

# FCC Radio Test Report

## FCC ID: 2AYOTTPA-M001P

This report concerns: Original Grant

**Project No.** : 2012C109  
**Equipment** : HP USI Garaged Pen  
**Brand Name** : HP  
**Test Model** : TPA-M001P  
**Series Model** : N/A  
**Applicant** : Shenzhen qianfenyi intelligent technology co., LTD  
**Address** : 302, Floor 3 Chuangxingda Commercial Center Building, Bao'an District, Shenzhen, PRC  
**Manufacturer** : Shenzhen qianfenyi intelligent technology co., LTD  
**Address** : 302, Floor 3 Chuangxingda Commercial Center Building, Bao'an District, Shenzhen, PRC  
**Date of Receipt** : Dec. 18, 2020  
**Date of Test** : Jan. 04, 2021 ~ Jan. 15, 2021  
**Issued Date** : Jan. 28, 2021  
**Report Version** : R00  
**Test Sample** : Sample No.: DG2020121878  
**Standard(s)** : FCC Part15, Subpart C (15.209)  
ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.



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Approved by : Ethan Ma



Certificate #5123.02

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### Declaration

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

**BTL**'s reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the U.S. Government.

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**BTL**'s laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

**BTL** is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

### Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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**REPORT ISSUED HISTORY**

Report Version	Description	Issued Date
R00	Original Issue.	Jan. 28, 2021

## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

<b>FCC Part15, Subpart C (15.209)</b>				
<b>Standard(s) Section</b>	<b>Test Item</b>	<b>Test Result</b>	<b>Judgment</b>	<b>Remark</b>
15.207	AC Power Line Conducted Emissions	N/A	N/A	-----
15.209(a)	Radiated Emissions	APPENDIX A APPENDIX B	PASS	-----
-----	Bandwidth	N/A	N/A	-----

NOTE:

- (1) "N/A" denotes test is not applicable to this device.

## 1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

## 1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

The BTL measurement uncertainty as below table:

### A. Radiated emissions Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB03	CISPR	9kHz ~ 30MHz	-	3.02
		30MHz ~ 200MHz	V	4.26
		30MHz ~ 200MHz	H	3.38
		200MHz ~ 1,000MHz	V	3.98
		200MHz ~ 1,000MHz	H	3.94

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

## 1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
Radiated Emissions-9K-30MHz	25°C	60%	DC 5V	Kwok Guo
Radiated Emissions-30 MHz to 1000MHz	26°C	52%	DC 5V	Kwok Guo

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	HP USI Garaged Pen
Brand Name	HP
Test Model	TPA-M001P
Series Model	N/A
Model Difference(s)	N/A
Power Rating	DC 1.0-2.7V via built-in supercap or DC 5V, 500mA via DC source.
Operation Frequency	120-480kHz (declared by manuufacurer)

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

The radiated power for this device is too to be observed in normal radiated emission testing.

### 2.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	TX Mode

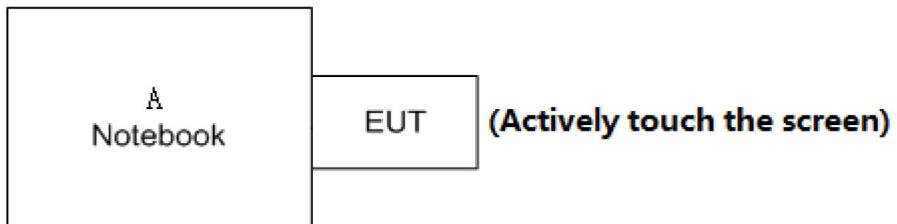
Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

Radiated emissions test	
Final Test Mode	Description
Mode 1	TX Mode

Note:

- (1) The EUT has the maximum average output power when the support unit is in low power and being charged by EUT.

