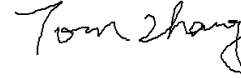


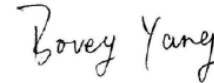
## FCC RADIO TEST REPORT

**Report Reference No.** ..... : NTEK-2011NT1101513E

Compiled by (+ signature) ..... : Tom Zhang



Approved by (+ signature) ..... : Bovey Yang



**Applicant's name** ..... : Sanwa Electronic Instrument Co., Ltd.

Address..... : 1-2-50, Yoshida Honmachi, Higashi-osaka, Osaka 578-0982  
Japan

**Manufacture's Name** ..... : Shanghai Merit Technology Corp.

Address..... : 1058 Taogan Road, Sheshan, Songjinag ,Shanghai ,China  
201602

**Test specification:**

Standard ..... : FCC Part15.249, RSS-210 Issue 8

Test procedure ..... : ANSI C63.4-2003, RSS-Gen Issue 3

**Test item description**

Product name ..... : 2.4GHz Digital High Response System

**FCC ID** ..... : **L73-90215**

**IC** ..... : **7377A90215**

Trademark ..... : SANWA

Model and/or type reference : MX-V

Rating(s) ..... : DC 6V by battery(4\*AA)

**Testing Laboratory information:**

Testing Laboratory Name ..... : NTEK Testing Technology Co., Ltd

Address ..... : 1/F, Building E, Fenda Science Park, Sanwei Community,  
Xixiang Street, Bao ' an District, Shenzhen P.R. China.

This device described above has been tested by NTEK Testing Technology Co., Ltd, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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**Testing** ..... :

Date of receipt of test item ..... : 2 Nov. 2011

Date (s) of performance of tests ..... : 2 Nov. 2011 ~2 Dec. 2011

Date of Issue..... : 2 Dec. 2011

Test Result..... : **Pass**

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## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

<b>FCC Part15, Subpart C (15.249) &amp; RSS-Gen Issue 3 &amp; RSS-210 Issue 8</b>			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	Note(1)
15.203	Antenna Requirement	Pass	
15.249	Radiated Spurious Emission	Pass	
15.249	Occupied Bandwidth	Pass	

**NOTE:**

(1) " N/A" denotes test is not applicable in this Test Report.

## 1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.

FCC FRN Registration Nombre:238937; IC Registration Nombre:9270A-1

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	Radiated Emission Test	$\pm 3.17\text{dB}$
3	RF power,conducted	$\pm 0.16\text{dB}$
4	Spurious emissions,conducted	$\pm 0.21\text{dB}$
5	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
6	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	2.4GHz Digital High Response System	
Trade Name	SANWA	
Model Name	MX-V	
OEM Brand/Model Name	N/A	
Model Difference	N/A	
Product Description	The EUT is a 2.4GHz Digital High Response System	
	Operation Frequency:	FHSS :2415~2465 MHz DSS: 2403-2466MHz
	Modulation Type:	FHSS, DSS
	Antenna Designation:	Printed ANT
	Antenna Gain(Peak)	2.0 dBi
EIRP	FHSS:105.97dbuv/m@3m DSS: 103.79dBuv/m@3m	
Channel List	Please refer to the Note 2.	
Power Source	DC 6V by battery(supplied from 1.5V*4cell "AA" alkaline battery)	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	N/A	
EUT Modification(s)	N/A	

Note:

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

2. FHSS Mode:

Channel	Frequency (MHz)
01	2415
02	2416
03	2417
.....	.....
49	2463
50	2464
51	2465

DSS Mode:

Channel	Frequency (MHz)
01	2403
02	2404
03	2405
.....	.....
62	2464
63	2465
64	2466

3.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	Printed Antenna	NA	2.0	Antenna

## 2.2 DESCRIPTION OF TEST MODES

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

Pretest Mode	Description
Mode 1	FHSS
Mode 2	DSS

For Conducted Emission	
Final Test Mode	Description
-	"N/A" denotes test is not applicable in this Test Report

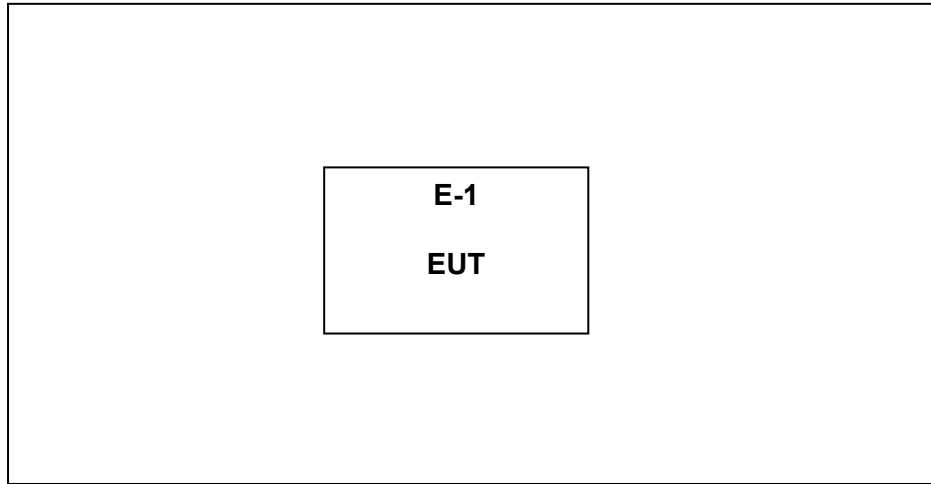
For Radiated Emission	
Final Test Mode	Description
Mode 1	FHSS
Mode 2	DSS

Note:

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

### 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated:





**2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)**

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	2.4GHz Digital High Response System	SANWA	MX-V	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

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

**2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS**

**Radiation Test equipment**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	E4407B	160400005	Jul. 06. 2012
2	Test Receiver	R&S	ESPI	101318	Jul. 06. 2012
3	Bilog Antenna	TESEQ	CBL6111D	31216	Jul. 06. 2012
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	Jul. 06. 2012
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	Jul. 06. 2012
6	Horn Antenna	EM	EM-AH-10180	2011071402	Jul. 06. 2012
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	Jul. 06. 2012
8	Amplifier	EM	EM-30180	060538	Jul. 06. 2012
9	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 06. 2012
10	Power Meter	R&S	NRVS	100696	Jul. 06. 2012

**Conduction Test equipment**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Receiver	R&S	ESCI	101160	Jul. 06. 2012
2	LISN	R&S	ENV216	101313	Jul. 06. 2012
3	LISN	EMCO	3816/2	00042990	Jul. 06. 2012
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	Jul. 06. 2012
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	Jul. 06. 2012
6	Absorbing clamp	R&S	MOS-21	100423	Jul. 06. 2012

### **3. TEST RESULT**

#### **3.1 ANTENNA REQUIREMENT**

##### **3.1.1 STANDARD REQUIREMENT**

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

##### **3.1.2 EUT ANTENNA**

The EUT antenna is Ú!å Åå Antenna. It comply with the standard requirement.

### 3.2 CONDUCTED EMISSION MEASUREMENT

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

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

0.15 -0.5			66 - 56 *	56 - 46 *	LP002.
0.50 -5.0			56.00	46.00	LP002.
5.0 -30.0			60.00	50.00	LP002.

Note:

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

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

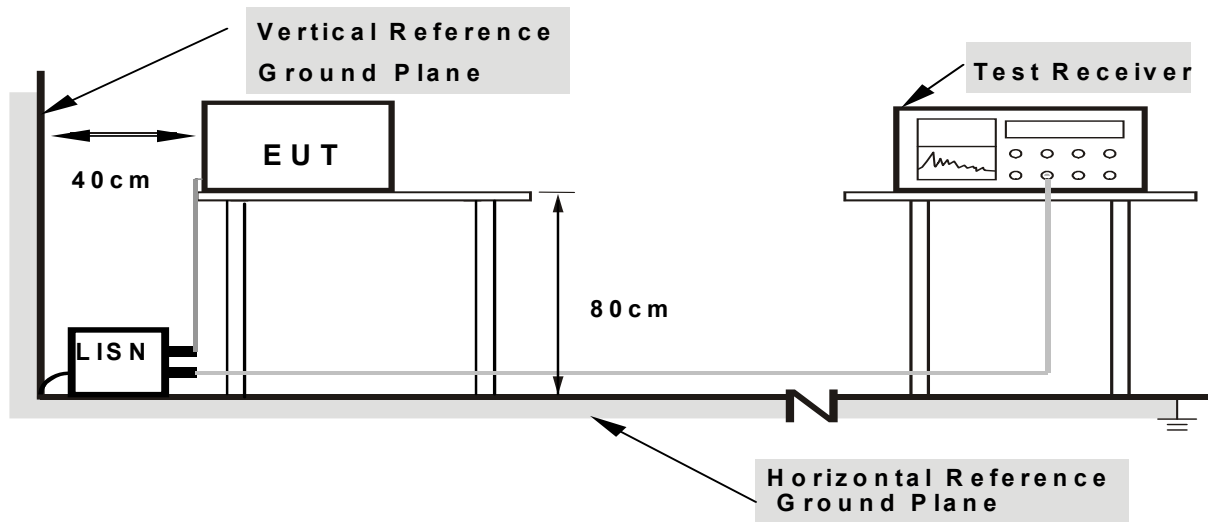
**3.2.2 TEST PROCEDURE**

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

**3.2.3 DEVIATION FROM TEST STANDARD**

No deviation

**3.2.4 TEST SETUP**



- Note:**
- 1. Support units were connected to second LISN.
  - 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

### 3.2.5 TEST RESULT

N/A

### 3.3 RADIATED EMISSION MEASUREMENT

#### 3.3.1 Radiated Emission Limits ( FCC 15.209 )

Frequencies (MHz)	Field Strength (microrvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).

#### LIMITS OF RADIATED EMISSION MEASUREMENT ( FCC 15.249)

Frequency of Emission (MHz)	Field Strength of fundamental ((millivolts /meter)	Field Strength of Harmonics (microvolts/meter)
2400 - 2483.5	50	500

Notes:

- (1) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

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

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

**3.3.2 TEST PROCEDURE**

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

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

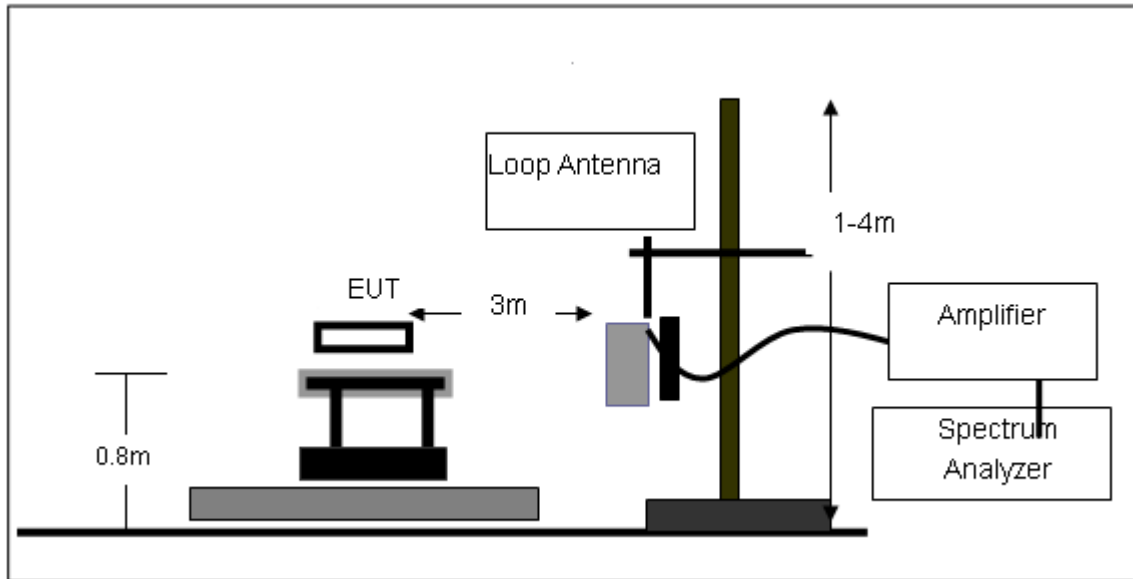
**3.3.3 DEVIATION FROM TEST STANDARD**

No deviation

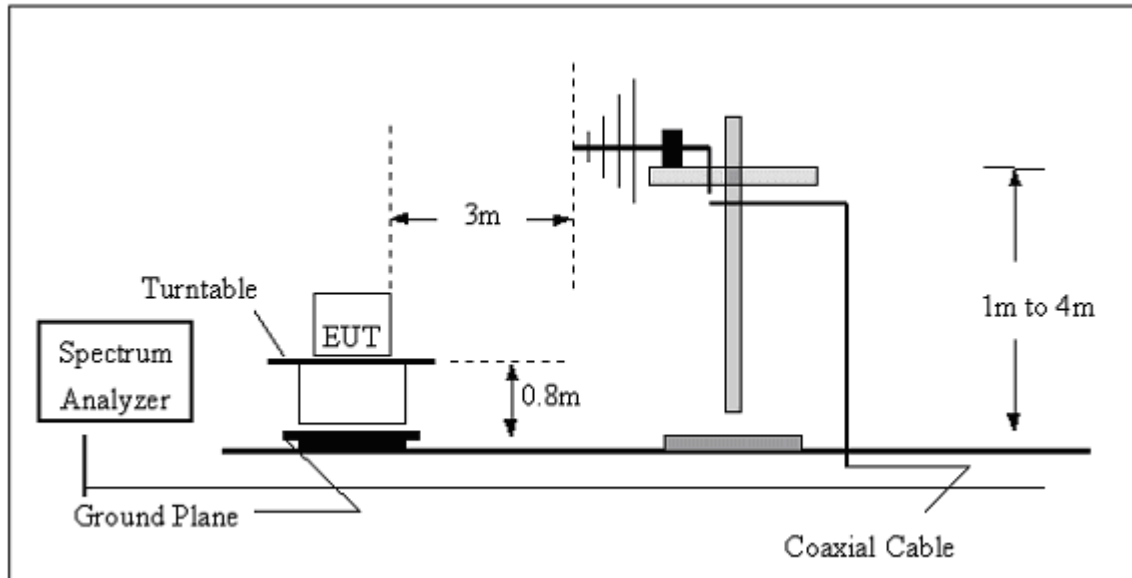


### 3.3.4 TEST SETUP

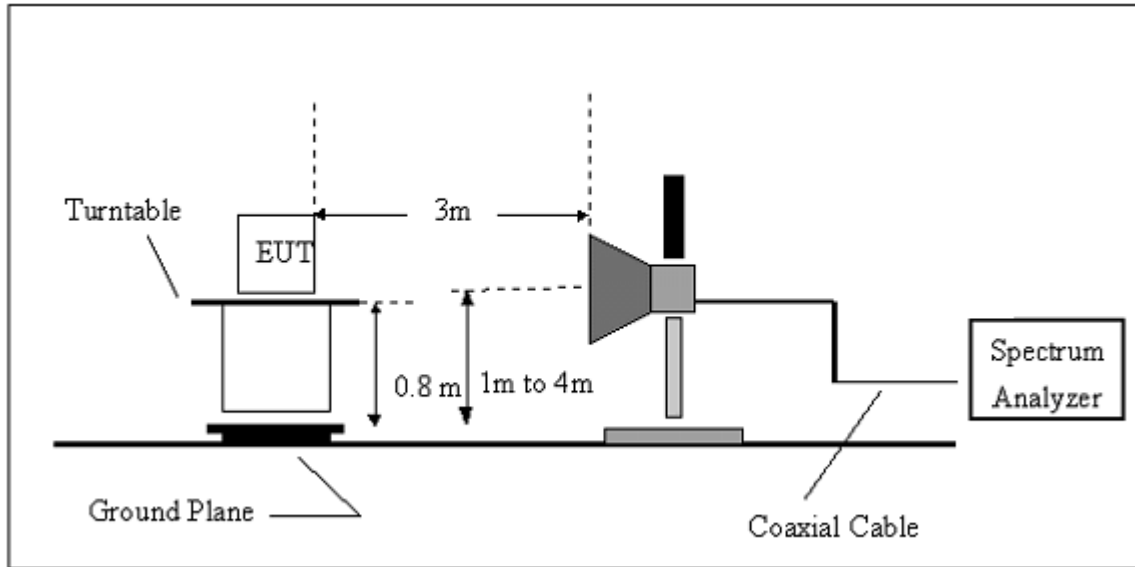
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



**3.3.5 TEST RESULTS (BLOW 30MHz)**

EUT :	2.4GHz Digital High Response System	Model Name. :	MX-V
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC6V by battery
Test Mode :	FHSS/DSS	Polarization :	--

Freq. (MHz)	Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	State P/F
--	--	--	--	PASS
--	--	--	--	PASS

**NOTE:**

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $20 \log(\text{specific distance}/\text{test distance})(\text{dB})$ ;

Limit line = specific limits(dBuv) + distance extrapolation factor.

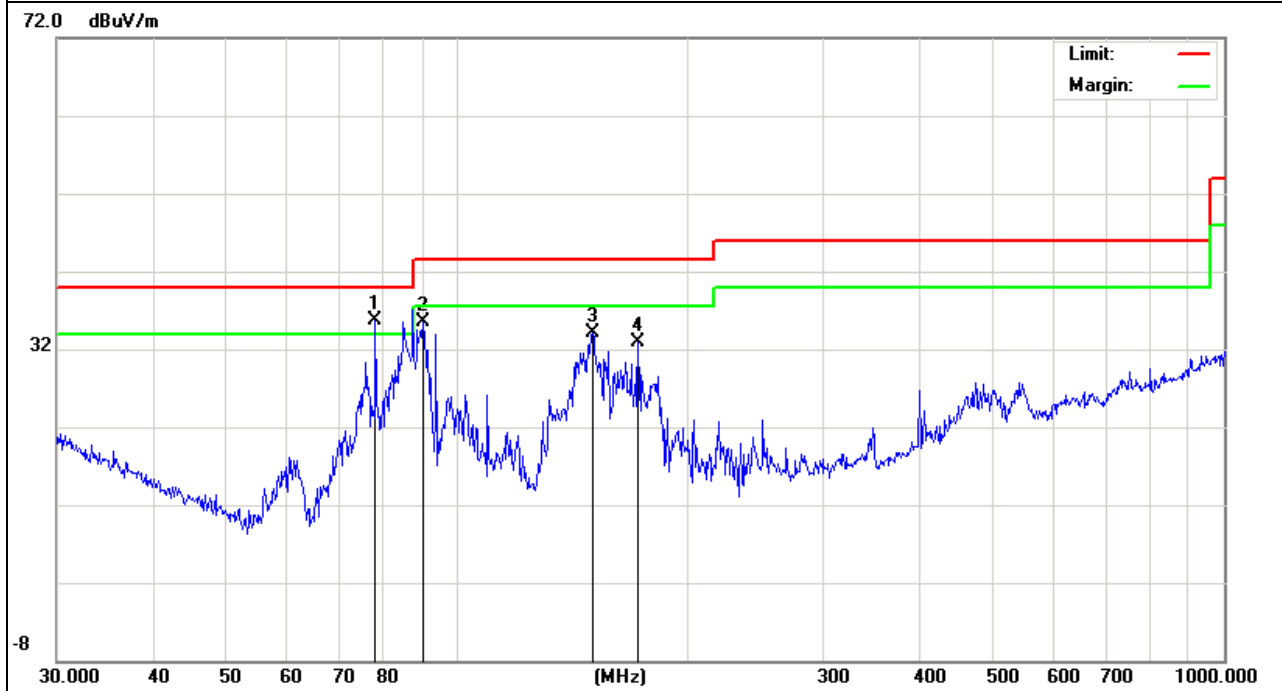
### 3.3.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
78.1389	28.28	7.37	35.65	40	-4.35	Quasi-Peak
90.2205	26.2	9.38	35.58	43.5	-7.92	Quasi-Peak
150.0107	22.42	11.78	34.2	43.5	-9.3	Quasi-Peak
171.9944	23	9.89	32.89	43.5	-10.61	Quasi-Peak

Remark:

- Factor = Antenna Factor + Cable Loss – Pre-amplifier.

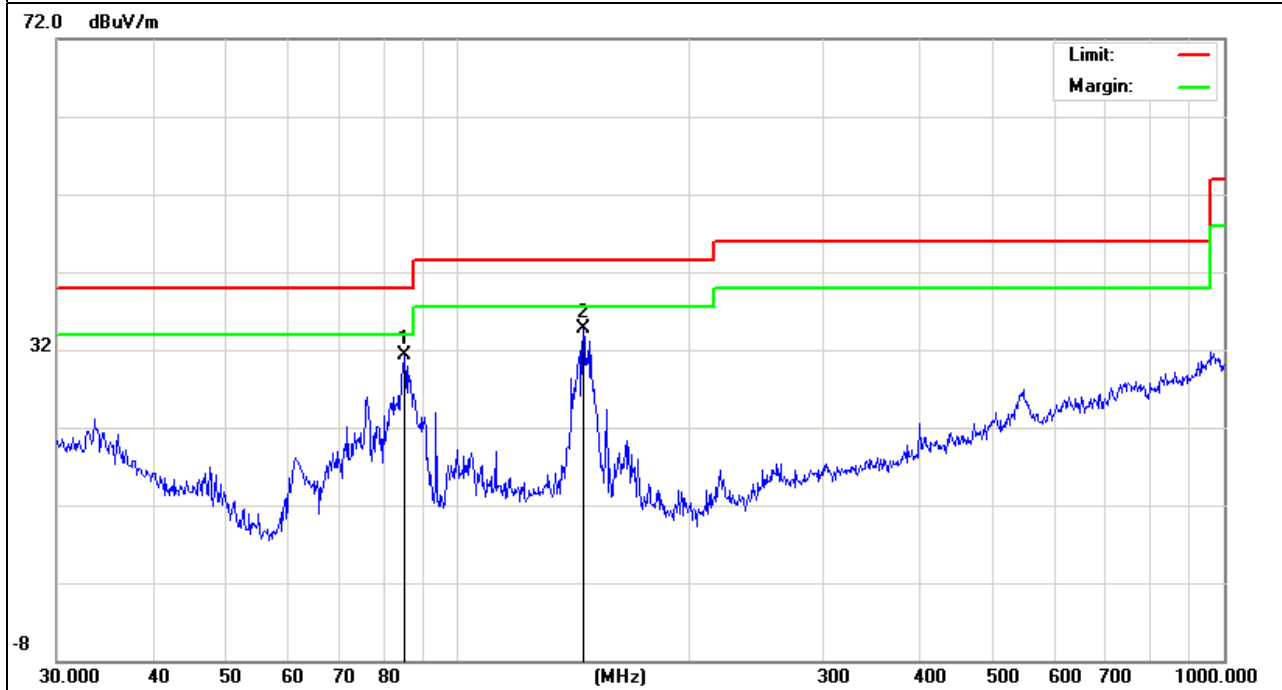


EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type
85.298	22.61	8.78	31.39	40	-8.61	Quasi-Peak
145.8608	22.73	11.9	34.63	43.5	-8.87	Quasi-Peak

Remark:

- Factor = Antenna Factor + Cable Loss – Pre-amplifier.

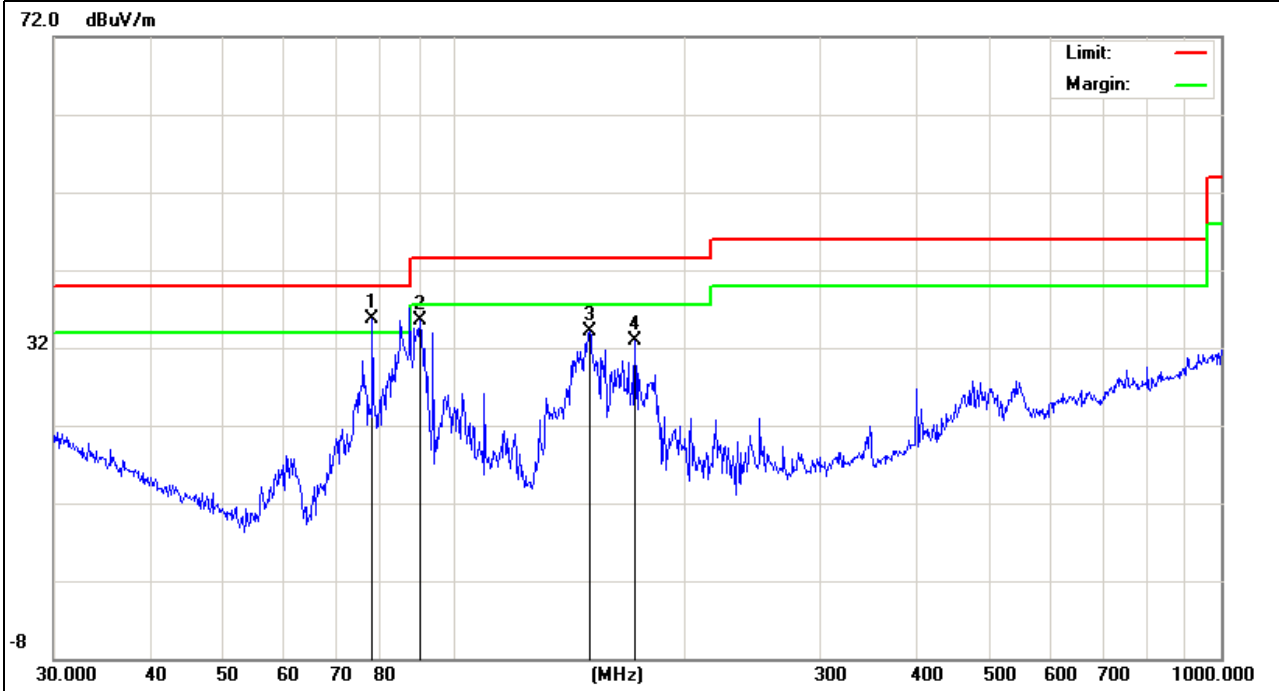


EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
78.9651	25.16	7.54	32.7	40	-7.3	Quasi-Peak
84.9993	26.8	8.72	35.52	40	-4.48	Quasi-Peak
90.2205	26.2	9.38	35.58	43.5	-7.92	Quasi-Peak
157.5586	20.72	10.98	31.7	43.5	-11.8	Quasi-Peak

Remark:

- Factor = Antenna Factor + Cable Loss – Pre-amplifier.

