

行政院及所屬各機關出國報告
(出國類別：考察)

考察電信設備審驗認證及射頻設備管理之現況及實施
出國報告書

出國人員：

服務機關	職稱	姓名
交通部電信總局	副處長	吳日田
交通部電信總局	科長	蔡怡昌
交通部電信總局	秘書	陳永華

出國地點：日本

出國期間：八十九年十二月十六日至二十二日

報告日期：九十年三月八日

H6/
C09000980

大 綱

一、 考察目的與行程 1
二、 參訪過程 3
三、 考察心得 6
四、 結論與建議事項13
五、 附件14
1. 日本郵政省通信總合研究所機構變遷與沿革	
2. 日本郵政省通信總合研究所概要	
3. 日本無線電台審驗認證之流程與認證之方式	
4. 日本 Telecom Engineering Center	
5. 日本 TELEC 之頻率，射頻功率與射頻衰減器之校正與可追溯系統	
6. 日本品質保證機構簡介	
7. 日本 JQA 之計量與測量業務	
8. 日本 JQA 產品安全認證系統	
9. 日本 JQA 電磁環境試驗	
10. 日本郵政省總合研究所電波測定設施	

一、 考察目的與行程

1. 考察目的：

亞太經濟合作會議(APEC)之各個經濟體目前正在洽談有關電信設備之相互承認(Mutual Recognition Agreement)事宜，我國和日本均是亞太經濟合作會議之會員國，在雙方展開有關電信設備相互承認之磋商之前，我方宜先對日本國內目前電信設備審驗認證之實施情形做一個初步的了解，以利雙方磋商時順利進行。並可比較我國和日本目前在審驗認證做法上有何差異，以作為我國制定相關法規、及管理機制之參考。射頻設備在世界各國都有受到管理，主要的原因是它會發出無線電波，如不加以管理則會造成電波秩序繁亂，甚至影響國家及社會之安全。本計畫之考察目的主要在瞭解日本電信設備審驗認證及射頻設備管理之現況及實施，俾以提供國內未來與日本進行電信設備相互承認時之參考，並了解日本對於射頻設備管理之現況及實施，以供國內制定法規及廠商做相關設備外銷日本時之參考。本計畫之考察目的，主要在瞭解日本電信設備審驗認證及射頻設備管理之現況及實施，並了解日本通

信總合研究所組織結構、使命、目標等與經費之來源，以及電信設備檢測實驗室電波暗室所需具備之設施。透過與日本郵政省通信總合研究所(CRL), 日本 TELECOM(TELEC), 日本品質保證機構(JQA), 東金科技公司(TOKIN)等人員的研討，以及實地參觀 CRL, TELEC, JQA, TOKIN 等所屬實驗室，更進一步了解日本在電信設備審驗認證及射頻設備管理上之做法，作為我國在電信設備審驗認證及射頻設備管理上之參考，並有助於雙方在亞太經濟合作會議上就有關電信設備相互承認之磋商。對於通信總合研究所之了解有助於我國設置類似單位之參考，實際的參觀電波暗室以及開放場之設施，有助於我國電波檢測設施需求之參考。

2. 行程：

本項考察期間自民國 89 年 12 月 16 日至 89 年 12 月 22 日止共 7 天。參與考察人員一行三人，由交通部電信總局副處長吳日田擔任團長，率電信總局電波管理處科長蔡怡昌，主任秘書室秘書陳永華，透過亞太科學技術學會及東亞協會安排為期七天之考察活動，期間分別參訪 NTT 多媒體中心、郵政省通信總合研究所、東金株式會社、日本品質保證協會

JQA、Telecom Engineering Center(TELEC)、NTT Communication headquarter Bldg in Minato-Ku、NTT Do Co Mo(Headquarter Bldg in Chiyoda-Ku)等機構。行程如下：

十二月十八日 上午參訪 NTT 多媒體中心

十二月十八日 下午參訪郵政省通信總合研究所

十二月十九日 上午參訪日本東金公司

十二月十九日 下午參訪日本 JQA

十二月二十日 上午參訪 TELEC 總部

十二月二十日 至松戶市參訪 TELEC 之電波暗室及室外開放場

十二月二十一日 上午參訪 NTT 公司

十二月二十一日 下午參訪 NTT DO CO MO 公司

二、參訪過程

十二月十八日 上午參訪 NTT 多媒體中心：

NTT 多媒體中心現在位於東京都霞關，將於 2001 年遷至西新宿，NTT 多媒體中心展示了在各種不同網路上提供網際網路之套裝服務，日本 NTT 公司目前是以 ISDN 為推廣之目標，鼓勵用戶使用 ISDN 作為快速上網之設備，未來計畫將光纖導入用戶家中使用。另外還展示了一些配合增值服務發展

出來的終端設備，如：可從電腦下載音樂之新型磁片及隨身聽、電子錢包、具語音辨識功能之手錶型行動通信終端等等。

十二月十八日 下午參訪郵政省通信總合研究所：
主任研究官奧山利幸先生介紹日本郵政省通訊總合研究所設立之法規依據，及有關總合研究所之組織結構，研究方向，以及通信總合研究所之使命。並參觀了通信總合研究所之電波暗室，以及開放場之設施。

十二月十九日 上午參訪日本東金公司
在計測事業部副部長志田浩義引導並介紹電波暗室規格，各種不同吸收體及所能吸收之電波頻率，並帶領參觀實際之電波暗室。

十二月十九日 下午參訪日本 JQA
JQA 所長松田二三夫介紹該組織之架構任務，JQA 是 JAPAN QUALITY ASSURANCE ORGANIZATION 之縮寫，JQA 認可之產品均貼有 S-JQA 標誌，JQA 也對產品做電磁相容測試，但是只限於家電產品，通信產品並未包含在內，和我國標準檢驗局之部份

工作相似。

十二月二十日 參訪 TELEC

上午至 TELEC 品川區總部，首先由常務理事菊井勉介紹 TELEC，並一邊介紹一邊接受發問，讓我們對 TELEC 有更深入的了解。TELEC 是日本郵政省唯一指定之型式認定發證組織，所有電波法規定須要做型式認定之產品，均要獲得 TELEC 發給型式認定證明才可銷售或使用。下午由 Keiichi Kusakawa 先生帶我們搭車至松戶市參觀 TELEC 之電波暗室及室外開放場，由試驗所長市野芳明介紹及帶領我們參觀，並回答問題，也參觀了行動電話機之 SAR 測試。

十二月二十一日 上午參訪 NTT 公司

NTT 公司介紹日本 ISDN 寬頻網路發展的情況及國際網路服務推廣的情形。

十二月二十一日 下午參訪 NTT DO CO MO 公司

NTT DO CO MO 現在是日本最大的行動電話服務公司，該公司展示了第三代行動通信系統的各式終端及應用、日本第二代行動通信系統演進的各式

終端及應用，該公司並展示了語音撥號的實用情況，以及該公司計畫發展的影像通信，使用者在通話時可看到對方之影像。

三、 考察心得

1. 郵政省依據法律設置通信總合研究所，通信總合研究所是日本國立研究機關，它的使命是在人類社會持續發展中增進國民生活安全與福祉並發展社會經濟以對亞洲太平洋地區及國際社會提供貢獻，促進資訊通信相關之研究開發與發展，它的部門有總務部、企劃部、通信系統部、光技術部、宇宙通信部、宇宙科學部、地球環境計測部、標準計測部、橫須賀無線通信研究中心、Kehanna 情報通信總合研究中心、第一特別研究室、第二特別研究室等，並支援郵政省政策及技術之制定、頻段分配、提供通信規格之報告、提供國際標準組織認可之規格等技術支援郵政省作成政策或法規。由於通信科學快速發展，我國電信總局亦須要一個支援單位提供它技術方面之建議，擬議中的電信技術中心應可參考日本通信總合研究所之功能加以修訂，以符合我國之需要。

2. 日本品質保證機構 JQA 是一個財團法人組織，

1995 年日本修改有關家電和材料之管理法律，確保產品安全的權責移轉至私部門，JQA 成為一個公正中立的第三者組織，它可確認一個製造公司的品質管理系統以及產品的傳導安全與電磁相容，它可發行一個標籤上面有 JQA 及 S 標誌，表示產品的品質是可靠的，這些產品主要是家庭電器產品以及消費性電子設備如電視、音響、個人電腦、微波爐與電冰箱等。由於 JQA 是一個民間組織，因此它很快的再安全測試與其他國外相關的測試檢查組織相互簽訂合約，以加快日本產品在其他國家上市的速度，增進日商的商機，它與 UL, CSA, BEAB 均有簽訂合約。歐洲共同市場行銷的產品需要 CE 標誌，JQA 本身亦獲得歐洲共同市場承認是一個基於 EC 指令的符合性評鑑與符合性認證組織。

JQA 本身也是一個受委任的測試與檢驗組織，包括電腦安全的診斷與建築材料強度的測試，並可做產品的可靠性與操作性的測試與檢查，並可發給證書。在日本政府管理當局規定資訊系統安全之測量標準，JQA 是一個被指定做例如計算機中心設備的檢驗組織。

JQA 具有法律依據可以做測試與檢查，它依照度量衡相關法規可做測量設備方面的測試與檢查，並可做 JIS 相容之檢查，JIS 是由通產省管理核准之標誌，JQA

基於電器用品與材料管理之法律，做電器用品與材料之測試與檢驗。

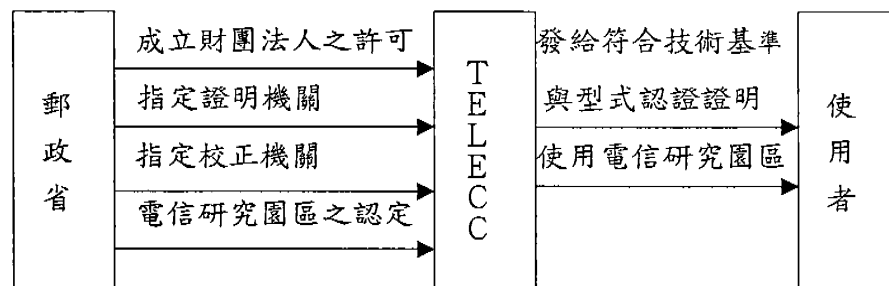
JQA 之部份工作與國內標準檢驗局相似，我國若能成立類似 JQA 之組織則可加強產品在國外上市之商機。

3. TELEC 是 Telecom Engineering Center 之簡稱，以財團法人之組織形態設立，TELEC 之前身是 MKK，MKK 之全名是無線設備檢查檢定協會，以財團法人之形態成立於 1978 年，開始從事之業務是無線電設備之檢定試驗及性能證明，1981 年開始發給日本電波法規定之技術標準符合性之證明，1986 年開始接受文件申請合格後即發給技術標準符合性證明，也就是只要在合格的實驗室測試後，將報告送 TELEC，經審查合格後即可發給技術標準符合性之證明，技術標準符合性之證明相當於我國之審定證明，1987 年郵政省委託 TELEC 從事無線電台之定期檢查業務，1989 年開始發給微弱電波機器之性能證明（相當於我國之低功率射頻電機型式認證證明），1995 年開始發給數位式無線電話機以及 PHS 終端設備之型式認證證明，1998 年原來由 TELEC 定期檢查無線電台之業務終止，基於日本電波法之測試儀器之指定校正機關由 TELEC 開始擔任，也就是實驗室使用來作測試報告之測試儀器必須送 TELEC 校正後發給

證明，所作的測試報告才是標準的數據，由於定期檢查無線電台之業務終止，本年度無線設備檢查檢定協會(MKK)名稱開始改為 TELEC。

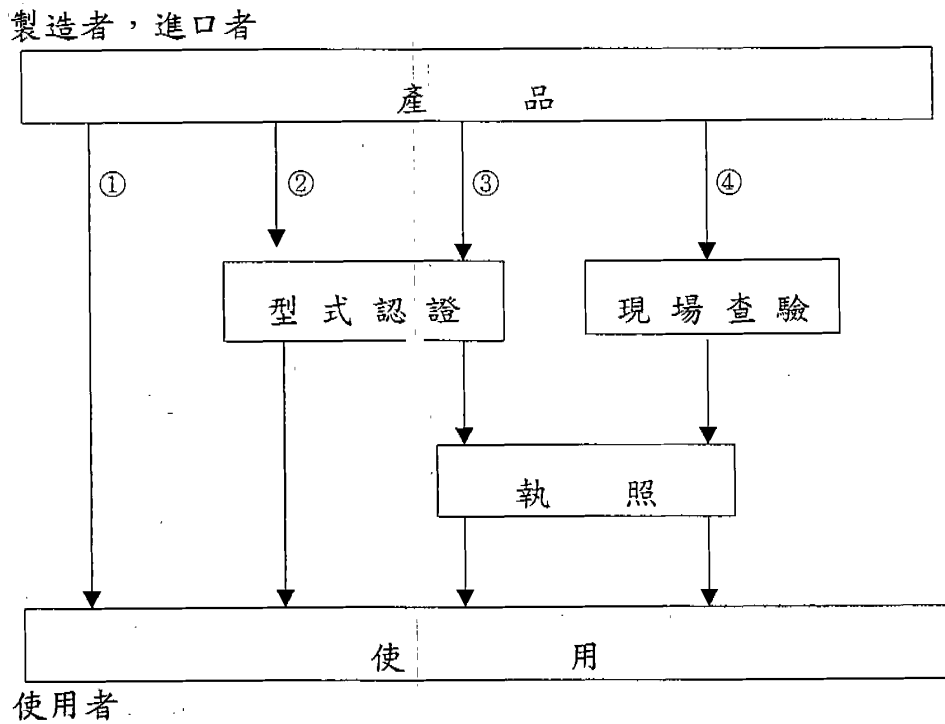
TELEC 現在之主要業務大略如下：基於電波法，需要型式認證證明之無線設備，郵政省指定 TELEC 為審查及發給證明之機構；從事測試業務之實驗室，電波法及郵政省規定實驗室所使用之測試儀器須送 TELEC 校正，測試報告始符合規定；製造業與輸入業需要做測試之設備 TELEC 可代客測試服務；無線電通信技術開發所需使用之設備，可向 TELEC 承租使用。

TELEC 和郵政省等之關係如下：



4. TELEC 於 1999 終止定期檢查無線電台之業務，現行日本無線電台有關廣播、微波鏈路、固定台等之檢查業務是由郵政省負責，合格者再由郵政省發給執照，至於型式認證業務仍然是由 TELEC 審查報告後發給型式認證證書，但是如果設備在通過型式認證後，於使用

時仍須使用執照者，則使用執照仍須由郵政省發給，低功率之無線電設備只要電場強度低於規定之數值者，則不須型式認證即可使用，其範圍是：頻率在 322MHz 以下者距離 3 公尺測量電場強度只要低於 500uV/m 者；或大於 322MHz 小於 10GHz 距離 3 公尺測量電場強度只要低於 35uV/m 者，日本的管理程序可用下圖來表示。



上圖中：

①所包含的物品如無線電遙控玩具

②所包含的裝置如民用頻段無線電、有線電話無

線主副機、低功率無線電設備、低功率數據通訊系統、個人手持電話系統等。

③所包含的裝置有個人無線電、陸地行動電話地面站、PHS 基地台等。

④所包含的如廣播、微波鏈路、固定電台等，不包含在 1、2、3 中之設備。

5. 日本TELEC之型式認證申請採取兩種方式，一種是依型式申請，另一種是依每一批設備申請。依型式申請需要檢查每一型式之設備，再檢查測試報告以及製造過程合格即可發給證書，另外依每一批設備申請者，如果該批設備是同一型式者，則隨機取樣抽檢，依每一批設備檢查者，通常是數量較少者採用。申請者可自行衡量認證費用後，再決定採取認證之方式。

6. TELEC是郵政省指定之儀器校正實驗室，受到指定必須要在TELEC校正之儀器有：頻率計、頻譜分析儀、電場強度表、射頻功率計、電壓電流表、信號產生器。以它在頻率標準方面，TELEC本身有一部用化學元素鈷

(Rubidium)蒸汽產生之標準頻率，它不斷的和郵政省通信總合研究所所送出之頻率做比較，並且也和NTV電視台副載波所送出之彩色電視覆載波頻率3.58MHz做比較，它的頻率和其他兩者頻率之差皆保持在 1×10^{-10} 的負10次方，算是相當的準確。

7. 在總合電波測定設施方面，通信總合研究所算是擁有完整設備之場所，它擁有大型電波無反射室、小型電波無反射室、天線近旁界(near side)測定設施與屋外測定設施。大型電波無反射室，它的室內面積長寬高為 $18 \times 14 \times 6.4$ 公尺，可使用的頻率範圍30MHz至10GHz，電波遮蔽特性70db以上。無反射室對於不同頻率在室內不同部位的無反射特性均不相同，以200MHz之頻率而言，總合研究所在本無反射室之電波無反射特性，天花板和地面是20db以上，在四周之牆面是25db以上，但是在10GHz時，其無反射特性，天花板和地面是55db以上，在四周之牆面是40db以上，隨著新材料的開發，將來這個數值應該是更高。

由於無線通信快速發展，因此頻譜的運用繼續往高頻部份使用，總合研究所的小型無反射室，就是針對SHF與EHF頻段而設置的，它的室內面積長寬高為 $8.5 \times 5.5 \times 5.5$ 公尺，使用頻率在3GHz至50GHz，無反射特性在45db以上，50GHz至100GHz，無反射特性在40db以上。

四、 結論與建議事項

1. 電信總局在民國八十五年七月一日以前擁有電信研究所，其性質與日本之通信總合研究所相當，能提供電信總局各種電信技術方面的評估，以做成適當的決策，但是改制後電信研究所隸屬中華電信公司，因此現在的電信研究所，它的性質已朝向商業化發展，因此未來國內應成立一個有公信力的電信技術機構，作為電信總局諮商參考之機構。

2. 國內之標準頻率目前由中華電信研究所提供，標準頻率之建立主要靠追溯及傳遞，電信研究所是追溯國際度量衡局 (BIPM) 之國際標準，提供國內量測校正追溯之來源，在中華電信公司民營化後是否仍有意願提供服務，此外民營機構是否能讓民眾產生國家級公信力之信賴感，因此電信總局成立電信技術中心之必要性，由這些因素來看更顯得有必要。

3. 日本郵政省通信總合研究所與 TELEC 屋外電波測定設施之開放場設備，均各有特別之處，它們的設計建造方式與國內民間實驗室的有相當大的不同，以 TELEC 來說，開放場之測試儀器是位於地下室，受測物是在地平面上，這樣的設計，值得我國電信技術中心在建立電波測定設施之開放場時作為參考。

4. 國內實驗室使用來測試電信器材之儀器，通常是由他們送自己認為是合格校正儀器之處所做校正，其原因是我國未指定測試電信器材之儀器必須送到何處校正，為使我國各電信器材檢測實驗室所使用之儀器均有齊一之水準，我國有必要建立一套類似日本之制度，使我國各電信器材檢測實驗室所作之報告水準更加一致，並可促進國內儀器校正實驗室產業之發展。

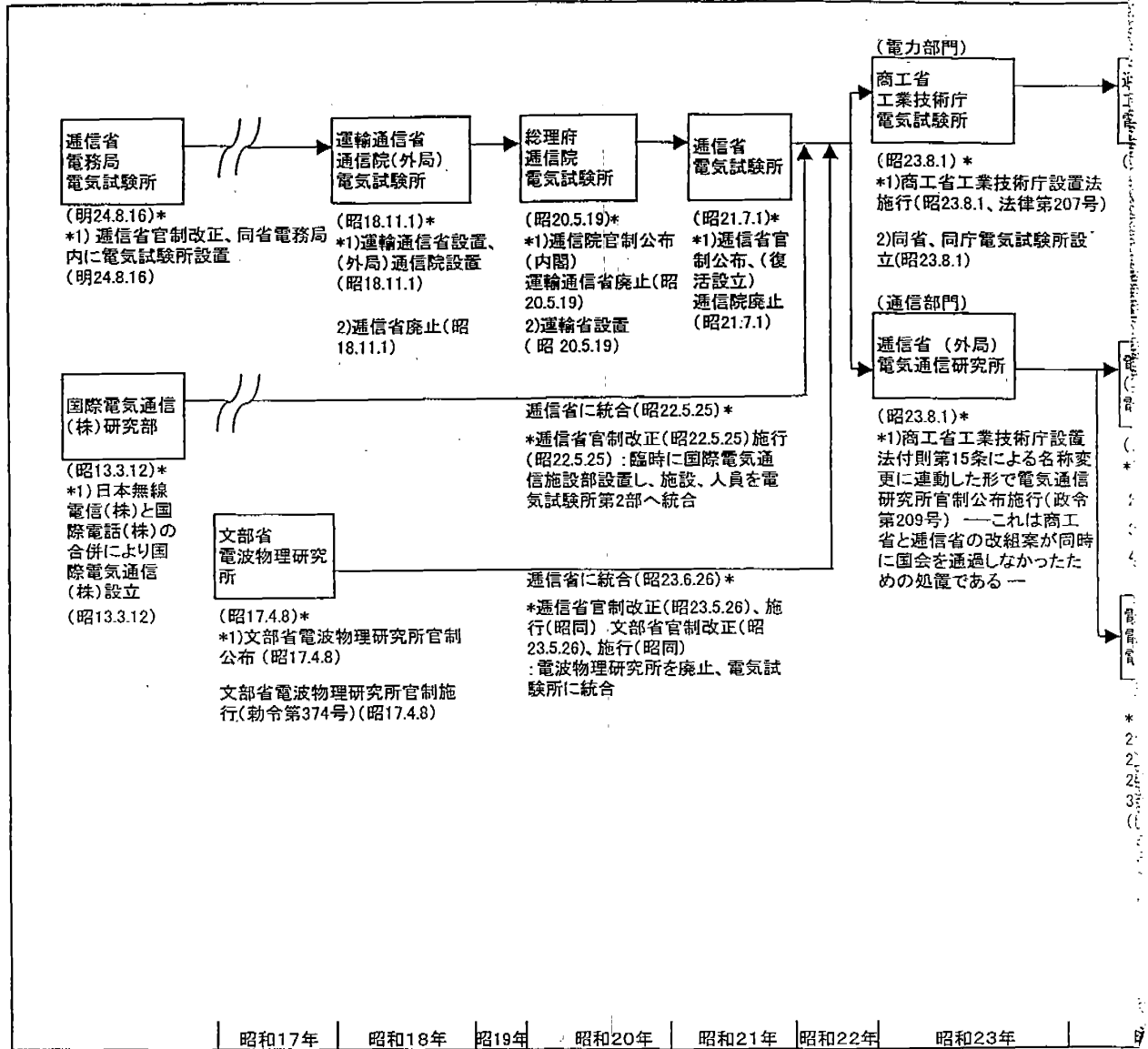
5. 我國電信總局應建立一個具有公信力之檢測實驗室，用來對於送至電信總局審驗之設備做評估，以及對於市面上已通過形式認證，出售之產品做抽測時做具有公信力之評估。因此建議總局建立電波暗室以及電波開放場。

五、 附件

1. 日本郵政省通信總合研究所機構變遷與沿革
2. 日本無線電台審驗認證之流程與認證之方式

3. 日本 Telecom Engineering Center
4. 日本 TELEC 之頻率，射頻功率與射頻衰減器
之校正與可追溯系統
5. 日本品質保證機構簡介
6. 日本 JQA 之計量與測量業務
7. 日本 JQA 產品安全認證系統
8. 日本 JQA 電磁環境試驗
9. 日本郵政省總合研究所電波測定設施

昭和20年代を中心とした四研究機関(電)



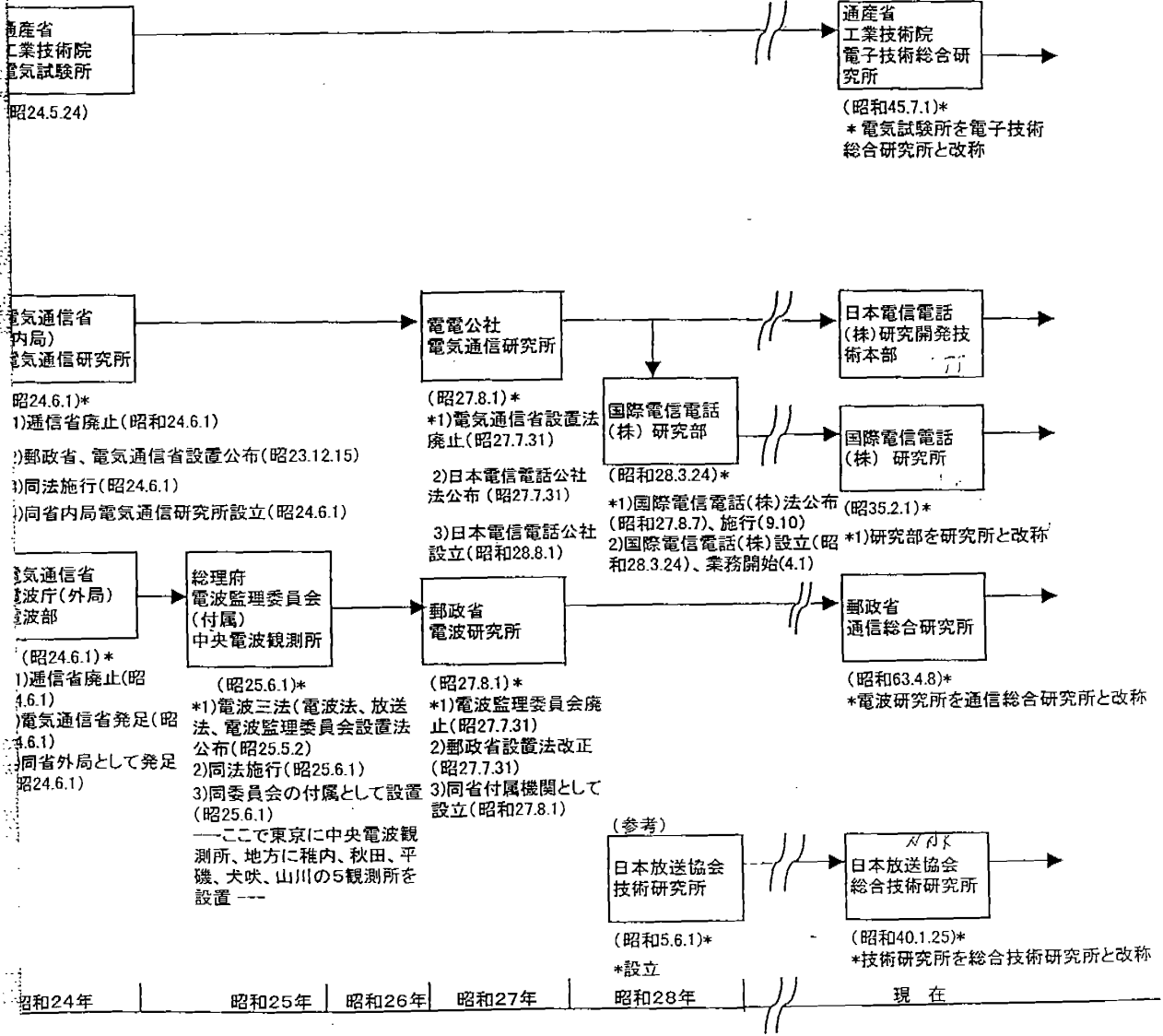
参考文献

- (1) 電子通信学会誌 第68巻 8号 昭60.8 若井 登「回想」電子通信関係研究所組織の変遷
- (2) 日本無線史 第1巻、第3巻、電波監理委員会(昭26)
- (3) 続日本無線史 電気通信協会(昭48. 1)
- (4) 電気試験所50年史 電気試験所(昭和19.7)
- (5) 郵政百年史 郵政省 (昭和46.4)
- (6) 電波研究所沿革史 郵政省 電波研究所(昭和36.3)

