7. Occupied Bandwidth and Band Edge Compliance

Test Requirement: FCC Rules: 47CFR Part 15, Subpart C, Sections 15.215(b) and (c), and 15.249(d)

Test Procedure: ANSI C63.4 - 1992

Date of Test: 24 & 26 December 2002

Laboratory: Test Site #2 (Acme, WA)

7.1 Requirements:

7.1.1 Section 15.215(b) and (c):

Section 15.215 Additional provisions to the general radiated emission limitations.

(b) In most cases, unwanted emissions outside of the frequency bands shown in these alternative provisions must be attenuated to the emissions limits shown in Section 15.209. In no case shall the level of the unwanted emissions from an intentional radiator operating under these additional provisions exceed the field strength of the fundamental emission.

(c) Intentional radiators operating under the alternative provisions to the general emissions limits, as contained in Sections 15.217 through 15.255 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the 20 dB bandwidth of the emission within the specified frequency band include the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

7.1.2 Section 15.2349(d):

Section 15.249 Operation within the bands 902 –928 MHz, 24000 – 2483.5 MHz, 5725 – 5875 MHz and 24.0 – 24.25 GHz

(d) (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

7.2 Test Equipment

⇒ Spectrum Analyzer (blue): Hewlett-Packard 8566B, Serial Number 2410A00168, Calibrated: 17 April 2002, Calibration Due Date: 17 April 2003

⇒ RF Preselector (blue): Hewlett-Packard 85685A, Serial Number 2648A00519, Calibrated: 17 April 2002, Calibration Due Date: 17 April 2003

⇒ Quasi Peak Adapter (blue): Hewlett-Packard 85650A, Serial Number 2043A00327, Calibrated: 17 April 2002, Calibration Due Date: 17 April 2003

⇒ Biconical Antenna (blue) (20 MHz to 200 MHz): EMCO 3110, Serial Number 1180, Calibrated: 14 June 2002, Calibration Due Date: 14 June 2003

⇒ Log Periodic Antenna (red) (200 MHz to 1000 MHz): EMCO 3146, Serial Number 9008-2853, Calibrated: 05 August 2002, Calibration Due Date: 05 August 2003

⇒ LF Loop Antenna: EMCO 6502, Serial Number 2178 Calibrated: 26 December 2001, Calibration Due Date: 26 December 2002

⇒ Double Ridge Guide Horn Antenna: (1 GHz to 18 GHz): EMCO 3115, Serial Number 9807-5534, Calibrated: 16 September 2002, Calibration Due Date: 16 September 2003

⇒ 1 GHz to 26 GHz Preamplifier: Hewlett Packard HP8449B/H02, Serial Number 2933A00198, Calibrated: 03 May 2001, Calibration Due Date: 03 May 2003

⇒ Turntable: Rothenbuhler Engineering, Custom, No Calibration Required

⇒ Turntable Position Controller: EMCO 1051, Serial Number 9002-1457, No Calibration Required

⇒ Antenna Mast and Controller: EMCO 1061, Serial Number 9003-1440, No Calibration Required

⇒ Open Area Test Site: Acme Testing Co., Test Site Number 2, Calibrated: 22 June 2002, Calibration Due Date: 22 June 2003