## 2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



## 2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model No.	Series No.
A	Notebook	ASUS	C436F	KBNTCVN0001449

Item	Cable Type	Shielded Type	Ferrite Core	Length
-	-	-	-	-

### 3. RADIATED EMISSION TEST

#### 3.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

##### LIMITS OF RADIATED EMISSION MEASUREMENT(9 kHz-1000 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

#### 3.2 TEST PROCEDURE

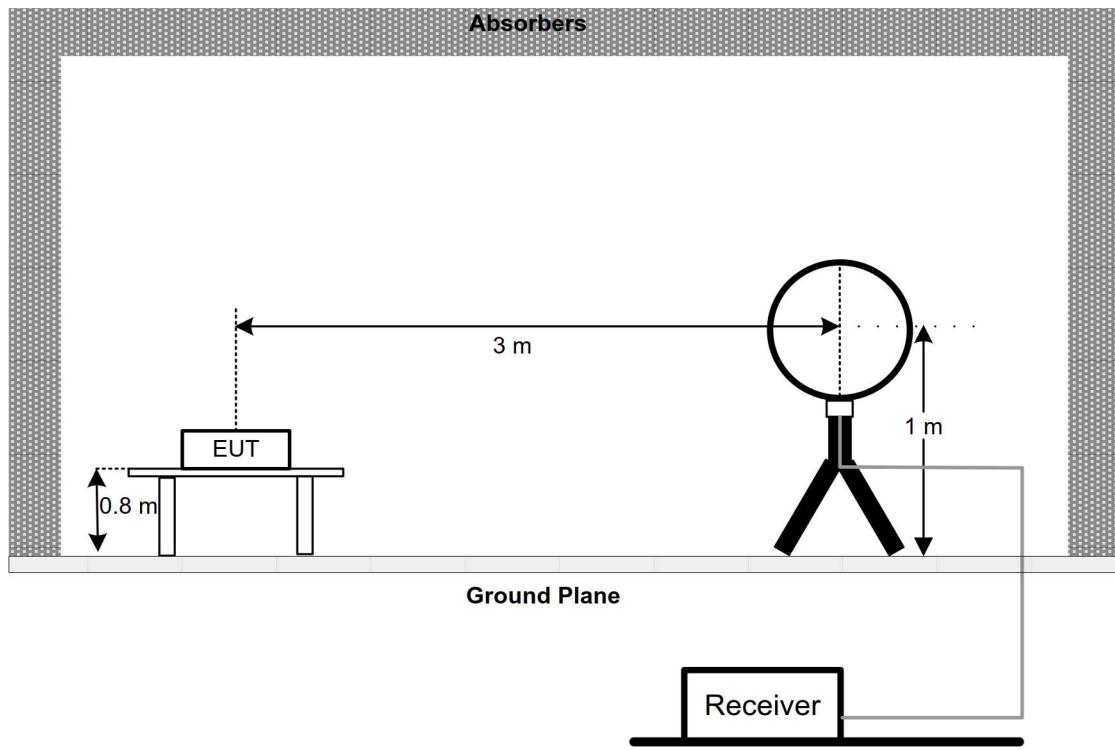
- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- b. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- d. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1 GHz)
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 3.3 DEVIATION FROM TEST STANDARD

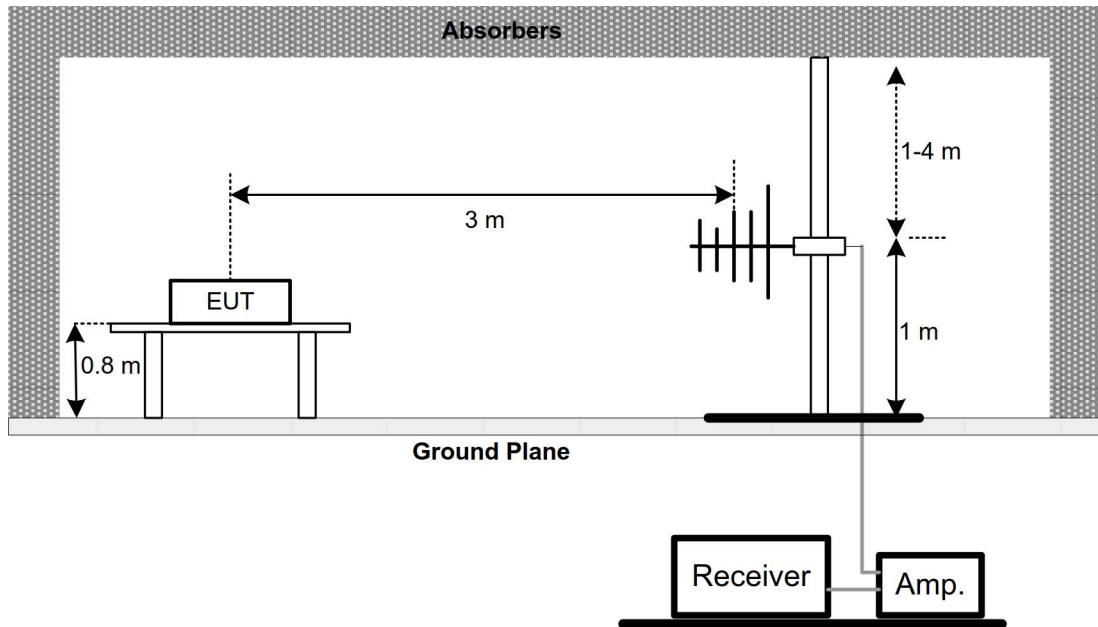
No deviation.

