

AIS Developer Studio

Release Version 1.0

ITU-R M.1371-5 Technology

**OWN PROFILE
MODULE**

NOTICE

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Objective

The objective for the use of the AIS Developer Studio is to create a general VDL environment using a PC and optional external RF signal generator / power pad. Where the choice of the base-band VDL / VDO and VDM data is easily analyzed and defined. As an AID to AIS

This product should only be used for the purposes intended by its developers and then only according to acceptable reference standards and operating procedures.

Any deviation from this may well be in conflict with competent regional authorities in your area.

The AIS Developer Studio and or Interface/s should not be used to alter the operational status of any AIS unit unless authorized by a competent authority.

Under no circumstances should the AIS Developer Studio and or Interface/s be used to create any signal content outside the scope of this document using any procedure or method offered by the AIS Developer Studio Interface.

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AISTE.ST formerly Sine Qua Non would like to take this opportunity to congratulate you on the purchase of one of the AIS Developer Studio suite of products. We want to assure you that this product range is designed using over 22 Years of AIS experience and thoroughly tested to ensure your complete satisfaction.

A demonstration program is provided free of charge. AISTE.ST requires that the user download the demo program and documentation from www.aiste.st and validate it for their respective use prior to placing an order for the un-encumbered licensed version.

Limited Warranty.

Where software discrepancies are identified and or module operational bugs are found. These should immediately be brought to the attention of AISTE.ST. The warranty is limited to the rectification of the discrepancy or bug by software upgrade, and should not exceed the original operational and technical specification as defined by AISTE.ST in the respective AIS Developer Studio module.

If you have any questions, queries or customisation requests related to this product, please do not hesitate to contact us by email:

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Thanking you,

AISTE.ST



Installation

The installation of AIS Developer Studio is as follows. Obtain the latest version of ADSV2.exe and license.txt from www.aiste.st. Create a new folder. Save the downloaded files in the folder. Run the application. This will allow the unit to run in demo mode.

Certain modulation formats will not run in demo mode.

AIS Developer Studio is not freeware.

Once you have evaluated it for your purpose please purchase your license file from www.aiste.st. Save your purchased license.txt file in the above-mentioned folder. This will allow the application to run in full un-unencumbered mode.

The license file will provide full user registration details.

Registered users will receive support if any problems with AIS Developer Studio arise.

ALL requests for support should be addressed to support@aise.st explaining any bug or discrepancy as well as a screenshot.

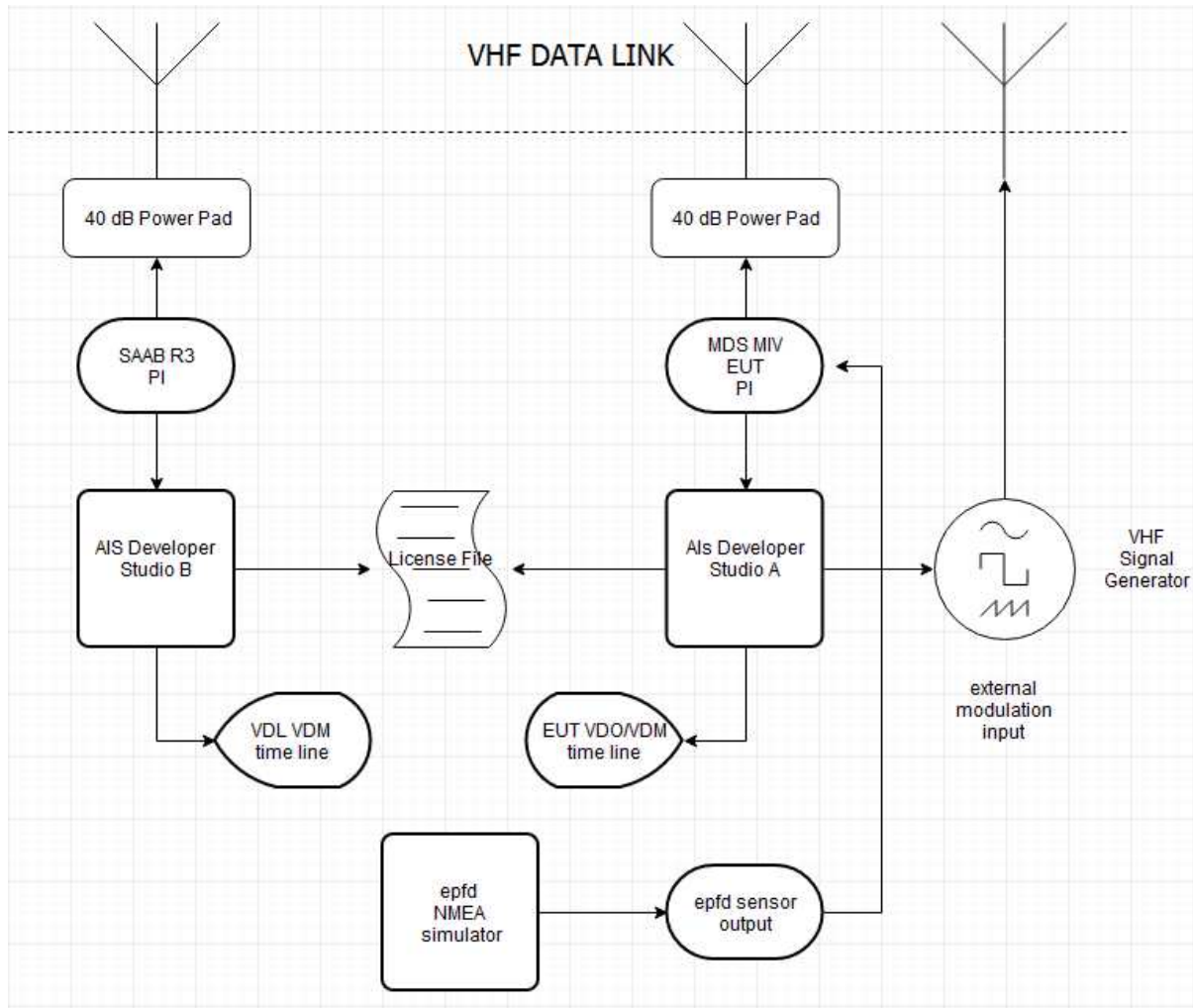
It is the intention of AISTE.ST through the current and further development of the AIS Developer Studio suite of components to continue to supply a cost effective method for development, production, integration and verification of protocols as used by AIS, ASM and VDE.

It is the intention of AISTE.ST to supply upgrades to the AIS Developer suite user group if and when they become available.

Users may subscribe to this upgrade service.

