ECMG
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FCC TEST REPORT

On Model Name: IP Camera

Model Numbers: GXV3615WP_HD/GXV3615W_HD/ GXV3615P_HD/GXV3615_HD

Brand Name: Grandstream

FCC ID Number: YZZGXV3615WP-HD

Prepared for Grandstream Networks,Inc

Test Specification: FCC Part 15, Subpart C

Test Report #:	SHE-1202-10783-FCC ID
Prepared by:	Sewen Guo
Reviewed by:	Jawen Yin
QC Manager:	Swall Zhang

Test Report Released by: Swall Zhang — February 28, 2012

Swall Zhang — Date

List of Attached Files

Exhibit Type	File Description	File Name
Test Report	Test Report	YZZGXV3615WP-HD _Test report.pdf
Operation Description	Technical Description	YZZGXV3615WP-HD _operation description.pdf
External Photos	External Photos	YZZGXV3615WP-HD _External Photos
Internal Photos	Internal Photos	YZZGXV3615WP-HD _Internal Photos
Block Diagram	Block Diagram	YZZGXV3615WP-HD _Block Diagram.pdf
Schematics	Circuit Diagram	YZZGXV3615WP-HD _Schematics.pdf
ID Label/Location	Label and Location	YZZGXV3615WP-HD _Label & Location.pdf
User Manual	User Manual	YZZGXV3615WP-HD _User Manual.pdf
Test setup photos	Test setup photos	YZZGXV3615WP-HD _Test Setup Photos

Test Location

Tests performed in a Certified ANSI Semi-Anechoic Chamber and Shielded Room.

Test Site Location : Galanz

25 South Ronggui Rd., Shunde, Foshan, Guangdong, China

Tel : (86)-757-23612785

Fax : (86)-757-23612537

Test Facility

The test facility was recognized, certified, or accredited by the following organizations:

- *CNAL – LAB Code: L2244*

Galanz EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements)for the Competence of Testing Laboratories.

- *FCC – Registration No.: 580210*

Galanz EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC was maintained in our files.

List of Test and Measurement Instruments

Equipment	*Manufacturer*	*Model No.*	*Serial No.*	*Calibrated Untill*
Spectrum Analyzer	*R&S*	*FSP30*	*100755*	*2012-11-30*
EMI Receiver	*SCHAFFNER*	*SMR4503*	*11725*	*2012-11-30*
LISN	*ETS*	*4825/2*	*1161*	*2012-11-30*
Coaxial Cable	*ATC*	*N/A*	*N/A*	*2012-11-30*
Double-ridged Wave guide horn	*ETS*	*3115*	*6587*	*2012-11-30*
Amplifier	*Agilent*	*83017A*	*MY39500438*	*2012-11-30*
Band filter	*ASI*	*82346*	*S06389*	*2012-11-30*
Biconilog Antenna	*ETS*	*3142C*	*00042672*	*2012-11-30*
Semi-anechoic Chamber	*ETS*	*N/A*	*N/A*	*2012-11-30*

Note: All testing were performed using internationally recognized standards.All test instruments were calibrated.

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Opinions and Interpretations

This test report relates to the abovementioned equipment under test (EU T).Without the permission of ECMG Electronic Technical Testing Corp (Shenzhen) Test Lab this test report is not permitted to be duplicated in extracts.This test report does not entitle to carry any test mark on this or similar products.The manufacturer has sole responsibility of continu ed compliance of the device.

Statement of Measurement Uncertainty

The data and results referenced in the document are true and accurate.The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may resultin additional deviation.

Administrative Data

Test Sample	*: IP Camera*
Model Name	*: GXV3615WP_HD/GXV3615W_HD/ GXV3615P_HD/GXV3615_HD*
Model Tested	*: GXV3615WP_HD*
Receipt Date	*: February 16, 2012*
Date Tested	*: February 17, 2012 to February 24,2012*
Applicant	*: Grandstream Networks, INC*
Address	*5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park, Shenzhen, China*
Telephone	*: (86)-755-26014600*
Fax	*: (86)-755-26014601*
Manufacturer	*: Grandstream Networks, INC*
Address	*5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park, Shenzhen, China*
Telephone	*: (86)-755-26014600*
Fax	*: (86)-755-26014601*
Factory	*: Grandstream Networks, INC*
Address	*5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park, Shenzhen, China*
Telephone	*: (86)-755-26014600*
Fax	*: (86)-755-26014601*

EUT Description

Grandstream Networks,Inc., model tested GXV3615WP_HD (referred to as the EUT in this report) is an IP Camera.

