Document 4-1

Working Group for Terrestrial Digital Broadcasting Relay Stations (3rd Meeting)
Summary of Minutes
Broadcasting System Committee, Telecommunications Technology Subcouncil, Telecommunications Council

1. Date and time

Friday, November 24, 2006 14:00 -

2. Location

Conference Room No. 1101 of MIC (Ministry of Internal Affairs and Communications)

3. Agenda

(1) Confirmation of the summary of minutes of the previous meeting
(2) About the draft report
(3) Others

4. Attendees (Honorifics omitted, in random order)

Kobayashi (Chief, Association of Radio Industries and Businesses), Seki (Deputy Chief, Fuji Television Network, Inc.), Ueda (Matsushita Electric Industrial Co., Ltd.), Ota (M.) (TV TOKYO Corporation), Ota (H.) (National Institute of Information and Communications Technology), Ogura (The National Association of Commercial Broadcasters in Japan), Ozaki (NHK Integrated Technology Inc.), Otosaka (Hitachi Kokusai Electric Inc.), Kato (TV Asahi Corporation), Kawabe (Sharp Corporation), Kawamoto (Japan Cable Laboratories), Kurihara (Miharu Communications Inc.), Sugawara (Tokyo Broadcasting System, Incorporated), Sugiura (Maspro Denkoh Corp.), Izumita (Nippon Television Network Corporation, as deputy for member Hayashi), Higuchi (NEC Corporation), Hirose (Toshiba Corporation), Fujimaki (Sony Corporation), Magarifuchi (Japan Radio Co., Ltd.), Miyazaki (Japan Cable Laboratories, as deputy for member Maruyama), Moriyama (the Japan Broadcasting Corporation), and Yamamoto (Yagi Antenna Inc.)

[Secretariat] Fuseda, Fukushima, Endo, and Kikuchi (Broadcasting Technology Division, MIC)

5. Documents Distributed

Document 3-1: Working Group for Terrestrial Digital Broadcasting Relay Stations (2nd Meeting) Summary of Minutes (draft)

Document 3-2: Draft report to the Broadcasting System Committee, Telecommunications Technology Subcouncil, Telecommunications Council

Reference About the technical conditions on the terrestrial digital broadcasting relay stations <interim report> (Document 2-2 for the 2nd meeting of the Broadcasting System Committee)

6. Summary of the Meeting

The agenda items were discussed as follows after ensuring that every participant received the documents to be distributed.

(1) Confirmation of the summary of minutes of the previous meeting

"The Working Group for Terrestrial Digital Broadcasting Relay Stations (2nd Meeting) Summary of Minutes (draft)" was approved after slight amendments were made.

(2) About the draft report

a. Setting new tolerances (+20% / 20%) for antennal power departure

The secretariat explained actions following the previous meeting as follows:

- The secretariat requested the members to submit data to back up the ground for newly setting the antenna power departure tolerances "+20% and -20%," but no member submitted the data.
- After the previous meeting was over, the secretariat asked each of the members from transmitter manufacturers about the status of the installation configuration of relay stations with "0.05 to 0.5 W" in power. The secretariat felt that this differed slightly from company to company. For this reason, the secretariat also suspended this matter in the mail deliberation that was conducted before the 2nd meeting of the Broadcasting System Committee (held on November 17).

・The secretariat would like the members to deliberate again on the matter today.

After the explanation, the following general questions-and-answers session was provided:

○ Member Sugiura: We prefer ±20%. When we measured the maximum output of an amplifier in the last stage in an environment of temperatures of -10 to +45 ºC , we could manage to include the tolerance within +10%, but if we considered the margin, it would actually be +20%. In addition, when considering the future maintenance of the amplifier, it will be difficult to manage the unit with a tolerance of +10%.

○ Member Magarifuchi: We may manufacture transmitters with tolerances of "+10% and -20%." When we are asked if the manufacturing cost would be reduced by loosening the tolerance from +10% to +20%, we can think of some cases where the cost would not be reduced. But, what we definitely can say is that productivity would be increased.

○ Member Sugiura: We think that the stations with "0.05 to 0.5 W" should be installed not in a central office but in an outdoor configuration. I want to add that, for example, when installing stations in Asahikawa, we must assume the temperature range may be down to -20 ºC and the tolerance will result in a worse value. If I think about this matter based on the past performance of our company, assuming that a provision establishes that the tolerance is "+10%," I believe our products will deviate from the specified value by about 0.4 dB and we must impose new control items on our factories to overcome such deviation, which may result in a cost increase.

○ Chief Kobayashi: I feel from the course of deliberations so far that some manufacturers can produce transmitters with a tolerance of "+10%" and other cannot. In contrast, I wonder what conditions broadcasters request.

○ Member Ota and member Moriyama: The fact is that we still have to decide on the installation configuration of stations with "0.05 to 0.5 W." If we think about the case by comparing with that of analog broadcasting, however, we can imagine configurations where about 80% of the stations will be housed in central offices. Unfortunately, we cannot say at this point in time that "we as broadcasters wish that the stations with "0.05 to 0.5 W" should be like this."

