UltraTech
Group of Labs

31040/SIT

C-1376

Canada
46390-2049

NVLAP
200093-0

00-034

SL2-IN-E-1119R

3000 Bristol Circle,
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Mar. 01, 2006
TIMCO ENGINEERING INC.
P.O. Box 370
849 N.W. State Road 45
Newberry, Florida

Subject: **FCC Certification Application under FCC 47 CFR, Parts 2, 22 (Subpart H) and 24 (Subpart E) – Non-broadcast Radio Transceivers Operating in the Frequency Bands 824.2 – 848.8 MHz and 1850.2 – 1909.8 MHz**
Applicant: **NBS Technologies Inc.**
Product: **NBS56XX**
Model: **NBS56XXTXXX**
FCC ID: **O3JNBS56XXT**

Dear Sir/Madam,

As appointed agent for **NBS Technologies Inc.**, we would like to submit the application for certification of the above product. Please review all files uploaded to TIMCO Web Site.

The NBS Technologies POS terminal, Model NBS56XXTXXX, incorporates a Wavecom Module previously certified by FCC (FCC ID: O9EQ2426-SK; Date of Grant: 07/16/2003). The incorporated radio is identical in design and construction to the original. Since, there is no change on the radio module's operation, only the following tests are performed to ensure the continuing compliance with different enclosure and power supply conditions:

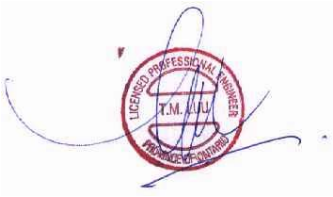
(1) RF output power to ensure the maximum power still meets the FCC Grant FCC ID: O9EQ2426-SK so that the test results from this application can be used for the new application FCC ID: O3JNBS56XXT.
(2) Transmitter spurious/harmonic radiated emissions. These tests are performed to ensure that the new enclosure and packaging will not affect radiated emissions from the Wavecom radio transmitter module.
(3) RF exposure evaluation for portable application (SAR).

For all other required tests pertaining to FCC Parts 2, 22 and 24, please refer to the original test reports and documents submitted by Wavecom to FCC, which are also uploaded to Timco E-filling site.

Notes:

- All confidential items associating to Wavecom Radio Module are submitted along with this application.
- The digital circuit portion of the POS Terminal has been tested and found to comply with FCC Part 15, Subpart B, Class A Digital Devices. Ultratech can provide the engineering test report upon request.
- The model appearing on the terminal may be displayed using numbers instead of "XXTXXX" (ex: 00T001, etc.). These designations indicate to the customer certain features. The electronics are equivalent regardless of these designations, which are included for marketing purposes and clarity only.

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



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

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Mar. 01, 2006

NBS Technologies Inc.
703 Evans Avenue, Suite 400
Toronto, ON
Canada, M9C 5E9

Attn.: **Mr. Clement Lormeau**

Subject: **Certification Testing in accordance with FCC 47 CFR, Parts 2, 22 (Subpart H) and 24 (Subpart E) - Non-Broadcast Radio Transceivers Operating in the Frequency Bands 824.2 – 848.8 MHz and 1850.2 – 1909.8 MHz**

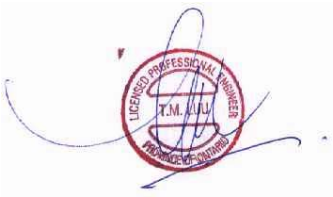
Product: **NBS56XX**
Model: **NBS56XXTXXX**

Dear Mr. Lormeau,

The product sample has been tested in accordance with **FCC 47 CFR, Parts 2, 22 (Subpart H) and 24 (Subpart E) - Non-Broadcast Radio Transceivers Operating in the Frequency Bands 824.2 – 848.8 MHz and 1850.2 – 1909.8 MHz,** and the results and observation were recorded in the engineering report, Our File No.: MIS-052FCC22-24

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

Yours truly,



Tri Minh Luu, P.Eng
Vice President - Engineering

Encl.

