FCC&IC Radio Test Report

FCC ID: KA2IR825D1

IC: 4216A-IR825D1

This report concerns (check one): ■ **Original Grant** □ **Class I Change**

Issued Date	:	Aug. 20, 2013
Project No.	:	1303C082
Equipment	:	Wireless router
Model Name	:	DIR-825
Applicant	:	D-LINK Corporation
Address	:	No.289, Sinhu 3rd Rd., Neihu District Taipei City 114, Taiwan, R.O.C

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Mar. 07, 2013
Date of Test: Mar. 07, 2013 ~ Aug. 19, 2013

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

Authorized Signatory : Steven Lu
(Steven Lu)

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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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1. CERTIFICATION

Equipment	:	Wireless router
Brand Name	:	D-LINK
Model Name	:	DIR-825
Applicant	:	D-LINK Corporation
Manufacturer	:	D-LINK Corporation
Address	:	No.289, Sinhu 3rd Rd., Neihu District Taipei City 114, Taiwan, R.O.C
Factory	:	1) Shenzhen Gongjin Electronics Co., Ltd. 2) TAICANG T&W Electronics Co., Ltd.
Address	:	1) No 2&3 Buildings, Mingwei Factory Area, Songgang Road West, No. A Building, 1#Songgang Road Songgang Sub-District, Shenzhen, Guangdong, 518105, P.R. China 2) Jiangnan Road 89, Ludu Town, Taicang, Jiangsu, 215412, P.R. China
Date of Test	:	Mar. 07, 2013 ~ Aug. 19, 2013
Test Item	:	ENGINEERING SAMPLE
Standard(s)	:	FCC Part15, Subpart E(15.407) / ANSI C63.4 : 2009; Canada RSS-210:2010 RSS-GEN Issue 3, Dec 2010 FCC KDB 789033 D01 General UNII Test Procedures v01r03 .

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-FICP-2-1303C082) 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).

Test result included in this report is only for the 5150MHz~5250MHz Mode part of the product.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart E ; Canada RSS-210				
Standard(s) Section		Test Item	Judgment	Remark
15.207	RSS-GEN 7.2.2	AC Power Line Conducted Emissions	PASS	
15.407(a)	RSS-210 A9.2(1)	26dB Spectrum Bandwidth	PASS	
15.407(a)	RSS-210 A9.2(1)	Maximum Conducted Output Power	PASS	
15.407(a)	RSS-210 A9.2(1)	Power Spectral Density	PASS	
15.407(a)	-	Peak Excursion	PASS	
15.407(a)	RSS-210 Annex 8 (A8.5)	Radiated Emissions	PASS	
15.407(b)	RSS-210 A9.2(1)	Band Edge Emissions	PASS	
15.407(g)	1 RSS-210 A1.1.4	Frequency Stability	PASS	
15.203	-	Antenna Requirements	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 is **DG-C02/DG-CB03** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.523792
Neutron's test firm number for FCC is 319330
Neutron's test firm number for IC is 4428B-1

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95**%。

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	NOTE
DG-CB03	CISPR	30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
		1GHz~18GHz	V	4.23	
		18GHz~40GHz	V	4.15	
		1GHz~18GHz	H	4.15	
		18GHz~40GHz	H	4.14	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless router
Brand Name	D-LINK
Model Name	DIR-825
Mode Different	N/A
Product Description	<table><tr><td>Operation Frequency</td><td>Band 1:5150MHz~5250MHz</td></tr><tr><td>Modulation Type</td><td>OFDM</td></tr><tr><td>Bit Rate of Transmitter</td><td>11a:6/ 9/12/18/24/36/48/54Mbps 11n:300Mbps</td></tr><tr><td>Antenna Designation</td><td rowspan="2">Please see note 3.(Page 9)</td></tr><tr><td>Antenna Gain(Peak)</td></tr><tr><td>Output Power Band 1</td><td>802.11a: 13.00 dBm 802.11n (20M): 12.14 dBm 802.11n (40M): 11.83 dBm</td></tr></table> More details of EUT technical specification, please refer to the User's Manual.
Power Source	DC voltage supplied from AC/DC adapter. Brand/Model: Gongjin / S24B12-120A200-Y4
Power Rating	I/P: AC 100-240V~50/60Hz Max 0.7A O/P: DC 12V 2A
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:

802.11a / 802.11n 20M	
Band 1	
Channel	Frequency (MHz)
36	5180
40	5200
44	5220
48	5240

802.11n 40M	
Band 1	
Channel	Frequency (MHz)
38	5190
46	5230

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	Airgain	N2430GND	Integral	N/A	3	
2	Airgain	N2430GND	Integral	N/A	3	

Note:
The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R). All transmit signals are completely uncorrelated, then, **Direction gain = G_{ANT}**, that is Directional gain=3.

Operating Mode / TX Mode	1TX	2TX
802.11a	V (ANT 1 or ANT 2)	-
802.11n(20MHz)	-	V (ANT 1 & ANT 2)
802.11n(40MHz)	-	V (ANT 1 & ANT 2)

3.2 DESCRIPTION OF TEST MODES

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

Pretest Test Mode	Description
Mode 1	TX A Mode / CH36, CH40, CH48(Band 1)
Mode 2	TX N20 Mode / CH36, CH40, CH48(Band 1)
Mode 3	TX N40 Mode / CH38, CH46 (Band 1)
Mode 4	TX Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Test	
Final Test Mode	Description
Mode 4	TX Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	TX A Mode / CH36, CH40, CH48(Band 1)
Mode 2	TX N20 Mode / CH36, CH40, CH48(Band 1)
Mode 3	TX N40 Mode / CH38, CH46 (Band 1)

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

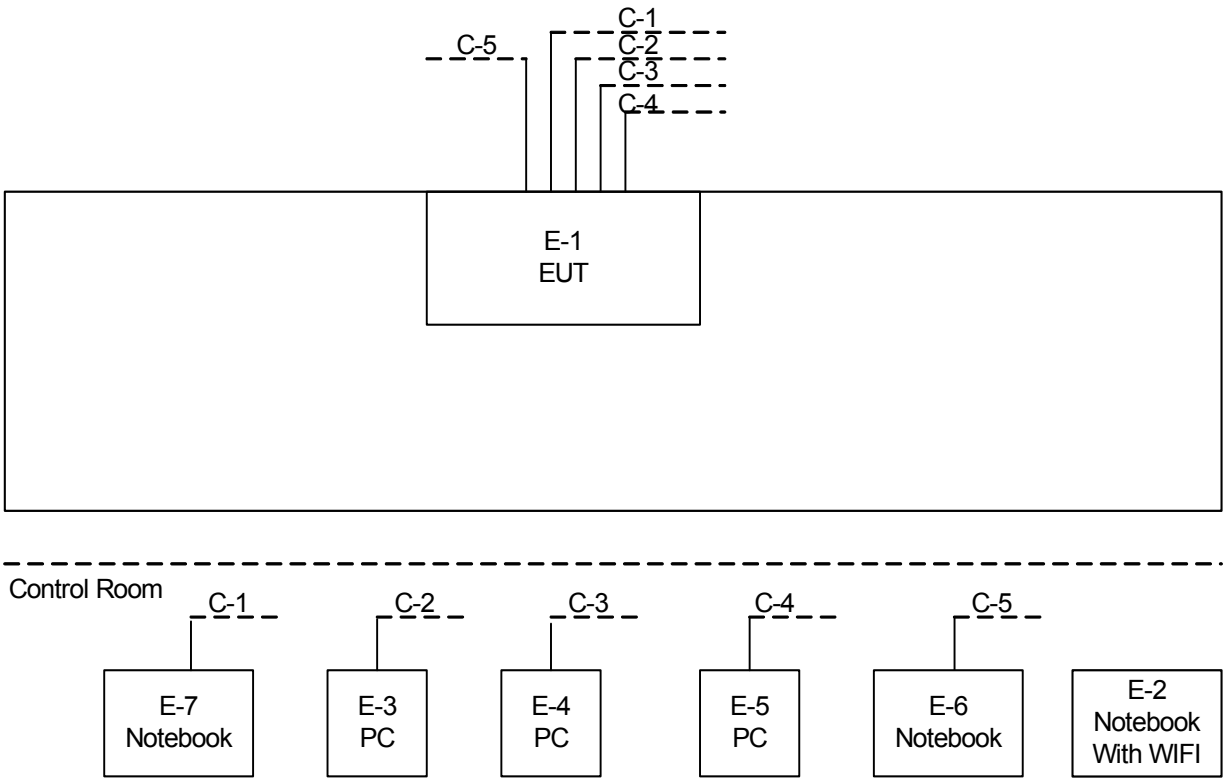
Test software version	SmartTools		
Frequency	5180 MHz	5200MHz	5240 MHz
A Mode	53	53	53

Test software version	SmartTools		
Frequency	5180 MHz	5200MHz	5240 MHz
N20 Mode	45	43	41

Test software version	SmartTools		
Frequency	5190 MHz	5230MHz	
N40 Mode	43	41	

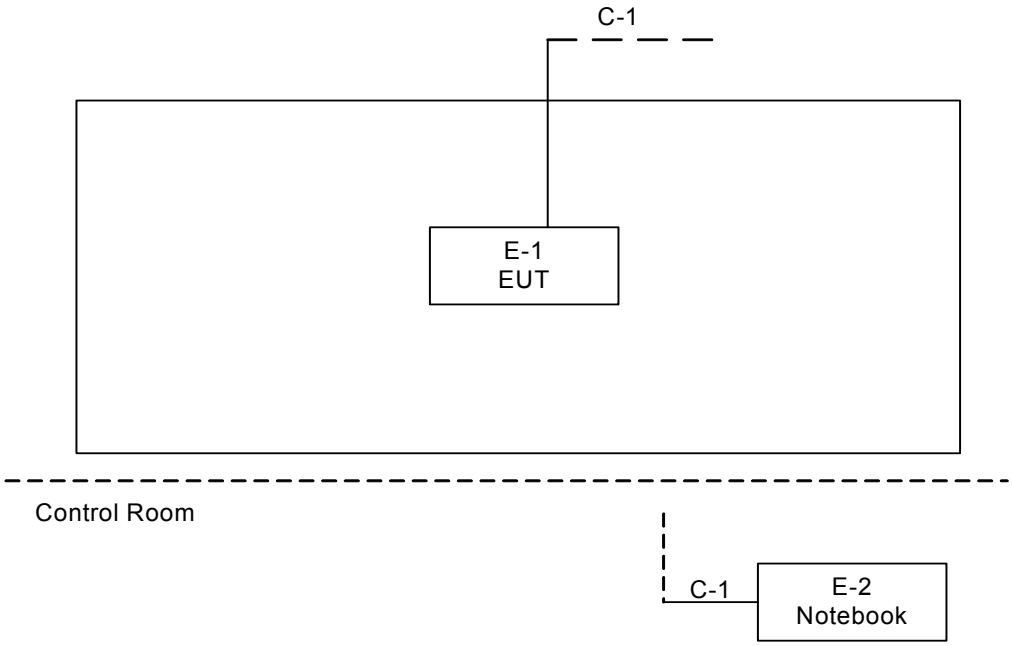
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Mode:



C-1: RJ45 Cable
C-2: RJ45 Cable
C-3: RJ45 Cable
C-4: RJ45 Cable
C-5: RJ45 Cable

Radiated Mode:



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/IC	Series No.	Note
E-1	Wireless router	D-Link	DIR-825	KA2IR825D1 4216A-IR825D1	N/A	EUT
E-2	NOTEBOOK	DELL	INSPIRON 1420	DOC	J8K832X	
E-3	PC	DELL	746	DOC	J4JQ52X	
E-4	PC	DELL	320	DOC	8PWN82X	
E-5	PC	DELL	755	DOC	CNX8120R16	
E-6	NOTEBOOK	HP	NB 331	DOC	L3G4741	
E-7	NOTEBOOK	ASUS	F9Eseries	DOC	7AN0AS301331	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	10m	
C-2	NO	NO	10m	
C-3	NO	NO	10m	
C-4	NO	NO	10m	
C-5	NO	NO	10m	

Note:

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

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

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.

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	LISN	EMCO	3816/2	00052765	May.24.2013	Apr. 25, 2014
2	LISN	R&S	ENV216	100087	Nov.15.2012	Nov.16.2013
3	Test Cable	N/A	C_17	N/A	Mar.14.2013	Mar.15.2014
4	EMI TEST RECEIVER	R&S	ESCS30	826547/022	May.24.2013	Apr. 25, 2014
5	50Ω Terminator	SHX	TF2-3G-A	08122902	May.24.2013	Apr. 25, 2014

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

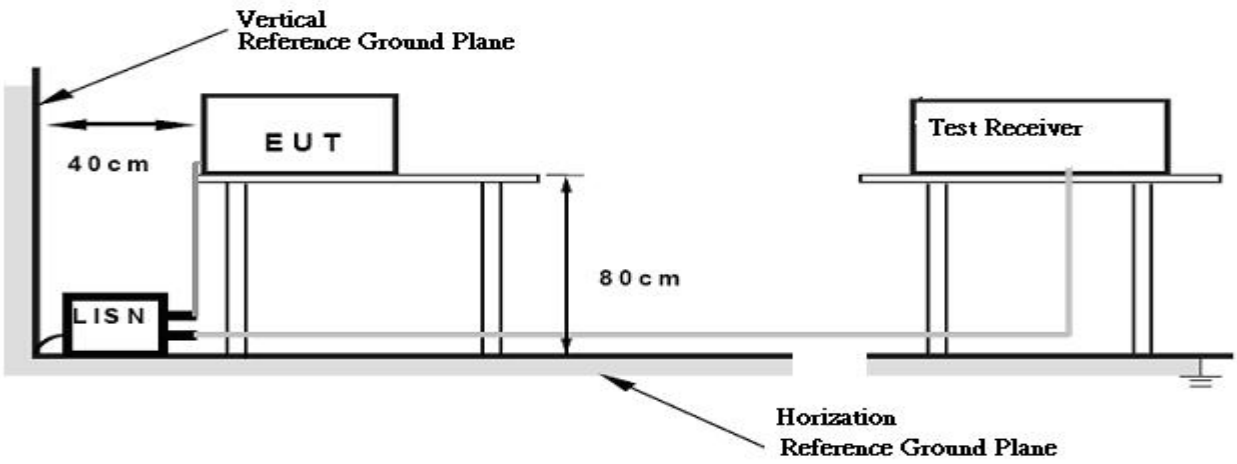
4.1.3 TEST PROCEDURE

a. 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.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



4.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.
The EUT was programmed to be in continuously transmitting/TX Mode mode.

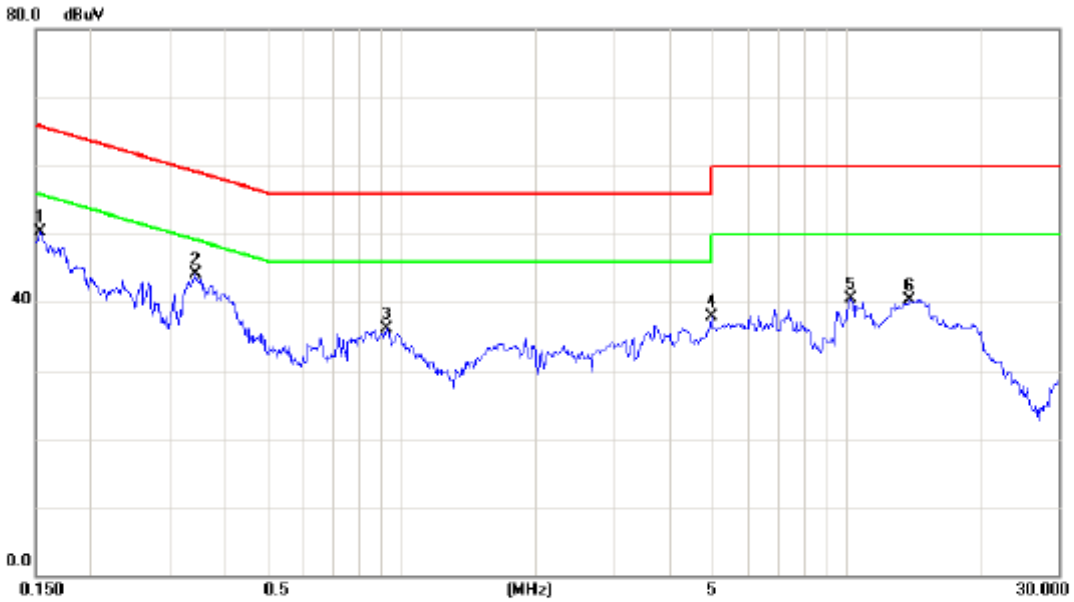
4.1.7 TEST RESULTS

Remark:

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the 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 QP Mode was measured, but AVG Mode didn't perform ◦ In this case, a " * " marked in AVG Mode column of Interference Voltage Measured ◦

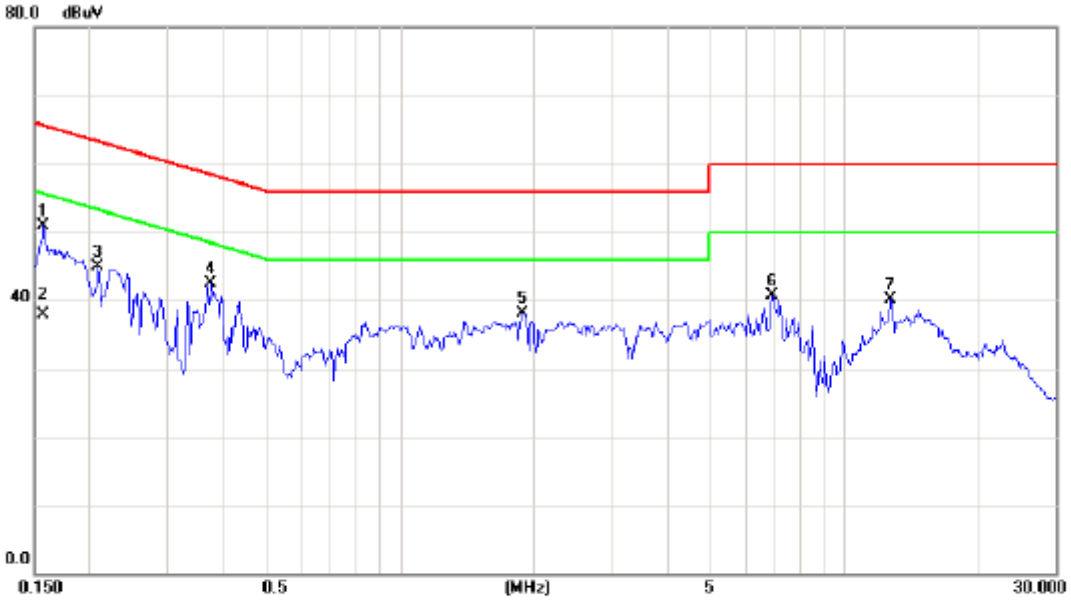
(2) Measuring frequency range from 150KHz to 30MHz ◦

EUT:	Wireless router	Model Name:	DIR-825
Temperature:	24 ℃	Relative Humidity:	55 %
Test Power:	AC 120V/60Hz	Phase:	Line
Test Mode :	TX Mode		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1532	40.54	9.72	50.26	65.82	-15.56	peak	
2	*	0.3427	34.30	9.71	44.01	59.14	-15.13	peak	
3		0.9233	26.39	9.74	36.13	56.00	-19.87	peak	
4		4.9518	28.09	9.84	37.93	56.00	-18.07	peak	
5		10.1791	30.55	10.02	40.57	60.00	-19.43	peak	
6		13.8411	30.25	10.06	40.31	60.00	-19.69	peak	

EUT:	Wireless router	Model Name:	DIR-825
Temperature:	24 ℃	Relative Humidity:	55 %
Test Power:	AC 120V/60Hz	Phase:	Neutral
Test Mode :	TX Mode		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1572	41.27	9.72	50.99	65.61	-14.62	peak	
2		0.1572	28.15	9.72	37.87	55.61	-17.74	AVG	
3		0.2083	35.22	9.72	44.94	63.27	-18.33	peak	
4		0.3750	32.75	9.72	42.47	58.39	-15.92	peak	
5		1.8880	28.28	9.78	38.06	56.00	-17.94	peak	
6		6.8775	30.79	9.91	40.70	60.00	-19.30	peak	
7		12.7161	30.14	10.05	40.19	60.00	-19.81	peak	

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on RSS-210 section 2.2&A8.5, then the RSS-Gen limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	(dBuV/m)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m)
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27	68.3
	-17	78.3

NOTE: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$E=\frac{1000000\sqrt{30P}}{3}$ μV/m, where P is the eirp (Watts)

4.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Antenna	Schwarbeck	VULB9160	9160-3232	May.25.2013	Apr. 25, 2014
2	Amplifier	HP	8447D	2944A09673	May.04.2013	Apr. 25, 2014
3	Test Receiver	R&S	ESCI	100382	May.04.2013	Apr. 25, 2014
4	Test Cable	N/A	C-01_CB03	N/A	Jul.01.2013	Jun.30.2014
5	Antenna	ETS	3115	00075789	May.25.2013	Apr. 25, 2014
6	Amplifier	Agilent	8449B	3008A02274	May.04.2013	Apr. 25, 2014
7	Spectrum	Agilent	E4408B	US39240143	Nov.24.2012	Nov. 16.2013
8	Test Cable	HUBER+SUHNER	C-45	N/A	May.02.2013	Apr. 30, 2014
9	Controller	CT	SC100	N/A	N/A	N/A
10	Horn Antenna	EMCO	3115	9605-4803	May.26.2013	May.25.2014
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	May.04.2013	Apr. 25, 2014
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct.13.2012	Oct.12.2013

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

4.2.3 TEST PROCEDURE

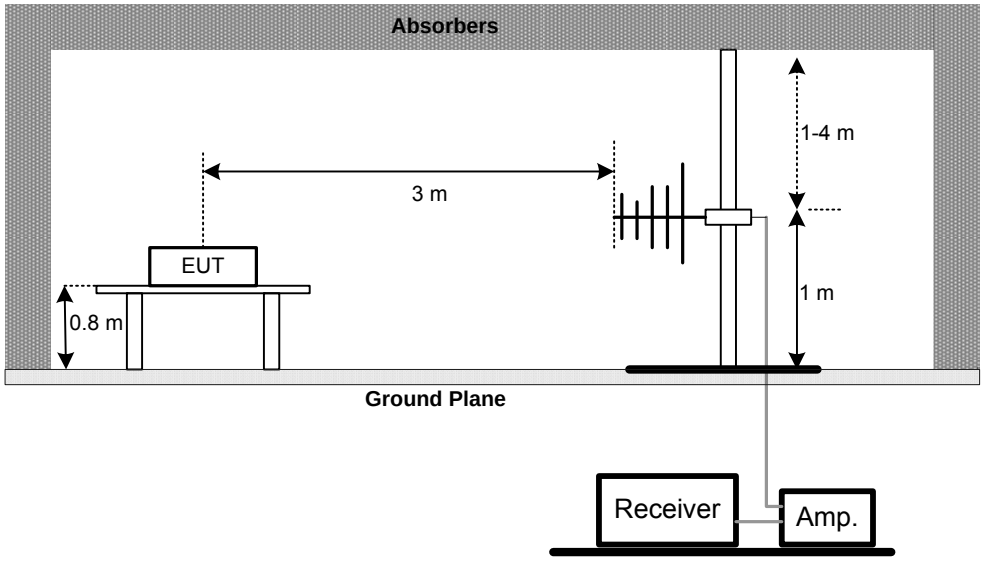
a. The measuring distance of at 1.5m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.4 DEVIATION FROM TEST STANDARD

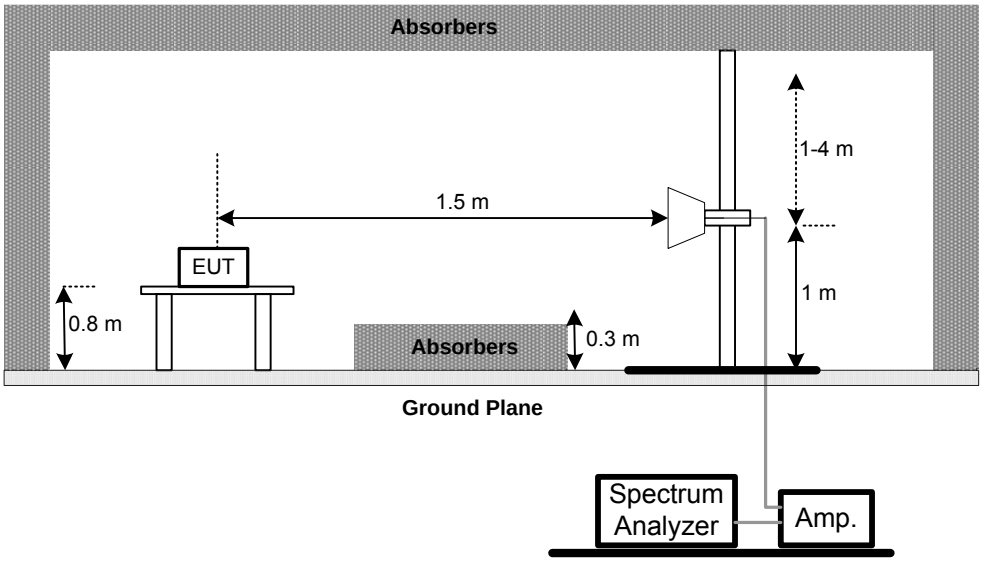
No deviation

4.2.5 TEST SETUP

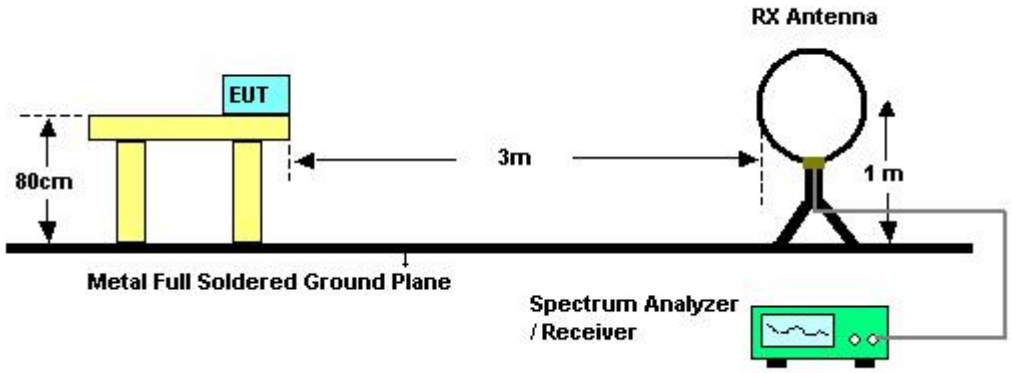
Radiated Emission Test Set-Up Frequency30 - 1000MHz



Radiated Emission Test Set-Up Frequency Above 1 GHz



Radiated emissions below 30MHz



4.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.7 TEST RESULTS-BETWEEN 30MHZ - 1000MHZ

Remark:

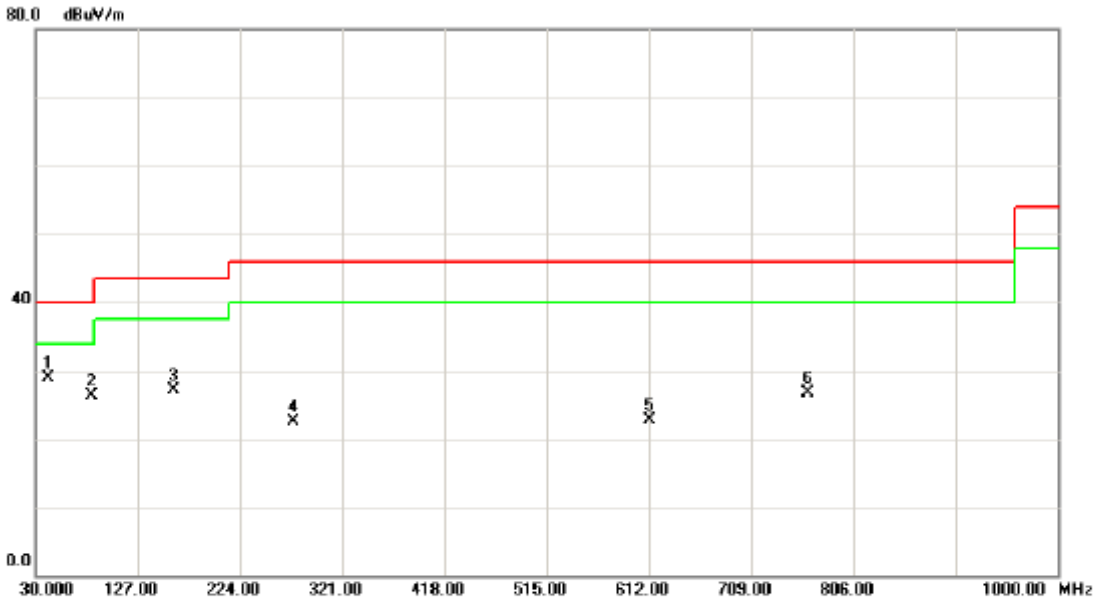
(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦

(2) 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 ◦

(3) Measuring frequency range from 30MHz to 1000MHz ◦

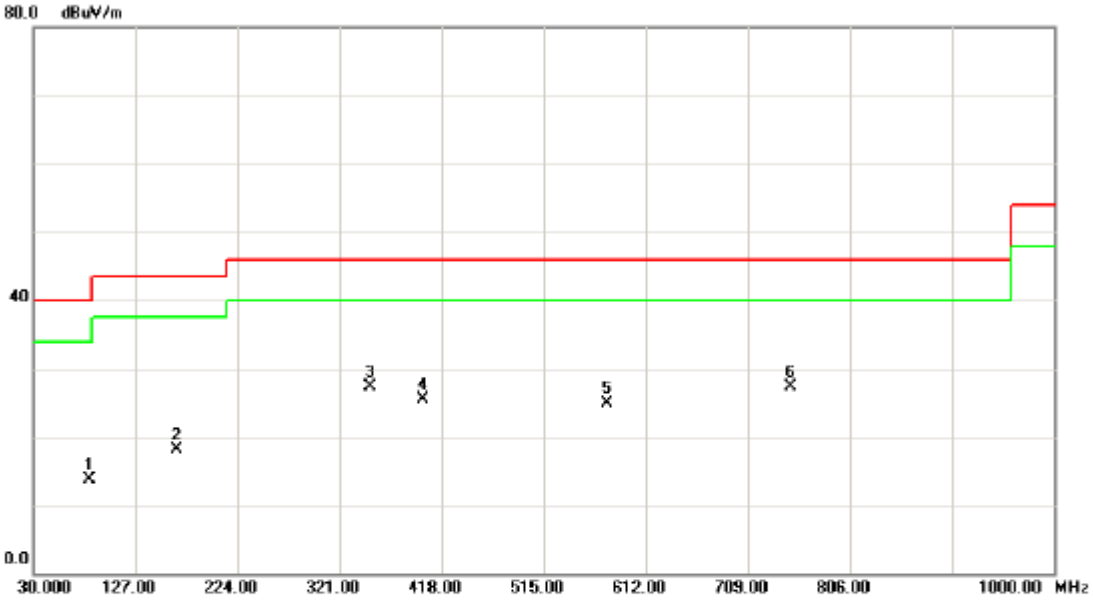
(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ◦

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25℃	Relative Humidity:	58 %
Test Voltage :	AC 120V/60Hz	Phase:	Vertical
Test Mode :	Band 1/TX A Mode 5180MHz		



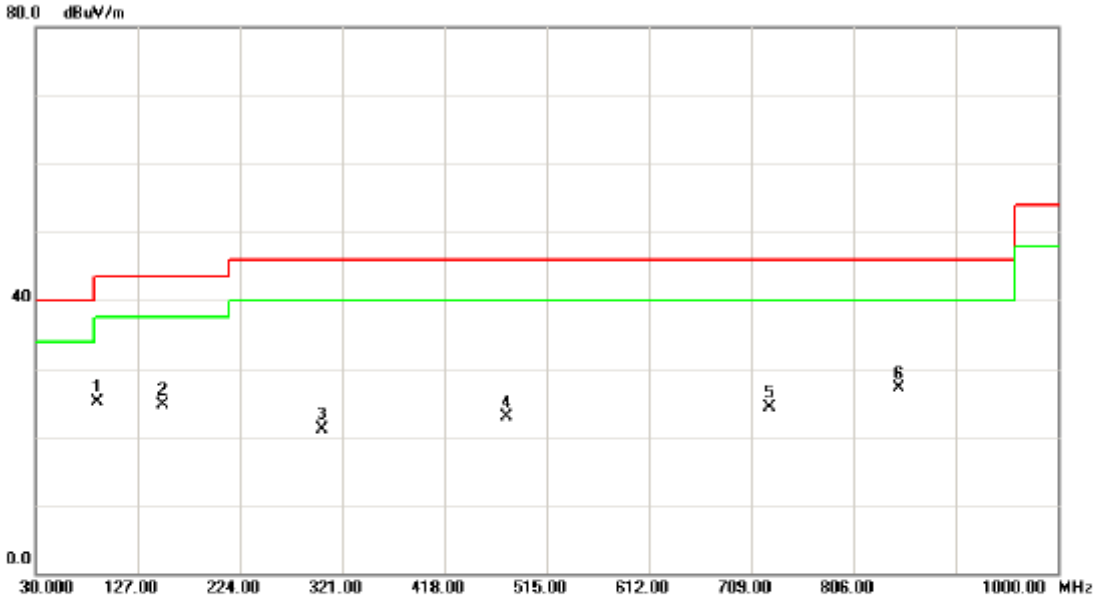
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	42.1250	45.75	-16.77	28.98	40.00	-11.02	peak	
2		83.3500	45.66	-19.26	26.40	40.00	-13.60	peak	
3		160.9500	44.95	-17.94	27.01	43.50	-16.49	peak	
4		274.9250	36.08	-13.49	22.59	46.00	-23.41	peak	
5		612.0000	28.04	-5.29	22.75	46.00	-23.25	peak	
6		762.3500	30.73	-4.09	26.64	46.00	-19.36	peak	

