



Neutron Engineering Inc.

Radio Test Report

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

Issued Date : Jul. 04, 2014
Project No. : 1406119
Equipment : module
Model Name : WM-N-BM-02_D-REF1

Applicant : ABILITY ENTERPRISE CO.,LTD.
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Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Jun. 11, 2014
Date of Test: Jun. 11, 2014 ~ Jul. 03, 2014

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.



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REPORT ISSUED HISTORY

Issue No.	Description	Issued Date
NEI-FCCP-1-1406119	Original report.	Jul. 05, 2014



1 CERTIFICATION

Equipment : module
Brand Name : USI
Model Name : WM-N-BM-02_D-REF1
Applicant : ABILITY ENTERPRISE CO.,LTD.
Date of Test : Jun. 11, 2014 ~ Jul. 03, 2014
Standard(s) : FCC Part 15, Subpart C: 2013
ANSI C63.4-2009

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-1406119) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).



2. SUMMARY OF TEST RESULTS

Standard Clause	Test Item	Result
15.207	Conducted Emission	PASS
15.247 (c)	Antenna conducted Spurious Emission	PASS
15.247 (a)(2)	6 dB Bandwidth	PASS
15.247 (b)	Maximum Peak Conducted Output Power	PASS
15.247 (c)	Radiated Spurious Emission	PASS
15.247 (d)(e)	Power Spectral Density	PASS
15.205	Restricted Bands	PASS
15.203	Antenna Requirement	PASS

NOTE:

- (1) N/A: denotes test is not applicable in this Test Report



2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

Conducted emission Test:

C02: 1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

Radiated emission Test (Below 1 GHz):

CB08: 1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

Radiated emission Test (Above 1 GHz):

CB08: 1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

2.2 MEASUREMENT UNCERTAINTY

The measurement uncertainty is not specified by FCC/Industry Canada rules and for reference only.

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%**.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

A. Conducted emission test:

Test Site	Measurement Frequency Range	U , (dB)	NOTE
C02	150 kHz ~ 30 MHz	2.59	

B. Radiated emission test:

Test Site	Item	Measurement Frequency Range	Uncertainty	NOTE
CB08	Radiated emission at 3m	Horizontal Polarization	30 - 200MHz	3.35 dB
		Horizontal Polarization	200 - 1000MHz	3.11 dB
		Horizontal Polarization	1 - 18GHz	3.97 dB
		Horizontal Polarization	18 - 40GHz	4.01 dB
	Radiated emission at 3m	Vertical Polarization	30 - 200MHz	3.22 dB
		Vertical Polarization	200 - 1000MHz	3.24 dB
		Vertical Polarization	1 - 18GHz	4.05 dB
		Vertical Polarization	18 - 40GHz	4.04 dB

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR} , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz: 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz: 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR} .

If U_{lab} is less than or equal to U_{CISPR} , then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{CISPR} , then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{CISPR})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{CISPR})$, exceeds the disturbance limit.



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	module	
Brand Name	USI	
Model Name	WM-N-BM-02_D-REF1	
OEM Brand/Model Name	N/A	
Model Difference	N/A	
Product Description	Operation Frequency	2412~2462 MHz
	Modulation Type	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM,(64 QAM, 16 QAM, QPSK, BPSK) IEEE 802.11n: OFDM(64 QAM, 16 QAM, QPSK, BPSK)
	Bit Rate of Transmitter	IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps IEEE 802.11n: up to 150 Mbps
	Number Of Channel	Please refer to the Note 2.
	Antenna Designation	Please refer to the Note 3.
	Antenna Gain(Peak)	Please refer to the Note 3.
	Maximum Conducted Output Power	IEEE 802.11b: 15.14 dBm (0.0327 W) IEEE 802.11g: 20.57 dBm (0.1140 W) IEEE 802.11n (20 MHz): 20.74 dBm(0.1186 W)
	More details of EUT technical specification please refer to the User's Manual.	
Power Source	DC Voltage supplied from host system.	
Power Rating	I/P: DC 3.3V	
Connecting I/O Port(s)	Please refer to the User's Manual	



NOTE:

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

IEEE 802.11b/g/n (20MHz)					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	08	2447		

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Printed	N/A	-3.04



3.2 DESCRIPTION OF TEST MODES

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

Test Items	IEEE	Mode	Data Rate	Channel	Note
Conducted Emission	802.11b	DSSS	1 Mbps	06	
Antenna conducted Spurious Emission	802.11b	DSSS	1 Mbps	01/06/11	
	802.11g	OFDM	6 Mbps	01/06/11	
	802.11n (20 MHz)	BPSK	MCS0	01/06/11	
6 dB Bandwidth	802.11b	DSSS	1 Mbps	01/06/11	
	802.11g	OFDM	6 Mbps	01/06/11	
	802.11n (20 MHz)	BPSK	MCS0	01/06/11	
Maximum Peak Conducted Output Power	802.11b	DSSS	1 Mbps	01/06/11	
	802.11g	OFDM	6 Mbps	01/06/11	
	802.11n (20 MHz)	BPSK	MCS0	01/06/11	
Radiated Spurious Emission (30 MHz to 1 GHz)	802.11n (20 MHz)	OFDM	MCS0	06	
Radiated Spurious Emission (above 1 GHz)	802.11b	DSSS	1 Mbps	01/06/11	
	802.11g	OFDM	6 Mbps	01/06/11	
	802.11n (20 MHz)	BPSK	MCS0	01/06/11	
Restricted Bands	802.11b	DSSS	1 Mbps	01/11	
	802.11g	OFDM	6 Mbps	01/11	
	802.11n (20 MHz)	BPSK	MCS0	01/11	
Antenna Requirement	---		---	---	

NOTE: The measurements are performed at the highest, middle, lowest available channels.



3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

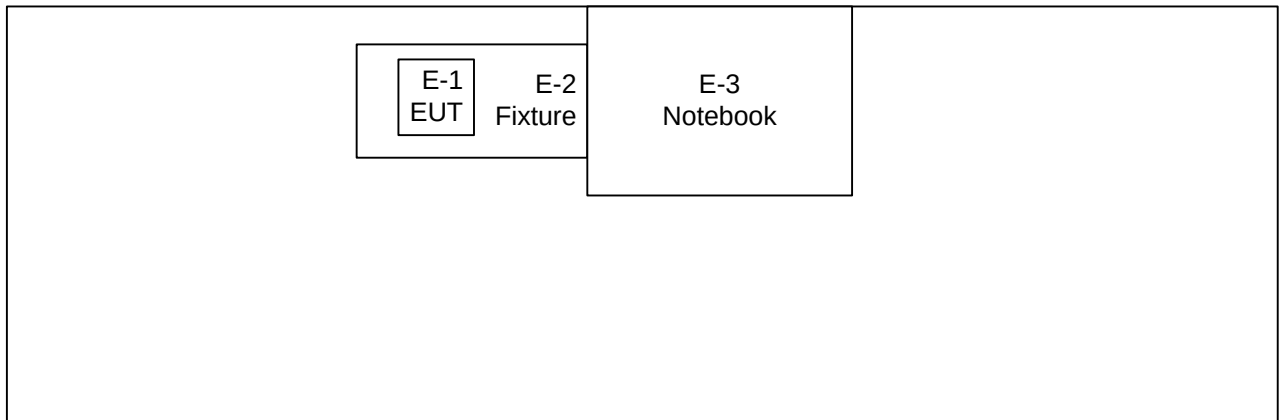
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final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

IEEE	802.11b			802.11g		
Test software Version	N/A			N/A		
Frequency	2412 MHz	2437 MHz	2462 MHz	2412 MHz	2437 MHz	2462 MHz
Parameter	14.5	14.25	13.75	13.5	13.25	12.75

IEEE	802.11n (20 MHz)		
Test software Version	N/A		
Frequency	2412 MHz	2437 MHz	2462 MHz
Parameter	13.75	13.5	13



3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED





3.5 DESCRIPTION OF SUPPORT UNITS

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

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	module	USI	WM-N-BM-02_D-REF1	2AAD3AA1D1	N/A	EUT
E-2	Fixture	N/A	N/A	N/A	N/A	
E-3	Notebook PC	ASUS	X80L	DOC	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
N/A	-	-	-	-

NOTE: The support equipment was authorized by Declaration of Conformity (DOC).



4 CONDUCTED EMISSION

4.1 LIMIT

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

NOTE:

1. The tighter limit applies at the band edges.
2. The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
3. The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
 Margin Level = Measurement Value – Limit Value

4.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	Schwarzbeck	NSLK 8127	8127685	Jan. 08, 2015
2	Test Cable	TIMES	CFD300-NL	C01	Jun. 15, 2015
3	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jun. 19, 2015
4	Measurement Software	EZ	EZ_EMC (Version NB-02A)	N/A	N/A

NOTE: **N/A:** denotes No Model Name, No Serial No. or No Calibration specified.



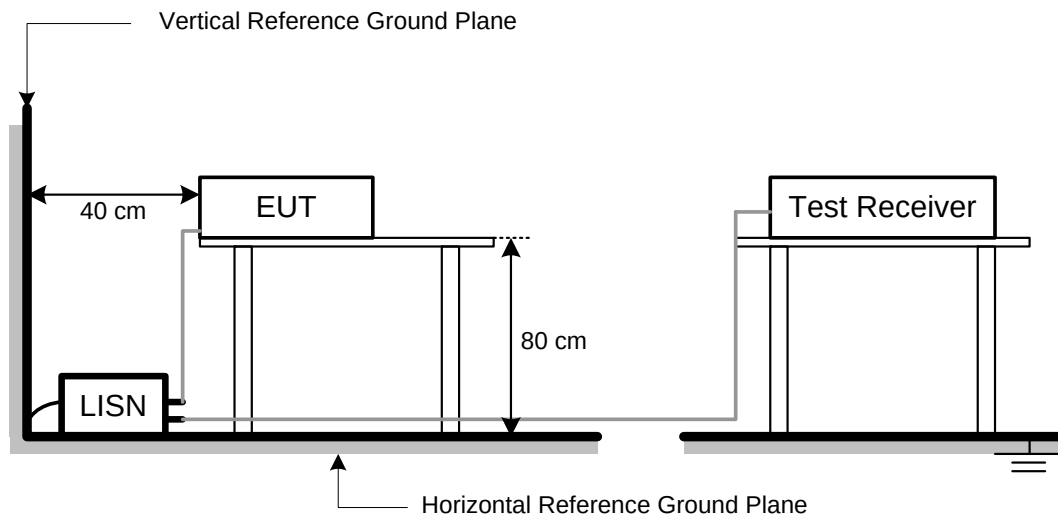
4.3 TEST PROCEDURES

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

NOTE:

- Reading in which marked as Peak, QP or AVG means measurements by using are Quasi-Peak or Average Mode with Detector BW=9 kHz (6 dB Bandwidth).
- All readings are Peak Mode value unless otherwise stated QP or AVG in column of Note. If the Peak or QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only Peak or QP Mode was measured, but AVG Mode didn't perform.

4.4 TEST SETUP LAYOUT



4.5 DEVIATION FROM TEST STANDARD

No deviation



4.6 EUT OPERATING CONDITIONS

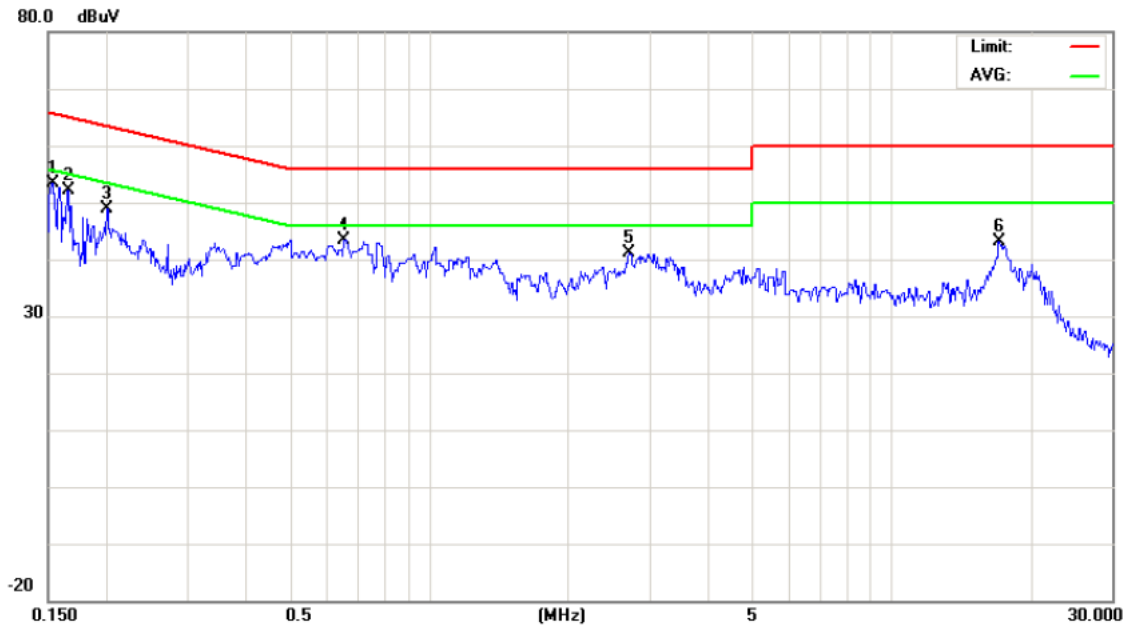
The EUT used during radiated and/or conducted emission measurement was designed to exercise in a manner similar to a typical use.



4.7 TEST RESULTS

EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Phase: Line

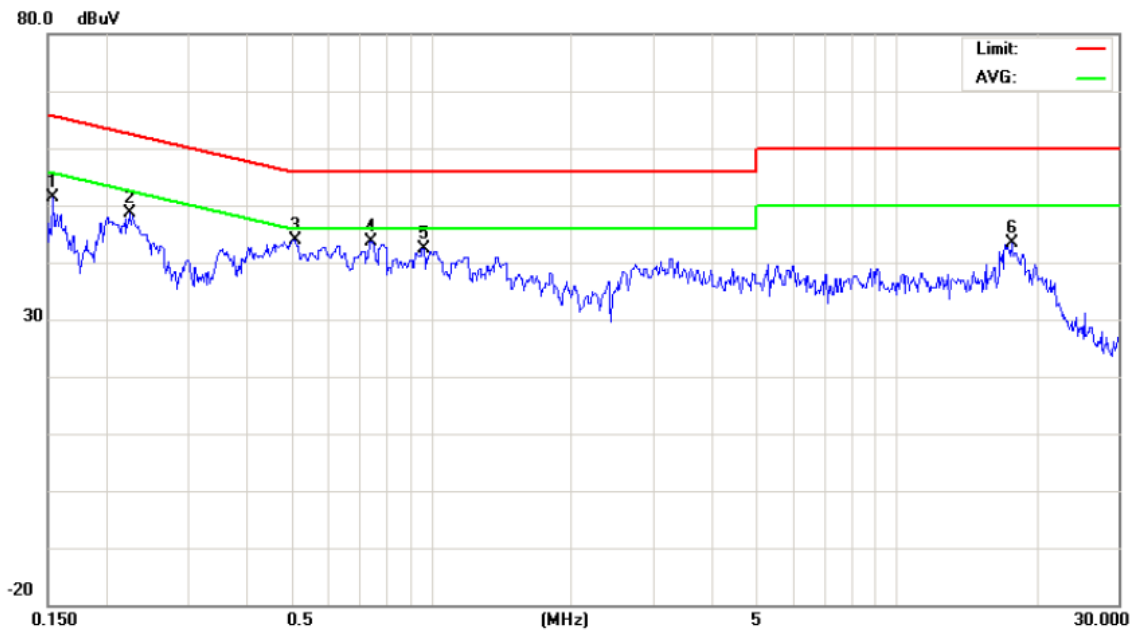


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1532	44.68	8.66	53.34	65.82	-12.48	peak	
2		0.1659	43.23	8.84	52.07	65.16	-13.09	peak	
3		0.2005	39.52	9.31	48.83	63.59	-14.76	peak	
4		0.6542	34.51	8.96	43.47	56.00	-12.53	peak	
5		2.7050	31.81	9.40	41.21	56.00	-14.79	peak	
6		17.0500	33.12	9.94	43.06	60.00	-16.94	peak	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Phase: Neutral



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1534	42.80	8.67	51.47	65.81	-14.34	peak	
2	0.2241	39.38	9.15	48.53	62.67	-14.14	peak	
3 *	0.5090	34.79	8.97	43.76	56.00	-12.24	peak	
4	0.7430	34.57	8.95	43.52	56.00	-12.48	peak	
5	0.9590	33.33	8.94	42.27	56.00	-13.73	peak	
6	17.6500	33.46	9.97	43.43	60.00	-16.57	peak	



5 ANTENNA CONDUCTED SPURIOUS EMISSION

5.1 LIMIT

Test Item	Frequency Range (MHz)	Limit
Antenna conducted Spurious Emission	30-25000	20 dB less than the peak value of fundamental frequency

5.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-30	100854	Sep. 08, 2014

NOTE: **N/A**: denotes No Model Name, No Serial No. or No Calibration specified.

5.3 TEST PROCEDURES

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

5.4 TEST SETUP LAYOUT



5.5 DEVIATION FROM TEST STANDARD

No deviation

5.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.6 Unless otherwise a special operating condition is specified in the follows during the testing.

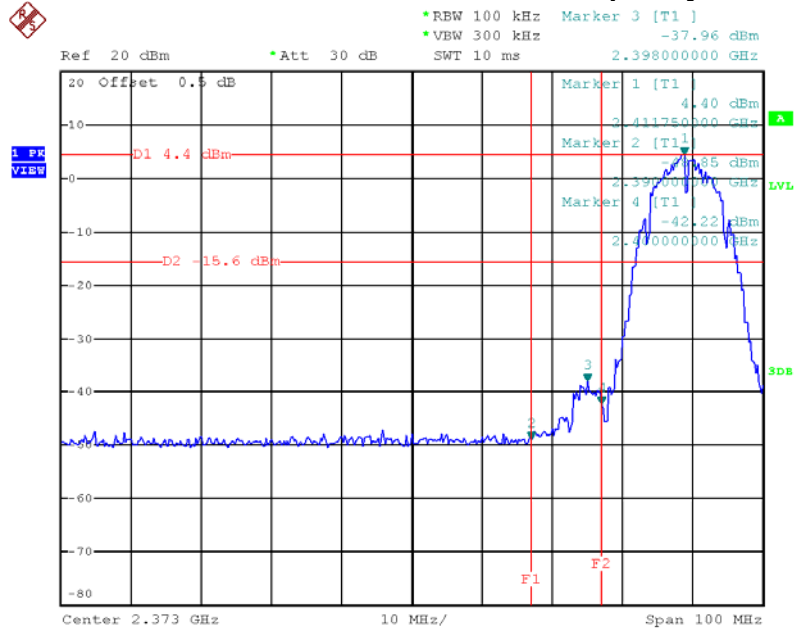
**5.7 TEST RESULTS**

EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b		

Channel of Worst Data			
The max. radio frequency power in any 100 kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2398.00	-37.96	2489.00	-47.80
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			

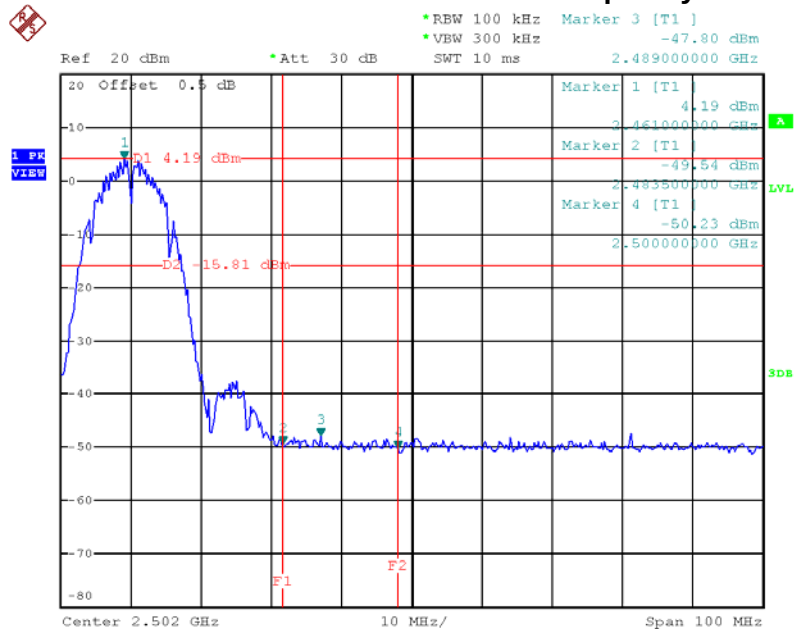


IEEE 802.11b/The max. radio frequency power in any
100kHz bandwidth outside the frequency band



Date: 18.JUN.2014 14:52:51

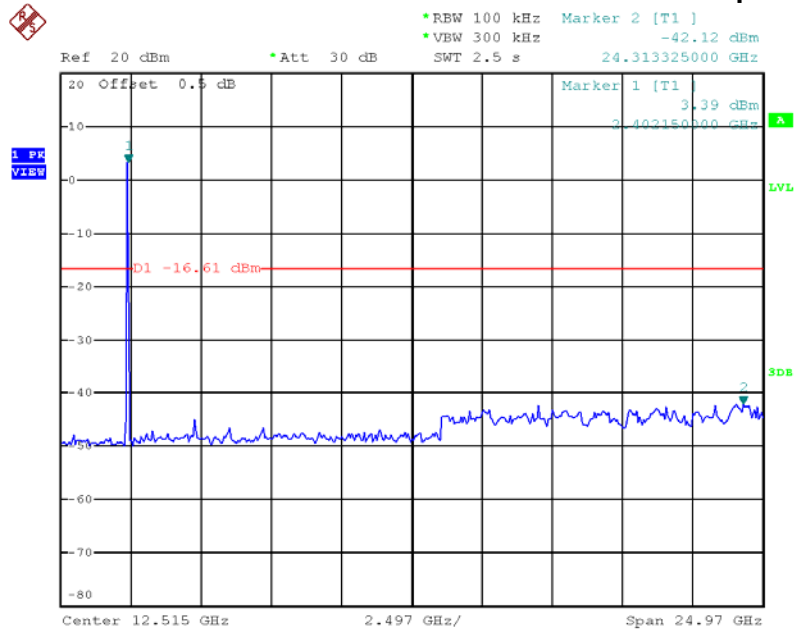
IEEE 802.11b/The max. radio frequency power in any
100 kHz bandwidth within the frequency band



Date: 18.JUN.2014 15:21:32

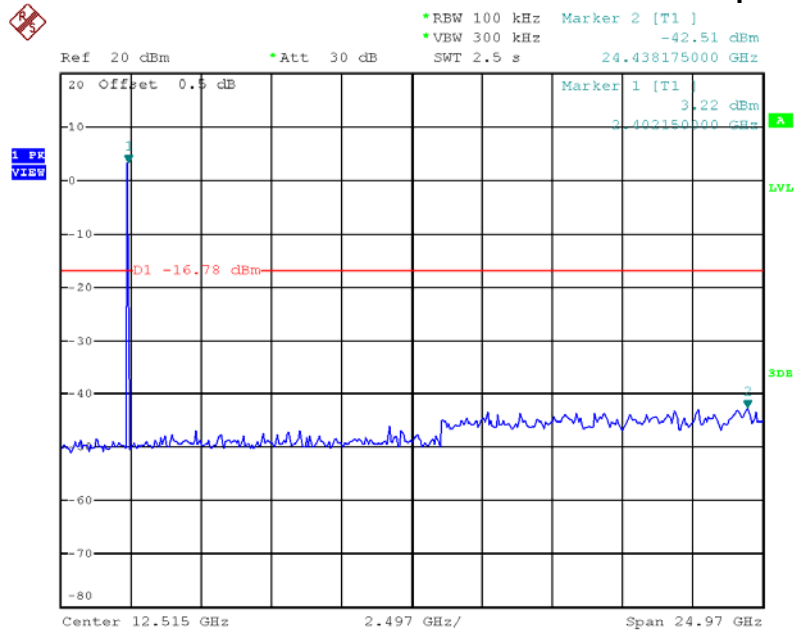


IEEE 802.11b/2412 MHz/10 Harmonic of the frequency



Date: 18.JUN.2014 14:57:10

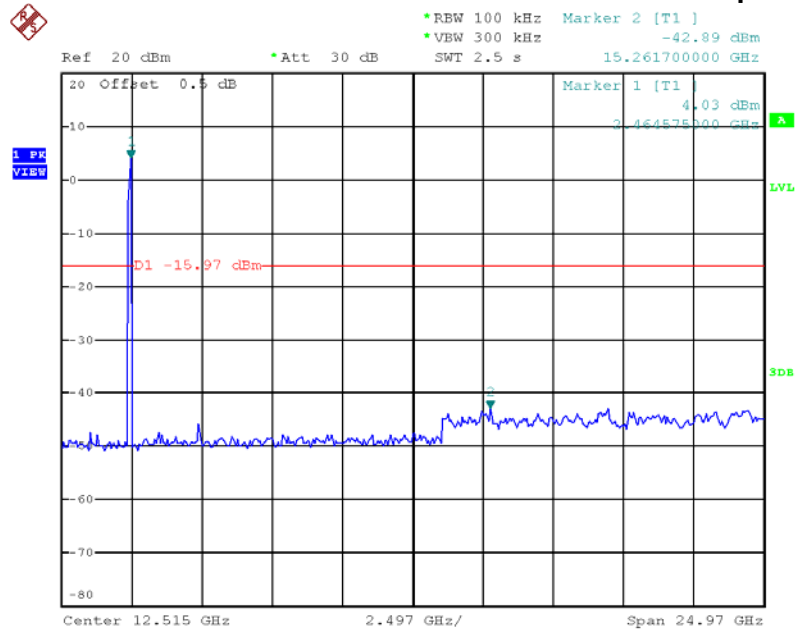
IEEE 802.11b/2437 MHz/10 Harmonic of the frequency



Date: 18.JUN.2014 15:03:56



IEEE 802.11b/2462 MHz/10 Harmonic of the frequency



Date: 18.JUN.2014 15:32:25

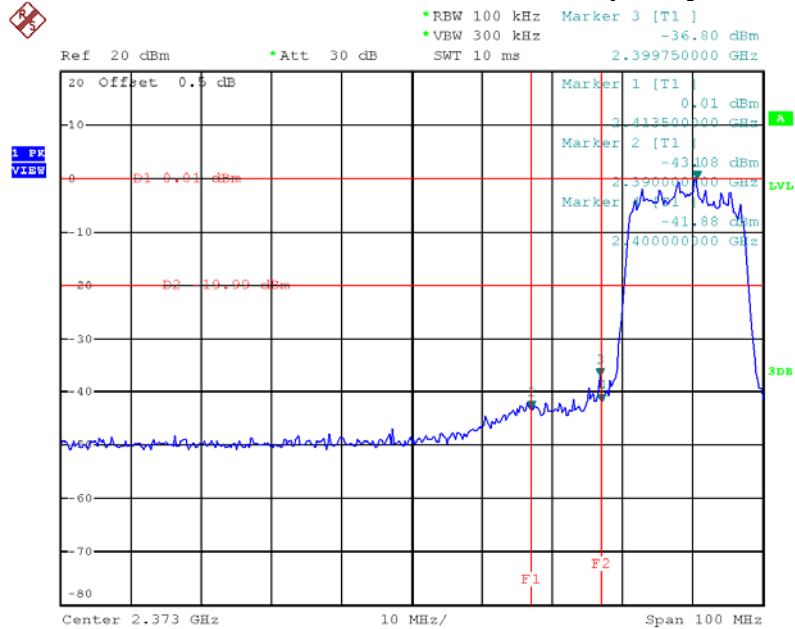


EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g		

Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2399.75	-36.80	2484.00	-43.78
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			