ENGINEERING TEST REPORT

NBS56XX
Model No.: NBS56XXTXXX
FCC ID: O3JNBS56XXT

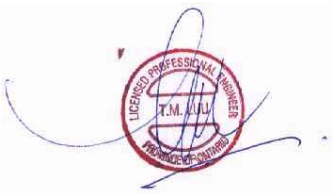
Applicant:

NBS Technologies Inc.
703 Evans Avenue, Suite 400
Toronto, ON
Canada, M9C 5E9

Tested in Accordance With

Federal Communications Commission (FCC)
47 CFR, PARTS 2, 22 (Subpart H) and 24 (Subpart E)

UltraTech's File No.: MIS-052FCC22-24

This Test report is Issued under the Authority of Tri M. Luu, Professional Engineer, Vice President of Engineering UltraTech Group of Labs Date: Mar. 01, 2006	
Report Prepared by: Anca Dobre Issued Date: Mar. 01, 2006	Tested by: Hung Trinh, RFI/EMI Technician Test Dates: Feb. 24-27, 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

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TABLE OF CONTENTS

EXHIBIT 1. SUBMITTAL CHECK LIST

Annex No.	Exhibit Type	Description of Contents	Quality Check (OK)
--	Test Report	Exhibit 1: Submittal check lists Exhibit 2: Introduction Exhibit 3: Performance Assessment Exhibit 4: EUT Operation and Configuration during Tests Exhibit 5: Summary of test Results Exhibit 6: Measurement Data Exhibit 7: Measurement Uncertainty Exhibit 8: Measurement Methods	OK
1	Test Setup Photos	Radiated Emission Setup Photos	OK
2	External Photos of EUT	External EUT Photos	OK
3	Internal Photos of EUT	Internal EUT Photos	OK
4	Cover Letters	Letter from Ultratech for Certification Request Letter from the Applicant to appoint Ultratech to act as an agent Letters from the Applicant to request for Confidentiality Filing	OK
5	Attestation Statements	--	--
6	ID Label/Location Info	ID Label Location of ID Label	OK
7	Block Diagrams	Block Diagram Wireless POS terminal Block Diagram Wavecom Radio Module	OK
8	Schematic Diagrams	Schematics Wireless POS terminal/Daughterboard Schematics Wavecom Radio Module	OK
9	Parts List/Tune Up Info	Parts Lists Wireless POS terminal Parts Lists Wavecom Radio Module	OK
10	Operational Description	NBS 5600 Terminal/Product Specification	OK
11	RF Exposure Info	SAR Test Report	OK
12	Users Manual	Installation and Operation Manual User Manual Wavecom Radio Module	OK

EXHIBIT 2. INTRODUCTION

2.1. SCOPE

Reference:	FCC Parts 2, 22 and 24
Title:	Telecommunication – 47 Code of Federal Regulations (CFR), Parts 2, 22 & 24
Purpose of Test:	To gain FCC Certification Authorization for Radio operating in the frequency bands 824.2 – 848.8 MHz and 1850.2 – 1909.8 MHz.
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.

2.2. RELATED SUBMITTAL(S)/GRANT(S)

None.

2.3. NORMATIVE REFERENCES

Publication	Year	Title
FCC CFR Parts 0-19, 80-End	2005	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 & EN 55022	2003 2003	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
CISPR 16-1	2003	Specification for Radio Disturbance and Immunity measuring apparatus and methods

EXHIBIT 3. PERFORMANCE ASSESSMENT

3.1. CLIENT INFORMATION

APPLICANT	
Name:	NBS Technologies Inc.
Address:	703 Evans Avenue, Suite 400 Toronto, ON Canada, M9C 5E9
Contact Person:	Mr. Dragoslav Jovanovic Phone #: 416-621-1911 Fax #: 416-621-8875 Email Address: djovanovic@nbstech.com

MANUFACTURER	
Name:	SAGEM Monetel
Address:	1, Rue Claude Chappe – BP346 07503 Guilherand-Granges France
Contact Person:	Mr. Clement Lormeau Phone #: +33 4 75 81 40 47 Fax #: +33 4 75 81 41 57 Email Address: clement.lormeau@sagem.com

