

## APPENDIX C

### SIGNAL UNIT FIELD CODING AND DEFINITIONS

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## SIGNAL UNIT FIELD CODING AND DEFINITIONS

*Note.*– Codes are listed as their decimal values unless indicated as hexadecimal by the letters *HEX*. Codes marked *RESERVED* are reserved for use in particular AMSS system implementations.

## 1. ACK/NAK (1 bit)

Code	Function
0	NAK, retransmit indicated message
1	ACK, do not retransmit indicated message

## 2. Acknowledge control (4 bits)

Code	Function
0	This ACK includes all retransmission requests
1-13	Number of retransmission request ACK messages remaining (applicable for PACK and TACK SUs only)
14	No errors in entire message
15	Retransmit entire message (applicable for PACK and TACK SUs only)

## 3. AES ID (3 octets)

This field shall be the 24-bit ICAO identifier of the AES.

## 4. Application reference number (4 bits)

This field shall contain the direct binary number of the reference number assigned by the circuit-mode services to the circuit-mode call.

The application reference number shall uniquely identify a call between an AES/GES pair. Application reference numbers shall be assigned cyclically by the AES on air-to-ground calls from the range 0-7 and by the GES on ground-to-air calls to a given AES from the range 8-15.

## 5. Beam ID (6 bits)

Code	Function
0	Global beam
1-63	Spot beams

## 6. Burst interval (4 bits)

In a multi-burst reservation, this field shall indicate that there is one burst reservation per  $2^{\text{BI}}$  frames, where BI= burst interval.

**7. Burst length (5 bits)**

This field shall indicate the length of the burst in terms of the number of signal units.

**8. Called/calling terminal (8 bits)**

Binary coded decimal (BCD) encoding, with the most significant digits appearing in least significant half octet, and vice versa.

**9. Cause class (3 bits)**

The assignment and interpretation of this field shall be dictated by the value assigned to the S (coding standard) field (Item 51). Cause class shall be used in association with cause value (Item 10) to identify the actual cause meaning.

CCITT Q.931 standard coding:

Code	Function
0	Normal event
1	Normal event
2	Resource unavailable
3	Service or option not available
4	Service or option not implemented
5	Invalid message (e.g. parameter out of range)
6	Protocol error (e.g. unknown message)
7	Interworking

Satellite network specific coding:

Code	Function
0	PSTN/ISDN call progress events
1	Call pre-emption
2	Resource unavailable
3	Invalid parameter
4	Out of service
5	Network failure
6	Service/option not supported
7	Normal event

**10. Cause value (4 bits)**

The assignment and interpretation of this field shall be dictated by the value of the S (coding standard) field (Item 50). Cause value shall be used in association with cause class (Item 9) to identify the actual cause meaning. The values given below are those required for interworking with the PSTN signalling systems R2, CCITT No. 5 and CCITT No. 7 TUP.

## CCITT Q.931 standard coding:

Cause Class	Cause Value	Function
0	1	Unallocated number
0	3	No route to destination
1	0	Normal clearing
1	1	User busy
1	2	No user responding
1	3	Called user busy (user alerted)
1	5	Call rejected
1	11	Destination out of service
1	12	Invalid (incomplete) number format
1	15	Normal, unspecified
2	2	No circuit/channel available
2	6	Network out of order
2	10	Switching equipment congestion
4	2	Channel type not implemented

## Satellite network specific coding:

Cause Class	Cause Value	Function
0	1	Address complete
1	1	Call pre-empted
2	1	No channel available
2	2	No channel unit available
2	3	Analog data equipment not available
2	4	Digital data equipment not available
3	1	Reserved
3	2	Invalid/incomplete address
4	1	Destination out of service
4	2	AES not authorized
4	3	Incoming calls barred
5	1	Continuity failure or no response
6	1	Reserved
6	2	Required analog data rate not supported
6	3	Required digital data rate not supported
6	4	Voice channel type not supported
6	5	Service type not supported
7	1	User busy
7	2	Unallocated number
7	3	AES absent
7	15	Undefined cause

**11. Channel bit rate (receive or transmit) (4 bits)**

Code	Function
0	600 bits/s
1	1 200 bits/s
2	2 400 bits/s
3	4 800 bits/s
4	6 000 bits/s
5	5 250 bits/s
6	10 500 bits/s
7	Unassigned
8	Unassigned
9	21 000 bits/s
10-15	Unassigned

**12. Channel frequency (2 octets)**

Most significant bit: 1= LHCP, 0= RHCP

Least significant 15 bits: 0000 to 7FFF (HEX)

Frequency expressed as binary number N, where

Frequency (MHz) = Base (MHz) + N \* 0.0025 MHz

Base = 1 510.0000 MHz for receive channels

Base = 1 611.5000 MHz for transmit channels

The all ZEROS code shall be used to denote the null value.