The EUT is an IP Camera which integrates an IEEE 802.11b/g/n wireless adapter. Main technical specifications of the EUT as belows:

<table>
<tr><th colspan="2">Parameter</th><th>Range</th></tr>
<tr><td rowspan="2">Basic parameters</td><td>Rated voltage</td><td>DC12V</td></tr>
<tr><td>Rated Current</td><td>0.5A</td></tr>
<tr><td rowspan="5">802.11b/g/n Adapter Parameters</td><td>Operating band</td><td>2400-2483.5MHz</td></tr>
<tr><td>WIFI Module Voltage</td><td>+3V3 supply for WIFI module</td></tr>
<tr><td>Working Frequency of Each Channel</td><td>
<table>
<tr><th>Channel No.</th><th>Frequency (MHz)</th><th>Channel No.</th><th>Frequency (MHz)</th></tr>
<tr><td>001</td><td>2412</td><td>007</td><td>2442</td></tr>
<tr><td>002</td><td>2417</td><td>008</td><td>2447</td></tr>
<tr><td>003</td><td>2422</td><td>009</td><td>2452</td></tr>
<tr><td>004</td><td>2427</td><td>010</td><td>2457</td></tr>
<tr><td>005</td><td>2432</td><td>011</td><td>2462</td></tr>
<tr><td>006</td><td>2437</td><td>--</td><td>--</td></tr>
</table>
</td></tr>
<tr><td>Frequency of Number</td><td>IEEE 802.11b/g: 11 channels;
802.11n HT 20MHz: 11channels;
802.11n HT 40MHz: 7 channels.</td></tr>
<tr><td>Modulation Type</td><td>IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)
IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK)
IEEE 802.11n HT20: OFDM
IEEE 802.11n H420: OFDM</td></tr>
<tr><td>Data Rate</td><td>IEEE 802.11b: 1/2/5.5/11Mbps;
IEEE 802.11g: 6/9/12/18/24/36/48/54Mbps;
IEEE 802.11n HT20: 65/58.5/52/39/26/19.5/13/6.5Mbps;
IEEE 802.11n HT40: 135/121.5/108/81/54/40.5/21/13.5Mbps</td></tr>
</table>

<table>
<tr><td></td><td>Tranmit Power</td><td><table>
<tr><th>Operating mode</th><th>Frequency Range (MHz)</th><th>Output Power (dBm)</th><th>Output Power (mW)</th></tr>
<tr><td>IEEE 802.11b</td><td>2412-2462</td><td>16±15%</td><td>22.91-69.18</td></tr>
<tr><td>IEEE 802.11g</td><td>2412-2462</td><td>12±15%</td><td>10.47-23.99</td></tr>
<tr><td>802.11n HT 20MHz</td><td>2412-2462</td><td>12±15%</td><td>10.47-23.99</td></tr>
<tr><td>802.11n HT 40MHz</td><td>2422-2452</td><td>12±15%</td><td>10.47-23.99</td></tr>
</table></td></tr>
<tr><td></td><td>Antenna Spec.</td><td>1. Gain: 2dBi
2. Impedance: 50ohm</td></tr>
<tr><td rowspan="5">I/O Ports</td><td>NETWORK</td><td>10/100 Switch LAN port for connecting to Ethernet. The indicator will be steady for connection and flashing for network activity.</td></tr>
<tr><td>DC 12V</td><td>12V DC power jack; UL Certified.</td></tr>
<tr><td>RESET</td><td>Press the Reset button for 6 seconds to</td></tr>
<tr><td>Speaker</td><td>GXV3615WP_HD built-in speaker</td></tr>
<tr><td>Microphone</td><td>GXV3615WP_HD built-in microphone</td></tr>
<tr><td rowspan="4">AC/DC Adapter</td><td>Input</td><td>100-240VAC 50/60Hz max 0.18A</td></tr>
<tr><td>Output</td><td>12VDC,0.5A</td></tr>
<tr><td>Model</td><td>SDF1200050A1BB</td></tr>
<tr><td>Brand name</td><td>Mass</td></tr>
</table>

NOTE: For more detailed informations or features please refer to user's manual of EUT.

EUT Model derived

Models of GXV3615WP_HD/GXV3615W_HD/GXV3615P_HD/GXV3615 _HD are the same product, differences between these models are only if they contain a wifi module and a PoE module or not. For more detailed informations are as belows:

Model of GXV3615WP_HD contains a wifi module and a PoE module.

