

FCC TEST REPORT
On Behalf of
Quanzhou Oway Electronics Co.,Ltd
Digital Satellite Receiver
Model No.: EX-5500
Additional Model No.: 5000, 5300fta, 9500, DVB-S FTA

Prepared for : Quanzhou Oway Electronics Co.,Ltd
Address : No.1137, Jiangnan High-Tech Electronic Information Industrial
Zone, Licheng, Fujian, China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : 1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd.,
Bao'an District, Shenzhen, Guangdong, China

Date of receipt of test sample : March 14, 2013
Number of tested samples : 1
Serial number : Prototype
Date of Test : March 14, 2013 - March 26, 2013
Date of Report : March 26, 2013

FCC TEST REPORT
FCC CFR 47 PART 15 Subpart B

Report Reference No. : LCS130314259TF

Date Of Issue : March 26, 2013

Testing Laboratory Name..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

**Address : 1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd.,
Bao'an District, Shenzhen, Guangdong, China**

**Testing Location/ Procedure : Full application of Harmonised standards ☒
Partial application of Harmonised standards ☐
Other standard testing method ☐**

Applicant's Name : Quanzhou Oway Electronics Co.,Ltd

**Address : No.1137, Jiangnan High-Tech Electronic Information Industrial
Zone, Licheng, Fujian, China**

Test Specification

Standard..... : FCC CFR 47 PART 15 Subpart B, ANSI C63.4-2009

Test Report Form No..... : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF..... : Dated 2011-03

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Test Item Description..... : Digital Satellite Receiver

Trade Mark : Sunstar

Model/ Type Reference : EX-5500

Ratings..... : AC 100V-240V, 50/60Hz, 0.15A, 9W

Result : Positive

Compiled by:

Ada Liang

Ada Liang/ File administrators

Supervised by:

Fox Zhang

Fox Zhang/ Technique principal

Approved by:

Gavin Liang

Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS130314259TFMarch 26, 2013

Date of issue

Type / Model..... : EX-5500

EUT..... : Digital Satellite Receiver

Applicant..... : Quanzhou Oway Electronics Co.,LtdAddress..... : No.1137, Jiangnan High-Tech Electronic Information
Industrial Zone, Licheng, Fujian, China

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Test Result according to the standards on page 5: **Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC CFR 47 PART 15 Subpart B	Class B	PASS
Radiated disturbance	FCC CFR 47 PART 15 Subpart B	Class B	PASS
Antenna Power (30 MHz to 960 MHz)	FCC CFR 47 PART 15 Subpart B Section 15.111	----	PASS
Output Signal Level	FCC CFR 47 PART 15 Subpart B Section 15.115 (b)(1)	----	PASS
Output Terminal Conducted Spurious Emission	FCC CFR 47 PART 15 Subpart B Section 15.115 (b)(2)	----	PASS
Antenna Transfer Switch	FCC CFR 47 PART 15 Subpart B Section 15.115 (C)(1)	----	PASS
N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Digital Satellite Receiver

Model Number : EX-5500

Power Supply : AC 100V-240V, 50/60Hz, 0.15A, 9W

2.2. Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, June 04, 2010
The Certificate Registration Number. is L4595.
Accredited by FCC, July 14, 2011
The Certificate Registration Number. is 899208.
Accredited by Industry Canada, May. 02, 2011
The Certificate Registration Number. is 9642A-1
Accredited by VCCI, Japan January 30, 2012
The Certificate Registration Number. is C-4260 and R-3804

2.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Radiation Uncertainty :	30MHz~200MHz	$\pm 2.96\text{dB}$	(1)
	200MHz~1000MHz	$\pm 3.10\text{dB}$	(1)
	1GHz~26.5GHz	$\pm 4.10\text{dB}$	(1)
Conduction Uncertainty :	150kHz~30MHz	$\pm 1.63\text{dB}$	(1)
Power disturbance :	30MHz~300MHz	$\pm 1.60\text{dB}$	(1)

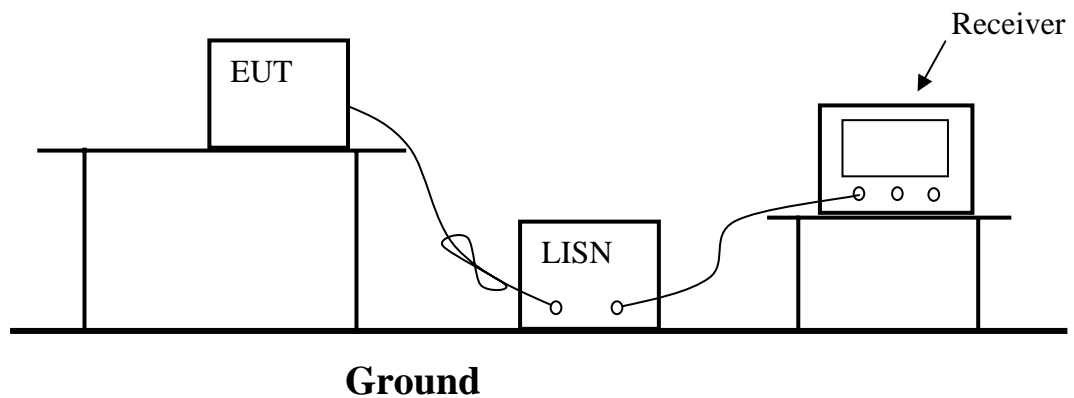
(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