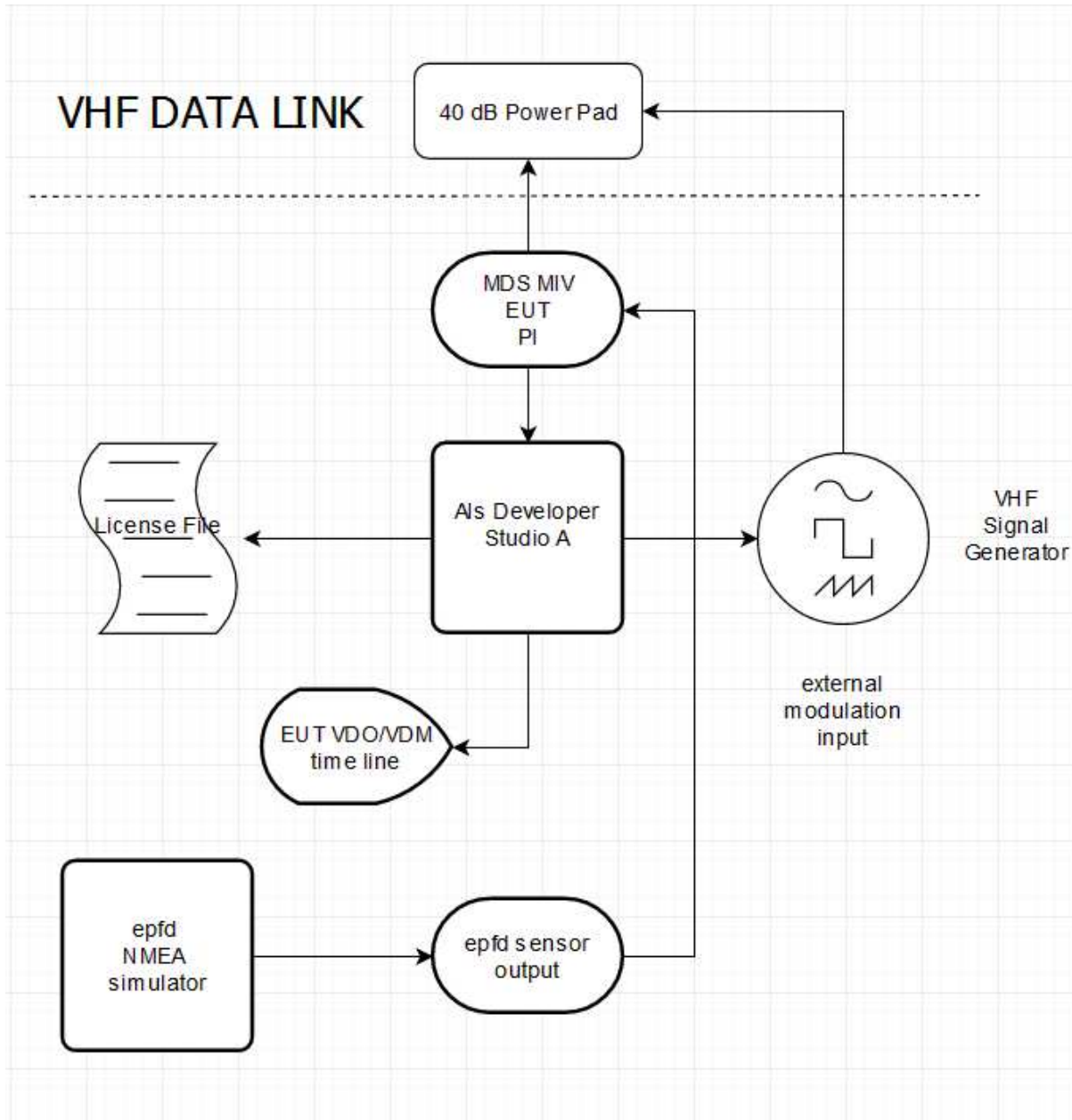


Verification set-up A



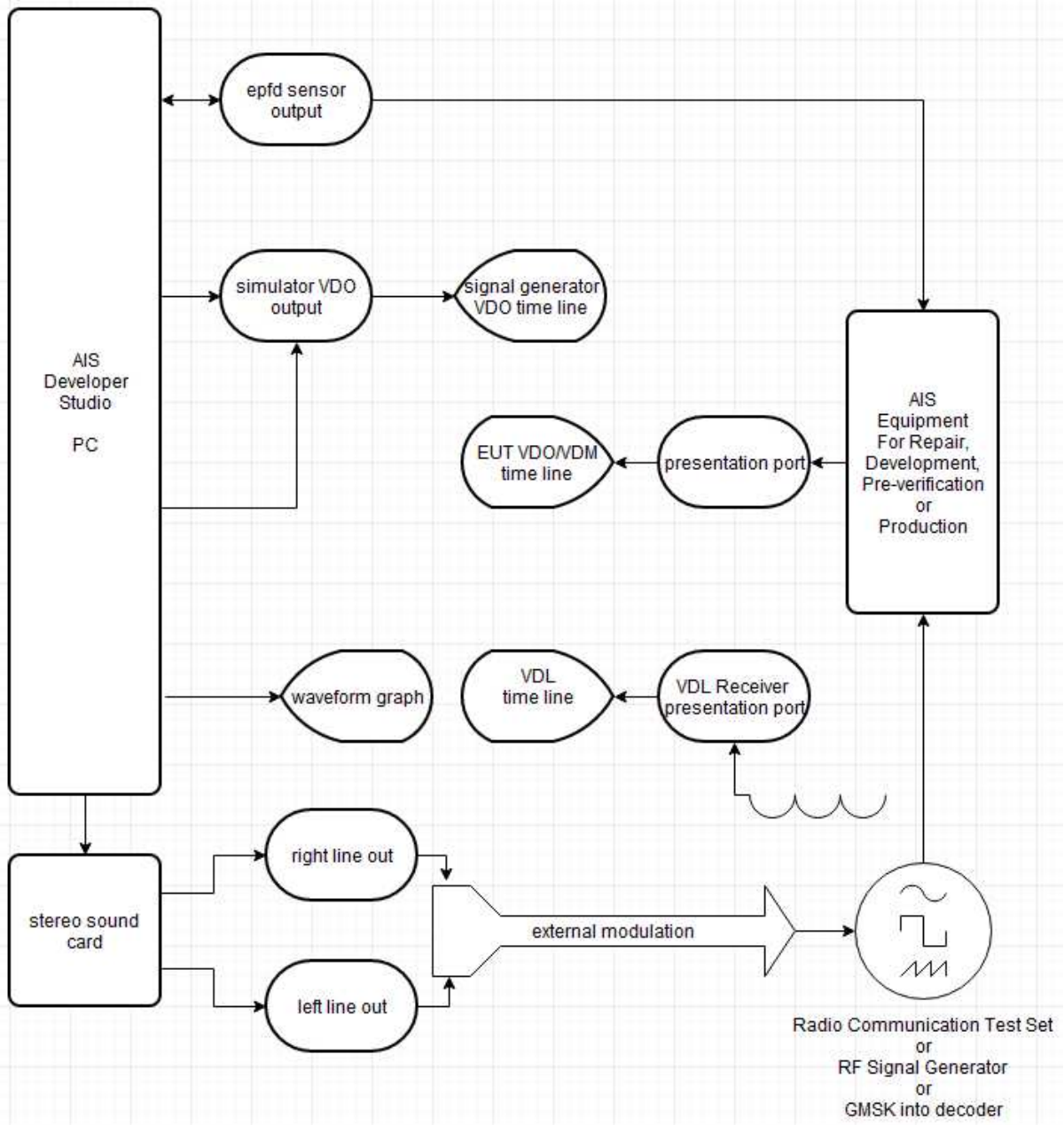


Verification set-up B





Verification set-up C





Method of measurement

Setup hardware as per Verification set-up A / B / C

Procedure

Initiate the following steps in order.

- Please follow order correctly.
- Once you have setup the signal generator modulation and created 5 separate identities you must save a system profile file.
- Save this file with a unique name so that you can re-use it and do not overwrite it.
- Step through all the following procedures.

WARNING

Many different signal generators and test sets are used to test radio communications transceivers. Some of these devices contain both signal generator and monitor receivers, which share a common output connector to the EUT path. If the signal generator is connected to the antenna connector to test the receiver, and the transmitter keys, then **serious damage can result to the signal generator.**

Higher quality instruments provide architectures with EUT reverse power protection. This circuitry will prevent damage to the signal source if a high RF power level is applied to its output connector from the EUT. Generally speaking...An AIS transmission may be too fast to correctly activate some of these protection circuit.

Make use of **EXTERNAL RF POWER PADS.**



Own Profile Overview

On application start up the “Own Profile data memory object is filled with the parameters obtained from the licence.txt file. These are system default values supplied by the client when they purchase an individual license file.

If the license file is correct it will allow opening and saving of files. Users may create unique contextual profiles for different evaluation scenarios.

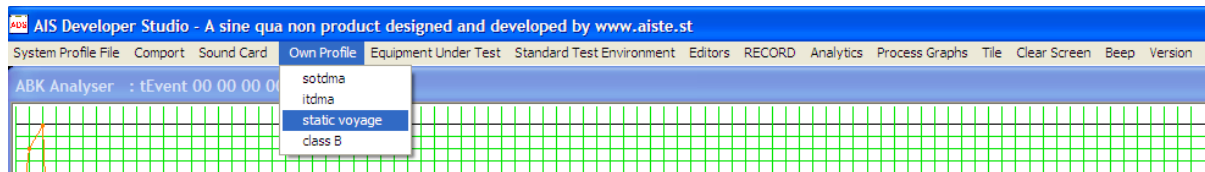
Own profile contextual information is data that is entered into the “Own Profile Dialog” and then saved as a ‘user. ads’ file. Either the user. ads profile data or the default license data is used to populate all RATDMA VDL packets.

The programmable signal generator module can send the user's profile and contextual information as part of the VDL message. You can use this information to provide a RATDMA customized VDL message.

Interactive Text Tips

The “Own Profile” dialogs feature interactive text tips. Position the mouse pointer in the desired location and click the left mouse button to display its text tip. Enable Beep menu item if you want an audible indication of error data entry.

Own Profile Menu





Sotdma

SlotTimeOut : 2,4,6 : Slot number used for this transmission (between 0 and 2 249)

Msg	RI	User ID	NvSt	ROTAis	SOG	PA	Longitude	Latitude	COG	THead	TSMP	SMI	S	RAIM	SS	STO	SubMSG
1	0	990005678	15	0	010.0	1	02814.9718,E	2550.8005,S	359.9	350.0	58	0	0	0	2	2	1234

Msg	RI	User ID	utcY	utcM	utcD	utcH	utcM	utcS	PA	Longitude	Latitude	EPFD	TXIrb	S	RAIM	SS	STO	SubMSG
4	0	990005678	2019	5	19	12	49	58	1	02814.9718,E	2550.8005,S	0	1	0	0	2	2	1234

Msg	RI	User ID	Altitude	SOG	PA	Longitude	Latitude	COG	TSMP	AS	S	DTE	S	AMF	RAIM	CSSF	SS	STO	SubMSG
9	0	990005678	4095	010.0	1	02814.9718,E	2550.8005,S	359.9	58	0	0	1	0	0	0	sel	2	2	1234

Degrees: [Slider] SOG [Slider]

Minutes: [Slider] COG [Slider]

1 / 10000: [Slider] Longitude [Slider] Latitude [Slider] HDT [Slider]

Longitude [Slider] Latitude [Slider] ROT [Slider]

CommState Step 1 - Sync State

0 - UTC direct

1 - UTC indirect

2 - Synced to a base station

3 - Synced to another station

[Slider]

ALTITUDE

CommState Step 2 - Sub Msg Data

3, 5, 7 - Received stations: [0]

2, 4, 6 - Slot number: [1234]

1 - UTC hour and minute: [1249]

0 - Slot offset: [0]

CommState Step 3 - Slot Time Out

0 last transmission in this slot

1 frame left until slot change

2 frames left until slot change

3 frames left until slot change

4 frames left until slot change

5 frames left until slot change

6 frames left until slot change

7 frames left until slot change

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 - Individual - George Fyfe
 - Registration - PMG2

Ship 0-14 knots
 Nominal reporting interval 10 s

Itdma

Keep flag : 1b : Set to TRUE (1) if the slot remains allocated for one additional frame

Msg	RI	User ID	NvSt	ROTAis	SOG	PA	Longitude	Latitude	COG	THead	TSMP	SMI	S	RAIM	SS	slotI	Nslot	KPF
3	0	990005678	15	0	010.0	1	02814.9718,E	2550.8005,S	359.9	350.0	36	0	0	0	2	375	0	1

Msg	RI	User ID	utcY	utcM	utcD	utcH	utcM	utcS	PA	Longitude	Latitude	EPFD	TXIrb	S	RAIM	SS	slotI	Nslot	KPF
0		990005678	2019	5	19	12	51	36	1	02814.9718,E	2550.8005,S	0	1	0	0	2	375	0	1

Msg	RI	User ID	Altitude	SOG	PA	Longitude	Latitude	COG	TSMP	AS	S	DTE	S	AMF	RAIM	CSSF	SS	slotI	Nslot	KPF
9	0	990005678	4095	010.0	1	02814.9718,E	2550.8005,S	359.9	36	0	0	1	0	0	0	sel	2	375	0	1

Degrees: [Slider] SOG [Slider]

Minutes: [Slider] COG [Slider]

1 / 10000: [Slider] Longitude [Slider] Latitude [Slider] HDT [Slider]

Longitude [Slider] Latitude [Slider] ROT [Slider]

CommState Step 1 - Sync State

0 - UTC direct

1 - UTC indirect

2 - Synchronized to a base station

3 - Synchronized to another station

[Slider]

ALTITUDE

Slot increment: [375]

Keep Flag

Number of slots to allocate

0 = 1 slot

1 = 2 slots

2 = 3 slots

3 = 4 slots

4 = 5 slots

5 = 1 slot; offset = slotincrement + 8 192

6 = 2 slots; offset = slot increment + 8 1!

