BCD436HP(UB376Z)
BCD536HP(UB375Z)
Remote Command Specification

Version 1.05
2017/11/13

Date	Version		Contents
2015/03/09	1.00		
2015/03/18	1.01		・Added description to JPM command. ・Added description to DTM command. ・Added description to URC command. ・Added description to AST command （ACTIVITY LOG).
2015/07/15	1.02		・Added description MNU ・Added description MSI ・Added description MSV ・Added description MSB ・Added sheet MSI. It is detail of MSI response.
2015/10/29	1.03		・Changed description TGID format of EDACS for Activity Log in "Analyze Command" sheet
2016/07/13	1.04		・Changed description of GLT command ・Added attribute for DMR/MotoTRBO to PSI, GSI Attribute ・Added command for DMR/MotoTRBO to Analyze Command ・Changed sheet name to CTCSS,DCS,P25NAC,ColorCode ・Added color code for DMR/MotoTRBO to CTCSS,DCS,P25NAC,ColorCode
2017/11/13	1.05		・Changed description of GLT command ・Added attribute for NXDN to PSI, GSI Attribute ・Added command for NXDN to Analyze Command ・Changed sheet name to Sub Audio ・Added RAN and Area for NXDN to Sub Audio

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	

MDL Get Model Info

Controller → Radio
(1) MDL[\r]

Radio → Controller
(1) MDL,[MODEL_NAME][\r]
[MODEL_NAME] BCD536HP
BCD436HP

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],[BK_COLOR],[BK_DIMMER][\r]

Note:
STS Command is compatible with old scanner.
PSI is better than STS.
See "Font Data Specification" for not ascii character code.

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
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
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 Analize Start

See Analize Command Tab

APR Analize Pauze/Resume

See Analize 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

BFH Band Scope Frequency Hold

Controller → Radio

BFH,[Frequency][/r]

Radio → Controller

BFH,OK[\r]

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_PREVOUS_MODE"	exit menu mode
	""	1 level back

GLT is command which PC get xx list form scanner.

Controller → Radio

(1)	GLT,FL	**F**avorites **L**ist
(2)	GLT,SYS,[fl_index]	**Sys**tem
(3)	GLT,DEPT,[system_index]	**Dep**artmen**t**
(4)	GLT,SITE,[system_index]	Site
(5)	GLT,CFREQ,[dept_index]	**C**onventional **Freq**uency
(6)	GLT,TGID,[dept_index]	**TGID**
(7)	GLT,SFREQ,[site_index]	**S**ite **Freq**uency
(8)	GLT,AFREQ	Search **A**voding **Freq**uencies
(9)	GLT,ATGID,[system_index]	Search **A**voiding **TGID**
(10)	GLT,FTO	**F**ire **T**one **O**ut
(11)	GLT,CS_BANK	**C**ustom **S**earch **Bank**
(12)	GLT,UREC	**U**ser **Rec**ord
(13)	GLT,IREC_FILE	**I**nner **Rec**ord **F**ile
(14)	GLT,UREC_FILE,[folder_index]	**U**ser **R**ecord **F**ile
(15)	GLT,TRN_DISCOV	**Trunk Discov**ery
(16)	GLT,CNV_DISCOV	**Conv**entional **Discov**ery

Radio → Controller

(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					※Name = Folder Name				
(13)	GLT	IREC_FILE	Index	Name	Time				※Name = File Name				
(14)	GLT	UREC_FILE	Index	Name	Time				※Name = File Name				
(15)	GLT	TRN_DISCOV	Name	Delay	Logging	Duration	CompareDB	SystemName	SystemType	SiteName	TimeOutTimer	AutoStore	
(16)	GLT	CNV_DISCOV	Name	Lower	Upper	Mod	Step	Delay	Logginig	CompareDB	Duration	TimeOutTimer	AutoStore

Short word means:
Q_Key : Quick Key
N_Tag : Number Tag
Freq : Frequency
Mod : Modulation
SAS : Sub Audio Setting (CTCSS/DCS/P25NAC/Color Code/RAN, Area)
SAL : Sub Audio Lockout (Tone L/O)Lower Upper

Avoid
Off
T-Avoid

※Name = Session Name
※Name = Session Name

The Index is kind of handle. PC uses index to Hold and Avoid.
MyId is like RRDB ID.

