



# RADIO TEST REPORT

Test Report No. : 31HE0013-HO-01-D-R1

**Applicant** : Sony Corporation  
**Type of Equipment** : Tablet Device  
**Model No.** : SGPT211US/S  
**Test standard** : FCC Part 22 Subpart H: 2006  
\*RF Output Power (Conducted/Radiated), Band-Edge (Radiated), and Spurious Emission (Radiated) tests only  
**FCC ID** : AK8SGPT211US  
**Test Result** : Complied

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6. This report is a revised version of 31HE0013-HO-01-D. 31HE0013-HO-01-D is replaced with this report.

**Date of test:** March 25 to May 3, 2011

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<b>CONTENTS</b>	<b>PAGE</b>
<b>SECTION 1: Customer information .....</b>	<b>3</b>
<b>SECTION 2: Equipment under test (E.U.T.) .....</b>	<b>3</b>
<b>SECTION 3: Test specification, procedures &amp; results .....</b>	<b>5</b>
<b>SECTION 4: Operation of E.U.T. during testing.....</b>	<b>8</b>
<b>SECTION 5: RF Output Power (Conducted/Radiated).....</b>	<b>14</b>
<b>SECTION 6: Spurious Emission and Band-Edge (Radiated).....</b>	<b>15</b>
<b>APPENDIX 1: Photographs of test setup.....</b>	<b>16</b>
<b>Radiated Spurious Emission .....</b>	<b>16</b>
<b>Worst Case Position and Angle .....</b>	<b>17</b>
<b>APPENDIX 2: Data of EMI test .....</b>	<b>18</b>
<b>RF Output Power (Conducted).....</b>	<b>18</b>
<b>RF Output Power (Radiated).....</b>	<b>20</b>
<b>Band Edge (Radiated).....</b>	<b>24</b>
<b>Spurious Emission (Radiated) .....</b>	<b>26</b>
<b>APPENDIX 3: Test instruments .....</b>	<b>36</b>

## **SECTION 1: Customer information**

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

### **2.1 Identification of E.U.T.**

Type of Equipment : Tablet Device  
Model No. : SGPT211US/S  
Serial No. : Refer to Section 4, Clause 4.2  
Receipt Date of Sample : March 25, 2011  
Country of Mass-production : Japan  
Condition of EUT : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)  
Modification of EUT : No Modification by the test lab

### **2.2 Product Description**

Model No: SGPT211US/S (referred to as the EUT in this report) is the Tablet Device.

Feature of EUT: This model is co-located with Wireless LAN(IEEE802.11b/g/n)/Bluetooth module and Wireless WAN module(GPRS/EDGE/HSPA/WCDMA). Each antenna is included in the equipment. This model can be co-operated Wireless WAN + Wireless LAN and Wireless WAN + Bluetooth. However, Wireless LAN and Bluetooth cannot be co-operated.

### **Radio Specification**

#### **Bluetooth**

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Other Clock Frequency	26MHz, 38.4MHz, 32.768kHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Type	Inverted-F
Antenna Gain	1.5dBi
Antenna Connector Type	N/A

#### **WLAN (IEEE802.11b/g/n-20)**

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Other Clock Frequency	26MHz, 38.4MHz, 32.768kHz
Type of Modulation	DSSS, OFDM
Bandwidth & Channel spacing	20MHz & 5MHz
Antenna Type	Inverted-F
Antenna Gain	1.5dBi
Antenna Connector Type	N/A

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### GSM

Equipment Type	Transceiver
Frequency of Operation	[Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz
Type of Modulation	GMSK , 8PSK
Bandwidth & Channel spacing	200kHz & 200kHz
Antenna Type	Inverted-F
Antenna Gain	2.5dBi
Antenna Connector Type	U.FL Compatible connector
Emission Designator(s)	300KGXW, 300KG7W
Power Supply	DC3.3V*
Maximum RF Output Power	0.380W ERP (GSM850) 25.8dBm 1.175W EIRP (PCS1900) 30.7dBm

\*Nominal voltage of WWAN module (FCC ID: VV7-MBMF5521GW1). Peak consumption current is 2.75A.  
Power supply to WWAN module is done through a DCDC converter: MIC22705YML (Rating: 7A) and the stable voltage is supplied to WWAN module regardless of input voltage. Therefore, the data of WWAN module (FCC ID: VV7-MBMF5521GW1) is effective.

