

ARQ FAE IN 141A AND ALE400 EASY WITH MULTIPSK (4.36)

Introduction

In this document it will be found 5 forms (snapshots of Multipsk screen with indications to the « how to operate ») which show the basic functions of ARQ FAE in 141A and ALE400 modes. Auxiliary options are neglected (descriptions will be found in the manual) . It is based on ALE400 and applicable to 141A.

Notes about the help in Multipsk:

- for the contextual help, click on the right button of the mouse, with the focus over the mode button "ALE400", for example),
- use also the button hints (wait a fraction of second over a button).

List of the forms

- Simplest way to use ARQ FAE in « Non selective QSO »
- Non selective QSO in ARQ FAE(from the addressee side)
- Selective call in ARQ FAE
- APRS in FAE
- Mail with or without attached file in ARQ FAE

Differences between 141A and ALE400

The ALE400 system has exactly the same functions as the ones of the 141A of Multipsk except that:

- * the bandwidth is 400 Hz instead of 2000 Hz as in 141A,
- * the modulation speed (50 bauds instead of 125 bauds) and consequently the text throughput are 2.5 slower,
- * no fix frequency (as in MFSK16...), the automatic tuning being able to be done thanks to the RS/ID transmission,
- * the S/N is 5 dB better: - 11.5 dB (- 13.5 dB with many repetitions) for ARQ FAE.

Other F6CTE "EASY" papers about ALE and ALE400 in FAE:

- ["ALE and ALE400 APRS with UI-VIEW through Multipsk easy"](#)
- ["The ARQ FAE beacon easy with Multipsk"](#)
- ["QSP mails forwarding easy with Multipsk in ALE and ALE400.pdf"](#)

MULTIPSK V. 4.36 RX/TX screen * MULTIPSK - THE MULTIMODE DIGITAL TRANSCEIVER * Version 4.36

Configuration Adjustments Opti **SIMPLEST WAY TO USE ARQ FAE IN "Non selective QSO in ARQ FAE"**

TCP/IP SdR spectrum Transceiver Country/Loc World QSO Mail Tune Beacon ID CPU Level: 4%

Where? Number? Search Look-up DXK DXView Pathfinder Where? -->PSKReporter Options are in the logbook

1	Call	Name	Freq Mhz	Mode	Ur	RST	My	RST	R	S	Locator	QTH	Notes
			14	ALE40	599	599							

Cluster L/A DXKeeper Conf F

MESSAGEID TX Text **Push to call Push to end**

Call ID	RS ID	Video ID	QRGs	RX RS ID	RX Call ID
TX: ALE400	MODE			RX: ALE400	

Mail CQ End
Options Aux. functions Answer

-TX frequency RX frequency Fr. difference FRM: Photo Transmit 0%
1625.0 Hz 1625.0 Hz 0.0 Hz His: B?? S?? AFC Fixed JPG file selection Stop TX Photo display

200 500 1000 1500 2000 2500 Spectrum Waterfall High

Professional modes
Band KHz (P450=+) 2.5 3.3 4.3
Color 10 AGC Grey

PAT	TEST	C'est en 1	HEURE	NORMAN	3 NORMANDI	Normandie	Anglais
Set 2	Sets	File	Macros	Clear	Repeat	UTC	NORMANDIE Louise Anglais co CARAC HELL

RX time + callsign + mode

Once connected, you can transmit a small JPG photo (<2 kbytes). You must first select the JPG file, before transmitting it. The transmission and the reception is automatic.

In "Message mode", the message is prepared and sent when the user considers that it is ready (with the "Send" button or the <Esc> or <Alt> key). The <Enter> key is used to move to the next row.

If not "Message mode", the message is sent as and when it is written.

