

## **APPENDIX 2: Test instruments**

### **EMI test equipment**

<b>Control No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Test Item</b>	<b>Calibration Date * Interval (month)</b>
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	RE	2006/11/01 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	RE	2006/09/13 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MHA-01	Horn Antenna 18-26.5G	EMCO	3160-09	RE	2006/01/09 * 12
MCC-06	Microwave Cable 1G-26.5GHz 1m	Suhner	SUCOFLEX 104	RE	2006/02/02 * 12
MCC-18	Microwave Cable 1G-26.5GHz 5m	Suhner	SUCOFLEX 104	RE	2006/02/02 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2006/02/09 * 12
MAT-25	Attenuator(10dB)(above1GHz)	Agilent	8493C	RE	2006/06/02 * 12
MHF-05	High Pass Filter 3.5-24GHz	Tokimec	TF323DCA	RE	2006/01/24 * 12
MOS-01	Digital Humidity Indicator	N.T	NT-1800	RE	2006/11/27 * 12
MBM-06	Barometer	SATO	Aneroid	RE	2006/06/19 * 60
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-
MJM-01	Measure	KDS	ES19-55	RE	-
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/10/07 * 12
MLA-01	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2006/10/07 * 12
MCC-01	Coaxial Cable 0.1-3000MHz	Suhner/storm/Agilent/T SJ	-	RE	2006/02/20 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2006/05/27 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE	2006/10/14 * 12
MURC-01	Universal Radio communication Tester	Rohde & Schwarz	CMU200	RE/AT	Pre Check
MSTW-22	Universal Radio communication	Rohde & Schwarz	V3.54	RE/AT	-
MSA-04	Spectrum Analyzer	Agilent	E4448A	AT	2006/06/02 * 12
MPM-08	Power Meter	Anritsu	ML2495A	AT	2006/09/20 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	AT	2006/09/20 * 12
MPSC-01	Power splitters/Combiners	Mini-Circuit	ZFSC-2-2500	AT	2006/09/20 * 12
MPSC-02	Power Splitters/Combiners	Mini-Circuit	ZFSC-2-10G	AT	2006/09/25 * 12
MCC-15	Microwave Cable 1G-26.5GHz 1m	Suhner	SUCOFLEX 104	AT	2006/02/02 * 12
MCC-25	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	AT	2006/08/29 * 12
MAT-21	Attenuator(20dB)(above1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-120	AT	2006/01/10 * 12
MAT-23	Attenuator(10dB) DC-18GHz	Orient Microwave	BX10-0476-00	AT	2006/03/18 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	AT	2006/11/27 * 12
MDPS-12	DC Power Supply	Kikusui	PAK35-10A	AT	Pre Check
MOS-14	Thermo-Hygrometer	Custom	GTH-180	AT	2006/01/19 * 24
MCH-04	Temperature and Humidity Chamber	Espec	PL-2KP	AT	2006/09/06 * 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**

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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MF060b(01.06.05)

**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	26LE0301-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part24 Section 24.232(b)
MODEL	PV150	TEST METHOD	FCC Part2 Section 2.1046
S/N	PVT2-88	TEST DISTANCE	-
POWER	DC3.9V(AC120V/60Hz)	DATE	11/27/2006
MODE	Tx PCL=0(MAX Pow)	TEMPERATURE	23°C
		HUMIDITY	58%
		ENGINEER	Takumi Shimada

<PCS1900>

Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	1850.2	-6.4	30.0	4.3	27.9	33.0	5.1
Mid	1880.0	-5.9	30.0	4.3	28.4	33.0	4.6
High	1909.8	-5.4	30.0	4.3	29.0	33.0	4.0

<PCS1900+GPRS>

Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	1850.2	-6.4	30.0	4.3	27.9	33.0	5.1
Mid	1880.0	-5.9	30.0	4.3	28.4	33.0	4.6
High	1909.8	-5.4	30.0	4.3	29.0	33.0	4.0

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

## Peak Output Power (Radiated)

UL Apex Co., Ltd.  
Head Office EMC Lab. Semi Anechoic Chamber : No1

COMPANY	Sharp corporation	REPORT NO	26LE0301-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part24 Section 24.232(b)
MODEL	PV150	TEST METHOD	FCC Part2 Section 2.1046
S/N	PVT2-88	TEST DISTANCE	3m
POWER	AC120V / 60Hz (AC Adapter)	DATE	11/14/2006
MODE	Tx	TEMPERATURE	21 deg.C.
	Tx 1850.2MHz (512ch)/PCL=0(MAX Pow)	HUMIDITY	48%
	Tx 1880.0MHz (661ch)/PCL=0(MAX Pow)	CALIBRATION	OK
	Tx 1909.8MHz (810ch)/PCL=0(MAX Pow)	ENGINEER	Takumi Shimada
POSITION	H: Y-axis / V: Z-axis		
Tx Antenna Height	1.5m		

<PCSI900>

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C	Remarks
		HOR	VER	HOR	VER				HOR	VER		HOR	VER			
		1	1850.20	131.1	128.1				23.8	20.6		1.7	7.4			
2	1880.00	132.2	129.5	24.6	21.7	1.7	7.4	0.0	30.2	27.4	33.0	2.8	5.6	Operating	No1	GSM
3	1909.80	133.3	131.0	25.4	22.9	1.8	7.4	0.0	31.1	28.6	33.0	<b>1.9</b>	4.4	Operating	No1	GSM

<PCSI900+GPRS>

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C	Remarks
		HOR	VER	HOR	VER				HOR	VER		HOR	VER			
		1	1850.20	131.0	128.3				23.7	20.8		1.7	7.4			
2	1880.00	131.9	129.6	24.3	21.8	1.7	7.4	0.0	29.9	27.5	33.0	3.1	5.5	Operating	No1	GSM+GPRS
3	1909.80	133.2	130.9	25.3	22.8	1.8	7.4	0.0	31.0	28.5	33.0	<b>2.0</b>	4.5	Operating	No1	GSM+GPRS

CALCULATION RESULT = SG Reading - Tx Loss + Tx Ant. Gain - Tx Ant. ATT. Loss  
Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-12.75GHz)  
Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-12.75GHz)  
All other emissions were at least 20dB below the specification limit.  
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  
- for the calibration data on the substitution measurement.  
Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.  
Detector : S/A PK (RBW: 3MHz , VBW: 3MHz)

## Emission Bandwidth

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

COMPANY SHARP CORPORATION  
EQUIPMENT Wireless PDA  
MODEL PV150  
S/N PVT2-88  
POWER DC3.9V (AC120V/60Hz)  
MODE Tx PCL=0(MAX Pow)

REPORT NO 26LE0301-HO  
REGULATION FCC Part24 Section 24.238(b)  
TEST METHOD FCC Part2 Section 2.1049  
TEST DISTANCE -  
DATE 11/27/2006  
TEMPERATURE 23°C  
HUMIDITY 58%  
ENGINEER Takumi Shimada

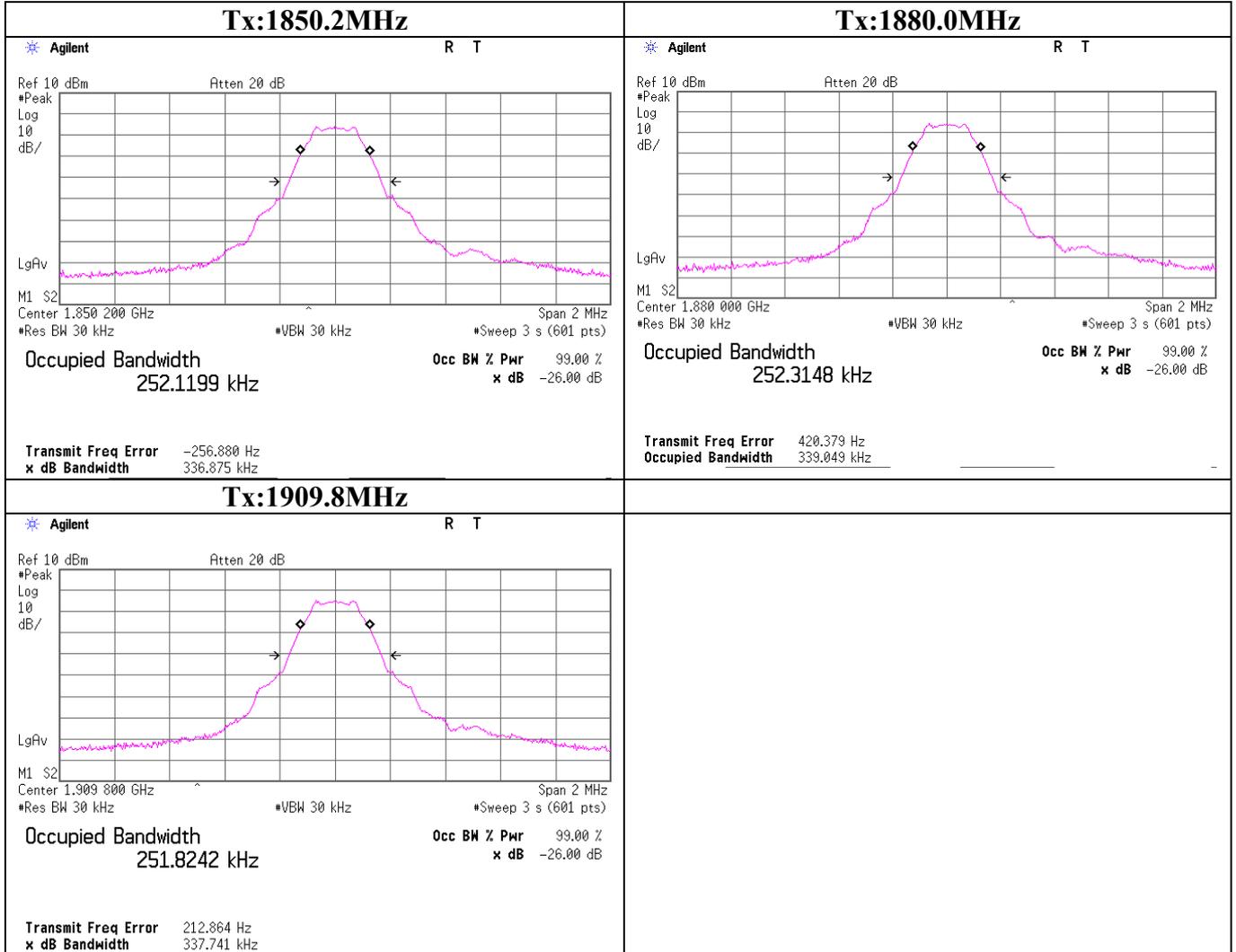
### <PCS1900>

CH	FREQ [MHz]	Bandwidth [kHz]	Limit [kHz]
Low	1850.2	336.9	-
Mid	1880.0	339.0	-
High	1909.8	337.7	-

