



EMI TEST REPORT

Test Report No.: 25HE0087-HO-5a

Applicant : Sharp Corporation
Type of Equipment : Wireless PDA
Model No. : PV200
Test standard : FCC Part 22 Subpart H: 2004
FCC ID : APYNAR0060
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.

Date of test:

February 27 to April 20, 2006

Tested by:

Y. Yoshida

Yutaka Yoshida
EMC Services

Approved by :

H. Shimizu

Hironobu Shimizu
Group Leader of
EMC Services

UL Apex Co., Ltd.

Head Office EMC Lab.

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CONTENTS	PAGE
SECTION 1: Client information.....	3
SECTION 2: Equipment under test (E.U.T.)	3
SECTION 3: Test specification, procedures & results	4
SECTION 4: Operation of E.U.T. during testing.....	6
SECTION 5: Peak Output Power (Conducted/Radiated).....	8
SECTION 6: Bandwidth and Band-Edge (Conducted).....	9
SECTION 7: Spurious Emission (Conducted)	9
SECTION 8: Spurious Radiation and Band-Edge (Radiated).....	9
SECTION 9: Frequency Stability	10
APPENDIX 1: Photographs of test setup.....	11
Spurious Radiation	11
Worst Case Position (Horizontal:Z-axis:/ Vertical: Y-axis)	12
APPENDIX 2: Test instruments	13
APPENDIX 3: Data of EMI test	14
Peak Output Power (Conducted)	14
Peak Output Power (Radiated)	15
Emission Bandwidth.....	16
99%Occupied Bandwidth	19
Band Edge(Conducted)	22
Band Edge (Radiated)	24
Spurious Emission (Conducted)	25
Spurious Radiation	32
Frequency Stability(Temperature/Voltage Variation).....	39

SECTION 1: Client information

Company Name : SHARP CORPORATION
Address : 492 Minosho-cho, Yamatokoriyama-city, NARA 639-1186,
JAPAN
Telephone Number : +81-743-55-4022
Facsimile Number : +81-743-55-2553
Contact Person : Takahiro Inoue

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

2.1 Identification of E.U.T.

Type of Equipment : Wireless PDA
Model No. : PV200
Serial No. : 5
Country of Manufacture : Japan
Rating : AC120V/60Hz (AC Adapter)
Receipt Date of Sample : February 23, 2006
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)

2.2 Product Description

2.2 Product Description

Model No: PV200 (referred to as the EUT in this report) is the Wireless PDA.

Equipment Type : Transceiver
Frequency Operation : 824.2-848.8MHz (GSM850)
Type of Modulation : GMSK/8PSK
Bandwidth : 340kHz
Channel Spacing : 200kHz
Channel Number : 124
Antenna fixed method : Integral
Antenna Type : PIFA (Type 53D)
Antenna Connector Type : Spring Contact
Antenna Gain : -5.30dBi max
Mode of Operation : Duplex
Other Clock Frequency : 32.768kHz, 12MHz, 26MHz, 32MHz
Power Supply : DC3.7V – 4.2V
Temperature of Operation : -10 deg. C. to + 55 deg. C.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 22 Subpart H: 2004
Title : FCC 47CFR Part 22 Subpart H
Cellular Radiotelephones 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)	Conducted/ Radiated	N/A	5.8dB 824.2MHz (Conducted)	Complied
Emission Bandwidth, 99% Occupied Bandwidth	Section 2.1049	Section 22.917(b)	Conducted	N/A	-	Complied
Band-Edge	Section 2.1049	Section 22.917(b)	Conducted/ Radiated	N/A	0.8dB 848.8MHz (Conducted)	Complied
Spurious Emission	Section 2.1051	Section 22.917(b)	Conducted	N/A	-	Complied
Spurious Radiation	Section 2.1053	Section 22.917(b)	Radiated	N/A	19.9dB 2472.6MHz, 2509.8MHz Horizontal	Complied
Frequency Stability (Temperature Variation)	Section 2.1055(a) (1) and (b)	Section 22.355	Conducted	N/A	-	Complied
Frequency Stability (Voltage Variation)	Section 2.1055(d)(1) and (2)	Section 22.355	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.

3.4 Uncertainty

Conducted

The measurement uncertainty (with a 95% confidence level) for this test is $\pm 2.66\text{dB}$.
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Radiated

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is $\pm 4.59\text{dB}$.
The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is $\pm 4.62\text{dB}$.
The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is $\pm 5.27\text{dB}$.
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

3.5 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247A	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	846015	IC4247A-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 measurement room	148738	IC4247A-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	-
No.4 measurement room	134570	IC4247A-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	-
No.5 shielded room	-	-	6.0 x 6.0 x 3.9m	N/A	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	N/A	-
No.6 preparation room	-	-	4.75 x 5.4 x 3.0m	N/A	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1 and No.2 semi-anechoic and No.7 shielded room.

3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

4.1 Operating Modes

The EUT was set with the mode in a manner similar to typical use during the tests.

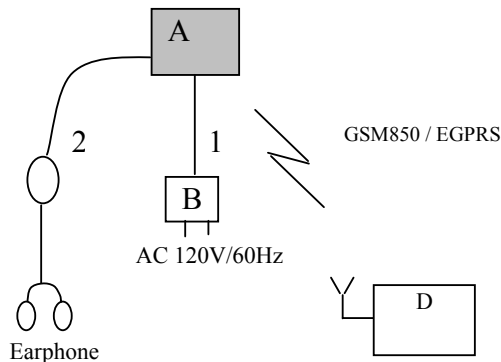
The sequence is used : Transmitting mode (GSM, GSMK)
 - Low Channel : 824.2MHz (Ch 128)
 - Mid Channel : 836.6MHz (Ch 190)
 - High Channel : 848.8MHz (Ch 251)

Transmitting mode (EGPRS, 8PSK)
 - Low Channel : 824.2MHz (Ch 128)
 - Mid Channel : 836.6MHz (Ch 190)
 - High Channel : 848.8MHz (Ch 251)
 - Mid Channel : 836.6MHz (Ch 190)+Bluetooth Hopping

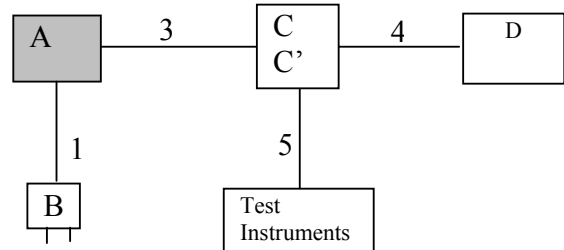
Justification: The system was configured in typical fashion (as a customer would normally use it) for testing.

4.2 Configuration and peripherals

Radiated



Conducted



* Cabling and setup were taken into consideration and test data was taken under worse case conditions.

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Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless PDA	PV200	5	Sharp Corporation	EUT
B	AC Adapter	ADP-5FH B	49W0525000433	DELTA Electronics, INC	-
C	Power splitters/Combiners *1	ZFSC-2-2500	0124	Mini-Circuit	Below 2GHz
C'	Power splitters/Combiners *1	ZFSC-2-10G	0127	Mini-Circuit	Above 2GHz
D	Universal Radio Communication Tester	CMU200	130900897	ROHDE&SCHWARZ	-

*1 It was used depending on measurement frequency.

List of cables used

No.	Name	Length (m)	Shield	Remarks
1	DC Cable	1.5	N	-
2	Headset Cable	1.45	N	-
3	Coaxial Cable	1.0	Y	-
4	Coaxial Cable	1.2	Y	-
5	Coaxial Cable	0.5	Y	-

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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

[Radiated]

Test Procedure

- 1) EUT was placed on a platform of nominal size, 0.5 m by 0.5m, 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 in No.2/No.3 semi anechoic chamber with a ground plane and at a distance of 3m (for the Peak Output Power for the Radiated). The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
- 2) Exchanged the EUT to the Substitution Antenna, the antenna was set for the same height as EUT on the table. The frequency below 1GHz of the Substitution Antenna was used as the Half wave dipole Antenna, which is harmonized with the measured frequency in 1). The Substitution Antenna was connected with the Signal Generator, and the polarized electromagnetic radiation of the Substitution Antenna was matched with the one of the measuring Antenna, which was set with the Signal Generator to the measured frequency in 1). Then, we set with the Output power (CW) of the Signal Generator where the measuring electromagnetic field is equal to the measured value in 1). The measuring antenna height varied between 1 and 4m to obtain the maximum receiving level. Its Output power of Signal Generator was recorded.
- 3) Effective radiated power was calculated by subtracting the cable loss and the attenuator loss connected between the Signal Generator and the Substitution Antenna from the Output power of the Signal Generator recorded in 2).

Test data	:	APPENDIX 3
Test result	:	Pass

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MF060b(10.04.03)

SECTION 6: Bandwidth and Band-Edge (Conducted)

Test Procedure

The Emission Bandwidth, 99% Occupied Bandwidth and Band-Edge was measured with a spectrum analyzer and attenuator connected to the antenna port.

Test data	:	APPENDIX 3
Test result	:	Pass

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

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

Test Procedure

- 1) EUT was placed on a platform of nominal size, 0.5m by 0.5m, 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 in No.2/No.3 semi anechoic chamber (19.2x11.2x7.7m) with a ground plane and at a distance of 3m. The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
- 2) Exchanged the EUT to the Substitution Antenna, the antenna was set for the same height as EUT on the table. The frequency below 1GHz of the Substitution antenna was used as the Half wave dipole antenna and Shorted dipole antenna calibrated with the Half wave dipole antenna, which is harmonized with the measured frequency in 1). The frequency above 1GHz of the Substitution antenna was used with Horn antenna calibrated with the Half wave dipole antenna. The Substitution antenna was connected with the Signal Generator, and the polarized electromagnetic radiation of the Substitution antenna was matched with the one of the measuring antenna, which was set with the Signal Generator to the measured frequency in 1). Then, we set with the Output power (CW) of the Signal Generator where the measuring electromagnetic field is equal to the measured value in 1). The measuring antenna height varied between 1 and 4m to obtain the maximum receiving level. Its Output power of Signal Generator was recorded.
- 3) Effective radiated power was calculated by subtracting the cable loss and the attenuator loss connected between the Signal Generator and the Substitution Antenna from the Output power of the Signal Generator recorded in 2). For the usage of the antenna (Shorted dipole and Horn antenna) except for the Half wave dipole antenna (2.15dBi) for the Substitution antenna, the Effective radiated power was calculated by compensating the finite difference in the antenna gain of the Half wave dipole antenna, and Substitution antenna.