Model of GXV3615W_HD contains only a wifi module but no PoE module.

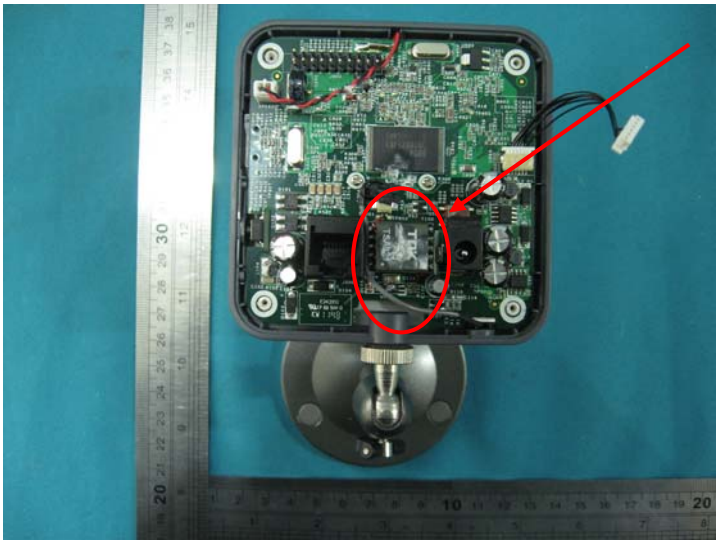
Model of GXV3615P_HD contains only a PoE module but no wifi module.

Model of GXV3615_HD contains neither wifi module nor PoE module.

GXV3615WP_HD Exterior view

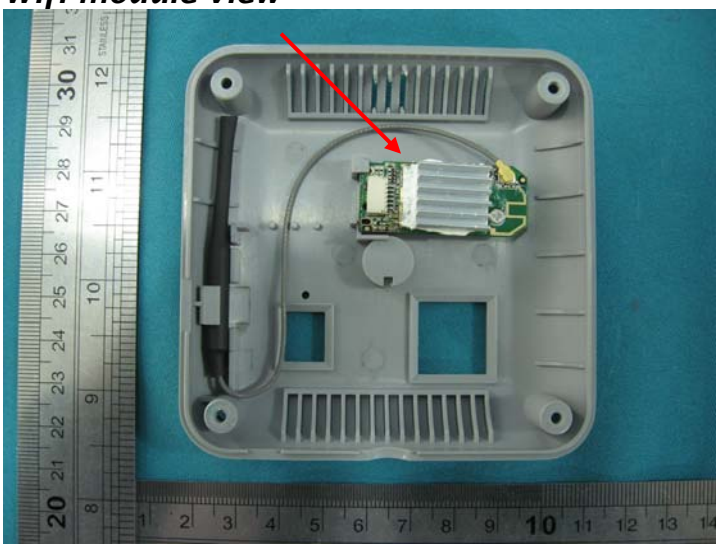
Models of GXV3615WP_HD, GXV3615W_HD,GXV3615P_HD and GXV3615_HD have the same exterior and structure.

GXV3615WP_HD Exterior view



Integrates a PoE circuit

Wifi module view



Model of GXV3615WP_HD was selected for the final testing.

Test Summary

The Electromagnetic Compatibility requirements on tested model GXV3615WP_HD for this test is stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endors ement upon any other component, host or subsystem used in the test set-up.

Tested model GXV3615WP_HD has been tested to conform to the following parts of the Part 15, Subpart C as detailed belows:

FCC Rules	Requirement	Result	Remark
§15.247(c)(1)(i); §15.203	Antenna Requirement	Compliant	Attachment 1
§15.207	Conducted Emission	Compliant	Attachment 2
§15.205(a); §15.209(a)	Radiated Emission	Compliant	Attachment 3
§15.247(b)	Maximum Peak Output Power	Compliant	Attachment 4
§15.247(a)(2)	Occupied Bandwidth	Compliant	Attachment 5
§15.247(d)	Edges Measurement	Compliant	Attachment 6
§15.247(e)	Power Spectral Density	Compliant	Attachment 7

Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations,data rate and antenna diversity(if any).

Regards to the frequency band over 10MHz, the lowest, middle and highest frequency of channel were selected to perform the test, and then shown on this report.

Following mode and channels were chosen for final test as listed belows.

