 클릭 시 Contents 및 Parsing 확인

File Contents Parsing

```
[X] Service n1   Local Phone Book
[X] Service n2   Fixed Dialling Numbers (FDN)
[X] Service n3   Extension 2
[O] Service n4   Service Dialling Numbers (SDN)
[O] Service n5   Extension3
[X] Service n6   Barred Dialling Numbers (BDN)
[X] Service n7   Extension4
[O] Service n8   Outgoing Call Information (OCI and OCT)
[O] Service n9   Incoming Call Information (ICI and ICT)
[O] Service n10  Short Message Storage (SMS)
[O] Service n11  Short Message Status Reports (SMSR)
[O] Service n12  Short Message Service Parameters (SMSP)
[O] Service n13  Advice of Charge (AoC)
[O] Service n14  Capability Configuration Parameters 2 (CCP2)
[O] Service n15  Cell Broadcast Message Identifier
[O] Service n16  Cell Broadcast Message Identifier Ranges
[X] Service n17  Group Identifier Level 1
[X] Service n18  Group Identifier Level 2
[O] Service n19  Service Provider Name
[O] Service n20  User controlled PLMN selector with Access Technology
[O] Service n21  MSISDN
[X] Service n22  Image (IMG)
[X] Service n23  Support of Localised Service Areas (SoLSA)
[O] Service n24  Enhanced Multi Level Precedence and Pre emption Service
[O] Service n25  Automatic Answer for eMLPP
[O] Service n26  RFU
[O] Service n27  GSM Access
[O] Service n28  Data download via SMS-PP
[X] Service n36  Depersonalisation Control Keys
[X] Service n37  Co-operative Network List
```

동일 File 중복 제거 상태
단, File 값 변경이 있을 시 제외 및 색상 표기
- 개통 데이터 포함 EF 파일 (노란색 표기)
- 개통 데이터 외 EF 파일 (연녹색 표기)

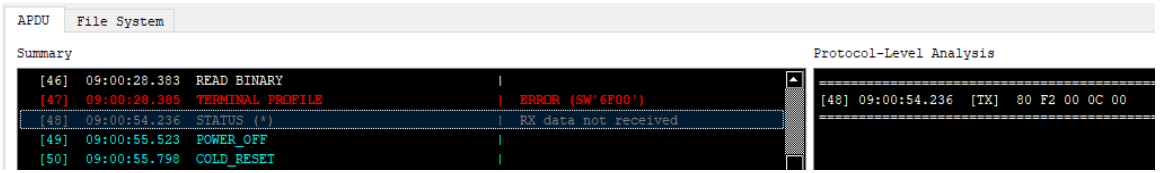
[참고] 색상 규칙 정리

(1) APDU Tab

APDU Summary 요약 메시지의 하기 문자열 포함 여부 기준으로 색상 적용

Red	= ['ERROR']
Magenta	= ['Re-Sync']
Grey	= ['(X)','(*)','Unknown']
Yellow	= ['ENVELOPE','REFRESH']
Cyan	= ['RESET', 'POWER']
Light blue	= ['MANAGE CHANNEL']
Light green	= ['AUTHENTICATE']

(*) : APDU 메시지 내 누락 발생 시



Unknown : 스펙 미포함 Instruction(INS) code

(2) File System Tab

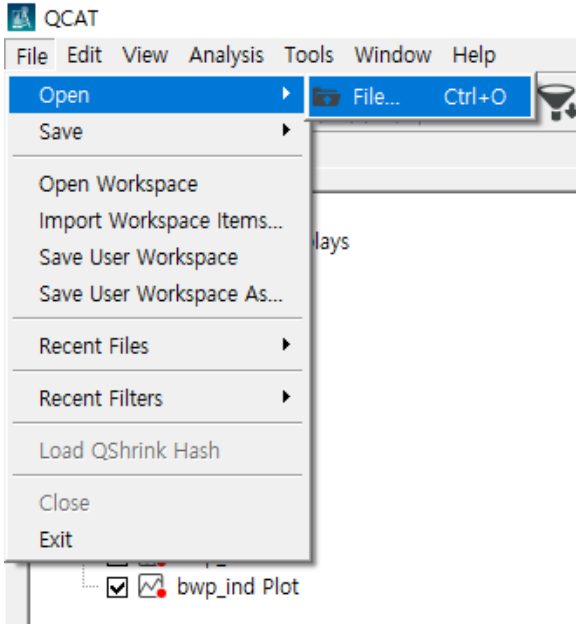
EF File의 Contents 변경 발생 시에만 적용, 하기 문자열 포함 여부에 따라 자사 개통 데이터 대상 EF 파일 구분

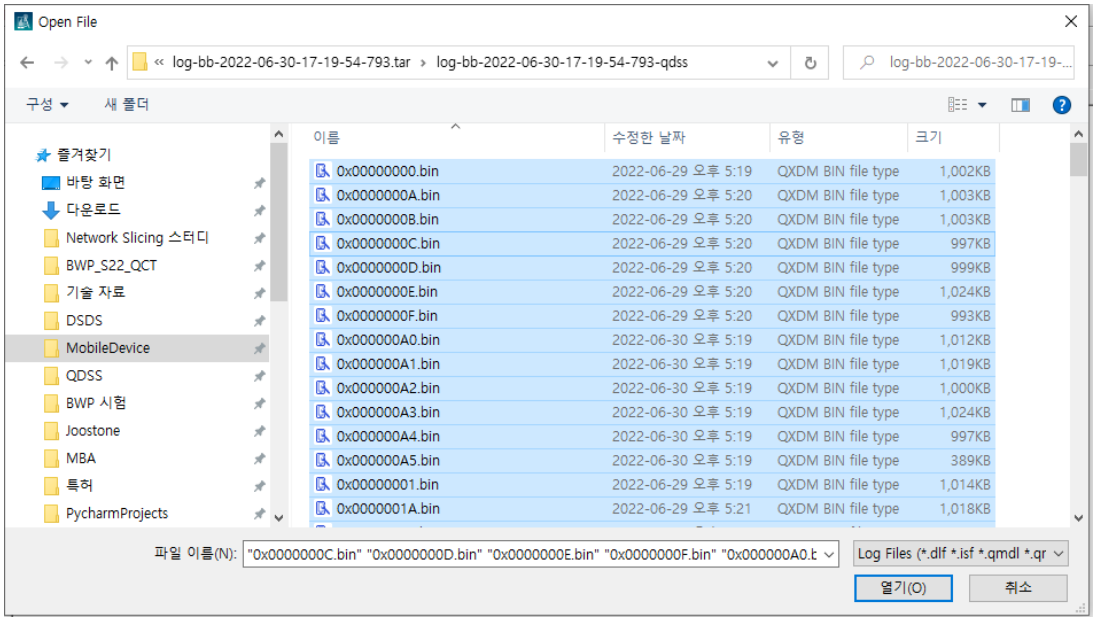
Yellow	= ['IMSI', 'MSISDN', 'OPLMNwAcT', 'ACC', 'Routing Indicator', 'IMPI', 'IMPU']
Light green	= 상기 EF 파일 외

(3) QCAT 로그 분석 방법 [1/6]

1. QCAT 에서 단말 CP 로그 열기 (*.bin / *.qdss)

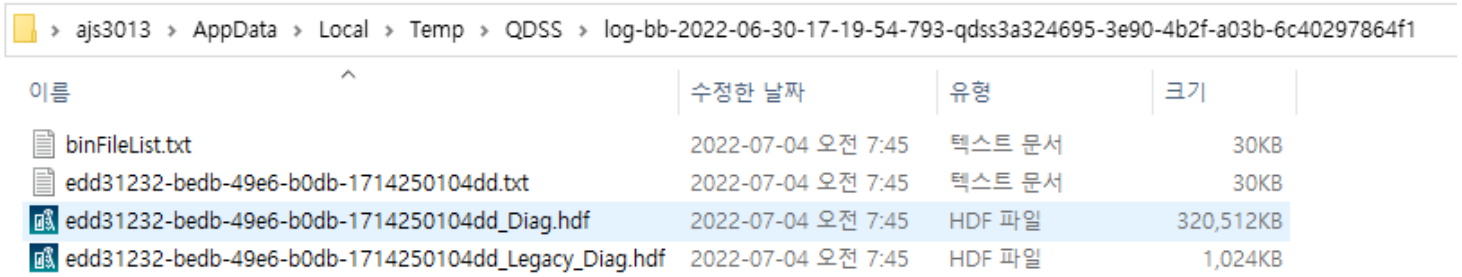
※ 단말 제조사 별 CP 로그 확보 방법은 각 제조사 PM 통해 확인 (삼성 silent log dump, 애플 carrier dump)





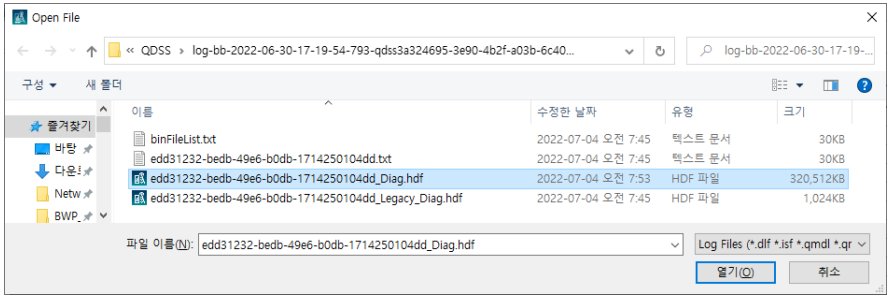
2. QCAT 에서 파일 Open 시 HDF 로그 파일 자동 생성됨

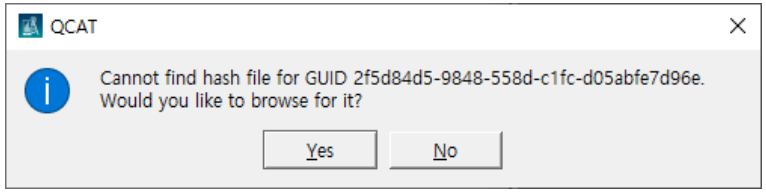
※ HDF(*.hdf) 파일 생성 루트 : C:₩Users₩User₩AppData₩Local₩Temp₩QDSS



(3) QCAT 로그 분석 방법 [2/6]

