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agenda item 2.2.)

PROPOSAL FOR DRAFT AMENDMENTS (SUPPLEMENT 2 TO THE 02 SERIES)
TO REGULATION No. 10

(Electromagnetic Compatibility)

Transmitted by the Expert from Japan

Note: The text reproduced below was prepared by the expert from Japan on the basis of a document distributed without a symbol (informal document No. 2) during the forty-seventh session of GRE. It proposes to allow in Regulation No. 10 for testing of electromagnetic compatibility the use of FM frequencies other than those within the FM frequency band standardized in Europe, in order to allow the application of Regulation No. 10 in Japan and other regions of the world (TRANS/WP.29/GRE/47, paras. 70 and 72).

Note: This document is distributed to the Experts on Lighting and Light-Signalling only.

GE.02-20365

A. PROPOSAL

Paragraph 6.3.2.4., amend to read (inserting a new footnote 2/):

"..... less than 20 dB micro-Volts (10 micro-Volts) over the frequency range 88-108 MHz 2/, then the vehicle shall be deemed to conform to the limits for narrowband electromagnetic disturbances and no further testing will be required.

2/ Contracting Parties may permit the use of another frequency, which corresponds to the frequency range of the vehicles' onboard FM antenna."

Annex 5,

Paragraph 1.3., amend to read (inserting a new footnote 1/):

"..... First, the emission levels in the FM band (88-108 MHz 1/) are measured at the vehicle radio antenna using the apparatus described in paragraph 1.2. If the level specified in paragraph 6.3.2.4. of this Regulation is not exceeded,

1/ Contracting Parties may permit the use of another frequency which corresponds to the frequency range of the vehicles' onboard FM antenna."

* * *

B. JUSTIFICATION

Japan is planning the adoption of Regulation No. 10 in the near future. But the present provision of Regulation No. 10 cannot be adopted, because of disparities of FM bands standardized in Europe and other regions of the world.

In Japan, the standard FM band is 76-90 MHz (not 88-108 MHz), and the reception sensitivity of some of onboard FM radio antennas for Japanese domestic use may be reduced in the frequency range of 88-108 MHz.

Figure 1 shows an example of the frequency characteristic of reception sensitivity of the antennas for Japanese use and for European use. This data shows that it will be technically incorrect to make measurements of vehicles with antennas for Japanese use within the frequency band 88-108 MHz.

Figure 2 shows that:

(1) the comparison between the measurement of 10m/3m method and an initial step method of European FM band using vehicles with onboard FM antennas for the European use.

(2) the comparison between the measurement of 10m/3m method and an initial step method of Japanese FM band using vehicles with onboard FM antennas for the Japanese use.

The data are shown by the differences between margins from each limit levels.

The distribution, average value and standard deviation of differences of 30 vehicles in total show, that correlations between 10m/3m method and the initial step method for both the European FM band and the Japanese FM band are almost equal.

Therefore, Japan proposes the addition of the Japanese FM frequency band (76-90MHz) for the initial step procedure of narrow-band electromagnetic disturbance test. This will facilitate the realization of reciprocal recognition of type approvals amongst not only European countries but also other Contracting Parties, where the standard FM frequency bands differ from that used in Europe (88-108 MHz).