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25℃	Relative Humidity:	58 %
Test Voltage :	AC 120V/60Hz	Phase:	Horizontal
Test Mode :	Band 1/TX A Mode 5180MHz		



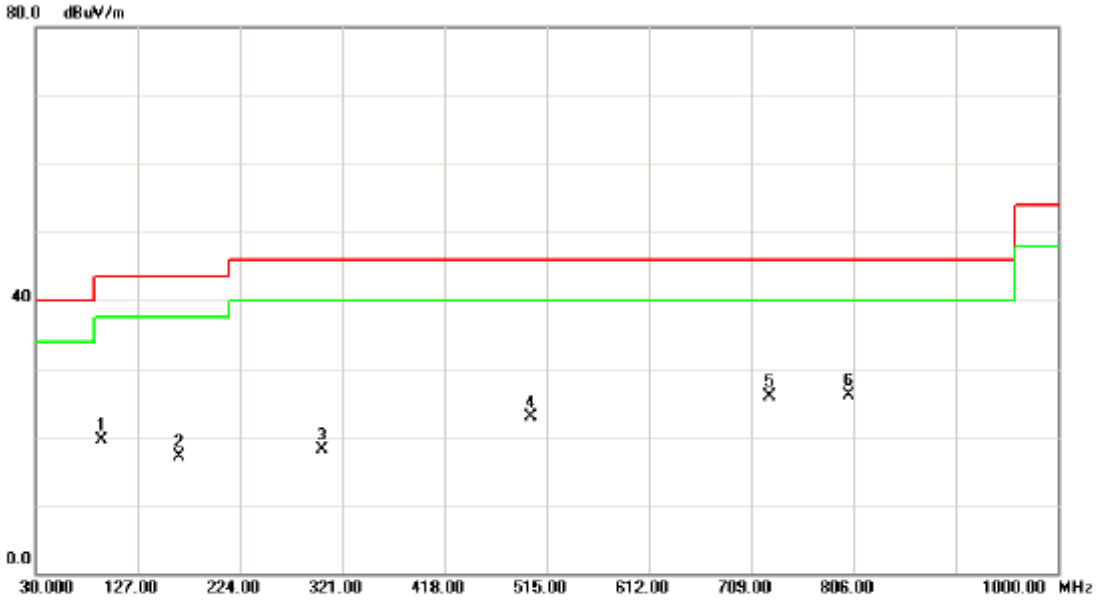
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		83.3500	32.93	-19.26	13.67	40.00	-26.33	peak	
2		165.8000	35.80	-17.77	18.03	43.50	-25.47	peak	
3		350.1000	38.81	-11.52	27.29	46.00	-18.71	peak	
4		401.0250	35.24	-9.80	25.44	46.00	-20.56	peak	
5		575.6250	30.85	-6.03	24.82	46.00	-21.18	peak	
6	*	750.2250	31.64	-4.24	27.40	46.00	-18.60	peak	

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25℃	Relative Humidity:	58 %
Test Voltage :	AC 120V/60Hz	Phase:	Vertical
Test Mode :	Band 1/TX A Mode 5200MHz		



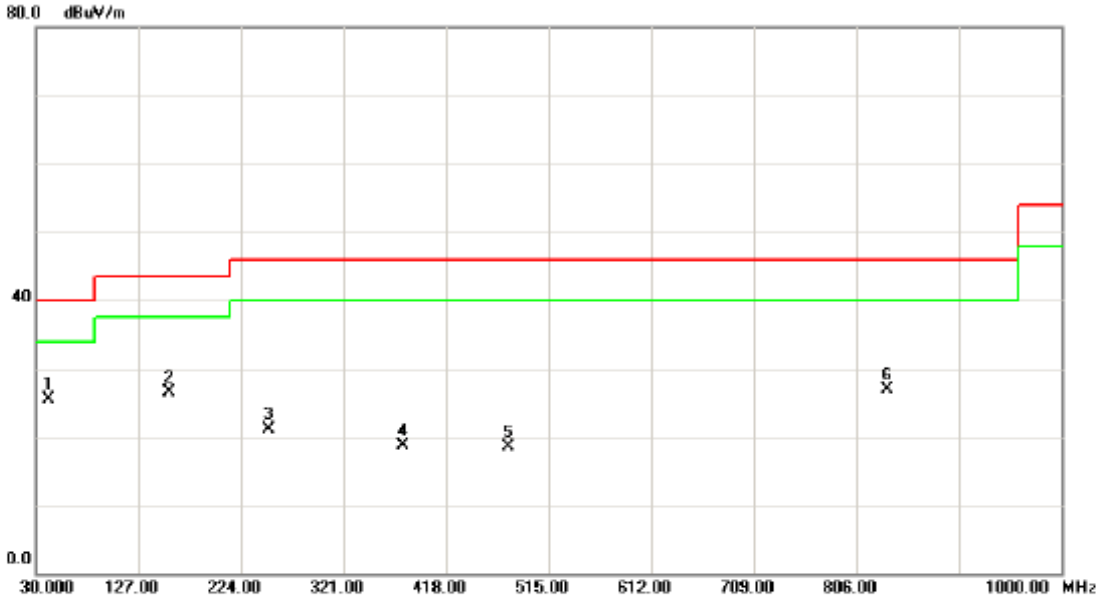
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	88.2000	44.33	-19.25	25.08	43.50	-18.42	peak	
2		151.2500	42.46	-17.85	24.61	43.50	-18.89	peak	
3		301.6000	33.82	-12.62	21.20	46.00	-24.80	peak	
4		476.2000	31.66	-8.68	22.98	46.00	-23.02	peak	
5		725.9750	28.71	-4.44	24.27	46.00	-21.73	peak	
6		849.6500	29.90	-2.73	27.17	46.00	-18.83	peak	

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25℃	Relative Humidity:	58 %
Test Voltage :	AC 120V/60Hz	Phase:	Horizontal
Test Mode :	Band 1/TX A Mode 5200MHz		



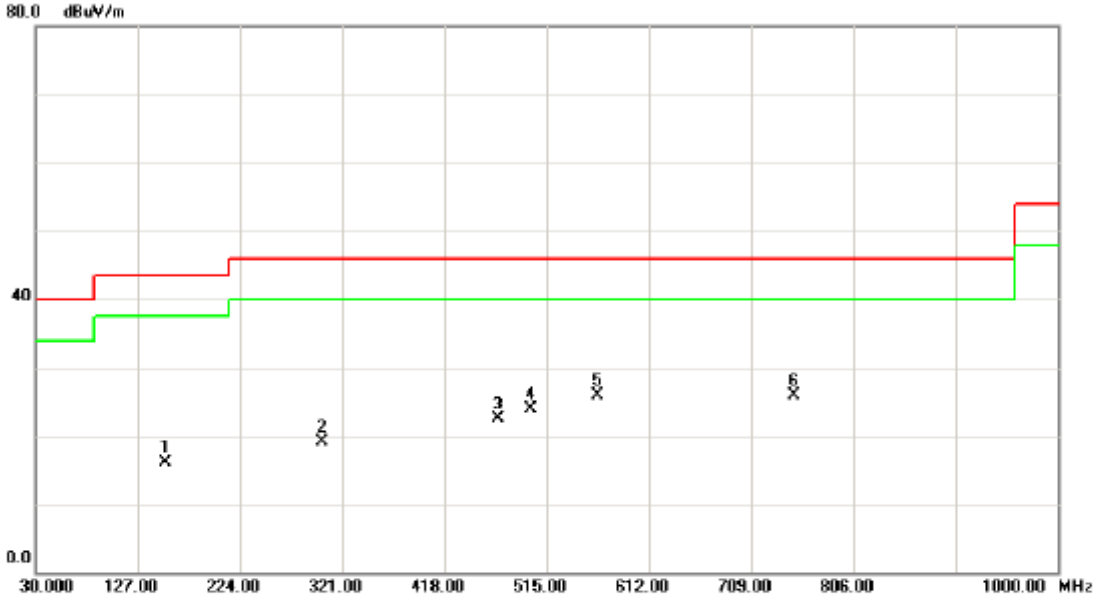
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		93.0500	38.49	-18.91	19.58	43.50	-23.92	peak	
2		165.8000	34.80	-17.77	17.03	43.50	-26.47	peak	
3		301.6000	30.65	-12.62	18.03	46.00	-27.97	peak	
4		500.4500	31.28	-8.37	22.91	46.00	-23.09	peak	
5		725.9750	30.26	-4.44	25.82	46.00	-20.18	peak	
6	*	801.1500	29.61	-3.60	26.01	46.00	-19.99	peak	

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25℃	Relative Humidity:	58 %
Test Voltage :	AC 120V/60Hz	Phase:	Vertical
Test Mode :	Band 1/TX A Mode 5240MHz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	42.1250	42.25	-16.77	25.48	40.00	-14.52	peak	
2		156.1000	44.37	-17.91	26.46	43.50	-17.04	peak	
3		250.6750	36.15	-14.99	21.16	46.00	-24.84	peak	
4		376.7750	29.34	-10.61	18.73	46.00	-27.27	peak	
5		476.2000	27.16	-8.68	18.48	46.00	-27.52	peak	
6		835.1000	29.89	-2.99	26.90	46.00	-19.10	peak	

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25℃	Relative Humidity:	58 %
Test Voltage :	AC 120V/60Hz	Phase:	Horizontal
Test Mode :	Band 1/TX A Mode 5240MHz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		153.6750	33.93	-17.88	16.05	43.50	-27.45	peak	
2		301.6000	31.65	-12.62	19.03	46.00	-26.97	peak	
3		468.9250	31.36	-8.76	22.60	46.00	-23.40	peak	
4		500.4500	32.28	-8.37	23.91	46.00	-22.09	peak	
5	*	563.5000	32.29	-6.30	25.99	46.00	-20.01	peak	
6		750.2250	30.14	-4.24	25.90	46.00	-20.10	peak	

4.2.8 TEST RESULTS - ABOVE 1000MHZ

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX A Mode 5180MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5150.00	V	16.45	8.13	40.09	56.54	48.22	-48.23	-56.55	68.30	54.00	-27.00	-41.30	X/E
5176.20	V	60.07	53.04	40.16	100.23	93.20	-4.54	-11.57					X/F
10360.01	V	35.24	24.43	13.73	48.97	38.16	-55.80	-66.61	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

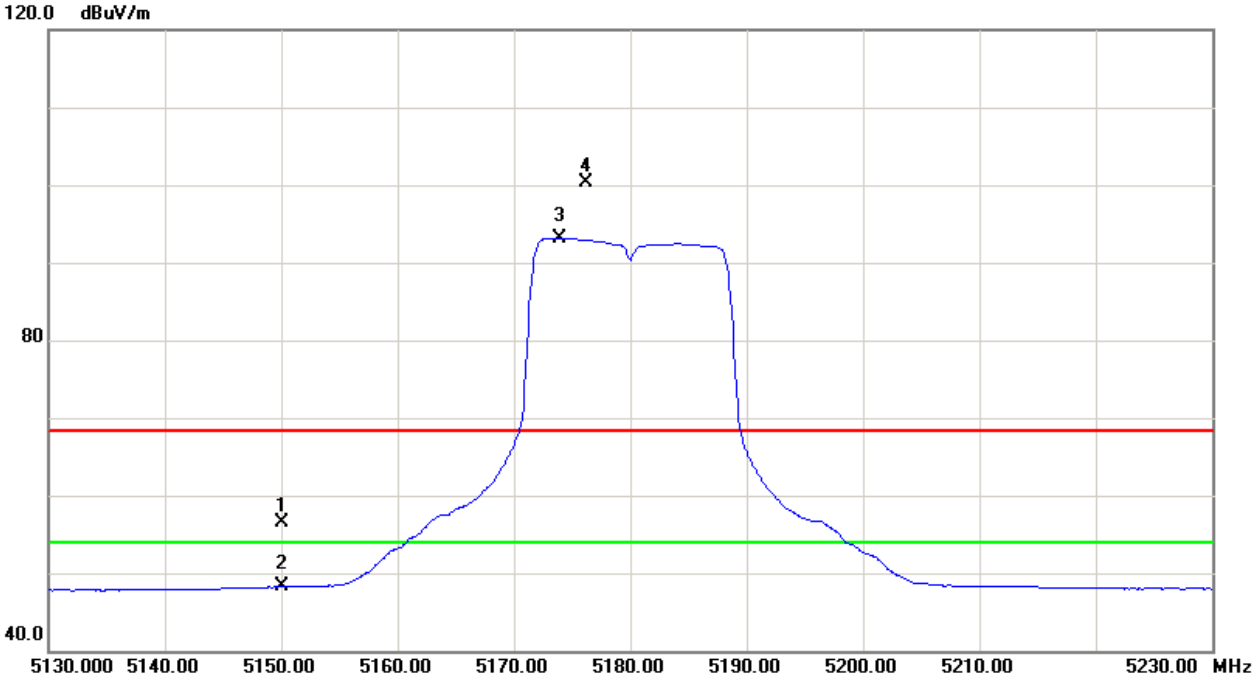
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

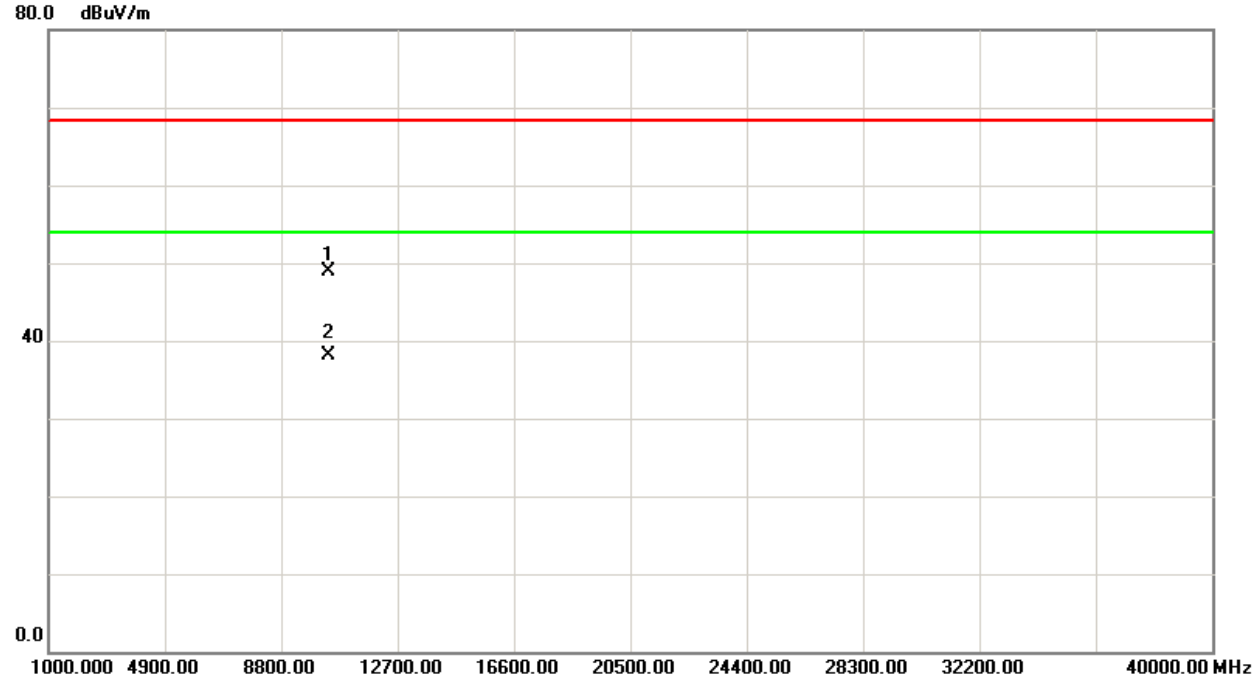
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH36(Above 1000 MHz, Vertical)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX A Mode 5180MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5150.00	H	17.70	8.44	40.09	57.79	48.53	-46.98	-56.24	68.30	54.00	-27.00	-41.30	X/E
5175.60	H	63.43	55.85	40.16	103.59	96.01	-1.18	-8.76					X/F
10360.02	H	37.14	25.40	13.73	50.87	39.13	-53.90	-65.64	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

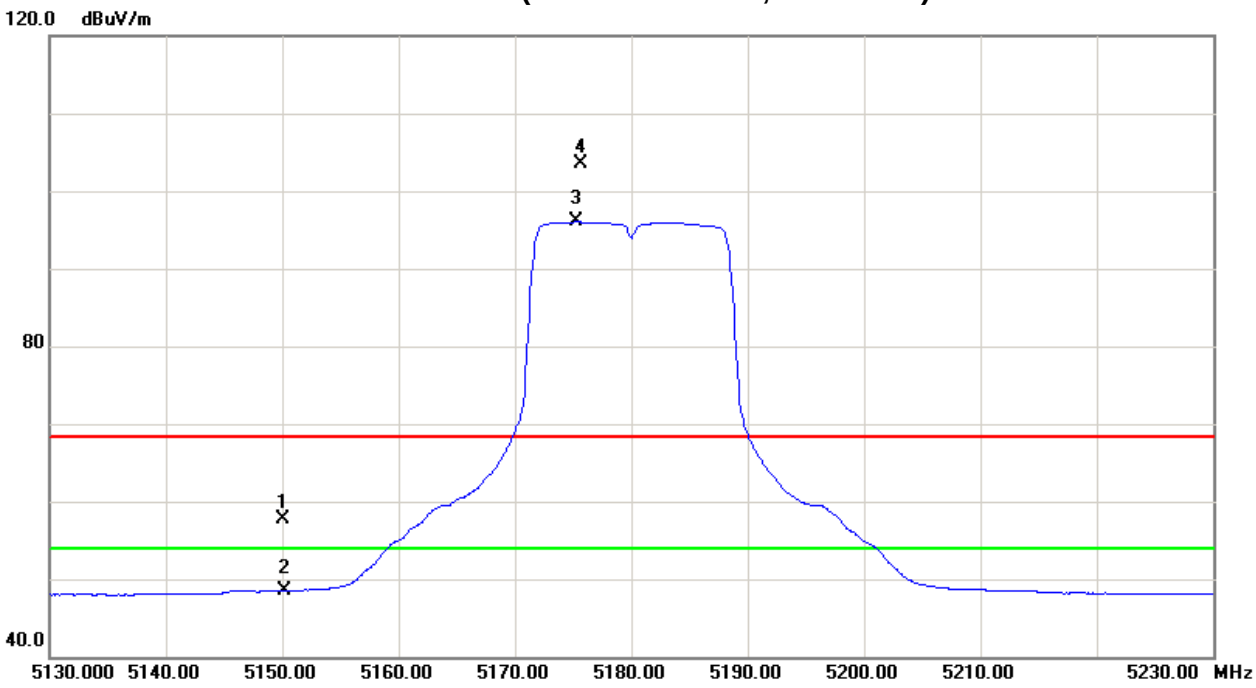
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

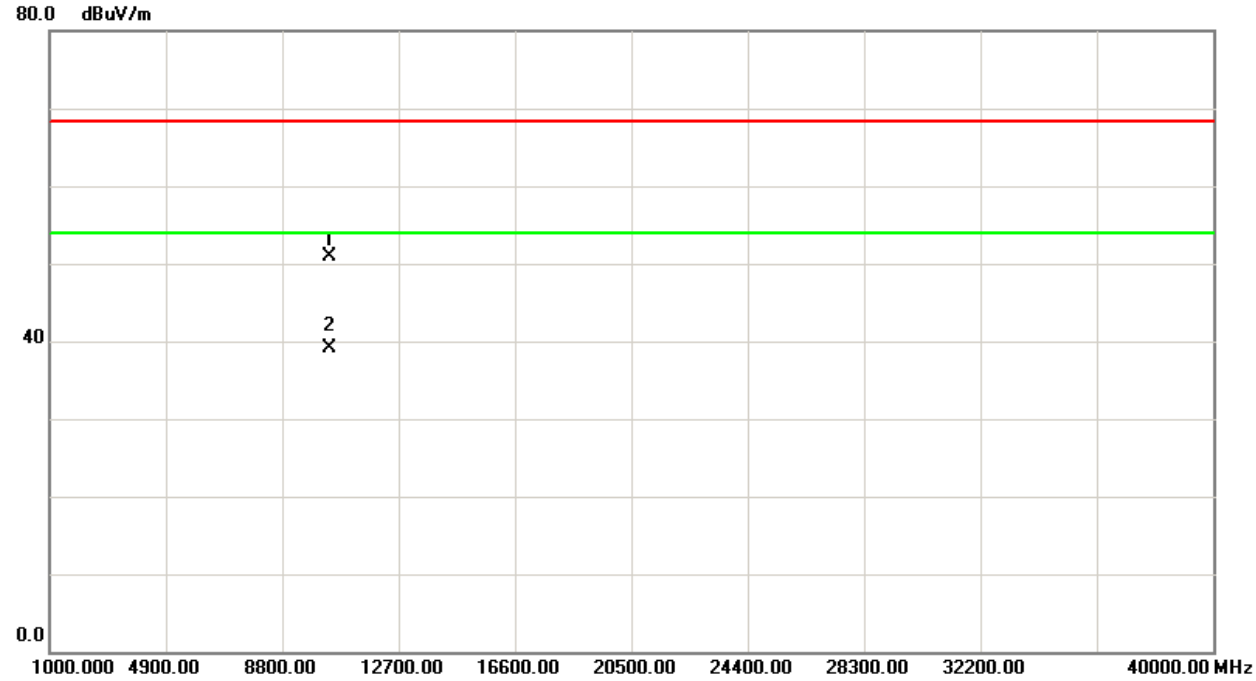
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH36(Above 1000 MHz, Horizontal)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX A Mode 5200MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5202.70	V	60.66	53.46	40.22	100.88	93.68	-3.89	-11.09					X/F
10400.14	V	35.07	23.42	13.78	48.85	37.20	-55.92	-67.57	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

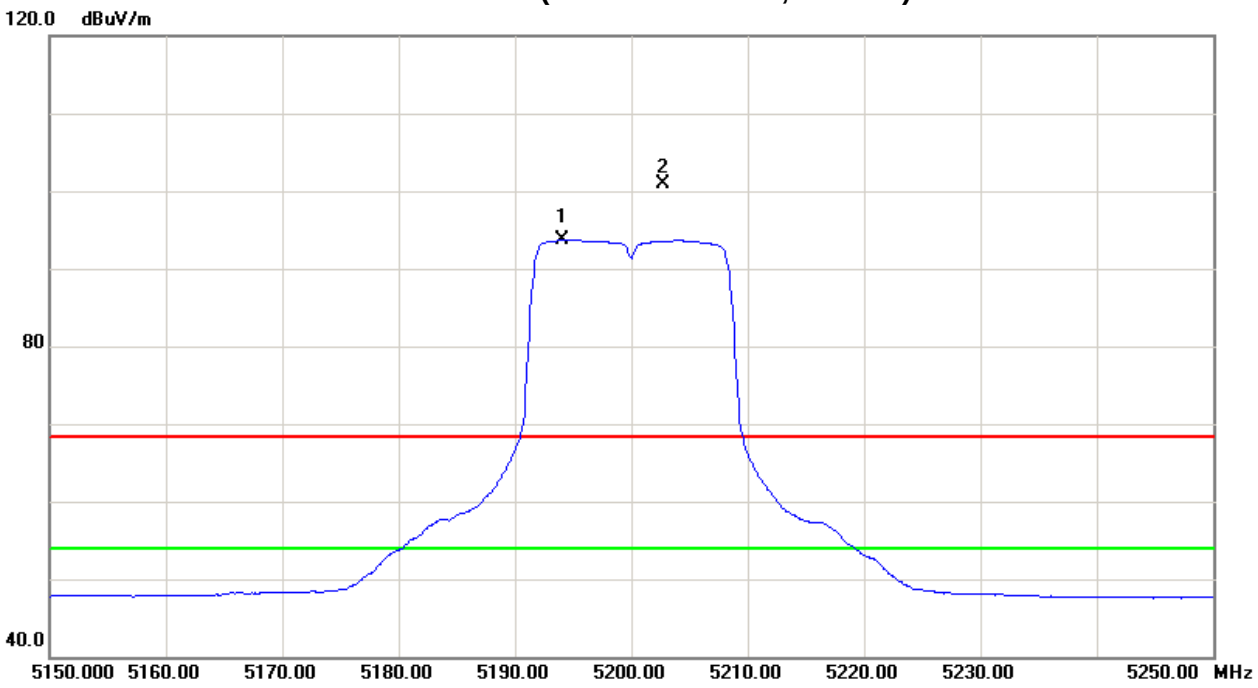
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

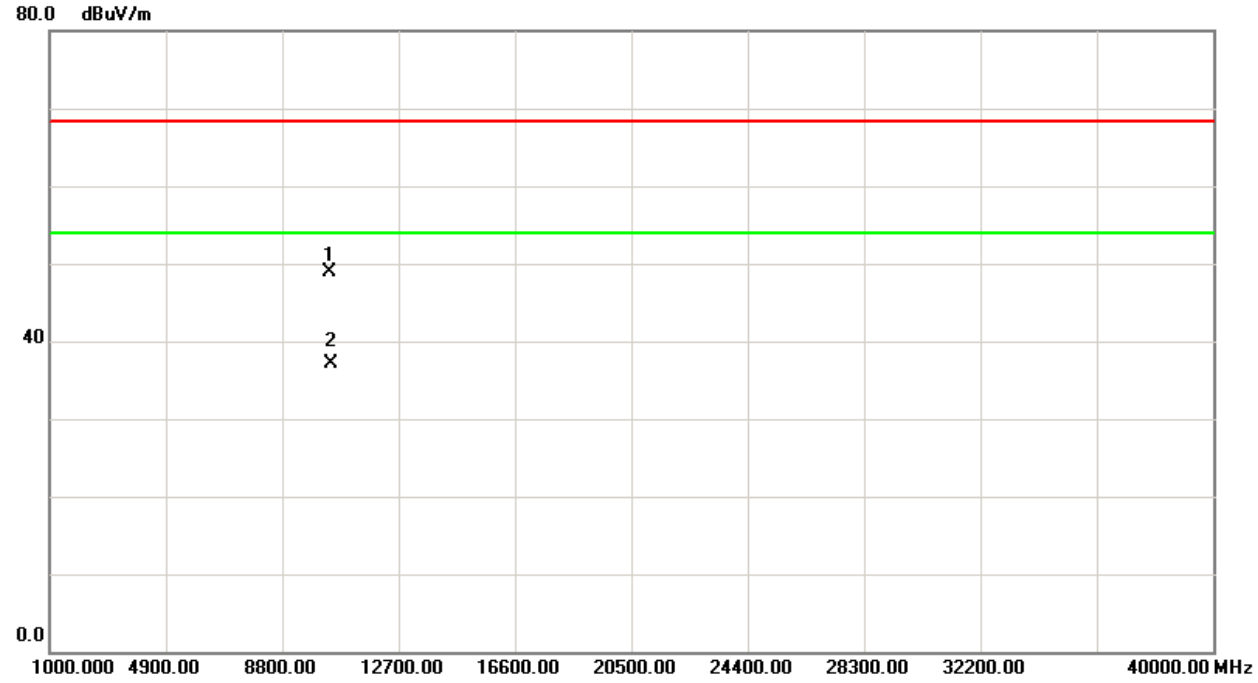
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH40(Above 1000 MHz, Vertical)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX A Mode 5200MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5193.50	H	62.83	55.76	40.20	103.03	95.96	-1.74	-8.81					X/F
10400.12	H	37.02	25.43	13.78	50.80	39.21	-53.97	-65.56	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

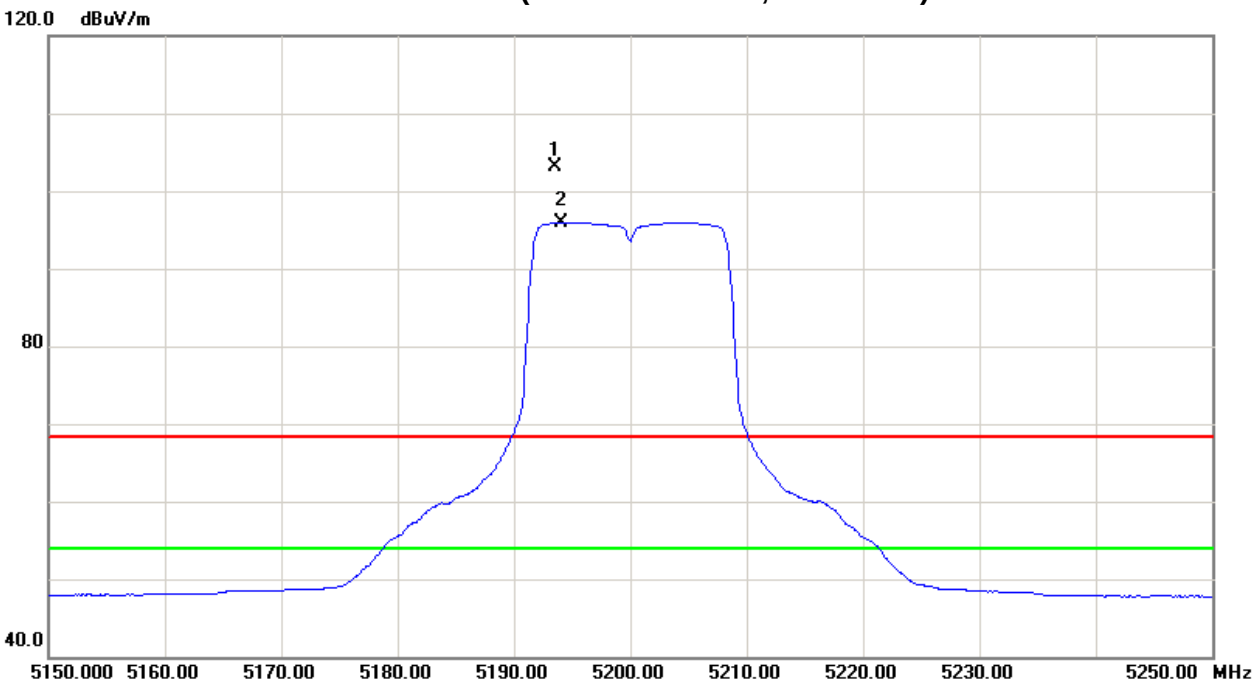
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

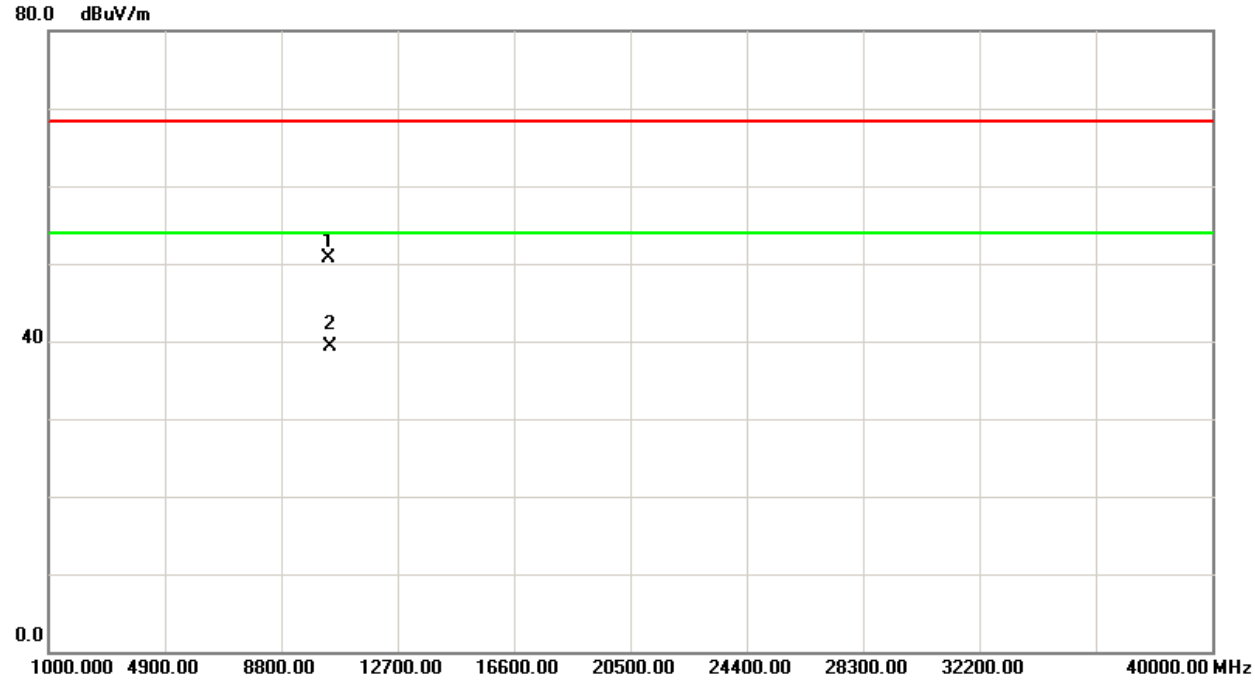
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH40(Above 1000 MHz, Horizontal)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	52 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX A Mode 5240MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5235.60	V	59.65	52.37	40.31	99.96	92.68	-4.81	-12.09					X/F
10480.13	V	35.14	23.59	13.87	49.01	37.46	-55.76	-67.31	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

