



Neutron Engineering Inc.

2.4 GHz WLAN Test Report

FCC ID: QKMQDSP2060INF

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

Issued Date : Oct. 04, 2012
Project No. : 1208149
Equipment : MONDOCENTER
Model Name : INF-MCENTER

Applicant : Quanmax Inc.
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Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Aug. 23, 2012
Date of Test: Aug. 23, 2012 ~ Sep. 26, 2012

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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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Table of Contents

REPORT ISSUED HISTORY	6
1 CERTIFICATION	7
2 SUMMARY OF TEST RESULTS	8
2.1 TEST FACILITY	9
2.2 MEASUREMENT UNCERTAINTY	9
3 GENERAL INFORMATION	10
3.1 GENERAL DESCRIPTION OF EUT	10
3.2 DESCRIPTION OF TEST MODES	12
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING	14
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	15
3.5 DESCRIPTION OF SUPPORT UNITS	16
4 CONDUCTED EMISSION	17
4.1 LIMIT	17
4.2 MEASUREMENT INSTRUMENTS LIST	17
4.3 TEST PROCEDURES	18
4.4 TEST SETUP LAYOUT	18
4.5 DEVIATION FROM TEST STANDARD	18
4.6 EUT OPERATING CONDITIONS	19
4.7 TEST RESULTS	20
5 ANTENNA CONDUCTED SPURIOUS EMISSION	22
5.1 LIMIT	22
5.2 MEASUREMENT INSTRUMENTS LIST	22
5.3 TEST PROCEDURES	22
5.4 TEST SETUP LAYOUT	22
5.5 DEVIATION FROM TEST STANDARD	22
5.6 EUT OPERATING CONDITIONS	22
5.7 TEST RESULTS - 2400-2483.5 MHZ	23
5.8 TEST RESULTS - 5745-5850 MHZ	47
6 6 DB BANDWIDTH	65
6.1 LIMIT	65
6.2 MEASUREMENT INSTRUMENTS LIST	65
6.3 TEST PROCEDURES	65
6.4 TEST SETUP LAYOUT	65
6.5 DEVIATION FROM TEST STANDARD	65
6.6 EUT OPERATING CONDITIONS	65
6.7 TEST RESULTS - 2400-2483.5 MHZ	66
6.8 TEST RESULTS - 5745-5850 MHZ	78
7 MAXIMUM PEAK CONDUCTED OUTPUT POWER	88



Table of Contents

7.1	LIMIT	88
7.2	MEASUREMENT INSTRUMENTS LIST	88
7.3	TEST PROCEDURES	88
7.4	TEST SETUP LAYOUT	88
7.5	DEVIATION FROM TEST STANDARD	88
7.6	EUT OPERATING CONDITIONS	88
7.7	TEST RESULTS - 2400-2483.5 MHZ	89
7.8	TEST RESULTS - 5745-5850 MHZ	97
8	RADIATED SPURIOUS EMISSION (9 KHZ TO 1 GHZ)	104
8.1	LIMIT	104
8.2	MEASUREMENT INSTRUMENTS LIST	105
8.3	MEASURING INSTRUMENTS SETTING	105
8.4	TEST PROCEDURES	106
8.5	DEVIATION FROM TEST STANDARD	106
8.6	TEST SETUP LAYOUT	106
8.7	EUT OPERATING CONDITIONS	107
8.8	TEST RESULTS - 2400-2483.5 MHZ	108
8.9	TEST RESULTS - 5745-5850 MHZ	110
9	RADIATED SPURIOUS EMISSION (ABOVE 1 GHZ)	112
9.1	LIMIT	112
9.2	MEASUREMENT INSTRUMENTS LIST	113
9.3	MEASURING INSTRUMENTS SETTING	113
9.4	TEST PROCEDURES	114
9.5	DEVIATION FROM TEST STANDARD	114
9.6	TEST SETUP LAYOUT	114
9.7	EUT OPERATING CONDITIONS	115
9.8	TEST RESULTS - 2400-2483.5 MHZ	116
9.9	TEST RESULTS - 5745-5850 MHZ	164
9.10	TEST RESULTS (RESTRICTED BANDS)	196
10	POWER SPECTRAL DENSITY	212
10.1	LIMIT	212
10.2	MEASUREMENT INSTRUMENTS LIST	212
10.3	TEST PROCEDURES	212
10.4	TEST SETUP LAYOUT	212
10.5	DEVIATION FROM TEST STANDARD	212
10.6	EUT OPERATING CONDITIONS	212
10.7	TEST RESULTS - 2400-2483.5 MHZ	213
10.8	TEST RESULTS - 5745-5850 MHZ	227



Table of Contents

11	RF EXPOSURE COMPLIANCE	239
11.1	LIMIT	239
11.2	MEASUREMENT INSTRUMENTS LIST	239
11.3	MPE CALCULATION METHOD	239
11.4	TEST SETUP LAYOUT	240
11.5	DEVIATION FROM TEST STANDARD	240
11.6	EUT OPERATING CONDITIONS	240
11.7	TEST RESULTS - 2400-2483.5 MHZ	241
11.8	TEST RESULTS - 5745-5850 MHZ	249
12	EUT TEST PHOTO	256



REPORT ISSUED HISTORY

Revised Version No.	Description	Issued Date
-	Initial Issue.	Oct. 04, 2012



1 CERTIFICATION

Equipment : MONDOCENTER
Brand Name : InFocus
Model Name : INF-MCENTER
Applicant : Quanmax Inc.
Date of Test : Aug. 23, 2012 ~ Sep. 26, 2012
Standards : FCC Part 15, Subpart C: 2010
ANSI C63.4: 2009

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-1208149) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

**2. SUMMARY OF TEST RESULTS**

Standard Clause	Test Item	Result
15.207	Conducted Emission	PASS
15.247 (c)	Antenna conducted Spurious Emission	PASS
15.247 (a)(2)	6dB Bandwidth	PASS
15.247 (b)	Maximum Peak Conducted Output Power	PASS
15.247 (c)	Radiated Spurious Emission	PASS
15.247 (d)(e)	Power Spectral Density	PASS
15.205	Restricted Bands	PASS
15.203	Antenna Requirement	PASS
1.1307 1.1310 2.1091 2.1093	RF Exposure Compliance	PASS

NOTE:

1. **N/A**: denotes test is not applicable in this Test Report
2. Portable device; SAR report is required.
3. This test report only covers radio operating bands: 2400-2483.5 MHz (IEEE 802.11b/g/n) and 5725-5850 MHz (IEEE 802.11a/n).
The test for radio operating bands: 5150-5250 MHz, 5250-5350 MHz and 5470-5725 MHz (IEEE 802.11a/n) is covered in another test report: NEI-FCCP-2-1208149.



2.1 TEST FACILITY

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

Conducted emission Test:

C02: (VCCI RN: C-3477; FCC RN: 614388; FCC DN: TW1054)

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

Radiated emission Test (Below 1 GHz):

CB08: (FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)

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

Radiated emission Test (Above 1 GHz):

CB08: (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)

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

2.2 MEASUREMENT UNCERTAINTY

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

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

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

A. Conducted emission test:

Test Site	Measurement Frequency Range	U , (dB)	NOTE
C03	150 kHz ~ 30 MHz	1.94	

B. Radiated emission test:

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

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

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

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

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

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



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	MONDOCENTER	
Brand Name	InFocus	
Model Name	INF-MCENTER	
OEM Brand/Model Name	N/A	
Model Difference	N/A	
Product Description	The EUT is a MONDOCENTER.	
	Operation Frequency	2412~2462 MHz, 5745~5825 MHz
	Modulation Type	DBPSK, DQPSK, CCK, BPSK, QPSK, 16QAM, 64QAM, MIMO 1. 2412~2462 MHz: IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: OFDM (2 TX & 2 RX) 2. 5745~5825 MHz: IEEE 802.11a: OFDM IEEE 802.11n: BPSK (2 TX & 2 RX)
	Bit Rate of Transmitter	IEEE 802.11b: 1, 2, 5.5 and 11 Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n: HT20: 130 Mbps (max.) IEEE 802.11n: HT40: 300 Mbps (max.)
	Number Of Channel	Please refer to the Note 2.
	Antenna Designation	Please refer to the Note 3.
	Antenna Gain(Peak)	Please refer to the Note 3.
	Maximum Peak Conducted Output Power:	2412-2462 MHz Band: IEEE 802.11b: 15.52 dBm IEEE 802.11g: 20.80 dBm IEEE 802.11n(20 MHz): 22.76 dBm 2422-2452 MHz Band: IEEE 802.11n(40 MHz): 22.64 dBm 5745-5825 MHz Band: IEEE 802.11a: 19.65 dBm IEEE 802.11n(20 MHz): 21.77 dBm 5755-5795 MHz Band: IEEE 802.11n(40 MHz): 21.76 dBm
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Power Source	DC Voltage supplied from External Power Supply.	
Power Rating	I/P: AC 100-240V 1.5A 50-60Hz / O/P: DC 19V 3.95A	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	1 * CPU: Intel, Core i5-2520M Processor, 2.5GHz 2 * Memory: TLA, 2 GB, DDR3-1333 1 * SSD: Intel, SSDSC2CW120A3, 120 GB 1 * 2.4 GHz and 5 GHz WLAN Module: Intel, INT-62205ANHMW 1 * AC ADAPTER: AcBel, AD9013 2 * Antenna: ARISTOTLE, PFA-25-C2M2-M10-1	
EUT Modification(s)	N/A	



NOTE:

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

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

2422-2452 MHz Band (IEEE 802.11n (40MHz))					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	06	2437	09	2452
04	2427	07	2442		
05	2432	08	2447		

5745-5825 MHz Band (IEEE 802.11a/n (20MHz))					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825
153	5765	161	5805		

5755-5795 MHz Band (IEEE 802.11n (40MHz))					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795		

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	ARISTOTLE	PFA-25-C2M2-M10-1	Dipole	R SMA PLUG	2.00
2	ARISTOTLE	PFA-25-C2M2-M10-1	Dipole	R SMA PLUG	2.00

4. The EUT incorporates MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R).

2412-2462 MHz Band	
Modulated type	TX Function
IEEE 802.11b	1 TX
IEEE 802.11g	1 TX
IEEE 802.11n (20MHz)	2 TX

2422-2452 MHz Band	
Modulated type	TX Function
IEEE 802.11n (40MHz)	2 TX

5745-5825 MHz Band	
Modulated type	TX Function
IEEE 802.11a	1 TX
IEEE 802.11n (20MHz)	2 TX

5755-5795 MHz Band	
Modulated type	TX Function
IEEE 802.11n (40MHz)	2 TX



3.2 DESCRIPTION OF TEST MODES

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

2412-2462 MHz Band					
Test Items	IEEE	Mode	Data Rate	Channel	Note
Conducted Emission	802.11b	DSSS	1 Mbps	06	
Antenna conducted Spurious Emission	802.11b	DSSS	1 Mbps	01/06/11	
	802.11g	OFDM	6 Mbps	01/06/11	
	802.11n (20 MHz)	BPSK	MCS8	01/06/11	
	802.11n (40 MHz)	BPSK	MCS8	03/06/09	
6 dB Bandwidth	802.11b	DSSS	1 Mbps	01/06/11	
	802.11g	OFDM	6 Mbps	01/06/11	
	802.11n (20 MHz)	BPSK	MCS8	01/06/11	
	802.11n (40 MHz)	BPSK	MCS8	03/06/09	
Maximum Peak Conducted Output Power	802.11b	DSSS	1 Mbps	01/06/11	
	802.11g	OFDM	6 Mbps	01/06/11	
	802.11n (20 MHz)	BPSK	MCS8	01/06/11	
	802.11n (40 MHz)	BPSK	MCS8	03/06/09	
Radiated Spurious Emission (30 MHz to 1 GHz)	802.11n (20 MHz)	OFDM	MCS8	06	
Radiated Spurious Emission (above 1 GHz)	802.11b	DSSS	1 Mbps	01/06/11	
	802.11g	OFDM	6 Mbps	01/06/11	
	802.11n (20 MHz)	BPSK	MCS8	01/06/11	
	802.11n (40 MHz)	BPSK	MCS8	03/06/09	
Restricted Bands	802.11b	DSSS	1 Mbps	01/06/11	
	802.11g	OFDM	6 Mbps	01/06/11	
	802.11n (20 MHz)	BPSK	MCS8	01/06/11	
	802.11n (40 MHz)	BPSK	MCS8	03/06/09	
Antenna Requirement	---		---	---	
RF Exposure Compliance	---		---	---	



5745-5825 MHz Band					
Test Items	IEEE	Mode	Data Rate	Channel	Note
Antenna conducted Spurious Emission	802.11a	OFDM	6 Mbps	149/157/165	
	802.11n (20 MHz)	BPSK	MCS8	149/157/165	
	802.11n (40 MHz)	BPSK	MCS8	151/159	
6 dB Bandwidth	802.11a	OFDM	6 Mbps	149/157/165	
	802.11n (20 MHz)	BPSK	MCS8	149/157/165	
	802.11n (40 MHz)	BPSK	MCS8	151/159	
Maximum Peak Conducted Output Power	802.11a	OFDM	6 Mbps	149/157/165	
	802.11n (20 MHz)	BPSK	MCS8	149/157/165	
	802.11n (40 MHz)	BPSK	MCS8	151/159	
Radiated Spurious Emission (30 MHz to 1 GHz)	802.11n (20 MHz)	OFDM	MCS8	157	
Radiated Spurious Emission (above 1 GHz)	802.11a	OFDM	6 Mbps	149/157/165	
	802.11n (20 MHz)	BPSK	MCS8	149/157/165	
	802.11n (40 MHz)	BPSK	MCS8	151/159	
Restricted Bands	802.11a	OFDM	6 Mbps	149/157/165	
	802.11n (20 MHz)	BPSK	MCS8	149/157/165	
	802.11n (40 MHz)	BPSK	MCS8	151/159	
Antenna Requirement	---		---	---	
RF Exposure Compliance	---		---	---	

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



3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

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

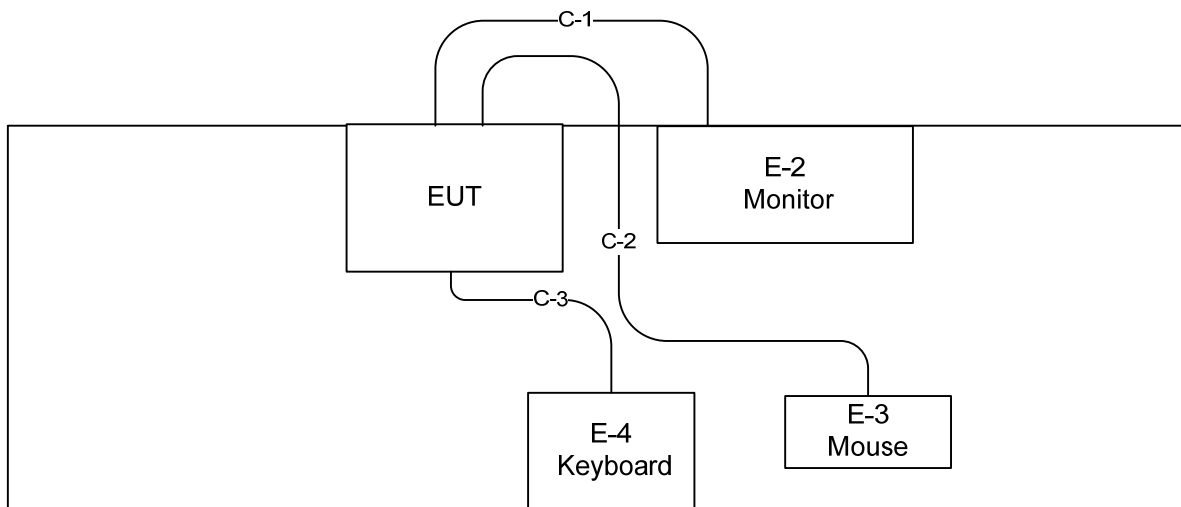
2412-2462 MHz Band						
IEEE	802.11b			802.11g		
Test software Version	DRTU			DRTU		
Frequency	2412 MHz	2437 MHz	2462 MHz	2412 MHz	2437 MHz	2462 MHz
Parameter	14	14	14	12.5	15	12.5

2412-2462 MHz Band				2422-2452 MHz Band		
IEEE	802.11n (20 MHz)			802.11n (40 MHz)		
Test software Version	DRTU			DRTU		
Frequency	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
Parameter	10	12	10	12	12	12

5745-5825 MHz Band						
IEEE	802.11a					
Test software Version	DRTU					
Frequency	5745 MHz	5785 MHz	5825 MHz			
Parameter	15.5	15.5	15.5			

5745-5825 MHz Band				5755-5795 MHz Band		
IEEE	802.11n (20 MHz)			802.11n (40 MHz)		
Test software Version	DRTU			DRTU		
Frequency	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	
Parameter	12.5	12.5	12.5	12.5	12.5	

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED





3.5 DESCRIPTION OF SUPPORT UNITS

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

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	MONDOCENTER	InFocus	INF-MCENTER	QKMQDSP2060INF	N/A	EUT
E-2	24" LCD Monitor	DELL	2408WFPb	DOC	071863-11	
E-3	USB Mouse	Logitech	M-BT83	DOC	810000361	
E-4	USB K/B	Logitech	Y-UR83	DOC	868017-0121	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	YES	YES	1.5M	VGA
C-2	NO	NO	1.7M	USB
C-3	NO	NO	1.5M	USB

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



4 CONDUCTED EMISSION

4.1 LIMIT

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

NOTE:

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

4.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Apr. 24, 2013
2	LISN	EMCO	3816/2	00066528	Mar. 26, 2013
3	Test Cable	TIMES	CFD300-NL	130	Jun. 14, 2013
4	EMI Test Receiver	Agilent	N9038A	MY51210215	Jan. 26, 2013

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



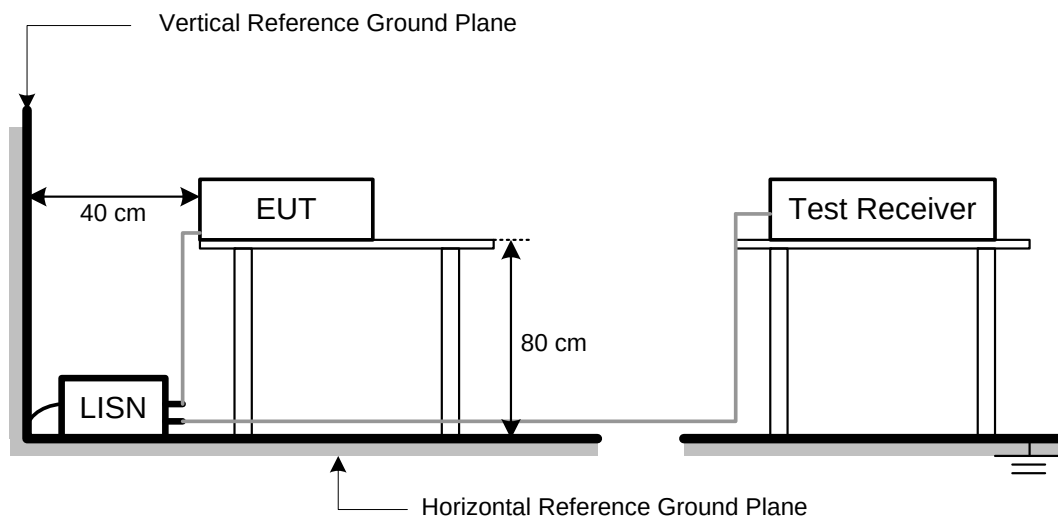
4.3 TEST PROCEDURES

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

NOTE:

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

4.4 TEST SETUP LAYOUT



4.5 DEVIATION FROM TEST STANDARD

No deviation



4.6 EUT OPERATING CONDITIONS

The EUT 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.



4.7 TEST RESULTS

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	24°C	Relative Humidity	48%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Phase: Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1631	35.06	9.59	44.65	65.30	-20.65	peak	
2		0.4396	23.07	9.61	32.68	57.07	-24.39	peak	
3		3.7963	29.90	9.67	39.57	56.00	-16.43	peak	
4	*	4.7862	30.20	9.69	39.89	56.00	-16.11	peak	
5		14.1875	29.11	9.86	38.97	60.00	-21.03	peak	
6		23.1250	30.02	9.91	39.93	60.00	-20.07	peak	



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	24°C	Relative Humidity	48%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Phase: Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4396	23.47	9.60	33.07	57.07	-24.00	peak	
2		2.1538	24.50	9.63	34.13	56.00	-21.87	peak	
3		2.7725	27.45	9.64	37.09	56.00	-18.91	peak	
4		3.2225	30.61	9.65	40.26	56.00	-15.74	peak	
5	*	4.7750	30.88	9.68	40.56	56.00	-15.44	peak	
6		27.1875	32.86	9.97	42.83	60.00	-17.17	peak	



5 ANTENNA CONDUCTED SPURIOUS EMISSION

5.1 LIMIT

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

5.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 06, 2012

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

5.3 TEST PROCEDURES

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

5.4 TEST SETUP LAYOUT



5.5 DEVIATION FROM TEST STANDARD

No deviation

5.6 EUT OPERATING CONDITIONS

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



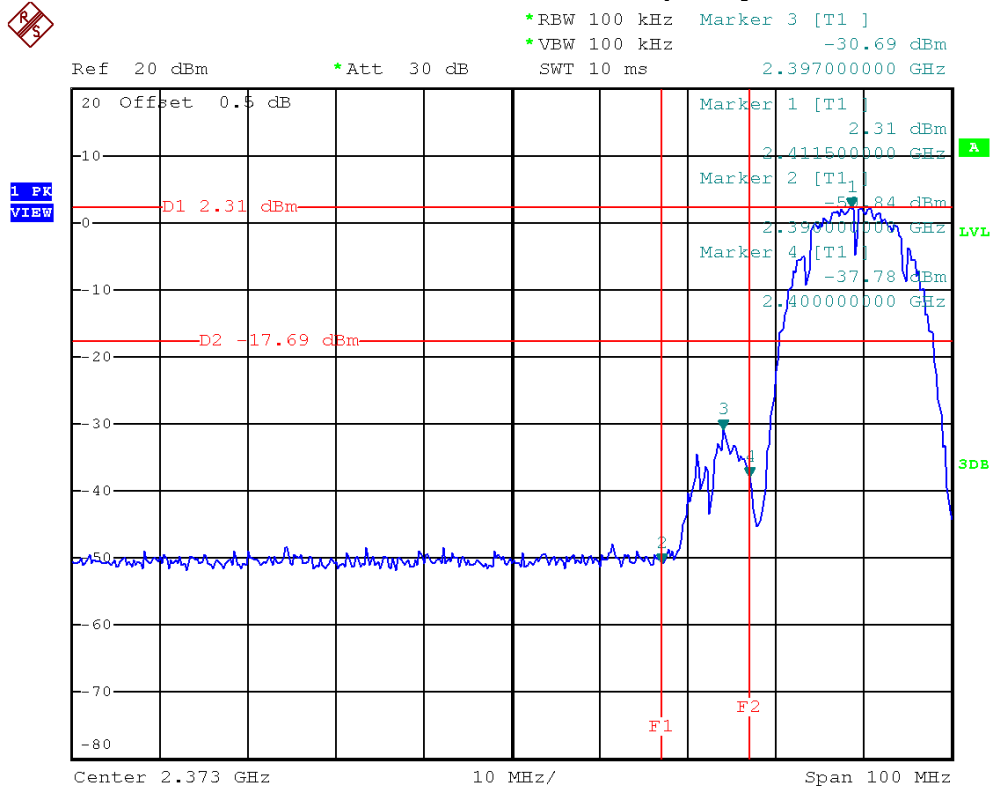
5.7 TEST RESULTS - 2400-2483.5 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b		

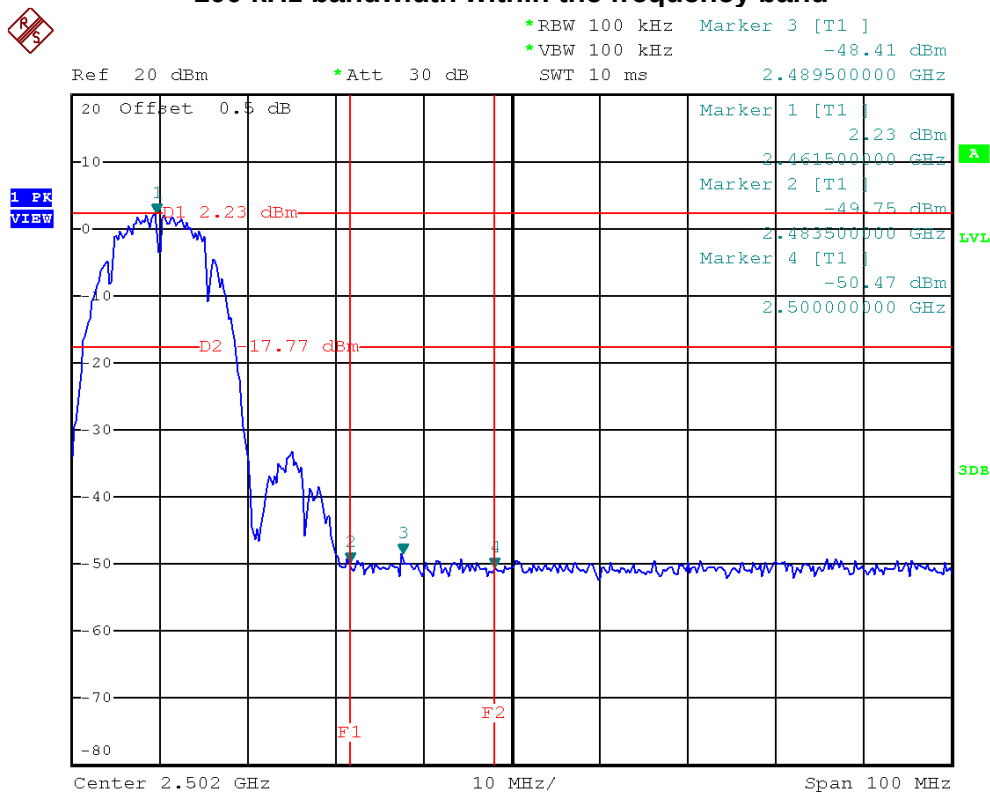
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2397.00	-30.69	2489.50	-48.41
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



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

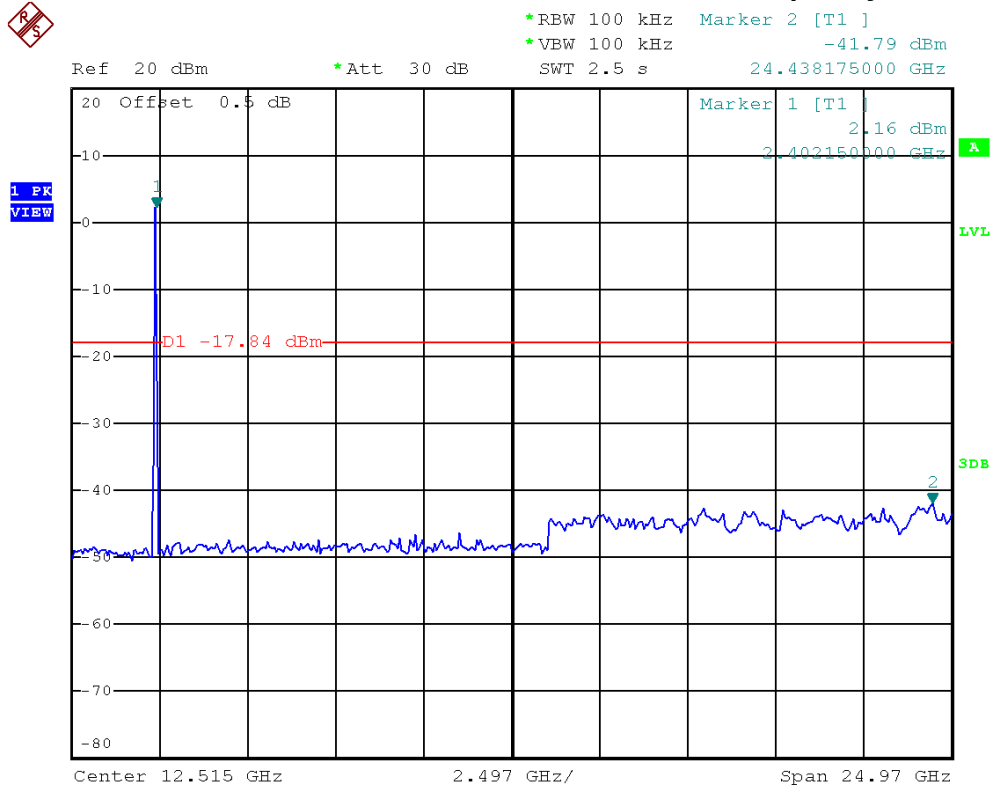


IEEE 802.11b/The max. radio frequency power in any
100 kHz bandwidth within the frequency band

