FCC15.247 Test Report

Applicant	:	Shenzhen JFK Electronic Co., Ltd
Product	:	Video Recorder
Model No.	:	X5 (Adding Model See Annex I)
FCC ID	:	2AAQUCARDVR01
Standards	:	FCC CFR Title 47 Part 15 Subpart C: 2012
		ANSI C63.4: 2009
		ANSI C63.10: 2009
Test Date	:	July 26, 2013 ~ August 08, 2013

Reviewed By : Sunny Sun

(Engineer: Sunny Sun)

Approved By : Marlin Chen

(Manager: Marlin Chen)

Revision History

Report No.	Version	Description	Issue Date
1307RSU00205	Rev. 01	Initial report	2013-08-12
1307RSU00205	Rev. 02	Adjust the output power	2013-08-20

Test Summary

FCC Part Section(s)	Test Description	Test Result (Pass/Fail)	Reference
15.207	Conducted Emission	Pass	Section 3
15.205 15.209	Radiated Emission	Pass	Section 4
15.247(d)	RF Antenna Conducted Spurious	Pass	Section 5
15.247(d)	Radiated Emission Band Edge	Pass	Section 6
15.215©	Operation Frequency Range of 20dB Bandwidth	Pass	Section 7
15.247(a)(2)	Occupied Bandwidth	Pass	Section 8
15.247(b)(3)	Power Output	Pass	Section 9
15.247(e)	Power Spectral Density	Pass	Section 10

CONTENTS

Description Page

1. General Information

1.1. Applicant

Shenzhen JFK Electronic Co., Ltd
3rd Floor, 12th Building, Liaoken 1st Industry Park, Shiyan, Baoan, Shenzhen, China

1.2. Manufacturer

Shenzhen JFK Electronic Co., Ltd
3rd Floor, 12th Building, Liaoken 1st Industry Park, Shiyan, Baoan, Shenzhen, China

1.3. Feature of Product

Product Name	Video Recorder
Model No.	X5
Frequency Range	802.11b/g/n(20MHz): 2412 ~ 2472 MHz 802.11n(40MHz): 2422 ~ 2462MHz
Channel Number	802.11b/g/n(20MHz): 13 802.11 n(40MHz): 9
Type of Modulation	802.11b: DSSS 802.11g/n: OFDM
Data Rate	802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11b: 1/2/5.5/11 Mbps 802.11n: up to 135 Mbps
Channel Control	Auto
Antenna Type	Internal
Peak Antenna Gain	1dBi

Channel List for 802.11b/g/n(20MHz)

Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz
04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz
10	2457 MHz	11	2462 MHz	N/A	N/A

Channel List for 802.11n(40MHz)

Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz
06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	N/A	N/A	N/A	N/A

1.4. Testing Facility

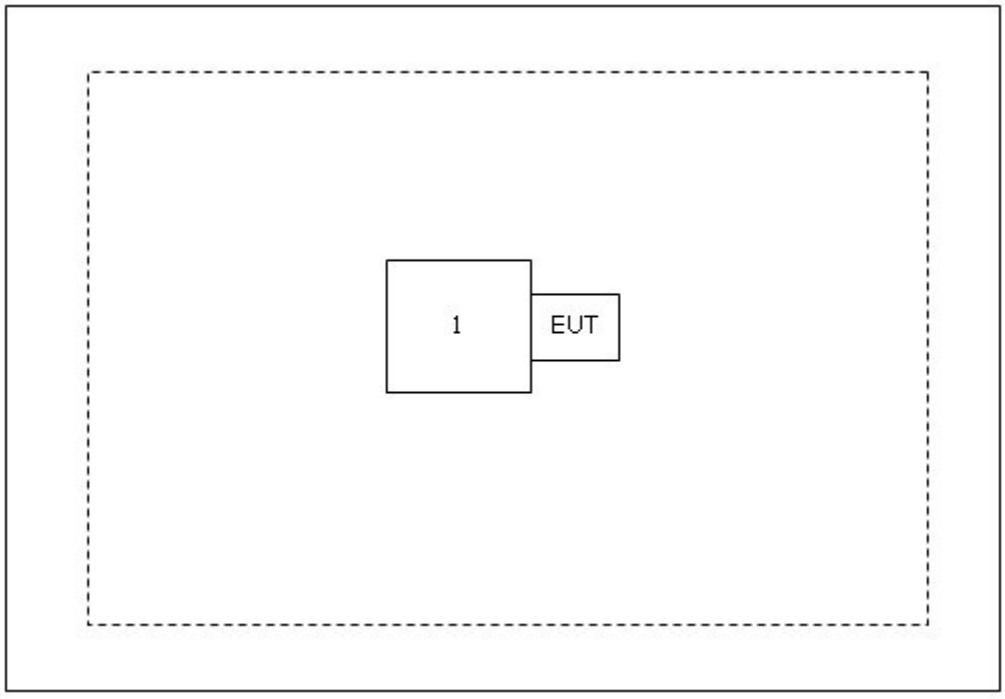
Test Site	QuieTek Technology (Suzhou) Co., Ltd.
Test Site Location	No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China
FCC Registration Number	800392

2. Test Configuration of Equipment Under Test

2.1. Test Mode

Test Mode
Mode 1: Transmit by 802.11b
Mode 2: Transmit by 802.11g
Mode 3: Transmit by 802.11n(20MHz)
Mode 4: Transmit by 802.11n(40MHz)

2.2. Configuration of Tested System

Connection Diagram


Signal Cable Type		Signal cable Description
A	N/A	N/A

2.3. Test 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.	Power Cord
1	Notebook	Asus	N80V	8BN0AS226971468	Non-Shielded, 1.8m

2.4. Test Software

Turn on the power of all equipment, then run the RF test software provided by applicant, and set the test mode and channel, then press OK to start continue transmit.

3. Conducted Emission

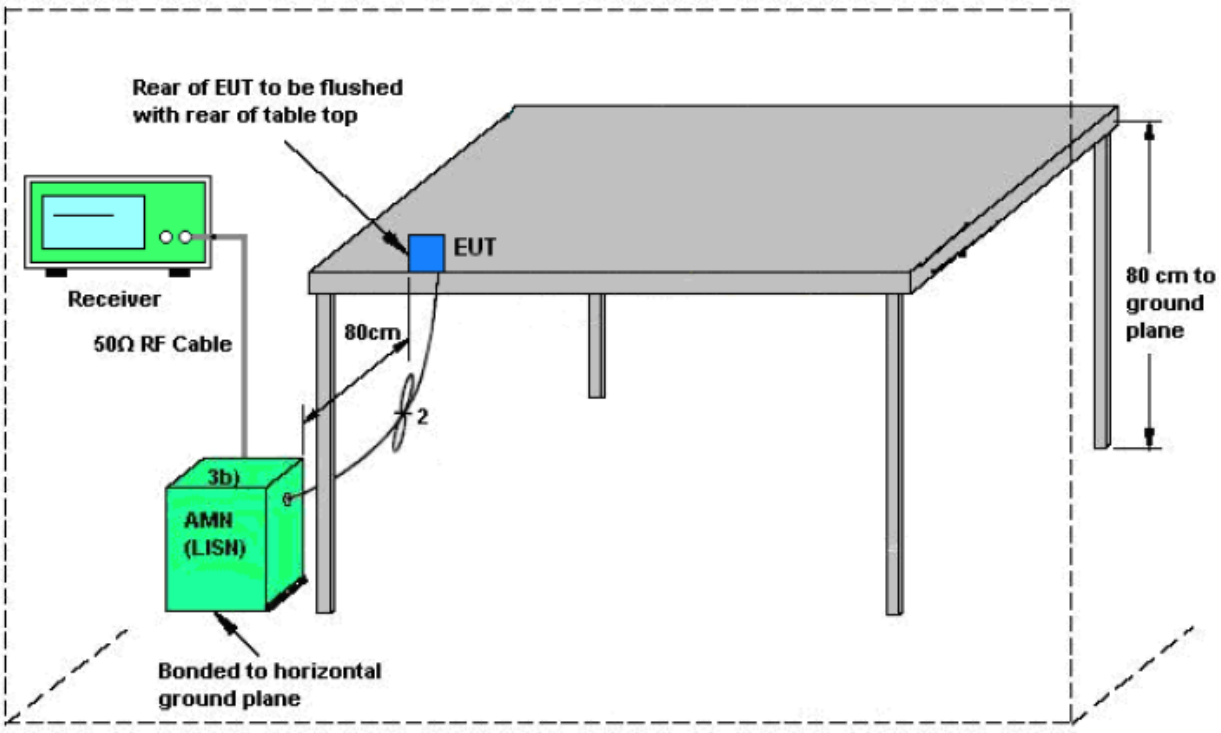
3.1. Limit of Conducted Emission

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

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

3.2. Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.3. Test Procedure

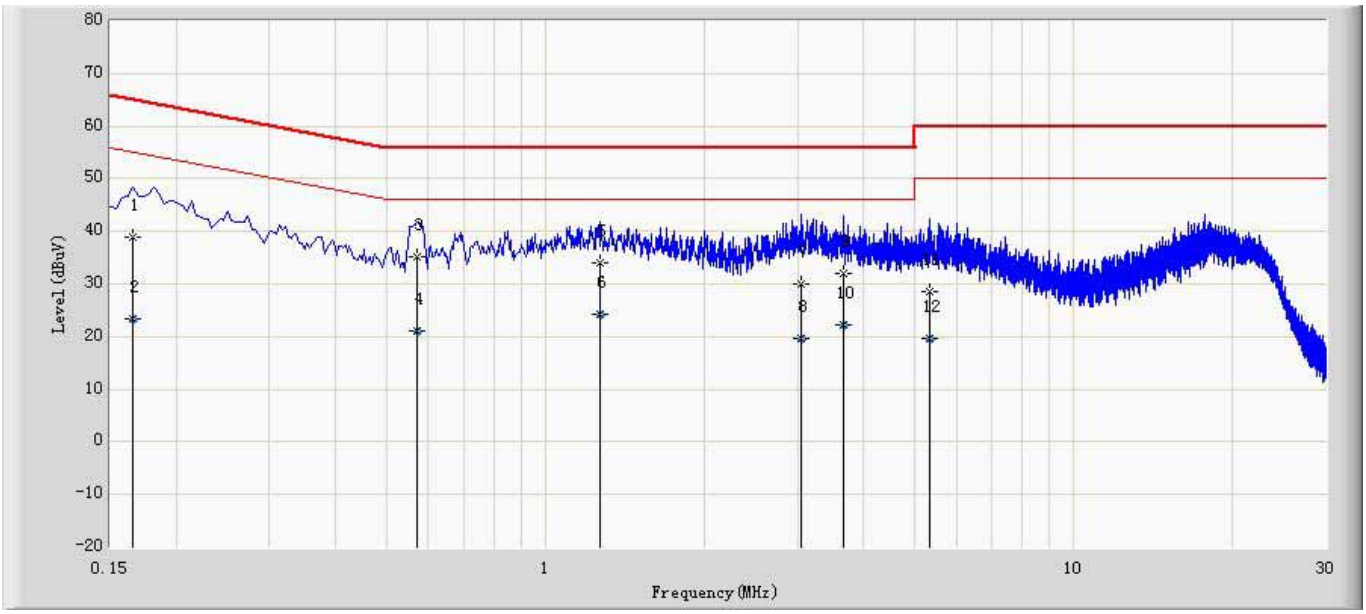
The EUT was setup according to ANSI C63.4, 2009 and tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear 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 9 kHz.

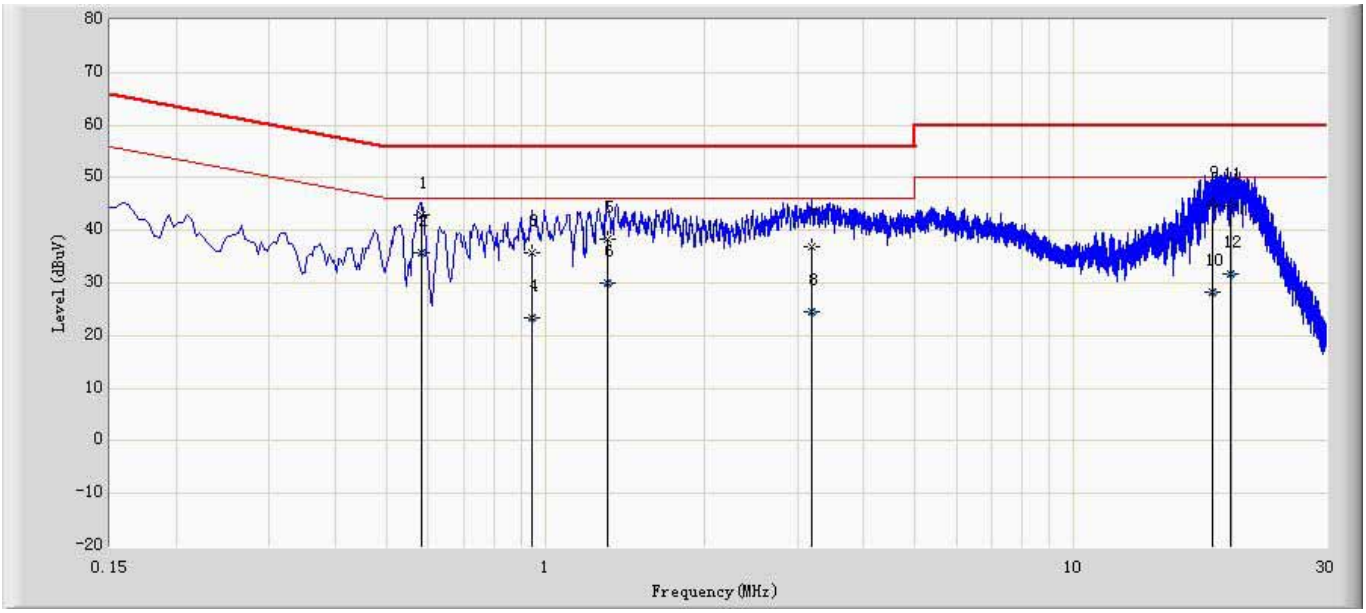
3.4. Test Result

Site: TR1	Time: 2013/07/28 - 17:10
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.166	38.965	29.138	-26.193	65.158	9.826	QP
2		0.166	23.356	13.530	-31.802	55.158	9.826	AV
3	*	0.570	35.185	25.326	-20.815	56.000	9.859	QP
4		0.570	21.106	11.247	-24.894	46.000	9.859	AV
5		1.266	33.970	24.170	-22.030	56.000	9.800	QP
6		1.266	24.394	14.595	-21.606	46.000	9.800	AV
7		3.054	30.087	20.273	-25.913	56.000	9.814	QP
8		3.054	19.768	9.954	-26.232	46.000	9.814	AV
9		3.662	32.061	22.238	-23.939	56.000	9.823	QP
10		3.662	22.169	12.346	-23.831	46.000	9.823	AV
11		5.326	28.424	18.574	-31.576	60.000	9.850	QP
12		5.326	19.530	9.680	-30.470	50.000	9.850	AV

Site: TR1	Time: 2013/07/28 - 17:18
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.582	42.855	32.892	-13.145	56.000	9.963	QP
2	*	0.582	35.869	25.906	-10.131	46.000	9.963	AV
3		0.942	35.886	25.895	-20.114	56.000	9.992	QP
4		0.942	23.303	13.311	-22.697	46.000	9.992	AV
5		1.310	38.235	28.224	-17.765	56.000	10.011	QP
6		1.310	30.048	20.037	-15.952	46.000	10.011	AV
7		3.190	36.928	26.920	-19.072	56.000	10.008	QP
8		3.190	24.472	14.464	-21.528	46.000	10.008	AV
9		18.322	44.958	34.800	-15.042	60.000	10.158	QP
10		18.322	28.158	18.000	-21.842	50.000	10.158	AV
11		19.782	44.797	34.600	-15.203	60.000	10.197	QP
12		19.782	31.797	21.600	-18.203	50.000	10.197	AV

4. Radiated Emission

4.1. Limit

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

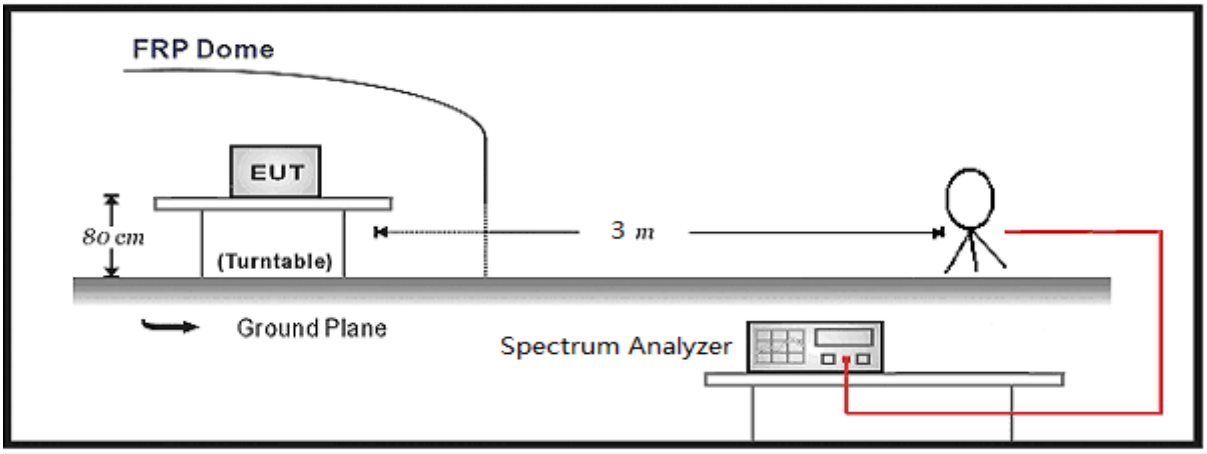
Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument Antenna and the closed point of any part of the device or system.

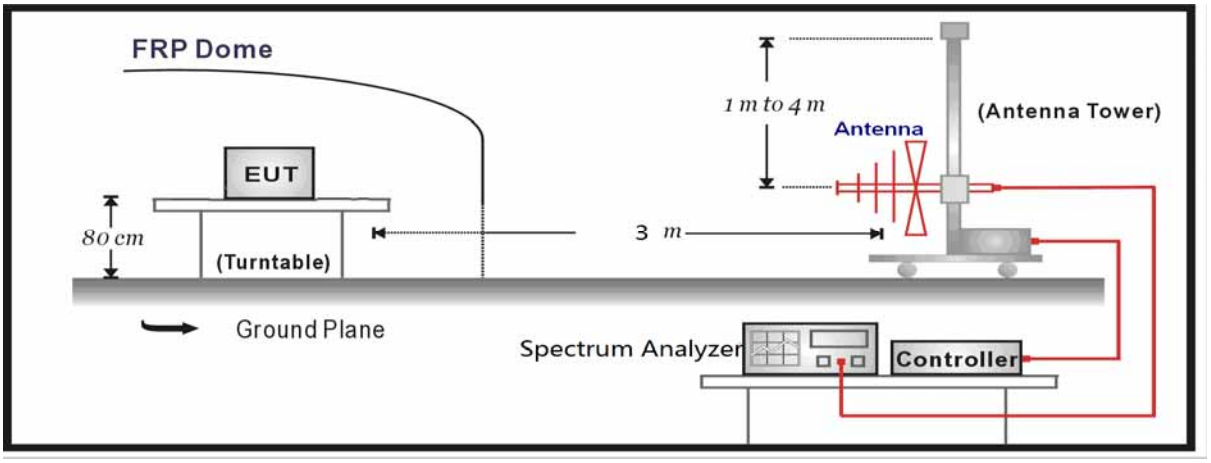
Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.2. Test Setup

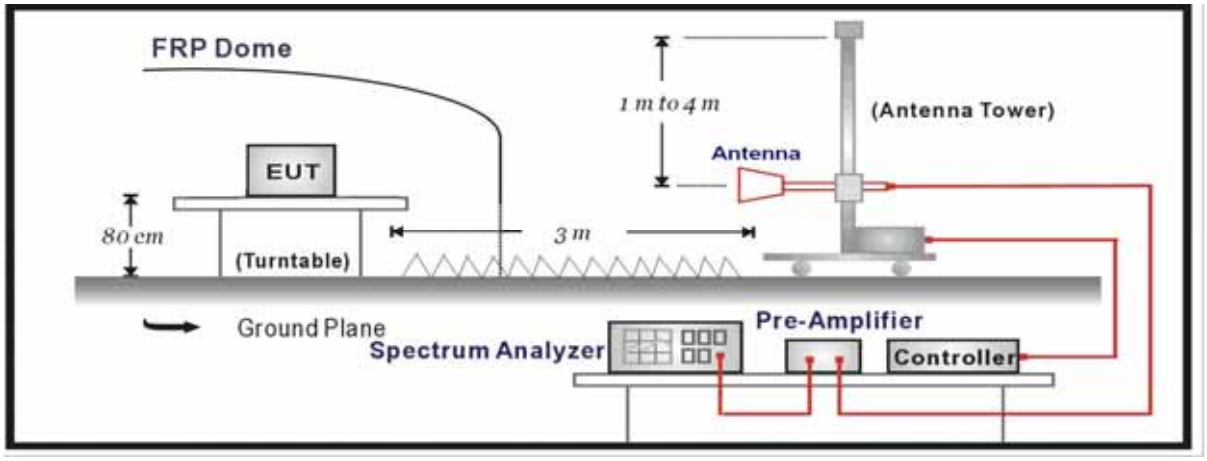
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to KDB 558074 forcompliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 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 is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the Antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn Antenna will be bended down a little (as horn Antenna has the narrow beamwidth) in order to keeping the Antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

4.4. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.
Measure Level = Reading Level + Cable Loss + Antenna Factor - Preamplifier Gain

Mode1: Transmit by 802.11b

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	V	2413.1	99.0	-4.4	94.6	Fundamental	/	PK
	V	313.2	13.0	15.1	28.1	46	-17.9	QP
	V	494.1	12.3	19.6	31.9	46	-14.1	QP
	H	3200.0	48.4	-5.8	42.6	54(Note3)	-11.4	PK
	H	4824.0	41.6	2.6	44.2	54(Note3)	-9.8	PK
	H	7236.0	40.7	8.9	49.6	54(Note3)	-4.4	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	2437.0	98.0	-4.4	93.6	Fundamental		PK
6	V	313.2	12.2	15.1	27.3	46	-18.7	QP
	V	495.6	11.3	19.6	30.9	46	-15.1	QP
	H	3200.0	42.8	-0.6	42.2	54(Note3)	-11.8	PK
	H	4874.0	41.6	2.8	44.4	54(Note3)	-9.6	PK
	H	7311.0	40.9	8.8	49.7	54(Note3)	-4.3	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	2462.0	91.8	-4.0	87.8	Fundamental	/	PK
	V	313.2	13.0	15.1	28.1	46	-17.9	QP
11	V	509.7	11.8	20.0	31.8	46	-14.2	QP
	H	3200.0	42.6	-0.6	42.0	54(Note3)	-12.0	PK
	H	4924.0	41.6	3.0	44.6	54(Note3)	-9.4	PK
	H	7386.0	41.0	8.9	49.9	54(Note3)	-4.1	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	7426.0	45.8	-3.0	42.8	54(note3)	-11.2	PK
	H	9848.0	38.7	3.1	41.8	54(note3)	-12.2	PK
	V	9848.0	38.8	3.2	42.0	54(note3)	-12.0	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode2: Transmit by 802.11g

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	V	2411.9	91.8	-4.4	87.4	Fundamental	/	PK
	V	313.2	13.0	15.1	28.1	46	-17.9	QP
	V	509.7	11.8	20.0	31.8	46	-14.2	QP
	H	3200.0	43.1	-1.7	41.4	54(Note3)	-12.6	PK
	H	4824.0	40.8	2.3	43.1	54(Note3)	-10.9	PK
	H	7236.0	40.4	8.8	49.2	54(Note3)	-4.8	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	2437.0	94.6	-4.4	90.2	Fundamental	/	PK
6	V	318.1	9.9	15.2	25.1	46	-20.9	QP
	V	496.1	8.9	19.6	28.5	46	-17.5	QP
	H	3200.0	42.7	-1.7	41.0	54(Note3)	-13.0	PK
	H	4876.0	40.4	2.5	42.9	54(Note3)	-11.1	PK
	H	7311.0	41.6	8.7	50.3	54(Note3)	-3.7	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	2461.9	97.3	-4.0	93.3	Fundamental		PK
	V	313.2	13.9	15.1	29.0	46	-17.0	QP
11	V	509.7	13.4	20.0	33.4	46	-12.6	QP
	H	3200.0	43.0	-1.7	41.3	54(Note3)	-12.7	PK
	H	4924.0	42.1	2.8	44.9	54(Note3)	-9.1	PK
	H	7386.0	40.6	8.8	49.4	54(Note3)	-4.6	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	7386.0	43.8	-3.0	40.8	54(note3)	-13.2	PK
	H	9848.0	38.6	3.1	41.7	54(note3)	-12.3	PK
	V	9848.0	39.4	3.2	42.6	54(note3)	-11.4	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode3: Transmit by 802.11n (20MHz)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	V	2411.7	90.0	-4.4	85.6	Fundamental	/	PK
	V	313.2	12.5	15.1	27.6	46	-18.4	QP
	V	508.7	14.0	20.0	34.0	46	-12.0	QP
	H	3200.0	42.9	-1.7	41.2	54(Note3)	-12.8	PK
	H	4824.0	42.0	2.3	44.3	54(Note3)	-9.7	PK
	H	7236.0	41.1	8.8	49.9	54(Note3)	-4.1	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	2437.0	92.5	-4.4	88.1	Fundamental	/	PK
6	V	313.2	14.2	15.1	29.3	46	-16.7	QP
	V	494.6	11.2	19.6	30.8	46	-15.2	QP
	H	3200.0	43.2	-1.7	41.5	54(Note3)	-12.5	PK
	H	4874.0	41.0	2.5	43.5	54(Note3)	-10.5	PK
	H	7311.0	40.8	8.7	49.5	54(Note3)	-4.5	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	2460.9	95.6	-4.0	91.6	Fundamental	/	PK
	V	313.2	14.0	15.1	29.1	46	-16.9	QP
11	V	508.7	12.7	20.0	32.7	46	-13.3	QP
	H	3200.0	42.9	-1.7	41.2	54(Note3)	-12.8	PK
	H	4924.0	42.0	2.8	44.8	54(Note3)	-9.2	PK
	H	7386.0	41.0	8.8	49.8	54(Note3)	-4.2	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	7386.0	45.0	-3.0	42.0	54(note3)	-12.0	PK
	H	9848.0	39.1	3.1	42.2	54(note3)	-11.8	PK
	V	9848.0	39.1	3.2	42.3	54(note3)	-11.7	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode4: Transmit by 802.11n (40MHz)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	V	2420.0	95.6	-4.6	91.0	Fundamental	/	PK
	V	313.2	6.6	21.0	27.6	46	-18.4	QP
	V	507.6	8.6	25.4	34.0	46	-12.0	QP
3	H	3200.0	55.5	-13.4	42.1	54(Note3)	-11.9	PK
6	H	4844.0	52.9	-8.6	44.3	54(Note3)	-9.7	PK
	H	7266.0	50.4	-0.7	49.7	54(Note3)	-4.3	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	2437.0	92.5	-4.4	88.1	Fundamental	/	PK
	V	313.2	8.0	21.0	29.0	46	-17.0	QP
	H	509.2	12.8	25.4	38.2	46	-7.8	QP
	H	3200.0	54.9	-13.4	41.5	54(Note3)	-12.5	PK
	H	4874.0	51.9	-8.5	43.4	54(Note3)	-10.6	PK
9	H	7311.0	50.2	-0.7	49.5	54(Note3)	-4.5	PK
	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	2453.6	95.6	-4.0	91.6	Fundamental	/	PK
	V	313.2	8.2	21.0	29.2	46	-16.8	QP
	V	509.2	12.8	25.4	38.2	46	-7.8	QP
	H	3200.0	54.7	-13.4	41.3	54(Note3)	-12.7	PK
	H	4904.0	53.0	-8.4	44.6	54(Note3)	-9.4	PK
	H	7356.0	50.0	-0.5	49.5	54(Note3)	-4.5	PK
3	V	24000.0	59.1	-8.9	50.2	54(Note3)	-3.8	PK
	V	2420.0	95.6	-4.6	91.0	Fundamental	/	PK
	V	313.2	6.6	21.0	27.6	46	-18.4	QP
	V	507.6	8.6	25.4	34.0	46	-12.0	QP

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

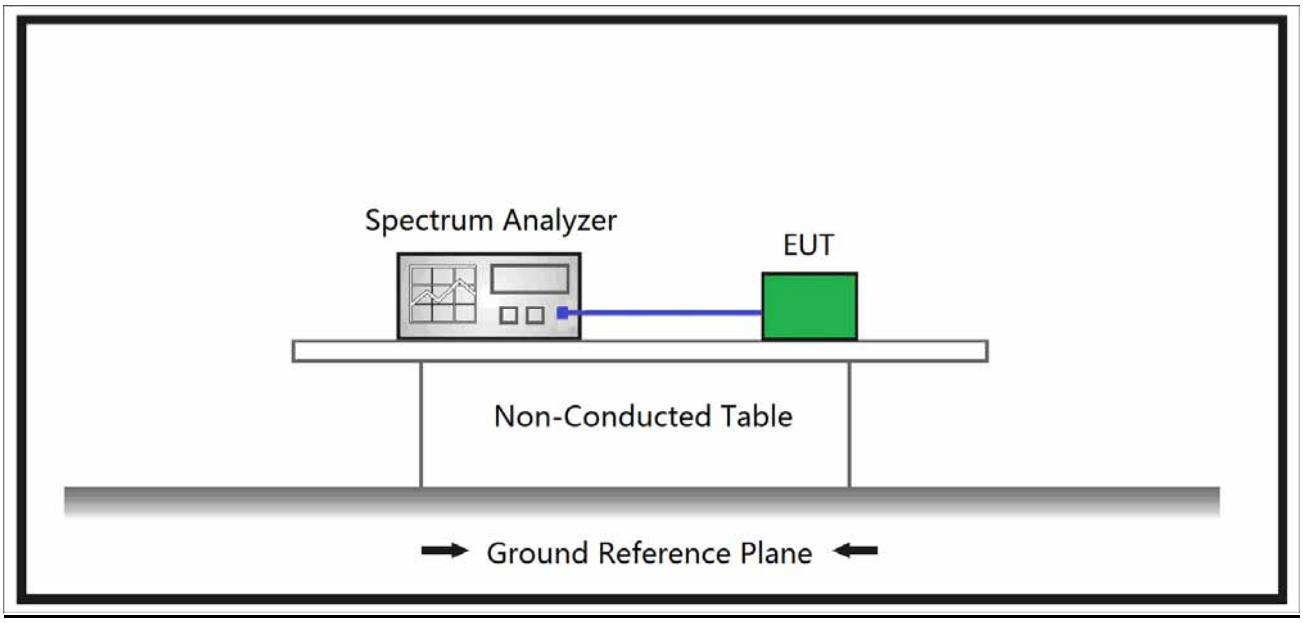
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

5. RF Antenna Conducted Spurious

5.1. Limit

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 either an RF conducted or a radiated measurement.