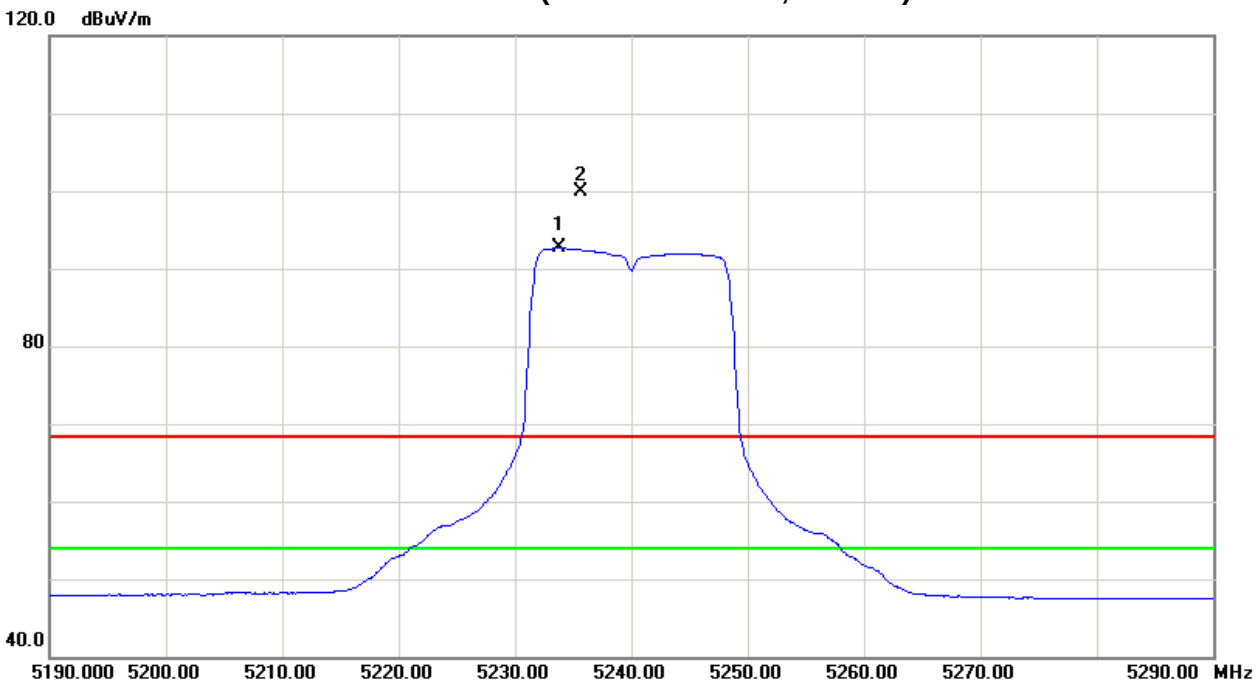
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

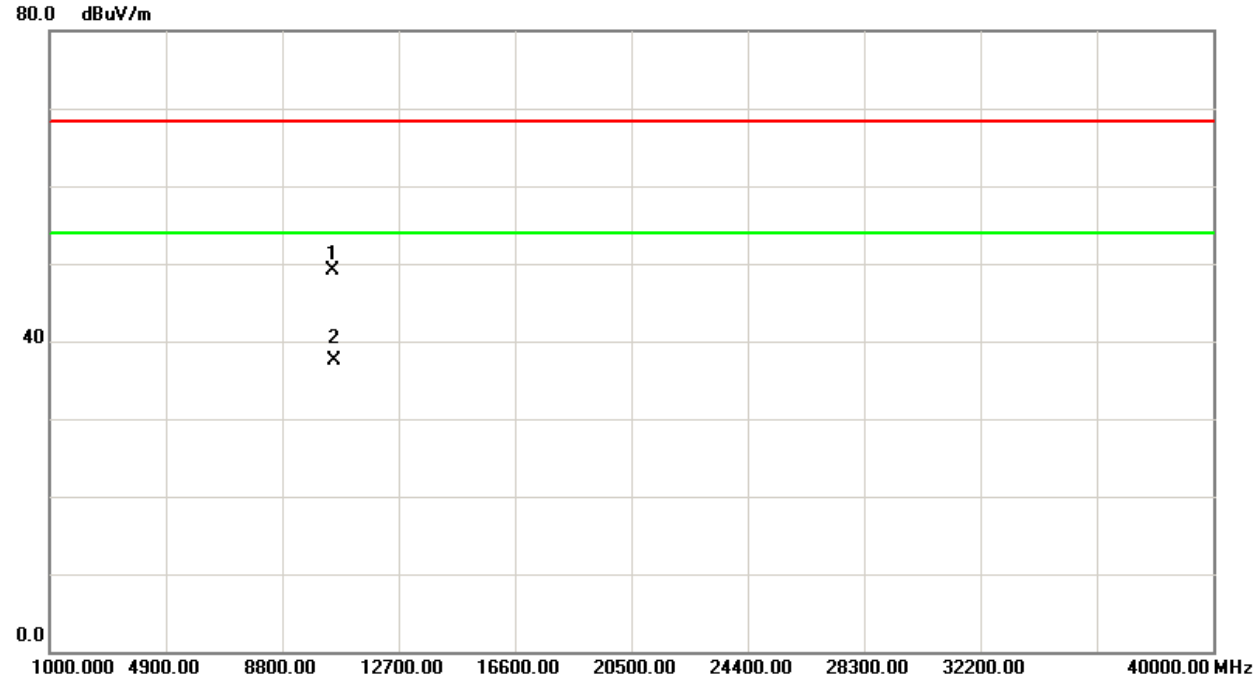
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH48(Above 1000 MHz, Vertical)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	52 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX A Mode 5240MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5246.50	H	63.82	56.77	40.34	104.16	97.11	-0.61	-7.66					X/F
10479.99	H	37.02	25.04	13.87	50.89	38.91	-53.88	-65.86	84.16	77.11	-11.14	-18.19	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

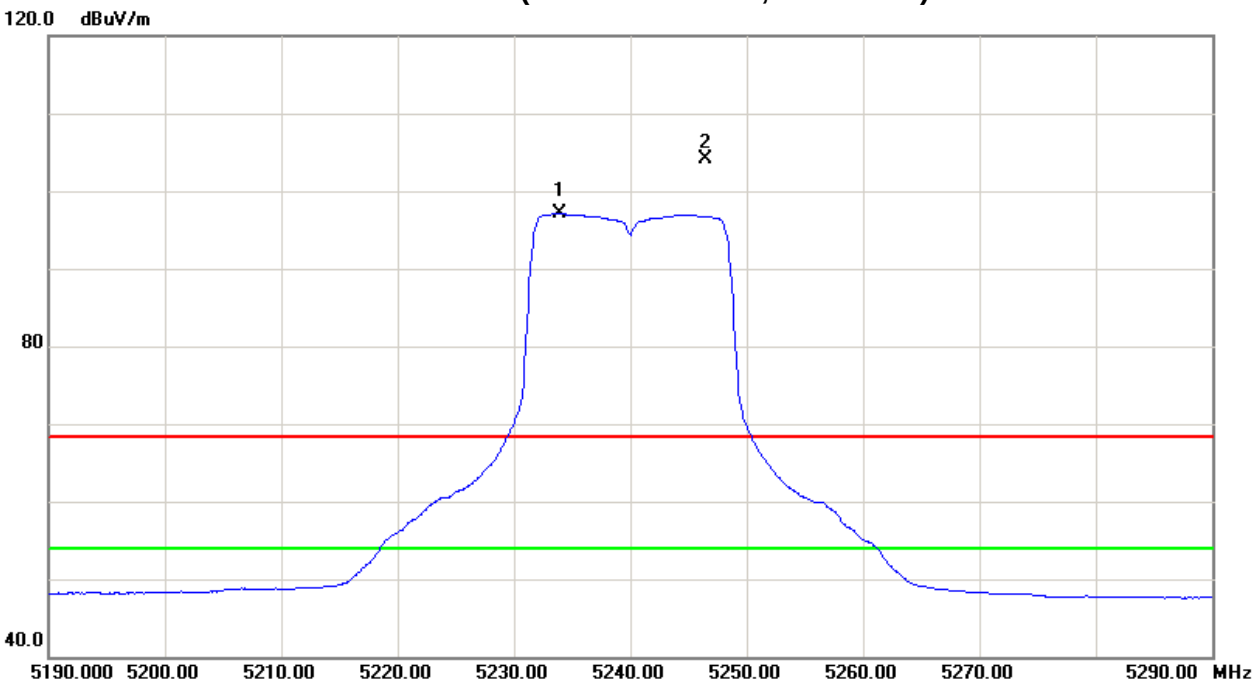
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

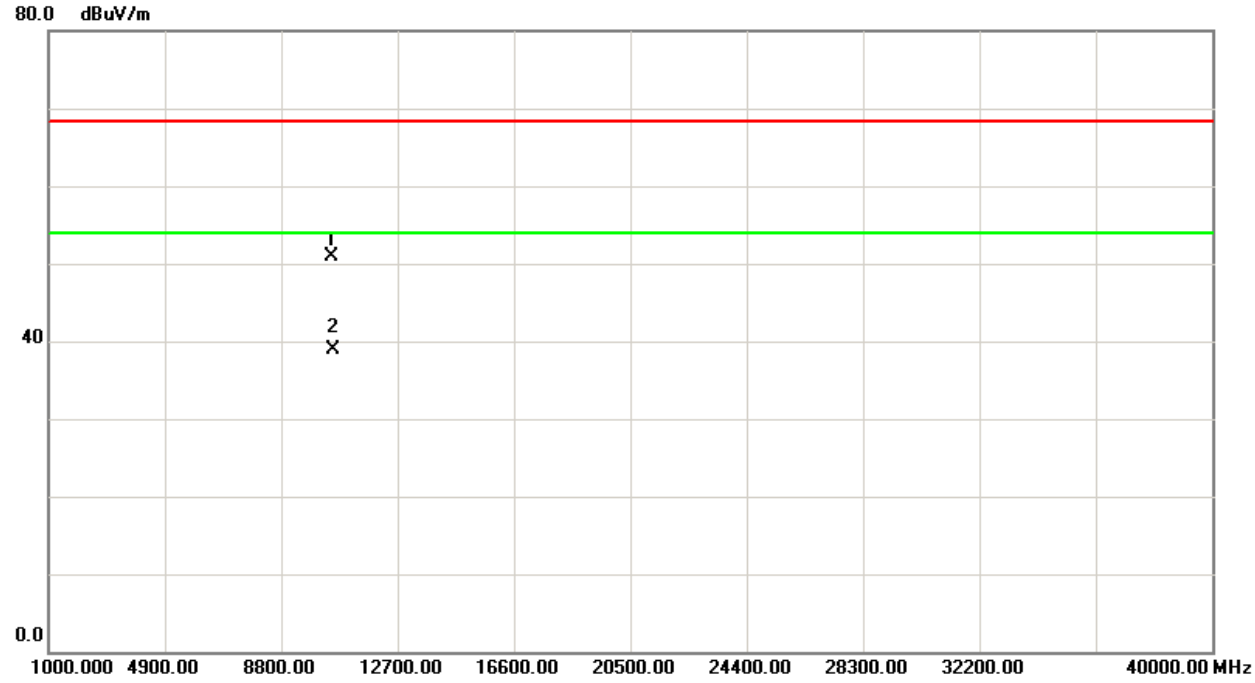
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH48(Above 1000 MHz, Horizontal)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N20 Mode 5180MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5150.00	V	16.55	7.98	40.09	56.64	48.07	-48.13	-56.70	68.30	54.00	-27.00	-41.30	X/E
5182.70	V	59.20	50.79	40.18	99.38	90.97	-5.39	-13.80					X/F
10360.01	V	33.05	21.13	13.73	46.78	34.86	-57.99	-69.91	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

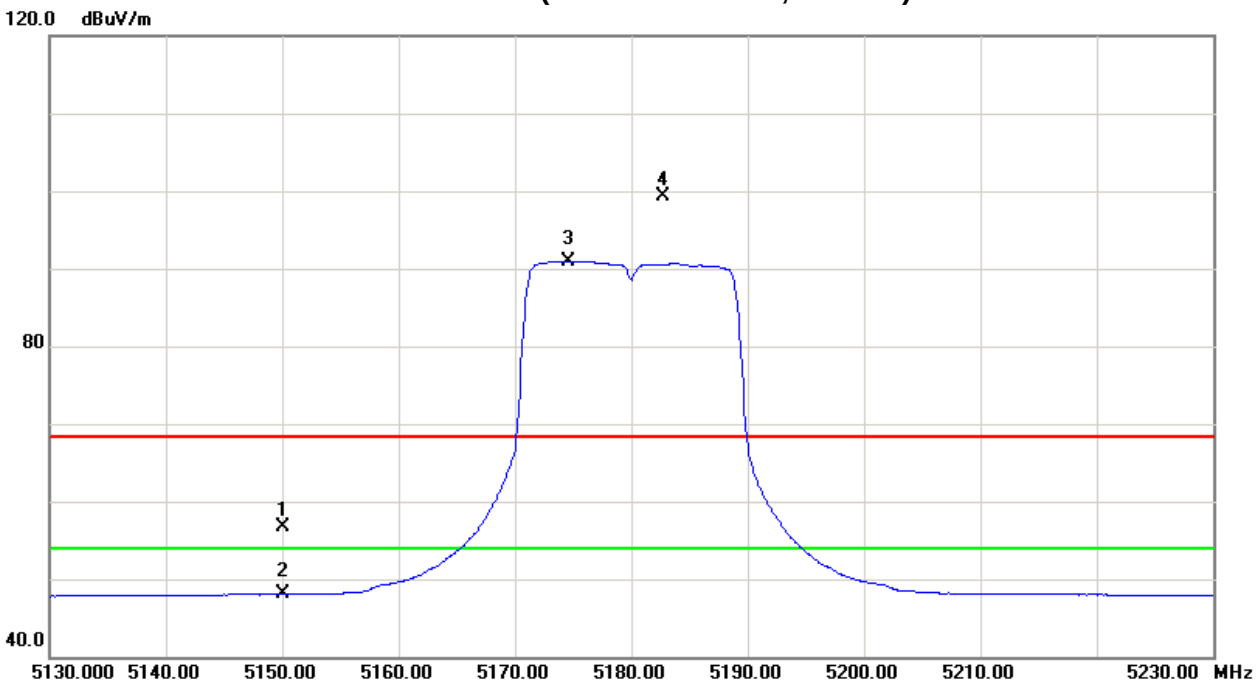
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

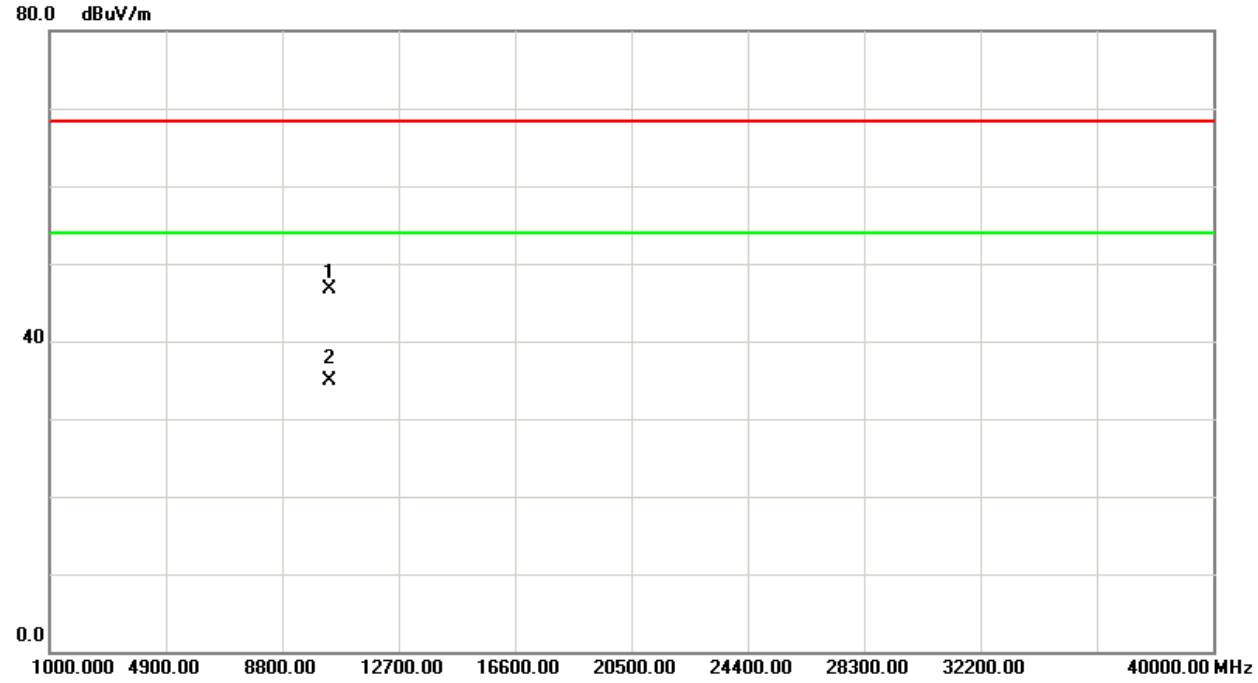
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH36(Above 1000 MHz, Vertical)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N20 Mode 5180MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5150.00	H	18.04	8.54	40.09	58.13	48.63	-46.64	-56.14	68.30	54.00	-27.00	-41.30	X/E
5181.40	H	62.39	55.26	40.18	102.57	95.44	-2.20	-9.33					X/F
10360.12	H	34.87	23.03	13.73	48.60	36.76	-56.17	-68.01	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

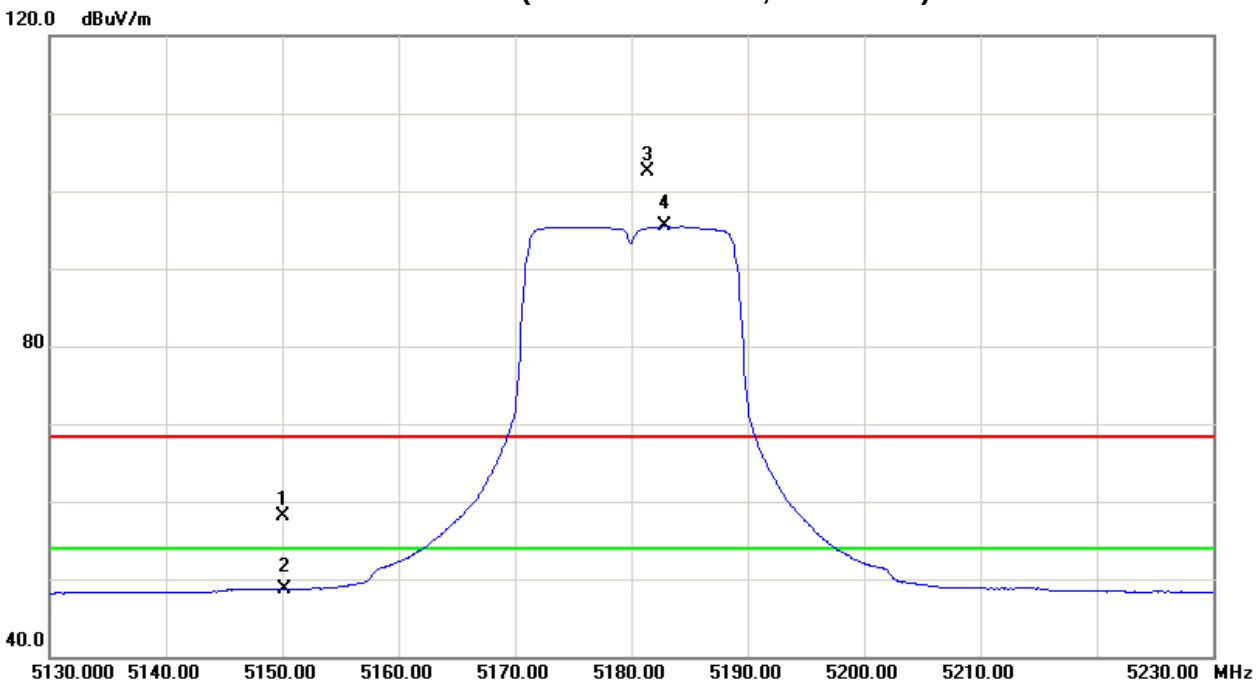
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

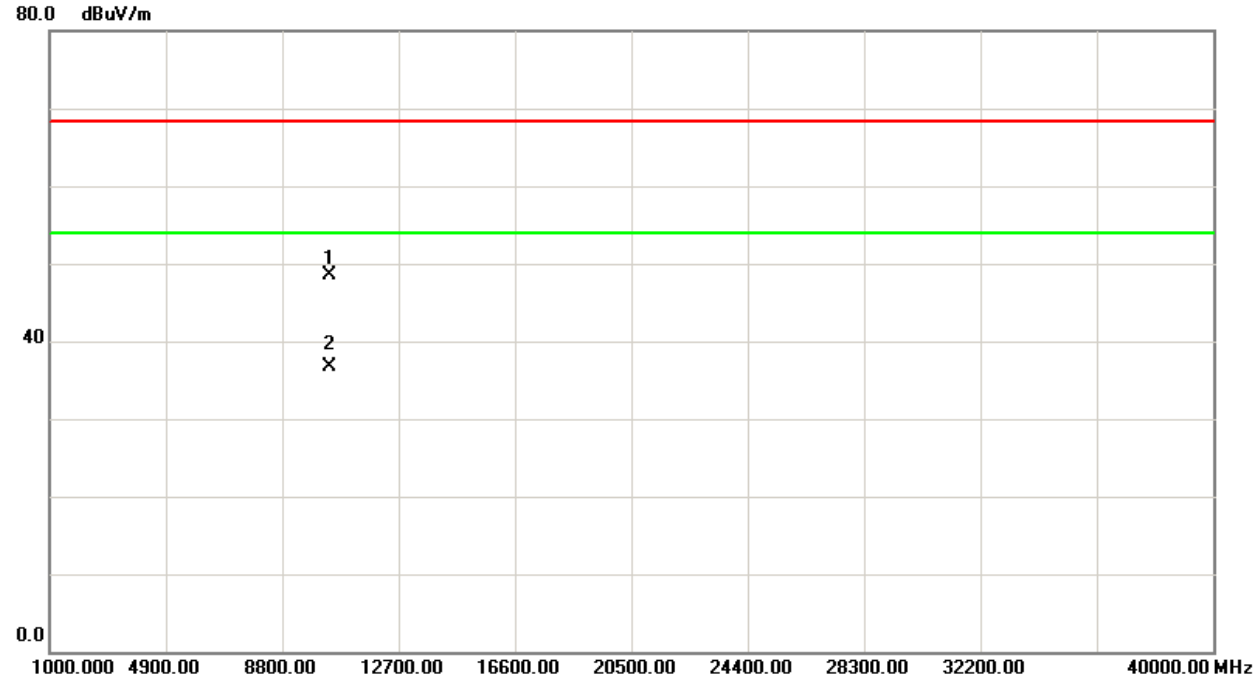
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH36(Above 1000 MHz, Horizontal)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N20 Mode 5200MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5197.10	V	60.14	50.72	40.21	100.35	90.93	-4.42	-13.84					X/F
10400.12	V	33.02	21.16	13.78	46.80	34.94	-57.97	-69.83	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

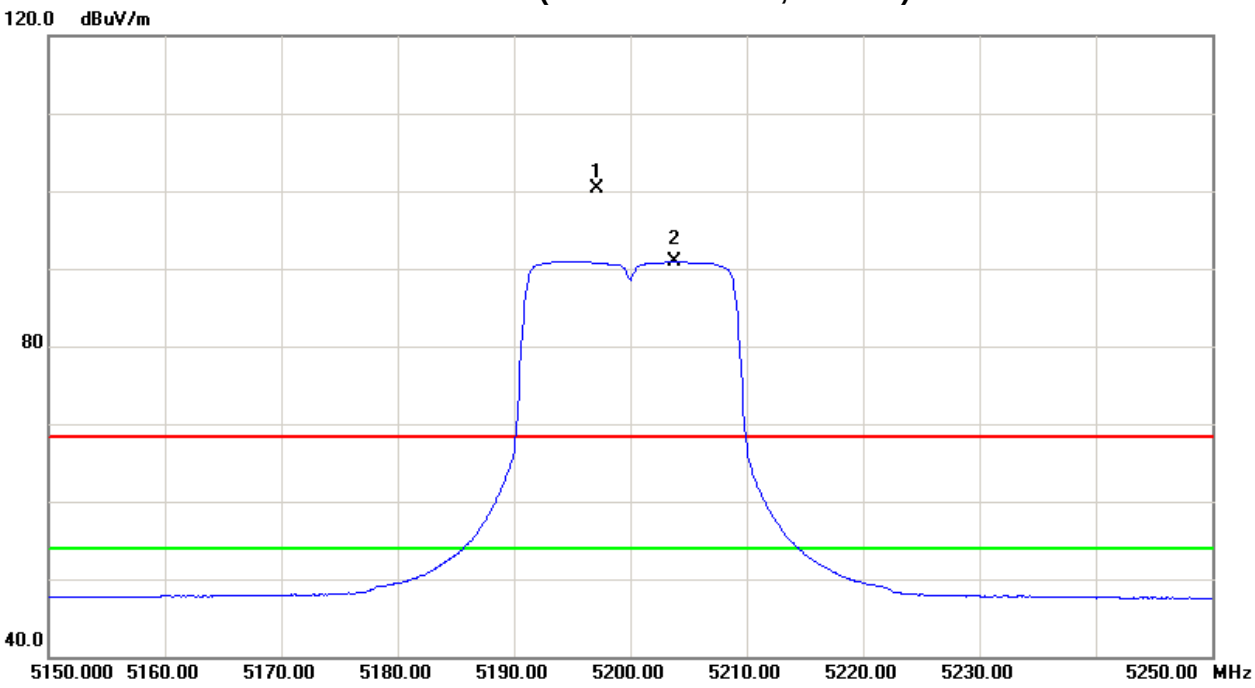
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

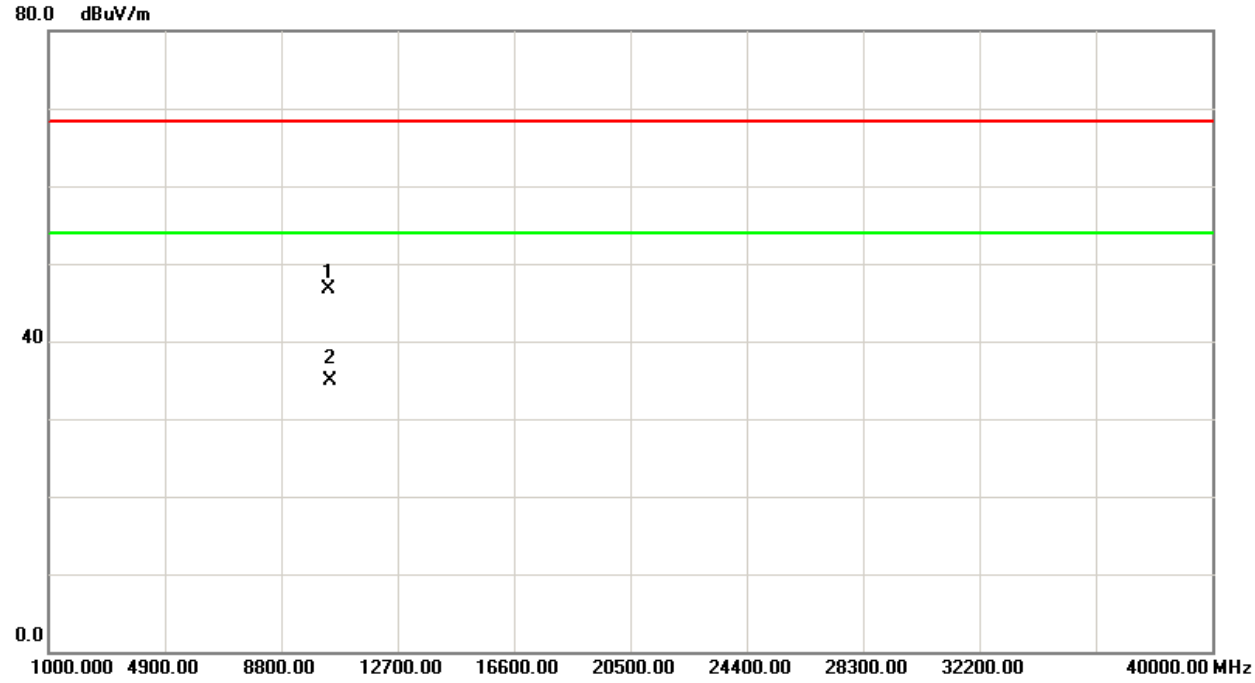
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH40(Above 1000 MHz, Vertical)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N20 Mode 5200MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5201.30	H	64.69	55.53	40.22	104.91	95.75	0.14	-9.02					X/F
10400.23	H	35.64	23.18	13.78	49.42	36.96	-55.35	-67.81	84.91	75.75	-10.39	-19.55	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

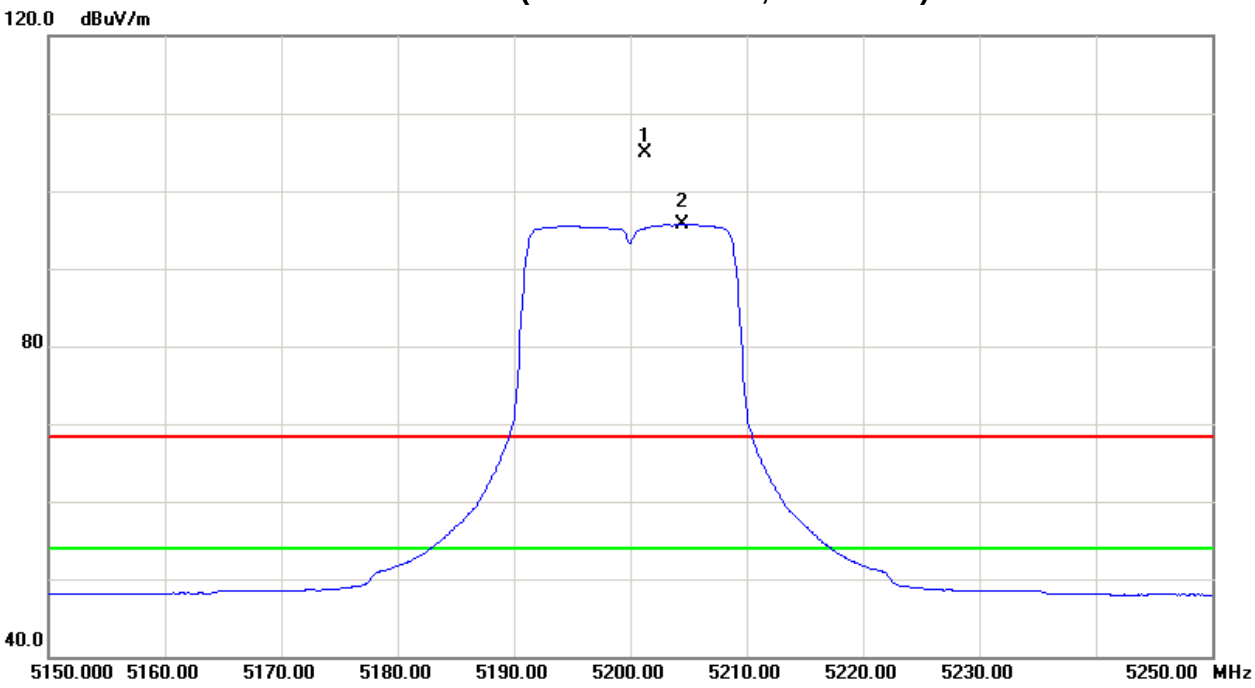
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

