



Neutron Engineering Inc.

FCC Radio TEST Report

FCC ID: RFARWSS5510

This report concerns (check one) : ☒ Original Grant ☐ Class II Change

Issued Date : Jun. 02, 2010
Project No. : 1004C227
Equipment : IMMERSIVE SOUND HOME THEATER
Model Name : HTS5580W/F7
Applicant : Eastech Electronics (Taiwan) Inc.
Address : 13FI, No. 99, Sec. 1, Nankan Road, Luchu
Shiang, Taoyuan Hsien, Taiwan

Tested by:

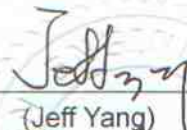
Neutron Engineering Inc. EMC Laboratory

Date of Receipt: May. 05, 2010

Date of Test:

May. 05, 2010 ~ May. 31, 2010

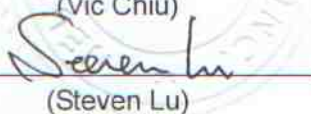
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Declaration

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 **R.O.C.**, 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.



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1. CERTIFICATION

Equipment: IMMERSIVE SOUND HOME THEATER
Brand Name: PHILIPS
Model Name: HTS5580W/F7
Applicant: Eastech Electronics (Taiwan) Inc.
Factory: Eastech Electronics (Hui Yang) Co.LTD
Address: Dong Feng District Xinxu, Hui Yang, Guangdong, P.R. China
Date of Test: May. 05, 2010 ~ May. 31, 2010
Test Item: ENGINEERING SAMPLE
Standards: FCC Part15, Subpart C(15.249)/ ANSI C63.4 : 2003

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-FCCP-1-1004C227) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.249)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.209	Radiated Emission	PASS	
15.249	Radiated Spurious Emission	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report



2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-C03/CB03** at the location of No.3, Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China. 523792
Neutron's test firm number is 319330

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 $y \pm U$, where expanded 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-C03	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	NOTE
CB03	CISPR	30MHz ~ 200MHz	V	2.48	
		30MHz ~ 200MHz	H	2.16	
		200MHz ~ 1,000MHz	V	2.50	
		200MHz ~ 1,000MHz	H	2.66	



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	IMMERSIVE SOUND HOME THEATER	
Brand Name	PHILIPS	
Model Name.	HTS5580W/F7	
OEM Brand/Model Name	N/A	
Model Difference	N/A	
Product Description	The EUT is a IMMERSIVE SOUND HOME THEATER.	
	Product Type	Low Power Communication Device
	Operation Frequency:	5736~5814 MHz
	Modulation Type:	QPSK
	Date rate:	22Mbps
	Number Of Channel	3CH .Please see Note 2.
	Antenna Designation:	Printed antenna
	Antenna Gain(Peak)	2.0 dBi
	Output Power:	93.32 dBuV/m (AV Max.)
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Channel List	Please refer to the Note 2.	
Power Source	DC Voltage supplied from DVD System.	
Power Rating	AC 120V/60Hz	
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. The EUT will work with DVD (HTS5580:Blu-ray)/DOCK-3060/00 ,and the EUT did not include the DVD system which is just the test peripheral equipment



2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5736	2	5762	3	5814

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Printed Antenna	N/A	2.0



3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based 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.

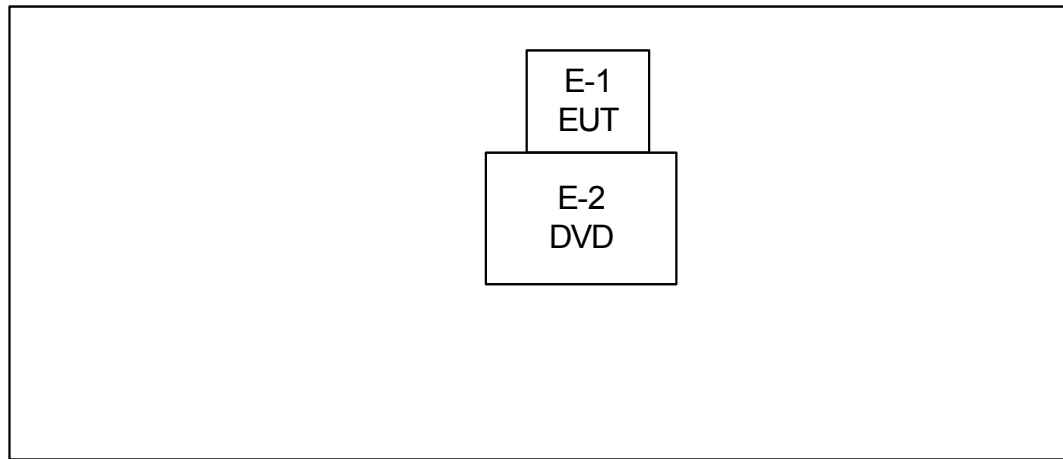
Pretest Mode	Description
Mode 1	CH Lower - 5736MHz
Mode 2	CH Middle - 5762MHz
Mode 3	CH Highest -5814MHz
Mode 4	Wireless Link

For Conducted Test	
Final Test Mode	Description
Mode 4	Wireless Link

For Radiated Test	
Final Test Mode	Description
Mode 1	CH Lower - 5736MHz
Mode 2	CH Middle - 5762MHz
Mode 3	CH Highest -5814MHz



3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED





3.4 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 ID	Series No.	Note
E-1	IMMERSIVE SOUND HOME THEATER	PHILIPS	HTS5580W/F7	RFARWSS5510	N/A	EUT
E-2	DVD	PHILIPS	HTS5580	N/A	N/A	

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 cm 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	66.00	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

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00052765	Jun.01.2010
2	LISN	Rolf Heine	NNB-2-16Z	99044	Jun.01.2010
3	50Ω Terminator	SHX	TF2-3G-A	08122901	Jun.01.2010
4	Transient Limiter	Agilent	11947A	3107A03668	Jun.01.2010
5	Test Cable	N/A	C-06_C03	N/A	Nov.16.2010
6	EMI TEST RECEIVER	R&S	ESCS30	8333641017	Jun.02.2010

Remark: " N/A" denotes No Model Name. , Serial No. or No Calibration specified.

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

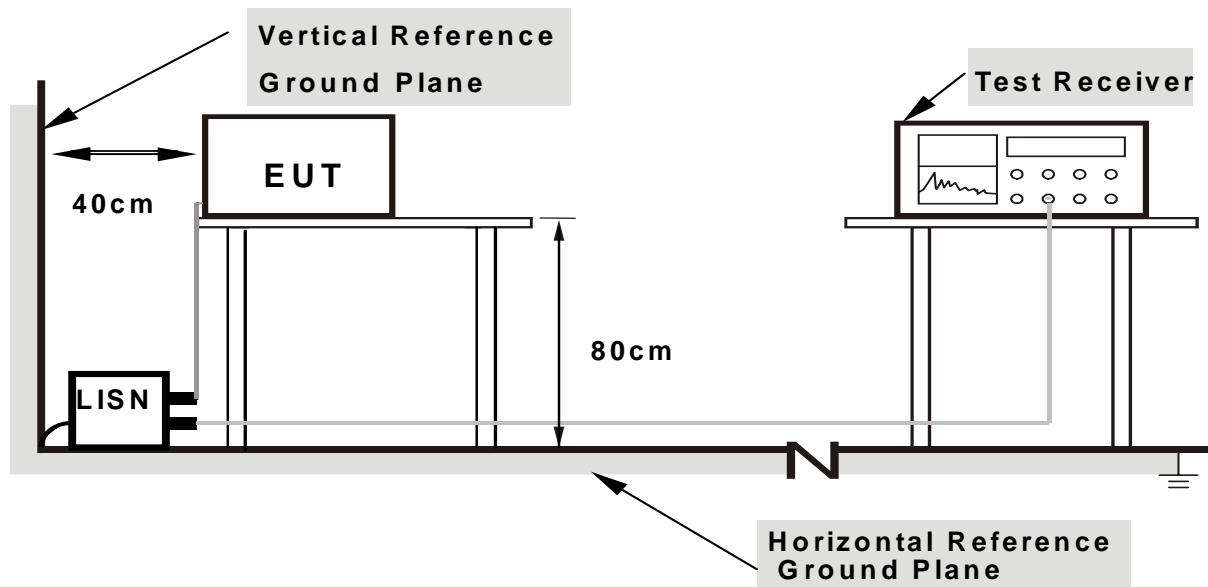
4.1.3 TEST PROCEDURE

- The EUT was placed 0.4 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- 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.



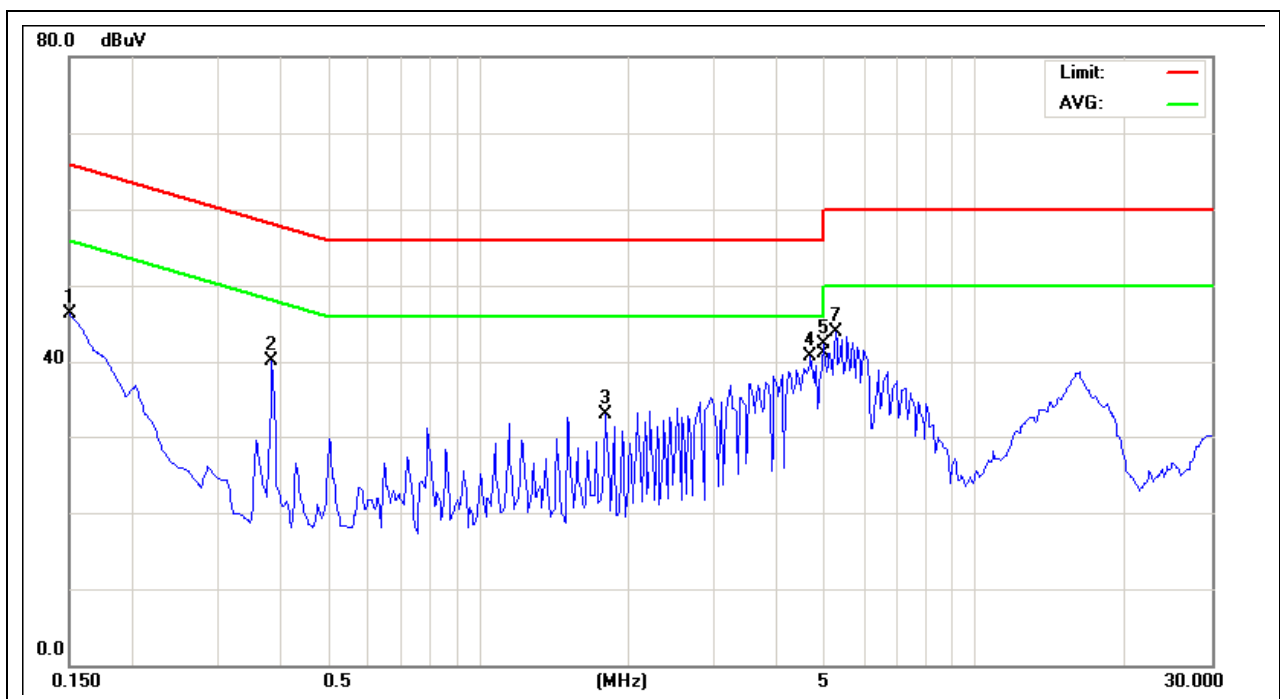
4.1.7 TEST RESULTS

E.U.T :	IMMERSIVE SOUND HOME THEATER	Model Name :	HTS5580W/F7
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	DVD PLAY		

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.15	Line	46.33	*	66.00	56.00	-19.67	(QP)
0.38	Line	40.12	*	58.19	48.19	-18.07	(QP)
1.80	Line	32.99	*	56.00	46.00	-23.01	(QP)
4.68	Line	40.66	*	56.00	46.00	-15.34	(QP)
4.97	Line	42.25	41.19	56.00	46.00	-4.81	(AV)
5.25	Line	43.87	*	60.00	50.00	-16.13	(QP)

Remark

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz . Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.3 sec./MHz .
- (2) 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 .
- (3) Measuring frequency range from 150KHz to 30MHz .