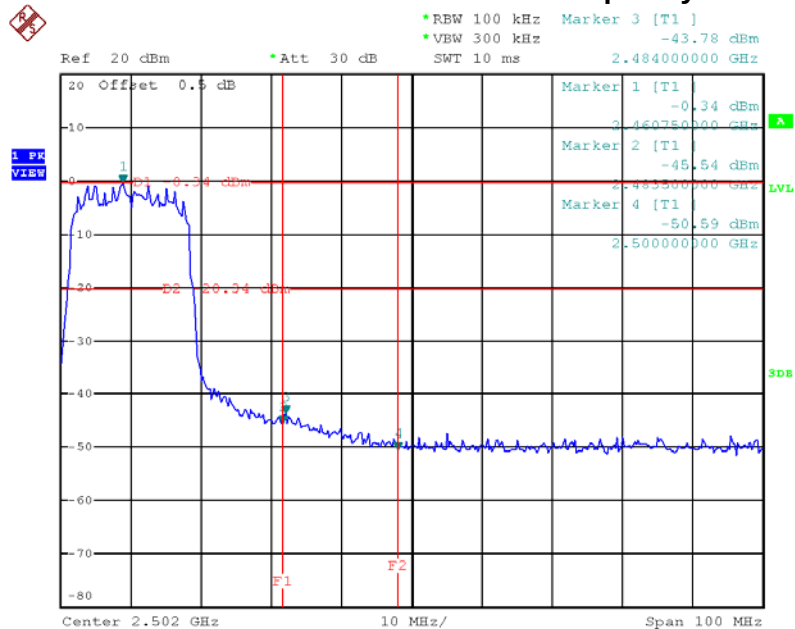


IEEE 802.11g/The max. radio frequency power in any 100kHz bandwidth outside the frequency band



Date: 18.JUN.2014 15:36:10

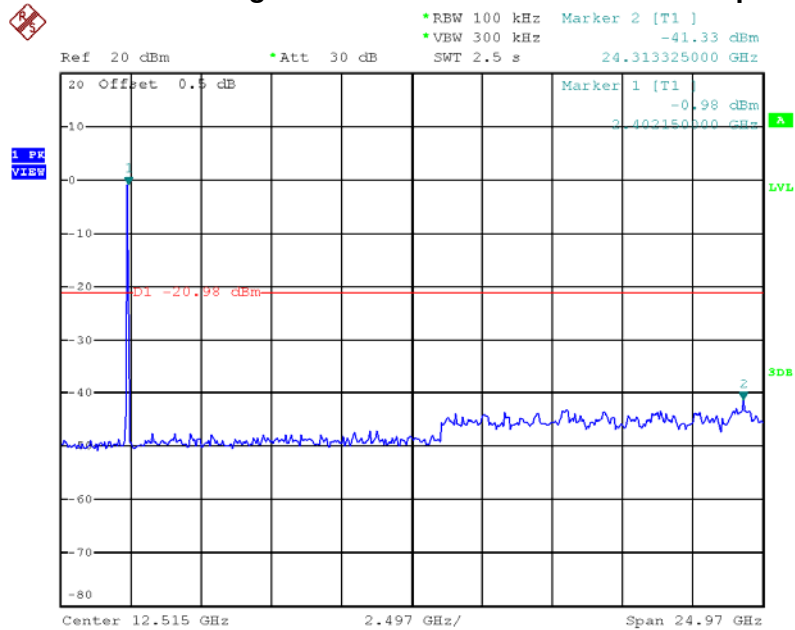
IEEE 802.11g/The max. radio frequency power in any 100 kHz bandwidth within the frequency band



Date: 18.JUN.2014 15:50:45

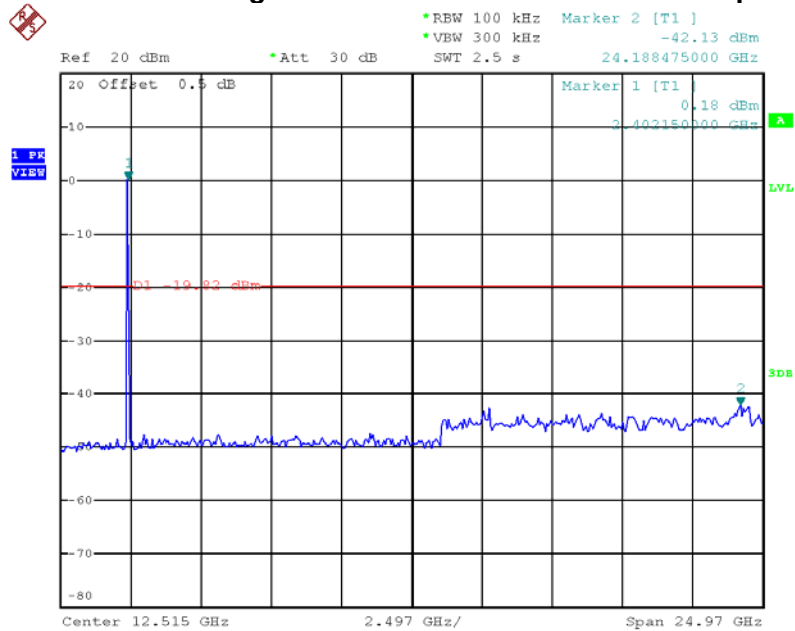


IEEE 802.11g/2412 MHz/10 Harmonic of the frequency



Date: 18.JUN.2014 15:39:19

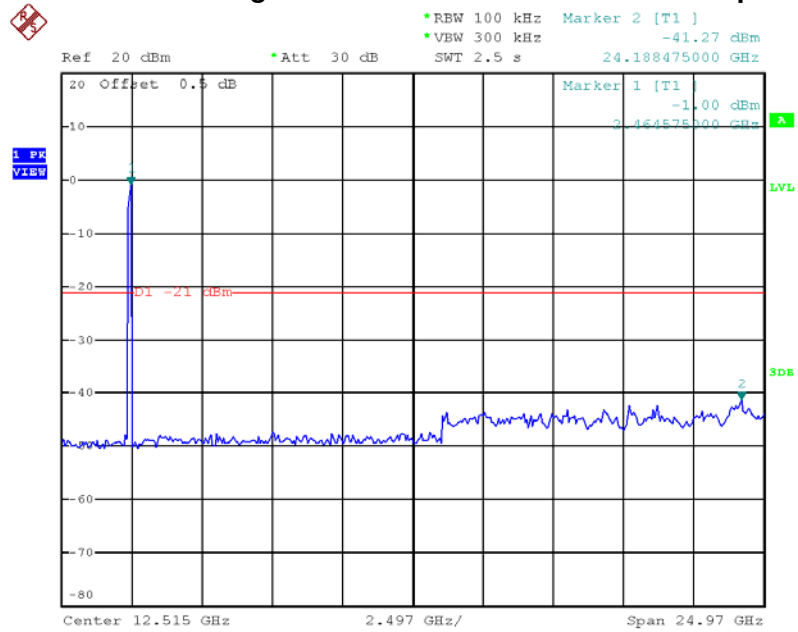
IEEE 802.11g/2437 MHz/10 Harmonic of the frequency



Date: 18.JUN.2014 15:49:19



IEEE 802.11g/2462 MHz/10 Harmonic of the frequency



Date: 18.JUN.2014 15:57:40

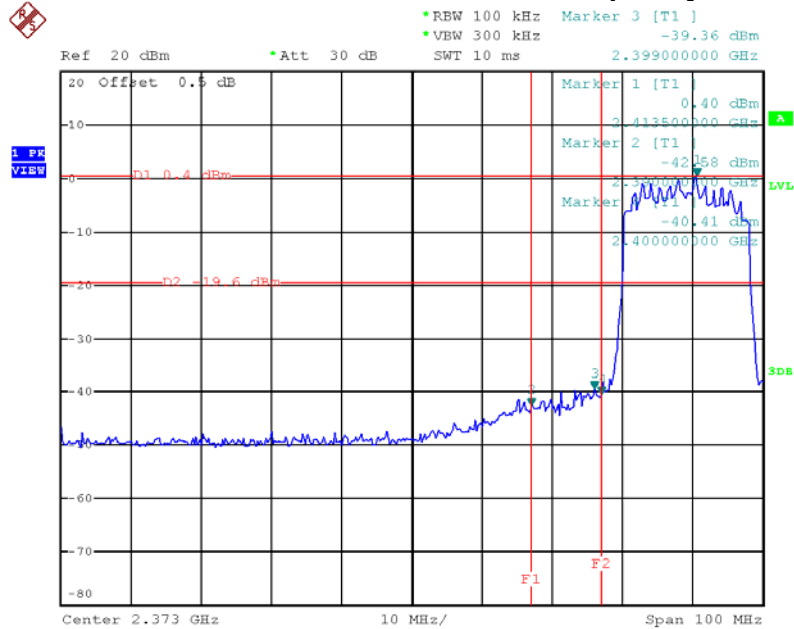


EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)		

Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2399.00	-39.36	2486.75	-43.99
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			

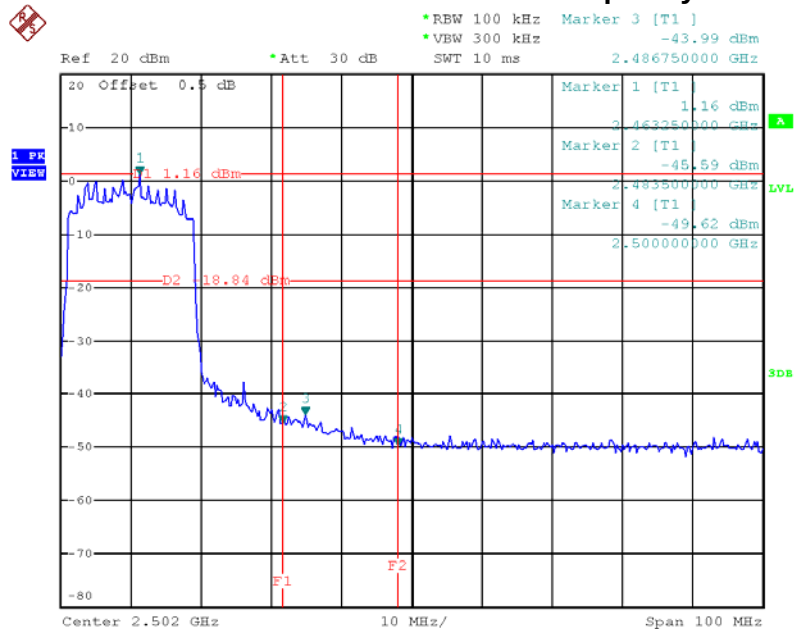


IEEE 802.11n (20 MHz)/The max. radio frequency power in any 100kHz bandwidth outside the frequency band



Date: 18.JUN.2014 16:00:28

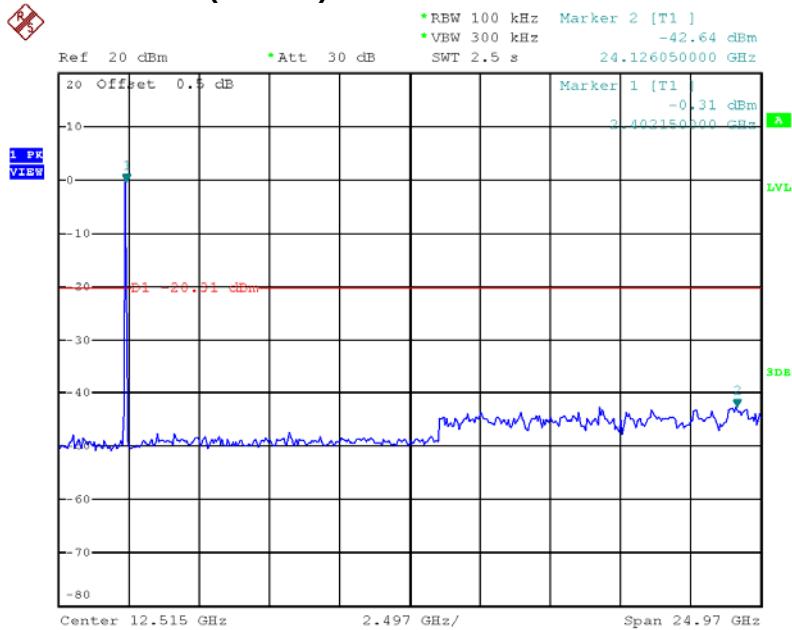
IEEE 802.11n (20 MHz)/The max. radio frequency power in any 100 kHz bandwidth within the frequency band



Date: 18.JUN.2014 16:10:12

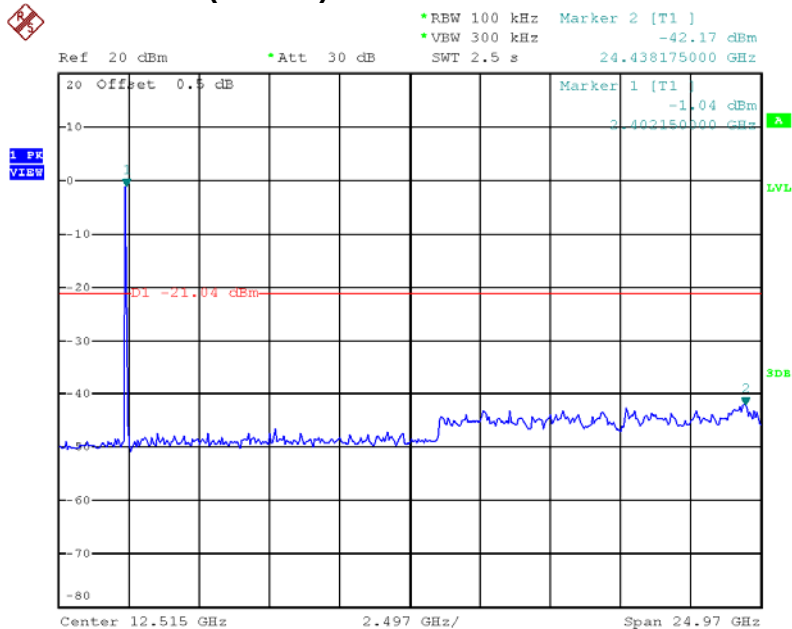


IEEE 802.11n (20 MHz)/2412 MHz/10 Harmonic of the frequency



Date: 18.JUN.2014 16:03:33

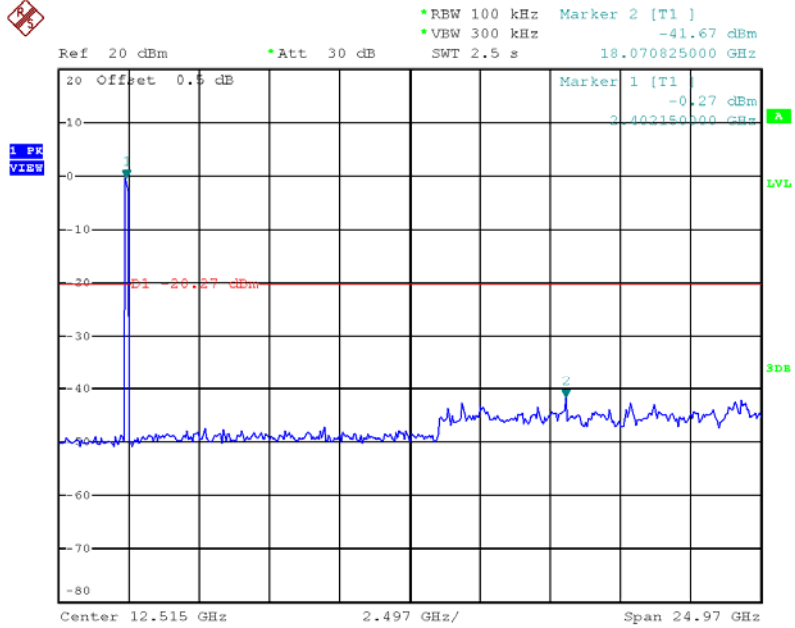
IEEE 802.11n (20 MHz)/2437 MHz/10 Harmonic of the frequency



Date: 18.JUN.2014 16:08:49



IEEE 802.11n (20 MHz)/2462 MHz/10 Harmonic of the frequency



Date: 18.JUN.2014 16:13:39



6.6 DB BANDWIDTH

6.1 LIMIT

Test Item	Frequency Range (MHz)	Limit
Bandwidth	2400-2483.5	$\geq 500\text{KHz}$ (6dB bandwidth)

6.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-30	100854	Sep. 08, 2014

NOTE: **N/A**: denotes No Model Name, No Serial No. or No Calibration specified.

6.3 TEST PROCEDURES

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

6.4 TEST SETUP LAYOUT



6.5 DEVIATION FROM TEST STANDARD

No deviation

6.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.6 Unless otherwise a special operating condition is specified in the follows during the testing.

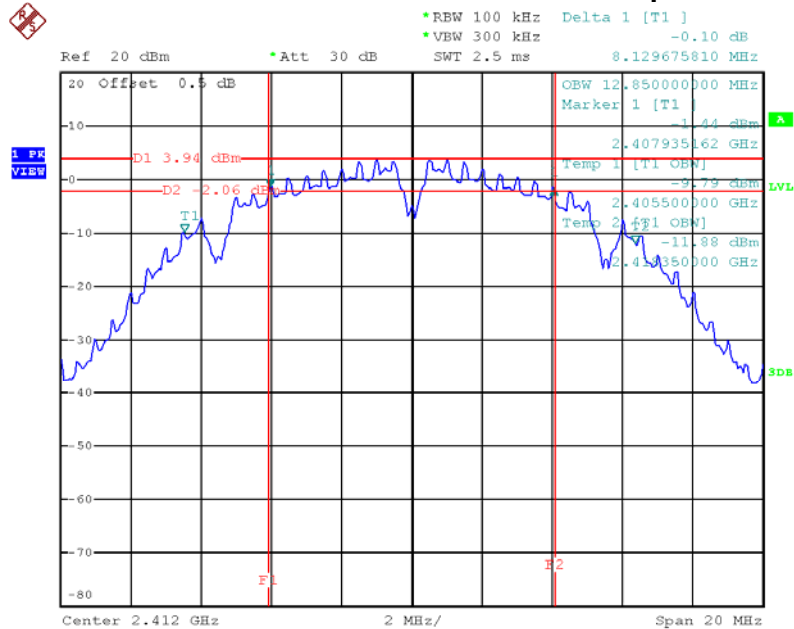


6.7 TEST RESULTS

EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
2412 MHz	8.13	12.85	≥ 500 kHz	PASS
2437 MHz	8.63	12.80	≥ 500 kHz	PASS
2462 MHz	8.58	12.80	≥ 500 kHz	PASS

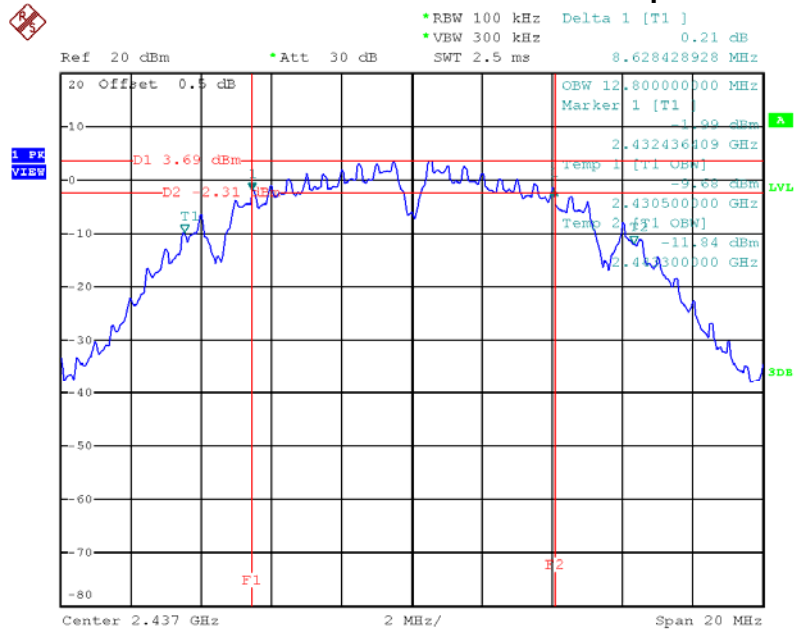
IEEE 802.11b/2412 MHz/6 dB and 99% Occupied Bandwidth



Date: 18.JUN.2014 14:52:11

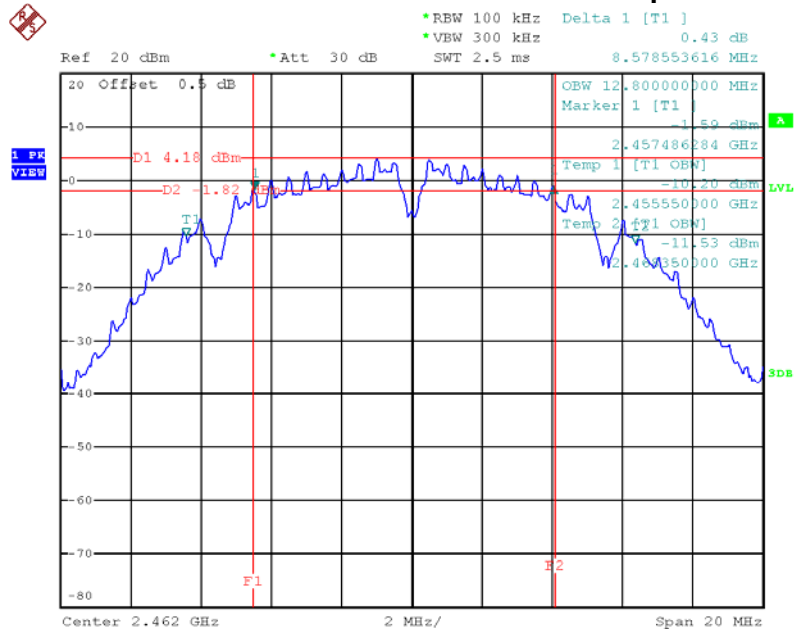


IEEE 802.11b/2437 MHz/6 dB and 99% Occupied Bandwidth



Date: 18.JUN.2014 14:59:54

IEEE 802.11b/2462 MHz/6 dB and 99% Occupied Bandwidth



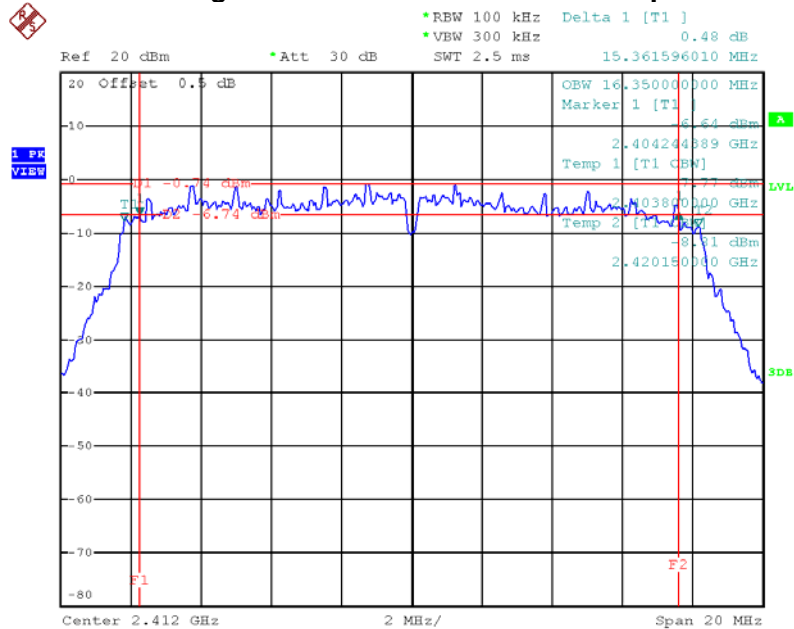
Date: 18.JUN.2014 15:24:10



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
2412 MHz	15.36	16.35	>=500 kHz	PASS
2437 MHz	15.12	16.35	>=500 kHz	PASS
2462 MHz	15.11	16.35	>=500 kHz	PASS

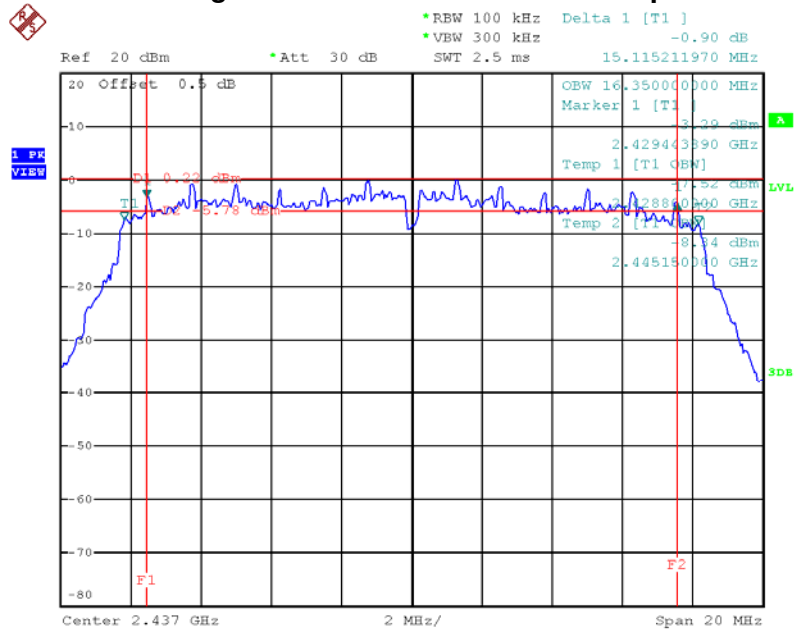
IEEE 802.11g/2412 MHz/6 dB and 99% Occupied Bandwidth



Date: 18.JUN.2014 15:35:43

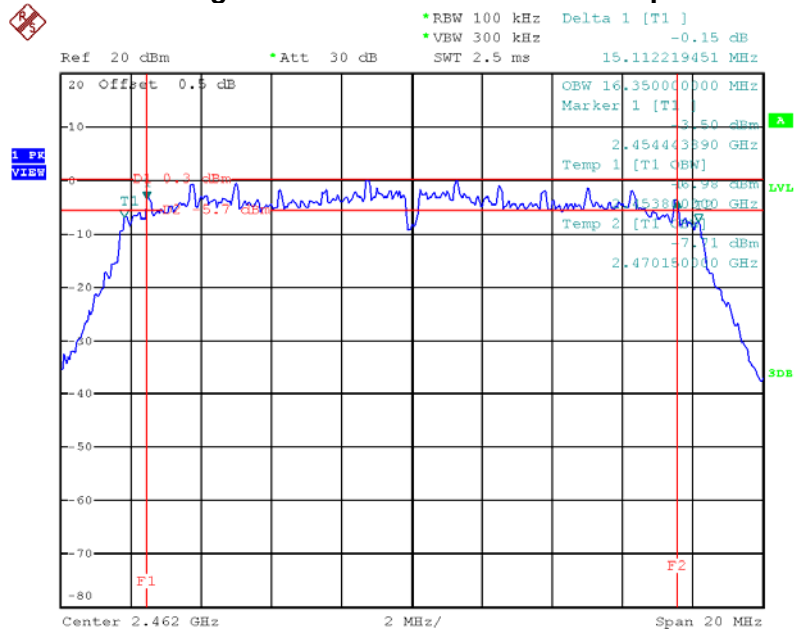


IEEE 802.11g/2437 MHz/6 dB and 99% Occupied Bandwidth



Date: 18.JUN.2014 15:43:51

IEEE 802.11g/2462 MHz/6 dB and 99% Occupied Bandwidth



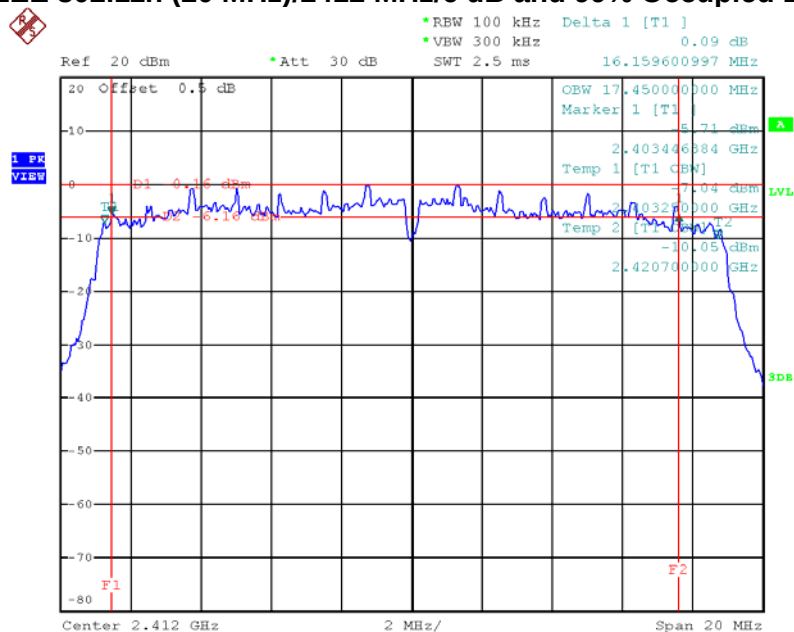
Date: 18.JUN.2014 15:50:22



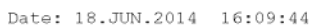
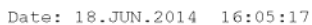
EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
2412 MHz	16.16	17.45	>=500 kHz	PASS
2437 MHz	15.11	17.50	>=500 kHz	PASS
2462 MHz	15.11	17.50	>=500 kHz	PASS

IEEE 802.11n (20 MHz)/2412 MHz/6 dB and 99% Occupied Bandwidth



Date: 18.JUN.2014 15:59:43





7 MAXIMUM PEAK CONDUCTED OUTPUT POWER

7.1 LIMIT

Test Item	Frequency Range (MHz)	Limit
Maximum Peak Conducted Output Power	2400-2483.5	1 watt or 30 dBm

7.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-30	100854	Sep. 08, 2014

NOTE: **N/A**: denotes No Model Name, No Serial No. or No Calibration specified.

