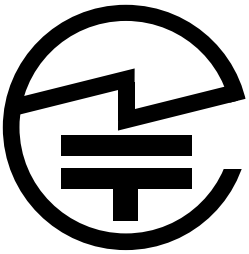
Guideline for Technical Regulations Conformity Certification for Radio Equipment in Japan



Contents

1. Obligation of License Holder

A legal entity that has obtained a Technical Regulations Conformity TEST Certification (Tst C.) or Technical Regulations Conformity TYPE Certification (Typ C.) for radio equipment is called a license holder. The license holders have various legal obligations for the radio equipment that has been certified.

1.1. Obligation of Construction Type Conformance

Article 38-25, Paragraph 1 of the Radio Law stipulates that "A legal entity who has obtained construction type certification from a registered certification body (hereinafter referred to as a license holder) must carry out that the specified radio equipment must conform to the certified construction type specification".

In addition, paragraph 2 states, "The license holder shall inspect the specified radio equipment described in the preceding paragraph in accordance with the method of confirmation pertaining to construction type certification, and shall prepare inspection records pursuant to the provisions of an ordinance of the Ministry of Internal Affairs and Communications. , must be preserved."

The items to be recorded in the inspection record are as follows according to the provisions of Article 19 of the Ordinance on Technical Regulations Conformity Certification of Specified Radio Equipment (hereafter referred to as the Certification Ordinance).

a) Certification number
b) Date and place of inspection
c) The name of the responsible person for the inspection
d) Quantity of Specified Radio Equipment inspected
e) Measurement procedure of inspection
f) Results

Furthermore, the inspection records must be hold for 10 years from the date of inspection.

1.2. Obligation of Notification on Modification

During the period of 10 years from the date of receiving the technical regulations conformity certification, if there are any changes in the following matters, the license holder shall, without delay, submit a notification of the form No. 6 specified in the Certification Ordinance to the Minister of Ministry of International Affairs and Communications, Japan.

a) name and address and, in the case of a legal entity, the name of its representative
b) Type or name of specific radio equipment (in case of Typ C.)

The Form No. 6 can be downloaded from the website of the Ministry of Internal Affairs and Communications.

1.3. Labeling of Certification Mark

The license holder may affix a certification mark to a conspicuous place on the radio equipment when fulfilling the obligation to conform to the construction design, etc., with respect to the radio equipment based on the certified construction type specifications.

1.4. Penalties

Penalties are stipulated for violations of the construction type conformity obligation. Penalties are stipulated in Articles 110, 112, and 113 of the Radio Law, and Article 114 also stipulates corporate penalties, stipulating fines of up to 100 million yen.

2. Differences between Test and Type Certification

Technical Regulations Conformity TEST Certification (Tst C.) is a certification scheme for independent each device by testing each sample. Therefore this is good for a small lot for developing proto types or exhibition. After sampling certification tests, every device has its own independent certification number.

On the other hand, Technical Regulations Conformity TYPE Certification (Typ C.) is a certification scheme for RF design. The certification test samples only one, because it assumes that the all manufacturing devices are the same RF performance due to controlling the quality management system. So there is an assessment for this quality management system in the certification process.

3. Technical Document Requirements

Table 1 lists the documents which are required for applying to certification. Other additional materials may have to be submitted depending on the radio type.

Table 1 Document List

Doc#	Name of Document	Comment	Tst C.	Typ C.
1	Application Form (Test C: Form1) (Type C: Form2)		○	○
2	Radio Class and Type of Emission etc. (Test C: Form1) (Type C: Form2)		○	○
3	Construction of the Confirmation Methods (Form2-2 No.1~No.6)	Submit either one of those from No.1~6.	○	○
4	Contents of Change/Differences (Form2-3)	In case of applying for modification	○	○
5	Statement of the Confirmation Methods (Form3)			○
6	Statement of the Confirmation Methods (Annex) (Form3-1)	in case of no ISO9001 certification		○
7	Test Report (Form4)	in case of submitting test report	○	○
8	Equipment List (Form5)	in case of submitting test report	○	○
9	Test Engineer (Form6)	in case of submitting test report	○	○
10	Power of Attorney (Test C: Form7) (Type C: Form7-1)	when the current license holder authorizes to the applicant	○	○
11	Copy of ISO9001	In case of no ISO 9001 certification, submit Statement of the Confirmation Methods		○