3. QCAT 에서 HDF 로그 파일 열기 (*.hdf)

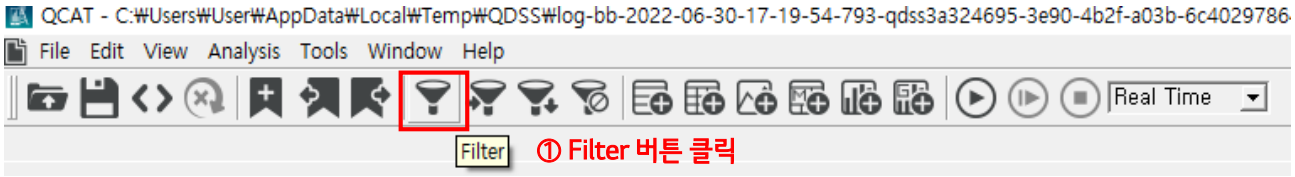


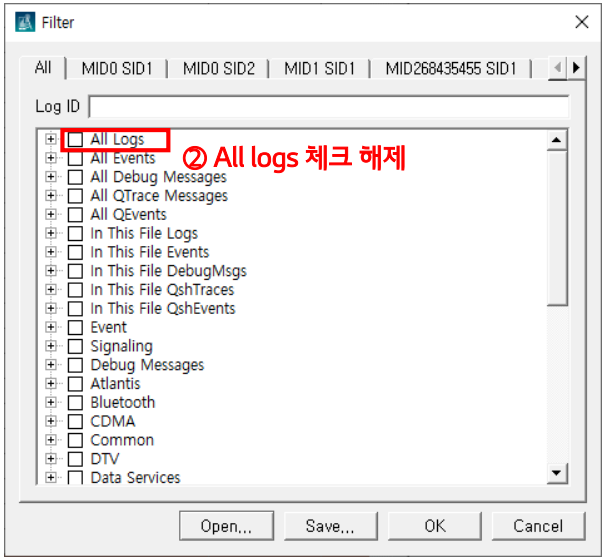


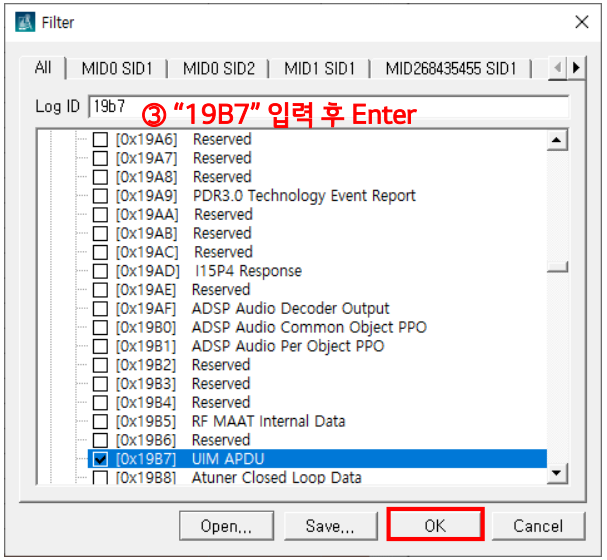
※ "No" 선택 가능 (SIM APDU 로그는 hash 파일 없이도 Parsing 가능함)

4. 로그 파일 열기 완료 → "Filter" 버튼 클릭 → All Logs 체크 해제 → "19B7" 검색 후 선택

※ SIM APDU 로그는 hash 파일 없이도 Parsing 가능함 ("No" 선택)





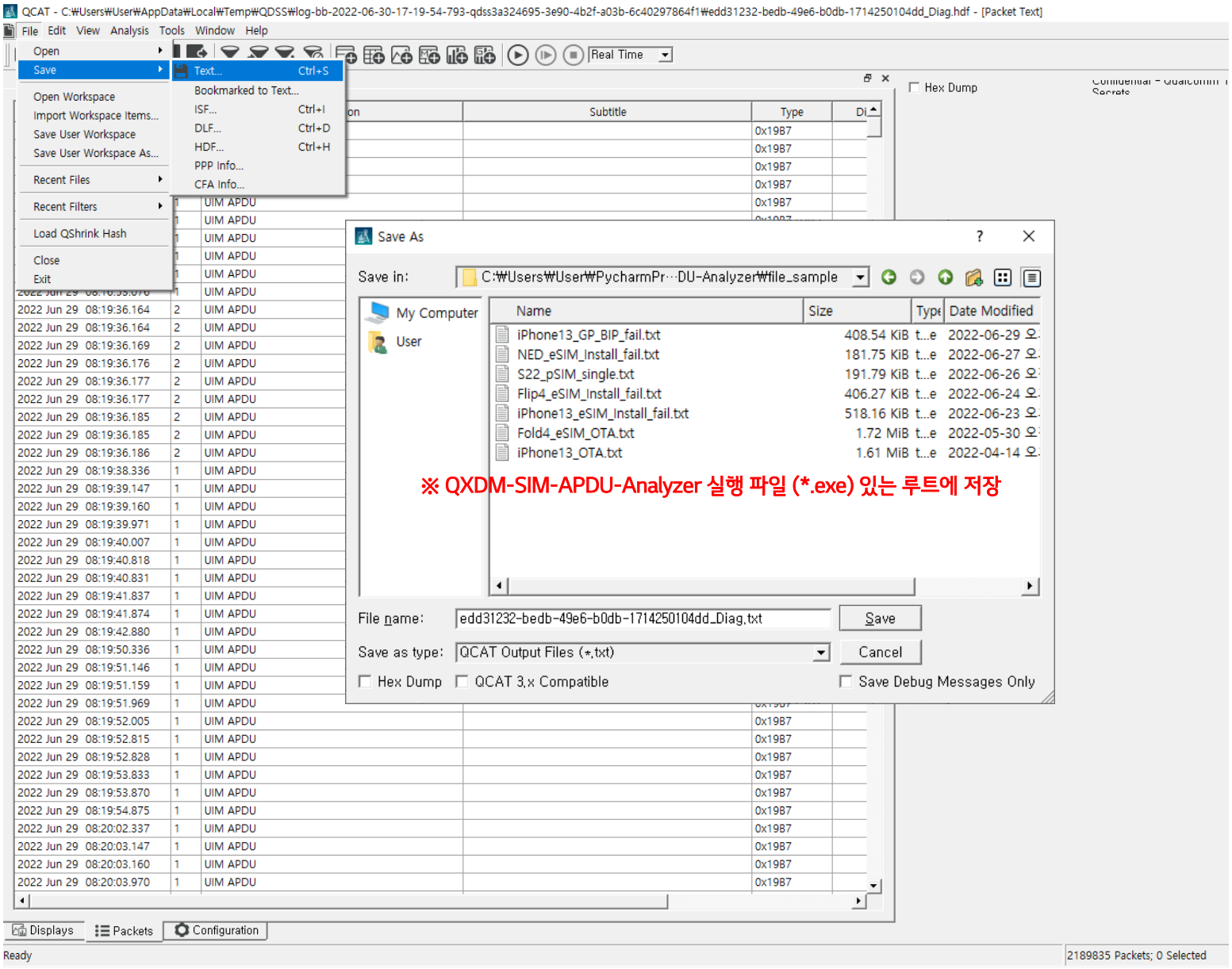


④ "UIM APDU" 체크

⑤ "OK" 클릭하여 필터 적용

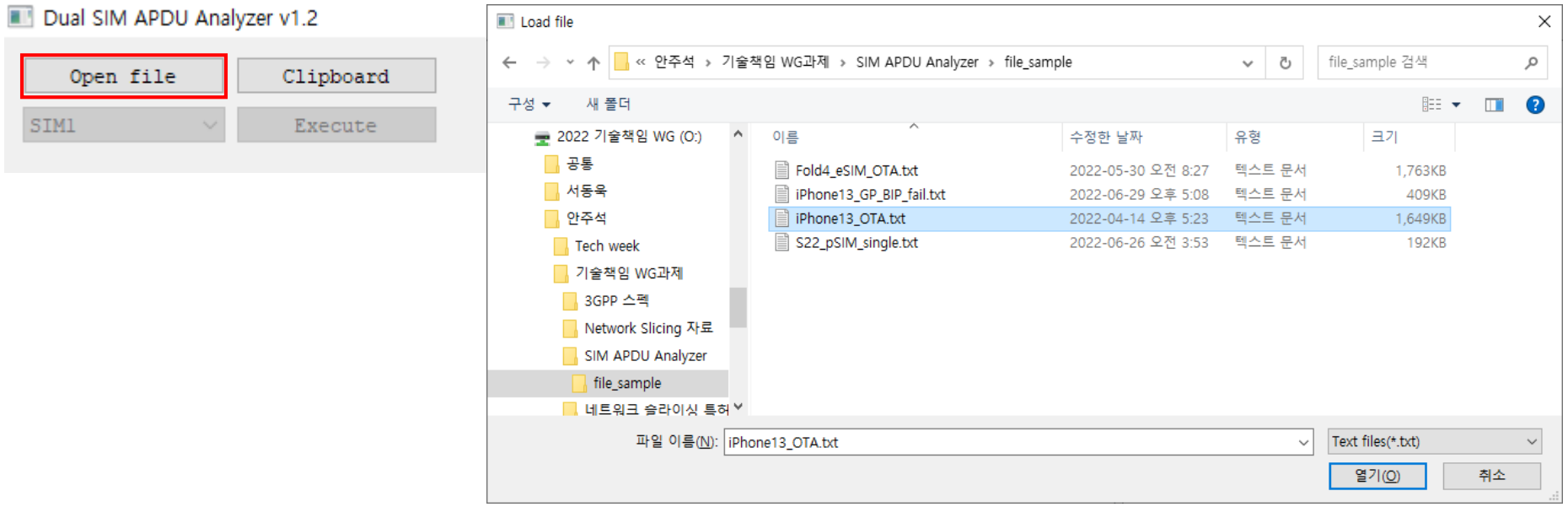
(3) QCAT 로그 분석 방법 [3/6]

5. 필터 적용 완료 후 텍스트 파일로 저장하기 (*.txt)

