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Report No.: SZEM130100046701
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FCC Test Report

Application No.: SZEM1301000467AV
Applicant/Manufacturer: HUAWEI TECHNOLOGIES CO., LTD
Address of Applicant/Manufacturer: Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129 P.R.China
Factory: Pro Broadband (Shenzhen) Inc.
Address of Factory: Unit 16, TongFuChun Industry Area, ShiAo, DaLang LongHua Town Shenzhen City China.
Equipment Under Test (EUT):
EUT Name: HD DVB-S2 STB
Model No.: DS363
Trade Mark: HUAWEI
FCC ID: QISDS363
Standards: 47 CFR PART 15, Subpart B:2012
Date of Receipt: 2013-01-28
Date of Test: 2013-01-29 to 2013-02-06
Date of Issue: 2013-02-21

Test Result :	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	47 CFR PART 15, Subpart B:2012	ANSI C63.4:2009	Class B	PASS
Conducted Emission (150kHz to 30MHz)	47 CFR PART 15, Subpart B:2012	ANSI C63.4:2009	Class B	PASS
Radiated Emission above 1 GHz	47 CFR PART 15, Subpart B:2012	ANSI C63.4:2009	Class B	PASS
Antenna Power (30 MHz to 960 MHz)	47 CFR PART 15, Subpart B:2012	Section 15.111	Class B	PASS
Output and Spurious conducted level at RF output terminal	47 CFR PART 15, Subpart B:2012	Section 15.115	Class B	PASS
Demonstration on internal preventing circuitry	47 CFR PART 15, Subpart B:2012	Section 15.115	Class B	PASS





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4 General Information

4.1 Details of E.U.T.

Power Supply: Switching power adaptor
Model: HW-120150U6W
Input: AC 100-240V 50/60Hz 0.5A
Output: DC12V 1.5A
Test voltage: AC 120V 60Hz
DC 3V 2*1.5V "AA" batteries for remote control

DC Cable: 140cm unshielded wire
HDMI Cable: 140cm shielded wire
AV Cable: 140cm unshielded wire

4.2 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
USB stick	KINGMAX	U208G
Samsung Television	Samsung	2232MW

4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.



4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**
CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.
- **VCCI**
The 3m Semi-anechoic chamber, Full-anechoic Chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197, G-416, T-1153 and C-2383 respectively.
- **FCC – Registration No.: 556682**
SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.
- **Industry Canada (IC)**
The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

5 Equipments Used during Test

RE in Chamber					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2013-06-10
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2013-05-17
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	Coaxial cable	SGS	N/A	SEL0028	2013-05-29
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2013-10-24
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2013-05-17
7	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2013-10-24
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2013-10-24
9	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2013-10-24
10	Band filter	Amindeon	Asi 3314	SEL0094	2013-05-17
11	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	2013-10-24

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	2013-06-10
2	LISN	Rohde & Schwarz	ENV216	SEL0152	2013-10-24
3	LISN	ETS-LINDGREN	3816/2	SEL0021	2013-05-17
4	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	EMC0120	2013-11-10
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	EMC0121	2013-11-10
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	EMC0122	2013-11-10
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2013-05-17
8	Coaxial Cable	SGS	N/A	SEL0025	2013-05-29



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CE AT & Antenna Power					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date
					(YYYY-MM-DD)
EMC0306	Shielding Room	Zhong Yu	8 x 3 x 3.8 m ³	N/A	N/A
EMC0506	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	2013-03-12
EMC0107	Coaxial Cable	SGS	2m	N/A	2013-07-29
EMC1704	Matching Pad	Rohde & Schwarz	RAM	100374	2013-10-05

General used equipment					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0102 to SEL0103	2013-10-24
2	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0101	2013-10-24
3	Barometer	ChangChun	DYM3	SEL0088	2013-05-17



TS9980 test system					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	Shielding Room	ChangZhou ZhongYu	JB88	SEL0166	2013-06-10
2	Signal Generator 9 KHz ~ 2.2GHz	Rohde & Schwarz	SML02	SEL0143	2013-10-24
3	Signal Generator 9 KHz ~ 1.1GHz	Rohde & Schwarz	SML01	SEL0135	2013-10-24
4	Power Meter	Rohde & Schwarz	NRVS	SEL0144	2013-10-24
5	RF Level Meter	Rohde & Schwarz	URV35	SEL0137	2013-10-24
6	Audio Analyzer	Rohde & Schwarz	UPL	SEL0136	2013-10-24
7	RF-Amplifier 150KHz ~150MHz	BONN Elektronik	BSA1515-2 5	SEL0157	2013-05-17
8	Stripline Test Cell	Erika Fiedler	VDE0872	SEL0167	N/A
9	TV Test Transmitter	Rohde & Schwarz	SFM	SEL0159	2013-05-17
10	TV Generator Pal	Rohde & Schwarz	SGPF	SEL0138	2013-10-24
11	TV Generator Ntsc	Rohde & Schwarz	SGMF	SEL0140	2013-10-24
12	TV Generator Secam	Rohde & Schwarz	SGSF	SEL0139	2013-10-24
13	TV-Test Transmitter 0.3MHz ~ 3300MHz	Rohde & Schwarz	SFQ	SEL0142	2013-10-24
14	MPEG2 Measurement Generator	Rohde & Schwarz	DVG	SEL0141	2013-10-24
15	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0177	2013-02-21
16	Matching Pad	Rohde & Schwarz	RAM	SEL0146	N/A
17	Matching Pad	Rohde & Schwarz	RAM	SEL0148	N/A
18	Absorbing Clamp	Rohde & Schwarz	MDS21	SEL0158	2013-05-17
19	Coupling Set	Erika Fiedler	RCo, RCi, MC, AC, LC	SEL0149	N/A
20	Filters	Erika Fiedler	Sr, LBS	SEL0150	N/A
21	Matching Network	Erika Fiedler	MN, T1	SEL0151	N/A

6 Test Results

6.1 Conducted Emissions Mains Terminals, 150kHz to 30MHz

Test Requirement: 47 CFR PART 15, Subpart B
 Test Method: ANSI C63.4
 Frequency Range: 150kHz to 30MHz
 Detector: Peak for pre-scan (9kHz Resolution Bandwidth)
 Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit
 Class / Limit: Class B
 Remark: All input terminals and connectors had terminated in the proper impedance during test.

Frequency range MHz	Class B Limits	
	dB (µV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

NOTE 1 :The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.
 NOTE 2: The lower limit is applicable at the transition frequency.

6.1.1 E.U.T. Operation

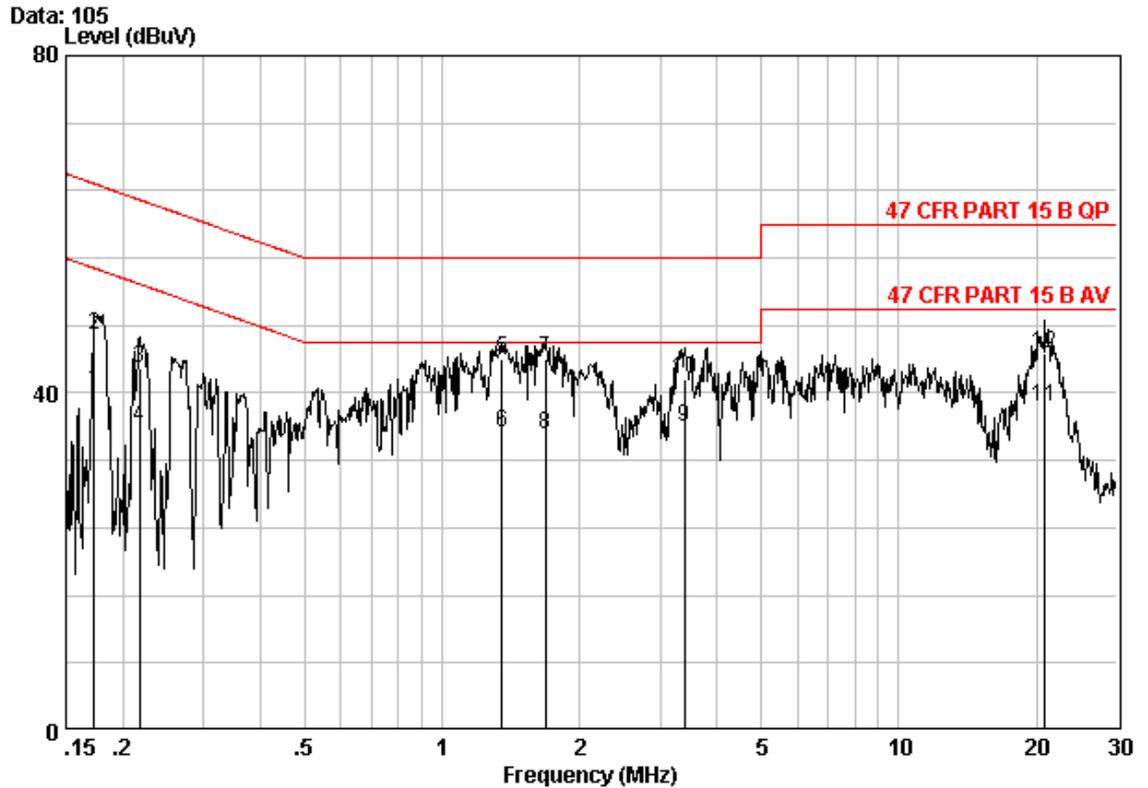
Operating Environment:
 Temperature: 24.0 °C Humidity: 53% RH Atmospheric Pressure: 1020 mbar
 EUT Operation: Test in DVB mode, (pre-test was performed at DVB mode, Record mode, Software update mode and Play with USB stick mode, completed test was conducted at DVB mode since it was the worst case), keep the EUT working with standard testing signal, pretest performed at low, middle and high channels DVB signal input and CH3,CH4 channels output, AV output and HDMI output, completed test was conducted at middle channel DVB signal input and HDMI output, since it was the worst case.

6.1.2 Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.
 Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.