		(Annex)		
12	Block Diagram	Block diagram of radio equipment	o	o
13	Schematic	In case of block diagram is not in detail.	o	o
14	BoM (Bill of Materials)	Parts names are necessary.	o	o
15	Parts Layout	To indicate locations of major RF parts and parts' names	o	o
16	Drawing of external view	input dimension of (W/L/H)	o	o
17	Evidence of tamper proof	Description of tamper proof	o	o
18	Antenna data sheet	Type of antenna, peak gain, outer drawing with dimension and radiation pattern.	o	o
19	Drawing of label	note the diameter of mark		o
20	Label location	Indicate the label location. In case of electrical label, note how to show label.		o
21	Data sheet of major RF components	RF IC	o	o
		FEM	o	o
		Crystal oscillator	o	o
		Regulator, (e.g. LDO, DC/DC converter etc.)	o	o
		others	o	o
22	Serial numbers for Test Samples	Table of serial number list. Identify all test samples with serial numbers	o	

Note: The documents to be submitted for the application for change can be only the documents according to the change.

3.1. Application forms (Doc#1)

- Regardless of new or modification, it is a common application form.
- When applying for change, please submit Form2-3 as well.
- Signature of applicant should be by the responsible person of the department.
- A radio equipped with multiple radio class can be applied with one application form.

3.2. Radio Class and Type of Emission etc. (Doc#2)

Please enter the every radio class and type in every form2 independently.

3.3. Construction Type Specifications (Form2-2, No1~6)

You will use one of construction type specifications (Form2-2) from No1to No6 depending on the radio type. Regarding the method of description, please refer to Form 2 for Construction Type Specification in “Ordinance on Technical Regulations Conformity Certification of Specified Radio Equipment”.
Here is an excerpt from the form certification regulation etc. concerning radio types such as Bluetooth or WLAN devices. Please do not modify the format and items as they are legally determined.

Contraction Type Specification No.3

<table>
<tr><td colspan="2">1 Communication Method</td><td colspan="4"></td></tr>
<tr><td rowspan="3">2 Transmitter</td><td>(1) Rated Output</td><td colspan="2"></td><td>(2) Class of Emission and Frequency Range of Transmittable Radio Wave</td><td></td></tr>
<tr><td>(3) Oscillation</td><td colspan="4">Synthesizer method using Crystal Oscillator
- Operation : xxMHz Crystal</td></tr>
<tr><td>(4) Modulation</td><td colspan="4"></td></tr>
<tr><td colspan="2" rowspan="2">3 Manufacturer Information</td><td>Name of Manufacturer</td><td>Model Type or Name</td><td colspan="2">Serial Number</td></tr>
<tr><td></td><td></td><td colspan="2">–</td></tr>
<tr><td colspan="2" rowspan="2">4 Antenna</td><td colspan="2">(1) Type and Structure</td><td colspan="2">(2) Gain</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2">5 Classification and Model Type or Name of Auxiliary Equipment</td><td colspan="4">Interference Protecting Circuit: Applying the Article 9-4 of Equipment Ordinance</td></tr>
<tr><td colspan="2">6 Other Construction Type</td><td colspan="4">(1)
(2)Confirmation of conformity with the technical regulations specified in Chapter 3 of the Radio Law
□confirmed that it complied with the technical regulations stipulated in Chapter 3 of the Radio Law, regarding the applied equipment, the "Construction Type" other than the items described in columns 1 to 5
(3) Declaration of other radio equipment in the same housing
□Not Applicable
□Applicable
□i. Confirmative radio equipment
(Number & Class:)
□ii. Extreme Low Power radio equipment
□iii. Radio equipment for simultaneous application
□iv. Radio equipment other than the above i - iii
(4) Confirmation of radio emission range
□confirmed that all radio equipment contained in the same housing will not emit radio waves outside the scope of "construction type specification" of the application equipment and the radio equipment declared in i to iii above.</td></tr>
<tr><td colspan="2">7 Attached Drawing, etc.</td><td colspan="4">Radio Equipment System Diagram
Rated input voltage:</td></tr>
<tr><td colspan="2">8 Reference Matters</td><td colspan="4">Connection to telecommunication network:</td></tr>
</table>