5.2. Test Setup



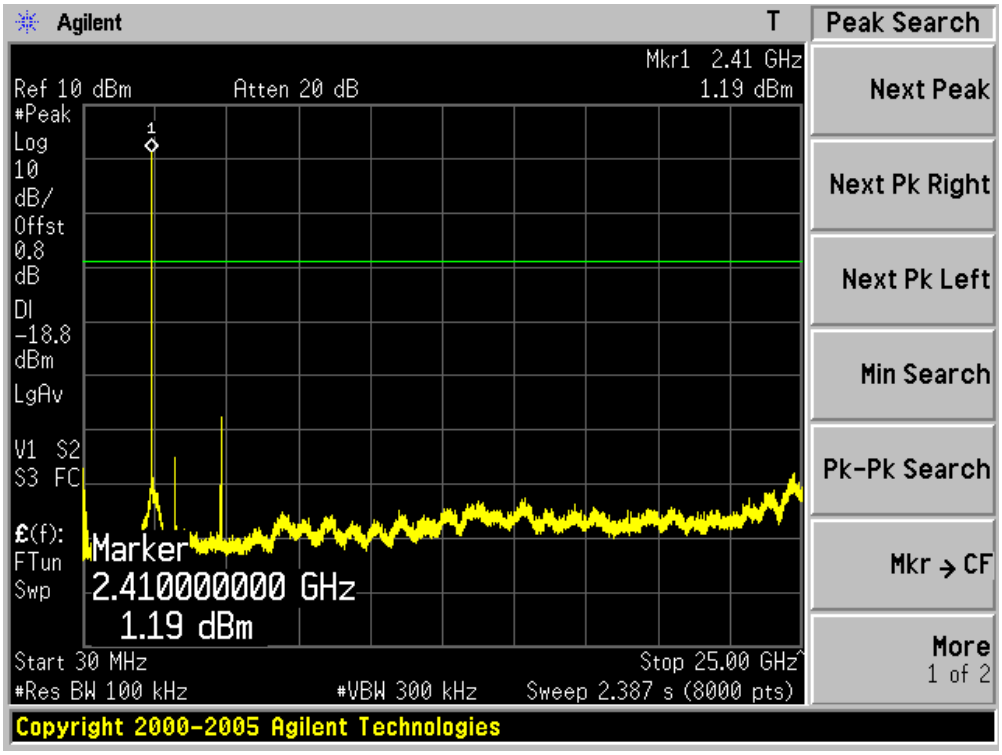
5.3. Test Procedure

The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

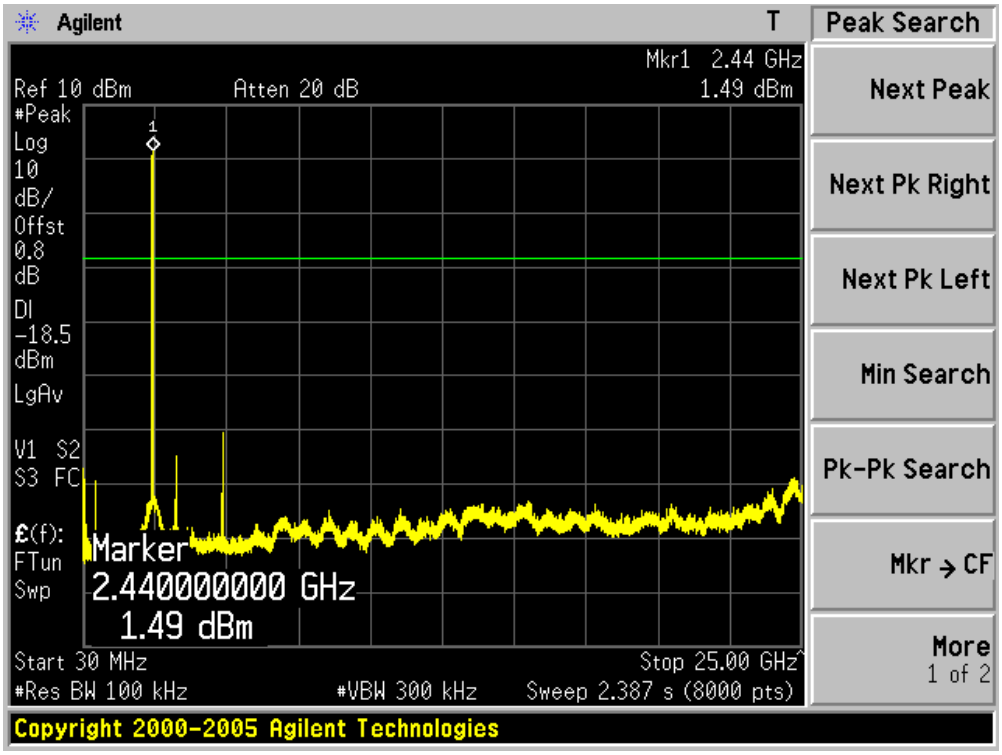
5.4. Test Result

Product	:	Video Recorder
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11b

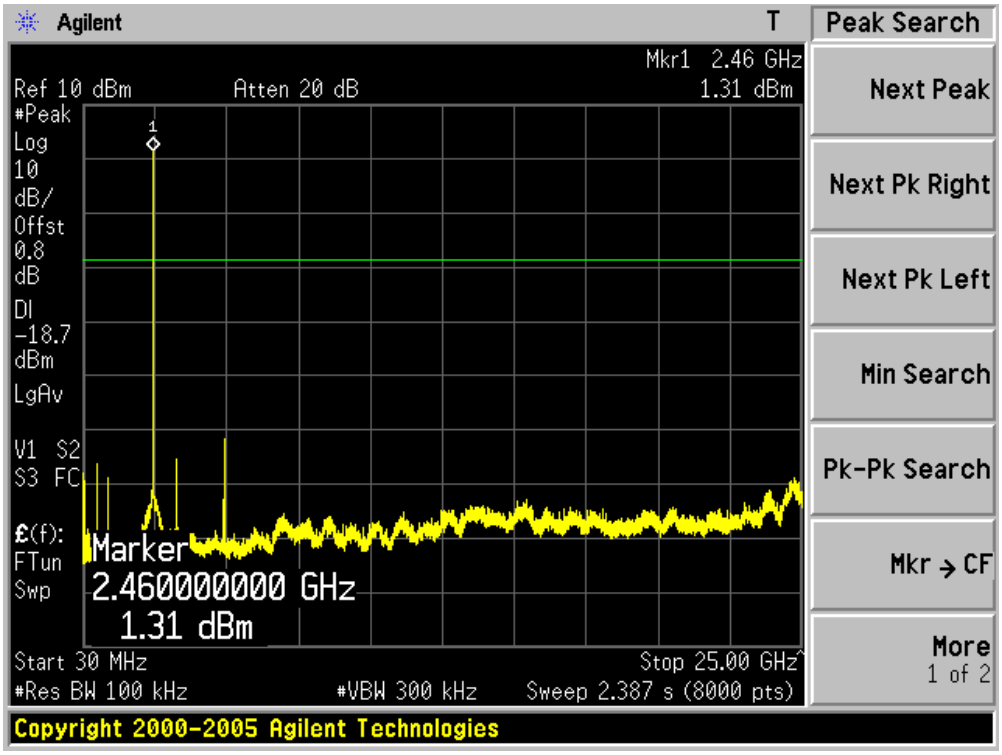
Channel 01 (2412MHz)



Channel 06 (2437MHz)

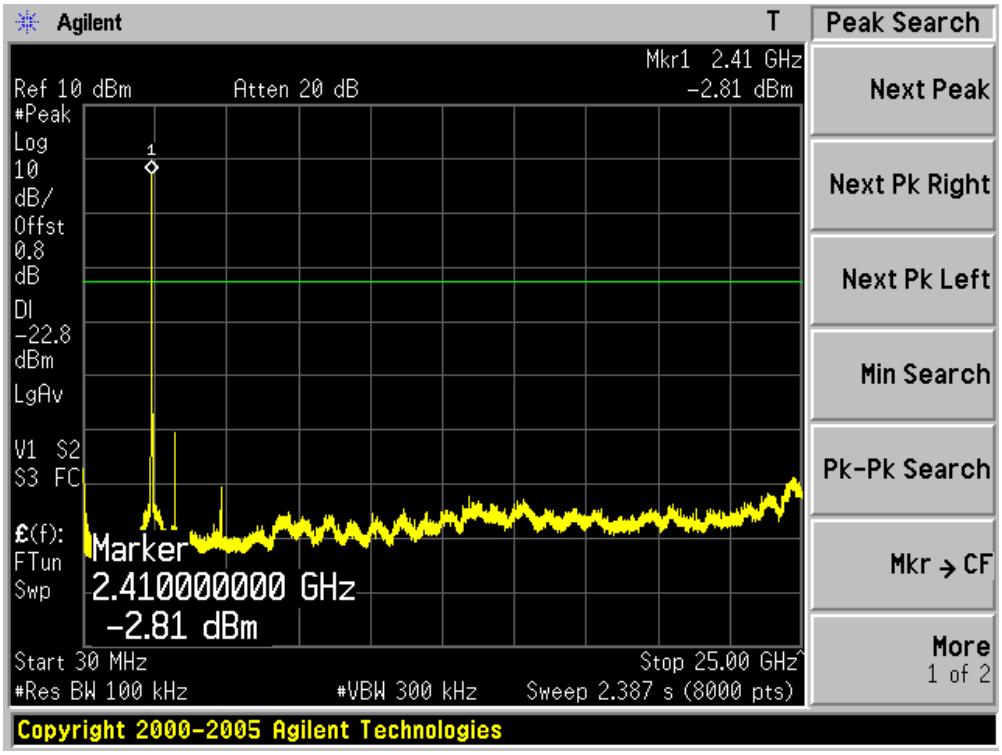


Channel 11 (2462MHz)

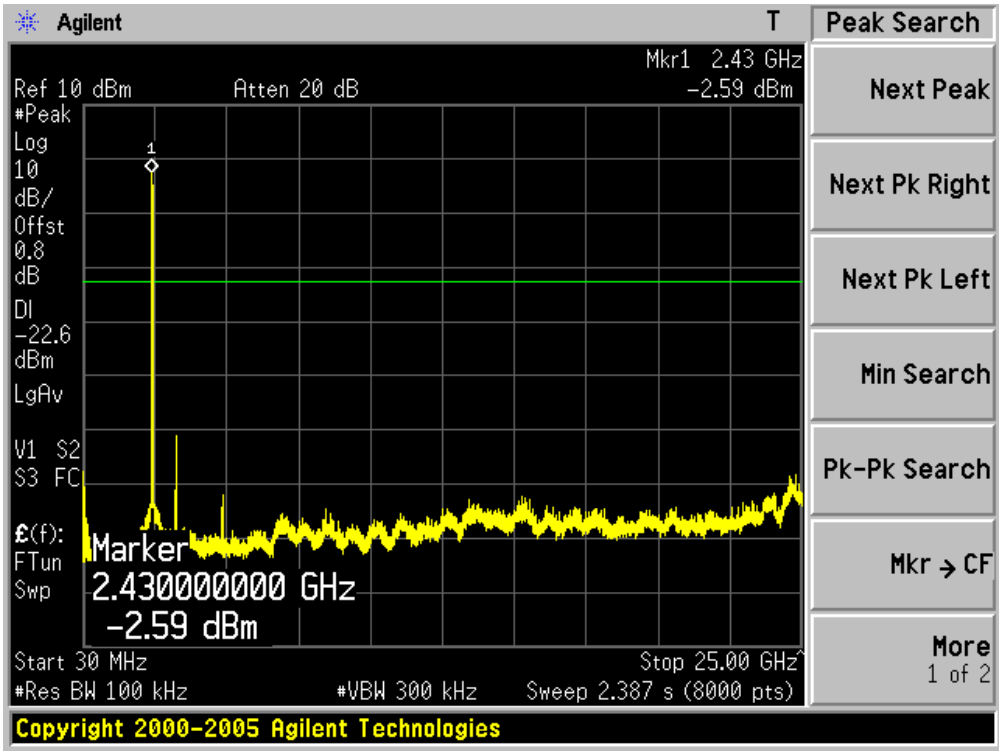


Product	:	Video Recorder
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11g

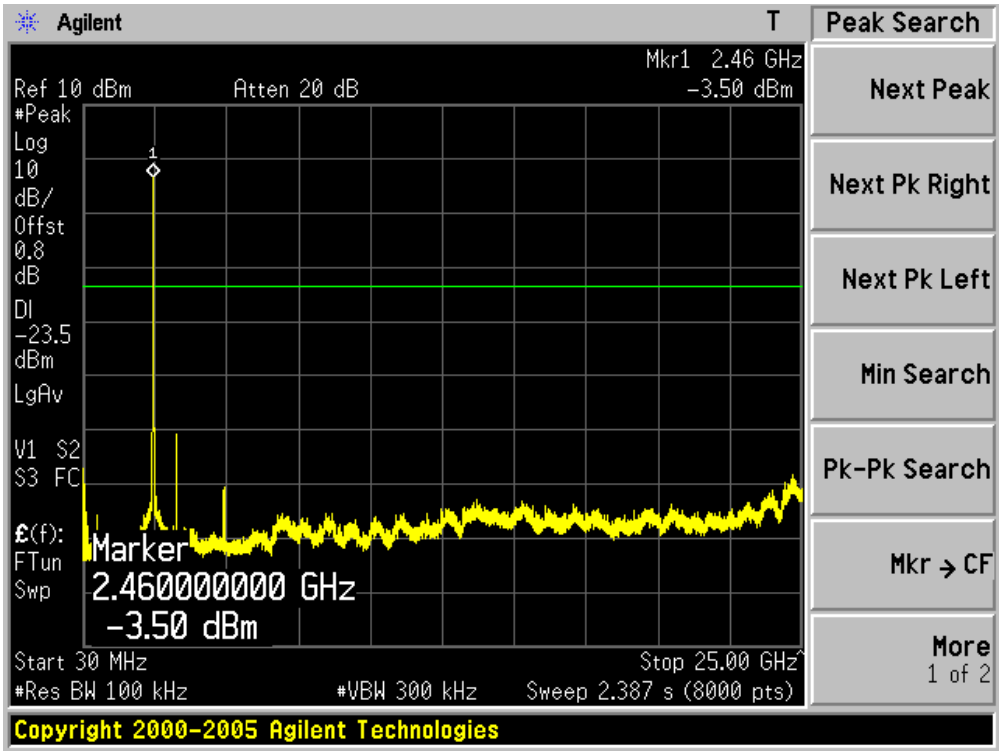
Channel 01 (2412MHz)



Channel 06 (2437MHz)

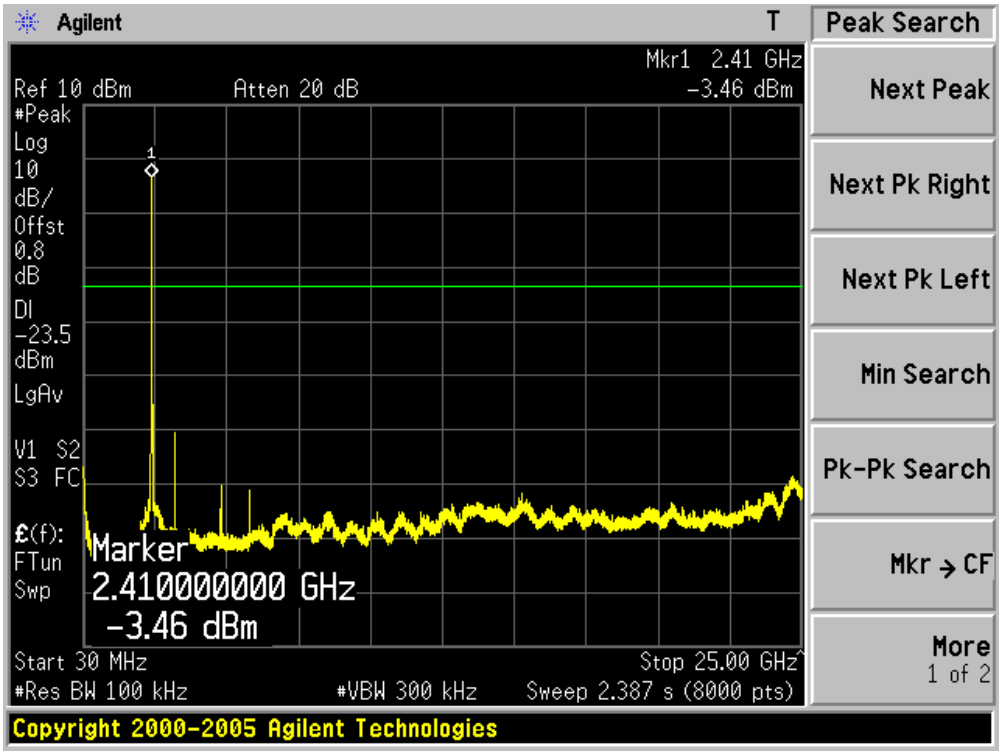


Channel 11 (2462MHz)

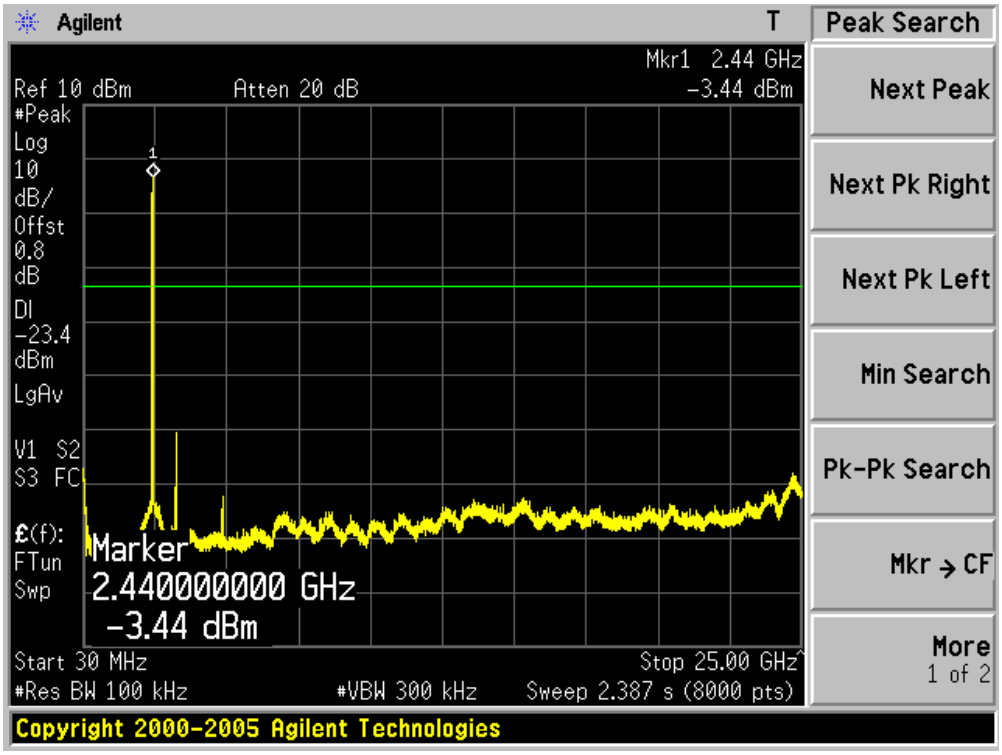


Product	:	Video Recorder
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11n(20MHz)

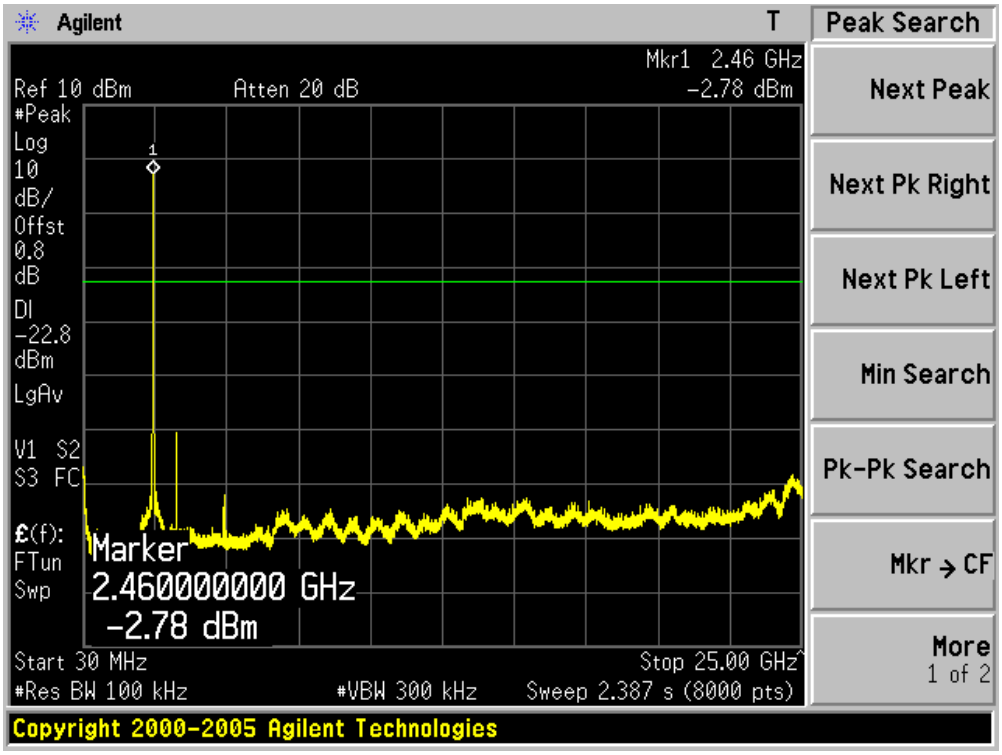
Channel 01 (2412MHz)



Channel 06 (2437MHz)

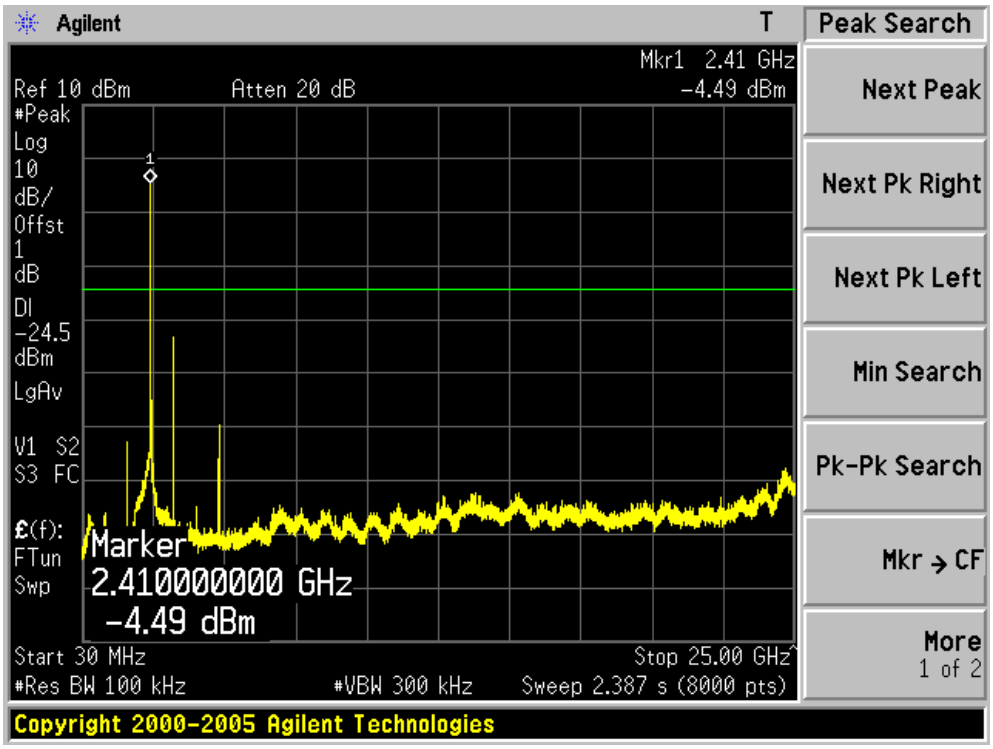


Channel 11 (2462MHz)

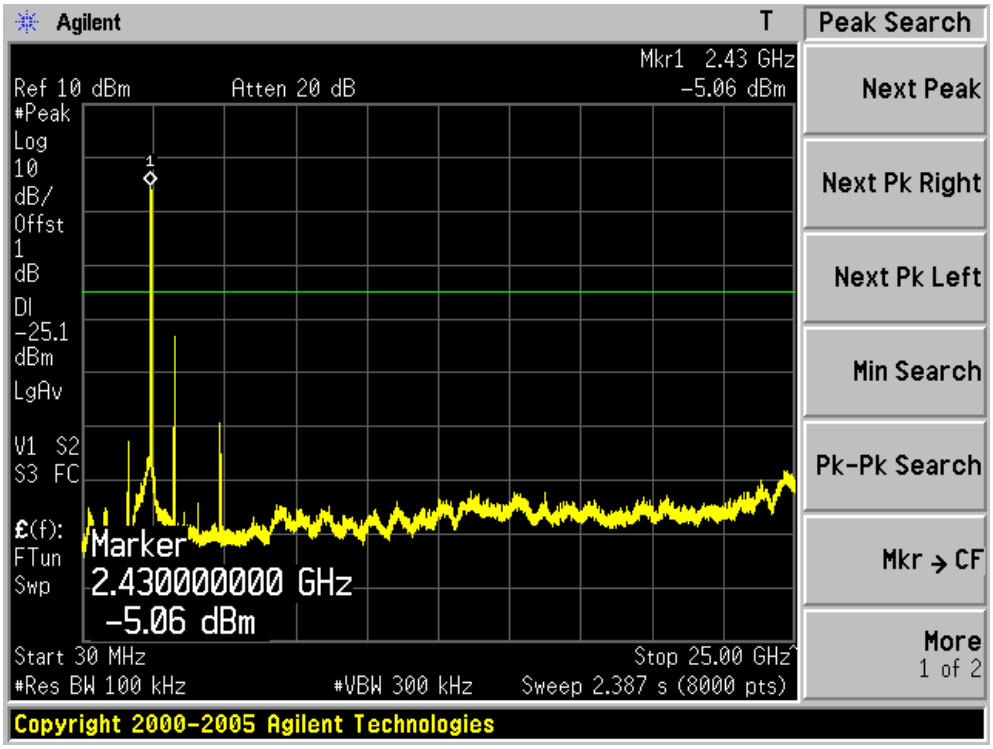


Product	:	Video Recorder
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz)