7.3 TEST PROCEDURES

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 3 MHz, VBW= 3 MHz, Sweep time = Auto.

7.4 TEST SETUP LAYOUT



7.5 DEVIATION FROM TEST STANDARD

No deviation

7.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 5.6 Unless otherwise a special operating condition is specified in the follows during the testing.



7.7 TEST RESULTS

EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	Peak Output Power		Limit		Result
	(dBm)	(W)	(dBm)	(W)	
2412 MHz	15.11	0.0324	30	1	PASS
2437 MHz	15.13	0.0326	30	1	PASS
2462 MHz	15.14	0.0327	30	1	PASS



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	Peak Output Power		Limit		Result
	(dBm)	(W)	(dBm)	(W)	
2412 MHz	20.57	0.1140	30	1	PASS
2437 MHz	20.54	0.1132	30	1	PASS
2462 MHz	19.84	0.0964	30	1	PASS



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	Peak Output Power		Limit		Result
	(dBm)	(W)	(dBm)	(W)	
2412 MHz	20.74	0.1186	30	1	PASS
2437 MHz	20.45	0.1109	30	1	PASS
2462 MHz	19.87	0.0971	30	1	PASS



8 RADIATED SPURIOUS EMISSION (9 KHZ TO 1 GHZ)

8.1 LIMIT

20 dB in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency Range: 9 kHz to 1 GHz		
FREQUENCY (MHz)	Field Strength (microvolts/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

Frequency Range: above 1 GHz				
FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
above 1 GHz	80	60	74	54

NOTE:

1. The limit for radiated test was performed according to FCC PART 15B.
2. The tighter limit applies at the band edges.
3. Emission level (dBuV/m)=20log Emission level (uV/m).
4. The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain(if use)
 Margin Level = Measurement Value – Limit Value



8.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-30	100854	Sep. 08, 2014
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Apr. 14, 2015
3	Microwave Pre-amplifier	Agilent	8449B	3008A01714	Apr. 15, 2015
4	Microflex Cable	Harbour industries	27478LL142	1m	May. 12, 2015
5	Microflex Cable	EMC	S104-SMA	8m	May. 12, 2015
6	Microflex Cable	Harbour industries	27478LL142	3m	May. 12, 2015
7	Test Cable	LMR	LMR-400	12m	May. 13, 2015
8	Test Cable	LMR	LMR-400	3m	May. 13, 2015
9	Pre-Amplifier	Anritsu	MH648A	M92649	Jun. 17, 2015
10	Log-Bicon Antenna	Schwarzbeck	VULB 9161	4049	Sep. 04, 2014

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

8.3 MEASURING INSTRUMENTS SETTING

EMI Test 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



8.4 TEST PROCEDURES

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1 GHz. For frequencies above 1 GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m Semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 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.
- 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.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- The testing follows the guidelines in ANSI C63.4 and FCC Public Notice DA 00-705 Measurement Guidelines. In case the emission is fail due to the used RBW/VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

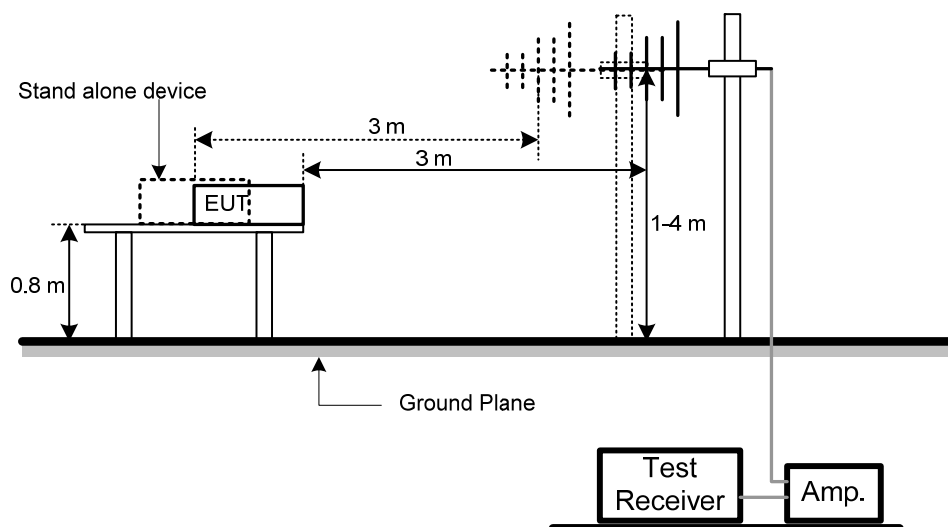
NOTE:

- Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode with Detector BW=120 kHz; SPA setting in RBW=100 kHz, VBW =100 kHz, Swp. Time = 0.3 sec./ MHz.
- All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

8.5 DEVIATION FROM TEST STANDARD

No deviation

8.6 TEST SETUP LAYOUT





8.7 EUT OPERATING CONDITIONS

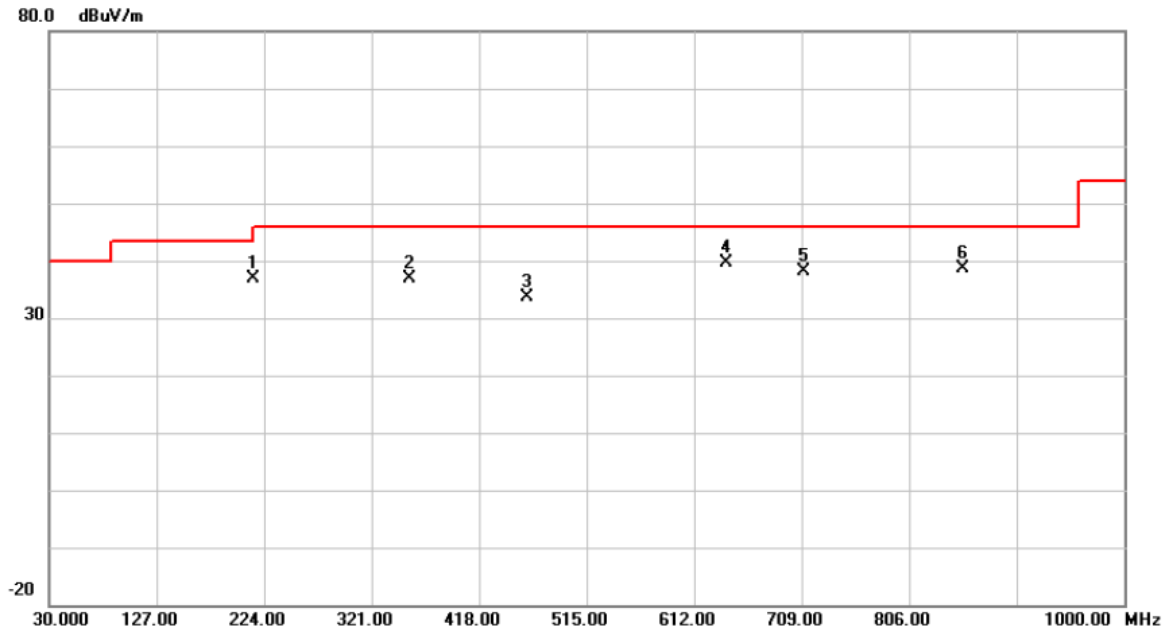
The EUT tested system was configured as the statements of 5.6 Unless otherwise a special operating condition is specified in the follows during the testing.



8.8 TEST RESULTS

EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Polarization: Vertical

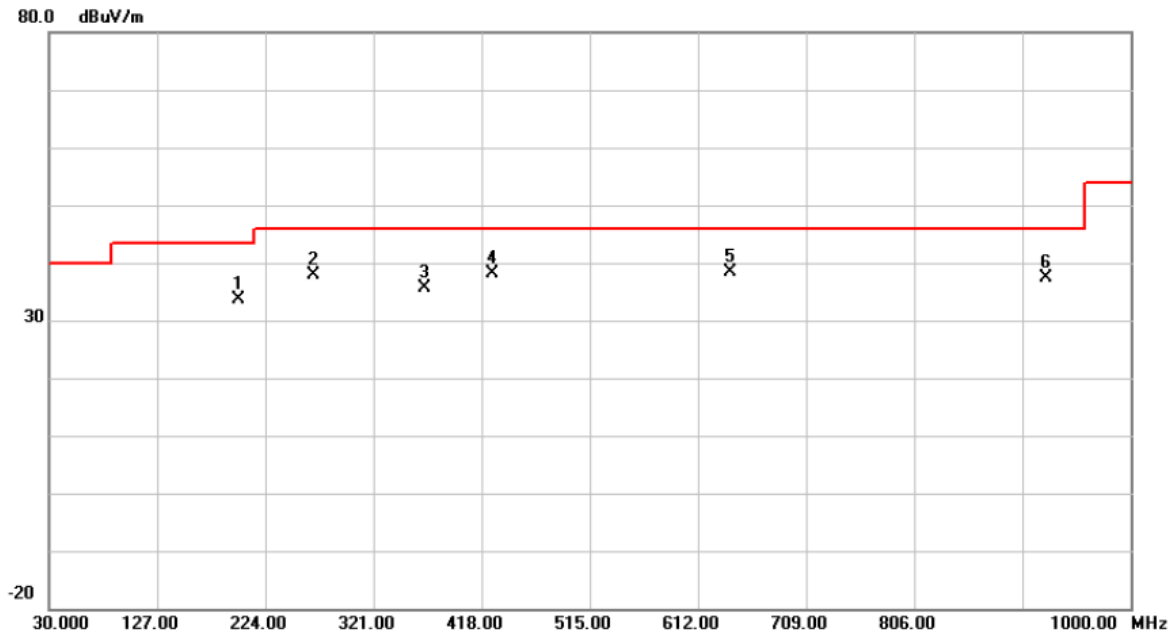


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		214.3000	53.62	-16.64	36.98	43.50	-6.52	peak	
2		354.9500	49.11	-12.17	36.94	46.00	-9.06	peak	
3		461.6500	43.18	-9.46	33.72	46.00	-12.28	peak	
4	*	641.1000	46.28	-6.73	39.55	46.00	-6.45	peak	
5		711.4250	43.75	-5.52	38.23	46.00	-7.77	peak	
6		854.5000	42.32	-3.59	38.73	46.00	-7.27	peak	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Polarization: Horizontal



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	199.7500	50.09	-16.52	33.57	43.50	-9.93	peak	
2	267.6500	52.29	-14.29	38.00	46.00	-8.00	peak	
3	367.0750	47.52	-11.95	35.57	46.00	-10.43	peak	
4	427.7000	48.38	-10.18	38.20	46.00	-7.80	peak	
5 *	641.1000	45.02	-6.73	38.29	46.00	-7.71	peak	
6	924.8250	40.49	-3.00	37.49	46.00	-8.51	peak	



9 RADIATED SPURIOUS EMISSION (ABOVE 1 GHz)

9.1 LIMIT

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency Range: 9 kHz to 1 GHz		
FREQUENCY (MHz)	Field Strength (micровolts/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

Frequency Range: above 1 GHz				
FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
above 1 GHz	80	60	74	54

NOTE:

- (1) The limit for radiated test was performed according to FCC PART 15B.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain(if use)
 Margin Level = Measurement Value – Limit Value



9.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-30	100854	Sep. 08, 2014
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Apr. 14, 2015
3	Microwave Pre-amplifier	Agilent	8449B	3008A01714	Apr. 15, 2015
4	Microflex Cable	Harbour industries	27478LL142	1m	May. 12, 2015
5	Microflex Cable	EMC	S104-SMA	8m	May. 12, 2015
6	Microflex Cable	Harbour industries	27478LL142	3m	May. 12, 2015
7	Test Cable	LMR	LMR-400	12m	May. 13, 2015
8	Test Cable	LMR	LMR-400	3m	May. 13, 2015
9	Pre-Amplifier	Anritsu	MH648A	M92649	Jun. 17, 2015
10	Log-Bicon Antenna	Schwarzbeck	VULB 9161	4049	Sep. 04, 2014

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

9.3 MEASURING INSTRUMENTS SETTING

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



9.4 TEST PROCEDURES

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m Semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 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.
- 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.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- The testing follows the guidelines in ANSI C63.4 and FCC Public Notice DA 00-705 Measurement Guidelines. In case the emission is fail due to the used RBW/VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

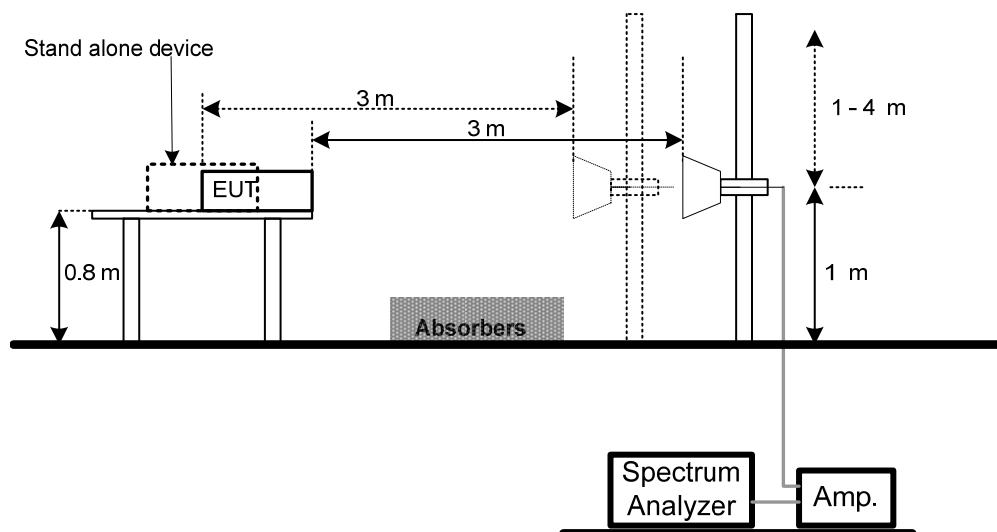
NOTE:

- Reading in which marked as Peak means measurements by using are Peak Mode with instrument setting in RBW= 1 MHz, VBW= 1 MHz, Swp. Time = Auto.
Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW= 1 MHz, VBW= 10 Hz, Swp. Time = Auto.
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform.

9.5 DEVIATION FROM TEST STANDARD

No deviation

9.6 TEST SETUP LAYOUT





9.7 EUT OPERATING CONDITIONS

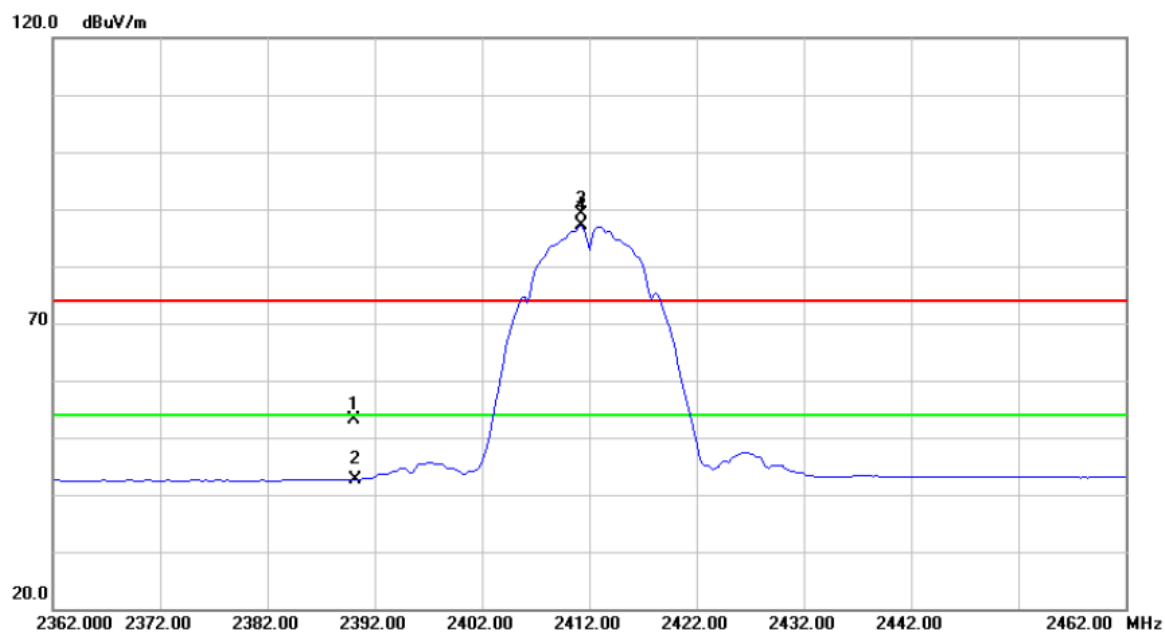
The EUT tested system was configured as the statements of 5.6 Unless otherwise a special operating condition is specified in the follows during the testing.



9.8 TEST RESULTS

EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2412 MHz		

Polarization: Vertical

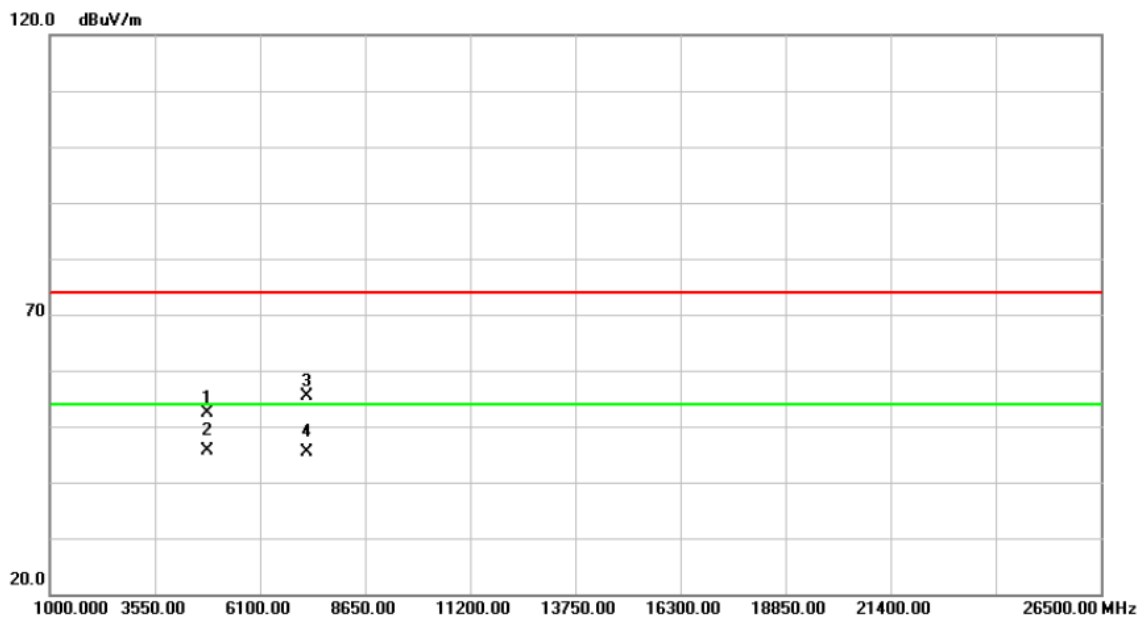


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	22.10	31.02	53.12	74.00	-20.88	peak	
2		2390.000	11.67	31.02	42.69	54.00	-11.31	AVG	
3	X	2411.250	58.10	31.12	89.22	74.00	15.22	peak	
4	*	2411.250	55.90	31.12	87.02	54.00	33.02	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2412 MHz		

Polarization: Vertical

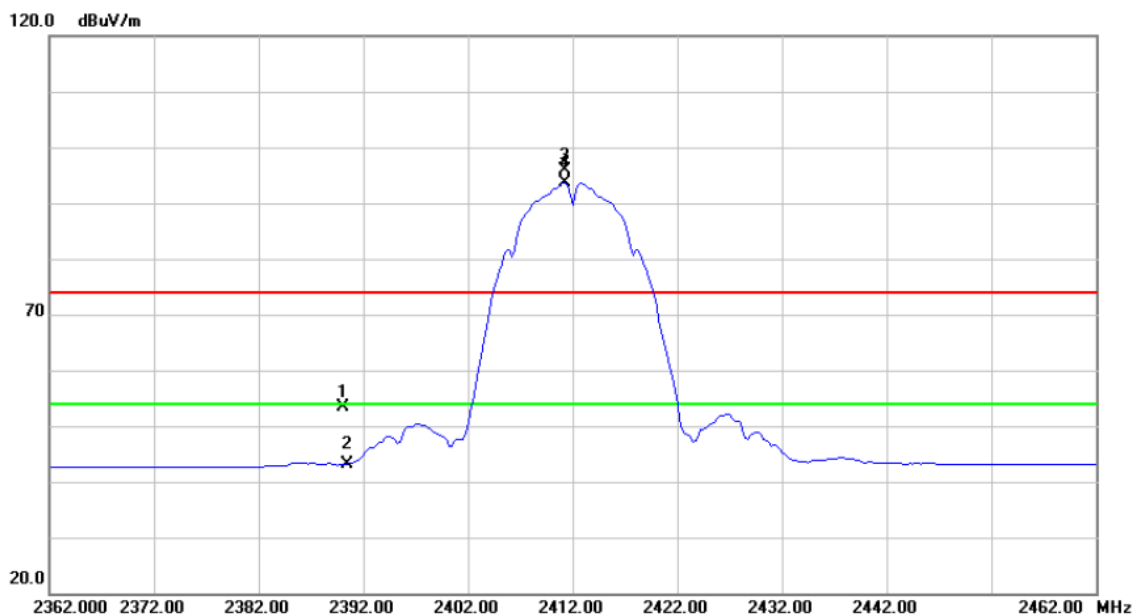


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4823.915	45.06	7.39	52.45	74.00	-21.55	peak	
2	*	4823.915	38.18	7.39	45.57	54.00	-8.43	AVG	
3		7236.955	40.52	14.87	55.39	74.00	-18.61	peak	
4		7236.955	30.63	14.87	45.50	54.00	-8.50	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2412 MHz		

Polarization: Horizontal

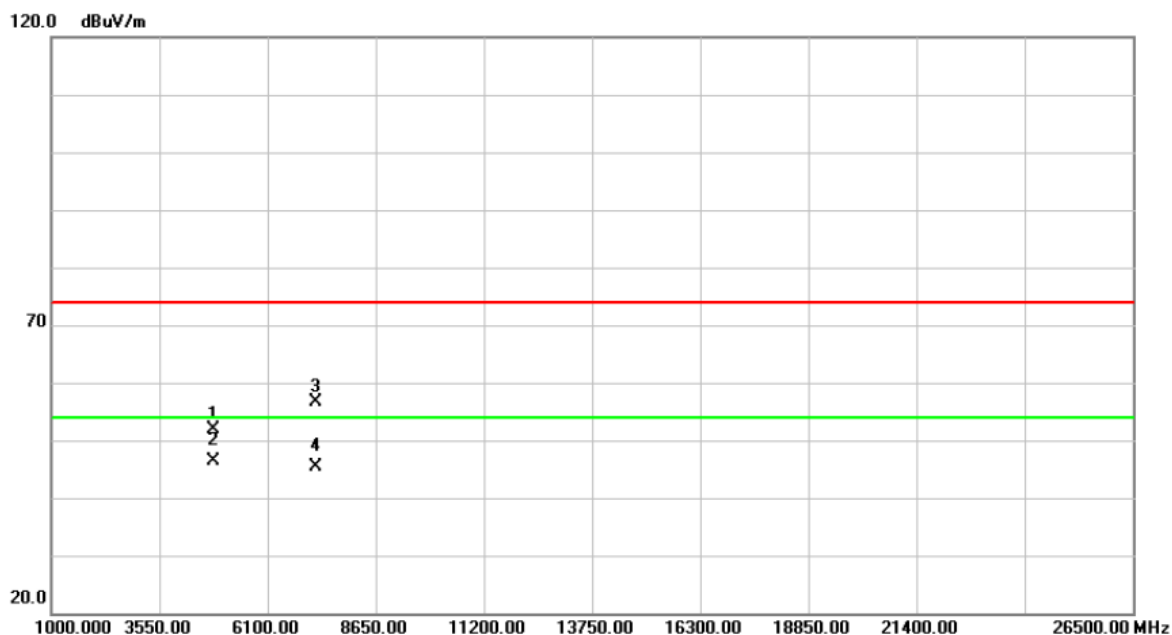


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	22.40	31.02	53.42	74.00	-20.58	peak	
2		2390.000	12.10	31.02	43.12	54.00	-10.88	AVG	
3	X	2411.250	64.70	31.12	95.82	74.00	21.82	peak	
4	*	2411.250	62.55	31.12	93.67	54.00	39.67	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2412 MHz		