- Column 1 is entered using an expression such as "simplex type" or "duplex type"; provided, however, that no entry is required for radio equipment used at specified low-power radio stations that use a radio wave having a frequency that is 2,400 MHz or more and 2,483.5 MHz or less, 2,425 MHz or more and 2,475 MHz or less, exceeding 10.5 GHz and 10.55 GHz or less, exceeding 24.05 GHz and 24.55 GHz or less, exceeding 60 GHz and 61 GHz or less (limited to Radio navigation Service), exceeding 76 GHz and 77 GHz or less, or exceeding 77 GHz and 81 GHz or less, or radio equipment used at the Radio Station of Ultra-Wide Band Wireless System that use a radio wave having a frequency that is 24.25 GHz or more and less than29 GHz.
- In Column 2, (1), the rated output value at the output terminal shown in the Radio Equipment System Diagram is indicated by class of emission. For radio equipment whose antenna power tolerance is specified by a bandwidth of 1 MHz, the antenna power for the bandwidth of 1 MHz is indicated also. For radio equipment whose antenna power tolerance is specified by an EIRP value, an EIRP value is indicated also. In this case, for indicates the EIRP value, Column 4, (2) is not required.
  (Example) 0.001W/MHz
  (Example) 0.000025W (EIRP)
- Column 2, (2) is entered using an expression such as "F1D280.0000MHz, F3E 281.0000MHz through 282.0000MHz (12.5kHz intervals, 81 waves)".
- In Column 2, (3), the oscillation method and frequency are indicated.
  (Example) Crystal oscillation 1/24 of the transmittable frequency
- In Column 2, (4), the modulation method corresponding to the class of emission set forth in Column 2, (2), the maximum modulation frequency and maximum frequency deviation, etc. are indicated; provided, however, that no entry is required in the case of radio equipment used at radio stations of citizen's band.
  (Example: 2.4 GHz band advanced low power data communication system)
  Modulation method: quadrature phase modulation
  BPSK (1 Mbps)
  GPSK (2 Mbps)
  CCK (5.5 Mbps/11 Mbps)
  Diffusion method: direct spreading
  Equivalent frequency to the modulation signal transmission speed: 1 MHz (BPSK, QPSK)
  1.375 MHz (CCK)
  In the case of hopping method, dwell time of hopping frequency is indicated.
- In Column 3, in the case of Construction Type Certification or Self-Confirmation of Technical Regulations Conformity, statement of the model type or name, and serial number is not required.
- In Column 4, (1), the polarization plane and the number of elements are indicated using an expression such as "single type (V) λ/4". In this case, the case of radio equipment used at radio stations of citizen’s band, an expression such as "whip antenna cm" is indicated.
- Column 4, (2) is indicated in Gis (absolute gain); provided, however, that no entry is required in the case of radio equipment used at radio stations of citizen's band. For

radio equipment whose angular width of main radiation is specified by EIRP, the angular width is indicated.

