



EMI TEST REPORT

Test Report No. : 23HE0073-HO-1

Applicant : ALPS Electric Co., Ltd.
Type of Equipment : CDMA data module
Model No. : UGEA3A
Test standard : FCC Part 22 Subpart H
FCC Part 24
FCC ID : CWTUGEA3A
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.
5. This test report does not constitute an endorsement by NIST/NVLAP or U.S. Government.

Date of test : June 4, 6, 9, 10, 11, 16, 18 and 19 and October 16, 2003

Tested by : 

Hiroka Umeyama
EMC Section

Approved by : 

Hironobu Shimoji
Group Leader of EMC Section

UL Apex Co., Ltd.
Head Office EMC Lab.
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SECTION 1: Client information

Company Name : ALPS Electric Co., Ltd.
Brand Name : ALPS
Address : Japan
Telephone Number : +81 244 35 1207
Facsimile Number : +81 244 35 1602
Contact Person : Masaaki Ueki

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : CDMA data module
Model No. : UGEA3A
Serial No. : 00000011(Conducted) and 00000013(Radiated)
Rating : DC 3.6V, 830mA
Country of Manufacture : Japan
Receipt Date of Sample : May 30, 2003
Condition of EUT : Mass-production is planned.

2.2 Product Description

ALPS Electric Co., Ltd., Model No: UGEA3A(referred to as the EUT in this report) is the CDMA data module.

Frequency band : 824-849MHz (AMPS)
824-849MHz (CDMA)
1850-1910MHz (PCS CDMA)
Frequency operation : 824.04-848.97 MHz (AMPS)
824.7-848.31 MHz (CDMA)
1851.25-1908.75 (PCS CDMA)
Type of modulation : AMPS/CDMA
Transmit power or Rating : AMPS :0.398 Werp (26dBm erp)
CDMA:0.2 Werp (23dBm erp)
PCS CDMA:0.2 Werp (23dBm erp)
Frequency tolerance : ±2.5ppm
Channel access protocol : Software controlled
Mode of operation : Duplex
Antenna Type : Type 1:842-894MHz(AMP/CDMA):3.5dBi Max.
1850-1990MHz(PCS):4.5dBi
Type 2:842-894MHz(AMP/CDMA):0.3dBi
1850-1990MHz(PCS):-0.92dBi
FCC Rules Parts : 22.901 (a), 22 (H), 24 (E)

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 22 Subpart H
FCC Part 24

Title : FCC 47CFR Part 22 Subpart H
Cellular Radiotelephone Services

FCC 47CFR Part 24
Personal Communications Services

3.2 Procedures and results

Item	Test Method	FCC Regulations	Remarks	Deviation	Worst margin	Results
Peak Output Power	Section 2.1046	Section 22.913(a) Section 24.232(b)	Conducted/ Radiated	N/A	-	Complied
Occupied Bandwidth	Section 2.1049	Section 22.917(b) Section 24.238(b)	Conducted	N/A	-	Complied
Band-Edge	Section 2.1049	Section 22.917(b) Section 24.238(b)	Conducted/ Radiated	N/A	0.3dB 824.0MHz (mode:CDMA)	Complied
Spurious Emission	Section 2.1051	Section 22.917(a) Section 24.238(a)	Conducted	N/A	-	Complied
Spurious Radiation	Section 2.1053	Section 22.917(a) Section 24.238(a)	Radiated	N/A	13.8dB 5639.15MHz Horizontal (mode:PCS)	Complied
Frequency Stability (Temperature Variation)	Section 2.1055(a) (1) and (b)	Section 22.355 Section 24.235	Conducted	N/A	-	Complied
Frequency Stability (Voltage Variation)	Section 2.1055(d)(1) and (2)	Section 22.355 Section 24.235	Conducted	N/A	-	Complied

Note: UL Apex's EMI Work Procedures No. QPM05

*These tests were also referred to TIA-603-B "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards."

3.3 Additions to standards

No addition, deviation or exclusion has been made from standards.

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3.4 Confirmation

UL Apex Co., Ltd. hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part 22 and Part 24.

3.5 Uncertainty

Radiated

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ± 4.5 dB.

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ± 5.2 dB.

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ± 6.6 dB.

■ The result is within Head Office EMC lab's uncertainty.

□ The data listed in this test report has enough margin.

Conducted

The measurement uncertainty (with a 95% confidence level) for this test is ± 3.0 dB.

■ The result is within Head Office EMC lab's uncertainty.

□ The data listed in this test report has enough margin.

3.6 Test Location

UL Apex Co., Ltd. Head Office EMC Lab.

No.2 semi anechoic chamber and No.3 measurement room.

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This semi anechoic chamber has been fully described in a report submitted to FCC office, and listed on June 05, 2002.
(Registration number: No.2 :846015 Industry Canada: No.2 : IC4247-2)

