

Synway Software Tool

CasTool User Manual

Synway Information Engineering Co., Ltd

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Chapter 1 Overview

CasTool.exe is a special tool we provide to help solve problems involving the digital station tap board, primarily used in:

- 1. Logging signaling messages for the digital phone, monitoring channel states and recording on-channel voices (applicable to Common Working Mode).
- 2. Recording raw waves or raw data flows (applicable to Raw Data Acquisition Mode).
- 3. Recording bit streams (applicable to Common Working Mode)

At present the models of digital station tap boards are as follows:

- 1. A-type: SHR-16DA-CT/PCI, SHR-24DA-CT/PCI
- 2. B-type: DST-24B/PCI, DST-24B/PCI+, DST-24B/PCI(2.0), DST-24B/PCI+(2.0), DST-24B/PCIe(2.0), DST-24B/PCIe+(2.0)

The two working modes mentioned above are described as follows:

- Common Working Mode: It is selected in case that the check box before 'Rec Raw Mode' is not ticked when using ShCtiConfig.exe to configure such information as PBX model, etc. In this mode, you can perform the recording of signaling messages (applicable to both A-type and B-type boards) or bit streams (applicable only to B-type boards). The bit stream is the effective raw data composed of voice data and signaling messages, generated by parsing the original waveforms.
- 2. Raw Data Acquisition Mode: It is selected in case that the check box before 'Rec Raw Mode' is ticked when using ShCtiConfig.exe to perform configuration. Note: SHR-16DA-CT/PCI and SHR-24DA-CT/PCI digital station tap boards, if working in Raw Data Acquisition Mode, support the acquisition of raw data flows, that is, collecting digital signals 0 or 1 at a specified rate. Some operations on parameter configuration may be required to enable this feature. Please contact us (see <u>Appendix B</u>) for help when necessary. DST-24B/PCI, DST-24B/PCI+, DST-24B/PCIe and DST-24B/PCIe+ digital station tap boards, if working in Raw Data Acquisition Mode, support the acquisition of raw waves, that is, performing the A/D conversion sampling to on-line raw waves at the rate of 10M/S.

This software cannot run without ShConfig.ini and ShIndex.ini, so you must configure ShConfig.ini properly for the digital station tap board according to the description in the document 'DSTBoard_Config_Manual.pdf', which can be downloaded from the link below:

http://www.synway.net/DownLoad/DST help document.rar



Chapter 2 Operation Guide

2.1 Recording Signaling Messages (applicable to Common Working Mode)

3	Cas Tool 3.	0							
1	TestInfo	ChInfo		Board		112 Channel:	Counts:		
	Ch ChState	1. System		Start Time:			End Time:		_
	DIMF BUFFER DKEY LCD INFO CallerId CalledId			No.	time	wEventCode	EventName	dwSubReason	dwXtz
	-Channel Info-								
	PbxModel:		Set						
	ChannelNum: F	1 🗌 🗆 4 wire	Start						
	PhoneModel:		End						
	EnRecord:	Bit Stream: 🥅	Cancel	<]			>
	Raw Wave:	Advance Set	Exit	ClearEvents E	vent Paus	Event Filter		Г	Exclude

Step 1: Start CasTool.exe and the main interface shows as Figure 2-1.



As seen in Figure 2-1, there are two columns 'TestInfo' and 'ChInfo' on the top of the left list window. The 'TestInfo' will cover such information as Ch, ChState, DTMF BUFFER, DKEY, LCD INFO, CallerId and CalledId, while the 'ChInfo' will show the monitored situation in real time. The right list window will display the D-channel event code and other parameters in turn.

The item 'Event Filter' at the bottom is used to set conditions for which events you exactly want to display. For example, if you only want events with the event code of 1008 and 104a to be displayed, fill in '1008 104a'; if you want all events but those with the event code of 1008 and 104a to be displayed, fill in '1008 104a' and tick the check box 'Exclude'. Note that up to 10 event filter conditions can be set at a time and the filled-in event codes should be separated by blank space.

Step 2: Fill in some parameters under 'Channel Info' as shown in Figure 2-2.



TestInfo	ChInfo		Board		112 Channel:	Counts:		
lh lhState	0 IDLE		Start Time:			End Time:		
JTMF BUFFER KEY C.D INFO CallerId CalledId			No.	time	wEventCode	EventName	dwSubReason	dwXtr
Channel Info PbxModel: PANASO		Set						
ChannelNum: 0	🚬 🗆 4 wire	Start						
PhoneModel: KX-T763 EnRecord: B	it Stream:	Cancel			j			>



The PBX model, the number of the monitored channel and the phone model are the essential information that you must input (that is, these three fields can't be left empty). They will be written into the generated log file.

For the use of 4-wire digital phones, tick the check box '4 wire'; or what you record may only include either uplink or downlink signals. In such situation, please make sure to tick this check box and then perform the recording again. Don't forget that the correct line connection is the prerequisite for such operation. See relative hardware manuals to find the connection rules for different kinds of 4-wire digital phones.

Step 3: If you need recording, tick the check box after 'EnRecord' as shown in Figure 2-3.