Neutral line:

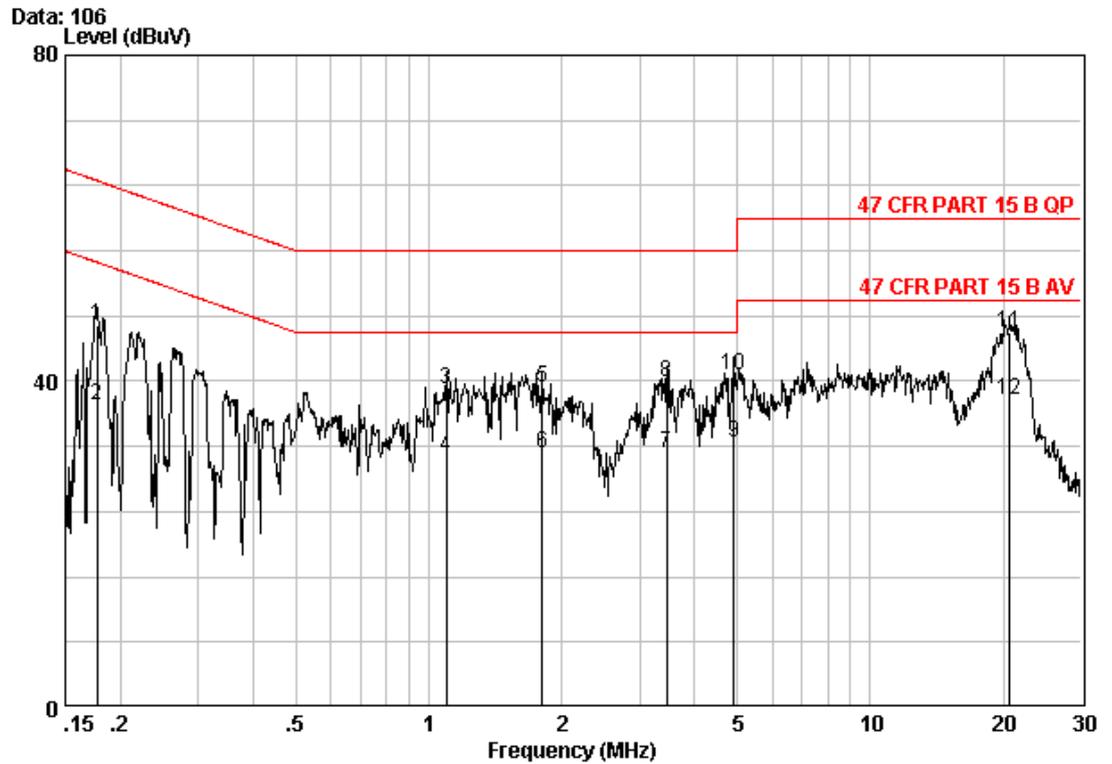


Site : Shielding Room
 Condition : 47 CFR PART 15 B QP CE NEUTRAL
 Job No. : 0467AV
 Mode : DVB

	Freq	Cable Loss	LISM Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.17307	0.02	9.70	30.58	40.30	54.81	-14.51	Average
2	0.17307	0.02	9.70	37.06	46.78	64.81	-18.03	QP
3	0.21735	0.02	9.70	33.29	43.01	62.92	-19.91	QP
4	0.21735	0.02	9.70	26.28	36.00	52.92	-16.92	Average
5	1.352	0.02	9.80	34.26	44.08	56.00	-11.92	QP
6	1.352	0.02	9.80	25.48	35.30	46.00	-10.70	Average
7	1.680	0.02	9.80	34.21	44.03	56.00	-11.97	QP
8	1.680	0.02	9.80	25.18	35.00	46.00	-11.00	Average
9	3.399	0.02	9.86	26.02	35.90	46.00	-10.10	Average
10	3.399	0.02	9.86	31.78	41.66	56.00	-14.34	QP
11	20.924	0.02	10.10	28.18	38.30	50.00	-11.70	Average
12	20.924	0.02	10.10	34.47	44.59	60.00	-15.41	QP



Live line



Site : Shielding Room
 Condition : 47 CFR PART 15 B QP CE LINE
 Job No. : 0467AV
 Mode : DVB

	Freq	Cable Loss	LISM Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.17678	0.02	9.70	37.22	46.94	64.64	-17.69	QP
2	0.17678	0.02	9.70	27.38	37.10	54.64	-17.54	Average
3	1.094	0.02	9.80	29.27	39.09	56.00	-16.91	QP
4	1.094	0.02	9.80	20.95	30.77	46.00	-15.23	Average
5	1.810	0.02	9.80	29.33	39.15	56.00	-16.85	QP
6	1.810	0.02	9.80	21.31	31.13	46.00	-14.87	Average
7	3.454	0.02	9.86	21.38	31.26	46.00	-14.74	Average
8	3.454	0.02	9.86	30.04	39.92	56.00	-16.08	QP
9	4.900	0.01	9.90	22.65	32.56	46.00	-13.44	Average
10	4.900	0.01	9.90	30.95	40.86	56.00	-15.14	QP
11	20.704	0.02	10.10	35.81	45.93	60.00	-14.07	QP
12	20.704	0.02	10.10	27.54	37.66	50.00	-12.34	Average

6.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement:	47 CFR PART 15, Subpart B
Test Method:	ANSI C63.4
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dB μ V/m between 30MHz & 88MHz 43.5 dB μ V/m between 88MHz & 216MHz 46.0 dB μ V/m between 216MHz & 960MHz 54.0 dB μ V/m above 960MHz
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit
Remark:	All input terminals and connectors had terminated in the proper impedance during test.

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 55% RH Atmospheric Pressure: 1020 mbar

EUT Operation: Test in DVB mode, keep the EUT working with standard testing signal, pretest performed at low, middle and high channels DVB signal input and CH3, CH4 channels output, AV output and HDMI output, completed test was conducted at middle channel DVB signal input and HDMI output, since it was the worst case.

Test in Play with USB stick mode, Keep EUT playing with USB stick, pretest performed at CH3, CH4 channels output, AV output and HDMI output, completed test was conducted at HDMI output, since it was the worst case.

Test in Record mode, keep EUT recording, pretest performed at CH3, CH4 channels output, AV output and HDMI output, completed test was conducted at HDMI output, since it was the worst case.

Test in Software update mode, keep EUT updating software via USB stick, pretest performed at CH3, CH4 channels output, AV output and HDMI output, completed test was conducted at HDMI output, since it was the worst case.

6.2.2 Measurement Data

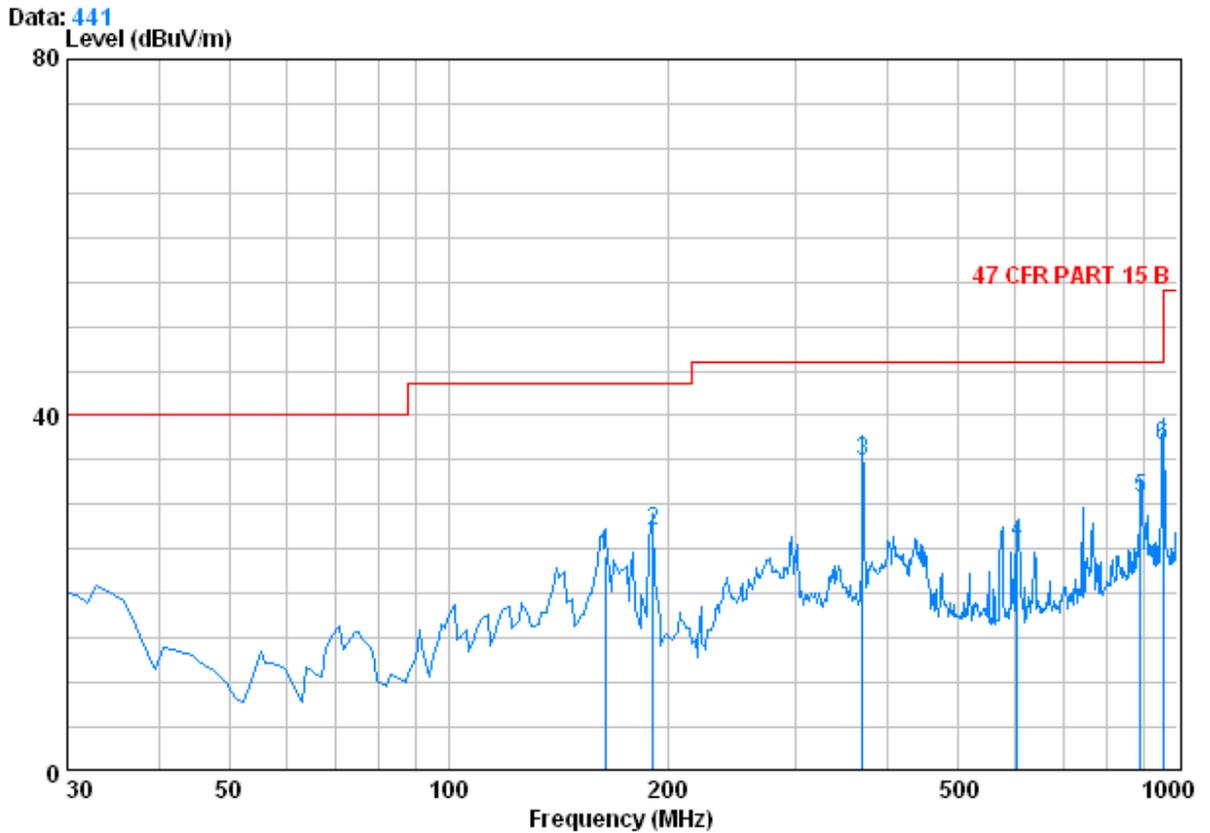
An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.





DVB mode

Horizontal

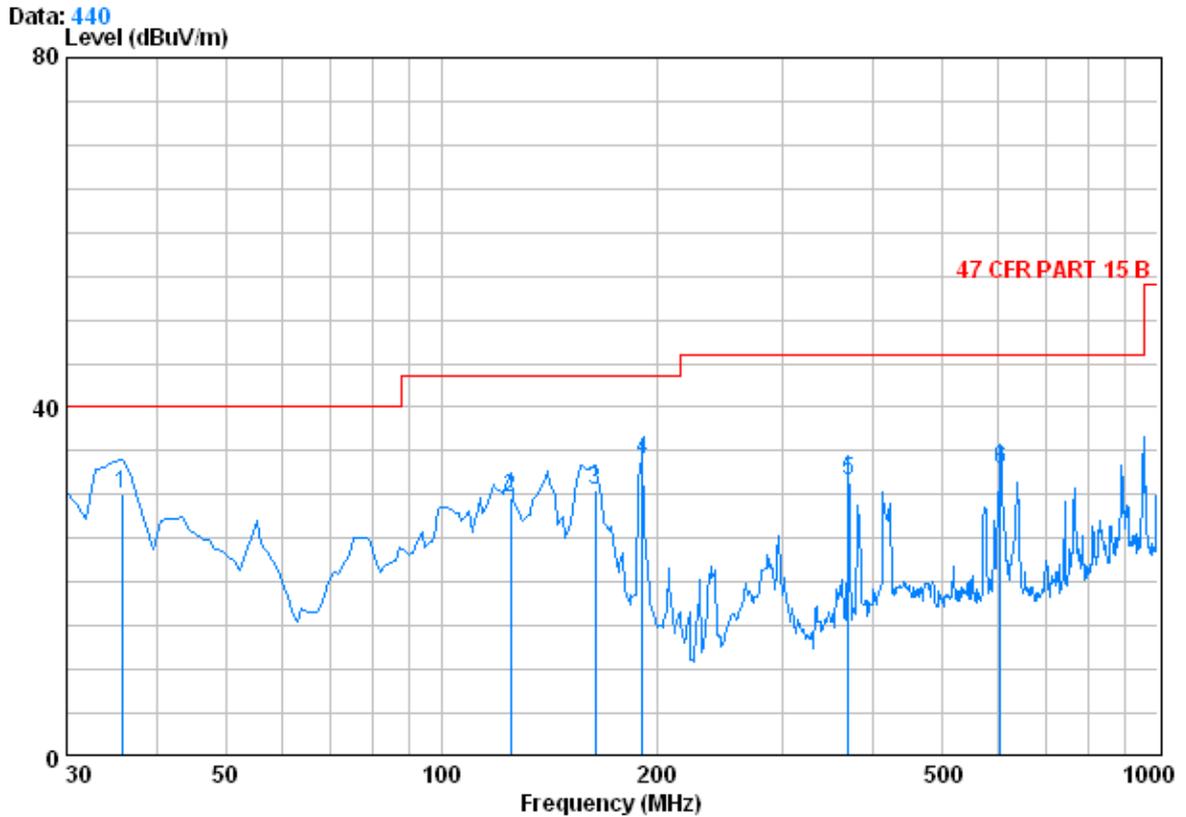


Condition : 47 CFR PART 15 B 3m 3142C NEW HORIZONTAL
Job No : 0467AV
Mode : DVB

	Freq	CableAntenna Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit	Over
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	163.860	1.34	9.50	26.84	40.28	24.29	43.50	-19.21
2	191.020	1.39	6.84	26.73	45.57	27.07	43.50	-16.43
3	370.470	2.12	11.34	26.93	48.25	34.78	46.00	-11.22
4	603.270	2.71	15.28	27.54	35.29	25.74	46.00	-20.26
5	890.390	3.56	20.60	26.82	33.47	30.82	46.00	-15.18
6	956.350	3.66	21.20	26.51	38.35	36.70	46.00	-9.30



