



Test Report

Product Name : IA2E DUPLEX CARDTYPE DIGITAL AUDIO
TRANSCEIVER

Model No. : C2ENSCTRUI00024R1

FCC ID. : PJHC2ETRUI24R

Applicant : Syncomm Technology Corp.

Address : 6F-15, No. 81, Shui-Li Rd., Hsinchu City, Taiwan
300, R.O.C.

Date of Receipt : 2009/10/12

Issued Date : 2009/10/28

Report No. : 09A207R-RFUSP42V01

Report Version : V1.0

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date : 2009/10/28

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TRANSCEIVER

Applicant : Syncomm Technology Corp.

Address : 6F-15, No. 81, Shui-Li Rd., Hsinchu City, Taiwan 300, R.O.C.

Manufacturer : Syncomm Technology Corp.

Model No. : C2ENSCTRUI00024R1

FCC ID. : PJHC2ETRUI24R

Rated Voltage : AC 120V/60Hz

EUT Voltage : AC 120V/60Hz

Trade Name : SYNIC

Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2008

Test Result : Complied

The test results relate only to the samples tested.

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Documented By :

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1. General Information

1.1. EUT Description

Product Name	IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER
Trade Name	SYNIC
Model No.	C2ENSCTRUI00024R1
Frequency Range	2404~2476MHz
Channel Number	25
Type of Modulation	GFSK
Antenna Gain	1.2dBi
Channel Control	Manual
Antenna Type	Printed

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2404	7	2422	13	2440	19	2458
2	2407	8	2425	14	2443	20	2461
3	2410	9	2428	15	2446	21	2464
4	2413	10	2431	16	2449	22	2467
5	2416	11	2434	17	2452	23	2470
6	2419	12	2437	18	2455	24	2473
25	2476						

Note:

1. This device is an IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER included a 2.4GHz receiving function, and 2.4GHz transmitting function.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regards to the frequency band operation; the highest rate that was included the lowest 、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 09A207R-RFUSP37V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
EMI	Mode 1: Transmit
Final Test Mode	
TX	Mode 1: Transmit

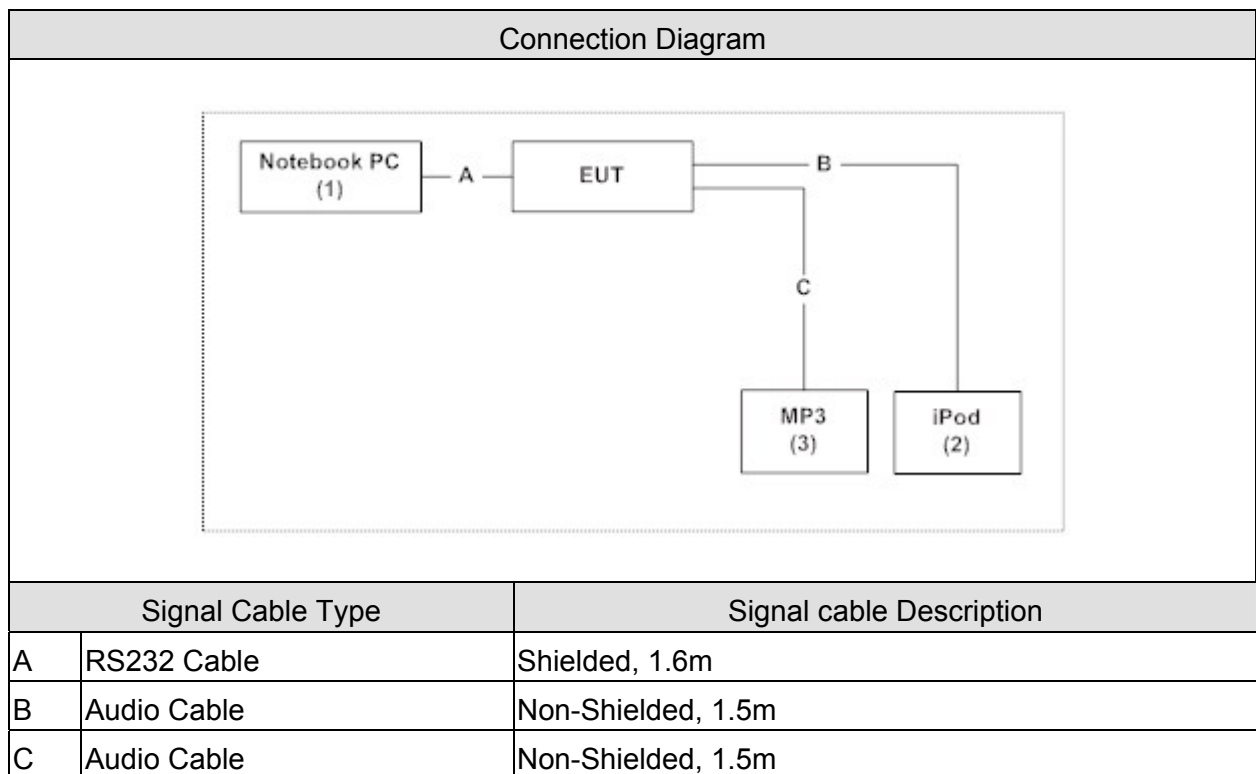
Emission	
Conducted Emission	Yes
Peak Power Output	Yes
Radiated Emission	Yes
Band Edge	Yes
Occupied Bandwidth	Yes
Power Density	Yes

1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	DELL	LATITUDE D400	GK43D1S	DoC	Non-shielded, 1.7m, a ferrite core bonded
2	iPod	Apple	A1136	9C724G7MV9M	DoC	--
3	MP3	SAMSUNG	YP-T55	N/A	DoC	--

1.5. Configuration of tested System



1.6. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.5
2	Turn on the power of all equipment.
3	The EUT will continue transmitting.
4	Repeat the above procedure (2) to (3)

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.209 Radiated Emission (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 RF Antenna (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Power Density (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

January 24, 2005 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520



Accredited by TAF
Accreditation Number: 1313
Effective through: December 27, 2010

Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2010



Site Name: Quietek Corporation
Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.
TEL : 886-3-592-8858 / FAX : 886-3-592-8859
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2. Peak Power Output

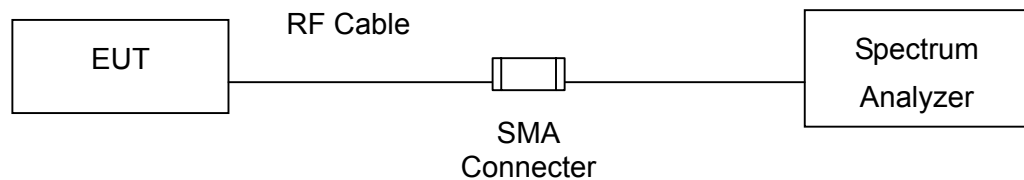
2.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2009
2	No.1 OATS			Sep., 2009

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2.2. Test Setup



2.3. Test procedures

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

2.4. Limits

The maximum peak power shall be less 1 Watt.

2.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB.

2.6. Test Result

Product	IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/10/12	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2404	15.47	1Watt= 30 dBm	Pass
12	2437	15.78	1Watt= 30 dBm	Pass
25	2476	15.96	1Watt= 30 dBm	Pass

3. Conducted Emission

3.1. Test Equipment

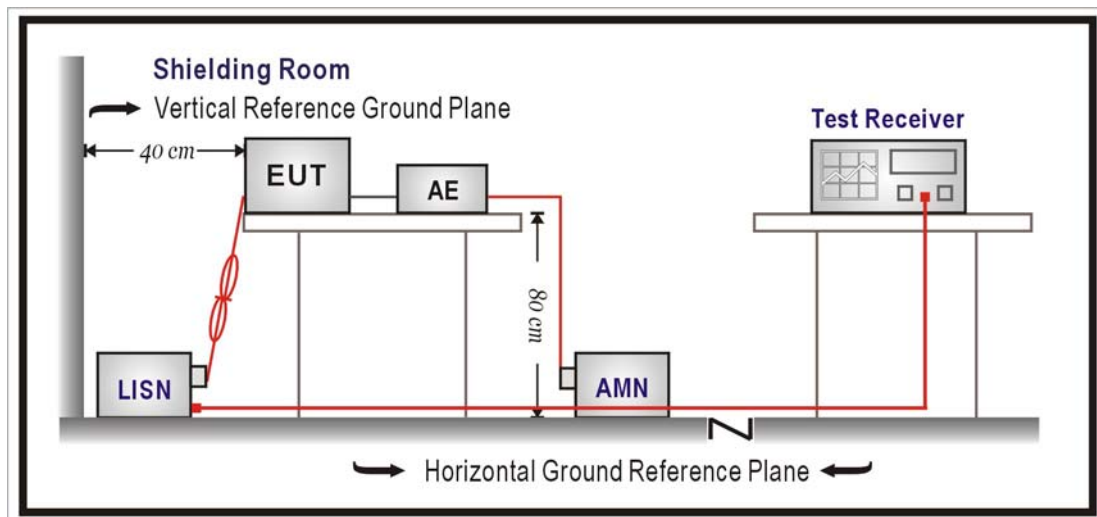
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
4-Wire ISN	R & S	ENY 41	837032/001	2009/04/15
Double 2-Wire ISN	R & S	ENY 22	835354/008	2009/04/15
LISN	R&S	ESH3-Z5	836679/022	2009/06/17
LISN	R & S	ESH3-Z5	836679/013	2008/12/30
Pulse Limiter	R & S	ESH3-Z2	100411	2008/11/16
Test Receiver	R & S	ESCS 30	100149	2008/11/15

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

3.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

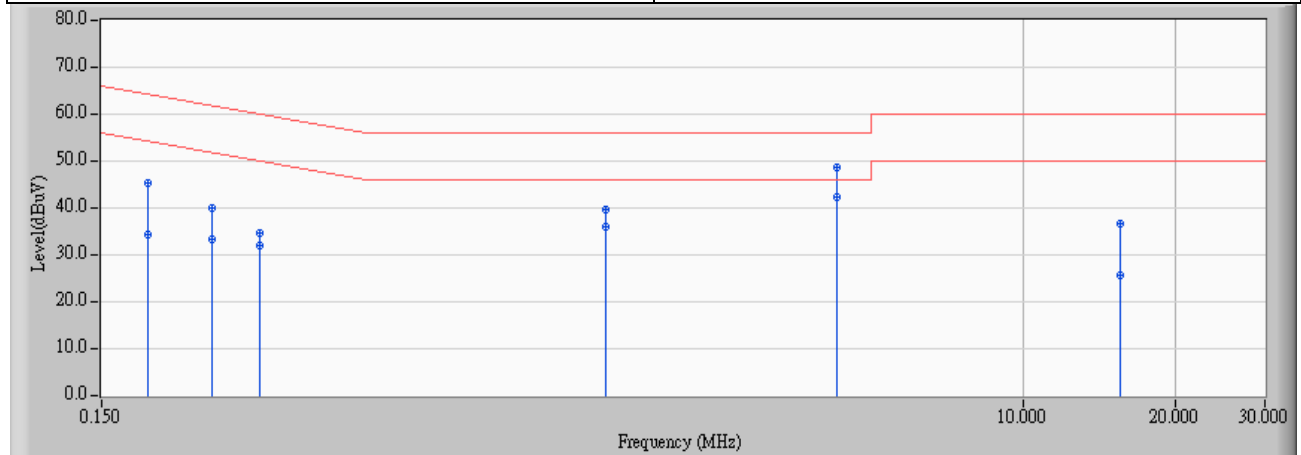
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

3.6. Test Result

Site : SR2	Time : 2009/10/27 - 15:14
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-LISN(16A) - Line1	Power : AC 120V/60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX-2437 MHz

