UltraTech
Group of Labs

Ultratech's Accreditations:

ANSI American National Standards Institute
0685

31040/SIT

C-1376

Canada
46390-2049

NVLAP
200093-0

BSMI
SL2-IN-E-1119R

3000 Bristol Circle,
Oakville, Ontario,
Canada L6H 6G4

Tel.: (905) 829-1570
Fax.: (905) 829-8050

Website: www.ultratech-labs.com
Email: vic@ultratech-labs.com

Apr. 27, 2006

TIMCO ENGINEERING INC.
P.O. Box 370
849 N.W. State Road 45
Newberry, Florida
USA 32669

Subject: **FCC Certification Authorization Application under FCC PART 15, Subpart C, Sec. 15.209 - Low Power Transmitters operating in the frequency band 125 kHz.**

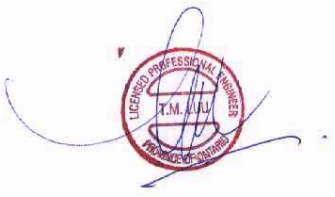
Product: **VProx,A,R**
Model No.: **VPrx,A,R**
FCC ID: **QC4-VPRXAR**

Dear Sir/Madam

As appointed agent for Bioscrypt Inc., we would like to submit the application for certification of the above product. Please review all required documents uploaded to your E-Filing web site.

If you have any queries, please do not hesitate to contact us.

Yours truly,



Tri Minh Luu, P. Eng.,
V.P., Engineering

Encl

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Email: vic@ultratech-labs.com

Apr. 27, 2006

Bioscrypt Inc.
505 Cochrane Drive
Markham, Ontario
Ontario, L3R 8E3

Attn.: **Mr. Vladimir Lazic**

Subject: **FCC Certification Application Testing under FCC PART 15, Subpart C, Sec. 15.209 – Low Power Transmitters operating in the frequency band 125 kHz.**

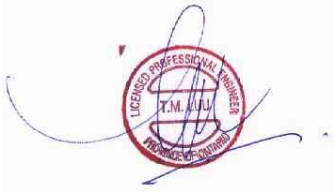
Product: **VProx,A,R**
Model No.: **VPrx,A,R**
FCC ID: **QC4-VPRXAR**

Dear Mr. Lazic,

The product sample, as provided by you, has been tested and found to comply with **FCC PART 15, Subpart C, Sec. 15.209 - Low Power Transmitters operating in the frequency band 125 kHz.**

Enclosed you will find copies of the engineering report. If you have any queries, please do not hesitate to contact us.

Yours truly,



Tri Minh Luu, P. Eng.,
V.P., Engineering

Encl

ENGINEERING TEST REPORT

VProx,A,R
Model No.: VPrx,A,R

FCC ID: QC4-VPRXAR

Applicant: **Bioscrypt Inc.**
505 Cochrane Drive
Markham, Ontario
Ontario, L3R 8E3

In Accordance With

FEDERAL COMMUNICATIONS COMMISSION (FCC)
PART 15, SUBPART C, SEC. 15.209
Low Power Transmitters
operating in the frequency band 125 kHz

UltraTech's File No.: MYT-092FCC15C

This Test report is Issued under the Authority of Tri M. Luu, Professional Engineer, Vice President of Engineering UltraTech Group of Labs Date: Apr. 27, 2006	
Report Prepared by: Mr. Tri M. Luu Issued Date: Apr. 27, 2006	Tested by: Mr. Hung Trinh Test Dates: Apr. 26, 2006

- *The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.*
- *This report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.*

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4
Tel.: (905) 829-1570 Fax.: (905) 829-8050
Website: www.ultratech-labs.com Email: vic@ultratech-labs.com, Email: tri.luu@sympatico.ca

TABLE OF CONTENTS

EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	FCC Part 15, Subpart C, Section 15.209
Title	Telecommunication - Code of Federal Regulations, CFR 47, Part 15
Purpose of Test:	To gain FCC Certification Authorization for Low Power Transmitters operating in the Frequency Band 125 kHz .
Test Procedures	Both conducted and radiated emissions measurements were conducted in accordance with American National Standards Institute ANSI C63.4 - American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
Environmental Classification:	• Light-industry, Commercial • Industry

1.2. RELATED SUBMITAL(S)/GRANT(S)

None

1.3. NORMATIVE REFERENCES

FCC CFR Parts 0-19	Feb. 16 - 2006	Code of Federal Regulations – Telecommunication
ANSI C63.4	2004	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
CISPR 22 +A1 EN 55022	2003-04-10 2004-10-14 2003	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
CISPR 16-1-1	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus
CISPR 16-2-1	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 2-1: Conducted disturbance measurement
CISPR 16-2-3	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 2-3: Radiated disturbance measurement