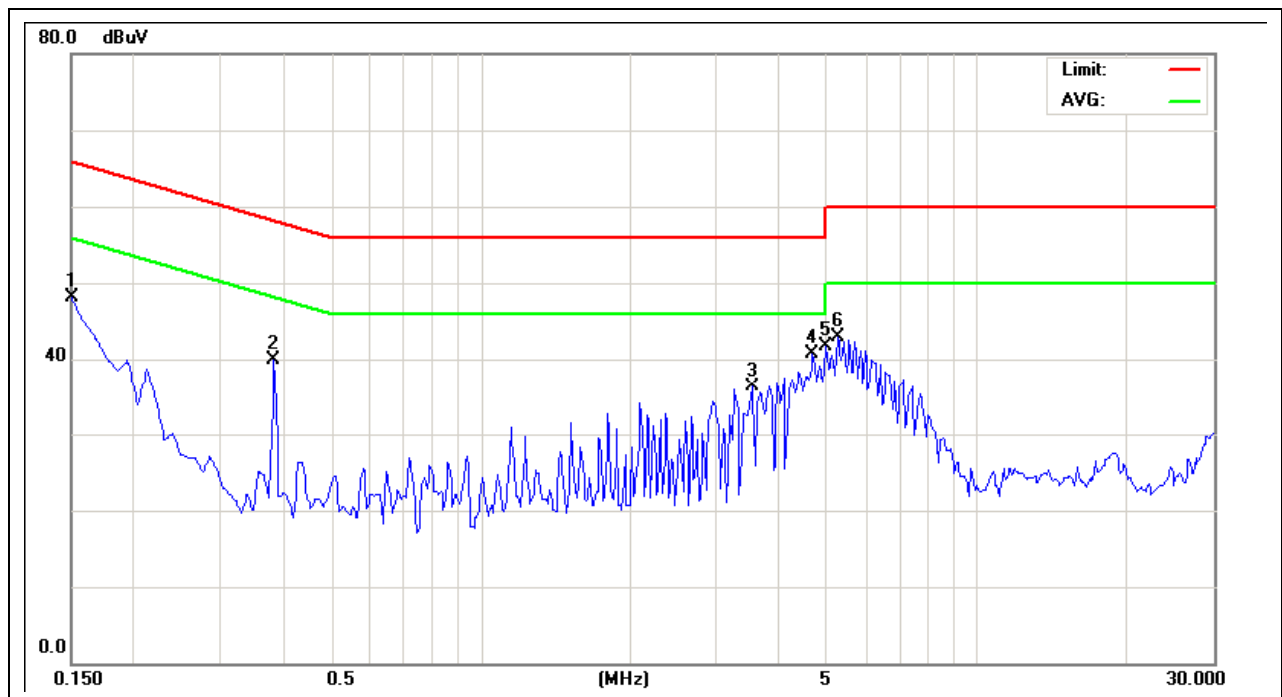


E.U.T :	IMMERSIVE SOUND HOME THEATER	Model Name :	HTS5580W/F7
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	DVD PLAY		

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.15	Neutral	48.12	*	66.00	56.00	-17.88	(QP)
0.38	Neutral	39.86	*	58.19	48.19	-18.33	(QP)
3.53	Neutral	36.34	*	56.00	46.00	-19.66	(QP)
4.69	Neutral	40.66	*	56.00	46.00	-15.34	(QP)
4.97	Neutral	41.67	*	56.00	46.00	-14.33	(QP)
5.26	Neutral	42.86	*	60.00	50.00	-17.14	(QP)

Remark

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz . Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.3 sec./MHz .
- (2) 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 .
- (3) Measuring frequency range from 150KHz to 30MHz .





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (FCC 15.209)

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

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.209)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	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).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC Part 15.249)

FCC Part15 (15.249) , Subpart C	
Limit	Frequency Range (MHz)
Field strength of fundamental 50000 μ V/m (94 dB μ V/m) @ 3 m	2400-2483.5
Field strength of harmonics 500 μ V/m (54 dB μ V/m) @ 3 m	Above 2483.5



4.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	ETS	3115	00075789	May.12.2011
2	Amplifier	Agilent	8449B	3008A02274	Jun.01.2010
3	Spectrum	Agilent	E4408B	US39240143	Nov.16.2010
4	Test Cable	HUBER+SUHNER	CB03 High Fre	N/A	May.03.2011
5	Antenna	Schwarbeck	VULB9160	9160-3232	Jun.01.2010
6	Amplifier	HP	8447D	2944A09673	Jun.01.2010
7	Test Receiver	R&S	ESCI	100895	Jun.02.2010
8	Test Cable	N/A	C-01_CB03	N/A	Jul.06.2010
9	Controller	CT	SC100	N/A	N/A

Remark: " N/A" denotes No Model Name. / Serial No. and No Calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz Note(1)
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 1 MHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

Note (1): According to FCC part 15.33(a)(1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. So the measure performed at the highest fundamental frequency of 40GHz.



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 room. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

<Frequency Range below 1GHz>

- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 1.5 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

<Frequency Range above 1GHz>

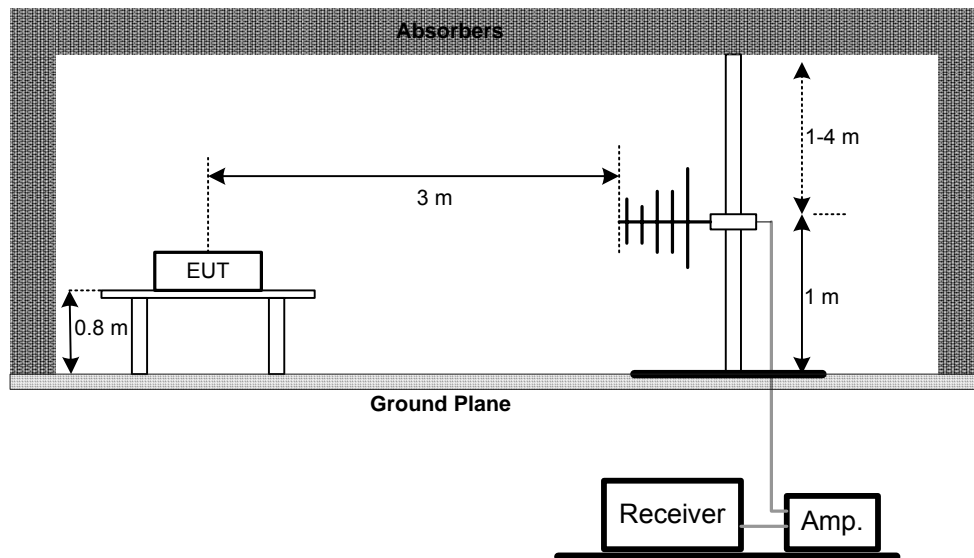
- c. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. The initial step in collecting radiated 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.
- f. 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.
- g. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.4 DEVIATION FROM TEST STANDARD

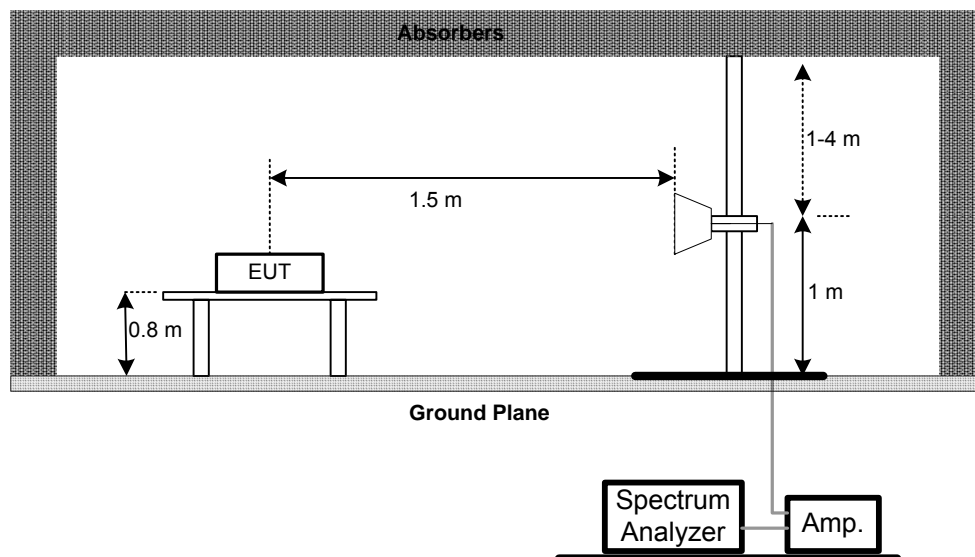
No deviation

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.