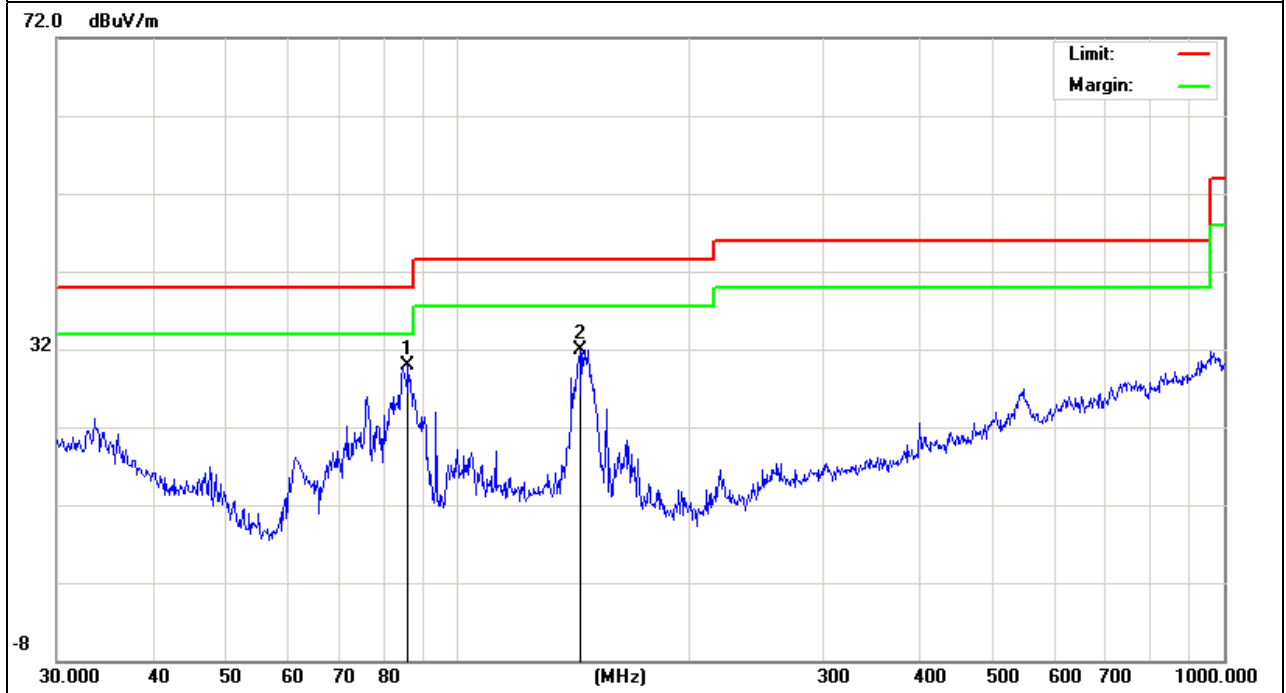


EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type
86.2001	21.02	8.92	29.94	40	-10.06	Quasi-Peak
144.3348	20.01	11.92	31.93	43.5	-11.57	Quasi-Peak

Remark:

- Factor = Antenna Factor + Cable Loss – Pre-amplifier.

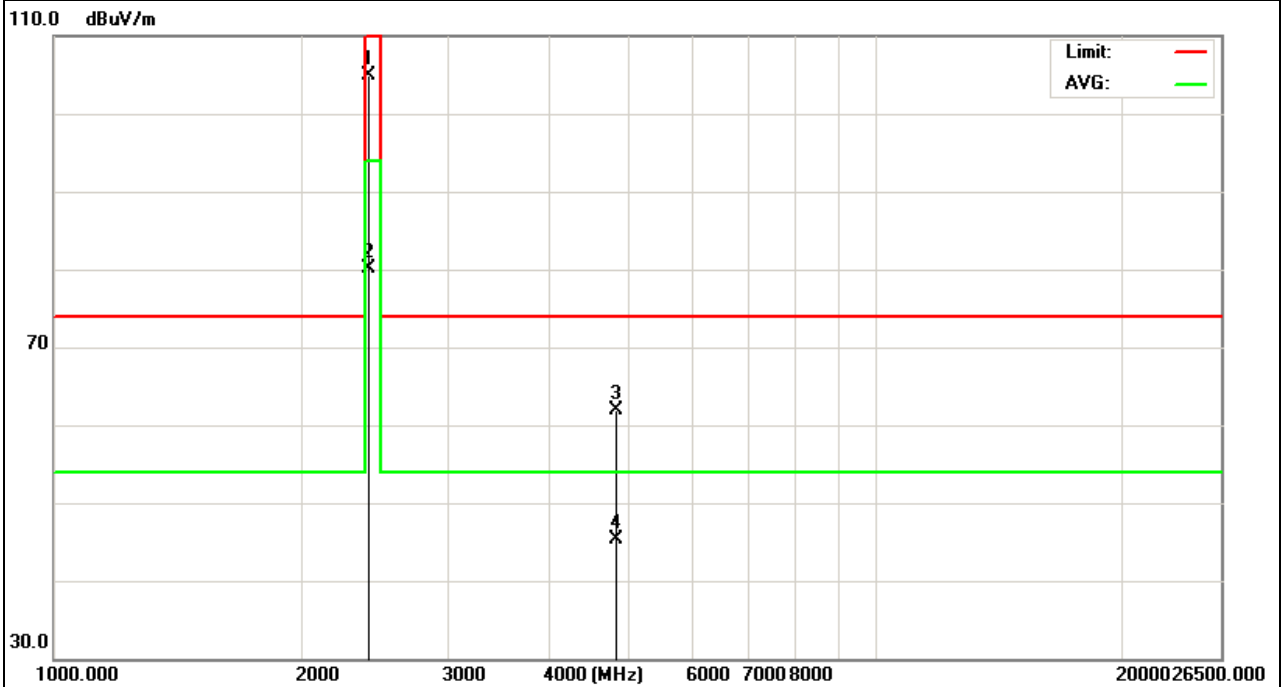


### 3.3.7 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/2415MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2415	122.45	-17.45	105	114.0 0	-9	peak
2415	97.47	-17.45	80.02	94	-13.98	AVG
4830	70.11	-8.11	62	74	-12	peak
4830	53.51	-8.11	45.4	54	-8.6	AVG

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

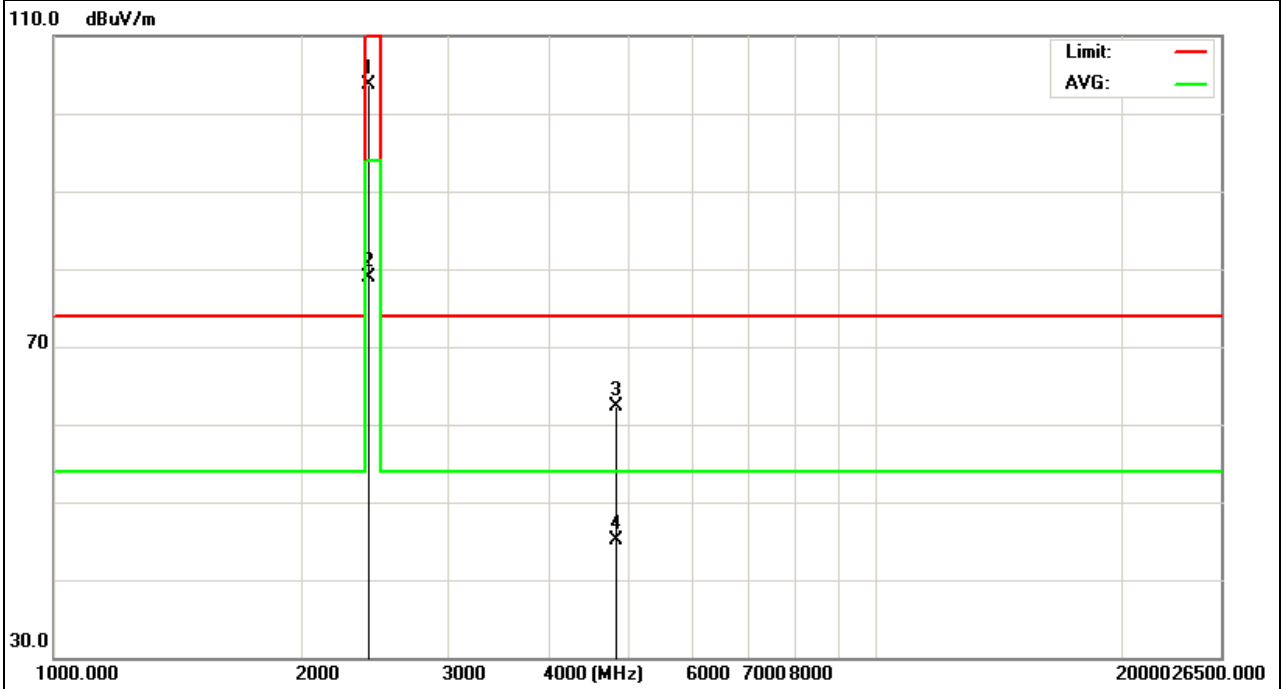




EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/2415MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2415	121.22	-17.45	103.77	114.0 0	-10.23	peak
2415	96.45	-17.45	79	94	-15	AVG
4830	70.47	-8.11	62.36	74	-11.64	peak
4830	53.21	-8.11	45.1	54	-8.9	AVG

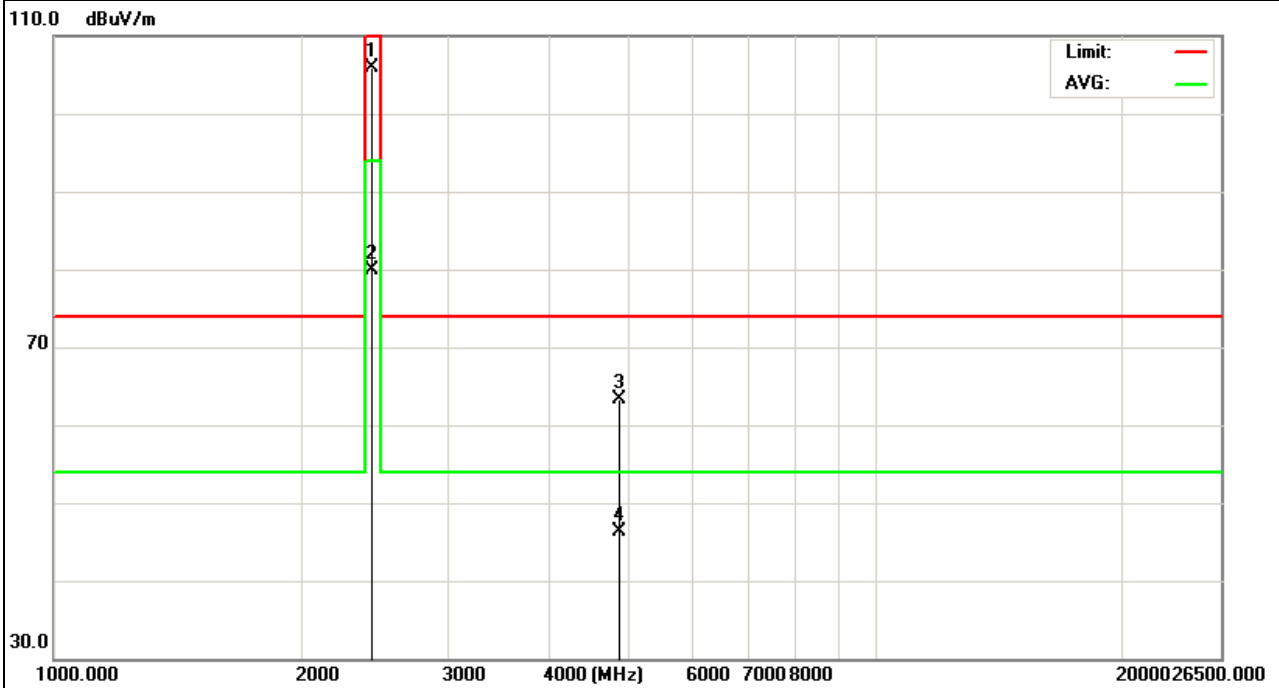
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/ 2440MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type
2440	123.42	-17.45	105.97	114.0 0	-8.03	peak
2440	97.41	-17.45	79.96	94	-14.04	AVG
4880	71.51	-8.22	63.29	74	-10.71	peak
4880	54.42	-8.22	46.2	54	-7.8	AVG