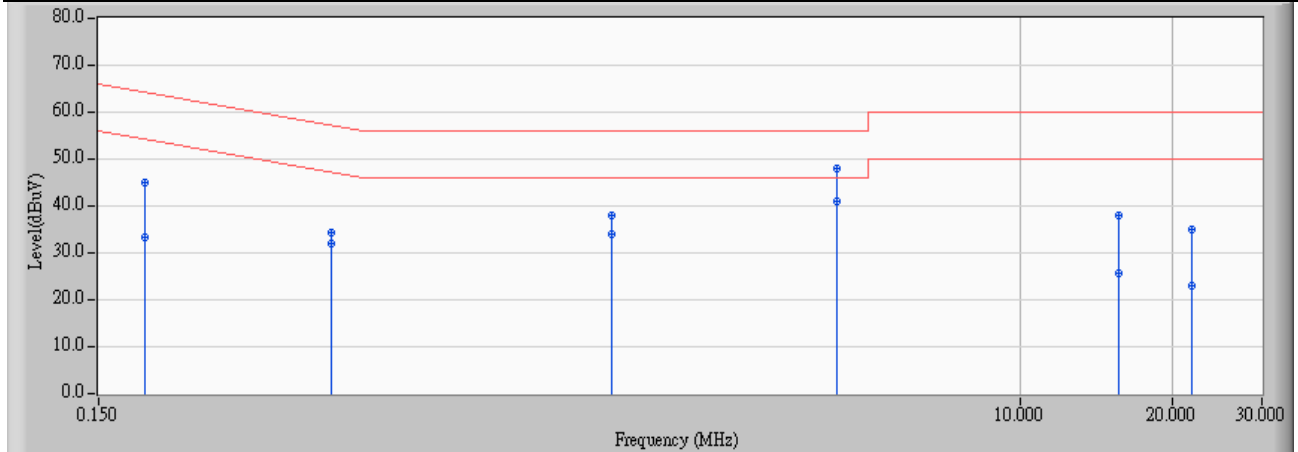


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.185	9.609	35.670	45.279	-18.999	64.278	QUASIPeAK
2		0.185	9.609	24.580	34.189	-20.089	54.278	AVERAGE
3		0.249	9.646	30.510	40.156	-21.649	61.805	QUASIPeAK
4		0.249	9.646	23.770	33.416	-18.389	51.805	AVERAGE
5		0.309	9.680	24.940	34.620	-25.375	59.995	QUASIPeAK
6		0.309	9.680	22.280	31.960	-18.035	49.995	AVERAGE
7		1.488	9.805	29.960	39.765	-16.235	56.000	QUASIPeAK
8		1.488	9.805	26.350	36.155	-9.845	46.000	AVERAGE
9		4.275	9.832	38.700	48.532	-7.468	56.000	QUASIPeAK
10	*	4.275	9.832	32.390	42.222	-3.778	46.000	AVERAGE
11		15.490	10.119	26.500	36.619	-23.381	60.000	QUASIPeAK
12		15.490	10.119	15.460	25.579	-24.421	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR2	Time : 2009/10/27 - 15:18
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-LISN(16A) - Line2	Power : AC 120V/60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX-2437 MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.185	9.609	35.450	45.059	-19.199	64.258	QUASIPeAK
2		0.185	9.609	23.660	33.269	-20.989	54.258	AVERAGE
3		0.434	9.753	24.600	34.352	-22.823	57.176	QUASIPeAK
4		0.434	9.753	22.120	31.872	-15.303	47.176	AVERAGE
5		1.547	9.805	28.280	38.085	-17.915	56.000	QUASIPeAK
6		1.547	9.805	24.310	34.115	-11.885	46.000	AVERAGE
7		4.330	9.834	38.000	47.834	-8.166	56.000	QUASIPeAK
8	*	4.330	9.834	31.110	40.944	-5.056	46.000	AVERAGE
9		15.595	10.202	27.850	38.052	-21.948	60.000	QUASIPeAK
10		15.595	10.202	15.550	25.752	-24.248	50.000	AVERAGE
11		21.834	10.451	24.510	34.961	-25.039	60.000	QUASIPeAK
12		21.834	10.451	12.580	23.031	-26.969	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
- 3.Measurement Level = Reading Level + Correct Factor

4. Radiated Emission

4.1. Test Equipment

The following test equipment are used during the test:

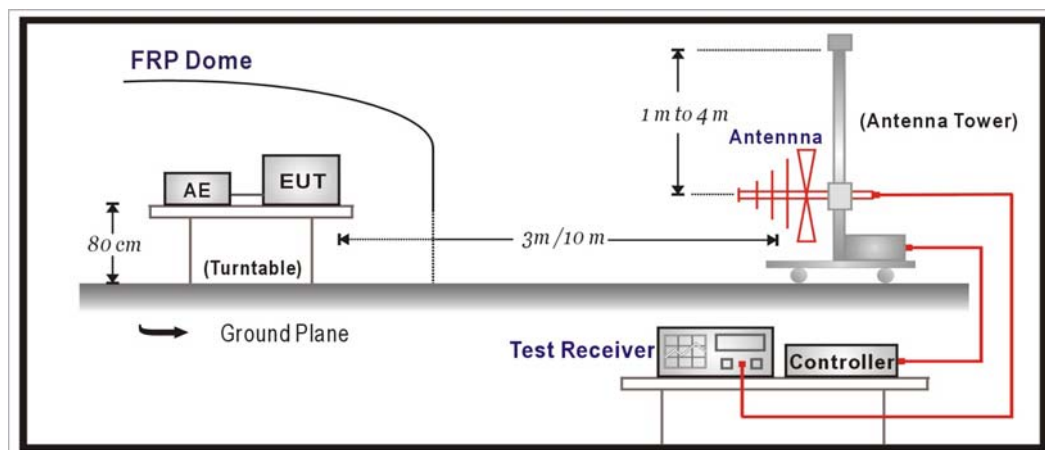
Radiated Emission / Site1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2895	2009/09/03
Horn Antenna	Electro Metrics	EM-6961	103325	2009/03/15
Pre-Amplifier	HP	8449B	3008A01123	2008/11/15
Pre-Amplifier	Quietek	AP-025C	N/A	N/A
Spectrum Analyzer	R & S	FSP40	100005	2009/08/25
Spectrum Analyzer	Advantest	R3162	120300649	2008/11/24
Test Receiver	R & S	ESCS 30	825442/017	2009/02/13

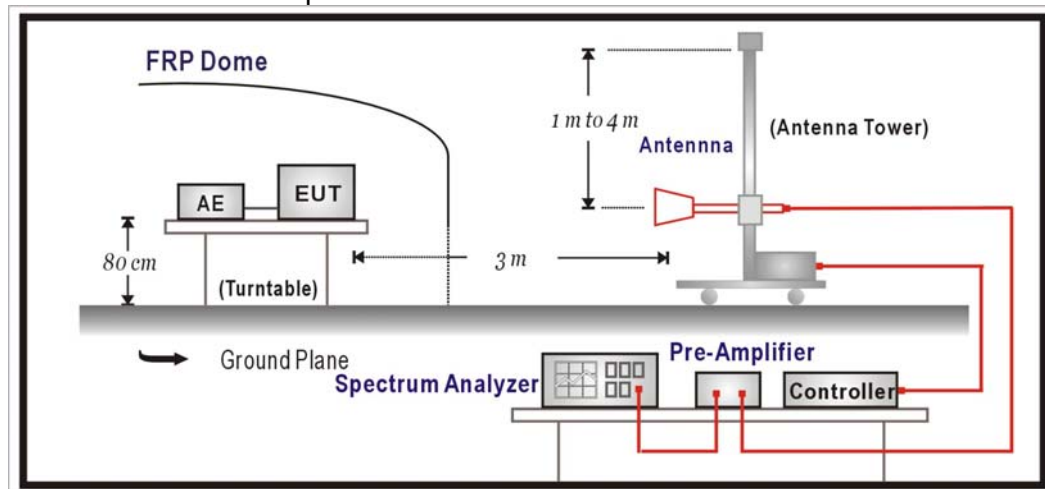
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. "N/A" Ca1.Date is used to Pre-test, not final test.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	dBuV/m	dBuV/m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement. On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

4.5. Uncertainty

The measurement uncertainty

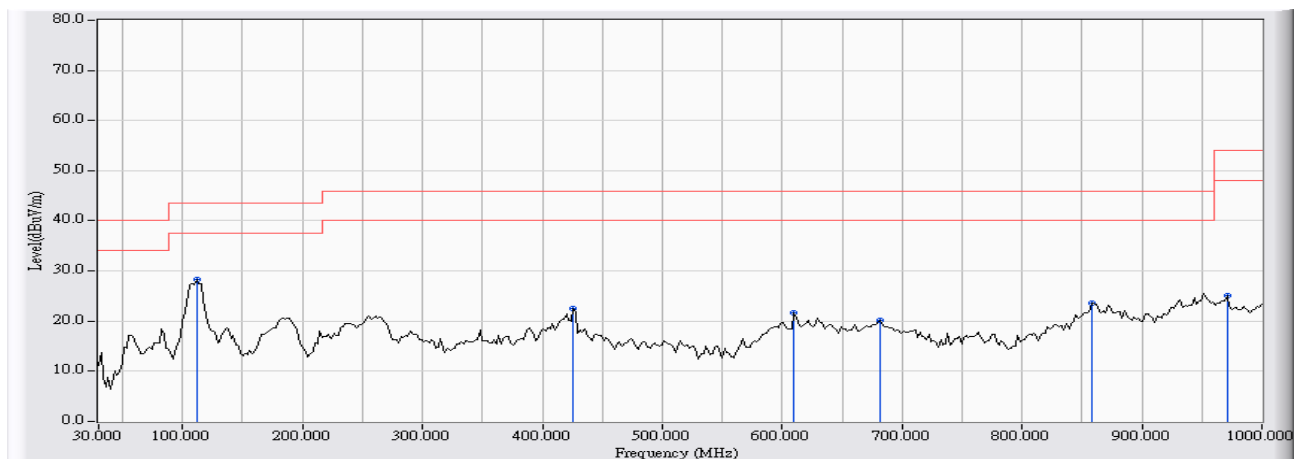
30MHz~1GHz as $\pm 3.19\text{dB}$

1GHz~26.5Ghz as $\pm 3.9\text{dB}$

4.6. Test Result

30MHz-1GHz Spurious:

Site : Site 1	Time : 2009/10/27 - 16:21
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2009) - HORIZONTAL	Power : AC 120V/60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX-2437 MHz

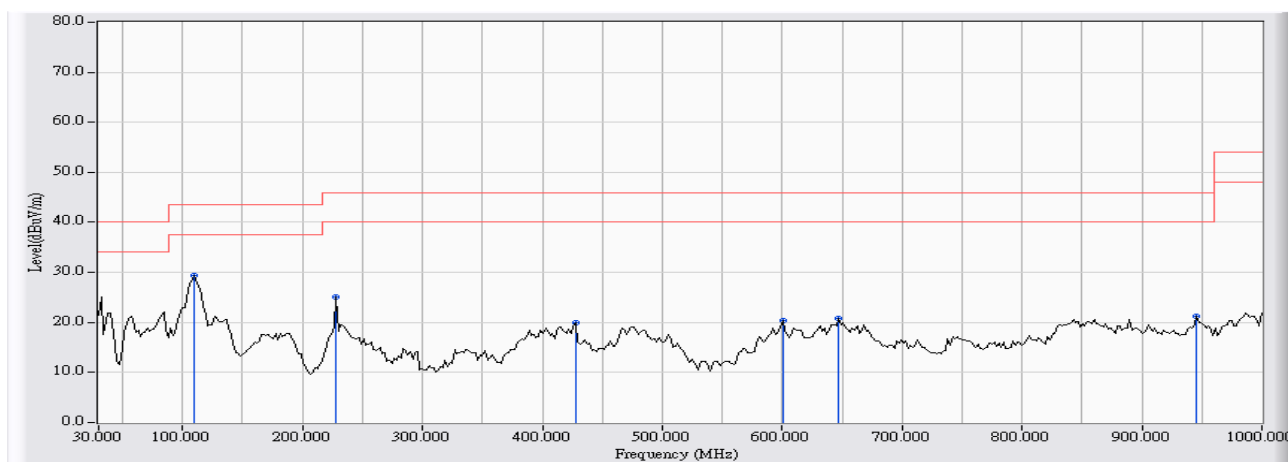


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	111.480	-15.257	43.637	28.380	-15.120	43.500	QUASIPeAK
2		425.760	-4.810	27.356	22.546	-23.454	46.000	QUASIPeAK
3		610.060	-2.640	24.273	21.633	-24.367	46.000	QUASIPeAK
4		681.840	-2.446	22.623	20.177	-25.823	46.000	QUASIPeAK
5		858.380	0.322	23.235	23.558	-22.442	46.000	QUASIPeAK
6		970.900	1.171	24.000	25.171	-28.829	54.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 1	Time : 2009/10/27 - 16:24
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2009) - VERTICAL	Power : AC 120V/60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX-2437 MHz