### 3.4 TEST SETUP

**9 kHz-30 MHz**



**30 MHz to 1 GHz**



**3.5 EUT OPERATING CONDITIONS**

The EUT was programmed to be in continuously transmitting mode.

**3.6 TEST RESULT - 9 kHz TO 30 MHz**

Please refer to the APPENDIX A.

Remark:

- (1) Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB).
- (2) Limit line = specific limits (dBuV) + distance extrapolation factor.

**3.7 TEST RESULTS - 30 MHz TO 1000 MHz**

Please refer to the APPENDIX B.

**4. MEASUREMENT INSTRUMENTS LIST**

<b>Radiated Emissions - 9 kHz to 30 MHz</b>					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	EM	EM-6876-1	230	Apr. 16, 2021
2	Cable	N/A	RG 213/U	N/A	May 29, 2021
3	EMI Test Receiver	R&S	ESCI	100895	Feb. 28, 2021
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
5	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

<b>Radiated Emissions - 30 MHz to 1 GHz</b>					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 09, 2021
2*	Amplifier	HP	8447D	2944A09673	Aug. 11, 2021
3	Receiver	Agilent	N9038A	MY52130039	Jul. 25, 2021
4	Cable	emci	LMR-400(30MHz-1GHz)(8m+5m)	N/A	May 22, 2021
5	Controller	CT	SC100	N/A	N/A
6	Controller	MF	MF-7802	MF780208416	N/A
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

Remark: "N/A" denotes no model name, serial no. or calibration specified.

"\*" calibration period of equipment list is three year.

Except \* item, all calibration period of equipment list is one year.

**5. EUT TEST PHOTO****Radiated Emissions Test Photos****9 kHz to 30 MHz (Polarization:X)****Refer to set up photos****9 kHz to 30 MHz (Polarization:Y)****Refer to set up photos**