7 = 3 slot; offset = slot increment + 8 19

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 - Registration - PMG2

Ship 0-14 knots
 Nominal reporting interval 10 s



Static and voyage

Reference point for reported position and overall dimensions of ship : A : 9b : Bit 21-Bit 29 : 0 - 511 = 511 m or greater														
Msg	RI	User ID	aisV	imoN	Call Sign	Name Of Ship				TShip	dimA	dimB	dimC	dimD
5		990005678	2	105678	A005678	MUSTANG PORT TUG@@@@@				52	25	25	10	10
			EPFD	etaM	etaD	etaH	etaM	Sdraft	Destination				DTE	S
			15	5	20	23	59	5	CAPE TOWN@@@@@@@@@@@@@@@@				1	

Class B

Class B unit flag : 1b : 1 = Class B 'CS' unit																					
Msg	RI	User ID	S	SOG	PA	Longitude	Latitude	COG	THead	TSMP	S	Unit	MKD	DSC	Band	ms22	Mode	RAIM	CSSF		
18	0	990005678	0	010.0	1	02814.9718,E	2550.8005,S	359.9	350.0	16	0	1	1	1	1	1	1	1	0		
Msg	RI	User ID	PN	Name Of Ship																	
24	0	990005678	0	PORT TUG@@@@@@@@@@@@@@@@																	
Msg	RI	User ID	PN	TShip	Vender ID	Call Sign	dimA	dimB	dimC	dimD	EPFD	S	This Product Is Licensed To								
24	0	990005678	1	52	ABC	15	185991	A005678	25	25	10	10	15	0	- Company - sinequanonth.co.za - Email - info@aiste.st - Individual - George Fyfe - Registration - PMG2						

You must complete the set of "Own Profile Dialogs" in order to correctly populate all VDL AIS Packets.

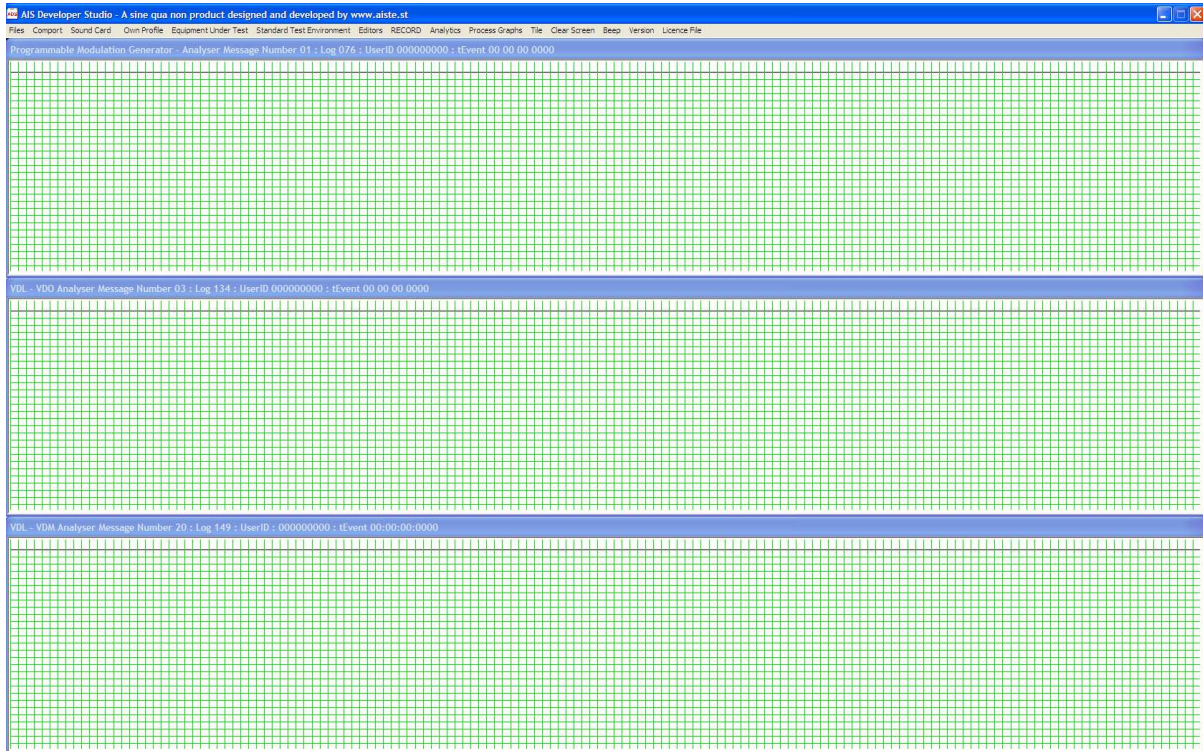
Cross populating of dialogues results.

AIS messages using a communication state are STATIC and carry the values entered into the SOTDMA and ITDMA dialogs.

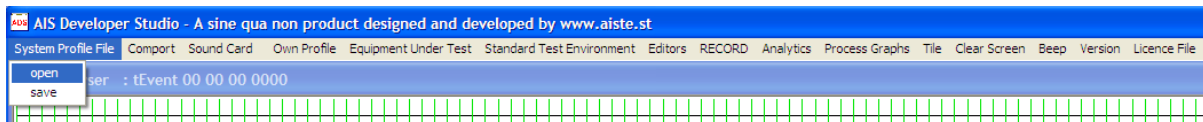


Start AIS Developer Studio

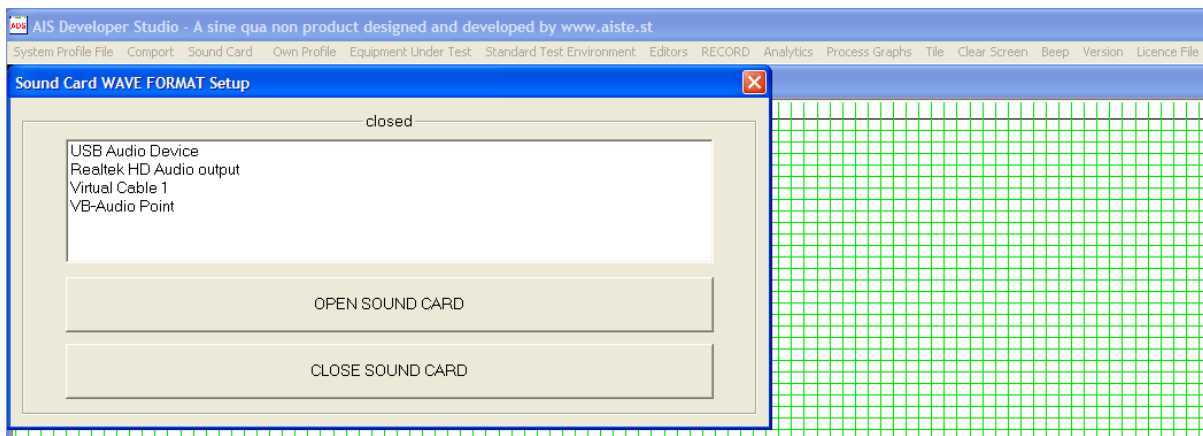
- Select and open license file
- AIS Developer Studio main time line window is displayed.



- If a “System Profile File” was previously created then select and open it.

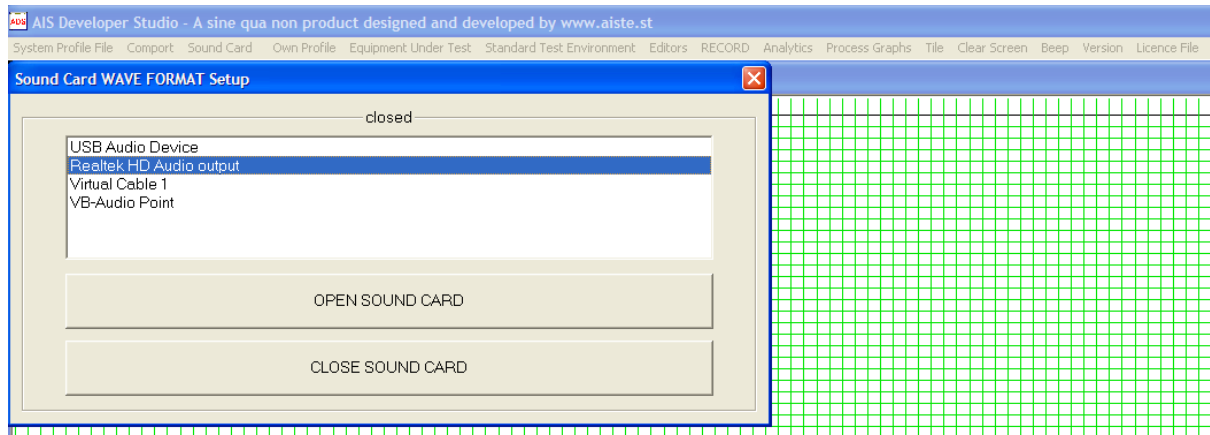


- Select Sound Card Menu Item



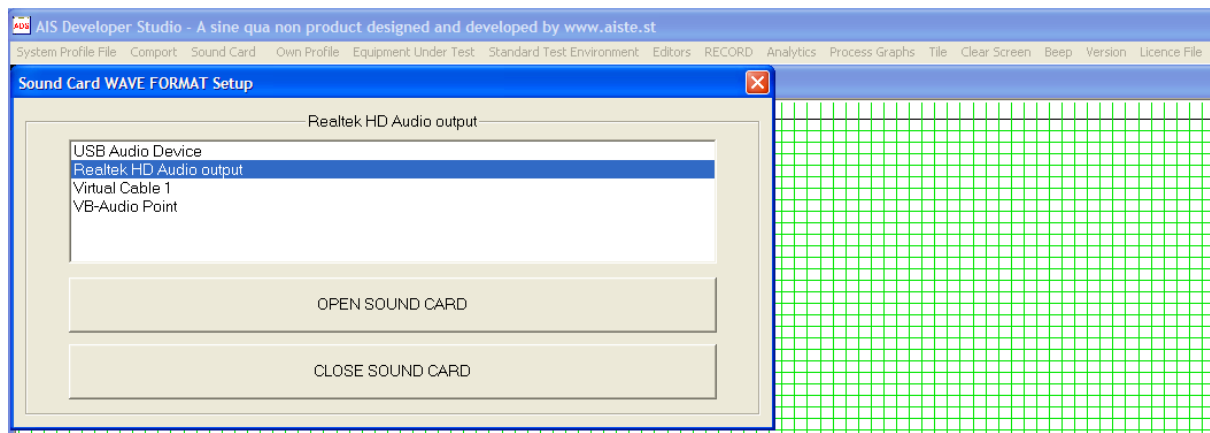


- A list of available devices will be shown.
- Dialogue device indication indicates, “closed”
- Select the “audio output device”. This will be different for every user and will depend on the internal / external soundcard/s in your system.