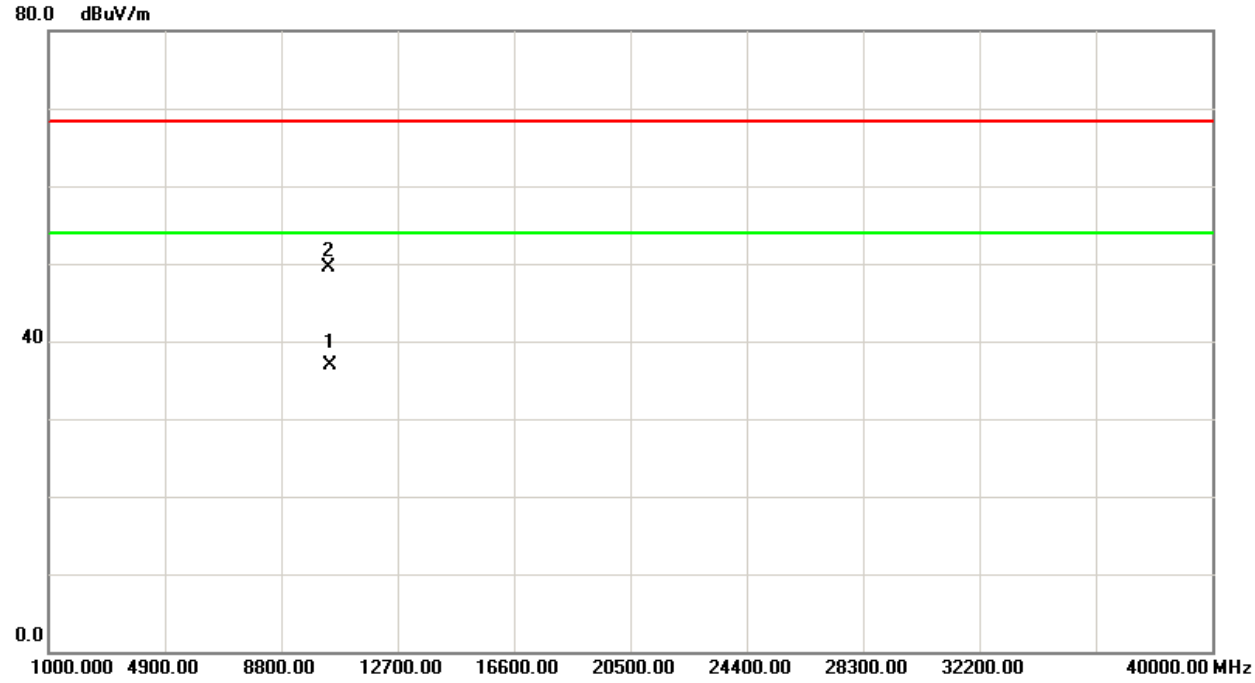
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH40(Above 1000 MHz, Horizontal)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	52 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N20 Mode 5240MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5243.70	V	61.50	52.13	40.33	101.83	92.46	-2.94	-12.31					X/F
10480.27	V	32.07	22.31	13.87	45.94	36.18	-58.83	-68.59	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

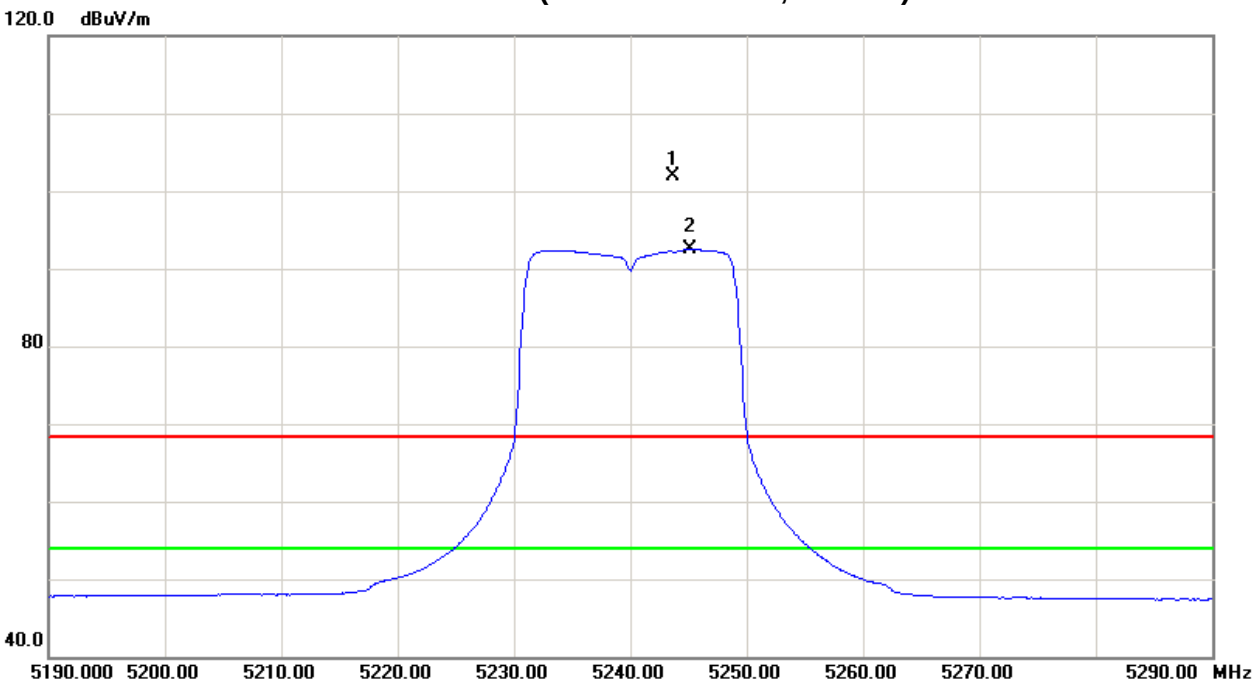
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

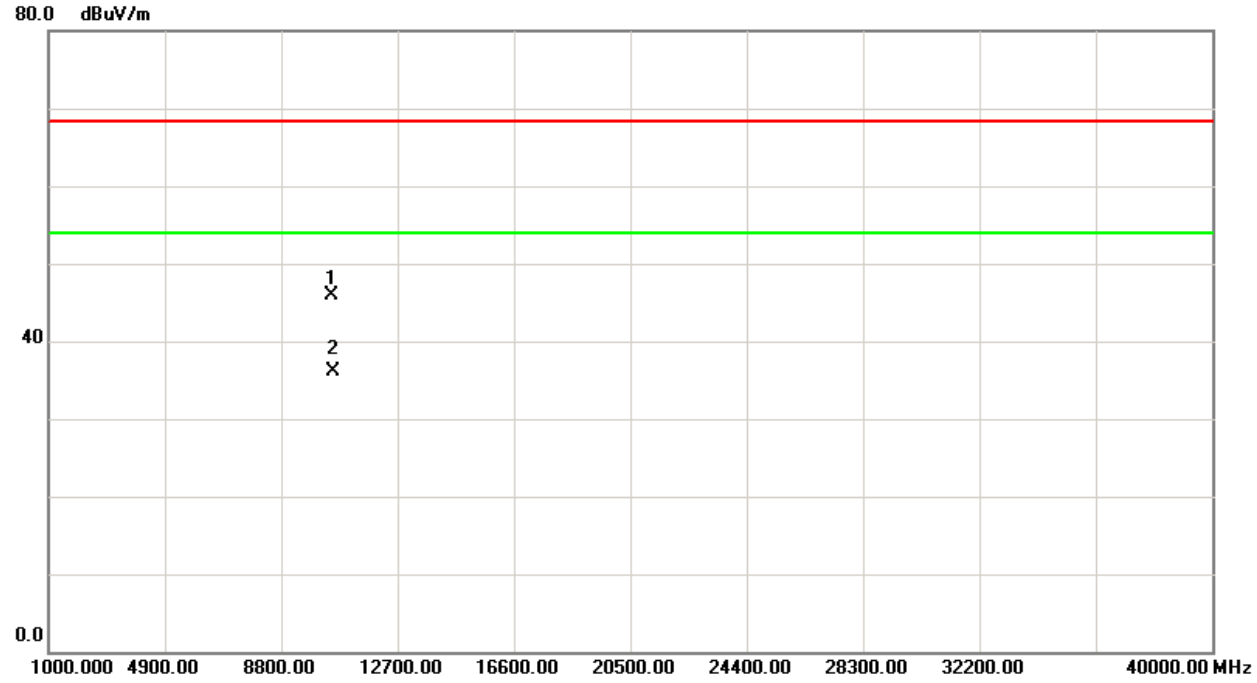
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH48(Above 1000 MHz, Vertical)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	52 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N20 Mode 5240MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5245.00	H	64.10	55.44	40.34	104.44	95.78	-0.33	-8.99					X/F
10479.98	H	34.17	22.70	13.87	48.04	36.57	-56.73	-68.20	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

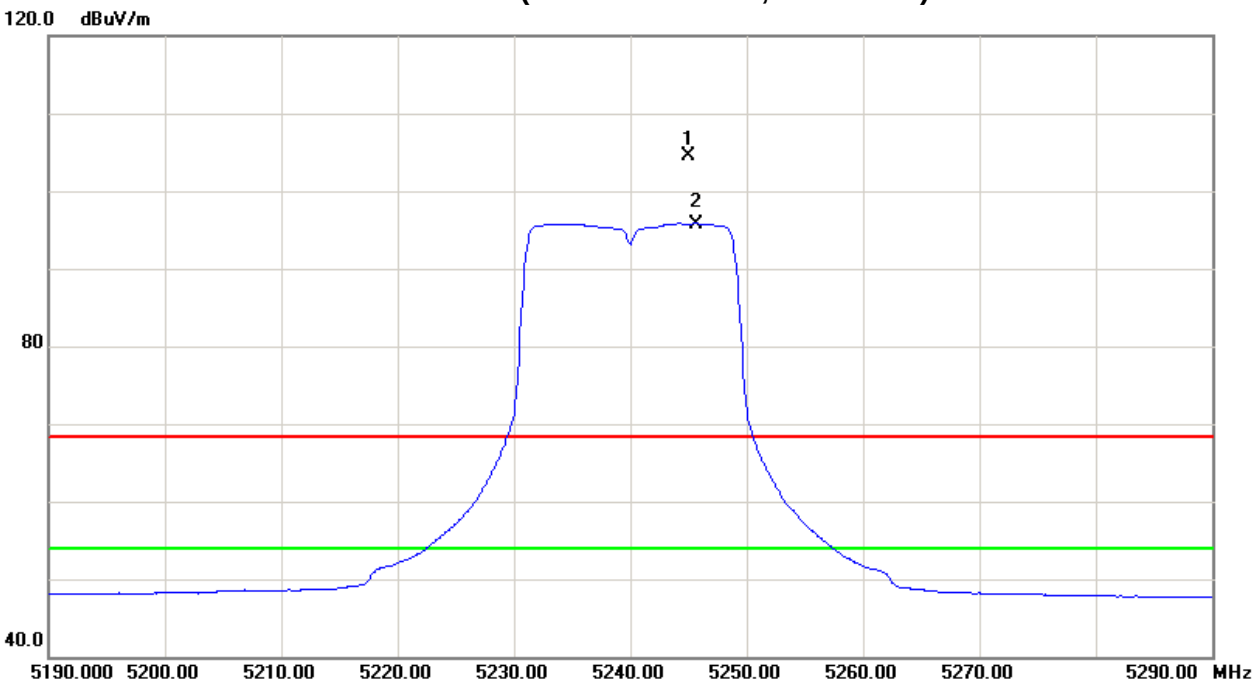
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

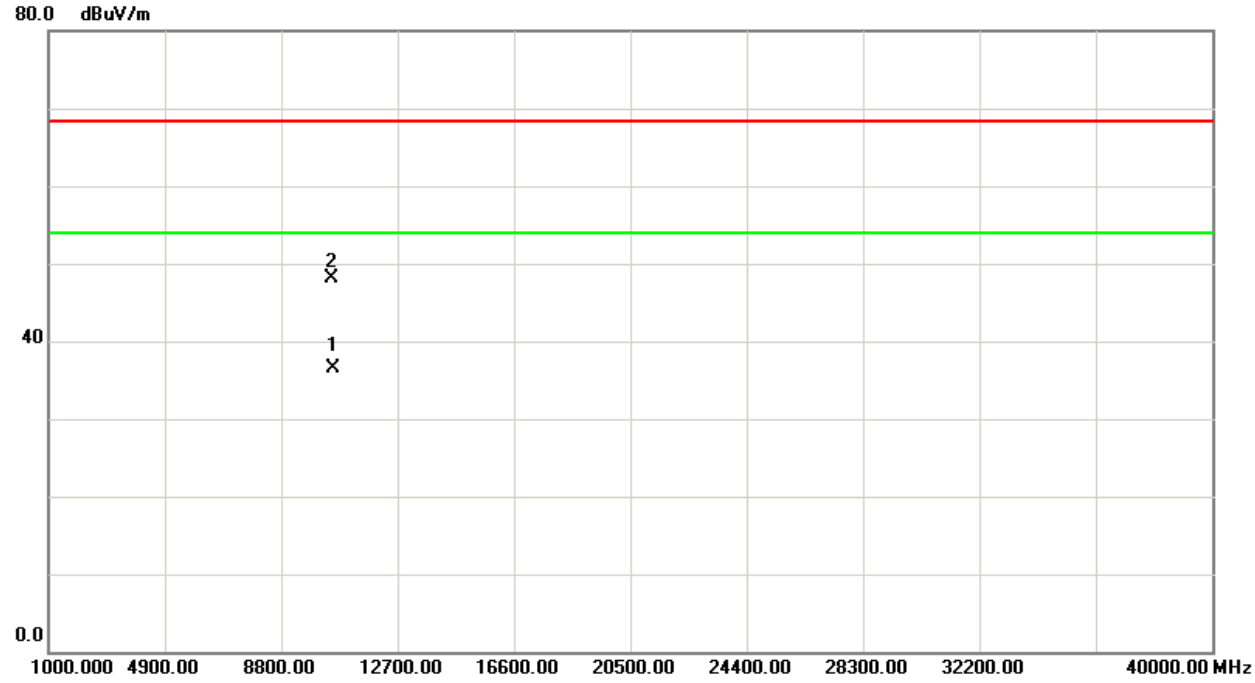
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH48(Above 1000 MHz, Horizontal)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N40 Mode 5190MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5150.00	V	21.74	11.47	40.09	61.83	51.56	-42.94	-53.21	68.30	54.00	-27.00	-41.30	X/E
5179.60	V	60.23	50.94	40.16	100.39	91.10	-4.38	-13.67					X/F
10380.12	V	31.38	20.53	13.76	45.14	34.29	-59.63	-70.48	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

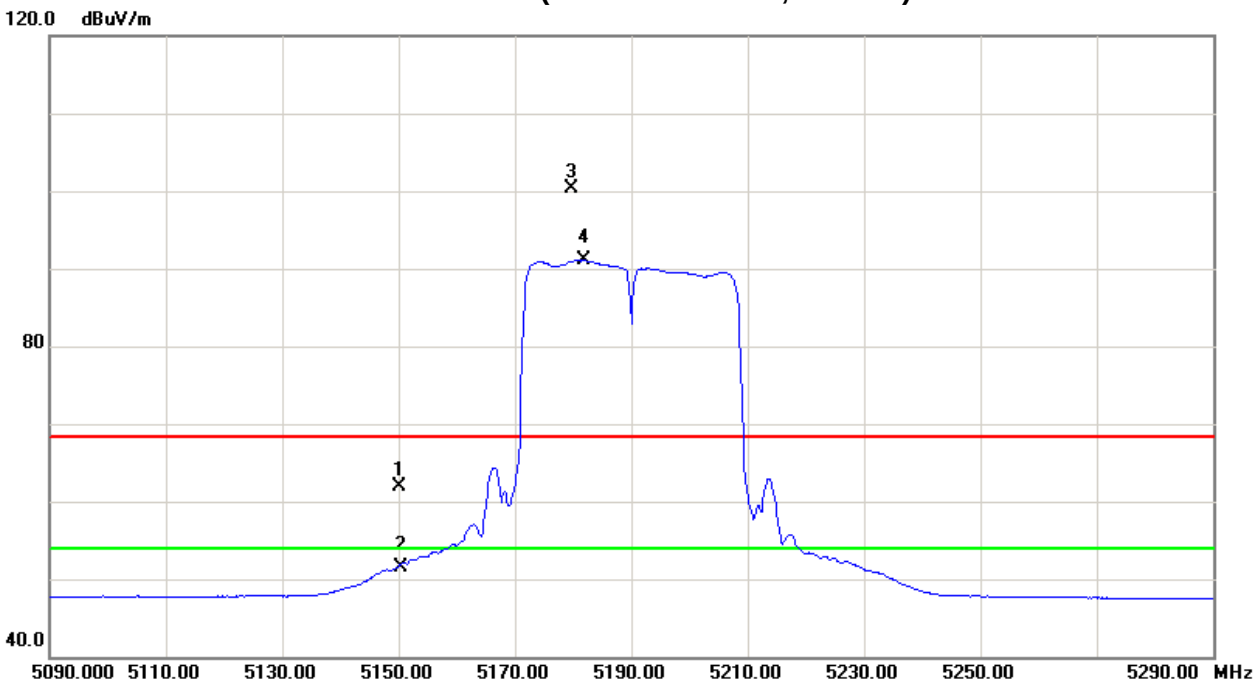
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

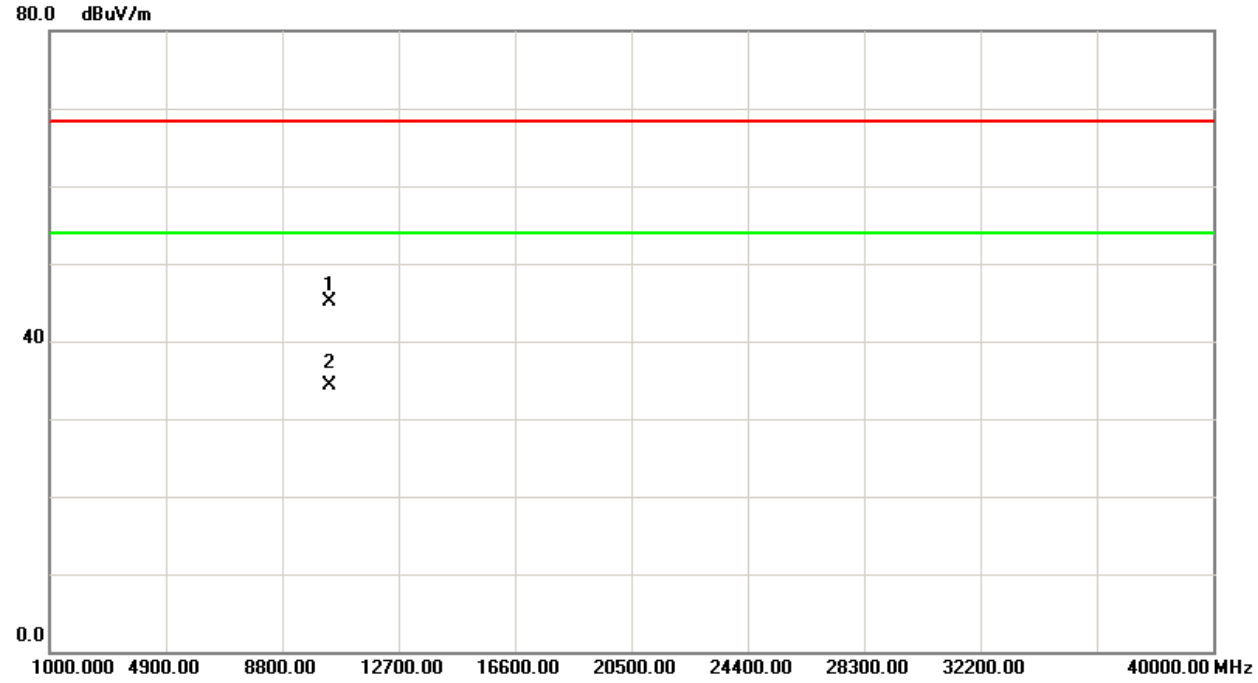
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH38(Above 1000 MHz, Vertical)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N40 Mode 5190MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5150.00	H	17.84	8.86	40.09	57.93	48.95	-46.84	-55.82	68.30	54.00	-27.00	-41.30	X/E
5203.00	H	61.52	52.84	40.23	101.75	93.07	-3.02	-11.70					X/F
10385.27	H	33.24	22.42	13.76	47.00	36.18	-57.77	-68.59	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

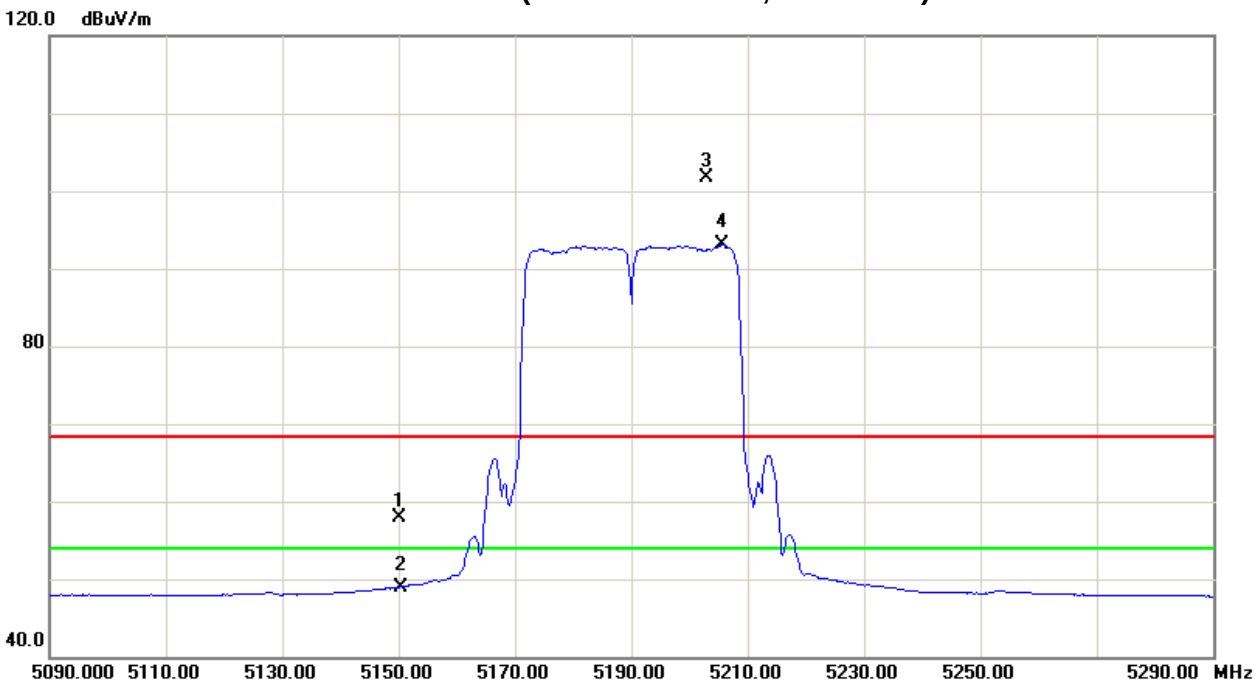
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

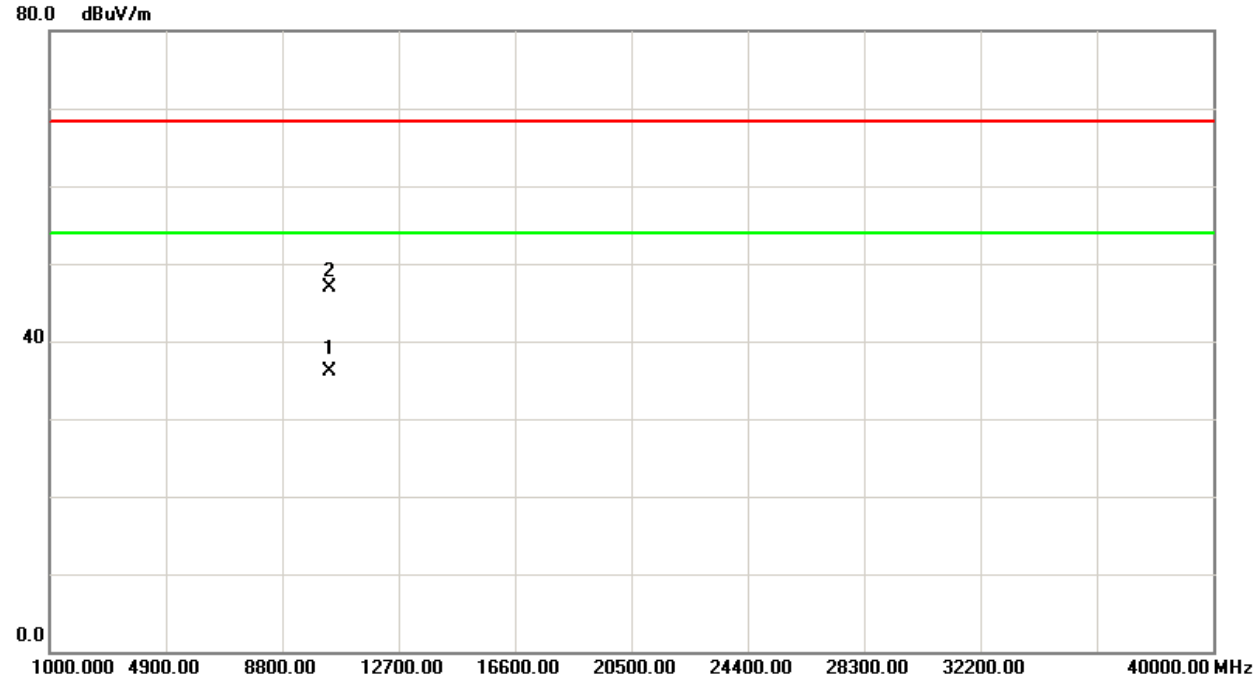
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH38(Above 1000 MHz, Horizontal)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N40 Mode 5230MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5231.20	V	60.12	50.84	40.30	100.42	91.14	-4.35	-13.63					X/F
10460.11	V	32.09	21.78	13.85	45.94	35.63	-58.83	-69.14	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

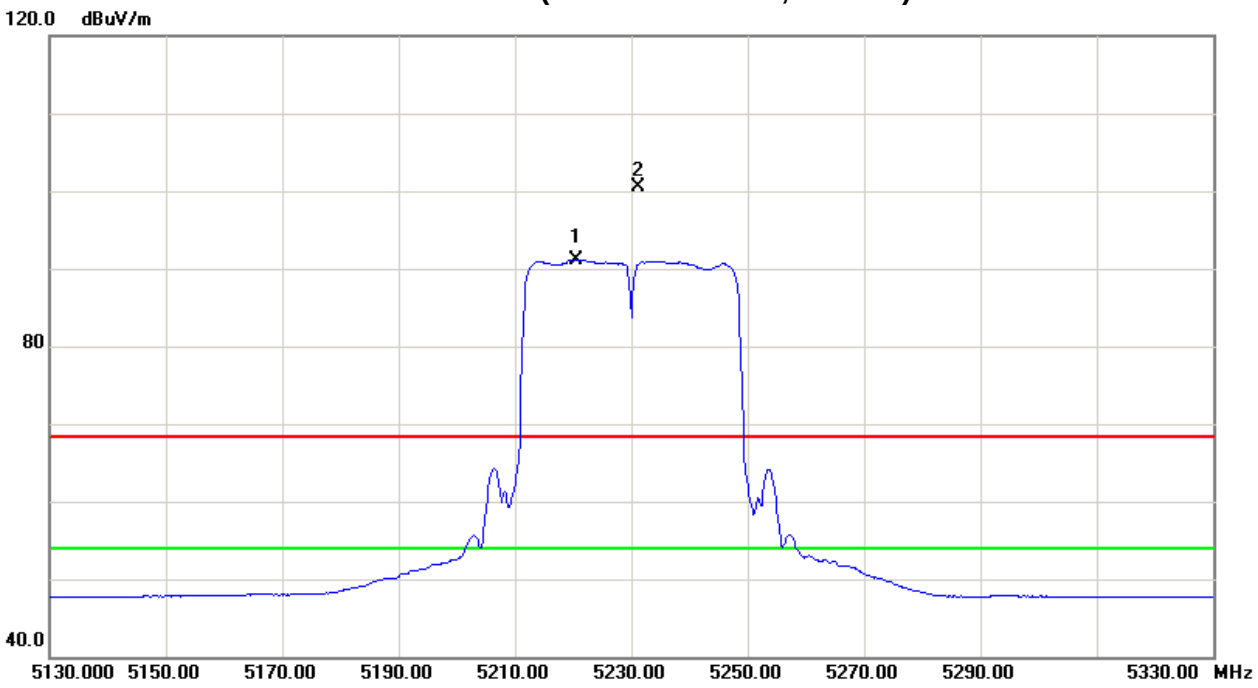
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

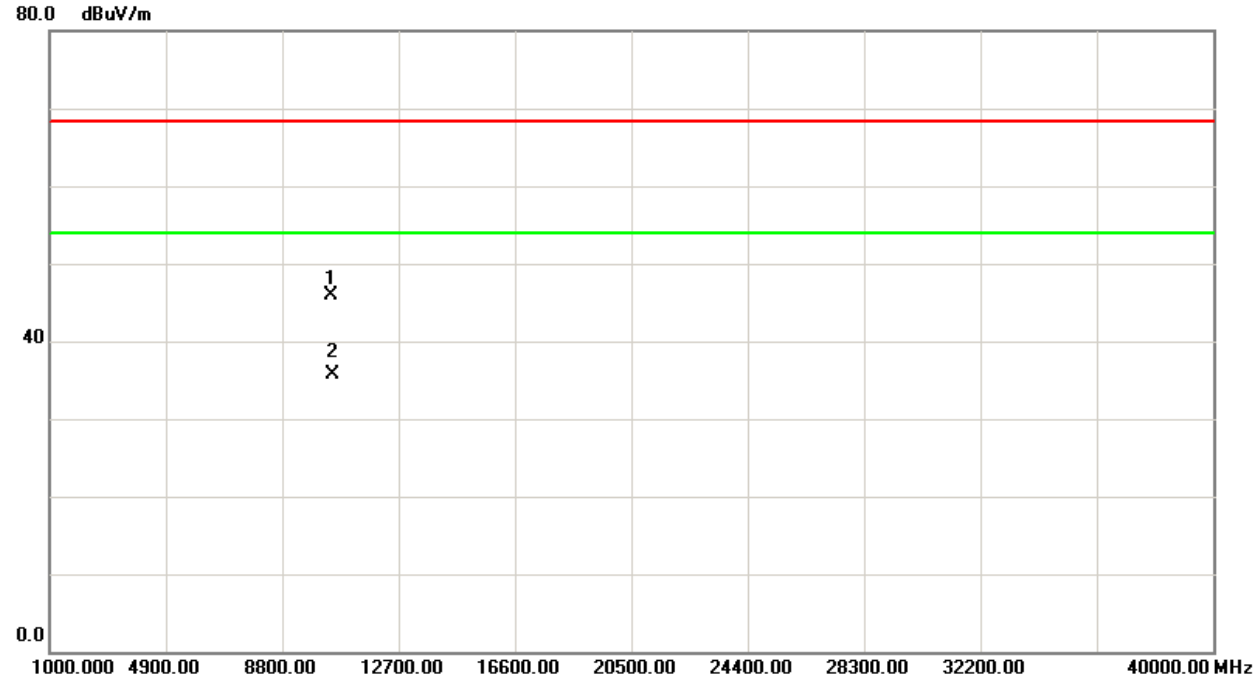
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH46(Above 1000 MHz, Vertical)





EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity :	58 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	Band 1/ TX N40 Mode 5230MHz		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.(dBuV/m)		Act.(dBm)		Limit(dBuV/m)		Limit(dBm)		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)									
5231.40	H	61.30	52.59	40.31	101.61	92.90	-3.16	-11.87					X/F
10462.35	H	33.11	22.61	13.85	46.96	36.46	-57.81	-68.31	68.30	54.00	-27.00	-41.30	X/H

Remark:

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 40GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) All readings are Peak unless otherwise stated AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency。"F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)

(4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

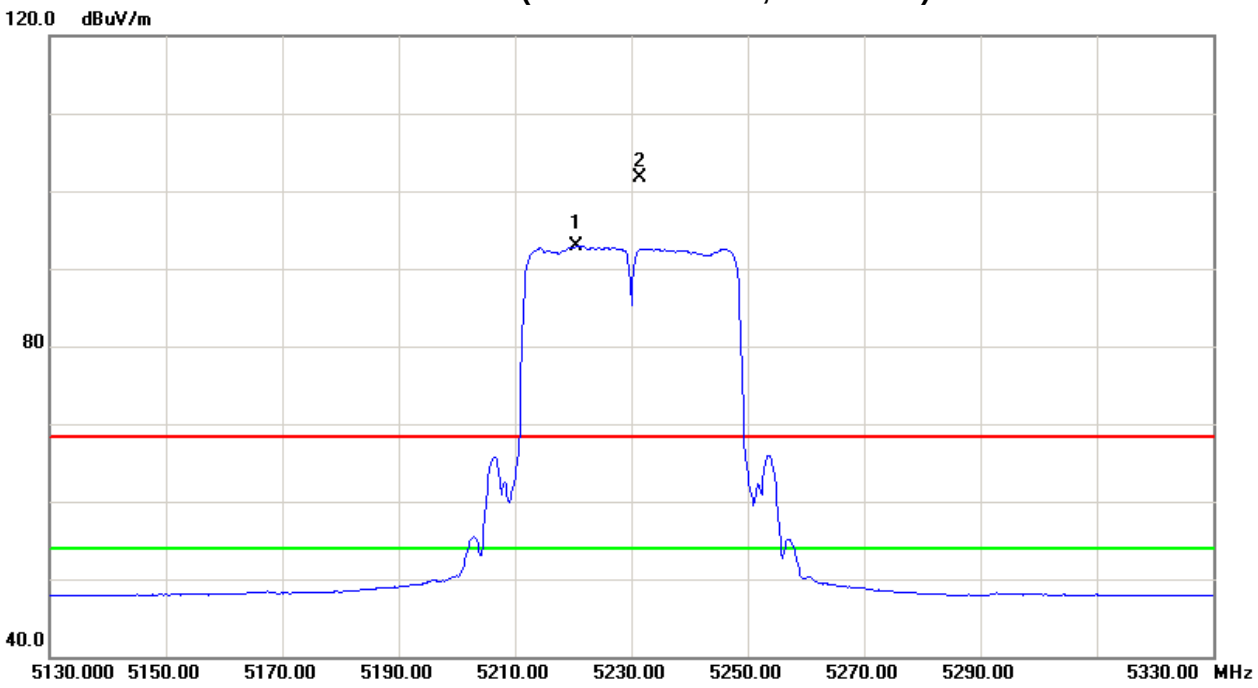
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

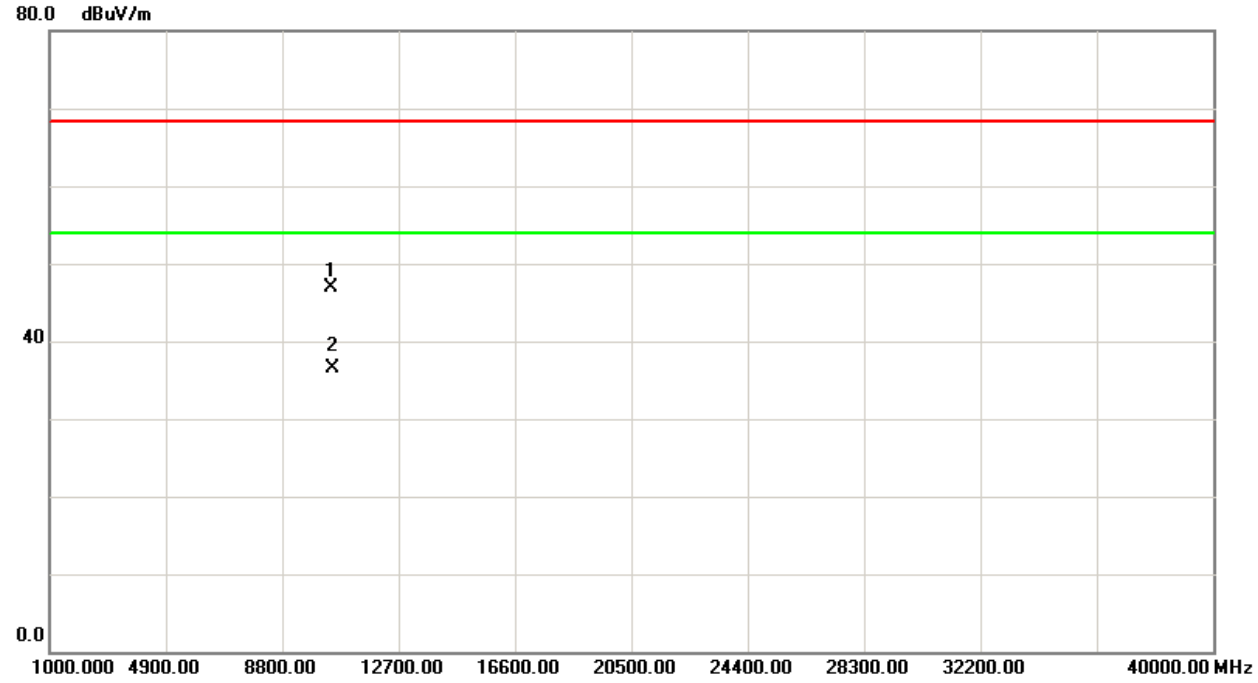
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(7) EUT Orthogonal Axes:
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

(8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.