*NVLAP Lab. code: 200572-0

3.7 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

The sequence is used : Transmitting

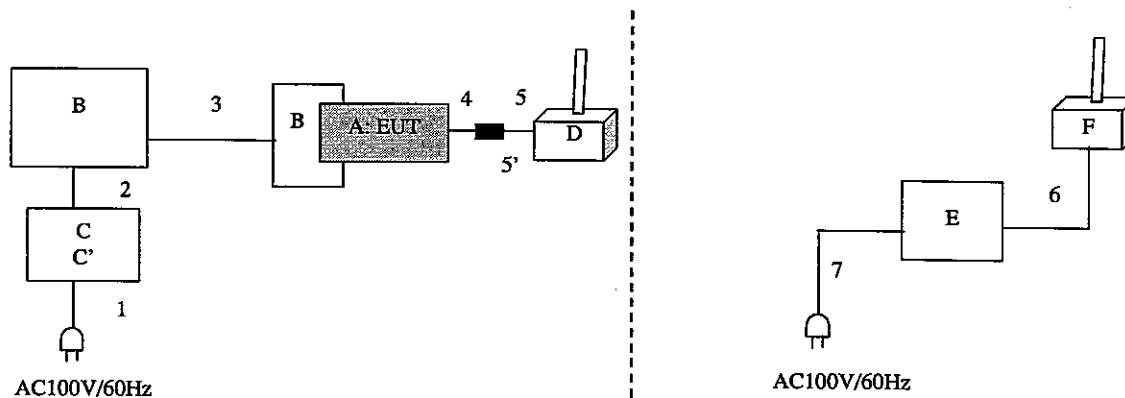
1. AMPS
2. CDMA
3. CDMA 1X (with modulation using the Universal Radio Communication)
4. PCS
5. PCS 1X (with modulation using the Universal Radio Communication)

Two Antenna Types for Radiated test :

1. Type 1:842-894MHz(AMP/CDMA):3.5dBi Max.
1850-1990MHz(PCS):4.5dBi
2. Type 2:842-894MHz(AMP/CDMA):0.3dBi
1850-1990MHz(PCS):-0.92dBi

Justification : The system was configured in typical fashion (as a customer would normally use it) for testing.

4.2.1 Configuration and peripherals



* Cabling was taken into consideration and test data was taken under worst case conditions.

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Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID	Remark
A	CDMA data module	UGEA3A	00000011 (Conducted) and 00000013 (Radiated)	ALPS Electric Co., Ltd.	CWTUGEA 3A	EUT
B	JIG	-	-	-	-	-
C	DC Power Supply (for Radiated test only)	PMC35-2A	13090501	KIKUSUI	-	Radiated test
C'	DC Power Supply (for Radiated test only)	PW18-1.3AT	08016530	KENWOOD	-	Conducted test
D	Antenna (for 2) (Type 1 and Type 2)	-	-	-	-	-
E	Universal RADIO COMMUNICATION TESTER	CMU200	837261/069	ROHDE& SCHWARZ	-	-
F	Antenna	-	-	-	-	-

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	AC Power Cable	1.8	N	Polyvinyl chloride
2	DC Power Cable	0.9	N	Polyvinyl chloride
3	Flat Cable	0.2	N	Polyvinyl chloride
4	Antenna Cable	0.2	N	Polyvinyl chloride
5	Antenna Cable (for Type 2)	1.3	N	Polyvinyl chloride
5'	Antenna Cable (for Type 1)	0.1	N	Polyvinyl chloride
6	Antenna Cable	2.0	N	Polyvinyl chloride
7	AC Power Cable	2.4	N	Polyvinyl chloride

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SECTION 5: Peak Output Power (Conducted / Radiated)

[Conducted]

Test Procedure

The peak output power (conducted) was measured with a power meter and an attenuator at the antenna port.

Test data : APPENDIX 3
Test result : Pass
Test instruments : APPENDIX 2
MCC-04, MAT-15, MPSE-03, MPM-01

[Radiated]

Test Procedure

The peak output power (conducted) was measured with a power meter and an attenuator at the antenna port.

For radiated peak output power, EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.

The Radiated Electric Field Strength intensity has been measured at the semi anechoic chamber (7.5 x 5.8 x 5.2m) and at a distance of 3m.

The measuring antenna height was varied between 1 to 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

An appropriate substitution antenna selected depending on measurement frequencies replaces the EUT in the same position.

The signal generator connected to the substitution antenna is adjusted to the measurement frequency and the level, which produces the equipment the same electric field strength at the measurement antenna. The measurement were performed for both vertical and horizontal antenna polarization.

Test data : APPENDIX 3
Test result : Pass
Test instruments : APPENDIX 2
HF-04, MAT-07, MBA-02, MCC-12, MLA-02, MPA-04, SA-07, MSG-03
MTR-02, MAT-20, MAT-21, MAT-23, MHA-05, MHA-06, MPA-01
MSG-01, MCC-05, MCC-06, MCC-11, MCC-22, MCC-24, MCC-10

SECTION 6: Occupied Bandwidth and Band-Edge (Conducted)

Test Procedure

The Emission Bandwidth and Band-Edge was measured with a spectrum analyzer and attenuator connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass
Test instruments : APPENDIX 2
MBTR10, MCC-14, MAT-10, MAT-22

SECTION 7: Spurious Emission (Conducted)

Test Procedure

The Spurious Emission was measured with a spectrum analyzer and attenuator connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass
Test instruments : APPENDIX 2
MBTR10, MCC-14, MAT-10, MAT-22

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SECTION 8: Spurious Radiation and Band-Edge (Radiated)

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.

The Radiated Electric Field Strength intensity has been measured at the semi anechoic chamber (7.5 x 5.8 x 5.2m) and at a distance of 3m.

The measuring antenna height was varied between 1 to 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

An appropriate substitution antenna selected depending on measurement frequencies replaces the EUT in the same position.

The signal generator connected to the substitution antenna is adjusted to the measurement frequency and the level, which produces the equipment the same electric field strength at the measurement antenna. The measurement were performed for both vertical and horizontal antenna polarization.

