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CNASL1225

MPE TEST REPORT

FCC Per 47 CFR 2.1091(b)

Report Reference No.....:	**TRE1206003503**
FCC ID .....:	**YAMMT680F5**
Compiled by (position+printed name+signature)..:	File administrators Tim Zhang
Supervised by (position+printed name+signature)..:	Test Engineer Eric Zhang
Approved by (position+printed name+signature)..:	Manager Wenliang Li
Date of issue.....:	June 29, 2012
Testing Laboratory Name .....:	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address.....:	Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Applicant's name.....:	**Hytera Communications Corporation Ltd.**
Address.....:	HYT Tower,Hi-Tech Industrial Park North,Nanshan District,Shenzhen China.518057
Test specification:	
Standard .....:	**FCC Per 47 CFR 2.1091(b)**
TRF Originator.....:	Shenzhen Huatongwei International Inspection CO., Ltd
Master TRF.....:	Dated 2006-06

Test item description .....:	TETRA Mobile Terminal
Trade Mark .....:	Hytera
Manufacturer .....:	**Hytera Communications Corporation Ltd.**
Model/Type reference.....:	MT680 F5
Listed Models .....:	/
Modulation .....:	π/4 DQPSK
Channel Separation.....	25KHz
Rated Power .....:	10.0 Watts(40.00dBm)
Operation Frequency.....	817MHz-824MHz/862MHz-869MHz
Ratings.....:	DC 13.20 V
Result.....:	**Positive**

MPE T E S T R E P O R T

Test Report No. :	**TRE1206003503**	June 29, 2012 Date of issue

Equipment under Test	:	TETRA Mobile Terminal
Model /Type	:	MT680 F5
Listed Models	:	/
Applicant	:	**Hytera Communications Corporation Ltd.**
Address	:	HYT Tower,Hi-Tech Industrial Park North,Nanshan District,Shenzhen China.518057
Manufacturer	:	**Hytera Communications Corporation Ltd.**
Address	:	HYT Tower,Hi-Tech Industrial Park North,Nanshan District,Shenzhen China.518057

Contents

1. Measurement Uncertainty

The information below presents an estimate of the possible errors that are associated with the measurement system.

Description	Error
NARDA Survey Meter	**± 3%**
Repeatability Accuracy	**± 7%**

2. Method of measurement

2.1. EME measurements made on trunk mounted antennas

2.1.1. External vehicle EME measurement

(Antenna mounted in trunk center)
With the survey meter and probe, take ten (10) measurements, at the standard test distance of 60 cm to the antenna, from the back of the vehicle in a vertical line and then average the results. These measurements are taken and recorded at every twenty (20) centimeters over a range starting at twenty (20) centimeters above ground and ending at 2.0 meters.

2.1.2. Internal vehicle EME measurement

(Antenna mounted in trunk center)
While rotating survey meter probe through 180 degrees to ensure that the highest level is found, scan the inside of the vehicle, both front and back seating areas, for the highest level in each location. After the highest level is found, scan vertically making two (2) additional measurements within an area approximately 40 cm wide (representing the width of a person) so as to have a total of three (3) measured points as indicated below that will be averaged
.
a) Head area
b) Chest area
c) Lower Trunk area

2.2. EME measurements made on center roof mounted antennas

2.2.1. External vehicle EME measurement

With the survey meter and probe, take ten (10) measurements, at the standard test distance of 110 cm from the vehicle-mounted antenna, in a vertical line and then average the results. These measurements are taken and recorded at every twenty (20) centimeters over a range starting at twenty (20) centimeters above ground and ending at 2.0 meters; this would be representative of a person standing next to a vehicle during a mobile radio transmission.

