

EMC TEST REPORT

Test item : Mobile Phone
Model No. : GT-S7500
Order No. : 1112-01750
Date of receipt : 2011-12-13
Test duration : 2011-12-14
Use of report : FCC Marking
Date of Issue : 2011-12-15

Applicant : Samsung Electronics Co., Ltd.

416, Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 442-742, Korea

Test laboratory : Digital EMC Co., Ltd.

683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, 449-080, Korea

Test specification : ANSI C 63.4:2003

FCC Part 15 Subpart B

(Type of Device : Class B Personal Computers and Peripherals
(JBP))

Test environment : Temperature (24 ~ 25) °C,
Humidity (42 ~ 45) % R.H.

Test result : ☒ Comply ☐ Not Comply

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose. This test report shall not be reproduced except in full, without the written approval of DIGITAL EMC CO., LTD.

Tested by:

Reviewed by:



Manager
H.S.KO



General Manager
C.H.LEE

The above test report is the accredited test results by Korea Laboratory Accreditation Scheme,
which signed the ILAC-MRA.

PRESIDENT OF DIGITAL EMC CO., LTD.

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1. General Remarks

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.

Address : 683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, 449-080, Korea

<http://www.digitalemc.com>

Tel: +82-31-321-2664 Fax: +82-31-321-1664

2. Test Laboratory

Digital EMC Co., Ltd. has been accredited / filed / authorized by the agencies listed in the following table;

Certificate	Nation	Agency	Code	Mark
Accreditation	Korea	KOLAS	393	ISO/IEC 17025
Site Filing	USA	FCC	101842 678747	Test Facility list & NSA Data
	Japan	VCCI	C-1427 R-1364, R-3385 T-1442, G-338	Test Facility list & NSA Data
Certification	Korea	KC	KR0034	Test Facility list & NSA Data
	Germany	TUV	ROK1028C	ISO/IEC 17025

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competent of calibration and testing laboratory".

3. General Information of EUT

3.1 Product Information

Model No.	GT-S7500
Device Capabilities	GSM850 / 1900 W-LAN (802.11b / 802.11g / 802.11n) BT (Class1, Ver3.0)
Serial No	NONE
FCC ID	A3LGTS7500
High Frequency	CPU : 1.0 GHz Oscillator : 48 MHz
Supplied Power for Test	AC120V, 60Hz
Applicant	Samsung Electronics Co., Ltd. 416, Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 442-742, Korea
Manufacturer	Samsung Electronics Co., Ltd. 416, Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 442-742, Korea

4. Test Summary

4.1 Applied standards and test results

Test Items	Applied Standards	Results
Conducted Disturbance	ANSI C63.4:2003	Comply
Radiated Disturbance	ANSI C63.4:2003	Comply

The data in this test report are traceable to the national or international standards.

4.2 Test environment and conditions

Test Items	Test date (MM-DD)	Temp ()	Humidity (% R.H.)	Pressure (hPa)
Conducted Disturbance	12-14	24	42	-
Radiated Disturbance	12-14	25	45	

4.3 Test result Summary

(1) Conducted Emission

Frequency [MHz]	Amplitude [dBμV]	Phase	Detector	Limit [dBμV]	Margin [dB]
0.15191	56.6	N	Quasi-Peak	65.9	9.3
0.15196	54.9	L1	Quasi-Peak	65.9	11.0

(2) Radiated Emission

Frequency [MHz]	Pol.	Reading [dBμV]	C.F. [dBμV]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
720.010	H	40.5	-0.5	40.0	46.0	6.0

Note) 1. Emission Level = Reading Value + Correction Factor.