33 Message mode Send 24/07/18 12:00:35 UTC SpotC. Off Commander

MULTIPSK V. 4.36 RX/TX screen * MULTIPSK - THE MULTIMODE DIGITAL TRANSCEIVER * Version 4.36

Configuration Adjustments Options Tools PSKRe

Non-selective QSO in ARQ FAE (from the addressee side)

TCP/IP	SdR spectrum	Transceiver	Country/Lod	World	QSO	Mail	Tune	Beacon	ID	CPU	Level: 5 %
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Where? Number? Search Look-up DXK DXView Pathfinder Where? -->PSKReporter Options are in the logbook

2	Call	Name	Freq Mhz	Mode	Ur	RST	My	RST	R	S	Locator	QTH	Notes	Clear	Logbook	QSO->Log		
			10.1	ALE4	599	599								Cluster	L	A	DXKeeper	Cont

MESSAGE ID TX Text Push to answer OK

Call ID	RS ID	Video ID	QRGs	RX RS ID	RX Call ID	Mail	CQ	End
TX: ALE400	MODE			RX: ALE400		Options	Aux. functions	Answer

Options

TX frequency	RX frequency	Fr. difference	FRM: F6CTE	Photo	Transmit	0 %
1626.0 Hz	1626.0 Hz	0.0 Hz	B30 S30	AFC	Fixed	JPG file selection

Professional modes

BPSK31	63	125	250	FEC31	PSK10	MT63
QPSK31	63	125	250	CHIP	PSK63E	DIGISSTV
PSKAM10	31	50	PSK220E	CW/NDB	CCW	QRSS
PACKET+APRS	Amator	FEC-Navtex	ASCII			
RTTY 45	50	75	LENTUS	Pactor1	DoF	THOR
THROBX	THROB	MESK+PIC	MESK8	DominoEX		
PAX/PAX2	DTME	VOICE	JT65	OLIVA	Contestia	
FM HELL	PSK H	FELD HELL	HELL 80	RTTYM		
AUTEX	141A(AE)	/FAE	ALE400	/FAE		
Filters	Analysis	Binaural	FAX	SSTV		

200 500 1000 1500 2000 2500 Spectrum Waterfall High

Band KHz (P450=+) 2.5 3.3 4.3

Call 1	F1	CQ	F2	Call 3	F3	Answer	F4	BTU	F5	Signoff	F6	TX	F7	RX	F8	RX time + callion + mode
Set 2	Sets	File	Macros	Clear	Repeat	UTC	T/R	F9	Info	F10	CW end/fin	CW answer				12:39:12 F6CTE ALE400

Color 10 AGC Grey

You type your message here (or use a macro)

CQ DE F9XYZ In this panel, it appears the text transmitted from your side

[End of TX] ARQ FAE CQ
F9XYZ DE F6CTE

On connection In this panel, it appears the text received

[Connection made with F6CTE]

The symbol rate is as suggested by John. First testing will probably be with his 8 ms guard band but I would like to make it adaptive to short that period if multipath conditions allow. DQPSK to get more throughput and because getting the absolute phase is a challenge. Any suggestion to use absolute phase would be appreciated since that gains a couple dB. The Fourier transform is mainly to identify the potential subchannel locations to allow adjusting for frequency drift. Once high energy bins are determined the signal is filtered at various of those frequencies and the square used to detect the doubled lowest frequency (125 Hz). That also locates the symbol period for synchronization. Actually, the possible frequency includes the guard band so it may be one of three values. By determining that value the guard band period is also determined and the actual guard band removed.

The protocol being full-duplex, there is no need to wait his/her turn for typing. So you transmit your message when you want.

Message received

Send 24/07/18 12:44:14 UTC SpotC. Off Commander

MULTIPSK V. 4.36 RX/TX screen * MULTIPSK - THE MULTIMO **SELECTIVE CALL IN ARQ FAE**

Configuration Adjustments Options Tools PSKReporter Satellites Panoramic Help

TCP/IP SdR spectrum Transceiver Country/Loc World QSO Mail Tune Beacon ID CPU Level: 4 %

Where? Number? Search Look-up DXK DXView Pathfinder Where? ->PSKReporter Options are in the logbook