Orthogonal Axis:X
Band 1/CH46(Above 1000 MHz, Horizontal)





5. 26dB SPECTRUM BANDWIDTH

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E ; RSS-210			
Test Item	Limit	Frequency Range (MHz)	Result
26 dB Bandwidth	------	5150MHz~5250	PASS

5.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov.26.2012	Nov.26.2013

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

5.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

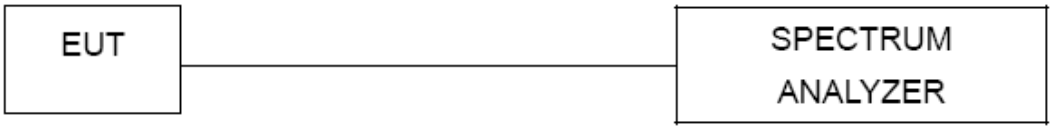
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RB	300 kHz
VB	1000 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

c. Measured the spectrum width with power higher than 26dB below carrier

5.1.3 DEVIATION FROM STANDARD

No deviation.

5.1.4 TEST SETUP



5.1.5 EUT OPERATION CONDITIONS

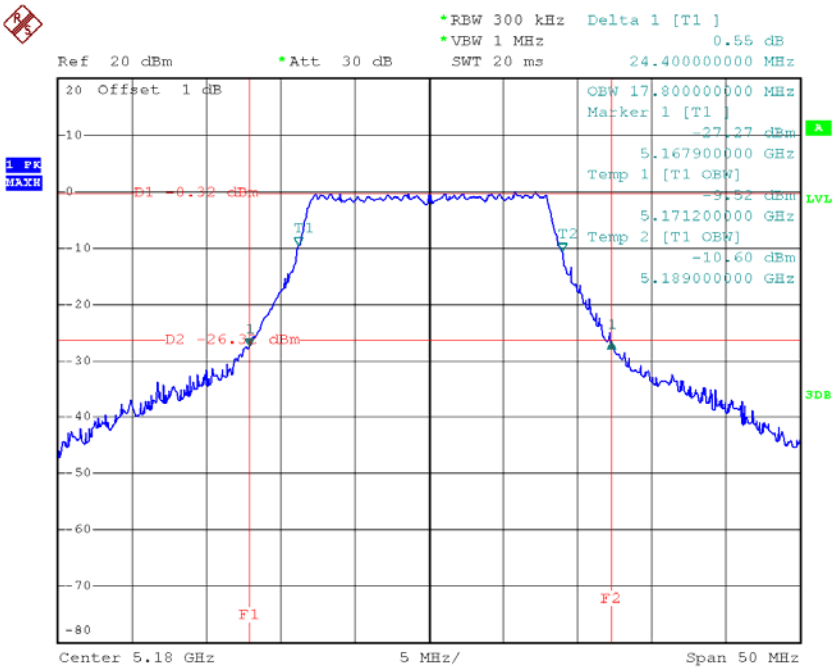
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.6 TEST RESULTS

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX A Mode /CH36, CH40, CH48		

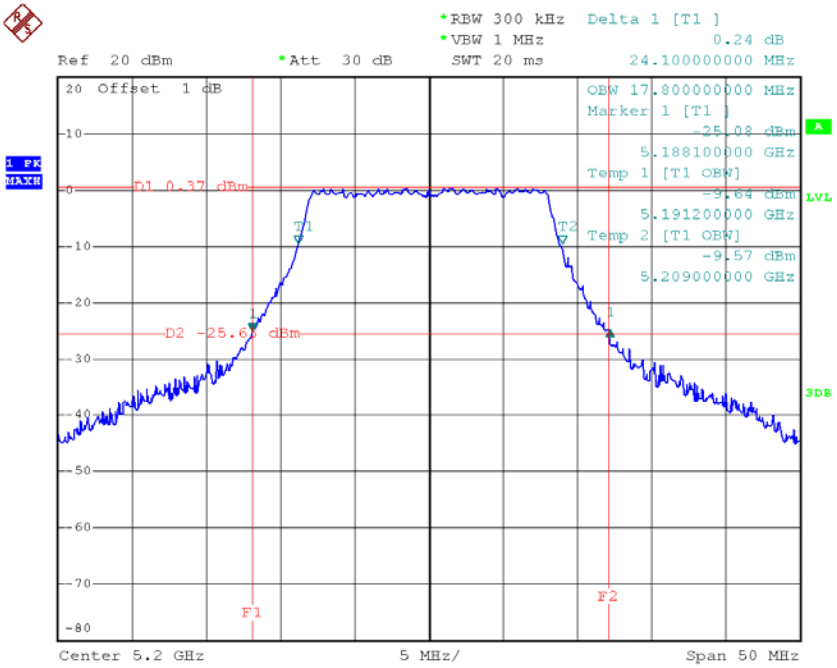
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
CH36	5180	24.40	17.80
CH40	5200	24.10	17.80
CH48	5240	24.20	17.80

CH36



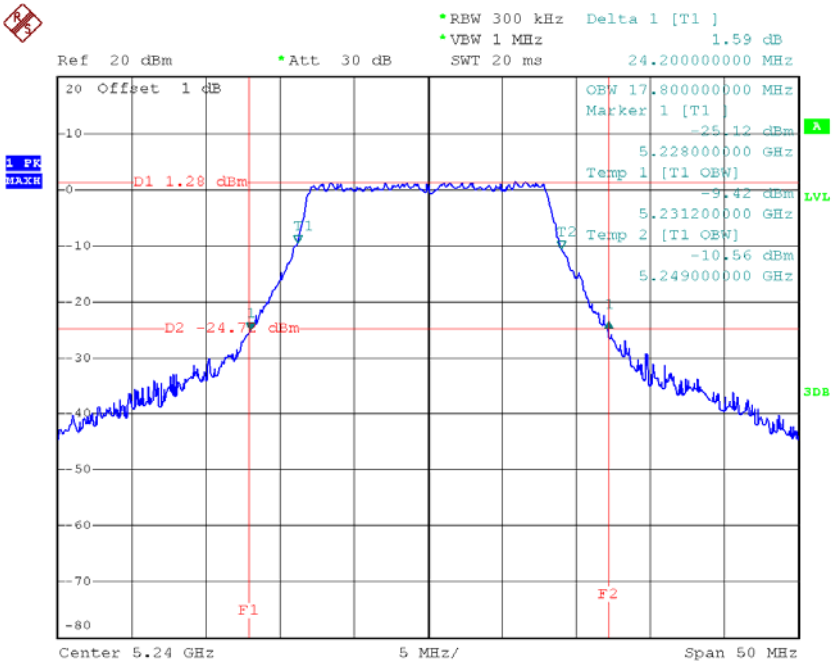
Date: 18.AUG.2013 10:57:00

CH40



Date: 18.AUG.2013 10:59:59

CH48

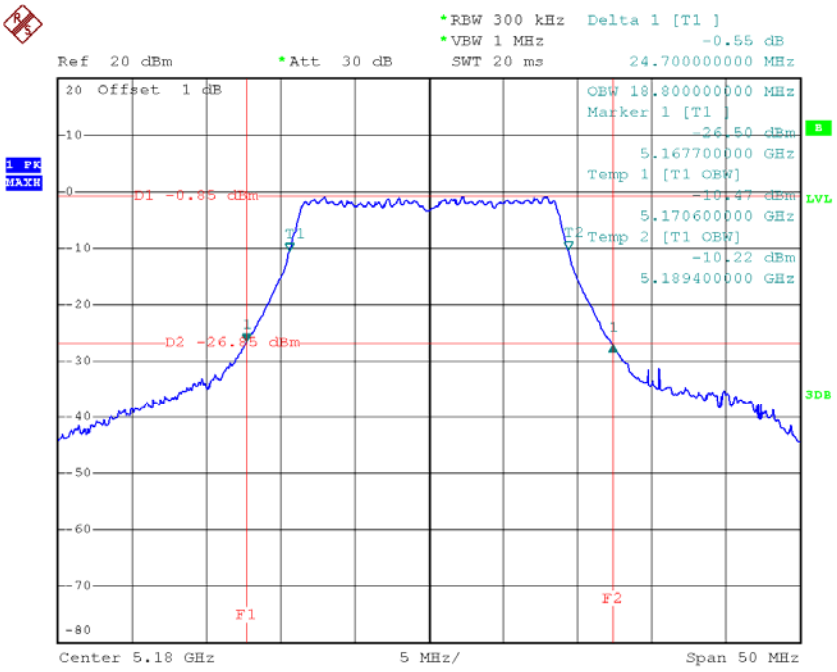


Date: 18.AUG.2013 11:00:59

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TXN20 Mode /CH36, CH40, CH48-ANT 1		

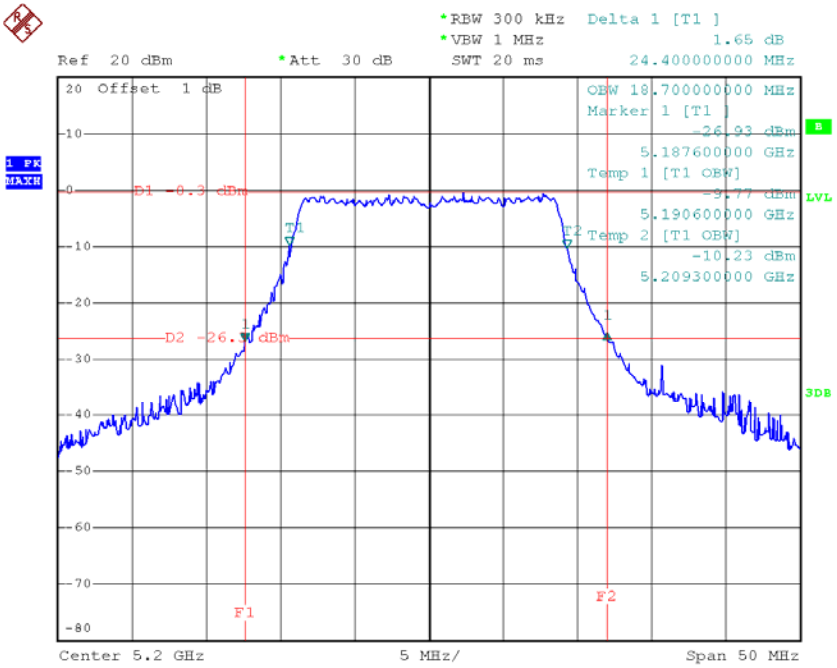
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
CH36	5180	24.70	18.80
CH40	5200	24.40	18.70
CH48	5240	24.50	18.70

CH36



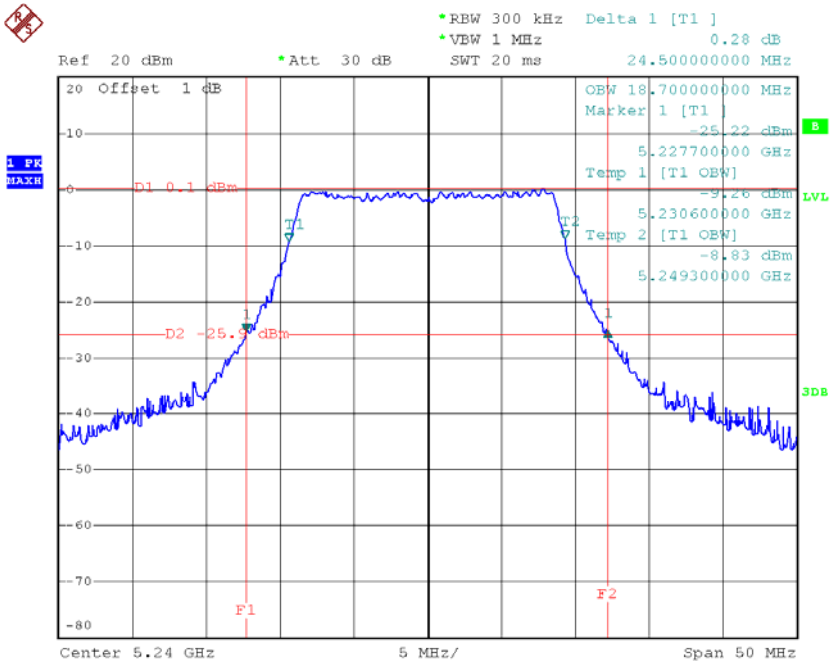
Date: 18.AUG.2013 14:18:57

CH40



Date: 18.AUG.2013 14:49:56

CH48

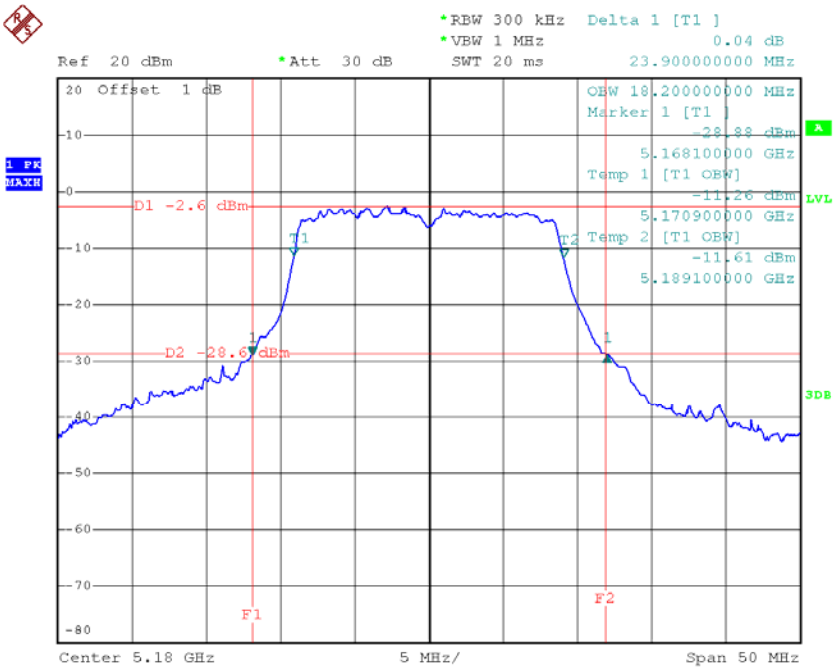


Date: 18.AUG.2013 14:54:19

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TXN20 Mode /CH36, CH40, CH48-ANT 2		

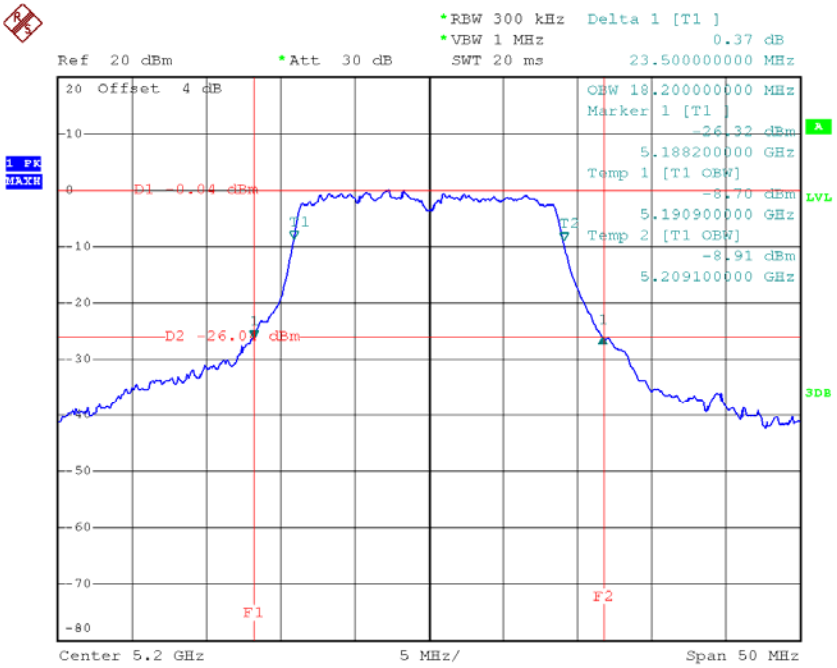
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
CH36	5180	23.90	18.20
CH40	5200	23.50	18.20
CH48	5240	23.80	18.20

CH36



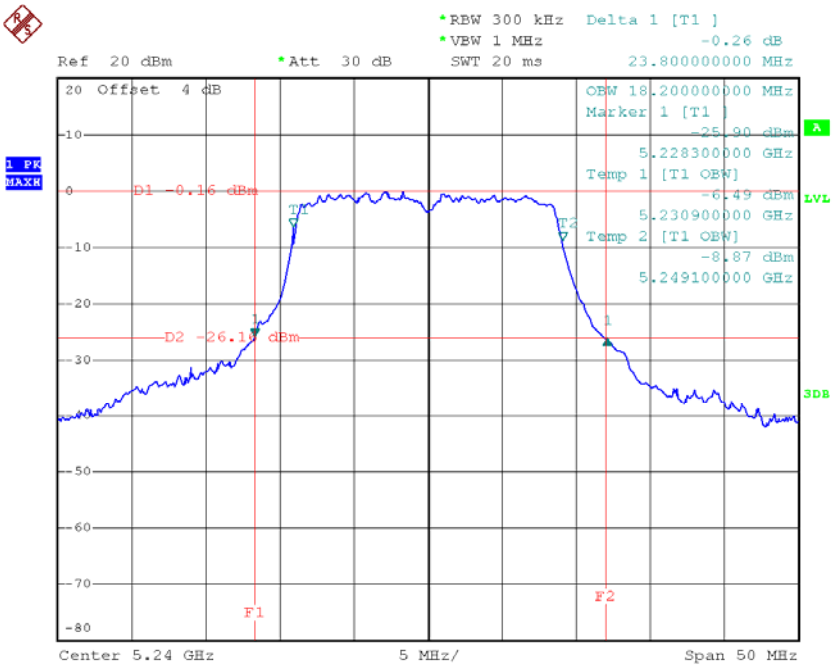
Date: 18.AUG.2013 15:36:42

CH40



Date: 18.AUG.2013 15:41:23

CH48

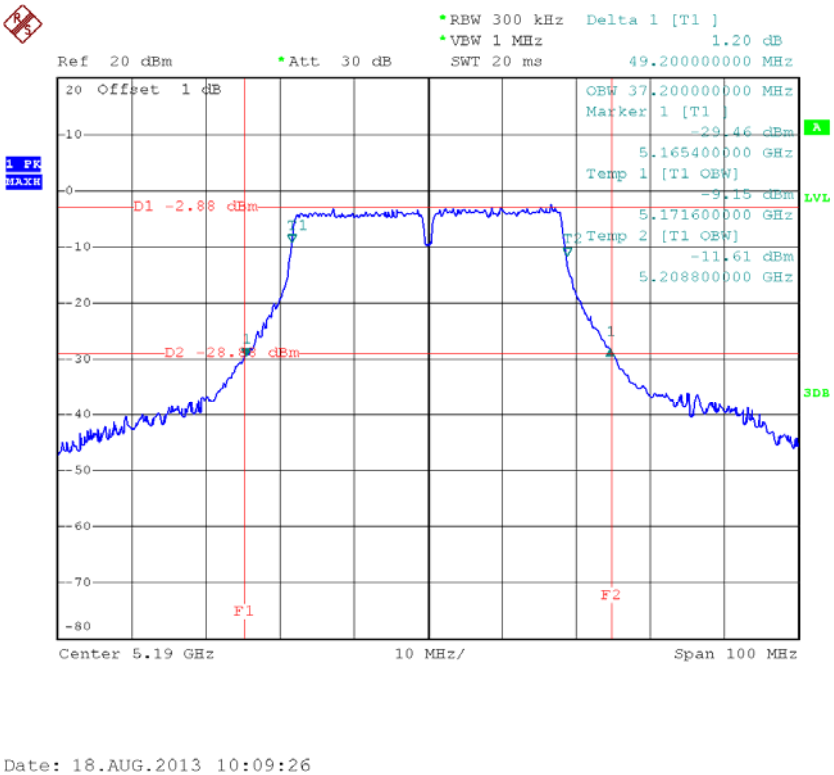


Date: 18.AUG.2013 15:45:15

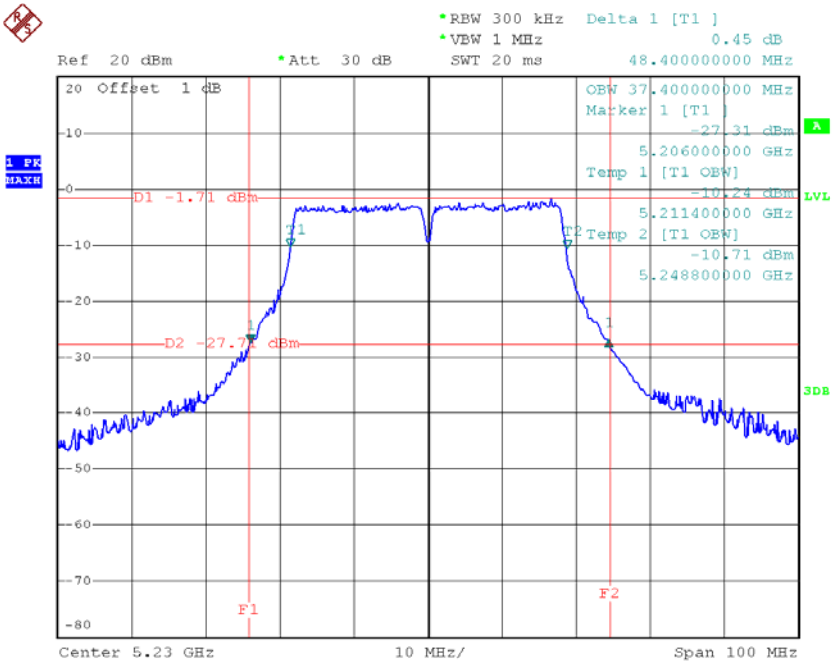
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TXN40 Mode /CH38, CH46-ANT 1		

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
CH38	5190	49.20	37.20
CH46	5230	48.40	37.40

CH38



CH46

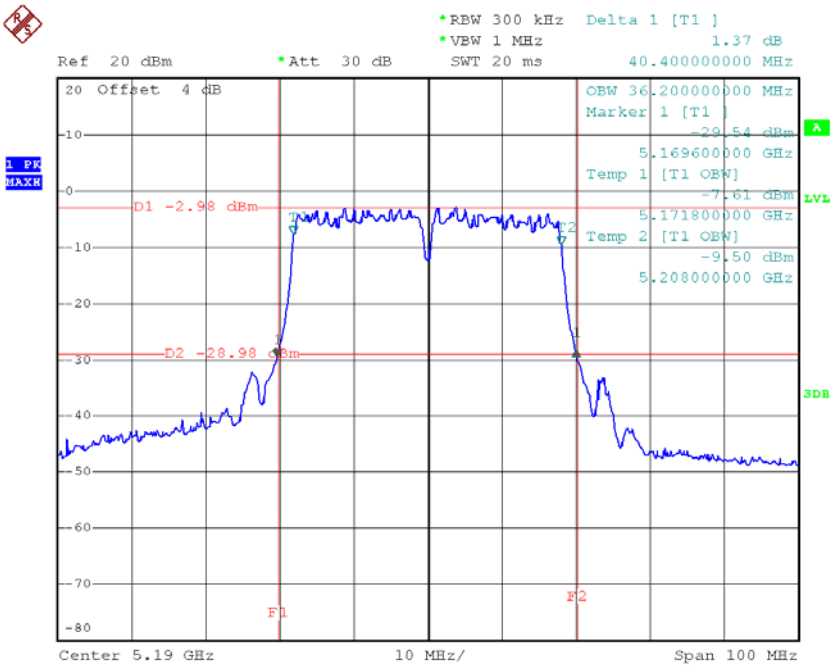


Date: 18.AUG.2013 10:49:37

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TXN40 Mode /CH38, CH46-ANT 2		

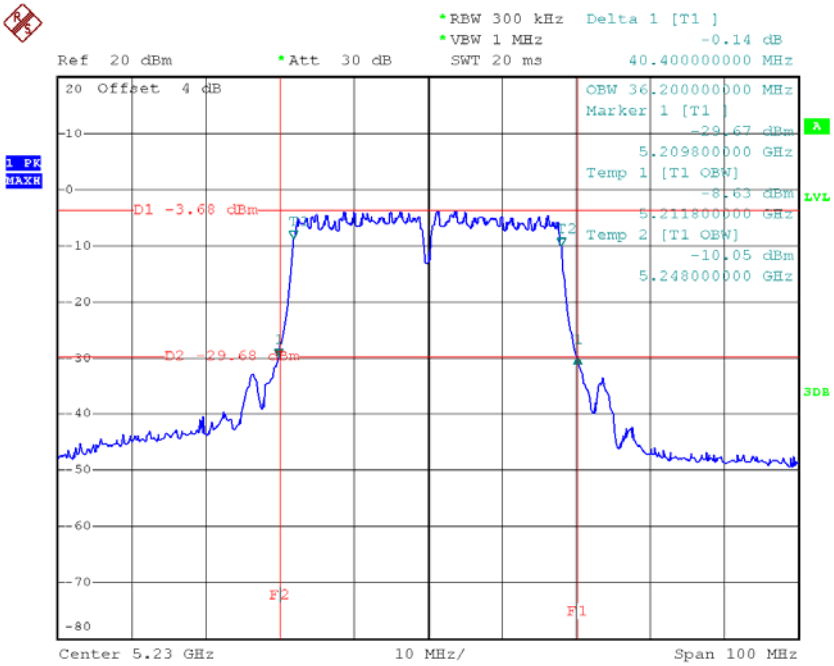
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
CH38	5190	40.40	36.20
CH46	5230	40.40	36.20

CH38



Date: 18.AUG.2013 16:21:36

CH46



Date: 18.AUG.2013 16:23:16

6. MAXIMUM CONDUCTED OUTPUT POWER

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E ; RSS-210			
Test Item	Frequency Range (MHz)	Limit	Result
Conducted Output Power	5150 - 5250	not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B,	PASS

Note: where "B" is the 26 dB emissions bandwidth in MHz.

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov.26.2012	Nov.26.2013

Remark: "N/A" denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

6.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

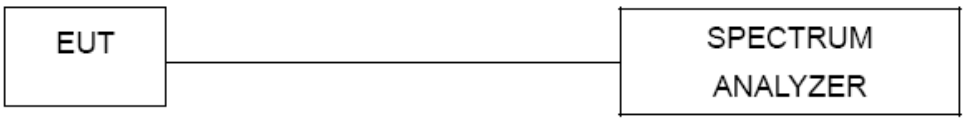
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	= 1 MHz.
VBW	≥ 3 MHz.
Detector	RMS
Trace	Max Hold
Sweep Time	auto

b. Test was performed in accordance with method of KDB 789033 D01.

6.1.3 DEVIATION FROM STANDARD

No deviation.