3	Cas Tool	3. 0							
Ŷ	TestInfo	ChInfo	T	Board		112 Channel:	Counts:		
	Ch ChState	0 IDLE		Start Time:			End Time:		
	DTMF BUFFER DKEY LCD INFO CallerId CalledId			No.	time	wEventCode	EventName	dwSubReason	dwXtr
	-Channel Info PbxModel:	FANASONIC	Set						
	ChannelNum:	0 T 4 wire	Start						
	PhoneModel:	KX-T7630	End						
	EnRecord:	🕑 Bit Stream: 🥅	Cancel	<					>
	Raw Wave:	Advance Set	Exit	ClearEvents 1	lvent Paus	e Event Filter		Г	Exclude

Figure 2-3

As long as 'EnRecord' is ticked, the program will automatically record A-Law formatted WAV files under the directory of the log file.

Step 4: When you finish setting the parameters under 'Channel Info', click on 'Set' as shown in Figure 2-4.

TestInfo	ChInfo	В	oard		112 Channel:	Counts	; J	
Ch ChState	0 IDLE	S	tart Time:			End Time:		
DTMF BUFFER DKEY LCD INFO CallerId CalledId			No.	time	wEventCode	EventName	dwSubReazon	dwXtr
ChannelNum: 0	SONTIC	Set						
PhoneModel: KX-T EnRecord: V	7630	End	<		1			>

Figure 2-4

Step 5: Then the dialog box of 'Success to set channel' will pop up as shown in Figure 2-5.



8	Cas Tool	3. 0							
1	TestInfo	ChInfo		Board		112 Channel:	Counts:		
	Ch ChState	0 IDLE		Start Time: 🗍			End Time:		
	DTMF BUFFER DKEY LCD INFO CallerId CalledId			No.	time	wEventCode	EventName	dwSubReason	dwXtr
	-Channel Info			OK Success to su 研定	et channel				
	PbxModel:	PANASONIC	Set						
	ChannelNum:	0	Start						
	PhoneModel:	KX-T7630	End						
	EnRecord:	🔽 Bit Stream: 🥅	Cancel	<]			>
	Raw Wave:	Advance Set	Exit	ClearEvents E	vent Pause	Event Filter		Г	Exclude

Figure 2-5

After the channel is set successfully, a folder named 'CasFile' will be generated under the same directory of the program to store the recorded signaling logs and voice files. And the signaling logs and voice files are named in the form of 'hour_minute_second', e.g. 15_24_35.log, 15_24_35.wav. As to the format of the signaling content, please refer to <u>Appendix A</u>.

Step 6: Click on 'OK' back to the main window. Now the button 'Start' is activated as shown in Figure 2-6.

DKEY LCD INFO CallerId CalledId Channel Num: 0 4 wire Krad	TestInfo	ChInfo	1	Board		112 Channel:	0 Counts		
DIME BUFFER DERY LCD INFO CallerId CalledId Call				Start Time:			End Time:		
PbxModel: PANASONIC Set Start	DTMF BUFFER DKEY LCD INFO CallerId CalledId			No.	time	wEventCode	EventName	dwSubReason	dwXtr
End	PbxModel: PAR								
PhoneModel: AA-11030	,		End			j			>

Figure 2-6

Step 7: At this time, you can click on the button of 'Start' to record signaling messages as shown in Figure 2-7.



ł	Cas Tool 3	8. 0						
20	TestInfo	ChInfo	Board		112 Channel:	Counts:		
	Ch ChState	0 IDLE	Start Time:			End Time:		
	DIMF BUFFER DKEY LCD INFO CallerId CalledId		No.	time	wEventCode	EventName	dwSubReason	dwXtr
	ChannelNum: PhoneModel:	Set 0 4 wire KX-T7630 End						3
		Bit Stream: Cancel Advance Set Exit	ClearEvents		Event Filter		r	Exclude

Figure 2-7

Step 8: Click on 'Start' and enter the interface as shown in Figure 2-8.

🔏 Cas Tool 3.	0							
TestInfo	ChInfo		Board		112 Channel:	0 Counts:		
Ch ChState	0 IDLE		Start Time:	201	2-3-21 10:23:43	B End Time:		_
DIMF BUFFER DKEY LCD INFO CallerId CalledId			No.	time	wEventCode	EventName	dwSubReason	dwXtr
	PANASOHIC	Set Start						
ChannelNum: 0	□ □ □ 4 wire							
PhoneModel:	CX-T7630	End						
EnRecord: 🔽	🛛 Bit Stream: 🥅	Cancel)			>
Raw Wave: 🔽	Advance Set	Exit	ClearEvents 1	lvent Paus	e Event Filter		Г	- Exclude



Upon the start of recording signaling messages, do the following operations: perform relevant testing on the digital phone which is parallelly connected to the monitored channel (i.e. the channel with the number set in the previous step), record the testing time, content and the information displayed in the column 'ChInfo'.

Step 9: This step is optional. By setting conditions in the item 'Event Filter', the right list window displays only those events that comply with the conditions. For example, if you input '1008 1001' to



the item 'Event Filter', then the right list window (i.e. the D-channel events list) will output those events with the event code of 1008 or 1001. See Figure 2-9.