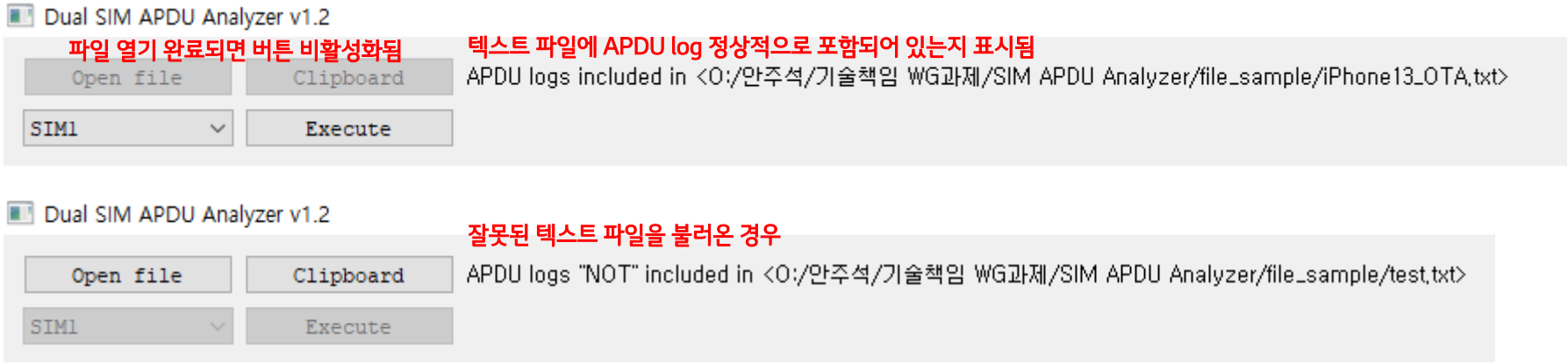


(3) QCAT 로그 분석 방법 [4/6]

6. QXDM-SIM-APDU-Analyzer 실행 후 "Open file" 버튼 클릭하여 저장한 텍스트 파일 열기

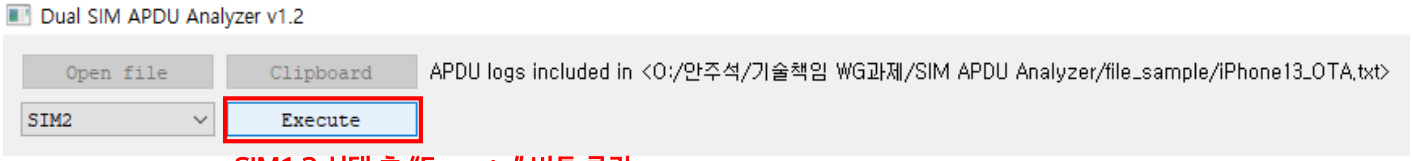


7. 텍스트 파일 열기 완료 화면

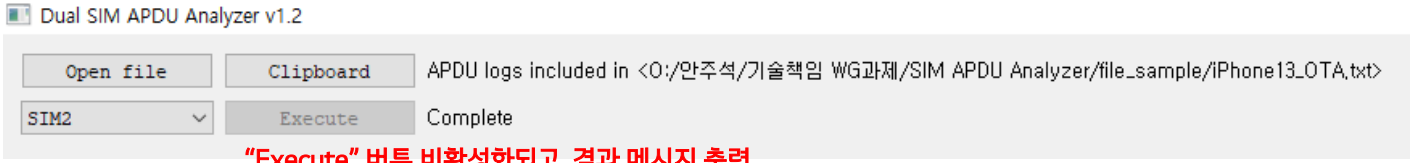


(3) QCAT 로그 분석 방법 [5/6]

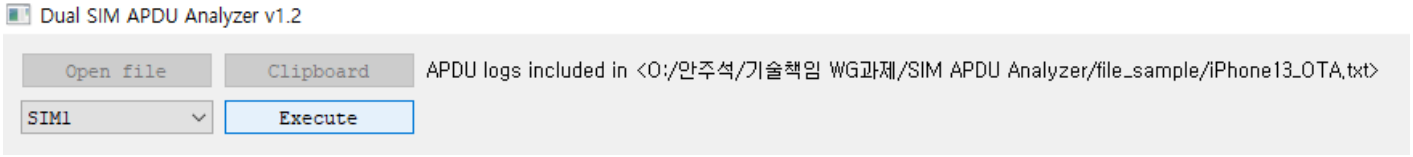
8. SIM1,2 선택 후 “Execute” 버튼 클릭



SIM1,2 선택 후 “Execute” 버튼 클릭



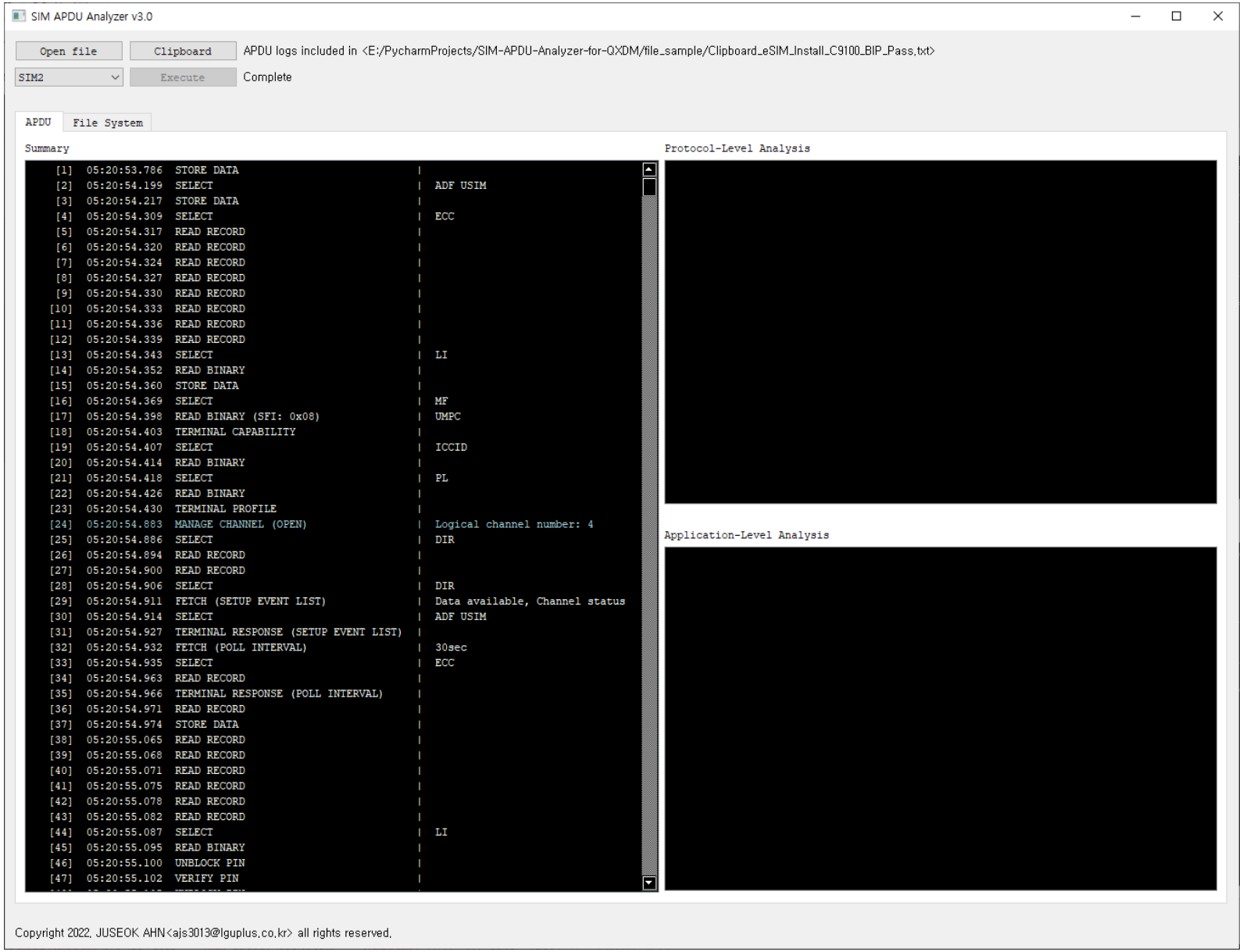
“Execute” 버튼 비활성화되고, 결과 메시지 출력



SIM1,2 변경 시 “Execute” 버튼 다시 활성화됨

(3) QCAT 로그 분석 방법 [6/6]