Test data : **APPENDIX 3**
Test result : **Pass**
Test instruments : **APPENDIX 2**
HF-04, MAT-07, MBA-02, MCC-12, MLA-02, MPA-04, SA-07, MSG-03
MTR-02, MAT-20, MAT-21, MAT-23, MHA-05, MHA-06, MPA-01
MSG-01, MCC-05, MCC-06, MCC-11, MCC-22, MCC-24, MCC-10

SECTION 9: Frequency Stability (Temperature / Voltage Variation)

Test Procedure

The Frequency Stability was measured with a frequency counter and attenuator connected to the antenna port.

The Frequency Drift was measured with the 10 deg. C. steps from -30 deg.C. to 50 deg.C., and it is presented as the ppm unit. The Frequency Drift was measured with the normal temperature(20 deg.C.) and Voltage tolerance (0 %, +15 %, -15%), and it is presented as the ppm unit.

Test data : **APPENDIX 3**
Test result : **Pass**
Test instruments : **APPENDIX 2**
MCH-01, MCC-04, MAT-01, MAT-22, UC-01

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Contents of Appendixes

APPENDIX 1: Photographs of test setup

Page 11-12 : Radiated
Page 13 : Conducted

APPENDIX 2: Test instruments

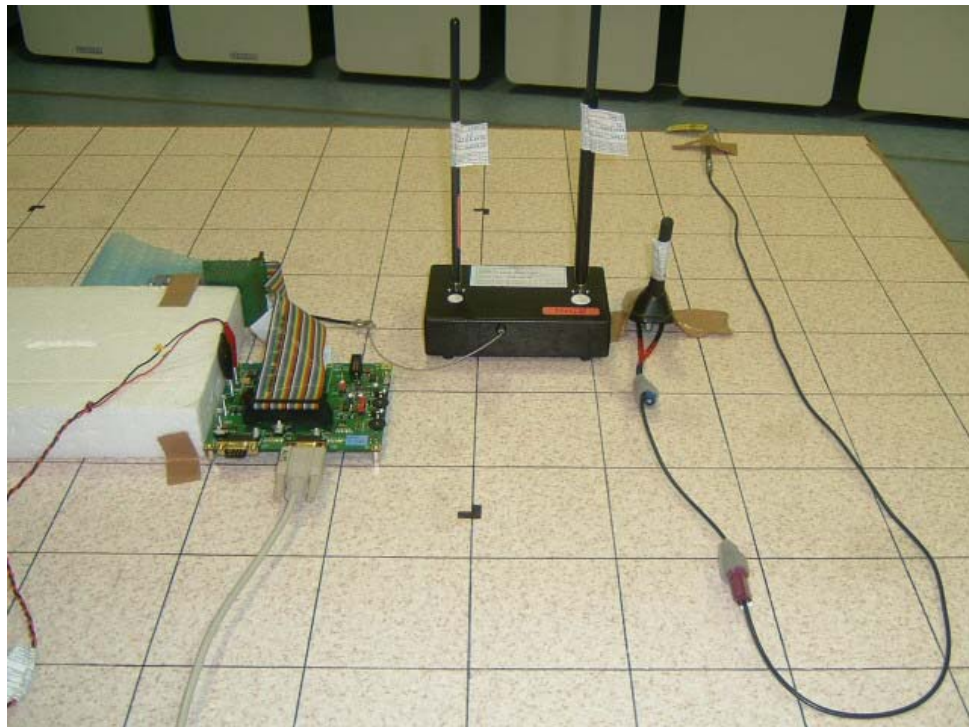
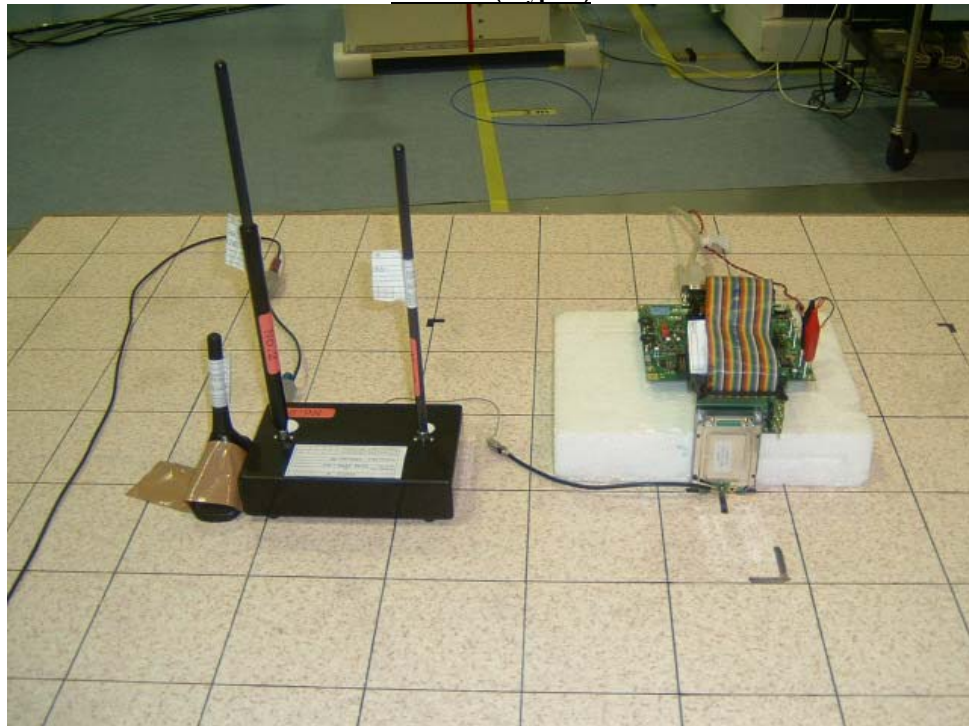
Page 14 : Test instruments