6.1.4 TEST SETUP



6.1.5 EUT OPERATION CONDITIONS

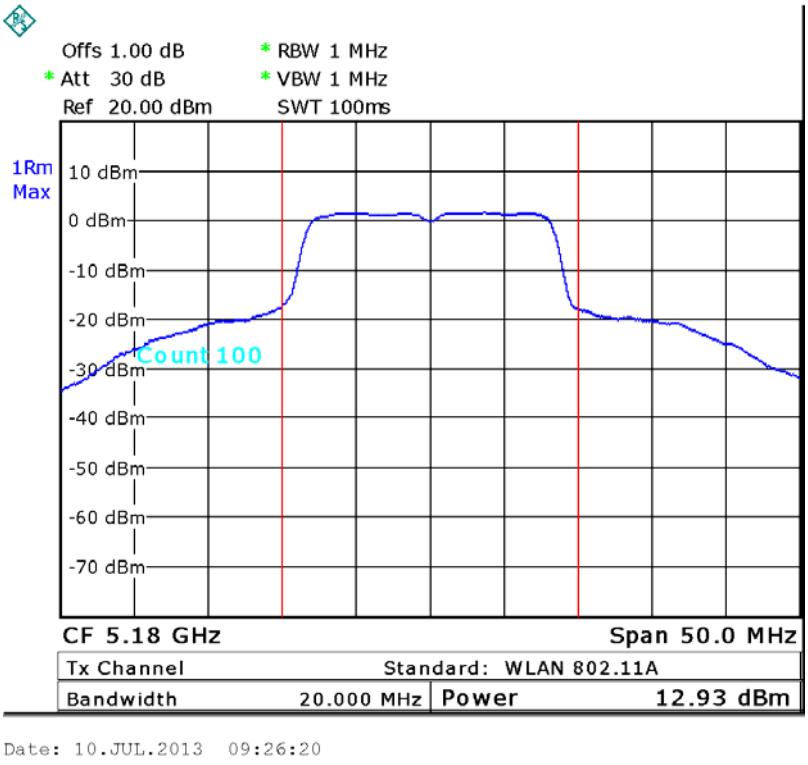
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.6 TEST RESULTS

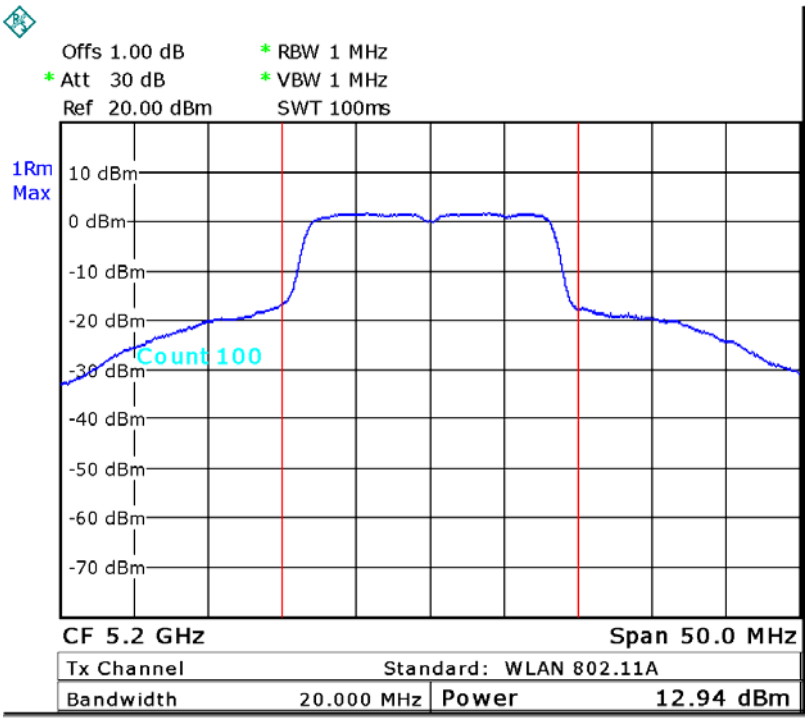
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX A Mode/CH36, CH40, CH48		

Test Channel	Frequency (MHz)	Conducted Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH36	5180	12.93	17.00	0.0501
CH40	5200	12.94	17.00	0.0501
CH48	5240	13.00	17.00	0.0501

CH36

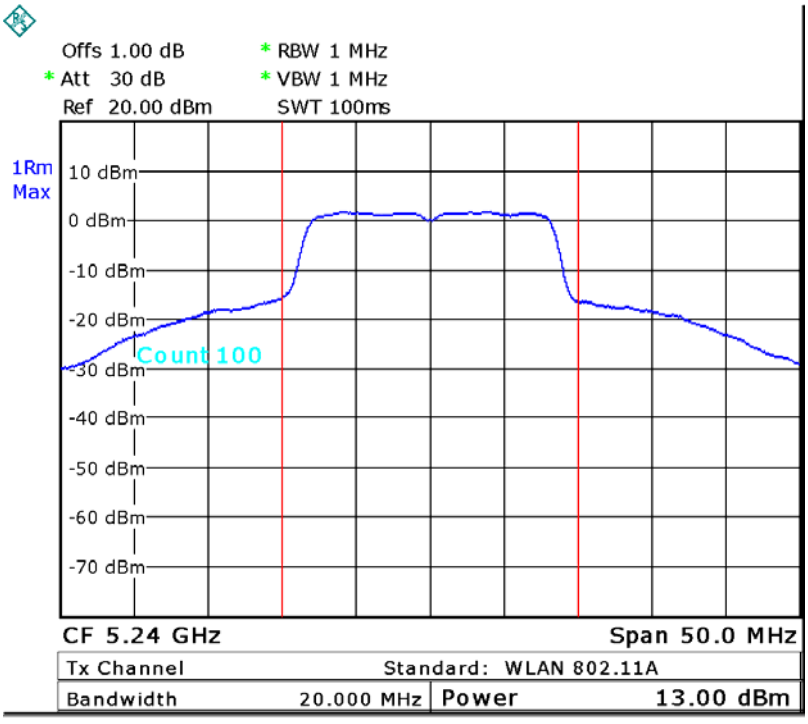


CH40



Date: 10.JUL.2013 09:27:50

CH48

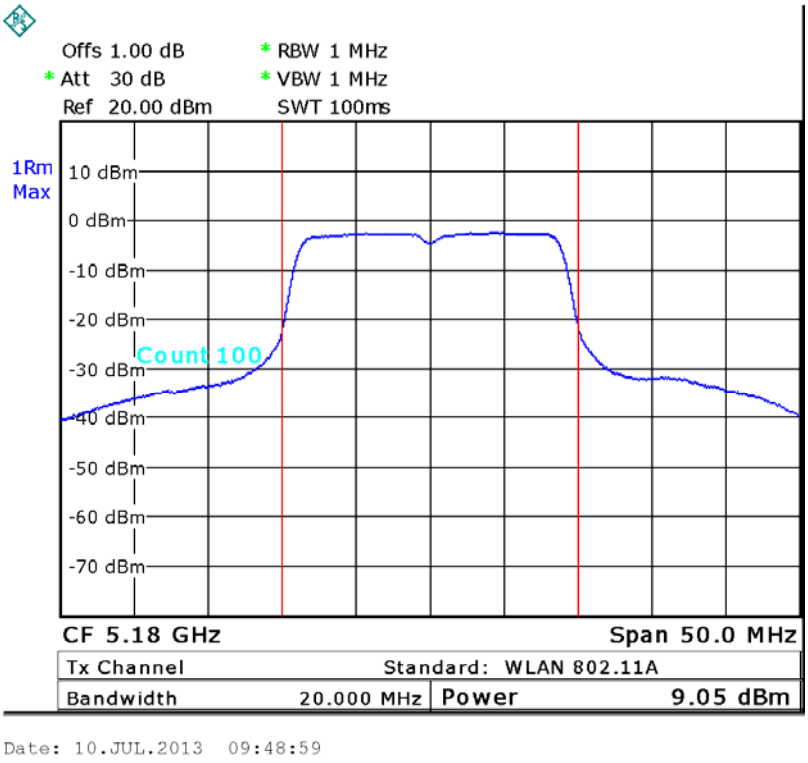


Date: 10.JUL.2013 09:28:17

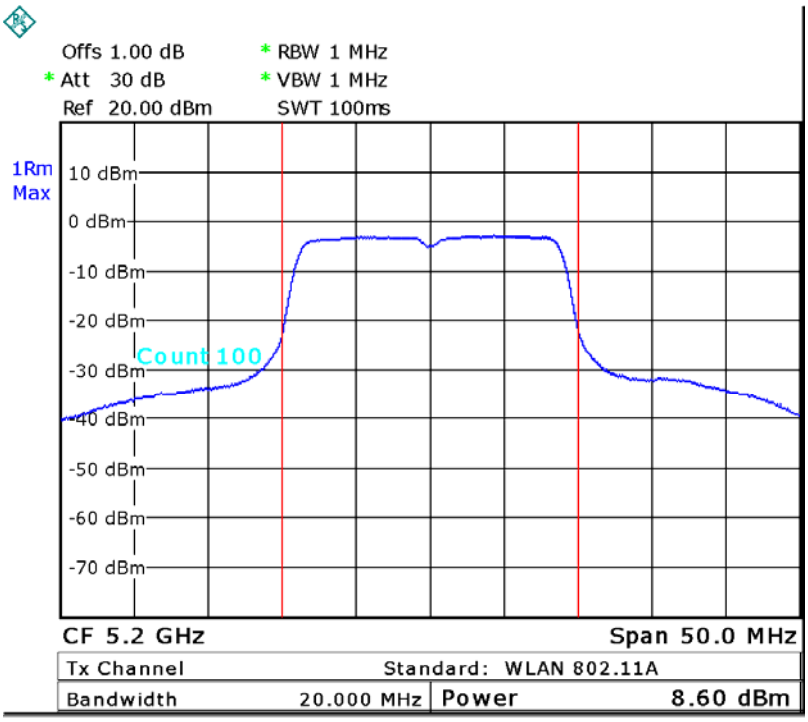
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/CH36, CH40, CH48-ANT 1		

Test Channel	Frequency (MHz)	Conducted Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH36	5180	9.05	17.00	0.0501
CH40	5200	8.60	17.00	0.0501
CH48	5240	9.15	17.00	0.0501

CH36

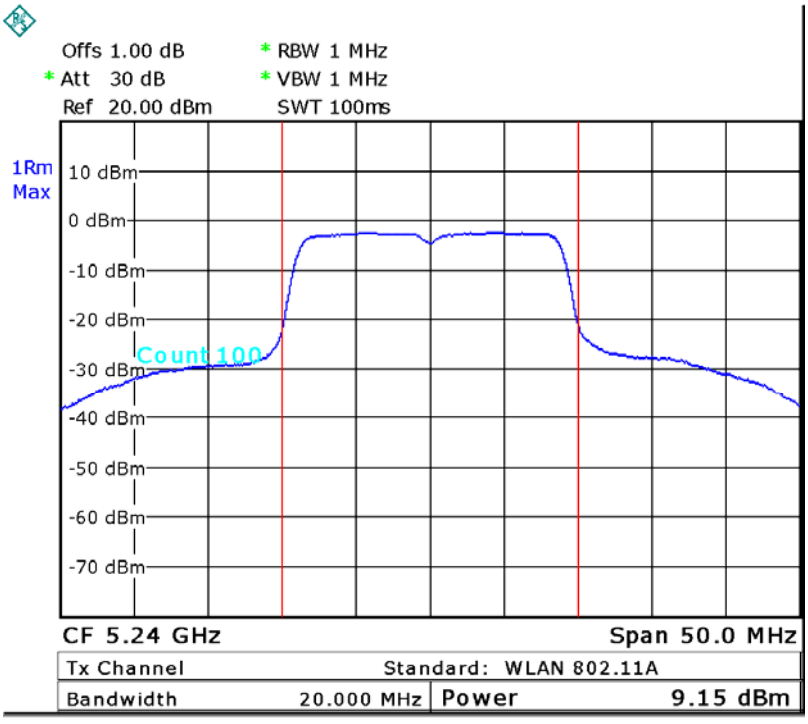


CH40



Date: 10.JUL.2013 09:49:57

CH48

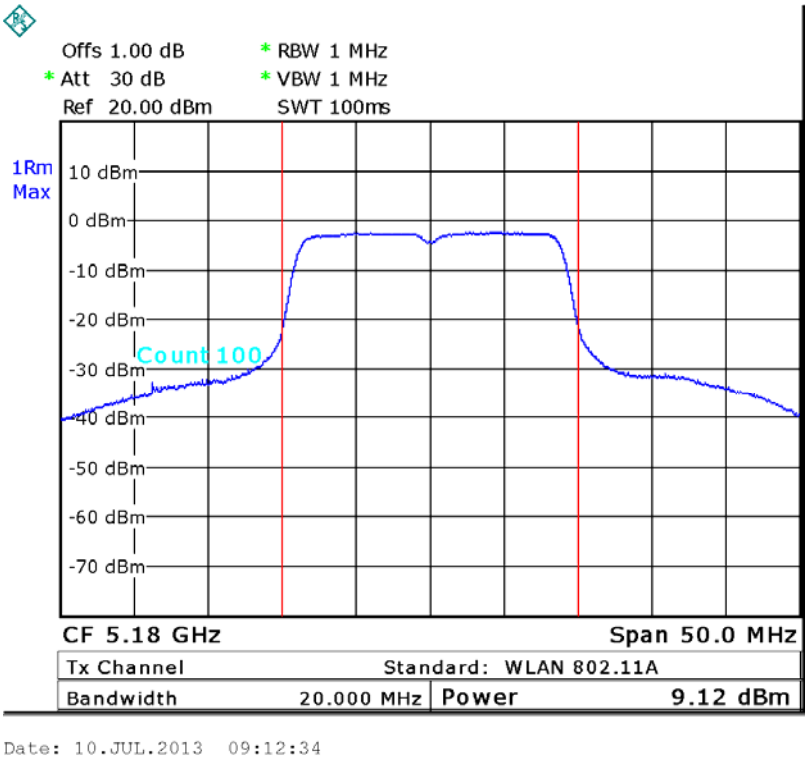


Date: 10.JUL.2013 09:50:42

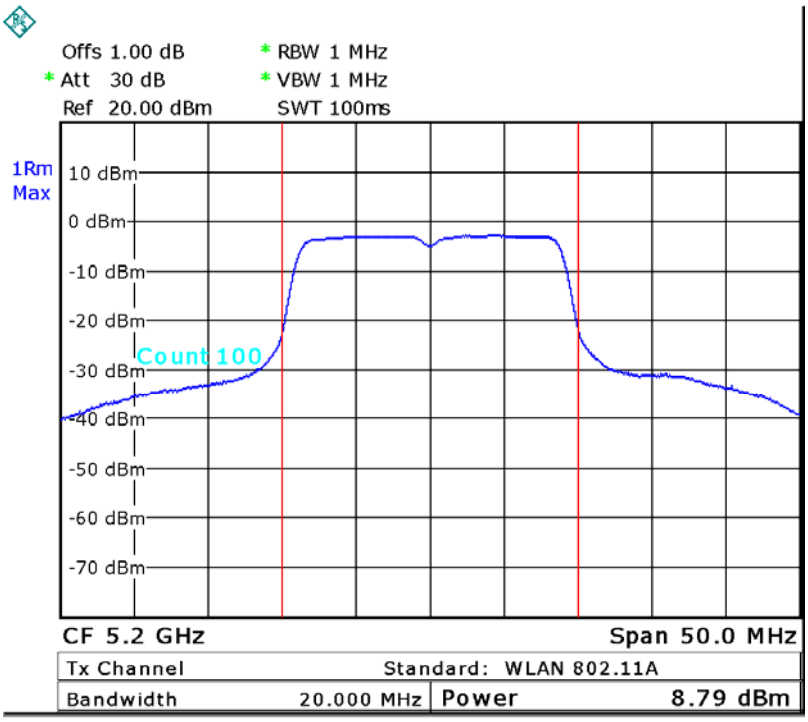
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/CH36, CH40, CH48-ANT 2		

Test Channel	Frequency (MHz)	Conducted Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH36	5180	9.12	17.00	0.0501
CH40	5200	8.79	17.00	0.0501
CH48	5240	9.11	17.00	0.0501

CH36

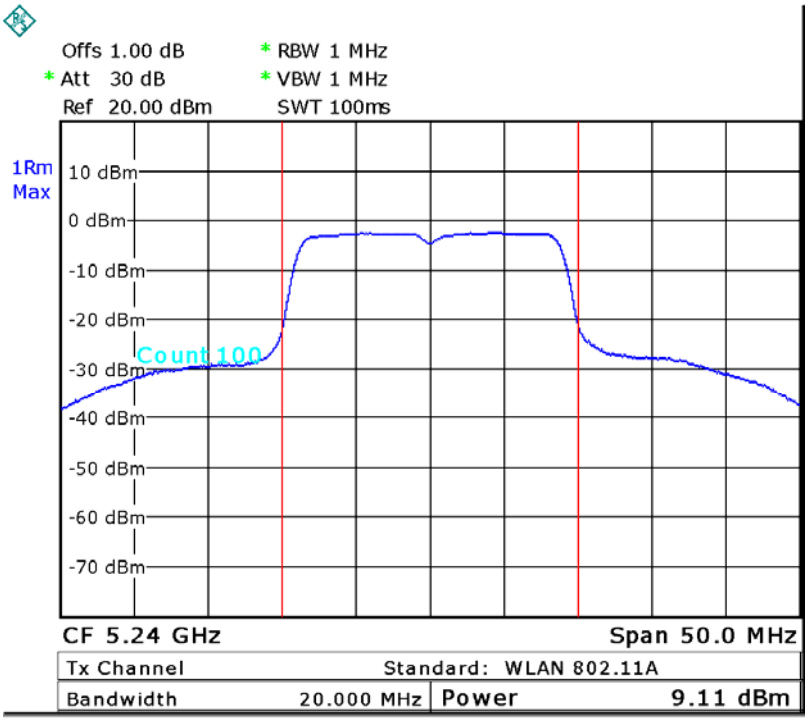


CH40



Date: 10.JUL.2013 09:05:59

CH48



Date: 10.JUL.2013 09:09:28

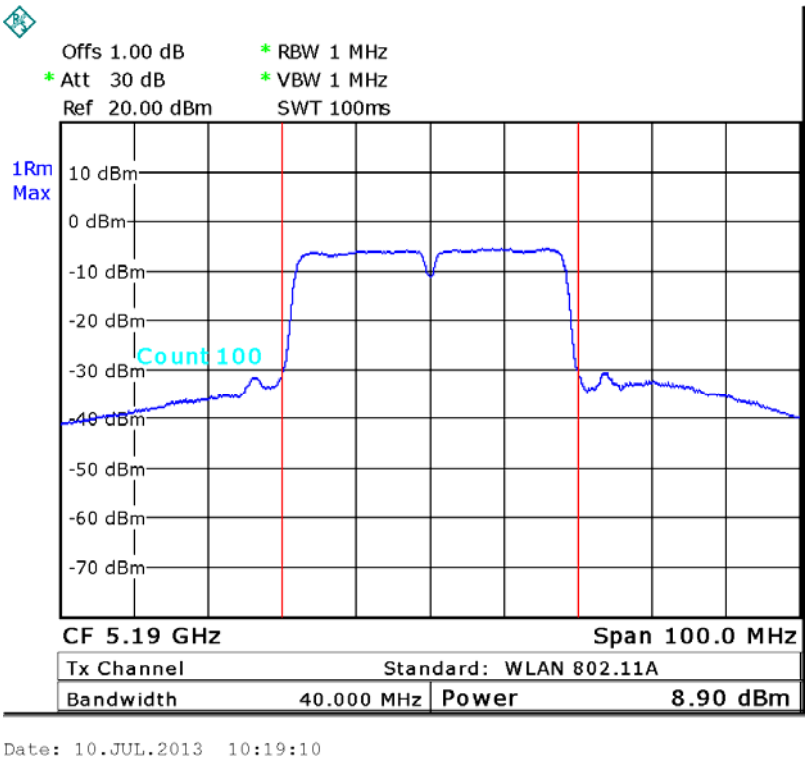
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/CH36, CH40, CH48-ANT 1+ANT 2		

Test Channel	Frequency (MHz)	Conducted Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH36	5180	12.10	17.00	0.0501
CH40	5200	11.71	17.00	0.0501
CH48	5240	12.14	17.00	0.0501

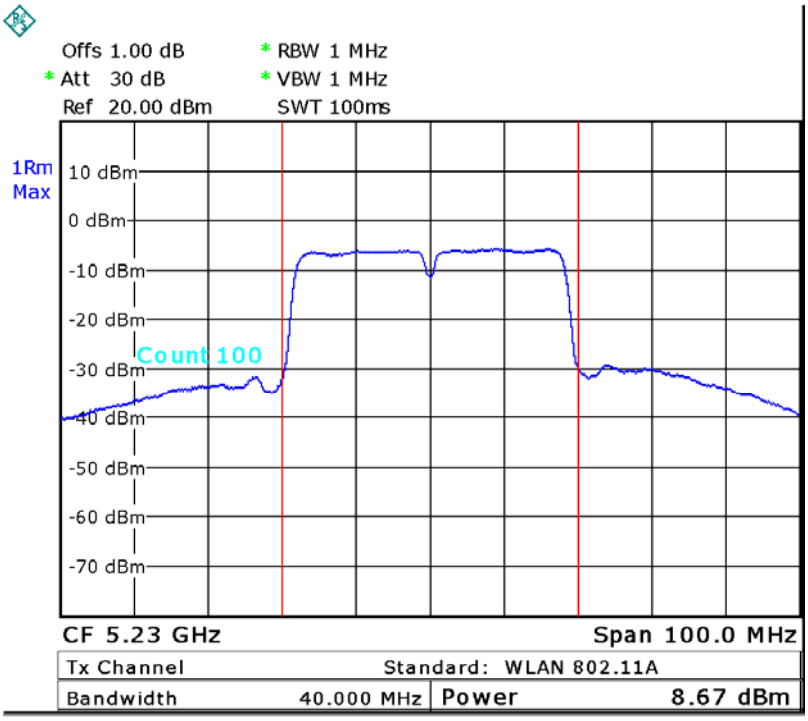
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/CH38, CH46 -ANT 1		

Test Channel	Frequency (MHz)	Conducted Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH38	5190	8.90	17.00	0.0501
CH46	5230	8.67	17.00	0.0501

CH38



CH46

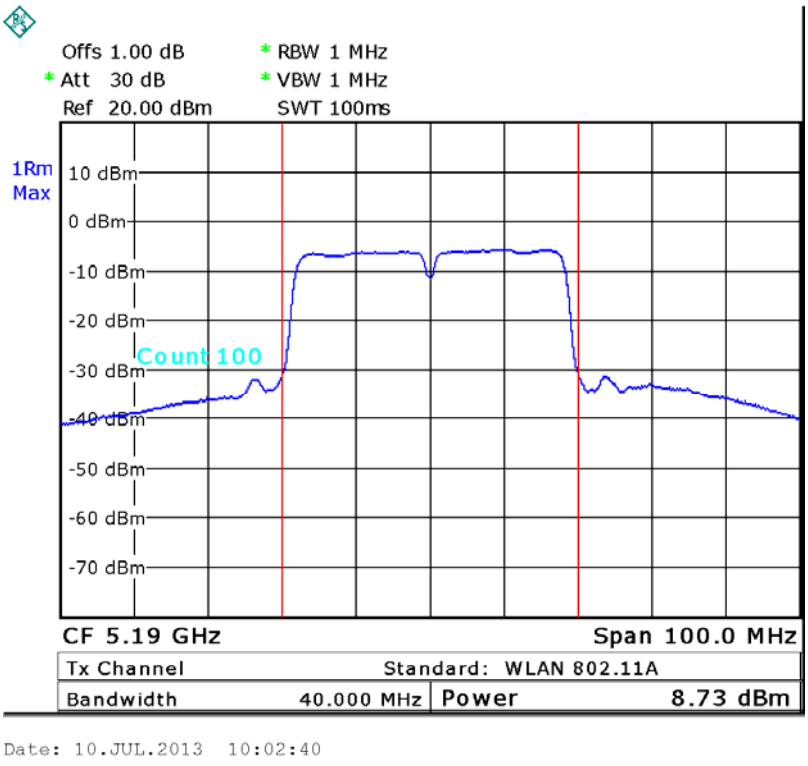


Date: 10.JUL.2013 10:18:19

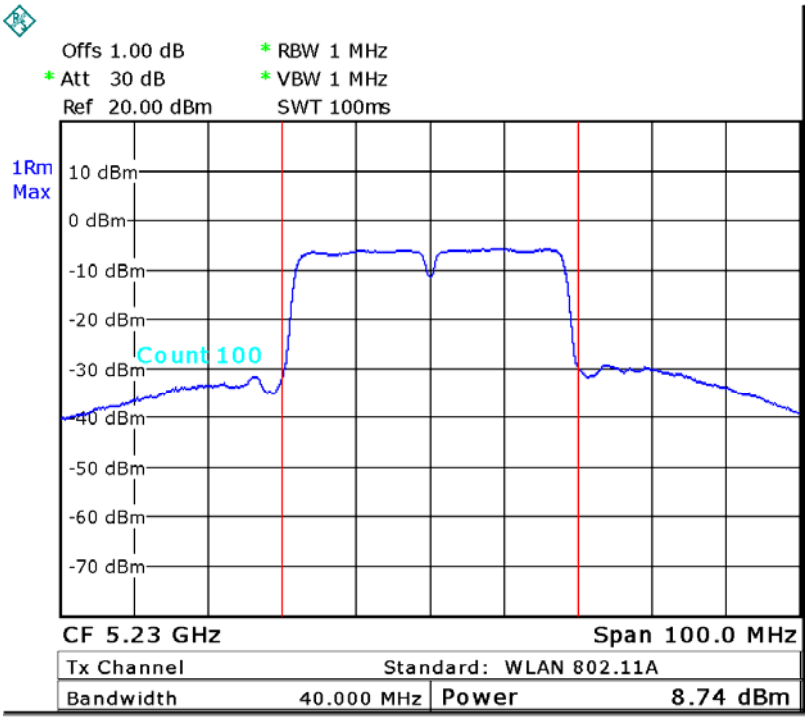
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/CH38, CH46 -ANT 2		

Test Channel	Frequency (MHz)	Conducted Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH38	5190	8.73	17.00	0.0501
CH46	5230	8.74	17.00	0.0501

CH38



CH46


Offs 1.00 dB
* RBW 1 MHz
* Att 30 dB
* VBW 1 MHz
Ref 20.00 dBm
SWT 100ms
1Rm
Max
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Count 100
CF 5.23 GHz
Span 100.0 MHz
Tx Channel
Standard: WLAN 802.11A
Bandwidth
40.000 MHz
Power
8.74 dBm
Date: 10.JUL.2013 10:05:18

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/CH38, CH46-ANT 1+ANT 2		

Test Channel	Frequency (MHz)	Conducted Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH38	5190	11.83	17.00	0.0501
CH46	5230	11.72	17.00	0.0501

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E ; RSS-210			
Test Item	Limit	Frequency Range (MHz)	Result
Antenna conducted Spurious Emission	-27 dBm/1MHz	5150 – 5250	PASS

7.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov.26.2012	Nov.26.2013

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

7.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

Spectrum Parameter	Setting
Attenuation	Auto
RB	1000 kHz
VB	1000 kHz
Trace	Max Hold
Sweep Time	Auto

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP

7.1.5 EUT OPERATION CONDITIONS

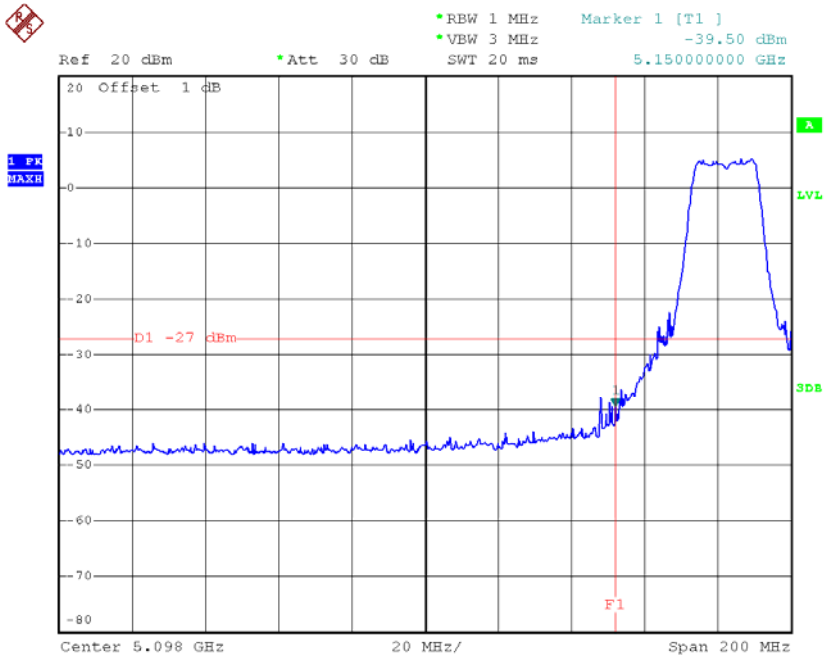
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.6 TEST RESULTS

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX A Mode/ CH36, CH40, CH48		

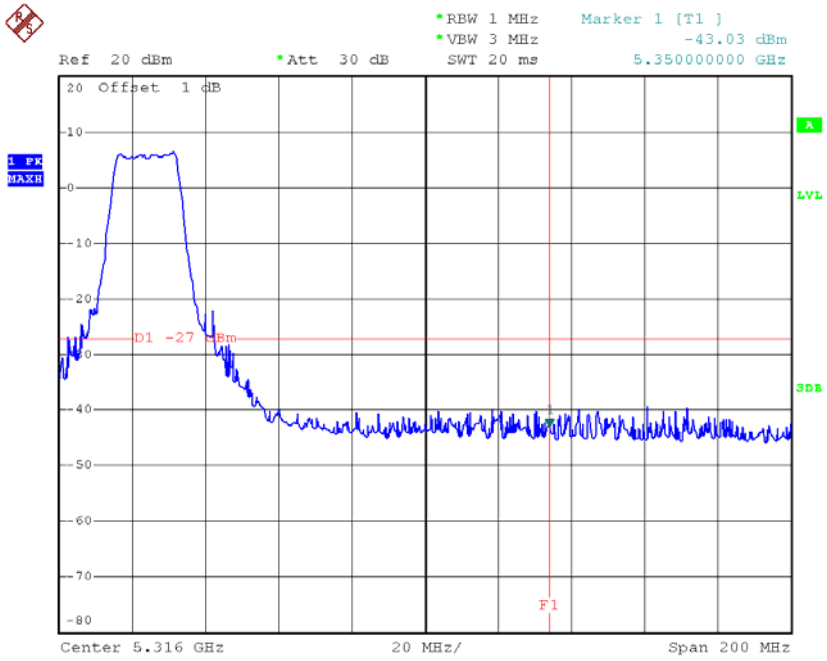
Channel of Worst Data: CH36			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5150.00	-39.50	5350.00	-43.03
Limit: -27 dBm/1MHz Result:PASS			
Measurement method: S.A Read value+Ant gain+cable loss			

TX mode CH36



Date: 18.AUG.2013 11:59:17

TX mode CH48

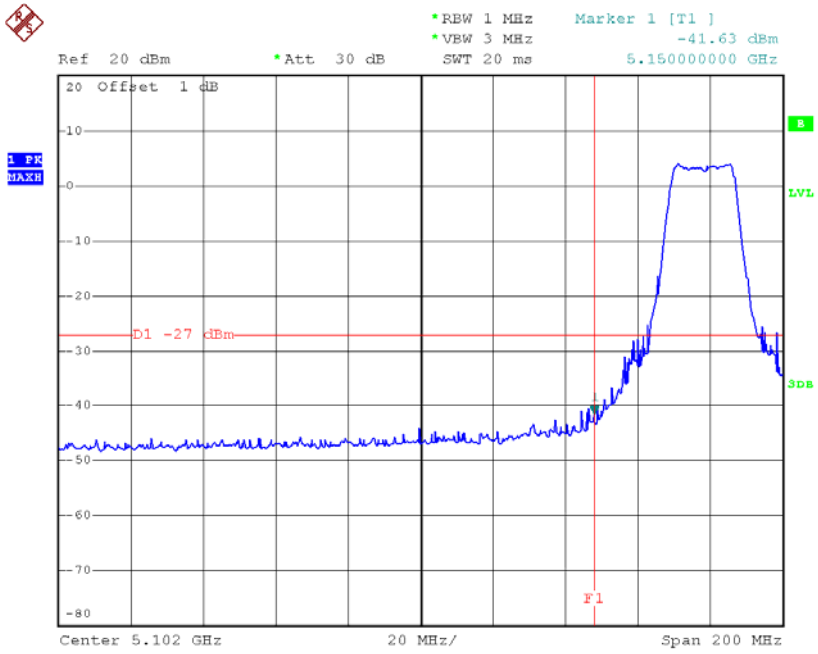


Date: 18.AUG.2013 12:00:25

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/ CH36, CH40 , CH48-ANT 1		

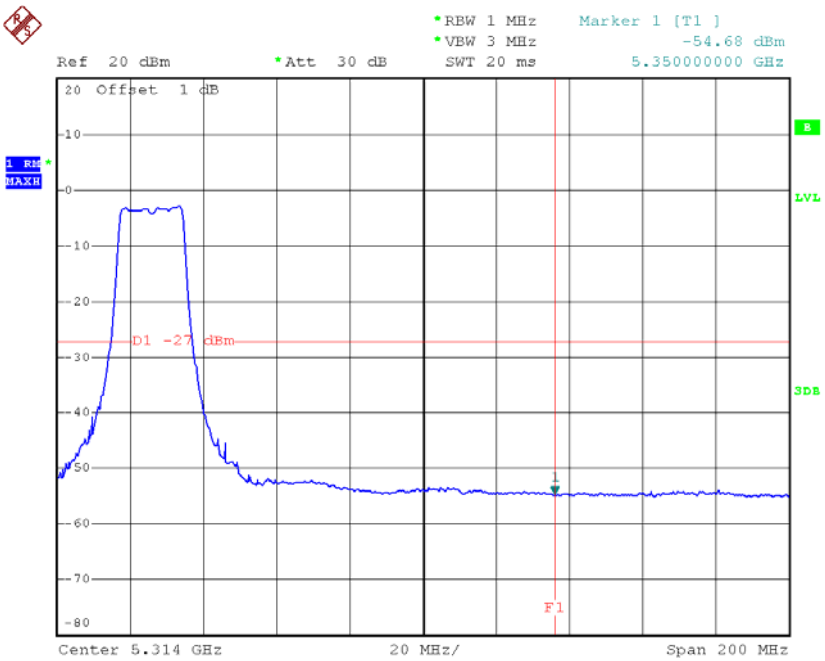
Channel of Worst Data: CH36			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5150.00	-41.63	5350.00	-54.68
Limit: -27 dBm/1MHz Result:PASS			
Measurement method: S.A Read value+Ant gain+cable loss			

