

CISPR Fについて (CISPR 14-1)

令和 2 年 12 月 25 日
電波利用環境委員会 CISPR F 作業班
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CISPR Fの動向について（CISPR 14-1）

- CISPR 14-1 第7版が2020年9月に発行。
- 2013年CISPRオタワ会議において日本からWPT機器の導入を提案以降、WPT機器のうち、inductionによるWPT（IPT：Inductive Power Transfer）のみを導入の対象としてTF-IPTで審議が開始され、その後第6版修正1のfragment1として審議が継続。
- 許容値はIH調理器のものをそのまま適用することが方針として決定され、主にIPT機器の動作条件が審議された。

◆対象とする機器

白物家電機器（業務用も一部含まれる）、電動工具、アミューズメント機器、おもちゃ、自動販売機等
これら機器でIPT機能を持つものも含まれる

CISPR Fの動向について (CISPR 14-1)

◆ IPTの定義

- **IPT (inductive power transfer)**

transfer of electrical energy solely by using inductive coupling from an **IPTS** to an **IPTC**, when these are placed in physical contact or in close proximity to each other, but are not electrically connected

- **IPTS (IPT source)**

apparatus that makes electric energy available to an IPTC using IPT

- **IPTC (IPT client)**

apparatus or device which receives electric energy through IPT

- **IPTe (IPT equipment)**

equipment made by the combination of a specific IPTS and one or more specific IPTCs

- **induction cooking appliance**

IPTS used for the purpose of cooking or heating food contained in a suitable IPTC

- **inductive powering equipment**

IPTS used for the purpose of powering or charging an IPTC

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◆許容値

住宅環境の許容値、いわゆるクラスBレベルの許容値のみが規定される。

➤伝導妨害波

（電源port、 auxiliary port及びWired network port）

IPT機器に対する電源portの許容値は9kHz～規定される

➤放射妨害波（妨害波電力の規定もあり）

➤磁界強度測定 or

ラージループアンテナシステム（LLAS）測定

（IH調理器を含むIPT機器にのみ適用される許容値）

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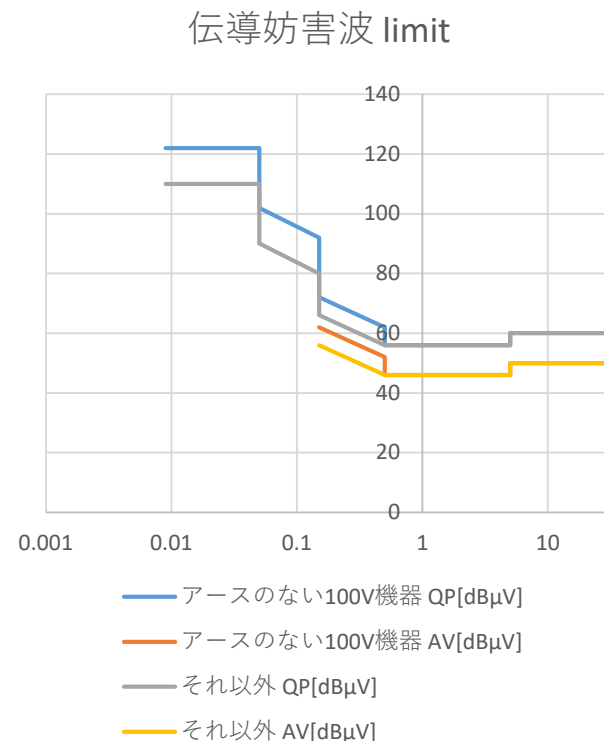
IPT機器の許容値

第6版までのIH調理器の許容値をそのまま採用

▶伝導妨害波 (9k~30MHz)

Frequency range	Appliances which are 100 V rated and without an earth connection		All other appliances	
	dBmV Quasi-peak	dBmV Average	dBmV Quasi-peak	dBmV Average
0,009 to 0,050	122	–	110	–
0,050 to 0,150	Decreasing linearly with logarithm of frequency from 102 to 92	–	Decreasing linearly with logarithm of frequency from 90 to 80	–
0,150 to 0,5	Decreasing linearly with logarithm of frequency from			
	72 to 62	62 to 52	66 to 56	56 to 46
0,5 to 5	56	46	56	46
5 to 30	60	50	60	50

The lower limit applies at the transition frequencies.