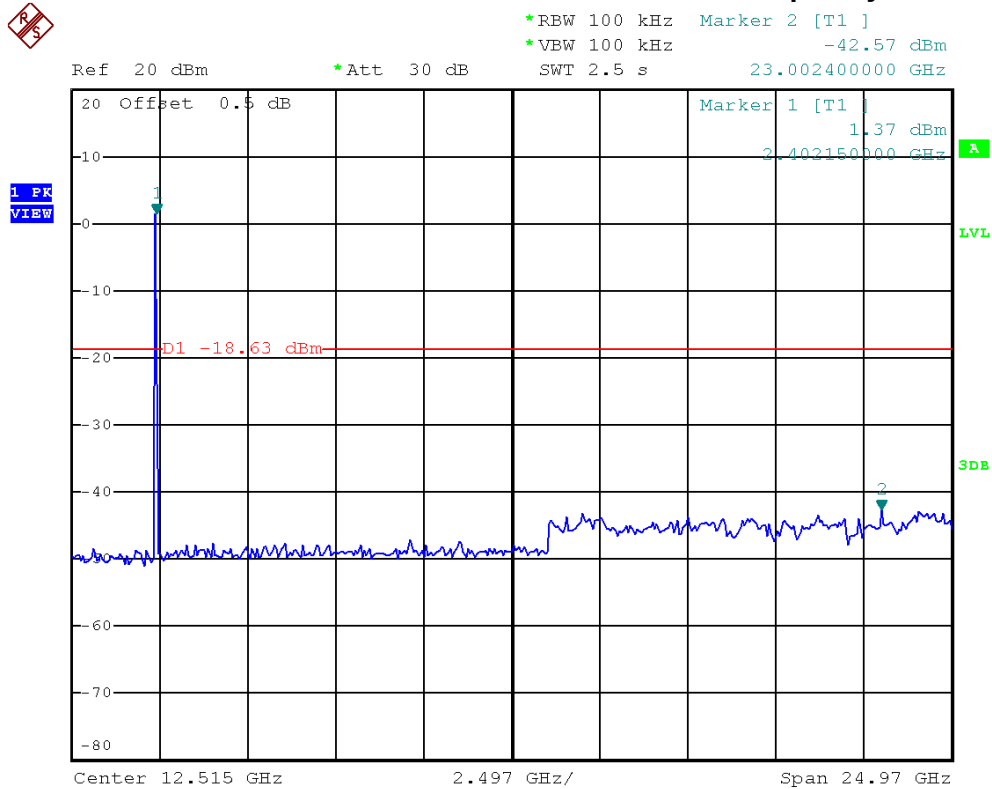




IEEE 802.11b/2412 MHz/10 Harmonic of the frequency



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

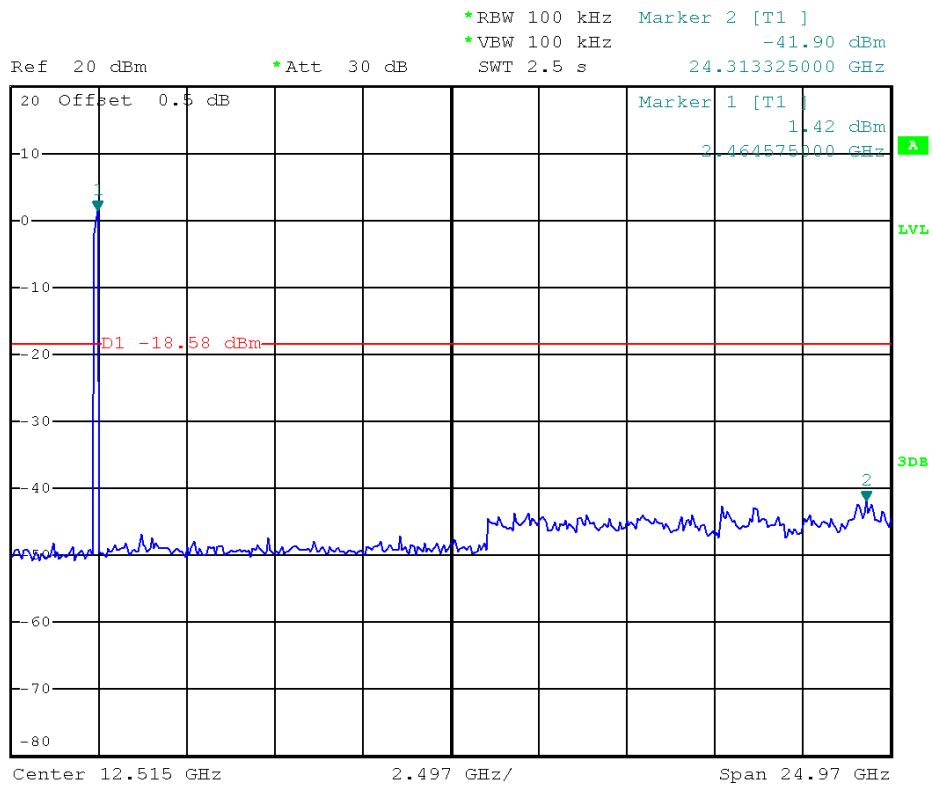




IEEE 802.11b/2462 MHz/10 Harmonic of the frequency



1 PK
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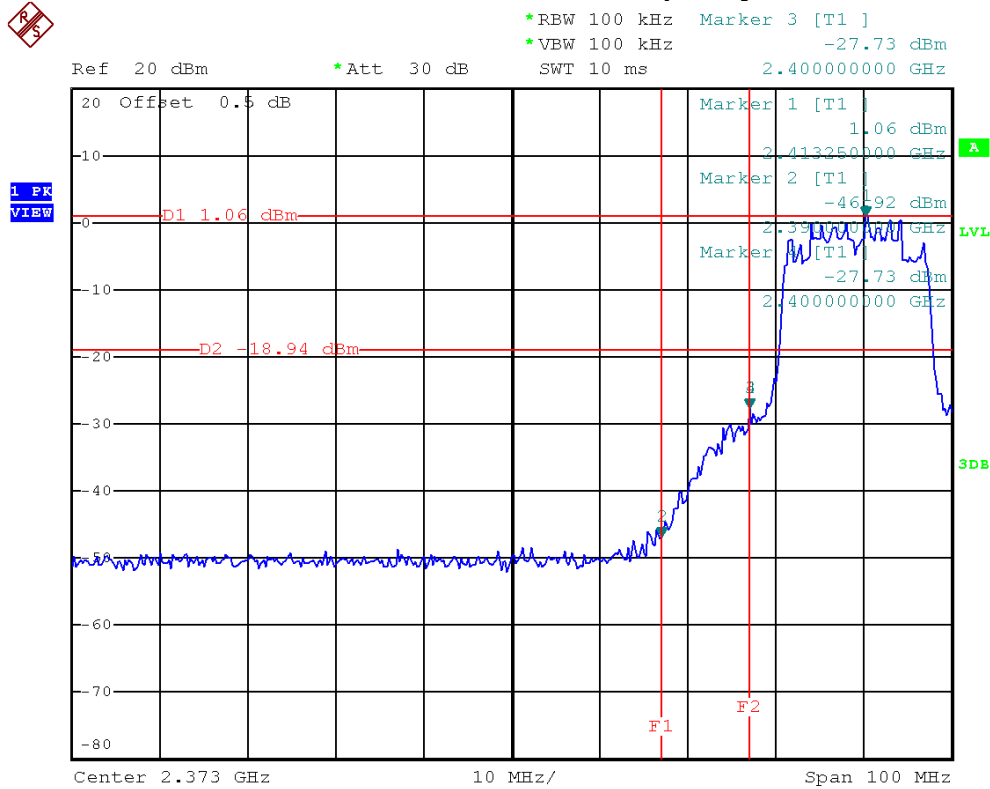


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g		

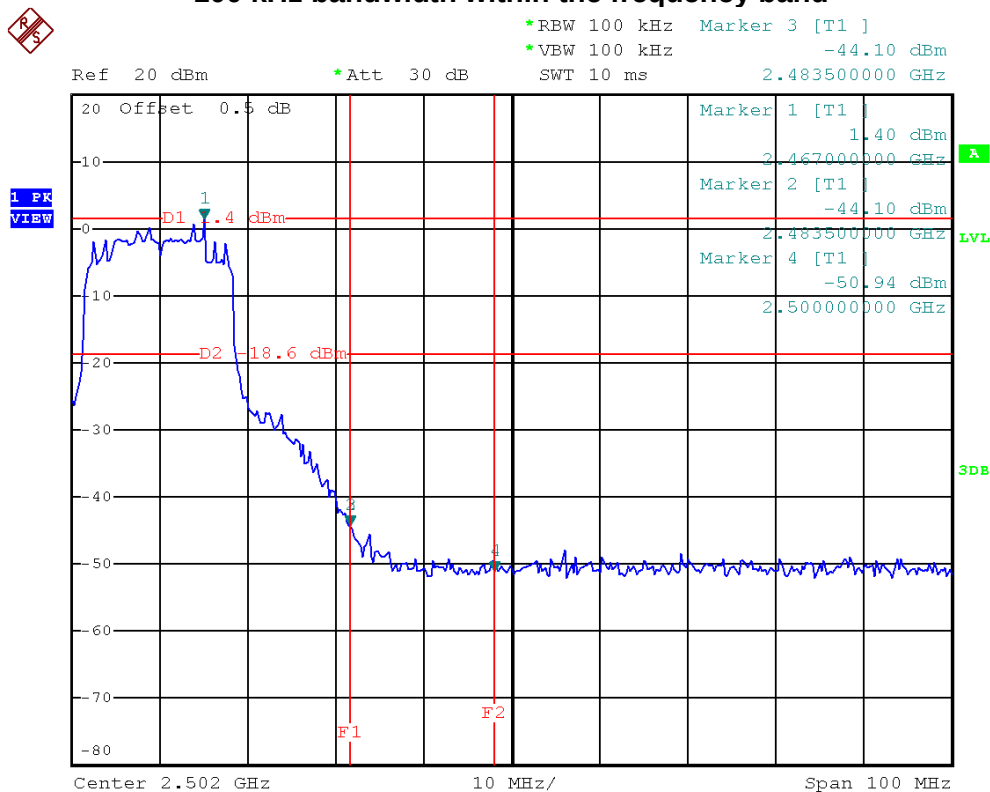
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2400.00	-27.73	2483.50	-44.10
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



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

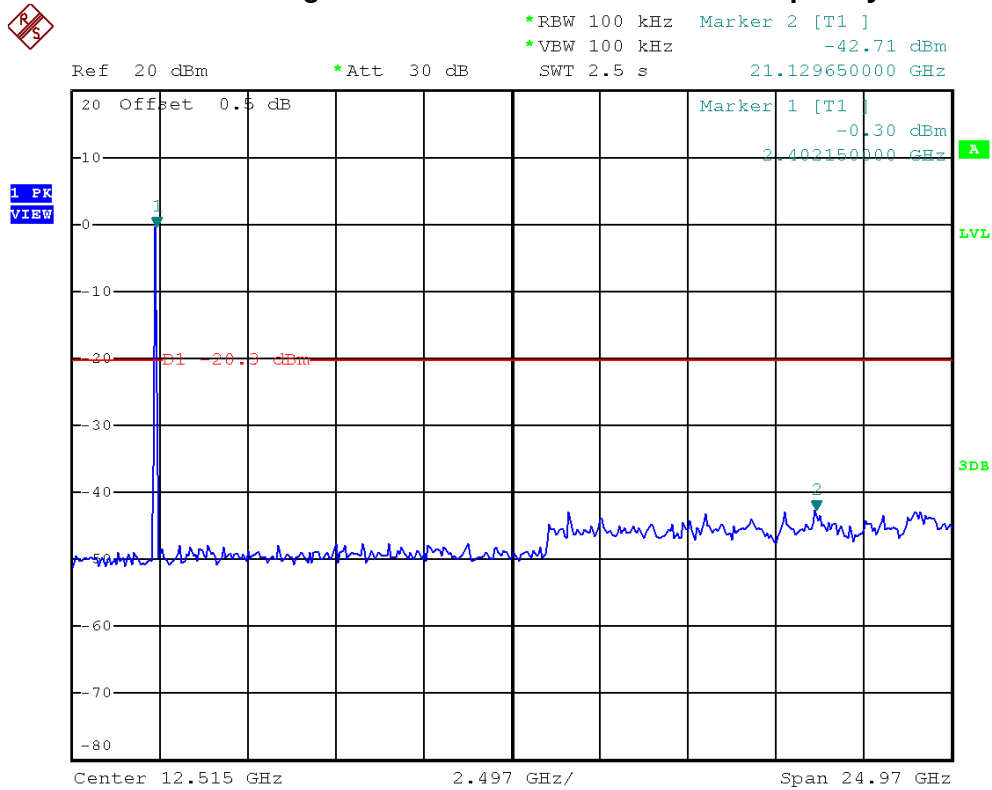


IEEE 802.11g/The max. radio frequency power in any
100 kHz bandwidth within the frequency band

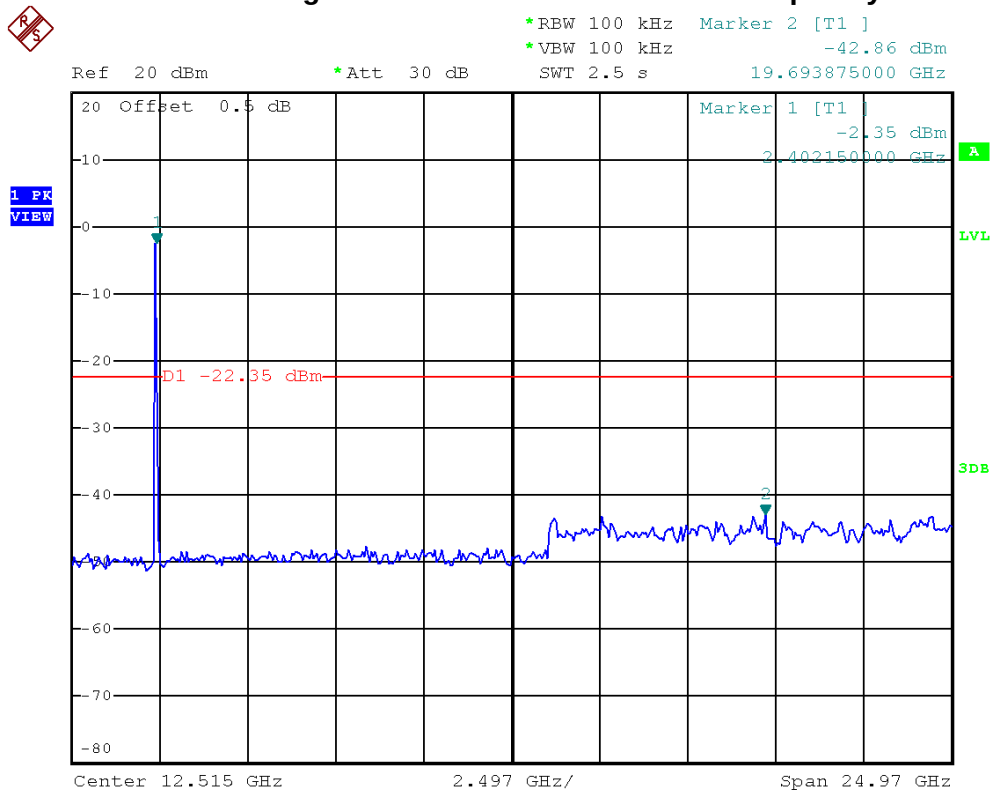




IEEE 802.11g/2412 MHz/10 Harmonic of the frequency



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

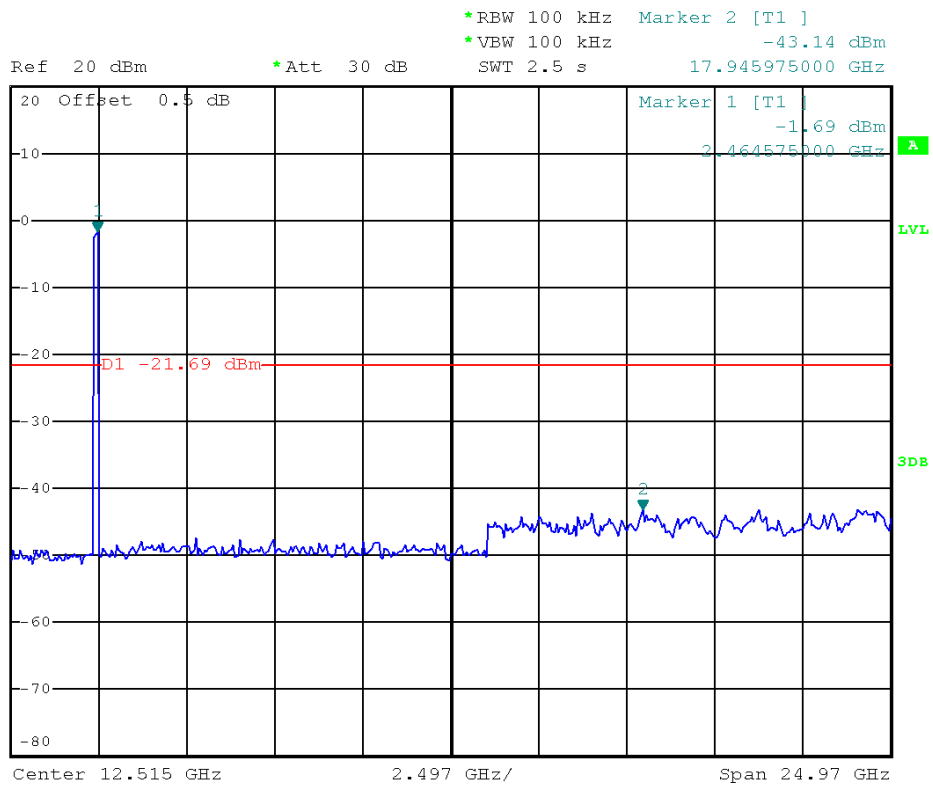




IEEE 802.11g/2462 MHz/10 Harmonic of the frequency



1 PK
VIEW



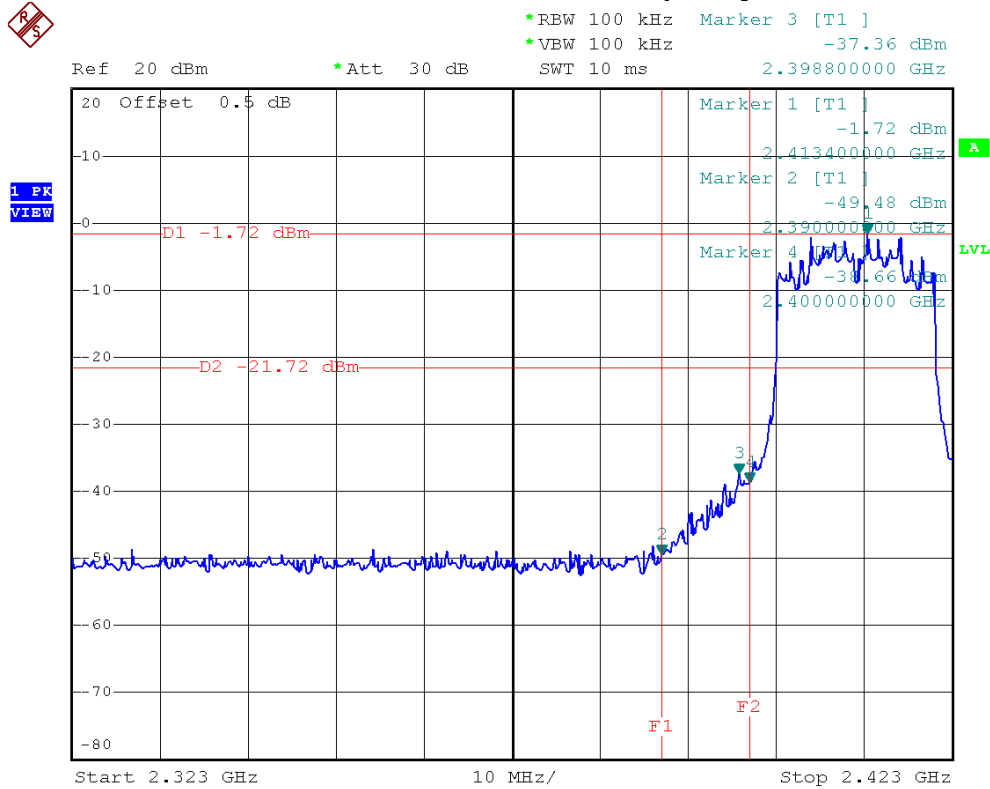


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.1		

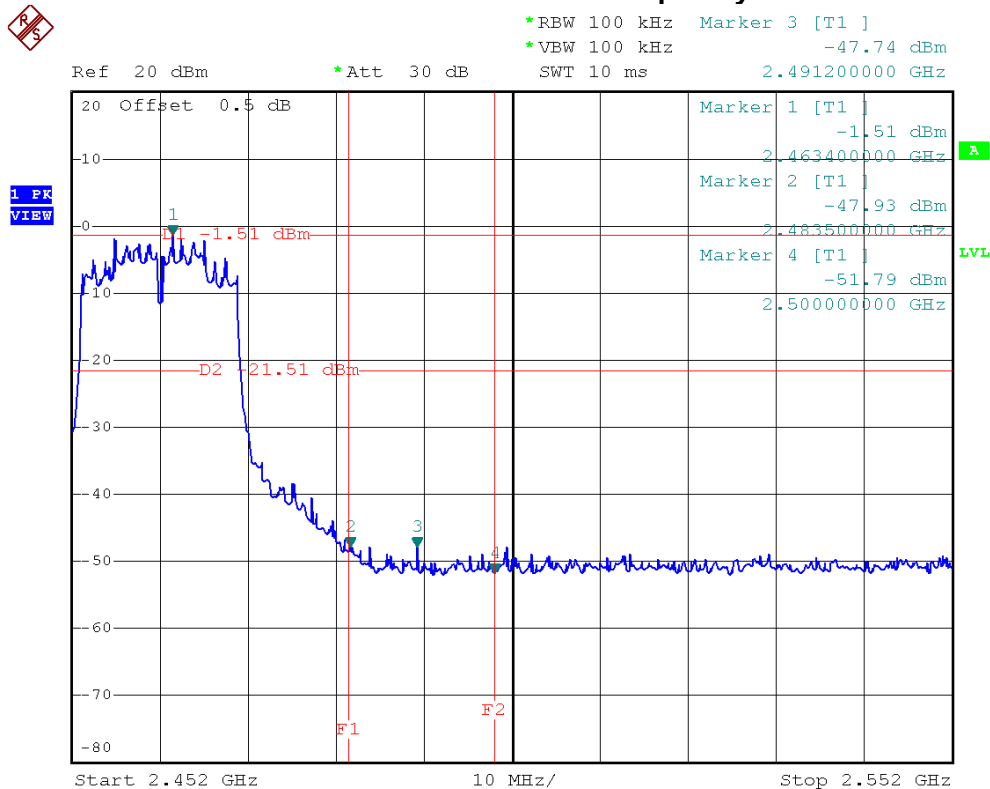
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2398.80	-37.36	2491.20	-47.74
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



IEEE 802.11n (20 MHz)/ANT.1/The max. radio frequency power in any 100kHz bandwidth outside the frequency band

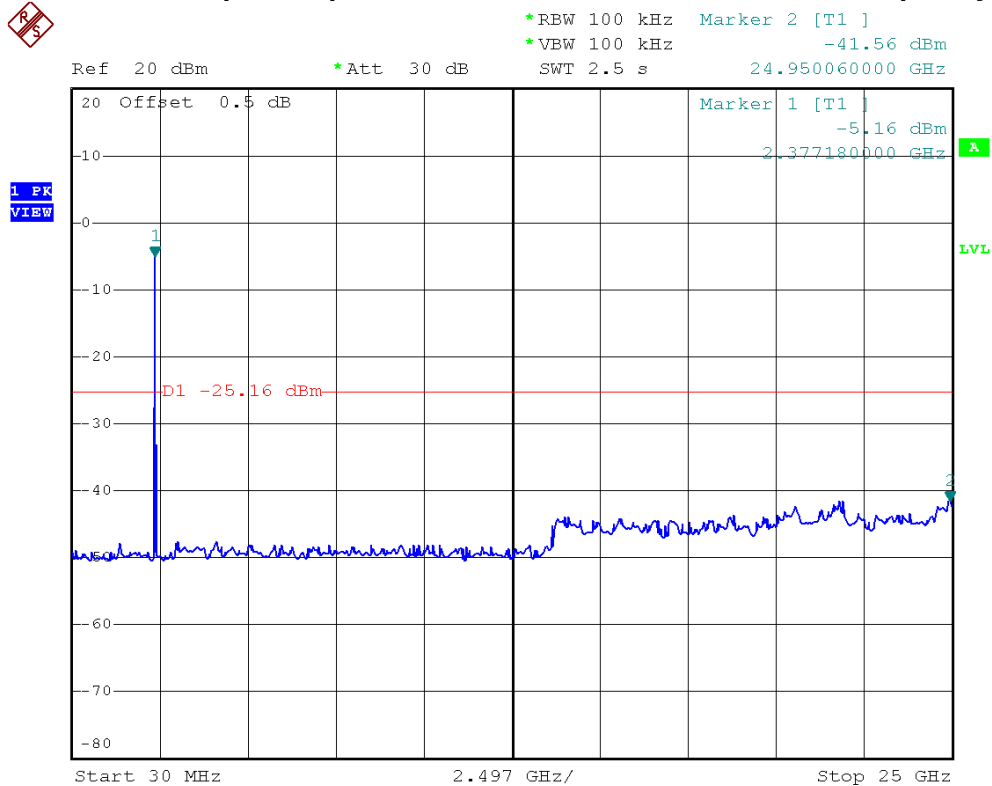


IEEE 802.11n (20 MHz)/ANT.1/The max. radio frequency power in any 100 kHz bandwidth within the frequency band

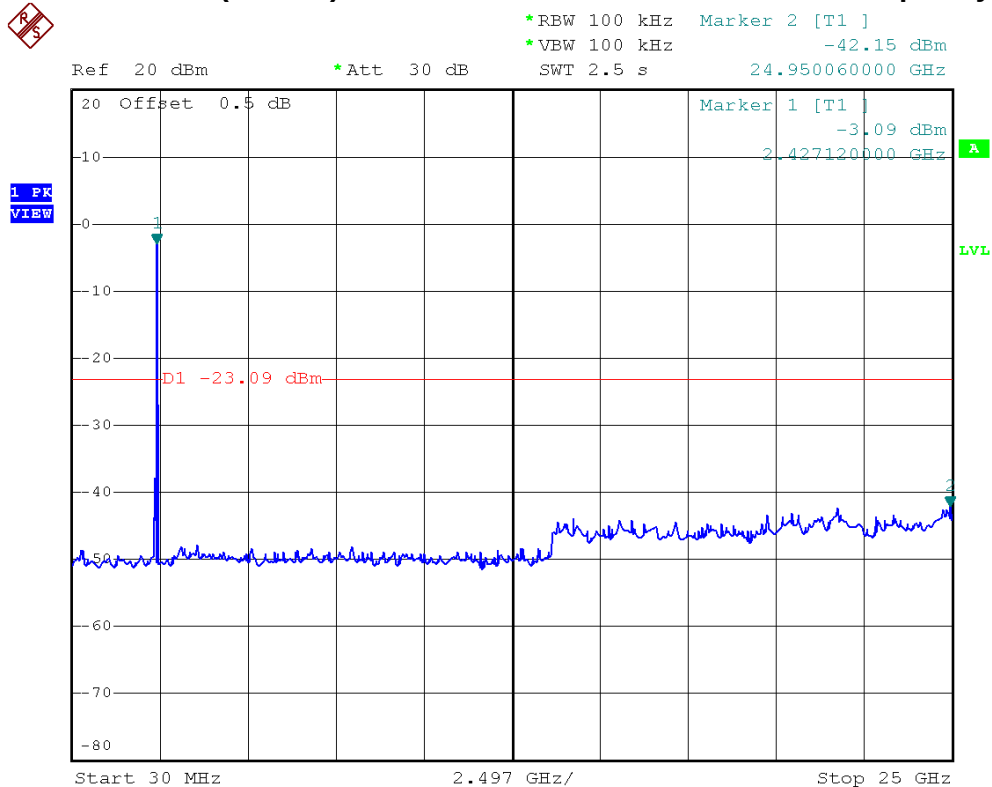




IEEE 802.11n (20 MHz)/ANT.1/2412 MHz/10 Harmonic of the frequency



IEEE 802.11n (20 MHz)/ANT.1/2437 MHz/10 Harmonic of the frequency





IEEE 802.11n (20 MHz)/ANT.1/2462 MHz/10 Harmonic of the frequency



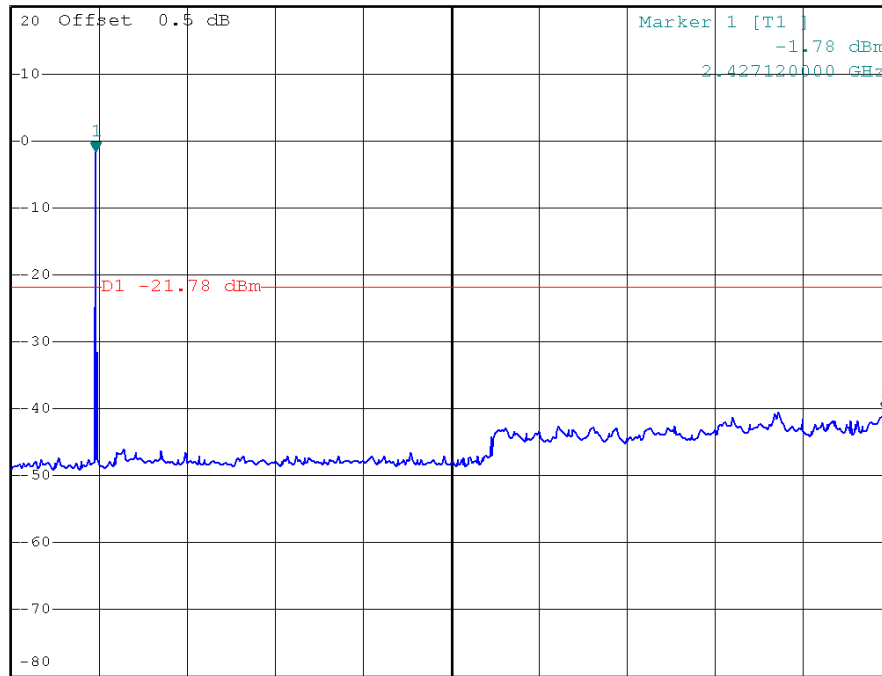
*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -40.52 dBm
SWT 2.5 s 24.850180000 GHz

Ref 20 dBm

*Att 30 dB

24.850180000 GHz

1 PK
VIEW



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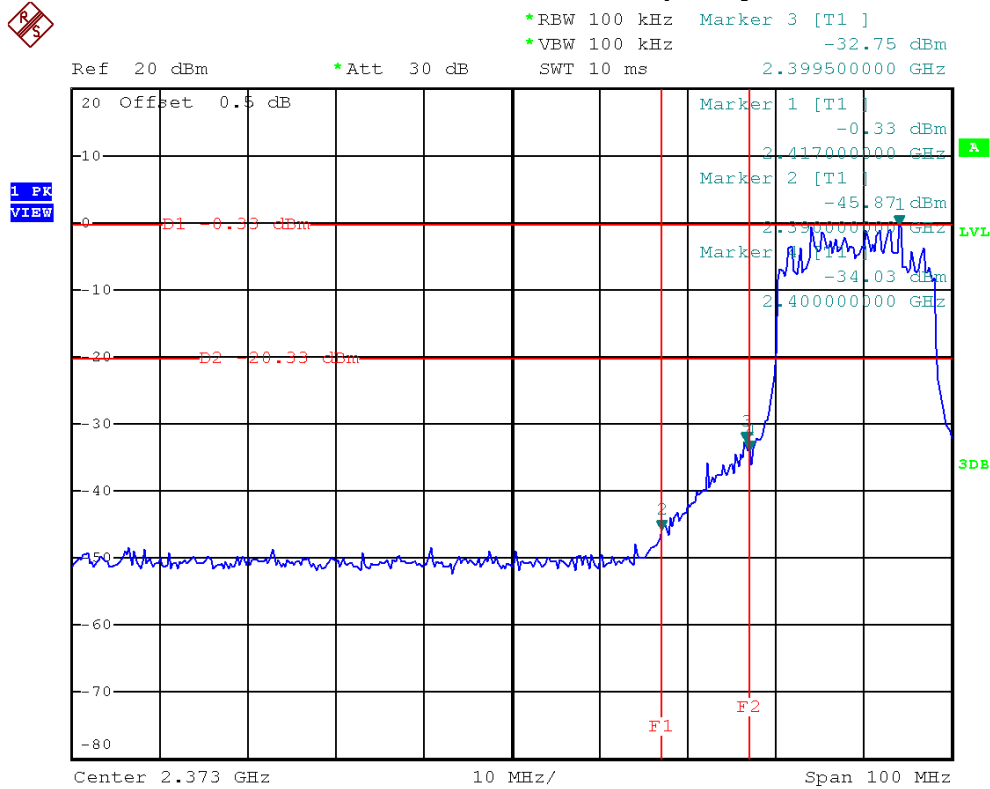


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.2		

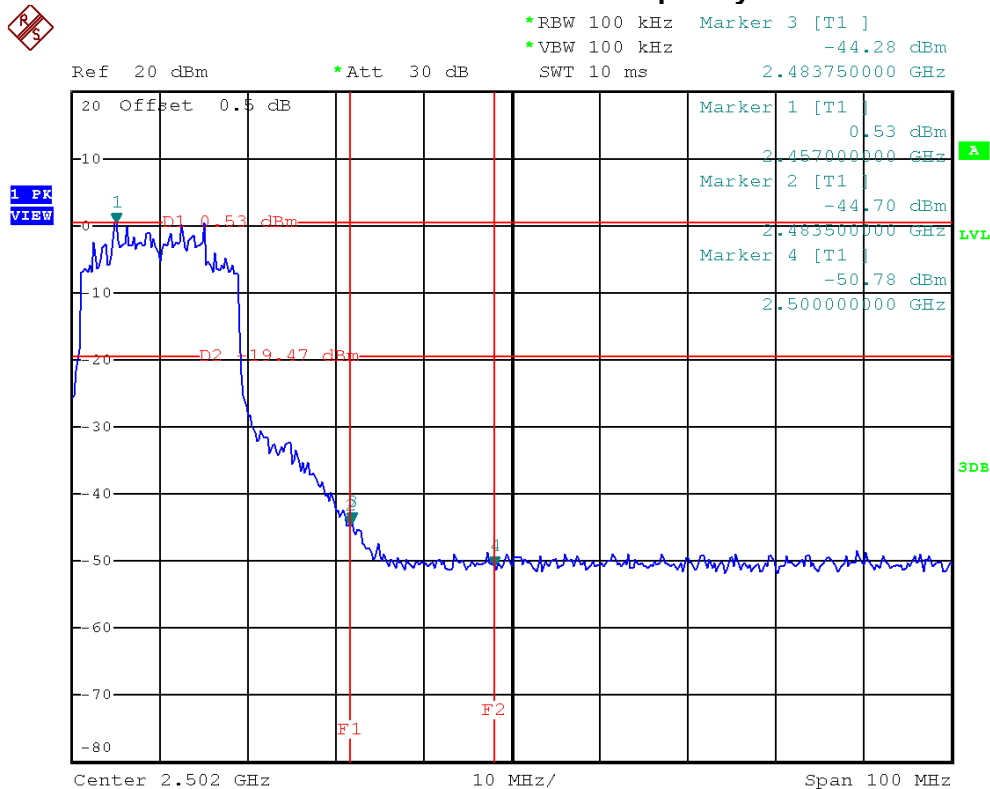
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2399.50	-32.75	2483.75	-44.28
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



IEEE 802.11n (20 MHz)/ANT.2/The max. radio frequency power in any 100kHz bandwidth outside the frequency band