Vertical



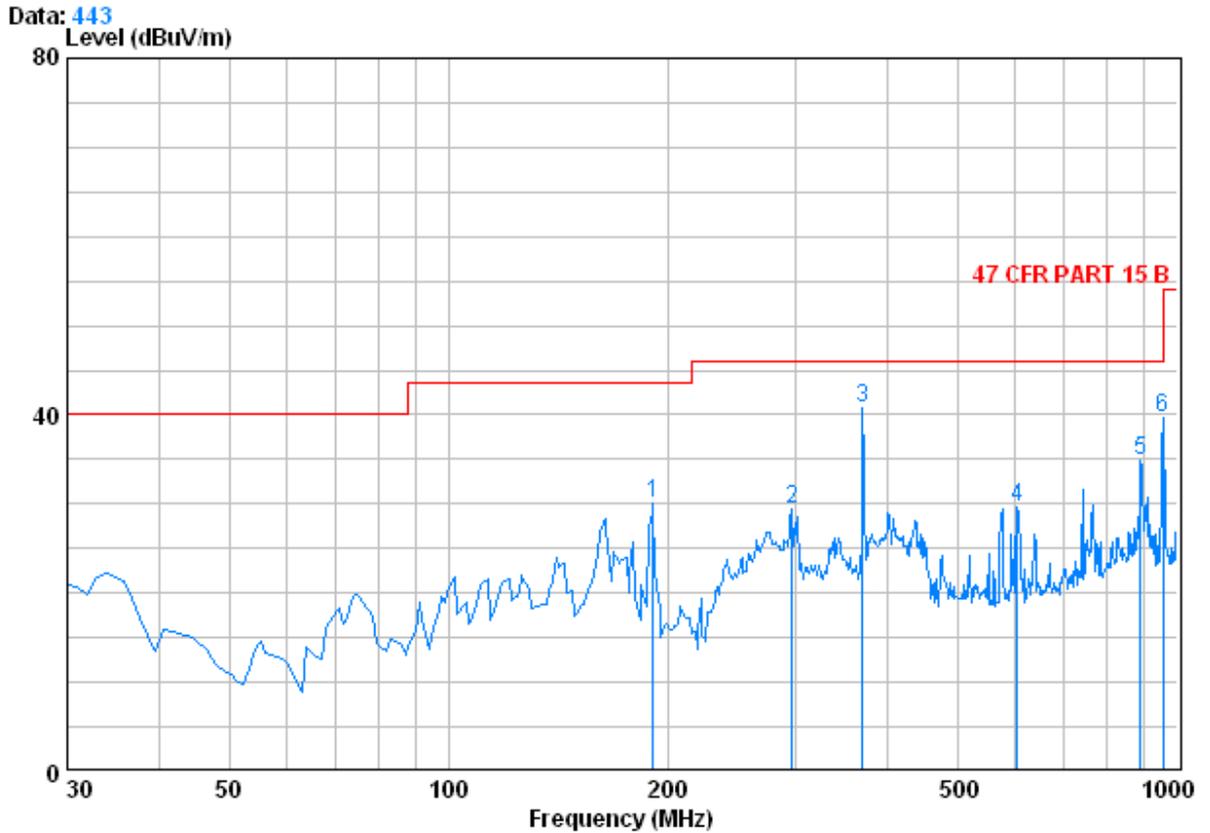
Condition : 47 CFR PART 15 B 3m 3142C NEW VERTICAL
Job No : 0467AV
Mode : DVB

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	35.820	0.60	13.23	27.33	43.54	30.03	40.00	-9.97
2	125.060	1.26	7.90	27.04	47.45	29.57	43.50	-13.93
3	163.860	1.34	9.50	26.84	46.41	30.41	43.50	-13.09
4	191.020	1.39	6.84	26.73	52.48	33.98	43.50	-9.52
5	370.470	2.12	11.34	26.93	45.01	31.54	46.00	-14.46
6	603.270	2.71	15.28	27.54	42.40	32.84	46.00	-13.16



Play with USB stick mode

Horizontal



Condition : 47 CFR PART 15 B 3m 3142C NEW HORIZONTAL

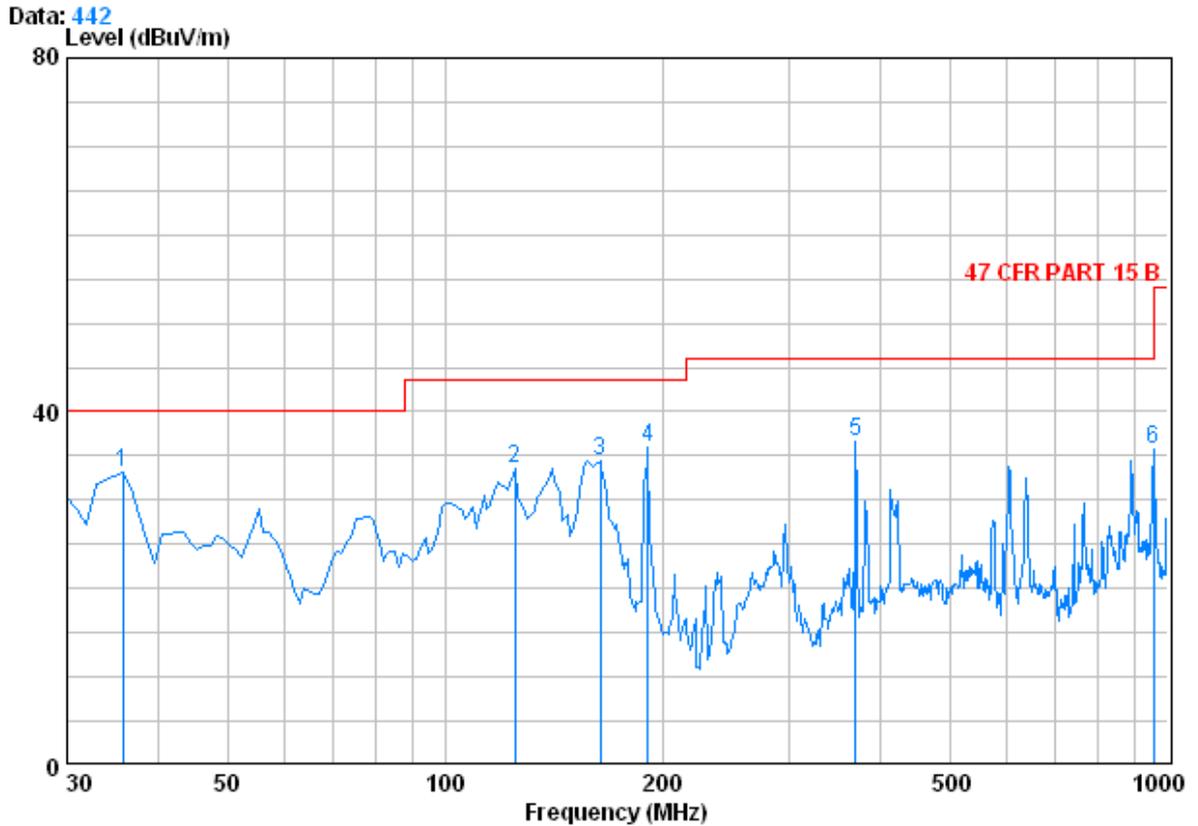
Job No : 0467AV

Mode : Play with USB stick

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	191.020	1.39	6.84	26.73	48.57	30.07	43.50	-13.43
2	295.780	1.88	9.54	26.41	44.47	29.48	46.00	-16.52
3	370.470	2.12	11.34	26.93	54.25	40.78	46.00	-5.22
4	603.270	2.71	15.28	27.54	39.29	29.74	46.00	-16.26
5	890.390	3.56	20.60	26.82	37.47	34.82	46.00	-11.18
6	956.350	3.66	21.20	26.51	41.35	39.70	46.00	-6.30



Vertical



Condition : 47 CFR PART 15 B 3m 3142C NEW VERTICAL

Job No : 0467AV

Mode : Play with USB stick

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	35.820	0.60	13.23	27.33	46.54	33.03	40.00	-6.97
2	125.060	1.26	7.90	27.04	51.45	33.57	43.50	-9.93
3	163.860	1.34	9.50	26.84	50.41	34.41	43.50	-9.09
4	191.020	1.39	6.84	26.73	54.48	35.98	43.50	-7.52
5	370.470	2.12	11.34	26.93	50.01	36.54	46.00	-9.46
6	956.350	3.66	21.20	26.51	37.37	35.72	46.00	-10.28

