



Revision History

#	Description	Date
0	Original Report Release	26-Oct-12

Notices:

1. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
2. The test results presented in this report relate only to the object tested.
3. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.
4. "(see Enclosure #)" refers to additional information appended to the report.
5. Throughout this report a point is used as the decimal separator.
6. Dimensions in English units for convenience only, metric units prevail.



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Normative References

The following document(s) have been appropriately considered in the performance of the test results detailed in this report.

CFR Title 47, Part 15
Radio Frequency Devices

ANSI C63.10:2009
American National Standard for Testing Unlicensed Wireless Devices

558074 D01 DTS Measurement Guidance v02
Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

RSS 210, Issue 8
License-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

RSS-Gen, Issue 3:2010
General Requirements and Information for the Certification of Radio Apparatus

Channels for USA and Canada:

Channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

Channels for Israel:

Channel	Frequency (MHz)
1	Not used
2	Not used
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	Not used
11	Not used

Equipment Under Test (EUT)

Details:

Test item description:

Model : 1AYBA2
Serial Number : NA30100Y
Production Status : Production Pre-Production Prototype
Other Status Info : [Click here to enter text.](#)
EUT Received Date : 9-Oct-12
Ratings : 5.0VDC 1 ϕ 3 ϕ Battery

General product description:

The device is an external storage drive with Wireless LAN connection.
Power is provided by an internal Li battery or from a 5 Vdc USB power connection. An external AC to USB DC adapter can be used to charge the internal battery.

Modifications to the EUT required for compliance:

There have been no modifications to the EUT as a result of this evaluation.

Deviations from Test Methodology:

There have been no deviations, additions to, or exclusions from the specified test standard.

Engineering Judgements:

No engineering judgments based on the results in this test report have been made.

Approved by (+ signature) : [Click here to enter text.](#)

Table 1 – EUT Internal Operating Frequencies

Frequency (MHz)	Description	Frequency (MHz)	Description
2400 – 2483.5	WLAN		
12	Clock		

Table 2 – EUT Operating Modes

Mode #	Description
1	802.11 b mode
2	802.11g mode
3	802.11n mode (20 MHz) 1 TX stream

EUT Configuration

A minimum representative configuration, as defined by the manufacturer, has been used for the testing performed herein. The selection of hardware (including interface ports), software, and cables were chosen by the manufacturer as being representative of the product’s intended use. The interconnection of various articles of equipment and the types of cables used has also been defined by the manufacturer.

The placement of the equipment under test has been, to the extent practical, arranged to maximize emissions.

Cables, of the type and length specified by the manufacturer, were connected to at least one of each type of interface port provided by the EUT and if practical, were terminated by a device typical of actual usage. For multiple ports of the same type, the addition of cables did not significantly affect the emission level (i.e. < 2B variation).

The arrangement of external power supply units was as follows:

- a) If the mains input cable of the external power supply unit is greater than 0,8 m, the external power supply unit shall be placed on the tabletop, with a nominal 0,1 m separation from the host unit.
- b) If the external power supply unit has a mains input cable that is less than 0,8 m, the external power supply unit shall be placed at a height above the ground plane such that its power cable is fully extended in the vertical direction.
- c) If the external power supply unit is incorporated into the mains power plug, it shall be placed on the tabletop. An extension cable shall be used between the external power supply unit and the source of power . The extension cable should be connected in a manner such that it takes the most direct path between the external power supply unit and the source of power.

Figure 1 - EUT Configuration Diagram

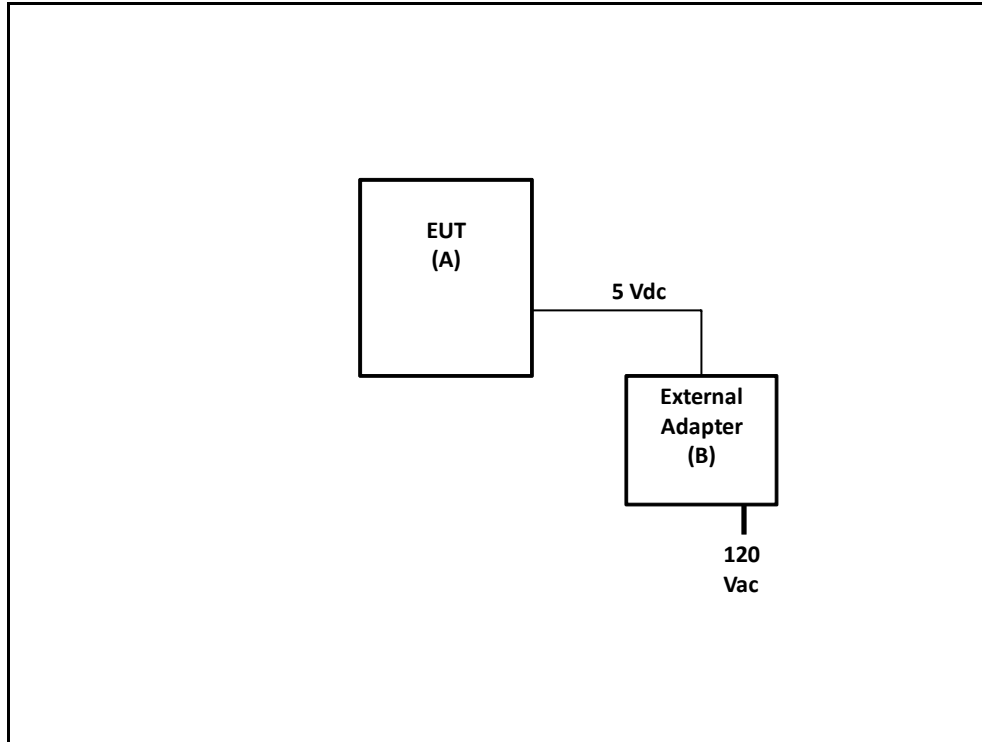


Table 3 – EUT & Auxilliary Equipment List

Item	Use*	Product Type	Manufacturer	Model	Serial No.
A	EUT	External Storage Drive	Seagate Technology LLC	1AYBA2	NA30100Y
B	AE	External Adapter	Asian Power Devices, Inc.	WA-10L05RU	299003687

Note:
 * Use = EUT - Equipment Under Test,
 AE - Auxiliary/Associated Equipment, or
 SIM - Simulator (Not Subjected to Test)

Table 4 - Interconnecting Cables List

Item	Use*	Cable Type
1	EUT	DC power to USB

EUT Photo(s)

Photo 1	EUT Photo – Top View	
		
Supplemental Information: CONFIDENTIAL		

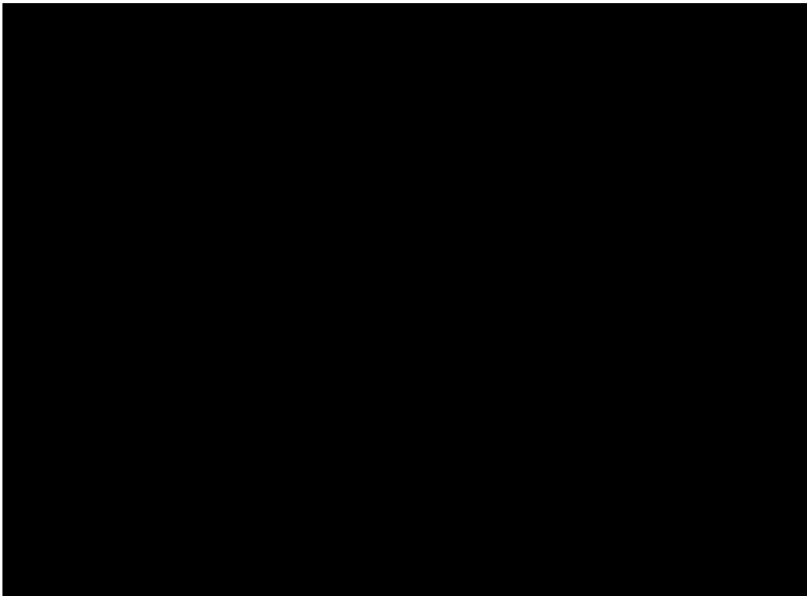
Photo 2	EUT Photo – Bottom View	
		
Supplemental Information: CONFIDENTIAL		


Photo 3	EUT Photo – External Power Supply	
		
Supplemental Information:		
CONFIDENTIAL		

Photo 4	EUT Photo – AC Inlet & Label OR External Power Supply	
		
Supplemental Information: CONFIDENTIAL		

Photo 4	EUT Photo – Antenna	
		
Supplemental Information: FOR COMMENT		



Summary of Testing			
Possible test case verdicts:			
- test case does not apply to the test object : N/A			
- test object does meet the requirement: P (Pass)			
- test object does not meet the requirement : F (Fail)			
- not tested (not part of this evaluation): NT			
Date(s) of performance of tests: 4 Oct. – 15 Oct. 2012			
Clause	Test Description	Verdict	Comment
47 CFR			
15.203	Antenna Requirement	P	
15.207	Conducted Emissions - Mains	P	
15.209	Radiated Emissions – Restricted Bands	P	
15.247(a)(2)	6 dB Occupied Bandwidth	P	
15.247(b)(3)	RF Output Power	P	
15.247(d)	Spurious Emissions	P	
15.247(e)	Power Spectral Density	P	
15.247(i)	RF Exposure	P	See separate SAR test report
RSS 210			
RSS GEN 7.2.4	Conducted Emissions - Mains	P	
RSS GEN 7.2.2	Radiated Emissions – Restricted Bands	P	
A8.2(a)	6 dB Occupied Bandwidth	P	
A8.2(b)	Power Spectral Density	P	
A8.4(4)	RF Output Power	P	
A8.5	Out of Band Spurious Emissions	P	
RSS GEN 5.6	RF Exposure	P	See separate SAR test report
Notes:			
General remarks:			
Summary of compliance with national requirements:			
Compliance with this standard provides a means of demonstrating conformity with the United States Federal Communication Commission (FCC) certification authorization procedures and Industry Canada (IC) rules.			
In addition compliance with this standard provides a means of demonstrating conformity with the requirements of the Israeli Ministry of Communications. Units in Israel will only operate on channel 3 – 9 (2422 MHz to 2452 MHz)			



Testing Location	
Testing Laboratory:	Nemko USA, Inc. (Dallas)
Testing location/ address	802 N. Kealy Ave. Lewisville, TX 75057 USA
Testing procedure: TMP	
Tested by (name + signature) :	
Approved by (+ signature) :	
Testing location/ address	
Supplemental Information:	
Testing results contained herein were performed at the location(s) listed above.	

Procedural Requirements

The following requirements are taken from the appropriate rules, other rules may apply and the manufacturer should consult the full text of the appropriate laws prior to marketing any device.

United States

Mandated procedures for digital devices are defined in 47 CFR 15.201, *Equipment authorization requirement*. Details of the authorization procedures (verification, declaration of conformity, and certification) can be found in 47 CFR, Part 2, Subpart J, *Equipment Authorization Procedures*.

Canada

Standard RSS-GEN contains the procedural requirements.

Information to the User and Labeling Requirements

The following requirements are taken from the appropriate rules, other rules may apply and the manufacturer should consult the full text of the appropriate laws prior to marketing any device.

United States

Labeling

47 CFR 2.925

(a) Each equipment covered in an application for equipment authorization shall bear a nameplate or label listing the following:

(1) FCC Identifier consisting of the two elements in the exact order specified in §2.926. The FCC Identifier shall be preceded by the term *FCC ID* in capital letters on a single line, and shall be of a type size large enough to be legible without the aid of magnification.

Example: FCC ID XXX123. XXX—Grantee Code 123—Equipment Product Code

47 CFR 15.19

(a) In addition to the requirements in part 2 of this chapter, a device subject to certification, or verification shall be labeled as follows:

(3) All other devices shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

47 CFR 15.19(b)(2) Label text and information should be in a size of type large enough to be readily legible, consistent with the dimensions of the equipment and the label. However, the type size for the text is not required to be larger than eight point.

47 CFR 15.19(b)(3): When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (b)(1) of this section on it, such as for a CPU board or a plug-in circuit board peripheral device, the text associated with the logo may be placed in a prominent location in the instruction manual or pamphlet supplied to the user. However, the unique identification (trade name and model number) and the logo must be displayed on the device.

47 CFR 15.19(b)(4): The label shall not be a stick-on, paper label. The label on these products shall be permanently affixed to the product and shall be readily visible to the purchaser at the time of purchase, as described in §2.925(d) of this chapter. "Permanently affixed" means that the label is etched, engraved, stamped, silkscreened, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment or on a nameplate of metal, plastic, or other material fastened to the equipment by welding, riveting, or a permanent adhesive. The label must be designed to last the expected lifetime of the equipment in the environment in which the equipment may be operated and must not be readily detachable.

Information to User

47 CFR 15.21: The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

Canada

Labeling

RSS –GEN 5.2: Every unit of Category I radio apparatus certified for marketing and use in Canada shall bear a permanent label on which is indelibly displayed the model number and Industry Canada certification number of the equipment model (transmitter, receiver, or inseparable combination thereof). Each model shall be identified by a unique combination of a model number and a certification number, which are assigned as described below in this section. The label shall be securely affixed to a permanently attached part of the device, in a location where it is visible or easily accessible to the user, and shall not be readily detachable. The label shall be sufficiently durable to remain fully legible and intact on the device in all normal conditions of use throughout the device's expected lifetime. These requirements may be met either by a separate label or nameplate permanently attached to the device or by permanently imprinting or impressing the label directly onto the device.

The label text shall be legible without the aid of magnification, but is not required to be larger than 8-point font size. If the device is too small to meet this condition, the label information may be included in the user manual upon agreement with Industry Canada.

The model number is assigned by the applicant and shall be unique to each model of radio apparatus under that applicant's responsibility. The model number shall be displayed on the label preceded by the text: "Model:", so it appears as follows:

Model: model number assigned by applicant

The certification number is made up of a Company Number (CN) assigned by Industry Canada's Certification and Engineering Bureau followed by the Unique Product Number (UPN), assigned by the applicant.

The certification number shall appear as follows:

IC: XXXXXX-YYYYYYYYYYYY

where:

- XXXXXX-YYYYYYYYYYYY is the certification number;
- XXXXXX is the Company Number (CN) assigned by Industry Canada, made of at most 6 alphanumeric characters (A-Z, 0-9), including a letter at the end of the CN to distinguish between different company addresses;
- YYYYYYYYYYYY is the Unique Product Number (UPN) assigned by the applicant, made of at most 11 alphanumeric characters (A-Z, 0-9); and the letters "IC" (Industry Canada) are to indicate the Industry Canada certification number, but are not part of the certification number.

Permitted alphanumerical characters used in the CN and UPN are limited to capital letters (A-Z) and numerals (0-9). Example: A company has been assigned a CN of "21A" and wishes to use a UPN of "WILAN3" for one of its products. The full Industry Canada certification number of this product would thus be: IC: 21A-WILAN3.

Category I equipment that is not labeled with the model number and the certification number as described above is not considered certified.

Notices to the User

RSS-GEN 5.3: Radio apparatus shall comply with the requirements to include required notices or statements to the user of equipment with each unit of equipment model offered for sale.

The required notices are specified in the RSS documents (including RSS-Gen) applicable to the equipment model. These notices are required to be shown in a conspicuous location in the user manual for the equipment, or to be displayed on the equipment model. If more than one notice is required, the equipment model(s) to which each notice pertains should be identified. Suppliers of radio apparatus shall provide notices and user information in both English and French.

RSS-GEN 7.1.3: User manuals for licence-exempt radio apparatus shall contain the following or equivalent notice in a conspicuous location in the user manual or alternatively on the device or both.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

User manuals for transmitters shall display the following notice in a conspicuous location:

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

User manuals for transmitters equipped with detachable antennas shall also contain the following notice in a conspicuous location:

This radio transmitter (identify the device by certification number, or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi) and required impedance for each.

Technical Requirements

The testing requirements, as appropriate, were derived from ANSI C63.4; 47 CFR, Subpart A; RSS 210; and RSS GEN.

Conducted Emissions

The mains cable of the EUT or EUT host unit was connected to the LISN defined in this standard and is bonded to the reference plane. Where applicable, remaining auxiliary equipment was powered through an additional LISN (also bonded to the reference plane), using a multi-socket outlet strip if necessary. The LISNs were at least 0.8m away from the EUT. A vertical ground plane was used while the table-top EUTs were placed on a wooden table 0.8m high. Floor-standing EUTs were insulated from the ground plane and grounded according to the manufacturer's instructions.

Signal cables were positioned for their entire lengths, as far as possible, at a nominal distance of 0.4 m from the ground reference plane. Where the mains cable supplied by the manufacturer was longer than 1 m, the excess was folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m. If the 1 m cable length cannot be achieved owing to physical limitations of the EUT arrangement, the cable length shall be as near to 1 m as possible.

All telecommunication and signal ports were correctly terminated using either appropriate associated equipment or a representative termination during the measurement of the conducted disturbances at the mains. If an ISN is connected to a telecommunications port during the measurement of conducted disturbances at the mains port, then the ISN receiver port was terminated in 50Ω. The ISNs were at least 0.8m away from the EUT.



Mains

Any power cable(s) from the equipment under test that were directly connected to the AC Mains have been tested. In the event that the equipment under test had no direct connection to the Mains, that is, it was connected to a Host unit (example: USB powered); then conducted emissions was performed on the Mains of the Host unit. Battery powered equipment was not tested for conducted emissions; however, if the equipment makes provisions for connections to a battery charger that is connected to the Mains, then conducted emissions were performed on the battery charger.

Table 5 – Class B Conducted Emissions Limits - Mains

Frequency	Limits (dB μ V)	
	Quasi-peak	Average
150 kHz – 500 kHz	66 - 56	5-46
500 kHz – 5 MHz	56	46
5 MHz – 30 MHz	60	50

NOTE 1: The lower limit shall apply at the transition frequency.
 NOTE 2: The limit decreases linearly with the logarithm of the frequency in the range 150 kHz to 500 kHz.

Radiated Emissions – Restricted Bands

The arrangement of the equipment is typical of a normal installation practice and as was practical, the arrangement was varied and emissions investigated for maximum amplitude. Final measurements were performed in a semi-anechoic chamber or on an open area test site (OATS). The equipment was rotated 360° and the antenna height has been varied between 1m and 4m. Measurements were taken at both horizontal and vertical antenna polarities. The receiver bandwidth was set to 120 kHz for measurements below 1 GHz, and 1 MHz for measurements above 1 GHz. A peak detector is used to detect an emission; a quasi-peak detector may be used to record a final measurement below 1 GHz and an average detector may be used above 1 GHz. An inverse proportionality factor of 20 dB/decade (10 dB) was used, as noted in 15.31(f)(1), to normalize the measured data to the specified test distance for determining compliance.

Frequency range of radiated measurements (15.33(a)):

Operating frequency of intentional radiator	Lowest frequency searched	Highest frequency searched
Below 10 GHz	9 kHz or lowest operating frequency generated in the device, whichever is highest	10 th harmonic of highest fundamental frequency or 40 GHz, whichever is lower
10 – 30 GHz	9 kHz or lowest operating frequency generated in the device, whichever is highest	5 th harmonic of highest fundamental frequency or 100 GHz, whichever is lower
At or above 30 GHz	9 kHz or lowest operating frequency generated in the device, whichever is highest	5 th harmonic of highest fundamental frequency or 200 GHz, whichever is lower



Restricted Bands 47 CFR 15.205

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
¹ 0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	(²)
13.36–13.41			

Restricted Bands RSS-GEN

MHz	MHz	MHz	GHz
0.090-0.110	12.57675-12.57725	960-1427	9.0-9.2
2.1735-2.1905	13.36-13.41	1435-1626.5	9.3-9.5
3.020-3.026	16.42-16.423	1645.5-1646.5	10.6-12.7
4.125-4.128	16.69475-16.69525	1660-1710	13.25-13.4
4.17725-4.17775	16.80425-16.80475	1718.8-1722.2	14.47-14.5
4.20725-4.20775	25.5-25.67	2200-2300	15.35-16.2
5.677-5.683	37.5-38.25	2310-2390	17.7-21.4
6.125-6.218	73-74.6	2655-2900	22.01-23.12
6.6775-6.26825	74.8-75.2	3260-3267	23.6-24.0
6.31175-6.31225	108-138	3332-3339	31.2-31.8
8.291-8.294	156.52475-156.52525	3345.8-3358	36.43-36.5
8.362-8.366	156.7-156.9	3500-4400	Above 38.6
8.37625-8.38675	240-285	4500-5150	
8.41425-8.41475	322-335.4	5350-5460	
12.29-12.293	399.9-410	7250-7750	
12.51975-12.52025	608-614	8025-8500	



Radiated Emission Limit – Restricted Bands

Reading on the measuring receiver showing fluctuations close to the limit, were observed for at least 15 s at each measurement frequency; the highest reading was recorded.

Table 6 – Radiated Emissions Limits per 47 CFR 15.209(a) & RSS-GEN 7.2.5

Frequency Range	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (m)
9 kHz – 490 kHz	2400/F(kHz)	48.5 – 13.8	300
490 kHz – 1.705 MHz	24000/F(kHz)	33.6 – 23.0	30
1.705 MHz – 30 MHz	30	29.5	30
30 MHz – 88 MHz	100	40.0	3
88 MHz – 216 MHz	150	43.5	3
216 MHz – 960 MHz	200	46.0	3
Above 960 MHz	500	54.0	3

Receiver Bandwidth and Hopping

15.247(a)(1) and RSS 210 A8.1(a): The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

Receiver bandwidth and hopping is verified through a technical description provided by the manufacturer.

6 dB Occupied Bandwidth

15.247(a)(2) and RSS 210 A8.2(a): Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

The 6 dB Occupied Bandwidth is measured at low, mid, and high channels and with each modulation mode.

Option #1:

1. Set resolution bandwidth (RBW) = 1-5% or DTS BW, not to exceed 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Option #2

The automatic bandwidth measurement capability of a spectrum analyzer may be employed using the X dB bandwidth mode with X set to 6 dB, if it implements the functionality described above. When using this capability, care should be taken to ensure that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that may be ≥ 6 dB.

Peak RF Output Power

Option #1

This procedure should be used when a spectrum/signal analyzer with a resolution bandwidth that is greater than or equal to the DTS bandwidth can be used to perform the measurement.

1. Set the RBW \geq DTS bandwidth.
2. Set VBW $\geq 3 \times$ RBW.
3. Set span \geq RBW.
4. Sweep time = auto couple.
5. Detector = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use peak marker function to determine the peak amplitude level.

Option #2

This procedure should only be used when the maximum available RBW of the spectrum/signal analyzer is less than the DTS bandwidth.

1. Set the RBW = maximum available (at least 1 MHz).
2. Set the VBW = $3 \times$ RBW or maximum available setting (must be \geq RBW).
3. Set the span to fully encompass the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the spectrum analyzer's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some analyzers, this may require a manual override to ensure use of peak detector). If the spectrum analyzer does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

Option #3

The maximum peak conducted output power can be measured using a broadband peak RF power meter. The power meter must have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast, average-responding diode type sensor.

Maximum RMS RF Output Power

15.247(b)(3) permits the maximum (average) conducted output power to be measured as an alternative to the maximum peak conducted output power for demonstrating compliance to the limit. When these procedures are utilized, the power is referenced to the emission bandwidth (EBW) rather than the DTS bandwidth (see Section 2.0 for definitions).

When using a spectrum/signal analyzer to perform these measurements, it must be capable of utilizing a number of measurement points in each sweep that is greater than or equal to twice the span/RBW in order to ensure bin-to-bin spacing of \leq RBW/2 so that narrowband signals are not lost between frequency bins.

The ideal method for measuring the maximum (average) conducted output power is with the EUT is configured to transmit continuously (duty cycle $\geq 98\%$) at its maximum power control level. However, when this condition cannot be realized, video triggering or signal gating can be used to ensure that the measurements are performed

only during periods when the EUT is transmitting at its maximum power control level. An option is also provided that can be used when none of the above requirements can be met with the available measurement instrumentation.

Option #1

This procedure should be used with an RMS power averaging detector; however, a sample detector can be used when an RMS detector is not available. This is the baseline method for measuring the maximum (average) conducted output power.

1. Set the analyzer span to a minimum of 1.5 times the EBW.
2. Set the RBW = 1 MHz.
3. Set the VBW \geq 3 MHz.
4. Ensure that the number of measurement points in the sweep \geq 2 x span/RBW.
5. Sweep time = auto couple.
6. Detector = power averaging (RMS) or sample detector when RMS not available.
7. Employ trace averaging in power averaging (RMS) mode over a minimum of 100 traces.
8. Use the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges.

Note: If the analyzer does not have a band power function, sum the spectral levels (in linear power units) at 1 MHz intervals extending across the entire EBW.

Option #2

This procedure can be used when an RMS power averaging detector is available in the spectrum/signal analyzer. This method utilizes a single slow sweep for determining the maximum (average) conducted output power and may be advantageous for use in automated test set-ups.

1. Set the analyzer span to a minimum of 1.5 times the EBW.
2. Set the RBW = 1 MHz.
3. Set the VBW \geq 3 MHz.
4. Detector = power average (RMS) detector.
5. Ensure that the number of measurement points in the sweep \geq 2 x span/RBW.
6. Manually set the sweep time to: $\geq 10 \times$ (number of measurement points in sweep) x (maximum data rate per stream).
7. Perform the measurement over a single sweep.
8. Use the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges.

Note: If the analyzer does not have a band power function, sum the spectral levels (in linear power units) at 1 MHz intervals extending across the entire EBW.

Option #3

This procedure provides an alternative for determining the RMS output power using a broadband RF average power meter with a thermocouple detector if the EUT can be configured to transmit continuously or if the power meter can be triggered/signal-gated such that the power is measured only when the EUT is transmitting at its maximum power control level.

Alternative

When the EUT cannot be configured to transmit continuously (*i.e.*, duty cycle < 98%), and video triggering/signal gating cannot be used to perform the measurement only during a time interval when the EUT is transmitting at its maximum power control level, then one of the procedures above can be used in free run mode to determine the average power inclusive of the on/off periods of the transmitter and then corrected by the duty cycle as follows:

1. Measure the duty cycle per the guidance provided in Section 5.0.
2. Add $10\log(1/\text{duty cycle})$ to the logarithmic representation of the maximum measured power level.
3. Note that when a power meter is used to perform this measurement then the integration period must exceed the repetition period of the transmitted signal by at least a factor of five.

Power Spectral Density

A conducted power spectral density (PSD) limit of 8 dBm in any 3 kHz band segment within the DTS bandwidth is specified during any time interval of continuous transmission. By rule, the same method as used to determine the conducted output power shall be used to determine the power spectral density (*i.e.*, if maximum peak conducted output power was measured then the peak PSD procedure shall be used and if maximum conducted output power was measured then the average PSD procedure shall be used). If the average PSD is measured with a power averaging (RMS) detector or a sample detector, then the spectrum analyzer must be capable of utilizing a number of measurement points in each sweep that is greater than or equal to twice the span/RBW in order to ensure bin-to-bin spacing of $\leq \text{RBW}/2$ so that narrowband signals are not lost between frequency bins.

One of the following procedures can be used to determine the DTS PSD as applicable.

Option #1

This procedure must be used if maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit, and is optional if the maximum (average) conducted output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW ≥ 3 kHz.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Option #2

This procedure can be used when the maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit. This is the baseline method for determining the maximum (average) conducted PSD level. If the analyzer has an RMS power averaging detector, it must be used; otherwise, use the sample detector. The EUT must be configured to transmit continuously (duty cycle $\geq 98\%$), or else video triggering/signal gating must be implemented to ensure that measurements are made when the EUT is transmitting at its maximum power control level.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set span to at least 1.5 times the DTS channel bandwidth.
3. Set RBW ≥ 3 kHz.
4. Set VBW $\geq 3 \times \text{RBW}$.
5. Detector = power averaging (RMS) or sample detector (when RMS not available).
6. Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.

7. Sweep time = auto couple.
8. Employ trace averaging (RMS) mode over a minimum of 100 traces.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Option #3

This procedure can be used when the maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit and the EUT can be configured to transmit continuously (duty cycle $\geq 98\%$), or video triggering/signal gating can be implemented to ensure that measurements are made when the EUT is transmitting at its maximum power control level. This procedure utilizes a single slow sweep to perform the measurement and may be advantageous for use in an automated test set-up.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the analyzer span to at least 1.5 times the DTS channel bandwidth.
3. Set the RBW ≥ 3 kHz.
4. Set the VBW $\geq 3 \times$ RBW.
5. Detector = power average (RMS).
6. Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
7. Manually set the sweep time to: $\geq 10 \times$ (number of measurement points in sweep) \times (maximum data rate per stream).
8. Perform the measurement over a single sweep.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Alternative 1

When the EUT cannot be configured to transmit continuously (*i.e.*, duty cycle $< 98\%$), and video triggering/signal gating cannot be used to measure only when the EUT is transmitting at its maximum power control level, then one of the procedures described above can be used in free run mode to determine the average power inclusive of the on/off periods of the transmitter and the result corrected by the duty cycle as follows:

1. Measure the duty cycle per the guidance provided in Section 5.0.
2. Add $10\log(1/\text{duty cycle})$ to the logarithmic representation of the maximum measured power level.

Spurious Emissions

15.247(d) and RSS 210 A8.5: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits is not required. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits specified.

Reference Level Measurement

Establish the reference level by using the peak PSD procedure to measure the PSD level in any 100 kHz bandwidth (*i.e.*, set RBW = 100 kHz and VBW ≥ 300 kHz) within the DTS channel bandwidth (the channel found to contain the maximum PSD level can be used to establish the reference level).

Unwanted Emissions Level Measurement

Measure the peak power in any 100 kHz bandwidth for all emissions outside of the authorized DTS frequency band as follows. This measurement must be performed over a frequency range that spans from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

1. Set start frequency to DTS channel edge frequency.
2. Set stop frequency so as to encompass the spectrum to be examined.
3. Set RBW = 100 kHz.
4. Set VBW \geq 300 kHz.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize (this may take some time, depending on the extent of the span).
9. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in 10.1. Report the three highest emissions relative to the limit.

Unwanted Emissions in Restricted Bands

§15.247(d) specifies that emissions which fall in the restricted bands, as defined in **§15.205(a)**, must comply with the radiated emission limits specified in **§15.209(a)**.

Radiated Emissions Measurements

Since the emission limits provided in **§15.209(a)** are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are defined in C63.10 shall be used.

Antenna-Port Conducted Emission Measurements

Antenna-port conducted measurements are acceptable as an alternative to radiated measurements for demonstrating compliance to the limits in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test (with antenna port(s) terminated) for cabinet/case emissions will also be required.

Relationship between Equivalent Isotropic Radiated Power (EIRP) and Electric Field Strength (E)

15.209(a) specifies radiated emissions limits for unwanted emissions in the restricted bands in terms of the maximum permissible electric field strength at a specified measurement distance. A correspondent EIRP level can be determined from the following relationship:

$$\text{eirp} = (e \times d)^2/30$$

where:

eirp = the equivalent isotropic radiated power in watts,

e = electric field strength in V/m,

d = measurement distance in meters.

Converting the above equation to the logarithmic equivalent yields:

$$\text{EIRP} = E + 20\log(d) - 104.8$$

and rearranging terms yields:

$$E = \text{EIRP} - 20\log(d) + 104.8$$

where:

EIRP = the equivalent isotropic radiated power in dBm,

E = electric field strength in dB μ V/m,

d = measurement distance in meters.

This relationship can be used to determine correspondent field strength levels from EIRP levels measured at the distances specified in **§15.209(a)**.

Additionally, when a conducted test is performed in lieu of a radiated test, an additional factor must be added to the measured amplitude level to account for possible ground reflections. For emissions at frequencies less than or equal to 30 MHz, a maximum ground reflection factor of 6 dB shall be used and for emissions at frequencies greater than 30 MHz but less than or equal to 1000 MHz, a maximum ground reflection factor of 4.7 dB shall be used. For emissions on frequencies greater than 1000 MHz, no ground reflection factor is applied.

Transmitter Antenna Gain Assumptions

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna must be added to the measured output power (when working in logarithmic terms).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

For guidance on calculating the additional array gain term when determining the effective antenna gain for an EUT with multiple outputs occupying the same or overlapping frequency ranges (e.g., MIMO or beamforming antennas), see KDB Publication 662911.

Radiated Spurious Emissions Measurement

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Established procedures for performing radiated measurements shall be used (see C63.10). All detected emissions must comply with the applicable limits.



Band-Edge Measurements

The measurement of unwanted emissions at the edge of the authorized frequency bands can be complicated by the capture of RF energy from the fundamental emission within the RBW passband. The following techniques are permitted for use in performing a measurement of the unwanted emission level at the band edges.

Marker-Delta Method

The marker-delta method, as described in KDB 913591 and in C63.10, can be used to perform measurements of the unwanted emissions level at the band-edges.

Integrated Power Measurement

A narrower resolution bandwidth can be used at the band edge to improve the measurement accuracy provided that the measurement is subsequently integrated to the relevant bandwidth specification (e.g., 100 kHz within non-restricted bands and 1 MHz within restricted frequency bands).

Measurement Uncertainty

Determining compliance with the limits in these standards was based on the results of the measurement, and does not take into account the measurement instrumentation uncertainty.

Referencing the measurement instrumentation uncertainty considerations contained in CISPR 16-4-2, the expanded measurement uncertainty is ± 4.90 dB for radiated emissions, ± 3.46 dB for mains conducted emissions, and ± 4.31 dB for telecommunication ports conducted emissions.

List of Test Equipment

The following test equipment was used in the performance of the testing herein.

Table 7 – Test Equipment Used

Asset Tag	Description	Manufacturer	Model	Serial Number	Cal. Date	Cal. Due
992	Antenna, Horn	EMCO	3160-09	9705-1079	N/R	
1016	Preamplifier	Hewlett Packard	8449A	2749A00159	23-Jul-2012	23-Jul-2013
1025	Preamplifier, 25dB	Nemko USA	LNA25	399	27-Feb-2012	27-Feb-2013
1036	Spectrum Analyzer	Rohde & Schwartz	FSEK30	830844/006	23-Dec-2011	23-Dec-2013
1304	Antenna, Horn	Electro Metrics	RGA-60	6151	24-Nov-2010	24-Nov-2012
1468	Attenuator, 10 dB	MCL Inc.	BW-S10W2 10db-2WDC		N/R	
1469	Attenuator, 10 dB	MCL Inc.	BW-S10W2 10db-2WDC		N/R	
1470	Attenuator, 10 dB	MCL Inc.	BW-S10W2 10db-2WDC		N/R	
1659	Spectrum Analyzer	Rohde & Schwartz	FSP	973353	17-Oct-2012	17-Oct-2014



Asset Tag	Description	Manufacturer	Model	Serial Number	Cal. Date	Cal. Due
1763	Antenna, Bilog	Schaffner	CBL 6111D	22926	21-Feb-2012	21-Feb-2013
1767	Receiver, EMI Test	Rohde & Schwartz	ESIB26	837491/0002	09-Dec-2011	09-Dec-2012
1783	Cable Assembly	Nemko	3m Chamber		26-Sep-2012	26-Sep-2013
1482	High Pass Filter	K&L Microwave	11SH10-4000/ T12000-0	2	N/R	



Test Results – Antenna Requirement

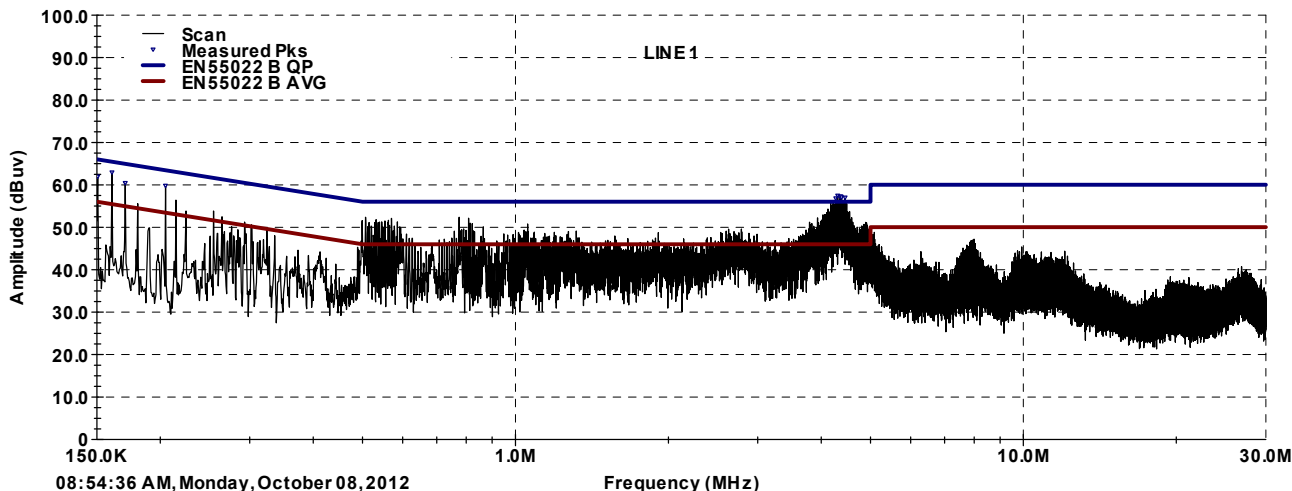


Test Results – Conducted Emissions - Mains



Table No. 2	Conducted Emissions - Mains	Verdict
		P

Frequency Range: 150 kHz to 30 MHz Test Location : Lab 3
 Test Method.....: ANSI C63.10
 EUT Configuration: Transmit full power, channel 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ Line Tested .: Phase A
 Test Date: 8-Oct-12
 Temperature: 24.5°C Relative Humidity : 33.3 %
 Test Equipment Asset Tag List : 674,1663,1924,704,1922,1258



(1) Frequency (MHz)	(3) QP evel (dBuV)	(4) AVE Level (dB μ V)	(5) & (6) Quasi-Peak		(7) & (8) Average		(9) Pass/ Fail
			Limit (dB μ V)	Margin (dB)	Limit (dB μ V)	Margin (dB)	
0.1597	51.8	41.0	65.7	14.0	55.7	14.8	Pass
0.1680	50.6	40.1	65.5	14.9	55.5	15.4	Pass
0.1794	49.1	39.3	65.2	16.0	55.2	15.8	Pass
0.2020	47.4	35.0	64.5	17.1	54.5	19.5	Pass
4.3516	31.0	15.8	56.0	25.1	46.0	30.2	Pass

(5) = (3) + (4) (7) = (6) - (5) (9) = (8) - (5)

Supplemental Information:

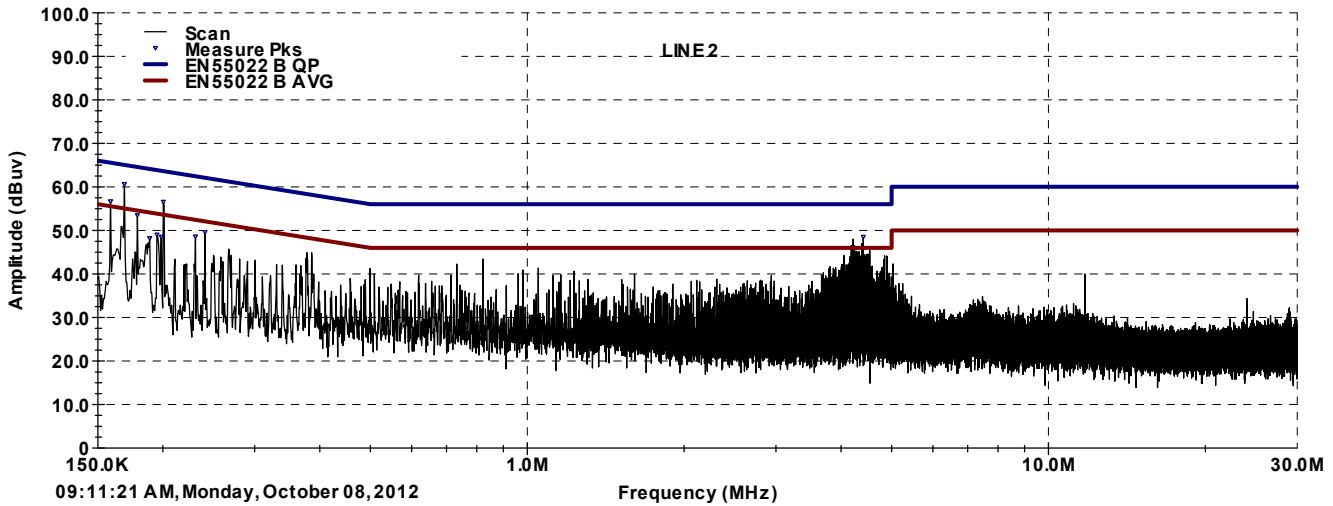
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David Light