3.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

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

Brand Name:	NBS
Product Name:	NBS56XX
Model Name or Number:	NBS56XXTXXX
Serial Number:	Preproduction
Type of Equipment:	Non-broadcast Radio Communication Equipment
Power Supply:	3.6 Vdc, 1.5Ah - Ni-MH Battery
Transmitting/Receiving Antenna Type:	Integral
Primary User Functions of EUT:	Wireless point-of-sale (POS) terminal to provide processing of payments.
Operating temperature range:	+5 °C to +45°C

3.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	Portable
Intended Operating Environment:	Commercial, industrial or business environment
Power Supply Requirement:	3.6 V Ni-MH battery
RF Output Power Rating:	▪ 824.2 – 848.8 MHz (GSM/GPRS): 1.61 W ERP ▪ 1850.2 – 1909.8 MHz (PCS GSM/GPRS): 1.42 W EIRP
Operating Frequency Range:	• 824.2 – 848.8 MHz (GSM/GPRS) • 1850.2 – 1909.8 MHz (PCS GSM/GPRS)
RF Output Impedance:	50 Ohms
Emission Designation*:	1M25F9W
Antenna Connector Type:	Ultra-Miniature SMT GSC
Antenna Description:	Manufacturer: SAGEM Monetel Type: Integrated Antenna Frequency Range: Tx: 824 – 849 MHz / 1850 – 1910 MHz Rx: 869 – 894 MHz / 1930 – 1990 MHz Gain: 1.6 dBi Max in 824-849 MHz 2.2 dBi Max. in 1850-1910 MHz
Other Clock Frequencies:	Terminal: 32kHz(quartz), 20MHz(quartz), 57MHz(PLL) Base station: 12.288MHz(quartz), 2.048MHz(PLL)

* Per 47 CFR § 2.201 and §2.202

RECEIVER	
Operating Frequency Range:	• 869 - 894 MHz (GSM/GPRS) • 1930 - 1990 MHz (PCS GSM/GPRS)

3.4. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	Mini-USB Main	1	Mini-USB type A	Shielded
2	Mini-USB Slave	1	Mini-USB type B	Shielded
3	IR	1	Optical	No cable

3.5. ANCILLARY EQUIPMENT

None.

EXHIBIT 4. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

4.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21°C
Humidity:	51%
Pressure:	102 kPa
Power input source:	3.6 V Ni-MH battery

4.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

Operating Modes:	The transmitter was operated in a continuous transmission mode with the carrier modulated as specified in the Test Data.
Special Test Software:	None.
Special Hardware Used:	None.
Transmitter Test Antenna:	The EUT is tested with the antenna fitted in a manner typical of normal intended use.

Transmitter Test Signals	
Frequency Band(s):	▪ 824.2 – 848.8 MHz (GSM/GPRS) ▪ 1850.2 – 1909.8 MHz (PCS GSM/GPRS)
Frequency(ies) Tested: (Near lowest, near middle & near highest frequencies in the frequency range of operation.)	▪ 824.2 MHz ▪ 836.4 MHz ▪ 848.8 MHz ▪ 1850.2 MHz ▪ 1880.0 MHz ▪ 1909.8 MHz
RF Power Output (measured maximum output power):	▪ 824.2 – 848.8 MHz (GSM/GPRS): 1.823 W / 1.61 W ERP ▪ 1850.2 – 1909.8 MHz (PCS GSM/GPRS): 0.863 W / 1.42 W EIRP
Normal Test Modulation:	GSM/GPRS
Modulating Signal Source:	Internal

EXHIBIT 5. SUMMARY OF TEST RESULTS

5.1. 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.

5.2. APPLICABILITY & SUMMARY OF EMISSION TEST RESULTS

FCC Section(s)	Test Requirements	Applicability (Yes/No)
1.1307, 1.1310, 2.1091 & 2.1093	RF Exposure Limit	See Ultratech SAR Test Report
2.1046, 22.913 & 24.232	RF Power Output	Yes
2.1047(a)	Audio Frequency Response	See original filing test report
2.1047(b)	Modulation Limiting	See original filing test report
2.1049	Emission Limitation & Emission Mask	See original filing test report
2.1051, 2.1057, 22.917& 24.238	Spurious emissions at antenna terminal	See original filing test report
2.1053, 2.1057, 22.917 & 24.238	Field strength of spurious radiation	Yes
2.1055	Frequency Stability	See original filing test report
Wireless GSM/GPRS POS Terminal, by **NBS Technologies Inc**., has also been tested and found to comply with FCC Part 15, Subpart B – Class A Digital Devices.		