- Select your “Audio Output Device”
- Select “Open Sound Card”
- The dialogue will automatically close if the requested device could be opened.

If you want to view your selection re-select Sound Card Menu Item.



You can see that:

- Your previous selection is highlighted.
- If successfully opened the dialogue device string indicates the device you selected.
- Close the dialogue the conventional Windows way  or use the escape key.



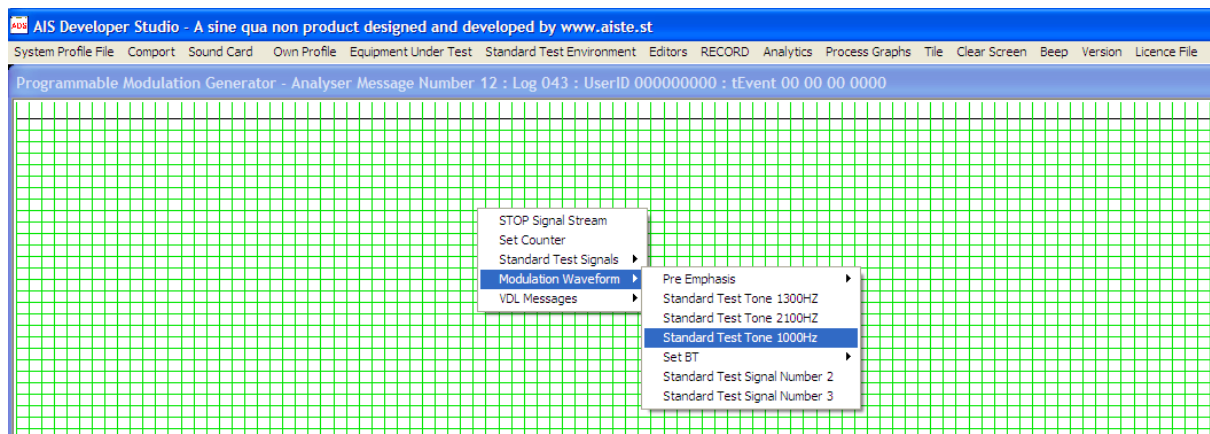
Set External Signal Generator Modulation / Deviation Level

Please read your Signal Generator Manual to find out the correct EXT modulation SETUP process for your instrument. It may be unique to your instrument.

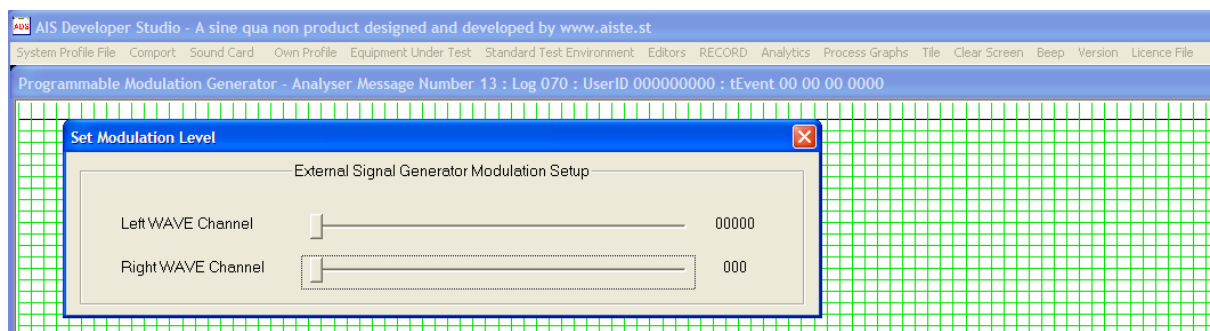
If you are unable to correctly setup your own instrument with the manufacturers manual then one of the following procedures may provide a nominally accurate 2.4KHZ deviation.

In FM, the depth of modulation is expressed as the modulation index (β), which is defined as the ratio of the deviation to the modulating frequency, or F_d/f_m . The FM process produces a large number of sidebands and, at certain values of β , the carrier will go to zero. The sidebands are described by mathematical entities called Bessel functions.

- Connect External Signal Generator Output to Spectrum Monitor.
- Setup Frequency = AIS1 / AIS2 / DSC; Span = 60 / 25Khz
- Select FM modulation as required.
- Right click mouse cursor in Programmable Modulation Time Line
- A context menu will be displayed.
- Select Modulation Waveform -> Standard Test Tone 1000HZ.



- Set the modulation frequency to 1KHz and zero level / deviation.

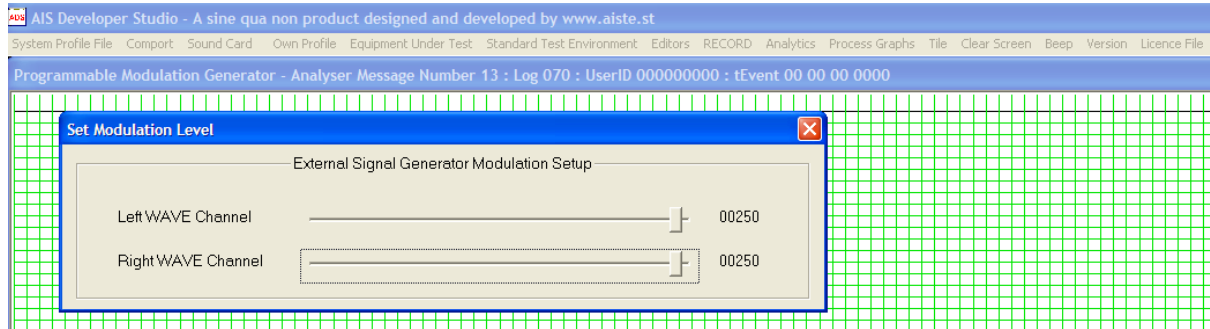


- Now slowly increase the level of the WAVE output channel / deviation that you connected to the Signal Generator EXT modulation in the “method” and you will see the carrier decrease to zero on the spectrum monitor. Leave the level at maximum null of the carrier.
- Reconnect Signal Generator to VDL “method”
- Save “System Profile File”



Alternatively if your Signal Generator has an automatic leveling EXT modulation setup, then set the Sound Card output level to just under maximum.

- This will allow the best signal to noise ratio from the sound card DAC.
- Adjust deviation on Signal Generator as required.

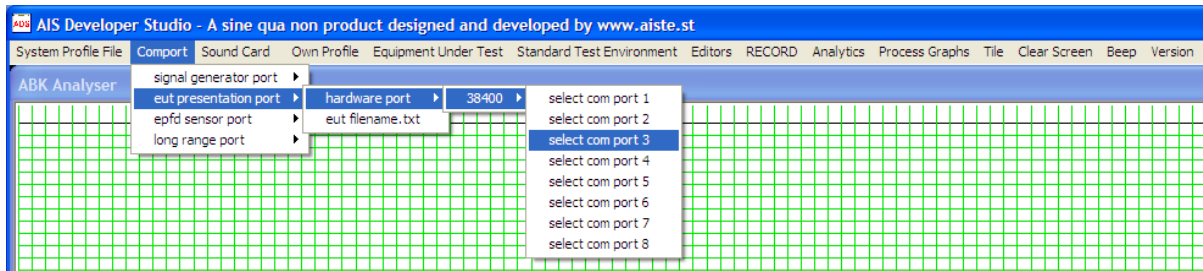


Alternatively make Use Of The IEC 61993 Transmission Mask for 25KHZ bandwidth as viewed on your Spectrum Monitor.

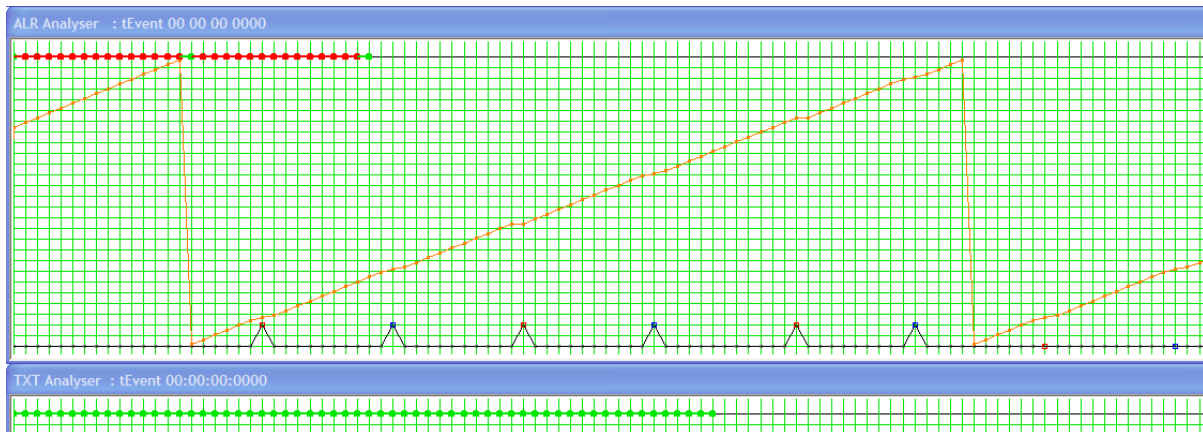




Open EUT Com Port

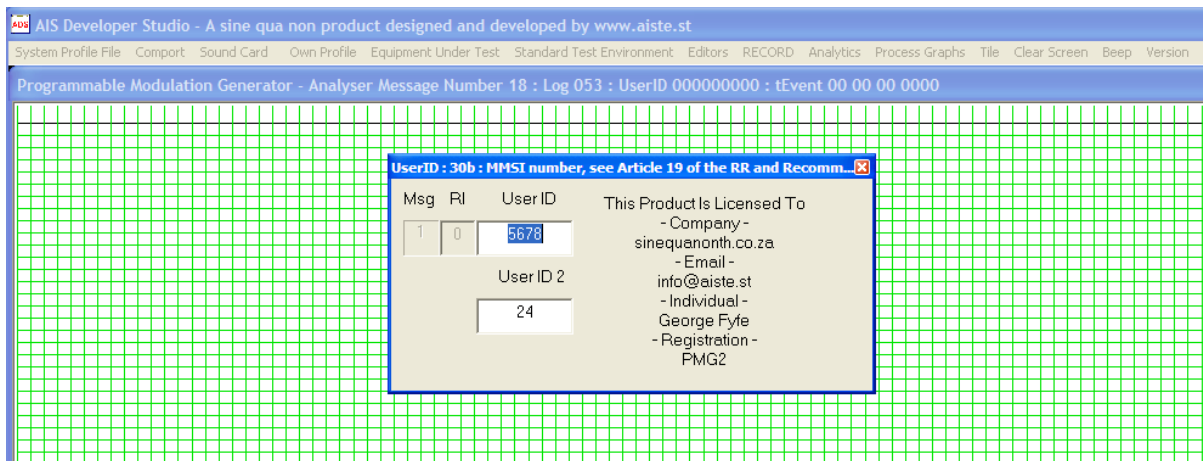


View EUT activity – EUT VDO or ADS(B) VDL VDM



Select->Equipment Under Test

- Set User ID 1 and or User ID 2
- This is the EUT MMSI
- Close the dialogue the conventional Windows way  or use the escape key.