Table No. 3	Conducted Emissions – Mains	Verdict
		P

Frequency Range: 150 kHz to 30 MHz Test Location: Lab 5
 Test Method.....: ANSI C63.10
 EUT Configuration: Transmit full power, channel 6
 Power Input.....: 120VAC, 60 Hz 1φ 3φ Line Tested .: Neutral
 Test Date: 8-Oct-12
 Temperature: 24.5°C Relative Humidity: 33.3 %
 Test Equipment Asset Tag List : 674,1663,1924,704,1922,1258



Frequency (MHz)	QP Level (dBuV)	AVE Level (dBμV)	Quasi-Peak		Average		Pass/Fail
			Limit (dBμV)	Margin (dB)	Limit (dBμV)	Margin (dB)	
0.1516	52.3	35.3	66.0	13.6	56.0	20.6	Pass
0.1607	51.3	38.6	65.7	14.4	55.7	17.1	Pass
0.1716	50.0	34.3	65.4	15.4	55.4	21.1	Pass
0.2043	46.3	31.7	64.4	18.1	54.4	22.7	Pass
4.2835	51.1	44.4	56.0	4.9	46.0	1.6	Pass
4.3048	51.6	44.8	56.0	4.4	46.0	1.2	Pass
4.3248	51.6	44.8	56.0	4.4	46.0	1.2	Pass
4.3578	51.4	44.9	56.0	4.6	46.0	1.1	Pass
4.4267	50.7	43.9	56.0	5.3	46.0	2.1	Pass
4.4322	50.6	43.7	56.0	5.4	46.0	2.3	Pass

(5) = (3) + (4) (7) = (6) – (5) (9) = (8) – (5)

Supplemental Information:

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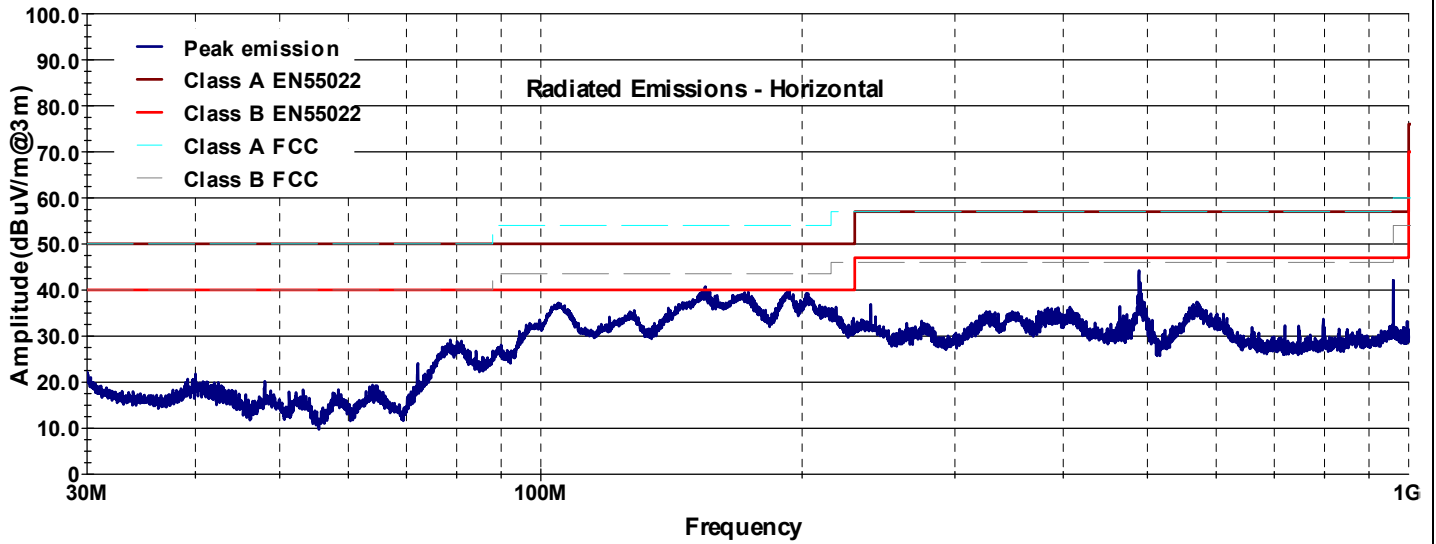


Test Results – Radiated Emissions – Restricted Bands



Table No. 4	Radiated Emissions – Restricted Bands – Lowest Channel	Verdict
		P

Frequency Range : 30 MHz to 1 GHz Test Location : 3m Chamber
 Test Method..... : 558074 D01 DTS Measurement Guidance v02
 Test Distance : 3m
 EUT Configuration : Transmit full power at 2412 MHz
 Test Date : 15-Oct-12
 Temperature : 24.2°C Relative Humidity : 42.6 %
 Test Equipment Asset Tag List : 1767, 1783, 1016, 1766, 1304



(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Antenna Polarity (H/V)	Detector	Frequency (MHz)	Turntable Azimuth (deg)	Antenna Height (m)	Receiver Reading (dBµV/m)	Site Correction Factor (dB/m)	Emission Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pass/Fail
H	QPK	155.0830	244	243	50.0	-14.7	35.3	40.0	4.7	Pass
H	QPK	488.7170	280	283	37.5	-7.1	30.5	47.0	16.5	Pass
H	QPK	569.4600	143	119	33.3	-5.3	28.1	47.0	18.9	Pass
H	QPK	959.9580	107	83	24.3	1.2	25.4	47.0	21.6	Pass

(6) = (4) + (5) (8) = (7) – (6)

Supplemental Information:

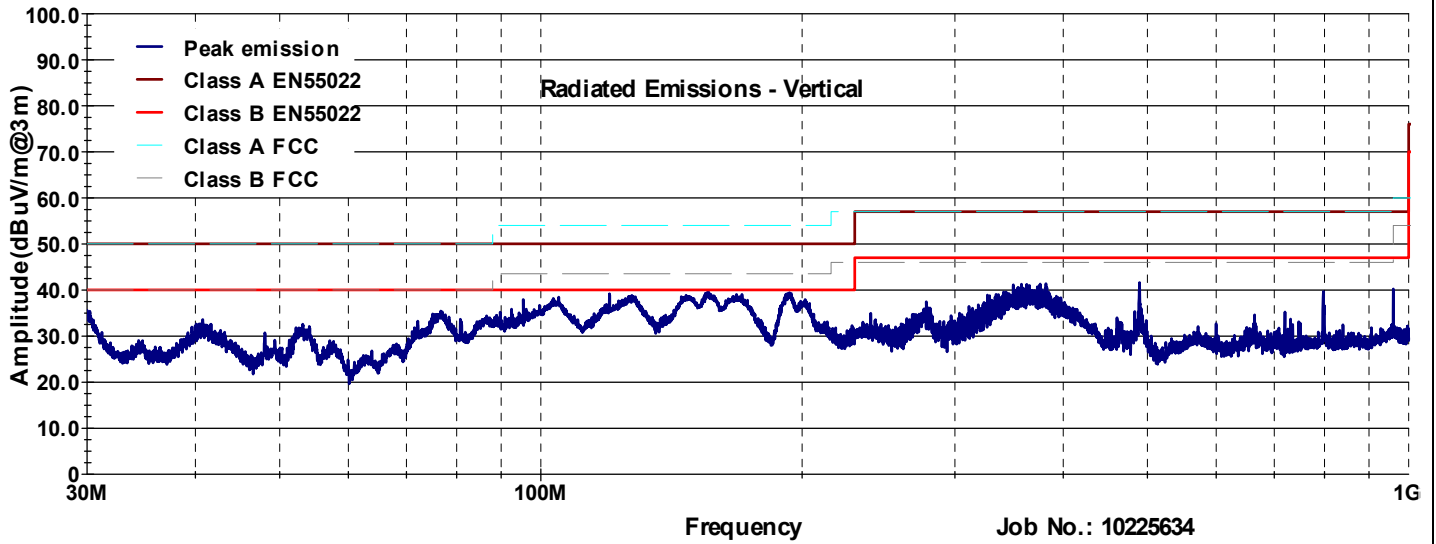
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Table No. 5	Radiated Emissions – Restricted Bands – Lowest Channel	Verdict
		P

Frequency Range : 30 MHz to 1 GHz Test Location : 3m Chamber
 Test Method..... : 558074 D01 DTS Measurement Guidance v02
 Test Distance : 3m
 EUT Configuration : Transmit full power at 2412 MHz
 Test Date : 15-Oct-12
 Temperature : 24.2°C Relative Humidity : 42.6 %
 Test Equipment Asset Tag List : 1767, 1783, 1016, 1766, 1304



(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Antenna Polarity (H/V)	Detector	Frequency (MHz)	Turntable Azimuth (deg)	Antenna Height (m)	Receiver Reading (dBµV/m)	Site Correction Factor (dB/m)	Emission Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pass/Fail
V	QPK	53.1519	95	106	51.0	-19.8	31.2	40.0	8.8	Pass
V	QPK	155.6170	57	109	50.9	-14.8	36.2	40.0	3.8	Pass
V	QPK	193.0320	-1	111	52.1	-16.0	36.1	40.0	3.9	Pass
V	QPK	277.8540	143	123	43.0	-12.4	30.6	47.0	16.4	Pass
V	QPK	381.9090	139	129	48.3	-9.3	39.0	47.0	8.0	Pass
V	QPK	490.2370	278	107	41.7	-7.0	34.7	47.0	12.3	Pass
V	QPK	797.6400	110	108	37.9	-1.8	36.1	47.0	10.9	Pass

(6) = (4) + (5) (8) = (7) - (6)

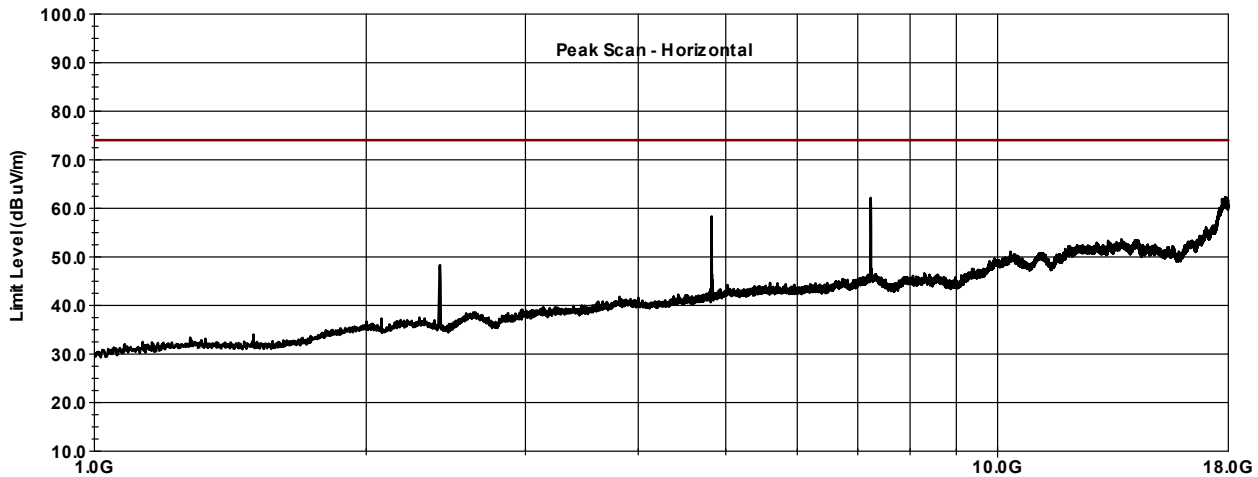
Supplemental Information:

Tested by (+ signature) :  David Light



Table No. 6	Radiated Emissions – Restricted Bands – Lowest Channel	Verdict
		P

Frequency Range : 1 GHz to 18 GHz Test Location : 3m Chamber
 Test Method..... : 558074 D01 DTS Measurement Guidance v02
 Test Distance : 3m
 EUT Configuration : Transmit full power at 2412 MHz
 Test Date : 15-Oct-12
 Temperature : 24.2°C Relative Humidity : 42.6 %
 Test Equipment Asset Tag List : 1767, 1783, 1016, 1766, 1304



(1) Antenna Polarity (H/V)	(2) Detector	(3) Frequency (MHz)	(4) Receiver Reading (dBuV/m)	(5) Site Correction Factor (dB/m)	(6) Emission Level (dBuV/m)	(7) Limit (dBuV/m)	(8) Margin (dB)	(9) Pass/ Fail
H	Average	4,824.0200	42.0	11	52.9	54.0	1.1	Pass
H	Average	7,235.9900	36.9	16	53.4	54.0	0.6	Pass
H	Average	9,648.0200	28.0	17	45.1	54.0	8.9	Pass
H	Average	12,060.0000	28.0	21	49.2	54.0	4.8	Pass
H	Average	14,472.0000	26.0	24	50.0	54.0	4.0	Pass
H	Average	16,884.0000	20.0	27	46.9	54.0	7.1	Pass
H	Average	4,824.0300	40.4	10.9	51.3	54.0	2.7	Pass
V	Average	7,235.3900	38.9	16.5	52.4	54.0	1.6	Pass
V	Average	9,648.2200	34.2	17.1	51.3	54.0	2.7	Pass
V	Average	12,059.5000	34.6	21.1	45.7	54.0	8.3	Pass
V	Average	14,471.7000	32.6	24.0	46.5	54.0	7.5	Pass
V	Average	16,884.0000	31.4	26.9	48.3	54.0	5.7	Pass

(6) = (4) + (5) (8) = (7) – (6)

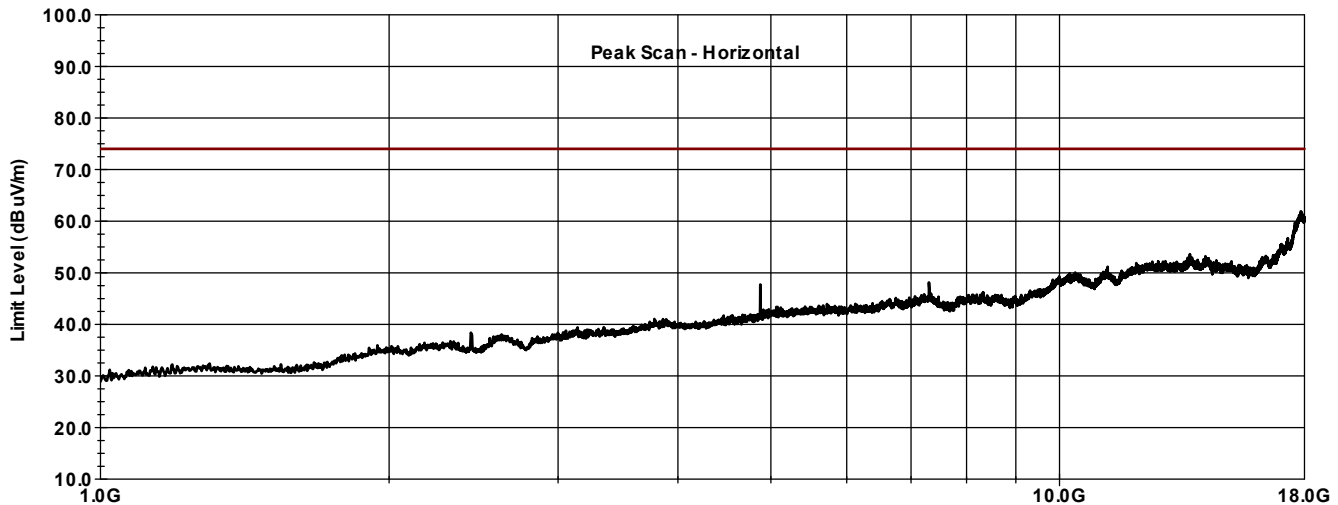
Supplemental Information:

Tested by (+ signature) :  David Light



Table No. 7	Radiated Emissions – Restricted Bands – Mid Channel	Verdict
		P

Frequency Range : 1 GHz to 18 GHz Test Location : 3m Chamber
 Test Method..... : 558074 D01 DTS Measurement Guidance v02
 Test Distance : 3m
 EUT Configuration : Transmit full power at 2437 MHz
 Test Date : 15-Oct-12
 Temperature : 24.2°C Relative Humidity : 42.6 %
 Test Equipment Asset Tag List : 1767, 1783, 1016, 1766, 1304



(1) Antenna Polarity (H/V)	(2) Detector	(3) Frequency (MHz)	(4) Receiver Reading (dBµV/m)	(5) Site Correction Factor (dB/m)	(6) Emission Level (dBµV/m)	(7) Limit (dBµV/m)	(8) Margin (dB)	(9) Pass/ Fail
H	Average	4,874.0000	36.6	11	47.8	54.0	6.2	Pass
H	Average	7,310.0900	34.8	16	51.3	54.0	2.7	Pass
H	Average	9,748.0800	34.3	18	51.9	54.0	2.1	Pass
H	Average	12,184.3000	23.9	22	45.5	54.0	8.5	Pass
H	Average	14,622.6000	22.6	24	46.3	54.0	7.7	Pass
H	Average	17,058.3000	21.7	28	49.5	54.0	4.5	Pass
V	Average	4,874.0000	36.6	11.2	52.4	54.0	1.6	Pass
V	Average	7,311.0000	34.1	16.5	50.6	54.0	3.4	Pass
V	Average	9,748.0000	34.4	17.6	45.7	54.0	8.3	Pass
V	Average	12,185.0000	33.9	21.6	46.5	54.0	7.5	Pass
V	Average	14,622.0000	32.4	23.7	48.3	54.0	5.7	Pass
V	Average	17,059.0000	31.8	27.8	48.3	54.0	5.7	Pass

(6) = (4) + (5) (8) = (7) – (6)

Supplemental Information:

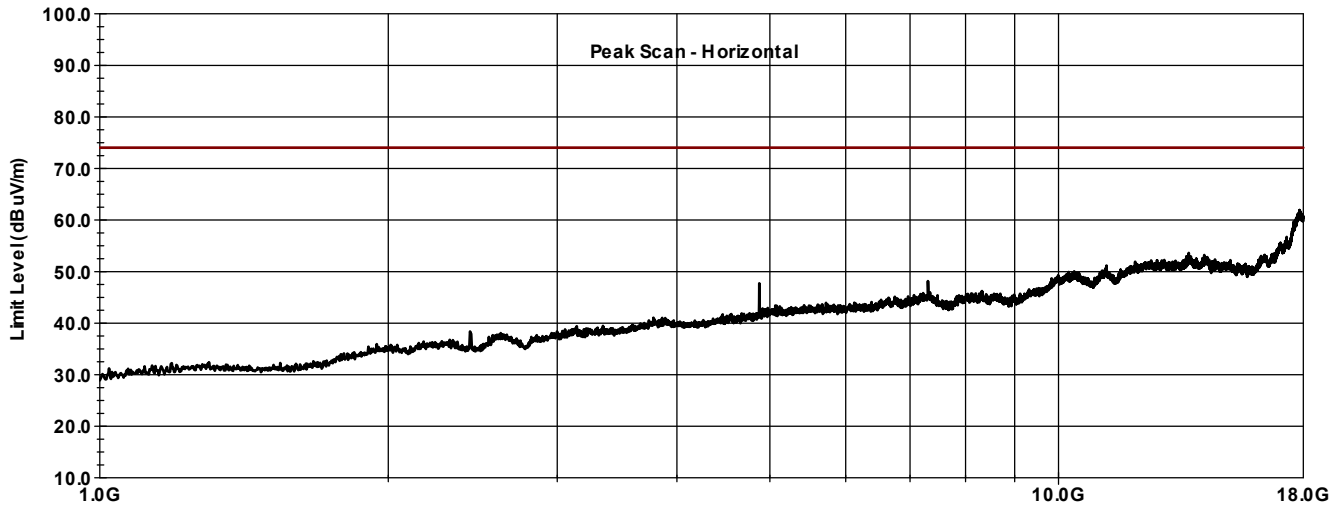
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Table No. 8	Radiated Emissions – Restricted Bands – Highest Channel	Verdict
		P

Frequency Range : 1 GHz to 18 GHz Test Location : 3m Chamber
 Test Method..... : 558074 D01 DTS Measurement Guidance v02
 Test Distance : 3m
 EUT Configuration : Transmit full power at 2462 MHz
 Test Date : 15-Oct-12
 Temperature : 24.2°C Relative Humidity : 42.6 %
 Test Equipment Asset Tag List : 1767, 1783, 1016, 1766, 1304



(1) Antenna Polarity (H/V)	(2) Detector	(3) Frequency (MHz)	(4) Receiver Reading (dBµV/m)	(5) Site Correction Factor (dB/m)	(6) Emission Level (dBµV/m)	(7) Limit (dBµV/m)	(8) Margin (dB)	(9) Pass/ Fail
H	Average	2,483.4800	36.3	3	39.7	54.0	14.3	Pass
H	Average	4,924.0300	36.6	11	48.1	54.0	5.9	Pass
H	Average	7,385.9100	33.8	16	50.0	54.0	4.0	Pass
H	Average	9,848.0400	34.2	18	52.1	54.0	1.9	Pass
H	Average	12,310.3000	24.0	22	45.8	54.0	8.2	Pass
H	Average	14,771.4000	21.3	24	44.9	54.0	9.1	Pass
H	Average	17,233.4000	32.1	27.8	52.4	54.0	1.6	Pass
V	Average	4,924.0100	38.4	11.5	49.8	54.0	4.2	Pass
V	Average	7,386.0000	37.9	16.2	45.7	54.0	8.3	Pass
V	Average	9,848.0000	35.5	17.9	46.5	54.0	7.5	Pass
V	Average	12,310.0000	24.0	21.8	48.3	54.0	5.7	Pass
V	Average	14,772.0000	21.5	23.6	48.3	54.0	5.7	Pass

(6) = (4) + (5) (8) = (7) – (6)

Supplemental Information:

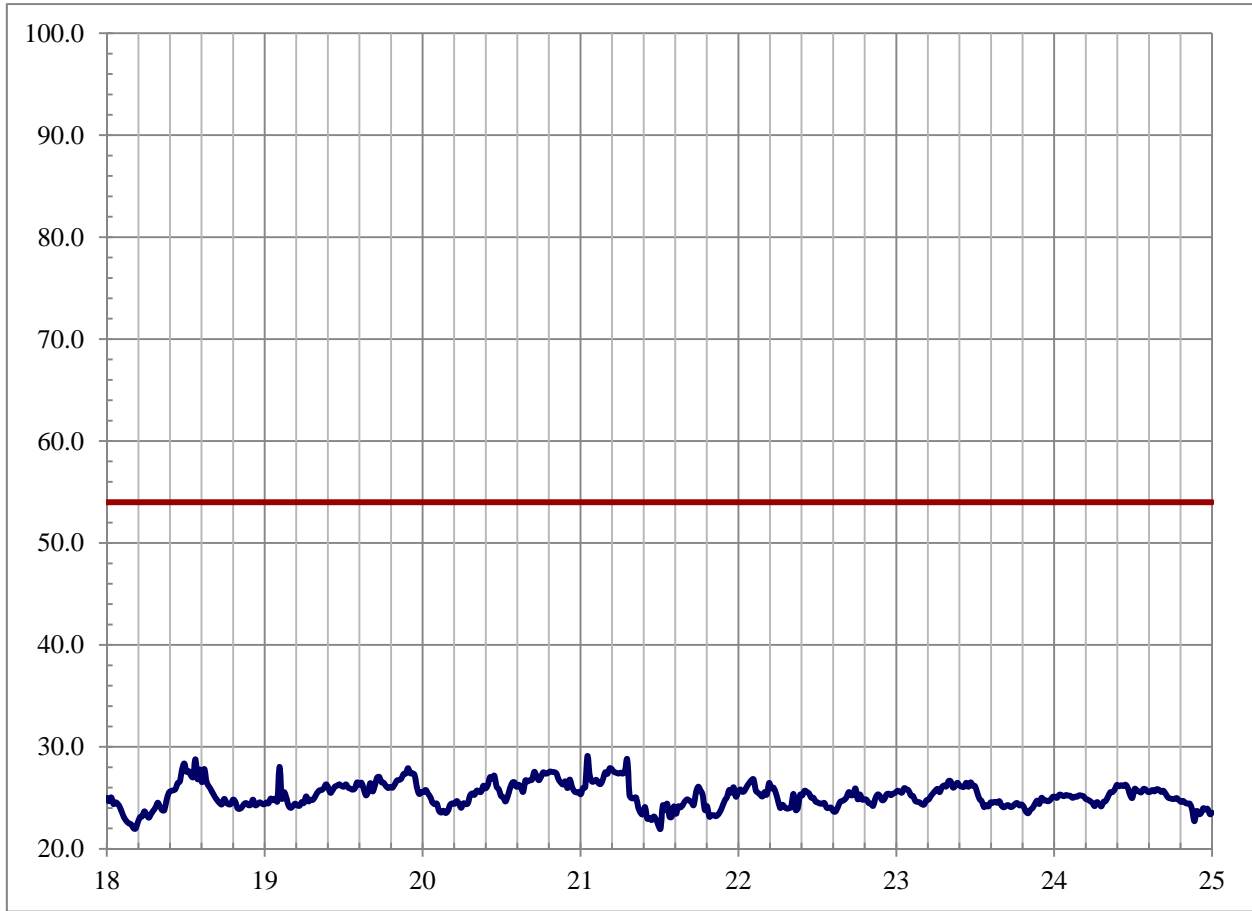
Tested by (+ signature)

David Light



Table No. 9	Radiated Emissions – Restricted Bands	Verdict
		P

Frequency Range : 18 GHz to 25 GHz Test Location : 3m Chamber
 Test Method..... : 558074 D01 DTS Measurement Guidance v02
 Test Distance : 3m
 EUT Configuration : Transmit full power channel 6
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity : 50.2 %
 Test Equipment Asset Tag List : 1036, 983, 992



Supplemental Information:

There were not emissions detected within 20 dB of the specification limit.

Tested by (+ signature): David Light *David Light*

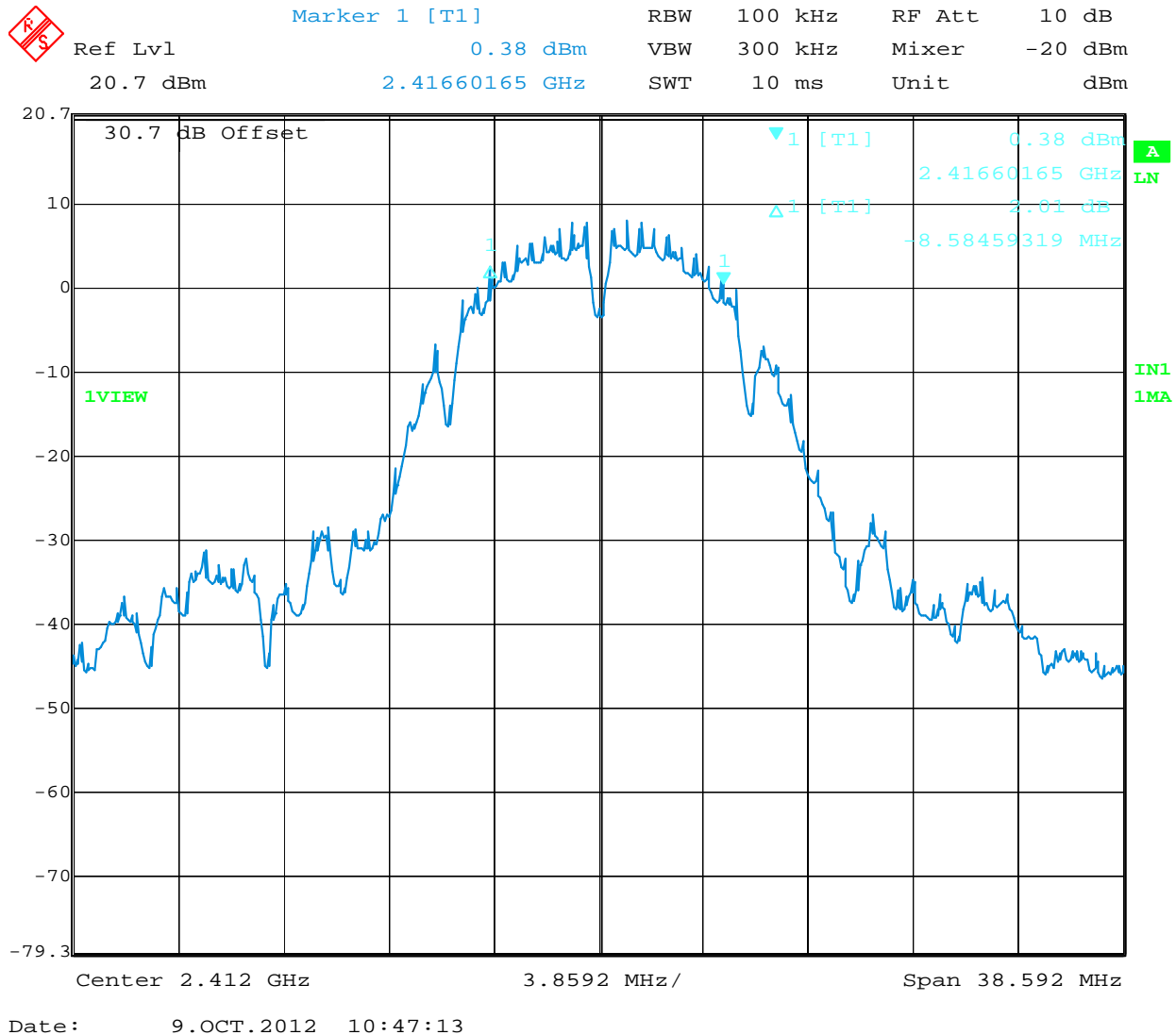


6 dB Occupied Bandwidth



Table No. 10	6 dB Occupied Bandwidth	Verdict
		P

Test Method : 558074 D01 DTS Measurement Guidance v02
 6 dB BW : 8.58 MHz
 EUT Configuration : 802.11b mode, Chan. 1
 Power Input : 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date : 9-Oct-12
 Temperature : 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



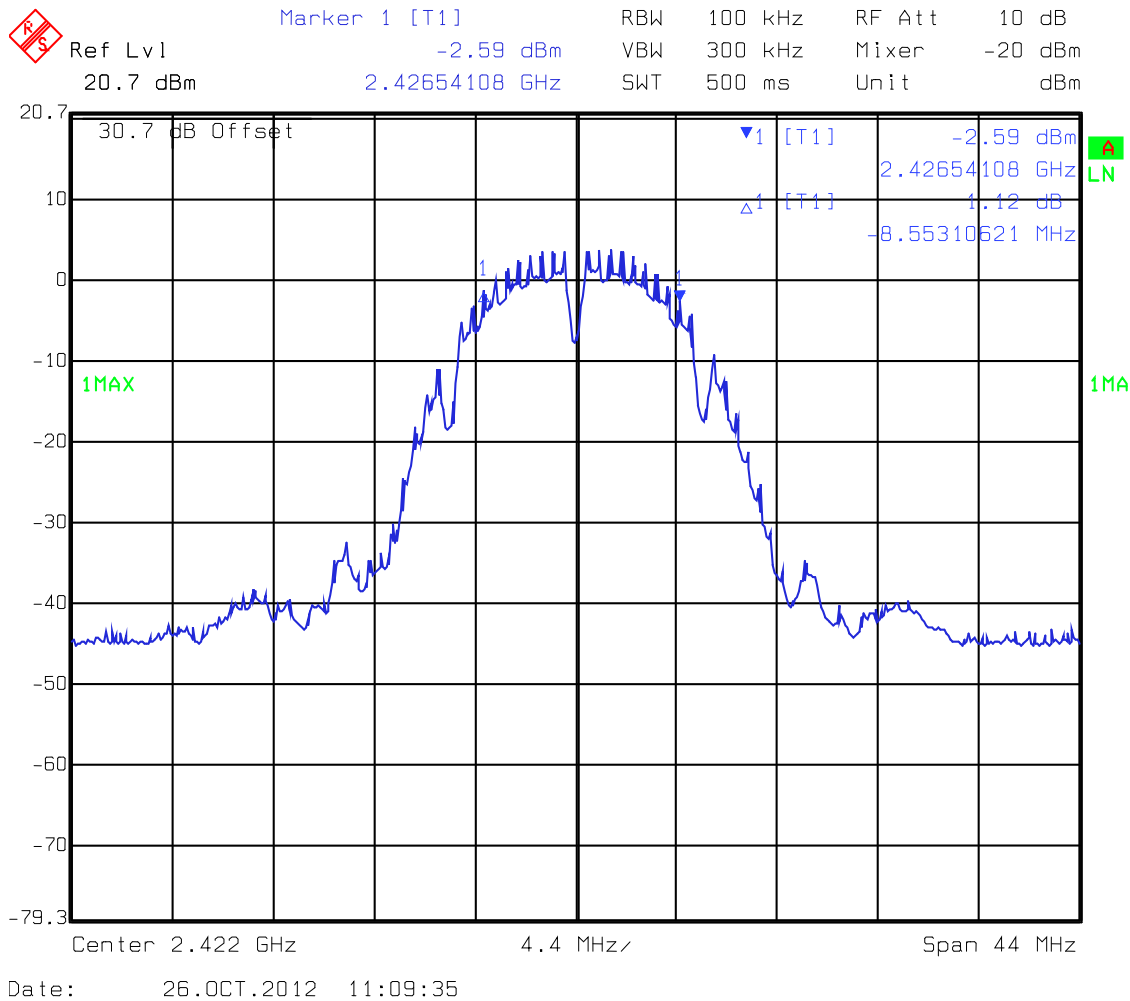
Supplemental Information:

Tested by (+ signature) : David Light *David Light*



Table No. 11	6 dB Occupied Bandwidth	Verdict
		P

Test Method : 558074 D01 DTS Measurement Guidance v02
 6 dB BW : 8.55 MHz
 EUT Configuration : 802.11b mode, Chan. 3
 Power Input : 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity:50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



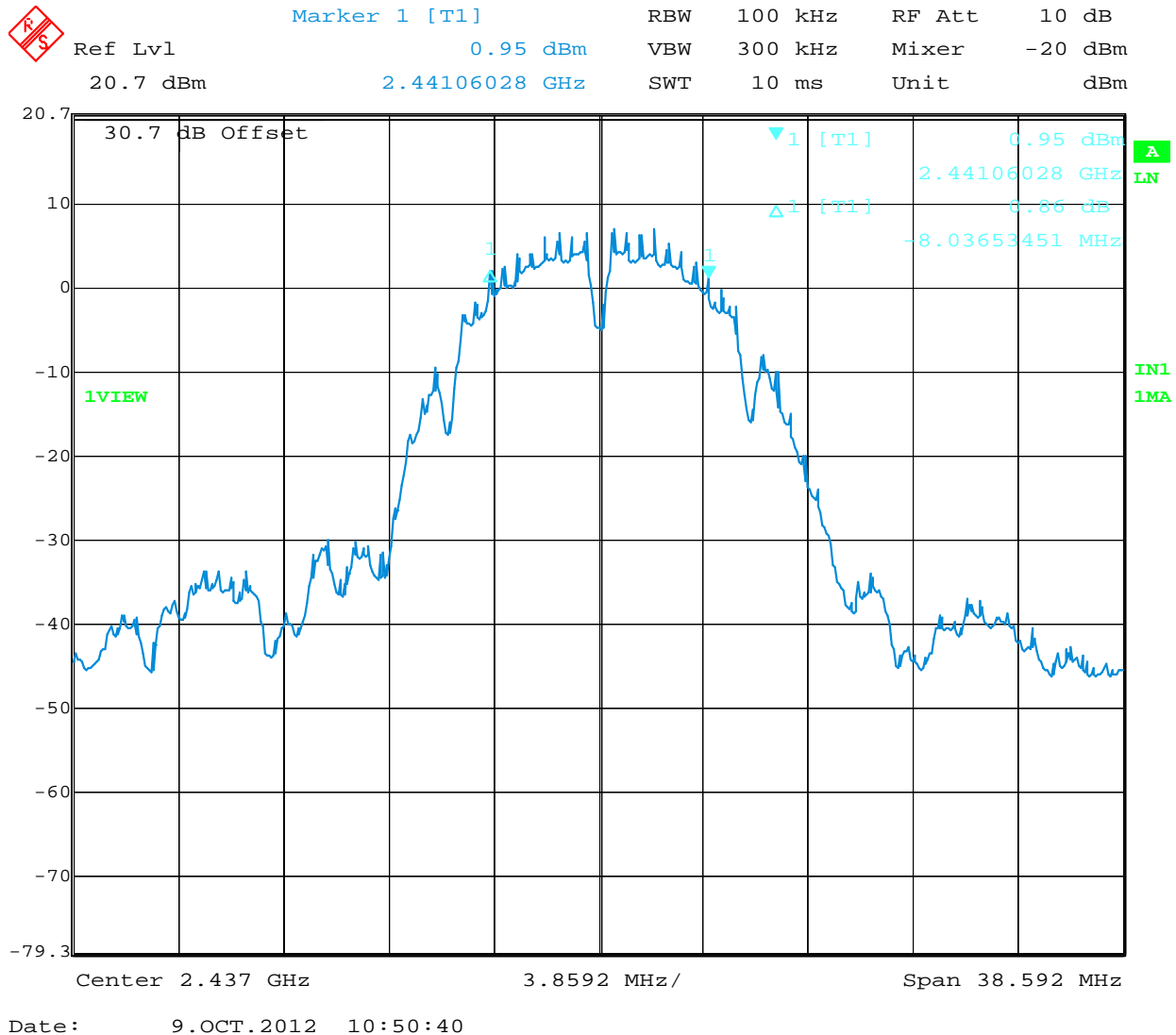
Supplemental Information:

Tested by (+ signature) : David Light



Table No. 12	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 8.04 MHz
 EUT Configuration: 802.11b mode, Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List : 1654, 1468. 1469, 1470, 1471



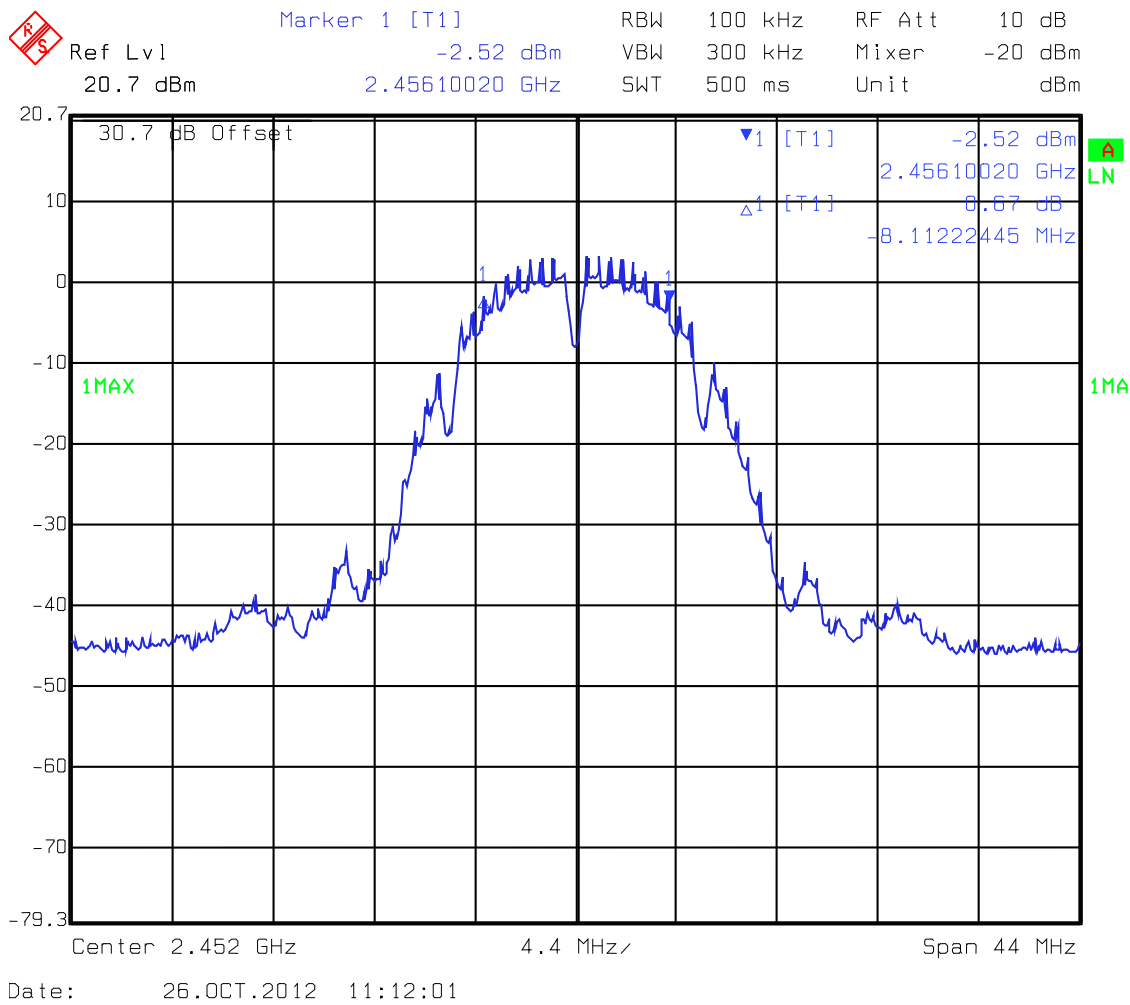
Supplemental Information:

Tested by (+ signature): David Light



Table No. 13	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 8.11MHz
 EUT Configuration: 802.11b mode, Chan. 9
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 22.9°C Relative Humidity: 50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



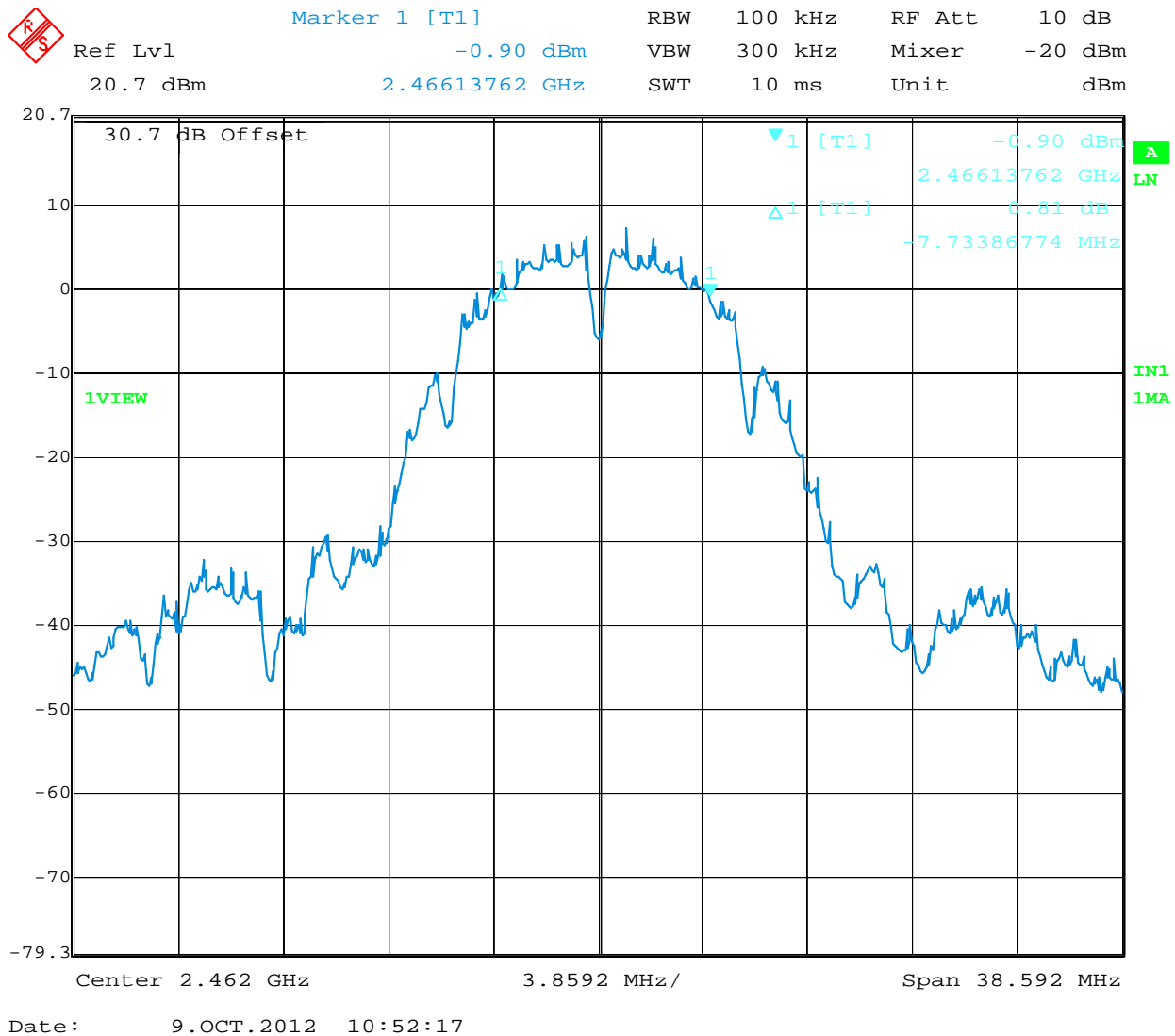
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 14	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 7.73 MHz
 EUT Configuration: 802.11b mode, Chan. 11
 Power Input.....: 120VAC, 60 Hz 1φ 3φ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity: 42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



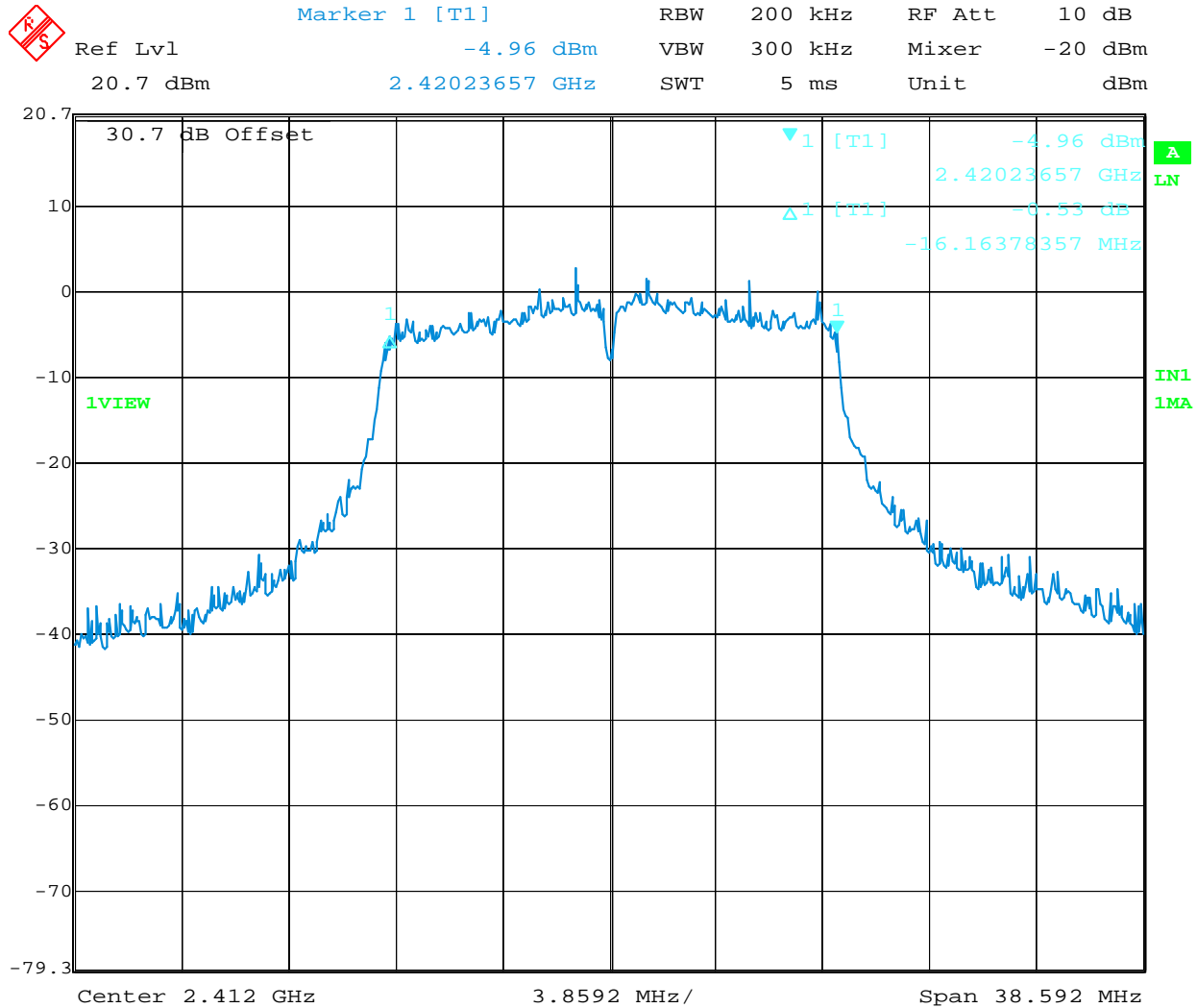
Supplemental Information:

Tested by (+ signature): David Light *David Light*



Table No. 15	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 16.2 MHz
 EUT Configuration: 802.11g mode, Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity: 42.2 %
 Test Equipment Asset Tag List : 1654, 1468. 1469, 1470, 1471



Date: 9.OCT.2012 10:54:44

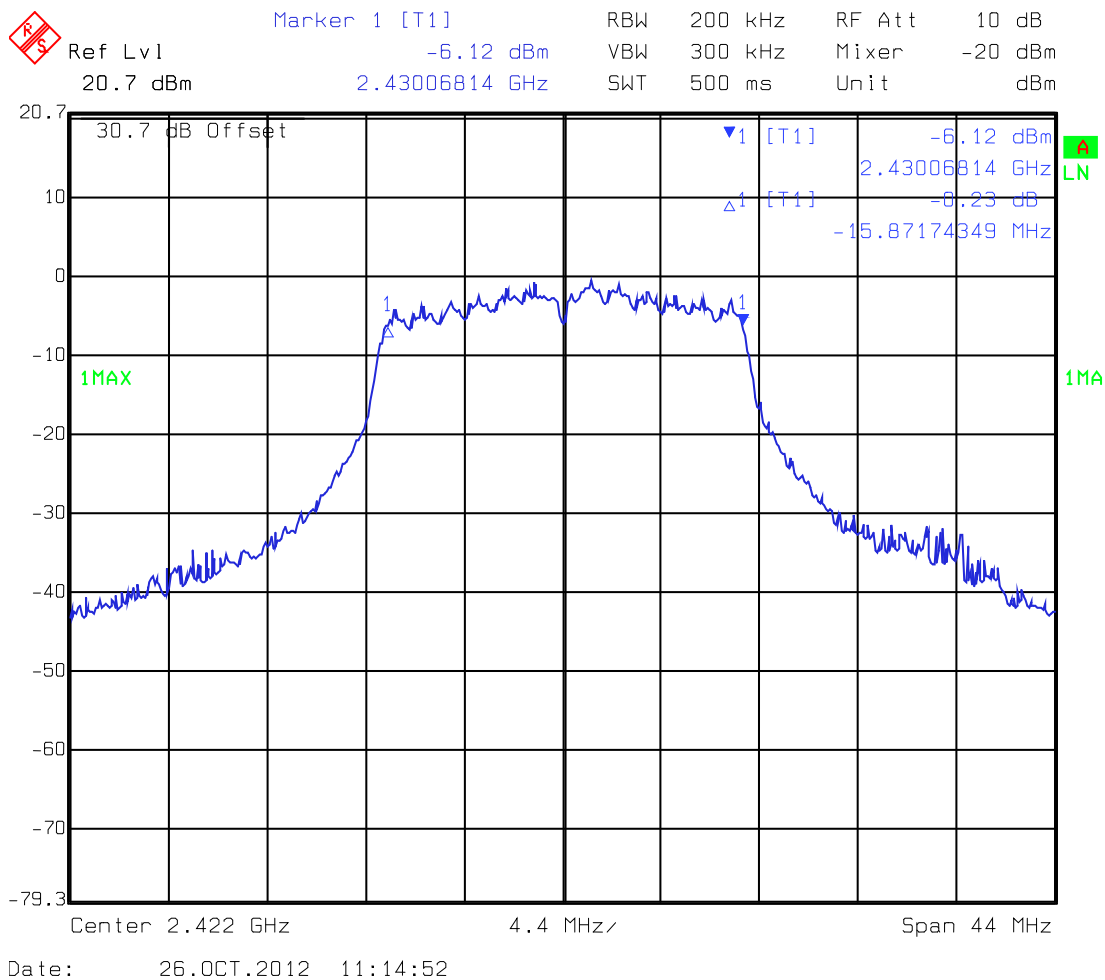
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 16	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 15.9 MHz
 EUT Configuration: 802.11g mode, Chan. 3
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 22.9°C Relative Humidity: 50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



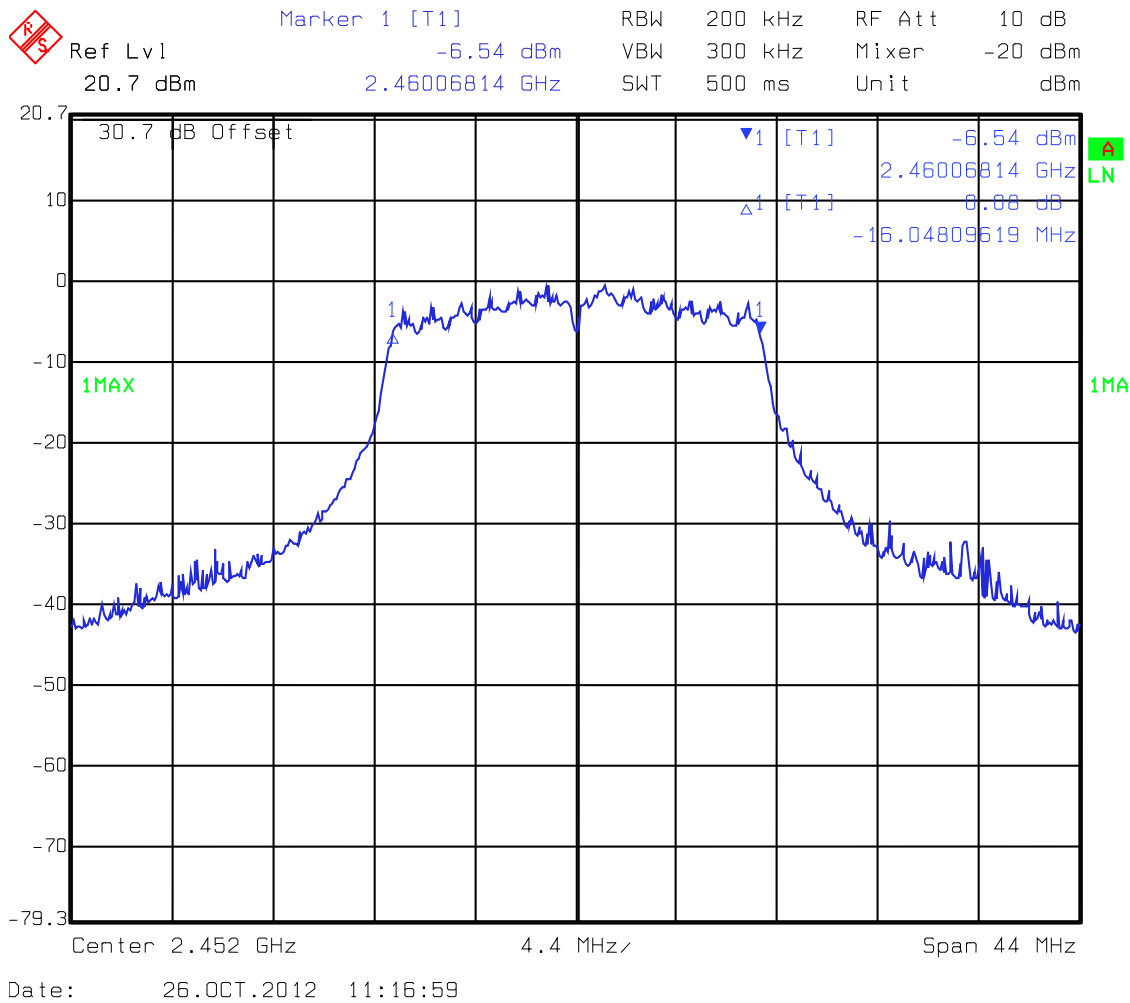
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 18	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 16.0 MHz
 EUT Configuration: 802.11g mode, Chan. 9
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 22.9°C Relative Humidity: 50.2 %
 Test Equipment Asset Tag List : 1036, 1468. 1469, 1470, 1471



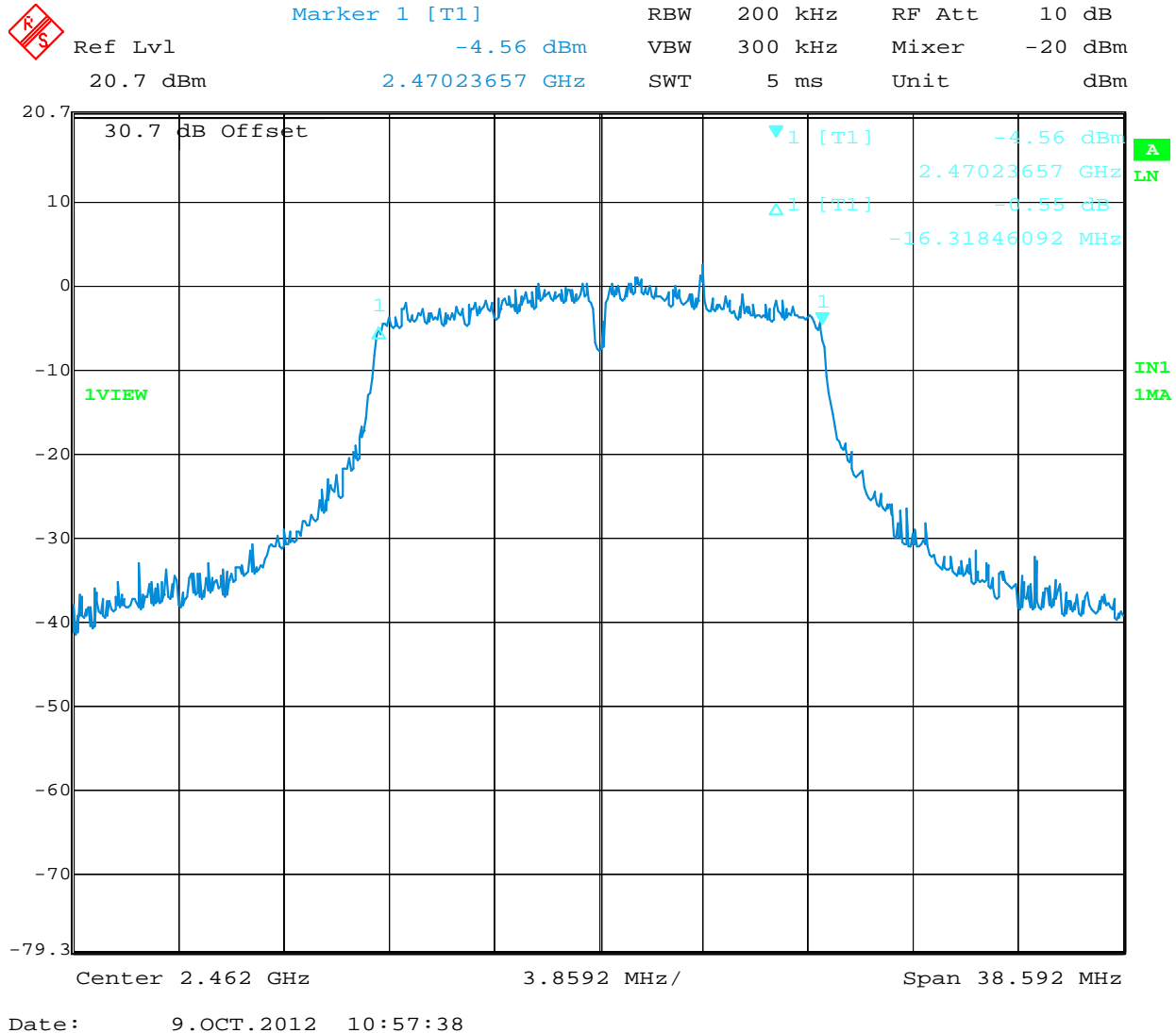
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 19	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 16.3 MHz
 EUT Configuration: 802.11g mode, Chan. 11
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity: 42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



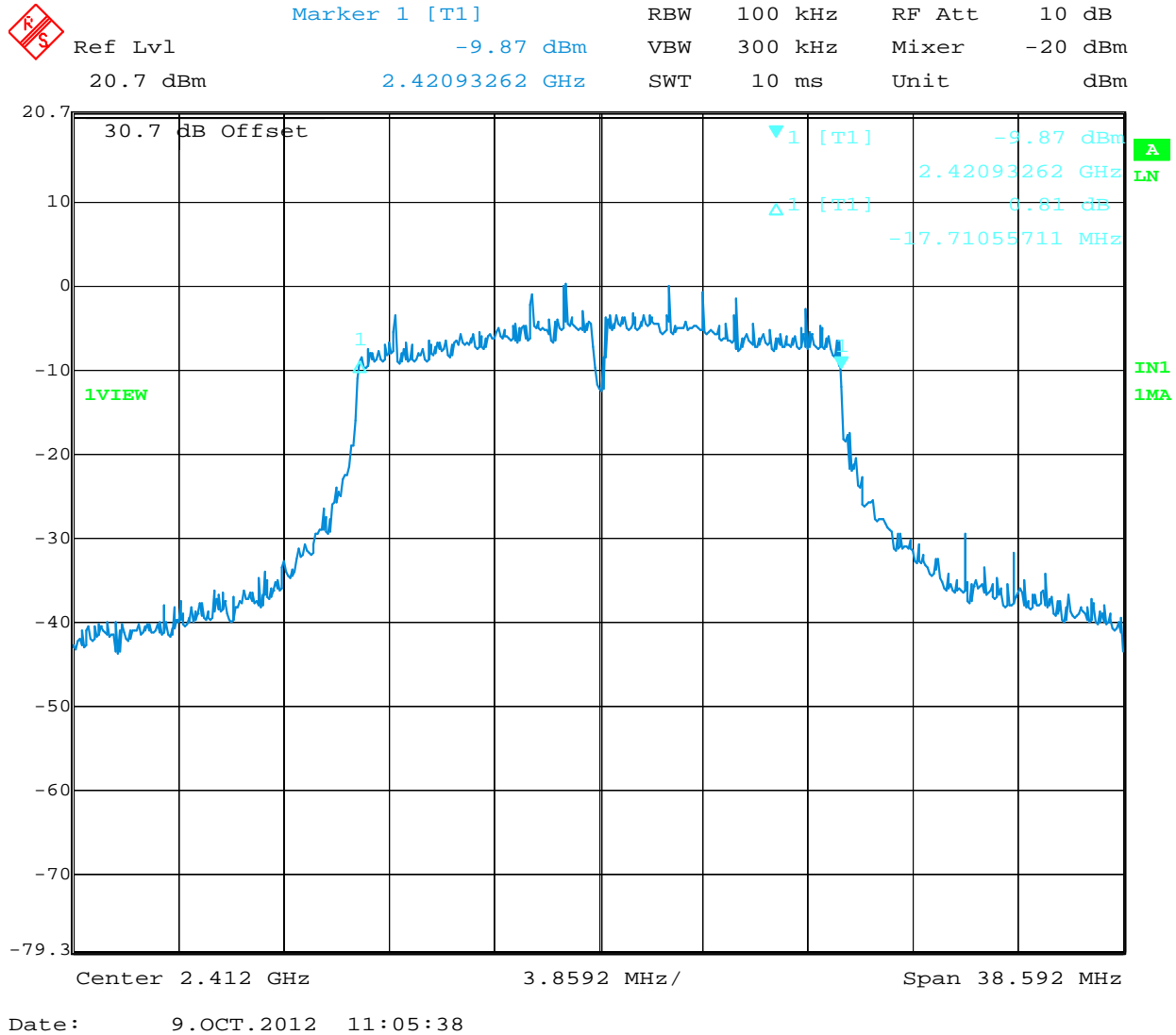
Supplemental Information:

Tested by (+ signature): David Light



Table No. 20	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 17.7 MHz
 EUT Configuration: 802.11n mode, Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity: 42.2 %
 Test Equipment Asset Tag List : 1654, 1468. 1469, 1470, 1471



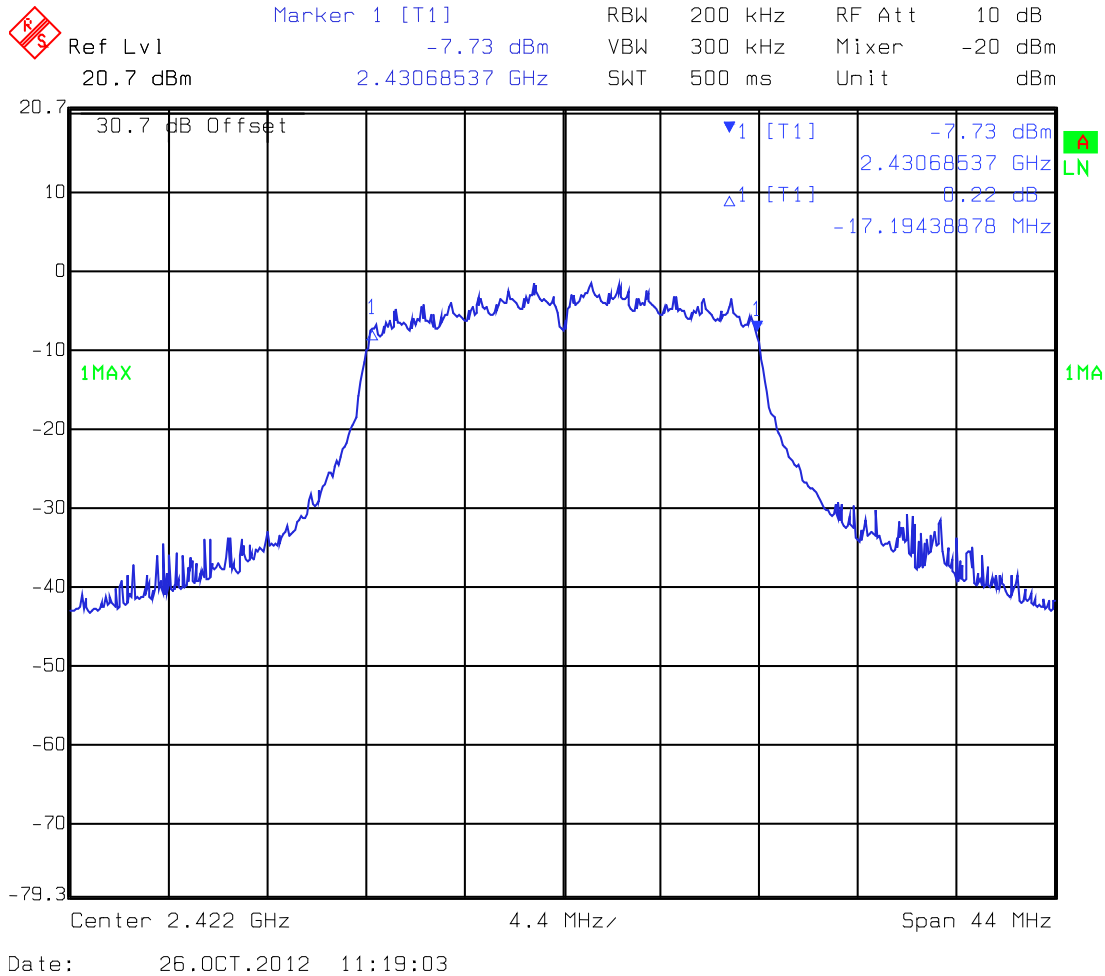
Supplemental Information:

Tested by (+ signature): David Light



Table No. 21	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 17.2 MHz
 EUT Configuration: 802.11n mode, Chan. 3
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 22.9°C Relative Humidity: 50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



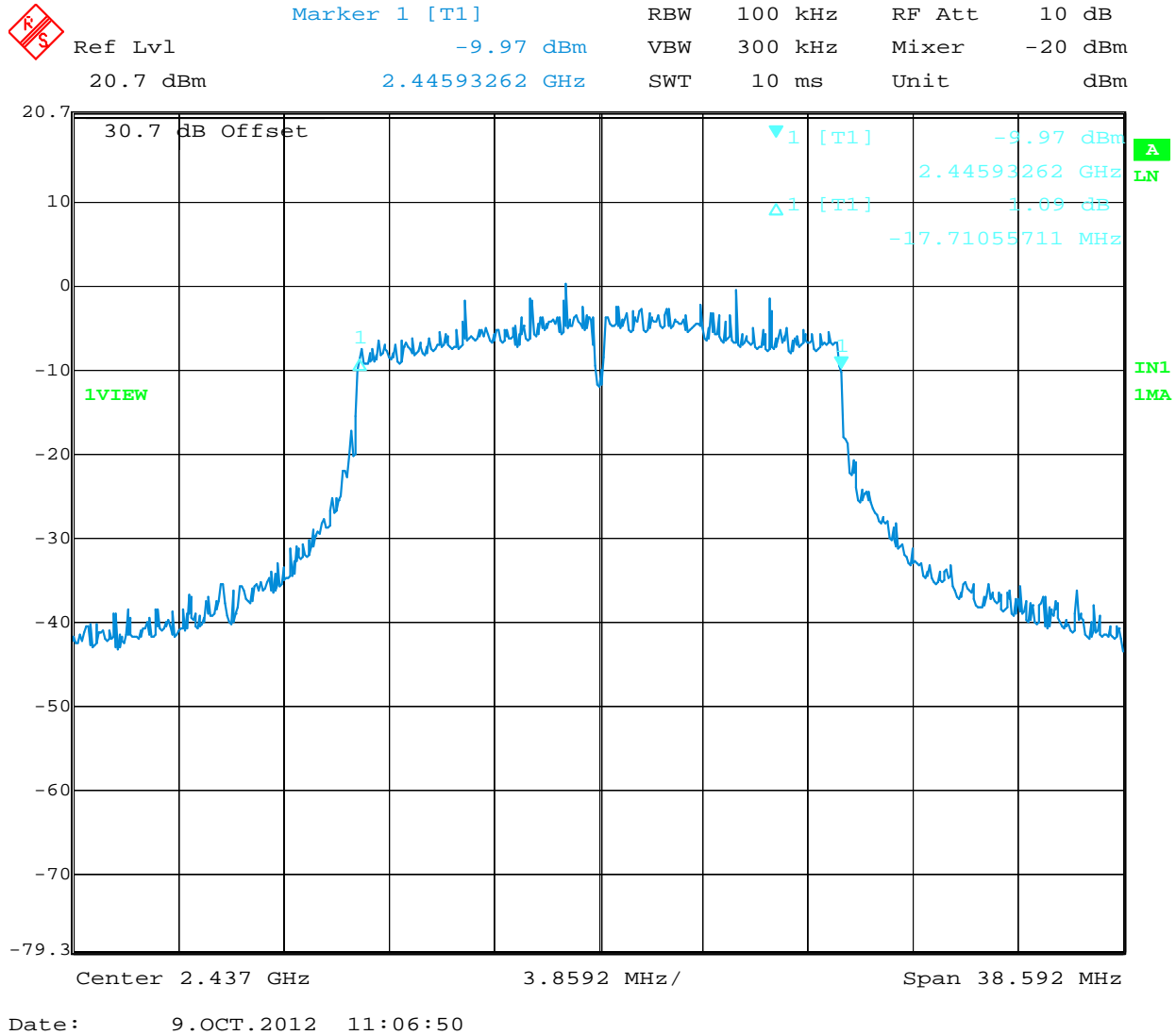
Supplemental Information:

Tested by (+ signature): David Light



Table No. 22	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 17.7 MHz
 EUT Configuration: 802.11n mode, Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.3°C Relative Humidity: 42.2 %
 Test Equipment Asset Tag List : 1654, 1468. 1469, 1470, 1471



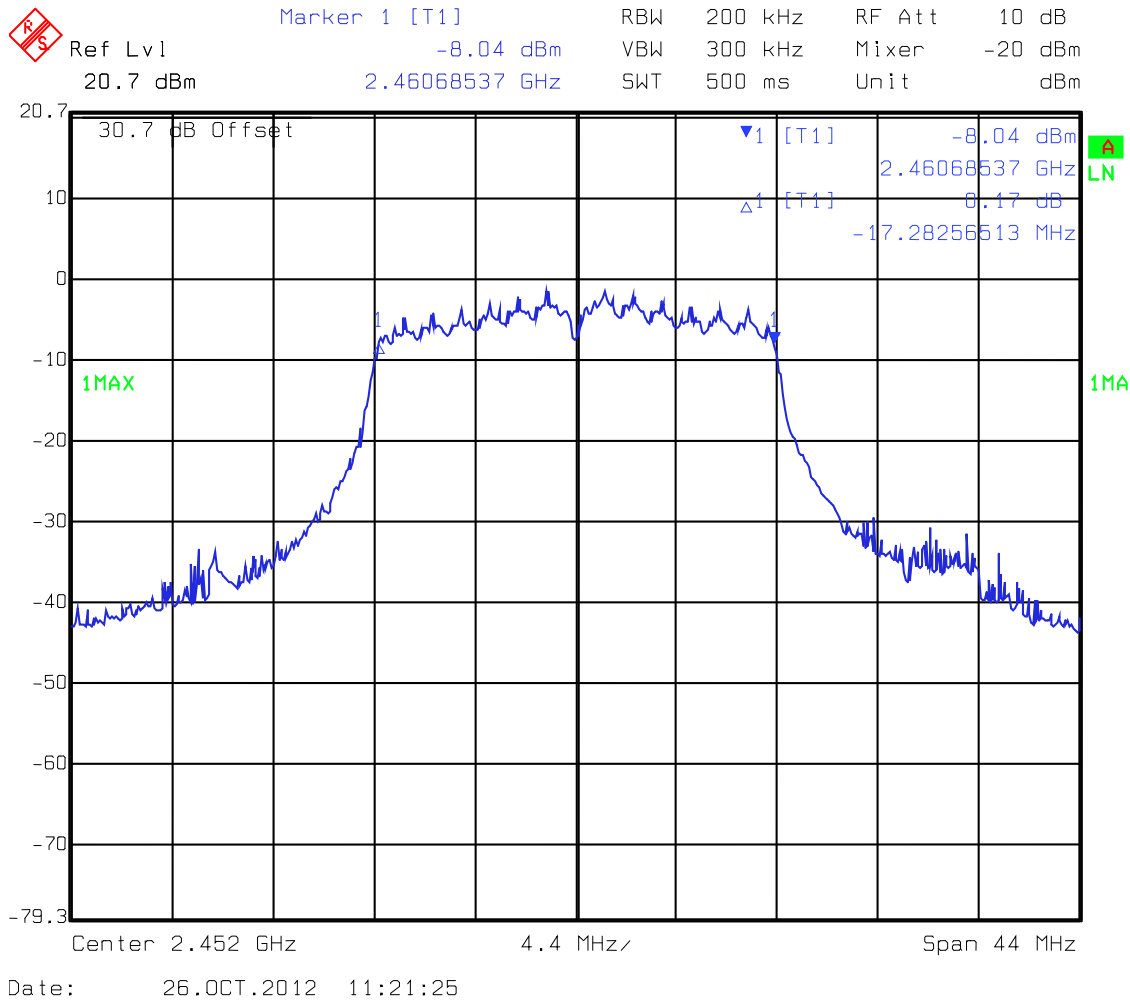
Supplemental Information:

Tested by (+ signature): David Light



Table No. 23	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 17.3 MHz
 EUT Configuration: 802.11n mode, Chan. 9
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 22.9°C Relative Humidity: 50.2 %
 Test Equipment Asset Tag List : 1036, 1468. 1469, 1470, 1471



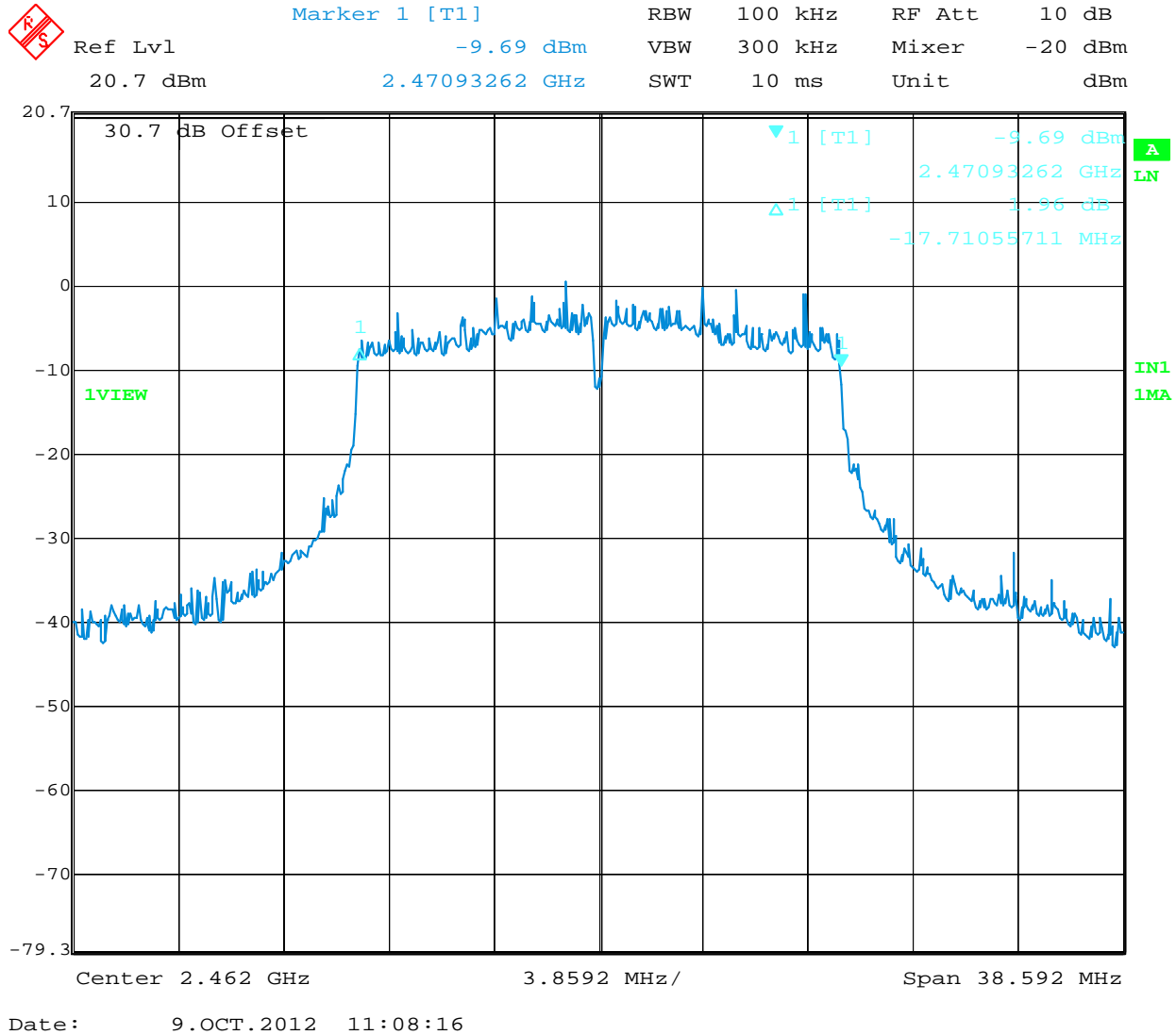
Supplemental Information:

Tested by (+ signature): David Light



Table No. 24	6 dB Occupied Bandwidth	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 6 dB BW: 17.7 MHz
 EUT Configuration: 802.11n mode, Chan. 11
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity: 42.2 %
 Test Equipment Asset Tag List : 1654, 1468. 1469, 1470, 1471



Supplemental Information:

Tested by (+ signature)