APPENDIX 3: Data of EMI test

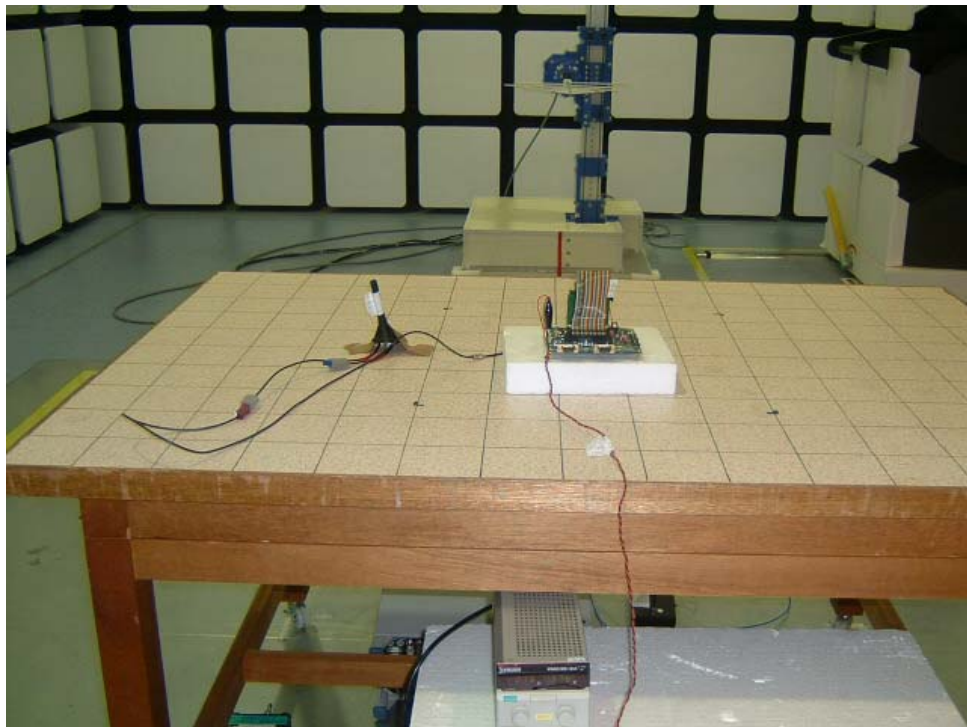
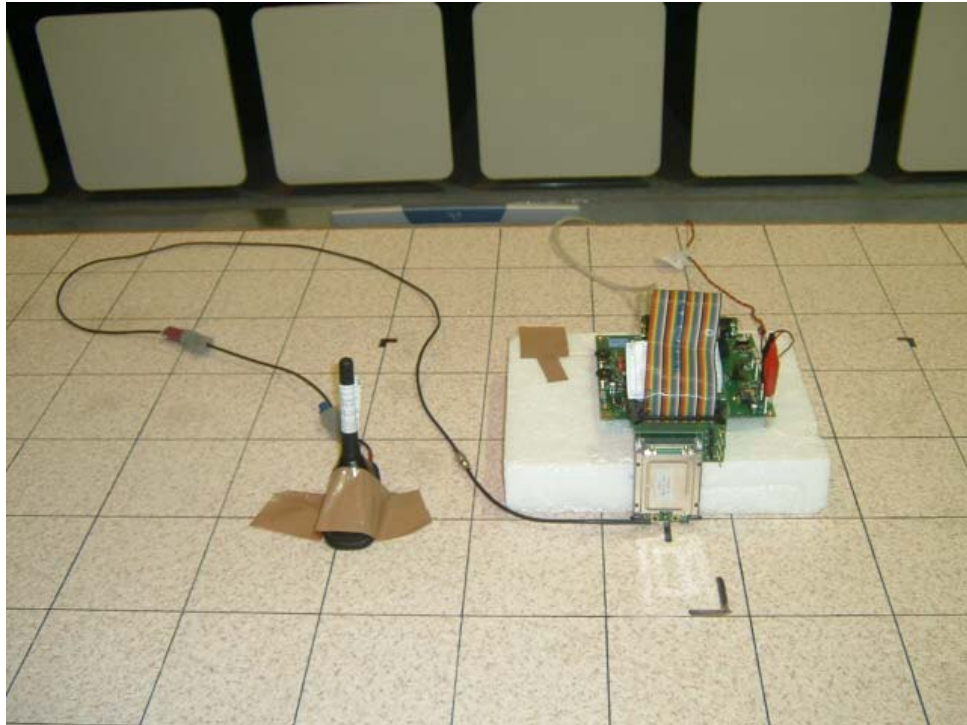
Page 15-28 : Peak Output Power (Conducted/Radiated)
Page 29-46 : Occupied Bandwidth
Page 47-60 : Band-Edge (Conducted/Radiated)
Page 61-72 : Spurious Emission (Conducted)
Page 73-78 : Spurious Emission (Radiated)
Page 79-81 : Frequency Stability

