# BCD436HP(UB376Z)
# BCD536HP(UB375Z)
# Remote Command Specification

This specification is subject to change.

Version 0.17
2015/01/26

| Date | Version | Author | Contents |
|---|---|---|---|
| 2015/01/26 | 0.17 | | |
| | | | |
| | | | |

| 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 | ~~FTX~~ | ~~File transmit~~ | | Delete |
| 20 | ~~FPR~~ | ~~File Prepare Reception~~ | | Delete |
| 21 | ~~FRX~~ | ~~File Receive~~ | | Delete |
| 22 | ~~DIR~~ | ~~Get Directory~~ | | Delete |
| 23 | DTM | Get/Set Date and Time. | | |
| 24 | LCR | Get/Set Location and range. | | |
| 25 | AST | Analyze Start | | |
| 26 | APR | Analyze Pauze/Resume | | |
| 27 | URC | User Record Control | | |
| 28 | BFH | Band Scope Frequency Hold | | |

---

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.

V0.17
Separate to sheet "GLT command".

---

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

Radio → Controller

(1) JPM,OK[\r]

---

FTX File transmit

---

FTX remote command transmits the file to the SD card of the Scanner.
After FTX command, scanner transmits file of [Transfer Size] byte

Controller → Radio

(1) FTX,[File Path],[Transfer Size][\r]

[File Path] : Up to 260 characters.(/BCDx36HP/XXX/XXX…)
[Transfer Size] : Up to 4294967295 byte

Radio → Controller

(1) FTX,OK[\r]
FTX,ERR,XXXX[\r]

※ XXXX Error Code 0001 Open File Error
0002 SD Card Memory Full

※ When you receive the FTX,OK[\r], send the file data after 100ms.
※ This command is valid only in PRG Mode.
※ Scanner will send the Check Sum when completes transmission of file (SUM=XXXX).
Check Sum is sending by text
※ File is sending by binary

---

FPR File Prepare Reception

---

FPR remote command prepares receiving the file from the SD card of the Scanner.

Controller → Radio

(1) FPR,[File Path][\r]
[File Path] : Up to 260 characters. (/BCDx36HP/XXX/XXX…)

Radio → Controller

(1) FPR,OK,XXXXXXXXXX[\r]
FPR,ERR,XXXX[\r]

※ XXXX Error Code 0001 Open File Error

※ XXXXXXXXXX : File Size（Up to 4294967295 byte)
※ This command is valid only in PRG Mode.

---

FRX File Receive

---

FRX command start transmiting data from Scanner.
The data is set file by FPR command to Controller from Scanner.

Controller → Radio

(1) FRX[\r]

※ Scanner will send the Check Sum when completes transmission of file (SUM=XXXX).
Check Sum is sending by text
※ This command is valid only in PRG Mode.
※ File is sending by binary

---

DIR

---

Controller → Radio

(1) DIR,[Path][\r]
[Path] : Up to 260 characters. (/BCDx36HP/XXX/XXX…)

Radio → Controller

(1) format will be XML

DIR,<XML>,[\r]
<?xml version="1.0" encoding="utf-8"?>[\r]
<DirInfo>[\r]
<DIR Name="favorites_lists" Date="2013/07/22_19:03:00"/>[\r]
<DIR Name="HPDB" Date="2013/12/16_13:54:00"/>[\r]
<FILE Name="scanner.inf" Date="2013/07/22_19:03:00" Size="83"/>[\r]
</DirInfo>[\r]

※ This command is valid only in PRG Mode.

---

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][\r]
(2) DTM,OK[\r]

---

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 Pause/Resume

---

See Analyze Command Tab

---

SUS Search Uniden Scanner

---

Controller → Radio
SUS,UNIDEN,SCANNER[\r]

Delete

Radio → Controller
SUS,[ModelName],[ScannerName],[ESN],[IP][\r]

[ModelName]
[ScannerName] ScannerName is string which user inputted. (Max 32 byte, ASCII)
[ESN] ESN
[IP] Scanner IP Address (xx.xxx.xxx.xxx)

---

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

[STATUS] : 0:Stop, 1:Start

---

BFH Band Scope Frequency Hold

---

Controller → Radio
BFH,[Frequency][/r]

Radio → Controller
BFH,OK[\r]