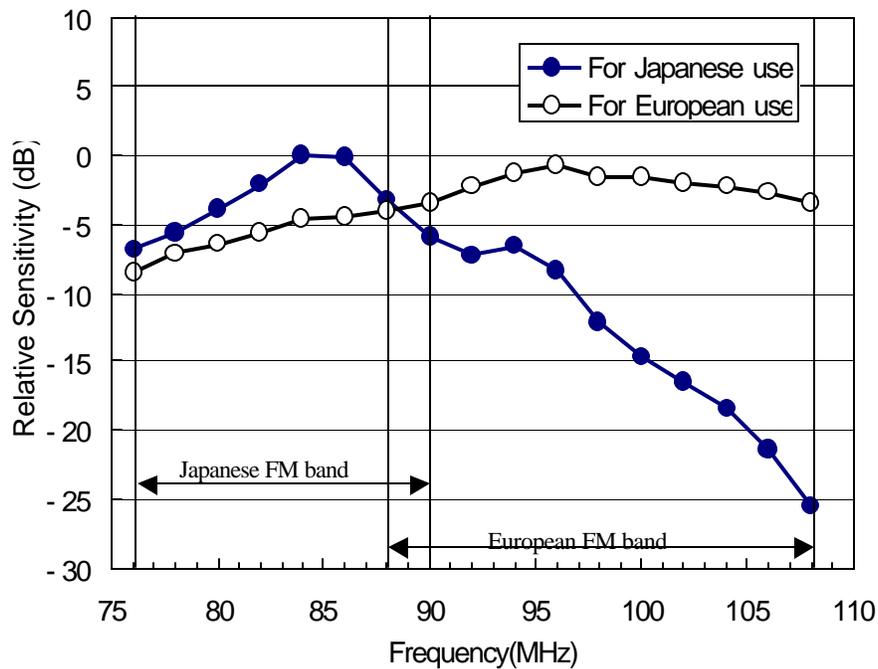
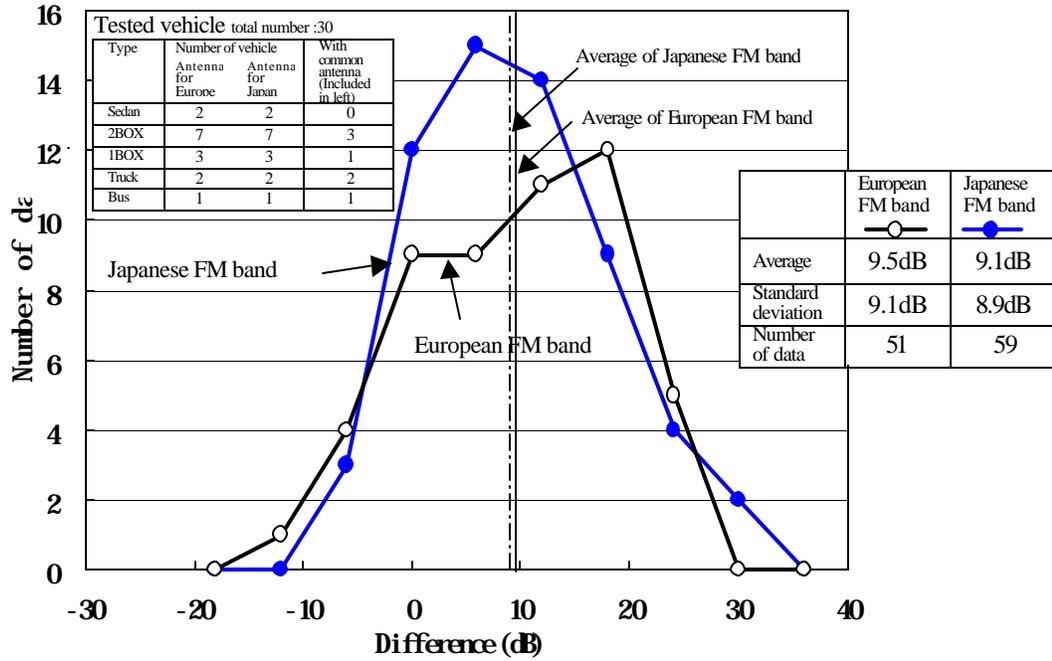


Figure 1: Example of Frequency Characteristic of Sensitivity of Onboard FM Radio Antennas



Formula: (Limit of 10m/3m method – Measured value of 10m/3m method) –
 – (Limit of initial step method – Measured value of initial step method)

Note: The differences are divided to sections by 6dB (-9 to -3; -3 to +3; +3 to +9), and numbers of data are counted in each section and plotted at the center points of each section.