TX mode CH36



Date: 18.AUG.2013 14:05:48

TX mode CH48

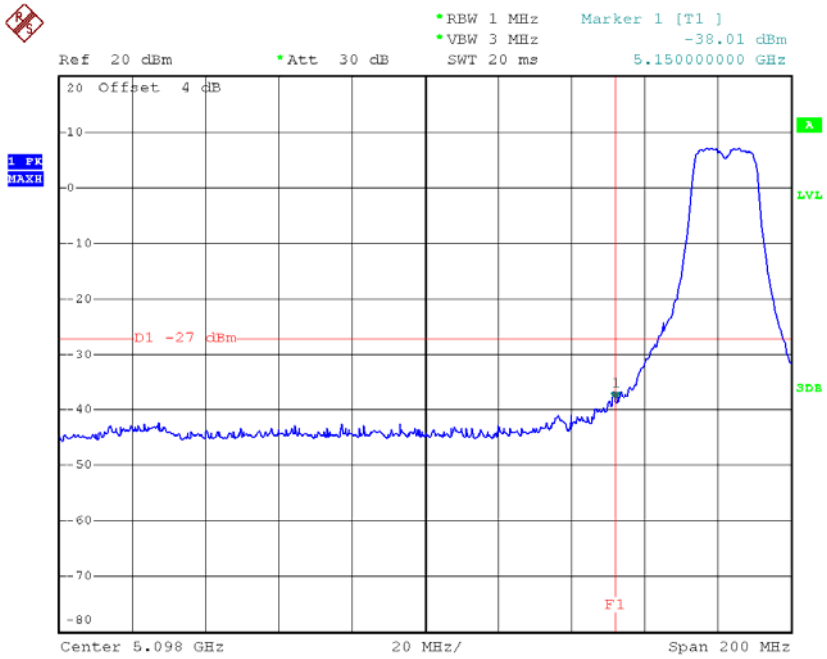


Date: 18.AUG.2013 14:52:29

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/ CH36, CH40 , CH48-ANT 2		

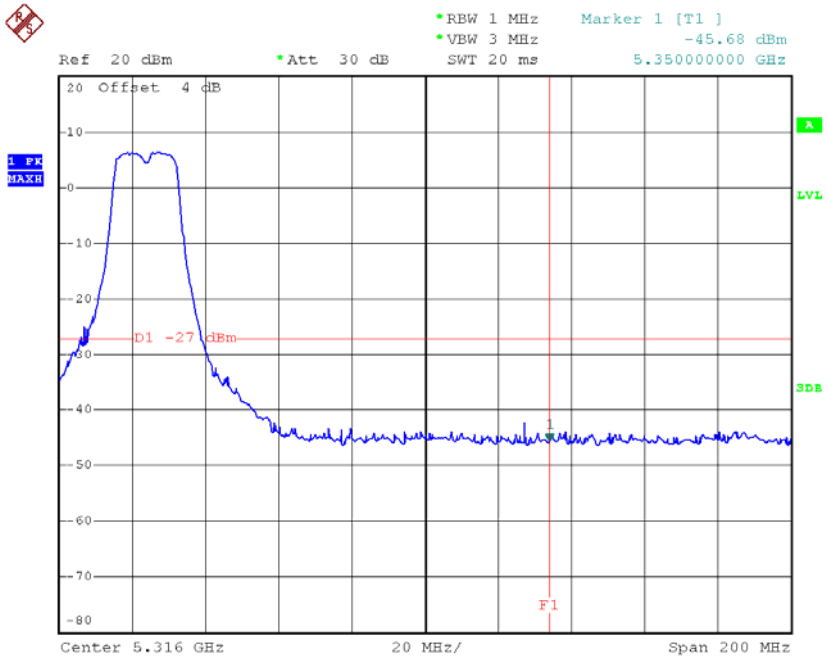
Channel of Worst Data: CH36			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5150.00	-38.01	5350.00	-45.68
Limit: -27 dBm/1MHz Result:PASS			
Measurement method: S.A Read value+Ant gain+cable loss			

TX mode CH36



Date: 18.AUG.2013 15:38:41

TX mode CH48

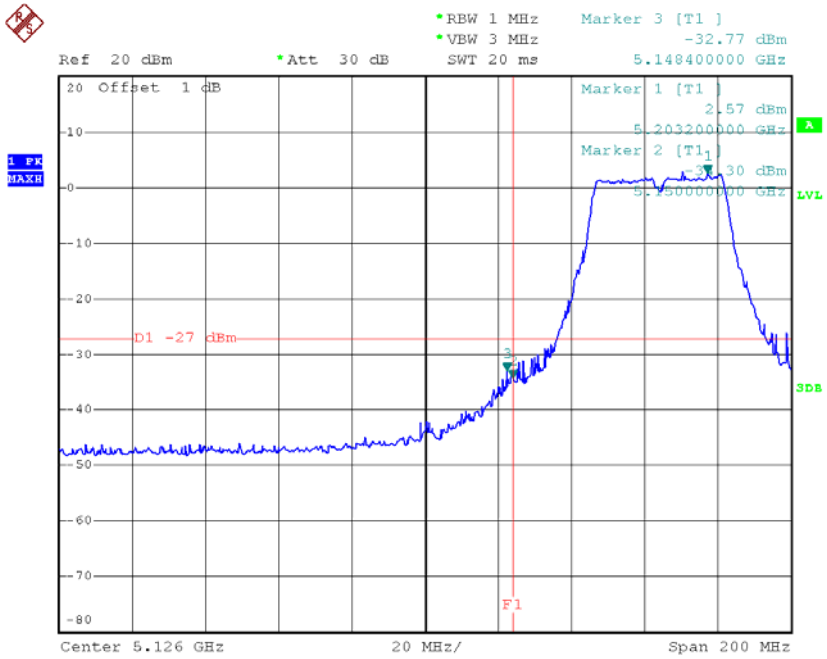


Date: 18.AUG.2013 15:46:43

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/ CH38, CH46-ANT 1		

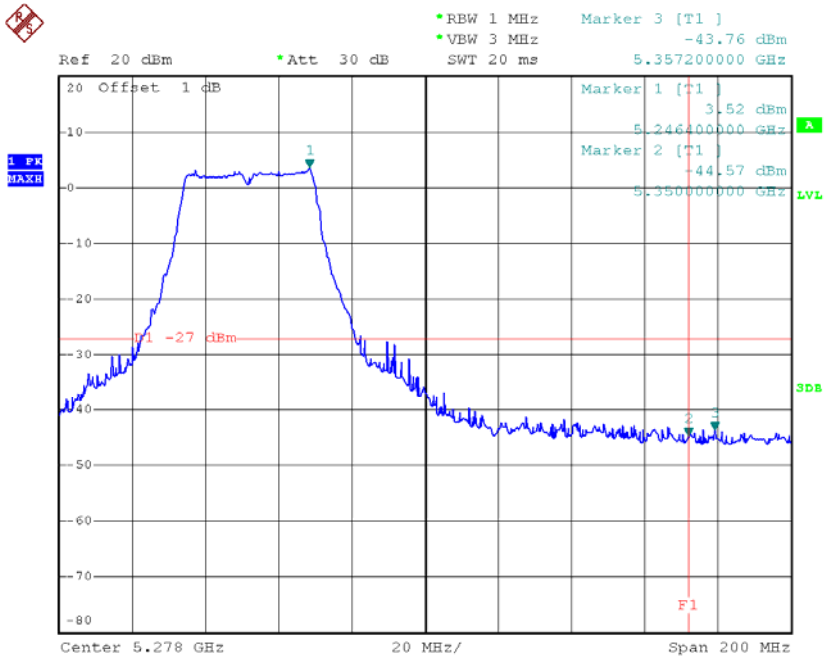
Channel of Worst Data: CH38			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5148.40	-32.77	5357.20	-43.76
Limit: -27 dBm/1MHz Result:PASS			
Measurement method: S.A Read value+Ant gain+cable loss			

TX mode CH38



Date: 18.AUG.2013 10:12:47

TX mode CH46

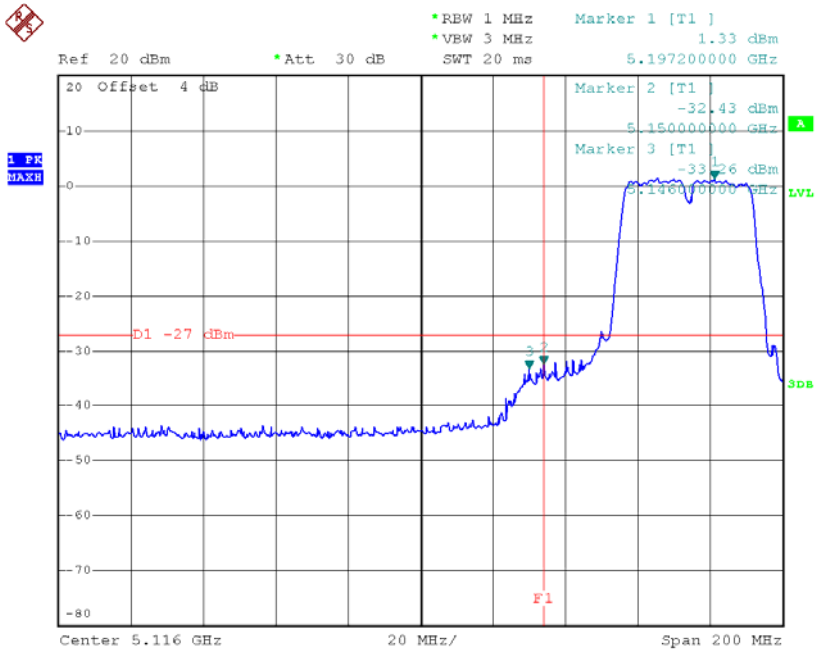


Date: 18.AUG.2013 10:26:55

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/ CH38, CH46-ANT 2		

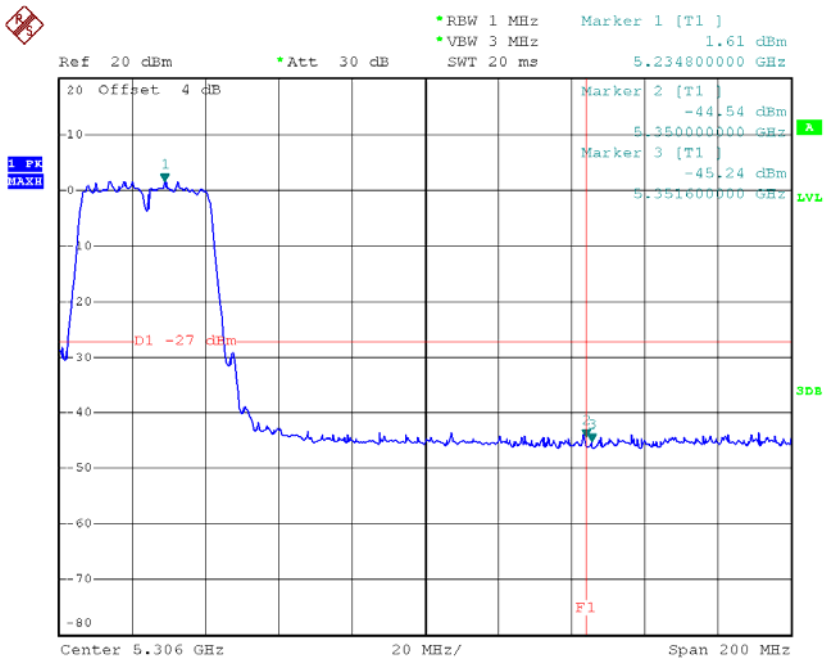
Channel of Worst Data: CH38			
The max. radio frequency power in any 1000kHz bandwidth outside the frequency band		The max. radio frequency power in any 1000kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5150.00	-32.43	5350.00	-44.54
Limit: -27 dBm/1MHz Result:PASS			
Measurement method: S.A Read value+Ant gain+cable loss			

TX mode CH38



Date: 18.AUG.2013 16:18:18

TX mode CH46



Date: 18.AUG.2013 16:25:36

8. POWER SPECTRAL DENSITY TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E ; RSS-210			
Test Item	Limit	Frequency Range (MHz)	Result
Power Spectral Density	4 dBm	5150 - 5250	PASS

8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov.26.2012	Nov.26.2013

Remark: “N/A” denotes no model name, serial no. or calibration specified.

8.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

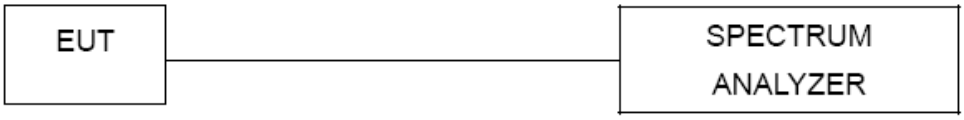
b.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	= 1 MHz.
VB	≥ 3 MHz.
Detector	RMS
Trace	Max Hold
Sweep Time	Auto

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP



8.1.5 EUT OPERATION CONDITIONS

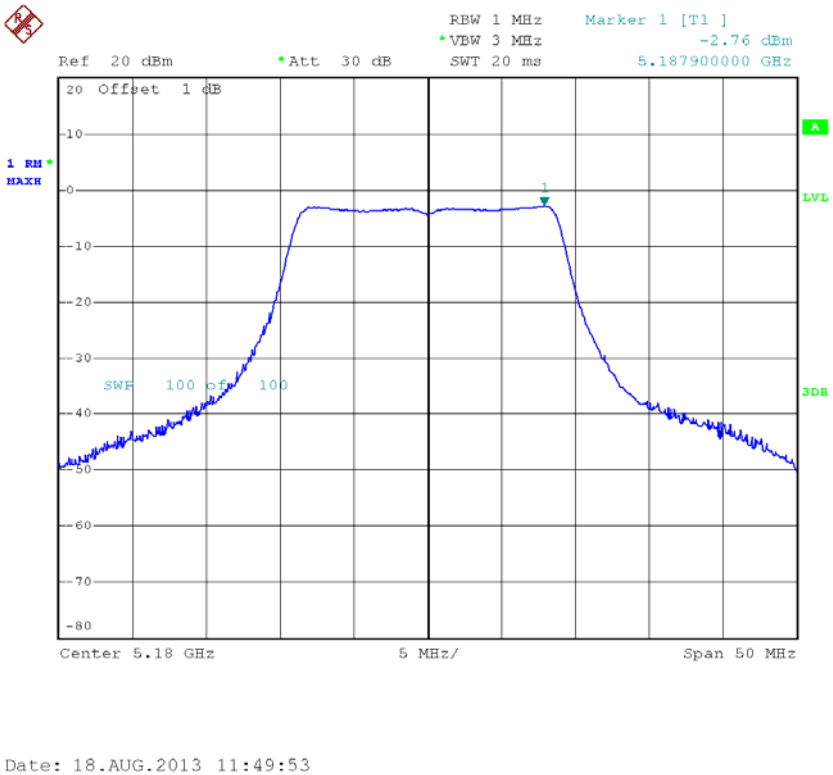
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.6 TEST RESULTS

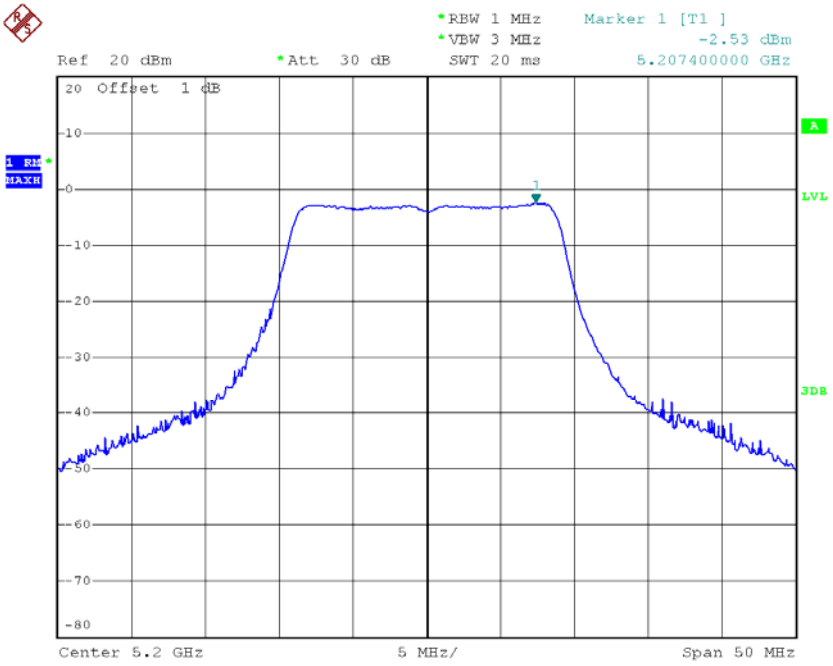
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX A Mode/CH36, CH40, CH48		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH36	5180	-2.16	4.00
CH40	5200	-2.53	4.00
CH48	5240	-1.88	4.00

CH36

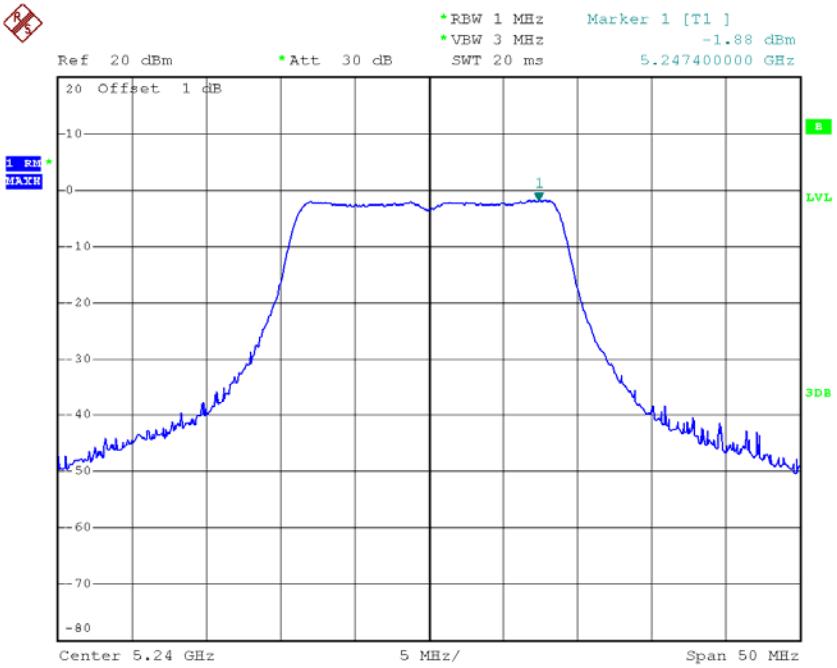


CH40



Date: 18.AUG.2013 12:05:47

CH48

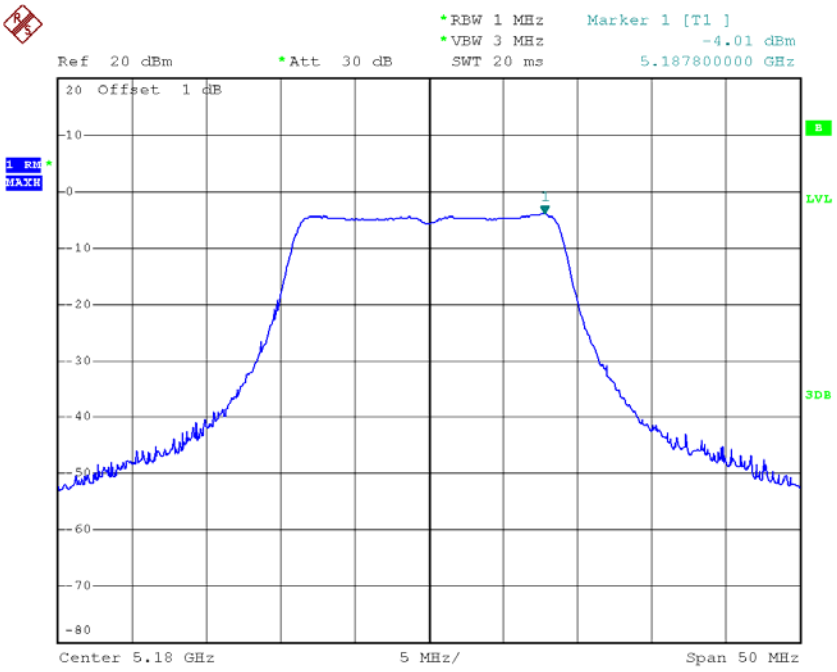


Date: 18.AUG.2013 12:11:32

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25 °C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/CH36, CH40, CH48-ANT 1		

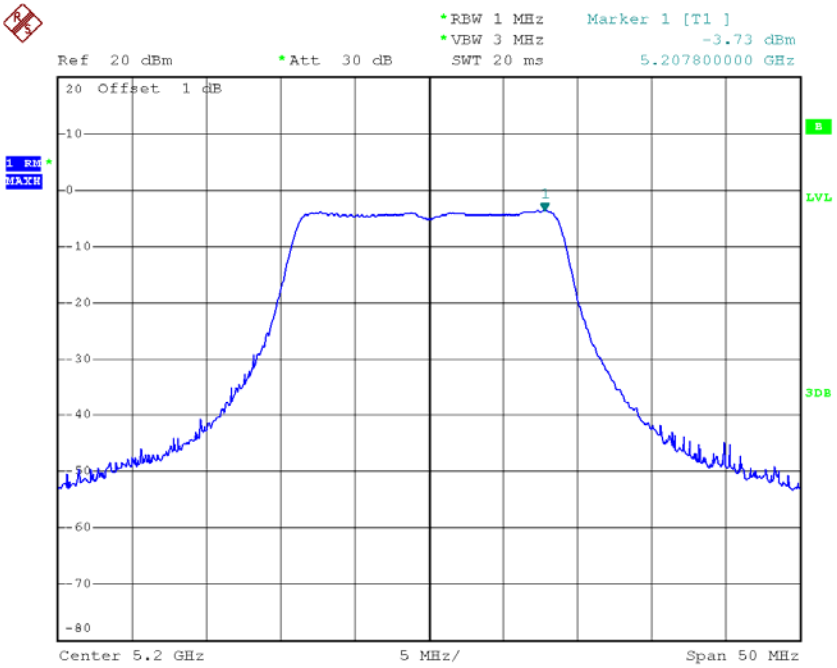
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH36	5180	-4.01	4.00
CH40	5200	-3.73	4.00
CH48	5240	-2.82	4.00

CH36



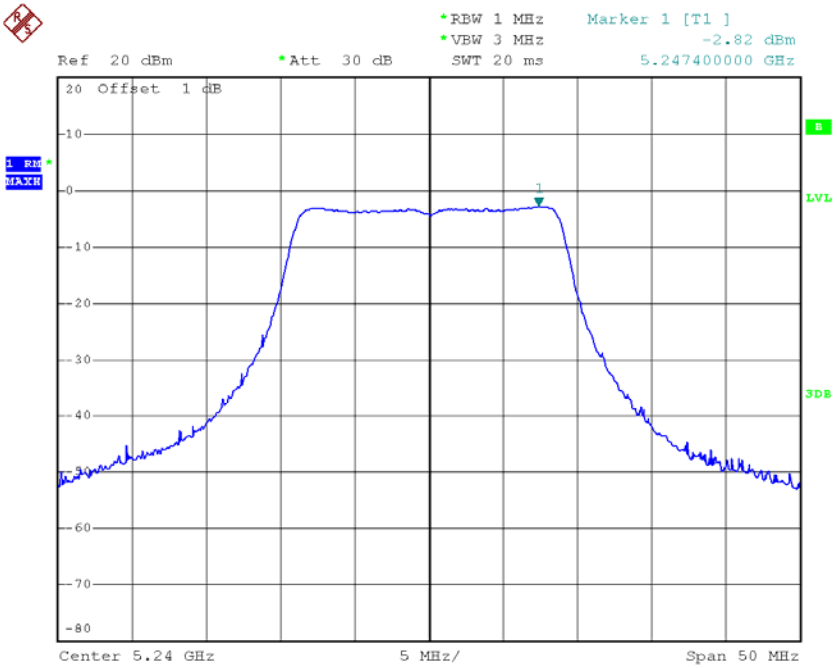
Date: 18.AUG.2013 14:06:35

CH40



Date: 18.AUG.2013 14:50:17

CH48

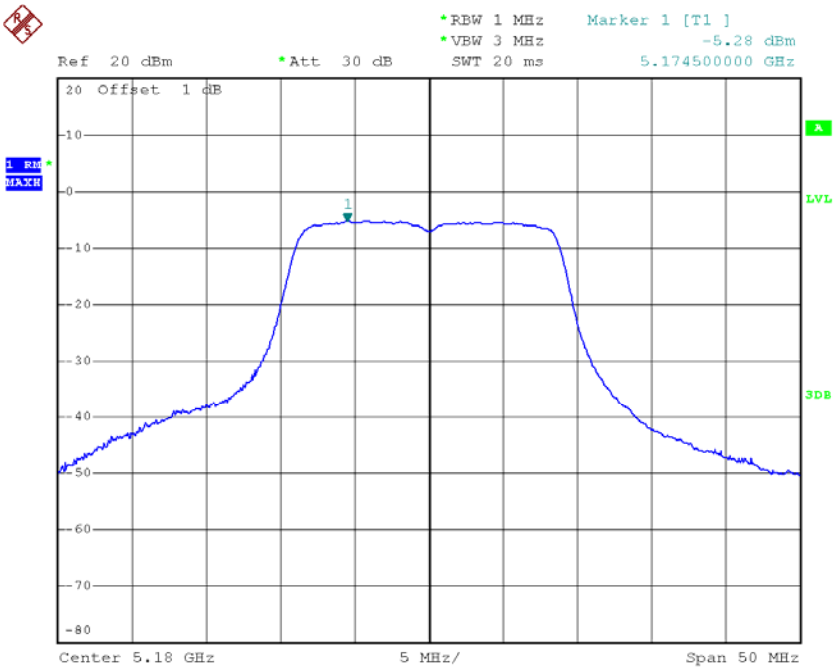


Date: 18.AUG.2013 14:50:47

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/CH36, CH40, CH48-ANT 2		

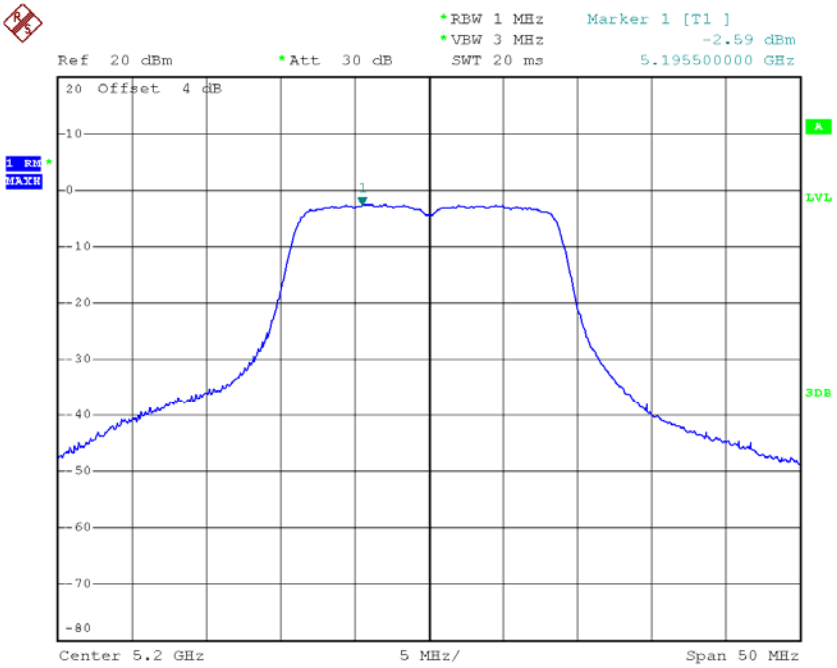
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH36	5180	-5.28	4.00
CH40	5200	-2.59	4.00
CH48	5240	-1.83	4.00

CH36



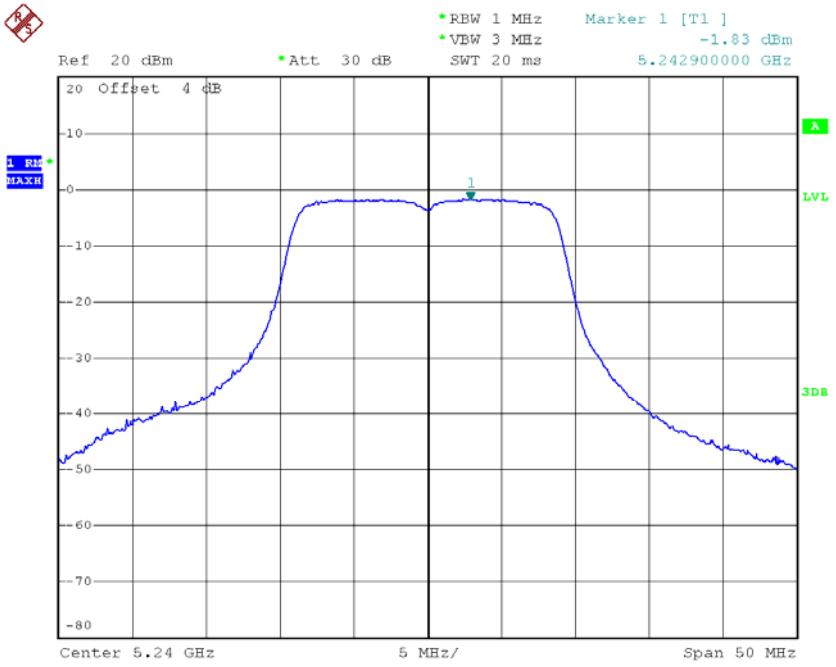
Date: 18.AUG.2013 15:37:03

CH40



Date: 18.AUG.2013 15:41:44

CH48



Date: 18.AUG.2013 15:43:26

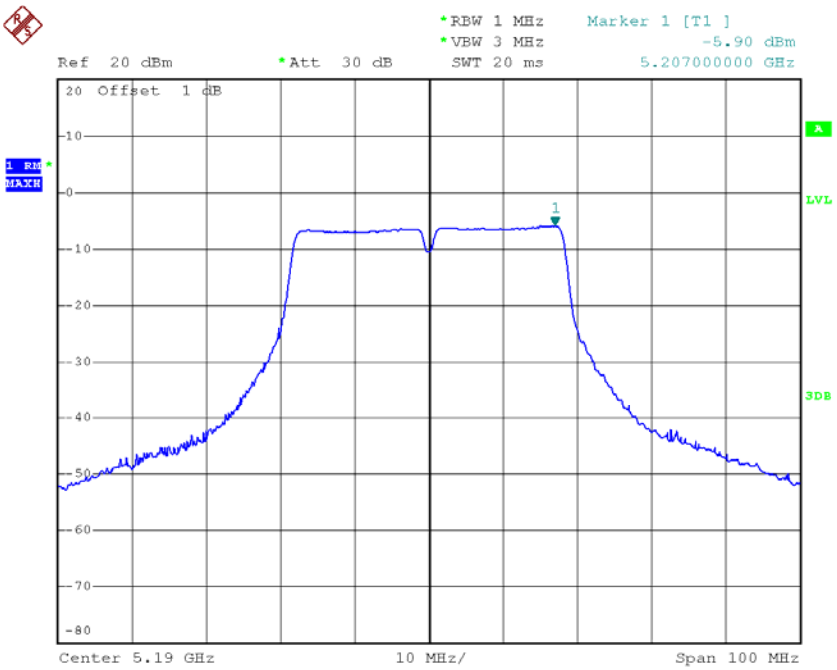
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/CH36, CH40, CH48-ANT 1+ANT 2		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH36	5180	-1.59	4.00
CH40	5200	-0.11	4.00
CH48	5240	0.71	4.00

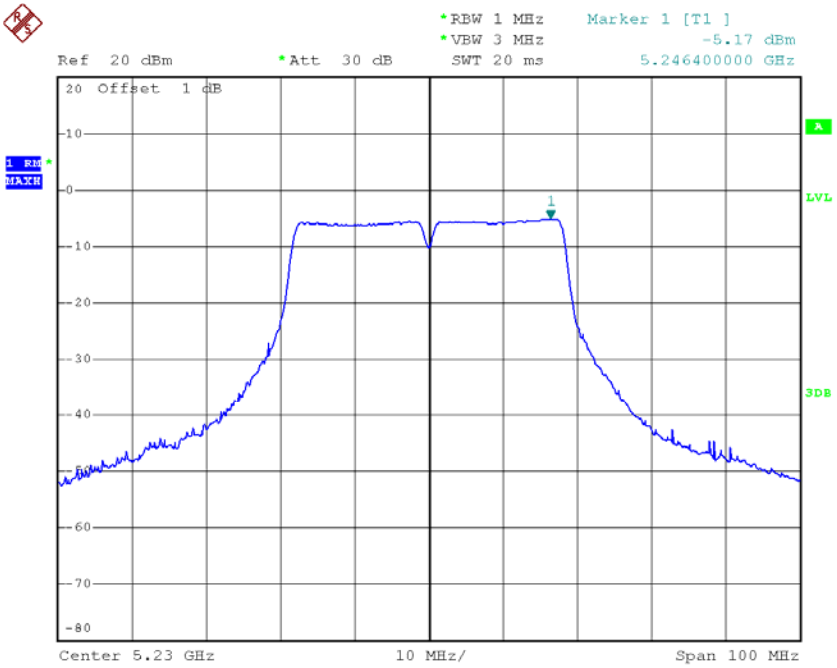
EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/CH38, CH46 -ANT 1		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH38	5190	-5.90	4.00
CH46	5230	-5.17	4.00

CH38



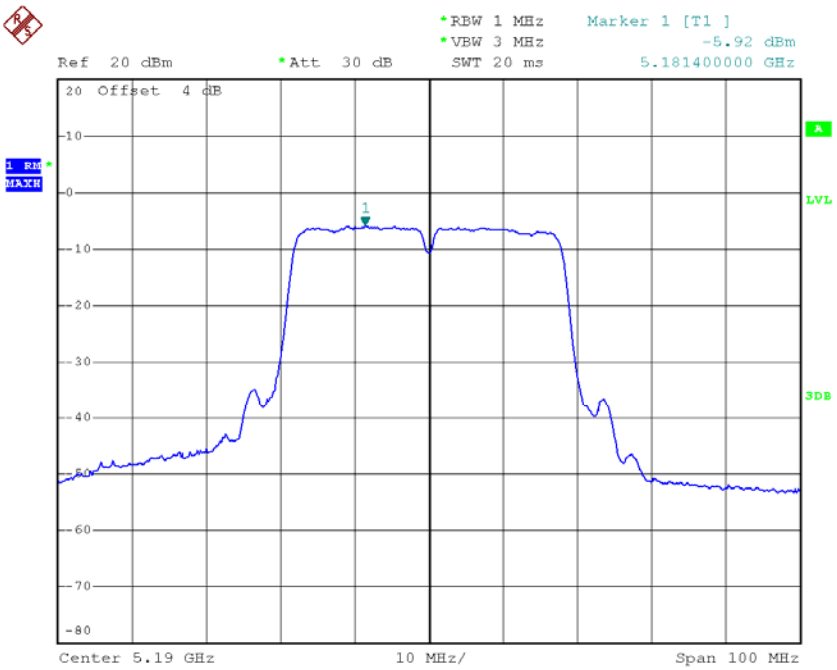
CH46


*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-5.17 dBm
5.246400000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
1 RM
MAXH
LVL
3DB
Center 5.23 GHz
10 MHz/
Span 100 MHz
Date: 18.AUG.2013 10:21:10

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/CH38, CH46 -ANT 2		

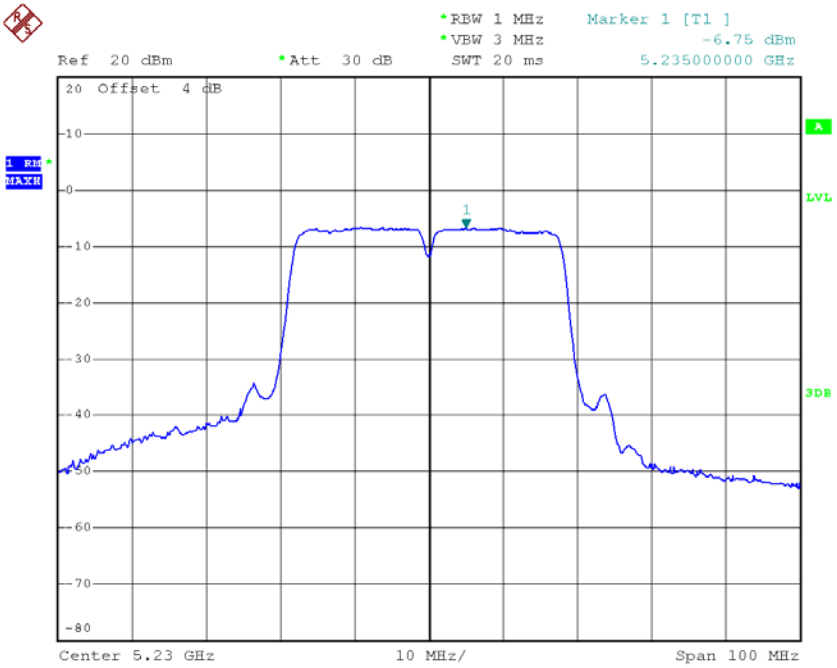
Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH38	5190	-5.92	4.00
CH46	5230	-6.75	4.00

CH38



Date: 18.AUG.2013 16:20:07

CH46


*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-6.75 dBm
5.235000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 4 dB
1 RM
MAXH
LVL
3DB
Center 5.23 GHz
10 MHz/
Span 100 MHz
Date: 18.AUG.2013 16:24:14

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/CH38, CH46 –ANT 1+ ANT 2		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH38	5190	-2.90	4.00
CH46	5230	-2.88	4.00

9. PEAK EXCURSION MEASUREMENT

9.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E ; RSS-210			
Test Item	Limit	Frequency Range (MHz)	Result
Peak Excursion Measurement	13 dB	5150 - 5250	PASS

9.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Next Calibration
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov.26.2012	Nov.26.2013

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

9.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz (Peak Trace) / 1000 kHz (Average Trace)
VB	3000 kHz (Peak Trace) / 3000 kHz (Average Trace)
Detector	Peak (Peak Trace) / RMS (Average Trace)
Trace	Max Hold
Sweep Time	60s

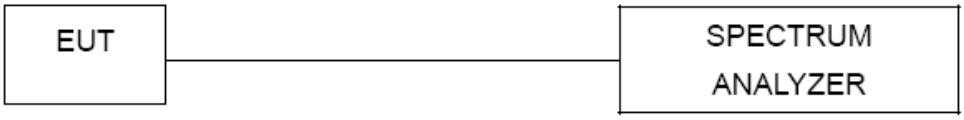
c. Peak Trace: Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and maxhold settings.

d. Average Trace: set RBW = 1 MHz, VBW = 3 MHz with RMS detector and trace average across 100 traces in power averaging mode.