TestInfo	ChInfo	3	Board		112 Channel:	0 Counts:	1	146
Ch ChState	0 IDLE		Start Time: 🗍	2012	2-3-21 10:23:4	³ End Time:		
DTMF BUFFER			No.	time	wEventCode	EventName	dwSubReason	dwXtr
DKEY			00000000	10:28	0x00000008	DST_OFFHOOK	-0:00000000	0x00C
LCD INFO CallerId			00000001	10:26	0x0000102a	DST DISPLAY CLEAR	0x00000800	0x00C
CalledId			00009002	10:26	0x00001008	DST MSG CHG	0x00000000	0x00C
Lalledid			00000003	10:26	0x0000000e	DST ONHOOK	0x00000000	0x00C
			00000004	10:26	0x0000102a	DST_DISPLAY_CLEAR	0x00000000	0x00C
			00000005	10:26	0x00001008	DST_MSG_CHG	0x00000000	0x000
			00000006	10:26	0x00000008	DST_OFFHOOK	0x00000000	0x00£
			0000007	10:26	0x0000102a	DST_DISPLAY_CLEAR	0x00000000	0x00C
			00000008	10:26	0x00001008	DST_MSG_CHG	0x00000000	0x00C
			00000009	10:26	0x0000000e	DST_ONHOOK	0x00000098	0x00C
			00000010	10:26	0x0000102a	DST_DISPLAY_CLEAR	0::00000000	0x00C
			00000011	10:26	0x00001008 -	DST_MSG_CHG	0x00000000	0x00C
-Channel Info								
		Set	1					
PbxModel: PAN	ASONIC							
ChannelNum: 0	T 4 wire	Start						
ter.	17630	End	1					
PhoneModel: KX-	11630		-					
EnRecord: 🔽	Bit Stream: 🥅	Cancel						>
EnRecord: 🗸	Bit Stream:	Exit	ClearEvents E		Rugat Bilton	1008 102a 8 e		Exc



If you tick the check box before 'Exclude', the right list window only displays the events incompliant with the filled-in conditions. See Figure 2-10.

💑 Cas Tool 3.0		
TestInfo ChInfo	Board 112 Channel: 0 Counts: 306	
Ch 0 ChState IDLE DTMF BUFFER DKEY LCD INFO CallerId CalledId	Start Time: 2012-3-21 10:23:43 End Time: No. time wEventCode EventName dwSubReason dwXtr 00000000 10:20: 0x000010b9 DST_RING_LT_ON 0x00000100 0x00C 00000001 10:28 0x000011b0 DST_INTERCOM_LT_ON 0x00000100 0x00C 00000002 10:28 0x000011af DST_INTERCOM_LT_ON 0x00000300 Qx00C 00000003 10:28 0x000011b0 DST_INTERCOM_LT_ON 0x00000300 Qx00C	
	OD000004 10:28 0x000011af DST_INTERCOM_LT 0x00000300 0x000 00000005 10:28 0x000011b0 DST_INTERCOM_LT.ON 0x00000100 0x000 00000006 10:28 0x000011b0 DST_INTERCOM_LT 0x00000300 0x000 00000006 10:28 0x000011b0 DST_INTERCOM_LT 0x00000300 0x000 00000008 10:28 0x000011b1 DST_INTERCOM_LT 0x00000300 0x000 00000008 10:28 0x000011b1 DST_INTERCOM_LT 0x00000300 0x000 00000008 10:28 0x000011b1 DST_INTERCOM_LT 0x00000300 0x000 00000009 10:28 0x000010b9 DST_RING_LT_ON 0x00000200 0x000	
Channel Info		
PbxModel: JPANASUNIC		
ChannelNum: 0 - 4 wire Start		
PhoneModel: FX-T7630 End		
EnRecord: 🔽 Bit Stream: 🗖 Cancel		
Raw Wave: Advance Set	ElearEvents Event Pause Event Filter 1008 102a 8 e	de



When you click the button 'ClearEvents', all events that are already shown in the right list window will be cleared out. However, it won't disturb the display of subsequent events. See Figure 2-11.



ð	Cas Tool	3. 0							
1	TestInfo	ChInfo		Board		112 Channel:			420
	Ch ChState	0 IDLE		Start Time: 🛛	201:	2-3-21 10:23:43	End Time:		
	DTMF BUFFER DKEY			No.	time	wEventCode	EventName	dwSubReason	dwXtr
	LCD INFO CallerId								
	CalledId								
Ś	,								
	Channel Info	PANASONIC	Set						
	PbxModel:	PANASUNIC	-						
	ChannelNum:	0 F 4 wire	Start	-					
	PhoneModel:	KX-T7630	End						
	EnRecord:	🔽 Bit Stream: 🥅	Cancel]			>
	Raw Wave:	Advance Set	Exit	ClearEvents	vent Pause	Event Filter	1008 102a 8 e		🗸 Exclude

Figure 2-11

When you click the button 'Event Pause', the event output is stopped and the button name changes to be 'Event Continue'. See Figure 2-12.

🔏 Cas Tool	3. 0							
TestInfo	ChInfo	T	Board		112 Channel:	0 Counts:		526
Ch ChState	0 IDLE		Start Time:	201	2-3-21 10:23:43	B End Time:		
DTMF BUFFER DKEY			No.	time	wEventCode	EventName	dwSubReason	dwXtr
LCD INFO			00000000	10:36	0x000010Ъ9	DST_RING_LT_ON	0x00000200	0x00C
CallerId CalledId								
-Channel Info PbxModel:	PANASONIC	Set						
r bxmoder.	I AMADOMIC							
ChannelNum:	0 T 4 wire	Start						
PhoneModel:	KX-T7630	End						
EnRecord:	✓ Bit Stream: □	Cancel	<)			>
			1		-			
Raw Wave:	Advance Set	Exit	ClearEvents	vent Paus	Byent Filter	1008 102a 8 e	F	Z Exclude
	10 A							

Figure 2-12

If you want the list window to go on displaying the events, click the button 'Event Continue'. See Figure 2-13.



