




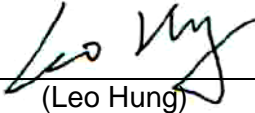
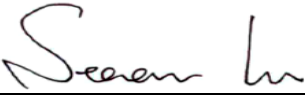
FCC Radio Test Report

FCC ID: ACQHDUDTA

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

Issued Date : Nov. 07, 2011
Project No. : 1110C258
Equipment : Universal Digital Transport Adapter
Model Name : HD-DTA100u/4305/000; HD-DTA100u/XXXX/XXX
(where X represents additional numeric suffix for non-hazardous differences)
Applicant : Motorola Mobility Inc.
Address : 101 Tournament Drive Horsham, PA 19044, USA
Manufacturer : Motorola Mobility Inc.
Address : 101 Tournament Drive Horsham, PA 19044, USA

Tested by:
Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Oct. 31, 2011
Date of Test:
Oct. 31, 2011 ~ Nov. 06, 2011

Testing Engineer : 
(Ivan Cao)
Technical Manager : 
(Leo Hung)
Authorized Signatory : 
(Steven Lu)

Neutron Engineering Inc.

**No.3, Jinshagang 1st Road, ShiXia, Dalang
Town, Dong Guan, China.
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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 : Universal Digital Transport Adapter

Brand Name : Motorola

Model Name : HD-DTA100u/4305/000; HD-DTA100u/XXXX/XXX (where X represents additional numeric suffix for non-hazardous differences)

Applicant : Motorola Mobility Inc.

Factory : 1. Hong Fu Jin Precision Industry (Shenzhen) Co., Ltd.
2. Nanning Fugui Precision Industrial Co., Ltd.

Address : 1. No.2, 2nd Donghuan Road, 10th Yousong Industrial District, Longhua Town, Baoan, Shenzhen, Guang Dong
2. No. 18, Zongbu Road, Nanning New&High-tech Industrial Development Zone, Guangxi

Date of Test : Oct. 31, 2011 ~ Nov. 06, 2011

Test Item : ENGINEERING SAMPLE

Standards : FCC Part15, Subpart C(15.247) / 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-1-1110C258) 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 (15.247) , Subpart C				
Standard	Section	Test Item	Judgment	Remark
	15.207	Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -9.53 dB at 1.759 MHz.
	15.247(d)	Antenna conducted Spurious Emission	PASS	Meets the requirements
	15.247(a)(2)	6dB Bandwidth	PASS	Meets the requirements
	15.247(b)(3)	Peak Output Power	PASS	Meets the requirements
	15.209/15.205	Radiated Spurious Emission	PASS	Meet the requirement of limit. Minimum passing margin is -5.95 dB at 73.65 MHz.
	15.247(e)	Power Spectral Density	PASS	Meets the requirements
	15.203	Antenna Requirement	PASS	Meets the requirements

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-CB03/DG-C02** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.523792

DG-C02 : (FCC RN: 247470)

DG-CB03 : (VCCI RN: G-95; FCC RN: 319330; IC Assigned Code: 4428B-1)

2.2 MEASUREMENT UNCERTAINTY

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

The reported uncertainty of measurement $y \pm U$, 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-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	NOTE
DG-CB03	CISPR	30MHz ~ 1000MHz	V	3.42	
		30MHz ~ 1000MHz	H	3.54	
		1GHz~26.5GHz	V	3.12	
		1GHz~26.5GHz	H	3.68	



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Universal Digital Transport Adapter	
Brand Name	Motorola	
Model Name	HD-DTA100u/4305/000; HD-DTA100u/XXXX/XXX (where X represents additional numeric suffix for non-hazardous differences)	
OEM Brand/Model Name	N/A	
Model Difference	where X represents additional numeric suffix for non-hazardous differences	
Product Description	The EUT is a Universal Digital Transport Adapter.	
	Operation Frequency:	2425~2475 MHz
	Modulation Type:	O-QPSK (digital modulation)
	Bit Rate of Transmitter	250 kbps
	Number of Channel	3 CH, Please see Note 2. (please see page 9)
	Antenna Designation:	Please see Note 3.
	Antenna Gain(Peak)	(please see page 9)
	Output Power:	-1.06dBm
	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.	
Power Source	#1 DC Voltage supplied from AC/DC adapter Brand name: Ampower ; Model name:AAI-01 #2 DC Voltage supplied from AC/DC adapter Brand name: Foxlink ; Model name:FA-0501500SUC	
Power Rating	#1 I/P 100-120VAC~ 50-60Hz, 0.25A O/P 5V, 1.5A #2 I/P 100-120VAC~ 60Hz, 0.3A O/P 5V, 1.5A	
Connecting I/O Port(s)	HDMI port Cable in / RF in port * 2 CH3/4 Switch port Power	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	N/A	

Note:

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



2.

Frequeuncy Band	Channel No.	Frequency
2400~2483.5MHz	01	2425 MHz
	02	2450 MHz
	03	2475 MHz

3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	PCB	N/A	3.25
2	N/A	N/A	PCB	N/A	3.25

EUT have two ANT port, can not transmitting synchronously.



3.2 DESCRIPTION OF TEST MODES

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

Pretest Mode	Description
Mode 1	TX MODE CHANNEL 01/02/03
Mode 2	FULL LOAD (256-QAM)

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

For Conducted Test	
Final Test Mode	Description
Mode 2	FULL LOAD (256-QAM)

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

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.



3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

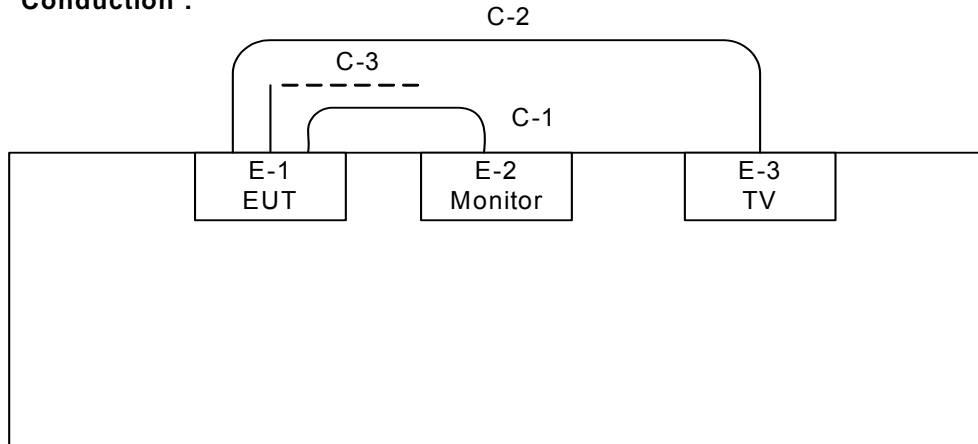
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final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

Test software Version	Test Program: Hardware control		
Frequency	2425 MHz	2450 MHz	2475 MHz
	3	3	3

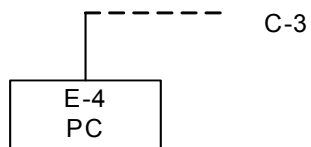


3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conduction :

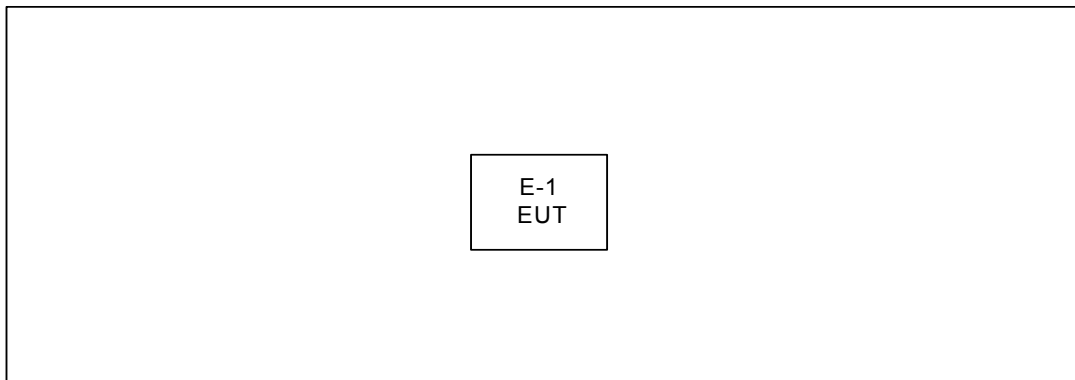


Control Room:



C-1 HDMI Cable
C-2 Coaxial Cable
C-3 Coaxial Cable

Radiation:





3.2 DESCRIPTION OF SUPPORT UNITS (CONDUCTED MODE)

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	Universal Digital Transport Adapter	Motorola	HD-DTA100u/4305/000	ACQHDUDTA	N/A	EUT
E-2	LCD monitor	Dell	E177FPc	DOC	CNOFJ179-64180-6AG-1WNS	
E-3	TV	SONY	KDL-32EX400	VER	5503192	
E-4	PC	IBM	8705	DOC	L3G4741	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	YES	NO	1.8M	Between the EUT and Monitor
C-2	YES	NO	1.5M	Between the EUT and TV
C-3	YES	NO	6.0M	Between the EUT and PC

Note:

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



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

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

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.1.2 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00052765	May.26.2012
2	LISN	R&S	ENV216	100087	May.26.2012
3	Test Cable	N/A	C_17	N/A	Mar.30.2012
4	EMI TEST RECEIVER	R&S	ESCS30	826547/022	May.26.2012
5	50Ω Terminator	SHX	TF2-3G-A	08122902	May.26.2012

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

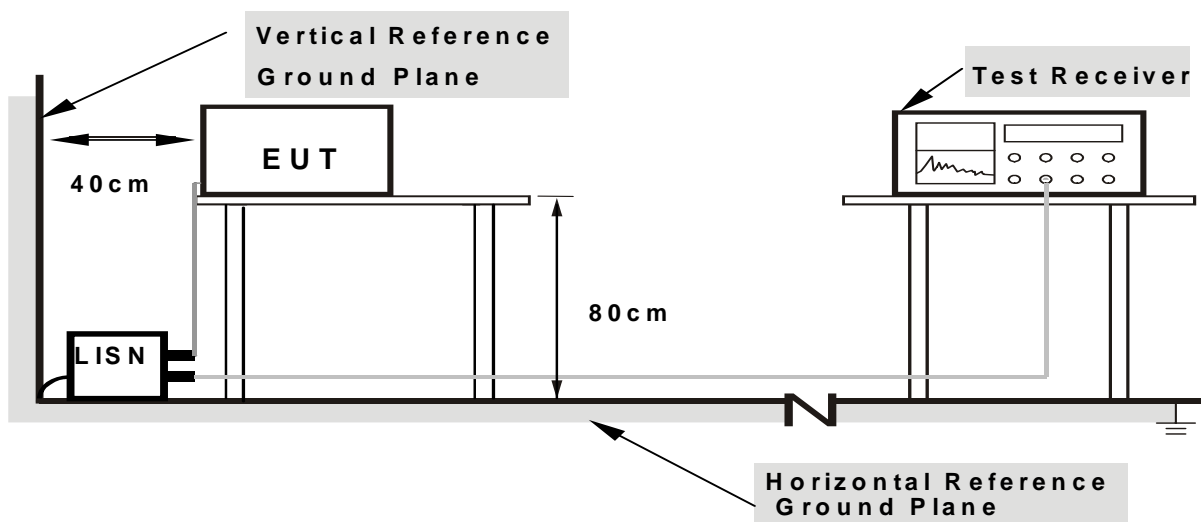
4.1.3 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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 cm from other units and other metal planes

4.1.6 EUT OPERATING CONDITIONS

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

The EUT was programmed to be in continuously transmitting



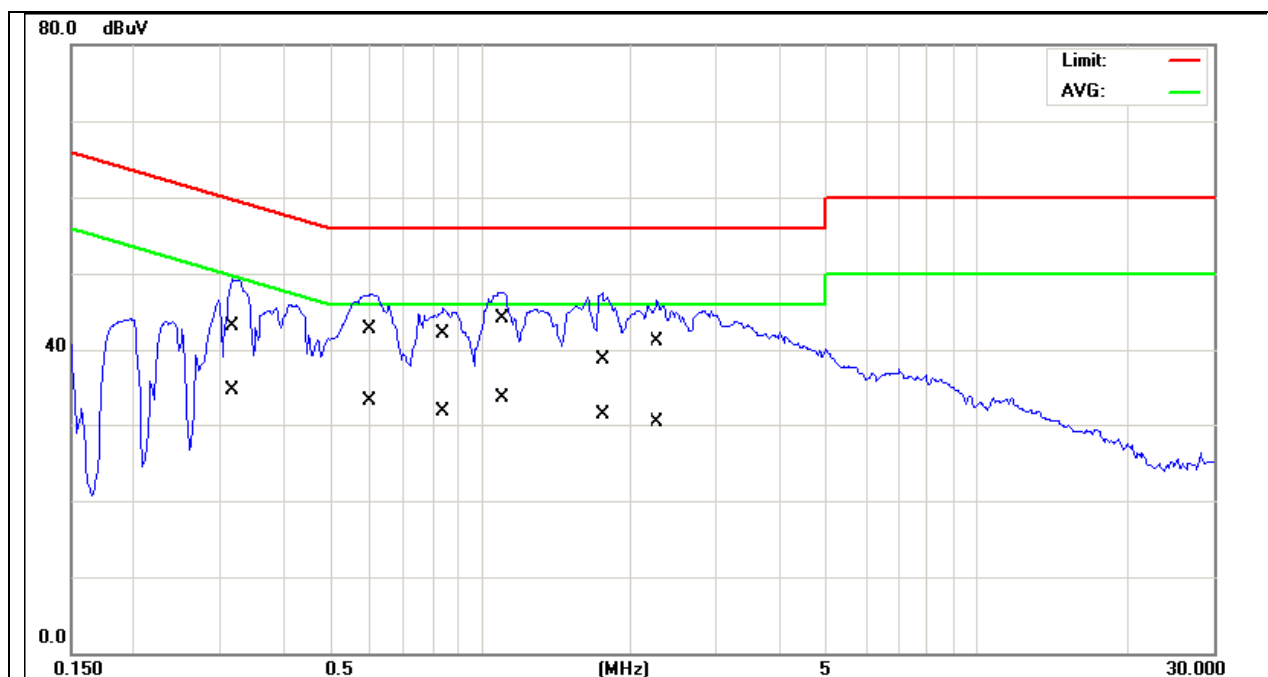
4.1.7 TEST RESULTS

EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-87MHz (Adapter: AAI-01)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.318	Line	33.25	24.65	9.78	43.03	34.43	59.76	49.76	-16.73	-15.33
0.599	Line	32.89	23.35	9.78	42.67	33.13	56.00	46.00	-13.33	-12.87
0.841	Line	32.35	21.86	9.79	42.14	31.65	56.00	46.00	-13.86	-14.35
1.103	Line	34.25	23.65	9.81	44.06	33.46	56.00	46.00	-11.94	-12.54
1.759	Line	28.86	21.35	9.92	38.78	31.27	56.00	46.00	-17.22	-14.73
2.283	Line	31.13	20.35	9.96	41.09	30.31	56.00	46.00	-14.91	-15.69

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
Correct factor = Insertion loss + Cable loss.
Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



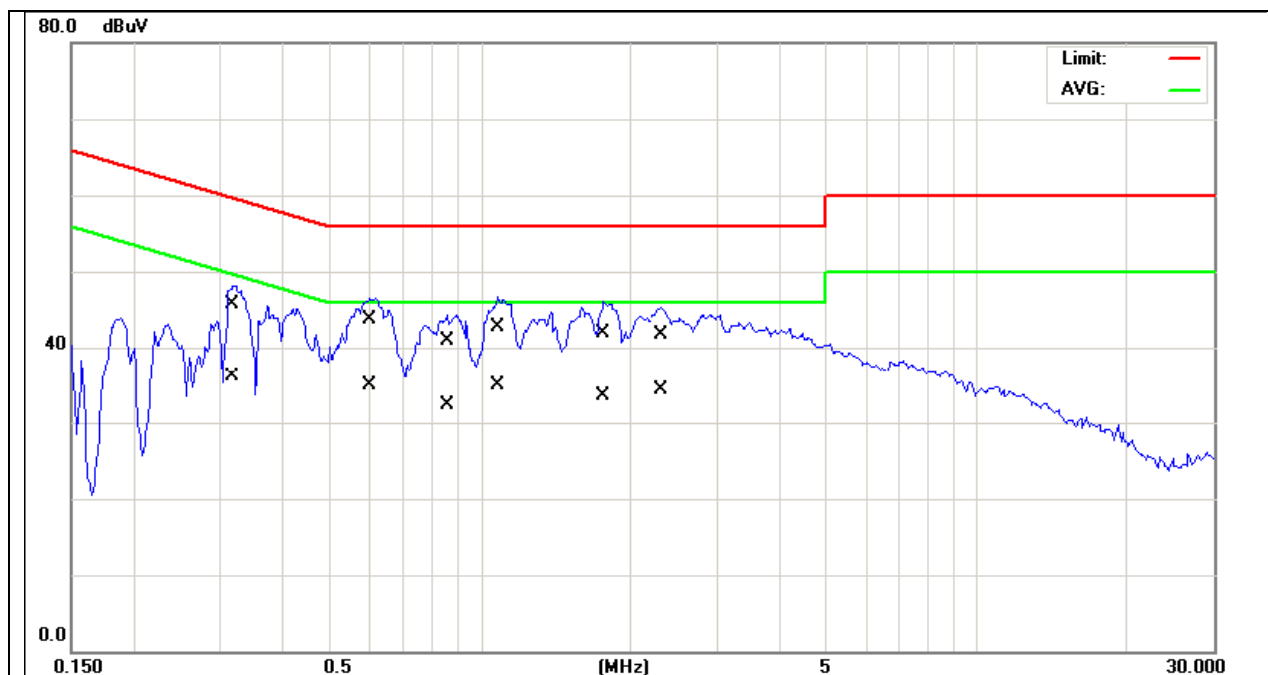


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-87MHz (Adapter: AAI-01)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.318	Neutral	35.98	26.25	9.78	45.76	36.03	59.76	49.76	-14.00	-13.73
0.599	Neutral	33.98	25.25	9.69	43.67	34.94	56.00	46.00	-12.33	-11.06
0.857	Neutral	31.29	22.65	9.68	40.97	32.33	56.00	46.00	-15.03	-13.67
1.080	Neutral	32.89	25.12	9.77	42.66	34.89	56.00	46.00	-13.34	-11.11
1.767	Neutral	32.05	23.69	9.80	41.85	33.49	56.00	46.00	-14.15	-12.51
2.318	Neutral	31.98	24.56	9.81	41.79	34.37	56.00	46.00	-14.21	-11.63

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
 Correct factor = Insertion loss + Cable loss.
 Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



