

SDS100(UB383Z)
SDS200(UB384Z)
SDS150(UB391Z)
Remote Command Specification

Version 2.00
2025/07/07

Date	Version	Contents
2018/04/13	0.01	Created new basd BCD536HP/BCD436HP Remote Command Specification Version 1.05.
2023/12/11	1.01	Append Waterfall
2023/12/22	1.02	Append GST command
2024/12/04	1.03	Append POF/GCS command
2025/07/07	2.00	Appended GW2 command Appended KAL command

No.	Command	Function	Program Mode Only
1	MDL	Get Model Info	
2	VER	Get Firmware Version	
3	KEY	Push KEY	
4	QSH	Go to quick search hold mode	
5	STS	Get Current Status	
6	JNT	Jump Number tag	
7	NXT	Next	
8	PRV	Previous	
9	FQK	Get/Set Favorites List Quick Keys Status	
10	SQK	Get/Set System Quick Keys Status	
11	DQK	Get/Set Department Quick Keys Status	
12	PSI	Push Scanner Information	
13	GSI	Get Scanner Information	
14	GLT	Get xxx list	
15	HLD	Hold	
16	AVD	Set Avoid Option	
17	SVC	Get/Set Service Type Settings	
18	JPM	Jump Mode	
19	DTM	Get/Set Date and Time.	
20	LCR	Get/Set Location and range.	
21	AST	Analize Start	
22	APR	Analize Pauze/Resume	
23	URC	User Record Control	
24	MNU	Menu Mode command	
25	MSI	Menu Status Info	
26	MSV	Menu Set Value	
27	MSB	Menu Structure Back	
28	GST	Get scanner status	
29	PWF	Push Waterfall FFT Information	
30	GWF	GetWaterfall FFT Information	
	GW2	Get Waterfall FFT Information without separator	
	KAL	Keep Alive	
31	POF	Power OFF	
32	GCS	Get Charge Status	
33	VOL	Get/Set Volume Level Settings	
34	SQL	Get/Set Squelch Level Settings	

MDL	Get Model Info
Controller → Radio	
(1)	MDL[r]
Radio → Controller	
(1)	MDL,[MODEL_NAME][r] [MODEL_NAME] SDS100 SDS200 SDS150GBT

VER	Get Firmware Version
Controller → Radio	
(1)	VER[r]
Radio → Controller	
(1)	VER,[VERSION][r] [VERSION] Version x.xx.xx

KEY	Push KEY
Controller → Radio	
(1)	KEY,[KEY_CODE],[KEY_MODE][r]
Radio → Controller	
(1)	KEY,OK[r]
See "key code for KEY Command" sheet for KEY_CODE.	

QSH	Go to quick search hold mode
Controller → Radio	
(1)	QSH,[FRQ][r]
Radio → Controller	
(1)	QSH,OK[r]
This command is invalid when the scanner is in Menu Mode, during Direct Entry operation, during Quick Save operation.	

STS	Get Current Status
Controller → Radio	
(1)	STS[r]
Radio → Controller	
(1)	STS,[DSP_FORM],[L1_CHAR],[L1_MODE],[L2_CHAR],[L2_MODE], [L3_CHAR],[L3_MODE],..., [L20_CHAR],[L20_MODE], [RSV],[RSV],[RSV],[RSV],[RSV], [RSV],[RSV],[RSV],[RSV][r]
Note:	
	[DSP_FORM] Display Form (5 - 20 dight: #####) (each # is 0 or 1) 0 means Small Font / 1 means Large Font.
	[L1_CHAR] Line1 Characters 24 or 30char (fixed length)
	[L1_MODE] Line1 Display Mode 24 or 30char
	[L2_CHAR] Line2 Characters 24 or 30char (fixed length)
	[L2_MODE] Line2 Display Mode 24 or 30char
	[L3_CHAR] Line3 Characters 24 or 30char (fixed length)
	[L3_MODE] Line3 Display Mode 24 or 30char
	:

```

:
:
[L20_CHAR] Line20 Characters 24 or 30char (fixed length)
[L20_MODE] Line20 Display Mode 24 or 30char
[RSV]

```

NOTE: Display Mode for Line1 – Line20

```

' ' (space): NORMAL CHAR,
*      : REVERSE CHAR
_      : Underline

```

The number of [Lx_CHAR] and [Lx_MODE] depend on Display Form.

ex

```

→ STS[¥r]
← STS,
  1111111111,          ← [DSP_FORM]
  --- M E N U ---      ← [L1_CHAR]
                      ← [L1_MODE]
  Set Scan Selection   ← [L2_CHAR]
                      ← [L2_MODE]
  Manage Full Database ← [L3_CHAR]
  Manage Favorites     ← [L3_MODE]
  Select Service Types ← [L4_CHAR]
  Srch/CloCall Opt     ← [L4_MODE]
  Search for...        ← [L5_CHAR]
  Close Call           ← [L5_MODE]
  Analyze              ← [L6_CHAR]
                      ← [L6_MODE]
                      ← [L7_CHAR]
                      ← [L7_MODE]
                      ← [L8_CHAR]
                      ← [L8_MODE]
                      ← [L9_CHAR]
                      ← [L9_MODE]
                      ← [L10_CHAR]
                      ← [L10_MODE]
  0,                  ← [RSV]
  1,                  ← [RSV]
  0,                  ← [RSV]
  0,                  ← [RSV]
  ,                   ← [RSV]
  ,                   ← [RSV]
  0,                  ← [RSV]
  OFF,               ← [RSV]
  3[¥r]              ← [RSV]

```

JNT Jump Number tag

Controller → Radio

(1) JNT,[FL_TAG],[SYS_TAG],[CHAN_TAG][¥r]

```

[FL_TAG]      Favorites List Number Tag    (0-99)
[SYS_TAG]     System Number Tag           (0-99)
[CHAN_TAG]    Channel Number Tag          (0-999)

```

Radio → Controller

(1) JNT,OK[¥r]

NXT Next

Controller → Radio

(1) NXT,[tkw],[xxx1],[xxx2],[COUNT][¥r]

Radio → Controller

(2) NXT,OK¥r

```

[tkw]                see sheet "tkd and 1st,2nd opt"
[xxx1]               see sheet "tkd and 1st,2nd opt"

```

[xxx2] see sheet "tkd and 1st,2nd opt"
[COUNT] slide counts (1-8)

PRV Previous

Controller → Radio

(1) PRV,[tkw],[xxx1],[xxx2],[COUNT][\r]

Radio → Controller

(2) PRV,OK\r

[tkw] see sheet "tkd and 1st,2nd opt"
[xxx1] see sheet "tkd and 1st,2nd opt"
[xxx2] see sheet "tkd and 1st,2nd opt"
[COUNT] slide counts (1-8)

FQK Get/Set Favorites List Quick Keys Status

Controller → Radio

(1) FQK[\r]

(2) FQK,[S0],[S1],.....[S99][\r]

Radio → Controller

(1) FQK,[S0],[S1],.....[S99][\r]

(2) FQK,OK\r

[Quick Key Status (S0-S99)]
0 : FLQK does not exist
1 : FLQK exists and is disabled
2 : FLQK exists and is enabled

If controller sends 0 (QK does not exist), radiowill ignore 0.

SQK Get/Set System Quick Keys Status

Controller → Radio

(1) SQK,[FAV_QK][\r]

(2) SQK,[FAV_QK],[S0],[S1],.....[S99][\r]

Radio → Controller

(1) SQK,[FAV_QK],[SYS_QK],[S0],[S1],.....[S99][\r]

(2) SQK,OK[\r]

[Quick Key Status (S0-S99)]
0 : SQK does not exist
1 : SQK exists and is disabled
2 : SQK exists and is enabled

If controller sends 0 (QK does not exist), radiowill ignore 0.

DQK Get/Set Department Quick Keys Status

Controller → Radio

(1) DQK,[FAV_QK],[SYS_QK][\r]

(2) DQK,[FAV_QK],[SYS_QK],[S0],[S1],.....[S99][\r]

Radio → Controller

(1) DQK,[FAV_QK],[SYS_QK],[S0],[S1],.....[S99][\r]

(2) DQK,OK[\r]

[Quick Key Status (S0-S99)]
0 : DQK does not exist
1 : DQK exists and is disabled
2 : DQK exists and is enabled

If controller sends 0 (QK does not exist), radiowill ignore 0.