Test data	:	APPENDIX 3
Test result	:	Pass

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SECTION 9: Frequency Stability

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 (DC3.6V to DC4.2V), and it is presented as the ppm unit.

Temperature : -30deg.C to +50deg.C (10 deg. C. step)
Voltage : Vnom:DC3.9V, Vmin:DC3.6V, Vmax:DC4.2V : Operating voltage range of EUT *

*The voltage supply beyond DC 4.2V exceeds the operating voltage range of EUT.

In case of the voltage supply below 3.6V, the EUT stops operation by "low battery detection function.

Therefore, Frequency Stability test was conducted under the above condition.

Test data : APPENDIX 3
Test result : Pass

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APPENDIX 1: Photographs of test setup

This page has been submitted for a separate exhibit.

Test report No. : 25HE0087-HO-5a
Page : 12 of 40
Issued date : April 7, 2006
FCC ID : APYNAR0060
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Worst Case Position (Horizontal:Z-axis:/ Vertical: Y-axis)

This page has been submitted for a separate exhibit.

APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2005/04/11 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2005/10/10 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2005/10/14 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	RE	2006/02/23 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE	2006/02/11 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2005/05/24 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MCC-47	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2005/08/30 * 12
MCC-16	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX 104	RE	2006/02/02 * 12
MHF-05	High Pass Filter	Tokimec	TF323DCA	RE	2006/01/24 * 12
MOS-02	Digital Humidity Indicator	N.T	NT-1800	RE	2004/11/25 * 24
MSTW-22	Universal Radio communication tester	Rohde & Schwarz	V3.54	RE/AT	Pre check
MSG-02	Signal Generator	Rohde & Schwarz	SML03	RE	2005/07/22 * 12
MDA-04	Dipole Antenna	Schwarzbeck	UHAP	RE	2005/10/14 * 12
MCC-10	Coaxial cable	Storm	90-195-394	RE	2005/03/17 * 12 2006/03/18 * 12
MCC-31	Coaxial cable	ULApex	-	RE	2005/06/02 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	AT	2006/02/11 * 12
MPSC-01	Power splitters/Combiners	Mini-Circuit	ZFSC-2-2500	AT	2005/09/27 * 12
MPSC-02	Power Splitters/Combiners	Mini-Circuit	ZFSC-2-10G	AT	2005/09/27 * 12
MPM-04	Power reflection meter	Rohde & Schwarz	NRVD	AT	2006/01/10 * 12
MPSE-04	Power sensor	Agilent	E9327A	AT	2005/03/29 * 12
MCC-30	coaxial cable	ULApex	-	AT	2005/06/02 * 12
MAT-11	Attenuator(10dB) 5M-18GHz N	Weinschel Corp	2	AT	2005/12/16 * 12
MAT-17	Attenuator(20dB) 9k-12.4GHz N	Weinschel Corp	MODEL 1	AT	2006/01/10 * 12
MCC-25	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	AT	2005/08/30 * 12
MOS-16	Thermo-Hygrometer	Custom	CTH-180	AT	2006/01/19 * 24
MCC-22	Microwave Cable 1G-50GHz	Storm	421-011 (90-011-080)	AT	2005/04/29 * 12
MCC-26	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	AT	2005/08/30 * 12
MRENT-23	Spectrum Analyzer	Advantest	R3273	AT	2006/01/10 * 12
MDPS-04	DC Power Supply	KENWOOD TMI	PW18-1.3AT	AT	Pre Check
MAEC-03	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2006/03/03 * 12
MOS-12	Thermo-Hygrometer	Custom	CTH-180	RE	2006/01/19 * 24
MSA-03	Spectrum Analyzer	Agilent	E4448A	RE	2005/09/16 * 12
MCC-51	Coaxial cable	UL Apex	-	RE	2006/03/11 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/01/29 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2006/01/29 * 12
MAT-27	Attenuator(3dB)	TME	UFA-01	RE	2006/03/11 * 12
MPA-13	Pre Amplifier	SONOA INSTRUMENT	310	RE	2006/03/25 * 12

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

Test Item:

RE: Radiated Emission

AT: Antenna Terminal Conducted test

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APPENDIX 3: Data of EMI test

Peak Output Power (Conducted)

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY	SHARP CORPORATION	REPORT NO	25HE0087-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part22 Section 22.913(a)
MODEL	PV200	TEST METHOD	FCC Part2 Section 2.1046
S/N	5	TEST DISTANCE	-
POWER	DC3.9V(AC120V/60Hz)	DATE	March 24, 2006
MODE	Tx 824.2MHz (128ch)/PCL=5(MAX Pow)	TEMPERATURE	24°C
	Tx 836.6MHz (190ch)/PCL=5(MAX Pow)	HUMIDITY	34%
	Tx 848.8MHz (251ch)/PCL=5(MAX Pow)	ENGINEER	Yutaka Yoshida

<GSM850>

Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit (7W) [dBm]	Margin [dB]
Low	824.2	2.1	30.0	0.5	32.6	38.5	5.9
Mid	836.6	2.0	30.0	0.5	32.5	38.5	6.0
High	848.8	1.9	30.0	0.5	32.4	38.5	6.1

<GSM850+EGPRS>

Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit (7W) [dBm]	Margin [dB]
Low	824.2	2.2	30.0	0.5	32.7	38.5	5.8
Mid	836.6	1.8	30.0	0.5	32.3	38.5	6.2
High	848.8	1.6	30.0	0.5	32.1	38.5	6.4

Sample Calculation : Result = Reading + Atten. + Cable Loss

Test report No. : 25HE0087-HO-5a
Page : 15 of 40
Issued date : April 7, 2006
FCC ID : APYNAR0060
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Peak Output Power (Radiated)

UL Apex Co., Ltd.
Head Office EMC Lab. Semi Anechoic Chamber : No.2/No.3

COMPANY	Sharp corporation	REPORT NO	25HE0087-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part22 Section 22.913(a)
MODEL	PV200	TEST METHOD	FCC Part2 Section 2.1046
S/N	5	TEST DISTANCE	3m
POWER	DC3.9V(AC120V/60Hz)	DATE	February 27, 2006 / April 20, 2006
MODE	Tx 824.2MHz (128ch)/PCL=5(MAX Pow)	TEMPERATURE	26°C / 25°C
	Tx 836.6MHz (190ch)/PCL=5(MAX Pow)	HUMIDITY	30% / 32%
	Tx 848.8MHz (251ch)/PCL=5(MAX Pow)	CALIBRATION	OK
POSITION	H:Z-axis / V:Y-axis	ENGINEER	Yutaka Yoshida

<GSM850> (No.2 Semi Anechoic Chamber)

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR	VER			HOR	VER		HOR	VER
		[dBm]				[dBm]			[dB]	
1	824.20	24.2	35.1	0.3	10.0	13.9	24.8	38.5	24.6	13.7
2	836.60	27.6	34.7	0.3	10.0	17.3	24.4	38.5	21.2	14.1
3	848.80	31.2	37.8	0.3	10.0	20.9	27.5	38.5	17.6	11.0

<GSM850+EGPRS> (No.3 Semi Anechoic Chamber)

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR	VER			HOR	VER		HOR	VER
		[dBm]				[dBm]			[dB]	
1	824.20	37.1	33.3	1.6	9.9	25.6	21.8	38.5	12.9	16.7
2	836.60	38.7	33.7	1.6	9.9	27.2	22.2	38.5	11.3	16.3
3	848.80	40.4	35.9	1.6	9.9	28.9	24.4	38.5	9.6	14.1

CALCULATION:READING(SG)-LOSS(CABLE)-ATTEN

Rx-ANTENNA : Biconical Antena(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-19GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Anrenna(1-19GHz)

The noise was measured at each position of all three axes X, Y and Z to compare the level, and the maximum noise.

With the result above, the effective radiated power was calculated on the basis of the reference value

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Emission Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY	SHARP CORPORATION	REPORT NO	25HE0087-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part22 Section 22.917(b)
MODEL	PV200	TEST METHOD	FCC Part2 Section 2.1049
S/N	5	TEST DISTANCE	-
POWER	DC3.9V (AC120V/60Hz)	DATE	March 24, 2006/April 17, 2006
MODE	Tx 824.2MHz (128ch)/PCL=5(MAX Pow	TEMPERATURE	24°C/22°C
	Tx 836.6MHz (190ch)/PCL=5(MAX Pow	HUMIDITY	34%/36%
	Tx 848.8MHz (251ch)/PCL=5(MAX Pow	ENGINEER	Yutaka Yoshida