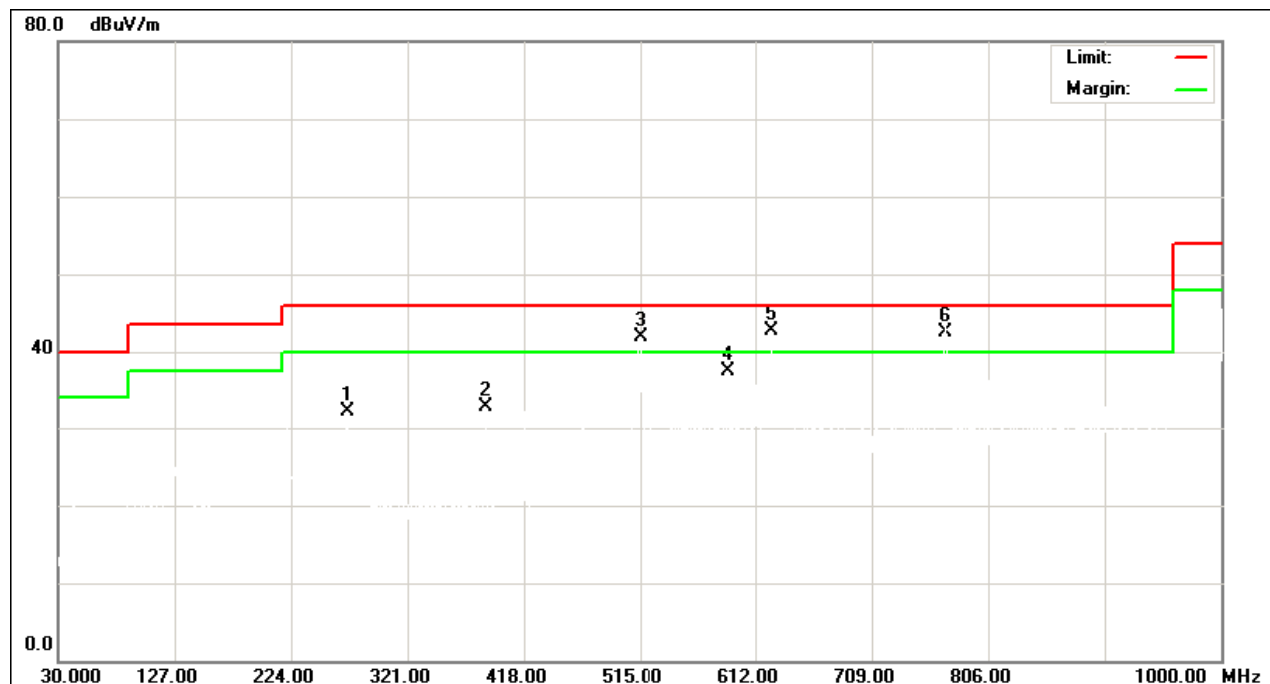
4.2.7 TEST RESULTS (BETWEEN 30 – 1000 MHz)

EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	24°C	Relative Humidity :	58 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX Mode		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
270.56	V	45.39	-13.25	32.14	46.00	- 13.86	
385.99	V	42.17	-9.53	32.64	46.00	- 13.36	
515.97	V	48.62	-6.77	41.85	46.00	- 4.15	
589.69	V	42.00	-4.53	37.47	46.00	- 8.53	
625.58	V	46.53	-3.80	42.73	46.00	- 3.27	
770.11	V	44.82	-2.29	42.53	46.00	- 3.47	(QP)

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.
- (3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP 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.



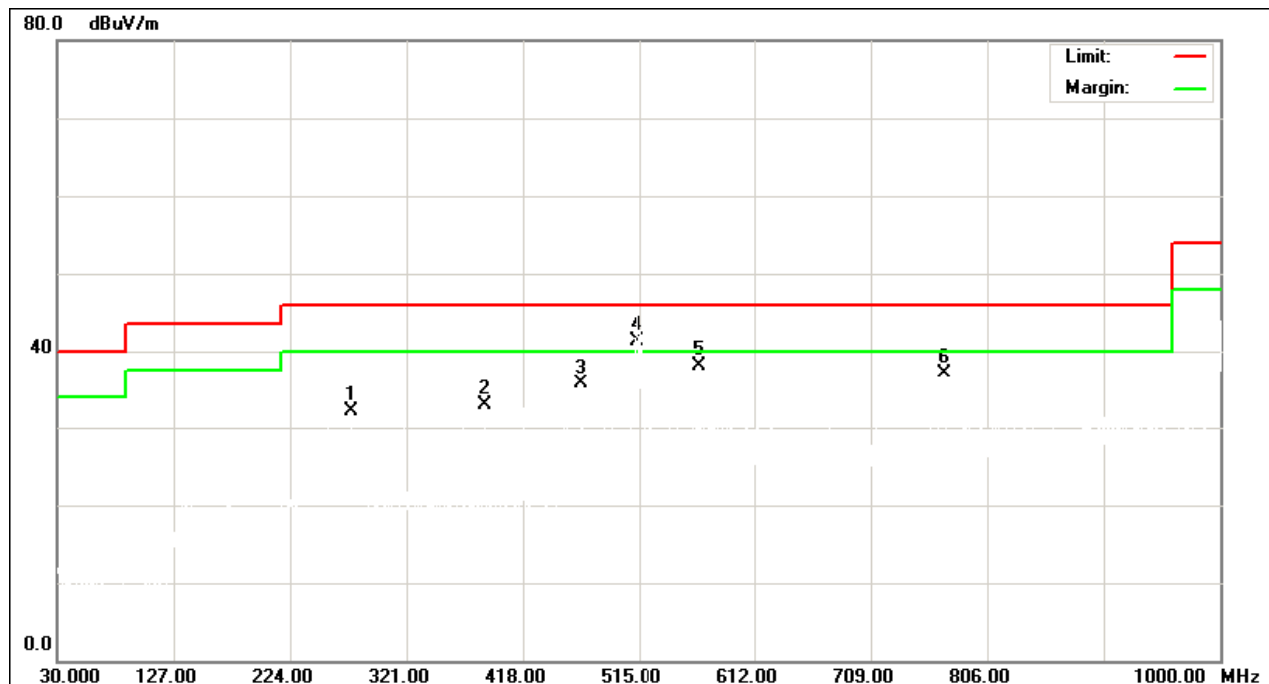


EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	24°C	Relative Humidity :	58 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX Mode		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
274.44	H	45.15	-12.99	32.16	46.00	- 13.84	
385.99	H	42.38	-9.53	32.85	46.00	- 13.15	
466.50	H	43.58	-7.87	35.71	46.00	- 10.29	
513.06	H	48.10	-6.88	41.22	46.00	- 4.78	(QP)
565.44	H	43.22	-5.11	38.11	46.00	- 7.89	
770.11	H	39.35	-2.29	37.06	46.00	- 8.94	

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.
- (3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP 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.





4.2.8 TEST RESULTS (ABOVE 1000 MHz)

EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	20°C	Relative Humidity :	51 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX 5736MHz		

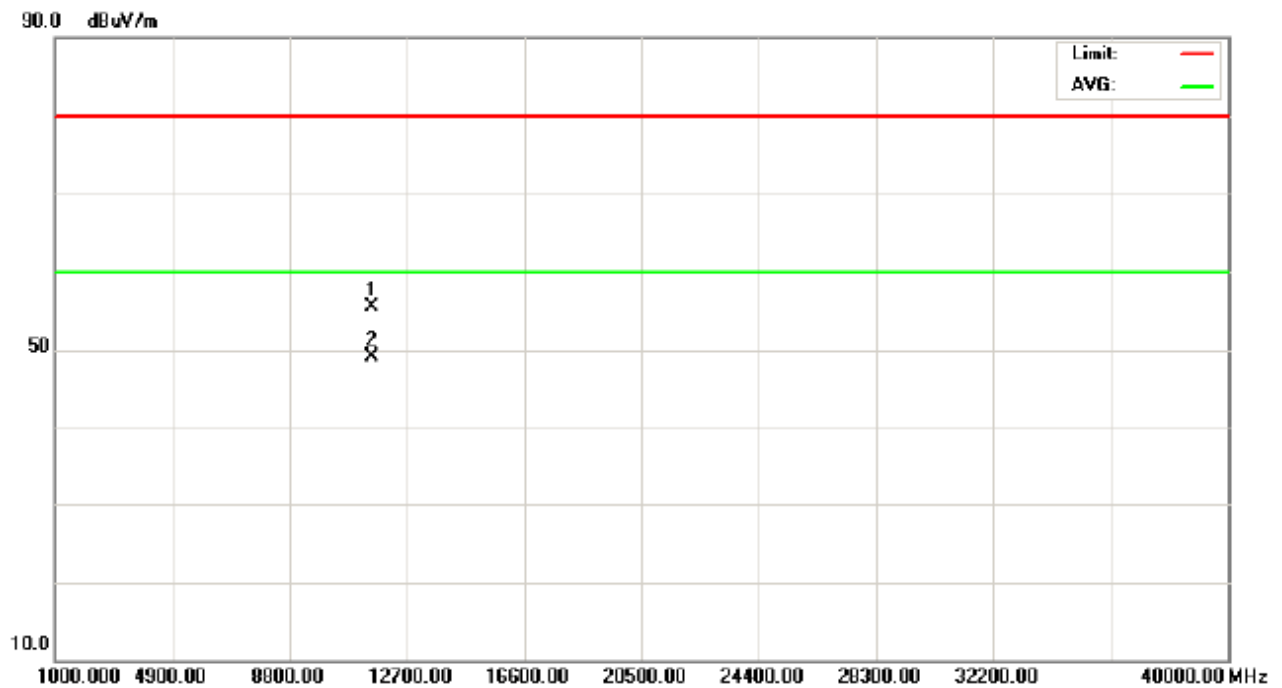
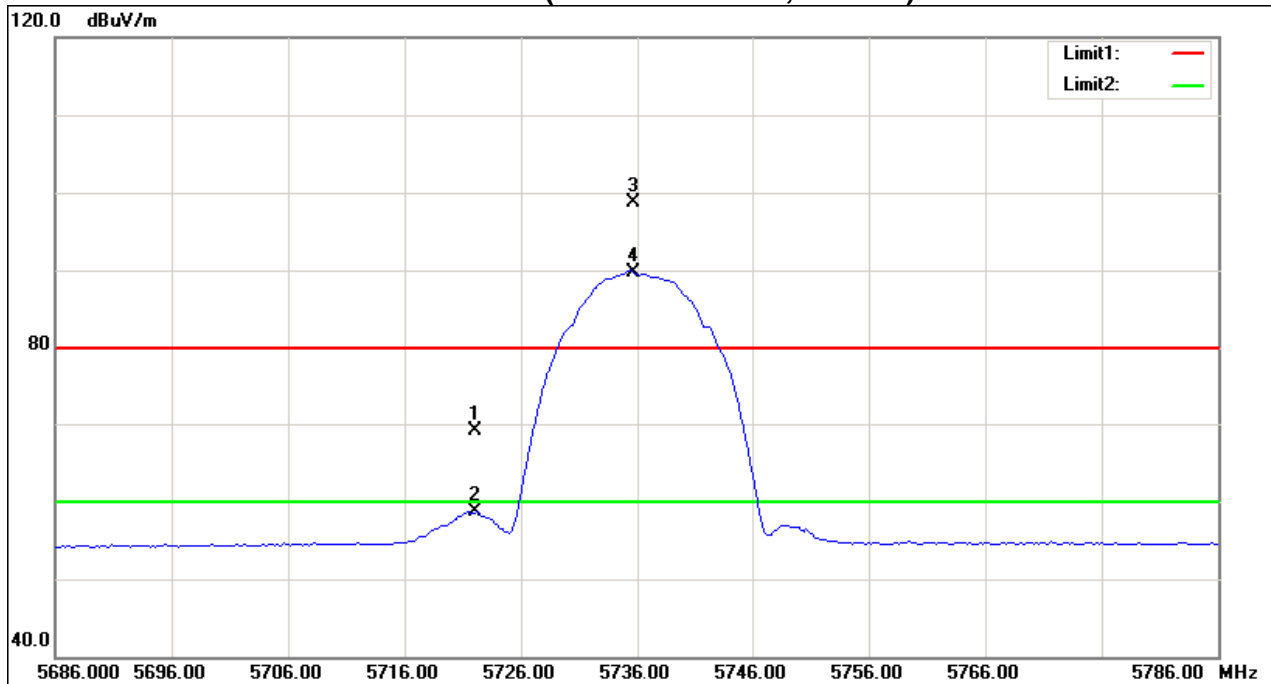
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit@1.5M		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
5722.00	V	30.06	19.58	39.09	69.15	58.67	80.00	60.00	X/E
5735.60	V	59.69	50.71	39.08	98.77	89.79	120.00	100.00	X/F
11466.00	V	42.01	35.47	13.58	55.59	49.05	80.00	60.00	X/H