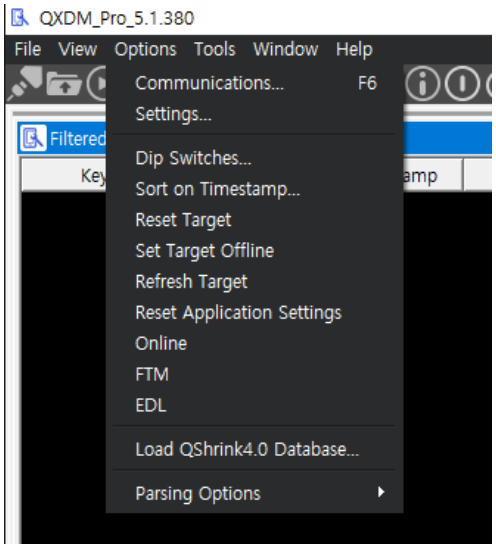
9. 결과 화면

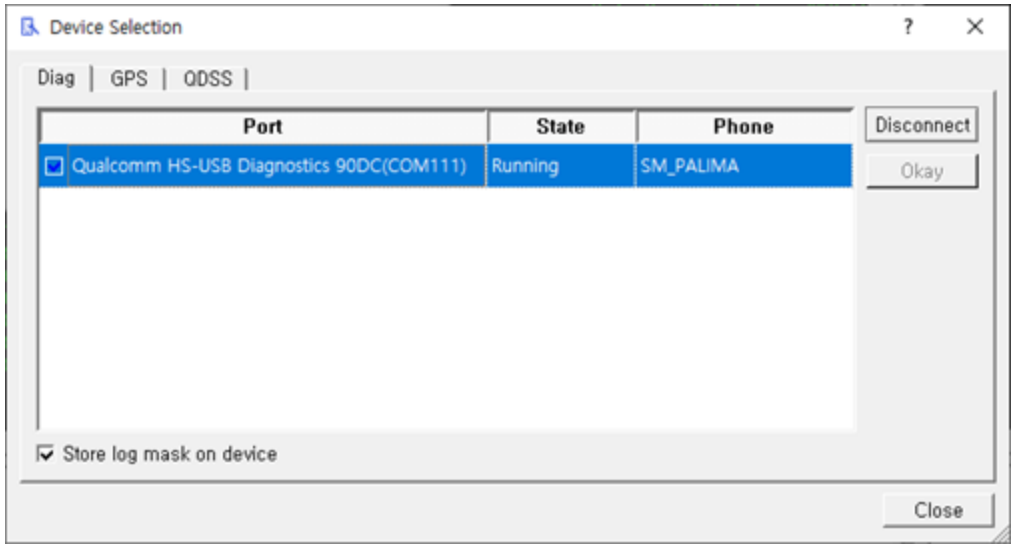


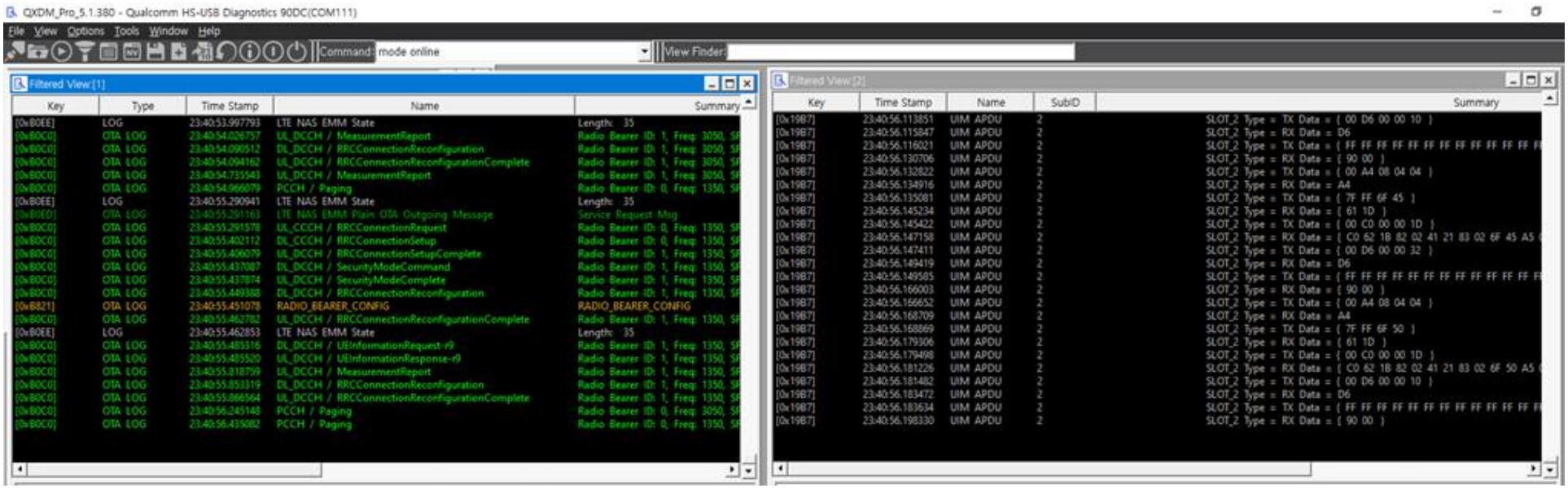
(4) QXDM 로그 분석 방법 [1/5]

1. 단말 포트 연결

※ 단말 제조사 별 포트 연결 방법은 각 제조사 PM 통해 확인 (삼성 usb setting, 애플 logging port 변경)

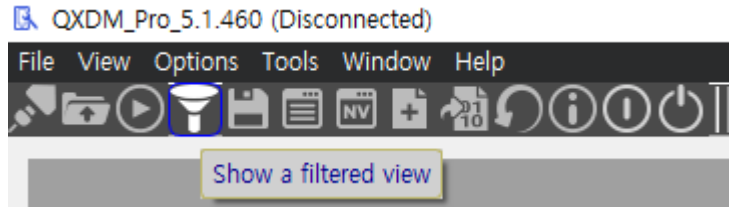


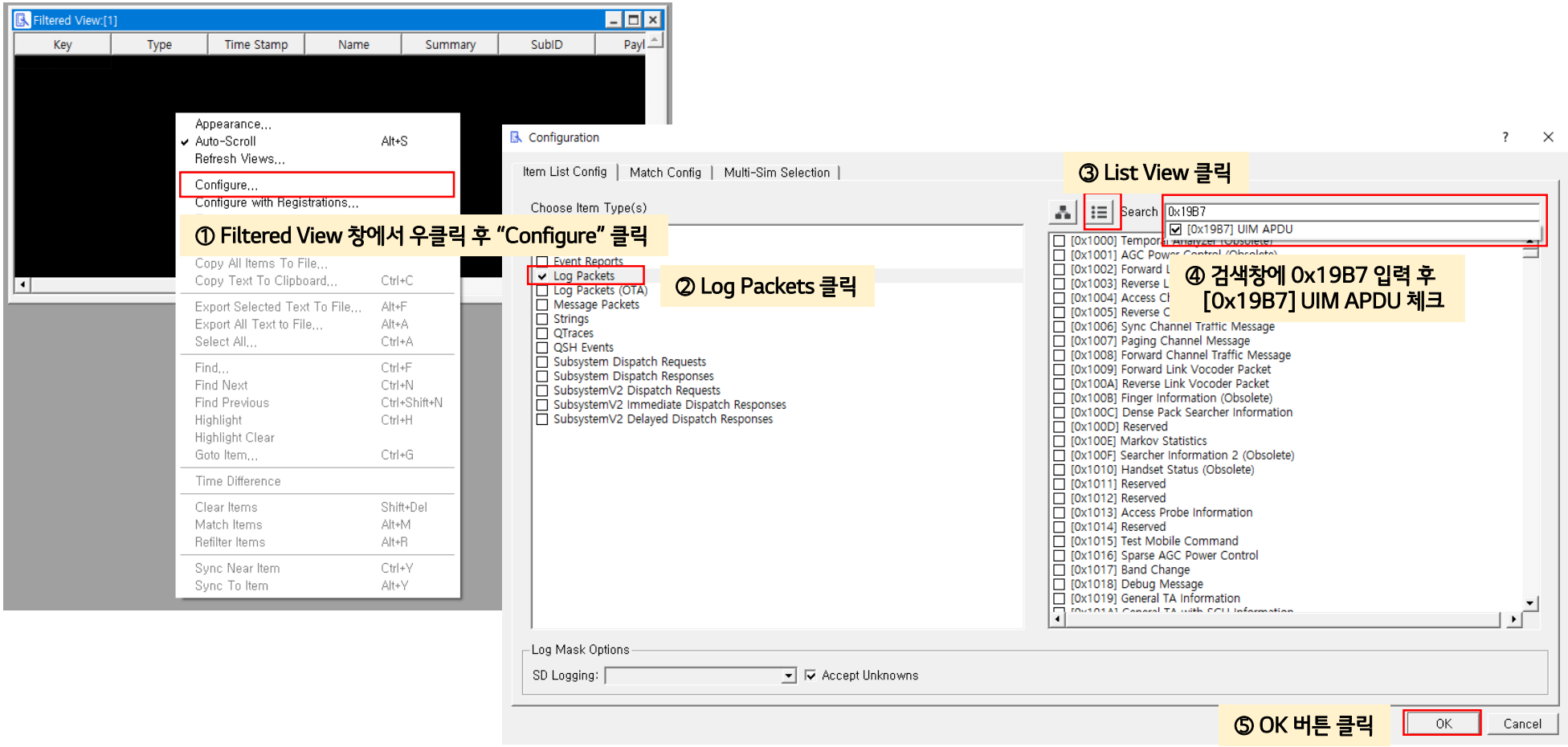




(4) QXDM 로그 분석 방법 [2/5]

2. Filtered View 생성 (0x19B7 UIM APDU)

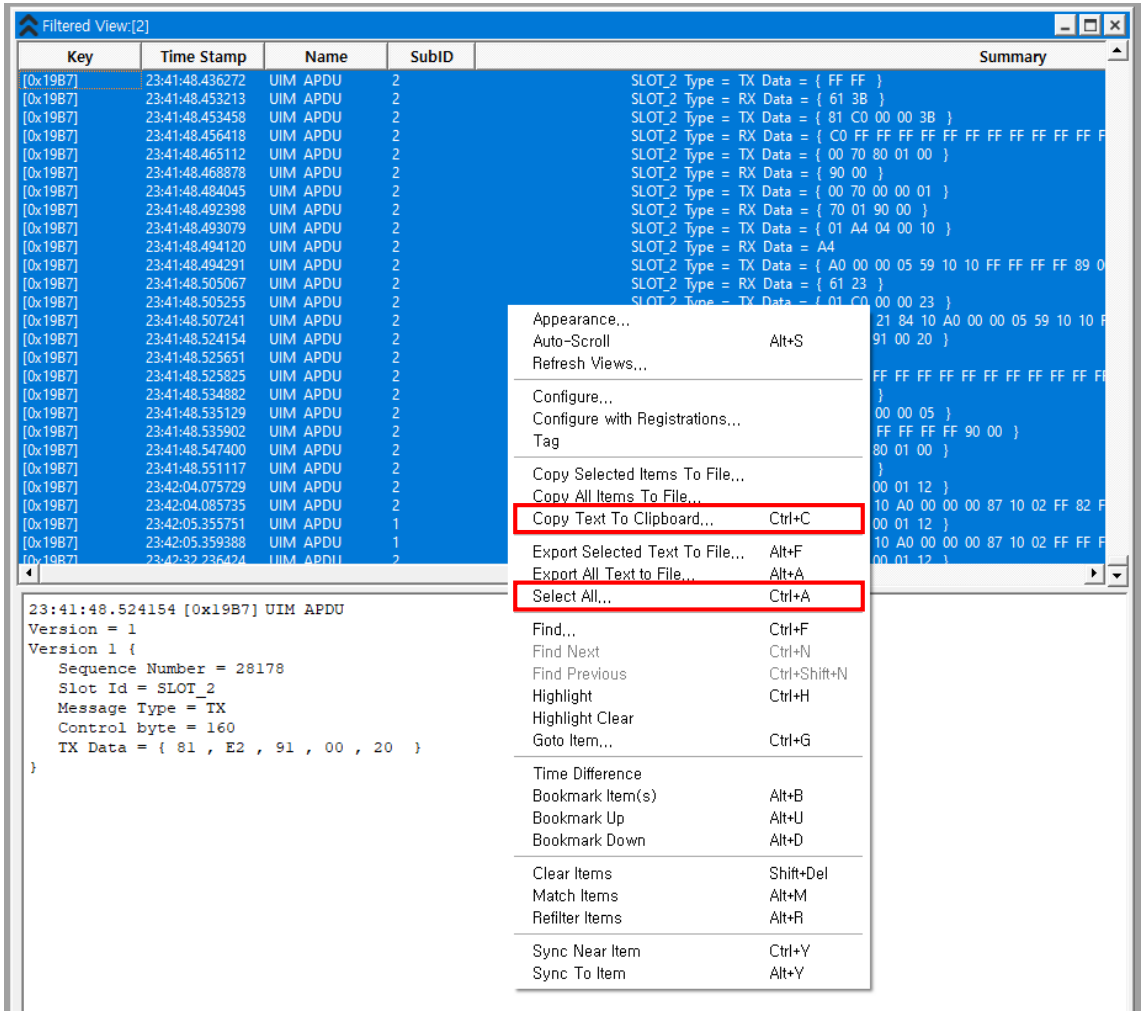


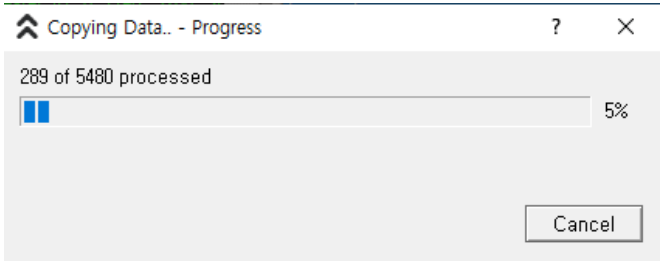


(4) QXDM 로그 분석 방법 [3/5]