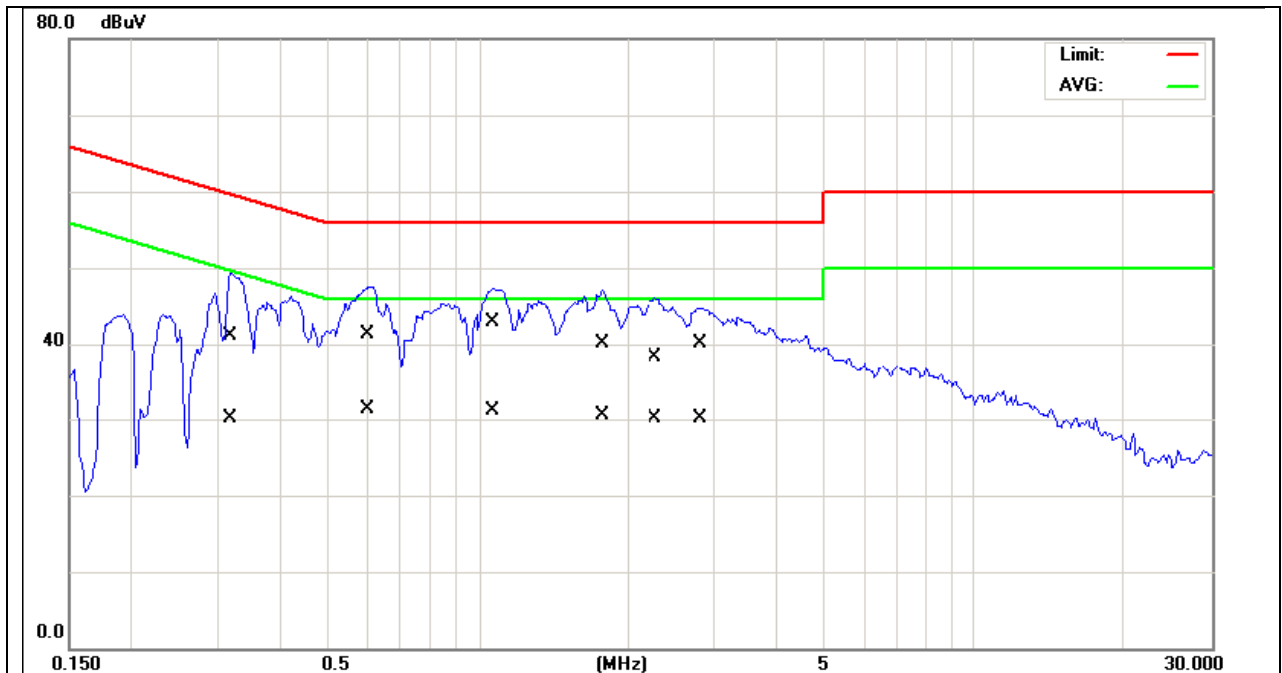


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-471MHz (Adapter: AAI-01)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.318	Line	31.25	20.40	9.78	41.03	30.18	59.76	49.76	-18.73	-19.58
0.599	Line	31.56	21.52	9.78	41.34	31.30	56.00	46.00	-14.66	-14.70
1.068	Line	33.12	21.35	9.81	42.93	31.16	56.00	46.00	-13.07	-14.84
1.775	Line	30.25	20.58	9.92	40.17	30.50	56.00	46.00	-15.83	-15.50
2.271	Line	28.35	20.14	9.96	38.31	30.10	56.00	46.00	-17.69	-15.90
2.802	Line	30.12	20.12	9.97	40.09	30.09	56.00	46.00	-15.91	-15.91

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
Correct factor = Insertion loss + Cable loss.
Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



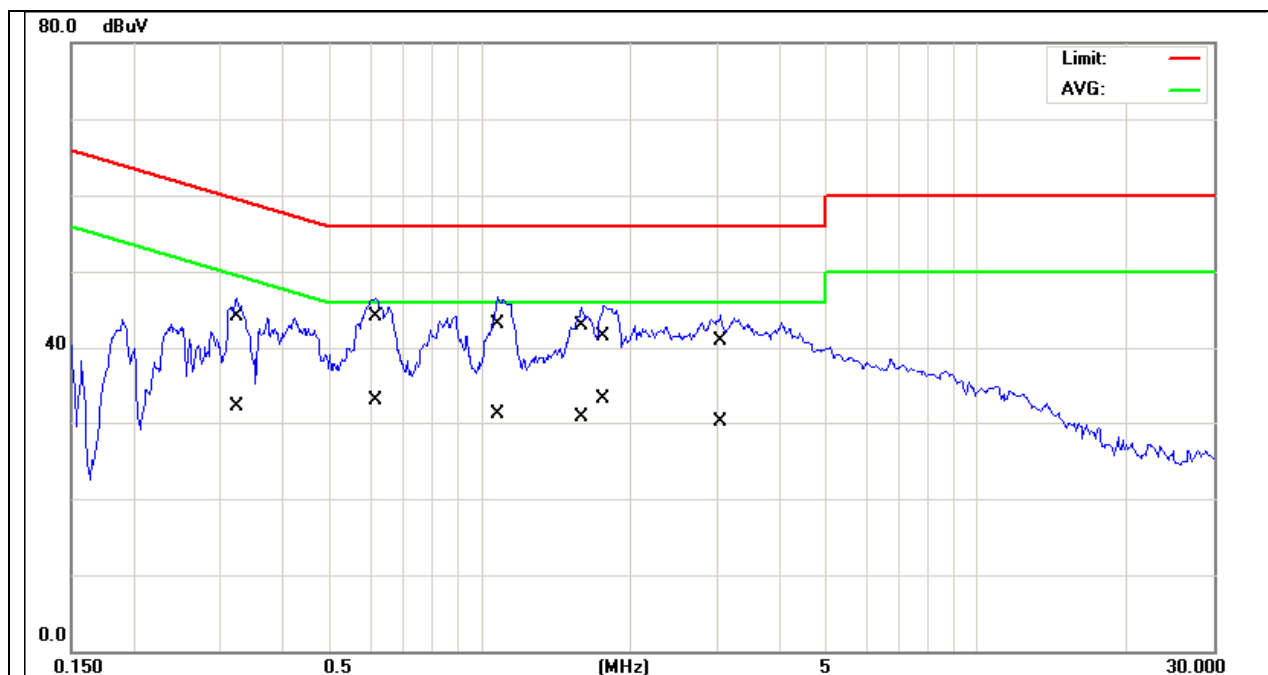


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-471MHz (Adapter: AAI-01)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.322	Neutral	34.25	22.39	9.78	44.03	32.17	59.67	49.67	-15.64	-17.50
0.615	Neutral	34.45	23.26	9.67	44.12	32.93	56.00	46.00	-11.88	-13.07
1.079	Neutral	33.35	21.30	9.77	43.12	31.07	56.00	46.00	-12.88	-14.93
1.599	Neutral	33.21	20.86	9.79	43.00	30.65	56.00	46.00	-13.00	-15.35
1.767	Neutral	31.61	23.37	9.80	41.41	33.17	56.00	46.00	-14.59	-12.83
3.070	Neutral	31.02	20.34	9.82	40.84	30.16	56.00	46.00	-15.16	-15.84

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
Correct factor = Insertion loss + Cable loss.
Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



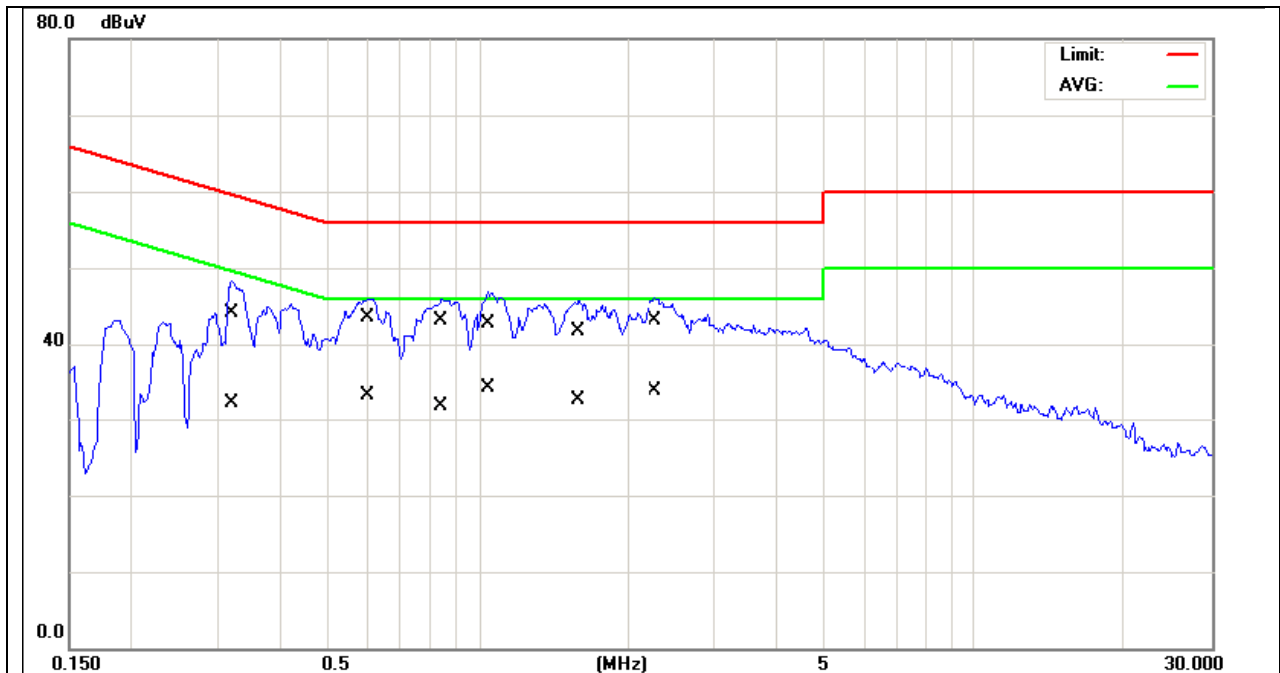


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-837MHz (Adapter: AAI-01)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.318	Line	34.28	22.35	9.78	44.06	32.13	59.75	49.75	-15.69	-17.62
0.599	Line	33.68	23.35	9.78	43.46	33.13	56.00	46.00	-12.54	-12.87
0.841	Line	33.28	21.87	9.79	43.07	31.66	56.00	46.00	-12.93	-14.34
1.048	Line	32.98	24.35	9.81	42.79	34.16	56.00	46.00	-13.21	-11.84
1.591	Line	31.86	22.65	9.89	41.75	32.54	56.00	46.00	-14.25	-13.46
2.271	Line	33.21	23.68	9.96	43.17	33.64	56.00	46.00	-12.83	-12.36

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
 Correct factor = Insertion loss + Cable loss.
 Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



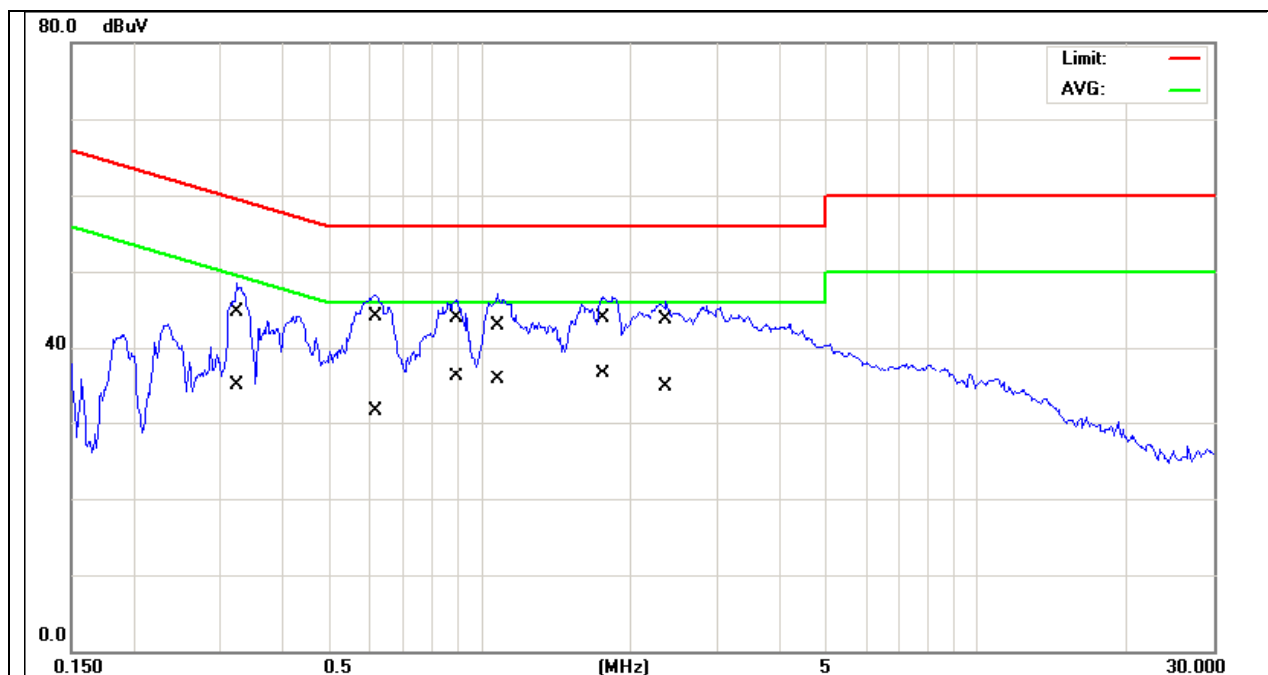


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-837MHz (Adapter: AAI-01)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.322	Neutral	35.02	25.19	9.78	44.80	34.97	59.67	49.67	-14.87	-14.70
0.615	Neutral	34.35	21.88	9.67	44.02	31.55	56.00	46.00	-11.98	-14.45
0.896	Neutral	34.12	26.35	9.71	43.83	36.06	56.00	46.00	-12.17	- 9.94
1.079	Neutral	33.17	25.89	9.77	42.94	35.66	56.00	46.00	-13.06	-10.34
1.759	Neutral	34.02	26.67	9.80	43.82	36.47	56.00	46.00	-12.18	- 9.53
2.371	Neutral	33.81	24.82	9.81	43.62	34.63	56.00	46.00	-12.38	-11.37

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
 Correct factor = Insertion loss + Cable loss.
 Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



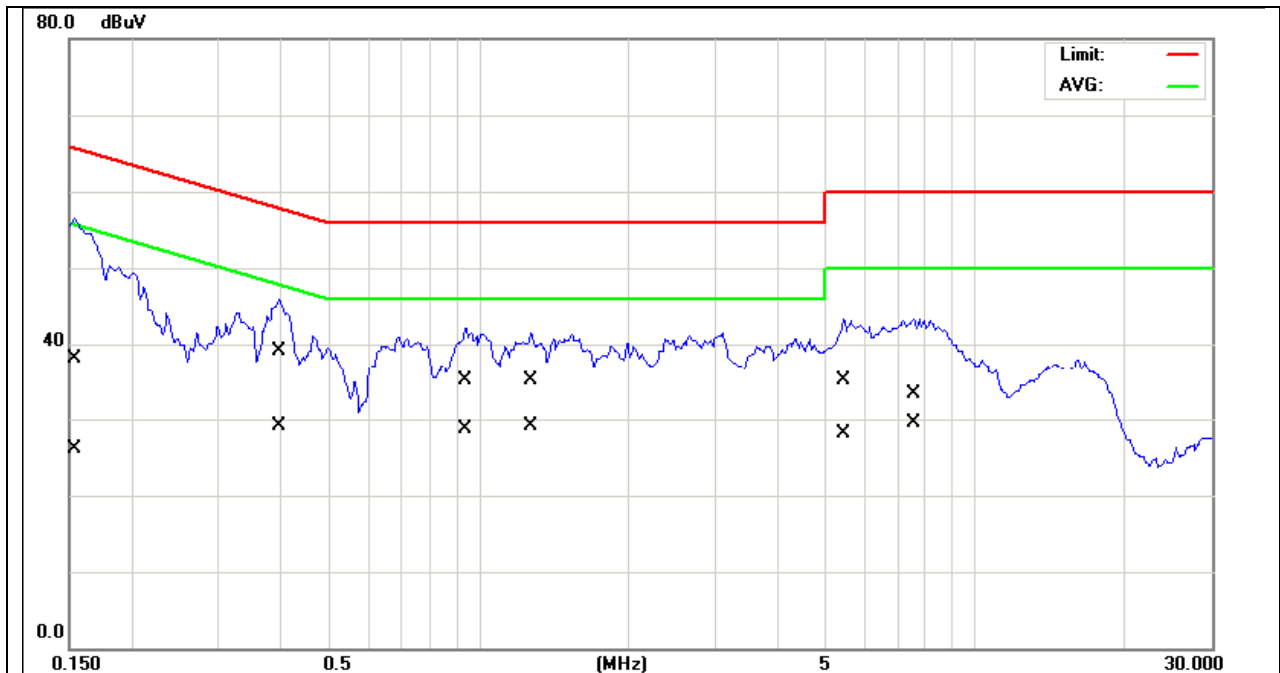


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-87MHz (Adapter: FA-0501500SUC)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.154	Line	28.36	16.25	9.79	38.15	26.04	65.78	55.78	-27.63	-29.74
0.396	Line	29.25	19.35	9.78	39.03	29.13	57.93	47.93	-18.90	-18.80
0.943	Line	25.35	18.99	9.80	35.15	28.79	56.00	46.00	-20.85	-17.21
1.271	Line	25.35	19.35	9.84	35.19	29.19	56.00	46.00	-20.81	-16.81
5.469	Line	25.11	18.11	10.00	35.11	28.11	60.00	50.00	-24.89	-21.89
7.535	Line	23.25	19.35	10.07	33.32	29.42	60.00	50.00	-26.68	-20.58

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
Correct factor = Insertion loss + Cable loss.
Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



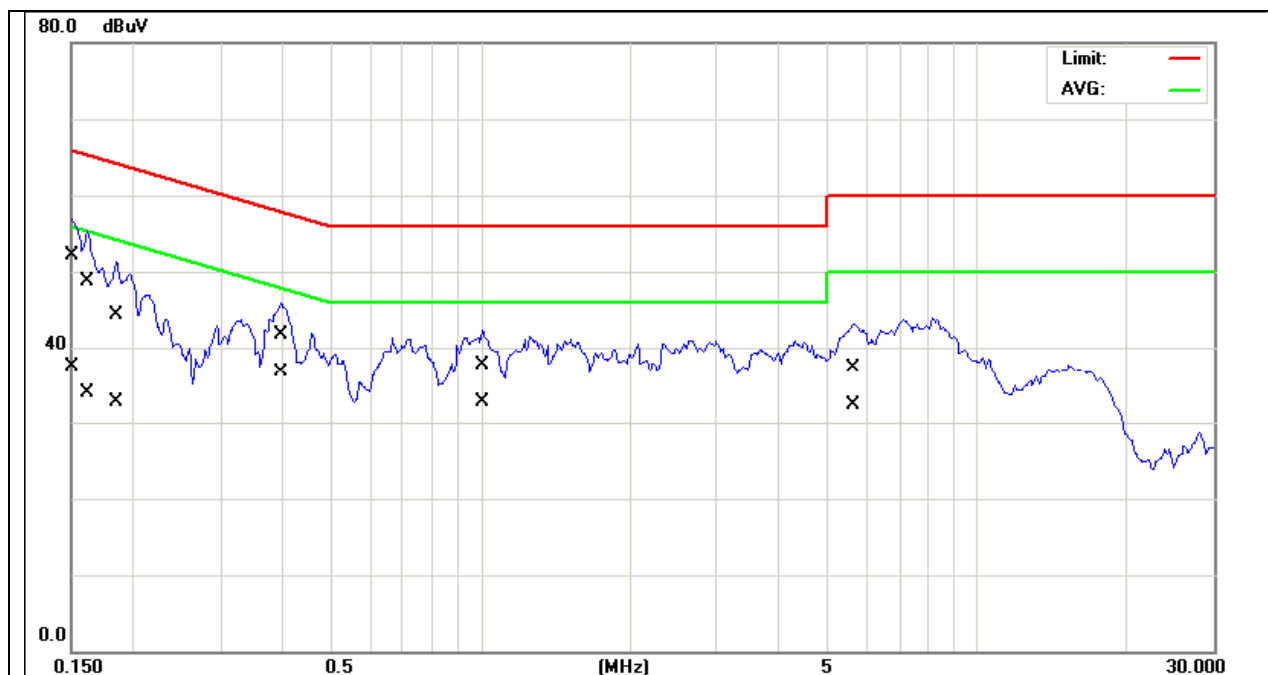


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-87MHz (Adapter: FA-0501500SUC)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.150	Neutral	42.40	27.80	9.79	52.19	37.59	66.00	56.00	-13.81	-18.41
0.162	Neutral	38.90	24.20	9.79	48.69	33.99	65.38	55.38	-16.69	-21.39
0.185	Neutral	34.50	22.98	9.78	44.28	32.76	64.25	54.25	-19.97	-21.49
0.396	Neutral	31.90	27.00	9.78	41.68	36.78	57.93	47.93	-16.25	-11.15
1.006	Neutral	27.86	22.94	9.77	37.63	32.71	56.00	46.00	-18.37	-13.29
5.680	Neutral	27.20	22.20	10.07	37.27	32.27	60.00	50.00	-22.73	-17.73

