

FCC Test Report

for

Wireless Color 2.5" TFT Monitoring System

Trade Name : Navigator
Model Number : CCD-625S
FCC ID : LE2CCD-625S
Report Number : RF-A63-0406-055
Date of Receipt : June 11,2004
Date of Report : June 16,2004

Prepared for

JSW PACIFIC CORPORATION

3F-3, No. 700, Chung-Zheng Rd., Chung Ho City, Taipei Hsien, Taiwan, R.O.C.

Prepared by



Central Research Technology Co.
EMC Test Laboratory

No.11, Lane41, Fushuen St., Jungshan Chiu, Taipei, Taiwan, 104, R.O.C.



NVLAP LAB CODE 200575-0



0905
ILAC MRA

This report shall not be reproduced, except in full, without the written approval of Central Research Technology Co.. It may be duplicated completely in its entirety for legal use with the permission of the applicant. It should not be used to claim product endorsement by CNLA, NVLAP or any U.S. government agency. The test result in the report applies only to the sample tested.

Total : 113 Pages

Certification of Compliance

Equipment under Test : Wireless Color 2.5" TFT Monitoring System
Model No. : CCD-625S
FCC ID : LE2CCD-625S
Applicant : JSW PACIFIC CORPORATION
Address : 3F-3, No. 700, Chung-Zheng Rd., Chung Ho City, Taipei
Hsien, Taiwan, R.O.C.
Applicable Standards : 47 CFR part 15, Subpart C
Date of Testing : June 14 ~ June 15, 2004
Deviation : N/A
Condition of Test Sample : Prototype



We, **Central Research Technology Co.**, hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's RF characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

PREPARED BY : Cathy Chen , DATE : 2004. 6. 16
(Cathy Chen/RF Engineer)
CHECKED BY : Sam Chien , DATE : 2004. 6. 16
(Sam Chien/Technical Manager)
APPROVED BY : T. Y. Shih , DATE : June 16, 2004
(Tsun-Yu Shih/Laboratory Head)

Contents

1. General Description	1
1.1 General Description of EUT	1
1.2 Test Mode	2
1.3 Applied standards	2
1.4 The Support Units	3
1.5 Layout of the Setup	3
1.6 Test Capability	4
2. Conducted Emission Measurement.....	5
2.1 Limits for Conducted Emission	5
2.2 Test Instruments	6
2.3 Test Procedures	7
2.4 Test Configurations	8
2.5 Photographs of the Test Configurations	8
2.6 Test Results	9
3. Radiated Emission Measurement	13
3.1 Limits for Radiated Emission	13
3.2 Test Instruments	14
3.3 Test Procedures	16
3.4 Test Configurations	17
3.5 Photographs of the Test Configurations	17
3.6 Test Results	18
4. Band Edge Measurement.....	104
4.1 Limits for Band Edge	104
4.2 Test Instruments	104
4.3 Test Procedures	105
4.4 Test Configurations	105
4.5 Test Results	106

Attachment 1 – Photographs of the Test Configurations

Attachment 2 – External Photographs of EUT

Attachment 3 – Internal Photographs of EUT

1. General Description

1.1 General Description of EUT

Equipment under Test : Wireless Color 2.5" TFT Monitoring System
Model No. : CCD-625S
FCC ID : LE2CCD-625S
Brand : Navigator
Power in : 120V/60Hz
Test Voltage : 120V/60Hz
Manufacturer : JSW PACIFIC CORPORATION
Number of Channel : 4
Frequency Range : 2400 ~ 2483.5 MHz
Modulation Skill : FM

The channel and the operation frequency of 802.11b is listed below:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	02	2432	03	2452
04	2472				

1.2 Test Mode

During the test, the EUT was set in continuously transmitting mode and/or receiving mode with a duty cycle of 100%.

The channels 1, 3, 4 of EUT were all tested.

1.3 Applied standards

According to the specifications of the manufacturers, the applied standard to evaluate the compliance of requirements is 47CFR Part 15, Subpart C and the measurement procedures specified in ANSI C63.4 are performed.

According to 47 CFR Part 15 Section 15.249, all the test items are as following:

PARAGRAPH	TEST REQUIREMENTS	COMPLIANCE (YES/NO)	Remarks
15.107	AC Power Conducted Emissions	Yes	
15.249(a)	Field strength	Yes	
15.249(d)(e)	Frequency Band Edge Measurement	Yes	

1.4 The Support Units

None

1.5 Layout of the Setup



Connecting Cables :

No.	Cable	Length	Shielded	Ferrite Core	Shielded Backshell	Supported by lab.	Note
A	Power code	1.0m					
B	Power code	1.0m					

1.6 Test Capability

Test Facility

The test facility used for evaluating the conformance of the EUT with each standard in the present report meets what required in CISPR16-1, CISPR16-2 and ANSI C63.4.

Test Room	Type of Test Room	Descriptions
☒ TR1	10m semi-anechoic chamber (23m×14m×9m)	Complying with the NSA requirements in documents CISPR 22 and ANSI C63.4. for the radiated emission measurement.
☐ TR4	Shielding Room (5m×3m×3m)	For the RF conducted emission measurement.
☒ TR5	Shielding Room (8m×5m×4m)	For the conducted emission measurement.

Test Laboratory Competence Information

Central Research Technology Co. has been accredited/filed/authorized by the agencies listed in the following table.

Certificate	Nation	Agency	Code	Mark
Accreditation Certificate	USA	NVLAP	200575-0	ISO/IEC 17025
	R.O.C. (Taiwan)	CNLA	0905	ISO/IEC 17025
	R.O.C. (Taiwan)	BSMI	SL2-IN-E-0033,SL2-IS-E-0033, SL2-R1/R2-E-0033, SL2-A1-E-0033	ISO/IEC 17025
Site Filing Document	USA	FCC	474046	Test facility list & NSA Data
	Canada	IC	4699A	Test facility list & NSA Data
	Japan	VCCI	R-1527,C-1609,T-131	Test facility list & NSA Data
Authorization Certificate	Germany	TÜV Rheinland	N/A	ISO/IEC 17025

The copy of each certificate can be downloaded from our web site: www.crc-lab.com

2. Conducted Emission Measurement

Test Result: PASS

2.1 Limits for Conducted Emission

☒ Limits for conducted disturbances at the mains ports

Frequency (MHz)	Quasi-peak (dBμV)	Average (dBμV)
0.15 to 0.5	66 – 56	56 – 46
0.5 to 5	56	46
5 to 30	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz.

2.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Test Receiver	R&S	ESCS 30/ 836858/021	January 1, 2004
LISN	R&S	ESH2-Z5/ 836613/001	December 31, 2003
2 nd LISN	R&S	ENV4200/ 833209/010	December 29, 2003
50Ω terminator	N/A	N/A/001	September 1, 2003
RF Switch	N/A	BN754030/ A35328 01/00	September 1, 2003
RF Cable	N/A	N/A/C0007	August 1, 2003
TR5 shielded room	ETS.LINDGREN	TR5/15353-F	August 27, 2003

Note:

1. The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the shielded room listed above is the date of shielding effectiveness verification measurement.

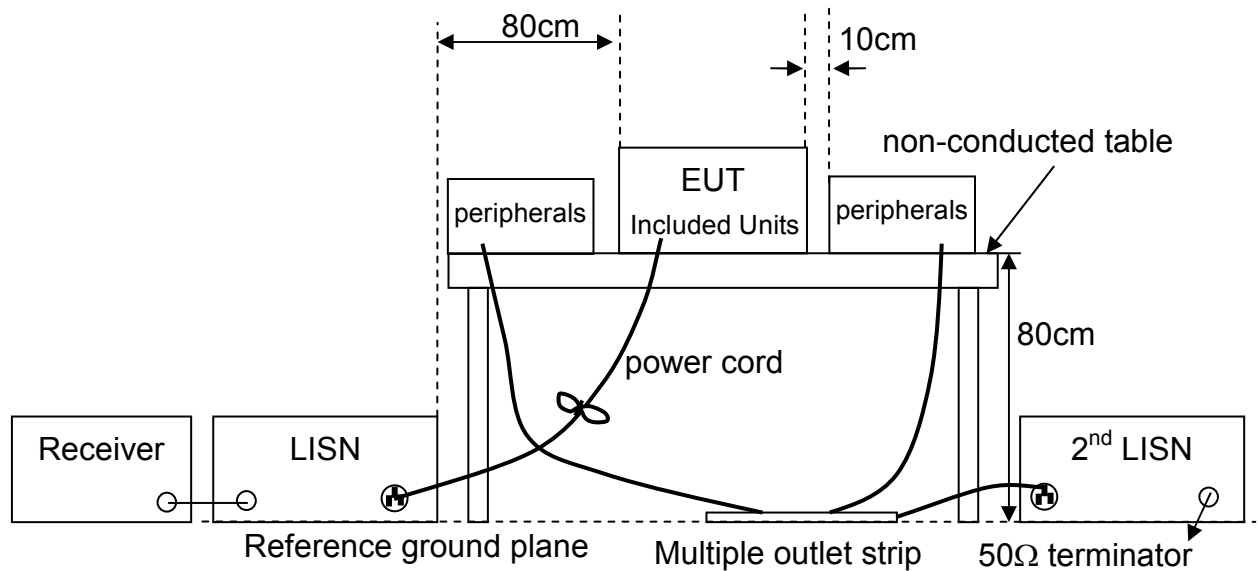
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$. The assessed measurement uncertainty for conducted emission is 2.14dB. The value is less than U_{cisprr} in table 1 of CISPR 16-4.

2.3 Test Procedures

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the reference ground plane and 0.4 meters from the conducting wall of the shielded room. Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the reference ground plane.
- c. Connect the EUT's power source to the appropriate power mains through the LISN.
- d. All the other peripherals are connected to the 2nd LISN, if any.
- e. The LISN was placed 0.8 meters from the EUT and at least 0.8 meters from other units and other metal planes.
- f. Measure the conducted emissions on each power line (Neutral Line and Line 1 – Hot side) of the EUT's power source by using the test receiver connected to the coupling RF output port of LISN.
- g. Rapidly scan the signal from 150kHz to 30MHz by using the receiver through the Maximum-Peak detector to determine those frequencies associated with higher emission levels for each measured line.
- h. Then measure the maximum level of conducted disturbance for each frequency found from step g. by using the receiver through the Quasi-Peak and Average detectors per CISPR 16-1.
- i. Record the level for each frequency and compare with the required limit.

2.4 Test Configurations



2.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

2.6 Test Results

Test Mode : Channel 1, Transmitter

Tester : Max **Temperature** : 19°C

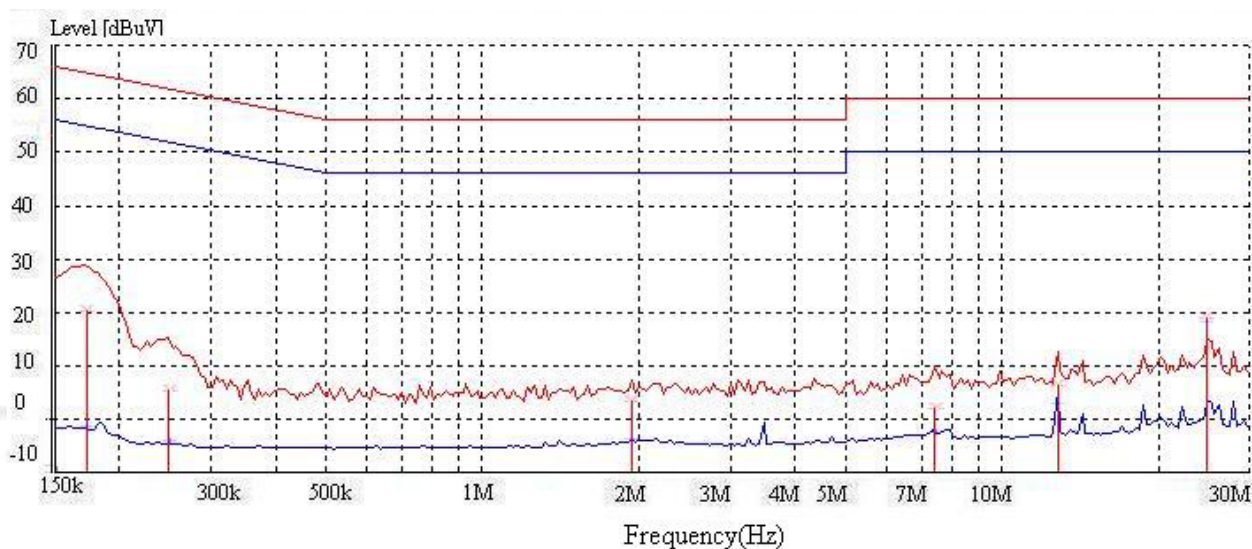
Humidity : 53%RH **Frequency Range** : 150kHz~30MHz

IF Bandwidth : 9kHz **Phase** : Line1

Frequency (MHz)	Reading data (dBuV)		Correction Factor (dB)	Emission (dBuV)		Limit (dBuV)		Margin (dB)	
	Q.P.	AV.		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.17	20.00	-2.20	0.30	20.30	-1.90	65.00	55.00	44.70	56.90
0.25	5.20	-5.00	0.20	5.40	-4.80	62.00	52.00	56.60	56.80
1.93	2.80	-4.80	0.50	3.30	-4.30	56.00	46.00	52.70	50.30
7.45	1.40	-3.50	0.70	2.10	-2.80	60.00	50.00	57.90	52.80
12.77	5.50	1.50	0.80	6.30	2.30	60.00	50.00	53.70	47.70
24.88	17.60	16.50	1.20	18.80	17.70	60.00	50.00	41.20	32.30

Note:

1. Emission (dBuV)= Reading Data + Correction Factor.
2. Correction Factor(dB) = Cable Loss + Insertion Loss of LISN.
3. Margin (dB)= Limit – Emission.
4. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.



Test Mode : **Channel 1, Transmitter**

Tester : Max **Temperature** : 19°C

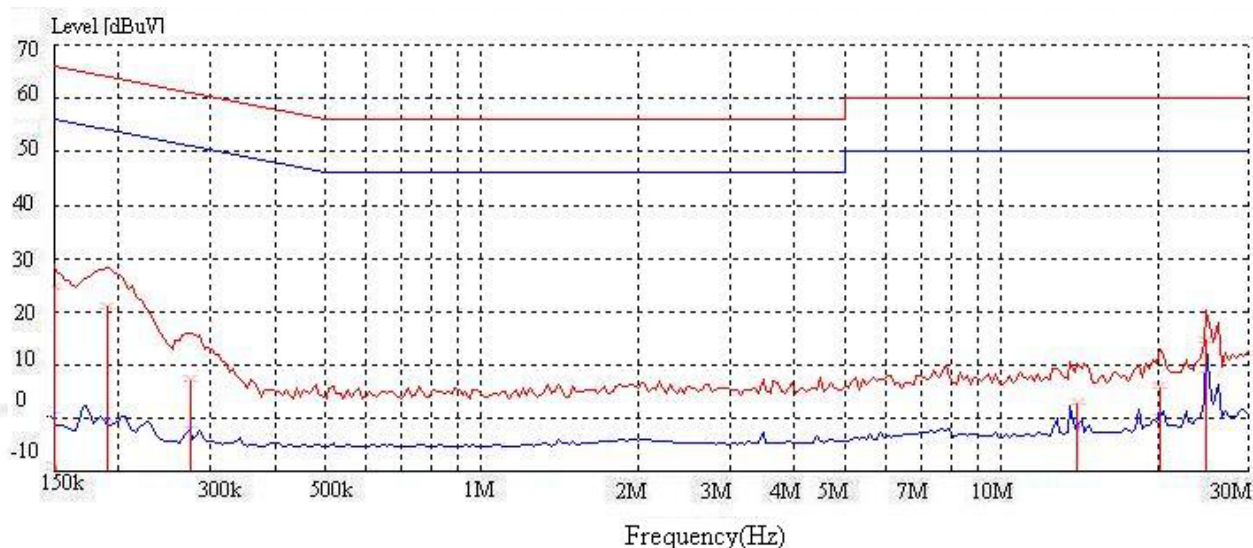
Humidity : 53%RH **Frequency Range** : 150kHz~30MHz

IF Bandwidth : 9kHz **Phase** : **Neutral**

Frequency (MHz)	Reading data (dBuV)		Correction Factor (dB)	Emission (dBuV)		Limit (dBuV)		Margin (dB)	
	Q.P.	AV.		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.15	23.90	-0.10	0.30	24.20	0.20	66.00	56.00	41.80	55.80
0.19	20.50	-1.30	0.20	20.70	-1.10	64.00	54.00	43.30	55.10
0.27	6.70	-2.60	0.20	6.90	-2.40	61.00	51.00	54.10	53.40
14.05	1.90	-3.10	0.80	2.70	-2.30	60.00	50.00	57.30	52.30
20.24	4.60	-1.00	1.10	5.70	0.10	60.00	50.00	54.30	49.90
24.88	13.20	6.70	1.20	14.40	7.90	60.00	50.00	45.60	42.10

Note:

1. Emission (dBuV)= Reading Data + Correction Factor.
2. Correction Factor(dB) = Cable Loss + Insertion Loss of LISN.
3. Margin (dB)= Limit – Emission.
4. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.