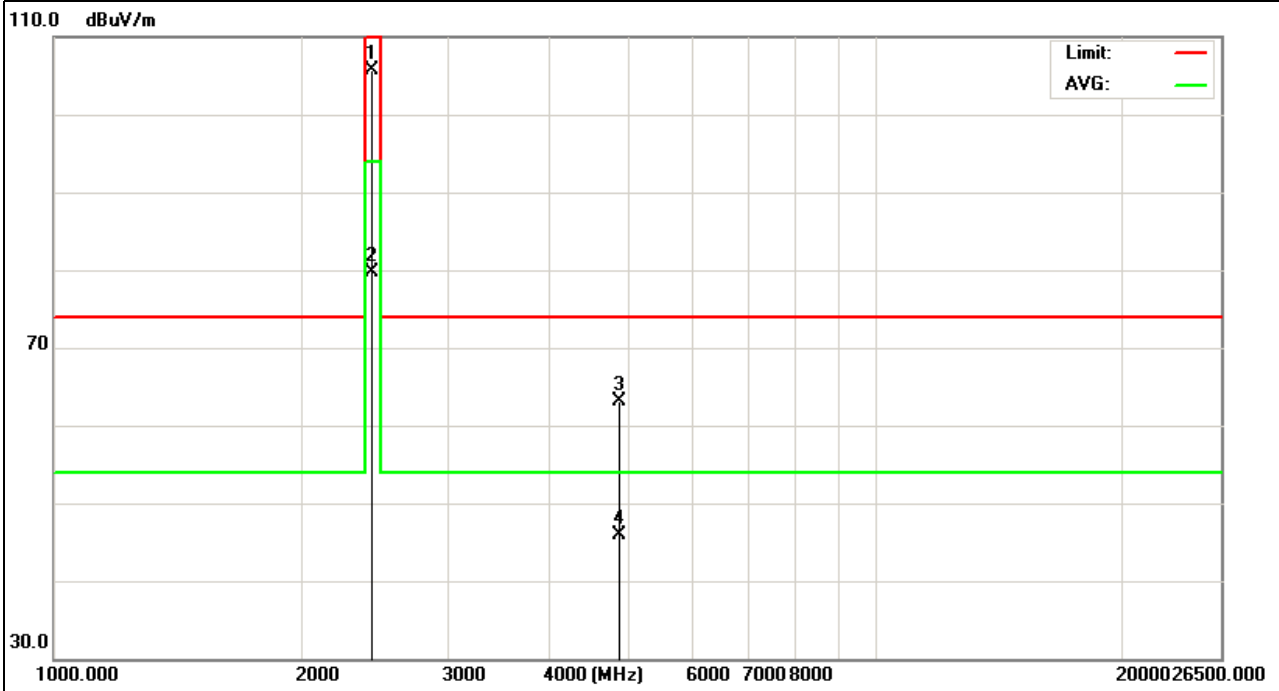
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/ 2440MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2440	123.13	-17.45	105.68	114.0 0	-8.32	peak
2440	97.25	-17.45	79.8	94	-14.2	AVG
4880	71.41	-8.22	63.19	74	-10.81	peak
4880	54.09	-8.22	45.87	54	-8.13	AVG

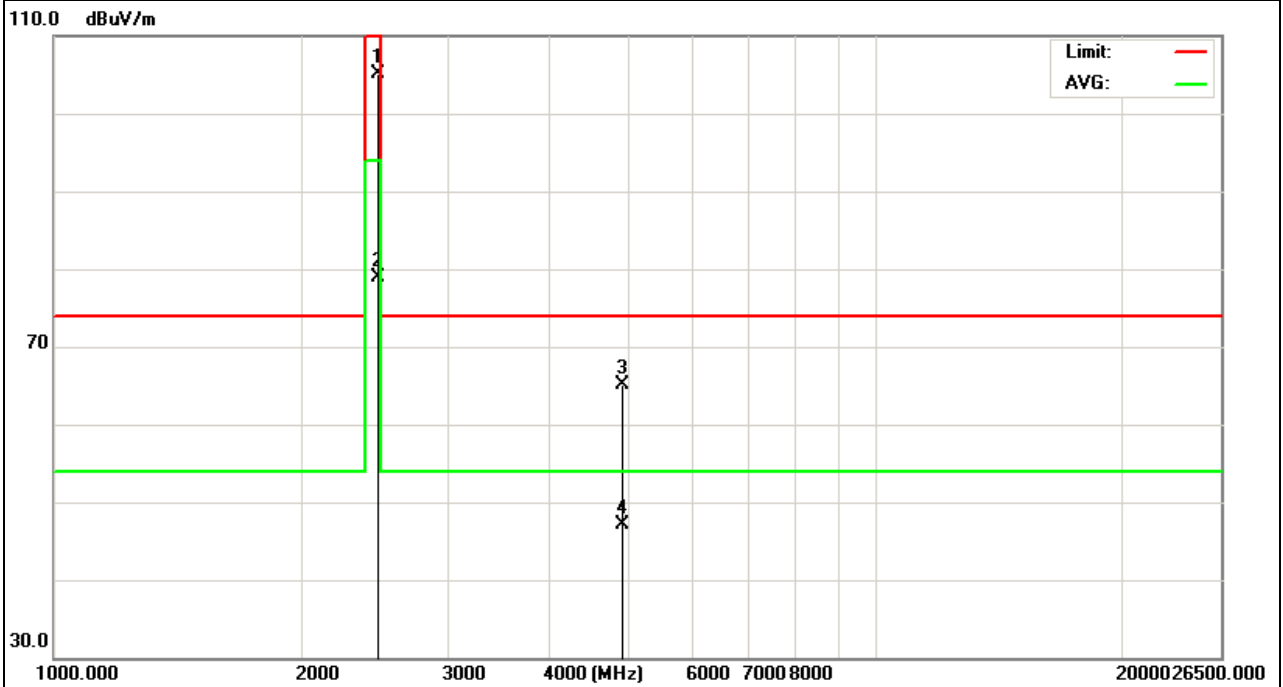
Remark:  
 Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/ 2465MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2465	122.42	-17.4	105.02	114.0 0	-8.98	peak
2465	96.32	-17.4	78.92	94	-15.08	AVG
4930	73.31	-8.19	65.12	74	-8.88	peak
4930	55.21	-8.19	47.02	54	-6.98	AVG

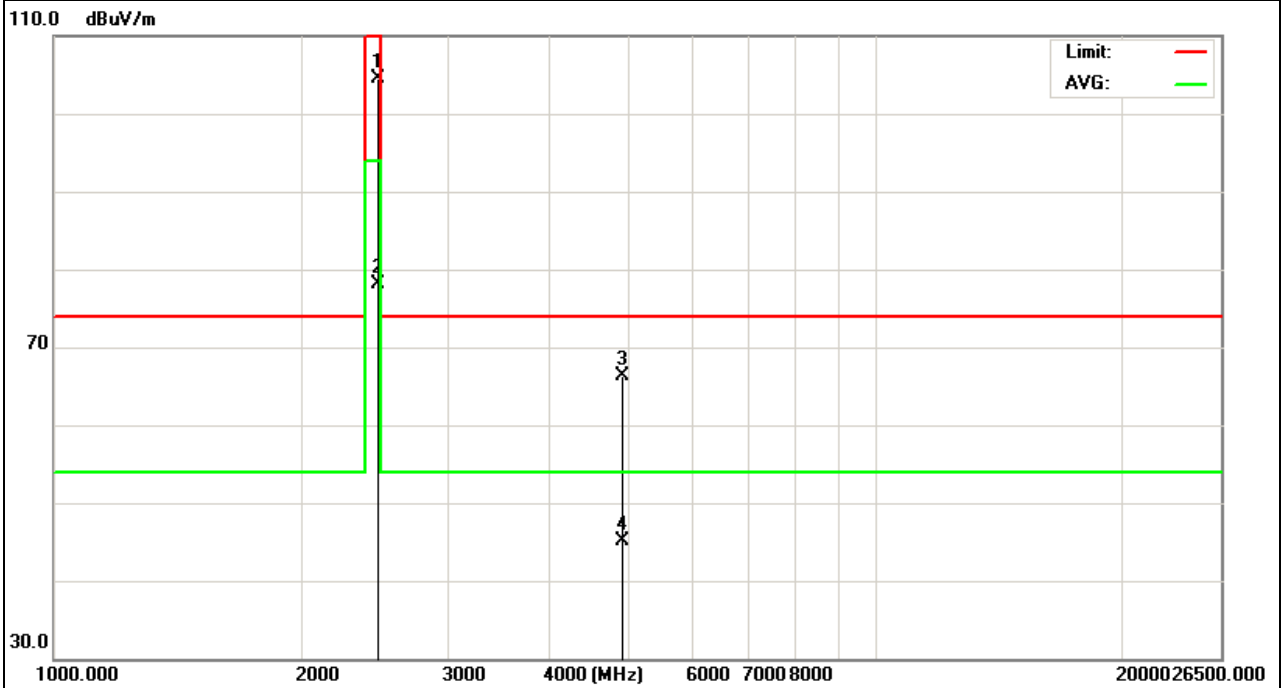
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/ 2465MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2465	121.87	-17.4	104.47	114.0 0	-9.53	peak
2465	95.44	-17.4	78.04	94	-15.96	AVG
4930	74.44	-8.19	66.25	74	-7.75	peak
4930	53.33	-8.19	45.14	54	-8.86	AVG

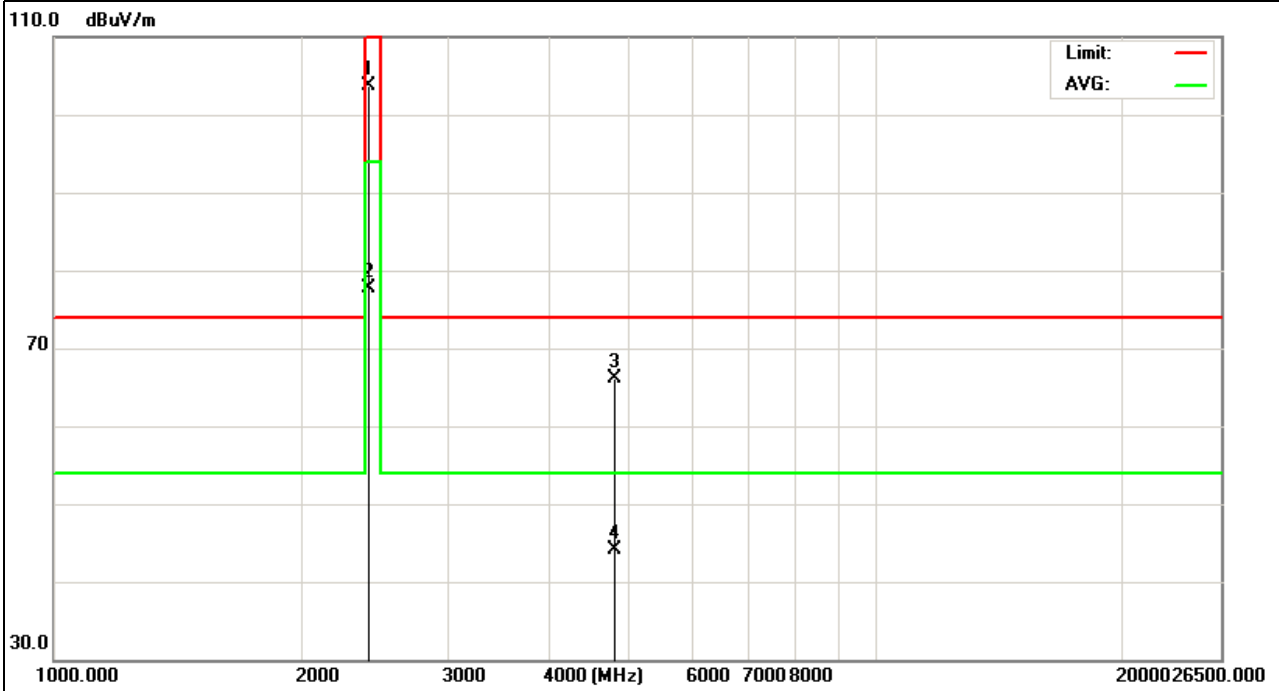
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2403MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2403	121.25	-17.46	103.79	114.0 0	-10.21	peak
2403	95.24	-17.46	77.78	94	-16.22	AVG
4806	74.32	-8.16	66.16	74	-7.84	peak
4806	52.24	-8.16	44.08	54	-9.92	AVG