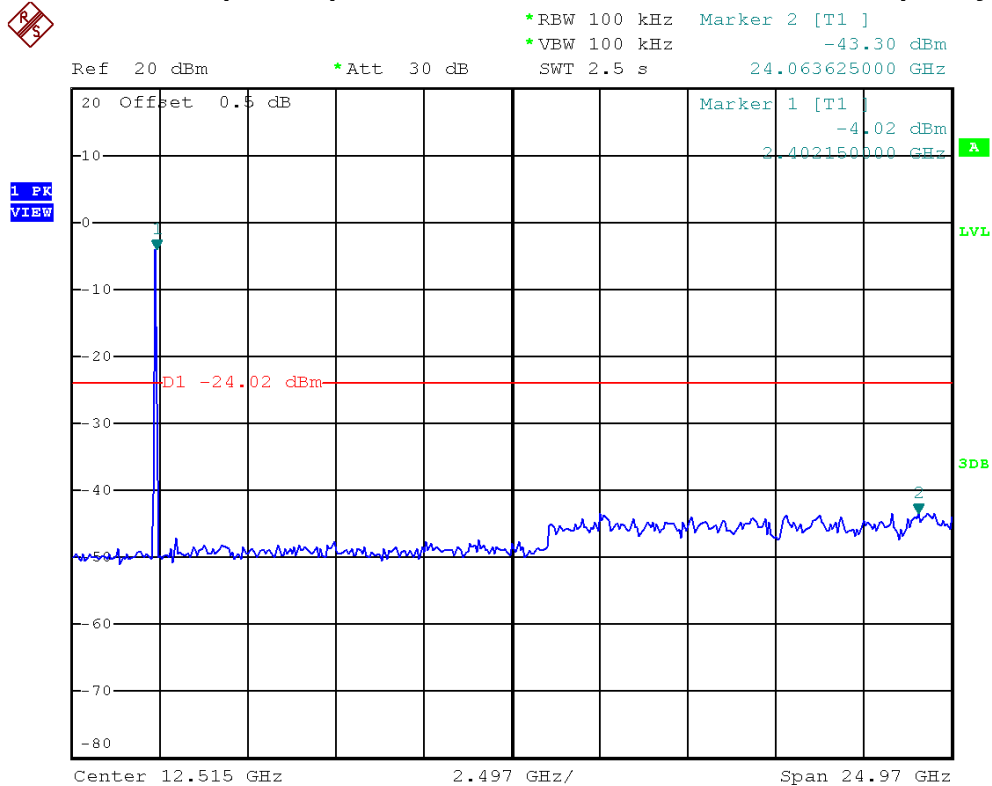


IEEE 802.11n (20 MHz)/ANT.2/The max. radio frequency power in any 100 kHz bandwidth within the frequency band

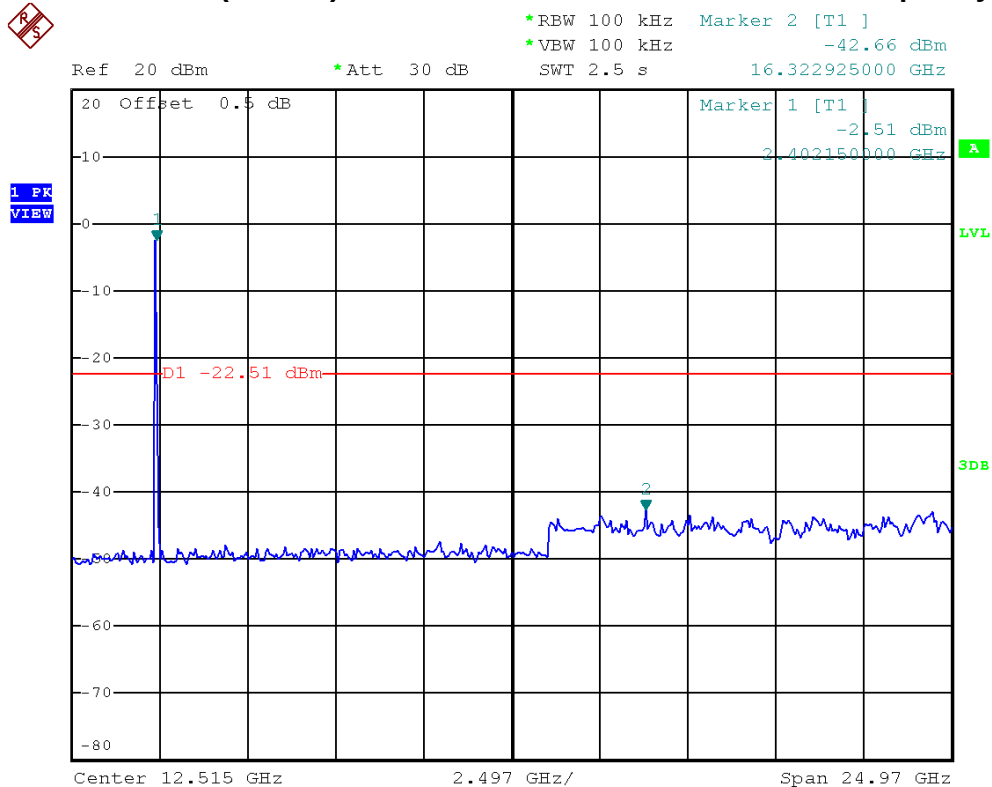




IEEE 802.11n (20 MHz)/ANT.2/2412 MHz/10 Harmonic of the frequency



IEEE 802.11n (20 MHz)/ANT.2/2437 MHz/10 Harmonic of the frequency





IEEE 802.11n (20 MHz)/ANT.2/2462 MHz/10 Harmonic of the frequency

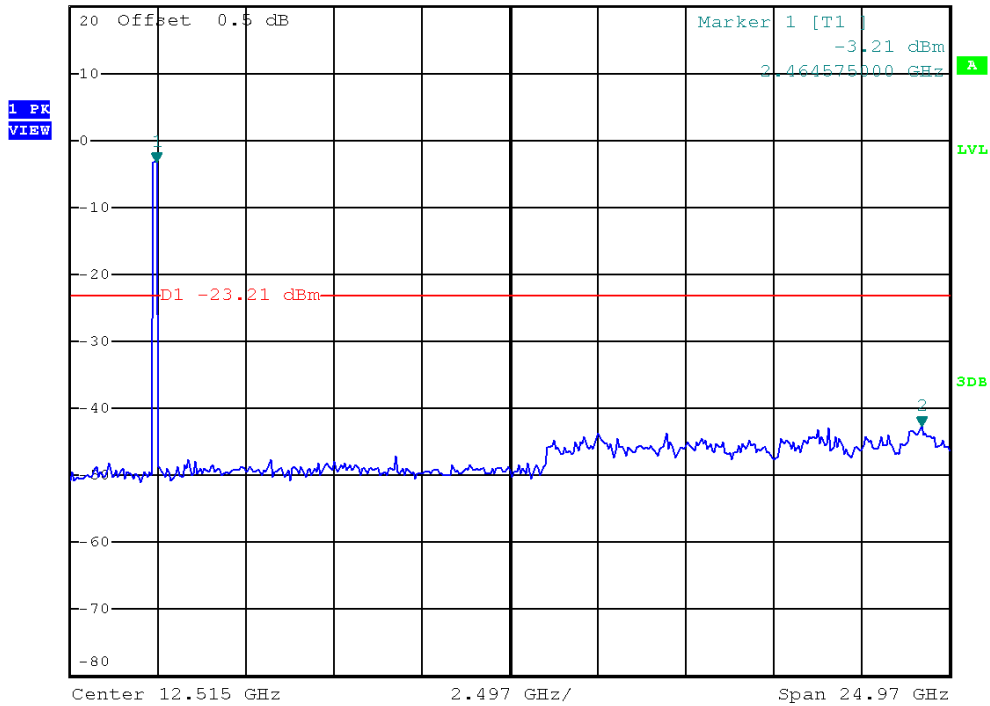


*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -42.48 dBm
SWT 2.5 s 24.188475000 GHz

Ref 20 dBm

*Att 30 dB

24.188475000 GHz



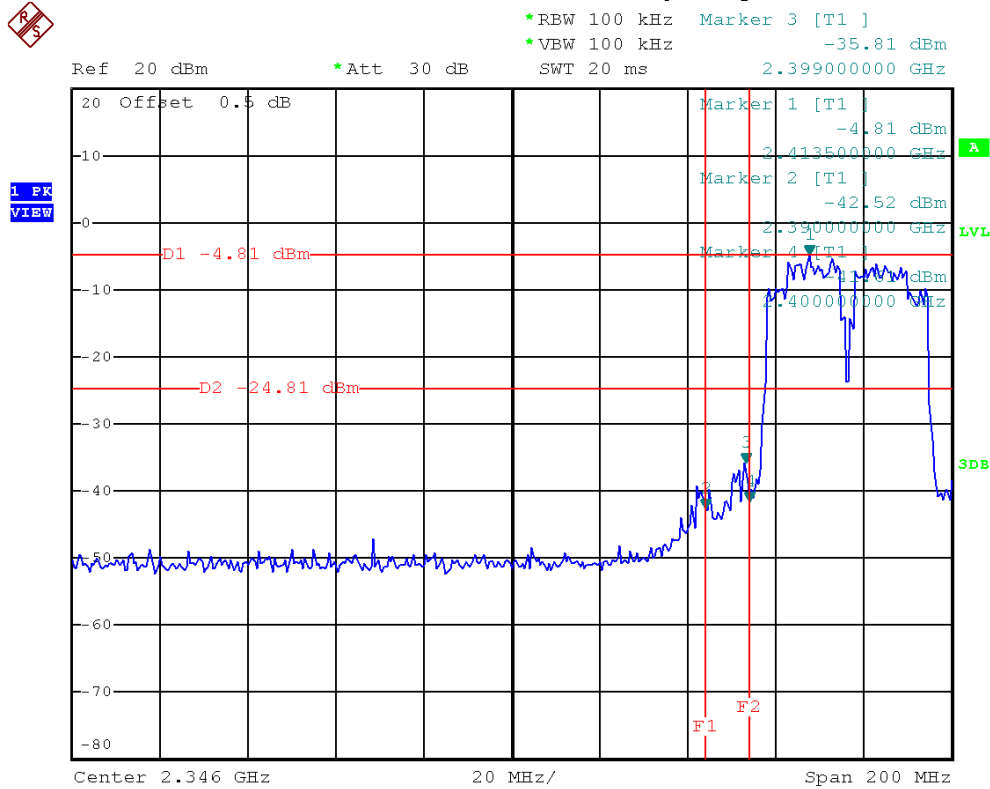


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.1		

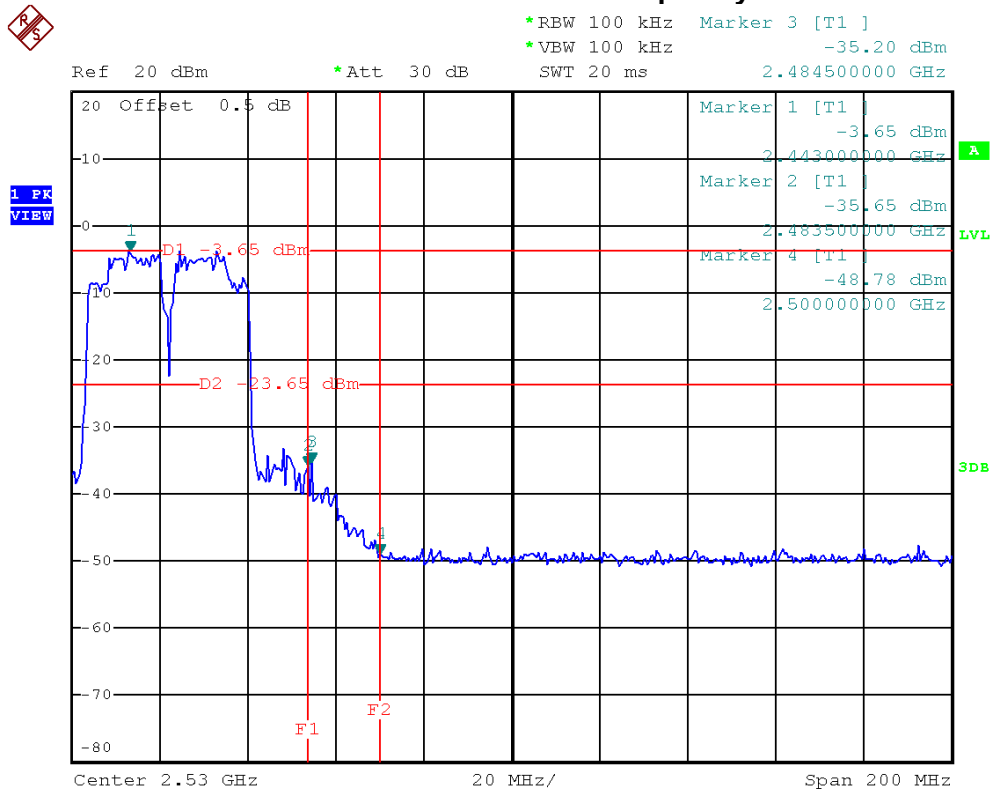
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2399.00	-35.81	2484.50	-35.20
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



IEEE 802.11n (40 MHz)/ANT.1/The max. radio frequency power in any 100kHz bandwidth outside the frequency band

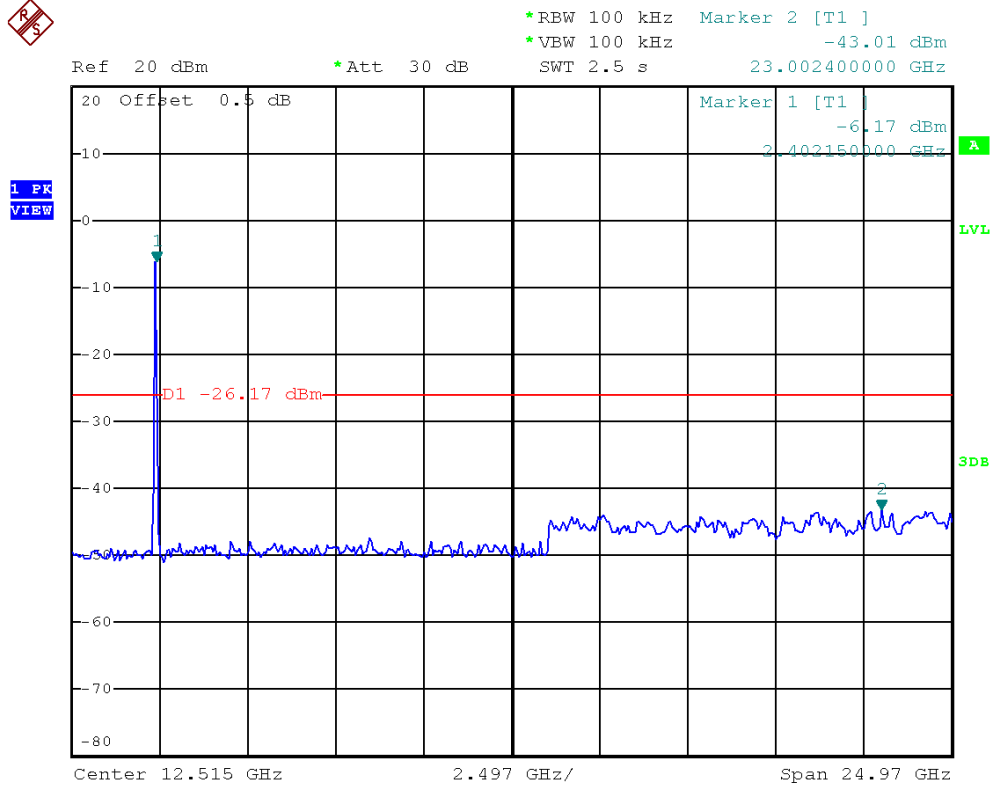


IEEE 802.11n (40 MHz)/ANT.1/The max. radio frequency power in any 100 kHz bandwidth within the frequency band

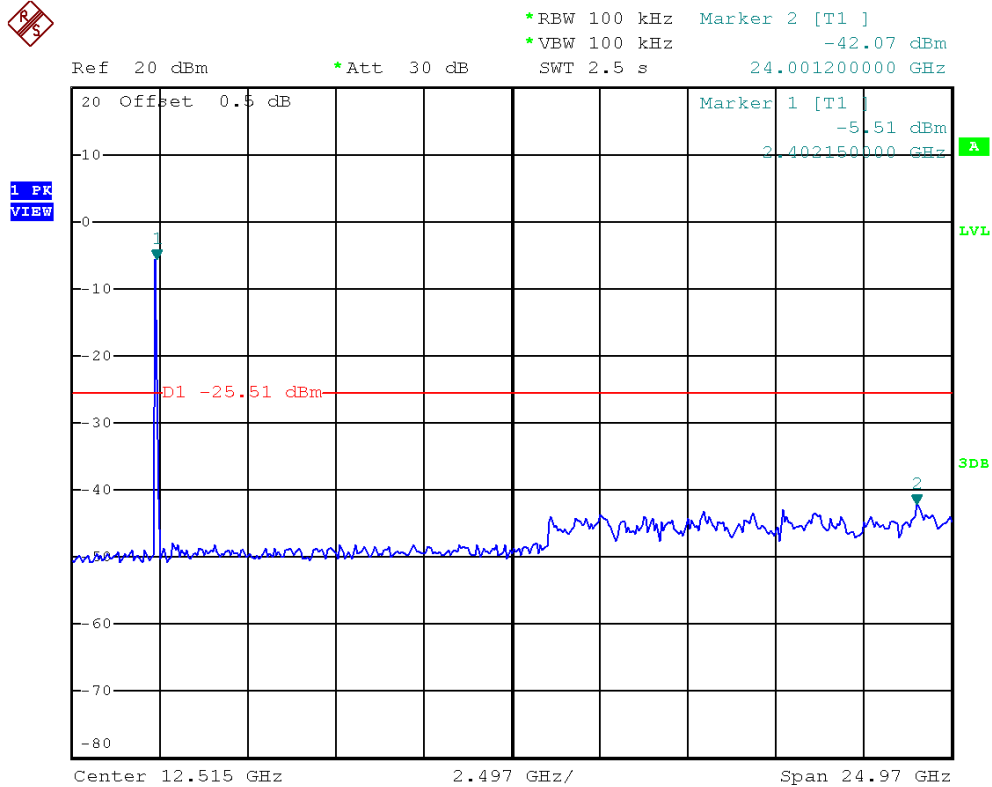




IEEE 802.11n (40 MHz)/ANT.1/2422 MHz/10 Harmonic of the frequency



IEEE 802.11n (40 MHz)/ANT.1/2437 MHz/10 Harmonic of the frequency





IEEE 802.11n (40 MHz)/ANT.1/2452 MHz/10 Harmonic of the frequency

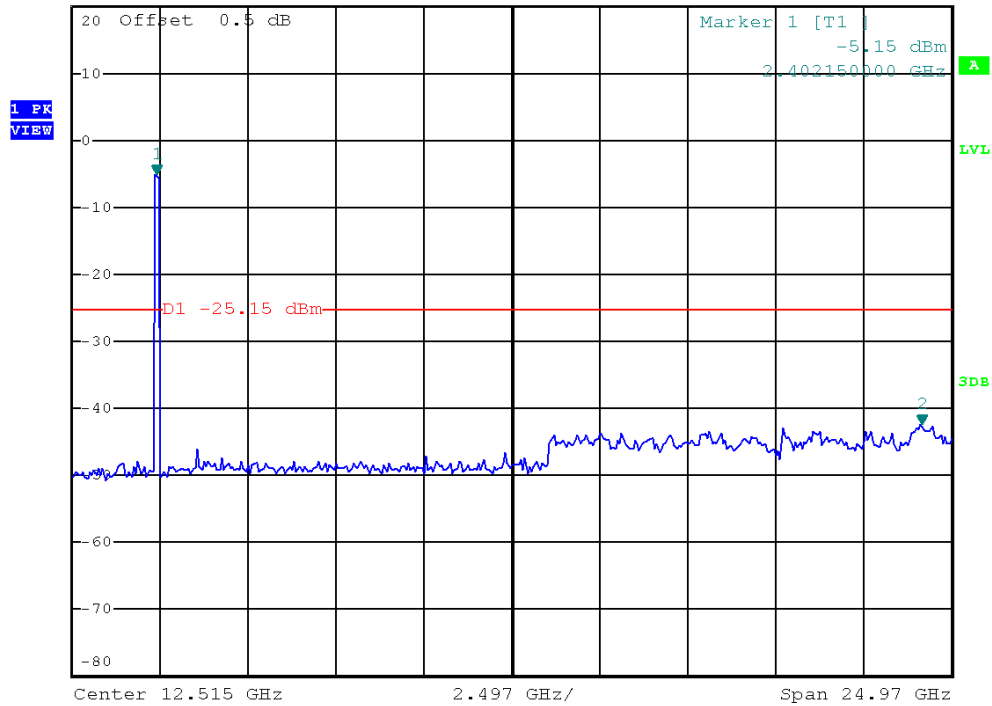


*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -42.26 dBm
SWT 2.5 s 24.126050000 GHz

Ref 20 dBm

*Att 30 dB

24.126050000 GHz



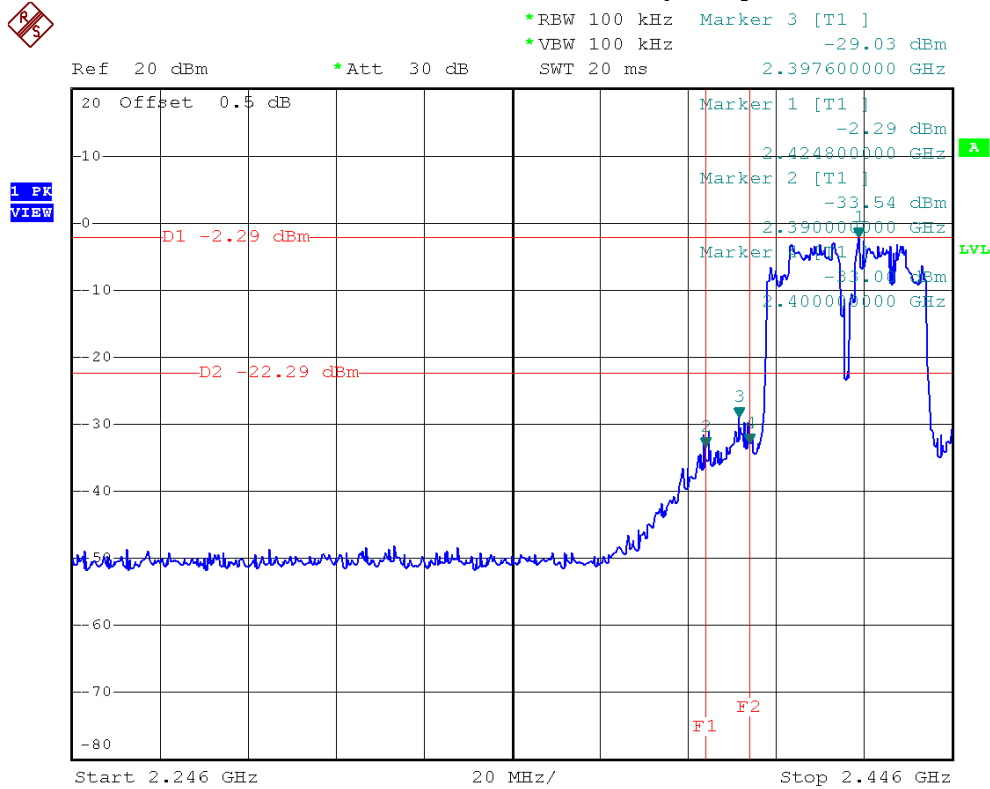


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.2		

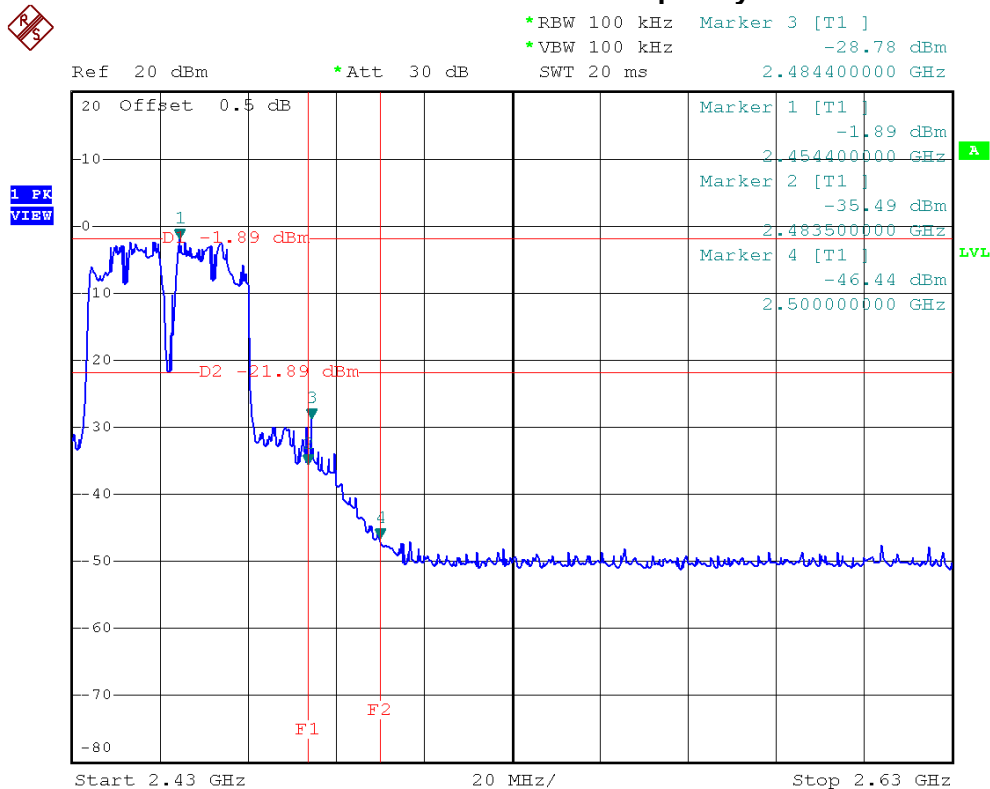
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2397.60	-29.03	2484.40	-28.78
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



IEEE 802.11n (40 MHz)/ANT.2/The max. radio frequency power in any 100kHz bandwidth outside the frequency band

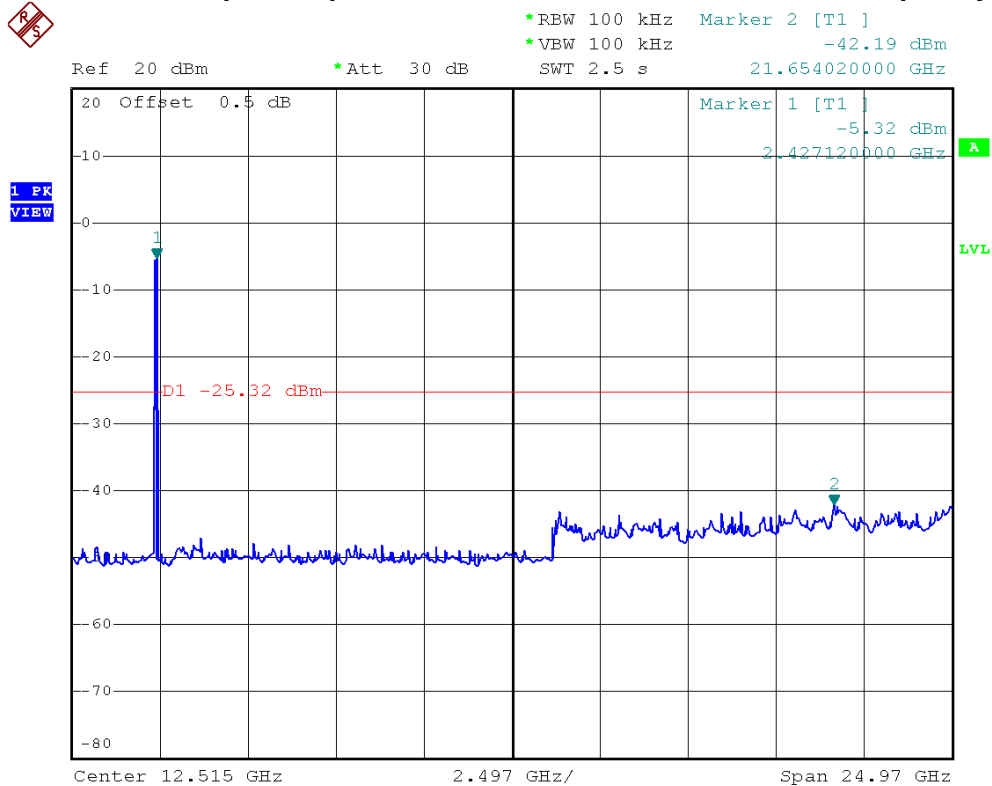


IEEE 802.11n (40 MHz)/ANT.2/The max. radio frequency power in any 100 kHz bandwidth within the frequency band

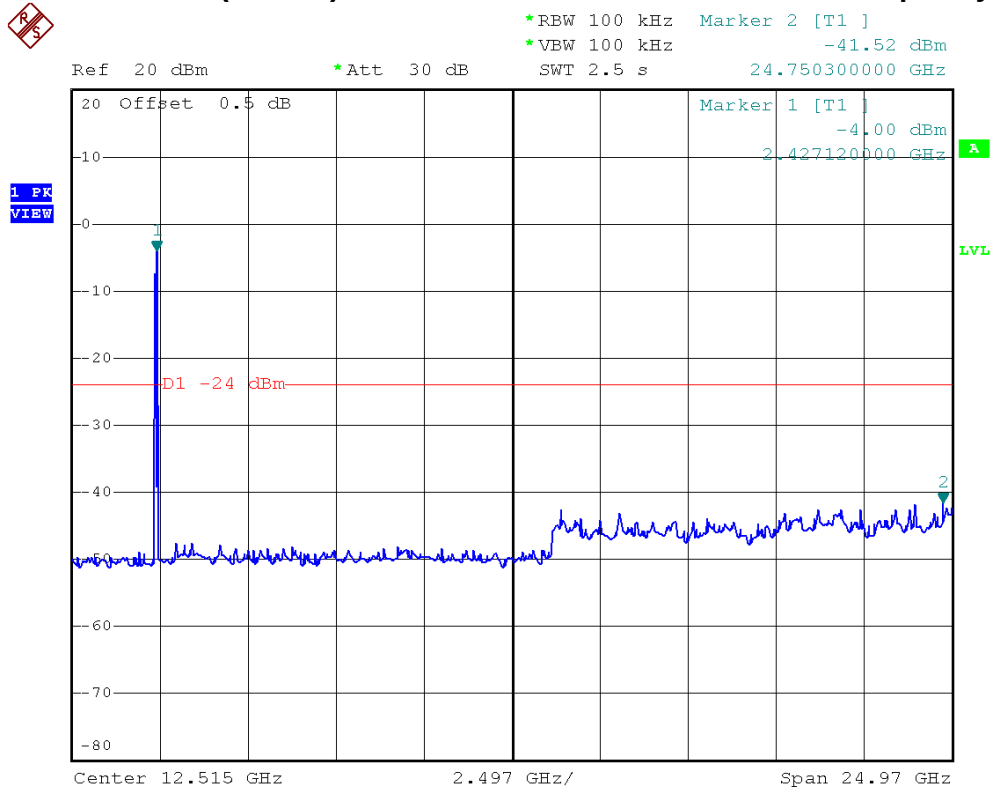




IEEE 802.11n (40 MHz)/ANT.2/2422 MHz/10 Harmonic of the frequency



IEEE 802.11n (40 MHz)/ANT.2/2437 MHz/10 Harmonic of the frequency





IEEE 802.11n (40 MHz)/ANT.2/2452 MHz/10 Harmonic of the frequency



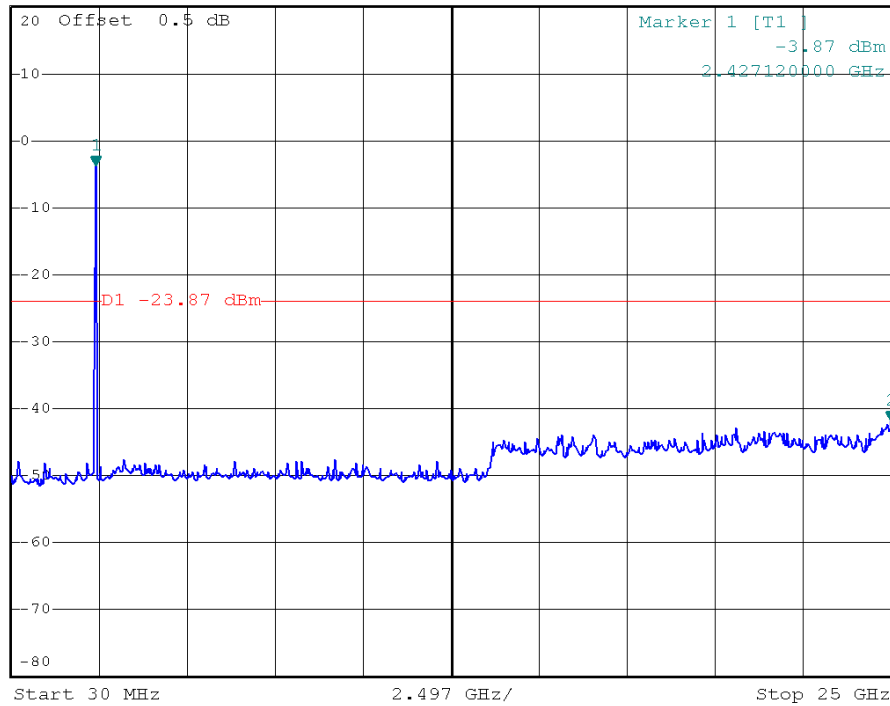
*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -41.87 dBm
SWT 2.5 s 25.000000000 GHz