2. Correction Factor = Cable loss - Amp gain + Antenna Factor

3. Margin = Limit - Emission level

5. Test Set-up and operation mode

5.1 Principle of Configuration Selection

Emission : The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

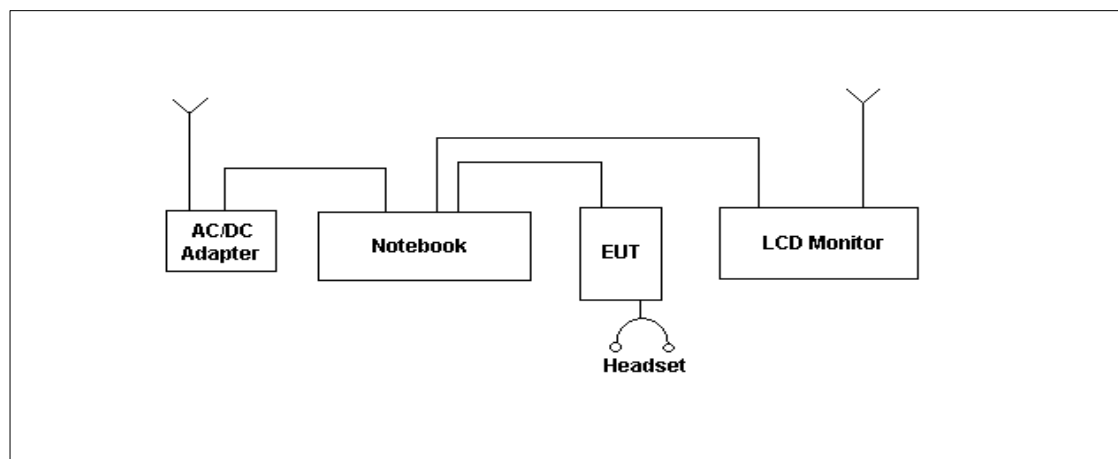
5.2 Test Operation Mode

- PC link mode (The measurement was made of the maximized by: Write/Read/Delete the “H” pattern mode; data exchange speed; moving the cable)

5.3 Support Equipment Used

Unit	Model No.	Serial No.	Manufacturer	CABLE			Backshell	FCC ID
				Connect type	Length (m)	shield		
LCD Monitor	MC19WS	NC72HVGSC00912Z	SAMSUNG	POWER DSUB	1.7 1.8	Non-Shield	Plastic	DOC
Mouse	1484	352700021375	MICROSOFT CORPORATION	USB	1.2	Non-Shield	Plastic	DOC
Headset	EHS61ASFWE	N/A	ESTEC	Audio In/Out	1.6	Non-Shield	Plastic	VER
Travel Adapter	ETA0U10EBE	DK1B530TS/7-E	RF TECH	POWER	1.5	Non-Shield	Plastic	VER
Battery	EHS60ANNBE	THaBB24AS/4-B	ELENTEC	-	1.3	Non-Shield	Metal	VER
Notebook	LGX14	009QTAF022136	LG	POWER	1.8	Non-Shield	Plastic	DOC
AC/DC Adapter	ADP-40PH AD	-	Delta electronics Inc	POWER	1.6	Non-Shield	Plastic	DOC

(Configuration of Tested System)



6. Test Results : Emission

6.1 Conducted Disturbance

6.1.1 Measurement Procedure

In the range of 0.15MHz to 30MHz, the conducted disturbance was measured and set-up was made accordance with **ANSI C63.4:2003**.

If the EUT is table top equipment, it was placed on a wooden table with a height of 0.8m above the reference ground plane and 0.4m from the conducting wall of the shielded room.

Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15m above the reference ground plane.

Connect the EUT's power source lines to the appropriate power mains / peripherals through the LISN. All the other peripherals are connected to the 2nd LISN, if any.

Unused measuring port of the LISN was resistively terminated by 50 ohm terminator.

The measuring port of the LISN for EUT was connected to spectrum analyzer.

Using conducted emission test software, the emissions were scanned with peak detector mode.

After scanning over the frequency range, suspected emissions were selected to perform final measurement. When performing final measurement, the receiver was used which has Quasi-Peak detector and Average detector.

By varying the configuration of the test sample and the cable routing it was attempted to maximize the emission.

For further description of the configuration refer to the picture of the test set-up.

6.1.2 Limit for Conducted Disturbance

(1) Conducted disturbance at mains ports.