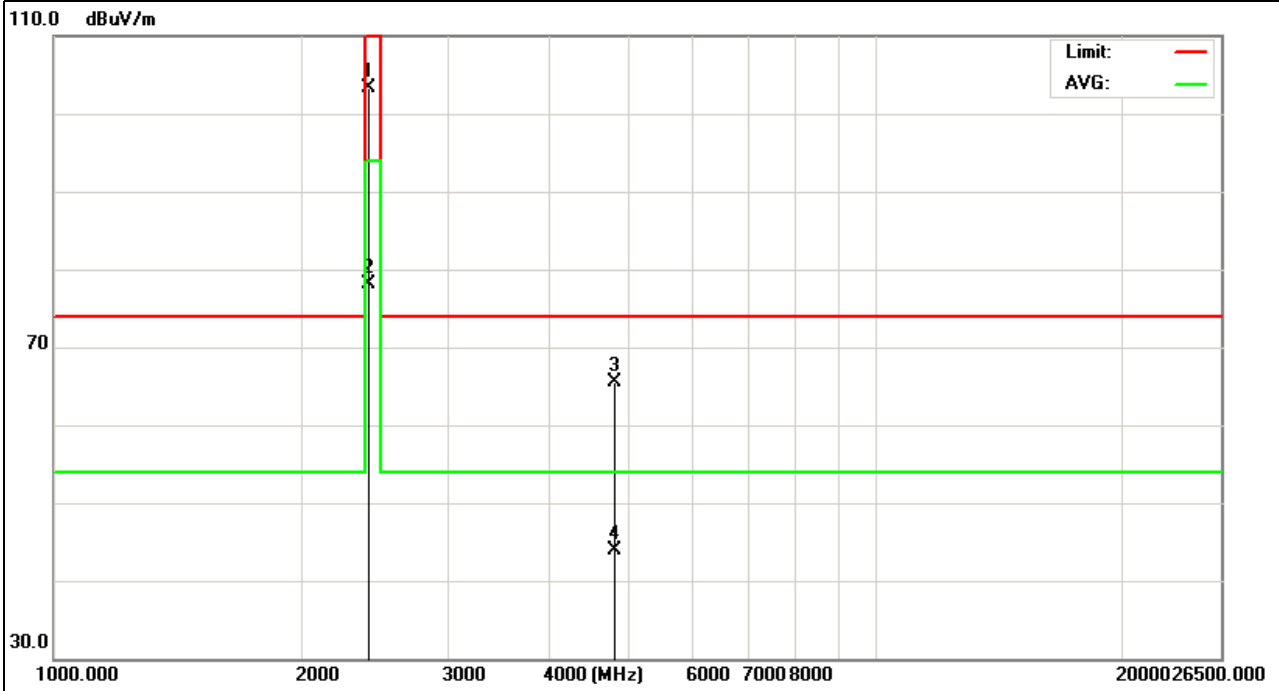
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2403MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2403	120.67	-17.46	103.21	114.0 0	-10.79	peak
2403	95.65	-17.46	78.19	94	-15.81	AVG
4806	73.74	-8.16	65.58	74	-8.42	peak
4806	51.99	-8.16	43.83	54	-10.17	AVG

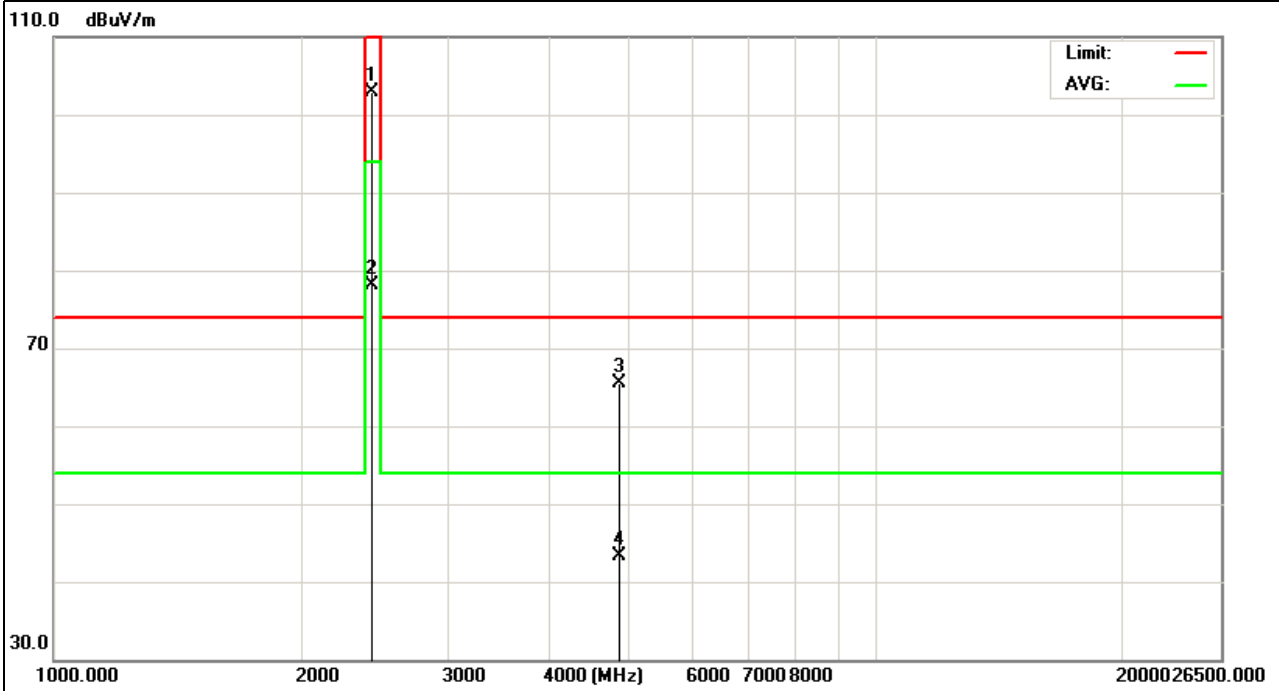
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2440MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2440	120.31	-17.45	102.86	114.0 0	-11.14	peak
2440	95.52	-17.45	78.07	94	-15.93	AVG
4880	73.64	-8.22	65.42	74	-8.58	peak
4880	51.46	-8.22	43.24	54	-10.76	AVG

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

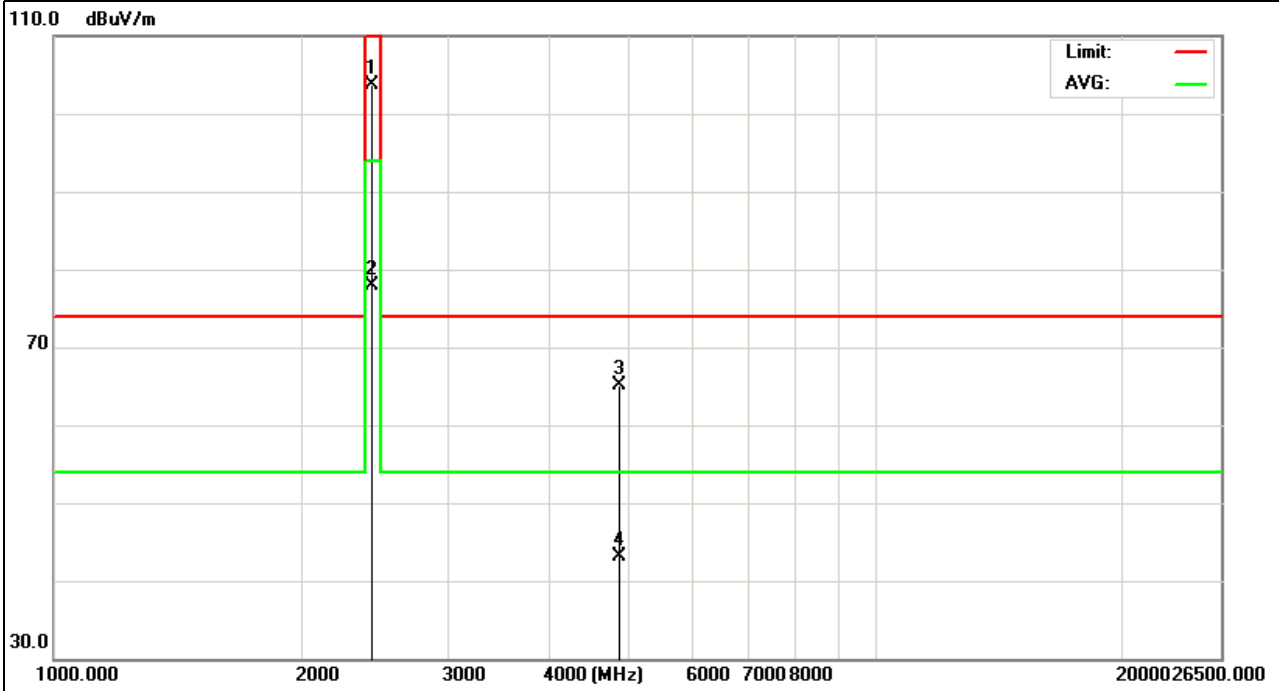




EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2440MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2440	121.11	-17.45	103.66	114.0 0	-10.34	peak
2440	95.41	-17.45	77.96	94	-16.04	AVG
4880	73.36	-8.22	65.14	74	-8.86	peak
4880	51.41	-8.22	43.19	54	-10.81	AVG

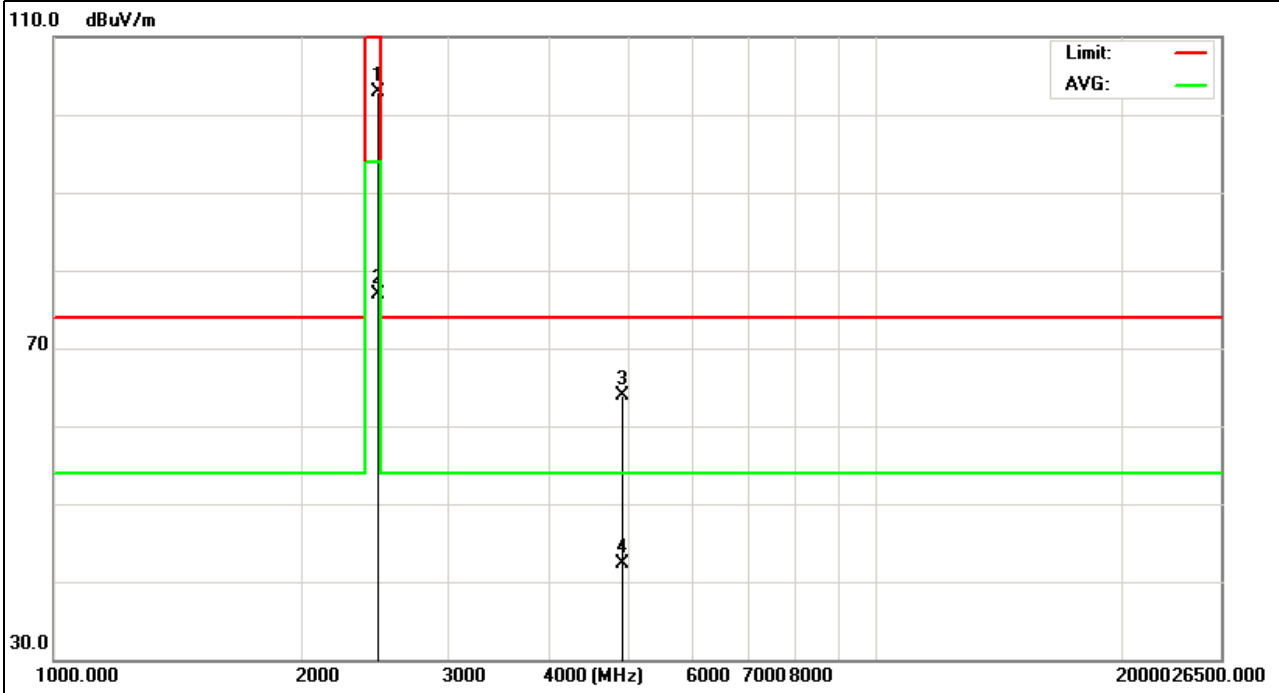
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2466MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2466	120.23	-17.4	102.83	114.0 0	-11.17	peak
2466	94.34	-17.4	76.94	94	-17.06	AVG
4932	72.13	-8.18	63.95	74	-10.05	peak
4932	50.45	-8.18	42.27	54	-11.73	AVG