Ref 20 dBm

*Att 30 dB

25.000000000 GHz

1 PK
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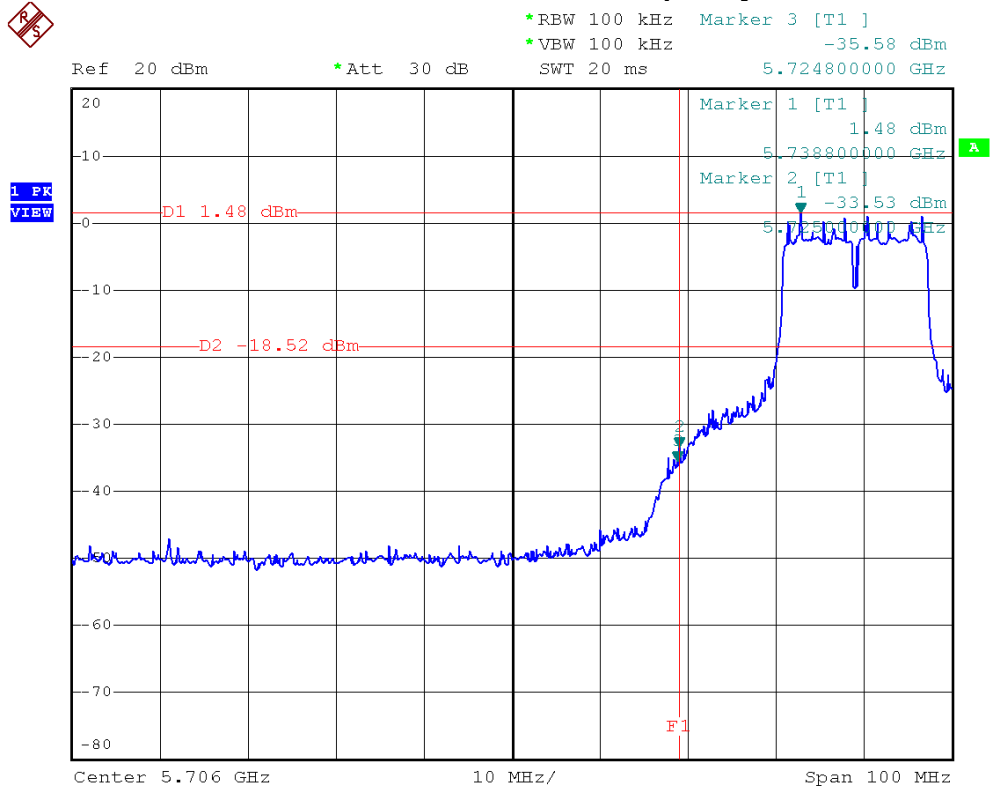
5.8 TEST RESULTS - 5745-5850 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11a		

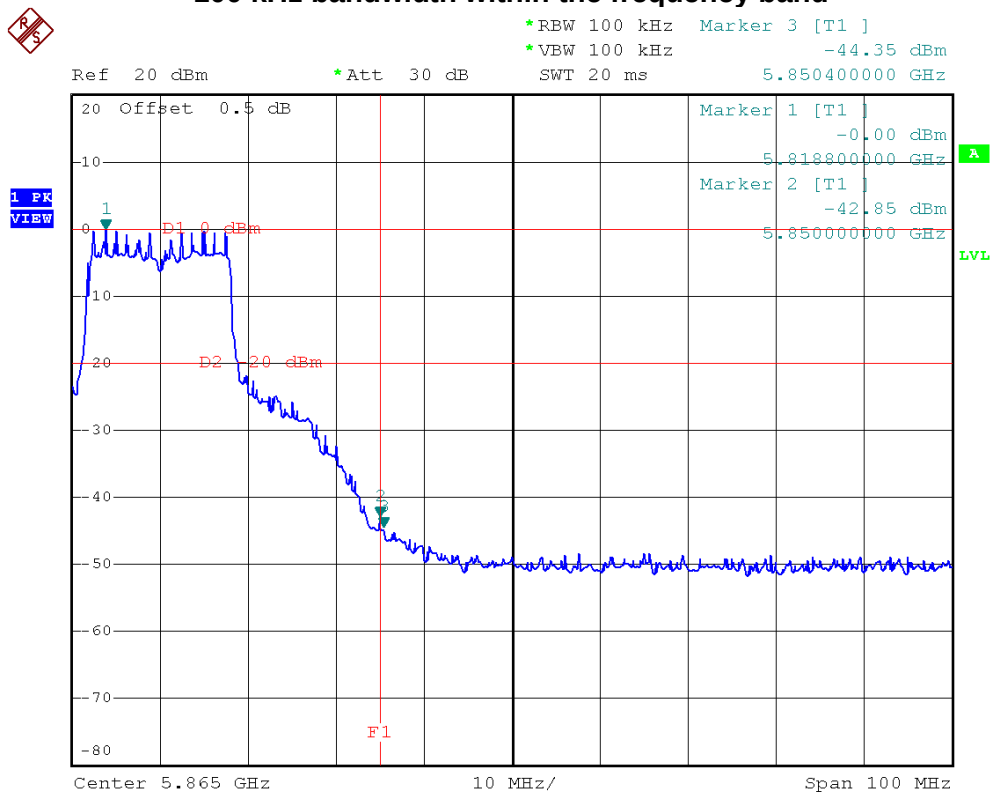
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5724.80	-35.58	5850.40	-44.35
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



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

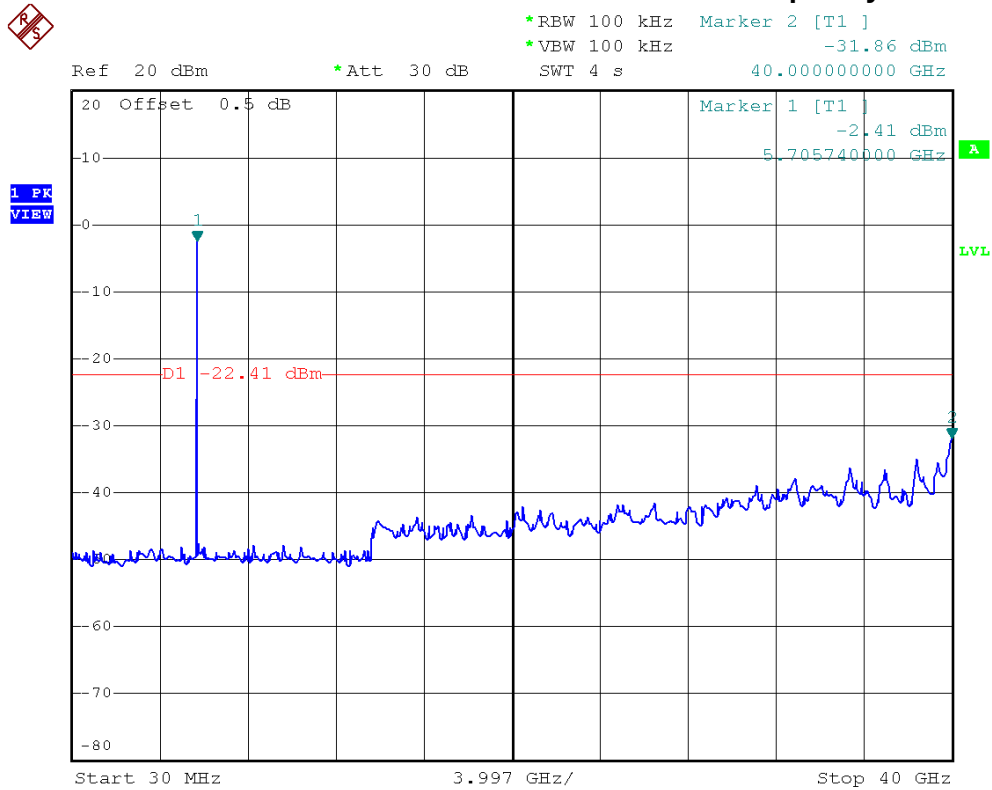


IEEE 802.11a/The max. radio frequency power in any 100 kHz bandwidth within the frequency band

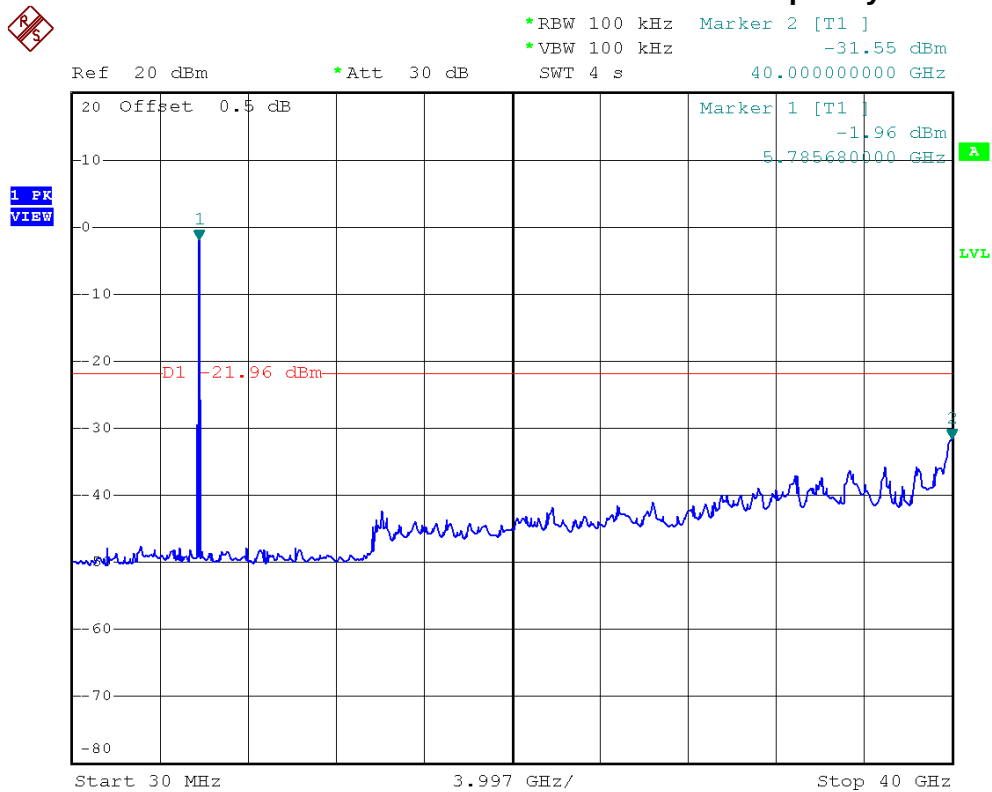




IEEE 802.11a/5745 MHz/10 Harmonic of the frequency



IEEE 802.11a/5785 MHz/10 Harmonic of the frequency

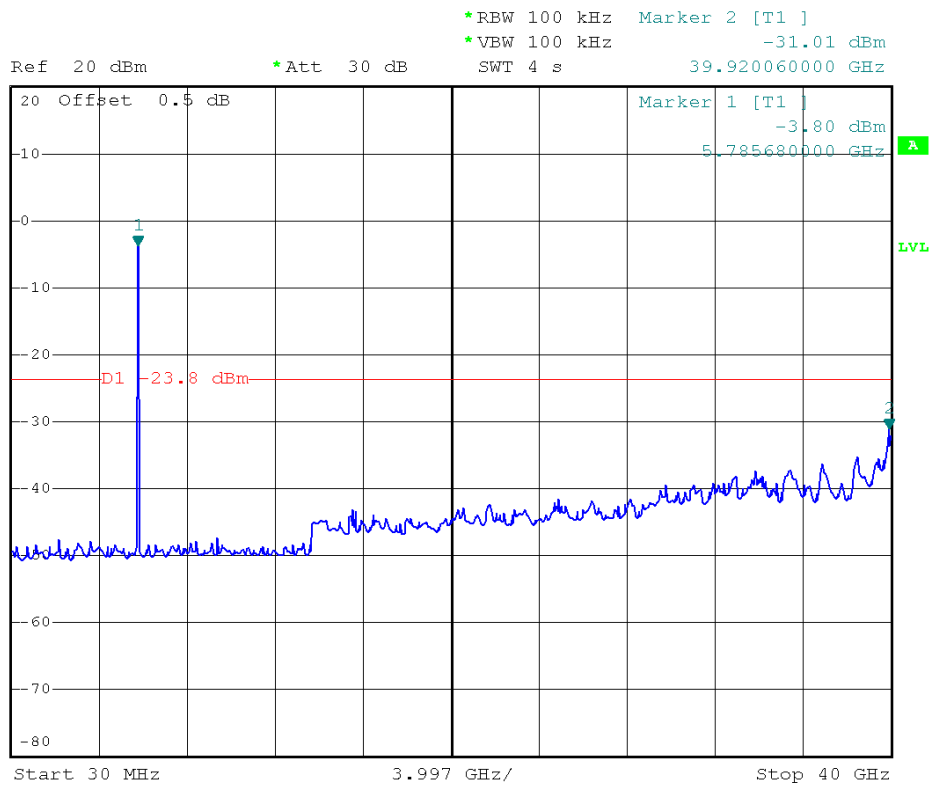




IEEE 802.11a/5825 MHz/10 Harmonic of the frequency



1 PK
VIEW

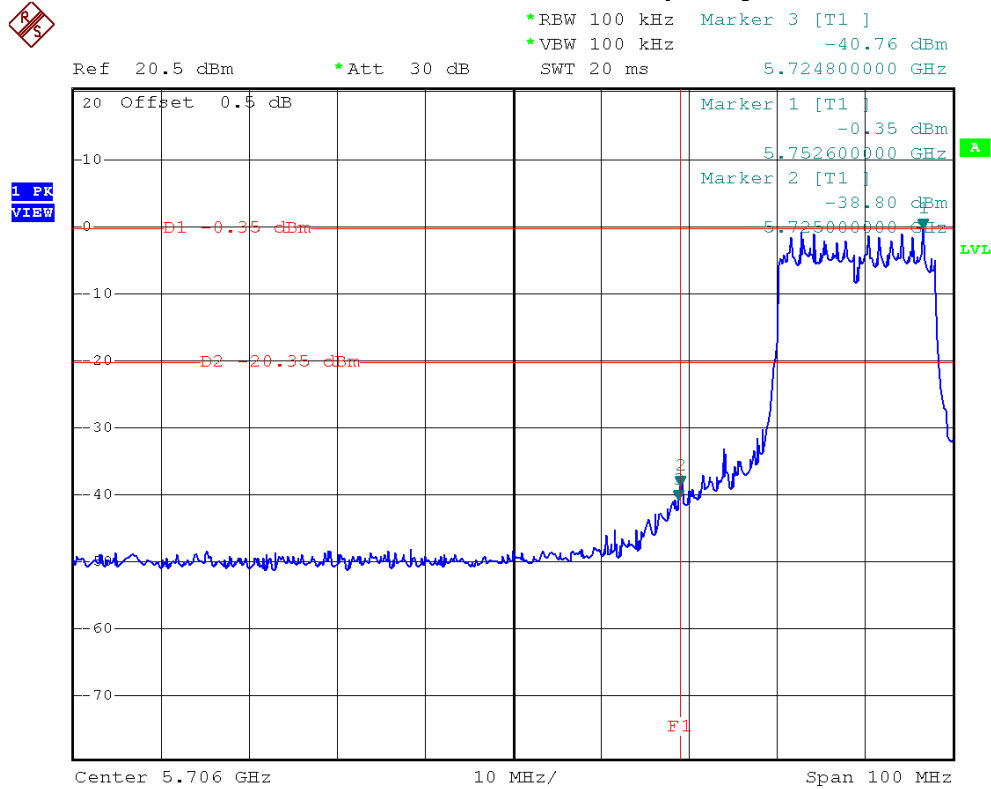




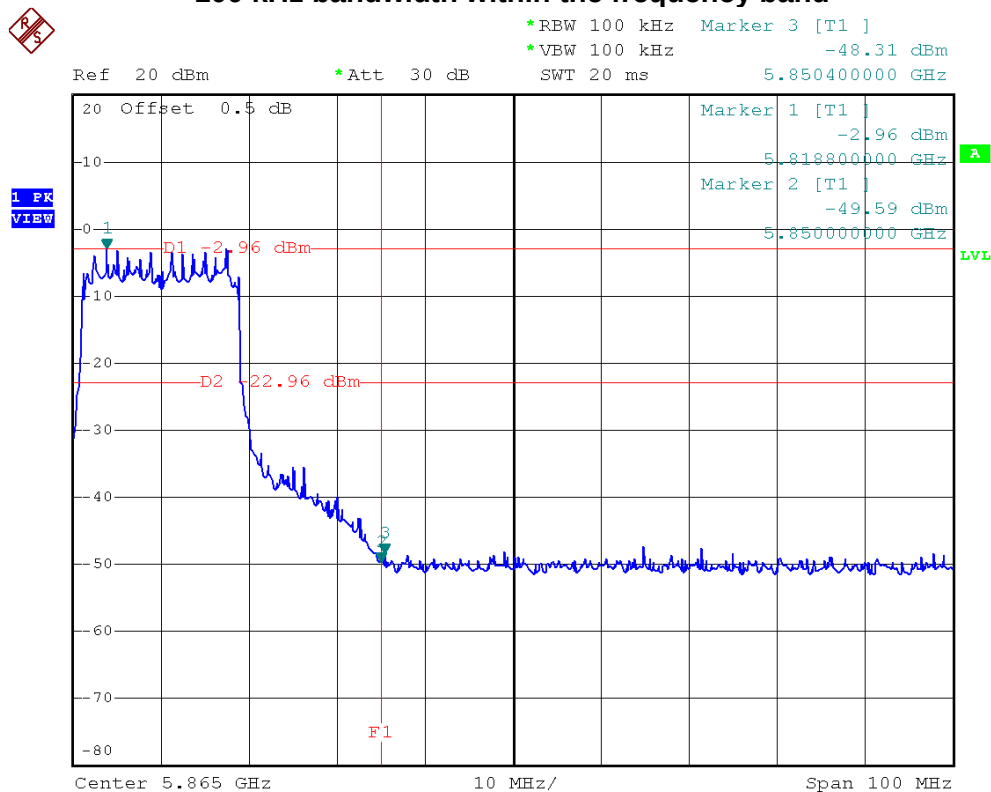
E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.1		

Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5724.80	-40.76	5850.40	-48.31
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			

IEEE 802.11n (20 MHz)/ANT.1/The max. radio frequency power in any 100kHz bandwidth outside the frequency band

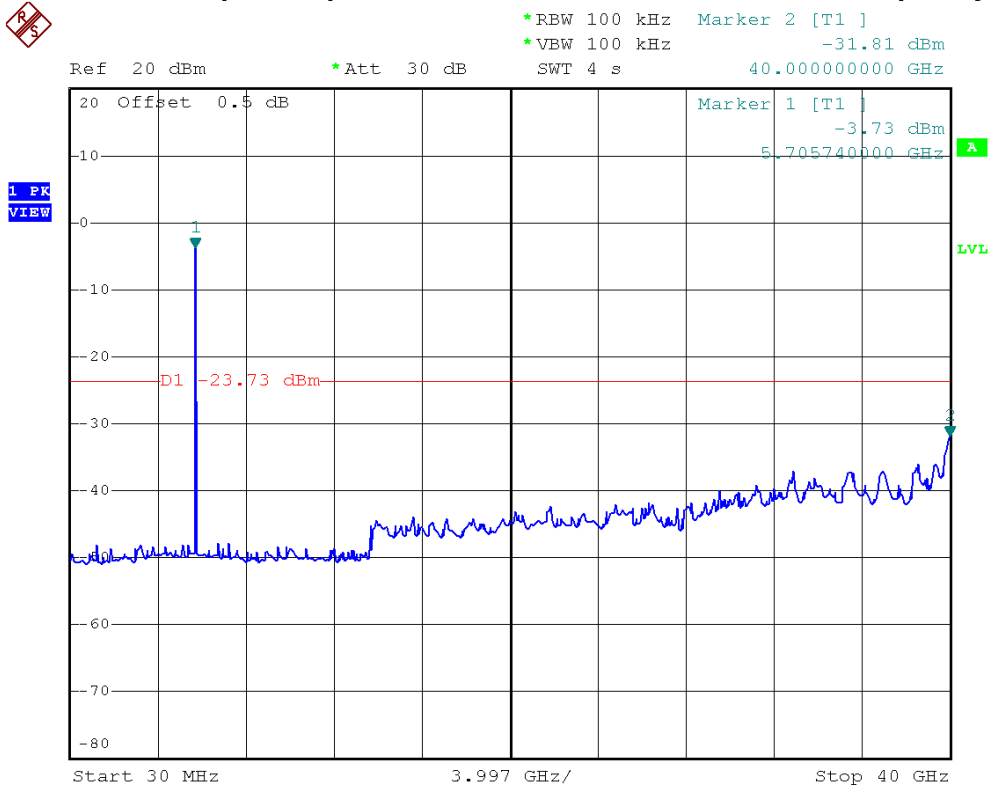


IEEE 802.11n (20 MHz)/ANT.1/The max. radio frequency power in any 100 kHz bandwidth within the frequency band

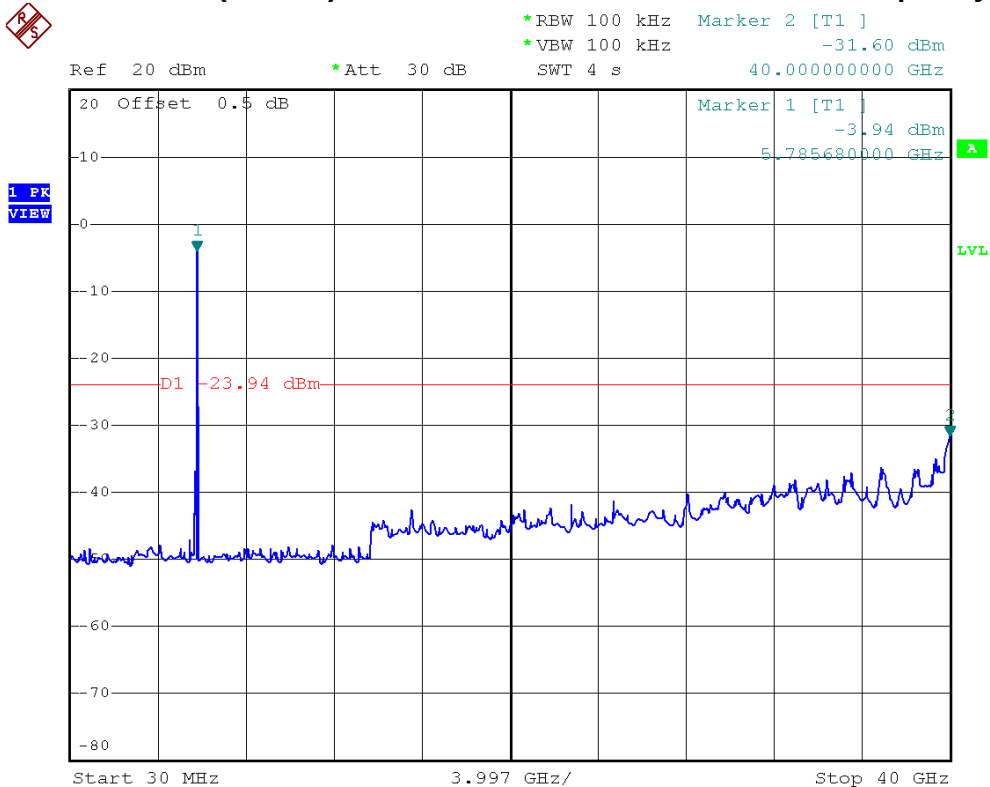




IEEE 802.11n (20 MHz)/ANT.1/5745 MHz/10 Harmonic of the frequency



IEEE 802.11n (20 MHz)/ANT.1/5785 MHz/10 Harmonic of the frequency





IEEE 802.11n (20 MHz)/ANT.1/5825 MHz/10 Harmonic of the frequency



*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -31.01 dBm
SWT 4 s 39.920060000 GHz

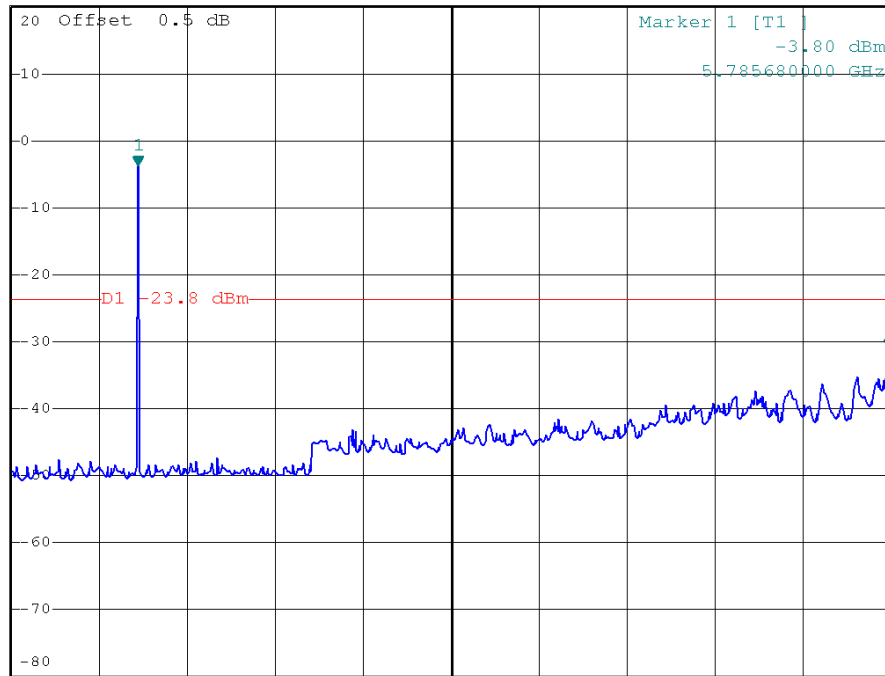
Ref 20 dBm

*Att 30 dB

SWT 4 s

39.920060000 GHz

1 PK
VIEW



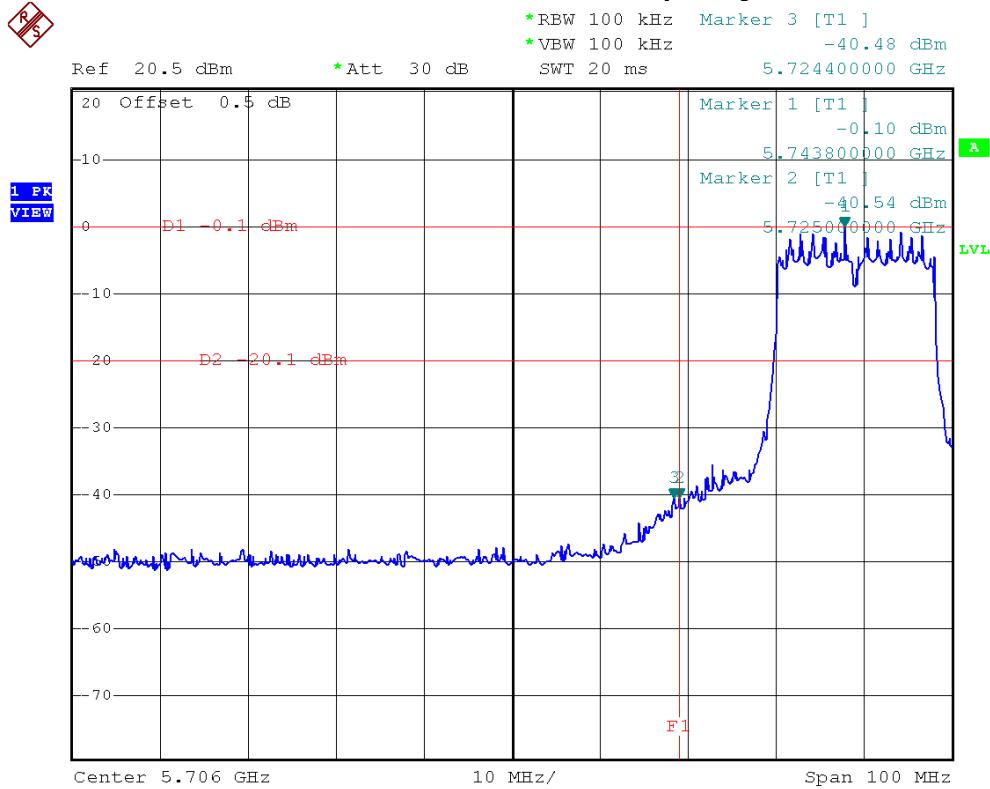


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.2		

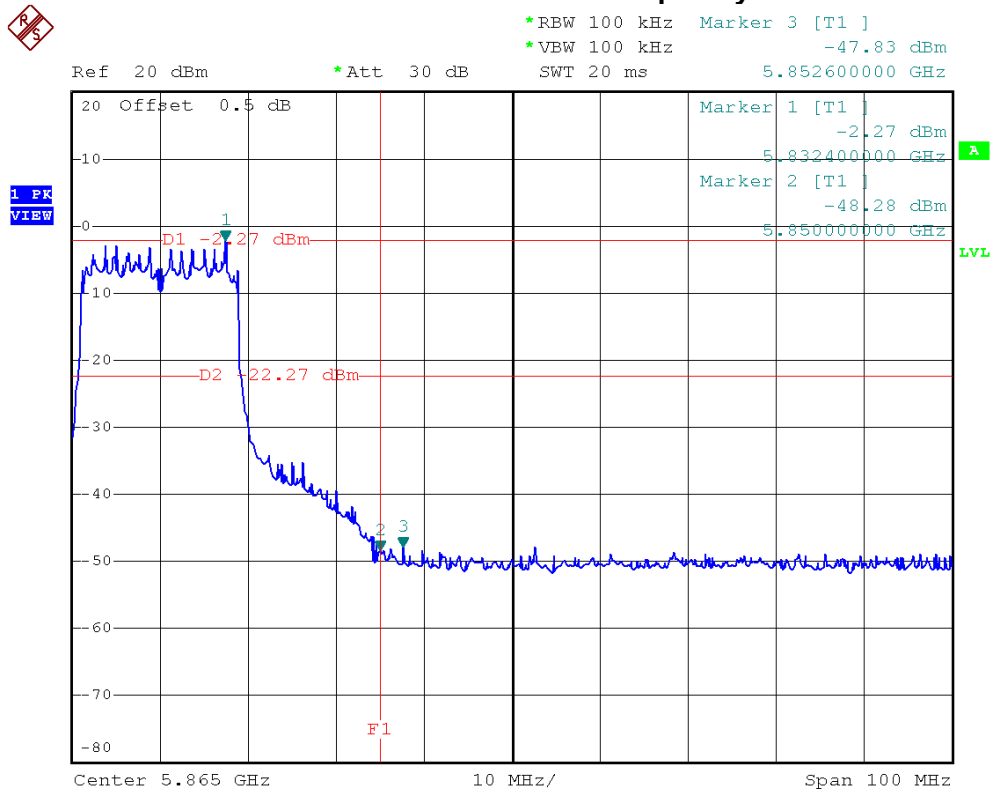
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5724.40	-40.48	5852.60	-47.83
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



IEEE 802.11n (20 MHz)/ANT.2/The max. radio frequency power in any 100kHz bandwidth outside the frequency band

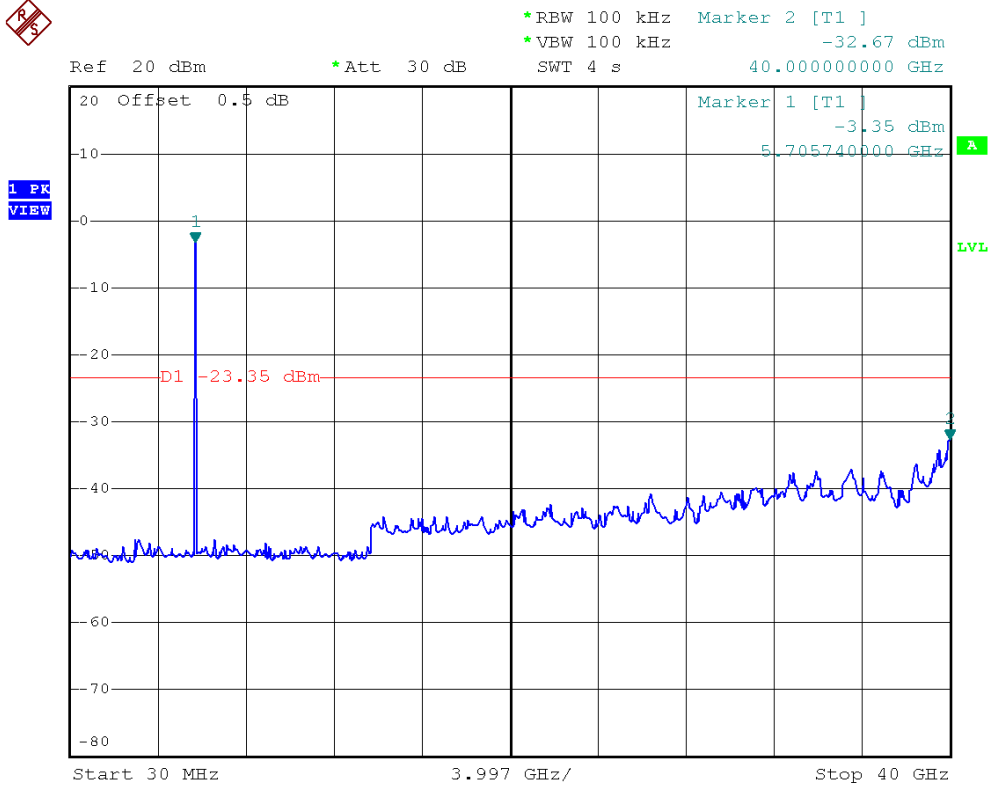


IEEE 802.11n (20 MHz)/ANT.2/The max. radio frequency power in any 100 kHz bandwidth within the frequency band