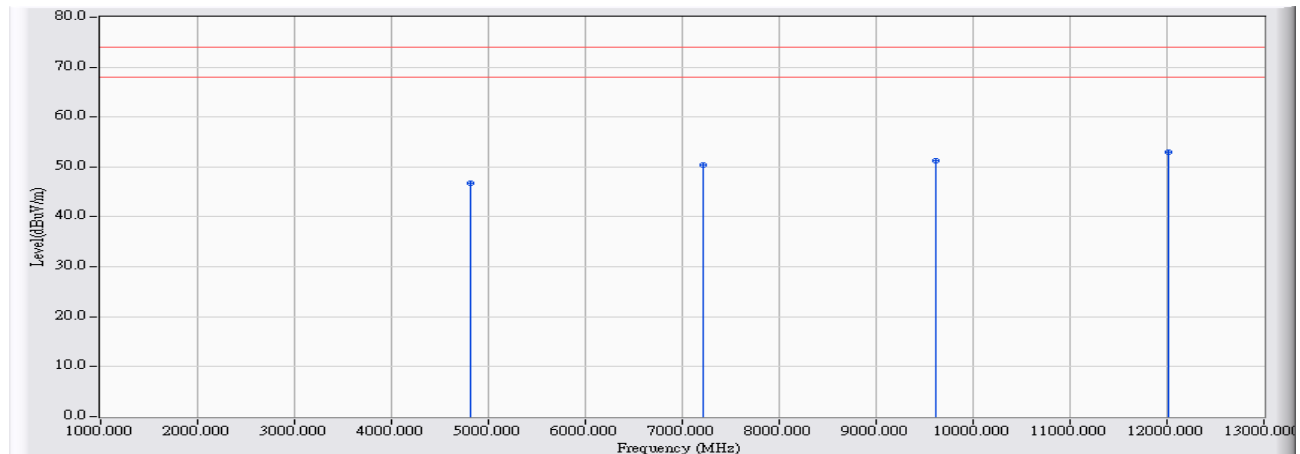
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	109.540	-12.313	41.628	29.315	-14.185	43.500	QUASIPeAK
2		227.880	-12.755	37.863	25.108	-20.892	46.000	QUASIPeAK
3		427.700	-6.242	26.167	19.925	-26.075	46.000	QUASIPeAK
4		600.360	-2.817	23.099	20.282	-25.718	46.000	QUASIPeAK
5		646.920	-2.859	23.559	20.700	-25.300	46.000	QUASIPeAK
6		945.680	-2.414	23.695	21.281	-24.719	46.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Above 1GHz Spurious:

Site : Site 1	Time : 2009/10/28 - 15:30
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB3_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX-2404 MHz

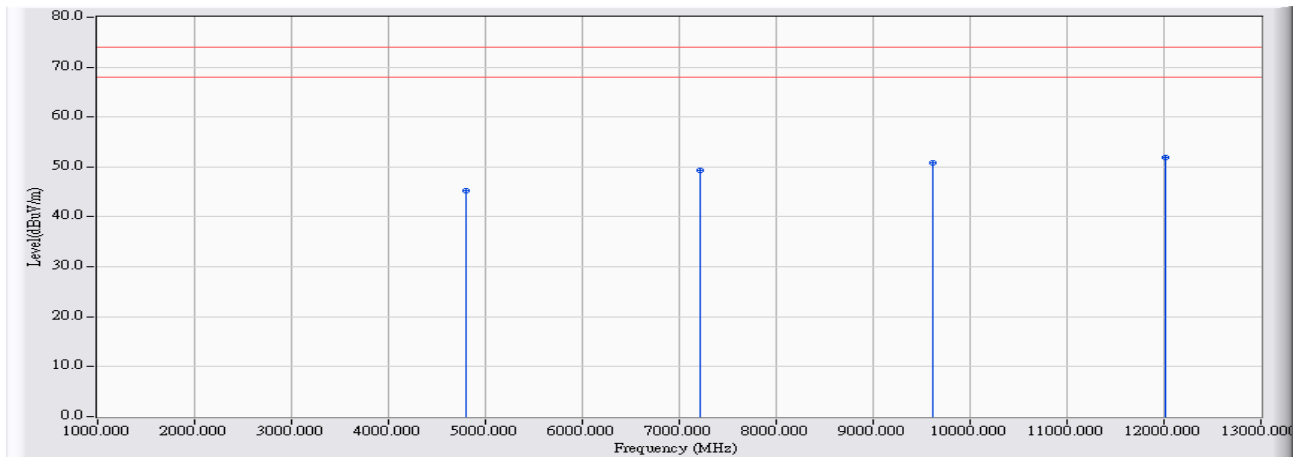


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4808.790	2.137	44.617	46.753	-27.247	74.000	54.000	PEAK
2		7213.050	6.991	43.429	50.420	-23.580	74.000	54.000	PEAK
3		9616.370	9.820	41.520	51.340	-22.660	74.000	54.000	PEAK
4		9616.370	9.820	41.460	51.280	-22.720	74.000	54.000	PEAK
5	*	12019.990	14.722	38.190	52.913	-21.087	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/28 - 15:32
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB3_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX-2404 MHz

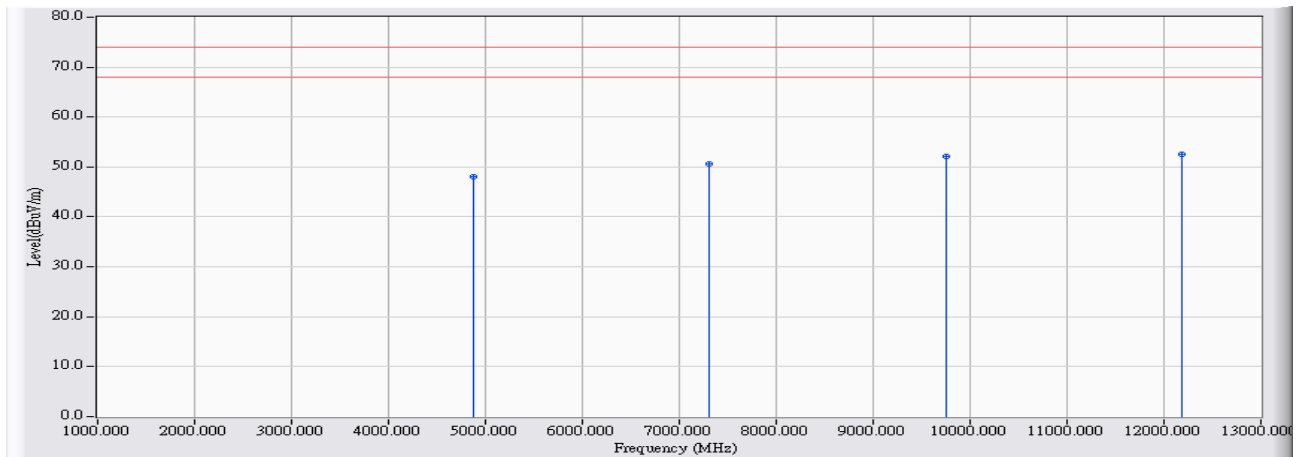


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4804.190	2.013	43.224	45.237	-28.763	74.000	54.000	PEAK
2		7213.640	7.171	42.069	49.241	-24.759	74.000	54.000	PEAK
3		9616.070	10.051	40.679	50.731	-23.269	74.000	54.000	PEAK
4	*	12019.380	13.613	38.356	51.969	-22.031	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/28 - 15:35
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB3_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX-2437 MHz

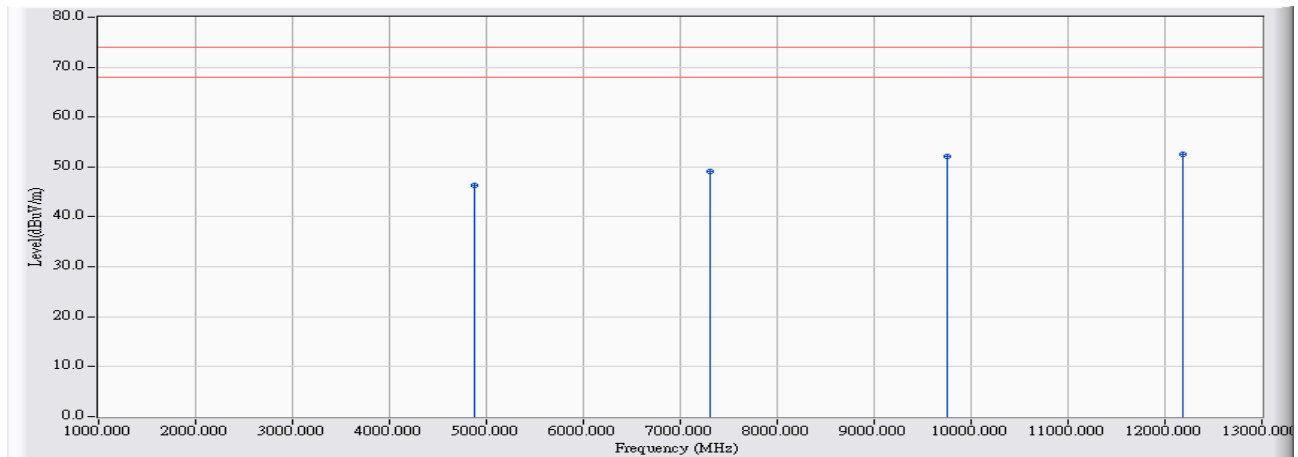


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4872.370	2.119	45.905	48.024	-25.976	74.000	54.000	PEAK
2		7309.550	7.763	42.949	50.712	-23.288	74.000	54.000	PEAK
3		9747.390	10.681	41.330	52.011	-21.989	74.000	54.000	PEAK
4	*	12186.340	14.064	38.501	52.564	-21.436	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/28 - 15:36
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB3_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX-2437 MHz

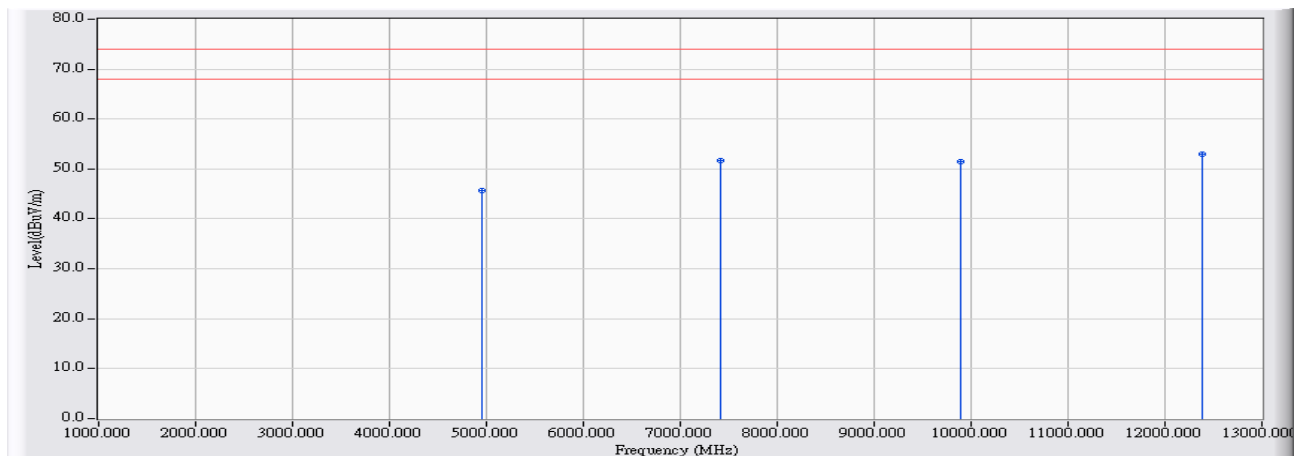


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4872.310	2.076	44.271	46.347	-27.653	74.000	54.000	PEAK
2		7309.330	7.549	41.461	49.011	-24.989	74.000	54.000	PEAK
3		9747.720	10.840	41.171	52.011	-21.989	74.000	54.000	PEAK
4	*	12186.310	12.980	39.534	52.514	-21.486	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/28 - 15:38
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB3_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX-2476 MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4950.760	2.349	43.431	45.781	-28.219	74.000	54.000	PEAK
2		7422.952	8.772	42.888	51.660	-22.340	74.000	54.000	PEAK
3		9897.630	11.368	40.131	51.499	-22.501	74.000	54.000	PEAK
4	*	12377.000	12.612	40.312	52.924	-21.076	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipments are used during the test:

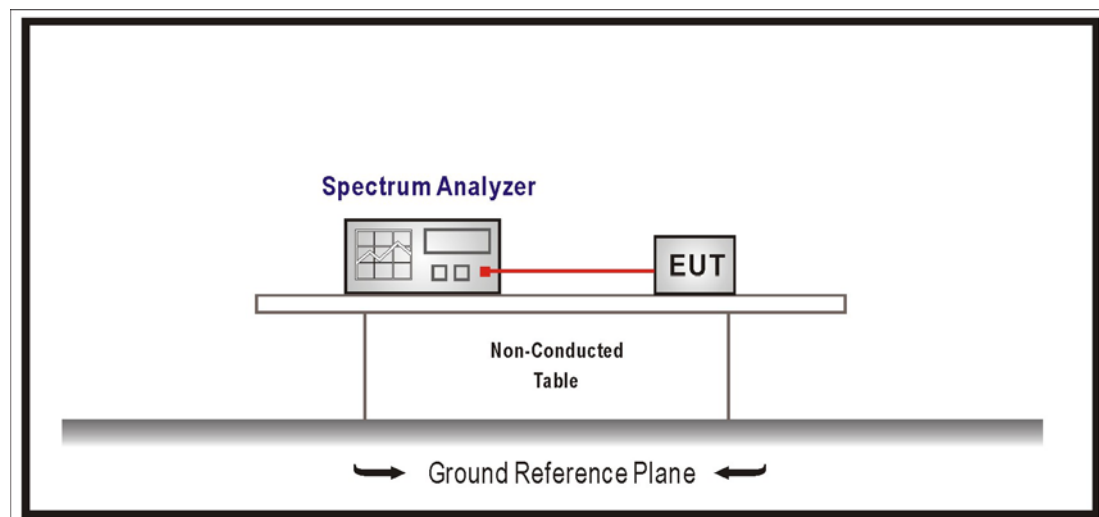
RF Conducted Measurement:				
Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2009
2	No.1 OATS			Sep., 2009

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. Test instruments are marked with "X" are used to measure the final test results.

5.2. Test Setup

RF Antenna Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements
Set RBW = 100 kHz, Set VBW $\geq$ RBW, scan up through 10th harmonic.

5.5. Uncertainty

The measurement uncertainty

Conducted is defined as $\pm 1.27\text{dB}$

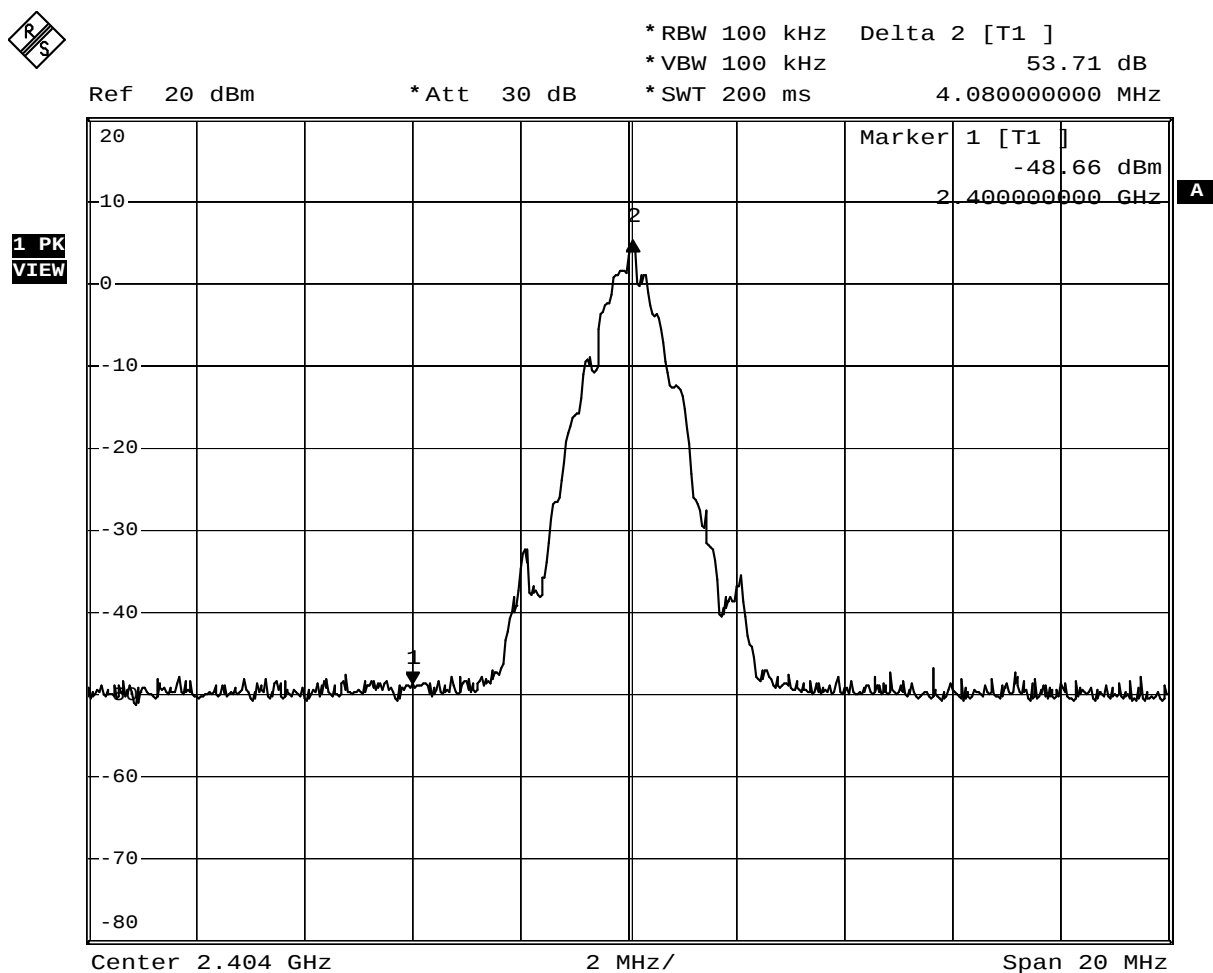
Radiated is defined as $\pm 3.9\text{dB}$

5.6. Test Result

Product	IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER		
Test Item	RF antenna conducted test		
Test Mode	Transmit		
Date of Test	2009/10/12	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2404	53.71	≥ 20	Pass
25	2476	55.75	≥ 20	Pass

Channel 1-Bandedge

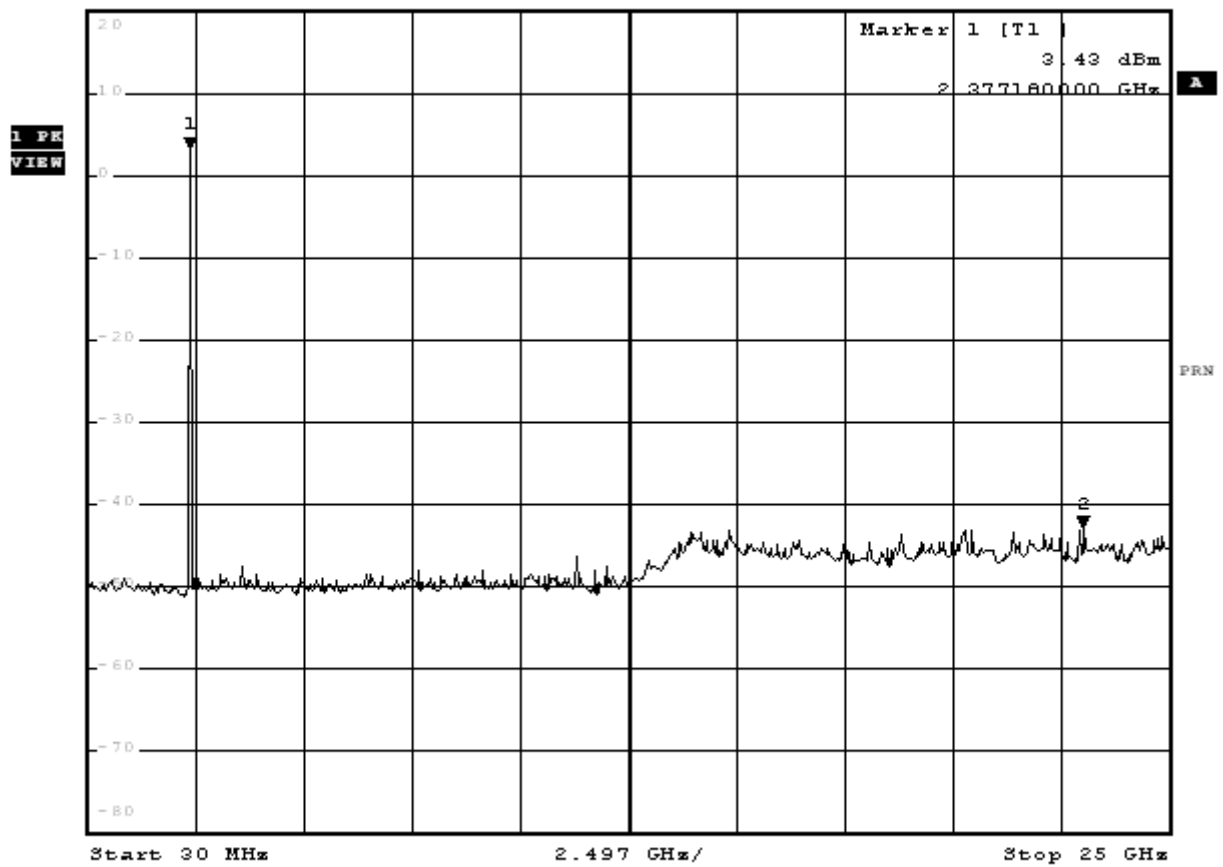


Date: 13.OCT.2009 14:08:02

Channel 1-(30M-25G)



*RBW 100 kHz Marker 2 [T1]
 *VBW 100 kHz -42.99 dBm
 Ref 20 dBm *Att 30 dB SWT 2.5 s 23.002400000 GHz