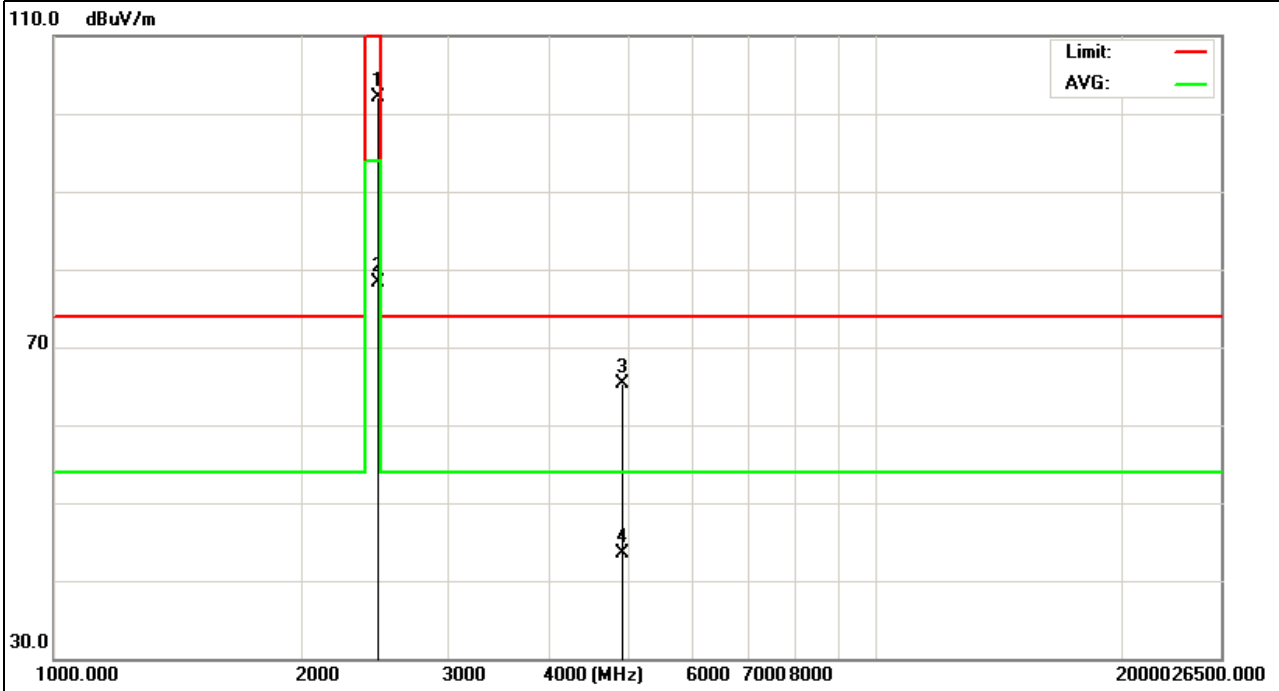
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2466MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2466	119.42	-17.4	102.02	114.0 0	-11.98	peak
2466	95.61	-17.4	78.21	94	-15.79	AVG
4932	73.51	-8.18	65.33	74	-8.67	peak
4932	51.62	-8.18	43.44	54	-10.56	AVG

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

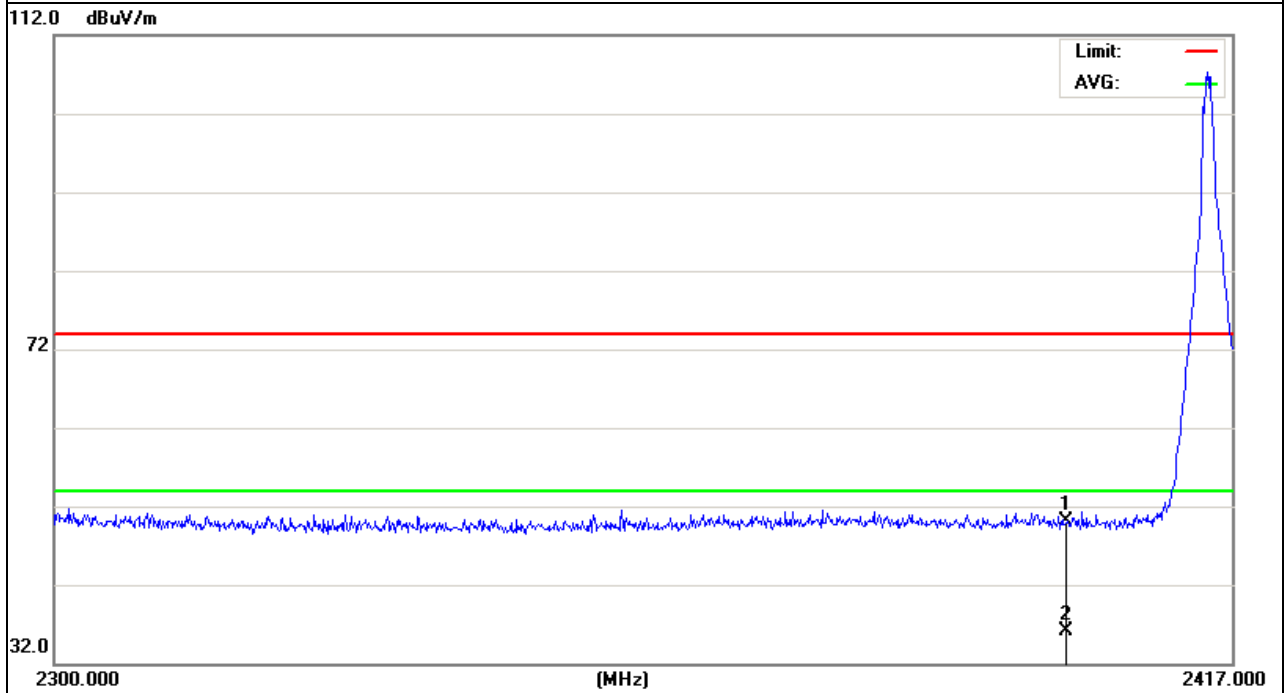


**Band Edge Emission:**

EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/ 2415MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	65.07	-14.92	50.15	74	-23.85	peak
2400	51.00	-14.92	36.08	54	-17.92	AVG

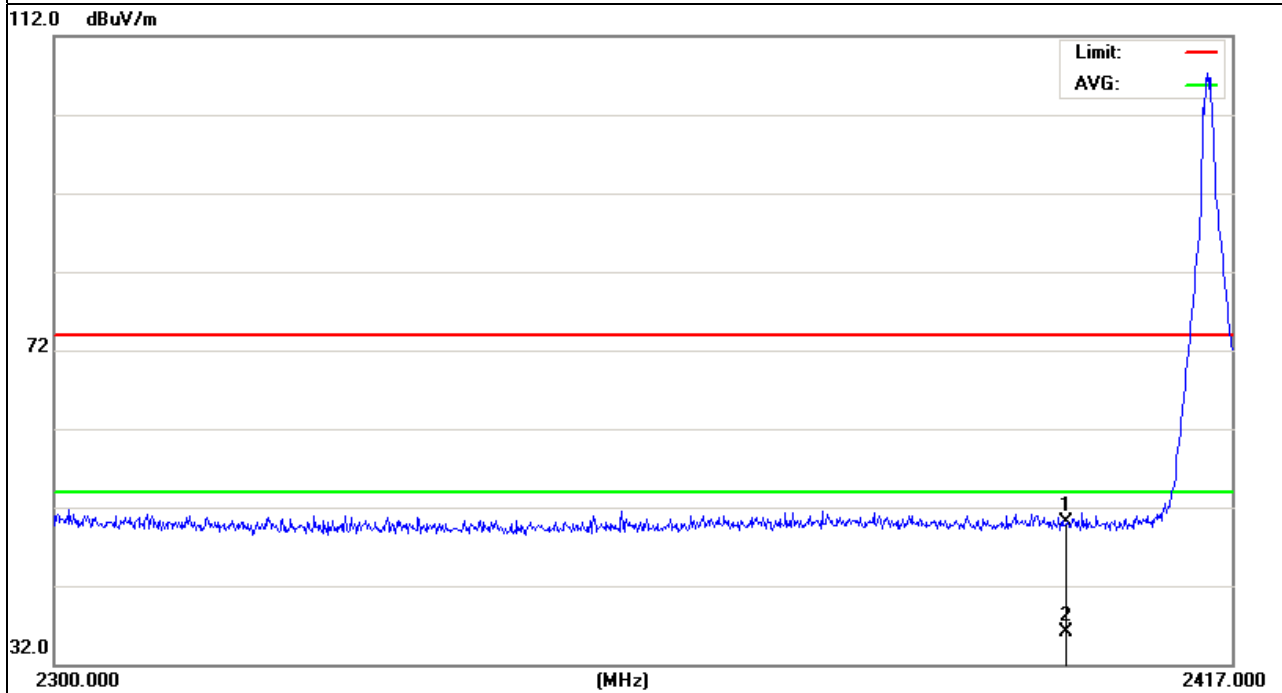
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/ 2415MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	65.05	-14.92	50.13	74	-23.87	peak
2400	51.07	-14.92	36.15	54	-17.85	AVG

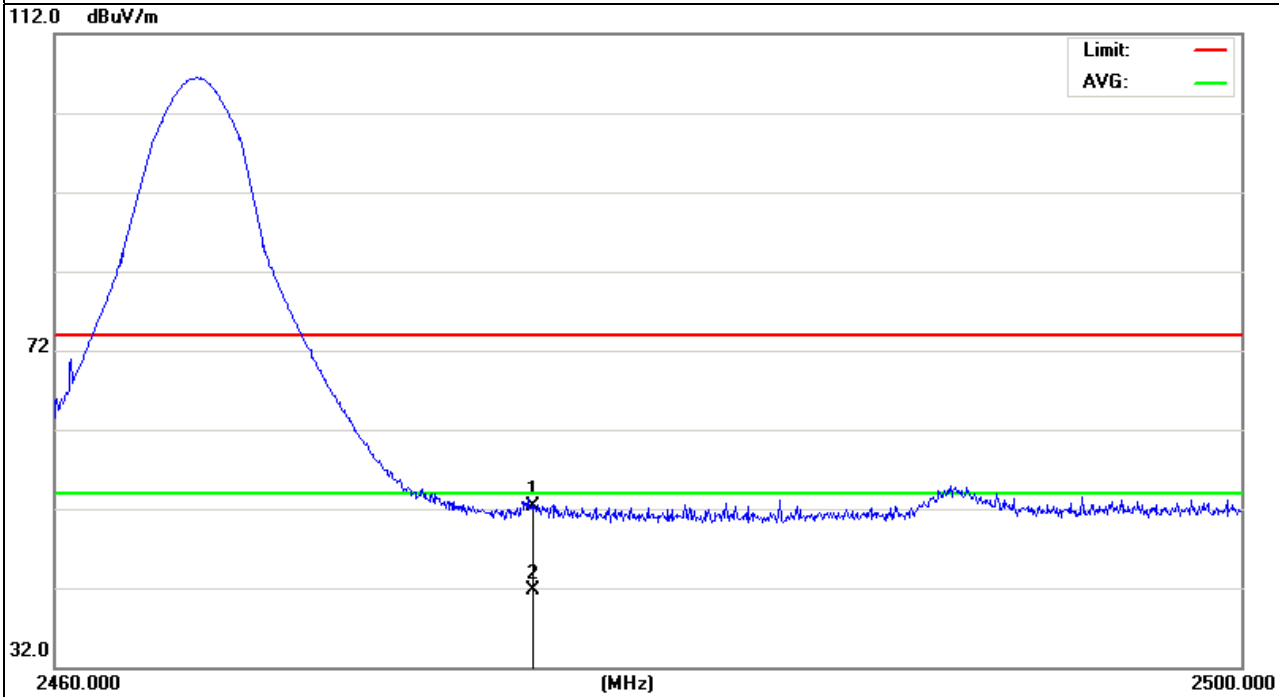
Remark:  
 Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/2465MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	65.23	-15.12	50.11	74	-23.89	peak
2483.5	51.45	-15.12	36.33	54	-17.67	AVG