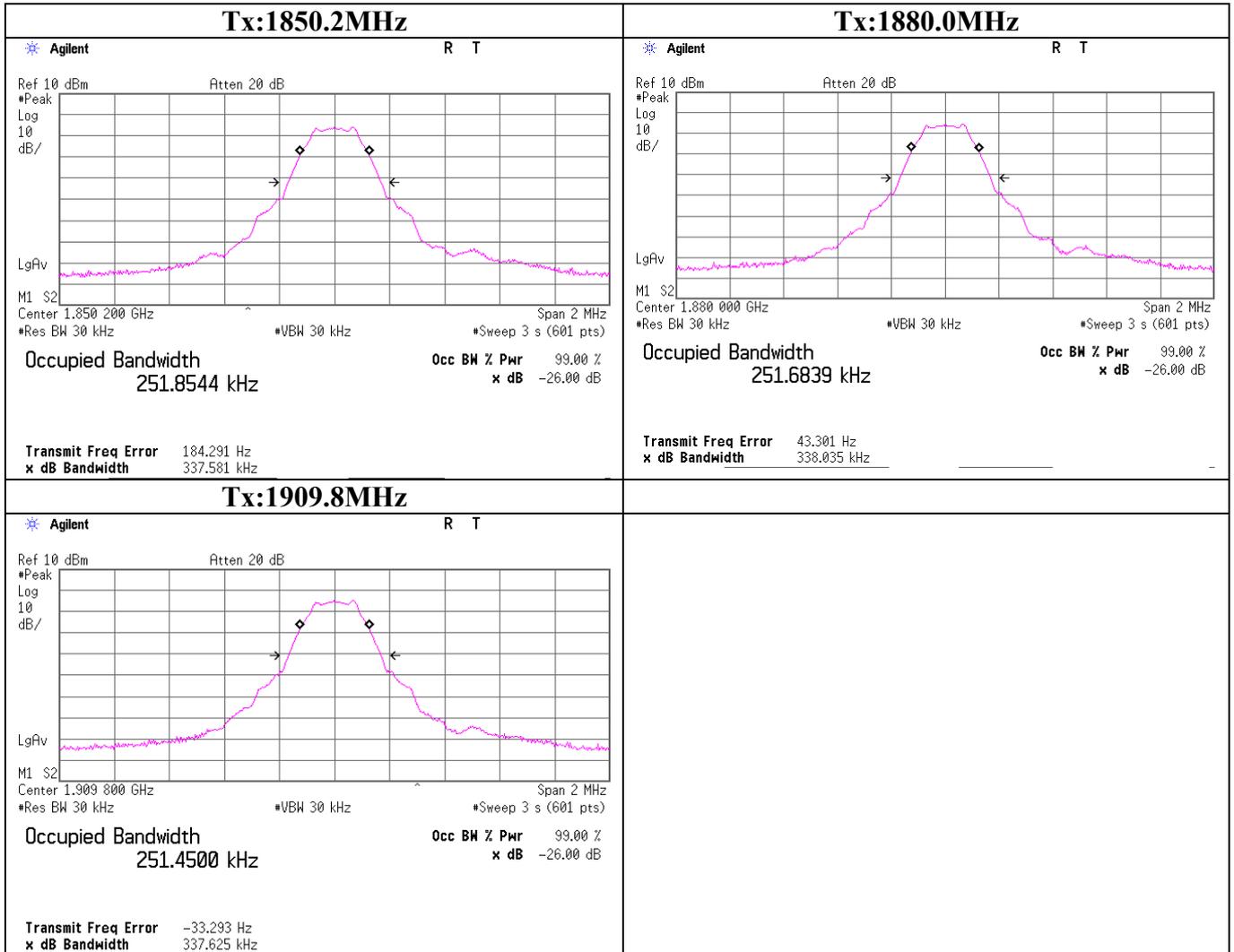
### <PCS1900+GPRS>

CH	FREQ [MHz]	Bandwidth [kHz]	Limit [kHz]
Low	1850.2	337.6	-
Mid	1880.0	338.0	-
High	1909.8	337.6	-

**Emission Bandwidth**  
**<PCS1900>**



**Emission Bandwidth**  
**<PCS1900+GPRS>**



## 99%Occupied Bandwidth

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

COMPANY	SHARP CORPORATION	REPORT NO	26LE0301-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part24 Section 24.238(b)
MODEL	PV150	TEST METHOD	FCC Part2 Section 2.1049
S/N	PVT2-88	TEST DISTANCE	-
POWER	DC3.9V (AC120V/60Hz)	DATE	11/27/2006
MODE	Tx PCL=0(MAX Pow)	TEMPERATURE	23°C
		HUMIDITY	58%
		ENGINEER	Takumi Shimada

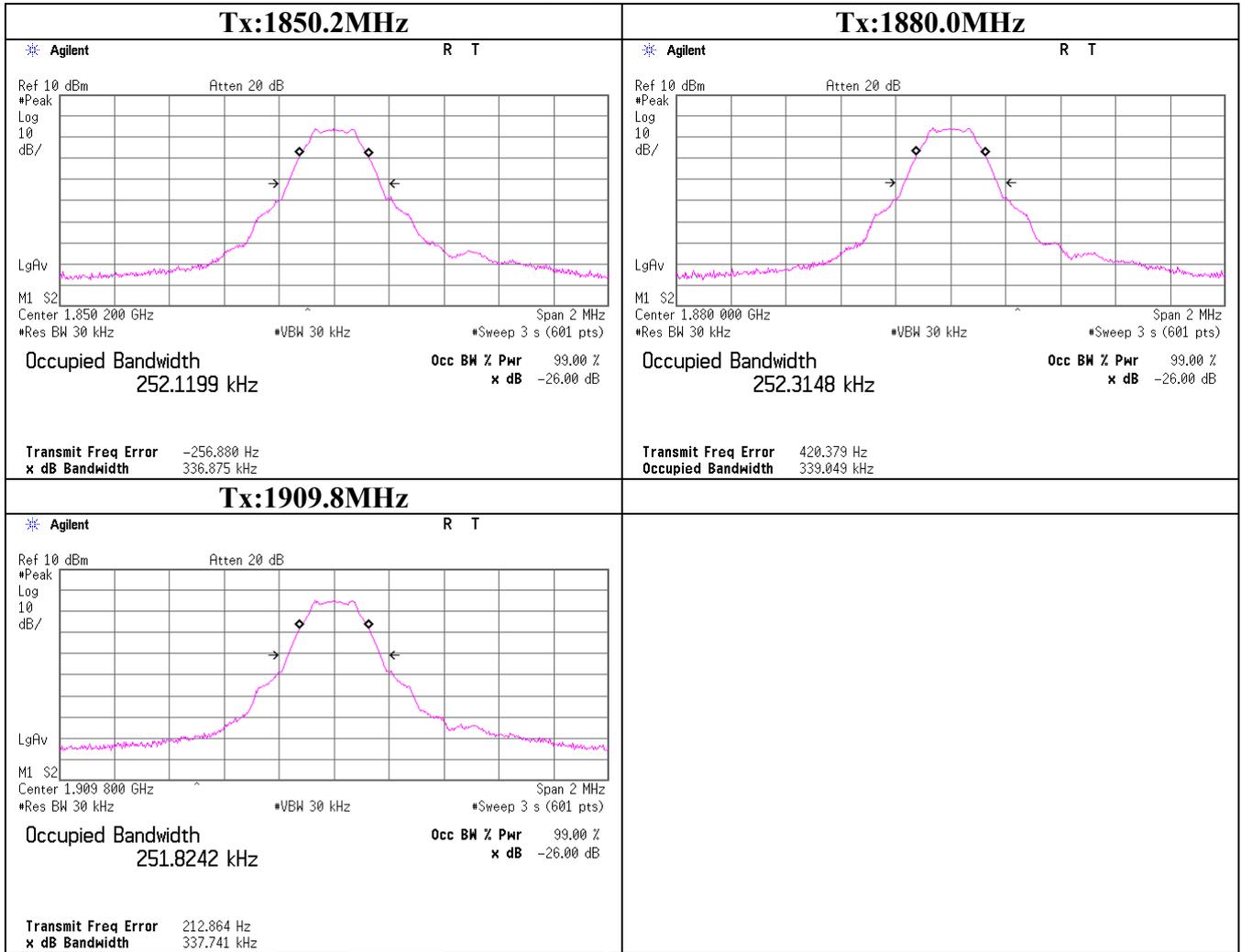
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CH	FREQ [MHz]	Bandwidth [kHz]	Limit [kHz]
Low	1850.2	252.1	-
Mid	1880.0	252.3	-
High	1908.8	251.8	-