5.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None.

5.4. DEVIATION OF STANDARD TEST PROCEDURES

None.

EXHIBIT 6. MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS

6.1. TEST PROCEDURES

Please refer to Ultratech Test Procedures, File # ULTR P001-2004, ANSI C63.4, and Exhibit 8 of this test report.

6.2. MEASUREMENT UNCERTAINTIES

The measurement uncertainties stated were calculated in accordance with requirements of UKAS Document NIS 81 with a confidence level of 95%. Please refer to Exhibit 7 for Measurement Uncertainties.

6.3. 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.

6.4. ESSENTIAL/PRIMARY FUNCTIONS AS DECLARED BY THE MANUFACTURER

The essential function of the EUT is to correctly communicate data to and from radios over RF link.

6.5. RF POWER OUTPUT [§§ 2.1046 & 22.913 & 24.232]

6.5.1. Limits

§22.913 (a) The Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

§ 24.232 (b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

6.5.2. Method of Measurements

Refer to ULTRATECH Test Procedures, File # ULTR P001-2004, ANSI C63.4 and Exhibit 8, section 8.1 (Conducted) and 8.2 (Radiated) of this report for measurement details.

6.5.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Digital radiocommunications tester	Rohde & Schwarz	CMD80	DE29573	9 kHz – 26.5 GHz
Attenuator	Weinschel Corp	46-20-34	BM1347	DC – 18 GHz

6.5.4. Test Data

Cellular Band: 824 – 849 MHz

Transmitter Channel Output	Fundamental Frequency (MHz)	Measured Peak Conducted Power (dBm)	ERP (dBm) Measured Using substitution Method	ERP Limit	*Calculated Antenna gain (dBi)
Lowest	824.20	32.61	30.31	38.5	-0.15
Middle	836.52	32.58	32.06	38.5	1.63
Highest	848.80	32.38	29.48	38.5	-0.75

* The antenna gain was obtained for the following formula:
ERP = (peak conducted power in dBm) + (antenna gain in dBi) – 2.15

PCS Band: 1850 – 1910 MHz

Transmitter Channel Output	Fundamental Frequency (MHz)	Measured Peak Conducted Power (dBm)	*Calculated e.i.r.p. (dBm)	e.i.r.p. Limit	*Calculated Antenna gain (dBi)
Lowest	1850.20	29.18	30.13	33.0	0.95
Middle	1880.00	29.37	31.52	33.0	2.16
Highest	1909.80	29.13	30.59	33.0	1.46

* The antenna gain was obtained for the following formula:
ERP = (peak conducted power in dBm) + (antenna gain in dBi)

6.6. TRANSMITTER SPURIOUS/HARMONIC RADIATED EMISSIONS [§§ 2.1053, 22.917 & 24.238]

6.6.1. Limits

§§22.917 (a) & 24.238 (a) On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43+10log(P) dB (P = transmitter conducted power in watts).

6.6.2. Method of Measurements

The spurious/harmonic ERP measurements are using substitution method specified in Exhibit 8, Section 8.2 of this report and its value in dBc is calculated as follows:

(1) If the transmitter's antenna is an integral part of the EUT, the ERP is measured using substitution method.
(2) If the transmitter's antenna is non-integral and diverse, the lowest ERP of the carrier with 0 dBi antenna gain is used for calculation of the spurious/harmonic emissions in dBc:
Lowest ERP of the carrier = EIRP – 2.15 dB = Pc + G - 2.15 dB = x dBm (conducted) + 0 dBi – 2.15 dB
(3) Spurious /harmonic emissions levels expressed in dBc (dB below carrier) are as follows:

ERP of spurious/harmonic (dBc) = ERP of carrier (dBm) – ERP of spurious/harmonic emission (dBm)

6.6.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer	Rhode & Schwarz	FSEK20/B4/B21	834157/005	9 kHz – 4 GHz
RF Amplifier	Com-Power	PA-102		1 MHz to 1 GHz, 30 dB gain nomimal
Microwave Amplifier	Hewlett Packard	HP 83017A	3116A00661	1 GHz to 26.5 GHz
Biconilog Antenna	EMCO	3142	10005	30 MHz to 2 GHz
Dipole Antenna	EMCO	3121C	8907-434	30 GHz – 1 GHz
Dipole Antenna	EMCO	3121C	8907-440	30 GHz – 1 GHz
Horn Antenna	EMCO	3155	9701-5061	1 GHz – 18 GHz
Horn Antenna	EMCO	3155	9911-5955	1 GHz – 18 GHz
RF Signal Generator	Hewlett Packard	HP 83752B	3610A00457	0.01 – 20 GHz

6.6.4. Test Data

6.6.4.1. Cellular Band (824-8849 MHz)

Carrier Frequency (MHz): 824.2
ERP (dBm): 30.31
Limit (dBc): -(43+10logP(in watts)) 43.31
Test Frequency Range (MHz): 30-9000

Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP)	Antenna Polarization (H/V)	ERP measured by Substitution Method (dBm)	(dBc)	Limit (dBc)	Margin (dB)
824.2	127.66	Peak	V	30.31	--	--	--
824.2	127.60	Peak	H	30.25	--	--	--
1648.4	73.28	Peak	V	-30.21	62.8	43.31	-19.5
1648.4	74.06	Peak	H	-30.21	62.8	43.31	-19.5
2472.6	75.58	Peak	V	-26.56	59.2	43.31	-15.9
2472.6	70.58	Peak	H	-32.22	64.8	43.31	-21.5
3296.8	61.17	Peak	V	-42.25	74.9	43.31	-31.6
No spurious emissions were found. All harmonics emissions more than 30 dB below the limit were recorded.							

Carrier Frequency (MHz): 836.52
ERP (dBm): 32.06
Limit (dBc): -(43+10logP(in watts)) 45.06
Test Frequency Range (MHz): 30-9000

Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP)	Antenna Polarization (H/V)	ERP measured by Substitution Method (dBm)	(dBc)	Limit (dBc)	Margin (dB)
836.4	127.80	Peak	V	30.06	--	--	--
836.4	129.41	Peak	H	32.06	--	--	--
1672.8	76.82	Peak	V	-26.60	59.2	45.06	-14.1
1672.8	71.25	Peak	H	-32.19	64.8	45.06	-19.7
2509.2	73.32	Peak	V	-27.13	59.7	45.06	-14.7
2509.2	69.99	Peak	H	-31.38	64.0	45.06	-18.9
3345.6	65.28	Peak	V	-38.54	71.1	45.06	-26.1
3345.6	60.97	Peak	H	-44.77	77.4	45.06	-32.3
4182.0	64.17	Peak	V	-38.64	71.2	45.06	-26.2
4182.0	65.03	Peak	H	-38.06	70.6	45.06	-25.6
No spurious emissions were found. All harmonics emissions more than 30 dB below the limit were recorded.							

Carrier Frequency (MHz): 848.80
ERP (dBm): 29.48
Limit (dBc): -(43+10logP(in watts)) 42.48
Test Frequency Range (MHz): 30-9000

Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP)	Antenna Polarization (H/V)	ERP measured by Substitution Method (dBm)	ERP measured by Substitution Method (dBc)	Limit (dBc)	Margin (dB)
848.8	125.95	Peak	V	28.60	--	--	--
848.8	126.83	Peak	H	29.48	--	--	--
1697.6	76.58	Peak	V	-26.45	58.8	42.48	-16.4
1697.6	73.71	Peak	H	-29.26	61.6	42.48	-19.2
2546.4	71.45	Peak	V	-28.59	61.0	42.48	-18.5
2546.4	69.16	Peak	H	-31.53	63.9	42.48	-21.4
3395.2	64.19	Peak	V	-39.00	71.4	42.48	-28.9
3395.2	61.04	Peak	H	-42.18	74.6	42.48	-32.1
4244.0	65.13	Peak	V	-37.75	70.1	42.48	-27.7
4244.0	66.57	Peak	H	-36.53	68.9	42.48	-26.4

No spurious emissions were found. All harmonics emissions more than 30 dB below the limit were recorded.