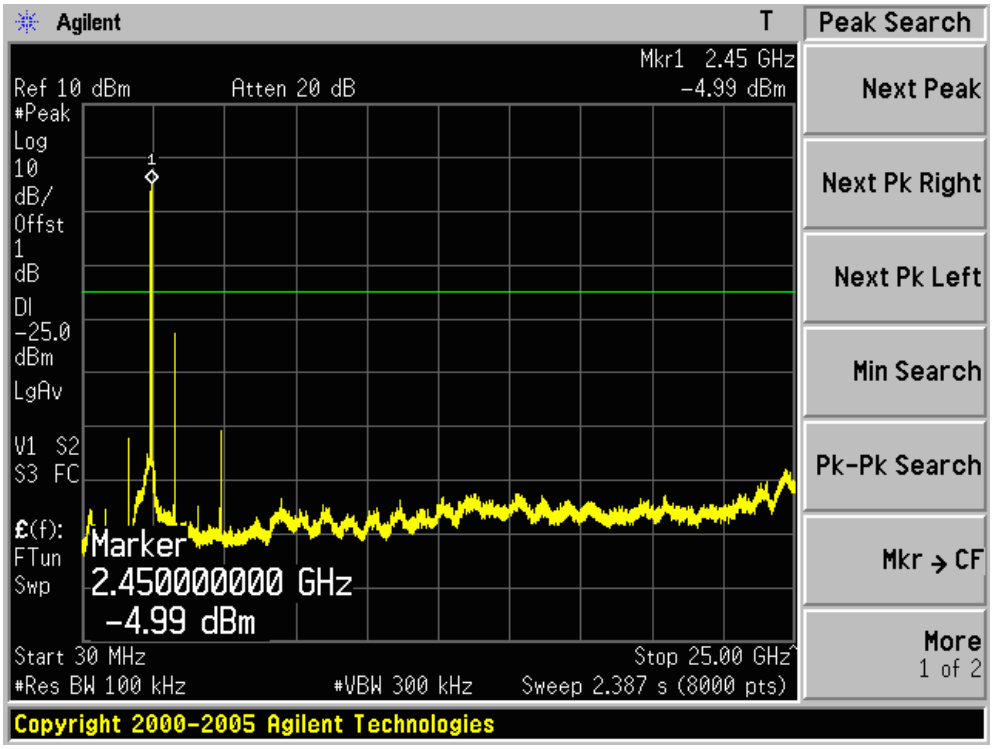
Channel 03 (2422MHz)



Channel 06 (2437MHz)



Channel 09 (2452MHz)

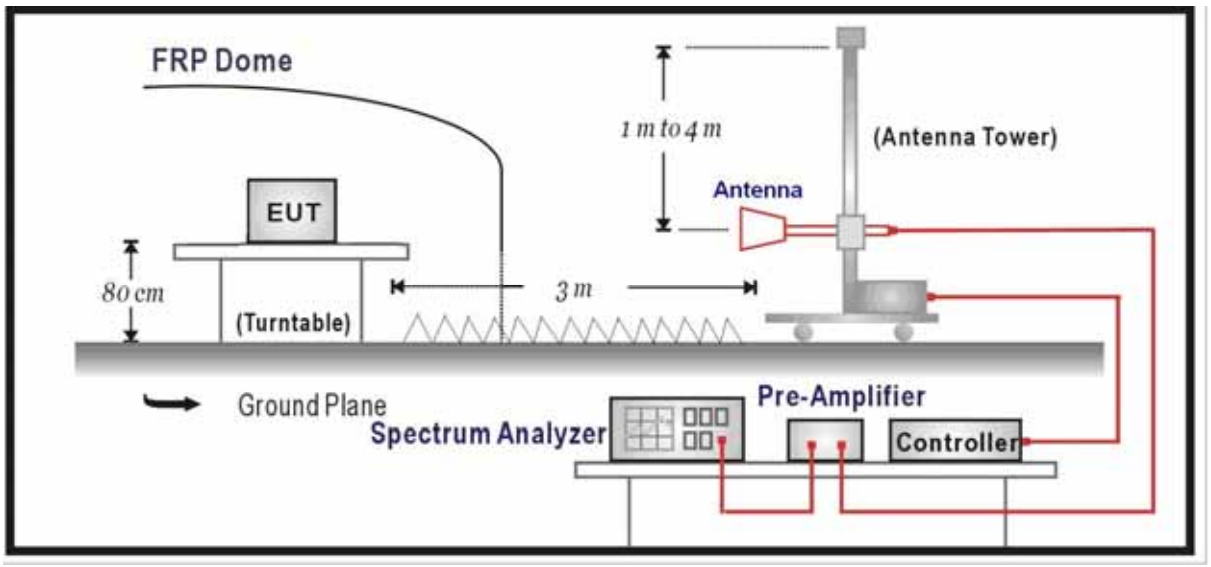


6. Radiated Emission Band Edge

6.1. Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.2. Test Setup



6.3. Test Procedure

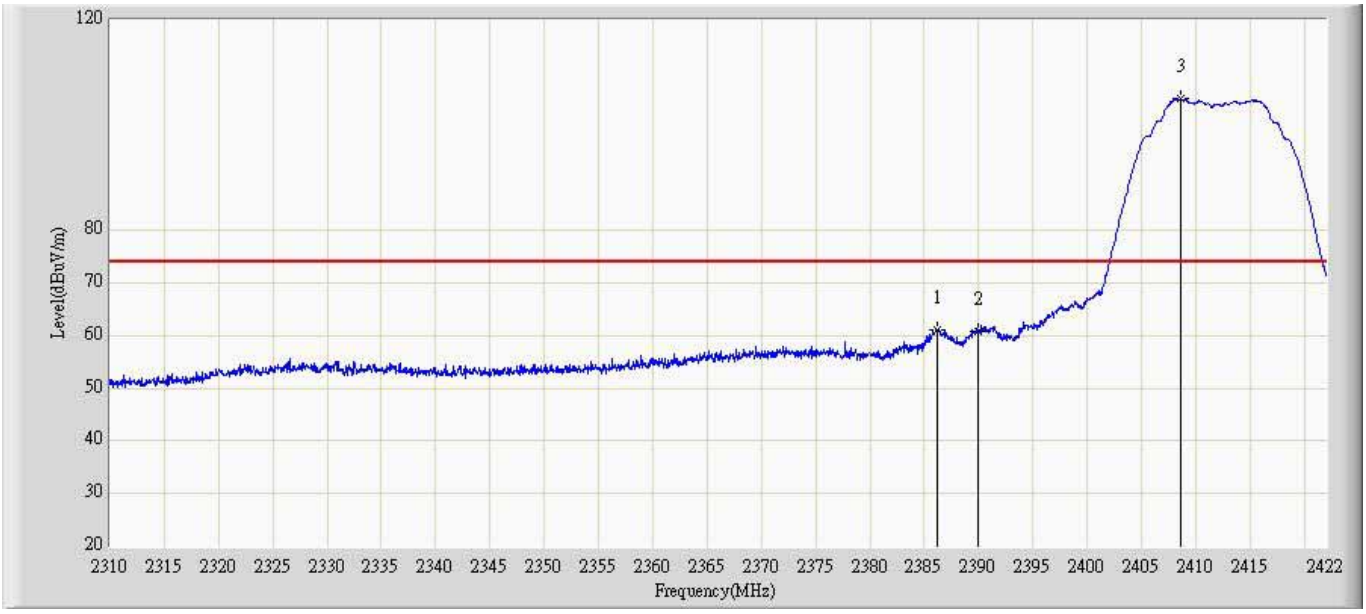
The EUT was setup according to ANSI C63.4, 2009 and tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 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 is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the Antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.

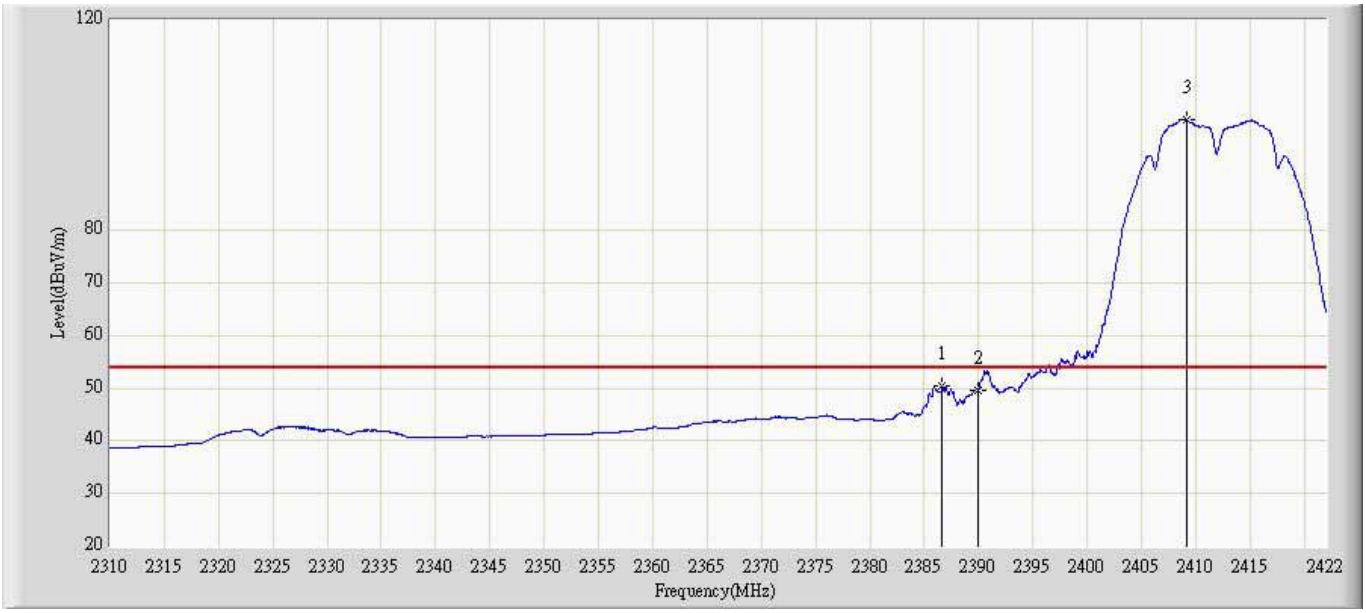
6.4. Test Result

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 09:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2412MHz by 802.11b	



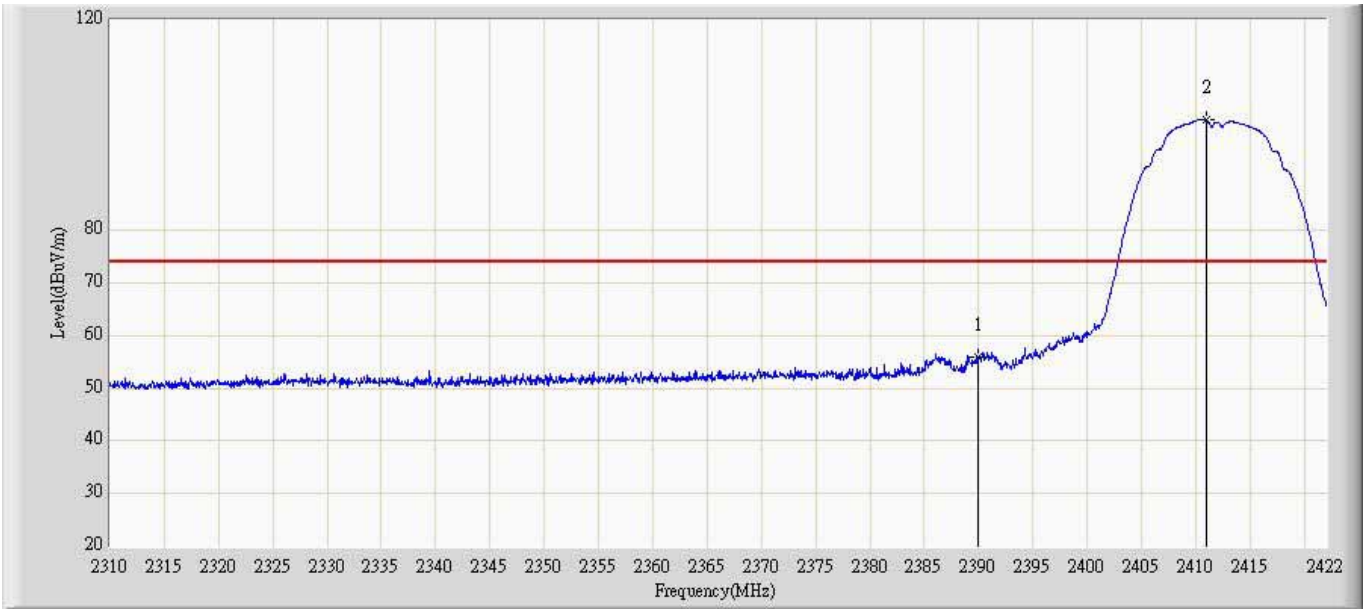
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2386.160	61.195	25.570	-12.805	74.000	35.625	PK
2			2390.000	60.912	25.271	-13.088	74.000	35.642	PK
3		*	2408.616	105.061	69.341	N/A	N/A	35.720	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2412MHz by 802.11b	



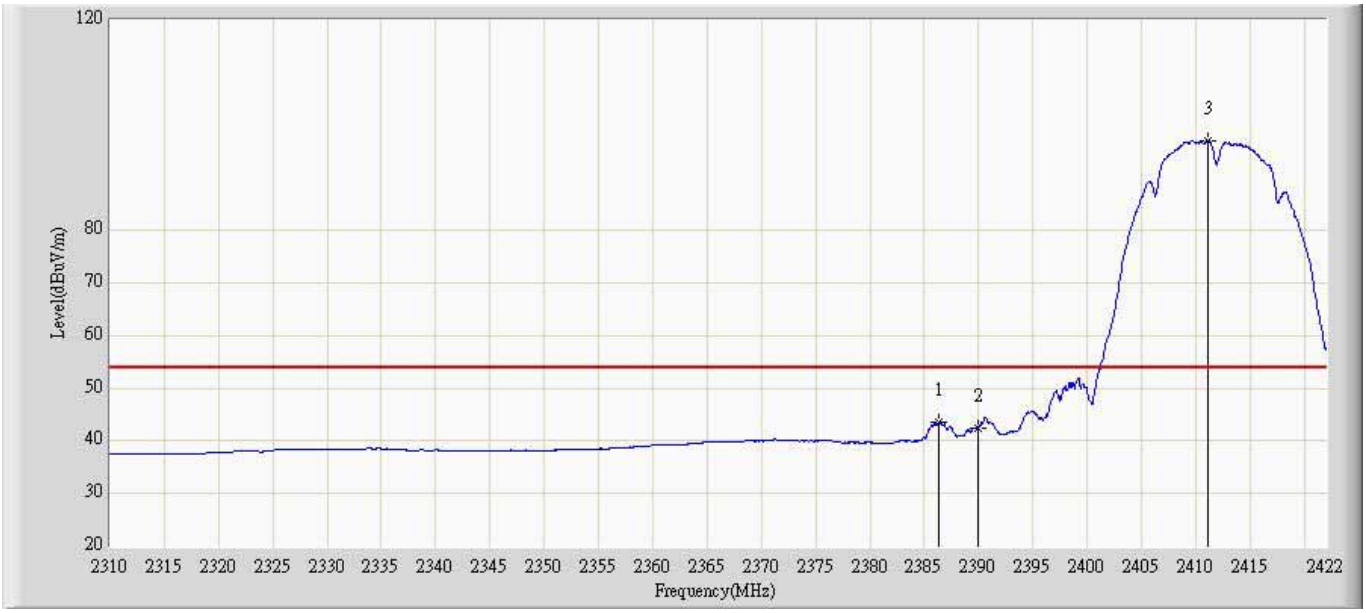
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2386.608	50.375	14.748	-3.625	54.000	35.627	AV
2			2390.000	49.672	14.031	-4.328	54.000	35.642	AV
3		*	2409.232	100.936	65.213	N/A	N/A	35.723	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:08
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2412MHz by 802.11b	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	55.882	19.581	-18.118	74.000	36.302	PK
2		*	2410.968	101.000	64.526	N/A	N/A	36.474	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2412MHz by 802.11b	

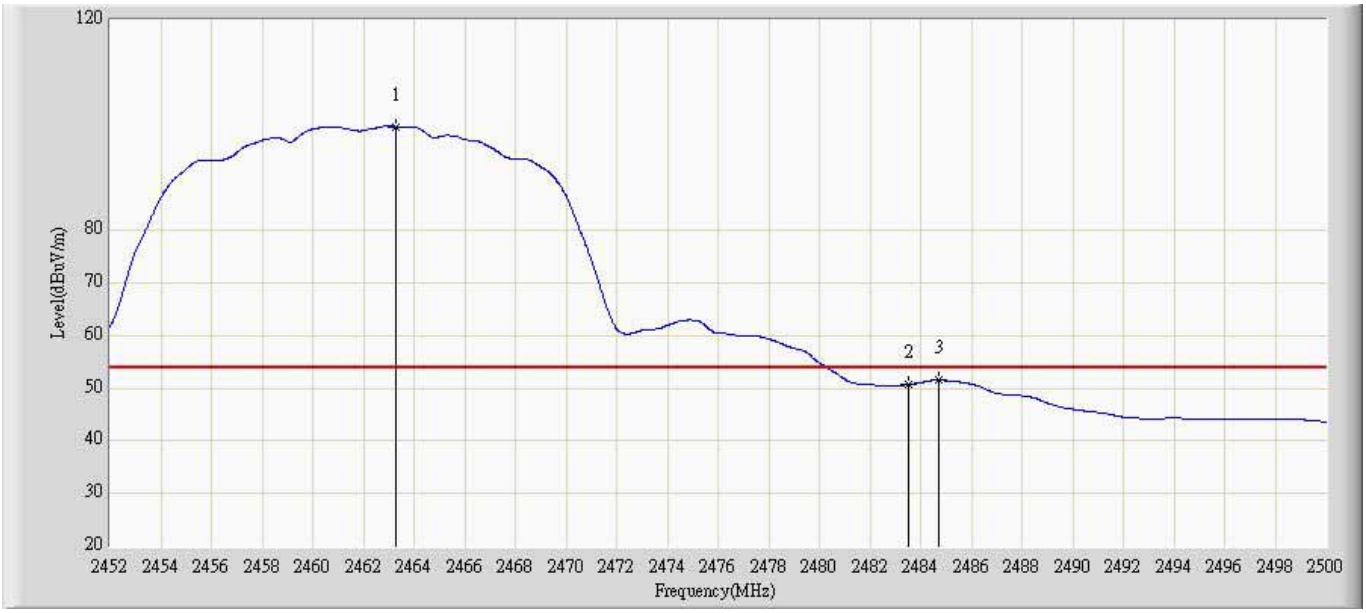


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2386.384	43.574	7.302	-10.426	54.000	36.272	AV
2			2390.000	42.502	6.201	-11.498	54.000	36.302	AV
3		*	2411.136	97.086	60.611	N/A	N/A	36.475	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2462MHz by 802.11b	

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2461.000	107.760	71.802	N/A	N/A	35.958	PK
2			2483.500	62.547	26.491	-11.453	74.000	36.055	PK
3			2487.400	63.646	27.571	-10.354	74.000	36.075	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2462MHz by 802.11b	

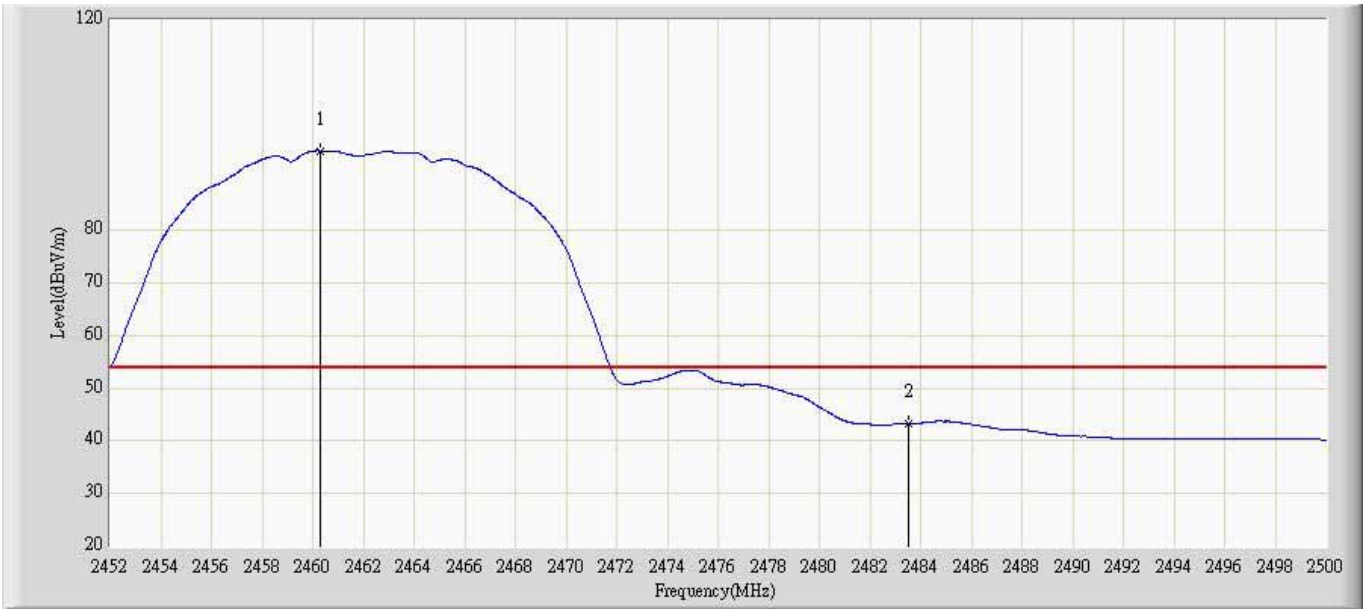


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2463.256	99.675	63.707	N/A	N/A	35.969	AV
2			2483.500	50.666	14.610	-3.334	54.000	36.055	AV
3			2484.736	51.532	15.470	-2.468	54.000	36.062	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:35
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2462MHz by 802.11b	

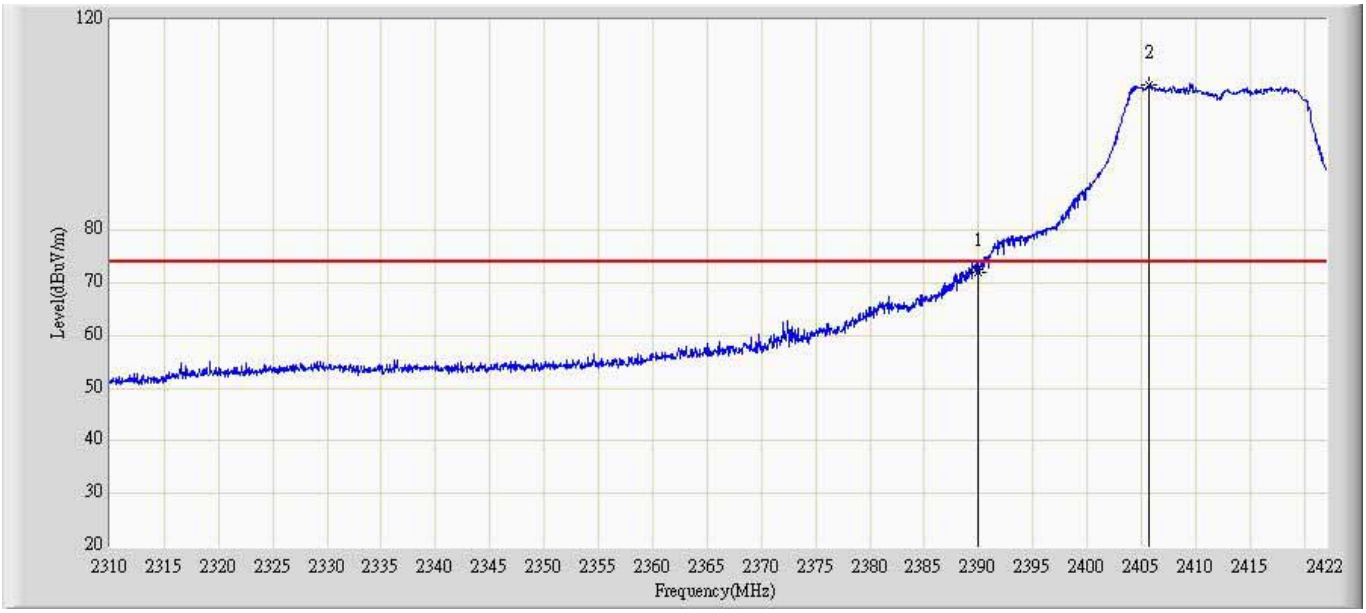
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2459.296	103.561	66.674	N/A	N/A	36.887	PK
2			2483.500	55.900	18.810	-18.100	74.000	37.089	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2462MHz by 802.11b	



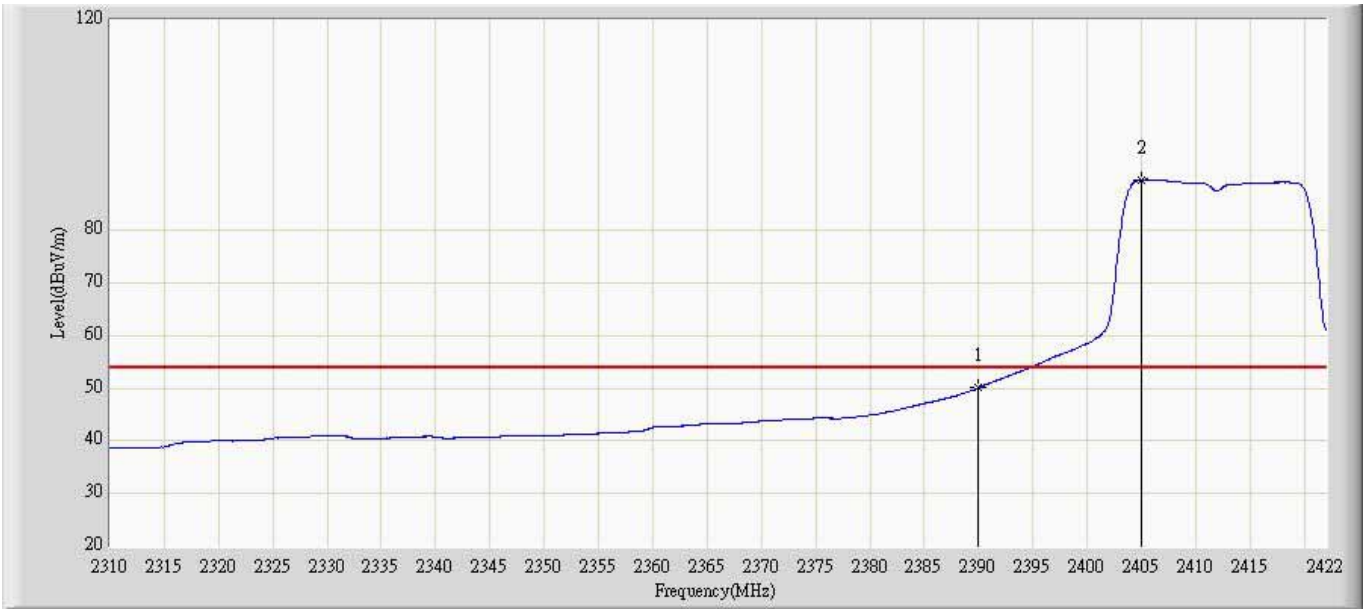
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2460.328	95.072	58.176	N/A	N/A	36.896	AV
2			2483.500	43.243	6.153	-10.757	54.000	37.089	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 2: Transmit at 2412MHz by 802.11g	



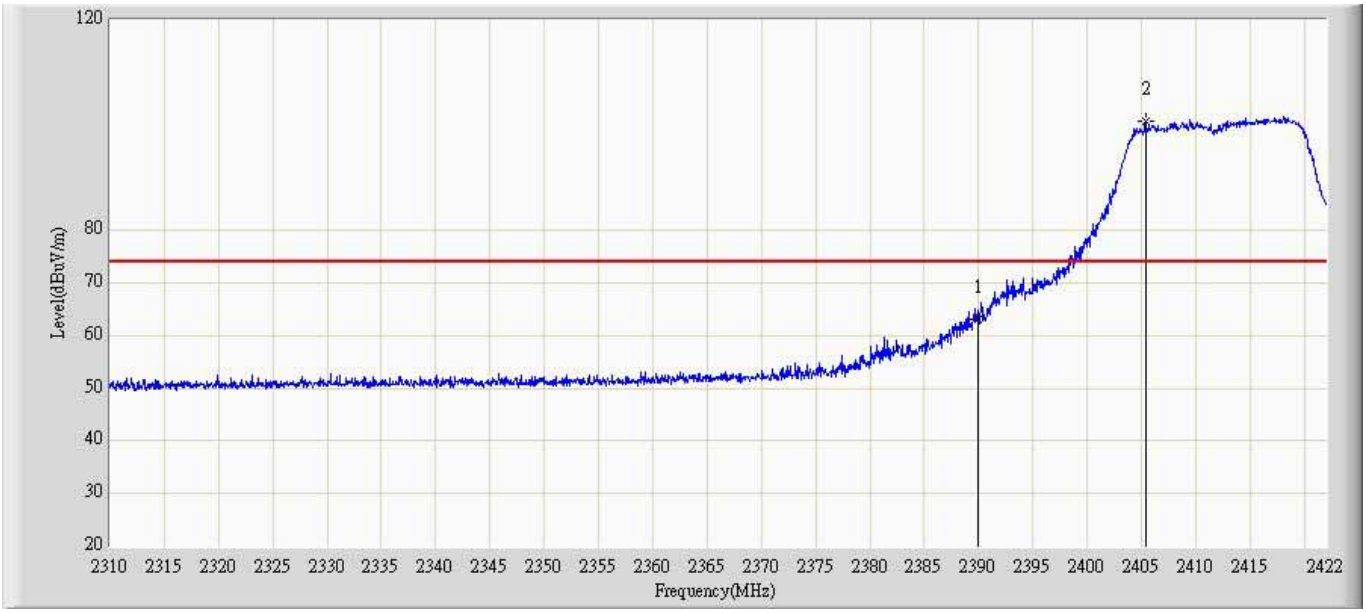
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	71.991	36.350	-2.009	74.000	35.642	PK
2		*	2405.704	107.758	72.050	N/A	N/A	35.708	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 2: Transmit at 2412MHz by 802.11g	