PSI Push Scanner Information

format will be XML.
See PSI,GSI tab

GSI Get Scanner Information

format will be XML.
See PSI,GSI tab

GLT Get xxx list

GLT is command which PC get xx list form scanner.

See "GLT command" sheet to detail.

HLD Hold

HLD is command to hold system, department, channel.
It can't hold favorites list and site frequency.

Controller → Radio

HLD,[tkw],[xxx1],[xxx2][\r]

tkw: see sheet "tkd and 1st,2nd opt"
xxx1 see sheet "tkd and 1st,2nd opt"
xxx2 see sheet "tkd and 1st,2nd opt"

Radio → Controller

HLD,OK[\r]

AVD Set Avoid Option

AVD is command to avoid or unavoid.
It can't avoid favorites list and site frequency.

Controller → Radio

AVD,[tkw],[xxx1],[xxx2][STATUS][\r]

tkw: see sheet "tkd and 1st,2nd opt"
xxx1 see sheet "tkd and 1st,2nd opt"
xxx2 see sheet "tkd and 1st,2nd opt"

[STATUS 1:Permanent Avoid
2:Temporary Avoid
3:Stop Avoiding

Radio → Controller

AVD,OK[\r]

Note:Please use the GSI or GLT command if you need to get avoid status

SVC Get/Set Service Type Settings

Controller → Radio

(1) SVC[\r]
(2) SVC,[PST1],[PST2],...,[PST37],[CST1],...,[CST10][\r]

Radio → Controller

- (1) SVC,[PST1],[PST2],...,[PST37],[CST1],...,[CST10][\r]
(2) SVC,OK[\r]
- [PSTx] 0: Off (Not Scan)
1: On (Scan)

JPM Jump Mode

Controller → Radio

- (1) JPM,[JUMP_MODE],[INDEX][\r]
- [JUMP_MODE] SCN_MODE
CTM_MODE
QSH_MODE
CC_MODE
WX_MODE
FTO_MODE
WF_MODE
IREC_MODE
UREC_MODE
TDIS_MODE
CDIS_MODE
- [INDEX] SCN_MODE : Chanel Index
CTM_MODE : Reserve
QSH_MODE : Reserve
CC_MODE : Reserve
WX_MODE : NORMAL
A_ONLY
SAME_1
SAME_2
SAME_3
SAME_4
SAME_5
ALL_FIPS
FTO_MODE : Reserve
WF_MODE : Reserve
IREC_MODE : Reserve
UREC_MODE : Folder Name
TDIS_MODE : Session Name
CDIS_MODE : Session Name

※When you send the channel index of 0xFFFFFFFF,
scanner start to scan from top channel

※If temporary clock was set and go to discovery mode, scanner sends NG response.

※If temporary clock was set and go to wx alert mode, scanner sends NG response.

Radio → Controller

- (1) JPM,OK[\r]

DTM Get/Set Date and Time.

Controller → Radio

- (1) DTM[\r]
(2) DTM,[DayLightSaving],[YYYY],[MM],[DD],[hh],[mm],[ss][\r]

Radio → Controller

- (1) DTM,[DayLightSaving],[YYYY],[MM],[DD],[hh],[mm],[ss],[RTC Status][\r]
(2) DTM,OK[\r]

[RTC Status]: 0:RTC NG
1:RTC OK

LCR Get/Set Location and range.

Controller → Radio
(1) LCR[\r]
(2) LCR,[LATITUDE],[LONGITUDE],[RANGE][\r]

Radio → Controller
(1) LCR,[LATITUDE],[LONGITUDE],[RANGE][\r]
(2) LCR,OK[\r]

LATITUDE and LONGITUDE is degree format.

AST Analyze Start

See Analyze Command Tab

APR Analyze Pauze/Resume

See Analyze Command Tab

URC User Record Control

Controller → Radio
(1) URC[\r]
(2) URC,[STATUS][\r]

Radio → Controller
(1) URC,[STATUS][\r]
(2) URC,OK[\r]
URC,ERR,[ERROR CODE][\r]

[ERROR CODE] :
0001: FILE ACCESS ERROR
0002: LOW BATTERY
0003: SESSION OVER LIMIT
0004: RTC LOST

[STATUS] : 0:Stop, 1:Start

MNU Menu Mode

Controller → Radio
(1) MNU,[MENU_ID],[INDEX][\r]

Radio → Controller
(1) MNU,OK[\r]

MENU_ID	INDEX	Menu Position
TOP	-	Top (Main) Menu
MONITOR_LIST	-	Select Lists to Monitor menu
SCAN_SYSTEM	Syetm Index	System Menu
SCAN_DEPARTMENT	Department Index	Department Menu
SCAN_SITE	Site Index	Site Menu
SCAN_CHANNEL	Channel Index	Channel Menu
SRCH_RANGE	Custom Bank Index	Custom Search Bank Menu
SRCH_OPT	-	Search/Close Call Opt menu
CC	-	Close Call Menu
CC_BAND	-	Clsoe Call Band Menu
WX	-	WX Operation Menu
FTO_CHANNEL	FTO Channel Index	Tone out Channel Menu
SETTINGS	-	Settings Menu
BRDCST_SCREEN	-	Broadcast screen Menu

MSI	Menu Status Info
Controller → Radio	
(1)	MSI[\r]
Radio → Controller	
(1)	MSI,<XML>,[\r] <?xml version="1.0" encoding="utf-8"?>[\r] <MSI Name=" Title " Index="xxxxxx" >[\r] : : </MSI>[\r]
format is XML. See sheet MSI tab	

MSV	Menu Set Value
Controller → Radio	
(1)	MSV,[RSV],[VALUE][\r]
Radio → Controller	
(1)	MSV,OK[\r]
VALUE	select type menu : selected item index input type menu : inputted string
Note	Replace comma(,) to tab(\t), if value contain ,(comma).

MSB	Menu Structure Back
Controller → Radio	
(1)	MSB,[RSV],[RET_LEVEL][\r]
Radio → Controller	
(1)	MSB,OK[\r]
RET_LEVEL	"RETURN_PREVIOUS_MODE" "" exit menu mode 1 level back

GST	Get scanner status (Supported Waterfall)
Controller → Radio	
(1)	GST[\r]
Radio → Controller	
(1)	GST,[DSP_FORM],[L1_CHAR],[L1_MODE],[L2_CHAR],[L2_MODE], [L3_CHAR],[L3_MODE],..., [L20_CHAR],[L20_MODE], [MUTE],[LED1],[LED2], [WF_MODE],[FREQ],[MOD],[MF_POS], [CF],[LOWER],[UPPER],[COLOR_MODE],[FFT_SIZE][\r]
[DSP_FORM]	Display Form (5 - 20 digit: #####) (each # is 0 or 1) 0 means Small Font / 1 means Large Font.
[L1_CHAR]	Line1 Characters 24 or 30char (fixed length)
[L1_MODE]	Line1 Display Mode 24 or 30char
[L2_CHAR]	Line2 Characters 24 or 30char (fixed length)
[L2_MODE]	Line2 Display Mode 24 or 30char
[L3_CHAR]	Line3 Characters 24 or 30char (fixed length)
[L3_MODE]	Line3 Display Mode 24 or 30char
:	:

```

:
:
[L20_CHAR] Line20 Characters 24 or 30char (fixed length)
[L20_MODE] Line20 Display Mode 24 or 30char
[LED1] Alert LED (0:OFF, 1:BLUE, 2:RED, 3:MAGENTA, 4:GREEN, 5:CYAN, 6:YELLOW, 7:WHITE)
[LED2] Batt Charge LED (0:OFF, 1:BLUE, 2:RED, 3:MAGENTA, 4:GREEN, 5:CYAN, 6:YELLOW, 7:WHITE)
[WF_MODE] SCANNER MODE ( 0 : Normal Mode, 1 : Waterfall, 2 :Menu/Direct Entry)
( Normal Mode means SDS Link does not an effective mode. Ex scan mode, search mode, ...)
[FREQ] Mark Frequency
[MOD] Modulation
[MF_POS] Marker position
[CF] Center Frequency
[LOWER] Lower Frequency
[UPPER] Upper Frequency
[COLOR_MODE] COLOR_MODE: 0:Color, 1:Black back, 2: White back
[FFT_SIZE] FFT Area Size (0 :25%, 1:50%, 2:75%, 3:100%)

```

NOTE: Display Mode for Line1 – Line20

```

' ' (space): NORMAL CHAR,
* : REVERSE CHAR
_ : Underline

```

The number of [Lx_CHAR] and [Lx_MODE] depend on Display Form.