Polarization: Horizontal

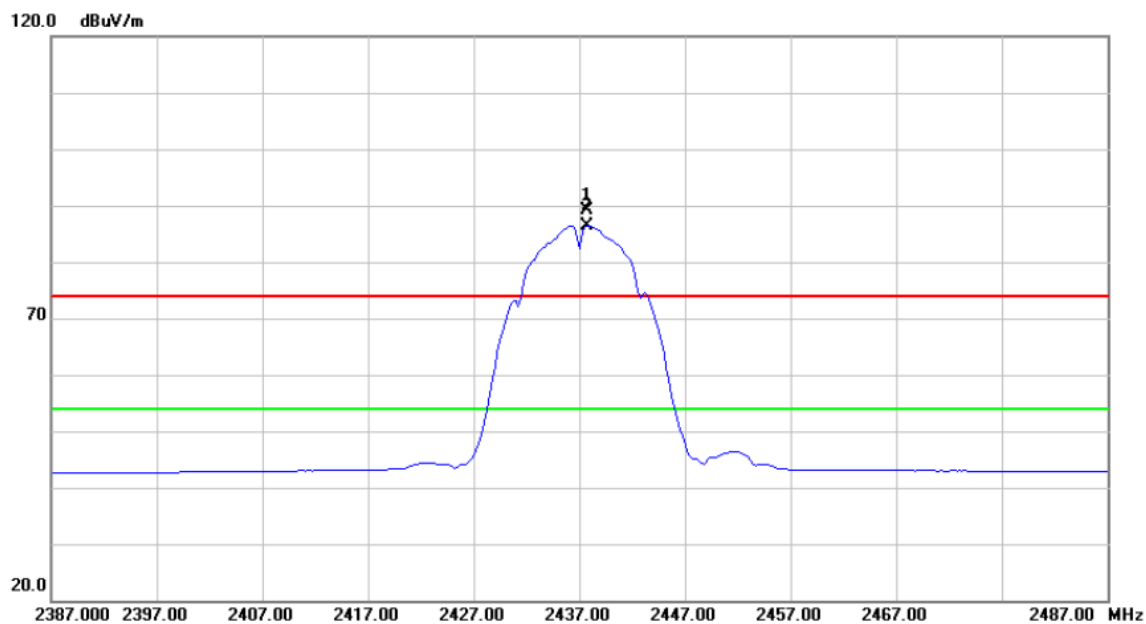


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.020	44.47	7.39	51.86	74.00	-22.14	peak	
2	*	4824.020	38.95	7.39	46.34	54.00	-7.66	AVG	
3		7236.955	41.84	14.87	56.71	74.00	-17.29	peak	
4		7236.955	30.62	14.87	45.49	54.00	-8.51	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Polarization: Vertical

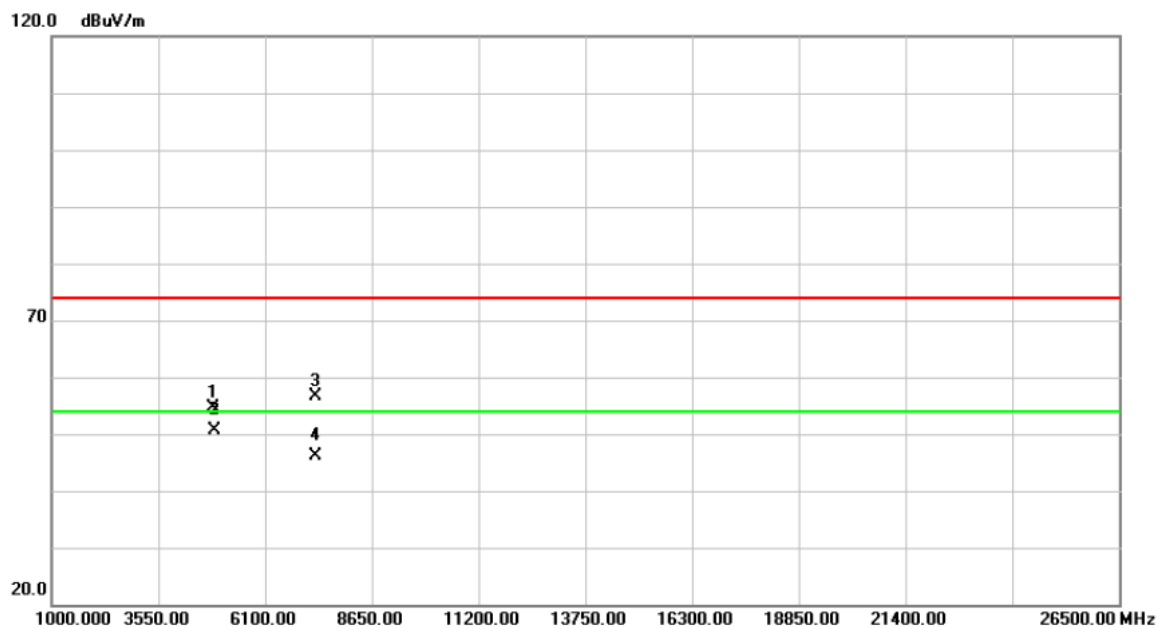


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.750	57.80	31.25	89.05	74.00	15.05	peak	
2	*	2437.750	55.25	31.25	86.50	54.00	32.50	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Polarization: Vertical

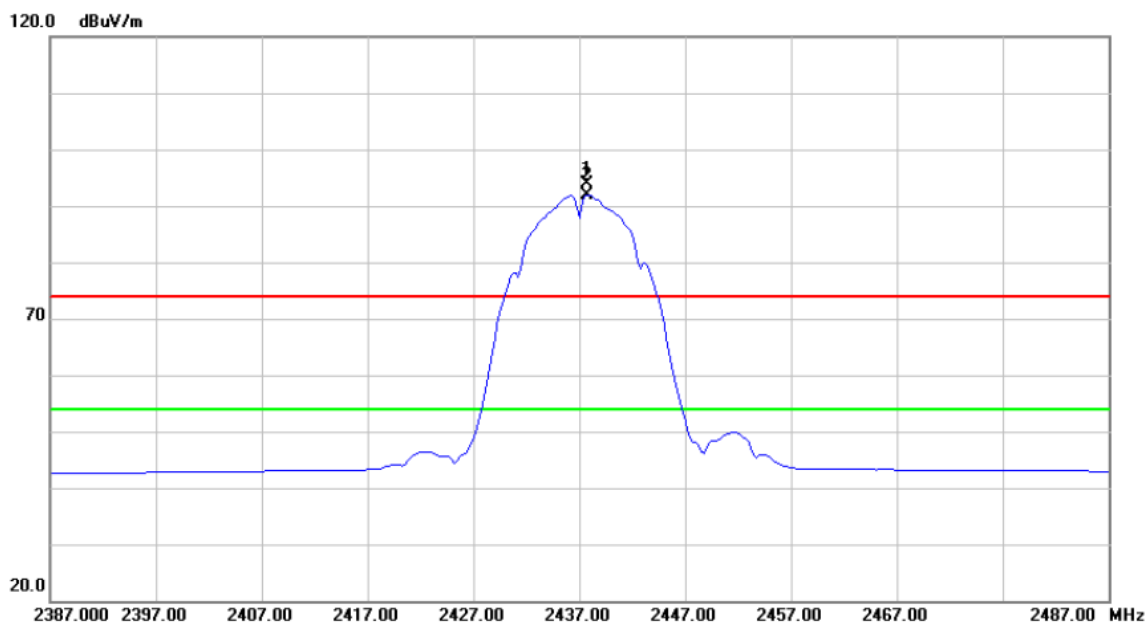


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4873.995	47.13	7.47	54.60	74.00	-19.40	peak	
2	*	4873.995	43.22	7.47	50.69	54.00	-3.31	AVG	
3		7311.035	41.44	15.18	56.62	74.00	-17.38	peak	
4		7311.035	30.85	15.18	46.03	54.00	-7.97	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Polarization: Horizontal

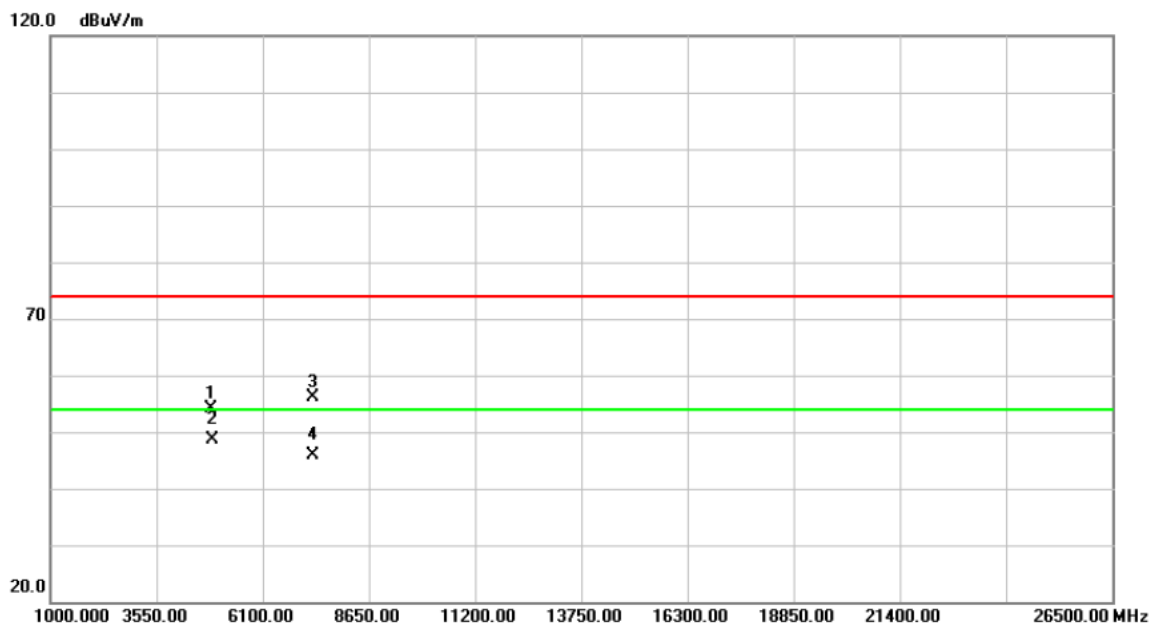


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.750	62.66	31.25	93.91	74.00	19.91	peak	
2	*	2437.750	60.61	31.25	91.86	54.00	37.86	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Polarization: Horizontal

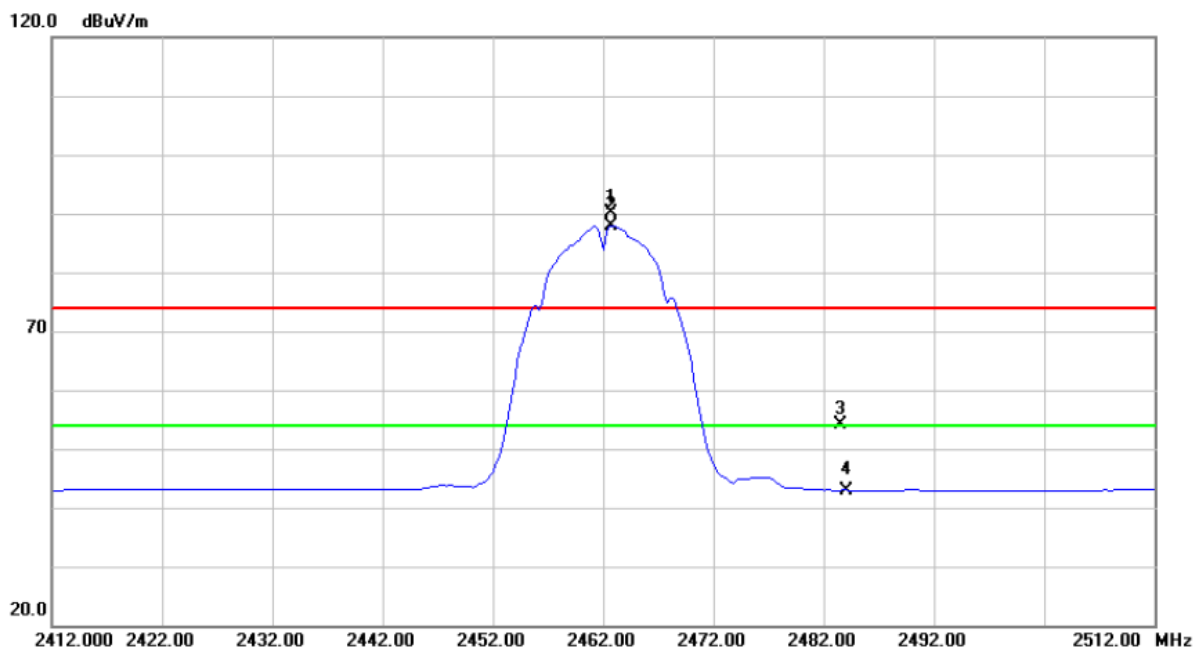


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.015	46.65	7.47	54.12	74.00	-19.88	peak	
2	*	4874.015	41.19	7.47	48.66	54.00	-5.34	AVG	
3		7311.035	41.06	15.18	56.24	74.00	-17.76	peak	
4		7311.035	30.82	15.18	46.00	54.00	-8.00	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2462 MHz		

Polarization: Vertical

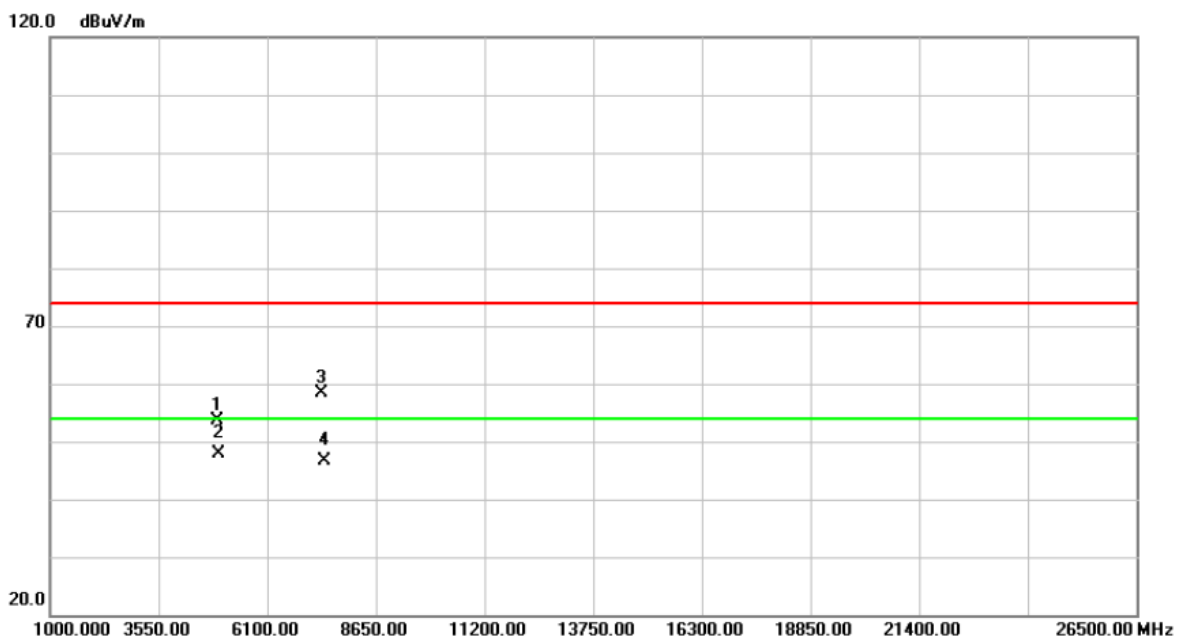


No.	Mk.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.750	58.67	31.36	90.03	74.00	16.03	peak	
2	*	2462.750	56.57	31.36	87.93	54.00	33.93	AVG	
3		2483.500	22.60	31.46	54.06	74.00	-19.94	peak	
4		2483.500	11.53	31.46	42.99	54.00	-11.01	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2462 MHz		

Polarization: Vertical

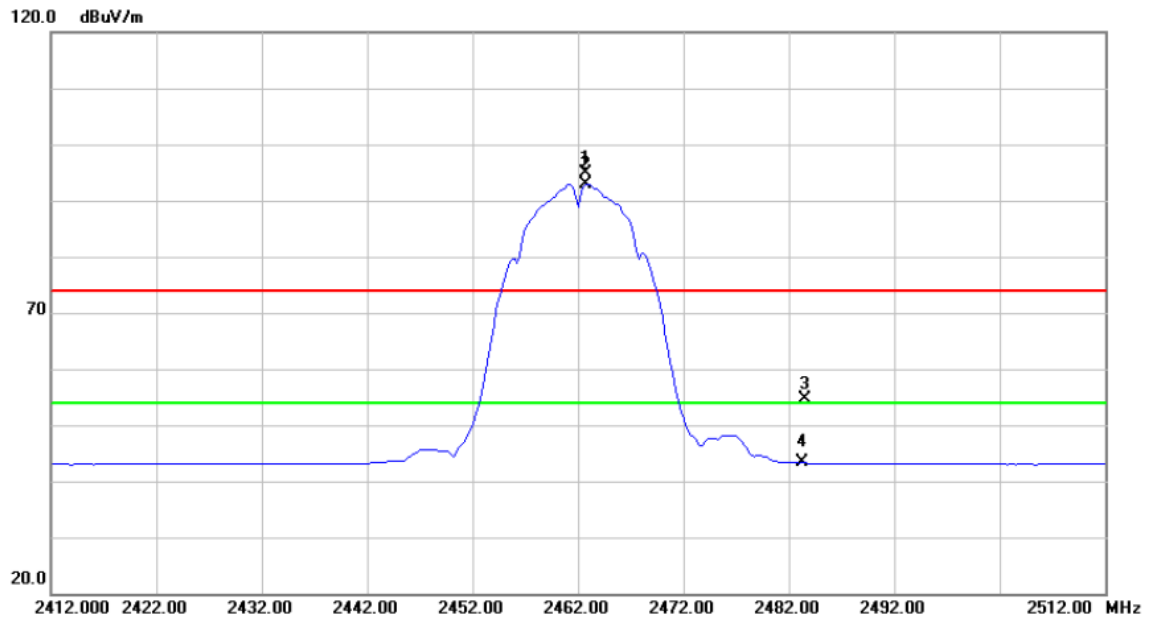


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4924.000	46.09	7.53	53.62	74.00	-20.38	peak	
2	*	4924.000	40.27	7.53	47.80	54.00	-6.20	AVG	
3		7385.970	42.87	15.50	58.37	74.00	-15.63	peak	
4		7385.970	31.16	15.50	46.66	54.00	-7.34	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2462 MHz		

Polarization: Horizontal

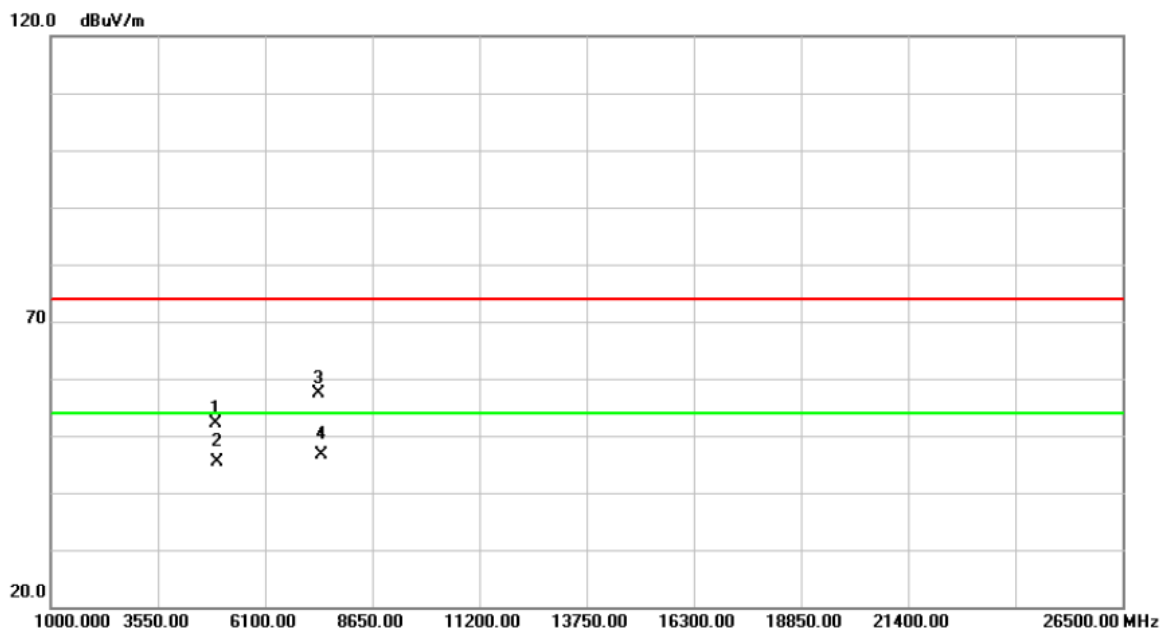


No.	Mk.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.750	63.63	31.36	94.99	74.00	20.99	peak	
2	*	2462.750	61.58	31.36	92.94	54.00	38.94	AVG	
3		2483.500	23.20	31.46	54.66	74.00	-19.34	peak	
4		2483.500	11.80	31.46	43.26	54.00	-10.74	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2462 MHz		

Polarization: Horizontal

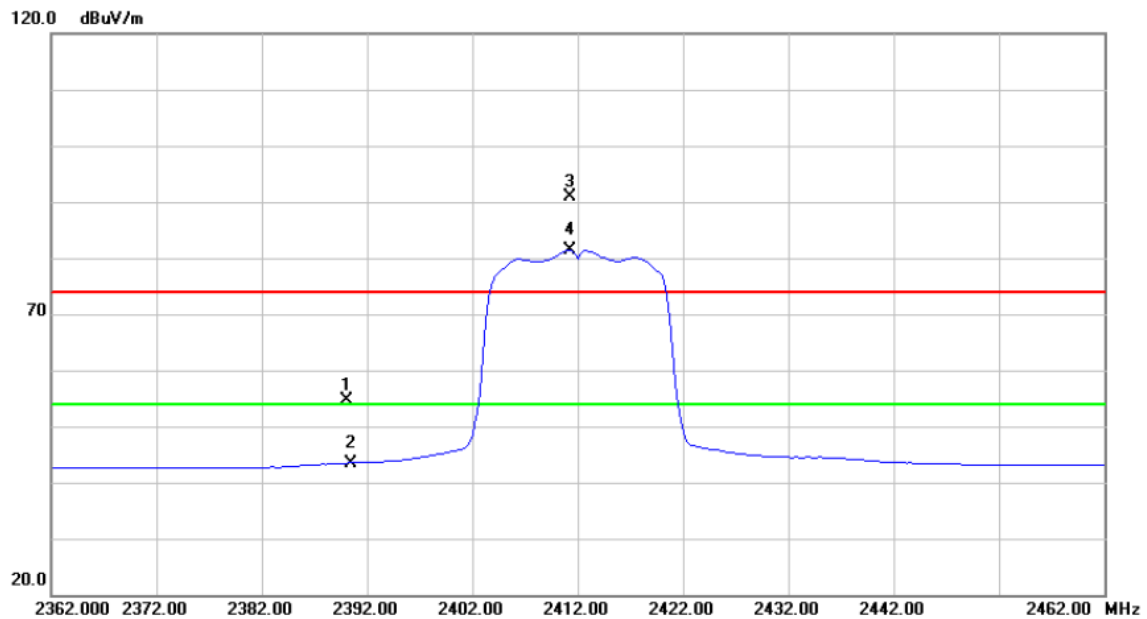


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4924.025	44.60	7.53	52.13	74.00	-21.87	peak	
2		4924.025	37.80	7.53	45.33	54.00	-8.67	AVG	
3		7385.970	41.91	15.50	57.41	74.00	-16.59	peak	
4	*	7385.970	31.12	15.50	46.62	54.00	-7.38	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2412 MHz		

Polarization: Vertical

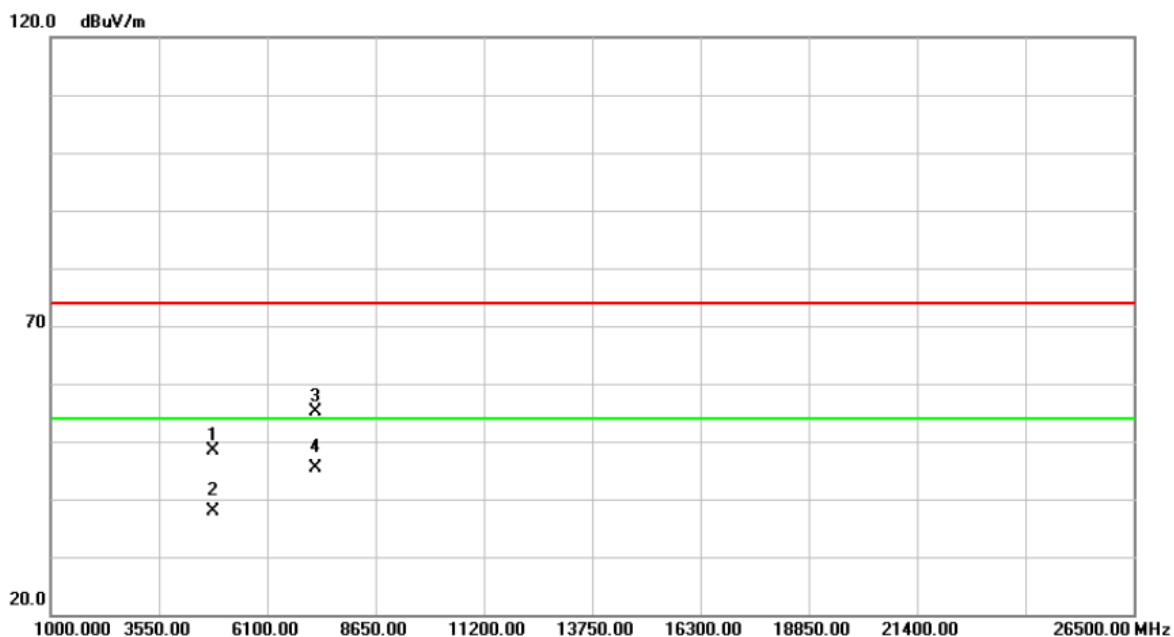


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	23.70	31.02	54.72	74.00	-19.28	peak	
2		2390.000	12.48	31.02	43.50	54.00	-10.50	AVG	
3	X	2411.250	59.78	31.12	90.90	74.00	16.90	peak	
4	*	2411.250	50.19	31.12	81.31	54.00	27.31	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2412 MHz		

