

NEXT IS NOW

Adaptive Multiple ALE Networking

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ALE Concepts

ALE for HF Communication

Automatic Link Establishment



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▲ HF link performance depends Frequencies that the best for link very according to:

- Time of day due to the sky layers reflection
- Weather
- Distance
- Environmental and thermal noise

So, the ALE is to:

- **Selects the best frequency in the current conditions.**
- **Simplifies the operating and link set-up**

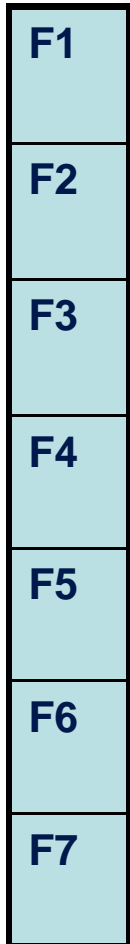
▲ ALE Systems fielded early at the 80s

- ☞ Collins Selscan®
- ☞ Tadiran AutoCall
- ☞ Harris Autolink®
- ☞ R&S ALIS
- ☞ Sunair Scancall®
- ☞ CCIR/GMDSS 493 (as a selcall protocol)

▲ 2nd Generation ALE standard- was published MIL-STD188-141

Many products conforming to MIL-STD 188-141A/B 2G-ALE Fielded
All new professional radios have embedded 2G ALE

NET1-20



ALE Address	Freq.	LQA
BBB	F1-F7	30-90%
AAA	F1-F7	30-90%

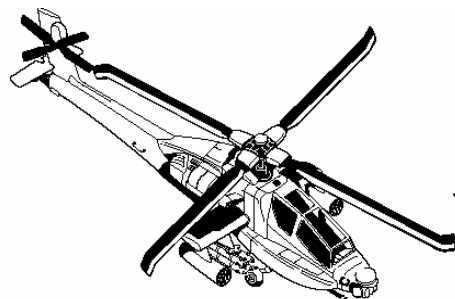


1-To reach a specific station, the radio operator simply enters an address

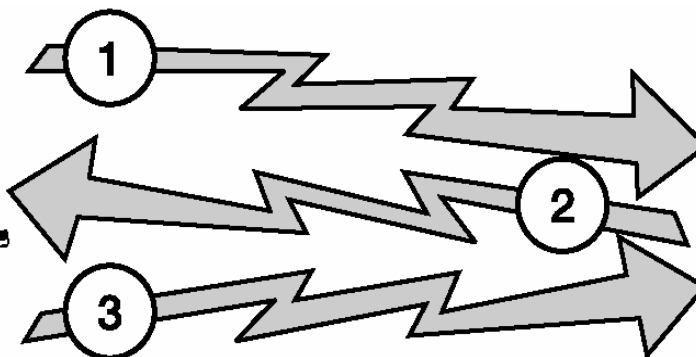
2-The radio consults its memory matrix and selects the best available assigned frequency

3-It then sends out a brief digital message containing the identification (ID) of the destination

4-The two stations automatically conduct a “handshake” to confirm that a link is established