David Light

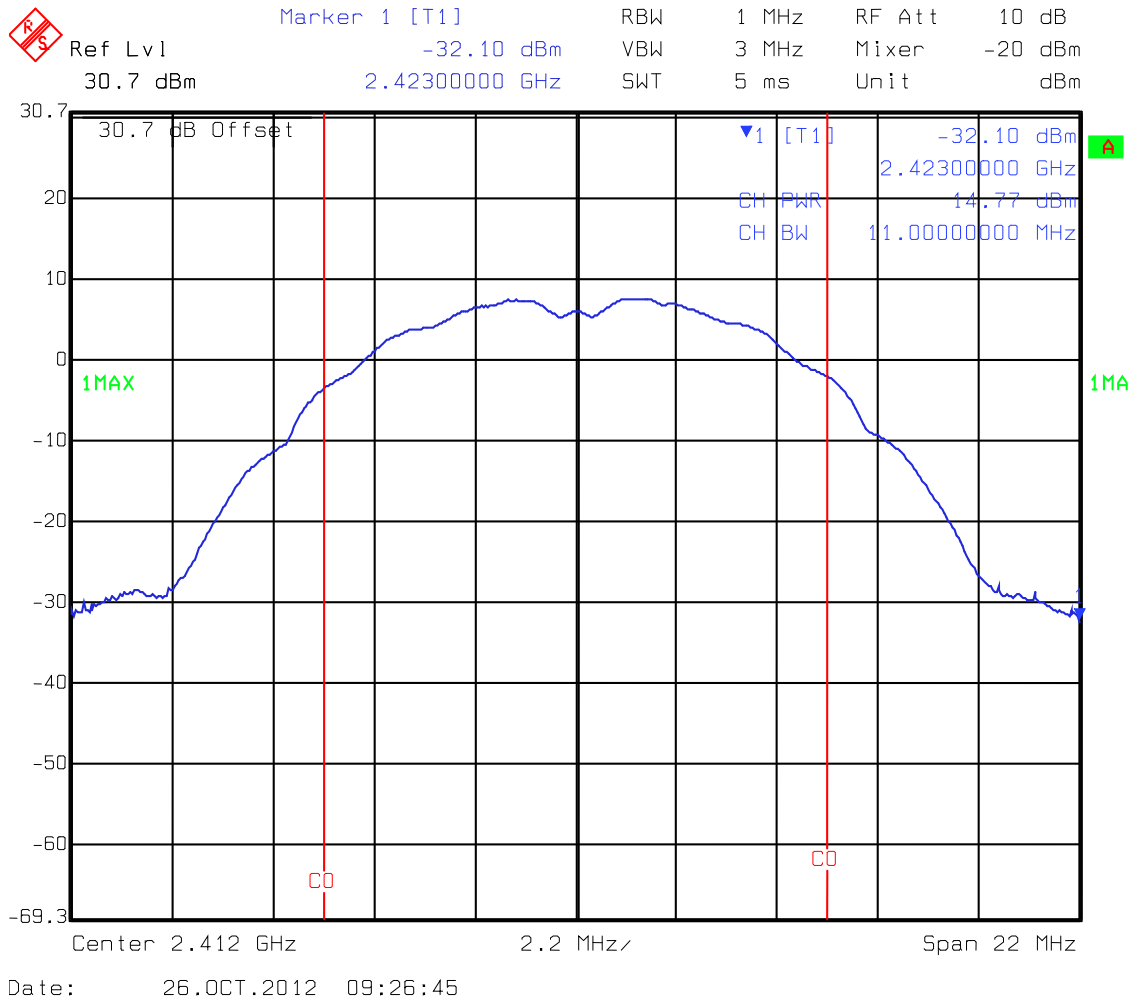


RF Output Power



Table No. 25	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11b mode, Chan. 1
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468. 1469, 1470, 1471



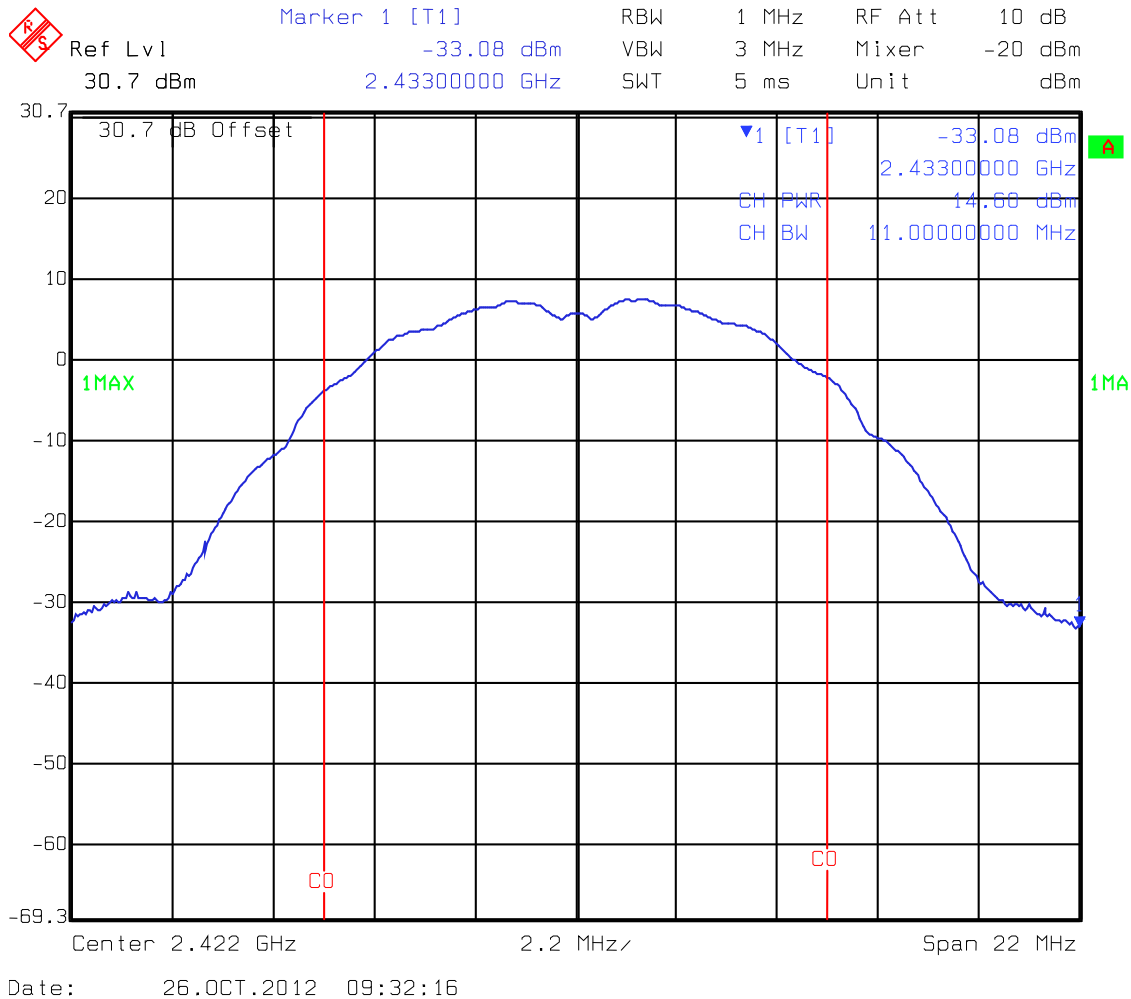
18.1181818Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 26	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11b mode, Chan. 3
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468. 1469, 1470, 1471



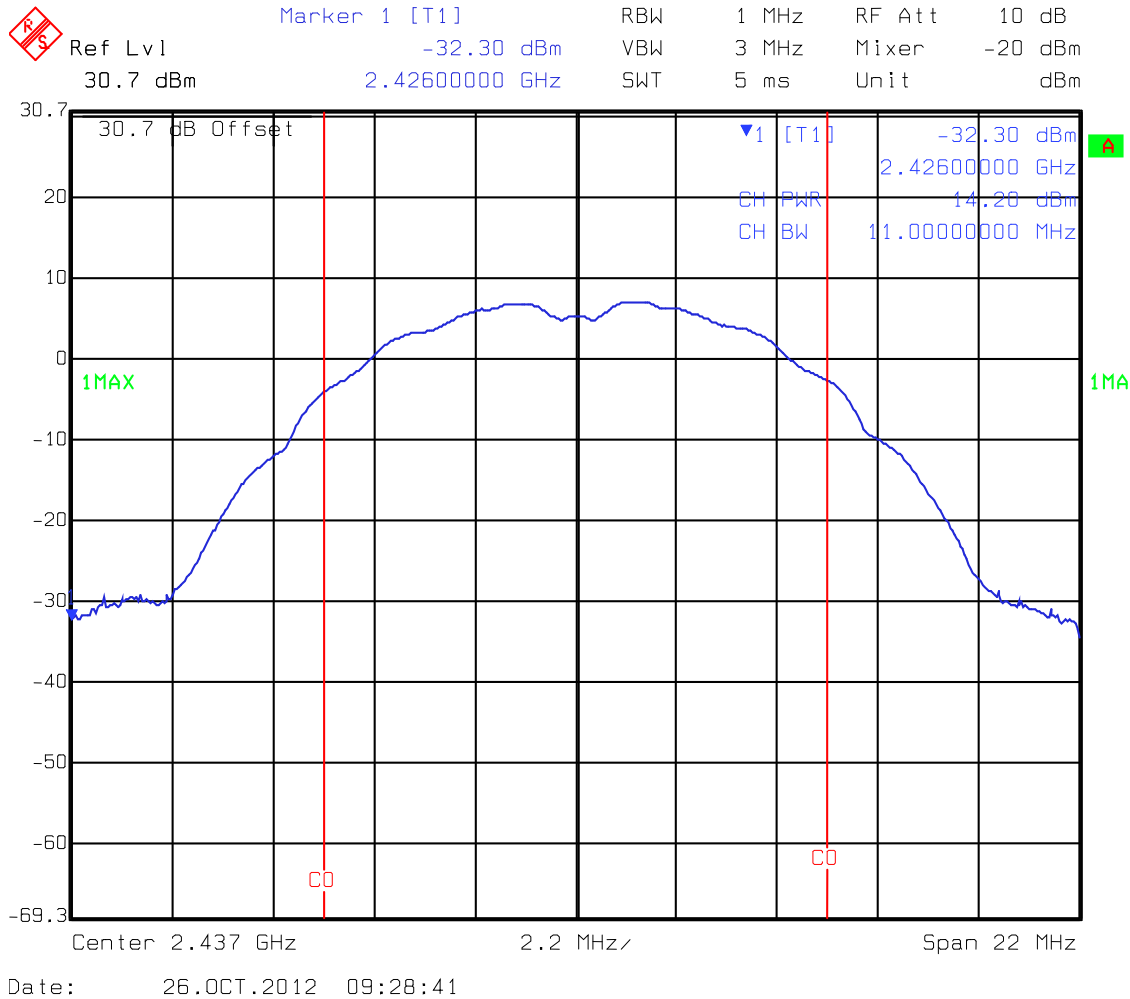
18.1181818Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 27	RF Output Power	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode, Chan. 6
 Power Input.....: 120VAC, 60 Hz 1φ 3φ
 Test Date: 26-Oct-12
 Temperature: 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List: 1036, 1468. 1469, 1470, 1471



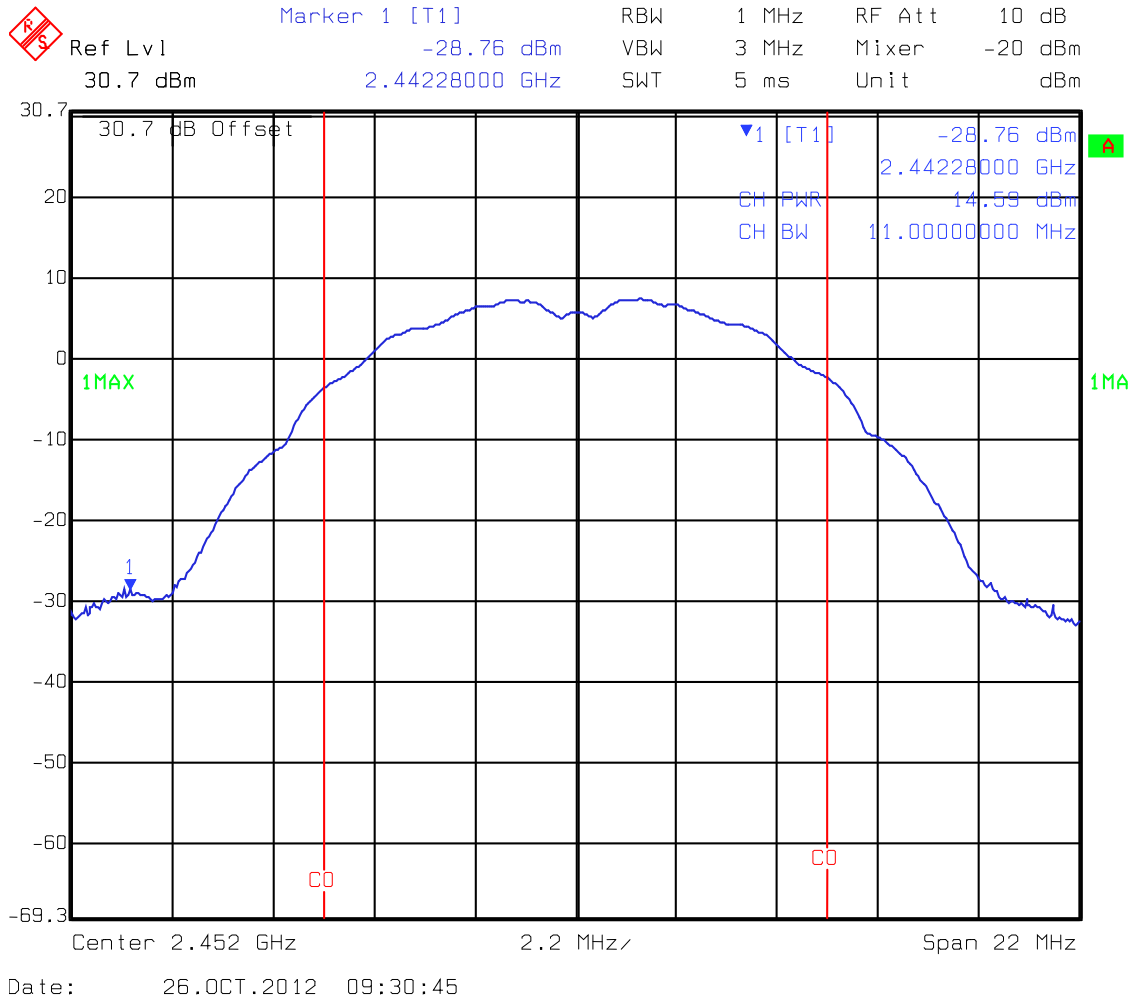
Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 28	RF Output Power	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode, Chan. 9
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List: 1036, 1468. 1469, 1470, 1471



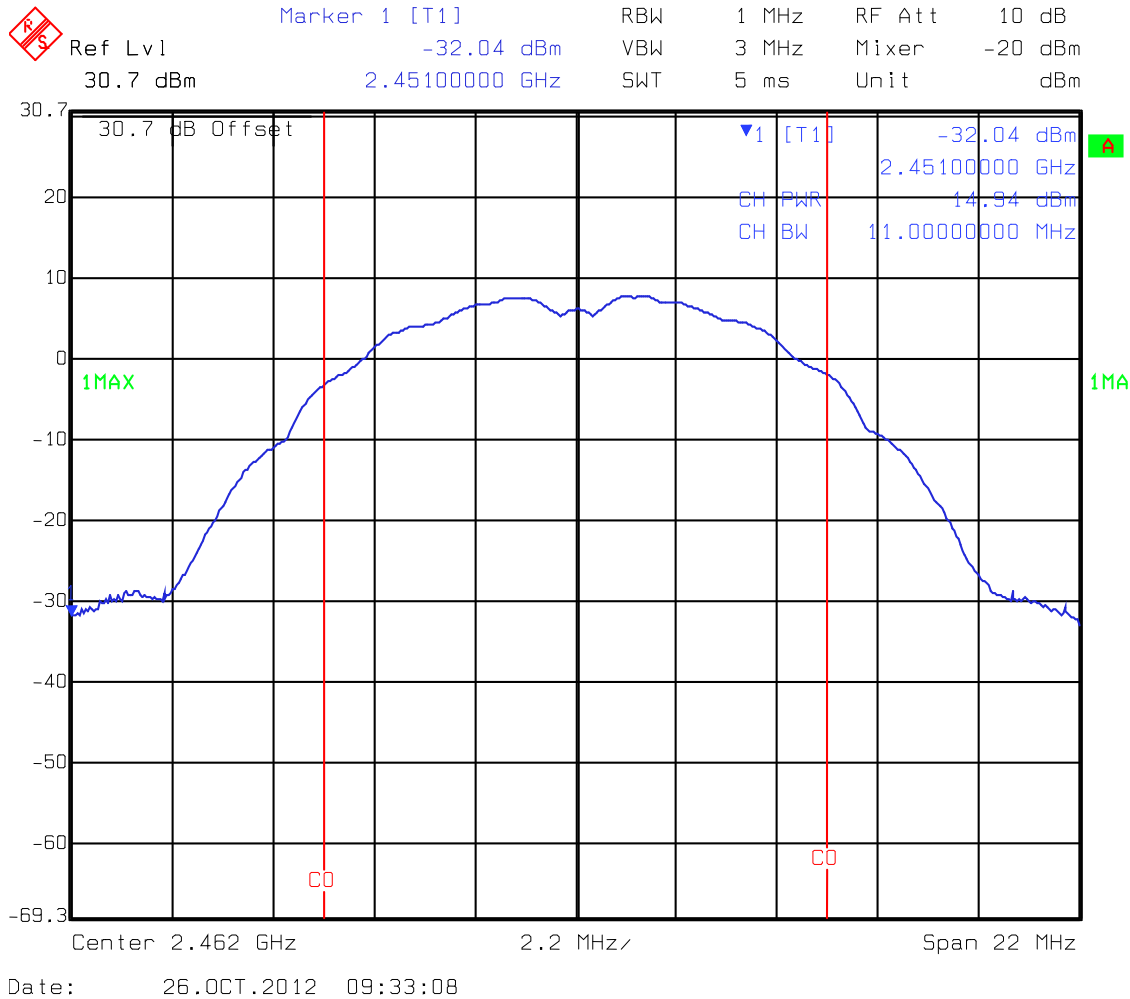
Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 29	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11b mode, Chan. 11
 Power Input..... : 120VAC, 50 Hz 1 ϕ 3 ϕ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



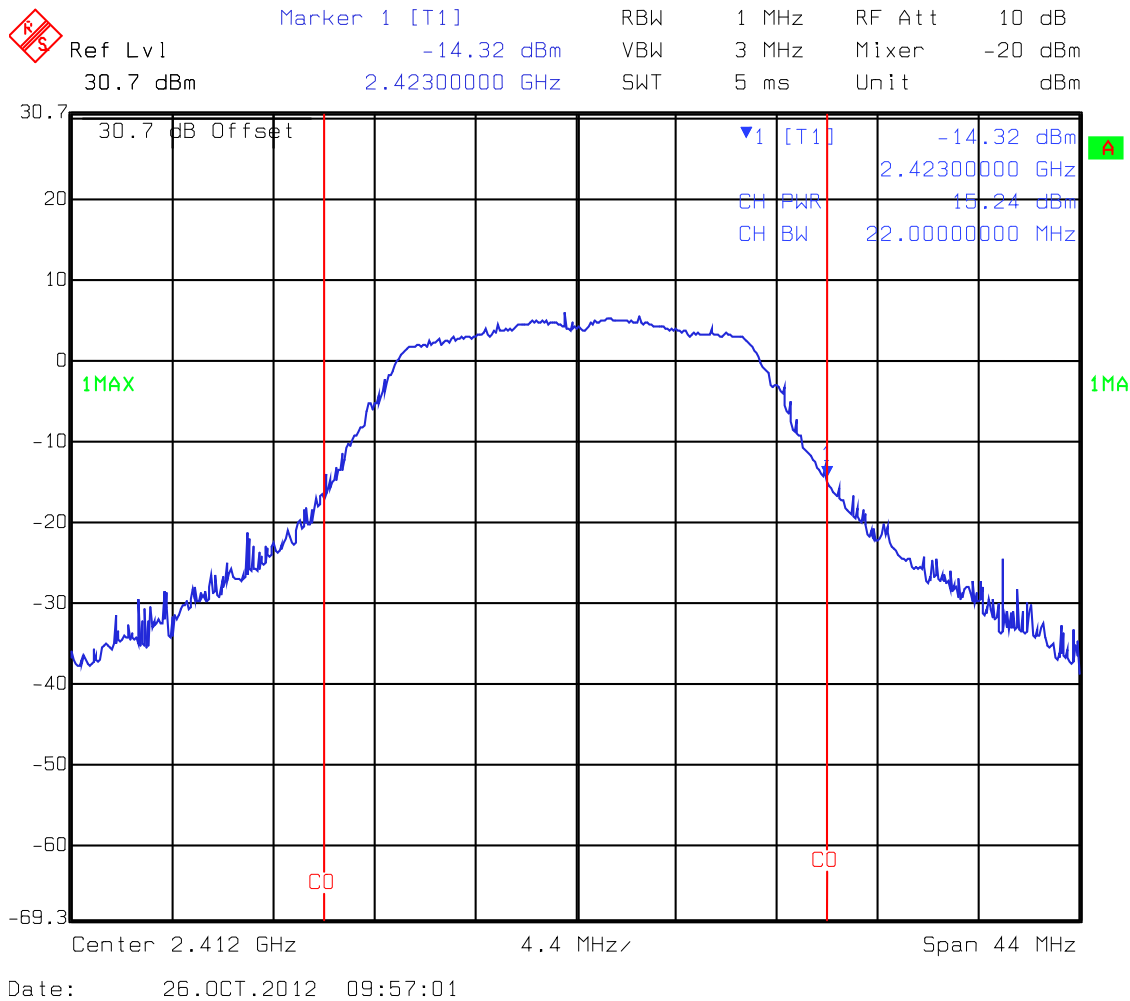
Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 30	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11g mode, Chan. 1
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



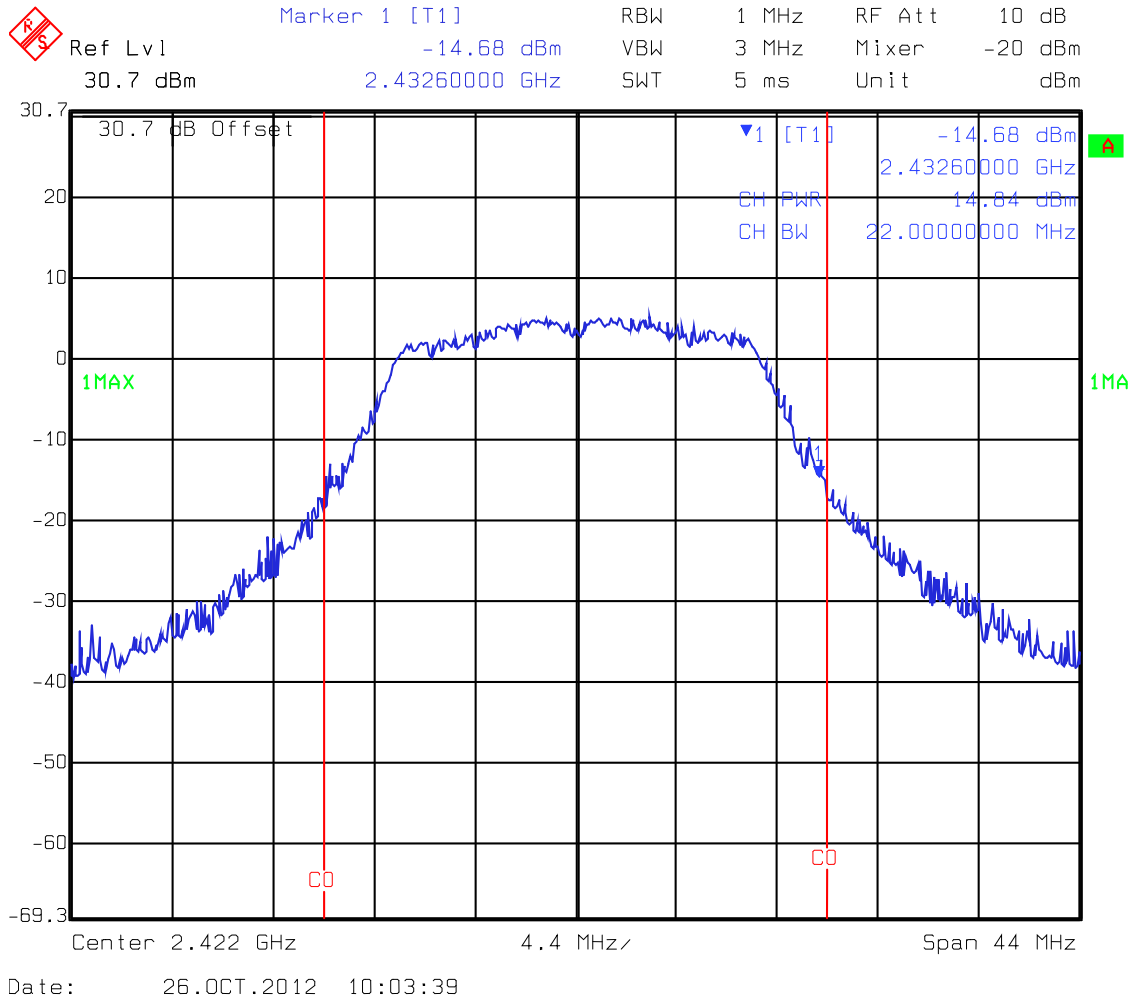
Supplemental Information:

Tested by (+ signature) : David Light



Table No. 31	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11g mode, Chan. 3
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



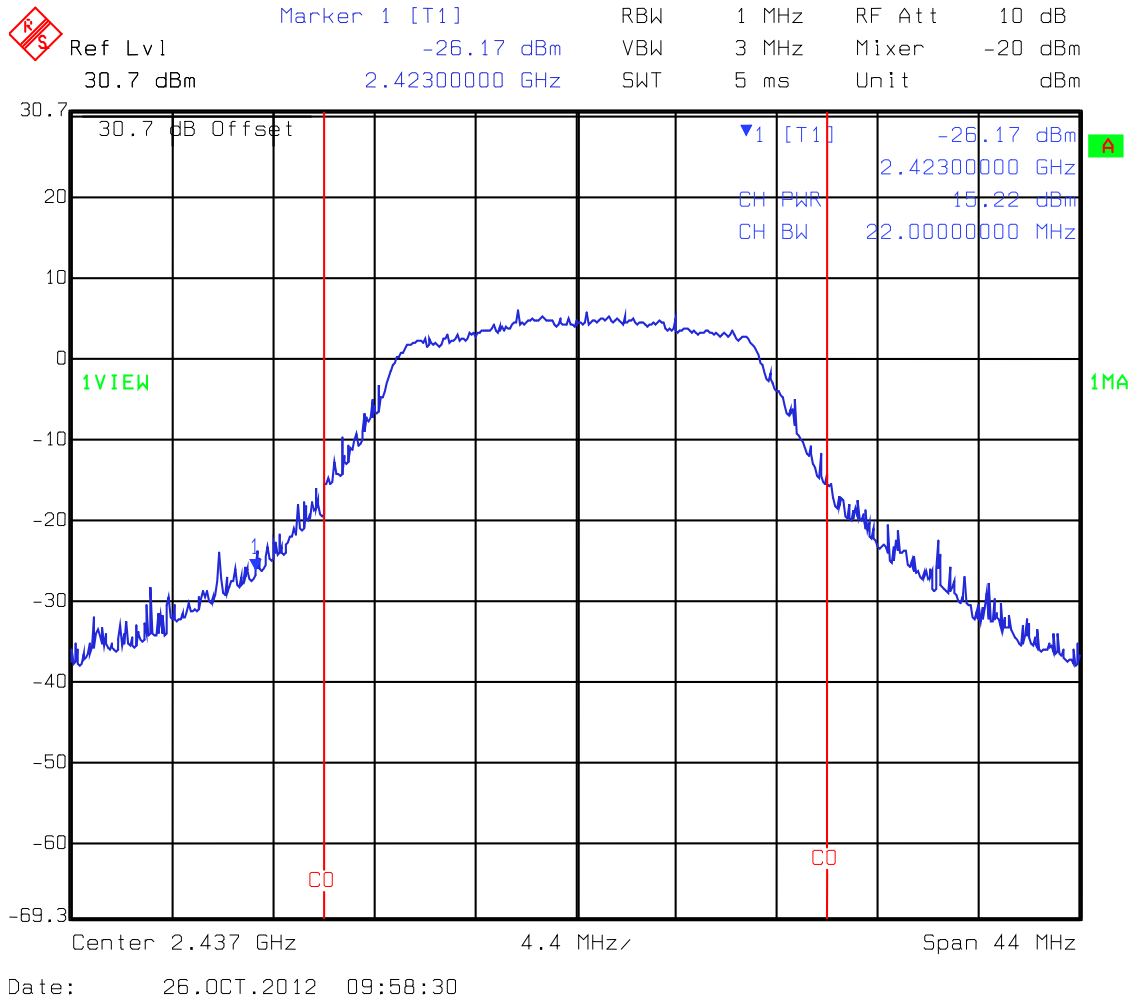
Supplemental Information:

Tested by (+ signature) : David Light



Table No. 32	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11g mode, Chan. 6
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



Supplemental Information:

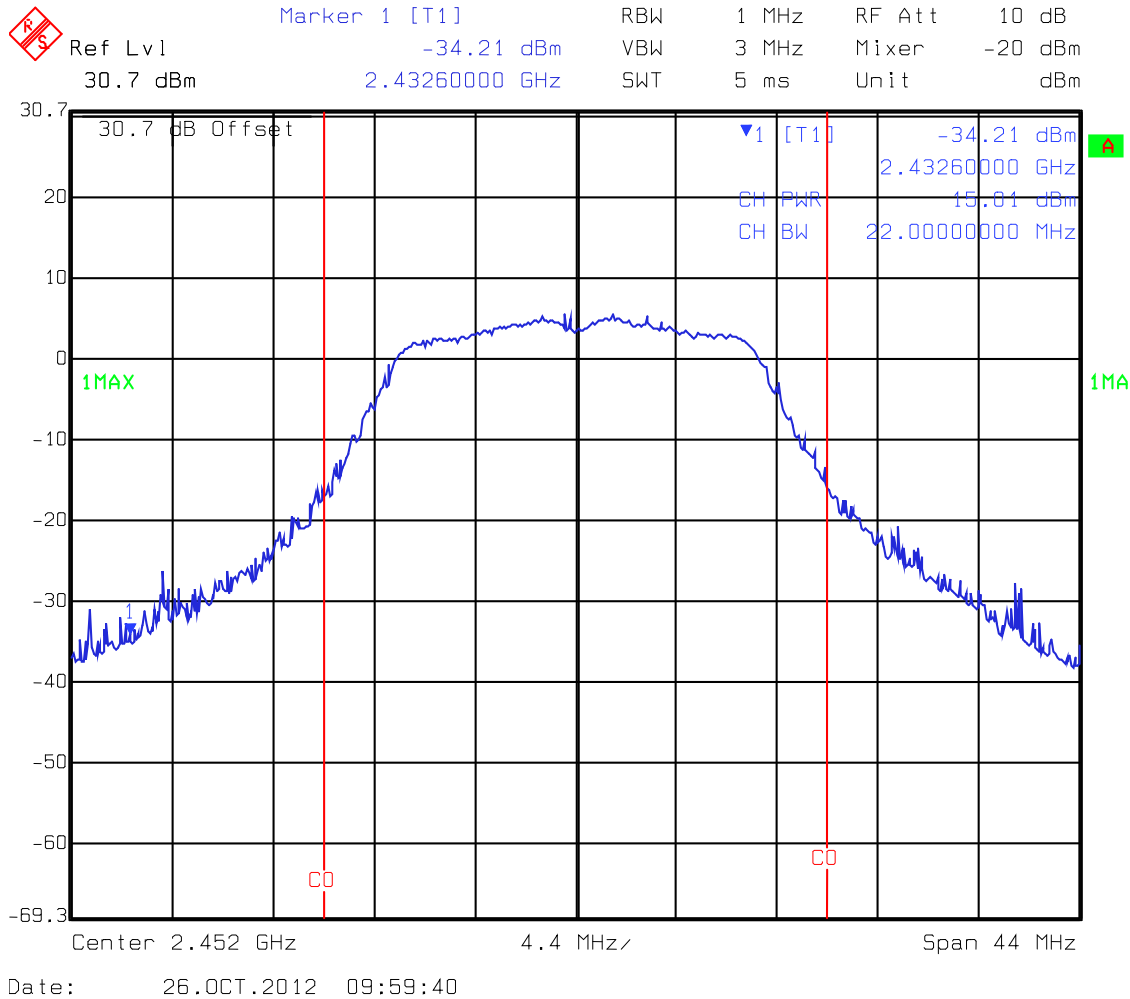
Tested by (+ signature)

David Light



Table No. 33	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11g mode, Chan. 9
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



Supplemental Information:

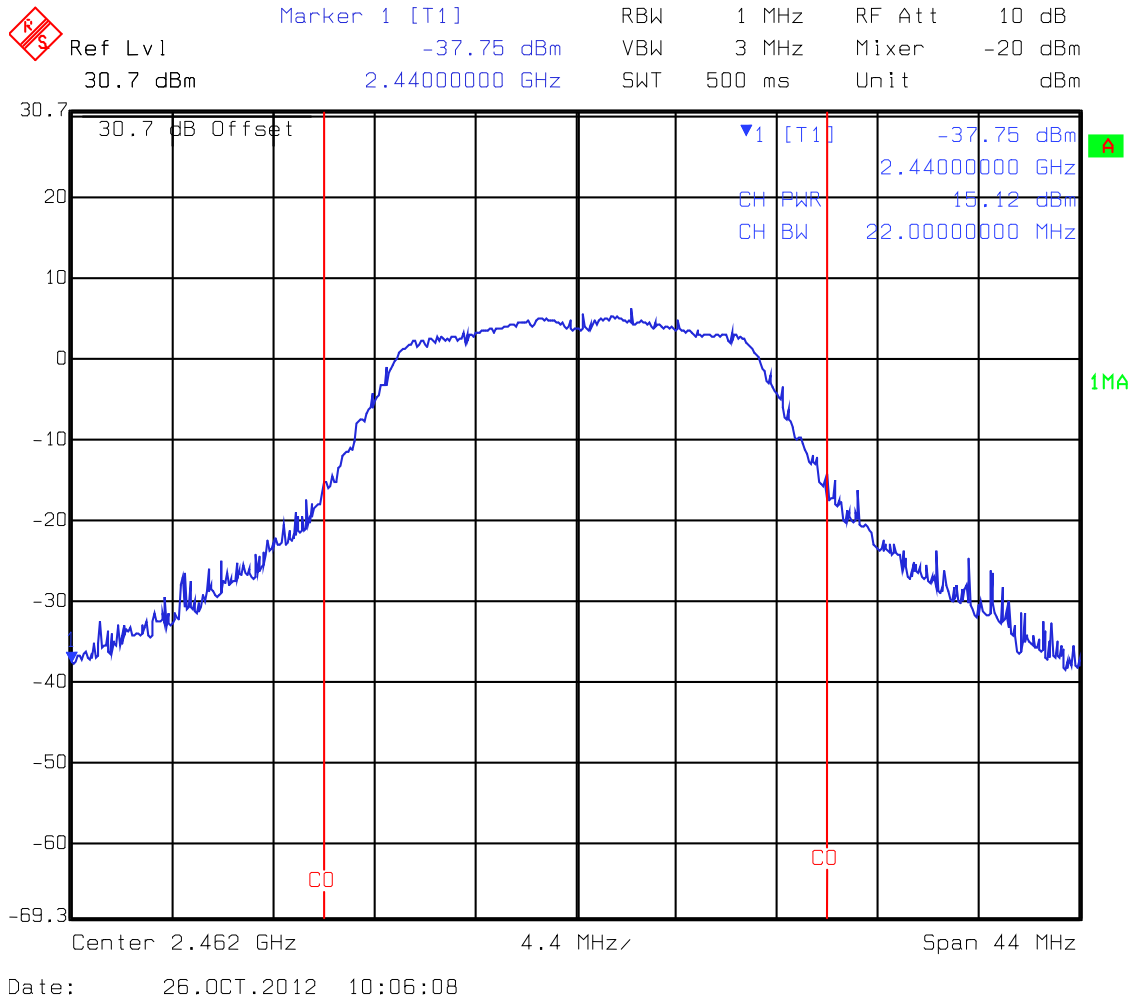
Tested by (+ signature)

David Light



Table No. 34	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11g mode, Chan. 11
 Power Input..... : 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



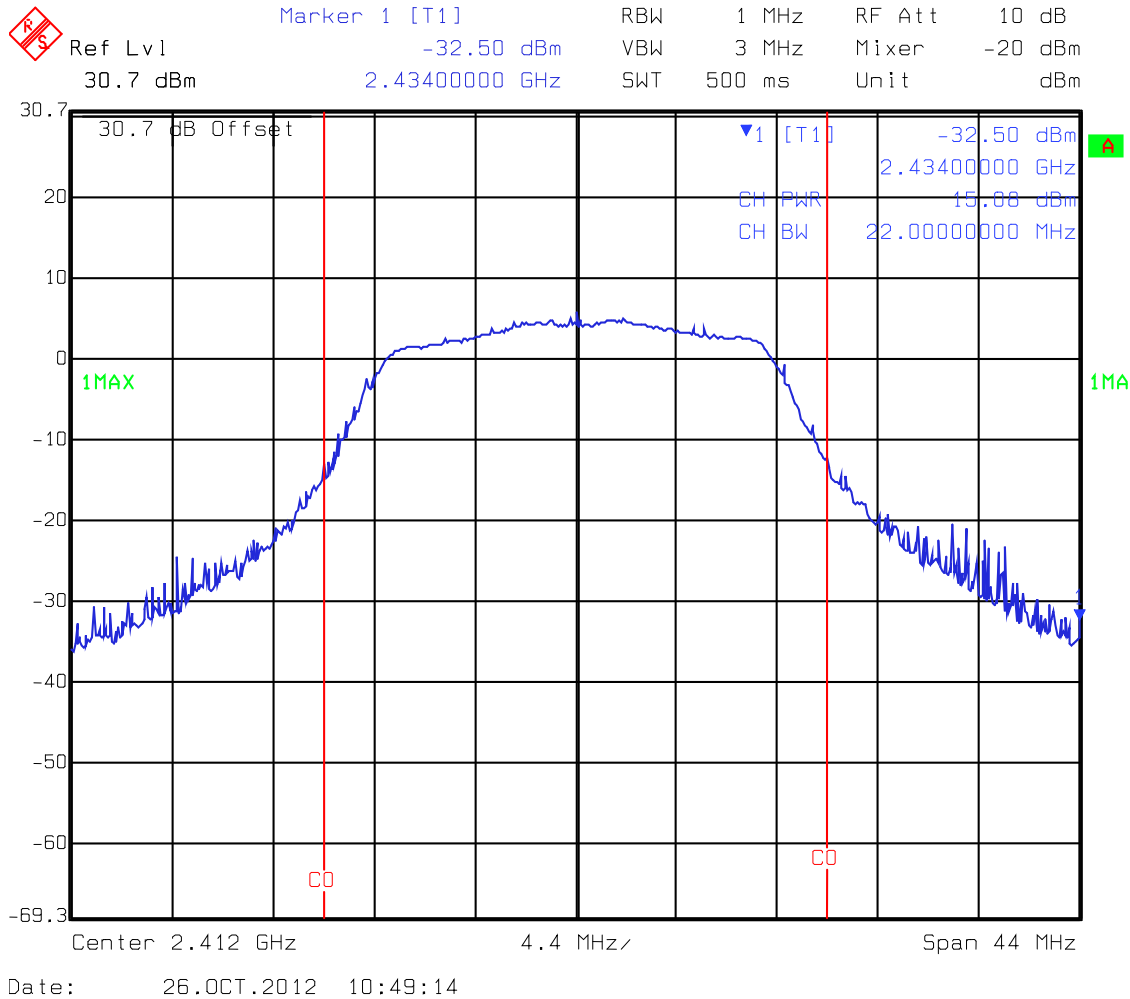
Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 35	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11n mode, Chan. 1
 Power Input..... : 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



Supplemental Information:

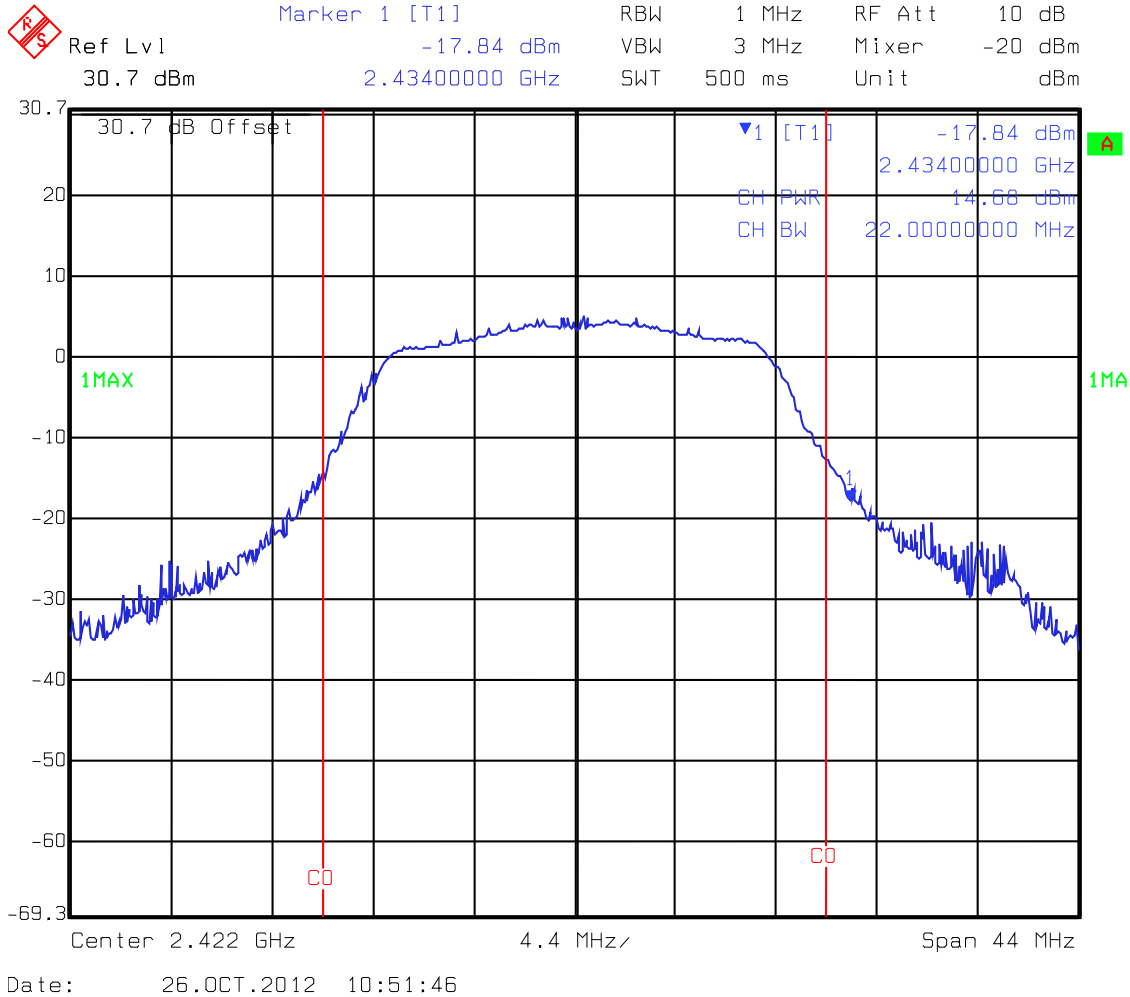
Tested by (+ signature)

David Light



Table No. 36	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11n mode, Chan. 3
 Power Input..... : 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



Supplemental Information:

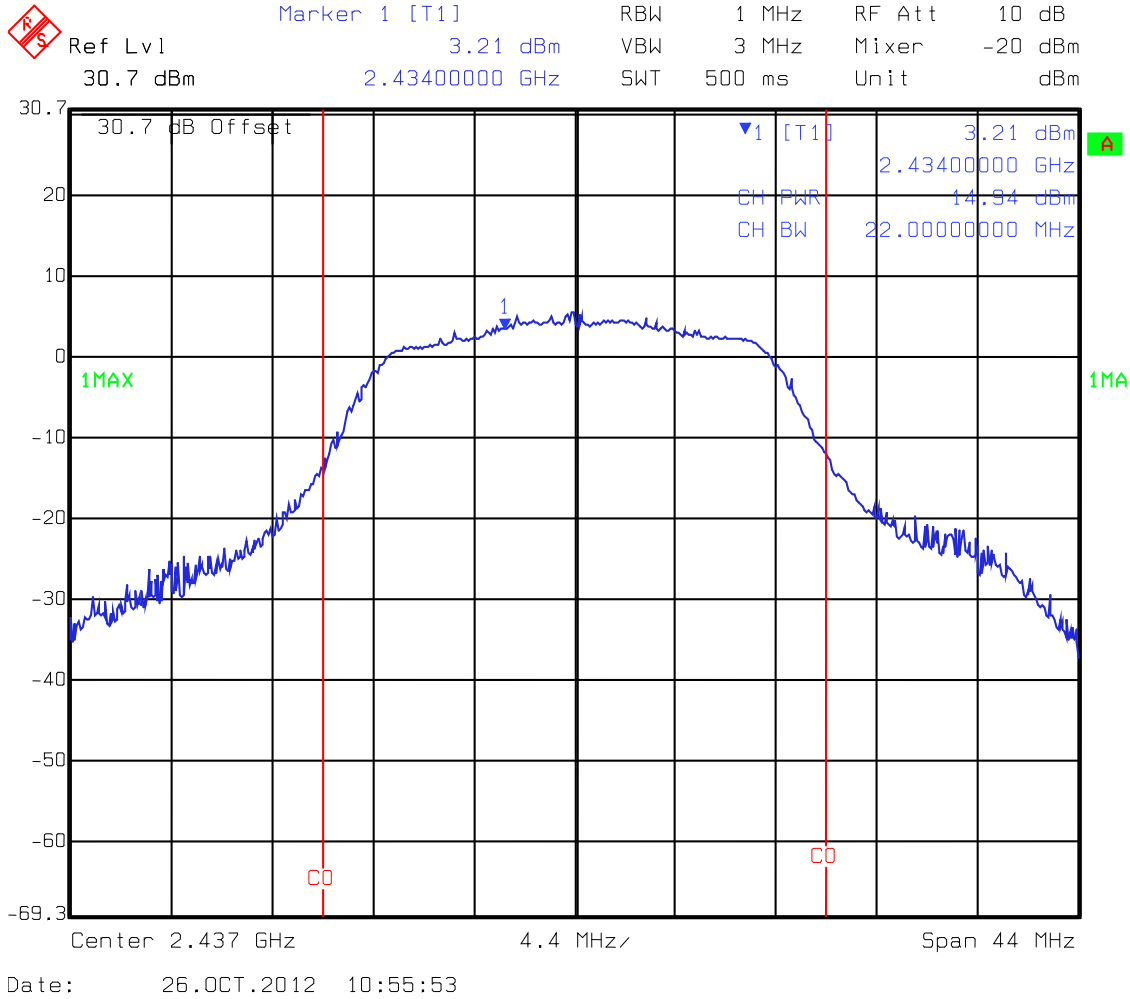
Tested by (+ signature)

David Light



Table No. 37	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11n mode, Chan. 6
 Power Input..... : 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



Supplemental Information:

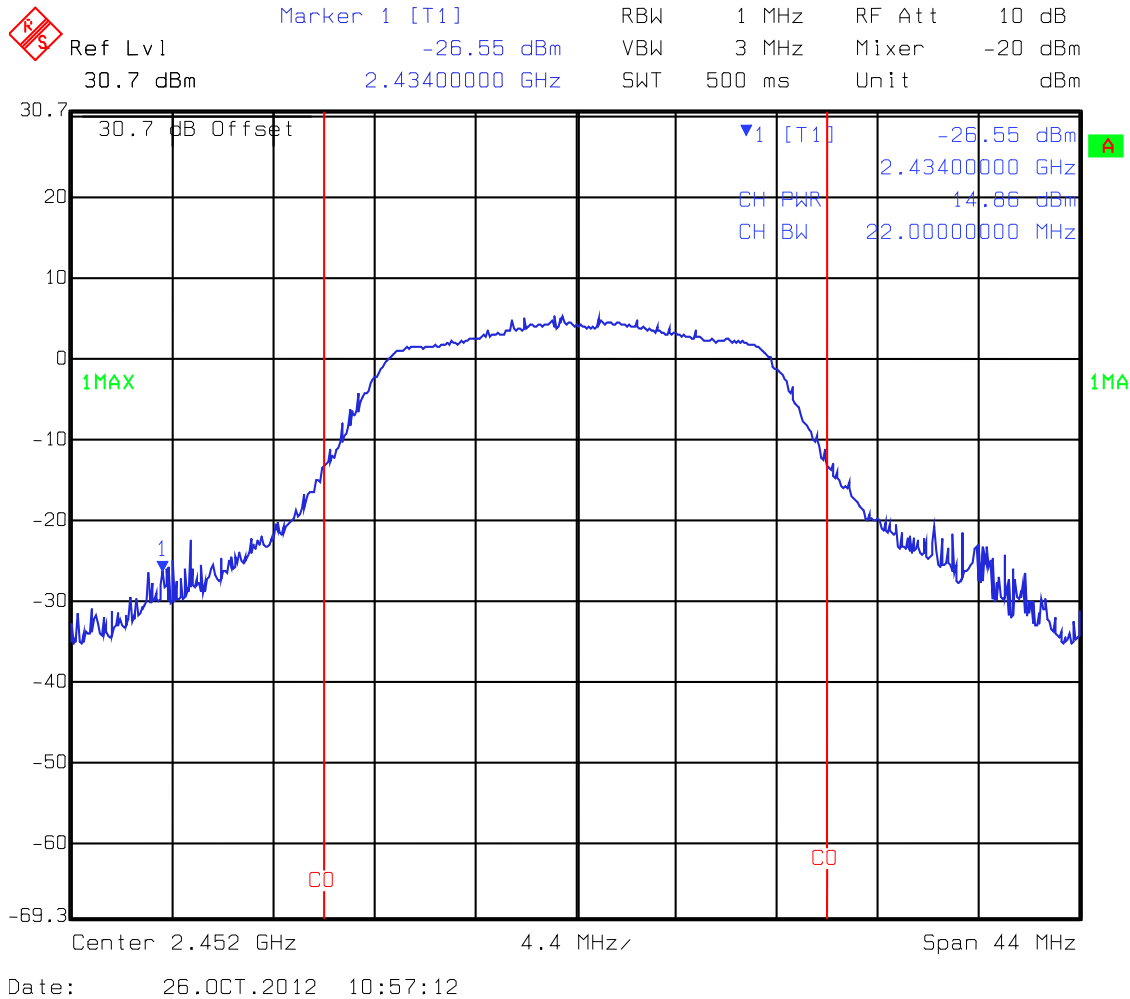
Tested by (+ signature)

David Light



Table No. 38	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11n mode, Chan. 9
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



Supplemental Information:

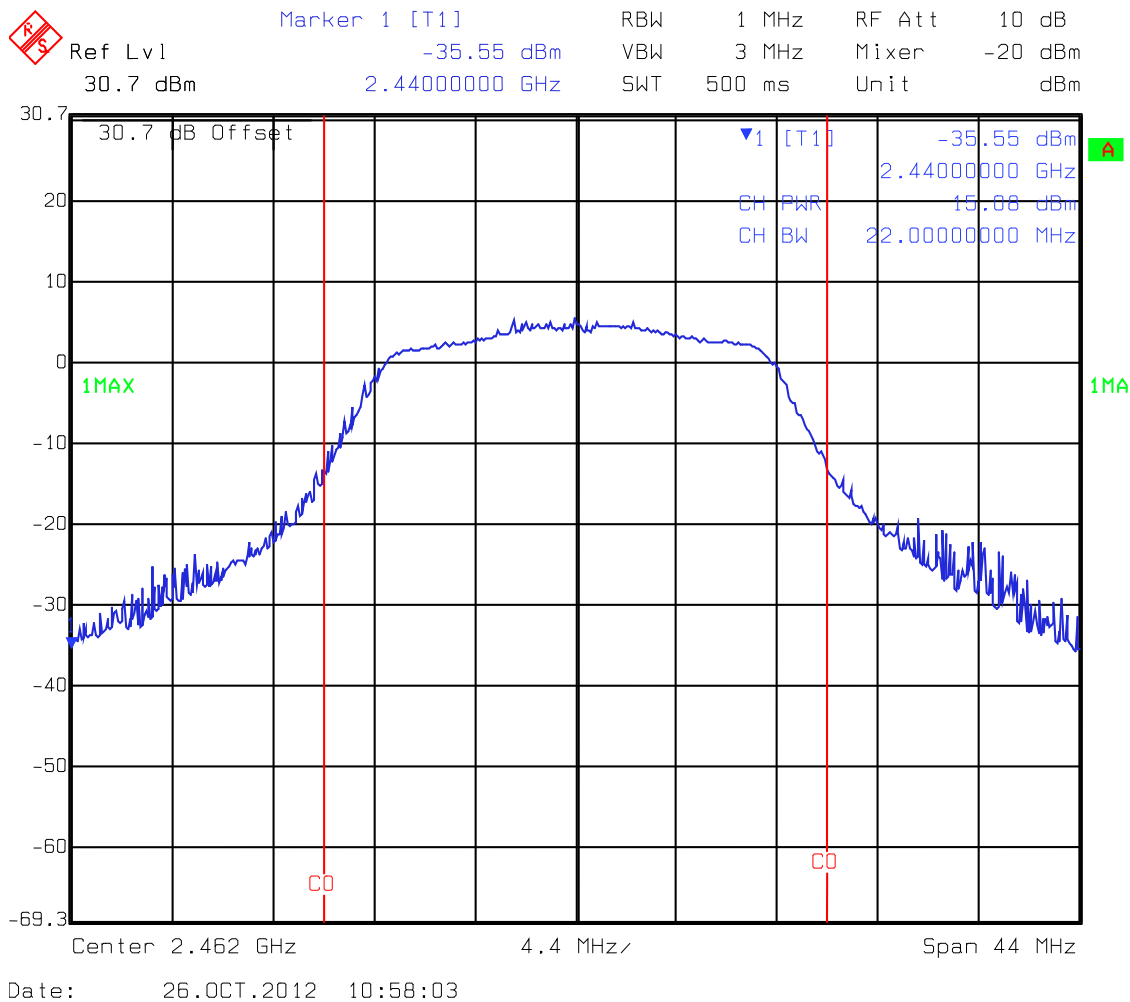
Tested by (+ signature)

David Light



Table No. 39	RF Output Power	Verdict
		P

Test Method..... : 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11n mode, Chan. 11
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 26-Oct-12
 Temperature : 22.9°C Relative Humidity :50.2 %
 Test Equipment Asset Tag List : 1036, 1468, 1469, 1470, 1471



Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 40	Peak RF Output – EIRP Calculation Method	Verdict
		NT

Measured Peak Antenna Power: Test Location: 3m Chamber
 Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 Test Distance: 3m
 EUT Configuration: Transmit 15 dBm
 RBW: 1
 VBW: 3
 Test Date: 9-Oct-12
 Temperature: 23.3°C Relative Humidity: 42.4 %
 Test Equipment Asset Tag List

(A) Freq. (MHz)	(B) P _{meas} Meter reading (dBm)	(C) G _R RX antenna gain (dBi)	(D) L _C Cable loss (dB)	(E) G _{amp} Pre-amp Gain (dB)	(F) P _R Adjusted RX Power (dBm)	(G) L _P Free-space propagation loss (dB)	(H) EIRP (dBm)	(I) G _T TX antenna gain (dBi)	(J) P _T Transmit power at antenna port (dBm)
2412		9.13	3.0	0.0		49.7		4.75	
2412		9.13	3.0	0.0		49.7		4.75	
2412		9.13	3.0	0.0		49.7		4.75	
2437		9.13	3.0	0.0		49.8		4.75	
2437		9.13	3.0	0.0		49.8		4.75	
2437		9.13	3.0	0.0		49.8		4.75	
2462		9.13	3.0	0.0		49.9		4.75	
2462		9.13	3.0	0.0		49.9		4.75	
2462		9.13	3.0	0.0		49.9		4.75	

(F) = (B)-(C)+(D)-(E) (G) = 20 log(A) + 20 log(3) – 27.5 (H) = (F) + (G) (J) = (H) – (I)

Supplemental Information:

Tested by (+ signature): David Light 



Spurious Emissions

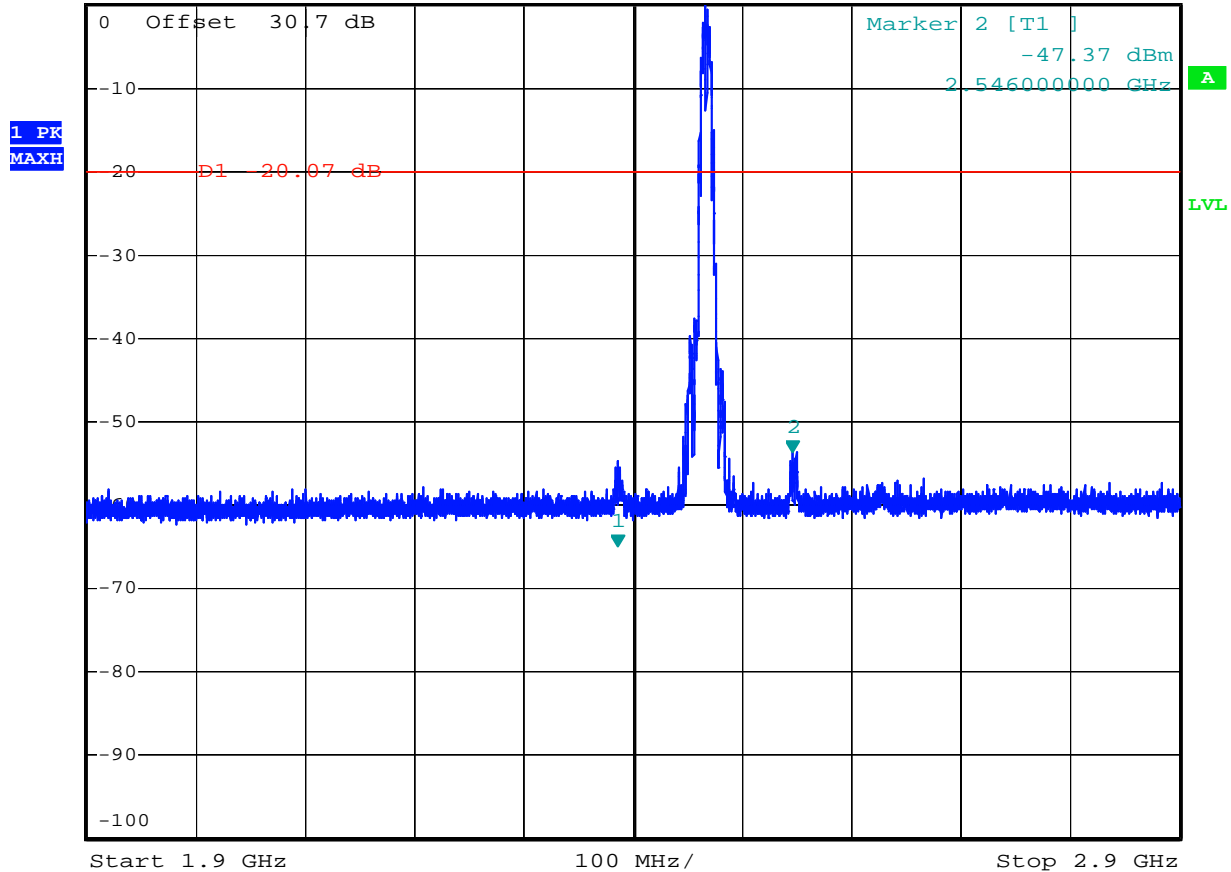


Table No. 41	Spurious Emissions – Lower Band Edge	Verdict
		P

Test Method..... : ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11b mode Chan. 1
 Power Input..... : 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date : 9-Oct-12
 Temperature : 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Ref 6.3 dBm *Att 10 dB *RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz -58.73 dBm
 *SWT 300 ms 2.385875000 GHz



Date: 9.OCT.2012 18:35:19

Supplemental Information:

Tested by (+ signature)

David Light

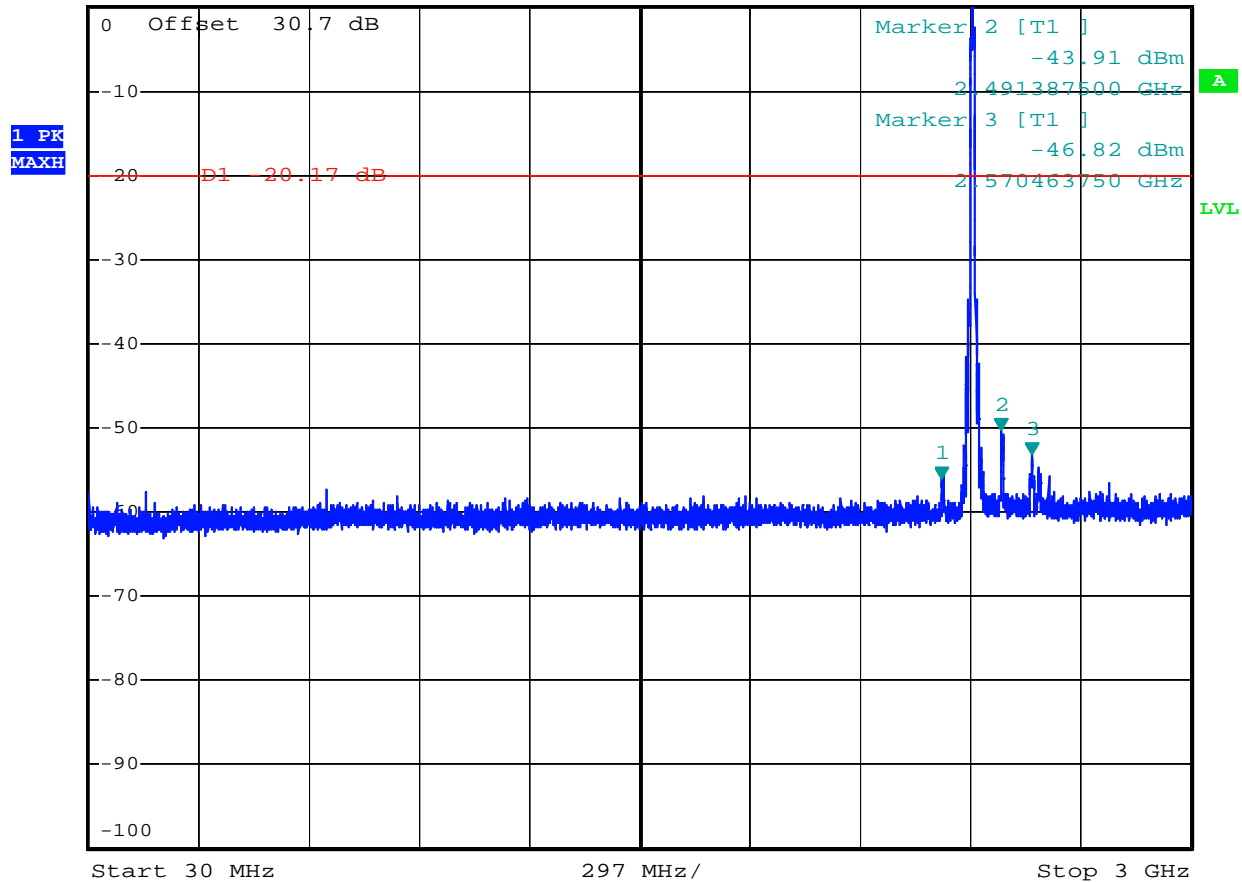


Table No. 42	Spurious Emissions	Verdict
		NT

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.3°C Relative Humidity :42.4 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



Ref 6.3 dBm *Att 10 dB
 *RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz -49.68 dBm
 *SWT 300 ms 2.330636250 GHz



Date: 9.OCT.2012 18:21:47

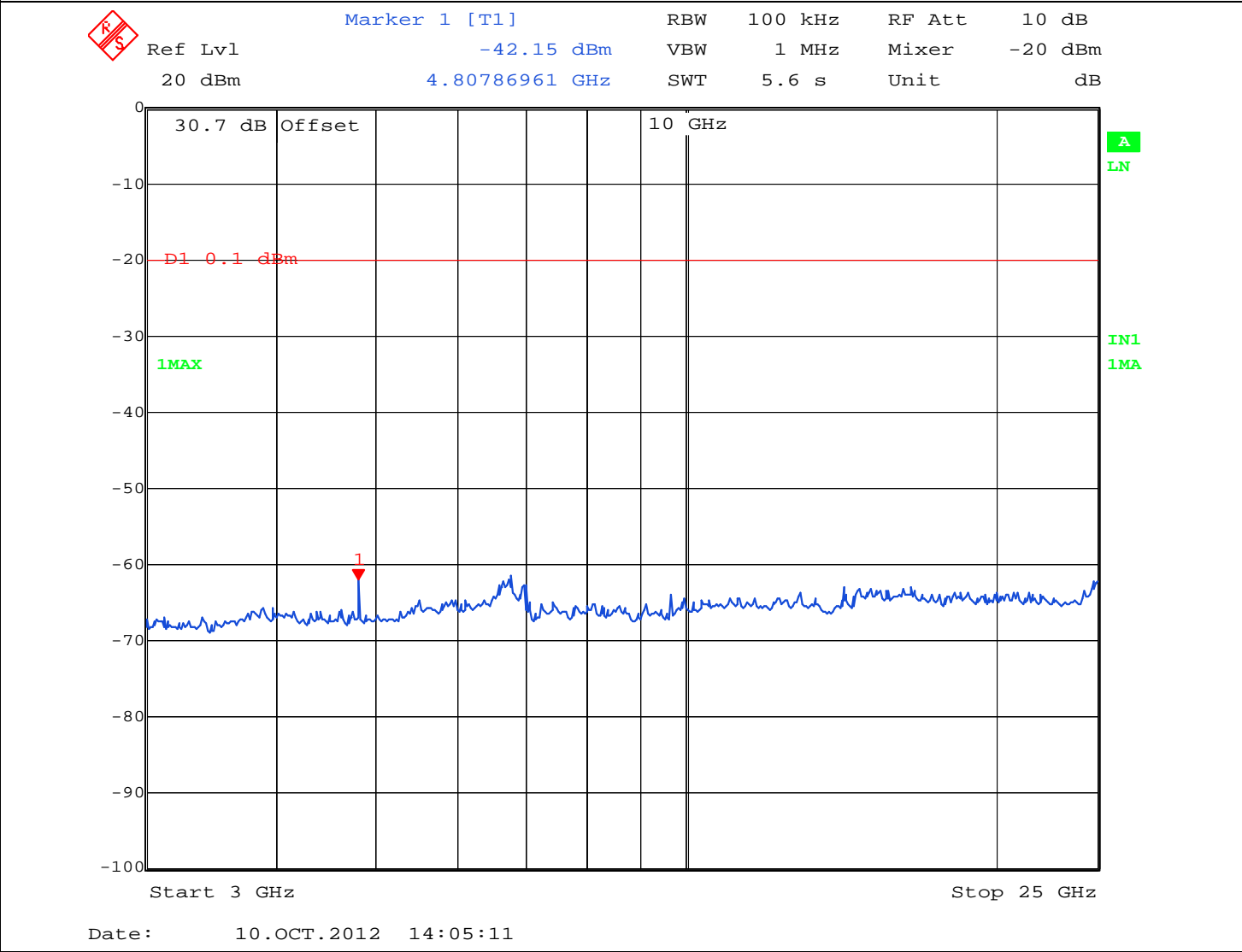
Supplemental Information:

Tested by (+ signature) : *David Lee* Click here to enter text.



Table No. 43	Spurious Emissions	Verdict
		NT

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 10-Oct-12
 Temperature: 23.0°C Relative Humidity :42.4 %
 Test Equipment Asset Tag List: 1767, 1468, 1469, 1470, 1471



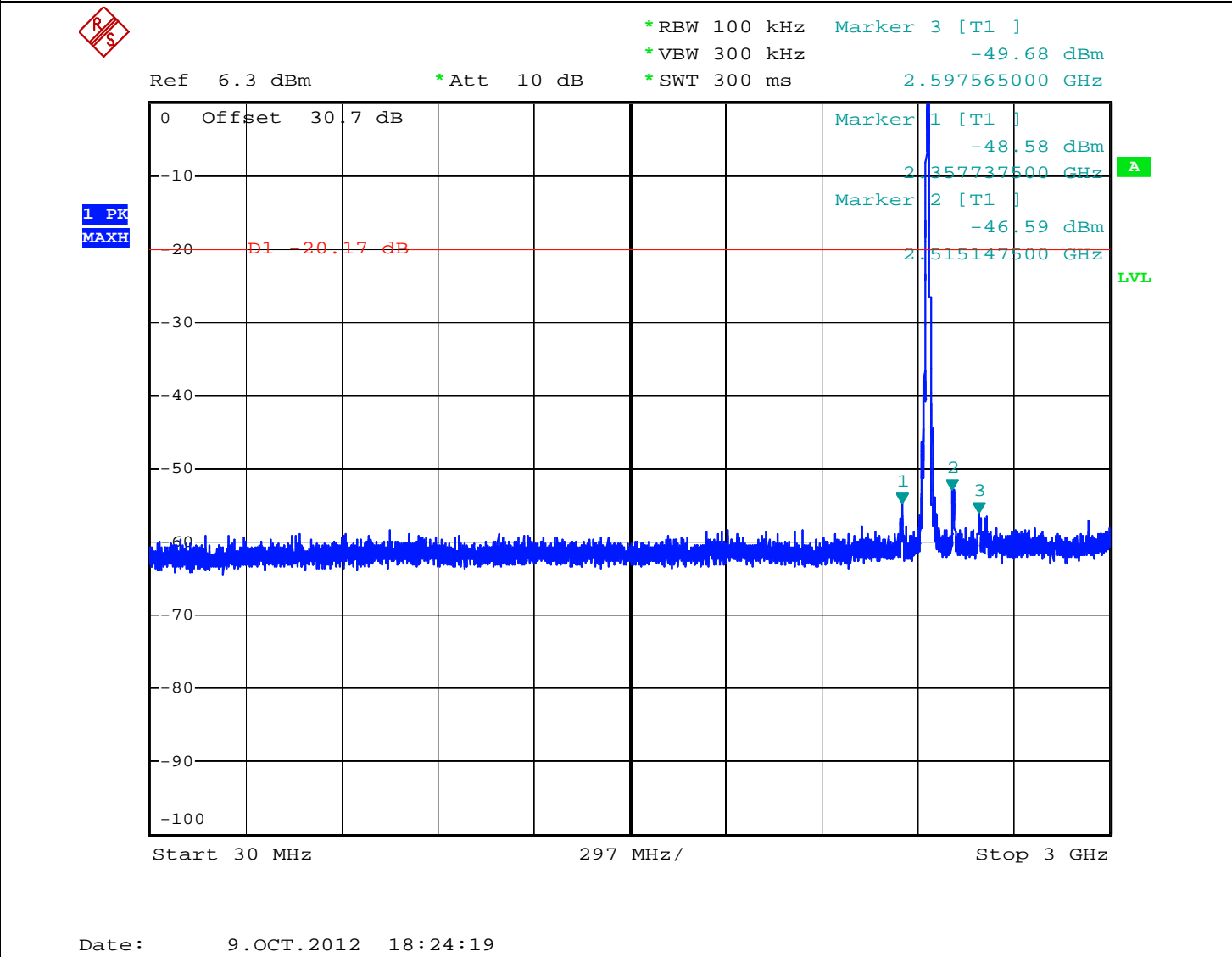
Supplemental Information:

Tested by (+ signature) : *David Lee* Click here to enter text.



Table No. 44	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



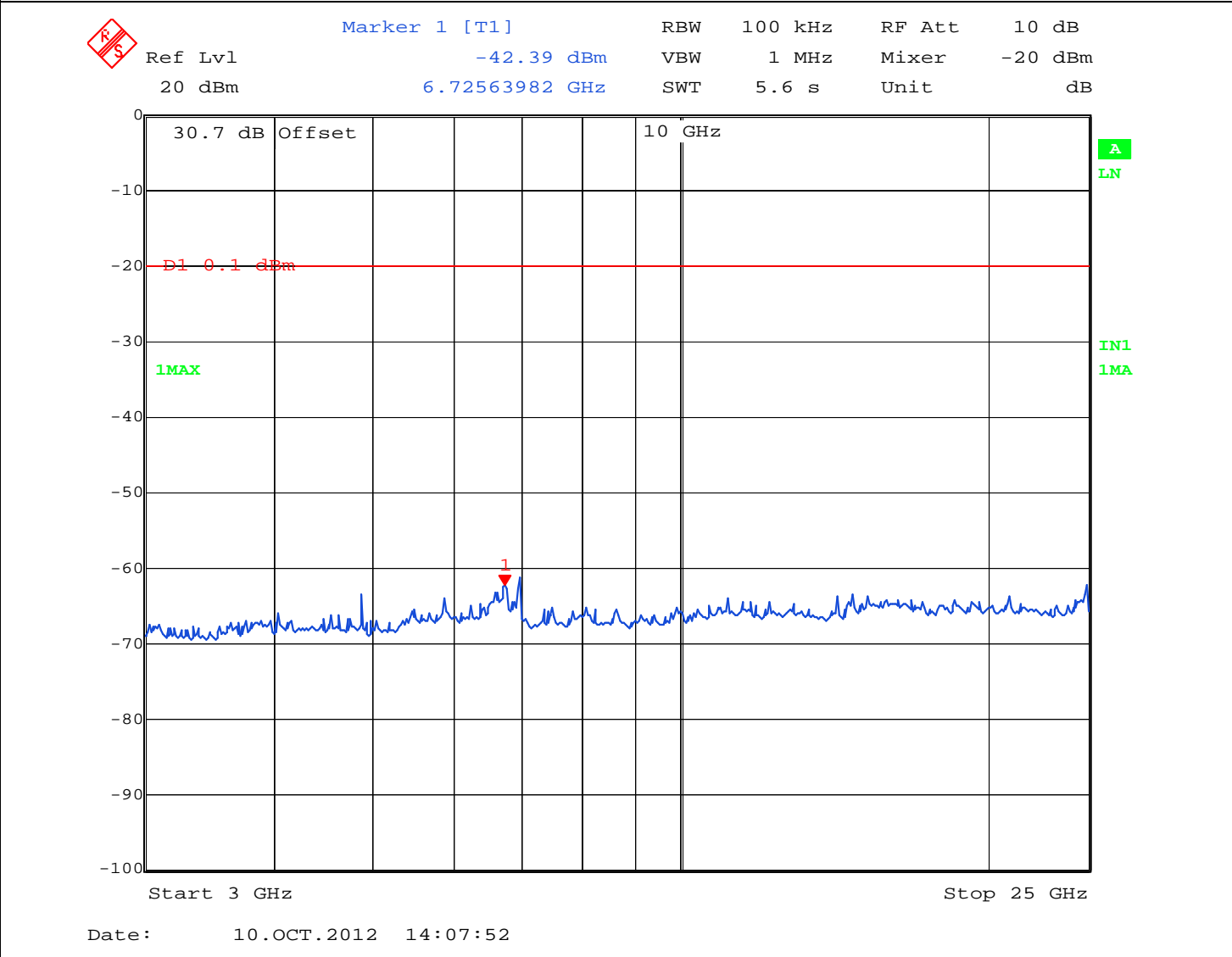
Supplemental Information:

Tested by (+ signature) : David Light *David Light*



Table No. 45	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 10-Oct-12
 Temperature: 23.0°C Relative Humidity :42.4 %
 Test Equipment Asset Tag List: 1767, 1468, 1469, 1470, 1471



Supplemental Information:

Tested by (+ signature) : David Light



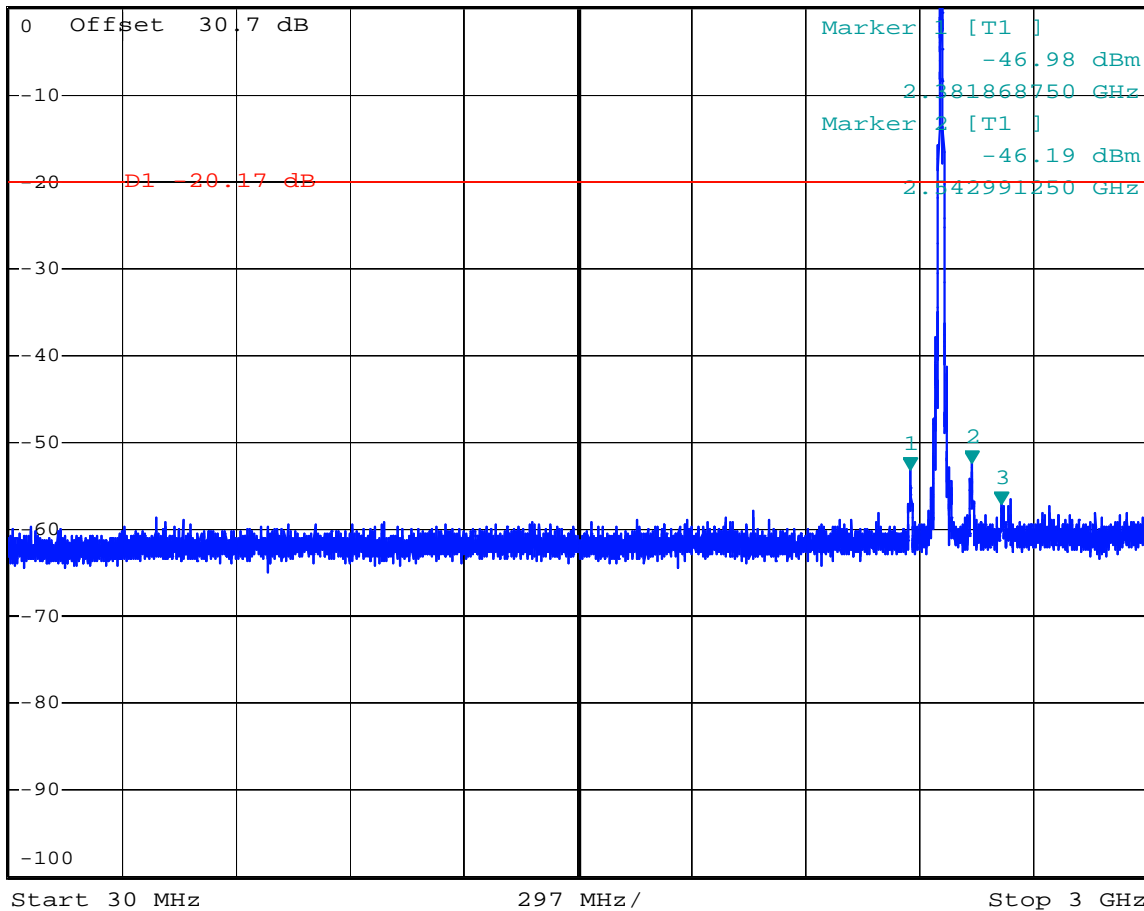
Table No. 46	Spurious Emissions	Verdict
		P

Test Method..... : ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11b mode Chan. 11
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 9-Oct-12
 Temperature : 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Ref 6.3 dBm *Att 10 dB *RBW 100 kHz Marker 3 [T1]
 *VBW 300 kHz -50.86 dBm
 *SWT 300 ms 2.620953750 GHz

