Forward Link Only Messaging Transport Specification

ARIB STANDARD

ARIB STD-B52 Version 1.1

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Association of Radio Industries and Businesses

Foreword

1. Introduction

With participation of radio equipment manufacturers, telecommunications operators, broadcasting equipment manufacturers, broadcasters and general users, Association of Radio Industries and Businesses (ARIB) defines basic technical requirements for standard specifications of radio equipment, etc. as an "ARIB STANDARD" in the field of various radio systems.

In conjunction with national technical standards which are intended for effective spectrum utilization and avoidance of interference with other spectrum users, an ARIB STANDARD is intended as a standard for use by a private sector compiling various voluntary standards regarding the adequate quality of radio and broadcasting service, compatibility issues, etc., and aims to enhance conveniences for radio equipment manufacturers, telecommunications operators, broadcasting equipment manufacturers, broadcasters and general users.

An ARIB STANDARD herein is published as "Forward Link Only Messaging Transport Specification." In order to ensure fairness and transparency in the defining stage, the standard was set by consensus of the standard council with participation of interested parties including radio equipment manufacturers, telecommunications operators, broadcasting equipment manufacturers, broadcasters, general users, etc. with impartiality.

It is our sincere hope that the standard would be widely used by radio equipment manufacturers, telecommunications operators, broadcasting equipment manufacturers, broadcasters, general users, etc.

2. Scope

This standard applies to the multimedia broadcasting defined in Section 2 of Chapter 4, Ordinance No.87 of the Ministry of Internal Affairs and Communications, 2011.

3. Standard References for Forward Link Only

The following list identifies the current version of the standards in the FLO family of standards.

Standard#	Title
STD-B47	Forward Link Only Air Interface Specification for Terrestrial Mobile Multimedia Multicast
STD-B48	Forward Link Only Transport Specification
STD-B49	Forward Link Only Media Adaptation Layer Specification
STD-B50	Forward Link Only Open Conditional Access (OpenCA) Specification
STD-B51	Forward Link Only System Information Specification
STD-B52	Forward Link Only Messaging Transport Specification
STD-B32	Video Coding, Audio Coding and Multiplexing Specifications for Digital Broadcasting*

*NOTE: The original document of this standard is Japanese version. Part 3 of this standard is not applicable to Forward Link Only system.

4. Industrial Property Rights

This standard does not describe industrial property rights mandatory to this standard. However, the right proprietor of the industrial property rights has expressed that "Industrial property rights related to this standard, listed in the annexed table below, are possessed by the applicator shown in the list. However, execution of the right listed in the annexed table below is permitted indiscriminately, without exclusion, under appropriate condition, to the user of this standard. In the case when the user of this standard possesses the mandatory industrial property rights for all or part of the contents specified in this standard, and when he asserts his rights, it is not applied."

Annexed Table (Selection of Option 2)

Patent Applicant/Holder	Name of Patent	Registration No./ Application No.	Remarks
QUALCOMM Incorporated (*1)	A comprehensive confirmation form has been submitted with regard to ARIB STD-B52 Ver.1.0.		
JVC KENWOOD Holdings, Inc. (*1)	A comprehensive confirmation form has been submitted with regard to ARIB STD-B52 Ver.1.0.		

(*1) These patents are applied to the part defined by ARIB STD-B52 Ver. 1.0. (Received on October 28, 2010)

Reference (Not applied in Japan)

Patent Applicant/Holder	Name of Patent	Registration No./ Application No.	Remarks
QUALCOMM Incorporated (*2)	Message broadcasting over wireless networks	WO2010071740	US20100142438

(*2) This patent is applied to the part defined by ARIB STD-B52 Ver. 1.0. (Received on May 10, 2011)

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No text.

FOREWORD

(This foreword is not part of this Standard.)

This specification is intended for use in Forward Link Only (TR 47.1) Networks.

This document is version 1.0 of this specification.

This specification makes use of certain standards and specifications listed in Section 2.5.

1 INTRODUCTION AND SCOPE

This document specifies the Forward Link Only Messaging Transport mechanism - a mechanism for low latency transport of short messages over the Forward Link Only air interface [1]. The Forward Link Only Messaging Transport (FMT) mechanism is intended for utilization by applications such as Emergency Alert Service (EMAS). This specification defines the protocol of the FMT mechanism. Specifications of applications that utilize the FMT are outside the scope of this specification.

Chapter 1: An informative chapter describing the scope and the organization of the document.