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
```

Favorites **L**ist
System
Department
Site
Conventional **freq**uency
TGID in ID Scan
TGID in ID Search
Site **f**requency
Avoiding **TGID** in ID Search
Search **A**voiding **freq**uency
Close **C**all
WX
Tone-**O**ut mode
Search **w**ith **s**can **freq**uency
CC Hits Channel
Custom **S**earch **Bank**
Custom **S**earch **freq**uency
Quick **S**earch **freq**uency
Repea**t**er Find **freq**uency

comand

Target Key Word	GLT 1st	GLT 2nd	NXT/PRV 1st	NXT/PRV 2nd	HLD 1st	HLD 2nd	AVD 1st	AVD 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]	---	

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

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 parame

PC/Tablet App need scanner internal information to show.

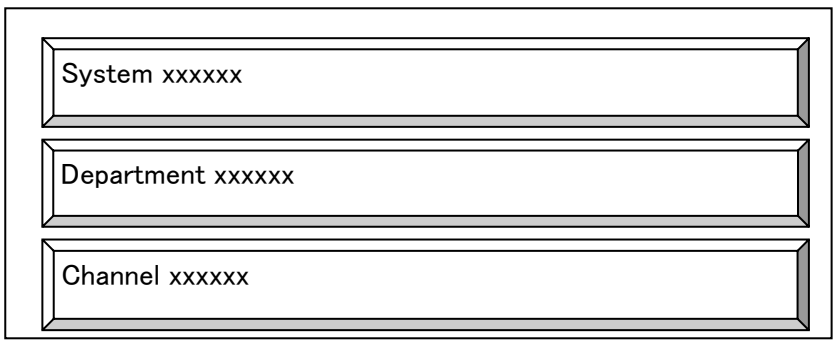
If the scanner recvies GSI command, it will send scanner internal information.
Scaner internal information is like XML.

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 &amp;amp; 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			
	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_conventiona	discovery_trunking	analyze_system_status	rf_power_plot	analyze	band_scope
MonitorList	○	○	○	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–
System	○	○	○	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Department	○	○	○	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Site	–	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ConvFrequency	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TGID	–	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
SiteFrequency	–	○			–	–	–	–	–	–	–	–	–	–	–	–	–	–
SrchFrequency	–	–	○	–	○	○	○	–	–	○	○	○	–	–	–	–	–	–
CcHitsChannel	–	–	–	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–
DualWatch	○	○	○	○	○	○	○	○	–	–	○	○	–	–	–	–	–	–
SearchRange	–	–	○	–	○	○	–	–	–	–	–	–	–	–	–	–	–	–
SearchBanks	–	–	–	–	○	–	–	–	–	–	–	–	–	–	–	–	–	–
CC_Bands	–	–	–	–	–	–	–	○	–	–	–	–	–	–	–	–	–	–
CC_Counters	–	–	–	–	–	–	–	○	–	–	–	–	–	–	–	–	–	–
ToneOutChannel	–	–	–	–	–	–	–	–	○	–	–	–	–	–	–	–	–	–
WxChannel	–	–	–	–	–	–	–	–	–	○	–	–	–	–	–	–	–	–
WxMode	–	–	–	–	–	–	–	–	–	○	–	–	–	–	–	–	–	–
ConventionalDiscovery	–	–	–	–	–	–	–	–	–	–	–	–	○	–	–	–	–	–
TrunkingDiscovery	–	–	–	–	–	–	–	–	–	–	–	–	–	○	–	–	–	–
SystemStatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○	–	–	–
RfPowerPlot	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○	–	–
Analyze	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○	–
BandScope	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○
BandScopeRange	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○

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
rf_power_plot
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
MotoTRBO Trunk
DMR One Frequency
NXDN Trunk
NXDN One Frequency

Department

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

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	xxxxxxxxxx : 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

BandScope

	Msg1	ASCII code , Max length 64
	Msg2	ASCII code , Max length 64
	Span	0.2MHz/0.4MHz/0.6MHz/0.8MHz/1MHz/2MHz/ 4MHz/6MHz/8MHz/10MHz/20MHz/40MHz/ 60MHz/80MHz/100MHz/200MHz
	Hold	On/Off
	Att	Off/G-Att

BandScopeRange

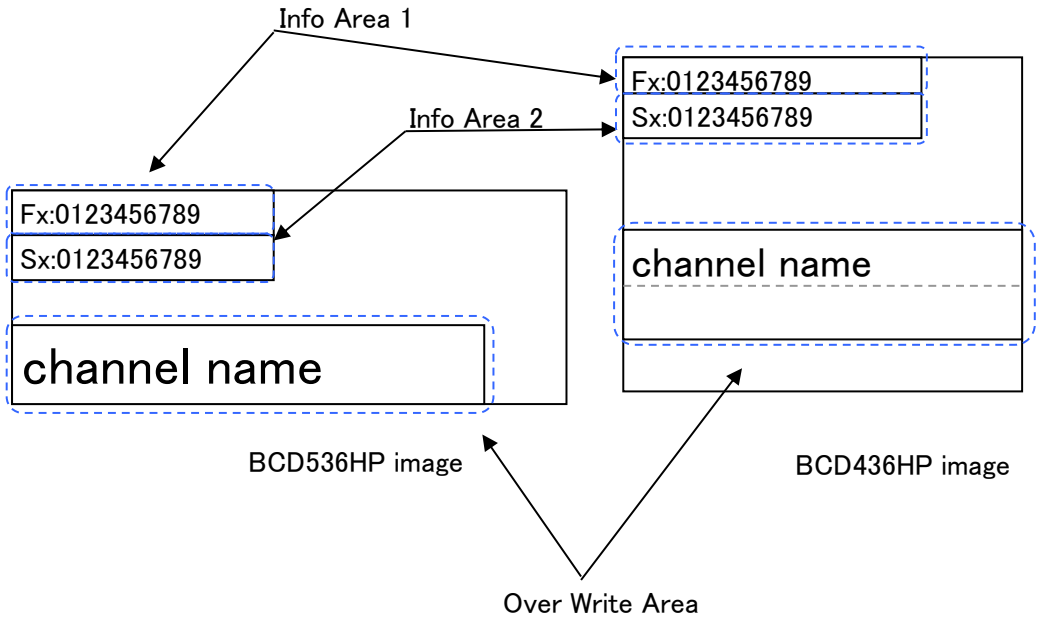
	Lower	xxxx.xxxxMHz
	Upper	xxxx.xxxxMHz
	Mod	Auto/AM/NFM/FM/WFM/FMB
	Step	5kHz/6.25kHz/7.5kHz/833kHz/10kHz/12.5kHz/ 15kHz/20kHz/25kHz/50kHz/100kHz

<<Info Area and Override>>

Scanner has special view area on main screen.
Info Area 1 and Info Area 2 are diplayed Quick keys status in scan mode or Banks status in custum 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>
```