3. UIM APDU (0x19B7) 로그 복사하기

- Filter View 창에서 “Ctrl+A” + “Ctrl+C”



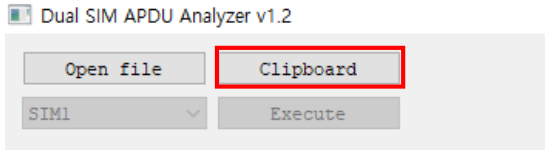


② Filter View:[2] 우클릭 후 Copy Text To Clipboard 선택 (Ctrl+C)

① Filter View:[2] 우클릭 후 Select All 선택 (Ctrl+A)

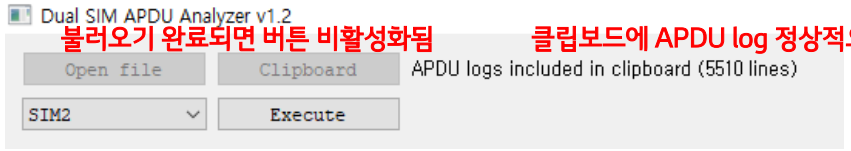
(4) QXDM 로그 분석 방법 [4/5]

4. QXDM-SIM-APDU-Analyzer 실행 후 “Clipboard” 버튼 클릭하여 클립보드에 복사된 로그 불러오기

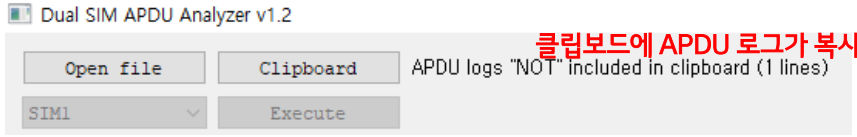


불러오기 완료되면 버튼 비활성화됨

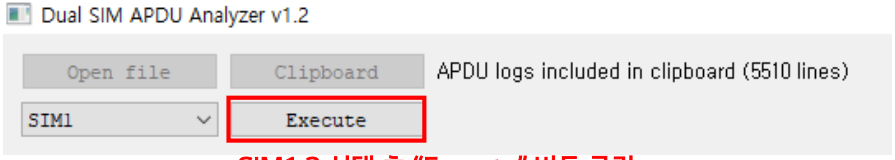
클립보드에 APDU log 정상적으로 포함되어 있는지 표시됨



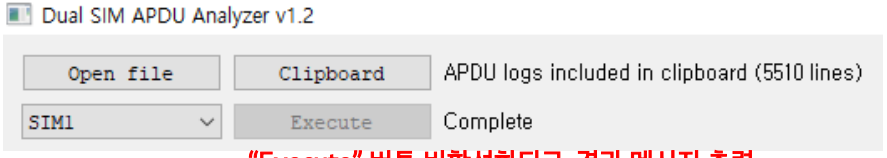
클립보드에 APDU 로그가 복사되지 않은 경우



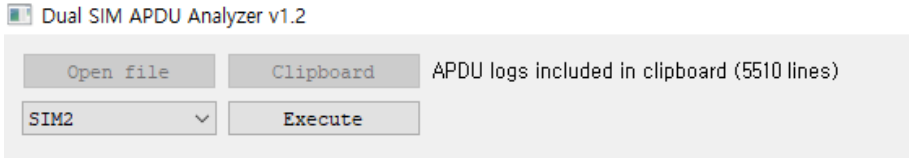
5. SIM1,2 선택 후 “Execute” 버튼 클릭



SIM1,2 선택 후 “Execute” 버튼 클릭



“Execute” 버튼 비활성화되고, 결과 메시지 출력

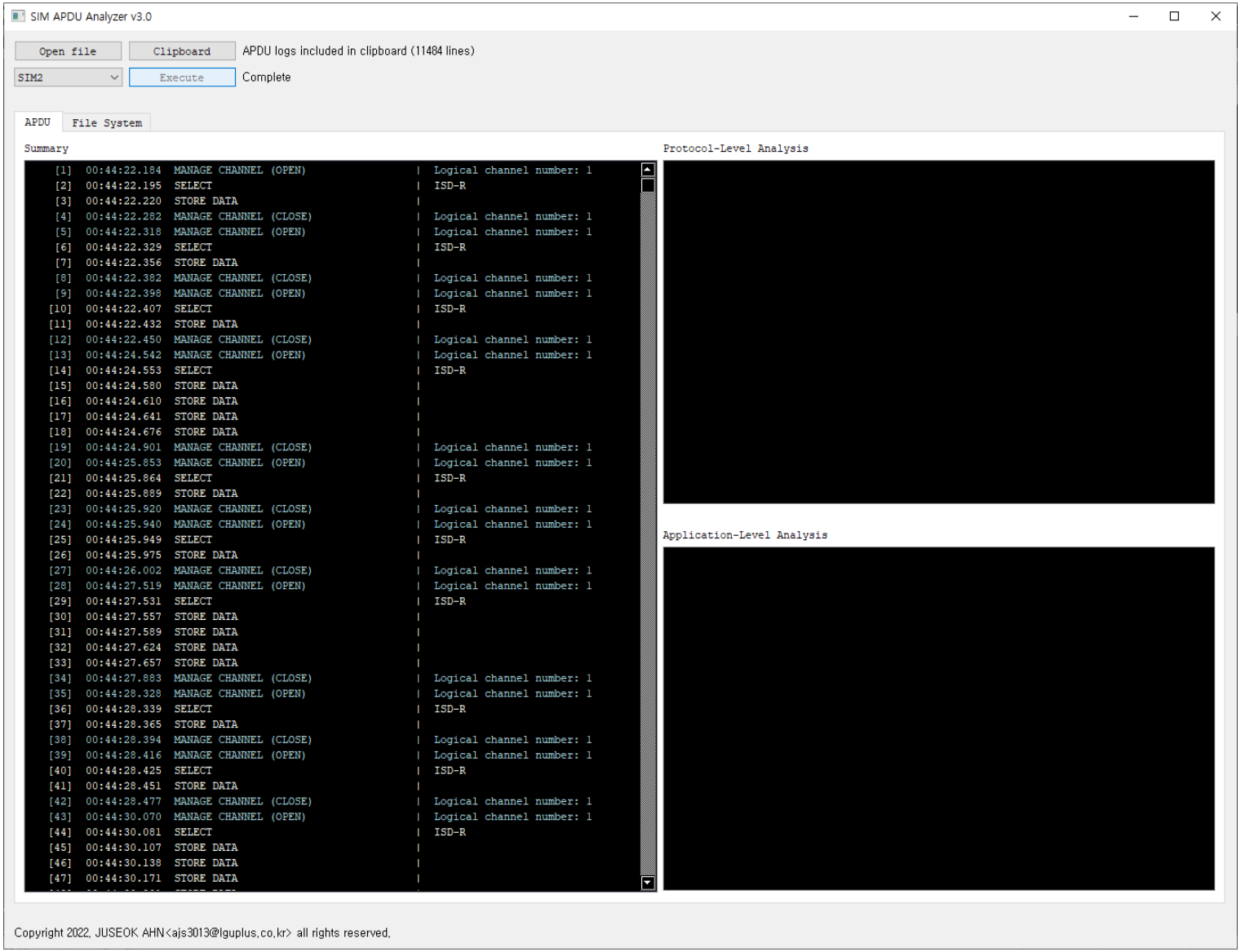


SIM1,2 변경 시 “Execute” 버튼 다시 활성화됨

(4) QXDM 로그 분석 방법 [5/5]

6. 결과 화면

클립보드 복사한 로그는 텍스트 파일(*.txt)로 저장 시 나중에 "Open File" 기능으로 다시 불러올 수 있음



(5) Shannon DM 로그 분석 방법 [1/6]