○ Chief Kobayashi: Can even the tolerance for MCPAs be made to fall within "+10%" if they are installed in central offices?

→ Member Sugawara: This depends on the temperature controls, even if they are installed in central offices. As it is almost impossible to install

air-conditioners in stations with “0.05 to 0.5 W,” most of them only have blower fans. I am concerned with not only low temperatures but also high temperatures.

○ Member Ozaki: If the tolerance cannot be made to fall within “+10%,” I must request that the working group consider a new setting of “+20%” in this deliberation of the technical standards.

○ Secretariat: If devices can be manufactured with tolerances of “+10% / -20%,” MIC will streamline relevant provisions by using “+10% / -20%” in general. Having said that, the effort does not make sense if the system becomes far removed from the reality and the digitization of broadcasting slows down. MIC intends to respect the opinions of all members and decide on the matter.

○ Chief Kobayashi: I would like to suspend deliberation on this matter and draw a conclusion on it in the next meeting or through mail deliberations that may be set up before the meeting after the secretariat and I organize the opinions of the members.

b. Comments, etc. sent to the secretariat after the previous meeting

The secretariat explained the reasons why they modified and suspended the comments sent to the secretariat from some members of this group after the previous meeting.

Among them, the secretariat provided the following general questions-and-answers session to discuss a proposal that the next sentence should be inserted after “2.3 In the Case of SNF Operation.”

(Proposed sentence)

“It is desirable to contrive to keep the tolerances of frequencies as low as possible when strict conditions for exceeding a guard band or delay are set up.”

○ Member Kawabe: The statement “the relative tolerance of frequencies is within 10 Hz between stations that make up an SFN” points to the values calculated from the characteristics of receivers, and when looking at Figures 6-1 and 6-2 in Reference 1, C/N, the limit for interference detection, fluctuates to a difference of about 2 dB, depending on the frequency departure Δf in an environment of 60 dBμV/m. This difference of about 2 dB must be accepted by receivers or recipients, given the line design. This makes me think that we should insert the sentence.

○ Chief Kobayashi: As the preceding paragraph says "...as it has been proven that the characteristics do not deteriorate greatly if the relative deviation of frequencies in SFN is as low as ±10Hz...," the connection between the sentences would not be good if the proposed sentence were inserted.

○ Member Moriyama: We should not mix up here arguments for the Ordinance Regulating Radio Equipment and those for measures in productive operations. When the outage of SFN happens in the worst condition, we must carefully investigate whether it occurred due to the exceeded guard band or frequency departure to clarify the cause of the outage. In addition, in the course of discussions on technical standards in the past, we presupposed that in the SFN reception model the DU ratio was not 0 dB but a few dB were secured for the ratio. Consequently, the report that discusses technical standards should not include any additional statements.

○ Member Kawabe: I understand what you mean. I just wanted to say that it was dangerous to include all negative items unfavorable to line designing into a phasing margin and a difference of about 2 dB would occur when the DU ratio was set to 0dB.

○ Chief Kobayashi: It is very rare that the DU ratio is 0 dB, so we don't have to worry about this. I have decided that as Reference 1 will be attached with the report, the sentence in question does not have to be included.

c. Items pointed out in the 2nd meeting of the Broadcasting System Committee

The secretariat introduced the items pointed out by members in the 2nd meeting of the Broadcasting System Committee and provided a questions-and-answers session. An outline of the session is as follows:

(a) How to demarcate antenna power (0.25 W, 0.5 W)

○ Secretariat: One comment stated "While the provisions for antenna power, etc. are set up by using demarcation points such as 0.5 W and 0.05 W, the demarcation points for the spectral mask are 0.25 W and 0.025 W, which is hard to understand. Can't these demarcations be on the same scale."

○ Chief Kobayashi: Tolerances for frequency departure, tolerances for antenna power departure, and spectral mask are provided separately in Article 5, Article 14, and Article 37.27.10 of the Ordinance Regulating Radio Equipment, respectively.

In addition, the spectral mask has been already defined with a specified value

of 0.25 W as its demarcation point. If we should change it to fit a value of 0.05 W, it would make the situation worse.

For these reasons, I would like to keep the current draft report intact.

→ Accepted.

(b) How to specify out-of-band radiation

○ Secretariat: The committee argued whether "out-of-band radiation should be specified with the current spectral mask or should be changed to the notation of absolute values.

○ Chief Kobayashi: As the out-of-band radiation in terrestrial digital broadcasting has been specified with spectral mask until now, it would become complicated if only the reference value we are considering now should be expressed in a notation of absolute values. For this reason, I would like to keep the current draft report intact.

→ Accepted.

(c) The representation of the vertical axis in "Figure 3: Spectral Mask Considering Low-Power Transmission Systems" of "4.2 Looser Specified Value of Spectral Mask"

○ Secretariat: Some member in the committee pointed out that "it is wrong that "the values for the vertical axis that represents attenuation take negative values." In addition, Chairperson Ito suggested "If the current notation must be kept intact from the viewpoint of ensuring consistency with the provision in ITU-R Recommendation SM. 1541-1, I would like to propose that both a more understandable notation and another notation that represents the provision of ITU-R Recommendation SM. 1541-1 should be included in any reports from this committee."