For IEEE 802.11b/g mode and IEEE 802.11n HT20 mode:

Carried Frequency (MHz)	Channel	Duty Cycle	Data Rate (Mbps)	Modulation Typle
2412	Channel Low	100%	IEEE 802.11b:1Mbps; IEEE 802.11g: 6Mbps; IEEE 802.11n HT20: 6.5Mbps; IEEE 802.11n HT40:13.5Mbps	IEEE 802.11b for DSSS,IEEE 802.11g and 802.11n HT20 For OFDM
2437	Channel Mid			
2462	Channel High			

For IEEE 802.11n HT40 mode:

Carried Frequency (MHz)	Channel Type&Number	Duty Cycle	Data Rate (Mbps)	Modulation Typle
2422	Channel Low	100%	13.5Mbps	OFDM
2437	Channel Mid			
2452	Channel High			

EUT Exercise Software

During testing an exercise software which "QATEST.EXE" was provided by Grandstream Networks,Inc., runs on windows XP system and control IEEE 802.11b/g/n adapter operating on a continuous transmission mode and receive mode.

Equipment Modification

Any modifications installed previous to testing by Grandstream Networks,Inc., will be incorporated in each production model sold or leased in United States.

There were no modifications for this EUT intended for grant.

Test System Details

EUT	
Model Number:	GXV3615WP_HD/GXV3615W_HD/GXV3615P_HD/GXV3615_HD
Description:	IP Camera
Manufacturer:	Grandstream Networks,Inc
Input Voltage:	120VAC/60Hz

Support Equipment			
Description	**Model Number**	**Serial Number**	**Manufacturer**
Notebook PC	NC4000	CNU4122BCL	HP
AC/DC Adapter Of Notebook	PPP009H	239427-003	HP

Cable Description					
Description	**From**	**to**	**Length (Meters)**	**Shielded (Y/N)**	**Ferrite (Y/N)**
AC/DC Adapter Cord Of Notebook PC	Adapter	Notebook	1.6	N	Y
	Notebook	AC Plug	1.2	N	Y
AC/DC Adapter of EUT	EUT	Plug	1.8	N	N
Note:The "EUT" means "IP Camera".					

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

ATTACHMENT 1 - ANTENNA REQUIREMENT

§15.203 Requirements:

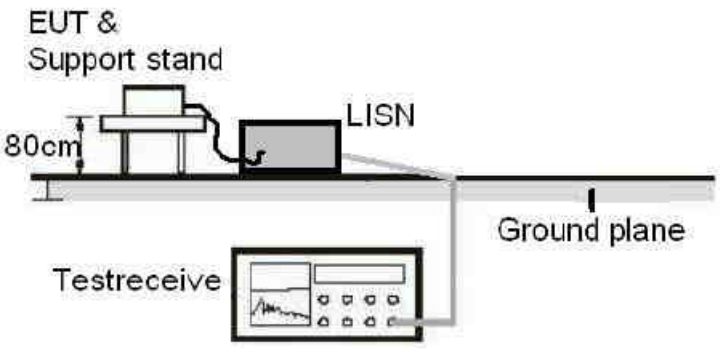
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

§15.247(c) (1)(i) Requirements:

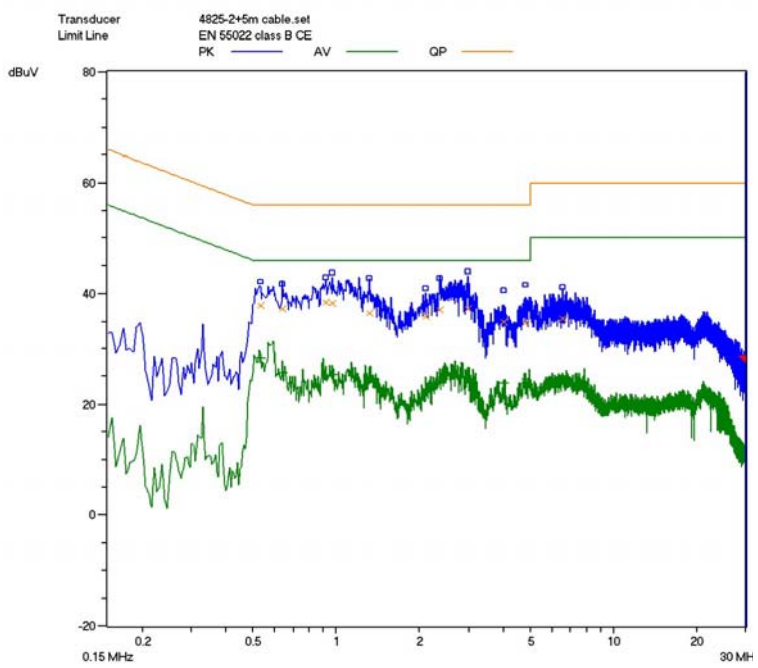
(i) Systems operating in the 2400-2483.5 MHz bands that are used exclusively for fixed. Point to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