Polarization: Vertical

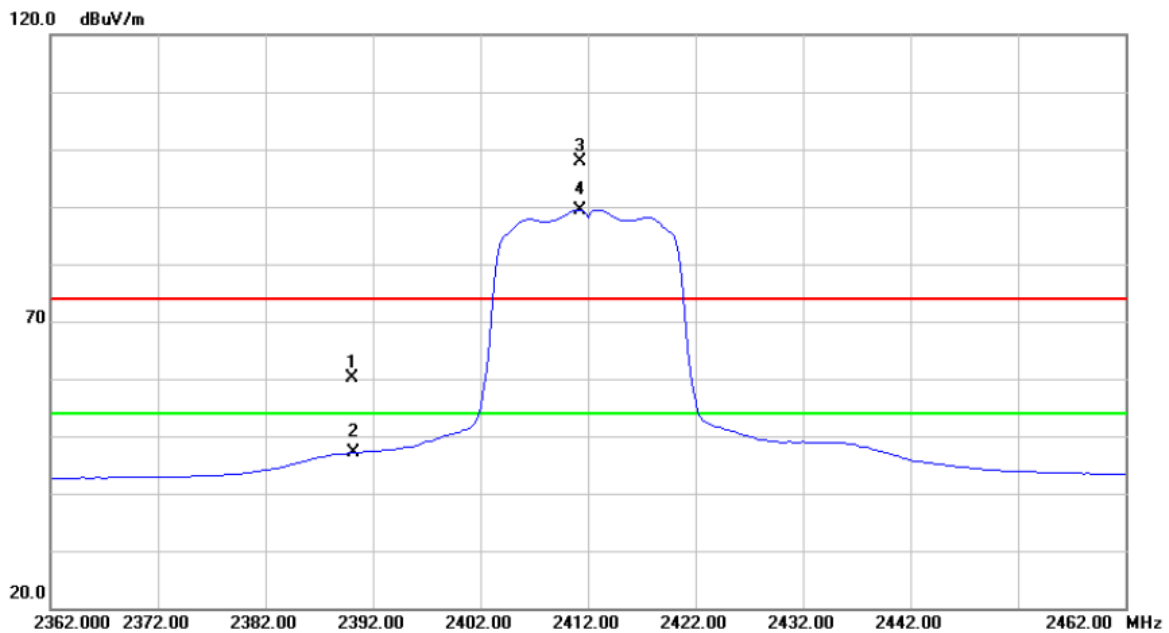


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.970	40.97	7.39	48.36	74.00	-25.64	peak	
2		4824.970	30.46	7.39	37.85	54.00	-16.15	AVG	
3		7236.625	40.27	14.87	55.14	74.00	-18.86	peak	
4	*	7236.625	30.59	14.87	45.46	54.00	-8.54	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2412 MHz		

Polarization: Horizontal

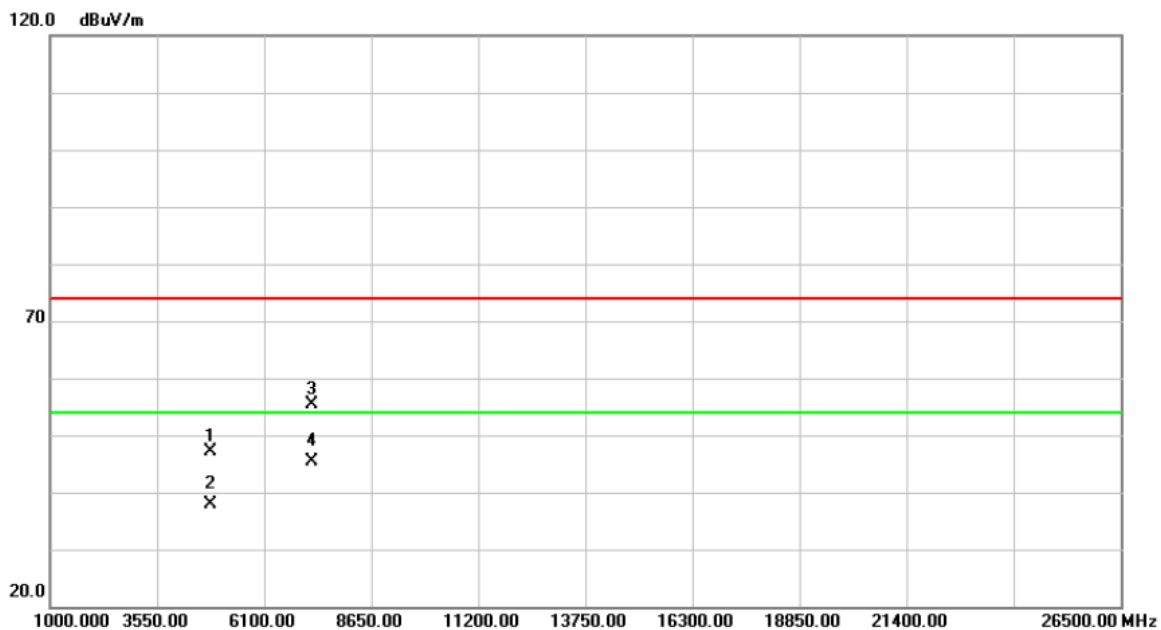


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	29.10	31.02	60.12	74.00	-13.88	peak	
2		2390.000	16.00	31.02	47.02	54.00	-6.98	AVG	
3	X	2411.250	66.83	31.12	97.95	74.00	23.95	peak	
4	*	2411.250	58.36	31.12	89.48	54.00	35.48	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2412 MHz		

Polarization: Horizontal

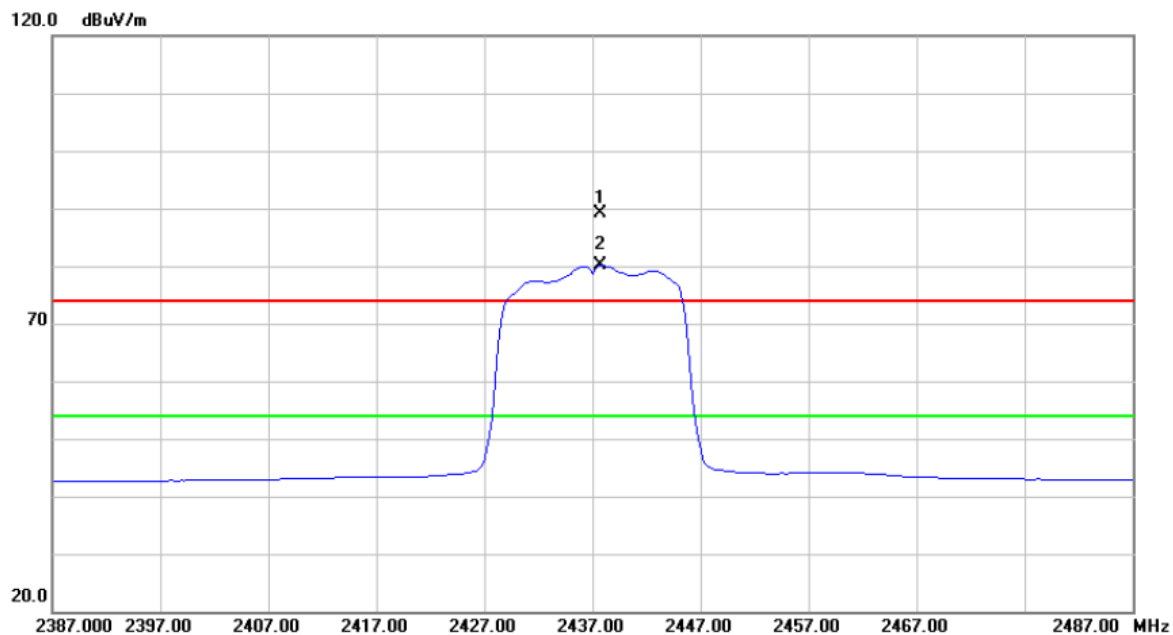


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.265	39.79	7.39	47.18	74.00	-26.82	peak	
2		4824.265	30.44	7.39	37.83	54.00	-16.17	AVG	
3		7236.625	40.45	14.87	55.32	74.00	-18.68	peak	
4	*	7236.625	30.53	14.87	45.40	54.00	-8.60	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2437 MHz		

Polarization: Vertical

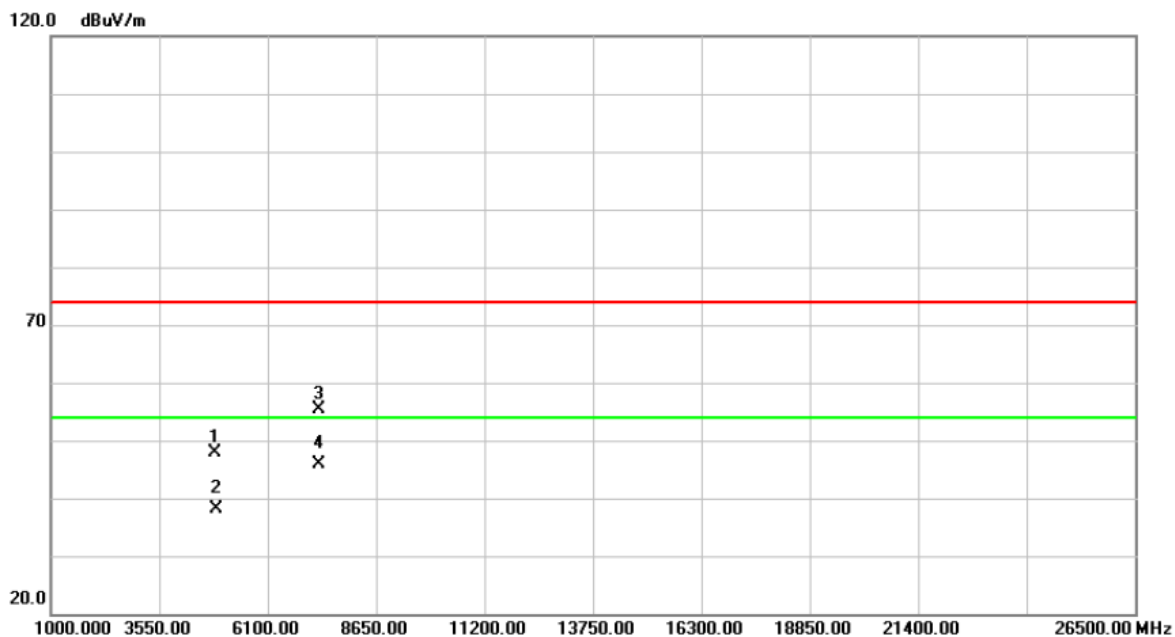


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2437.750	57.90	31.25	89.15	74.00	15.15	peak	
2	*	2437.750	48.82	31.25	80.07	54.00	26.07	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2437 MHz		

Polarization: Vertical

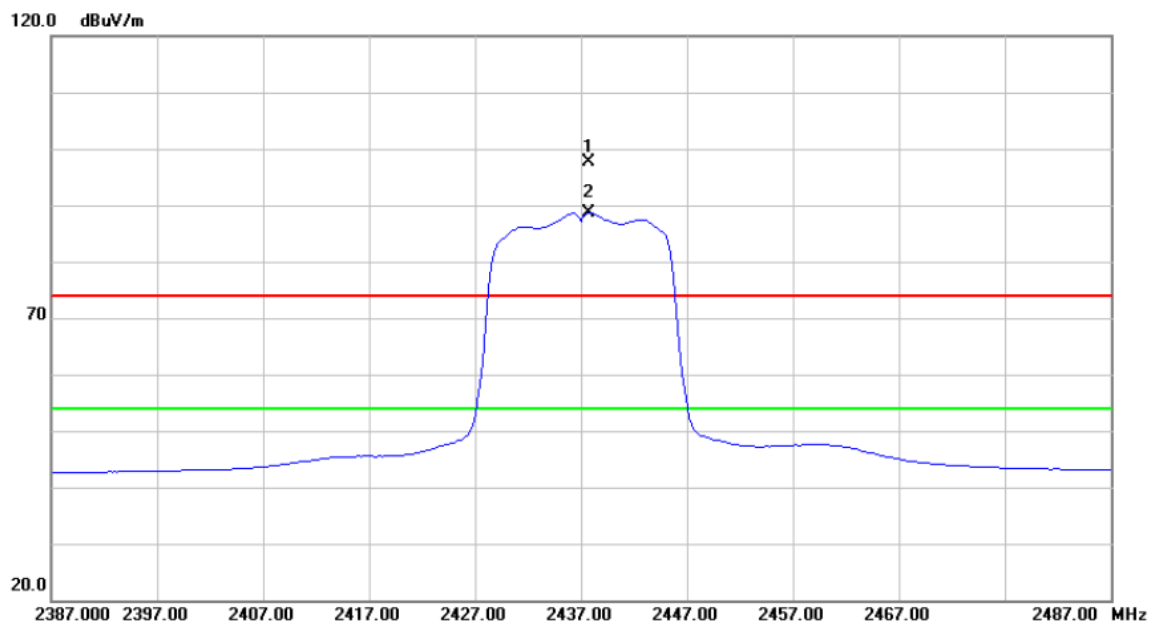


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.085	40.32	7.47	47.79	74.00	-26.21	peak	
2		4874.085	30.70	7.47	38.17	54.00	-15.83	AVG	
3		7310.790	40.29	15.18	55.47	74.00	-18.53	peak	
4	*	7310.790	30.74	15.18	45.92	54.00	-8.08	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2437 MHz		

Polarization: Horizontal

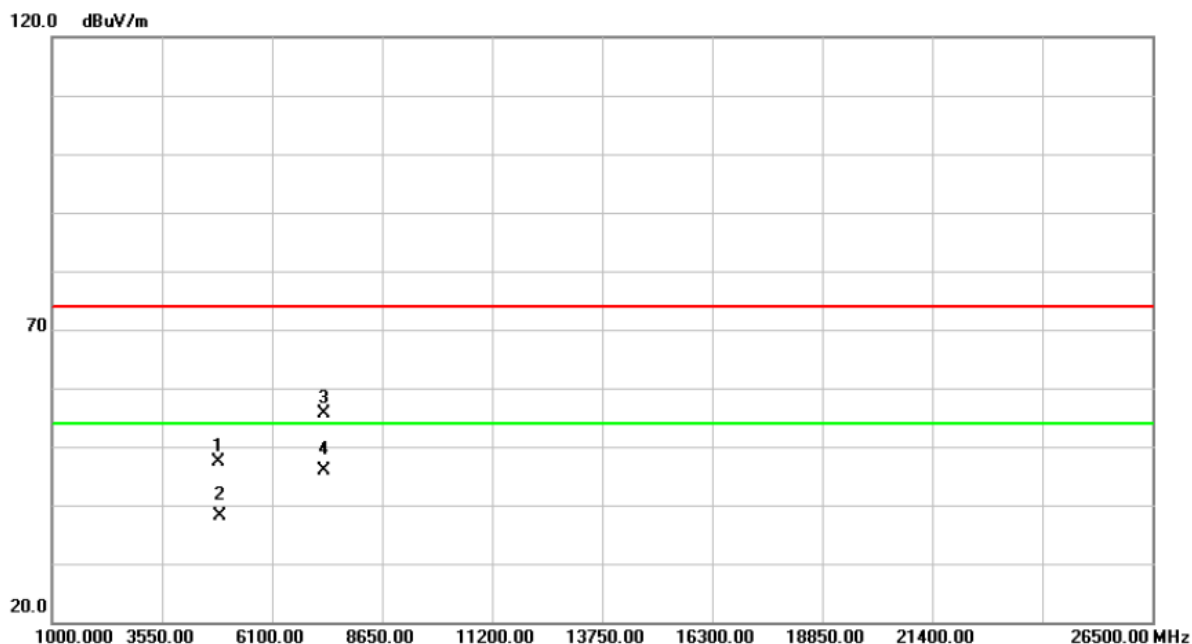


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.750	66.40	31.25	97.65	74.00	23.65	peak	
2	*	2437.750	57.39	31.25	88.64	54.00	34.64	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2437 MHz		

Polarization: Horizontal

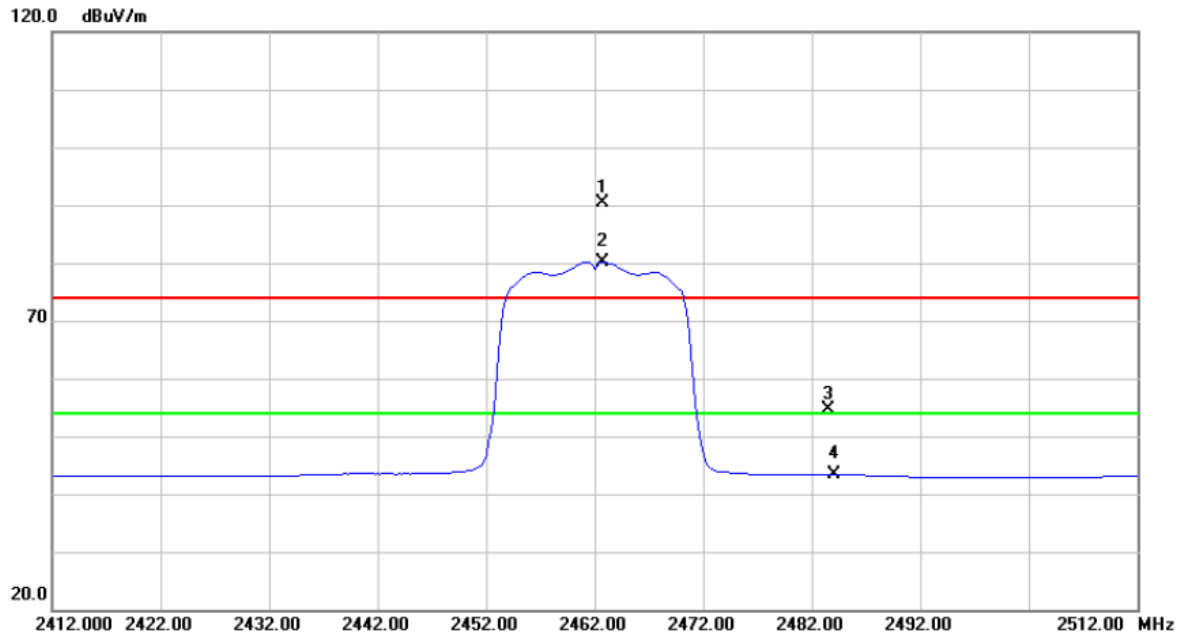


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4875.000	40.04	7.46	47.50	74.00	-26.50	peak	
2		4875.000	30.55	7.46	38.01	54.00	-15.99	AVG	
3		7310.790	40.56	15.18	55.74	74.00	-18.26	peak	
4	*	7310.790	30.71	15.18	45.89	54.00	-8.11	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2462 MHz		

Polarization: Vertical

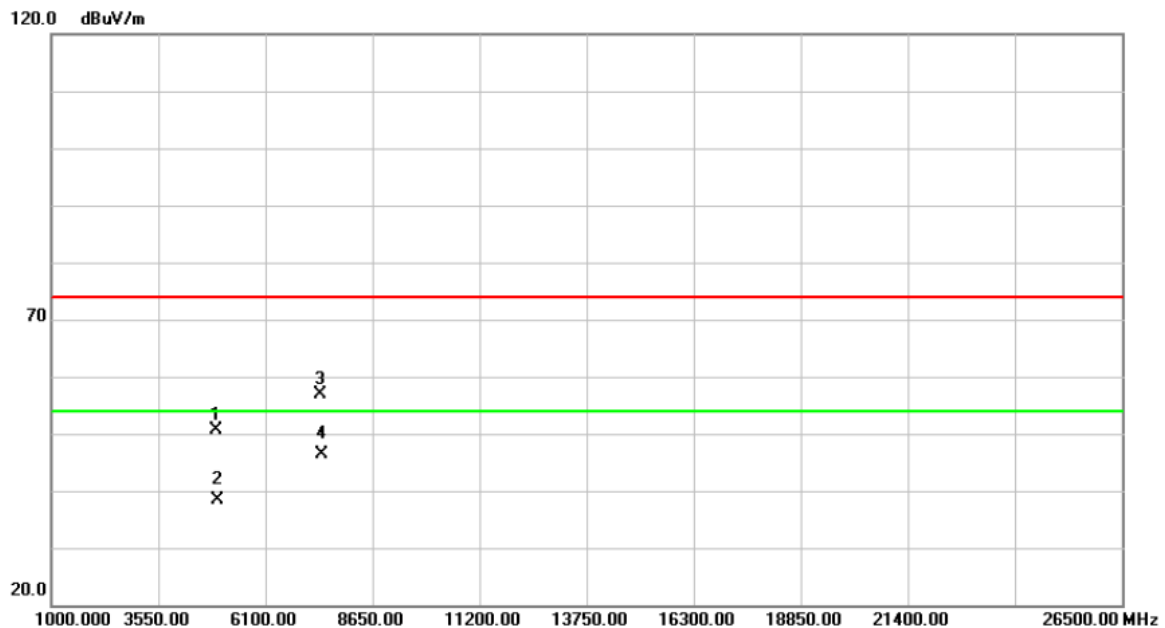


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.750	58.90	31.36	90.26	74.00	16.26	peak	
2	*	2462.750	48.76	31.36	80.12	54.00	26.12	AVG	
3		2483.500	23.20	31.46	54.66	74.00	-19.34	peak	
4		2483.500	11.93	31.46	43.39	54.00	-10.61	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2462 MHz		

Polarization: Vertical

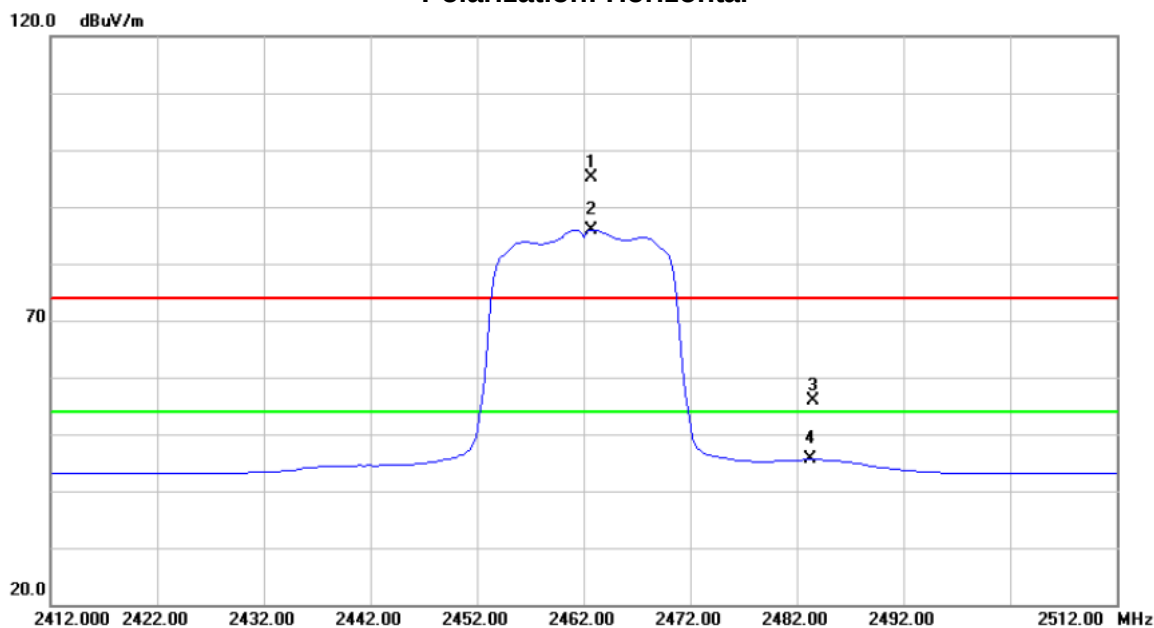


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4923.580	43.06	7.53	50.59	74.00	-23.41	peak	
2	4923.580	30.84	7.53	38.37	54.00	-15.63	AVG	
3	7392.250	41.28	15.52	56.80	74.00	-17.20	peak	
4 *	7392.250	30.97	15.52	46.49	54.00	-7.51	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2462 MHz		

Polarization: Horizontal

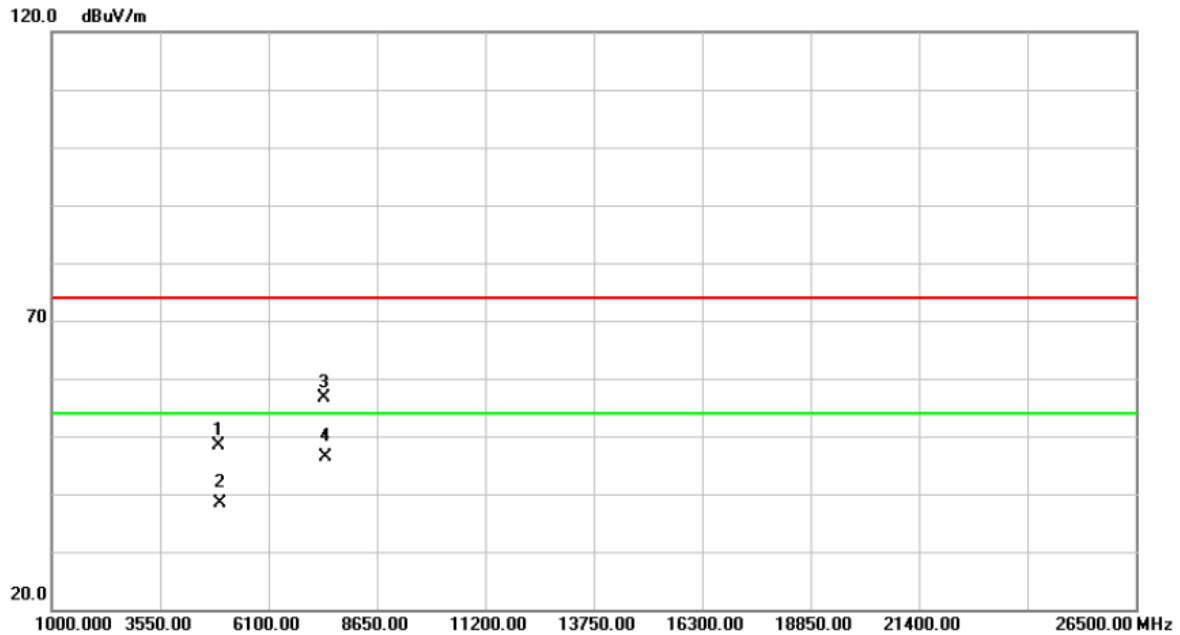


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.750	63.65	31.36	95.01	74.00	21.01	peak	
2	*	2462.750	54.62	31.36	85.98	54.00	31.98	AVG	
3		2483.500	24.50	31.46	55.96	74.00	-18.04	peak	
4		2483.500	14.07	31.46	45.53	54.00	-8.47	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2462 MHz		