Note 2:

if Lx_CHAR or Lx_MODE is all ' '(0x20), it will be converteded "".
if Lx_CHAR has ",", (comma), ",", (comma) will be changed "t".

Note 3:

LED2 : Only SDS150

PWF Push Waterfall FFT Information

Controller → Device

(1) PWF,[FFT_TYPE],[ON/OFF][\r]

Device → Controller

(1) PWF,[DATA1],[DATA2],..., [DATA_n],[\r]

[FFT_TYPE]

1 Dispalyed FFT (240)

GWF GetWaterfall FFT Information

Controller → Radio

(1) GWF,[TYPE],[ON/OFF][\r]

Radio → Controller

(1) GWF,[DATA1],[DATA2],..., [DATA240],[\r]

[FFT_TYPE]

Dispalyed FFT (240)

GW2 Get Waterfall FFT Informatic Binary data

Controller → Radio

(1) GWF,[TYPE],[ON/OFF][\r]

Radio → Controller

(1) GWF,[FFT_DATA][\r]

[FFT_TYPE]

	[FFT_DATA]	Dispalyed FFT (240) Binary
--	------------	----------------------------

KAL	Keep Alive
-----	------------

Controller → Radio
(1) KAL[\r]

Radio does not return a response for Keep Alive command.

POF	Power OFF
-----	-----------

Controller → Device
(1) POF[\r]

Device → Controller
(1) POF,OK[\r]

GCS	Get Charge Status
-----	-------------------

Controller → Device
(1) GCS[\r]

Device → Controller
(1) GCS,CST=[DATA1],VOLT=[DATA2]mV:[DATA3]%,CURR=[DATA4]mA,TEMP=[DATA5]C\n

[DATA1]	0 CHG_SUBSTS_NO_CHG	No Ext. Power or No Battery
	1 CHG_SUBSTS_BQ274_INIT	Initializing Gauge IC(BQ27426)
	2 CHG_SUBSTS_TEMP_NG	Abnormal Temperature
	3 CHG_SUBSTS_PWR_NG	Abnormal Power
	4 CHG_SUBSTS_FULL_CHG	Full Charge
	5 CHG_SUBSTS_RECHG	Recharge
	6 CHG_SUBSTS_CHARGE	Charging

[DATA2][DATA3] Battery Voltage (mV) : Remaining Battery Capacity (%)

[DATA4] Charge(+) / Discharge(-) Current (mA)

[DATA5] Battery Temperature (Celsius)

ex.) CST=4,VOLT=4184mV:100%,CURR=0000mA,TEMP= 27.65C

VOL	Get/Set Volume Level Settings
-----	-------------------------------

Controller → Radio
(1) VOL[\r]
(2) VOL,[LEVEL][\r]

Radio → Controller
(1) VOL,[LEVEL][\r]
(2) VOL[\r]

[LEVEL]	Volume Level 0-15 : for SDS100/SDS150 0-29 : for SDS200
---------	---

SQL Get/Set Squelch Level Settings

Controller → Radio

- (1) SQL[r]
- (2) SQL,[LEVEL][r]

Radio → Controller

- (1) SQL,[LEVEL][r]
- (2) SQL[r]

[LEVEL] Volume Level
0-15 : for SDS100/SDS150
0-19 : for SDS200

Favorites List
 System
 Department
 Site
 Conventional frequency
 TGID in ID Scan
 TGID in ID Search
 Site frequency
 Avoiding TGID in ID Search
 Search Avoiding frequency
 Close Call
 WX
 Tone-Out mode
 Search with scan frequency
 CC Hits Channel
 Custom Search Bank
 Custom Search frequency
 Quick Search frequency
 Repeater Find frequency

	comand							
	GLT		NXT/PRV		HLD		AVD	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd
FL	[none]		---		---		---	
SYS	[Parent FL Index]		Sys Index	[none]	Sys Index	[none]	Sys Index	[none]
DEPT	[Parent Sys Index]		Dept Index	[Parent Sys Index]	Dept Index	[Parent Sys Index]	Dept Index	[none]
SITE	[Parent Sys Index]		Site Index	[none]	Site Index	[none]	Site Index	[none]
CFREQ	[Parent Dept Index]		Chan Index	[none]	Chan Index	[none]	Chan Index	[none]
TGID	[Parent Dept Index]		Chan Index	[none]	Chan Index	[none]	Chan Index	[none]
STGID	---		TGID	[Site Index]	TGID	[Site Index]	---	(Use ATGID)
SFREQ	[Parent Sit Index]		---		---		---	
ATGID	[Parent Sys Index]		---		---		TGID	Parent sys index
AFREQ	[none]		---		---		[Frequency]	[none]
CC	---		[none]	[none]	[none]	[none]	---	(Use AFREQ)
WX	[none]		WX Chan Index	[none]	WX Chan Index	[none]	---	
FTO	[none]		FTO Chan Index	[none]	FTO Chan Index	[none]	---	
SWS_FREQ	---		Frequency	[Parent Dept Index]	Frequency	[Parent Dept Index]	---	(Use AFREQ)
CCHIT	[Parent Dept Index]		CC Chan Index	[none]	CC Chan Index	[none]	CC Chan Index	[none]
CS_BANK	[none]		---		---		---	
CS_FREQ	---		Frequency	Parent Bank index	Frequency	Parent Bank index	---	(Use AFREQ)
QS_FREQ	---		Frequency	[none]	Frequency	[none]	---	(Use AFREQ)
RPTR_FREQ	---		Frequency	[none]	Frequency	[none]	---	(You can't avoid Repeater Frequency)
IREC_FILE	[none]			[none]	File Index	[none]	---	(You can't avoid)
UREC_FOLDER	[none]		---	(You can't select folder)	---	(You can't select folder)	---	(You can't avoid)
UREC_FILE	Folder Index		File Index	[none]	File Index	[none]	---	(You can't avoid)
TRN_DISCOV	[none]		---		---		TGID	[none]
CNV_DISCOV	[none]		---		---		Frequency	[none]
BAND_SCOPE	---		Frequency	[none]	Frequency	[none]	---	

Target Key Word

[none] means Parameter is none.
 '---' means invarild comand

Note 1 If you want ot avoid 406.0MHz in Quick Search mode,
 "AVD,AFREQ,4060000,,1%r" is right.
 "AVD,QS_FREQ,4060000,,1%r" is bad command.