TestInfo	ChInfo	1	Board		112 Channel:	O Counts:		558
Ch ChState	0 IDLE		Start Time: 🏼	2012	-3-21 10:23:43	End Time:		
DTMF BUFFER			No.	time	wEventCode	EventName	dwSubReason	dwXtr
DKEY LCD INFO			00000000	10:36	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
CallerId			00000001	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
CalledId			00000002	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
Carrente			00000003	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
			00000004	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
			00000005	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
			00000006	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
			00000007	10:38	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
-Channel Info		Set						
PbxModel: PANA	SONIC							
ChannelNum: 0	☐ 4 wire	Start	1					
PhoneModel:	7630	End						
EnRecord: 🔽	Bit Stream: 🥅	Cancel						>
Raw Wave:	Advance Set	Exit	ClearEvents	and Constant	Front Filter	1008 102a 8 e		Z Exclude

Figure 2-13

Step 10: When you finish all testings on the digital phone, click on 'End' to stop recording signaling messages as shown in Figure 2-14.

TestInfo	ChInfo		Board		112 Channel:	0 Counts:		644
Ch ChState	0 IDLE		Start Time: 🗍	2012	-3-21 10:23:43	End Time:		
DTMF BUFFER			No.	time	wEventCode	EventName	dwSubReason	dwXtr
DKEY			00000000	10:36	0x000010b9	DST RING LT ON	0x00000200	0x00C
LCD INFO			00000001	10:37	0x000010b9	DST RING LT ON	0x00000200	0x00C
CallerId			00000002	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
CalledId			00000003	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
			00000004	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
			00000005	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
			00000006	10:37	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
			00000007	10:38	0x000010b9	DST_RING_LT_ON	0x00000200	0x00C
			00000008	10:41	0x000010b9	DST RING LT ON	0x00000200	0x00C
			00000009	10:41	0x000010b9	DST RING LT ON	0x00000200	0x00C
			00000010	10:41	0x000010Ъ9	DST_RING_LT_ON	0x00000200	0x00C
-Channel Info								
PbxModel: PANASONI		Set						
roxmodel. Pranaout			·					
ChannelNum: 0	T 4 wire	Start						
PhoneModel: KX-T7630		End	\triangleright					
EnRecord: 🔽 Bi	t Stream: 🥅	Cancel]			>
Raw Wave:	dvance Set	Exit	ClearEvents E		Frent Filter			Exclu

Figure 2-14

If the button 'Cancel' is clicked, all the files generated in this operation, including both signaling logs and voice files, will be deleted.

Step 11: When you click the button 'End', the dialog box of 'Log Information' pops up as shown in Figure 2-15.



estInfo	ChInfo	T	Board	112	Channel:	0 Counts:		722
h hState	0 IDLE		Start Time:	2012-3-21	10:23:43 End	l Time:	2012-3-21 10	:44:28
IMF BUFFER	1	Log Informat	tion			tName	dwSubReason	dw 🔨
KEY CD INFO		week and a set				RING_LT_ON	0x00000200	0x
allerId		Describe Prol	LT			RING_LT_ON	0x00000200	0x
lledId		Describe from	DTem			RING_LT_ON	0x00000200	0x
TTEATA		Describe the	details about t	he issue here	1	RING_LT_ON	0x00000200	0x
		Describe che	decairs about .	me issue here.		MSG_CHG	0x00000000	0x
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	St 55	Contraction of the local		RING_LT_ON	0x00000200	0x
						RING_LT_ON	0x00000200	0x
						RING_LT_ON	0x00000200	0x
					1000	RING_LT_ON	0x00000200	0x
		Describe Open	ration			RING_LT_ON	0x00000200	0x
		bescribe oper	acron			RING_LT_ON	0x00000200	0x
		Decribe the	detailed operati	ng process here.	~	MSG_CHG	0x00000000	0x
		1	A DESIGNATION OF SMALL AND			RING_LT_ON	0x00000200	0x
		14. 3	0.000			RING_LT_ON	0x00000200	0x
Channel Info						RING_LT_ON	0x00000200	0x
PbxModel: PAN	ASONIC					RING_LT_ON	0x00000200	0x
					\sim	RING_LT_ON	0x00000200	0x
						RING_LT_ON	0x00000200	0x
ChannelNum: 0	☐ 4 wire					MSG_CHG	0x00000000	0x
			OK			RING_LT_ON	0x00000200	0x
PhoneModel: KX-	T7630					RING_LT_ON	0x00000200	0x
, , ,					1	1		
EnRecord: 🔽	Bit Stream:	Cancel	<					>
	pre bereau. j		1					
Raw Wave:	Advance Set	Exit	1 1000 000 01	Event Pause Event	E			Exclu

Figure 2-15

Write down all abnormal phenomena that you ever met into 'Describe Problem' and 'Describe Operation', such as 'channel state transition is inaccurate', 'fail to detect the calling party number', etc. In the 'Describe Operation', please describe the relevant testings on the monitored digital phone that you did in Step 8 as clear as possible. Then click on 'OK' upon completion.

Step 12: Go back to the main interface and click on 'Exit' to exit the program. See Figure 2-16 below.