Test Mode : **Channel 1, Receiver**

Tester : Max **Temperature** : 19°C

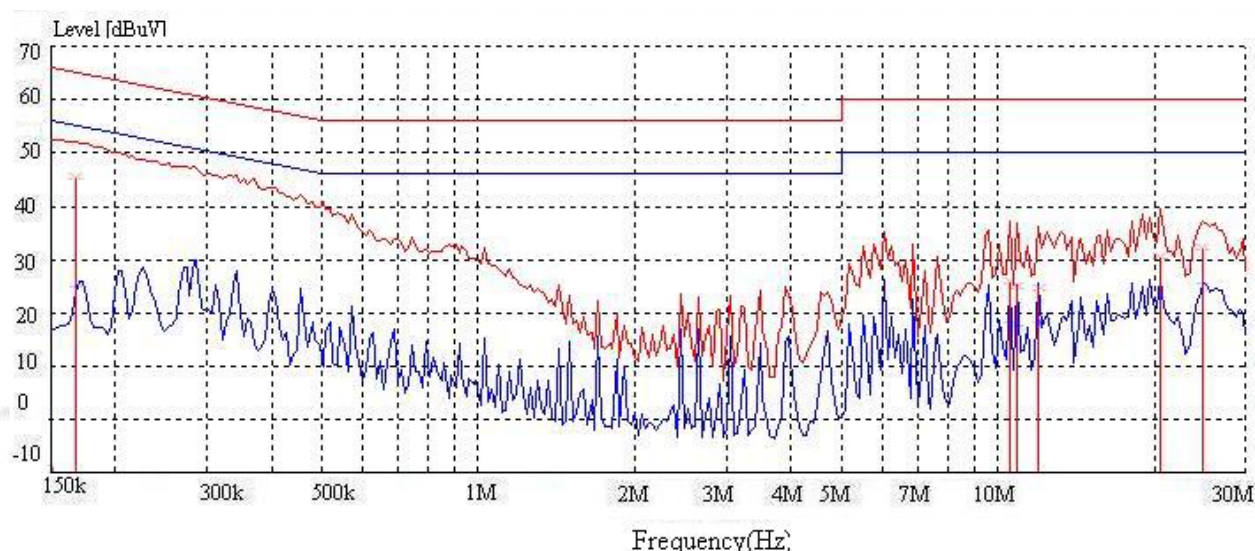
Humidity : 53%RH **Frequency Range** : 150kHz~30MHz

IF Bandwidth : 9kHz **Phase** : Line1

Frequency (MHz)	Reading data (dBuV)		Correction Factor (dB)	Emission (dBuV)		Limit (dBuV)		Margin (dB)	
	Q.P.	AV.		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.17	45.00	23.90	0.30	45.30	24.20	65.00	55.00	19.70	30.80
10.56	24.80	16.80	0.70	25.50	17.50	60.00	50.00	34.50	32.50
10.90	23.90	16.30	0.70	24.60	17.00	60.00	50.00	35.40	33.00
11.99	23.50	17.00	0.70	24.20	17.70	60.00	50.00	35.80	32.30
20.57	29.20	21.10	1.10	30.30	22.20	60.00	50.00	29.70	27.80
24.88	30.60	23.60	1.20	31.80	24.80	60.00	50.00	28.20	25.20

Note:

1. Emission (dBuV)= Reading Data + Correction Factor.
2. Correction Factor(dB) = Cable Loss + Insertion Loss of LISN.
3. Margin (dB)= Limit – Emission.
4. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.



Test Mode : **Channel 1, Receiver**

Tester : Max **Temperature** : 19°C

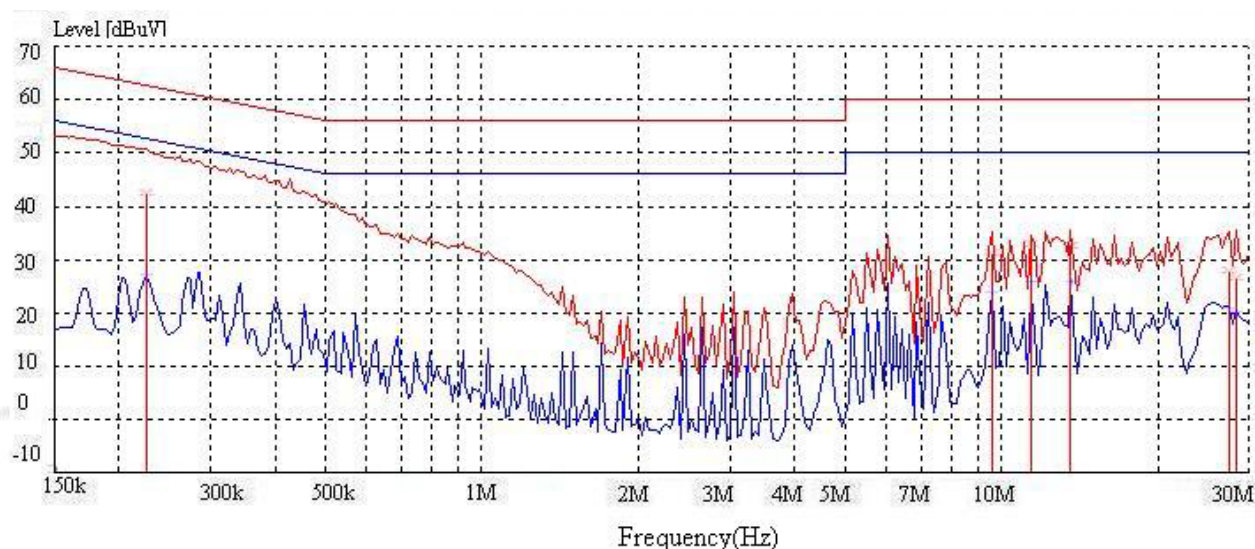
Humidity : 53%RH **Frequency Range** : 150kHz~30MHz

IF Bandwidth : 9kHz **Phase** : **Neutral**

Frequency (MHz)	Reading data (dBuV)		Correction Factor (dB)	Emission (dBuV)		Limit (dBuV)		Margin (dB)	
	Q.P.	AV.		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.23	42.10	26.40	0.20	42.30	26.60	63.00	53.00	20.70	26.00
9.60	30.40	22.50	0.60	31.00	23.10	60.00	50.00	29.00	26.90
11.43	31.90	24.60	0.70	32.60	25.30	60.00	50.00	27.40	24.70
13.61	31.60	24.40	0.80	32.40	25.20	60.00	50.00	27.60	24.80
27.37	26.20	18.90	1.40	27.60	20.30	60.00	50.00	32.40	29.70
28.25	24.80	18.20	1.40	26.20	19.60	60.00	50.00	33.80	30.40

Note:

1. Emission (dBuV)= Reading Data + Correction Factor.
2. Correction Factor(dB) = Cable Loss + Insertion Loss of LISN.
3. Margin (dB)= Limit – Emission.
4. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.



3. Radiated Emission Measurement

Test Result: PASS

3.1 Limits for Radiated Emission

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following. 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.

Fundamental Frequency	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (uV/m)
902 – 928 MHz	50	500
2400 – 2483.5 MHz	50	500
5725 – 5875 MHz	50	500
24.0 – 24.25 GHz	250	2500

Section 15.209(a) Limit			
Frequency (MHz)	Measurement Distance (m)	Field Strength (dBuV/m)	Field Strength (uV/m)
0.009 - 0.490	300	67.6/kHz	2400/kHz
0.490 - 1.705	30	87.6/kHz	24000/kHz
1.705 – 30	30	29.5	30
30 – 88	3	40.0	100
88 – 216	3	43.5	150
216 – 960	3	46.0	200
960 up	3	54.0	500

3.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./Serial No.	Last Cal.
EMI Test Receiver (9kHz~2.75GHz)	R&S	ESCS 30/ 836858/020	July 25, 2003
Broadband Antenna (30MHz~3000MHz)	R&S	HL-562/ 360543/010	February 17, 2004
Broadband Antenna (30MHz~3000MHz)	R&S	HL-562/ 360543/007	February 17, 2004
* Double-Ridge Horn Antenna (1GHz~18GHz)	R&S	HF-906/ 359287/002	March 18, 2004
*Double Ridge Horn Antenna (18GHz~26GHz)	EMCO	3116/ 20533	December 8, 2003
Pre-Amplifier (10MHz~2GHz)	Mini Circuit	ZKL-2/ 001	April 17, 2004
Pre-Amplifier (10MHz~2GHz)	Mini Circuit	ZKL-2/ 002	April 17, 2004
* Pre-amplifier (100MHz~18GHz)	MITEQ	JS4-00101800-28-5A/ 742229	February 14, 2004
*Pre-amplifier (18GHz~26GHz)	MITEQ	JS4-18002600-30-5A / 741923	March 14, 2004
Spectrum (9kHz~7GHz)	R&S	FSP7/ 100106	May 18, 2004
* Spectrum (9kHz~40GHz)	R&S	FSP40/ 10031	June 8, 2004
RF Cable	N/A	N/A/ C0049	April 17, 2004
RF Cable	N/A	N/A/ C0050	April 17, 2004
* RF Cable	Huber + Suhner	104/ C0031	August 1, 2003
TR1 Semi - anechoic Chamber	ETS.LINDGREN	TR1/ 17627-B	April 11, 2004

Note:

1. “*” : These instruments are used only for the measurement of emission frequency above 1000MHz.
2. The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC.
3. NCR : No Calibration Required.
4. The calibration date of the semi-anechoic chamber listed above is the date of NSA measurement.

Measurement Uncertainty

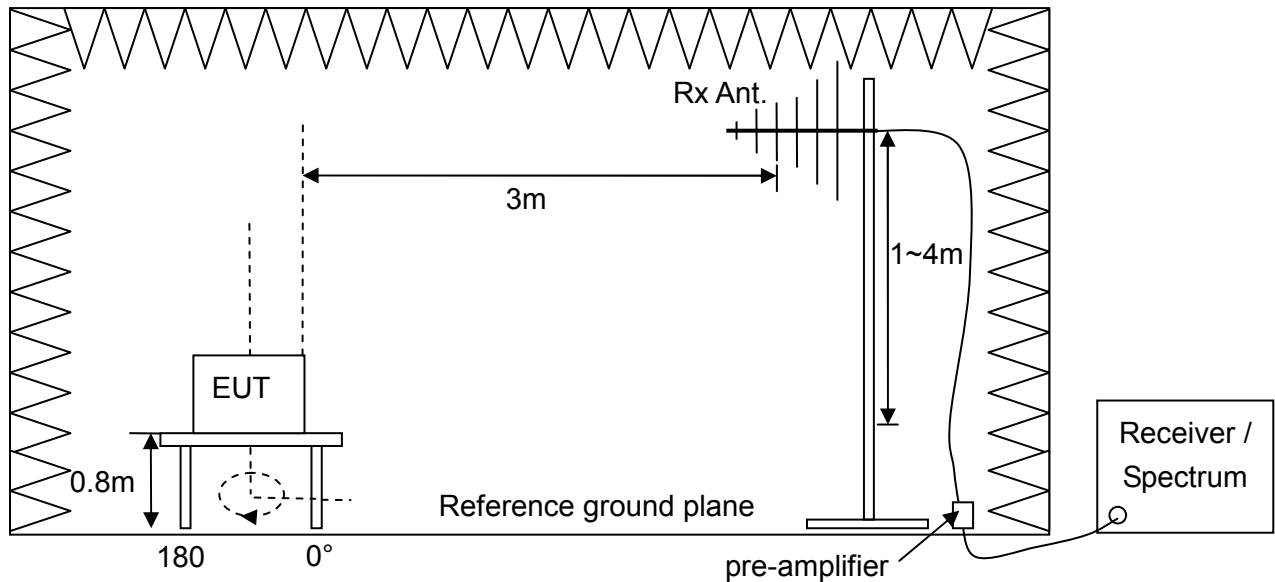
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$. The assessed measurement uncertainty for horizontal / vertical polarization radiated emission are 4.62dB and 4.52dB respectively. The values are less than $U_{cisp\text{r}}$ in table 1 of CISPR 16-4.

3.3 Test Procedures

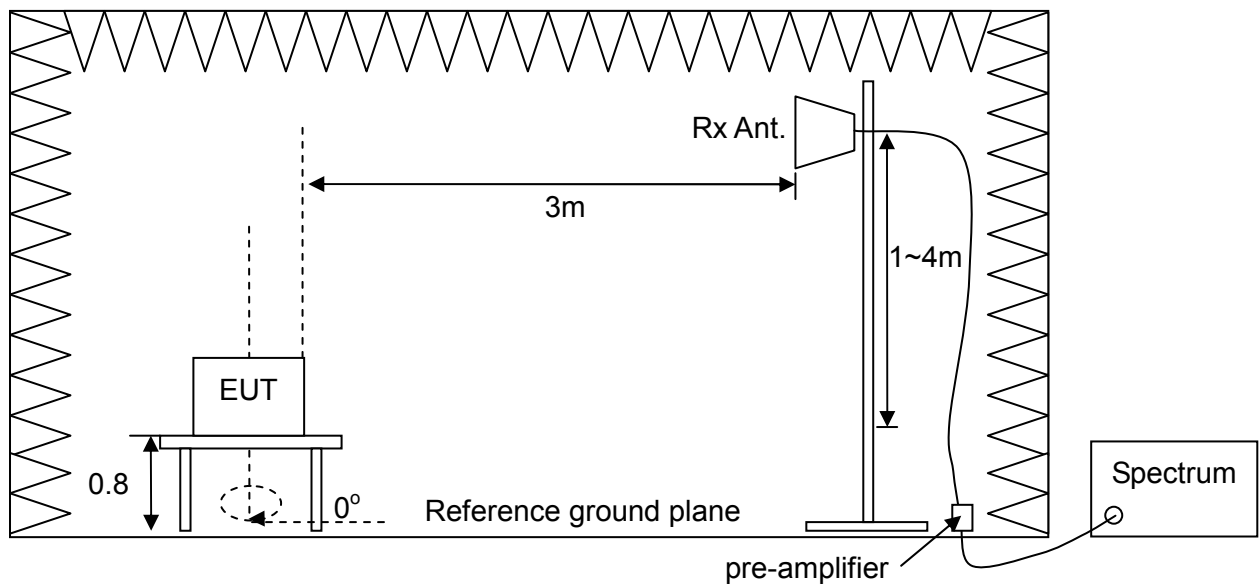
- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the reference ground plane in the semi-anechoic chamber.
- c. The EUT was set 3m away from the interference receiving antenna.
- d. Rapidly sweep the signal in the test frequency range by using the spectrum through the Maximum-peak detector.
- e. Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4 meters above the reference ground plane continuously to determine at least six frequencies associated with higher emission levels and record them.
- f. Then measure each frequency found from step e. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.
- g. Finely tune the antenna and turntable around the recorded position of each frequency found from step f.
- h. For measurement of frequency below 1000MHz, set the receiver detector to be Quasi-Peak per CISPR 16-1 to find out the maximum level occurred.
- i. For measurement of frequency above 1000MHz, set the spectrum detector to be Peak or Average to find out the maximum level occurred, if any.
- j. Record the frequency and polarization of the receiving antenna and compare the maximum level with the required limit.
- k. Change the receiving antenna to another polarization to measure radiated emission by following step d. to j. again.
- l. If the peak emission level measured from step e. is 10dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. value will be measured and presented.

3.4 Test Configurations

Radiated Emission Measurement below 1000MHz



Radiated Emission Measurement above 1000MHz (if any)



3.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

3.6 Test Results

Field strength of Fundamental

Test Mode : Transmitter by Power adaptor

Tester : Alex Temperature : 19°C

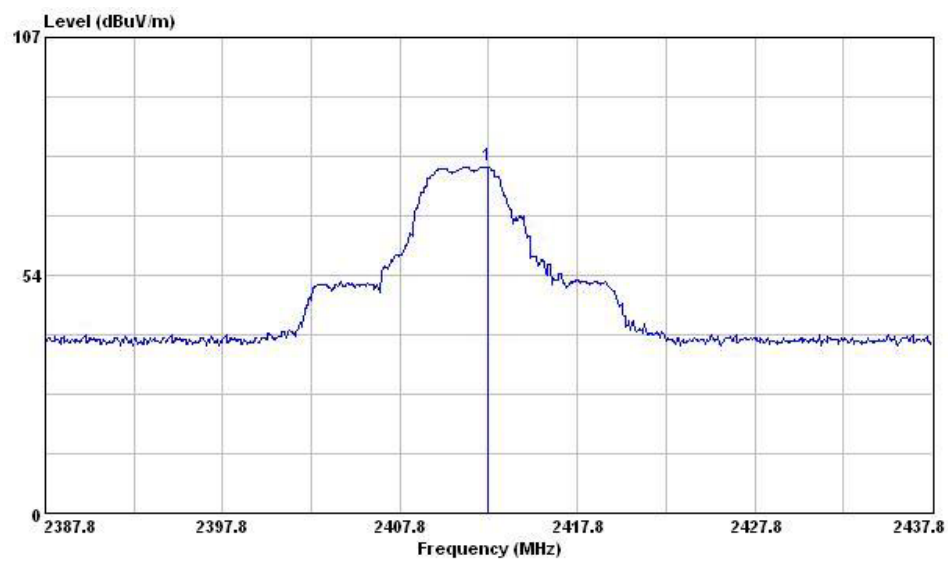
Humidity : 53%RH

Operation Channel	Emission Level (dBuV/m)		Correction Factor (dB1/m)	Limit (dBuV/m)		Margin (dB)		Antenna polarization
	PK	AV		PK	AV	PK	AV	
CH1	79.93	77.06	0.36	114.00	94.00	34.07	16.94	V
	78.31	75.95	0.36	114.00	94.00	35.69	18.05	H
CH3	77.64	74.62	0.49	114.00	94.00	36.36	19.38	V
	78.57	76.28	0.49	114.00	94.00	35.43	17.72	H
CH4	79.30	77.74	0.55	114.00	94.00	34.70	16.26	V
	76.67	74.05	0.55	114.00	94.00	37.33	19.95	H