Remark :

- (1) Emission level (dBuV/m) = 20 log Emission level (uV/m).
Distance extrapolation factor = 20 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.
<Frequency Range above 1GHz> Test distance is 1.5meter.
- (2) Measuring frequency range is 40GHz. "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
- (8) The amplitude of spurious emissions (3th harmonic of fundamental frequency to 40GHz) which are attenuated by more than 20 dB below the permissible value has no need to be reported.



Orthogonal Axis : X
TX 5736MHz (Above 1000 MHz, Vertical)





EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	20°C	Relative Humidity :	51 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX 5736MHz		

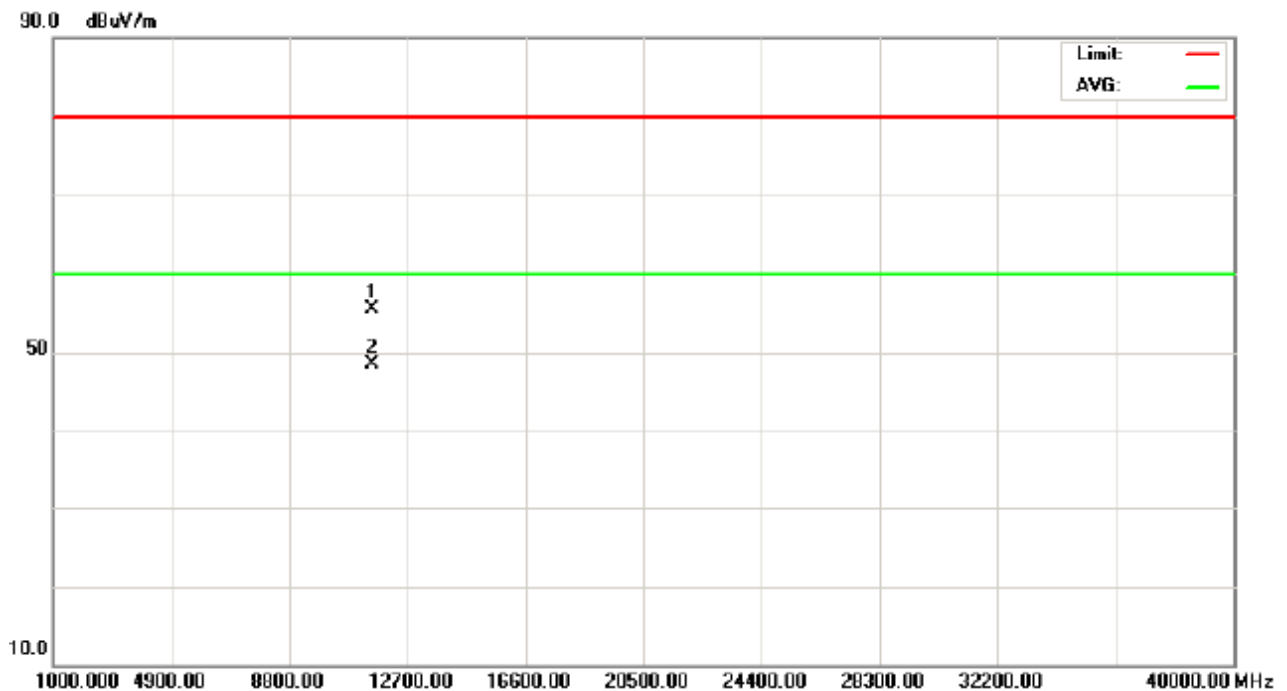
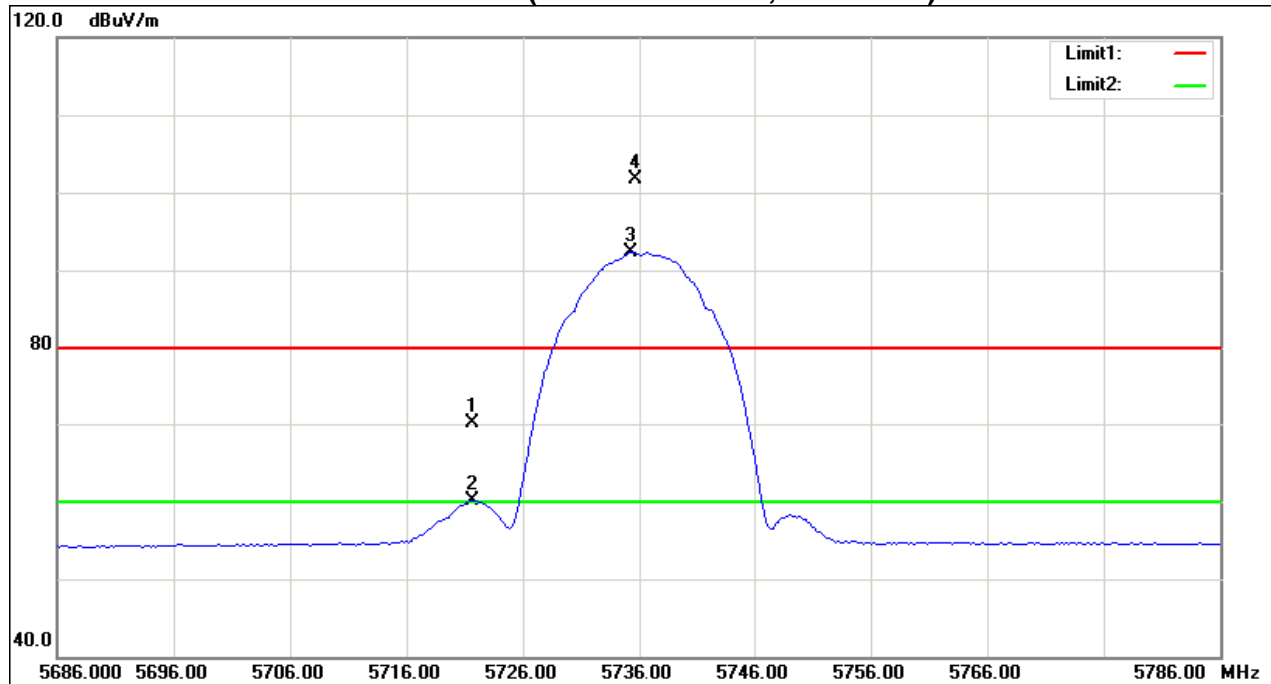
Freq. (MHz)	Ant. Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit@1.5M		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
5721.60	H	31.08	20.95	39.09	70.17	59.87	80.00	60.00	X/E
5735.20	H	62.54	53.31	39.08	101.62	92.39	120.00	100.00	X/F
11466.00	H	42.01	34.90	13.58	55.59	48.48	80.00	60.00	X/H

Remark :

- (1) Emission level (dBuV/m) = 20 log Emission level (uV/m).
Distance extrapolation factor = 20 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.
<Frequency Range above 1GHz> Test distance is 1.5meter.
- (2) Measuring frequency range is 40GHz. "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
- (8) The amplitude of spurious emissions (3th harmonic of fundamental frequency to 40GHz) which are attenuated by more than 20 dB below the permissible value has no need to be reported.