3. POWER LINE CONDUCTED MEASUREMENT

3.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2012/06/18	2013/06/17
2	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2012/06/18	2013/06/17
3	Artificial Mains	ROHDE & SCHWARZ	ENV216	101288	2012/06/18	2013/06/17
4	TVB593v2.2_Active Mixer	TELEVIEW	TVB593/S/S2	23.36.20.11.09. 00.00.13	2012/05/16	2013/05/15

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Measurement Limits (Class B)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 ~ 0.50	66-56	56-46
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turn on the power of all equipment.

3.5.3. Let the EUT work in test mode (ON) and measure it.

3.6. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC/ANSI C63.4-2009 on Conducted Emission Measurement.

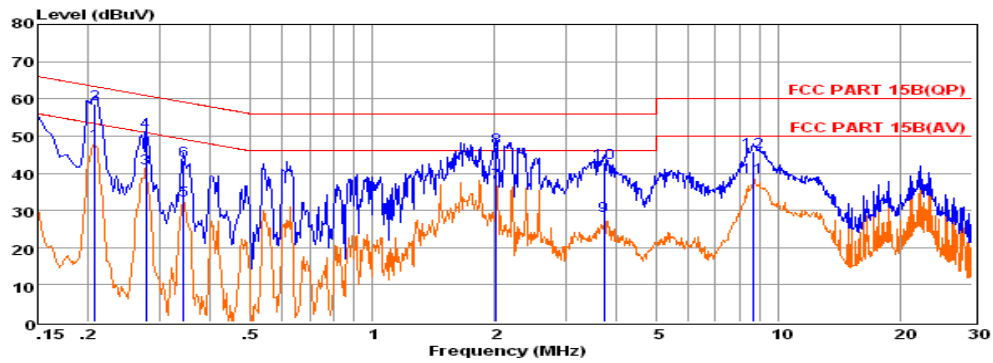
The bandwidth of test receiver is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.7. Power Line Conducted Emission Measurement Results

PASS.

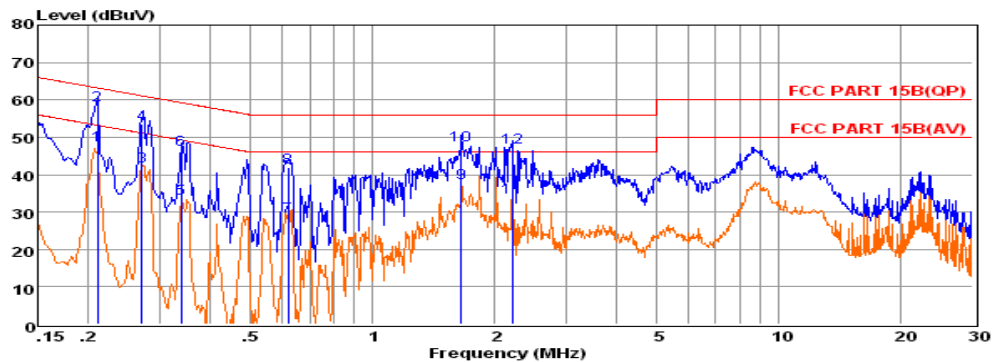
All the scanning waveforms for Conducted Emission Measurement are refer to the next page.



Env. Ins: 24*/56%
 EUT: Digital Satellite Receiver
 M/N: EX-5500
 Power Rating: AC 120V/60Hz
 Test Mode: On
 Operator: DANNY
 Memo:
 Pol: NEUTRAL

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.21	38.46	9.59	0.03	48.08	53.32	-5.24	Average
2	0.21	48.94	9.59	0.03	58.56	63.32	-4.76	QP
3	0.28	31.73	9.60	0.03	41.36	50.90	-9.54	Average
4	0.28	41.64	9.60	0.03	51.27	60.90	-9.63	QP
5	0.34	23.10	9.61	0.03	32.74	49.13	-16.39	Average
6	0.34	33.73	9.61	0.03	43.37	59.13	-15.76	QP
7	2.02	27.82	9.63	0.05	37.50	46.00	-8.50	Average
8	2.02	37.28	9.63	0.05	46.96	56.00	-9.04	QP
9	3.72	18.82	9.65	0.06	28.53	46.00	-17.47	Average
10	3.72	33.15	9.65	0.06	42.86	56.00	-13.14	QP
11	8.64	29.02	9.71	0.08	38.81	50.00	-11.19	Average
12	8.64	36.11	9.71	0.08	45.90	60.00	-14.10	QP

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
 2. The emission levels that are 20dB below the official limit are not reported.