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
 Correct factor = Insertion loss + Cable loss.
 Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



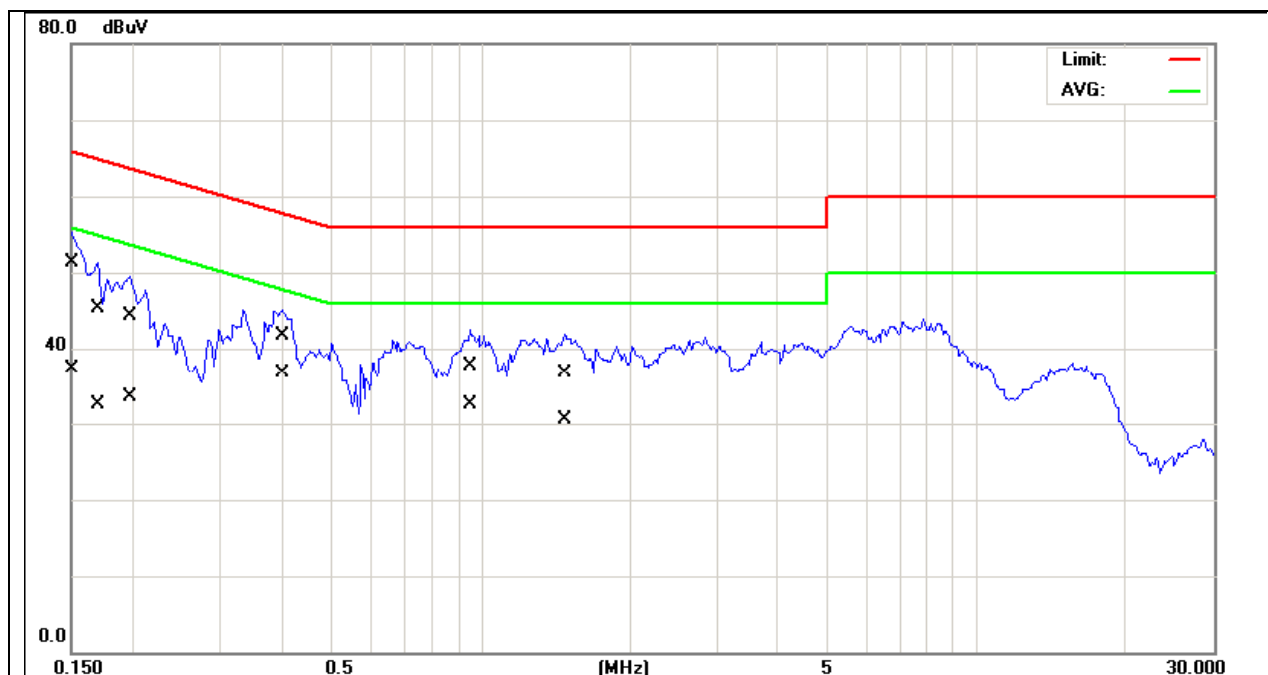


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-471MHz (Adapter: FA-0501500SUC)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.150	Line	41.50	27.50	9.79	51.29	37.29	66.00	56.00	-14.71	-18.71
0.170	Line	35.60	22.80	9.79	45.39	32.59	64.98	54.98	-19.59	-22.39
0.197	Line	34.50	23.80	9.78	44.28	33.58	63.74	53.74	-19.46	-20.16
0.400	Line	31.89	26.98	9.78	41.67	36.76	57.85	47.85	-16.18	-11.09
0.951	Line	27.85	22.69	9.80	37.65	32.49	56.00	46.00	-18.35	-13.51
1.474	Line	26.89	20.65	9.88	36.77	30.53	56.00	46.00	-19.23	-15.47

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
 Correct factor = Insertion loss + Cable loss.
 Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



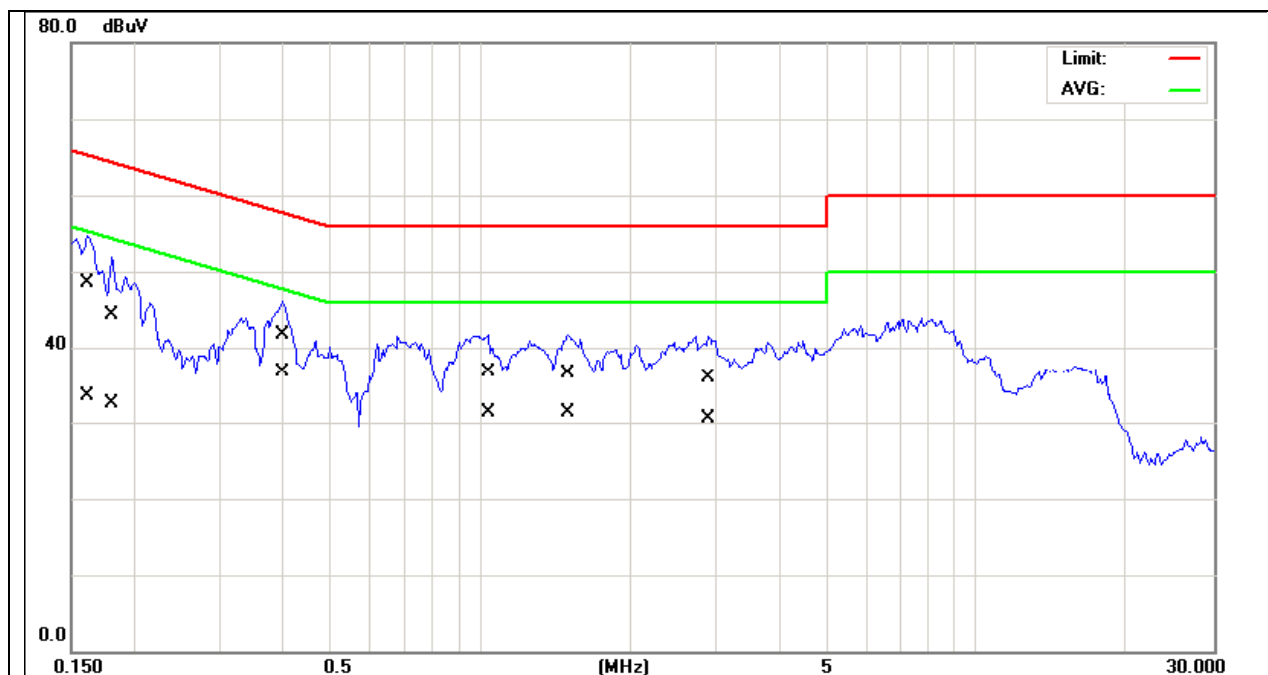


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-471MHz (Adapter: FA-0501500SUC)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.162	Neutral	38.80	23.65	9.79	48.59	33.44	65.38	55.38	-16.79	-21.94
0.181	Neutral	34.56	22.68	9.78	44.34	32.46	64.43	54.43	-20.09	-21.97
0.400	Neutral	32.02	26.89	9.78	41.80	36.67	57.85	47.85	-16.05	-11.18
1.037	Neutral	26.89	21.56	9.77	36.66	31.33	56.00	46.00	-19.34	-14.67
1.498	Neutral	26.69	21.56	9.79	36.48	31.35	56.00	46.00	-19.52	-14.65
2.892	Neutral	26.12	20.75	9.82	35.94	30.57	56.00	46.00	-20.06	-15.43

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
 Correct factor = Insertion loss + Cable loss.
 Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



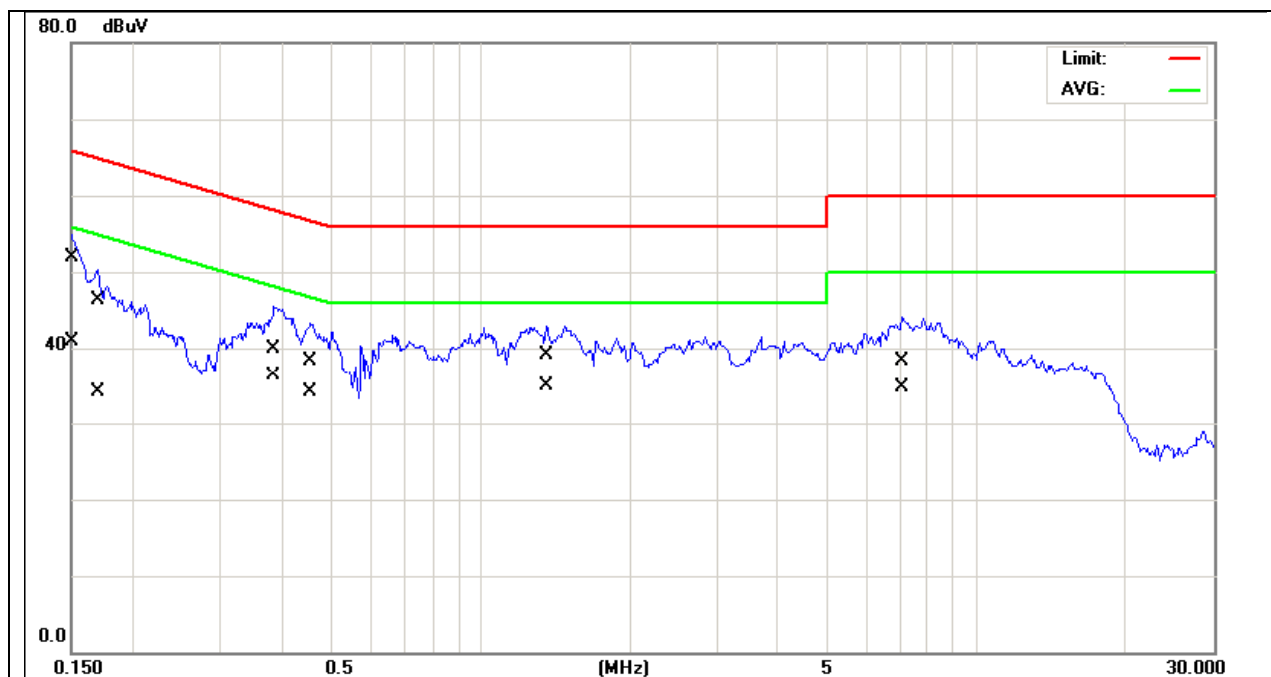


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-837MHz (Adapter: FA-0501500SUC)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.150	Line	42.04	31.05	9.79	51.83	40.84	66.00	56.00	-14.17	-15.16
0.170	Line	36.58	24.35	9.79	46.37	34.14	64.98	54.98	-18.61	-20.84
0.384	Line	30.12	26.50	9.78	39.90	36.28	58.19	48.19	-18.29	-11.91
0.455	Line	28.56	24.35	9.78	38.34	34.13	56.79	46.79	-18.45	-12.66
1.357	Line	29.35	25.14	9.85	39.20	34.99	56.00	46.00	-16.80	-11.01
7.090	Line	28.35	24.66	10.05	38.40	34.71	60.00	50.00	-21.60	-15.29

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
 Correct factor = Insertion loss + Cable loss.
 Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦



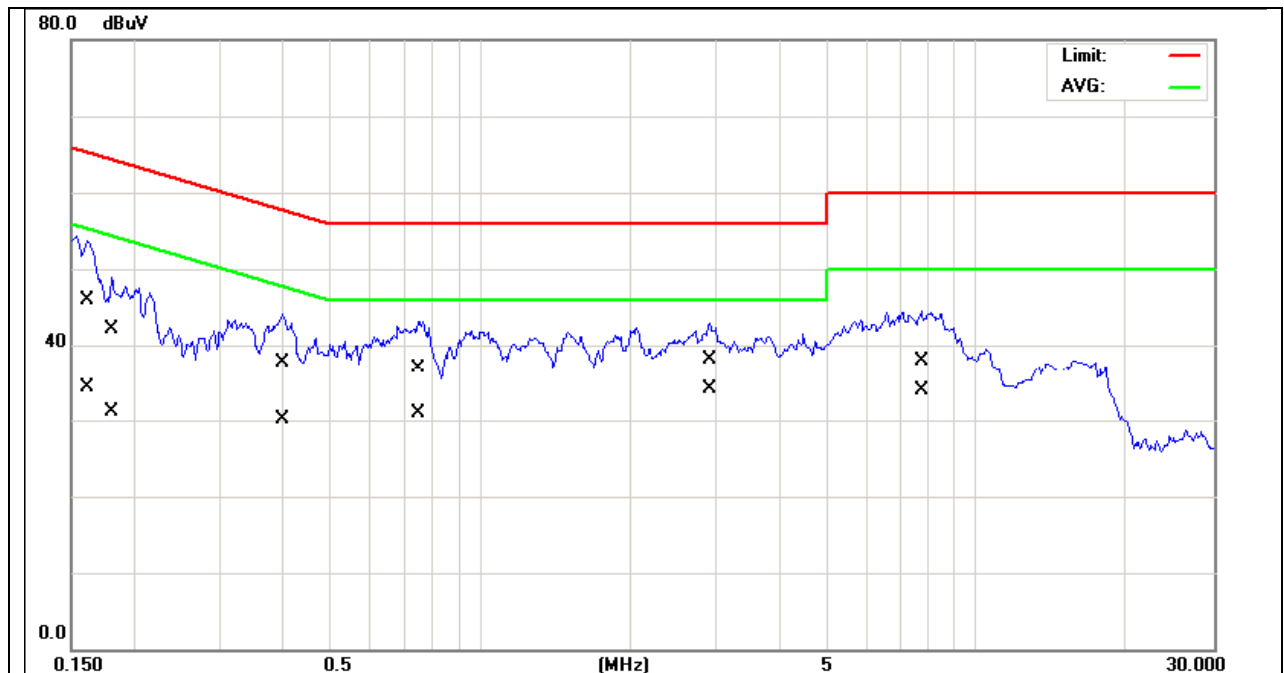


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	27 °C	Relative Humidity :	51 %
Pressure :	1010hPa	Test Power :	AC 120V/60Hz
Test Mode :	FULL LOAD (256-QAM)-837MHz (Adapter: FA-0501500SUC)		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin(dB)	
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode	QP-Mode	AV-Mode
0.162	Neutral	36.02	24.53	9.79	45.81	34.32	65.38	55.38	-19.57	-21.06
0.181	Neutral	32.35	21.35	9.78	42.13	31.13	64.44	54.44	-22.31	-23.31
0.400	Neutral	28.02	20.35	9.78	37.80	30.13	57.85	47.85	-20.05	-17.72
0.747	Neutral	27.35	21.35	9.63	36.98	30.98	56.00	46.00	-19.02	-15.02
2.900	Neutral	28.35	24.35	9.82	38.17	34.17	56.00	46.00	-17.83	-11.83
7.742	Neutral	27.35	23.32	10.63	37.98	33.95	60.00	50.00	-22.02	-16.05

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 = 0.2 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 =0.2 sec./MHz ◦
- (2) Margin value = Measurement level – Limit value.
 Correct factor = Insertion loss + Cable loss.
 Measurement level = Correct factor + Reading level.
- (3) Measuring frequency range from 150KHz to 30MHz ◦





4.2 RADIATED EMISSION MEASUREMENT

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

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), 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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

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



4.2.2 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Active Loop Antenna	R&S	HFH2-Z2	830749/020	May.26.2012
2	Bi-log Antenna	Schwarzbeck	VULB9160	9160-3232	May.25.2012
3	Horn Antenna	ETS	3115	00075789	May.11.2012
4	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170340	Dec.15.2011
5	Amplifier	HP	8447D	2944A09673	May.25.2012
6	Amplifier	Agilent	8449B	3008A02274	May.25.2012
7	Amplifier	EMC	EMC2654045	980039	Aug.11.2012
8	Test Receiver	R&S	ESCI	100895	May.25.2012
9	Spectrum Analyzer	R&S	FSP 40	100185	Nov.26.2011
10	Test Cable	N/A	C-01_CB03	N/A	Jul.04.2012
11	Test Cable	HUBER+SUHNER	SUCOFLEX_8 m	313794/4	Apr.11.2012
12	Controller	CT	SC100	N/A	N/A

Note

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in DG-CB03 (Below 1GHz/Above 1GHz)
3. The Horn antenna and HP preamplifier (model: 8449B) /EMC preamplifier (model: EMC2654045) are used only for the measurement of emission frequency above 1GHz if tested.
4. The IC Site Registration No. is 4428B-1 (DG-CB03)
5. The FCC Site Registration No. is 319330 (DG-CB03)

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

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



4.2.3 TEST PROCEDURE

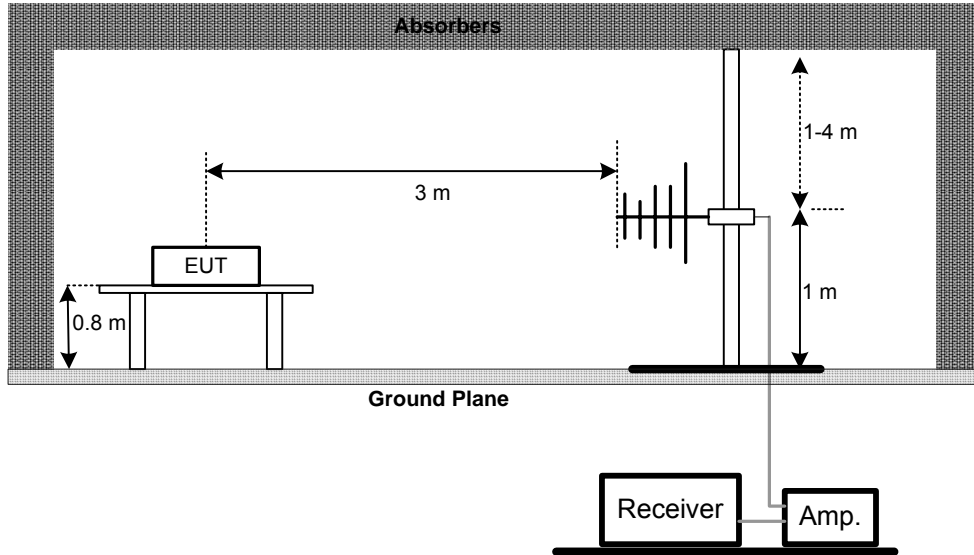
- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated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