TestInfo	ChInfo	Board		112 Channel:	0 Counts:		722
Ch ChState	0 IDLE	Start Time:	2012	-3-21 10:23:4	³ End Time:	2012-3-21 10	:44:28
DTMF BUFFER		No.	time	wEventCode	EventName	dwSubReason	dw 🔨
DKEY		00000011	10:41	0x000010Ъ9	DST RING LT ON	0x00000200	0x
LCD INFO		00000012	10:41	0x000010b9	DST_RING_LT_ON	0x00000200	0x
CallerId CalledId		00000013	10:41	0x000010b9	DST_RING_LT_ON	0x00000200	0x
'arreara		00000014	10:42	0x000010b9	DST_RING_LT_ON	0x00000200	0x
		00000015	10:42	0x00001008	DST_MSG_CHG	0x00000000	0x
		00000016	10:42	0x000010b9	DST_RING_LT_ON	0x00000200	0x
		00000017	10:42	0x000010b9	DST_RING_LT_ON	0x00000200	0x
		00000018	10:42	0x000010b9	DST_RING_LT_ON	0x00000200	0x
		00000019	10:42	0x000010b9	DST_RING_LT_ON	0x00000200	0x
		00000020	10:42	0x000010b9	DST_RING_LT_ON	0x00000200	0x
		00000021	10:43	0x000010b9	DST_RING_LT_ON	0x00000200	0x
		00000022	10:43	0x00001008	DST_MSG_CHG	0x00000000	0x
		0000023	10:43	0x000010b9	DST_RING_LT_ON	0x00000200	0x
		00000024	10:43	0x000010b9	DST_RING_LT_ON	0x00000200	0x
Channel Info		00000025	10:43	0x000010b9	DST_RING_LT_ON	0x00000200	0x
PbxModel: PANASONIC	s	00000026	10:43	0x000010b9	DST_RING_LT_ON	0x00000200	0x
i banoder. printbolito		00000027	10:43	0x000010b9	DST_RING_LT_ON	0x00000200	0x
and a second	St	00000028	10:44	0x000010b9	DST_RING_LT_ON	0x00000200	0x
ChannelNum: 0	4 wire	00000029	10:44	0x00001008	DST_MSG_CHG	0x00000000	0x
		00000030	10:44	0x000010b9	DST_RING_LT_ON	0x00000200	0x
PhoneModel: KX-T7630	E	00000031	10:44	0x000010b9	DST_RING_LT_ON	0x00000200	0x
EnRecord: 🔽 Bit Stream:	Car Car						>

Figure 2-16

Note: A log file will be generated once the buttons 'Start' and 'End' are pressed. So during the



testing process, you need repeat this operation for each call. And each operation will be recorded to an independent log file for our analysis.

After you finish the signaling recording, please provide the following materials to our technical support people.

1) The version of the Synway driver (you can check through 'Property' of My Computer \rightarrow 'Device Manager' \rightarrow 'Property' of board) and the board model;

- 2) The generated files under the folder 'CasFile' (including signaling logs and voice files);
- 3) The file 'ShConfig.ini' loaded for the run of CasTool.exe.

2.2 Recording Raw Waves/Raw Data Flows (applicable to Raw Data Acquisition Mode)

The preparation for recording raw waves or raw data flows:

Before you start recording raw waves or raw data flows, you must use the driver configuration program to delete unrelated boards, making sure that only those with raw waves or raw data flows to be recorded are remained, and connect lines only to a specified channel on those boards. Note that for 4-wire digital phones, you need perform two recordings of the raw waves for a same operation. Connect the uplink to the specified channel and do the first recording. Then disconnect the uplink and connect the downlink to the specified channel, and do the second recording. For 2-wire digital phones, one recording is enough.

The recording of raw waves or raw data flows should be performed in Raw Data Acquisition Mode which can be set by the configuration program in driver. For DST A-type boards, after ticking the check box 'Rec Raw Mode', you need to use the button 'set' to evaluate the module type with the PBX model that you choose. See Figure 2-17 below. For DST B-type boards, tick the check box 'Rec Raw Mode' and choose the closest PBX model (Note: we suggest you choose Alcatel 4200/4400 if your PBX model is not yet supported). See Figure 2-18 below.



oduleId	Installed	Туре	Version
	YES	UNKNOW	0.0
	YES YES	UNKNOW	0.0 0.0
	YES	UNKNOW	0.0
		100	
- A-	AND PHONE		
Set Ibx J		1000/4400 -1	— DZ – – – – – – – – – –
Seci	JAICATEL -	1200/4400	🔽 DEvent Update
Set Phon	e Type 0,0,0,0,0), 0, 0, 0, 0, 0, 0, 0, 0, 0, 0	, 0, 0
Bin Void	ce Format 🛛 🕼	A-law C U-law	Set
			✓ Rec Raw Mode

Figure 2-17 For A-type Boards

ModuleId	Installed	Type PANASONTC	Version 1.5
2	YES	PANASONIC PANASONIC	1.5 1.5
	11.0	TAAADONIC	1.0
SET PBX A	ND PHONE		
Set P		с - > г	DEvent Updates
Set Phon	e Type 0,0,0,0,0), 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0	, 0, 0, 0, 0, 0, 0, 0
Bin Voic	e Format 🕝	A-law C U-law	
- <u></u>		a lan y o lan	
Rec F	law Mode		
A wee u	aw Mode		

Figure 2-18 For B-type Boards

Step 1: Start CasTool.exe and tick the check box after 'Raw Wave' (for B-type boards) or 'Raw Bits' (for A-type boards). **Note: What displays on the interface for B-type boards is 'Raw**



Wave' as shown in Figure 2-19, while that for A-type boards is 'Raw Bits' as shown in Figure 2-20.