Env. Ins: 24*/56%
 EUT: Digital Satellite Receiver
 M/N: EX-5500
 Power Rating: AC 120V/60Hz
 Test Mode: On
 Operator: DANNY
 Memo:
 Pol: LINE

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.21	38.20	9.63	0.03	47.86	53.18	-5.32	Average
2	0.21	48.82	9.63	0.03	58.48	63.18	-4.70	QP
3	0.27	32.57	9.63	0.03	42.23	51.12	-8.89	Average
4	0.27	43.72	9.63	0.03	53.38	61.12	-7.74	QP
5	0.34	23.95	9.62	0.03	33.60	49.27	-15.67	Average
6	0.34	36.91	9.62	0.03	46.56	59.27	-12.71	QP
7	0.62	19.19	9.63	0.04	28.86	46.00	-17.14	Average
8	0.62	32.32	9.63	0.04	41.99	56.00	-14.01	QP
9	1.65	28.20	9.64	0.05	37.89	46.00	-8.11	Average
10	1.65	38.20	9.64	0.05	47.89	56.00	-8.11	QP
11	2.21	24.10	9.64	0.05	33.79	46.00	-12.21	Average
12	2.21	37.49	9.64	0.05	47.18	56.00	-8.82	QP

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
 2. The emission levels that are 20dB below the official limit are not reported.

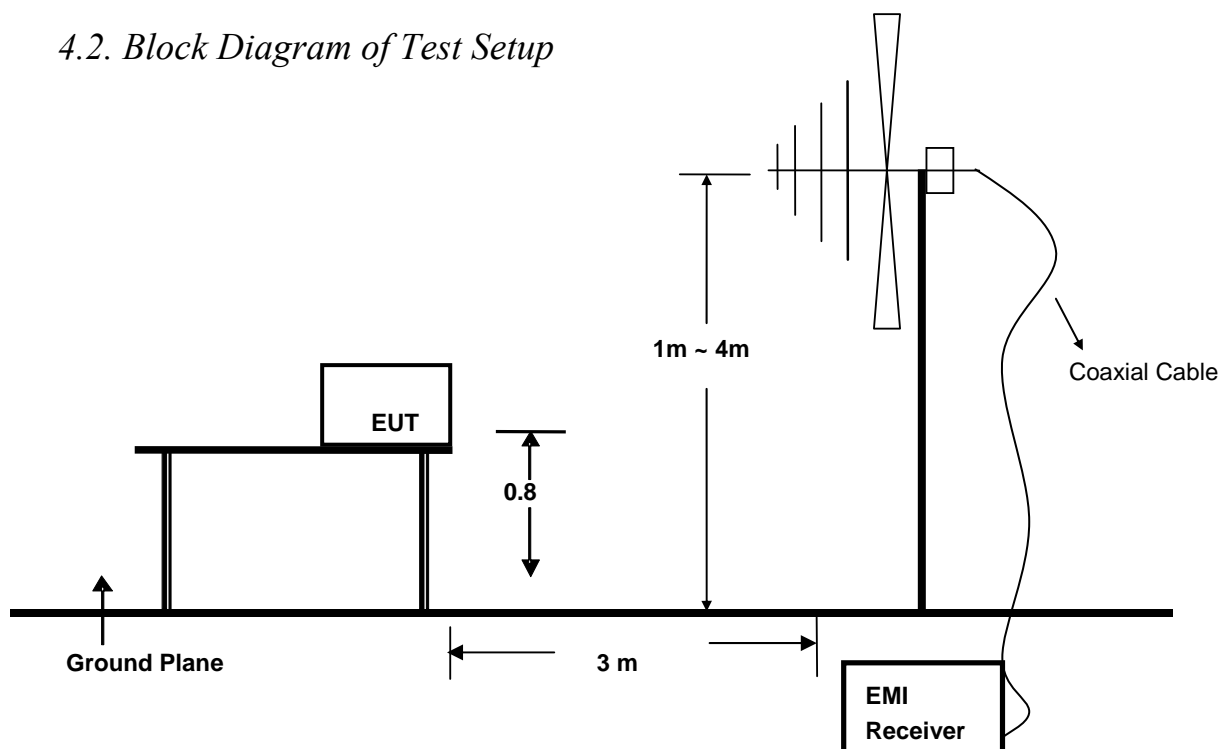
Remark: Pre-scan all mode then record worst TV Mode (Channel 4) result.

4. RADIATED EMISSION MEASUREMENT

4.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2012/06/18	2013/06/17
2	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2012/06/18	2013/06/17
3	Log per Antenna	ROHDE & SCHWARZ	VULB9163	9163-470	2012/06/18	2013/06/17
4	Spectrum Analyzer	Agilent	E4407B	MY41440754	2012/06/18	2013/06/17
5	Horn Antenna	ETS.LINDGREN	3115	00034771	2012/06/18	2013/06/17
6	TVB593v2.2_Active Mixer	TELEVIEW	TVB593/S/S 2	23.36.20.11.0 9.00.00.13	2012/05/16	2013/05/15
7	Signal analyzer	Agilent	E4448B	MY41440292	2012/06/15	2013/06/14

4.2. Block Diagram of Test Setup



4.3. Radiated Emission Limit (Class B)

Limits for radiated disturbance Blow 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54

Remark : (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V}/\text{m}$

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Limits for radiated disturbance Above 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT	
		Average Limit (dB μ V/m)	Peak Limit (dB μ V/m)
1000-5000	3	54	74

Note: The lower limit applies at the transition frequency.