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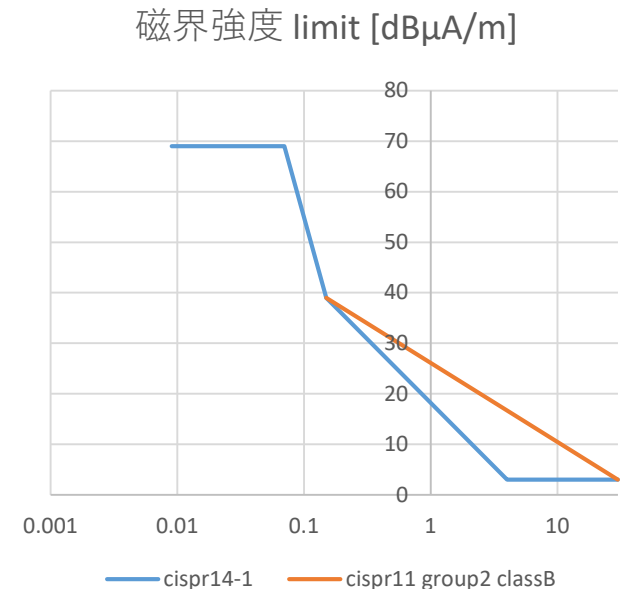
IPT機器の許容値

- 放射妨害波 (30M~6GHz) の詳細は割愛
IPT機器に妨害波電力測定を適用できる
- 磁界強度 (9k~30MHz)

Frequency range MHz	Limits at 3 m distance ^{a, b} Quasi-peak dBμA/m
0,009 to 0,070	69
0,070 to 0,150	Decreasing linearly with logarithm of frequency from 69 to 39
0,150 to 4,0	Decreasing linearly with logarithm of frequency from 39 to 3
4,0 to 30	3

^a The measurements are performed at 3 m distance with a small loop antenna (e.g 60 cm) as described in 4.3.2 of CISPR 16-1-4:2010.

^b The antenna shall be installed vertically, with the lower edge of the loop at 1 m height above the floor.



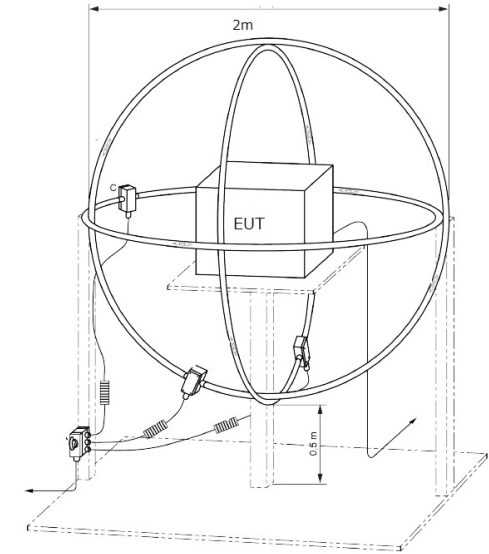
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IPT機器の許容値

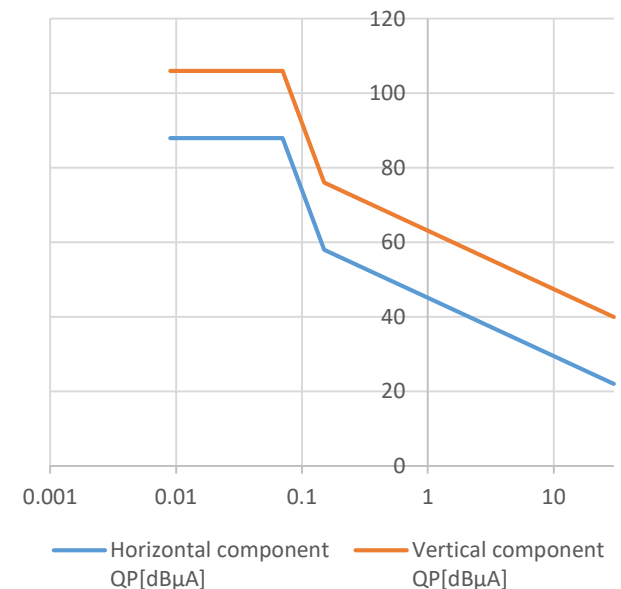
➤ LLAS測定 (9k~30MHz)

Frequency range MHz	Horizontal component ^{a,b}	Vertical component ^{a,c}
	Quasi-peak dB μ A	Quasi-peak dB μ A
0,009 to 0,070	88	106
0,070 to 0,150	Decreasing linearly with logarithm of frequency from	
	88 to 58	106 to 76
0,150 to 30	Decreasing linearly with logarithm of frequency from	
	58 to 22	76 to 40

- a The measurements shall be performed using the 2 m large loop antenna system (LLAS) as described in 4.7 and Annex C of CISPR 16-1-4:2010.
- b Current induced by the horizontal component of the magnetic field, which is measured with the two vertically-oriented LLAs of the LLAS.
- c Current induced by the vertical component of the magnetic field, which is measured with the horizontally-oriented LLA of the LLAS.