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 | **Tr**u**n**k **Discov**ery |
| (16) | GLT,CNV_DISCOV | **C**o**nv**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)
- SAL : Sub Audio Lockout (Tone L/O)Lower

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

**F**avorites **L**ist
**Sys**tem
**Dep**artment
**Site**
**C**onventional **freq**uency
**TGID** in ID Scan
**TGID** in ID Search
**S**ite **f**requency
**A**voiding **TGID** in ID Search
Search **A**voiding **freq**uency
**C**lose **C**all
**WX**
**T**one-**O**ut mode
**S**earch **w**ith **s**can **freq**uency
**CC Hit**s Channel
**C**ustom **S**earch **Bank**
**C**ustom **S**earch **freq**uency
**Q**uick **S**earch **freq**uency
**Rep**eater 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] | | File Index | [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 param

eter.

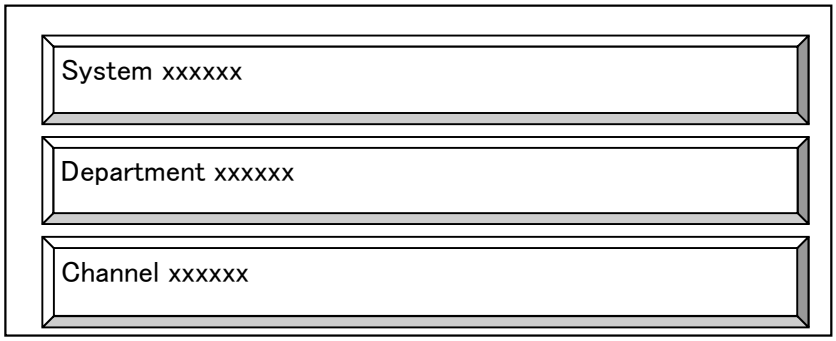
PC/Tablet App need scanner internal information to show.

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"
            A_Led="Off" Dir="Down"
            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_conventional | 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 | |
| Mute | Unmute/Mute | |
| A_Led | Off/Blue/Red/Magenta/Green/Cyan/Yellow/White | |
| Dir | Up/Down | This parameter is valid in Scan mode and Search modes. |
| 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

## 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 |

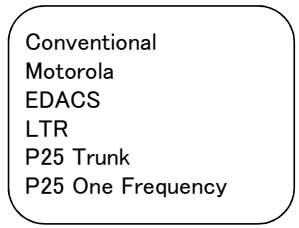
## MonitorList

| 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 |




## 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 : "CTCSS,DCS,P25NAC" |
| SAL | Off/On |
| SAD | See Sheet : "CTCSS,DCS,P25NAC" |
| LVL | -3/-2-/-1/0/1/2/3 |
| IFX | Off/On |

## TGID

| | |
|---|---|
| Name | ASCII code , Max length 64 |

| | | |
|---|---|---|
| Index | 0- | |
| Avoid | Off/T-Avoid/Avoid | |
| TGID | TGID:xxxx | |
| 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 | |
| ~~IFX~~ | ~~Off/On~~ | Deleted in V0.17 (moved to SiteFrequency. IFX is Frequency Option) |

## SiteFrequency

| | | |
|---|---|---|
| Freq | xxxx.xxxxMHz | |
| IFX | Off/On | Add in V0.17. |

## 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 : "CTCSS,DCS,P25NAC" |
| 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 : "CTCSS,DCS,P25NAC" |
| 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

Add in V0.17.

| | |
|---|---|
| Lower | xxxx.xxxxMHz |
| Upper | xxxx.xxxxMHz |
| Mod | Auto/AM/NFM/FM/WFM/FMB |
| Step | |
| PastTime | |
| HitCount | |
| Freq | xxxx.xxxxMHz |
| SAD | See Sheet : "CTCSS,DCS,P25NAC" |
| IFX | Off/On |

### TrunkingDiscovery

Add in V0.17.

| | |
|---|---|
| SystemName | ASCII code , Max length 64 |

| | |
|---|---|
| SiteName | ASCII code , Max length 64 |
| PastTime | |
| HitCount | |
| TGID | |
| TgidName | |

