FCC&IC Radio Test Report

FCC ID: 2AAGJDHTS514
IC: 11154A-DHTS514

This report concerns (check one): ■ **Original Grant** □ **Class II Change**

Issued Date	: Dec. 03, 2013
Project No.	: 1310C090
Equipment	: HOME THEATER SYSTEM
Model Name	: SC-S514
Applicant	: Tymphany HK Limited
Address	: Room 1307-8 Dominion Centre 43-59 Queen's Road East, WanChai, Hong Kong

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Oct. 25, 2013
Date of Test: Oct. 25, 2013 ~ Dec. 02, 2013

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

Authorized Signatory : Steven Lu
(Steven Lu)

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **CHINA**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Table of Contents Page

Table of Contents Page

REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
NEI-FICP-4-1310C090	Original Issue.	Dec. 03, 2013

1. CERTIFICATION

Equipment	:	HOME THEATER SYSTEM
Brand Name	:	DENON
Model Name	:	SC-S514
Applicant	:	Tymphany HK Limited
Manufacture	:	D&M Holdings Inc.
Address	:	D&M Building, 2-1 Nissin-cho, Kawasaki-ku, Kawasaki-shi, Kanagawa, Japan
Factory	:	Premium Loudspeakers(Huizhou) Co.,Ltd.
Address	:	Tymphany Industrial Area, XinLian Village, XinXu Town, Huizhou City ,Guangdong,, P.R. China
Date of Test	:	Oct. 25, 2013 ~ Dec. 02, 2013
Test Item	:	ENGINEERING SAMPLE
Standard(s)	:	FCC Part15(2012), Subpart C(15.247) / ANSI C63.4-2009 Canada RSS-210:2010 RSS-GEN Issue 3, Dec 2010

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FICP-7-1310C090) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

Test result included in this report is only for the 5.8G part of the speaker.

2. SUMMARY OF TEST RESULTS

Applied Standard(s): FCC Part15 (15.247) , Subpart C Canada RSS-210:2010; RSS-GEN Issue 3, Dec 2010				
Standard(s) Section		Test Item	Judgment	Remark
15.207	RSS-GEN 7.2.2	Conducted Emission	PASS	
15.247(d)	RSS-210 Annex 8 (A8.5)	Antenna conducted Spurious Emission	PASS	
15.247(a)(2)	RSS-210 Annex 8 (A8.2(a))	6dB Bandwidth	PASS	
15.247(b)(3)	RSS-210 Annex 8 (A8.4(4))	Peak Output Power	PASS	
15.247(e)	RSS-210 Annex 8 (A8.2(b))	Power Spectral Density	PASS	
15.203	-	Antenna Requirement	PASS	
15.209/15.205	RSS-210 Annex 8 (A8.5)	Transmitter Radiated Emissions	PASS	
-	RSS-Gen 7.2.3	Receiver Radiated Emissions	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this test report.

(2) The test follows FCC KDB Publication No. 558074 D01 DTS Meas Guidance v03r01 (Measurement Guidelines of DTS)

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-CB03/DG-C02** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.523792
Neutron's test firm number for FCC: 319330
Neutron's test firm number for IC: 4428B-1

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	NOTE
DG-CB03	CISPR	9KHz~30MHz	V	3.79	
		9KHz~30MHz	H	3.57	
		30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
		1GHz~18GHz	V	3.12	
		1GHz~18GHz	H	3.68	
		18GHz~40GHz	V	4.15	
		18GHz~40GHz	H	4.14	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	HOME THEATER SYSTEM
Brand Name	DENON
Model Name	SC-S514
Product Description	Operation Frequency: 5736~5814 MHz Modulation Type: QPSK Bit Rate of Transmitter: 100Kbps Number of Channel: 3 CH, Please see note 2. Antenna Designation / Antenna Gain(Peak): Please see note 3. Output Power: 11.74 dBm More details of EUT technical specification, please refer to the User's Manual.
Power Source	DC voltage supplied from AC/DC adapter. Brand/ Model: DYS / DYS602-240250-12B05B
Power Rating	I/P: AC 100-240V~ 50/60Hz 1.5A MAX O/P: DC 24.0V 2.5A
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2.

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	5736	02	5762	03	5814

3. Antenna Specification:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
A	SMSC	DWAM83-TB	Printed	N/A	3.0
B	SMSC	DWAM83-TB	Printed	N/A	3.0

Only "one" antenna is selected for use at any one time, through the on-board Transmit-Receive / Diversity RF switch.

3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX Mode CHANNEL 01/02/03
Mode 4	TX Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Test	
Final Test Mode	Description
Mode 4	TX Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	TX Mode CHANNEL 01/02/03

Note:

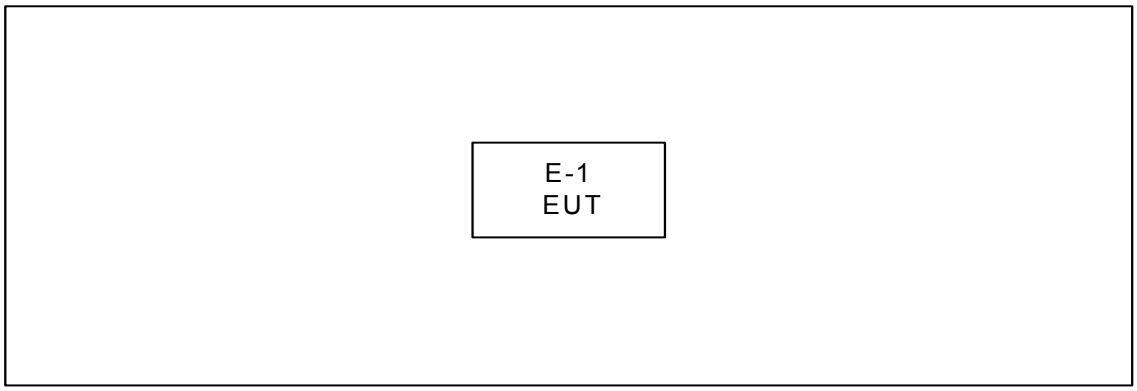
(1) The measurements are performed at the high, middle, low available channels.

3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product

Test software version	GUI_Demo_01.05.29_8192		
Frequency	5736 MHz	5762 MHz	5814MHz
TX Mode	N/A	N/A	N/A

3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC /IC ID	Series No.	Note
E-1	HOME THEATER SYSTEM	DENON	SC-S514	2AAGJDHTS514 11154A-DHTS514	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	-

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in m in『Length』column.

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.0	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.1.2 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00052765	Apr. 25, 2014
2	LISN	R&S	ENV216	100087	Nov.09, 2014
3	Test Cable	N/A	C_17	N/A	Mar.15, 2014
4	EMI TEST RECEIVER	R&S	ESCS30	826547/022	Apr. 25, 2014
5	50Ω Terminator	SHX	TF2-3G-A	08122902	Apr. 25, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

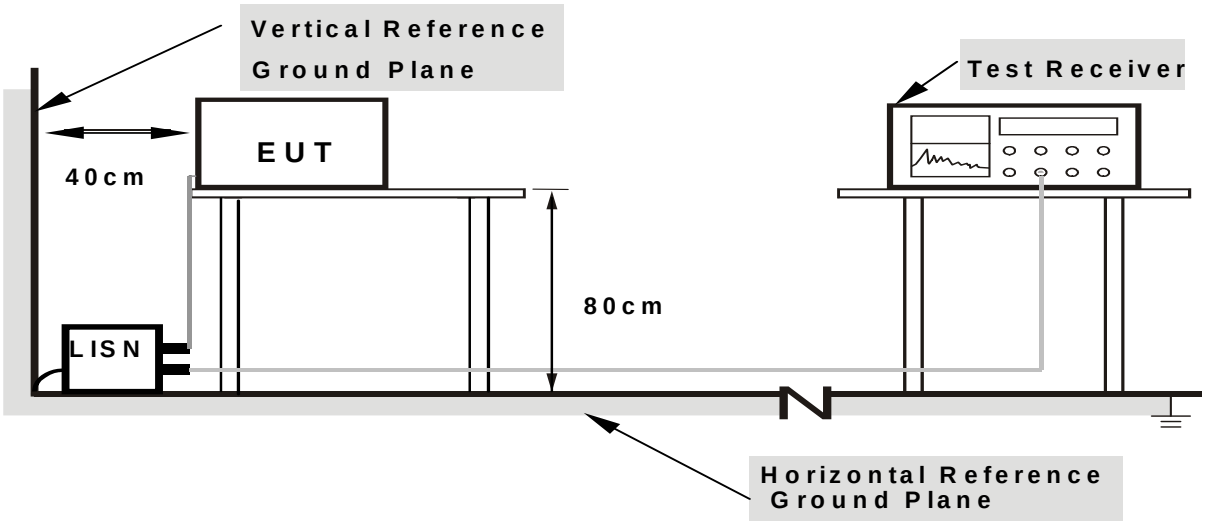
4.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.
The EUT was programmed to be in continuously transmitting/TX Mode mode.

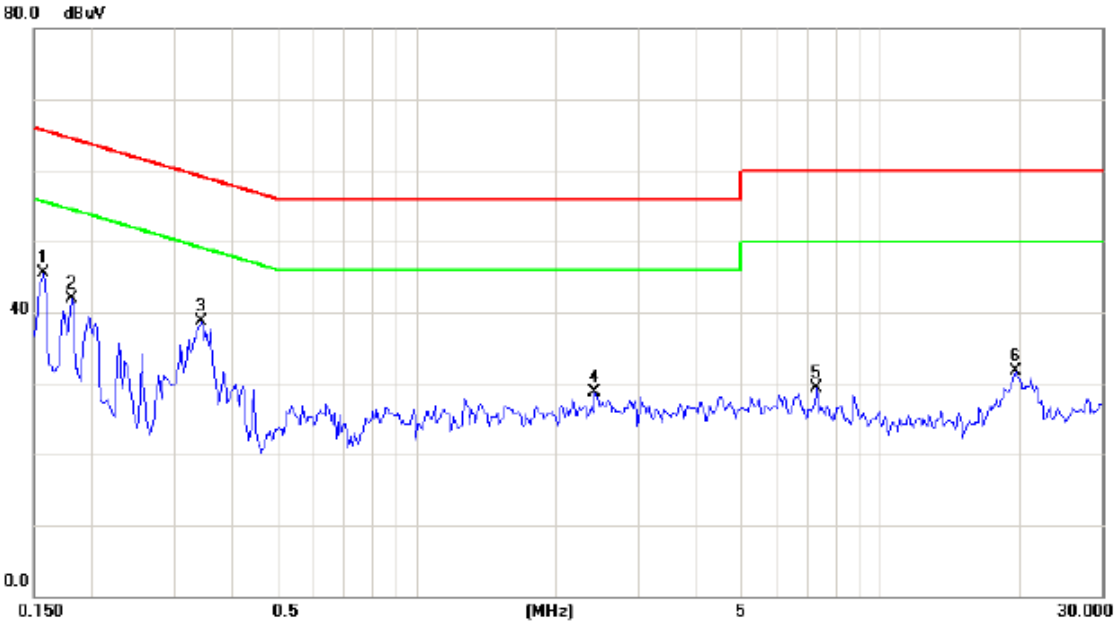
4.1.7 TEST RESULTS

Remark:

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform.In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

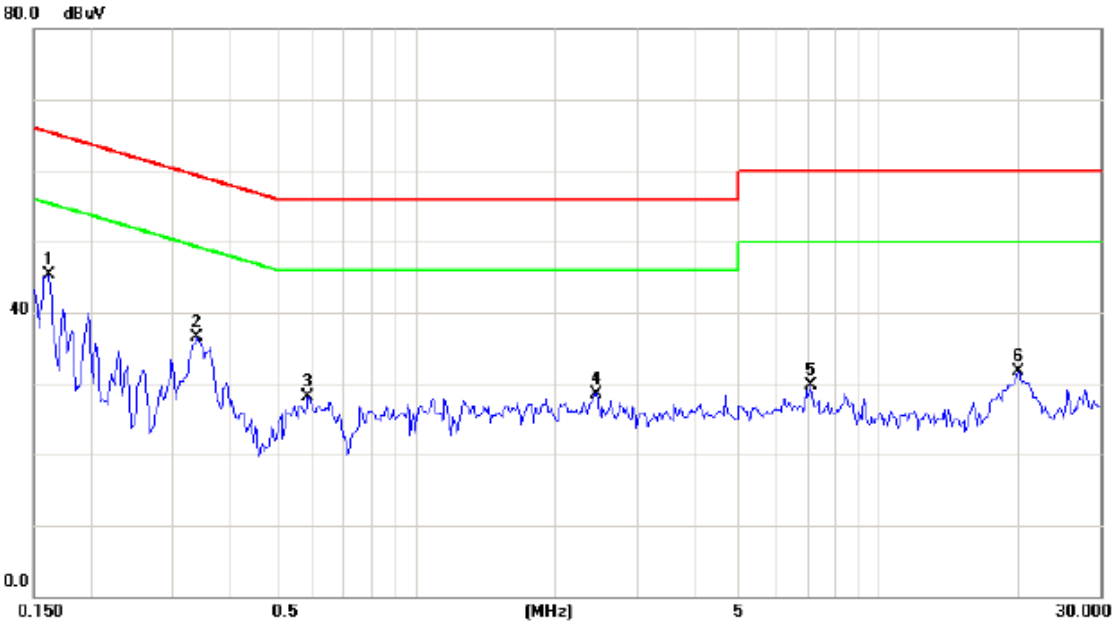
(2) Measuring frequency range from 150KHz to 30MHz.