<GSM850>

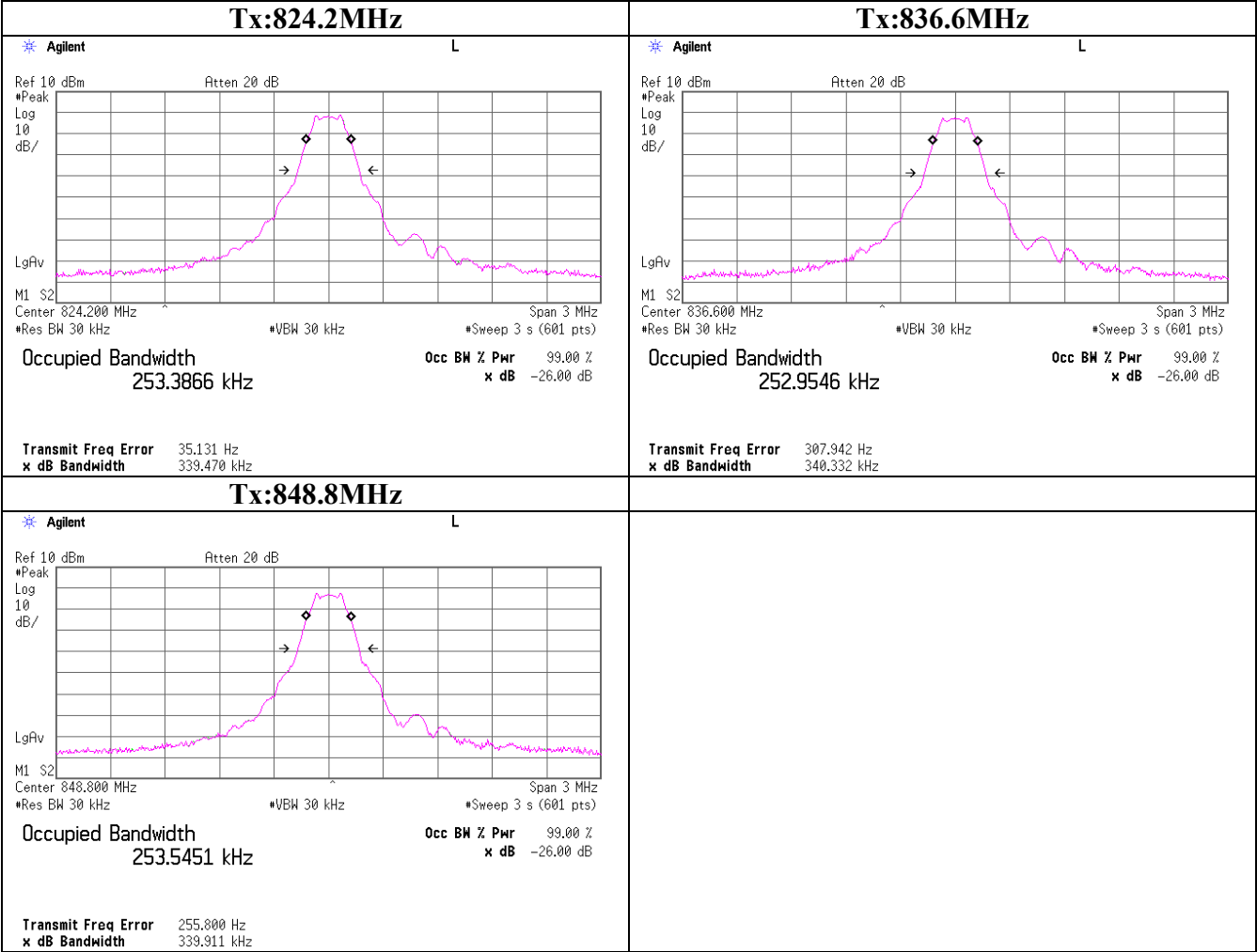
CH	FREQ	Bandwidth	Limit
	[MHz]	[kHz]	[kHz]
Low	824.2	339.5	-
Mid	836.6	340.3	-
High	848.8	339.9	-

<GSM850+EGPRS>

CH	FREQ	Bandwidth	Limit
	[MHz]	[kHz]	[kHz]
Low	824.2	340.8	-
Mid	836.6	339.1	-
High	848.8	340.8	-

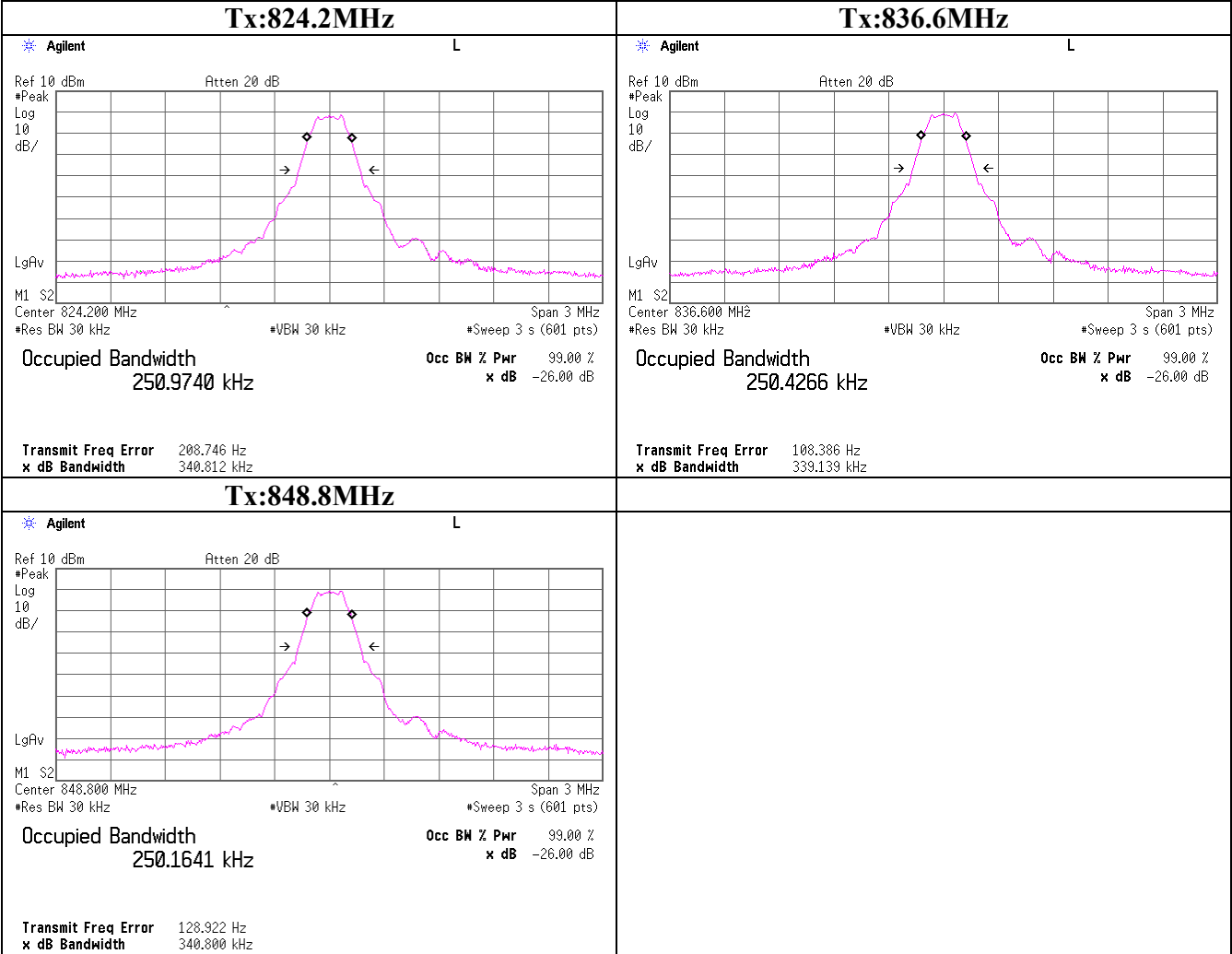
Emission Bandwidth

<GSM850>



Emission Bandwidth

<GSM850+EGPRS>



99% Occupied Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY	SHARP CORPORATION	REPORT NO	25HE0087-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part22 Section 22.917(b)
MODEL	PV200	TEST METHOD	FCC Part2 Section 2.1049
S/N	5	TEST DISTANCE	-
POWER	DC3.9V (AC120V/60Hz)	DATE	March 24, 2006
MODE	Tx 824.2MHz (128ch)/PCL=5(MAX Pow	TEMPERATURE	24℃
	Tx 836.6MHz (190ch)/PCL=5(MAX Pow	HUMIDITY	34%
	Tx 848.8MHz (251ch)/PCL=5(MAX Pow	ENGINEER	Yutaka Yoshida

<GSM850>

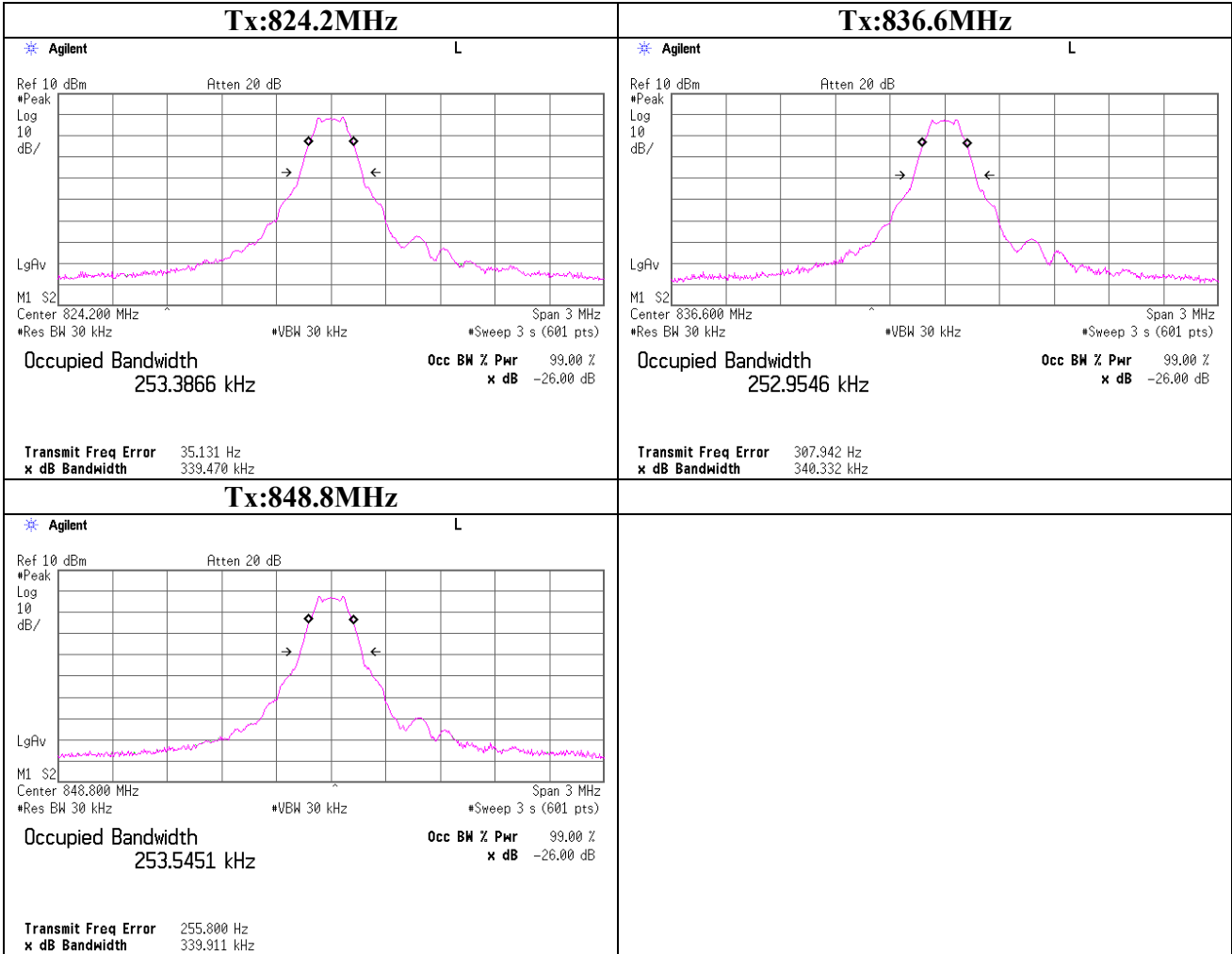
CH	FREQ	Bandwidth	Limit
	[MHz]	[kHz]	[kHz]
Low	824.2	253.4	-
Mid	836.6	253.0	-
High	848.8	253.5	-