💑 Cas Tool 3.0							
TestInfo	ChInfo	Board		112 Channel:	Counts:		
Ch ChState		Start Time:			End Time:		
DTMF BUFFER DKEY		No.	time	wEventCode	EventName	dwSubReason	dwXtr
LCD INFO CallerId							
CalledId							
Į.							
Channel Info	Set						
PbxModel:	Set						
ChannelNum: -1	4 wireStart						
PhoneModel:	End						
	Cancel	<					>
EnRecord: 🕅 Bit Stree							
Raw Wave: 🔽 Advance	Set	ClearEvents	Event Paus	Event Filter		Г	Exclude

Figure 2-19 For B-type Boards

Note: Before running CasTool to record raw waves on a DST B-type board, you may need to add configuration items about analog switch to the file ShConfig.ini. For detailed information, contact our technicians.

💑 Cas Tool 3.0							
TestInfo ChInfo	1	Board	c.	10909 Channel:	Counts:		
Ch ChState		Start Time:			End Time:		
DTMF BUFFER DKEY		No.	time	wEventCode	EventName	dwSubReason	dwXtr
LCD INFO CallerId							
CalledId							
1							
Channel Info	Set						
PbxModel:							
ChannelNum: 0 F4 wire	Start						
PhoneModel:	End						
EnRecord: 🔽 Bit Stream: 🔽	Cancel	<)			>
Raw Code: 🔽 Advance Set	Exit	ClearEvents	7	Event Filter		r	- Exclude
haw code. It Advance bet	LXIL	CLEAREVENTS 1	vent l'ause			,	an cardue

Figure 2-20 For A-type Boards

While recording raw data flows on a DST A-type board, you may need to set some parameters. Click on 'Advance Set' to go into the dialog 'Advance Setting' as shown in Figure 2-21.



Å₫	vance Setting	×
	Static DAC Ctrl Voltage: d300 OHEX SsmSetRecRawCtrl1 Freq Div Radio: 0d00 OHEX	
	SsmSetRecRawCtrl2 Exit	;

Figure 2-21

Note: The values of these two parameters shown above should be determined by actual situations. For detailed information, contact our technicians.

Step 2: Fill in the PBX and phone models and the specified channel number respectively for the items 'PbxModel', 'PhoneModel' and 'ChannelNum' as shown in Figure 2-22. Such information will be saved to the end of the recorded data file.

💑 Cas Tool 3.0							
TestInfo ChInfo	I	Board		112 Channel:	Counts:		
Ch ChState		Start Time:			End Time:		
DTMF BUFFER DKEY		No.	time	wEventCode	EventName	dwSubReason	dwXtr
LCD INFO CallerId							
CalledId							
Channel Info PbxModel: PANASONIC	Set						
	Start						
ChannelNum: 0 F 4 wire	Dtart						
PhoneModel: KX-T7630	End						
EnRecord: 🥅 Bit Stream: 🥅	Cancel	<		<u> </u>			>
Raw Wave: 🔽 Advance Set	Exit	ClearEvents	lvent Pause	Event Filter		Г	- Exclude
		· /					

Figure 2-22

Step 3: Click on the button 'Set' as shown in Figure 2-23.



lestInfo	ChInfo		Board		112 Channel:	Counts:		
'h 'hState			Start Time:			End Time:		
TMF BUFFER KEY CD INFO CallerId alledId			No.	time	wEventCode	EventName	dwSubReason	dwXtr
Channel Info PbxModel:	PANASONIC	Set	Þ					
ChannelNum: PhoneModel:		StertEnd						
Fnonemodel. EnRecord:	□ Bit Stream: □	Cancel						>

Figure 2-23

Step 4: Now the 'Start' button is activated as shown in Figure 2-24.

💑 Cas Tool 3.0						
TestInfo ChInfo	Board		112 Channel:	Counts:		
Ch ChState	Start Time:			End Time:		
DTMF BUFFER DKEY	No.	time	wEventCode	EventName	dwSubReason	dwXtr
LCD INFO CallerId						
CalledId						
Channel Info						
roxmodel.						
ChannelNum: 0 F4 wire Start						
PhoneModel: EX-T7630 End						
EnRecord: T Bit Stream: T Cancel	<					>
			1			
Raw Wave: 🔽 Advance Set Exit	ClearEvents	Event Paus	Event Filter	1		Exclude

Figure 2-24

Step 5: Click on the 'Start' button as shown in Figure 2-25.



lestInfo	ChInfo		Board		112 Channel:	Counts:	1	
h hState			Start Time:			End Time:		
TMF BUFFER KEY			No.	time	wEventCode	EventName	dwSubReason	dwXtr
CD INFO allerId								
alledId								
Channel Info-								
	PANASONIC	Set						
		Start	5					
ChannelNum:	0 🔽 4 wire							
PhoneModel:	KX-T7630	End						
EnRecord:	□ Bit Stream: □	Cancel	<					>
	Advance Set	Exit			Event Filter	-		Exclud

Figure 2-25

Step 6: Then the right area shows the size of the currently recorded data file as shown in Figure 2-26. Normally, the sampling rate for B-type boards is about 10M/S while that for A-type boards depends on parameter settings.