### W-CDMA

Equipment Type	Transceiver
Frequency of Operation	[Up Link] Band V: 824 – 849MHz Band II: 1850 – 1910MHz [Down Link] Band V: 869 – 894MHz Band II: 1930 – 1990MHz
Type of Modulation	QPSK
Bandwidth & Channel spacing	5MHz & 200kHz
Antenna Type	Inverted-F
Antenna Gain	2.5dBi
Antenna Connector Type	U.FL Compatible connector
Emission Designator(s)	4M20F9W
Power Supply	DC3.3V*
Maximum RF Output Power	0.178W ERP (Band V) 22.5dBm 0.501W EIRP (Band II) 27.0dBm

\*Nominal voltage of WWAN module (FCC ID: VV7-MBMF5521GW1). Peak consumption current is 2.75A.  
Power supply to WWAN module is done through a DCDC converter: MIC22705YML (Rating: 7A) and the stable voltage is supplied to WWAN module regardless of input voltage. Therefore, the data of WWAN module (FCC ID: VV7-MBMF5521GW1) is effective.

### GPS

Equipment Type	Receiver
Receiving Frequency	1575.42MHz
Type of Modulation	Spread Spectrum modulation
Bandwidth	2.046MHz
Antenna Type	Inverted-F
Antenna Connector Type	U.FL Compatible connector

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## SECTION 3: Test specification, procedures & results

### 3.1 Test Specification

Test Specification : FCC Part 22 Subpart H: 2006, final revised on November 29, 2006  
Title : FCC 47CFR Part 22 Subpart H  
Cellular Radiotelephone Service

\*RF Output Power (Conducted/Radiated), Band-Edge (Radiated), and Spurious Emission (Radiated) test only

### 3.2 Procedures and results

Item	Test Specification & Procedure	Remarks	Deviation	Worst margin	Results
RF Output Power(Conducted/ Radiated) (Conducted Output Power / Effective radiated power(ERP))	FCC 2.1046 FCC 22.913(a)(2) ----- RSS-132(4.4)	Conducted/ Radiated	N/A	-	Complied
Band-Edge	FCC 2.1053 FCC 22.917 ----- RSS-132 (4.5)	Radiated	N/A	<b>GSM850</b> 10.5dB 849.00MHz, Vertical <b>W-CDMA Band V</b> 9.3dB 849.00MHz, Vertical	Complied
Spurious Emission	FCC 2.1053 FCC 22.917 ----- RSS-132 (4.5)	Radiated	N/A	<b>GSM850</b> 22.2dB 2509.80MHz, Horizontal <b>W-CDMA Band V</b> 26.4dB 1673.20MHz, Horizontal	Complied
Receiver Spurious Emission	RSS-132 (4.6)	Radiated	N/A	<b>GSM850</b> 2.8dB 71.588MHz, Horizontal <b>W-CDMA Band V</b> 2.8dB 71.589MHz, Horizontal	Complied

Note: UL Japan's EMI Work Procedures No. 13-EM-W0420

\*These tests were also referred to ANSI/TIA 603-C-2004 " Land Mobile FM or PM Communications Equipment Measurement and Performance Standards."

\*These tests were performed without any deviations from test procedure except for additions or exclusions.

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### 3.3 Uncertainty

#### EMI

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

<Transmitting mode>

Radiated Emission (EUT height: 0.8m) (+dB)	
Measurement Distance 3m	
25MHz-300MHz	5.4dB
300MHz-1000MHz	4.0dB
1GHz-12.75GHz	4.4dB

<Receiving mode>

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(+dB)				(1m*)(+dB)		(0.5m*)(+dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	3.5dB	5.1dB	5.2dB	4.8dB	5.1dB	4.4dB	4.3dB
No.2	4.0dB	5.1dB	5.2dB	4.8dB	5.0dB	4.3dB	4.2dB
No.3	4.2dB	4.7dB	5.2dB	4.8dB	5.0dB	4.5dB	4.2dB
No.4	4.0dB	5.0dB	5.1dB	4.8dB	5.0dB	5.1dB	4.2dB

#### Radiated emission test(3m)

(Except Receiver Spurious Emission)

The data listed in this test report has enough margin, more than the site margin.