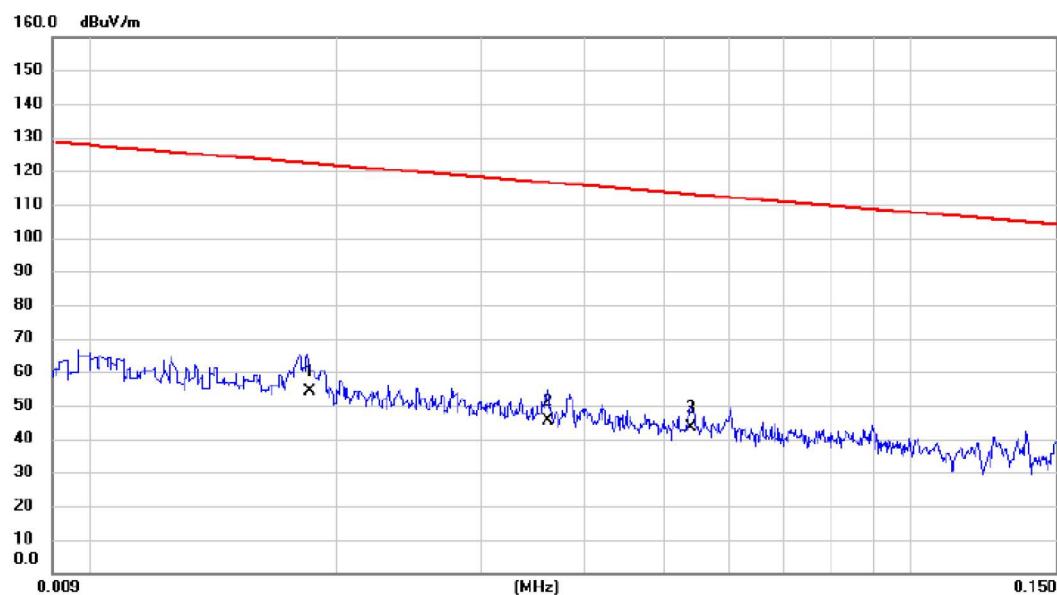
**9 kHz to 30 MHz (Polarization:Z)**

**Refer to set up photos**

**Radiated Emissions Test Photos****30 MHz to 1000 MHz****Refer to set up photos**

**APPENDIX A - RADIATED EMISSION - 9 KHZ TO 30 MHZ**

Test Mode TX Mode

**Polarization:X**

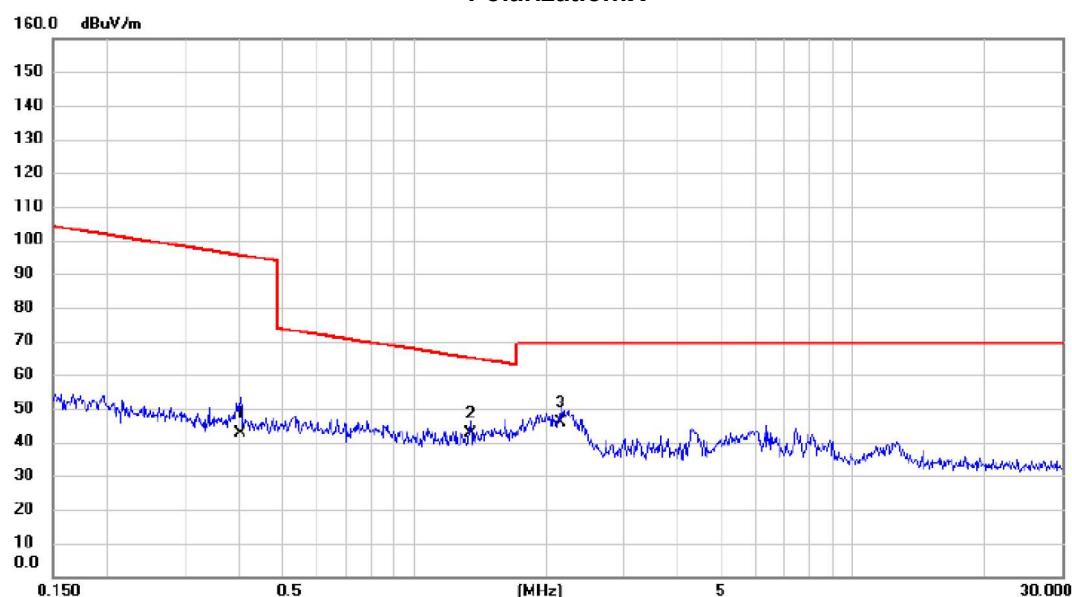
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table		
			Level	Factor	ment						
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	0.0185	40.58	13.68	54.26	122.26	-68.00	AVG			
2		0.0361	32.67	12.79	45.46	116.45	-70.99	AVG			
3		0.0540	30.82	12.44	43.26	112.96	-69.70	AVG			

**REMARKS:**

(1) Measurement Value = Reading Level + Correct Factor.  
(2) Margin Level = Measurement Value - Limit Value.

Test Mode

TX Mode

**Polarization:X**

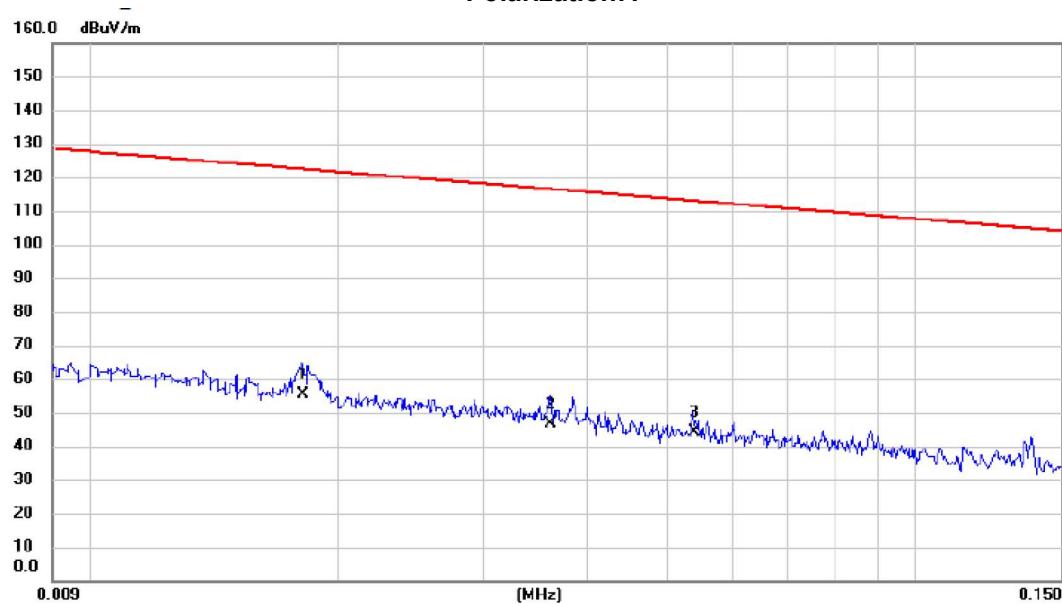
No. Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit	Margin	Antenna Height	Table Degree	Comment
		dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	
1	0.4020	30.25	12.25	42.50	95.52	-53.02	AVG		
2 *	1.3450	30.93	11.63	42.56	65.03	-22.47	QP		
3	2.1552	34.75	11.23	45.98	69.54	-23.56	QP		