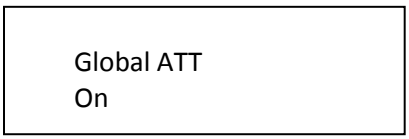


<<Popup Screen>>

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.

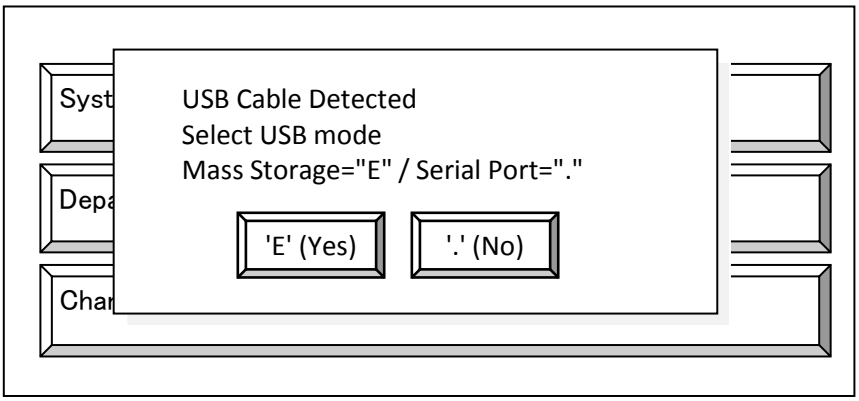
```
<ViewDescription>
   <PopupScreen Text="Global ATT¥nOn"/>
</ViewDescription>
```