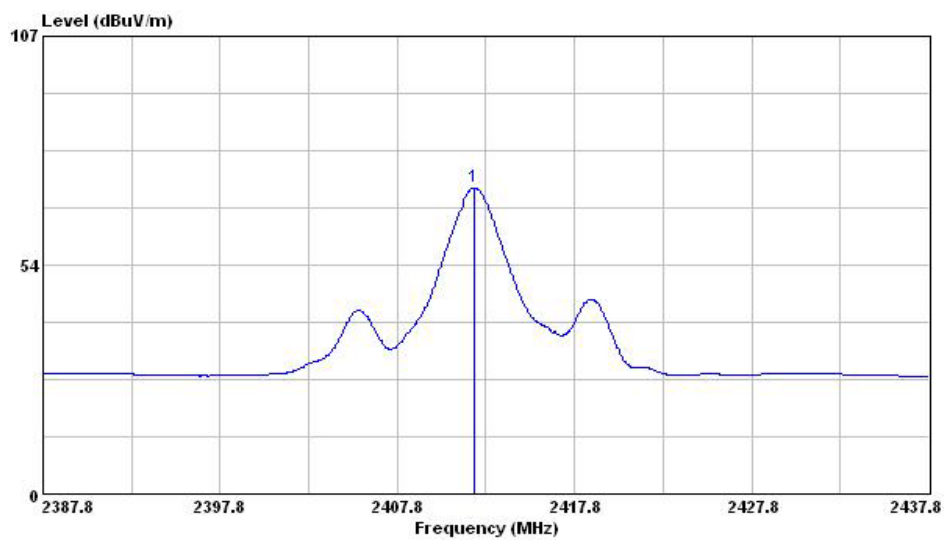
Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Preamplifier gain
2. Emission Level (dBuV/m) = Reading Value + Correction Factor
3. Margin (dB) = Limit – Emission Level

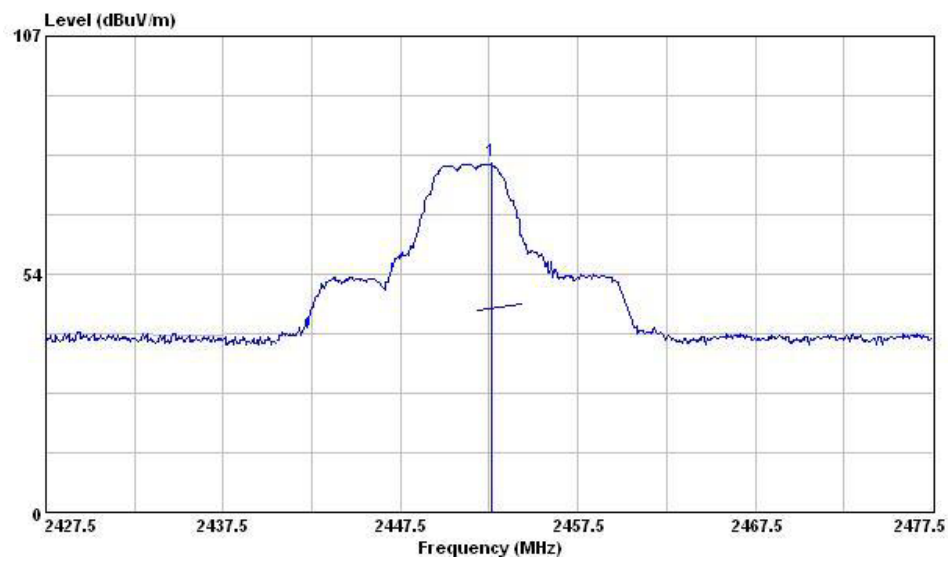
CH1 Vertical Polarization (Peak)



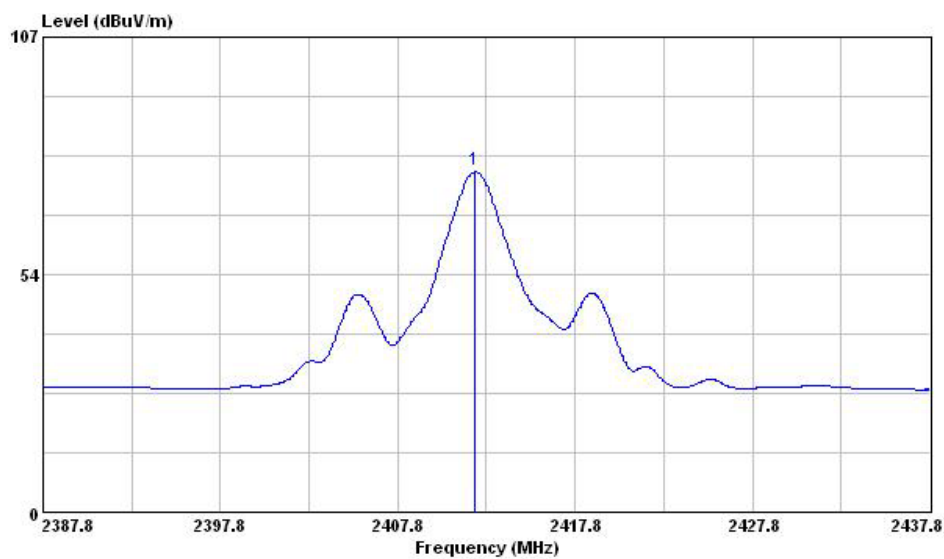
CH1 Vertical Polarization(Average)

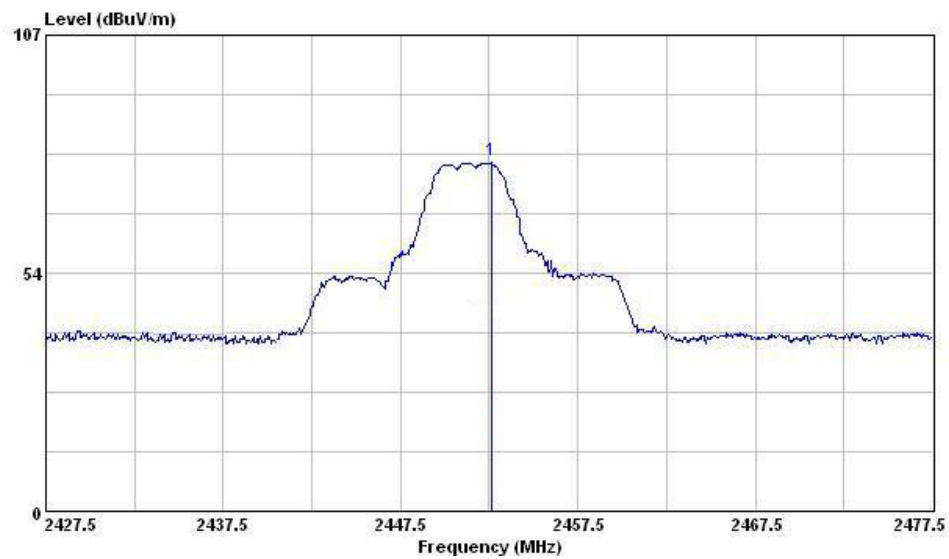
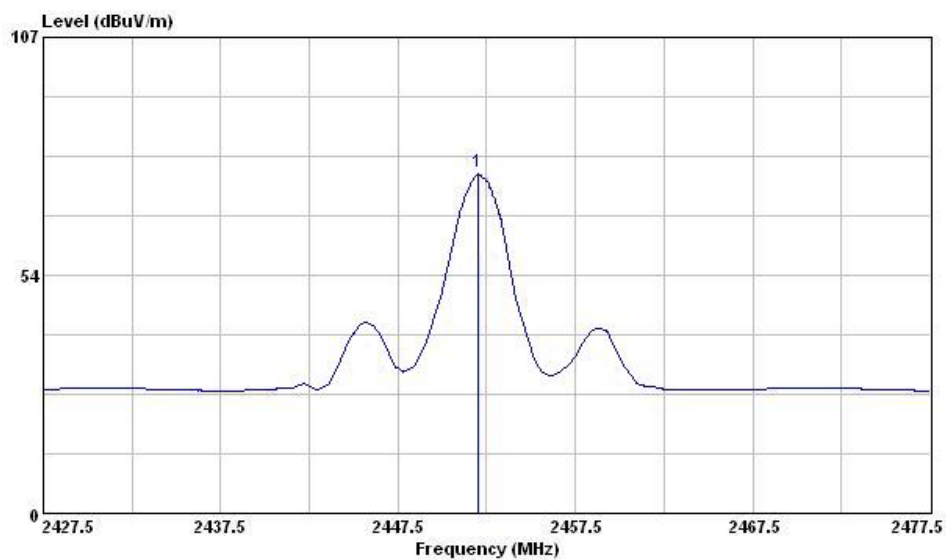


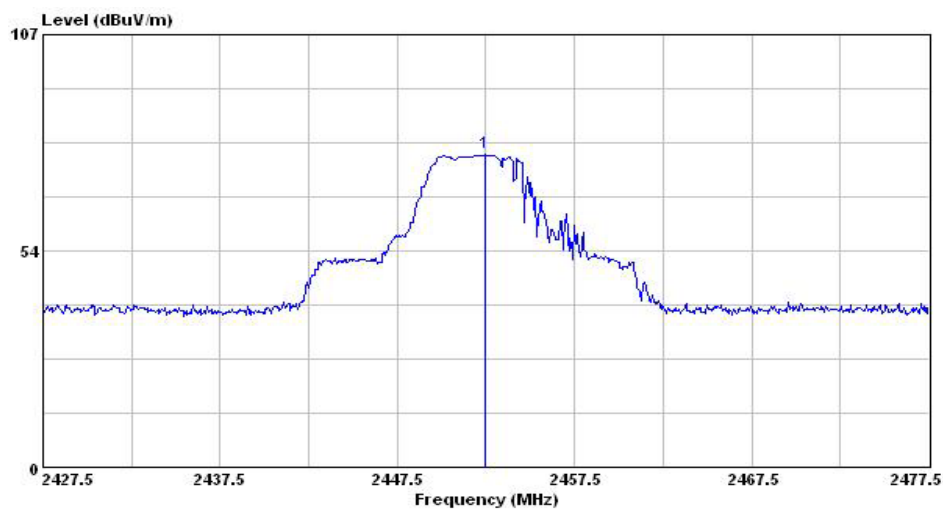
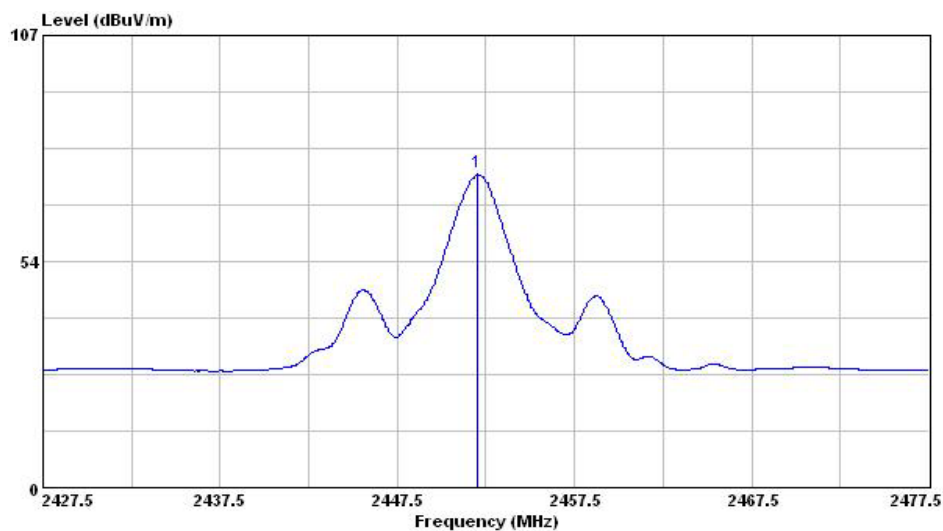
CH1 Horizontal Polarization (Peak)

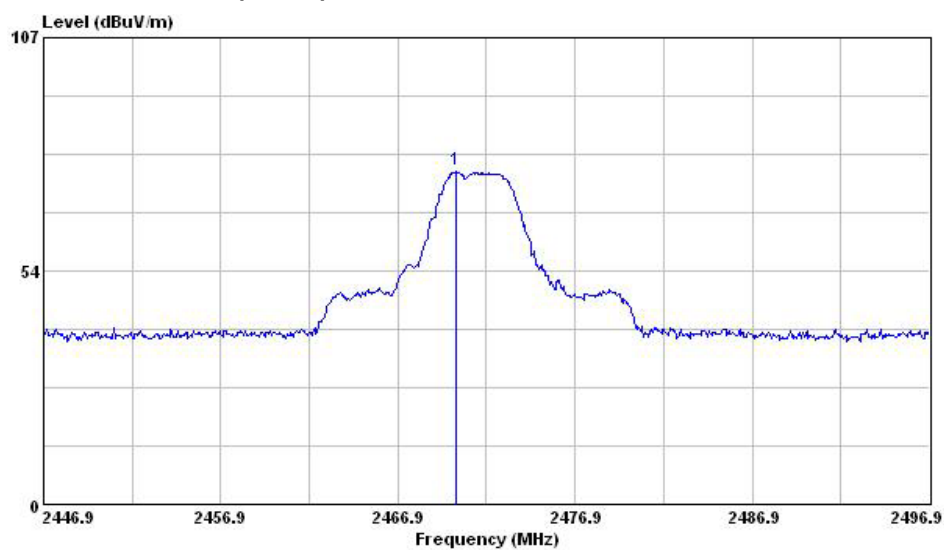
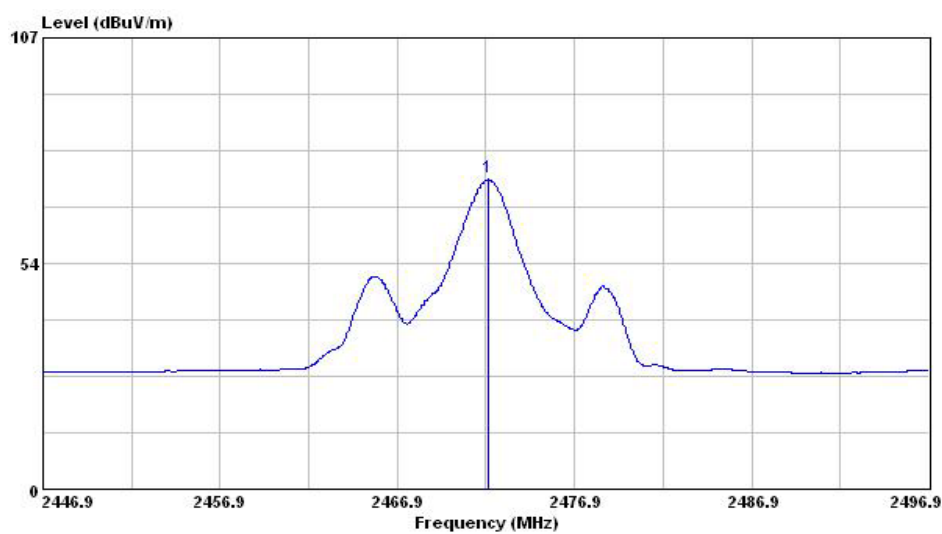


CH1 Horizontal Polarization (Average)

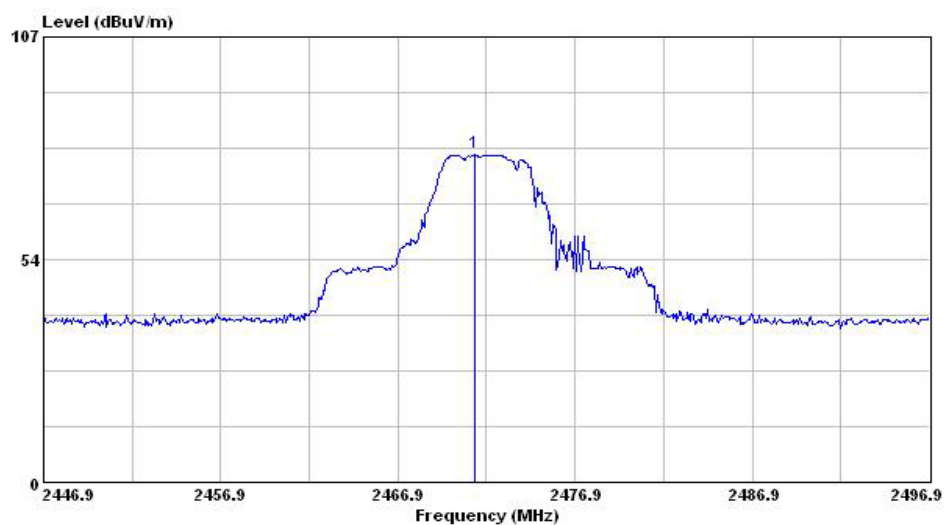


CH3 Vertical Polarization(Peak)**CH3 Vertical Polarization(Average)**

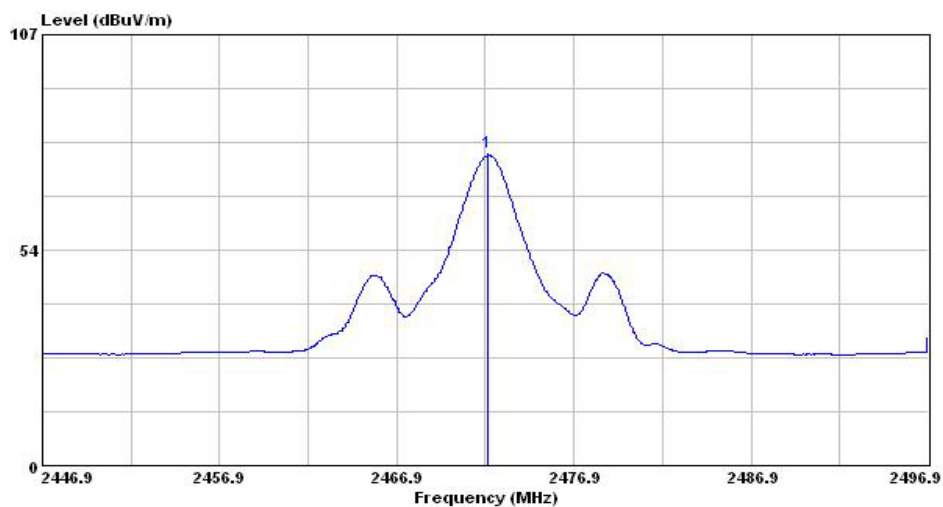
CH3 Horizontal Polarization(Peak)**CH3 Horizontal Polarization (Average)**