- In Column 5, the components, etc. of the radio equipment that are not listed in Columns 2 through 4 are indicated.
  (Example)
  Kind and Model Type or Name: System Type, Regulation, etc.
  Interference Prevention Function: The function specified in Article 9-4 of the Equipment Regulations
- Entry in Column 6 is as follows:

1) In the case of specified radio equipment listed in Item 2 of Paragraph 2 of Article 2, the type, manufacturer's name, model, or name of the specific radio equipment listed in Item 1 of the same paragraph contained in the same casing shall be stated.
2) With regard to the Applied Equipment, the Applicant shall confirm that the construction design other than the items described in Columns 1 to 5 conform to the technical regulations stipulated in Chapter 3 of the Radio Law, and shall place a check mark a box ☐.
3) "Weak radio equipment" means the radio equipment of a radio station whose radio waves emitted as stipulated in Article 4, Item 1 of the Radio Law are extremely weak.
4) "Radio equipment for simultaneous application" means a radio device that has applied for technical regulation conformity certification or construction design certification to the same registered certification authority or approval certification body among other radio equipment contained in the same housing of the applied equipment.
5) In (3), the presence or absence of other radio equipment contained in the same housing as the applied equipment and the applicable item from (1) to (4) shall be checked in a box ☐. In the number and classification column of (1), the technical regulation conformity certification number, construction design certification number, or identification number shall be written as the number, and the type of specific radio equipment listed in Article 2, Paragraph 1 shall be stated as the type.
6) (4) With respect to all radio equipment housed in the same housing as the applied equipment, the applicant confirms that radio waves are not emitted outside the scope of the construction design of the applied equipment and the radio equipment declared in (3) (i) to (iii) and places a check mark in a box ☐. In addition, in case the radio equipment referred to in (3) (iv) has been actually licensed or certified (license, registration, or preliminary license) or is newly licensed or certified etc. (technical regulation conformity certification, construction design certification, or self-confirmation of conformity with technical regulations), it shall not preclude the emission of radio waves within the scope of the construction design related license and certification etc. although the radio waves are outside the range confirmed in (4).

- Attached drawings, etc. in Column 7 shall be as follows:

1) In the Radio Equipment System Diagram, the names and uses of the semiconductors or integrated circuits, the frequency of each stage (including the frequency multiplication and synthesizing methods), and the power supply voltage shall be indicated.

2) For radio equipment subject to the technical standards for the specific absorption rate (SAR) and the allowable incident density (PD) for the human body specified in Article 14-2, Paragraph 1 of the equipment regulations, a drawing describing the enclosure of the radio equipment under normal use, a document describing the positional relationship between the radio equipment and the human body when the distance between the antenna and the human body is within 20cm, and a drawing describing the structure and position of the antenna and other items subject to measurement under the technical standards shall be attached. When there is another radio equipment in the same enclosure as specified in Article 14-2, Paragraph 1 of the equipment regulations, a drawing describing the structure and the location of the other radio equipment antenna, and the construction design (limited to communication system, transmitter and antenna) shall be attached.
3) For radio equipment relating to the technical standards for the specific absorption rate (SAR) at the human temporal area and the allowable incident power density (PD) at the human temporal area specified in Article 14-2, Paragraph 2 of the equipment regulations, a drawing showing the structure and location of the antenna and other items to be measured in accordance with the technical standards shall be attached.
4) For the radio equipment declared in (3) (iv) in column6, a document describing the construction design (limited to the items relating to the rated output of the transmitter, the type of radio wave that can be emitted, and the frequency range) shall be attached.