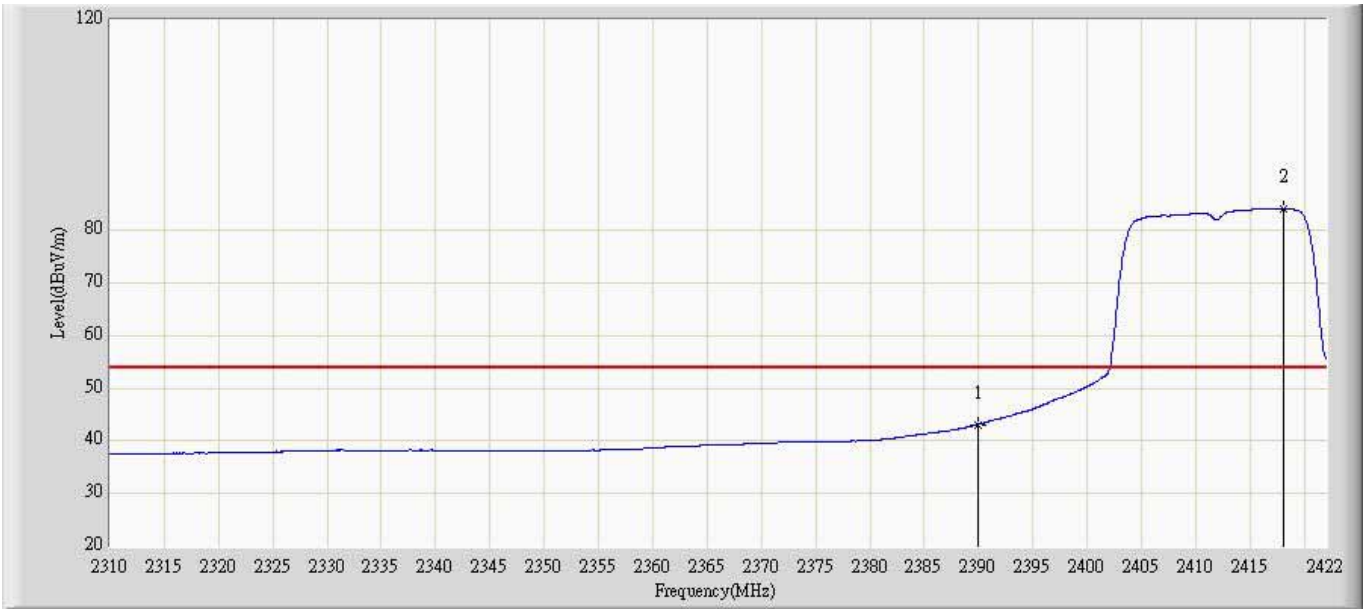
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	50.106	14.465	-3.894	54.000	35.642	AV
2		*	2405.032	89.623	53.918	N/A	N/A	35.704	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 10:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 2: Transmit at 2412MHz by 802.11g	



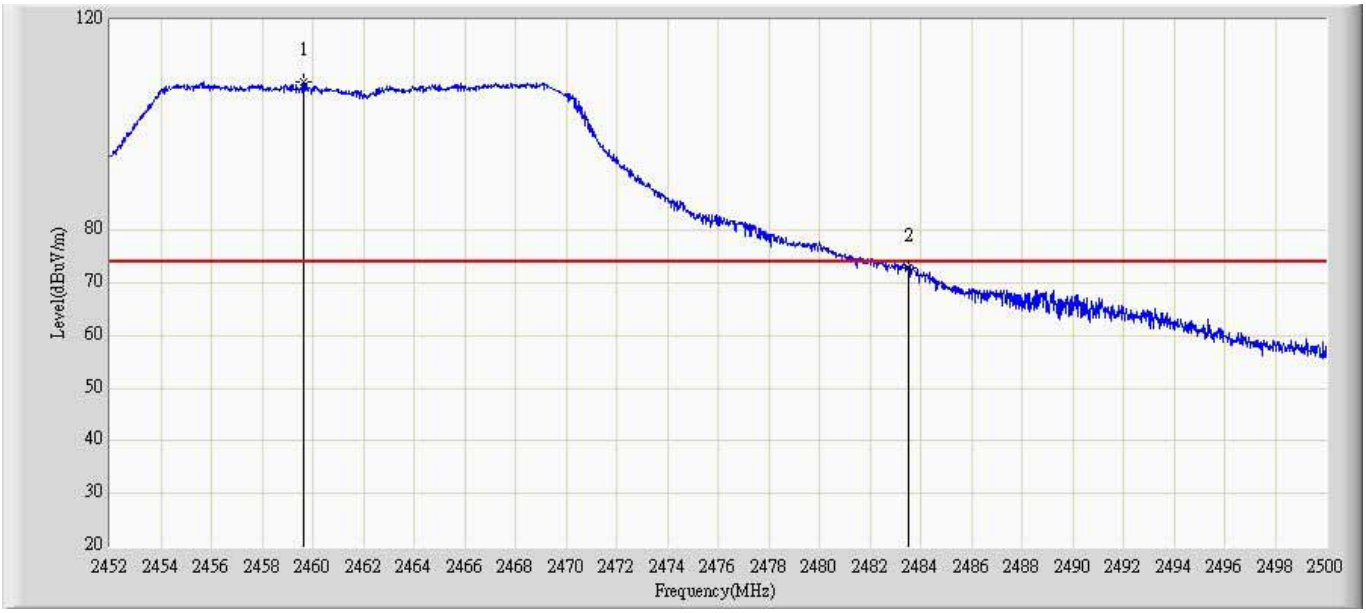
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	62.987	26.686	-11.013	74.000	36.302	PK
2		*	2405.368	100.751	64.323	N/A	N/A	36.428	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:00
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 2: Transmit at 2412MHz by 802.11g	



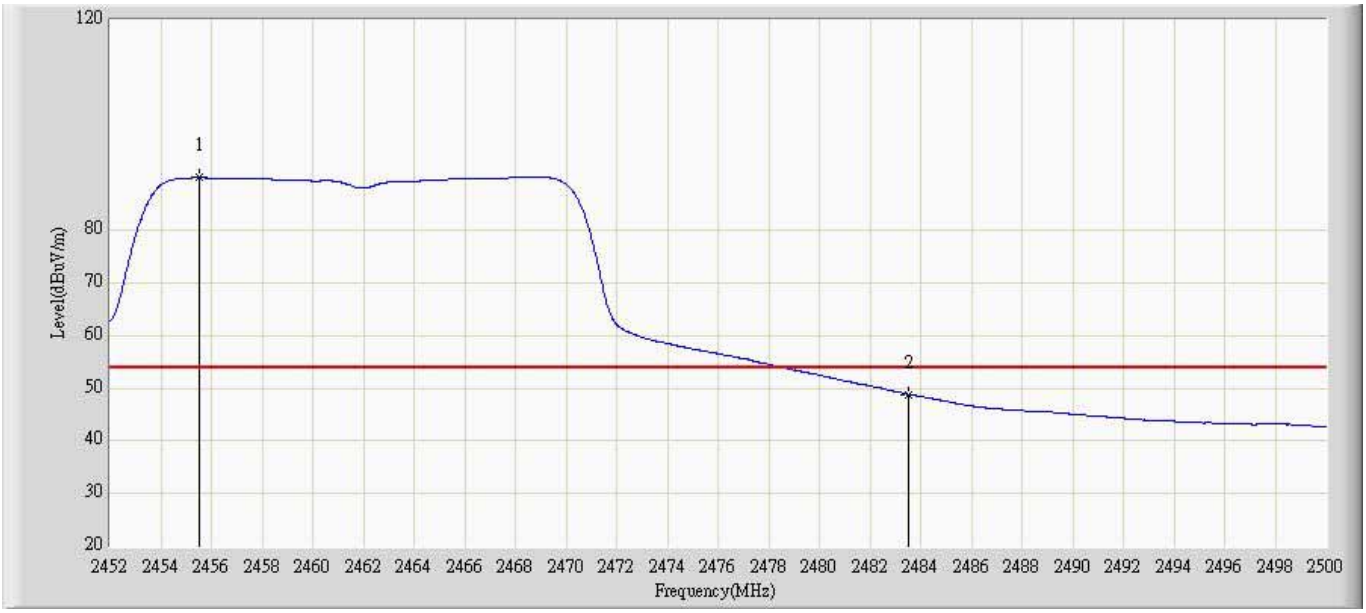
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	43.132	6.831	-10.868	54.000	36.302	AV
2		*	2418.136	84.095	47.558	N/A	N/A	36.536	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 2: Transmit at 2462MHz by 802.11g	



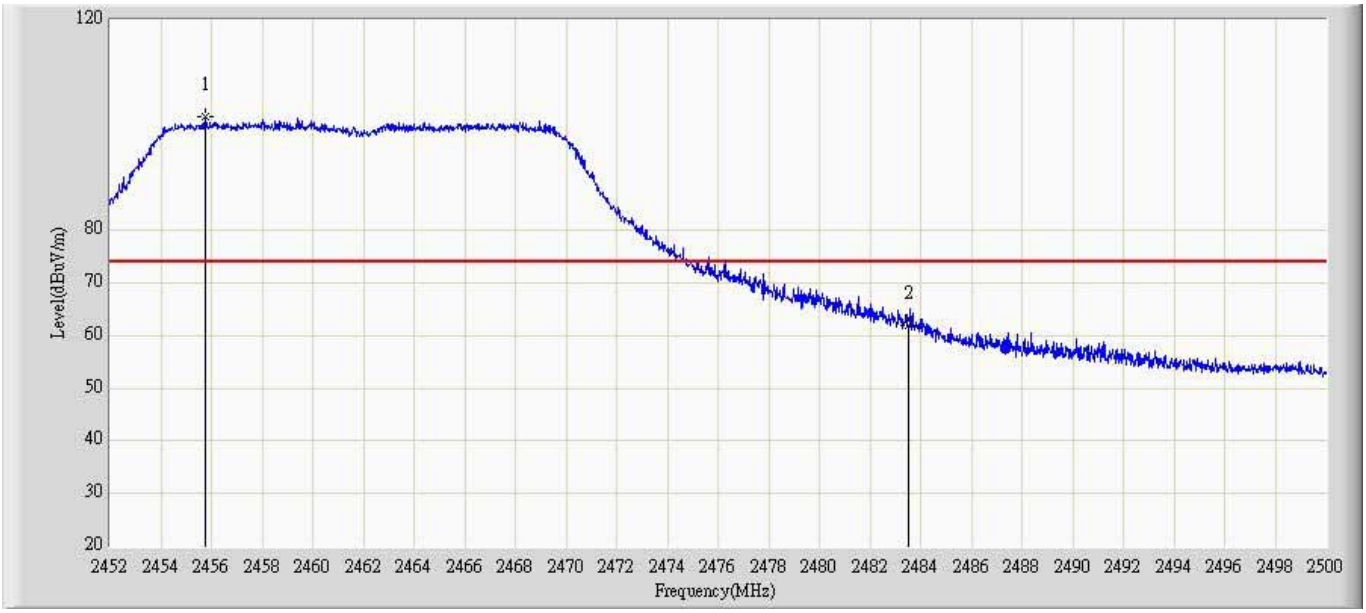
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2459.632	108.312	72.360	N/A	N/A	35.952	PK
2			2483.500	72.960	36.904	-1.040	74.000	36.055	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:04
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 2: Transmit at 2462MHz by 802.11g	



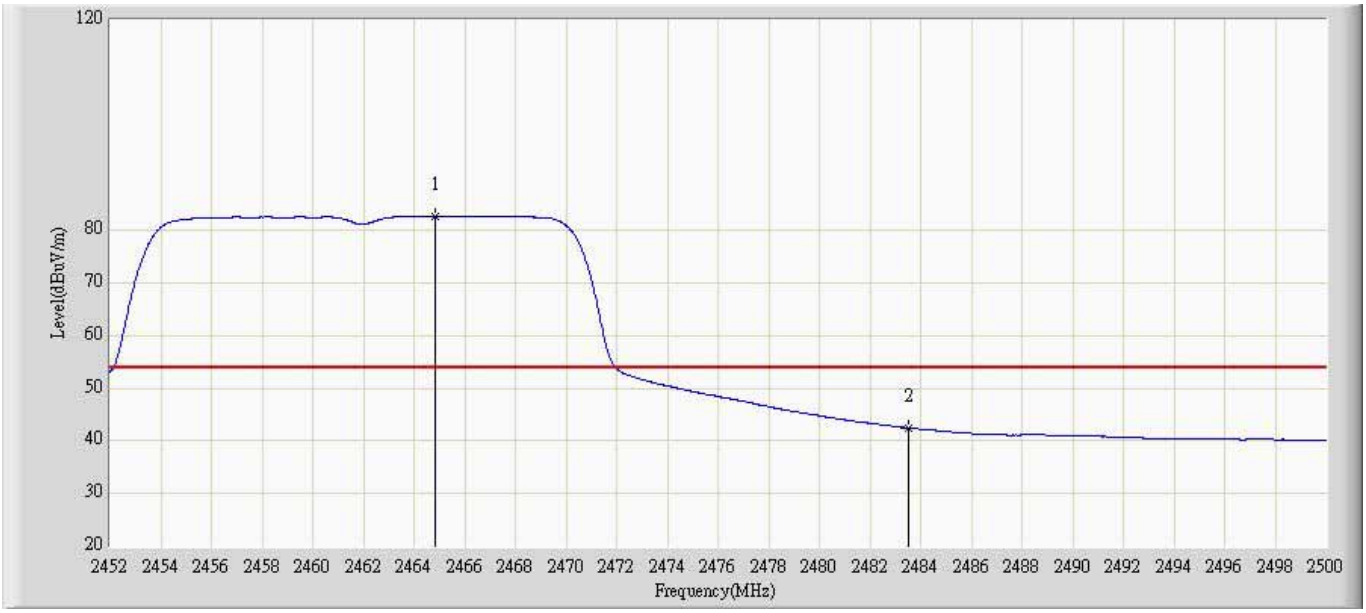
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2455.552	90.031	54.099	N/A	N/A	35.932	AV
2			2483.500	48.840	12.784	-5.160	54.000	36.055	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 2: Transmit at 2462MHz by 802.11g	



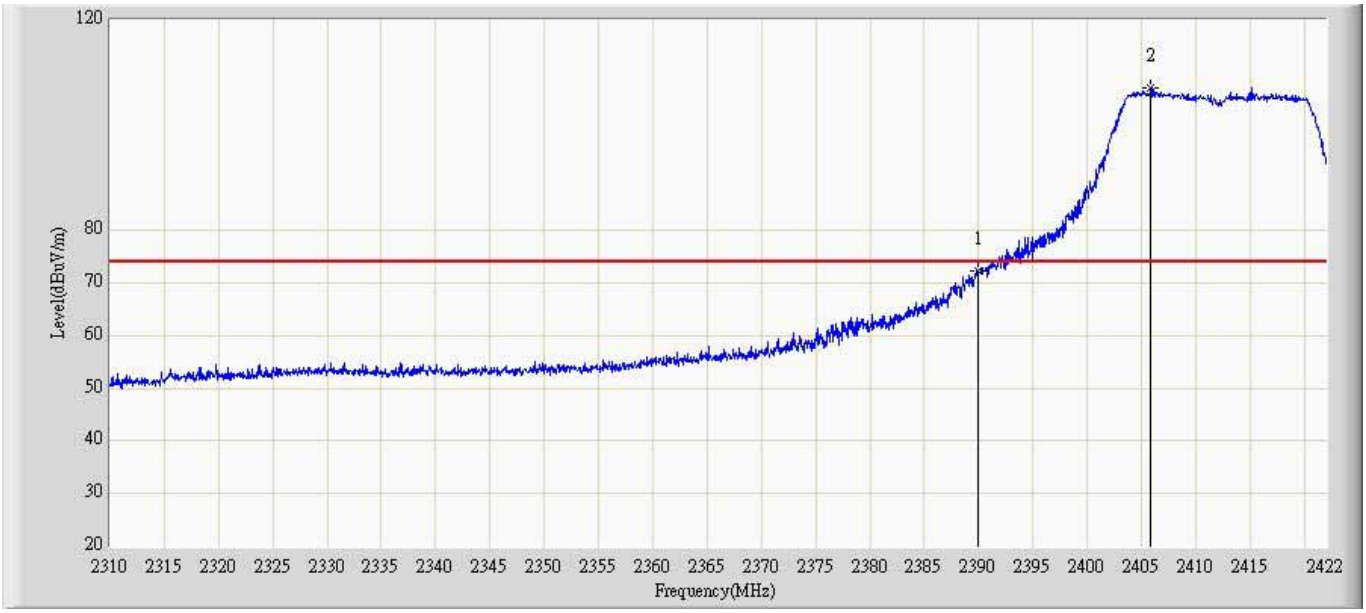
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2455.768	101.574	64.718	N/A	N/A	36.857	PK
2			2483.500	62.042	24.952	-11.958	74.000	37.089	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:08
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 2: Transmit at 2462MHz by 802.11g	



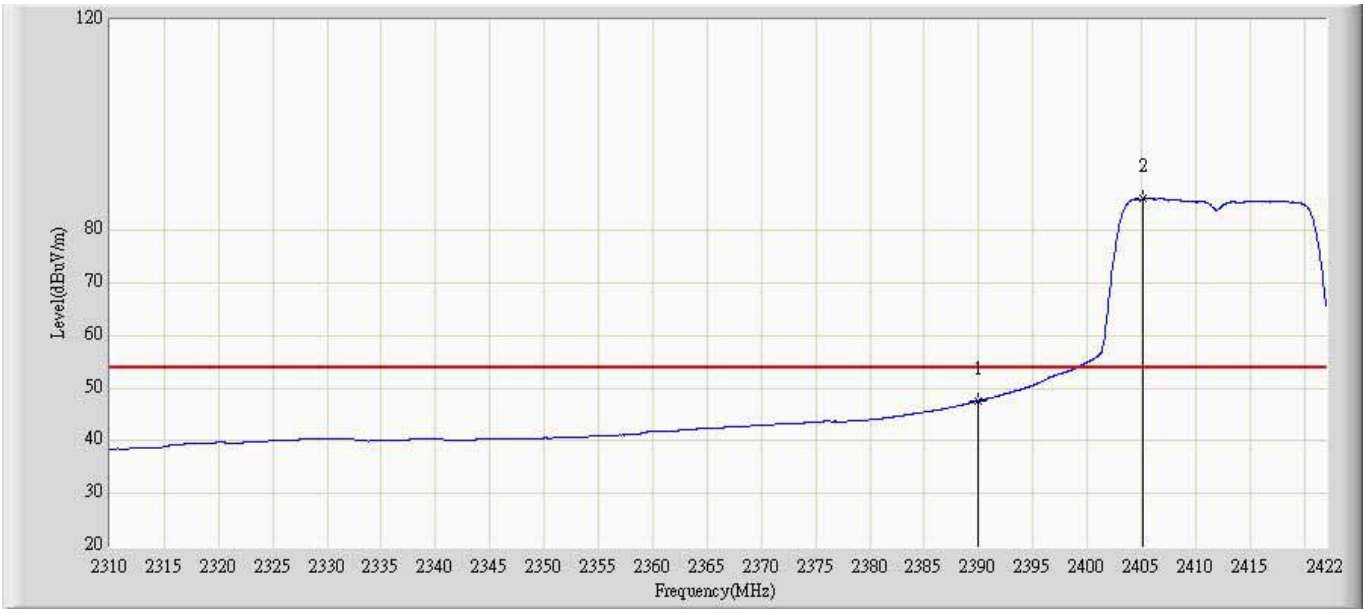
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2464.816	82.727	45.793	N/A	N/A	36.934	AV
2			2483.500	42.442	5.352	-11.558	54.000	37.089	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:09
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 3: Transmit at 2412MHz by 802.11n20MHz	



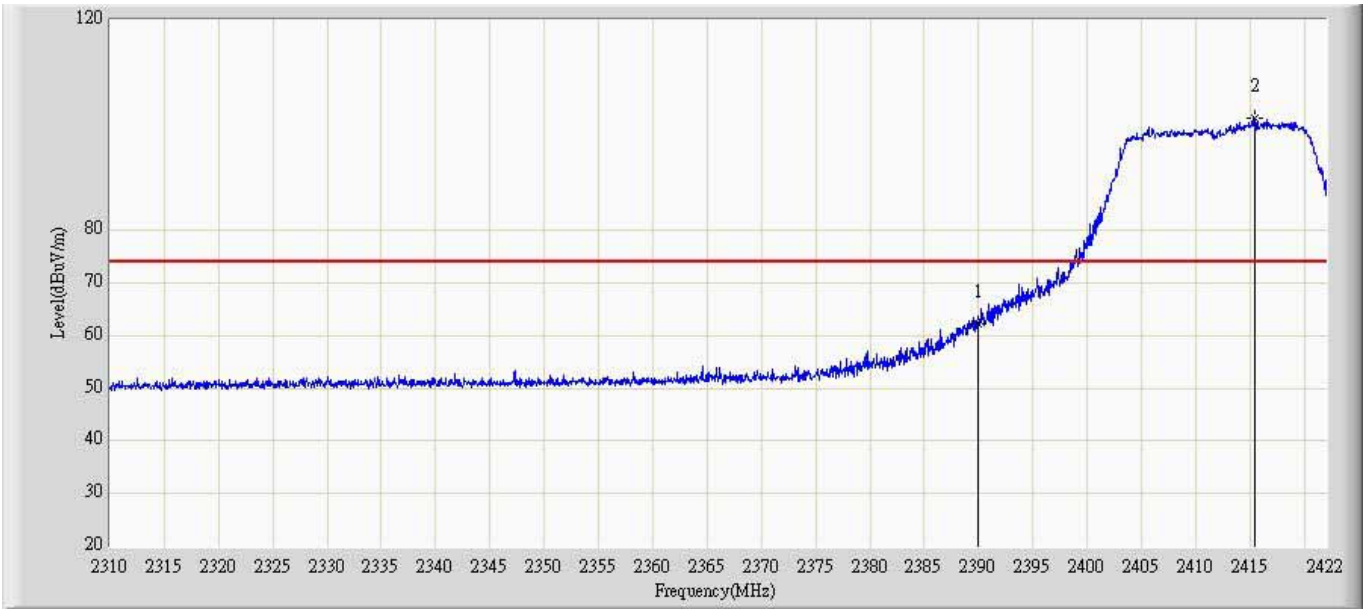
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	72.336	36.695	-1.664	74.000	35.642	PK
2		*	2405.872	107.015	71.307	N/A	N/A	35.708	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 3: Transmit at 2412MHz by 802.11n20MHz	



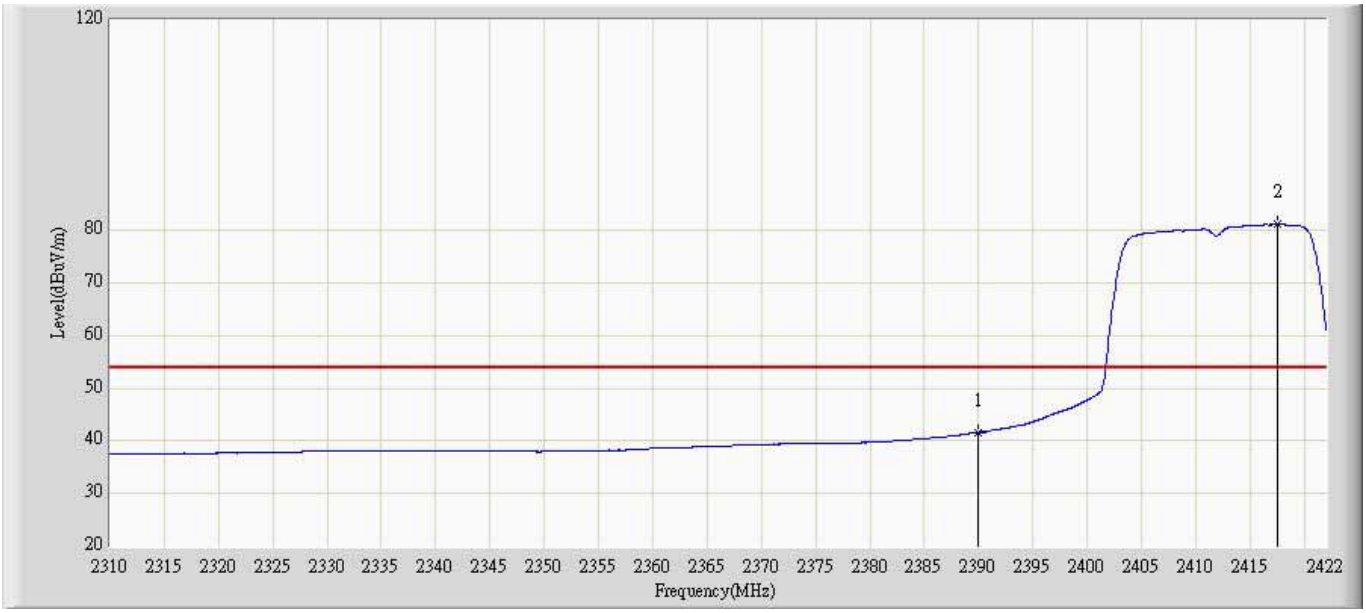
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	47.600	11.959	-6.400	54.000	35.642	AV
2		*	2405.200	86.032	50.327	N/A	N/A	35.706	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 3: Transmit at 2412MHz by 802.11n20MHz	



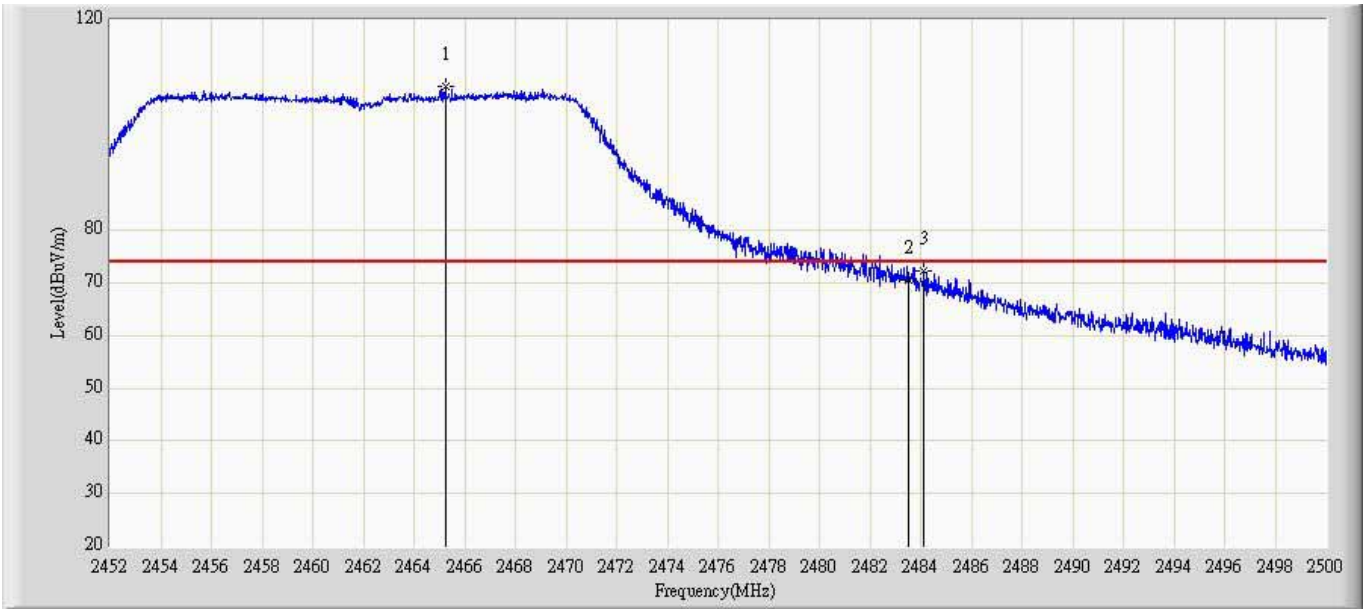
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	62.170	25.869	-11.830	74.000	36.302	PK
2		*	2415.504	101.403	64.890	N/A	N/A	36.513	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 3: Transmit at 2412MHz by 802.11n20MHz	