6.6.4.2. PCS Band: 1850-1910 MHz

Carrier Frequency (MHz): 1850.2
ERP (dBm): 27.98
Limit (dBc): -(43+10logP(in watts)) 40.98
Test Frequency Range (MHz): 30-20000

Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP)	Antenna Polarization (H/V)	ERP measured by Substitution Method (dBm)	(dBc)	Limit (dBc)	Margin (dB)
1850.2	124.57	Peak	V	27.22	--	--	--
1850.2	125.33	Peak	H	27.98	--	--	--
5550.6	71.54	Peak	V	-30.71	59.9	40.98	-18.9
5550.6	70.70	Peak	H	-30.62	59.8	40.98	-18.8
7400.8	78.12	Peak	V	-19.51	48.7	40.98	-7.7
7400.8	71.86	Peak	H	-26.79	56.0	40.98	-15.0
9251.0	64.84	Peak	V	-37.11	66.3	40.98	-25.3
9251.0	59.91	Peak	H	-42.24	71.4	40.98	-30.4
11101.2	63.19	Peak	V	-42.05	71.2	40.98	-30.3
11101.2	62.83	Peak	H	-44.31	73.5	40.98	-32.5

No spurious emissions were found. All harmonics emissions more than 30 dB below the limit were recorded.

Carrier Frequency (MHz): 1880
ERP (dBm): 29.37
Limit (dBc): -(43+10logP(in watts)) 42.37
Test Frequency Range (MHz): 30-20000

Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP)	Antenna Polarization (H/V)	ERP measured by Substitution Method (dBm)	(dBc)	Limit (dBc)	Margin (dB)
1880.0	126.72	Peak	V	29.37	--	--	--
1880.0	126.11	Peak	H	28.76	--	--	--
5640.0	70.65	Peak	V	-32.46	61.8	42.37	-19.5
5640.0	73.88	Peak	H	-29.92	59.3	42.37	-16.9
7520.0	74.67	Peak	V	-26.89	56.3	42.37	-13.9
7520.0	73.85	Peak	H	-27.50	56.9	42.37	-14.5
13160.0	64.17	Peak	V	-43.49	72.9	42.37	-30.5
13160.0	60.28	Peak	H	-43.23	72.6	42.37	-30.2

No spurious emissions were found. All harmonics emissions more than 30 dB below the limit were recorded.

Carrier Frequency (MHz): 1909.8
ERP (dBm): 28.44
Limit (dBc): -(43+10logP(in watts)) 41.44
Test Frequency Range (MHz): 30-20000

Frequency (MHz)	E-Field (dBµV/m)	EMI Detector (Peak/QP)	Antenna Polarization (H/V)	ERP measured by Substitution Method (dBm)	(dBc)	Limit (dBc)	Margin (dB)
1909.8	125.79	Peak	V	28.44	--	--	--
1909.8	124.35	Peak	H	27.00	--	--	--
5729.4	71.75	Peak	V	-32.31	61.4	41.44	-20.0
5729.4	71.89	Peak	H	-31.21	60.3	41.44	-18.9
7639.2	78.17	Peak	V	-22.70	51.8	41.44	-10.4
7639.2	75.29	Peak	H	-27.15	56.3	41.44	-14.8
11458.8	62.46	Peak	V	-42.06	71.2	41.44	-29.8
11458.8	61.79	Peak	H	-42.93	72.1	41.44	-30.6
13368.6	66.06	Peak	V	-40.87	70.0	41.44	-28.6
13368.6	62.45	Peak	H	-43.36	72.5	41.44	-31.1
No spurious emissions were found. All harmonics emissions more than 30 dB below the limit were recorded.							