CH4 Vertical Polarization (Peak)**CH4 Vertical Polarization (Average)**

CH4 Horizontal Polarization (Peak)



CH4 Horizontal Polarization (Average)



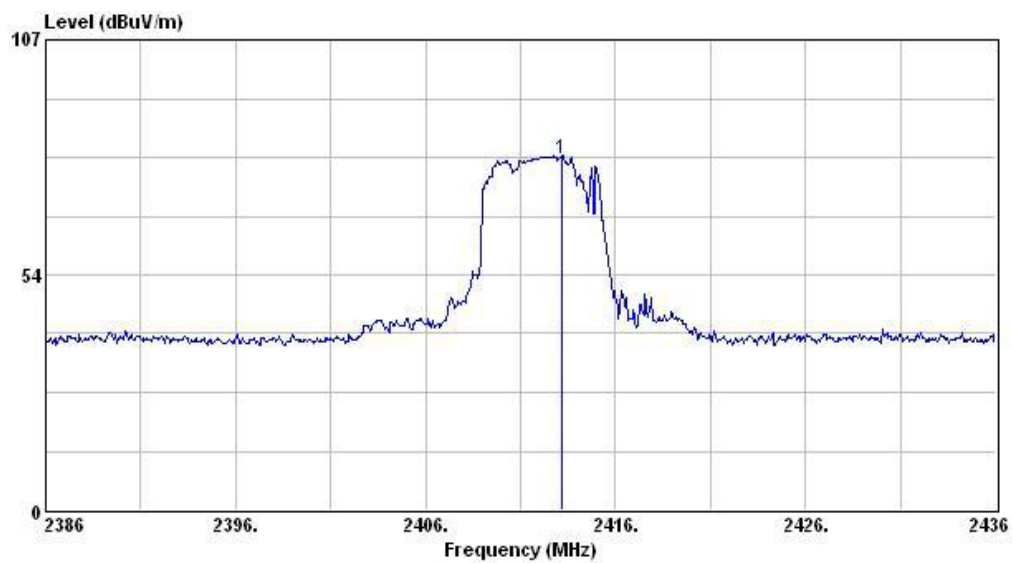
Test Mode : Transmitter by battery**Tester : Alex Temperature : 19°C****Humidity : 53%RH**

Operation Channel	Emission Level (dBuV/m)		Correction Factor (dB1/m)	Limit (dBuV/m)		Margin (dB)		Antenna polarization
	PK	AV		PK	AV	PK	AV	
CH1	81.14	78.36	0.36	114.00	94.00	32.86	15.64	V
	79.94	76.80	0.36	114.00	94.00	34.06	17.20	H
CH3	79.69	77.00	0.49	114.00	94.00	34.31	17.00	V
	76.18	73.81	0.49	114.00	94.00	37.82	20.19	H
CH4	81.48	78.94	0.55	114.00	94.00	32.52	15.06	V
	78.03	75.49	0.55	114.00	94.00	35.97	18.51	H

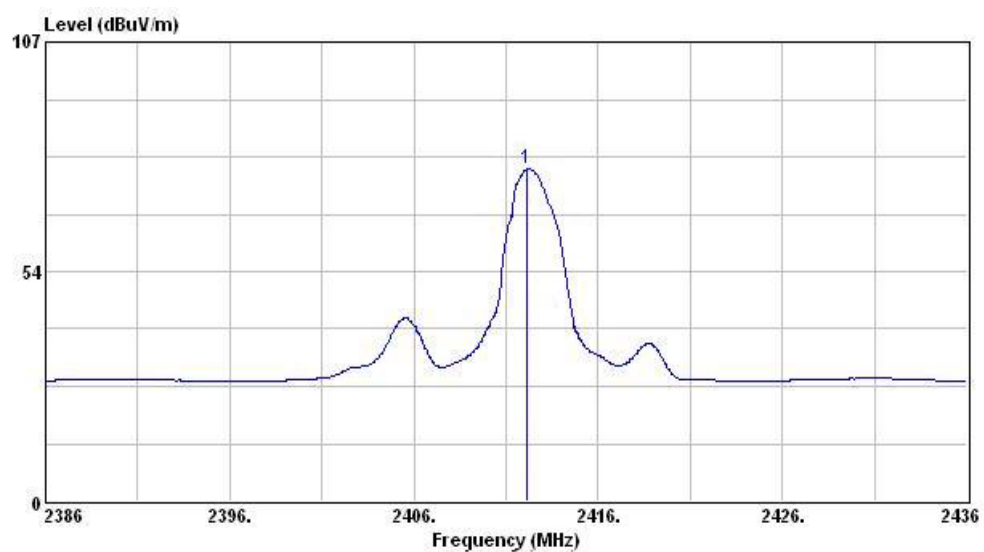
Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Preamplifier gain
2. Emission Level (dBuV/m) = Reading Value + Correction Factor
3. Margin (dB) = Limit – Emission Level

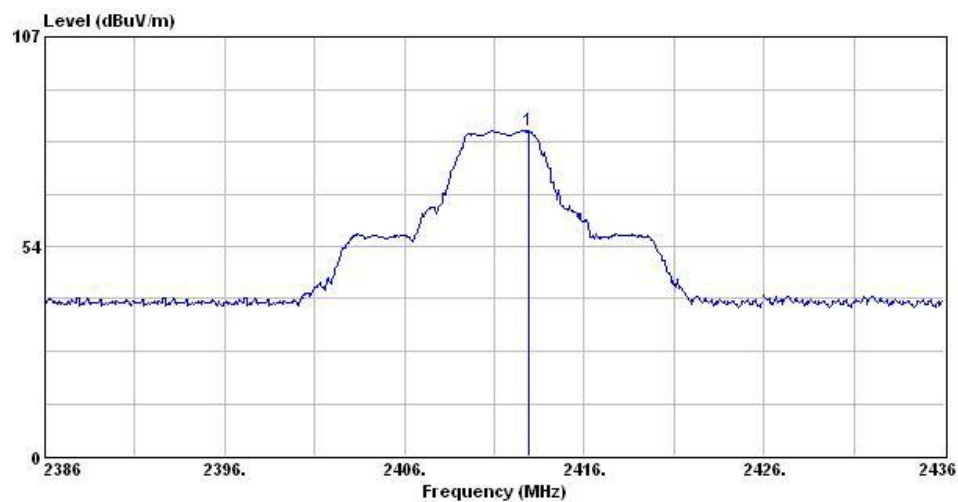
CH1 Vertical Polarization (Peak)



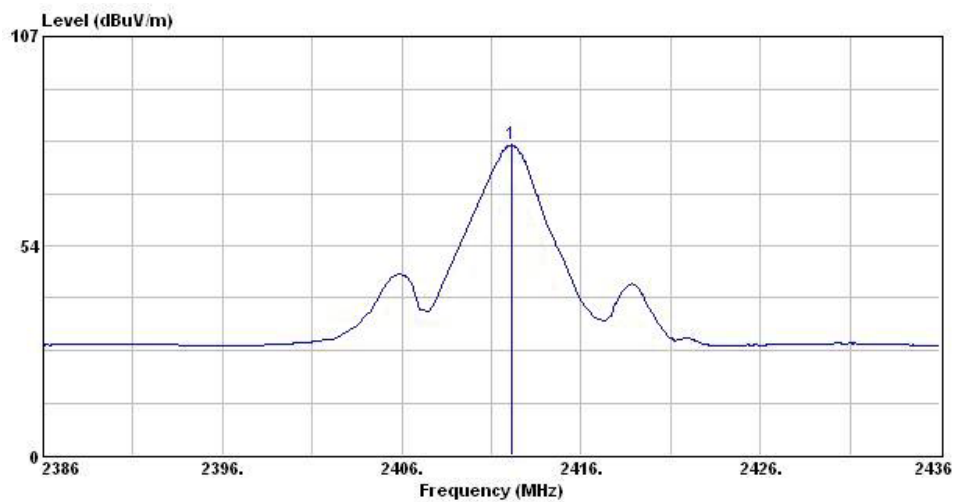
CH1 Vertical Polarization (Average)

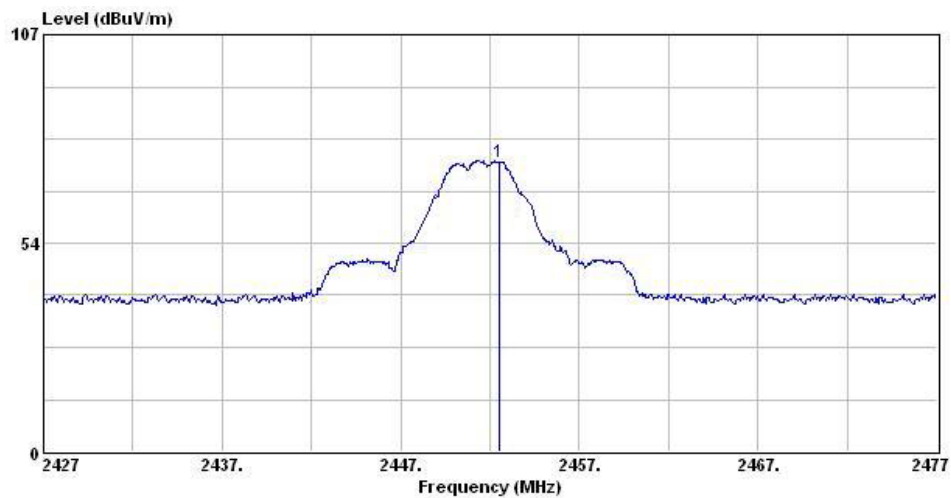
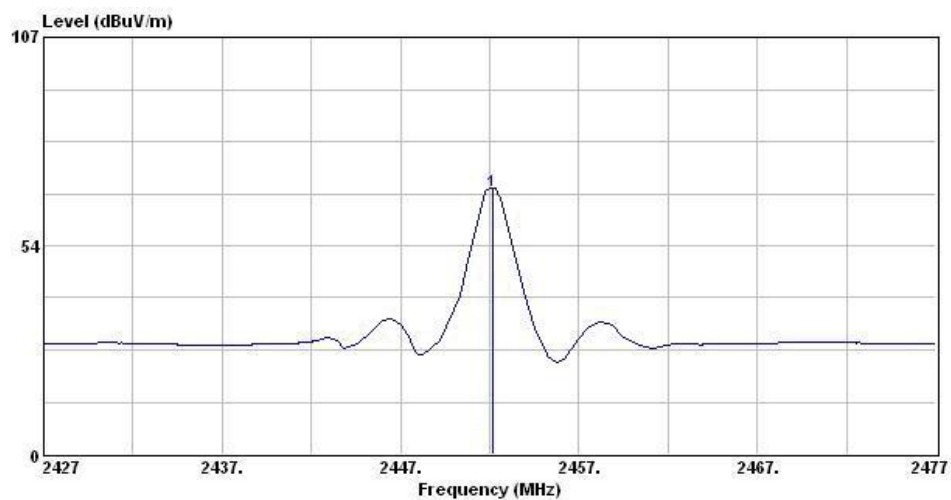


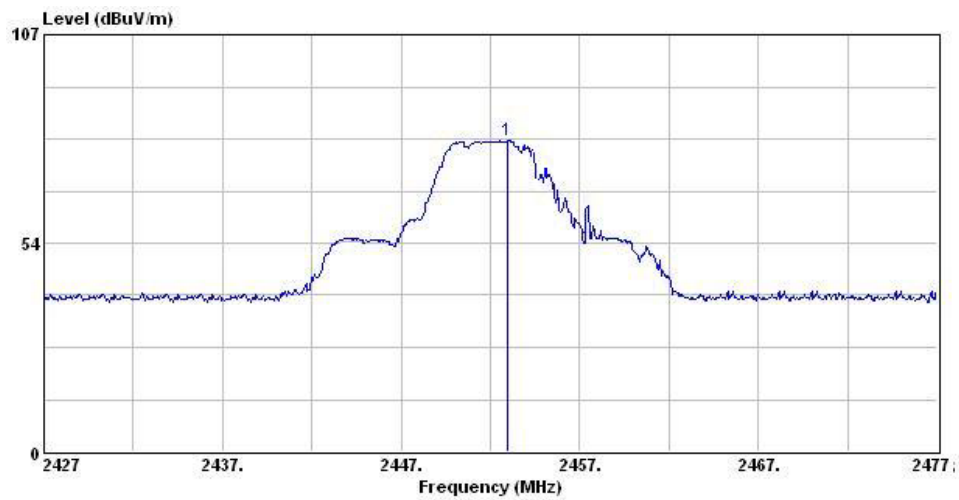
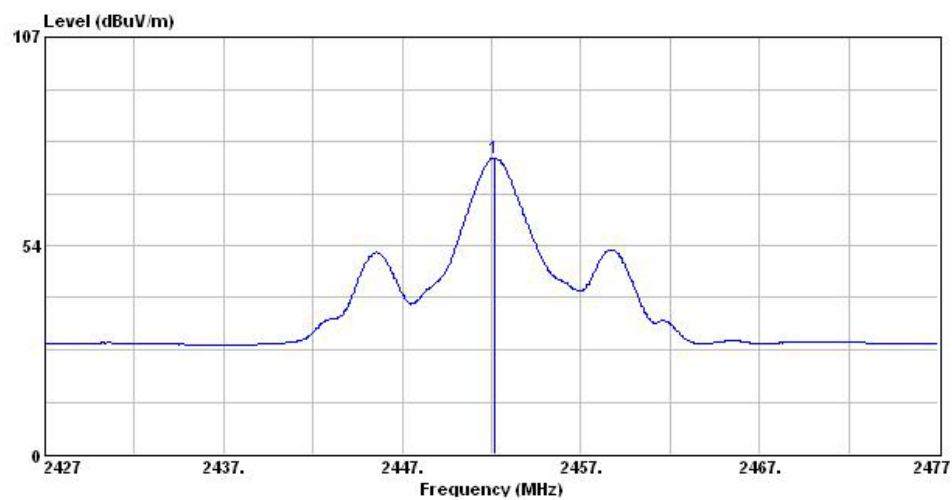
CH1 Horizontal Polarization (Peak)

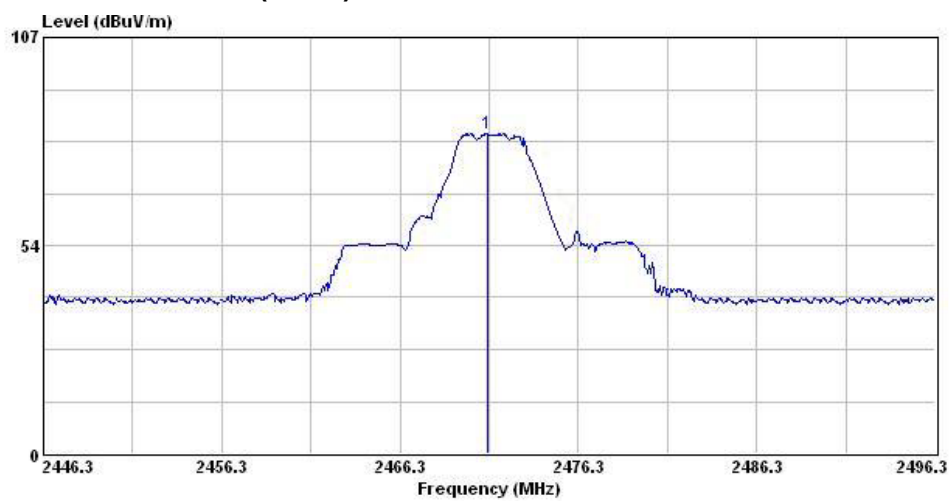
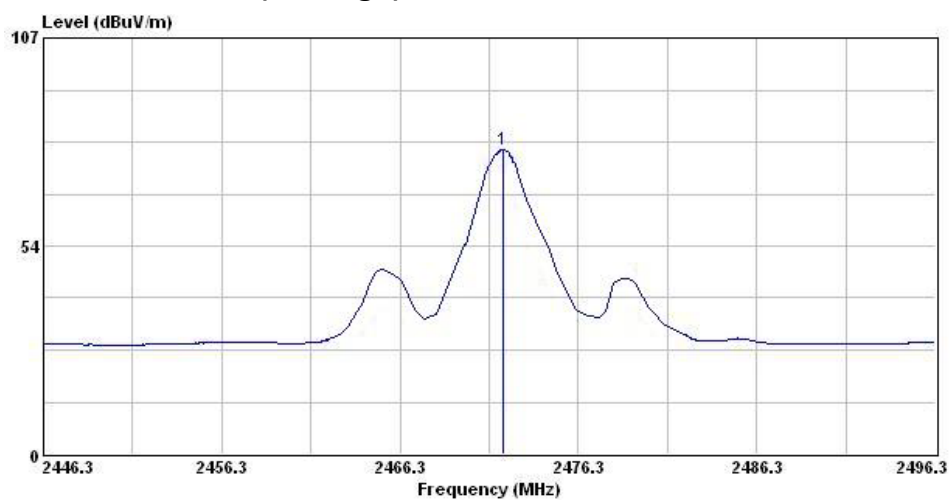