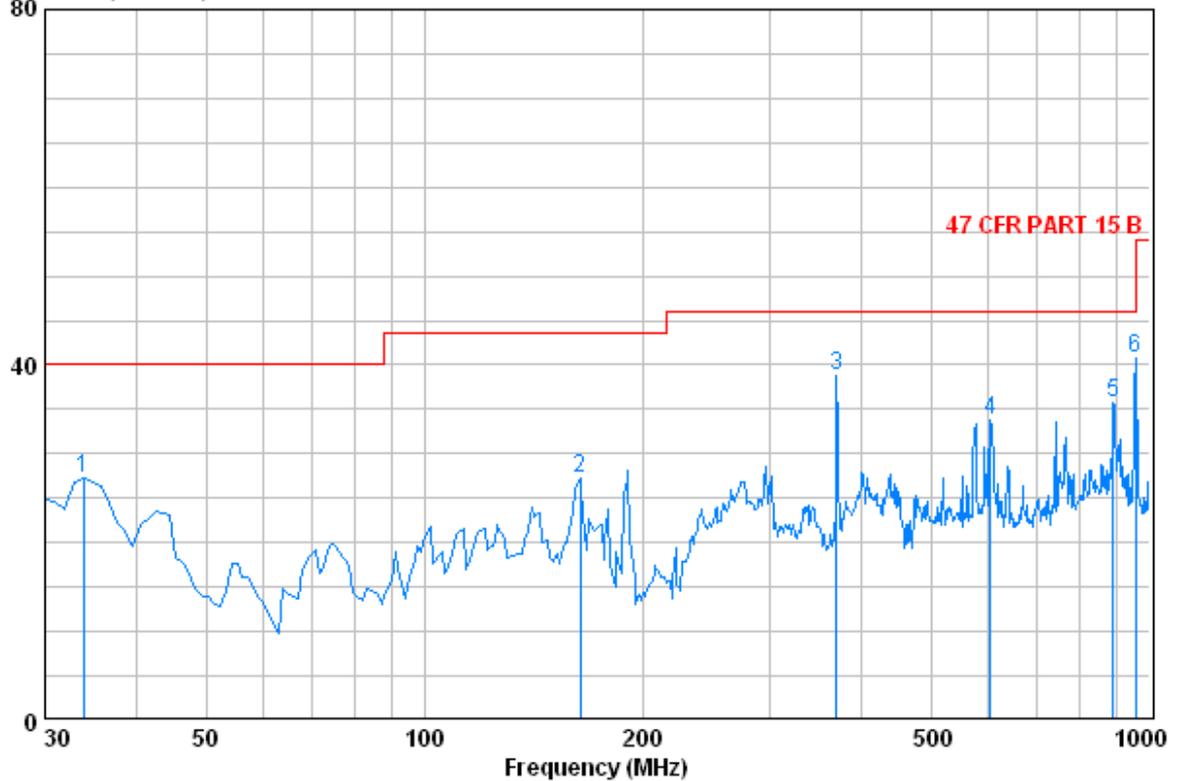


Record mode

Horizontal

Data: 445

Level (dBuV/m)



Condition : 47 CFR PART 15 B 3m 3142C NEW HORIZONTAL

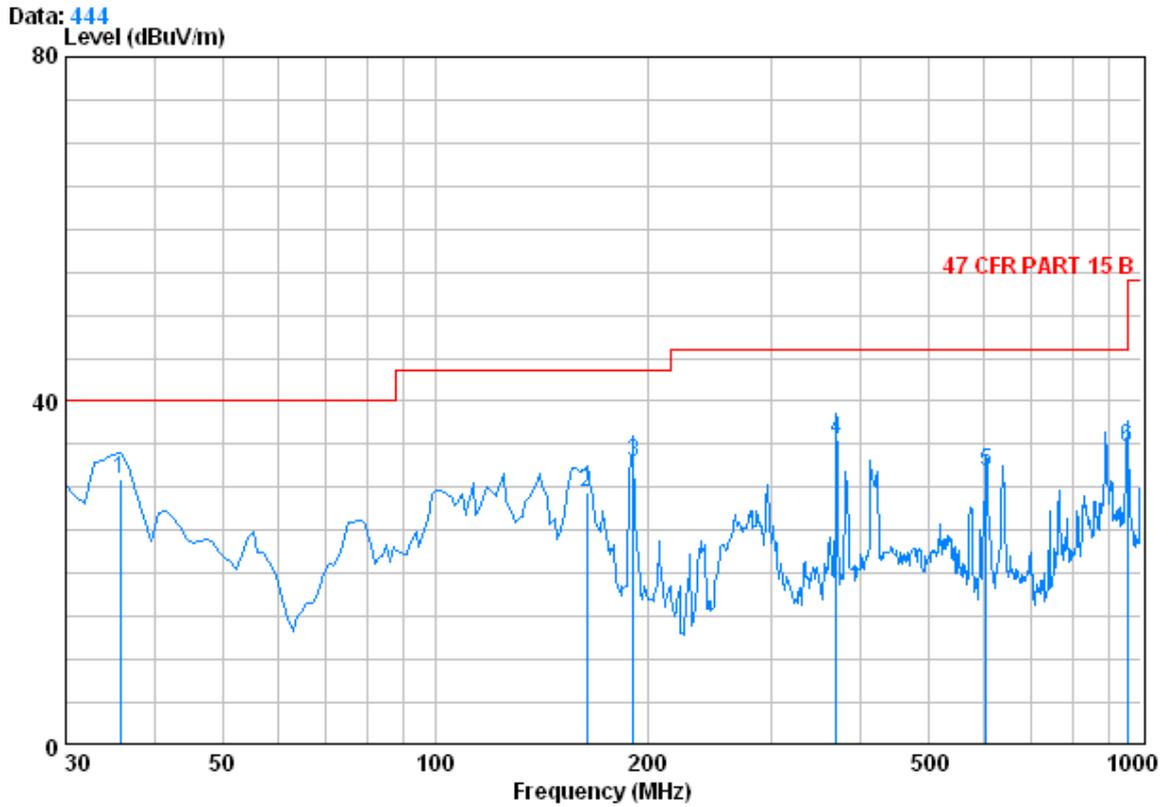
Job No : 0467AV

Mode : record

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Limit Level	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB
1	33.880	0.60	14.90	27.34	39.08	27.24	40.00 -12.76
2	163.860	1.34	9.50	26.84	43.28	27.29	43.50 -16.21
3	370.470	2.12	11.34	26.93	52.25	38.78	46.00 -7.22
4	603.270	2.71	15.28	27.54	43.29	33.74	46.00 -12.26
5	890.390	3.56	20.60	26.82	38.47	35.82	46.00 -10.18
6	956.350	3.66	21.20	26.51	42.35	40.70	46.00 -5.30



Vertical



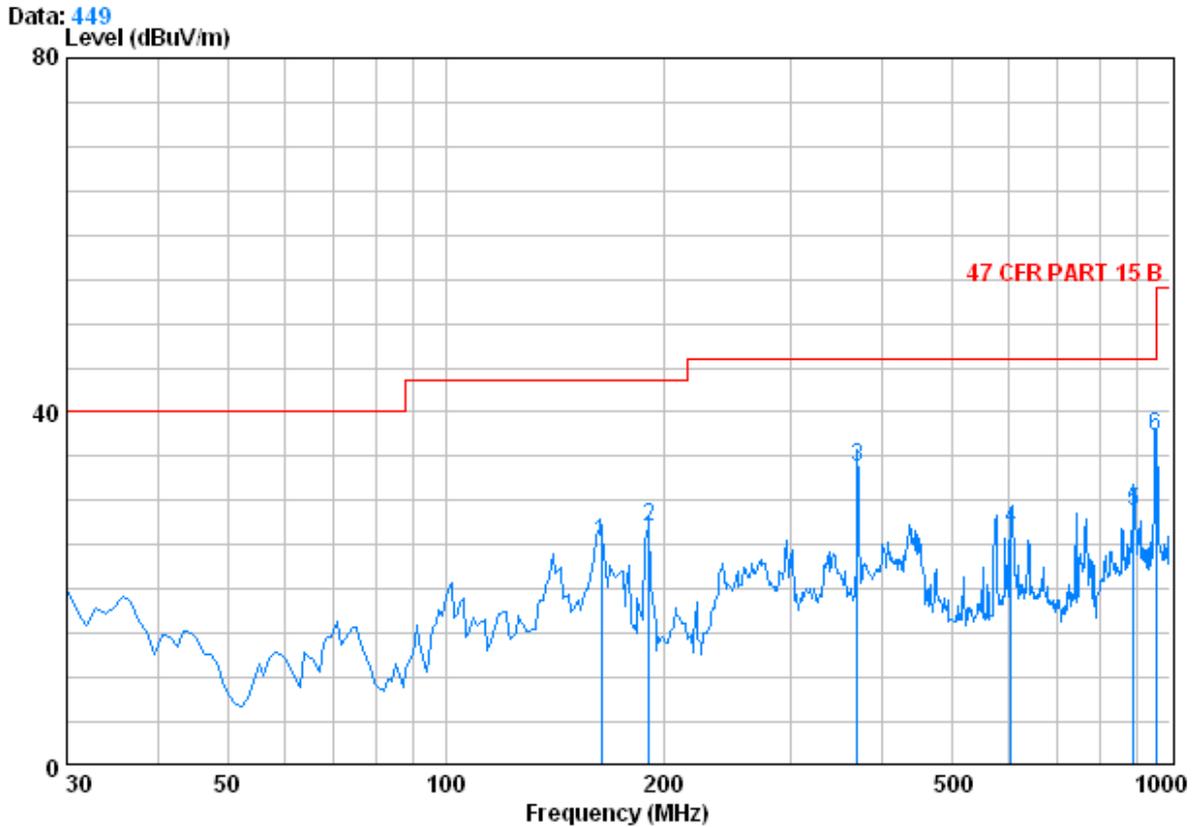
Condition : 47 CFR PART 15 B 3m 3142C NEW VERTICAL
Job No : 0467AV
Mode : record

	Freq MHz	CableAntenna		Preamp	Read	Limit	Over
		Loss	Factor	Factor	Level	Line	Limit
		dB	dB/m	dB	dBuV	dBuV/m	dB
1	35.820	0.60	13.23	27.33	44.54	31.03	40.00 -8.97
2	163.860	1.34	9.50	26.84	45.41	29.41	43.50 -14.09
3	191.020	1.39	6.84	26.73	51.48	32.98	43.50 -10.52
4	370.470	2.12	11.34	26.93	49.01	35.54	46.00 -10.46
5	603.270	2.71	15.28	27.54	41.40	31.84	46.00 -14.16
6	956.350	3.66	21.20	26.51	36.37	34.72	46.00 -11.28