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX Mode	Phase:	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1578	35.83	9.63	45.46	65.58	-20.12	peak	
2		0.1812	32.34	9.65	41.99	64.43	-22.44	peak	
3		0.3453	29.03	9.67	38.70	59.07	-20.37	peak	
4		2.4273	18.82	9.86	28.68	56.00	-27.32	peak	
5		7.2930	19.31	9.98	29.29	60.00	-30.71	peak	
6		19.6290	21.40	10.25	31.65	60.00	-28.35	peak	

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX Mode	Phase:	Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1617	35.55	9.70	45.25	65.38	-20.13	peak	
2		0.3375	26.71	9.72	36.43	59.26	-22.83	peak	
3		0.5875	18.46	9.74	28.20	56.00	-27.80	peak	
4		2.4508	18.72	9.88	28.60	56.00	-27.40	peak	
5		7.1290	19.66	10.02	29.68	60.00	-30.32	peak	
6		20.0352	21.33	10.39	31.72	60.00	-28.28	peak	

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9KHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a) & RSS-210 section 2.2 & Annex 8 (A8.5), then the 15.209(a) & RSS-Gen limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	(dBuV/m) (at 3m)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz for PK/AVG detector
Start ~ Stop Frequency	90kHz~110kHz for QP detector
Start ~ Stop Frequency	110kHz~490kHz for PK/AVG detector
Start ~ Stop Frequency	490kHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

4.2.2 MEASUREMENT INSTRUMENTS LIST ANS SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Apr. 25, 2014
2	Amplifier	HP	8447D	2944A09673	Apr. 25, 2014
3	Test Receiver	R&S	ESCI	100382	Apr. 25, 2014
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 02, 2014
5	Antenna	ETS	3115	00075789	Apr. 25, 2014
6	Amplifier	Agilent	8449B	3008A02274	Apr. 25, 2014
7	Spectrum	Agilent	E4408B	US39240143	Nov. 09, 2014
8	Test Cable	HUBER+SUHNER	C-45	N/A	Apr. 30, 2014
9	Controller	CT	SC100	N/A	N/A
10	Horn Antenna	EMCO	3115	9605-4803	Apr. 25, 2014
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Apr. 25, 2014
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct. 22, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

4.2.3 TEST PROCEDURE

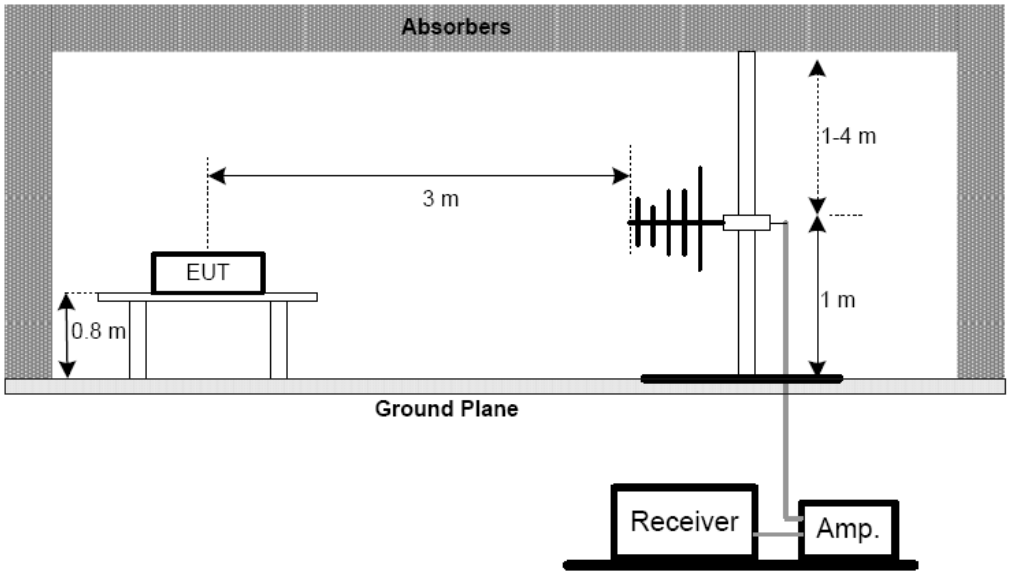
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.4 DEVIATION FROM TEST STANDARD

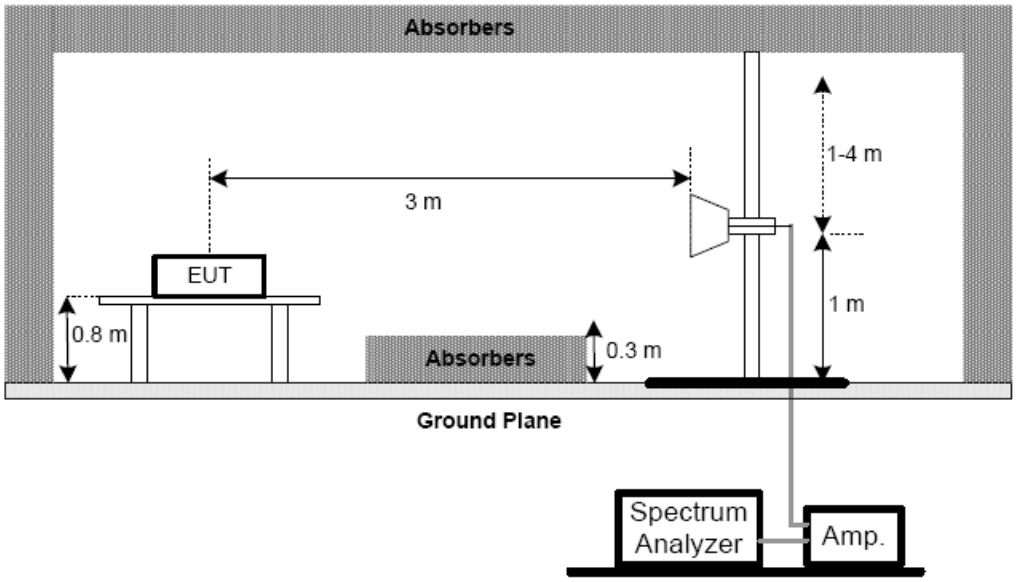
No deviation

4.2.5 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



4.2.6 EUT OPERATING CONDITIONS

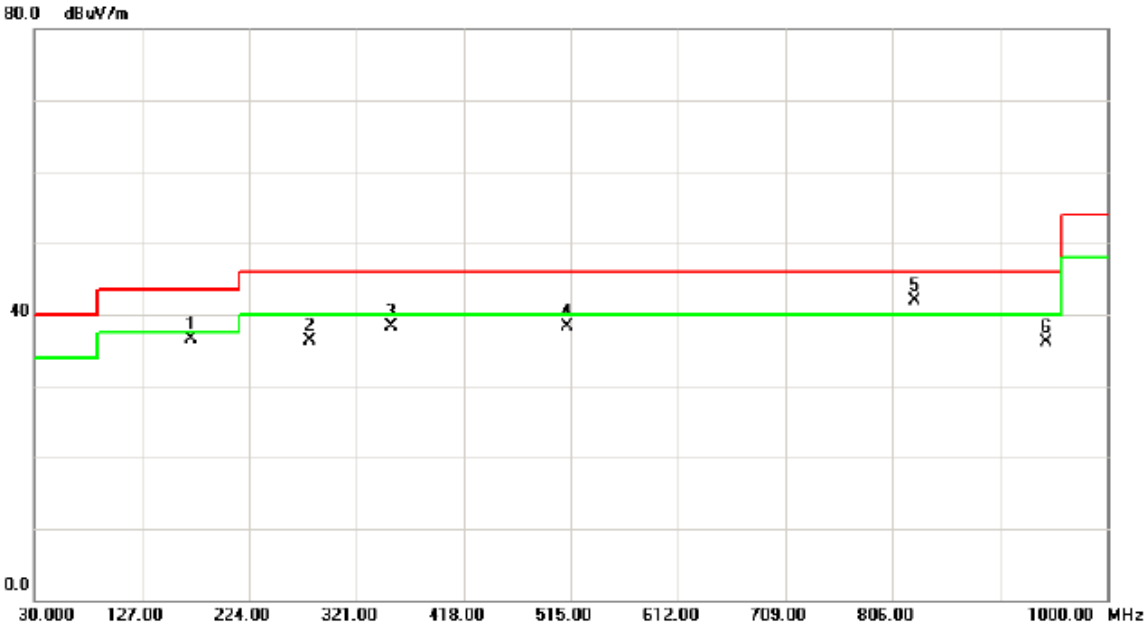
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.7 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

Remark:

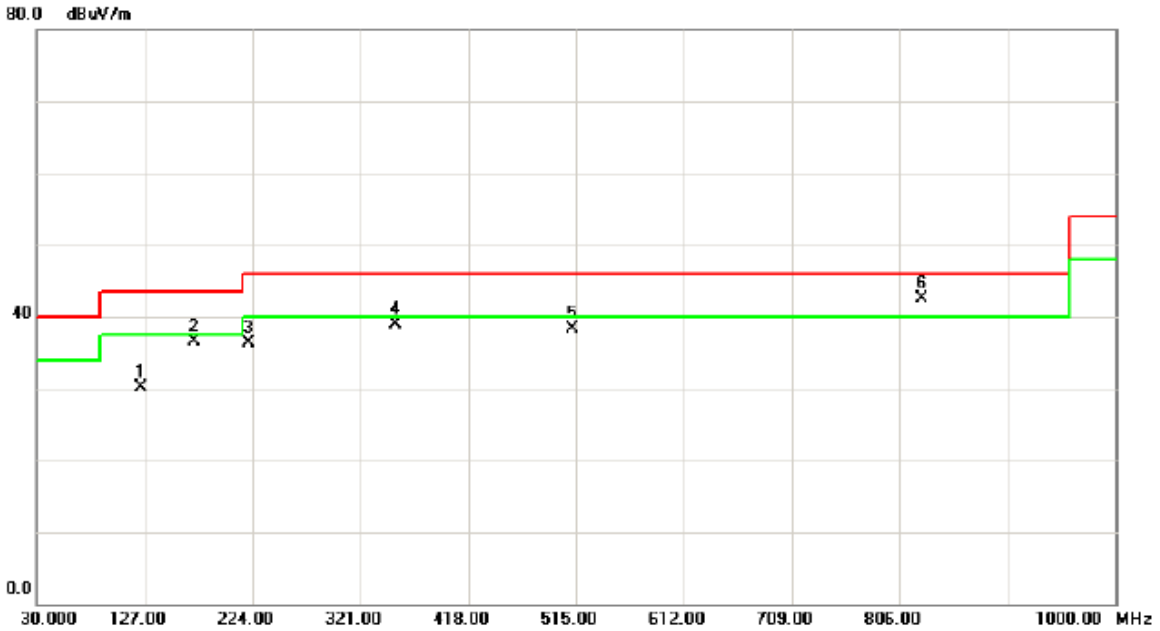
(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform.
(3) Measuring frequency range from 30MHz to 1000MHz.
(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5736MHz	Phase:	Vertical



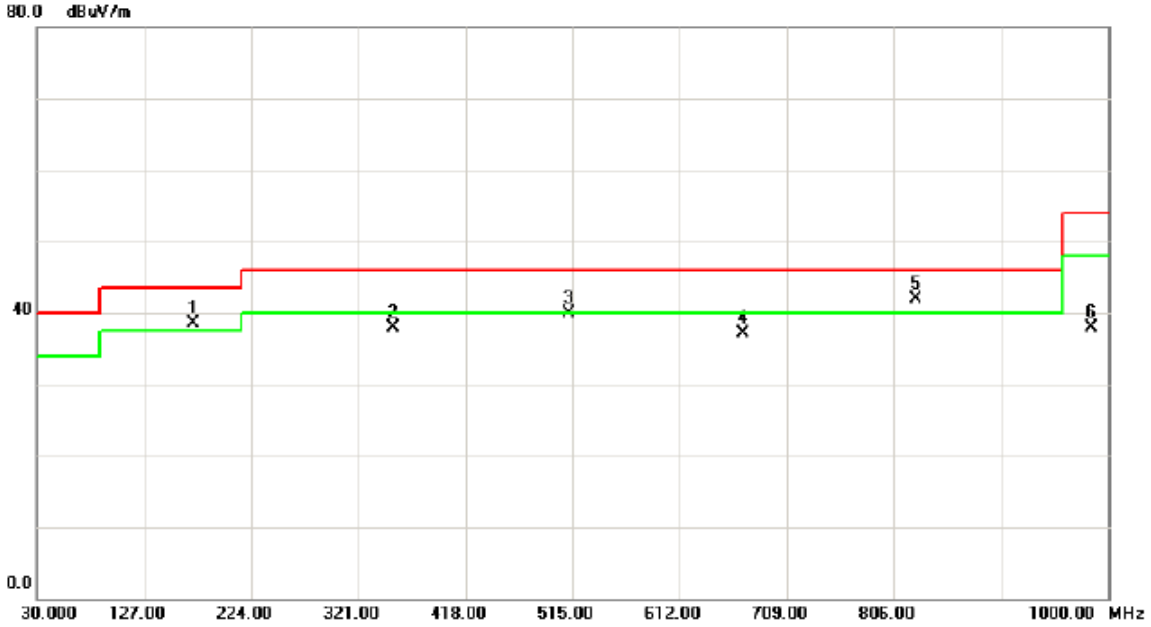
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		171.6200	49.25	-12.74	36.51	43.50	-6.99	peak	
2		279.2900	48.84	-12.63	36.21	46.00	-9.79	peak	
3		352.0400	49.75	-11.39	38.36	46.00	-7.64	peak	
4		512.0900	48.07	-9.69	38.38	46.00	-7.62	peak	
5	*	826.3700	45.37	-3.40	41.97	46.00	-4.03	peak	
6		944.7100	36.80	-0.60	36.20	46.00	-9.80	peak	