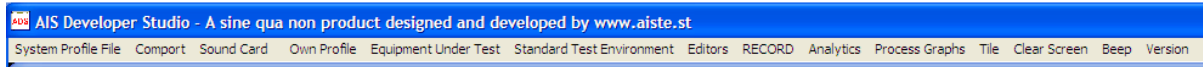
Interactive example - incorrect 6 Bit Text

REMOVE INCORRECT ITUR-M1371-5 Table 47 Character <t>

Msg RI	UserID	AIS Ver	IMO Num	Call Sign	Name Of Ship	TShip	Dimensions and Ref Position			
5	990006123	1	1073741823	AISTEST	MUSTANG CRUISER PMG2	90	1	2	3	4
		EPFD	Expected Time Of Arrival		Draught	Destination			DTE	S
		7	12	31	23	59	9	this is a test		1

Incorrect lower case characters. <t> indicates first incorrect character. Error text message will remain until all incorrect characters are replaced or removed.

Enable "Beep" from time line window menu if you wish to have a audible indication of errors.



Interactive example - correct 6 Bit Text

Destination 120b : Max 20 chars using 6-bit ASCII, @@@@@@@@@@@@@@@@@@ = not available

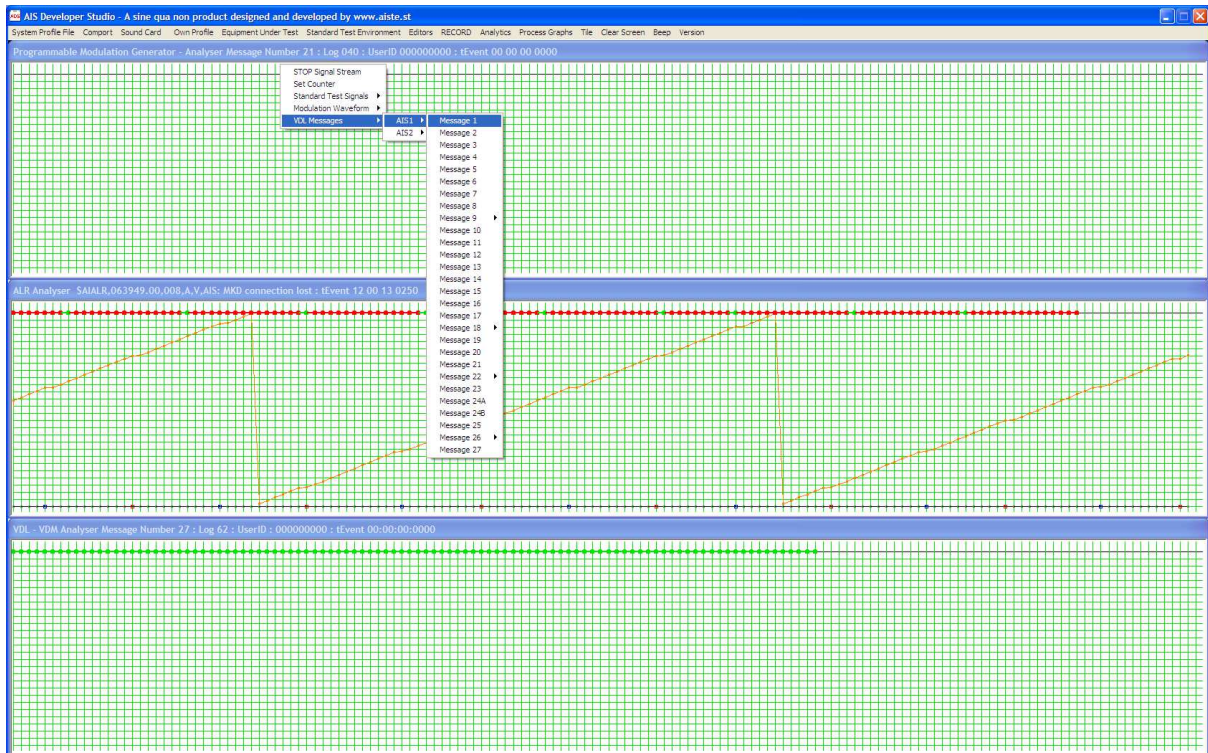
Msg RI	User ID	AIS Ver	IMO Num	Call Sign	Name Of Ship	TShip	Dimensions and Ref Position			
5	990006123	1	1073741823	AISTEST	MUSTANG CRUISER PMG2	90	1	2	3	4
		EPFD	Expected Time Of Arrival		Draught	Destination			DTE	S
		7	12	31	23	59	9	THIS IS A TEST		1

Error text replaced with text tip.



Open Context Menu

- Right click mouse cursor in Programmable Modulation Time Line
- A context menu will be displayed.



The selection of AIS1 or AIS2 will change the channel indication of the Programmable Modulation Generator VDO string.



Message 1 : Position report

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Received VDL - VDM Message Filter:

Message 1 : Position report																	
Msg	RI	User ID	NvSt	ROTais	SOG	PA	Longitude	Latitude	COG	THead	TSTP	SMI	S	RAIM	SS	STO	SubMSG
1	0	990005678	15	000	010.0	1	02814.9718'E	2550.8005'S	359.9	350	35	1	0	1	2	2	1234

Message 2 : Position report

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Received VDL - VDM Message Filter:

Message 2 : Position report																	
Msg	RI	User ID	NvSt	ROTais	SOG	PA	Longitude	Latitude	COG	THead	TSTP	SMI	S	RAIM	SS	STO	SubMSG
2	0	990005678	15	000	010.0	1	02814.9718'E	2550.8005'S	359.9	350	45	1	0	1	2	2	1234

Message 3 : Position report

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Received VDL - VDM Message Filter:

Message 3 : Position report																		
Msg	RI	User ID	NvSt	ROTais	SOG	PA	Longitude	Latitude	COG	THead	TSTP	SMI	S	RAIM	SS	SInc	NSlots	KFlag
3	0	990005678	15	000	010.0	1	02814.9718'E	2550.8005'S	359.9	350	49	1	0	1	2	0375	0	0



Message 4 : UTC and position report from base station

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Received VDL - VDM Message Filter:

Message 4 : UTC and position report from base station																	
Msg	RI	User ID	utcY	utcM	utcD	utcH	utcM	utcS	Longitude	Latitude	EPFD	TLRB	S	RAIM	SS	STO	SubMSG
4	0	990005678	2019	5	20	3	40	53	02814.9718'E	2550.8005'S	15	1	0	1	2	2	1234

Message 5 : Ship static and voyage related data

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Received VDL - VDM Message Filter:

Message 5 : Ship static and voyage related data																
Msg	RI	User ID	aisV	IMO Num	Call Sign	Name Of Ship	TShip	dimA	dimB	dimC	dimD					
5	0	990005678	2	010012345	A005678	PORT TUG@@@@@@@@@@@@@@@@	52	025	025	10	10					
			EPFD	etaM	etaD	etaH	etaM	Draught	Destination			DTE	S			
			15	00	00	00	00	00.0	CAPE TOWN@@@@@@@@@@@@@@@@			1	0			



Message 6 : Addressed binary message

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

example : [0x11,0x12] -> enter 0x11,0x12, -> each byte entry must start with '0x' and end with a comma(,)

Msg	RI	SourceID	Sequence Number	Destination ID	ReTX	S
6	0	990005678	1	5678	0	0

Payload = DAC FI(16 Bits)+(115X8 bits) = MaxPkt 936 Bits : ABM 575 : Bits 936

DAC: 100, FI: 10
 dac : 0001100100 fi : 001010

0x80,0x86,0x8d,0x94,0x9b,0xa2,0xa9,0xaf,0xb5,0xbc,0xc2,0xc8,0xcd,0xd3,0xdd,0xe1,0xe6,0xea,0xed,0xf1,0xf4,0xf6,0xf9,0xfb,0xfc,0xfe,0xff,0xff,0xff,0xfe,0xfd,0xfc,0xfa,0xf8,0xf5,0xf2,0xef,0xec,0xe8,0xe3,0xdf,0xda,0x

TABLE 55

Number of slots	Maximum binary data bytes
1	8
2	36
3	64
4	92
5	117

DEMO: 115 Binary Data Bytes, 115 Point Sine Wave

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 - Registration - PMG2

DEMO: Select

VDL: Select

NOTE: Binary editor supports cut and paste in correct format. [0xhh,]

Received VDL - VDM Message Filter:

Message 6 : Addressed binary message

Msg	RI	User ID	SeqNumber	DestinationID	ReTx Flag	Spare	DAC	FI
6	0	990005678	1	000005678	0	0	100	10