附件: /

総合研、通研、KDD研、通信総研)の機構変遷図

暫定版 平成2年3月



Outline of CRL

Communications Research Laboratory
Ministry of Posts & Telecommunications
JAPAN

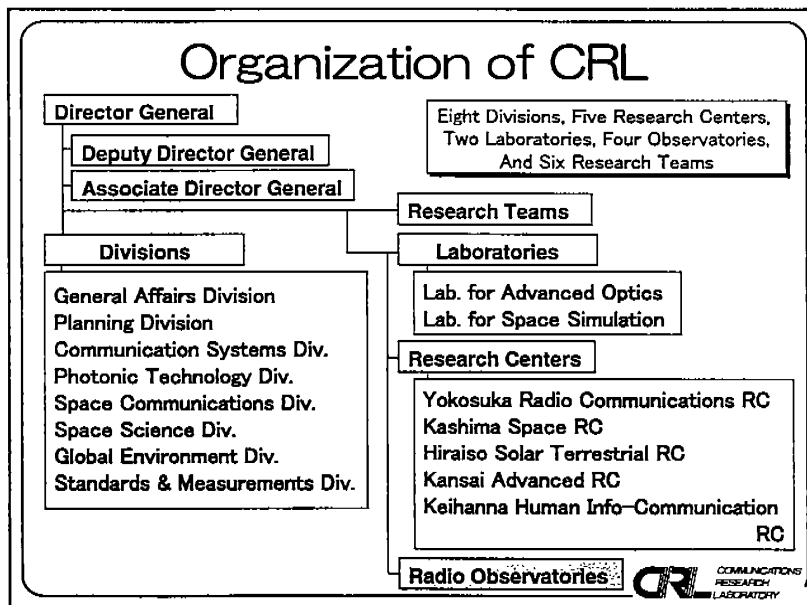
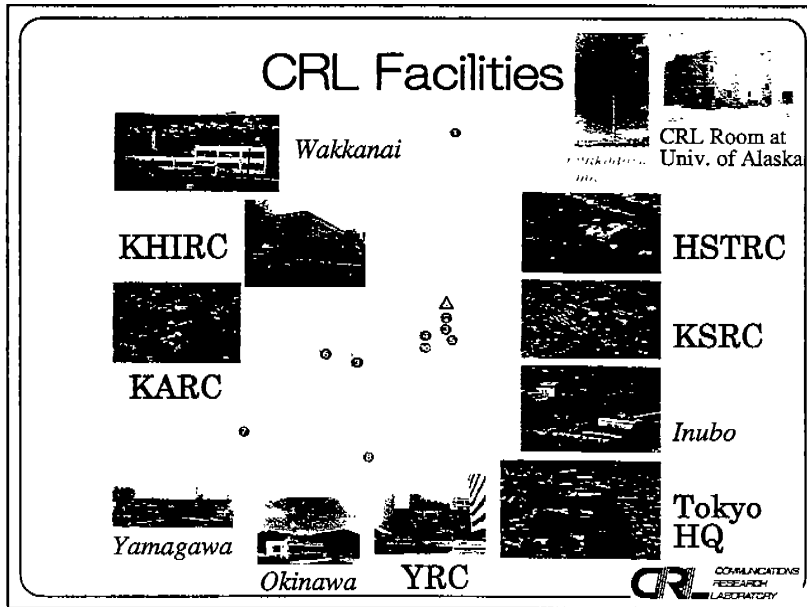
December 2000

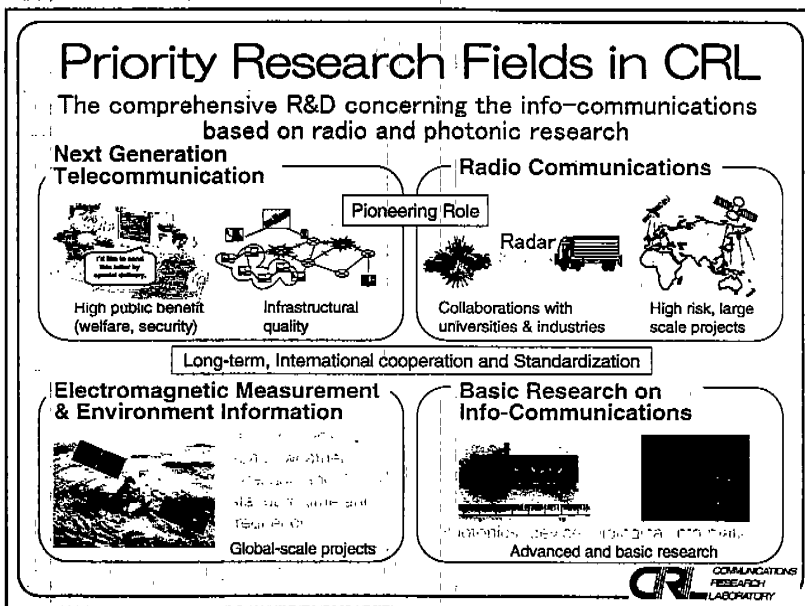
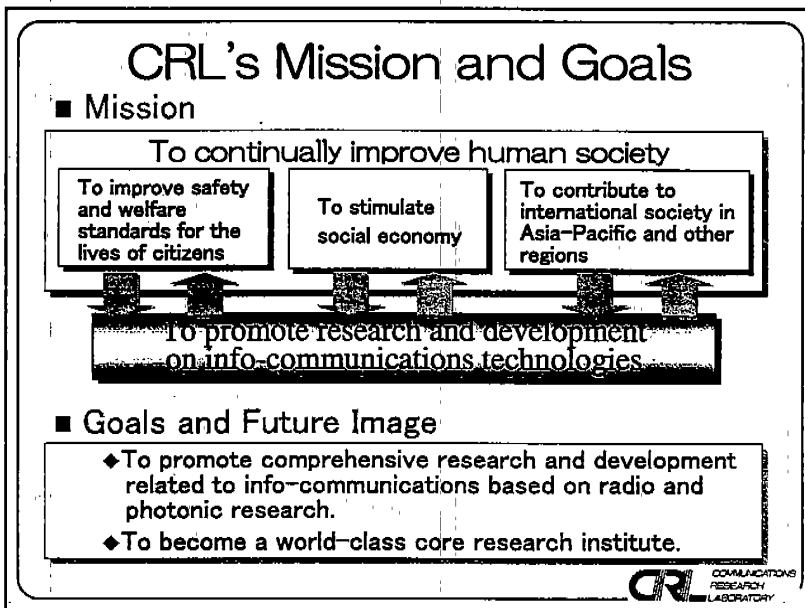


Milestone of CRL

- 1896 Radio Telegraph Research Division was established in the Electrotechnical Lab, Ministry of Communications.
(1895 Marconi made the first radio communication experiment.)
- 1952 Radio Research Laboratories was established in the Ministry of Posts and Telecommunications (MPT).
- 1988 Communications Research Laboratory (CRL) started by being renamed and reorganized.
- 1989 Kansai Advanced Research Center was established in CRL.
- 1997 Yokosuka Radio Communications Research Center was established in CRL.
- 2000 Keihanna Human Info-Communication Research Center was established in CRL on July.







Three Regular Services

Determination & Supply of the Standard Time and Frequency

Highly Precise
Japan Standard Time
(Error rate: one second
per 1.7 million years)



Atomic Standard
of Frequency
Standard



- ★Transmission Freq:
40 kHz
- ★Transmission Output:
50 kW
- ★Location:
Fukushima Pref.

Type Approval & Calibration of Wireless Equipments



Standard of
Wireless Equipments

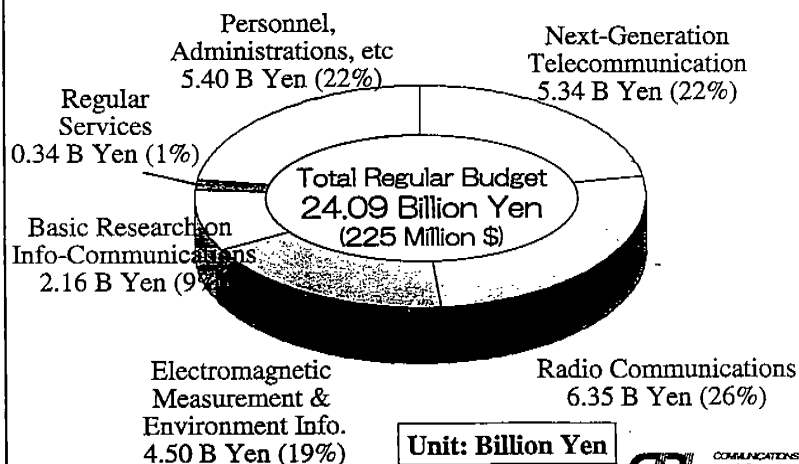
(In Fiscal Year 1999)
★Type Approval:
153
★Calibration:
155

Regular Observation of Ionosphere & Space Environment Info. Service

- ★Regular Observation of Ionosphere
by four radio-wave observatories
in Japan and the Showa Base in
the Antarctic for about 60 years.
- ★Space Environment Info. Service



CRL Budget in FY 2000



Number of Personnel in FY 2000

Administration
112 (26%)

Total: 427

As of October 31, 2000

Research
315 (74%)

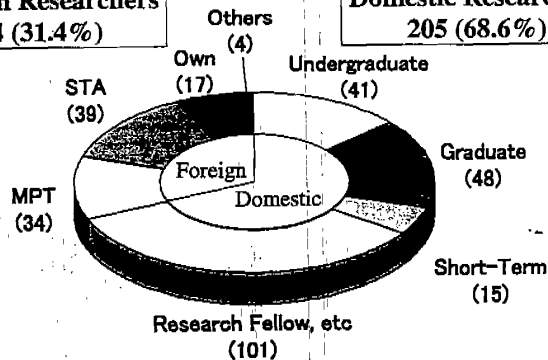
- Number of Ph.D. holders: 171
- Number of researchers of foreign nationalities: 14
 - China: 9 (including one section chief)
 - Korea, Austria, Bangladesh, Netherlands, and Iran: one each



Number of Visiting Researchers

Foreign Researchers
94 (31.4%)

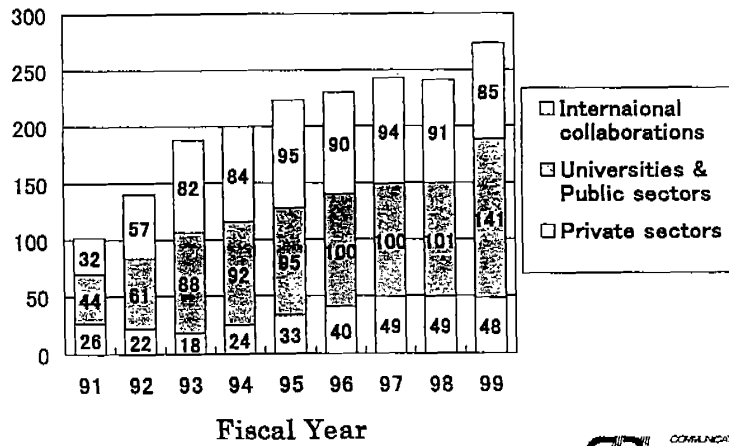
Domestic Researchers
205 (68.6%)



Total Number in FY 1999: 299

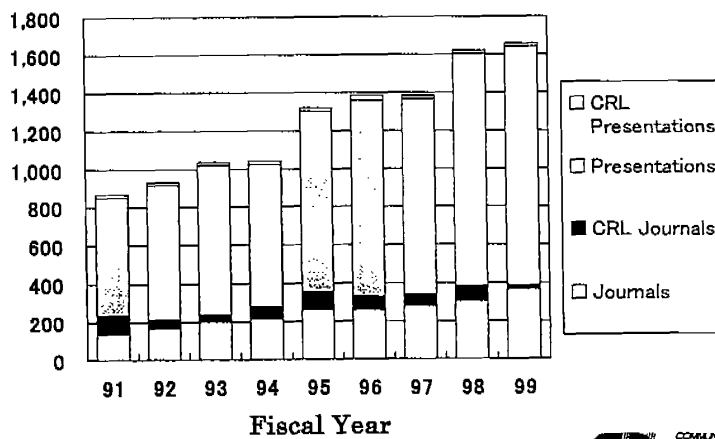


Number of Collaborations



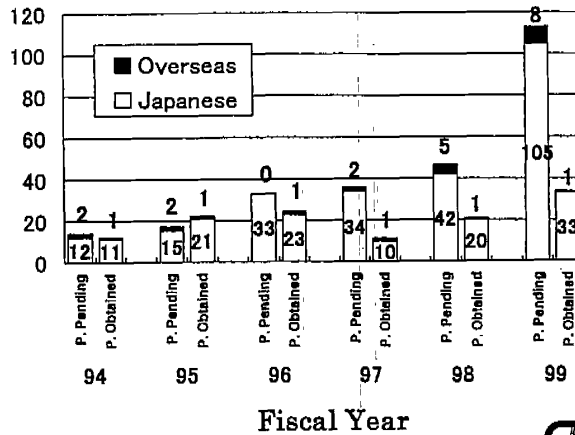
CRL COMMUNICATIONS RESEARCH LABORATORY

Number of Publications



CRL COMMUNICATIONS RESEARCH LABORATORY

Numbers of Patents Obtained and Patents Pending



Fiscal Year

CRL COMMUNICATIONS
RESEARCH
LABORATORY

The Second External Review in FY 1999

■ Purpose

Clarifying the meaning of CRL research projects
Evaluating the future plan for the Independent Administrative Corporation CRL

■ Committee of External Review

Chaired by Dr. Leo Esaki
(Nobel prize winner)
70 Reviewers including 16 foreign reviewers

■ Composition of the Committee

Overall Status Review Committee
(Dec. 16-17, 1999)
Research Work Review Committee
(Four research areas: between Aug. and Nov. of 1999)

■ Highly Evaluated Points

Securement of man-power
Socially important contribution
Positive attitude to external review



CRL COMMUNICATIONS
RESEARCH
LABORATORY

附件： 2

7

CRL becomes an independent administrative institution

(of the Ministry of Public Management, Home Affairs, Posts and Telecommunications from FY 2001).

■ Basic Points

- ◆ Medium-term Goal and Plan (of five years)
 - ◆ Autonomous Management / External Review
 - ◆ Top Management / External Advisory Board
 - ◆ Budget / Corporate Accounting Principles
 - ◆ Flexible Organization / Variety in Personnel
- Mission-oriented / Project-oriented Research
- Openness / Autonomy / Accountability

Center Of Excellence



CRL: An Independent Administrative Institution

Safety and quality of life of the nation's citizens

Open platform

for promoting national R&D projects based on collaborations with industries and universities

Socioeconomic stimulation

■ "Domain programs"

for the domain-oriented R&D groups which seek and bear seeds for next-generation research & industry.

Contribution to international society

■ "Dynamic projects"

for the mission-oriented R&D groups which dynamically promote basic and applied research.

Continuous progress of human society

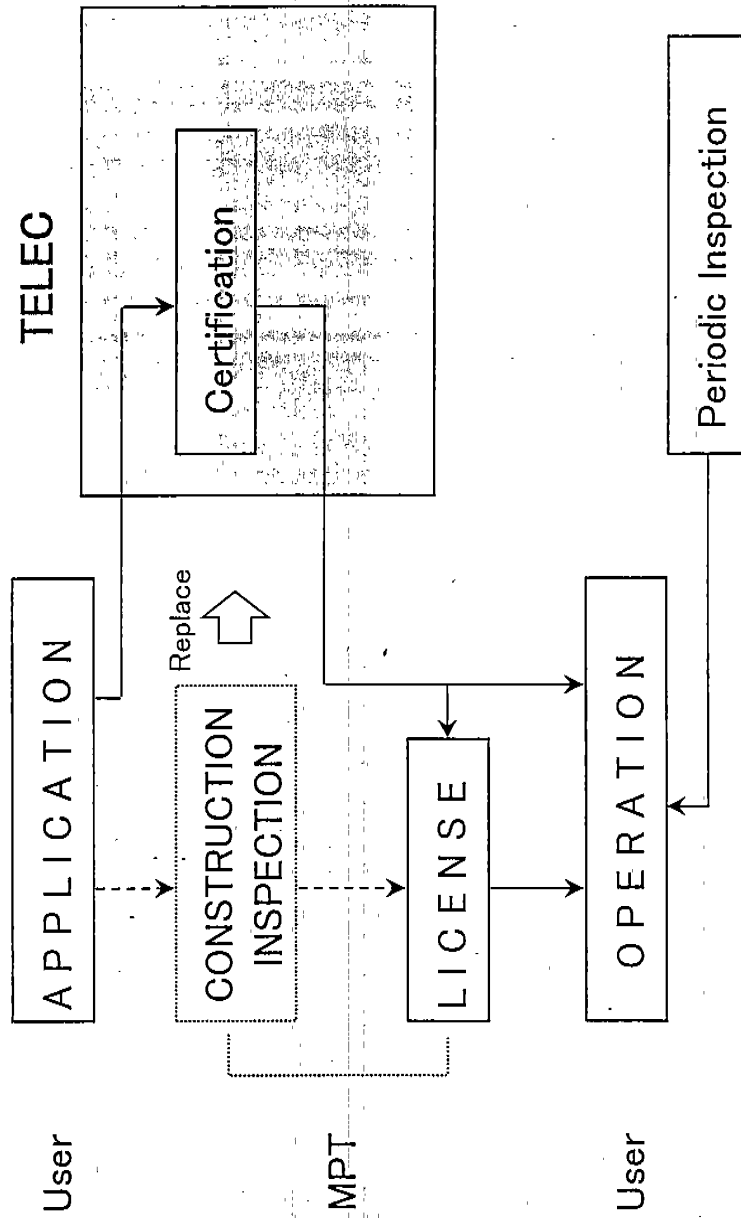
Core facility in info-communication research

Frank and creative research environment

Attractive research institute for world-wide researchers

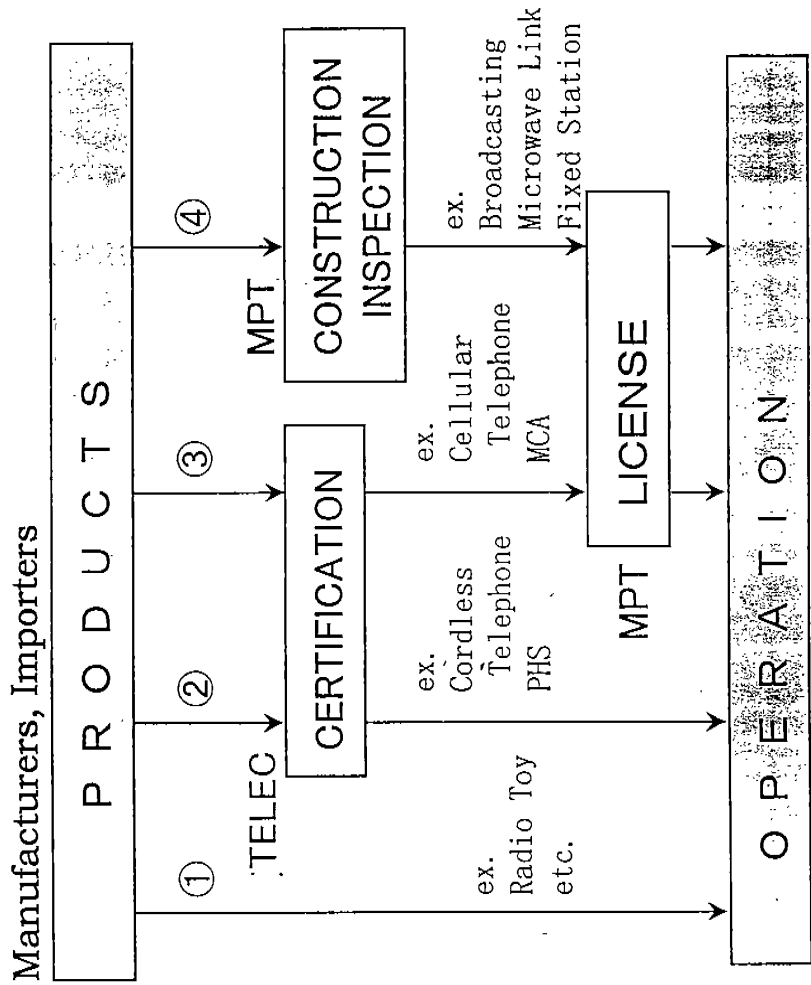


ESTABLISHMENT OF RADIO STATIONS & CERTIFICATION SYSTEM IN JAPAN



This Chart is a basic principle of establishment of radio stations and certification system.

ESTABLISHMENT OF RADIO STATIONS & CERTIFICATION SYSTEM IN JAPAN



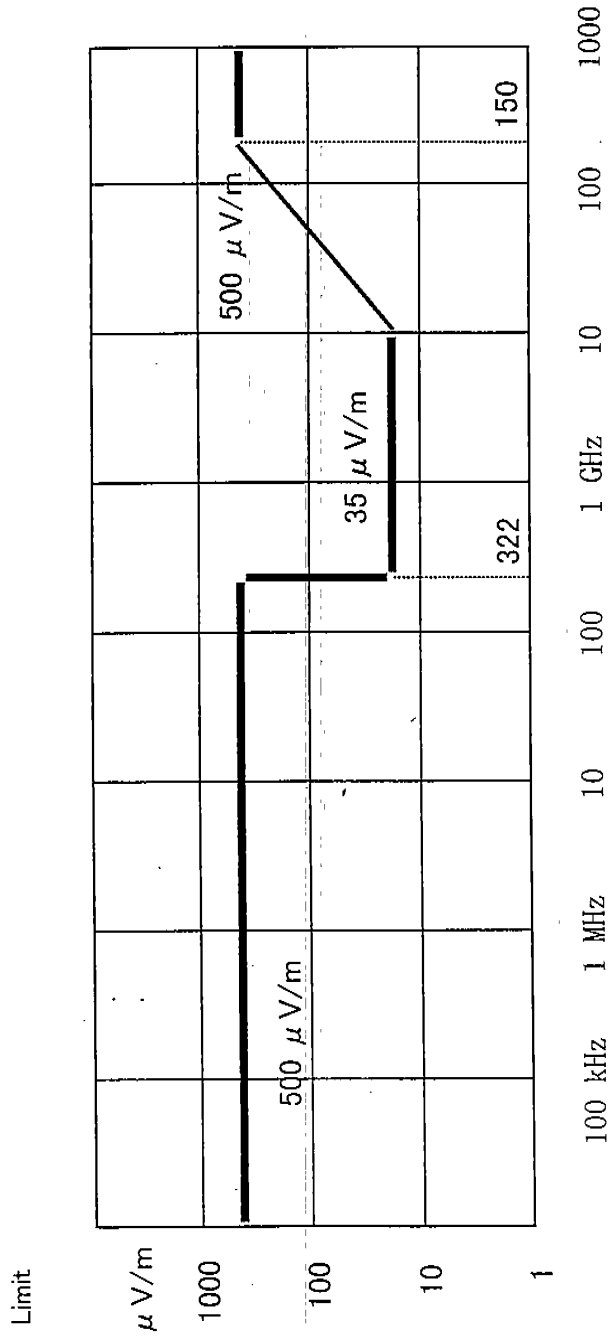
User

①, ②, ③ and ④ show the category of procedures of certification and licensing.



CONDITION OF STATION

NOT REQUIRED LICENSES USING EXTREMELY WEAK RADIO (Procedure①)



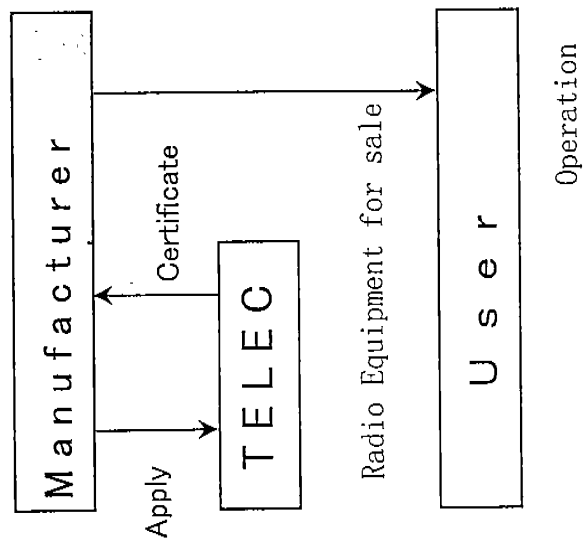
附件：3

Limit of Field Strength at 3 m



CERTIFICATION(I)

If TELEC certifies radio equipments, users aren't required any radio licenses. (Procedure②)



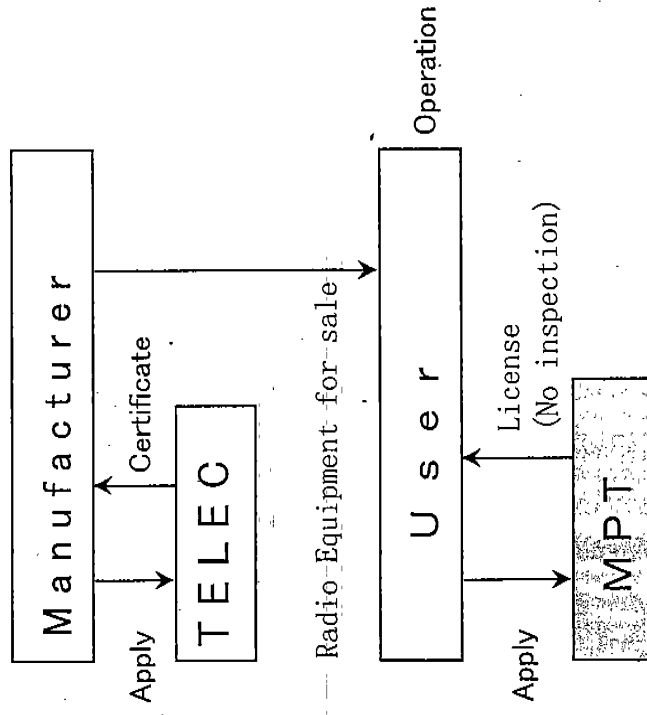
○ Applied Equipment

- Citizen Radio
- Cordless Telephone
- Specified Low Power Radio Equipment
- Low Power Data Communication Systems
- Personal Handyphone System etc.