Note 2 If App sends "HLD", "NXT" or "PRV" in Repeater Find mod, the scanner cancels Repeater Find mod
 and returns to previous mode(Custom Search/Quick Search/ Close Call)

Note 3 "Unkown" department in ID Search is virtual department. You can hold, next and previous "Unkown" department but can't avoid it.
 "Unkown" department needs parent system index. Another department doesn't need parent system index. Both is OK that you set blank or system index for 2nd param

Controller → Radio

- [Favorites List](#)
[System](#)
[Department](#)
[Site](#)
[Conventional Frequency](#)
[TGID](#)
[Site Frequency](#)
[Search Avoiding Frequencies](#)
[Search Avoiding TGID](#)
[Fire Tone Out](#)
[Custom Search Bank](#)
[User Record](#)
[Inner Record File](#)
[User Record File](#)
[Trunk Discovery](#)
[Conventional Discovery](#)

(1)	GLT	FL	Index	Name	Monitor	Q_Key	N_Tag												
(2)	GLT	SYS	Index	MyId	Name	Avoid	Type	Q_Key	N_Tag										
(3)	GLT	DEPT	Index	MyId	Name	Avoid	Q_Key												
(4)	GLT	SITE	Index	MyId	Name	Avoid	Q_Key												
(5)	GLT	CFREQ	Index	MyId	Name	Avoid	Freq	Mod	SAS	SAL	SvcType	N_Tag							
(6)	GLT	TGID	Index	MyId	Name	Avoid	TGID	Audio Type	SvcType	N_Tag									
(7)	GLT	SFREQ	Index	Freq															
(8)	GLT	AFREQ	Freq	Avoid															
(9)	GLT	ATGID	TGID	Avoid	index	Name	DeptName	DeptIndex											
(10)	GLT	FTO	Index	Freq	Mod	Name	ToneA	ToneB											
(11)	GLT	CS_BANK	Index	Name	Lower	Upper	Mod	Step											
(12)	GLT	UREC	Index	Name															
(13)	GLT	IREC_FILE	Index	Name	Time														
(14)	GLT	UREC_FILE	Index	Name	Time														
(15)	GLT	TRN_DISCOV	Name	Delay	Logging	Duration	CompareDB	SystemName	SystemType	SiteName	TimeOutTimer	AutoStore							
(16)	GLT	CNV_DISCOV	Name	Lower	Upper	Mod	Step	Delay	Logging	CompareDB	Duration	TimeOutTimer	AutoStore						

Avoid
Off
T-Avoid

※Name = Session Name
※Name = Session Name

15/37

format will be XML.

```
ex
GLT,FL%r
GLT,<XML>,%r
<?xml version="1.0" encoding="utf-8"?>%r
<GLT>%r
  <FL Index="0" Name="Favorites List 1" Monitor="On" Q_Key="1" N_Tag="None" />%r
  <FL Index="1" Name="Favorites List 2" Monitor="On" Q_Key="2" N_Tag="2" />%r
  <FL Index="2" Name="Favorites List 3" Monitor="Off" Q_Key="3" N_Tag="999" />%r
</GLT>%r
```

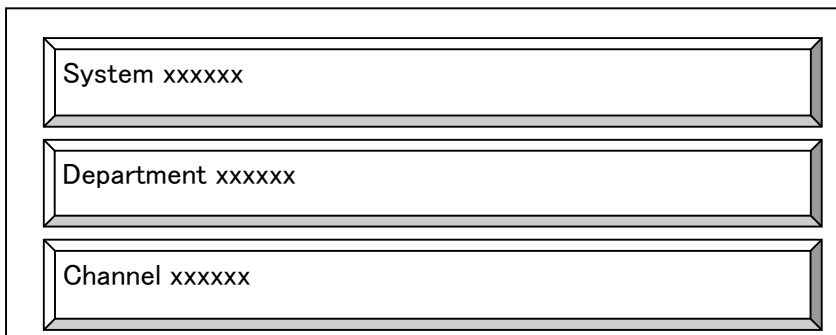
PC/Tablet App need scanner internal information to show.

If the scanner recvies GSI command, it will send scanner internal information.
Scanner internal information is like XML.

If the scanner receive PSI command, it outputs information periodically.
User can change interval by parameter.

[Ex .scan mode]

```
<?xml version="1.0" encoding="utf-8"?>
<ScannerInfo Mode="Trunk Scan Hold" V_Screen="trunk_scan">
  <MonitorList Name="Full Database" Index="4294967295" ListType="FullDb" Q_Key="None" N_Tag="None" DB_Counter="3" />
  <System Name="Calcasieu" Index="283" Avoid="Off" SystemType="Conventional" Q_Key="None" N_Tag="None" Hold="On" />
  <Department Name="Calcasieu Parish - Parish Fire & Medical" Index="286" Avoid="Off" Q_Key="None" Hold="Off" />
  <ConvFrequency Name="DeQuincy Fire Department" Index="290" Avoid="Off" Freq=" 154.4150MHz"
    Mod="NFM" N_Tag="None" Hold="On" SvcType="Fire Dispatch" P_Ch="Off" SAS="All" SAD="None" LVL="0" IFX="Off" />
  <AGC A_AGC="Off" D_AGC="Off" />
  <DualWatch PRI="Off" CC="Off" WX="Off" />
  <Property
    VOL="0" SQL="9" Sig="0"
    WiFi="3" Att="Off" Rec="Off"
    KeyLock="Off" P25Status="None"
    Mute="Mute" Backlight="100"
    Rssi="0.377"
  />
</ViewDescription>
  <InfoArea1 Text="F0:01234-6*789" />
  <InfoArea2 Text="S3:01234-6*----" />
  <PopupScreen Text="Quick Save?%n"/>
</ViewDescription>
```



see PSI, GSI Elemen
PSI, GSI Attribute
Attribute (ViewDescription)

All mode Elements

ScannerInfo

Property

AGC

DispFormat

ViewDescription (when the radio is wiewing override area)

ReplayDescription (when the radio is in REPLAY mode)

ScannerInfo is the root node.

Depend on mode elements

	Scan mode				Search				Signal		Temporary		discovery		Analyze			WF
	conventional_scan	trunk_scan	custom_with_scan	cchits_with_scan	custom_search	quick_search	close_call	cc_searching	tone_out	wx_alert	reverse_frequency	repeater_find	discovery_convention	discovery_trunking	analyze_system_status	rf_power_plot	analyze	waterfall
MonitorList	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-
System	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Department	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ConvFrequency	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TGID	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SiteFrequency	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SrchFrequency	-	-	-	○	-	○	○	-	-	○	○	○	-	-	-	-	-	-
CcHitsChannel	-	-	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DualWatch	○	○	○	○	○	○	○	○	-	-	○	○	-	-	-	-	-	-
SearchRange	-	-	○	-	○	○	-	-	-	-	-	-	-	-	-	-	-	-
SearchBanks	-	-	-	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-
CC_Bands	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-	-	-	-
CC_Counters	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-	-	-	-
ToneOutChannel	-	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-	-	-
WxChannel	-	-	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-	-
WxMode	-	-	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-	-
ConventionalDiscovery	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-	-	-
TrunkingDiscovery	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-	-
SystemStatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-
Analyze	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-
WaterfallBand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○
WaterfallSettings	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○

Elements in ViewDescription

InfoArea1

InfoArea2

OverWrite

PopupScreen

PlainText

Elements in ReplayDescription

File

ReplayMode

ScannerInfo

Attribute Name	Value
Mode	
V_Screen	

Scan Mode
Scan Hold
Tone-Out
Custom Search
Custom Search Hold
Quick Search
Quick Search Hold
Service Scan
Service Scan Hold
Trunk Scan
Trunk Scan Hold
Close Call Only
Close Call
Menu tree

Property

Attribute Name	Value
F	Off/On
VOL	0-29 or 0-15
SQL	0-19 or 0-15
Sig	0-4
WiFi	Off / 0-3 / AP
Battery	0.0-3.3
Att	Off/On/G-Att
Rec	Off/On
KeyLock	Off/On
P25Status	None/Data/P25/DMR/CAP/CON/DT3/XPT /NX9/NX4/ND9/ND4/IDS/NXD
Mute	Unmute/Mute
A_Led	Off/Blue/Red/Magenta/Green/Cyan/Yellow/White
Dir	Up/Down
Rssi	0-

plain_text
conventional_scan
trunk_scan
custom_with_scan
cchits_with_scan
custom_search
quick_search
close_call
cc_searching
tone_out
wx_alert
discovery_conventional
discovery_trunking
reverse_frequency
repeater_find
direct_entry
menu_selection
menu_input
analyze_system_status
analyze

AGC

Attribute Name	Value
A_AGC	Off/On
D_AGC	Off/On

DualWatch

Attribute Name	Value
PRI	Off/DND/Priority
CC	Off/DND/Priority
WX	Off/Priority

MonitorList

Attribute Name	Value
Name	ASCII code , Max length 64
Index	0-
ListType	FullDb/FL/SWS
Q_Key	0-99/None
N_Tag	0-99/None
DB_Counter	0-65535, if counter overs 65535, counter will be 0.