4.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown in Section 4.2.

4.5.2. Let the EUT work in test mode (on) and measure it.

4.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009 on radiated emission measurement.

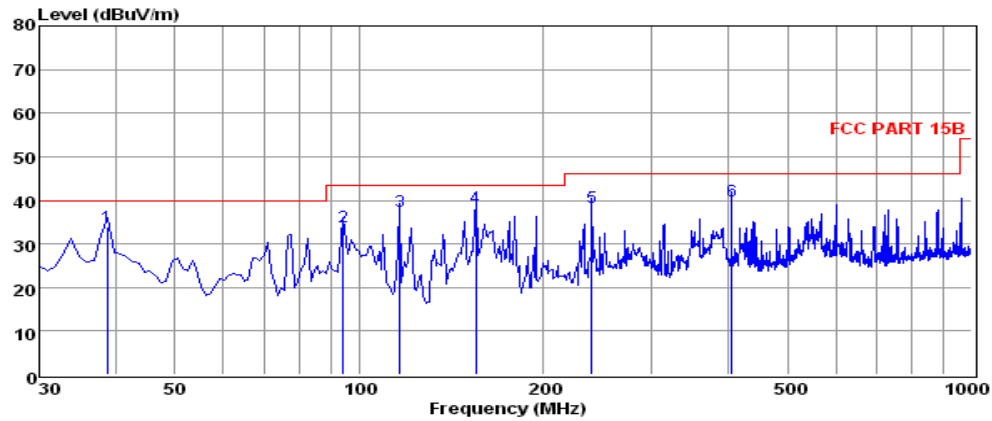
The bandwidth of the EMI test receiver is set at 120 kHz or 1000 kHz.

The frequency range from 30MHz to 5000MHz is checked.

4.7. Radiated Emission Noise Measurement Result

PASS.

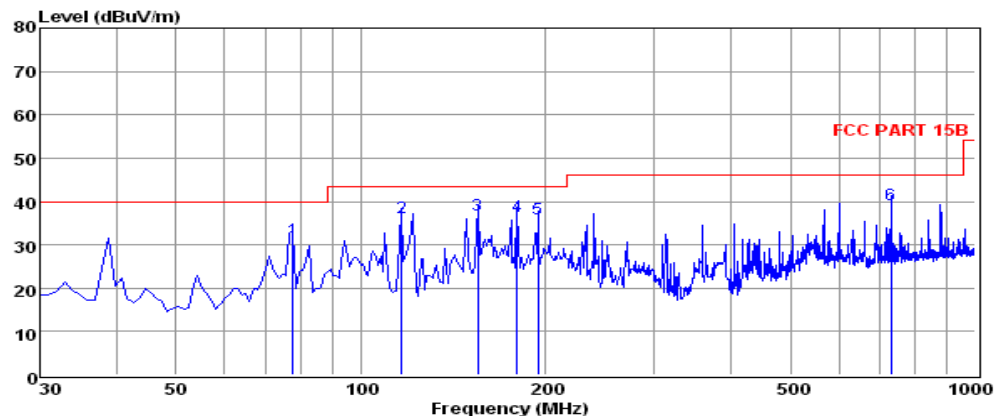
The scanning waveforms please refer to the next page.



Env. /Ins: 24°C/56%
 EUT: Digital Satellite Receiver
 M/N: EX-5500
 Power Rating: AC 120V/60Hz
 Test Mode: On
 Operator: DANNY
 Memo:
 pol: VERTICAL

	Freq	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	38.73	20.35	0.38	13.25	0.00	33.98	40.00	-6.02	QP
2	94.02	20.66	0.58	12.66	0.00	33.90	43.50	-9.60	QP
3	116.33	25.53	0.68	11.13	0.00	37.34	43.50	-6.16	QP
4	155.13	29.14	0.76	8.47	0.00	38.37	43.50	-5.13	QP
5	239.52	25.32	1.01	12.07	0.00	38.40	46.00	-7.60	QP
6	405.39	23.32	1.32	15.17	0.00	39.81	46.00	-6.19	QP

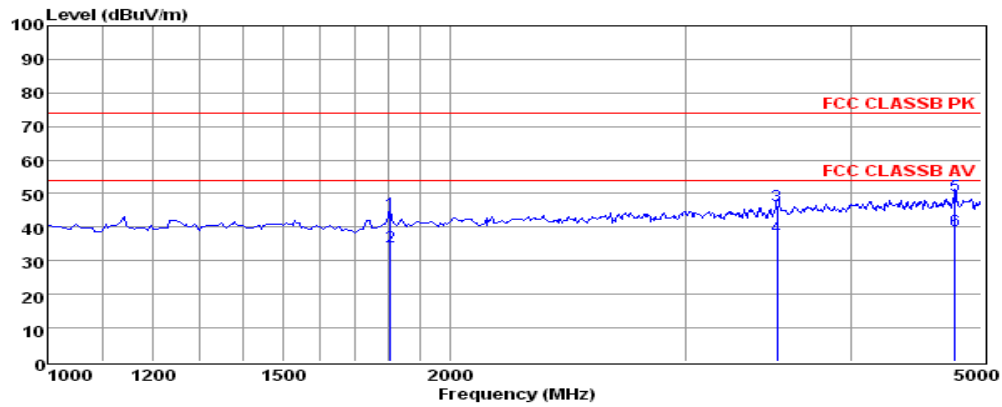
Note: 1. All readings are Quasi-peak values.
 2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.
 3. The emission levels that are 20dB below the official limit are not reported.