2.2.2. Internal vehicle EME measurement

While rotating survey meter probe through 180 degrees to ensure that the highest level is found, scan the inside of the vehicle, both front and back seating areas, for the highest level in each location. After the highest level is found, scan vertically making two (2) additional measurements within an area approximately 40 cm wide (representing the width of a person) so as to have a total of three (3) measured points as indicated below that will be averaged.

a) Head area
b) Chest area
c) Lower Trunk area

3. Approved Accessories

Antenna:

Model: TQC-900BII
Roof Mount 817MHz-824MHz/862MHz-869MHz
Gain: 7.00dBi

Vehicle:

Band: BYD
Model: F6

4. Test Result

Measurement Information				
Measurement Freq.(MHz)	**817.0000**	**824.0000**	**862.0000**	**869.0000**
Raw Data Power(W)	11.56	11.91	11.37	11.72
Controlled Limit	2.7233	2.7466	2.8733	2.8966
Uncontrolled Limit	0.5446	0.5493	0.5746	0.5793
Cal.	1.00	1.00	1.00	1.00
Antenna / gain(dBi)	Whip / 7.0	Whip / 7.0	Whip / 7.0	Whip / 7.0
External Vehicle Power Density(50% duty)	average over body/2			
Internal Vehicle Power Density(50% duty)	average over (head/chest/leg)/2			

External Vehicle MPE Assessment at 817.0000 MHz						
Antenna Location	**Antenna/ gain**	**Meas. Distance (cm)**	**E/H Field**	**Calibration Factor**	**Average Over Body**	**Pwr. Density (mW/cm^2)**
Trunk	Whip / 7.0	60	E	1.00	0.22	0.18
Measurement grid						
Test position	**Height (cm)**	**% of controlled limit**	**Test position**	**Height (cm)**	**% of controlled limit**	
1	20	6.2	6	120	31.0	
2	40	7.3	7	140	24.5	
3	60	17.2	8	160	16.6	
4	80	20.2	9	180	18.9	
5	100	29.6	10	200	12.1	

External Vehicle MPE Assessment at 824.0000 MHz						
Antenna Location	**Antenna/ gain**	**Meas. Distance (cm)**	**E/H Field**	**Calibration Factor**	**Average Over Body**	**Pwr. Density (mW/cm^2)**
Trunk	Whip / 7.0	60	E	1.00	0.26	0.11
Measurement grid						
Test position	**Height (cm)**	**% of controlled limit**	**Test position**	**Height (cm)**	**% of controlled limit**	
1	20	6.4	6	120	31.8	
2	40	7.2	7	140	28.4	
3	60	12.6	8	160	22.2	
4	80	20.0	9	180	14.2	
5	100	30.8	10	200	12.7	

External Vehicle MPE Assessment at 862.0000 MHz						
Antenna Location	Antenna/ gain	Meas. Distance (cm)	E/H Field	Calibration Factor	Average Over Body	Pwr. Density (mW/cm^2)
Trunk	Whip / 7.0	60	E	1.00	0.23	0.14
Measurement grid						
Test position	Height (cm)	% of controlled limit	Test position	Height (cm)	% of controlled limit	
1	20	7.7	6	120	24.4	
2	40	6.5	7	140	23.8	
3	60	11.2	8	160	22.8	
4	80	20.4	9	180	15.4	
5	100	23.2	10	200	13.7	

External Vehicle MPE Assessment at 869.0000 MHz						
Antenna Location	Antenna/ gain	Meas. Distance (cm)	E/H Field	Calibration Factor	Average Over Body	Pwr. Density (mW/cm^2)
Trunk	Whip / 7.0	60	E	1.00	0.25	0.15
Measurement grid						
Test position	Height (cm)	% of controlled limit	Test position	Height (cm)	% of controlled limit	
1	20	7.5	6	120	24.2	
2	40	6.2	7	140	23.5	
3	60	11.2	8	160	22.1	
4	80	20.2	9	180	15.2	
5	100	22.4	10	200	10.2	

External Vehicle MPE Assessment at 862.0000MHz						
Antenna Location	Antenna/ gain	Meas. Distance (cm)	E/H Field	Calibration Factor	Average Over Body	Pwr. Density (mW/cm^2)
Trunk	Whip / 7.0	108	E	1.00	0.18	0.10
Measurement grid						
Test position	Height (cm)	% of controlled limit	Test position	Height (cm)	% of controlled limit	
1	20	3.2	6	120	14.1	
2	40	3.2	7	140	15.2	
3	60	8.2	8	160	12.2	
4	80	11.2	9	180	7.5	
5	100	16.0	10	200	6.2	