Chapter 2: A normative chapter defining compliance terminology, acronyms, definitions of terms, conventions for specifying data types, and references.

Chapter 3: A normative chapter describing the Forward Link Only Messaging Transport mechanism.

2 APPARATUS

2.1 Compliance Terminology

The key words “shall”, “shall not”, “should”, “should not”, “may”, “need not”, “can” and “cannot”, when used in this standard, shall be interpreted as described in the TIA Style Manual.

2.2 Symbols and Abbreviations

The following symbols and abbreviations are used in this Standard:

CPP: Control Protocol Packet

EMAS: Emergency Alert Service

FMT: Forward Link Only Messaging Transport

LOI: Local Operations Infrastructure

TIA: Telecommunications Industry Association

WOI: Wide Operations Infrastructure

2.3 Definitions

The following definitions apply to capitalized terms used in this specification:

Term	Definition
Device	Customer Equipment that implements ARIB STD-B47 [1].
Local-area	Local-area refers to a market, typically a metropolitan area.
Local-area Operations Infrastructure (LOI)	LOI is a group of transmitters that provide coverage to a Local-area.
LOI_ID	Identifier assigned to a LOI. This also identifies the local area the LOI covers.
Network	A mobile multimedia multicast head-end infrastructure that implements ARIB STD-B47 [1].
Wide-area	Wide-area refers to a set of markets, typically one or more metropolitan areas.
Wide area Operations Infrastructure (WOI)	WOI is a group of transmitters that provide coverage to a Wide area
WOI_ID	Identifier assigned to a WOI. This also identifies the wide area the WOI covers.

2.4 Binary Message Format Specifications

Binary message formats are specified in tables. An example is shown in Table 2-1

Field	Size (bits)	Format
fieldA	16	uilsbf
fieldB	8	uilsbf
fieldC	8	uilsbf
for (i=0; i < fieldC; i++)		
fieldD	16	uilsbf
fieldE	Variable	byteString

Table 2-1: Example Message Specification

The topmost field in the table is the first field serialized into the binary message. In this example fieldA is the first field; fieldB is the second field and so on. The size of the fields is specified in the second column and the format is specified in the third column. For example fieldA is 16 bit long and its format is uilsbf – "unsigned int significant lowest bit first". So fieldA's value is serialized as unsigned 16 bits with least significant bit being the first bit; the next significant bit being the second bit and so on. In this example, there could be multiple instances of fieldD depending on the value of fieldC. The message format specification uses a C-language syntax style. Conditional fields are represented using "if" statements, and repetitive fields are represented using "for" statements. The last field, fieldE, is a variable length field of byteString format. Unless specified, byteStrings are serialized as is - that is the first bit of the byteString is the first bit of fieldE.

2.5 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this specification. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this specification are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. TIA maintains registries of currently valid national standards published by them.

[1] TIA-1099, Forward Link Only Air Interface Specification for Terrestrial Mobile Multimedia Multicast, March 2007.

[2] TIA-1099-A, Forward Link Only Air Interface Specification for Terrestrial Mobile Multimedia Multicast, April 2009.

[3] ARIB STD-B47, Forward Link Only Air Interface Specification for Terrestrial Mobile Multimedia Multicast.

[4] Ordinance No.87 of the Ministry of Internal Affairs and Communications, 2011.

[5] Notification No.299 of the Ministry of Internal Affairs and Communications, 2011.

3 FORWARD LINK ONLY MESSAGING TRANSPORT

3.1 Introduction

Forward Link Only Networks efficiently distribute broadband multimedia content over multicast wireless networks to mobile Devices supporting large numbers of subscribers. Physical, MAC and control/stream layers for a Forward Link Only Network are specified in [1] [2] [3]. This document specifies Forward Link Only Messaging Transport mechanism - a mechanism for low latency transport of short messages over the Forward Link Only air interfaces [1] [2] [3] .

3.2 Reference Architecture

Figure 3-1: Reference Architecture and FMT scope

Figure 3-1 shows the reference architecture relevant to FMT. Applications like EMAS could use FMT for the delivery of application messages. The Application Server is responsible for generation of application messages or collection of application messages from other Servers. The Application Server sends the application messages to a Forward Link Only Broadcast Network for delivery of the message over the FMT Layer. The FMT Layer utilizes the Control Channel defined in [1] for delivery of application messages. The Application Server and the interface between the Application Server and Forward Link Only Broadcast Network are outside the scope of this specification.