Frequency range (MHz)	Limits dB(μV)			
	Quasi-peak		Average	
	Class A	Class B	Class A	Class B
0.15 to 0.50	79	66 to 56	66	56 to 46
0.50 to 5	73	56	60	46
5 to 30		60		50
Note 1 The lower limit shall apply at the transition frequencies.				
Note 2 The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.				

Test Result



Results of Conducted Emission

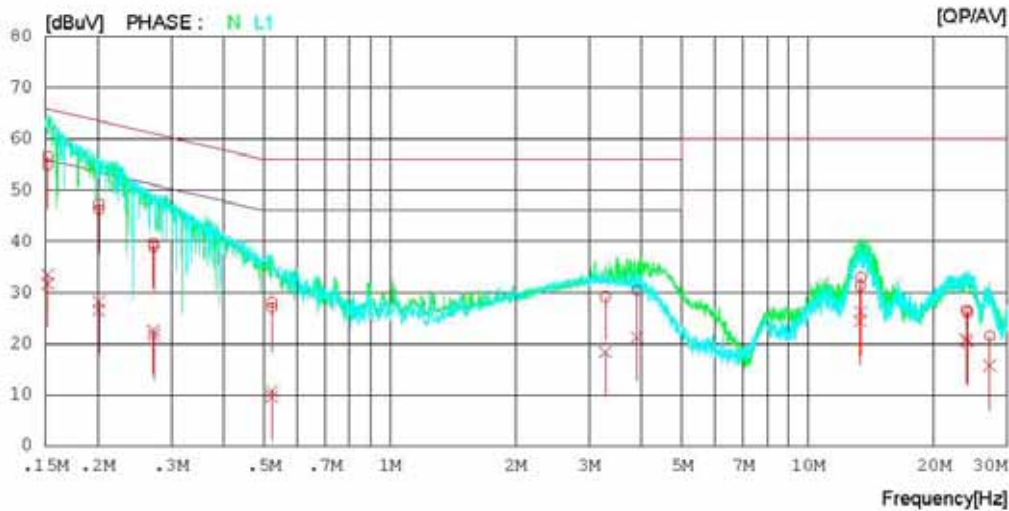
Date : 2011-12-14

Model No. : GT-S7500
Type :
Serial No. :
Test Condition : PC LINK

Reference No. :
Power Supply : 120 V 60Hz
Temp/Hum. : 24 °C 42 % R.H
Operator :

Memo :

LIMIT : CISPR22_B_QP
CISPR22_B_AV



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.15191	56.4	33.3	0.2	56.6	33.5	65.9	55.9	9.3	22.4	N
2	0.20139	47.1	28.1	0.1	47.2	28.2	63.6	53.6	16.4	25.4	N
3	0.27214	39.5	22.5	0.1	39.6	22.6	61.1	51.1	21.5	28.5	N
4	0.52300	28.0	10.5	0.1	28.1	10.6	56.0	46.0	27.9	35.4	N
5	3.89650	29.9	20.9	0.4	30.3	21.3	56.0	46.0	25.7	24.7	N
6	13.39450	32.0	25.3	0.9	32.9	26.2	60.0	50.0	27.1	23.8	N
7	23.91650	25.4	19.7	1.1	26.5	20.8	60.0	50.0	33.5	29.2	N
8	0.15196	54.7	31.5	0.2	54.9	31.7	65.9	55.9	11.0	24.2	L1
9	0.20139	46.1	26.4	0.1	46.2	26.5	63.6	53.6	17.4	27.1	L1
10	0.27266	38.9	21.6	0.1	39.0	21.7	61.0	51.0	22.0	29.3	L1
11	0.52208	26.9	9.5	0.1	27.0	9.6	56.0	46.0	29.0	36.4	L1
12	3.28050	28.8	17.9	0.4	29.2	18.3	56.0	46.0	26.8	27.7	L1
13	13.33800	30.4	23.5	0.9	31.3	24.4	60.0	50.0	28.7	25.6	L1
14	24.13300	25.1	19.2	1.1	26.2	20.3	60.0	50.0	33.8	29.7	L1
15	27.23950	20.4	14.6	1.1	21.5	15.7	60.0	50.0	38.5	34.3	L1

6.2 Radiated Disturbance

6.2.1 Measurement Procedure

The radiated disturbance was measured and set-up was made accordance with **ANSI C63.4:2003**.