4.2.4 DEVIATION FROM TEST STANDARD

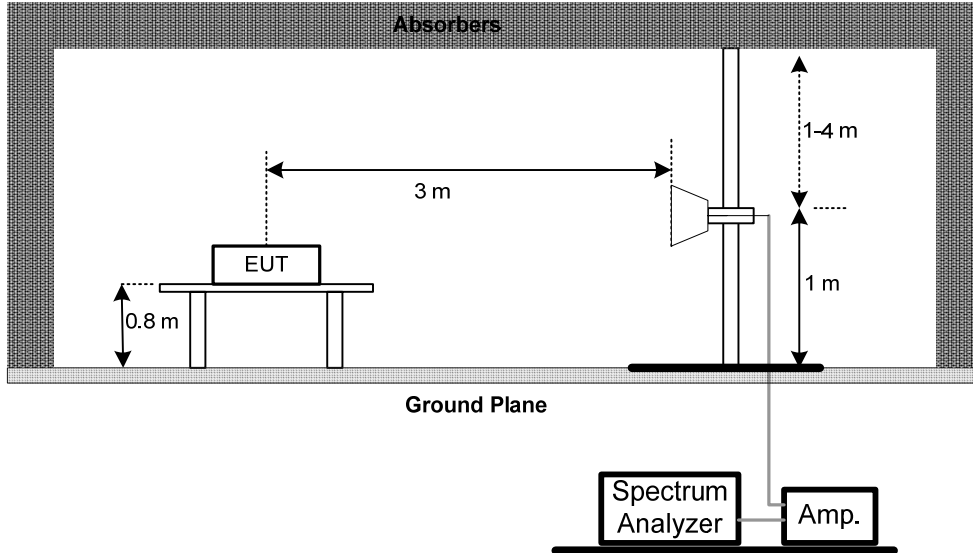
No deviation

4.2.5 TEST SETUP

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



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



4.2.6 EUT OPERATING CONDITIONS

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



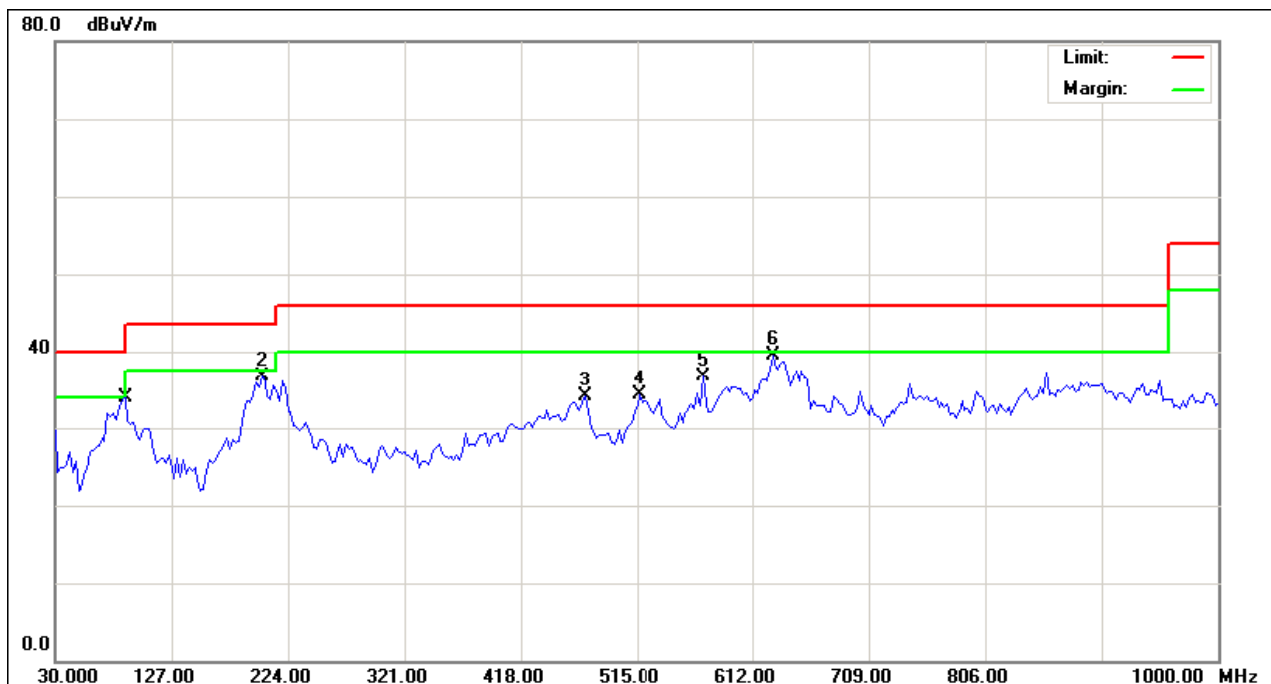
4.2.7 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	28 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE CHANNEL 01 (Adapter: AAI-01)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
88.20	V	52.93	-19.08	33.85	43.50	- 9.65	
202.18	V	53.15	-16.51	36.64	43.50	- 6.86	
471.35	V	41.81	-7.79	34.02	46.00	- 11.98	
517.43	V	41.04	-6.71	34.33	46.00	- 11.67	
570.78	V	41.63	-4.98	36.65	46.00	- 9.35	
628.98	V	43.26	-3.73	39.53	46.00	- 6.47	

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦
- (2) Measuring frequency range from 30MHz to 1000MHz ◦
- (3) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
Margin value = Emission level – Limit value.
- (4) 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 ◦
- (5) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ◦



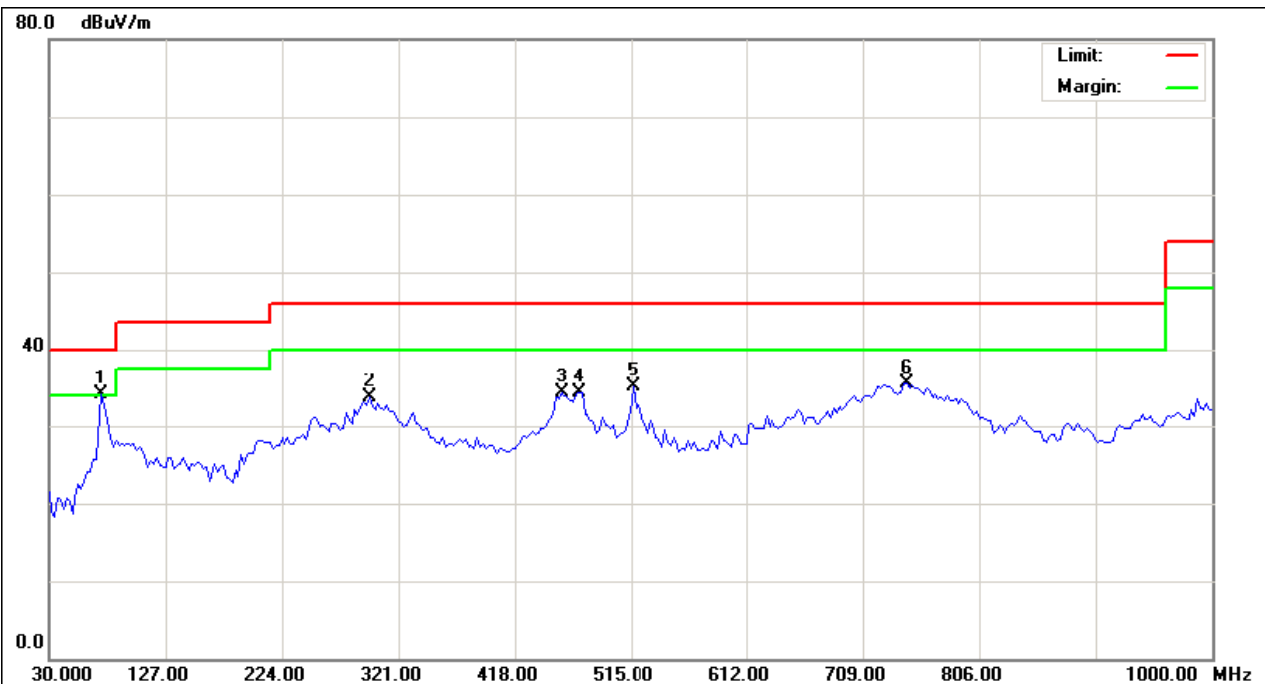


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	28 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE CHANNEL 01 (Adapter: AAI-01)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
73.65	H	52.73	-18.68	34.05	40.00	- 5.95	
296.75	H	45.81	-12.07	33.74	46.00	- 12.26	
456.80	H	42.36	-8.01	34.35	46.00	- 11.65	
471.35	H	42.06	-7.79	34.27	46.00	- 11.73	
517.43	H	41.77	-6.71	35.06	46.00	- 10.94	
745.38	H	38.21	-2.63	35.58	46.00	- 10.42	

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦
- (2) Measuring frequency range from 30MHz to 1000MHz ◦
- (3) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
Margin value = Emission level – Limit value.
- (4) 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 ◦
- (5) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ◦



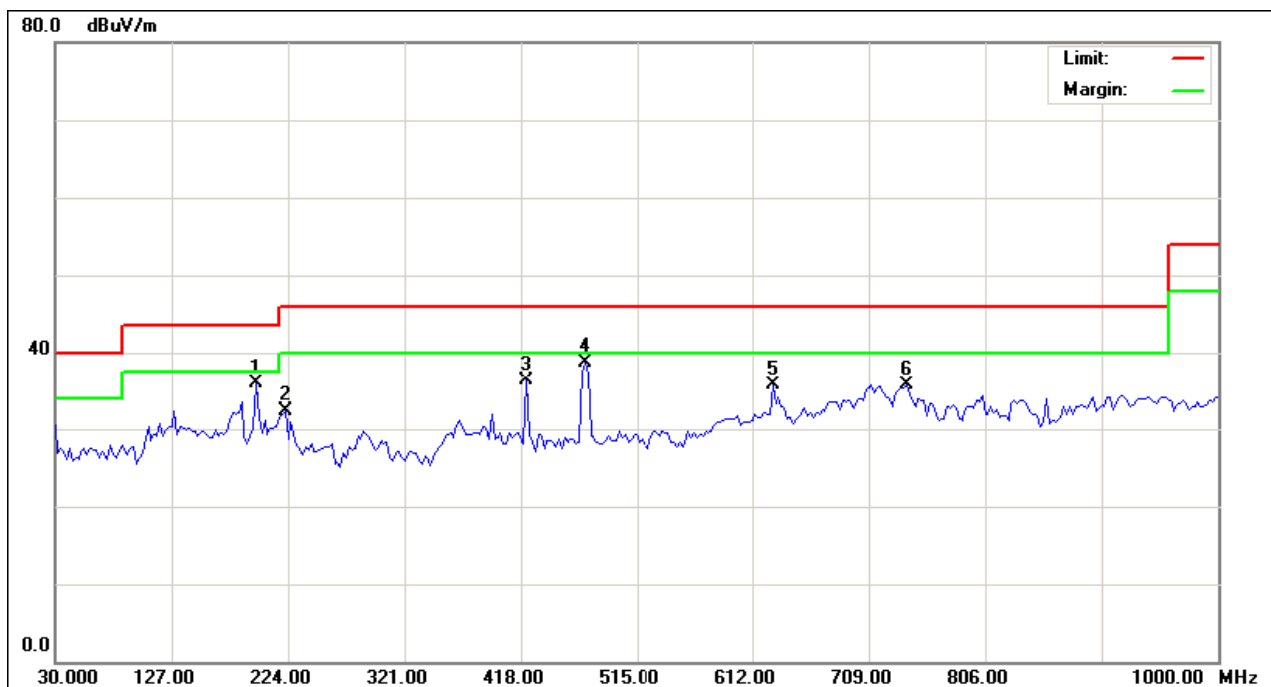


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	28 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE CHANNEL 01 (Adapter: FA-0501500SUC)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
197.33	V	52.47	-16.62	35.85	43.50	- 7.65	
221.58	V	48.20	-15.82	32.38	46.00	- 13.62	
422.85	V	45.01	-8.61	36.40	46.00	- 9.60	
471.35	V	46.53	-7.79	38.74	46.00	- 7.26	
628.98	V	39.51	-3.73	35.78	46.00	- 10.22	
740.53	V	38.47	-2.67	35.80	46.00	- 10.20	

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦
- (2) Measuring frequency range from 30MHz to 1000MHz ◦
- (3) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
Margin value = Emission level – Limit value.
- (4) 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 ◦
- (5) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ◦



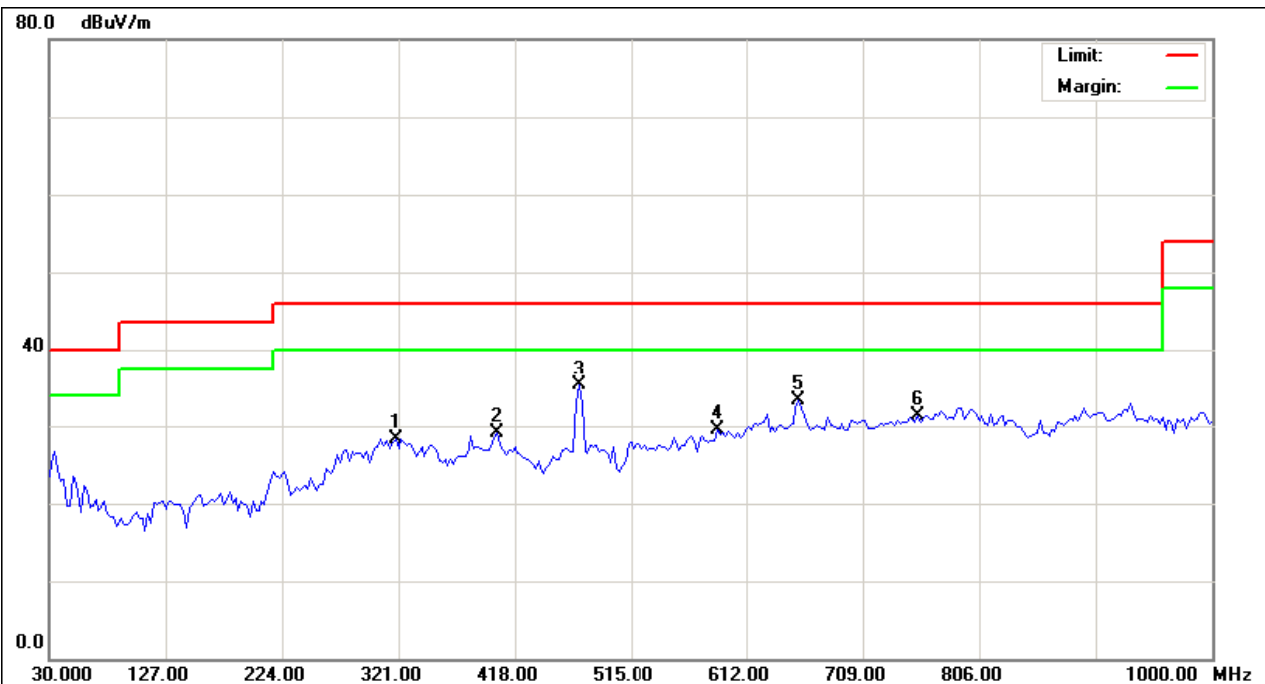


EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	28 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE CHANNEL 01 (Adapter: FA-0501500SUC)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
318.58	H	40.01	-11.61	28.40	46.00	- 17.60	
403.45	H	38.15	-8.96	29.19	46.00	- 16.81	
471.35	H	43.02	-7.79	35.23	46.00	- 10.77	
587.75	H	34.07	-4.57	29.50	46.00	- 16.50	
655.65	H	36.67	-3.32	33.35	46.00	- 12.65	
755.08	H	33.72	-2.49	31.23	46.00	- 14.77	

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦
- (2) Measuring frequency range from 30MHz to 1000MHz ◦
- (3) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
Margin value = Emission level – Limit value.
- (4) 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 ◦
- (5) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ◦





4.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE 2425MHz		

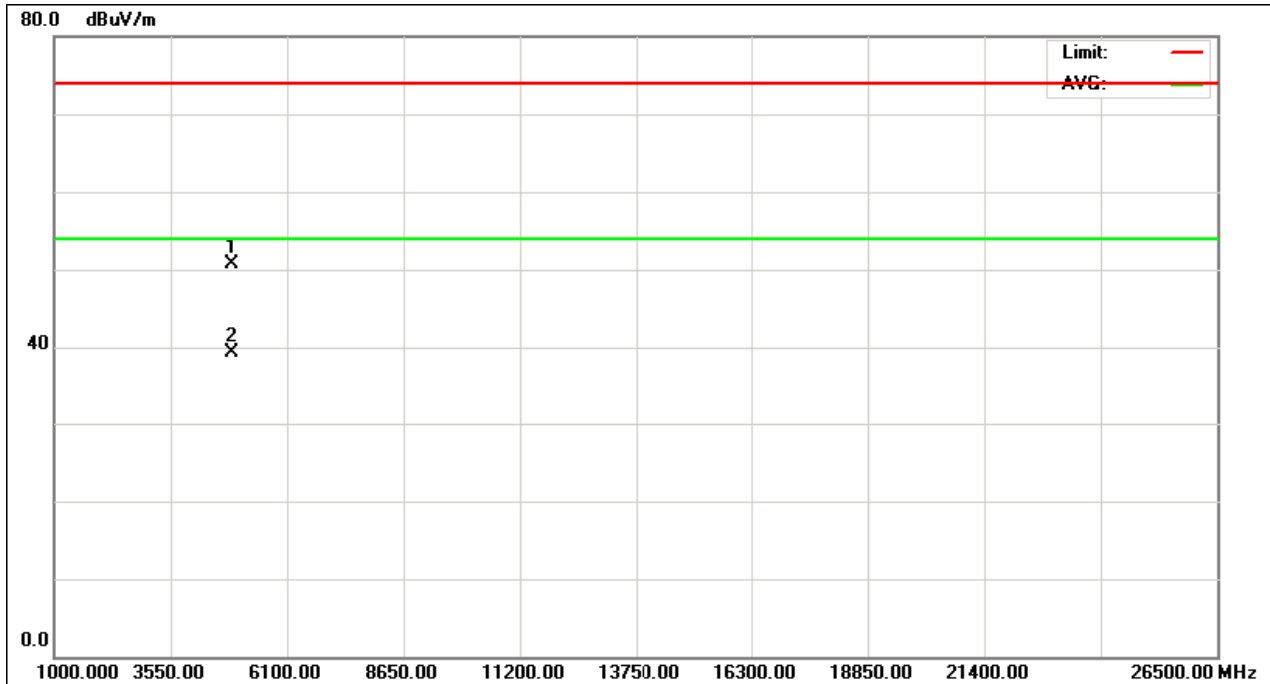
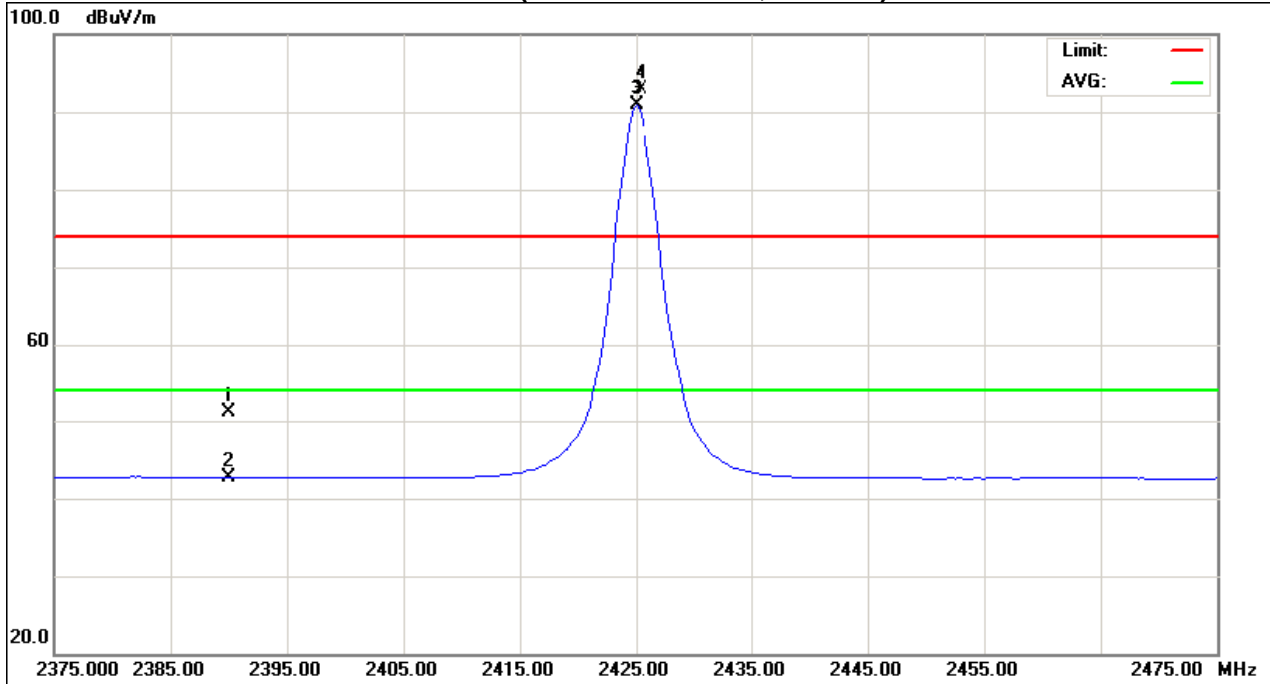
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	19.16	10.85	31.91	51.07	42.76	74.00	54.00	X/E
2425.00	V	61.09	58.96	31.87	92.96	90.83			X/F
4850.01	V	45.26	33.87	5.38	50.64	39.25	74.00	54.00	X/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (8) Reading in which marked as Peak or AVG means measurements by using are Peak Mode or AVG with Detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz, AVG Mode with detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =10Hz, Swp. Time = 0.3 sec./MHz ◦
- (9) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
Margin value = Emission level – Limit value.