System

Name	ASCII code , Max length 64
Index	0-
Avoid	Off/T-Avoid/Avoid
SystemType	
Q_Key	0-99/None
N_Tag	0-99/None
Hold	Off/On

Conventional
Motorola
EDACS
LTR
P25 Trunk
P25 One Frequency

Department

Name	ASCII code , Max length 64
Index	0-
Avoid	Off/T-Avoid/Avoid
Q_Key	0-99/None
Hold	Off/On

MotoTRBO Trunk
DMR One Frequency
NXDN Trunk
NXDN One Frequency

Site

Name	ASCII code , Max length 64
Index	0-
Avoid	Off/T-Avoid/Avoid
Q_Key	0-99/None
Hold	Off/On
Mod	Auto/NFM/FM

ConvFrequency

Name	ASCII code , Max length 64
Index	0-
Avoid	Off/T-Avoid/Avoid
Freq	xxxx.xxxxMHz
Mod	Auto/AM/NFM/FM/WFM/FMB
N_Tag	0-999/None
Hold	Off/On
SvcType	See Sheet : "Service type"
P_Ch	Off/On
SAS	See Sheet : "Sub Audio"
SAL	Off/On
SAD	See Sheet : "Sub Audio"
RecSlot	Slot 1/2/None
LVL	-3/-2/-1/0/1/2/3
IFX	Off/On
TGID	TGID xxxx/None
U_Id	UID xxxx/None

TGID

Name	ASCII code , Max length 64
Index	0-
Avoid	Off/T-Avoid/Avoid
TGID	TGID:xxxx
SetSlot	Slot 1/2/Any
RecSlot	Slot 1/2/None
N_Tag	0-999/None
Hold	Off/On
SvcType	See Sheet : "Service type"
P_Ch	Off/On
LVL	-3/-2/-1/0/1/2/3

SiteFrequency

Freq	xxxx.xxxxMHz
SAS	See Sheet : "Sub Audio"
SAD	See Sheet : "Sub Audio"
IFX	Off/On

SearchBanks

Attribute	Name	Value
Index		0-9
BankStatus		xxxxxxxx : 0=Off/ 1=On order=0123456789
Name		ASCII code , Max length 64
BankNo		0-9

CC_Bands

Attribute Name	Value
BandStatus	xxxxxxx : 0=Off/ 1=On order=0123456

SrchFrequency

Attribute Name	Value
Avoid	Off/T-Avoid/Avoid
Freq	xxxx.xxxxMHz
Mod	Auto/AM/NFM/FM/WFM/FMB
Hold	Off/On
SAD	See Sheet : "Sub Audio"
RecSlot	Slot 1/2/None
TGID	TGID xxxx/None
U_Id	UID xxxx/None
IFX	Off/On

CcHitsChannel

Attribute Name	Value
Name	ASCII code , Max length 64
Index	0-
Avoid	Off/T-Avoid/Avoid
CH_No	0-9
Freq	xxxx.xxxxMHz
Mod	Auto/AM/NFM/FM/WFM/FMB
Hold	Off/On
SAD	See Sheet : "Sub Audio"
LVL	-3/-2/-1/0/1/2/3
IFX	Off/On

SearchRange

Lower	xxxx.xxxxMHz
Upper	xxxx.xxxxMHz
Mod	Auto/AM/NFM/FM/WFM/FMB
Step	

ToneOutChannel

Name	ASCII code , Max length 64
Index	1-
CH_No	0-31
Freq	xxxx.xxxxMHz
Mod	Auto/AM/NFM/FM/WFM/FMB
Hold	Off/On
LVL	-3/-2/-1/0/1/2/3
IFX	Off/On
ToneA	xxxxHz
ToneB	xxxxHz

WxMode

Mode	"Monitor Weather" or "Weather Alert"
SAME	"Alert Only" or SAME group name

WxChannel

Name	ASCII code , Max length 64
Index	0-
CH_No	1-7
Freq	xxxx.xxxxMHz
Mod	FM
Hold	Off/On
LVL	-3/-2/-1/0/1/2/3
IFX	Off/On

ConventionalDiscovery

Lower	xxxx.xxxxMHz
Upper	xxxx.xxxxMHz
Mod	Auto/AM/NFM/FM/WFM/FMB
Step	
Freq	xxxx.xxxxMHz
SAD	See Sheet : "Sub Audio"
RecSlot	Slot 1/2/None
PastTime	
HitCount	
TGID	TGID xxxx/None
U_Id	UID xxxx/None
IFX	Off/On

TrunkingDiscovery

SystemName	ASCII code , Max length 64
SiteName	ASCII code , Max length 64
TGID	
TgidName	
SAD	See Sheet : "Sub Audio"
RecSlot	Slot 1/2/None
PastTime	
HitCount	
U_Id	UID xxxx/None

SystemStatus

SystemName	ASCII code , Max length 64
SiteName	ASCII code , Max length 64
Signal	0-100
Quality	0-100
Activity	0-100
SystemID	0-0x1FFFF
SystemSubID	0-99
SiteID	0-4095
WacnID	0-0xFFFFF
NAC	0-0xFFF
Color	0-15
RAN	0-63
Area	0-1
Att	Off/G-Att
Freqs	0-16
P25Status	None/Data/P25/DMR/CAP/CON/DT3/XPT /NX9/NX4/ND9/ND4/IDS/NXD

RfPowerPlot

Frequency	xxxx.xxxxMHz
Modulation	Auto/AM/NFM/FM/WFM/FMB
SampleRate	100ms/200ms/400ms/800ms
Att	Off/G-Att
B01	0 - 100
B02	0 - 100
B03	0 - 100
B04	0 - 100
B05	0 - 100
B06	0 - 100
B07	0 - 100
B08	0 - 100
B09	0 - 100
B10	0 - 100
B11	0 - 100
B12	0 - 100

B13	0 - 100
B14	0 - 100
B15	0 - 100
B16	0 - 100
B17	0 - 100
B18	0 - 100
B19	0 - 100
B20	0 - 100
B21	0 - 100
B22	0 - 100
B23	0 - 100
B24	0 - 100
B25	0 - 100
B26	0 - 100
B27	0 - 100
B28	0 - 100
B29	0 - 100
B30	0 - 100
B31	0 - 100
B32	0 - 100
B33	0 - 100
B34	0 - 100

Analyze

Msg1	ASCII code , Max length 64
Msg2	ASCII code , Max length 64
SystemName	ASCII code , Max length 64
SiteName	ASCII code , Max length 64
Att	Off/G-Att

※Used by following mode

- LCN Finder
- Current Activity
- LCN Monitor
- Activity Log

WaterfallBand

Lower	xxxx.xxxxMHz
Center	xxxx.xxxxMHz
Upper	xxxx.xxxxMHz
Mod	Auto/AM/NFM/FM/WFM/FMB
Step	5kHz/6.25kHz/7.5kHz/833kHz/10kHz/12.5kHz/ 15kHz/20kHz/25kHz/50kHz/100kHz
Span	360kHz/720kHz/1.44MHz/2.88MHz/ 5.76MHz/8.64MHz/17.28MHz/
Limit	0/1