0x80,0x86,0x8D,0x94,0x9B,0xA2,0xA9,0xAF,0xB5,0xBC,0xC2,0xC8,0xCD,0xD3,0xDD,0xE1,0xE6,0xEA,0xED,0xF1,0xF4,0xF6,0xF9,0xFB,0xFC,0xFE,0xFE,0xFF,0xFF,0xFE,0xFD,0xFC,0xFA,0xF8,0xF5,0xF2,0xEF,0xEC,0xE8,0xE3,0xDF,0xDA,0xD5,0xD0,0xCA,0xC5,0xBF,0xB9,0xB2,0xAC,0xA5,0x9F,0x98,0x91,0x8A,0x83,0x7C,0x75,0x6E,0x67,0x60,0x5A,0x53,0x4D,0x46,0x40,0x3A,0x35,0x2F,0x2A,0x25,0x20,0x1C,0x17,0x13,0x10,0x0D,0x0A,0x07,0x05,0x03,0x02,0x01,0x00,0x00,0x00,0x01,0x01,0x03,0x04,0x06,0x09,0x0B,0x0E,0x12,0x15,0x19,0x1E,0x22,0x27,0x2C,0x32,0x37,0x3D,0x43,0x4A,0x50,0x56,0x5D,0x64,0x6B,0x72,0x79,



Message 7 : Binary acknowledge

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Sequence number : 2b : 0-3; see § 5.3.1, Annex 2											
Msg	RI	User ID	S	Destination Id1	SqId1	Destination Id2	Sq Id2	Destination Id3	SqId3	Destination Id4	SqId4
7	0	990005678	0	123456789	1	0	0	0	0	0	0
VDL											

Minimum Entry	
Destination ID1	MMSI number of first destination of this ACK
Sequence number for ID1	Sequence number of message to be acknowledged; 0...3

Received VDL - VDM Message Filter:

Message 7 : Binary acknowledge											
Msg	RI	User ID	S	DestinationID1	SqID1	DestinationID2	SqID2	DestinationID3	SqID3	DestinationID4	SqID4
7	0	990005678	0	123456789	1	000000000	0	000000000	0	000000000	0



Message 8: Binary broadcast message

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

example : [0x11,0x12] -> enter 0x11,0x12, -> each byte entry must start with '0x' and end with a comma...

Msg	RI	SourceID	S	DEMO		VDL
8	0	990005678	0	119 Binary Data Bytes 119 Point Sine Wave		

Payload = DAC FI (16 Bits) + (119 X 8 bits) = 936 Bits

DAC: 100 FI: 10
dac : 0001100100 fi : 001010

```
0x80,0x86,0x8d,0x94,0x9a,0xa1,0xa7,0xae,0xb4,0xba,0xc0,0xc5,0xcb,0xd0,0xd5,0xda,0xdf,0xe3,0xe7,0xeb,0xee,0xf2,0xf4,0xf7,0xf9,0xfb,0xfd,0xfe,0xff,0x01,0x02,0x04,0x06,0x08,0x0b,0x0d,0x11,0x14,0x18,0x1c,0x20,0x25,0x2a,0x2f,0x34,0x3a,0x3f,0x45,0x4b,0x51,0x58,0x5e,0x65,0x68,0x72,0x79
```

TABLE 58

Number of slots	Maximum binary data bytes
1	12
2	40
3	68
4	96
5	121

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DEMO: Select

VDL: Select

NOTE: Binary editor supports cut and paste in correct format. [0xhh,]

Received VDL - VDM Message Filter:

Message 8 : Binary broadcast message

Msg	RI	User ID	S	DAC	FI
8	0	990005678	0	100	10

```
0x80,0x86,0x8d,0x94,0x9a,0xa1,0xa7,0xae,0xb4,0xba,0xc0,0xc5,0xcb,0xd0,0xd5,0xda,0xdf,0xe3,0xe7,0xeb,0xee,0xf2,0xf4,0xf7,0xf9,0xfb,0xfd,0xfe,0xff,0x01,0x02,0x04,0x06,0x08,0x0b,0x0d,0x11,0x14,0x18,0x1c,0x20,0x25,0x2a,0x2f,0x34,0x3a,0x3f,0x45,0x4b,0x51,0x58,0x5e,0x65,0x68,0x72,0x79
```



Message 9 : Standard search and rescue aircraft position report SOTDMA

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item (Message 9->SOTDMA).

Received VDL - VDM Message Filter:

Msg	RI	User ID	ALT	SOG	PA	Longitude	Latitude	COG	TS	AltSen	S	DTE	S	AS	RAIM	CF
9	0	990005678	4095	0100	1	02814.9718'E	2550.8005'S	359.9	5	1	0	1	0	1	1	0

SS	STO	SubMSG
2	2	1234

Message 9 : Standard search and rescue aircraft position report ITDMA

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item (Message 9->ITDMA).

Received VDL - VDM Message Filter:

Msg	RI	User ID	ALT	SOG	PA	Longitude	Latitude	COG	TS	AltSen	S	DTE	S	AS	RAIM	CF
9	0	990005678	4095	0100	1	02814.9718'E	2550.8005'S	359.9	33	1	0	1	0	1	1	1

SS	Sinc	NSlots	KFlag
2	0375	0	0



Message 10 : Coordinated universal time and date inquiry

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

Received VDL - VDM Message Filter:

The screenshot shows a dialog box titled "Message 10 : Coordinated universal time and date inquiry". It contains a table with the following data:

Msg	RI	User ID	S	Destination ID	S
10	0	990005678	0	000005678	0

Message 11 : UTC and position response from mobile station

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

Received VDL - VDM Message Filter:

The screenshot shows a dialog box titled "Message 11 : UTC and position response from mobile station". It contains a table with the following data:

Msg	RI	User ID	utcY	utcM	utcD	utcH	utcM	utcS	Longitude	Latitude	EPFD	TxLRB	S	RAIM	SS	STO	SubMSG
11	0	990005678	2019	5	20	7	40	47	02814.9718'E	2550.8005'S	15	1	0	1	2	2	1234



Message 12 : Addressed safety related message

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Correct ITUR-M1371-5 Table 47 Character <@>

Msg	RI	SourceID	seqN	Destination ID	ReTx	S
12	0	990005678	1	5678	0	0

DEMO
156 Character
Safety Related
Text String

VDL

Payload = (156 X 6 bits) = MaxPkt 936 Bits : SRT 156

```
@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^~
!#$%&'()*+,-./0123456789;:<=>?@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@?>=<;:9876543210/.,+*)('&%$#! -^)[ZYXWVUTSRQPONMLKJIHGFEDCBA@
```

TABLE 62

Number of slots	Maximum 6-bit ASCII characters
1	10
2	48
3	85
4	122
5	156

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DEMO: Select

VDL: Select

NOTE1: Binary editor supports cut and paste in correct 6 bit format.

NOTE2: If you are going to paste text into the edit box, first switch the audible “fault” Beep on. It will indicate all non-accepted 6-bit characters.

Received VDL - VDM Message Filter:

Message 12 : Addressed safety related message

Msg	RI	User ID	SeqNumber	Destination ID	ReTx	S
12	0	990005678	1	000005678	0	0

```
@ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^~
!#$%&'()*+,-./0123456789;:<=>?@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
-^)[ZYXWVUTSRQPONMLKJIHGFEDCBA@
```



Message 13: Safety related acknowledge

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Msg	RI	User ID	S	Destination Id1	SqId1	Destination Id2	Sq Id2	Destination Id3	SqId3	Destination Id4	SqId4
13	0	990005678	0	123456789	1	0	0	0	0	0	0

VDL

Received VDL - VDM Message Filter:

Msg	RI	User ID	S	DestinationID1	SqID1	DestinationID2	SqID2	DestinationID3	SqID3	DestinationID4	SqID4
13	0	990005678	0	123456789	1	000000000	0	000000000	0	000000000	0



Message 14: Safety related broadcast message

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Correct ITUR-M1371-5 Table 47 Character <@>

Msg	RI	SourceID	S
14	0	990005678	0

DEMO - 161 Character Safety Related Text String

VDL

Payload = (161X 6 bits) = Max 966 Bits : SRBM 156

```
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^~
!"#$%&'()*+,-./0123456789:;<=>?@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@?>=<;:9876543210/./,+*)(`&%$#! -^)\ZYXWVUTSRQPONMLKJIHGFEDCBA@
```

Number of slots	Maximum 6-bit ASCII characters
1	16
2	53
3	90
4	128
5	161

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DEMO: Select

VDL: Select

NOTE1: Binary editor supports cut and paste in correct 6 bit format.

Received VDL - VDM Message Filter:

Message 14 : Safety related broadcast message

Msg	RI	User ID	S
14	0	990005678	0

```
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^~
!"#$%&`()*+,-./0123456789:;<=>?@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@@@@@@@@@?>=<;:9876543210/./,+*)(`&%$#!
-^)\ZYXWVUTSRQPONMLKJIHGFEDCBA@
```



Message 15: Interrogation

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
 A context menu will be displayed.
 Left click mouse to select item.

Offset A/B : 12b : (A)Offset from current slot to first assigned slot. (B)Should be omitted if there is assignment to station A, only

Msg	RI	User ID	S	destID1.0	mID1.0	offS1.0	S	mID1.1	offS1.1	S	destID2.0	mID2.0	offS2.0	S
15	0	990005678	0	123456789	!	0	0	0	0	0	0	0	0	0

VDL

Minimum Entry	
Destination ID1	MMSI number of first interrogated station
Message ID1	First requested message type from first interrogated station

Received VDL - VDM Message Filter:

Message 15 : Interrogation

Msg	RI	User ID	S	DestinationID1	mID1	sOffset1.1	S	mID1.2	sOffset1.2	S	DestinationID2	mD2.1	sOffse 2.1	S
15	0	990005678	0	123456789	1	0000	0	0	0000	0	000000000	0	0000	0



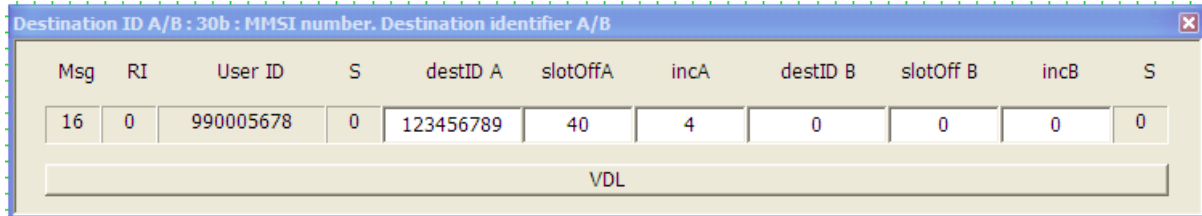
Message 16 : Assigned mode command

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

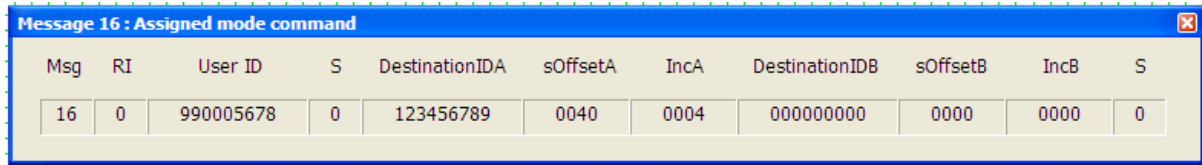
A context menu will be displayed.