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5736MHz	Phase:	Horizontal



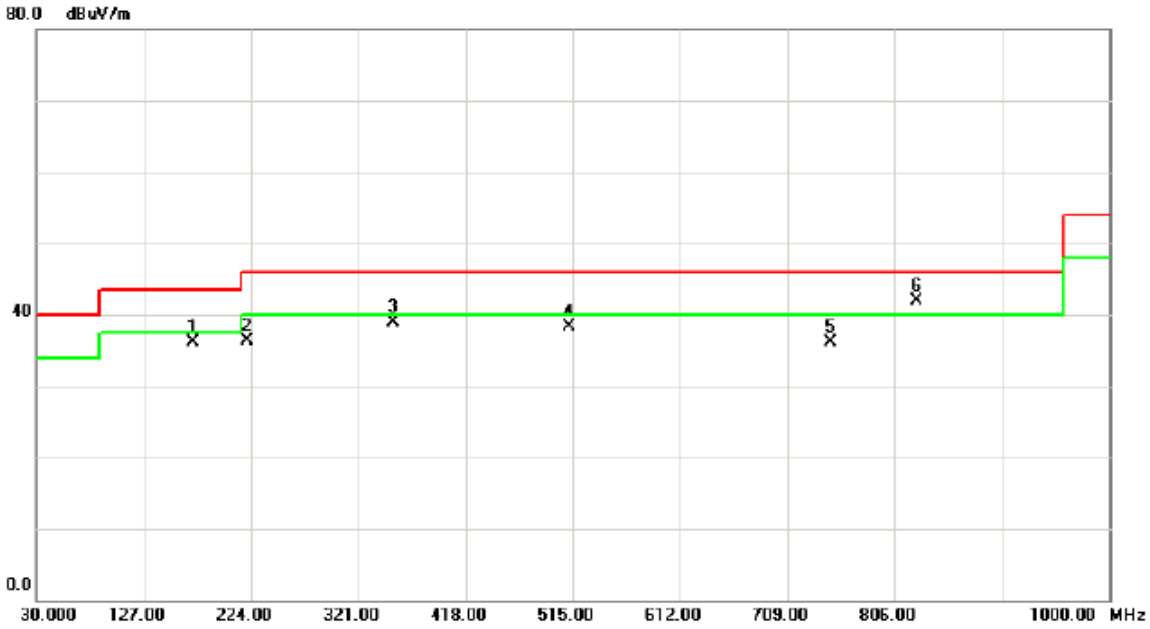
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		123.1200	43.76	-13.72	30.04	43.50	-13.46	peak	
2		171.6200	49.25	-12.74	36.51	43.50	-6.99	peak	
3		221.0900	51.28	-14.97	36.31	46.00	-9.69	peak	
4		352.0400	50.25	-11.39	38.86	46.00	-7.14	peak	
5		512.0900	48.07	-9.69	38.38	46.00	-7.62	peak	
6	*	826.3700	45.87	-3.40	42.47	46.00	-3.53	peak	

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5762MHz	Phase:	Vertical



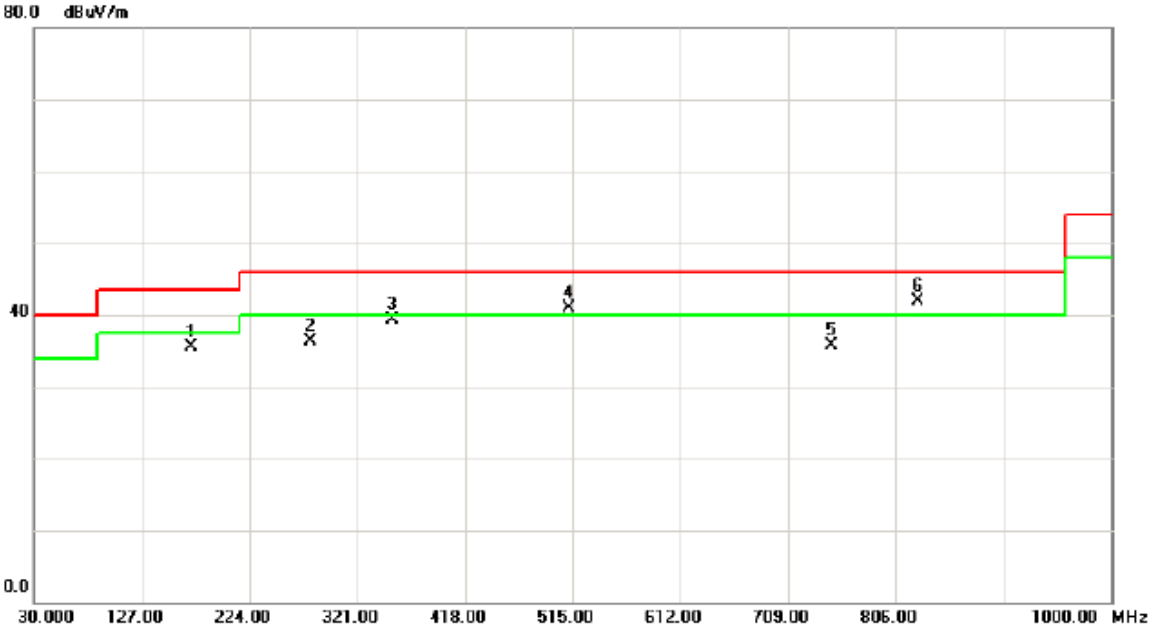
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	!	171.6200	51.25	-12.74	38.51	43.50	-4.99	peak	
2		352.0400	49.25	-11.39	37.86	46.00	-8.14	peak	
3		512.0900	49.57	-9.69	39.88	46.00	-6.12	peak	
4		669.2300	42.45	-5.28	37.17	46.00	-8.83	peak	
5	*	826.3700	45.37	-3.40	41.97	46.00	-4.03	peak	
6		984.4800	37.96	0.01	37.97	54.00	-16.03	peak	

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5762MHz	Phase:	Horizontal



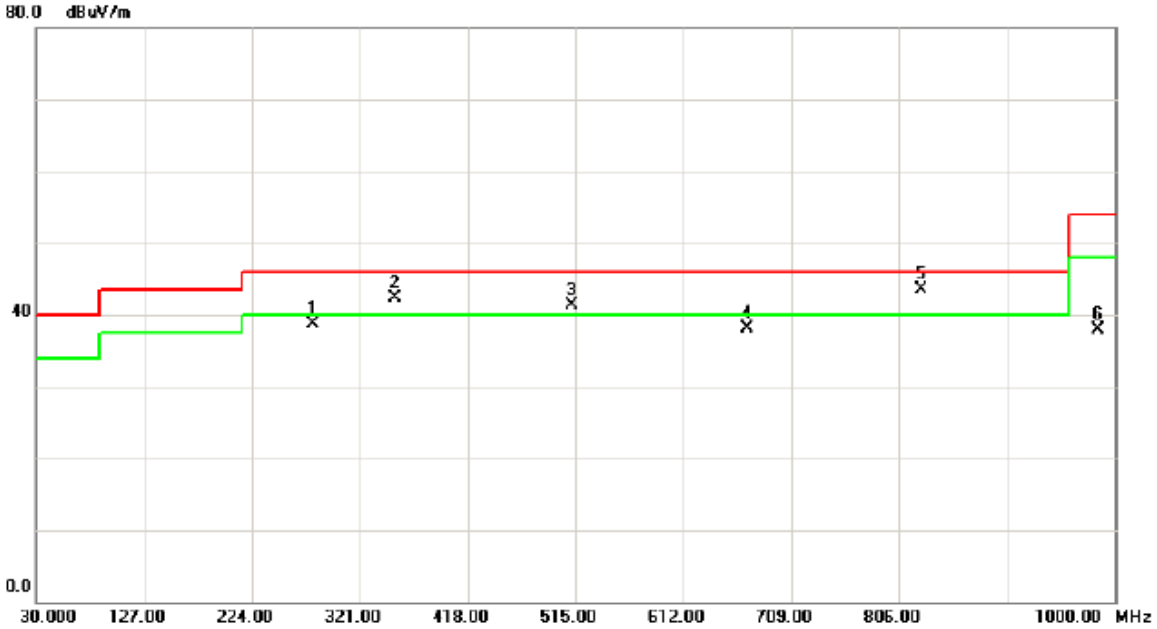
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		171.6200	48.75	-12.74	36.01	43.50	-7.49	peak	
2		221.0900	51.28	-14.97	36.31	46.00	-9.69	peak	
3		352.0400	50.25	-11.39	38.86	46.00	-7.14	peak	
4		512.0900	48.07	-9.69	38.38	46.00	-7.62	peak	
5		747.8000	41.10	-4.90	36.20	46.00	-9.80	peak	
6	*	826.3700	45.37	-3.40	41.97	46.00	-4.03	peak	

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5814MHz	Phase:	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		171.6200	48.25	-12.74	35.51	43.50	-7.99	peak	
2		279.2900	48.84	-12.63	36.21	46.00	-9.79	peak	
3		352.0400	50.75	-11.39	39.36	46.00	-6.64	peak	
4	!	512.0900	50.57	-9.69	40.88	46.00	-5.12	peak	
5		747.8000	40.60	-4.90	35.70	46.00	-10.30	peak	
6	*	826.3700	45.37	-3.40	41.97	46.00	-4.03	peak	

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5814MHz	Phase:	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		279.2900	51.34	-12.63	38.71	46.00	-7.29	peak	
2	!	352.0400	53.75	-11.39	42.36	46.00	-3.64	peak	
3	!	512.0900	51.07	-9.69	41.38	46.00	-4.62	peak	
4		669.2300	43.45	-5.28	38.17	46.00	-7.83	peak	
5	*	826.3700	46.87	-3.40	43.47	46.00	-2.53	peak	
6		984.4800	37.96	0.01	37.97	54.00	-16.03	peak	

4.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5736MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
5734.40	**V**	**54.19**	**52.01**	**44.38**	**98.57**	**96.39**			**X/F**
11471.84	V	31.14	21.08	18.42	49.56	39.50	74.00	54.00	X/H

Remark:

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

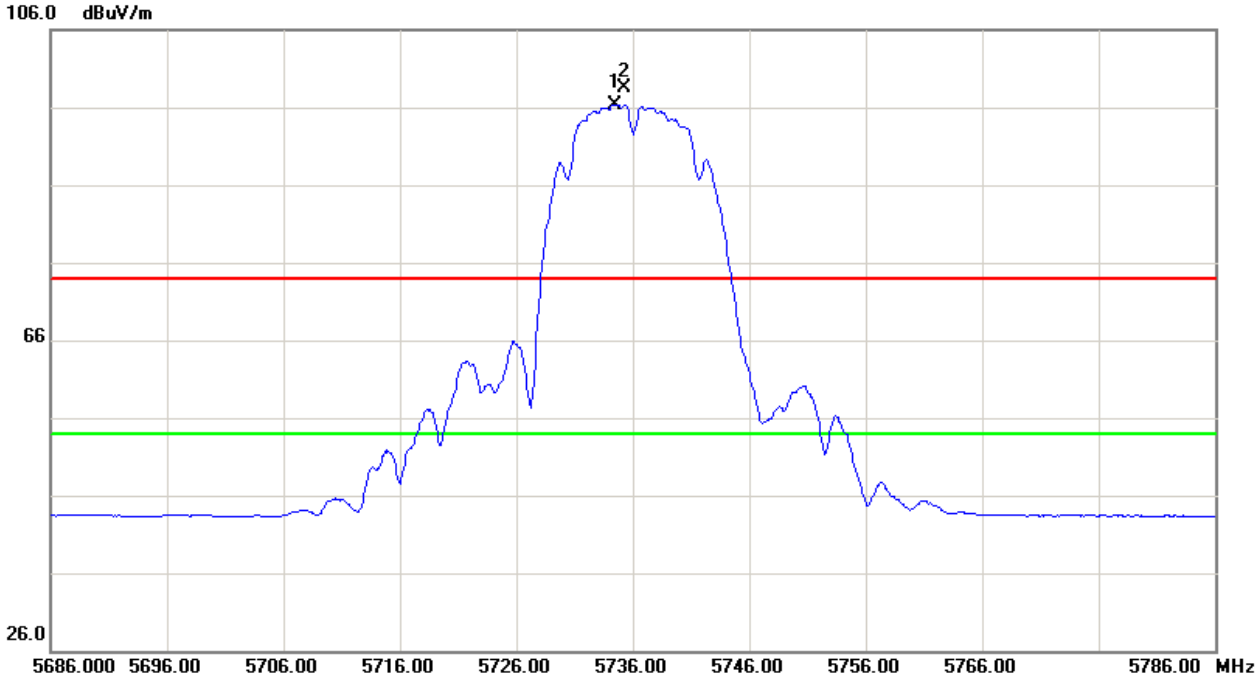
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