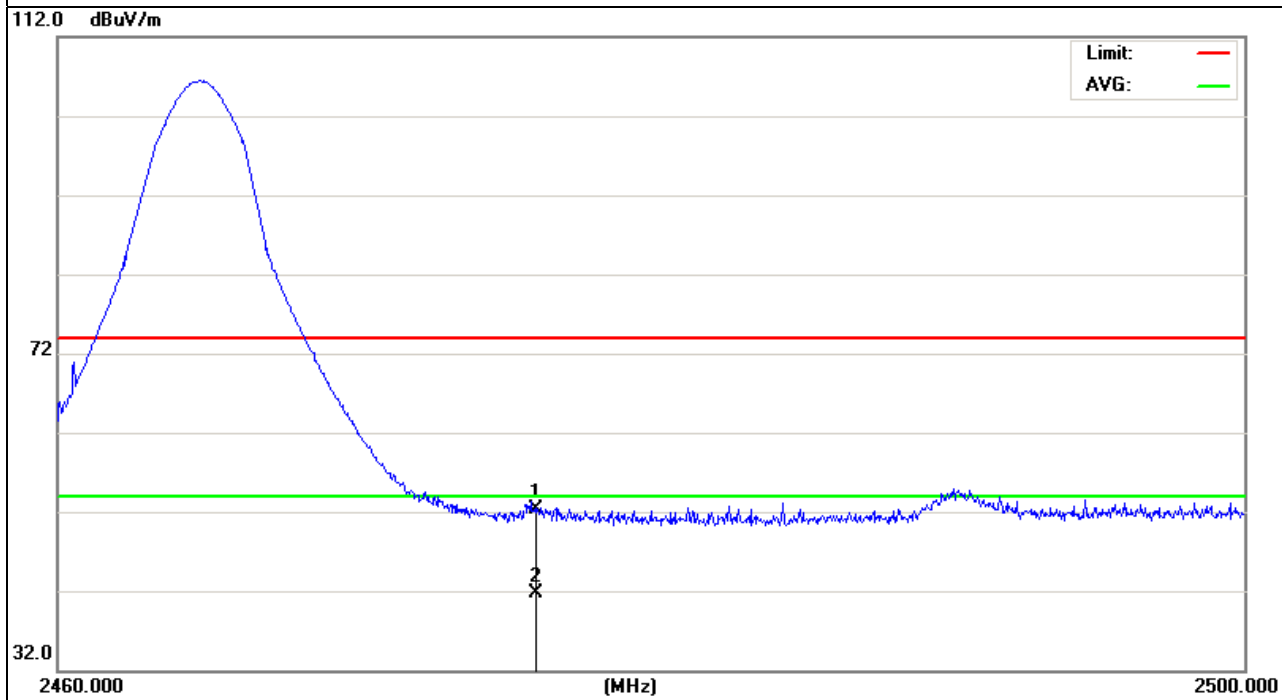
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	FHSS/2465MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	65.44	-15.12	50.32	74	-23.68	peak
2483.5	51.01	-15.12	35.89	54	-18.11	AVG

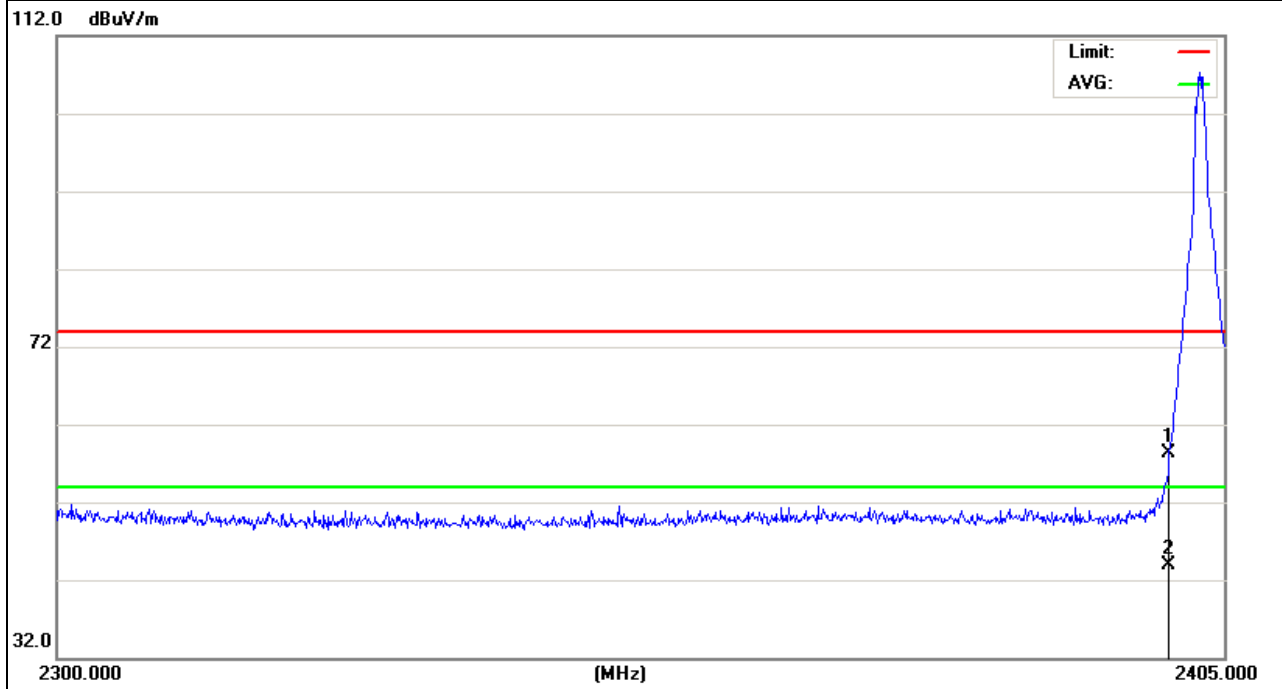
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2403MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	75.07	-14.92	55.15	74	-18.85	peak
2400	54.00	-14.92	39.08	54	-14.92	AVG

Remark:  
 Factor = Antenna Factor + Cable Loss – Pre-amplifier.

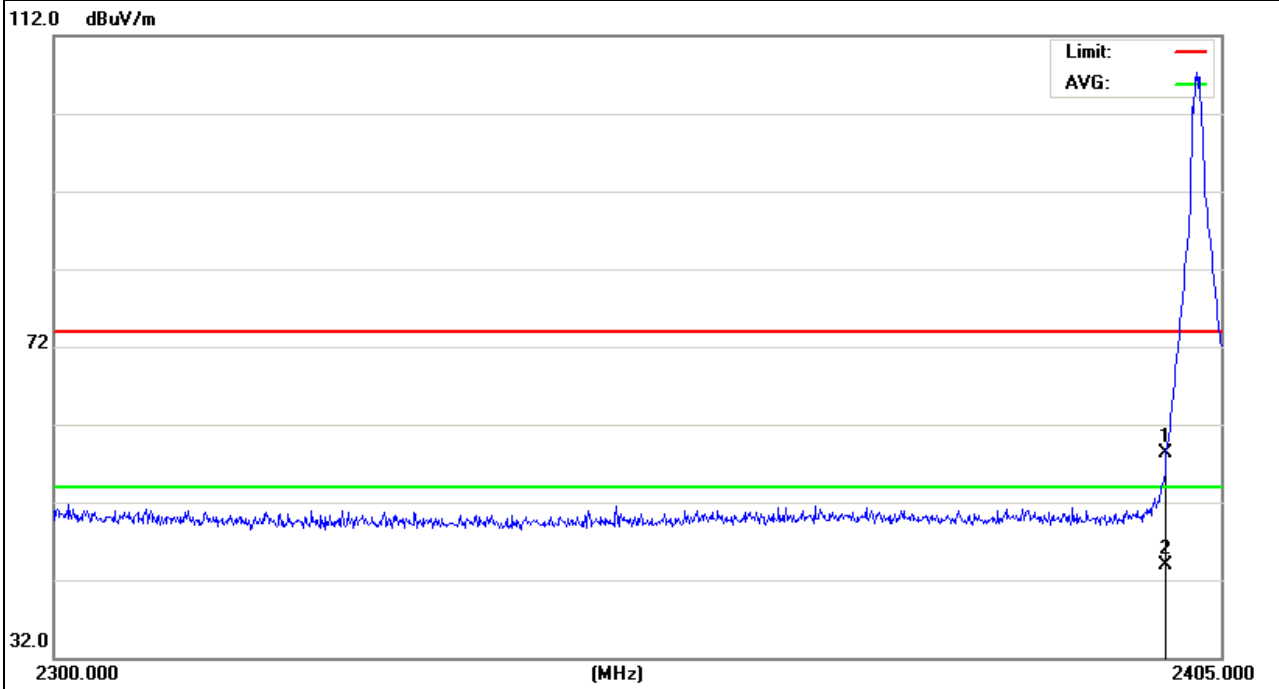




EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2403MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	71.05	-14.92	56.13	74	-17.87	peak
2400	54.07	-14.92	39.15	54	-14.85	AVG

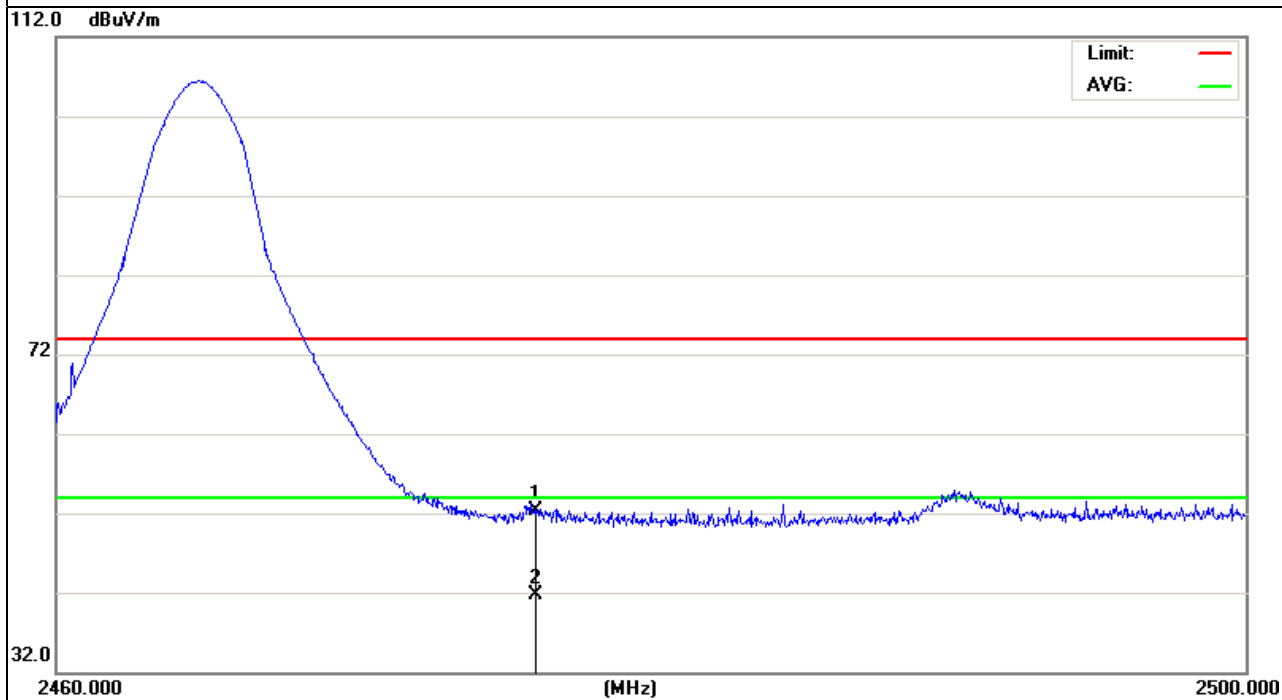
Remark:  
 Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2466MHz	Polarization :	Vertical
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	66.83	-15.12	51.71	74	-22.29	peak
2483.5	56.67	-15.12	41.55	54	-12.45	AVG

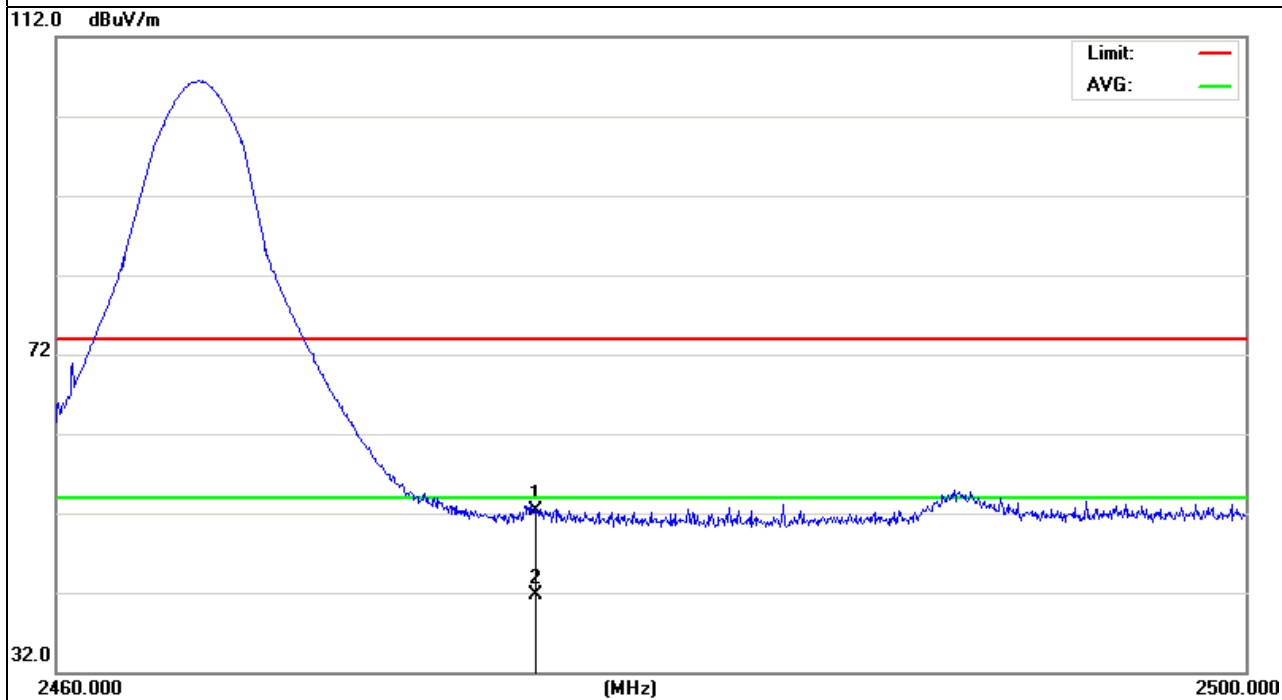
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-11-18
Test Mode :	DSS/ 2466MHz	Polarization :	Horizontal
Test Power :	DC 6V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	66.25	-15.12	51.13	74	-22.87	peak
2483.5	56.27	-15.12	41.15	54	-12.85	AVG

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



#### 4. BANDWIDTH TEST

##### 4.1 TEST PROCEDURE

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

##### 4.2 DEVIATION FROM STANDARD

No deviation.