EXHIBIT 1. PERFORMANCE ASSESSMENT

1.1. CLIENT INFORMATION

APPLICANT:	
Name:	Bioscrypt Inc.
Address:	505 Cochrane Drive Markham, Ontario Ontario, L3R 8E3
Contact Person:	Mr. Vladimir Lazic Phone #: 905-940-7787 Fax #: 905-940-7642 Email Address: vladimir.lazic@bioscrypt.com

MANUFACTURER:	
Name:	Bioscrypt Inc.
Address:	505 Cochrane Drive Markham, Ontario Ontario, L3R 8E3
Contact Person:	Mr. Vladimir Lazic Phone #: 905-940-7787 Fax #: 905-940-7642 Email Address: vladimir.lazic@bioscrypt.com

1.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

Brand Name	Bioscrypt Inc.
Product Name	VProx,A,R
Model Name or Number	VPrx,A,R
Serial Number	N/A
Type of Equipment	Low Power Transmitters
Input Power Supply Type	7 to 24 Vdc using a generic external power supply
Primary User Functions of EUT:	finger print reader

1.3. EUT'S TECHNICAL SPECIFICATIONS

Vprox, A,R employs an HID 125 kHz Radio Transmitter Module (ProxPoint 4065A OEM)

TRANSMITTER	
Equipment Type:	▪ Base station (fixed use)
Intended Operating Environment:	▪ Commercial, light industry & heavy industry
Power Supply Requirement:	7 to 24 Vdc
E-Field of the Carrier Signal:	50.9 dBuV/m at 10 meters
Operating Frequency:	125 kHz
RF Output Impedance:	50 Ohms
Channel Spacing:	N/A
Duty Cycle:	10%
20 dB Bandwidth:	1.79 kHz
Modulation Type:	ASK 20% duty cycle @ 100 mS
Emission Designation:	1K79P0N
Antenna Connector Type:	Manufacturer: HID Type: LC (Coil), soldered to the printed circuit board Model: Integral Frequency Range: 125KHz

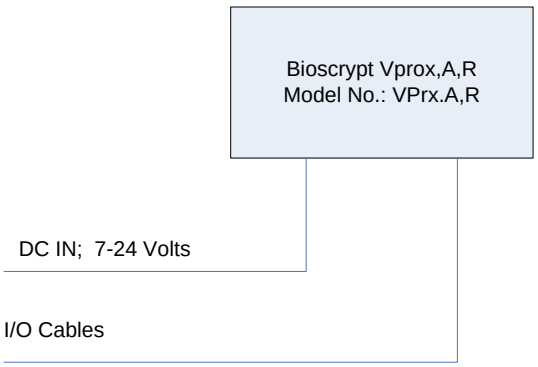
1.4. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	RS-232	1x 2 wires	DB-15 (all ports)	Non shielded
2	RS-485	1x 2 wires	DB-15	Non shielded
3	Wiegand Input	1x 2 wires	DB-15	Non shielded
4	Wiegand Output	1x 2 wires	DB-15	Non shielded
5	Signal GND	1	DB-15	Non shielded
6	Wiegand GND	1	DB-15	Non shielded
7	Power	1	DB-15	Non shielded
8	Power Return	1	DB-15	Non shielded
9	Line Trigger (GPO)	1	DB-15	Non shielded
10	Earth GND	1	DB-15	Non shielded
11	USB Service Port	1	Under Secure Cover	

1.5. ANCILLARY EQUIPMENT

N/A

1.6. GENERAL TEST SETUP



- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

EXHIBIT 2. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

2.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21°C
Humidity:	51%
Pressure:	102 kPa
Power input source:	12 Vdc

2.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

The Model VPrx,A,R was set to transmit continuously during tests.

EXHIBIT 3. SUMMARY OF TEST RESULTS

3.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- AC Powerline Conducted Emissions were performed in UltraTech's shielded room, 16'(L) by 12'(W) by 12'(H).

- Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with FCC office (FCC File No.: 31040/SIT 1300B3) and Industry Canada office (Industry Canada File No.: IC2049-1). Last Date of Site Calibration: June. 20, 2005.

3.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC PARAGRAPH.	TEST REQUIREMENTS	COMPLIANCE (YES/NO)
15.203	Antenna Requirement	Yes. Integral antenna
15.209 & 15.205	Transmitter Radiated Emissions - Fundamental, Harmonic and Spurious	Yes
15.115(c)	20 dB Bandwidth	Yes
15.107(a)	AC Power Line Conducted Emissions Measurements (Transmit & Receive)	Yes
The digital circuit portion of the EUT has been tested and verified to comply with FCC Part 15, Subpart B, Class B Digital Devices, the associated Radio Receiver operating in 125 kHz is exempted from FCC authorization . The engineering test report can be provided upon FCC requests.		

3.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

EXHIBIT 4. MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS

4.1. TEST PROCEDURES

This section contains test results only. Details of test methods and procedures can be found in ANSI C63.4 and ULTR-P001-2004.

4.2. MEASUREMENT UNCERTAINTIES

The measurement uncertainties stated were calculated in accordance with requirements of UKAS Document LAB 34 with a confidence level of 95%. Please refer to Exhibit 6 for Measurement Uncertainties.