Env. /Ins: 24°C/56%
 EUT: Digital Satellite Receiver
 M/N: EX-5500
 Power Rating: AC 120V/60Hz
 Test Mode: On
 Operator: DANNY
 Memo:
 pol: HORIZONTAL

	Freq	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	77.53	22.53	0.47	8.17	0.00	31.17	40.00	-8.83	QP
2	116.33	24.52	0.68	11.13	0.00	36.33	43.50	-7.17	QP
3	155.13	27.71	0.76	8.47	0.00	36.94	43.50	-6.56	QP
4	179.38	26.05	0.89	9.64	0.00	36.58	43.50	-6.92	QP
5	193.93	24.58	0.76	10.56	0.00	35.90	43.50	-7.60	QP
6	729.37	18.34	1.70	19.18	0.00	39.22	46.00	-6.78	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.
 3. The emission levels that are 20dB below the official limit are not reported.



Env. /Ins: 24°C/56%

EUT: Digital Satellite Receiver

M/N: EX-5500

Power Rating: AC 120V/60Hz

Test Mode: ON

Operator: ANDY

Memo:

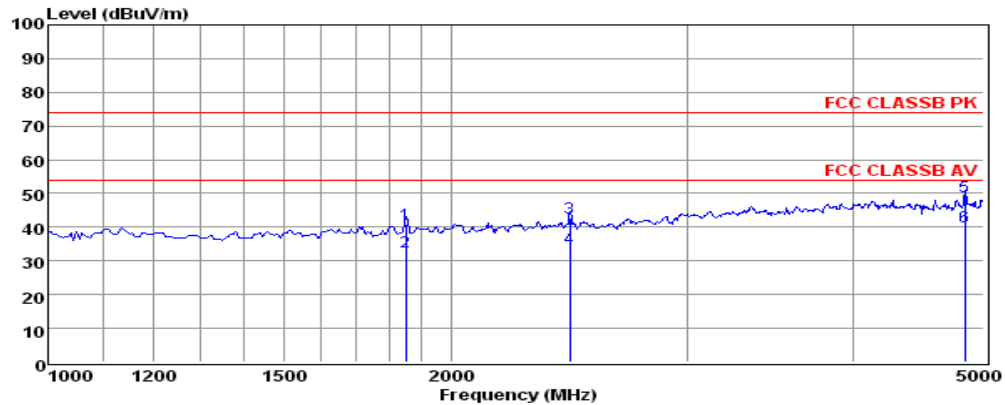
pol: HORIZONTAL

	Freq	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	1805.00	50.23	4.46	26.45	37.02	44.12	74.00	-29.88	Peak
2	1805.58	40.27	4.46	26.45	37.02	34.16	54.00	-19.84	Average
3	3515.00	45.83	6.57	30.98	36.90	46.48	74.00	-27.52	Peak
4	3515.11	36.59	6.57	30.98	36.90	37.24	54.00	-16.76	Average
5	4780.00	44.90	7.67	33.25	36.44	49.38	74.00	-24.62	Peak
6	4780.26	34.71	7.67	33.25	36.44	39.19	54.00	-14.81	Average

Note: 1. All readings are Quasi-peak values.

2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.

3. The emission levels that are 20dB below the official limit are not reported.



Env. /Ins: 24°C/56%

EUT: Digital Satellite Receiver

M/N: EX-5500

Power Rating: AC 120V/60Hz

Test Mode: ON

Operator: ANDY

Memo:

pol: VERTICAL

	Freq	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	1850.00	47.06	4.47	26.48	37.03	40.98	74.00	-33.02	Peak
2	1850.46	38.65	4.47	26.48	37.03	32.57	54.00	-21.43	Average
3	2455.00	46.88	5.14	27.74	37.10	42.66	74.00	-31.34	Peak
4	2455.29	37.92	5.14	27.73	37.10	33.69	54.00	-20.31	Average
5	4840.00	44.41	7.70	33.40	36.43	49.08	74.00	-24.92	Peak
6	4840.89	35.32	7.70	33.40	36.43	39.99	54.00	-14.01	Average

Note: 1. All readings are Quasi-peak values.

2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.

3. The emission levels that are 20dB below the official limit are not reported.

Remark: Pre-scan all mode then record worst TV Mode (Channel 4) result.