3.3 FMT Protocol Architecture

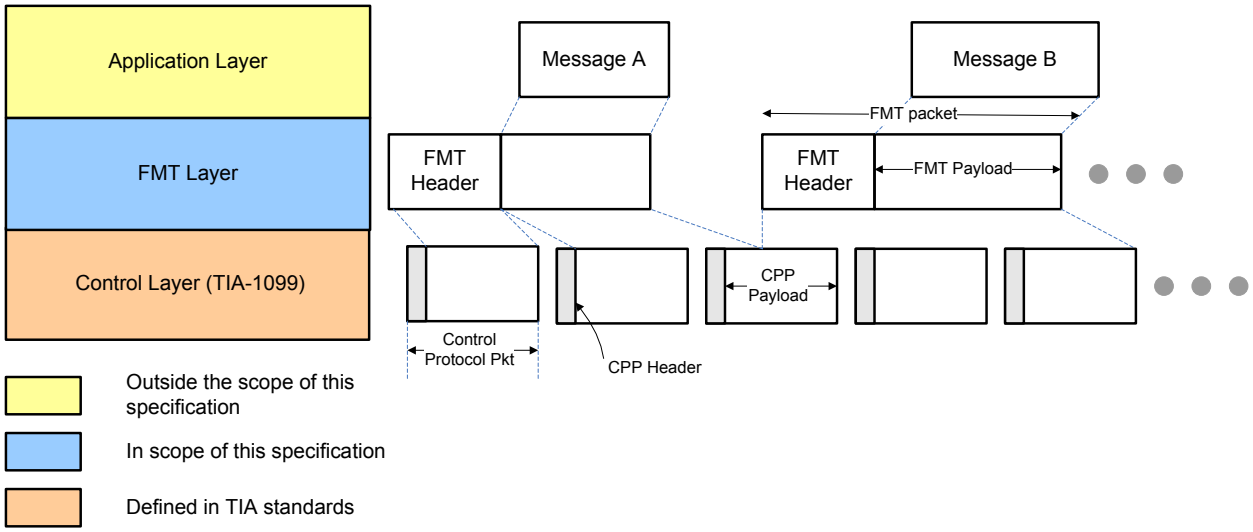

Figure 3-2: FMT Protocol Architecture

Application messages from Applications that utilize FMT are obtained at the FMT layer. The FMT layer prefixes an FMT header to every application message to generate an FMT Packet. FMT Packets are fragmented into FMT Fragments to be sent as Control Protocol Packets over the Control Channel.

3.4 FMT Packet Format

Field	Size (bits)	Format
fmtHeader {		
fmtMsgType	8	uilsbf
fmtMessageId	16	uilsbf
woiCount	8	uilsbf
for (i=0; i<woiCount; i++)		
woiId	16	uilsbf
loiCount	8	uilsbf
for (i=0; i<loiCount; i++)		
loiId	16	uilsbf
length	16	uilsbf
}		
fmtPayload	Variable	byteString

Table 3-1: FMT Packet Format

Table 3-1 shows the FMT Packet format. An FMT Packet consists of an fmtHeader and an fmtPayload. The following paragraphs contain field descriptions.

fmtMsgType

fmtMsgType identifies the Type of the message carried in an FMT Payload. Values 0-223 are reserved for the use of common messaging services such as Emergency Alerts. Please see Appendix A for a list of common messaging services over FMT and their fmtMsgType values. Values 224-255 are in the scope of the Forward Link Only Service Operator and can be assigned by them for operator-specific messaging services.

fmtMessageId

fmtMessageId is the identifier of the message of a particular fmtMsgType carried in the FMT Packet. The Forward Link Only Network shall ensure that fmtMessageId is unique across messages of a particular fmtMsgType, currently active in the system. Devices may use fmtMessageId along with fmtMsgType for duplicate detection. However duplicate detection is not guaranteed at the FMT Layer. The Device Application Layer is also expected to have logic for duplicate application message detection.

woiCount

woiCount gives the number of WOIs contained in this FMT Packet.

woiId

The FMT Packet contains “woiCount” instances of woiId fields. Each woiId identifies a WOI the FMT Packet is intended for.

loiCount

loiCount gives the number of LOIs contained in the FMT Packet.

loiId

The FMT Packet contains “loiCount” instances of loiId fields. Each loiId identifies a LOI the FMT Packet is intended for.

If a Device is located in a WOI mentioned in the woiId list or if a Device is located in a LOI mentioned in the loiId list, then the FMT Packet is relevant to that Device.

If a woiCount is 0 and loiCount is 0 for an FMT Packet, then the Packet is relevant to a Device irrespective of the LOI and WOI the Device is in.