4.3. MEASUREMENT EQUIPMENT USED:

The measurement equipment used complied with the requirements of the Standards referenced in the Methods & Procedures ANSI C63.4 and CISPR 16-1.

4.4. AC POWERLINE CONDUCTED EMISSIONS @ FCC PART 15, SUBPARTS B & C, PARA.15.107(A) & 15.207

4.4.1. Limits

The equipment shall meet the limits of the following table:

	CLASS B LIMITS		
Test Frequency Range (MHz)	**Quasi-Peak (dBμV)**	**Average* (dBμV)**	**Measuring Bandwidth**
0.15 to 0.5	66 to 56*	56 to 46*	RBW = 9 kHz VBW ≥ 9 kHz for QP VBW = 1 Hz for Average
0.5 to 5	56	46	RBW = 9 kHz VBW ≥ 9 kHz for QP VBW = 1 Hz for Average
5 to 30	60	50	RBW = 9 kHz VBW ≥ 9 kHz for QP VBW = 1 Hz for Average

* Decreasing linearly with logarithm of frequency

4.4.2. Method of Measurements

Refer to Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4 for measurement methods

4.4.3. Test Equipment List

Test Instruments	**Manufacturer**	**Model No.**	**Serial No.**	**Frequency Range**
EMI Receiver System/Spectrum Analyzer with built-in Amplifier	Hewlett Packard	HP 8546A	3520A00248	9KHz-5.6GHz, 50 Ohms
Transient Limiter	Hewlett Packard	11947A	*310701998*	9 kHz – 200 MHz 10 dB attenuation
L.I.S.N.	EMCO	3825/2	*89071531*	9 kHz – 200 MHz 50 Ohms / 50 μH
12'x16'x12' RF Shielded Chamber	RF Shielding	…	..	…

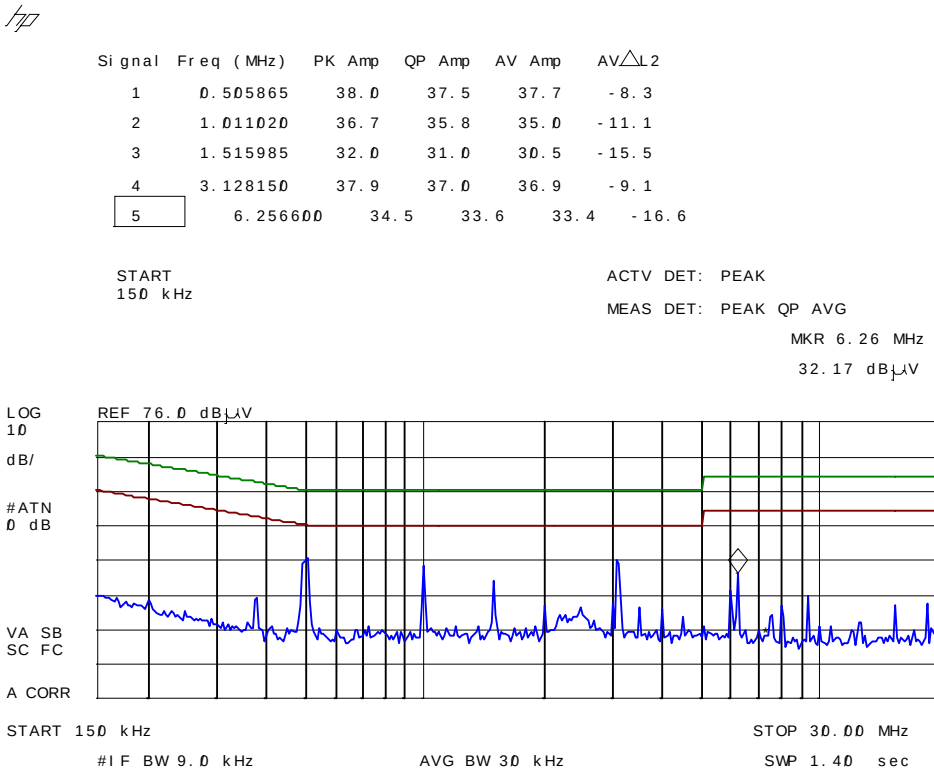
4.4.4. Photographs of Test Setup

Refer to the Photographs #1 & #2 in Annex 1 for setup and arrangement of equipment under tests and its ancillary equipment.