**REMARKS:**

(1) Measurement Value = Reading Level + Correct Factor.  
(2) Margin Level = Measurement Value - Limit Value.

Test Mode

TX Mode

**Polarization:Y**

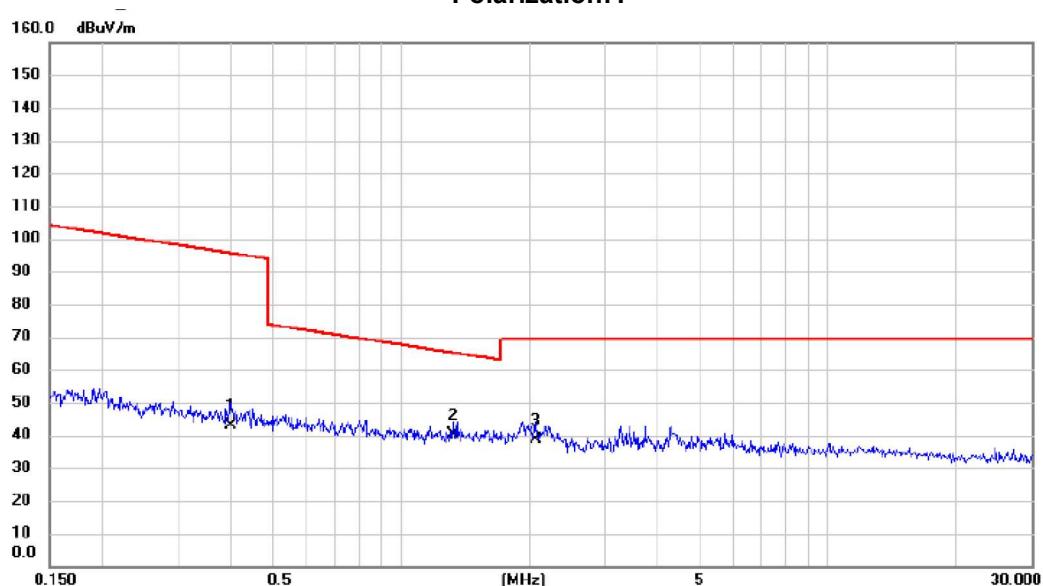
No. Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table	Degree	
		Level	Factor	ment						
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1 *	0.0181	41.55	13.81	55.36	122.45	-67.09	AVG			
2	0.0361	33.93	12.79	46.72	116.45	-69.73	AVG			
3	0.0540	31.57	12.44	44.01	112.96	-68.95	AVG			

**REMARKS:**

(1) Measurement Value = Reading Level + Correct Factor.  
(2) Margin Level = Measurement Value - Limit Value.

Test Mode

TX Mode

**Polarization:Y**

No.	Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit	Margin	Antenna Height cm	Table Degree	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB	Detector	degree	
1		0.3997	30.75	12.26	43.01	95.57	-52.56	AVG		
2	*	1.3238	28.49	11.64	40.13	65.17	-25.04	QP		
3		2.0660	27.37	11.27	38.64	69.54	-30.90	QP		

**REMARKS:**

(1) Measurement Value = Reading Level + Correct Factor.  
(2) Margin Level = Measurement Value - Limit Value.