Please note that the geographical relevance offered by FMT Layer is WOIs and LOIs. However the application layer could have a finer resolution (e.g. areaCodes, GPS coordinates etc.). The definition of such a resolution and means of obtaining such application level location information is outside the scope of this specification.

length

length gives the length of the fmtPayload in bytes

fmtPayload

fmtPayload is the encapsulated application message. The format of the encapsulated application message is outside the scope of this specification.

3.5 FMT Packet Fragmentation

As mentioned in Section 3.3, FMT Packets are fragmented into FMT Fragments to be sent as Control Protocol Packets (CPPs). Please refer to [1] for details on the Control Channel. The value of MessageTypeId present in the CPP Header of FMT Fragment CPPs shall be 0x05. FMT Packets are packed back-to-back and then fragmented into FMT Fragments. The CPPNumber in the CPP Header for FMT Fragment CPPs is used to identify the order of FMT Fragments for reassembly into FMT Packets.

A Control Channel could be a local Control Channel or wide Control Channel. FMT Packets could be sent in local Control Channels, wide Control Channels, or both. However, a single FMT packet shall not be fragmented across two different Control Channels. Once fragments of an FMT packet are sent on a particular Control Channel, all fragments for that FMT packet must be transmitted on the same Control Channel.

The decision to send an FMT Packet in a wide or a local Control Channel is specific to a Network implementation. The Device shall not assume syntax restrictions for an FMT Packet based on the type of Control Channel by which the FMT Fragments were delivered. For example an FMT Packet delivered through a wide Control Channel could have a list of loiIds in its fmtHeader (Section 3.4).

Please note that according to [1] the payload size of the first CPP packet in a Superframe will be different than the payload size of other CPP packets. The first CPP packet of a Superframe may or may not be an FMT Fragment CPP. Other Control Protocol messages may be present as the first CPP packet in a Superframe.

A CPP can be classified as either a Bin0 CPP or a Bin1 CPP [1]. FMT Packets could be sent as Bin0 CPPs, Bin1 CPPs, or both. However, a single FMT packet shall not be fragmented across two different bin classifications. Once fragments of an FMT packet are classified as a particular bin, all fragments for that FMT packet must be transmitted with the same bin classification. The decision to send an FMT Packet as Bin0 CPPs or Bin1 CPPs is specific to a Network implementation.

An FMT Packet could be fragmented into FMT Fragments that are carried in different Control Protocol Capsules (Superframes).

3.5.1 An example FMT Packet Fragmentation (Informative)

Figure 3-3 illustrates an example FMT Packet Fragmentation scenario. In this scenario, two application messages are delivered over a Control Channel. Both of these messages are sent as CPPs with the same BinId. The two messages are packed back-to-back and fragmented into five FMT Fragments. The shaded boxes in the figure illustrate the CPP header fields of the FMT Fragment CPPs. The fifth FMT Fragment is padded with “n” PAD bytes to fill the last CPP. The format of the CPP PAD bytes and CPP header indication will be as specified in [1]. Although this figure does not explicitly illustrate an FMT Packet spanning across multiple Control Protocol Capsules, it is possible for different FMT Fragments of an FMT Packet to be present in different Capsules.

