

REMOTE COMMAND

【 Remote Communication Format 】

BPS rate : 4800/9600/19200/38400/57600/115200 bps
Start/Stop bit : 1 bit, 1 bit
Data Length : 8 bit
Parity Check : None
Code : ASCII
Flow Control : None
Return Code : Carriage Return only

【 FORMAT OF THIS DOCUMENT 】

<COMMAND NAME>

Summary explanation of the function of the command

Controller → Radio

Command format

Radio → Controller

Response format

NOTE

1. Commands are required to wait a response from the scanner, then, next command is accepted.
2. All memory access commands are acceptable in only Program Mode.
Use PRG command to enter Program Mode, and EPG command to exit.
3. Error messages aren't described for each command, but the scanner returns error message to the controller as follows.
 - 1) Command format error / Value error : ERR[\r]
 - 2) The command is invalid at the time : NG[\r]
 - 3) Framing error : FER[\r]
 - 4) Overrun error : ORER[\r]
4. [\r] means "to hit the Enter key" or "to send the Return code".
5. Several commands or responses with long format are described like multi-line because of the page width but their formats are only single line, actually.
In set command, only "," parameters are not changed.
6. The set command is aborted if any format error is detected.
7. [INDEX] or [xxx_INDEX] is the index of internal memory chain.
Dynamic Memory Allocation Structure always uses it as a handle to access data and to trace forward/reverse or up/down index.
The range of the index is from 1 to maximum memory block (about 45000).
8. [FRQ], [BASEx] and [LIMIT_x] are frequency format.
It is showed by 8 digit number without decimal point.
The order of the digits is from 1 GHz digit to 100 Hz digit.
ex. 08510125 means 851.0125MHz
9. [TGID] shows TGID format. The formats depend on Trunked System Type.
See another Appendix to get further information.
10. [NAME] shows each custom name. If you set only a space character, the name will return to default name.
11. [LATITUDE] shows North or South Latitude.
The data shows "DDMMSSsL" at DMS Format.

DD	:	Degree	(00 - 90 : Double figure fixation)
MM	:	Minute	(00 - 59 : Double figure fixation)
SSss	:	Second	(SS : 00 - 59 : Double figure fixation)
			(ss : 00 - 99 : Double figure fixation)
L	:	Bearing	(N : North / S : South)

ex) "North Latitude 40°42'51.12" shows "40425112N".

12. [LONGITUDE] shows West or East Longitude.

The data shows “DDMMSSsL” at DMS Format.

DDD : Degree (000 - 180 : Triple figure fixation)
MM : Minute (00 - 59 : Double figure fixation)
SSss : Second (SS : 00 - 59 : Double figure fixation)
(ss : 00 - 99 : Double figure fixation)

L : Bearing (W : West / E : East)

ex) “West Longitude 74°00’23.05” shows “074002305W”.

Remote Command List

No.	Category	Command	Function	Program Mode Only
	Remote Control	GID	Get Current TalkGroup ID Status	
		KEY	Push KEY	
		POF	Power Off	
		QSH	Go to quick search hold mode	
		QSC	Set current frequency and get reception status	
		CSC	Go to Custom search and get reception status	
		PWR	Get RSSI Level	
		STS	Get Current Status	
		GLG	Get Reception Status	
		JPM	Jump Mode	
		JNT	Jump to Number Tag	
		MNU	Menu Mode	
	System Information	MDL	Get Model Info	
		VER	Get Firmware Version	
	Program Control Mode	PRG	Enter Program Mode	
		EPG	Exit Program Mode	
	System Settings	BLT	Get/Set Backlight	O
		BSV	Get/Set Battery Info	O
		COM	Get/Set COM port setting	O
		CLR	Clear All Memory	O
		KBP	Get/Set Key Beep and setting	O
		OMS	Get/Set Opening Message	O
		PRI	Get/Set Priority Mode	O
		AGV	Get/Set Auto Gain Control	O
		SCT	Get System Count	O
	Scan Settings	SIH	Get System Index Head	O
		SIT	Get System Index Tail	O
		QSL	Get/Set System/Site Quick Lockout	O
		QGL	Get/Set Group Quick Lockout	O
		CSY	Create System	O
		DSY	Delete System	O
		SIN	Get/Set System Info	O
		TRN	Get/Set Trunk Info	O
		AST	Append Site	O
		SIF	Get/Set Site Info	O
		MCP	Get/Set Motorola Custom Band Plan	O
		ABP	Get/Set APCO-P25 Band Plan	O

		TFQ	Get/Set Trunk Frequency Info	O
		AGC	Append Channel Group	O
		AGT	Append TalkGroup ID Group	O
		DGR	Delete Group / Site	O
		GIN	Get/Set Group Info	O
		ACC	Append Channel / Trunk Frequency	O
		ACT	Append TalkGroup ID	O
		DCH	Delete Channel	O
		CIN	Get/Set Channel Info	O
		TIN	Get/Set TalkGroup ID Info	O
		GLI	Get Lockout TalkGroup ID (for Rvw L/O ID)	O
		SLI	Get Search L/O TalkGroup ID	O
		ULI	Unlock TalkGroup ID (for Rvw L/O ID)	O
		LOI	Lockout ID (TalkGroup ID)	O
		REV	Get Rev Index	O
		FWD	Get Fwd Index	O
		RMB	Get Remains of Memory Block	O
		MEM	Get Memory Used	O
	Location Setting	LIH	Get Location Alert System Index Head	O
		LIT	Get Location Alert System Index Tail	O
		CLA	Create Location Alert System	O
		DLA	Delete Location Alert System	O
		LIN	Get/Set Location Alert System Info	O
	Search / Close Call Settings	SCO	Get/Set Search/Close Call Settings	O
		BBS	Get/Set Broadcast Screen Band Settings	O
		SHK	Get / Set Search Key Settings	O
		GLF	Get Global Lockout Freq	O
		ULF	Unlock Global L/O	O
		LOF	Lock Out Frequency	O
		CLC	Get/Set Close Call Settings	O
	Service Search Settings	SSP	Get/Set Service Search Settings	O
		CSG	Get/Set Custom Search Group	O
	Custom Search Settings	CBP	Get/Set C-Ch Only Custom search MOT Band Plan	O
		CSP	Get/Set Custom Search Settings	O
	Weather Settings	WXS	Get/Set Weather Settings	O
		SGP	Get/Set SAME Group Settings	O
	Tone-Out Setting	TON	Get/Set Tone-Out Settings	O
	LCD Contrast Settings	CNT	Get/Set LCD Contrast Settings	O
	Scanner Option Settings	SCN	Get/Set Scanner Option Settings	O
	Volume Level Settings	VOL	Get/Set Volume Level Settings	
	Squelch Level Settings	SQL	Get/Set Squelch Level Settings	
	APCO Data Settings	P25	Get/Set APCO Data Settings	
	Default Band Coverage Settings	DBC	Get/Set Default Band Coverage Settings	O
	GPS Settings	GDO	Get/Set GPS Format	O
	Band Scope Settings	BSP	Get/Set Band Scope Settings	O
		GIE	Get Global IF exchange Frequency	O
	IF exchange list Settings	CIE	Clear IF exchange Frequency	O
		RIE	Register IF exchange Frequency	O
	TEST	BAV	Get Battery Voltage	
		WIN	Get Window Voltage	

<COMMAND GID>

Get Current TGID Status

Controller → Radio

GID[\r]

Radio → Controller

GID,[SITE_TYPE],[TGID],[ID_SRCH_MODE],[NAME1],[NAME2],[NAME3] [\r]

[SITE_TYPE]	: Site Type
CNV	: CONVENTIONAL system site
MOT	: MOTOROLA system site
EDC	: EDACS Narrow / Wide system site
EDS	: EDACS SCAT system site
LTR	: LTR system site
P25S	: P25 STANDARD system site
P25F	: P25 One Frequency TRUNK system site

[TGID]	: TGID
[ID_SRCH_MODE]	: ID SCAN / ID SEARCH Mode 0:ID SCAN Mode / 1:ID SEARCH Mode)
[NAME1]	: SYSTEM / SITE NAME (Alpha Tag)
[NAME2]	: GROUP NAME (Alpha Tag)
[NAME3]	: TGID NAME (Alpha Tag)

FUNCTION

This command return TGID currently displayed on LCD.

If you get the TGID once, the scanner returns , , , , , [\r] until next reception.

NOTE :

This command return , , , , , [\r], when TGID is not displayed.

<COMMAND KEY>

Push KEY

Controller → Radio

KEY, [KEY_CODE], [KEY_MODE] [\r]

Radio → Controller

KEY, OK [\r]

[KEY_CODE]	M	:	MENU
	F	:	FUNC
	H	:	HOLD
	S	:	SCAN/SEARCH
	L	:	L/O
	1	:	1
	2	:	2
	3	:	3
	4	:	4
	5	:	5
	6	:	6
	7	:	7
	8	:	8
	9	:	9
	0	:	0
	.(dot)	:	./NO
	E	:	E/YES
	>	:	VFO RIGHT * Set "P" to KEY_MODE.
	<	:	VFO LEFT * Set "P" to KEY_MODE.
	^	:	VFO PUSH
	P	:	POWER/LIGHT/LOCK
[KEY_MODE]	P	:	Press
	L	:	Long Press
	H	:	Hold (Press and Hold until Release receive)
	R	:	Release (Cancel Hold state)

Ex.1) Press MENU KEY

→ KEY,M,P[\r]

← OK[\r]

Ex.2) Press F + SCAN KEY

→ KEY,F,P[\r] : Hold F KEY

← OK[\r]

→ KEY,S,P[\r] : Press SCAN KEY (F + SCAN KEY operation)

← OK[\r]

→ KEY,F,P[\r] : Release F KEY

→ OK[\r]

Ex.3) Press and Hold L/O KEY

→ KEY,L,L[\r]

← OK[\r]

The status of KEY HOLD does time-out in 10 seconds after having received the command of KEY HOLD when there is not communication. (For example, "KEY,F,H".)

<COMMAND POF>

Power OFF

Controller → Radio

POF[\r]

Radio → Controller

POF,OK[\r]

Turns off the scanner.

After this command, the scanner doesn't accept any command.

<COMMAND QSH>

Go to quick search hold mode

Controller → Radio

QSH,[FRQ],[RSV],[MOD],[ATT],[DLY],[RSV],[CODE_SRCH],[BSC],[REP],[RSV],
[AGC_ANALOG],[AGC_DIGITAL],[P25WAITING][\r]

Radio → Controller

QSH,OK[\r] or QSH,NG[\r]

[FRQ]	: Frequency (The right frequency)
[MOD]	: Modulation (AUTO/AM/FM/NFM/WFM/FMB)
[ATT]	: Attenuation (0:OFF / 1:ON)
[DLY]	: Delay Time (-10,-5,-2,0,1,2,5,10,30)
[CODE_SRCH]	: CTCSS/DCS/P25 NAC Search (0:OFF / 1: CTCSS/DCS / 2: P25 NAC Search)
[BSC]	: Broadcast Screen (16digit: #####.##) (each # is 0 or 1)
	0 means OFF
	1 means ON
	+--- Band 10
	:
	+--- Band 2
	+--- Band 1
	+----- Reserve
	+----- NOAA WX
	+----- VHF TV
	+----- UHF TV
	+----- FM
	+----- Pager
[REP]	: Repeater Find (0:OFF / 1:ON)
[AGC_ANALOG]	: AGC Setting for Analog Audio (0:OFF / 1:ON)
[AGC_DIGITAL]	: AGC Setting for Digital Audio (0:OFF / 1:ON)
[P25WAITING]	: P25 Waiting time (0,100,200,300, , 900,1000)
	0 : 0ms
	100 : 100ms
	200 : 200ms
	300 : 300ms
	400 : 400ms
	500 : 500ms
	600 : 600ms
	700 : 700ms
	800 : 800ms
	900 : 900ms
	1000 : 1000ms

[RSV] : Reserve Parameter * This is always only ",".