**Aircraft AAA
Initiates Call**

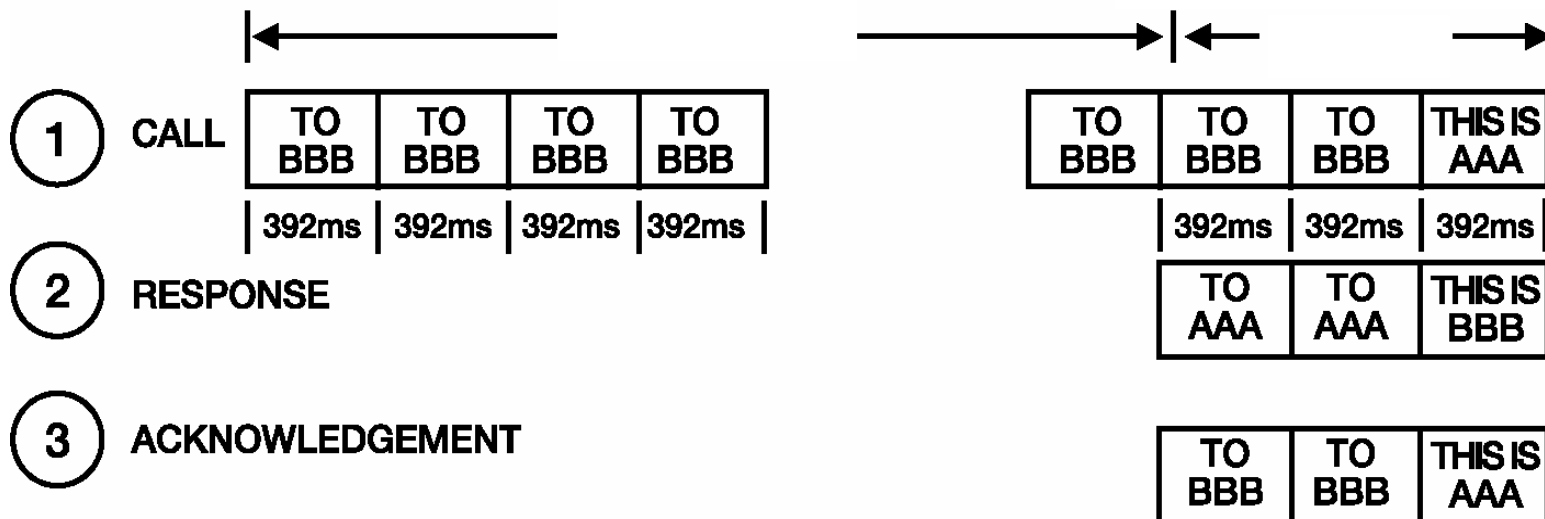


Ground Station



**Ground BBB
Receiver
Scanning**

Scanning Call



Data- up to 90 Characters:

- Messages – Individual/All-Call
- Sending GPS information
- Polling GPS from clients
- Command and Control System
- Diagnostic information



PC Control application Radio RSS menu

The screenshot shows the 'RSS Panel' application window. It features a menu bar (File, View/Change, Service, Preferences, Help) and a toolbar. The main interface is divided into several sections:

- Channels parameters:** A table listing channel configurations.
- General parameters:** A section with various dropdown menus and checkboxes for system settings.
- Scanning setting:** A table for defining scanning groups.
- Amplifier and tuner enable menu:** A section with checkboxes to enable or disable the amplifier and tuner.

No.	Tx. Freq.	Rx. Freq.	Tx Power	Band	Mode	A.G.C.	B.W.
1	18	18	LDW	USB	SSB	Slow	2.7
2	3	3	MAX	USB	SSB	Slow	2.7
3	5	5	MAX	USB	SSB	Slow	2.7
4	8	8	MAX	USB	SSB	Slow	2.7
5	12	12	MAX	USB	SSB	Slow	2.7

	Guard	Scanned Channels
A		
B		
C		
D		
E		

Options

Priority Channel: 1
Scan Rate: 2 Sec/Chan
Baud Rate: 9600
Alert tone: Low
Cw PTT Hold: 150 msec
Alternate Display: 5 Sec
Data Power Level: Medium
Language: English

Beep after keyboard press
 Beep after PTT release
 Accessory side tone
 Microphone side tone
 Hide frequency
 Noise Blanker