**13. Channel type (2 bits)**

This field shall identify the channel which was used for the message being acknowledged.

Code	Function
0	R channel
1	P channel
2	T channel
3	Unassigned

**14. Circuit data rate (4 bits)**

This field shall be used by the AES to indicate the requested circuit mode data rate (modem type if applicable). It shall also be used by the GES to inform the AES of the actual data rate achieved, which may be different from the requested data rate if a multi-rate modem is used or if modem synchronization is not achieved.

The coding shall be dependent on the type of circuit-mode data service, as indicated by the service identity field (Item 56).

Analog-interconnect data service:

Code	Function
0	Data mode not required/achieved
1	1 200 bits/s: CCITT V.23
2	1 200 bits/s: CCITT V.22
3	1 200 bits/s: CCITT V.22bis
4	2 400 bits/s: CCITT V.22bis
5	4 800 bits/s: CCITT V.32
6	9 600 bits/s: CCITT V.32
7-14	Unassigned
15	Facsimile (Group 3) service: CCITT T.30

Digital interconnect data service:

Code	Function
0	Data mode not required/achieved
1	1 200 bits/s
2	2 400 bits/s
3	4 800 bits/s
4	9 600 bits/s
5-15	Unassigned

#### 15. Circuit data requirement (2 bits)

This field shall be used by the AES to indicate whether all ground-to-air circuit-mode calls should be allocated circuit-mode data service capable channel equipment by the GES, and if so, which type of interconnect capability shall be required.

Code	Function
00	Circuit mode data service not required
01	Analog interconnect service required
10	Digital interconnect service required
11	Unassigned

#### 16. Class of AES (2 bits)

The AESs shall be classified according to their equipment configuration and capabilities, as follows:

- Class 1: Low gain antenna only, packet-mode services only;
- Class 2: Reserved;



Class 3: High gain antenna only, circuit-mode and packet-mode (simultaneous and non-simultaneous) services;

Class 4: High gain antenna only, packet-mode services only;

Code	Function
0	Class 1
1	Reserved
2	Class 3
3	Class 4

#### 17. CCITT CRC (16 bits)

Each signal unit shall contain 16 check bits (the last two octets) for error detection. These check bits shall be calculated from the first 10 octets of standard length SU, from the first 17 octets of an extended length signal unit or from the first 4 octets of the burst identifier SU (Figure S24), using the following generator polynomial:

$$x^{16} + x^{12} + x^5 + 1 \quad (\text{see CCITT Red Book, Recommendation X.25 Section 2.2.7})$$

At the receiving end, the check bits for each received signal unit shall be calculated and if there is a mismatch with the received check bits, the signal unit shall be discarded.

#### 18. Data bit rate capability (1 octet)

Each bit in this field shall indicate the availability ("1") or unavailability ("0") of the corresponding channel/bit rate combination at the AES as follows:

Bit	Combination
1	Reserved
2	P-Ch
2 400 bits/s	
3	P-Ch
4 800 bits/s	
4	P-Ch
10 500 bits/s	
5	R-/T-Ch 2 400 bits/s
6	R-/T-Ch 10 500 bits/s
7, 8	Unassigned

*Note.*– 0.6 and 1.2 kbit/s P, R and T channels are mandatory for all AESs.

#### 19. Delay to RES (6 bits)

This field shall indicate the delay before the reservation will be sent to the AES by the GES. The delay shall be given as a direct binary number of superframes.

**20. Digit**

This field shall be a binary coded decimal digit. The end-of-digits code shall be combination F (HEX).

**21. DLS/RLS (1 bit)**

Code	Function
0	Direct link service (DLS)
1	Reliable link service (RLS)

**21a. Duration (6 bits)**

The decimal equivalent of this field shall specify the length in minutes of the period of time during which the AES shall inhibit its log-on attempts to the specified GES.