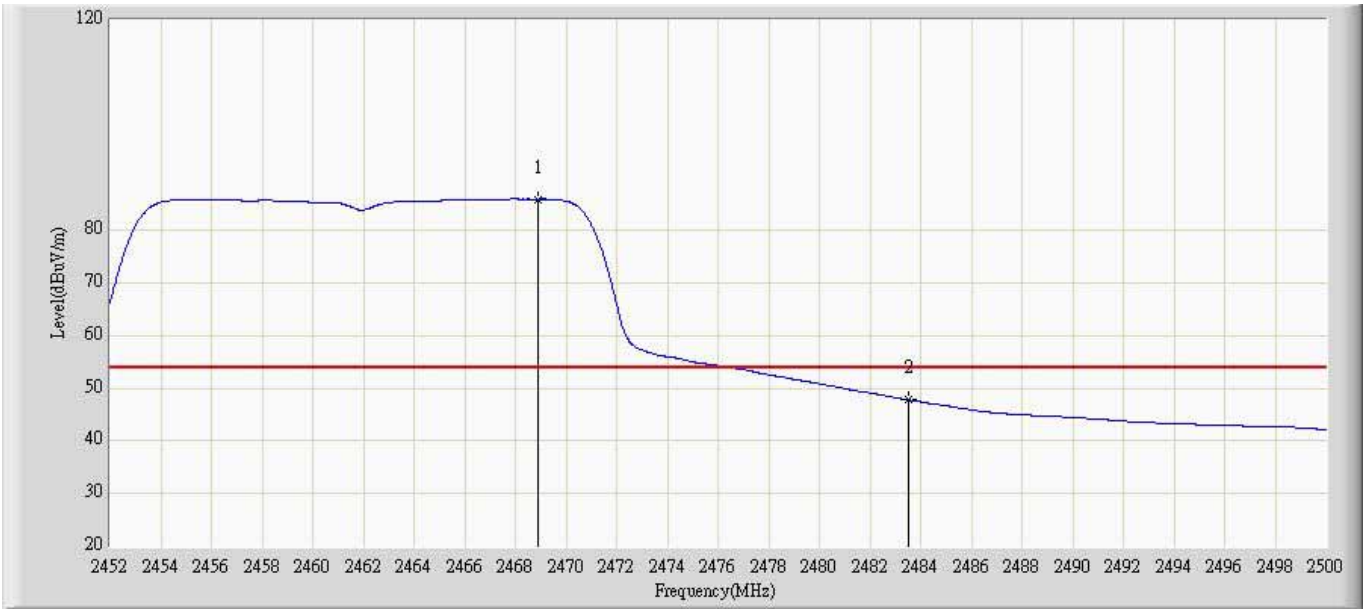
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	41.645	5.344	-12.355	54.000	36.302	AV
2		*	2417.576	81.102	44.570	N/A	N/A	36.532	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:20
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 3: Transmit at 2462MHz by 802.11n20MHz	



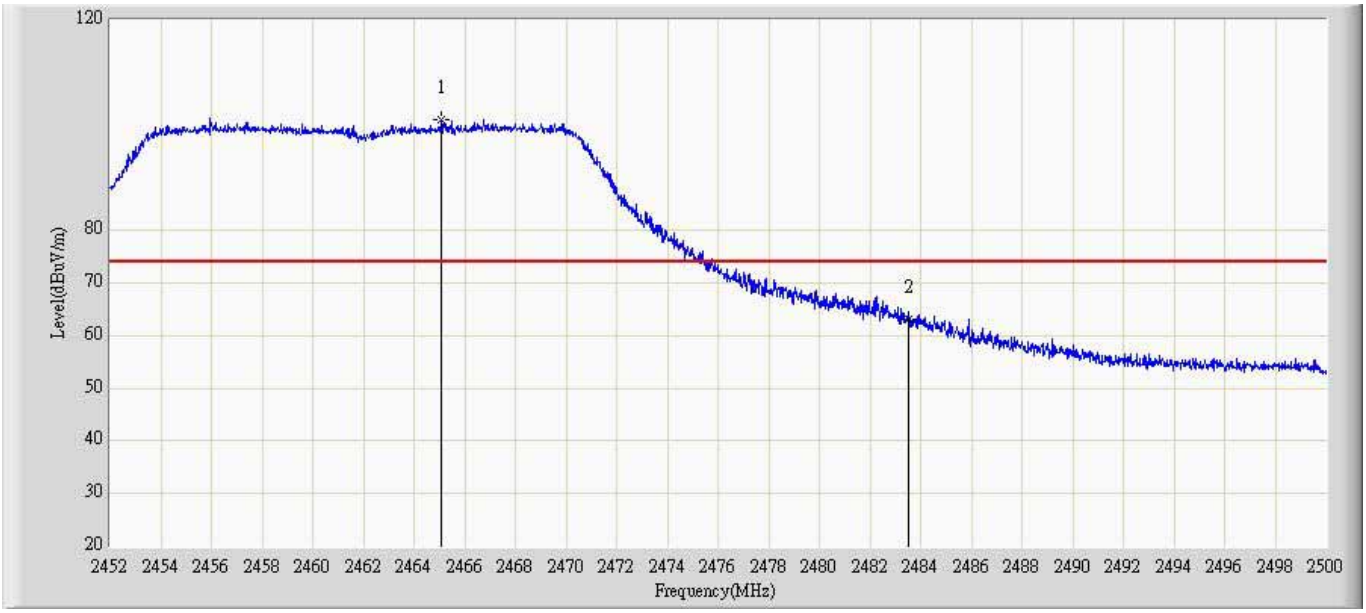
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2465.224	107.247	71.271	N/A	N/A	35.977	PK
2			2483.500	70.502	34.446	-3.498	74.000	36.055	PK
3			2484.136	72.410	36.351	-1.590	74.000	36.059	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 3: Transmit at 2462MHz by 802.11n20MHz	



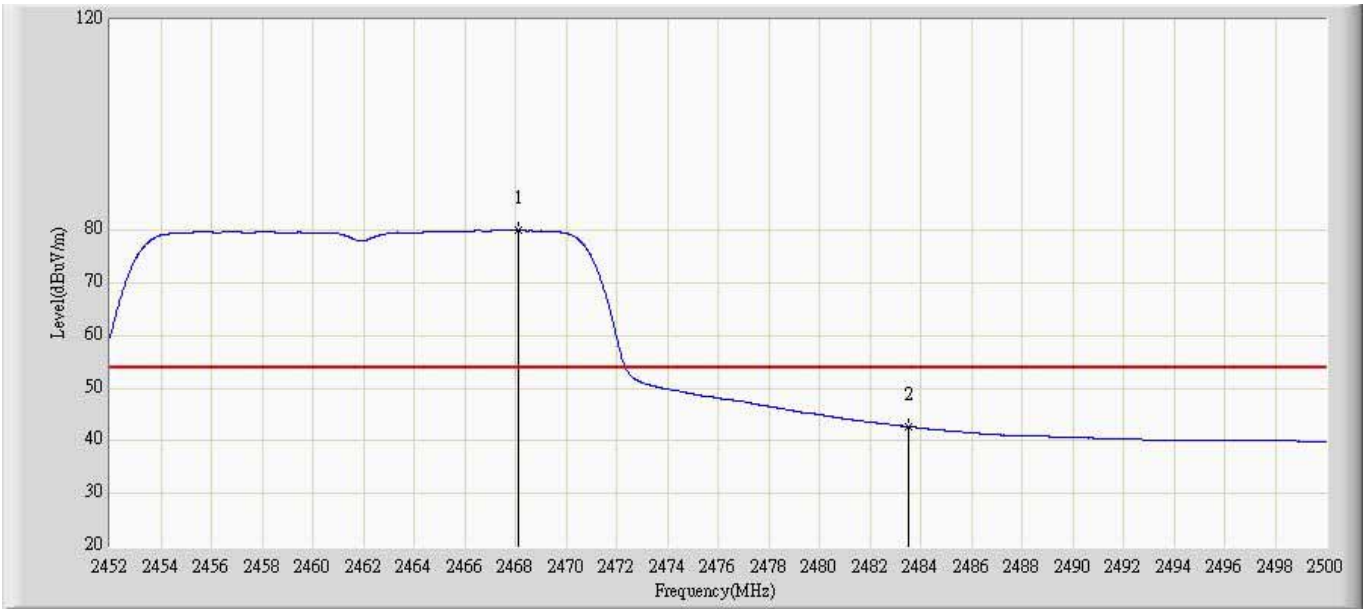
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2468.920	85.939	49.947	N/A	N/A	35.992	AV
2			2483.500	47.819	11.763	-6.181	54.000	36.055	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 3: Transmit at 2462MHz by 802.11n20MHz	



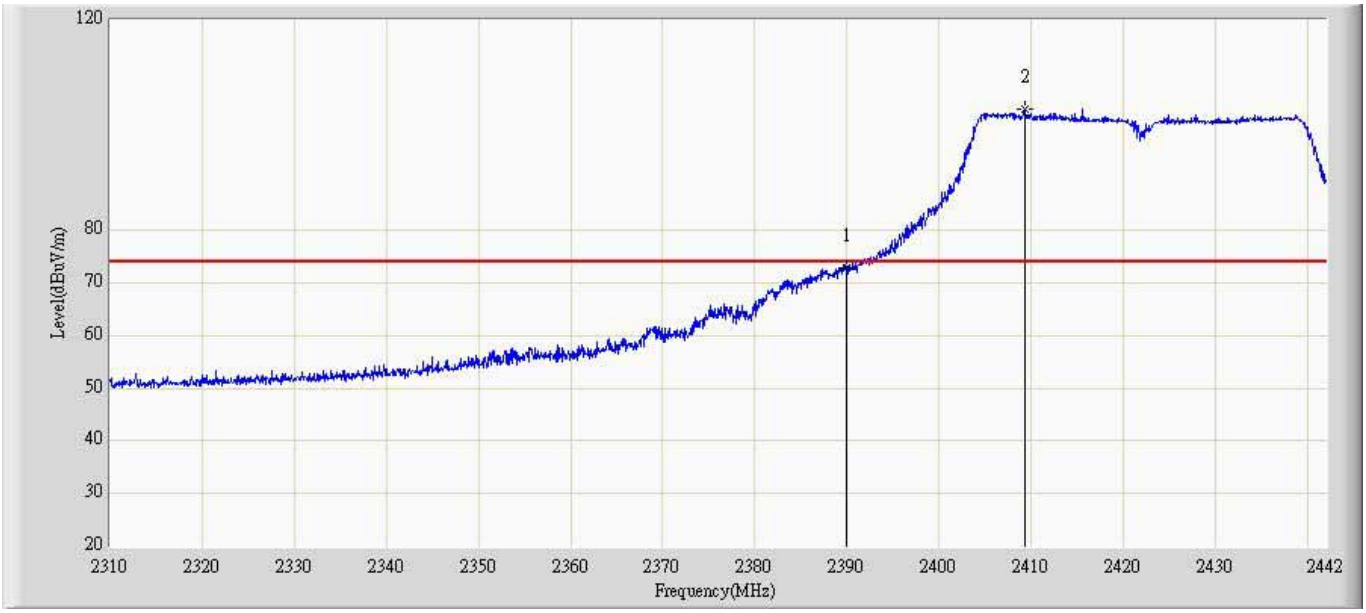
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2465.080	101.138	64.202	N/A	N/A	36.936	PK
2			2483.500	63.195	26.105	-10.805	74.000	37.089	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:34
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 3: Transmit at 2462MHz by 802.11n20MHz	



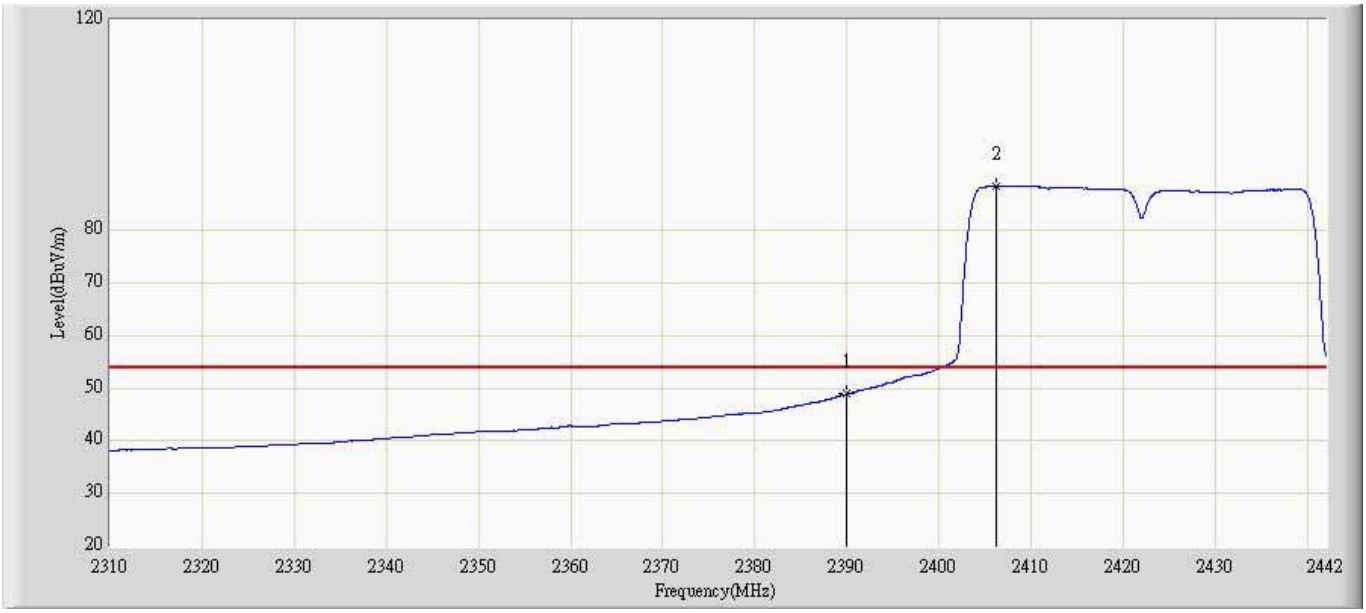
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2468.104	80.007	43.046	N/A	N/A	36.961	AV
2			2483.500	42.694	5.604	-11.306	54.000	37.089	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:35
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 4: Transmit at 2422MHz by 802.11n40MHz	



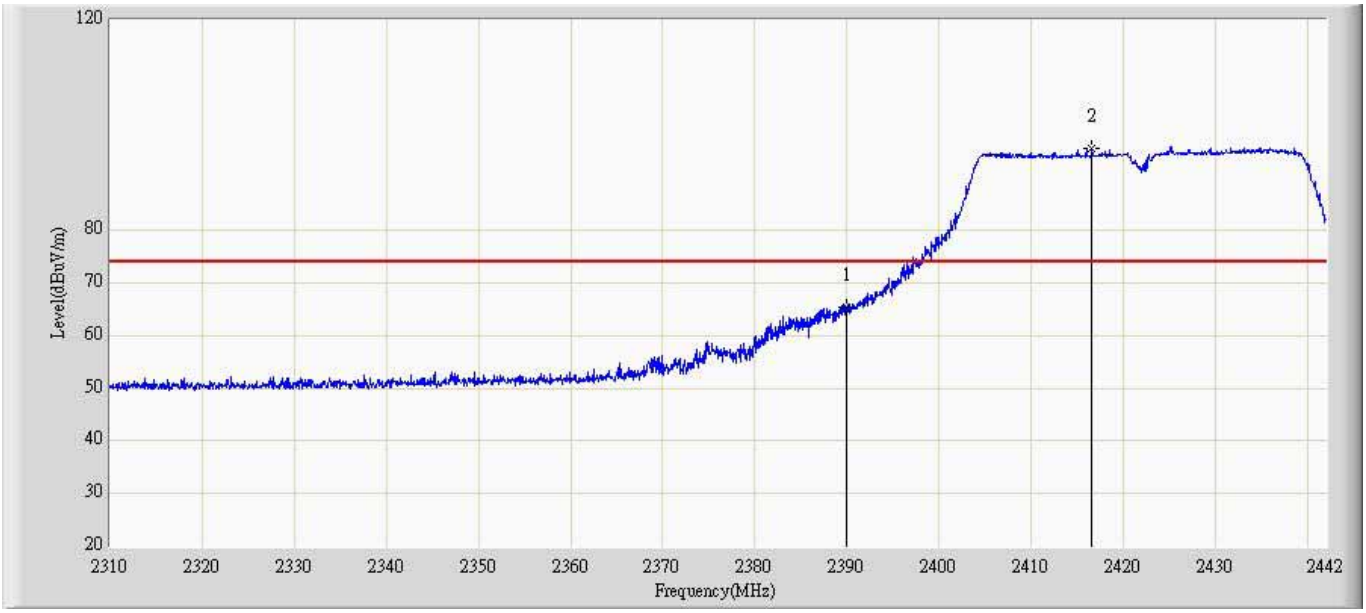
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	72.893	37.252	N/A	N/A	35.642	PK
2		*	2409.264	103.078	67.355	29.078	74.000	35.723	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 4: Transmit at 2422MHz by 802.11n40MHz	



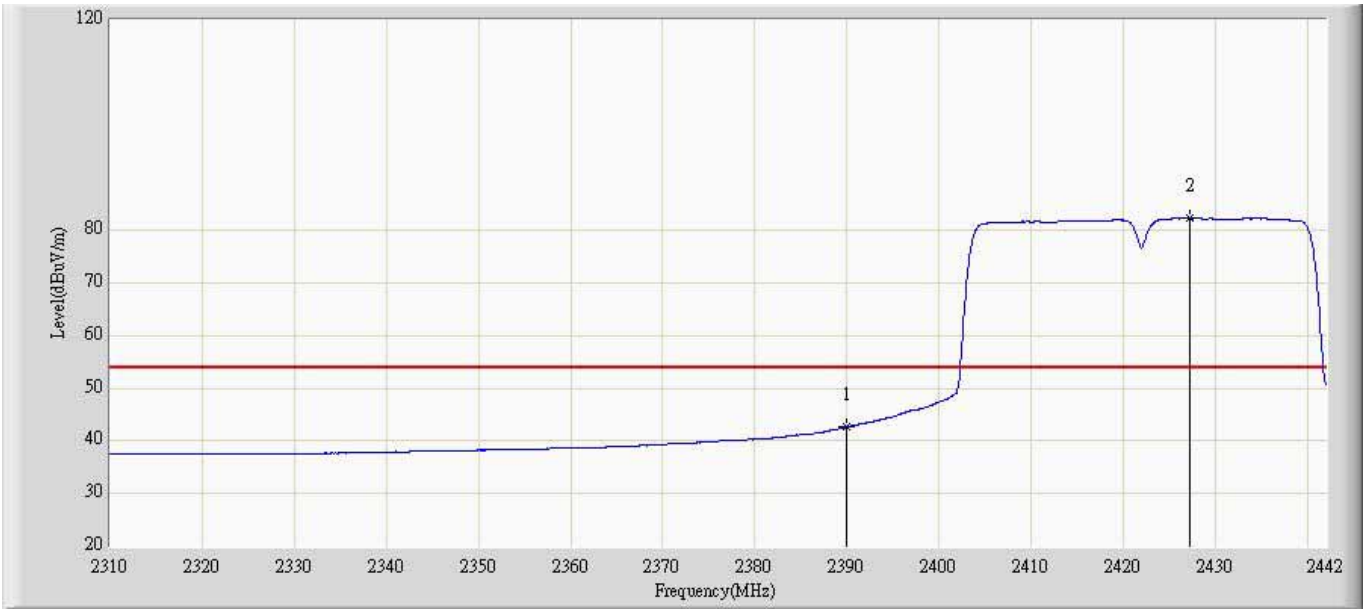
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	48.891	13.250	-5.109	54.000	35.642	AV
2		*	2406.228	88.346	52.636	N/A	N/A	35.710	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 4: Transmit at 2422MHz by 802.11n40MHz	



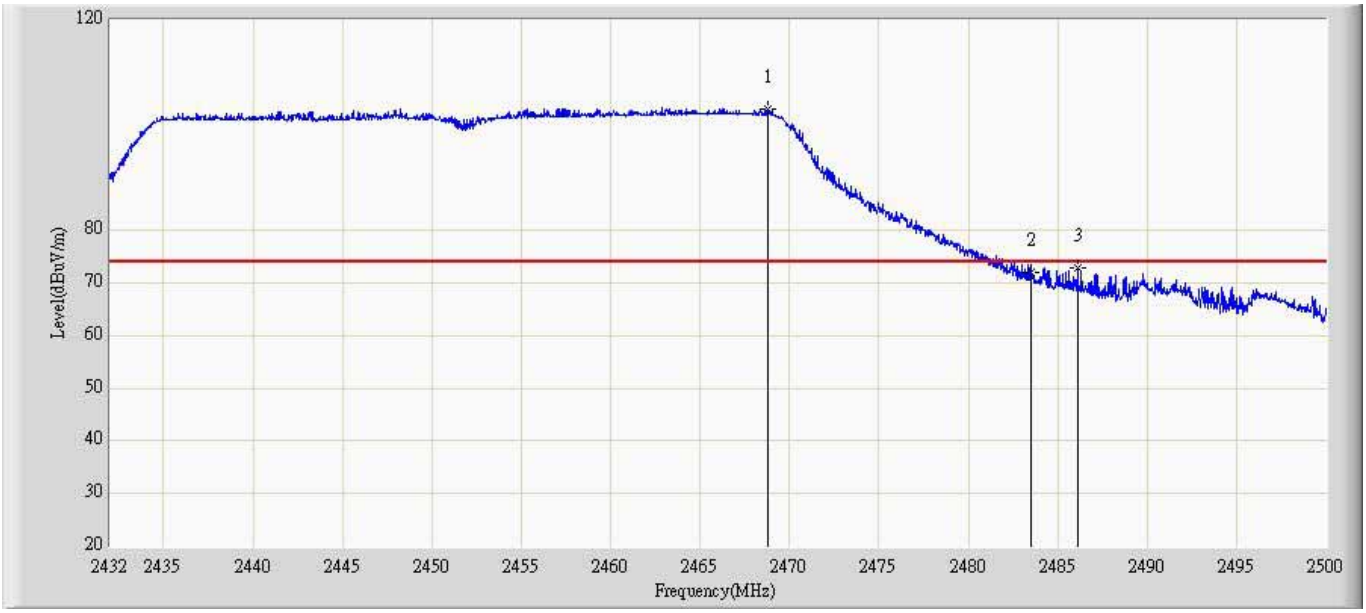
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	65.395	29.094	-8.605	74.000	36.302	PK
2		*	2416.590	95.622	59.099	N/A	N/A	36.523	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 4: Transmit at 2422MHz by 802.11n40MHz	



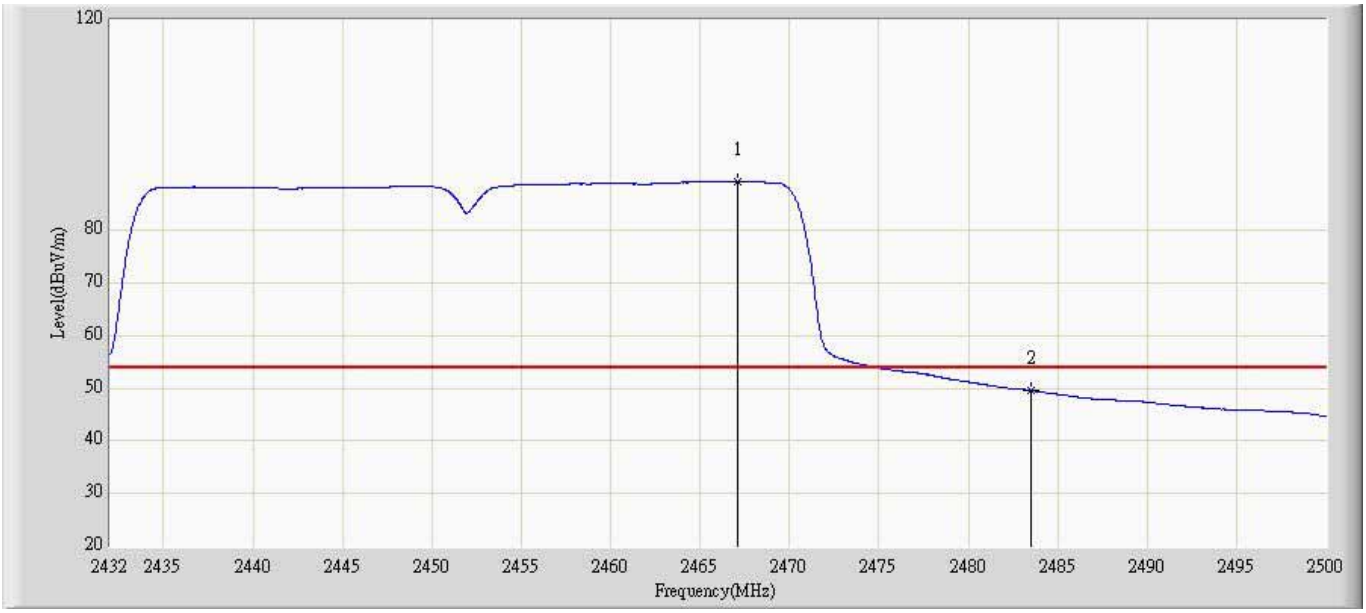
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	42.653	6.352	-11.347	54.000	36.302	AV
2		*	2427.150	82.335	45.719	N/A	N/A	36.616	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 4: Transmit at 2452MHz by 802.11n40MHz	



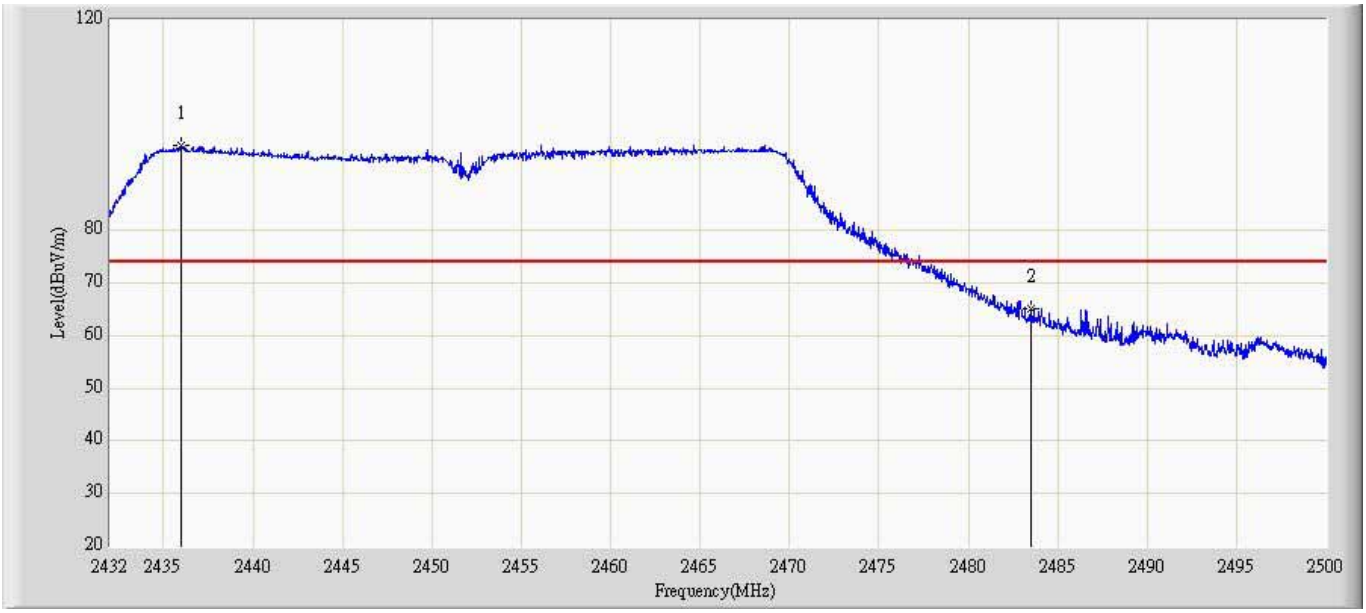
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2468.754	103.153	67.162	N/A	N/A	35.991	PK
2			2483.500	72.080	36.024	-1.920	74.000	36.055	PK
3			2486.128	72.965	36.897	-1.035	74.000	36.068	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 4: Transmit at 2452MHz by 802.11n40MHz	