This command is invalid when the scanner is in Menu Mode, during Direct Entry operation, during Quick Save operation.

FUNCTION

UASD specifies arbitrary frequency and changes to Quick Search Hold (VFO) mode.

Parameter, such as STP, changes the contents of Srch/CloCall option.

Note:

Even when only [FRQ] parameter is set, this command will work.

<COMMAND QSC>

Set current frequency and get reception status

Controller → Radio

QSC,[FRQ],[RSV],[MOD],[ATT],[DLY],[RSV],[CODE_SRCH],[BSC],[REP],[RSV],
[AGC_ANALOG],[AGC_DIGITAL],[P25WAITING] [\r]

Radio → Controller

QSC,[RSSI],[FRQ],[SQL][\r] or QSC,NG[\r]

[FRQ]	:	Frequency (The right frequency)
[MOD]	:	Modulation (AUTO/AM/FM/NFM/WFM/FMB)
[ATT]	:	Attenuation (0:OFF / 1:ON)
[DLY]	:	Delay Time (-10,-5,-2,0,1,2,5,10,30)
[CODE_SRCH]	:	CTCSS/DCS Search (0:OFF / 1: CTCSS/DCS Search / 2: P25 NAC Search)
[BSC]	:	Broadcast Screen (16digit: #####.#)
	(each # is 0 or 1)	·+ Band10
	0 means OFF	:
	1 means ON	+---- Band 2
		+---- Band 1
		+----- Reserve
		+----- NOAA WX
		+----- VHF TV
		+----- UHF TV
		+----- FM
		+----- Pager
[REP]	:	Repeater Find (0:OFF / 1:ON)
[RSSI]	:	RSSI A/D Value (0-1023)
[SQL]	:	Squelch Status (0:CLOSE / 1:OPEN)
[AGC_ANALOG]	:	AGC Setting for Analog Audio(0:OFF / 1:ON)
[AGC_DIGITAL]	:	AGC Setting for Digital Audio (0:OFF / 1:ON)
[P25WAITING]	:	P25 Waiting time (0,100,200,300, , 900,1000)
	0	: 0ms
	100	: 100ms
	200	: 200ms
	300	: 300ms
	400	: 400ms
	500	: 500ms
	600	: 600ms
	700	: 700ms
	800	: 800ms
	900	: 900ms
	1000	: 1000ms
[RSV]	:	Reserve Parameter * This is always only ",".

This command is invalid when the scanner is in Menu Mode, during Direct Entry operation, during Quick Save operation.

FUNCTION

UASD specifies arbitrary frequency and changes to Quick Search Hold (VFO) mode.

Parameter, such as STP, changes the contents of Srch/CloCall option.

<COMMAND CSC>

Go to Custom search and get reception status

Controller → Radio

① CSC,ON[\r]

② CSC,OFF[\r]

Radio → Controller

① CSC,[RSSI],[FRQ],[SQL][\r]

CSC,[RSSI],[FRQ],[SQL][\r]

CSC,[RSSI],[FRQ],[SQL][\r]

....

....

....

CSC,[RSSI],[FRQ],[SQL][\r]

② CSC,OK[\r]

[RSSI] : RSSI A/D Value (0-1023)

[FRQ] : Current Frequency

[SQL] : Squelch Status (0:CLOSE / 1:OPEN)

This command outputs custom search status of each frequency sequentially.

Use CSC,OFF command to stop the output.

This command is invalid when the scanner is in Menu Mode, during Direct Entry operation, during Quick Save operation.

<COMMAND PWR>

*Get RSSI Level

Controller → Radio

PWR[\r]

Radio → Controller

PWR,[RSSI],[FRQ][\r]

[RSSI] : RSSI A/D Value (0-1023)

[FRQ] : Current Frequency

Returns current RSSI level and its frequency.

The order of the frequency digits is from 1 GHz digit to 100 Hz digit.

<COMMAND STS>

Get Current Status

Controller → Radio

STS[\r]

Radio → Controller

STS, [DSP_FORM], [L1_CHAR], [L1_MODE], [L2_CHAR], [L2_MODE], [L3_CHAR], [L3_MODE],
[L4_CHAR], [L4_MODE], ..., [L8_CHAR], [L8_MODE], [SQL], [MUT], [BAT], [WAT], [RSV],
[RSV], [SIG_LVL], [BK_COLOR], [BK_DIMMER] [\r]

[DSP_FORM] : Display Form (4 - 8digit:#####)
(each # is 0 or 1) 0 means Small Font / 1 means Large Font.
[L1_CHAR] : Line1 Characters 16char (fixed length)
[L1_MODE] : Line1 Display Mode 16char
[L2_CHAR] : Line2 Characters 16char (fixed length)
[L2_MODE] : Line2 Display Mode 16char
[L3_CHAR] : Line3 Characters 16char (fixed length)
[L3_MODE] : Line3 Display Mode 16char
[L4_CHAR] : Line4 Characters 16char (fixed length)
[L4_MODE] : Line4 Display Mode 16char
:
[L8_CHAR] : Line8 Characters 16char (fixed length)
[L8_MODE] : Line8 Display Mode 16char
[SQL] : Squelch Status (0:CLOSE / 1:OPEN)
[MUT] : Mute Status (0:OFF / 1:ON)
[RSV] : Reserve Parameter * This is always only "0".
[BAT] : Battery Low Status (0:No Alert / 1:Alert)
[WAT] : Weather Alert Status (0:No Alert / 1: Alert / \$\$\$: Alert
SAME CODE)
[SIG_LVL] : Signal Level (0 - 5)
[BK_COLOR] : Backlight Color
(OFF, BLUE, RED, MAGENTA, GREEN, CYAN, YELLOW, WHITE)
[BK_DIMMER] : Backlight Dimmer (0:OFF / 1:Low / 2:Middle / 3:High)

NOTE :) Display Mode for Line1 - Line8

(space) : NORMAL CHAR, *: REVERSE CHAR

_ (Under bar) : Underline

If all 16chars are normal, only ", " is sent.

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

Ex.1)

```
┌-----┐
└-- M E N U --┘   Squelch Status      : OPEN
┌Program System┐   Mute Status          : OFF
└Program Location┘ Battery Low Status   : No Alert
└Srch/CloCall Opt┘ Weather Alert Status : No Alert
└-----┘
```

→ STS[\r]

← 1111,

-- M E N U -- , ← [L1_CHAR]

_____, ← [L1_MODE]

Program System , ← [L2_CHAR]

***** , ← [L2_MODE]

Program Location, ← [L3_CHAR]

```

,                               ← [L3_MODE]
Srch/CloCall Opt,             ← [L4_CHAR]
,                               ← [L4_MODE]
1,0,0,0,,,0,GREEN,, [\r]
Returns current scanner status.

```

```

Ex.2)  [-----]
        | HOLD L/O          |
        | System 1          |      Squelch Status      : CLOSE
        | 851.0125MHz       |      Mute Status        : ON
        | P NFM ATT         |      Battery Low Status  : No Alert
        | S1: 5             |      Weather Alert Status : Alert
        | GRP 2             |      WX
        |-----|

→ STS[\r]
← 011000,
    HOLD L/O          , ← [L1_CHAR]
    ,                 ← [L1_MODE]
    SYSTEM 1          , ← [L2_CHAR]
    ,                 ← [L2_MODE]
    851.0125MHz       , ← [L3_CHAR]
    ,                 ← [L3_MODE]
    P NFM ATT         , ← [L4_CHAR]
    ,                 ← [L4_MODE]
    S1: 5             , ← [L5_CHAR]
    ,                 ← [L5_MODE]
    GRP 2             WX, ← [L6_CHAR]
    ,                 ← [L6_MODE]
    0,1,0,0,,,1,GREEN,, [\r]

```

Returns current scanner status.

```

<COMMAND GLG>
Get Reception Status
    Controller → Radio
GLG[\r]
    Radio → Controller
GLG, [FRQ/TGID], [MOD], [ATT], [CTCSS/DCS], [NAME1], [NAME2], [NAME3], [SQL], [MUT],
[SYS_TAG], [CHAN_TAG], [P25NAC] [\r]
GLG,,,,,,,,, [\r]

```

```

[FRQ/TGID]      : Frequency or TGID
[MOD]           : Modulation          (AM/FM/NFM/WFM/FMB)
[ATT]           : Attenuation          (0:OFF / 1:ON)
[CTCSS/DCS]     : CTCSS/DCS Status (0-231)
                *See CTCSS/DCS CODE LIST about the details of this code.
[NAME1]         : System, Site or Search Name
[NAME2]         : Group Name
[NAME3]         : Channel Name
[SQL]           : Squelch Status      (0:CLOSE / 1:OPEN)
[MUT]           : Mute Status          (0:OFF / 1:ON)

```

[SYS_TAG]	:	Current system number tag	(0-999/NONE)
[CHAN_TAG]	:	Current channel number tag	(0-999/NONE)
[P25NAC]	:	P25 NAC Status	(0-FFF: 0-FFF / NONE: Nac None)

Get reception status.

The Scanner returns GLG,,,,,,,,[\r] until it detects a frequency or a TGID.

<COMMAND JPM>

Jump Mode

Controller → Radio

JPM,[JUMP_MODE],[INDEX][\r]

Radio → Controller

JPM,OK[\r]

[JUMP_MODE]	:	SCN_MODE	Scan mode
		SVC_MODE	Service Search mode
		CTM_MODE	Custom Search mode
		CC_MODE	Close Call Only mode
		WX_MODE	WX SCAN mode
		FTO_MODE	Tone-Out mode
[INDEX]	:	SCN_MODE	Channel Index
		SVC_MODE	PublicSafety
			News
			HAM
			Marine
			Railroad
			Air
			CB
			FRS/GMRS/MURS
			Racing
			FM
			Special
			Military
		CTM_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

Note) Scanner returns NG in the state that the mode switch cannot be done.

<COMMAND MNU>

Menu Mode
Controller → Radio
MNU, [MENU_INDEX] [\r]
Radio → Controller
MNU, OK [\r]

[MENU_INDEX]	:	SVC_MENU	:	Service Search Select Menu
WX_MENU	:	WX_MENU	:	WX Select Menu
CCBAND_MENU	:	CCBAND_MENU	:	Close Call Band Filter Menu
SCR_OPT_MENU	:	SCR_OPT_MENU	:	Broadcast Screen Band Menu
GL_LIST_MENU	:	GL_LIST_MENU	:	Search Global Lockout List Review Menu
SETTING_MENU	:	SETTING_MENU	:	Setting Menu

Note) Scanner returns NG in the state that the mode switch cannot be done.

<COMMAND JNT>

Jump to Number Tag
Controller → Radio
JNT, [SYS_TAG], [CHAN_TAG] [\r]
Radio → Controller
JNT, OK [\r]

[SYS_TAG]	:	System Number Tag	(0-999/NONE)
[CHAN_TAG]	:	Channel Number Tag	(0-999/NONE)

When both [SYS_TAG] and [CHAN_TAG] are set as blank, scanner returns error.
When [SYS_TAG] is set as blank, [CHAN_TAG] is set with a number tag, scanner jump to the channel number tag in current system.
When [SYS_TAG] is set with a number tag, [CHAN_TAG] is set as blank, scanner jump to the first channel of the system number tag.