APPENDIX 1: Photographs of test setup

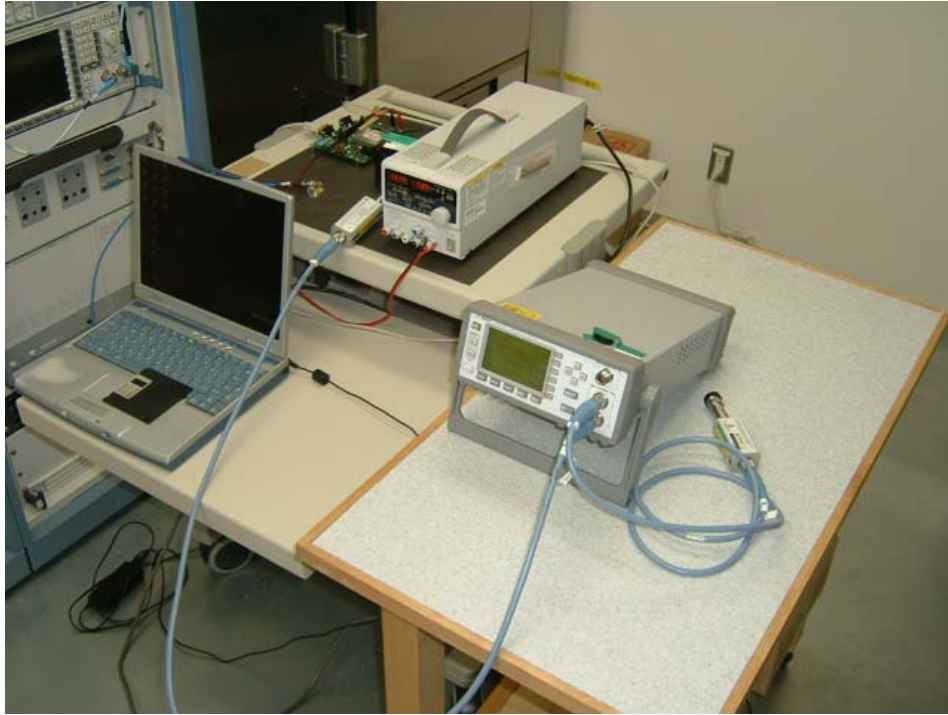
Radiated (Type 1)



Radiated (Type 2)



Conducted



APPENDIX 2: Test Instruments

Test Report No : 23HE0073-HO

APPENDIX 2 Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No.	Test Item	Calibration Date (In accordance with)
MBTR10	Spectrum Analyzer	Rohde & Schwarz	FSP30	RE	2002/11/13 * 12
MCC-04	Microwave Cable	Storm	421-011	RE	2003/01/14 * 12
MAT-01	20dB Fixed attenuator	Agilent	8490D.020	RE	2003/08/22 * 12
MAT-22	Attenuator	Orient Microwave	BX10-0476-00	RE	2003/03/31 * 12
MAT-15	Attenuator	Agilent	US40010300	RE	2002/12/24 * 12
MPM-01	Power Meter	Agilent	E4417A	RE	2002/11/08 * 36
MPSE-03	Power sensor	Agilent	E9327A	RE	2003/04/14 * 12
MDPS-04	DC Power Supply	KENWOOD TMI	PW18-1.3AT	RE	Pre Check
UC-01	Universal Counter	Agilent	53131A	RE	2002/10/24 * 12
MCH-01	Temp.&Humid. Chamber	Tabai Espec	PL-2KP	RE	2002/12/18 * 12
HF-04	ERROR: Server error: Entry not found in index	ERROR: Server error: Entry not found in index	ERROR: Server error: Entry not found in index	RE	
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2003/04/11 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2002/12/24 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2002/10/16 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2003/05/08 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2002/10/16 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2003/03/13 * 12
SA-07	Spectrum Analyzer	Advantest	R3273	RE	2002/12/10 * 12
MSG-03	Signal Generator	Rohde & Schwarz	SML03	RE	2003/09/11 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE	2003/01/31 * 12
MAT-20	Attenuator	HIROSE ELECTRIC CO.LTD.	AT-110	RE	2003/02/04 * 12
MAT-21	Attenuator	HIROSE ELECTRIC CO.LTD.	AT-120	RE	2003/02/03 * 12
MAT-23	Attenuator	Orient Microwave	BX10-0476-00	RE	2003/03/31 * 12
MHA-05	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2003/01/11 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2003/01/11 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2003/02/08 * 12
MSG-01	Signal Generator	Rohde & Schwarz	SMR40	RE	2002/11/25 * 12
MCC-05	Microwave Cable	Storm	421-011	RE	2003/01/14 * 12
MCC-06	Microwave Cable	Storm	421-011	RE	2003/01/14 * 12
MCC-11	Microwave coaxial cable	Suhner	SUCOFLEX 104	RE	2003/03/27 * 12
MCC-22	Microwave Cable	Storm	-	RE	2004/04/29 * 12
MCC-24	Microwave Cable	Storm	-	RE	2003/04/30 * 12
MCC-10	Coaxial cable	Storm	90-195-394	RE	2003/03/26 * 12
SA-07	Spectrum Analyzer	Advantest	R3273	RE	2002/12/10 * 12
MPM-04	Power Meter	Agilent	E4416A	RE	2003/03/13 * 12
MPSE-04	Power sensor	Agilent	E9327A	RE	2003/03/18 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item:

RE: Radiated emission.