<GSM850+EGPRS>

CH	FREQ	Bandwidth	Limit
	[MHz]	[kHz]	[kHz]
Low	824.2	251.0	-
Mid	836.6	250.4	-
High	848.8	250.2	-

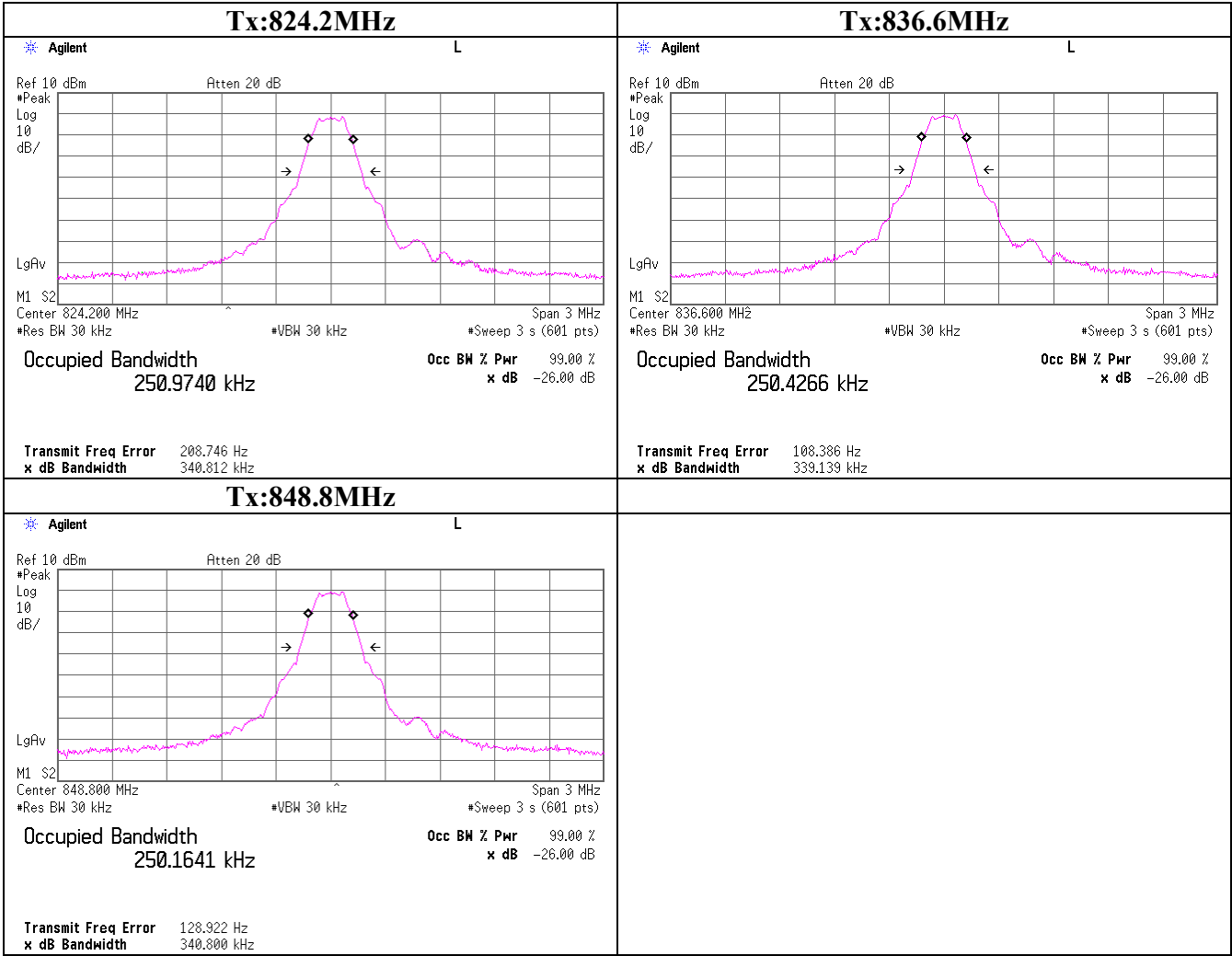
99%Occupied Bandwidth

<GSM850>



99%Occupied Bandwidth

<GSM850+EGPRS>



Band Edge(Conducted)

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY SHARP CORPORATION
EQUIPMENT Wireless PDA
MODEL PV200
S/N 5
POWER DC3.9V (AC120V/60Hz)
MODE Tx 824.2MHz (128ch)/PCL=5(MAX Pow)
Tx 848.8MHz (251ch)/PCL=5(MAX Pow)

REPORT NO 25HE0087-HO
REGULATION FCC Part22 Section 24.917(b)
TEST METHOD FCC Part2 Section 2.1049
TEST DISTANCE -
DATE March 24, 2006/April 17, 2006
TEMPERATURE 24°C/22°C
HUMIDITY 34%/36%
ENGINEER Yutaka Yoshida

VIDEO AV 30 times

<GSM850>

Frequency	Reading	Atten.	Cable Loss	Result	Limit
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[dBm]
823.996	-47.7	30.0	3.9	-13.9	-13.0
849.018	-47.7	30.0	3.9	-13.8	-13.0

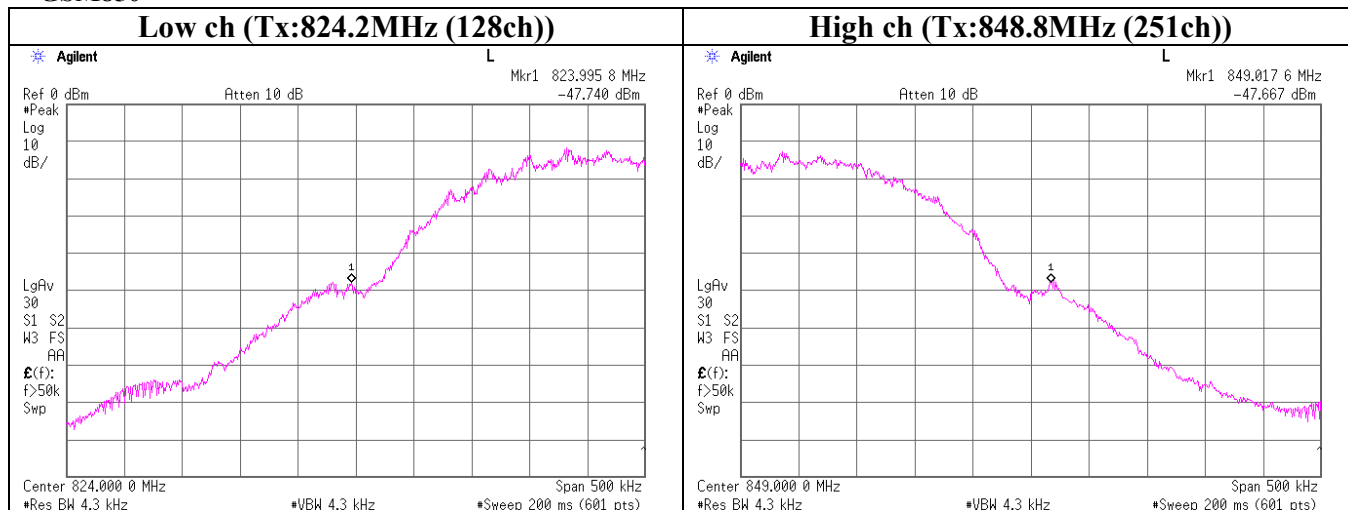
<GSM850+EGPRS>

Frequency	Reading	Atten.	Cable Loss	Result	Limit
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[dBm]
823.982	-48.5	30.0	3.9	-14.6	-13.0
849.024	-48.0	30.0	3.9	-14.1	-13.0

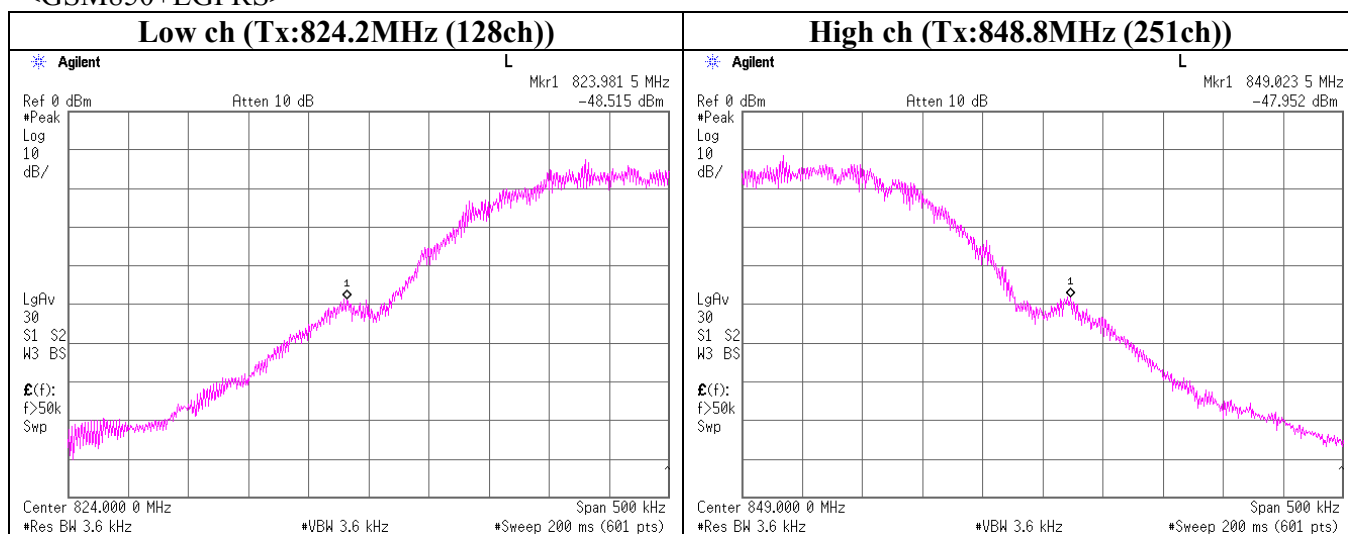
Sample Calculation : Result = Reading + Atten. + Cable Loss(including customer cable)