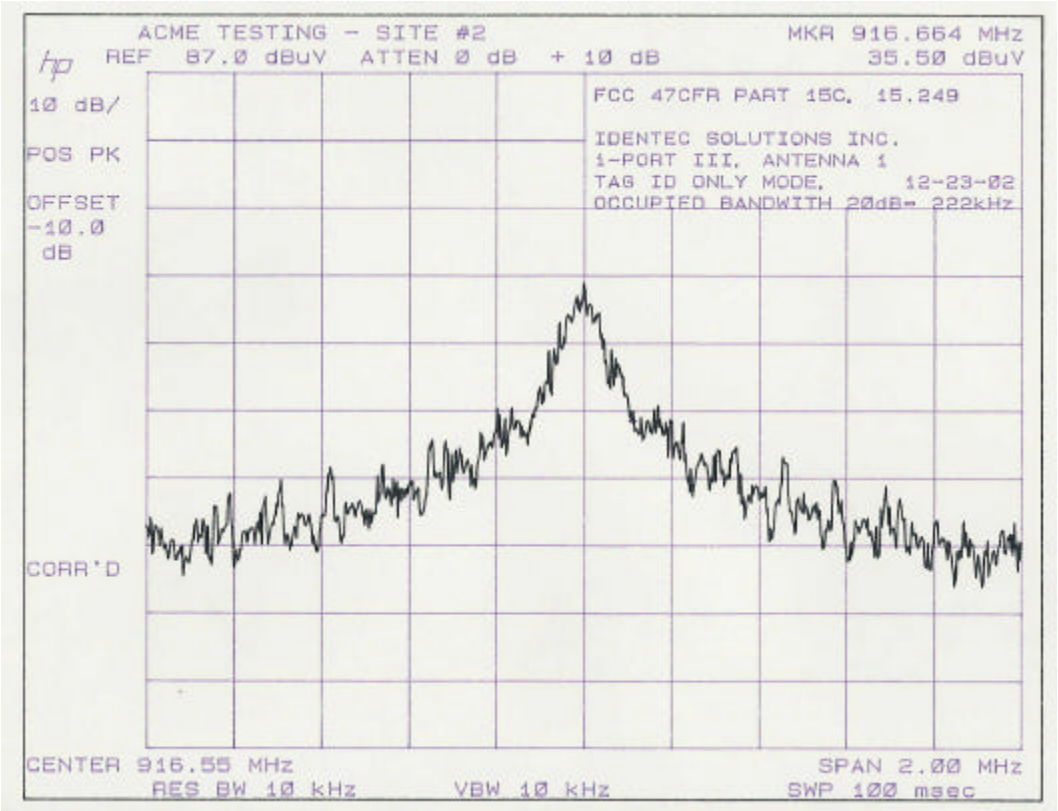
7.3 Purpose

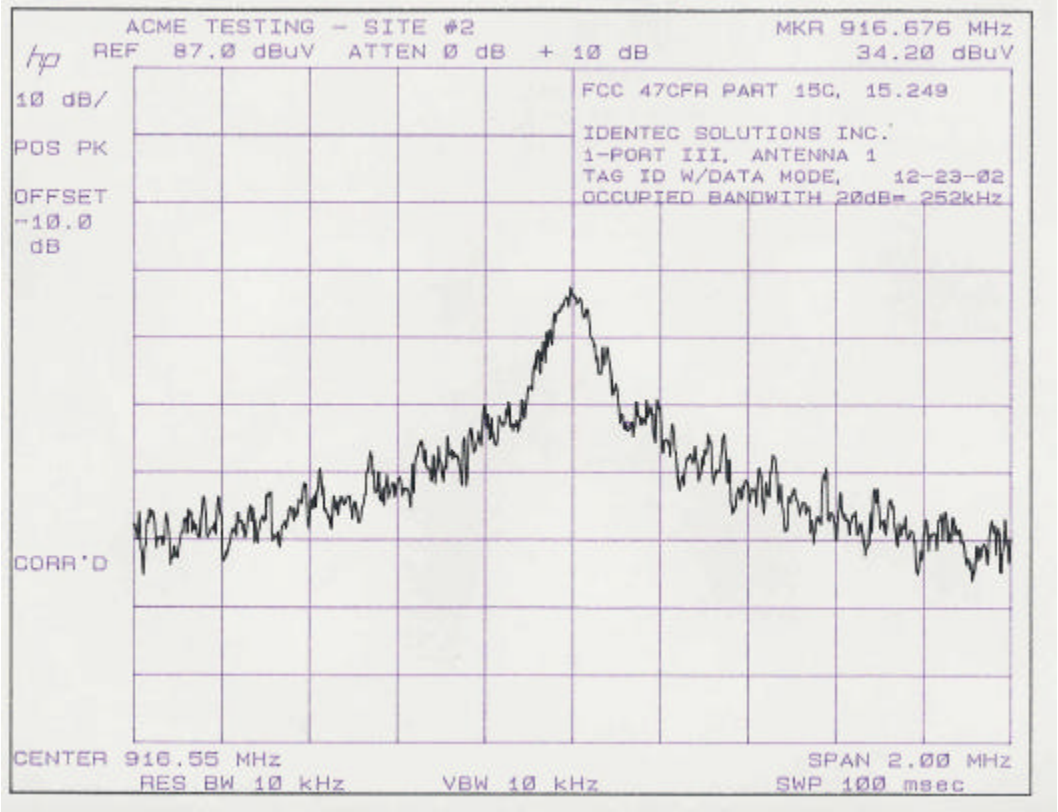
The purpose of this test was to evaluate the radiated electromagnetic interference characteristics of the EUT.

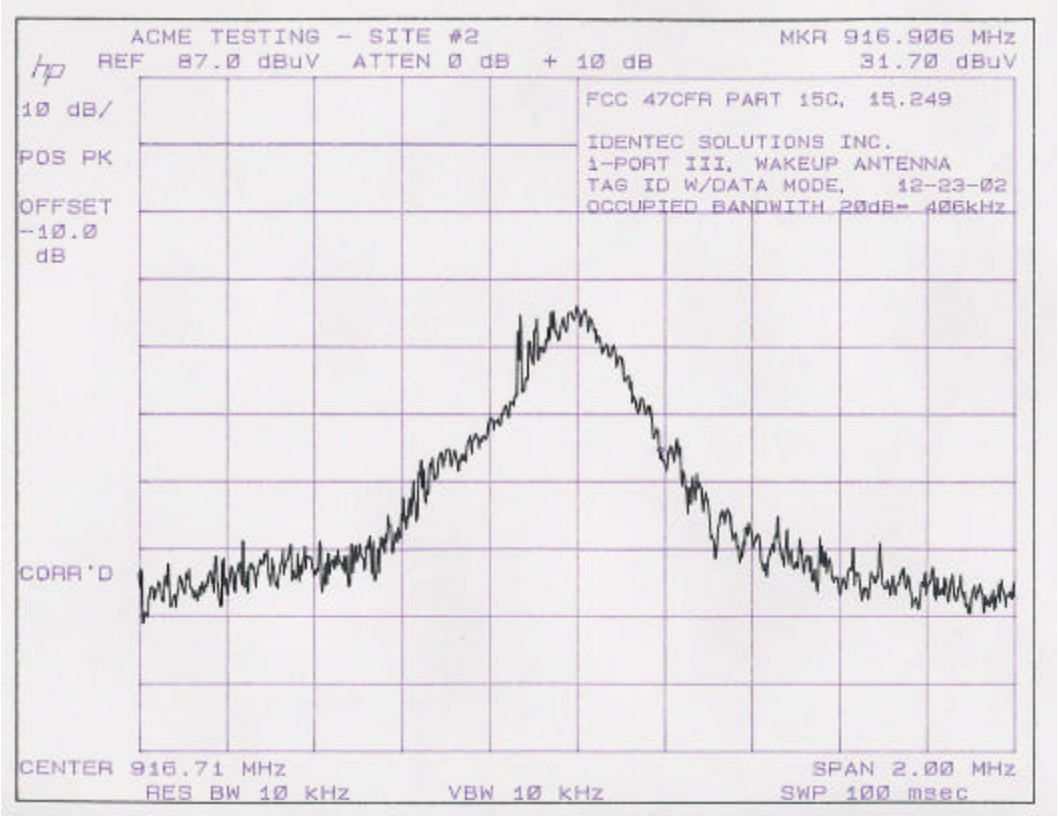
7.4 Occupied (-20 dB) Bandwidth Test Results