LLAS limit



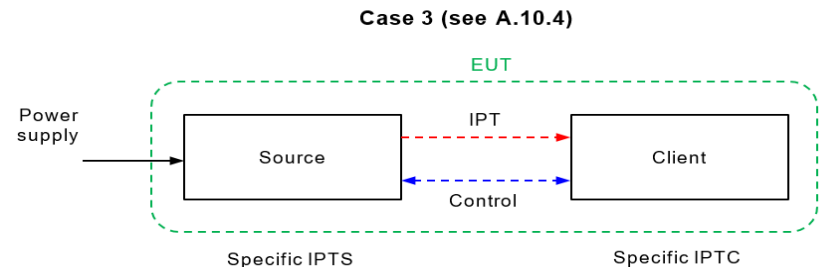
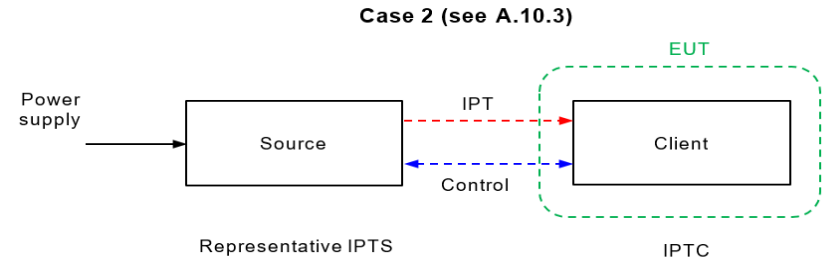
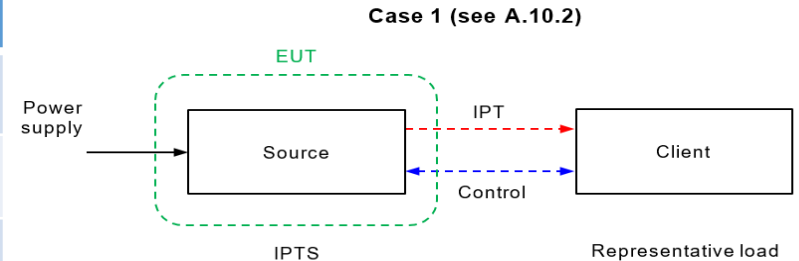
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◆ IPT機器の動作条件

A.10 Equipment making use of IPT other than induction cooking appliances

Case	EUT	Operating mode	Test setup
1 (see A.10.2)	IPTS	Powering and/or charging	Representative load docked to the EUT
2 (see A.10.3)	IPTC	Normal operation and/or charging	EUT docked to a representative IPTS
3 (see A.10.4)	IPTC	Normal operation and/or charging	IPTS and IPTC(s) docked together

- – If the inductive powering equipment is intended to be used with the IPTS coil in one orientation only (e.g. horizontal or vertical), then the measurements shall be made with the equipment positioned to obtain that coil orientation;
- – If the inductive powering equipment is intended to be used with the IPTS coil in various orientations, then the measurements shall be made twice, with the equipment positioned to obtain both a horizontal and a vertical orientation of the IPTS coil.



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◆IPT機器の動作条件

A.10 Equipment making use of IPT other than induction cooking appliances

A.10.2 IPTS

The IPTS shall be operated at least at 90 % of its rated input power and the representative load shall be able to obtain such condition.

- **Fixed IPT zone(s)**

If the IPTS has one or multiple fixed power transfer zones they shall be operated separately in sequence by one representative load only (i.e. during each measurement only one power transfer zone is active).

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◆IPT機器の動作条件

• Non-fixed IPT zone(s)

If the IPTS permits free positioning of IPTC(s) within the active perimeter, one representative load shall be placed on the geometrical centre of the perimeter. The representative load shall be able to meet the load conditions provided in A.10.2.1.

A.10.3 IPTC

- The representative IPTS shall operate in accordance with its specified operating conditions and shall be able to provide enough power to enable the IPTC to operate at its highest power setting.
- For IPTC that offer functions similar to products covered by Annex A, the same test conditions of Annex A shall apply. Otherwise, the general test conditions in 6.1 shall apply.

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◆IPT機器の動作条件

A.10.4 IPTE

- IPTE (case 3) shall be evaluated as a whole system.
NOTE An example of case 3 is a kitchen appliance tested with its dedicated IPTS.
- For IPTE that offer functions similar to products covered by Annex A, the same test conditions of Annex A shall apply. Otherwise, the general test conditions in 6.1 shall apply.
- Both IPTS and IPTC(s) shall be set to their highest power settings.