<COMMAND MDL>

Get Model Info
Controller → Radio
MDL [\r]
Radio → Controller
MDL, BCD396XT [\r]

Returns Model Information.

<COMMAND VER>

Get Firmware Version
Controller → Radio
VER [\r]
Radio → Controller
VER, Version 1.00.00 [\r]

Returns Firmware Version.

<COMMAND PRG>

Enter Program Mode
Controller → Radio
PRG[\r]
Radio → Controller
PRG,OK[\r]
PRG,NG[\r]

This command is invalid when the scanner is in Menu Mode, during Direct Entry operation, during Quick Save operation.

The scanner goes to Program Mode.

The scanner displays "Remote Mode" on first line and "Keypad Lock" on second line in Program Mode.

<COMMAND EPG>

Exit Program Mode
Controller → Radio
EPG[\r]
Radio → Controller
EPG,OK[\r]

The scanner exits from Program Mode.

Then the scanner goes to Scan Hold Mode.

<COMMAND BLT>

Get/Set Backlight
Controller → Radio
BLT[\r]
BLT, [EVNT], [COLOR], [DIMMER] [\r]
Radio → Controller
BLT, [EVNT], [COLOR], [DIMMER] [\r]
BLT,OK[\r]

[EVENT]

IF : INFINITE
10 : 10sec
30 : 30sec
KY : KEYPRESS
SQ : SQUELCH

[COLOR] : (BLUE,RED,MAGENTA,GREEN,CYAN,YELLOW,WHITE)

[DIMMER] : Backlight Dimmer (1:Low / 2:Middle / 3:High)

Get/Set Backlight Setting.

This command is only acceptable in Programming Mode.

```

<COMMAND BSV >
  Get/Set Battery Info
  Controller → Radio
BSV [\r]
BSV,[BAT_SAVE],[CHARGE_TIME][\r]

  Radio → Controller
BSV,[BAT_SAVE],[CHARGE_TIME][\r]
BSV,OK[\r]
    [BAT_SAVE]          Battery Save          (0:OFF / 1:ON)
    [CHARGE_TIME]       Battery Charge Time (1-16)

```

```

< COMMAND COM >
  Get/Set COM port setting
  Controller → Radio
COM,[/r]
COM,[BAUDRATE],[RSV][/r]

```

```

  Radio → Controller
COM,[BAUDRATE],[RSV][/r]
COM,OK[/r]

```

```

    [BAUDRATE]  :
                OFF   :OFF
                4800  :4800bps
                9600  :9600bps
                19200 :19200bps
                38400 :38400bps
                57600 :57600bps
                115200:115200b

```

Note:

When receive "COM,OK", next command should not be send in 2 second.
 Only PC Control (Baud Rate) does not become an initial-setting value.

```

<COMMAND CLR>
  Clear All Memory
  Controller → Radio
CLR[\r]
  Radio → Controller
CLR,OK[\r]

```

All the memories are set for initial setting.
 This command is only acceptable in Programming Mode.

Note :

It takes dozens of seconds.
 Only PC Control (Baud Rate) does not become an initial-setting value.

<COMMAND KBP>

Get/Set Key Beep and setting

Controller → Radio

KBP[\r]

KBP,[LEVEL],[LOCK],[SAFE][\r]

Radio → Controller

KBP,[LEVEL],[LOCK],[SAFE][\r]

KBP,OK[\r]

[LEVEL]	: Beep Level	(0:Auto / 1-15 / 99:OFF)
[LOCK]	: Key Lock status	(0:OFF / 1:ON)
[SAFE]	: Key Safe status	(0:OFF / 1:ON)

Get/Set Key Beep Setting.

This command is only acceptable in Programming Mode.

<COMMAND OMS>

Get/Set Opening Message

Controller → Radio

OMS[\r]

OMS,[L1_CHAR],[L2_CHAR],[L3_CHAR],[L4_CHAR][\r]

Radio → Controller

OMS,[L1_CHAR],[L2_CHAR],[L3_CHAR],[L4_CHAR][\r]

OMS,OK[\r]

[L1_CHAR]	: Line1 Characters	(max.16char)
[L2_CHAR]	: Line2 Characters	(max.16char)
[L3_CHAR]	: Line3 Characters	(max.16char)
[L4_CHAR]	: Line4 Characters	(max.16char)

If only space code is set in character area, the message returns default message.

This command is only acceptable in Programming Mode.

<COMMAND PRI>

Get/Set Priority Mode

Controller → Radio

PRI[\r] : Get Priority Mode Setting

PRI,[PRI_MODE],[MAX_CHAN],[INTERVAL][\r]

Radio → Controller

PRI,[PRI_MODE],[MAX_CHAN],[INTERVAL][\r]

PRI,OK[\r]

[PRI_MODE]	: Priority Setting	(0:OFF / 1:ON / 2:PLUS ON)
[MAX_CHAN]	: Priority Scan max channels at once	(1-100)
[INTERVAL]	: Priority Scan Interval time	(1-10)

Get/Set Priority Mode.

This command is only acceptable in Programming Mode.

<COMMAND AGV>

Get/Set Auto Gain Control

Controller → Radio

AGV[\r]

AGV,[RSV],[RSV],[A_RES],[A_REF],[A_GAIN],[D_RES],[A_GAIN] [\r]

Radio → Controller

AGV,[RSV],[RSV],[A_RES],[A_REF],[A_GAIN],[D_RES],[A_GAIN] [\r]

AGV,OK[\r]

[A_RES] : Analog Response Time (-4 - +6)

[A_REF] : Analog Reference Gain (-5 - +5)

[A_GAIN] : Analog Gain Range (0 - 15)

[D_RES] : Digital Response Time (-8 - +8)

[D_GAIN] : Digital Reference Gain(-5 - +5)

[RSV] : Reserve Parameter * This is always only ",".

Get/Set AGC Setting.

This command is only acceptable in Programming Mode.

<COMMAND SCT>

Get System Count

Controller → Radio

SCT[\r]

Radio → Controller

SCT,###[\r] : ### (0 - 500)

Returns the number of stored System.

This command is only acceptable in Programming Mode.

<COMMAND SIH>

Get System Index Head

Controller → Radio

SIH[\r]

Radio → Controller

SIH,[SYS_INDEX] [\r]

Returns the first index of stored system list.

This command is only acceptable in Programming Mode.

<COMMAND SIT>

Get System Index Tail

Controller → Radio

SIT[\r]

Radio → Controller

SIT,[SYS_INDEX] [\r]

Returns the last index of stored system list.

This command is only acceptable in Programming Mode.

```

<COMMAND QSL>
Get/Set System/Site Quick Lockout
Controller → Radio
QSL[\r]
QSL,[PAGE0],[PAGE1],[PAGE2],[PAGE3],[PAGE4],[PAGE5],[PAGE6],[PAGE7],[PAGE8],
[PAGE9][\r]
Radio → Controller
QSL,[PAGE0],[PAGE1],[PAGE2],[PAGE3],[PAGE4],[PAGE5],[PAGE6],[PAGE7],[PAGE8],
[PAGE9][\r]
QSL,OK[\r]

```

```

[PAGE0] - [PAGE9] : ##### (each # is 0 - 2)
                    0 : Not assigned (Displayed as "-" on the scanner.)
                    1 : On           (Displayed as each number on the scanner.)
                    2 : Off          (Displayed as "*" on the scanner.)
                    The Order of Quick Key is as same as LCD Icon.
[PAGE0]             : Quick Key 1 - 9, 0
[PAGE1]             : Quick Key11 - 19,10
[PAGE2]             : Quick Key21 - 29,20
[PAGE3]             : Quick Key31 - 39,30
[PAGE4]             : Quick Key41 - 49,40
[PAGE5]             : Quick Key51 - 59,50
[PAGE6]             : Quick Key61 - 69,60
[PAGE7]             : Quick Key71 - 79,70
[PAGE8]             : Quick Key81 - 89,80
[PAGE9]             : Quick Key91 - 99,90

```

This command is only acceptable in Programming Mode.
It cannot turn on/off the Quick Key that has no System / Site.

```

<COMMAND QGL>
Get/Set Group Quick Lockout
Controller → Radio
QGL,[SYS_INDEX][\r]
QGL,[SYS_INDEX],#####[\r]
Radio → Controller
QGL,#####[\r]
QGL,OK[\r]

```

```

##### (each # is 0 - 2) : Group Quick Key status of [SYS_INDEX].
                    0 : Not assigned (Displayed as "-" on the scanner.)
                    1 : On           (Displayed as each number on the scanner.)
                    2 : Off          (Displayed as "*" on the scanner.)

```

The Order of Quick Key is as same as LCD Icon (1 - 9, 0).
This command is only acceptable in Programming Mode.
It cannot turn on/off the Quick Key that has no Group.

```

<COMMAND CSY>
Create System
Controller → Radio
CSY,[SYS_TYPE],[PROTECT][\r]
Radio → Controller
CSY,[SYS_INDEX][\r]

```

```

[SYS_TYPE] : System Type
    CNV      : CONVENTIONAL
    MOT      : MOTOROLA TYPE
    EDC      : EDACS Narrow / Wide
    EDS      : EDACS SCAT
    LTR      : LTR
    P25S     : P25 STANDARD
    P25F     : P25 One Frequency TRUNK

```

```

[SYS_INDEX] : The Index of Created System
[PROTECT]   : Protect bit Status          (0:OFF / 1:ON)

```

Creates a system and return created system index.
The index is a handle to get/set system information.
Returns -1 if the scanner failed to create because of no resource.
This command is only acceptable in Programming Mode.

```

<COMMAND DSY>
Delete System
Controller → Radio
DSY,[SYS_INDEX][\r]
Radio → Controller
DSY,OK[\r]

```

```

[SYS_INDEX] : System Index

```

This command deletes a System.
This command is only acceptable in Programming Mode.

```

<COMMAND SIN>
Get/Set System Info
Controller → Radio
SIN,[INDEX][\r]
SIN,[INDEX],[NAME],[QUICK_KEY],[HLD],[LOUT],[DLY],[RSV],[RSV],[RSV],[RSV],
[RSV],[START_KEY],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[NUMBER_TAG],
[AGC_ANALOG],[AGC_DIGITAL],[P25WAITING][\r]
Radio → Controller
SIN,[SYS_TYPE],[NAME],[QUICK_KEY],[HLD],[LOUT],[DLY],[RSV],[RSV],[RSV],[RSV],
[RSV],[REV_INDEX],[FWD_INDEX],[CHN_GRP_HEAD],[CHN_GRP_TAIL],[SEQ_NO],
[START_KEY],[RSV],[RSV],[RSV],[RSV],[RSV],[NUMBER_TAG],[AGC_ANALOG],
[AGC_DIGITAL],[P25WAITING],[PROTECT],[RSV][\r]
SIN,OK[\r]

```

[INDEX]	: System Index
[SYS_TYPE]	: System Type
CNV	: CONVENTIONAL
MOT	: MOTOROLA TYPE
EDC	: EDACS Narrow / Wide
EDS	: EDACS SCAT
LTR	: LTR
P25S	: P25 STANDARD
P25F	: P25 One Frequency TRUNK
[NAME]	: Name (max.16char)
[QUICK_KEY]	: Quick Key (0-99/(dot) means none)
[HLD]	: System Hold Time (0-255)
[LOUT]	: Lockout (0:Unlocked / 1:Lockout)
[DLY]	: Delay Time (-10,-5,-2,0,1,2,5,10,30)
[REV_INDEX]	: Reverse System Index of the Scan Setting
[FWD_INDEX]	: Forward System Index of the Scan Setting
[CHN_GRP_HEAD]	: Channel Group Index Head of the conventional system or Site Index Head of the Trunked System
[CHN_GRP_TAIL]	: Channel Group Index Tail of the conventional system or Site Index Tail of the Trunked System
[SEQ_NO]	: System Sequence Number (1 - 500)
[START_KEY]	: Startup Configuration Key (0-9/(dot) means none)
[NUMBER_TAG]	: Number tag (0-999 / NONE)
[AGC_ANALOG]	: AGC Setting for Analog Audio (0:OFF / 1:ON)
[AGC_DIGITAL]	: AGC Setting for Digital Audio (0:OFF / 1:ON)
[P25WAITING]	: P25 Waiting time (0,100,200, , 900,1000)
[PROTECT]	: Protect bit Status (0:OFF / 1:ON)
[RSV]	: Reserve Parameter * This is always only ",."