##### 4.3 TEST SETUP



**4.4 TEST RESULTS**

EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	26 °C	Relative Humidity :	53%
Pressure :	1020 hPa	Test Power :	DC 6V
Test Mode :	DSS/TX		

Test Channel	Frequency (MHz)	99% Bandwidth (MHz)
CH01	2403	1.44
CH32	2440	1.48
CH64	2466	1.44

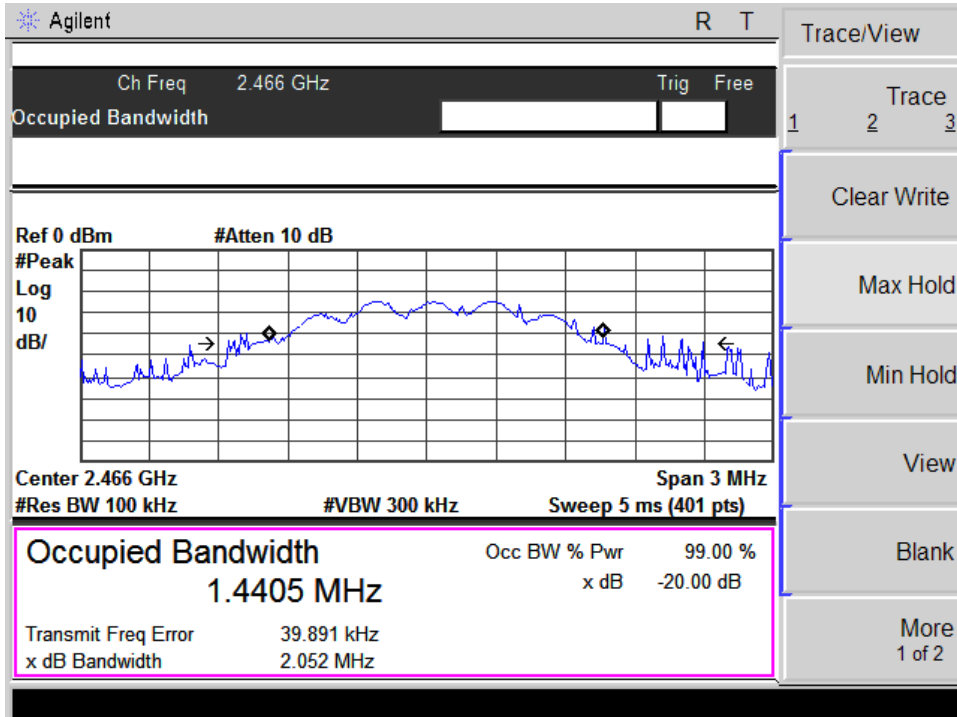
### The Lowest Channel: 2403MHz

Agilent		R	T	Meas Setup	
Ch Freq 2.403 GHz		Trig Free		Avg Number 10	
Occupied Bandwidth				On Off	
Ref 0 dBm #Atten 10 dB				Avg Mode Repeat	
				Max Hold Off	
Center 2.403 GHz Span 3 MHz				On Off	
#Res BW 100 kHz #VBW 300 kHz Sweep 5 ms (401 pts)				Occ BW % Pwr 99.00 %	
<b>Occupied Bandwidth</b>		Occ BW % Pwr		99.00 %	
1.4435 MHz		x dB		-20.00 dB	
Transmit Freq Error 29.960 kHz				OBW Spar 3.00000000 MHz	
x dB Bandwidth 1.594 MHz				x dB -20.00 dB	
				Optimize Ref Level	

### The Middle Channel: 2440MHz

Agilent		R	T	Meas Setup	
Ch Freq 2.44 GHz		Trig Free		Avg Number 10	
Occupied Bandwidth				On Off	
Ref 0 dBm #Atten 0 dB				Avg Mode Repeat	
				Max Hold Off	
Center 2.44 GHz Span 3 MHz				On Off	
#Res BW 100 kHz #VBW 300 kHz Sweep 5 ms (401 pts)				Occ BW % Pwr 99.00 %	
<b>Occupied Bandwidth</b>		Occ BW % Pwr		99.00 %	
1.4790 MHz		x dB		-20.00 dB	
Transmit Freq Error 34.420 kHz				OBW Spar 3.00000000 MHz	
x dB Bandwidth 1.632 MHz				x dB -20.00 dB	
				Optimize Ref Level	

### The High Channel:2466MHz

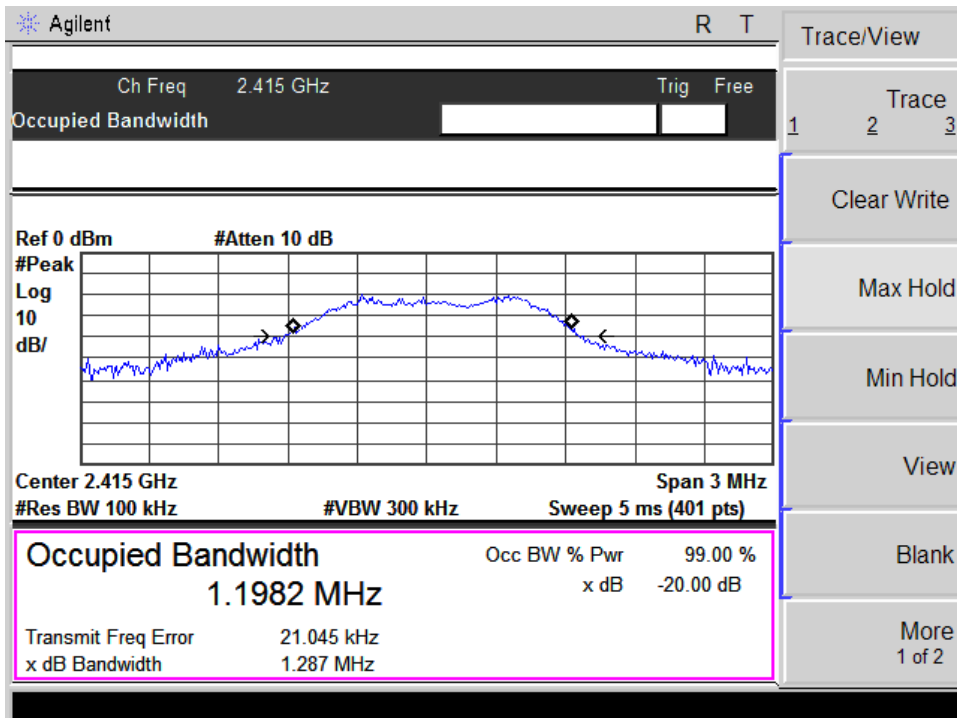


EUT :	2.4GHz Digital High Response System	Model Name :	MX-V
Temperature :	26 °C	Relative Humidity :	53%
Pressure :	1020 hPa	Test Power :	DC 6V
Test Mode :	FHSS/TX		

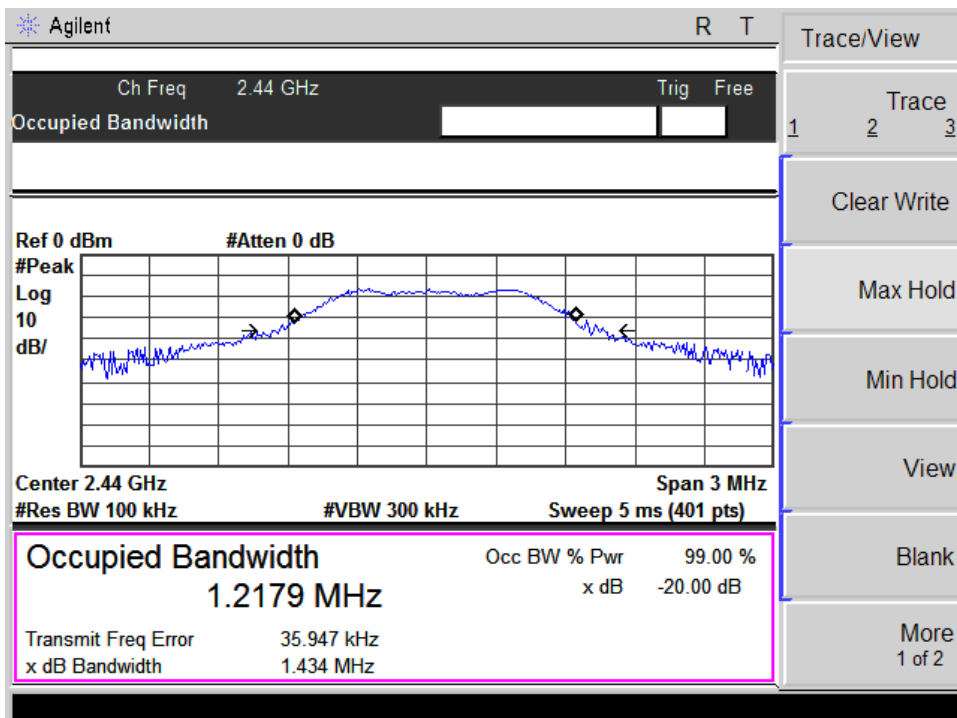
Test Channel	Frequency (MHz)	99% Bandwidth (MHz)
CH01	2415	1.20
CH25	2440	1.22
CH51	2465	1.24



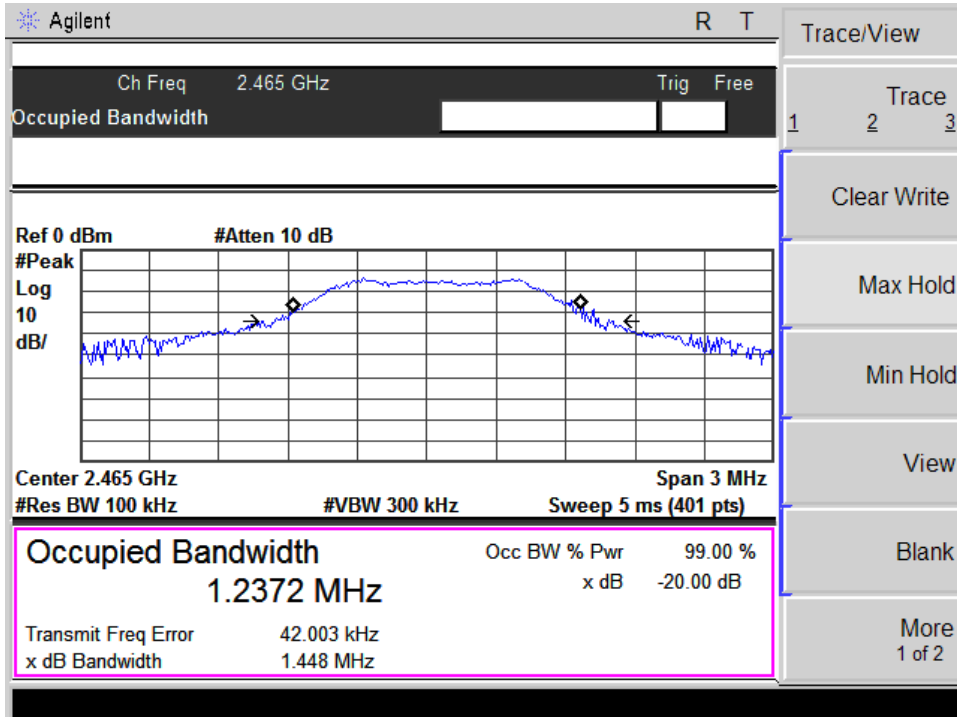
### The Lowest Channel: 2415MHz



### The Middle Channel: 2440MHz



### The High Channel:2465MHz



**5. EUT TEST PHOTO**

**Radiated Measurement Photos**