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 shoud 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 form 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 Frequncy	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　　Analize 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" Tgidype="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			
"<opecode>/<data>"			
opecode		opecode	1byte:00-FF(hex)
data		TSBK	12bytes:000000000000000000000000-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					
SNDCP Data Channel Grant					
SNDCP Data Page Request					
SNDCP 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-FFFFFFF(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:	Lcn:	Slot:
Talkgroup Voice Channel Link Control	Tid:	Uid:	Color Code:	Lcn:	Slot:
Unit to Unit Voice Channel Grant	Uid Src:	Uid Dst:	Color Code:	Lcn:	Slot:
Unit to Unit Voice Channel Link Control	Uid Src:	Uid Dst:	Color Code:	Lcn:	Slot:
Broadcast Talkgroup Voice Channel Grant	Tid:	Uid:	Color Code:	Lcn:	Slot:
Capacity Plus Voice Channel Grant	Tid:	Uid:	Color Code:	Lcn:	Slot:
Capacity Plus Update	Sid:	Site:	Color Code:	Lcn:	Slot:
Capacity Plus Site ID	Sid:	Site:	Color Code:	Lcn:	Slot:
Linked Capacity Plus Site ID	Sid:	Site:	Color Code:	Lcn:	Slot:
Connect Plus Voice Channel Grant	Tid:	Uid:	Color Code:	Lcn:	Slot:
Connect Plus Update					
Connect Plus Network ID	Sid:	Site:	Color Code:	Lcn:	Slot:
DMR Network ID	Sid:	Site:	Color Code:	Lcn:	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)
Lcn : 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

Message	Description1	Description2	Description3	Description4	Description5
Replying to requesting communication	Tid:	Uid:	Area Code:	Home Ch:	
	Uid Src:	Uid Dst:	Area Code:	Home Ch:	
Performing voice communication	Tid:	Uid:	RAN: or Area Code:		
	Uid Src:	Uid Dst:	RAN: or Area Code:		
Sending Encryption init vector					
Assignment of traffic channel to VC	Tid:	Uid:	RAN: or Area Code:	LCN: or Home Ch:	
	Uid Src:	Uid Dst:	RAN: or Area Code:	LCN: or Home Ch:	
Existence of assigned traffic channel to VC	Tid:	Uid:	RAN: or Area Code:	LCN: or Home Ch:	
	Uid Src:	Uid Dst:	RAN: or Area Code:	LCN: or Home Ch:	
Transmission released					
Idle					
Disconnecting					
Site configuration information	Sys:	Site:	RAN:	Cch LCN: or DFA	
Service information which site provides	Sys:	Site:	RAN:		
Information of site's control channel	Sys:	Site:	RAN:	Cch LCN: or DFA	
IDAS go to Repeater	Tid:	Uid:	Area Code:	Go to Repeater:	
	Uid Src:	Uid Dst:	Area Code:	Go to Repeater:	

Description
Sys : System ID (Decimal)
Site : Site ID (Decimal)
Tid : Talk Group ID (Decimal)
Uid : Unit ID (Decimal)
Uid Src : Individual Call Source Unit ID (Decimal)
Uid Dst : Individual Call Destination Unit ID (Decimal)
RAN : NEXEDGE RAN (Decimal)

Area Code	:	IDAS Area Code (Decimal)
LCN	:	NEXEDGE LCN (Decimal)
Go to Repeater	:	IDAS Repeater Channel (Decimal)
Home Ch	:	IDAS Home Channel (Decimal)
Cch LCN	:	NEXEDGE Control Channel (Decimal)
DFA	:	NEXEDGE Direct Frequency Assignment

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

■ LCN Finder

Controller → Radio

AST,LCN_FINDER,[Site Index]¥r

Radio → Controller

format will be XML.
Data is sent in 500ms interval

Parameter

Freq : Frequency
AccuracyStatus : Accuracy Level (Total 30 status)
- 0 : Unknown
- 1 : Level 1
- 2 : Level 2
- 3 : Level 3
- 4 : Level 4
- 5 : Found
- 6 : Disable

Condition : Searching
All Lcn Found

XML example

AST,<XML>,¥r
<?xml version="1.0" encoding="utf-8"?>¥r
<AST>¥r
<LcnFinder Freq="851.0125" AccuracyStatus="566666666666666666666666666666"
<LcnFinder Freq="851.0375" AccuracyStatus="610000000000000000000000000000"
<LcnFinder Freq="851.0625" AccuracyStatus="603000000000000000000000000000"