Left click mouse to select item.



Minimum Entry	
Destination ID A	MMSI number. Destination identifier A
Offset A	Offset from current slot to first assigned slot
Increment A	Increment to next assigned slot
Please Read M.1371-5 and or view the tech tips in the Dialog title bar to understand this message	

Received VDL - VDM Message Filter:





Message 17: Global navigation-satellite system broadcast binary message

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

Surveyed longitude of DGNSS ref station in 1/10 min. 91° = not available - IIII,N/S

Msg	RI	SourceID	S	Longitude	Latitude
17	0	990005678	0	18159.9,E	9159.9,S

Payload = (92 X 8 bits) = 736 Bits : Editor = Bits 736

```
0x80,0x88,0x91,0x99,0xa2,0xaa,0xb2,0xba,0xc2,0xc9,0xd0,0xd7,0xdd,0xe2,0xe8,
0xec,0xf1,0xf4,0xf8,0xfa,0xfc,0xfe,0xff,0xff,0xff,0xfe,0xfc,0xfa,0xf8,0xf4,0xf1,0xec
,0xe8,0xe2,0xdd,0xd7,0xd0,0xc9,0xc2,0xba,0xb2,0xaa,0xa2,0x99,0x91,0x88,0x80
,0x77,0x6e,0x66,0x5d,0x55,0x4d,0x45,0x3d,0x36,0x2f,0x28,0x22,0x1d,0x17,0x13
```

DEMO - Binary Data Bytes

VDL

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 - Individual - George Fyfe
 - Registration - PMG2

DEMO: Select

VDL: Select

Binary editor supports formatted (0xhh,) cut and paste Differential correction data.

Received VDL - VDM Message Filter:

Message 17: Global navigation-satellite system broadcast binary message

Msg	RI	User ID	S	Longitude	Latitude
17	0	990005678	0	18159.9,E	9159.9,S

```
0x80,0x88,0x91,0x99,0xA2,0xAA,0xB2,0xBA,0xC2,0xC9,0xD0,0xD7,0xDD,0xE2,0xE8,0xEC,0xF1,0xF4,0xF8,0xFA,0xFC,0xFE,0xFF,0xFF,0xF
F,0xFE,0xFC,0xFA,0xF8,0xF4,0xF1,0xEC,0xE8,0xE2,0xDD,0xD7,0xD0,0xC9,0xC2,0xBA,0xB2,0xAA,0xA2,0x99,0x91,0x88,0x80,0x77,0x6E,0x
66,0x5D,0x55,0x4D,0x45,0x3D,0x36,0x2F,0x28,0x22,0x1D,0x17,0x13,0xE0,0xB0,0x70,0x50,0x30,0x10,0x00,0x00,0x00,0x10,0x30,0x50,0x
70,0xB0,0xE0,0x13,0x17,0x1D,0x22,0x28,0x2F,0x36,0x3D,0x45,0x4D,0x55,0x5D,0x66,0x6E,0x77,
```



Message 18: Standard class B equipment position report -SOTDMA

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

Received VDL - VDM Message Filter:

Msg	RI	User ID	S	SOG	PA	Longitude	Latitude	COG	THead	TSTP	S	Unit	MKD	DSC	Band	msg22	Mode
18	0	990005678	0	010.0	1	02814.9718,E	2550.8005,S	359.9	350	24	0						

RAIM	CF	SS	STO	SubMSG
0	0	3	2	1234

Received VDL - VDM Message Filter:

Msg	RI	User ID	S	SOG	PA	Longitude	Latitude	COG	THead	TSTP	S	Unit	MKD	DSC	Band	msg22	Mode
18	0	990005678	0	010.0	1	02814.9718,E	2550.8005,S	359.9	350	29	0						

RAIM	CF	SS	Sinc	NSlots	KF
0	1	3	0000	3	0

Received VDL - VDM Message Filter:

Msg	RI	User ID	S	SOG	PA	Longitude	Latitude	COG	THead	TSTP	S	Unit	MKD	DSC	Band	msg22	Mode
18	0	990005678	0	010.0	1	02814.9718,E	2550.8005,S	359.9	350	36	0	1	0	0	0	0	0

RAIM	CF	SS	Sinc	NSlots	KF
0	1	3	0000	3	0



Message 19 : Extended class B equipment position report

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
 A context menu will be displayed.
 Left click mouse to select item.

Received VDL - VDM Message Filter:

Msg	RI	User ID	S	SOG	PA	Longitude	Latitude	COG	THead	TSMP	S	Name Of Ship
19	0	990005678	000	010.0	1	02814.9718,E	2550.8005,S	359.9	350	27	0	@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@

TSHP	dimA	dimB	dimC	dimD	EPFD	RAI	DTE	AS	S
0	000	000	00	00	0	0	1	0	0

Message 20: Data link management message

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
 A context menu will be displayed.
 Left click mouse to select item.

Msg	RI	User ID	S	offSetN1	numS1	TO1	inc1	offSetN2	numS2	TO2	inc2
20	0	990005678	0	100	15	7	0	200	15	6	0

offSetN3	numS3	TO3	inc3	offSetN4	numS4	TO4	inc4	S
300	15	5	0	400	15	4	0	0

Minimum Entry	
Offset number 1	Reserved offset number; 0 = not available
Number of slots 1	Number of reserved consecutive slots: 1 - 15; 0 = not available
Time-out 1	Time-out value in minutes; 0 = not available.
Increment 1	Increment to repeat reservation block 1; 0 = not available.

Received VDL - VDM Message Filter:

Msg	RI	User ID	S	OfsNum1	NS1	TO1	Inc 1	OfsNum2	NS2	TO2	Inc 2
20	0	990005678	0	0100	15	7	0000	0200	15	6	0000

OfsNum3	NS3	TO3	Inc 3	OfsNum4	NS4	TO4	Inc 4	S
0300	15	5	0000	0400	15	4	0000	0



Message 21 : Aids-to-navigation report

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

Msg	RI	User ID	AType	Aids to Navigation Name (Name Of Ship)	PA	Longitude	Latitude	dimA	dimB	dimC	dimD	EPFD	
21	0	990001234	7	PORT TUG@@@@@@@@@@@@	1	02814.9718,E	2550.8005,S	25	25	5	5	15	
VDL				TSP	offP	AtoNstatus	RAIM	VPF	AMF	S	Aids to Navigation Extended Name		S
				15	0	1 1 1 1 1 1 1 1	1	0	0	0	EXTENDED NAME@		0

AtoN Status should be entered in a binary fashion with either a space or a comma delimiter.

Eg. 1 0 1 0 1 0 1 0
1,0,1,0,1,0,1,0,

Received VDL - VDM Message Filter:

Msg	RI	User ID	AType	Aids to Navigation Name	PA	Longitude	Latitude	dimA	dimB	dimC	dimD	EPFD	
21	0	990001234	007	PORT TUG@@@@@@@@@@@@	1	02814.9718,E	2550.8005,S	025	025	05	05	15	
				TSP	offP	AtoNstatus	RAIM	VPF	AS	S	Aids to Navigation Extended Name		S
				0	0	1 1 1 1 1 1 1 1	1	0	0	0	EXTENDED NAME@		0



Message 22 : Channel management - Geographical

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

Value of 1 nautical mile to a value of 8 nautical miles (with a resolution of 1 nautical milc)																
Msg	RI	Station ID	S	ChanA	ChanB	TxRx	Pw	Longitude 1	Latitude 1	Longitude 2	Latitude 2	BcAd	bwA	bwB	TZS	S
22	0	990001234	0	2048	2049	1	1	02814.9,E	2550.8,S	02814.9,E	2550.8,S	0	0	0	β	

Received VDL - VDM Message Filter:

Message 22 : Channel management																
Msg	RI	Station ID	S	ChanA	ChanB	TxRx	Pw	Longitude 1	Latitude 1	Longitude 2	Latitude 2	BcAd	bwA	bwB	TZS	S
22	0	990001234	0	2048	2049	1	1	02814.9,E	2550.8,S	02814.9,E	2550.8,S	0	0	0	3	0

Message 22 : Channel management - Addressed

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

VHF channel number, see ITU- R M.1084, Annex 4																
Msg	RI	Station ID	S	ChanA	ChanB	TxRx	Pw	msbID1	lsbID1	msbID2	lsbID2	BcAd	bwA	bwB	TZS	S
22	0	990001234	0	2048	2049	1	1	1	1582	0	0	1	0	0	3	

Received VDL - VDM Message Filter:

VHF channel number, see ITU- R M.1084, Annex 4																
Msg	RI	Station ID	S	ChanA	ChanB	TxRx	Pw	msbID1	lsbID1	msbID2	lsbID2	BcAd	bwA	bwB	TZS	S
22	0	990001234	0	2047	2048	5	1	1	1582	0	0	1	1	2	3	



Message 23 : Group assignment command

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Msg	RI	UserID	S	Longitude 1	Latitude 1	Longitude 2	Latitude 2	StaT	TShp	S	TxRx	RepR	QTme
23	0	990001234	0	02814.9,E	2550.8,S	02814.9,E	2550.8,S	0	52	0	1	0	0

VDL

Received VDL - VDM Message Filter:

Msg	RI	Station ID	S	Longitude 1	Latitude 1	Longitude 2	Latitude 2	StaT	TShi	TRxM	RR	QT
23	0	990001234	0	02814.9,E	2550.8,S	02814.9,E	2550.8,S	0	052	1	0	0



Message 24 A : Static data report

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Received VDL - VDM Message Filter:

Msg	RI	User ID	PartNum	Name Of Ship
24	0	990001234	0	PORT TUG@@@@@@@@@@@@@@@@

Message 24 B : Static data report

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Received VDL - VDM Message Filter:

Msg	RI	User ID	PartNum	TShip	Vendor ID	Call Sign	dimA	dimB	dimC	dimE		
24	0	990001234	1	52	APZ	15	1048575	A001234	025	025	05	05