- Column 8 shall be as follows:

1) If it is difficult to open/close the radio equipment upon conducting the collation examination, drawings showing the layout of components, and drawings or photographs showing external appearance shall be attached.
2) If there are any testing programs, connectors or other properties indispensable in particular upon conducting the characteristic test, the name and type of those shall be indicated.
3) For radio equipment which is used at radio stations of a low-power data communication system using emissions of a frequency that is 2,400 MHz or more and 2,483.5 MHz or less, and has occupied band width which is exceeding 26 MHz and 40 MHz or less, it shall be indicated whether it has a carrier sensing function.
4) For radio equipment which is used at radio stations of a low-power data communication system using emissions of a frequency of exceeding 5,150 MHz and 5,350 MHZ or less and radio equipment of land mobile stations of 5.2 GHz band high-power data communication system, it shall be stated whether there is an indication that transmission of such radio equipment is allowed only indoors except when communicating with base stations or land mobile relay stations of 5.2 GHz band high-power data communication system.
5) For radio equipment which is used at radio stations of a low-power data communication system using emissions of a frequency of exceeding 5,250 MHz and 5.350 MHz or less, or exceeding 5,470 MHz and 5,730 MHz or less, distinction between master station (meaning radio stations that transmit radio waves without being controlled by other radio stations, set up the radio frequency used at other

radio stations within the communication system, and control other radio stations within the communications system; the same applies hereinafter) and slave station (meaning radio stations that is controlled by the master station), and whether it has a function to reduce the average antenna power of the communications system by 3 dB shall be indicated.

6) For radio equipment of base stations and land mobile relay stations of 5.2 GHz band high-power data communication system, a document explaining that the equipment complies with the equivalent isotropic radiated power conditions specified in Article 49-20-2, Parapraph1, Item 4 of the equipment regulations shall be attached.
7) Other matters for reference shall be indicated.
(Example) Whether it is connected to telecommunications line equipment

3.4. Statement of the Confirmation Methods (Not required for Tst C)

A statement of the confirmation methods describes the items listed in Appended Table No.4 of the certification regulations (organization, responsibility and authority, management methods to fulfill the obligation to conform to the construction design, inspection of specified radio equipment conforms to its construction design (construction design conformity obligation). Use Form3 as a template. If you don't have ISO certificate, then Form3-1 has to be submitted as well. A license holder shall ensure that the radio equipment conforms to its certified construction type when dealing in specified radio equipment based on technical regulations conformity type certification. Please read the following along with the confirmation method.
http://www.tele.soumu.go.jp/j/sys/equ/tech/

3.5. Copy of ISO9001 Certification (Not required for Tst C)

Please provide a copy of ISO9001 certificate of the factory which the radio equipment is manufactured. Please make sure the scope of ISO 9001 certification includes manufacturing of the applied products and the certificate is within the validity.

3.6. Block Diagram

Figure 1 shows an example of a block diagram. It shall indicate the reference numbers and model numbers of RF major components of transmitter and receiver (RF IC, FEM, crystal oscillator, others and power supply regulator etc.), power supply voltage to be supplied, frequency of the radio, reference frequency of the crystal oscillator etc. as well. In case an RF module is used, a system diagram which indicates model numbers of major components etc. shall be provided.