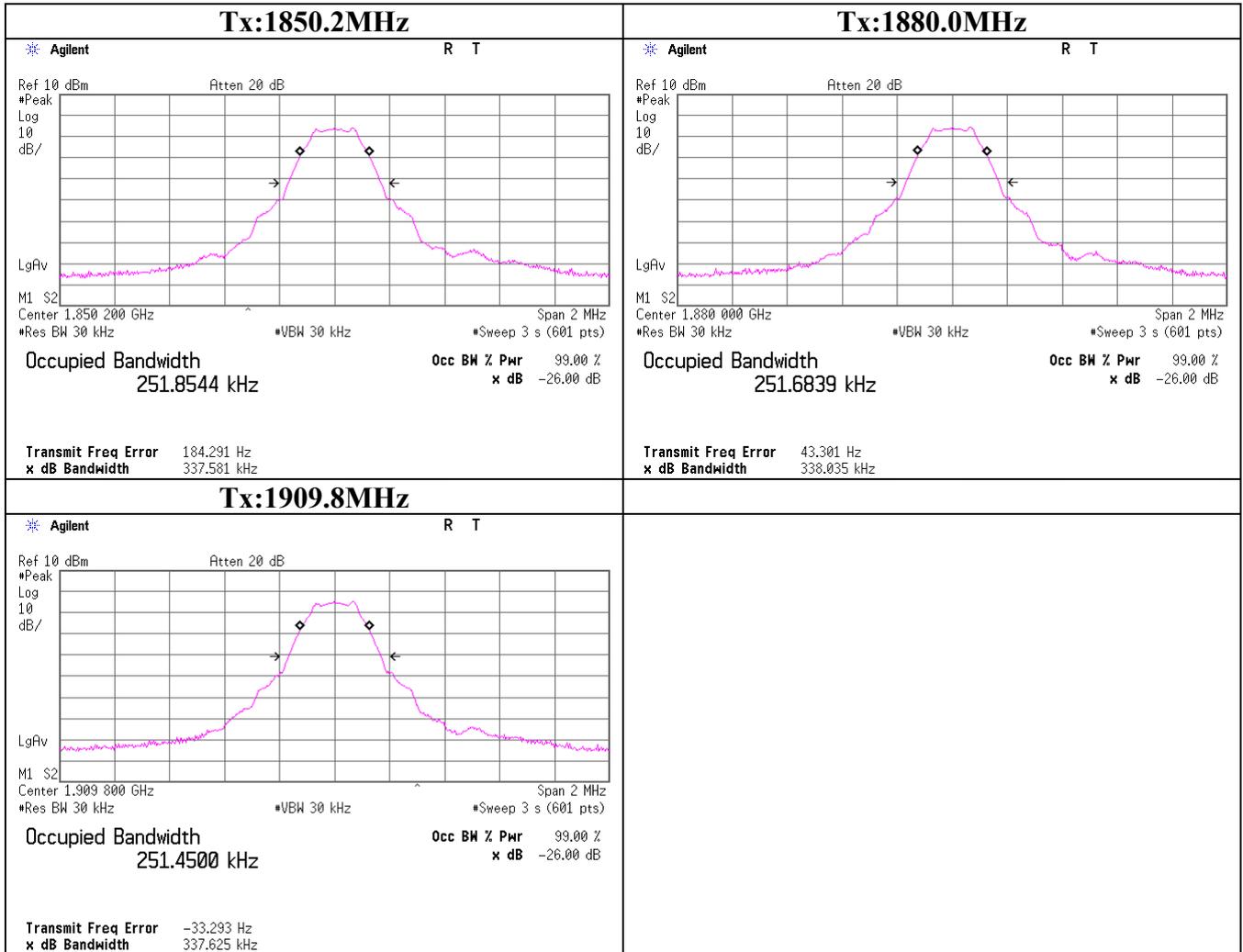
### <PCS1900+GPRS>

CH	FREQ [MHz]	Bandwidth [kHz]	Limit [kHz]
Low	1850.2	251.9	-
Mid	1880.0	251.7	-
High	1908.8	251.5	-

**99%Occupied Bandwidth**  
**<PCS1900>**



**99% Occupied Bandwidth**  
**<PCS1900+GPRS>**



## Band Edge(Conducted)

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

COMPANY	SHARP CORPORATION	REPORT NO	26LE0301-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part24 Section 24.238(b)
MODEL	PV150	TEST METHOD	FCC Part2 Section 2.1049
S/N	PVT2-88	TEST DISTANCE	-
POWER	DC3.9V (AC120V/60Hz)	DATE	11/27/2006
MODE	Tx PCL=0(MAX Pow)	TEMPERATURE	23°C
		HUMIDITY	58%
		ENGINEER	Takumi Shimada

VIDEO AV 30 times

### <PCS1900>

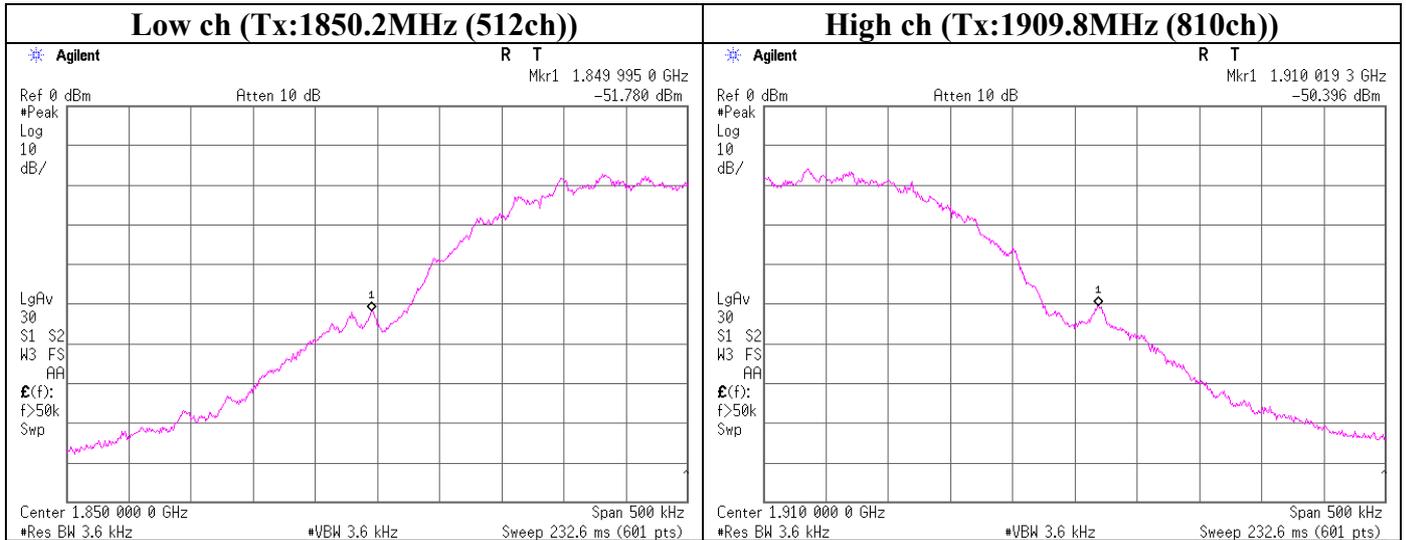
Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]
1850.00	-51.8	30.0	4.3	-17.5	-13.0
1910.02	-50.4	30.0	4.3	-16.0	-13.0

### <PCS1900+GPRS>

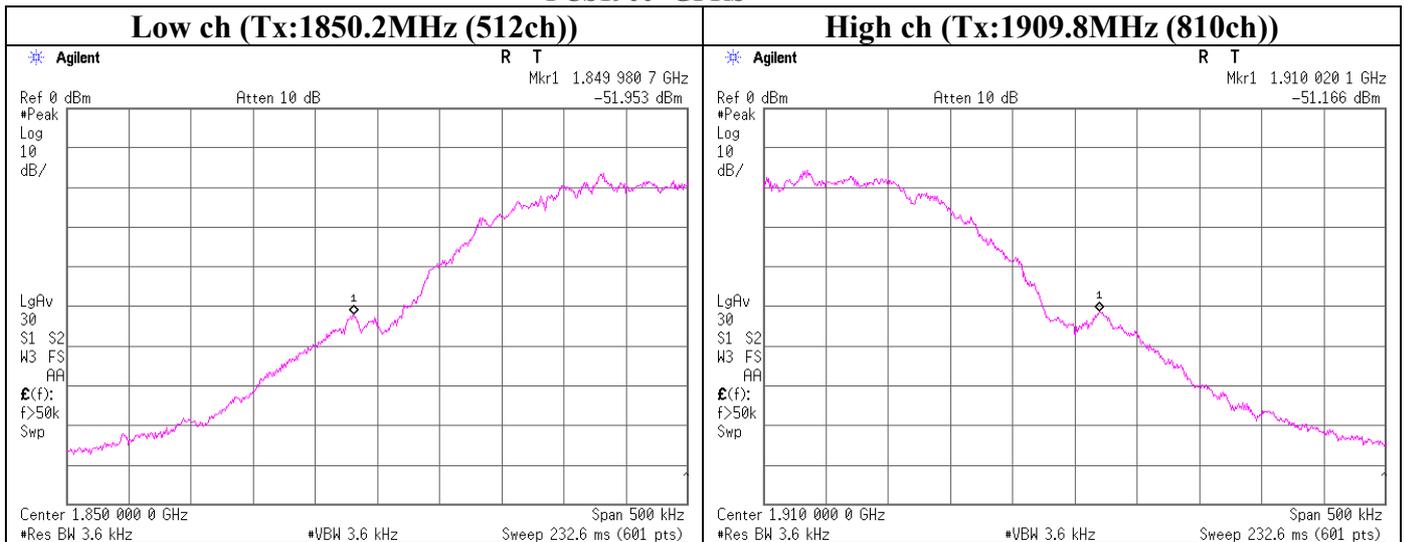
Frequency [MHz]	Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Limit [dBm]
1849.98	-52.0	30.0	4.3	-17.6	-13.0
1910.02	-51.2	30.0	4.3	-16.8	-13.0