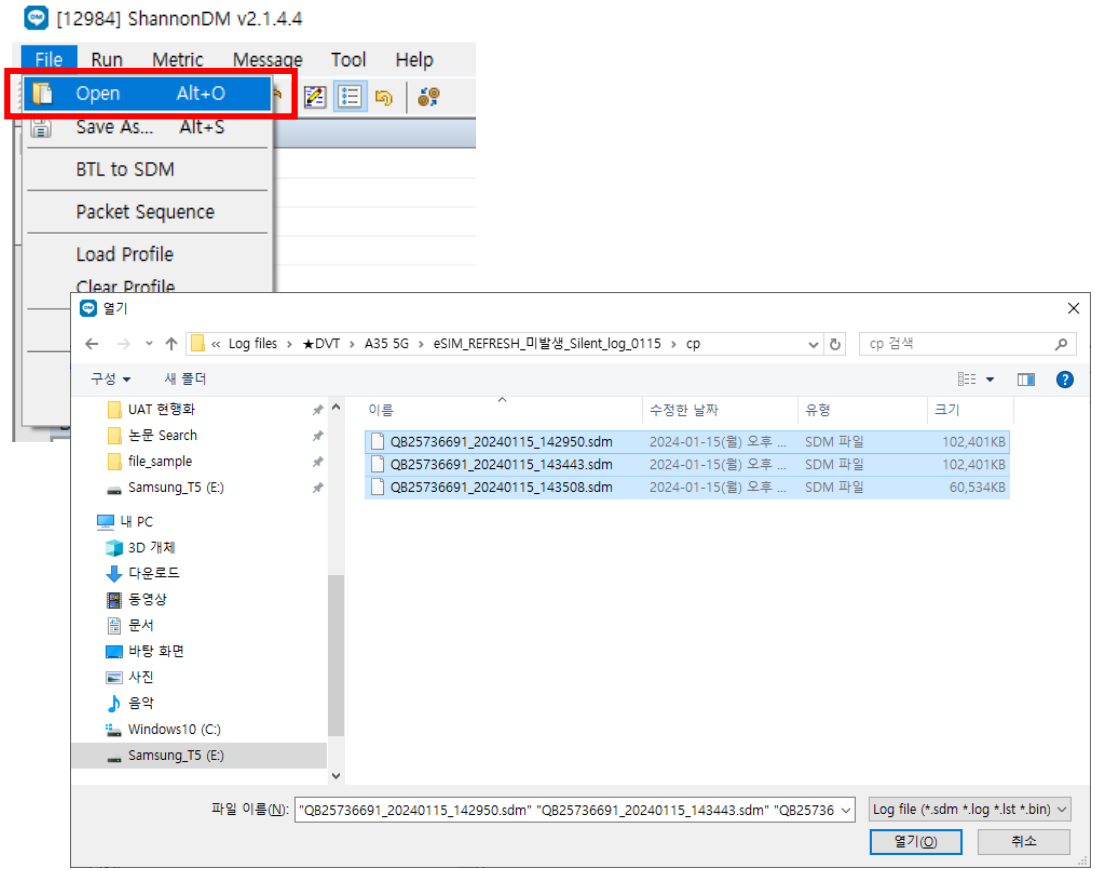
1. Shannon DM License 권한 업데이트

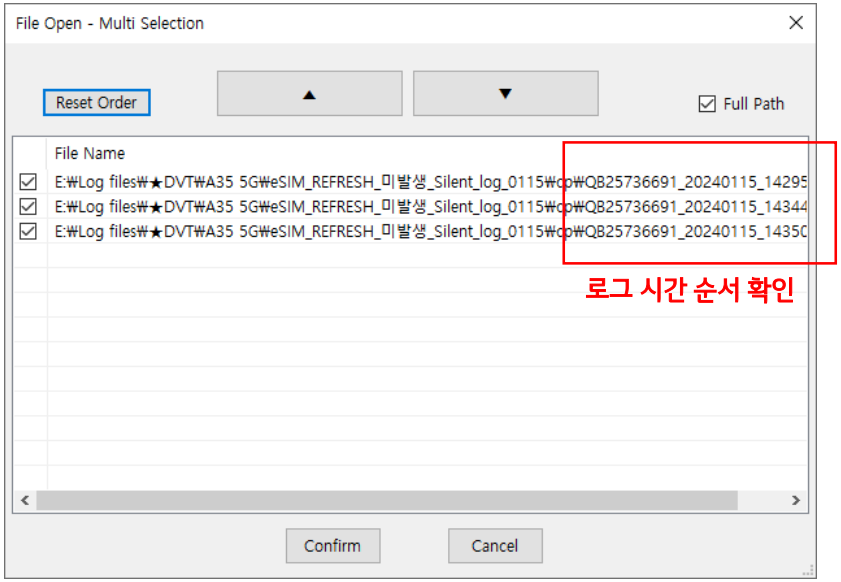
APDU 로그 분석을 위해선 DM 권한 업데이트 필요 ※ License 관련 사항은 별도 공유

2. Shannon DM 에서 단말 CP 로그 열기

File → Open → <u>로그 파일 (*.sdm)</u> 불러오기 (복수 로그 파일의 경우 <u>시간 순 정렬</u> 필수 확인, Reset Order 클릭 후 Confirm 클릭)

※ 단말 제조사 별 CP 로그 확보 방법은 각 제조사 PM 통해 확인 (삼성 silent log dump)



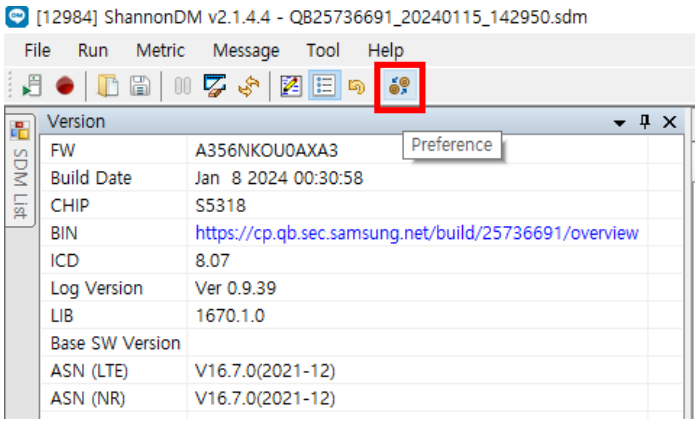


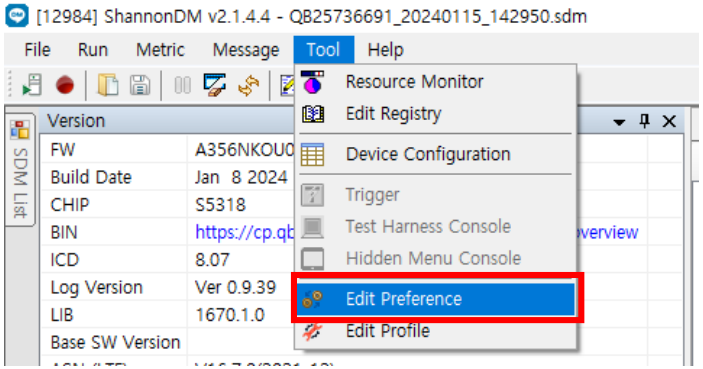
(5) Shannon DM 로그 분석 방법 [2/6]

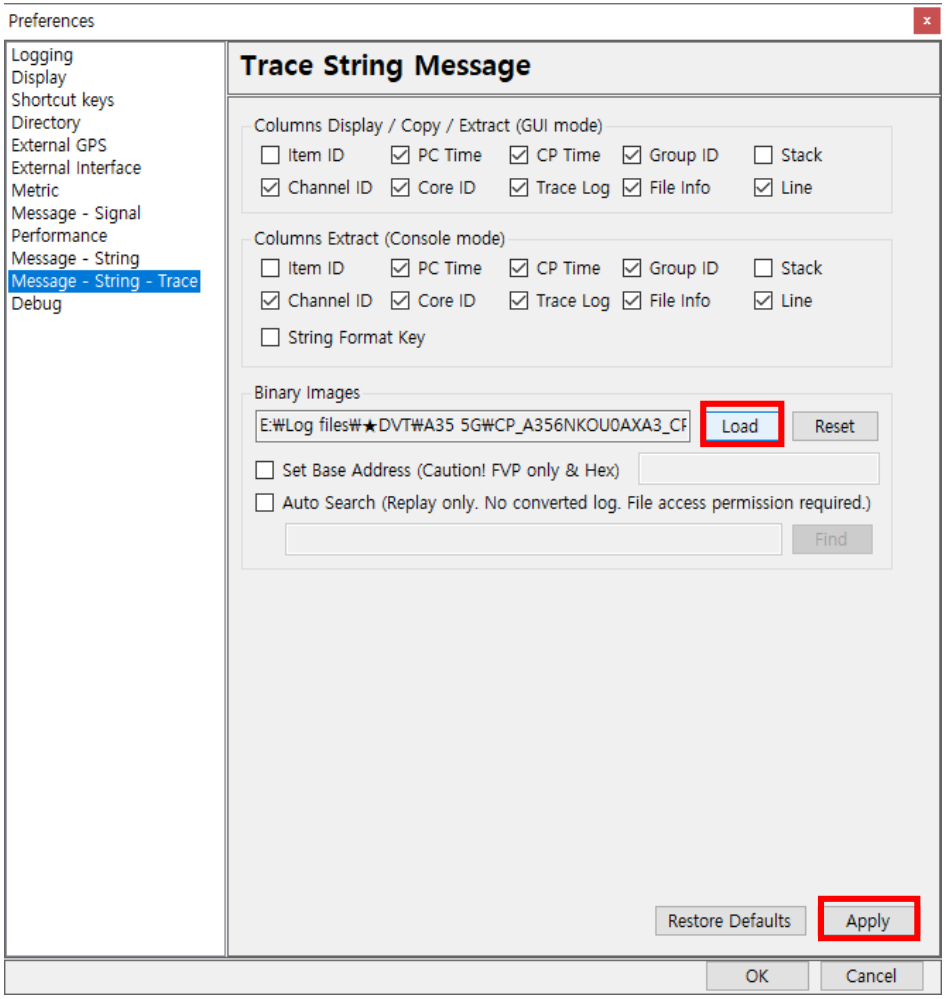
3. CP 바이너리 매칭

Tool → Edit Preference → “Message – String – Trace” → Binary Images → Load → CP 바이너리(*.md5) 불러오기 → Apply