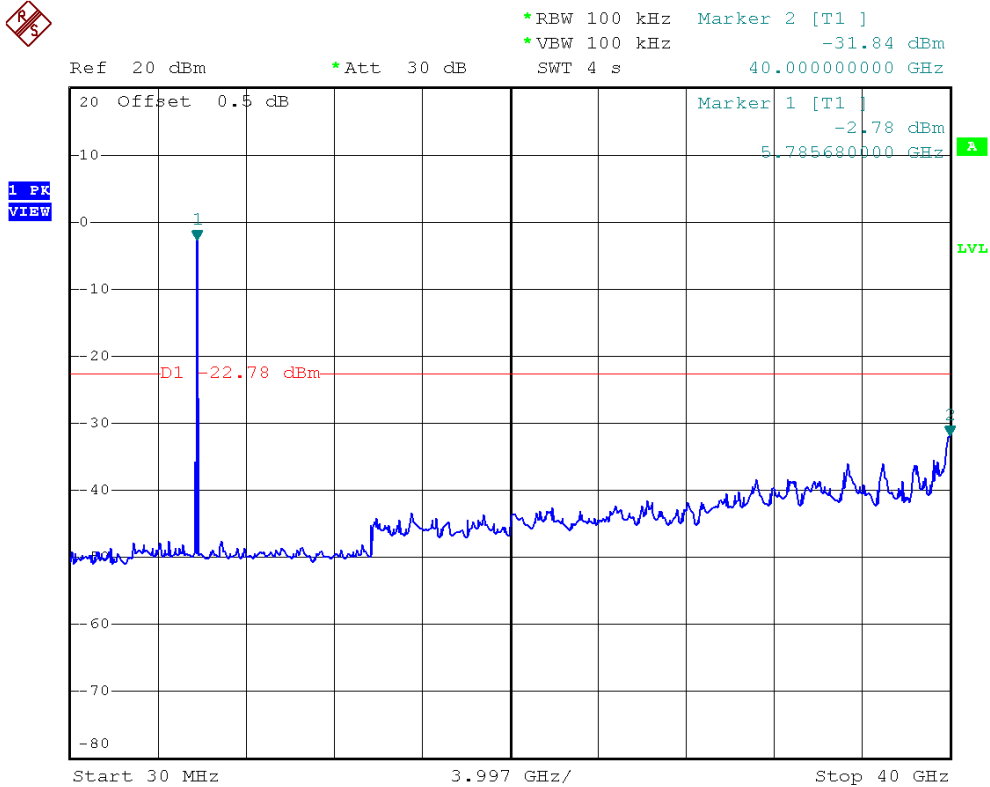




IEEE 802.11n (20 MHz)/ANT.2/5745 MHz/10 Harmonic of the frequency



IEEE 802.11n (20 MHz)/ANT.2/5785 MHz/10 Harmonic of the frequency





IEEE 802.11n (20 MHz)/ANT.2/5825 MHz/10 Harmonic of the frequency



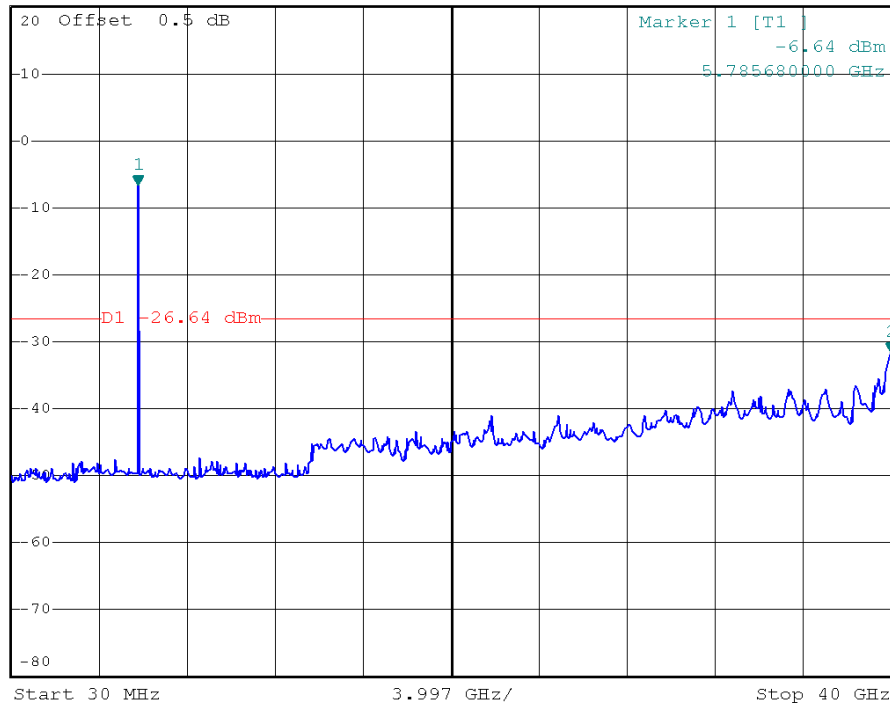
*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -31.61 dBm
SWT 4 s 40.000000000 GHz

Ref 20 dBm

*Att 30 dB

40.000000000 GHz

1 PK
VIEW



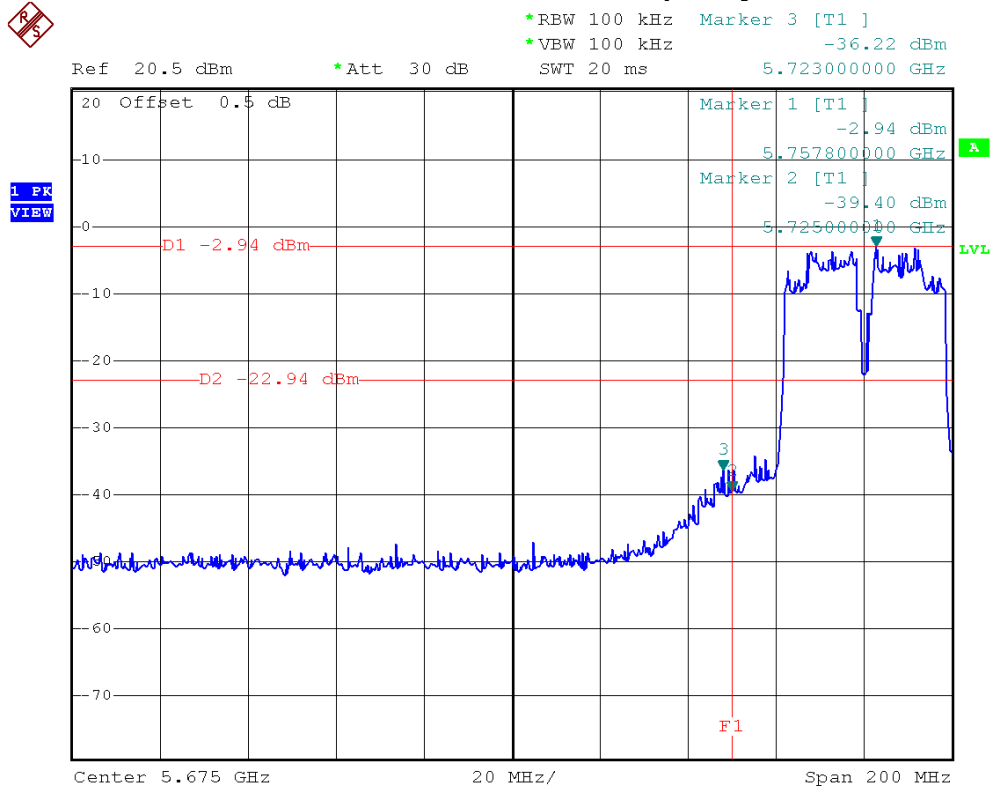


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.1		

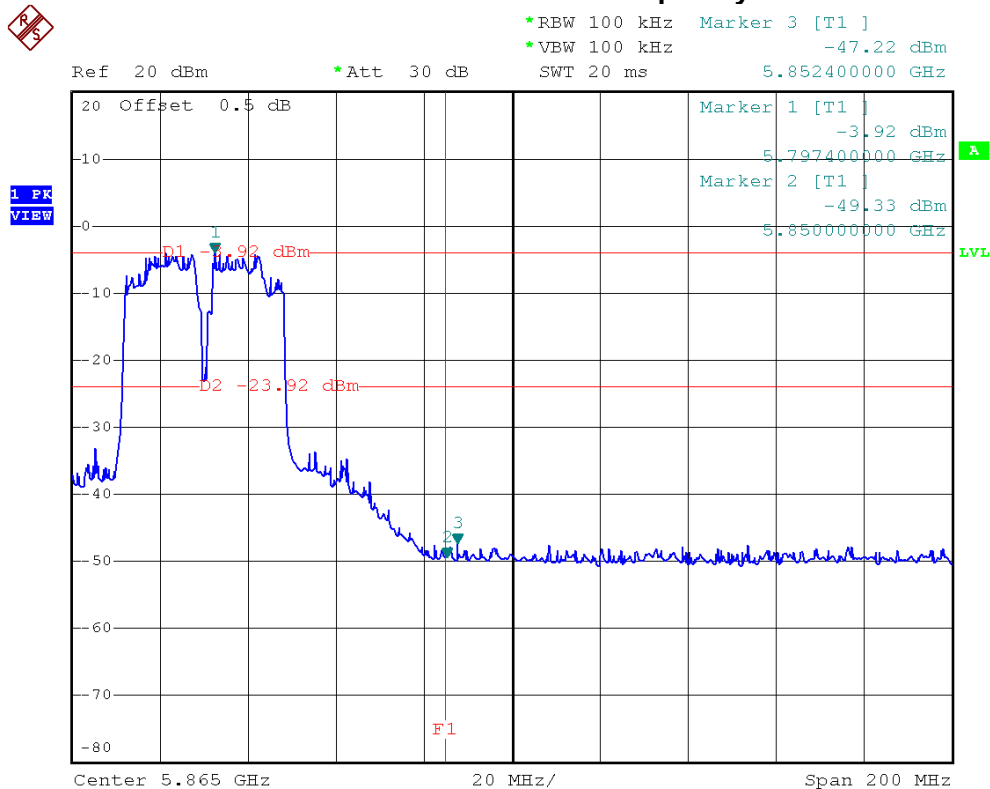
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5723.00	-36.22	5852.40	-47.22
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



IEEE 802.11n (40 MHz)/ANT.1/The max. radio frequency power in any 100kHz bandwidth outside the frequency band

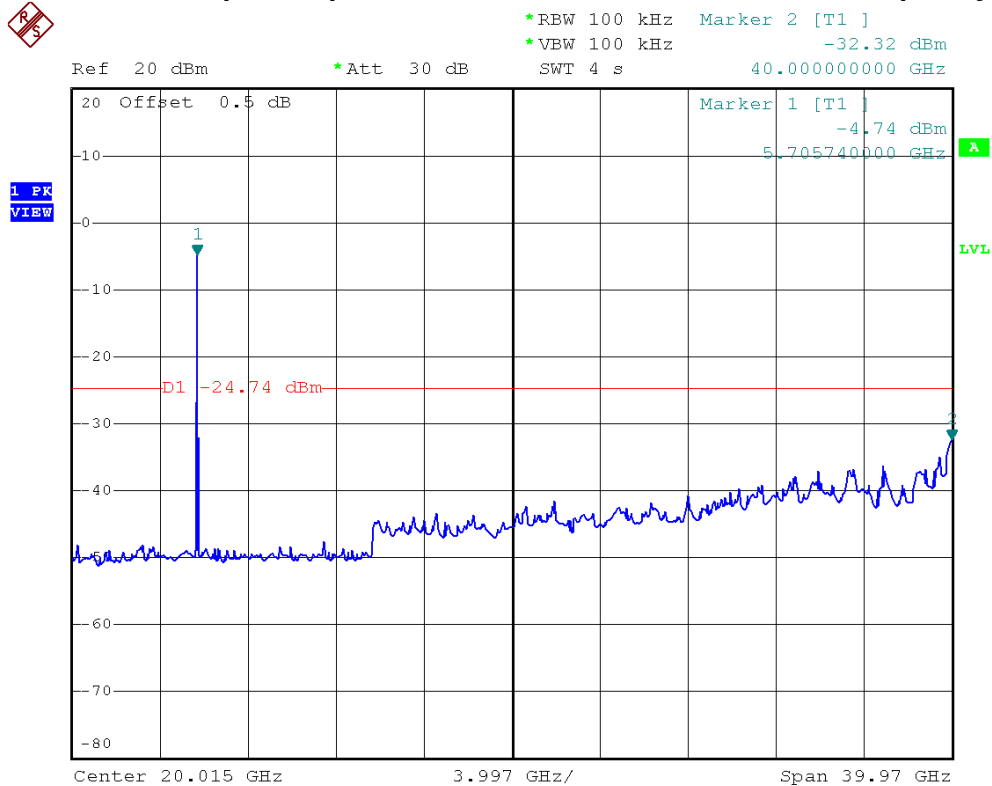


IEEE 802.11n (40 MHz)/ANT.1/The max. radio frequency power in any 100 kHz bandwidth within the frequency band

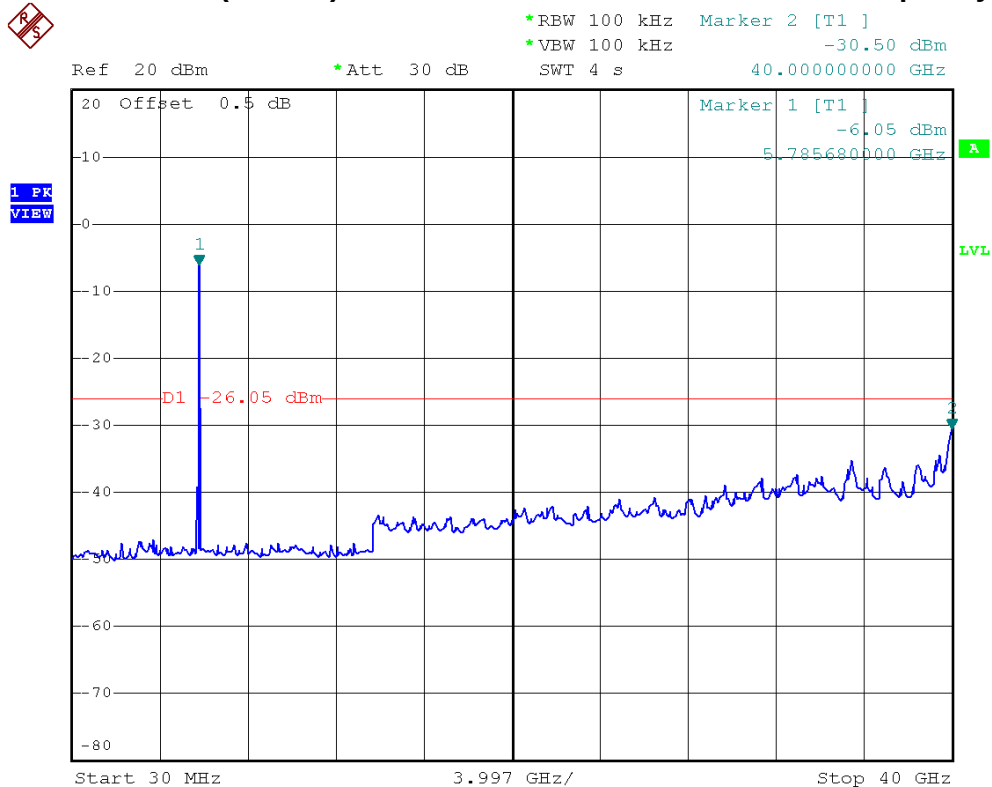




IEEE 802.11n (40 MHz)/ANT.1/5755 MHz/10 Harmonic of the frequency



IEEE 802.11n (40 MHz)/ANT.1/5795 MHz/10 Harmonic of the frequency



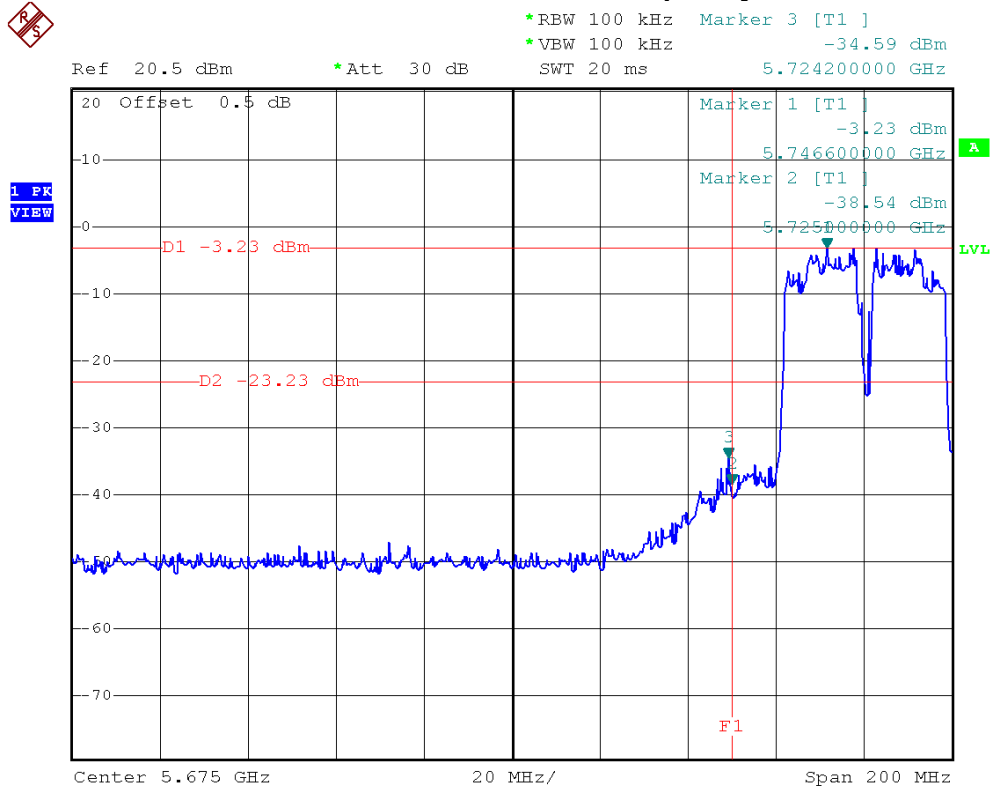


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.2		

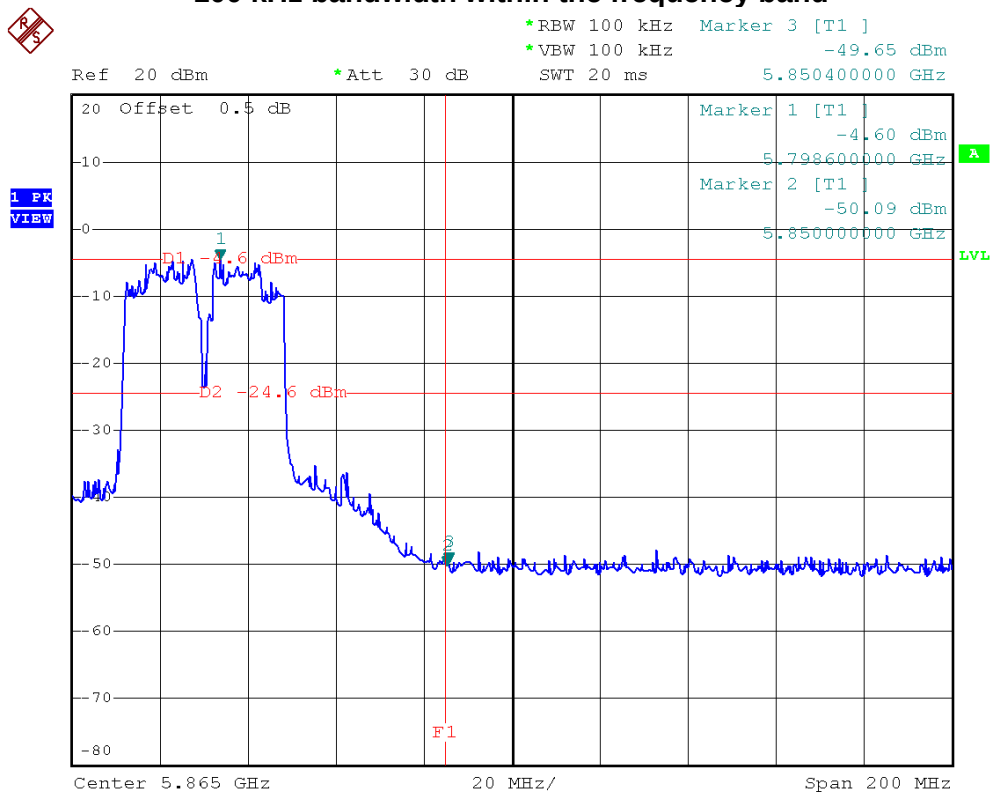
Channel of Worst Data			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
5724.20	-34.59	5850.40	-49.65
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



IEEE 802.11n (40 MHz)/ANT.2/The max. radio frequency power in any 100kHz bandwidth outside the frequency band



IEEE 802.11n (40 MHz)/ANT.2/The max. radio frequency power in any 100 kHz bandwidth within the frequency band





IEEE 802.11n (40 MHz)/ANT.2/5755 MHz/10 Harmonic of the frequency



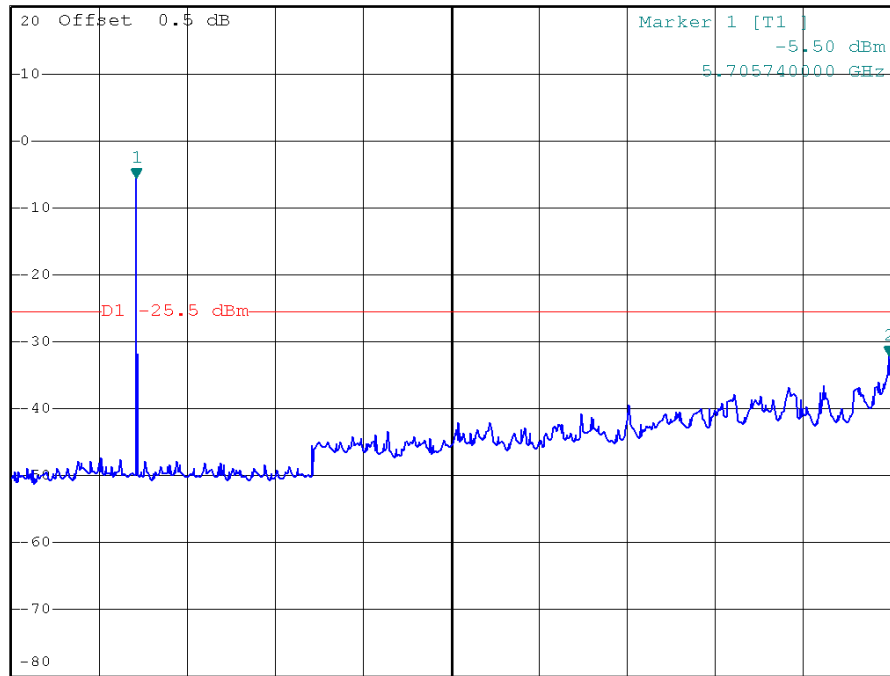
*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -32.19 dBm
SWT 4 s 39.920060000 GHz

Ref 20 dBm

*Att 30 dB

39.920060000 GHz

1 PK
VIEW



Start 30 MHz

3.997 GHz/

Stop 40 GHz

IEEE 802.11n (40 MHz)/ANT.2/5795 MHz/10 Harmonic of the frequency



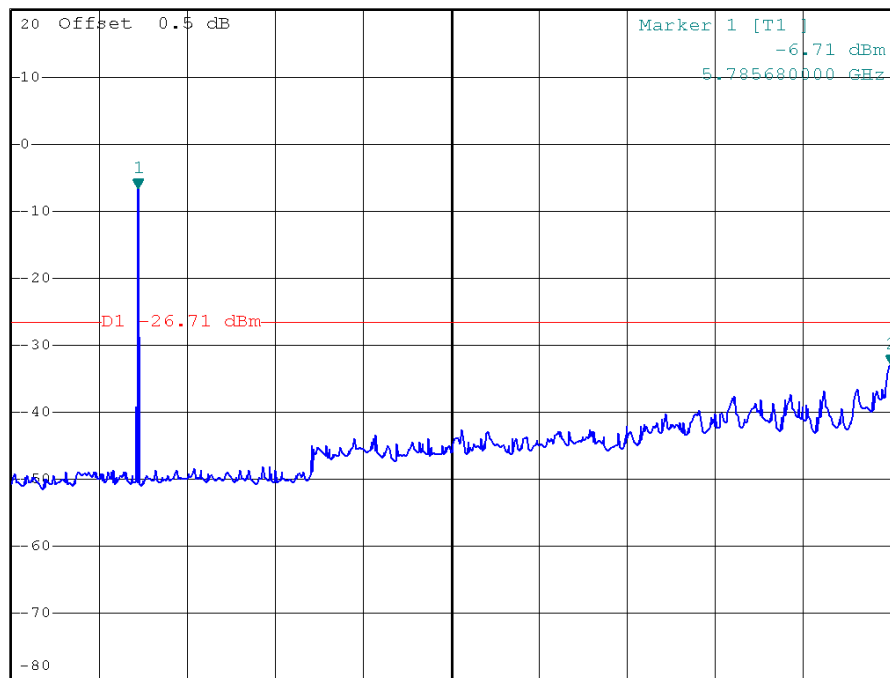
*RBW 100 kHz Marker 2 [T1]
*VBW 100 kHz -32.85 dBm
SWT 4 s 40.000000000 GHz

Ref 20 dBm

*Att 30 dB

40.000000000 GHz

1 PK
VIEW



Start 30 MHz

3.997 GHz/

Stop 40 GHz



6 6 DB BANDWIDTH

6.1 LIMIT

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

6.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 06, 2012

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

6.3 TEST PROCEDURES

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

6.4 TEST SETUP LAYOUT



6.5 DEVIATION FROM TEST STANDARD

No deviation

6.6 EUT OPERATING CONDITIONS

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

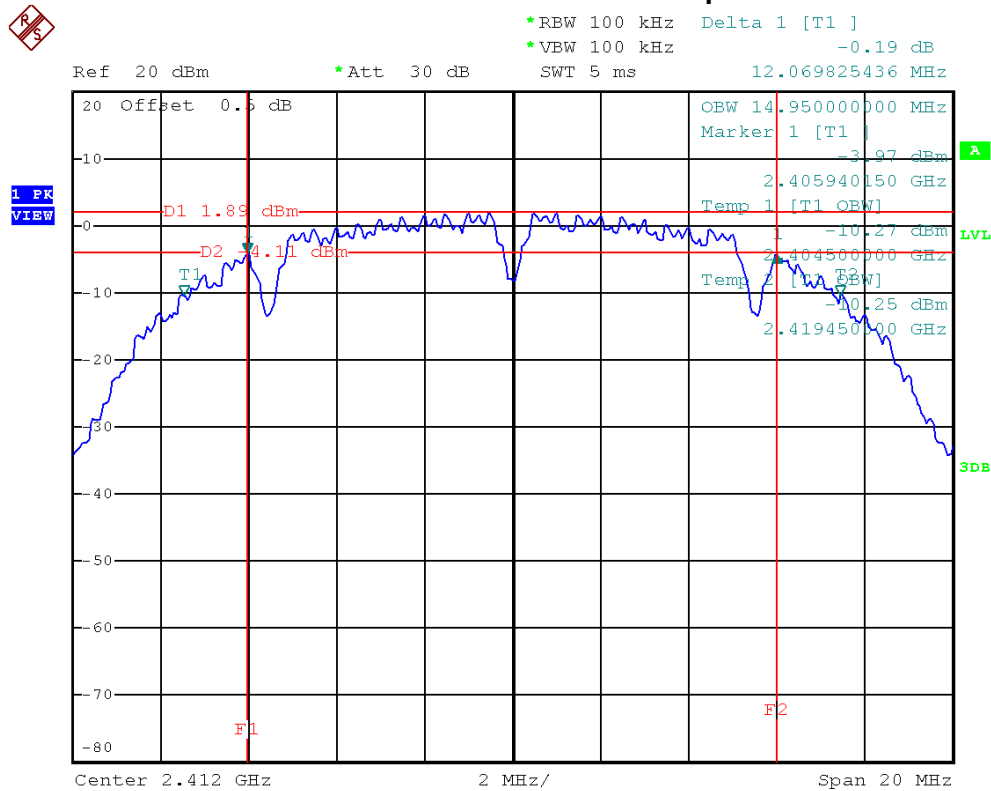


6.7 TEST RESULTS - 2400-2483.5 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2412 MHz, 2437 MHz, 2462 MHz		

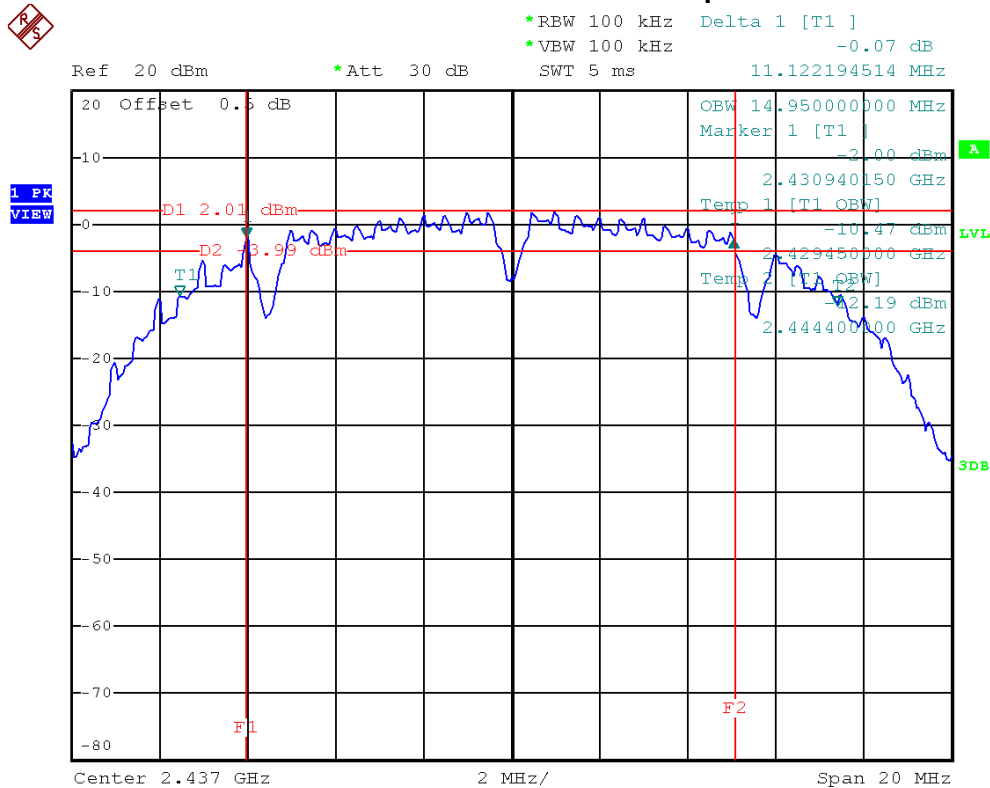
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
2412 MHz	12.07	14.95	>=500 kHz	PASS
2437 MHz	11.12	14.95	>=500 kHz	PASS
2462 MHz	10.17	14.90	>=500 kHz	PASS