Message 25 : Single Slot Binary Message

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

Destination Indicator : 1b : 1 = Addressed (Destination ID uses 30 data bits for MMST)

Msg	RI	SourceID	DestInd	BinDat	Destination ID
25	0	990001234	1	1	5678

Payload = DestInd(32) + BinDatFlg(16) + Editor(112) = Bits 160

DAC: 100 FI: 10
 dac : 0001100100 fi : 001010

Binary Data Bytes

0x80,0xb7,0xe3,0xfc,0xfc,0xe3,0xb7,0x80,0x48,0x1c,0x03,0x03,0x1c,0x48,

TABLE 81

Destination indicator	Coding method	Binary data (maximum bits)
0	0	128
0	1	112
1	0	96
1	1	80

VDL

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Received VDL - VDM Message Filter:

Message 25 : Single Slot Binary Message

Msg	RI	User ID	DesI	BIF	Destination ID	DAC	FI
25	0	990001234	1	1	000005678	100	10

Binary :

0x80,0xb7,0xe3,0xfc,0xfc,0xe3,0xb7,0x80,0x48,0x1c,0x03,0x03,0x1c,0x48,



Message 26: Multiple slot binary message with communications state SOTDMA

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

ApplicationID : 16b : DAC + FI, consisting of, 6-bit function identifier FI -> 64 unique application specific messages

Files communication state Licence File

Msg	RI	SourceID	DestI	BinD	Destination ID	CST	SS	STO	SubMessage
26	0	990001234	1	1	5678	0	2	2	1234

Payload

DAC: 100 FI: 10
dac : 0001100100 fi : 001010

```
0x80,0x86,0x8d,0x94,0x9a,0xa1,0xa7,0xae,0xb4,0xba,0xc0,0xc5,0xcb,0xd0,0xd5,0xda,0xdf,0xe3,0xee,0xeb,0xee,0xf2,0xf4,0xf7,0xf9,0xfb,0xfd,0xfe,0xff,0xff,0xff,0xfe,0xfd,0xfc,0xfa,0xf8,0xf6,0xf3}
```

TABLE 83

Destination indicator	Binary data flag	Binary data (maximum bits)				
		1-slot	2-slot	3-slot	4-slot	5-slot
0	0	104	328	552	776	1000
0	1	88	312	536	760	984
1	0	72	296	520	744	968
1	1	56	280	504	728	952

DEMO Binary Data Bytes(Based On Pre-Selection Of DestInd And BinDat)

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Received VDL - VDM Message Filter:

Message 26: Multiple slot binary message with communications state SOTDMA

Msg	RI	User ID	DesI	BIF	Destination ID	DAC	F	SS	STO	SubMSG
26	0	990001234	1	1	000005678	100	10	2	2	1234

```
0x80,0x86,0x8D,0x94,0x9A,0xA1,0xA7,0xAE,0xB4,0xBA,0xC0,0xC5,0xCB,0xD0,0xD5,0xDA,0xDF,0xE3,0xE7,0xEB,0xEE,0xF2,0xF4,0xF7,0xF9,0xFB,0xFD,0xFE,0xFE,0xFF,0xFF,0xFF,0xFE,0xFD,0xFC,0xFA,0xF8,0xF6,0xF3,0xF0,0xED,0xE9,0xE5,0xE1,0xDD,0xD8,0xD3,0xCE,0xC8,0xC3,0xBD,0xB7,0xB1,0xAA,0xA4,0x9E,0x97,0x90,0x8A,0x83,0x7C,0x75,0x6F,0x68,0x61,0x5B,0x55,0x4E,0x48,0x42,0x3C,0x37,0x31,0x2C,0x27,0x22,0x1E,0x1A,0x16,0x12,0x0F,0x0C}
```



Message 26: Multiple slot binary message with communications state ITDMA

Generate:

Right click mouse cursor in Programmable Modulation Time Line.
A context menu will be displayed.
Left click mouse to select item.

ApplicationID : 16b : DAC + FI, consisting of, 6-bit function identifier FI -> 64 unique application specific messages

Msg	RI	SourceID	DestI	BinD	Destination ID	CSF	SS	SLINC	NSLOT	KPF
26	0	990001234	1	1	5678	1	2	375	0	1

Payload = DestInd(32) + BinDatFlg(16) + Editor(952) = Bits 1000

DAC: 100 F: 10

dac : 0001100100 fi :

```
0x80,0x86,0x8d,0x94,0x9a,0xa1,0xa7,0xae,0xb4,0xba,0xc0,0xc5,0xcb,0xd0,0xd5,0xda,0xdf,0xe3,0xe7,0xeb,0xee,0xf2,0xf4,0xf7,0xf9,0xfb,0xfd,0xfe,0xff,0xff,0xff,0xfe,0xfd,0xfc,0xfa,0xf8,0xf6,0xf3,
```

VDL

TABLE 83

Destination indicator	Binary data flag	Binary data (maximum bits)				
		1-slot	2-slot	3-slot	4-slot	5-slot
0	0	104	328	552	776	1000
0	1	88	312	536	760	984
1	0	72	296	520	744	968
1	1	56	280	504	728	952

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DEMO Binary Data Bytes(Based On Pre-Selection Of DestInd And BinDat)

Received VDL - VDM Message Filter:

Message 26 : Multiple slot binary message with communications state ITDMA

Msg	RI	User ID	DesI	BIF	Destination ID	DAC	FI	SS	SInc	NSlots	KF
26	0	990001234	1	1	000005678	100	10	2	0375	0	1

```
0x80,0x86,0x8D,0x94,0x9A,0xA1,0xA7,0xAE,0xB4,0xBA,0xC0,0xC5,0xCB,0xD0,0xD5,0xDA,0xDF,0xE3,0xE7,0xEB,0xEE,0xF2,0xF4,0xF7,0xF9,0xFB,0xFD,0xFE,0xFE,0xFF,0xFF,0xFF,0xFE,0xFD,0xFC,0xFA,0xF8,0xF6,0xF3,0xF0,0xED,0xE9,0xE5,0xE1,0xDD,0xD8,0xD3,0xCE,0xC8,0xC3,0xBD,0xB7,0xB1,0xAA,0xA4,0x9E,0x97,0x90,0x8A,0x83,0x7C,0x75,0x6F,0x68,0x61,0x5B,0x55,0x4E,0x48,0x42,0x3C,0x37,0x31,0x2C,0x27,0x22,0x1E,0x1A,0x16,0x12,0x0F,0x0C,0x09,0x07,0x05,0x03,0x02,0x
```




Message 27 : Long-range automatic identification system broadcast message

Generate:

Right click mouse cursor in Programmable Modulation Time Line.

A context menu will be displayed.

Left click mouse to select item.

Received VDL - VDM Message Filter:

Message 27 : Long-range automatic identification system broadcast message											
Msg	RI	User ID	PA	RAIM	NvSt	Longitude	Latitude	SOG	COG	PLC	S
27	3	990001234	1	1	15	02814.9,E	2550.8,S	10	359	1	0



Abbreviations

The following is a list of abbreviations used in the AIS Developer Studio Suite

1pps	1 pulse per second
ACK	Acknowledge
AIS	Automatic Identification System
AIS1	Automatic Identification System channel 1 (161.975 MHz)
AIS2	Automatic Identification System channel 2 (162.025 MHz)
ANT	Antenna
BER	Bit Error Rate
BIT	Built In Self Test
BS	Base Station
BT	Bandwidth Time product
COG	Course over Ground
DBR	Differential Beacon Receiver
DSC	Digital Selective-Calling
DTE	Data Terminal Equipment
ECDIS	Electronic Chart Display and Information System
ECS	Electronic Chart System
EPFS/D	Electronic Position Fixing System/Device
ETA	Estimated Time of Arrival
GPS	Global Positioning System
HDLC	High-level Data Link Control
IEC	International Electro-technical Commission
IO	Input-Output
ITU	International Telecommunication Union
KDU	Keyboard Display Unit
LR	Long Range
MMSI	Maritime Mobile Service Identities
PMG	Programmable Modulation Generator
PA	Power Amplifier
PC	Personal Computer
PER	Packet Error Rate
PI	Presentation Interface
RF	Radio Frequency
ROT	Rate of Turn
RX	Receive
SOG	Speed over Ground
TDMA	Time Division Multiple Access
TX	Transmit
UTC	Coordinated Universal Time
VDL	VHF Data Link
VHF	Very High Frequency
VSWR	Voltage Standing Wave Ratio
ADS	AIS Developer Studio V2
NTP	Network Time Protocol
SNTP	Simple Network Time Protocol
ADS	AIS Developer Studio



Reference Documents

List of standards and specifications

Document Number	Title
IEC 61162-1	Maritime Navigation and Radio Communication Equipment and Systems - Digital Interfaces: Part 1 - Single Talker and Multiple Listeners.
IEC 61162-2	Maritime Navigation and Radio Communication Equipment and Systems - Digital Interfaces: Part 2 - Single Talker and Multiple Listeners High Speed Transmission.
IEC 61993-2 IEC 62287 IEC 62320	Universal Shipborne Automatic Identification System (AIS).
ITU-R M.1084-2	Interim solutions for improved efficiency in the use of Band 156-174Mhz by stations in the Maritime Mobile Service.
ITU-R M.1371-5	Technical characteristics for a universal ship-borne automatic identification system using time division multiple access in the maritime mobile band.
ITU-R M.493	Digital Selective Calling (DSC) system for use in the Maritime Mobile Service.
ITU-R M.823-2	Technical characteristics of differential transmissions for global navigation satellite systems from maritime radio beacons in the frequency band 283.5 - 315 kHz in region 1 and 285-325 kHz in regions 2 and 3.
ITU-R M.825-3	Characteristics of a transponder system using DSC techniques for use with vessel traffic services and ship-to-ship identification.
ITU Manual	ITU Manual for use by the Maritime mobile and Maritime Mobile-Satellite Services.
IEC 61108-1	Global navigation satellite systems (GNSS) - Part 1: Global positioning system (GPS) - Receiver equipment - Performance standards, methods of testing and required test results.
IEC/EN 60945	Maritime Navigation and Radio communication equipment and systems – General requirements-methods of testing and required results

List of Related Software and Manuals

Module	Description	Part number
AIS Developer Studio Software for Windows. Verified to run on WINXP and WIN10	A Windows based application for configuring and testing various AIS products. Various levels of user access available dependent on licence.	ADSV2.exe



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