TX CH01 (Above 1000 MHz, Vertical)





EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE 2425MHz		

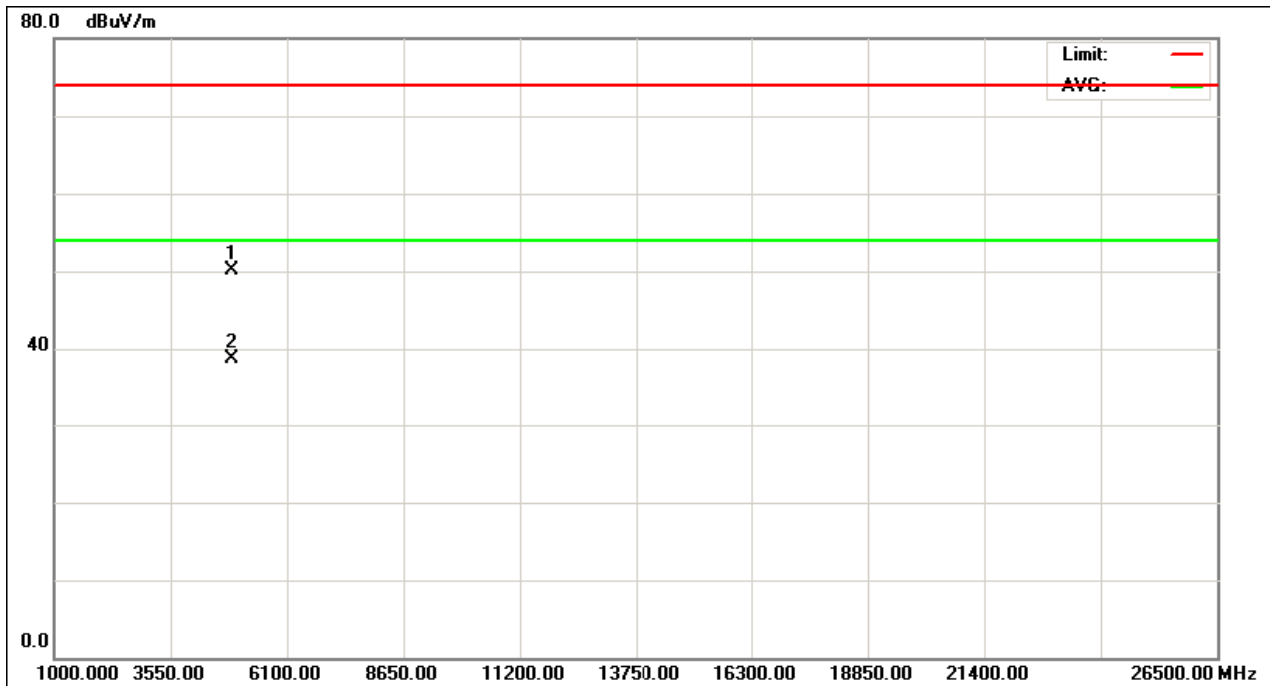
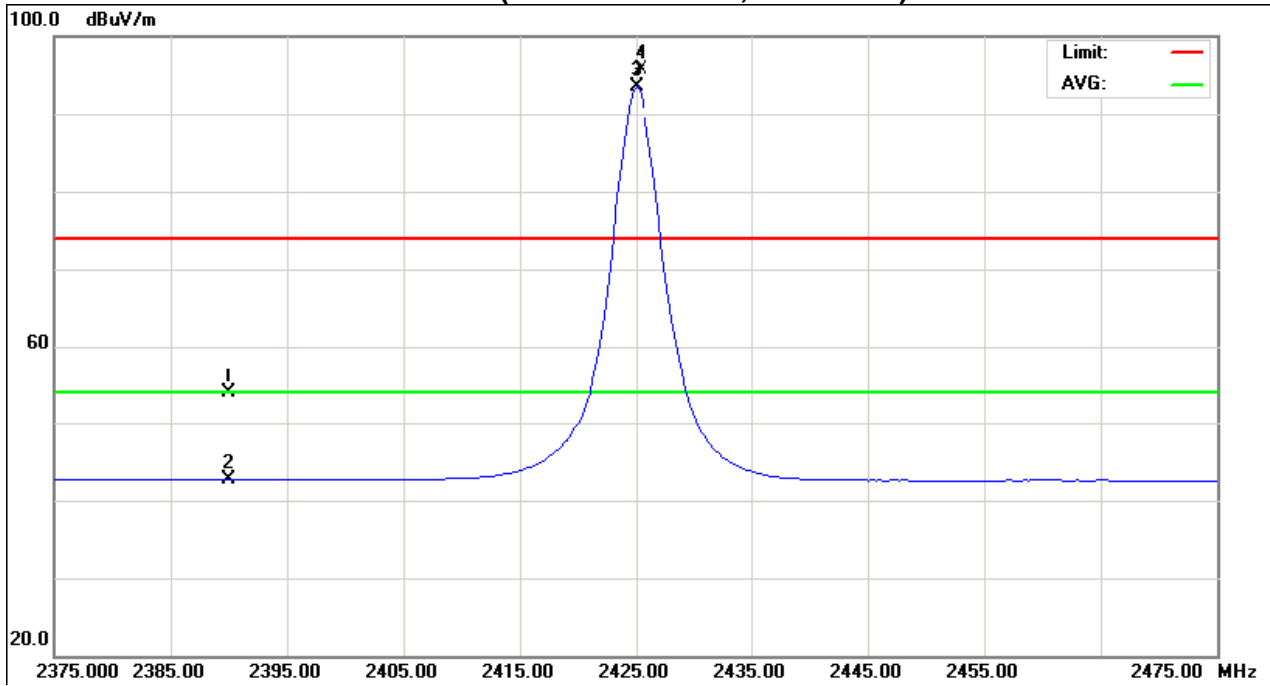
Freq.	Ant.Pol.	Reading		Ant./CF	Act		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	H	21.92	10.82	31.91	53.83	42.73	74.00	54.00	X/E
2425.00	H	63.84	61.67	31.87	95.71	93.54			X/F
4850.09	H	44.73	33.29	5.38	50.11	38.67	74.00	54.00	X/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (8) Reading in which marked as Peak or AVG means measurements by using are Peak Mode or AVG with Detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz, AVG Mode with detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =10Hz, Swp. Time = 0.3 sec./MHz ◦
- (9) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
 Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
 Margin value = Emission level – Limit value.



TX CH01 (Above 1000 MHz, Horizontal)





EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE 2450MHz		

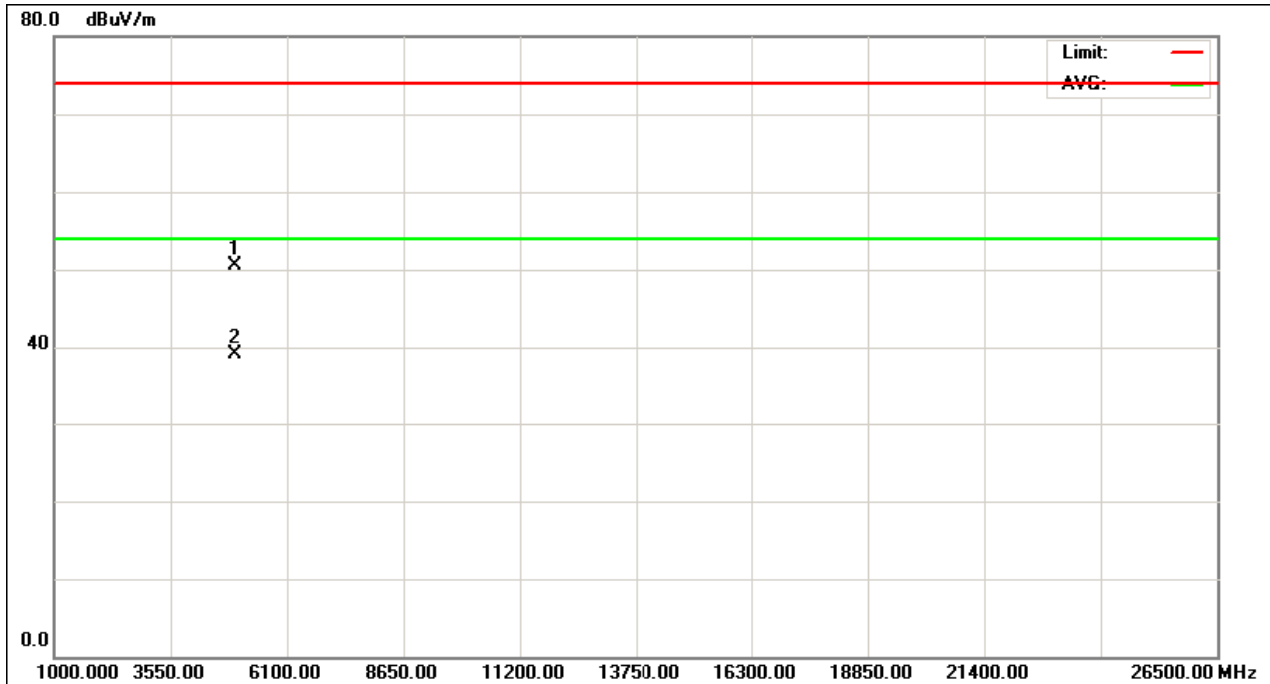
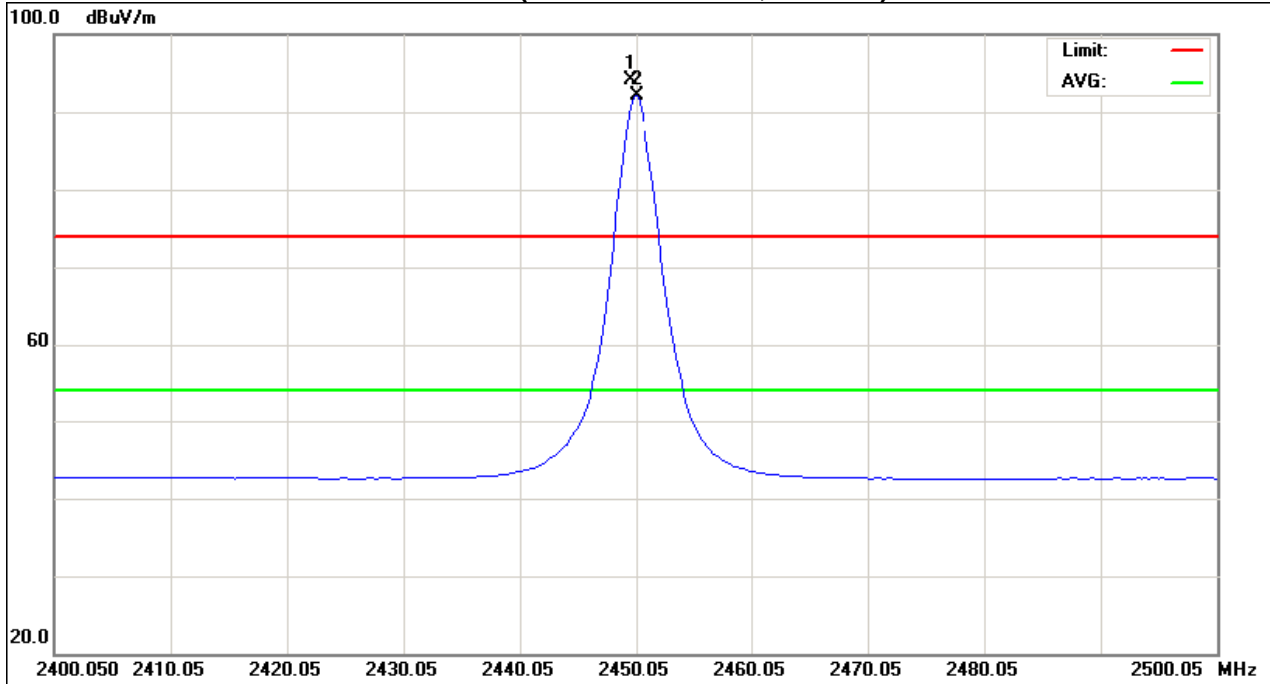
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2450.05	V	62.35	60.26	31.84	94.19	92.10			X/F
4900.22	V	44.92	33.53	5.57	50.49	39.10	74.00	54.00	X/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦“F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown “ * ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
“X” - denotes Laid on Table ; ”Y” - denotes Vertical Stand ; ”Z” - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (8) Reading in which marked as Peak or AVG means measurements by using are Peak Mode or AVG with Detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz, AVG Mode with detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =10Hz, Swp. Time = 0.3 sec./MHz ◦
- (9) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
Margin value = Emission level – Limit value.



TX CH02 (Above 1000 MHz, Vertical)





EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE 2450MHz		

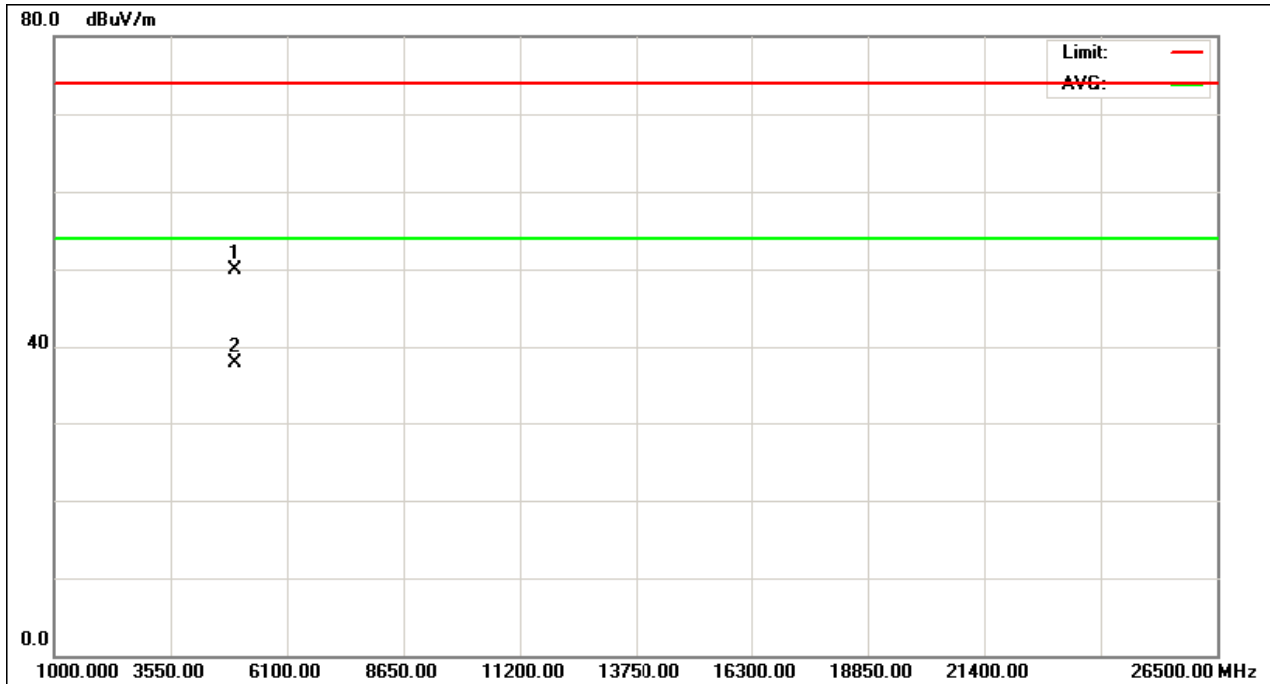
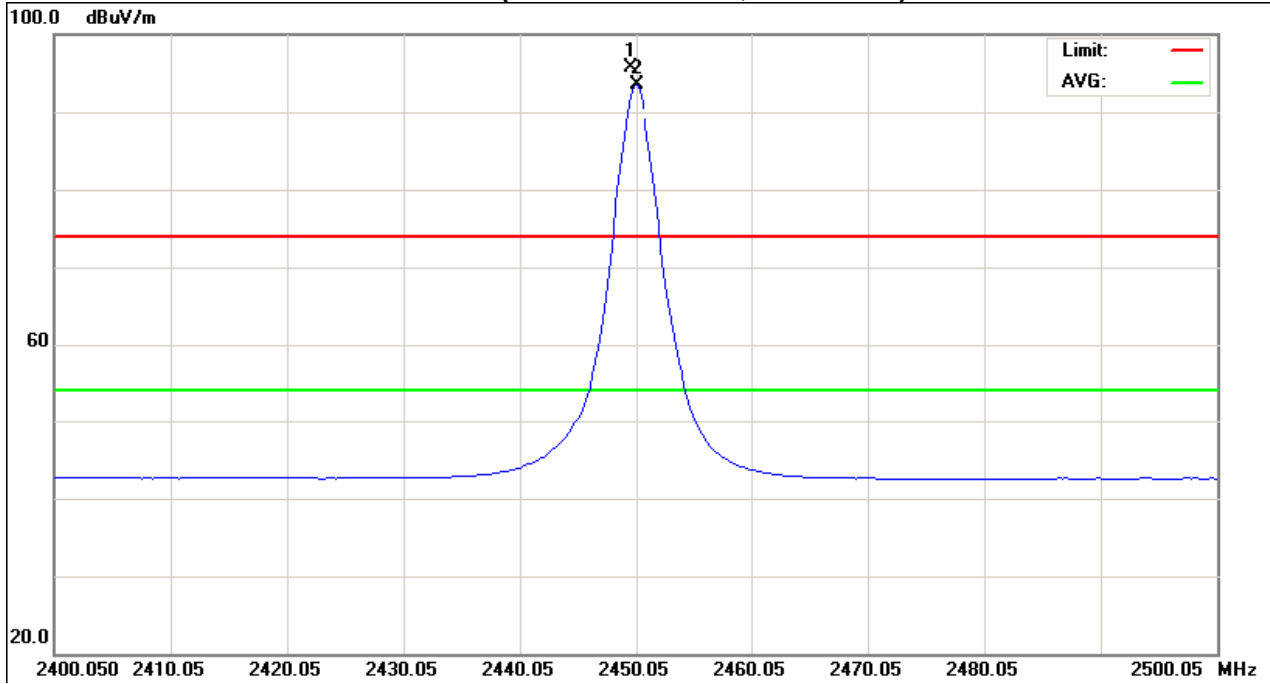
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2449.55	H	63.79	61.66	31.84	95.63	93.50			X/F
4900.21	H	44.26	32.31	5.57	49.83	37.88	74.00	54.00	X/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (8) Reading in which marked as Peak or AVG means measurements by using are Peak Mode or AVG with Detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz, AVG Mode with detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =10Hz, Swp. Time = 0.3 sec./MHz ◦
- (9) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
Margin value = Emission level – Limit value.