FCC Section	FCC Rules	Conclusion
§15.203& §15.207 (c) (1) (i)	*Described how the EUT complies with the requirements that either its antenna is permanently attached, or that it employ a unique antenna connector,for every antenna proposed for use with the EUT.* *The exception is in those cases where EUT must be professionally installed. In order to demonstrate that professional installation is required, the following 3 points must be addressed:* *1. The application (or intended use) of the EUT.* *2. The installation requirements of the EUT.* *3. The method by which the EUT will be marketed.*	*The maximal gain of the antenna is 2.0 dBi and use a unique connector.* *So the unit do meet requirement.*

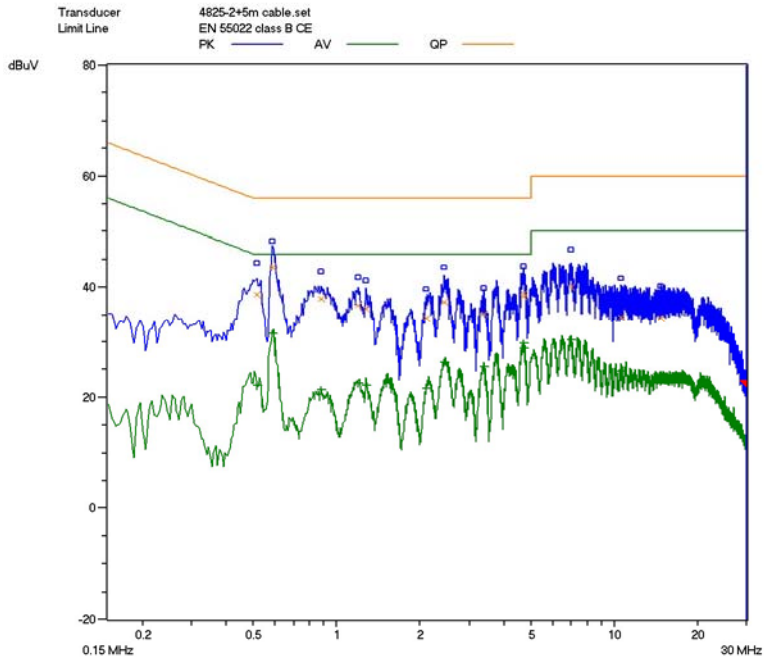
ATTACHMENT 2 - CONDUCTED EMISSION TEST RESULTS

CLIENT:	GRANDSTREAM NETWORKS,INC.	**TEST STANDERD:**	Section 15.207
MODEL NUMBERS:	GXV3615WP_HD/GXV3615W_HD/GXV3615P_HD/GXV3615_HD	**PRODUCT:**	IP Camera
EUT MODEL:	GXV3615WP_HD	**EUT DESIGNATION:**	Digital Transmission Device
TEMPERATURE:	23°C	**HUMIDITY:**	47%RH
ATM PRESSURE:	101.0kPa	**GROUNDING:**	None
TESTED BY:	Sewen Guo	**DATE OF TEST:**	February 17, 2012
TEST REFERENCE:	ANSI C63.4: 2003		
TEST PROCEDURE:	The EUT was set up according to the guidelines of ANSI C63.4:2003 for conducted emissions. The measurement was using a AMN on each line and an EMI receiver peak scan was made at the frequency measurement range.The six highest significant peaks were then marked, and these signals were then quasi-peaked and averaged.		
TEST SETUP			
DESCRIPTIONS OF TEST MODE:	Set to WIFI operational mode,communicate with a notebook PC by wireless router nearby.		
TESTED RANGE:	150kHz to 30MHz		
TEST VOLTAGE:	120VAC/60Hz		
RESULTS:	The EUT meet the requirements of test reference for conducted cmissions at AC input port.The test results relate only to the equipment under test provided by client.		
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen) test personnel.		
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB		

For WiFi Mode:



Line L Conducted Emission Graph



Line N Conducted Emission Graph

Conducted Emission Test Data:

Line	*Frequency (MHz)*	*Corrected QP Level (dBuV)*	*Limits QP (dBuV)*	*Margin QP (dB)*	*Frequency (MHz)*	*Corrected AV Level (dBuV)*	*Limits AV (dBuV)*	*Margin QP (dB)*
For WiFi Mode:								
L	*0.530*	*38.0*	*56*	*-18.0*	*0.530*	*28.1*	*46*	*-17.9*
L	*0.920*	*38.5*	*56*	*-17.5*	*0.920*	*25.0*	*46*	*-21.0*
L	*0.9650*	*38.3*	*56*	*-17.7*	*0.9650*	*24.3*	*46*	*-21.7*
L	*1.3150*	*36.5*	*56*	*-19.5*	*1.3150*	*24.3*	*46*	*-21.7*
L	*2.3550*	*37.0*	*56*	*-19.0*	*2.3550*	*24.7*	*46*	*-21.3*
L	*2.9800*	*37.4*	*56*	*-18.6*	*2.9800*	*24.5*	*46*	*-21.5*
N	*0.5150*	*38.6*	*56*	*-17.4*	*0.5150*	*22.2*	*46*	*-23.8*
N	*0.5850*	*43.6*	*56*	*-12.4*	*0.5850*	*31.5*	*46*	*-14.5*
N	*0.8800*	*37.9*	*56*	*-18.1*	*0.8800*	*21.4*	*46*	*-24.6*
N	*4.6900*	*38.3*	*56*	*-17.7*	*4.6900*	*28.7*	*46*	*-17.3*
N	*6.9950*	*40.0*	*56*	*-16.0*	*6.9950*	*30.3*	*46*	*-15.7*
N	*10.5200*	*34.6*	*56*	*-21.4*	*10.5200*	*34.7*	*46*	*-11.3*

Note :
1) All readings are using a bandwidth of 9 kHz, with a 500 ms sweep time. A video filter was not use.
2) "QP" means "Quasi-Peak" values, "AV" means "Average" values.
3) The other reading are too low against official limits that are not be recorded.

ATTACHMENT 3- RADIATED EMISSION TEST

CLIENT:	GRANDSTREAM NETWORKS,INC.	**TEST STANDERD:**	Section 15.209(a), Section 15.205(a)
MODEL NUMBERS:	GXV3615WP_HD/GXV3615W_HD/GXV3615P_HD/GXV3615_HD	**PRODUCT:**	IP Camera
EUT MODEL:	GXV3615WP_HD	**EUT DESIGNATION:**	Digital Transmission Device
TEMPERATURE:	23°C	**HUMIDITY:**	47%RH
ATM PRESSURE:	101.0kPa	**GROUNDING:**	None
TESTED BY:	Sewen Guo	**DATE OF TEST:**	February 17, 2012
TEST REFERENCE:	ANSI C63.4: 2003		
TEST PROCEDURE:	The EUT was set up according to the guidelines of ANSI C63.4: 2003 for radiated emissions. An EMI receiver peak scan was made at the frequency measurement range (pre-scan) in an Anechoic chamber. Test procedure as follow: a) The EUT is placed on a turntable, which is 0.8 m above ground plane.The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. b) The EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. c) Maximum procedure was performed on the six highest emissions to ensure EUT compliance. d) And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. e) Repeat above procedures until the measurements for all frequencies are complete.		
DESCRIPTION OF TEST MODE	***For below 1GHz:*** Set to WiFi mode, pre-scan all channels of the IEEE 802.11b/g/n, and found the 801.11b mode, channel 1 with data rate of 1Mbps which is worst case mode. So IEEE 802.11b mode,channel 1 with data rate of 1Mbps was chosen for the final test and recorded in report. ***For above 1GHz:*** Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations,data rate and antenna ports (if EUT with antenna diversity architecture). Following channels were chosen for the final test as listed below: 802.11b mode with data rate of 1Mbps, 802.11g mode with data rate of 6Mbps, 802.11n HT20 mode with data rate of 6.5Mbps and 802.11n HT40 mode with data rate of 13.5Mbps.		