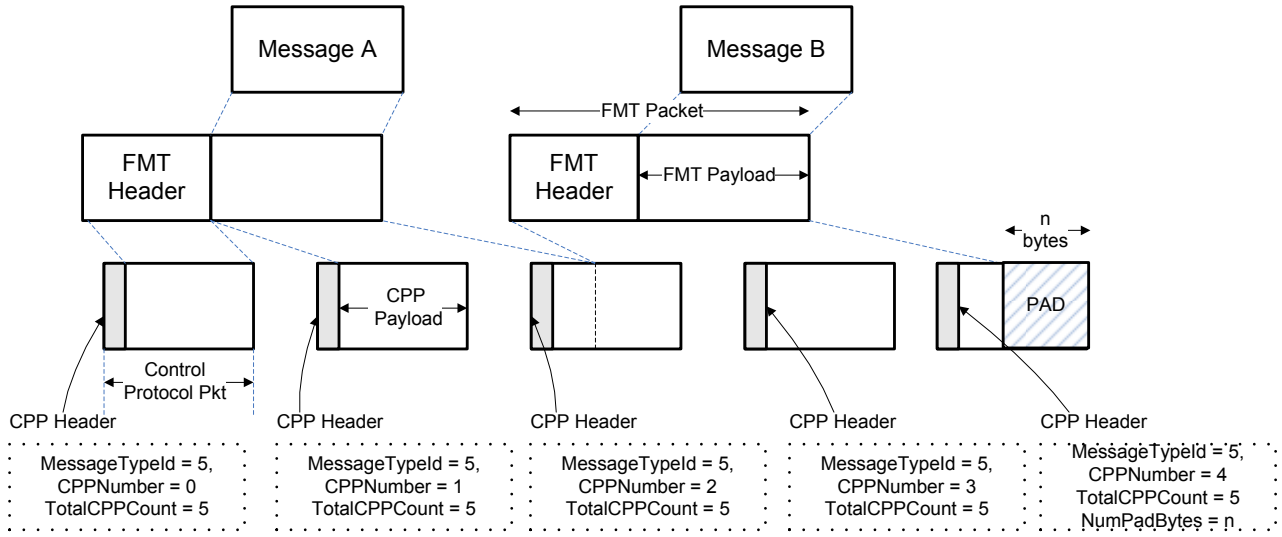

Figure 3-3: An example FMT Packet Fragmentation

No Text

APPENDIX A – FMT MESSAGE TYPE VALUES

In this release of the specification no fmtMsgType values have been allocated to common messaging services.

1 No text.

APPENDIX B – OPERATOR-SPECIFIC MESSAGING FORMAT (NORMATIVE)

This appendix defines operator-specific messaging format (i.e. fmtPayload) for emergency alert messages to be used in Japan. Three message types are defined.

B.1 Emergency Warning Service (fmtMsgType=224)

This message is used to indicate that there is an emergency warning service. In the case of emergency, a special broadcasting program (Video and Audio) would be broadcasted. When this message is received while receiving other service, the receiver is forced to tune to this special program.

Table B.1-1: EWS fmtPayload Format

Field	Size (bits)	Format
fmtPayload {		
ServiceId	16	uilsbf
Start_End_Flag	1	bslbf
Signal_Level	1	bslbf
Reserved	6	bslbf
Area_Code Length	8	uilsbf
for (i=0; i<Area_Code_Length; i++)		
Area_Code	12	bslbf
Reserved	4	bslbf
}		

Table B.1-1 shows the EWS fmtPayload format. The following paragraphs contain field descriptions.

ServiceId

This field identifies FLO ServiceId of the service where the special broadcasting program is available.

Start_End_Flag

This 1-bit flag corresponds to start signal and end signal in the emergency alarm signal specified in Notation No.405 of the Ministry of Posts and Telecommunications in 1985. When this bit is set to ‘1’, it means that emergency alarm signal has started or is being broadcast. When this bit is set to ‘0’, it means that the emergency alarm signal is ended.

Signal_Level

This 1-bit field corresponds to emergency alarm signal specified in article 138-2 of Radio Station Operation Rule. When this bit is 0, it means that broadcast emergency alarm signal is the 1st type of start signal. When this bit is 1, it means that broadcast emergency alarm signal is the 2nd type of start signal. See Table B.1-2.

Table B.1-2: Signal Level Usgae

Signal level	Description	Clarification of usage
0	1st type signal level	- When broadcasting that alarm declaration is issued by the specification of article 9, clause 1 of "Large scale earthquake countermeasure exceptional action law" (Law No. 73 in 1978). - When broadcasting in accordance with the specification of article 57 of "Disaster countermeasure basic law" (Law No. 223 in 1961) (including when applying article 20 of "Large scale earthquake countermeasure exceptional action law".)
1	2nd type signal level	- When broadcasting that tidal wave alarm has been issued by the specification of article 13 clause 1 of "Weather business law" (Law No.165 in 1952.)

Reserved

This field is reserved and set to 0.

Area_Code_Length

This is an 8-bit field, which indicates following area code byte length.

Area_Code

This is a 12-bit field and corresponds to area code specified in clause 138-3 of Radio Station Operation Rule. For allocation of area code, specification in the Notation No. 405 of the Ministry of Posts and Telecommunications in 1985 is used. See Table B.1-3.