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DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

COMPANY : ALPS Electric Co., Ltd
EQUIPMENT : CDMA data module
MODEL : UGEA3A
S/N : 0000011
FCC ID : CWTUGEA3A
IC Number : -
POWER : DC3.6V
MODE : Tx (AMPS)
: Wide Band Data

REPORT NO : 23HE0073-HO-1
REGULATION : Fcc Part 22 Section 22.913(a)
TEST METHOD : Fcc Part 2 Section 2.1046
TEST DISTANCE : -
DATE : 10/16/2003
TEMPERATURE : 24°C
HUMIDITY : 50%


Engineer : Hiroka Umeyama

CH	FREQ	P/M Reading	Atten.	Result
	[MHz]	[dBm]	[dB]	[dBm]
Low	824.04	-4.0	30.0	26.0
Mid	836.52	-4.0	30.0	26.0
High	848.97	-4.0	30.0	26.0

Result = P/M Reading + Atten.

DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

COMPANY : ALPS Electric Co., Ltd
EQUIPMENT : CDMA data module
MODEL : UGEA3A
S/ N : 0000011
FCC ID : CWTUGEA3A
IC Number : -
POWER : DC3.6V
MODE : Tx (AMPS)
: Signaling Tone

REPORT NO : 23HE0073-HO-1
REGULATION : Fcc Part 22 Section 22.913(a)
TEST METHOD : Fcc Part 2 Section 2.1046
TEST DISTANCE : -
DATE : 10/16/2003
TEMPERATURE : 24°C
HUMIDITY : 50%

Engineer : 
Hiroka Umeyama

CH	FREQ	P/M Reading	Atten.	Result
	[MHz]	[dBm]	[dB]	[dBm]
Low	824.04	-4.0	30.0	26.0
Mid	836.52	-4.0	30.0	26.0
High	848.97	-4.0	30.0	26.0

Result = P/M Reading + Atten.

DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

COMPANY : ALPS Electric Co., Ltd
EQUIPMENT : CDMA data module
MODEL : UGEA3A
S/ N : 00000011
FCC ID : CWTUGEA3A
IC Number : -
POWER : DC3.6V
MODE : Tx (AMPS)
: Supervisory Audio Tone

REPORT NO : 23HE0073-HO-1
REGULATION : Fcc Part 22 Section 22.913(a)
TEST METHOD : Fcc Part 2 Section 2.1046
TEST DISTANCE : -
DATE : 10/16/2003
TEMPERATURE : 24°C
HUMIDITY : 50%


Engineer : Hiroka Umeyama

CH	FREQ	P/M Reading	Atten.	Result
	[MHz]	[dBm]	[dB]	[dBm]
Low	824.04	-4.0	30.0	26.0
Mid	836.52	-4.0	30.0	26.0
High	848.97	-4.0	30.0	26.0

Result = P/M Reading + Atten.

DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.

Head Office EMC Lab. No.3 Measurement Room

COMPANY : ALPS Electric Co., Ltd
EQUIPMENT : CDMA data module
MODEL : UGEA3A
S/N : 0000011
FCC ID : CWTUGEA3A
IC Number : -
POWER : DC3.6V
MODE : Tx (AMPS)
Supervisory Audio Tone + Signaling Tone

REPORT NO : 23HE0073-HO-1
REGULATION : Fcc Part 22 Section 22.913(a)
TEST METHOD : Fcc Part 2 Section 2.1046
TEST DISTANCE : -
DATE : 10/16/2003
TEMPERATURE : 24°C
HUMIDITY : 50%

Engineer : 
Hiroka Umeyama

CH	FREQ [MHz]	P/M Reading [dBm]	Atten. [dB]	Result [dBm]
Low	824.04	-4.0	30.0	26.0
Mid	836.52	-4.0	30.0	26.0
High	848.97	-4.0	30.0	26.0

Result = P/M Reading + Atten.

DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

COMPANY : ALPS Electric Co., Ltd
EQUIPMENT : CDMA data module
MODEL : UGEA3A
S/N : 00000011
FCC ID : CWTUGEA3A
IC Number : -
POWER : DC3.6V
MODE : Tx (AMPS)
: Voice + Supervisory Audio Tone

REPORT NO : 23HE0073-HO-1
REGULATION : Fcc Part 22 Section 22.913(a)
TEST METHOD : Fcc Part 2 Section 2.1046
TEST DISTANCE : -
DATE : 10/16/2003
TEMPERATURE : 24°C
HUMIDITY : 50%

Engineer : 
Hiroka Umeyama

CH	FREQ	P/M Reading	Atten.	Result
	[MHz]	[dBm]	[dB]	[dBm]
Low	824.04	-4.0	30.0	26.0
Mid	836.52	-4.0	30.0	26.0
High	848.97	-4.0	30.0	26.0

Result = P/M Reading + Atten.

DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.

Head Office EMC Lab. No.3 Measurement Room

COMPANY : ALPS Electric Co., Ltd
EQUIPMENT : CDMA data module
MODEL : UGEA3A
S/N : 00000011
FCC ID : CWTUGEA3A
IC Number : -
POWER : DC3.6V
MODE : Tx (CDMA)

REPORT NO : 23HE0073-HO-1
REGULATION : Fcc Part 22 Section 22.913(a)
TEST METHOD : Fcc Part 2 Section 2.1046
TEST DISTANCE : -
DATE : 06/04/2003
TEMPERATURE : 25°C
HUMIDITY : 50%


Engineer : Hiroka Umeyama

CH	FREQ	P/M Reading	Atten.	Result
	[MHz]	[dBm]	[dB]	[dBm]
Low	824.7	-7.0	30.0	23.0
Mid	836.5	-7.0	30.0	23.0
High	848.3	-7.0	30.0	23.0

Result = P/M Reading + Atten.

DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.

Head Office EMC Lab. No.3 Measurement Room

COMPANY : ALPS Electric Co., Ltd
EQUIPMENT : CDMA data module
MODEL : UGEA3A
S/N : 00000011
FCC ID : CWTUGEA3A
IC Number : -
POWER : DC3.6V
MODE : Tx (CDMA 1X)

REPORT NO : 23HE0073-HO-1
REGULATION : Fcc Part 22 Section 22.913(a)
TEST METHOD : Fcc Part 2 Section 2.1046
TEST DISTANCE : -
DATE : 06/16/2003
TEMPERATURE : 22°C
HUMIDITY : 60%


Engineer : Hiroka Umeyama

CH	FREQ [MHz]	P/M Reading [dBm]	Atten. [dB]	Result [dBm]
Low	824.7	-7.0	30.0	23.0
Mid	836.5	-7.0	30.0	23.0
High	848.3	-7.0	30.0	23.0

Result = P/M Reading + Atten.

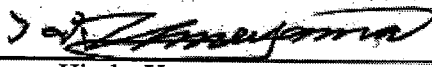
DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.

Head Office EMC Lab. No.3 Measurement Room

COMPANY : ALPS Electric Co., Ltd
EQUIPMENT : CDMA data module
MODEL : UGEA3A
S/N : 00000011
FCC ID : CWTUGEA3A
IC Number : -
POWER : DC3.6V
MODE : Tx (PCS)

REPORT NO : 23HE0073-HO-1
REGULATION : Fcc Part 24 Section 24.232(b)
TEST METHOD : Fcc Part 2 Section 2.1046
TEST DISTANCE : -
DATE : 06/06/2003
TEMPERATURE : 24°C
HUMIDITY : 39%


Engineer : Hiroka Umeyama

CH	FREQ	P/M Reading	Atten.	Result
	[MHz]	[dBm]	[dB]	[dBm]
Low	1851.3	-7.0	30.0	23.0
Mid	1880.0	-7.0	30.0	23.0
High	1908.8	-7.0	30.0	23.0

Result = P/M Reading + Atten.

DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

COMPANY : ALPS Electric Co., Ltd
EQUIPMENT : CDMA data module
MODEL : UGEA3A
S/N : 0000011
FCC ID : CWTUGEA3A
IC Number : -
POWER : DC3.6V
MODE : Tx (PCS 1X)

REPORT NO : 23HE0073-HO-1
REGULATION : Fcc Part 24 Section 24.232(b)
TEST METHOD : Fcc Part 2 Section 2.1046
TEST DISTANCE : -
DATE : 06/16/2003
TEMPERATURE : 22°C
HUMIDITY : 60%


Engineer : Hiroka Umeyama

CH	FREQ [MHz]	P/M Reading [dBm]	Atten. [dB]	Result [dBm]
Low	1851.3	-7.0	30.0	23.0
Mid	1880.0	-7.0	30.0	23.0
High	1908.8	-7.0	30.0	23.0


Result = P/M Reading + Atten.

DATA OF PEAK OUTPUT POWER (RADIATED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : ALPS Electric Co.,Ltd.
EQUIPMENT : CDMA data Module
MODEL : UGEA3A
S/N : 00000013
FCC ID : CWTUGEA3A
POWER : DC 3.6V
MODE : Transmitting(AMPS)

REPORT NO : 23JE0073-HO- 1
REGULATION : FCC Part22 Section 22.913(a)
TEST METHOD : FCC Part2 Section 2.1046
TEST DISTANCE : 3m
DATE : 06/11/2003 06/19/2003
TEMPERATURE : 27deg. C 27deg. C
HUMIDITY : 60% 63%


ENGINEER : Hiroka Umeyama

ANT Type 1

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]
1	824.03	15.0	26.1	1.9	2.15	10.1	3.0	14.1
2	836.51	13.4	27.1	2.0	2.15	10.1	1.3	15.0
3	848.96	13.0	26.2	2.0	2.15	10.1	0.9	14.1

ANT Type 2

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]
1	824.04	19.7	25.8	1.9	2.15	10.1	7.7	13.8
2	836.53	18.6	24.2	2.0	2.15	10.1	6.5	12.1
3	848.97	21.0	26.2	2.0	2.15	10.1	8.9	14.1

CALCULATION:READING(SG)-LOSS(CABLE)+ANT.GAIN-ATTEN-2.15

RxANTENNA:Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-13GHz)

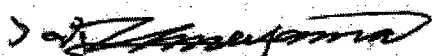
TxANTENNA:Dipole Antenna(30-1000MHz), Horn Antenna(1-13GHz)

DATA OF PEAK OUTPUT POWER (RADIATED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : ALPS Electric Co.,Ltd.
EQUIPMENT : CDMA data Module
MODEL : UGEA3A
S/N : 00000013
FCC ID : CWTUGEA3A
POWER : DC 3.6V
MODE : Transmitting(CDMA)

REPORT NO : 23JE0073-HO- 1
REGULATION : FCC Part22 Section 22.913(a)
TEST METHOD : FCC Part2 Section 2.1046
TEST DISTANCE : 3m
DATE : 06/11/2003 06/19/2003
TEMPERATURE : 27deg. C 27deg. C
HUMIDITY : 60% 63%