Orthogonal Axis : X
TX 5736MHz (Above 1000 MHz, Horizontal)





EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	20°C	Relative Humidity :	51 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX 5762MHz		

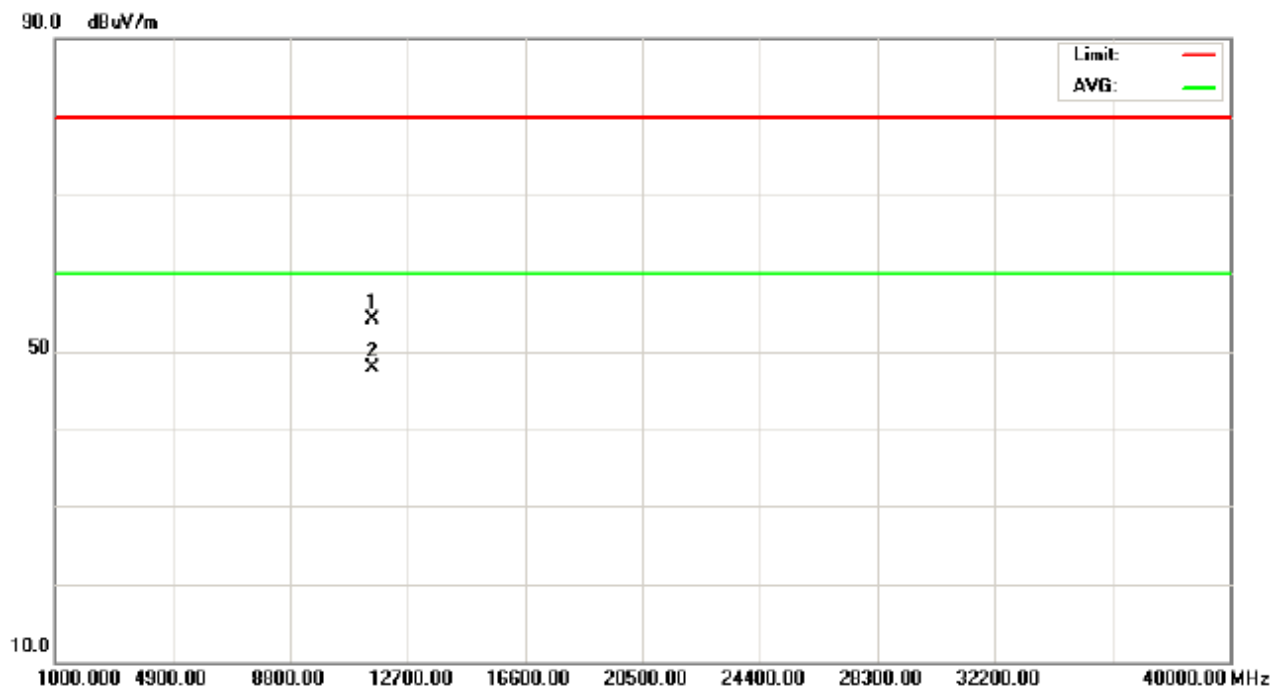
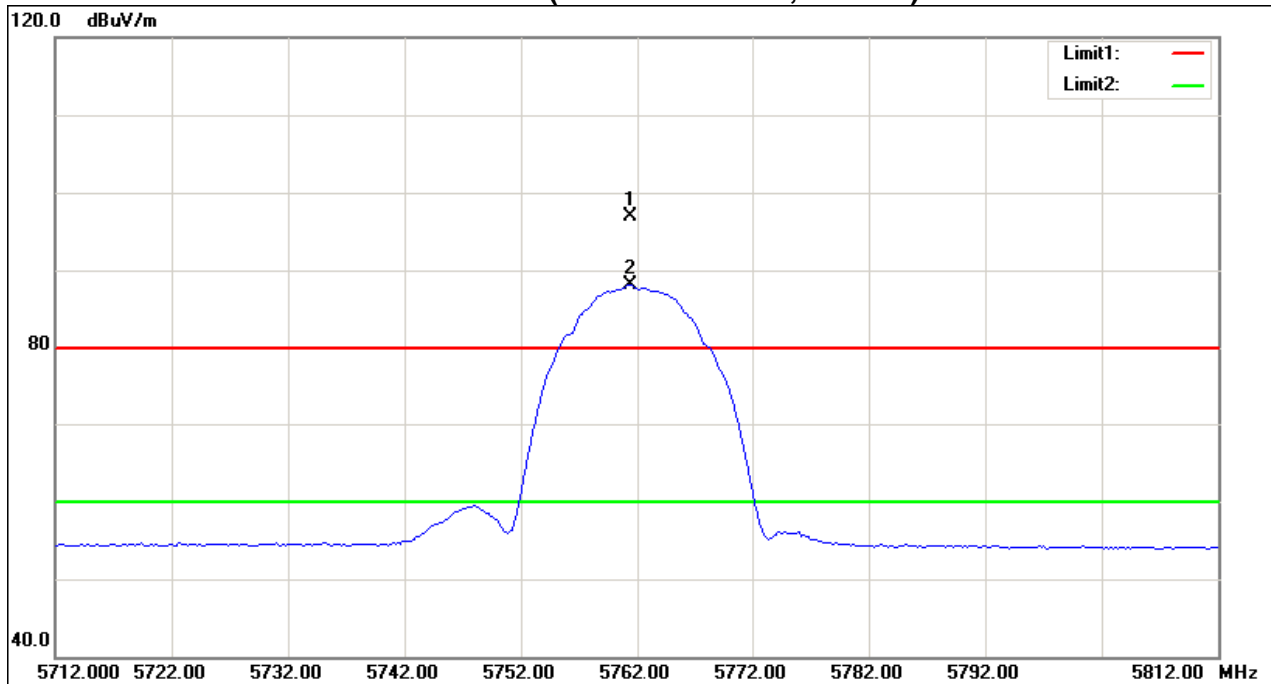
Freq. (MHz)	Ant. Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit@1.5M		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
5761.40	V	57.84	48.99	39.09	96.93	88.08	120.00	100.00	X/F
11526.00	V	40.31	35.04	13.71	54.02	48.75	80.00	60.00	X/H

Remark :

- (1) Emission level (dBuV/m) = 20 log Emission level (uV/m).
Distance extrapolation factor = 20 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.
<Frequency Range above 1GHz> Test distance is 1.5meter.
- (2) Measuring frequency range is 40GHz. "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
- (8) The amplitude of spurious emissions (3th harmonic of fundamental frequency to 40GHz) which are attenuated by more than 20 dB below the permissible value has no need to be reported.



Orthogonal Axis : X
TX 5762 MHz (Above 1000 MHz, Vertical)





EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	20°C	Relative Humidity :	51 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX 5762MHz		

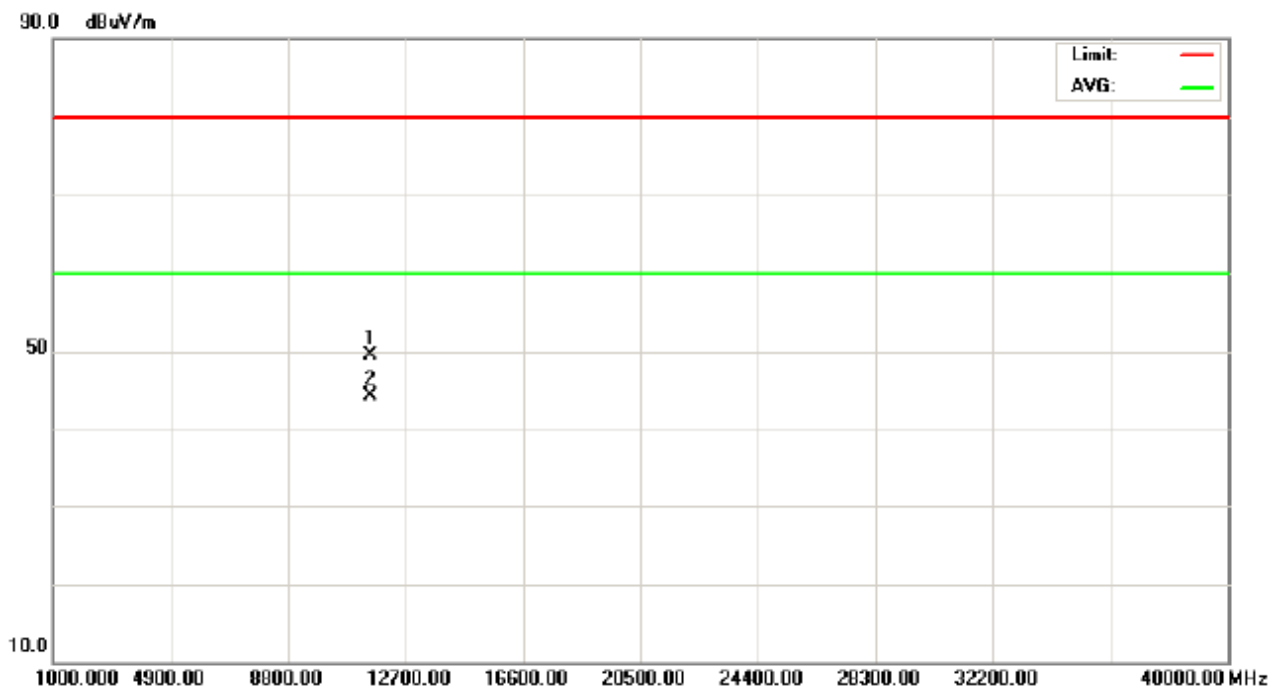
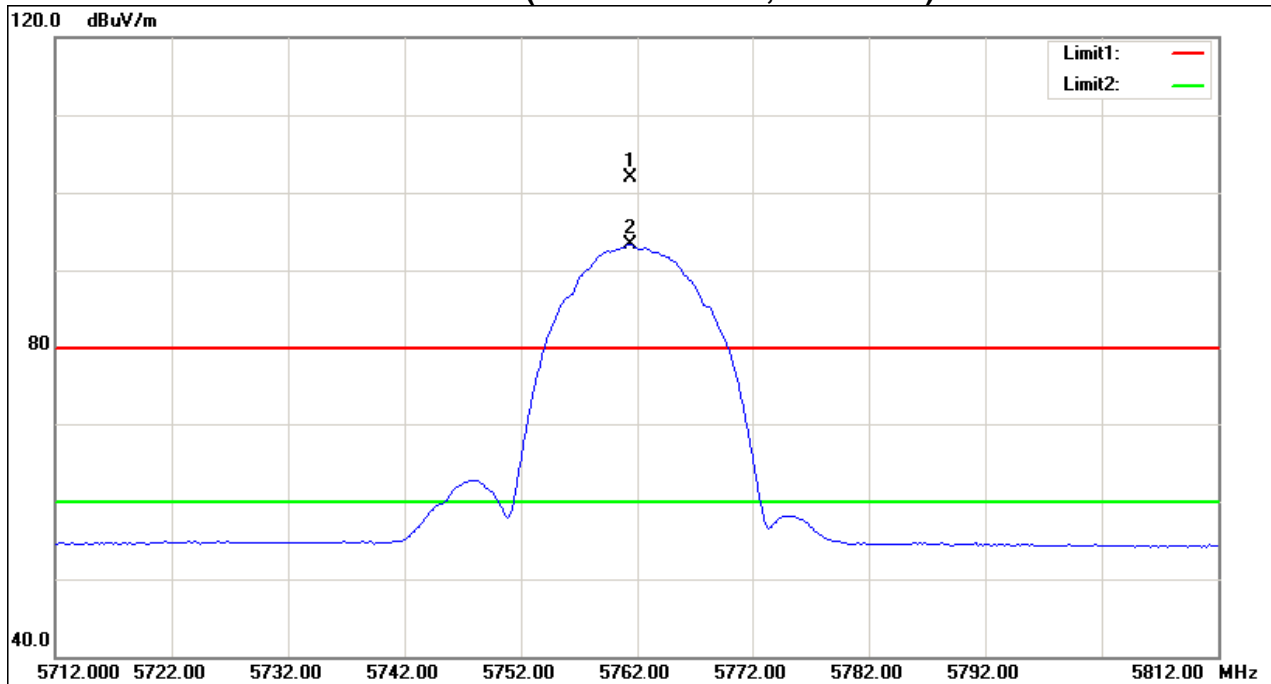
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit@1.5M		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
5761.40	H	62.86	54.23	39.09	101.95	93.32	120.00	100.00	X/F
11526.00	H	35.87	30.68	13.71	49.58	44.39	80.00	60.00	X/H

Remark :

- (1) Emission level (dBuV/m) = 20 log Emission level (uV/m).
Distance extrapolation factor = 20 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.
<Frequency Range above 1GHz> Test distance is 1.5meter.
- (2) Measuring frequency range is 40GHz. "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
- (8) The amplitude of spurious emissions (3th harmonic of fundamental frequency to 40GHz) which are attenuated by more than 20 dB below the permissible value has no need to be reported.