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

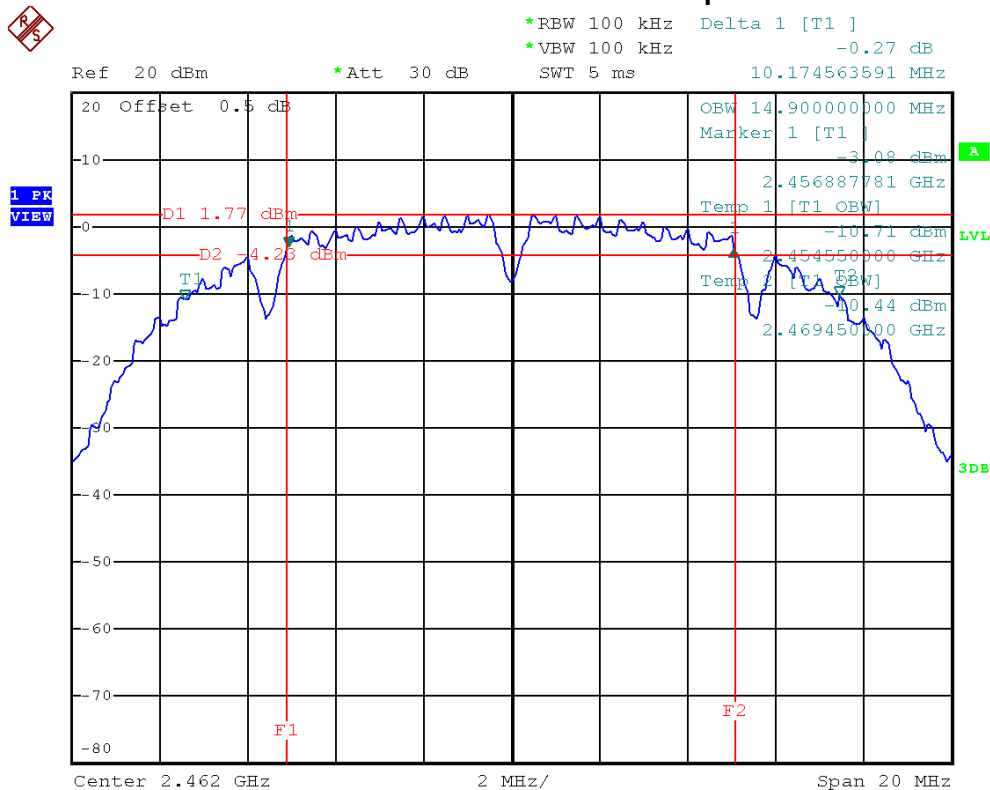




IEEE 802.11b/2437 MHz/6 dB and 99% Occupied Bandwidth

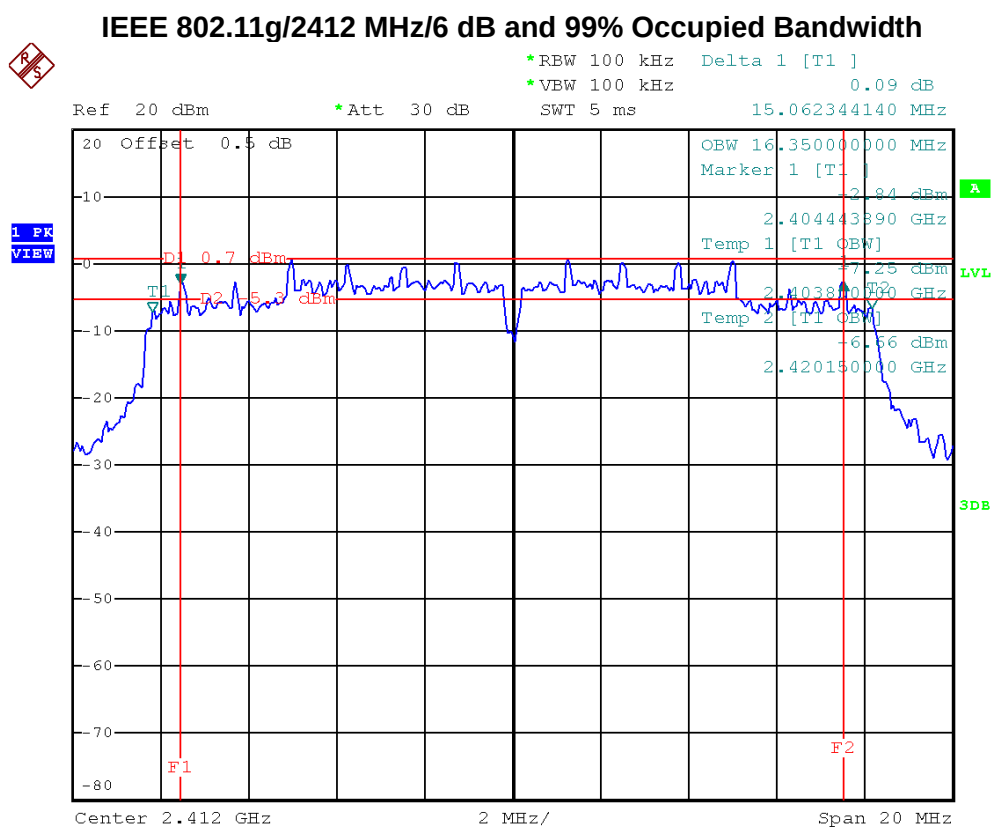


IEEE 802.11b/2462 MHz/6 dB and 99% Occupied Bandwidth



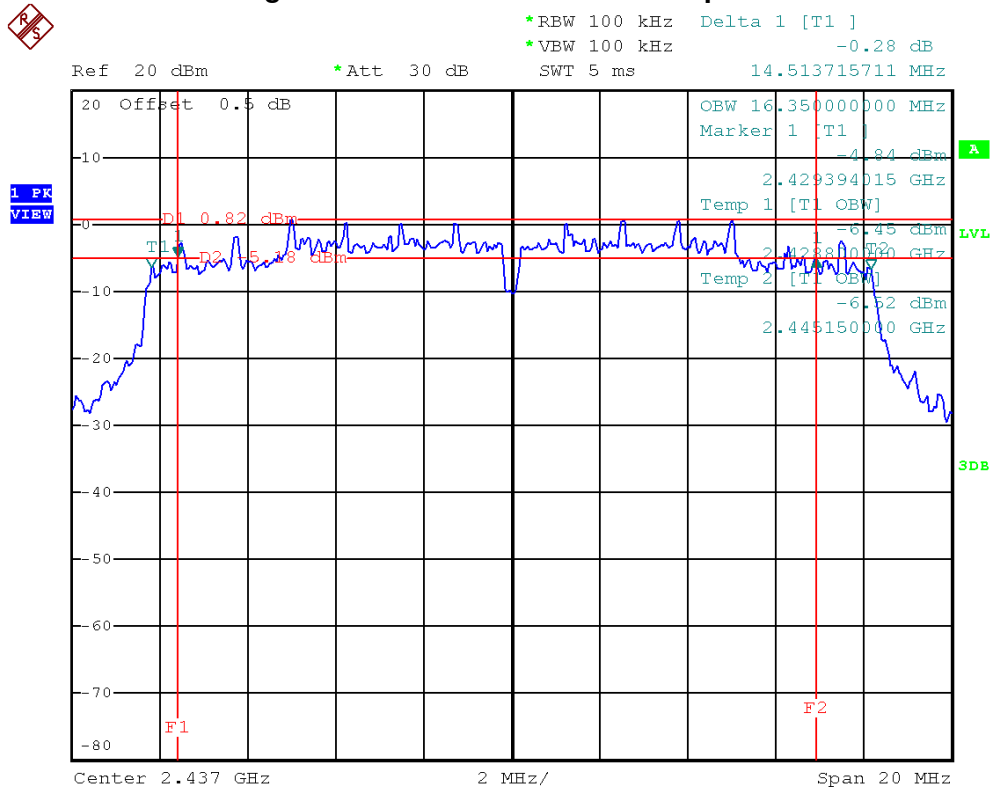


Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
2412 MHz	15.06	16.35	>=500 kHz	PASS
2437 MHz	14.51	16.35	>=500 kHz	PASS
2462 MHz	15.02	16.35	>=500 kHz	PASS

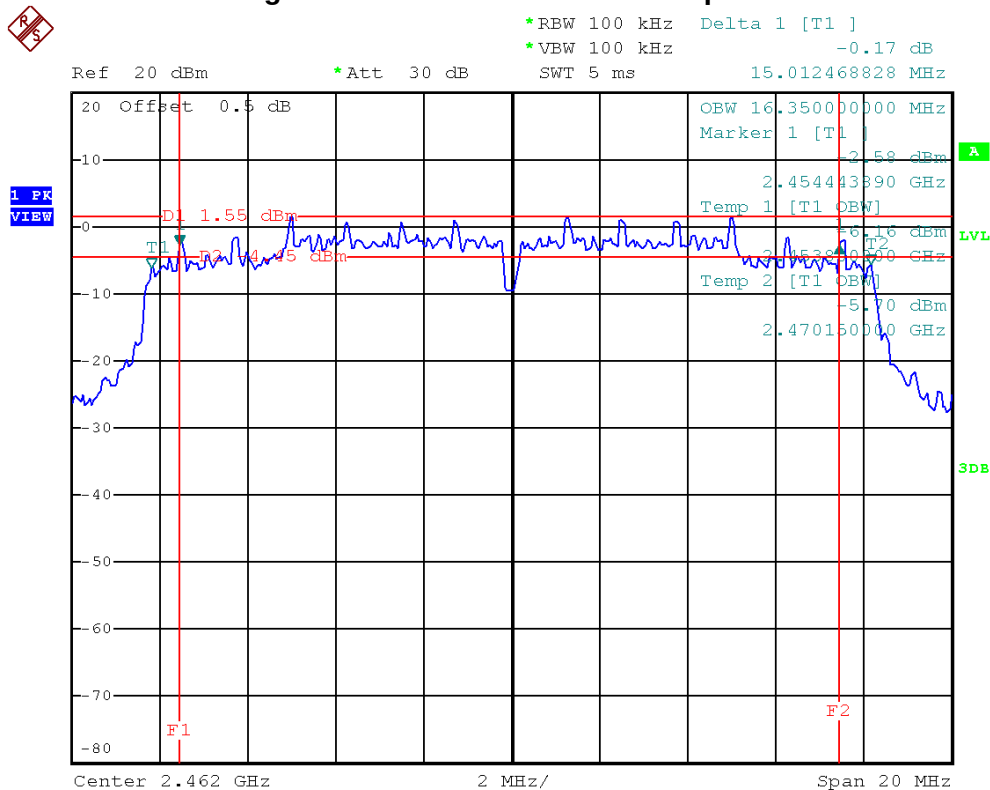




IEEE 802.11g/2437 MHz/6 dB and 99% Occupied Bandwidth



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

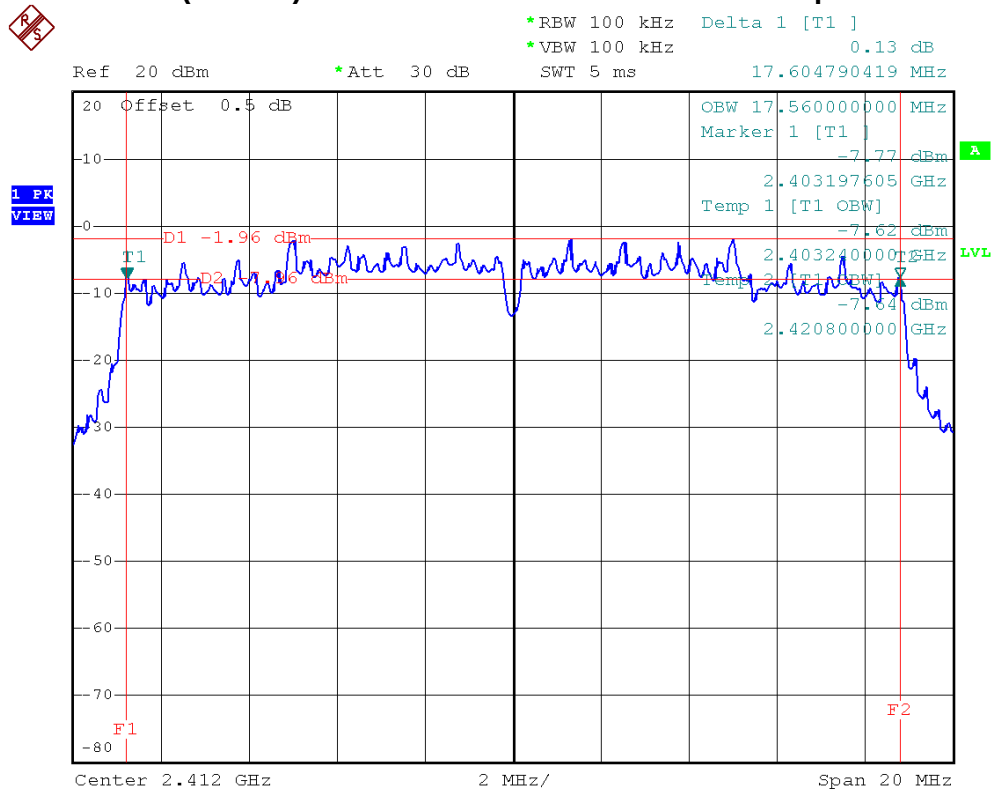




E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.1/2412 MHz, 2437 MHz, 2462 MHz		

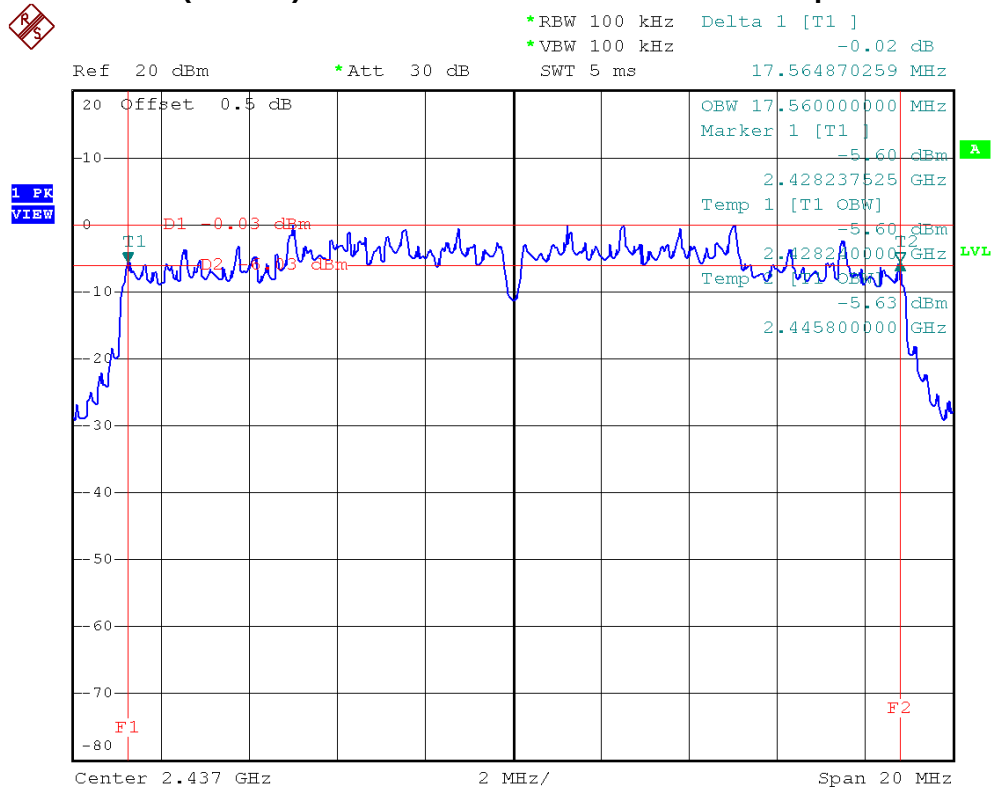
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
2412 MHz	17.60	17.56	>=500 kHz	PASS
2437 MHz	17.56	17.56	>=500 kHz	PASS
2462 MHz	17.56	17.56	>=500 kHz	PASS

IEEE 802.11n (20 MHz)/ANT.1/2412 MHz/6 dB and 99% Occupied Bandwidth

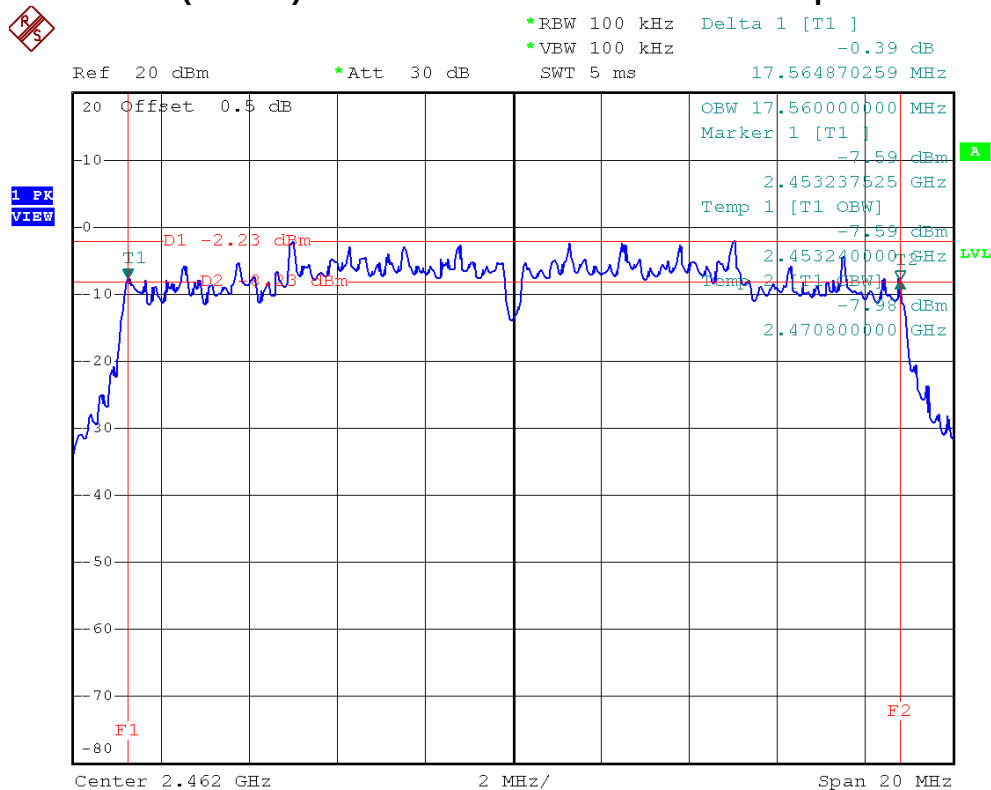




IEEE 802.11n (20 MHz)/ANT.1/2437 MHz/6 dB and 99% Occupied Bandwidth



IEEE 802.11n (20 MHz)/ANT.1/2462 MHz/6 dB and 99% Occupied Bandwidth

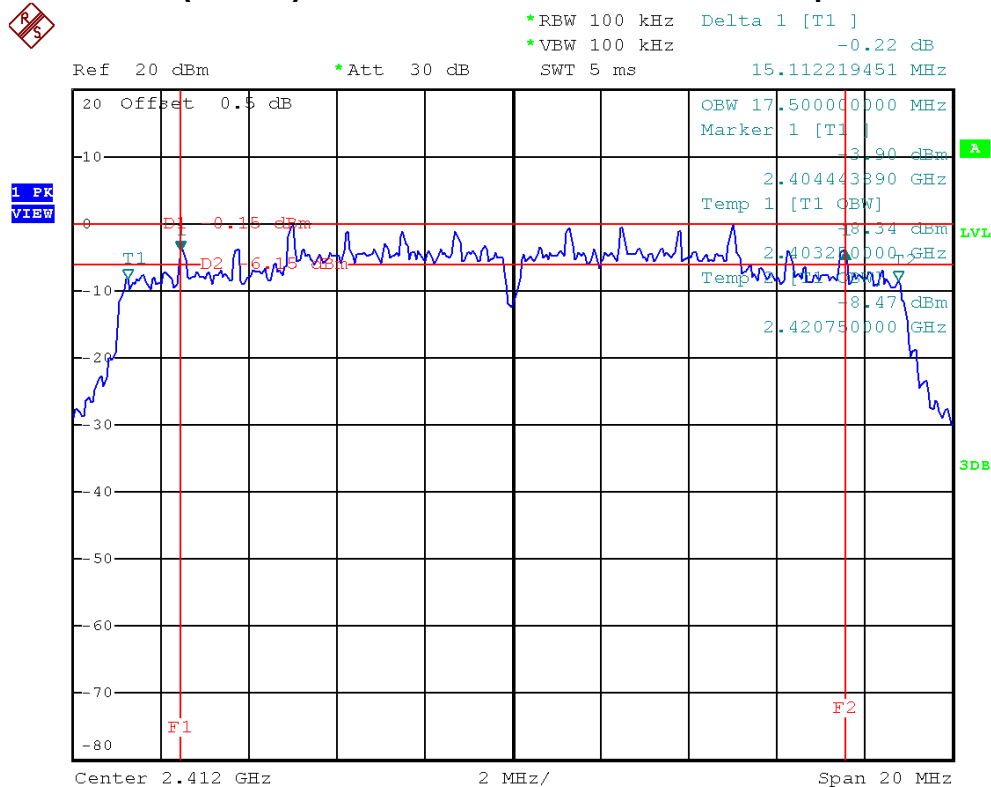




E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.2/2412 MHz, 2437 MHz, 2462 MHz		

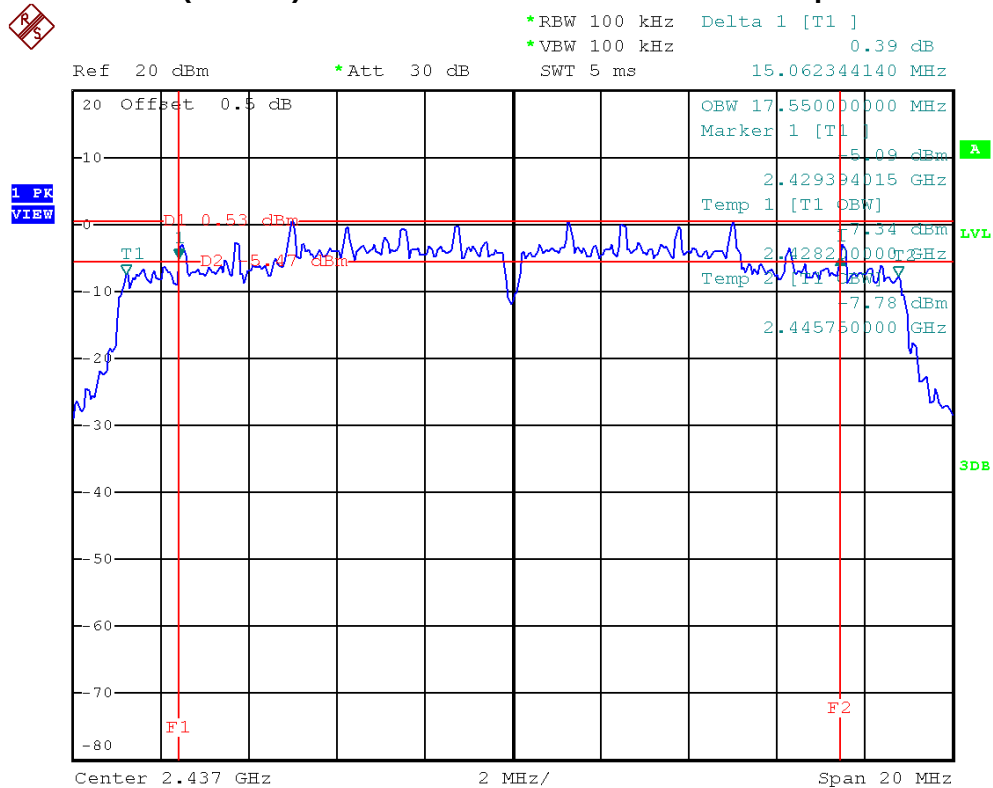
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
2412 MHz	15.11	17.50	>=500 kHz	PASS
2437 MHz	15.06	17.55	>=500 kHz	PASS
2462 MHz	15.11	17.55	>=500 kHz	PASS

IEEE 802.11n (20 MHz)/ANT.2/2412 MHz/6 dB and 99% Occupied Bandwidth

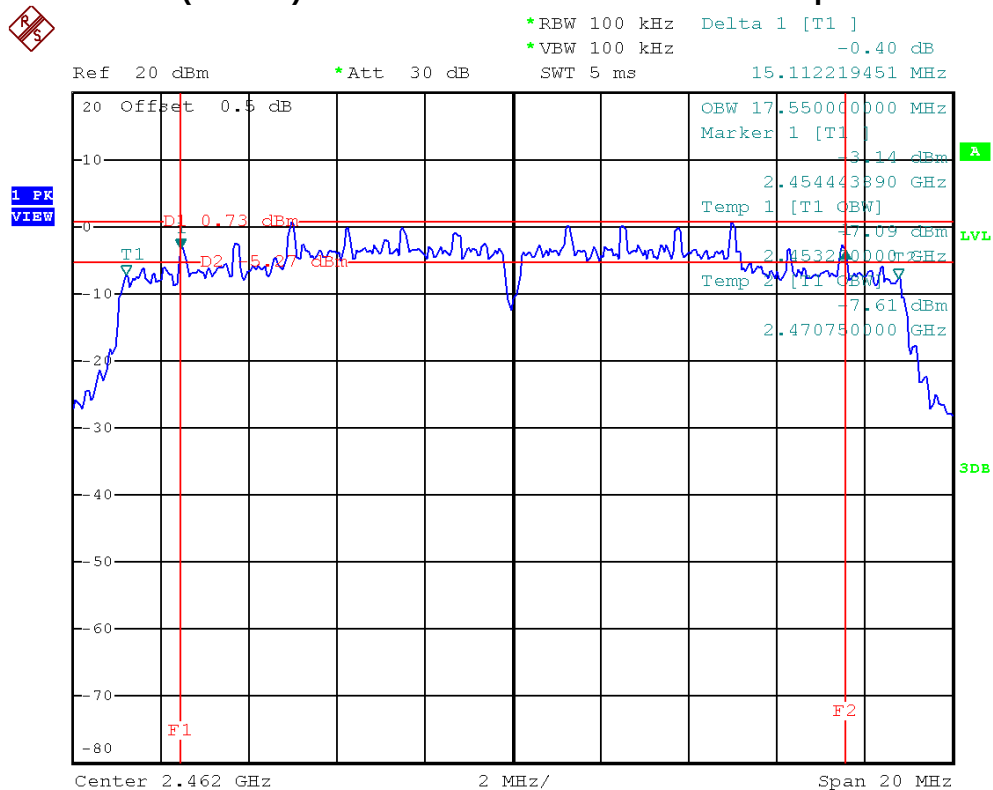




IEEE 802.11n (20 MHz)/ANT.2/2437 MHz/6 dB and 99% Occupied Bandwidth



IEEE 802.11n (20 MHz)/ANT.2/2462 MHz/6 dB and 99% Occupied Bandwidth

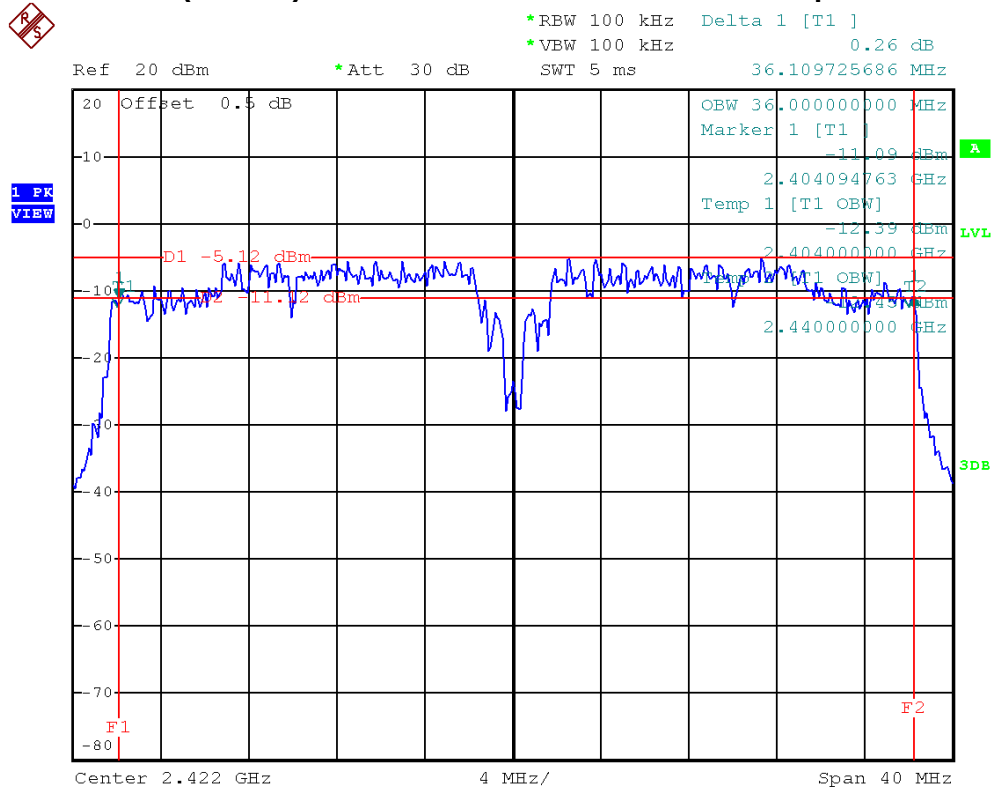




E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.1/2422 MHz, 2437 MHz, 2452 MHz		

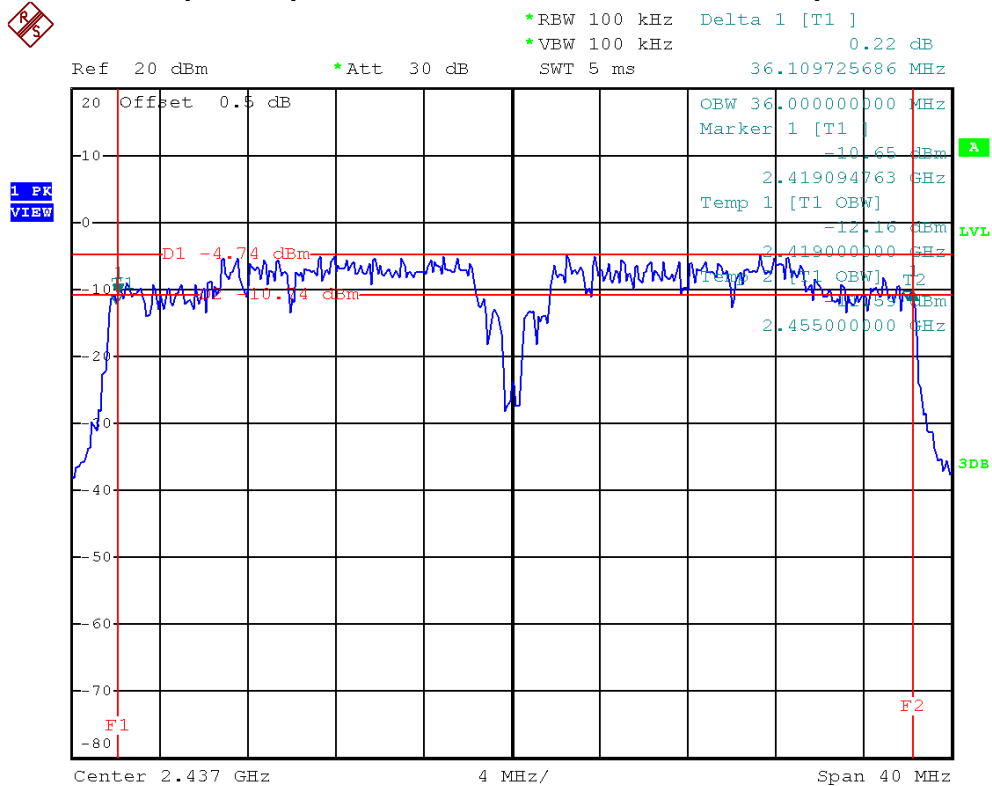
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
2422 MHz	36.11	36.00	>=500 kHz	PASS
2437 MHz	36.11	36.00	>=500 kHz	PASS
2452 MHz	35.31	36.00	>=500 kHz	PASS