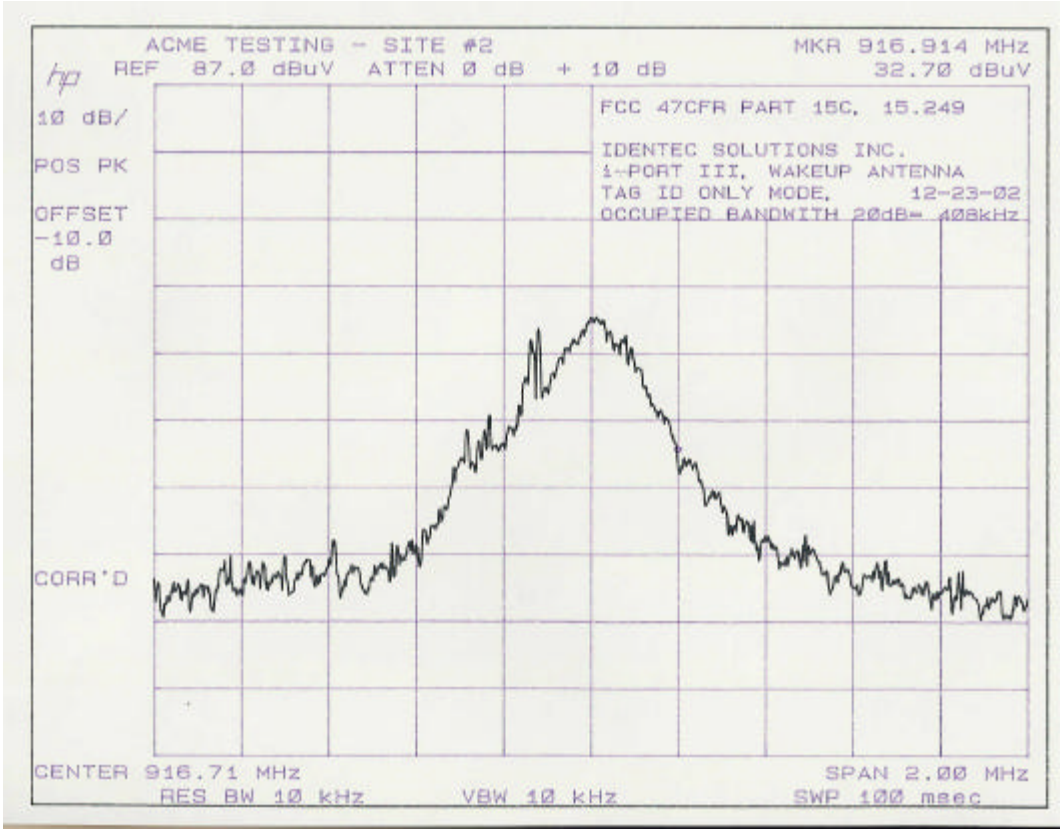
See the plots on the next two pages.
The worst case –20 dB Occupied Bandwidth is: 408 kHz, which occurs in the “TX, Tag ID Plus Data Mode”, emitted from Antenna #1.