1	Call	Name	Freq Mhz	Mode	Ur	RST	My	RST	R	S	Locator	QTH	Notes
			14	ALE4	599	599							

Clear Logbook QSO->Log Cluster L A DXKeeper Cont F

MESSAGE ID TX Text **Push this button** OK

Call ID	RS ID	Video ID	QRGs	RX RS ID	RX Call ID
TX: ALE400	MODE			RX: ALE400	

Mail CQ End Options Aux. functions Answer

-TX frequency RX frequency Fr. difference FRM: F9XYZ Photo Transmit 0 %

1625.0 Hz	1625.0 Hz	0.0 Hz	B30 S07	AFC	Fixed
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JPG file selection Stop TX Photo display

200 500 1000 1500 2000 2500 Spectrum Waterfall High

BPSK31	63	125	250	FEC31	PSK10	MT63
QPSK31	63	125	250	CHIP	PSK63F	DIGISSTV
PSKAM10	31	50	PSK220F	CW/NDB	CCW	QRSS
PACKET+APRS	Amtor	FEC-Navtex	ASCII			
RTTY 45	50	75	LENTUS	Pactor1	DoF	THOR
THROBX	THROB	MESK+PIC	MESK8	DominoEX		
PAX/PAX2	DTMF	VOICE	JT65	OLIVIA	Contestia	
FM HELL	PSK H	FELD HELL	HELL 80	RTTYM		
AUTEX	141A(ALE)/FAE	ALE400	/FAE			
Filters	Analysis	Binaural	FAX	SSTV		

Professional modes

Hams to call Rewind

Auxiliary functions: Selective call Type the callsign or select it

This panel opens with the "Aux. functions" button on the RX/TX screen. Help 3dB max=5 dB

Management of calls Add this call to the list See the file Lists up-to-date F9XYZ

Push to call Connection made with F9XYZ Push to end Erase Received mail

Selective call in ARQ FAE Call-> F9XYZ End From: F6CTE To: F9XYZ

ARQ FAE beacon Off Mails Server Start-> End Interval (s) 30

APRS position transmission in FAE mode APRS transmission APRS window KISS KISS through TCP/IP

0 % Authorized Link established Direct mail File to send + folder Send mail (+ file)

Stop of the transmission Erase Attached file

Subject Subject of the mail (2)

ARQ FAE Message: Responder

QSP mail To my mailbox Addressee(s) AZ1ER Send Own mail recovery

PAT TEST C'est en 1 HEURE NORMAN

Set 2 Sets File Macros Clear Repeat UTC NORMANDIE

CQ F6CTE>F9XYZ

[End of TX] ARQ FAE selective call
F6CTE DE F9XYZ
[Connection made with F9XYZ]

Fonts Clear Double Height 33 Message mode

APRS IN FAE Transmission of APRS frames (position with, possibly the weather) 24/07/18 16:40:44 UTC

Building of the APRS frame you wish to transmit
 The frame correspond to a fixed station (QRA) or to a GPS station.
 Data with their button non-clicked will not be sent
 Your call must be written in the field "Sender" in the RX/TX window.
 The APRS destination is "APZMU3" (experimental APRS address)

Your position and possible weather information

Your latitude/longitude
 d-m.c (N/S) d-m.c (W/E)
 47-55.20N 001-55.80E

Frame type
 "Position" (+ altitude) "Weather" (+ position)
 "GPS position" "GPS position + altitude"

Pieces of information for "Position" frame ("Comment" also for GPS)
 Altitude feet (0 to 999999) m (0 to 304799)
 Comment

Pieces of information for "Weather" frame (not for GPS)
 Wind direction degrees (0 to 359)
 Wind speed mph (0 to 999) km/h (0 to 999)
 Gust speed mph (0 to 999) km/h (0 to 999)
 Temperature F (-99 to 999) C (-72 to 537)
 Rainfall (24h) 1/100 inch (0 to 999) mm (0 to 253)
 Snowfall (24h) inch (0 to 999) cm (0 to 999)
 Humidity % (1 to 100)
 Pressure 1/10 mbar (hPa) (0 to 99999)