💑 Cas Tool 3.0		
TestInfo Ch ChState DIMF BUFFER DKEY LCD INFO CallerId CalledId	ChInfo	Board 112 Channel: Counts: Start Time: 2012-3-21 11:5:33 End Time: 73471 KB 73471 KB
ChannelNum: 0	ASONIC Set Start Start T7630 Bit Stream: Cancel Advance Set Exit	ClearEvents Event Pause Event Filter



Step 7: Click on the 'End' button to stop acquiring raw data as shown in Figure 2-27.



💑 Cas Tool 3.0	
TestInfo Ch ChState DTMF BUFFER DKEY LCD INFO CallerId CalledId	Board 112 Channel: Counts: Start Time: 2012-3-21 11:5:33 End Time: 73471 XB 73471 XB
Channel Info PbxModel: FANASONIC ChannelNum: 0 4 wire PhoneModel: KX-T7830 EnRecord: Bit Stream: Cancel Raw Wave: Advance Set Exit	ClearEvents Event Filter

Figure 2-27

Step 8: Then the dialog box of 'Log Information' pops up as shown in Figure 2-28. Fill in the two items 'Describe Problem' and 'Describe Operation' and click on 'OK' upon completion. All the information you write will be saved to the end of the data file for our developer's analysis.

💑 Cas Tool 3.0	
TestInfo ChInfo Ch ChState DTMF BUFFER DKEY	Board 112 Channel: Counts: Start Time: 2012-3-21 11:5:33 End Time: 2012-3-21 11:5:51 I67167 KB Interface Interface
LCD INFO CallerId CalledId	Describe Froblem
	Describe Operation
Channel Info PbxModel: PANASONIC ChannelNum: 0	Decribe the detailed operating process here.
PhoneModel: 107-17630 EnRecord: T Bit Stream: T	
Raw Wave: 🔽 Advance Set	Exit ClearEvents Event Pause Event Filter

Figure 2-28

Step 9: Click on the 'Exit' button to exit CasTool.exe as shown in Figure 2-29.



💑 Cas Tool 3.0	
TestInfo ChInfo	Board 112 Channel: Counts:
Ch ChState	Start Time: 2012-3-21 11:5:33 End Time: 2012-3-21 11:5:51
DTMF BUFFER DKEY	
LCD INFO CallerId	167167 KB
CalledId	
Channel Info	
PbxModel: PRMASUNIC	
ChannelNum: 0 5tart	
PhoneModel: EX-T7630 End	
EnRecord: 🔽 Bit Stream: 🔽 Cancel	
Intecord. I Die Stream.	
Raw Wave: 🔽 Advance Set Exit	ClearEvents Event Pause Event Filter

Figure 2-29

After the recording of raw waves or raw data flows is stopped, a folder named 'CasFile' will be generated under the same directory of the program to store the recorded waves or data flows. All the files generated therein are named in the form of 'hour_minute_second', e.g. 16_23_18.pcm.

After you finish recording raw waves (for B-type boards) or raw data flows (for A-type boards), please provide the following materials to our technical support people.

- 1) The version of the Synway driver (you can check through 'Property' of My Computer \rightarrow 'Device Manager' \rightarrow 'Property' of board) and the board model;
- 2) The generated files under the folder 'CasFile' (*.pcm).

2.3 Recording Bit Streams (applicable to Common Working Mode)

Note: This feature is only supported by DST B-type boards.

Before you start recording bit streams, you must use the driver configuration program to delete unrelated boards, making sure that only those with bit streams to be recorded are remained, and connect lines only to Channel 0 on those boards.

The recording of bit streams should be performed in Common Working Mode. After running CasTool.exe, tick the check box 'Bit Stream' first as shown in Figure 2-30, and then follow Step 2 and subsequent steps in <u>Section 2.2</u> as the operations are the same.



36	Cas Tool	3.0							
E	TestInfo	ChInfo		Board		112 Channel:	Counts:		
	Ch ChState	0 IDLE		Start Time:			End Time:		
	DTMF BUFFER DKEY			No.	time	wEventCode	EventName	dwSubReason	dwXtr
I	LCD INFO CallerId								
	CalledId								
778									
Γ	Channel Info	PANASONIC	Set						
	PbxModel:								
	ChannelNum:	0	Start						
	PhoneModel:	KX-T7630	End						
	EnRecord:	🗆 Bit Stream: 🔽	Cancel	<)			>
	Raw Wave:	Advance Set	Exit	ClearEvents 1	Event Paus	Event Filter		г	Exclude
L				-		-1			

Figure 2-30

A file will be generated after finish recording bit stream. This file is stored under the folder 'CasFile'. The folder 'CasFile' has a same directory of the program. The data file is named in the form of 'hour-minute-second', e.g. 16_23_18.bit.

After you finish the signaling recording of the bit stream, please provide the following materials to our technical support people.

After the recording of bit streams is stopped, a folder named 'CasFile' will be generated under the same directory of the program to store the recorded bit streams. All the files generated therein are named in the form of 'hour_minute_second', e.g. 16_23_18.bit.

After you finish recording bit streams, please provide the following materials to our technical support people.