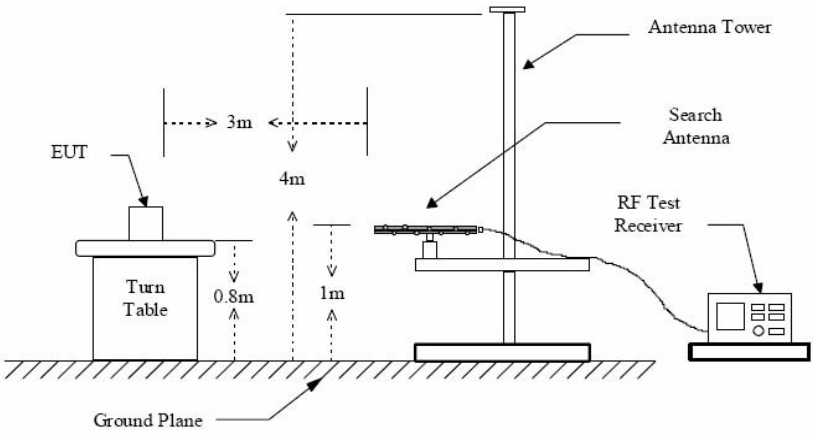
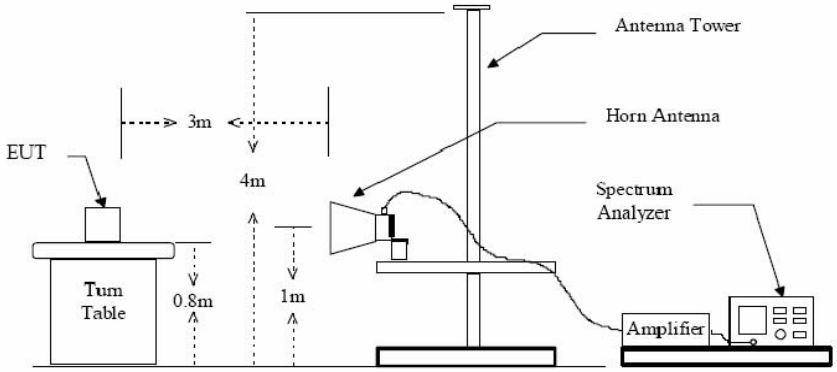
<table>
<tr><td>MEASUREMENT SETUP:</td><td>Measurement receiver shall be set as below:

<table>
<tr><th>Frequency (MHz)</th><th>Receive detector</th><th>RBW</th><th>VBW</th><th>Value</th></tr>
<tr><td>30-1000</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak</td></tr>
<tr><td>Above 1000</td><td>Peak</td><td>1MHz</td><td>1MHz</td><td>Peak</td></tr>
<tr><td>Above 1000</td><td>Peak</td><td>1MHz</td><td>10Hz</td><td>average</td></tr>
</table></td></tr>
<tr><td>LIMITS:</td><td>Section 15.209 limits as below:

<table>
<tr><th>Other Frequency (MHz)</th><th colspan="2">Field strength (uV/meter) dB uV/meter</th></tr>
<tr><td>30-88</td><td>100</td><td>40.0</td></tr>
<tr><td>88-216</td><td>150</td><td>43.5</td></tr>
<tr><td>216-960</td><td>200</td><td>46.0</td></tr>
<tr><td>Above 960</td><td>500</td><td>54.0</td></tr>
</table>
NOTE:

1) Field Strength (dBmV/m)= 20log Field Strength (mV/m).

2) In the emission tables above,the tighter limit applies at the band edge.</td></tr>
<tr><td>TESTED RANGE:</td><td>30MHz to 25GHz</td></tr>
<tr><td>TEST VOLTAGE:</td><td>120VAC/60Hz</td></tr>
<tr><td>RESULTS:</td><td>According to the data in the following,the EUT complied with the FCC Part 15.209 &15.205. The test results relate only to the equipment under test provided by client.</td></tr>
</table>

TEST SETUP:	Figure 1 : Frequencies measured below 1 GHz configuration  Figure 2 : Frequencies measured above 1 GHz configuration 
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen) test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

Test Data (Below 1GHz):

For 802.11b mode,channel 1 with data rate of 1Mbps:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level QP (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Horizontal							
40.640	0.02	16.8	/	5.88	22.7	40.0	-17.3
265.920	0.15	12.9	/	30.55	43.6	46.0	-2.4
322.960	0.16	13.4	/	12.94	26.5	46.0	-19.5
432.000	0.20	15.8	/	12.40	28.4	46.0	-17.6
720.000	0.39	20.7	/	13.61	34.7	46.0	-11.3
799.840	0.39	22.2	/	14.31	36.9	46.0	-9.1
Vertical							
41.120	0.02	16.8	/	19.68	36.5	40.0	-3.5
265.920	0.15	12.9	/	18.55	31.6	46.0	-14.4
307.920	0.16	13.7	/	7.64	21.5	46.0	-24.5
531.280	0.30	18.1	/	10.00	28.4	46.0	-17.6
584.720	0.30	19.0	/	11.40	30.7	46.0	-15.3
648.000	0.36	20.0	/	10.54	30.9	46.0	-15.1

Note:

a) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss –Preamplifier Factor.

b) Other emission levels are too low against official limits that are not recorded.