WaterfallSettings

MF	xxxx.xxxxMHz
Gain	Auto/0/1/.../15

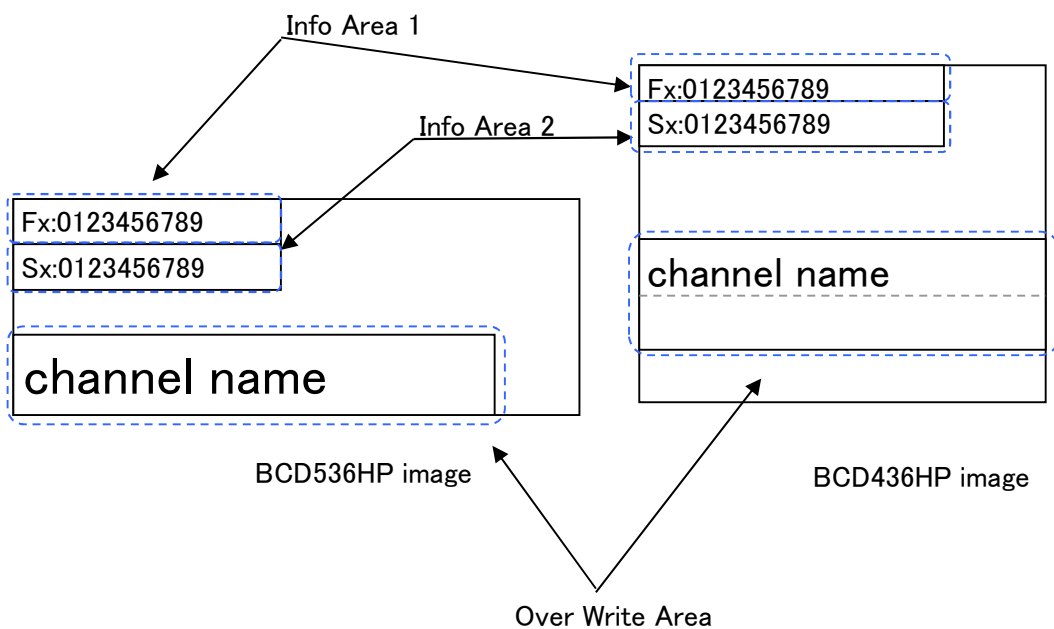
<<Info Area and Override>>

Scanner has special view area on main screen.

Info Area 1 and Info Area 2 are displayed Quick keys status in scan mode or Banks status in custom search mode.

Over Write Area is displayed error message or scanning message on channel name area.

```
<ViewDescription>  
  <InfoArea1 Text="F0:01234-6*789" />  
  <InfoArea2 Text="S3:01234-6*—" />  
  <OverWrite Text="No thing to scan">  
</ViewDescription>
```



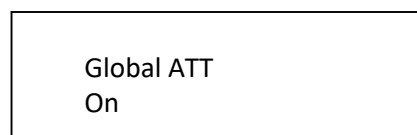
<<Popup Screen>>

Scanner has popup screen. It shows temporary view for 1-2 seconds.

The popup screen is shown on main screen.

It is like toaster in Android OS.

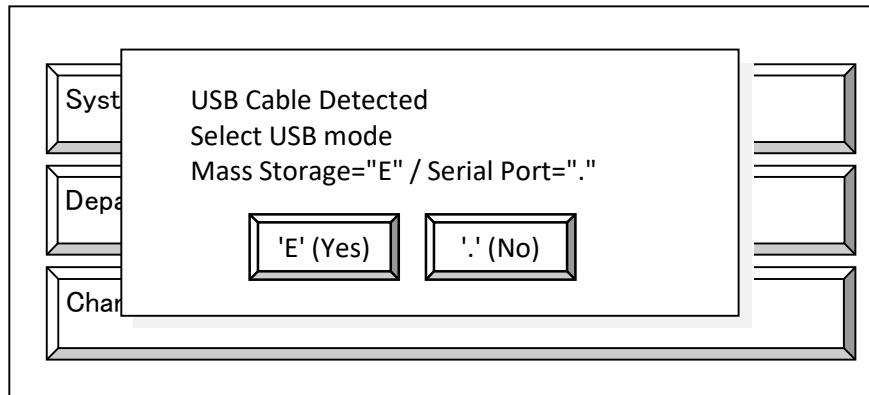
```
<ViewDescription>  
  <PopupScreen Text="Global ATT\nOn" />  
</ViewDescription>
```



Popup screen has a few buttons.
 This popup screen is not cleared automatically.
 Scanner waits pressed button by user.

It is like Dialog box.

```
<ViewDescription>
  <PopupScreen Text="USB Cable Detected&#xD;
    Select USB mode&#xD;&#xD;Mass Storage=&quot;E&quot; / Serial Port=&quot;.&quot;">
    <Button Text="&quot;E&quot; (Yes)" KeyCode="E"/>
    <Button Text="&quot;.&quot; (No)" KeyCode="." />
  </PopupScreen>
```



In this case Popup screen has 2 buttons.

If 'E' (Yes) button is pressed, App should send "KEY,E,P".
 E is KeyCode.

<<PlainText view>>

Plain Text view is kind of view mode in main screen.

ex.

```
<ViewDescription>
  <PlainText Text="Copyright 2014"/>
  <PlainText Text="Uniden America Corp." />
  <PlainText Text="All Rights Reserved." />
  <PlainText Text=""/>
</ViewDescription>
```

<< ReplayDescription >>

```
<ReplayDescription>  
  <File Index="2" />  
  <ReplayMode Mode="USER_REC" />  
</ReplayDescription>
```

Basic Rule for Response scanner information

MyId

The system, department, site and channel on Full Database have MyId.

The system, department, site and channel copied from full database have MyId.

But system, department, site and channel which user created don't have MyId.

MyId relates RadioReference ID.

ID is shown xxId=xx.

e.x.

CountyId=5

AgencyId=15

ID list

HPDB ID	description	RRDB ID
CountyId	Conventional System (County)	ctid
AgencyId	Conventional System (Agency)	aid
TrunkId	Trunked System	sid
CGroupId	Conventional Department	scid
CFreqId	Conventional Frequency	fid
SiteId	Trunked Site	siteId
TGroupId	Trunked Department	tgCid
Tid	Trunked Channel	tgId

Note :

Search with Scan doesn't have MyId.

Index

The index will be used, when you hold or avoid system, department and channel.

It is decided when data is downloaded to RAM. It is invalid if DB_Counter differs.

Name

ASCII code (20h-7eh)

Max Length 64 characters

AST Analyze Start

■ Current Activity

Controller → Radio

AST,CURRENT_ACTIVITY,[Site Index]¥r

Radio → Controller

format will be XML.

Data is sent in 200ms interval

C-Ch

No	LCN	Frequency	SystemID	SiteID	TGID Type
----	-----	-----------	----------	--------	-----------

V-Ch

No	LCN	Frequency	TGID	Unit ID	MOD	TGID Type
----	-----	-----------	------	---------	-----	-----------

Parameter

LCN : LCN(decimal)
Freq : Frequency
TGID : Talk Group ID(decimal)
Unit ID : Unit ID(decimal)
MOD : Mode
Analog
Digital
Encrypted
TgidType : Talk Group ID type
Control Channel
Encrypted
Patch
Unknown
TGID
I-CALL
SystemID : System ID(hex)
SiteID : Site ID(decimal)

XML example

```
AST,<XML>¥r
<?xml version="1.0" encoding="utf-8"?>¥r
<AST>¥r
  <CurrentActivity LCN="1" Freq="851.0125" SystemID="0001h" SiteID="0" TgidType="Control Channel" />¥r
  <CurrentActivity LCN="2" Freq="851.0375" TGID="16" UnitID="32" MOD="Analog" TgidType="TGID" />¥r
  <CurrentActivity LCN="3" Freq="851.0625" TGID="64" UnitID="128" MOD="Analog" TgidType="TGID" />¥r
  :
  :
  <CurrentActivity LCN="32" Freq="851.6125" TGID="256" UnitID="512" MOD="Analog" TgidType="TGID" />¥r
</AST>¥r
```

※Before sending AST command, please go to Scan Mode to load the hpdb data

■ LCN Monitor

Controller → Radio

AST,LCN_MONITOR,[Site Index]¥r

Radio → Controller

format will be XML.

Data is sent in 1s interval

No	LCN	Frequency	Status
----	-----	-----------	--------

Parameter

LCN : LCN(decimal)
Freq : Frequency
ReceiveStaus : 1 or 0

XML example

```
AST,<XML>¥r
<?xml version="1.0" encoding="utf-8"?>¥r
<AST>¥r
  <LcnMonitor LCN="1" Freq="851.0125" ReceiveStaus="1" />¥r
  <LcnMonitor LCN="2" Freq="851.0250" ReceiveStaus="0" />¥r
  <LcnMonitor LCN="3" Freq="851.0375" ReceiveStaus="0" />¥r
  <LcnMonitor LCN="4" Freq="851.0500" ReceiveStaus="0" />¥r
  <LcnMonitor LCN="5" Freq="851.0625" ReceiveStaus="0" />¥r
  :
  :
  <LcnMonitor LCN="32" Freq="851.4000" ReceiveStaus="0" />¥r
</AST>¥r
```

※Before sending AST command, please go to Scan Mode to load the hpdb data

■ Activity Log

※If temporary clock was set and go to activity log mode, scanner sends NG response.