**22. EIRP adjustment (4 bits)**

This field shall be used to indicate the EIRP adjustment value relative to the current transmit level as follows:

Code	Function
0	No adjustment
1	+ 1 dB
2	+ 2 dB
3	+ 3 dB
4-12	Unassigned
13	-3 dB
14	-2 dB
15	-1 dB

**23. Existence (1 bit)**

Code	Function
0	This series of broadcasts is not being transmitted
1	This series of broadcasts is being transmitted

**24. GES ID (1 octet)**

This field shall be the 8-bit identifier given to the GES.

**25. GES beam support table (32 bits)**

This field shall start from octet 5, bit 1 and shall end at octet 8, bit 8. Each bit shall correspond to a satellite beam, starting from global beam in the first bit then spot beam 1, 2, 3, etc. up to

spot beam 31, respectively. 0 means the spot beam has no P or R channel from that GES. 1 means the GES has at least one P and R channel set in that beam.

**26. Idle pattern**

All zeros.

**27. Initial EIRP (4 bits)**

The EIRP value shall be equal to  $(10.5 + N)$  dBW where N is the value of this field (range 0 to 15).

**28. I/R (initial/renewal) (1 bit)**

This field shall indicate whether the log-on request is initial or for log-on renewal.

Code	Function
0	Initial log-on
1	Log-on renewal

**29. Length (8 bits)**

This field shall be the direct binary representation of the number of octets to follow.

**29a. Global beam series (GBS) (1 bit)**

This field shall indicate, in the spot beam series broadcast index SU, whether or not a global beam series is present. This field shall be set to one if the global beam series is present: otherwise, the field shall be set to zero.

**30. Location (of cause) (4 bits)**

This information element shall indicate the location relevant to the cause value and cause class information elements. Its interpretation shall be dictated by the value assigned to the S (coding standard) information element, which specifies whether the CCITT Q.931 standard coding or the satellite network specific coding rules apply.

CCITT Q.931 standard coding:

Code	Function
0	User
1	Private network serving the local user
2	Public network serving the local user
3	Transit network
4	Public network serving the remote user
5	Private network serving the remote user

7	International network
10	Network beyond interworking point

All other values are reserved

Satellite network specific coding:

Code	Function
1	AES - user network side
2	AES - satellite network side
3	GES - satellite network side
4	GES - fixed network side
5	Reserved
6	Interworking with the terrestrial network

All other values are unassigned

### 31. LSU number (2 bits)

Code	Function
0	Indicating the initial LSU and the LSU contains $P_{smc}$ , $R_{smc}0$ , $R_{smc}1$ frequencies in this order
1	LSU contains $P_{smc}$ , $R_{smc}0$ , $R_{smc}1$ frequencies in this order (as for code 0, but this can appear anywhere in the sequence)
2	LSU contains $R_{smc}2$ , $R_{smc}3$ , $R_{smc}4$ frequencies in this order
3	LSU contains $R_{smc}5$ , $R_{smc}6$ , $R_{smc}7$ frequencies in this order

### 31a. LOV (1 bit)

This field shall indicate the capability of the AES to respond to the log-on interrogation from the GES.

Code	Function
0	AES capable of responding
1	AES not capable of responding

### 32. Message length (7 bits)

This field shall indicate, in direct binary number, the number of SUs in an SU set (2 user octets in the initial signal unit, and 8 octets per subsequent signal unit). When used for requesting T channel capacity, this number shall be increased by one each time a request (initial or repeated) is transmitted via the T channel. The maximum length of initial SU set shall be limited to 64 (SUs).

**33. Message type (1 octet)**

This field shall identify the type of the message. The complete set of message types shall be as listed at the end of this appendix.

**34. Network ID (4 bits)**

Code	Function
0	Unassigned
1	E164/E163
2	X.121
3	F.69
4	Private network - no address following
5	Private network - address following
6 to 14	To be coded for applicable public and private networks (SITA, ARINC, etc.)
15	Distress call

**35. NOT (1 bit)**

This field shall indicate the transmitter capability of the AES.

Code	Function
0	Indicating the AES has one transmitter
1	Indicating the AES has multiple transmitters

**36. Number of bursts reserved (3 bits)**

This field shall identify the number of bursts reserved as a binary number.