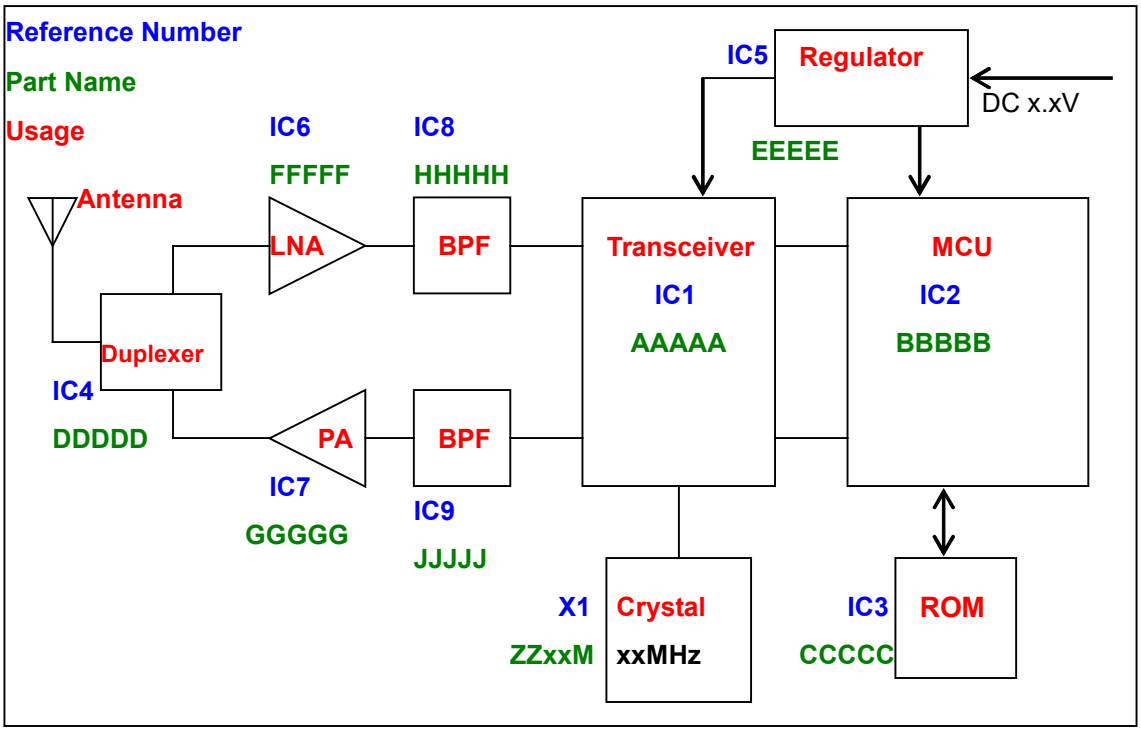


Figure 1 Example of Block Diagram

3.7. Schematic

In case the block diagram is not sufficient, provide circuit schematics as a reference. It is helpful for us to understand the product.

3.8. BoM (Bill of Materials)

Please provide BoM which lists model numbers of the parts specified in block diagram and circuit schematic for cross-checking.

3.9. Part Layout

Part layout shall show the part location and model numbers on PCB. Silkscreen layout or photo which indicates the location of major components can be acceptable. In case a RF module is used, provide a layout inside of this RF module with the location of major components as well as part layout.

3.10. Drawing of external view

This shall show external views of the product together with size (length, width, and height). Alternatively clear photos showing the product in all dimensions with a scale are acceptable. Minor protrusions does not need to be included in the dimensions.

3.11. Evidence of tamper proof

If the equipment is required to be tamperproof, it shall be described in detail how this is achieved in column 6 or a separate document if there is not enough space.

3.12. Antenna

If there are some antennas to be applied for and there is not enough space in construction design form, prepare a separate list and fill in “Refer to the antenna list” in (1) and (2) of 4 on the construction design form.

3.13. Label

Figure 2 shows an example of the certification mark and label. The certificate mark, R symbol and certificate number shall be integrated into a label.