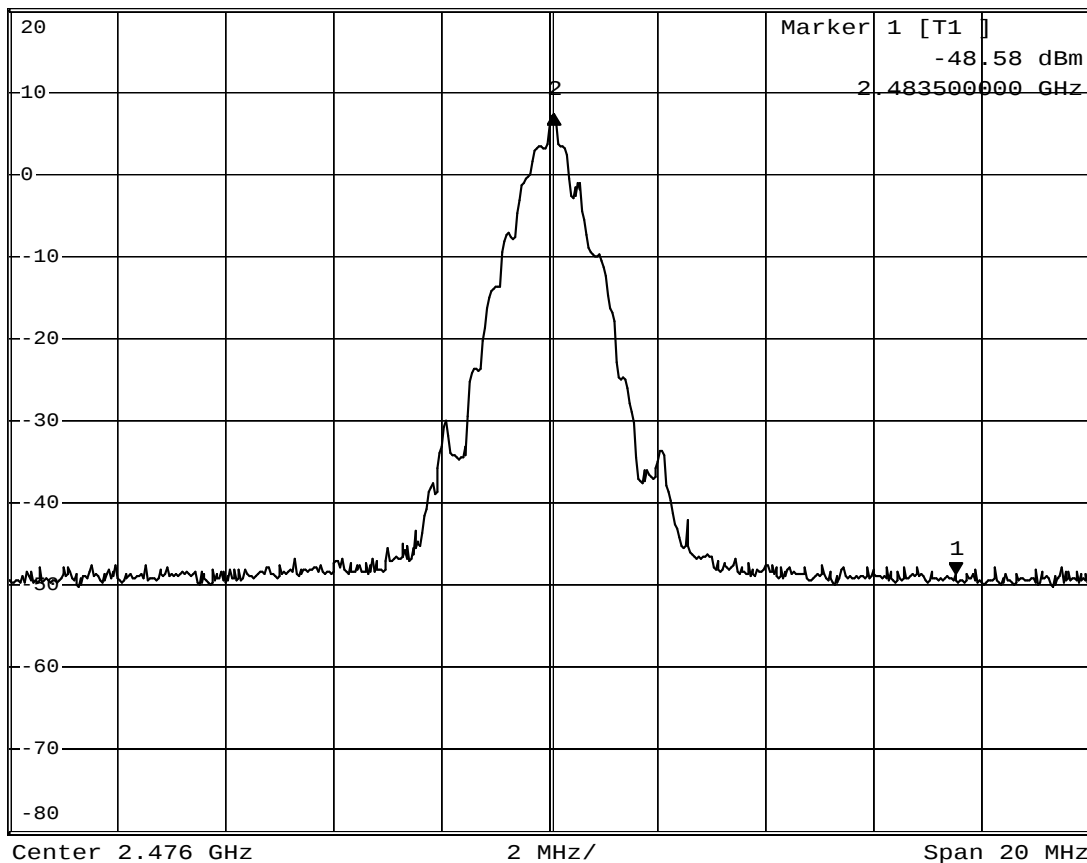
Date: 13.OCT.2009 14:29:15

Channel 25-Bandedge



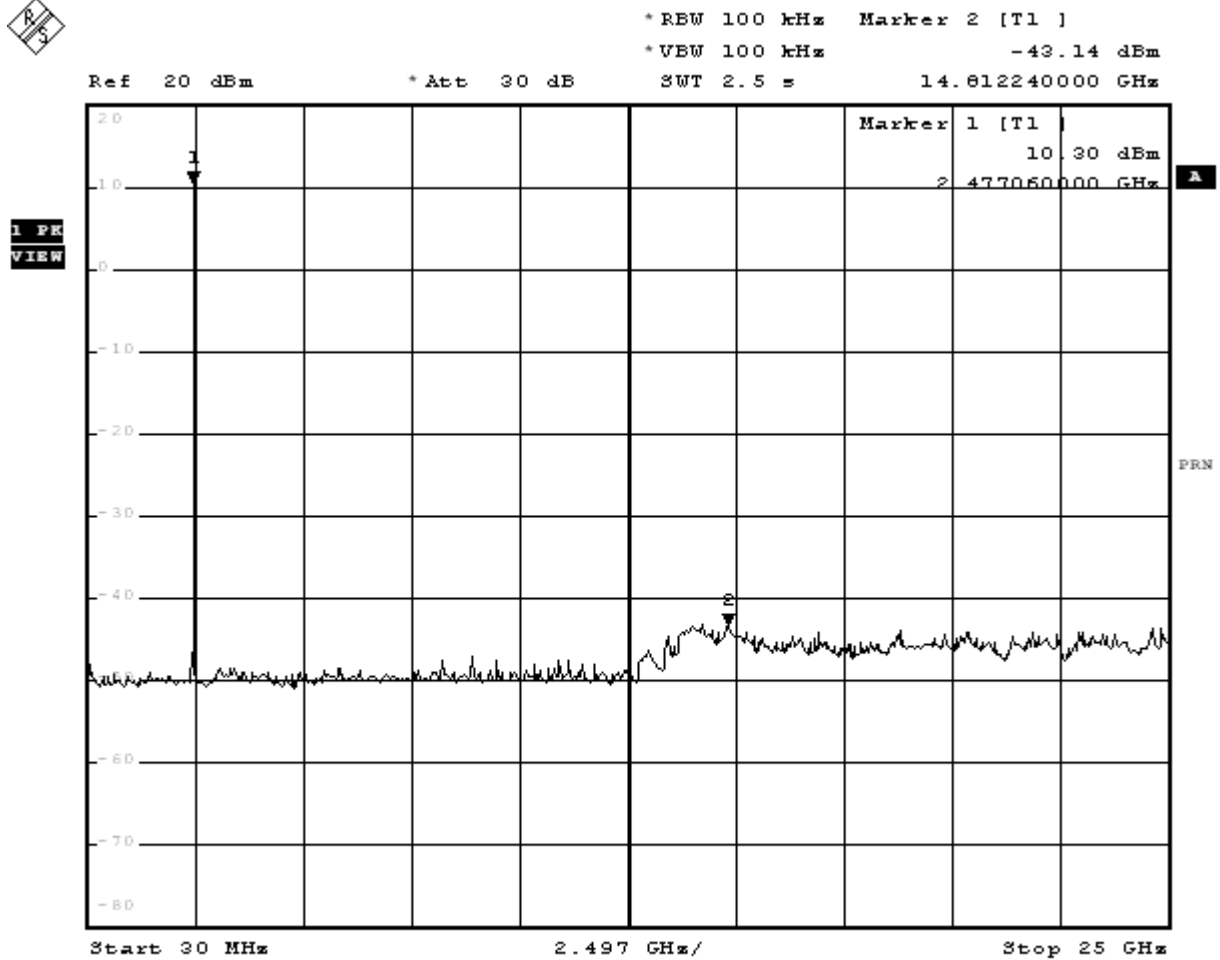
Ref 20 dBm *Att 30 dB *RBW 100 kHz Delta 2 [T1] *VBW 100 kHz 55.75 dB *SWT 200 ms -7.420000000 MHz

1 PK
VIEW



Date: 13.OCT.2009 12:46:54

Channel 25-(30M-25G)



Date: 13.OCT.2009 14:37:32

6. Radiated Emission Band Edge

6.1. Test Equipment

The following test equipments are used during the test:

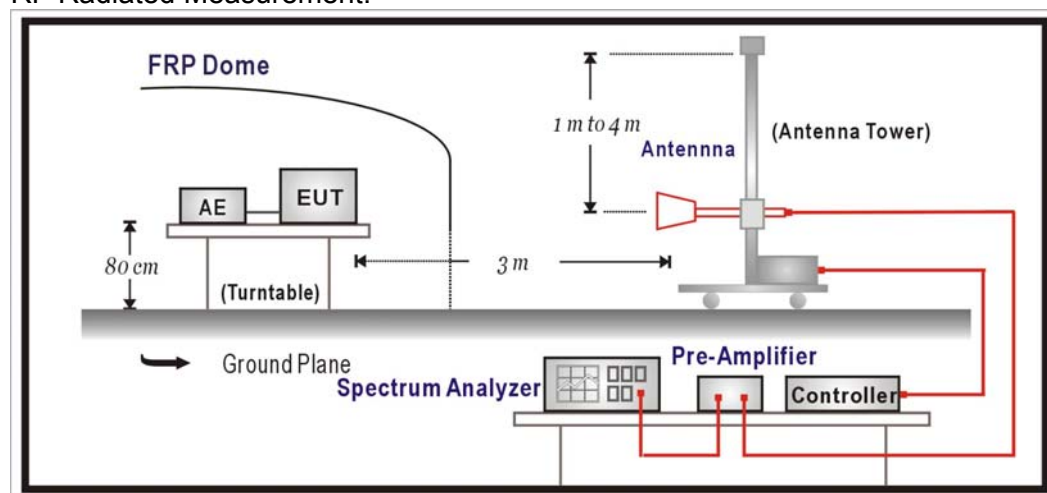
RF Radiated Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2009
2	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2009
3		Loop Antenna	R & S	HFH2-Z2 / 833799/004	Sep., 2009
4		BiconiLog Antenna	Schwarzbeck	VULB 9166 / 1061	Sep., 2009
5		Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2009
6	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Sep., 2009
7	No.1 OATS				Sep., 2009

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. Test instruments are marked with "X" are used to measure the final test results.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

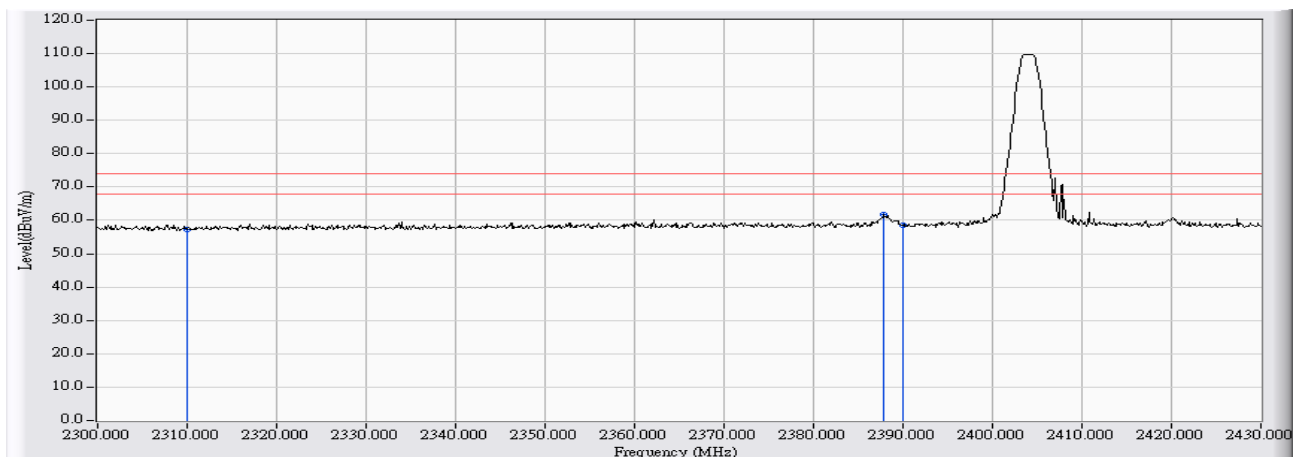
6.5. Uncertainty

The measurement uncertainty
 ± 3.9 dB above 1GHz

6.6. Test Result

Radiated is defined as

Site : Site 1	Time : 2009/10/13 - 15:03
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCIVER	Note : TX – 2404 MHz

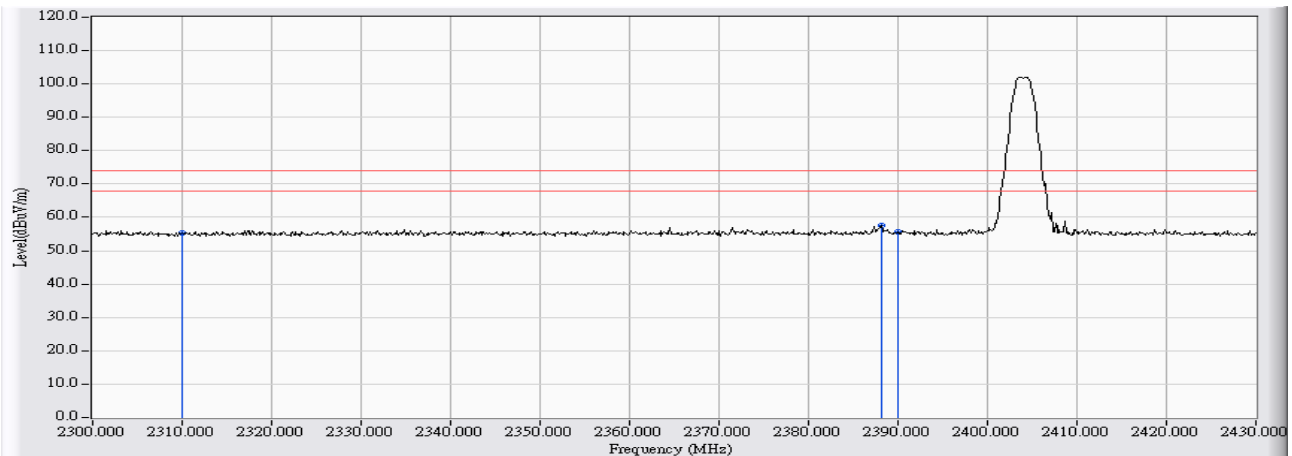


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	2310.000	31.658	25.727	57.384	-16.616	74.000	54.000	PEAK
2	* 2387.880	32.025	29.740	61.766	-12.234	74.000	54.000	PEAK
3	2390.000	32.036	26.521	58.557	-15.443	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/13 - 15:15
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCIVER	Note : TX- 2404 MHz

