International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.722.2
Corrigendum 2
(01/2007)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

Digital terminal equipments – Coding of analogue signals by methods other than PCM

Wideband coding of speech at around 16 kbit/s using Adaptive Multi-Rate Wideband (AMR-WB)

Corrigendum 2

ITU-T Recommendation G.722.2 (2003) – Corrigendum 2

ITU-T G-SERIES RECOMMENDATIONS

TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

INTERNATIONAL TELEPHONE CONNECTIONS AND CIRCUITS	G.100–G.199
GENERAL CHARACTERISTICS COMMON TO ALL ANALOGUE CARRIER-TRANSMISSION SYSTEMS	G.200–G.299
INDIVIDUAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON METALLIC LINES	G.300–G.399
GENERAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON RADIO-RELAY OR SATELLITE LINKS AND INTERCONNECTION WITH METALLIC LINES	G.400–G.449
COORDINATION OF RADIOTELEPHONY AND LINE TELEPHONY	G.450–G.499
TRANSMISSION MEDIA CHARACTERISTICS	G.600–G.699
DIGITAL TERMINAL EQUIPMENTS	G.700–G.799
General	G.700–G.709
Coding of analogue signals by pulse code modulation	G.710–G.719
Coding of analogue signals by methods other than PCM	**G.720–G.729**
Principal characteristics of primary multiplex equipment	G.730–G.739
Principal characteristics of second order multiplex equipment	G.740–G.749
Principal characteristics of higher order multiplex equipment	G.750–G.759
Principal characteristics of transcoder and digital multiplication equipment	G.760–G.769
Operations, administration and maintenance features of transmission equipment	G.770–G.779
Principal characteristics of multiplexing equipment for the synchronous digital hierarchy	G.780–G.789
Other terminal equipment	G.790–G.799
DIGITAL NETWORKS	G.800–G.899
DIGITAL SECTIONS AND DIGITAL LINE SYSTEM	G.900–G.999
QUALITY OF SERVICE AND PERFORMANCE – GENERIC AND USER-RELATED ASPECTS	G.1000–G.1999
TRANSMISSION MEDIA CHARACTERISTICS	G.6000–G.6999
DATA OVER TRANSPORT – GENERIC ASPECTS	G.7000–G.7999
ETHERNET OVER TRANSPORT ASPECTS	G.8000–G.8999
ACCESS NETWORKS	G.9000–G.9999

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation G.722.2

Wideband coding of speech at around 16 kbit/s using Adaptive Multi-Rate Wideband (AMR-WB)

Corrigendum 2

Summary

Corrigendum 2 details a number of corrections needed to the C source code in G.722.2 Annex C. These changes are due to an error in the ITU output interface and are necessary to maintain the synchronization with the 3GPP AMR-WB codec specifications.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g. interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

Page

ITU-T Recommendation G.722.2

Wideband coding of speech at around 16 kbit/s using Adaptive Multi-Rate Wideband (AMR-WB)

Corrigendum 2

1   Annex C (electronic attachment) file bits.c

Lines 319-371

Software listing before the change:

```
if(n == 2)
{
      if(datalen == 0) /* RX_NO_DATA frame type */
      {
         if(st->prev_ft == RX_SPEECH_GOOD || st->prev_ft == RX_SPEECH_BAD)
         {
            *frame_type = RX_SID_FIRST;
         }
     else
         {
            *frame_type = RX_NO_DATA;
         }
         *mode = st->prev_mode;
      }
      else{

         coding_mode = -1;
         for(i=NUM_OF_MODES-1; i>=0; i--)
         {
            if(datalen == nb_of_bits[i])
            {
               coding_mode = i;
            }
         }
         if(coding_mode == -1)
         {
        fprintf(stderr, "\n\n ERROR: Invalid number of data bits received
             [%d]\n\n", datalen);
          exit(-1);
         }

         if(coding_mode == NUM_OF_MODES-1)     /* DTX frame type */
         {
            if(type_of_frame_type == 0x6b20) /* bad SID frame */
            {
               *frame_type = RX_SID_BAD;
            }
        else                               /* correct SID frame */
            {
               *frame_type = RX_SID_UPDATE;
            }
            *mode = st->prev_mode;
         }
      else
         {
            if(type_of_frame_type == 0x6b20)
```

```
                {
                    *frame_type = RX_SPEECH_BAD;
                }
            else
                {
                    *frame_type = RX_SPEECH_GOOD;
                }
                *mode = coding_mode;
            }
        }
    }
}
```