Code	Function
0	Unassigned
1-7	1-7 bursts reserved

**37. Number of C channels (4 bits)**

This field shall indicate, as a direct binary number, the number of voice channels which the AES is equipped for. This field shall be one for Level-3 AES.

**38. Number of frequencies (4 bits)**

This field shall indicate, as a direct binary number (e.g. 1 = 1 frequency), the number of frequencies assigned.

**39. Number of octets in the last SSU (4 bits)**

This field shall indicate, as a direct binary number (e.g. 1 = 1 octet), the number of octets of user data in the user data field of the last SSU of the SU set.

**40. Number of SSUs (in ACK/NAK) (2 bits)**

Code	Function
0	No SSU, only used when ACKCTL field equals 14 or 15
1	One SSU
2	Two SSUs
3	Three SSUs

**41. P/R MSG (1 bit)**

This field shall indicate whether the log-on confirm SU has an associated P/R channel control SU.

Code	Function
0	No associated P/R channel control SU.
1	Associated P/R channel control SU exists.

**42. P/S (primary/secondary) (1 bit)**

This field shall indicate whether the log-on is primary or secondary.

Code	Function
0	Primary log-on
1	Secondary log-on

**43. Q number (precedence) (4 bits)**

The following table shall indicate the scheme for the assignment of Q numbers to the various categories of messages for transmission on the P, R, T and sub-band C channels. The actual Q numbers assigned to the individual signal unit message types shall be as specified at the end of the appendix.

Code	Function
15	Distress/urgency C channel request/assignment signalling; distress/urgency T channel request signalling; all T channel assignment signalling (including reservation forthcoming signalling)
14	Distress/urgency packet-mode data

13	Link layer protocol signalling; AES/GES management SUs; flight safety and other "safety" T channel request signalling (Q= 11, 5 - 8); C channel signalling other than request/assignment
12	Flight safety C channel request/assignment signalling
11	Flight safety packet-mode data
10	Other "safety" C channel request/assignment signalling
9	"Non-safety" C channel request/assignment signalling; "non-safety" T channel request signalling (Q= 0 - 3)
5-8	Other "safety" packet-mode data (See Table 7.12)
4	Reserved for "non-safety" C channel precedence
0-3	"Non-safety" packet-mode data (See Table 7.12)
NA	System table broadcast SUs and fill-in SU

#### 44. Reason (4 bits)

Code	Function	Rejection category
0	Log-on table full	Temporary unavailable
1	Requested voice channel characteristic not available	Permanent unavailable
2	Requested beam not served	Invalid parameters
3	Fixed network failure	Temporary unavailable
4	Unassigned	
5	Invalid satellite ID	Invalid parameters
6	Invalid GES ID	Invalid parameters
7	P/R/T - channels not available	Temporary unavailable
8	Packet-mode data services not available	Permanent unavailable
9-13	Unassigned	
14	Other unspecified reason	Temporary unavailable
15	AES not authorized	Permanent unavailable

#### 45. Received bit error rate (8 bits)

This field shall indicate the error rate before FEC decoding. The code value = V, where V = average number of errors per 2 560 channel bits.

#### 46. Reference number (3 bits for R channel or 4 or 8 bits for P and T channels)

The value for this field shall be assigned by the AES for air-to-ground data transfer and by the GES for ground-to-air data transfer. The scope of the reference number shall be within its Q number (precedence level). The reference number, in association with the Q number, shall be used for message segmentation/assembly and ARQ error control at the link level.

Each user data message shall be given a reference number at the time of initial transmission and this is used in subsequent acknowledge, retransmission, and request for acknowledge messages to guard against confusion/duplication of messages. The allocation of the reference numbers shall be performed independently for messages sent via the R, T and P channels.

**47. Report type (4 bits)**

This field shall identify the specific type of call progress signal unit.

Code	Function
0	Unassigned
1	Channel status report
2	Connect
3	Test
4	Call attempt result
5	Channel release
6	Reserved
7-15	Unassigned

**48. Reserved (variable number of bits)**

Fields marked RESERVED are reserved for use in particular AMSS system implementations.

**49. Revision number (8 bits)**

This field shall indicate the revision number of AES system table. It shall be incremented by one for each successive revision.

**50. RFC flag (1 bit)**

This field shall be used to identify whether or not a reservation (RES) SU or a reservation forthcoming (RFC) SU has been preceded by either an RFC LSU or TACK LSU indicating errors.