4.4.5. Test DATA

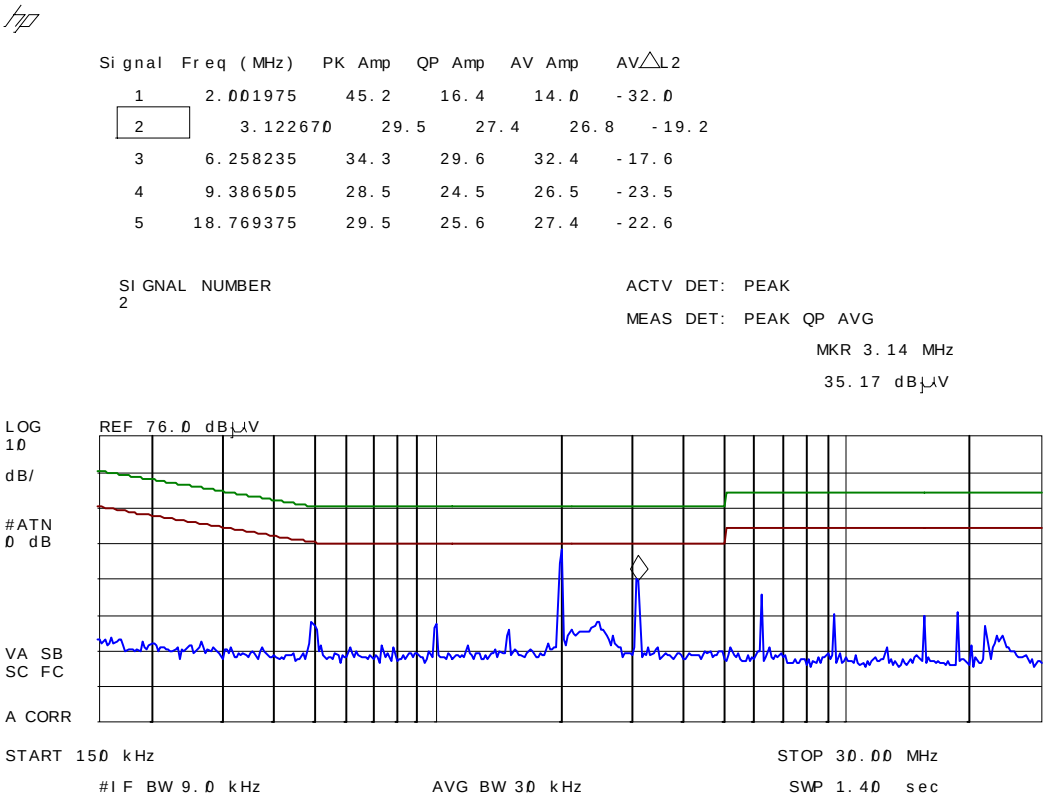
Conforms. Refer to Plots # 1 to 6 for details of measurements

Plot #1: DC POWER LINE CONDUCTED EMISSION MEASUREMENTS				
Detector: [**X**] PEAK [**X**] QUASI-PEAK [**X**] AVERAGE		Temp: 22C°	Humidity: 12%	File#: MYT-092Q
Line Tested: 1	Line Voltage 7 Vdc	Test Tech: Phuong	Test Date: April 17, 06	
Standard: FCC 15B	Comments: Pass			



Plot #2: DC POWER LINE CONDUCTED EMISSIONS MEASUREMENTS

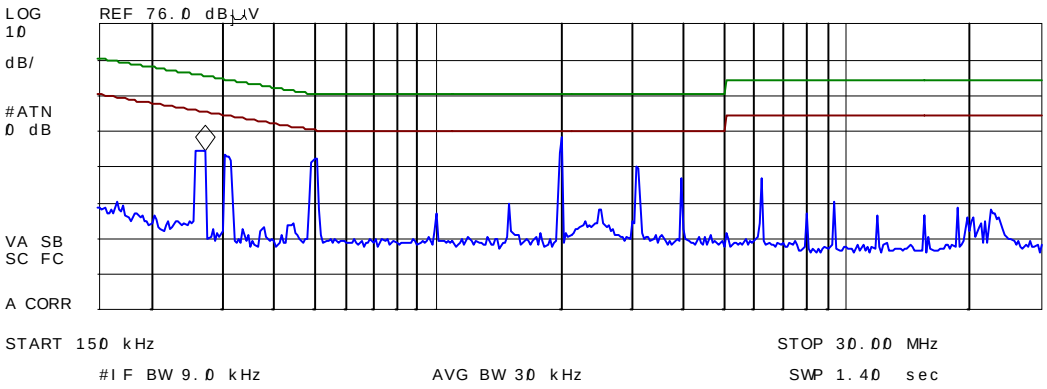
Detector: [X] PEAK [X] QUASI-PEAK [X] AVERAGE		Temp: 22C°	Humidity: 12%	File#: MYT-092Q
Line Tested: 2	Line Voltage 7 Vdc	Test Tech: Phuong	Test Date: April 17, 06	
Standard: FCC 15B	Comments: Pass			



Plot #3: DC POWER LINE CONDUCTED EMISSIONS MEASUREMENTS

Detector: [**X**] PEAK [**X**] QUASI-PEAK [**X**] AVERAGE	Temp: 22C°	Humidity: 12%	File#: MYT-092Q
Line Tested: 1	Line Voltage 12 Vdc	Test Tech: Phuong	Test Date: April 17, 06
Standard: FCC 15B	Comments: Pass		