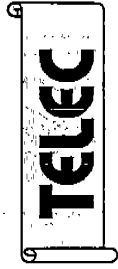


CERTIFICATION(II)

If TELEC certifies radio equipments, users aren't required the inspection of MPT. (Procedure③)



- Applied Equipment
 - Cellular Telephone
 - MCA
 - Personal Radio
 - Land Mobile Earth Station
 - Base Station for PHS
- etc.



CERTIFICATION(III)

METHOD OF CERTIFICATION

Type Application

- ① Examine every Type of Equipments
- ② Examine Test Data and Manufacturing Process

Each Equipment Application

- ① Examine each Equipment in Random Sampling Basis even if they are the same type.

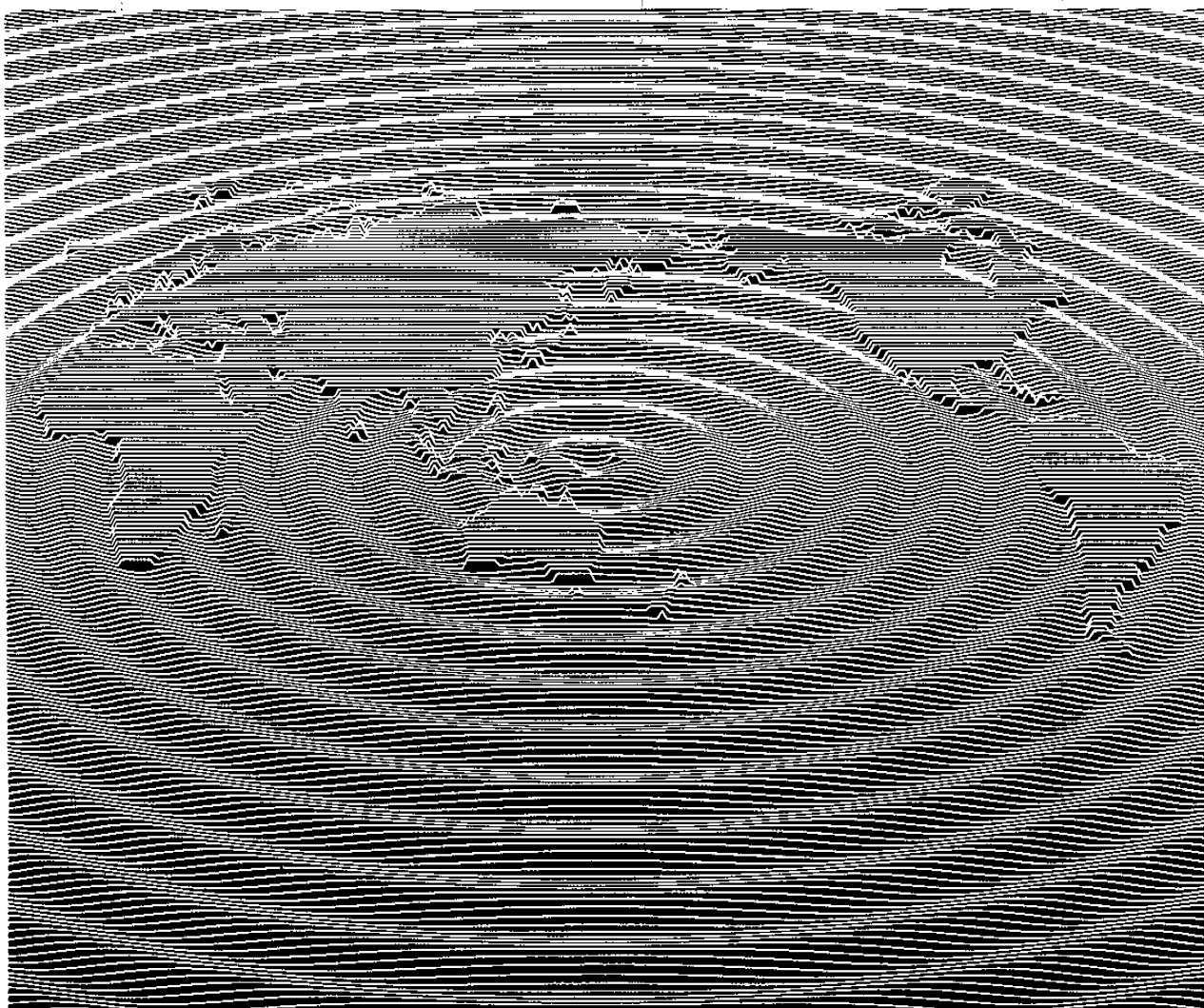
Test Electrical Characteristics

- Frequency Error
- Occupied Bandwidth
- Spurious Emission Intensity
- Antenna Power Error
- Frequency Deviation or Shift
- Adjacent Channel Power
- Limitation of Collateral Radio Emission of Receiver etc.

TELECOM

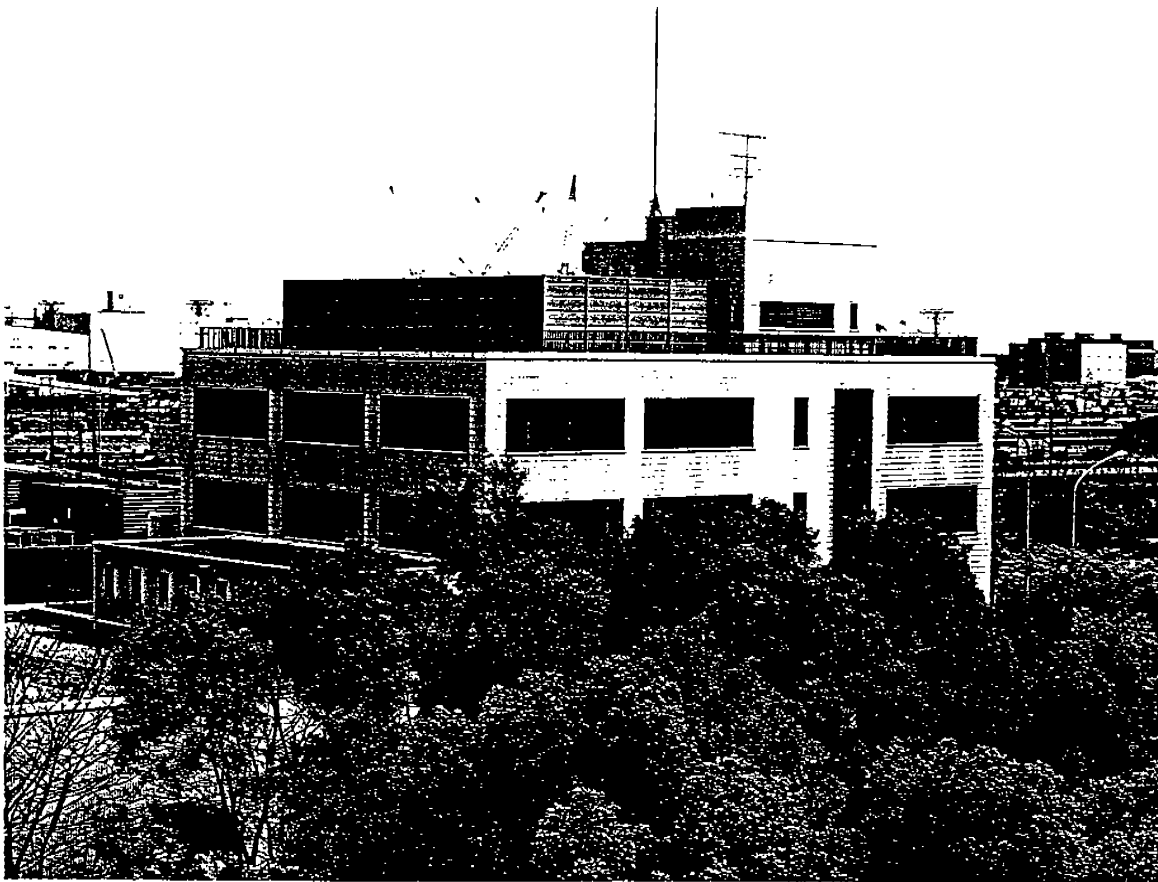
TEEC

Profile



Telecom Engineering Center

附件：4



Profile

Name : Telecom Engineering Center(TELEC)

Establishment : June 20, 1978

Office: Tokyo, Matsudo, Nagano, Nagoya, Osaka,
Kumamoto, Sendai, Sapporo

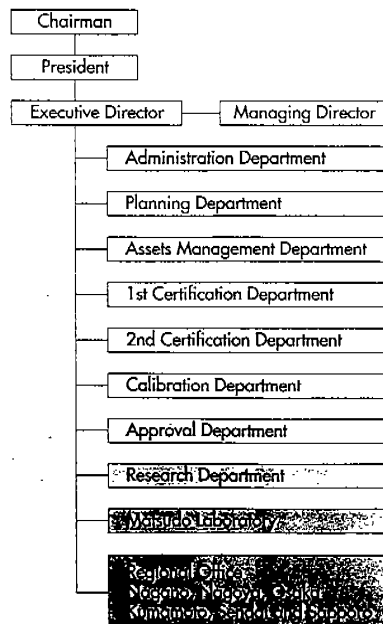
Number of staff employees : Approx. 70

Competent authorities: Ministry of Posts and Telecommunications

Services :

- Technical standard conformity certification
- Calibration of measuring instrument etc.
- Performance certification of radio equipment
- Test of radio equipment
- Research and development
- Open facilities for supporting R&D activities
(Tokyo Telecom Research Park)

Management organization



附件：4

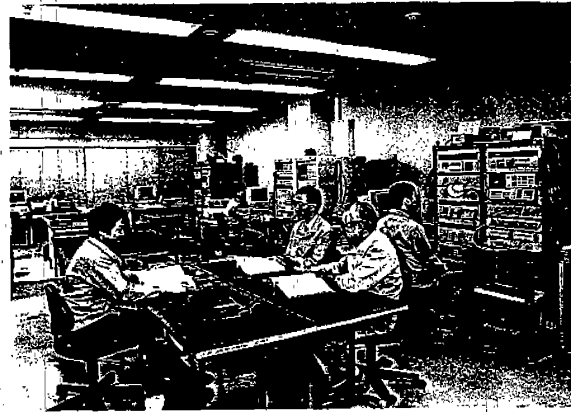
TELEC performs various services from technical standard conformity and aims at becoming one of the major notified bodies and test laboratories

Technical Standard Conformity Certification

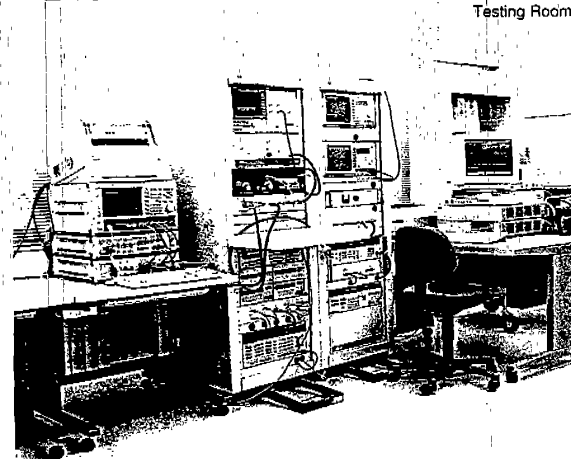
This system has been established to simplify and rationalize small scale radio station licensing jobs for the convenience of license applicants.

The certified equipments are not required either a pre-permit or inspection after completion of construction work. In addition, some certificated radio equipments are not required any radio licenses.

TELEC is the major organization conducting this service under designation by the Minister of Posts and Telecommunications. Certification by TELEC at present covers 57 types of radio equipments; such as Cellular radio telephone, Cordless telephone, Low power data communication system; INMARSAT mobile equipment, etc. There are two types of applications for this service; document application and test application. And this service is performed at the Head Office and the six Regional Offices.



Testing Room



Test Equipment

Main equipments subject to technical standard conformity certification

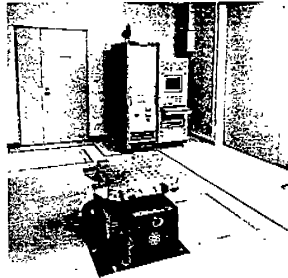
FDMA, TDMA and CDMA cellular radio telephone	PHS land mobile station※	Airplane portable radio telephone	Citizen radio※
Personal radio	Analog and Digital cordless telephone※	Specified low power radio equipment※	VSAT
Low power security radio equipment※	Low power data communication system※	Digital MCA	Fixed station for 38GHz band
Beacon system	Portable station for Iridium system	INMARSAT mobile equipment	Electronic Toll Collection system (mobile station)※

Note : Equipments marked ※ are not required a radio station license if TELEC has certified.

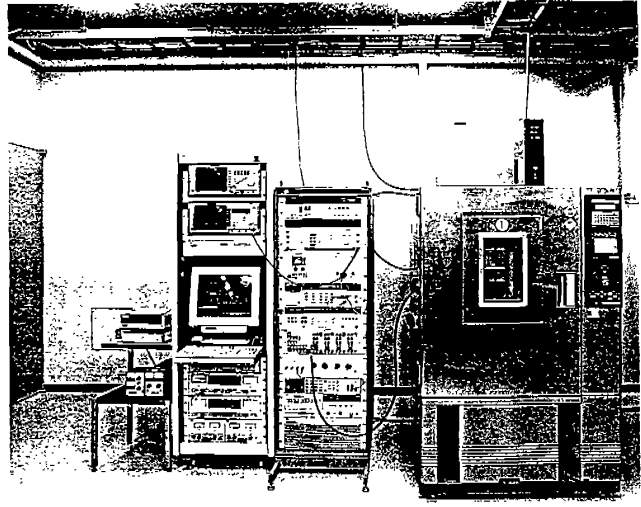
tification service to the supporting service for research and development ies in the world through a wide range of various activities for effective use

In addition to this certification service, we perform environmental tests such as vibration test, continuous operation test, etc. to check high accuracy and reliability of the radio equipment.

TELEC is now conducting, under designation by the Minister of Posts and Telecommunications, the test for 23 types of radio equipments such as F3E etc. and the confirmation of document for 24 types of radio equipments.



Vibration Test Apparatus



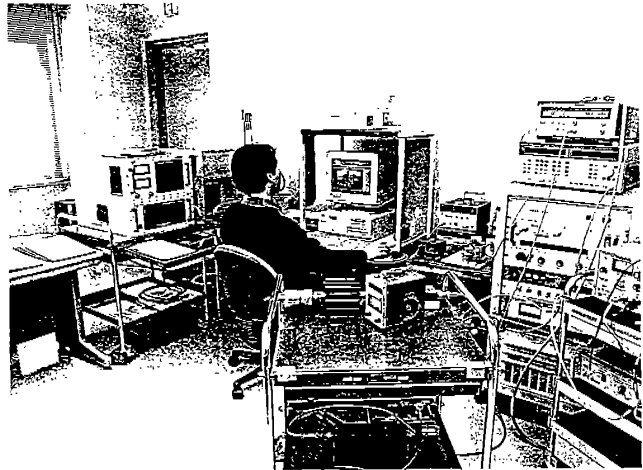
Temperature and Humidity Chamber

Calibration of Measuring Instrument etc.

The measuring instruments used for conducting the examination of radio stations by attested examiners or preparing the necessary data for the document application of technical standard conformity certification and certification of environmental test must be calibrated according to the Radio Law.

TELEC conducts calibration services of these measuring instruments at Matsudo Laboratory and Regional Offices in Japan.

TELEC's calibrators are periodically calibrated with standards which trace their counterparts of the Communications Research Laboratory of the Ministry of Posts and Telecommunications that has the national standards so that TELEC keeps its calibrators accurate.



Calibration Room

Frequency counter	○	○
Spectrum analyzer	○	○
Field strength meter	○	○
RF power meter	○	○
Voltage/current meter	○	○
Signal generator	○	○
Modulation meter	—	○
RF attenuator	—	○
Antenna	—	○

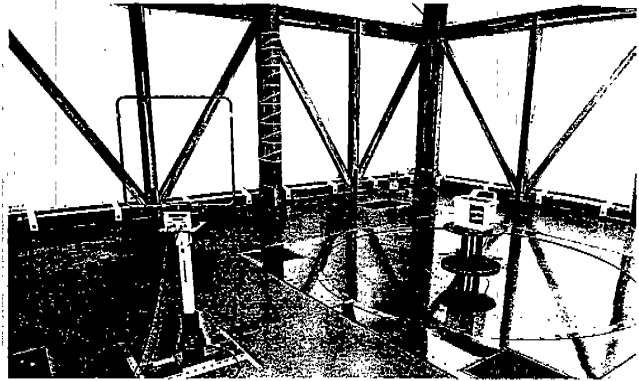
附件：4

radio waves

Performance Certification of Radio Equipment

This service is to measure the field intensity of radio stations whose output power is extremely weak and to certify that these radio stations are not required licenses by confirming that the measured results satisfy the technical standard stipulated in the Radio Law. This service is performed by Matsudo Laboratory. Many types of equipments such as wireless microphone and automatic door sensor on the market today are subject to this service.

In addition to performance certification of such a low output power radio equipment, TELEC certifies the conformity of performance of the radio equipment with specified technical standards under the designation by the Minister of Posts and Telecommunications.

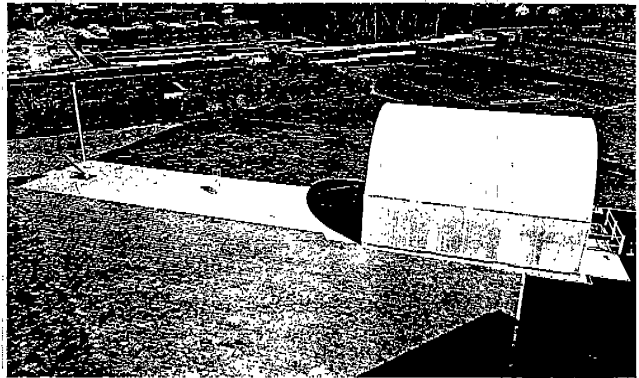


Performance Certification Facility

Test of Radio Equipment

By using an open test site, an anechoic room, etc., Matsudo Laboratory carries out the test of Industrial, Scientific and Medical equipment (such as electromagnetic cooking ovens, ultrasonic cleaners, etc.), and the measurement of interference field strength emitted from ITE (Information Technology Equipment).

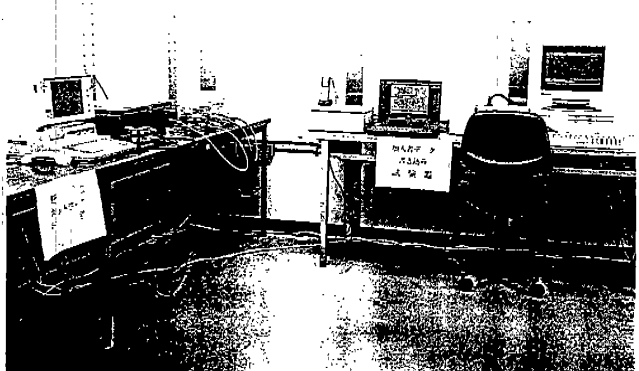
And TELEC carries out the characteristic test of an anechoic room on the request by a manufacture etc.



Open Test Site

Conformance Test for terminal equipment

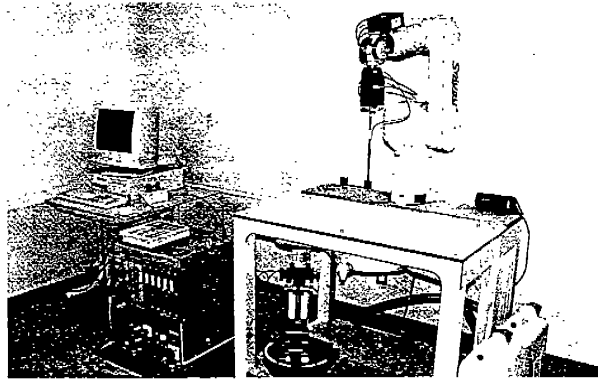
Accompanied with the introduction of the sell out system of a radio equipment for public use such as PHS etc., TELEC performs this test as a public, neutral organization in place of carriers because terminal equipments came to be sold to end users directly. TELEC carries out the conformance test for terminal equipments such as PHS and various pagers with the proficient knowledge of measuring technology obtained so far through rich experience.



Testing Room for Conformance Test

Research and Development

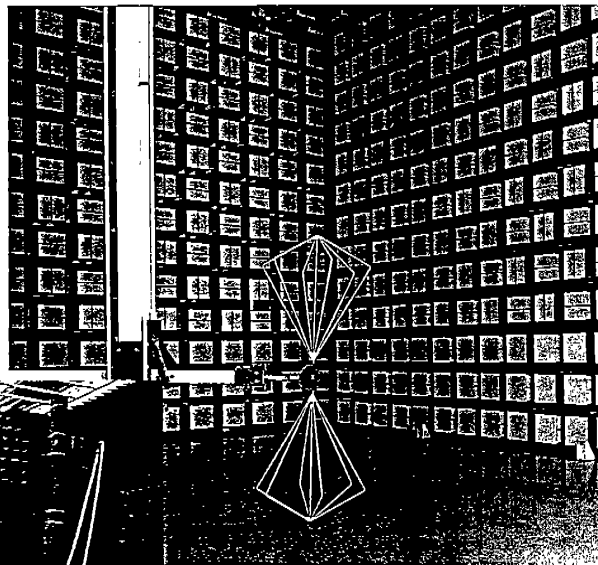
With the progress of radio communication technology, high technology is required for the accurate measurement of radio equipments. TELEC carries out research and development about the measurement methods for new radio equipments and measuring instruments for new measurement method and to get hold of the developing situation and the international trend etc. of a radio system. TELEC is actively entrusted with various investigations and researches from other organizations and participate in a development of various radio systems to be carried out by other organizations.



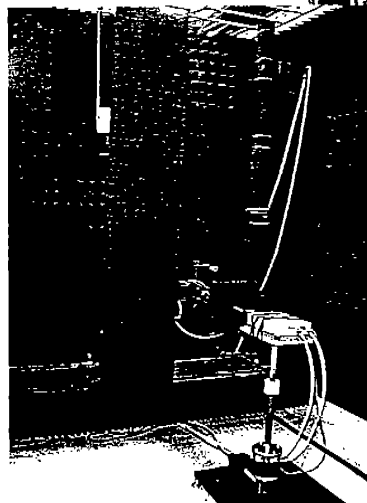
SAR(Specific Absorption Rate)Measurement System

Open Facilities for supporting R&D Activities (Tokyo Telecom Research Park)

The various measuring instruments and facilities such as an anechoic room, an open test site, a near field antenna measurement system, a network analyzer, etc.to be equipped by TELEC are opened to the public by leasing. Tokyo Telecom Research Park is a multipurpose, open facility for supporting research and development activities of telecommunication technology.R&D rooms for rent are located in 5th and 6th floors of the Head Office and each floor can be partitioned upon the request of users. TELEC also provides many measuring instruments in addition to above mentioned open facilities.These facilities are open to the public to enable comprehensive and systematic research and development activities.