Polarization: Horizontal

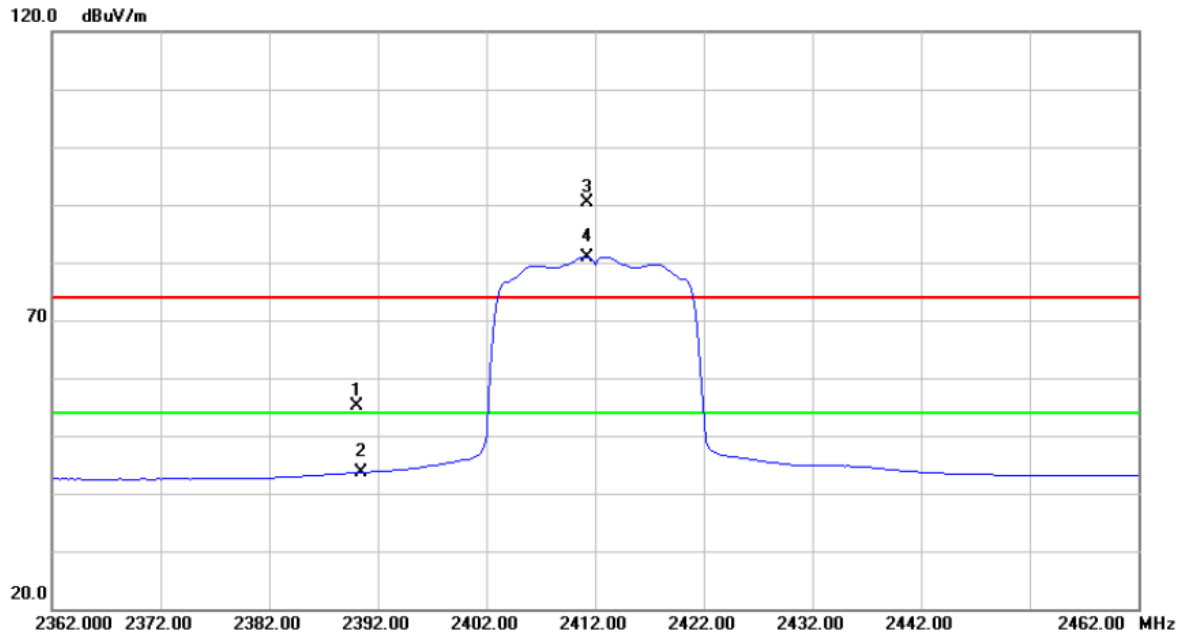


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4919.000	40.92	7.52	48.44	74.00	-25.56	peak	
2		4919.000	30.91	7.52	38.43	54.00	-15.57	AVG	
3		7392.250	41.11	15.52	56.63	74.00	-17.37	peak	
4	*	7392.250	30.92	15.52	46.44	54.00	-7.56	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2412 MHz		

Polarization: Vertical

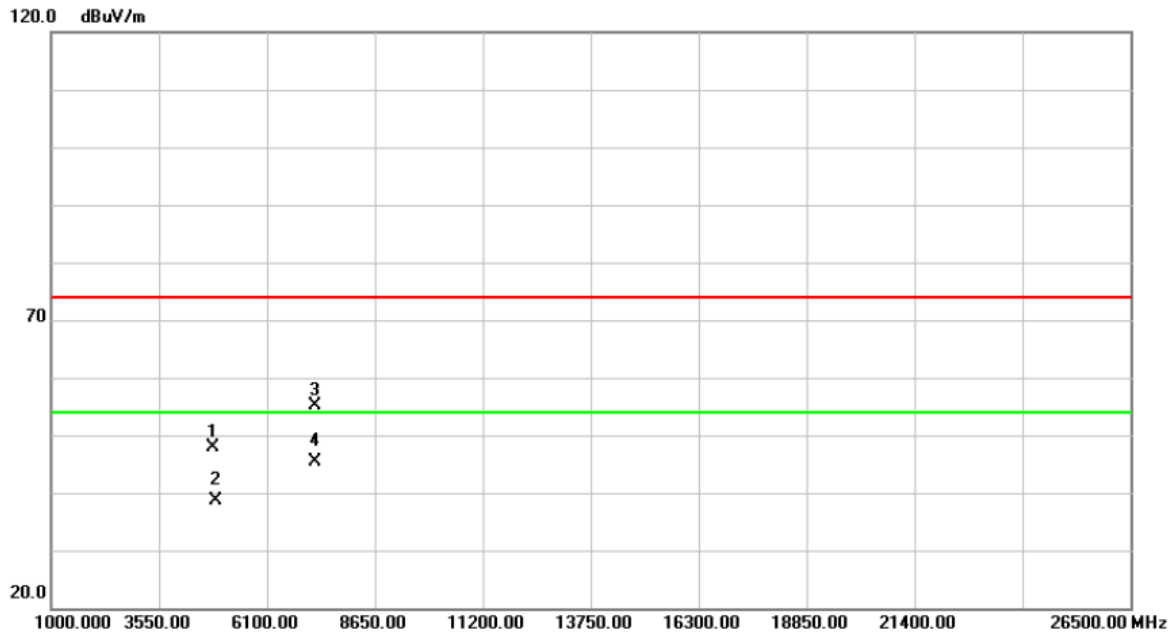


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	24.20	31.02	55.22	74.00	-18.78	peak	
2		2390.000	12.60	31.02	43.62	54.00	-10.38	AVG	
3	X	2411.250	59.20	31.12	90.32	74.00	16.32	peak	
4	*	2411.250	49.85	31.12	80.97	54.00	26.97	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2412 MHz		

Polarization: Vertical

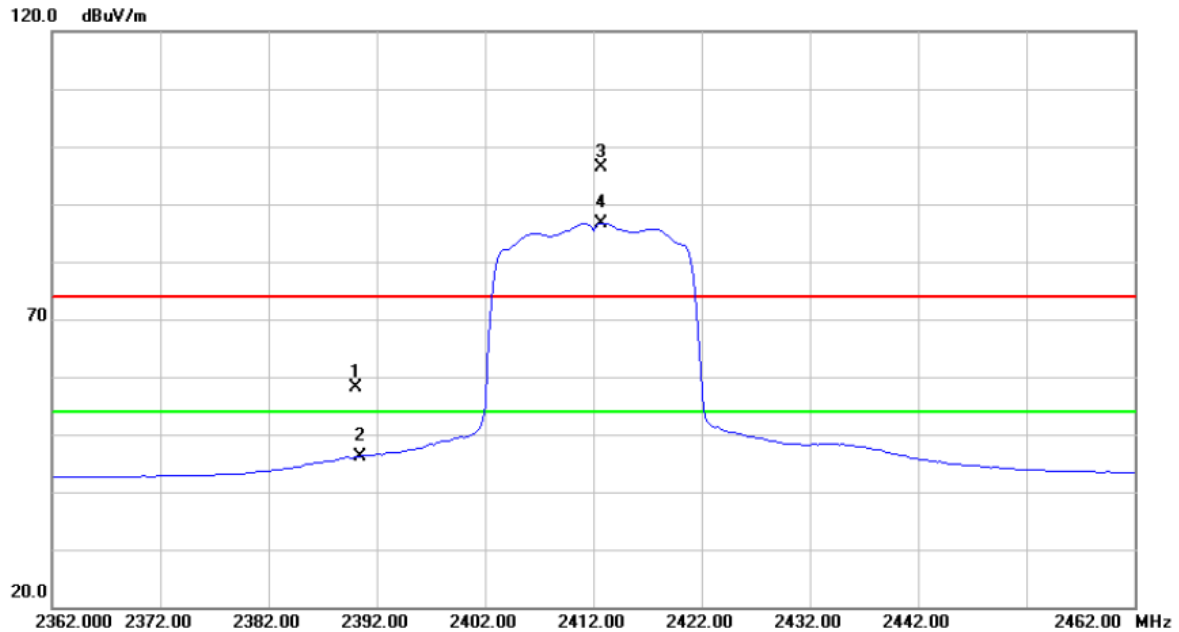


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4825.310	40.59	7.39	47.98	74.00	-26.02	peak	
2		4825.310	31.12	7.39	38.51	54.00	-15.49	AVG	
3		7237.265	40.20	14.87	55.07	74.00	-18.93	peak	
4	*	7237.265	30.53	14.87	45.40	54.00	-8.60	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2412 MHz		

Polarization: Horizontal

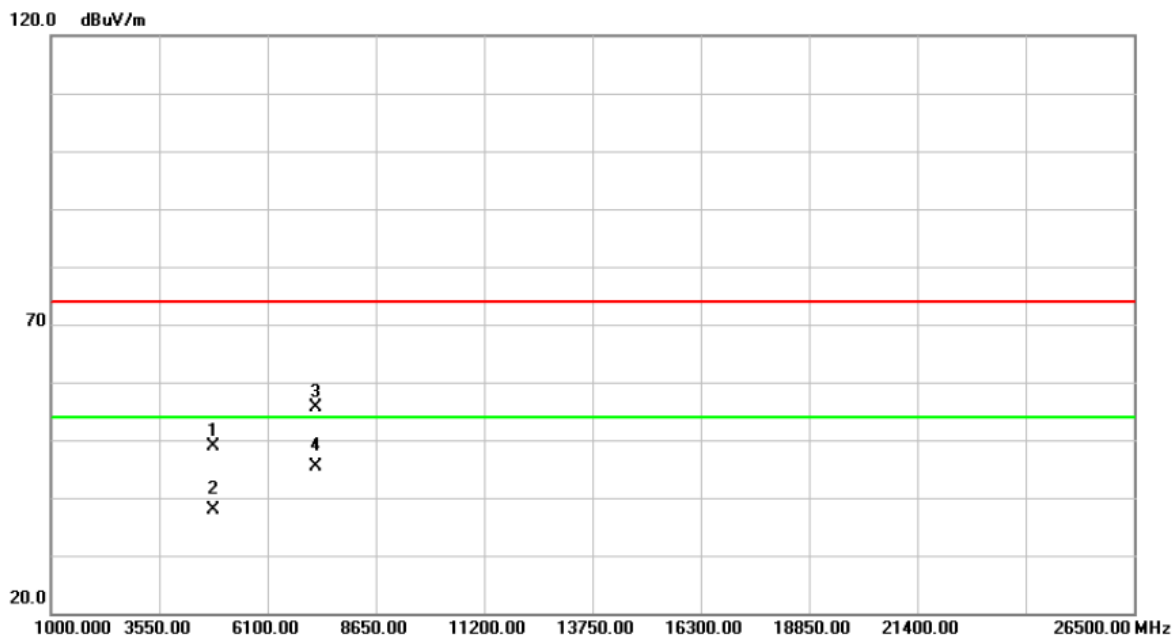


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	27.20	31.02	58.22	74.00	-15.78	peak	
2		2390.000	15.14	31.02	46.16	54.00	-7.84	AVG	
3	X	2412.750	65.17	31.12	96.29	74.00	22.29	peak	
4	*	2412.750	55.53	31.12	86.65	54.00	32.65	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2412 MHz		

Polarization: Horizontal

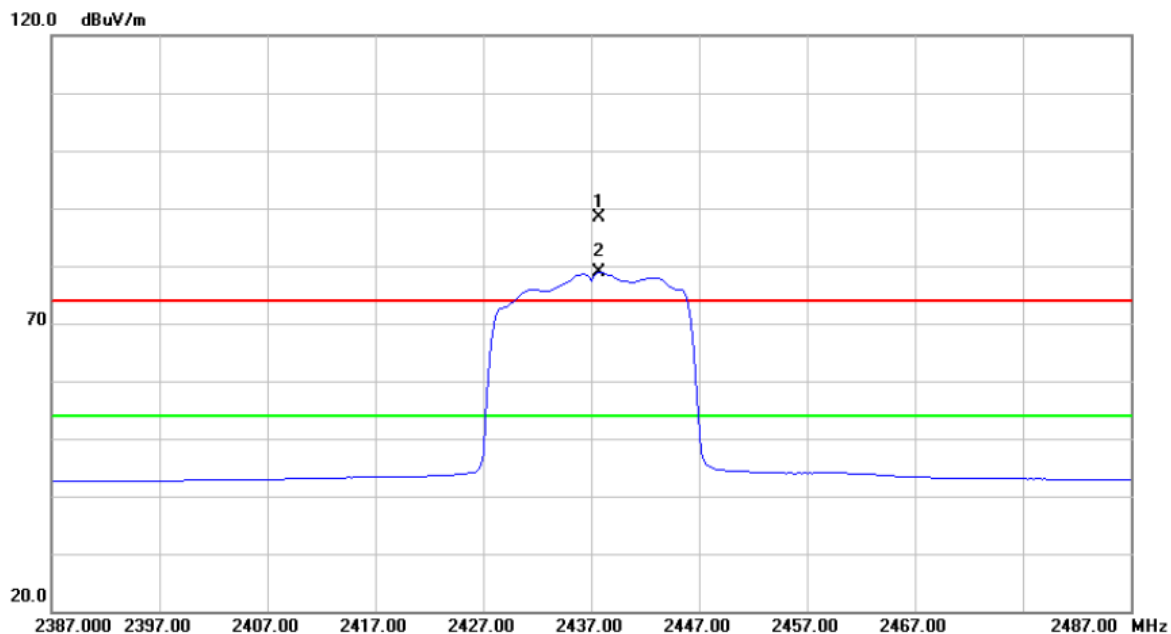


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4824.370	41.38	7.39	48.77	74.00	-25.23	peak	
2		4824.370	30.54	7.39	37.93	54.00	-16.07	AVG	
3		7237.265	40.72	14.87	55.59	74.00	-18.41	peak	
4	*	7237.265	30.48	14.87	45.35	54.00	-8.65	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2437 MHz		

Polarization: Vertical

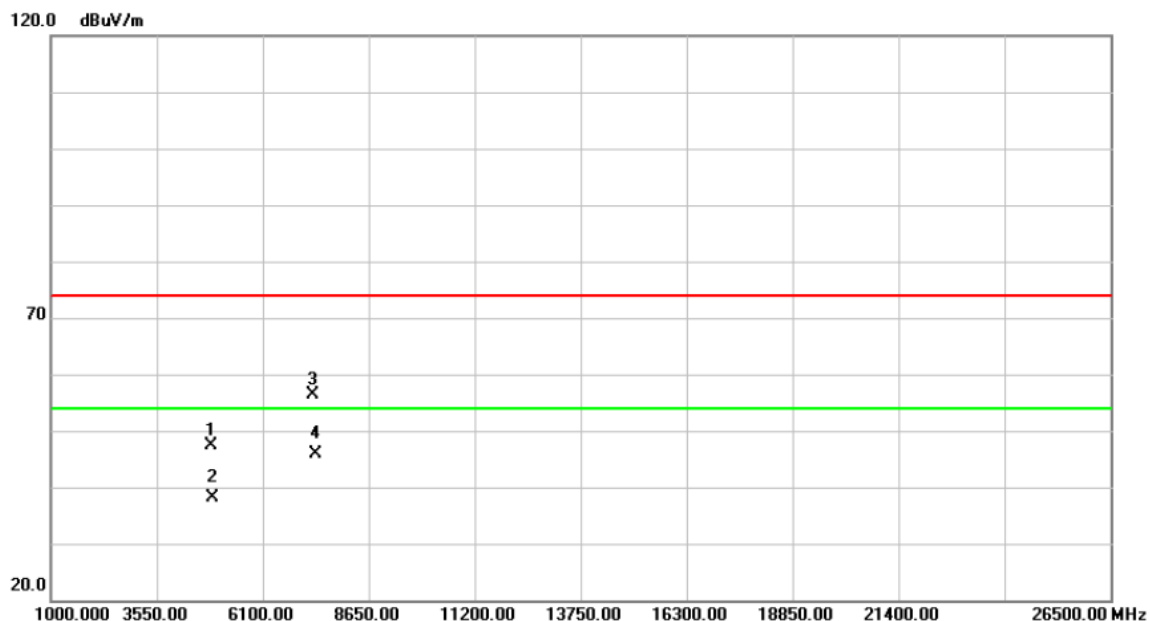


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.750	57.20	31.25	88.45	74.00	14.45	peak	
2	*	2437.750	47.51	31.25	78.76	54.00	24.76	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2437 MHz		

Polarization: Vertical

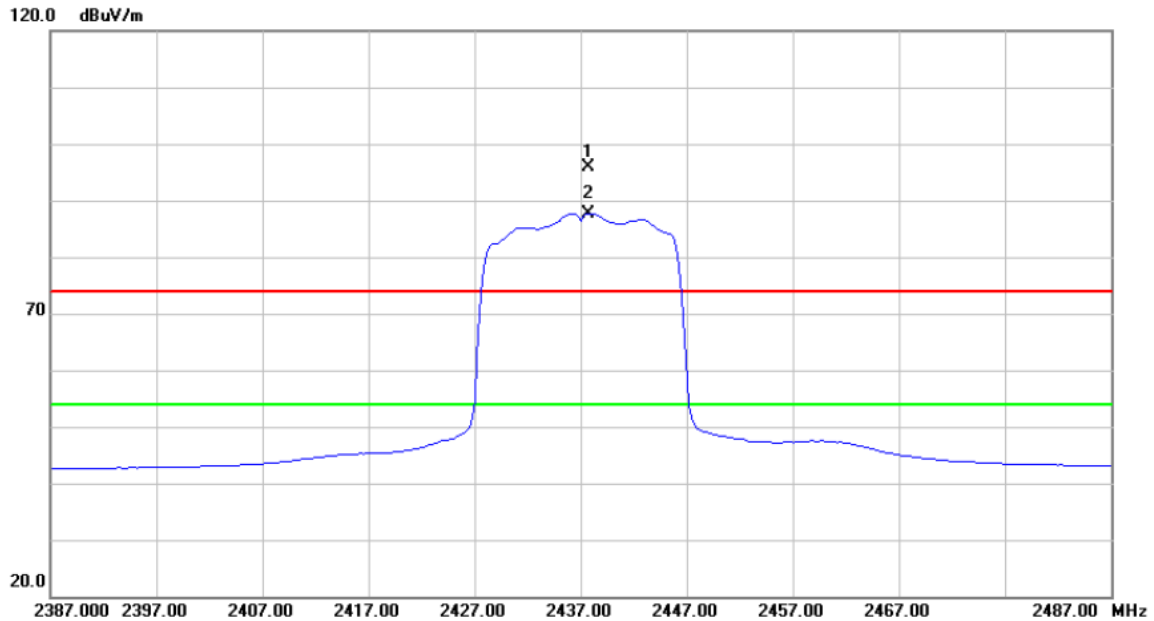


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4874.705	39.90	7.47	47.37	74.00	-26.63	peak	
2		4874.705	30.68	7.47	38.15	54.00	-15.85	AVG	
3		7311.950	41.16	15.19	56.35	74.00	-17.65	peak	
4	*	7311.950	30.71	15.19	45.90	54.00	-8.10	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2437 MHz		

Polarization: Horizontal

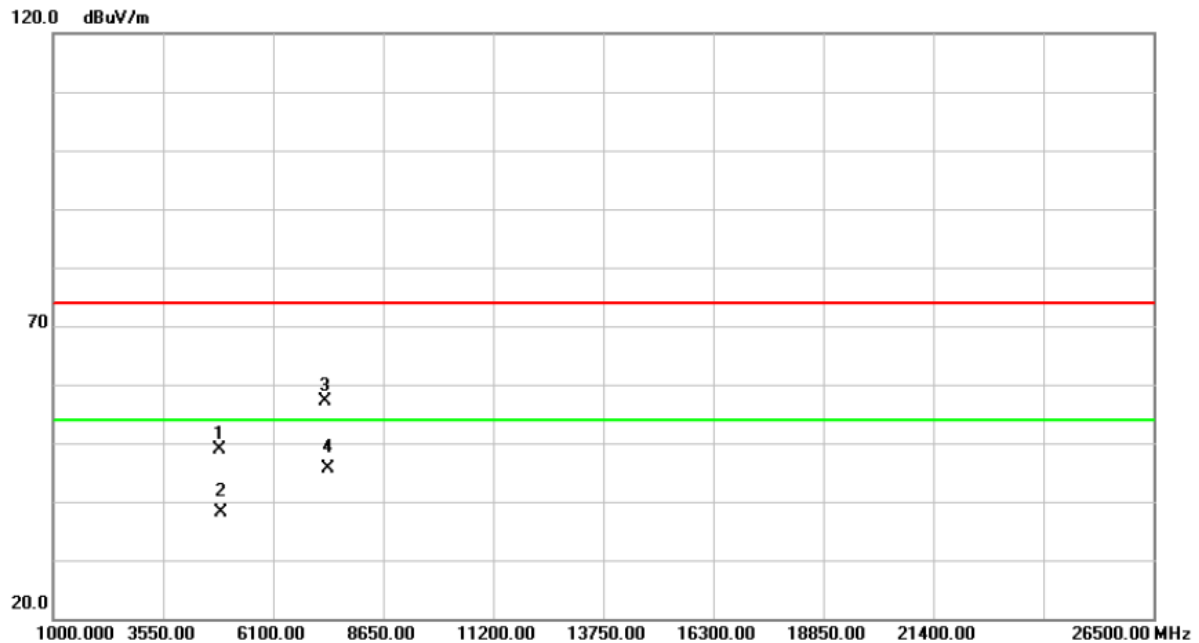


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.750	64.70	31.25	95.95	74.00	21.95	peak	
2	*	2437.750	56.45	31.25	87.70	54.00	33.70	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2437 MHz		

Polarization: Horizontal

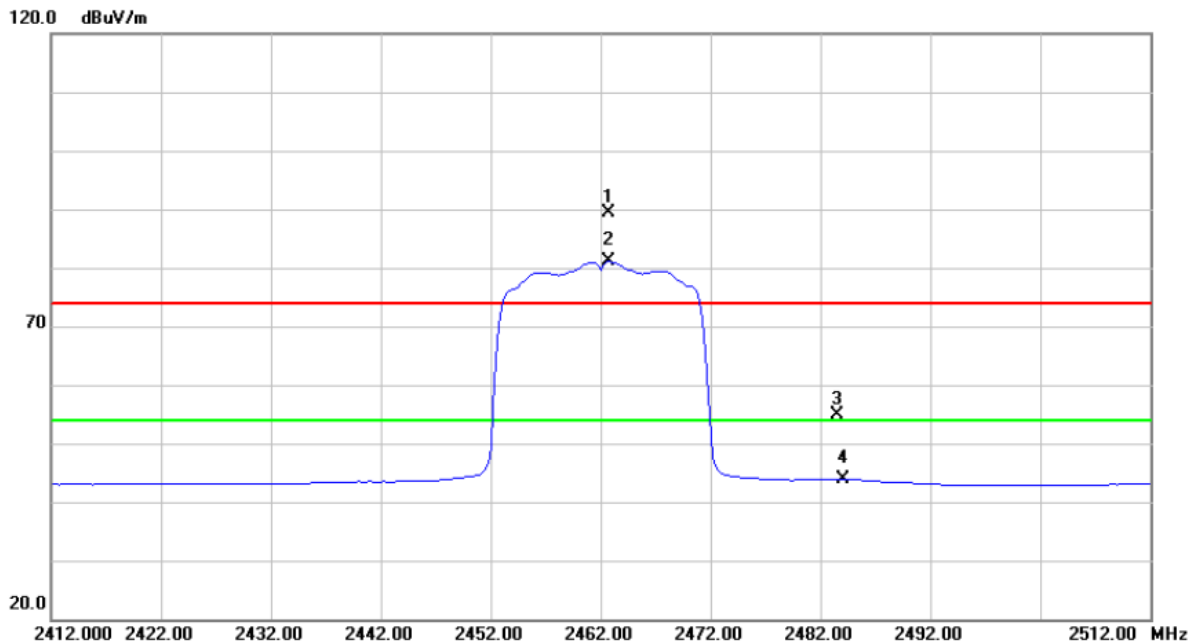


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4873.800	41.52	7.47	48.99	74.00	-25.01	peak	
2		4873.800	30.65	7.47	38.12	54.00	-15.88	AVG	
3		7311.930	41.84	15.19	57.03	74.00	-16.97	peak	
4	*	7311.930	30.49	15.19	45.68	54.00	-8.32	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2462 MHz		

Polarization: Vertical

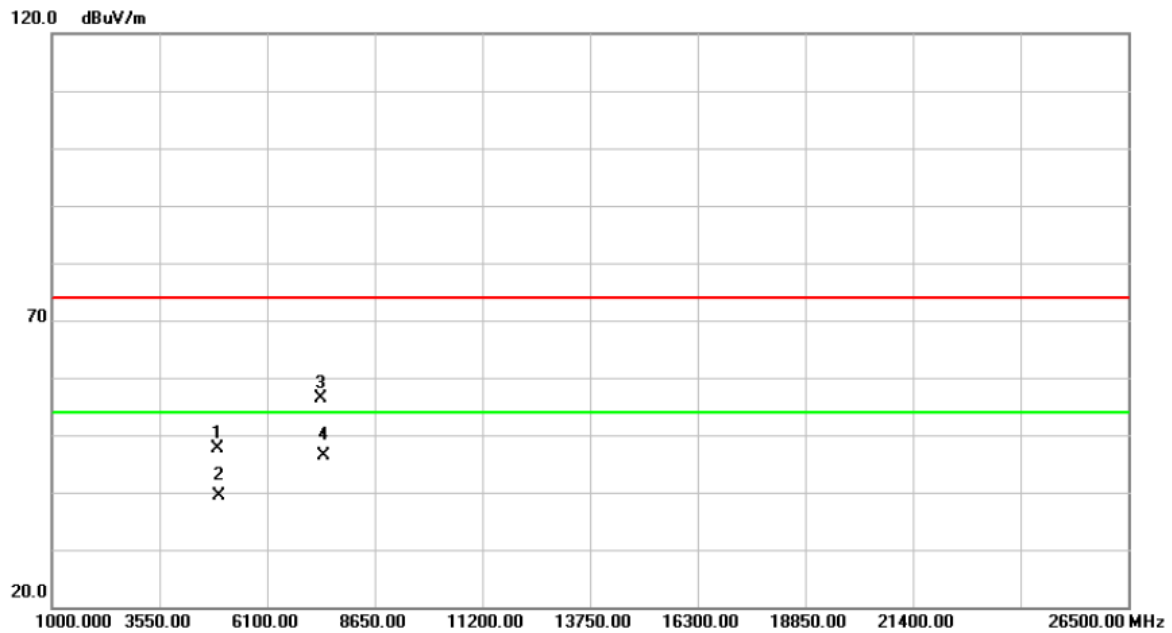


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.750	57.90	31.36	89.26	74.00	15.26	peak	
2	*	2462.750	49.67	31.36	81.03	54.00	27.03	AVG	
3		2483.500	23.50	31.46	54.96	74.00	-19.04	peak	
4		2483.500	12.37	31.46	43.83	54.00	-10.17	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2462 MHz		