Figure 2 Distribution of differences between 10m/3m method and the initial step method

Appendix

OUTLINE OF THE MEASUREMENT OF COMPARISON DATA BETWEEN 10M/3M METHOD AND
THE INITIAL STEP METHOD

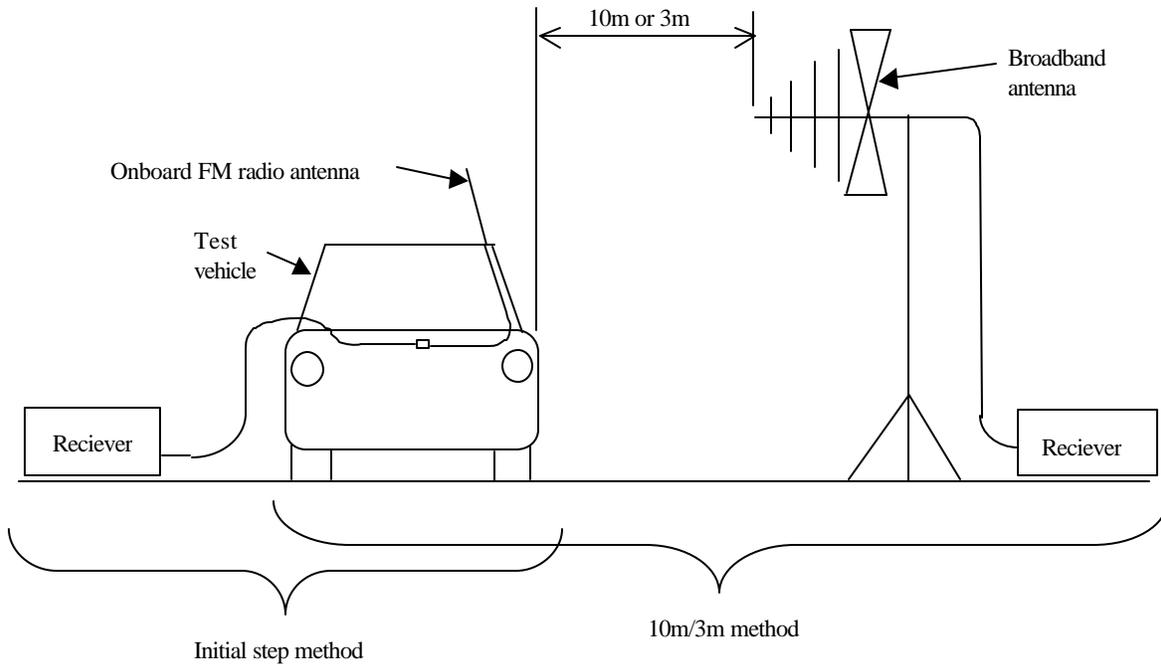


Figure 3: Setting condition of measurement of the initial step method and 10m/3m method

Procedure of data processing:

(1) Actual noise levels of FM band are measured both by 10m/3m method and the initial step method. In total, 15 vehicles with antennas for Europe were measured within the European FM band, and 15 vehicles with antennas for Japan, within the Japanese FM band. Noise levels were recorded at the frequency points where noises can be measured both by 10m/3m method and the initial step method. In total, 51 data values for the European FM band, and 59 data values for the Japanese FM band were recorded.

(2) Difference values were calculated for each measured noises, using the expression below:

$$\begin{aligned} & (\text{Limit of 10m/3m method} - \text{Measured value of 10m/3m method}) - \\ & - (\text{Limit of initial step method} - \text{Measured value of initial step method}) \end{aligned}$$

(3) The difference level was divided to sections by 6dB (-9 to -3; -3 to +3; +3 to +9), and numbers of data are counted for each section and plotted at the centre points of each section. Data are also divided into two groups, data of the European FM band and the Japanese FM band.