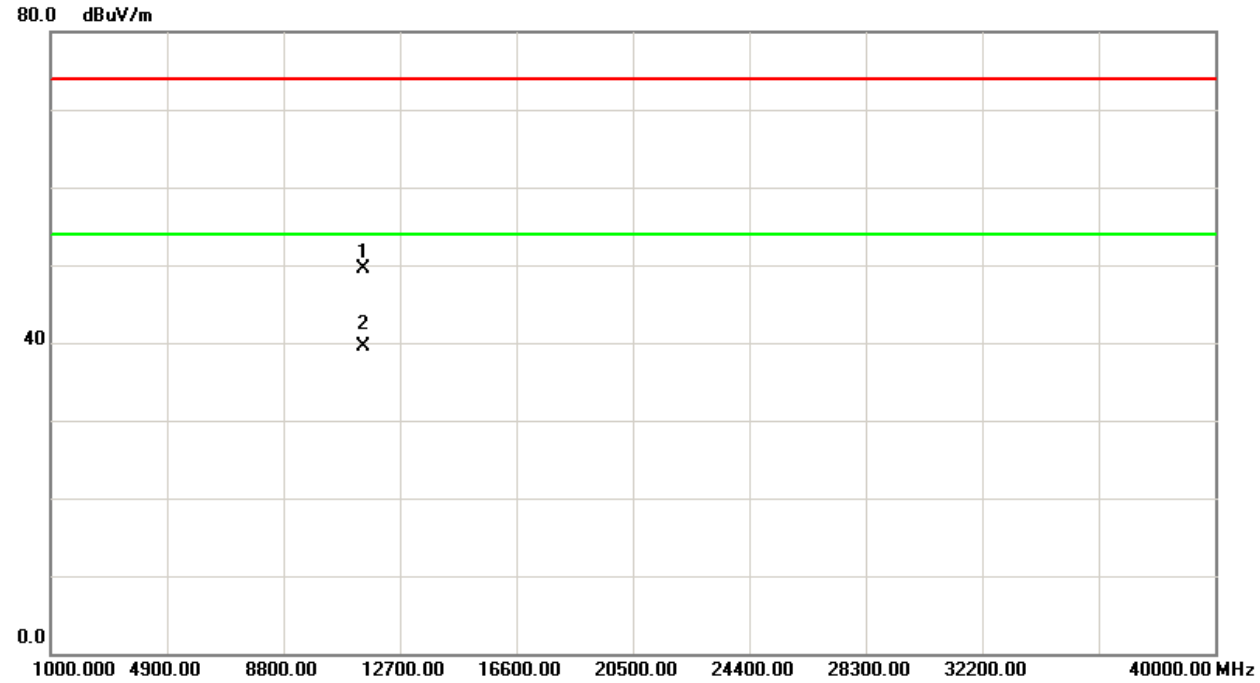
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH01 (Above 1000 MHz, Vertical)





EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5736MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
5735.20	**H**	**52.13**	**50.09**	**44.39**	**96.52**	**94.48**			**X/F**
11471.95	H	32.43	21.24	18.42	50.85	39.66	74.00	54.00	X/H

Remark:

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

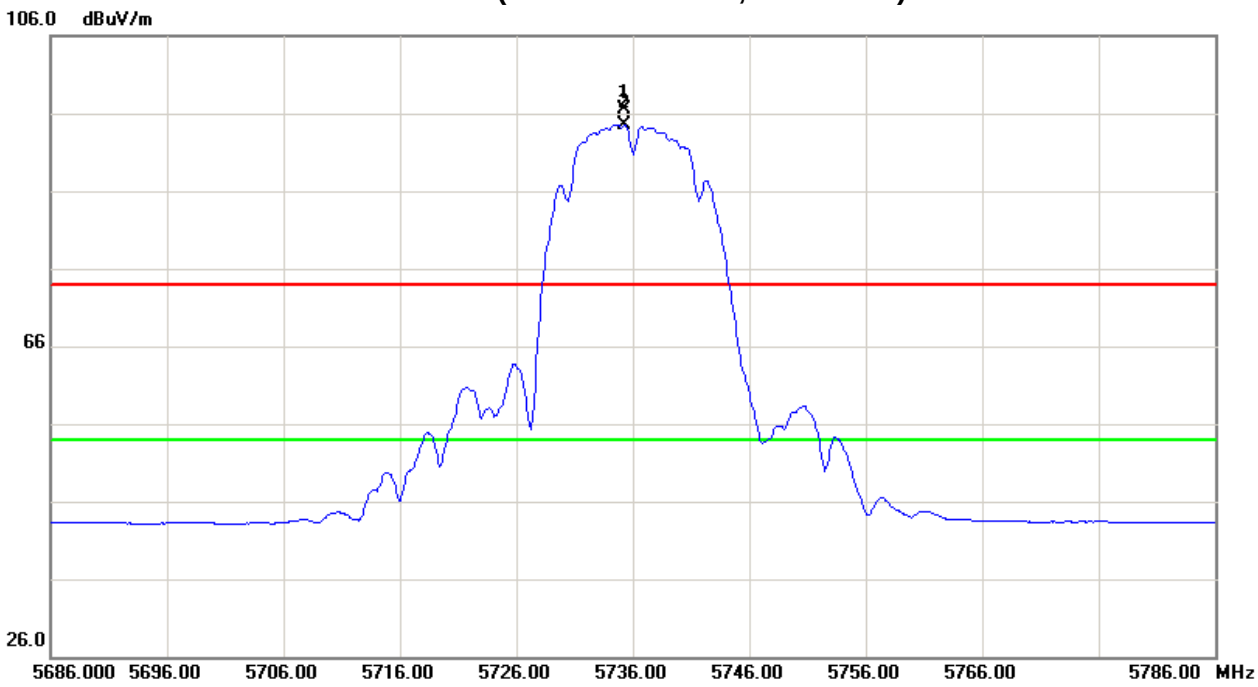
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

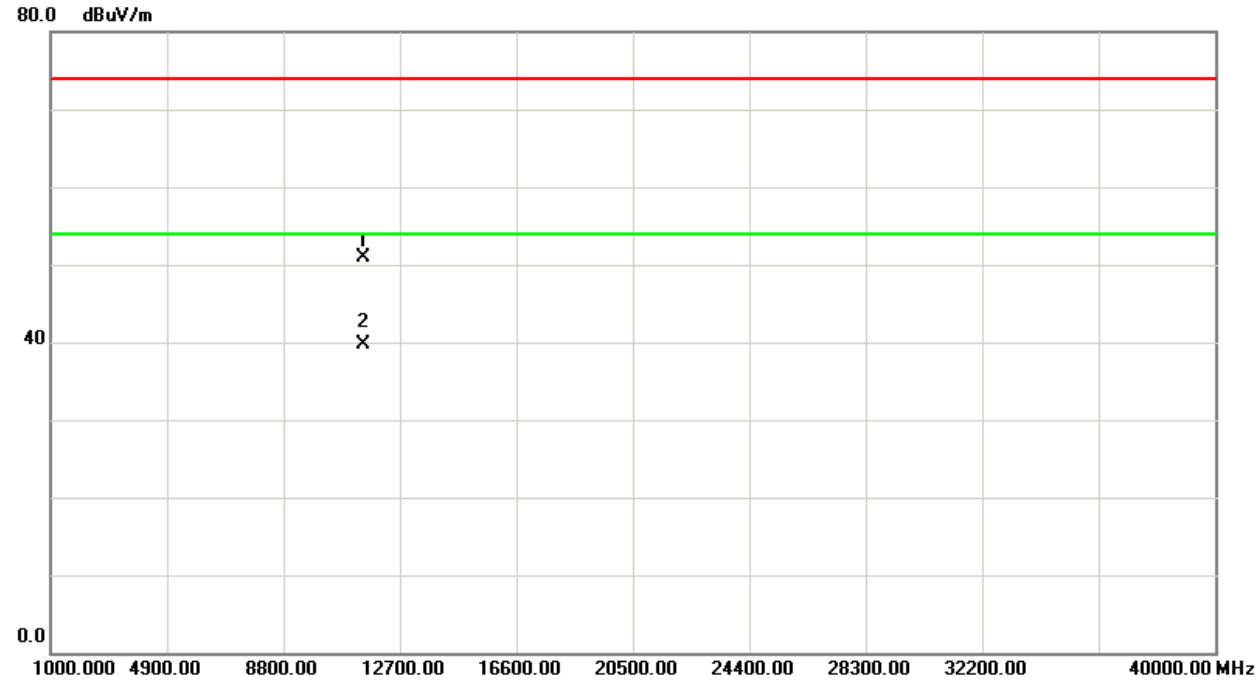
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH01 (Above 1000 MHz, Horizontal)





EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5762MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
5760.60	**V**	**52.42**	**50.30**	**44.47**	**96.89**	**94.77**			**X/F**
11524.46	V	31.51	20.39	18.55	50.06	38.94	74.00	54.00	X/H

Remark:

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

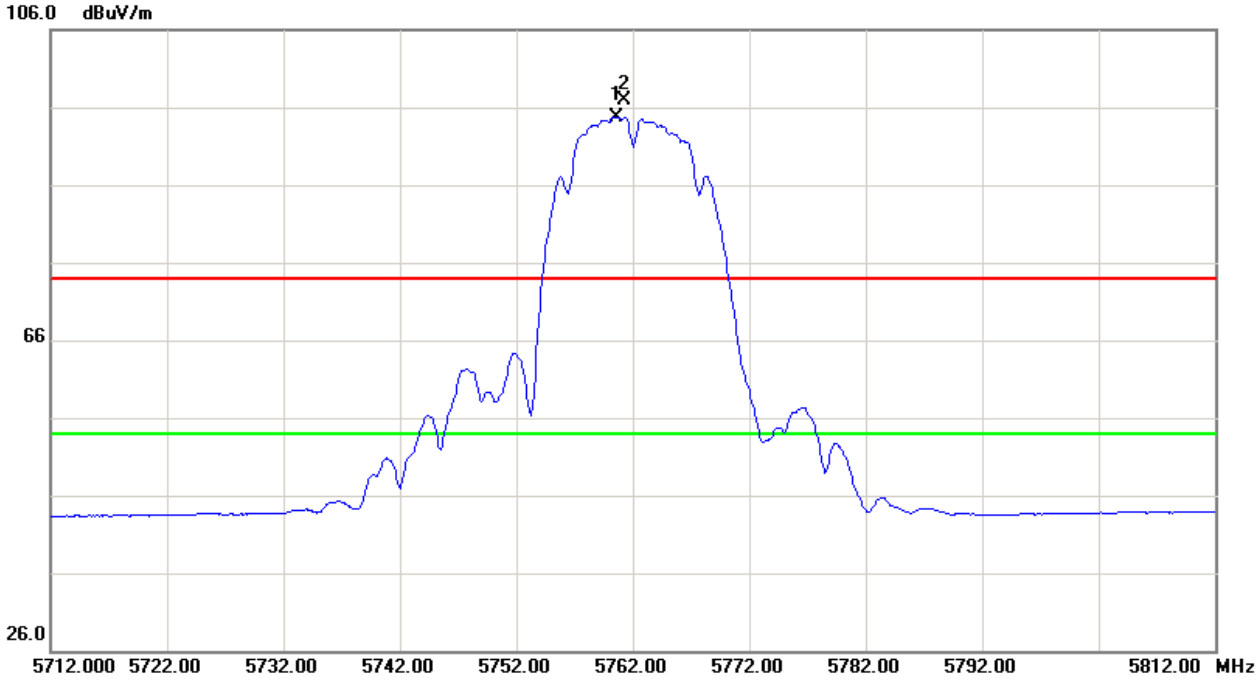
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