Controller → Radio

AST,ACTIVITY_LOG,[Site Index]¥r

Radio → Controller

AST,ACTIVITY_LOG,[Time],[Data],[Message],[Description]

Parameter

Time : MM/DD/YYYY hh:mm:ss
 Data : Received raw data (depends on system type)
 Message : Message type (Depends on system type)
 Description1-5 : Message description (depends on system type). Number of description is depends on message type.

【Motorola】

Data		
"<cmd>/<prv>/<id>"		
cmd	: command field	0-1023(decimal)
prv	: private bit	0 or 1
id	: id field	0-65535(decimal)

Message	Description1	Description2	Description3	Description4	Description5
System ID	Sid:				
Site ID	Site:				
Talkgroup Voice Channel Grant	Tid:	Uid:	Lcn:	Sts:	Mod:
Talkgroup Voice Channel Grant Update	Tid:		Lcn:	Sts:	
I-Call Voice Channel Grant Update	Uid:		Lcn:		
Individual Call	Uid:	Uid:	Lcn:		
Patch/MultiSelect Voice Channel Grant	Pid:	Uid:	Lcn:	Sts:	Mod:
Patch/Multiselect Voice Channel Grant Update	Pid:		Lcn:	Sts:	
Patch List	Pid:	Mid			
Patch Cancel	Pid:				
Control					
First OSW					
Receive Error					

Description

Sid : System ID(hex)
 Site : Site ID(decimal)
 Tid : Talk Group ID(decimal)
 Uid : Unit ID(decimal)
 Pid : Patch ID(decimal)
 Mid : Patch Member ID (decimal)
 Lcn : LCN(decimal)
 Sts : Status bit
 Normal Talkgroup
 All Talkgroup
 Emergency
 Talkgroup Patch
 Emergency Patch
 Emergency Multi-Group
 Multi-Select
 DES Encryption Talkgroup
 DES All Talkgroup
 DES Emergency
 DES Talkgroup Patch
 DES Emergency Patch
 DES Emergency Multi-Group
 Multi-Select DES TG
 Mod : Modulation
 Analog
 Digital

【P25 Standard】

Data		
"<opcode>/<data>"		
opcode	opcode	1byte:00-FF(hex)
data	TSBK	12bytes:00000000000000000000-FFFFFFFFFFFFFFFFFFFFFFFF(hex)

Message	Description1	Description2	Description3	Description4	Description5
Group Voice Channel Grant	Lcn:	Gad:	Sad:		
Group Voice Channel Grant Explicit	LcnT:	Gad:	Sad:	LcnR:	
Group Voice Channel Grant Update	Lcn:	Gad:	Lcn:	Gad:	
Group Voice Channel Grant Update Explicit	LcnT:	LcnR:	Gad:		
Unit To Unit Voice Channel Grant	Lcn:	Tad:	Sad:		
Unit To Unit Voice Channel Grant Extended	LcnT:	Tad:	Sad:	LcnR:	
Unit To Unit Answer Request	Tad:	Src:			
Unit To Unit Answer Request Extended	Tad:	Src:			
Unit To Unit Voice Channel Grant Update	Lcn:	Tad:	Sad:		
Unit To Unit Voice Channel Grant Update Extended	LcnT:	Tad:	Sad:	LcnR:	
Telephone Voice Channel Grant					
Telephone Interconnect Answer Request					

Identifier Update for X2TDMA					
Individual Data Channel Grant					
Group Data Channel Grant					
Group Data Channel Announcement					
Group Data Channel Announcement Explicit					
SNDGP Data Channel Grant					
SNDGP Data Page Request					
SNDGP Data Channel Announcement Explicit					
Status Update					
Status Query					
Message Update					
Radio Unit Monitor Command					
Call Alert					
Acknowledge Response FNE					
Queued Response					
Extended Function Command					
Deny Response					
Group Affiliation Response					
Secondary Control Channel Broadcast Explicit					
Group Affiliation Query					
Location Registration Response					
Unit Registration Response					
Unit Registration Command					
Authentication Command					
De-Registration Acknowledge					
Identifier Update for TDMA	Iden:	Type:	Tofs:	Csp:	Bfrq:
Identifier Update for VHF/UHF Bands					
Time and Date Announcement	Iden:	Bw:	Tofs:	Csp:	Bfrq:
Roaming Address Command					
Roaming Address Update					
System Service Broadcast					
Secondary Control Channel Broadcast					
RFSS Status Broadcast	Sid:	Sub:	Site:	Lcn:	
RFSS Status Broadcast Extended	Sid:	Sub:	Site:	LcnT:	LcnR:
Network Status Broadcast	Wacn:	Sid:	Lcn:		
Network Status Broadcast Extended	Wacn:	Sid:	LcnT:	LcnR:	
Adjacent Status Broadcast					
Identifier Update for non-VHF/UHF Bands	Iden:	Bw:	Tofs:	Csp:	Bfrq:
Protection Parameter Broadcast					
Protection Parameter Update					
Receive Error					

Description

Lcn : LCN(decimal)
 LcnT : Transmit channel LCN(decimal)
 LcnR : Receive channel LCN(decimal)
 Gad : Group Address(decimal)
 Sad : Source Address(decimal)
 Tad : Target Address(decimal)
 Src : Source ID(decimal)
 Iden : Identifier(decimal)
 Bw : Band Width(decimal)
 Tofs : Transmit Offset(decimal)
 Csp : Channel Spacing(decimal)
 Bfrq : Base Frequency(decimal)
 Sid : System ID(hex)
 Sub : RF Sub-system ID(decimal)
 Site : Site ID(decimal)
 Wacn : WACN ID(hex)
 Type : Channel Type (decimal)

[EDACS]

Data		
<data>		
data	message data	28bits:0000000-FFFFFF(hex)

Message	Description1	Description2	Description3	Description4	Description5
Site ID	Site:		Lcn:		
Talkgroup Voice Channel Grant	Tid:	Uid:	Lcn:	Sts:	
Talkgroup Voice Channel Grant Update	Tid:		Lcn:	Sts:	
I-Call Voice Channel Grant Update	Uid:		Lcn:	Sts:	
Patch Voice Channel Grant	Pid:	Uid:	Lcn:	Sts:	
Patch Voice Channel Grant Update	Pid:		Lcn:	Sts:	
Patch List	Pid:	Mid:			
First OSW					
Receive Error					

Description

Site : Site ID(decimal)
 Tid : Talk Group ID(decimal 1-2047: AFS, decimal 2048-65535: Decimal)
 Uid : Unit ID(decimal)
 Pid : Patch ID(decimal)
 Mid : Patch Member ID (decimal)
 Lcn : LCN(decimal)
 Sts : Status bit

Normal Talkgroup
Talkgroup Patch
Emergency
Emergency Patch
Digital Talkgroup
Digital Patch
Digital Emergency
Digital Emergency Patch
I-Call
Digital I-Call

【LTR】

Data		
"<data>"		
data	<area_code>/<goto>/<home>/<id>/<free>	
area code	Area Code	0 or 1
goto	Goto Repeater	0-31(decimal)
home	Home Repeater	0-31(decimal)
id	Id Field	0-255(decimal)
free	Free Repeater	0-31(decimal)

Message	Description1	Description2	Description3	Description4	Description5
Repeater Idle	Tid:	Rpt:	Goto:	Free:	
Talkgroup Voice Channel Grant Update	Tid:	Rpt:	Goto:	Free:	
Turn-off Code	Tid:	Rpt:	Goto:	Free:	

Tid : Talk Group ID (Area-Home-Id)
Rpt : Transmitting Repeater
Goto : Goto Repeater
Free : Free Repeater