EXHIBIT 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 and NIS 81 (1994)

7.1. 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 Γ_1 = 0.2 Antenna VRC Γ_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

EXHIBIT 8. MEASUREMENT METHODS

8.1. CONDUCTED POWER MEASUREMENTS

- The following shall be applied to the combination(s) of the radio device and its intended antenna(e).
- I f the RF level is user adjustable, all measurements shall be made with the highest power level available to the user for that combination.
- The following method of measurement shall apply to both conducted and radiated measurements.
- The radiated measurements are performed at the Ultratech Calibrated Open Field Test Site.
- The measurement shall be performed using normal operation of the equipment with modulation.

Test procedure shall be as follows:

Step 1: Duty Cycle measurements if the transmitter's transmission is transient

- Using a EMI Receiver with the frequency span set to 0 Hz and the sweep time set at a suitable value to capture the envelope peaks and the duty cycle of the transmitter output signal;
- The duty cycle of the transmitter, x = Tx on / (Tx on + Tx off) with 0<x<1, is measure and recorded in the test report. For the purpose of testing, the equipment shall be operated with a duty cycle that is equal or more than 0.1.

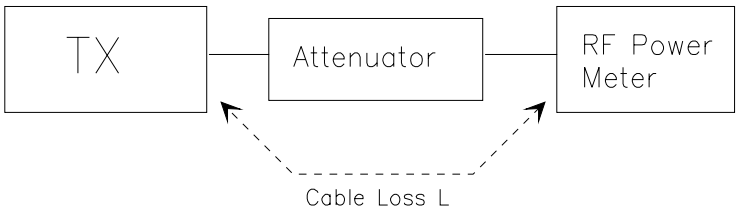
Step 2: Calculation of Average EIRP. See Figure 1

- The average output power of the transmitter shall be determined using a wideband, calibrated RF average power meter with the power sensor with an integration period that exceeds the repetition period of the transmitter by a factor 5 or more. The observed value shall be recorded as "A" (in dBm);
- The e.i.r.p. shall be calculated from the above measured power output "A", the observed duty cycle x, and the applicable antenna assembly gain "G" in dBi, according to the formula:

EIRP = A + G + 10log(1/x)

{ X = 1 for continuous transmission => 10log(1/x) = 0 dB }

Figure 1.



8.2. RADIATED POWER MEASUREMENTS (ERP & EIRP) USING SUBSTITUTION METHOD

8.2.1. Maximizing RF Emission Level (E-Field)

(a) The measurements was performed with full rf output power and modulation.
(b) Test was performed at listed 3m open area test site (listed with FCC, IC, ITI, NVLAP, ACA & VCCI).
(c) The transmitter under test was placed at the specified height on a non-conducting turntable (80 cm height)
(d) The BICONILOG antenna (20 MHz to 1 GHz) or HORN antenna (1 GHz to 18 GHz) was used for measuring.
(e) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level

Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
E (dBuV/m) = Reading (dBuV) + Total Correction Factor (dB/m)

(f) Set the EMI Receiver and #2 as follows:

Center Frequency:	test frequency
Resolution BW:	100 kHz
Video BW:	same
Detector Mode:	positive
Average:	off
Span:	3 x the signal bandwidth

(g) The test antenna was lowered or raised from 1 to 4 meters until the maximum signal level was detected.
(h) The transmitter was rotated through 360^{o} about a vertical axis until a higher maximum signal was received.
(i) The test antenna was lowered or raised again from 1 to 4 meters until a maximum was obtained. This level was recorded.
(j) The recorded reading was corrected to the true field strength level by adding the antenna factor, cable loss and subtracting the pre-amplifier gain.
(k) The above steps were repeated with both transmitters' antenna and test receiving antenna placed in vertical and horizontal polarization. Both readings with the antennas placed in vertical and horizontal polarization shall be recorded.
(l) Repeat for all different test signal frequencies

8.2.2. Measuring the EIRP of Spurious/Harmonic Emissions using Substitution Method

(a) Set the EMI Receiver (for measuring E-Field) and Receiver #2 (for measuring EIRP) as follows:

Center Frequency:	equal to the signal source
Resolution BW:	10 kHz
Video BW:	same
Detector Mode:	positive
Average:	off
Span:	3 x the signal bandwidth

(b) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level

Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
E (dBuV/m) = Reading (dBuV) + Total Correction Factor (dB/m)

(c) Select the frequency and E-field levels obtained in the Section 8.2.1 for ERP/EIRP measurements.
(d) Substitute the EUT by a signal generator and one of the following transmitting antenna (substitution antenna):
- ♦ DIPOLE antenna for frequency from 30-1000 MHz or
- ♦ HORN antenna for frequency above 1 GHz }.

(e) Mount the transmitting antenna at 1.5 meter high from the ground plane.
(f) Use one of the following antenna as a receiving antenna:
- ♦ DIPOLE antenna for frequency from 30-1000 MHz or
- ♦ HORN antenna for frequency above 1 GHz }.

(g) If the DIPOLE antenna is used, tune it's elements to the frequency as specified in the calibration manual.
(h) Adjust both transmitting and receiving antenna in a VERTICAL polarization.
(i) Tune the EMI Receivers to the test frequency.
(j) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(k) The transmitter was rotated through 360^{o} about a vertical axis until a higher maximum signal was received.
(l) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(m) Adjust input signal to the substitution antenna until an equal or a known related level to that detected from the transmitter was obtained in the test receiver.
(n) Record the power level read from the Average Power Meter and calculate the ERP/EIRP as follows:

P = P1 - L1 = (P2 + L2) – L1 = P3 + A + L2 - L1
EIRP = P + G1 = P3 + L2 - L1 + A + G1
ERP = EIRP – 2.15 dB
Total Correction factor in EMI Receiver # 2 = L2 – L1 + G1

Where:	P:	Actual RF Power fed into the substitution antenna port after corrected.
	P1:	Power output from the signal generator
	P2:	Power measured at attenuator A input
	P3:	Power reading on the Average Power Meter
	EIRP:	EIRP after correction
	ERP:	ERP after correction

(o) Adjust both transmitting and receiving antenna in a HORIZONTAL polarization, then repeat step (k) to (o)
(p) Repeat step (d) to (o) for different test frequency
(q) Repeat steps (c) to (j) with the substitution antenna oriented in horizontal polarization.
(r) Actual gain of the EUT's antenna is the difference of the measured EIRP and measured RF power at the RF port. Correct the antenna gain if necessary.

Figure 2

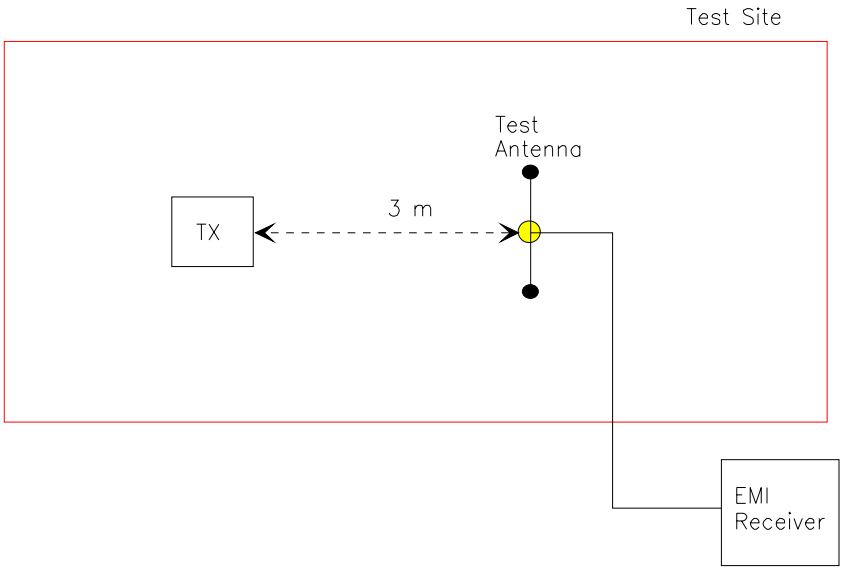


Figure 3