Get/Set System Information.

The scanner returns only "," to punctuate for parameters which are not appropriate the system type.

In set command, the scanner neglects the parameters that are not appropriate the system type.

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

This command is only acceptable in Programming Mode.

When the system protect bit is ON, except [SYS_TYPE], [NAME], [REV_INDEX], [FWD_INDEX], [CHN_GRP_HEAD], [CHN_GRP_TAIL], other parameters will be send as a reserve parameter in the Radio -> Controller command.

```

<COMMAND TRN>
Get/Set Trunk Info
Controller → Radio
TRN,[INDEX][\r]
TRN,[INDEX],[ID_SEARCH],[S_BIT],[END_CODE],[AFS],[RSV],[RSV],[EMG],[EMGL],
[FMAP],[CTM_FMAP],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],
,
[MOT_ID],[EMG_COLOR],[EMG_PATTERN],[P25NAC],[PRI_ID_SCAN][\r]
Radio → Controller
TRN,[ID_SEARCH],[S_BIT],[END_CODE],[AFS],[RSV],[RSV],[EMG],[EMGL],[FMAP],
[CTM_FMAP],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],
[TGID_GRP_HEAD],[TGID_GRP_TAIL],[ID_LOUT_GRP_HEAD],[ID_LOUT_GRP_TAIL],
[MOT_ID],[EMG_COLOR],[EMG_PATTERN],[P25NAC],[PRI_ID_SCAN][\r]
TRN,OK[\r]

```

```

[INDEX]      : System Index
[ID_SEARCH]   : ID Search/Scan  (0:ID Scan mode / 1: Search Mode)
[S_BIT]      : Motorola Status Bit  (0:Ignore, 1:Yes)
[END_CODE]   : Motorola End Code(0:Ignore,1:Analog,2:Analog and Digital)
[AFS]        : EDACS ID Format      (0:Decimal / 1:AFS)
[EMG]        : Emergency Alert      (0:Ignore / 1-9:Alert)
[EMGL]       : Emergency Alert Level (0:OFF / 1 - 15)
[FMAP]       : Fleet Map           (0-16, 0-15:Preset, 16:Custom)
[CTM_FMAP]   : Custom Fleet Map Setting (##### : # is 0-E)
               # means Size Code of each BLOCK (from 0 to 7)
               0 : Size Code 0    5 : Size Code 5    A : Size Code 10
               1 : Size Code 1    6 : Size Code 6    B : Size Code 11
               2 : Size Code 2    7 : Size Code 7    C : Size Code 12
               3 : Size Code 3    8 : Size Code 8    D : Size Code 13
               4 : Size Code 4    9 : Size Code 9    E : Size Code 14

[TGID_GRP_HEAD] : TGID Index Head of the System
[TGID_GRP_TAIL] : TGID Index Tail of the System
[ID_LOUT_GRP_HEAD]: L/O TGID Group Index Head of the System
[ID_LOUT_GRP_TAIL]: L/O TGID Group Index Tail of the System
[MOT_ID]       : Motorola/P25 ID Format      (0:Decimal / 1:HEX )
[EMG_COLOR]    : Emergency Alert Light color
               (OFF,BLUE,RED,MAGENTA,GREEN,CYAN,YELLOW,WHITE)
[EMG_PATTERN]  : Emergency Alert Light Pattern(0:ON/1:Slow /2:Fast)
[P25NAC]       : P25 NAC Status             (0-FFF:0-FFF/SRCH:Nac Search)
[PRI_ID_SCAN]  : Priority ID Scan            ( 0:OFF / 1: ON)
[RSV]         : Reserve Parameter          * This is always only ",".

```

Get/Sets Trunked System Information.

The scanner returns only "," to punctuate for parameters which are not appropriate the system type.

In set command, the scanner neglects the parameters that are not appropriate the system.

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

When the system protect bit is ON, except [TGID_GRP_HEAD], [TGID_GRP_TAIL], [ID_LOUT_GRP_HEAD], [ID_LOUT_GRP_TAIL], other parameters will be send as a reserve parameter in the Radio -> Controller command.

This command is only acceptable in Programming Mode.

```

<COMMAND AST>
Append Site
Controller → Radio
AST,[SYS_INDEX],[RSV][\r]
Radio → Controller
AST,[SITE_INDEX][\r]

```

```

[SYS_INDEX]          : System Index
[SITE_INDEX]         : Appended Site Index

```

Append Site to the system.
Returns "-1" if the scanner failed to create because of no resource.
This command is only acceptable in Programming Mode.

```

<COMMAND SIF>
Get/Set Site Info
Controller → Radio
SIF,[INDEX][\r]
SIF,[INDEX],[NAME],[QUICK_KEY],[HLD],[LOUT],[MOD],[ATT],[RSV],[RSV],[RSV],
[START_KEY],[LATITUDE],[LONGITUDE],[RANGE],[GPS_ENABLE],[RSV],[MOT_TYPE],
[EDACS_TYPE],[P25WAITING],[RSV][\r]
Radio → Controller
SIF,[RSV],[NAME],[QUICK_KEY],[HLD],[LOUT],[MOD],[ATT],[C-CH],[RSV],[RSV],
[REV_INDEX],[FWD_INDEX],[SYS_INDEX],[CHN_HEAD],[CHN_TAIL],[SEQ_NO],
[START_KEY],[LATITUDE],[LONGITUDE],[RANGE],[GPS_ENABLE],[RSV],[MOT_TYPE],
[EDACS_TYPE],[P25WAITING],[RSV][\r]
SIF,OK[\r]

[INDEX]          : Site Index
[NAME]           : Name (max.16char)
[QUICK_KEY]      : Quick Key (0-99/(dot) means none)
[HLD]            : Site Hold Time (0-255)
[LOUT]           : Lockout (0:Unlocked / 1:Lockout)
[MOD]            : Modulation (AUTO/FM/NFM)
[ATT]            : Attenuation (0:OFF/1:ON)
[C-CH]           : This parameter is always "1"
[REV_INDEX]      : Reverse Site Index of the Scan Setting
[FWD_INDEX]      : Forward Site Index of the Scan Setting
[SYS_INDEX]      : System Index
[CHN_HEAD]       : Channel Index Head of the Group List
[CHN_TAIL]       : Channel Index Tail of the Group List
[SEQ_NO]         : Site Sequence Number (1-256)
[START_KEY]      : Startup Configuration (0-9/(dot) means none)
[LATITUDE]       : North or South Latitude
[LONGITUDE]      : West or East Longitude
[RANGE]          : Range (1-250 : 1= 0.5 mile or km)
[GPS_ENABLE]     : GPS Location detection (0:OFF/1:ON)
[MOT_TYPE]       : Band type for MOT/EDACS(STD/ SPL/CUSTOM)
[EDACS_TYPE]     : EDACS (WIDE/NARROW)
[P25WAITING]     : P25 Waiting time(0,100,200,300, .... , 900,1000)
[RSV]            : Reserve Parameter * This is always only ", ".

```

Get/Set Site Information.

The scanner returns only "," to punctuate for parameters which are not appropriate the site type.

In set command, the scanner neglects the parameters that are not appropriate the system type.

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

When the system protect bit is ON, except [REV_INDEX], [FWD_INDEX], [SYS_INDEX], [CHN_HEAD], [CHN_TAIL], other parameters will be send as a reserve parameter in the Radio -> Controller command.

This command is only acceptable in Programming Mode.

```
<COMMAND MCP>
Get/Set Motorola Custom Band Plan
Controller → Radio
MCP,[INDEX][\r]
MCP,[INDEX],[LOWER1],[UPPER1],[STEP1],[OFFSET1],[LOWER2],[UPPER2],[STEP2],
[OFFSET2],[LOWER3],[UPPER3],[STEP3],[OFFSET3],[LOWER4],[UPPER4],[STEP4],
[OFFSET4],[LOWER5],[UPPER5],[STEP5],[OFFSET5],[LOWER6],[UPPER6],[STEP6],
[OFFSET6][\r],
Radio → Controller
MCP,[LOWER1],[UPPER1],[STEP1],[OFFSET1],[LOWER2],[UPPER2],[STEP2],
[OFFSET2],[LOWER3],[UPPER3],[STEP3],[OFFSET3],[LOWER4],[UPPER4],[STEP4],
[OFFSET4],[LOWER5],[UPPER5],[STEP5],[OFFSET5],[LOWER6],[UPPER6],[STEP6],
[OFFSET6][\r],
MCP, OK[\r]
```

[INDEX]	: Site Index		
[LOWER n]	: Lower Frequency n		
[UPPER n]	: Upper Frequency n		
[STEP n]	: Step n		
	"500": 5.0k	"625": 6.25k	"1000": 10.0k
	"1250": 12.5k	"1500": 15.0k	"1875": 18.75k
	"2000": 20.0k	"2500": 25.0k	"3000": 30.0k
	"3125": 31.25k	"3500": 35.0k	"3750": 37.5k
	"4000": 40.0k	"4375": 43.75k	"4500": 45.0k
	"5000": 50.0k	"5500": 55.0k	"5625": 56.25k
	"6000": 60.0k	"6250": 62.5k	"6500": 65.0k
	"6875": 68.75k	"7000": 70.0k	"7500": 75.0k
	"8000": 80.0k	"8125": 81.25k	"8500": 85.0k
	"8750": 87.5k	"9000": 90.0k	"9375": 93.75k
	"9500": 95.0k	"10000": 100.0k	
[OFFSETn]	: Offset n (-1023 to 1023)		

Get/Sets Band Plan Setting for MOT 800 custom/VHF/UHF site.

In set command, if only "," parameters are send the Band Plan setting of the site will not changed.

The set command is aborted if any format error is detected.

When the system protect bit is ON, all the parameters will be send as a reserve parameter in the Radio -> Controller command.

Before using this command, user should set Band Plan type as "Custom" first by using SIF command.