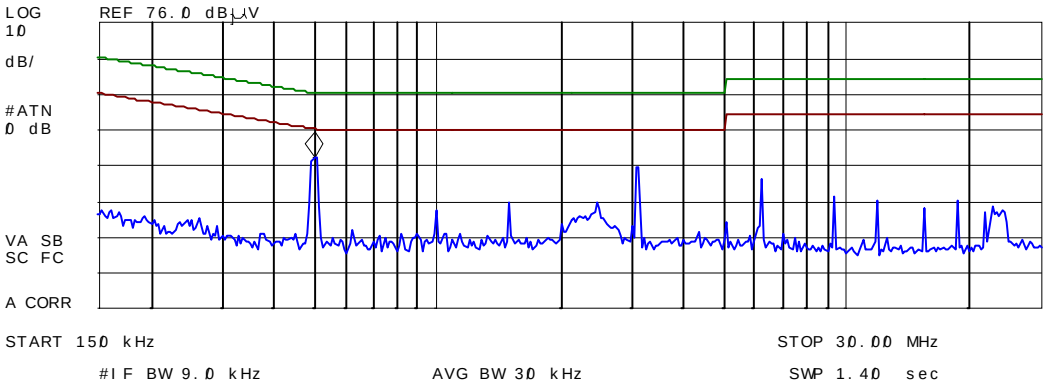
Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV△L2
2	0.504400	40.0	38.6	39.1	-6.9
3	6.258450	34.9	33.8	33.5	-16.5
4	18.776695	27.1	25.3	24.0	-26.0
5	0.273265	30.1	27.7	12.3	-38.8
6	0.273265	30.1	27.7	12.3	-38.8



Plot #4: DC POWER LINE CONDUCTED EMISSIONS MEASUREMENTS

Detector: [X] PEAK [X] QUASI-PEAK [X] AVERAGE		Temp: 22C°	Humidity: 12%	File#: MYT-092Q
Line Tested: 2	Line Voltage 12 Vdc	Test Tech: Phuong	Test Date: April 17, 06	
Standard: FCC 15B	Comments: Pass			

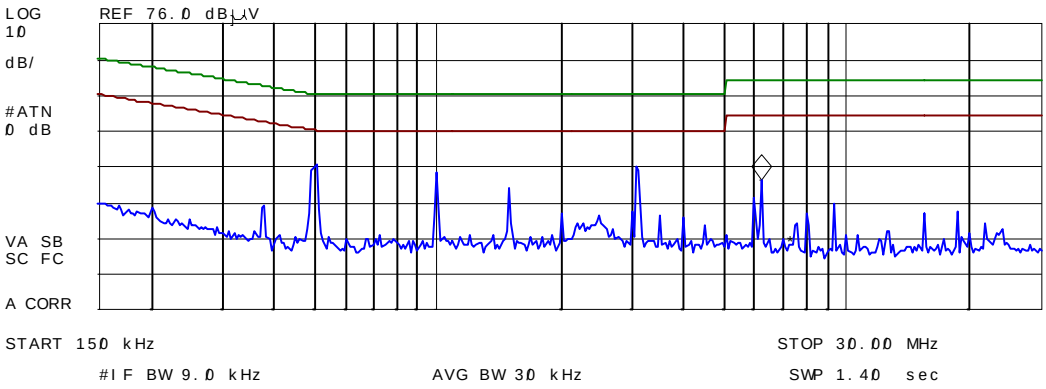
Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV△L2
1	0.504805	39.6	39.4	39.4	-6.6
2	3.127820	37.8	37.2	37.0	-9.0
3	6.256225	34.7	33.9	33.7	-16.3
4	18.766590	29.2	28.1	27.1	-22.9



Plot #5: DC POWER LINE CONDUCTED EMISSIONS MEASUREMENTS

Detector: [**X**] PEAK [**X**] QUASI-PEAK [**X**] AVERAGE	Temp: 22C°	Humidity: 12%	File#: MYT-092Q
Line Tested: 1	Line Voltage 24 Vdc	Test Tech: Phuong	Test Date: April 17, 06
Standard: FCC 15B	Comments: Pass		

Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV△L2
1	0.505865	38.0	37.5	37.7	-8.3
2	1.011020	36.7	35.8	35.0	-11.1
3	1.515985	32.0	31.0	30.5	-15.5
4	3.128150	37.9	37.0	36.9	-9.1
5	6.256600	34.5	33.6	33.4	-16.6