5. ANTENNA POWER CONDUCTION LIMITS FOR RECEIVERS.

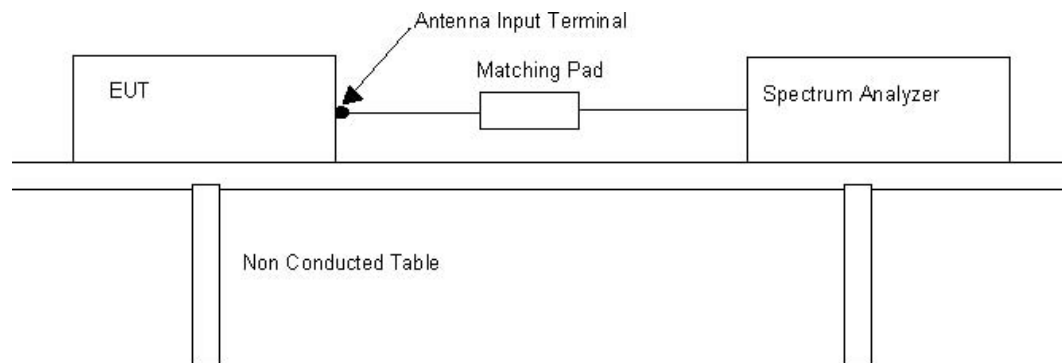
5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440754	2012/06/18	2013/06/17
2	TVB593v2.2 ActiveMixer	TELEVIEW	TVB593/S/S2	23.36.20.11.09.00.00.13	2012/05/16	2013/05/15
3	Signal analyzer	Agilent	E4448B	MY41440292	2012/06/15	2013/06/14

5.2. Standard Applicable

FCC Part 15 Subpart B Section 15.111

5.3. Block Diagram of Test Setup



5.4. Test Procedures

Power on the receive antenna terminals was to be determined by measurement of the voltage present at these terminals. Antenna-conducted power measurements is performed with the EUT antenna terminals connected directly to a spectrum analyzer, if the antenna impedance matches the impedance of the measuring instrument. Otherwise, use an impedance-matching network to connect the measuring instrument to the antenna terminals of the EUT. Losses in decibels in any impedance-matching network used is added to the measured value in dBmV. With the EUT tuned to one of the frequency over which device operates, measure both the frequency and voltage present at the antenna input terminals over the frequency range specified in the individual equipment requirements. Repeat this measurement with the receiver tuned to another frequency until the number of frequencies specified have been successively measured. Power on the receive antenna terminals is the ratio of V^2/R , where V is the loss-corrected voltage measured at the antenna terminals, and R is the impedance of the measuring instrument.

5.5. Test Results

PASS.

Tuned Frequency [MHz]	Meter Reading [dBμV]	Correction Factor [dB]	Emission Level [dBμV]	Limit [dBμV]	Margin [dB]
2425.0	36.2	8.8	45.0	51.8	6.8
3155.0	36.8	8.9	45.7	51.8	6.1
3205.0	36.6	8.9	45.5	51.8	6.3
3350.0	35.1	8.9	44.0	51.8	7.8

Remark:

1. *Emission Level = Meter Reading + Correction Factor(Matching Loss + Cable loss), Margin value = Limit - Signal Level*
2. *Measurements using the CISPR Quasi -peak mode in the frequency range 30 to 1000MHz and measurements using the CISPR peak mode in the frequency range 1000 to 5000MHz .*
3. *The limits is 2.0 nanowatts in the frequency range 30 to 5000MHz.*

6. OUTPUT SIGNAL CONDUCTED LEVEL MEASUREMENT

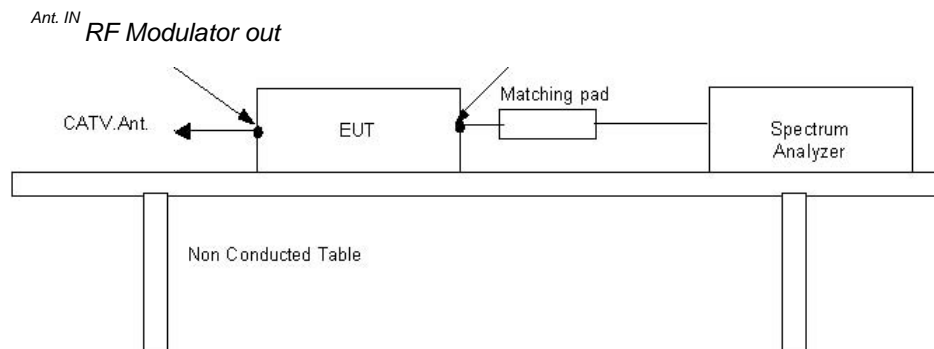
6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440754	2012/06/18	2013/06/17
2	TVB593v2.2 ActiveMixer	TELEVIEW	TVB593/S/S2	23.36.20.11.09.00.00.13	2012/05/16	2013/05/15
3	Signal analyzer	Agilent	E4448B	MY41440292	2012/06/15	2013/06/14

6.2. Standard Applicable

FCC Part15 Subpart B Section 15.115(b)(1)