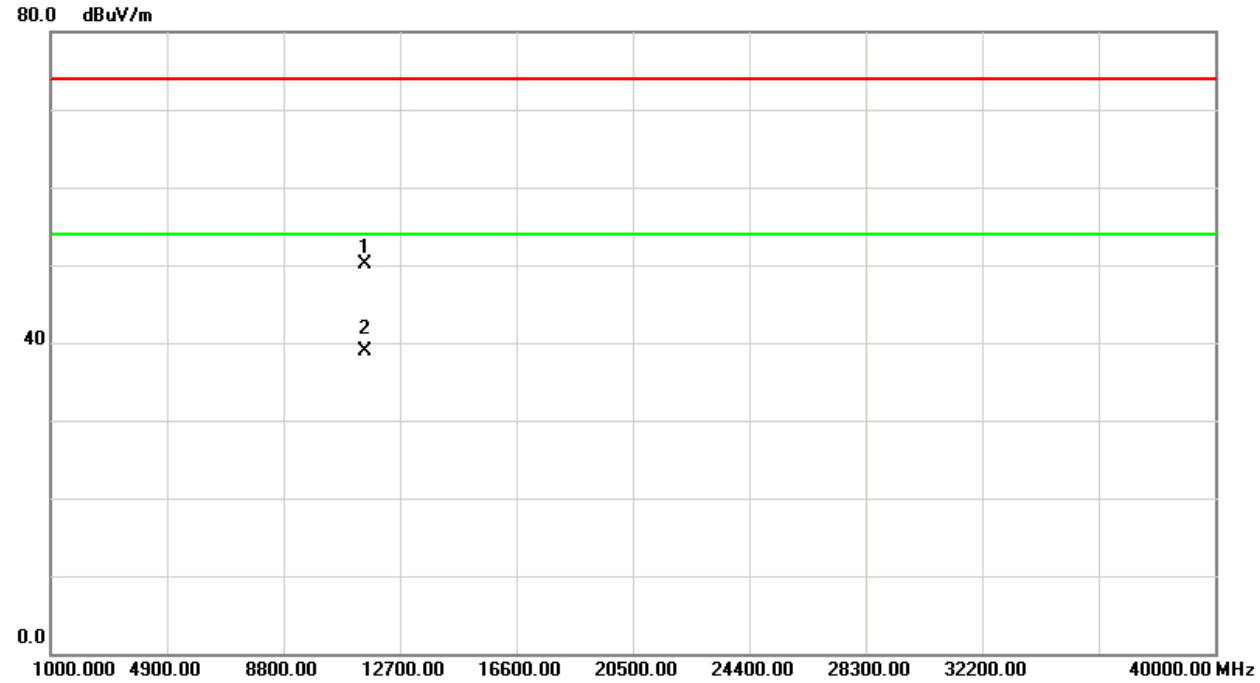
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH02 (Above 1000 MHz, Vertical)





EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5762MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
5760.60	**H**	**51.36**	**49.39**	**44.47**	**95.83**	**93.86**			**X/F**
11524.34	H	30.31	19.78	18.55	48.86	38.33	74.00	54.00	X/H

Remark:

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

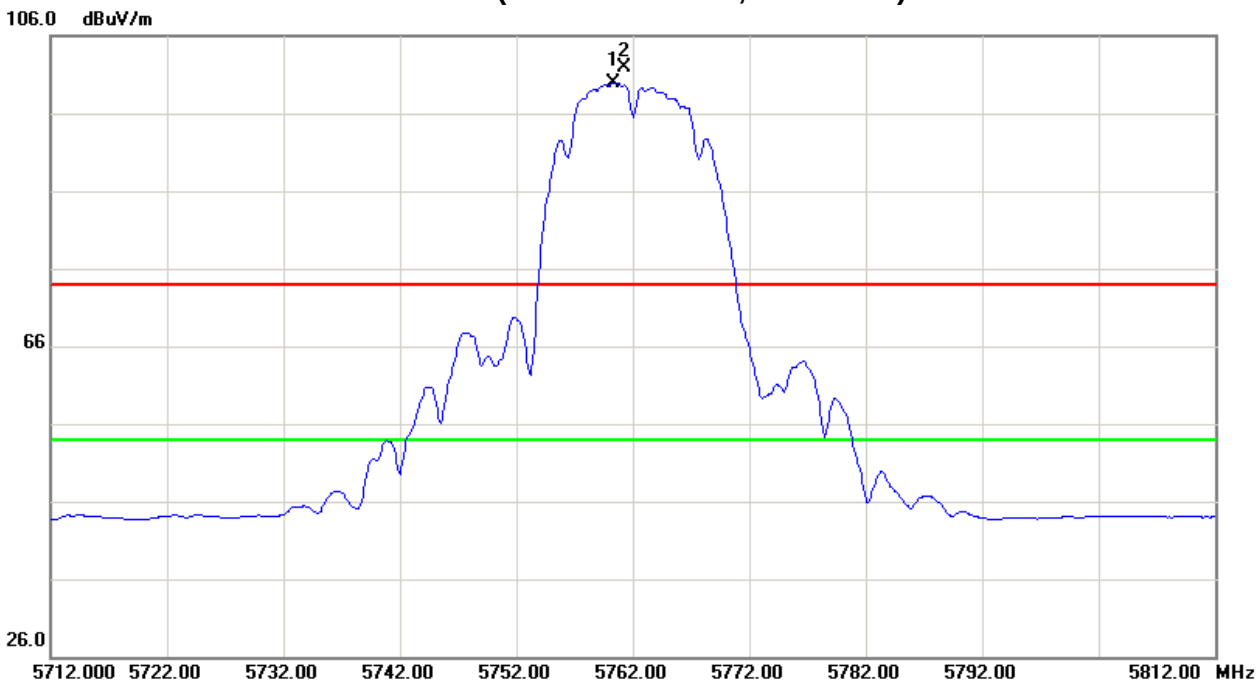
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

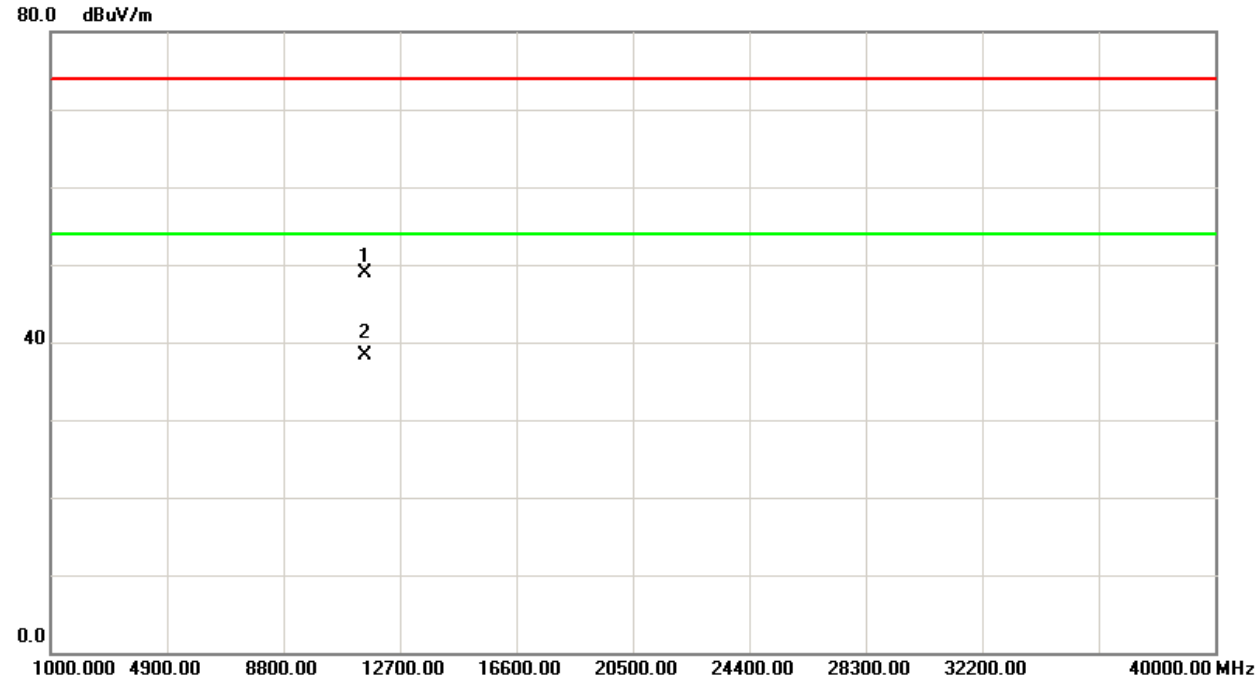
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH02 (Above 1000 MHz, Horizontal)





EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5814MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
5813.20	**V**	**51.40**	**49.45**	**44.65**	**96.05**	**94.10**			**X/F**
5850.00	V	7.86	-0.97	44.78	52.64	43.81	74.00	54.00	X/E
11627.48	V	31.28	21.37	18.81	50.09	40.18	74.00	54.00	X/H

Remark:

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

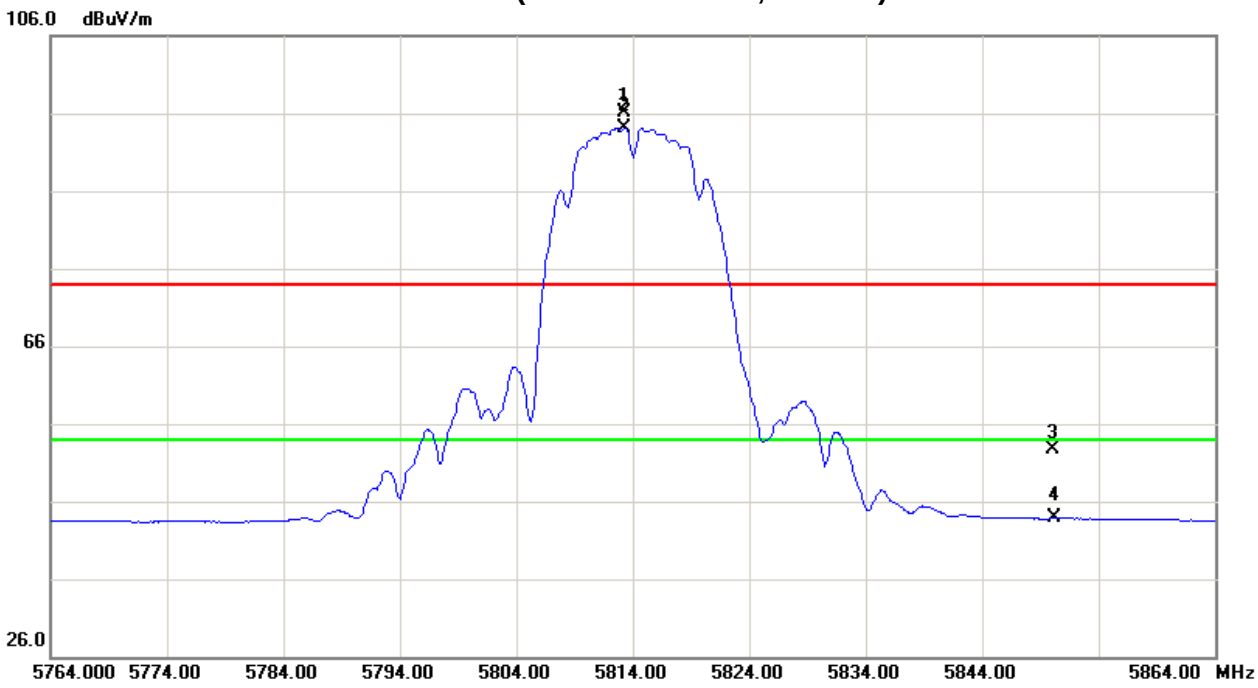
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

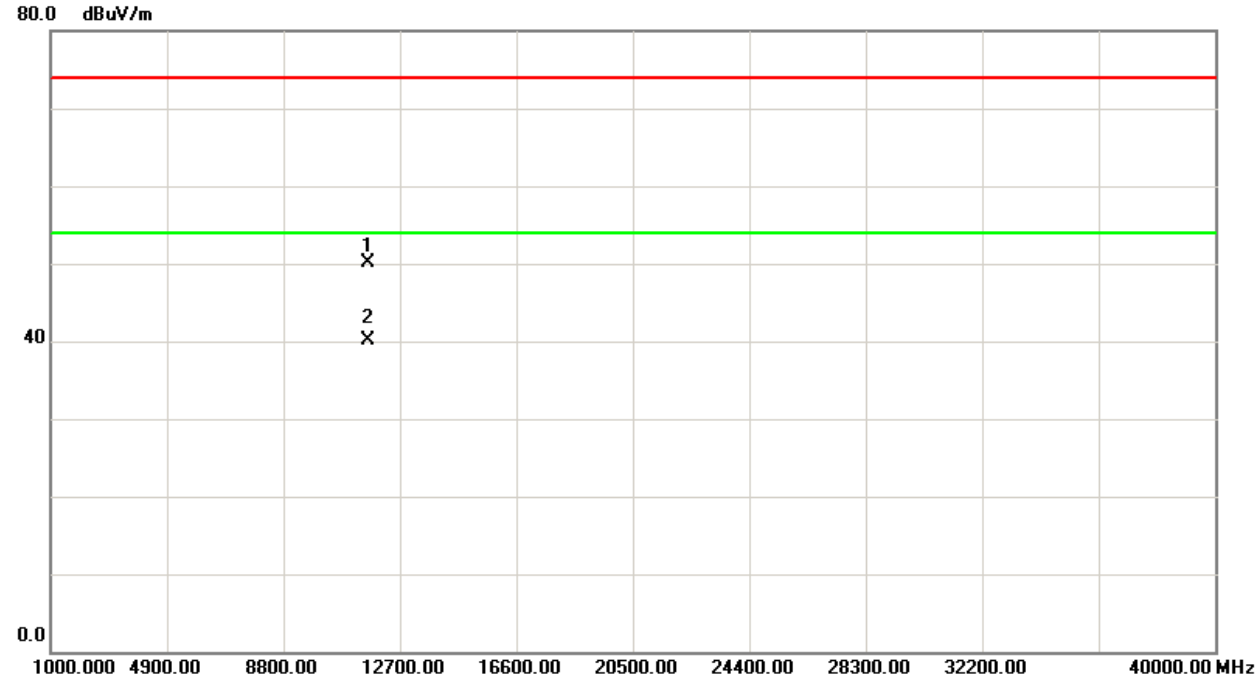
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH03 (Above 1000 MHz, Vertical)





EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode 5814MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
5813.20	**H**	**50.15**	**48.25**	**44.65**	**94.80**	**92.90**			**X/F**
5850.00	H	7.87	-0.96	44.78	52.65	43.82	74.00	54.00	X/E
11627.85	H	32.01	21.29	18.81	50.82	40.10	74.00	54.00	X/H

Remark:

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .

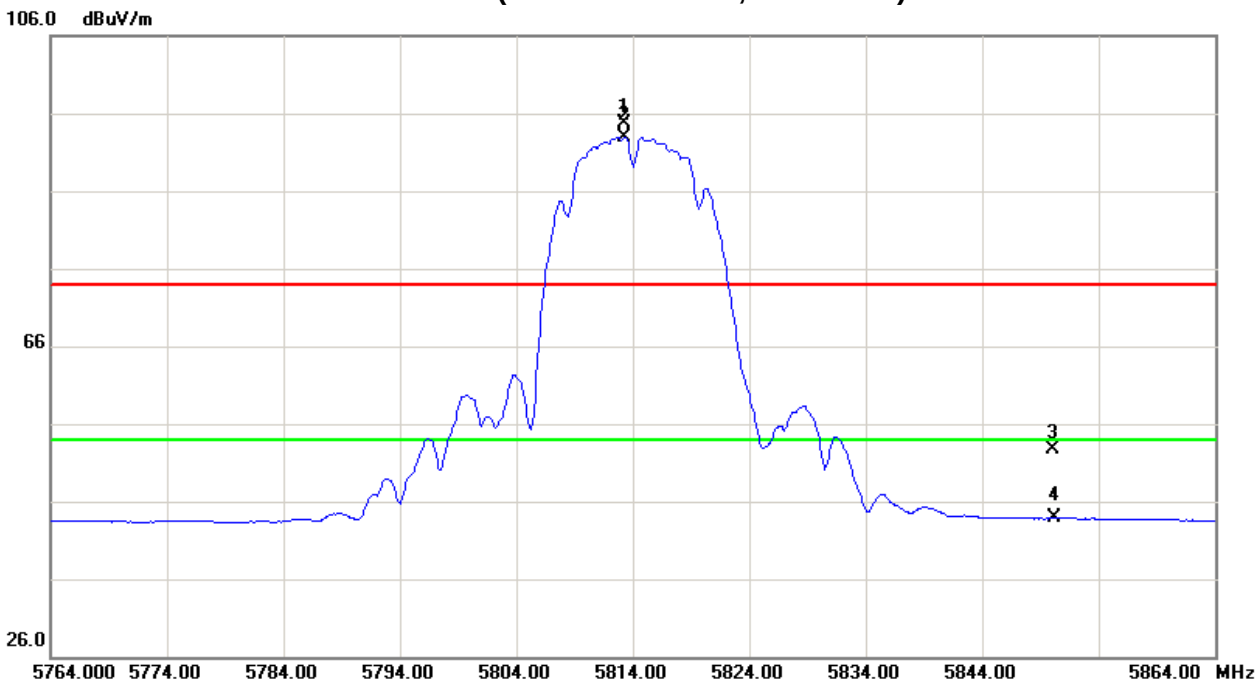
(4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

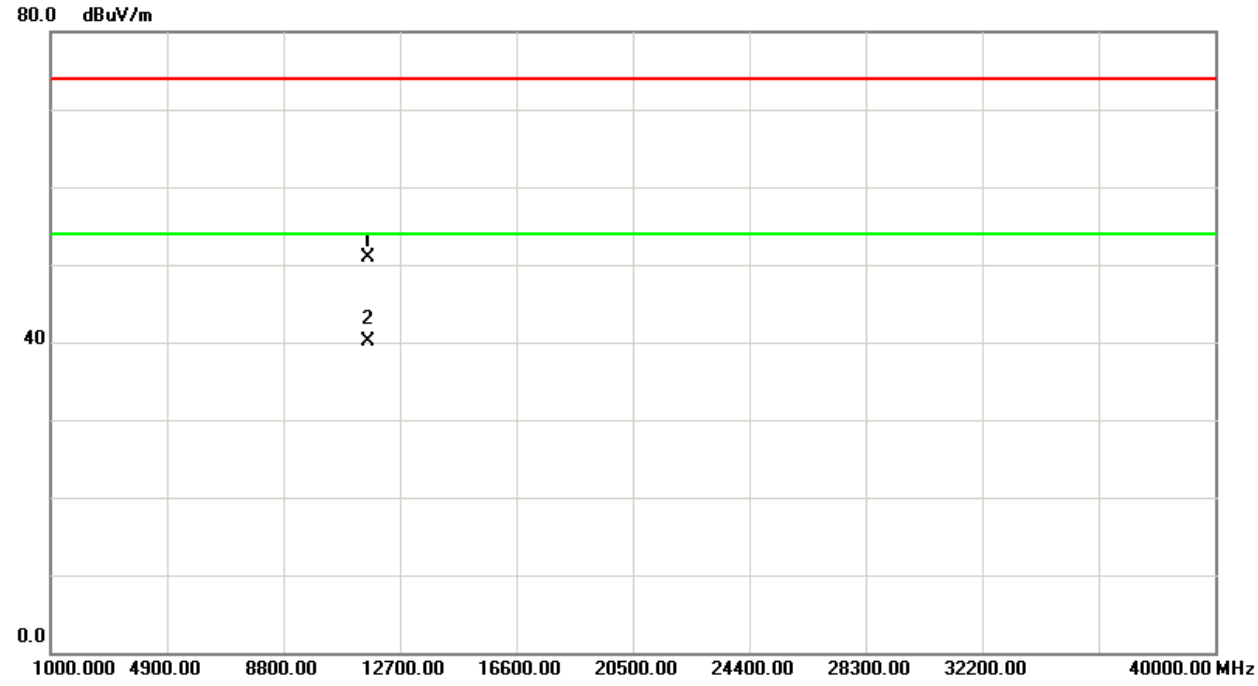
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(6) EUT Orthogonal Axis:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

TX CH03 (Above 1000 MHz, Horizontal)





5. BANDWIDTH TEST

5.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C/ RSS-GEN and RSS-210			
Section	Test Item	Frequency Range (MHz)	Result
115.247(a)(2) RSS-GEN section 4.6.1 RSS-210 Annex 8 (A8.2(a))	Bandwidth	5725 - 5825	PASS

5.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov. 09, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

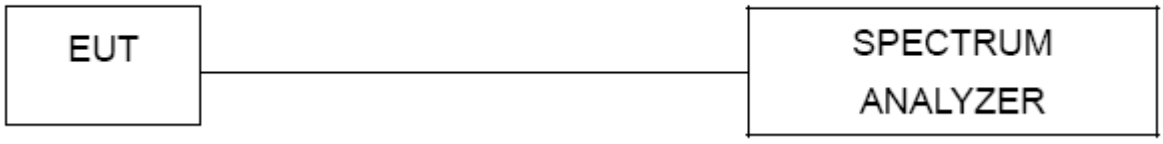
5.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting: RBW= 100KHz, VBW=300KHz, Sweep time = 2.5 ms.

5.1.3 DEVIATION FROM STANDARD

No deviation.

5.1.4 TEST SETUP



5.1.5 EUT OPERATION CONDITIONS

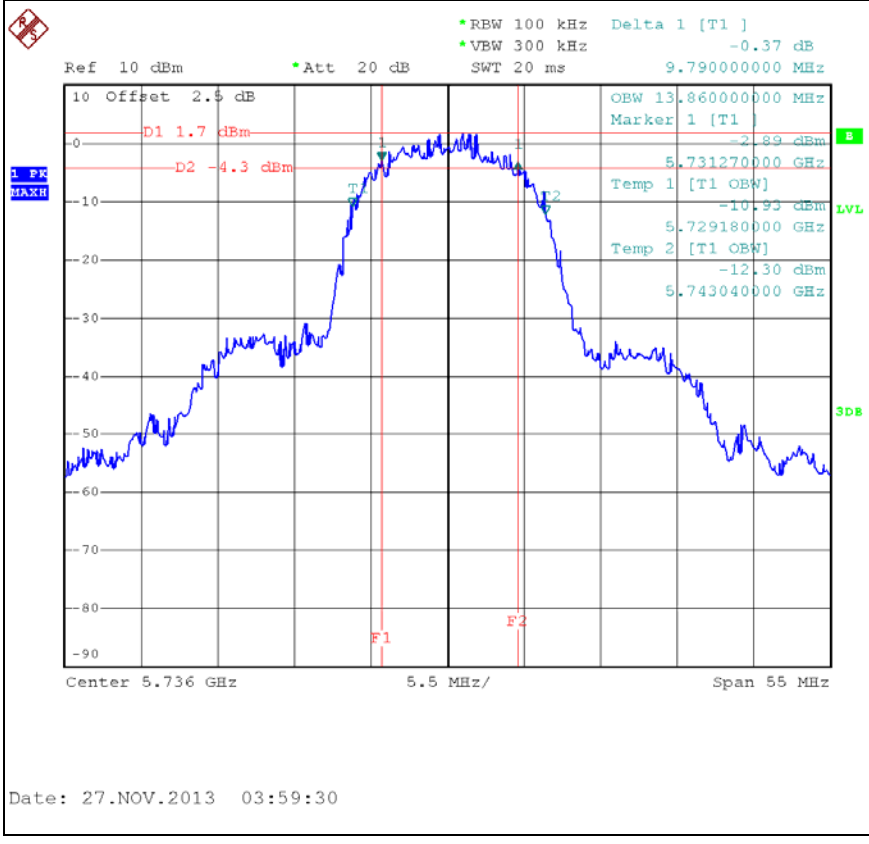
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.6 TEST RESULTS

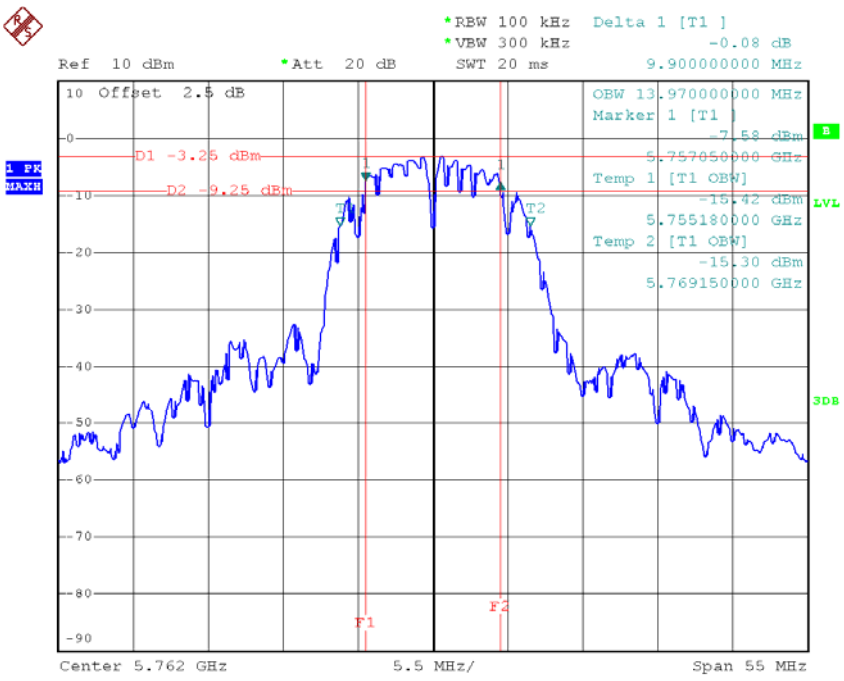
EUT:	HOME THEATER SYSTEM	Model Name. :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode /CH01, CH02, CH03		

Test Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Result
CH01	5736	9.79	13.86	PASS
CH02	5762	9.90	13.97	PASS
CH03	5814	9.90	13.97	PASS

TX CH01

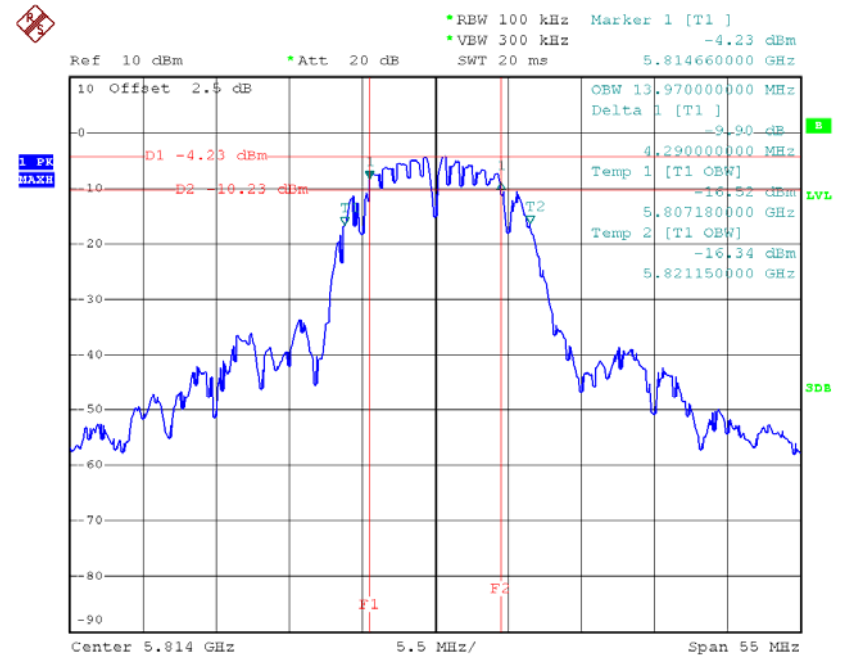


TX CH02



Date: 27.NOV.2013 04:24:44

TX CH03



Date: 27.NOV.2013 05:29:12

6. MAXIMUM OUTPUT POWER TEST

6.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C/ RSS-210				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3) RSS-210 Annex 8.4(4)	Maximum Output Power	1 watt or 30dBm	5725 - 5825	PASS

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Next Calibration
1	P-series Power meter	Agilent	N1911A	MY45100473	Apr.25.2014
2	Wireband Power sensor	Agilent	N1921A	MY51100041	Apr.25.2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

6.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

6.1.3 DEVIATION FROM STANDARD

No deviation.