Polarization: Vertical

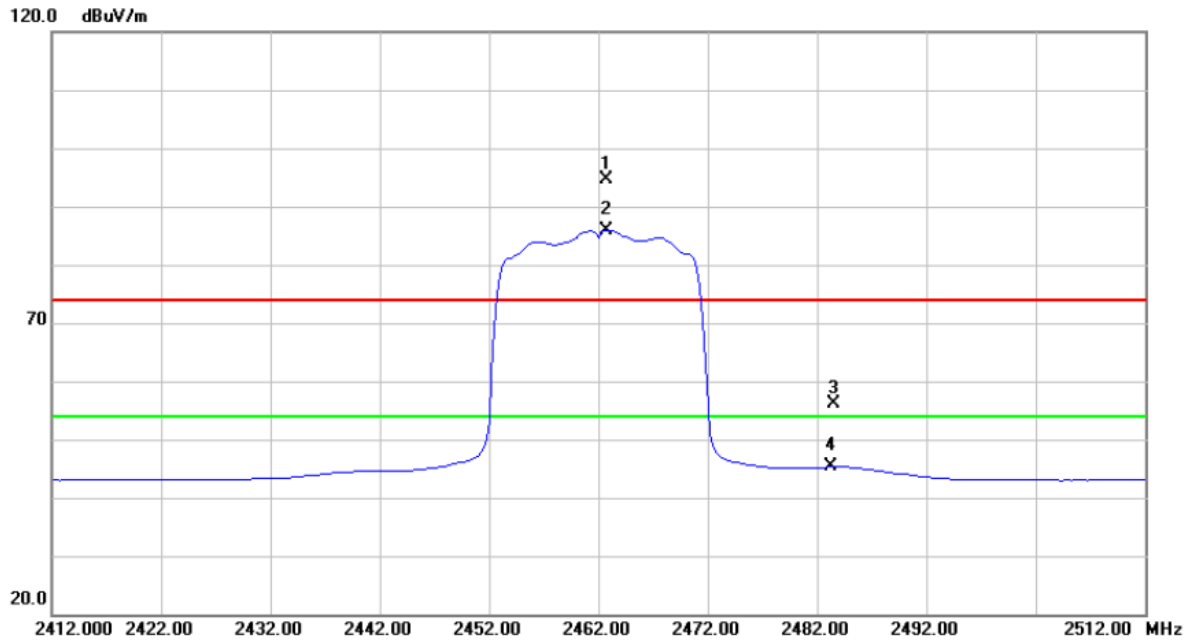


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4924.070	40.14	7.53	47.67	74.00	-26.33	peak	
2		4924.070	31.93	7.53	39.46	54.00	-14.54	AVG	
3		7386.620	40.84	15.50	56.34	74.00	-17.66	peak	
4	*	7386.620	30.95	15.50	46.45	54.00	-7.55	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2462 MHz		

Polarization: Horizontal

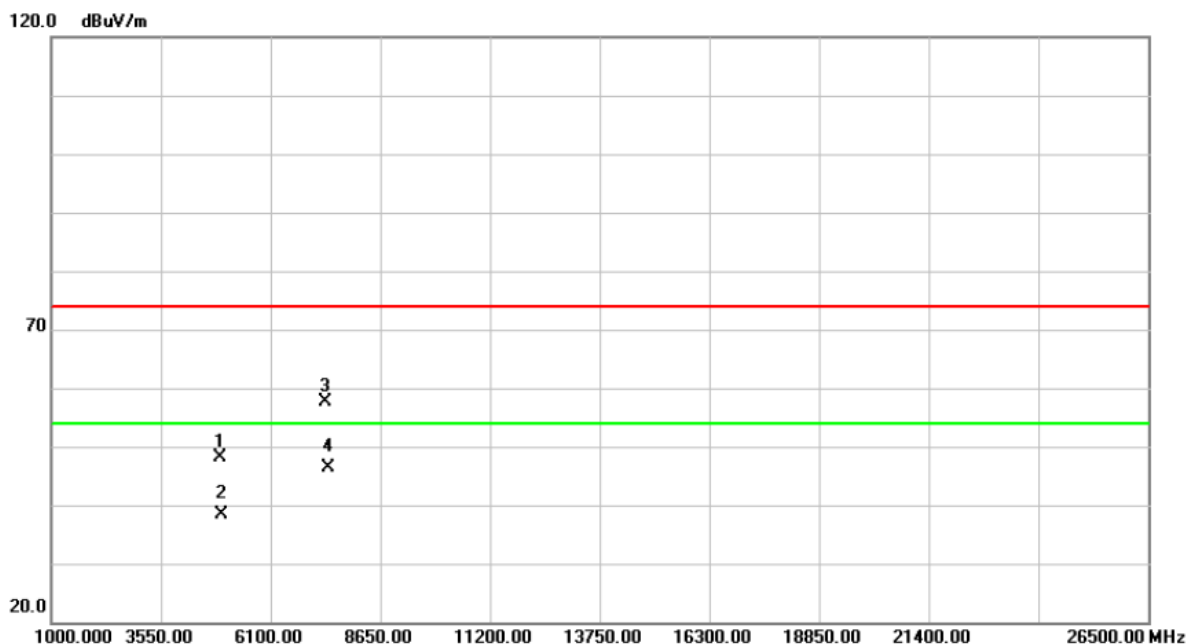


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2462.750	63.20	31.36	94.56	74.00	20.56	peak	
2	*	2462.750	54.57	31.36	85.93	54.00	31.93	AVG	
3		2483.500	24.70	31.46	56.16	74.00	-17.84	peak	
4		2483.500	13.83	31.46	45.29	54.00	-8.71	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2462 MHz		

Polarization: Horizontal



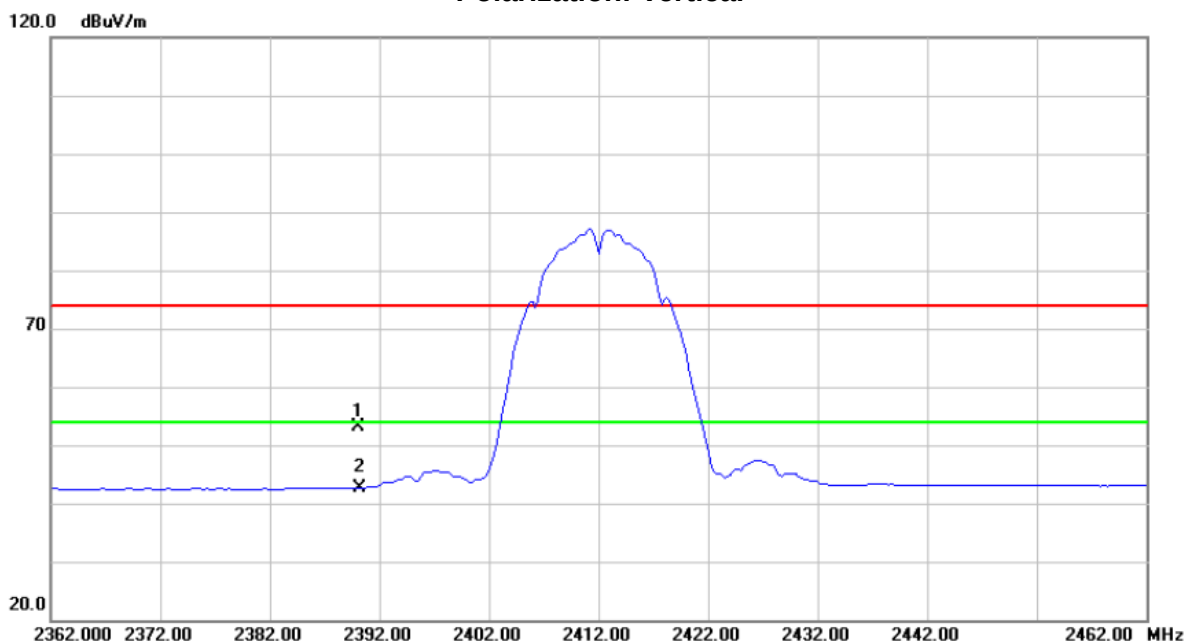
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4924.615	40.53	7.53	48.06	74.00	-25.94	peak	
2		4924.615	30.82	7.53	38.35	54.00	-15.65	AVG	
3		7386.480	42.12	15.50	57.62	74.00	-16.38	peak	
4	*	7386.480	30.91	15.50	46.41	54.00	-7.59	AVG	



9.9 TEST RESULTS (RESTRICTED BANDS)

EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b		
NOTE	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

Polarization: Vertical

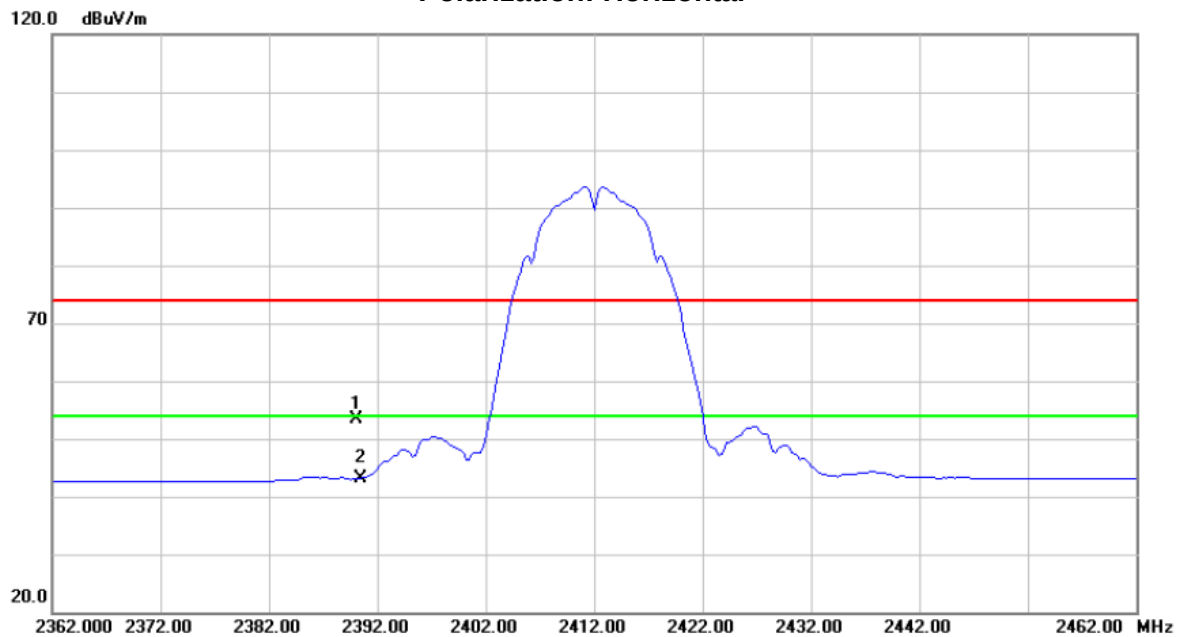


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	22.10	31.02	53.12	74.00	-20.88	peak	
2	*	2390.000	11.67	31.02	42.69	54.00	-11.31	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b		
NOTE	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

Polarization: Horizontal

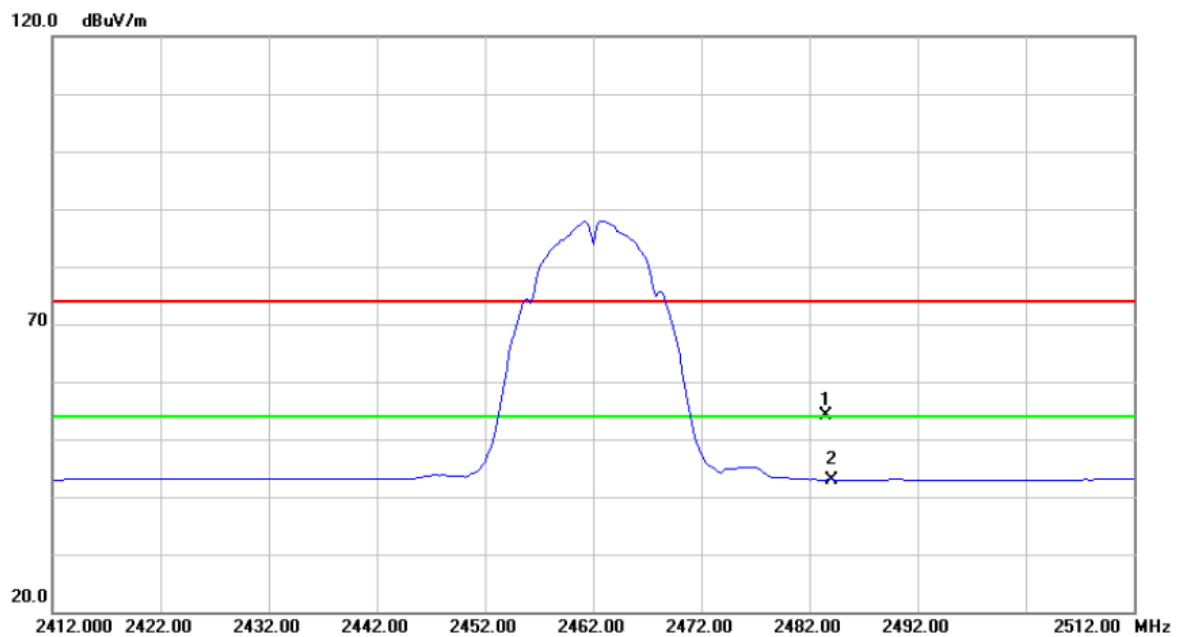


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	22.40	31.02	53.42	74.00	-20.58	peak	
2	*	2390.000	12.10	31.02	43.12	54.00	-10.88	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b		
NOTE	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

Polarization: Vertical

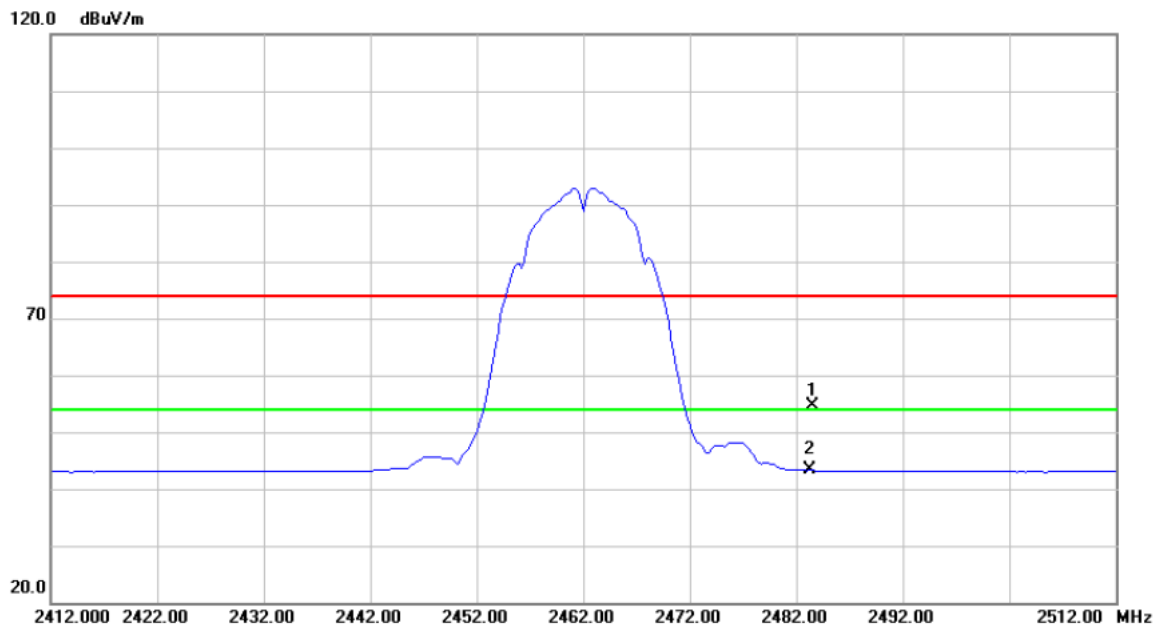


No. Mk.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	2483.500	22.60	31.46	54.06	74.00	-19.94	peak	
2 *	2483.500	11.53	31.46	42.99	54.00	-11.01	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b		
NOTE	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

Polarization: Horizontal

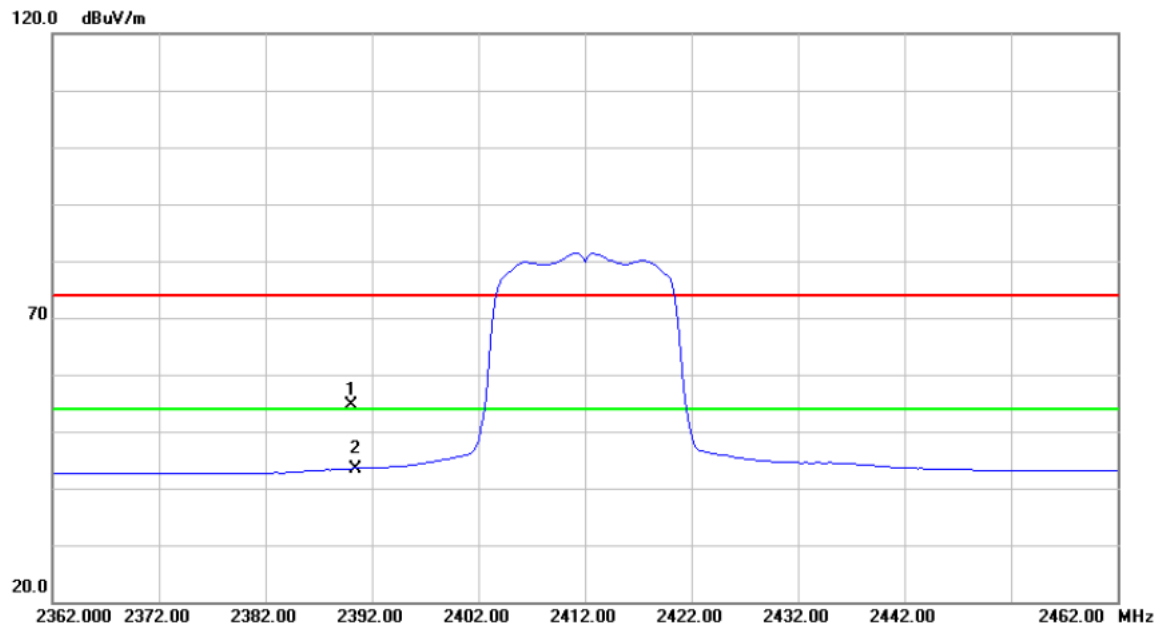


No.	Mk.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2483.500	23.20	31.46	54.66	74.00	-19.34	peak	
2	*	2483.500	11.80	31.46	43.26	54.00	-10.74	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g		
NOTE	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

Polarization: Vertical

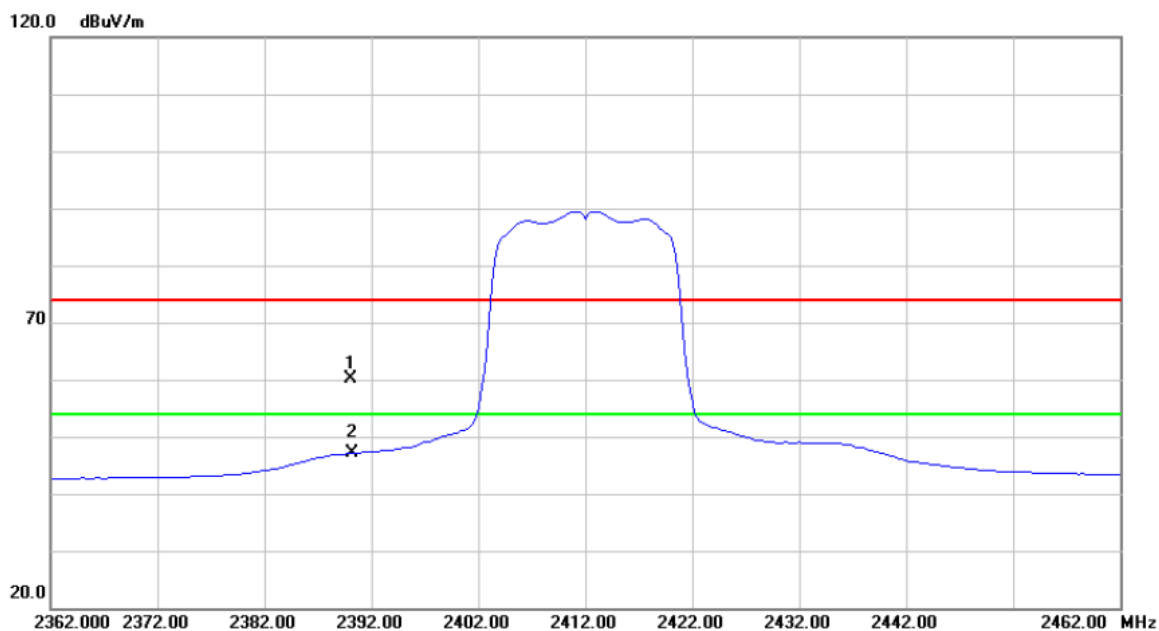


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	23.70	31.02	54.72	74.00	-19.28	peak	
2	*	2390.000	12.48	31.02	43.50	54.00	-10.50	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g		
NOTE	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

Polarization: Horizontal

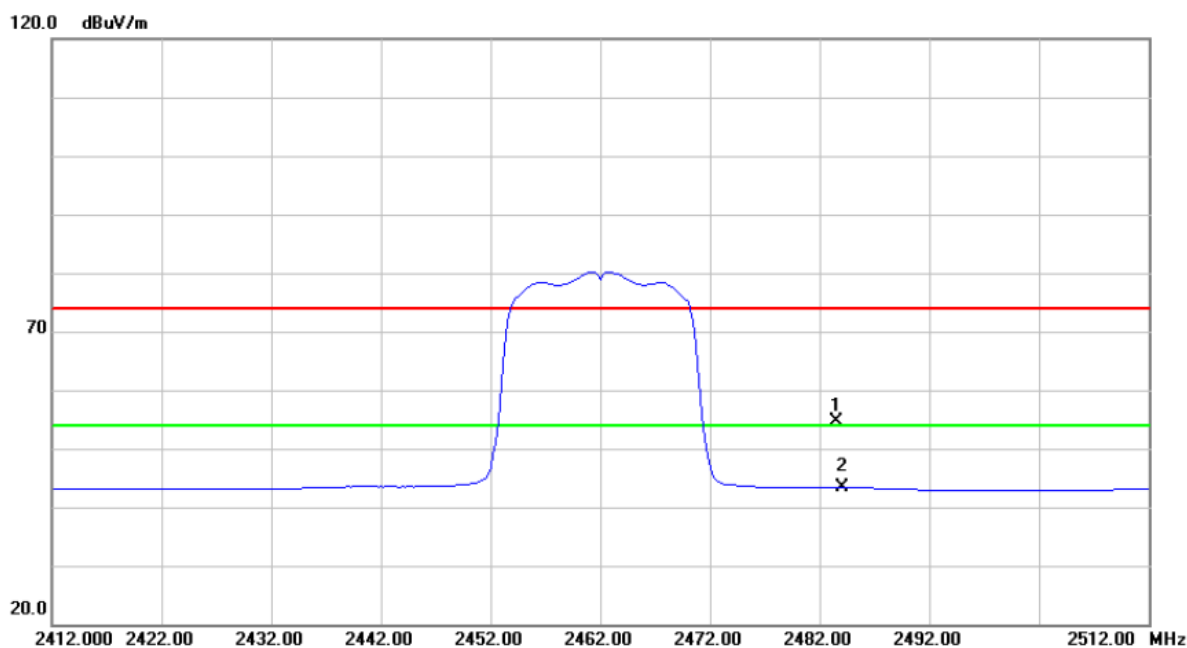


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	29.10	31.02	60.12	74.00	-13.88	peak	
2	*	2390.000	16.00	31.02	47.02	54.00	-6.98	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g		
NOTE	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

Polarization: Vertical

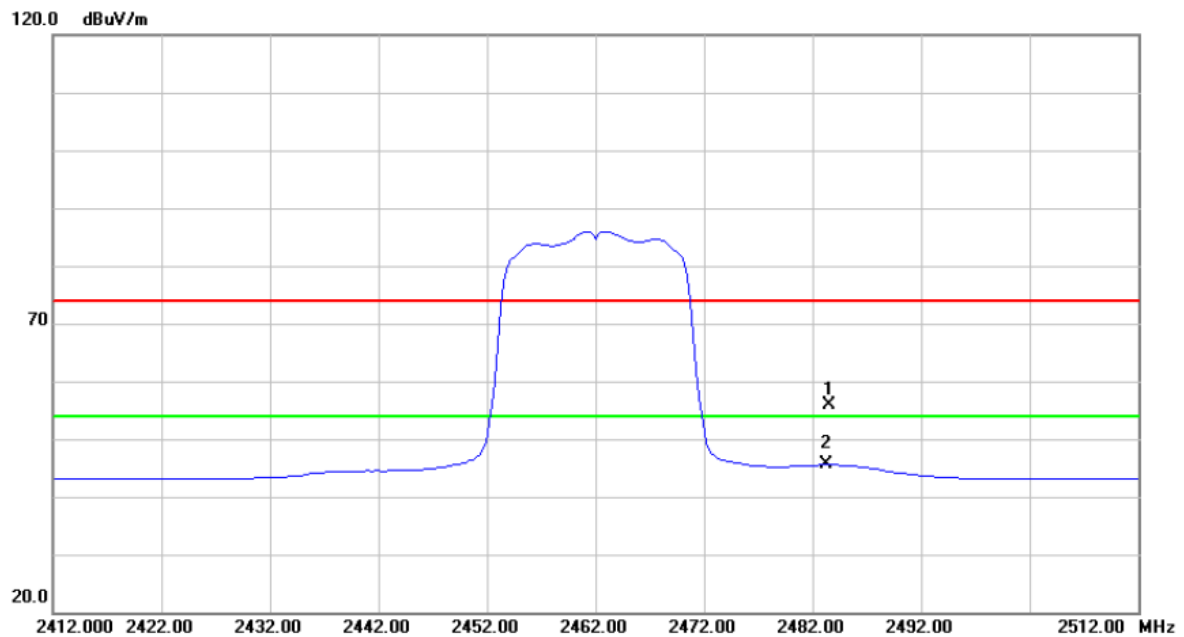


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2483.500	23.20	31.46	54.66	74.00	-19.34	peak	
2	*	2483.500	11.93	31.46	43.39	54.00	-10.61	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g		
NOTE	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