Software update mode

Horizontal



Condition : 47 CFR PART 15 B 3m 3142C NEW HORIZONTAL

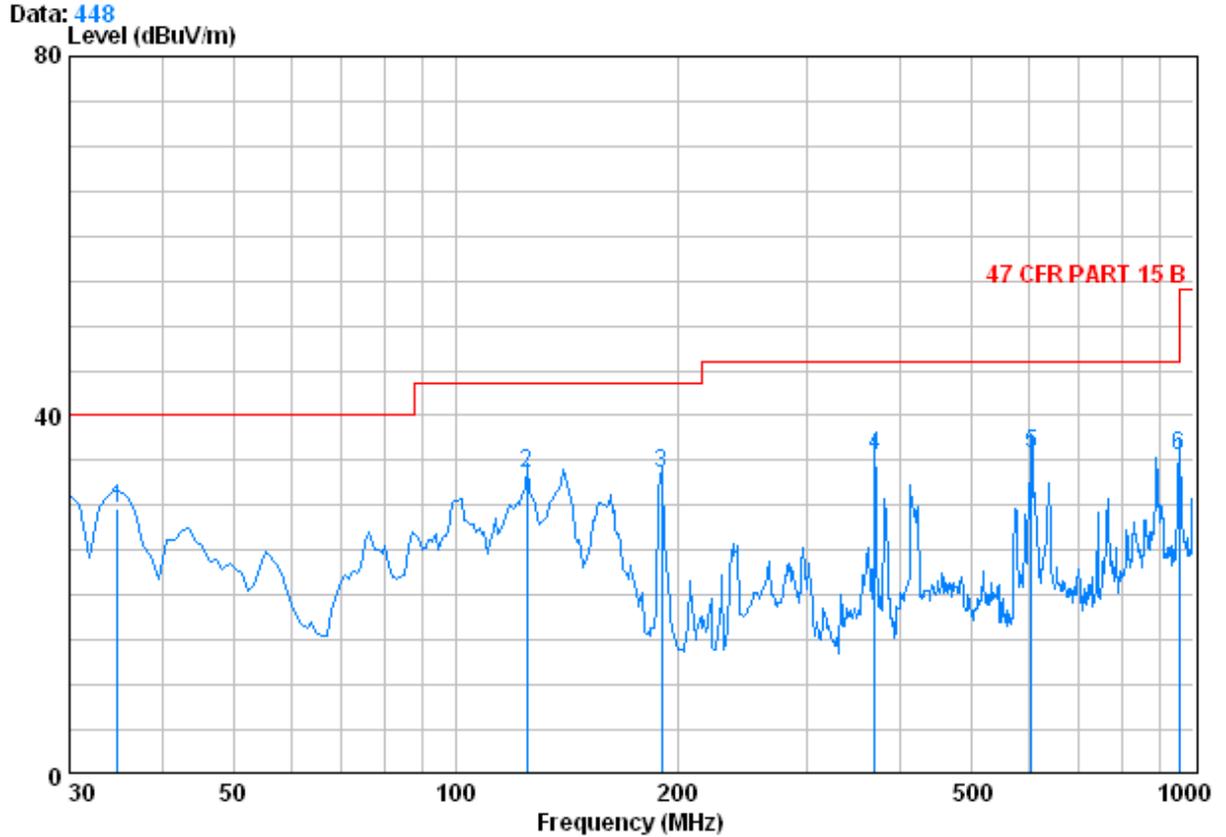
Job No : 0467AV

Mode : Software update

	Freq	CableAntenna Loss	Antenna Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	163.860	1.34	9.50	26.84	41.28	25.29	43.50	-18.21
2	191.020	1.39	6.84	26.73	45.57	27.07	43.50	-16.43
3	370.470	2.12	11.34	26.93	47.25	33.78	46.00	-12.22
4	603.270	2.71	15.28	27.54	36.29	26.74	46.00	-19.26
5	890.390	3.56	20.60	26.82	31.47	28.82	46.00	-17.18
6	957.320	3.66	21.20	26.51	38.83	37.19	46.00	-8.81



Vertical



Condition : 47 CFR PART 15 B 3m 3142C NEW VERTICAL

Job No : 0467AV

Mode : Software update

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Limit Level	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB
1	34.850	0.60	14.01	27.34	42.45	29.73	40.00 -10.27
2	125.060	1.26	7.90	27.04	51.45	33.57	43.50 -9.93
3	190.050	1.38	6.80	26.74	52.03	33.48	43.50 -10.02
4	370.470	2.12	11.34	26.93	49.01	35.54	46.00 -10.46
5	603.270	2.71	15.28	27.54	45.40	35.84	46.00 -10.16
6	957.320	3.66	21.20	26.51	37.13	35.48	46.00 -10.52



6.3 Radiated Emissions above 1 GHz

Test Requirement: 47 CFR PART 15,Subpart B
Test Method: ANSI C63.4
Frequency Range: 1GHz to 40GHz
Measurement Distance: 3 m
Class / Limit: Class B

Detector:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak	1MHz	1MHz	Peak Value
		Peak	1MHz	10Hz	Average Value

Test Date: N/A: See Remark Below

Remark:

All input terminals and connectors had terminated in the proper impedance during test.

For further details, please refer to Subject B section 15.33 (b) (1)of FCC Part 15 which states:

The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement Range (MHz)
Below 1.705	30
1.705 to 108	1000
108 to 500	2000
500 to 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 55% RH Atmospheric Pressure: 1020 mbar

EUT Operation: Test in DVB mode, keep the EUT working with standard testing signal, pretest performed at low, middle and high channels DVB signal input and CH3,CH4 channels output, AV output and HDMI output, completed test was conducted at middle channel DVB signal input and HDMI output, since it was the worst case.

Test in Play with USB stick mode, Keep EUT playing with USB stick, pretest performed at CH3, CH4 channels output, AV output and HDMI output, completed test was conducted at HDMI output, since it was the worst case.

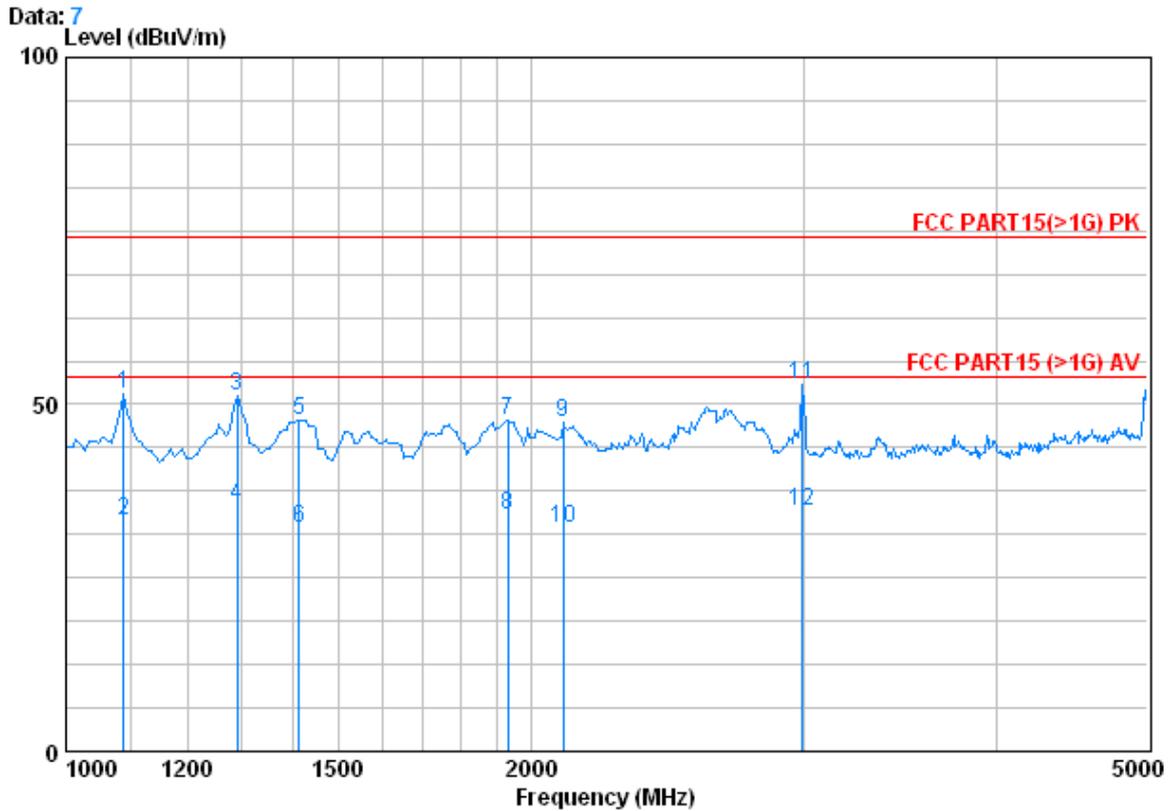
Test in Record mode, keep EUT recording, pretest performed at CH3,CH4 channels output, AV output and HDMI output, completed test was conducted at HDMI output, since it was the worst case.

Test in Software update mode, keep EUT updating software via USB stick, pretest performed at CH3,CH4 channels output, AV output and HDMI output, completed test was conducted at HDMI output, since it was the worst case.

6.3.2 Measurement Data

DVB mode

Horizontal



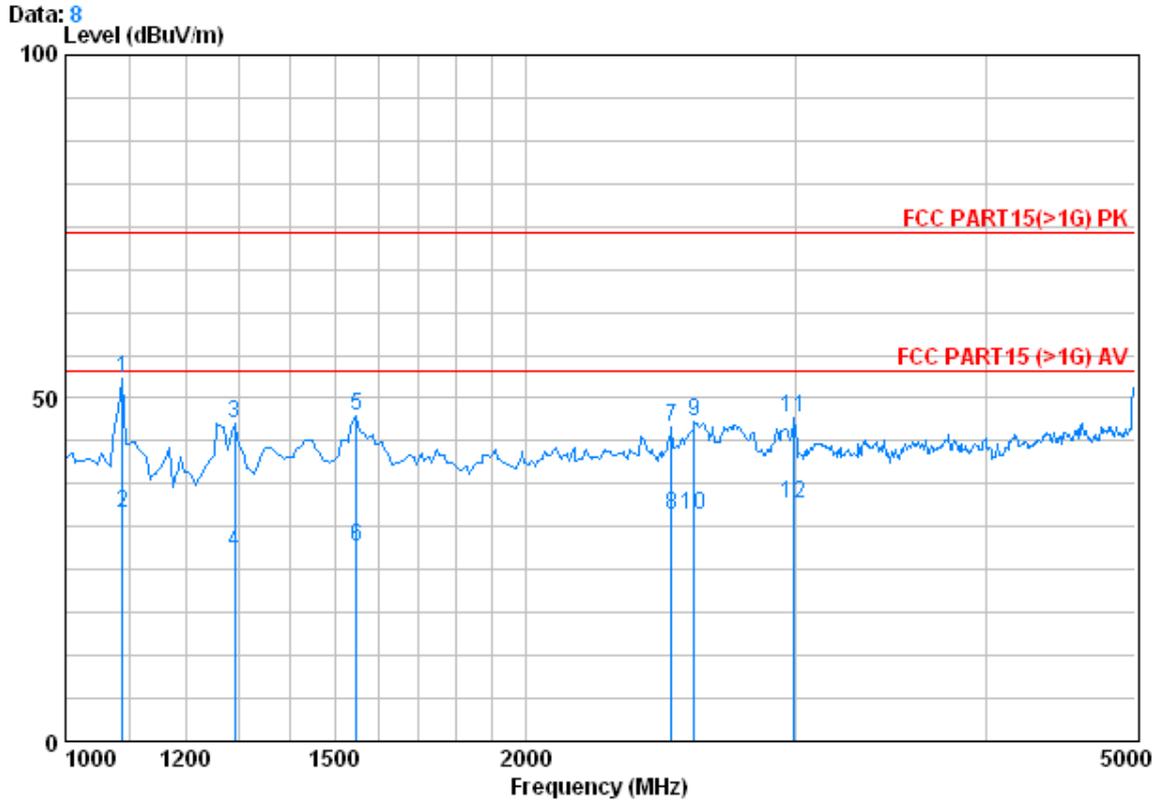
Condition : FCC PART15(>1G) PK 3m HORIZONTAL
 Job No. : 0467AV
 Mode : DVB