- 3) The version of the Synway driver (you can check through 'Property' of My Computer \rightarrow 'Device Manager' \rightarrow 'Property' of board) and the board model;
- 4) The generated files under the folder 'CasFile' (*.bit).



Chapter 3 Troubleshooting

If you have questions in using DST boards, please replace them with DST B-type boards to diagnose the system following the flow shown below.



Figure 3-1 Troubleshooting Flow for DST Boards

Notes:

- 1. You need to add the configuration item AnalogCtrl before recording original waveforms. See detailed information about AnalogCtrl, read *SynCTl Programmer's Manual*.
- 2. If you meet problems in using DST A-type boards, please replace them with B-type boards and diagnose the system according to the above flow diagram.







Connect the recorded phone line to Channel 0 of the DST-24B digital station tap board in parallel, according to Figure 3-2. Then do the following test step by step.

- 1) Pick up Ext0. Dial '123456789*0#' in turn. Push functional keys from the top down and from left to right. Then hang up Ext0.
- 2) Start a call from Ext0 to Ext1. Directly hang up Ext0 once Ext1 begins to ring.
- 3) Pick up Ext1. Start a call from Ext0 to Ext1. Hang up Ext0 once it receives busy tones.
- 4) Start a call from Ext0 to Ext1. Pick up Ext1 and answer the call once it rings. Hang up Ext0 first. Then hang up Ext1.
- 5) Start a call from Ext0 to Ext1. Pick up Ext1 and answer the call once it rings. Hang up Ext1 first. Then hang up Ext0.
- 6) Start a call from Ext0 to Dir0. Directly hang up Ext0 once Dir0 begins to ring.
- 7) Pick up Dir0. Start a call from Ext0 to Dir0. Hang up Ext0 once it receives busy tones.
- 8) Start a call from Ext0 to Dir0. Pick up Dir0 and answer the call once it rings. Hang up Ext0 first. Then hang up Dir0.
- 9) Start a call from Ext0 to Dir0. Pick up Dir0 and answer the call once it rings. Hang up Dir0 first. Then hang up Ext0.
- 10) Start a call from Ext1 to Ext0. Directly hang up Ext1 once Ext0 begins to ring.
- 11) Start a call from Ext1 to Ext0. Pick up Ext0 and answer the call once it rings. Hang up Ext1 first. Then hang up Ext0.
- 12) Start a call from Ext1 to Ext0. Pick up Ext0 and answer the call once it rings. Hang up Ext0 first. Then hang up Ext1.
- 13) Start a call from Dir0 to Ext0. Directly hang up Dir0 once Ext0 begins to ring.
- 14) Start a call from Dir0 to Ext0. Pick up Ext0 and answer the call once it rings. Hang up Dir0 first. Then hang up Ext0.
- 15) Start a call from Dir0 to Ext0. Pick up Ext0 and answer the call once it rings. Hang up Ext0 first. Then hang up Dir0.



Notes:

To improve the analysis accuracy of the LCD information events and the indicator events, we strongly suggest that you record a clear video of Ext0 or take some photos reflecting the change in the indicators and LCD of Ext0 while performing Step2, Step5, Step6, Step9, Step11 and Step14 above. Send these videos or photos to our technicians together with the raw waves and the bit stream files.



Appendix A Example of Signaling Content

The format of the output log files:

0234 10:4:48 DST ch[0] CmdType[D] Len[19] Data--> 6a 13 80 4d 61 72 20 31 32 20 31 32 3a 34 33 20 70 6d 20

0235 10:4:51 DST ch[0] CmdType[D] Len[1] Data--> 43

0236 10:4:51 DST ch[0] CmdType[D] Len[1] Data--> 1f

0237 10:4:51 DST ch[0] CmdType[U] Len[1] Data--> ce

0238 10:4:55 DST ch[0] CmdType[D] Len[1] Data--> 5c

PBX Model: Norstar Phone Model: M7310

Describe Problem: 'Caller ID not received...'

Describe Operation: 'Call out...'



Appendix B Example of Standard Raw Wave

Refer to <u>Section 2.2</u> for the recording of raw waves. Because such problems as wrong connections and disturbs in the physical environment may probably result in unstandard waves which are not applicable for analysis, we provide a basic analysis method of raw waves hereinafter for your reference.

- 1. Download and install the voice analysis software CoolEdit.
- 2. Follow the figures shown below to open the *.pcm file of the recoded raw wave with CoolEdit.

Interp	ret Sample I	Format As
<u>Sample Rate</u> 10240 192000 96000 88200 64000 48000 44100 32000 22050 16000 11025 8000 6000	<u>C</u> hannels ● <u>M</u> ono C <u>S</u> tereo	Besolution ● 8-bit ○ 16-bit ○ 32-bit (float)

Raw Data (no header)	×
Data Formatted As	
8-bit mu-Law Compressed	
When opening, offset input data by:	
Create .DAT header file on save	OK
8-bit	Cancel

3. Roll the mouse to enlarge your recorded raw wave figure and observe its details. A standard raw wave is as follows in the figure. Whether the channel is in a talking state or not, a standard raw wave recorded must consist of periodic frames. Each frame period is 125ms or 250ms (250ms in the figure below) and contains an uplink signal and a downlink signal. If the wave you record looks quite different from the standard raw wave, please examine your connections and the physical environment.







Appendix C Technical/sales Support

Thank you for choosing Synway. Please contact us should you have any

inquiry regarding our products. We shall do our best to help you.

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