Table B.1-3: Area Code Assignment

Area Code	Description		Area Code	Description	
0011 0100 1101	Local common code		1101 0100 1010	Prefecture Code	Yamanashi
0101 1010 0101	Wide area code	Wide area of Kanto	1001 1101 0010		Nagano
			1010 0110 0101		Gifu
0111 0010 1010		Wide area of Chukyo	1010 0101 1010		Shizuoka
			1001 0110 0110		Aichi
1000 1101 0101		Wide area of Kinki	0010 1101 1100		Mie
			1100 1110 0100		Shiga
0110 1001 1001		Tottori, Shimane area	0101 1001 1010		Kyoto
			1100 1011 0010		Osaka
0101 0101 0011		Okayama, Kagawa area	0110 0111 0100		Hyogo
			1010 1001 0011		Nara
0001 0110 1011	Prefecture Code	Hokkaido	0011 1001 0110		Wakayama
0100 0110 0111		Aomori	1101 0010 0011		Tottori
0101 1101 0100		Iwate	0011 0001 1011		Shimane
0111 0101 1000		Miyagi	0010 1011 0101		Okayama
1010 1100 0110		Akita	1011 0011 0001		Hiroshima
1110 0100 1100		Yamagata	1011 1001 1000		Yamaguchi
0001 1010 1110		Fukushima	1110 0110 0010		Tokushima
1100 0110 1001		Ibaraki	1001 1011 0100		Kagawa
1110 0011 1000		Tochigi	0001 1001 1101		Ehime
1001 1000 1011		Gunma	0010 1110 0011		Kochi
0110 0100 1011		Saitama	0110 0010 1101		Fukuoka
0001 1100 0111		Chiba	1001 0101 1001		Saga
1010 1010 1100		Tokyo	1010 0010 1011		Nagasaki
0101 0110 1100		Kanagawa	1000 1010 0111		Kumamoto
0100 1100 1110		Niigata	1100 1000 1101		Oita
0101 0011 1001		Toyama	1101 0001 1100		Miyazaki
0110 1010 0110		Ishikawa	1101 0100 0101		Kagoshima
1001 0010 1101		Fukui	0011 0111 0010		Okinawa

Reserved

This field is reserved and set to 0.

B.2 Early Earthquake Warning (fmtMsgType=225)

This message is used to carry earthquake warning from the Meteorological Agency. The content of this message is based on the information carried from the information source.

Table B.2-1: EEW fmtPayload Format

Field	Size (bits)	Format
fmtPayload {		
OriginatorId	8	uilsbf
SignalId	3	uilsbf
Reserved	5	bslbf
Hypocenter_Location	16	uilsbf
Corresponding_Area	56	bslbf
Reserved	16	bslbf
Hypocenter_Information {		
Hypocenter_Information_Identifier	16	uilsbf
Cancel_Indicator	1	bslbf
Latitude	11	silsbf
Longitude	12	silsbf
Depth	10	uilsbf
Time_of_Occurence	48	uilsbf
Reserved	6	bslbf
}		
}		

Table B.2-1 shows the EEW fmtPayload format. The following paragraphs contain field descriptions.

OriginatorId

This field is used to identify the originator of this message.

SignalId

This field identifies the earthquake information contained in this alert. See Table B.2-2.

Table B.2-2: SignalId Value Assignment

value	Description
000	Earthquake alert with area information
001	Earthquake alert without area information
010	Test earthquake alert with area information
011	Test earthquake alert without area information
100-111	Reserved

Reserved

This field is reserved and set to 0.

Hypocenter_Location

This field indicates the hypocenter location. See Table B.2-3.