ENGINEER : Hiroka Umeyama

ANT Type 1

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]
1	824.85	19.0	27.4	1.9	2.15	10.1	7.0	15.4
2	836.54	17.0	28.1	2.0	2.15	10.1	4.9	16.0
3	848.26	14.9	26.8	2.0	2.15	10.1	2.8	14.7

ANT Type 2

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]
1	824.78	18.7	24.4	1.9	2.15	10.1	6.7	12.4
2	836.98	16.6	24.8	2.0	2.15	10.1	4.5	12.7
3	848.47	16.9	23.7	2.0	2.15	10.1	4.8	11.6

CALCULATION:READING(SG)-LOSS(CABLE)+ANT.GAIN-ATTEN-2.15

RxANTENNA:Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-13GHz)


TxANTENNA:Dipole Antenna(30-1000MHz), Horn Antenna(1-13GHz)

DATA OF PEAK OUTPUT POWER (RADIATED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : ALPS Electric Co.,Ltd.
EQUIPMENT : CDMA data Module
MODEL : UGEA3A
S/N : 00000013
FCC ID : CWTUGEA3A
POWER : DC 3.6V
MODE : Transmitting(CDMA 1X)

REPORT NO : 23JE0073-HO- 1
REGULATION : FCC Part22 Section 22.913(a)
TEST METHOD : FCC Part2 Section 2.1046
TEST DISTANCE : 3m
DATE : 06/11/2003 06/19/2003
TEMPERATURE : 27deg. C 27deg. C
HUMIDITY : 60% 63%


ENGINEER : Hiroka Umeyama

ANT Type 1

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]
1	824.97	18.2	27.6	1.9	2.15	10.1	6.2	15.6
2	836.37	17.1	28.5	2.0	2.15	10.1	5.0	16.4
3	848.15	14.8	28.2	2.0	2.15	10.1	2.7	16.1

ANT Type 2

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]
1	824.94	23.8	26.8	1.9	2.15	10.1	11.8	14.8
2	836.47	23.2	26.5	2.0	2.15	10.1	11.1	14.4
3	848.33	23.7	26.5	2.0	2.15	10.1	11.6	14.4

CALCULATION:READING(SG)-LOSS(CABLE)+ANT.GAIN-ATTEN-2.15

RxANTENNA:Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-13GHz)

TxANTENNA:Dipole Antenna(30-1000MHz), Horn Antenna(1-13GHz)

DATA OF PEAK OUTPUT POWER (RADIATED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : ALPS Electric Co.,Ltd.
EQUIPMENT : CDMA data Module
MODEL : UGEA3A
S/N : 00000013
FCC ID : CWTUGEA3A
POWER : DC 3.6V
MODE : Transmitting(PCS)

REPORT NO : 23JE0073-HO-1
REGULATION : FCC Part24 Section 24.232(b)
TEST METHOD : FCC Part2 Section 2.1046
TEST DISTANCE : 3m
DATE : 06/09/2003 06/18/2003
TEMPERATURE : 27deg. C 27deg. C
HUMIDITY : 60% 63%


ENGINEER : Hiroka Umeyama

ANT Type 1

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER				HOR [dBm]	VER
1	1851.34	-12.5	1.8	2.6	9.60	0.0	-5.5	8.8
2	1880.10	-12.4	1.9	2.6	9.70	0.0	-5.3	9.0
3	1908.75	-14.4	0.4	2.6	9.90	0.0	-7.1	7.7

ANT Type 2

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER				HOR [dBm]	VER
1	1851.34	-8.1	-0.5	2.6	9.60	0.0	-1.1	6.5
2	1880.10	-8.2	-1.3	2.6	9.70	0.0	-1.1	5.8
3	1908.75	-7.6	-1.5	2.6	9.90	0.0	-0.3	5.8

CALCULATION:READING(SG)-LOSS(CABLE)+ANT.GAIN-ATTEN

RxANTENNA:Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-13GHz)


TxANTENNA:Dipole Antenna(30-1000MHz), Horn Antenna(1-13GHz)

DATA OF PEAK OUTPUT POWER (RADIATED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : ALPS Electric Co.,Ltd.
EQUIPMENT : CDMA data Module
MODEL : UGEA3A
S/N : 00000012
FCC ID : CWTUGEA3A
POWER : DC 3.6V
MODE : Transmitting(PCS 1X)

REPORT NO : 23JE0073-HO - 1
REGULATION : FCC Part24 Section 24.232(b)
TEST METHOD : FCC Part2 Section 2.1046
TEST DISTANCE : 3m
DATE : 06/09/2003 06/18/2003
TEMPERATURE : 27deg. C 27deg. C
HUMIDITY : 60% 63%


ENGINEER : Hiroka Umeyama

ANT Type 1

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]
1	1851.25	6.0	21.3	2.6	9.60	0.0	13.0	28.3
2	1880.00	4.9	19.2	2.6	9.70	0.0	12.0	26.3
3	1908.89	4.2	19.9	2.6	9.90	0.0	11.5	27.2

ANT Type 2

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]
1	1851.25	11.7	19.7	2.6	9.60	0.0	18.7	26.7
2	1880.00	10.4	15.1	2.6	9.70	0.0	17.5	22.2
3	1908.89	9.6	14.9	2.6	9.90	0.0	16.9	22.2

CALCULATION:READING(SG)-LOSS(CABLE)+ANT.GAIN-ATTEN

RxANTENNA:Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-13GHz)

TxANTENNA:Dipole Antenna(30-1000MHz), Horn Antenna(1-13GHz)