6.1.4 TEST SETUP

6.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.6 TEST RESULTS

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode /CH01, CH02, CH03		

Test Channel	Frequency (MHz)	Maximum Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	5736 MHz	10.41	30	1
CH02	5762 MHz	11.74	30	1
CH03	5814 MHz	11.21	30	1

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 Applied procedures / limit

20dBc in any 100KHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a) & RSS-210 section 2.2 & Annex 8 (A8.5), then the 15.209(a) & RSS-GEN limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

7.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov. 09, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

7.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting: RBW= 100KHz, VBW=300KHz, Sweep time = Auto.

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP

7.1.5 EUT OPERATION CONDITIONS

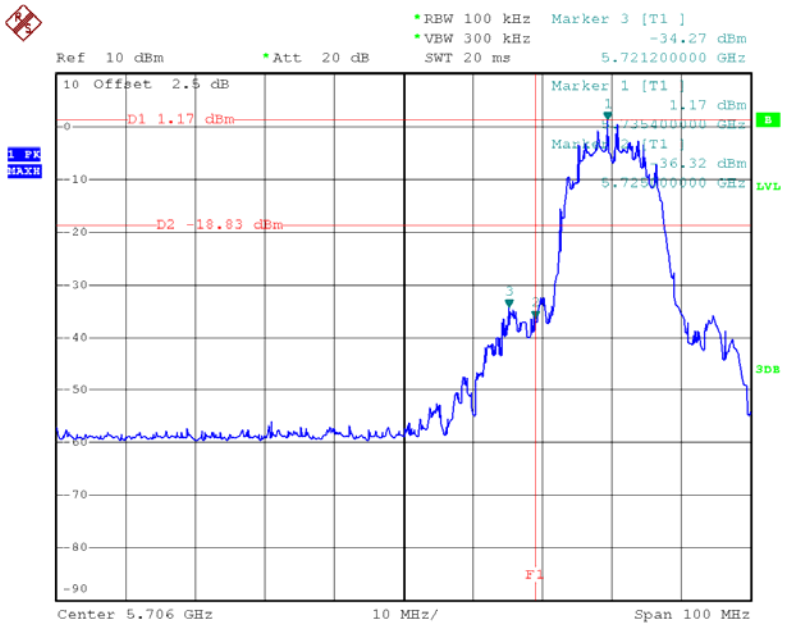
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.6 TEST RESULTS

EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	25 ℃	Relative Humidity:	58 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode /CH01, CH02, CH03		

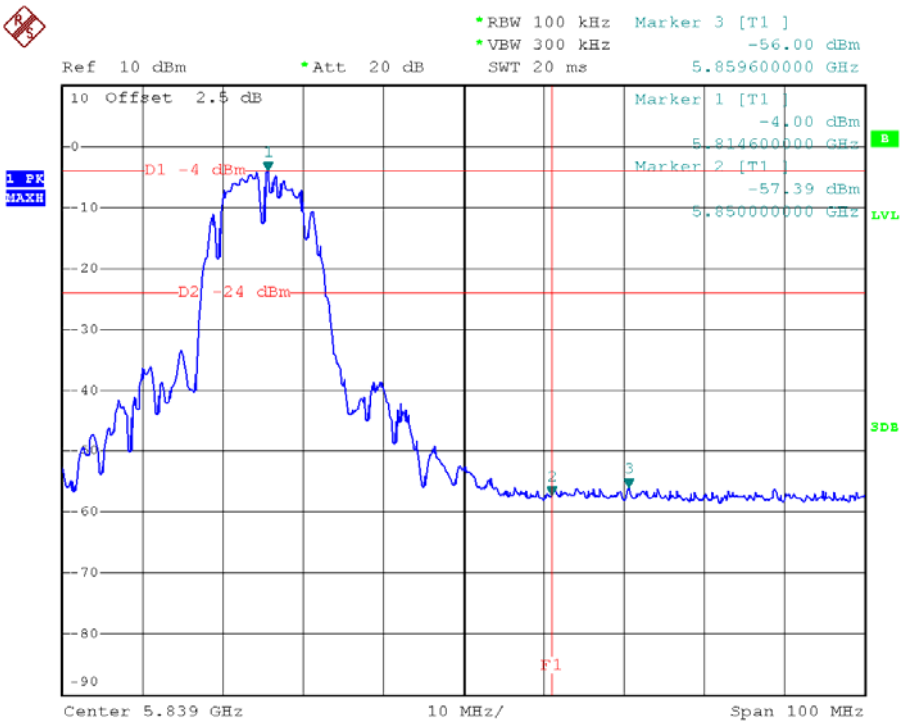
Channel of Worst Data: CH01			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5721.20	-34.27	5859.60	-56.00
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.			

TX mode CH01



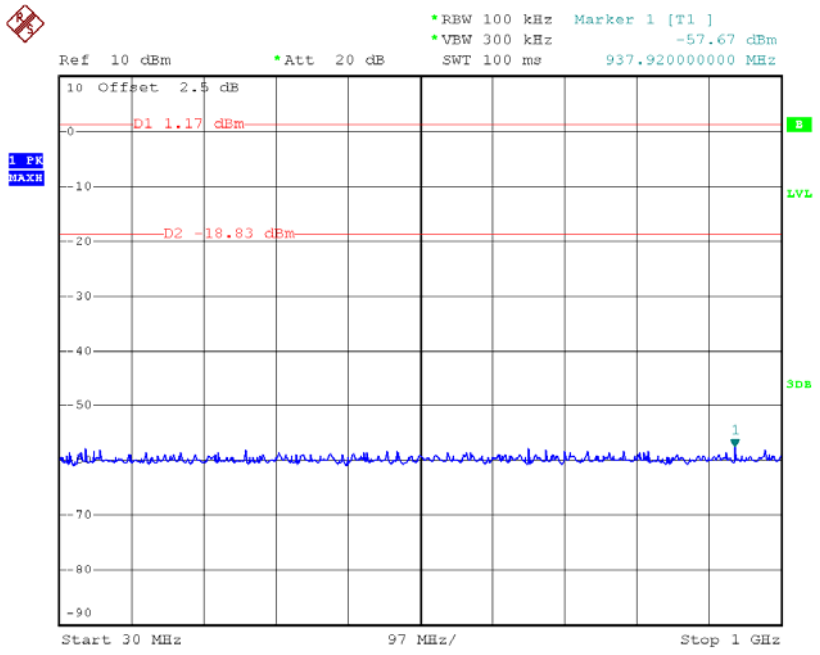
Date: 27.NOV.2013 04:09:21

TX mode CH03



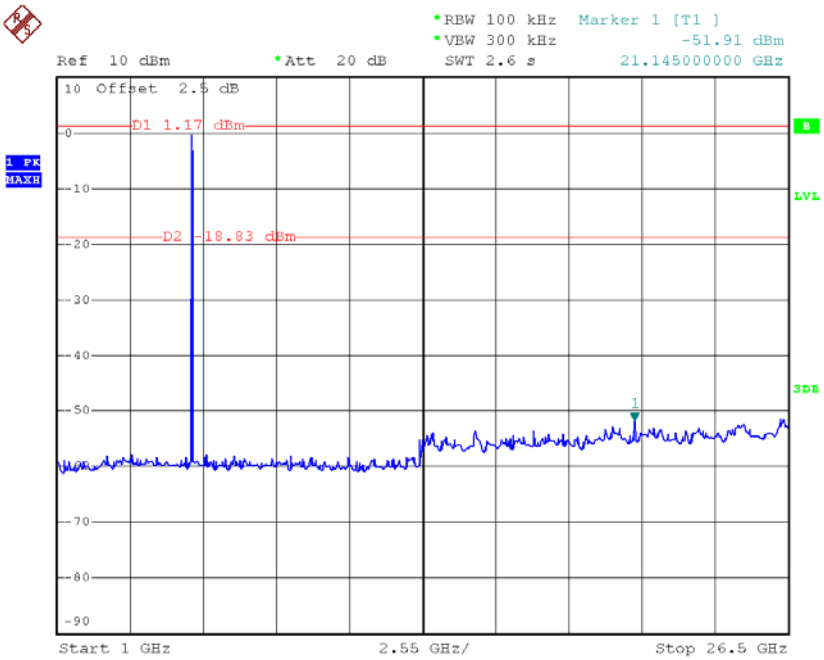
Date: 27.NOV.2013 05:33:49

TX mode CH01 (30M~1000MHz)



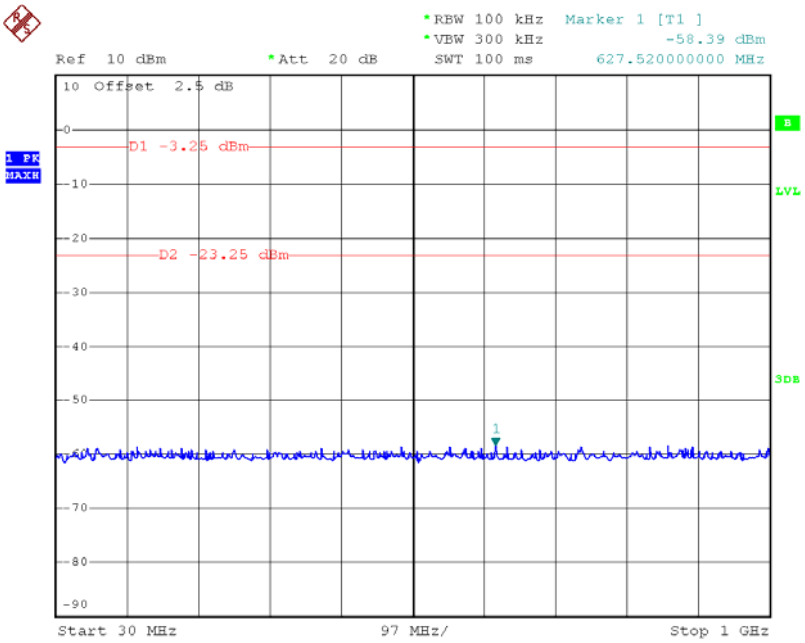
Date: 27.NOV.2013 04:11:01

TX mode CH01 (1000MHz~10th Harmonic)



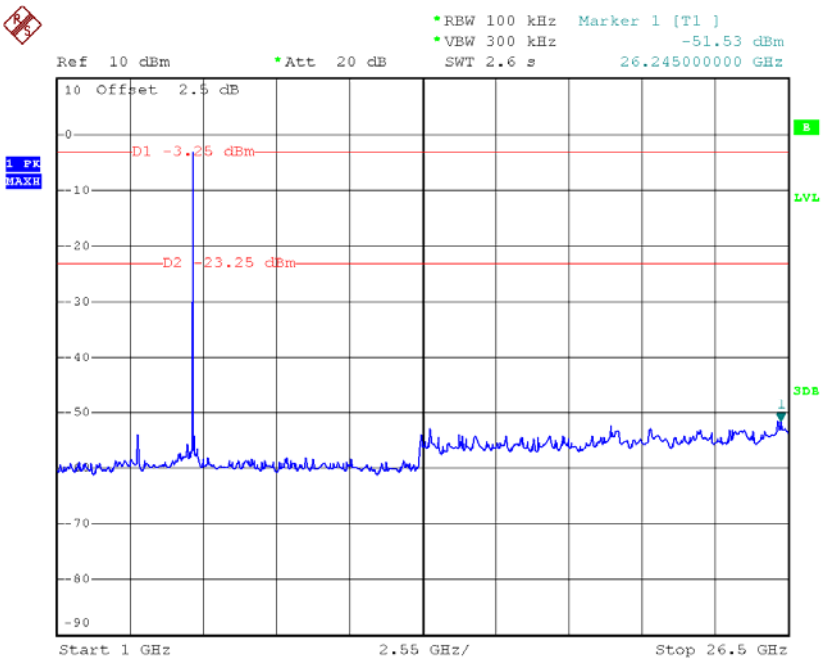
Date: 27.NOV.2013 04:11:22

TX mode CH02 (30M~1000MHz)