Software listing after the change:
```
if(n == 2)
{
        if(type_of_frame_type == 0x6b20)         /* bad frame */
        {
            *frame_type = RX_SPEECH_LOST;
            *mode = st->prev_mode;
        }
        else if(type_of_frame_type == 0x6b21)    /* good frame */
        {
            if(datalen == 0)              /* RX_NO_DATA frame type */
            {
                if(st->prev_ft == RX_SPEECH_GOOD)
                {
                    *frame_type = RX_SID_FIRST;
                }
                else
                {
                    *frame_type = RX_NO_DATA;
                }
                *mode = st->prev_mode;
            }
            else
            {
                coding_mode = -1;
                for(i=NUM_OF_MODES-1; i>=0; i--)
                {
                    if(datalen == nb_of_bits[i])
                    {
                        coding_mode = i;
                    }
                }

                if(coding_mode == -1)
                {
        fprintf(stderr, "\n\n ERROR: Invalid number of data bits received
[%d]\n\n", datalen);
                    exit(-1);
                }

                if(coding_mode == NUM_OF_MODES-1) /* DTX frame type */
                {
                    *frame_type = RX_SID_UPDATE;
                    *mode = st->prev_mode;
                }
                else
                {
                    *frame_type = RX_SPEECH_GOOD;
                    *mode = coding_mode;
                }
            }
        }
```

```
            st->prev_mode = *mode;
            st->prev_ft = *frame_type;
        }
        else
    {
            fprintf(stderr, "\n\n ERROR: Invalid ITU file format \n\n");
            exit(-1);
        }
}
```

2   Annex C (electronic attachment) file dec_main.c

Lines 244-261

Software listing before the change:

```
/* SPEECH action state machine  */
test();test();
if ((sub(frame_type, RX_SPEECH_BAD) == 0) ||
    (sub(frame_type, RX_SPEECH_PROBABLY_DEGRADED) == 0))
{
    /* bfi for all index, bits are not usable */
    bfi = 1;                            move16();
    unusable_frame = 0;                 move16();
} else if ((sub(frame_type, RX_NO_DATA) == 0) ||
        (sub(frame_type, RX_SPEECH_LOST) == 0))
{
    /* bfi only for lsf, gains and pitch period */
    bfi = 1;                            move16();
    unusable_frame = 1;                 move16();
} else
{
    bfi = 0;                            move16();
    unusable_frame = 0;                 move16();
}
```

Software listing after the change:

```
/* SPEECH action state machine  */
test();test();
if ((sub(frame_type, RX_SPEECH_BAD) == 0) ||
    (sub(frame_type, RX_SPEECH_PROBABLY_DEGRADED) == 0))
{
    /* bfi only for lsf, gains and pitch period */
    bfi = 1;                            move16();
    unusable_frame = 0;                 move16();
} else if ((sub(frame_type, RX_NO_DATA) == 0) ||
        (sub(frame_type, RX_SPEECH_LOST) == 0))
{
    /* bfi for all index, bits are not usable */
    bfi = 1;                            move16();
    unusable_frame = 1;                 move16();
} else
{
    bfi = 0;                            move16();
    unusable_frame = 0;                 move16();
}
```

SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	**Transmission systems and media, digital systems and networks**
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	Telecommunication management, including TMN and network maintenance
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks, open system communications and security
Series Y	Global information infrastructure, Internet protocol aspects and next-generation networks
Series Z	Languages and general software aspects for telecommunication systems