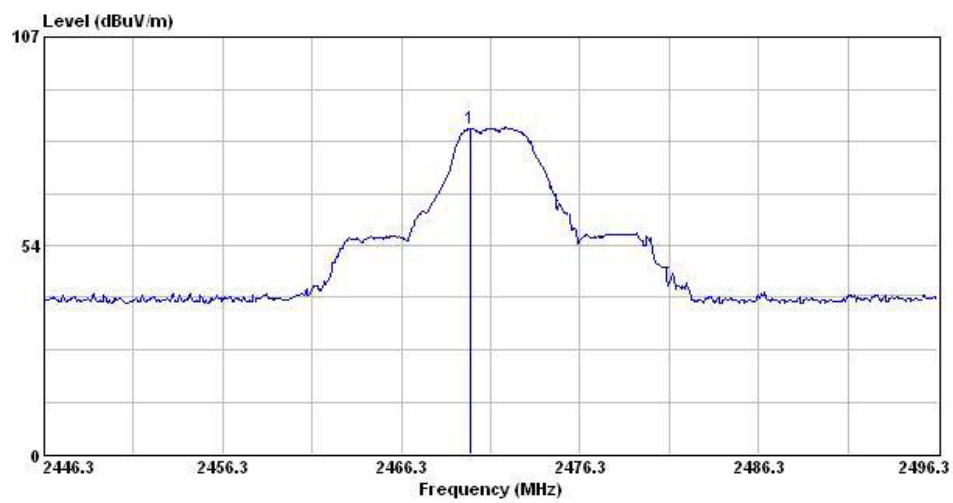
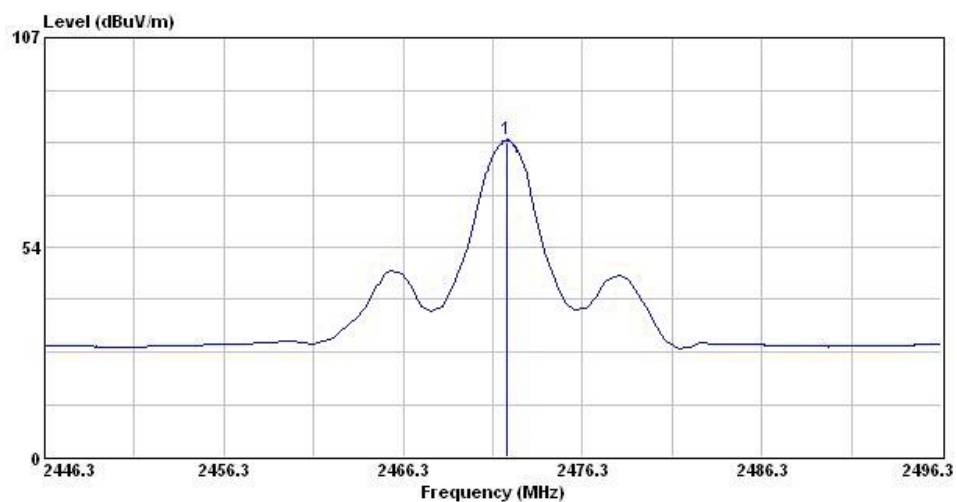
CH1 Horizontal Polarization (Average)



CH3 Vertical Polarization (Peak)**CH3 Vertical Polarization (Average)**

CH3 Horizontal Polarization (Peak)**CH3 Horizontal Polarization (Average)**

CH4 Vertical Polarization (Peak)**CH4 Vertical Polarization (Average)**

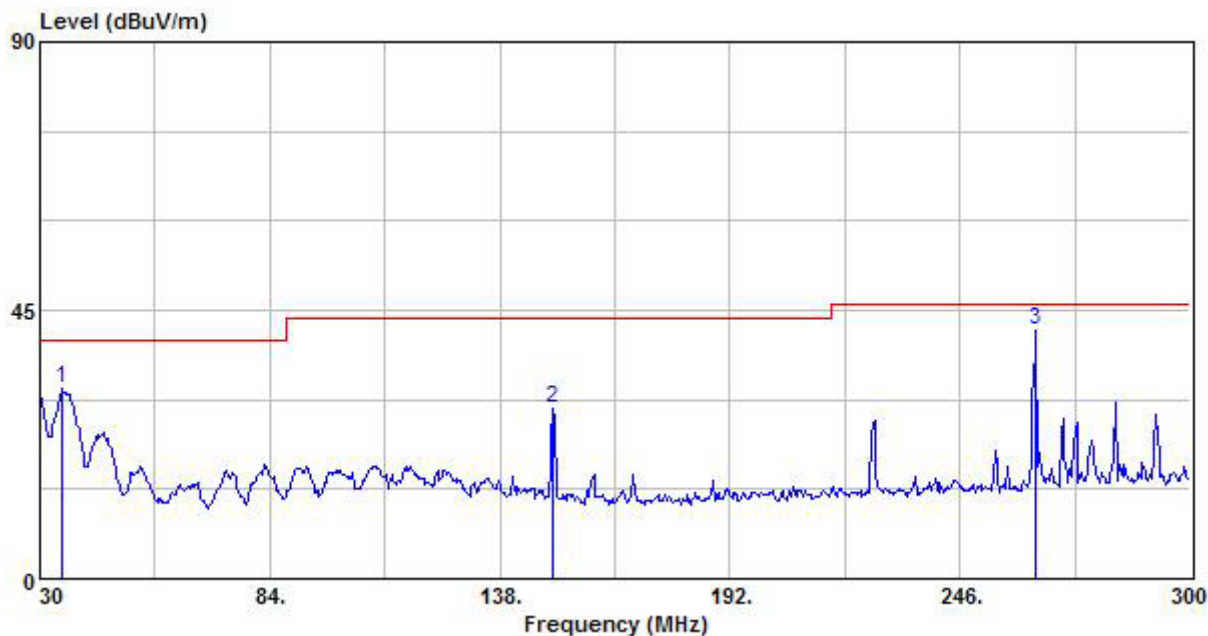
CH4 Horizontal Polarization (Peak)**CH4 Horizontal Polarization (Average)**

Radiated Emission Measurement below 1000MHz**Test Mode** : Channel 1, Transmitter by Power adaptor**Tester** : Alex **Temperature** : 19°C**Humidity** : 53%RH **Frequency Range** : 30MHz~300MHz**IF Bandwidth** : 120kHz **Polarization** : Horizontal

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	35.13	43.04	-11.28	31.76	40.00	8.24
2	150.42	49.44	-21.06	28.38	43.50	15.12
3	263.82	59.59	-17.96	41.63	46.00	4.37

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

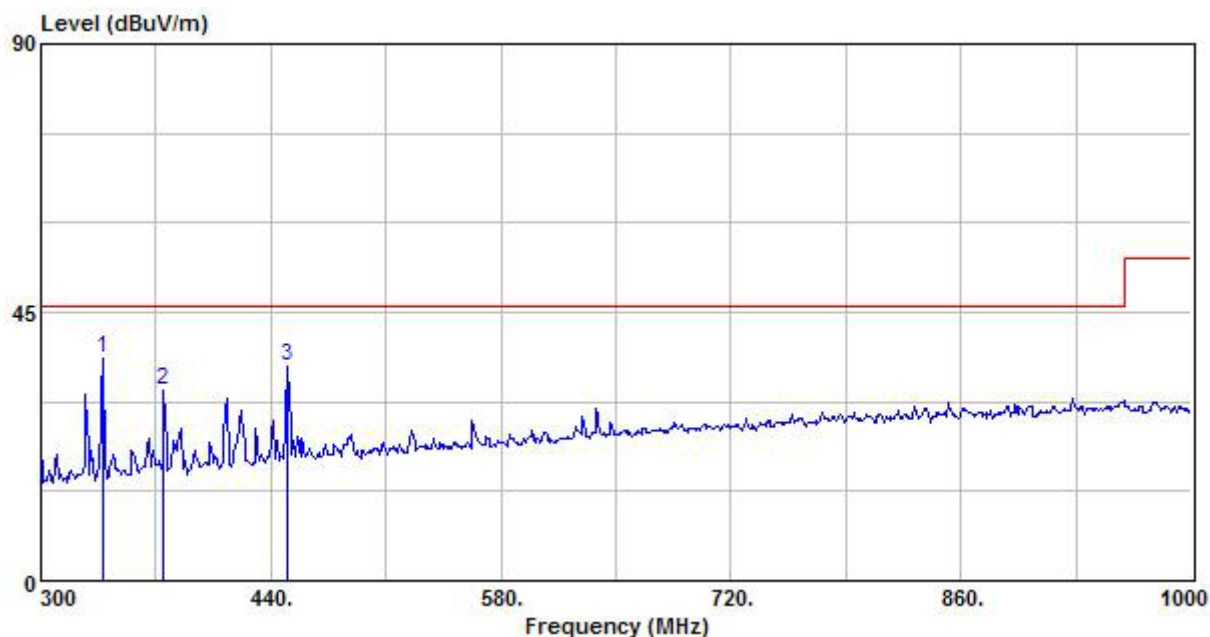


Test Mode : Channel 1, Transmitter by power adaptor
Tester : Alex **Temperature** : 19°C
Humidity : 53%RH **Frequency Range** : 300MHz~1GHz
IF Bandwidth : 120kHz **Polarization** : Horizontal

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	337.80	52.29	-15.08	37.21	46.00	8.79
2	374.90	46.03	-13.99	32.04	46.00	13.96
3	450.50	47.81	-11.90	35.91	46.00	10.09

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

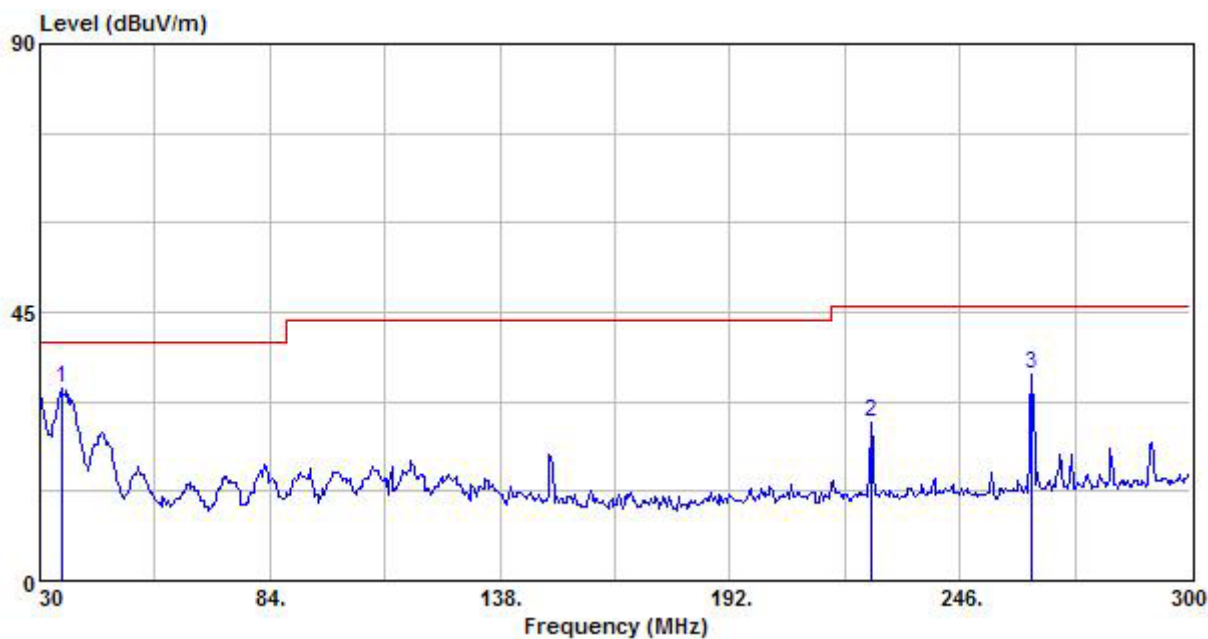


Test Mode : Channel 1, Transmitter by power adaptor
Tester : Alex **Temperature** : 19°C
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz
IF Bandwidth : 120kHz **Polarization** : Vertical

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	35.13	43.39	-11.28	32.11	40.00	7.89
2	225.21	45.86	-19.31	26.55	46.00	19.45
3	262.74	52.64	-18.09	34.55	46.00	11.45

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

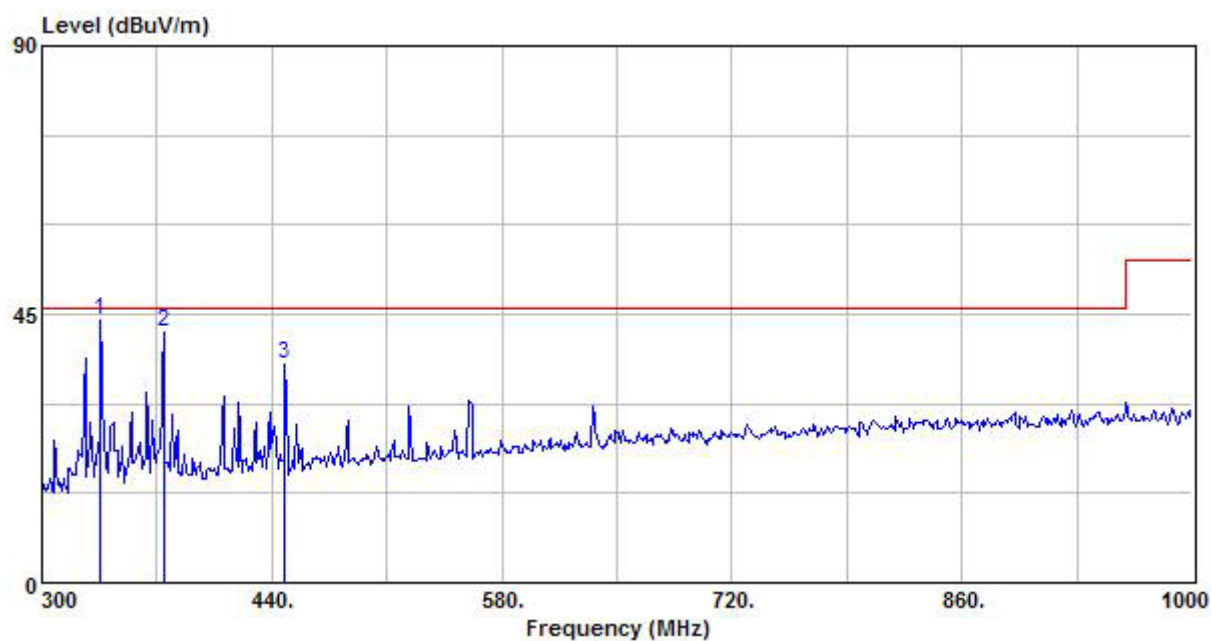


Test Mode : Channel 1, Transmitter by power adaptor
Tester : Alex **Temperature** : 19°C
Humidity : 53%RH **Frequency Range** : 300MHz~1GHz
IF Bandwidth : 120kHz **Polarization** : Vertical

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	335.70	59.07	-15.13	43.94	46.00	2.06
2	374.20	55.88	-14.02	41.86	46.00	4.14
3	447.70	48.46	-11.98	36.48	46.00	9.52

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

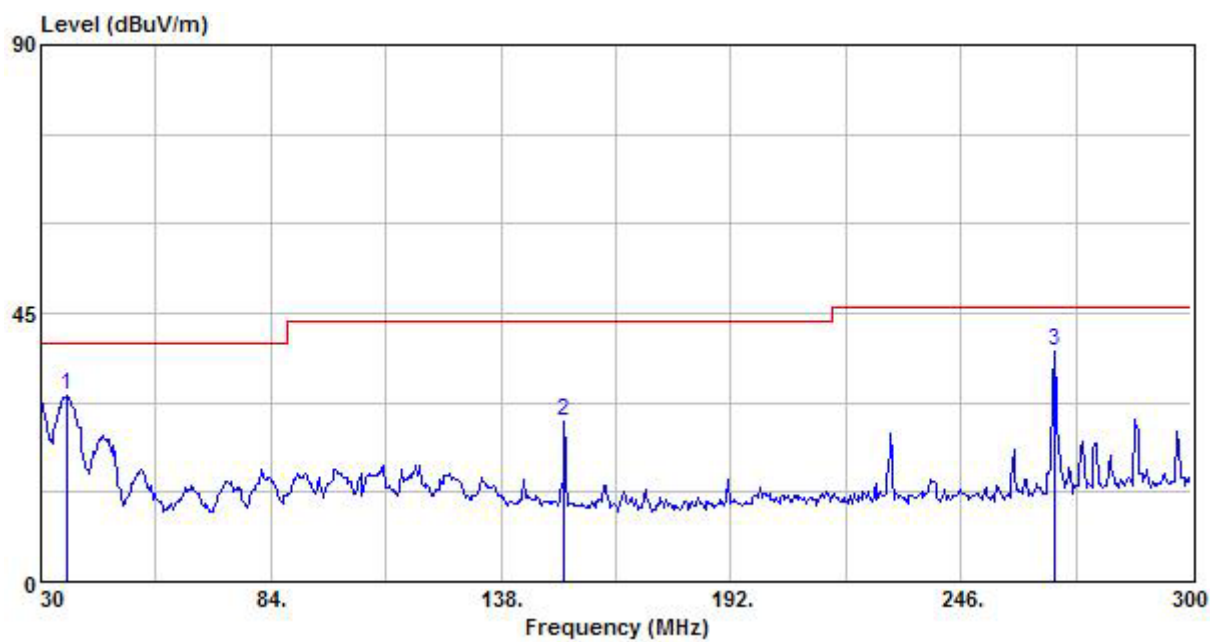


Test Mode : Channel 3, Transmitter by power adaptor
Tester : Alex **Temperature** : 19°C
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz
IF Bandwidth : 120kHz **Polarization** : Horizontal