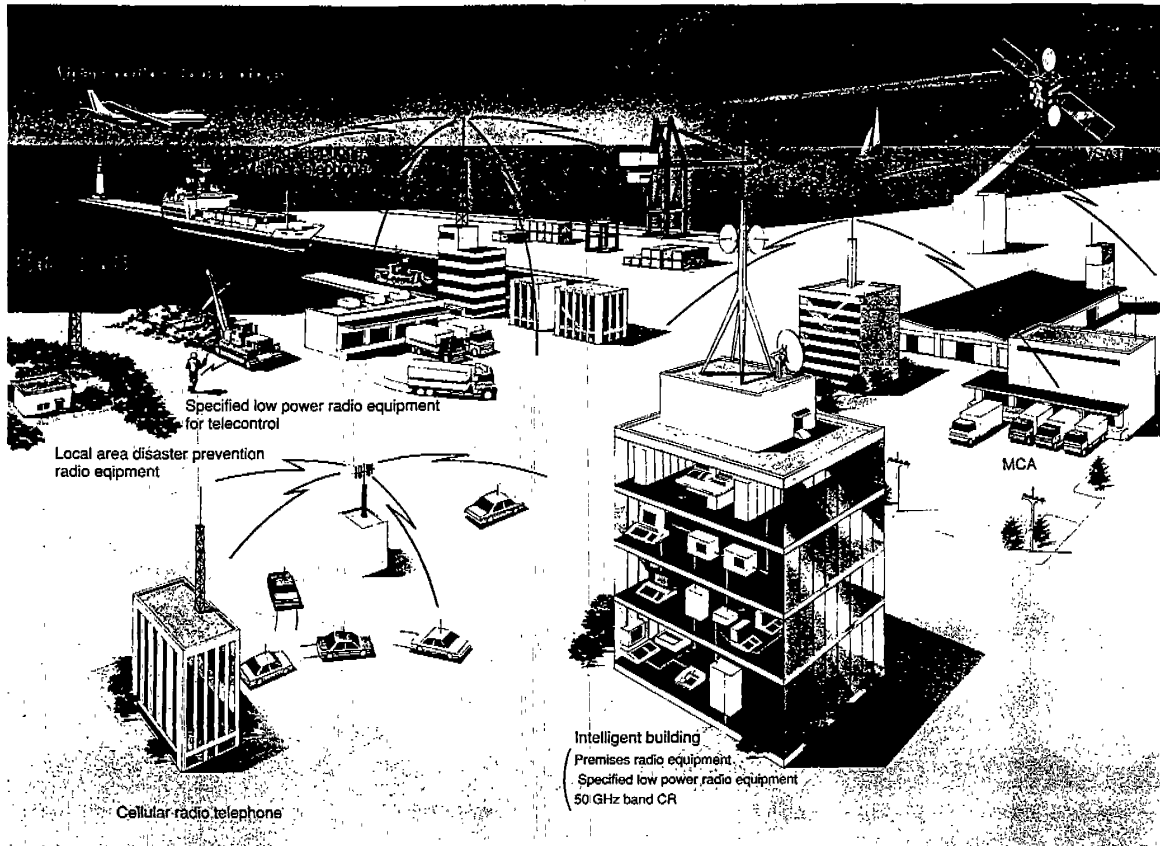
Anechoic Room



Near-field Antenna Measurement System

附件：4

TELEC's Wide Fields of Activities



HISTORY OF TELEC

- 1978** Radio Equipment Inspection and Certification Institute (MKK) was established in the Iikura building of the Ministry of Posts and Telecommunications. Certification of Environmental Test and Performance Certification services were started.
- 1981** Technical Standard Conformity Certification (hereinafter Certification) service stipulated in the Radio Law was started. Osaka Regional Office was established.
- 1983** Administration Department moved to Toranomon, Minato-ku and Service Department moved to Oi test site. Sapporo Regional Office was established. Koganei and Iwaoka test site were established.
- 1984** Sendai, Nagoya, Niigata and Fukuoka Regional Offices were established. Osaka Regional Office moved to the present site.
- 1986** Document Application was adopted for Certification. Calibration services were started. MKK constructed an open test site in Koganei test site, and test service of ITE equipments was started.
- 1987** Periodic Inspection service of radio stations was started. Naha Regional Office was established.
- 1988** Performance Certification service using an anechoic room through supportive tax for high technology was started.
- 1989** Performance Certification service for extremely weak power radio equipment was started. Matsudo test site was established.
- 1990** MKK constructed a new building and the Head Office moved to this building. Tokyo Telecom Research Park service was started.
- 1993** Conformance Test service for terminal equipment was started.
- 1995** Performance Certification service was started for a digital cordless telephone and a PHS terminal for exporting to foreign countries.
- 1996** Koganei test site was closed.
- 1997** MKK constructed a new building in Matsudo City as Matsudo Laboratory.
- 1998** Periodic Inspection service of radio stations by TELEC was ended. Tokyo, Kanazawa, Hiroshima, Matsuyama and Naha Regional Offices were closed. Calibration for measuring instruments, etc. stipulated in the Radio Law was started. The name of the organization was changed from "MKK" to "Telecom Engineering Center (TELEC)".