2002 Valley Highway PO Box 3 Acme WA 98220-0003
phone:888 226-3837 fax: 360 595-2722



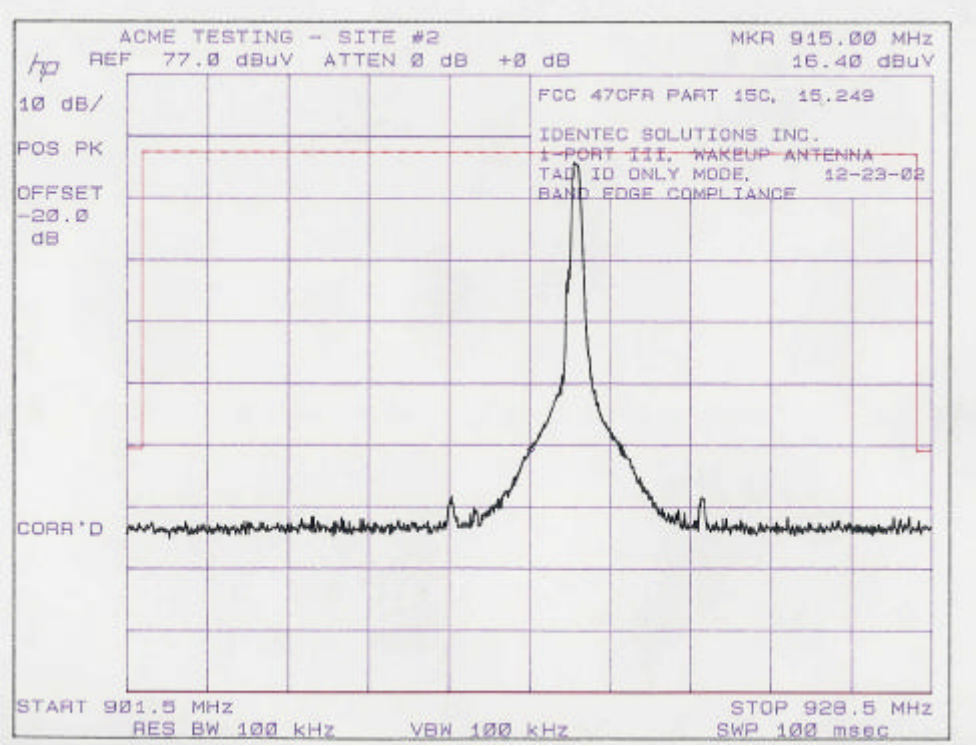


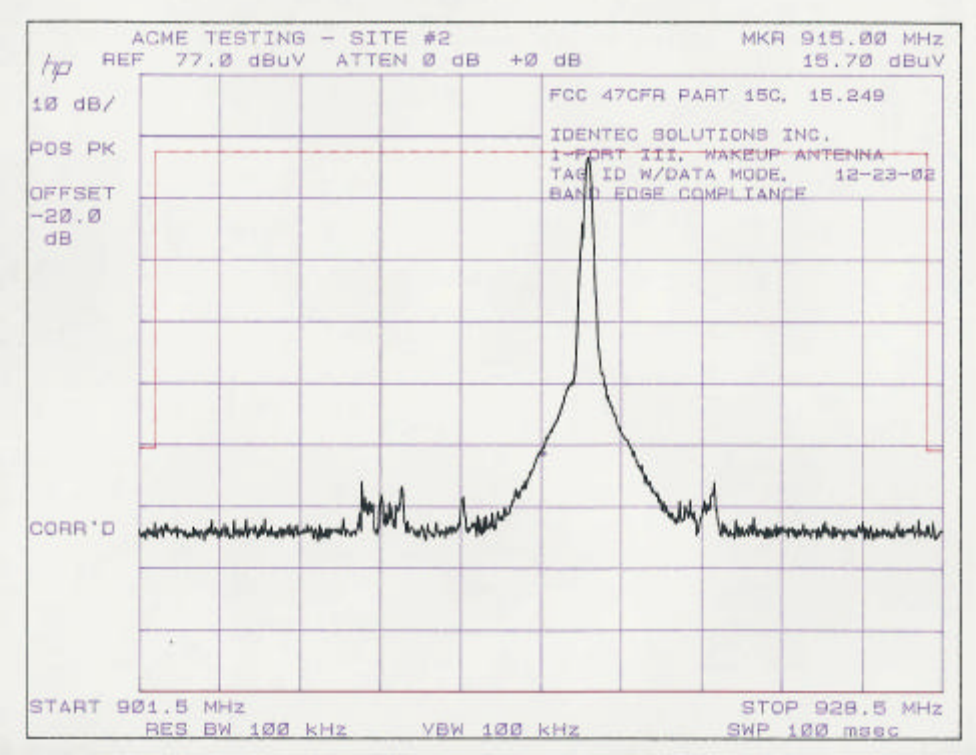

ACME TESTING - SITE #2
MKR 916.906 MHz
REF 87.0 dBuV ATTEN 0 dB + 10 dB
31.70 dBuV
10 dB/
POS PK
OFFSET
-10.0
dB
FCC 47CFR PART 15C, 15.249
IDENTEC SOLUTIONS INC.
i-PORT III, WAKEUP ANTENNA
TAG ID W/DATA MODE, 12-23-02
OCCUPIED BANDWITH 20dB= 406kHz
CORR'D
CENTER 916.71 MHz
SPAN 2.00 MHz
RES BW 10 kHz
VBW 10 kHz
SWP 100 msec