○ Chief Kobayashi: As far as this is concerned, it is desirable that in view of amendment tasks of ministerial ordinances, notices, and examination standards to be conducted in MIC after the report is finalized from the Broadcasting System Committee, the notation used in reports from the Committee should match that used in the draft amendments to the ministerial ordinances and so forth. Consequently, in response to the suggestion from Chairperson Ito, we will provide figures in pairs which have different notations for the vertical axes, add sentences that explain what the term "attenuation" means, include data with the same notation as that in the existing provisions of the Ordinance Regulating Radio Equipment in documents used in reports from this working group to the Broadcasting System Committee. What do other members think of this? I would

like the members to leave the descriptive text entirely up to the secretariat and me.

→ Accepted.

(d) Representation of “the lowest level” in “2.5 (2) Tolerances for frequency departure” in Reference 1

○ Secretariat: A member pointed out that “if an input level range of -75 dBm to -10 dBm was validated in the measurement of the input level tolerance, should the frequency tolerances be measured with an input level of -75 dBm that is the strictest condition.” In addition, member Moriyama said for this matter that “a value of -47 dBm means not “the lowest input level” but “the lowest input level as the measurement reference. To avoid misunderstandings, we would like to modify the relevant expressions.”

○ Member Moriyama: In response to the remark, today’s reference has been modified.

(e) Handling data with code rate 7/8

○ Secretariat: Concerning the fact that data with code rate 7/8 is handled in (3) Tolerances for frequency departure in SFN of Reference 1, a member pointed out that statements that referred to code rate 7/8 could be removed if data would not contribute to clarifying explanations because this code is not being used.

As far as this is concerned, in light of the current situation where the past reports from the Council included data with both code rate 3/4 and 7/8 and the relevant technical standards such as the Ordinance Regulating Radio Equipment and examination standards did not state whether either code would be adopted, the secretariat asks members to agree that we will include data with both 3/4 and 7/8 in our reports etc.

(f) Reason that tolerance for frequency departure is 10 kHz

○ Secretariat: Chairperson Ito pointed out that “the reason why the tolerance for frequency departure for relay stations with more than 0.05 W to 0.5 W is 10 kHz is not cogent.” In addition, a member made a comment that “the reasons only include those from the viewpoint of the side of providers (broadcasters and transmitter manufacturers), so they should also include those from the viewpoint of the side of recipients” as the ground for 10 kHz.

○ Member Moriyama: In response to the remark, today’s reference has been

modified. I added the following as additional reasons: (1) The scale of power for relay stations and the ratio of the number of the stations at the relevant scale to that of the total of relay stations are different from those in analog broadcasting; (2) The digital relay stations do not have offset frequencies; and (3) A study on the characteristics of commercially available receivers shows that the value will not cause any problems.

○ Chief Kobayashi: Considering the purport of Chairperson Ito's remark, the grounds do not seem to be cogent. The secretariat and I will further elaborate and summarize the descriptions, and then I will ask the members to deliberate on them in the next meeting or through mail deliberations before the meeting.

(g) How to describe the performance of oscillators

○ Secretariat: A member pointed out that, regarding the description of the performance of oscillators in "2.2.1. Frequency Departure by the Classification of Antenna Power for Relay Stations," the accuracy of each oscillator should be first described using a notation of 10^{-x} and then in units of Hz after it is converted into carrier frequencies." The secretariat is still considering how to describe performance.

(h) Disposing of angled brackets for applicable conditions for extremely low-power stations

○ Secretariat: The secretariat continues to consider examples of configurations to which extremely low-power stations apply.

(3) Others

a. Carrier-to-noise in line design

○ Member Ueda: If "the relative tolerance for frequency departure between stations that make up an SFN is set to be within 10 Hz ," do we have data concerning effects brought by the carrier-to-noise performance of relay stations?

→ Member Ota: Line design only includes it as a general deterioration equivalent C/N and does not give specific consideration to it. Will some effect, such as a change of carrier-to-noise ratio, be expected when the frequency departure is increased?

○ Member Ueda: As Table 2-1 in Reference 3 lists a value of 50 dB that is the same as that of key stations as "(7) Transmission C/N (Carrier-to-Noise)," I think there is nothing problematic about such performance. But, it is still possible that digital broadcasts cannot be received when low-performance

foreign-made transmitters are used.

○ Chief Kobayashi: What do other members think of the validity of a value of 50 dBc?

→ Member Hirose: Our company also adopts a value of 50 dBc, and the large C/N will make it acceptable.

b. Messages

The secretariat explained the future work schedule as follows:

(a) Work flow until the next meeting of this working group

・Submission of more comments etc. - To the secretariat by Tuesday, November 28

(b) Next meeting of this working group (Monday, December 4)

・Confirmation of the items on which this meeting could not draw a conclusion

・Finalization of the draft report

(c) The 3rd meeting of the Broadcasting System Committee - On Thursday, December 7

・Finalization of the draft report

End of Summary