This command is only acceptable in Programming Mode.

```

<COMMAND ABP>
  Get/Set APCO-P25 Band Plan
  Controller → Radio
    ① ABP,[INDEX][\r]
    ②
ABP,[INDEX],[BASE_FREQ_0],[SPACING_FREQ_0],[BASE_FREQ_1],[SPACING_FREQ_1], .
. .
[BASE_FREQ_E],[SPACING_FREQ_E],[BASE_FREQ_F],[SPACING_FREQ_F][\r]
  Radio → Controller
    ① ABP,[BASE_FREQ_0],[SPACING_FREQ_0],[BASE_FREQ_1],[SPACING_FREQ_1], . .
.
[BASE_FREQ_E],[SPACING_FREQ_E],[BASE_FREQ_F],[SPACING_FREQ_F][\r]
    ② ABP,OK[\r]

```

```

[INDEX]          : Site Index
[BASE_FREQ_n]    : Base frequency (MHz) (25.0000MHz to 1300.0000MHz,
                  5.0Hz step)
                  Base_FREQ_n = (base frequency * 10^6) / 5
                  (Hexadecimal number)
[SPACING_FREQ_n] : Spacing frequency(kHz) (0.125kHz to 128.0kHz,
                  0.125kHz step)
                  SPACING_FREQ_n = (spacing frequency *10^3)/125
                  (Hexadecimal number)
                  *n : Base Plan number
EX.) Base frequency = 851.00625MHz, Spacing frequency = 6.25kHz
     [BASE_FREQ_n] = (851.00625*10^6)/5 = A2510A2(H)
     [SPACING_FREQ_n] = (6.25*10^3)/125= 32      (H)

```

Band Plan that has no data returns "0".

When the system protect bit is ON, all the parameters will be send as a reserve parameter in the Radio -> Controller command.

This command is only acceptable in Programming Mode.

<COMMAND TFQ>

Get/Set Trunk Frequency Info

Controller → Radio

TFQ,[CHN_INDEX][\r]

TFQ,[CHN_INDEX],[FRQ],[LCN],[LOUT],[RSV],[NUMBER_TAG],[VOL_OFFSET],[RSV]
[\r]

Radio → Controller

TFQ,[FRQ],[LCN],[LOUT],[REV_INDEX],[FWD_INDEX],[SYS_INDEX],[GRP_INDEX],[RSV],
[NUMBER_TAG],[VOL_OFFSET],[RSV][\r]

TFQ,OK[\r]

[CHN_INDEX]	:	Trunk Frequency Index
[FRQ]	:	Trunk Frequency
[LCN]	:	LCN (EDACS WIDE/NARROW system: 0 to 20 LTR system: 0 to 30)
[LOUT]	:	Lockout (0:Unlocked / 1:Lockout)
[REV_INDEX]	:	Reverse Frequency Index of the Site
[FWD_INDEX]	:	Forward Frequency Index of the Site
[SYS_INDEX]	:	System Index of the Frequency
[GRP_INDEX]	:	Index of the Site
[NUMBER_TAG]	:	Number tag (0-999 / NONE)
[VOL_OFFSET]	:	Volume Offset (-3 - +3)

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

This command is only acceptable in Programming Mode.

For Motorola or EDACS SCAT System, [LCN] is ignored.

When the system protect bit is ON, except [REV_INDEX], [FWD_INDEX], [SYS_INDEX], [GRP_INDEX], other parameters will be send as a reserve parameter in the Radio -> Controller command.

[NUMBER_TAG] and [VOL_OFFSET] are just used for SCAT system.

<COMMAND AGC>

Append Channel Group

Controller → Radio

AGC,[SYS_INDEX][\r]

Radio → Controller

AGC,[GRP_INDEX][\r]

[SYS_INDEX]	:	System Index
[GRP_INDEX]	:	appended Channel Group Index

Append Channel Group to the system.

Returns "-1" if the scanner failed to create because of no resource.

This command is only acceptable in Programming Mode.

```

<COMMAND AGT>
Append TGID Group
Controller → Radio
AGT,[SYS_INDEX][\r]
Radio → Controller
AGT,[GRP_INDEX][\r]

```

```

[SYS_INDEX]      : System Index
[GRP_INDEX] : appended TGID Group Index

```

Append TGID Group to the system.
Returns "-1" if the scanner failed to create because of no resource.
This command is only acceptable in Programming Mode.

```

<COMMAND DGR>
Delete Group / Site
Controller → Radio
DGR,[INDEX][\r]
Radio → Controller
DGR,OK[\r]

```

```

[INDEX]      : Group / Site Index

```

This command deletes a Channel Group, TGID Group or Site.
This command is only acceptable in Programming Mode.

```

<COMMAND GIN>
Get/Set Group Info
Controller → Radio
GIN,[GRP_INDEX][\r]
GIN,[GRP_INDEX],[NAME],[QUICK_KEY],[LOUT],[LATITUDE],[LONGITUDE],[RANGE],
[GPS_ENABLE][\r]
Radio → Controller
GIN,[GRP_TYPE],[NAME],[QUICK_KEY],[LOUT],[REV_INDEX],[FWD_INDEX],[SYS_INDEX],
[CHN_HEAD],[CHN_TAIL],[SEQ_NO],[LATITUDE],[LONGITUDE],[RANGE],[GPS_ENABLE]
[\r]
GIN,OK[\r]

```

For Group Information

```

[GRP_INDEX]      : Group Index
[GRP_TYPE]       : Group Type      (C: Channel Group / T: TGID Group)
[NAME]           : Name            (max.16char)
[QUICK_KEY]      : Quick Key (1-9,0: means 10, .(dot): means none)
[LOUT]           : Lockout         (0:Unlocked / 1:Lockout)
[REV_INDEX]      : Reverse Group Index of the System
[FWD_INDEX]      : Forward Group Index of the System
[SYS_INDEX]      : System Index
[CHN_HEAD]       : Channel Index Head of the Group List
[CHN_TAIL]       : Channel Index Tail of the Group List
[SEQ_NO]         : Group Sequence Number of the System
[LATITUDE]       : North or South Latitude
[LONGITUDE]      : West or East Longitude
[RANGE]          : Range           (1-250 : 1= 0.5 mile or km)
[GPS_ENABLE]     : GPS Location detection (0:OFF/1:ON)

```

Get/Set Group Information.

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

When the system protect bit is ON, except [NAME], [REV_INDEX], [FWD_INDEX], [SYS_INDEX], [CHN_HEAD], [CHN_TAIL], other parameters will be send as a reserve parameter in the Radio -> Controller command.

This command is only acceptable in Programming Mode.

```
<COMMAND ACC>
Append Channel / Trunk Frequency
Controller → Radio
ACC,[GRP_INDEX][\r]
Radio → Controller
ACC,[CHN_INDEX][\r]

[GRP_INDEX] : Channel Group Index
[CHN_INDEX] : Appended Channel Index
- or -
[GRP_INDEX] : Site Index
[CHN_INDEX] : Appended Trunk Frequency Index
```

Append Channel to the group. Or, append Trunk Frequency to the Site.

Returns "-1" if the scanner failed to create because of no resource.

This command is only acceptable in Programming Mode.

```
<COMMAND ACT>
Append TGID
Controller → Radio
ACT,[GRP_INDEX][\r]
Radio → Controller
ACT,[INDEX][\r]

[GRP_INDEX] : TGID Group Index
[TGID_INDEX] : appended TGID Index
```

Append TGID to the group.

Returns "-1" if the scanner failed to create because of no resource.

This command is only acceptable in Programming Mode.

```
<COMMAND DCH>
Delete Channel
Controller → Radio
DCH,[INDEX][\r]
Radio → Controller
DCH,OK[\r]

[INDEX] : Channel Index, TGID Index or Trunked Frequency Index
```

This command deletes a Channel and TGID.

This command is also valid for deleting a Trunk Frequency.

This command is only acceptable in Programming Mode.

```

<COMMAND CIN>
Get/Set Channel Info
Controller → Radio
CIN,[INDEX] [\r]
CIN,[INDEX],[NAME],[FRQ],[MOD],[CTCSS/DCS],[TLOCK],[LOUT],[PRI],[ATT],[ALT],
[ALTL],[RSV],[AUDIO_TYPE],[P25NAC],[NUMBER_TAG],[ALT_COLOR],[ALT_PATTERN],
[VOL_OFFSET] [\r]
Radio → Controller
CIN,[NAME],[FRQ],[MOD],[CTCSS/DCS],[TLOCK],[LOUT],[PRI],[ATT],[ALT],[ALTL],
[REV_INDEX],[FWD_INDEX],[SYS_INDEX],[GRP_INDEX],[RSV],[AUDIO_TYPE],[P25NAC],
[NUMBER_TAG],[ALT_COLOR],[ALT_PATTERN],[VOL_OFFSET] [\r]
CIN,OK[\r]

```

[INDEX]	: Channel Index
[NAME]	: Name (max.16char)
[FRQ]	: Channel Frequency
[MOD]	: Modulation (AUTO/AM/FM/NFM/WFM/FMB)
[ATT]	: Attenuation (0:OFF / 1:ON)
[CTCSS/DCS]	: CTCSS/DCS Status (0-231)
	*See <u>CTCSS/DCS</u> CODE LIST about the details of this code.
[TLOCK]	: CTCSS/DCS Tone Lockout(0:OFF / 1:ON)
[LOUT]	: Lockout (0:Unlocked / 1:Lockout)
[PRI]	: Priority (0:OFF / 1:ON)
[ALT]	: Alert Tone (0:OFF / 1-9:Tone No)
[ALTL]	: Alert Tone Level (0:AUTO/ 1-15)
[REV_INDEX]	: Reverse Channel Index of the Chan0nel Group
[FWD_INDEX]	: Forward Channel Index of the Channel Group
[SYS_INDEX]	: System Index of the Channel
[GRP_INDEX]	: Group Index of the Channel
[AUDIO_TYPE]	: Audio Type (0:All/1:Analog Only/2:Digital Only)
[P25NAC]	: P25 NAC Status (0-FFF: 0-FFF / SRCH: Nac Search)
[NUMBER_TAG]	: Number tag (0-999 / NONE)
[ALT_COLOR]	: Alert Light color (OFF,BLUE,RED,MAGENTA,GREEN,CYAN,YELLOW,WHITE)
[ALT_PATTERN]	: Alert Light Pattern(0:ON / 1:SLow / 2:Fast)
[VOL_OFFSET]	: Volume Offset (-3 - +3)

Get/Set Channel Information.

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

This command is only acceptable in Programming Mode.

When the system protect bit is ON, except [REV_INDEX], [FWD_INDEX], [SYS_INDEX], [GRP_INDEX], other parameters will be send as a reserve parameter in the Radio -> Controller command.

```

<COMMAND TIN>
Get/Set TGID Info
Controller → Radio
TIN,[INDEX][\r]
TIN,[INDEX],[NAME],[TGID],[LOUT],[PRI],[ALT],[ALTL],[RSV],[AUDIO_TYPE],
[NUMBER_TAG],[ALT_COLOR],[ALT_PATTERN],[VOL_OFFSET][\r]
Radio → Controller
TIN,[NAME],[TGID],[LOUT],[PRI],[ALT],[ALTL],[REV_INDEX],[FWD_INDEX],
[SYS_INDEX],[GRP_INDEX],[RSV],[AUDIO_TYPE],[NUMBER_TAG],[ALT_COLOR],
[ALT_PATTERN],[VOL_OFFSET][\r]
TIN,OK[\r]

[INDEX]           : TGID Index
[NAME]            : Name (max.16char)
[TGID]            : TGID
[LOUT]            : Lockout (0:Unlocked / 1:Lockout)
[PRI]             : Priority (0:OFF / 1:ON)
[ALT]             : Alert Tone (0:OFF / 1-9:Tone No)
[ALTL]            : Alert Tone Level (0:AUTO/ 1-15)
[REV_INDEX]       : Reverse TGID Index of the Group
[FWD_INDEX]       : Forward TGID Index of the Group
[SYS_INDEX]       : System Index of the TGID
[GRP_INDEX]       : Group Index of the TGID
[AUDIO_TYPE]      : Audio Type (0:All/1:Analog Only/2: Digital Only)
[NUMBER_TAG]      : Number tag (0-999 / NONE)
[ALT_COLOR]       : Alert Light color
                  (OFF,BLUE,RED,MAGENTA,GREEN,CYAN,YELLOW,WHITE)
[ALT_PATTERN]     : Alert Light Pattern(0:ON / 1:Slow / 2:Fast)
[VOL_OFFSET]      : Volume Offset (-3 - +3)

```

Get/Set TGID Information.