If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8m above the reference ground plane and 3m away from the interference receiving antenna in the **10m semi-anechoic chamber**.

Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15m above the reference ground plane.

Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4m above the reference ground plane continuously to determine associated with higher emission levels and record them.

The measurement was made in both the vertical and horizontal polarization, and the maximum value is presented in the report.

For below 1GHz frequency range, Quasi-Peak detector with 120kHz RBW was used.

Also Peak and Average detector with 1MHz RBW were used for above 1GHz frequency range.

For further description of the configuration refer to the picture of the test set-up.

6.2.2 Limit for Radiated Disturbance

- The test frequency range of Radiated Disturbance measurements are listed below.

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40GHz, whichever is lower

(1) Limit for Radiated Emission below 1000MHz

Frequency range (MHz)	Class A Equipment (10m distance)	Class B Equipment (3m distance)
	Quasi-peak limits (dB μ V/m)	Quasi-peak limits (dB μ V/m)
30 to 88	39.1	40
88 to 216	43.5	43.5
216 to 960	46.4	46
960 to 1000	49.5	54
Note 1 The lower limit shall apply at the transition frequency. Note 2 Additional provisions may be required for cases where interference occurs. Note 3 According to 15.109(g), as an alternative to the radiated emission limit shown above, digital devices may be shown to comply with the standards(CISPR), Pub. 22 shown as below.		
30 to 230	40	30
230 to 1000	47	37

(2) Limits for Radiated Emission in the frequency range 1000 - 2000MHz at a measuring distance of 10m

Frequency (GHz)	Class A Equipment		Class B Equipment	
	peak (dB μ V/m)	Average (dB μ V/m)	peak (dB μ V/m)	Average (dB μ V/m)
1 to 2	69.5	49.5	63.5	43.5

(3) Limits for Radiated Emission above 1000MHz at a measuring distance of 3m

Frequency (GHz)	Class A Equipment		Class B Equipment	
	peak (dB μ V/m)	Average (dB μ V/m)	peak (dB μ V/m)	Average (dB μ V/m)
1 to 40	80	60	74	54

Test Result

< 30 MHz ~ 1 GHz >

RADIATED EMISSION

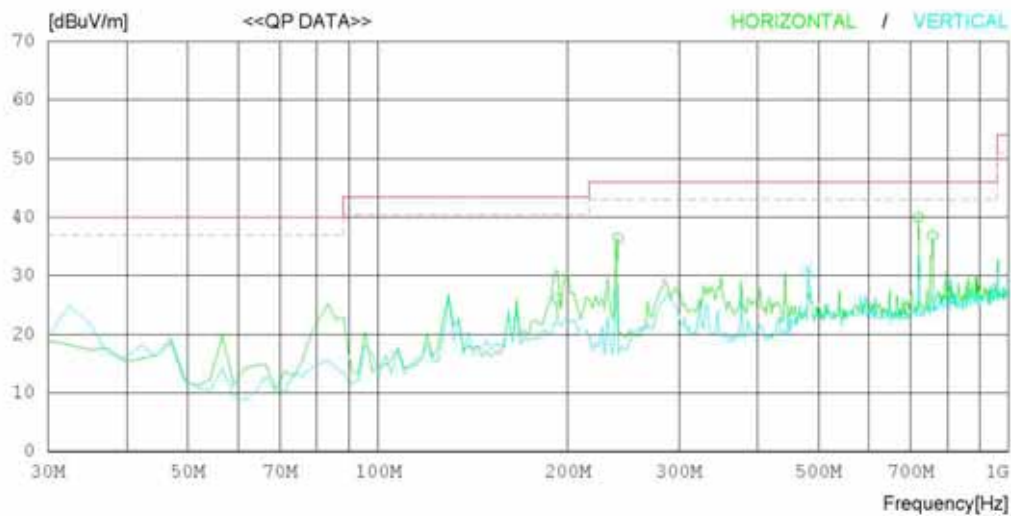
Date : 2011-12-14

Model Name : GT-S7500
Model No.
Serial No.
Test Condition : PC LINK

Reference No.
Power Supply : 120V 60Hz
Temp/Humi : 25°C 45 % R. H.
Operator

Memo :