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	36.21	43.16	-12.09	31.07	40.00	8.93
2	152.85	48.21	-21.20	27.01	43.50	16.49
3	268.14	56.09	-17.46	38.63	46.00	7.37

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

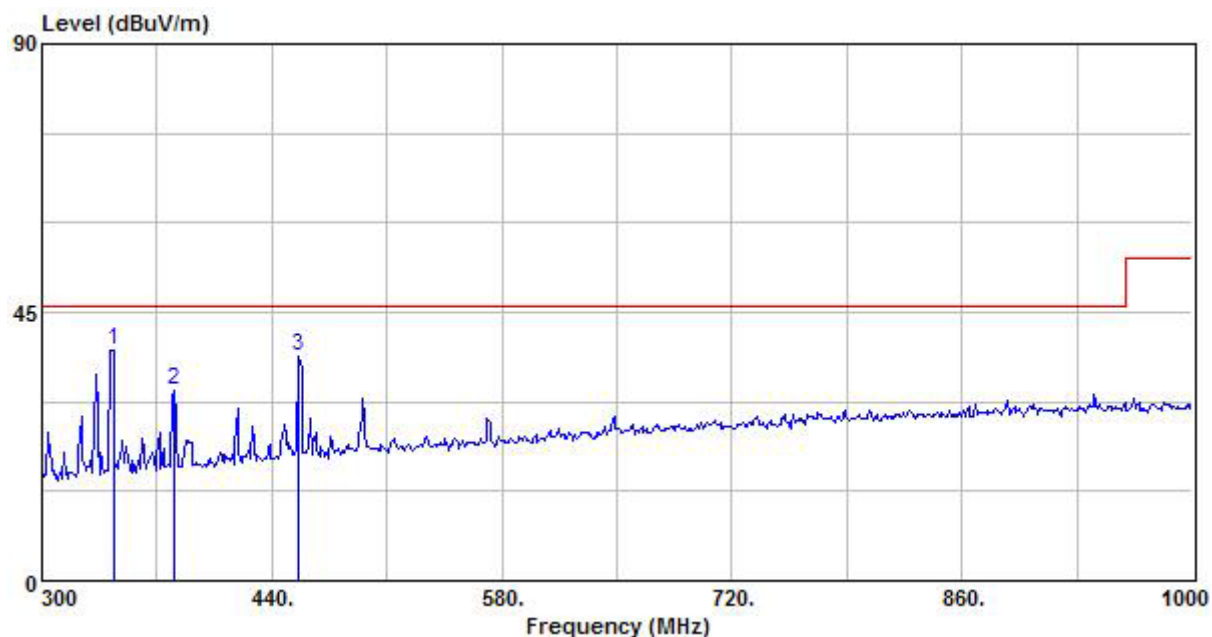


Test Mode : Channel 3, Transmitter by power adaptor
Tester : Alex Temperature : 19°C
Humidity : 53%RH Frequency Range : 300MHz~1GHz
IF Bandwidth : 120kHz Polarization : Horizontal

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	343.40	53.45	-14.95	38.50	46.00	7.50
2	380.50	45.81	-13.84	31.97	46.00	14.03
3	456.10	49.37	-11.75	37.62	46.00	8.38

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

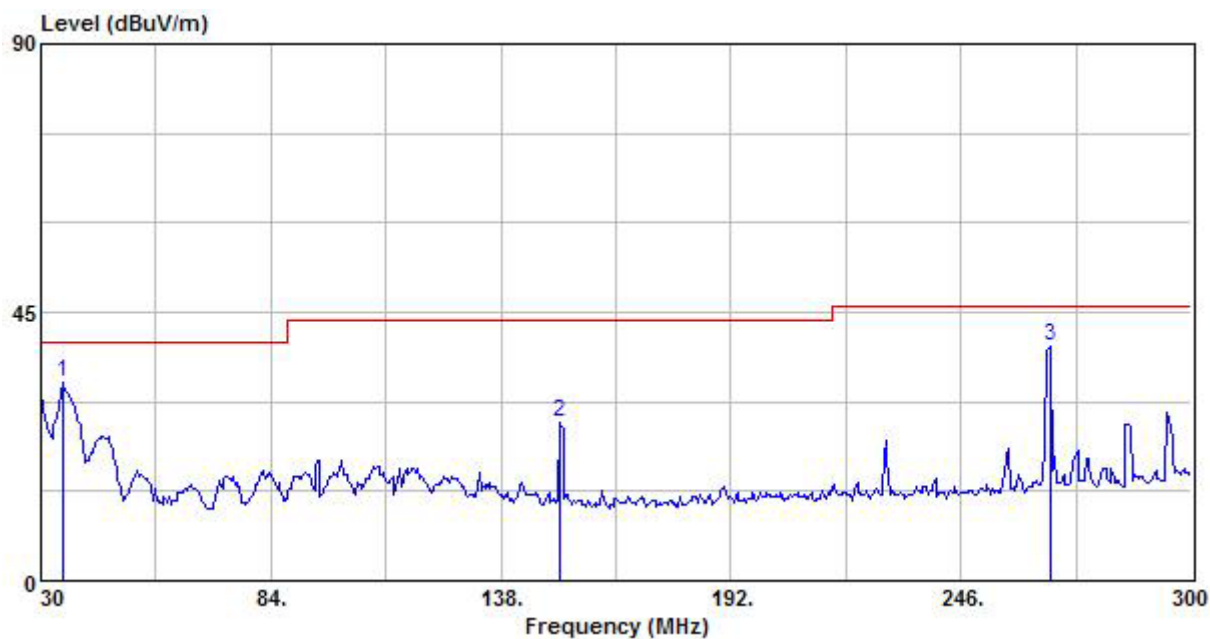


Test Mode : Channel 3, Transmitter by power adaptor
Tester : Alex **Temperature** : 19°C
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz
IF Bandwidth : 120kHz **Polarization** : Vertical

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	35.13	44.58	-11.28	33.30	40.00	6.70
2	151.77	47.65	-21.13	26.52	43.50	16.98
3	267.06	56.89	-17.59	39.30	46.00	6.70

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

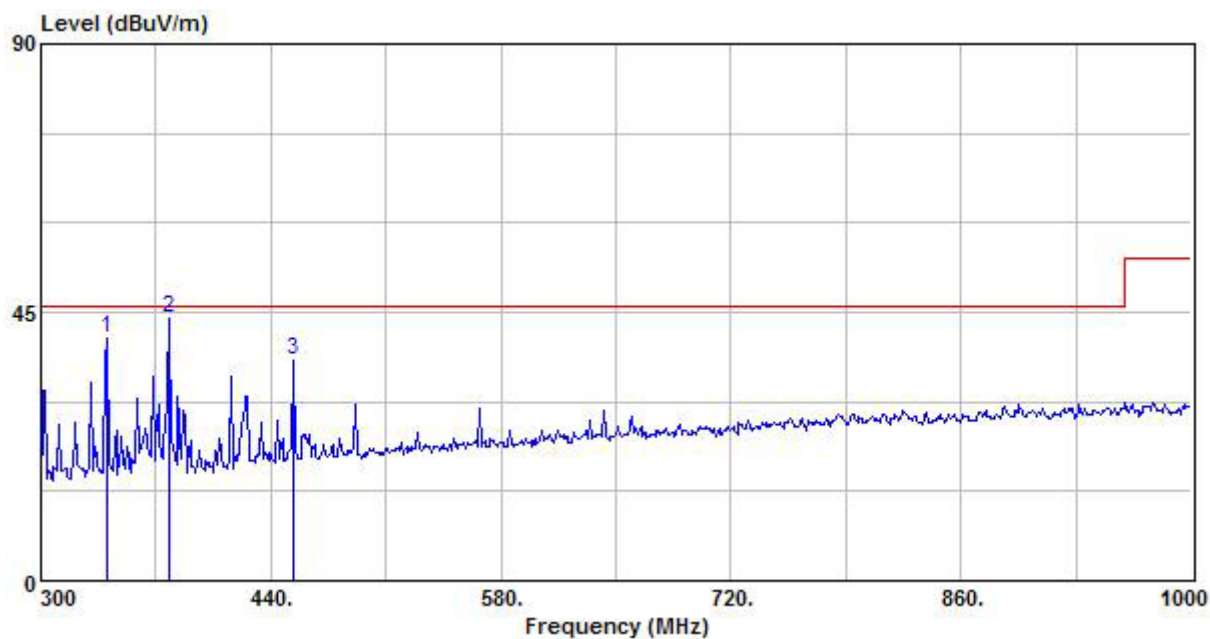


Test Mode : Channel 3, Transmitter by power adaptor
Tester : Alex Temperature : 19°C
Humidity : 53%RH Frequency Range : 300MHz~1GHz
IF Bandwidth : 120kHz Polarization : Vertical

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	340.60	55.50	-15.01	40.49	46.00	5.51
2	377.70	57.98	-13.91	44.07	46.00	1.93
3	453.30	48.65	-11.82	36.83	46.00	9.17

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

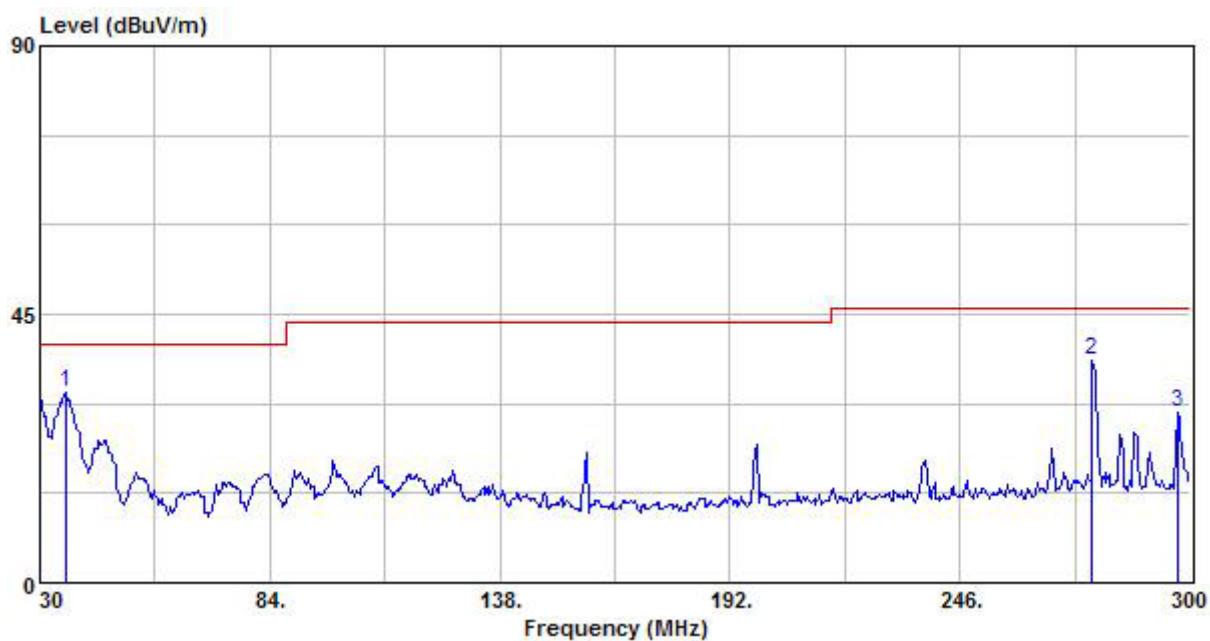


Test Mode : Channel 4, Transmitter by power adaptor
Tester : Alex **Temperature** : 19°C
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz
IF Bandwidth : 120kHz **Polarization** : Horizontal

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	35.94	43.73	-11.88	31.85	40.00	8.15
2	277.05	54.40	-17.14	37.26	46.00	8.74
3	297.30	44.94	-16.42	28.52	46.00	17.48

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

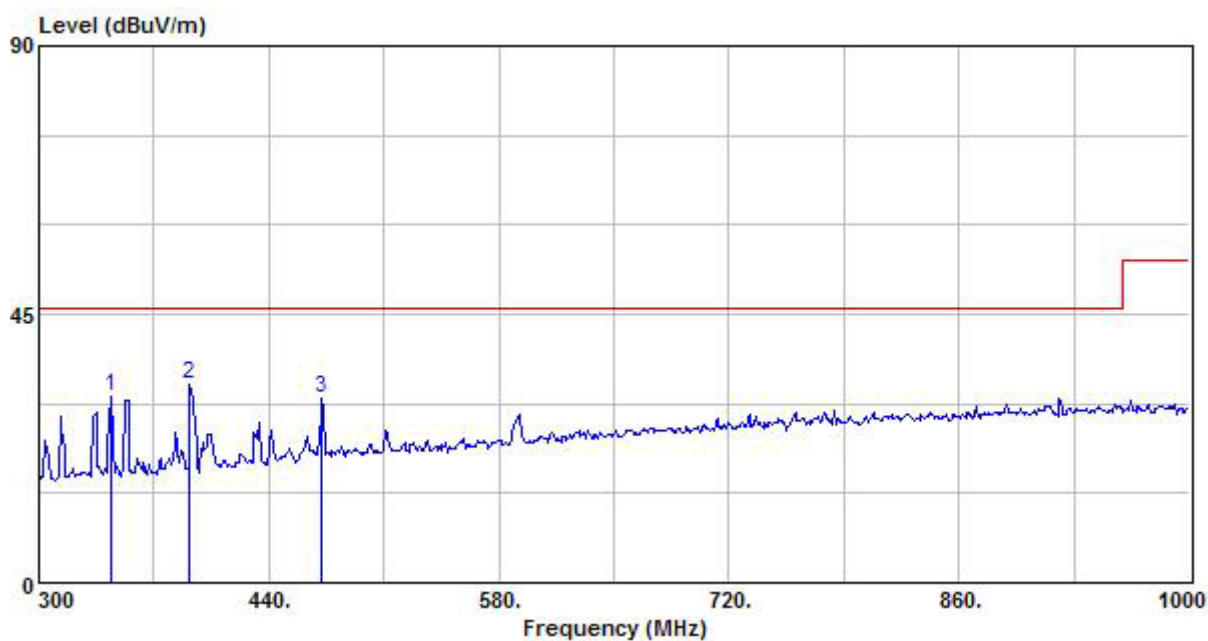


Test Mode : Channel 4, Transmitter by power adaptor
Tester : Alex **Temperature** : 19°C
Humidity : 53%RH **Frequency Range** : 300MHz~1GHz
IF Bandwidth : 120kHz **Polarization** : Horizontal

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	343.40	46.27	-14.95	31.32	46.00	14.68
2	391.70	46.72	-13.51	33.21	46.00	12.79
3	472.20	42.38	-11.33	31.05	46.00	14.95

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

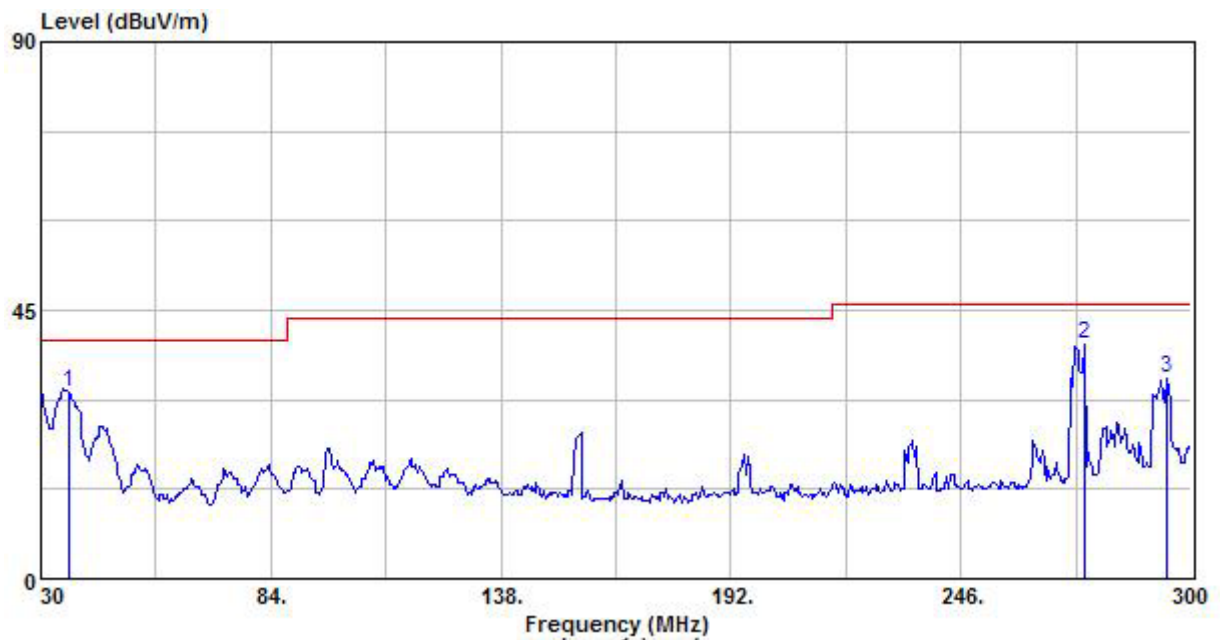


Test Mode : Channel 4, Transmitter by power adaptor
Tester : Alex Temperature : 19°C
Humidity : 53%RH Frequency Range : 30MHz~300MHz
IF Bandwidth : 120kHz Polarization : Vertical