(필수) 단말에 현재 적용된 CP 바이너리





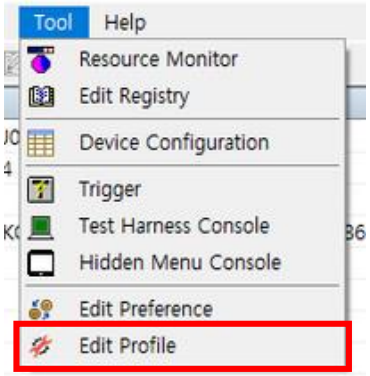


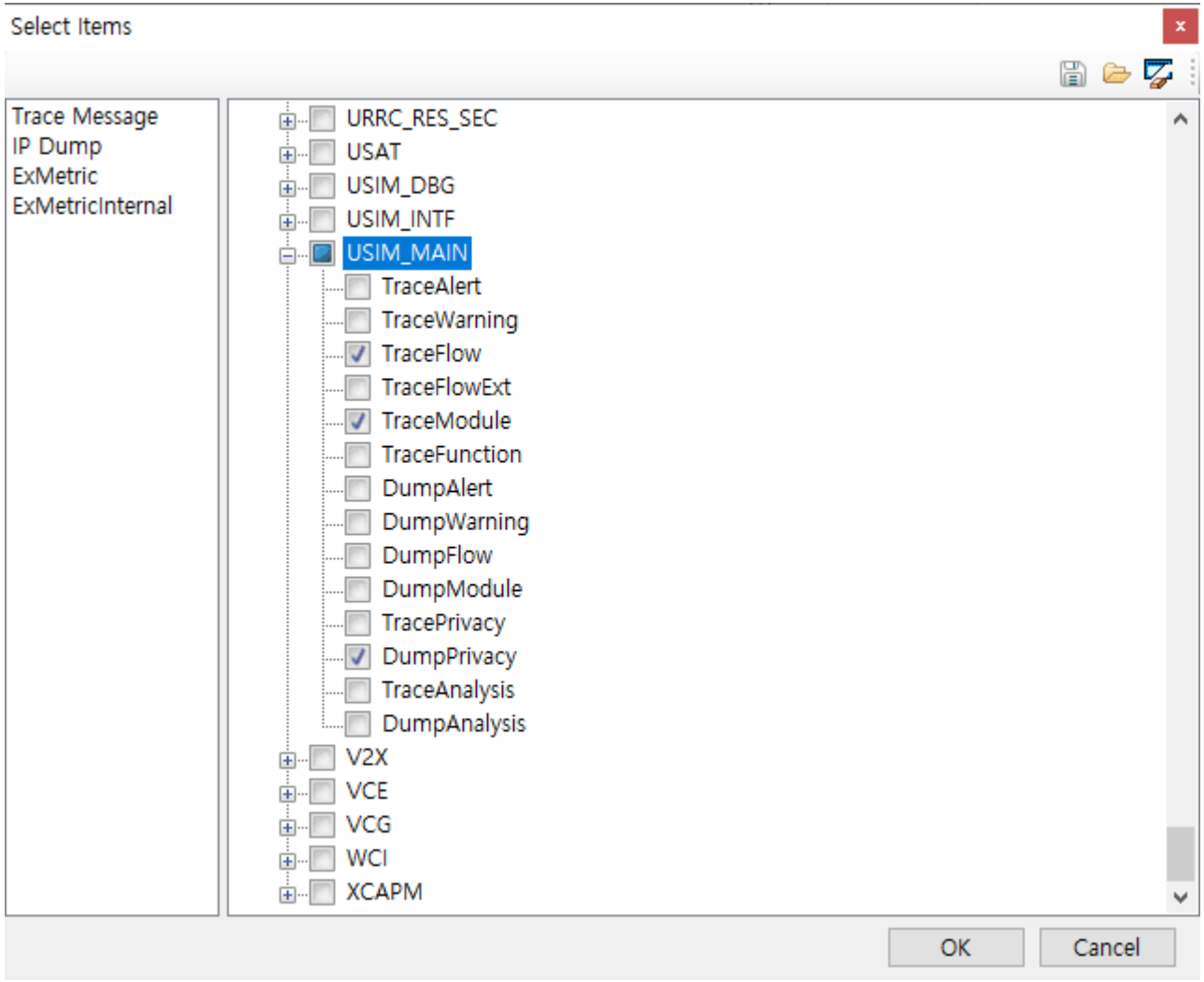
(5) Shannon DM 로그 분석 방법 [3/6]

4. Edit Profile 적용

Tool → Edit Profile → Trace Message → USIM_MAIN → *'TraceFlow', 'TraceModule', 'DumpPrivacy'* 체크

※ APDU 분석에 필요한 최소 항목
→ 아이템 선택이 많아질수록 Trace 창 로드 심해지는 현상 있음

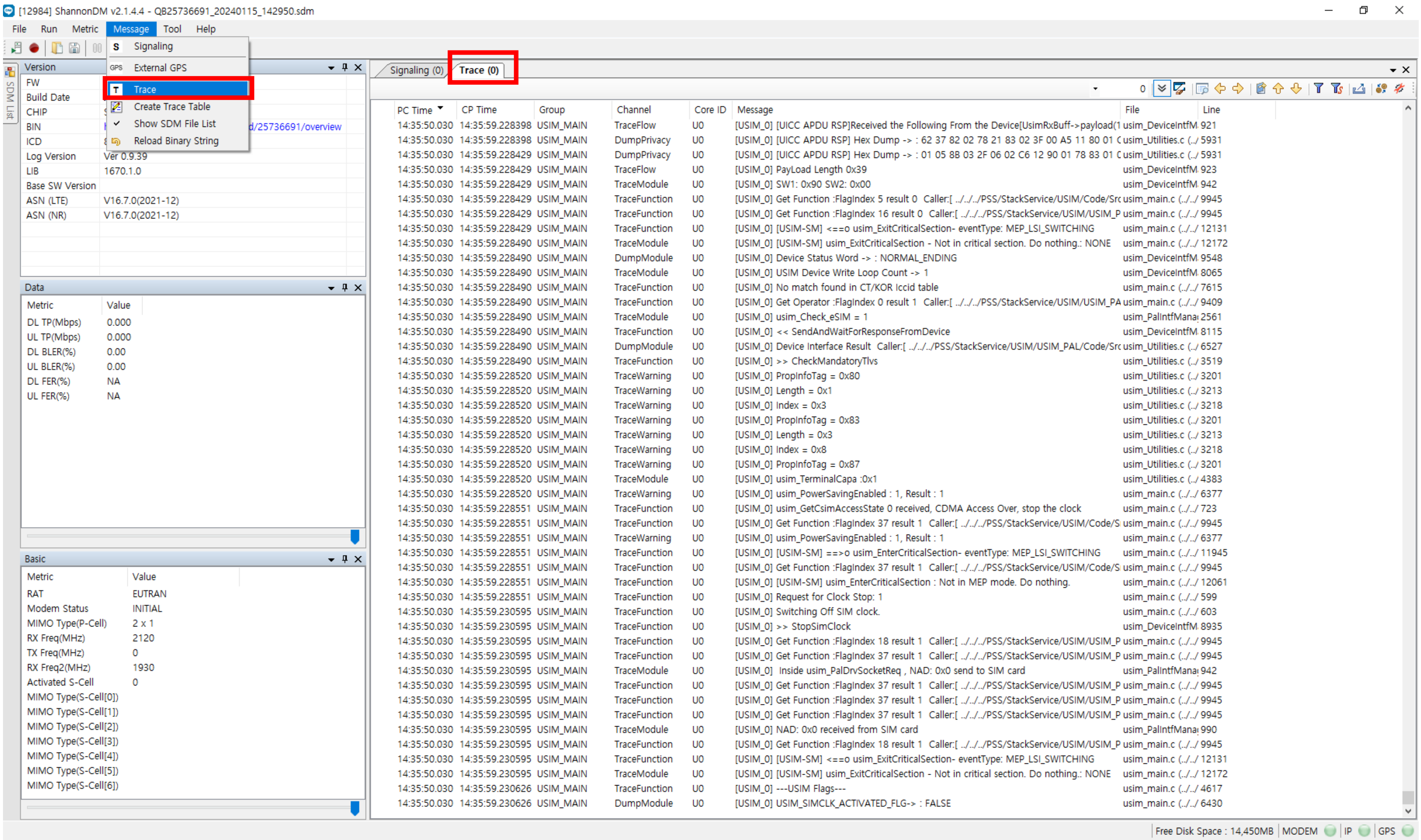




(5) Shannon DM 로그 분석 방법 [4/6]

5. Trace 메시지 확인

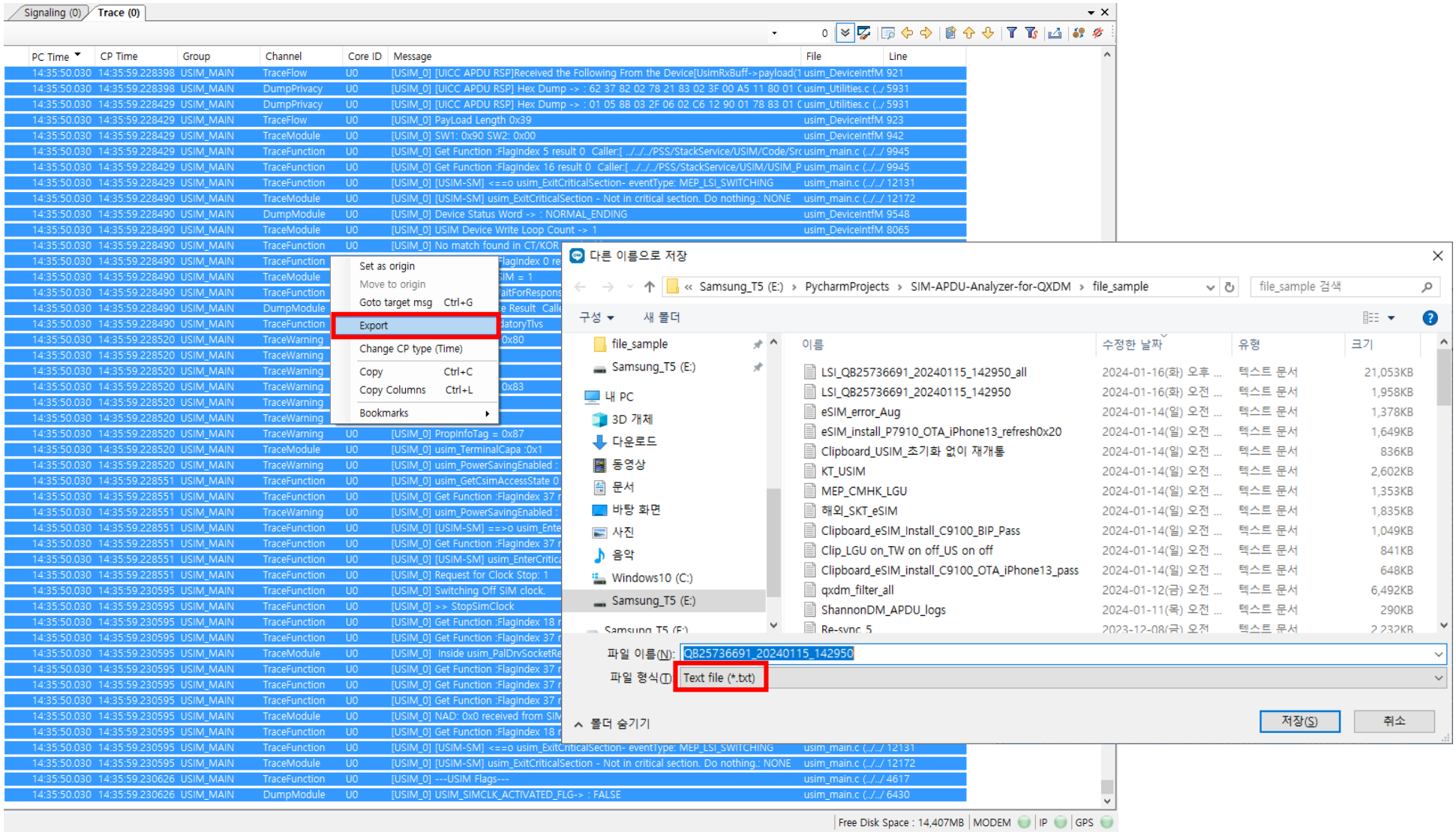
Message → Trace → Trace Window 생성 및 SIM APDU 로그 출력 확인 (raw data)