LIMIT : FCC Part15 Subpart B Class B (3m)
MARGIN: 3 dB



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	192.575	37.5	9.7	2.0	23.2	26.0	43.5	17.5	165	169
2	240.000	45.2	12.4	2.3	23.5	36.4	46.0	9.6	100	25
3	720.010	40.5	19.2	4.3	24.0	40.0	46.0	6.0	100	115
4	758.268	36.5	19.7	4.4	23.8	36.8	46.0	9.2	264	208
----- Vertical -----										
5	480.059	35.2	17.3	3.3	24.6	31.2	46.0	14.8	352	183

< 1 GHz ~ 3 GHz_PEAK >

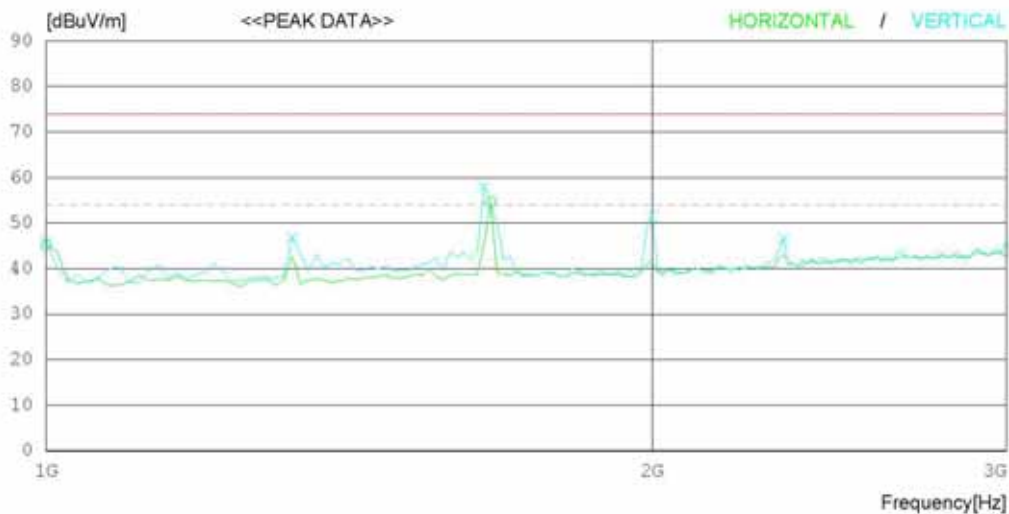
RADIATED EMISSION

Date : 2011-12-14

Model Name	GT-S7500	Reference No.	120V	60Hz
Model No.		Power Supply	25°C	45 % R. H.
Serial No.		Temp/Humi		
Test Condition	PC LINK	Operator		

Memo :

LIMIT : FCC Part15 Subpart B Class B (3m) - 18G(Peak)
 FCC Part15 Subpart B Class B (3m) - 18G(Avg)



No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	1000.000	58.1	23.6	5.3	41.8	45.2	74.0	28.8	100	341
2	1662.500	64.5	25.2	6.8	41.9	54.6	74.0	19.4	100	243
----- Vertical -----										
3	1000.000	58.7	23.6	5.3	41.8	45.8	74.0	28.2	100	358
4	1325.000	58.3	24.6	5.9	41.9	46.9	74.0	27.1	100	320
5	1650.000	68.2	25.2	6.7	41.9	58.2	74.0	15.8	100	222
6	2000.000	60.7	25.2	7.7	42.0	51.6	74.0	22.4	100	65
7	2325.000	54.0	26.6	8.0	42.0	46.6	74.0	27.4	100	118