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

**Band Edge(Conducted)**  
**<PCS1900>**



**<PCS1900+GPRS>**



## Band Edge (Radiated)

UL Apex Co., Ltd.  
Head Office EMC Lab. Semi Anechoic Chamber : No1

COMPANY	Sharp corporation	REPORT NO	26LE0301-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part24 Section 24.238(b)
MODEL	PV150	TEST METHOD	FCC Part2 Section 2.1049
S/N	PVT2-88	TEST DISTANCE	3m
POWER	AC120V / 60Hz (AC Adapter)	DATE	11/14/2006
MODE	Tx	TEMPERATURE	21 deg.C.
	Tx 1850.2MHz (512ch)/PCL=0(MAX Pow)	HUMIDITY	48%
	Tx 1909.8MHz (810ch)/PCL=0(MAX Pow)	CALIBRATION	OK
POSITION	H: Y-axis / V: Z-axis	ENGINEER	Takumi Shimada
Tx Antenna Height	1.5m		

<PCS1900>

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C	Remarks
		HOR	VER	HOR	VER				HOR	VER		HOR	VER			
		1	1850.00	87.6	86.2				-19.7	-21.3		1.7	7.4			
2	1910.02	88.5	88.2	-19.4	-19.9	1.8	7.4	0.0	-13.7	-14.2	-13.0	0.7	1.2	Operating	No1	GSM

<PCS1900+GPRS>

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C	Remarks
		HOR	VER	HOR	VER				HOR	VER		HOR	VER			
		1	1850.00	88.1	86.4				-19.2	-21.1		1.7	7.4			
2	1910.02	88.2	86.6	-19.7	-21.5	1.8	7.4	0.0	-14.0	-15.8	-13.0	1.0	2.8	Operating	No1	GSM+GPRS

CALCULATION RESULT = SG Reading - Tx Loss + Tx Ant. Gain - Tx Ant. ATT. Loss

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-12.75GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-12.75GHz)

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

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

- for the calibration data on the substitution measurement.

Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

Detector : 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  
EQUIPMENT        Wireless PDA  
MODEL             PV150  
S/N                PVT2-88  
POWER             DC3.9V (AC120V/60Hz)  
MODE              Tx            PCL=0(MAX Pow)

REPORT NO        26LE0301-HO  
REGULATION      Fcc Part 24 Section 24.238(a)  
TEST METHOD      Fcc Part 2 Section 2.1051  
TEST DISTANCE   -  
DATE              11/27/2006  
TEMPERATURE     23°C  
HUMIDITY         58%  
ENGINEER         Takumi Shimada

### Limit Line

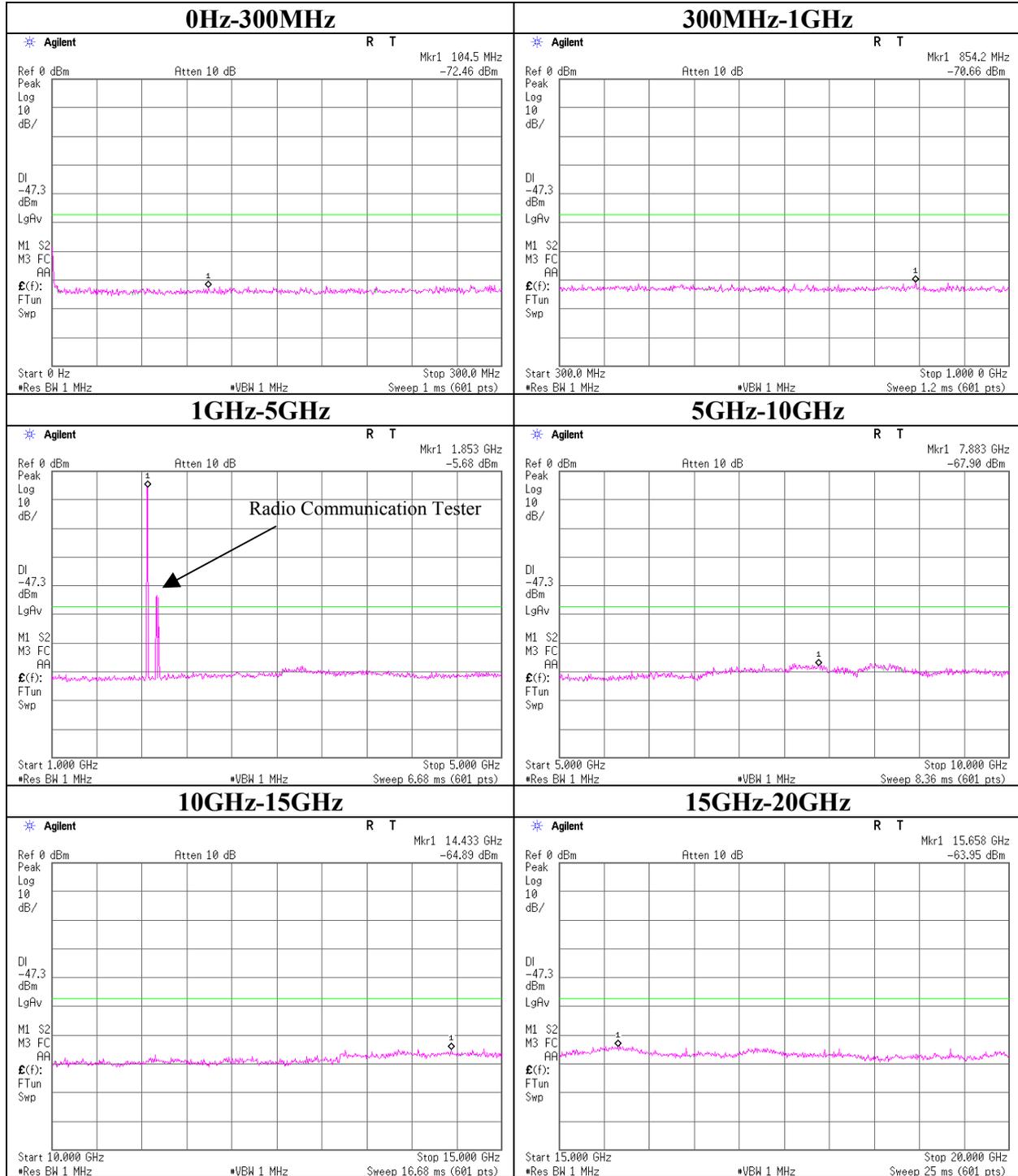
Limit [dBm]	Atten. [dB]	Cable Loss [dB]	Limit Line [dBm]
-13.0	30.0	4.3	-47.3

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

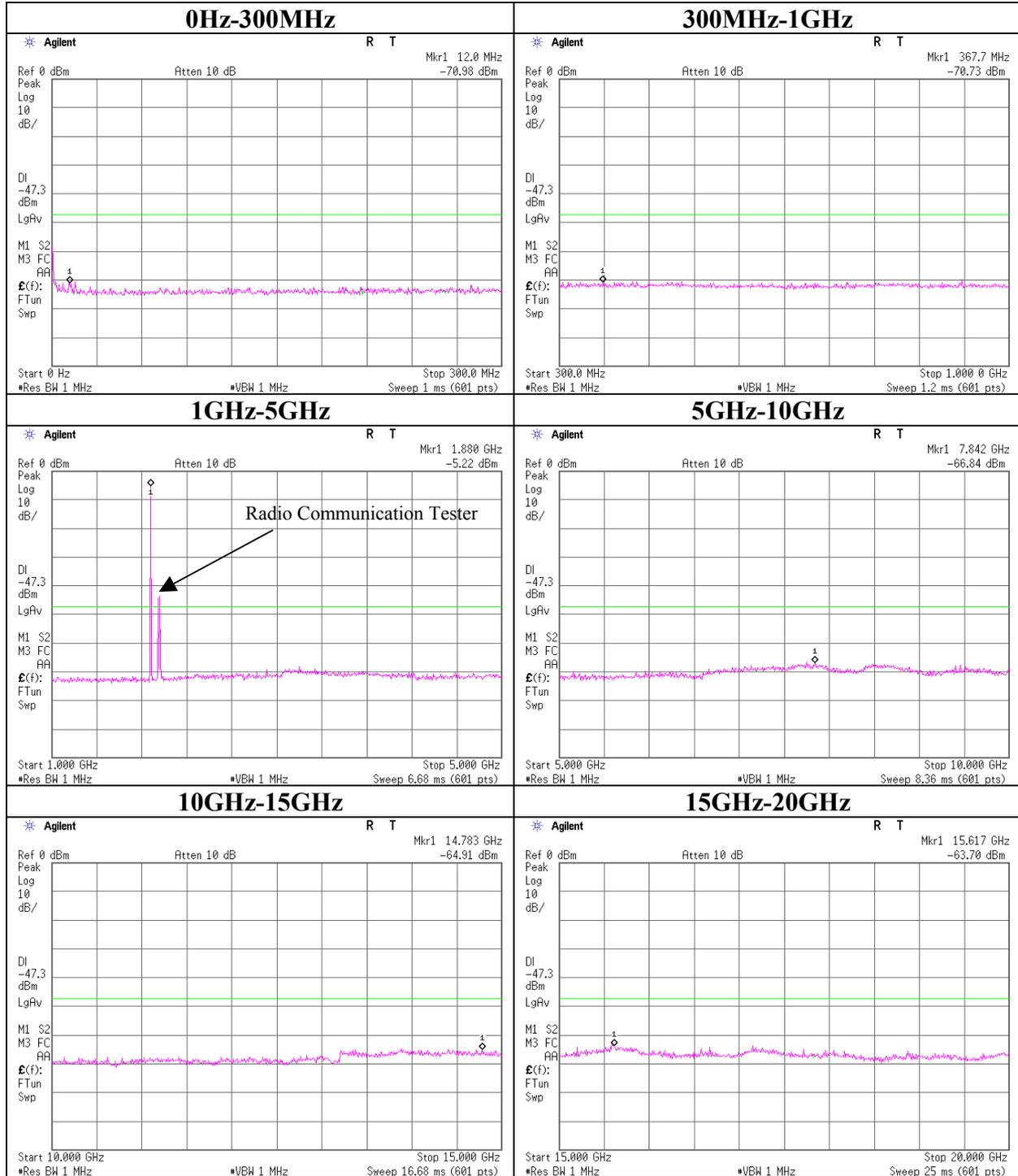
Result        OK

\*All the spurious noises were below the above limit line.