Code	Function
0	Not preceded by either RFC LSU or TACK SU set indicating errors
1	Has been preceded by either an RFC LSU or TACK SU set indicating errors

**51. S (coding standard) (1 bit)**

The field shall identify the rules (coding standard) according to which the location, cause class and cause value information elements are coded.

Code	Function
0	CCITT Q.931 standard coding
1	Satellite network specific coding



**52. Satellite flag (1 bit)**

Code	Function
0	Indicating the SU contains information for the satellite via which it is broadcast
1	Indicating the SU contains information for the satellite in another region

**53. Satellite ID (6 bits)**

This field shall be the 6-bit identifier given to the satellite.

**54. Satellite inclination (3 bits)**

Code	Function
0	0 to 5/8 degree
1	more than 5/8 up to 10/8 degrees
2	more than 10/8 up to 15/8 degrees
3	more than 15/8 up to 20/8 degrees
4	more than 20/8 up to 25/8 degrees
5	more than 25/8 up to 30/8 degrees
6	more than 30/8 up to 35/8 degrees
7	more than 35/8 up to 40/8 degrees

**55. Satellite longitude (8 bits)**

This field shall be a binary code representation of the longitudinal location of the satellite, as east longitude relative to the Greenwich meridian in units of 1.5 degrees.

**56. Satellite right ascension (8 bits)**

This field shall indicate the closest time point expressed in minutes from 00:00 UTC with 10 minutes increment to the time when the satellite crosses the equatorial plane from south to north on the New Year's day. The time of satellite ascension on day "n" of the year shall be "4 x n" minutes earlier than on the New Year's day.

**57. SC (1 bit)**

This field shall indicate the compliance of AES with SARPs.

Code	Function
0	Not SARPs compliant
1	SARPs compliant

**58. Sequence indicator (4 bits)**

This field shall be only used in extended length (i.e. 19 octet) SUs on the R channel. It shall indicate the position of the SU within the sequence of SUs that comprise a SU set. It also specifies the total number of SUs in the SU set.

Code	SU position	No. of SU in SU set
0	Unassigned	Unassigned
1	1	1
2	1 (first)	2
3	2 (last)	2
4	1 (first)	3
5	2 (intermediate)	3
6	3 (last)	3
7 to 15	Unassigned	Unassigned

**59. Sequence number (4 bits or 6 bits)**

This field shall be used in standard length (i.e. 12 octet) signal units on all channels. The field shall be set in an ISU of an SU set to the total number of subsequent signal units (SSUs) in the SU set and shall be decremented by one in each following SSU, until the last SSU of the SU set has a value of 0. The field in a broadcast index SU of AES system table broadcast shall be set to the largest sequence number (one less than the number of LSUs included) in each series of broadcast LSUs. The sequence number in the first LSU in a series shall be set to the same number as in index SU and shall be decremented by one in each following LSU, until the last LSU of the series has a value of 0. The field in an RTX SU heading a retransmission SU set shall be set equal to the total number of SSUs in the retransmission SU set. In each retransmitted SSU this field shall be offset by subtracting the value in the sequence number (offset value) field of the RTX SU from the original SSU sequence number.

**60. Sequence number (off-set value) (6 bits)**

This field shall be used in standard length (i.e. 12 octet) signal units on all channels. It shall indicate the last (lowest) SSU sequence number in error.

**61. Service direction (2 bits)**

Code	Function
0	Unassigned
1	Air-to-ground
2	Ground-to-air
3	Bidirectional

**62. Service identity (4 bits)**

Code	Function
0	Unassigned
1	Telephone
2	Circuit-mode data, analog-interconnect
3	Circuit-mode data, digital-interconnect
4 to 9	Unassigned
10	Direct link service message
11	Reliable link service message
12 to 15	Unassigned

**63. Source (2 bits)**

This field shall identify the location at which the signal unit was generated.

Code	Function
0	Unassigned
1	AES
2	GES
3	Reserved

**64. Spare (variable number of bits)**

Fields marked SPARE shall be filled entirely with zeros.

**64.a Spot beam series (SPS) (1 bit)**

This field shall indicate, in the global beam series broadcast index SU, whether or not a spot beam series is present. This field shall be set to one if the spot beam series is present; otherwise, the field shall be set to zero.