SystemStatus

| | |
|---|---|
| SystemName | ASCII code , Max length 64 |
| SiteName | ASCII code , Max length 64 |
| Signal | 0-100 |
| Quality | 0-100 |
| Activity | 0-100 |
| SystemID | 0-0xFFFF |
| SystemSubID | 0-99 |
| SiteID | 0-99 |
| WacnID | 0-0xFFFFF |
| NAC | 0-0xFFF |
| Att | Off/G-Att |

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/<br>4MHz/6MHz/8MHz/10MHz/20MHz/40MHz/<br>60MHz/80MHz/100MHz/200MHz |
| Hold | On/Off |
| Att | Off/G-Att |

BandScopeRange

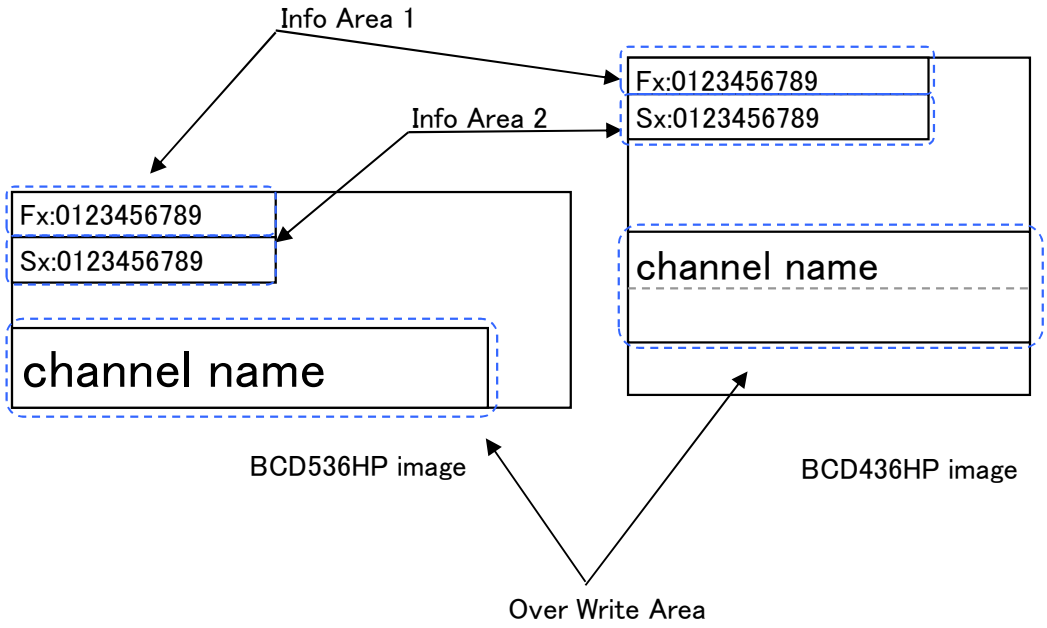
| | |
|---|---|
| Lower | xxxx.xxxxMHz |
| Upper | xxxx.xxxxMHz |
| Mod | Auto/AM/NFM/FM/WFM/FMB |
| Step | 5kHz/6.25kHz/7.5kHz/833kHz/10kHz/12.5kHz/<br>15kHz/20kHz/25kHz/50kHz/100kHz |

## <<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>
```

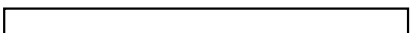


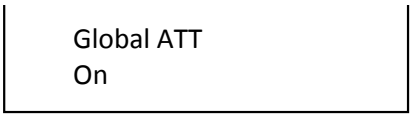

## <<Popup Screen>>

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>
```

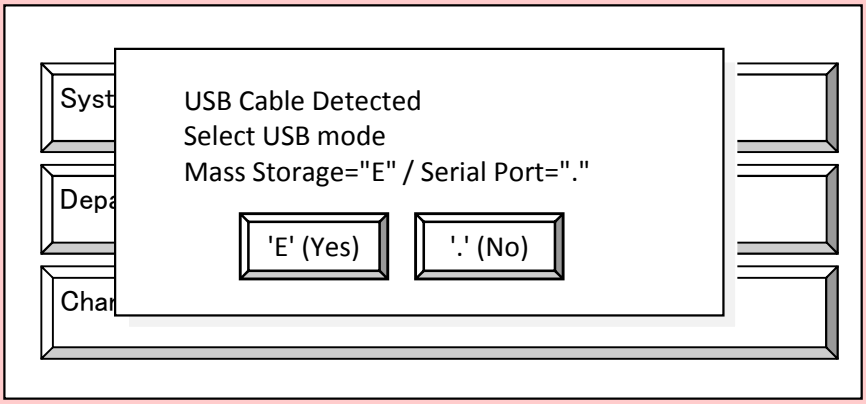





Popup screen has a few buttons.
This popup screen is not cleared automatically.
Scanner waits pressed button by user.