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

This command is only acceptable in Programming Mode.

When the system protect bit is ON, except [REV_INDEX], [FWD_INDEX], [SYS_INDEX], [GRP_INDEX], other parameters will be send as a reserve parameter in the Radio -> Controller command.

```

<COMMAND GLI>
Get Lockout TGID (for Rvw L/O ID)
Controller → Radio
GLI,[SYS_INDEX][\r]
Radio → Controller
GLI,[TGID][\r]
GLI,-1[\r]           : No more lockout TGID

```

This command is used to get L/O TGID list of a system.

You should call this command again and again to get all L/O TGID until the scanner returns "-1".

"-1" means that no more L/O TGID exists.

When the system protect bit is ON, only "-1" will be send in the Radio -> Controller command.

This command is only acceptable in Programming Mode.

```

<COMMAND SLI>
Get Search L/O TGID
Controller → Radio
SLI,[SYS_INDEX][\r]
Radio → Controller
SLI,[TGID][\r]
SLI,-1[\r]          : No more lockout TGID

```

This command is used to get Search L/O TGID list of the system.
Search L/O TGID is the L/O TGID which doesn't belong to any group in the system as a TGID.
Compared with GLI command, this command doesn't return any L/O TGID which is belong to one of group in the system.
You should call this command again and again to get all L/O TGID until the scanner returns "-1".
"-1" means that no more L/O TGID exists.
This command is only acceptable in Programming Mode.

```

<COMMAND ULI>
Unlock TGID (for Rvw L/O ID)
Controller → Radio
ULI,[SYS_INDEX],[TGID][\r]
Radio → Controller
ULI,OK[\r]

```

This command unlocks a L/O TGID in a system.
The TGID is deleted from L/O list.
This command is only acceptable in Programming Mode.

```

<COMMAND LOI>
Lockout ID (TGID)
Controller → Radio
LOI,[SYS_INDEX],[TGID][\r]
Radio → Controller
LOI,OK[\r]

```

This command locks out a TGID for the system.
The TGID is added to L/O list.
This command is only acceptable in Programming Mode.

```

<COMMAND REV>
Get Rev Index
Controller → Radio
REV,[INDEX][\r]
Radio → Controller
REV,[INDEX][\r]

```

[INDEX] : Index of system, site, group, channel, TGID or Location Alert System.

Returns reverse(backward) index of the index in the memory chain.
Returns -1 if no more index exists.
This command is only acceptable in Programming Mode.

```

<COMMAND FWD>
Get Fwd Index
Controller → Radio
FWD,[INDEX][\r]
Radio → Controller
FWD,[INDEX][\r]

```

[INDEX] : Index of system, site, group, channel, TGID or Location Alert System.

Returns forward index of the index in the memory chain.
Returns -1 if no more index exists.
This command is only acceptable in Programming Mode.

```

<COMMAND RMB>
Get Remains of Memory Block
Controller → Radio
RMB[\r]
Radio → Controller
RMB,#####[\r]

```

Returns the number of idle(free) memory block.
: ##### (not zero-padding)
This command is only acceptable in Programming Mode.

```

<COMMAND MEM>
Get Memory Used
Controller → Radio
MEM[\r]
Radio → Controller
MEM,[MEMORY_USED],[SYS],[SITE],[CHN],[LOC][\r]

```

[MEMORY_USED] : The percent of memory that is used (0 - 100)
[SYS] : The number of systems that is created (0 - 500)
[SITE] : The number of sites that is created (0 - 1000)
[CHN] : The number of channels that is created (0 - 25000)
[LOC] : The number of location system that is created (0 - 1000)

This command is only acceptable in Programming Mode.

```

<COMMAND LIH>
Get Location Alert System Index Head
Controller → Radio
LIH,[LAS_TYPE][\r]
Radio → Controller
LIH,[INDEX][\r]

```

[LAS_TYPE] : Location Alert Type
(POI:POI / DROAD: Dangerous Road / DXING : Dangerous Xing)

Returns the first index of stored location alert system list.
This command is only acceptable in Programming Mode.

```

<COMMAND LIT>
Get Location Alert System Index Tail
Controller → Radio
LIT,[LAS_TYPE][\r]
Radio → Controller
LIT,[INDEX][\r]

```

```

[LAS_TYPE]          : Location Alert Type
                    (POI:POI / DROAD: Dangerous Road / DXING : Dangerous Xing)

```

Returns the last index of stored location alert system list.
This command is only acceptable in Programming Mode.

```

<COMMAND CLA>
Create Location Alert System
Controller → Radio
CLA,[LAS_TYPE][\r]
Radio → Controller
CLA,[INDEX][\r]

```

```

[LAS_TYPE]          : Location Alert Type
                    (POI: POI / DROAD: Dangerous Road / DXING: Dangerous Xing)
[INDEX]             : Location Alert System Index

```

Creates a system and return created location alert system index.
The index is a handle to get/set location alert system information.
Returns "-1" if the scanner failed to create because of no resource.
This command is only acceptable in Programming Mode.

```

<COMMAND DLA>
Delete Location Alert System
Controller → Radio
DLA,[INDEX][\r]
Radio → Controller
DLA,OK[\r]

```

```

[INDEX]             : Location Alert System Index

```

This command deletes a location alert system.
This command is only acceptable in Programming Mode.

```

<COMMAND LIN>
Get/Set Location Alert System Info
Controller → Radio
LIN,[INDEX][\r]
LIN,[INDEX],[LAS_TYPE],[NAME],[LOUT],[ALT],[ALTL],[LATITUDE],[LONGITUDE],
[RANGE],[SPEED],[DIR],[ALT_COLOR],[ALT_PATTERN][\r]
Radio → Controller
LIN,[LAS_TYPE],[NAME],[LOUT],[ALT],[ALTL],[REV_INDEX],[FWD_INDEX],[SEQ_NO],
[LATITUDE],[LONGITUDE],[RANGE],[SPEED],[DIR],[ALT_COLOR],[ALT_PATTERN][\r]
LIN,OK[\r]

[INDEX]           : Location Alert System Index
[LAS_TYPE]        : Location Alert Type
                   (POI: POI / DROAD: Dangerous Road / DXING: Dangerous Xing)
[NAME]            : Name (max.16char)
[LOUT]            : Lockout (0:Unlocked / 1:Lockout)
[ALT]             : Alert Tone (0:OFF/1 - 4:Tone No.)
[ALTL]            : Alert Tone Level (0:AUTO/1-15)
[REV_INDEX]       : Reverse System Index of Location Alert System
[FWD_INDEX]       : Forward System Index of Location Alert System
[SEQ_NO]          : Location Alert System Sequence Number
[LATITUDE]        : North or South Latitude
[LONGITUDE]       : West or East Longitude
[RANGE]           : Range (1-80: 1=0.05 mile or km)
[SPEED]           : Speed Limit (0-200: 1 means 1 mile/hour or km/h)
[DIR]             : Heading (0-358/360 : 2' step, 360=All range)
[ALT_COLOR]       : Alert Light color
                   (OFF,BLUE,RED,MAGENTA,GREEN,CYAN,YELLOW,WHITE)
[ALT_PATTERN]     : Alert Light Pattern(0:ON / 1:SLow / 2:Fast)

```

Get/Set Location Alert System Information.

In set command, the scanner neglects the parameters that are not appropriate the system type.

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

This command is only acceptable in Programming Mode.

```

<COMMAND SCO>
Get/Set Search/Close Call Settings
Controller → Radio
SCO[\r]
SCO, [RSV], [MOD], [ATT], [DLY], [RSV], [CODE_SRCH], [BSC], [REP], [RSV], [RSV],
[ MAX_STORE], [RSV], [AGC_ANALOG], [AGC_DIGITAL], [P25WAITING] [\r]
Radio → Controller
SCO, [RSV], [MOD], [ATT], [DLY], [RSV], [CODE_SRCH], [BSC], [REP], [RSV], [RSV],
[ MAX_STORE], [RSV], [AGC_ANALOG], [AGC_DIGITAL], [P25WAITING] [\r]
SCO, OK [\r]

[MOD]          : Modulation                (AUTO/AM/FM/NFM/WFM/FMB)
[ATT]          : Attenuation                (0:OFF / 1:ON)
[DLY]          : Delay Time                 (-10,-5,-2,0,1,2,5,10,30)
[CODE_SRCH]    : CTCSS/DCS Search
                  (0:OFF / 1: CTCSS/DCS / 2: P25 NAC Search)
[BSC]          : Broadcast Screen
                  (16digit: #####*#)
                  (each # is 0 or 1)      |||||+--- Band10
0 means OFF    ||||| :
1 means ON     |||||+--- Band 2
                  |||||+----- Band 1
                  |||||+----- Reserve
                  |||+----- NOAA WX
                  ||+----- VHF TV
                  |+----- UHF TV
                  +----- FM
                  +----- Pager
[REP]          : Repeater Find              (0:OFF / 1:ON)
[ MAX_STORE]   : Max Auto Store              (1-256)
[AGC_ANALOG]   : AGC Setting for Analog Audio (0:OFF / 1:ON)
[AGC_DIGITAL]  : AGC Setting for Digital Audio (0:OFF / 1:ON)
[P25WAITING]   : P25 Waiting time            (0,100,200,300, .... , 900,1000)

```

Get/Set Search/Close Call Settings.
In set command, only "," parameters are not changed.
The set command is aborted if any format error is detected.
This command is only acceptable in Programming Mode.

```

<COMMAND BBS>
Get/Set Broadcast Screen Band Settings
Controller → Radio
BBS, [INDEX] [\r]
BBS, [INDEX], [LIMIT_L], [LIMIT_H] [\r]
Radio → Controller
BBS, [LIMIT_L], [LIMIT_H] [\r]
BBS, OK [\r]

[INDEX]        : Index                    (1-9, 0 means 10)
[LIMIT_L]      : Lower Limit Frequency    (00000000 -99999999)
[LIMIT_H]      : Upper Limit Frequency    (00000000 -99999999)

```

Get/Set Broadcast Screen Band Settings.
This command is Only acceptable in Programming Mode.

```

<COMMAND SHK>
Get/Set Search Key Settings
Controller → Radio
SHK[\r]
SHK,[SRCH_KEY_1],[SRCH_KEY_2],[SRCH_KEY_3],[RSV],[RSV],[RSV][\r]
Radio → Controller
SHK,[SRCH_KEY_1],[SRCH_KEY_2],[SRCH_KEY_3],[RSV],[RSV],[RSV][\r],SHK,OK[\r]