Internal Vehicle MPE Assessment at 817.0000MHz						
Antenna Location	**Antenna/ gain**	**Meas. Distance (cm)**	**E/H Field**	**Calibration Factor**	**Average over Head,Chest,Leg Back/Front Seats (mW/cm^2)**	**Pwr. Density of Higher Level (mW/cm^2)**
Trunk	Whip / 7.0	Highest Reading	E	1.00	0.224/0.012	0.112/0.006

Measurement grid			
Test position	**% of controlled limit Head**	**% of controlled limit Chest**	**% of controlled limit Leg**
Back Seat	13.2	12.2	13.5
Front Sea	6.2	5.2	3.6

Internal Vehicle MPE Assessment at 824.0000 MHz						
Antenna Location	**Antenna/ gain**	**Meas. Distance (cm)**	**E/H Field**	**Calibration Factor**	**Average over Head,Chest,Leg Back/Front Seats (mW/cm^2)**	**Pwr. Density of Higher Level (mW/cm^2)**
Trunk	Whip / 7.0	Highest Reading	E	1.00	0.240/0.016	0.120/0.008

Measurement grid			
Test position	**% of controlled limit Head**	**% of controlled limit Chest**	**% of controlled limit Leg**
Back Seat	20.2	14.8	10.6
Front Sea	8.4	3.7	8.5

Internal Vehicle MPE Assessment at 862.0000 MHz						
Antenna Location	**Antenna/ gain**	**Meas. Distance (cm)**	**E/H Field**	**Calibration Factor**	**Average over Head,Chest,Leg Back/Front Seats (mW/cm^2)**	**Pwr. Density of Higher Level (mW/cm^2)**
Roof	Whip / 7.0	Highest Reading	E	1.00	0.120/0.012	0.060/0.006

Measurement grid			
Test position	**% of controlled limit Head**	**% of controlled limit Chest**	**% of controlled limit Leg**
Back Seat	18.8	13.2	7.6
Front Sea	5.6	2.4	6.2

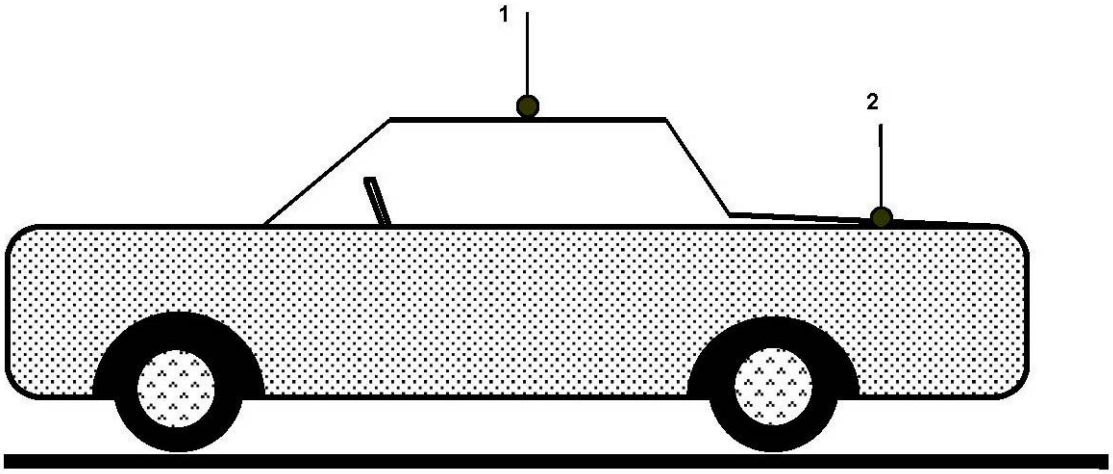
Internal Vehicle MPE Assessment at 869.0000 MHz						
Antenna Location	**Antenna/ gain**	**Meas. Distance (cm)**	**E/H Field**	**Calibration Factor**	**Average over Head,Chest,Leg Back/Front Seats (mW/cm^2)**	**Pwr. Density of Higher Level (mW/cm^2)**
Roof	Whip / 7.0	Highest Reading	E	1.00	0.180/0.014	0.090/0.007