	Freq	Cable Loss	Antenna Factor	Preamplifier	Read Level	Level	Limit	Over	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1090.000	2.26	27.36	39.18	61.06	51.49	74.00	-22.51	Peak
2	1090.000	2.26	27.36	39.18	42.93	33.36	54.00	-20.64	AVERAGE
3	1290.000	2.38	27.73	39.26	60.50	51.35	74.00	-22.65	Peak
4	1290.000	2.38	27.73	39.26	44.67	35.52	54.00	-18.48	AVERAGE
5	1415.000	2.47	27.94	39.32	56.68	47.77	74.00	-26.23	Peak
6	1415.000	2.47	27.94	39.32	41.10	32.19	54.00	-21.81	AVERAGE
7	1930.000	2.79	31.31	39.54	53.21	47.77	74.00	-26.23	Peak
8	1930.000	2.79	31.31	39.54	39.44	34.00	54.00	-20.00	AVERAGE
9	2095.000	2.87	31.96	39.64	52.11	47.30	74.00	-26.70	Peak
10	2095.000	2.87	31.96	39.64	37.05	32.23	54.00	-21.77	AVERAGE
11	2995.000	3.31	33.38	40.30	56.56	52.95	74.00	-21.05	Peak
12	2995.000	3.31	33.38	40.30	38.23	34.61	54.00	-19.39	AVERAGE





Vertical



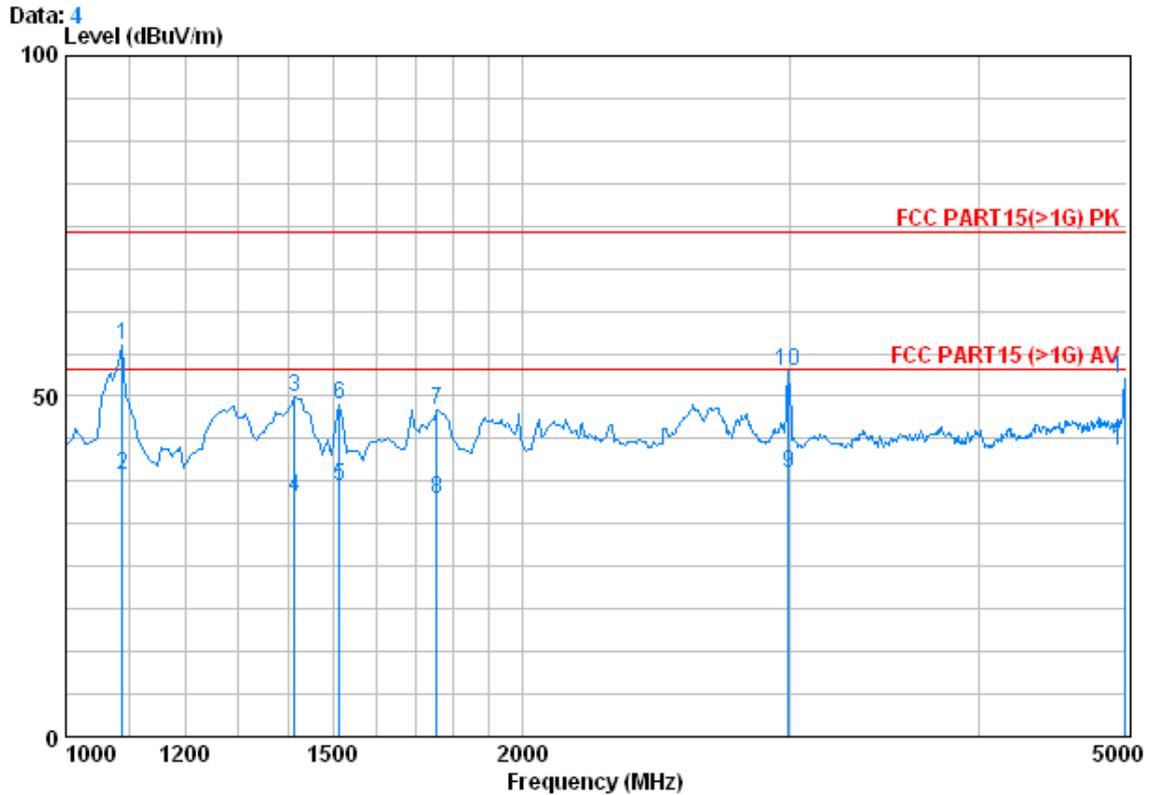
Condition : FCC PART15(>1G) PK 3m VERTICAL
 Job No. : 0467AV
 Mode : DVB

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	
1	1090.000	2.26	27.36	39.18	62.55	52.99	74.00	-21.01 Peak
2	1090.000	2.26	27.36	39.18	42.93	33.36	54.00	-20.64 AVERAGE
3	1290.000	2.38	27.73	39.26	55.52	46.37	74.00	-27.63 Peak
4	1290.000	2.38	27.73	39.26	36.67	27.52	54.00	-26.48 AVERAGE
5	1550.000	2.55	28.47	39.38	55.68	47.32	74.00	-26.68 Peak
6	1550.000	2.55	28.47	39.38	36.71	28.35	54.00	-25.65 AVERAGE
7	2490.000	3.03	32.70	39.92	49.97	45.79	74.00	-28.21 Peak
8	2490.000	3.03	32.70	39.92	37.22	33.04	54.00	-20.96 AVERAGE
9	2575.000	3.08	32.82	39.99	50.71	46.62	74.00	-27.38 Peak
10	2575.000	3.08	32.82	39.99	37.11	33.02	54.00	-20.98 AVERAGE
11	2995.000	3.31	33.38	40.30	50.74	47.13	74.00	-26.87 Peak
12	2995.000	3.31	33.38	40.30	38.23	34.61	54.00	-19.39 AVERAGE



Play with USB stick mode

Horizontal



Condition : FCC PART15(>1G) PK 3m HORIZONTAL

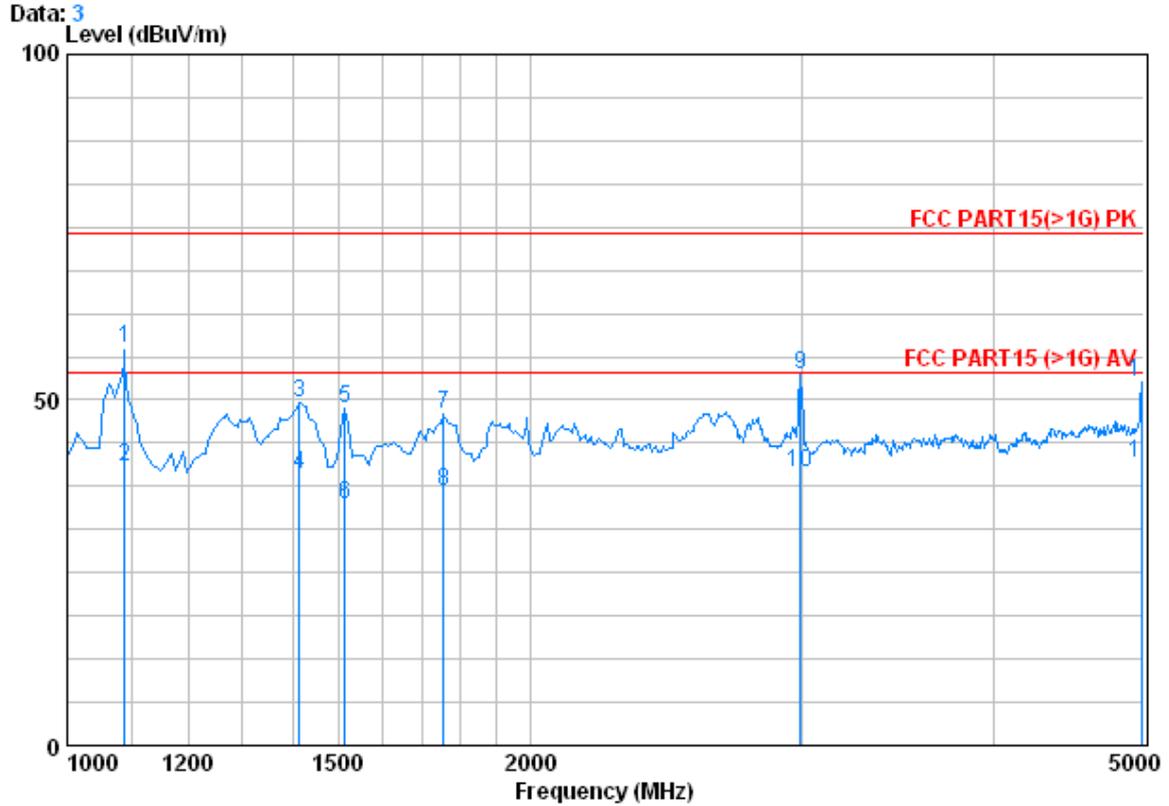
Job No. : 0467AV

Mode : Play with USB stick

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1090.000	2.26	27.36	39.18	66.99	57.42	74.00	-16.58	Peak
2	1090.000	2.26	27.36	39.18	47.93	38.36	54.00	-15.64	AVERAGE
3	1415.000	2.47	27.94	39.32	58.66	49.75	74.00	-24.25	Peak
4	1415.000	2.47	27.94	39.32	44.10	35.19	54.00	-18.81	AVERAGE
5	1515.000	2.52	28.22	39.36	45.36	36.75	54.00	-17.25	AVERAGE
6	1515.000	2.52	28.22	39.36	57.40	48.79	74.00	-25.21	Peak
7	1755.000	2.67	29.95	39.46	54.86	48.02	74.00	-25.98	Peak
8	1755.000	2.67	29.95	39.46	41.74	34.90	54.00	-19.10	AVERAGE
9	2995.000	3.31	33.38	40.30	42.23	38.61	54.00	-15.39	AVERAGE
10	2995.000	3.31	33.38	40.30	57.39	53.78	74.00	-20.22	Peak
11	4990.000	4.77	34.40	41.77	44.51	41.91	54.00	-12.09	AVERAGE
12	4990.000	4.77	34.40	41.77	55.08	52.48	74.00	-21.52	Peak