1 PK
MAXH



Date: 9.OCT.2012 18:27:24

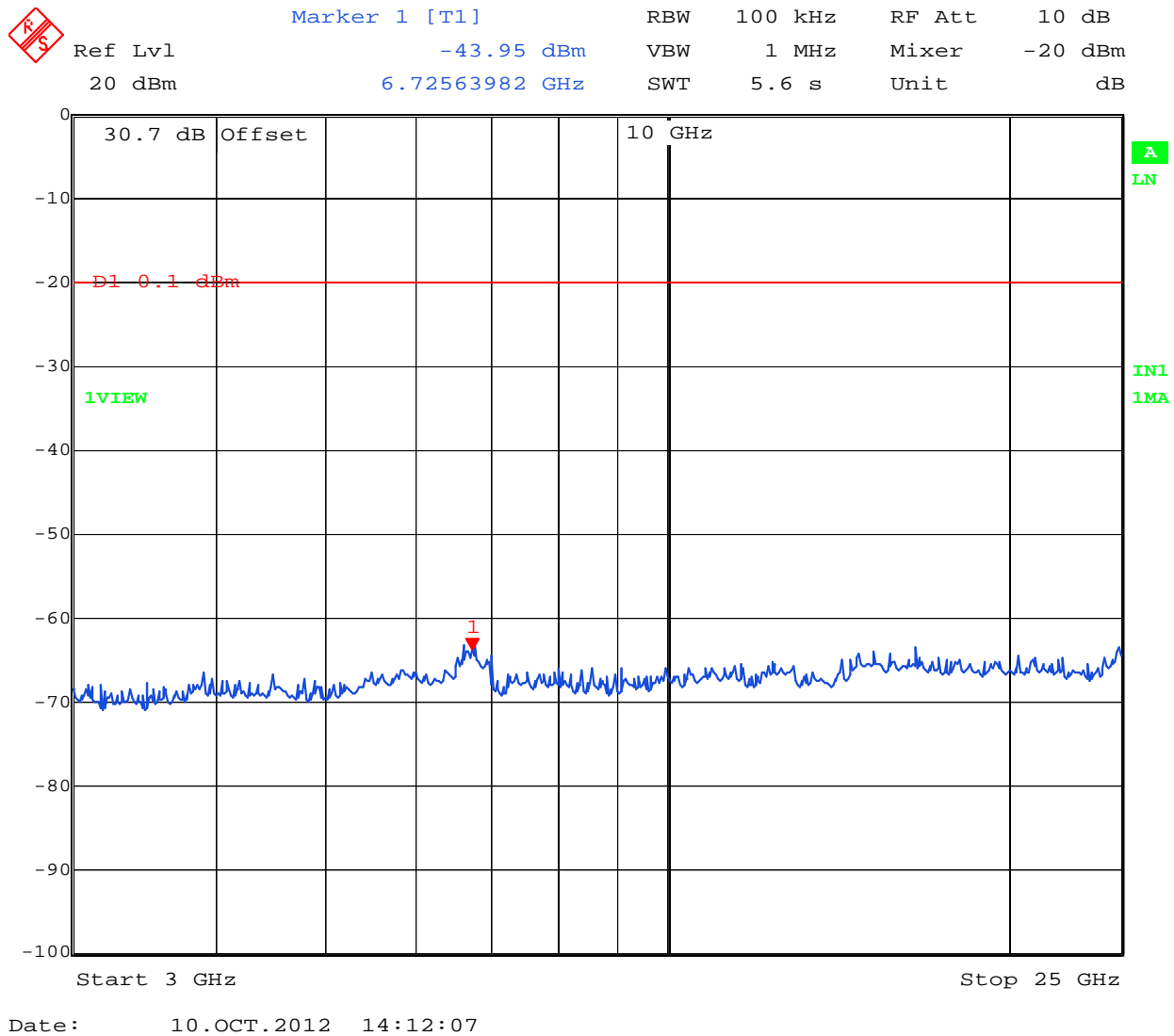
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 47	Spurious Emissions	Verdict
		P

Test Method..... : ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11b mode Chan. 11
 Power Input..... : 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date : 10-Oct-12
 Temperature : 23.0°C Relative Humidity :42.4 %
 Test Equipment Asset Tag List : 1767, 1468, 1469, 1470, 1471



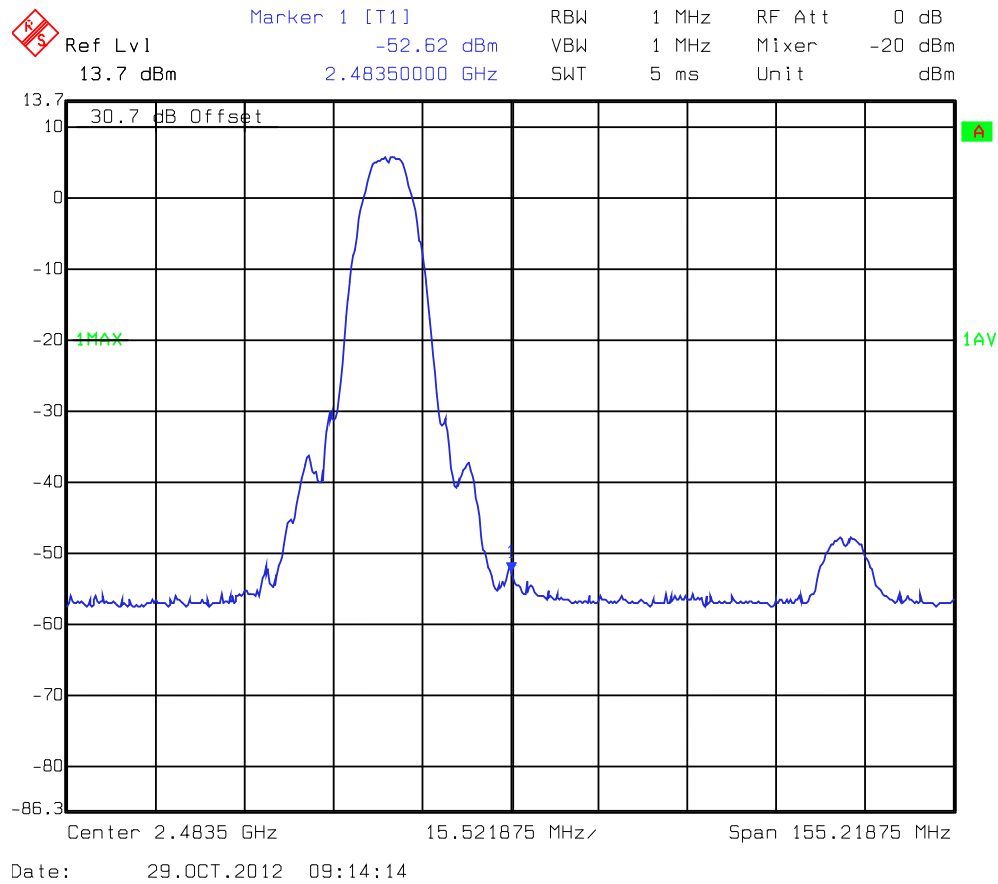
Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 48	Spurious Emissions – Upper Band Edge	Verdict
		P

Test Method..... : ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration : 802.11b mode Chan. 11
 Power Input..... : 120VAC, 60 Hz 1φ 3φ
 Test Date : 9-Oct-12
 Temperature : 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Supplemental Information:

Frequency (MHz)	Measured Power at ant. (dBm)	Ant. gain (dBi)	Power at ant. (W)	Field strength (V/m)	Field strength (dBuV/m)
2483.5	-52.62	4.75	1.633E-08	0.000233	47.4

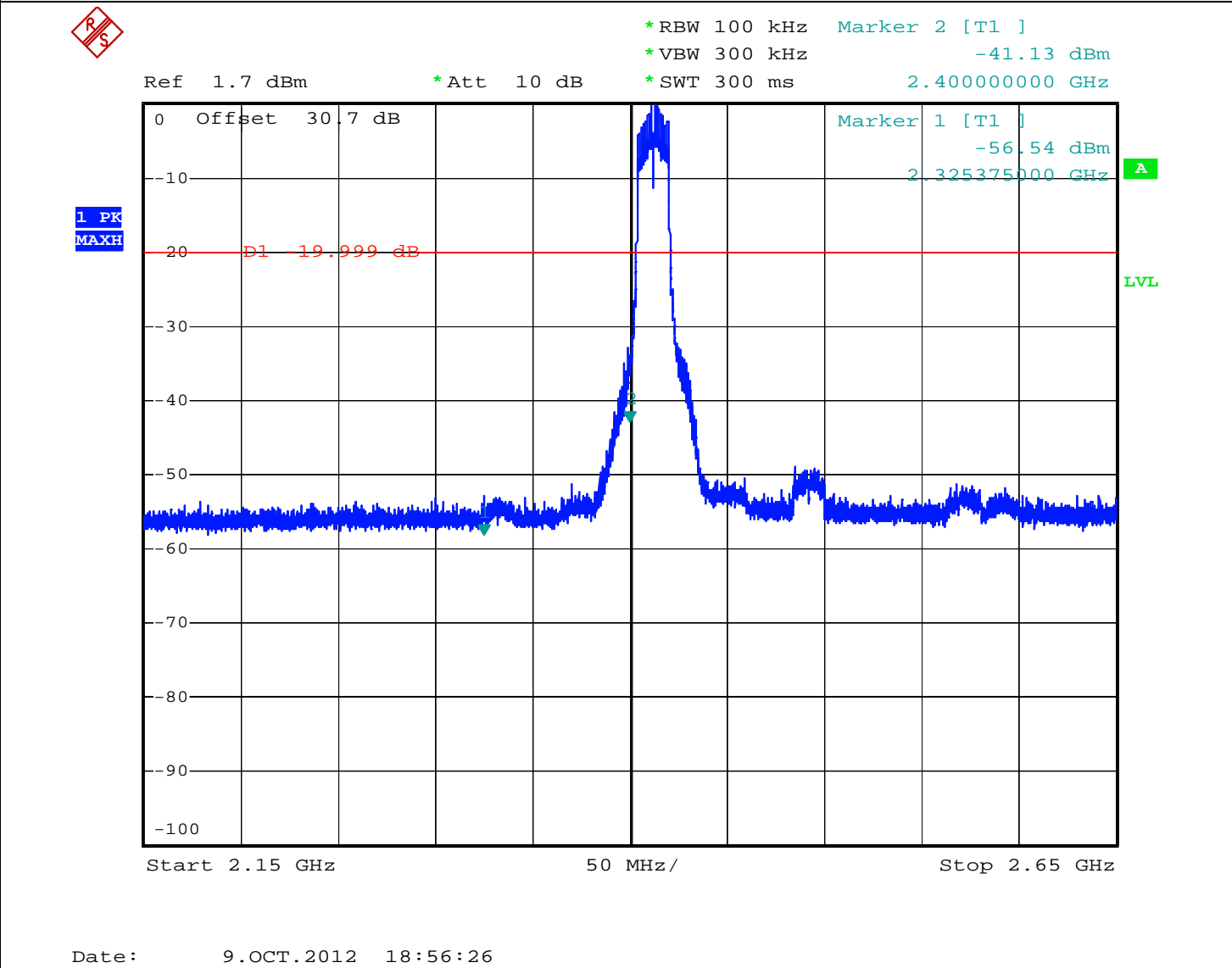
Tested by (+ signature)

Tom Tidwell



Table No. 49	Spurious Emissions – Lower Band Edge	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471

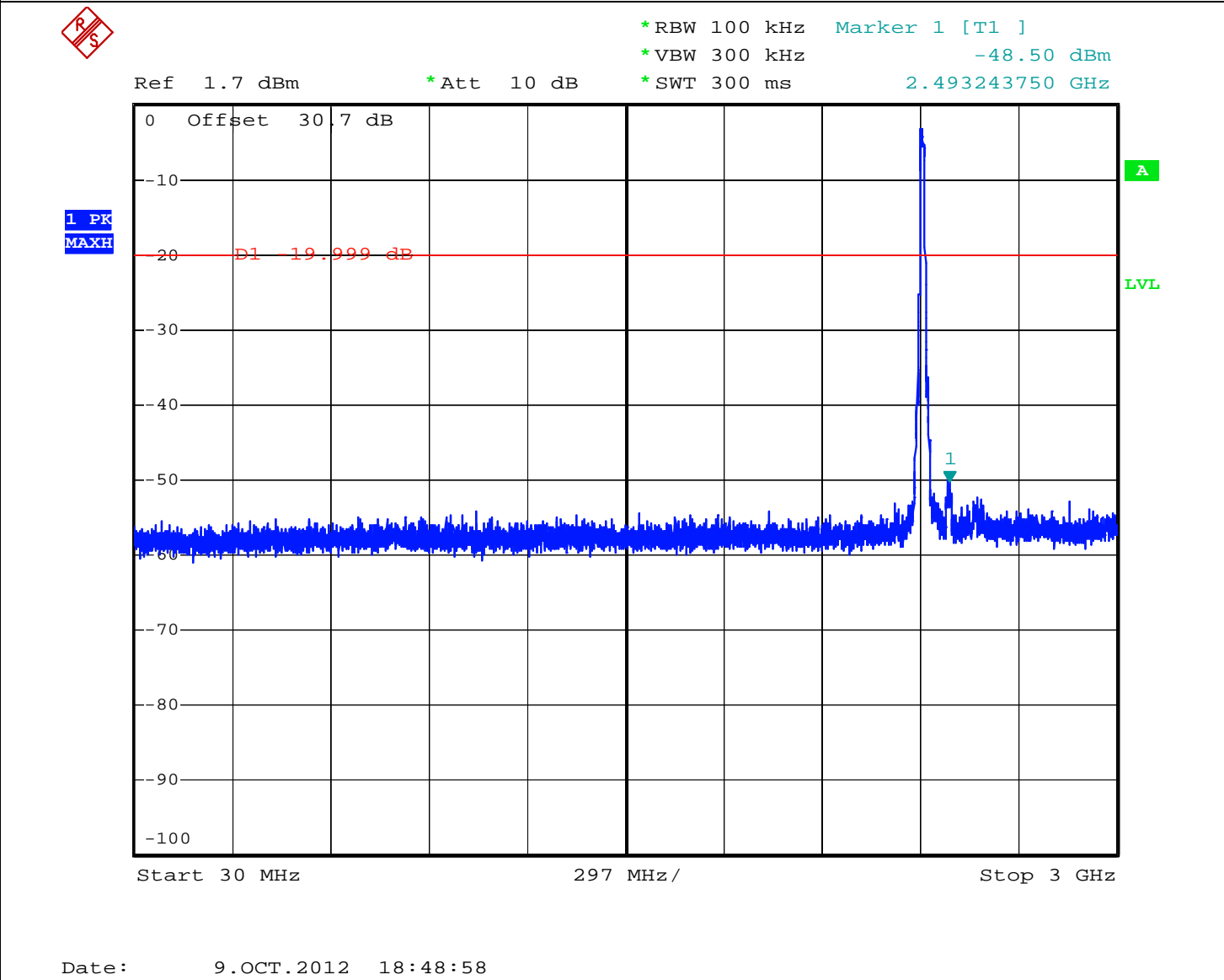


Supplemental Information:

Tested by (+ signature): David Light *David Light*

Table No. 50	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



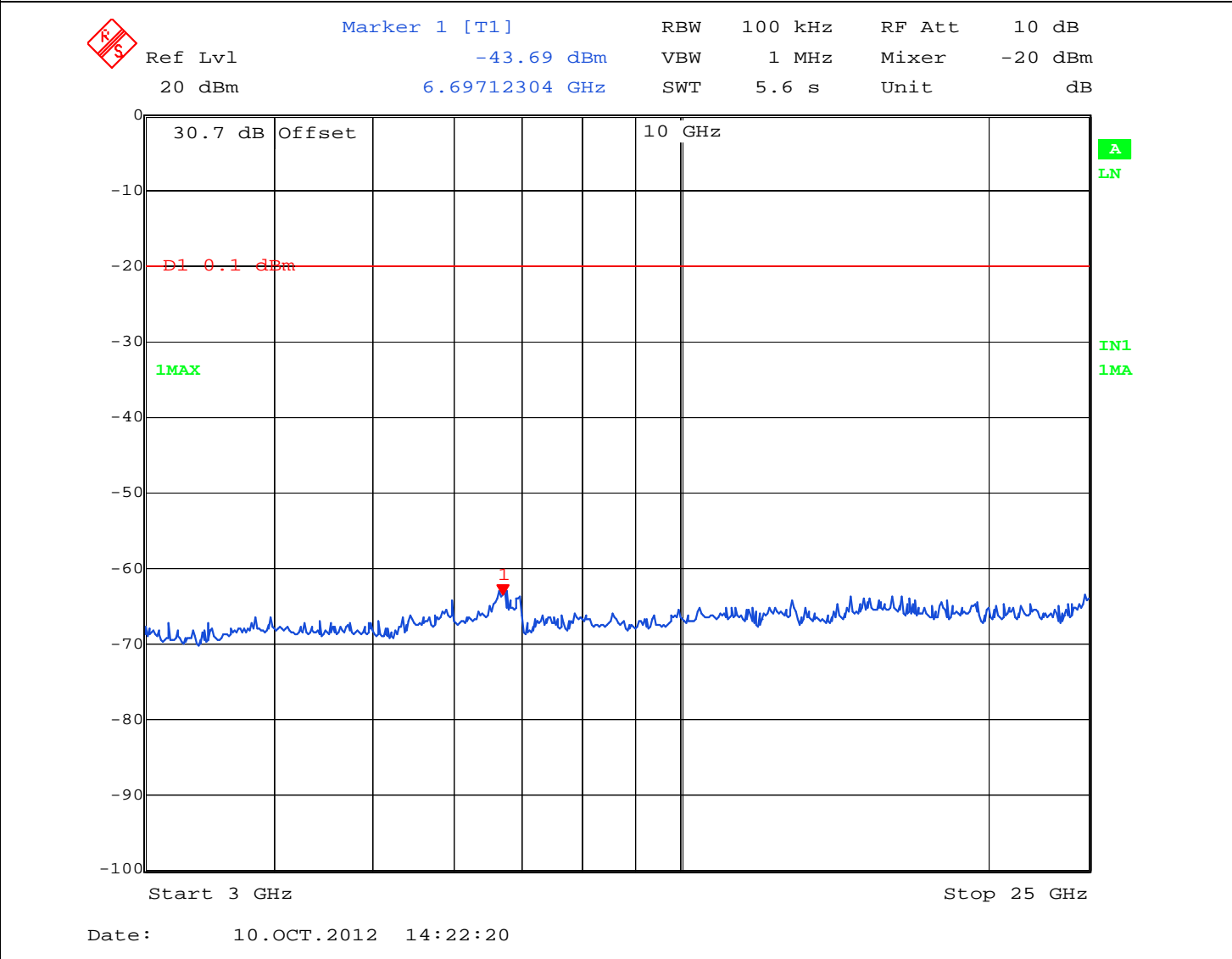
Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 51	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 10-Oct-12
 Temperature: 23.0°C Relative Humidity:42.4 %
 Test Equipment Asset Tag List: 1767, 1468, 1469, 1470, 1471



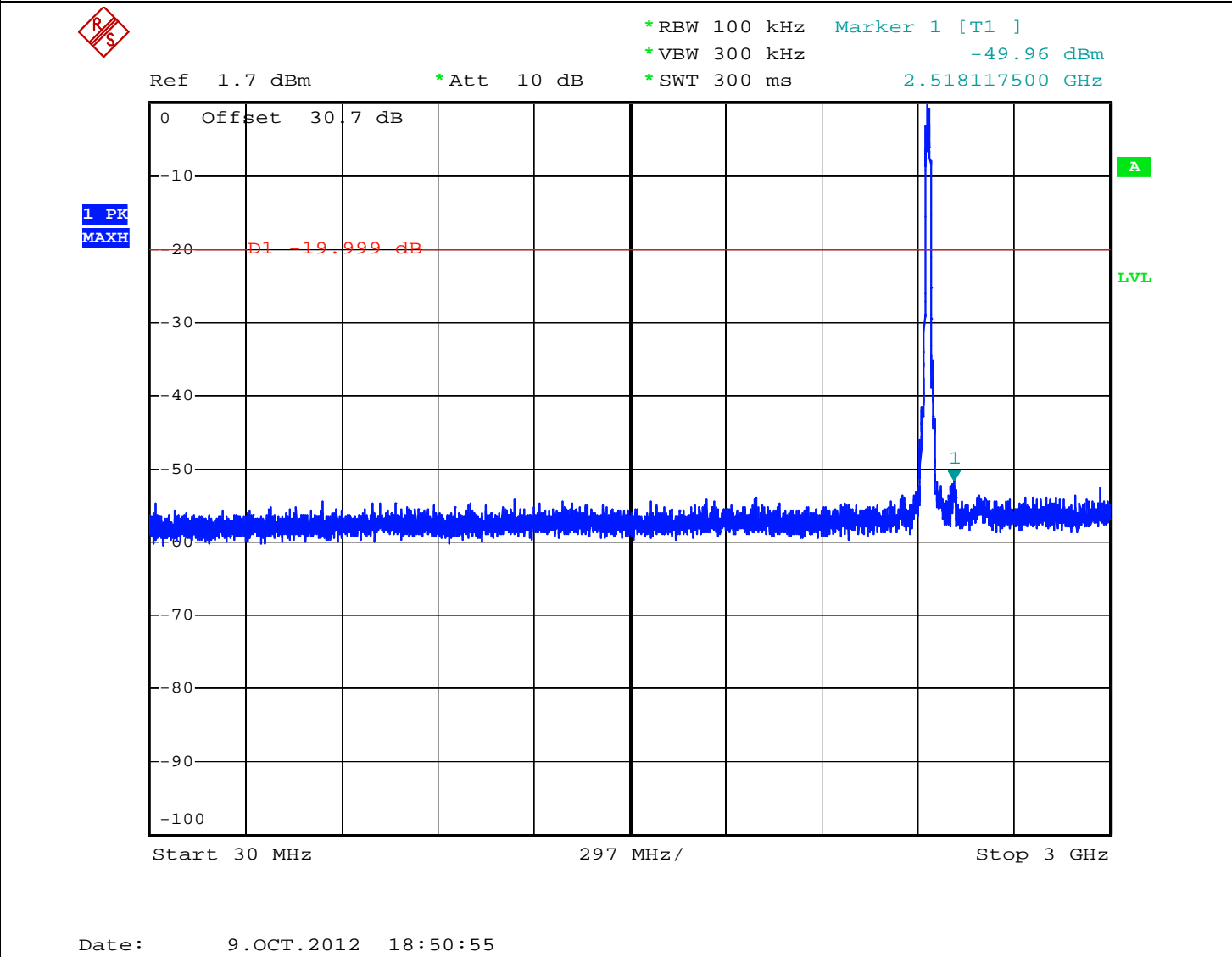
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 52	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



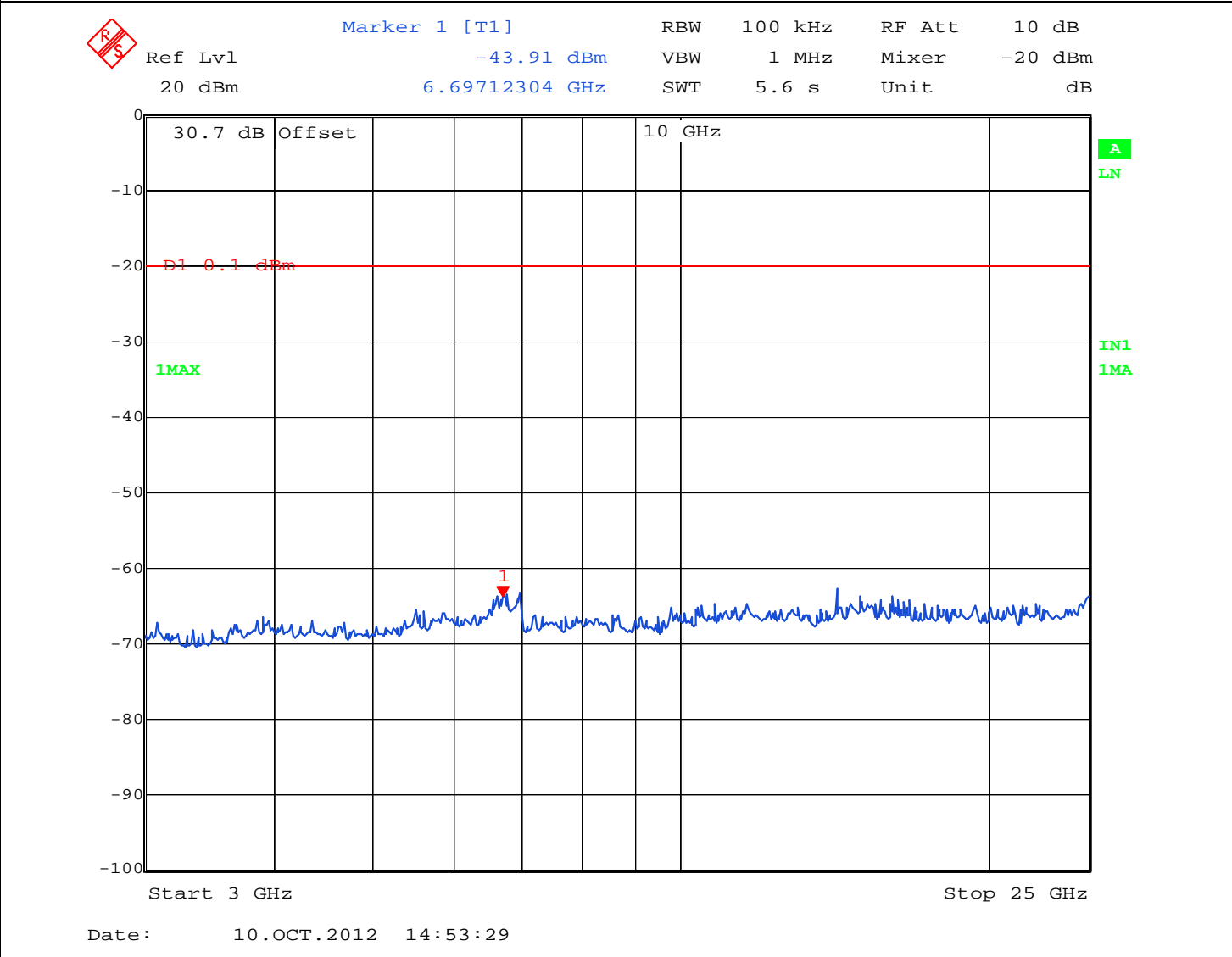
Supplemental Information:

Tested by (+ signature) : David Light *David Light*



Table No. 53	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 10-Oct-12
 Temperature: 23.0°C Relative Humidity:42.4 %
 Test Equipment Asset Tag List: 1767, 1468, 1469, 1470, 1471

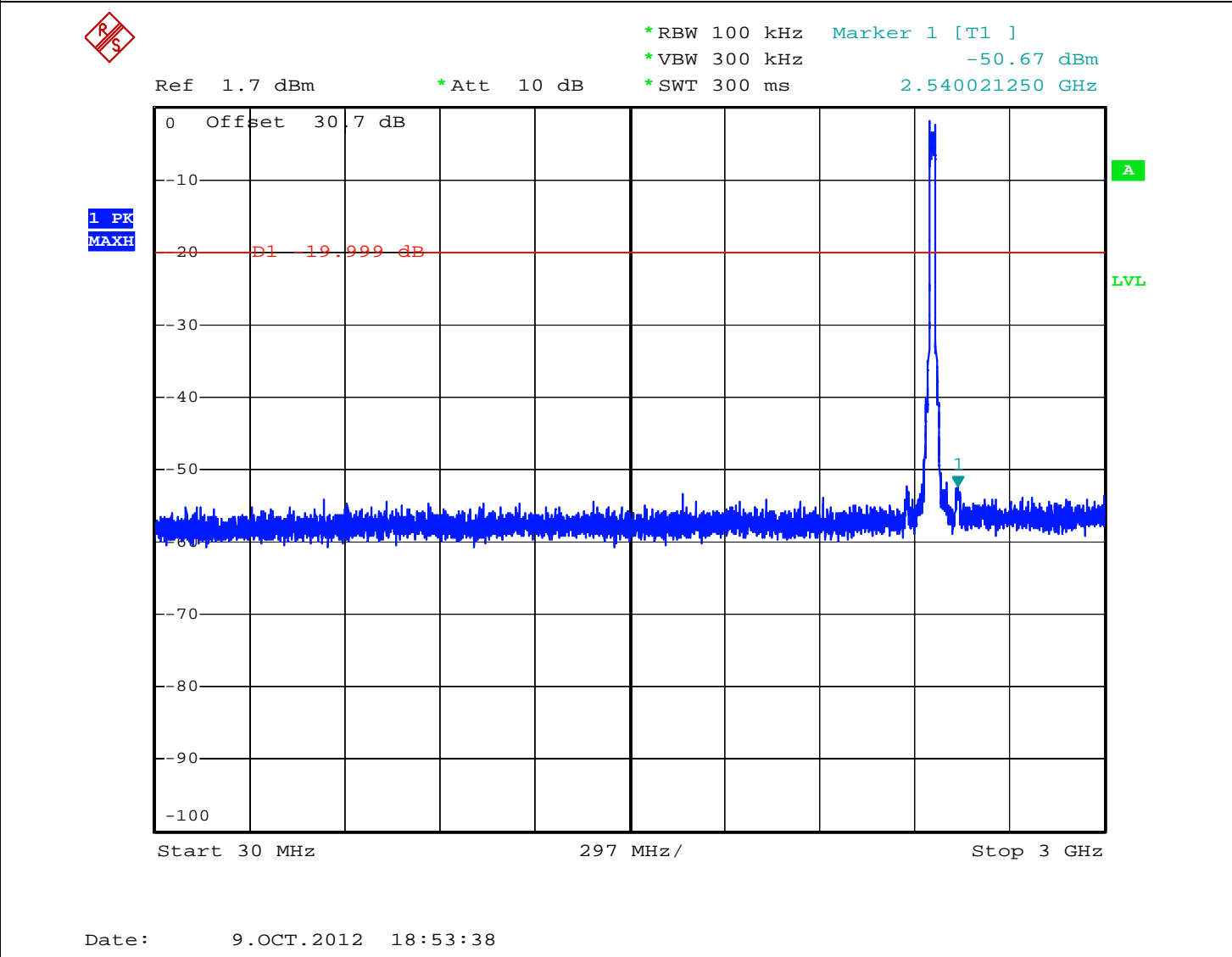


Supplemental Information:

Tested by (+ signature): *David Light* David Light

Table No. 54	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode Chan. 11
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



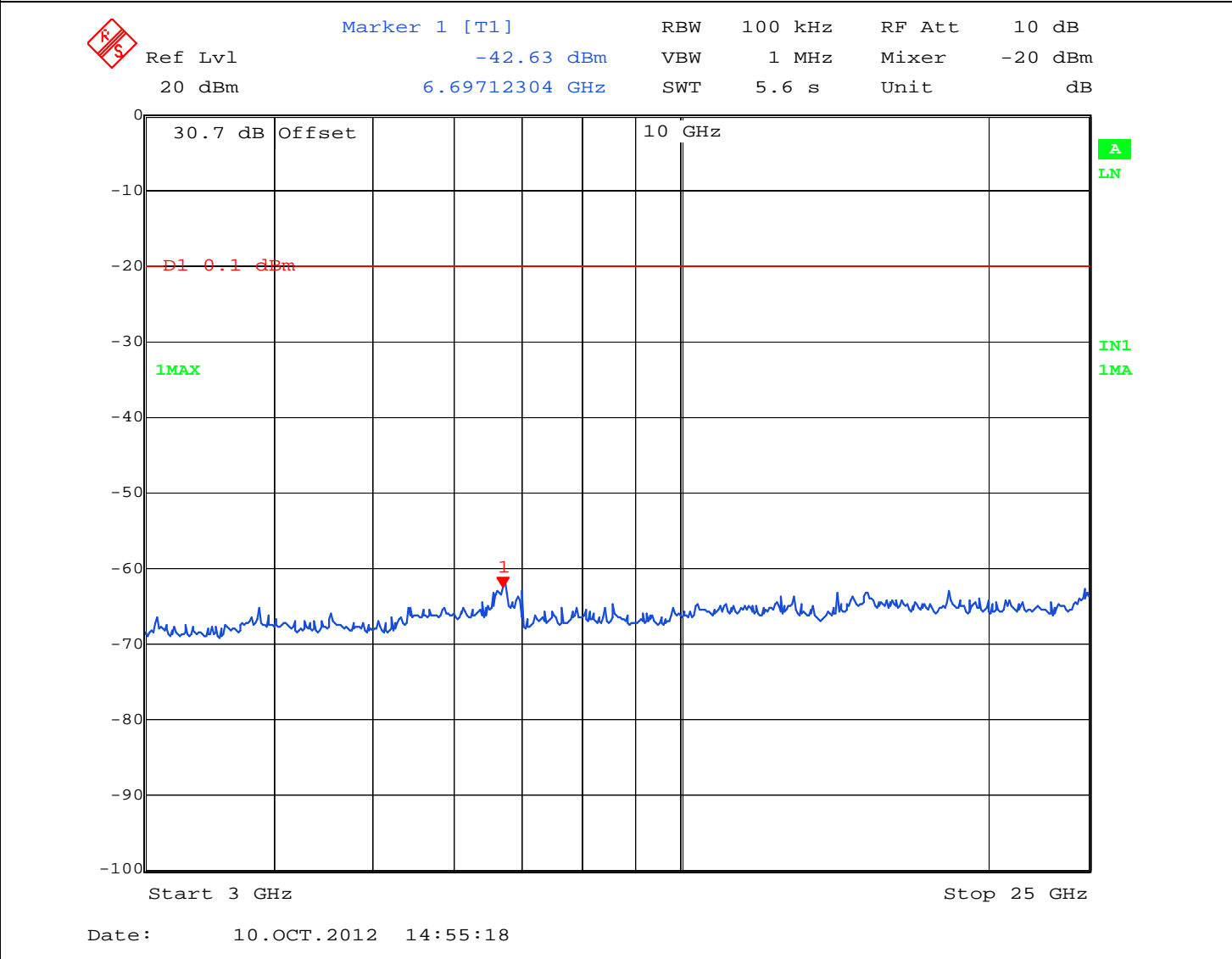
Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 55	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode Chan. 11
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 10-Oct-12
 Temperature: 23.0°C Relative Humidity:42.4 %
 Test Equipment Asset Tag List: 1767, 1468, 1469, 1470, 1471



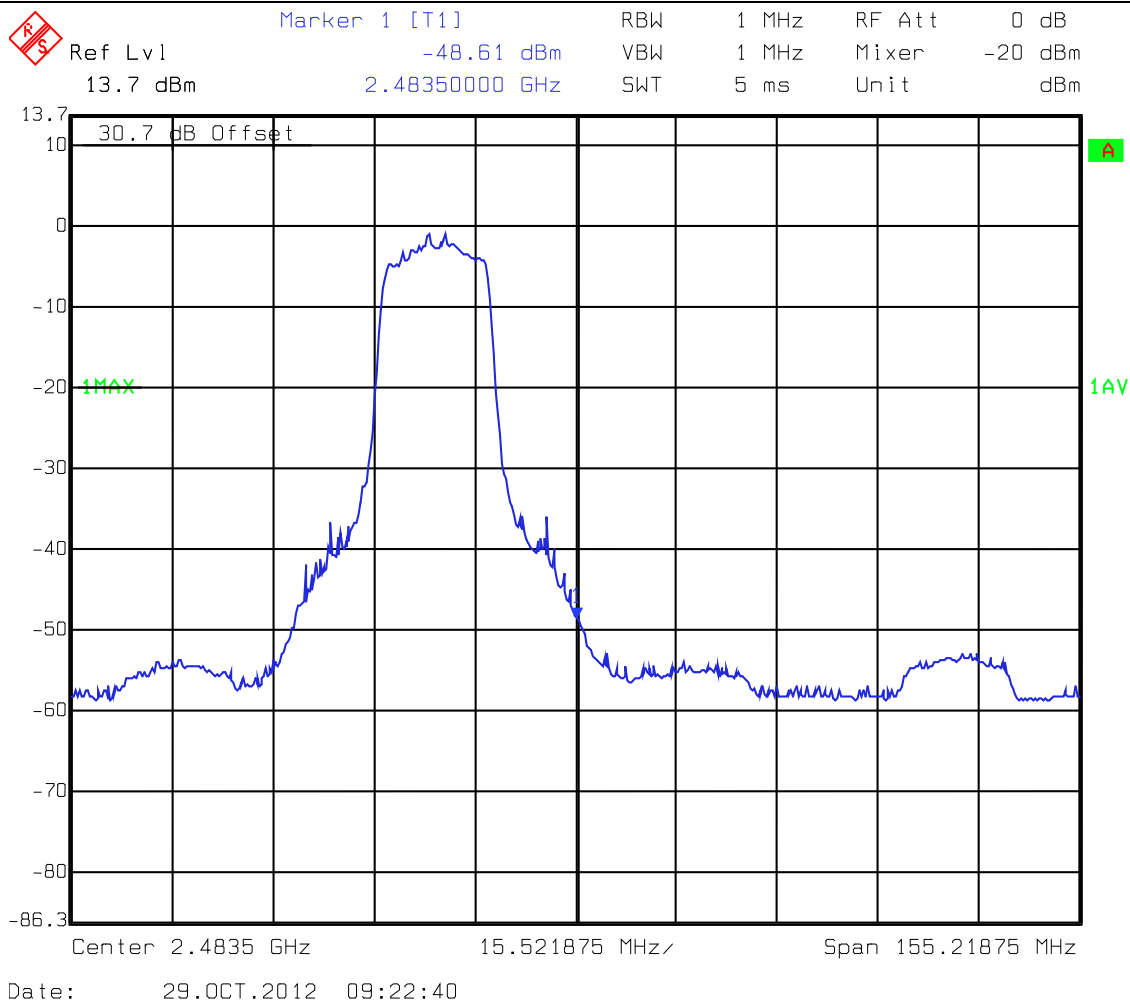
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 56	Spurious Emissions – Upper Band Edge	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode Chan. 11
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



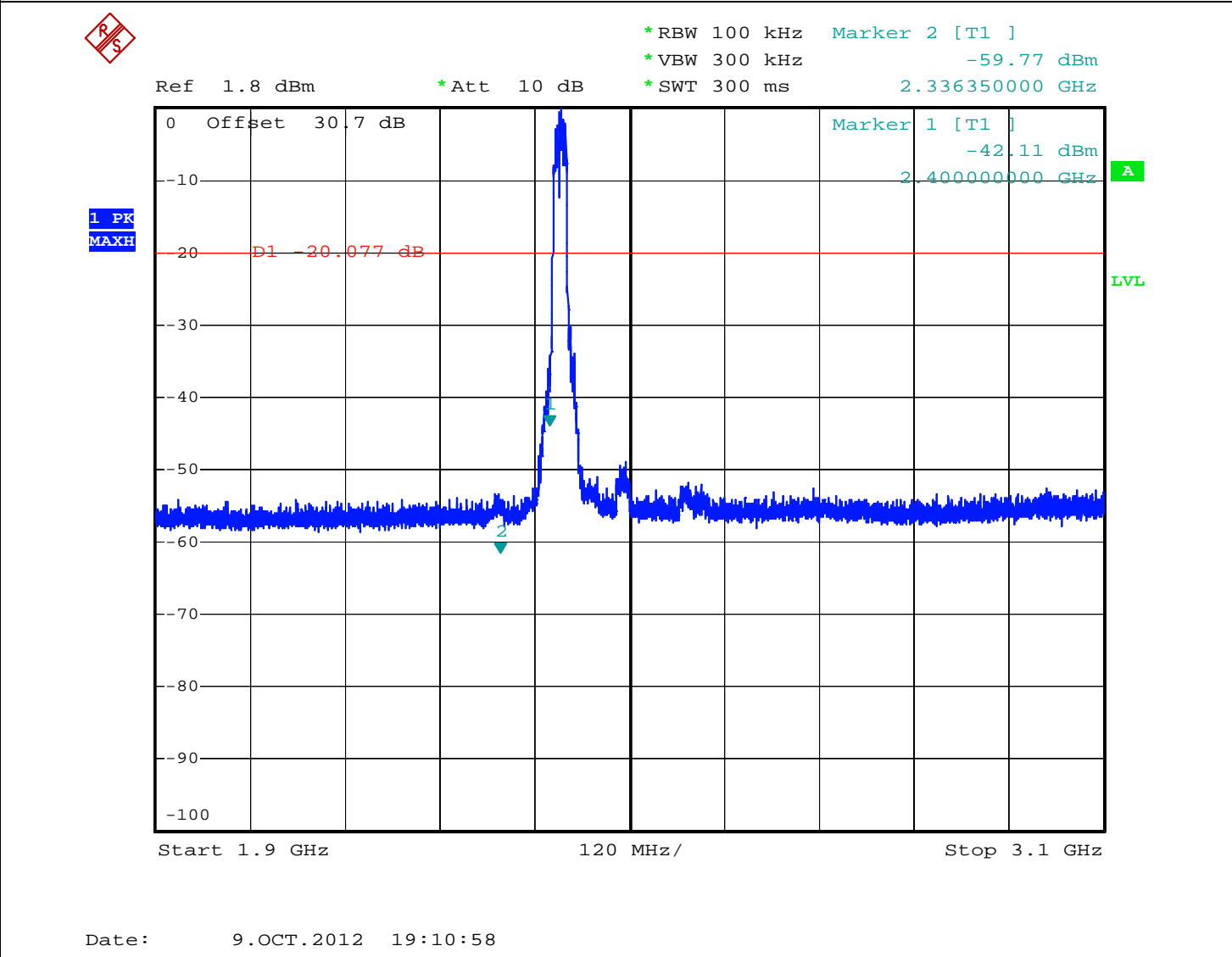
Supplemental Information:

Frequency (MHz)	Measured Power at ant. (dBm)	Ant. gain (dBi)	Power at ant. (W)	Field strength (V/m)	Field strength (dBuV/m)
2483.5	-48.61	4.75	4.111E-08	0.00037	51.4

Tested by (+ signature) : *David Light* David Light

Table No. 57	Spurious Emissions – Lower Band Edge	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471

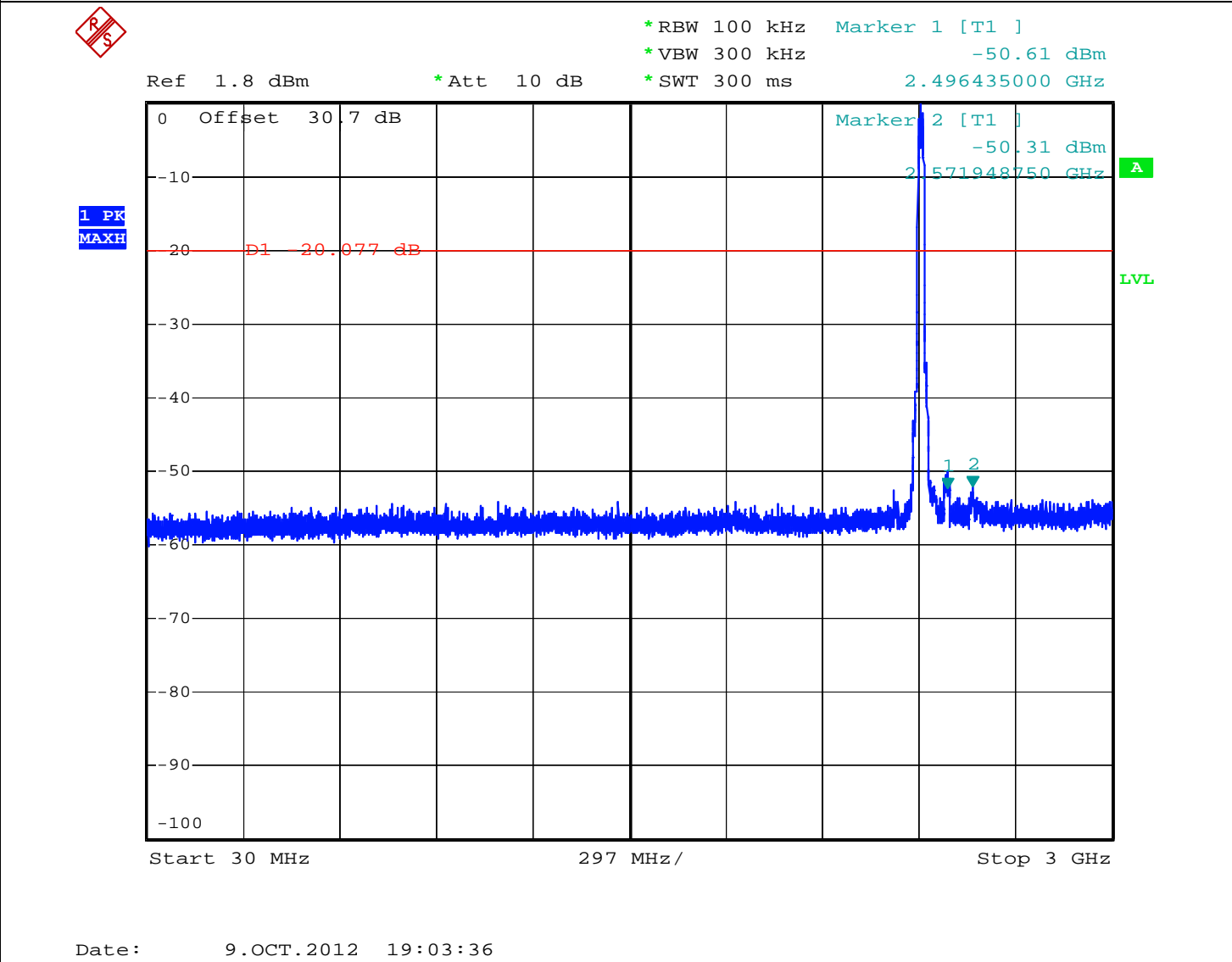


Supplemental Information:
 Field strength at 2483.5 MHz = 48.3 dBuV/m @3m

Tested by (+ signature): David Light 

Table No. 58	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



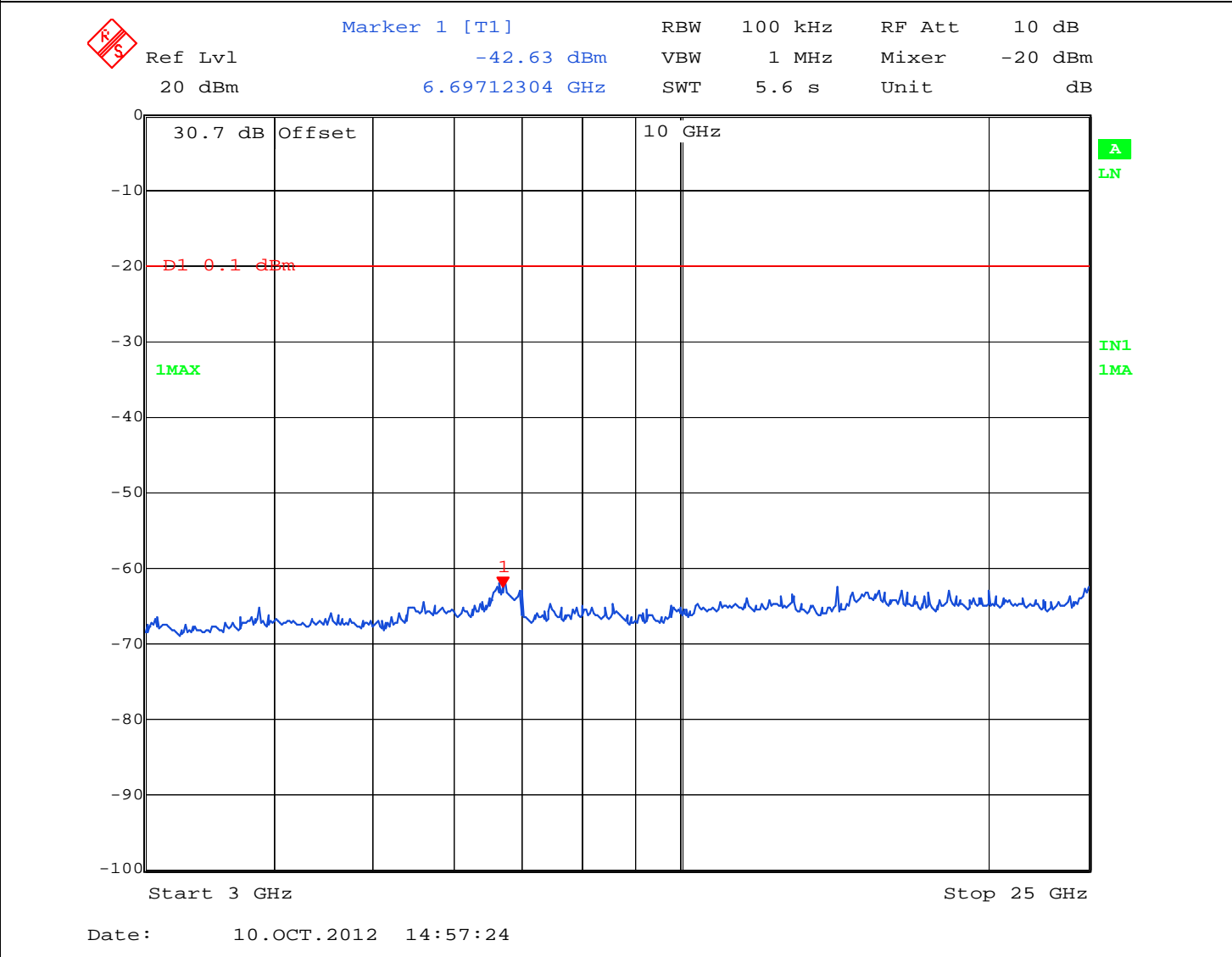
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 59	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 10-Oct-12
 Temperature: 23.0°C Relative Humidity:42.4 %
 Test Equipment Asset Tag List: 1767, 1468, 1469, 1470, 1471



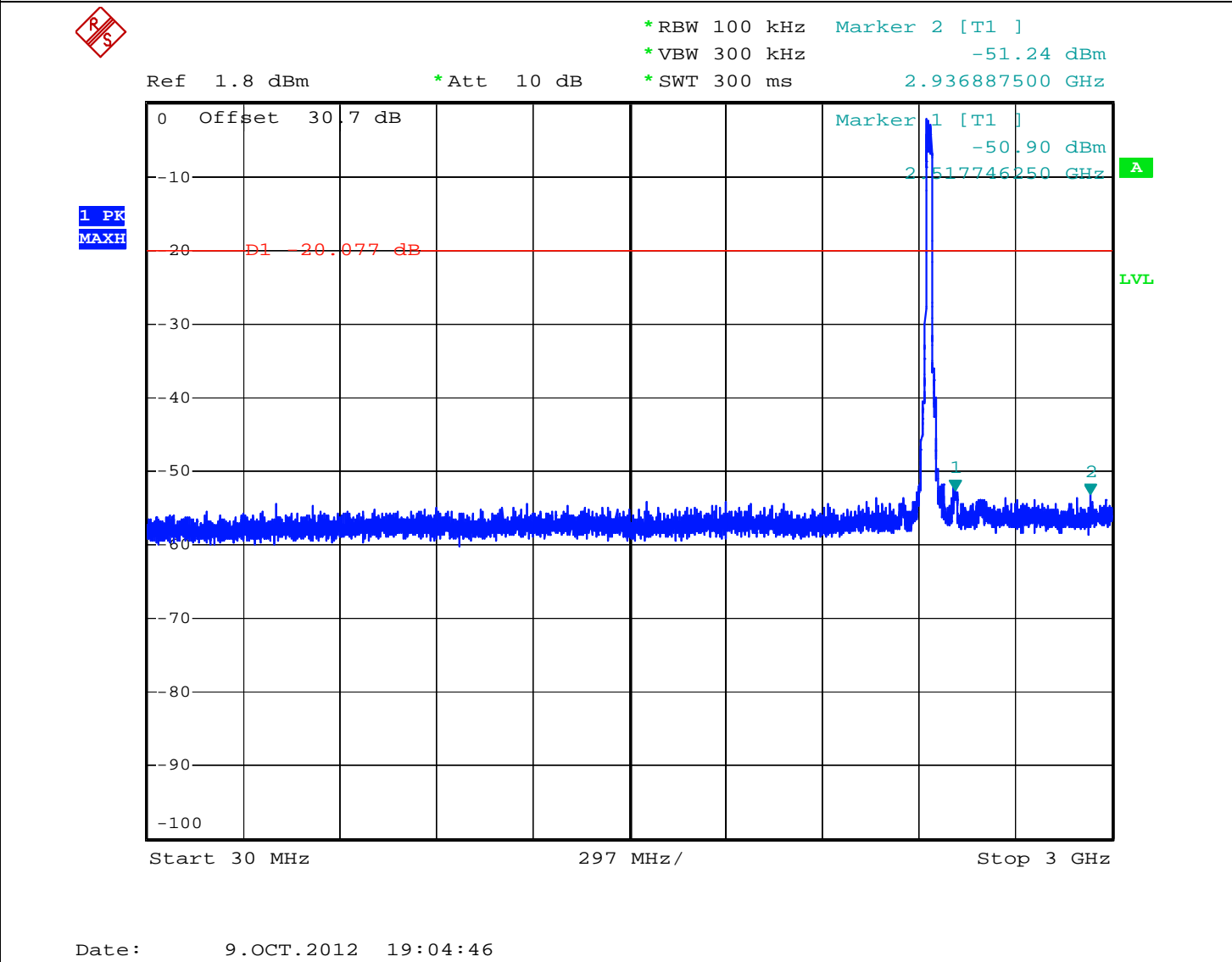
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 60	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



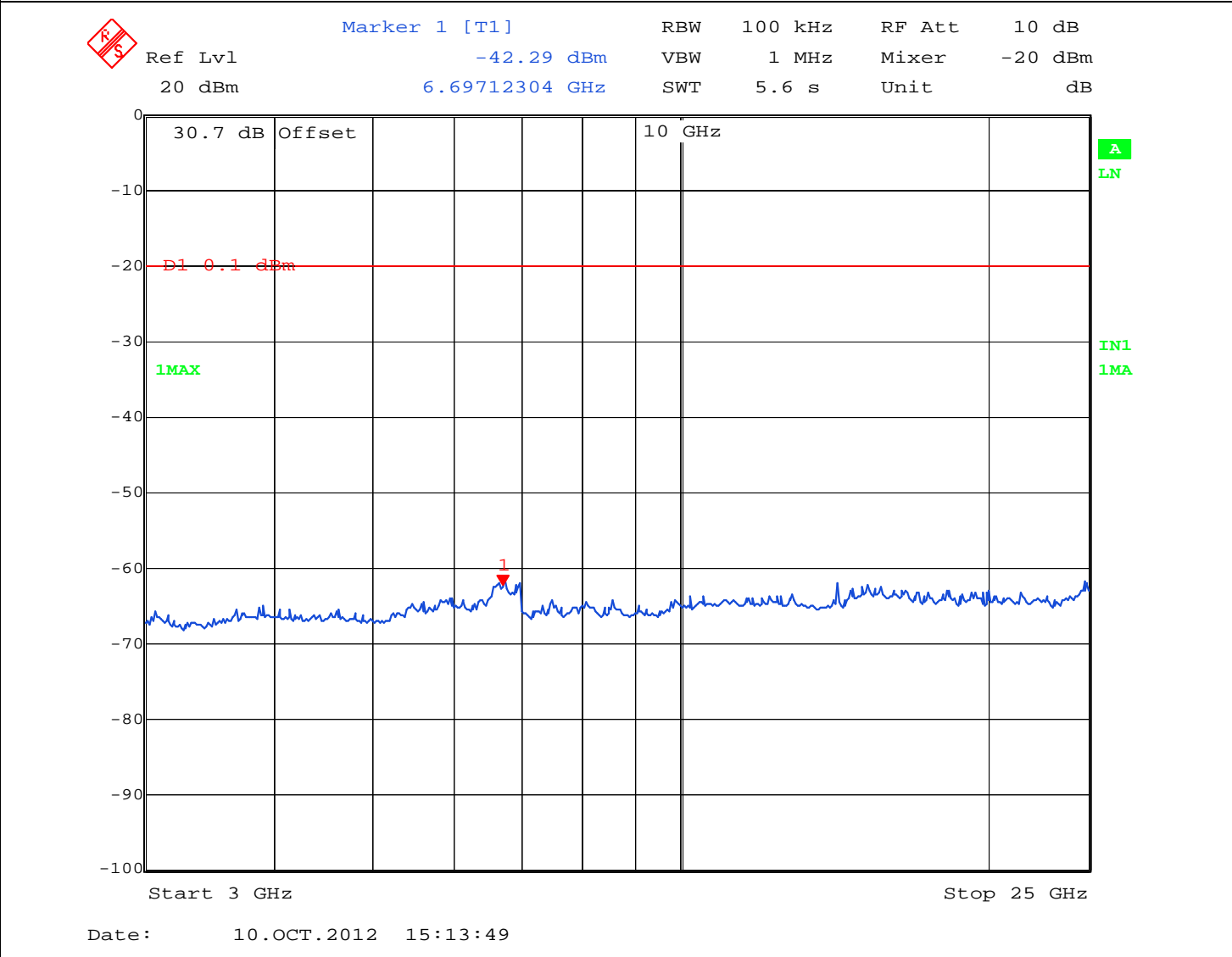
Supplemental Information:

Tested by (+ signature) : *David Light* David Light



Table No. 61	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 10-Oct-12
 Temperature: 23.0°C Relative Humidity:42.4 %
 Test Equipment Asset Tag List: 1767, 1468, 1469, 1470, 1471



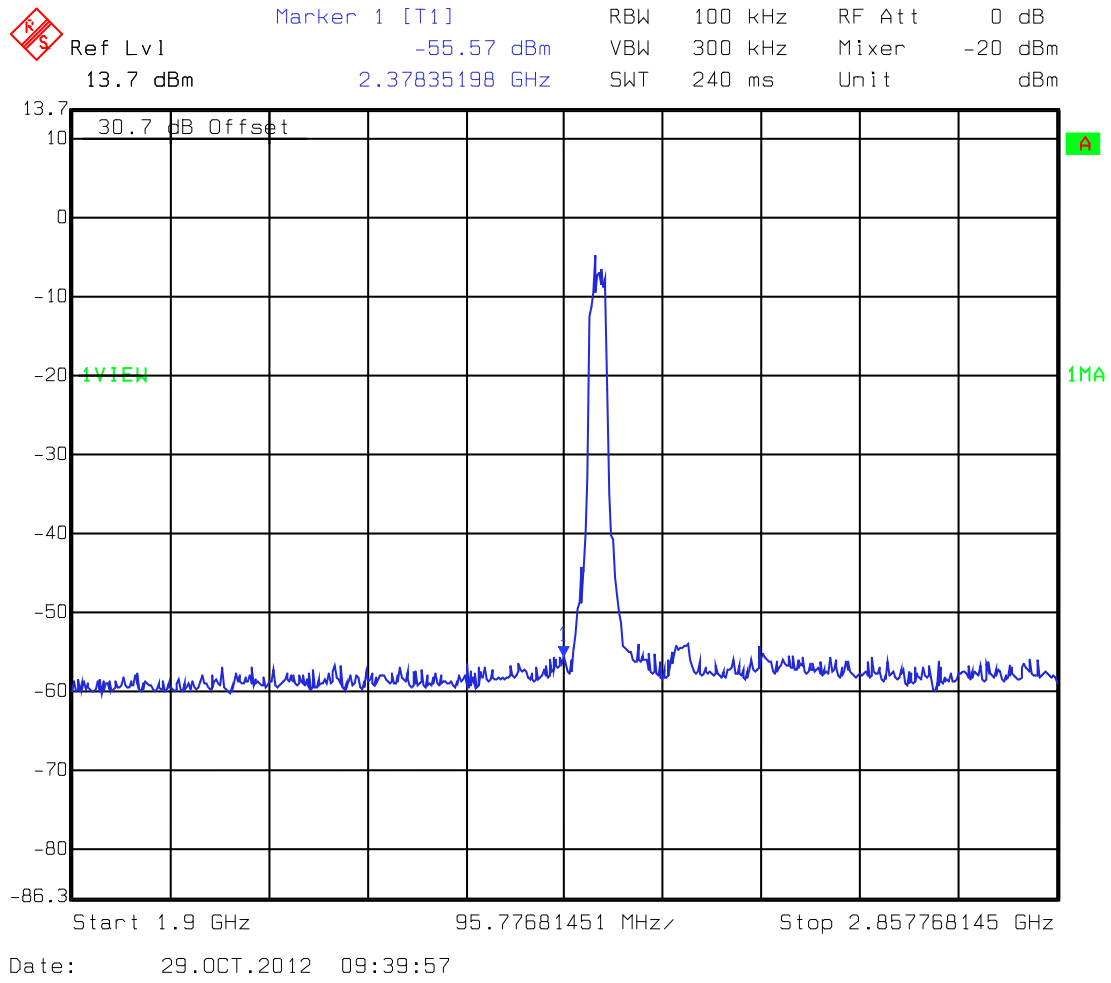
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 62	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



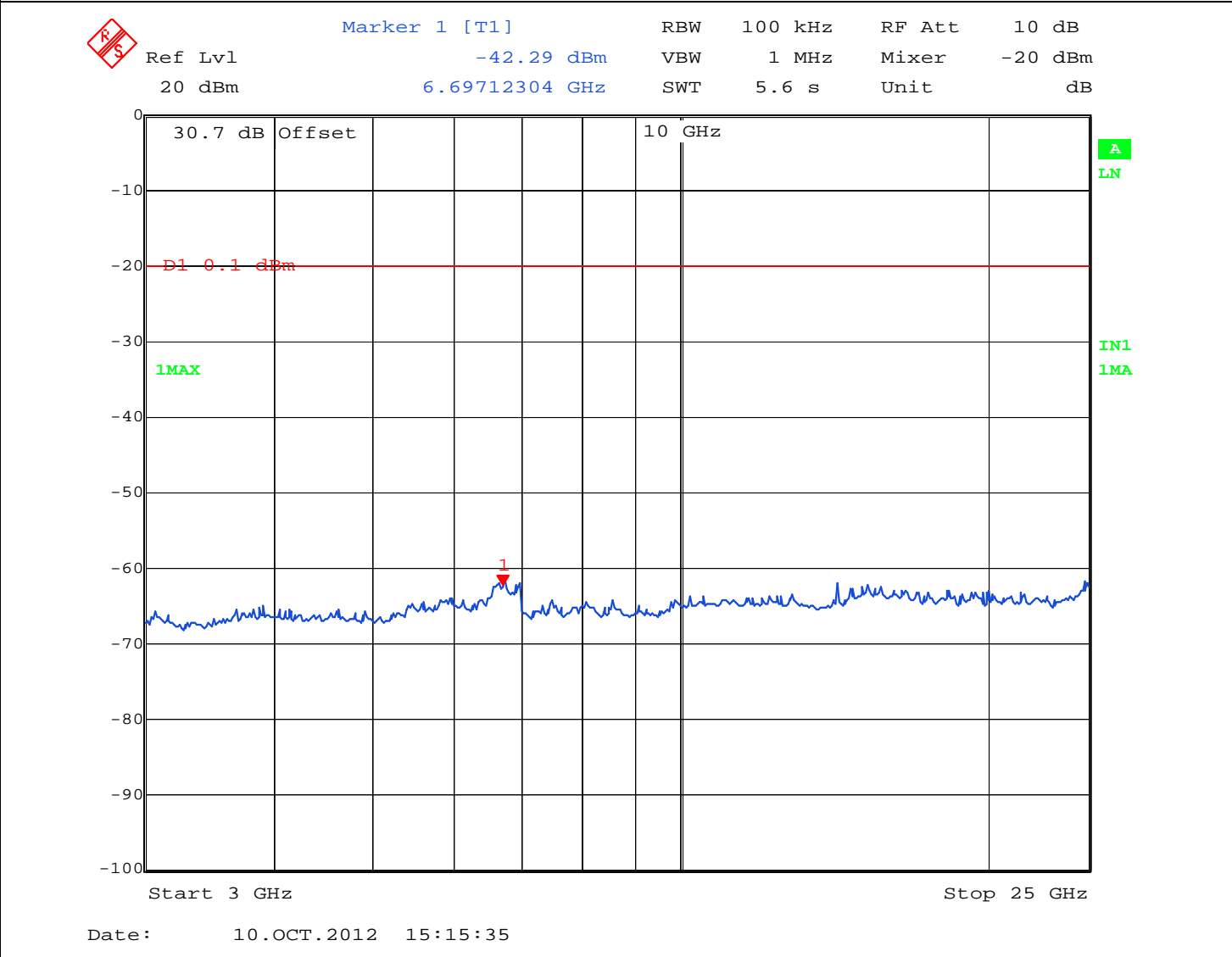
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 63	Spurious Emissions	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode Chan. 11
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 10-Oct-12
 Temperature: 23.0°C Relative Humidity:42.4 %
 Test Equipment Asset Tag List: 1767, 1468, 1469, 1470, 1471



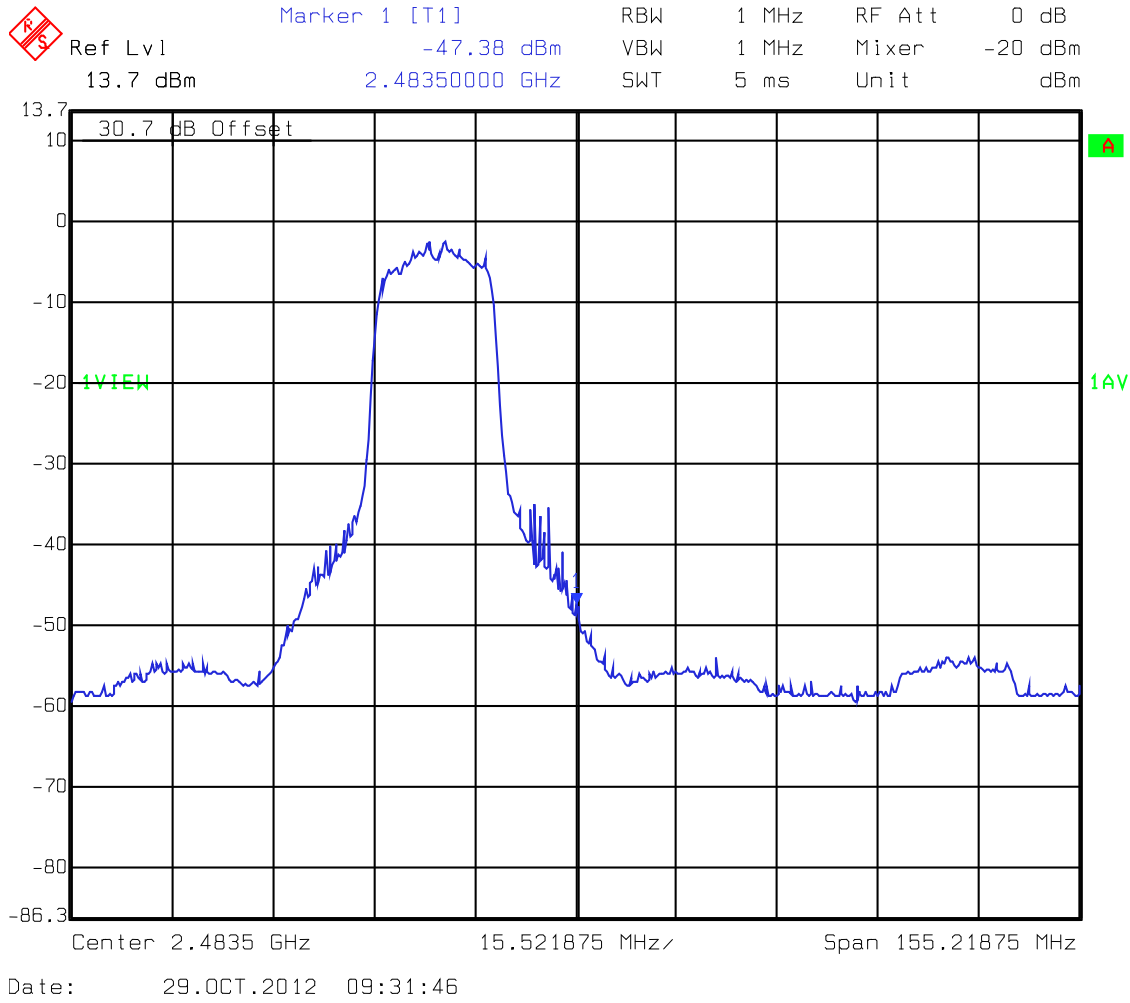
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 64	Spurious Emissions – Upper Band Edge	Verdict
		P

Test Method.....: ANSI C63.10 and 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode Chan. 11
 Power Input.....: 120VAC, 60 Hz 1φ 3φ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity:42.2 %
 Test Equipment Asset Tag List: 1654, 1468, 1469, 1470, 1471



Supplemental Information:

Frequency (MHz)	Measured Power at ant. (dBm)	Ant. gain (dBi)	Power at ant. (W)	Field strength (V/m)	Field strength (dBuV/m)
2483.5	-47.38	4.75	5.458E-08	0.000427	52.6

Tested by (+ signature): *David Light* David Light

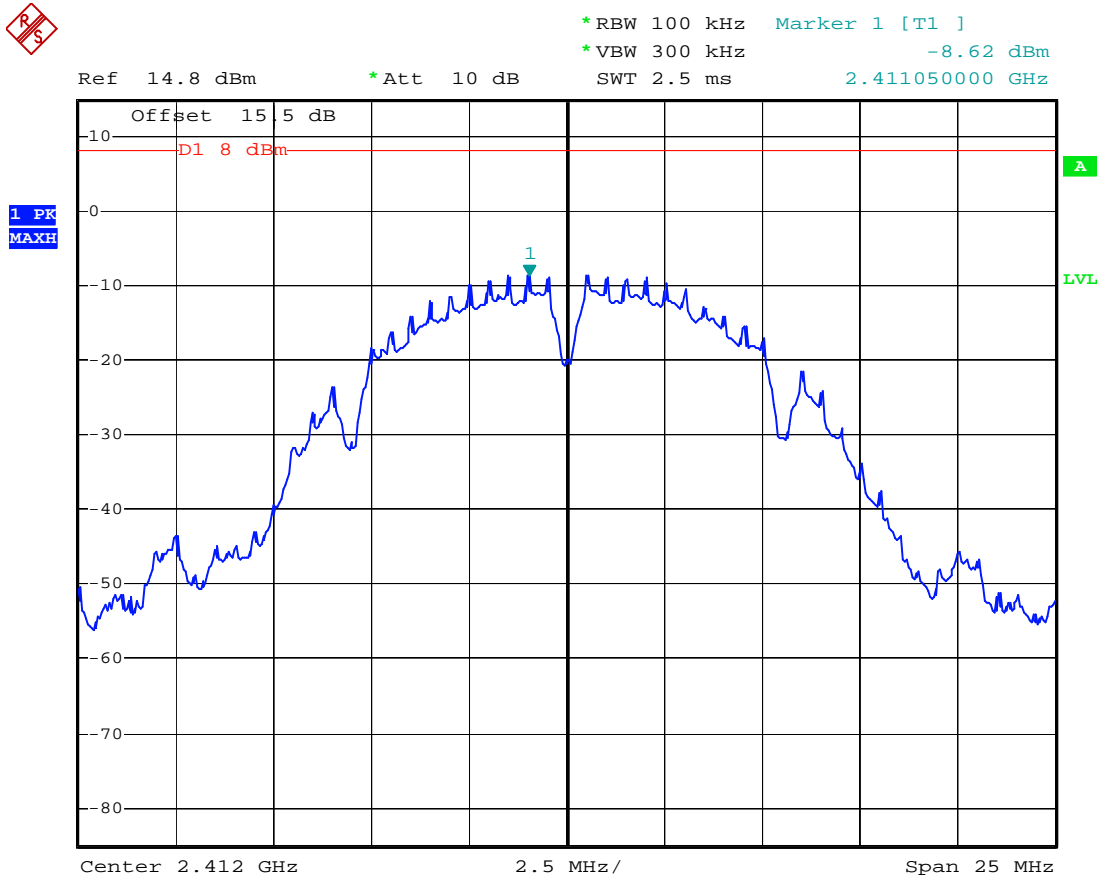


Test Results – Power Spectral Density



Table No. 65	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode, Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Date: 9.OCT.2012 17:36:15

Supplemental Information:

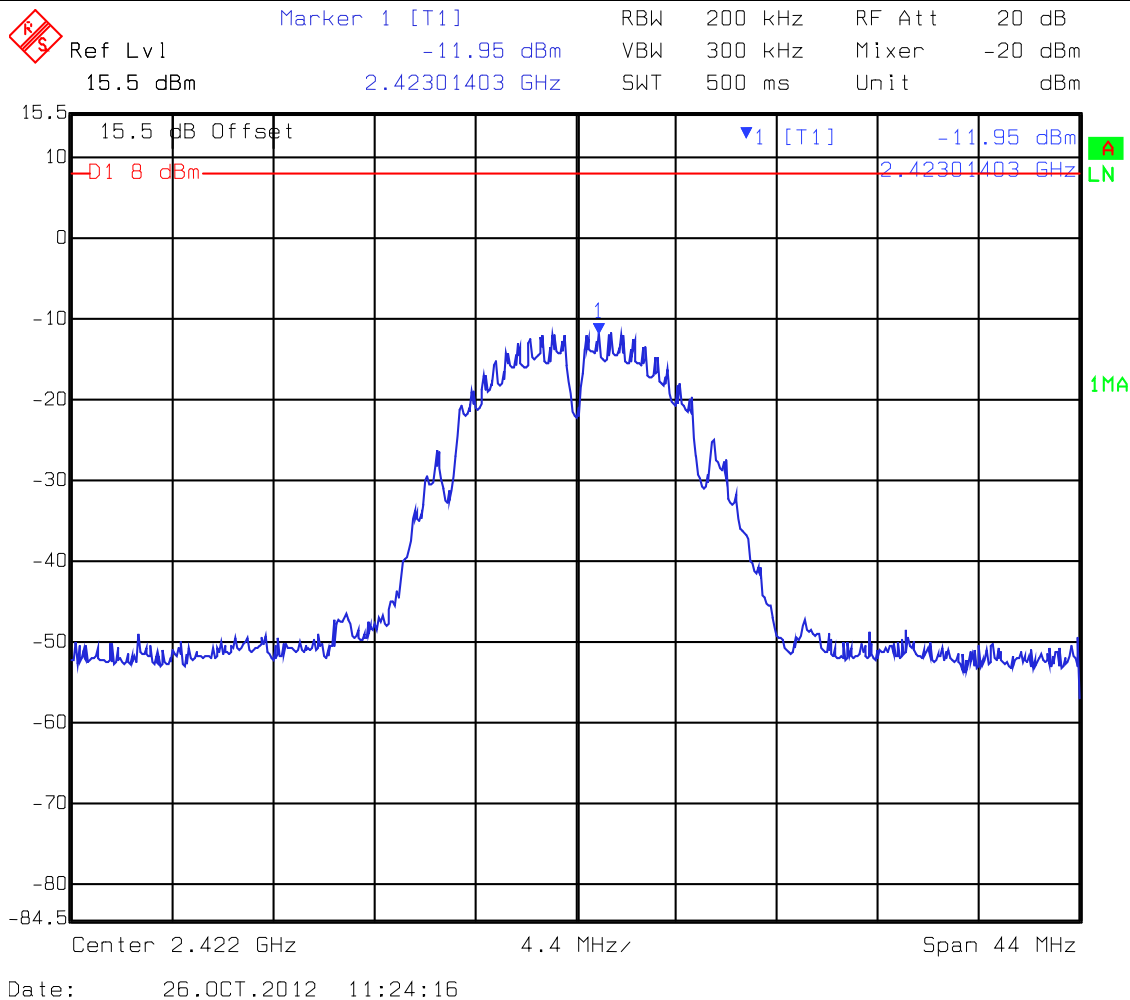
Tested by (+ signature)

David Light



Table No. 66	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode, Chan. 3
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



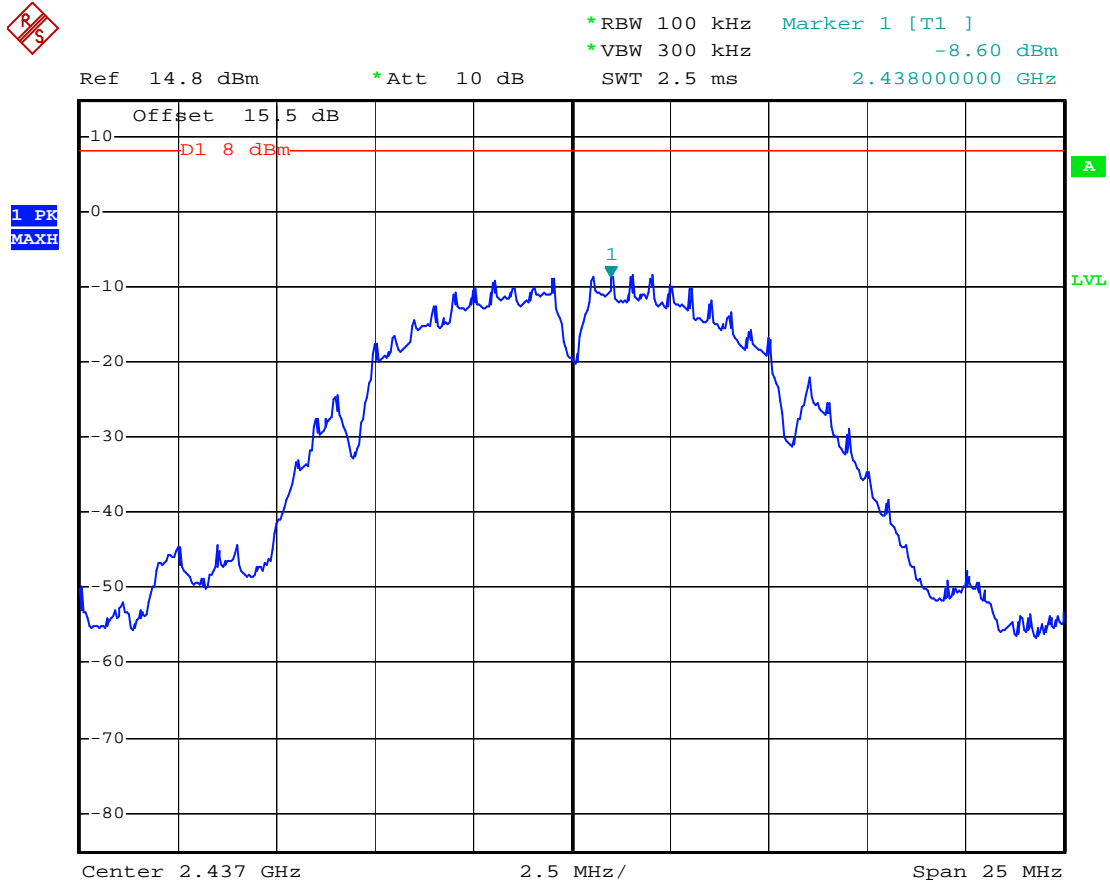
Supplemental Information:

Tested by (+ signature): *David Light*
 David Light



Table No. 67	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode, Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Date: 9.OCT.2012 17:37:10

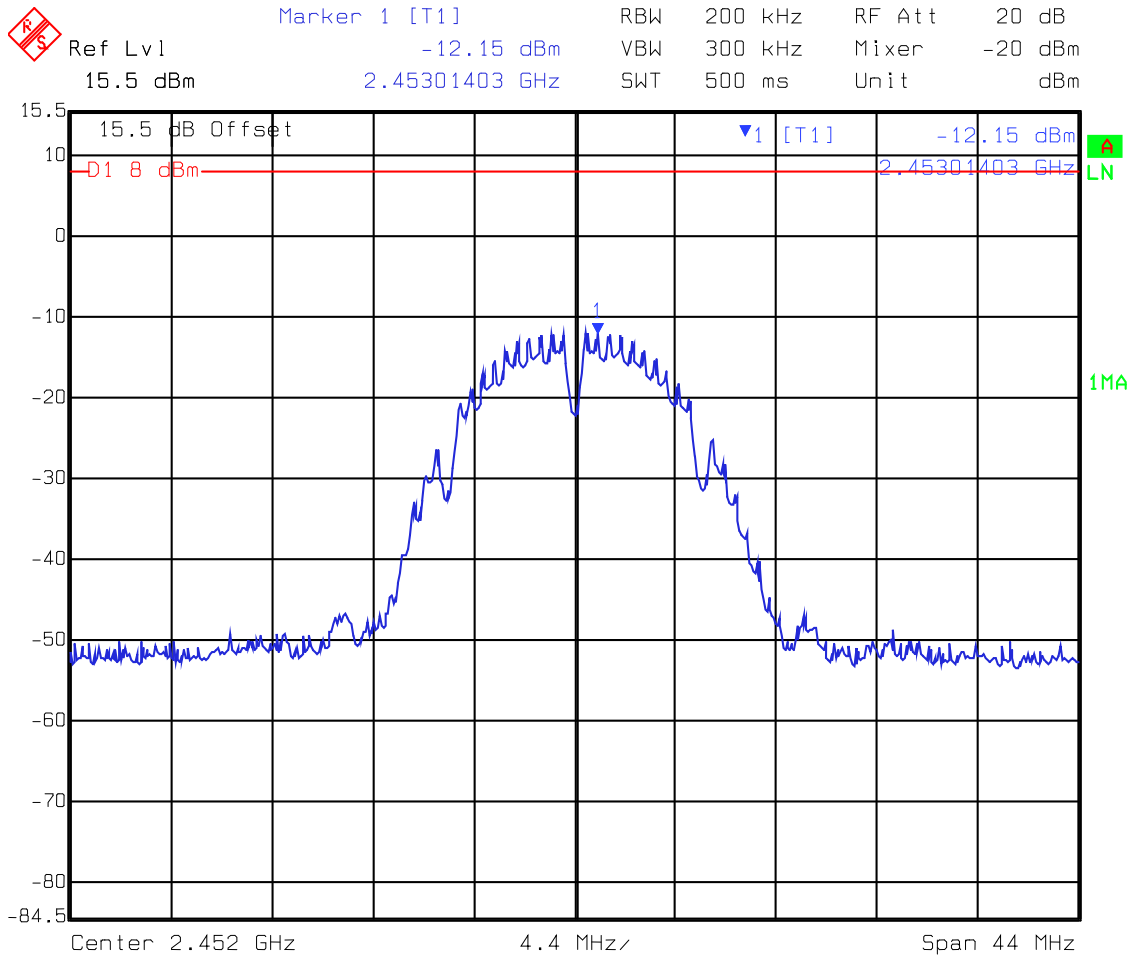
Supplemental Information:

Tested by (+ signature): David Light *David Light*



Table No. 68	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode, Chan. 9
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Date: 26.OCT.2012 11:25:22

Supplemental Information:

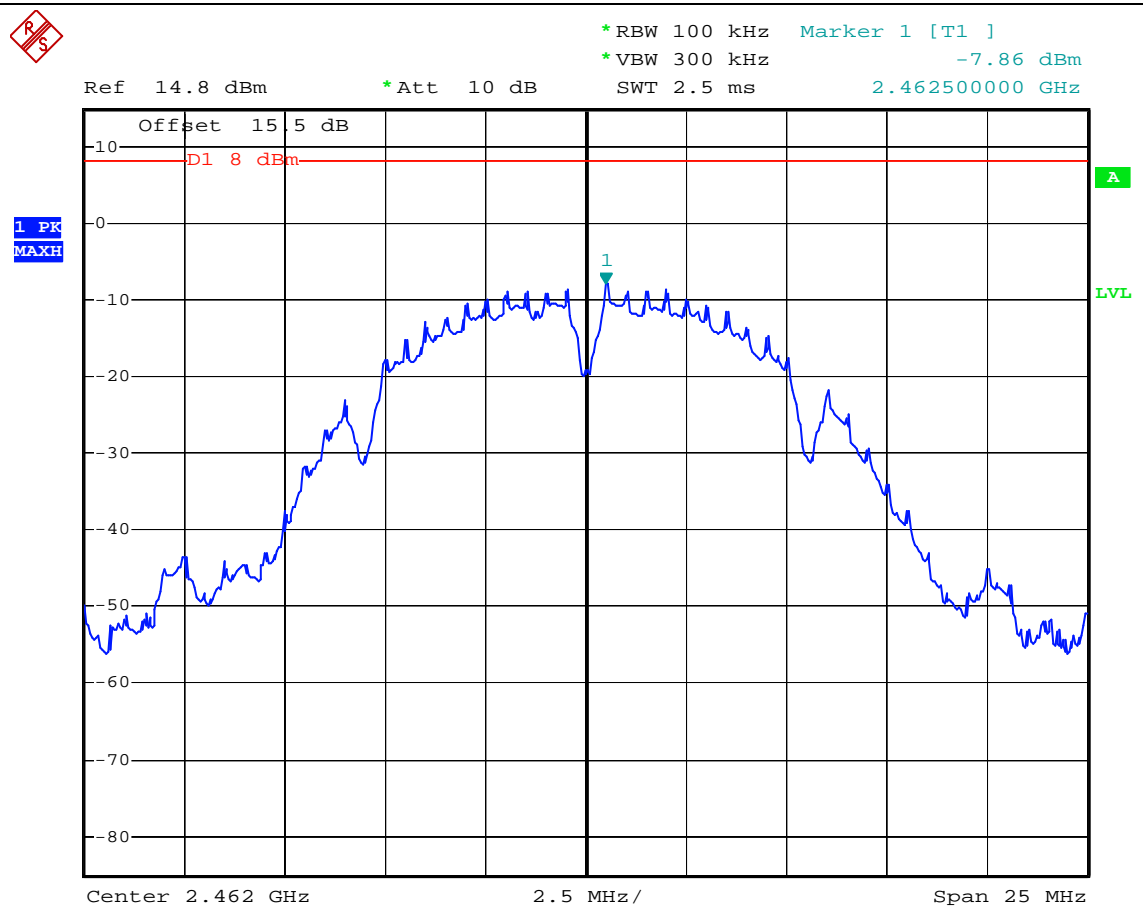
Tested by (+ signature)

David Light



Table No. 69	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11b mode, Chan. 11
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Date: 9.OCT.2012 17:38:58

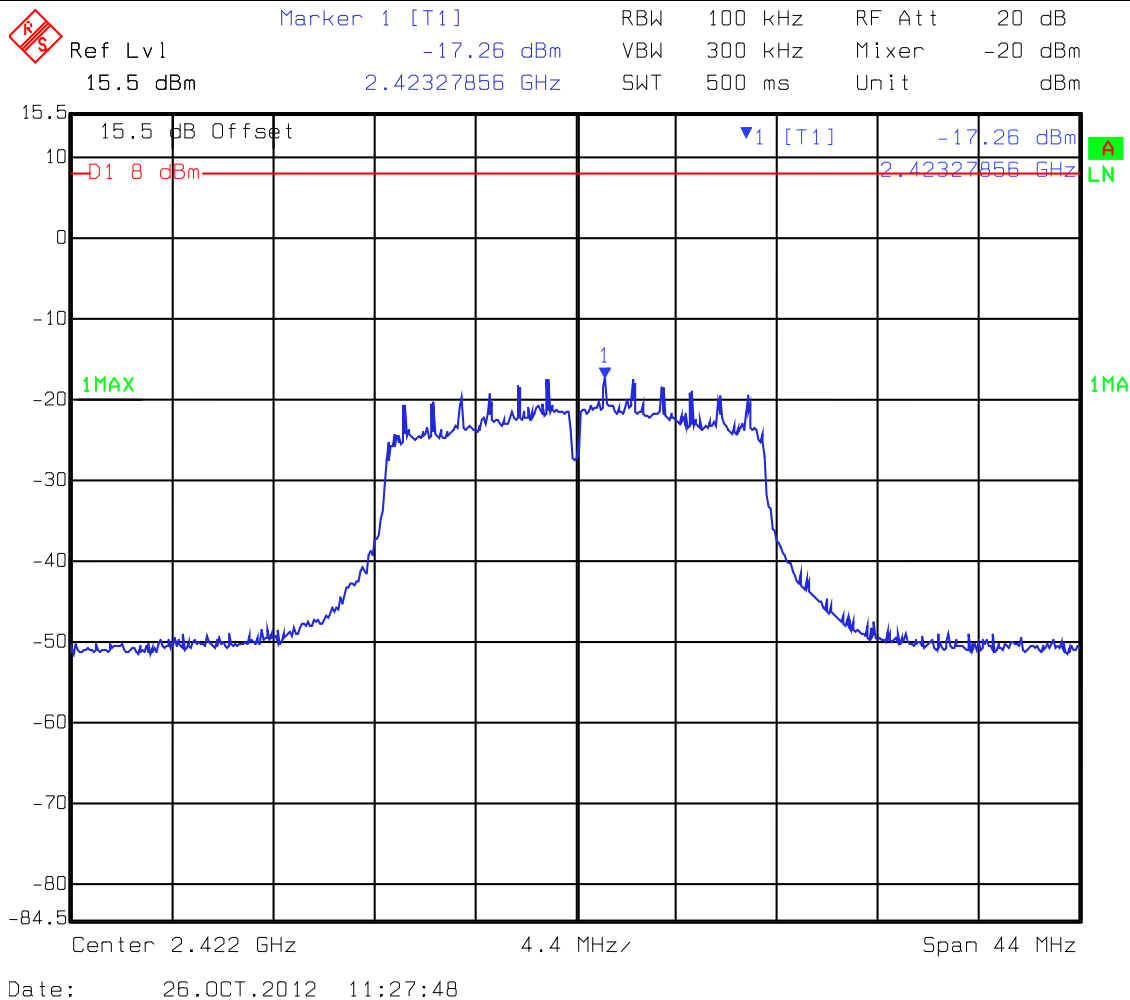
Supplemental Information:

Tested by (+ signature): David Light *David Light*



Table No. 71	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode, Chan. 3
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



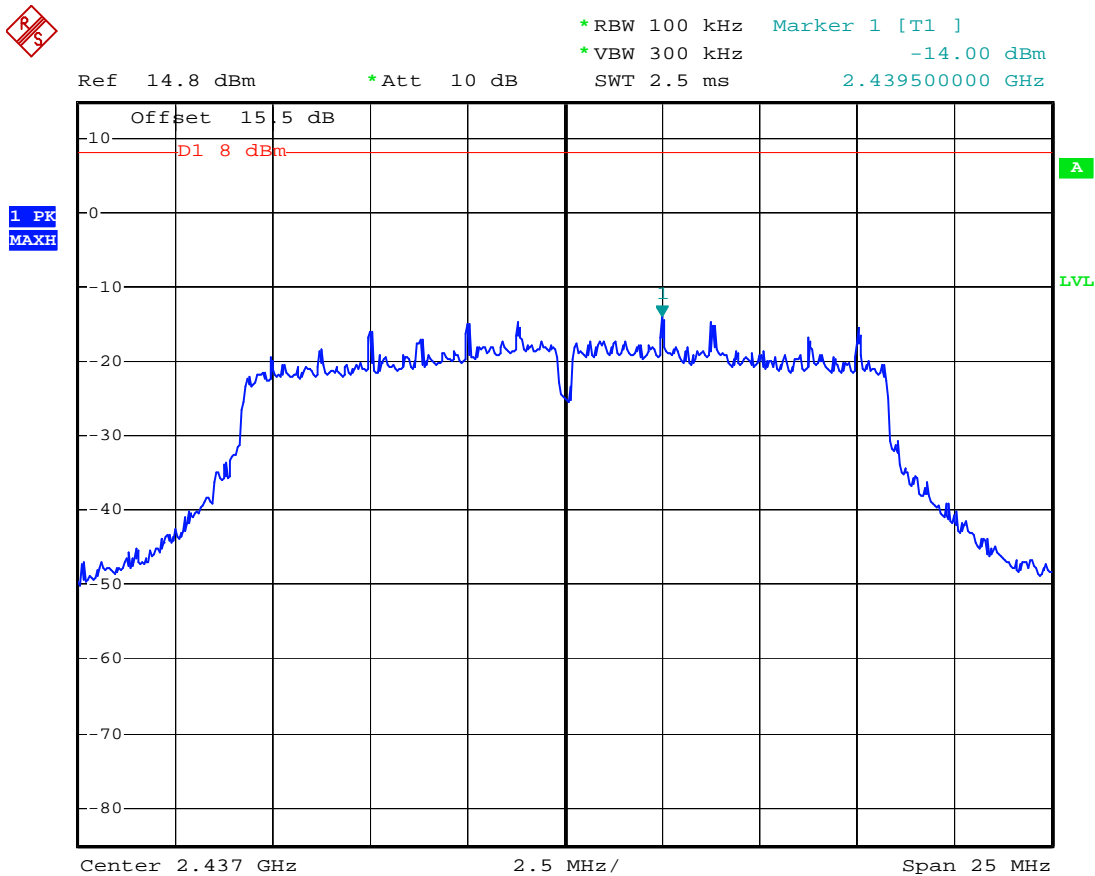
Supplemental Information:

Tested by (+ signature): *David Light*
David Light



Table No. 72	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode, Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 16-Nov-11
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Date: 9.OCT.2012 17:41:38

Supplemental Information:

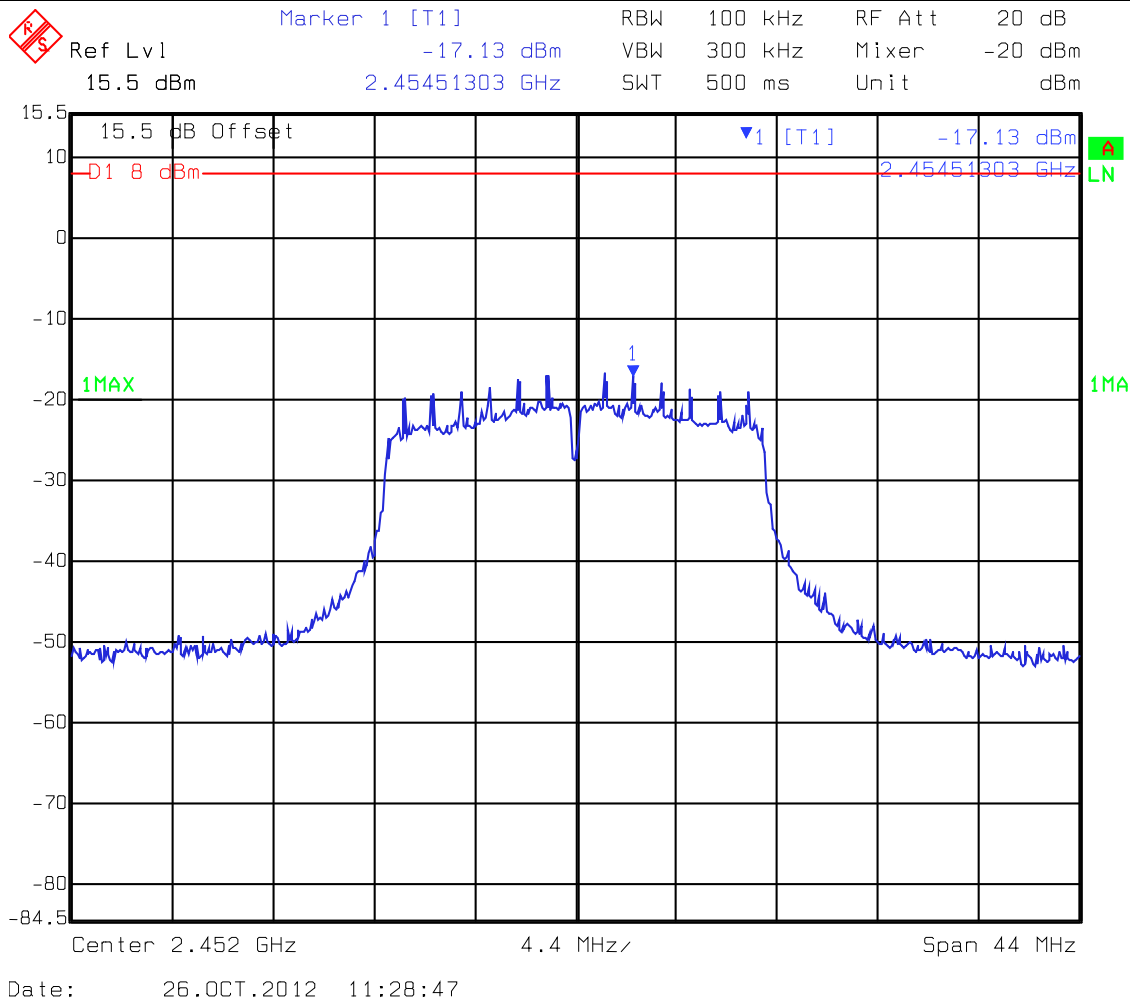
Tested by (+ signature)

David Light



Table No. 73	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode, Chan. 9
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



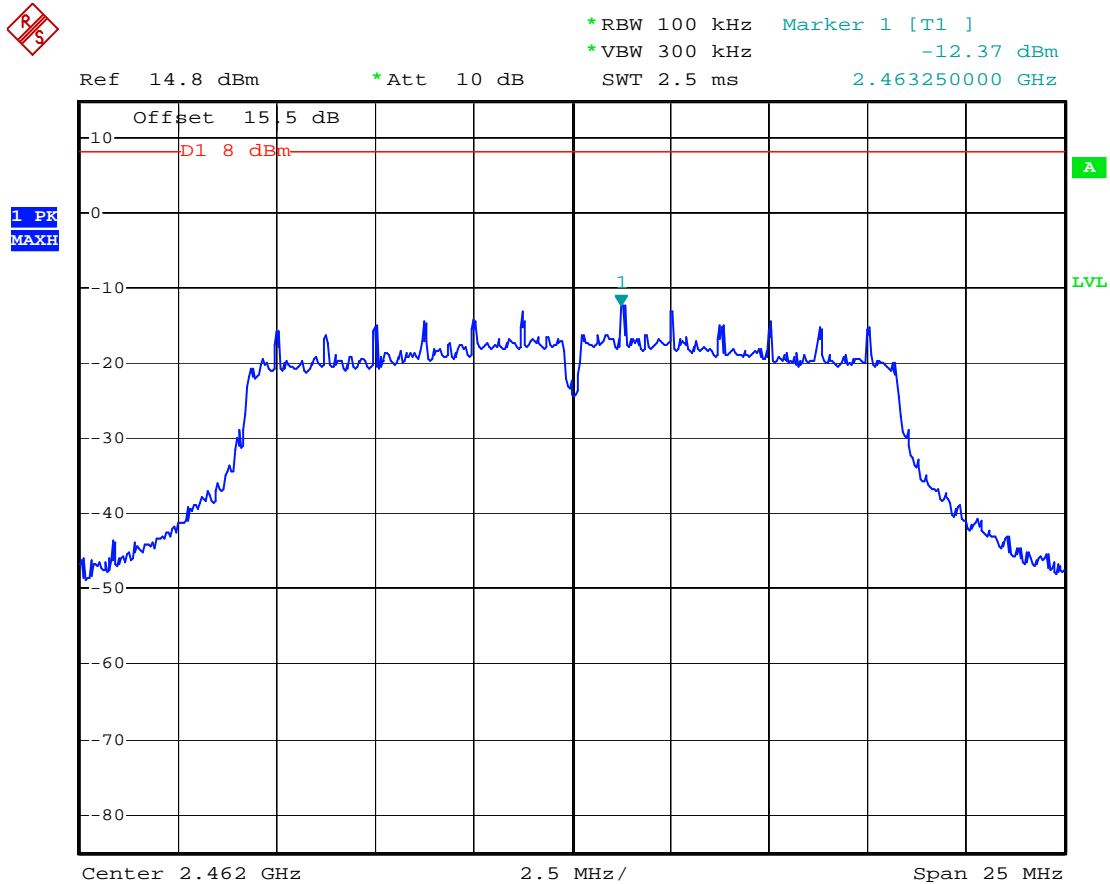
Supplemental Information:

Tested by (+ signature): *David Light*
David Light



Table No. 74	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11g mode, Chan. 11
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Date: 9.OCT.2012 17:42:45

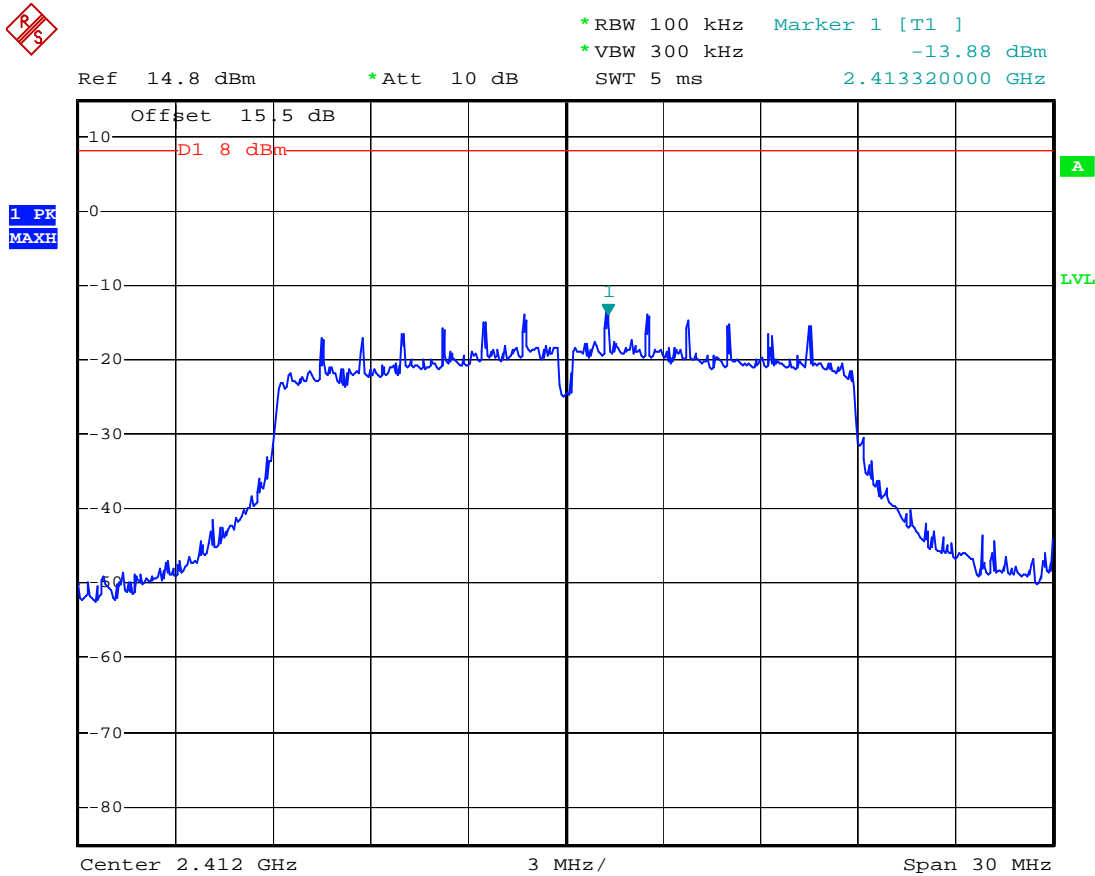
Supplemental Information:

Tested by (+ signature): David Light *David Light*



Table No. 75	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode, Chan. 1
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Date: 9.OCT.2012 17:53:03

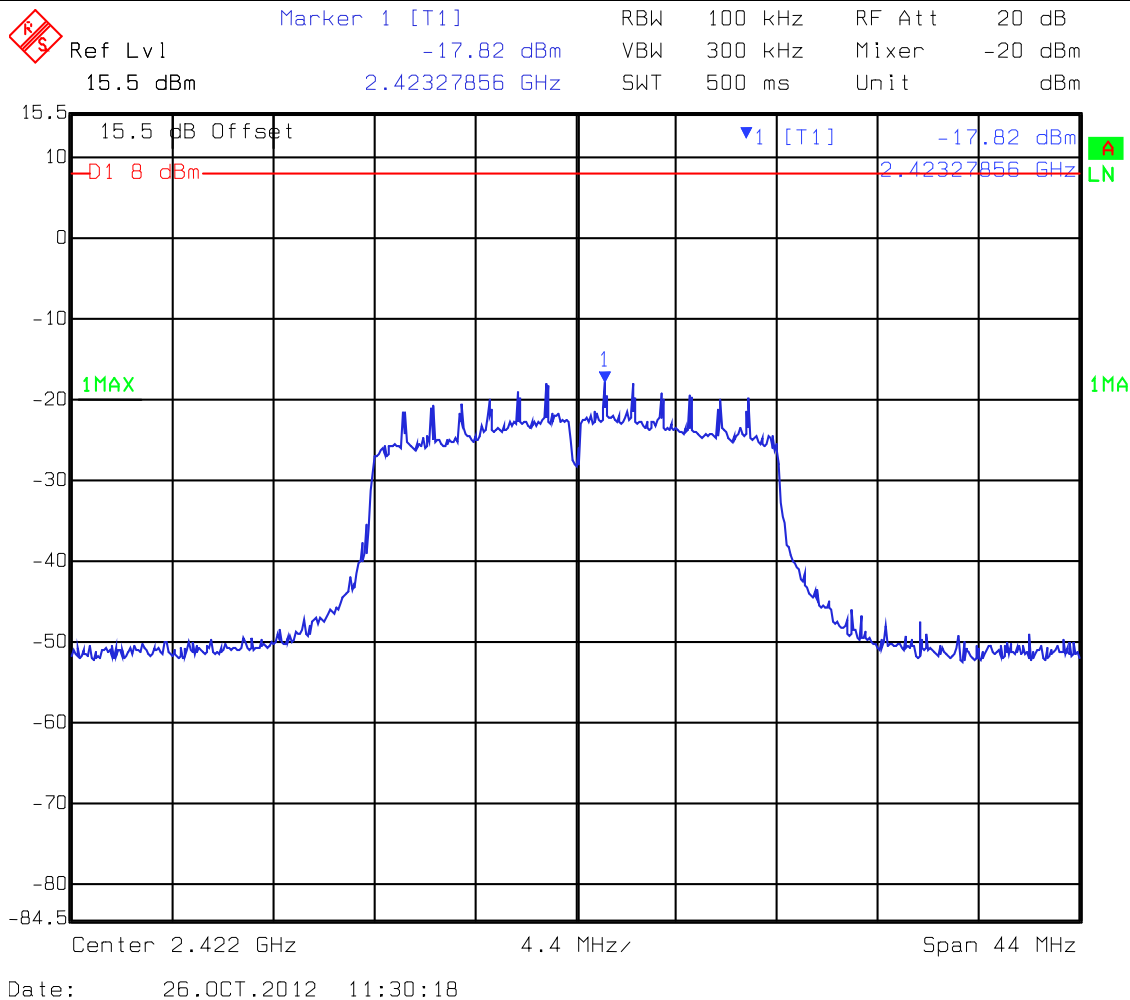
Supplemental Information:

Tested by (+ signature): *David Light* David Light



Table No. 76	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode, Chan. 3
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



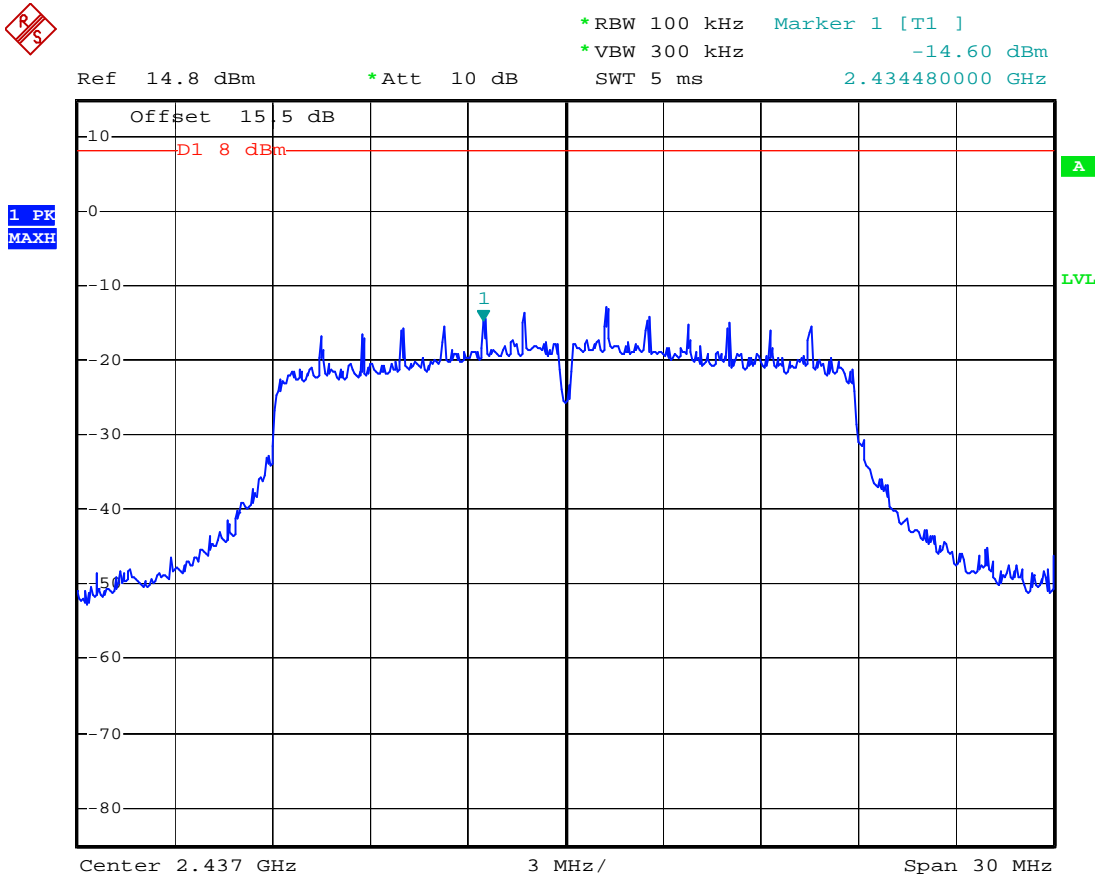
Supplemental Information:

Tested by (+ signature): *David Light*
David Light



Table No. 77	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode, Chan. 6
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Date: 9.OCT.2012 17:55:19

Supplemental Information:

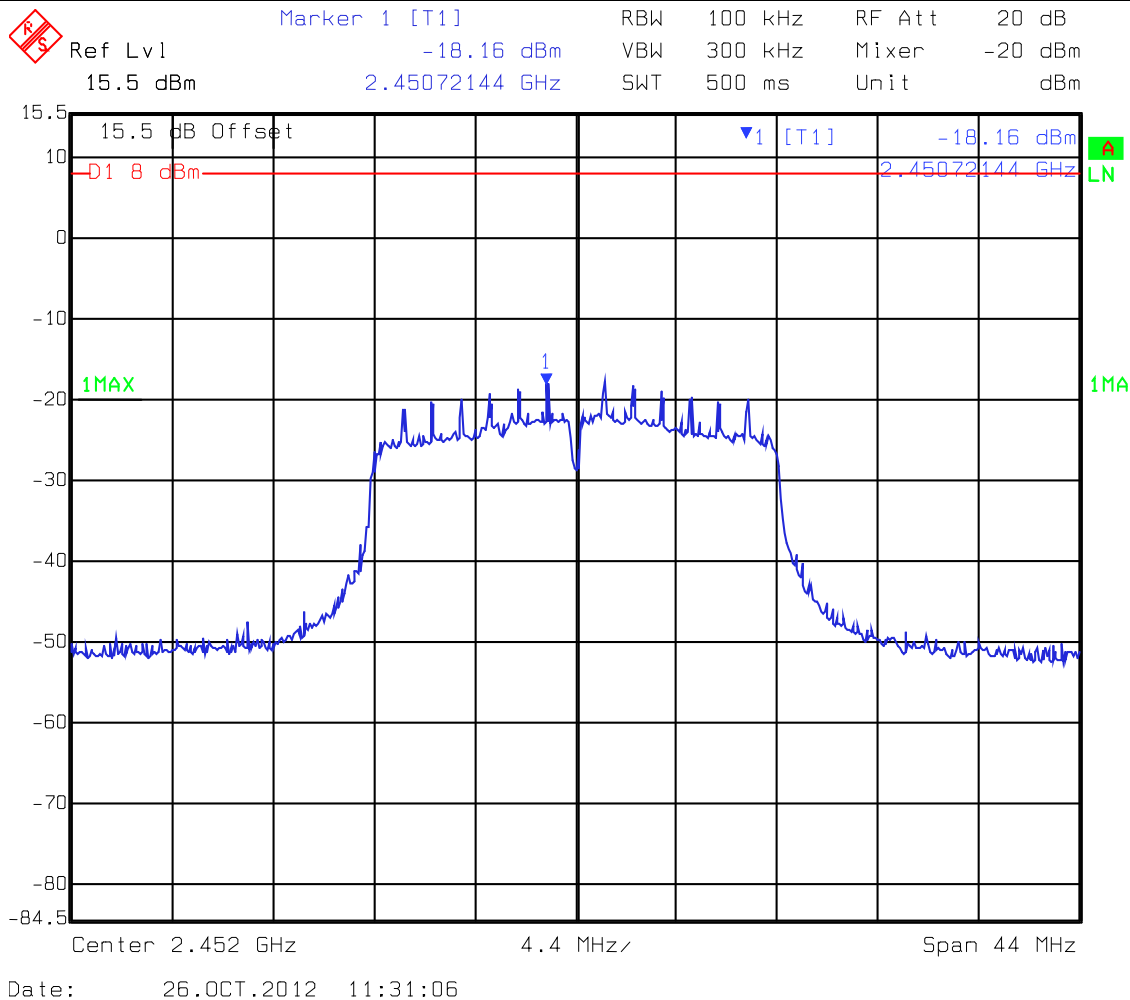
Tested by (+ signature)

David Light



Table No. 78	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode, Chan. 9
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 26-Oct-12
 Temperature: 23.4°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



Supplemental Information:

Tested by (+ signature): David Light

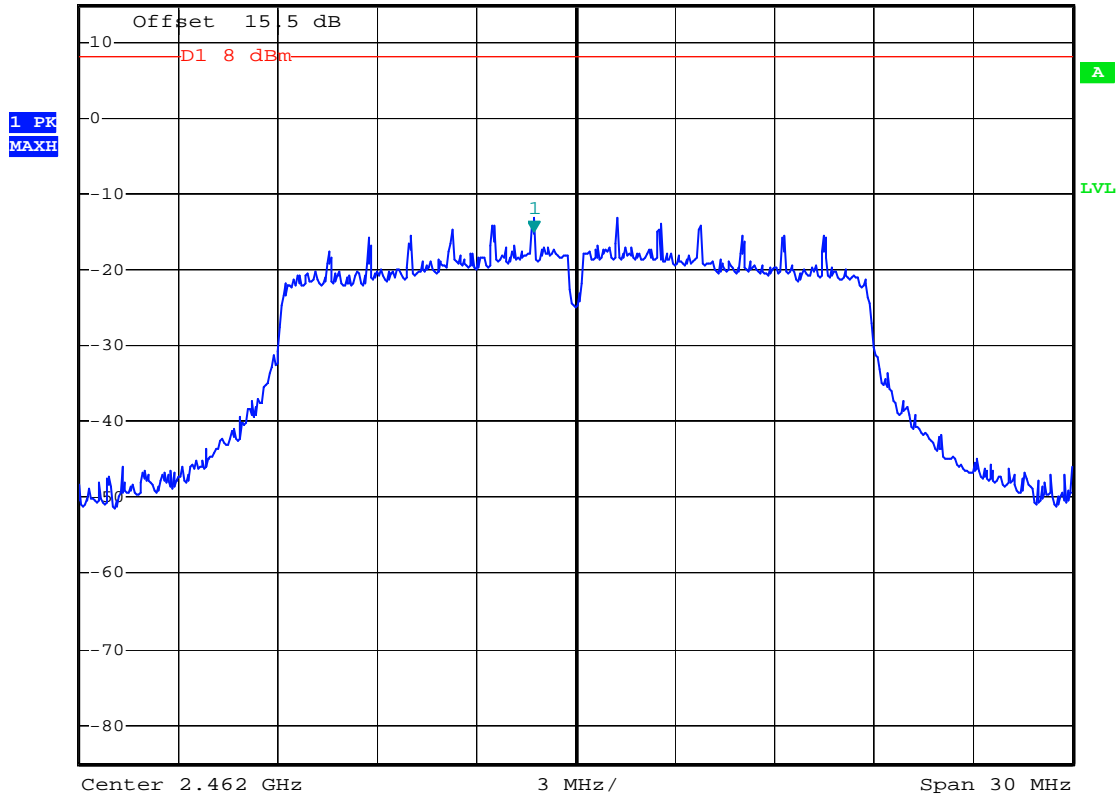


Table No. 79	Power Spectral Density	Verdict
		P

Test Method.....: 558074 D01 DTS Measurement Guidance v02
 EUT Configuration: 802.11n mode, Chan. 11
 Power Input.....: 120VAC, 60 Hz 1 ϕ 3 ϕ
 Test Date: 9-Oct-12
 Temperature: 23.3°C Relative Humidity :42.2 %
 Test Equipment Asset Tag List : 1654, 1468, 1469, 1470, 1471



*RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz -14.90 dBm
 Ref 14.8 dBm *Att 10 dB SWT 5 ms 2.460740000 GHz



Date: 9.OCT.2012 17:57:02

Supplemental Information:

Tested by (+ signature):  Click here to enter text.



RF Exposure



Table No. 80	RF Exposure	Verdict
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Test Method..... : ANSI C.95 and Safety Code 6
EUT Configuration : Body SAR configuration
Power Input..... : 120VAC, 60 Hz 1 ϕ 3 ϕ

Refer to separate SAR test report

Supplemental Information:



Setup Photos

Photo 5	Test Setup – Radiated Emissions (below 1 GHz)	
		
Supplemental Information:	CONFIDENTIAL	

Photo 6	Test Setup – Radiated Emissions (above 1 GHz)	
		
Supplemental Information:	CONFIDENTIAL	

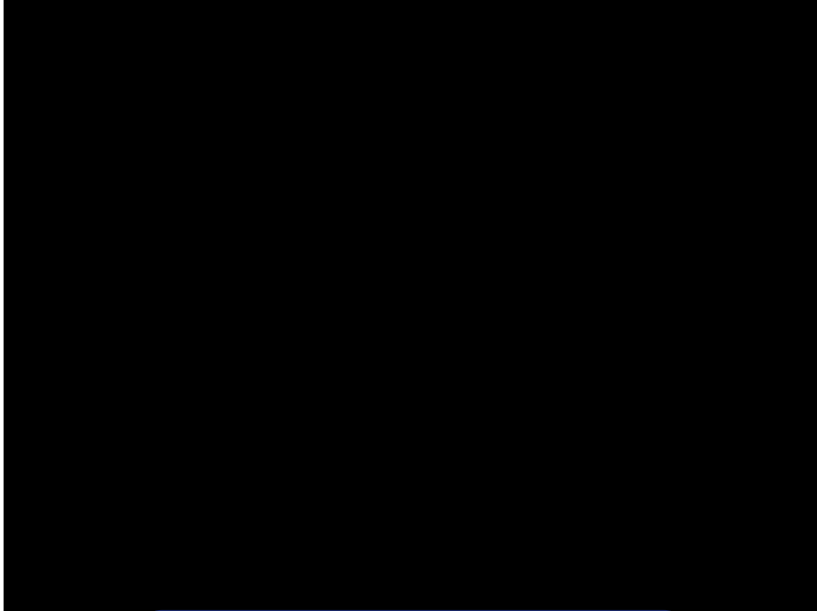
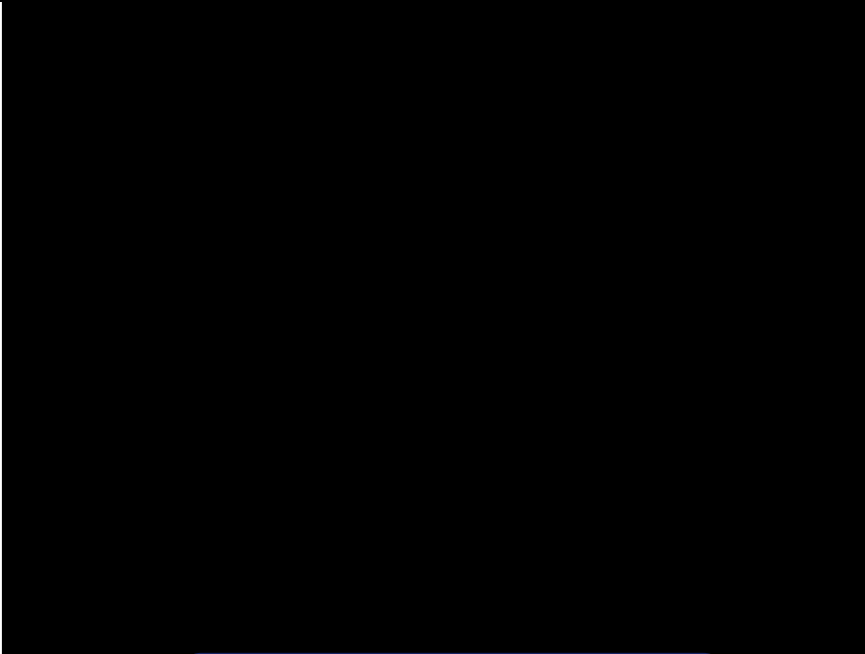
Photo 7	Test Setup – Conducted Emissions - MAINS	
		
Supplemental Information:	CONFIDENTIAL	

Photo 8	Test Setup – Conducted Emissions	
		
Supplemental Information:	CONFIDENTIAL	