Accessories

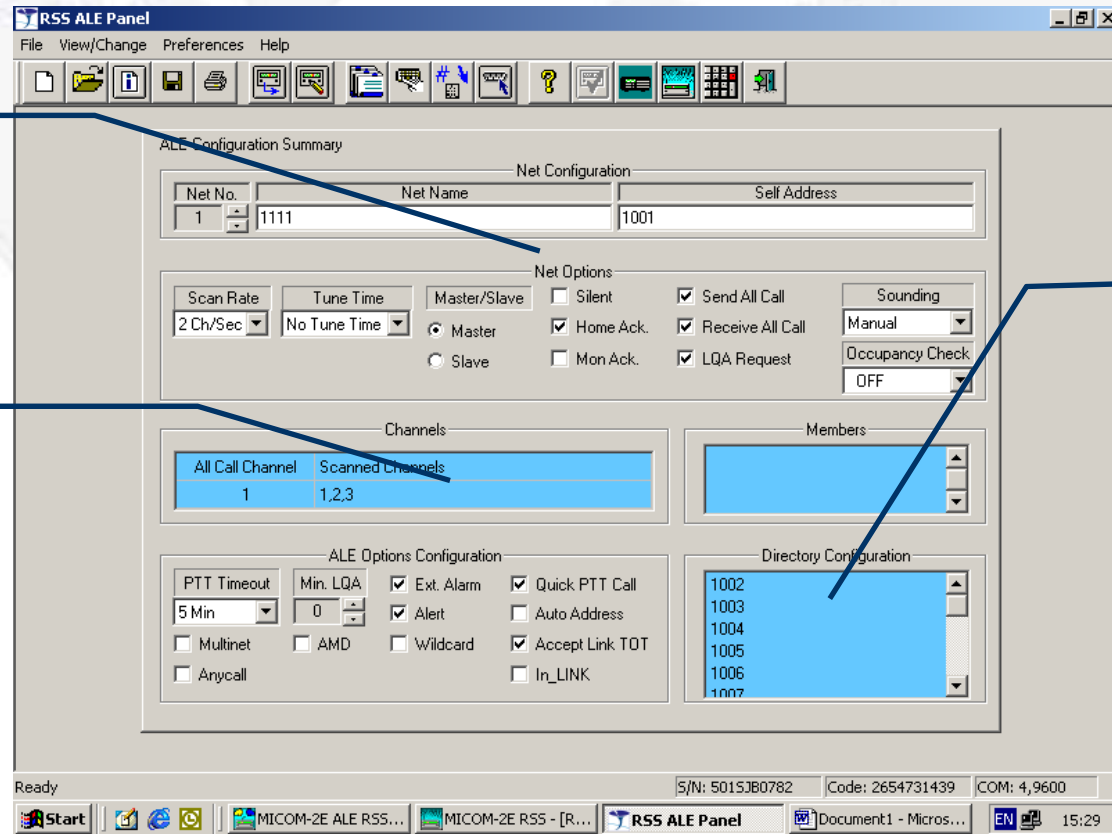
Amplifier Tuner

Net parameters Up to 20

Channels setting Up to 200

Directory Up to 100

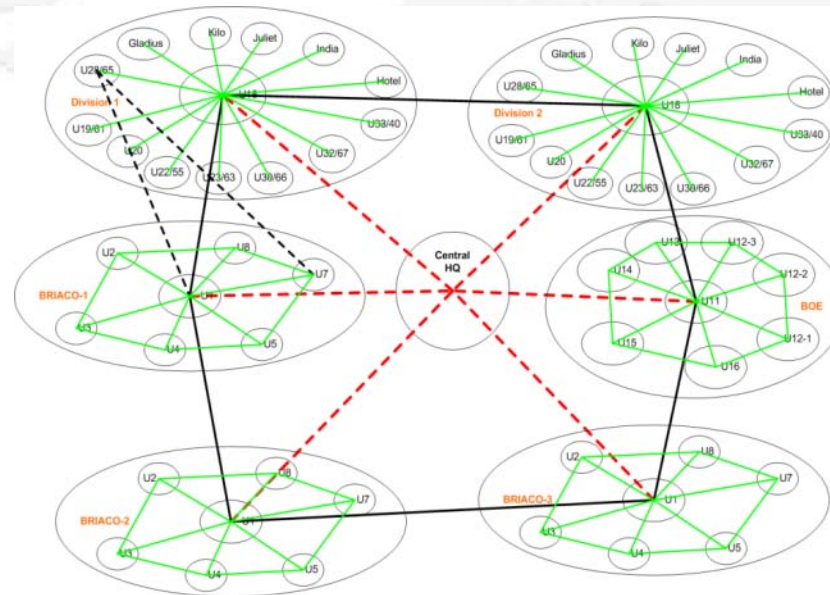
Up to 15 characters address



ALE biggest limitation

Linking between nets/groups/organization

Specially in emergency



- Data Base management
 - Frequency Management
 - Increasing the frequencies table to thousands
 - Addressing Directory Management
 - Increasing the Directory table to thousands
 - Address book:
 - Linking between address and frequency table; each address will carry its own frequencies and use real time channel selection before use or by setting the minimum LQA.
 - Fast/Speed dialing HMI algorithm (similar to phone number)