Band Edge(Conducted)

<GSM850>



<GSM850+EGPRS>



Band Edge (Radiated)

Head Office EMC Lab. Semi Anechoic Chamber : No.2

COMPANY Sharp corporation
EQUIPMENT Wireless PDA
MODEL PV200
S/N 5
POWER DC3.9V(AC120V/60Hz)
MODE Tx 824.2MHz (128ch)/PCL=5(MAX Pow)
Tx 848.8MHz (251ch)/PCL=5(MAX Pow)
POSITION H:X-axis / V:Y-axis

REPORT NO 25HE0087-HO
REGULATION FCC Part22 Section 22.917(b)
TEST METHOD FCC Part2 Section 2.1049
TEST DISTANCE 3m
DATE February 27, 2006
TEMPERATURE 26°C
HUMIDITY 30%
CALIBRATION OK
ENGINEER Yutaka Yoshida

No.	FREQ	SG READING		CABLE LOSS [dB]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR	VER			HOR	VER		HOR	VER
		[dBm]				[dBm]			[dB]	
1	824.00	-17.7	-8.4	0.3	10.0	-27.9	-18.6	-13.0	14.9	5.6
2	849.00	-10.8	-5.3	0.3	10.0	-21.1	-15.6	-13.0	8.1	2.6

Result calculation:SG READING-CABLE LOSS-ATTEN

Rx-ANTENNA : Biconical Antena(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-19GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Anrenna(1-19GHz)

The noise was measured at each position of all three axes X, Y and Z to compare the level, and the maximum noise.

S/A PK (RBW: 3.6kHz , VBW:3.6kHz)

Spurious Emission (Conducted)

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

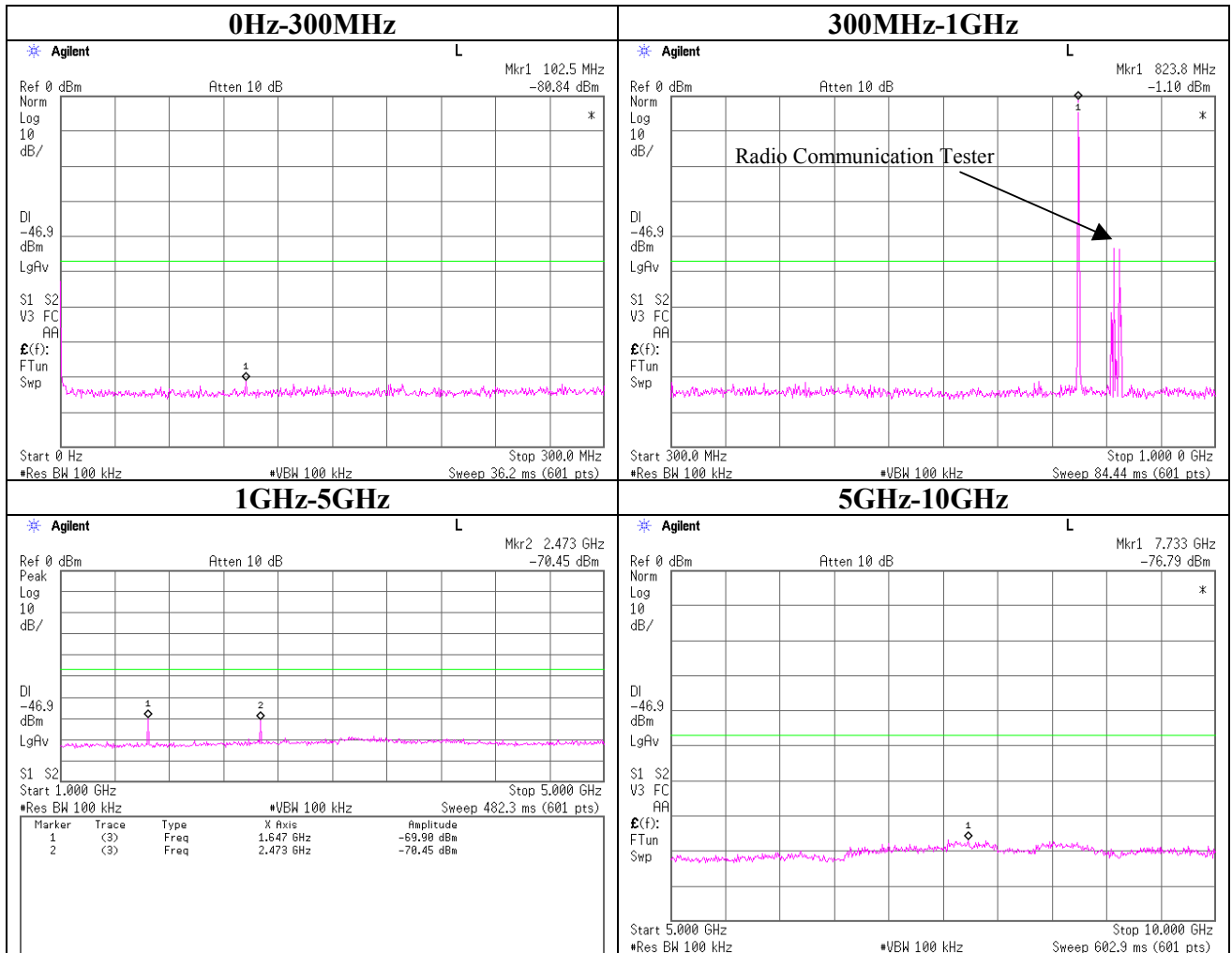
COMPANY	SHARP CORPORATION	REPORT NO	25HE0087-HO
EQUIPMENT	Wireless PDA	REGULATION	Fcc Part 22 Section 22.917(a)
MODEL	PV200	TEST METHOD	Fcc Part 2 Section 2.1051
S/N	5	TEST DISTANCE	-
POWER	DC3.7V (AC120V/60Hz)	DATE	March 24, 2006/April 17, 2006
MODE	Tx 824.2MHz (128ch)/PCL=5(MAX Pow)	TEMPERATURE	24°C/22°C
	Tx 836.6MHz (190ch)/PCL=5(MAX Pow)	HUMIDITY	34%/36%
	Tx 848.8MHz (251ch)/PCL=5(MAX Pow)	ENGINEER	Yutaka Yoshida

Limit Line

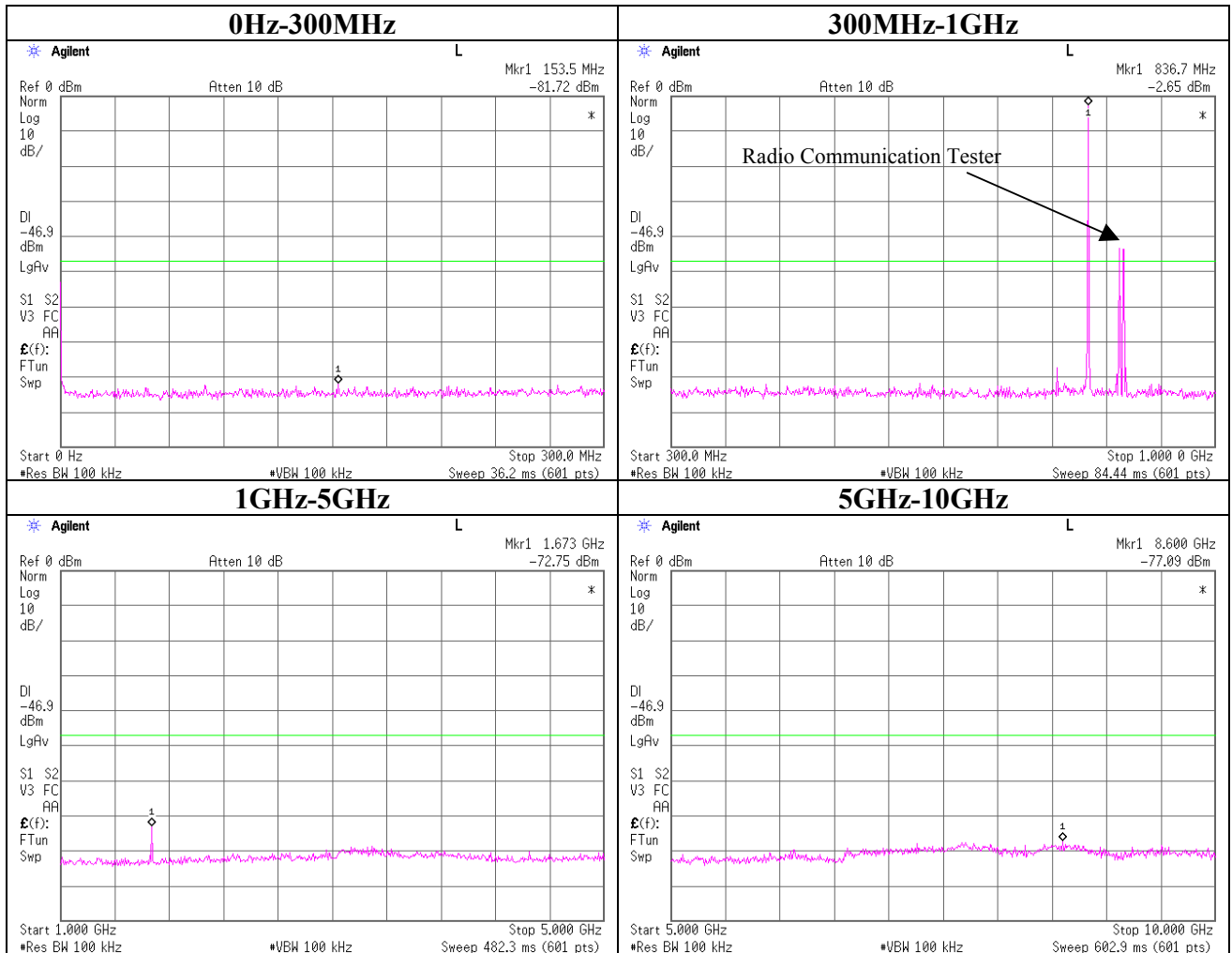
Limit	Atten.	Cable Loss	Limit Line
[dBm]	[dB]	[dB]	[dBm]
-13.0	30.0	3.9	-46.9