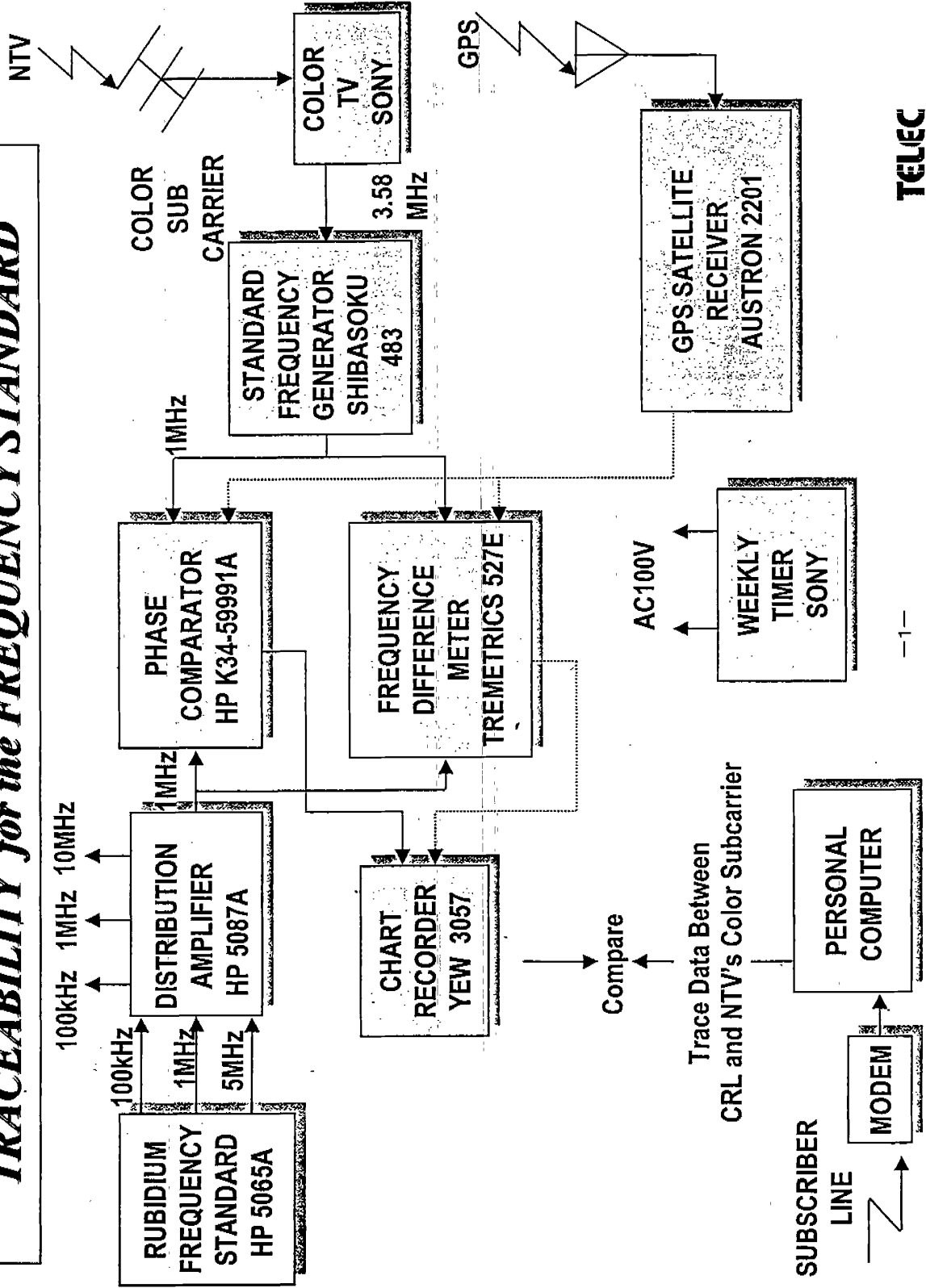
附件：4

**CALIBRATION and TRACEABILITY
SYSTEM for FREQUENCY,
RADIO FREQUENCY POWER and
RADIO FREQUENCY ATTENUATION
of TELEC**

附件：5

TELEC

TRACEABILITY for the *FREQUENCY STANDARD*

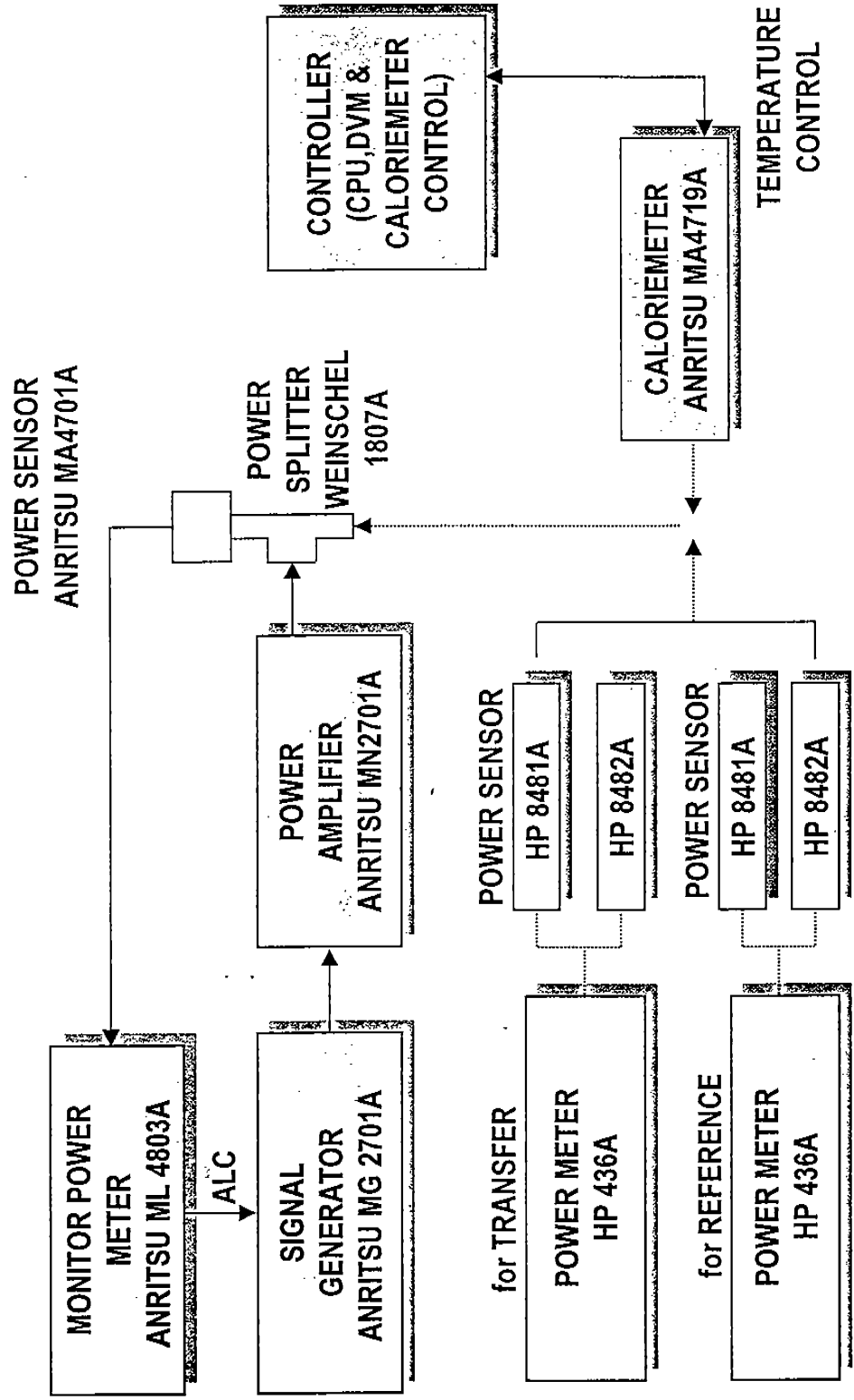


TELECOM

附件：5

TRACEABILITY for the RADIO FREQUENCY POWER

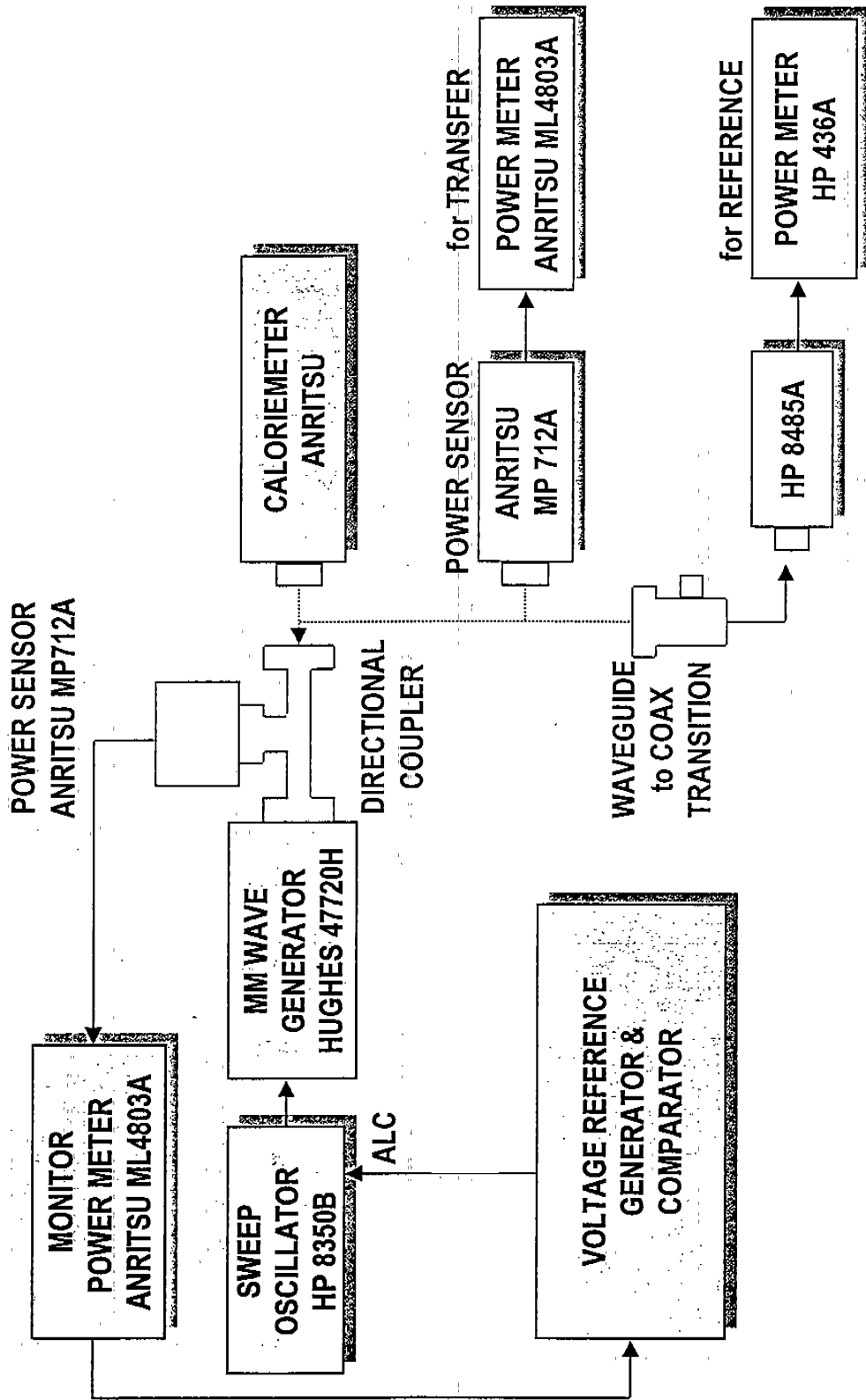
1. 10MHz ~ 18GHz (10mW) COAXIAL TYPE



TELEEC

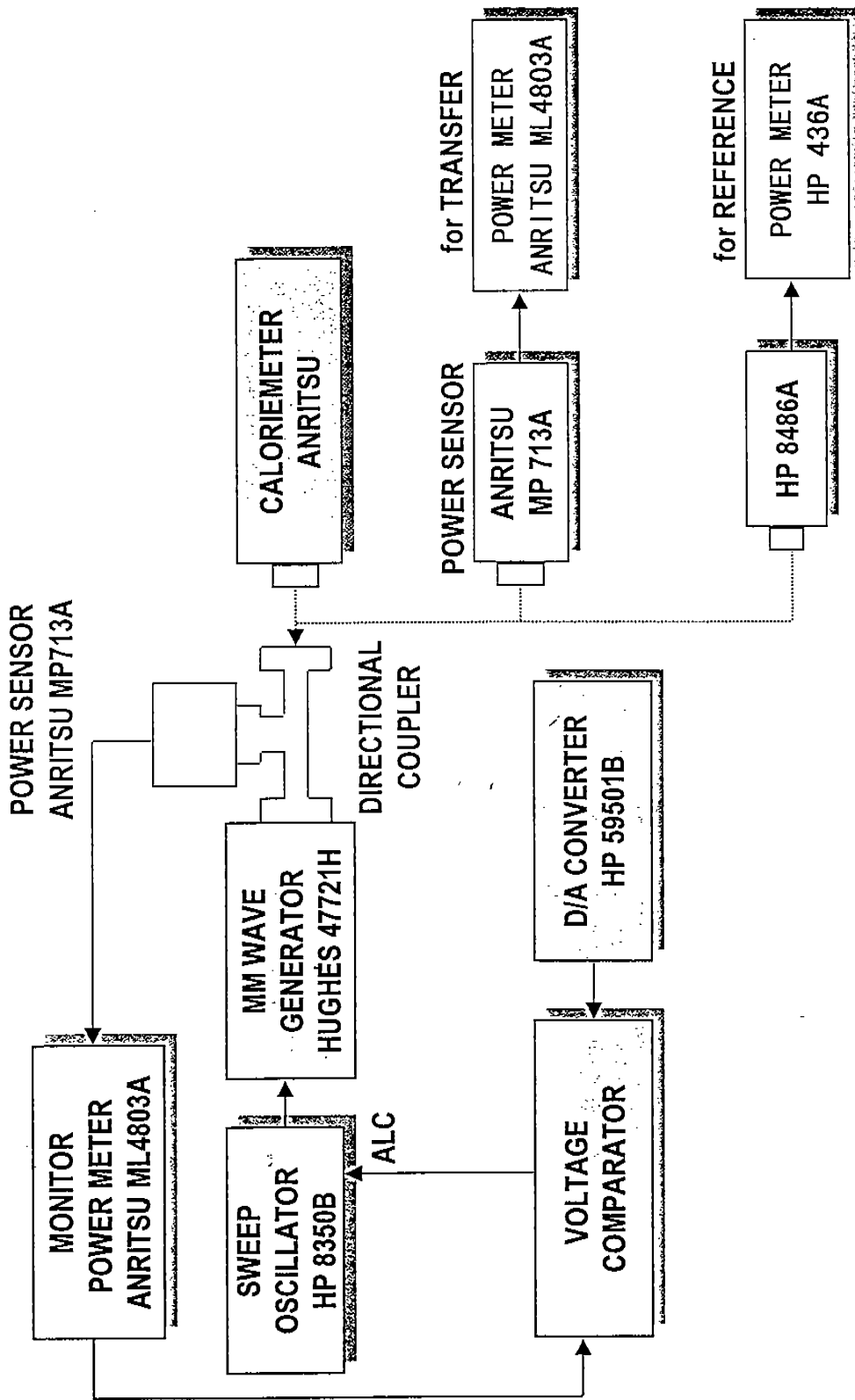
附件: 5

2. 18GHz ~ 26.5GHz (10mW) WAVEGUIDE TYPE



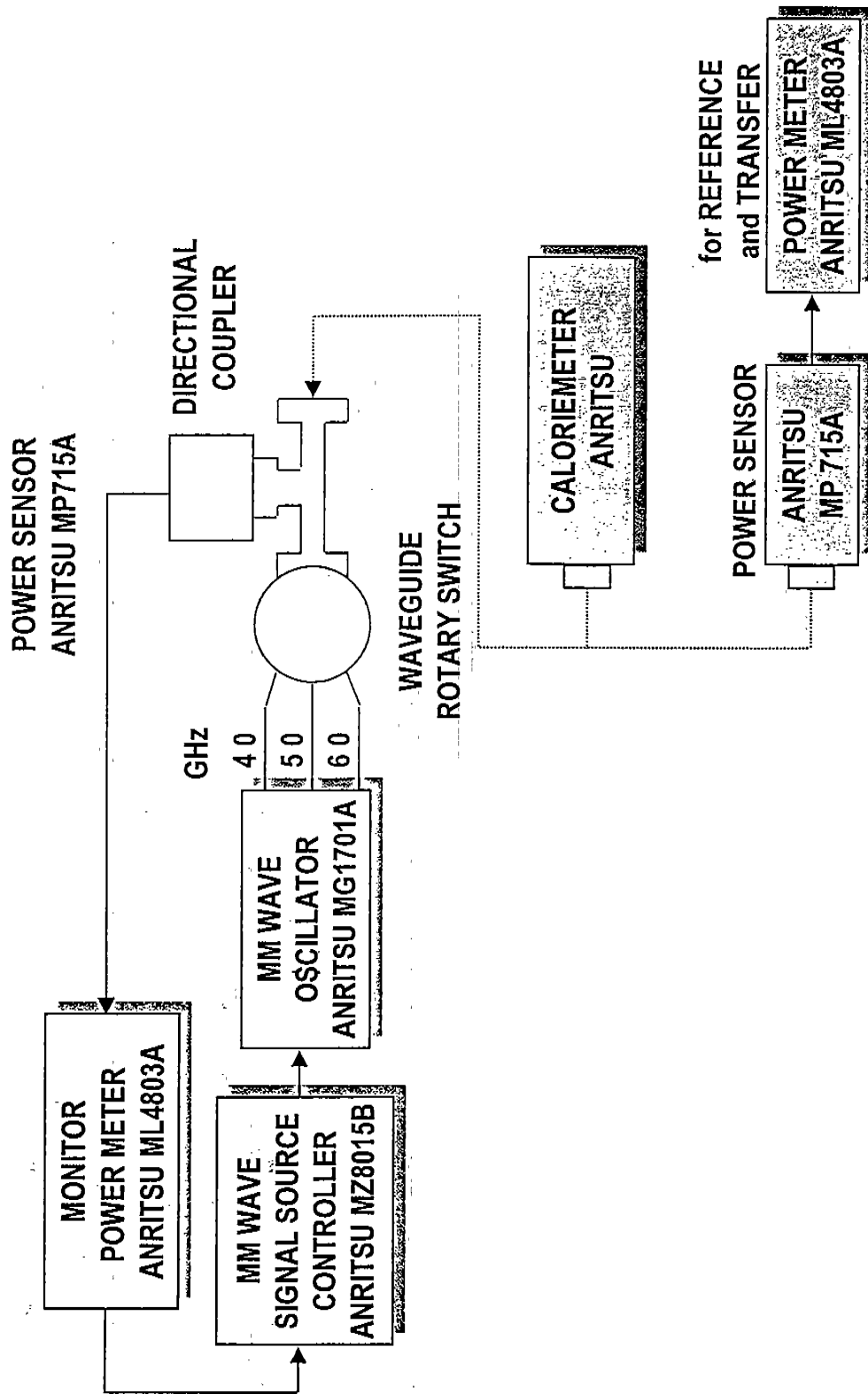
附件：5

3. 26. 5GHz ~ 40GHz (10mW) WAVEGUIDE TYPE



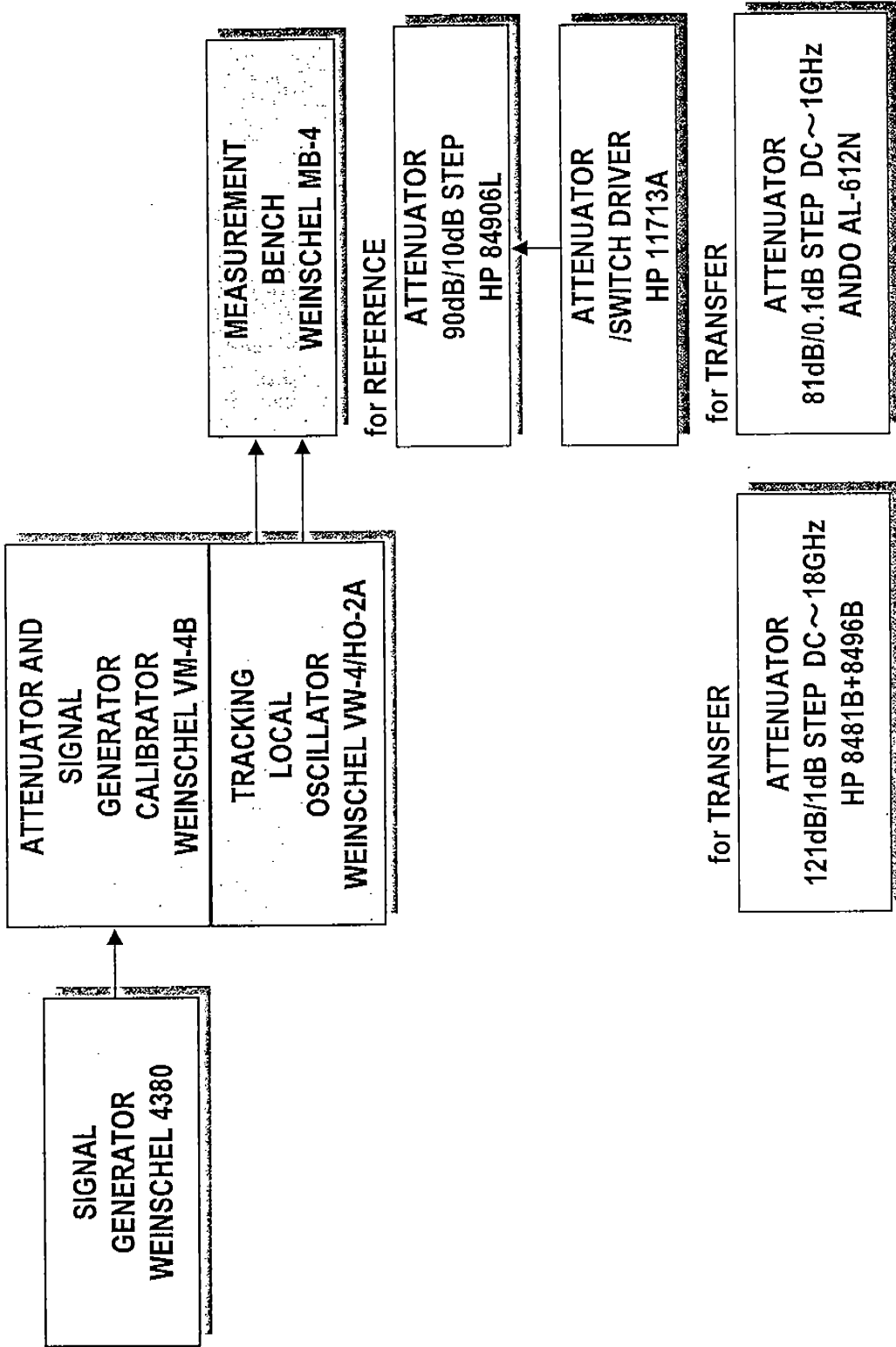
附件：5

4. 40GHz ~ 60GHz (10mW) WAVEGUIDE TYPE



附件：5

TRACEABILITY for the RADIO FREQUENCY ATTENUATION

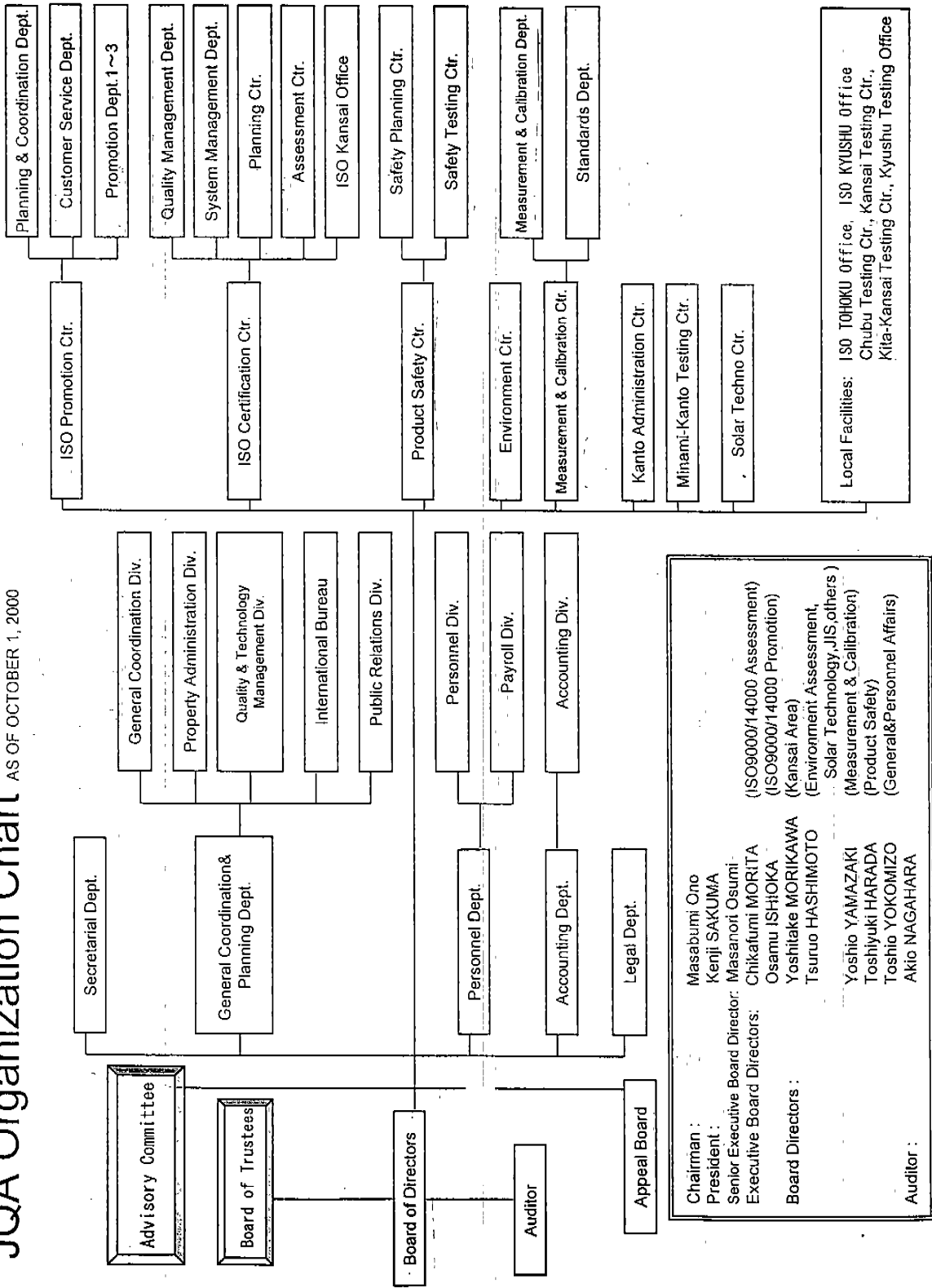


TELECOM

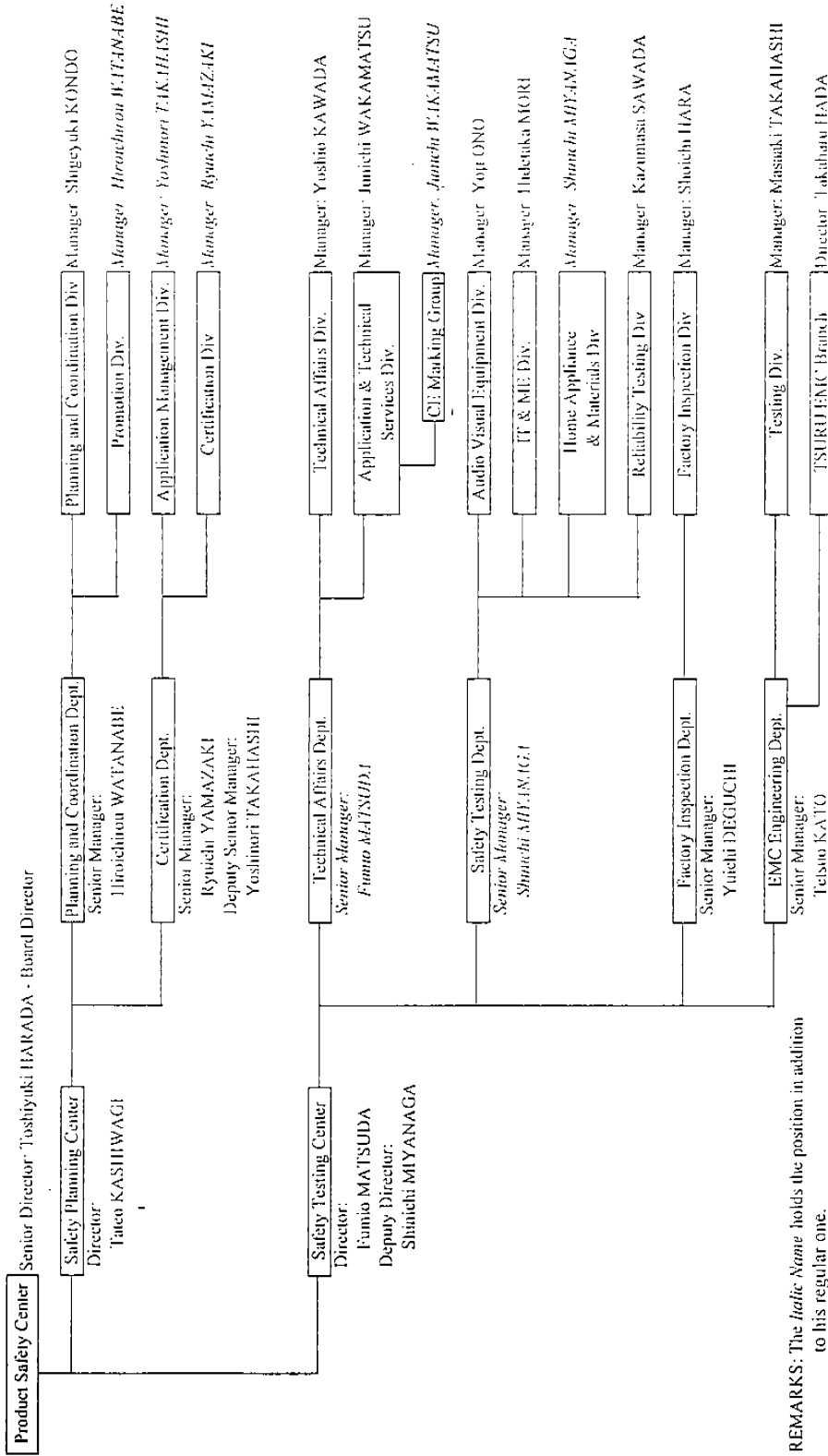
附件：5

JQA Organization Chart

AS OF OCTOBER 1, 2000



JQA PRODUCT SAFETY CENTER ORGANIZATION CHART(October 2000)



REMARKS: The *Italic Name* holds the position in addition to his regular one.

JQA Business Activities

JQA has started EMC testing activities since 1961, and based on the rich experience of EMC testing, JQA has been conducting various kinds of EMC testing of interference radiation.

Today, JQA laboratories are able to conduct interference radiation measurement of information processing equipment and receivers, etc., complying with the regulations / standards of each country such as EMC testing complying with regulations of FCC (Federal Communications Commission), EN (European Standards), AS (Australian Standards), NZS (New Zealand Standard), CISPR (International Special Committee on Radio Interference), and Technical Standards of VCCI (Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines).

Besides measurement of interference radiation JQA is conducting various kinds of environment testing such as, witness testing for improvement of the current situation, measurement of immunity, testing of telephone terminal equipment, and source harmonic measurement.

<BUSINESS ACTIVITIES>

1. Interference radiation testing of information processing equipment, and receivers, etc.

JQA issues test reports of the measurement based on standards and regulations applying to each country.

2. Evaluation Testing of Immunity

JQA conducts the following evaluation testing of noise elimination competence when electronic products are interfered by noise complying with the IEC, EN, CISPR, Lloyd, and NK (Nihon Kaiji Kyokai) standards.

3. Testing of Telephone terminal equipment

JQA will issue test reports of testing on telephone terminal equipment such as, telephones, facsimiles, modems and switchboards, etc. complying with US FCC regulations (chapter 68), Canada IC regulations (CS-03) and Australia regulations (ACA TS-001, 002-004, 006). JQA laboratories have obtained FCC/IC/NATA accreditation.

4. EMC/EMI Research and Evaluation

We conduct research and evaluation of EMC/EMI among offices and factories.

5. Witness Measurement Testing for Countermeasure

We provide countermeasure service to control interference radiation. Our technical experts will support the measurement.

6. Application services

We conduct application services concerning FCC, IC on telephone terminal devices, information processing devices, and "Certificate" "Notice" on transmitter, receiver and other machinery.

7. Testing based on EMC directives (CE Marking)

We conduct testing services based on EMC directives. Certificates of VDE, TUV-PS, and other overseas bodies can be obtained through JQA basing on our cooperation.

We also conduct EMI/ EMS testing based on EN regulation of EMC directive on machineries of any size, as a preparation of shipment to Europe.

8. Measurement tour

We provide measurement service of EMC Testing anywhere in Japan.

As for CE Marking(on-site-test), we support issuing of Certificate of Conformity of Belgium Competent Body, AIB-VINCOTTEINTER (AVI).

9. EMC Testing on Medical electrical appliances

Self standard of Japan Medical Appliances Group Council.

10. Characteristic and Evaluation Testing of Anecoic Chamber

We conduct evaluation testing based on Base-technique R&D Promotion Tax System (Hi-tech tax system).

11. Source Harmonic Measurement Testing

We conduct measurement of harmonic current conducted from power wire of electric and electrical appliances.

<JQA Offices and Activities>

Activities		Offices				
		Safety Testing Center	Tsuru EMC Branch	Shikatsu Branch	Kameoka EMC Branch	Kita-Kansai Testing Center
Field Intensity Measurement		○	○	○	○	○
Conduction Noise Terminal Voltage Measurement		○	○	○	○	○
Conductive Radiation Noise Power Measurement		○	○	○	○	○
Immunity Measurement			○	○	---	○
Testing of Telephone Terminal Devices		○	---	---	---	---
Testing and Evaluation on Interference radiation		○	○	○	○	○
Characteristic Evaluation Testing on Anechoic Chamber		○	---	---	---	---
Measurement on Feeble Radio Wave Appliance		○	○	---	---	---
Power Source Harmonic Testing		---	○	○	---	○
Witness Measurement on purpose of Countermeasure	Anechoic Chamber	○	○	○	---	---
	Open Site	○	○	---	○	○
Application Service		○	---	---	---	○

cf.) ○---The office is capable to conduct the testing.

JQA: Japan's Leading Quality Assurance Organization

In recent years, the assurance of product quality has been sought after not only for reasons of safety. Realizing quality assurance has also made it possible to distribute goods; actively quality assurance is the basis for economic activities in our modern society. With a solid foundation of quality assurance, we can be confident in importing products. This has made possible the current international distribution of goods and the fomenting of widespread economic integration.

Testing organizations were central to the creation of qualifications and standards, especially much needed international regulations. They

focused their efforts on establishing a comprehensive quality assurance system. The role of these international quality assurance organizations continues today and will become even more important in the future.

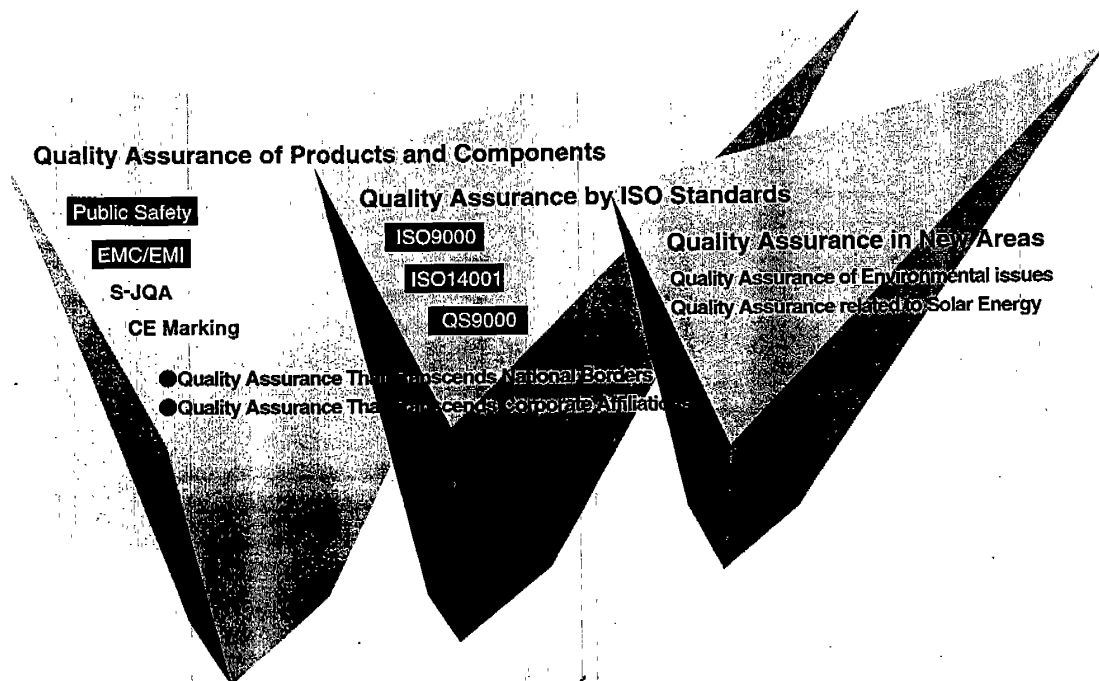
Working with these international organizations, JQA has, since its establishment, conducted tests and inspections on all types of goods. It has done so as an impartial third party and has helped assure product quality. As a result, many Japanese products, having received quality assurance certification from JQA, have been sent to markets around the world where they are then wel-

comed as reliable products.

Responding to international demand, we perform quality assurance in the following three fields: quality assurance of management systems based on ISO standards; quality assurance of products through the testing and inspection of products based on various standards; and quality assurance in new areas which are likely to be extremely important in the 21st century. Efforts in this last category include environmental assessments and development in solar energy, carried out in order to harmonize economic activities and the global environment.

JQA: Supporting people, Technology, and Society as a

The Three Areas of Quality Assurance



附件：6

Promoting Highly Reliable Products and Public Safety

Quality Assurance of Products

To provide highly reliable products and to assure safety in their use, product quality must be assured based on set regulations and supervision of the application of those regulations. In order to maintain a high level of quality assurance for products and components, JQA conducts many types of tests and inspections. We also actively undertake activities in the area of product liability.

Safety and Electromagnetic Interference Testing

●JQA Product Safety Certification System

By the revision of the Electrical Appliance and Material Control Law in 1995, the responsibility for assuring product safety has been shifting to the private sector. Under the JQA Product Safety Certification System, JQA--as an impartial and neutral third-party institution--confirms the quality management system of manufacturing companies and conducts safety and electromagnetic interference

tests of products; mainly home appliances and consumer electronics equipment such as television receivers, acoustic equipment, personal computers, microwave ovens and refrigerators. S-JQA mark are displayed on the certified products, which means they are reliable.



●Safety Tests through mutual contract with Testing and Inspection Organizations Overseas

To export electrical and electronic products to a certain country, corporations must obtain safety certification from that country's certification authority. To avoid the trouble of obtaining certification in the destination country, JQA has concluded the cooperative agreements with overseas testing/inspection bodies such as CSA, UL, BEAB and conduct conforming tests and factory inspections according to the applicable standards. We are affiliated with, or according to the standards of the destination country.

(CB Certification-related Activities)

JQA is authorized under IECEE, as a CB testing laboratory, to test television sets, audio equipment, office equipment, and microwave ovens. When the CB certificate is granted to the products, it is easy to obtain a certification in the destination country.

●EMC/EMI Testing

The issue of radio wave interference has arisen with the advancement of electronic technology. JQA measures interfering waves based on radio wave interference regulations and issues certificates to products that comply with the standards. JQA also measures equipment for its susceptibility to external electromagnetic interference.

CE Marking

●Conformity Assessment and Conformity Certification Based on EC Directives

Products applicable to the EC directives are obligated to bear the CE Mark to be distributed in the European market. So the products are required to be in conformity to the safety requirements of the applicable directives. Technical construction files need to be prepared and certification from notified bodies is required by complying with conformity evaluation procedures (modules). JQA, in close alliance with such notified bodies, provides services mainly with respect to the following directives:

Machinery Directive, Medical Device Directive, EMC (Electro Magnetic Compatibility) Directive, Low Voltage Directive, Pressure Equipment Directive, Car Homologation (e mark)



附件：6

Commissioned Testing and Inspections

●Testing and Inspection of Product Performance and Reliability and the Issuance of Certificates

Safety and performance evaluations are sometimes required in the design and development of products. In addition to a company's own inspections, evaluations and inspections by a third party can be required at the stage of product shipping or installation. At other times, third party certification of product performance is required between the manufacturing and purchase stages. JQA performs many types of tests and inspections, at all steps, from design, development, and manufacturing to shipping and installation. With its rich expertise and know-how, JQA promotes quality assurance.

(Performance and reliability testing of electronic equipment and safety testing of medical equipment)

JQA conducts performance and reliability tests of home appliances and audiovisual equipment. In addition, it conducts safety tests of medical equipment based on applicable standards, and assists the establishment of quality management systems.

(Machinery Testing and Inspection)

JQA also conducts inspection of all types of plant and equipment at home and abroad based on companies' needs for third-party inspection.

●Diagnosis of Computer Security

With the spread of Internet and electronic transactions, computers throughout the world have become connected by network. Since this remarkable development now constitutes the essential business infrastructure of all industries, working out safety measures of the computer system is indispensable. Security evaluations of computer equipment/systems and protection of private information are carried out in compliance with worldwide standards (ex. ISO). In Japan, government authorities have publicized the safety measure criteria of information systems; among them only MITI provides Ministerial accreditation. JQA is a designated inspection organization for equipments of such computer centers. JQA also conducts testing, inspection and certification of security-related products.

●Testing of Construction Materials

JQA carries out test for tensile strength and bending strength of pressure-welded reinforced steel bars, test for strength of screw and analysis of salt content of concrete and test for strength of structural beams and quality of soil.

Besides, JQA conducts inspection and calibration on equipment for tensile strength testing, compression strength testing to secure reliability of such testing equipment.

Tests and Inspections Based on Regulations

●Measurements based on the Measurement Law

In all areas of society, business transactions take place based on weights and measurements. JQA inspects many types of measuring devices according to the Measurement Law. And also JQA provides standards for electrical-, electromagnetic wave-, length-, temp-, and mass-measuring implements and calibrates measuring devices.

●Inspections for Compliance with JIS

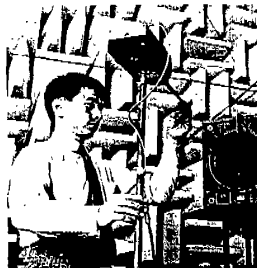
JIS mark is a sign of trustworthiness that is guaranteed under "Industrial Standardization Law."

Checking JIS mark on the market, consumers can readily choose safety products.

JIS mark approval is administrated by MITI and factory inspection by public notice is required on approved factories to ensure that products with JIS mark are appropriately manufactured in compliance with the standards.

●Safety Tests and Inspections based on the Electric Appliance and Material Control Law

The Electric Appliance and Material Control Law applies to household appliances. The law plays the important function of protecting consumers from the danger of fire and electric shock from household appliances. JQA performs this function and in so doing helps protect consumers by making sure that products conform to the Law.

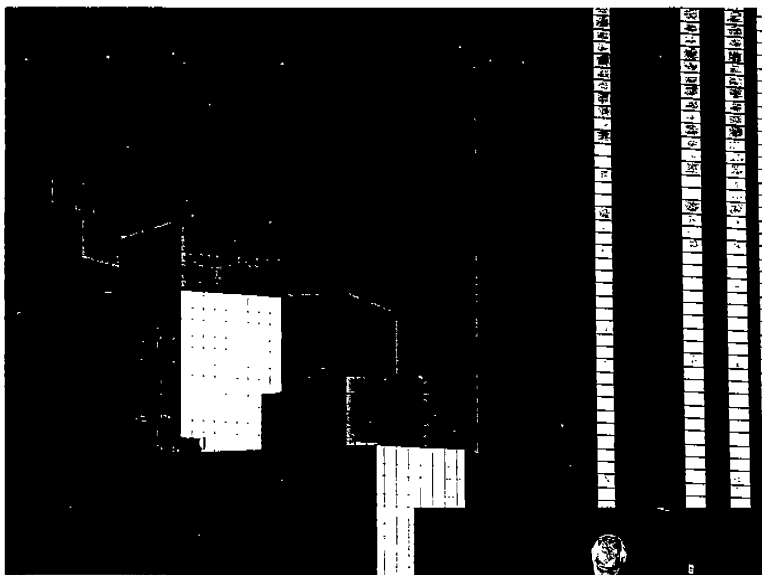


Supporting Corporate Quality Assurance in our International Information-Oriented Society

Quality Assurance by ISO Standards

JQA is an internationally recognized assessment and registration body that provides comprehensive services of management systems.

With the globalization of economy, management systems based on ISO standards, mainly ISO9000 and ISO14001 have rapidly spread over the world. ISO management systems have been recognized as global standards that help strengthen corporate management systems to satisfy customer needs. JQA as a leading assessment and registration body in Japan will actively meet the current needs through our information services and assessment services for widely developing management systems.



●ISO9000

ISO (International Standardization Organization) established ISO9000 as international standard for quality management system. ISO9000 assures quality at every stage, from design, development, production, inspection, servicing and others. The standard have become a tool that is indispensable for business activities. JQA, as a member of IQNet, an international network of leading assessment and registration bodies, has actively provided quality system assessment services according to the standard on international level.



(ISO9000 Registration Mark)

●ISO14001

ISO14001 is new international standard for environmental management system, which ISO has established in September 1996.

This is for companies to promote continuous improvement on their environmental effect by repeating PDCA cycle, which stands



for Plan (environmental policy / plan)-Do (practice and management)-Check (checkups and correction)-and Action (review by managers).

This standard is well known throughout the world as an effective tool of management with special emphasis on the environment.



(ISO14001 Registration Mark)

Comprehensive Assessment Service

(JQA provides various assessment services to meet the diversifying.)

ISO9000/14001 Combined Management System Assessment	Synergistic effect of ISO9000/14001 can be expected and the volume of man / day work for assessment will be reduced by the combined assessment.
OH&S (Occupational Health and Safety)	OH&S is an assessment of management system concerning occupational health and safety based on "BS8800".
ISO9000-HACCP	This is an assessment system using HACCP guidelines of Codex in the ISO 9000s context.
IBEC (IQNet Business Excellence Concept)	IBEC is an assessment service comprehensively evaluating business excellence concept based on ISO management system. Companies can improve business conditions by having the result of evaluation numerically shown and benchmarking.
MGC (IQNet Member's Global Certificate)	In cooperation with the IQNet members, JQA performs assessments, based on an agreed policy, dealing with the various requests from companies doing business internationally.

附件：6

●QS9000

QS9000 is a common quality system standard laid down by the Big Three U.S. automotive manufacturers (Chrysler, Ford and GM) for automotive parts and materials suppliers. It is based on the ISO9000 standard adding requirements particular to the automotive industry. Third party organizations will conduct assessment on behalf of the Big Three. In JQA, we are arranging the system in order to conduct QS9000 assessments as an enlargement of ISO9000 assessments.

(IQNet)

IQNet is an international network of assessment / registration bodies. IQNet members are representative bodies in each country and provide competent, professional and effective services. About 30 countries are represented by the participating members in this network and JQA works as a leading member. JQA conducts not only assessment and registration services of management systems based on ISO9000/14001, but also comprehensive assessment services such as IBEC, MGC, etc.



Searching for Energy Resources and Creating a Living Environment That Is Gentle on People and Nature

Quality Assurance in New Areas

Environmental issues range from immediate local problems, such as trash disposal, to global-scale issues. To protect the global environment toward the 21st century, nations throughout the world are studying concrete measures such as the curbing of carbon dioxide emissions and the recycling systems. JQA engages actively in environmental protection and research and development in the field of solar energy for the future generation. We are conducting research and development on solar energy, which promises to be a clean energy source for the next generation.



Quality Assurance of Environment

● Environmental Assessments

Development projects often have a major impact on the environment, and environmental assessments are necessary as a result. JQA conducts surveys of the natural, living, and social environments which will be impacted by a given project and estimates and evaluates the changes that the environment will undergo due to the project. In this way, JQA plays an important role in environmental protection.

● Investigation into Pollution Sources and Analysis of Trace Chemical Substances

Commissioned by the Environment Agency, JQA leads the field in investigation and research into the establishment of adequate sampling and analysis methods and is highly acclaimed for its work in this area. JQA is working to create better living environments through a broad range of activities, based on the Laws related environmental issues.

Activities related to Solar Energy

● Solar Energy R&D

JQA has participated in the Sunshine Project (a research and development effort into new energy technologies) from its beginning and has performed research on technology to utilize solar light and heat and on the application of solar energy to a variety of fields. Research on solar energy utilization technology is attracting a great deal of attention as we approach the 21st century, as solar energy promises to help preserve the global environment.