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	36.48	43.64	-12.28	31.36	40.00	8.64
2	274.89	56.53	-17.17	39.36	46.00	6.64
3	294.33	50.04	-16.57	33.47	46.00	12.53

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

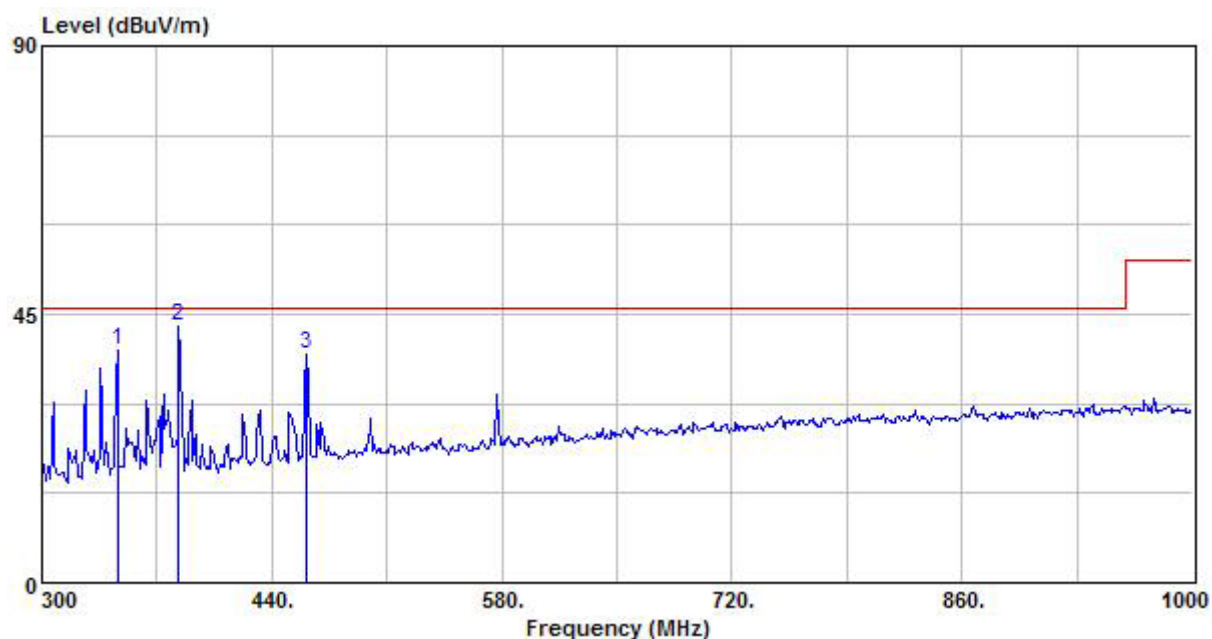


Test Mode : Channel 4, Transmitter by power adaptor
Tester : Alex **Temperature** : 19°C
Humidity : 53%RH **Frequency Range** : 300MHz~1GHz
IF Bandwidth : 120kHz **Polarization** : Vertical

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	346.20	53.91	-14.87	39.04	46.00	6.96
2	383.30	56.72	-13.75	42.97	46.00	3.03
3	461.00	49.87	-11.61	38.26	46.00	7.74

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 1, Transmitter by battery

Tester : Alex **Temperature** : 19°C

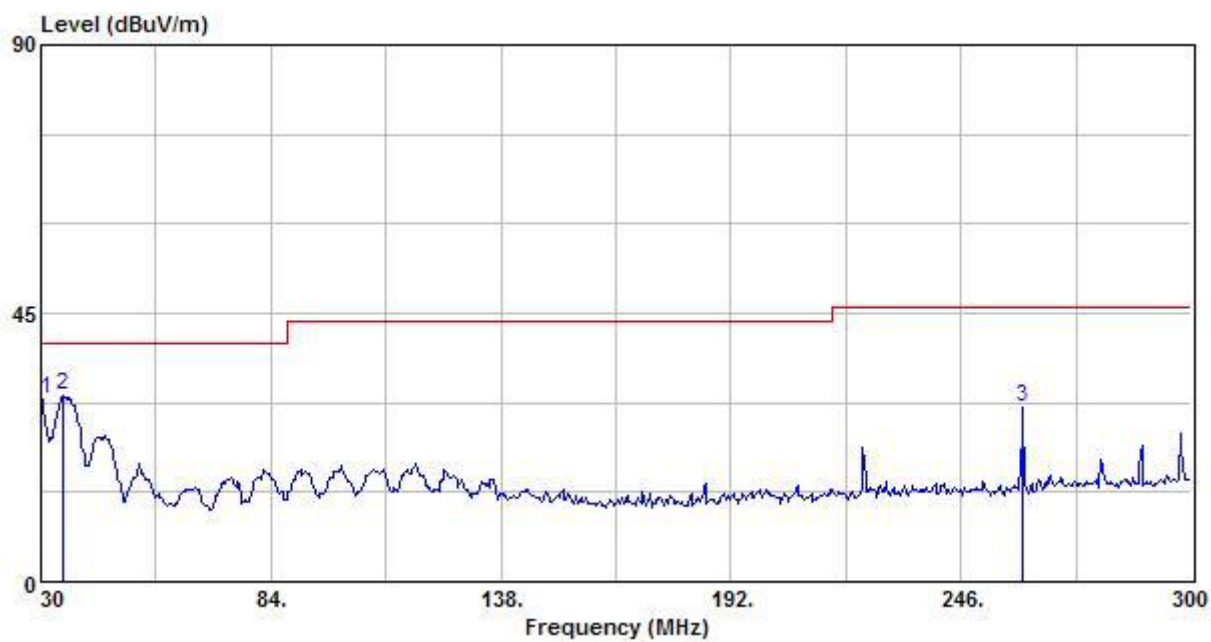
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz

IF Bandwidth : 120kHz **Polarization** : Horizontal

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.00	42.58	-11.15	31.43	40.00	8.57
2	35.13	42.58	-11.28	31.30	40.00	8.70
3	260.58	47.56	-18.33	29.23	46.00	16.77

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 1, Transmitter by battery

Tester : Alex **Temperature** : 19°C

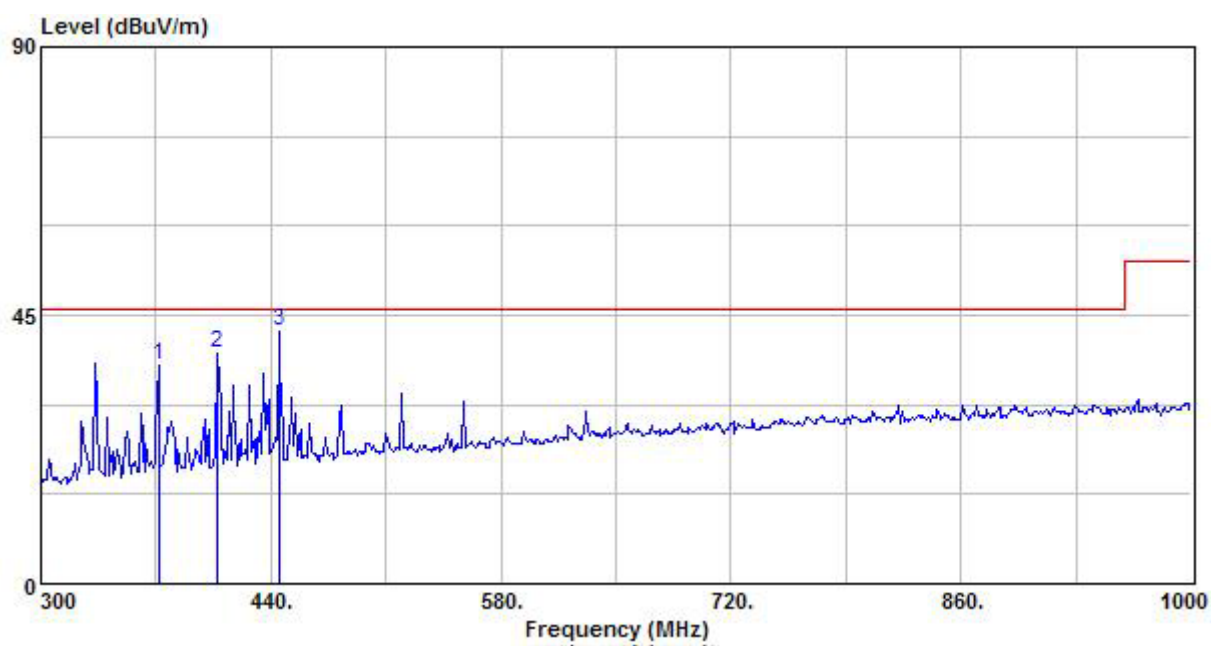
Humidity : 53%RH **Frequency Range** : 300MHz~1GHz

IF Bandwidth : 120kHz **Polarization** : Horizontal

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	371.40	50.72	-14.11	36.61	46.00	9.39
2	407.80	51.60	-13.05	38.55	46.00	7.45
3	444.90	54.31	-12.04	42.27	46.00	3.73

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 1, Transmitter by battery

Tester : Alex **Temperature** : 19°C

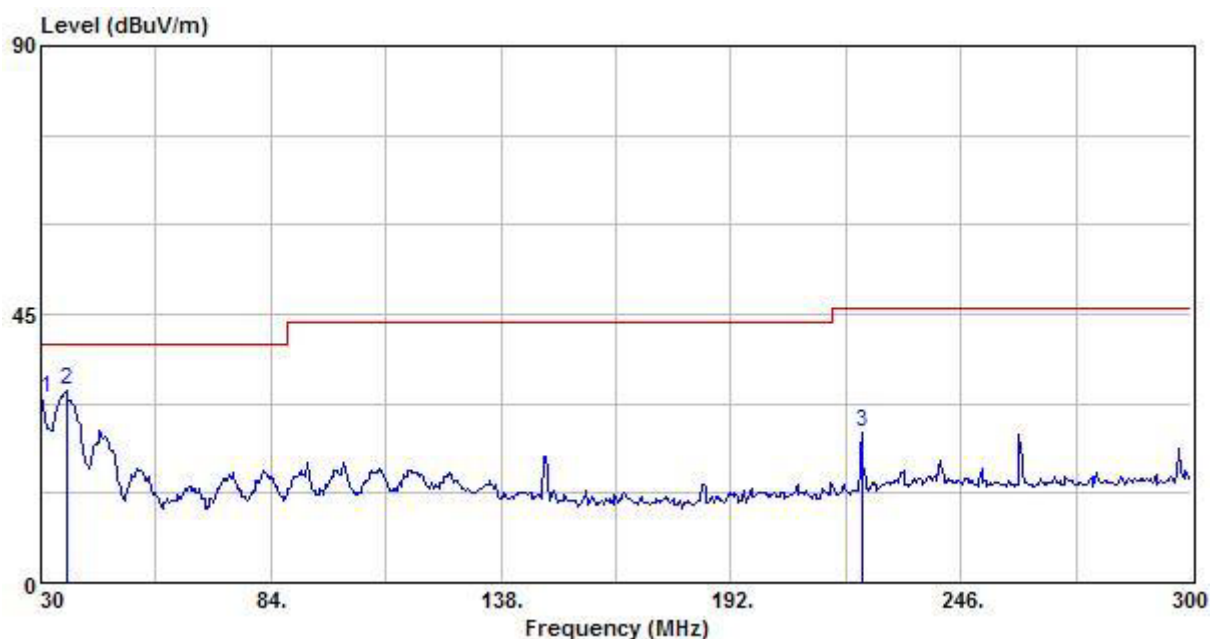
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz

IF Bandwidth : 120kHz **Polarization** : Vertical

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.00	42.45	-11.15	31.30	40.00	8.70
2	35.94	44.24	-11.88	32.36	40.00	7.64
3	222.78	44.60	-19.44	25.16	46.00	20.84

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 1, Transmitter by battery

Tester : Alex **Temperature** : 19°C

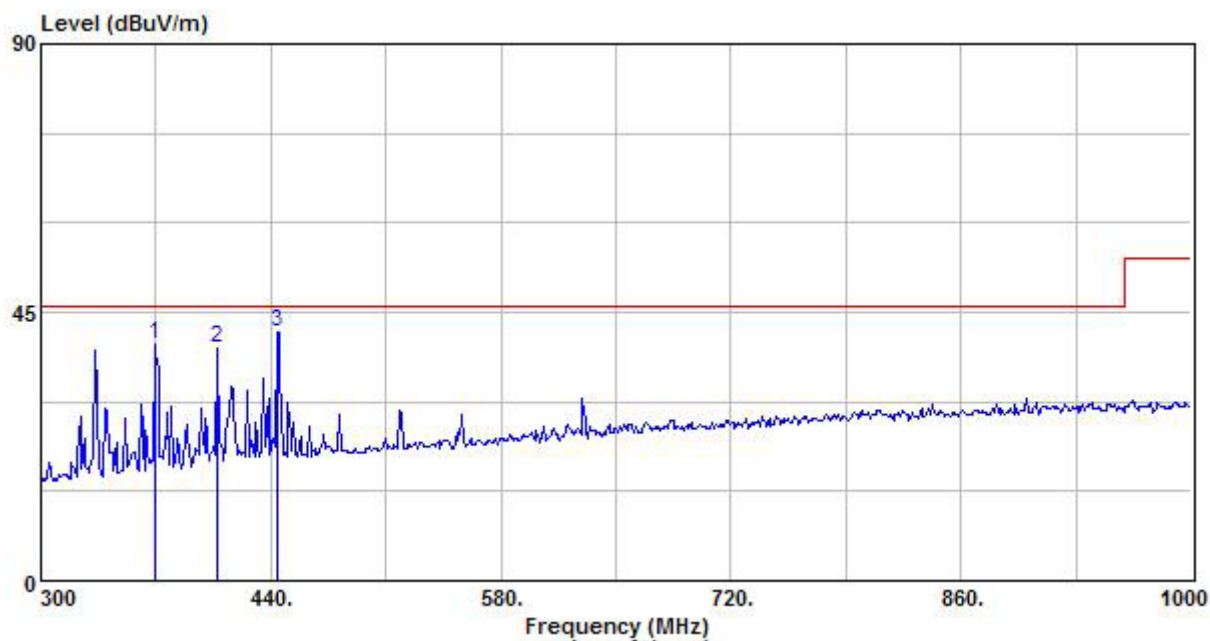
Humidity : 53%RH **Frequency Range** : 300MHz~1GHz

IF Bandwidth : 120kHz **Polarization** : Vertical

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	369.30	53.83	-14.18	39.65	46.00	6.35
2	407.80	52.12	-13.05	39.07	46.00	6.93
3	444.20	53.83	-12.07	41.76	46.00	4.24

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 3, Transmitter by battery

Tester : Alex **Temperature** : 19°C

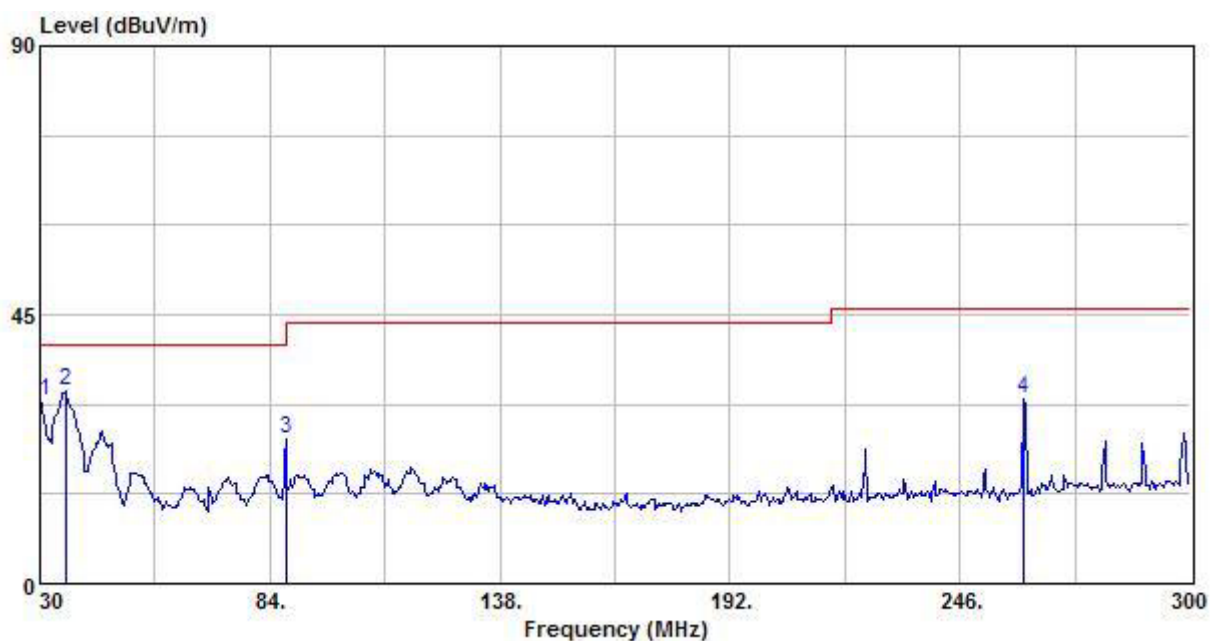
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz

IF Bandwidth : 120kHz **Polarization** : Horizontal

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.00	42.39	-11.15	31.24	40.00	8.76
2	35.94	44.17	-11.88	32.29	40.00	7.71
3	87.78	44.34	-20.30	24.04	40.00	15.96
4	260.85	49.36	-18.31	31.05	46.00	14.95