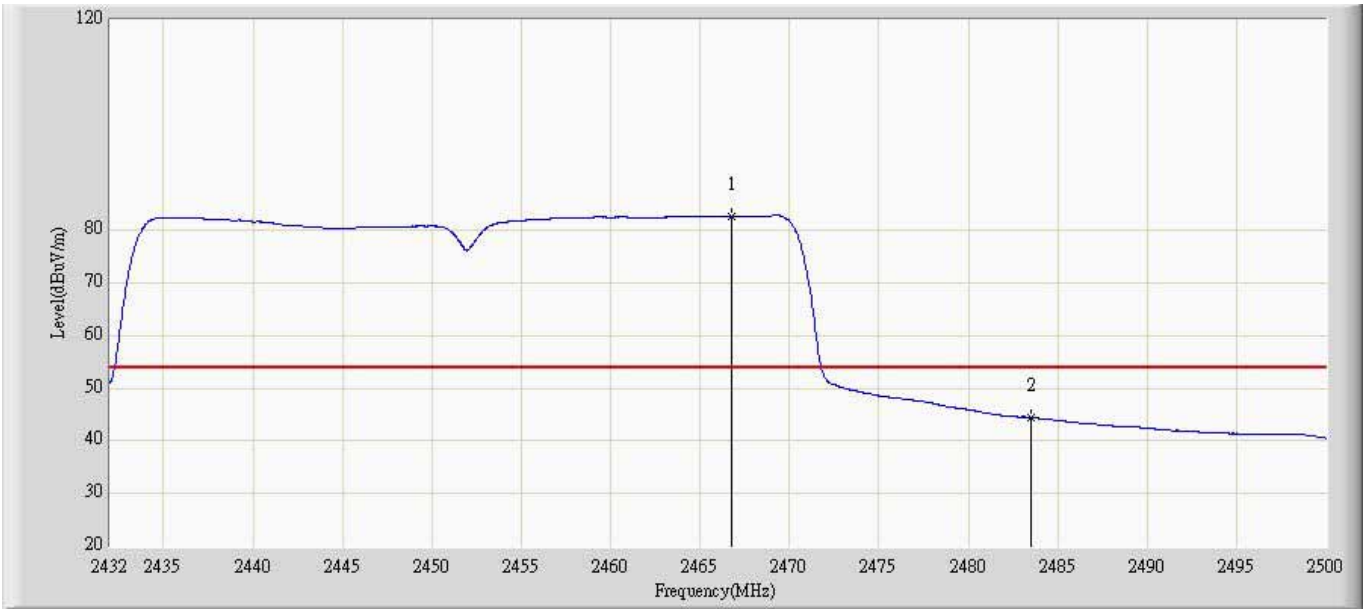
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2467.088	89.169	53.185	N/A	N/A	35.984	AV
2			2483.500	49.552	13.496	-4.448	54.000	36.055	AV

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 4: Transmit at 2452MHz by 802.11n40MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2435.978	96.066	59.378	N/A	N/A	36.689	PK
2			2483.500	65.108	28.018	-8.892	74.000	37.089	PK

Engineer: Milo	
Site: AC5	Time: 2013/07/21 - 11:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: Video Recorder	Power: AC 120V/60Hz
Note: Mode 4: Transmit at 2452MHz by 802.11n40MHz	



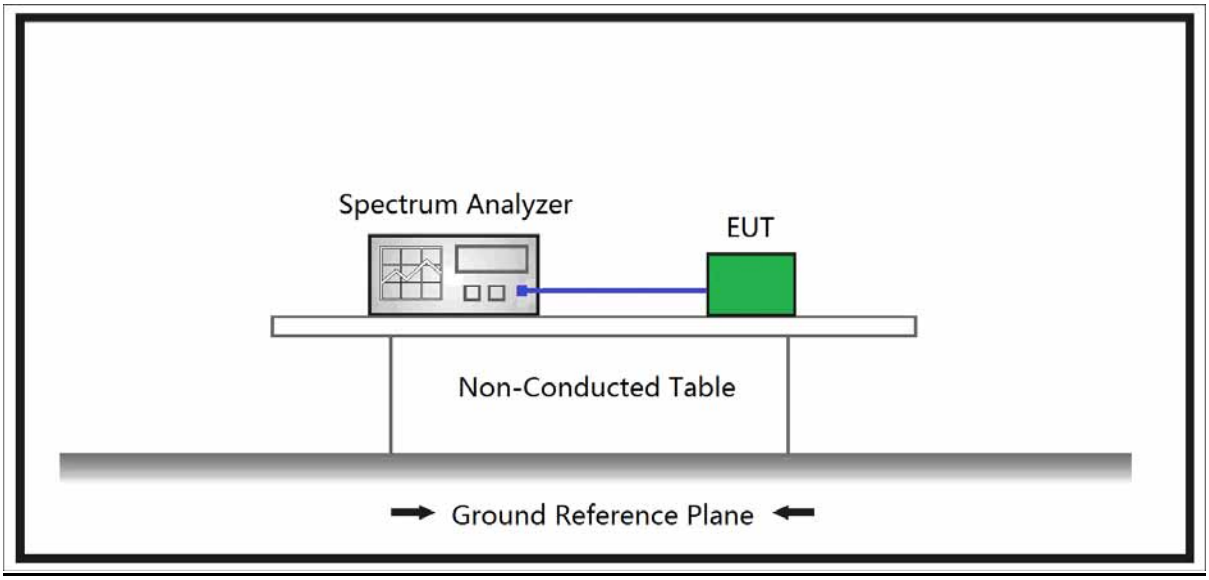
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2466.748	82.625	45.675	N/A	N/A	36.950	AV
2			2483.500	44.476	7.386	-9.524	54.000	37.089	AV

7. Operation Frequency Range of 20dB Bandwidth

7.1. Limit

20 dB bandwidth of the emission is contained within the operation frequency band.

7.2. Test Setup



7.3. Test Procedure

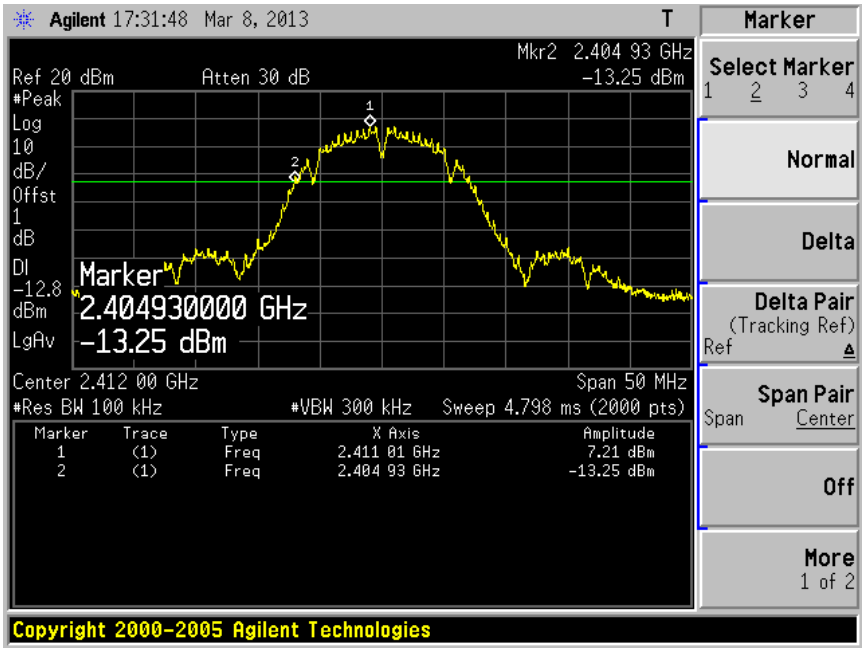
The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Span greater than RBW.

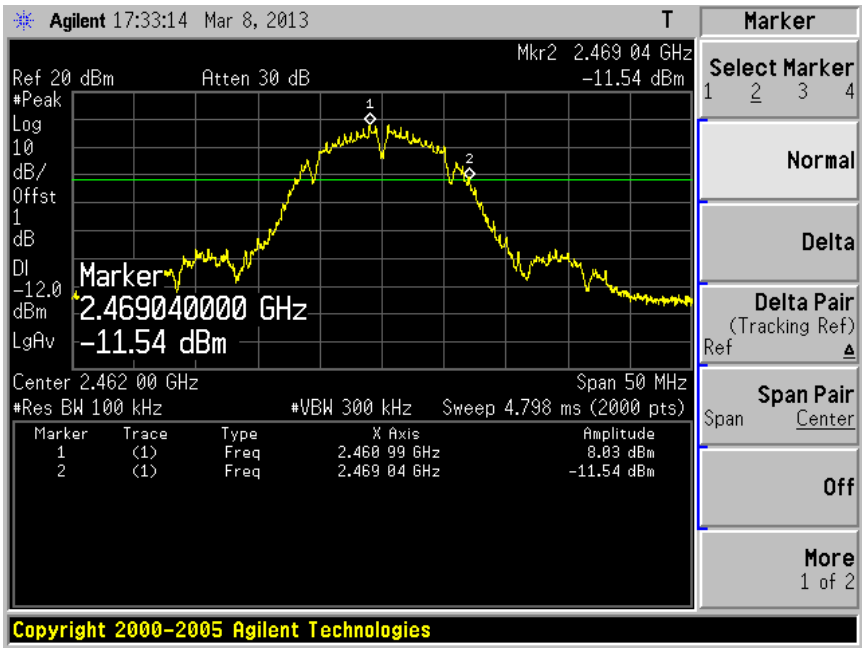
7.4. Test Result

Product	:	Video Recorder
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11b

Channel 01 (2412MHz)

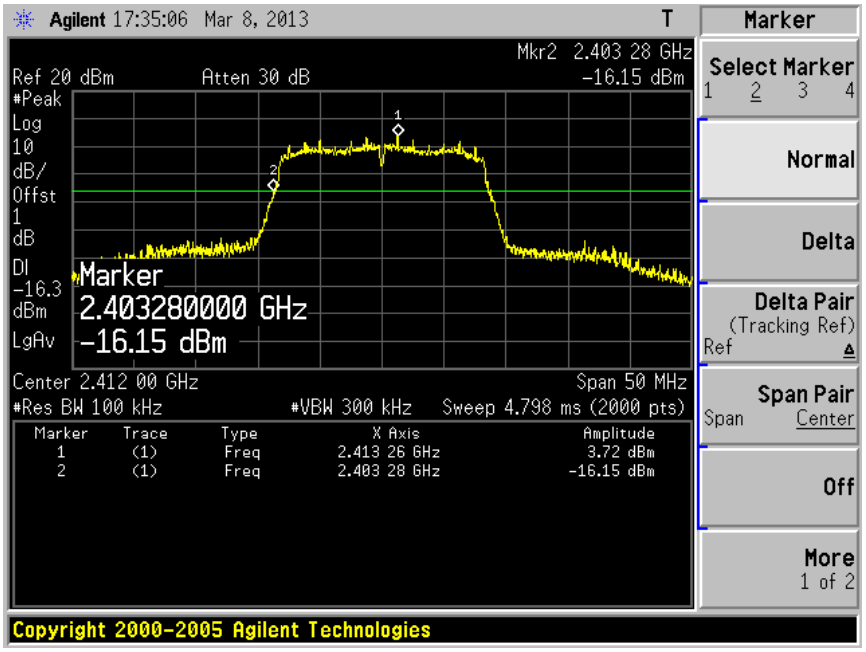


Channel 11 (2462MHz)

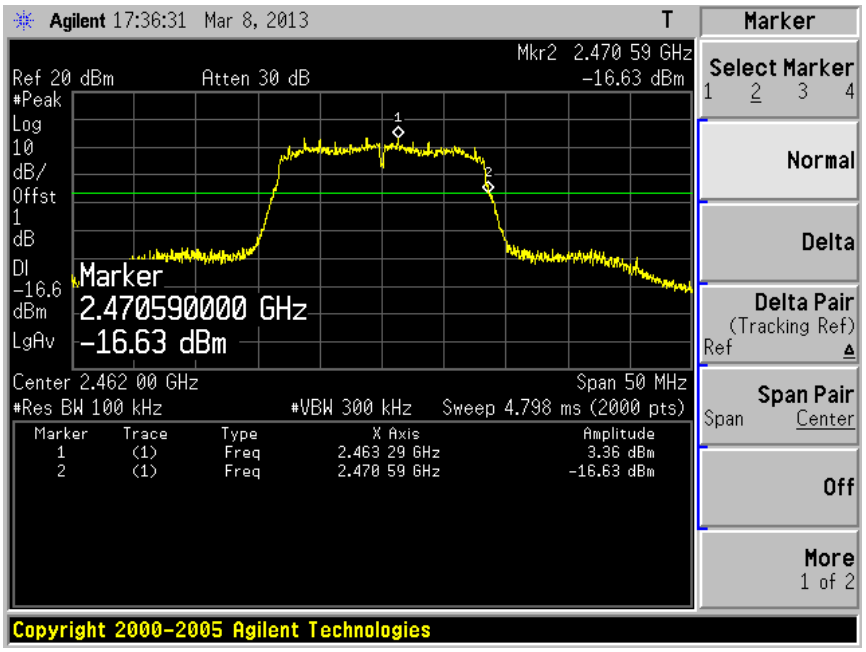


Product	:	Video Recorder
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11g

Channel 01 (2412MHz)

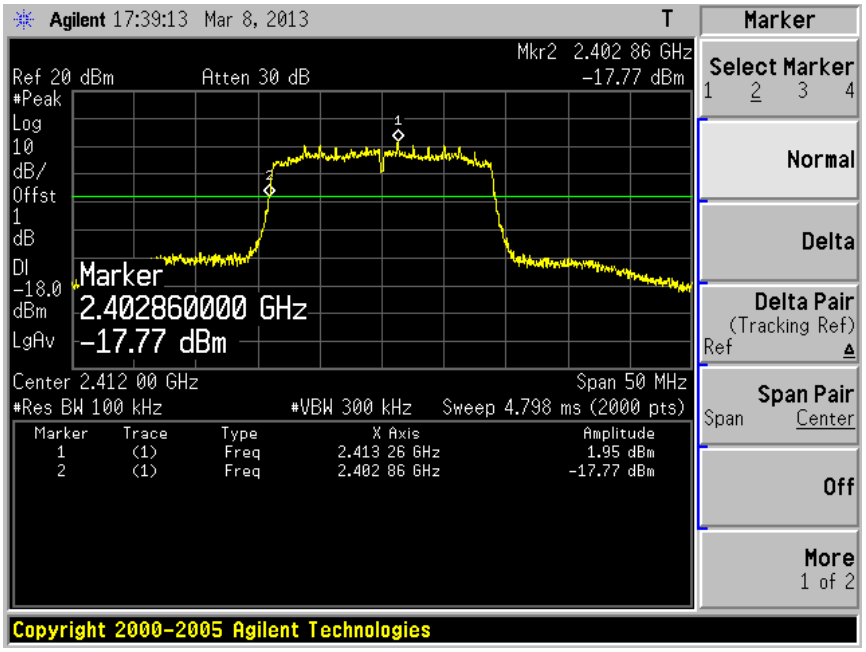


Channel 11 (2462MHz)

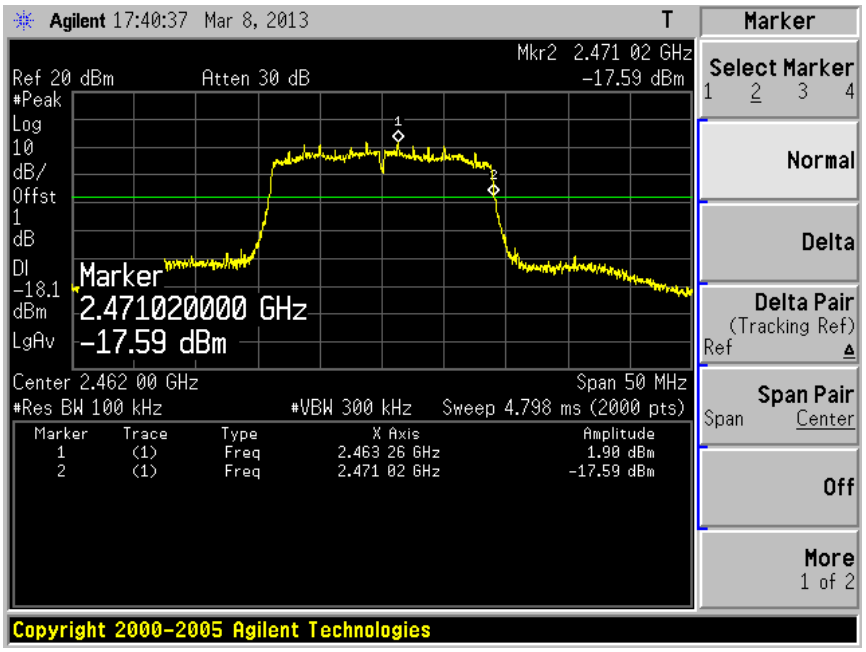


Product	:	Video Recorder
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11n(20MHz)

Channel 01 (2412MHz)

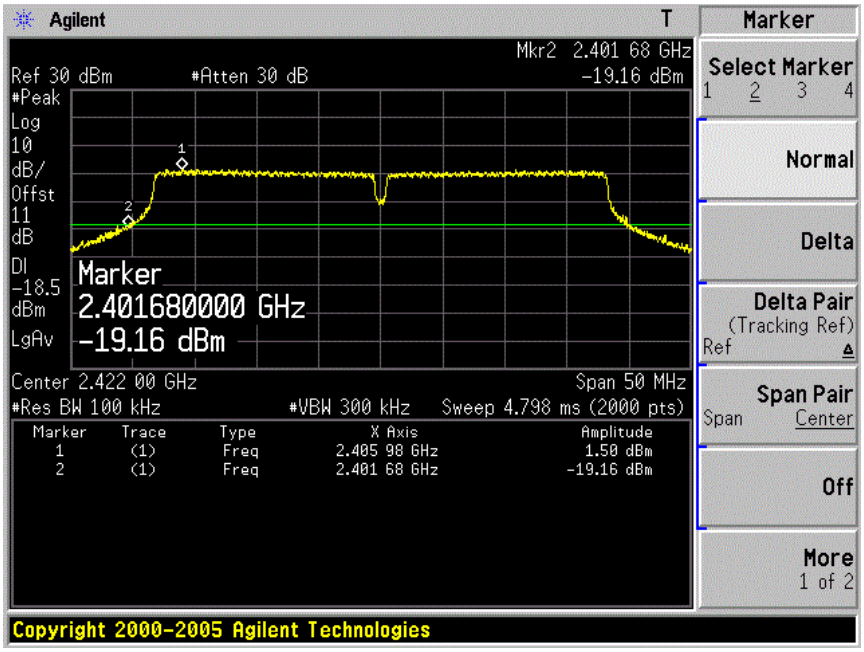


Channel 11 (2462MHz)

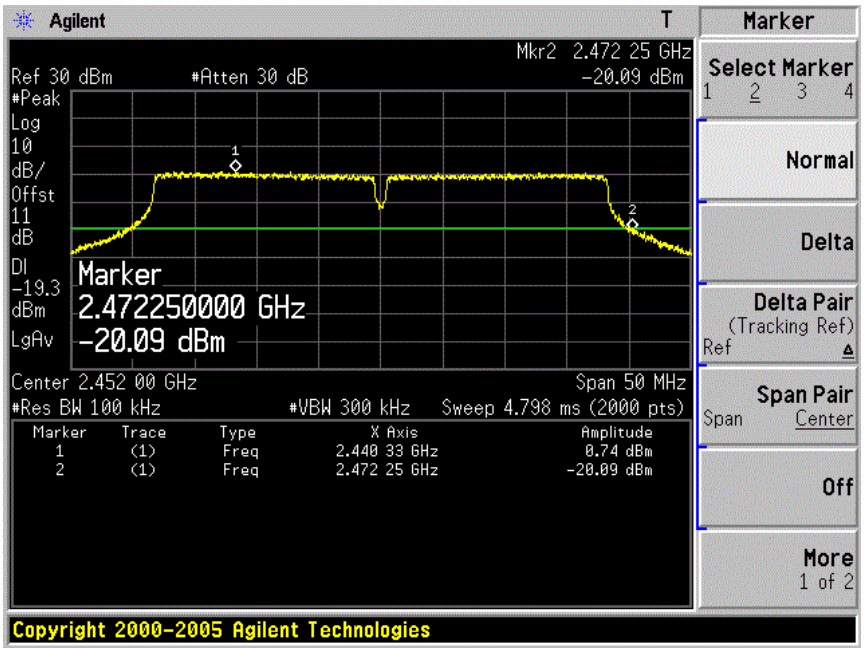


Product	:	Video Recorder
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz)

Channel 03 (2422MHz)



Channel 09 (2452MHz)

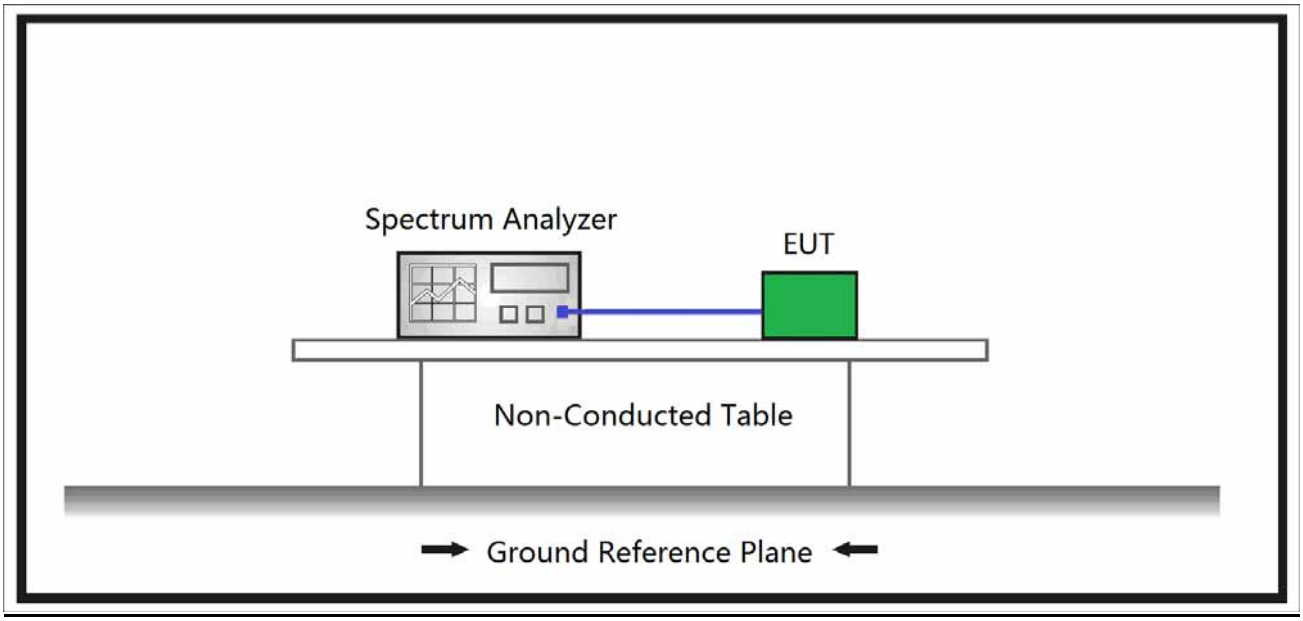


8. Occupied Bandwidth

8.1. Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

8.2. Test Setup



8.3. Test Procedure

The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

DTS bandwidth OPTION 2:

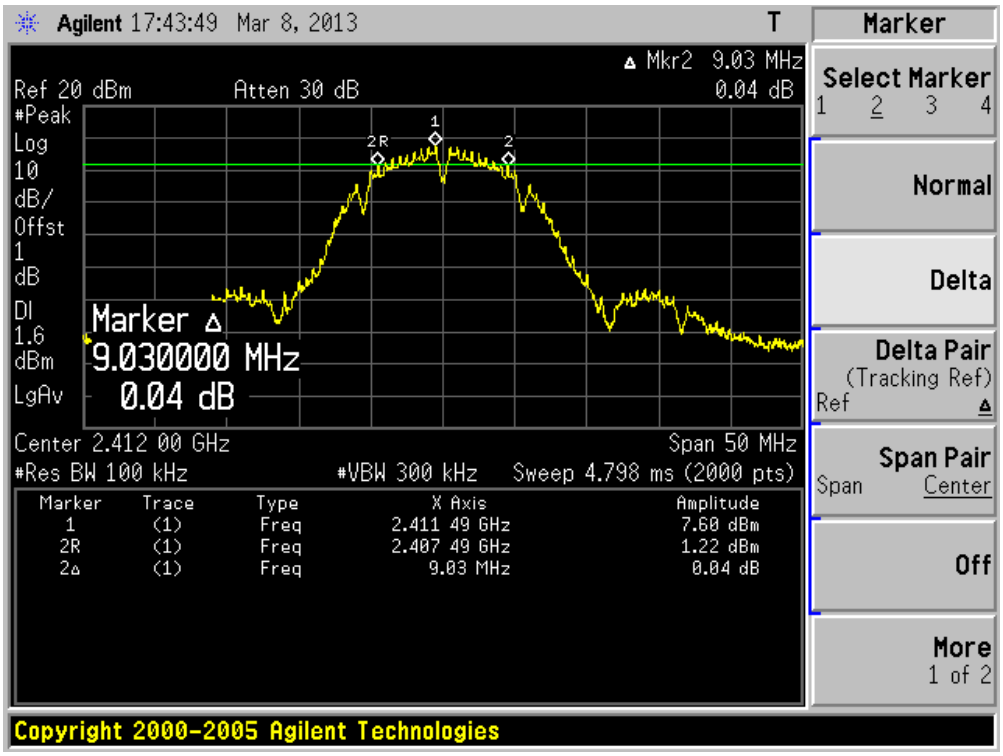
The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW ≥ 3 * RBW, peak detector with maximum hold) is implemented by the instrumentation function.