#### Receiver Spurious Emission

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

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### 3.4 Test Location

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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	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
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	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

\* Size of vertical conducting plane (for Conducted Emission test): 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

### 3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX.

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

### **4.1 Operating Modes**

#### **<GSM850 (Power level 5 / Multi-slot class 10)>**

<b>Test</b>	<b>Operating mode</b>	<b>Power control</b>	<b>Tested frequency</b>	<b>Channel</b>
RF output Power(Conducted)	Transmitting (Tx) (GPRS, GMSK) Transmitting (Tx) (EGPRS, 8PSK)	Max	824.2MHz 836.6MHz 848.8MHz	128 190 251
RF output Power (Radiated)	Transmitting (Tx) (GPRS, GMSK) Transmitting (Tx) (EGPRS, 8PSK)	Max	824.2MHz 836.6MHz 848.8MHz	128 190 251
Spurious Emission	Transmitting (Tx) (GPRS, GMSK)	Max	824.2MHz 836.6MHz 848.8MHz	128 190 251
Band Edge	Transmitting (Tx) (GPRS, GMSK) Transmitting (Tx) (EGPRS, 8PSK)	Max	824.2MHz 848.8MHz	128 251
Receiver Spurious Emission	Receiving (Rx) (GPRS, GMSK)	-	836.6MHz	190

\*The EUT was command to operate at maximum transmit power.

#### **<W-CDMA Band V(TPC all ones / Power class 3)>**

<b>Test</b>	<b>Operating mode</b>	<b>Tested frequency</b>	<b>Channel</b>
RF output Power(Conducted)	Transmitting (Tx) W-CDMA (RMC12.2kbps) Transmitting (Tx) W-CDMA (HSDPA Subtest 1-4) Transmitting (Tx) W-CDMA (HSUPA Subtest 1-5)	826.4MHz 836.6MHz 846.6MHz	4132 4183 4233
RF output Power (Radiated) Spurious Emission	Transmitting (Tx) W-CDMA (RMC12.2kbps)	826.4MHz 836.6MHz 846.6MHz	4132 4183 4233
Band Edge	Transmitting (Tx) W-CDMA (RMC12.2kbps)	826.4MHz 846.6MHz	4132 4233
Receiver Spurious Emission	Receiving (Rx) W-CDMA (RMC12.2kbps)	836.6MHz	4183

\*The EUT was command to operate at maximum transmit power.

\*The WCDMA and HSPA modes of EUT were verified on each channel and "sub-tests" according to section 4.1.1 to 4.1.4. (Also refer to Release-6 procedures in section 5.2 of 3GPP TS 34.121.)

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#### 4.1.1 Explanation of the Rel-99 WCDMA and Rel-6 HSPA measurement mode

3GPP defines UE Test Modes and Channel Configurations for Regulatory Testing.

- **UE Test Modes:**  
Test Mode 1(Data Loopback Test)
- **Channel Configurations:**  
R99 – 12.2kpbs Reference Measurement Channel (RMC) channel  
HSDPA – Fixed Reference Channel (FRC)  
HSUPA – New HSUPA channel configuration (HSDPA data from DL is looped back onto UL)
- **Procedure to configure UE to transmit maximum power:**  
Rel99: 3GPP TS 34.121 section 5.2  
HSDPA Rel5: 3GPP TS 34.121 section 5.2A  
HSDPA Rel6: 3GPP TS 34.121 section 5.2AA  
HSUPA Rel6: 3GPP TS 34.121 section 5.2B

\* About Rel-99 and HSDPA testing, test equipment send “all up bits” forcing UE max power

#### 4.1.2 Explanation for HSDPA/HSPA Subtests

3GPP TS 34.121 defines test requirements and procedures for testing all variations of WCDMA. 3GPP TS 34.121 defines 4 HSDPA test configurations and 5 HSPA test configurations (“Subtests”) for various RF Conformance tests. The Following table shows Release 5 HSDPA and Release 6 HSPA Subtest Configurations per 3GPP TS 34.121.

[HSDPA]

Table C.10.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c\beta_d$	$\beta_{HS}$ (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15	15/15	64	12/15	24/15	1.0	0.0
	(Note 4)	(Note 4)		(Note 4)			
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1:  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{HS} = 30/15 * \beta_c$ .

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA,  $\Delta_{ACK}$  and  $\Delta_{NACK} = 30/15$  with  $\beta_{HS} = 30/15 * \beta_c$ , and  $\Delta_{CQI} = 24/15$  with  $\beta_{HS} = 24/15 * \beta_c$ .

Note 3: CM = 1 for  $\beta_c\beta_d = 12/15$ ,  $\beta_{HS}/\beta_c = 24/15$ . For all other combinations of DPDCCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the  $\beta_c/\beta_d$  ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to  $\beta_c = 11/15$  and  $\beta_d = 15/15$ .

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[HSUPA]

Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note1)	$\beta_{oc}$	$\beta_{ed}$ (Note 5) (Note 6)	$\beta_{ed}$ (SF)	$\beta_{ed}$ (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1:  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{br} = 30/15 * \beta_c$ .