```

```

[SRCH_KEY_1] - [SRCH_KEY_3] : Search Range
.(dot) : Not assign
PublicSafety: Public Safety range CUSTOM_1: Custom 1 range
News : News range CUSTOM_2: Custom 2 range
HAM : HAM Radio range CUSTOM_3: Custom 3 range
Marine : Marine range CUSTOM_4: Custom 4 range
Railroad : Railroad range CUSTOM_5: Custom 5 range
Air : Air range CUSTOM_6: Custom 6 range
CB : CB Radio range CUSTOM_7: Custom 7 range
FRS/GMRS/MURS: FRS/GMRS/MURS range CUSTOM_8: Custom 8 range
Racing : Racing range CUSTOM_9: Custom 9 range
FM : FM Broadcast range CUSTOM_10: Custom 10 range
Special : Special range TONE_OUT: Tone Out mode
Military : Military Air range B_SCOPE: Band Scope

```

Get/Set Search Key Settings.
This command is only acceptable in Programming Mode.

```

<COMMAND GLF>
Get Global Lockout Freq
Controller → Radio
GLF[\r]
Radio → Controller
GLF,[FRQ][\r]
GLF,-1[\r]

```

```

[FRQ] : Lockout Frequency (250000-13000000)

```

This command is used to get Global L/O frequency list.
You should call this command again and again to get all-global L/O frequency until the scanner returns "-1".
"-1" means that no more L/O frequency exists.
This command is only acceptable in Programming Mode.

```

<COMMAND ULF>
Unlock Global L/O
Controller → Radio
ULF,[FRQ][\r]
Radio → Controller
ULF,OK[\r]

```

```

[FRQ] : Lockout Frequency (250000-13000000)

```

This command unlocks a L/O frequency.
The frequency is deleted from L/O list.
This command is only acceptable in Programming Mode.

```

<COMMAND LOF >
Lock Out Frequency
Controller → Radio
LOF,[FRQ][\r]
Radio → Controller
LOF,OK[\r]

```

[FRQ] : Frequency (250000-13000000)

This command locks out a frequency.
The frequency is added to L/O list.
This command is only acceptable in Programming Mode.

```

<COMMAND CLC>
Get/Set Close Call Settings
Controller → Radio
CLC[\r]
CLC,[CC_MODE],[CC_OVERRIDE],[RSV],[ALTB],[ALTL],[ALTP],[CC_BAND],[LOUT],
[HLD],[QUICK_KEY],[NUMBER_TAG],[ ALT_COLOR],[ALT_PATTERN][\r]
Radio → Controller
CLC,[CC_MODE],[CC_OVERRIDE],[RSV],[ALTB],[ALTL],[ALTP],[CC_BAND],[LOUT],
[HLD],[QUICK_KEY],[NUMBER_TAG],[ ALT_COLOR],[ALT_PATTERN][\r]
CLC,OK[\r]

```

[CC_MODE]	: Mode	(0:OFF / 1:CC PRI / 2:CC DND)
[CC_OVERRIDE]	: Override	(1:ON / 0:OFF)
[ALTB]	: Alert Beep	(0:OFF / 1-9:Tone No)
[ALTL]	: Alert Tone Level	(0:AUTO/ 1-15)
[ALTP]	: Close Call Pause	
	3	: 3 sec 5 : 5 sec
	10	: 10 sec 15 : 15 sec
	30	: 30 sec 45 : 45 sec
	60	: 60 sec INF : Infinite
[CC_BAND]	: Close Call Band	(7digit #####)
	(each # is 0 or 1)	+- 800MHz+
	0 means OFF	+-- UHF
	1 means ON	+--- VHF HIGH2
		+---- VHF HIGH1
		+----- AIR BAND
		+----- VHF LOW2
		+----- VHF LOW1
[LOUT]	: Lockout for CC Hits with Scan	(0:Unlocked/1:Lockout)
[HLD]	: System Hold Time for CC Hits with Scan	(0-255)
[QUICK_KEY]	: Quick Key for CC Hits with Scan	(0 - 99/(dot))
		*".(dot)" means that nothing is assigned.
[NUMBER_TAG]	: Number tag	(0-999 / NONE)
[ALT_COLOR]	: Alert Light color	(OFF,BLUE,RED,MAGENTA,GREEN,CYAN,YELLOW,WHITE)
[ALT_PATTERN]	: Alert Light Pattern	(0:ON / 1:Slow / 2:Fast)
[RSV]	: Reserve Parameter	* This is always only ",,".

Get/Set Close Call Settings.

In set command, only ",," parameters are not changed.
The set command is aborted if any format error is detected.
This command is only acceptable in Programming Mode.

```

<COMMAND SSP>
Get/Set Service Search Settings
Controller → Radio
SSP,[SRCH_INDEX][\r]
SSP,[SRCH_INDEX],[DLY],[ATT],[HLD],[LOUT],[QUICK_KEY],[START_KEY],[RSV],
[NUMBER_TAG],[AGC_ANALOG],[AGC_DIGITAL],[P25WAITING] [\r]
Radio → Controller
SSP,[SRCH_INDEX],[DLY],[ATT],[HLD],[LOUT],[QUICK_KEY],[START_KEY],[RSV],
[NUMBER_TAG],[AGC_ANALOG],[AGC_DIGITAL],[P25WAITING] [\r]
SSP,OK[\r]

[SRCH_INDEX]      : Service Search Range
                   1 : Public Safety 6 : Air          12 : Special
                   2 : News             7 : CB Radio   15 : Military Air
                   3 : HAM Radio        8 : FRS/GMRS/MURS
                   4 : Marine           9 : Racing
                   5 : Railroad         11 : FM Broadcast
[DLY]              : Delay Time              (-10,-5,-2,0,1,2,5,10,30)
[ATT]              : Attenuation              (0:OFF/1:ON)
[HLD]              : System Hold Time for Search with Scan(0-255)
[LOUT]             : Lockout for Search with Scan(0:Unlocked/1:Lockout)
[QUICK_KEY]        : Quick Key                ( 0 - 99 / .(dot) )
[START_KEY]        : Startup Configuration Key ( 0 - 9 / .(dot) )
[NUMBER_TAG]       : Number tag                (0-999 / NONE)
[AGC_ANALOG]       : AGC Setting for Analog Audio (0:OFF / 1:ON)
[AGC_DIGITAL]      : AGC Setting for Digital Audio (0:OFF / 1:ON)
[P25WAITING]       : P25 Waiting time (0,100,200,300, .... , 900,1000)

```

The set command is aborted if any format error is detected.
This command is only acceptable in Programming Mode.

```

<COMMAND CSG>
Get/Set Custom Search Group
Controller → Radio
CSG[\r]
CSG,#####[\r]      : Status of Each Search Range
Radio → Controller
CSG,#####[\r]
CSG,OK[\r]

##### (each # is 0 or 1) :      0 : valid / 1 : invalid

```

The Order of Range is as same as LCD Icon (1 - 10).
Get/Set current status of the custom search range.
This command is only acceptable in Programming Mode.
*It can not set all Custom Search Ranges to "0".

```

<COMMAND CBP>
Get/Set C-Ch Only Custom Search MOT Band Plan Settings
Controller → Radio
CBP, [SRCH_INDEX] [\r]
CBP, [SRCH_INDEX], [MOT_TYPE], [LOWER1], [UPPER1], [STEP1], [OFFSET1], [LOWER2],
[UPPER2], [STEP2], [OFFSET2], [LOWER3], [UPPER3], [STEP3], [OFFSET3], [LOWER4],
[UPPER4], [STEP4], [OFFSET4], [LOWER5], [UPPER5], [STEP5], [OFFSET5], [LOWER6],
[UPPER6], [STEP6], [OFFSET6] [\r],
Radio → Controller
CBP, [MOT_TYPE], [LOWER1], [UPPER1], [STEP1], [OFFSET1], [LOWER2], [UPPER2], [STEP2],
[OFFSET2], [LOWER3], [UPPER3], [STEP3], [OFFSET3], [LOWER4], [UPPER4], [STEP4],
[OFFSET4], [LOWER5], [UPPER5], [STEP5], [OFFSET5], [LOWER6], [UPPER6], [STEP6],
[OFFSET6] [\r],
CBP, OK [\r]

```

[SRCH_INDEX]	: Index	(1-9, 0 means 10)	
[MOT_TYPE]	: Band type for MOT	(STD/ SPL/CUSTOM)	
[LOWER n]	: Lower Frequency n		
[UPPER n]	: Upper Frequency n		
[STEP n]	: Step n		
	"500": 5.0k	"625": 6.25k	"1000": 10.0k
	"1250": 12.5k	"1500": 15.0k	"1875": 18.75k
	"2000": 20.0k	"2500": 25.0k	"3000": 30.0k
	"3125": 31.25k	"3500": 35.0k	"3750": 37.5k
	"4000": 40.0k	"4375": 43.75k	"4500": 45.0k
	"5000": 50.0k	"5500": 55.0k	"5625": 56.25k
	"6000": 60.0k	"6250": 62.5k	"6500": 65.0k
	"6875": 68.75k	"7000": 70.0k	"7500": 75.0k
	"8000": 80.0k	"8125": 81.25k	"8500": 85.0k
	"8750": 87.5k	"9000": 90.0k	"9375": 93.75k
	"9500": 95.0k	"10000": 100.0k	
[OFFSETn]	: Offset n	(-1023 to 1023)	

Get/Sets Band Plan Setting for MOT 800custom/VHF/UHFsite when trunking control channel in custom search.

In set command, if only "," parameters are send the Band Plan setting will not changed. The set command is aborted if any format error is detected. If [MOT_TYPE] is not CUSTOM, any other setting will be ignored.

This command is only acceptable in Programming Mode.

```

<COMMAND CSP>
Get/Set Custom Search Settings
Controller → Radio
CSP,[SRCH_INDEX][\r]
CSP,[SRCH_INDEX],[NAME],[LIMIT_L],[LIMIT_H],[STP],[MOD],[ATT],[DLY],[RSV],
[HLD],[LOUT],[C-CH],[RSV],[RSV],[QUICK_KEY],[START_KEY],[RSV],[NUMBER_TAG],
[AGC_ANALOG],[AGC_DIGITAL],[P25WAITING][\r]
Radio → Controller
CSP,[NAME],[LIMIT_L],[LIMIT_H],[STP],[MOD],[ATT],[DLY],[RSV],[HLD],[LOUT],
[C-CH],[RSV],[RSV],[QUICK_KEY],[START_KEY],[RSV],[NUMBER_TAG],[AGC_ANALOG],
[AGC_DIGITAL],[P25WAITING][\r]
CSP,OK[\r]

```

[SRCH_INDEX]	: Index	(1-9,0 means 10)
[NAME]	: Name	(max.16char)
[LIMIT_L]	: Lower Limit Frequency	(250000-13000000)
[LIMIT_H]	: Upper Limit Frequency	(250000-13000000)
[STP]	: Search Step	
	AUTO : AUTO	833 : 8.33k 2000 : 20k
	500 : 5k	1000 : 10k 2500 : 25k
	625 : 6.25k	1250 : 12.5k 5000 : 50k
	750 : 7.5 k	1500 : 15k 10000 : 100k
[MOD]	: Modulation	(AUTO/AM/FM/NFM/WFM/FMB)
[ATT]	: Attenuation	(0:OFF / 1:ON)
[DLY]	: Delay Time	(-10,-5,-2,0,1,2,5,10,30)
[HLD]	: System Hold Time	(0-255)
[LOUT]	: Lockout	(0:Unlocked / 1:Lockout)
[C-CH]	: Control Channel Only	(0:OFF / 1:ON)
[QUICK_KEY]	: Quick Key	(0 - 99 / .(dot))
[START_KEY]	: Startup Configuration Key	(0 - 9/ .(dot))
[NUMBER_TAG]	: Number tag	(0-999 / NOE)
[AGC_ANALOG]	: AGC Setting for Analog Audio	(0:OFF / 1:ON)
[AGC_DIGITAL]	: AGC Setting for Digital Audio	(0:OFF / 1:ON)
[P25WAITING]	: P25 Waiting time	(0,100,200,300, , 900,1000)

Get/Set Custom Search Settings.