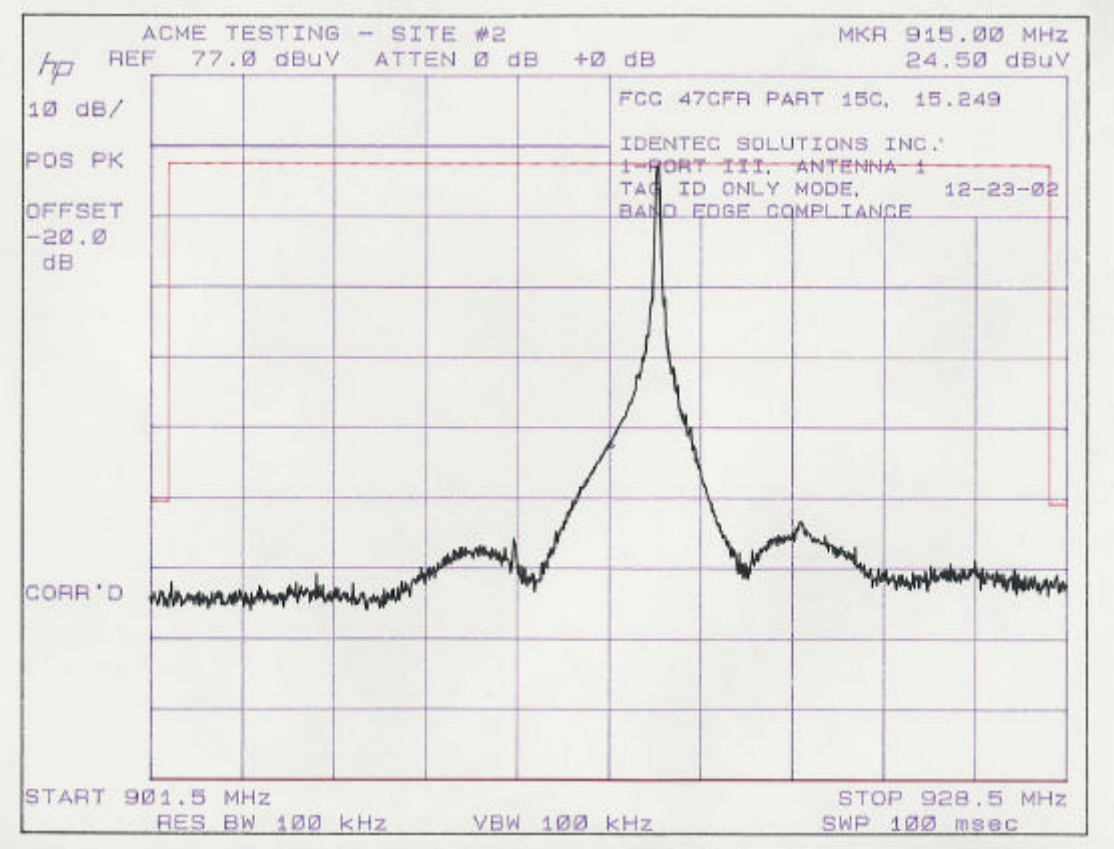

ACME TESTING - SITE #2
MKR 916.914 MHz
REF 87.0 dBuV ATTEN 0 dB + 10 dB
32.70 dBuV
10 dB/
POS PK
OFFSET
-10.0
dB
FCC 47CFR PART 15C, 15.249
IDENTEC SOLUTIONS INC.
i-PORT III, WAKEUP ANTENNA
TAG ID ONLY MODE, 12-23-02
OCCUPIED BANDWITH 20dB= 408kHz
CORR'D
CENTER 916.71 MHz
SPAN 2.00 MHz
RES BW 10 kHz
VBW 10 kHz
SWP 100 msec

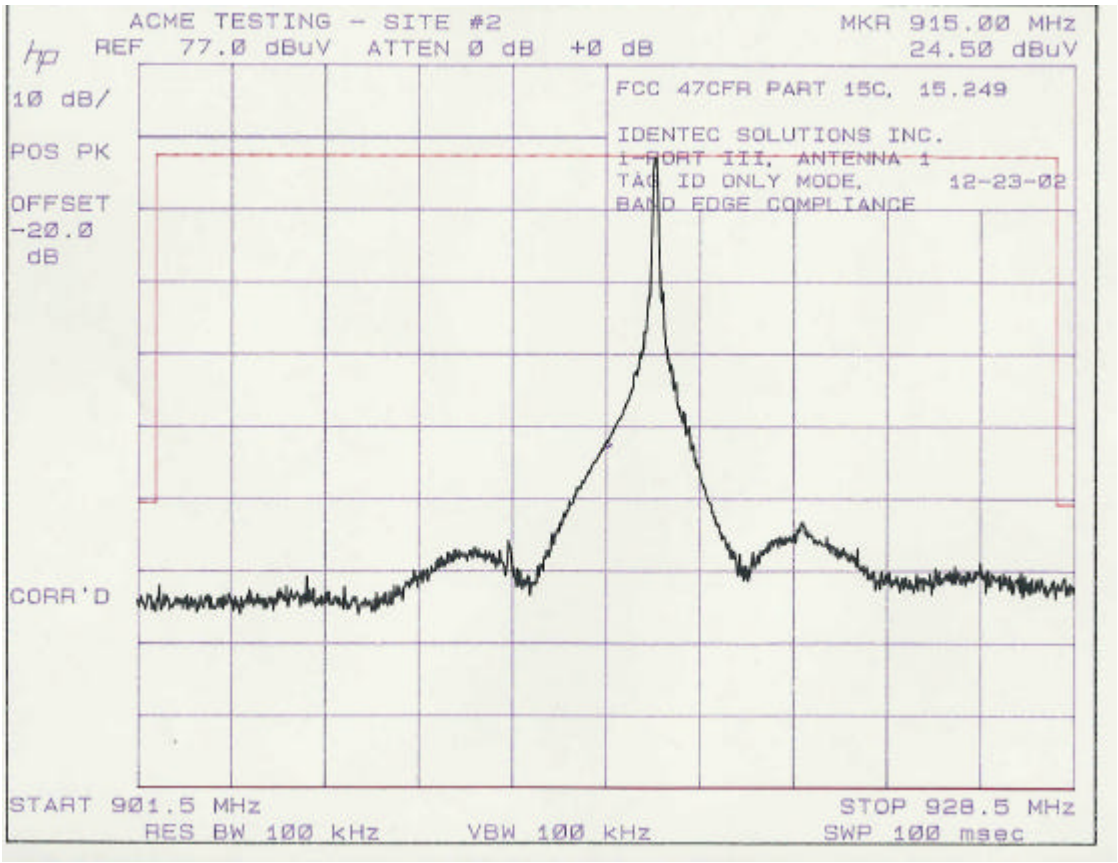
7.5 Band Edge Compliance Test Results

The EUT complied with the Band Edge Compliance requirements specified in 47CFR Part 15 Subpart C Sections 15.215(b) and (c), and 15.249(d).