Note 2: CM = 1 for  $\beta_c/\beta_d = 12/15$ ,  $\beta_{br}/\beta_c = 24/15$ . For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the  $\beta_c/\beta_d$  ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to  $\beta_c = 10/15$  and  $\beta_d = 15/15$ .

Note 4: For subtest 5 the  $\beta_c/\beta_d$  ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to  $\beta_c = 14/15$  and  $\beta_d = 15/15$ .

Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 6:  $\beta_d$  can not be set directly, it is set by Absolute Grant Value.

#### 4.1.3 Maximum Output Power Verification

[HSDPA]

Maximum output power was verified on High, Middle and Low channels according to the Release 5 procedures described in section 5.2 of 3GPP TS 34.121, using an FRC with H-set 1 and 12.2kbps RMC with TPC (transmit power control) set to all "1's". Output power was measured according requirements for HS-DPCCH Sub-test 1-4.

[HSUPA]

Maximum output power was verified on the High, Middle and Low channels according to Release 6 procedures in section 5.2 of 3GPP TS 34.121, using the appropriate RMC, FRC and E-DCH configurations. When E-DCH was active, inner loop power control with power control algorithm 2 was used to maintain E-TFCI requirements. Output power for the applicable HSPA modes was measured for E-DCH Sub-test 1-5.

#### 4.1.4 Test Equipment Setting Summary Table

The following table is the key parameters that was configured in test equipment.

Subtest	Mode	Loopback Mode	Rel99 RMC	HSDPA FRC	HSUPA Test	Common Setting		$\beta_c/\beta_d$	MPR	Power Class 3 limit
						$\beta_c$	$\beta_d$			
	Rel99	Test Mode 1	12.2kbps RMC	-	-	-	-	8/15	-	24(+1.7/-3.7dB)
1	Rel6 HSDPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	-	2/15	15/15	2/15	0	24(+1.7/-3.7dB)
2	Rel6 HSDPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	-	12/15	15/15	12/15	0	24(+1.7/-3.7dB)
3	Rel6 HSDPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	-	15/15	8/15	15/8	0.5	23.5(+2.2/-3.7dB)
4	Rel6 HSDPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	-	15/15	4/15	15/4	0.5	23.5(+2.2/-3.7dB)
1	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	11/15	15/15	11/15	0	24(+1.7/-3.7dB)
2	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	6/15	15/15	6/15	2	22(+3.7/-3.7dB)
3	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	15/15	9/15	15/9	1	23(+2.7/-3.7dB)
4	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	2/15	15/15	2/15	2	22(+3.7/-3.7dB)
5	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set 1 (QPSK)	HSUPA Loopback	15/15	15/15	15/15	0	24(+1.7/-3.7dB)

Subtest	HSDPA Specific Settings						
	$\Delta$ ACK	$\Delta$ NACK	$\Delta$ CQI	Ack-Nack repetition factor	CQI Feedback	CQI Repetition Factor	Ahs= $\beta$ hs/ $\beta$ c
Rel 6 HSDPA							
1	8	8	8	3	4ms	2	30/15
2	8	8	8	3	4ms	2	30/15
3	8	8	8	3	4ms	2	30/15
4	8	8	8	3	4ms	2	30/15

Subtest	HSDPA Specific Settings							HSUPA Specific Settings			HSUPA Additional Info	
	$\Delta$ ACK	$\Delta$ NACK	$\Delta$ CQI	Ack-Nack repetition factor	CQI Feedback	CQI Repetition Factor	Ahs= $\beta$ hs/ $\beta$ c	$\Delta$ E-DPCCH	$\Delta$ HARQ	AG Index	ETFCI (form TS34.121 Table C.11.1.3)	Associated Max UL Data Rate kbps
Rel 6 HSPA												
1	8	8	8	3	4ms	2	30/15	6	0	20	75	242.1
2	8	8	8	3	4ms	2	30/15	8	0	12	67	174.9
3	8	8	8	3	4ms	2	30/15	8	0	15	92	482.8
4	8	8	8	3	4ms	2	30/15	5	0	17	71	205.8
5	8	8	8	3	4ms	2	30/15	7	0	21	81	308.9