8.4. Test Result

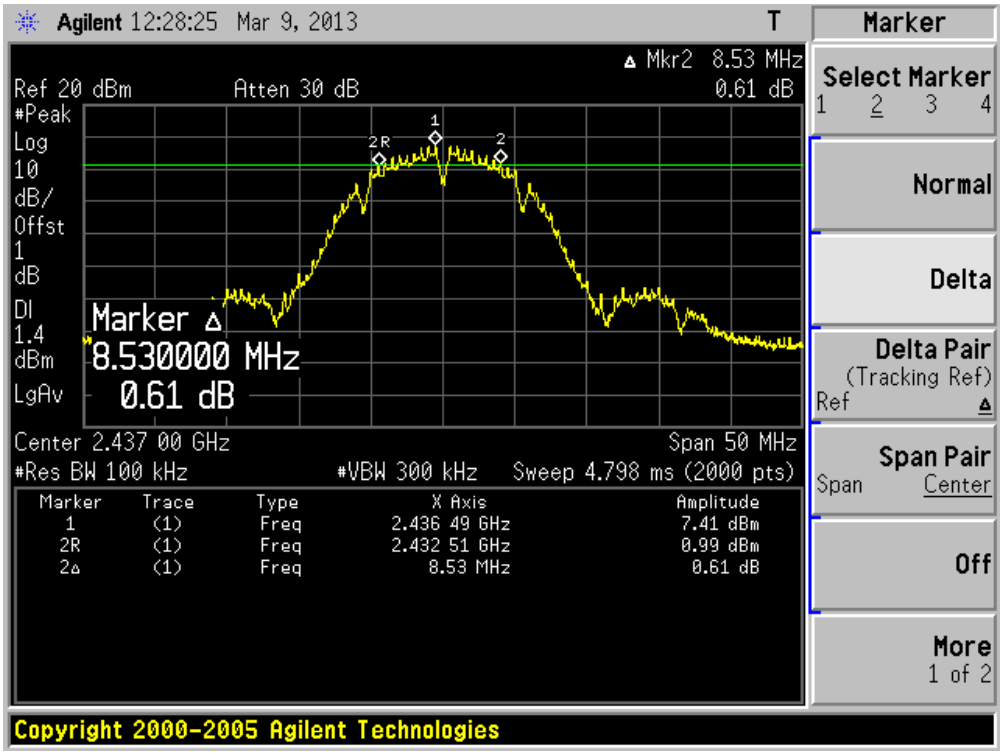
Product	:	Video Recorder
Test Item	:	6dB Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	9030	500	Pass
06	2437	8530	500	Pass
11	2462	8530	500	Pass

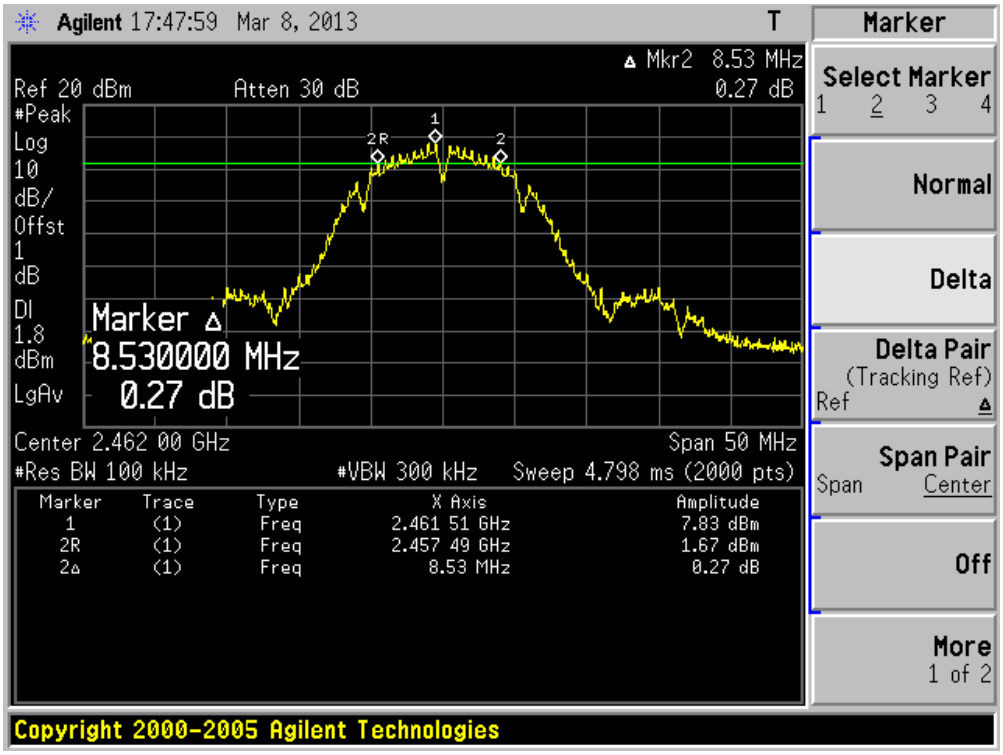
Channel 01 (2412MHz)



Channel 06 (2437MHz)



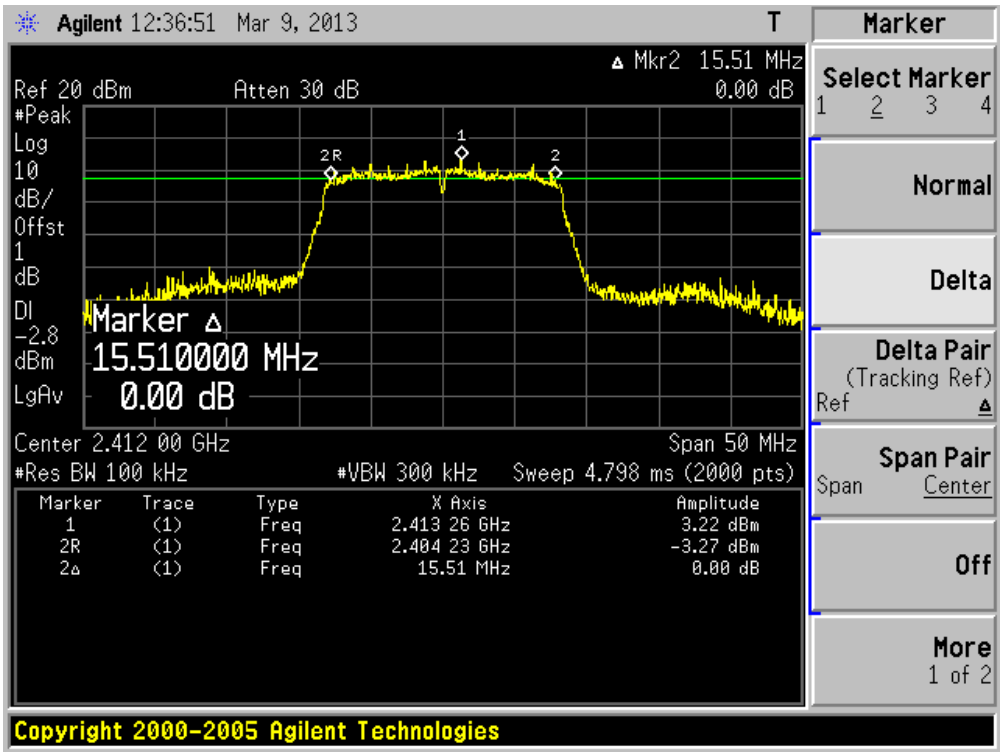
Channel 11 (2462MHz)



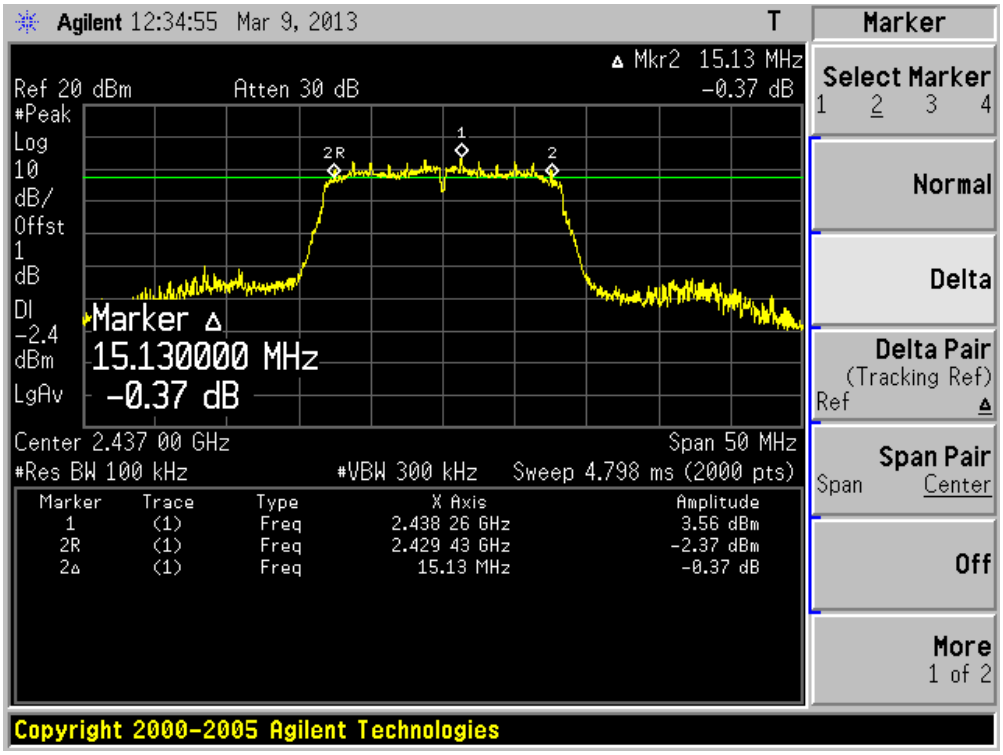
Product	:	Video Recorder
Test Item	:	6dB Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	15510	500	Pass
06	2437	15130	500	Pass
11	2462	15310	500	Pass

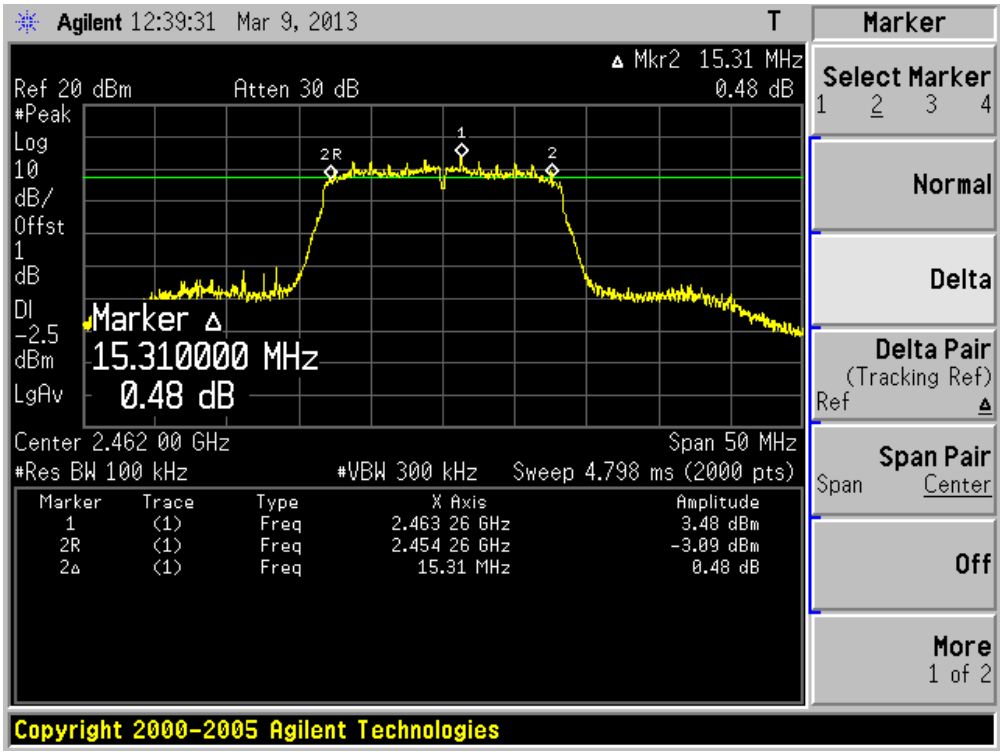
Channel 01 (2412MHz)



Channel 06 (2437MHz)



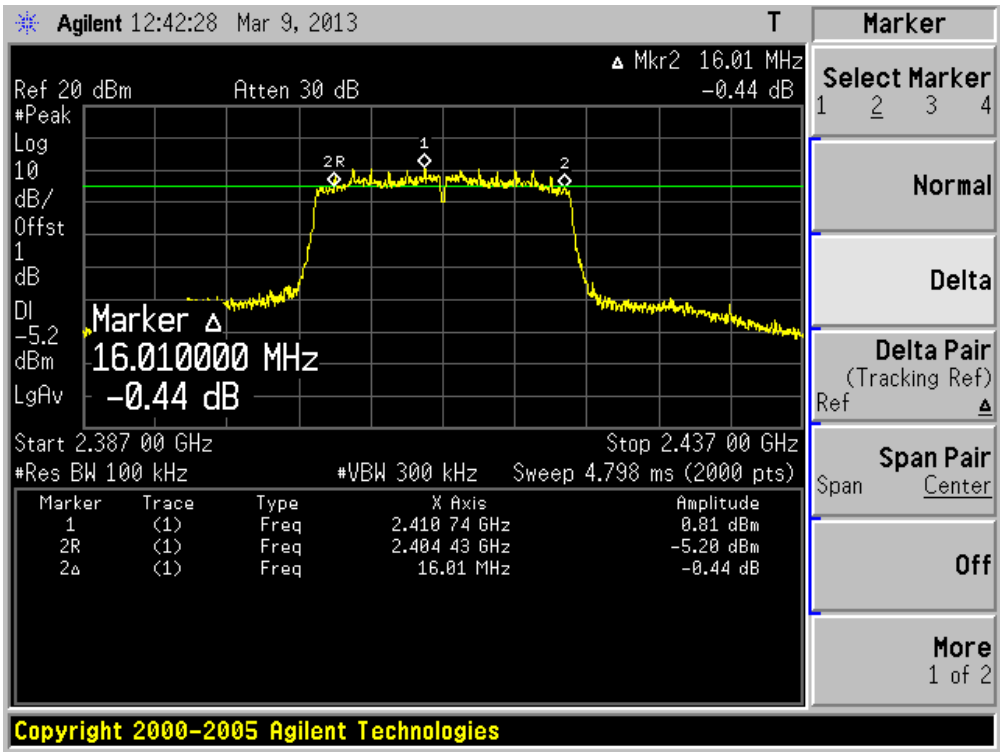
Channel 11 (2462MHz)



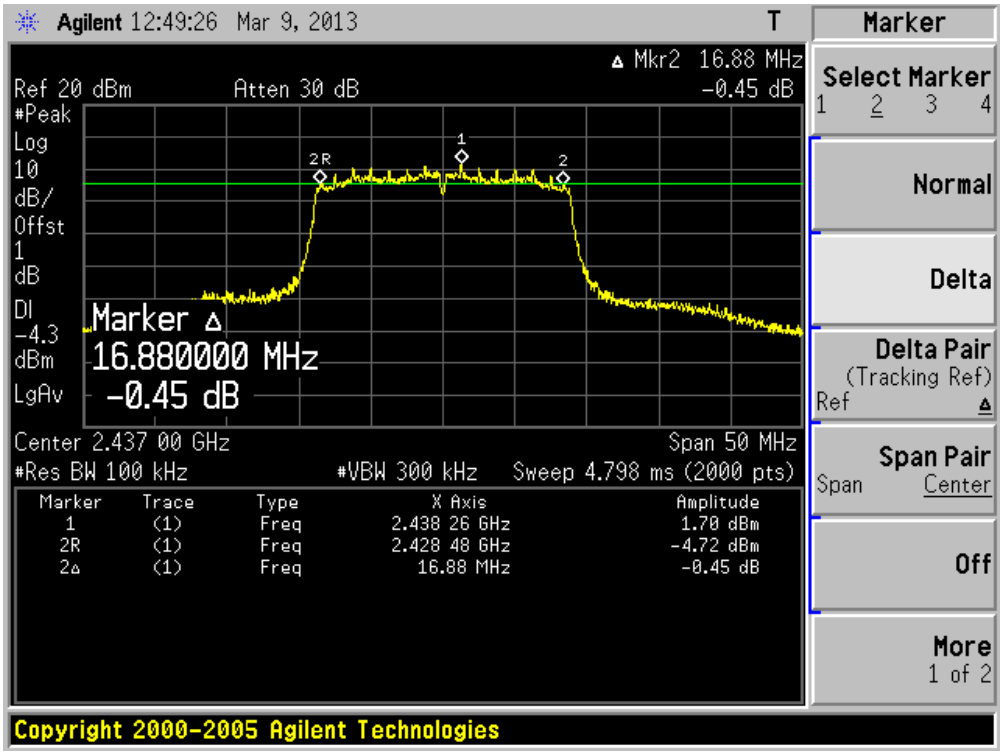
Product	:	Video Recorder
Test Item	:	6dB Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11n(20MHz)

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	16010	500	Pass
06	2437	16880	500	Pass
11	2462	16010	500	Pass

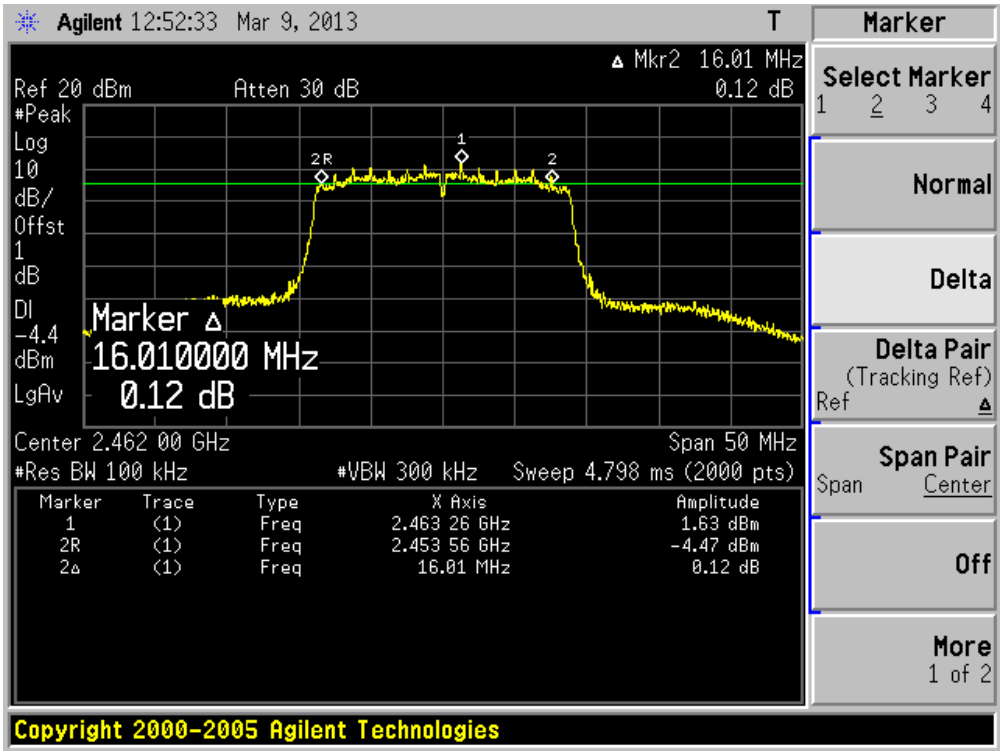
Channel 01 (2412MHz)



Channel 06 (2437MHz)



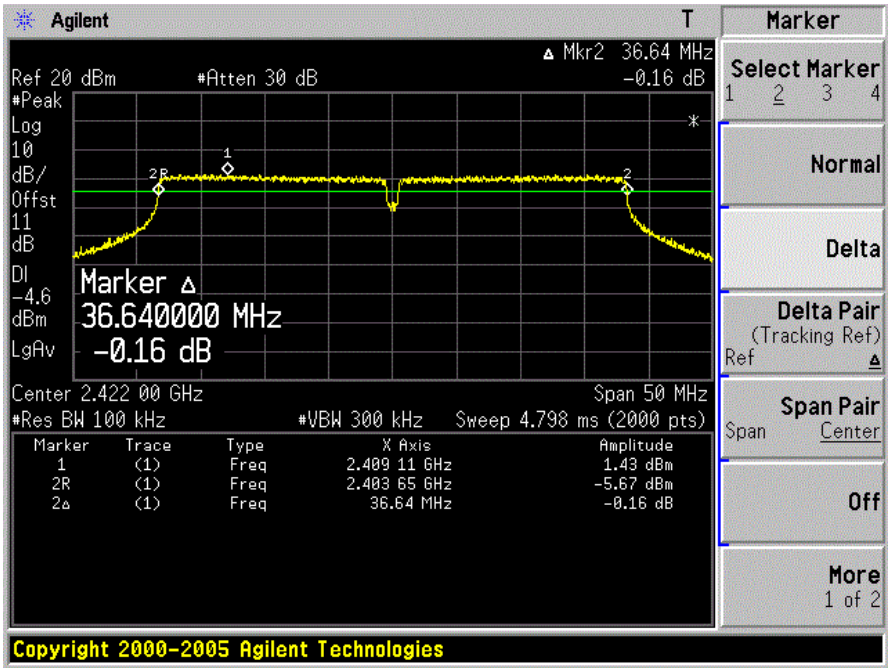
Channel 11 (2462MHz)



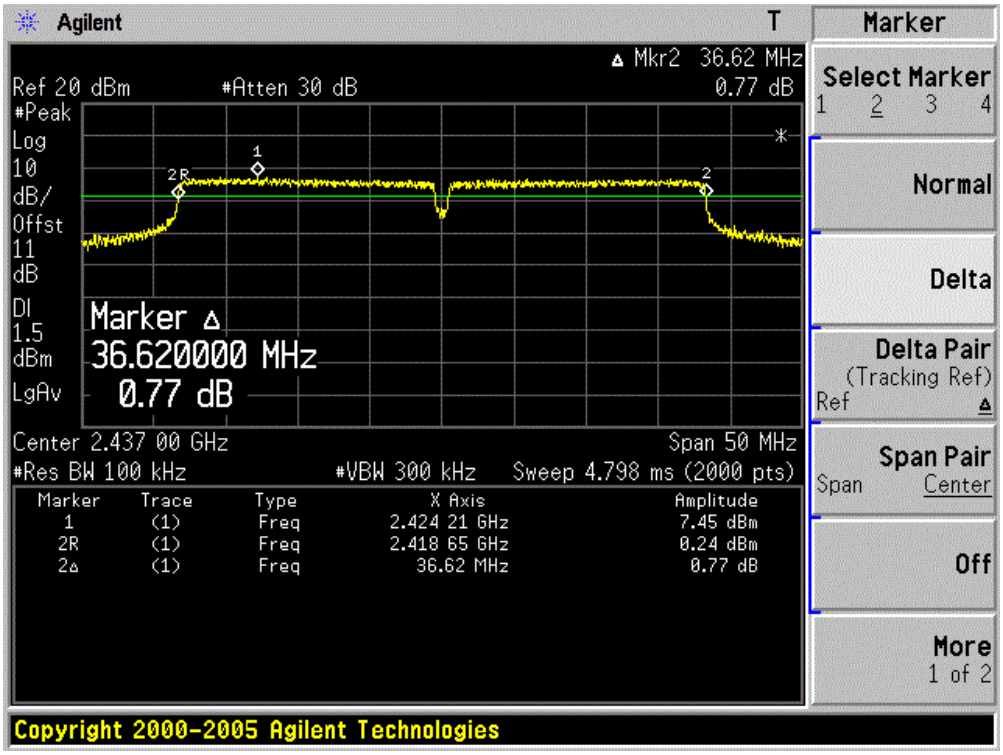
Product	:	Video Recorder
Test Item	:	6dB Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz)

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
03	2422	36640.0	500	Pass
06	2437	36570.0	500	Pass
09	2452	36620.0	500	Pass

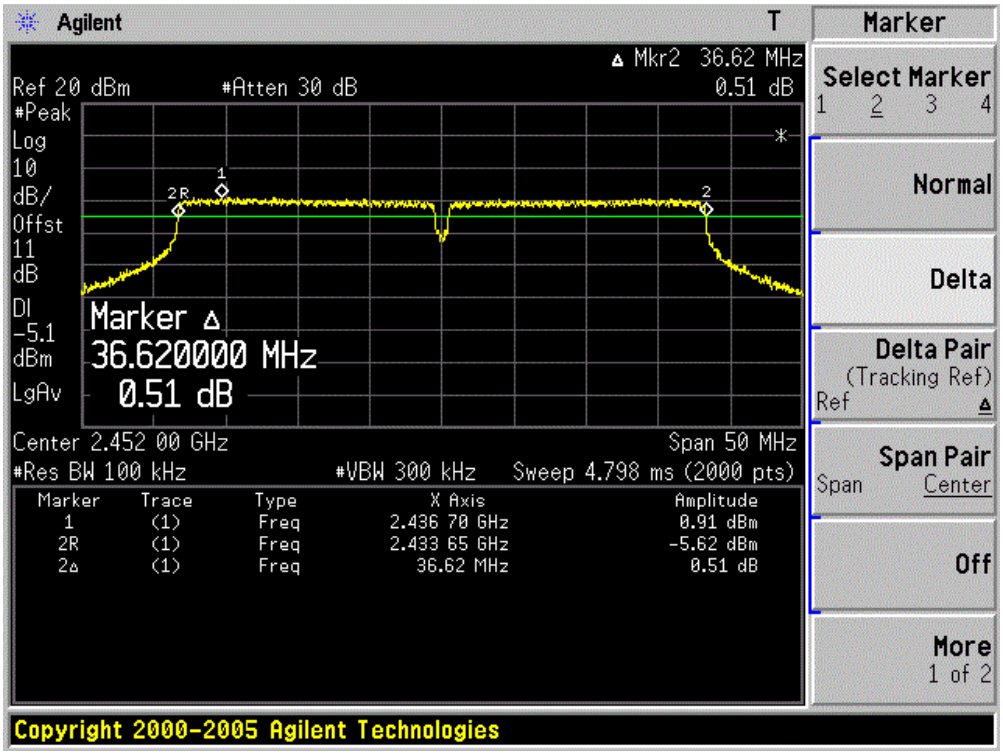
Channel 03 (2422MHz)



Channel 06 (2437MHz)



Channel 09 (2452MHz)



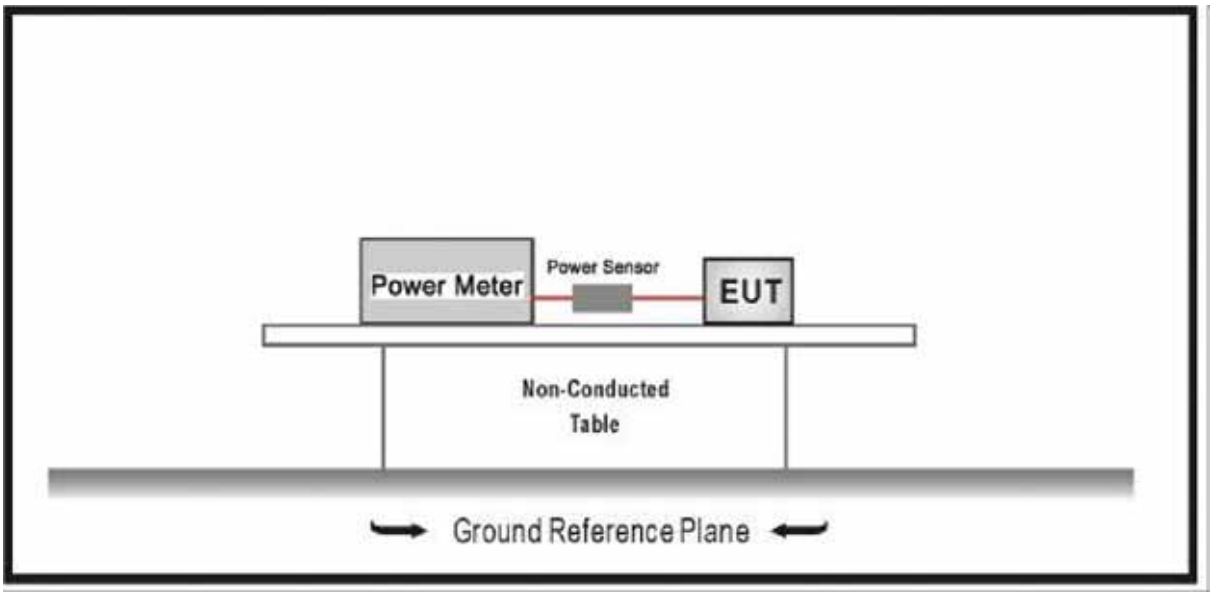
9. Power Output

9.1. Limit

The maximum peak power shall be less 1 Watt (30dBm).

Note: the conducted output power limit specified above is based on the use the antennas with directional gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

9.2. Test Setup



9.3. Test Procedure

The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

Use the broadband peak RF power meter to test peak power and record the result.

9.4. Test Result

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (blue marker) for final test of each channel.

MCS Index for 802.11n	Spatial Streams	Data Rate (Mbps)					
		802.11b	802.11g	20MHz Bandwidth		40MHz Bandwidth	
				800ns GI	400ns GI	800ns GI	400ns GI
0	1	1	6	6.5	7.2	13.5	15.0
1	1	2	9	13.0	14.4	27.0	30.0
2	1	5.5	12	19.5	21.7	40.5	45.0
3	1	11	18	26.0	28.9	54.0	60.0
4	1	---	24	39.0	43.3	81.0	90.0
5	1	---	36	52.0	57.8	108.0	120.0
6	1	---	48	58.5	65.0	121.5	135.0
7	1	---	54	65.0	72.2	135.0	150.0

Power output at various data rates:

Test Mode	Bandwidth	Frequency (MHz)	Channel	Data Rate	Peak Power (dBm)
802.11b	20	2437	6	1	8.69
				5.5	8.92
				11	9.17
802.11g	20	2437	6	6	8.28
				24	8.42
				54	8.97
802.11n	20	2437	6	MCS0	8.05
				MCS4	8.53
				MCS7	9.11
802.11n	40	2437	6	MCS0	7.99
				MCS4	8.23
				MCS7	9.56

Product	:	Video Recorder
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Total Power (dBm)	Limit (dBm)	Result
1	2412	8.87	8.87	30.00	Pass
6	2437	9.17	9.17	30.00	Pass
11	2462	8.55	8.55	30.00	Pass

Product	:	Video Recorder
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Total Power (dBm)	Limit (dBm)	Result
1	2412	8.43	8.43	30.00	Pass
6	2437	8.97	8.97	30.00	Pass
11	2462	8.05	8.05	30.00	Pass

Product	:	Video Recorder
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 3: Transmit by 802.11n(20MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Total Power (dBm)	Limit (dBm)	Result
1	2412	8.68	8.68	30.00	Pass
6	2437	9.11	9.11	30.00	Pass
11	2462	8.10	8.10	30.00	Pass

Product	:	Video Recorder
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz)

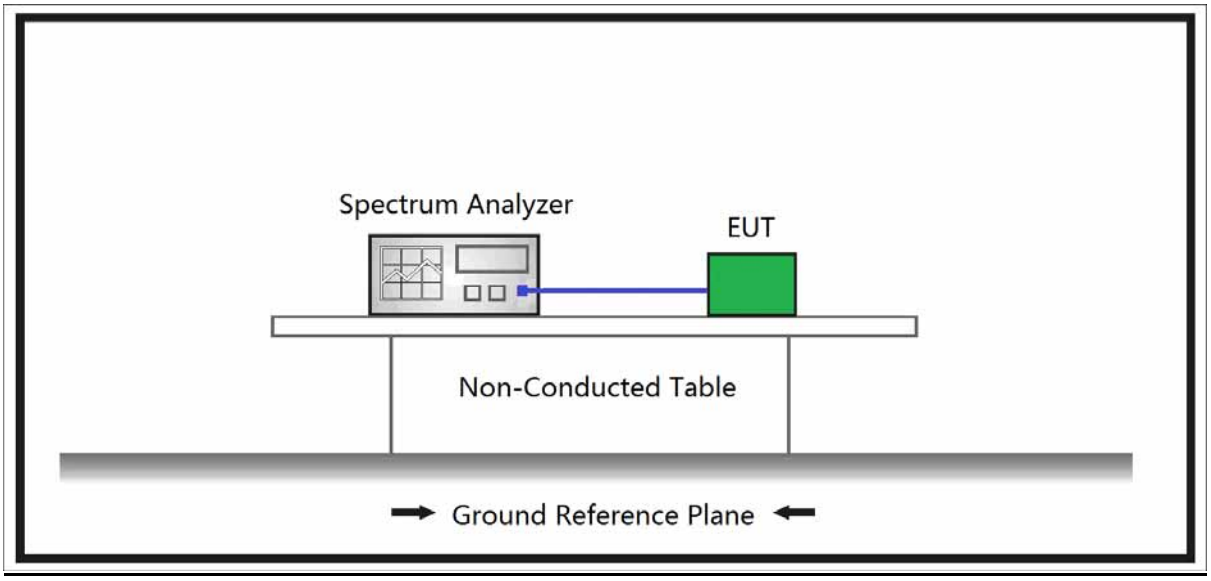
Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Total Power (dBm)	Limit (dBm)	Result
3	2422	9.08	9.08	30.00	Pass
6	2437	9.56	9.56	30.00	Pass
9	2452	8.81	8.81	30.00	Pass

10. Power Spectral Density

10.1. Limit

For digitally modulated systems, the 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.