< 1 GHz ~ 3 GHz_AV >

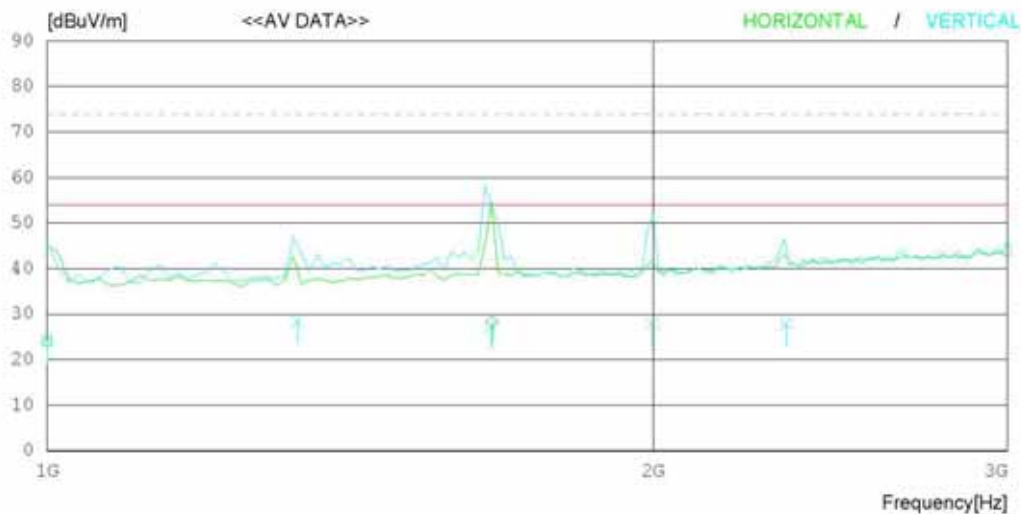
RADIATED EMISSION

Date : 2011-12-14

Model Name	GT-S7500	Reference No.	
Model No.		Power Supply	120V 60Hz
Serial No.		Temp/Humi	25°C 45 % R. H.
Test Condition	PC LINK	Operator	

Memo :

LIMIT : FCC Part15 Subpart B Class B (3m) - 18G(Avg)
 FCC Part15 Subpart B Class B (3m) - 18G(Peak)



No.	FREQ [MHz]	READING AV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	1000.000	36.9	23.6	5.3	41.8	24.0	54.0	30.0	100	341
2	1663.900	38.2	25.2	6.8	41.9	28.3	54.0	25.7	100	243
----- Vertical -----										
3	1000.000	37.2	23.6	5.3	41.8	24.3	54.0	29.7	100	116
4	1332.250	39.8	24.6	6.0	41.9	28.5	54.0	25.5	125	320
5	1661.375	37.1	25.2	6.8	41.9	27.2	54.0	26.8	100	222
6	1997.949	37.1	25.2	7.7	42.0	28.0	54.0	26.0	163	65
7	2329.150	35.2	26.6	8.0	42.0	27.8	54.0	26.2	100	118