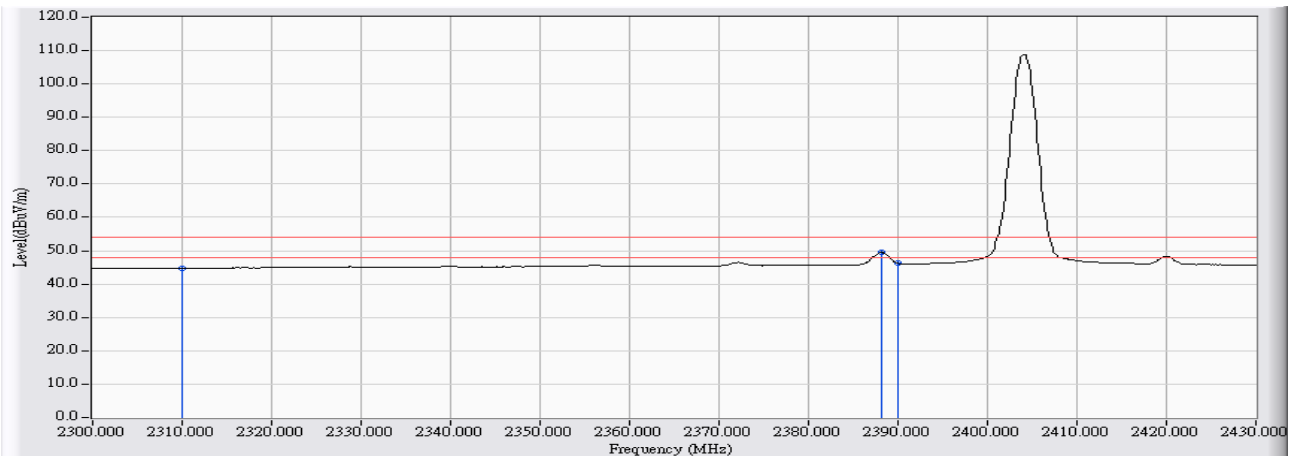


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	2310.000	28.738	26.520	55.257	-18.743	74.000	54.000	PEAK
2	* 2388.140	28.476	29.211	57.687	-16.313	74.000	54.000	PEAK
3	2390.000	28.470	27.098	55.568	-18.432	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/13 - 15:05
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCIVER	Note : TX- 2404 MHz

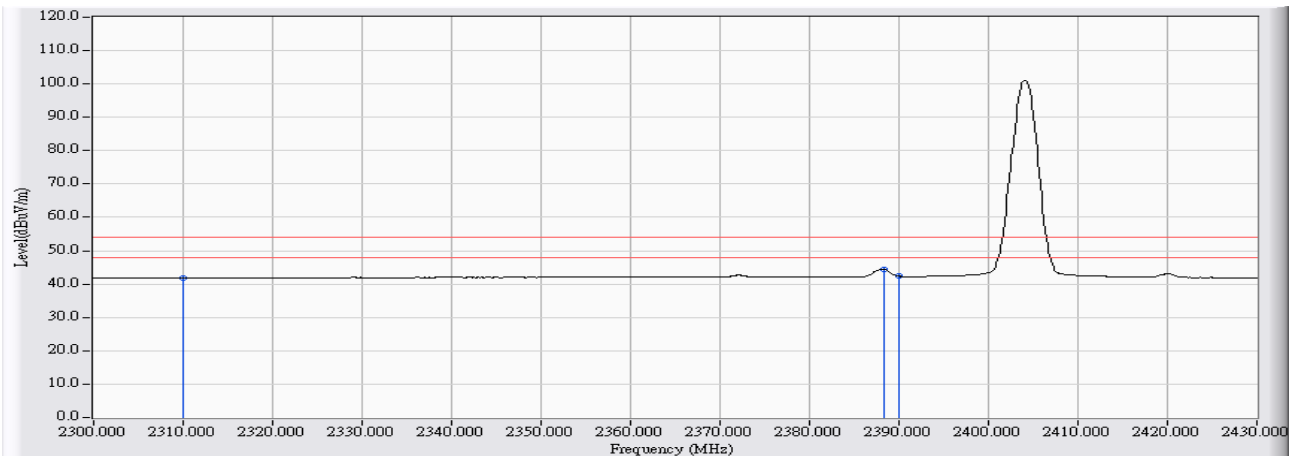


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	2310.000	31.658	13.126	44.783	-9.217	74.000	54.000	AVERAGE
2	* 2388.140	32.027	17.385	49.412	-4.588	74.000	54.000	AVERAGE
3	2390.000	32.036	14.172	46.208	-7.792	74.000	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/13 - 15:16
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCIVER	Note : TX - 2404 MHz

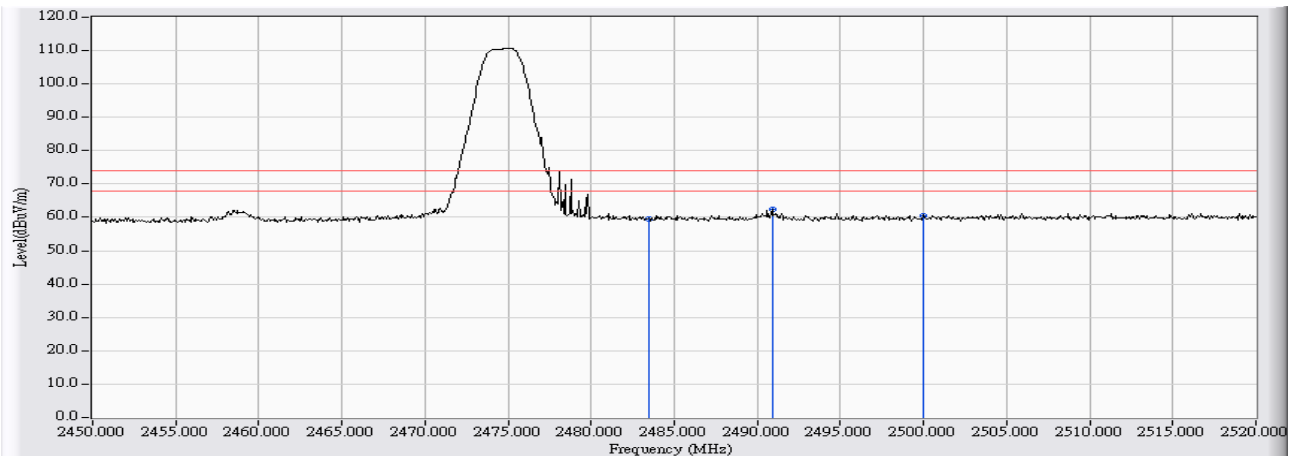


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	2310.000	28.738	13.184	41.921	-12.079	74.000	54.000	AVERAGE
2	* 2388.270	28.476	15.958	44.433	-9.567	74.000	54.000	AVERAGE
3	2390.000	28.470	13.901	42.371	-11.629	74.000	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/13 - 15:27
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCIVER	Note : TX – 2476 MHz

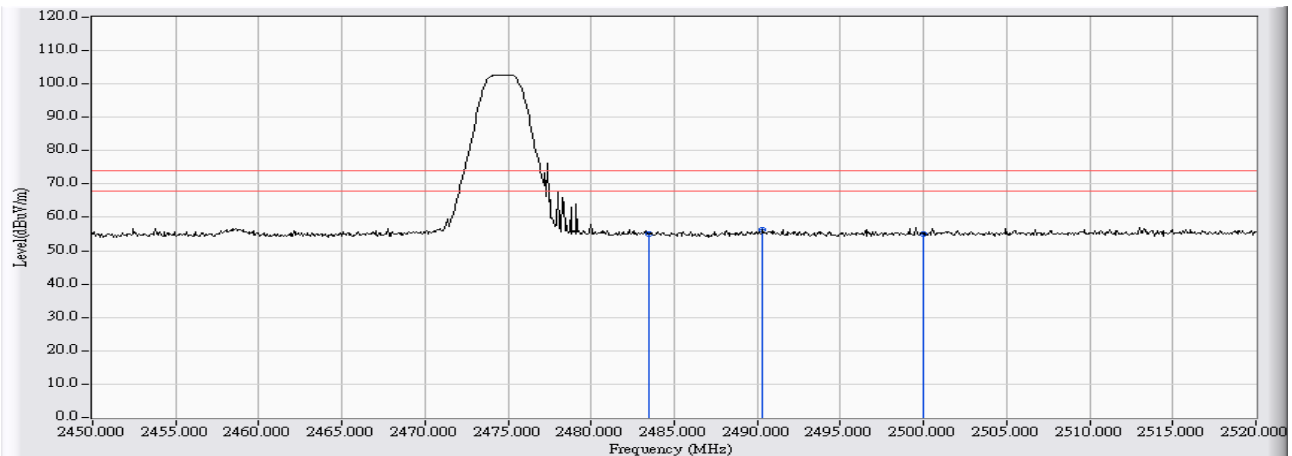


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2483.500	32.480	27.150	59.630	-14.370	74.000	54.000	PEAK
2	*	2490.880	32.516	29.931	62.447	-11.553	74.000	54.000	PEAK
3		2500.000	32.557	28.046	60.604	-13.396	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/13 - 15:33
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCIVER	Note : TX - 2476 MHz

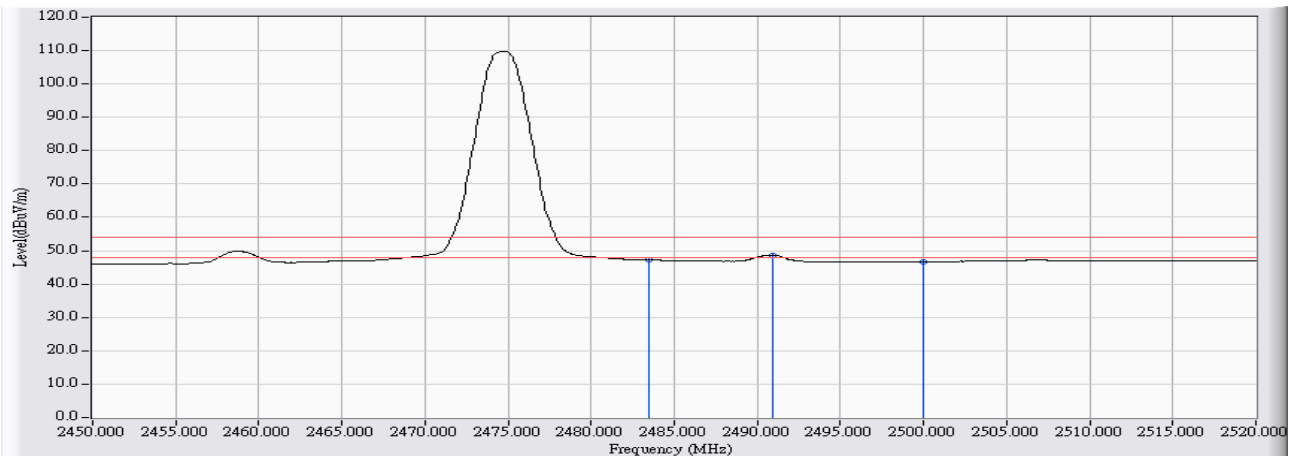


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	2483.500	28.156	26.765	54.920	-19.080	74.000	54.000	PEAK
2	* 2490.320	28.130	28.255	56.384	-17.616	74.000	54.000	PEAK
3	2500.000	28.142	26.901	55.043	-18.957	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/13 - 15:28
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCIVER	Note : TX -2476 MHz

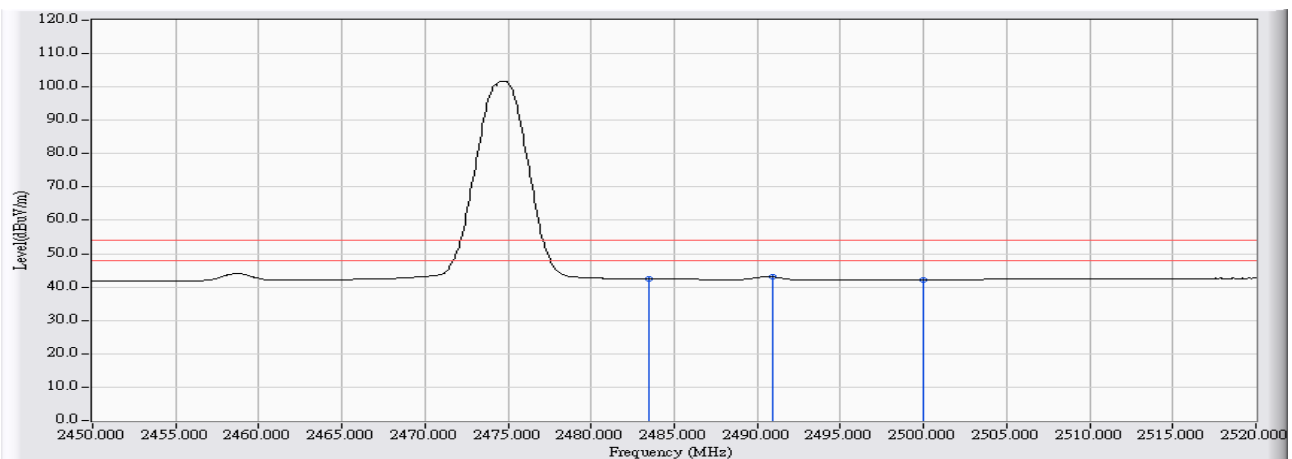


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2483.500	32.480	14.707	47.187	-6.813	74.000	54.000	AVERAGE
2	*	2490.880	32.516	16.206	48.722	-5.278	74.000	54.000	AVERAGE
3		2500.000	32.557	14.192	46.750	-7.250	74.000	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : Site 1	Time : 2009/10/13 - 15:34
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V / 60Hz
EUT : IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER	Note : TX - 2476 MHz