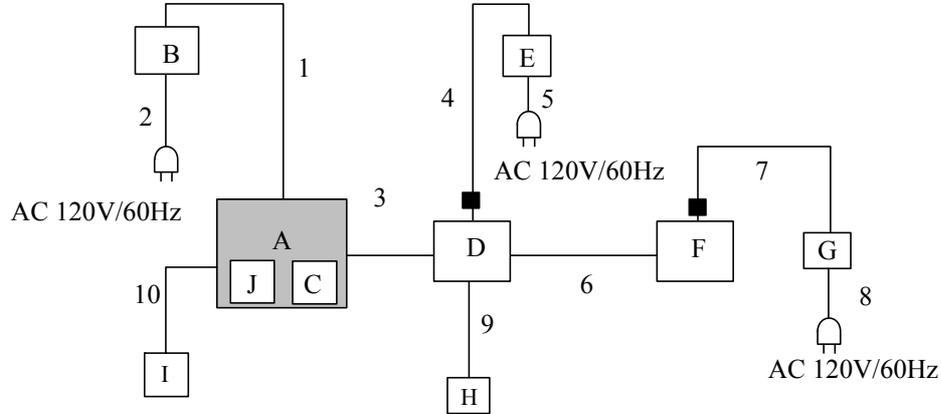
HSUPA Reference E-TFCI Parameters  
 [Subtest 1,2,4,5]

Information Element	Value/Remark
E-DCH info	Uplink DPCH info
- E-DPDCH info	
- Reference E-TFCIs	5 E-TFCIs
- Reference E-TFCI	11
- Reference E-TFCI PO	4
- Reference E-TFCI	67
- Reference E-TFCI PO	18
- Reference E-TFCI	71
- Reference E-TFCI PO	23
- Reference E-TFCI	75
- Reference E-TFCI PO	26
- Reference E-TFCI	81
- Reference E-TFCI PO	27

[Subtest 3]

Information Element	Value/Remark
E-DCH info	Uplink DPCH info
- E-DPDCH info	
- Reference E-TFCIs	2 E-TFCIs
- Reference E-TFCI	11
- Reference E-TFCI PO	4
- Reference E-TFCI	92
- Reference E-TFCI PO	18

## 4.2 Configuration and peripherals



■ : Standard Ferrite Core

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

### Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Tablet Device	SGPT211US/S	DVT102006000444 *1) DVT102004000011 *2)	SONY	EUT
B	AC Adapter	SGPAC5V2	148907411 11026000217	SONY	-
C	Micro SD Card	SR-2C1	F 1170000 052	SONY	-
D	Laptop PC	2373G07	L303T2G	IBM	-
E	AC Adapter	92P1020	11592P1020Z1Z9RM67H1Y C	IBM	-
F	Printer	C6414A	CN0B11C1H2	Hewlett Packard	-
G	AC Adapter	C6409-60014	0049R0D	Hewlett Packard	-
H	USB Mouse	X05-89304	52779-576-1794482-0	Microsoft	-
I	Headset	-	-	SONY	-
J	Rechargeable Lithium Ion Battery Pack	SGPBP01	175699711 0000661 1124	SONY	-

\*1) Used for all tests except RF output Power(Conducted)

\*2) Used for RF output Power(Conducted)

### List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.5	Unshielded	Unshielded	-
2	AC Cable	1.5	Unshielded	Unshielded	-
3	USBCable	1.0	Shielded	Shielded	-
4	DC Cable	1.8	Unshielded	Unshielded	-
5	AC Cable	0.9	Unshielded	Unshielded	-
6	Pararell Cable	2.0	Shielded	Shielded	-
7	DC Cable	2.0	Unshielded	Unshielded	-
8	AC Cable	1.8	Unshielded	Unshielded	-
9	USB Cable	0.8	Shielded	Shielded	-
10	Headset Cable	1.2	Unshielded	Unshielded	-

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## **SECTION 5: RF Output Power (Conducted/Radiated)**

[Conducted : Conducted Output Power]

### **Test Procedure**

The RF output power (conducted) was measured with Wireless Communication Test Set and an attenuator at the antenna port.

[Radiated : Effective radiated power(ERP)]

### **Test Procedure**

- 1) EUT was placed on a platform of nominal size, 1.5 m by 1.0m, 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 a semi anechoic chamber 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, 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(ERP) 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).

- The carrier level and noise levels were confirmed at each position of X, Y and Z axis of EUT and each angle of 0, 90, 180 degrees of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

**Test data** : **APPENDIX 2**  
**Test result** : **Pass**

## **SECTION 6: Spurious Emission and Band-Edge (Radiated)**

### **Test Procedure**

- 1) EUT was placed on a platform of nominal size, 1.5m by 1.0m, 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 a semi anechoic chamber 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.

- The carrier level and noise levels were confirmed at each position of X, Y and Z axis of EUT and each angle of 0, 90, 180 degrees of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

**Test data** : **APPENDIX 2**  
**Test result** : **Pass**