Measurement grid			
Test position	**% of controlled limit Head**	**% of controlled limit Chest**	**% of controlled limit Leg**
Back Seat	20.1	15.5	8.2
Front Sea	7.3	5.1	7.2

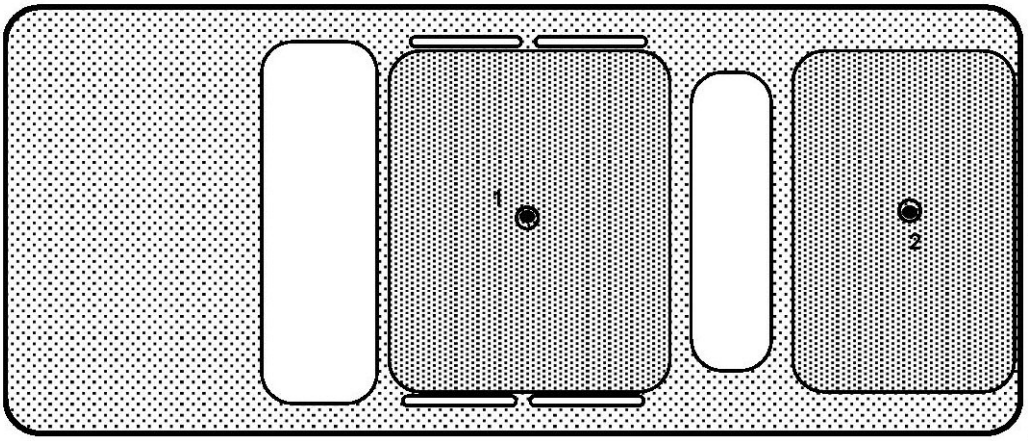
5. Conclusion

The measurement results comply with the FCC Limit Per 47 CFR 2.1091 (b) for the controlled RF Exposure.