Test Mode

TX Mode

**Polarization:Z**

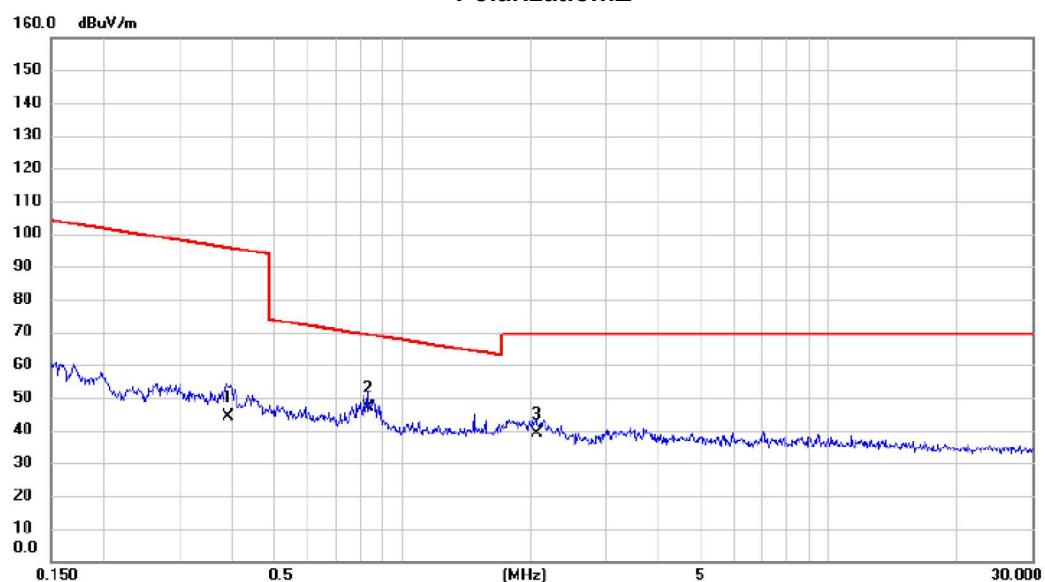
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table			
			Level	Factor	ment							
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	0.0182	42.16	13.78	55.94	122.40	-66.46	AVG				
2		0.0384	31.62	12.73	44.35	115.92	-71.57	AVG				
3		0.0603	28.76	12.48	41.24	112.00	-70.76	AVG				

**REMARKS:**

(1) Measurement Value = Reading Level + Correct Factor.  
(2) Margin Level = Measurement Value - Limit Value.

Test Mode

TX Mode

**Polarization:Z**

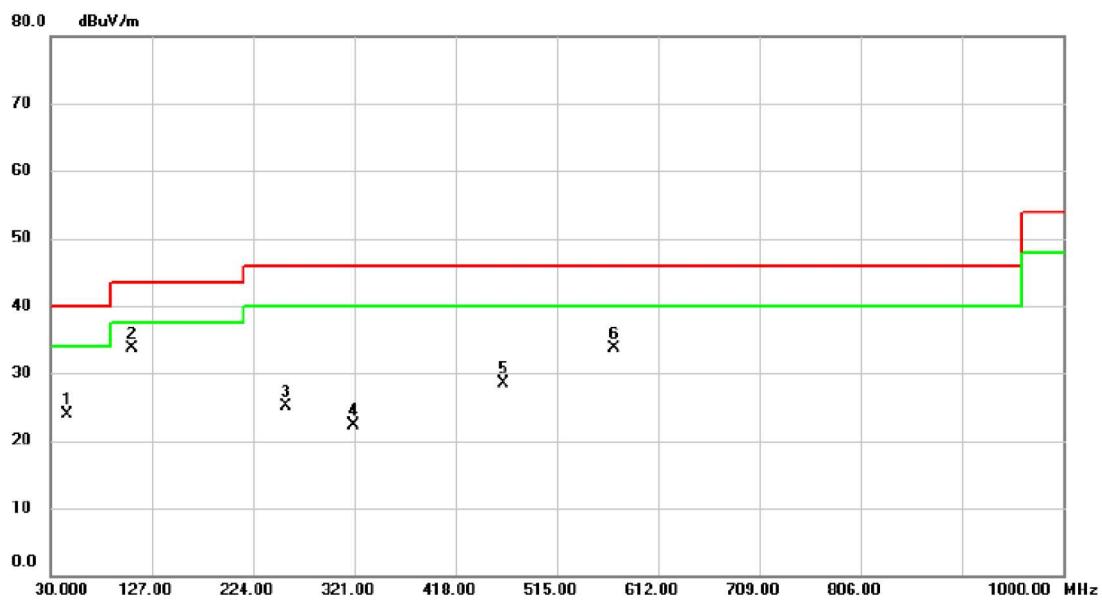
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		0.3893	31.92	12.29	44.21	95.80	-51.59	AVG		
2	*	0.8305	35.26	11.87	47.13	69.22	-22.09	QP		
3		2.0660	27.84	11.27	39.11	69.54	-30.43	QP		