Polarization: Horizontal

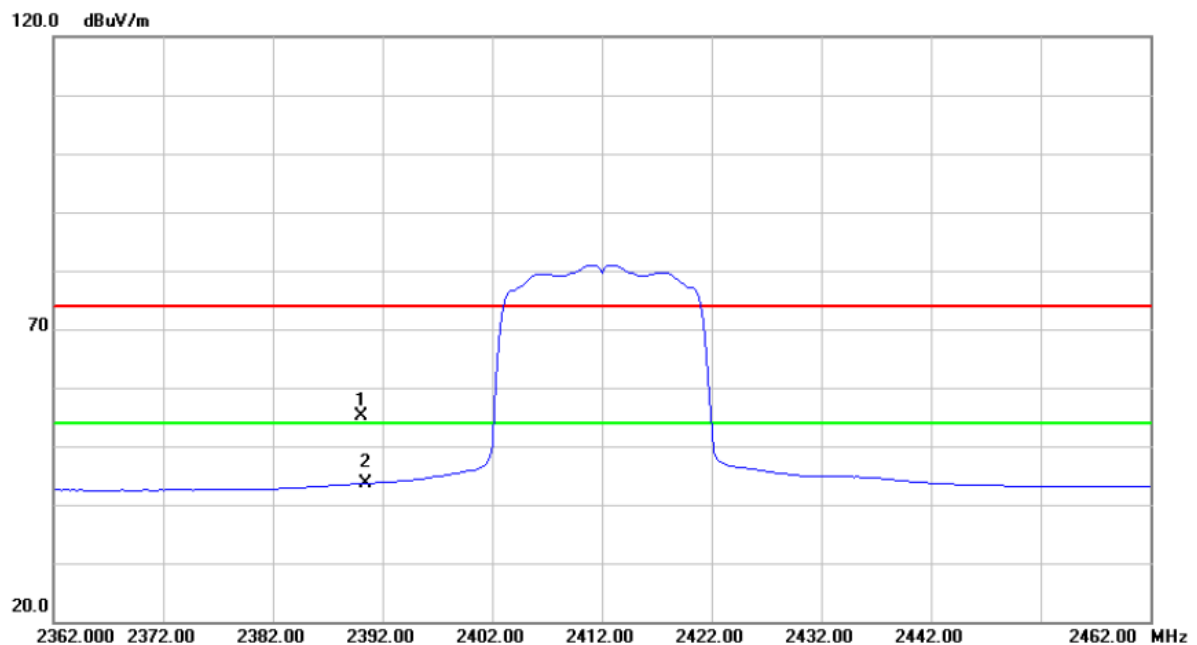


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2483.500	24.50	31.46	55.96	74.00	-18.04	peak	
2	*	2483.500	14.07	31.46	45.53	54.00	-8.47	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)		
NOTE	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

Polarization: Vertical

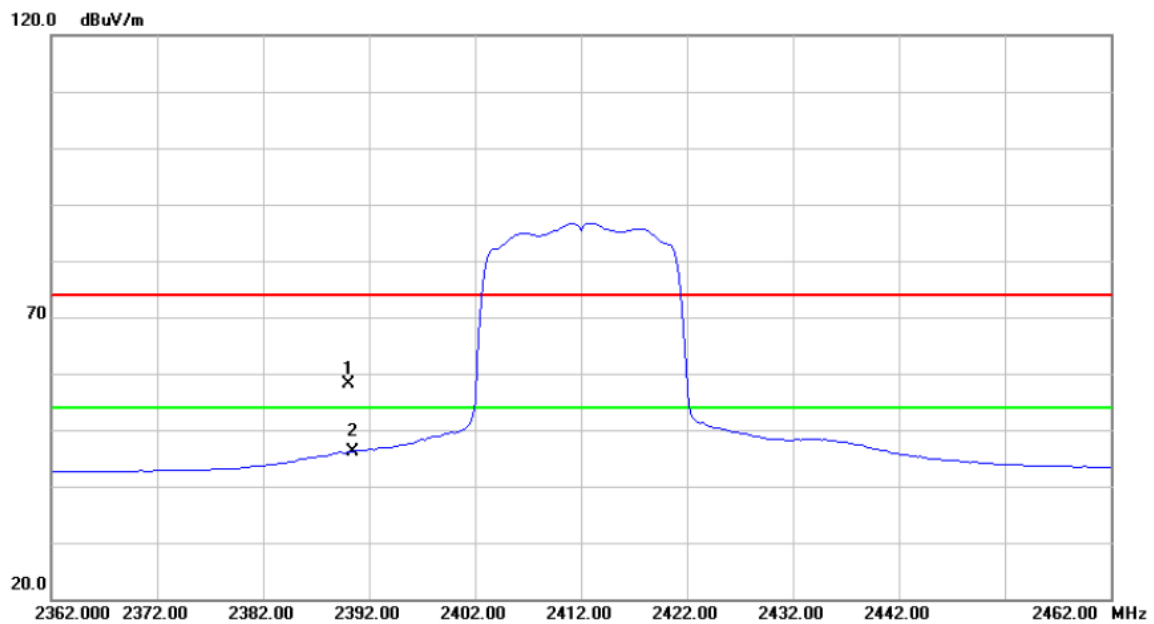


No. Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.000	24.20	31.02	55.22	74.00	-18.78	peak	
2 *	2390.000	12.60	31.02	43.62	54.00	-10.38	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)		
NOTE	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

Polarization: Horizontal

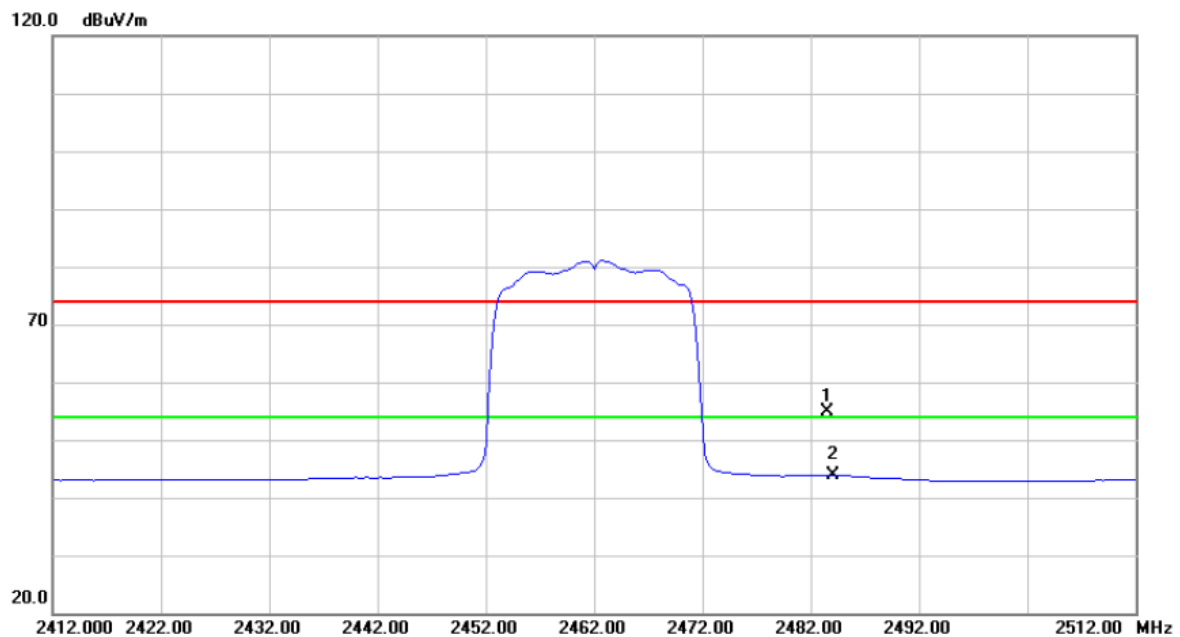


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	27.20	31.02	58.22	74.00	-15.78	peak	
2	*	2390.000	15.14	31.02	46.16	54.00	-7.84	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)		
NOTE	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

Polarization: Vertical

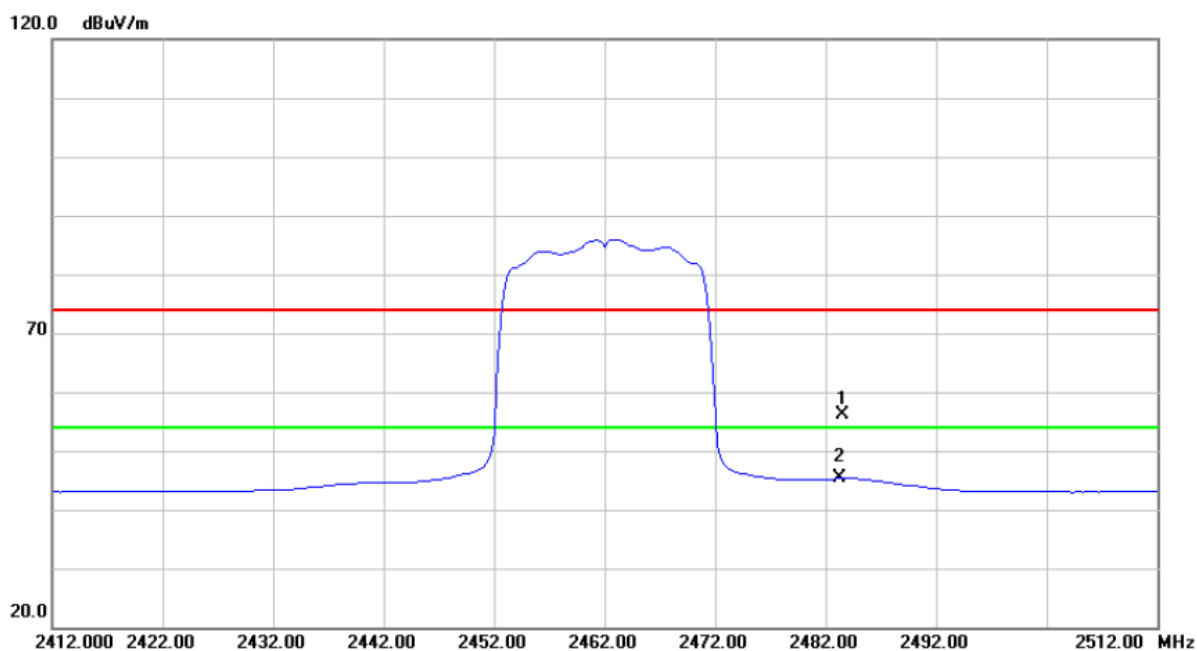


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2483.500	23.50	31.46	54.96	74.00	-19.04	peak	
2	*	2483.500	12.37	31.46	43.83	54.00	-10.17	AVG	



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)		
NOTE	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

Polarization: Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector Comment
1		2483.500	24.70	31.46	56.16	74.00	-17.84	peak
2	*	2483.500	13.83	31.46	45.29	54.00	-8.71	AVG



10 POWER SPECTRAL DENSITY

10.1 LIMIT

Test Item	Frequency Range (MHz)	Limit
Power Spectral Density	2400-2483.5	8 dBm (in any 3 kHz)

10.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-30	100854	Sep. 08, 2014

NOTE: **N/A**: denotes No Model Name, No Serial No. or No Calibration specified.

10.3 TEST PROCEDURES

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

10.4 TEST SETUP LAYOUT



10.5 DEVIATION FROM TEST STANDARD

No deviation

10.6 EUT OPERATING CONDITIONS

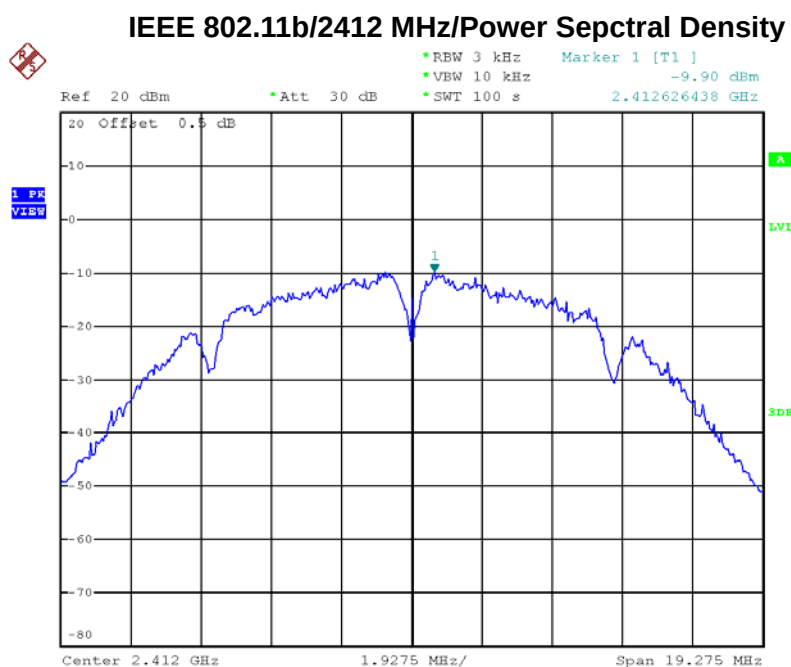
The EUT tested system was configured as the statements of 5.6 Unless otherwise a special operating condition is specified in the follows during the testing.



10.7 TEST RESULTS

EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2412 MHz, 2437 MHz, 2462 MHz		

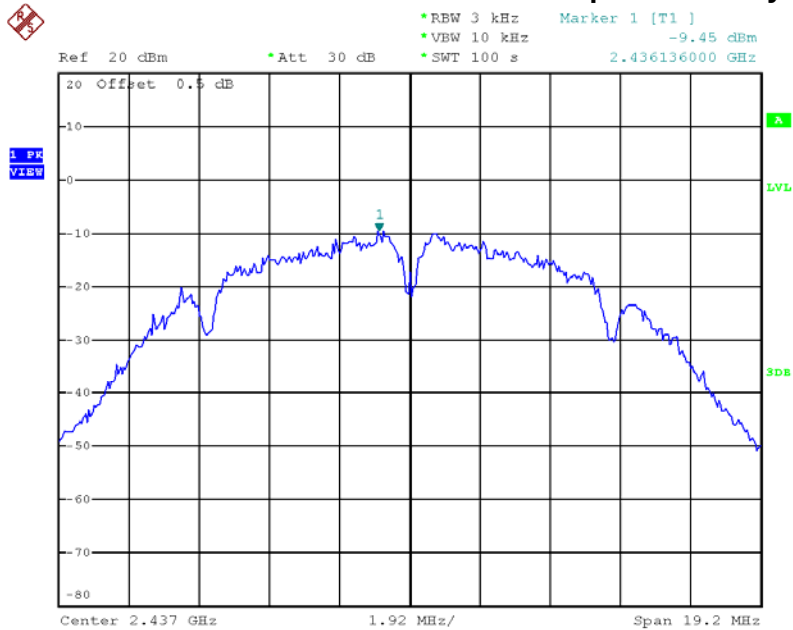
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-9.90	8	PASS
2437 MHz	-9.45	8	PASS
2462 MHz	-7.96	8	PASS



Date: 18.JUN.2014 14:56:18

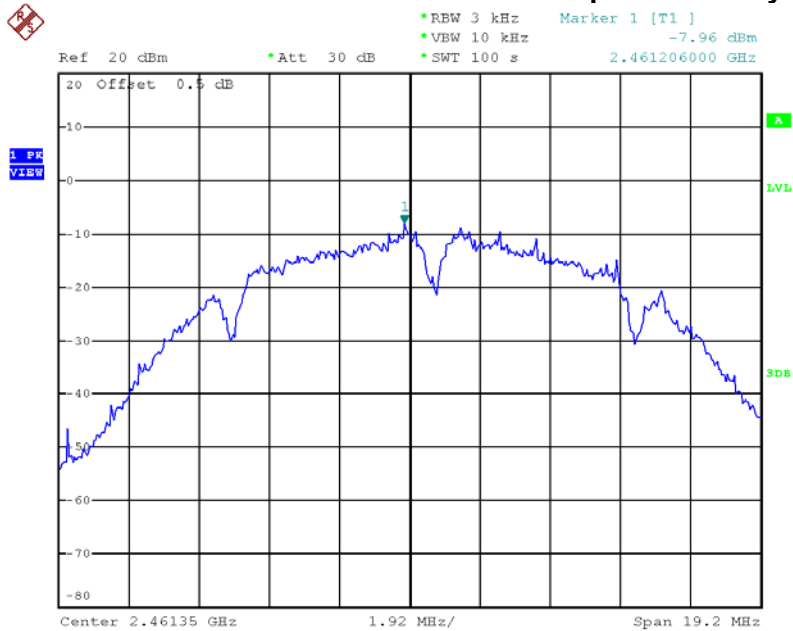


IEEE 802.11b/2437 MHz/Power Sepctral Density



Date: 18.JUN.2014 15:02:12

IEEE 802.11b/2462 MHz/Power Sepctral Density

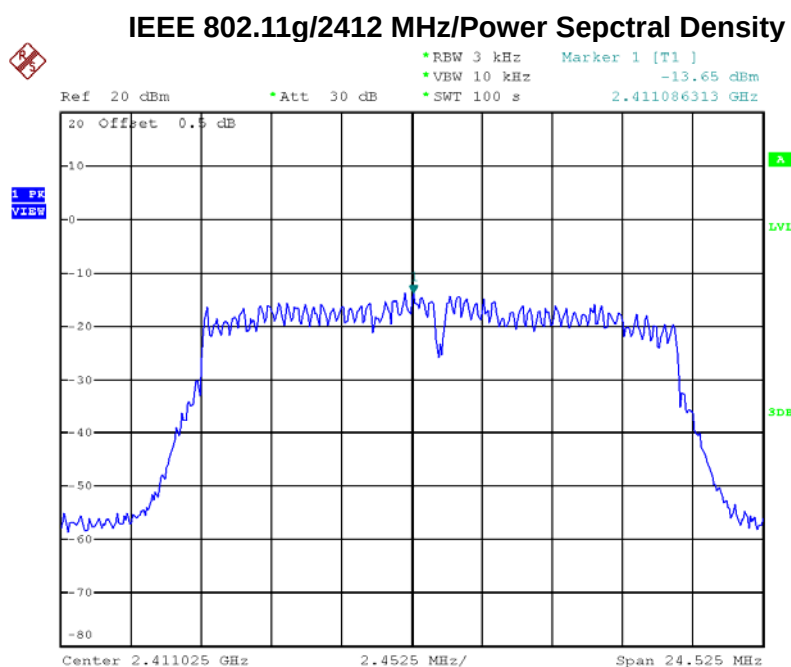


Date: 18.JUN.2014 15:31:18



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2412 MHz, 2437 MHz, 2462 MHz		

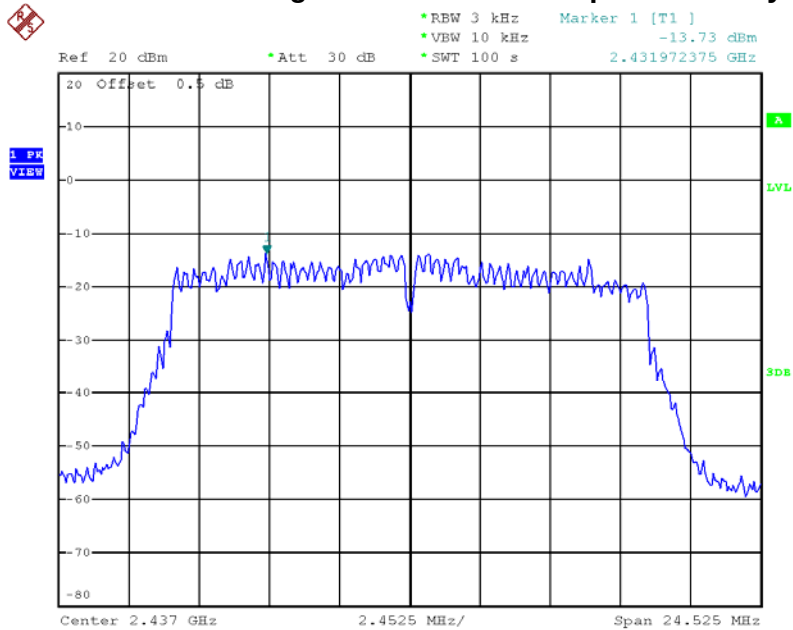
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-13.65	8	PASS
2437 MHz	-13.73	8	PASS
2462 MHz	-13.22	8	PASS



Date: 18.JUN.2014 15:38:15

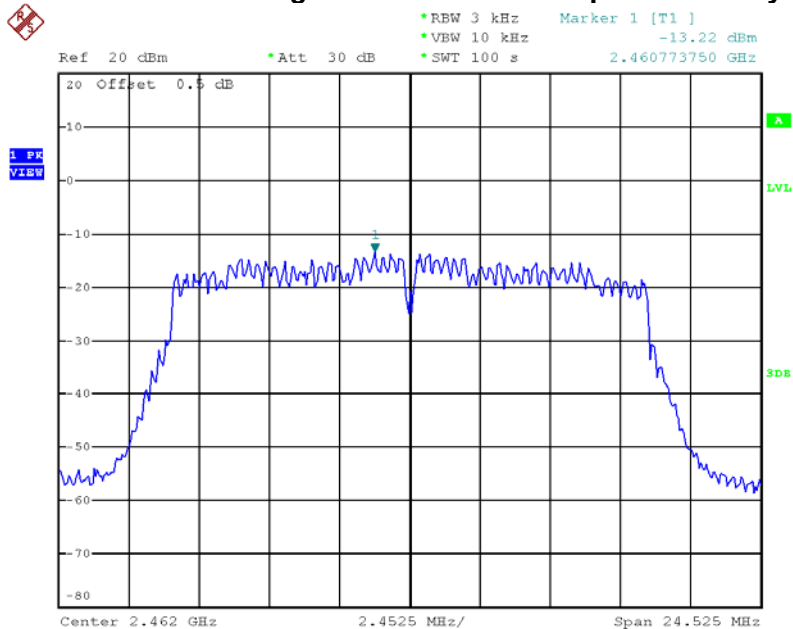


IEEE 802.11g/2437 MHz/Power Sepctral Density



Date: 18.JUN.2014 15:46:41

IEEE 802.11g/2462 MHz/Power Sepctral Density



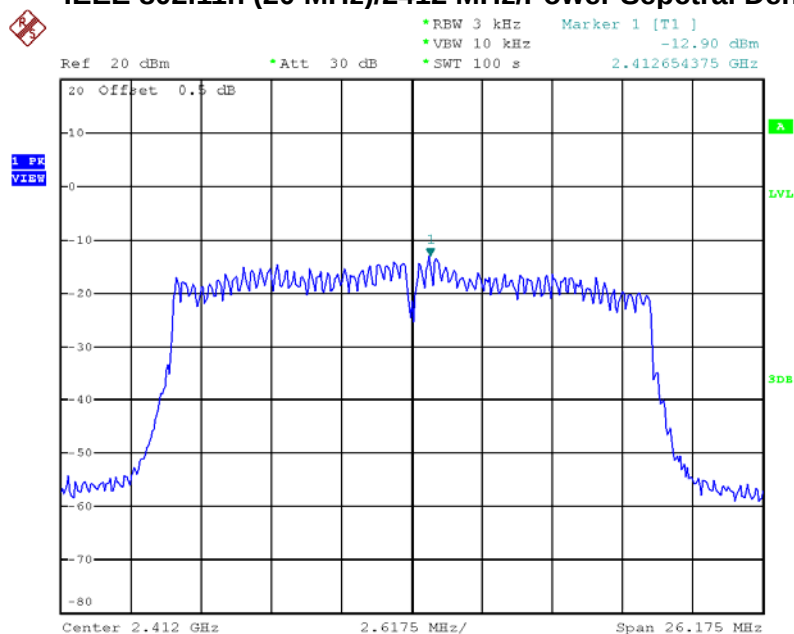
Date: 18.JUN.2014 15:52:53



EUT	module	Model Name	WM-N-BM-02_D-REF1
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-12.90	8	PASS
2437 MHz	-12.89	8	PASS
2462 MHz	-13.04	8	PASS

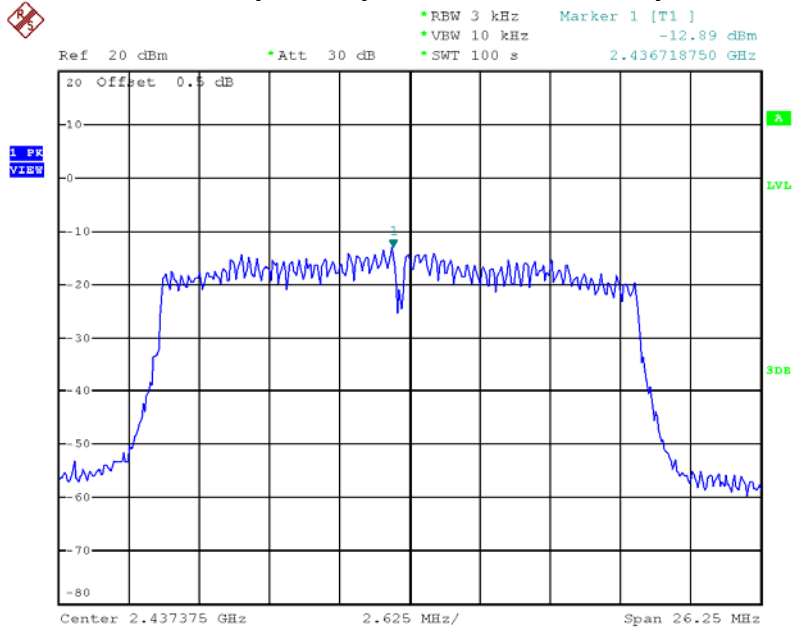
IEEE 802.11n (20 MHz)/2412 MHz/Power Sepctral Density



Date: 18.JUN.2014 16:02:54

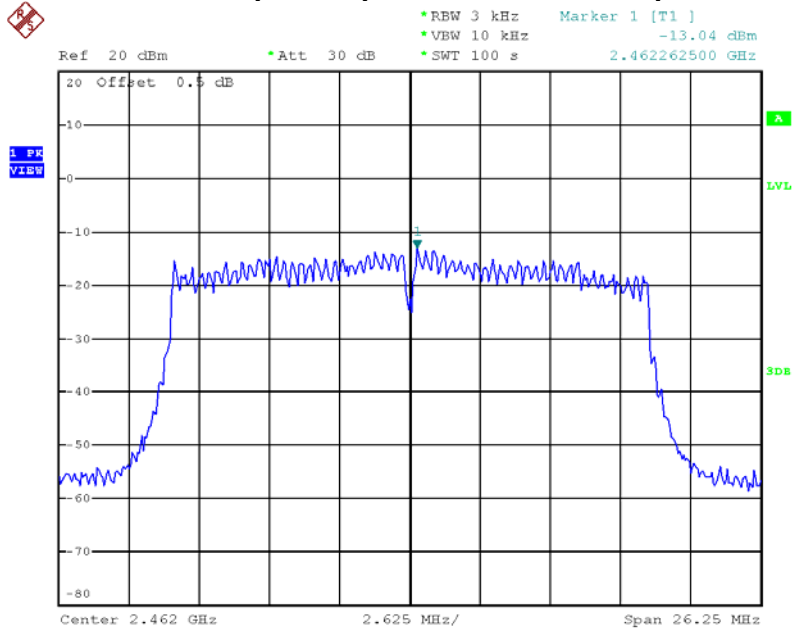


IEEE 802.11n (20 MHz)/2437 MHz/Power Sepctral Density



Date: 18.JUN.2014 16:07:35

IEEE 802.11n (20 MHz)/2462 MHz/Power Sepctral Density



Date: 18.JUN.2014 16:12:33



11 EUT TEST PHOTO

Conducted emission test photos



Radiated spurious emission test photos