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	2483.500	28.156	14.252	42.407	-11.593	74.000	54.000	AVERAGE
2	* 2490.880	28.127	14.986	43.113	-10.887	74.000	54.000	AVERAGE
3	2500.000	28.142	14.095	42.237	-11.763	74.000	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

7. Occupied Bandwidth

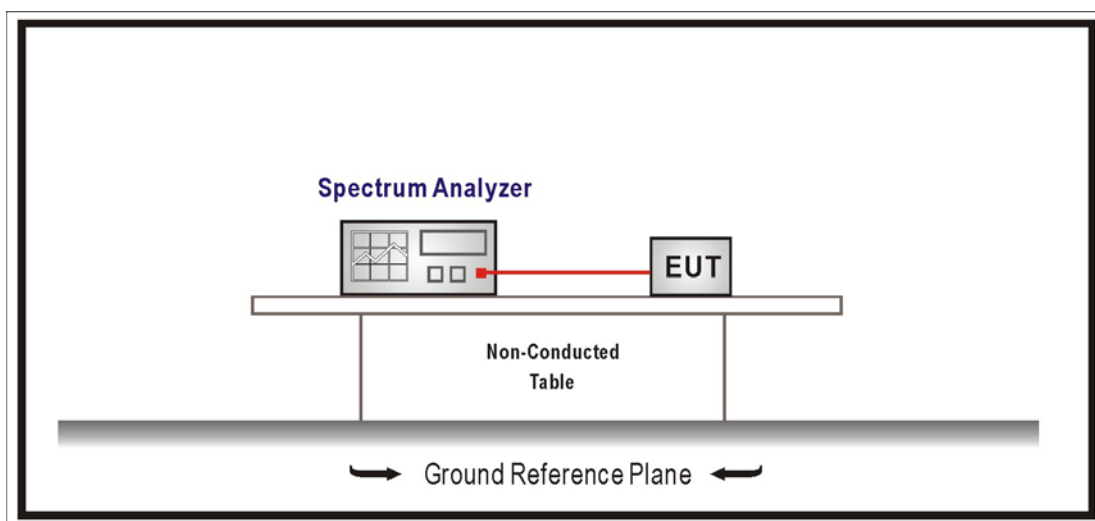
7.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2009
2	No.1 OATS			Sep., 2009

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

7.2. Test Setup



7.3. Test Procedures

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Span greater than RBW.

7.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

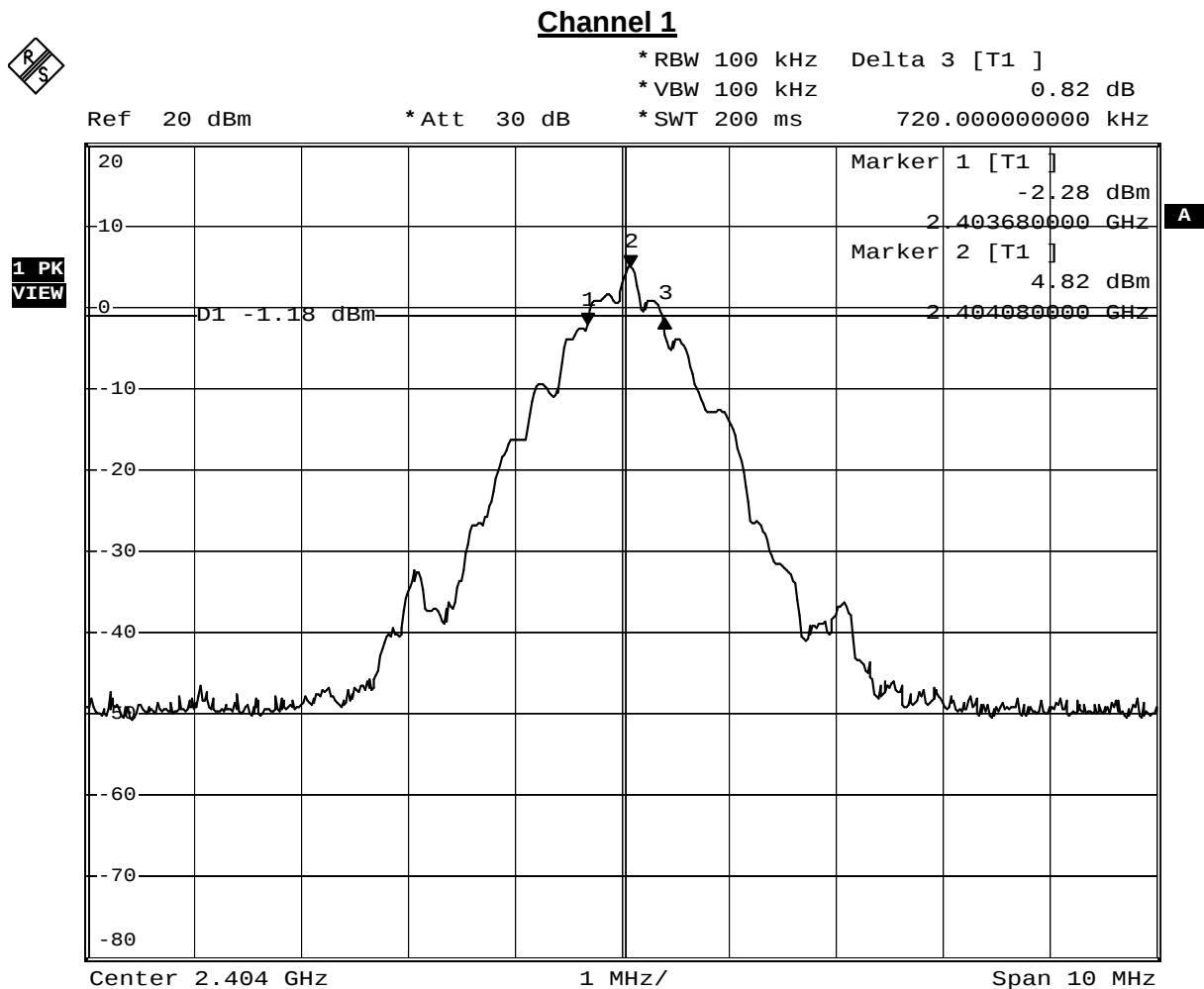
7.5. Uncertainty

The measurement uncertainty is defined as $\pm 150\text{Hz}$

7.6. Test Result

Product	IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER		
Test Item	Occupied Bandwidth		
Test Mode	Transmit		
Date of Test	2009/10/12	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2404	720	≥500	Pass
12	2437	700	≥500	Pass
25	2476	680	≥500	Pass



Date: 13.OCT.2009 14:10:22

Channel 12

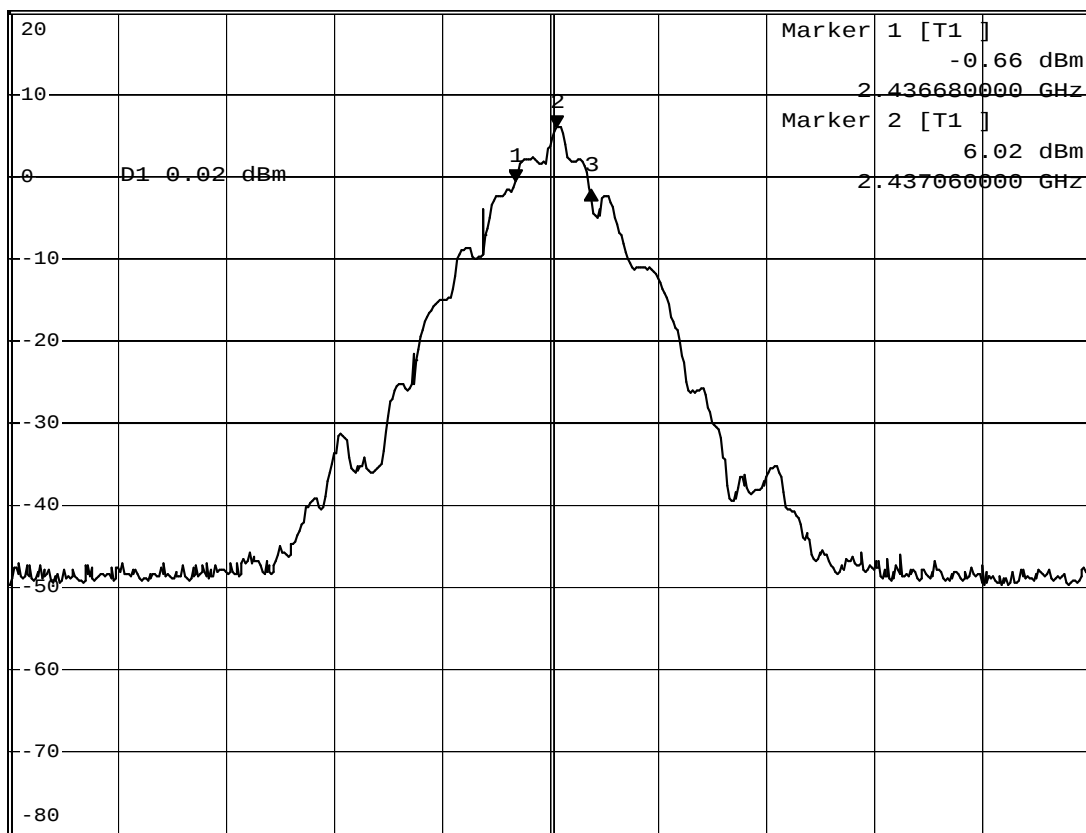


* RBW 100 kHz Delta 3 [T1]
 * VBW 100 kHz -0.88 dB
 * SWT 200 ms 700.000000000 kHz

Ref 20 dBm

* Att 30 dB

1 PK
VIEW



Center 2.437 GHz

1 MHz/

Span 10 MHz

Date: 13.OCT.2009 12:41:17

Channel 25

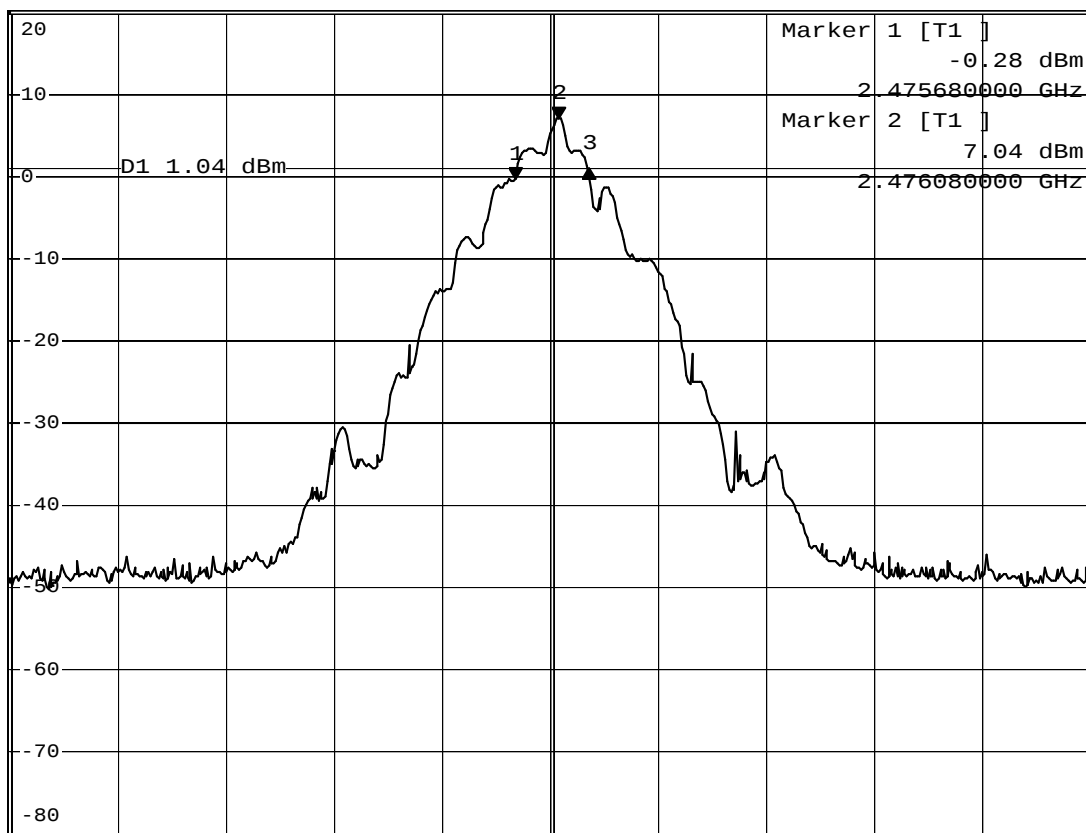


* RBW 100 kHz Delta 3 [T1]
 * VBW 100 kHz 1.25 dB
 * SWT 200 ms 680.000000000 kHz