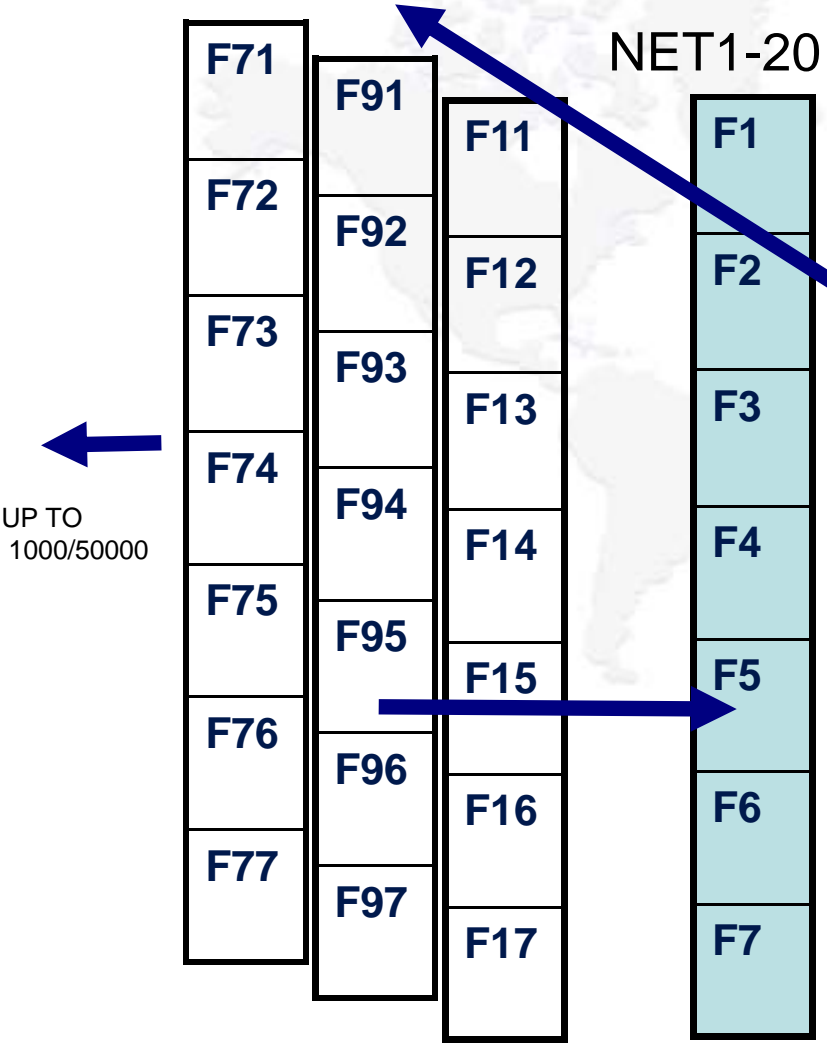
Enhanced ALE Adaptive Protocol

Address related to NET

LQA – mini LQA/Bidirectional

Common Federal DB

ALE Address	Freq.	LQA
BBB	F1-F7	30-90%
AAA	F1-F7	30-90%



Designed for the Federal



Adaptive Multiple Networking

- Extended ALE Data Base Management
- Keeping - JITC Certification per MIL-STD188-141B interoperability
- Interoperable with all ALE - MIL-STD188-141B networking system
- Fast Dialing

Download/Upload ALE Data Base

Group Name: washington

Delete Group Edit Group Add Groups

ALE Stations:

No	Index	Station Name	ALE Address	Channels
3	002	Charleston	PATHFINDER	2,3,4,5
4	003	Harrisburg	RM125	2,3,4,5
5	004	Annapolis	M91	2,3,4,5

Delete Station Edit Station Add Stations

C:\Program Files\AleDbBurner\RM1200.adb

ALE Station edit

ALE Station Name: Harrisburg

ALE Address: RM125

Ale Scan Channels: 2,3,4,5




Save Cancel

Adaptive Multiple Networking

- Common Global Federal Data Base
- ALE Index (1000 stations and 1000 channels – that can be increased)
- Linking in minimum LQA
- Linking on best CH with Bidirectional LQA update
- Dialing (index) feature
- Concept: Loading ALE NET according to destination address




Download/Upload ALE Data Base

Group Name:

 **Delete Group**  **Edit Group**  **Add Groups**




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3	002	Charleston	PATHFINDER	2,3,4,5
4	003	Harrisburg	RM125	2,3,4,5
5	004	Annapolis	M91	2,3,4,5

 **Delete Station**  **Edit Station**  **Add Stations**

Channels:

No	Channel	Frequency [MHz]
1	0	8
2	1	12
3	2	16
4	3	19
5	4	22
6	5	25
7	6	4

 **Del Channel**  **Edit Channel**  **Add Channels**



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