6.3. Block Diagram of Test Setup



6.4. Test Procedures

The output signal level is the maximum voltage level present at the output terminals of the EUT on a particular frequency during normal use of the device. The signal level was measured by direct connection to the spectrum analyzer with 50/75 ohm matching transformer between the spectrum analyzer and the TV interface device. The RF output signal level measured was the highest RF level present at the output terminals during normal use of the device. Measurements were made of the levels of both the visual (61.25 MHz) and audio (71.75 MHz) carrier for each TV channel (3 and 4) on which the device operates. The cable was supported between the EUT and the measuring instrument in a straight horizontal line so it had at least 75cm clearance from any conducting surface. The EUT is provided with a typical signal consistent with normal operation. For each channel on which the EUT operates and in each mode in which the device operates, the video and audio carrier level is measured and recorded. The voltage corresponding to the peak envelope power of the video modulated signal during maximum amplitude peaks across a resistance (R ohms) matching the rated output impedance of the device, must not exceed $692.8 R^{1/2}$ mV for all other TV interface device. The voltage corresponding to peak envelope power of the audio modulated signal, if provided by the TV interface device, must not exceed $155 R^{1/2}$ mV for cable system terminal device of TV interface device used with a master antenna, and $77.5 R^{1/2}$ mV for all other TV interface device. Losses in decibels in any impedance-matching network used is added to the measured value in dBmV. The EUT was configured in accordance with ANSI C63.4 Section 12.2 as below configuration block diagram.

6.5. Test Results

PASS.

Test Channel	Emission Frequency [MHz]	Meter Reading [dB μ V]	Correction Factor [dB]	Signal Level [dB μ V]	Limit [dB μ V]	Margin [dB]
3	61.29	59.11	6.5	65.61	69.5	3.89
	65.73	43.48	6.5	49.98	56.5	6.52
4	67.29	58.45	6.5	64.95	69.5	4.55
	71.71	43.31	6.5	49.81	56.5	6.69

Remark:

- 1. The correction factor consists of the insertion loss of the impedance matching transformer and the coaxial cable used for the test.*
- 2. The spectrum was checked in each test mode and operation mode, and the maximum measured data were reported.*
- 3. Emission Level = Meter Reading + Correction Factor (Matching Loss + Cable loss)
Margin value = Limit - Signal Level*

7. OUTPUT TERMINAL CONDUCTED SPURIOUS EMISSION MEASUREMENT

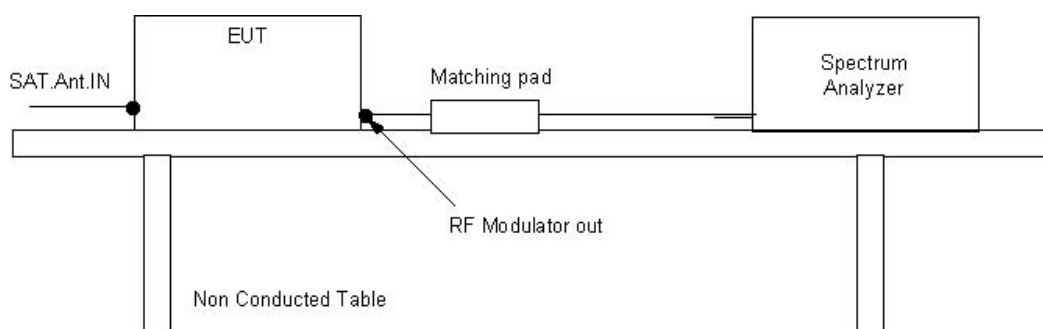
7.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440754	2012/06/18	2013/06/17
2	TVB593v2.2 ActiveMixer	TELEVIEW	TVB593/S/S2	23.36.20.11.09.00.00.13	2012/05/16	2013/05/15
3	Signal analyzer	Agilent	E4448B	MY41440292	2012/06/15	2013/06/14

7.2. Standard Applicable

FCC Part15 Subpart B Section 15.115(b)(2)

7.3. Block Diagram of Test Setup



7.4. Test Procedures

The RF output signal was fed to the TV receiver via coaxial cable. Measurements were made by direct connection to the spectrum analyzer and TV interface device with 50/75 ohm matching transformer. The frequency range 30 to 1000 MHz was investigated for significant emission. The maximum RMS voltage of any emission appearing on frequencies removed by more than 4.6 MHz below and 7.4 MHz above the video carrier frequency on which the TV interface device is operated must not exceed 692.8 R^{1/2} mV for cable system terminal device or TV interface device used with a master antenna and 10.95 R^{1/2} mV for all other TV interface device when terminated with a resistance (R ohms) matching the rated output impedance of the TV interface device. The EUT was configured in accordance with ANSI C63.4 Section 12.2 as below configuration block diagram.

7.5. Test Results

PASS.