TX CH02 (Above 1000 MHz, Horizontal)





EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE 2475MHz		

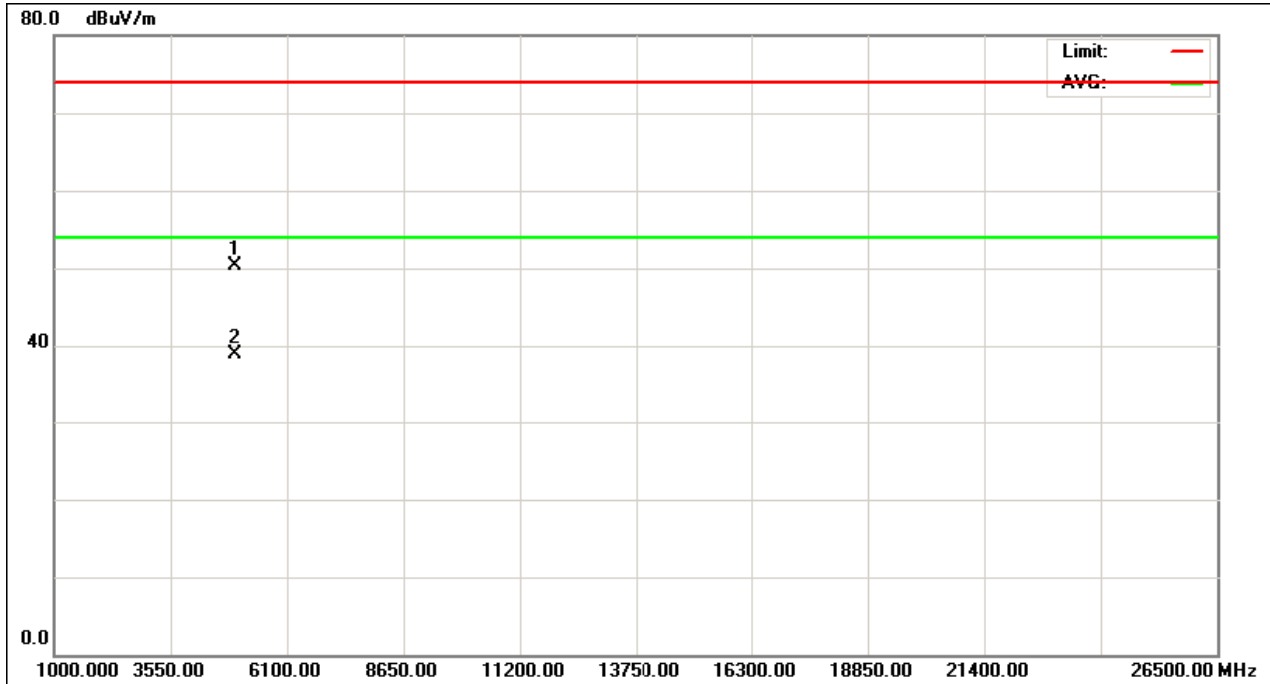
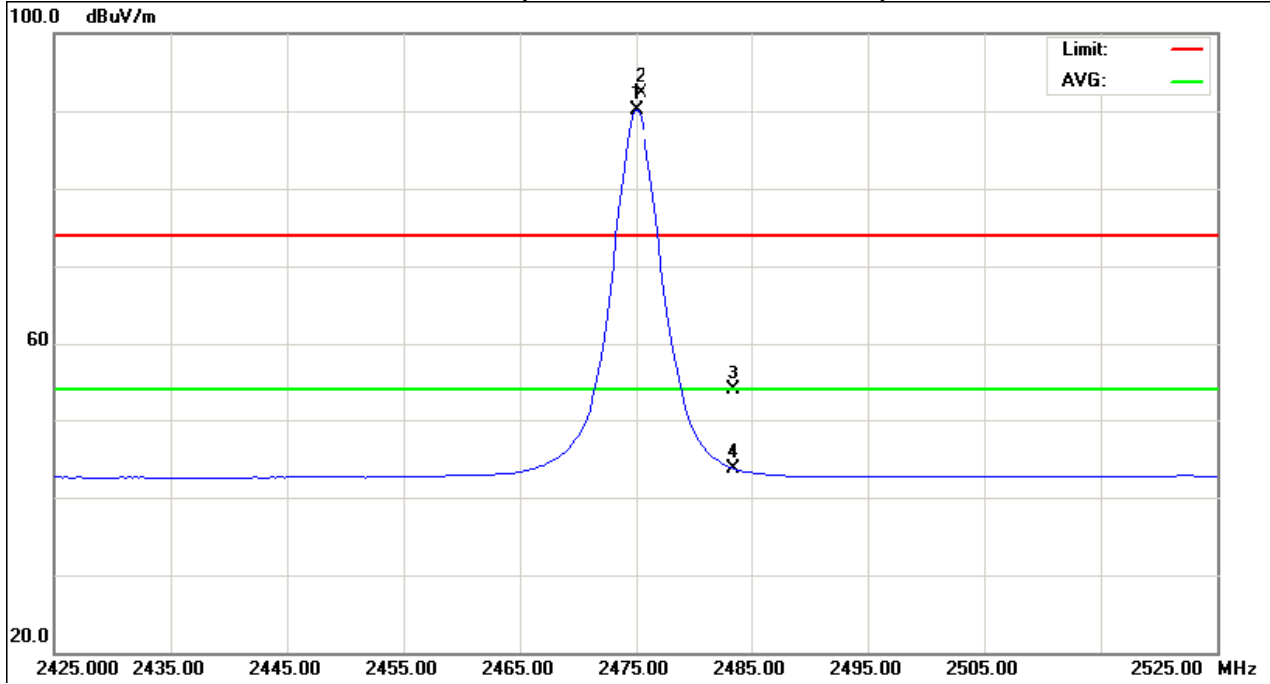
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2475.00	V	60.44	58.37	31.81	92.25	90.18			X/F
2483.50	V	22.01	11.90	31.80	53.81	43.70	74.00	54.00	X/E
4950.88	V	44.65	33.25	5.75	50.40	39.00	74.00	54.00	X/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (8) Reading in which marked as Peak or AVG means measurements by using are Peak Mode or AVG with Detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz, AVG Mode with detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =10Hz, Swp. Time = 0.3 sec./MHz ◦
- (9) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
 Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
 Margin value = Emission level – Limit value.



TX CH03 (Above 1000 MHz, Vertical)





EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	25 °C	Relative Humidity :	58 %
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE 2475MHz		

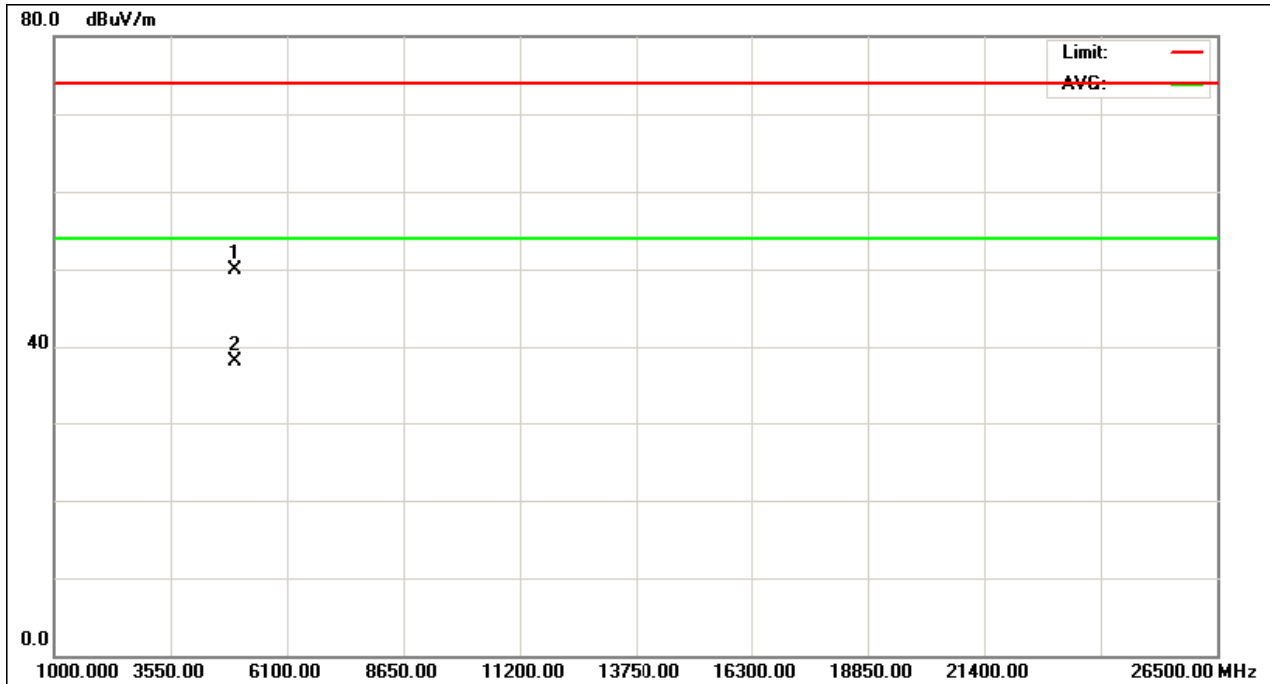
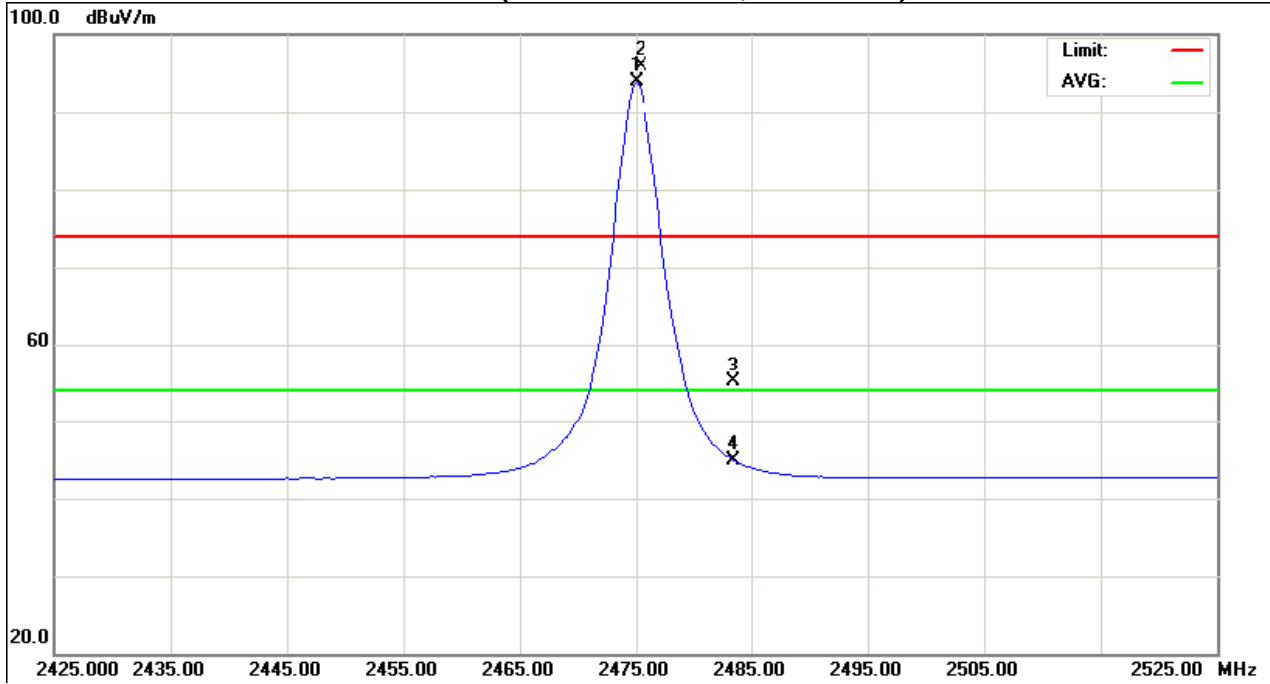
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2475.00	H	64.16	62.03	31.81	95.97	93.84			X/F
2483.50	H	23.36	13.13	31.80	55.16	44.93	74.00	54.00	X/E
4950.81	H	44.13	32.26	5.75	49.88	38.01	74.00	54.00	X/H

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (8) Reading in which marked as Peak or AVG means measurements by using are Peak Mode or AVG with Detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz, AVG Mode with detector BW=1MHz ; SPA setting in RBW=1MHz, VBW =10Hz, Swp. Time = 0.3 sec./MHz ◦
- (9) Measured level (dBuV/m)= Raw value (dBuV) + Correction Factor(dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor(dB).
Margin value = Emission level – Limit value.



TX CH03 (Above 1000 MHz, Horizontal)





5. BANDWIDTH TEST

5.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

5.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Jan. 04, 2012

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

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.1.2 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 = 5 ms.

5.1.3 DEVIATION FROM STANDARD

No deviation.

5.1.4 TEST SETUP



5.1.5 EUT OPERATION CONDITIONS

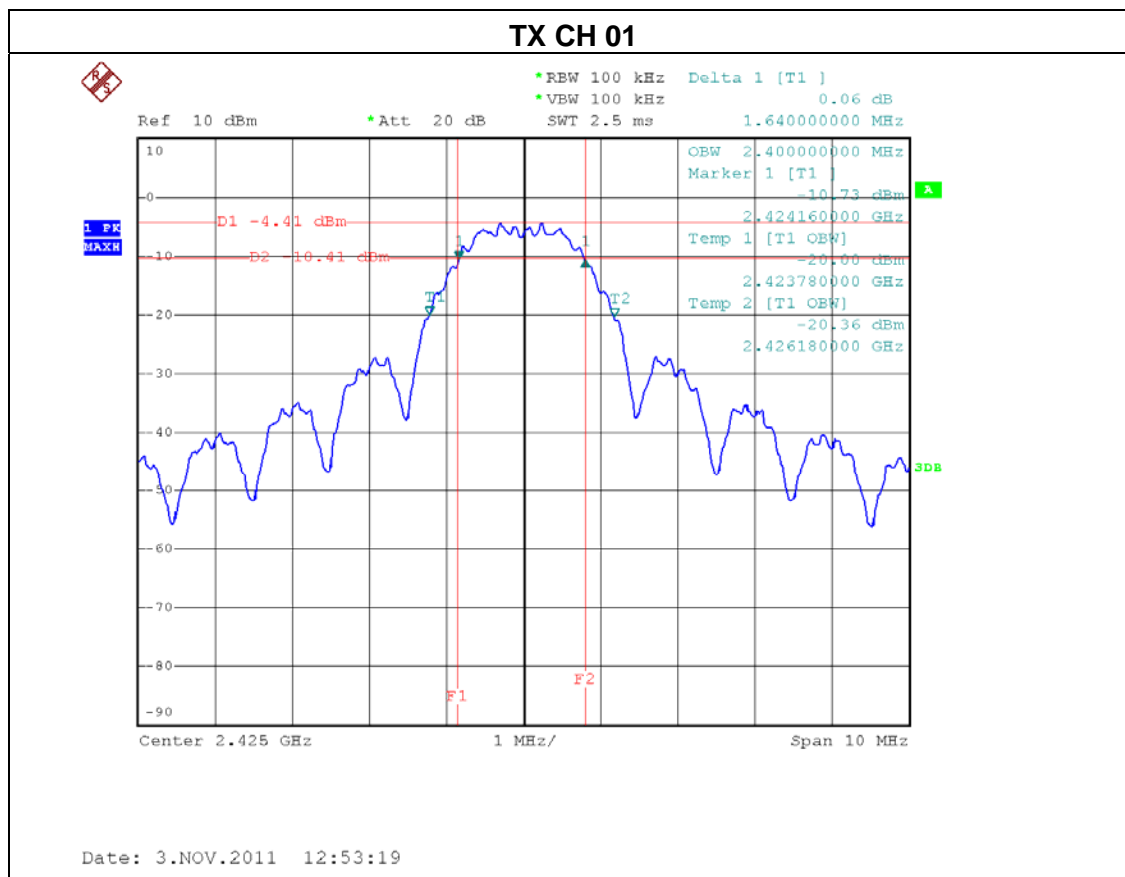
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

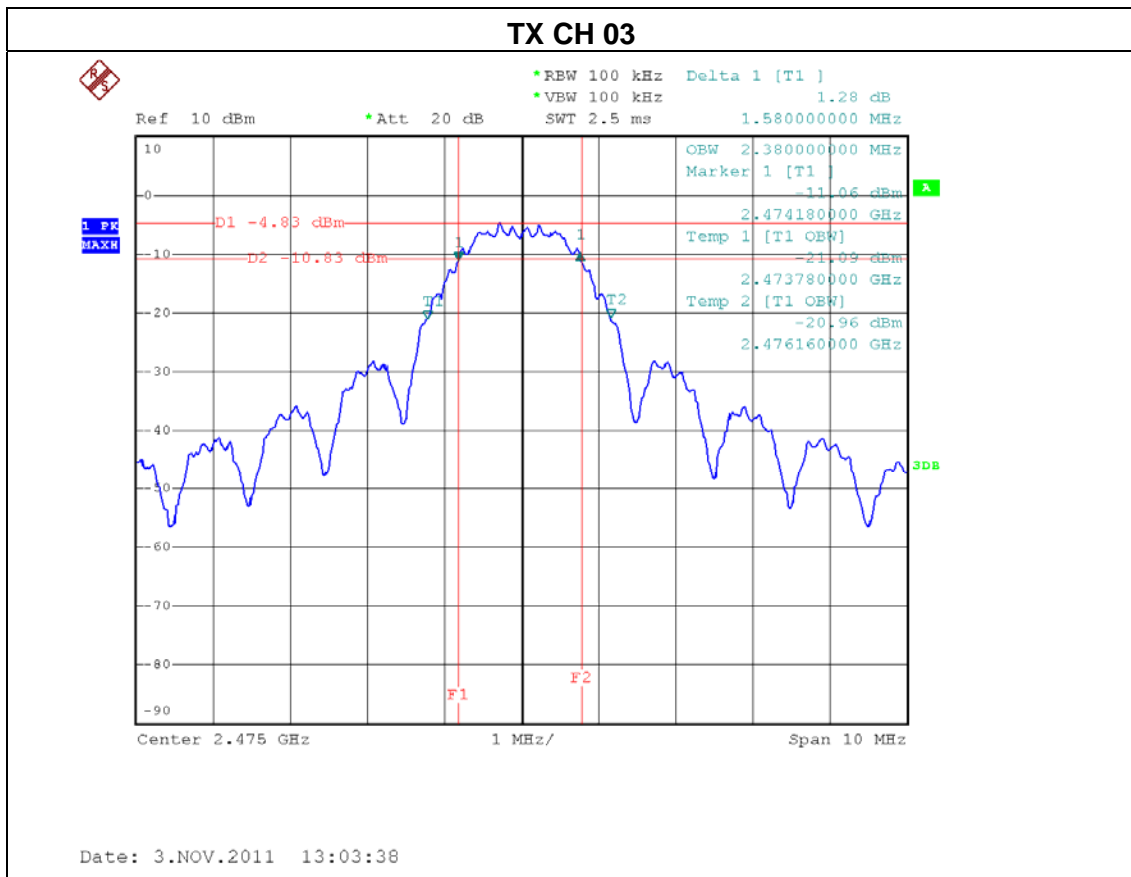
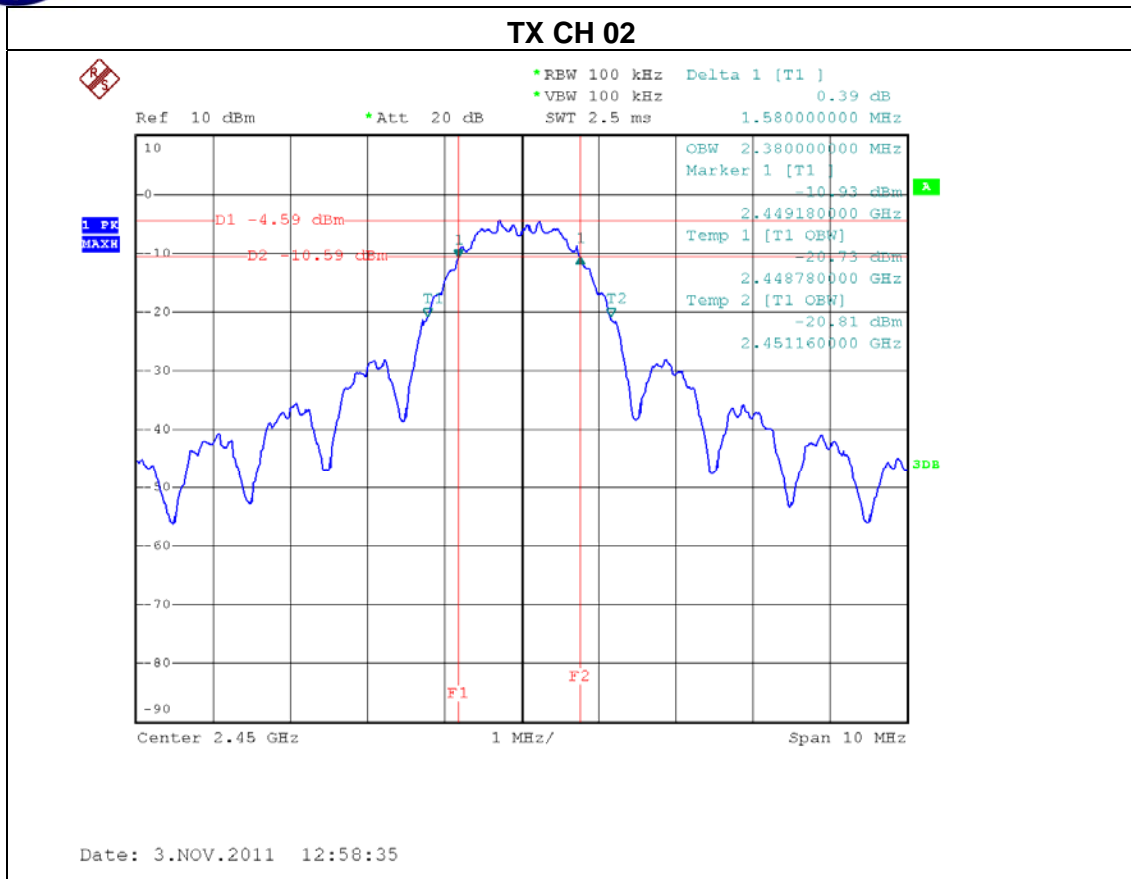


5.1.6 TEST RESULTS

EUT :	Universal Digital Transport Adapter	Model Name. :	HD-DTA100u/4305/000
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1008 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE /CH01, CH02, CH03		

Test Channel	Frequency (MHz)	Bandwidth (MHz)	LIMIT (MHz)
CH01	2425	1.64	>=500KHz
CH02	2450	1.58	>=500KHz
CH03	2475	1.58	>=500KHz







6. MAXIMUM OUTPUT POWER TEST

6.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Maximum Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	P-series Power meter	Agilent	N1911A	MY45100473	Apr.29.2012
2	Wireband Power sensor	Agilent	N1921A	MY51100041	Apr.29.2012

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

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

6.1.2 TEST PROCEDURE

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

6.1.3 DEVIATION FROM STANDARD

No deviation.