2004.11.17

Outline of JQA (as of July 1,2000)

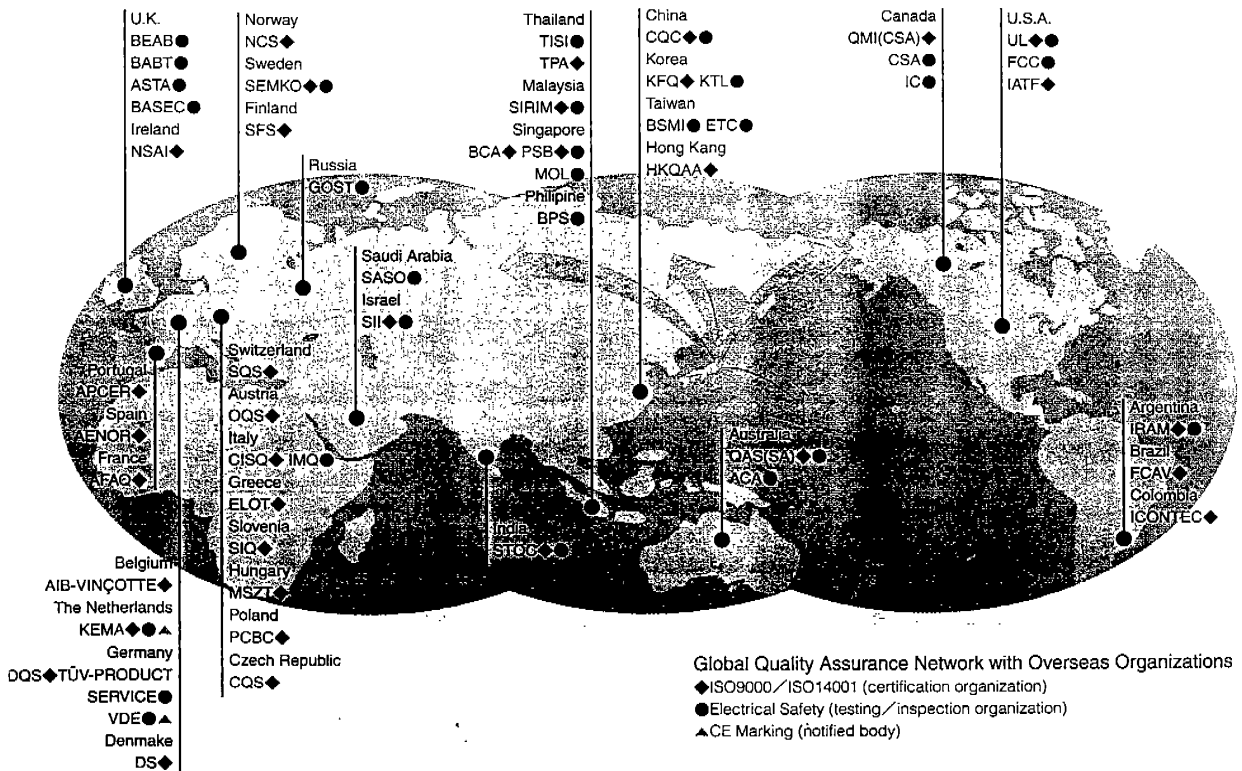
- Name: Japan Quality Assurance Organization (JQA)
- Chairman: Masabumi Ono
- President: Kenji Sakuma
- Location: 1-9-15, Akasaka,Minato-ku, Tokyo 107-0052
- Establishment: October 28, 1957
- Total Assets: ¥16.6Billion USD 150Million
(1¥110=1USD)
as of March 31,2000
- Offices: JQA has fifteen branch offices throughout Japan, including Tokyo (Setagaya, Shinagawa,Akasaka), Osaka (Higashi-Osaka,Mino-o),Nagoya,Chiba, and Hamamatsu.
- Number of Employees: 850
- Competent Authority: the Ministry of International Trade and Industry(MITI)

JQA

JAPAN QUALITY ASSURANCE ORGANIZATION

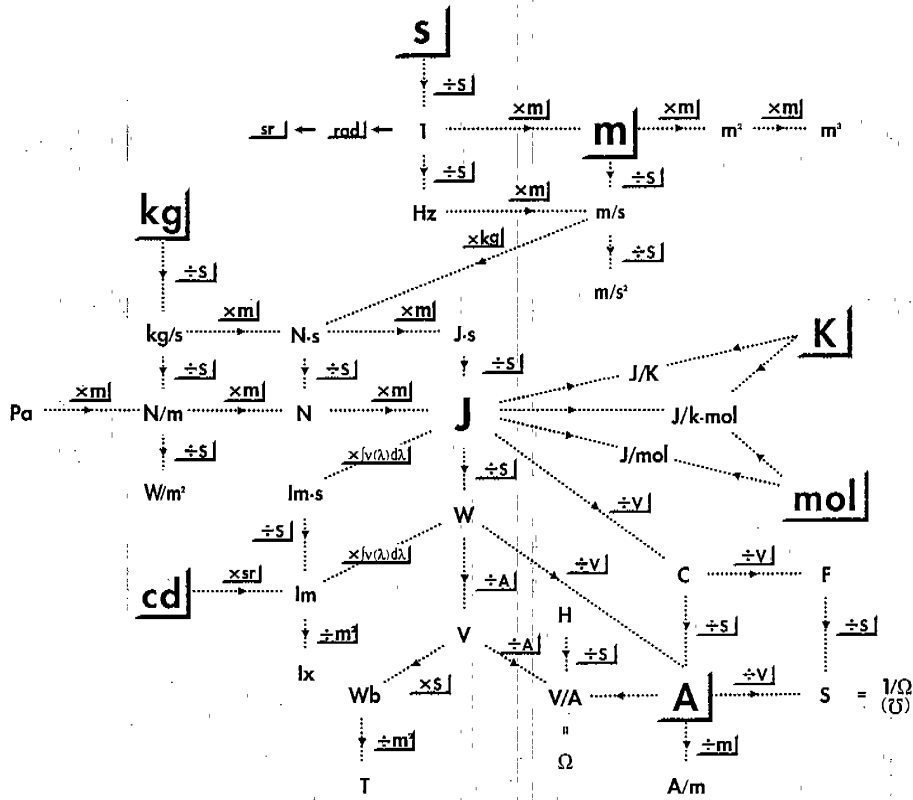
Leading International Quality Assurance Organization

JQA's Global Network:Supporting Quality Assurance throughout the World



附件：6

計量・計測業務のご案内



財団法人 日本品質保証機構

附件：7

計量法に基づく検定業務

社会生活のあらゆるところで計量・計測に基づいた商取引や計測結果そのものを公に第三者に証明することが行われています。

計量法は、第三者との取引証明行為に使用される計量器の中で政令で定めた計量器については、計量の安全を確保する意味から検定を受け合格したものの使用を義務づけています。

これら検定対象となる計量器の中には、直接取引に係わる はかり、ガソリンメータ、タクシーメータ等のほか、環境基本法に基づく環境基準の達成状況を把握するための騒音や振動レベルをはじめ水質や大気汚染物質などを計測する環境計量器も含まれています。

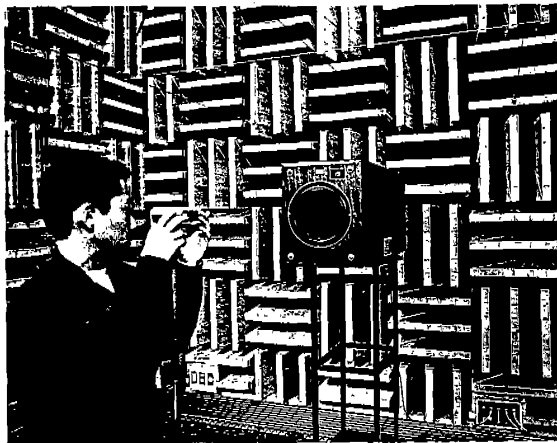
JQAは、1973年7月に環境計量器の普通騒音計の指定検定機関として通商産業大臣に指定を受けて検定業務を開始しました。その後、指定品目もPH計、非分散型赤外線式濃度計と順次その範囲が広がりました。

1993年11月の新計量法においても引き続いて指定検定機関とし指定を受け、現在では十数品目になっています。

検定業務は、東京の計量計測センターの他、中部試験センター、関西試験センター及び九州試験所の四カ所で行っていますが、この他に、移動検定車による巡回検定により、全国47都道府県をカバーしています。

JQAは計量法に基づく指定検定機関です

取引・証明に使用する政令で定められた計量器は、計量法に基づく検定を受け、合格したものでなければなりません。JQAは計量器の検定を実施する指定検定機関として通商産業大臣から指定を受けており適正な検定を実施いたします。



騒音計の検定

JQAは指定校正機関として 国家計量標準の供給に寄与しています

計量法に基づくトレーサビリティ制度で、JQAは通商産業大臣から長さ、電気、電磁波の減衰量、熱量標準物質及び音圧の指定校正機関として指定を受けております。

JQAはISO/IEC Guide25に基づいて 認定された校正機関です

JQAはJCSS、及びA2LA(米国)より、ISO/IEC Guide25による校正機関として認定を受けており、QS-9000等の要求事項である計測器の校正にも対応可能です。

JCSS Japan Calibration Service System
A2LA American Association for Laboratory Accreditation

(お役に立ちます!!) JQAの依頼試験

ISO9000/14001、QS-9000の 認証取得に

近年、製造業、サービス産業、地方公共団体等の事業活動において、ISO9000等の認証取得が不可欠の状況にあります。これらの認証取得に当たっては、計測器の管理に関する要求事項が含まれており、試験・検査に使用する計測器を適切に校正し、精度を維持していかなければなりません。

JQAは電子技術総合研究所、計量研究所等の国の研究機関から検定・校正に必要な標準の供給を受けておりますので、ISO9000等の認証取得に必要な成績書を発行することができます。

事業所内の計測器管理に

計測器を管理しなければならないが事業所内に標準室がない、また、標準室はあるが校正を行う技術者が少ない等、このような悩みをお持ちの方、JQAにご相談下さい。JQAでは、適切な計測器の管理をお手伝いいたします。

計測器の定期的な点検に

工場等でお持ちの計測器で、それほど高い精度は必要としないが定期的に性能の確認をしたい場合、また、製造工程に用いられている監視用、制御用計測器を点検したい場合、JQAが皆様にかわって点検いたします。

(信頼の証) JQAラベル

JQAでは、校正、点検、試験等を行った計測器にはラベルを貼付し、一目でその計測器の管理状況がわかるようにいたします。

<ラベル例>



附件：ウ

計量法に基づく業務

検 定


■環境計量器


- 騒音計 ————— 精密騒音計
普通騒音計
- 振動レベル計
- 濃度計 ————— ジルコニア式酸素濃度計
溶液導電率式二酸化硫黄濃度計
磁気式酸素濃度計
紫外線式二酸化硫黄濃度計
紫外線式窒素酸化物濃度計
非分散型赤外線式二酸化硫黄濃度計
非分散型赤外線式窒素酸化物濃度計
非分散型赤外線式一酸化炭素濃度計
化学発光式窒素酸化物濃度計
- pH計 ————— ガラス電極式水素イオン濃度検出器
ガラス電極式水素イオン濃度指示計

■一般計量器

- 質量計(分銅及びおもりは除く)
- 温度計 ————— ガラス製体温計
抵抗体温計
- アナロイド型血圧計
- ポンベ型熱量計

■検定証印有効期間等表示

	1 2 . 1 0	上段：検定実施年月
	1 7 . 1 0	下段：有効期間満了年月

	1 4 . 1 0	有効期間満了年月 (pH計検出器に使用)
---	-----------	-------------------------

型式試験

- 環境計量器
- ポンベ型熱量計

環境計測器の校正業務

■温度

ガラス製温度計／指示温度計(デジタル温度計等)／白金測温抵抗体／熱電対

■湿度

露点計／湿度計／アスマン通風乾湿計

■音響・振動関係

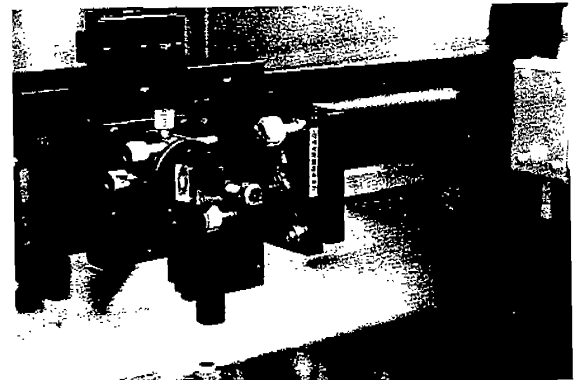
騒音計／振動レベル計・振動計／オージオメータ／騒音・振動レベル計用レベルレコーダ／その他

■濃度関係

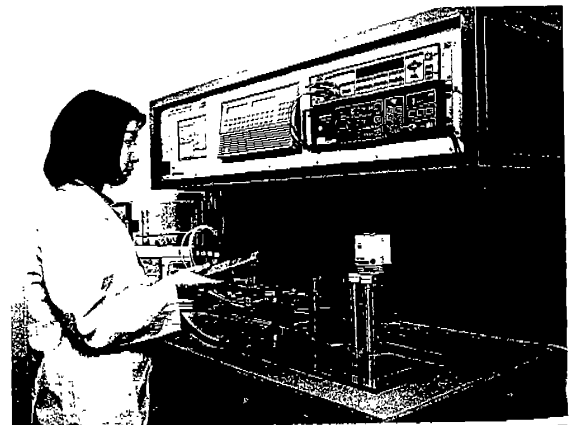
イオン電極式濃度計(指示計・検出器)／発生源用大気濃度計／校正用ガス調整装置／環境用濃度計

■その他

光散乱式粒子計数器／分光光度計用光学フィルタ／中・微風速計／酸素警報器／その他



レーザー光を用いた振動計の絶対校正システム



湿度計の校正

電子計測器の校正業務

■高周波・マイクロ波・レーザ関係

電圧計/電力計/減衰器/インピーダンス素子/レーザ
パワーメータ/信号発生器/周波数カウンタ/オシロス
コープ/スペクトラムアナライザ/その他

■直流・低周波関係

電圧計/電流計/デジタルマルチメータ/絶縁抵抗計/
耐圧試験器/LCR測定器/回転計/その他

■X線関係

軟X線線量(率)計/中硬X線線量(率)計/その他

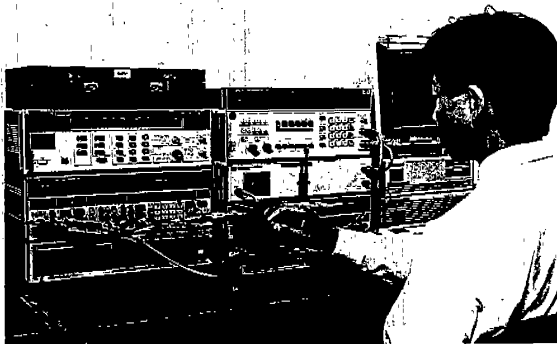
質量計測器の校正業務

■分銅 ■はかり ■おもり

ループ/ロードセル/ボックス

圧力計測器の校正業務

重錘型圧力計/液柱型圧力計/フォルトン式気圧計/指
示圧力計(デジタル圧力計、圧力センサ)/ブルドン管圧
力計



減衰量の校正

その他計測器の校正業務

■高精度長さ標準器関係

ブロックゲージ/ガラススケール
633nm波長安定化He-Neレーザ
標準マイクロスケール

■各種校正用マスタ・ゲージ関係

リングゲージ/プラグゲージ/ステップゲージ

■精密計測器関係

1次元測長器/電気マイクロメータ/工具顕微鏡
3次元測定機/その他

■光学素子関係

オプティカルフラット/オプティカルパラレル/対物ミク
ロメータ/微細パターン

■角度計測器関係

ポリゴン鏡/インデックステーブル/角度ゲージ/その他

■工場測定具関係

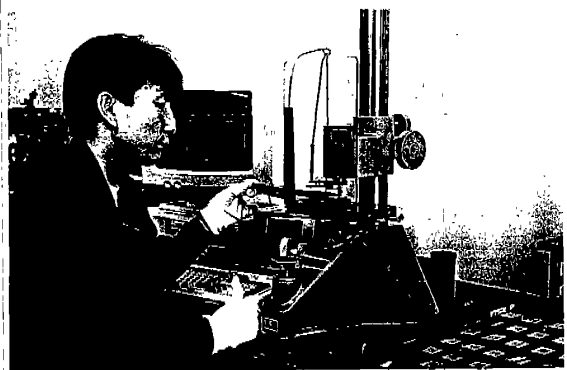
ノギス/ハイトゲージ/マイクロメータ/ダイヤルゲージ/
シリンダゲージ/デプスゲージ/巻尺/直尺/その他

その他計測器の校正業務

■トルク関係

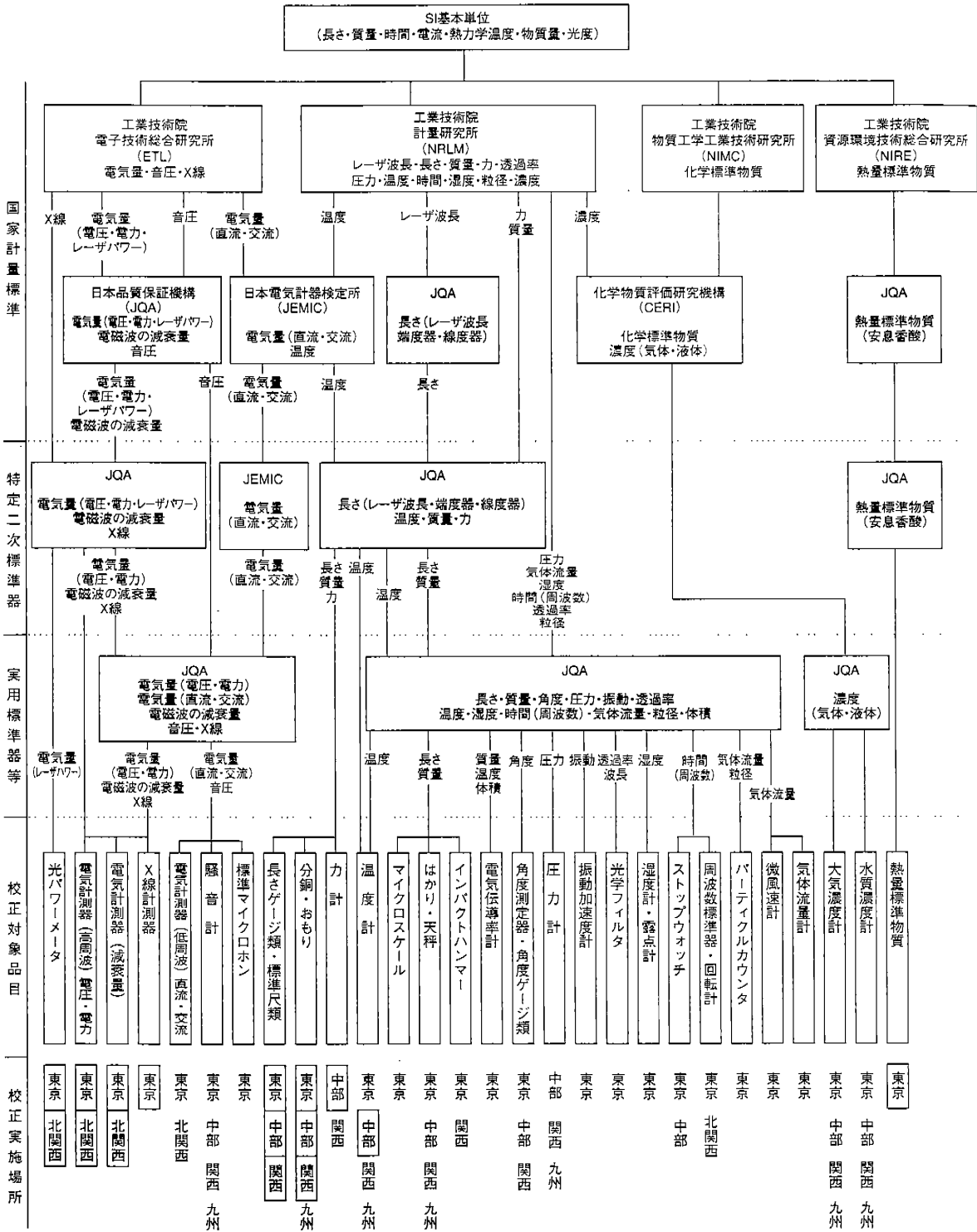
トルクドライバ/トルクメータ/トルクレンチ/トルク
テスタ

■密度 ■体積 ■ストップウォッチ



ブロックゲージの比較校正

JQAのトレーサビリティ体系



□の枠内事業所はJCSSによる認定事業者です。
の枠内事業所はA2LAによる認定校正機関です。

* 校正範囲の詳細につきましては、各事業所までお問い合わせ下さい。

JQAは指定校正機関です。

計測器の校正業務

JQAにおける校正業務の歴史は、1963年3月に遡ります。輸出品の性能の維持、安定及び向上を図ることを目的に、電子機器及び部品の輸出検査に用いる計測器に限定して、高周波計測器の校正業務が開始されました。

1965年代後半にはトレーサビリティ思想の普及と、工業技術院電子技術総合研究所の技術指導によりJQAの校正業務は当初の高周波領域から、マイクロ波、エックス線、レーザ領域へと順次その範囲を拡大してきました。

1985年には長さ計測の分野でも工業技術院計量研究所の指導を得て、ブロックゲージ、ノギス、マイクロメータ等の長さ計測器の校正業務を開始し、その技術は高い評価を得ています。

また、1993年11月1日に施行された新計量法の計量標準供給制度(トレーサビリティ制度)により、電気、長さ、標準物質等の指定校正機関及び認定事業者として標準供給を行っています。

一方、検定業務と関連して環境計量器の校正も行っています。騒音計、振動レベル計、大気濃度計、パーティクルカウンタ、中・微風速計等の校正のほか、分光光度計用光学フィルタや標準マイクロスケールの供給を行っています。

このようにJQAは、国家標準と産業標準を結ぶ中間標準供給機関として豊富な実績を持っています。また、近年、国際的なパスポートとして急速に普及した品質システム(ISO/IECガイド25)の要求に対し、日本のトレーサビリティ制度の他、米国の認定機関であるA2LAの認定を取得し、高い技術力と信頼性のある計測器の校正を行っている公的機関です。

附件：7

校正実施場所

取扱い業務の詳細・料金等については、下記の事業所までお問い合わせください。
 なお、○は当該業務を行っていることを示しています。

●は所在地を示しています。

	検定・環境計測器	電子計測器	長さ計測器	質量計測器	圧力計測器	力計測器	温・湿度計測器
計量計測センター 〒157-8573 東京都世田谷区砧1-21-25 TEL. 03-3416-5554(代) / FAX. 03-3416-6742	○	○	○	○	○	○	○
中部試験センター (西春町) 〒481-0043 愛知県西春日井郡西春町大字沖村字沖浦39 TEL. 0568-23-0111(代) / FAX. 0568-24-0705	○						
中部試験センター (師勝試験所) 〒481-0005 愛知県西春日井郡師勝町大字栗師寺字山浦53-1 TEL. 0568-23-0023(代) / FAX. 0568-23-0116			○	○	○	○	○
関西試験センター 〒578-0921 大阪府東大阪市水走3-8-19 TEL. 0729-66-7200(代) / FAX. 0729-66-7188			○	○	○	○	○
北関西試験センター 〒562-0027 大阪府箕面市石丸1-7-7 TEL. 0727-29-2243(代) / FAX. 0727-28-6848		○					
九州試験所 〒841-0081 佐賀県鳥栖市堂方町字隈239-1 TEL. 0942-83-7763(代) / FAX. 0942-83-7742	○		○	○	○	○	○

各試験所の認定番号

JCSS
0029

は、計量法トレーサビリティ制度のロゴマークです。
 計量計測センターは長さ、質量、電気等(高周波電力・高周波電圧、レーザパワー)、電磁波の減衰量、放射線及び標準物質(熱量)の認定事業者です。
 0029は計量計測センターの認定番号です。



CALIBRATION
C/N 1400.01

は、A2LAの認定ロゴマークです。
 計量計測センターは長さ、電気及び温・湿度について認定されています。
 C/N 1400.01は計量計測センターの認定番号です。

JCSS
0064

は、計量法トレーサビリティ制度のロゴマークです。
 中部試験センター(師勝試験所)は長さ、質量、力及び温度の認定事業者です。
 0064は中部試験センターの認定番号です。



CALIBRATION
C/N 1400.04

は、A2LAの認定ロゴマークです。
 中部試験センターは長さについて認定されています。
 C/N 1400.04は中部試験センターの認定番号です。

JCSS
0071

は、計量法トレーサビリティ制度のロゴマークです。
 関西試験センターは長さ及び質量の認定事業者です。
 0071は関西試験センターの認定番号です。



CALIBRATION
C/N 1400.03

は、A2LAの認定ロゴマークです。
 関西試験センターは長さについて認定されています。
 C/N 1400.03は関西試験センターの認定番号です。

JCSS
0052

は、計量法トレーサビリティ制度のロゴマークです。
 北関西試験センターは電気等(レーザパワー)及び電磁波の減衰量の認定事業者です。
 0052は北関西試験センターの認定番号です。



CALIBRATION
C/N 1400.02

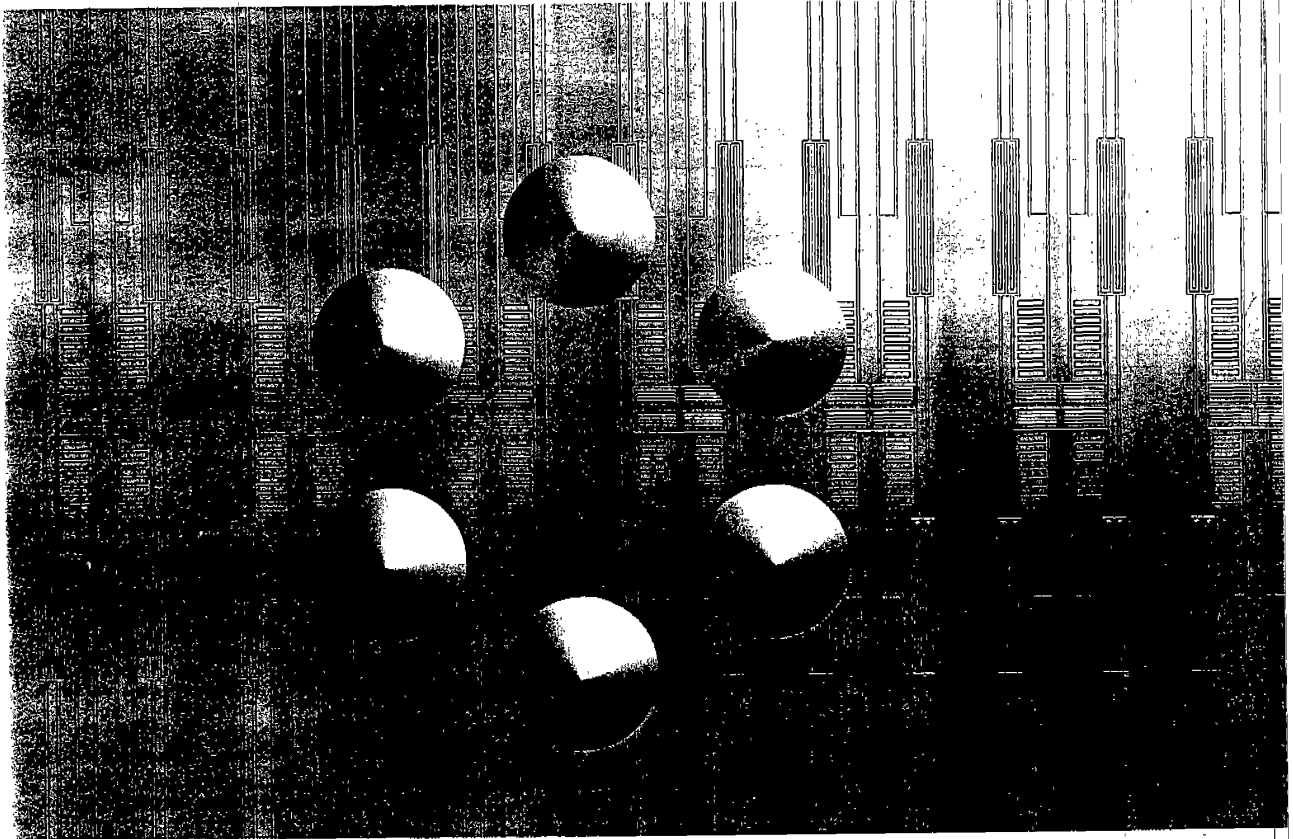
は、A2LAの認定ロゴマークです。
 北関西試験センターは電気について認定されています。
 C/N 1400.02は北関西試験センターの認定番号です。

JQA 財団法人日本品質保証機構
 JQAホームページ <http://www.jqa.or.jp>

011.B 300601

00.11.B 300601

Guidance of JQA Product Safety Certification System



From obligatory to voluntary safety assurance for electrical appliance

The regulations based on the electrical appliance and material control law have helped to ensure the safety of electrical appliances in Japan for many years. However, the regulations have recently been relaxed partially, and voluntary certifications are now being used in their place.