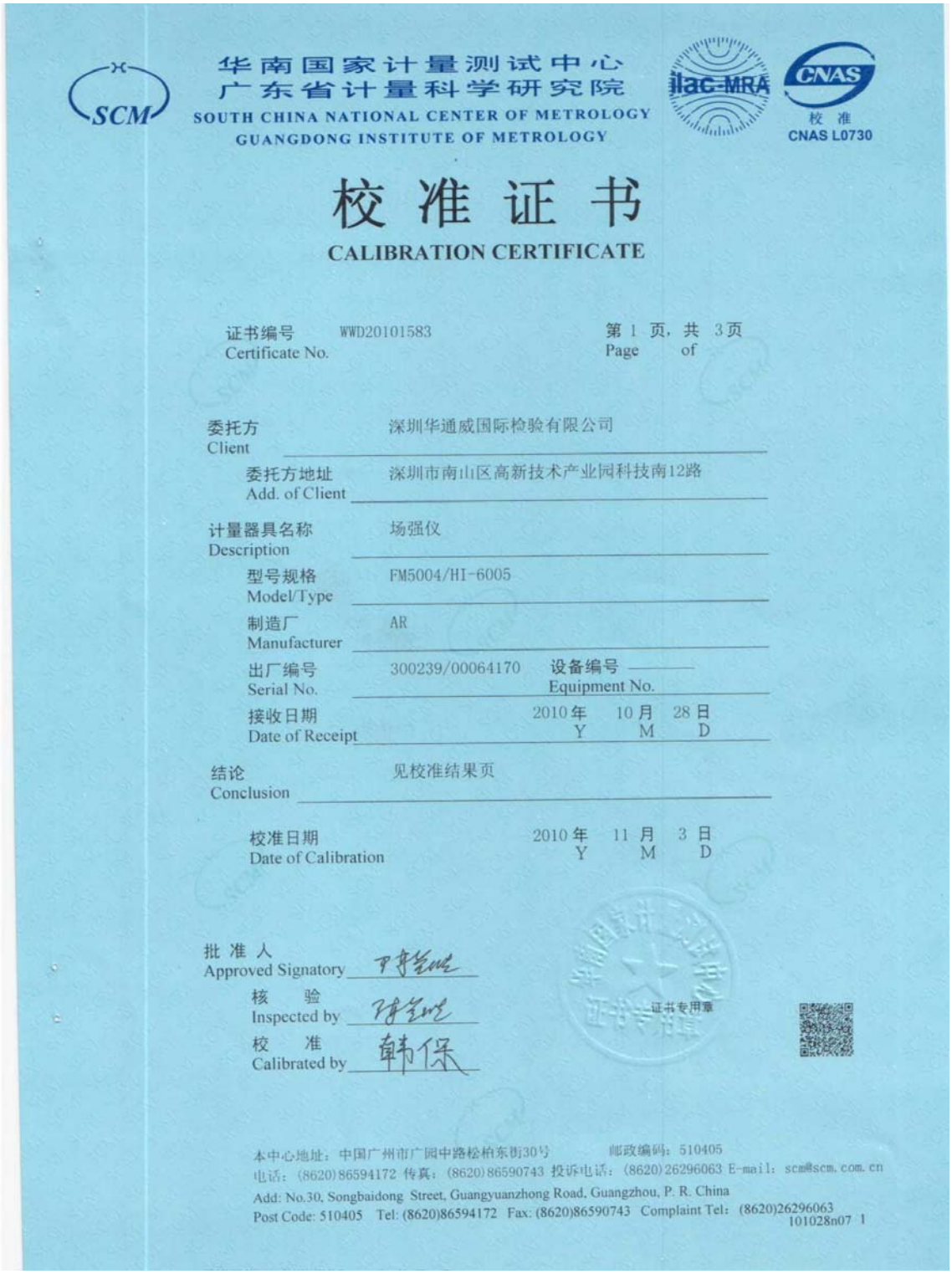
6. Antenna Location Drawing



1 - Roof (center)
2 - Trunk (center)



7. Probe Calibration Certificates



华南国家计量测试中心
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校准证书
CALIBRATION CERTIFICATE

证书编号 Certificate No. WWD20101583 第 1 页，共 3 页 Page of

委托方 Client 深圳华通威国际检验有限公司

委托方地址 Add. of Client 深圳市南山区高新技术产业园科技南12路

计量器具名称 Description 场强仪

型号规格 Model/Type FM5004/HI-6005

制造厂 Manufacturer AR

出厂编号 Serial No. 300239/00064170 设备编号 Equipment No.

接收日期 Date of Receipt 2010年 Y 10月 M 28日 D

结论 Conclusion 见校准结果页

校准日期 Date of Calibration 2010年 Y 11月 M 3日 D

批准人 Approved Signatory

核验 Inspected by

校准 Calibrated by 韩保

证书专用章

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说 明

证书编号 Certificate No. WWD20101583

DIRECTIONS

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1. 本中心是国家质量监督检验检疫总局在华南地区设立的国家法定计量检定机构，计量授权证书号是：（国）法计（2007）01043号、（国）法计（2007）01032号。本中心是中国合格评定国家认可委员会(CNAS)认可实验室，认可证书号为：CNAS L0730.

This laboratory is the National Legal Metrological Verification Institution in southern China set up by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ) under authorization certificates No.(2007)01043 & (2007)01032. This laboratory is accredited by China National Accreditation Service for Conformity Assessment under Laboratory Accreditation Certification No. CNAS L0730.

2. 本中心所出具的数据均可溯源至国家计量基准和国际单位制(SI)。
All data issued by this laboratory are traceable to national primary standards and International System of Units (SI).

3. 本次校准的技术依据：
Reference documents for the calibration:

IEEE 1309-2005 Calibration of electromagnetic field sensors and probes, excluding antennas, from 9 kHz to 40 HGz 频率为9KHz～40GHz的电磁场传感器和探头(天线除外)的校准
JJG 561-1988 RJ-3型近区电场测量仪试行检定规程 V.R.of Model RJ-3 Near-Zone Electric-Field Measuring Instruments

4. 本次校准所使用的主要计量标准器具：
Major standards of measurement used in the calibration:

设备名称/型号 Name of Equipment /Model	编号 Serial No.	证书号/有效期 Certificate No. /Due Date	计量特性 Metrological Characteristic
场强标准 TEM Cell /8801	014	WWD20100034 /2011-01-12	±1 dB
功率放大器 Power Amplifier /100W1000B	305581	WWS20100786 /2011-07-15	增益 :U_{rel}=1 dB(k=2) Gain :U_{rel}=1 dB(k=2)
信号发生器 Signal Generator /E8267C	US42340272	WWS20100376 /2011-04-18	电平:U_{rel}=0.20 dB 频率:U_{rel}=1×10^{-8} (k=2) Level:U_{rel}=0.20 dB , Frequency:U_{rel}=1×10^{-8} (k=2)
电场探头/读出装置 Electromagnetic Field Meter/reader /EP183/8053A	000WJ40805&1420K211 37	XDdj2010-1988 /2011-09-24	U=(0.94～1.3) dB, k=2

5. 校准地点、环境条件：
Place and environmental conditions of the calibration:
地点 Place 无线电室（Radio Lab.） 温度 Temperature (20±5) ℃ 相对湿度 RH <80 %

6. 被校准仪器限制使用条件：
Limiting condition of the instrument calibrated:

注：1. 本证书校准结果只与受校准仪器有关。
2. 未经本中心书面批准，不得部分复制此证书。
Note:1. The results relate only to the items calibrated.
2. This certificate shall not be reproduced except in full, without the written approval of our laboratory.

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CNAS 校准 CNAS L0730

校准结果
RESULTS OF CALIBRATION

证书编号 WWD20101583 原始记录号 020101583 第 3 页,共 3 页
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1 场强测量准确度 (见表1)
Field Strength Measuring Accuracy (See Table 1)

表1 (Table 1)

探头 Probe	频率 Frequency	标准值 Reference Value	被检表示值 Indication Value	误差(dB) Error	允许误差 MPE	结论 Conclusion
HI-6005	27 MHz	1 V/m	1.08 V/m	+0.67	±2.0 dB	合格(Pass)
	27 MHz	2 V/m	2.21 V/m	+0.87	±2.0 dB	合格(Pass)
	27 MHz	5 V/m	5.07 V/m	+0.12	±2.0 dB	合格(Pass)
	27 MHz	10 V/m	9.93 V/m	-0.06	±2.0 dB	合格(Pass)
	27 MHz	20 V/m	19.29 V/m	-0.31	±2.0 dB	合格(Pass)

2 频率响应 (见表2)
Frequency Response (See Table 2)

表2 (Table 2)

探头 Probe	频率 Frequency	标准值 Reference Value	被检表示值 Indication Value	误差(dB) Error	允许误差 MPE	结论 Conclusion
HI-6005	100 kHz	10 V/m	8.30 V/m	-1.62	N/A	合格(Pass)
	1 MHz	10 V/m	9.83 V/m	-0.15	N/A	合格(Pass)
	10 MHz	10 V/m	10.44 V/m	+0.37	N/A	合格(Pass)
	27 MHz	10 V/m	9.93 V/m	-0.06	±2.0 dB	合格(Pass)
	50 MHz	10 V/m	9.74 V/m	-0.23	±2.0 dB	合格(Pass)
	100 MHz	10 V/m	9.82 V/m	-0.16	±2.0 dB	合格(Pass)
	200 MHz	10 V/m	9.68 V/m	-0.28	±2.0 dB	合格(Pass)
	300 MHz	10 V/m	9.36 V/m	-0.57	±2.0 dB	合格(Pass)
	1 GHz	10 V/m	9.12 V/m	-0.80	±2.0 dB	合格(Pass)
	2 GHz	10 V/m	9.76 V/m	-0.21	±2.0 dB	合格(Pass)
	3 GHz	10 V/m	9.03 V/m	-0.89	N/A	合格(Pass)

说明(Note):
1 测量结果的扩展不确定度:
Expanded uncertainty of measurement:
U=1.5 dB，k=2
(依据 JJF1059—1999 测量不确定度评定与表示)
(In accordance with JJF1059-1999 Evaluation and Expression of Uncertainty in Measurement)
2 建议校准周期不超过1年。
The period of calibration advised within one year.

.....End of Report.....