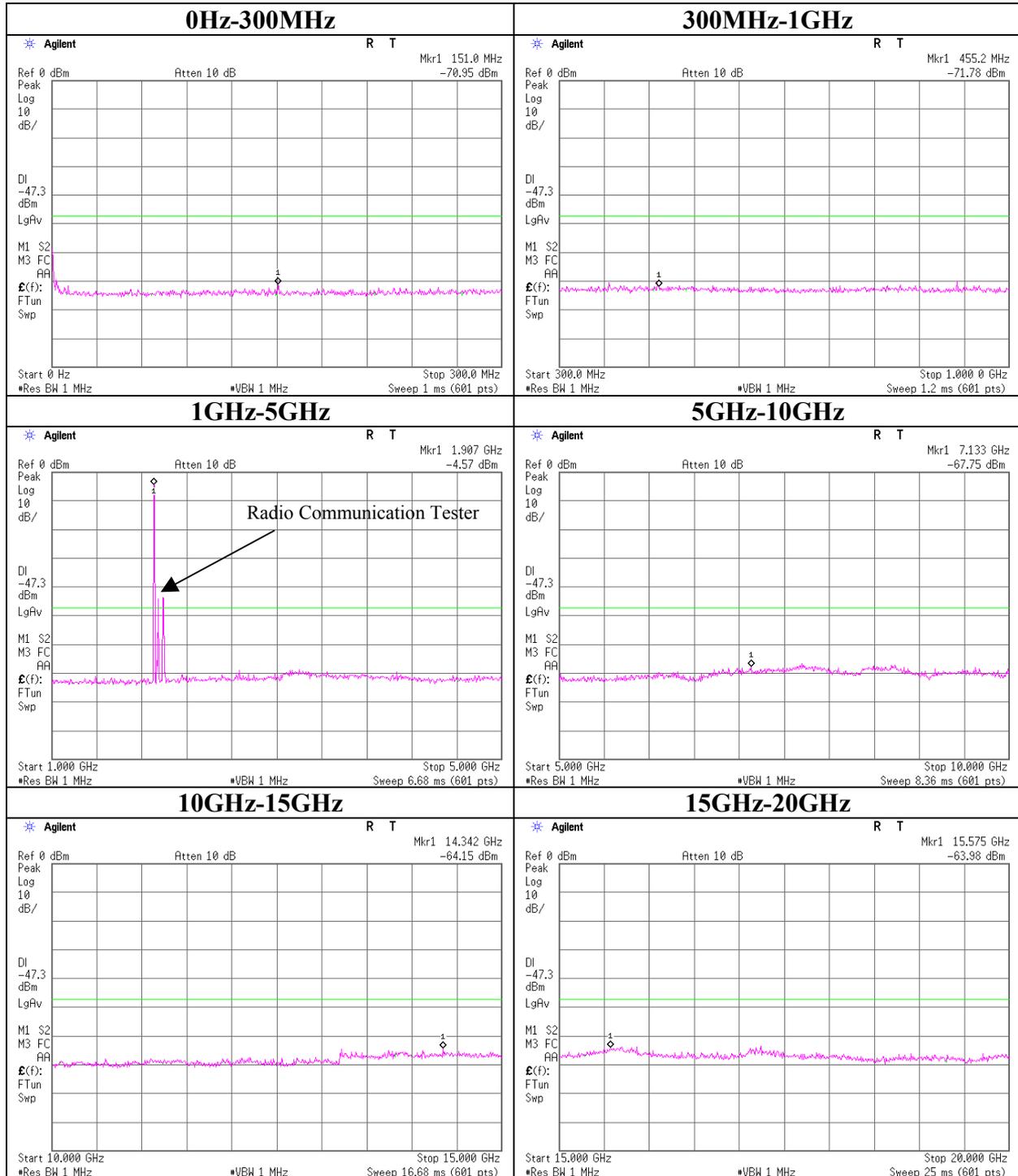
**Spurious Emission (Conducted)**  
**PCS1900 / Tx:1850.2MHz**



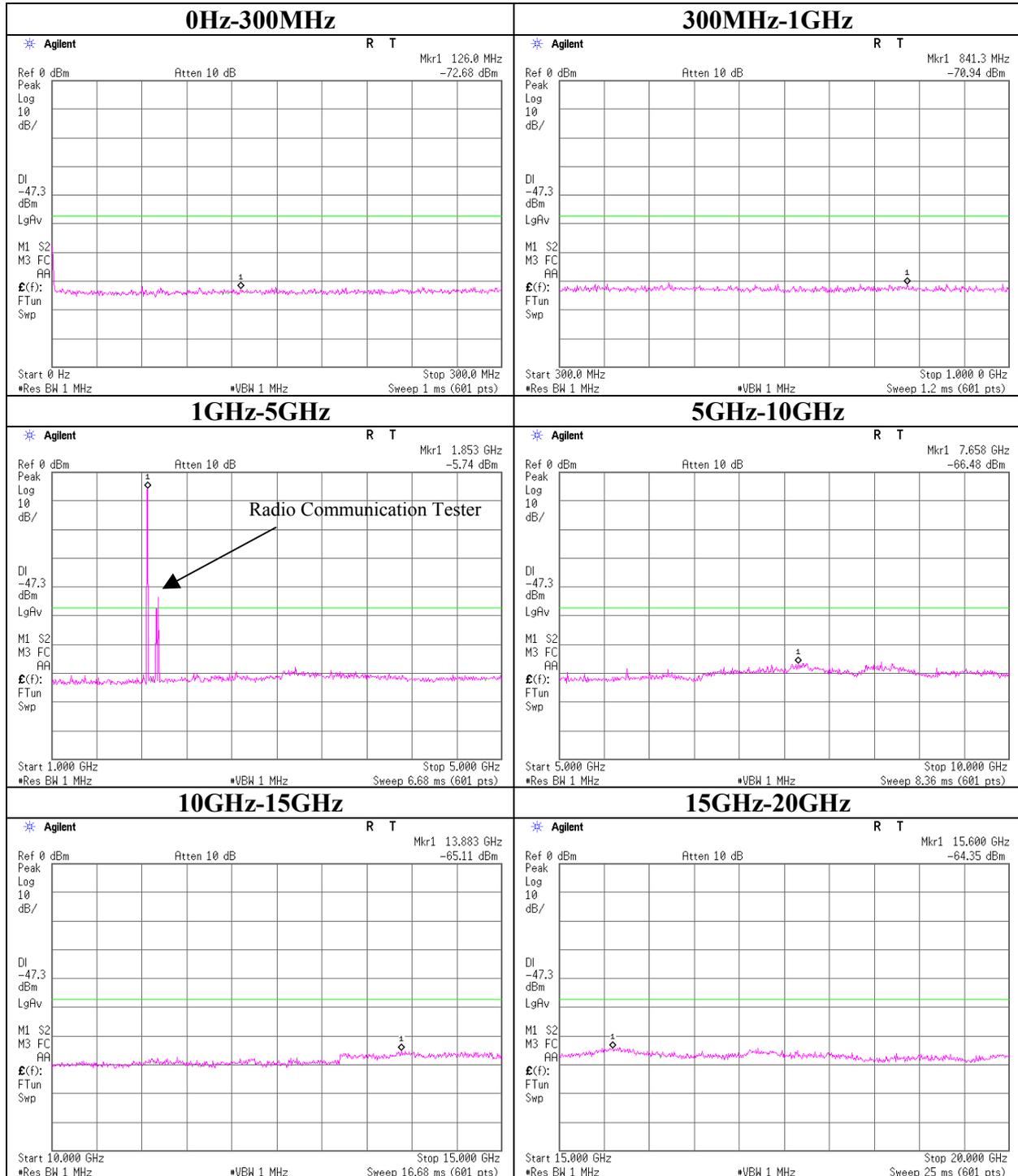
**Spurious Emission (Conducted)**  
**PCS1900 / Tx:1880.0MHz**