1 **Table B.2-3: Hypocenter Location Value Assignment (1/2)**

2

Code	Area	Code	Area	Code	Area	Code	Area
9011	Hokkaido Douou	9100	Gunma	9290	Nara	9825	Sea around Tanegashima
9012	Hokkaido Dounan	9110	Saitama	9300	Wakayama	9826	Hyuga-nada Sea
9013	Hokkaido Douhoku	9120	Chiba	9310	Tottori	9827	Sea around Amami Island
9014	Hokkaido Douto	9761	Chiba Nampo-oki	9320	Shimane	9828	Sea around Tsushima
9700	Hokkaido Nansei-oki	9130	Tokyo	9330	Okayama	9829	Fukuoka Hokusei-oki
9701	Hokkaido Seiho-oki	9140	Kanagawa	9340	Hiroshima	9830	Kagoshima Seiho-oki
9702	Ishikari Bay	9150	Niigata	9360	Tokushima	9831	Sea around Satsunan Islands
9703	Hokkaido Hokusei-oki	9372	Niigata-oki	9370	Kagawa	9832	Kagoshima Toho-oki
9704	Souya Straits	9160	Toyama	9380	Ehime	9833	Kyushu Nanto-oki
9705	Kunashiri Island	9170	Ishikawa	9390	Kochi	9471	Sea around Okinawa main Island
9706	Etorofu Island	9180	Fukui	9790	Tosa Bay	9472	Sea around Minami Daitojima
9707	Hokkaido Toho-oki	9190	Yamanashi	9791	Kii Channel	9850	Okinawa Nampo-oki
9708	Nemuro Peninsula-oki	9200	Nagano	9792	Osaka Bay	9473	Sea around Miyakojima
9709	Kushiro-oki	9210	Gifu	9793	Harima-nada Sea	9851	Sea around Ishigakijima
9710	Tokachi-oki	9220	Shizuoka	9794	Seto Inland Sea	9852	Ishigakijima Nampo-oki
9711	Urakawa-oki	9230	Aichi	9795	Aki-nada Sea	9853	Iriomotejima
9712	Tomakomai-oki	9240	Mie	9796	Suo-nada Sea	9854	Sea around Yonagunijima
9713	Uchiura Bay	9762	Mie Nanto-oki	9797	Iyo-nada Sea	9855	Miyakojima Hokusei-oki
9714	Souya Toho-oki	9763	Ibaraki-oki	9798	Bungo Channel	9856	Ishigakijima Hokusei-oki
9715	Abashiri-oki	9764	Kanto Toho-oki	9799	Yamaguchi Hokusei-oki	9900	Taiwan
9716	Etorofu-to Nanto-oki	9765	Chiba Toho-oki	9800	Shimane-oki	9901	East China Sea

Table B.2-3: Hypocenter Location Value Assignment (2/2)

Code	Area	Code	Area	Code	Area	Code	Area
9020	Aomori	9766	Kanto Nampo-oki	9801	Tottori-oki	9902	Shikoku-oki
9030	Iwate	9767	Sea around Izu Islands	9802	Sea around Okinoshima	9903	Sea around Torishima
9040	Miyagi	9768	Tokyo Bay	9803	Hyogo Hoppou-oki	9904	Torishima Toho-oki
9050	Akita	9769	Sagami Bay	9804	Kyoto-oki	9905	Sea of Okhotsk
9060	Yamagata	9770	Izu Toho-oki	9805	Awaji Island	9906	Sakhalin
9207	Fukushima	9771	Shizuoka-oki	9806	Wakayama-oki	9907	Sea of Japan (north)
9730	Tsugaru Straits	9772	Mikawa Bay	9350	Yamaguchi	9908	Sea of Japan (central)
9731	Yamagata-oki	9773	Ise Bay	9400	Fukuoka	9909	Sea of Japan (west)
9732	Akita-oki	9774	Wakasa Bay	9410	Saga	9781	Sea around Chichijima
9733	Aomori Seiho-oki	9775	Fukui-oki	9420	Nagasaki	9910	Nankaido Nampo-oki
9734	Mutsu Bay	9776	Ishikawa Seiho-oki	9430	Kumamoto	9911	Sakhalin (south)
9735	Aomori Toho-oki	9777	Noto Peninsula-oki	9440	Oita	9912	Korean Peninsula (south)
9736	Iwate-oki	9778	Toyama Bay	9450	Miyazaki		
9737	Miyagi-oki	9779	Sado	9460	Kagoshima		
9738	Sanriku-oki	9780	Tokaido-oki	9820	Sea around Goto Islands		
9739	Fukushima-oki	9250	Shiga	9821	Amakusa-nada Sea		
9080	Ibaraki	9260	Kyoto	9822	Ariake Sea		
9760	Chiba Nanto-oki	9270	Osaka	9823	Tachibana Bay		
9090	Tochigi	9280	3.5.2 Hyogo	3.5.3 9824	3.5.4 Kagoshima Bay		

Corresponding_Area

This is a 56-bit bitmap corresponds to the area where this message is intended to. See Table B.2-4.

Table B.2-4: Corresponding Area Bitmap

bit	Area	bit	Area	bit	Area
B0	Hokkaido Douou	B19	Niigata	B38	Hiroshima
B1	Hokkaido Dounan	B20	Toyama	B39	Tokushima
B2	Hokkaido Douhoku	B21	Ishikawa	B40	Kagawa
B3	Hokkaido Douto	B22	Fukui	B41	Ehime
B4	Aomori	B23	Yamanashi	B42	Kochi
B5	Iwate	B24	Nagano	B43	Yamaguchi
B6	Miyagi	B25	Gifu	B44	Fukuoka
B7	Akita	B26	Shizuoka	B45	Saga
B8	Yamagata	B27	Aichi	B46	Nagasaki
B9	Fukushima	B28	Mie	B47	Kumamoto
B10	Ibaraki	B29	Shiga	B48	Oita
B11	Tochigi	B30	Kyoto	B49	Miyazaki
B12	Gunma	B31	Osaka	B50	Kagoshima
B13	Saitama	B32	Hyogo	B51	Amami
B14	Chiba	B33	Nara	B52	Okinawa
B15	Tokyo	B34	Wakayama	B53	Daitoujima
B16	Izu Islands	B35	Tottori	B54	Miyakojima
B17	Ogasawara	B36	Shimane	B55	Yaeyama
B18	Kan	B3	Ok		