**REMARKS:**

(1) Measurement Value = Reading Level + Correct Factor.  
(2) Margin Level = Measurement Value - Limit Value.

**APPENDIX B - RADIATED EMISSION - 30 MHZ TO 1000 MHZ**

Test Mode TX Mode

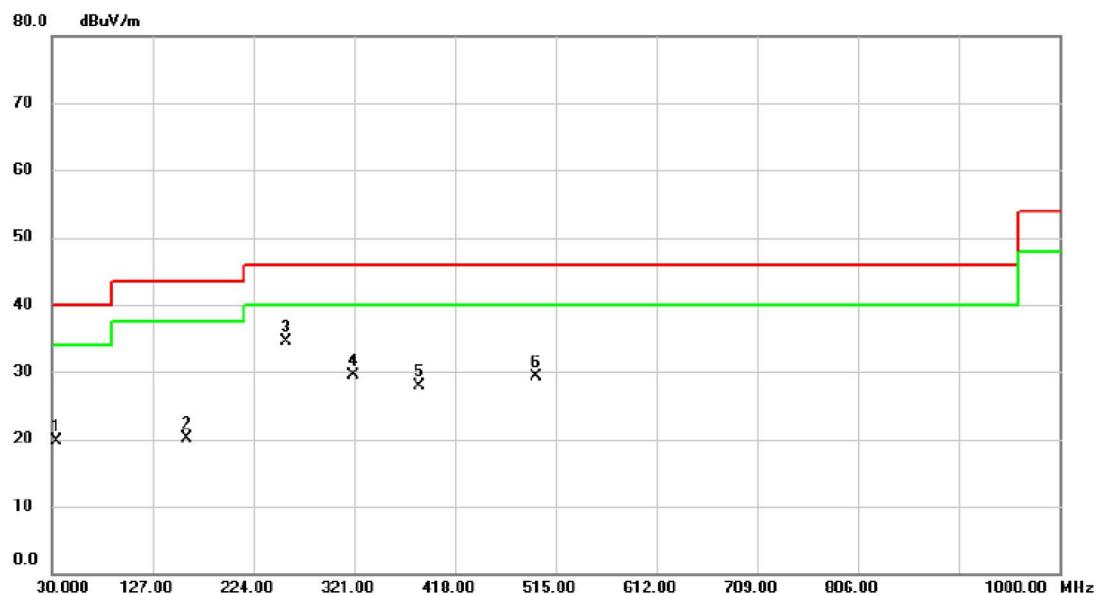
**Vertical**

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor	Measure- ment dBuV/m	Limit dB	Margin Detector	Comment
1		46.490	37.94	-13.97	23.97	40.00	-16.03	peak
2	*	108.570	48.13	-14.33	33.80	43.50	-9.70	peak
3		256.010	37.74	-12.65	25.09	46.00	-20.91	peak
4		320.030	33.06	-10.68	22.38	46.00	-23.62	peak
5		463.590	36.02	-7.54	28.48	46.00	-17.52	peak
6		569.320	39.88	-6.24	33.64	46.00	-12.36	peak

**REMARKS:**

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode TX Mode

**Horizontal**

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV/m	dB			
1		33.880	34.55	-14.80	19.75	40.00	-20.25	peak	
2		159.980	30.83	-10.67	20.16	43.50	-23.34	peak	
3 *		256.010	47.14	-12.65	34.49	46.00	-11.51	peak	
4		320.030	40.23	-10.68	29.55	46.00	-16.45	peak	
5		384.050	37.35	-9.38	27.97	46.00	-18.03	peak	
6		495.600	36.70	-7.30	29.40	46.00	-16.60	peak	

**REMARKS:**

(1) Measurement Value = Reading Level + Correct Factor.  
(2) Margin Level = Measurement Value - Limit Value.

**End of Test Report**