Voluntary certifications can be made based on assurance and product safety declaration performed by a manufacturer. Alternatively, a certification can be received from a third party. A manufacturer can choose either method of safety assurance.

The product liability law has become effective in July 1995.

The law clearly defines the manufacturer's responsibility for product safety, and the ability to confirm and demonstrate product safety will be more important than ever before.

**JQA
Product Safety Certification System
has been launched**

JQA introduced its product safety certification system in January 1995 in order to satisfy the need to have product safety assurance conducted by an independent and neutral third party. JQA is a member of the Electrical Appliance Certification Council, which was formed on December 1994 for the purpose of establishing the third-party certification system in Japan.

Special Features of the JQA Product Safety Certification System

- The third party's special staff for safety assurance can maintain a consistent set of technical standards.

Certification by a third party with extensive technical expertise enables you to make and supply safer products that can be used with confidence by all members of society.

The third party can conduct safety tests in a reliable and efficient manner at advanced test facilities.

附件：8



JQA

JQA Safety Certification Mark

A JQA safety certification mark indicates that an electrical appliance has satisfied a required safety standard. Therefore, the mark is a symbol of "safety electrical appliance".

Characteristics of the JQA Product Safety Certification System

Because of the JQA's network with overseas certification organizations, you can obtain multiple certifications with only one application (OSS: One Stop Shopping), and avoid duplicated tests and procedures.

For products already certified by overseas certification organizations (including UL and CSA) or by the IECEE-CB system, JQA can utilize these test data:

JQA will issue the report best suited to your needs, including an English structural report or other detailed reports. You can use these reports and data to obtain other certifications or to improve international technical control.

You can receive favorable treatment regarding **Product Liability Insurance**.

We can provide product liability insurance at a favorable rate for manufacturers certified by JQA.

附件：X

JQA Product Safety Certification System

— Step for the certification



Application
Application form for JQA certification (A complete set)



Informing the Estimation and Scheduled Completion Date
Informing the client of the estimated fee, number of required samples and completion date

Product Tests
Data from other sources can be used / OSS is also available
EMC test is conducted on a basic model only

Issuance of Test Result
JQA will repeatedly issue improvement requests until the test outcome satisfies a prescribed standard

Conclusion of a License Agreement

Starting to use the JQA safety certification mark



Shipment

Continuance of Certification

Certification and Registration
Issuance of a certificate and a structural report
An English version can be issued(at cost)upon request
A detailed test report in Japanese can be prepared(at cost) upon request

Periodical Factory Inspection (for Follow-up)

Issuance of a Periodical Factory Inspection Report
JQA confirms if the quality assurance system and product safety have been maintained (in a structural report). (Data from other source can be used, and OSS is also available)

附件：P

JQA Product Safety Certification System

— Service List

Certifiable Products
All electrical appliances including : finished products / half-finished products / accessories / parts / wires / materials

Applicable Standards
Item 1 or 2 of the ministerial ordinance specifying the technical standard for electrical appliances(IEC standard). When no ministerial ordinance specifies the standard, JQA determines the standard based on international standards.

Test Period
An average testing(for example, on a TV set) takes about 1.5 months after receiving a test sample(a prototype is acceptable) and application form.

Costs
Testing fee
License fee for registering each series of products
Initial factory inspection fee for registering a new factory
License extension fee per factory in case clients continue to produce a certified product

Initial Factory Inspection
JQA confirms each factory's quality assurance system and inspection facilities(Data from other sources can be used / OSS is also available)

Factory Inspection Report
Issuance of factory inspection report



In the JQA Product Safety Certification System,

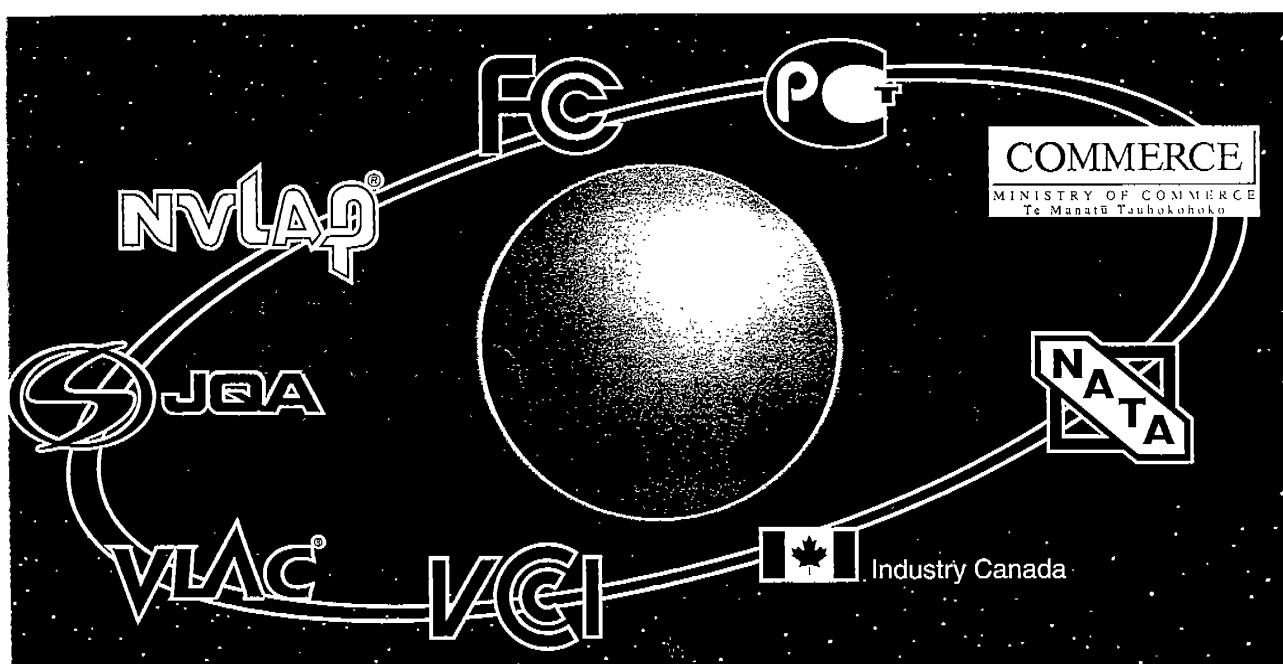
JQA carries out a safety test for each product, confirms the quality assurance system of each factory, and gives a certificate to each product. Only products certified by JQA can bear the JQA safety certification mark.

JQA

Networking with leading overseas certification organizations

By cooperating with UL of the United States, CSA of Canada, and other leading certification organizations in Europe, JQA has obtained extensive technical expertise and the use of test facilities not only for tests related to the electrical appliance and material control law in Japan, but also for UL, CSA and IEC standards. In addition, JQA is able to conduct safety tests on products for both domestic and overseas market. JQA will make the most of its experience and cooperative activities in its certification system, and carry out comprehensive safety tests for electrical appliances.

電磁環境試験業務のご案内



財団法人 日本品質保証機構

附件：9

先進の技術と設備でサービス領域をさらに拡大。

● 業務内容

1. 情報処理装置、受信機等の妨害電波試験
各国の規格・規則に基づいて測定を行い、試験成績書を発行します。
2. イミュニティの評価試験
電子機器が妨害電波を受けたときの妨害排除能力の評価試験をIEC、EN、CISPR等の規格に基づいて行い、試験成績書を発行します。
3. 電話端末装置の試験
電話機、ファクシミリ、モデム、交換機等、電話端末装置の試験を米国FCC規格、カナダIC規則及びオーストラリア規則に基づいて実施し、試験成績書を発行します。
4. 電磁環境調査及び評価
事務所及び工場等の電磁環境調査・評価を行い、調査報告書を発行します。
5. 対策を目的とした立合測定
妨害波抑制対策のため、お客様が立会いのもとに測定を行います。
6. 申請代行 (FCC、IC他)
電話端末装置に関する登録申請代行 (FCC、IC)、情報処理装置、送受信機及びその他の機器についての「証明」又は「通知」等に関する申請代行を行います。
7. EMC指令に基づいた試験 (CEマーキング)
各種機器・装置の欧州への出荷に対応するため、EN規格に基づいたEMI及びEMS試験を行います。また、提携機関であるVDE、TUV-PS等の協力も得られます。
8. EMC指令に基づいた出張測定 (オンサイトテスト)
ベルギーのCompetent BodyであるAVIの適合証明書の発行までサポート致します。
9. 医用電気機器のEMC試験
日本医療機器関係団体協議会 (日医機協) の自主基準に基づく試験を行います。
10. 電波無反射室の特性、評価試験
基盤技術研究開発促進税制 (ハイテク税制) に基づく評価試験を行います。
11. 電源高調波及びフリッカの評価試験
電子・電気機器の電源線から伝導される高調波電流及びフリッカの測定を国内ガイドライン及びEN、IEC規格に基づいて行います。
12. S-JQAマーク制度の試験
電気用品技術基準に基づく試験を行います。

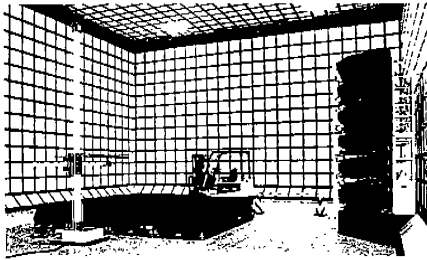
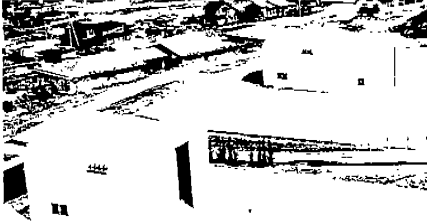
● 業務項目別事業所一覧

業 務	実 施 事 業 所				
	安全試験検査センター	都留電磁環境試験所	師勝試験所	亀岡電磁環境測定所	北關西試験センター
電界強度測定					
伝導雑音端子電圧測定					
伝導性輻射雑音電力測定					
イミュニティ測定				—	
電話端末装置の試験		—	—	—	—
電磁妨害に関する試験・評価					
電波無反射室の特性評価試験		—	—	—	—
微弱電波機器の測定	○	—	—	—	—
電源高調波試験	—	○	○	—	○
対策を目的とした立合測定	電波無反射室	○	○	—	○
	オープンサイト	—	—	○	○
申請代行	○	※	※	—	○

注) ○ は試験可能項目。※は受付のみ。

都留電磁環境試験所

NVLAP Laboratory Code : 200192-0
 IC (カナダ) Laboratory Code : IC 2079-5
 IC 2079-6
 VLAC認定番号 : VLAC-004



都留電磁環境試験所のサイト

- オープンサイト (全天候型)
3/10/30m法対応……………2基
- シールドルーム……………2室
- 3/10m電波無反射室……………1室
- 小型暗室……………1室

● 測定設備

● オープンサイト ●

項目 (単位)	第一サイト	第二サイト
測定距離 (m)	3/10/30	3/10/30
回転台の大きさ・直径(m)	5	5
許容重量 (kg)	5,000	3,000
電源容量 (Hz, KVA)	単相/三相: 50/60、20/10	単相/三相: 50/60、10/6

● シールドルーム ●

項目 (単位)	A 室	B 室
大きさ (m)	L5×W8×H3	L4×W4.5×H3
電源容量 (Hz, KVA)	単相/三相: 50/60、5/15	単相:50/60、10

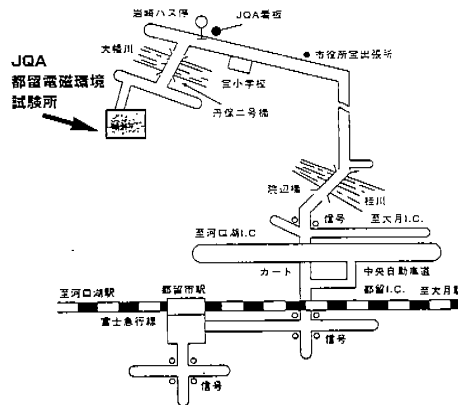
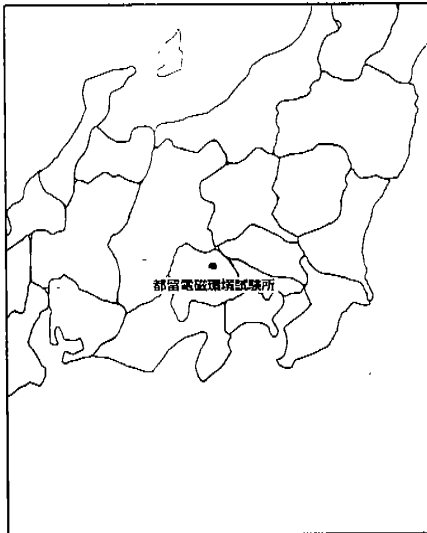
● 電波無反射室・大型暗室 ●

項目 (単位)	
寸法L, W, H (m)	20.4 × 13.4 × 8.3
扉寸法W, H (m)	3 × 4
測定距離 (m)	3/10
回転台寸法 (m)	2/5
許容重量 (kg)	5000
電源容量 (Hz, KVA)	30kVA/単・三相

● IMM測定用 ●

項目 (単位)	IMM測定用
寸法L, W, H (m)	7.0×4.5×3.0
扉寸法W, H (m)	2×2
測定距離 (m)	3
回転台寸法 (m)	1.2
許容重量 (kg)	150
電源容量 (Hz, KVA)	単相: 50/60、10

● 案内図



〒402-0045 山梨県都留市大幡丹保沢2096

TEL 0554-43-5517 FAX 0554-43-6316

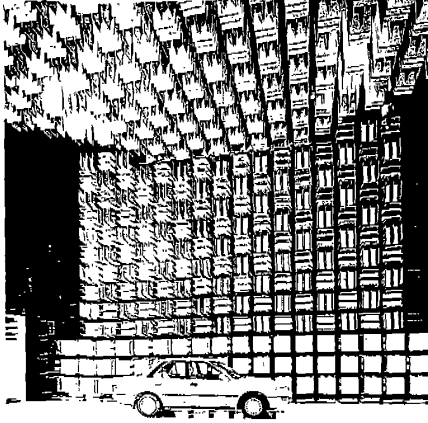
富士急行線 都留市駅から宝鏡山行又はつるぎ行バス(約10分)岩崎下車、徒歩3分。中央自動車道 都留インターより約8分。

附件: 9

師勝試験所

NVLAP Laboratory Code : 200190-0
 IC (カネコ) Laboratory Code : IC 2079-4

VLAC認定番号 : VLAC-003



● 測定設備

● 電波無反射室 ●

項目 (単位)	
室の大きさ (m)	L16×W11×H7.7
扉寸法 (m)	4×2.7
測定距離 (m)	3/10
回転台の大きさ・直径 (m)	5
許容重量 (kg)	3,000
電源容量 (Hz, KVA)	単相/三相:50/60、8/24

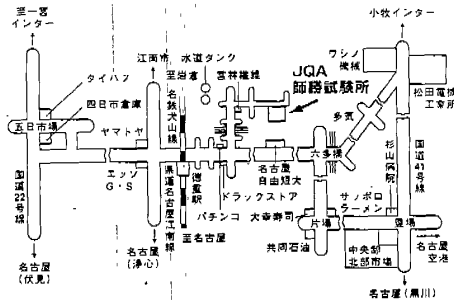
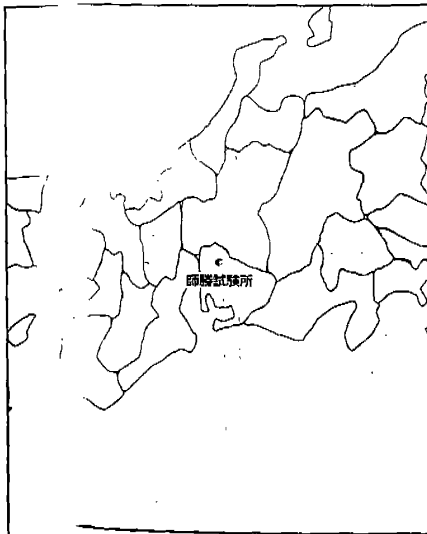
● シールドルーム ●

項目 (単位)	
大きさ (m)	L6×W4.3×H3.2
電源容量 (Hz, KVA)	単相/三相:50/60、6/6

● 師勝試験所のサイト

- 3/10m電波無反射室 …………… 1室
- シールドルーム …………… 1室

● 案内図



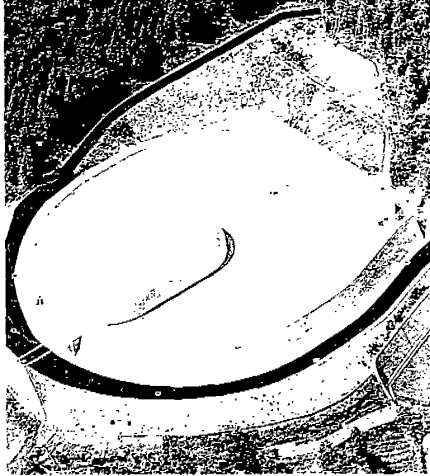
〒481-0005 愛知県西春日井郡師勝町大字薬師寺字山浦53-1
 TEL 0568-23-0023 FAX 0568-23-0116
 名鉄犬山線 名古屋駅から18分、徳重駅下車徒歩8分・一宮インターより約10分、小牧インターより約15分

● 附件 : 9

亀岡電磁環境測定所

NVLAP Laboratory Code : 200191-0
 IC (カナダ) Laboratory Code : IC 2079-3

VLAC認定番号 : VLAC-002



亀岡電磁環境測定所のサイト

- オープンサイト
 3/10/30m法対応(全天候型) 1基
 3/10m法対応 1基
- シールドルーム 1室

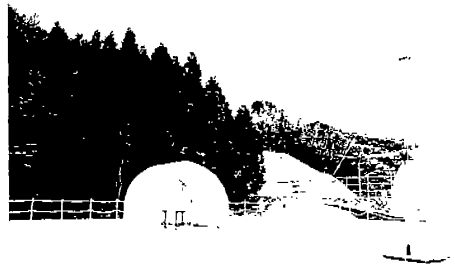
● 測定設備

○ オープンサイト

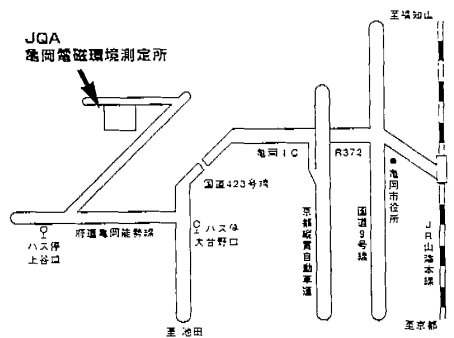
項目 (単位)	第一サイト	第二サイト
測定距離 (m)	3 / 10 / 30	3 / 10
回転台の大きさ・直径(m)	1.5 / 6 / 0	1.5
許容重量 (kg)	10,000	600
電源容量 (Hz, KVA)	単相/三相: 50.60/400.36	単相/三相: 60.12

○ シールドルーム

項目 (単位)	
大きさ (m)	L 5 × W 8 × H 3
電源容量 (Hz, KVA)	単相/三相: 50/60/400.20



● 案内図

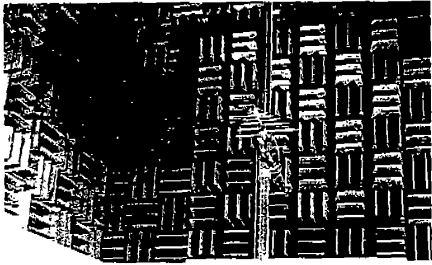


〒621-0126 京都府亀岡市西別院町犬甘野尾崎9-1
 受付/ご相談 TEL 0727-29-2243 FAX 0727-28-6848
 測定所 TEL 0771-27-3666 FAX 0771-27-3667
 JR山陰本線 亀岡駅より車で約15分
 名神高速道路 京都南インターより約45分
 阪神高速道路、中国自動車道 池田インターより約45分

● 附件 ●

北関西試験センター

NVLAP Laboratory Code : 200191-0
 IC (カナダ) Laboratory Code : IC 2079-1
 : IC 2079-2
 VLAC認定番号 : VLAC-002



北関西試験センターのサイト

- 電波無反射室
3m法対応.....1室
- オープンサイト(全天候型)
10m法対応.....1基
3m法対応.....1基
- シールドルーム.....1室

● 測定設備

● 電波無反射室 ●

項目 (単位)	
室の大きさ (m)	L 9 × W 6 × H 7.4
扉 寸 法 (m)	2 × 1.6
測定距離 (m)	3
回転台の大きさ・直径 (m)	1.2
許容重量 (kg)	450
電源容量 (Hz, KVA)	単相:三相:50/60, 12

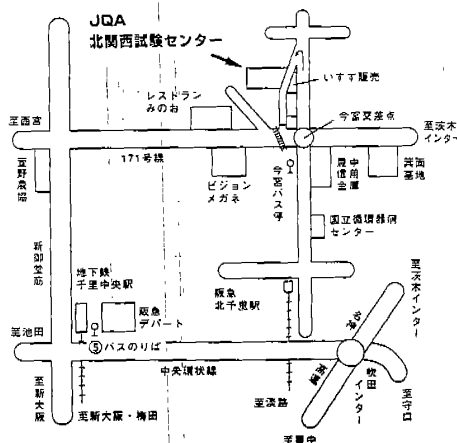
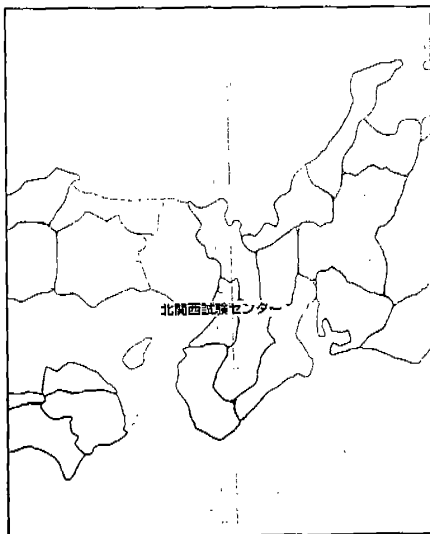
● オープンサイト ●

項目 (単位)	第一サイト	第二サイト
測定距離 (m)	3/10	3
回転台の大きさ・直径 (m)	1.5	1.5
許容重量 (kg)	500	500
電源容量 (Hz, KVA)	単相/三相: 50/60, 10.6	単相:50/60.5 三相:60.6

● シールドルーム ●

項目 (単位)	
大 き さ (m)	L 3.7 × W 3 × H 2.5
電源容量 (Hz, KVA)	単相:50/60, 5

● 案内図



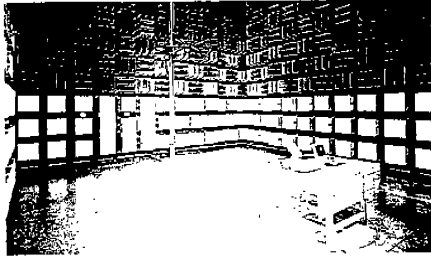
〒562-0027 大阪府箕面市石丸1-7-7
 TEL 0727-29-2243 FAX 0727-28-6848

御堂筋線 千里中央駅よりバス15分 (薬生団地行、大阪外大前行 (学生便は不可)、間谷住宅行、外院の里行、小野原行) 今宮下車徒歩3分

附件：9

安全試験検査センター

NATA Accreditation : 13247
 NVLAP Laboratory Code : 200189-0
 IC (カナダ) Laboratory Code : IC 2079-7
 IC 2079-8
 VLAC認定番号 : VLAC-001