<LcnFinder Freq="851.6125" AccuracyStatus="600000000000000000000000000000"
<LcnFinder Condition="Searching"/>
</AST>¥r

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

■ Band Scope

Data is sent in 10ms interval
Controller → Radio

AST,BAND_SCOPE,[Center frequency],[Span],[Step],[Modulation]¥r

[Center frequency]
250000 – 13000000
[Span]

200	8000
400	10000
600	20000
800	40000
1000	60000
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

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
FMB
[Sampling Rate]
100
200
400
800

Radio → Controller

AST,OK¥r

APR Analize Pauze/Resume

Controller → Radio

APR,[Analize Mode]¥r

Parameter

Analize 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	BCD436HP	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	SYSTEM	SYSTEM	System Key
B	DEPT	DEPT	
C	CHANNEL	CHAN	Channel Key
Z	ZIP	Zip	Zip Key
T	SREV	*(none)*	Service Type Key
R	RANG	RANG	Range Key

SAS(**S**ub **A**udio **S**ettings)

	All	Analog (CTCSS/DCS	Digital (P25 NAC/ColorCode/RAN/Area)
	All	Tone Search	NAC Search
0x0000		CTCSS 67.0Hz	NAC 000h
		CTCSS 69.3Hz	NAC 001h
		CTCSS 71.9Hz	NAC 002h
		CTCSS 74.4Hz	NAC 003h
		CTCSS 77.0Hz	NAC 004h
		CTCSS 79.7Hz	NAC 005h
		CTCSS 82.5Hz	NAC 006h
		CTCSS 85.4Hz	NAC 007h
		CTCSS 88.5Hz	NAC 008h
		CTCSS 91.5Hz	NAC 009h
		CTCSS 94.8Hz	NAC 00Ah
		CTCSS 97.4Hz	NAC 00Bh
		CTCSS 100.0Hz	NAC 00Ch
		CTCSS 103.5Hz	NAC 00Dh
		CTCSS 107.2Hz	NAC 00Eh
		CTCSS 110.9Hz	NAC 00Fh
		CTCSS 114.8Hz	NAC 010h
		CTCSS 118.8Hz	NAC 011h
0x0012		CTCSS 123.0Hz	NAC 012h
:		CTCSS 127.3Hz	:
:		CTCSS 131.8Hz	:
:		CTCSS 136.5Hz	:
0x0fff		CTCSS 141.3Hz	NAC FFFh
0x1000		CTCSS 146.2Hz	Color Code 0
		CTCSS 151.4Hz	Color Code 1
		CTCSS 156.7Hz	Color Code 2
		CTCSS 159.8Hz	Color Code 3
		CTCSS 162.2Hz	Color Code 4
		CTCSS 165.5Hz	Color Code 5
		CTCSS 167.9Hz	Color Code 6
		CTCSS 171.3Hz	Color Code 7
		CTCSS 173.8Hz	Color Code 8
		CTCSS 177.3Hz	Color Code 9
		CTCSS 179.9Hz	Color Code 10
		CTCSS 183.5Hz	Color Code 11
		CTCSS 186.2Hz	Color Code 12
		CTCSS 189.9Hz	Color Code 13
		CTCSS 192.8Hz	Color Code 14
0x100f		CTCSS 196.6Hz	Color Code 15
:		CTCSS 199.5Hz	:
:		CTCSS 203.5Hz	:
:		CTCSS 206.5Hz	:
0x2000		CTCSS 210.7Hz	RAN 0
		CTCSS 218.1Hz	RAN 1
		CTCSS 225.7Hz	RAN 2
		CTCSS 229.1Hz	RAN 3
		CTCSS 233.6Hz	RAN 4
		CTCSS 241.8Hz	RAN 5
		CTCSS 250.3Hz	RAN 6
		CTCSS 254.1Hz	RAN 7
		DCS 006	RAN 8
		DCS 007	RAN 9
		DCS 015	RAN 10
		DCS 017	RAN 11
		DCS 021	RAN 12
		DCS 023	RAN 13
		DCS 025	RAN 14
		DCS 026	RAN 15
		DCS 031	RAN 16
		DCS 032	RAN 17
		DCS 036	RAN 18
		DCS 043	RAN 19
		DCS 047	RAN 20
		DCS 050	RAN 21
		DCS 051	RAN 22
		DCS 053	RAN 23
		DCS 054	RAN 24
		DCS 065	RAN 25
		DCS 071	RAN 26
		DCS 072	RAN 27
		DCS 073	RAN 28
		DCS 074	RAN 29
		DCS 114	RAN 30
		DCS 115	RAN 31
		DCS 116	RAN 32
		DCS 122	RAN 33
		DCS 125	RAN 34
		DCS 131	RAN 35
		DCS 132	RAN 36
		DCS 134	RAN 37
		DCS 141	RAN 38
		DCS 143	RAN 39
		DCS 145	RAN 40
		DCS 152	RAN 41
		DCS 155	RAN 42