(5) Shannon DM 로그 분석 방법 [5/6]

6. Trace 메시지 Export

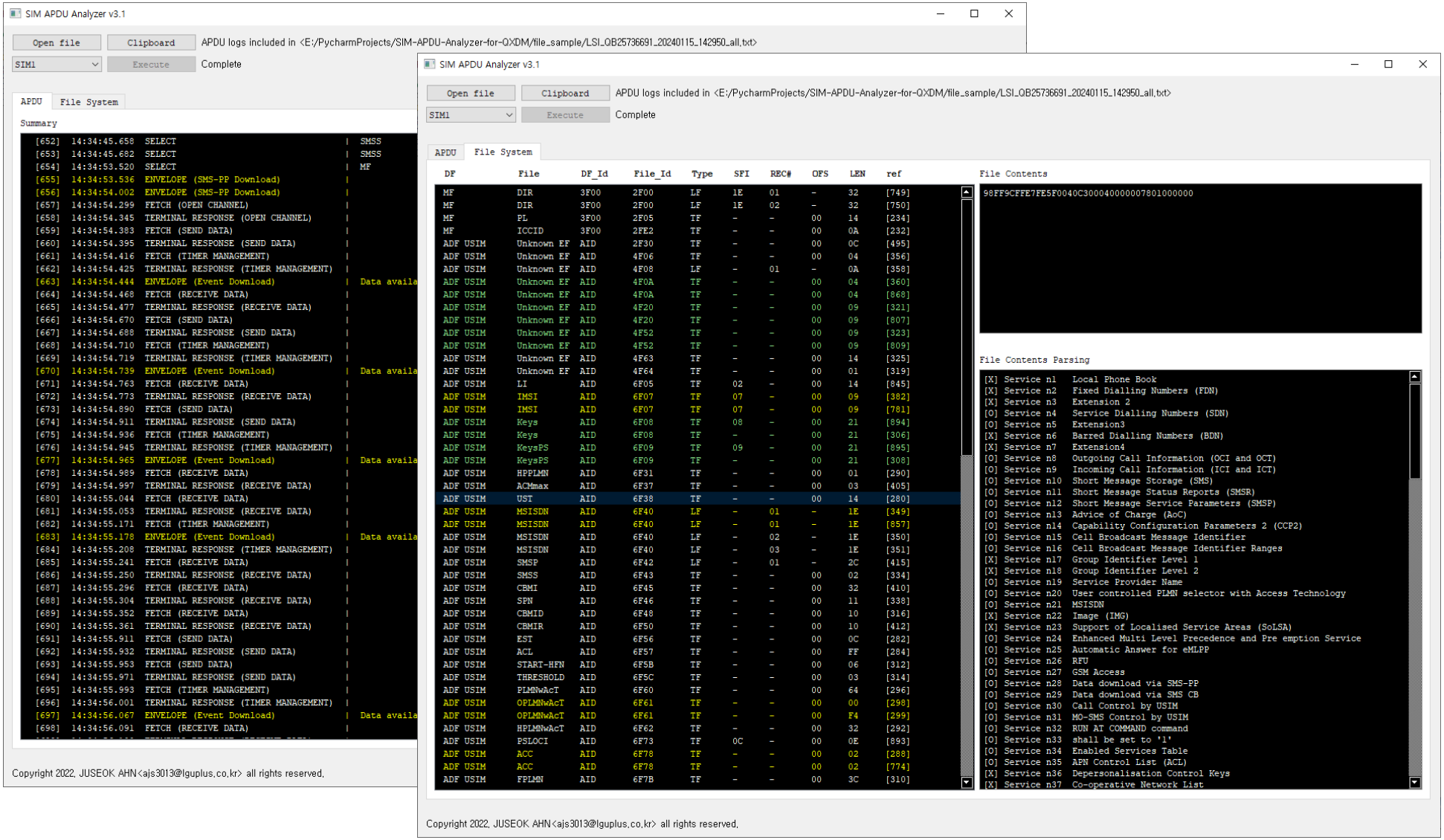
Trace 메시지 전체 선택(Ctrl+A) → 우클릭 Export 선택 → 파일 형식 텍스트 파일(*.txt)로 지정 후 저장



(5) Shannon DM 로그 분석 방법 [6/6]

7. 결과 화면

SIM APDU Analyzer (**v3.1 이상**) 에서 “Open file” 버튼 클릭해 6번에서 저장한 텍스트 파일 불러오기

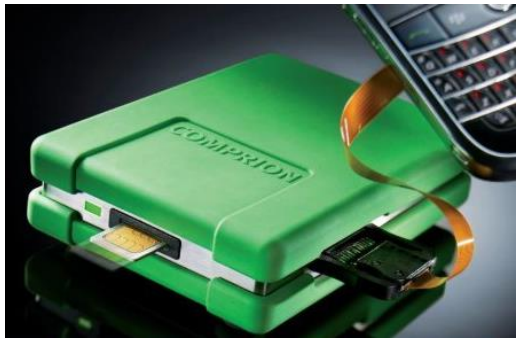


개발 배경

❖ eSIM 은 단말 내부에 장착되어 있어 USIM 에 사용 중인 분석 Tool 활용이 불가함

- 단말과 SIM간의 통신은 APDU (Application Protocol Data Unit) 구조를 사용하며, Byte로 구성된 값의 의미를 Decoding 해주는 분석 Tool이 필요함

  Ex. SIM에 저장된 파일 값 Read, LTE/5G 인증 로그, OTA 개통 로그 등을 분석



단말에 물리적인 케이블 연결하는 방식

#	Command
49	SELECT (UST)
50	READ BINARY (Offset 0, Len 12)
51	SELECT (EST)
52	READ BINARY (Offset 0, Len 12)
53	READ BINARY (SFI:07, IMSI, Offset 0, Len 9)
54	SELECT (7FFF.7F66.5F30.4F34)
55	SELECT (CBMID)
56	READ BINARY (Offset 0, Len 16)
57	SELECT (NETPAR)
58	READ BINARY (Offset 0, Len 255)

Field	Value
Command:	SELECT
Status:	Normal ending of command.
Current DF:	USIM Application Directory (3F00.7FFF)
Current EF:	USIM Service Table (6F38)
Time:	134.341 s
P1:	Select by File ID
P2:	Return FCP
Logical Channel:	00
Secure Messaging Indicatic	No SM used between terminal and card

ISO Protocol Layer

#	Sequence	Dir	Description	Value	Delay	Meaning
52	APDU		Header [CLA INS P1 P2]	00 A4 00 04	273.56 etu	SELECT
			Incoming data	6F 38		
			Outgoing data	62 17 82 02 41 21 83 02 6F 38 8A 01 05 8B 03 6F 06 04 80 02 00 0C 88 01 20	41.38 etu	
			Return code [SW1 SW2]	90 00		

➢ 단말 모뎀 로그 기반의 단말과 SIM 간의 APDU 통신 로그 분석 Tool 개발

- 현재 퀄컴과 COMPRION 양사 간 Tool 호환성 제공을 위한 개발 검토 계약을 진행 중이나 올해 9월 이내에 상용 솔루션 제공은 불가할 것으로 예상됨 eSIM 상용화 전까지 퀄컴 모뎀 로그 기반의 분석 Tool 자체 개발 계획을 수립함

  1) eSIM 단말은 USIM, eSIM 과 동시에 통신 가능하여 2개 Path의 로그가 단말 모뎀 로그에 함께 남음 → Path 별 로그 구분하여 별도 분석 필요

  2) 퀄컴 모뎀 로그는 APDU Decoding 범위가 제한적임 → eSIM 단말 DVT에 필요한 필수 값을 표준 기반으로 Decoding하는 기능 제공

2022 Mar 13 22:35:41.890	UIM APDU	
2022 Mar 13 22:35:41.899	UIM APDU	
2022 Mar 13 22:35:41.899	UIM APDU	
2022 Mar 13 22:35:41.903	UIM APDU	
2022 Mar 13 22:35:41.903	UIM APDU	
2022 Mar 13 22:35:41.908	UIM APDU	
2022 Mar 13 22:35:41.908	UIM APDU	
2022 Mar 13 22:35:41.913	UIM APDU	
2022 Mar 13 22:35:41.913	UIM APDU	
2022 Mar 13 22:35:41.928	UIM APDU	
2022 Mar 13 22:35:41.929	UIM APDU	
2022 Mar 13 22:35:41.935	UIM APDU	
2022 Mar 13 22:35:41.936	UIM APDU	
2022 Mar 13 22:35:41.942	UIM APDU	
2022 Mar 13 22:35:41.943	UIM APDU	
2022 Mar 13 22:35:41.950	UIM APDU	
2022 Mar 13 22:35:41.950	UIM APDU	
2022 Mar 13 22:35:41.957	UIM APDU	

APDU Parsing 결과 보여주기

```
2022 Mar 13  22:35:41.875  [15]  0x19B7  UIM APDU
Subscription ID = 1
Version                 = 1
Sequence Number         = 188
Slot Id                 = SLOT_1
Message Type            = RX
Control byte            = 0
RX Data                 = { B0 98 FF 9C FF E7 FE 5F 00 40 C3 00 04 90 00  }
APDU Parsing
  Transaction Start : 2022/03/13 22:35:41.866
  slot value:1
  READ BINARY
Logical Channel: 0
  UICC instruction class
  CLA - No SM used between terminal and card
  Offset: 0x00
Bytes Read: { 0x98 0xFF 0x9C 0xFF 0xE7 0xFE 0x5F 0x00 0x40 0xC3
              0x00 0x04 }
Status Words - 0x90 0x00 -   Normal ending of the command

          Length:  39
          Header:  27 00 B7 19 15 BF 5B 41 C3 F6 F7 00
          Payload: 01 BC 00 01 05 00 00 00 00 00 0F 00
                   B0 98 FF 9C FF E7 FE 5F 00 40 C3 00
                   04 90 00
```

eSIM/USIM Path 구분 및 필터 제공

Bytes 값에 대한 Decoding 추가