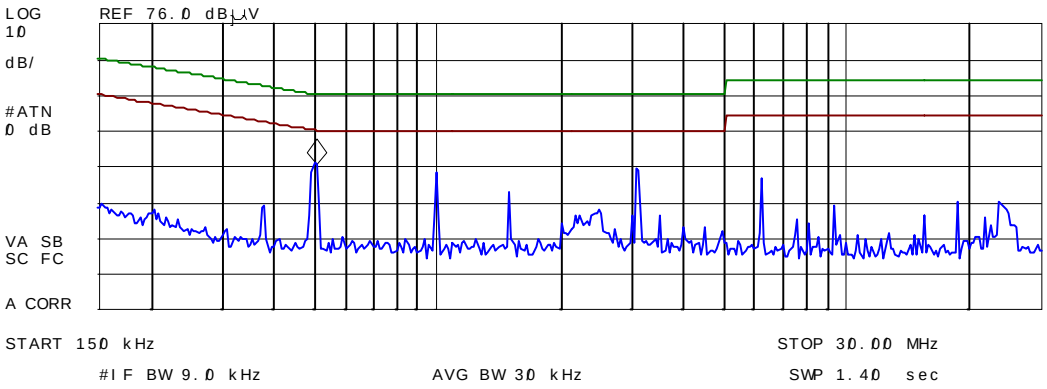
Plot #6: DC POWER LINE CONDUCTED EMISSIONS MEASUREMENTS

Detector: [**X**] PEAK [**X**] QUASI-PEAK [**X**] AVERAGE	Temp: 22C°	Humidity: 12%	File#: MYT-092Q
Line Tested: 2	Line Voltage 24 Vdc	Test Tech: Phuong	Test Date: April 17, 06
Standard: FCC 15B	Comments: Pass		

Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV△L2
1	0.505660	38.6	38.1	38.0	-8.0
2	1.009870	36.3	35.5	35.2	-10.8
3	1.515985	32.5	31.0	30.5	-15.5
4	3.129460	37.7	36.9	36.8	-9.2
5	6.258040	34.8	33.6	33.4	-16.6

SIGNAL NUMBER
1

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 510 kHz
36.43 dBµV



- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

4.5. 26 DB BANDWIDTH @ FCC 15.215(C)

4.5.1. Limits

The rf spectrum shall not stay in the restricted band specified in FCC 15.205

4.5.2. Method of Measurements

Refer to ANSI C63.4

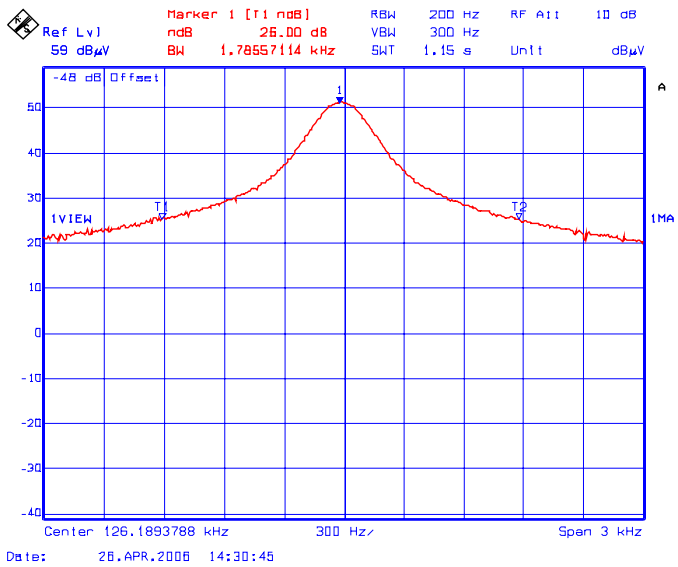
The transmitter output was connected to the spectrum analyzer through an attenuator. the bandwidth of the fundamental frequency was measured with the spectrum analyzer using RBW = 1% of approximate 26dB BW, VBW > RBW, Span = approx. 3x26dB BW. The 26 dB Bandwidth was measured and recorded.

4.5.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Rohde & Schawrz	FSEK20/B4/B21	834157/005	9 kHz – 40 GHz with external mixer

4.5.4. Test Data

CHANNEL FREQUENCY (KHz)	26 dB Bandwidth (KHz)
125.0	1.79



- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

4.6. TRANSMITTER SPURIOUS EMISSIONS (RADIATED @ 3 METERS), FCC CFR 47, PARA. 15.209 & 15.205

4.6.1. Limits

The fundamental frequency shall not fall within any restricted frequency band specified in 15.205
All rf other emissions shall not exceed the general radiated emission limits specified in @ 15.209(a).

FCC CFR 47, Part 15, Subpart C, Para. 15.205(a) - Restricted Frequency Bands

MHz	MHz	MHz	GHz
0.090 - 0.110	162.0125 - 167.17	2310 - 2390	9.3 - 9.5
0.49 – 0.51	167.72 - 173.2	2483.5 - 2500	10.6 - 12.7
2.1735 - 2.1905	240 - 285	2655 - 2900	13.25 - 13.4
8.362 - 8.366	322 - 335.4	3260 - 3267	14.47 - 14.5
13.36 - 13.41	399.9 - 410	3332 - 3339	14.35 - 16.2
25.5 – 25.67	608 - 614	3345.8 - 3358	17.7 - 21.4
37.5 – 38.25	960 - 1240	3600 - 4400	22.01 - 23.12
73 - 75.4	1300 - 1427	4500 - 5250	23.6 - 24.0
108 – 121.94	1435 - 1626.5	5350 - 5460	31.2 - 31.8
123 – 138	1660 - 1710	7250 - 7750	36.43 - 36.5
149.9 – 150.05	1718.8 - 1722.2	8025 - 8500	Above 38.6
156.7 – 156.9	2200 - 2300	9000 - 9200	