Test Channel	Emission Frequency [MHz]	Meter Reading [dB μ V]	Correction Factor [dB]	Signal Level [dB μ V]	Limit [dB μ V]	Margin [dB]
3	32.32	19.47	6.5	25.97	39.5	13.53
	35.35	18.42	6.5	24.92	39.5	14.58
	54.06	17.29	6.5	23.79	39.5	15.71
4	32.21	18.76	6.5	25.26	39.5	14.24
	43.83	17.96	6.5	24.46	39.5	15.04
	74.30	17.46	6.5	23.96	39.5	15.54

Remark:

- 1. The correction factor consists of the insertion loss of the impedance matching transformer and the coaxial cable used for the test.*
- 2. The spectrum was checked in each test mode and operation mode, and the maximum measured data were reported.*
- 3. Emission Level = Meter Reading + Correction Factor(Matching Loss + Cable loss)
Margin value = Limit - Signal Level*

8. TRANSFER SWITCH MEASUREMENT

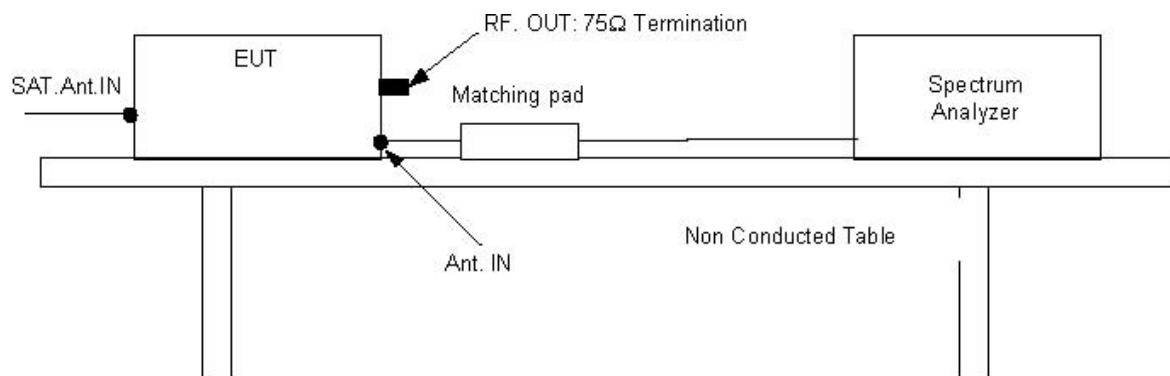
8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440754	2012/06/18	2013/06/17
2	TVB593v2.2 ActiveMixer	TELEVIEW	TVB593/S/S2	23.36.20.11.09.00.00.13	2012/05/16	2013/05/15
3	Signal analyzer	Agilent	E4448B	MY41440292	2012/06/15	2013/06/15

8.2 Standard Applicable

FCC Part15 Subpart B Section 15.115(c)(1)

8.3. Block Diagram of Test Setup



8.4. Test Procedures

Isolation was measured for all positions of an antenna transfer switch on all output channels of the EUT. TV interface device transfer switch isolation is the difference the levels of a signal going into one antenna input port of the switch and that of the same signal coming out of another antenna terminal of transfer switch. The isolation of an antenna transfer switch equipped with coaxial connectors is performed by measuring the maximum voltage of the visual carrier. Measurements were made of the maximum RMS voltage at the antenna input terminals of the switch for all positions of the transfer switch. The maximum voltage corresponds to the peak envelope power of the video signal during maximum amplitude peaks. In either position of the receiver transfer switch, the maximum voltage at the receiving antenna input terminals of the switch when terminated with a resistance (R ohms) matching the rated impedance of the antenna input of the switch, must not exceed $0.346 R^{1/2}$ mV. The maximum voltage corresponds to the peak envelope power of the video modulated signal during maximum amplitude. The EUT was configured in accordance with ANSI C63.4 Section 12.2 as below configuration block diagram. And the EUT configuration can also be seen in Appendix B. Photographs of the test setup. The unused RF input/output terminals are terminated in proper impedance. The antenna input terminal is connected to the input of preamplifier through the matching transformer coaxial cable. And the output of preamplifier is connected to

the spectrum analyzer. Then, the signal level on the antenna input terminal is measured under the EUT condition produced the maximum signal level.

8.5. Test Results

PASS.

Test Channel	Emission Frequency [MHz]	Meter Reading [dB μ V]	Correction Factor [dB]	Emission Level [dB μ V]	Limit [dB μ V]	Margin [dB]
3	61.29	During this test no signal detected			9.5	-
4	67.29				9.5	-

Remark:

1. No emission was observed during the test. The spectrum was checked in each test mode and operation mode Transfer switch isolation measurements were made on the Channel 3 or 4 video output frequency of 61.25 or 67.25MHz and both positions of the transfer switch were checked for compliance.
2. To clarify the emissions emanated from ANT. input terminal on the EUT, RF pre-amplifier was used. The gain of pre-amplifier at each frequency measured from the EUT was obtained after sufficient warm-up for stabilization of gain. The correction factor consists of the insertion loss of the impedance matching transformer, the coaxial cable used for the test and the gain of pre-amplifier.
3. Emission Level = Meter Reading + Correction Factor (Matching Loss + Cable loss) Margin value = Limit - Emission Level
4. Spectrum analyzer setting: Frequency Span 1MHz, Resolution bandwidth 100 kHz, Video bandwidth 3MHz, Detector function Peak mode.

9. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

5000	5300fta	9500	DVB-S FTA
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Belong to the tested device:

Product description : Digital Satellite Receiver

Model name : EX-5500

*Remark: PCB board, structure and internal of these model(s) are the same,
So no additional models were tested.*

-----THE END OF REPORT-----