安全試験検査センターのサイト

- 電波無反射室
3m法対応.....2室
- シールドルーム.....3室

● 測定設備

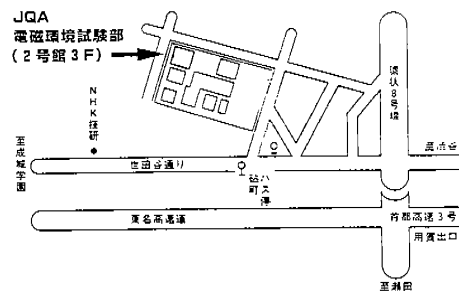
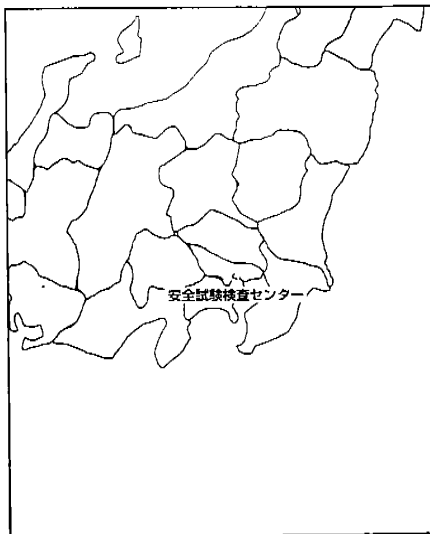
● 電波無反射室 ●

項目 (単位)	A 室	B 室
室の大きさ (m)	L9×W7×H7	L8×W7×H7
扉寸法 (m)	2×2.5	2×2.5
測定距離 (m)	3	3
回転台の大きさ・直径 (m)	1.5	1.5
許容重量 (kg)	650	650
電源容量 (Hz, KVA)	単相:50/60、3/6	単相:50/60、3/6

● シールドルーム ●

項目 (単位)	A 室	B 室	C 室
大きさ (m)	L5×W6×H3	L6×W4×H2	L7.5×W5×H2.2
電源容量 (Hz, KVA)	単相: 50/60、3/6	単相: 50/60、5	単相: 50/60、2/2

● 案内図



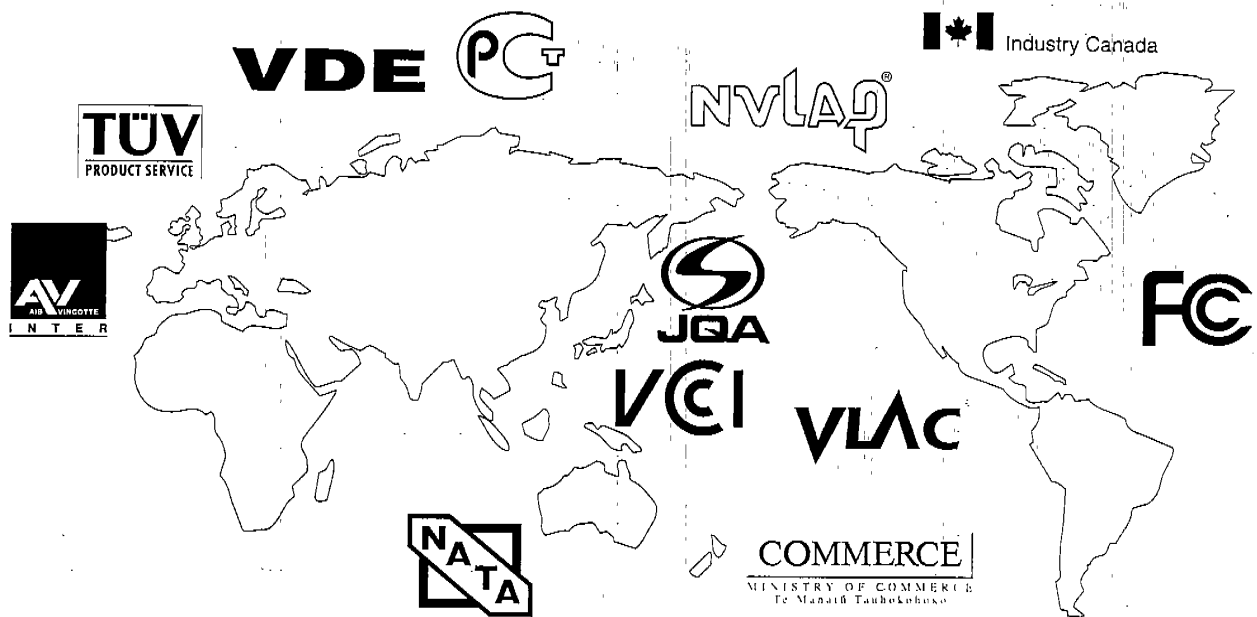
〒157-8573 東京都世田谷区站1-21-25

TEL 03-3416-0193 FAX 03-3416-8290

小田急線 成城学園前駅から渋谷駅又は田園調布行バス (約10分) 駅
 町下車、徒歩2分。

JR渋谷駅から成城学園前駅行バス (約40分) 駅町下車、徒歩2分。

附件: 9



JQAが認定又は登録されている機関

- FCC: Federal Communications Commission (米国)
- IC: Industry Canada (カナダ)
- Ministry of Commerce (ニュージーランド)
- NATA: National Association of Testing Authorities, Australia (オーストラリア)
- NVLAP: National Voluntary Laboratory Accreditation Program (米国)
- VCCI: 情報処理装置等電波障害自主規制協議会
- VLAC: 株式会社 電磁環境試験所認定センター

JQAが提携している機関

- AVI: AIB VINCOTTE INTER (ベルギー)
- GOST-ASIA (ロシア)
- TÜV-PS: TÜV-Product Service (ドイツ)
- VDE Testing and Certification Institute (ドイツ)

JQA 財団法人 **日本品質保証機構**

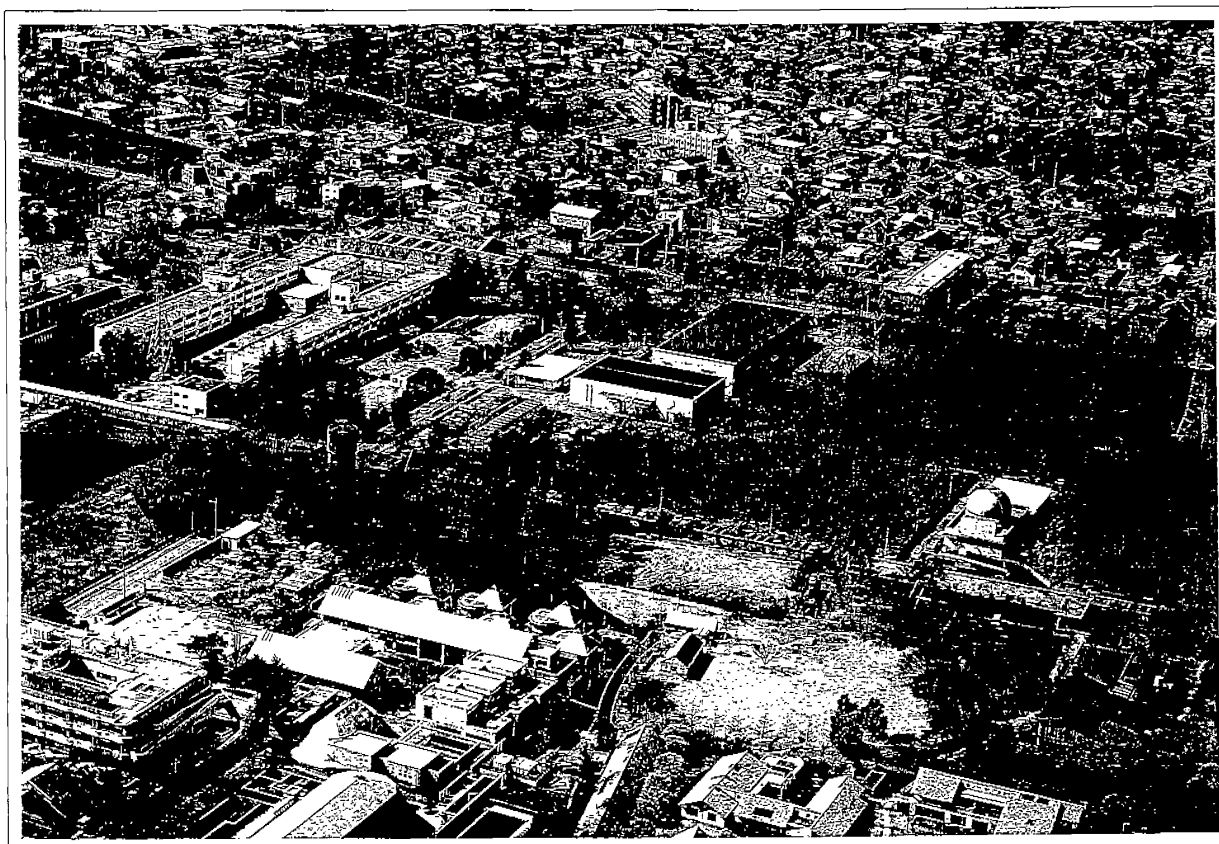
本部 / 〒107-0052 東京都港区赤坂1-9-15 TEL.03-3583-9001 (代) / FAX.03-3583-9002
<http://www.jqa.or.jp/>

設立 1972 年 9 月

00.7.B3005001

総合電波測定施設

Measuring Facilities for Radio Research



通信総合研究所は、情報通信分野における唯一の国立研究所として、情報・通信・電波の各分野にわたって、21世紀を目指し基礎から応用までの幅広い研究を行っています。当施設内には、各種の電波無反射室、屋外電波測定施設、測定機器など、さまざまな測定施設を用意し、各種研究開発に利用しております。

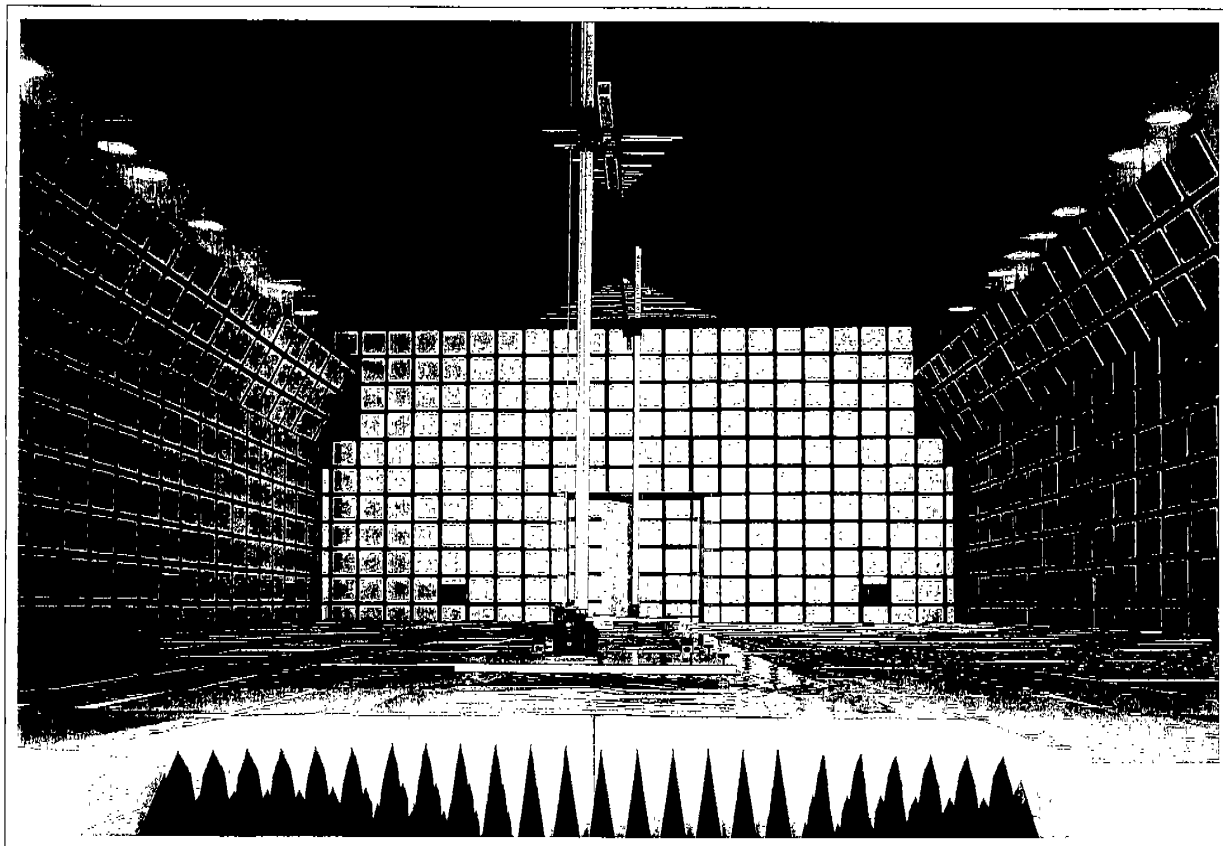


郵政省 通信総合研究所

附件：10

大型電波無反射室

Anechoic Chamber for VHF and UHF Bands



目的

V/UHF帯等の比較的低い周波数用の電波無反射室で、各種アンテナの研究開発、電磁環境や電磁波標準の研究、無線機器の型式検定試験等に用います。

諸元

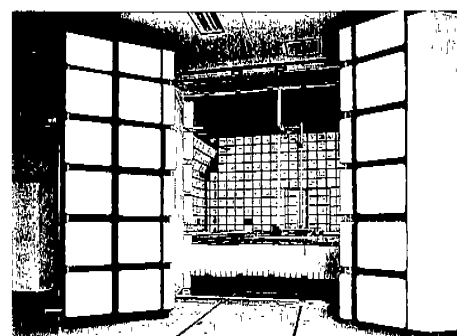
電波無反射室内積 14m(幅)×18m(奥行)×6.4m(高さ)

使用周波数 30MHz~10GHz

使用周波数および無反射特性

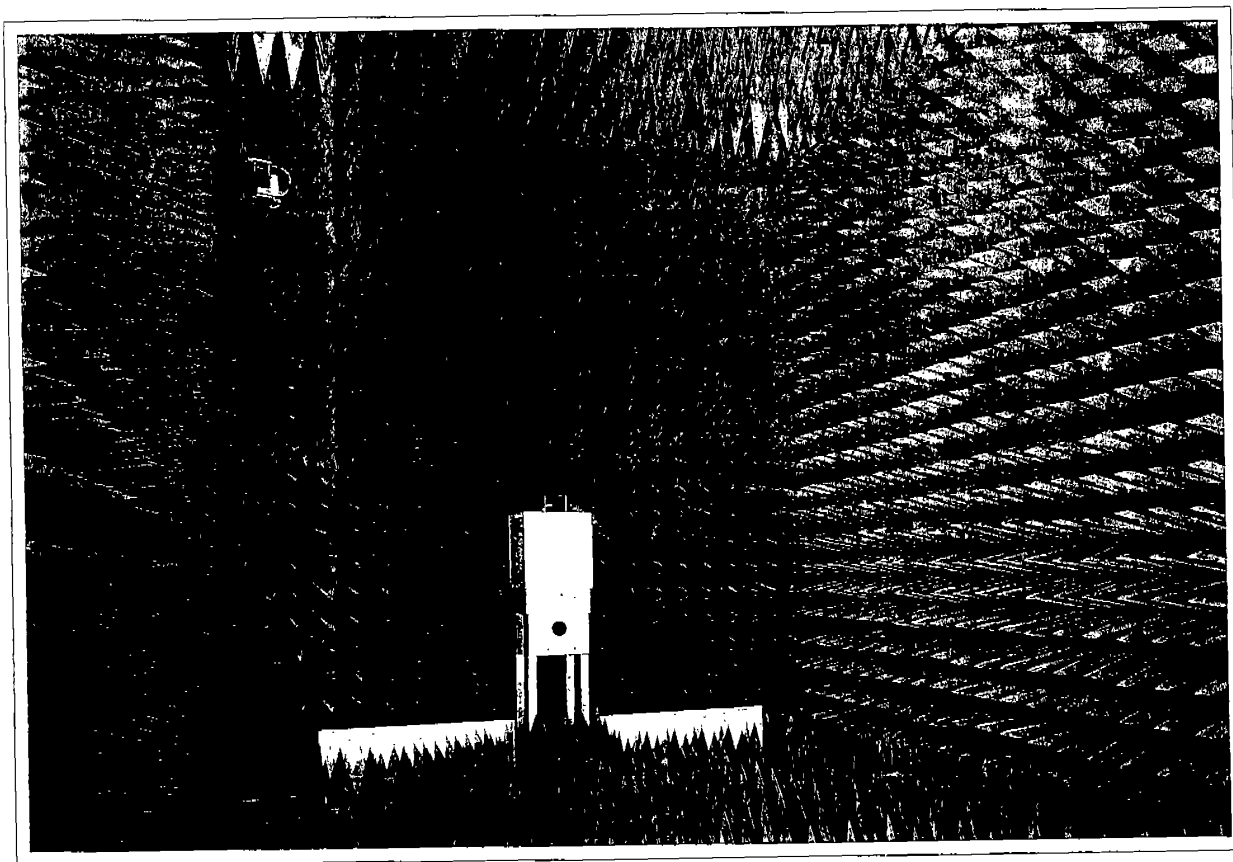
周波数	天井・床面	壁面
200MHz	20dB以上	25dB以上
1GHz	40dB以上	35dB以上
5GHz	50dB以上	40dB以上
10GHz	55dB以上	40dB以上

電波遮蔽特性 70dB以上



小型電波無反射室

Anechoic Chamber for SHF and EHF Bands



目的

S/EHF帯の各種アンテナおよび散乱体の特性測定や、電磁環境などの測定を行います。

諸元

電波無反射室内積 5.5m(幅)×8.5m(奥行)×5.5m(高さ)

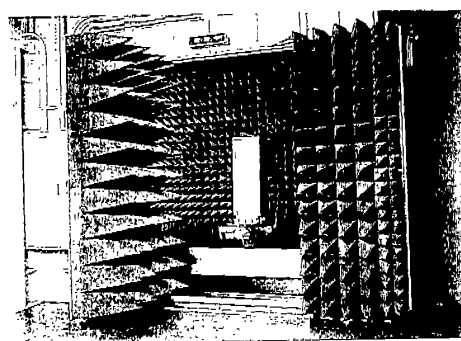
送受信距離 5m

使用周波数および無反射特性

周波数	無反射特性
-----	-------

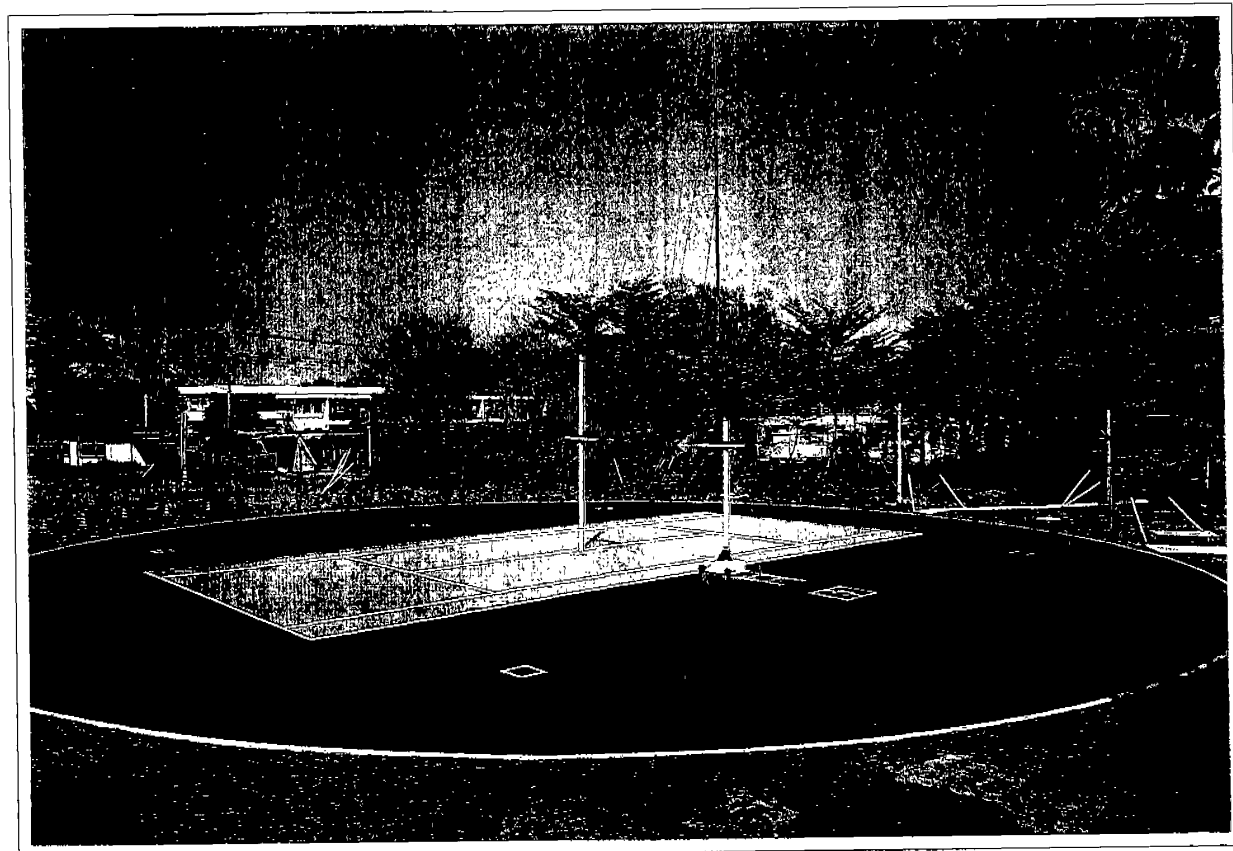
3GHz~50GHz	45dB以上
------------	--------

50GHz~100GHz	40dB以上
--------------	--------



屋外電波測定施設

Open-Field Test Site

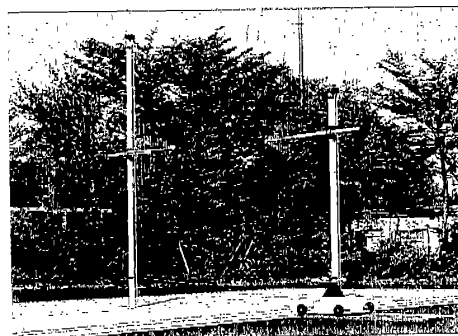


目的

各種アンテナの特性測定・校正、および不要電波の測定とそれらに関連する研究を行うための屋外電波測定施設です。

諸元

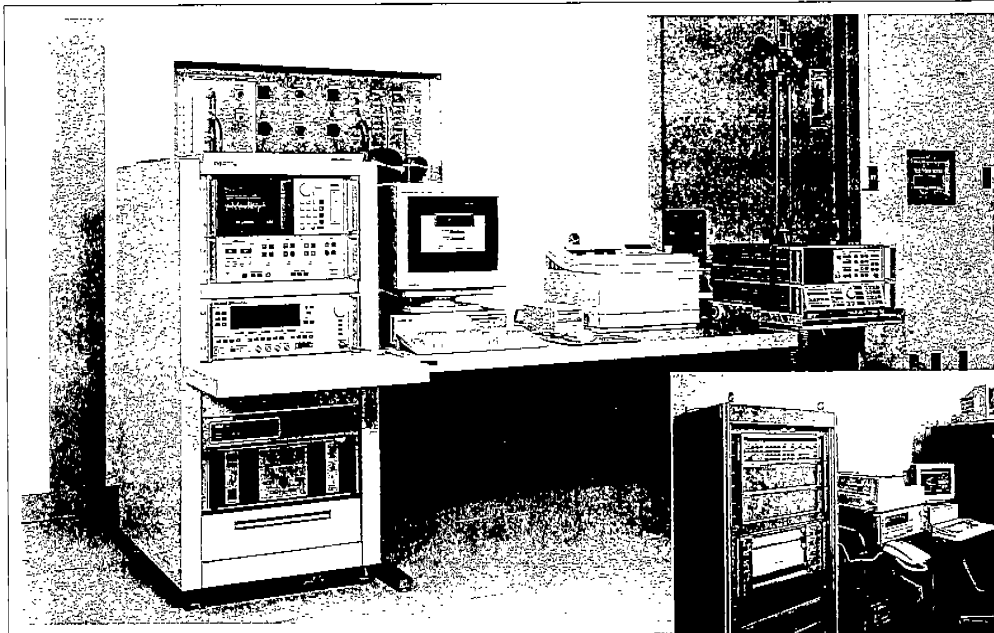
グラウンドプレーン	ステンレスメッシュ張り(直径36m円形)	
ターンテーブル	床置き移動型(直径1.2m)	
固定式アンテナ昇降機	アンテナ昇降範囲1~6m	
移動式アンテナ昇降機	水平移動範囲30m、アンテナ昇降範囲1~4m	
正規化サイトアッテネーション		
送受信間距離	理論値に対する偏差	偏波面
3m	±3dB以内	水平及び垂直
10m	±3dB以内	水平及び垂直



関連測定システム

Measuring Systems

●大型電波無反射室：アンテナ特性測定システム(横河ヒューレットパッカード製)



●小型電波無反射室：信号発生器 他

目的

大型電波無反射室をはじめ各測定施設には、アンテナ特性や妨害波特性等を測定するために、以下の測定システムが付属しています。

大型電波無反射室

アンテナポジショナ(オービットAL4372-1、デバイスD76A)
アンテナ特性測定システム(HP85301Cシステム)
スペクトルアナライザ(HP8566B)
計測コントローラ(HP9000/382)

小型電波無反射室

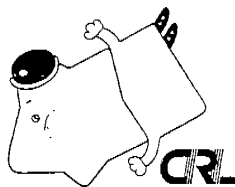
アンテナポジショナ(SA53150A)
測定用受信機(SA1782)
信号発生器(HP83650A 他)
高周波回路特性測定装置(HP8510Cシステム)
計測コントローラ(NEC9801BA)

アンテナ近傍界測定施設

アンテナポジショナ(SA53150A)
測定用受信機(SA1782)
信号発生器(ウィルトロン6753A)
計測コントローラ(HP9000/382)

屋外電波測定施設

EMI受信機(HP8374B)
信号発生器(HP8664A)
スペクトルアナライザ(HP8563E)
計測コントローラ(HP9000/382)
アンテナ(ダイポールアンテナ、バイコニカルアンテナ、
ログペリオディックアンテナ、ロバーツアンテナ)



附件：10

郵政省通信総合研究所
〒184 東京都小金井市貫井北町4-2-1
Tel.(0423) 21-1211(代表)