【DMR/MotoTRBO】

Data		
"<opcode>/<fid>/<id>/<ch>/<slot>/<prv>/<emergency>"		
opcode	Full/Short Link Control Opcode	00-3F (Hex)
	Control Signal Block Opcode	00-3F (Hex)
fid	Feature ID	00(DMR), 06(Connect Plus), 10(Capacity Plus) (Hex)
id	TGID	0-16777215 (Decimal)
ch	LCN	0-4095 (Decimal)
slot	TDMA Slot	1 or 2 or 15(None) (Decimal)
prv	Privacy	0 or 1
emergency	Emergency	0 or 1

Message	Description1	Description2	Description3	Description4	Description5
Talkgroup Voice Channel Grant	Tid:	Uid:	Color Code:	Len:	Slot:
Talkgroup Voice Channel Link Control	Tid:	Uid:	Color Code:	Len:	Slot:
Unit to Unit Voice Channel Grant	Uid Src:	Uid Dst:	Color Code:	Len:	Slot:
Unit to Unit Voice Channel Link Control	Uid Src:	Uid Dst:	Color Code:	Len:	Slot:
Broadcast Talkgroup Voice Channel Grant	Tid:	Uid:	Color Code:	Len:	Slot:
Capacity Plus Voice Channel Grant	Tid:	Uid:	Color Code:	Len:	Slot:
Capacity Plus Update	Sid:	Site:	Color Code:	Len:	Slot:
Capacity Plus Site ID	Sid:	Site:	Color Code:	Len:	Slot:
Linked Capacity Plus Site ID	Sid:	Site:	Color Code:	Len:	Slot:
Connect Plus Voice Channel Grant	Tid:	Uid:	Color Code:	Len:	Slot:
Connect Plus Update					
Connect Plus Network ID	Sid:	Site:	Color Code:	Len:	Slot:
DMR Network ID	Sid:	Site:	Color Code:	Len:	Slot:
Idle					

Description

Sid : Network ID (Hex)
Site : Site ID (Decimal)
Tid : Talk Group ID (Decimal)
Uid : Unit ID (Decimal)
Uid Src : Source Unit ID (Decimal)
Uid Dst : Destination Unit ID (Decimal)
Color Code : Color Code (Decimal)
Len : LCN (Decimal)
Slot : TDMA Slot (Decimal)

※Before sending AST command, please go to Scan Mode to load the hpdb data

【NXDN】

Data		
"<call type>/<home ch>/<id>/<ch>/<prv>/<emergency>"		
call type	Call Type	0-7 (Decimal)
home ch	Home Channel	0-31 (IDAS only, Decimal)
id	TGID	NEXEDGE: 0-65535, IDAS: 0-2047 (Decimal)
ch	LCN	0-1023 (Decimal)
prv	Privacy	0 or 1
emergency	Emergency	0 or 1

400 10000
600 20000
800 30000
1000 40000
2000 80000
4000 100000
6000 200000

[Step]

500 1500
625 2000
750 2500
833 5000
1000 10000

[Modulation]

Auto
AM
NFM
FM
WFM
FMB

Radio → Controller

The data is output every time the frequency is changed
AST,BAND_SCOPE,[Frequency],[RSSI_LEVEL]¥r

Parameter

Frequency : Frequency
Status : RSSI Level (0 - 100)

■ Raw Data Output

Controller → Radio

AST,RAW_DATA_OUTPUT,[Frequency],[Modulation],[Filter],[Global Attenuator]¥r

[Frequency]

250000 - 13000000

[Modulation]

Auto
AM
NFM
FM
WFM
FMB

[Filter]

1=On
0=Off

[Global Attenuator]

1=On
0=Off

Removed in SDS100

Radio → Controller

Discriminator A/D sampling raw data (10 bit signed data) will be output by the radio.
10 bit data will be divided into High byte and Low byte, see data format in next table.

*Data Format

	b7	b6	b5	b4	b3	b2	b1	b0
H	1	0	0	bit9	bit8	bit7	bit6	bit5
L	0	0	0	bit4	bit3	bit2	bit1	bit0

※ Interface of raw data output mode is the only USB port.
If you want to use the other remote command, please send after pause command.

■ System Status

Controller → Radio

AST,SYSTEM_STATUS,[site_index]¥r

Radio → Controller

AST,OK¥r

■ Rf Power Plot

Controller → Radio

AST,RF_POWER_PLOT,[Frequency],[Modulation],[Sampling Rate]¥r

[Frequency]

250000 - 13000000

[Modulation]

Auto
AM
NFM
FM
WFM

Removed in SDS100

FMB
[Sampling Rate]
100
200
400
800

Radio → Controller
AST,OK%r

APR Analyze Pauze/Resume

Controller → Radio
APR,[Analyze Mode]%r

- Parameter
- Analyze Mode :
- SYSTEM_STATUS
 - RF_POWER_PLOT
 - CURRENT_ACTIVITY
 - LCN_MONITOR
 - ACTIVITY_LOG
 - RAW_DATA_OUTPUT

Radio → Controller
APR,OK%r

MSI

Attribute	Name	Value
Name		Menu title
Index		Menu index
MenuType		TypeSelect/TypeInput/TypeLocation/TypeError
Value		Current set value
Selected		

MenuItem

Attribute	Name	Value
Name		Item name
Index		Item index
Value		Menu item current value

MenuInput

Attribute	Name	Value
MaxLength		1-64
EnableKeys		Characters which user can input.
AddedInformation		String

MenuLocation

Attribute	Name	Value
MaxLength		1-
EnableKeys		Characters which user can input.
IsLatitude		"1"=Lan/ "0"= Lon

MenuErrorMsg

Attribute	Name	Value
Text		Error Message
ScanButton		"1"=Enable / "0"=Disable

Service Type

id	Service Type Name
PST1	Multi-Dispatch
PST2	Law Dispatch
PST3	Fire Dispatch
PST4	EMS Dispatch
PST5	non
PST6	Multi-Tac
PST7	Law Tac
PST8	Fire-Tac
PST9	EMS-Tac
PST10	non
PST11	Interop
PST12	Hospital
PST13	Ham
PST14	Public Works
PST15	Aircraft
PST16	Federal
PST17	Business
PST18	non
PST19	non
PST20	Railroad
PST21	Other
PST22	Multi-Talk
PST23	Law Talk
PST24	Fire-Talk
PST25	EMS-Talk
PST26	Transportation
PST27	non
PST28	non
PST29	Emergency Ops
PST30	Military
PST31	Media
PST32	Schools
PST33	Security
PST34	Utilities
PST35	non
PST36	non
PST37	Corrections

Custom Service Type

id	Service Type Name
ST1	Custom 1
ST2	Custom 2
ST3	Custom 3
ST4	Custom 4
ST5	Custom 5
ST6	Custom 6
ST7	Custom 7
ST8	Custom 8
ST9	Racing Officials
ST10	Racing Teams

Key code	BCD536HP	SDS100	Note
M	MENU	Menu	Menu Key
F	(Rotary nob)	Func	F Key
L	AVOID	AVOID	Avoid Key
1	1	1	1 Key
2	2	2	2 Key
3	3	3	3 Key
4	4	4	4 Key
5	5	5	5 Key
6	6	6	6 Key
7	7	7	7 Key
8	8	8	8 Key
9	9	9	9 Key
0	0	0	0 Key
.	. NO	. NO	Dot key
E	E yes	E yes	Enter Key
>	(Rotary nob)	(Rotary nob)	Rotary Right
<	(Rotary nob)	(Rotary nob)	Rotary Left
^	(Rotary nob)	(Rotary nob)	Rotary nob push
V	VOL	Backlight	Volume nob push
Q	SQ	(none)	Squelch nob push
Y	REPLAY	REPLAY	Replay Key
A	SOFT 1	SOFT 1	BCD436HP : System
B	SOFT 2	SOFT 2	BCD436HP : Dept
C	SOFT 3	SOFT 3	BCD436HP : Channel
Z	ZIP	Zip	Zip Key
T	SREV	(none)	Service Type Key
R	RANG	RANG	Range Key