6.1.4 TEST SETUP



6.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing. Transmit output power was measured while the host equipment supply voltage was varied from 85 % to 115 % of the nominal rated supply voltage. No change in transmit output power was observed.



6.1.6 TEST RESULTS

EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1008 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE /CH01, CH02, CH03		

Maximum Output Power

Test Channel	Frequency (MHz)	Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2425 MHz	-1.06	30	1
CH02	2450 MHz	-1.39	30	1
CH03	2475 MHz	-1.63	30	1



7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 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

7.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Jan. 04, 2012

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

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

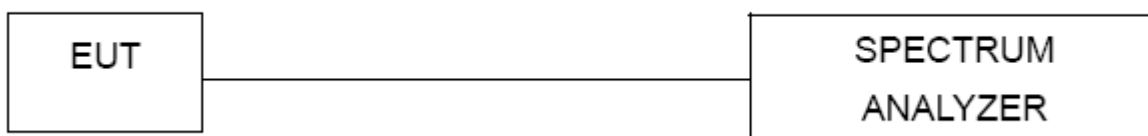
7.1.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = 10 ms.

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP



7.1.5 EUT OPERATION CONDITIONS

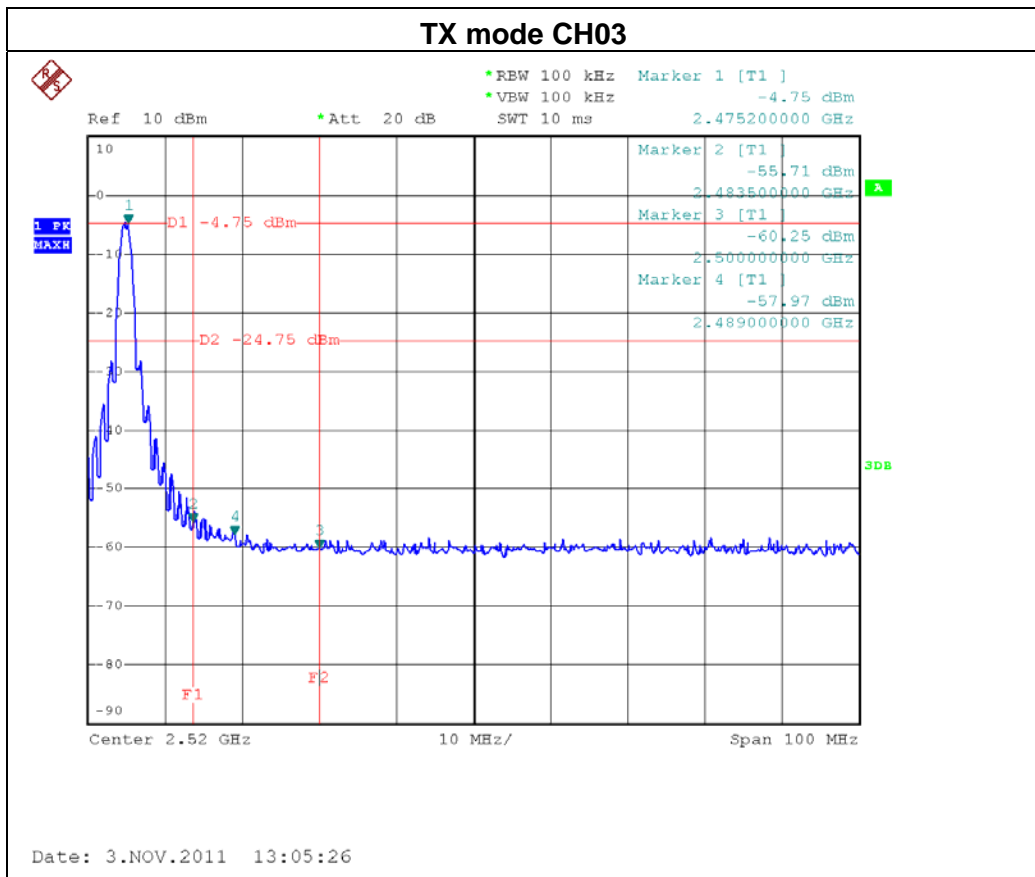
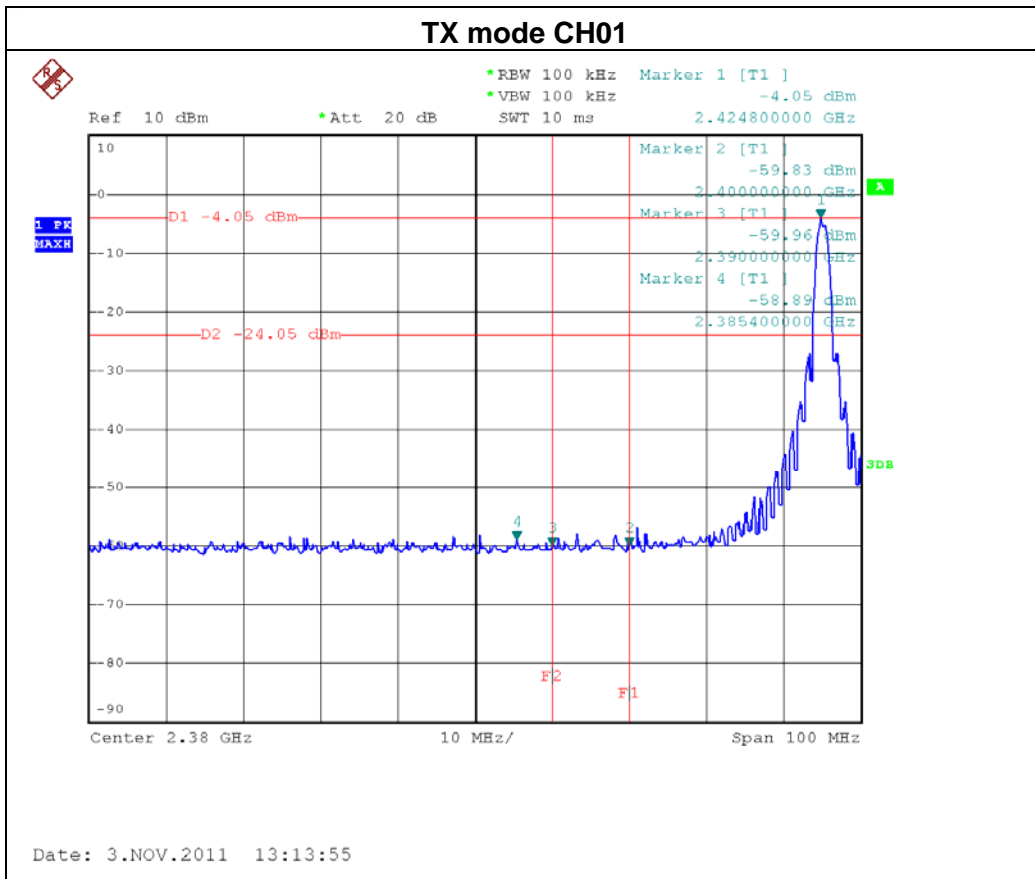
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

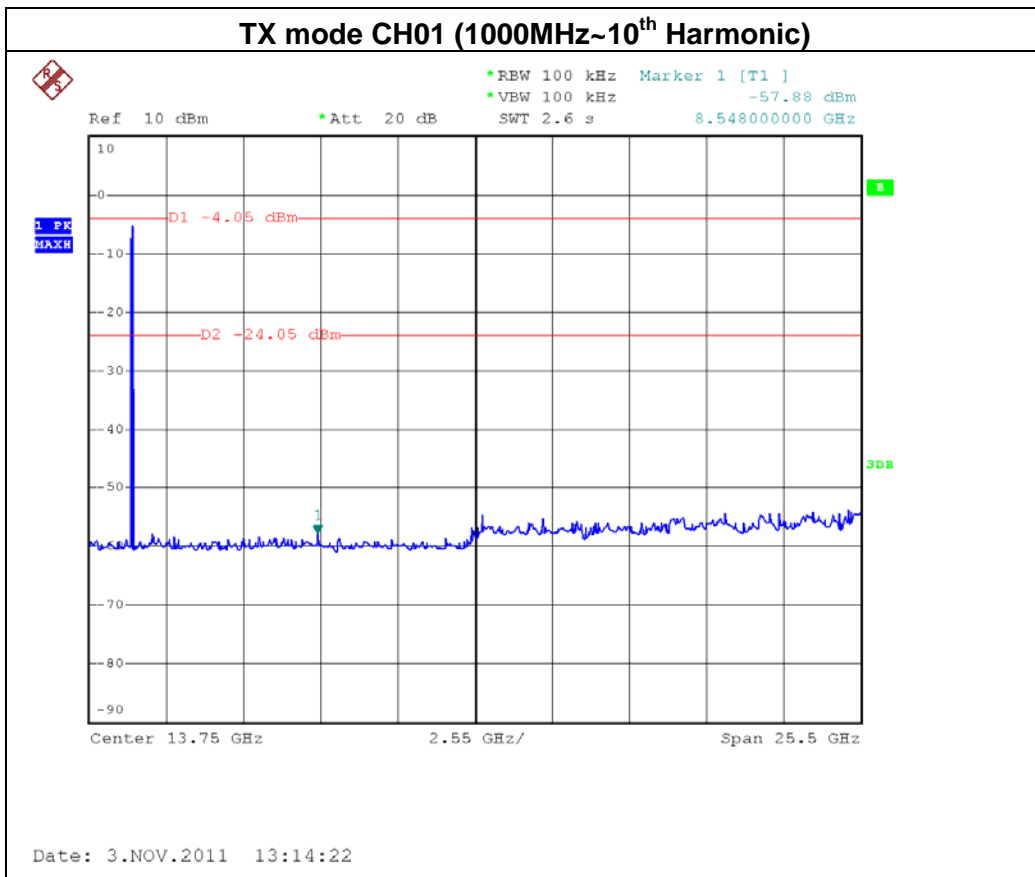
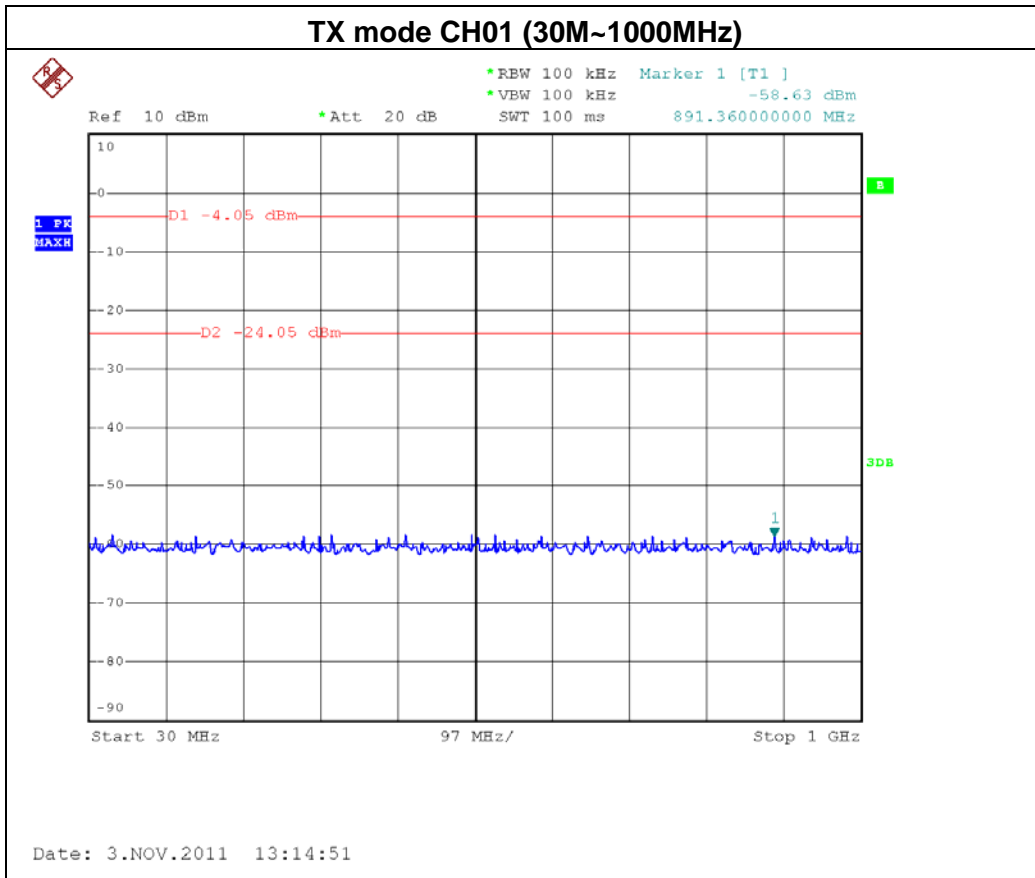


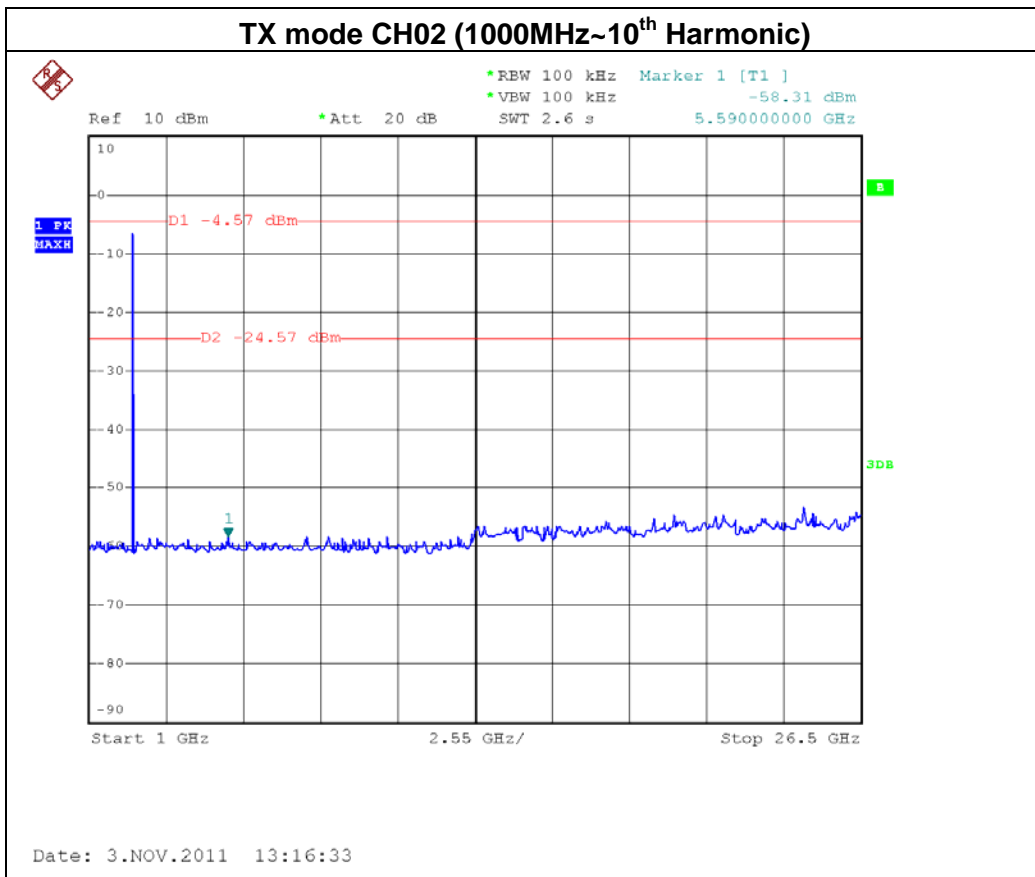
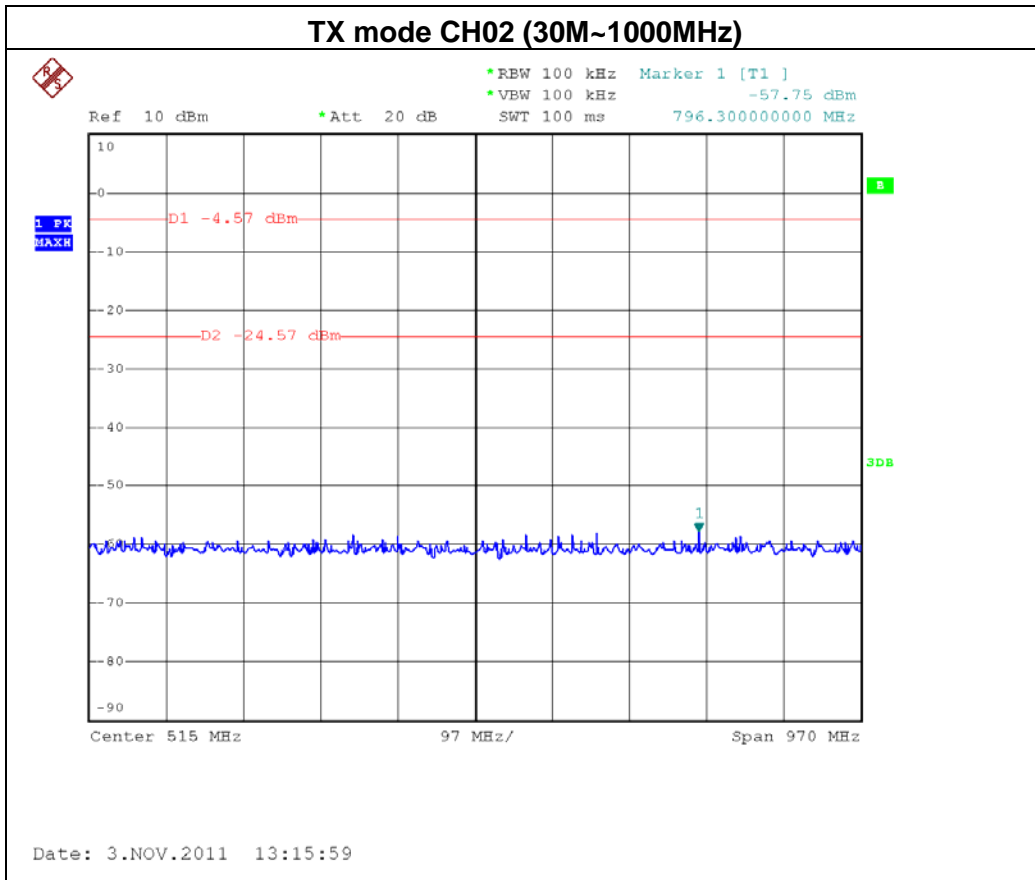
7.1.6 TEST RESULTS