Orthogonal Axis : X
TX 5762MHz (Above 1000 MHz, Horizontal)





EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	20°C	Relative Humidity :	51 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX 5814MHz		

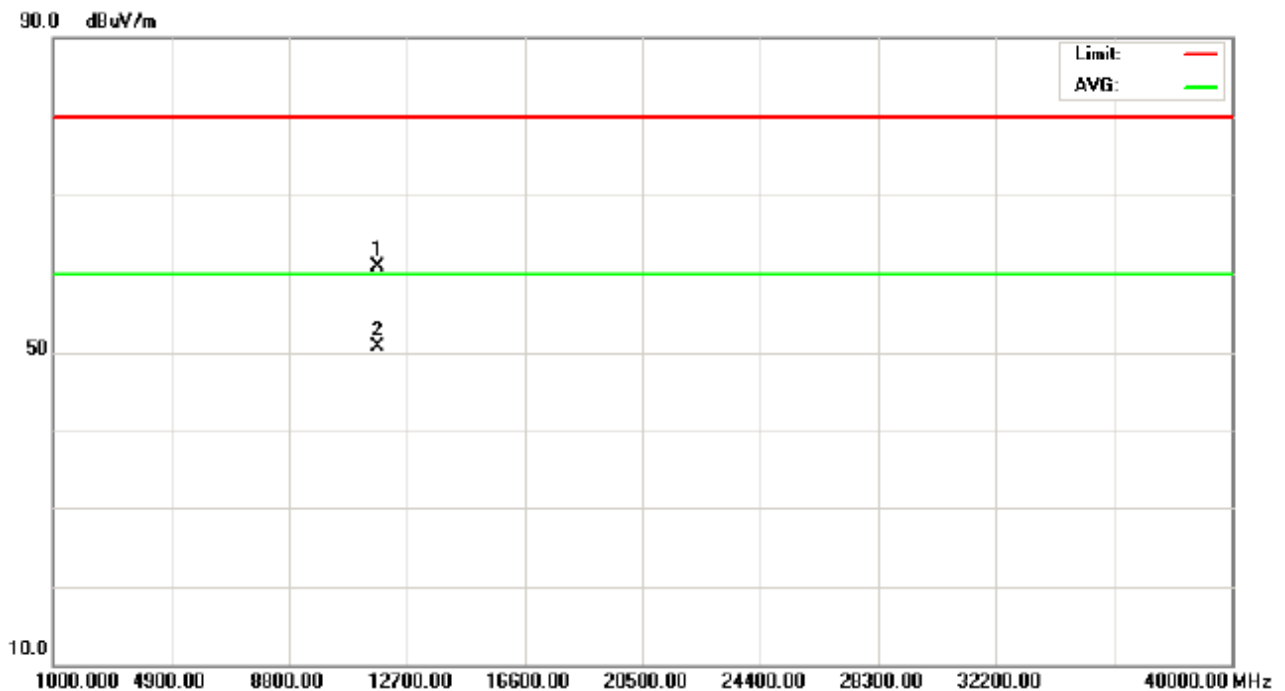
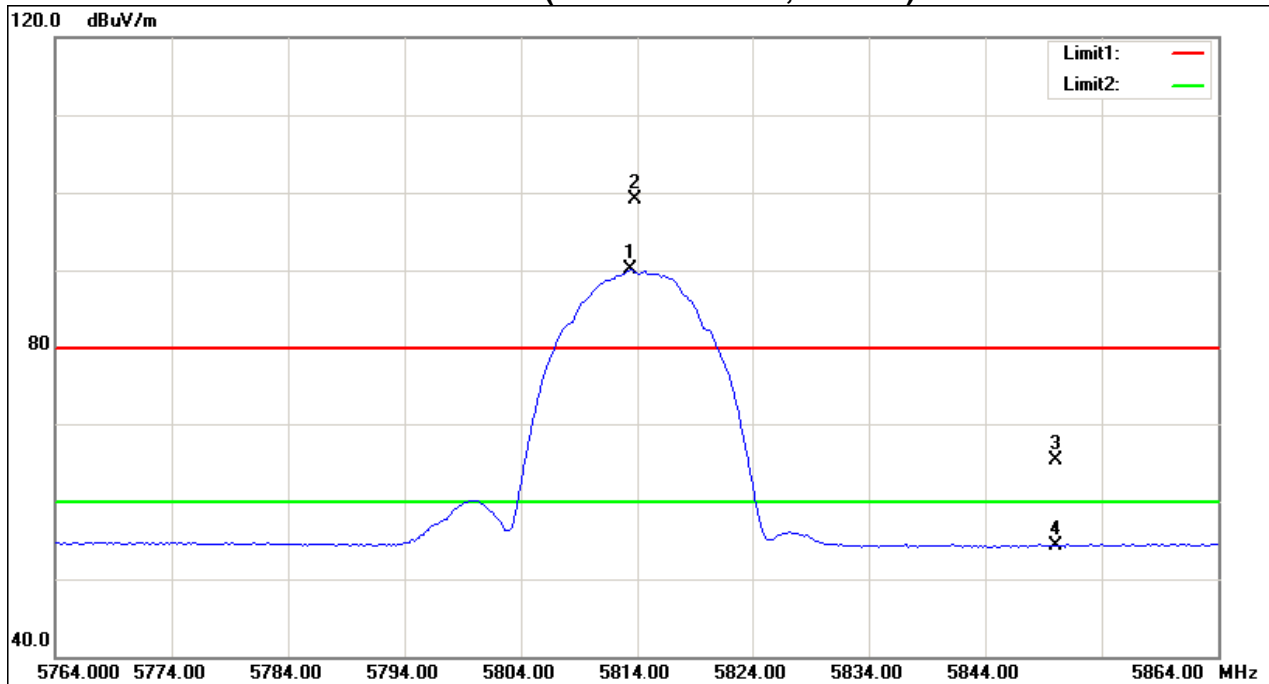
Freq. (MHz)	Ant. Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit@1.5M		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
5813.40	V	59.94	50.94	39.08	99.02	90.02	120.00	100.00	X/F
5850.00	V	26.31	15.21	39.08	65.39	54.29	80.00	60.00	X/E
11628.10	V	46.92	36.51	13.90	60.82	50.41	80.00	60.00	X/H

Remark :

- (1) Emission level (dBuV/m) = 20 log Emission level (uV/m).
Distance extrapolation factor = 20 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.
<Frequency Range above 1GHz> Test distance is 1.5meter.
- (2) Measuring frequency range is 40GHz. "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
- (8) The amplitude of spurious emissions (3th harmonic of fundamental frequency to 40GHz) which are attenuated by more than 20 dB below the permissible value has no need to be reported.



Orthogonal Axis : X
TX 5814MHz (Above 1000 MHz, Vertical)





EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	20°C	Relative Humidity :	51 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX 5814MHz		