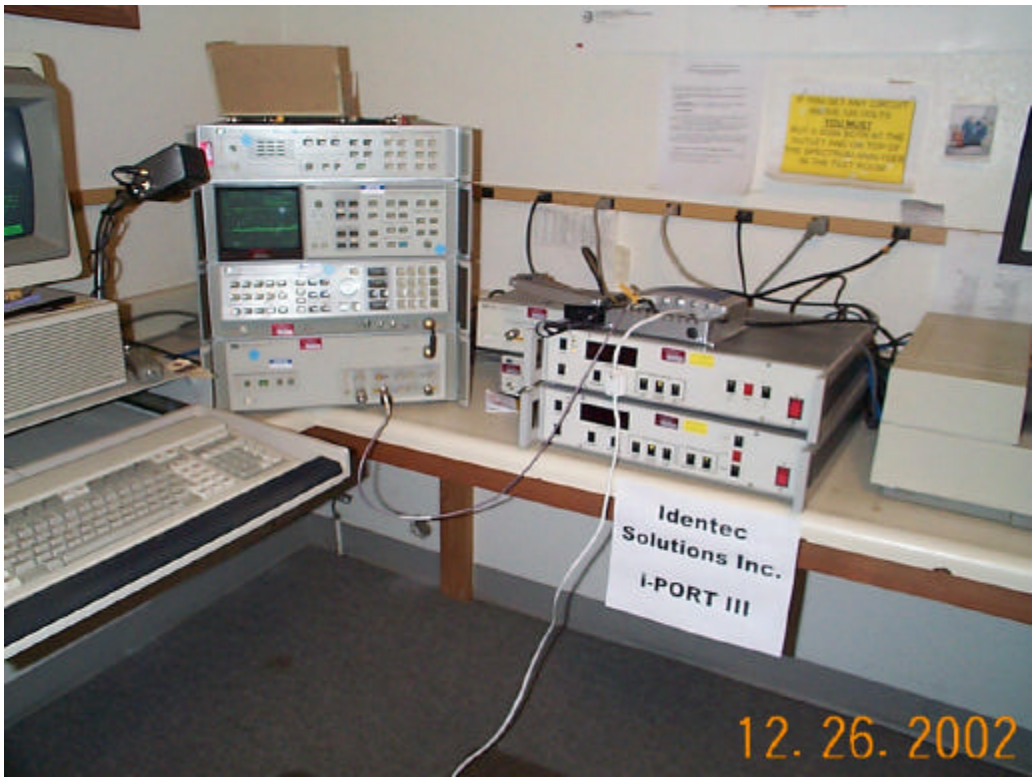





ACME TESTING - SITE #2
MKR 915.00 MHz
REF 77.0 dBuV ATTEN 0 dB +0 dB
24.50 dBuV
10 dB/
POS PK
OFFSET
-20.0
dB
FCC 47CFR PART 15C, 15.249
IDENTEC SOLUTIONS INC.
i-PORT III, ANTENNA 1
TAG ID ONLY MODE, 12-23-02
BAND EDGE COMPLIANCE
CORR'D
START 901.5 MHz
STOP 928.5 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 100 msec


ACME TESTING - SITE #2
MKR 915.00 MHz
REF 77.0 dBuV ATTEN 0 dB +0 dB
24.50 dBuV
10 dB/
POS PK
OFFSET
-20.0
dB
FCC 47CFR PART 15C, 15.249
IDENTEC SOLUTIONS INC.
i-PORT III, ANTENNA 1
TAG ID ONLY MODE, 12-23-02
BAND EDGE COMPLIANCE
CORR'D
START 901.5 MHz
STOP 928.5 MHz
RES BW 100 kHz
VBW 100 kHz
SWP 100 msec

7.6 Test Setup Photographs



8. Miscellaneous Comments and Notes

For Spurious Emissions in the Restricted Bands, per Section 15.205(a) and 15.205(b), prescans were performed using the Wakeup Antenna #5 and Antenna #1, in both TX Tag ID Only Mode, and, TX Tag ID with Data Mode. The Radiated Spurious Emissions were not any different from the Radiated Emissions when the EUT was prescanned in Receive Mode.