bit	Area	bit	Area	bit	Area
	a g a w a	7	a y a m a		

Note: B0 bit is the most left bit.

Hypocenter_Information_Identifer

This field is used to identify the hypocenter_information. This is set to the minute (mm) and second (ss) of the current time (yyyymmddhhmmss) and coded in the order of minute and second using four 4-bit binary coded decimals (BCD).

Cancel_Indircator

When this 1-bit flag is set to ‘1’, it means that this message is being canceled. Otehrwise, this flag is set to ‘0’.

Latitude

This field is set to the latitude of hypocenter. When the most significant bit is set to 0, it means north latitudes, otherwise south latitudes. The remaining 10-bit indicates latitudes in units of 0.1 degrees (-90.0 ~ +90.0).

Longitude

This field is set to the latitude of hypocenter. When the most significant bit is set to 0, it means east longitudes, otherwise west longitudes. The remaining 11-bit indicates longitudes in units of 0.1 degrees (-180.0 ~ +180.0).

Depth

This 10-bit field is set to the depth of hypocenter in units of km (0-999).

Time_of_Occurence

This field is set to the time of occurrence. This is set to the year(yy), month(mm), day(dd), hour(hh), minute(mm) and second(ss) of the time of occurrence (yyyymmddhhmmss) and coded in the order of year, month, day, hour, minute and second using twelve 4-bit binary coded decimals (BCD).

Reserved

This field is reserved and set to 0.

B.3 Emergency News Alert (fmtMsgType=226)

This alert is used to send text-based notification alert to receivers. Use case: evacuation order, important notification by local authority, amber alert etc. If this alert is received, then receiver should display the text included in this alert.

Table B.3-1: ENA fmtPayload Format

Field	Size (bits)	Format
fmtPayload {		
OriginatorId	8	uilsbf
Test_Flag	1	bslbf
Area_Flag	1	bslbf
Reserved	6	bslbf
if(Area_Flag == 1) {		
Corresponding_Area	56	bslbf
Reserved	16	bslbf
}		
Text_Length	16	uilsbf
for (i=0; i<Text_Length; i++)		
Text_char	8	uilsbf
}		

Table B.3-1 shows the ENA fmtPayload format. The following paragraphs contain field descriptions.

OriginatorId

This field is used to identify the originator of this message.

Test_Flag

When this bit is set to ‘1’, it means that this alert is being sent for test purpose. Otherwise, it means that this alert is not for test.

Area_Flag

This 1-bit flag is set to ‘1’ if the Corresponding_Area is included in this alert. Otherwise, this flag is set to ‘0’ and it means this alert is intended to everywhere.

Reserved

This field is reserved and set to 0.

Coresponding_Area

This is a 56-bit bitmap corresponds to the area where this message is intended to. See Table B.2-4.

Reserved

This field is reserved and set to 0.

Text_Length

This field indicates the length of the following text_char fields in bytes.

Text_Char

This is an 8-bit field. A string of Text_Char fields specifies a news alert contained in this message. Text information is coded using UTF8.

Change History List of Standard Ver.1.1

No.	Item No.	Description	Page	Reason
1	Scope	This standard applies to the multimedia broadcasting defined in Section 2 of Chapter ~~3~~ 24, Ordinance No.~~26~~87 of the Ministry of Internal Affairs and Communications, ~~2003~~2011.		Modifications in line with the amendment of Ordinance and Notification.
2	Reference	Industrial Property Rights for Ver.1.0 (Not applied in Japan)		Updated with the IPR declarations received.
3	Normative References	[4] Ordinance No.~~26~~87 of the Ministry of Internal Affairs and Communications, ~~2003~~2011. [5] Notification No.~~88~~299 of the Ministry of Internal Affairs and Communications, ~~2009~~2011.	3	Modifications in line with the amendment of Ordinance and Notification.

Forward Link Only Messaging Transport Specification

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