**65. Starting frame number (4 bits)**

This field shall indicate, as a direct number, the starting frame number of the allocated reservation.

**66. Starting slot number (6 bits)**

This field shall indicate, as a direct binary number, the starting slot number of the allocated reservation within the starting frame number.

67. SU type (4 bits)

This field shall indicate whether the extended length SU is carrying signalling application information or user data. In the later case, its value shall represent the number of octets of user data in the user data field of the extended length (i.e. 19 octet) SU.

Code	Function
0	Unassigned
1 to 11	1 to 11 octets of user data SU
12 to 14	Unassigned
15	Signalling information SU

#### 68. TDMA MSG (1 bit)

This field shall indicate whether the log-on confirm SU has an associated T channel control message.

Code	Function
0	No associated T channel control message.
1	Associated T channel control message exists.

#### 69. TX channel number (2 bits)

Code	Function
0	Channel No. 0
1	Channel No. 1
2	Channel No. 2
3	Channel No. 3

#### 70. Universal time (7 octets)

The time information shall be synchronized to the UTC time standard.

**Format:** Each of the following is a single octet field coded in the binary coded decimal (BCD) format. The code FF<sub>H</sub> can be used in any field to represent a NULL entry.

**Century:** Century AD (Anno Domini), CC (2 digit): 00 to 99

**Year:** Year within the century, YY (2 digit): 00 to 99

**Month:** Month within the year, MM (2 digit): 01 to 12

**Day:** Day within the month, DD (2 digit): 01 to 31

**Hour:** Hour within the day, hh (2 digit): 00 to 24

**Minute:** Minute within the hour, mm (2 digit): 00 to 59

Second: Second in the minute, ss (2 digit): 00 to 59

# 71. Voice channel characteristics (6 bits)

Code	Voice rate to AES	Voice rate from AES	Channel bit rate	FEC rate
0	Unassigned			
1	Reserved			
2	9 600 LPC <sup>(note)</sup>	9 600 LPC <sup>(note)</sup>	21 000	1/2
3	Reserved			
4	Unassigned			
5	Reserved			
6	Unassigned			
7	Reserved			
8-63	Unassigned			

*Note.* – LPC corresponds to the multi-pulse excited linear predictive coding algorithm as defined in Section 8.

## Message Type List

Code (HEX)	Function	Message format figure	Q number (precedence)
<b>BROADCAST</b>			
00	Reserved		
01	Fill-in signal unit	AS23	NA
02	AES system table broadcast (GES P <sub>smc</sub> and R <sub>smc</sub> channels PARTIAL)	AS17B	NA
03	AES system table broadcast (beam identification PARTIAL)	AS17D	NA
04	AES system table broadcast (GES beam support PARTIAL)	AS17E	NA
05	AES system table broadcast (GES P <sub>smc</sub> and R <sub>smc</sub> channels COMPLETE)	AS17B	NA
06	AES system table broadcast (beam identification COMPLETE)	AS17D	17NA
07	AES system table broadcast (GES beam support COMPLETE)	AS17E	NA
08	System broadcast - selective release	AS20B	13
09	System broadcast - universal time	AS20A	13
0A	AES system table broadcast (index)	AS17A	NA

Code (HEX)	Function	Message format figure	Q number (precedence)
OB	AES system table broadcast (satellite identification PARTIAL)	AS17C	NA
OC	AES system table broadcast (satellite identification COMPLETE)	AS17C	NA
OD	AES system table broadcast (2nd series of GES $P_{smc}$ and $R_{smc}$ channels COMPLETE)	AS17B	NA
OE	Reserved		

#### SYSTEM LOG-ON/LOG-OFF

10	Log-on request	AS1	13
11	Log-on confirm	AS2	13
12	Log control (R channel)-log-off request	AS32	13
12	Log control (P channel)-log-off request	AS3C	13
13	Log control (P channel)-log-on reject	AS3B	13
13	Log control (R channel)-reassignment reject	AS32	13
14	Log control (P channel)-log-on interrogation	AS3A	13
15	Log-on/log-off acknowledge (P channel)	AS14A	13
15	Log-on/log-off acknowledge (R channel)	AS34	13
16	Log control (P channel)-log-on prompt	AS3A	13
17	Log control (P channel)-data channel reassignment	AS3A	13
17	Log control (R channel)-ready for reassignment	AS32	13