Sample Calculation : Limit Line = Limit - Atten. - Cable Loss

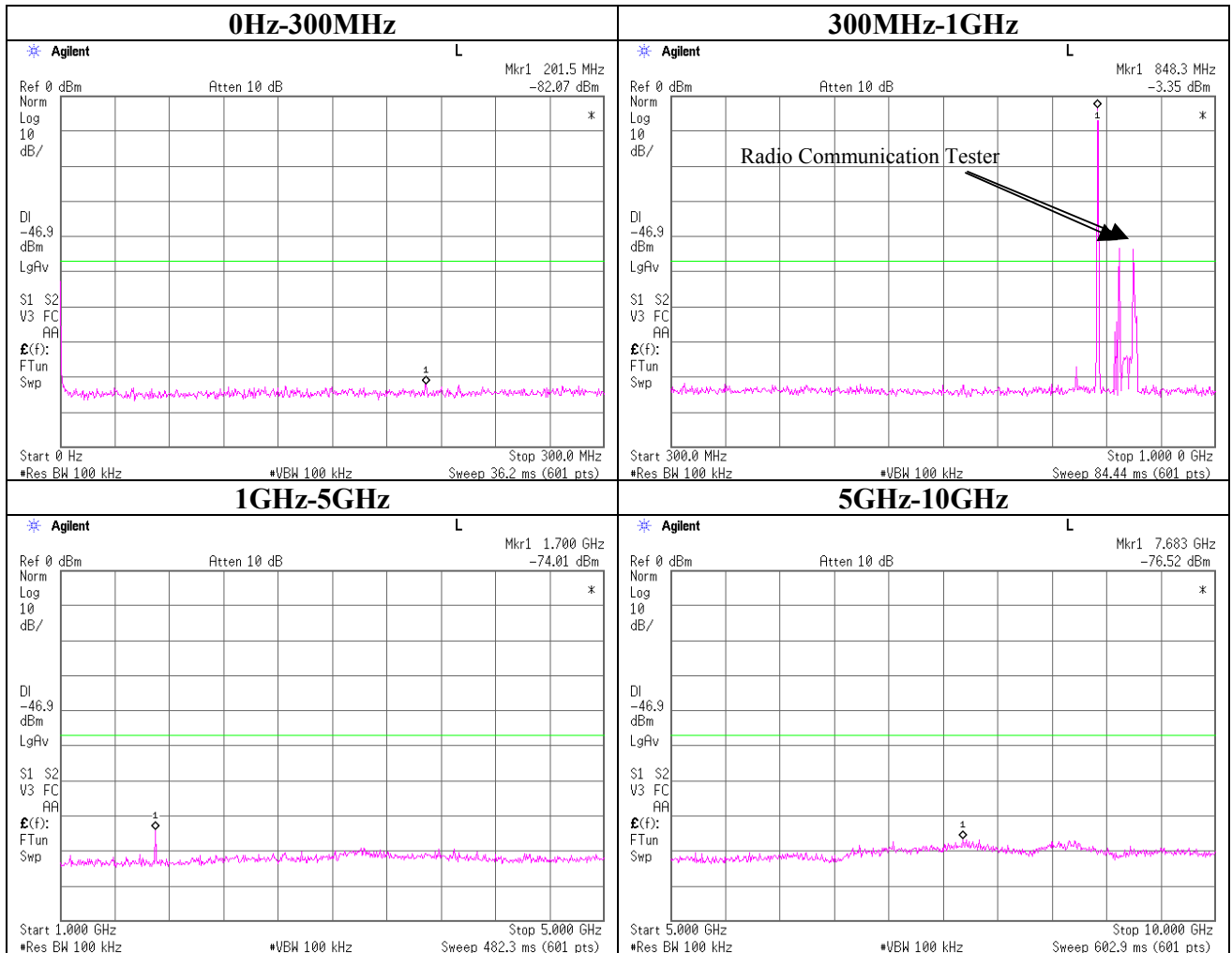
Spurious Emission (Conducted)
GSM850 / Tx:824.2MHz



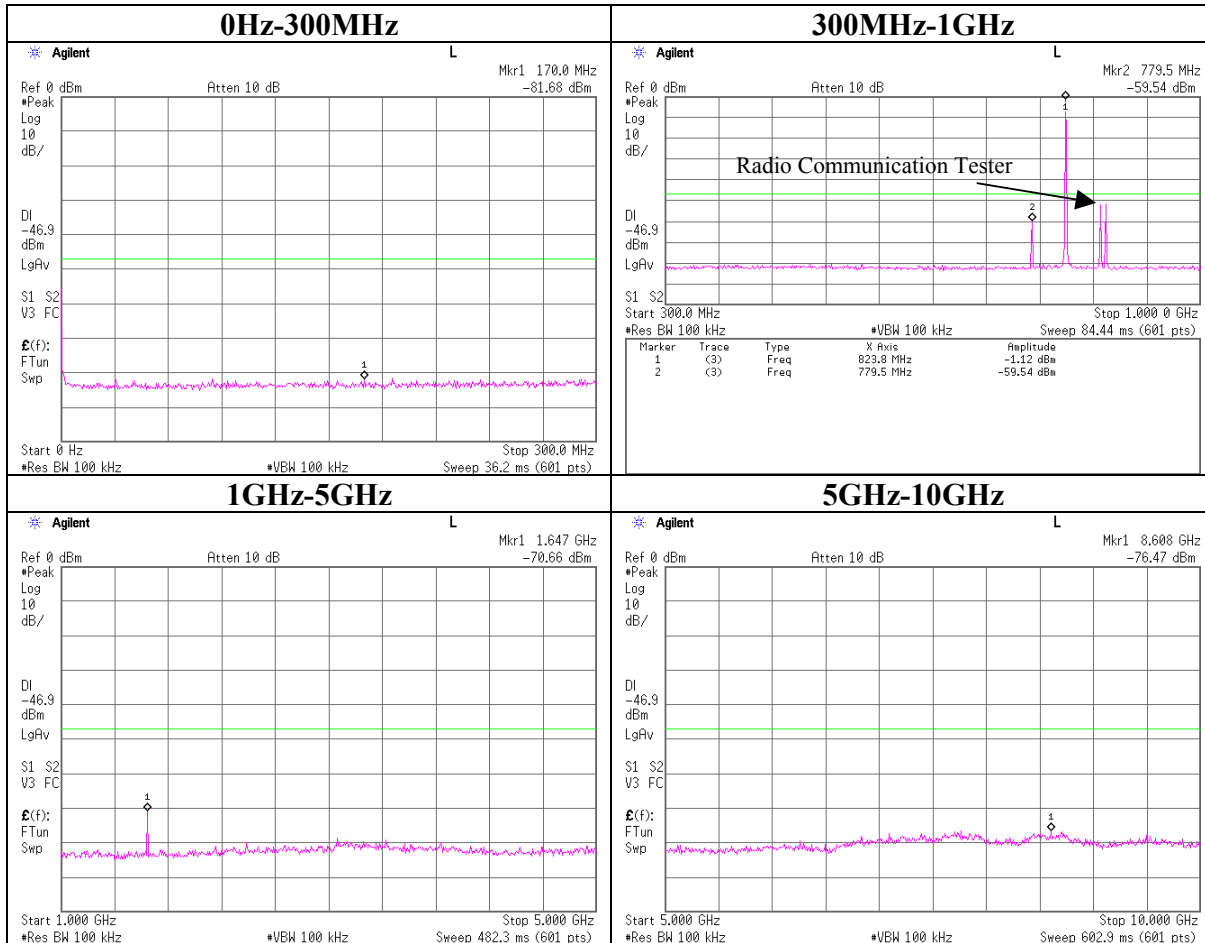
Spurious Emission (Conducted)
GSM850 / Tx:836.6MHz