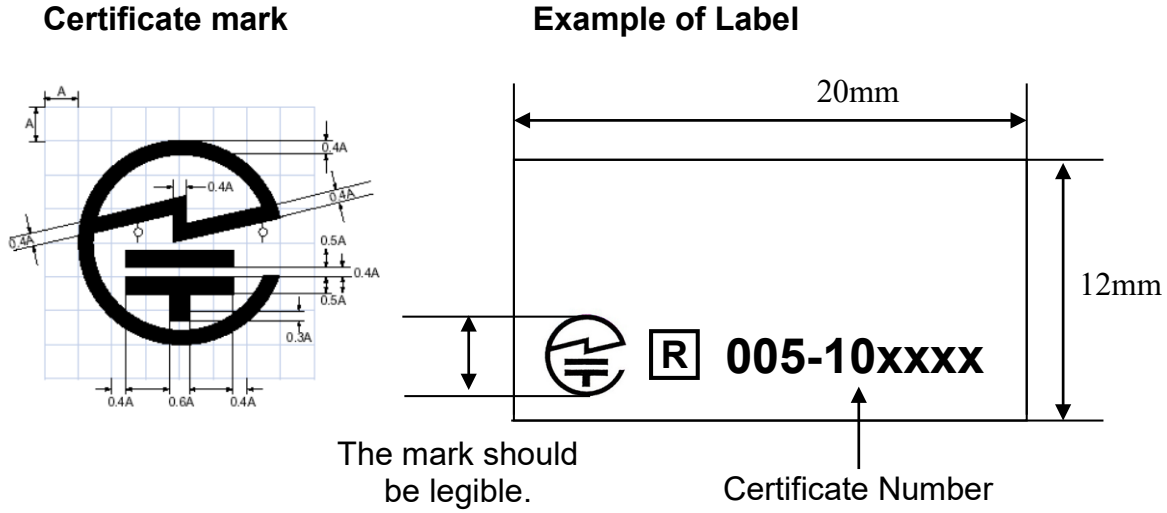


Figure 2 Certificate Mark and Label

- Size shall be such that it can be easily identified.
- Label material shall not be easily damaged.
- Colors shall be appropriate, however label shall be easily readable.

3.14. Label Location

A label layout drawing / photograph showing label location on a product is required. In case of electromagnetic labeling, labeling procedure shall be clearly indicated.

3.15. Data Sheet of major RF components

Please provide data sheets for major RF components, such as RH ICs, FEMs, crystal oscillator, others and power regulator etc.

An antenna data sheet with the maximum antenna gain and external dimensions is required. If an antenna is radio type with half-width limitation etc., radiation pattern is also required.

4. Device under Test (DUT)

RF performance test is conducted by conductivity measurement by connecting DUT prepared by an applicant and our measurement equipment with RF cable. For that purpose, an applicant needs to prepare hardware modification on antenna port and power supply as well as software tool for emitting test radio waves. All applied DUT shall be prepared in case of “Test Certification” and 2 units (1 stand as spare) in case of “Type Certification”.

4.1. Hardware modification

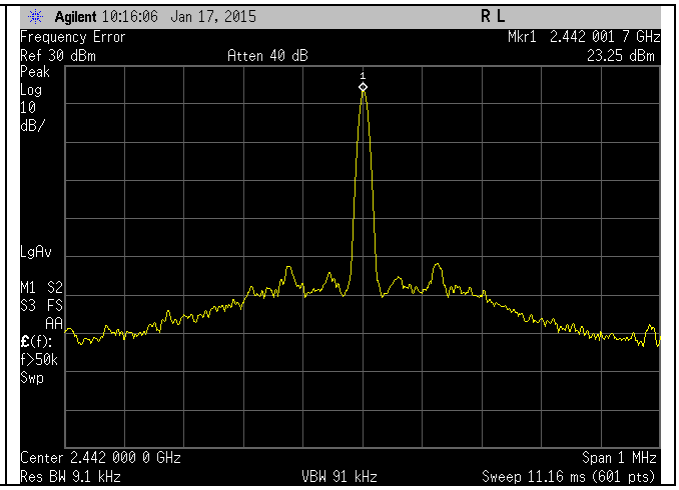
As shown in Figure 3, attach semi-rigid cables etc. to take out power supplied to antenna of DUT. If there is a high-frequency coaxial connector with a switch for testing and measurement in front of an antenna, prepare a RF cable with an adopter converting the connector to a SMA connector. In any case, indicate loss by the cable and the connector.
Test is conducted under +/- 10 variety of power supply voltage of radio equipment. Therefore it is necessary to modify a power supply cable (including USB bus power) so that DUT can be driven by supplied voltage from external power source. If voltage supply is via a general-purpose outlet plug with commercial voltage, no modification is required.