FCC CFR 47, Part 15, Subpart C, Para. 15.209(a)
-- Field Strength Limits within Restricted Frequency Bands --

FREQUENCY (MHz)	FIELD STRENGTH LIMITS (microvolts/m)	DISTANCE (Meters)
0.009 - 0.490	2,400 / F (KHz)	300
0.490 - 1.705	24,000 / 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

4.6.2. Method of Measurements

Refer to Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4 for measurement methods

The following measurement procedures were also applied:

- Applies to harmonics/spurious that fall in the restricted bands listed in Section 15.205. the maximum permitted average field strength is listed in Section 15.209. A Pre-Amp and highpass filter are used for this measurement.
- For 9 kHz $\leq$ frequencies $\leq$ 150 kHz: RBW = 1 KHz, VBW $\geq$ 1 KHz, SWEEP=AUTO.
- For 150 MHz $\leq$ frequencies $\leq$ 30 MHz: RBW = 10 KHz, VBW $\geq$ 10 KHz, SWEEP=AUTO.
- For 30 MHz $\leq$ frequencies $\leq$ 1 GHz: RBW = 100 KHz, VBW $\geq$ 100 KHz, SWEEP=AUTO.
- For frequencies $\geq$ 1 GHz: RBW = 1 MHz, VBW = 1 MHz (Peak) & VBW = 10 Hz (Average), SWEEP=AUTO.
- If the emission is pulsed, modified the unit for continuous operation, then use the settings above for measurements, then correct the reading by subtracting the peak-average correction factor derived from the appropriate duty cycle calculation. See Section 15.35(b) and (c).

4.6.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Rohde & Schawrz	FSEK20/B4/B21	834157/005	9 kHz – 40 GHz with external mixer
Microwave Amplifier	Hewlett Packard	HP 83017A		1 GHz to 26.5 GHz
Microwave Amplifier	Hewlett Packard	HP 83051A	3332A00471	1 GHz to 50 GHz
Active Loop Antenna	EMCO	6507	8906-1167	1 kHz – 30 MHz
Biconilog Antenna	EMCO	3143	1029	20 MHz to 2 GHz

4.6.4. Photographs of Test Setup

Refer to the Photographs #3 & #4 in Annex 1 for setup and arrangement of equipment under tests and its ancillary equipment.

4.6.5. Test Data

Notes:

(1) Since the RF emissions form 9 kHz to 30 MHz are too small to be tested at 300 meters, we chose to test it at 10 meters. Except for limits in the frequency range 9 kHz to 490 kHz, the limits are linearly interpolated to 10 meter distance.

In the frequency range 9 kHz to 490 kHz, the limit is converted from 300 m to 10 m using the following formula:

Limit at 10 meters in 9 to 490 KHz band = $[(2400*300/10) / F (KHz)]^2 = [72,000 / F (KHz)]^2$

(2) For our interest, the radiated emissions in the frequency range from 30 to 1000 MHz were measured at 10 meters so that the results can be used for all requirements such as FCC 15.209, FCC 15.109 Class B and CISPR 22 Class B. The limits were linearly interpolated from 3 meter to 10 meter distance.

Equivalently, the limits at 10 meters are converted as below:

FREQUENCY (MHz)	FIELD STRENGTH LIMITS (microvolts/m)	DISTANCE (Meters)
0.009 - 0.490	$[72,000 / F (KHz)]^2$	10
0.490 - 1.705	72,000 / F (KHz)	10
1.705 - 30.0	90	10
30 – 88	30	10
88 – 216	45	10
216 – 960	60	10
Above 960	150	10

4.6.5.1. Radiated emissions from 9 KHz to 30 MHz at 10 Meters Distance using an Active Loop Antenna

FREQUENCY (MHz)	RF PEAK LEVEL (dBuV/m)	RF AVG LEVEL (dBuV/m)	ANTENNA PLANE (Degree)	LIMIT @ 10m 15.209 (dBuV/m)	LIMIT MARGIN (dB)	PASS/ FAIL	Distance (m)
0.126	50.9	N/A	0	110.3	-59.4	PASS	10
0.126	46.1	N/A	90	110.3	-64.2	PASS	10

- The emissions were scanned from 10 kHz to 30 MHz and all emissions within 40 dB below the limits were recorded.