9.1.3 DEVIATION FROM STANDARD

No deviation.

9.1.4 TEST SETUP



9.1.5 EUT OPERATION CONDITIONS

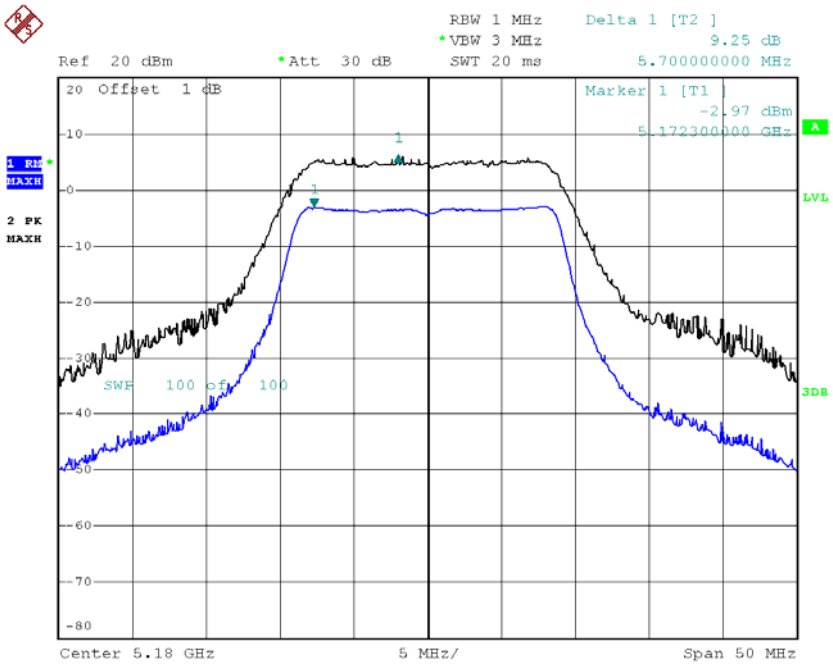
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

9.1.6 TEST RESULTS

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX A Mode/CH36, CH40, CH48		

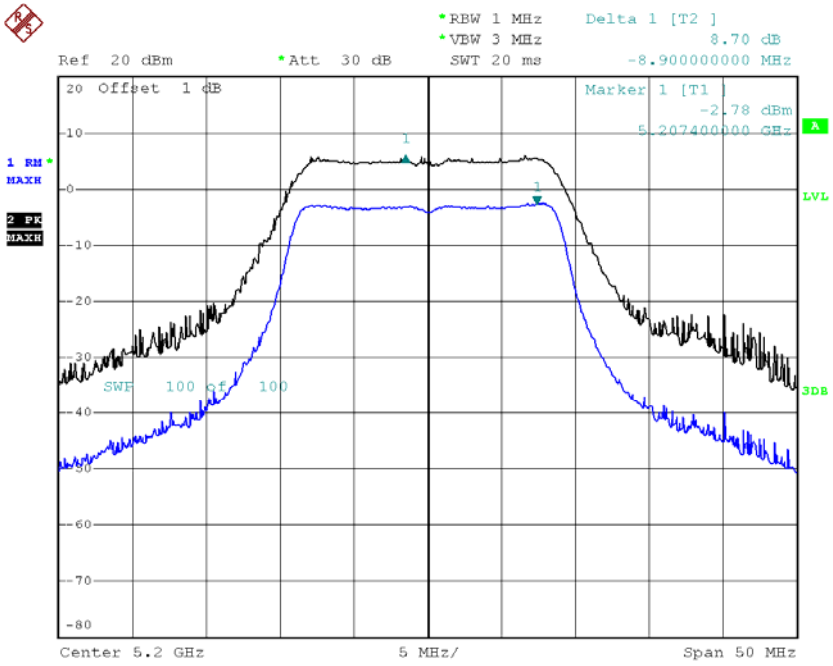
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH36	5180	9.25	13
CH40	5200	8.70	13
CH48	5240	9.24	13

CH36



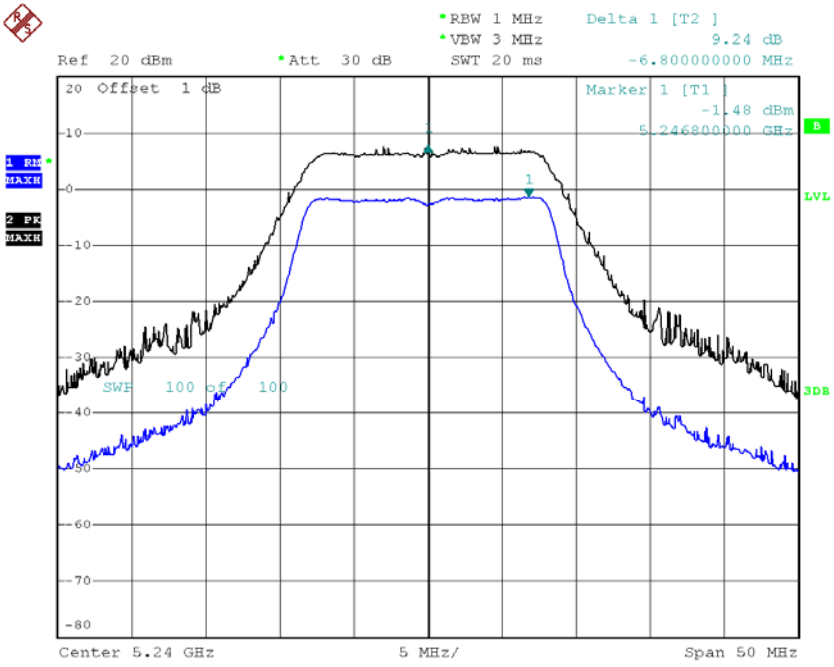
Date: 18.AUG.2013 11:48:18

CH40



Date: 18.AUG.2013 12:06:25

CH48

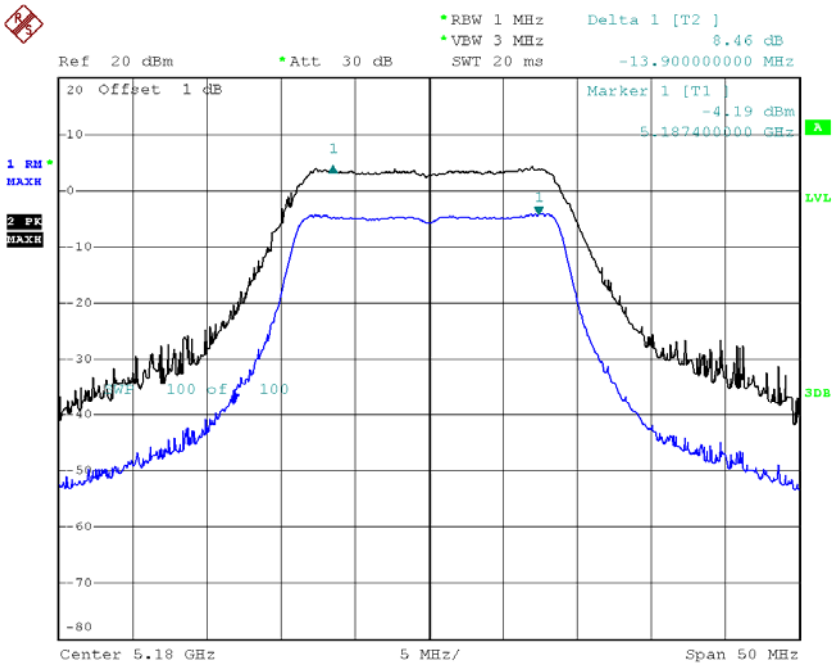


Date: 18.AUG.2013 11:31:46

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/CH36, CH40, CH48-ANT 1		

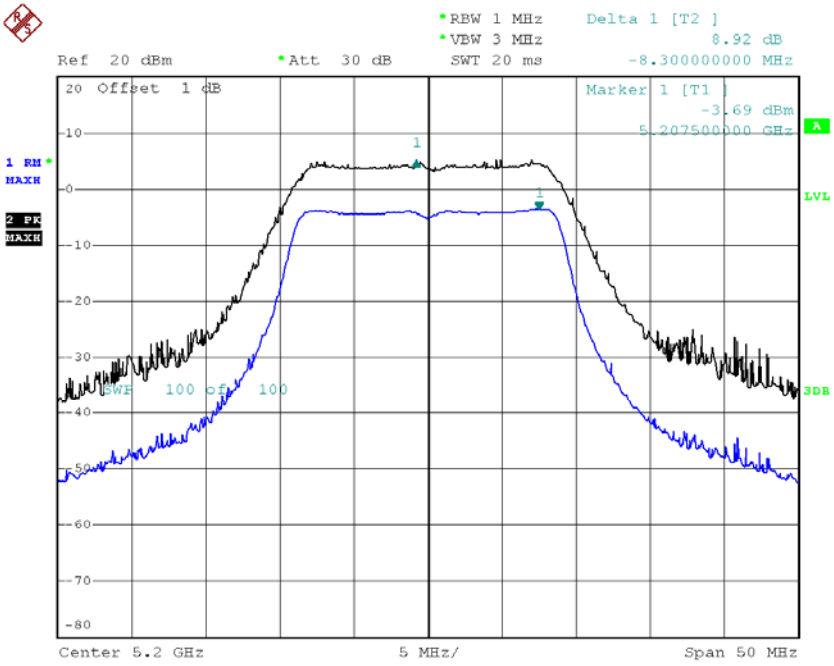
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH36	5180	8.46	13
CH40	5200	8.92	13
CH48	5240	9.04	13

CH36



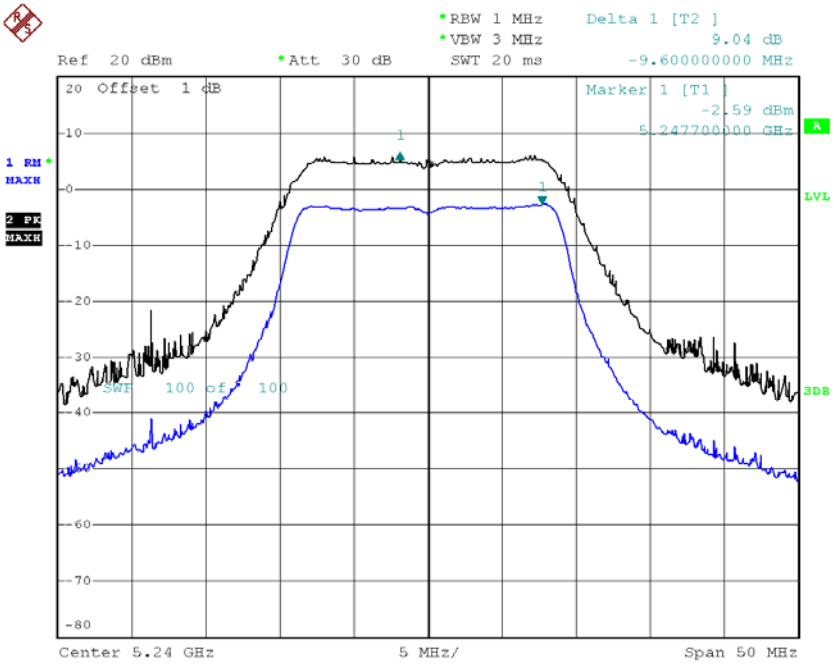
Date: 18.AUG.2013 14:06:57

CH40



Date: 18.AUG.2013 14:48:59

CH48

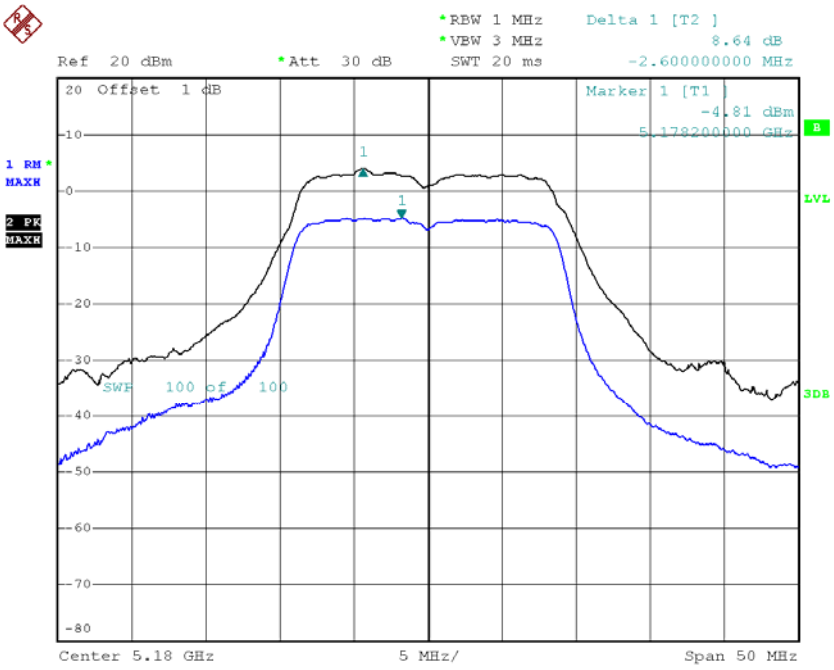


Date: 18.AUG.2013 14:51:22

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25 °C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N20 Mode/CH36, CH40, CH48-ANT 2		

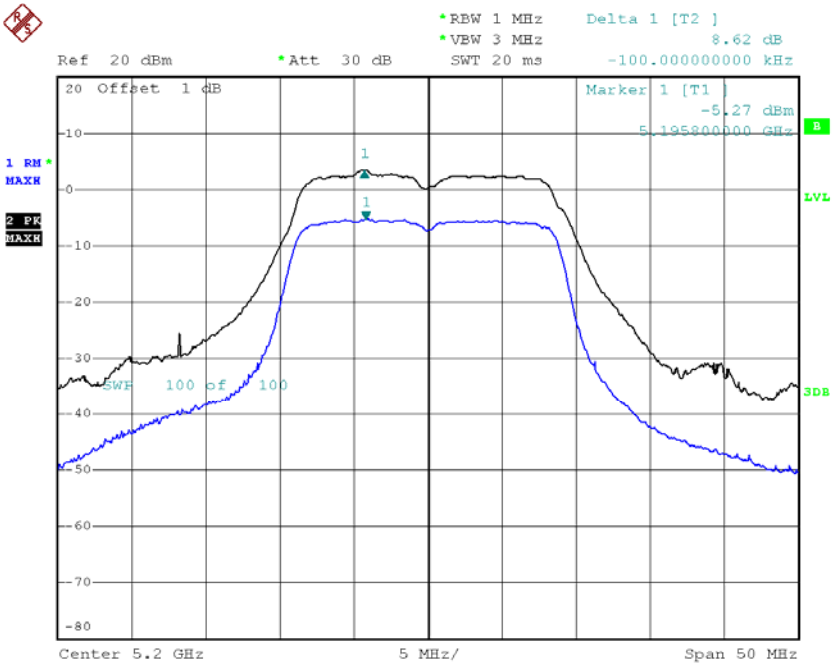
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH36	5180	8.64	13
CH40	5200	8.62	13
CH48	5240	8.21	13

CH36



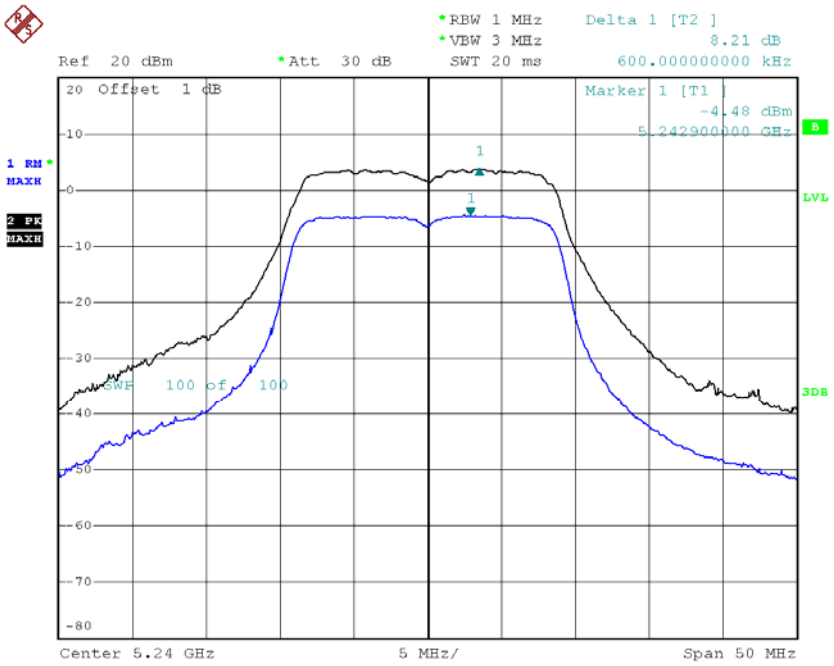
Date: 18.AUG.2013 15:33:26

CH40



Date: 18.AUG.2013 15:40:24

CH48

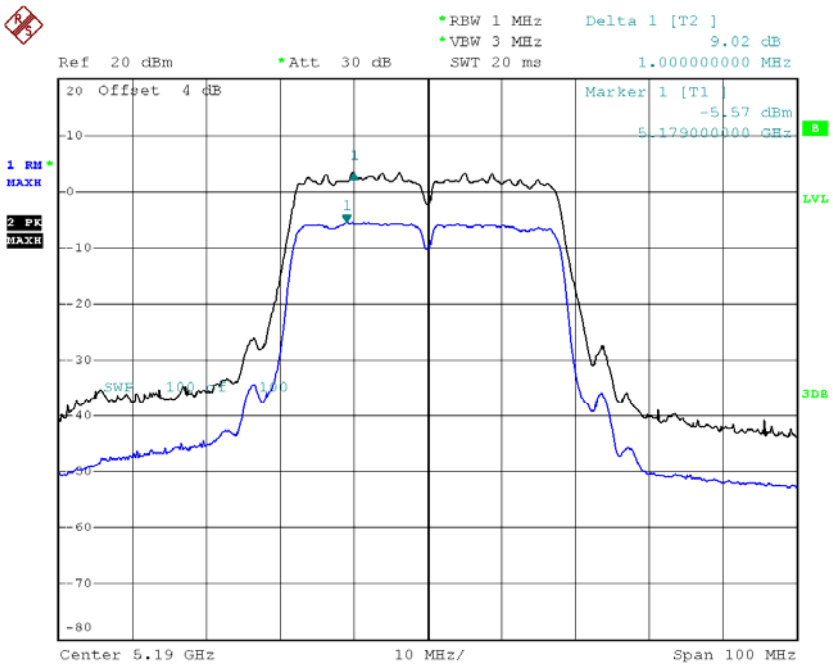


Date: 18.AUG.2013 15:43:16

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/CH38, CH46-ANT 1		

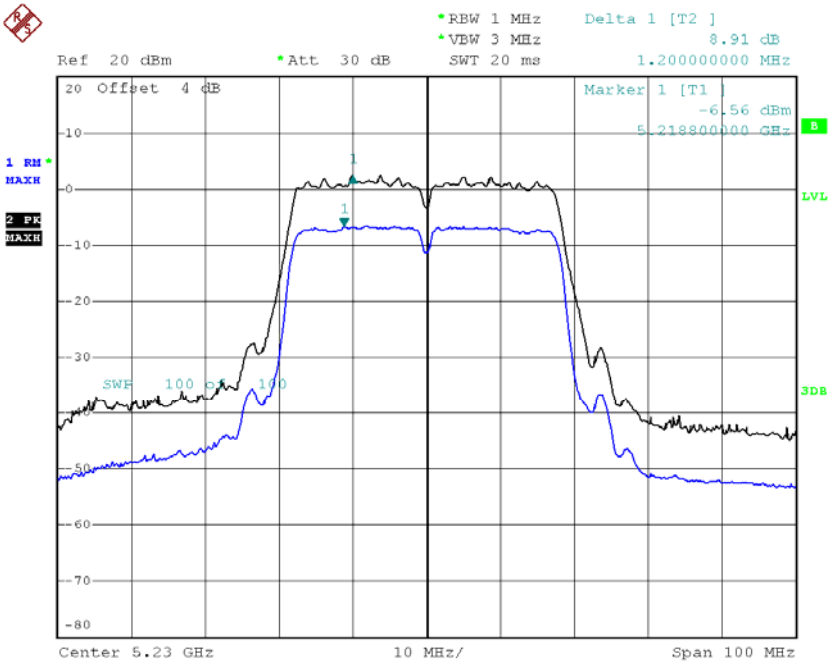
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH38	5190	9.02	13
CH46	5230	8.91	13

CH38



Date: 18.AUG.2013 16:15:58

CH46

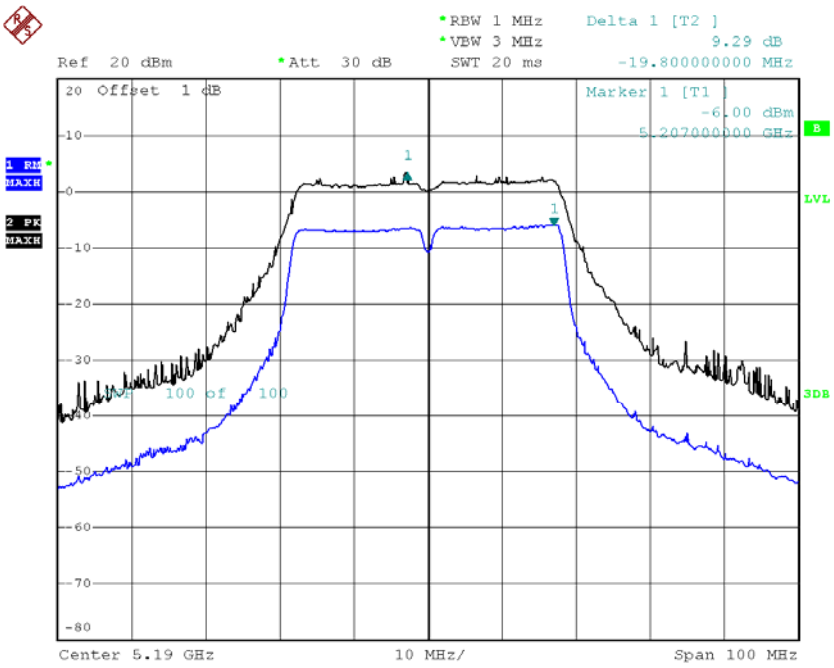


Date: 18.AUG.2013 16:22:33

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1/TX N40 Mode/CH38, CH46-ANT 2		

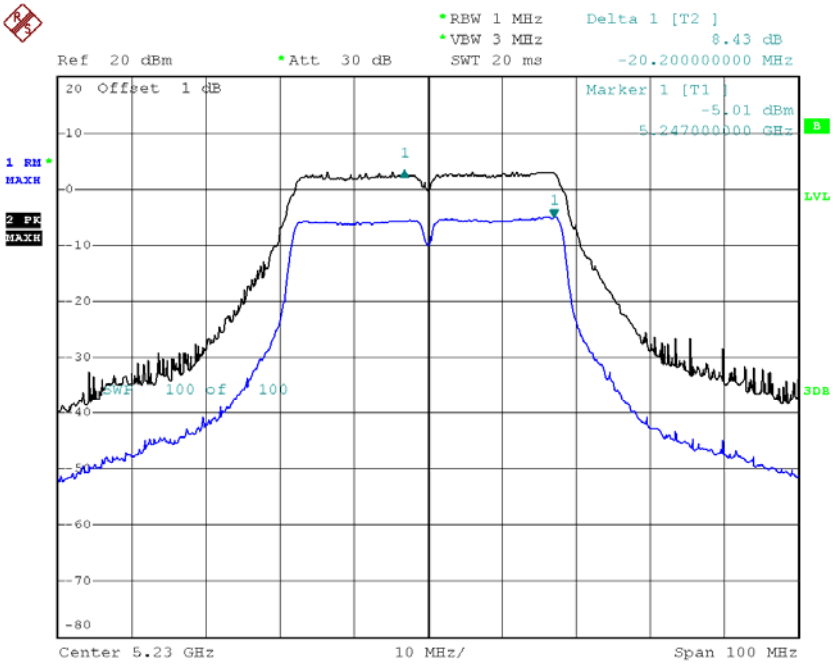
Test Channel	Frequency (MHz)	Peak Excursion (dB)	LIMIT (dB)
CH38	5190	9.29	13
CH46	5230	8.43	13

CH38



Date: 18.AUG.2013 10:10:25

CH46



Date: 18.AUG.2013 10:18:42

10. FREQUENCY STABILITY MEASUREMENT

10.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart E ; RSS-210			
Test Item	Limit	Frequency Range (MHz)	Result
Frequency Stability	specified in the user's manual	5150 – 5250	PASS

10.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Nov. 26.2013
2	Precision Oven Tester	HOLINK	H-T-1F-D	BA03101701	May.25.2014

Remark: "N/A" denotes no model name, serial no. or calibration specified.
All calibration period of Equipment List is One Year.

10.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RB	10 kHz
VB	10 kHz
Sweep Time	Auto

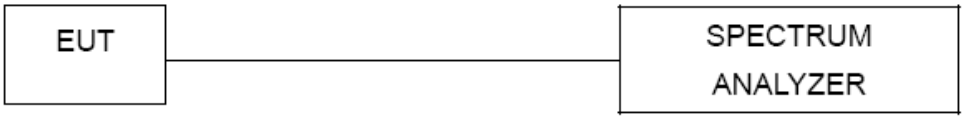
c. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

d. user manual temperature is 0°C~35°C.

10.1.3 DEVIATION FROM STANDARD

No deviation.

10.1.4 TEST SETUP



10.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

10.1.6 TEST RESULTS

EUT:	Wireless router	Model Name :	DIR-825
Temperature:	25°C	Relative Humidity:	58 %
Test Voltage:	AC 120V/60Hz		
Test Mode :	Band 1		

Voltage vs. Frequency Stability

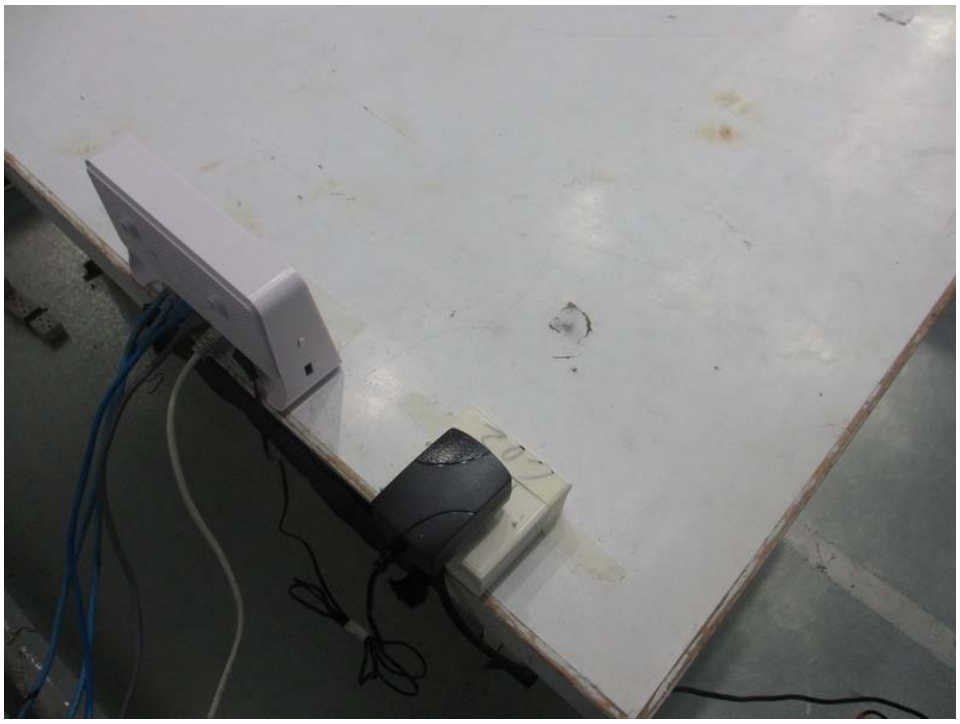
Voltage	Measurement Frequency (MHz)
(V)	5180
138	5179.982000
120	5179.985000
102	5179.984000
Max. Deviation (MHz)	0.018000
Max. Deviation (ppm)	3.47

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(℃)	5180
0	5179.989000
10	5179.986000
20	5179.983000
30	5179.986000
40	5179.983000
Max. Deviation (MHz)	0.017000
Max. Deviation (ppm)	3.28

11. EUT TEST PHOTO

Conducted Measurement Photos



Radiated Measurement Photos