9. Informative Information

American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025-1999

ACME TESTING CO.
Site # 1 and Site # 2
P.O. Box 3,
2002 Valley Highway
Acme, WA 98220-0003
Harry H. Hodes Phone: 360 595 2785

ELECTRICAL (EMC)

Valid to: November 30, 2003 Certificate Number: 0829-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following Electromagnetic Compatibility (EMC) tests:

Test Technology	Test Method(s)
Basic Test Method Standards (Emissions):	
Conducted & Radiated:	ANSI C63.4-1992 & ANSI C63.4-2000; EIA/TIA-603:1993 & TIA/EIA-603:2001; FCC OET MP-5:1986; CISPR 11:1991 & EN 55011:1992; CISPR 11:1997 + A1:1999 & EN 55011:1998 + A1:1999; CISPR 13:1996 + A1:1998; CISPR 13:2001 & EN 55013:2001 & EN 55013:1990 + A12:1994 + A13:1996 + A14:1999 CISPR 14-1:1993 + A1:1996 + A2:1998 & EN 55014-1:1993 + A1:1997 + A2:1999; CISPR 14-1:2000 + A1:2001 & EN 55014-1:2000 + A1:2001 CISPR 22:1993 + A1:1995 + A2:1996 & EN 55022:1994 + A1:1995 + A2:1997; CISPR 22:1997 + A1:2000 & EN 55022:1998 + A1:2000;
Harmonic Current:	IEC 61000-3-2:1995+A1:1997+A2:1998 & IEC 61000-3-2:2000 & EN 61000-3-2:1995+A1,A2:1998+A14:2000; IEC 61000-3-2:2000 & EN 61000-3-2:2000
Voltage Fluctuations & Flicker	IEC 61000-3-3:1994+ A1:2001 & EN 61000-3-3:1995+A1:2001
Basic Test Method Standards (Immunity):	
Audio Frequency Common Mode	IEC 61000-2-1:1990; IEC 61000-2-2:2002
Electrostatic Discharge (ESD):	IEC 801-2:1991; IEC 1000-4-2:1995; IEC 61000-4-2:1995 + A1:1998 + A2:2001; EN 61000-4-2:1995 + A1:1998 + A2:2001;
Radiated RF Fields:	IEC 801-3:1984; ENV 50140:1994; IEC 1000-4-3:1995 & IEC 61000-4-3:1995; EN 61000-4-3:1996 + A1:1998; ENV 50204:1995;
Electrical Fast Transient/Burst:	IEC 801-4:1998; IEC 1000-4-4:1995; IEC 61000-4-4:1995; EN 61000-4-4:1995;

(A2LA Cert. No. 829.01) 05/08/02 Page 1 of 4

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • Phone: 301-644 3248 • Fax: 301-662 2974

Test Technology	Test Method(s)
Surge:	IEC 801-5(D):1992 (*single phase only, and excluding 10/700 surge testing*); ENV 50142:1994 (*single phase only, and excluding 10/700 surge testing*); IEC 1000-4-5:1995 (*single phase only,and excluding 10/700 surge testing*); IEC 61000-4-5:1995 (*single phase only, and excluding 10/700 surge testing*); EN 61000-4-5:1995 (*single phase only, and excluding 10/700 surge testing*);
RF Common Mode (Conducted):	ENV 50141:1994; IEC 1000-4-6:1996; IEC 61000-4-6:1996; EN 61000-4-6:1996;
Power Frequency Magnetic Fields:	IEC 1000-4-8:1994; IEC 61000-4-8:1994; EN 61000-4-8:1994; IEC 61000-4-8:2001
Voltage Dips, Short Interruptions, & Variations:	IEC 1000-4-11:1994; IEC 61000-4-11:1994; EN 61000-4-11:1994;

Generic & Product Family Standards:

47 U.S. Code of Federal Regulations (47 CFR) FCC Methods, as follows:
Part 15 (using ANSI C63.4-1992 & ANSI C63.4-2000); &
Part 18 (using FCC OET MP-5:1986);

ICES-003 Issue 2 Revision 1;

CNS 13438:1997; CNS 13439:1994;

Bellcore [Telcordia] GR-1089-CORE Issue 2 Revision 1:1999
(*Sections 2, 3, 4.5.9, 4.5.10 [1st level surge only],9.10.5, & 9.10.6 Only*);

AS/NZS 2064:1997; AS/NZS 3548:1995;
AS/NZS 4251.1:1994; AS/NZS 4252.1:1994;
AS/NZS 4268.2:1995

EN 50081-1:1992; EN 50081-2:1993; EN 50082-1:1997; EN 50082-2:1995;
IEC 61000-6-1:1997 & EN 61000-6-1:2001
IEC 61000-6-2:1999 & EN 61000-6-2:1999 & EN 61000-6-2:2001
IEC 61000-6-3:1996 & EN 61000-6-3:2001
IEC 61000-6-4:1997 & EN 61000-6-4:2001

EN 50083-2:1995 + A1:1997; EN 50091-2:1995;
EN 50130-4:1995 + A1:1998, EN 50199:1995; EN 50270:1999;
EN 50293:2000;

CISPR 11:1991 & EN 55011:1992;
CISPR 11:1997 + A1:1998 & EN 55011:1998 + A1:1999;
CISPR 13:1996 + A1:1998
& EN 55013:1990 + A12:1994 + A13:1996 + A14:1999
CISPR 13:2001 & EN 55013:2001;
CISPR 14-1:1993 + A1:1996 + A2:1998
& EN 55014-1:1993 + A1:1997 + A2:1999;
CISPR 14-1:2000 + A1:2001 & EN 55014-1:2000 + A1:2001
CISPR 14-2:1997 & EN 55014-2:1997