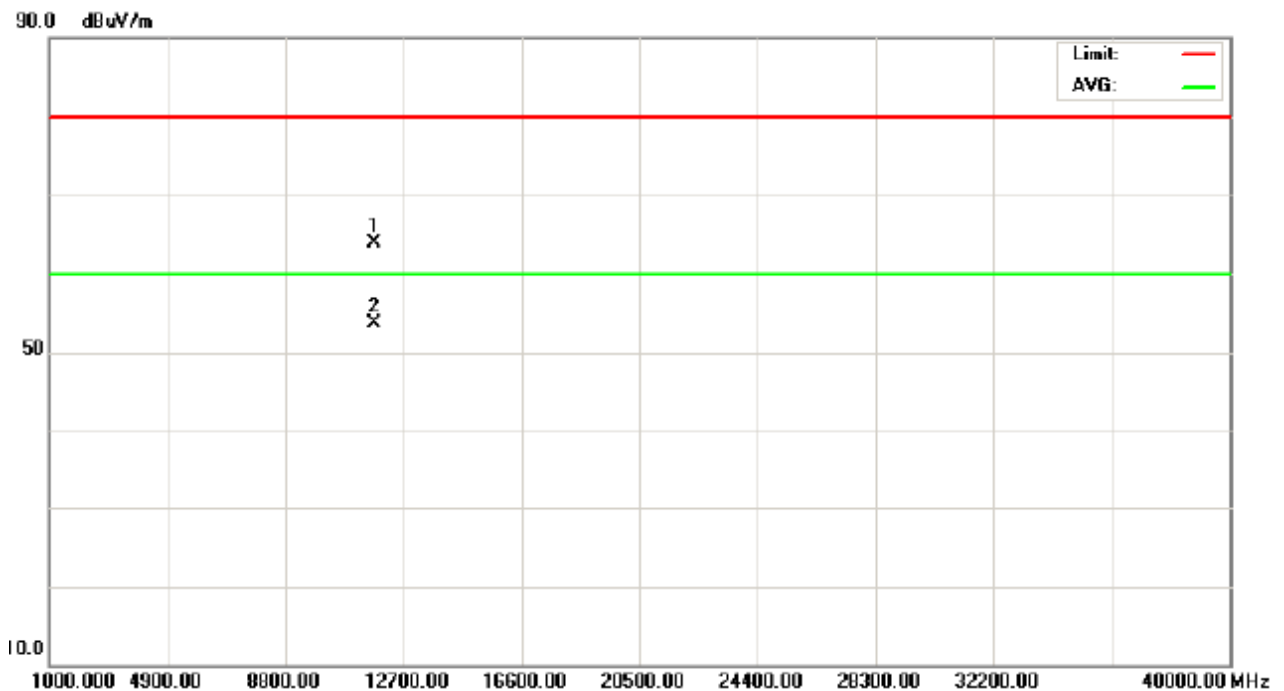
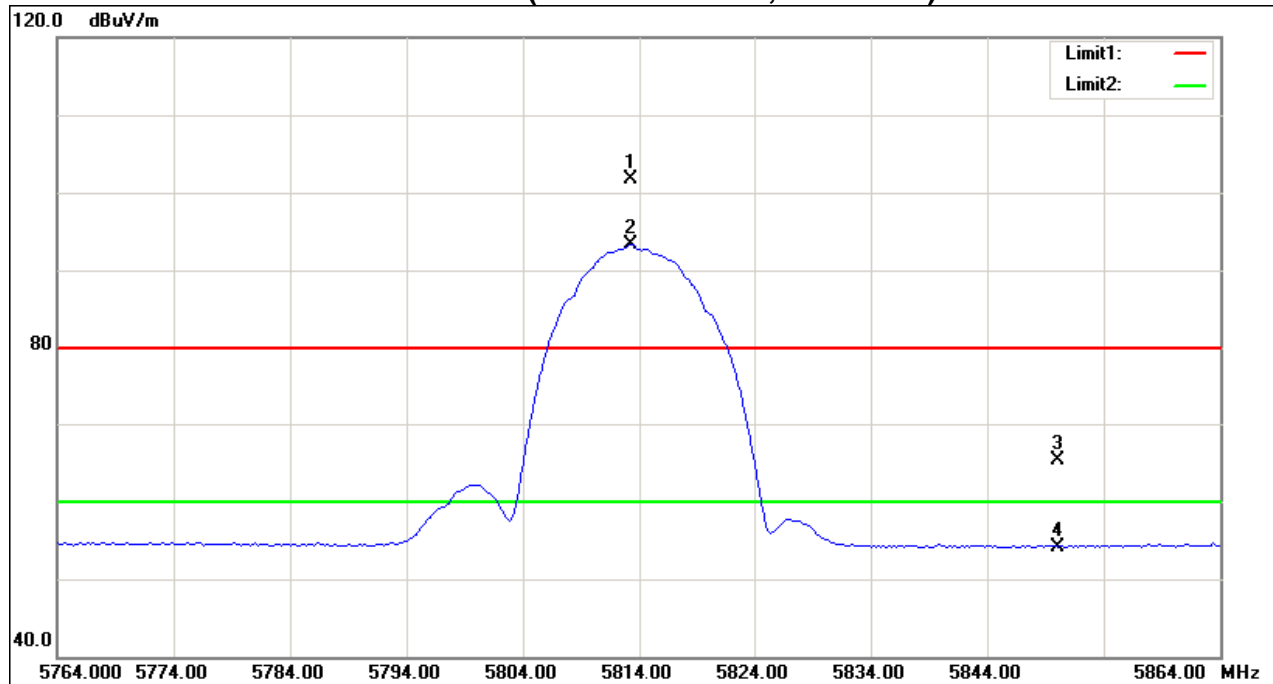
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit@1.5M		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
5813.20	H	62.72	54.22	39.08	101.80	93.30	120.00	100.00	X/F
5850.00	H	26.29	14.95	39.08	65.37	54.03	80.00	60.00	X/E
11627.90	H	50.10	39.83	13.90	64.00	53.73	80.00	60.00	X/H

Remark :

- (1) Emission level (dBuV/m) = 20 log Emission level (uV/m).
Distance extrapolation factor = 20 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.
<Frequency Range above 1GHz> Test distance is 1.5meter.
- (2) Measuring frequency range is 40GHz. "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
- (8) The amplitude of spurious emissions (3th harmonic of fundamental frequency to 40GHz) which are attenuated by more than 20 dB below the permissible value has no need to be reported.



Orthogonal Axis : X
TX 5814MHz (Above 1000 MHz, Horizontal)





4.2.9 TEST RESULTS (fundamental frequency)

EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	20°C	Relative Humidity :	51 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX CH 5736MHz/5762MHz/5814MHz		

		Peak	AV		Peak	AV	Peak	AV	
Freq.	Ant.Pol.	Reading		Ant./CL/	Actual FS		Limit@1.5M		
(MHz)	(H/V)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	NOTE
5735.60	V	59.69	50.71	39.08	98.77	89.79	120.00	100.00	CH01
5735.20	H	62.54	53.31	39.08	101.62	92.39	120.00	100.00	CH01
5761.40	V	57.84	48.99	39.09	96.93	88.08	120.00	100.00	CH02
5761.40	H	62.86	54.23	39.09	101.95	93.32	120.00	100.00	CH02
5813.40	V	59.94	50.94	39.08	99.02	90.02	120.00	100.00	CH03
5813.20	H	62.72	54.22	39.08	101.80	93.30	120.00	100.00	CH03

Remark :

- (1) Emission level (dBuV/m) = 20 log Emission level (uV/m).
Distance extrapolation factor = 20 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.
<Frequency Range above 1GHz> Test distance is 1.5meter.
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (3) 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.
- (4) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



5. BANDWIDTH TEST

5.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.27.2010

Remark: " N/A" denotes No Model Name. , Serial No. or No Calibration specified.

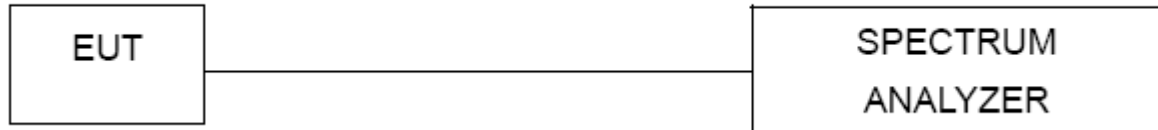
5.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = 20 ms.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

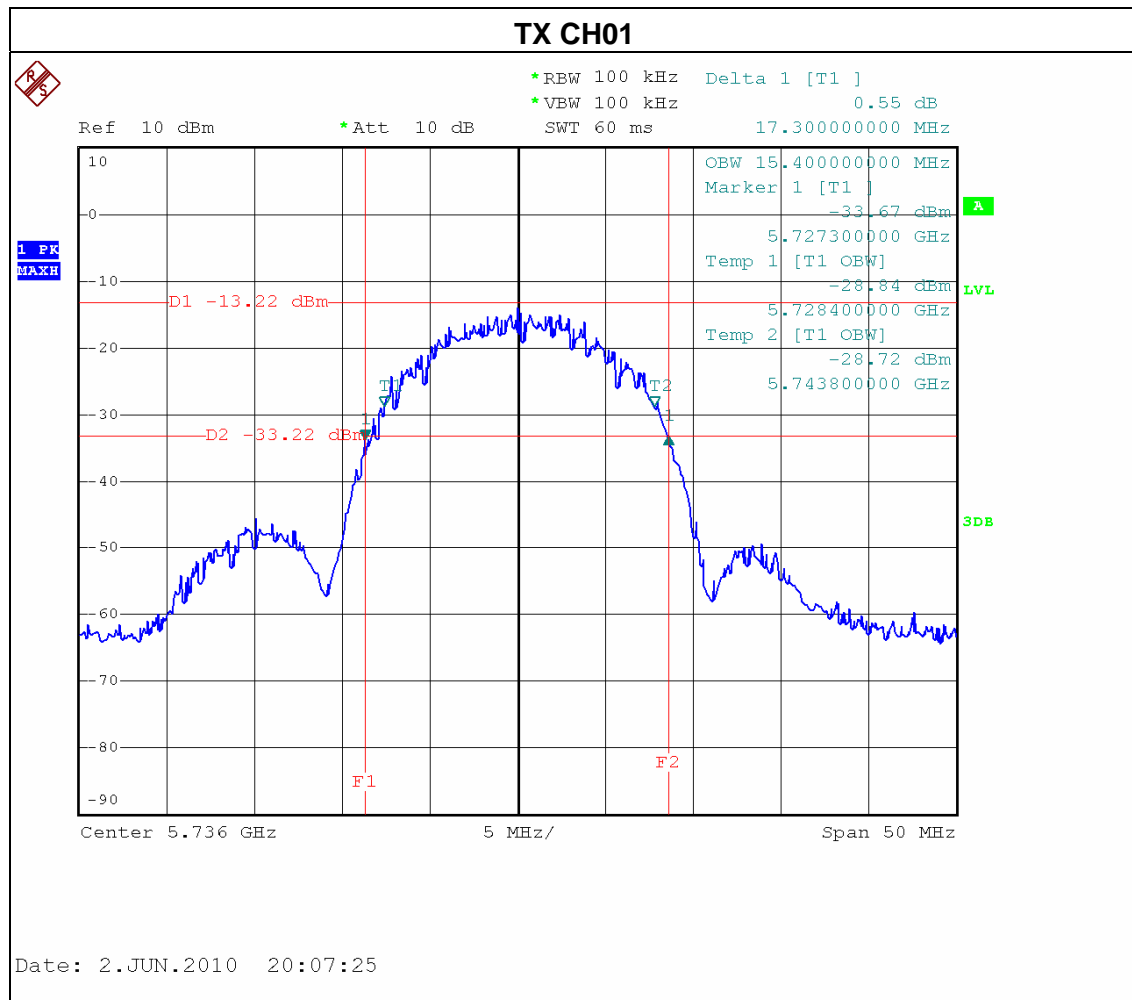
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



5.6 TEST RESULTS

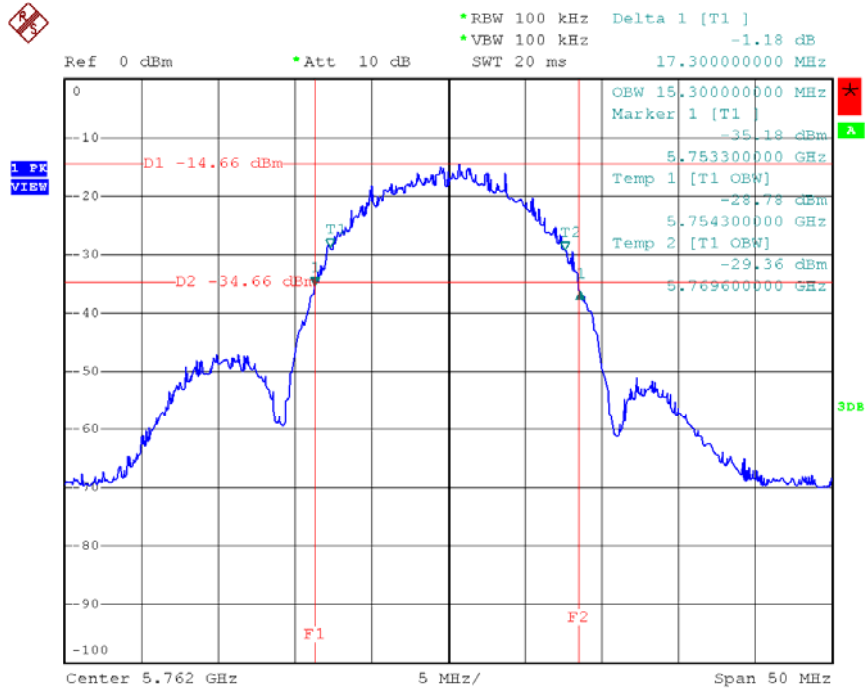
EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	24°C	Relative Humidity :	55 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX CH 01/02/03		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)	99% occupied Bandwidth(MHz)
CH01	5736	17.30	15.40
CH02	5762	17.30	15.30
CH03	5814	17.00	15.20