Vertical



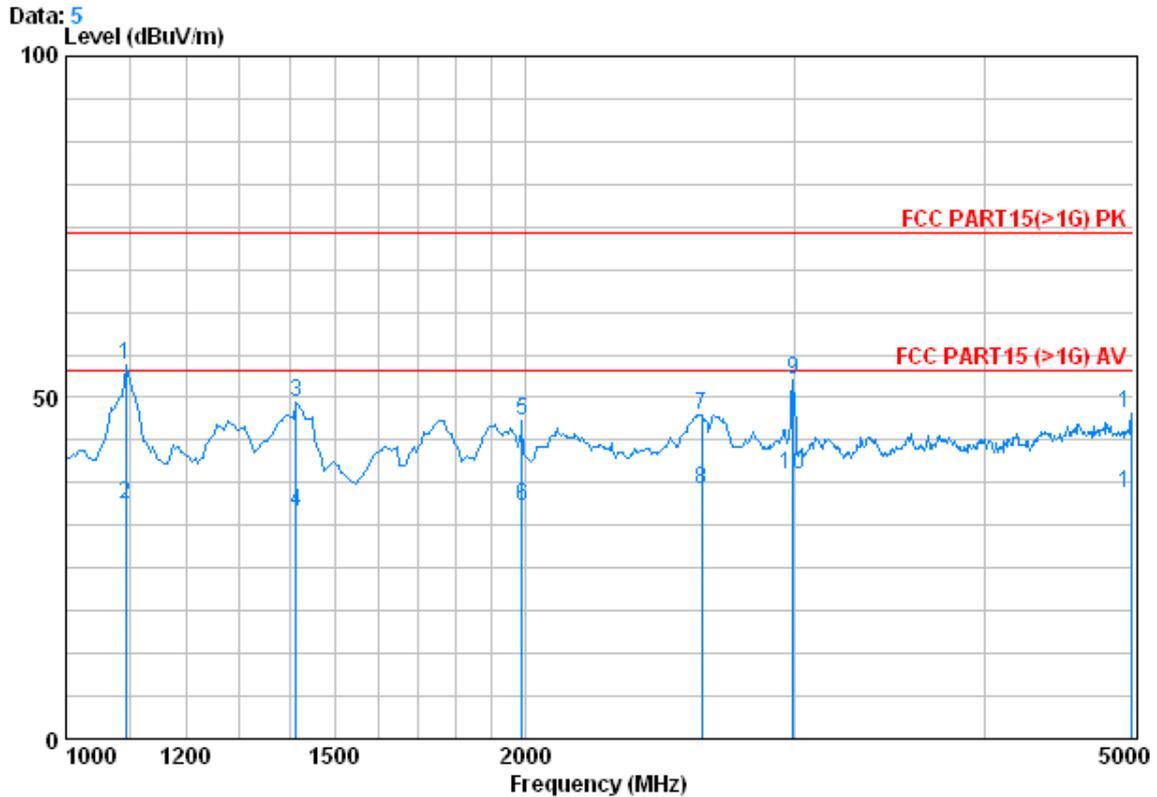
Condition : FCC PART15(>1G) PK 3m VERTICAL
 Job No. : 0467AV
 Mode : Play with USB stick

	Freq	CableAntenna	Preamp	Read	Limit	Over		
	MHz	Loss	Factor	Level	Line	Limit	Remark	
		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1090.000	2.26	27.36	39.18	66.99	57.42	74.00	-16.58 Peak
2	1090.000	2.26	27.36	39.18	49.93	40.36	54.00	-13.64 AVERAGE
3	1415.000	2.47	27.94	39.32	58.43	49.52	74.00	-24.48 Peak
4	1415.000	2.47	27.94	39.32	48.10	39.19	54.00	-14.81 AVERAGE
5	1515.000	2.52	28.22	39.36	57.40	48.79	74.00	-25.21 Peak
6	1515.000	2.52	28.22	39.36	43.36	34.75	54.00	-19.25 AVERAGE
7	1755.000	2.67	29.95	39.46	54.82	47.98	74.00	-26.02 Peak
8	1755.000	2.67	29.95	39.46	43.74	36.90	54.00	-17.10 AVERAGE
9	2995.000	3.31	33.38	40.30	57.39	53.78	74.00	-20.22 Peak
10	2995.000	3.31	33.38	40.30	43.23	39.61	54.00	-14.39 AVERAGE
11	4990.000	4.77	34.40	41.77	55.08	52.48	74.00	-21.52 Peak
12	4990.000	4.77	34.40	41.77	43.51	40.91	54.00	-13.09 AVERAGE



Record mode

Horizontal

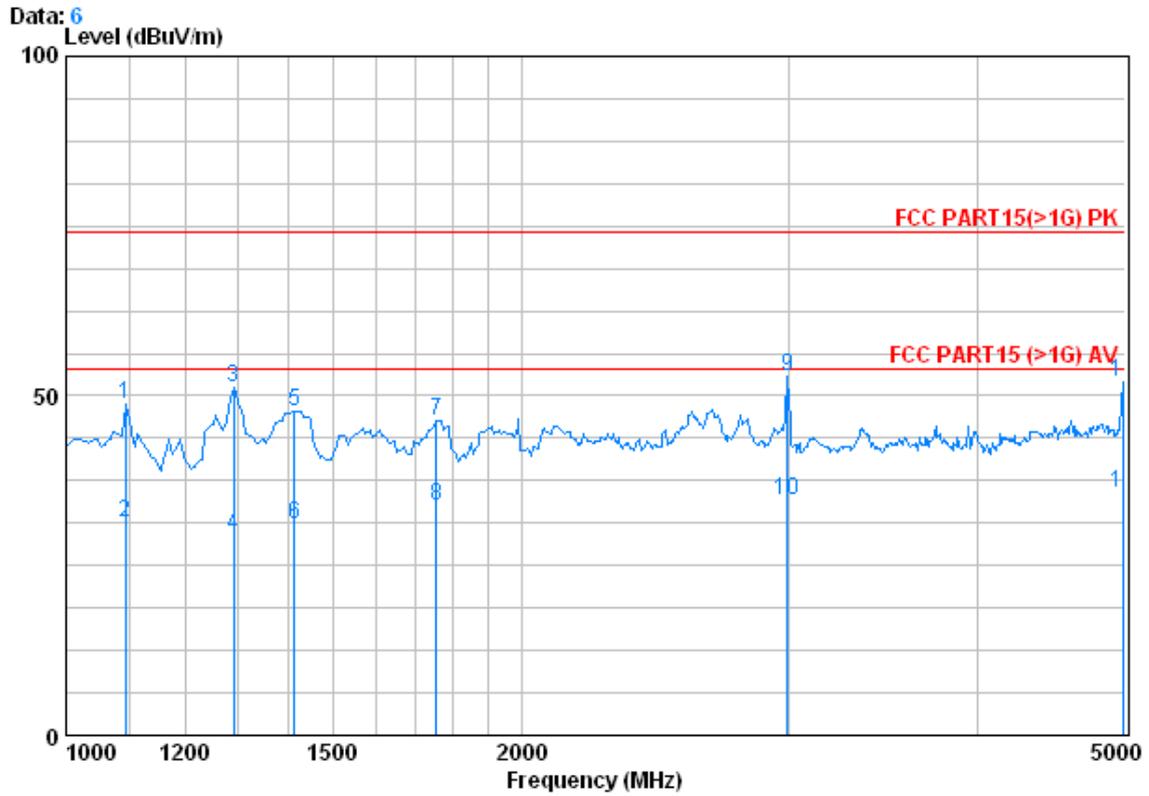


Condition : FCC PART15(>1G) PK 3m HORIZONTAL
Job No. : 0467AV
Mode : Record

	Freq	CableAntenna Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1095.000	2.26	27.39	39.18	64.27	54.74	74.00	-19.26	Peak
2	1095.000	2.26	27.39	39.18	43.97	34.43	54.00	-19.57	AVERAGE
3	1415.000	2.47	27.94	39.32	58.18	49.27	74.00	-24.73	Peak
4	1415.000	2.47	27.94	39.32	42.10	33.19	54.00	-20.81	AVERAGE
5	1990.000	2.84	31.68	39.56	51.53	46.49	74.00	-27.51	Peak
6	1990.000	2.84	31.68	39.56	39.24	34.19	54.00	-19.81	AVERAGE
7	2610.000	3.10	32.86	40.02	51.48	47.43	74.00	-26.57	Peak
8	2610.000	3.10	32.86	40.02	40.60	36.55	54.00	-17.45	AVERAGE
9	2995.000	3.31	33.38	40.30	56.28	52.67	74.00	-21.33	Peak
10	2995.000	3.31	33.38	40.30	42.23	38.61	54.00	-15.39	AVERAGE
11	4990.000	4.77	34.40	41.77	50.39	47.80	74.00	-26.20	Peak
12	4990.000	4.77	34.40	41.77	38.51	35.91	54.00	-18.09	AVERAGE



Vertical



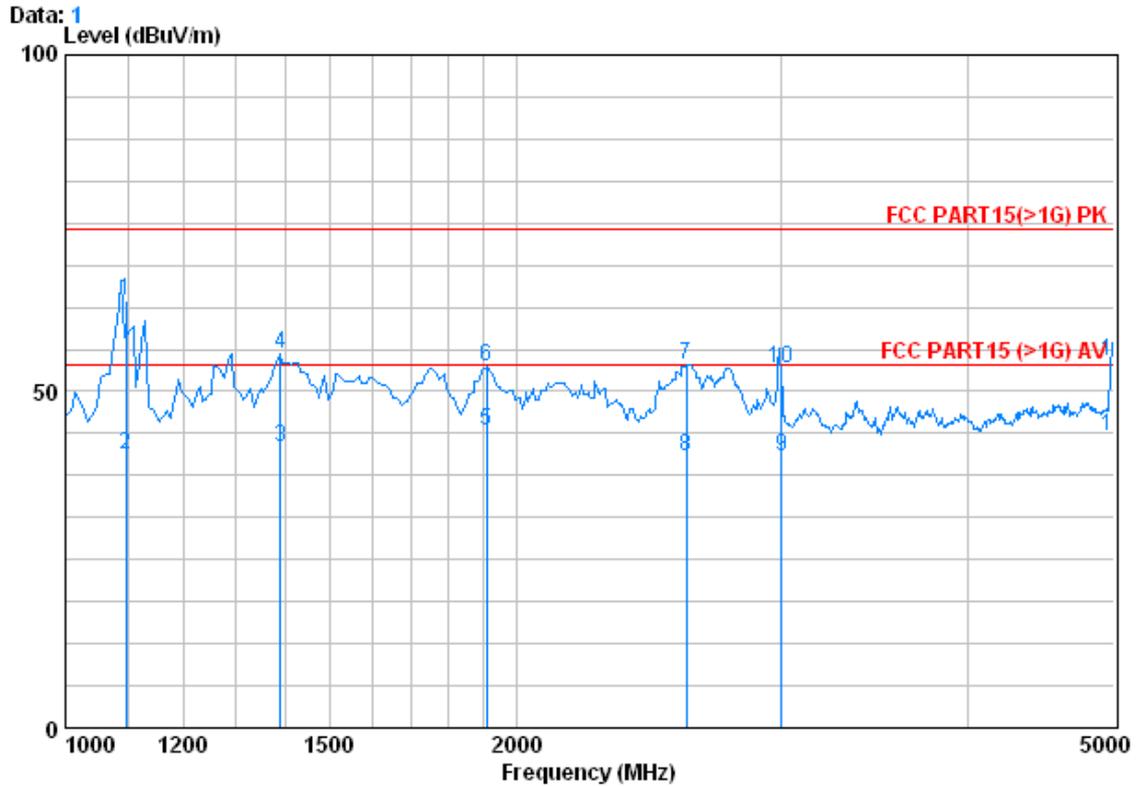
Condition : FCC PART15(>1G) PK 3m VERTICAL
Job No. : 0467AV
Mode : Record