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　　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**

| | | | |
|---|---|---|---|
| ~~No~~ | ~~:　1-32~~ | | Deleted "No" in V0.17 |
| 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**

| | | | |
|---|---|---|---|
| ~~No~~ | ~~:　1-32~~ | | Deleted "No" in V0.17 |
| 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

**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(AFS)
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

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

## ■ EDACS,LTR 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="56666666666666666666666666666666"
<LcnFinder Freq="851.0375" AccuracyStatus="61000000000000000000000000000000"
<LcnFinder Freq="851.0625" AccuracyStatus="60300000000000000000000000000000"

<LcnFinder Freq="851.6125" AccuracyStatus="60000000000000000000000000000000"
<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]

| | | |
|---|---|---|
| ~~AUTO~~ | 1500 | Deleted "Auto" in V0.17 |
| 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 Analyze Pause/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

# 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 |

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

| All | Analog ( CTCSS/DCS | Digital (P25 NAC) |
|---|---|---|
| All | Tone Search | NAC Search |
| | 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 | |
| | CTCSS 151.4Hz | |
| | CTCSS 156.7Hz | |
| | CTCSS 159.8Hz | |
| | CTCSS 162.2Hz | |
| | CTCSS 165.5Hz | |
| | CTCSS 167.9Hz | |
| | CTCSS 171.3Hz | |
| | CTCSS 173.8Hz | |
| | CTCSS 177.3Hz | |
| | CTCSS 179.9Hz | |
| | CTCSS 183.5Hz | |
| | CTCSS 186.2Hz | |
| | CTCSS 189.9Hz | |
| | CTCSS 192.8Hz | |
| | CTCSS 196.6Hz | |
| | CTCSS 199.5Hz | |
| | CTCSS 203.5Hz | |
| | CTCSS 206.5Hz | |
| | CTCSS 210.7Hz | |
| | CTCSS 218.1Hz | |
| | CTCSS 225.7Hz | |
| | CTCSS 229.1Hz | |
| | CTCSS 233.6Hz | |
| | CTCSS 241.8Hz | |
| | CTCSS 250.3Hz | |
| | CTCSS 254.1Hz | |
| | DCS 006 | |
| | DCS 007 | |

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

| All | Analog ( CTCSS/DCS | Digital (P25 NAC) |
|---|---|---|
| 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 | |
| | CTCSS 151.4Hz | |
| | CTCSS 156.7Hz | |
| | CTCSS 159.8Hz | |
| | CTCSS 162.2Hz | |
| | CTCSS 165.5Hz | |
| | CTCSS 167.9Hz | |
| | CTCSS 171.3Hz | |
| | CTCSS 173.8Hz | |
| | CTCSS 177.3Hz | |
| | CTCSS 179.9Hz | |
| | CTCSS 183.5Hz | |
| | CTCSS 186.2Hz | |
| | CTCSS 189.9Hz | |
| | CTCSS 192.8Hz | |
| | CTCSS 196.6Hz | |
| | CTCSS 199.5Hz | |
| | CTCSS 203.5Hz | |
| | CTCSS 206.5Hz | |
| | CTCSS 210.7Hz | |
| | CTCSS 218.1Hz | |
| | CTCSS 225.7Hz | |
| | CTCSS 229.1Hz | |
| | CTCSS 233.6Hz | |
| | CTCSS 241.8Hz | |
| | CTCSS 250.3Hz | |
| | CTCSS 254.1Hz | |
| | DCS 006 | |
| | DCS 007 | |

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DCS 664
DCS 703
DCS 712
DCS 723
DCS 731
DCS 732
DCS 734
DCS 743
DCS 754

| 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 | Department Key |
| C | CHANNEL | CHAN | Channel Key |
| Z | ZIP | Zip | Zip Key |
| T | SREV | (none) | Service Type Key |
| R | RANG | RANG | Range Key |