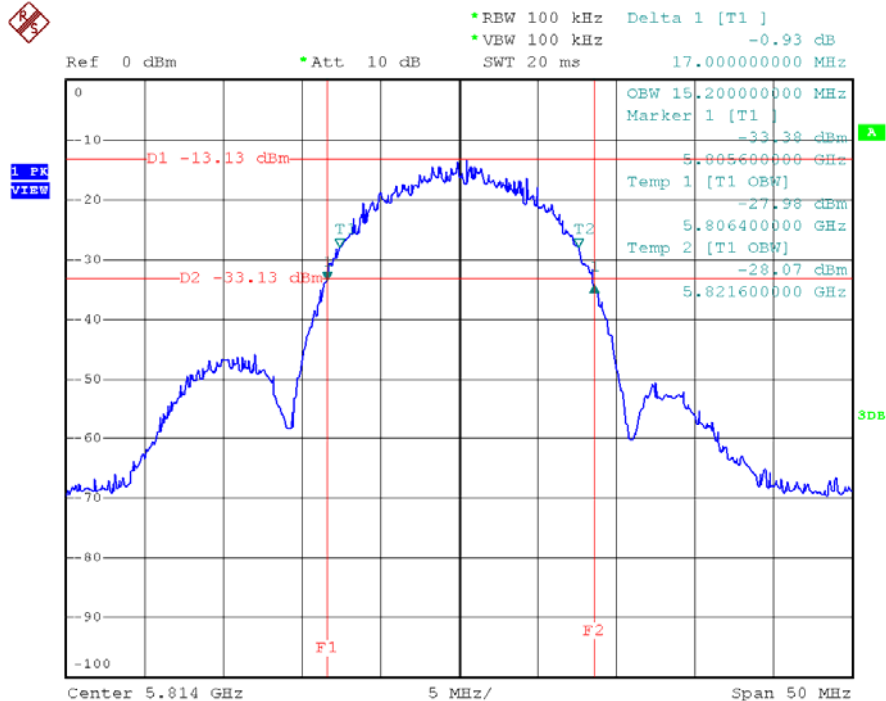


TX CH 02



Date: 2.JUN.2010 22:56:23

TX CH 03



Date: 2.JUN.2010 22:34:44



6. ANTENNA CONDUCTED SPURIOUS EMISSION

6.1 APPLIED PROCEDURES / LIMIT

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), then the 15.209(a) 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

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.27.2010

Remark: " N/A" denotes No Model Name. , Serial No. or No Calibration specified.

The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100 KHz /100 KHz for Peak

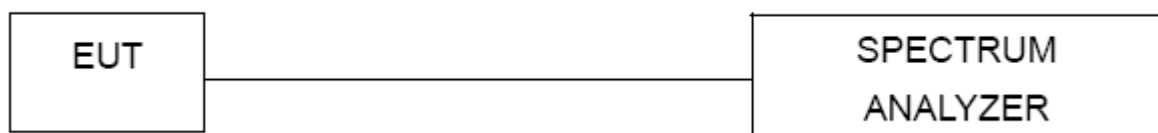
6.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.

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.

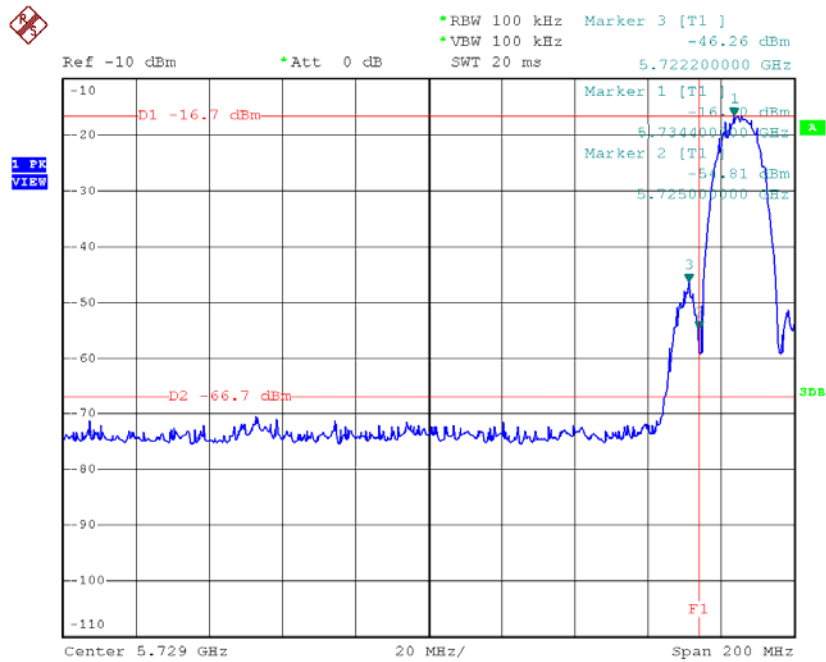
**6.1.6 TEST RESULTS**

EUT :	IMMERSIVE SOUND HOME THEATER	Model Name. :	HTS5580W/F7
Temperature :	20°C	Relative Humidity :	55 %
Pressure :	1001 hPa	Test Power :	AC 120V/60Hz
Test Mode :	TX CH01, 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)
5722.20	-46.26	5875.00	-73.92
Result			
In any 100kHz bandwidth outside the frequency band (5725~5875MHz), the radio frequency power is at least 50dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			

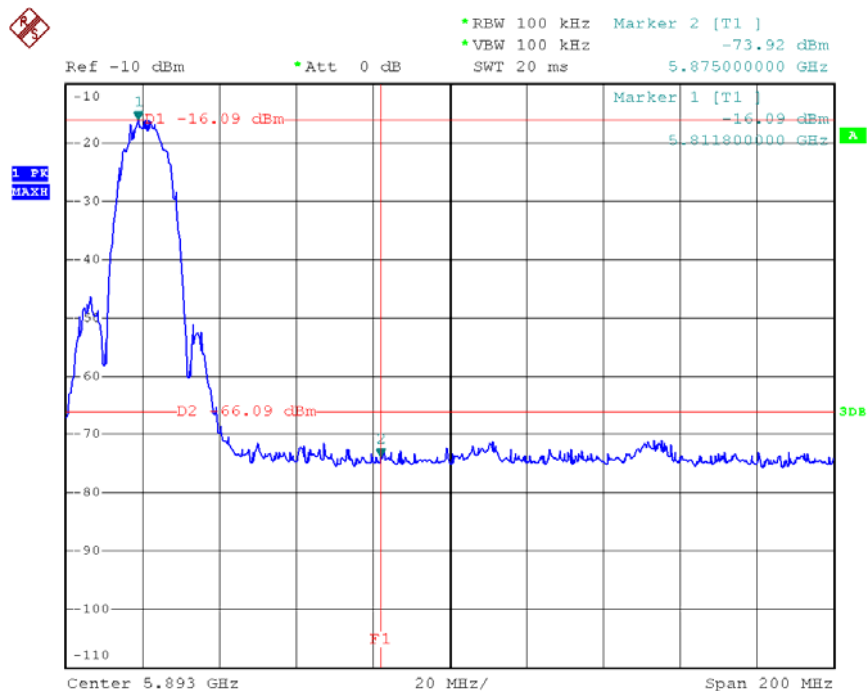


TX CH01



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TX CH03

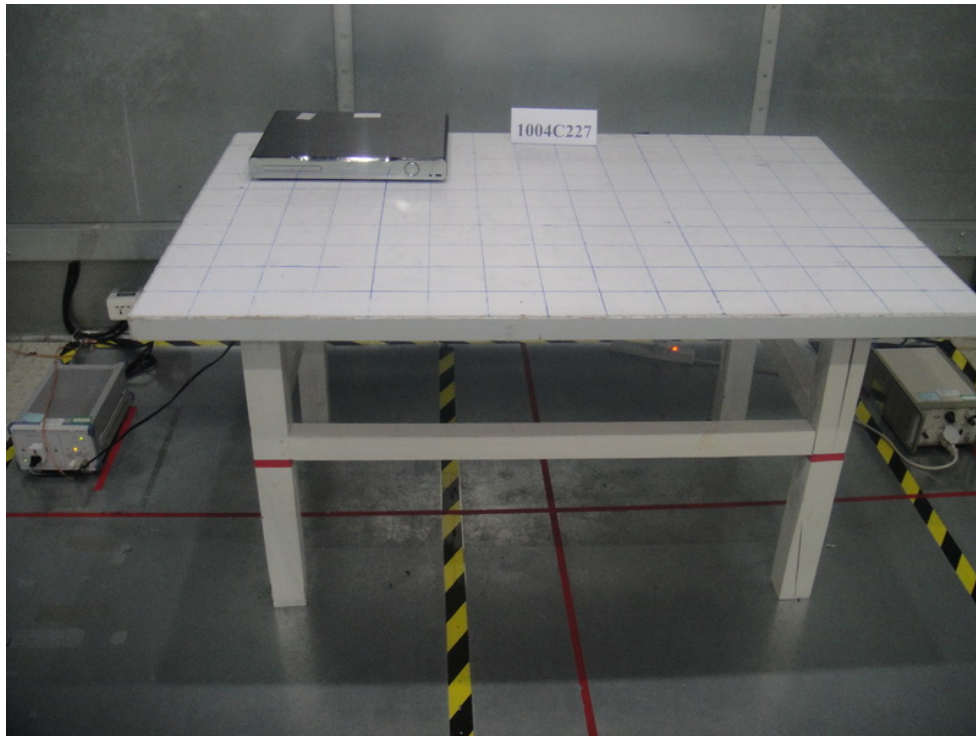


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7. EUT TEST PHOTO

Conducted Measurement Photos



Radiated Measurement Photos