SAD(**S**ub **A**udio **D**etected)

All	Analog (CTCSS/DCS	Digital (P25 NAC/ColorCode/RAN/Area)
None	None	None
	CTCSS 67.0Hz	NAC 000h
	CTCSS 69.3Hz	NAC 001h
	CTCSS 71.9Hz	NAC 002h
	CTCSS 74.4Hz	NAC 003h
	CTCSS 77.0Hz	NAC 004h
	CTCSS 79.7Hz	NAC 005h
	CTCSS 82.5Hz	NAC 006h
	CTCSS 85.4Hz	NAC 007h
	CTCSS 88.5Hz	NAC 008h
	CTCSS 91.5Hz	NAC 009h
	CTCSS 94.8Hz	NAC 00Ah
	CTCSS 97.4Hz	NAC 00Bh
	CTCSS 100.0Hz	NAC 00Ch
	CTCSS 103.5Hz	NAC 00Dh
	CTCSS 107.2Hz	NAC 00Eh
	CTCSS 110.9Hz	NAC 00Fh
	CTCSS 114.8Hz	NAC 010h
	CTCSS 118.8Hz	NAC 011h
	CTCSS 123.0Hz	NAC 012h
	CTCSS 127.3Hz	:
	CTCSS 131.8Hz	:
	CTCSS 136.5Hz	:
	CTCSS 141.3Hz	NAC FFFh
	CTCSS 146.2Hz	Color Code 0
	CTCSS 151.4Hz	Color Code 1
	CTCSS 156.7Hz	Color Code 2
	CTCSS 159.8Hz	Color Code 3
	CTCSS 162.2Hz	Color Code 4
	CTCSS 165.5Hz	Color Code 5
	CTCSS 167.9Hz	Color Code 6
	CTCSS 171.3Hz	Color Code 7
	CTCSS 173.8Hz	Color Code 8
	CTCSS 177.3Hz	Color Code 9
	CTCSS 179.9Hz	Color Code 10
	CTCSS 183.5Hz	Color Code 11
	CTCSS 186.2Hz	Color Code 12
	CTCSS 189.9Hz	Color Code 13
	CTCSS 192.8Hz	Color Code 14
	CTCSS 196.6Hz	Color Code 15
	CTCSS 199.5Hz	:
	CTCSS 203.5Hz	:
	CTCSS 206.5Hz	:
	CTCSS 210.7Hz	RAN 0
	CTCSS 218.1Hz	RAN 1
	CTCSS 225.7Hz	RAN 2
	CTCSS 229.1Hz	RAN 3
	CTCSS 233.6Hz	RAN 4
	CTCSS 241.8Hz	RAN 5
	CTCSS 250.3Hz	RAN 6
	CTCSS 254.1Hz	RAN 7
	DCS 006	RAN 8
	DCS 007	RAN 9
	DCS 015	RAN 10
	DCS 017	RAN 11
	DCS 021	RAN 12
	DCS 023	RAN 13
	DCS 025	RAN 14
	DCS 026	RAN 15
	DCS 031	RAN 16
	DCS 032	RAN 17
	DCS 036	RAN 18
	DCS 043	RAN 19
	DCS 047	RAN 20
	DCS 050	RAN 21
	DCS 051	RAN 22
	DCS 053	RAN 23
	DCS 054	RAN 24
	DCS 065	RAN 25
	DCS 071	RAN 26
	DCS 072	RAN 27
	DCS 073	RAN 28
	DCS 074	RAN 29
	DCS 114	RAN 30
	DCS 115	RAN 31
	DCS 116	RAN 32
	DCS 122	RAN 33
	DCS 125	RAN 34
	DCS 131	RAN 35
	DCS 132	RAN 36
	DCS 134	RAN 37
	DCS 141	RAN 38
	DCS 143	RAN 39
	DCS 145	RAN 40
	DCS 152	RAN 41
	DCS 155	RAN 42