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 3, Transmitter by battery

Tester : Alex **Temperature** : 19°C

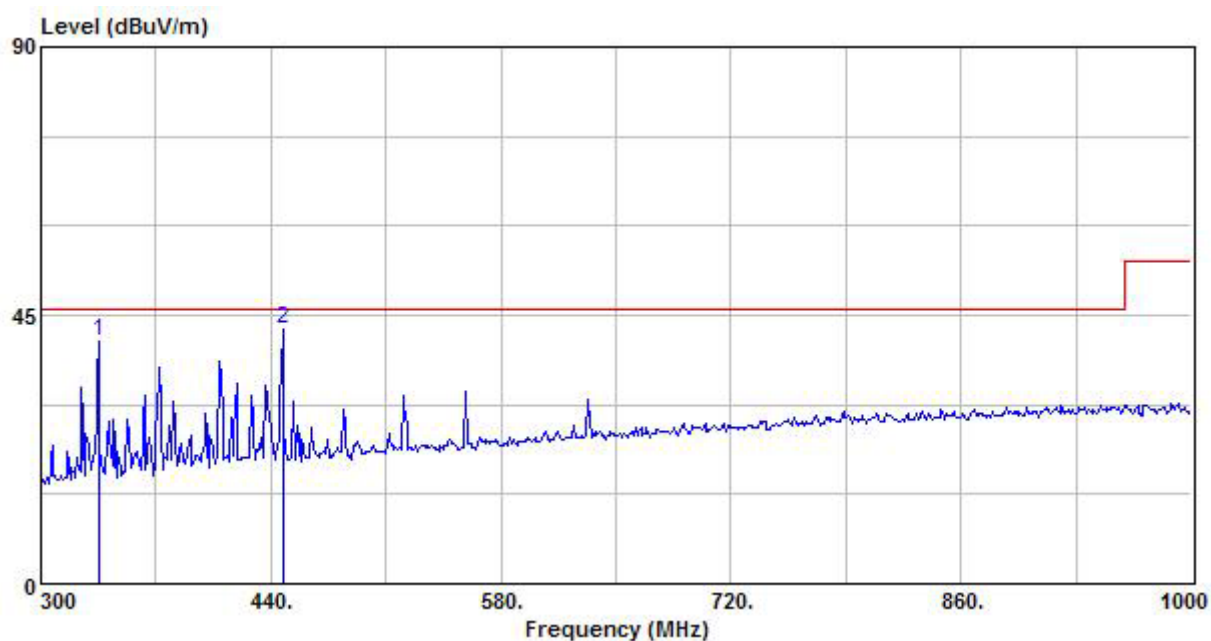
Humidity : 53%RH **Frequency Range** : 300MHz~1GHz

IF Bandwidth : 120kHz **Polarization** : Horizontal

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	335.00	55.94	-15.15	40.79	46.00	5.21
2	447.00	54.49	-11.99	42.50	46.00	3.50

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 3, Transmitter by battery

Tester : Alex **Temperature** : 19°C

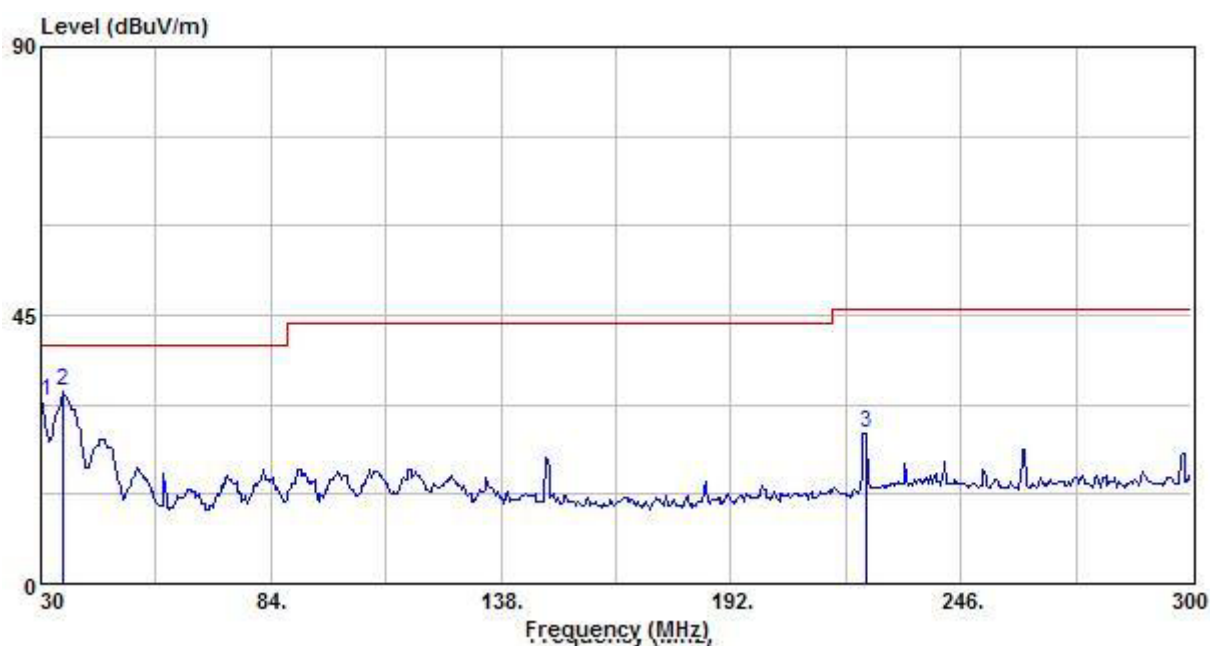
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz

IF Bandwidth : 120kHz **Polarization** : Vertical

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.00	41.69	-11.15	30.54	40.00	9.46
2	35.13	43.62	-11.28	32.34	40.00	7.66
3	223.59	44.62	-19.39	25.23	46.00	20.77

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 3, Transmitter by battery

Tester : Alex **Temperature** : 19°C

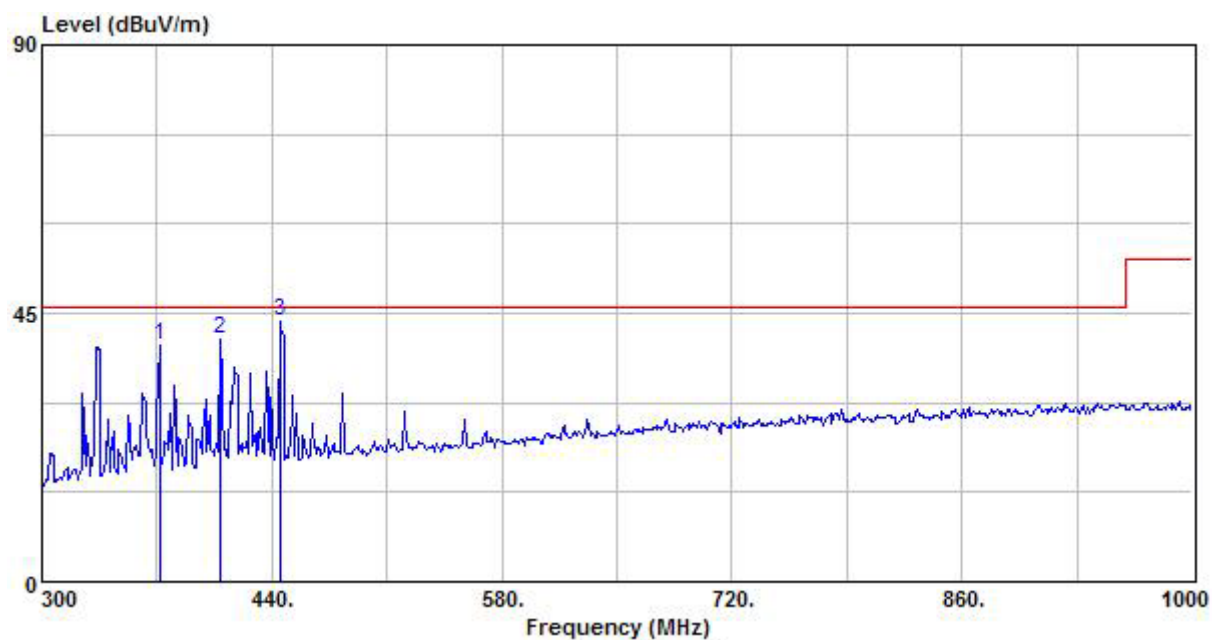
Humidity : 53%RH **Frequency Range** : 300MHz~1GHz

IF Bandwidth : 120kHz **Polarization** : Vertical

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	371.40	53.59	-14.11	39.48	46.00	6.52
2	408.50	53.76	-13.05	40.71	46.00	5.29
3	444.90	55.54	-12.04	43.50	46.00	2.50

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 4, Transmitter by battery

Tester : Alex **Temperature** : 19°C

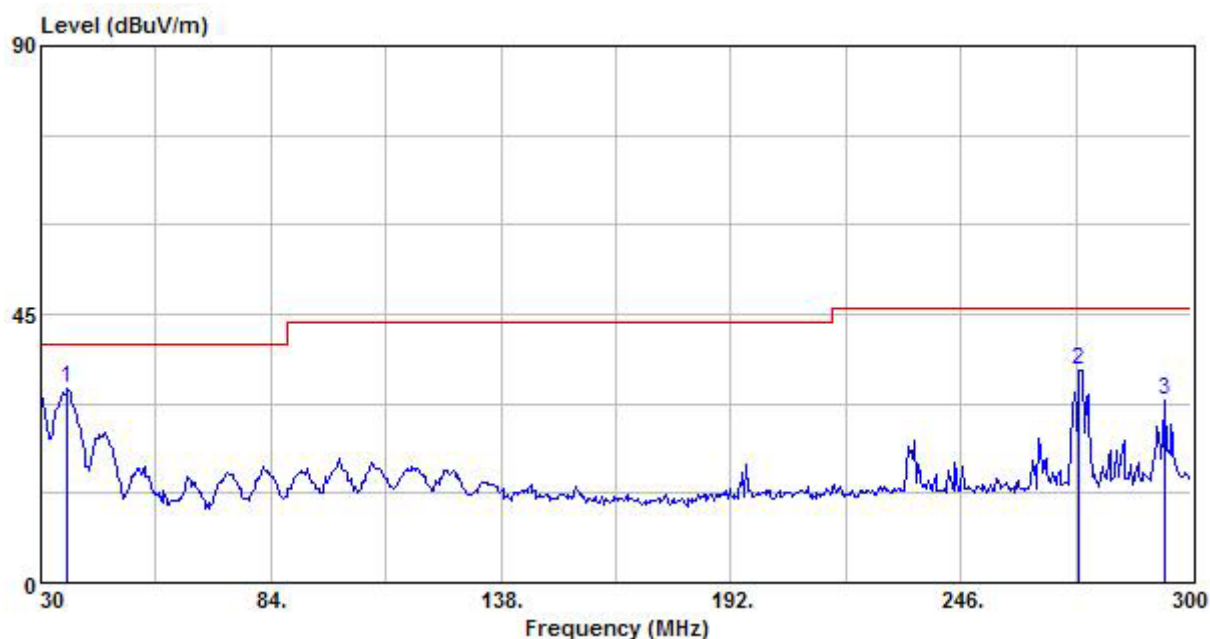
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz

IF Bandwidth : 120kHz **Polarization** : Horizontal

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	36.21	44.77	-12.09	32.68	40.00	7.32
2	273.81	52.81	-17.19	35.62	46.00	10.38
3	294.06	47.00	-16.58	30.42	46.00	15.58

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 4, Transmitter by battery

Tester : Alex **Temperature** : 19°C

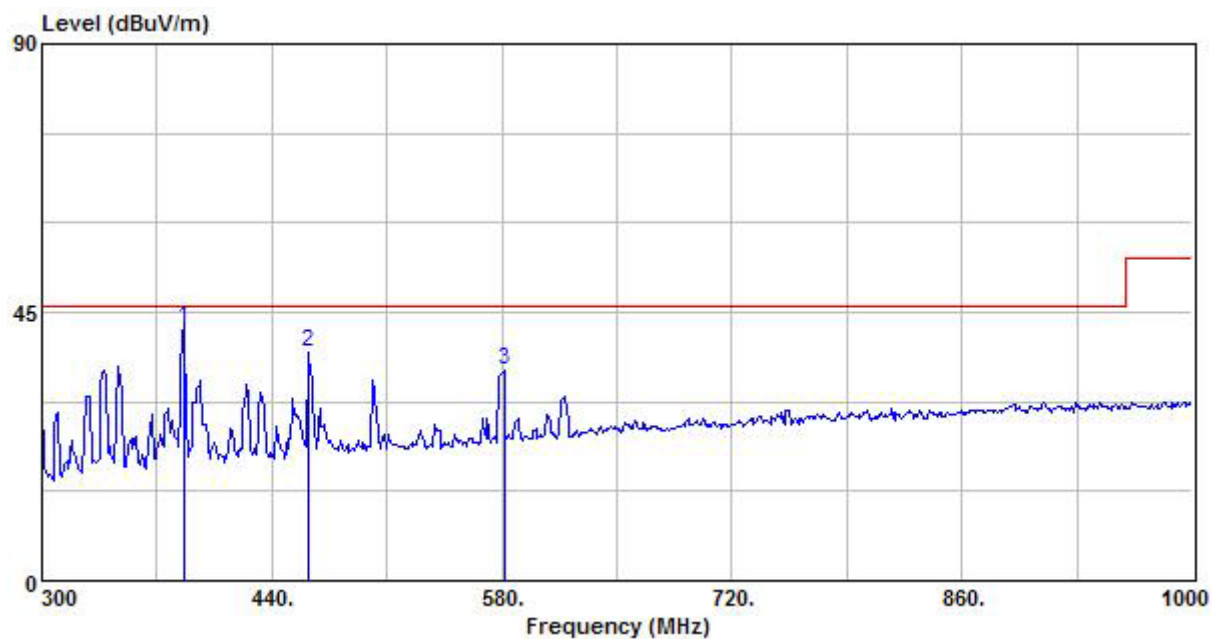
Humidity : 53%RH **Frequency Range** : 300MHz~1GHz

IF Bandwidth : 120kHz **Polarization** : Horizontal

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	386.10	55.83	-13.66	42.17	46.00	3.83
2	461.70	49.74	-11.60	38.14	46.00	7.86
3	581.40	44.50	-9.15	35.35	46.00	10.65

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 4, Transmitter by battery

Tester : Alex **Temperature** : 19°C

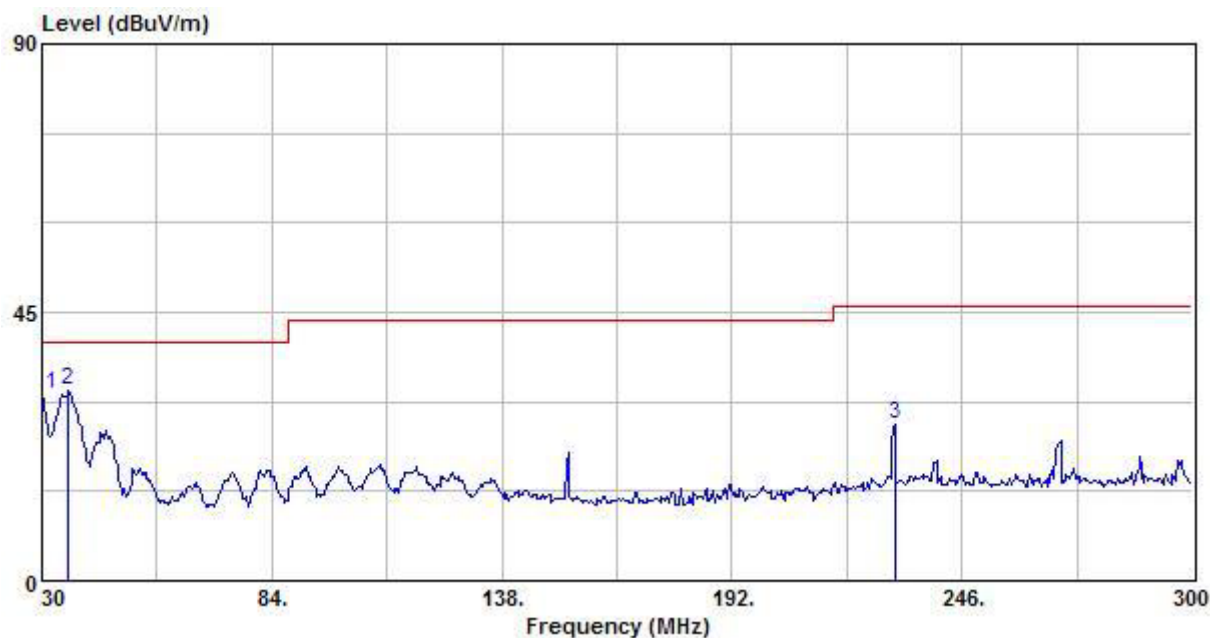
Humidity : 53%RH **Frequency Range** : 30MHz~300MHz

IF Bandwidth : 120kHz **Polarization** : Vertical

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.00	42.30	-11.15	31.15	40.00	8.85
2	36.21	43.91	-12.09	31.82	40.00	8.18
3	230.34	45.26	-19.04	26.22	46.00	19.78

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : Channel 4, Transmitter by battery

Tester : Alex **Temperature** : 19°C

Humidity : 53%RH **Frequency Range** : 300MHz~1GHz

IF Bandwidth : 120kHz **Polarization** : Vertical

	Frequency (MHz)	Reading Data (dBuV)	Correction Factor (dB1/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	341.30	50.59	-14.98	35.61	46.00	10.39
2	380.50	57.26	-13.84	43.42	46.00	2.58
3	456.10	52.14	-11.75	40.39	46.00	5.61

Note :

1. Correction Factor (dB1/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