IEEE 802.11n (40 MHz)/ANT.1/2422 MHz/6 dB and 99% Occupied Bandwidth

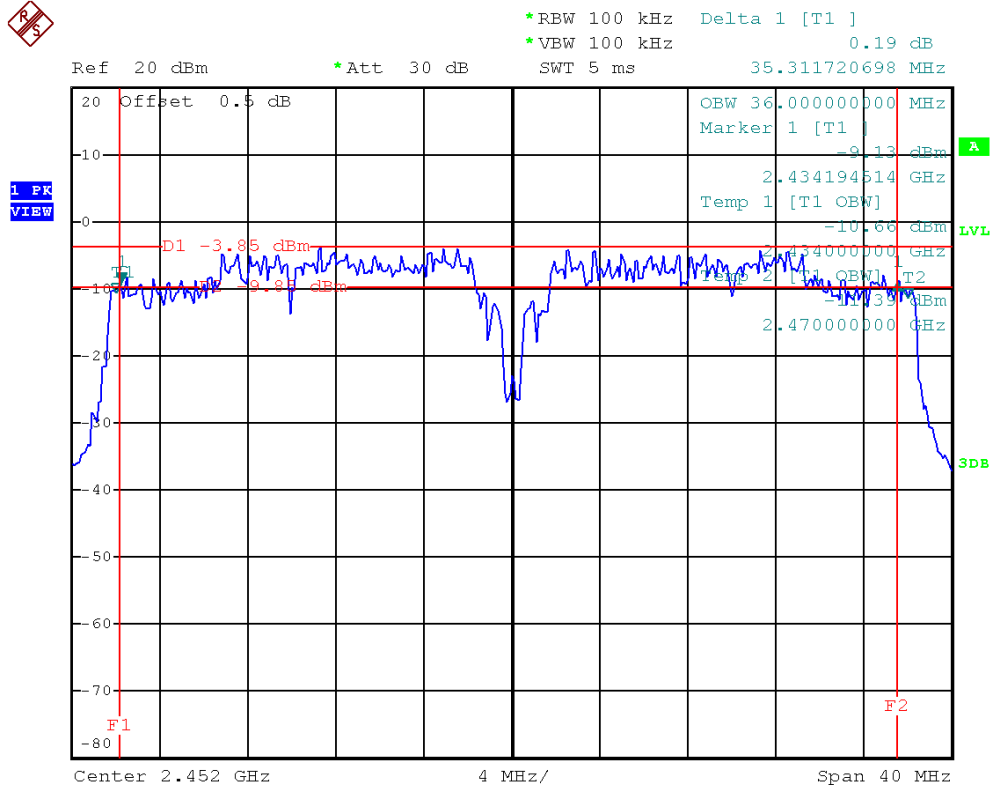




IEEE 802.11n (40 MHz)/ANT.1/2437 MHz/6 dB and 99% Occupied Bandwidth



IEEE 802.11n (40 MHz)/ANT.1/2452 MHz/6 dB and 99% Occupied Bandwidth

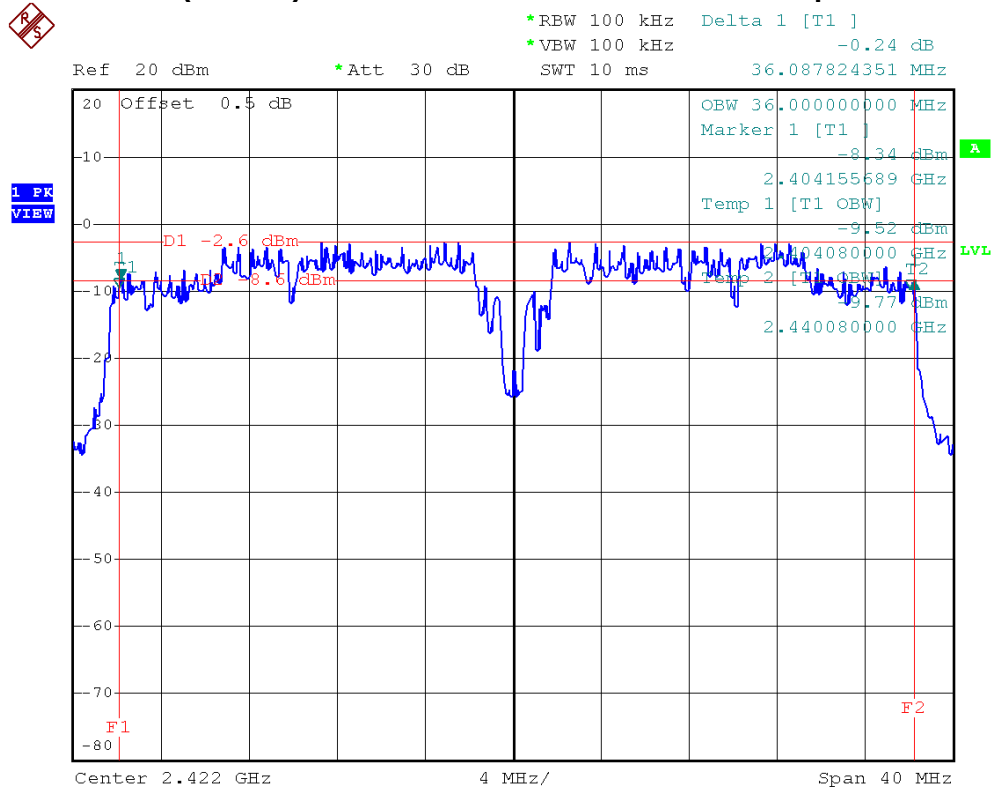




E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.2/2422 MHz, 2437 MHz, 2452 MHz		

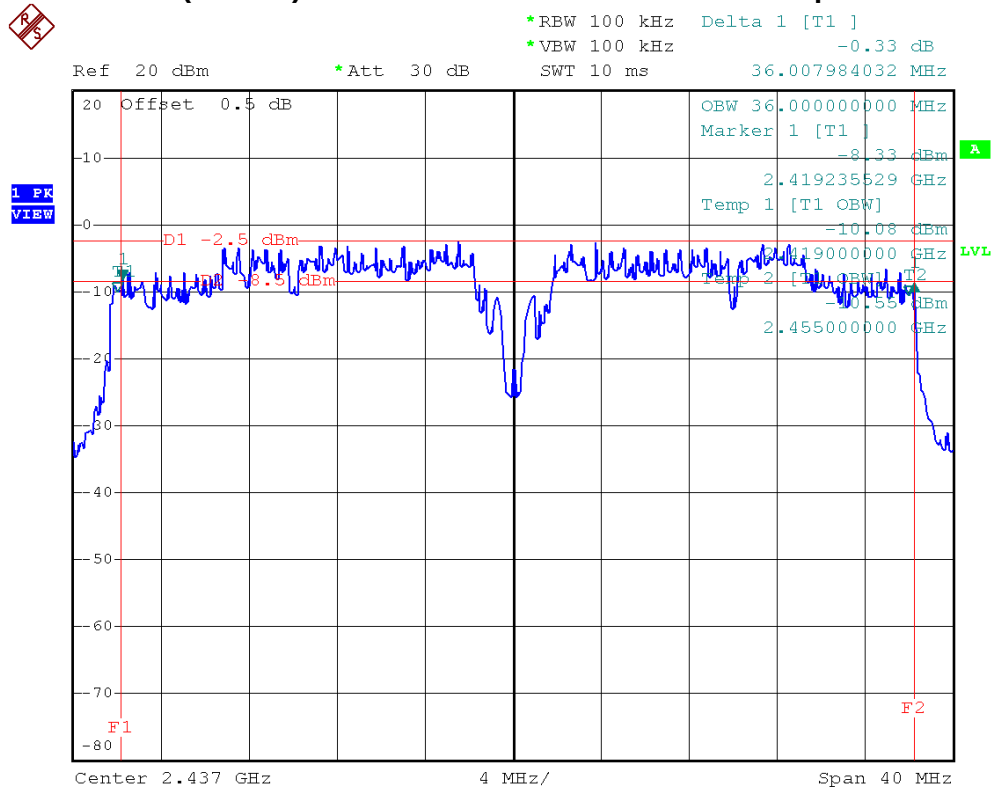
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
2422 MHz	36.09	36.00	>=500 kHz	PASS
2437 MHz	36.01	36.00	>=500 kHz	PASS
2452 MHz	36.01	35.92	>=500 kHz	PASS

IEEE 802.11n (40 MHz)/ANT.2/2422 MHz/6 dB and 99% Occupied Bandwidth

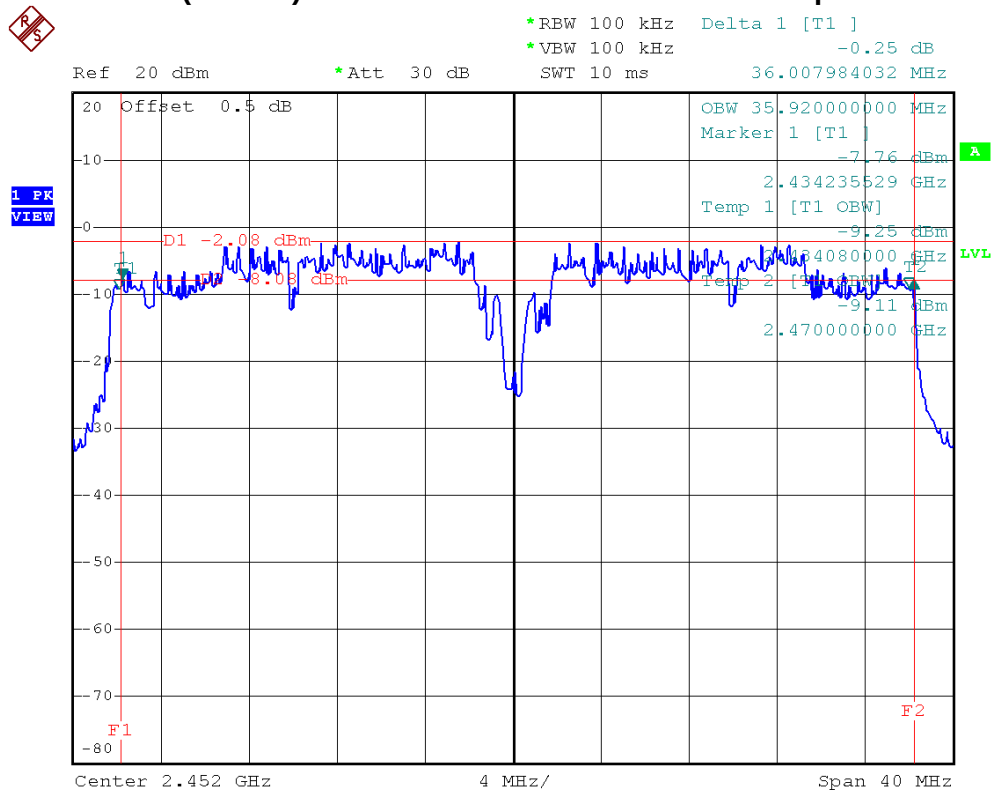




IEEE 802.11n (40 MHz)/ANT.2/2437 MHz/6 dB and 99% Occupied Bandwidth



IEEE 802.11n (40 MHz)/ANT.2/2452 MHz/6 dB and 99% Occupied Bandwidth



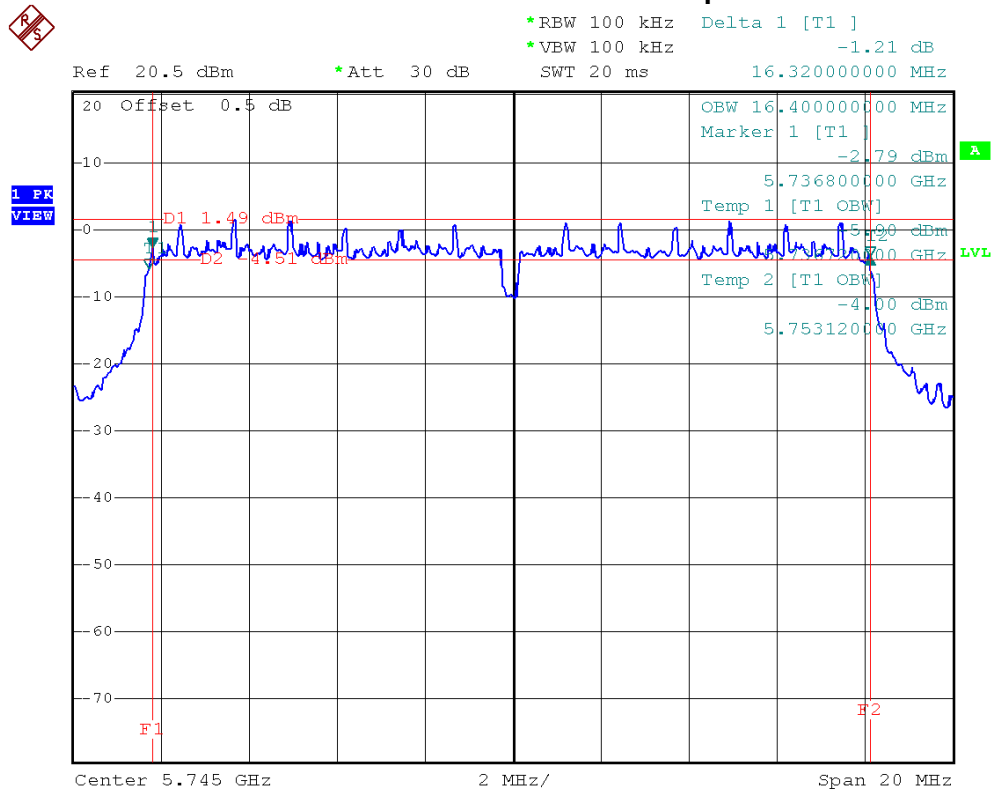


6.8 TEST RESULTS - 5745-5850 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11a/5745 MHz, 5785 MHz, 5825 MHz		

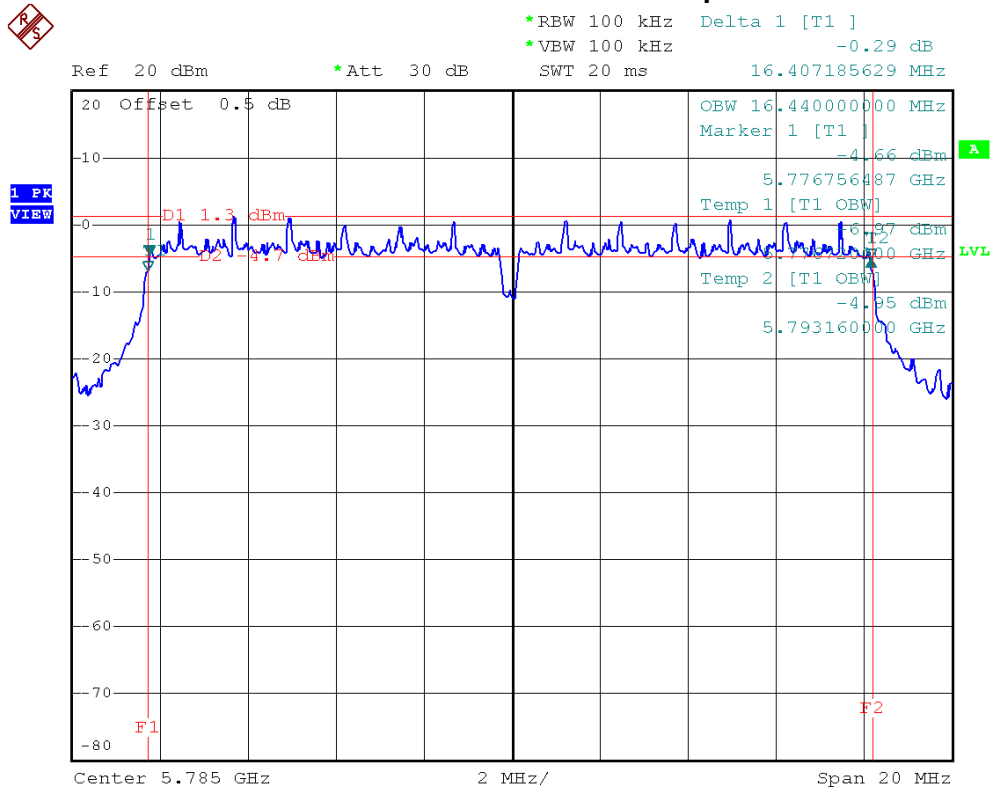
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
5745 MHz	16.32	16.40	>=500 kHz	PASS
5785 MHz	16.41	16.44	>=500 kHz	PASS
5825 MHz	16.33	16.48	>=500 kHz	PASS

IEEE 802.11a/5745 MHz/6 dB and 99% Occupied Bandwidth

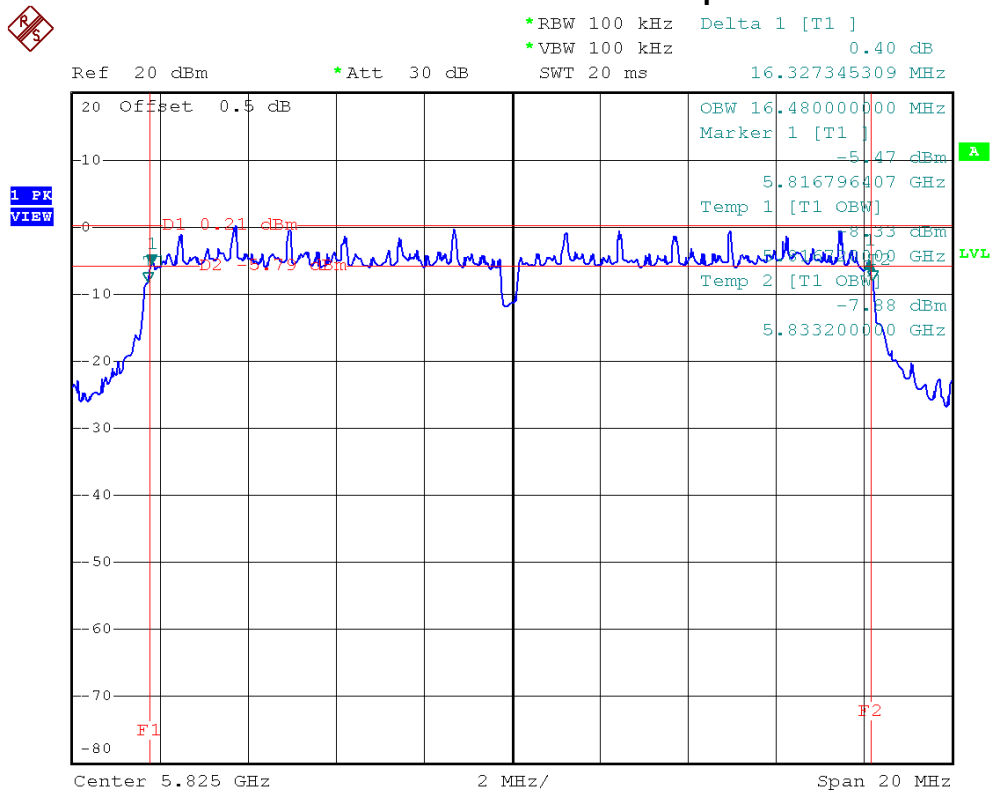




IEEE 802.11a/5785 MHz/6 dB and 99% Occupied Bandwidth



IEEE 802.11a/5825 MHz/6 dB and 99% Occupied Bandwidth

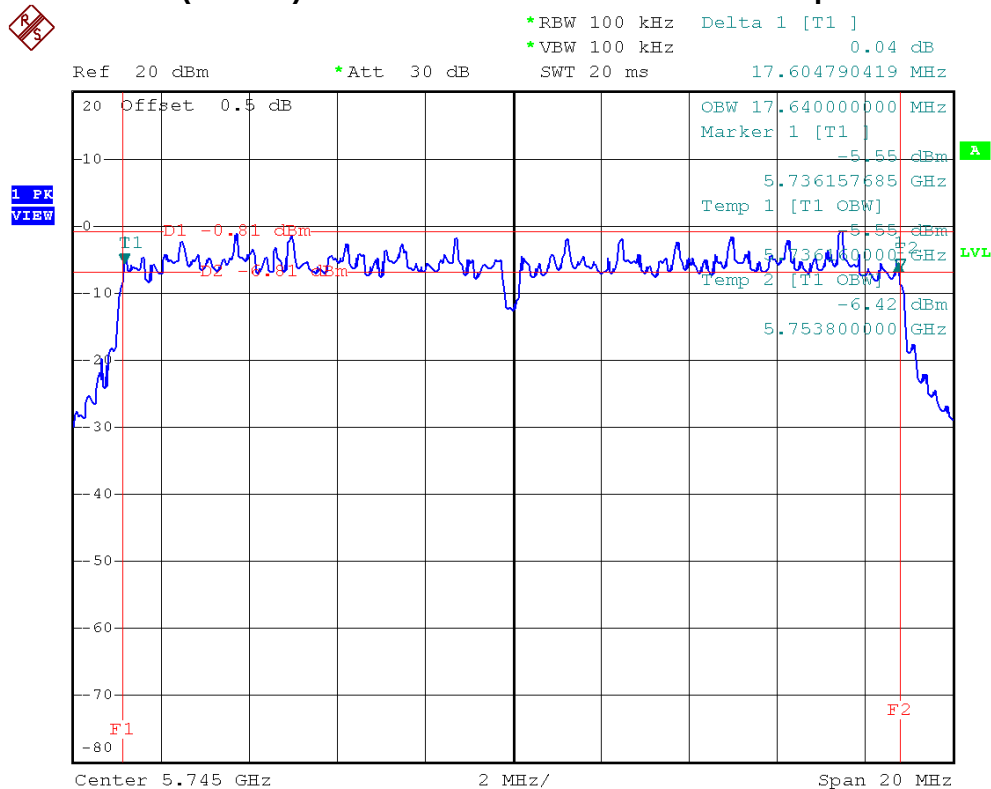




E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.1/5745 MHz, 5785 MHz, 5825 MHz		

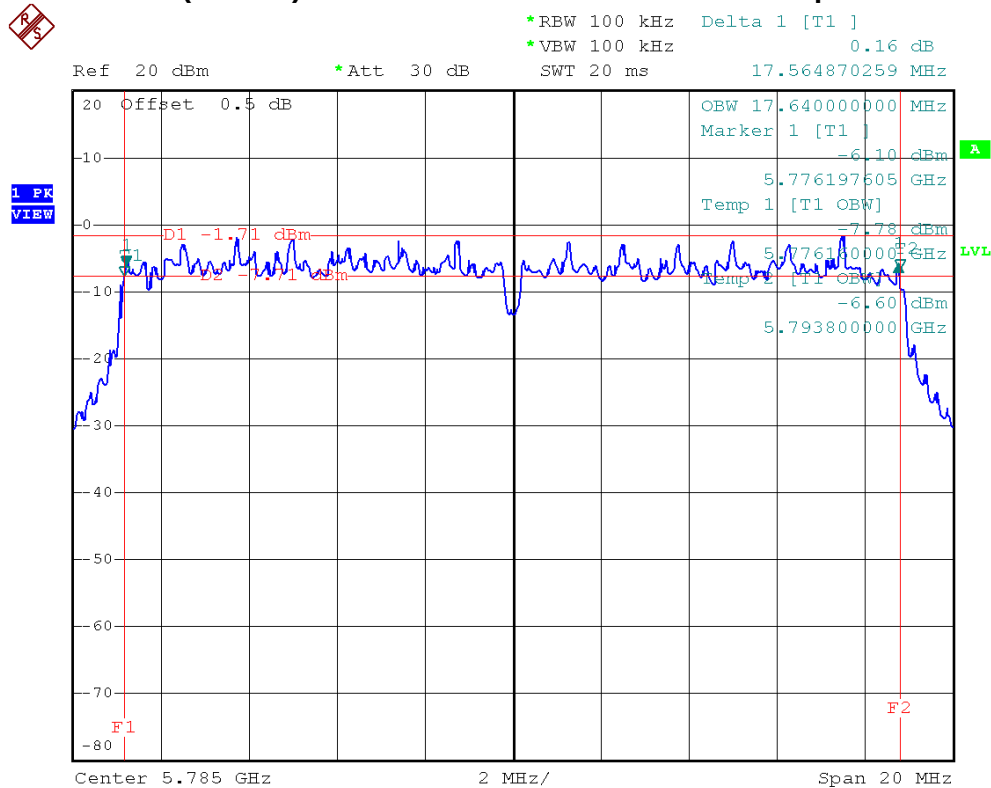
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
5745 MHz	17.60	17.64	>=500 kHz	PASS
5785 MHz	17.56	17.64	>=500 kHz	PASS
5825 MHz	17.56	17.60	>=500 kHz	PASS

IEEE 802.11n (20 MHz)/ANT.1/5745 MHz/6 dB and 99% Occupied Bandwidth

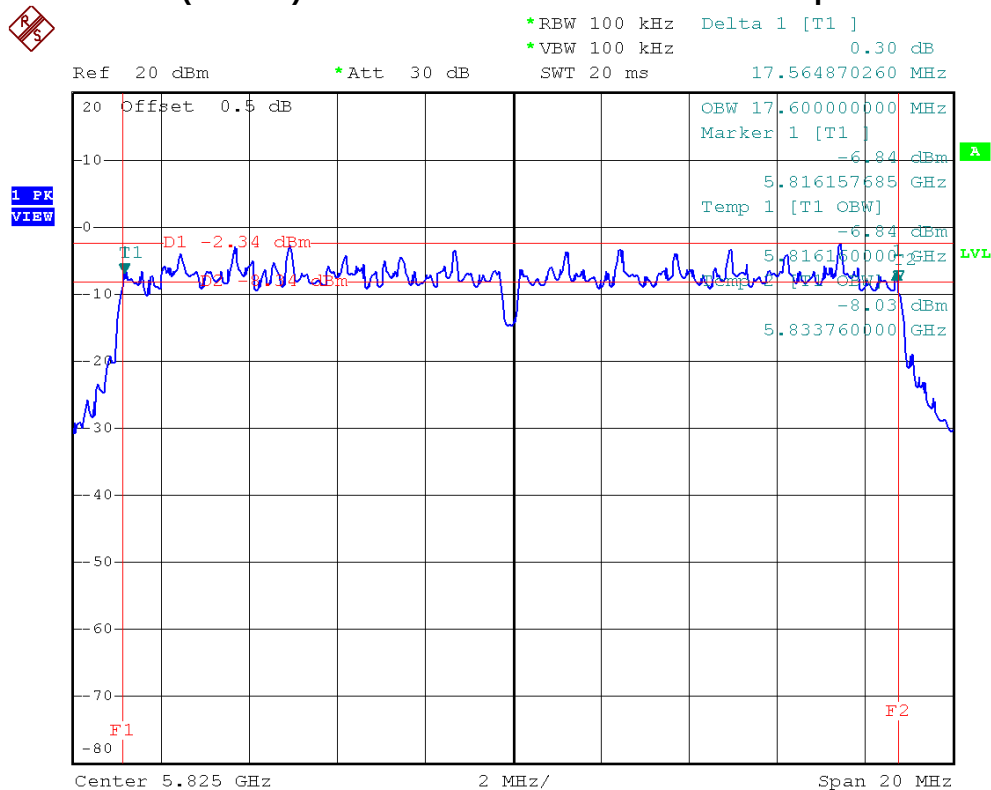




IEEE 802.11n (20 MHz)/ANT.1/5785 MHz/6 dB and 99% Occupied Bandwidth



IEEE 802.11n (20 MHz)/ANT.1/5825 MHz/6 dB and 99% Occupied Bandwidth

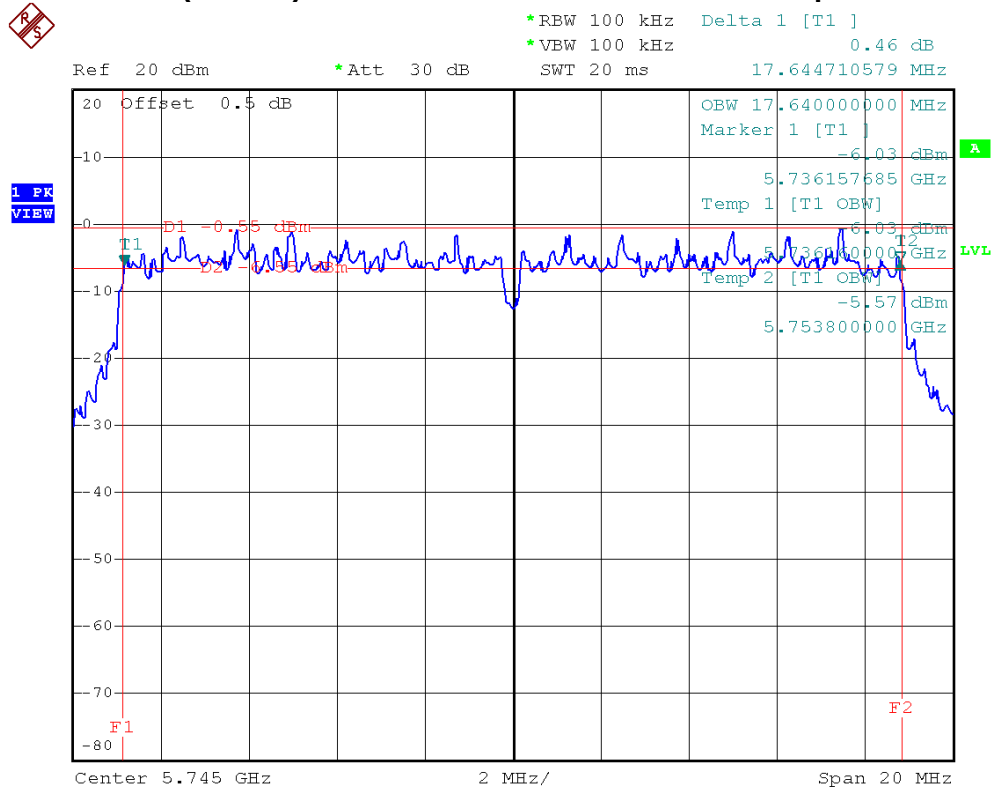




E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.2/5745 MHz, 5785 MHz, 5825 MHz		

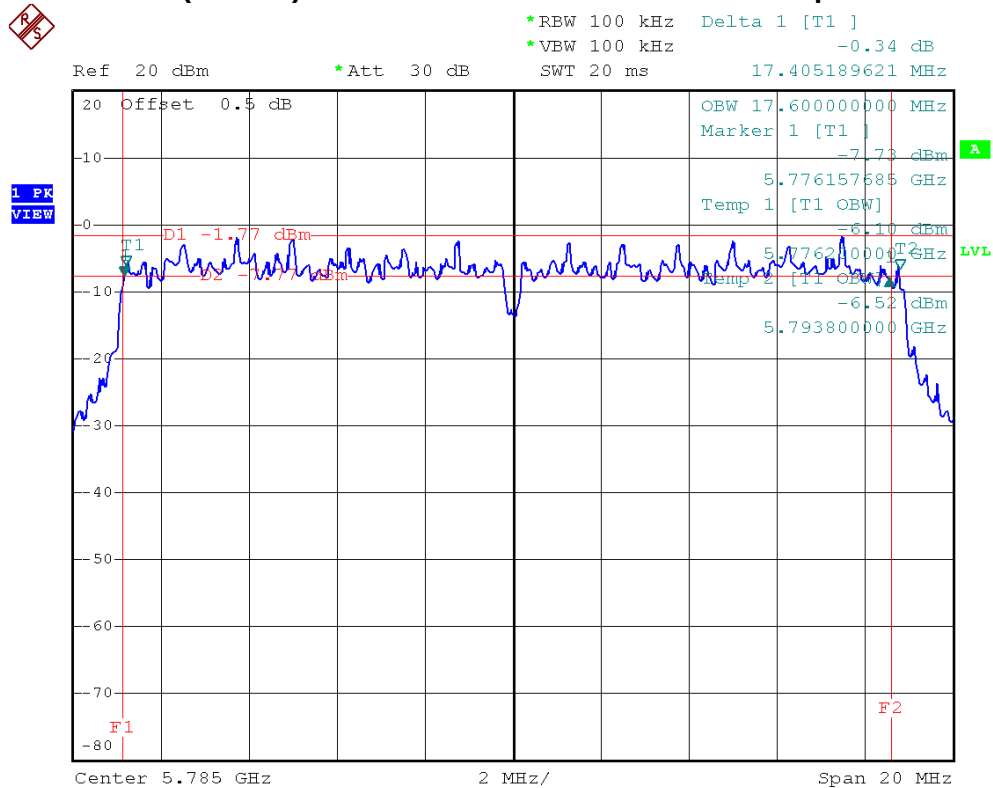
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
5745 MHz	17.64	17.64	>=500 kHz	PASS
5785 MHz	17.41	17.60	>=500 kHz	PASS
5825 MHz	17.56	17.60	>=500 kHz	PASS