Transmission window

Data checking Data storage
 Close with storage Close without storage
 Only one transmission Stop the beacon
 Beacon with interval, in minutes of: 1/2 1 3 10 20 30 60
 Non standard icon -> Emergency

Reception window

E. Y=4215 km Distance=878 km / Az.=52deg

Push this button

Your position and possible weather information

Close with storage

Push to transmit your position

ANSCEIVER * Versio

amic Help

acon ID CPU

Options are in the

Clear Logboo

Cluster L A DXK

Aux. functions

ransmi 0 %

selection Stop TX PP

1500

NDI Normandie

e Anglais co C

Push this button

Auxiliary functions: Selective call / APRS / Beacon / Transmission of a message (+file) / QSP mails

This panel opens with the "Aux. functions" button on the RX/TX screen. Help S/N max=-25 dB Addressee:

Management of calls Add this call to the list: Call See the file Lists up-to-date Call

Push this button Erase Received mail

Selective call in ARQ FAE Call-> CALL End From: To:

ARQ FAE beacon Off azerr Mails Server Start-> End Interval (s) 30

APRS position transmission in FAE mode APRS transmission APRS window KISS KISS through TCP/IP

0 % Authorized Direct mail File to send + folder Send mail (+ file)
 Disconnected Attached file
 Reset link or connection attempt Erase

Subject

MESSAGEID TX Text Mail with or without attached file (in a selective or a non-selective QSO) BX THROB MESK+PIC MESK8 DominoEX
 PAX/PAX2 DTME VOICE JT65 OLIVIA Contestia
 FM HELL PSK H FELD HELL HELL 80 RTTYM
 AUTEX 141A(AE)/FAE ALE400/FAE
 Filters Analysis Binaural FAX SSTV

Call ID RS ID Video ID QRGs RX RS ID RX Call ID Mail TX CQ End
 TX: ALE400 MODE RX: ALE400 Options Aux. functions Answer

-TX frequency RX frequency Fr. difference FRM: F9XYZ Photo Transmit TX 10% --> 1 mn 4 s
 1625.0 Hz 1625.0 Hz 0.0 Hz B30 S03 AFC Fixed JPG file selection Stop TX Photo display

200 500 1000 1500 2000 2500 Spectrum Waterfall High

PAT TEST C'est en 1 HEURE NORMAN 3 NORMANDI Normandie Anglais RX time + callion + mode
 Set 2 Sets File Macros Clear Repeat UTC NORMANDIE Louise Anglais co CARAC HELL 17:01 F9XYZ ALE400

Color 10 AGC Grey

CQ F6CTE>F9XYZ 791 Fourier transform
 The Fourier transform is mainly to identify the potential sub

[End of TX] ARQ FAE selective call
 F6CTE DE F9XYZ
 [Connection made with F9XYZ]

Transmission state

Auxiliary functions: Selective call / APRS / Beacon / Transmission of a message (+file) / QSP mails

This panel opens with the "Aux. functions" button on the RX/TX screen. Help S/N max=-7 dB

Management of calls Add this call to the list: The mails sent and received are stored in the mailbox late F9XYZ

Transmission of a message and/or a file in progress Erase Received mail

Selective call in ARQ FAE Call-> F9XYZ End From: F6CTE To: F9XYZ

ARQ FAE beacon Off azerr Mails Server Start-> End Interval (s) 30

APRS position transmission in FAE mode APRS transmission APRS window KISS KISS through TCP/IP

TX 10% --> 1 mn 4 s more Authorized Link established Direct mail File to send + folder Send mail (+ file)
 Stop of the transmission File to send A.bmp Erase Attached file

Subject The Fourier transform is mainly to identify the potential subchannel locations to allow adjusting for frequency drift. Once high energy bins are determined the signal is filtered at various of those frequencies and the square used to detect the doubled lowest frequency (125 Hz). That also locates the symbol period for synchronization. Actually, the possible frequency includes the guard band so it may be one of three values. By determining that value the guard band period is also determined and the actual guard band removed.

Fourier transform
 ARQ FAE Message: Responder

File to send Message to send

Fonts Clear Double Height 33 Message mode