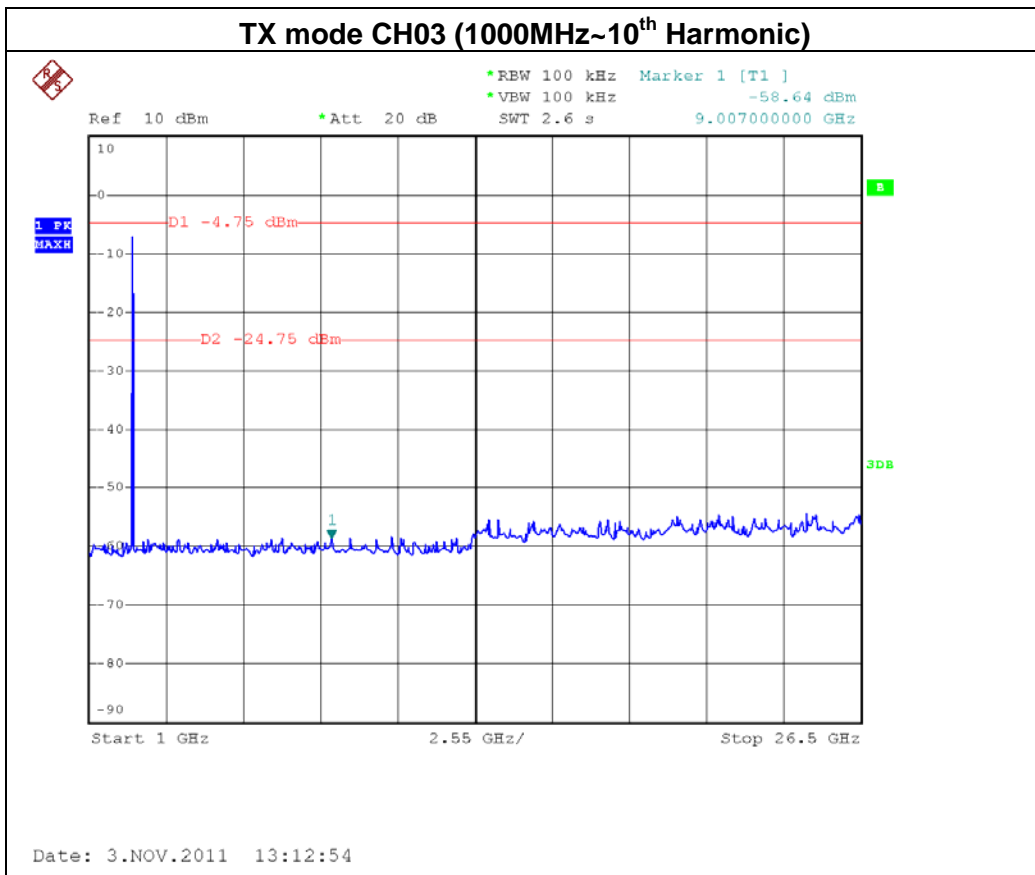
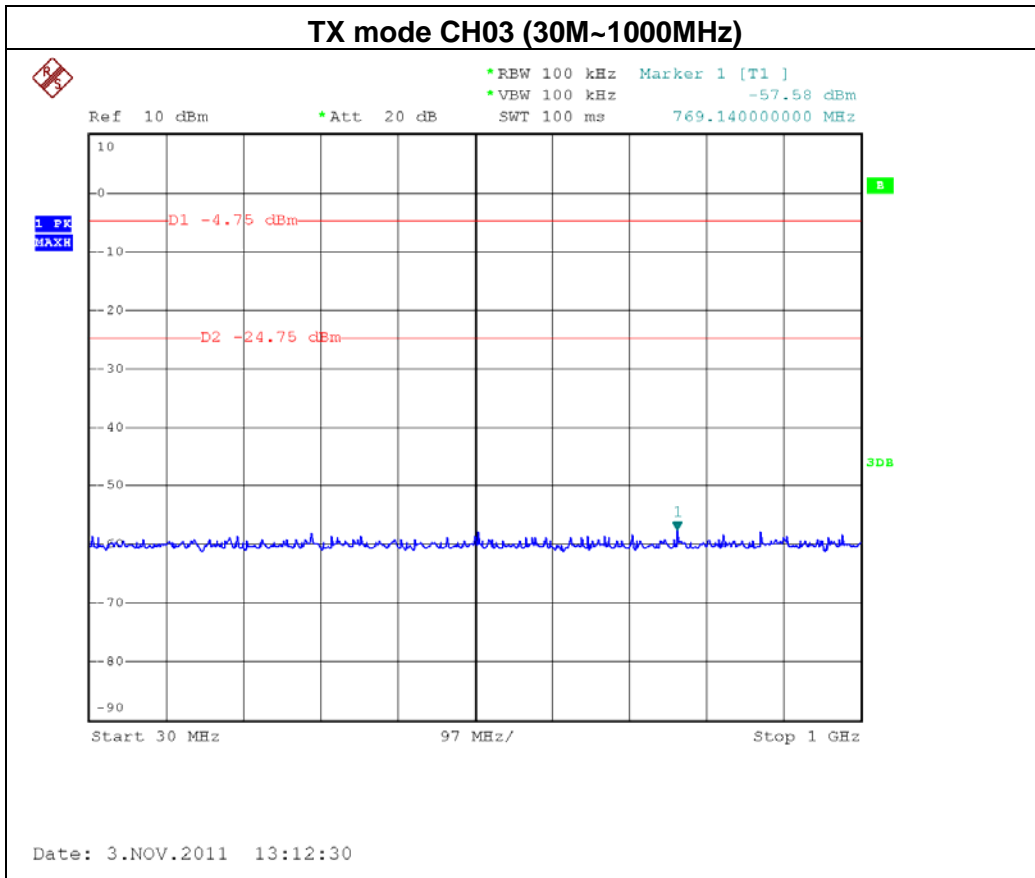
EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1008 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE /CH01, CH02 , CH03		

Channel of Worst Data: CH03			
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)
2385.40	-58.89	2483.50	-55.71
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			











8. POWER SPECTRAL DENSITY TEST

8.1 Applied procedures / limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e)	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Jan. 04, 2012

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

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

8.1.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW=3KHz, VBW=30 KHz, Sweep time = 500s.

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

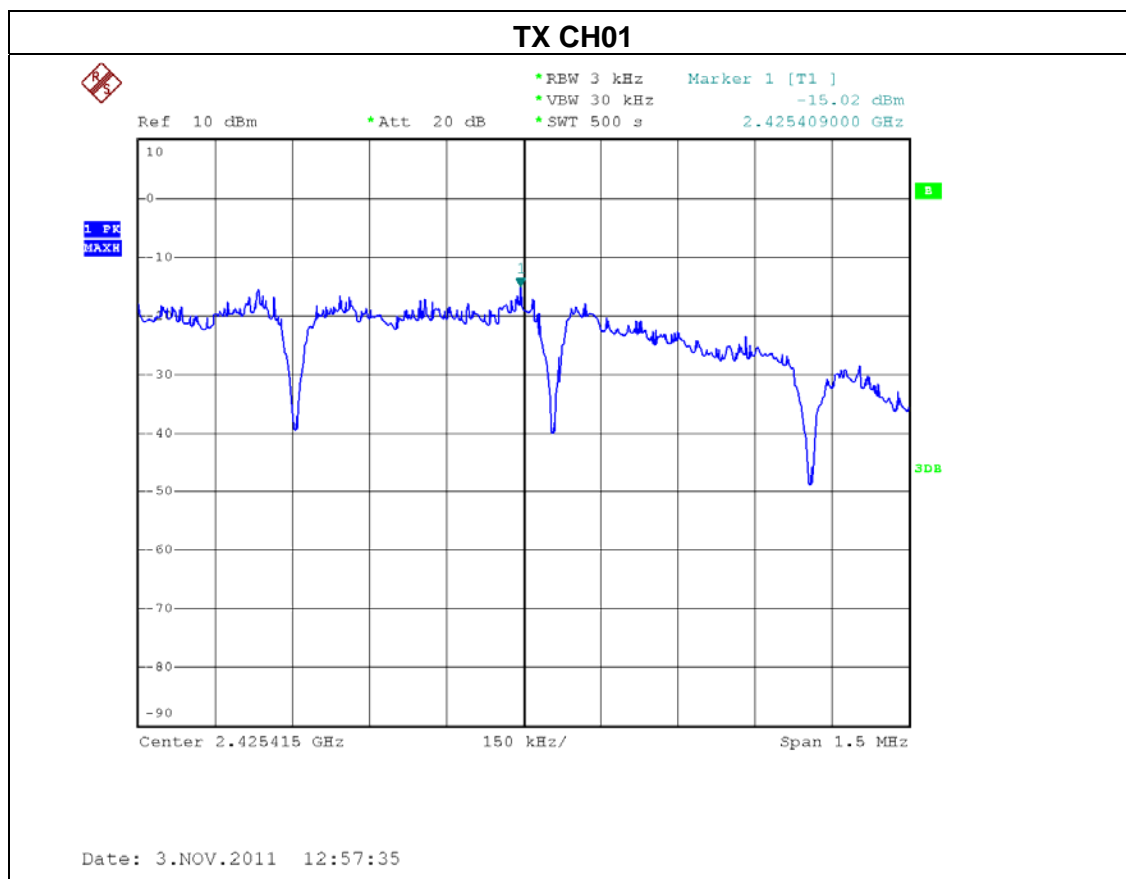
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

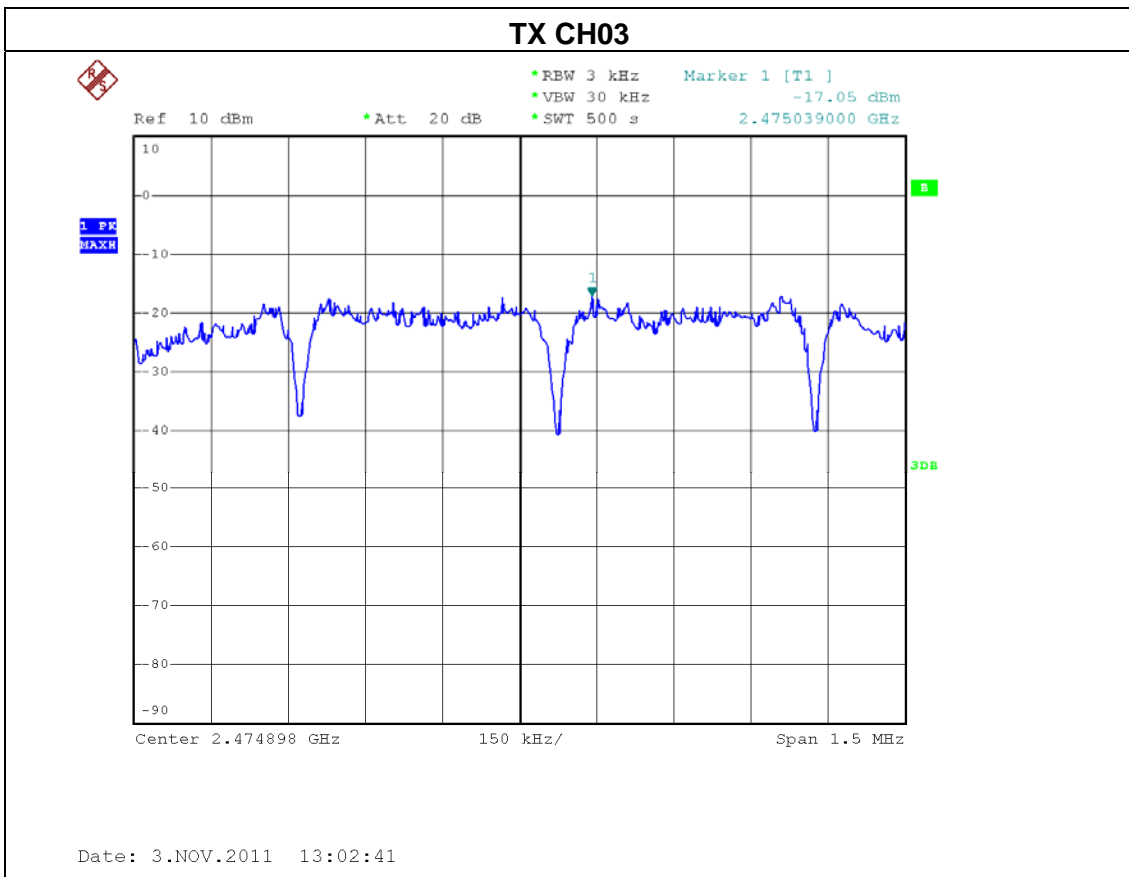
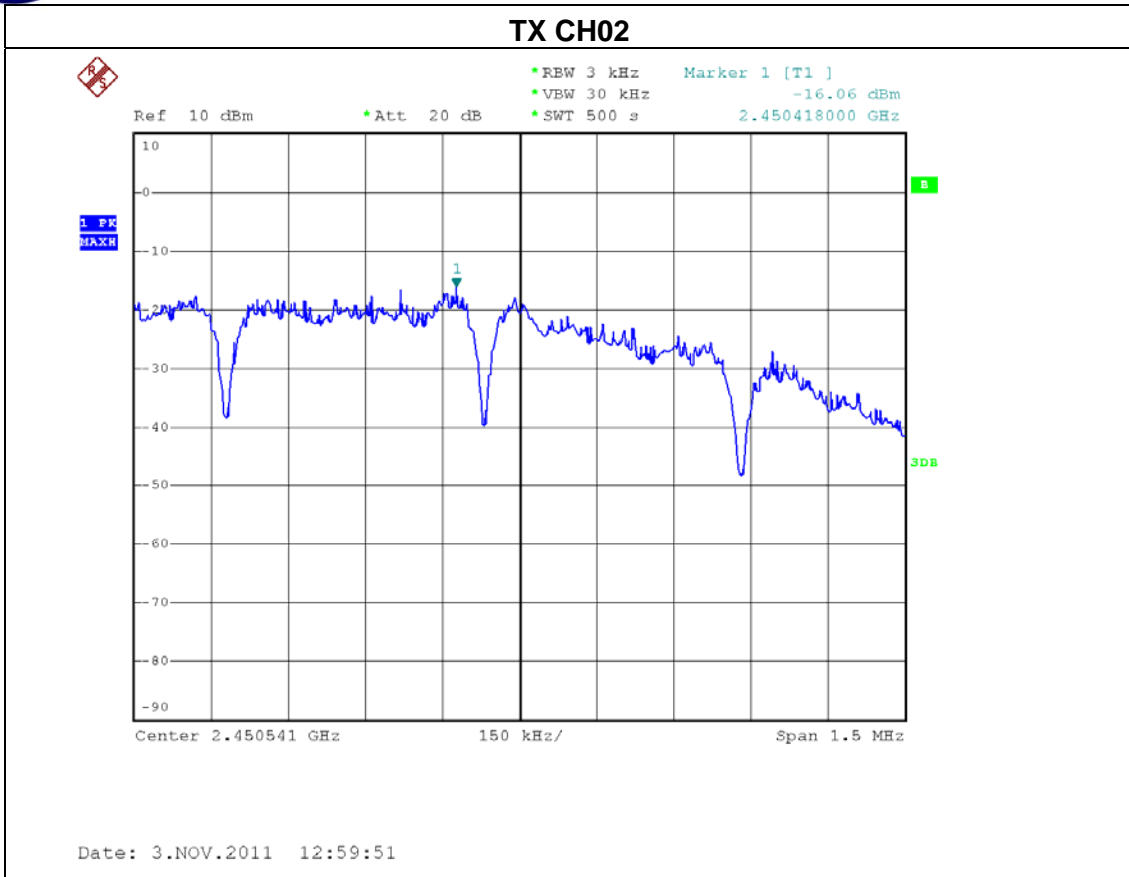


8.1.6 TEST RESULTS

EUT :	Universal Digital Transport Adapter	Model Name :	HD-DTA100u/4305/000
Temperature :	24 °C	Relative Humidity :	60 %
Pressure :	1008 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX MODE /CH01, CH02, CH03		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	2425 MHz	-15.02	8
CH02	2450 MHz	-16.06	8
CH03	2475 MHz	-17.05	8







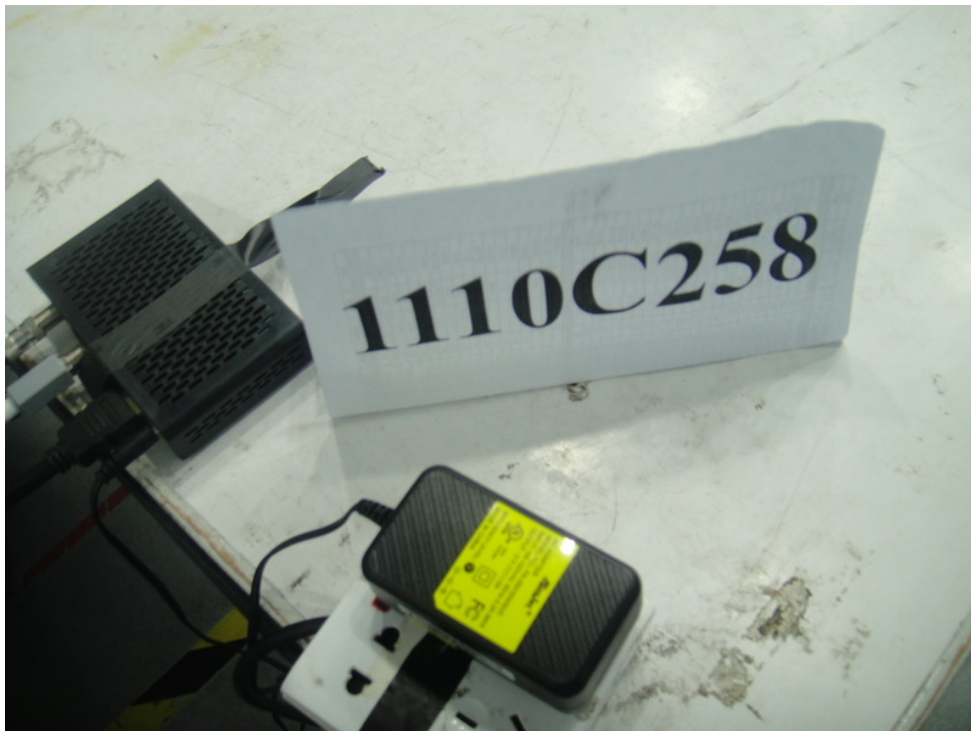
9. EUT TEST PHOTO

**Conducted Measurement Photos
Adapter : AAI-01**





**Conducted Measurement Photos
Adapter : FA-0501500SUC**





Radiated Measurement Photos