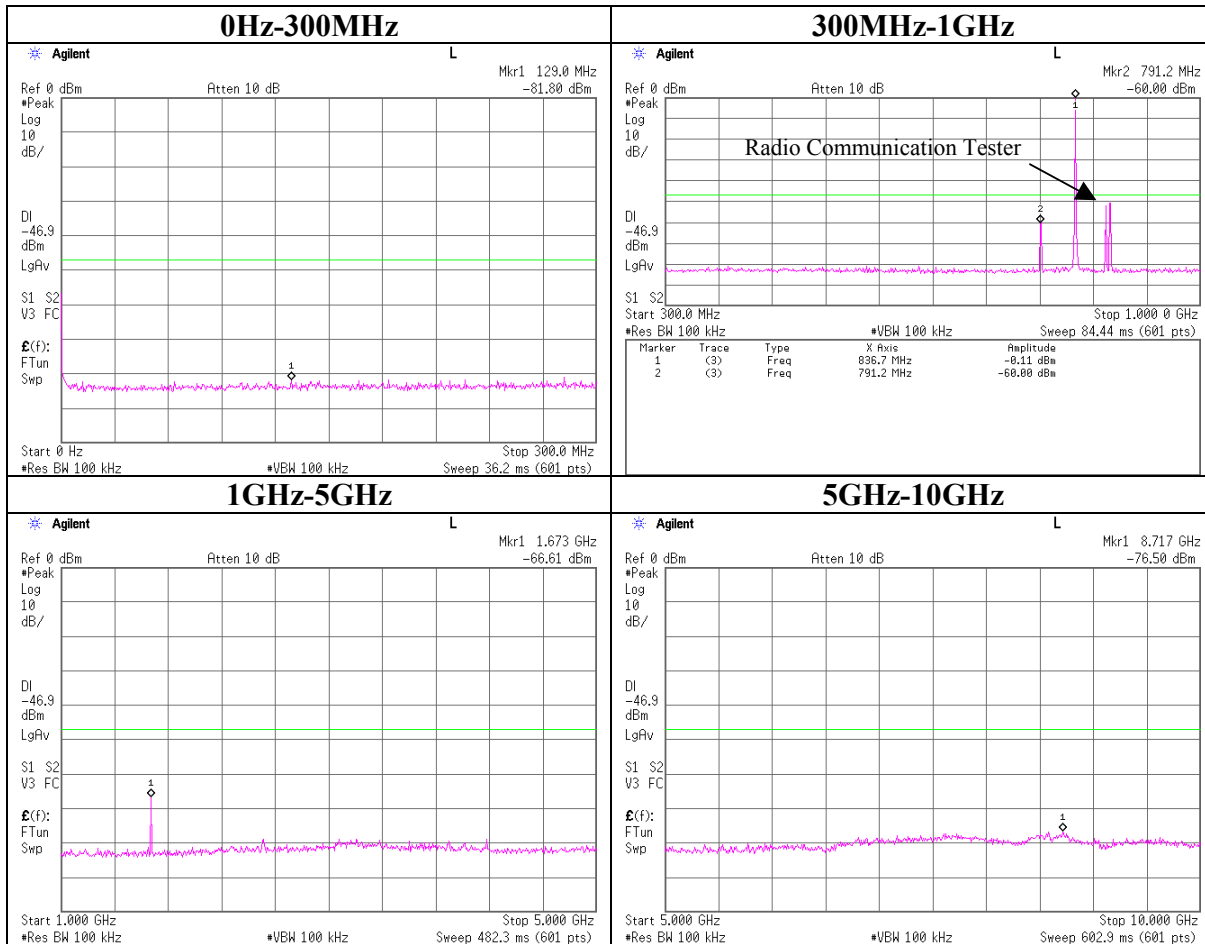
Spurious Emission (Conducted)
GSM850 / Tx:848.8MHz



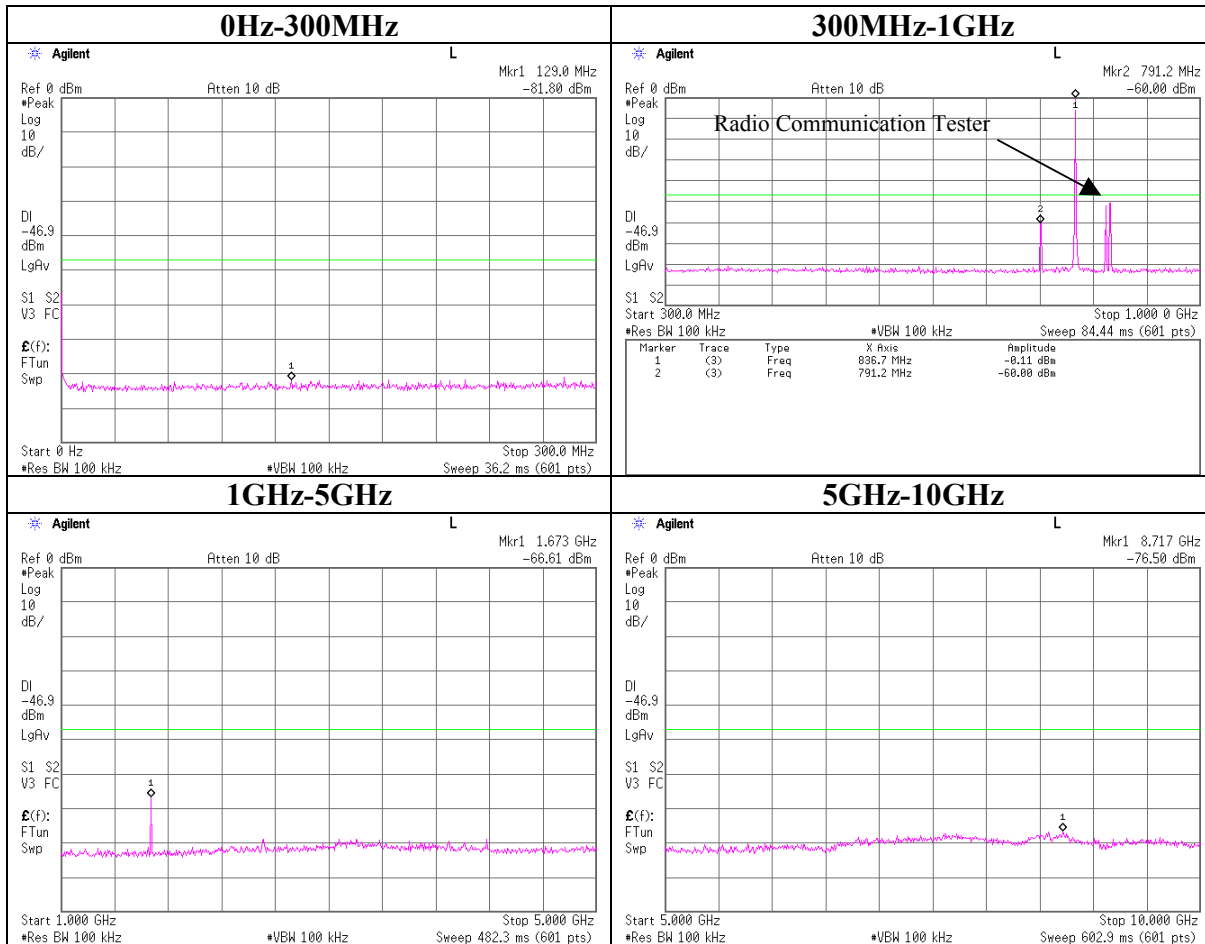
Spurious Emission (Conducted)
GSM850+EGPRS / Tx:824.2MHz



Spurious Emission (Conducted)
GSM850+EGPRS / Tx:836.6MHz



Spurious Emission (Conducted)
GSM850+EGPRS / Tx:848.8MHz



MF060b(10.04.03)

Test report No. : 25HE0087-HO-5a
Page : 35 of 40
Issued date : April 7, 2006
FCC ID : APYNAR0060
Revised date : April 20, 2006

Spurious Radiation

UL Apex Co., Ltd.
Head Office EMC Lab. Semi Anechoic Chamber : No.2/No.3

COMPANY Sharp corporation
EQUIPMENT Wireless PDA
MODEL PV200
S/N 5
POWER DC3.9V(AC120V/60Hz)
MODE Tx 824.2MHz (128ch)/PCL=5(MAX Pow)
POSITION H:Z-axis / V:Y-axis

REPORT NO 25HE0087-HO
REGULATION FCC Part22 Section 22.917(a)
TEST METHOD FCC Part2 Section 2.1053
TEST DISTANCE 3m
DATE April 20, 2006
TEMPERATURE 25°C
HUMIDITY 32%
CALIBRATION OK
ENGINEER Yutaka Yoshida

<GSM850+EGPRS>

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]		HOR [dB]	VER [dB]
1	45.01	-24.5	-33.6	0.5	-20.75	10.3	-58.2	-67.3	-13.0	45.2	54.3
2	136.58	-72.4	-63.2	0.7	2.15	10.2	-83.3	-74.1	-13.0	70.3	61.1
3	1648.40	-50.1	-53.9	1.8	5.70	0.0	-48.3	-52.1	-13.0	35.3	39.1
4	2472.60	-49.2	-53.1	2.9	10.20	0.0	-44.0	-47.9	-13.0	31.0	34.9
5	3296.80	-57.3	-54.9	3.2	11.10	0.0	-51.6	-49.2	-13.0	38.6	36.2
6	4121.00	-58.4	-58.1	4.0	12.50	0.0	-52.0	-51.7	-13.0	39.0	38.7
7	4945.00	-59.6	-59.0	4.3	12.70	0.0	-53.4	-52.8	-13.0	40.4	39.8
8	5769.40	-64.1	-66.0	4.5	13.10	0.0	-57.6	-59.5	-13.0	44.6	46.5
9	6593.60	-65.5	-62.4	5.0	13.60	0.0	-59.0	-55.9	-13.0	46.0	42.9
10	7417.80	-57.3	-58.8	5.5	11.60	0.0	-53.3	-54.8	-13.0	40.3	41.8
11	8242.00	-56.9	-57.8	5.7	10.70	0.0	-54.0	-54.9	-13.0	41.0	41.9

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

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-19GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-19GHz)

All other emissions were at least 20dB below the specification limit.

*The noise level was too low to detect.

The noise was measured at each position of all three axes X, Y and Z to compare the level, and the maximum noise.

S/A PK (RBW: 100kHz , VBW:100kHz)

UL Apex Co., Ltd.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
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Facsimile : +81 596 24 8124

MF060b(10.04.03)

Test report No. : 25HE0087-HO-5a
Page : 36 of 40
Issued date : April 7, 2006
FCC ID : APYNAR0060
Revised date : April 20, 2006

Spurious Radiation

UL Apex Co., Ltd.
Head Office EMC Lab. Semi Anechoic Chamber : No.2/No.3

COMPANY	Sharp corporation	REPORT NO	25HE0087-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part22 Section 22.917(a)
MODEL	PV200	TEST METHOD	FCC Part2 Section 2.1053
S/N	5	TEST DISTANCE	3m
POWER	DC3.9V(AC120V/60Hz)	DATE	April 20, 2006
MODE	Tx 836.6MHz (190ch)/PCL=5(MAX Pow)	TEMPERATURE	25°C
POSITION	H:Z-axis / V:Y-axis	HUMIDITY	32%
		CALIBRATION	OK
		ENGINEER	Yutaka Yoshida

<GSM850+EGPRS>

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]		HOR [dB]	VER [dB]
1	39.45	-19.7	-27.4	0.5	-25.00	10.6	-57.9	-65.6	-13.0	44.9	52.6
2	128.60	-73.5	-64.0	0.7	2.15	10.2	-84.4	-74.9	-13.0	71.4	61.9
4	1673.20	-54.7	-53.1	1.8	5.70	0.0	-52.9	-51.3	-13.0	39.9	38.3
5	2509.80	-52.9	-63.0	2.9	10.50	0.0	-47.4	-57.5	-13.0	34.4	44.5
6	3346.40	-61.3	-58.3	3.5	11.40	0.0	-55.5	-52.5	-13.0	42.5	39.5
7	4183.00	-60.6	-65.8	4.0	12.50	0.0	-54.2	-59.4	-13.0	41.2	46.4
8	5019.60	-62.3	-64.3	4.3	12.70	0.0	-56.1	-58.1	-13.0	43.1	45.1
9	5856.20	-65.2	-66.0	4.7	13.50	0.0	-58.5	-59.3	-13.0	45.5	46.3
10	6692.80	-61.7	-61.9	5.4	12.60	0.0	-56.6	-56.8	-13.0	43.6	43.8
11	7529.40	-59.0	-57.9	5.5	11.10	0.0	-55.5	-54.4	-13.0	42.5	41.4
12	8366.00	-56.6	-58.0	5.8	10.90	0.0	-53.6	-55.0	-13.0	40.6	42.0

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

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-19GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-19GHz)

All other emissions were at least 20dB below the specification limit.