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

This command is only acceptable in Programming Mode.

```

<COMMAND WXS>
Get/Set Weather Settings
Controller → Radio
WXS[\r]
WXS,[DLY],[ATT],[ALT_PRI],[RSV],[AGC_ANALOG],[RSV][\r]
Radio → Controller
WXS,[DLY],[ATT],[ALT_PRI],[RSV],[AGC_ANALOG],[RSV][\r]
WXS,OK[\r]

```

```

[DLY]          : Delay Time                (-10,-5,-2,0,1,2,5,10,30)
[ATT]          : Attenuation                (0:OFF / 1:ON)
[ALT_PRI]      : Weather Alert Priority      (0:OFF / 1:ON)
[AGC_ANALOG]   : AGC Setting for Analog Audio (0:OFF / 1:ON)

```

Get/Set Weather Priority Settings.
This command is only acceptable in Programming Mode.

```

<COMMAND SGP>
Get/Set SAME Group Settings
Controller → Radio
SGP,[SAME_INDEX][\r]
SGP,[SAME_INDEX],[NAME],[FIPS1],[FIPS2],[FIPS3],[FIPS4],[FIPS5],[FIPS6],
[FIPS7],[FIPS8][\r]
Radio → Controller
SGP,[NAME],[FIPS1],[FIPS2],[FIPS3],[FIPS4],[FIPS5],[FIPS6],[FIPS7],[FIPS8][\r]
SGP,OK[\r]

```

```

[SAME_INDEX]: SAME Index      (1 - 5 )
[NAME]      : SAME Group Name (max.16char)
[FIPS1-8]   : FIPS Code (6digit:000000-999999, or ----- means none)

```

Get/Set SAME Group Settings.
In set command, only "," parameters are not changed.
The set command is aborted if any format error is detected.
This command is only acceptable in Programming Mode.

```

<COMMAND TON>
Get/Set Tone-Out Settings
Controller → Radio
TON,[INDEX][\r]
TON,[INDEX],[NAME],[FRQ],[MOD],[ATT],[DLY],[ALT],[ALTL],[TONE_A],[RSV],
[TONE_B],[RSV],[RSV],[RSV],[ALT_COLOR],[ALT_PATTERN],[AGC_ANALOG],[RSV],
[RSV][\r]
Radio → Controller
TON,[INDEX],[NAME],[FRQ],[MOD],[ATT],[DLY],[ALT],[ALTL],[TONE_A],[RSV],
[TONE_B],[RSV],[RSV],[RSV],[ALT_COLOR],[ALT_PATTERN],[AGC_ANALOG],[RSV],
[RSV][\r]
TON,OK[\r]

```

[INDEX]	: Index	(1-9,0 means 10)
[NAME]	: Name	(max.16char)
[FRQ]	: Channel Frequency	
[MOD]	: Modulation	(AUTO / FM / NFM)
[ATT]	: Attenuation	(0:OFF / 1:ON)
[DLY]	: Delay Time	(0,1,2,5,10,30 / INF : Infinite)
[ALT]	: Alert Tone	(0:OFF/1-9:Tone No.)
[ALTL]	: Alert Tone Level	(0:AUTO/1-15)
[TONE_A]	: Tone A Frequency	
	ex.) 10000 means 1000.0Hz	
	00000 means 0.0Hz	
[RSV]	: Reserve Parameter	* This is always only ",."
[TONE_B]	: Tone B Frequency	
[ALT_COLOR]	: Alert Light color	
	(OFF,BLUE,RED,MAGENTA,GREEN,CYAN,YELLOW,WHITE)	
[ALT_PATTERN]	: Alert Light Pattern	(0:ON / 1:Slow / 2:Fast)
[AGC_ANALOG]	: AGC Setting for Analog Audio	(0:OFF / 1:ON)

Get/Set Tone-Out Settings.
This command is only acceptable in Programming Mode.

```

<COMMAND CNT>
Get/Set LCD Contrast Settings
Controller → Radio
CNT[\r]
CNT,[CONTRAST][\r]
Radio → Controller
CNT,[CONTRAST][\r]
CNT,OK[\r]

```

[CONTRAST]	: LCD Contrast	(1 - 15)
------------	----------------	----------

Get/Set LCD Contrast Settings.
This command is only acceptable in Programming Mode.

<COMMAND SCN>

Get/Set Scanner Option Settings

Controller → Radio

SCN[\r]

SCN,[DISP_MODE],[RSV],[CH_LOG],[G_ATT],[RSV],[P25_LPF][RSV],[RSV],[RSV],
[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV][\r]

Radio → Controller

SCN,[DISP_MODE],[RSV],[CH_LOG],[G_ATT],[RSV],[P25_LPF],[RSV],[RSV],[RSV],
[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV],[RSV][\r]

SCN,OK[\r]

[DISP_MODE] : DISPLAY MODE (1:MODE1 / 2:MODE2 / 3:MODE3)
[CH_LOG] : Control Channel Logging (0:OFF / 1:ON / 2:Extend)
[G_ATT] : Global attenuator (0: OFF / 1: ON)
[P25_LPF] : P25 Low-Pass Filter (0: OFF / 1: ON)
[RSV] : Reserve Parameter * This is always only ",".

Get/Set Scanner Option Settings

This command is only acceptable in Programming Mode.

<COMMAND VOL>

Get/Set Volume Level Settings

Controller → Radio

VOL[\r]

VOL,[LEVEL][\r]

Radio → Controller

VOL,[LEVEL][\r]

VOL,OK[\r]

[LEVEL] : Volume Level (0 - 15)

<COMMAND SQL>

Get/Set Squelch Level Settings

Controller → Radio

SQL[\r]

SQL,[LEVEL][\r]

Radio → Controller

SQL,[LEVEL][\r]

SQL,OK[\r]

[LEVEL] : Squelch Level (0:OPEN / 1-14 / 15:CLOSE)

<COMMAND P25>

Get/Set APCO Data Settings

Controller → Radio

P25[\r]

Radio → Controller

P25,[RSV],[RSV],[ERR_RATE][\r]

[ERR_RATE] : Error Rate (from 0 to 99)

```

<COMMAND DBC>
Get/Set Default Band Coverage Settings
Controller → Radio
DBC, [BNAD_NO] [\r]
DBC, [BNAD_NO], [STEP], [MOD] [\r]

```

```

Radio → Controller
DBC, [STEP], [MOD] [\r]
DBC, OK [\r]

```

```

[BAND_NO]          : Band No (1-31)
                    : Band number of band coverage
[STP]              : Search Step
    500      : 5k      625      : 6.25k      750      : 7.5 k
    833      : 8.33k   1000     : 10k      1250     : 12.5k
    1500     : 15k     2000     : 20k      2500     : 25k
    5000     : 50k     10000    : 100k
[MOD]             : Modulation      (AM / NFM / FM / WFM / FMB)

```

This command is only acceptable in Programming Mode.

```

<COMMAND GDO>
Get/Set GPS Disp Option
Controller → Radio
GDO [\r]
GDO, [DISP_MODE], [UNIT], [TIME_FORMAT], [TIME_ZONE], [POS_FORMAT] [\r]
Radio → Controller
GDO, [DISP_MODE], [UNIT], [TIME_FORMAT], [TIME_ZONE], [POS_FORMAT] [\r]
GDO, OK [\r]

```

```

[DISP_MODE] : Display GPS Mode
              ( 0:ETA / 1:Clock / 2:Elevation / 3:Speed / 4:Location )
[UNIT]       : Distance Unit      ( 0: mile / 1: km )
[TIME_FORMAT]: Time Format         ( 0: 12 H / 1: 24H)
[TIME_ZONE]  : Time Zone (-14.0/-13.5/.../-0.5/0.0/0.5/.../13.5/14.0)
              ex) "-14.0" means "- 14.0 H".
[POS_FORMAT]: Position Format      ( DMS / DEG )

```

This command is only acceptable in Programming Mode.

```

<COMMAND BSP>
Get/Set Band Scope System Settings
Controller → Radio
BSP[\r]
BSP,[FRQ],[STP],[SPN],[MAX_HOLD][\r]
    Radio → Controller
BSP,[FRQ],[STP],[SPN],[MAX_HOLD][\r]
BSP,OK[\r]
    [FRQ]                : Center Frequency
    [STP]                : Search Step
        500      : 5k          625      : 6.25k          750      : 7.5 k
        833      : 8.33k       1000     : 10k           1250     : 12.5k
        1500     : 15k         2000     : 20k           2500     : 25k
        5000     : 50k         10000    : 100k
    [SPN]                : Sweep Span
        0.2M,      0.4M,      0.6M,
        0.8M,      1M,        2M,
        4M,        6M,        8M,
        10M,       20M,       40M,
        60M,       80M,       100M,
        120M,      140M,      160M,
        180M,      200M,      250M,
        300M,      350M,      400M,
        450M,      500M
    [MAX_HOLD]           : Max Hold Display                (0:OFF / 1:ON)

```

Get/Set Band Scope System Settings.

In set command, only "," parameters are not changed.

The set command is aborted if any format error is detected.

This command is only acceptable in Programming Mode.

```

<COMMAND GIE>
Get Global IF exchange Frequency
Controller → Radio
GIE [\r]
    Radio → Controller
GIE,[FRQ][\r]
GIE,-1[\r]

    [FRQ]                : IF Exchange Frequency          (250000-13000000)

```

This command is used to get Global IF exchange frequency list.

You should call this command again and again to get all global IF exchange frequencies until the scanner returns "-1".

"-1" means that no more IF exchange frequency exists.

This command is only acceptable in Programming Mode.

```

<COMMAND CIE>
Clear IF exchange Frequency
Controller → Radio
CIE,[FRQ][\r]
Radio → Controller
CIE,OK[\r]

```

[FRQ] : IF Exchange Frequency (250000-13000000)

This command clear Frequency from Global IF exchange Frequency list.
This command is only acceptable in Programming Mode.

```

<COMMAND RIE>
Register IF exchange Frequency
Controller → Radio
RIE,[FRQ][\r]
Radio → Controller
RIE,OK[\r]

```

[FRQ] : IF Exchange Frequency (250000-13000000)

This command register Frequency to Global IF exchange Frequency list.
This command is only acceptable in Programming Mode.

```

<COMMAND BAV>
*Get Battery Voltage

Controller → Radio
BAV[\r]
Radio → Controller
BAV,####[\r]

```

: A/D Value (0-1023)

Battery Level[V] = (3.2[V] * #### * 2)/1023

Returns current battery voltage.
This command is for test mode.

```

<COMMAND WIN>
*Get Window Voltage
Controller → Radio
WIN[\r]
Radio → Controller
WIN,###,[FRQ][\r]

```

: ### : A/D Value (0-255)

Returns current window voltage and its frequency.
The order of the frequency digits is from 1 GHz digit to 100 Hz digit.
This command is for test mode.