Figure 3 Example of Hardware Modification

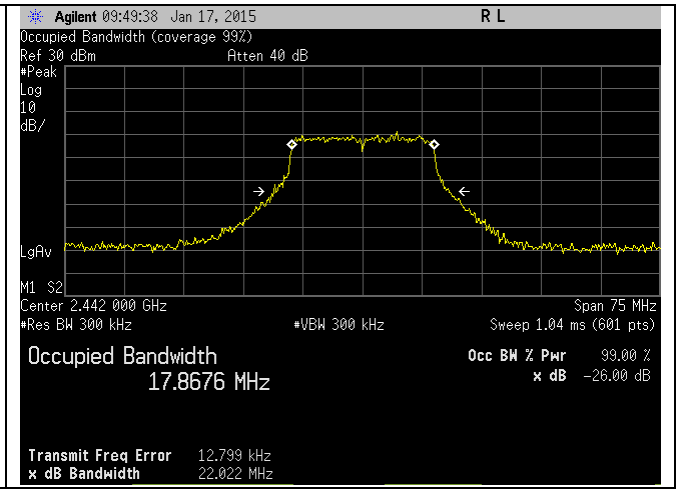
4.2. Software tool

Test is conducted by activating DUT in test mode. Please prepare necessary test software tool and controlling PC for testing. The test modes are as follows. They need to be easily set as they are changed many times during testing. Please prepare the instruction manual in details, such as how to set test mode (like as command, setting parameters).

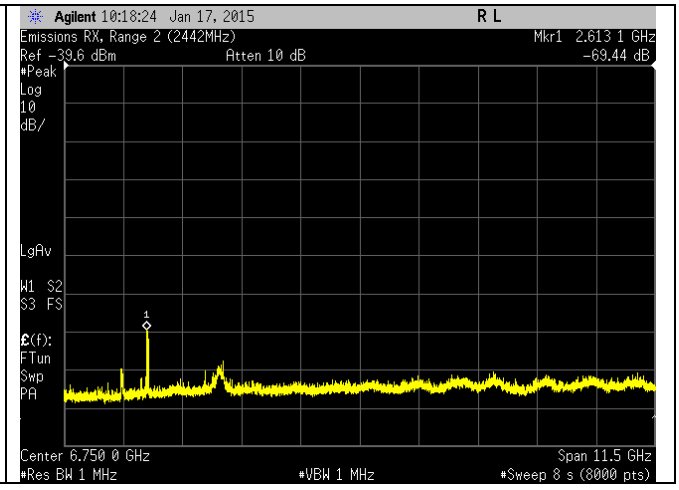
Test Mode of Non-modulated Carrier

Measurement item: “Frequency Tolerance” Settings: Transmit only non-modulated carrier wave continuously at upper/middle/lower limits of applied frequencies.	

Test Mode of Modulated Carrier

Measurement item: “Antenna Power Tolerance”, “Allowable value of occupied frequency bandwidth” and “Spurious emission or unwanted emission intensity limits” etc. Setting: Transmit modulated signal with a pseudo-noise code continuously at maximum output power at upper/middle/lower limits of applied frequency bands.	

Test Mode of continuous Receiving signal

Measurement item: “Limit of Radio Waves Which Are Secondarily Emitted” Setting: Set continuous receiving mode at upper/middle/lower limits of applied frequency bands.	

4.3. Precautions for Test

Before providing test samples, complete all adjustments and settings of antenna power etc. Be informed that we will not perform these adjustments, settings and cable loss measurement etc. in our test lab.

Revision History

Revision	Date	Note	Author
Ver. 1	2018/05/30	Initial Version	Horiguchi
Ver. 1.1	2020/03/27	Add comment of frequencies in the test mode (Clause3).	Ito
Ver. 1.2		2.14 Diameter of Mark is changed.	Ito
Ver. 2.0	2022/09/27	Add LH's obligation New sections Updated new Construction type specifications	Ito
Ver. 3.0	2023/04/1	Review of the whole contents and correction of editorial errors	Ito