	DCS 156	RAN 43
	DCS 162	RAN 44
	DCS 165	RAN 45
	DCS 172	RAN 46
	DCS 174	RAN 47
	DCS 205	RAN 48
	DCS 212	RAN 49
	DCS 214	RAN 50
	DCS 223	RAN 51
	DCS 225	RAN 52
	DCS 226	RAN 53
	DCS 243	RAN 54
	DCS 244	RAN 55
	DCS 245	RAN 56
	DCS 246	RAN 57
	DCS 251	RAN 58
	DCS 252	RAN 59
	DCS 255	RAN 60
	DCS 261	RAN 61
	DCS 263	RAN 62
0x203f	DCS 265	RAN 63
:	DCS 266	:
:	DCS 271	:
:	DCS 274	:
0x3000	DCS 306	Area 0
0x3001	DCS 311	Area 1
	DCS 315	
	DCS 325	
	DCS 331	
	DCS 332	
	DCS 343	
	DCS 346	
	DCS 351	
	DCS 356	
	DCS 364	
	DCS 365	
	DCS 371	
	DCS 411	
	DCS 412	
	DCS 413	
	DCS 423	
	DCS 431	
	DCS 432	
	DCS 445	
	DCS 446	
	DCS 452	
	DCS 454	
	DCS 455	
	DCS 462	
	DCS 464	
	DCS 465	
	DCS 466	
	DCS 503	
	DCS 506	
	DCS 516	
	DCS 523	
	DCS 526	
	DCS 532	
	DCS 546	
	DCS 565	
	DCS 606	
	DCS 612	
	DCS 624	
	DCS 627	
	DCS 631	
	DCS 632	
	DCS 654	
	DCS 662	
	DCS 664	
	DCS 703	
	DCS 712	
	DCS 723	
	DCS 731	
	DCS 732	
	DCS 734	
	DCS 743	
	DCS 754	

	DCS 156	RAN 43
	DCS 162	RAN 44
	DCS 165	RAN 45
	DCS 172	RAN 46
	DCS 174	RAN 47
	DCS 205	RAN 48
	DCS 212	RAN 49
	DCS 214	RAN 50
	DCS 223	RAN 51
	DCS 225	RAN 52
	DCS 226	RAN 53
	DCS 243	RAN 54
	DCS 244	RAN 55
	DCS 245	RAN 56
	DCS 246	RAN 57
	DCS 251	RAN 58
	DCS 252	RAN 59
	DCS 255	RAN 60
	DCS 261	RAN 61
	DCS 263	RAN 62
	DCS 265	RAN 63
	DCS 266	:
	DCS 271	:
	DCS 274	:
	DCS 306	Area 0
	DCS 311	Area 1
	DCS 315	
	DCS 325	
	DCS 331	
	DCS 332	
	DCS 343	
	DCS 346	
	DCS 351	
	DCS 356	
	DCS 364	
	DCS 365	
	DCS 371	
	DCS 411	
	DCS 412	
	DCS 413	
	DCS 423	
	DCS 431	
	DCS 432	
	DCS 445	
	DCS 446	
	DCS 452	
	DCS 454	
	DCS 455	
	DCS 462	
	DCS 464	
	DCS 465	
	DCS 466	
	DCS 503	
	DCS 506	
	DCS 516	
	DCS 523	
	DCS 526	
	DCS 532	
	DCS 546	
	DCS 565	
	DCS 606	
	DCS 612	
	DCS 624	
	DCS 627	
	DCS 631	
	DCS 632	
	DCS 654	
	DCS 662	
	DCS 664	
	DCS 703	
	DCS 712	
	DCS 723	
	DCS 731	
	DCS 732	
	DCS 734	
	DCS 743	
	DCS 754	