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Limit Level	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	
1	1095.000	2.26	27.39	39.18	58.20	48.66	74.00	-25.34 Peak
2	1095.000	2.26	27.39	39.18	40.97	31.43	54.00	-22.57 AVERAGE
3	1290.000	2.38	27.73	39.26	60.50	51.35	74.00	-22.65 Peak
4	1290.000	2.38	27.73	39.26	38.67	29.52	54.00	-24.48 AVERAGE
5	1415.000	2.47	27.94	39.32	56.68	47.77	74.00	-26.23 Peak
6	1415.000	2.47	27.94	39.32	40.10	31.19	54.00	-22.81 AVERAGE
7	1755.000	2.67	29.95	39.46	53.18	46.34	74.00	-27.66 Peak
8	1755.000	2.67	29.95	39.46	40.74	33.90	54.00	-20.10 AVERAGE
9	2995.000	3.31	33.38	40.30	56.56	52.95	74.00	-21.05 Peak
10	2995.000	3.31	33.38	40.30	38.23	34.61	54.00	-19.39 AVERAGE
11	4990.000	4.77	34.40	41.77	54.61	52.01	74.00	-21.99 Peak
12	4990.000	4.77	34.40	41.77	38.30	35.70	54.00	-18.30 AVERAGE



Software update mode

Horizontal

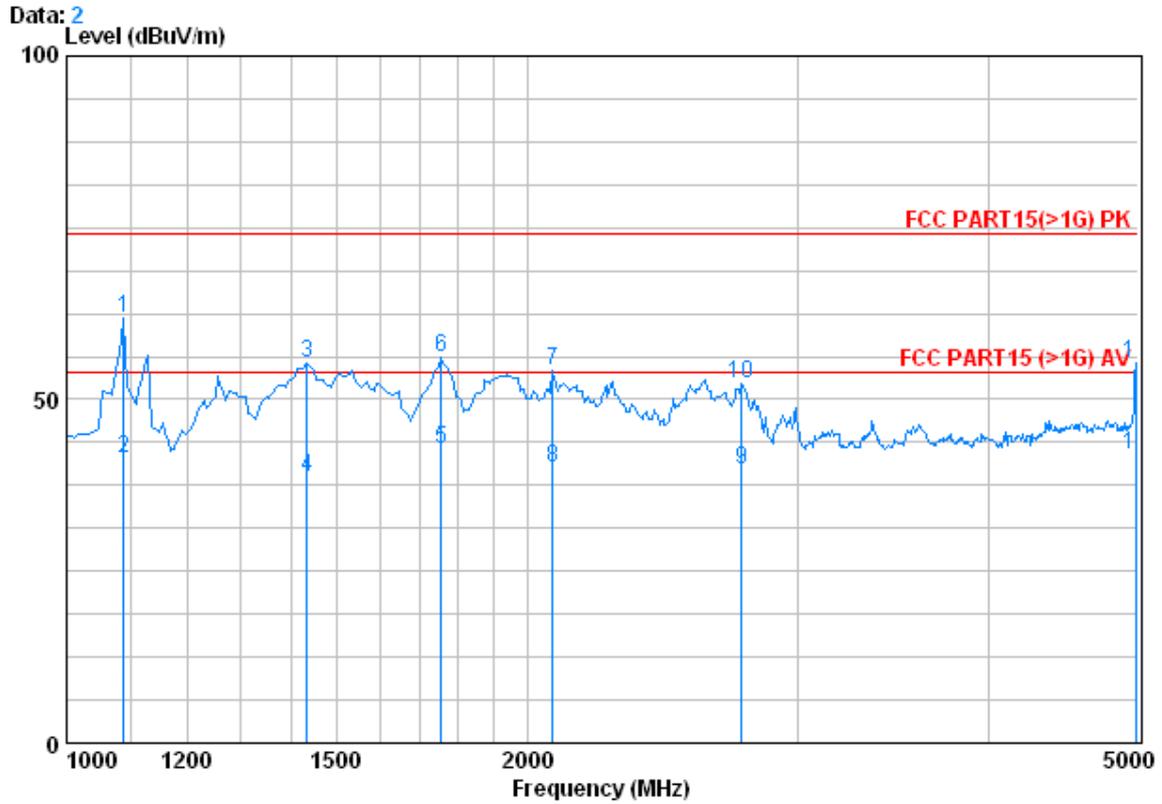


Condition : FCC PART15(>1G) PK 3m HORIZONTAL
 Job No. : 0467AV
 Mode : Software update

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1097.600	2.26	27.39	39.18	73.00	63.46	74.00	-10.54	Peak
2	1097.600	2.26	27.39	39.18	50.00	40.46	54.00	-13.54	Average
3	1390.000	2.44	27.91	39.31	50.63	41.67	54.00	-12.33	AVERAGE
4	1390.000	2.44	27.91	39.31	64.65	55.70	74.00	-18.30	Peak
5	1910.000	2.78	31.18	39.53	49.69	44.12	54.00	-9.88	AVERAGE
6	1910.000	2.78	31.18	39.53	59.17	53.60	74.00	-20.40	Peak
7	2595.000	3.09	32.84	40.00	58.15	54.08	74.00	-19.92	Peak
8	2595.000	3.09	32.84	40.00	44.47	40.40	54.00	-13.60	AVERAGE
9	3000.000	3.32	33.40	40.30	44.00	40.42	54.00	-13.58	Average
10	3000.000	3.32	33.40	40.30	57.00	53.42	74.00	-20.58	Peak
11	4995.000	4.77	34.40	41.77	57.00	54.40	74.00	-19.60	Peak
12	4995.000	4.77	34.40	41.77	46.00	43.40	54.00	-10.60	Average



Vertical



Condition : FCC PART15(>1G) PK 3m VERTICAL
 Job No. : 0467AV
 Mode : Software update

	Freq	Cable Loss	Antenna Factor	Preamplifier Factor	Read Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	
1	1090.000	2.26	27.36	39.18	71.29	61.73	74.00	-12.27 Peak
2	1090.000	2.26	27.36	39.18	50.93	41.36	54.00	-12.64 AVERAGE
3	1435.000	2.48	28.01	39.33	64.27	55.42	74.00	-18.58 Peak
4	1435.000	2.48	28.01	39.33	47.54	38.70	54.00	-15.30 AVERAGE
5	1755.000	2.67	29.95	39.46	49.74	42.90	54.00	-11.10 AVERAGE
6	1755.000	2.67	29.95	39.46	62.84	56.00	74.00	-18.00 Peak
7	2075.000	2.86	31.92	39.63	59.06	54.22	74.00	-19.78 Peak
8	2075.000	2.86	31.92	39.63	44.84	40.00	54.00	-14.00 AVERAGE
9	2755.000	3.18	33.05	40.12	43.56	39.67	54.00	-14.33 AVERAGE
10	2755.000	3.18	33.05	40.12	56.25	52.37	74.00	-21.63 Peak
11	4990.000	4.77	34.40	41.77	44.51	41.91	54.00	-12.09 AVERAGE
12	4990.000	4.77	34.40	41.77	57.80	55.20	74.00	-18.80 Peak



6.4 Antenna Power, 30 MHz to 960 MHz

Test Requirement: 47 CFR PART 15,Subpart B
Test Method: Setion 15.111
Test Voltage: 120V AC, 60Hz
Frequency Range: 30 MHz to 960 MHz
Class / Limit: Class B / 2 nW at 75 ohm terminal.
Detector: Quasi-peak
Remark: Limit voltage at 75ohm impedance =20log sqrt(P X R) =51.8 dBuV

6.4.1 E.U.T. Operation

Operating Environment:
Temperature: 25.0 °C Humidity: 55% RH Atmospheric Pressure: 1020 mbar
EUT Operation: Test in DVB mode, keep the EUT working with standard testing signal, pretest performed at low, middle and high channels DVB signal input and CH3,CH4 channels output, AV output and HDMI output, completed test was conducted at middle channel DVB signal input and HDMI output, since no worst case was found.

6.4.2 Measurement Data

Table with 6 columns: Frequency (MHz), Transducer (dB), Receiver QP Reading (dBuV), Receiver QP Level (dBuV), Limit (dBuV), Margin (dB). Rows include frequencies 126.850, 231.320, 346.161, 455.510, and 569.512.



6.5 Output and Spurious conducted level at RF output terminal

Test Requirement: 47 CFR PART 15, Subpart B
Test Method: Section 15.115
Test Voltage: 120V AC, 60Hz
Frequency Range: 4.6 MHz to 1 GHz
Class / Limit: 69.54dBuV for Video
56.53dBuV for Audio
39.55dBuV for others
Detector: RMS RBW=100kHz VBW=300kHz
Remark : Test with a 75/50 ohm converter.
Limit=20log(0.003)+120=69.54 dBuV for Video
Limit=20log(0.000671)+120=56.53 dBuV for Audio
Limit=20log(0.000095)+120=39.55 dBuV for Others

6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 55% RH Atmospheric Pressure: 1020 mbar

EUT Operation: Test in DVB mode, keep the EUT working with standard testing signal, pretest performed at low, middle and high channels DVB signal input and CH3, CH4 channels output, completed test was conducted at middle channel DVB signal input and CH3 channel out, since no worst case was found.

6.5.2 Measurement Data



Video

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)
61.25	50.82	69.54	-18.72
35.45	34.25	39.55	-5.3
85.57	34.36	39.55	-5.19
202.25	33.12	39.55	-6.43
410.25	31.21	39.55	-8.34
857.25	32.25	39.55	-7.3
975.35	30.23	39.55	-9.32

Audio

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)
65.75	50.76	56.53	-5.77
40.35	34.22	39.55	-5.33
87.69	35.35	39.55	-4.2
205.42	35.15	39.55	-4.4
413.51	33.25	39.55	-6.3
875.36	30.25	39.55	-9.3
965.25	33.22	39.55	-6.33





6.6 Demonstration on internal preventing circuitry

Test Requirement: 47 CFR PART 15, Subpart B
Test Method: Section 15.115
Test Voltage: 120V AC, 60Hz
Class / Limit: Class B
Video input signal levels in the range of 1V to 5V

6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 55% RH Atmospheric Pressure: 1020 mbar

EUT Operation: Test in DVB mode, keep the EUT working with standard testing signal, pretest performed at low, middle and high channels DVB signal input and CH3, CH4 channels output, completed test was conducted at middle channel DVB signal input and CH3 channel out, since no worst case was found.

6.6.2 Measurement

While the antenna port input with video signal levels in the range of one to five volts, there without anything noises appeared on the monitor, and the EUT was operated normally.