(A2LA Cert. No. 829.01) 05/08/02

Test Technology	Test Method(s)
Generic & Product Family Standards:	
	CISPR 22:1993 + A1:1995 + A2:1996
	& EN 55022:1994 + A1:1995 + A2:1997;
	CISPR 22:1997 + A1:2000 & EN 55022:1998 + A1:2000;
	CISPR 24: 1997 + A1:2001 & EN 55024:1998 + A1:2001
	EN 55103-1:1996; EN 55103-2:1996;
	IEC 60521:1988 & EN 60521:1995;
	IEC 60555-2:1991 & EN 60555-2:1993;
	IEC 60555-3:1990 & EN 60555-3:1991;
	EN 60601-1-2:1984 *(EMC Requirements Only)*;
	IEC 60601-1-2:2001 (2nd Edition) *(EMC Requirements Only)*
	& EN 60601-1-2:2001 (2nd Edition) *(EMC Requirements Only)*
	IEC 60687:1992 & EN 60687:1992;
	IEC 60870-2-1:1995 & EN 60870-2-1:1996
	IEC 60945:1996 (*Clauses 9, 10, 11.2, 12.2, & 12.3 Only*),
	& EN 60945:1996 (*Clauses 9, 10, 11.2, 12.2, & 12.3 Only*);
	IEC 61000-3-2:1995+A1:1997+A2:1998
	& EN 61000-3-2:1995+A1,A2:1998+A14:2000;
	IEC 61000-3-2:2000 & EN 61000-3-2:2000;
	IEC 61000-3-3:1994 + A1:2001 & EN 61000-3-3:1995 + A1:2001;
	IEC 61036:1996 + A1:2000 & EN 61036:1996 + A1:2000;
	IEC 61131-2:1992 & EN 61131-2:1994 + A11:1996 + A12:2000;
	IEC 61204-3:2000 & IEC 61204-3:2000;
	IEC 61268:1995 & EN 61268:1996;
	IEC 61326:1997 + A1:1998 + A2:2000
	& EN 61326:1997 + A1:1998 + A2:2000;
	IEC 61800-3:1996 & EN 61800-3:1996 + A11:2000;
	EN 300 339:1998
	EN 300 386 V1.3.1(09-2001),
	EN 301 489-01 (09-2001)
	ETS 300 683:1997
	EN 301 489-03 (11-2001)
	EN 300 385:1999
	EN 301 489-04 (07-2000)
	EN 300 279:1999
	EN 301 489-05 (07-2000)
	EN 301 489-09 (09-2000)
	ETS 300 684:1997
	EN 301 489-15 (09-2000)
	EN 301 489-22 (11-2000)

(A2LA Cert. No. 829.01) 05/08/02

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2002 Valley Highway PO Box 3 Acme WA 98220-0003
phone:888 226-3837 fax: 360 595-2722

Radio Test Standards:

47 U.S. Code of Federal Regulations (47 CFR) FCC Methods, as follows:
Part 15 (using ANSI C63.4-1992 & ANSI C63.4-2000), &
Part 90 (using ANSI C63.4-1992, ANSI C63.4-2000, & TIA/EIA-603);

Industry Canada, as follows:
RSS-119 Issue 6: March 2000;
RSS-125 Issue 2: August 1996;
RSS-210 Issue 4: December 2000;

European Union [EU] & European Economic Area [EEA], as follows:
EN 300 086-1 V.1.2.1 (2001-03) & EN 300 086-2 V.1.2.1 (2001-02);
EN 300 113-1 V1.3.1 (2001-03) & EN 300 113-2 V1.3.1 (2001-03);
EN 300 219-1 V1.2.1 (2001-03) & EN 300 219-2 V1.2.1 (2001-03);
EN 300 220-1 V1.3.1 (2000-09) & EN 300 220-2 V1.3.1 (2000-09)
& EN 300 220-3 V1.1.1 (2000-03);
EN 300 296-1 V1.1.1 (2001-03) & EN 300 296-2 V1.1.1 (2001-02);
EN 300 330-1 V1.3.1 (2001-06) & EN 300 330-2 V1.1.1 (2001-06);
EN 300 422-1 V1.2.1 (2000-08) & EN 300 422-2 V1.1.1 (2000-08);
EN 300 440-1 V1.3.1 (2001-09) & EN 300 440-2 V1.1.1 (2001-09);
EN 301 751 V1.2.1 (2000-12);
EN 301 753 V1.1.1 (2001-03);
EN 301 783-1 V1.1.1 (2000-09) & EN 301 783-2 V1.1.1 (2000-07)

On the following materials and products:
Electrical and electronic equipment for: information technology; industrial, scientific, and medical applications; residential service; receivers; licensed and unlicensed transmitters/transceivers; UPS systems; alarm/security systems; heavy industrial equipment; marine equipment; professional audio/video equipment; arc welders; PLC controllers; and scientific and laboratory apparatus.

(A2LA Cert. No. 829.01) 05/08/02

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2002 Valley Highway PO Box 3 Acme WA 98220-0003
phone:888 226-3837 fax: 360 595-2722

THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

ACME TESTING CO.
Acme, WA

for technical competence in the field of

Electrical Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002 (1994).

Presented this 30th day of April, 2002.

SEAL

President
For the Accreditation Council
Certificate Number 829.01
Valid to November 30, 2003

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

July 26, 2002

Registration Number: 90420

Acme Testing Co.
P.O. Box 3
2002 Valley Highway
Acme, WA 98220-0003

Attention: Harry Hodes

Re: Measurement facility located at Acme
Sites 1 & 2 (3, 10 & 30 meters)
Date of Renewal: July 26, 2002

Gentlemen:

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website www.fcc.gov under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

Phyllis Parrish
Information Technician