Ref 20 dBm

* Att 30 dB

1 PK
VIEW



Center 2.476 GHz

1 MHz/

Span 10 MHz

Date: 13.OCT.2009 12:48:22

8. Power Density

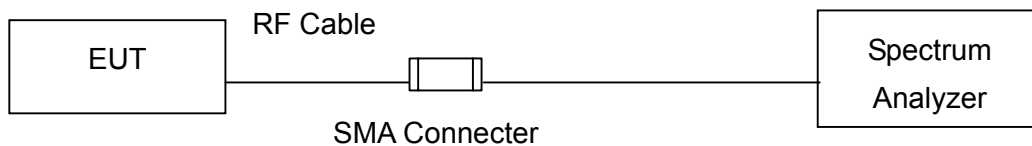
8.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2009
2	No.1 OATS			Sep., 2009

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

8.2. Test Setup



8.3. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW= 3 kHz, Set VBW $\geq$ 9 kHz, Sweep time=Auto, Set detector=Peak detector

8.5. Uncertainty

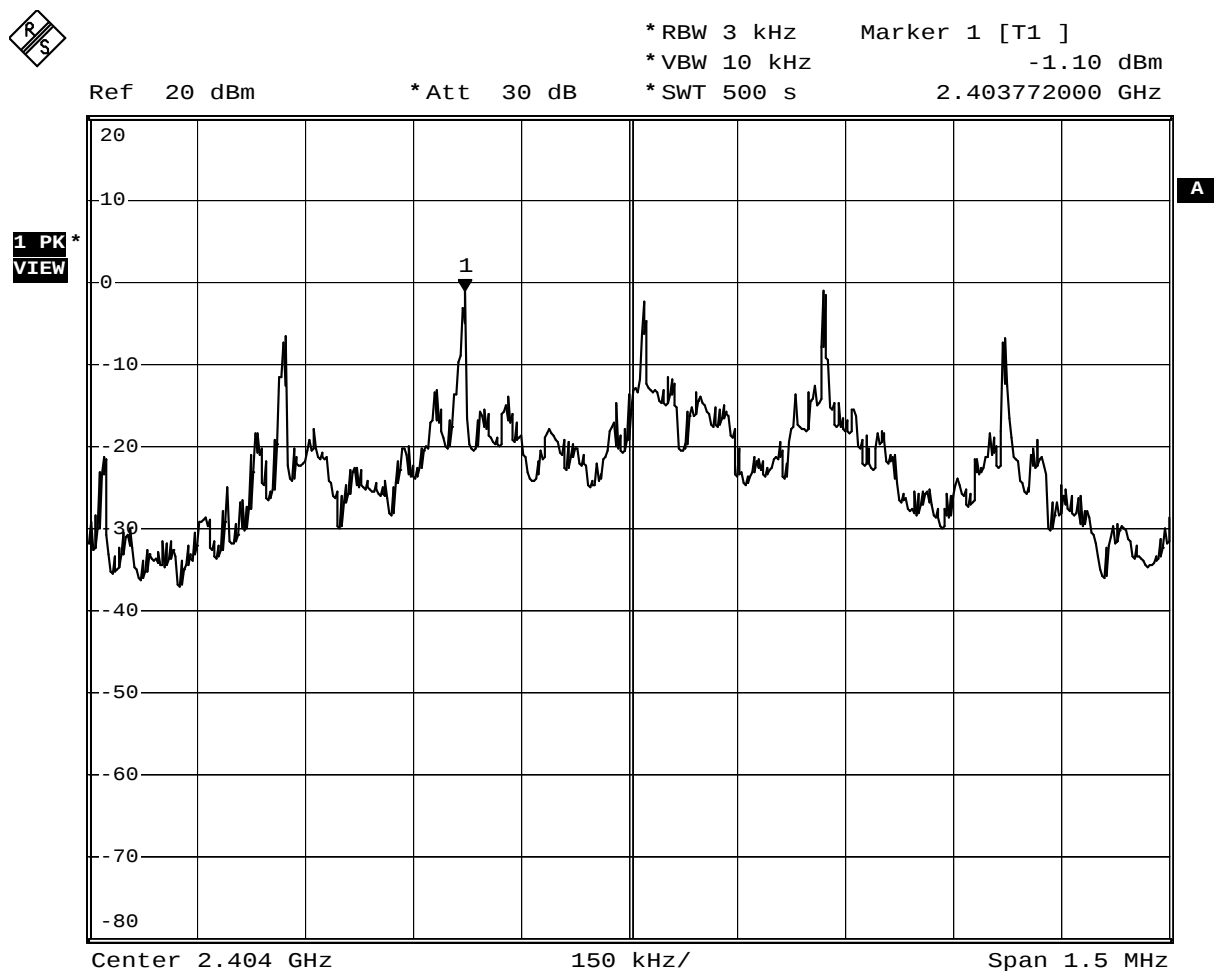
The measurement uncertainty is defined as ± 1.27 dB.

8.6. Test Result

Product	IA2E DUPLEX CARDTYPE DIGITAL AUDIO TRANSCEIVER		
Test Item	Power Density		
Test Mode	Transmit		
Date of Test	2009/10/12	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2404	-1.10	≤8	Pass
12	2437	-0.29	≤8	Pass
25	2476	1.28	≤8	Pass

Channel 1



Date: 13.OCT.2009 14:06:27

Channel 12

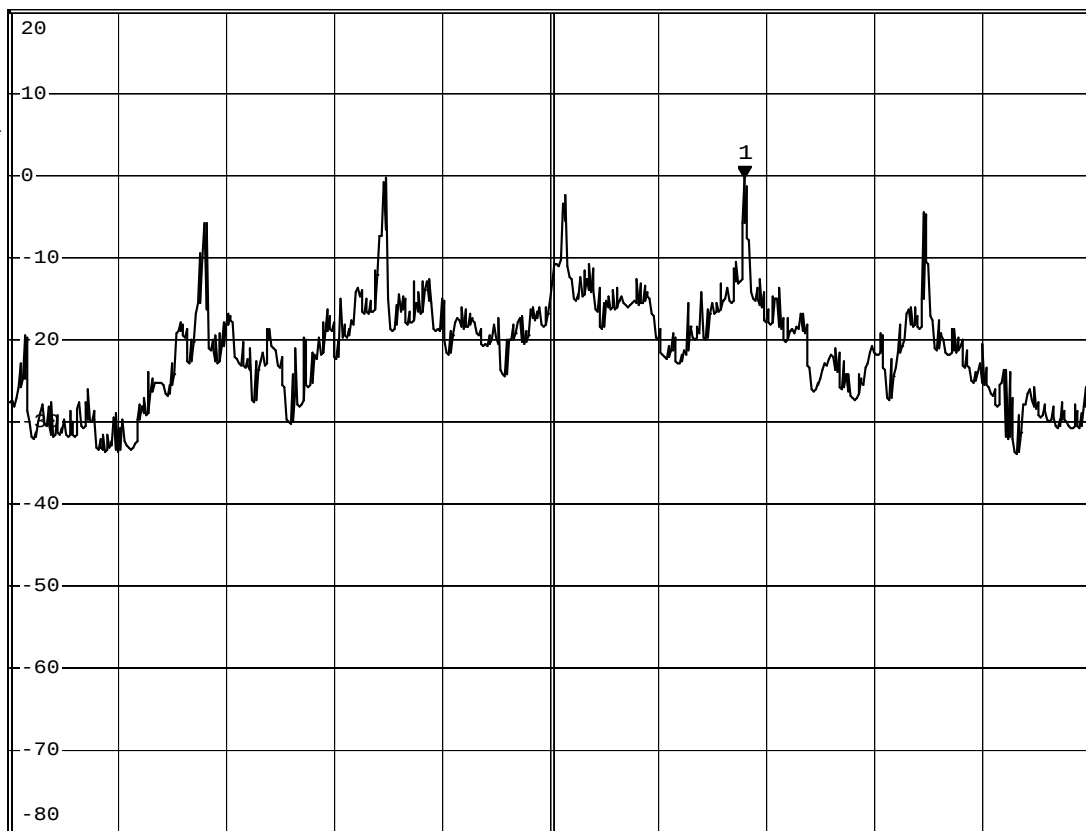


* RBW 3 kHz Marker 1 [T1]
 * VBW 10 kHz -0.29 dBm
 * SWT 500 s 2.437270000 GHz

Ref 20 dBm

* Att 30 dB

1 PK*
VIEW



Center 2.437 GHz

150 kHz/

Span 1.5 MHz

Date: 13.OCT.2009 13:24:12

Channel 25

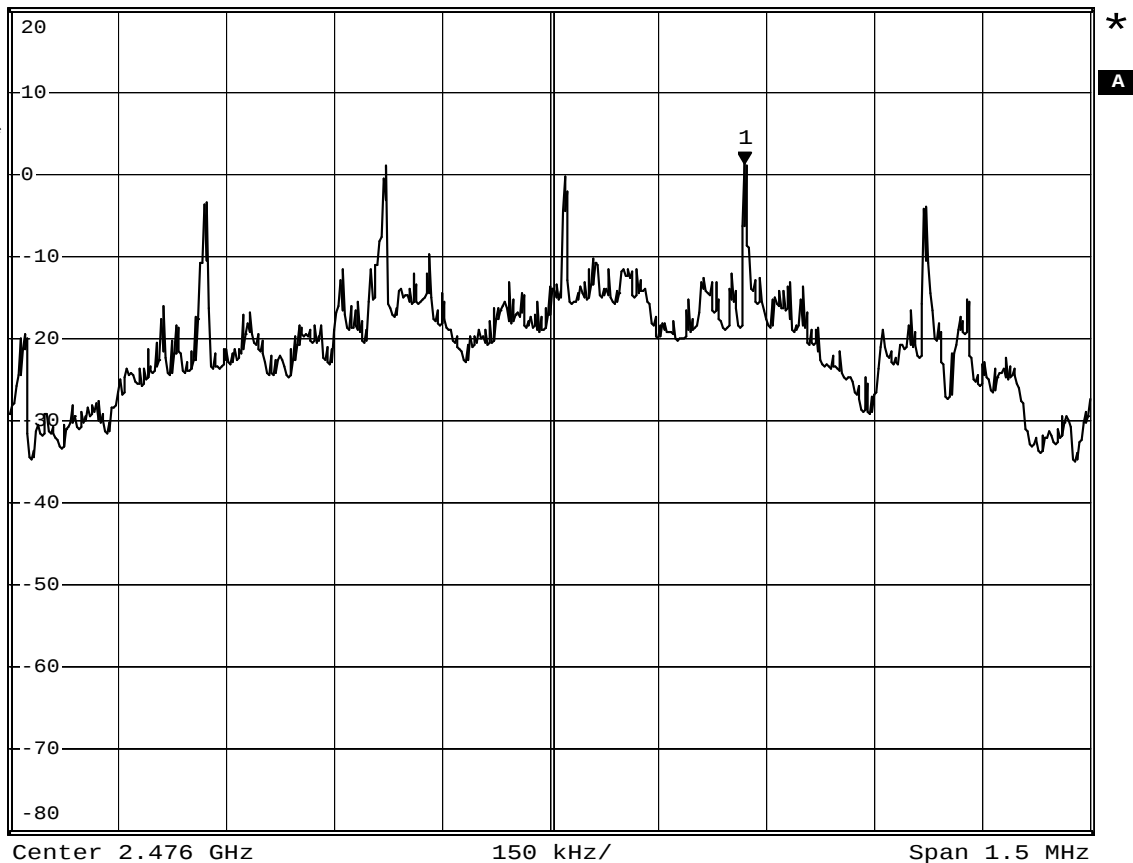


*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 1.28 dBm
 *SWT 500 s 2.476270000 GHz

Ref 20 dBm

*Att 30 dB

1 PK
VIEW



Date: 13.OCT.2009 13:00:13