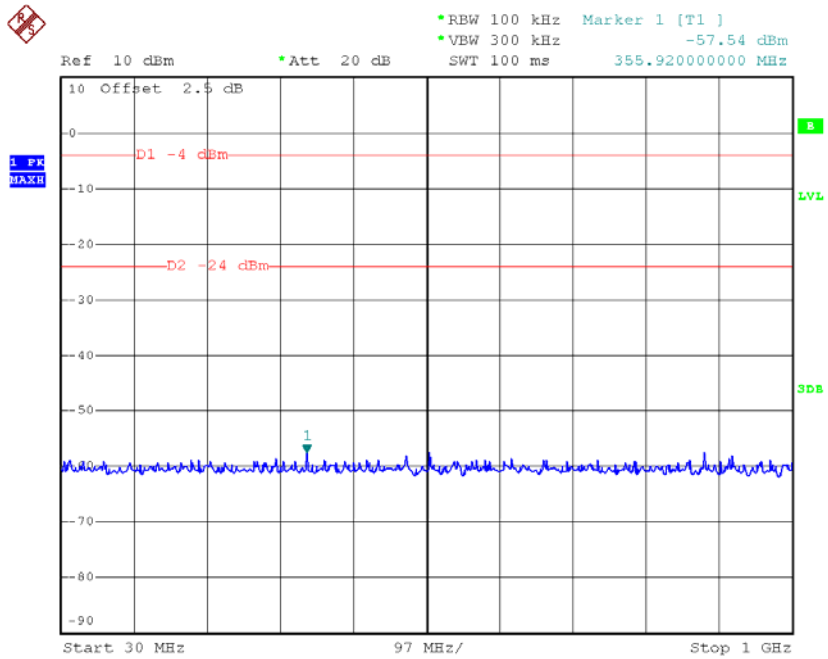
Date: 27.NOV.2013 04:27:20

TX mode CH02 (1000MHz~10th Harmonic)



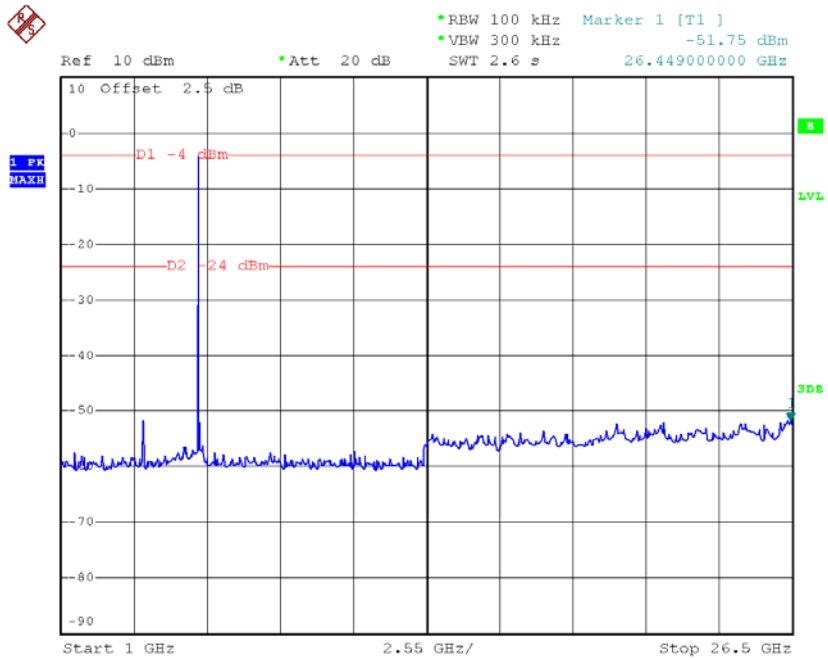
Date: 27.NOV.2013 04:27:41

TX mode CH03 (30M~1000MHz)



Date: 27.NOV.2013 05:34:40

TX mode CH03 (1000MHz~10th Harmonic)



Date: 27.NOV.2013 05:34:22

8. POWER SPECTRAL DENSITY TEST

8.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C / RSS-210				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e) RSS-210 Annex 8(A8.2(b))	Power Spectral Density	8 dBm (in any 3KHz)	5736 - 5814	PASS

8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov. 09, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

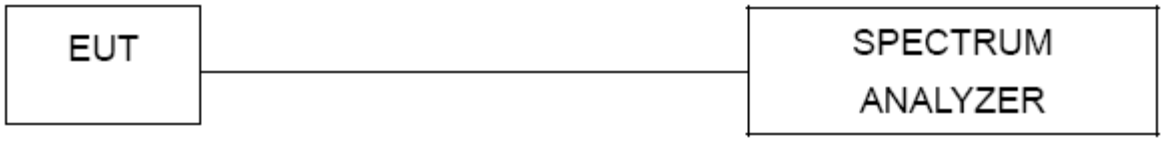
8.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting: RBW=3KHz, VBW=10KHz, Sweep time = Auto.

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

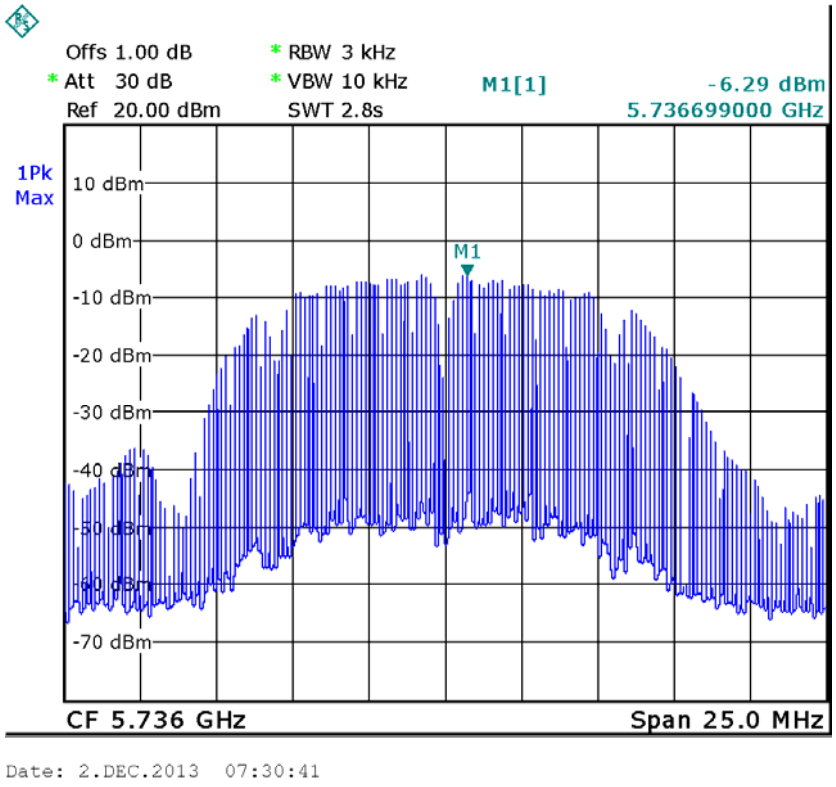
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.6 TEST RESULTS

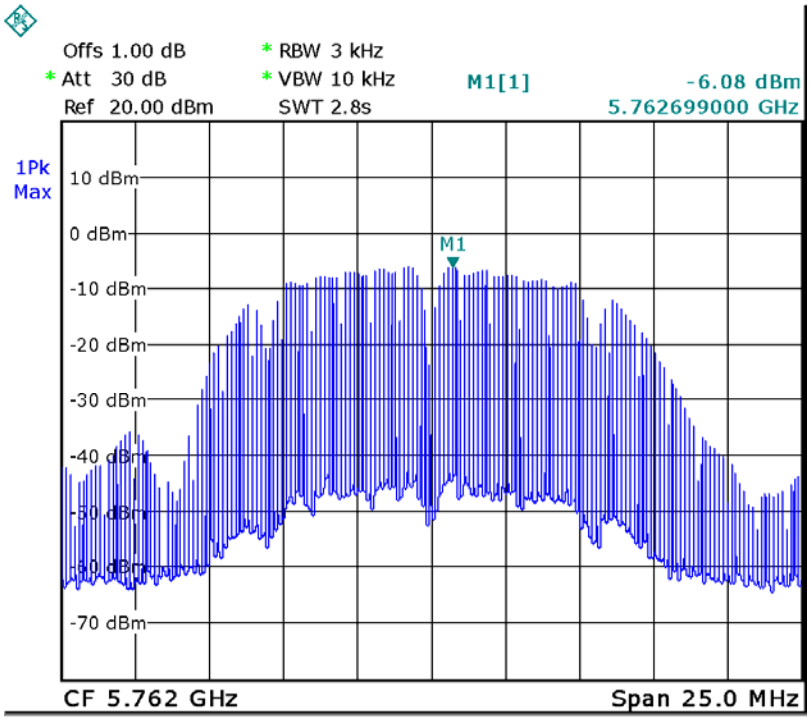
EUT:	HOME THEATER SYSTEM	Model Name :	SC-S514
Temperature:	23 ℃	Relative Humidity:	51 %
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode /CH01, CH02, CH03		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	5736 MHz	-2.44	8
CH02	5762 MHz	-3.47	8
CH03	5814 MHz	-4.40	8

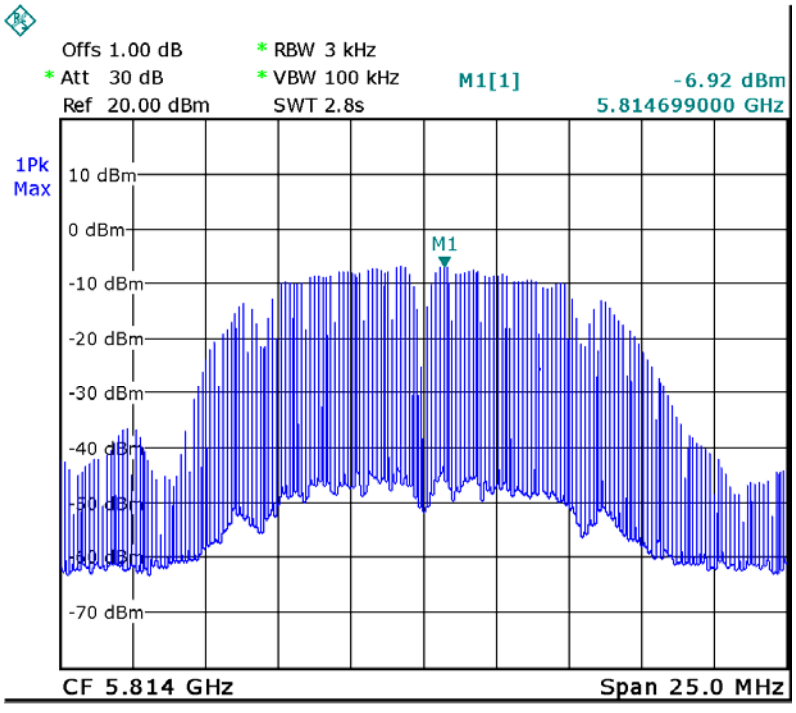
TX CH01



TX CH02



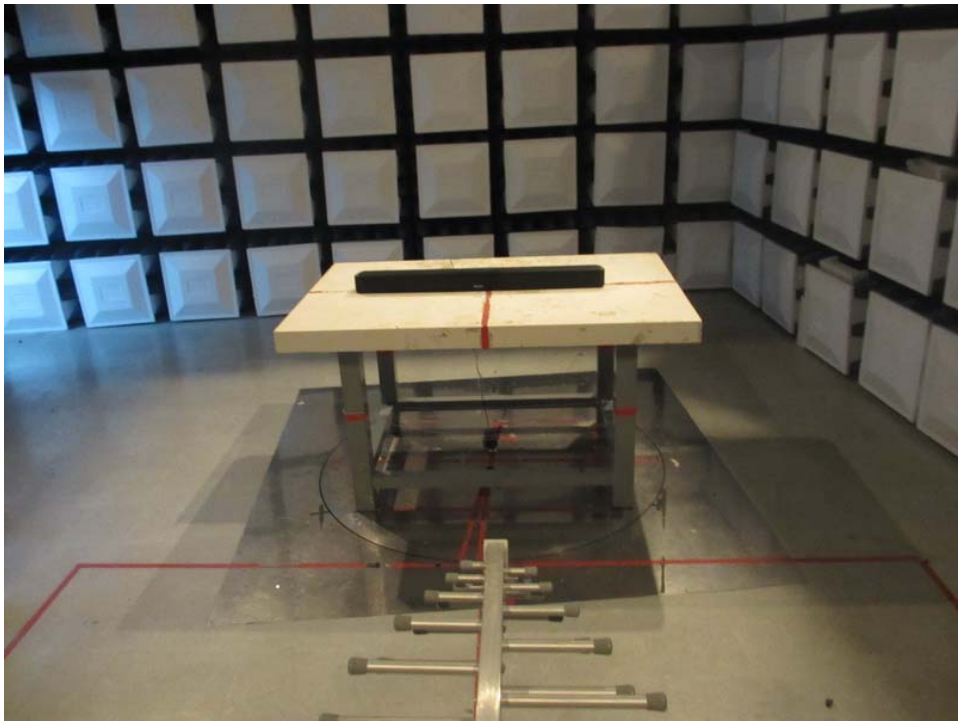
TX CH03



9. EUT TEST PHOTO

Conducted Measurement Photos

Radiated Measurement Photos
30MHz~1GHz



Radiated Measurement Photos
Above 1G