< 3 GHz ~ 6 GHz >

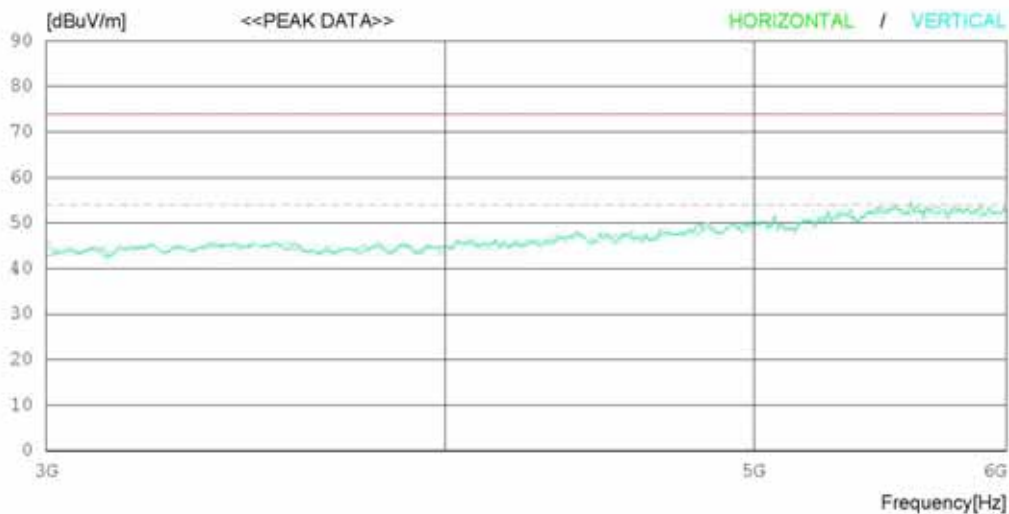
RADIATED EMISSION

Date : 2011-12-14

Model Name	: GT-S7500	Reference No.	:	
Model No.	:	Power Supply	:	120V 60Hz
Serial No.	:	Temp/Humi	:	25°C 45 % R. H.
Test Condition	: PC LINK	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)
 FCC Part15 Subpart.B Class B (3m) - 18G(Avg)



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	PEAK [dBuV]	FACTOR [dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]

* Remark : There are no emissions as above data plots.

Appendix 1

List of Test and Measurement Instruments

1. Conducted Disturbance

	Name of Instrument	Model No.	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
☒	EMI Test Receiver	ESCI	100364	Rohde & Schwarz	2011.03.08	2012.03.08
☒	LISN	LISN1600	197204	TTI	2011.07.02	2012.07.02
☒	LISN(EUT)	ESH2-Z5	828739/006	R&S	2011.09.30	2012.09.30
☒	50 ohm Terminator	CT-01	N/A	TME	2011.01.11	2012.01.11
☐	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	106760	R&S	2011.03.07	2012.03.07
☐	Spectrum Analyzer	8591E	3649A05889	H/P	2011.03.07	2012.03.07
☐	RFI/Field intensity Meter	KNM-2402	4N-170-3	KYORITSU	2011.07.02	2012.07.02
☐	LISN	KNW-407	8-317-8	KYORITSU	2011.01.11	2012.01.11
☐	LISN	KNW-242	8-654-15	KYORITSU	2011.07.02	2012.07.02
☐	50 ohm Terminator	CT-01	N/A	TME	2011.01.11	2012.01.11
☐	ISN	T4A	24869	Teseq GmbH	2011.01.11	2012.01.11
☐	LISN(DC)	NNBM8125	8125-821	SCHWARZBECK	2011.07.01	2012.07.01

2. Radiated Disturbance

	Name of Instrument	Model No.	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
☒	EMI Test Receiver	ESU	100014	Rohde & Schwarz	2011.01.20	2012.01.20
☒	Bilog Antenna	CBL6112B	2737	SCHAFFNER	2010.07.14	2012.07.14
☒	Horn Antenna	3115	0021097	ETS	2010.04.13	2012.04.13
☒	Amplifier(22dB)	8447E	2945A02865	H/P	2011.01.11	2012.01.11
☒	Pre Amplifier	MLA-00108-B02-36	1518831	TSJ	2011.01.11	2012.01.11
☒	Controller	5905A	N/A	TOKIN	-	-
☒	ANT.master	N/A	N/A	TOKIN	-	-
☐	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	106760	R&S	2011.03.07	2012.03.07
☐	EMI Test Receiver	ESCI	100364	Rohde & Schwarz	2011.03.08	2012.03.08
☐	BICONICAL ANT.	VHA 9103	91031946	SCHWARZBECK	2010.12.21	2012.12.21
☐	LOG-PERIODIC ANT.	UHALP 9108A-A1	1098	SCHWARZBECK	2010.11.29	2012.11.29
☐	Pre Amplifier	MLA-100K01-B01-26	1252741	TSJ	2011.03.07	2012.03.07
☐	Position Controller	5901T	14173	TOKIN	-	-
☐	DRIVER	5902T2	14174	TOKIN	-	-
☐	Spectrum Analyzer	E4411B	US41062735	Agilent	2011.07.01	2012.07.01
☐	Amplifier (25dB)	8447D	2443A03690	Agilent	2011.07.01	2012.07.01
☐	Bilog Antenna	VULB9160	3151	SCHAFFNER	2010.08.25	2012.08.25
☐	Controller	5900	N/A	TOKIN	-	-