*The noise level was too low to detect.

The noise was measured at each position of all three axes X, Y and Z to compare the level, and the maximum noise.

S/A PK (RBW: 100kHz , VBW:100kHz)

UL Apex Co., Ltd.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
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MF060b(10.04.03)

Test report No. : 25HE0087-HO-5a
Page : 37 of 40
Issued date : April 7, 2006
FCC ID : APYNAR0060
Revised date : April 20, 2006

Spurious Radiation

UL Apex Co., Ltd.
Head Office EMC Lab. Semi Anechoic Chamber : No.2/No.3

COMPANY	Sharp corporation	REPORT NO	25HE0087-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part22 Section 22.917(a)
MODEL	PV200	TEST METHOD	FCC Part2 Section 2.1053
S/N	5	TEST DISTANCE	3m
POWER	DC3.9V(AC120V/60Hz)	DATE	February 27, 2006 / April 20, 2006
MODE	Tx 848.8MHz (251ch)/PCL=5(MAX Pow)	TEMPERATURE	26°C / 25°C
POSITION	H:Z-axis / V:Y-axis	HUMIDITY	30% / 32%
		CALIBRATION	OK
		ENGINEER	Yutaka Yoshida

<GSM850+EGPRS>

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]		HOR [dB]	VER [dB]
1	44.85	-22.5	-31.2	0.5	-23.15	10.4	-58.7	-67.4	-13.0	45.7	54.4
2	142.50	-71.9	-62.8	0.6	2.15	10.0	-82.5	-73.4	-13.0	69.5	60.4
3	1697.60	-49.1	-52.1	1.9	5.70	0.0	-47.4	-50.4	-13.0	34.4	37.4
4	2546.40	-61.5	-60.4	2.9	10.50	0.0	-56.0	-54.9	-13.0	43.0	41.9
5	3395.20	-66.5	-60.1	3.4	11.80	0.0	-60.2	-53.8	-13.0	47.2	40.8
6	4244.00	-61.0	-63.6	4.2	12.50	0.0	-54.8	-57.4	-13.0	41.8	44.4
7	5092.80	-64.4	-62.3	4.3	12.70	0.0	-58.2	-56.1	-13.0	45.2	43.1
8	5941.60	-64.6	-66.2	4.7	13.60	0.0	-57.8	-59.4	-13.0	44.8	46.4
9	6790.40	-60.3	-61.6	5.1	11.80	0.0	-55.7	-57.0	-13.0	42.7	44.0
10	7639.20	-55.8	-57.3	5.5	11.10	0.0	-52.3	-53.8	-13.0	39.3	40.8
11	8488.00	-55.2	-57.0	6.0	11.20	0.0	-52.1	-53.9	-13.0	39.1	40.9

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

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-19GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-19GHz)

All other emissions were at least 20dB below the specification limit.

*The noise level was too low to detect.

The noise was measured at each position of all three axes X, Y and Z to compare the level, and the maximum noise.

S/A PK (RBW: 100kHz , VBW:100kHz)

UL Apex Co., Ltd.
Head Office EMC Lab.
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MF060b(10.04.03)

Test report No. : 25HE0087-HO-5a
Page : 38 of 40
Issued date : April 7, 2006
FCC ID : APYNAR0060
Revised date : April 20, 2006

Spurious Radiation

UL Apex Co., Ltd.
Head Office EMC Lab. Semi Anechoic Chamber : No.2/No.3

COMPANY	Sharp corporation	REPORT NO	25HE0087-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part22 Section 22.917(a)
MODEL	PV200	TEST METHOD	FCC Part2 Section 2.1053
S/N	5	TEST DISTANCE	3m
POWER	DC3.9V(AC120V/60Hz)	DATE	April 20, 2006
MODE	Tx 836.6MHz (190ch)/PCL=5(MAX Pow)	TEMPERATURE	25°C
POSITION	H:Z-axis / V:Y-axis	HUMIDITY	32%
		CALIBRATION	OK
		ENGINEER	Yutaka Yoshida

<GSM850+EGPRS+BT Hopping>

No.	FREQ [MHz]	SG READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]		HOR [dB]	VER [dB]
1	39.45	-19.7	-27.4	0.5	-25.00	10.6	-57.9	-65.6	-13.0	44.9	52.6
2	128.60	-73.5	-64.0	0.7	2.15	10.2	-84.4	-74.9	-13.0	71.4	61.9
3	1206.67	-56.8	-63.7	1.7	5.70	0.0	-54.9	-61.8	-13.0	41.9	48.8
4	1673.20	-47.4	-52.4	1.8	5.70	0.0	-45.6	-50.6	-13.0	32.6	37.6
5	2509.80	-55.4	-67.7	2.9	10.50	0.0	-49.9	-62.2	-13.0	36.9	49.2
6	3346.40	-54.2	-51.8	3.5	11.40	0.0	-48.4	-46.0	-13.0	35.4	33.0
7	4183.00	-63.4	-67.6	4.0	12.50	0.0	-57.0	-61.2	-13.0	44.0	48.2
8	5019.60	-65.2	-65.1	4.3	12.70	0.0	-59.0	-58.9	-13.0	46.0	45.9
9	5856.20	-65.9	-65.6	4.7	13.50	0.0	-59.2	-58.9	-13.0	46.2	45.9
10	6692.80	-61.6	-61.4	5.4	12.60	0.0	-56.5	-56.3	-13.0	43.5	43.3
11	7529.40	-58.0	-57.7	5.5	11.10	0.0	-54.5	-54.2	-13.0	41.5	41.2
12	8366.00	-55.8	-56.9	5.8	10.90	0.0	-52.8	-53.9	-13.0	39.8	40.9

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

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-19GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-19GHz)

All other emissions were at least 20dB below the specification limit.

*The noise level was too low to detect.

The noise was measured at each position of all three axes X, Y and Z to compare the level, and the maximum noise.

S/A PK (RBW: 100kHz , VBW:100kHz)

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MF060b(10.04.03)

Test report No. : 25HE0087-HO-5a
Page : 39 of 40
Issued date : April 7, 2006
FCC ID : APYNAR0060
Revised date : April 20, 2006

Frequency Stability(Temperature/Voltage Variation)

UL Apex Co., Ltd.
Head Office Measurement Room

COMPANY Sharp Corporation
EQUIPMENT Wireless PDA
MODEL PV200
S/N 5
POWER DC3.9V (AC120V/60Hz)
MODE Tx 836.6MHz (190ch)/PCL=5(MAX Pow)

REPORT NO 25HE0087-HO
REGULATION FCC Part22 Section 24.355
TEST METHOD FCC Part2 Section 2.1055(a)(1) and(b)
FCC Part2 Section 2.1055(d)(1) and(b)
TEST DISTANCE -
DATE March 27, 2006
TEMPERATURE 23°C
HUMIDITY 38%
ENGINEER Yutaka Yoshida

<GSM850>

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30.0	3.9	836.662489	-1016	-1.214	1.5
-20.0	3.9	836.661987	-514	-0.614	1.5
-10.0	3.9	836.661553	-80	-0.096	1.5
0.0	3.9	836.661411	62	0.074	1.5
10.0	3.9	836.661291	182	0.218	1.5
20.0	3.9	836.661473	0	0.000	1.5
30.0	3.9	836.662446	-973	-1.163	1.5
40.0	3.9	836.661913	-440	-0.526	1.5
50.0	3.9	836.662204	-731	-0.874	1.5

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20.0	3.6	836.662173	-700	-0.837	1.5
20.0	3.9	836.661473	0	0.000	1.5
20.0	4.2	836.661968	-495	-0.592	1.5

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Test report No. : 25HE0087-HO-5a
Page : 40 of 40
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Revised date : April 20, 2006

Frequency Stability(Temperature/Voltage Variation)

UL Apex Co., Ltd.
Head Office EMC Lab No.7 Shielded Room

COMPANY Sharp Corporation
EQUIPMENT Wireless PDA
MODEL PV200
S/N 5
POWER DC3.9V (AC120V/60Hz)
MODE Tx 836.6MHz (190ch)/PCL=5(MAX Pow)

REPORT NO 25HE0087-HO
REGULATION FCC Part2 Section 24.355
TEST METHOD FCC Part2 Section 2.1055(a)(1) and(b)
FCC Part2 Section 2.1055(d)(1) and(b)
TEST DISTANCE -
DATE April 17, 2006
TEMPERATURE 22°C
HUMIDITY 36%
ENGINEER Yutaka Yoshida

<GSM850+EGPRS>

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30.0	3.9	836.600032	-45	-0.054	1.5
-20.0	3.9	836.599999	-12	-0.014	1.5
-10.0	3.9	836.599967	20	0.024	1.5
0.0	3.9	836.600008	-21	-0.025	1.5
10.0	3.9	836.600009	-22	-0.026	1.5
20.0	3.9	836.599987	0	0.000	1.5
30.0	3.9	836.600011	-24	-0.029	1.5
40.0	3.9	836.600003	-16	-0.019	1.5
50.0	3.9	836.600013	-26	-0.031	1.5

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20.0	3.6	836.599999	-12	-0.014	1.5
20.0	3.9	836.599987	0	0.000	1.5
20.0	4.2	836.599989	-2	-0.002	1.5

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