10.2. Test Setup



10.3. Test Procedure

The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

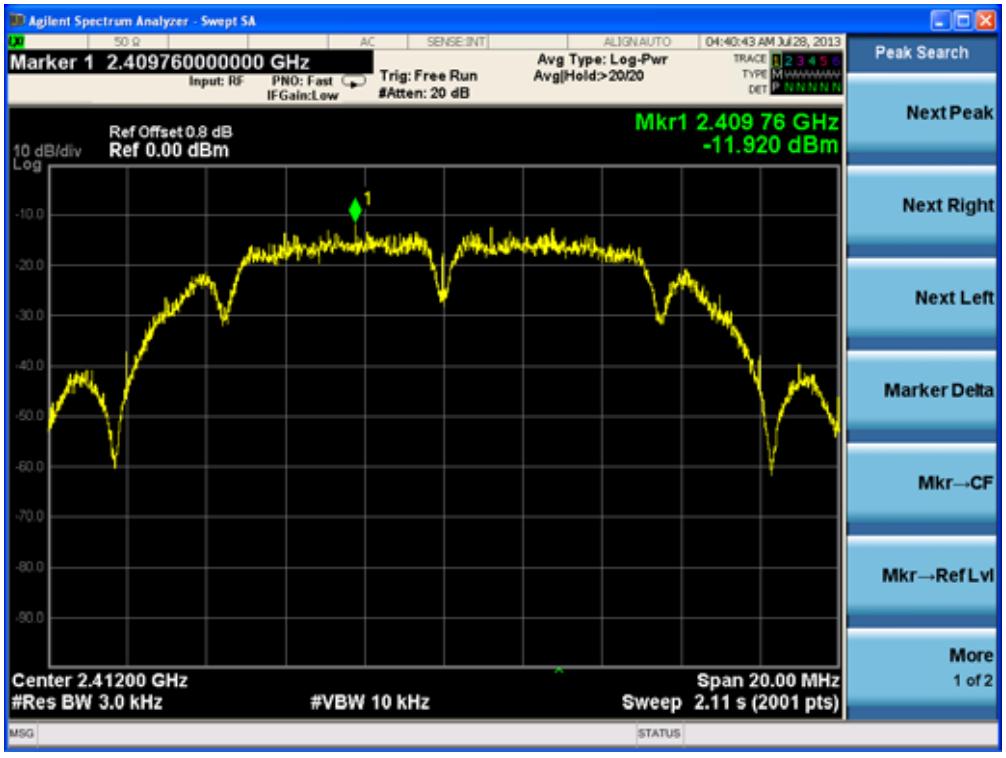
Set analyzer center frequency to DTS channel center frequency, the span to 1.5 times the DTS channel bandwidth, RBW ≧ 3 kHz, Set VBW ≧ 3 * RBW, Sweep time = auto couple, Detector = peak, Trace mode = max hold, Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level. If measured value exceed limit reduce RBW (no less than 3kHz) and repeat.

10.4. Test Result

Product	:	Video Recorder
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Measurement PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
01	2412	-11.92	-11.92	8	Pass
06	2437	-12.77	-12.77	8	Pass
11	2462	-12.57	-12.57	8	Pass

Channel 01 (2412MHz)



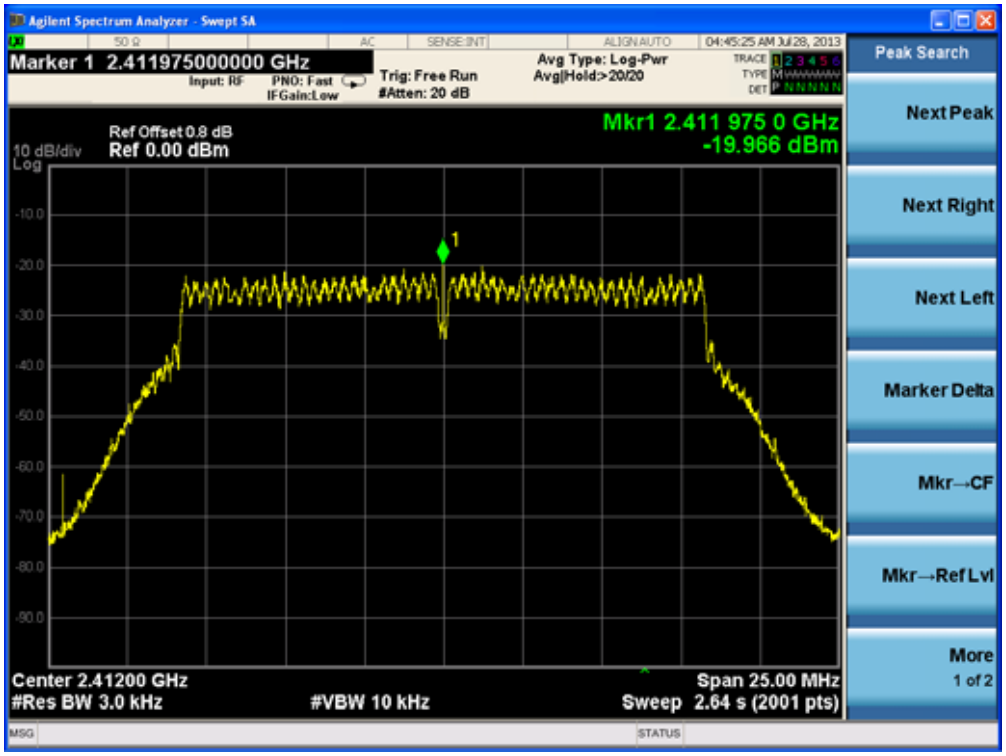
Channel 06 (2437MHz)

Channel 11 (2462MHz)

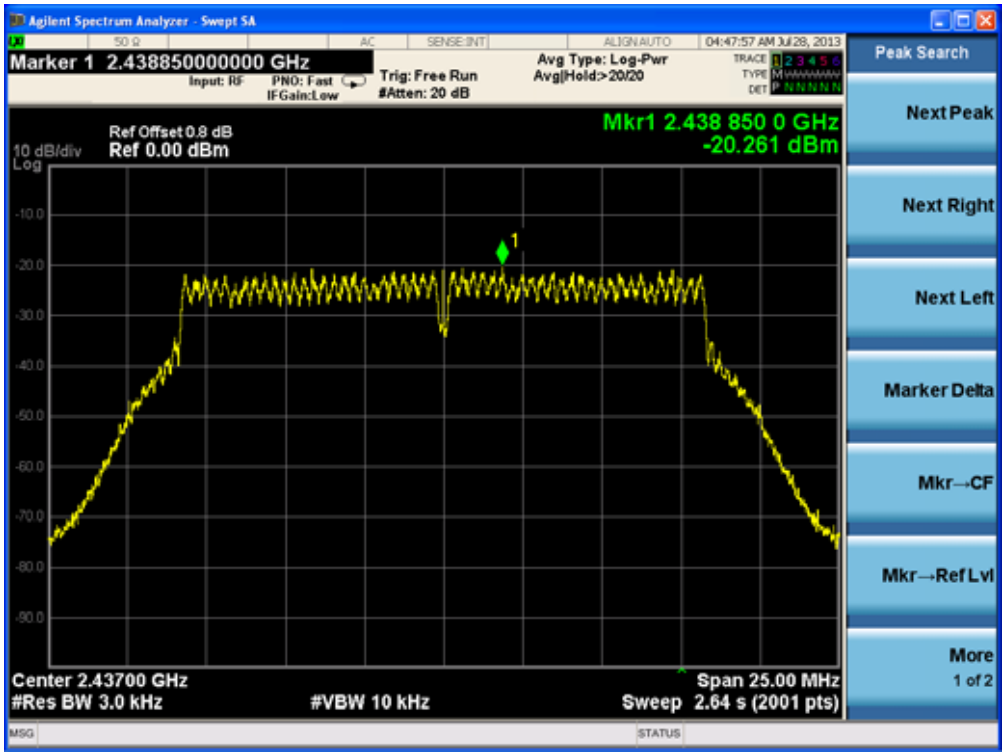
Product	:	Video Recorder
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Measurement PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
01	2412	-19.97	-19.97	8	Pass
06	2437	-20.26	-20.26	8	Pass
11	2462	-19.98	-19.98	8	Pass

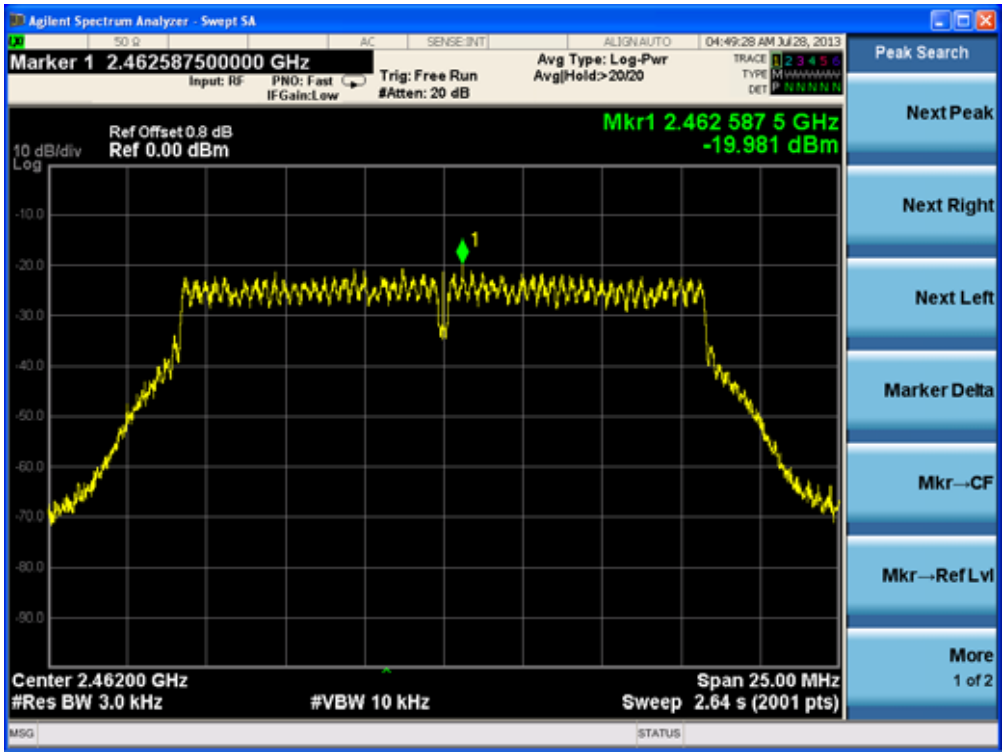
Channel 01 (2412MHz)



Channel 06 (2437MHz)



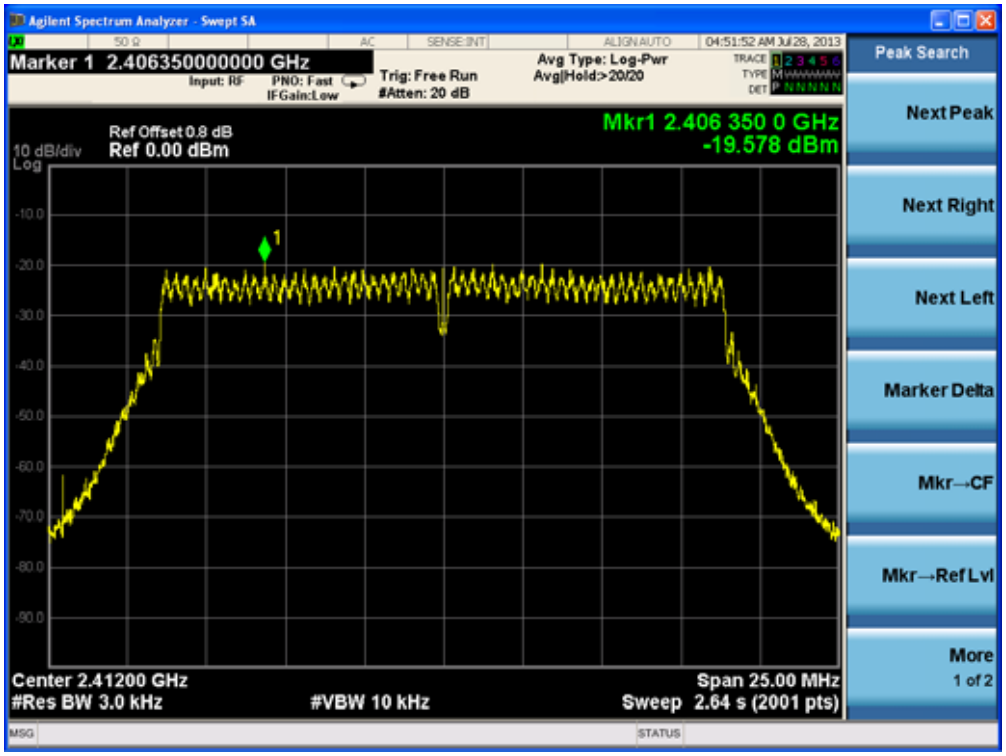
Channel 11 (2462MHz)



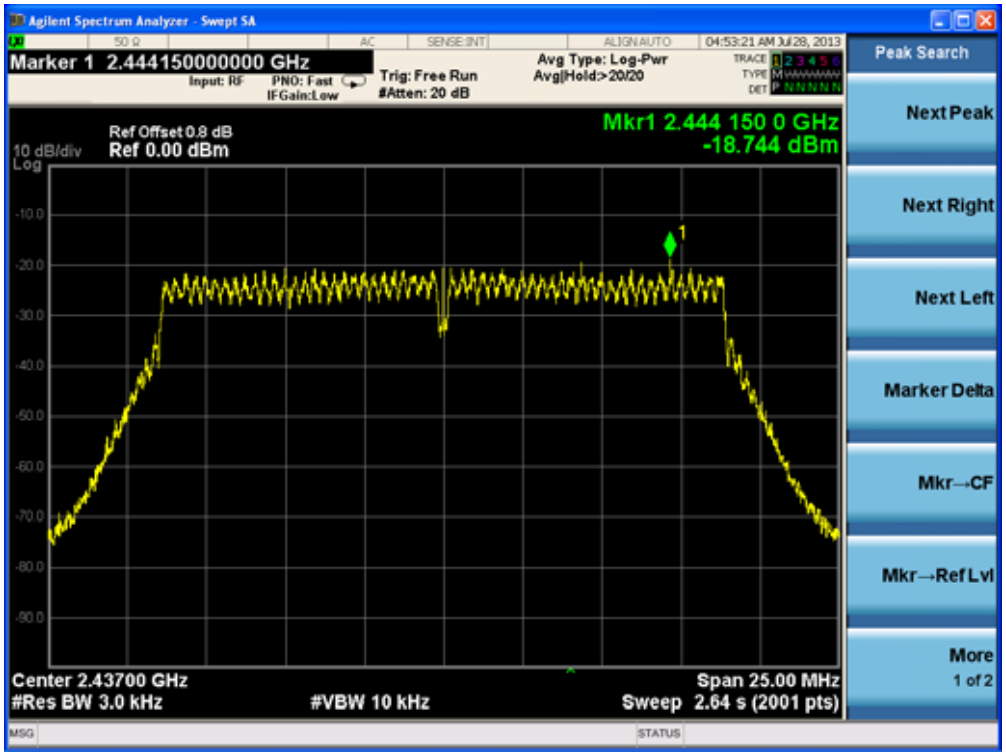
Product	:	Video Recorder
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11n(20MHz)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
01	2412	-19.58	-19.58	8	Pass
06	2437	-18.74	-18.74	8	Pass
11	2462	-19.65	-19.65	8	Pass

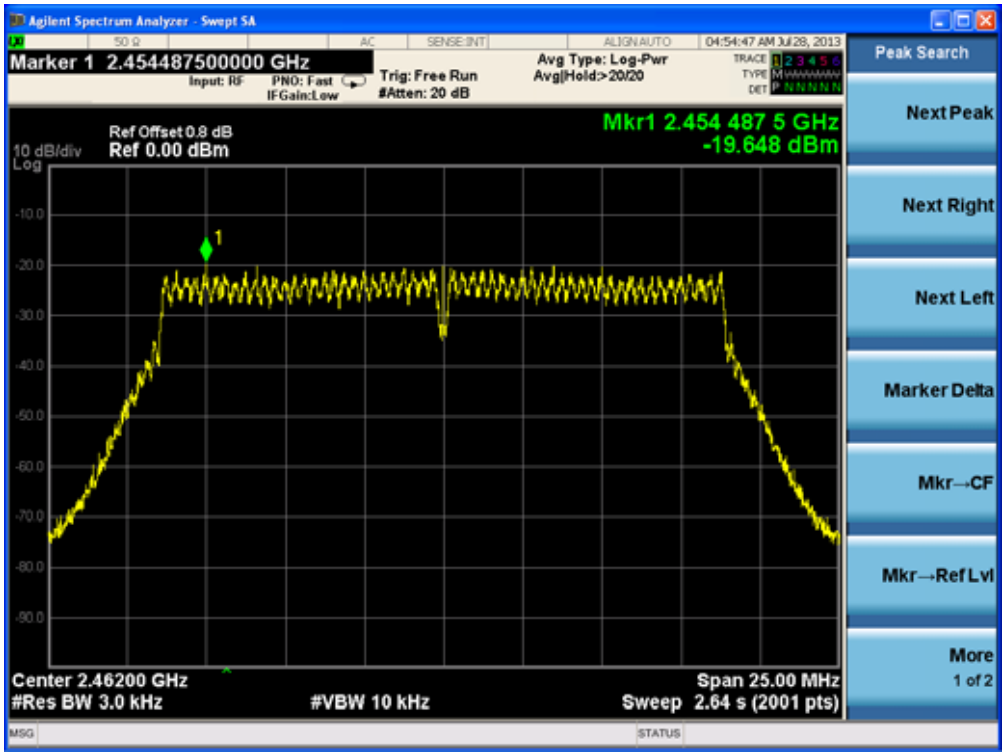
Channel 01 (2412MHz)



Channel 06 (2437MHz)



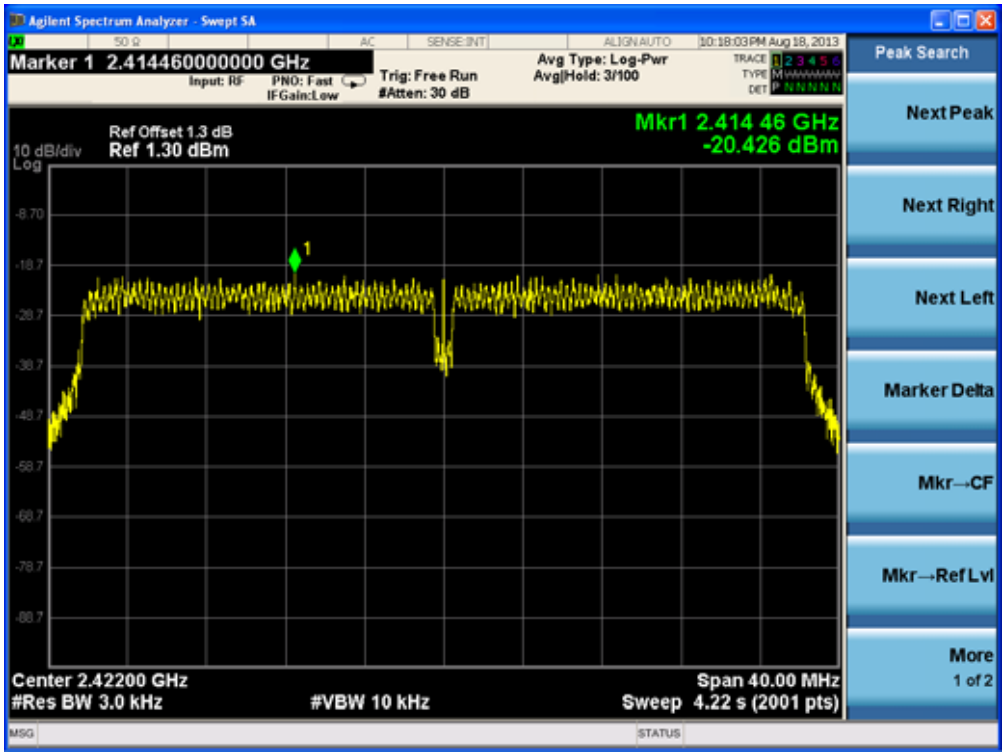
Channel 11 (2462MHz)



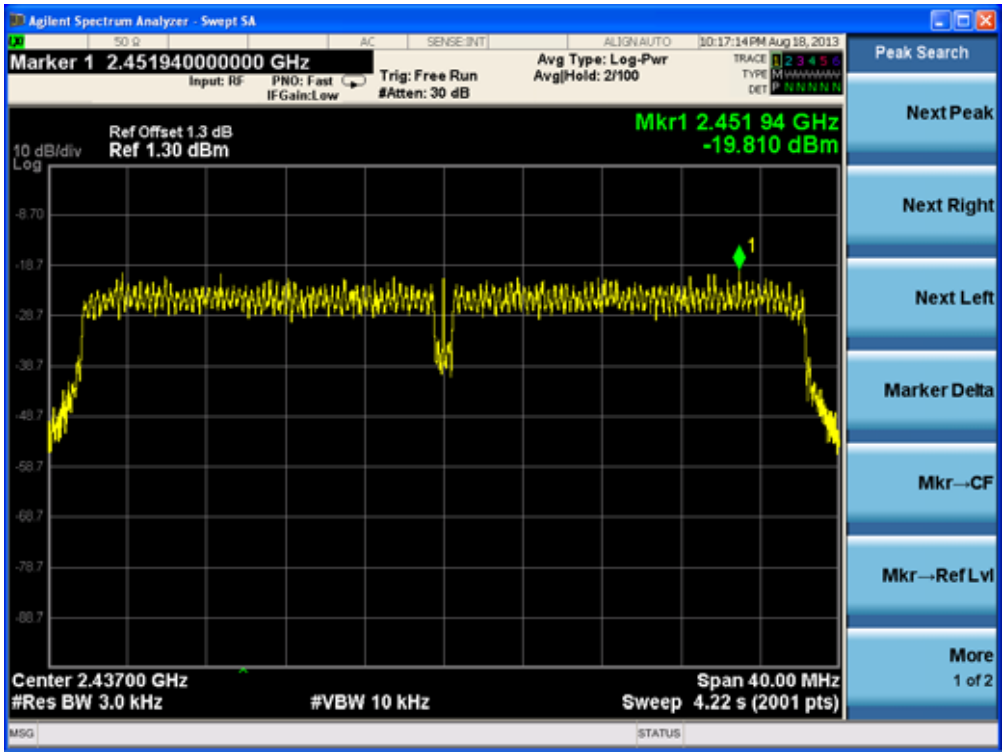
Product	:	Video Recorder
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Result
03	2422	-20.43	-20.43	8	Pass
06	2437	-19.81	-19.81	8	Pass
09	2452	-19.99	-19.99	8	Pass

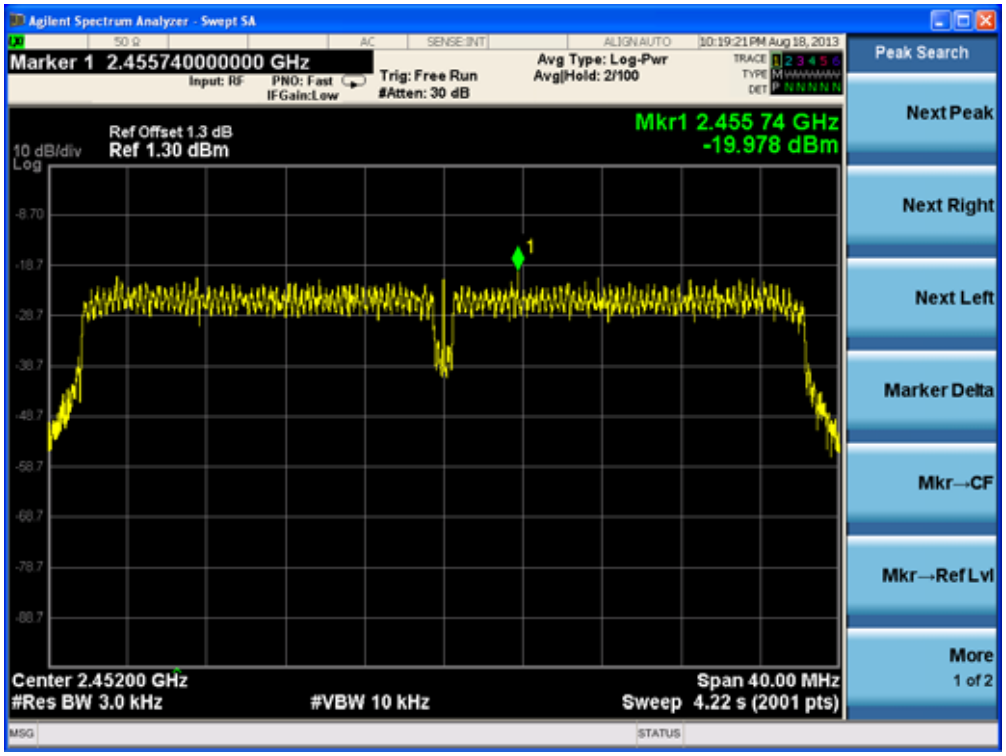
Channel 03 (2422MHz)



Channel 06 (2437MHz)



Channel 09 (2452MHz)



11. Measurement Uncertainty

Conducted Emission
The maximum measurement uncertainty is defined as: 9kHz~30MHz: ±2.02dB
Radiated disturbance
The maximum measurement uncertainty is defined as: Below 1GHz: ±3.8dB Above 1GHz: ±3.9dB
RF Antenna Conducted Spurious
The maximum measurement uncertainty is defined as: ±1.27 dB.
Radiated Emission Band Edge
The maximum measurement uncertainty is defined as: Above 1GHz: ±3.9dB
Operation Frequency Range of 20dB Bandwidth
The maximum measurement uncertainty is defined as: ±1 kHz.
Occupied Bandwidth
The maximum measurement uncertainty is defined as: ±1 kHz.
Power Output
The maximum measurement uncertainty is evaluated as ±1.27 dB.
Power Spectral Density
The maximum measurement uncertainty is evaluated as ±1.27 dB.

12. List of Measuring Instrument

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100726	2014.01.07
Two-Line V-Network	R&S	ENV216	100043	2014.03.30
Two-Line V-Network	R&S	ENV216	100044	2013.09.17
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2014.03.01
50ohm Termination	SHX	TF2	07081401	2013.09.17
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2014.01.10

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2014.03.30
Loop Antenna	R&S	HFH2-Z2	833799/003	2013.11.22
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2013.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2014.01.09

Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2014.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2014.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2014.06.11
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2014.01.11

Operation Frequency Range of 20dB Bandwidth / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014.01.21
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2014.05.07

Occupied Channel Bandwidth

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014/03/30
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2014/05/08

Power Output

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2013.11.10
Power Sensor	Anritsu	MA2411B	0846014	2013.11.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2014.05.07

Power Spectral Density

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014.01.21
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2014.05.07

Annex I

J Series	J001, J002, J003, J004, J005, J006, J007, J008, J009, J010, J011, J012, J013, J014, J015, J016, J017, J018, J019, J020, J021, J022, J023, J024, J025, J026, J027, J028, J029, J030, J031, J032, J033, J034, J035, J036, J037, J038, J039, J040, J050, J052, J055, J058, J060, J065, J068, J070, J080, J090, J095, J098
S Series	S001, S002, S003, S004, S005, S006, S007, S008, S009, S010, S011, S012, S013, S014, S015, S016, S018, S020, S022, S024, S028, S030, S036, S040, S050, S058, S060, S070, S080, S090, S198, S1000, S298, S398, S498, S598, S698, S798, S898, S518, S700, S900, S1000, S2000, S998
K Series	K1000, K2000, K3000, K4000, K5000, K6000, K7000, K8000, K9000
T Series	T1, T2, T4, T5, T6, T7, T8, T9, T10, T11, T12, T13, T14, T15, T16, T17, T18, T19, T20, T21, T22, T23, T24, T25, T26, T27, T28, T29, T30, T40, T50, T60, T70, T80, T90
X Series	X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12, X13, X14, X15, X16, X17, X18, X19, X20, X22, X24, X25, X28, X35, X40, X50, X60, X70, X80, X90
A Series	A001, A002, A003, A004, A005, A006, A007, A008, A009, A010, A011, A012, A013, A014, A015, A016, A017, A018, A019, A020, A030, A040, A050, A060, A070, A080, A090
D Series	D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D010, D012, D013, D014, D015, D016, D017, D018, D019, D020, D030, D040, D050, D060, D070, D080, D090
F Series	F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, F13, F14, F16, F18, F20, F30, F40, F50, F60, F70, F80, F90

Note: They are only different for marketing requirement.

The End