#### CALL INITIATION

20	Access request telephone (non-safety)	AS28	9
20	Access request telephone (other safety)	AS28	10
20	Access request telephone (flight safety)	AS28	12
20	Access request telephone (distress)	AS28	15
20	Call announcement (non-safety)	AS4C	9
20	Call announcement (other safety)	AS4C	10
20	Call announcement (flight safety)	AS4C	12
20	Call announcement (distress)	AS4C	15

Code (HEX)	Function	Message format figure	Q number (precedence)
21	Call information service address (ISU)	AS5	13



Code (HEX)	Function	Message format figure	Q number (precedence)
22	Access request data (R/T channel) (non-safety)	AS29/AS4B	9
22	Access request data (R/T channel) (flight safety and other safety)	AS29/AS4B	13
22	Access request data (R/T channel) (distress)	AS29/AS4B	15
23	Abbreviated access request telephone (other safety)	AS28A	10
23	Abbreviated access request telephone (flight safety)	AS28A	12
23	Abbreviated access request telephone (distress)	AS28A	15

### CALL PROGRESS

30	Call progress (P/C channel)	AS6AF/AS6AR/AS6B/ AS6C/AS6D/AS6E	13
30	Call progress (R channel)	AS33A/AS33B	13
31	C channel assignment (distress)	AS7	15
32	C channel assignment (flight safety)	AS7	12
33	C channel assignment (other safety)	AS7	10
34	C channel assignment (non-safety)	AS7	9

### CHANNEL INFORMATION

40	P/R channel control (ISU)	AS8	13
41	T channel control (ISU)	AS9	13

Code (HEX)	Function	Message format figure	Q number (precedence)
<b>TDMA RESERVATION</b>			
50	Unsolicited reservation	AS10	15
51	T channel assignment	AS11	15
52	Reserved		
53	Reservation forthcoming (RFC)	AS13	15
<b>ACKNOWLEDGEMENT</b>			
60	Telephony acknowledge (P/C channel)	AS14B	13
60	Telephony acknowledge (R channel)	AS35	13
61	Request for acknowledgement (RQA) (P channel)	AS15	13
61	Request for acknowledgement (RQA) (R channel)	AS30	13
62	Acknowledge (RACK, TACK) (P channel)	AS16B/AS16A	13
62	Acknowledge (PACK) (R channel)	AS31	13
<b>USER DATA</b>			
70	Reserved		
71	User data (ISU) - RLS (P/T channel)	AS21	V(0-3,5-8,11,14)
72	Retransmission header (RTX) (P/T channel)	AS22	V(0-3,5-8,11,14)
73	Reserved		
74	User data (3 octet LSDU) - RLS (P channel)	AS21B	V(0-3,5-8,11,14)
75	Reserved		
76	User data (4 octet LSDU) - RLS (P channel)	AS21C	V(0-3,5-8,11,14)
N/A	User data (ISU/SSU) (R channel)	AS25	V(0-3,5-8,11,14)
80	Broadcast reserved		
81	AES system table broadcast-spot beam series GES P/R channel (partial)	AS38B/AS38C	NA
82	AES system table broadcast-spot beam series GES beam support (partial)	AS38F	NA
83	AES system table broadcast-spot beam series GES P/R channel (complete)	AS38B/AS38C	NA

Code (HEX)	Function	Message format figure	Q number (precedence)
84	AES system table broadcast-spot beam series GES beam support (complete)	AS38F	NA
85	AES system table broadcast-spot beam series index	AS38A	NA
86	AES system table broadcast-spot beam series satellite/beam ID (partial)	AS38D/AS38E	NA
87	AES system table broadcast-spot beam series satellite/beam ID (complete)	AS38D/AS38E	NA
88	AES system table broadcast-spot beam series 2nd series of GES P/R channel (complete)	AS38B/AS38C	NA

**SUBSEQUENT SIGNAL UNITS: bits 8-7 = 1 1**

Call information service address (SSU)	AS5A	13
P/R channel control (SSU)	AS8A	13
T channel control (SSU)	AS9A	13
User data (SSU) - (P/T channel)	AS21A	V(0-3,5-8,11,14)

All other codes are unassigned.

In the Q number column, message types with a variable Q No. are indicated by V followed in brackets by the value or range of values normally used.

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