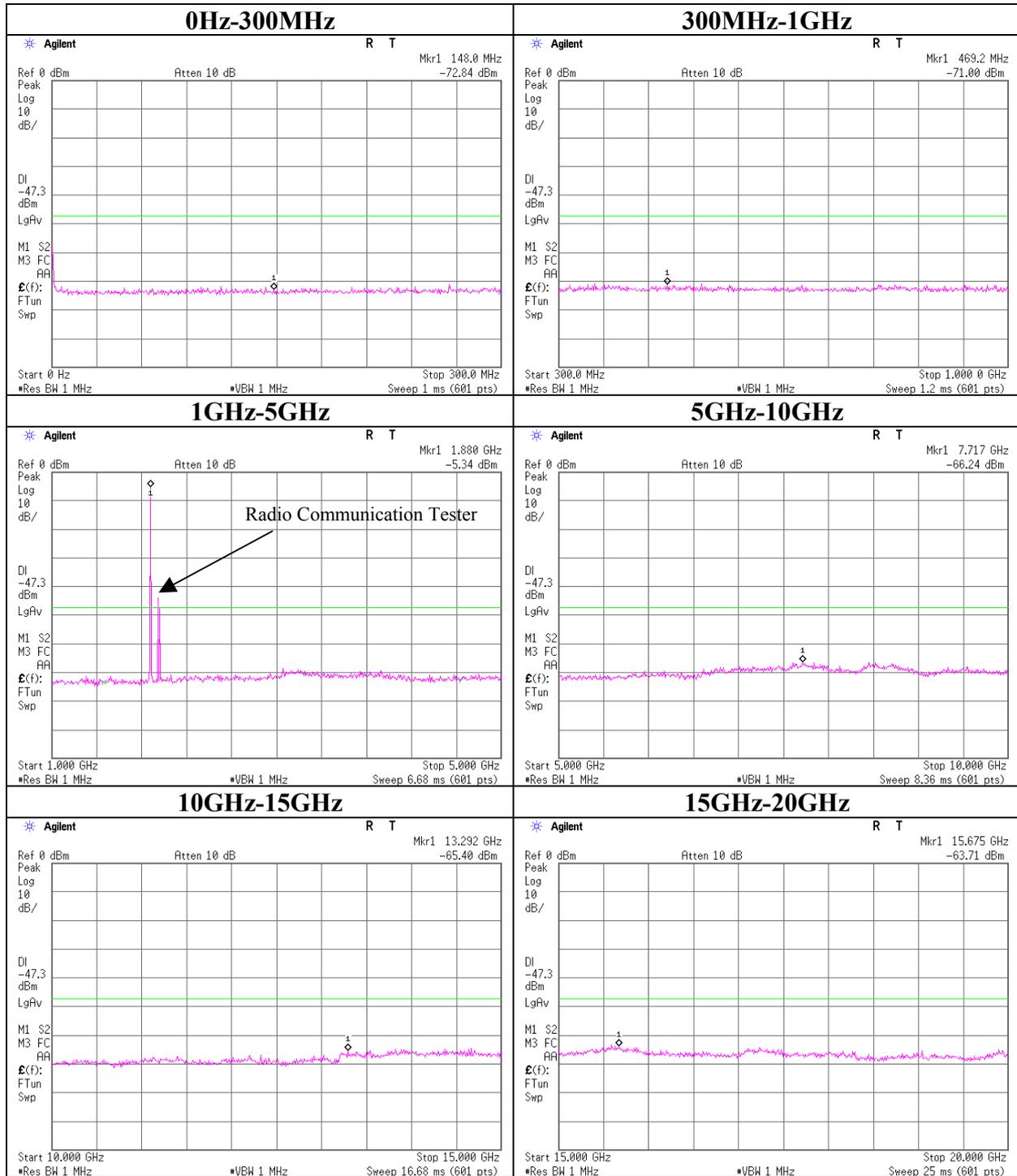
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**PCS1900 / Tx:1909.8MHz**



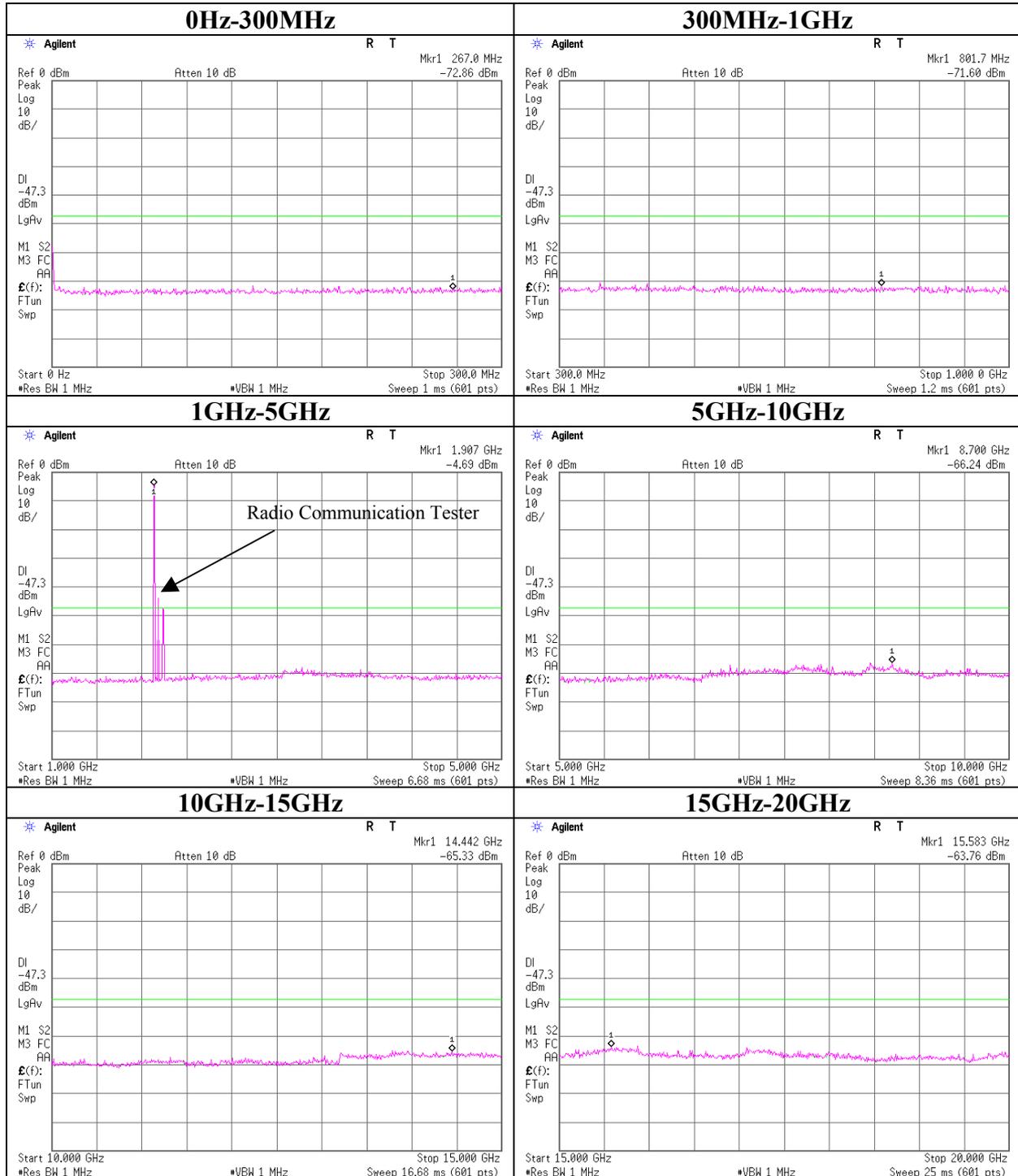
**Spurious Emission (Conducted)**  
**PCS1900+GPRS / Tx:1850.2MHz**



**Spurious Emission (Conducted)**  
**PCS1900+GPRS / Tx:1880.0MHz**



**Spurious Emission (Conducted)**  
**PCS1900+GPRS / Tx:1909.8MHz**



## Spurious Radiation

UL Apex Co., Ltd.  
Head Office EMC Lab. Semi Anechoic Chamber : No1

COMPANY Sharp corporation  
EQUIPMENT Wireless PDA  
MODEL PV150  
S/N PVT2-88  
POWER AC120V / 60Hz (AC Adapter)  
MODE Tx 1850.2 MHz  
POSITION H: Y-axis / V: Z-axis  
Tx Antenna Height 1.5m

REPORT NO 26LE0301-HO  
REGULATION FCC Part24 Section 24.238(a)  
TEST METHOD FCC Part2 Section 2.1046  
TEST DISTANCE 3m (below10GHz) / 1m (above10GHz)  
DATE 11/14/2006, 11/15/2006  
TEMPERATURE 21 deg.C., 23deg.C  
HUMIDITY 48%, 33%  
CALIBRATION OK  
ENGINEER Takumi Shimada

<PCSI900>

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C	Remarks
		HOR	VER	HOR	VER				HOR	VER		HOR	VER			
		1	70.38	35.5	38.6				-40.9	-37.1		0.4	-11.0			
2	104.66	36.7	45.2	-53.9	-39.3	0.8	-1.2	9.9	-65.8	-51.2	-13.0	52.8	38.2	Operating	No1	
3	151.20	49.1	45.4	-42.8	-41.4	1.0	2.2	9.9	-51.6	-50.2	-13.0	38.6	37.2	Operating	No1	
4	3700.40	57.0	58.4	-51.3	-49.8	2.6	10.1	0.0	-43.8	-42.3	-13.0	30.8	29.3	Operating	No1	
5	5550.60	59.7	59.3	-49.2	-49.2	3.1	10.7	0.0	-41.7	-41.7	-13.0	28.7	28.7	Operating	No1	
6	7400.80	55.9	56.1	-48.1	-46.6	4.6	11.0	0.0	-41.7	-40.1	-13.0	28.7	27.1	Operating	No1	
7	9251.00	62.4	63.1	-40.3	-41.1	6.1	11.8	0.0	-34.6	-35.3	-13.0	21.6	22.3	Operating	No1	
8	11101.20	53.9	52.2	-57.8	-58.5	7.8	10.9	0.0	-54.7	-55.4	-13.0	41.7	42.4	Operating	No1	
9	12951.40	63.7	60.9	-49.9	-53.1	8.5	14.2	0.0	-44.2	-47.4	-13.0	31.2	34.4	Operating	No1	
10	14801.60	70.2	65.1	-44.6	-49.3	9.3	12.9	0.0	-41.0	-45.7	-13.0	28.0	32.7	Operating	No1	
11	16651.80	66.5	64.3	-50.0	-51.6	9.3	14.8	0.0	-44.5	-46.1	-13.0	31.5	33.1	Operating	No1	
12	18502.00	52.7	51.5	-58.8	-60.2	9.6	15.2	0.0	-53.2	-54.6	-13.0	40.2	41.6	Operating	No1	

CALCULATION RESULT = SG Reading - Tx Loss + Tx Ant. Gain - Tx Ant. ATT. Loss

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-26.5GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-26.5GHz)

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

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  
- for the calibration data on the substitution measurement.

Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

Detector : S/A PK(RBW:1MHz,VBW:1MHz)

## Spurious Radiation

UL Apex Co., Ltd.  
Head Office EMC Lab. Semi Anechoic Chamber : No1

COMPANY Sharp corporation  
EQUIPMENT Wireless PDA  
MODEL PV150  
S/N PVT2-88  
POWER AC120V / 60Hz (AC Adapter)  
MODE Tx 1880 MHz  
POSITION H: Y-axis / V: Z-axis  
Tx Antenna Height 1.5m

REPORT NO 26LE0301-HO  
REGULATION FCC Part24 Section 24.238(a)  
TEST METHOD FCC Part2 Section 2.1046  
TEST DISTANCE 3m (below10GHz) / 1m (above10GHz)  
DATE 11/14/2006, 11/15/2006  
TEMPERATURE 21 deg.C., 23deg.C  
HUMIDITY 48%, 33%  
CALIBRATION OK  
ENGINEER Takumi Shimada

<PCSI900>

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C	Remarks
		HOR	VER	HOR	VER				HOR	VER		HOR	VER			
1	72.04	37.9	46.9	-39.2	-29.2	0.4	-10.4	9.9	-59.8	-49.8	-13.0	46.8	36.8	Operating	No1	
2	103.97	41.3	46.1	-49.0	-38.3	0.8	-1.3	9.9	-61.0	-50.4	-13.0	48.0	37.4	Operating	No1	
3	148.77	50.8	46.7	-41.2	-40.1	1.0	2.2	9.9	-49.9	-48.8	-13.0	36.9	35.8	Operating	No1	
4	3760.00	59.0	56.6	-49.3	-51.6	2.6	10.2	0.0	-41.8	-44.1	-13.0	28.8	31.1	Operating	No1	
5	5640.00	65.0	61.8	-43.9	-46.7	3.2	10.6	0.0	-36.5	-39.2	-13.0	23.5	26.2	Operating	No1	
6	7520.00	66.9	62.4	-36.9	-40.1	4.8	11.1	0.0	-30.6	-33.8	-13.0	17.6	20.8	Operating	No1	
7	9400.00	61.4	62.7	-40.8	-41.0	6.2	11.7	0.0	-35.3	-35.5	-13.0	22.3	22.5	Operating	No1	
8	11280.00	55.3	53.7	-56.7	-57.5	7.9	11.4	0.0	-53.2	-54.1	-13.0	40.2	41.1	Operating	No1	
9	13160.00	61.5	59.9	-51.6	-53.2	8.5	13.8	0.0	-46.2	-47.9	-13.0	33.2	34.9	Operating	No1	
10	15040.00	68.6	65.7	-47.3	-50.1	9.4	13.2	0.0	-43.6	-46.4	-13.0	30.6	33.4	Operating	No1	
11	16920.00	67.4	64.9	-48.9	-50.8	9.1	14.2	0.0	-43.8	-45.7	-13.0	30.8	32.7	Operating	No1	
12	18800.00	50.3	50.8	-61.6	-61.3	9.7	15.1	0.0	-56.2	-55.9	-13.0	43.2	42.9	Operating	No1	

CALCULATION RESULT = SG Reading - Tx Loss + Tx Ant. Gain - Tx Ant. ATT. Loss

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperriodic Antenna(300-1000MHz), Horn Antenna(1-26.5GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-26.5GHz)

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

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 - for the calibration data on the substitution measurement.

Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

Detector : S/A PK(RBW:1MHz,VBW:1MHz)

## Spurious Radiation

		UL Apex Co., Ltd.			
		Head Office EMC Lab. Semi Anechoic Chamber :		No1	
COMPANY	Sharp corporation		REPORT NO	26LE0301-HO	
EQUIPMENT	Wireless PDA		REGULATION	FCC Part24 Section 24.238(a)	
MODEL	PV150		TEST METHOD	FCC Part2 Section 2.1046	
S/N	PVT2-88		TEST DISTANCE	3m (below10GHz) / 1m (above10GHz) /	
POWER	AC120V / 60Hz (AC Adapter)		DATE	11/14/2006, 11/15/2006	
MODE	Tx	1909.8 MHz	TEMPERATURE	21 deg.C., 23deg.C	
POSITION	H: Y-axis / V: Z-axis		HUMIDITY	48%, 33%	
Tx Antenna Height	1.5m		CALIBRATION	OK	
		ENGINEER		Takumi Shimada	
<b>&lt;PCS1900&gt;</b>					

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C
		HOR	VER	HOR	VER				HOR	VER		HOR	VER		
1	68.43	37.5	46.8	-38.2	-28.3	0.4	-11.6	9.9	-60.1	-50.1	-13.0	47.1	37.1	Operating	No1
2	102.40	41.8	47.5	-47.8	-36.7	0.8	-1.7	9.9	-60.2	-49.1	-13.0	47.2	36.1	Operating	No1
3	148.56	50.5	46.6	-41.5	-40.2	1.0	2.2	9.9	-50.2	-48.9	-13.0	37.2	35.9	Operating	No1
4	3819.60	57.4	57.7	-51.0	-50.6	2.6	10.2	0.0	-43.4	-43.0	-13.0	30.4	30.0	Operating	No1
5	5729.40	62.9	62.9	-46.0	-45.5	3.2	10.6	0.0	-38.7	-38.2	-13.0	25.7	25.2	Operating	No1
6	7639.20	57.3	57.3	-46.2	-45.0	5.1	11.1	0.0	-40.1	-39.0	-13.0	27.1	26.0	Operating	No1
7	9549.00	61.4	61.5	-40.2	-41.7	6.3	11.6	0.0	-35.0	-36.4	-13.0	22.0	23.4	Operating	No1
8	11458.80	55.6	53.8	-56.6	-58.0	8.0	11.9	0.0	-52.8	-54.1	-13.0	39.8	41.1	Operating	No1
9	13368.60	63.2	61.2	-49.1	-50.8	8.6	13.4	0.0	-44.3	-46.0	-13.0	31.3	33.0	Operating	No1
10	15278.40	72.9	67.7	-43.3	-48.3	9.5	14.0	0.0	-38.8	-43.9	-13.0	25.8	30.9	Operating	No1
11	17188.20	68.8	65.0	-45.9	-48.7	9.1	12.8	0.0	-42.2	-45.0	-13.0	29.2	32.0	Operating	No1
12	19098.00	47.6	47.7	-64.3	-64.3	9.7	15.0	0.0	-59.0	-59.0	-13.0	46.0	46.0	Operating	No1

CALCULATION RESULT = SG Reading - Tx Loss + Tx Ant. Gain - Tx Ant. ATT. Loss

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-26.5GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-26.5GHz)

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

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

- for the calibration data on the substitution measurement.

Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

Detector : S/A PK(RBW:1MHz,VBW:1MHz)

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## Spurious Radiation

		UL Apex Co., Ltd.			
		Head Office EMC Lab. Semi Anechoic Chamber :		No1	
COMPANY	Sharp corporation		REPORT NO	26LE0301-HO	
EQUIPMENT	Wireless PDA		REGULATION	FCC Part24 Section 24.238(a)	
MODEL	PV150		TEST METHOD	FCC Part2 Section 2.1046	
S/N	PVT2-88		TEST DISTANCE	3m (below10GHz) / 1m (above10GHz) /	
POWER	AC120V / 60Hz (AC Adapter)		DATE	11/14/2006, 11/15/2006	
MODE	Tx	1850.2 MHz	TEMPERATURE	21 deg.C., 23deg.C	
POSITION	H: Y-axis / V: Z-axis		HUMIDITY	48%, 33%	
Tx Antenna Height	1.5m		CALIBRATION	OK	
		ENGINEER		Takumi Shimada	

<PCS1900+GPRS>

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C
		HOR	VER	HOR	VER				HOR	VER		HOR	VER		
1	69.51	35.2	46.2	-40.9	-29.2	0.4	-11.3	9.9	-62.4	-50.8	-13.0	49.4	37.8	Operating	No1
2	100.62	40.6	47.1	-48.3	-36.9	0.8	-2.0	9.9	-61.0	-49.6	-13.0	48.0	36.6	Operating	No1
3	148.89	49.6	49.7	-42.4	-37.1	1.0	2.2	9.9	-51.1	-45.8	-13.0	38.1	32.8	Operating	No1
4	3700.40	60.3	59.1	-48.0	-49.1	2.6	10.1	0.0	-40.5	-41.6	-13.0	27.5	28.6	Operating	No1
5	5550.60	63.3	59.5	-45.6	-49.0	3.1	10.7	0.0	-38.1	-41.5	-13.0	25.1	28.5	Operating	No1
6	7400.80	55.4	55.9	-48.6	-46.8	4.6	11.0	0.0	-42.2	-40.3	-13.0	29.2	27.3	Operating	No1
7	9251.00	60.5	61.7	-42.2	-42.5	6.1	11.8	0.0	-36.5	-36.7	-13.0	23.5	23.7	Operating	No1
8	11101.20	55.8	52.6	-55.9	-58.1	7.8	10.9	0.0	-52.8	-55.0	-13.0	39.8	42.0	Operating	No1
9	12951.40	63.6	61.4	-50.0	-52.6	8.5	14.2	0.0	-44.3	-46.9	-13.0	31.3	33.9	Operating	No1
10	14801.00	71.4	65.6	-43.4	-48.8	9.3	12.9	0.0	-39.8	-45.2	-13.0	26.8	32.2	Operating	No1
11	16651.80	66.7	65.4	-49.8	-50.5	9.3	14.8	0.0	-44.3	-45.0	-13.0	31.3	32.0	Operating	No1
12	18500.00	51.5	50.7	-60.0	-61.0	9.6	15.2	0.0	-54.4	-55.4	-13.0	41.4	42.4	Operating	No1

CALCULATION RESULT = SG Reading - Tx Loss + Tx Ant. Gain - Tx Ant. ATT. Loss

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-26.5GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-26.5GHz)

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

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

- for the calibration data on the substitution measurement.

Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

Detector : S/A PK(RBW:1MHz,VBW:1MHz)

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## Spurious Radiation

		UL Apex Co., Ltd.			
		Head Office EMC Lab. Semi Anechoic Chamber :		No1	
COMPANY	Sharp corporation		REPORT NO	26LE0301-HO	
EQUIPMENT	Wireless PDA		REGULATION	FCC Part24 Section 24.238(a)	
MODEL	PV150		TEST METHOD	FCC Part2 Section 2.1046	
S/N	PVT2-88		TEST DISTANCE	3m (below10GHz) / 1m (above10GHz) / t	
POWER	AC120V / 60Hz (AC Adapter)		DATE	11/14/2006, 11/15/2006	
MODE	Tx 1880 MHz		TEMPERATURE	21 deg.C., 23deg.C	
POSITION	H: Y-axis / V: Z-axis		HUMIDITY	48%, 33%	
Tx Antenna Height	1.5m		CALIBRATION	OK	
			ENGINEER	Takumi Shimada	
<b>&lt;PCS1900+GPRS&gt;</b>					

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C
		HOR	VER	HOR	VER				HOR	VER					
1	70.39	37.6	46.3	-38.8	-29.4	0.4	-11.0	9.9	-60.1	-50.6	-13.0	47.1	37.6	Operating	No1
2	99.91	40.2	46.3	-48.4	-37.6	0.8	-2.2	9.9	-61.2	-50.5	-13.0	48.2	37.5	Operating	No1
3	150.02	50.0	50.1	-41.9	-36.6	1.0	2.2	9.9	-50.7	-45.4	-13.0	37.7	32.4	Operating	No1
4	3760.00	59.9	57.3	-48.4	-50.9	2.6	10.2	0.0	-40.9	-43.4	-13.0	27.9	30.4	Operating	No1
5	5640.00	64.7	61.6	-44.2	-46.9	3.2	10.6	0.0	-36.8	-39.4	-13.0	23.8	26.4	Operating	No1
6	7520.00	56.5	55.0	-47.3	-47.5	4.8	11.1	0.0	-41.0	-41.2	-13.0	28.0	28.2	Operating	No1
7	9400.00	60.5	62.7	-41.7	-41.0	6.2	11.7	0.0	-36.2	-35.5	-13.0	23.2	22.5	Operating	No1
8	11280.00	55.6	53.9	-56.4	-57.3	7.9	11.4	0.0	-52.9	-53.9	-13.0	39.9	40.9	Operating	No1
9	13160.00	61.7	60.2	-51.4	-52.9	8.5	13.8	0.0	-46.0	-47.6	-13.0	33.0	34.6	Operating	No1
10	15040.00	69.4	65.5	-46.5	-50.3	9.4	13.2	0.0	-42.8	-46.6	-13.0	29.8	33.6	Operating	No1
11	16920.00	66.5	64.7	-49.8	-51.0	9.1	14.2	0.0	-44.7	-45.9	-13.0	31.7	32.9	Operating	No1
12	18800.00	50.0	50.8	-61.9	-61.3	9.7	15.1	0.0	-56.5	-55.9	-13.0	43.5	42.9	Operating	No1

CALCULATION RESULT = SG Reading - Tx Loss + Tx Ant. Gain - Tx Ant. ATT. Loss

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-26.5GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-26.5GHz)

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

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

- for the calibration data on the substitution measurement.

Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

Detector : S/A PK(RBW:1MHzVBW:1MHz)

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## Spurious Radiation

UL Apex Co., Ltd.  
Head Office EMC Lab. Semi Anechoic Chamber : No1

COMPANY Sharp corporation  
EQUIPMENT Wireless PDA  
MODEL PV150  
S/N PVT2-88  
POWER AC120V / 60Hz (AC Adapter)  
MODE Tx 1909.8 MHz  
POSITION H: Y-axis / V: Z-axis  
Tx Antenna Height 1.5m

REPORT NO 26LE0301-HO  
REGULATION FCC Part24 Section 24.238(a)  
TEST METHOD FCC Part2 Section 2.1046  
TEST DISTANCE 3m (below10GHz)/ 1m (above10GHz)  
DATE 11/14/2006, 11/15/2006  
TEMPERATURE 21 deg.C., 23deg.C  
HUMIDITY 48%, 33%  
CALIBRATION OK  
ENGINEER Takumi Shimada

<PCS1900GPRS>

No.	Frequency [MHz]	Electric Field Strength (After Factor Calculation) [dBuV/m]		SG Reading [dBm]		Tx Cable Loss [dB]	Tx Ant. Gain [dBi]	Tx Ant. ATT. Loss [dB]	RESULT (EIRP) [dBm]		LIMIT [dBm] (EIRP)	MARGIN [dB]		Mode	A/C	Remarks
		HOR	VER	HOR	VER				HOR	VER						
1	68.92	35.0	45.9	-40.9	-29.4	0.4	-11.4	9.9	-62.6	-51.1	-13.0	49.6	38.1	Operating	No1	
2	99.25	38.4	46.2	-49.8	-37.4	0.8	-2.4	9.9	-62.9	-50.5	-13.0	49.9	37.5	Operating	No1	
3	149.86	49.3	48.8	-42.6	-37.9	1.0	2.2	9.9	-51.4	-46.7	-13.0	38.4	33.7	Operating	No1	
4	3819.60	59.7	55.6	-48.7	-52.7	2.6	10.2	0.0	-41.1	-45.1	-13.0	28.1	32.1	Operating	No1	
5	5729.40	62.7	63.2	-46.2	-45.2	3.2	10.6	0.0	-38.9	-37.9	-13.0	25.9	24.9	Operating	No1	
6	7639.20	54.8	56.9	-48.7	-45.4	5.1	11.1	0.0	-42.6	-39.4	-13.0	29.6	26.4	Operating	No1	
7	9549.00	60.0	61.9	-41.6	-41.3	6.3	11.6	0.0	-36.4	-36.0	-13.0	23.4	23.0	Operating	No1	
8	11458.80	56.5	54.2	-55.7	-57.6	8.0	11.9	0.0	-51.9	-53.7	-13.0	38.9	40.7	Operating	No1	
9	13368.60	64.1	60.7	-48.2	-51.3	8.6	13.4	0.0	-43.4	-46.5	-13.0	30.4	33.5	Operating	No1	
10	15278.40	71.1	67.7	-45.1	-48.3	9.5	14.0	0.0	-40.6	-43.9	-13.0	27.6	30.9	Operating	No1	
11	17188.20	68.1	65.5	-46.6	-48.2	9.1	12.8	0.0	-42.9	-44.5	-13.0	29.9	31.5	Operating	No1	
12	19098.00	48.2	47.9	-63.7	-64.1	9.7	15.0	0.0	-58.4	-58.8	-13.0	45.4	45.8	Operating	No1	

CALCULATION RESULT = SG Reading - Tx Loss + Tx Ant. Gain - Tx Ant. ATT. Loss

Rx-ANTENNA : Biconical Antenna(30-300MHz), Logperiodic Antenna(300-1000MHz), Horn Antenna(1-26.5GHz)

Tx-ANTENNA : Shorted Dipole Antenna(30-120MHz), Dipole Antenna(120-1000MHz), Horn Antenna(1-26.5GHz)

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

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  
- for the calibration data on the substitution measurement.

Result is calculated to two places of decimals. Therefore, there may be 0.1 difference for the result.

Detector : S/A PK(RBW:1MHz,VBW:1MHz)

**Frequency Stability(Temperature/Voltage Variation)**

UL Apex Co., Ltd.  
Head Office Measurement Room

COMPANY	Sharp Corporation	REPORT NO	26LE0301-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part24 Section 24.235
MODEL	PV150	TEST METHOD	FCC Part2 Section 2.1055(a)(1) and(b)
S/N	PVT2-88		FCC Part2 Section 2.1055(d)(1) and(2)
POWER	DC3.9V (AC120V/60Hz)	TEST DISTANCE	-
MODE	Tx 1880.0MHz (661ch)/PCL=0(MAX Pow)	DATE	11/28/2006
		TEMPERATURE	23°C
		HUMIDITY	59%
		ENGINEER	Takumi Shimada

<PCS1900>

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30.0	3.9	1880.058674	1631	0.867	-
-20.0	3.9	1880.059017	1287	0.685	-
-10.0	3.9	1880.060409	-105	-0.056	-
0.0	3.9	1880.060348	-44	-0.023	-
10.0	3.9	1880.058644	1660	0.883	-
20.0	3.9	1880.060305	0	0.000	-
30.0	3.9	1880.059532	773	0.411	-
40.0	3.9	1880.059335	970	0.516	-
50.0	3.9	1880.058762	1543	0.821	-

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20.0	3.600	1880.059003	1301	0.692	-
20.0	3.900	1880.060305	0	0.000	-
20.0	4.200	1880.060666	-362	-0.192	-

**Frequency Stability(Temperature/Voltage Variation)**

Head Office Measurement Room

COMPANY	Sharp Corporation	REPORT NO	26LE0301-HO
EQUIPMENT	Wireless PDA	REGULATION	FCC Part24 Section 24.235
MODEL	PV150	TEST METHOD	FCC Part2 Section 2.1055(a)(1) and(b) FCC Part2 Section 2.1055(d)(1) and(2)
S/N	PVT2-88	TEST DISTANCE	-
POWER	DC3.9V (AC120V/60Hz)	DATE	11/28/2006
MODE	Tx 1880.0MHz (661ch)/PCL=0(MAX Pow)	TEMPERATURE	23°C
		HUMIDITY	59%
		ENGINEER	Takumi Shimada

**<PCS1900+GPRS>**

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
-30.0	3.9	1880.051609	-2762	-1.469	-
-20.0	3.9	1880.051375	-2529	-1.345	-
-10.0	3.9	1880.051107	-2261	-1.202	-
0.0	3.9	1880.049847	-1001	-0.533	-
10.0	3.9	1880.049813	-967	-0.514	-
20.0	3.9	1880.048846	0	0.000	-
30.0	3.9	1880.051289	-2443	-1.299	-
40.0	3.9	1880.049881	-1034	-0.550	-
50.0	3.9	1880.049525	-679	-0.361	-

Temp. [deg.C]	Volt. [V]	Frequency Reading [MHz]	Frequency Error [Hz]	Frequency Error [ppm]	Limit [ppm]
20.0	3.600	1880.051134	-2288	-1.217	-
20.0	3.900	1880.048846	0	0.000	-
20.0	4.200	1880.051243	-2397	-1.275	-