IEEE 802.11n (20 MHz)/ANT.2/5745 MHz/6 dB and 99% Occupied Bandwidth

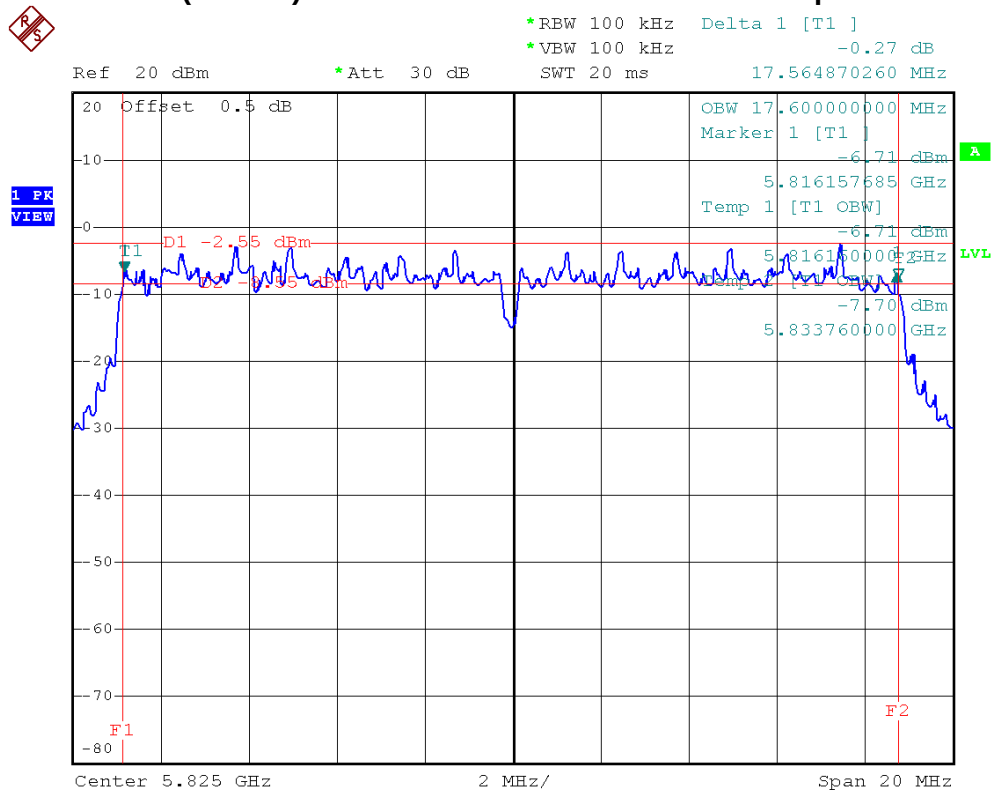




IEEE 802.11n (20 MHz)/ANT.2/5785 MHz/6 dB and 99% Occupied Bandwidth



IEEE 802.11n (20 MHz)/ANT.2/5825 MHz/6 dB and 99% Occupied Bandwidth



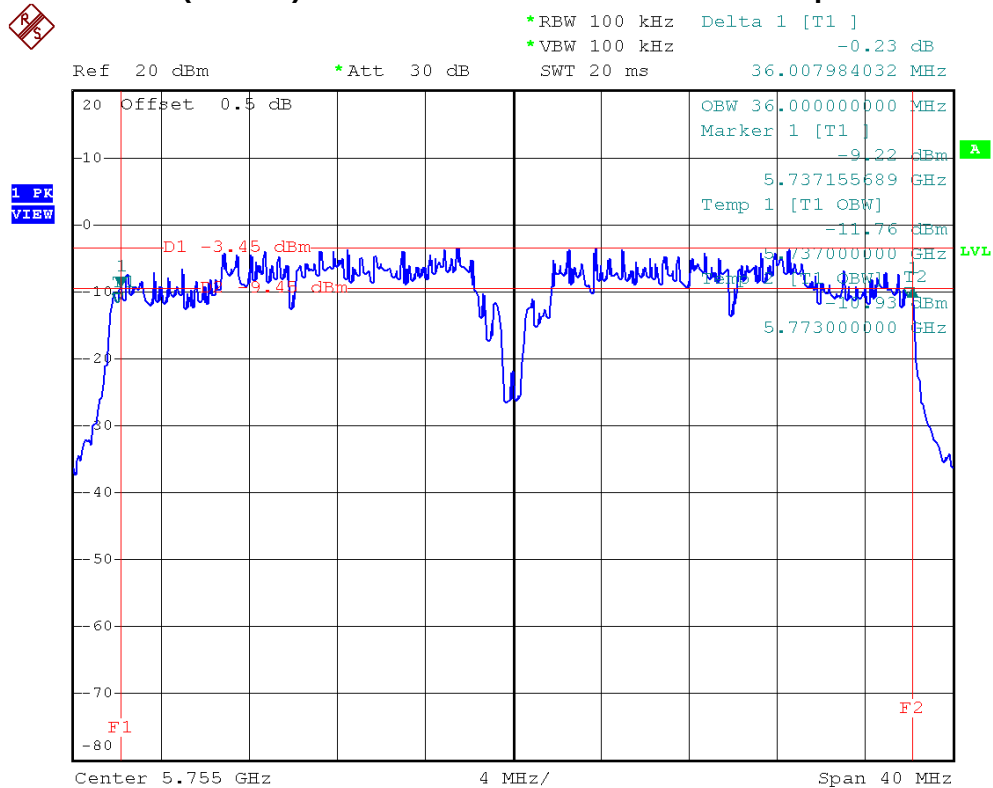


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.1/5755 MHz, 5795 MHz		

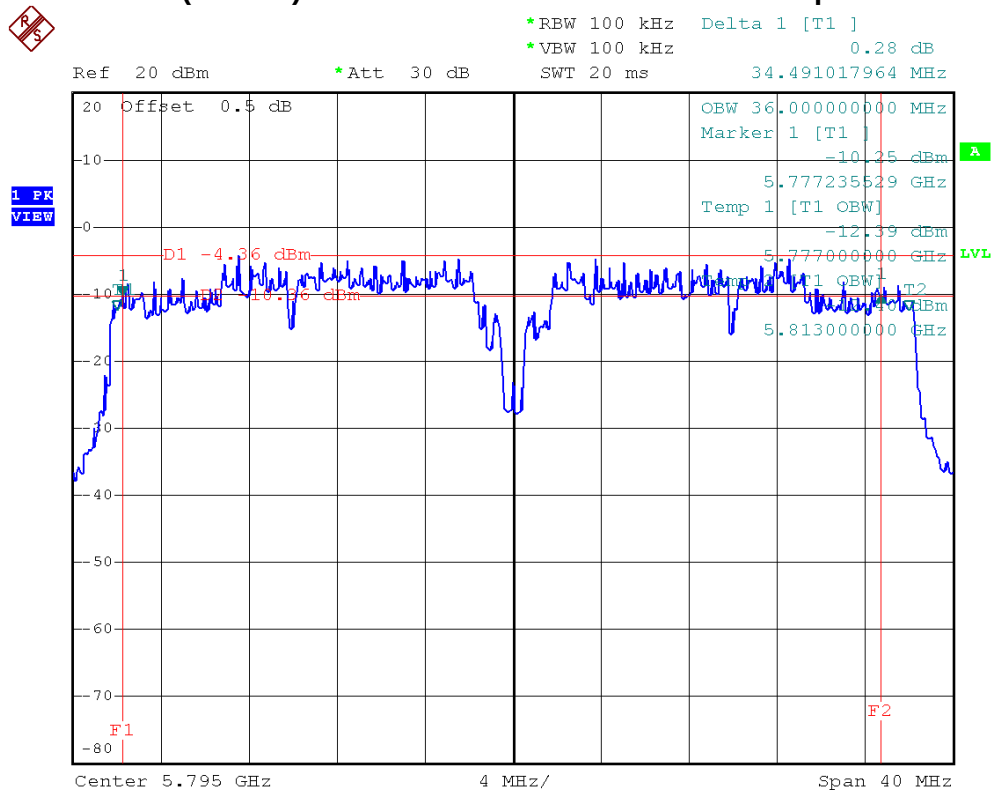
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
5755 MHz	36.01	36.00	>=500 kHz	PASS
5795 MHz	34.49	36.00	>=500 kHz	PASS



IEEE 802.11n (40 MHz)/ANT.1/5755 MHz/6 dB and 99% Occupied Bandwidth



IEEE 802.11n (40 MHz)/ANT.1/5795 MHz/6 dB and 99% Occupied Bandwidth



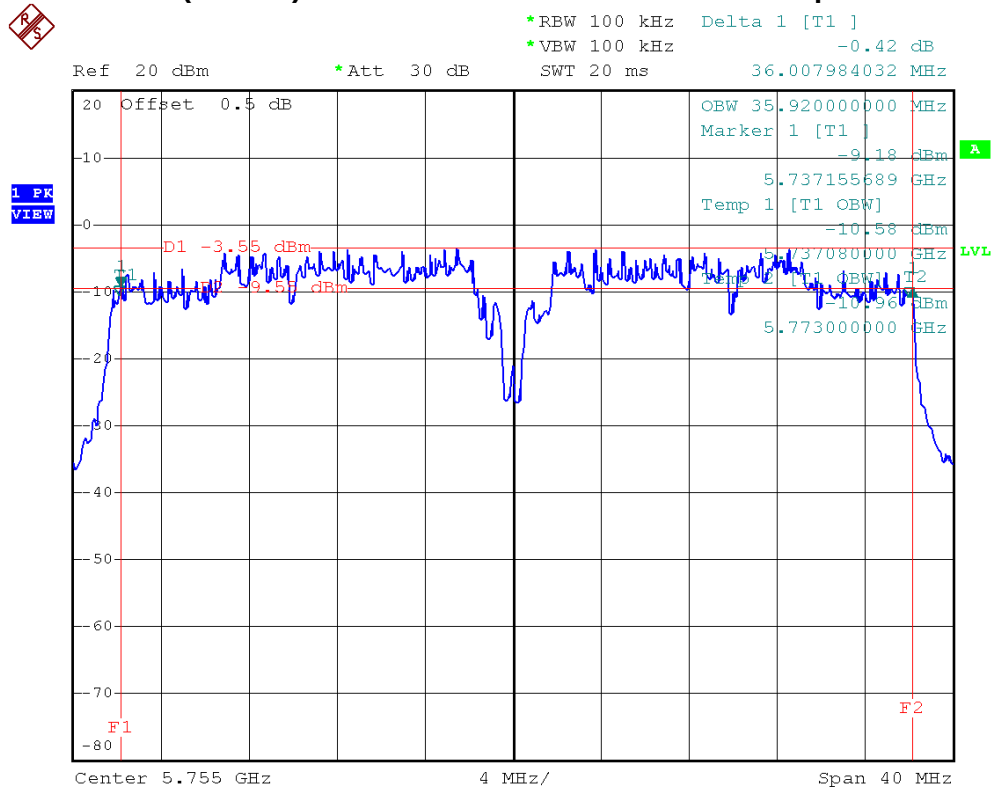


E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.2/2422 MHz, 2437 MHz, 2452 MHz		

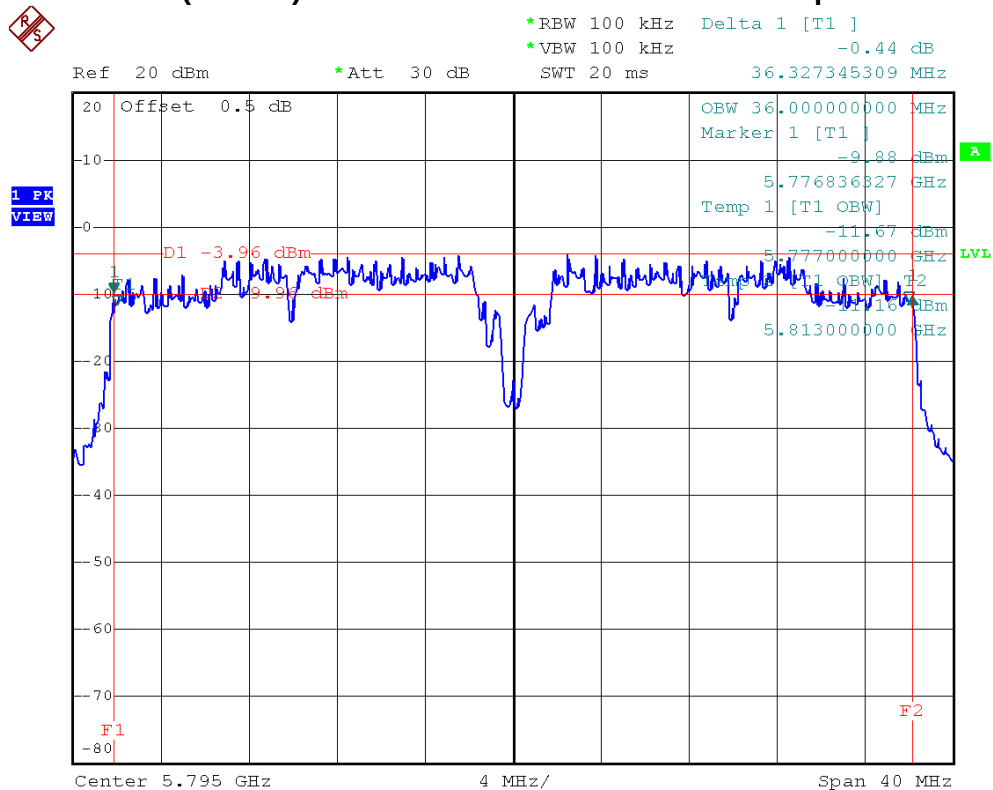
Frequency	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
5755 MHz	36.01	35.92	>=500 kHz	PASS
5795 MHz	36.33	36.00	>=500 kHz	PASS



IEEE 802.11n (40 MHz)/ANT.2/5755 MHz/6 dB and 99% Occupied Bandwidth



IEEE 802.11n (40 MHz)/ANT.2/5795 MHz/6 dB and 99% Occupied Bandwidth





7 MAXIMUM PEAK CONDUCTED OUTPUT POWER

7.1 LIMIT

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

7.2 MEASUREMENT INSTRUMENTS LIST

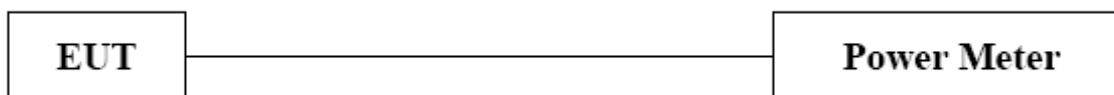
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2495A	1128008	Feb,20,2013
2	Power Meter Sensor	Anritsu	MA2411B	1126001	Feb,20,2013

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

7.3 TEST PROCEDURES

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

7.4 TEST SETUP LAYOUT



7.5 DEVIATION FROM TEST STANDARD

No deviation

7.6 EUT OPERATING CONDITIONS

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



7.7 TEST RESULTS - 2400-2483.5 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
2412 MHz	15.52	30	PASS
2437 MHz	15.26	30	PASS
2462 MHz	15.13	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11g/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
2412 MHz	19.82	30	PASS
2437 MHz	20.8	30	PASS
2462 MHz	20.2	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.1/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
2412 MHz	18.23	30	PASS
2437 MHz	19.62	30	PASS
2462 MHz	18.15	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.2/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
2412 MHz	18.36	30	PASS
2437 MHz	19.87	30	PASS
2462 MHz	18.22	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.Total/2412 MHz, 2437 MHz, 2462 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
2412 MHz	21.31	30	PASS
2437 MHz	22.76	30	PASS
2462 MHz	21.20	30	PASS

NOTE:

- The MIMO test requirement, RF conducted output power shall measure each transmitter chain by using channel power method.
And after obtain each individual transmitter chain power, then sum the output power by using the following formula:

$$((\text{dBm}/\text{Chain 1})/10^{\log}) + ((\text{dBm}/\text{Chain 2})/10^{\log}) + ((\text{dBm}/\text{Chain N})/10^{\log}) = \text{Combined peak output power in mW.}$$
- Antenna Gain=2 dBi.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.1/2422 MHz, 2437 MHz, 2452 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
2422 MHz	19.3	30	PASS
2437 MHz	19.58	30	PASS
2452 MHz	19.42	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.2/2422 MHz, 2437 MHz, 2452 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
2422 MHz	19.7	30	PASS
2437 MHz	19.68	30	PASS
2452 MHz	19.74	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (240 MHz)/ANT.Total/2422 MHz, 2437 MHz, 2452 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
2422 MHz	22.51	30	PASS
2437 MHz	22.64	30	PASS
2452 MHz	22.59	30	PASS

NOTE:

- The MIMO test requirement, RF conducted output power shall measure each transmitter chain by using channel power method.
And after obtain each individual transmitter chain power, then sum the output power by using the following formula:

$$((\text{dBm}/\text{Chain 1})/10^{\wedge}\text{Log}) + ((\text{dBm}/\text{Chain 2})/10^{\wedge}\text{log}) + ((\text{dBm}/\text{ChainN})/10^{\wedge}\text{log}) = \text{Combined peak output power in mW.}$$
- Antenna Gain=2 dBi.



7.8 TEST RESULTS - 5745-5850 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11a/5745 MHz, 5785 MHz, 5825 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
5745 MHz	19.65	30	PASS
5785 MHz	19.05	30	PASS
5825 MHz	17.45	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.1/5745 MHz, 5785 MHz, 5825 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
5745 MHz	18.28	30	PASS
5785 MHz	17.55	30	PASS
5825 MHz	16.45	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.2/5745 MHz, 5785 MHz, 5825 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
5745 MHz	19.19	30	PASS
5785 MHz	18.65	30	PASS
5825 MHz	17.72	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.Total/5745 MHz, 5785 MHz, 5825 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
5745 MHz	21.77	30	PASS
5785 MHz	21.15	30	PASS
5825 MHz	20.14	30	PASS

NOTE:

1. The MIMO test requirement, RF conducted output power shall measure each transmitter chain by using channel power method.
And after obtain each individual transmitter chain power, then sum the output power by using the following formula:
$$((\text{dBm}/\text{Chain 1})/10^{\wedge}\text{Log}) + ((\text{dBm}/\text{Chain 2})/10^{\wedge}\text{log}) + ((\text{dBm}/\text{ChainN})/10^{\wedge}\text{log}) = \text{Combined peak output power in mW.}$$
2. Antenna Gain=2 dBi.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.1/5755 MHz, 5795 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
5755 MHz	18.45	30	PASS
5795 MHz	17.33	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.2/5755 MHz, 5795 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
5755 MHz	19.03	30	PASS
5795 MHz	18.34	30	PASS



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (240 MHz)/ANT.Total/5755 MHz, 5795 MHz		

Frequency	Peak Output Power (dBm)	LIMIT (dBm)	Result
5755 MHz	21.76	30	PASS
5795 MHz	20.87	30	PASS

NOTE:

1. The MIMO test requirement, RF conducted output power shall measure each transmitter chain by using channel power method.
And after obtain each individual transmitter chain power, then sum the output power by using the following formula:

$$((\text{dBm}/\text{Chain 1})/10^{\text{Log}}) + ((\text{dBm}/\text{Chain 2})/10^{\text{Log}}) + ((\text{dBm}/\text{Chain N})/10^{\text{Log}}) = \text{Combined peak output power in mW.}$$
2. Antenna Gain=2 dBi.



8 RADIATED SPURIOUS EMISSION (9 KHZ TO 1 GHZ)

8.1 LIMIT

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

Frequency Range: 9 kHz to 1 GHz		
FREQUENCY (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

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

NOTE:

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



8.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 06, 2012
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Apr. 16, 2013
3	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Apr. 17, 2013
4	Microflex Cable	N/A	N/A	1m	Apr. 14, 2013
5	Microflex Cable	AISI	S104-SMAP-1	10m	Apr. 14, 2013
6	Microflex Cable	N/A	N/A	3m	Apr. 14, 2013
7	Test Cable	N/A	LMR-400	966_12m	May. 15, 2013
8	Test Cable	N/A	LMR-400	966_3m	May. 15, 2013
9	Pre-Amplifier	EMC	EMC-330	980081	Jun. 07, 2013
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 12, 2013
11	Horn Antenna	Schwarzbeck	BBHA 9170	187	Dec. 18, 2012
12	Preamplifier With Adaptor	EMC	EMC2654045	980030	Feb. 19, 2013

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

8.3 MEASURING INSTRUMENTS SETTING

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



8.4 TEST PROCEDURES

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1 GHz. For frequencies above 1 GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m Semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- The testing follows the guidelines in ANSI C63.4 and FCC Public Notice DA 00-705 Measurement Guidelines. In case the emission is fail due to the used RBW/VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

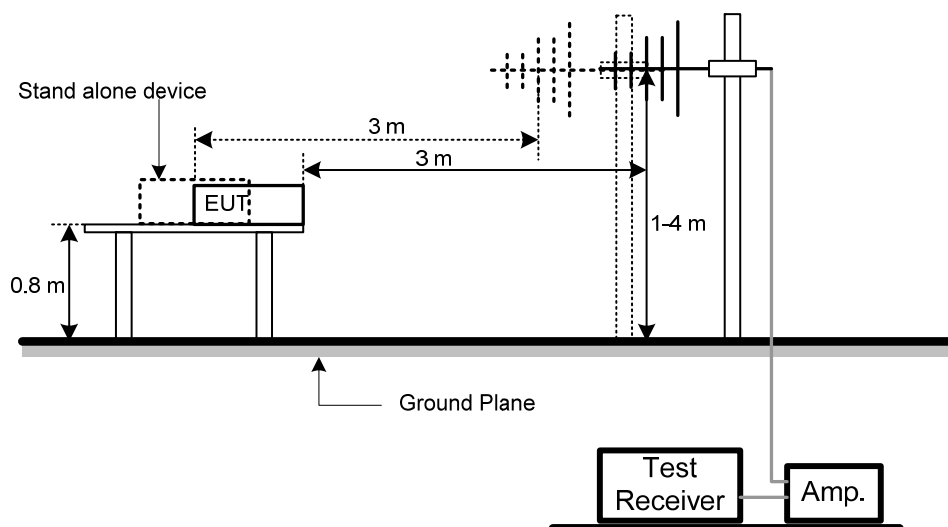
NOTE:

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

8.5 DEVIATION FROM TEST STANDARD

No deviation

8.6 TEST SETUP LAYOUT





8.7 EUT OPERATING CONDITIONS

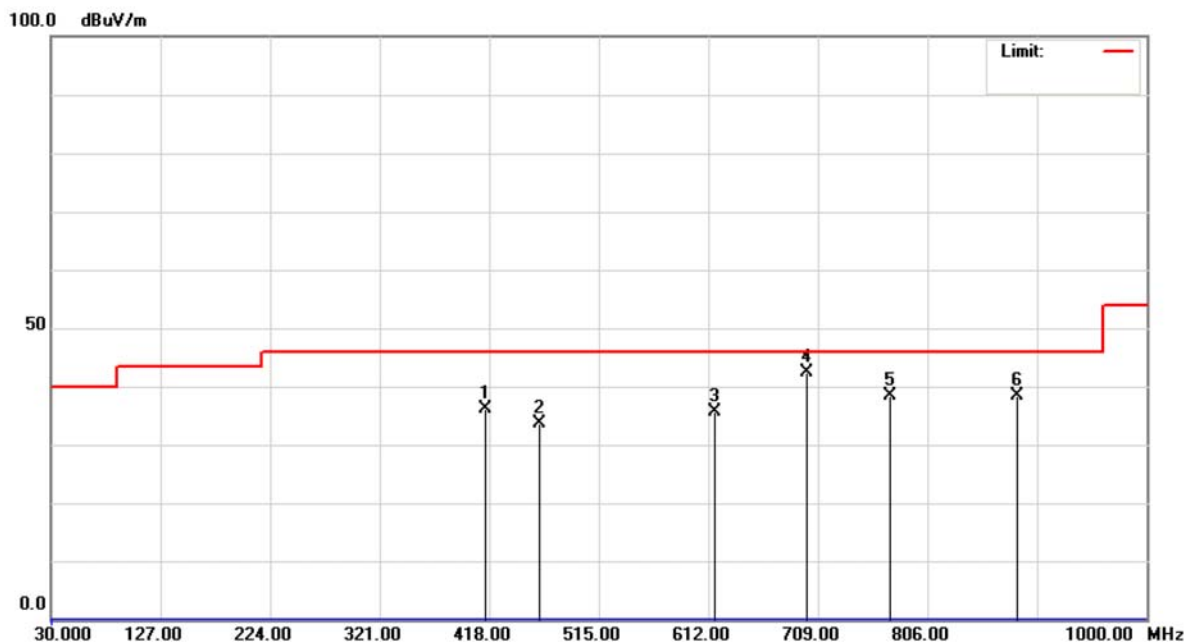
The EUT tested system was configured as the statements of 4.6 Unless otherwise a special operating condition is specified in the follows during the testing.



8.8 TEST RESULTS - 2400-2483.5 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Polarization: Vertical

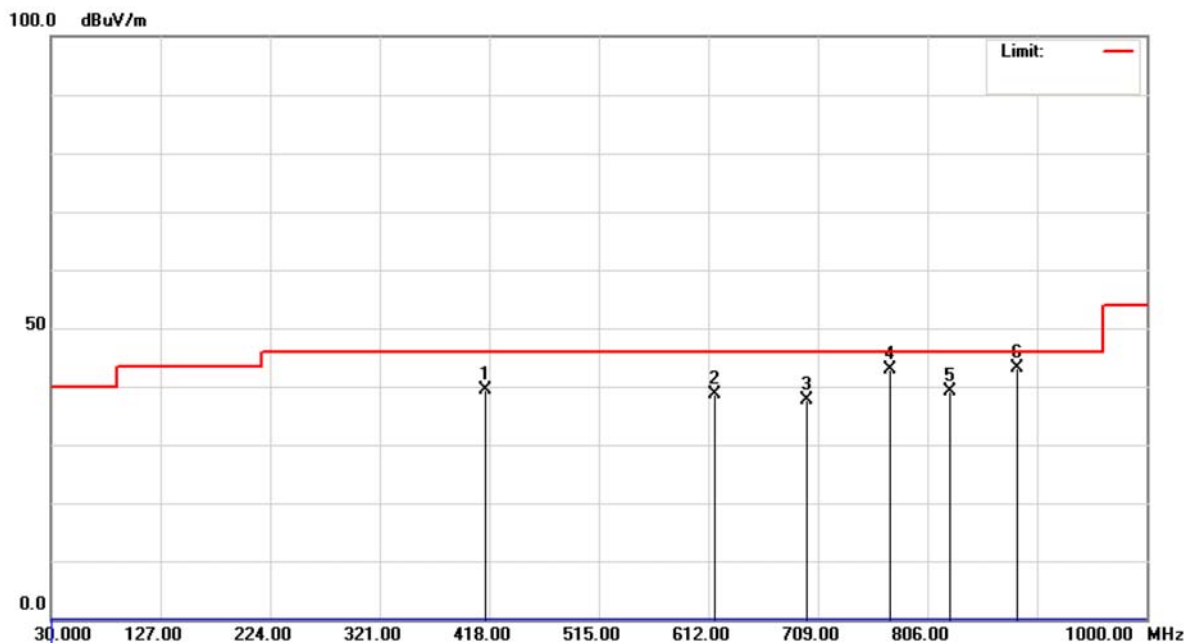


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		414.1199	51.22	-15.15	36.07	46.00	-9.93	peak	
2		462.6199	47.63	-14.00	33.63	46.00	-12.37	peak	
3		617.8200	46.33	-10.65	35.68	46.00	-10.32	peak	
4	*	699.2999	52.03	-9.64	42.39	46.00	-3.61	peak	
5		773.0200	46.78	-8.36	38.42	46.00	-7.58	peak	
6		885.5399	45.04	-6.76	38.28	46.00	-7.72	peak	



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11b/2437 MHz		

Polarization: Horizontal



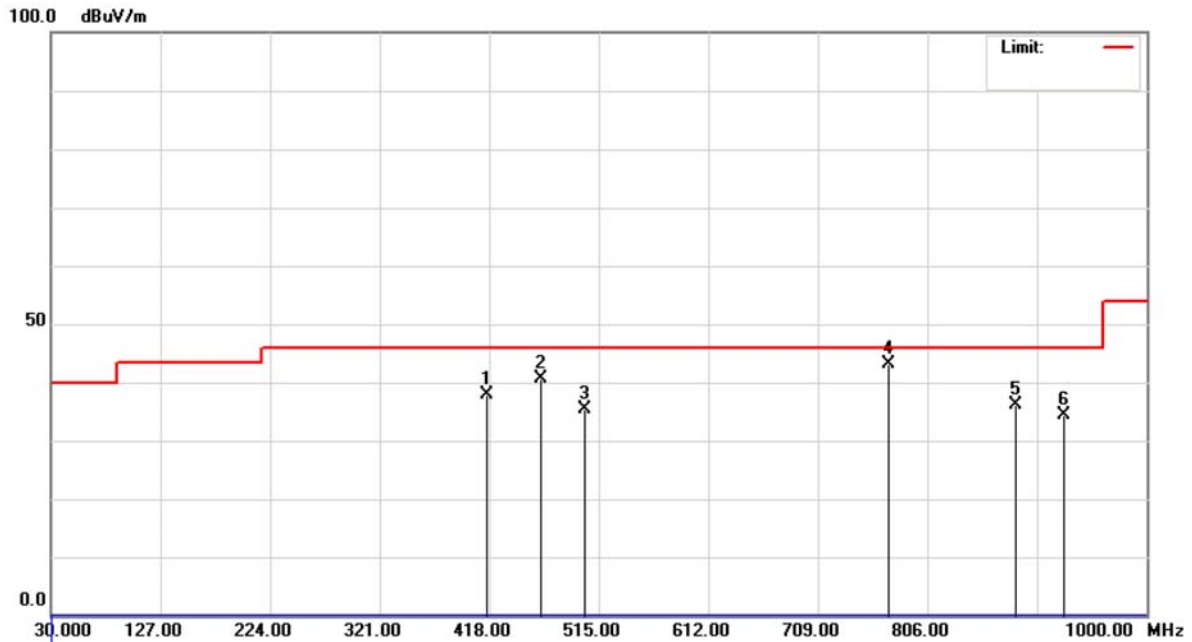
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		414.1200	54.44	-15.15	39.29	46.00	-6.71	peak	
2		617.8200	49.24	-10.65	38.59	46.00	-7.41	peak	
3		699.2999	47.19	-9.64	37.55	46.00	-8.45	peak	
4		773.0200	51.16	-8.36	42.80	46.00	-3.20	peak	
5		825.4000	46.71	-7.63	39.08	46.00	-6.92	peak	
6	*	885.5400	49.81	-6.76	43.05	46.00	-2.95	peak	



8.9 TEST RESULTS - 5745-5850 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11a /5785 MHz		

Polarization: Vertical

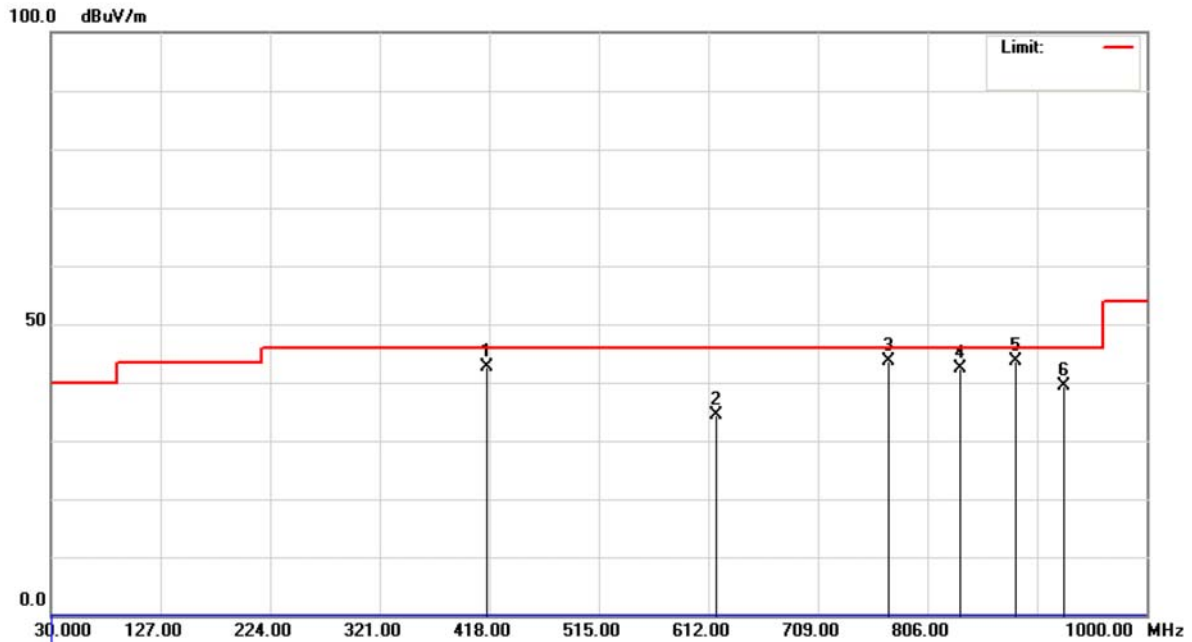


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		415.5750	53.09	-15.11	37.98	46.00	-8.02	peak	
2		464.0750	54.65	-13.97	40.68	46.00	-5.32	peak	
3		502.8750	48.65	-13.22	35.43	46.00	-10.57	peak	
4	*	772.0499	51.46	-8.37	43.09	46.00	-2.91	peak	
5		883.5999	43.02	-6.78	36.24	46.00	-9.76	peak	
6		927.2500	40.37	-5.97	34.40	46.00	-11.60	peak	



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11a/5785 MHz		

Polarization: Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		415.5750	57.82	-15.11	42.71	46.00	-3.29	peak	
2		619.2750	44.94	-10.63	34.31	46.00	-11.69	peak	
3	*	772.0500	52.11	-8.37	43.74	46.00	-2.26	peak	
4		835.1000	49.80	-7.47	42.33	46.00	-3.67	peak	
5		883.6000	50.51	-6.78	43.73	46.00	-2.27	peak	
6		927.2500	45.27	-5.97	39.30	46.00	-6.70	peak	