4.6.5.2. Radiated emissions from 30 MHz to 1 GHz at 10 Meters Distance using Biconilog Antenna

FREQUENCY (MHz)	RF PEAK LEVEL (dBuV/m)	EMI DETECTOR (Peak/QP)	ANTENNA PLANE (V/H)	LIMIT @ 10m 15.209 (dBuV/m)	LIMIT MARGIN (dB)	PASS/ FAIL	Distance (m)
161.10	20.9	Peak	V	33.1	-12.2	PASS	10
161.10	16.1	Peak	H	33.1	-17.0	PASS	10
193.10	24.0	Peak	V	33.1	-9.1	PASS	10
193.10	17.6	Peak	H	33.1	-15.5	PASS	10
227.94	25.3	Peak	V	35.6	-10.3	PASS	10
227.94	21.5	Peak	H	35.6	-14.1	PASS	10
229.99	25.9	Peak	V	35.6	-9.7	PASS	10
229.99	21.6	Peak	H	35.6	-14.0	PASS	10
298.13	30.9	QP	V	35.6	-4.7	PASS	10
298.13	29.8	Peak	H	35.6	-5.8	PASS	10
303.60	28.7	Peak	V	35.6	-6.9	PASS	10
303.60	21.3	Peak	H	35.6	-14.3	PASS	10
309.90	27.5	Peak	V	35.6	-8.1	PASS	10
309.90	21.5	Peak	H	35.6	-14.1	PASS	10
436.20	28.3	Peak	V	35.6	-7.3	PASS	10
436.20	22.9	Peak	H	35.6	-12.7	PASS	10
480.80	26.3	Peak	V	35.6	-9.3	PASS	10
480.80	25.0	Peak	H	35.6	-10.6	PASS	10
496.70	32.0	Peak	V	35.6	-3.6	PASS	10
496.70	29.5	Peak	H	35.6	-6.1	PASS	10
680.77	27.8	QP	V	35.6	-7.8	PASS	10
680.77	29.5	Peak	H	35.6	-6.1	PASS	10
875.60	28.4	Peak	V	35.6	-7.2	PASS	10
875.60	27.2	Peak	H	35.6	-8.4	PASS	10

- The emissions were scanned from 30 MHz to 1000 GHz and all emissions within 20 dB below the limits were recorded.

EXHIBIT 5. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 and LAB 34

5.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY

CONTRIBUTION (Line Conducted)	PROBABILITY DISTRIBUTION	UNCERTAINTY (dB)	
		9-150 kHz	0.15-30 MHz
EMI Receiver specification	Rectangular	±1.5	±1.5
LISN coupling specification	Rectangular	±1.5	±1.5
Cable and Input Transient Limiter calibration	Normal (k=2)	±0.3	±0.5
Mismatch: Receiver VRC Γ_1 = 0.03 LISN VRC Γ_R = 0.8(9 kHz) 0.2 (30 MHz) Uncertainty limits 20Log(1±$\Gamma_1\Gamma_R$)	U-Shaped	±0.2	±0.3
System repeatability	Std. deviation	±0.2	±0.05
Repeatability of EUT	--	--	--
Combined standard uncertainty	Normal	±1.25	±1.30
Expanded uncertainty U	Normal (k=2)	±2.50	±2.60

Sample Calculation for Measurement Accuracy in 450 kHz to 30 MHz Band:

$u_c(y) = \sqrt{\sum_{I=1}^{m} u_i^2(y)} = \pm \sqrt{(1.5^2 + 1.5^2)/3 + (0.5/2)^2 + (0.05/2)^2 + 0.35^2} = \pm 1.30$ dB

$U = 2u_c(y) = \pm 2.6$ dB

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

5.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

CONTRIBUTION (Radiated Emissions)	PROBABILITY DISTRIBUTION	UNCERTAINTY (± dB)	
		3 m	10 m
Antenna Factor Calibration	Normal (k=2)	±1.0	±1.0
Cable Loss Calibration	Normal (k=2)	±0.3	±0.5
EMI Receiver specification	Rectangular	±1.5	±1.5
Antenna Directivity	Rectangular	+0.5	+0.5
Antenna factor variation with height	Rectangular	±2.0	±0.5
Antenna phase center variation	Rectangular	0.0	±0.2
Antenna factor frequency interpolation	Rectangular	±0.25	±0.25
Measurement distance variation	Rectangular	±0.6	±0.4
Site imperfections	Rectangular	±2.0	±2.0
Mismatch: Receiver VRC $\Gamma_1 = 0.2$ Antenna VRC $\Gamma_R = 0.67$(Bi) 0.3 (Lp) Uncertainty limits 20Log(1±$\Gamma_1\Gamma_R$)	U-Shaped	+1.1 -1.25	±0.5
System repeatability	Std. Deviation	±0.5	±0.5
Repeatability of EUT		-	-
Combined standard uncertainty	Normal	+2.19 / -2.21	+1.74 / -1.72
Expanded uncertainty U	Normal (k=2)	+4.38 / -4.42	+3.48 / -3.44

Calculation for maximum uncertainty when 3m biconical antenna including a factor of k=2 is used:

$U = 2u_c(y) = 2x(+2.19) = +4.38$ dB And $U = 2u_c(y) = 2x(-2.21) = -4.42$ dB