Test Data (Above 1GHz):

802.11b mode/Low Channel: 2412MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
1034.00	1.39	23.9	33.6	60.72	52.41	74	-21.59	V
5896.00	3.87	35.4	31.6	33.06	40.73	74	-33.27	V
4808.00	3.26	33.5	32.0	44.64	49.40	74	-24.60	V
7392.00	5.32	36.2	30.5	29.35	40.37	74	-33.63	V
8320.52	4.67	35.8	29.9	29.99	40.56	74	-33.44	V
7250.00	4.67	36.0	30.5	40.13	50.3	74	-23.7	V
7018.0	4.67	36.2	30.5	30.38	40.75	74	-33.25	H
1272.0	6.2	37.9	33.6	36.95	47.45	74	-26.55	H
3210.0	2.57	31.5	32.1	40.33	42.30	74	-31.70	H
4808.0	3.26	32.9	32.0	45.08	49.24	74	-24.76	H
3212.0	3.26	32.2	32.1	36.94	40.30	74	-33.70	H
1272.5	1.71	23.9	33.6	55.55	47.56	74	-26.44	H

Frequency (MHz)	Cable Loss(dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
1170.00	1.39	23.9	31.6	40.42	34.11	54	-19.89	V
1024.80	1.39	23.9	31.6	34.82	28.51	54	-25.49	V
4808.00	3.50	32.90	31.6	27.22	32.02	54	-21.98	V
7392.00	4.10	36.20	30.5	18.67	28.47	54	-25.53	V
6904.85	4.10	33.90	30.8	22.8	30.0	54	-24.00	V
5987.01	3.87	35.40	31.6	21.87	29.54	54	-24.46	V
7256.00	4.10	36.20	30.5	18.36	28.16	54	-25.84	H
4808.00	3.5	32.90	31.6	27.96	32.76	54	-21.24	H
3210.00	2.57	31.50	32.1	27.91	29.88	54	-24.12	H
1170.00	1.39	23.9	31.6	39.63	33.32	54	-20.68	H
5672.00	3.87	35.40	31.6	22.48	30.15	54	-23.85	H
4503.34	3.26	33.5	32.0	25.74	30.50	54	-23.50	H

802.11b mode/Mid Channel: 2437MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
6984.00	4.10	33.90	30.8	34.02	41.22	74	-32.78	V
4876.00	3.26	33.5	32.0	38.55	43.31	74	-30.69	V
10792.00	7.20	37.8	30.0	26.49	41.49	74	-32.51	V
1034.00	1.39	23.9	31.6	59.18	52.87	74	-21.13	V
5320.00	3.50	32.9	31.6	40.2	45.00	74	-29.00	V
4502.30	3.26	33.5	32.0	35.45	40.21	74	-33.79	V
7018.00	4.10	36.20	30.5	30.34	40.14	74	-33.86	H
4876.00	3.26	33.5	32.0	38.41	43.17	74	-30.83	H
3244.00	2.57	31.50	32.1	40.49	42.46	74	-31.54	H
1544.00	1.71	26.1	33.6	53.89	48.10	74	-25.90	H
5461.00	3.50	32.9	31.6	40.33	45.13	74	-28.87	H
6473.00	4.10	33.90	30.8	38.03	45.23	74	-28.77	H

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
7392.00	4.10	36.20	30.5	18.7	28.50	54	-25.50	V
3278.00	2.57	31.50	32.1	27.29	29.26	54	-24.74	V
1170.00	1.39	23.9	31.6	40.34	34.03	54	-19.97	V
4876.00	3.26	33.5	32.0	25.12	29.88	54	-24.12	V
3554.00	2.67	32.2	32.1	22.86	25.63	54	-28.37	V
1257.00	1.39	23.9	31.6	41.32	35.01	54	-18.99	V
7018.00	4.10	36.20	30.5	18.32	28.12	54	-25.88	H
4876.00	3.26	33.5	32.0	24.53	29.29	54	-24.71	H
3244.00	2.57	31.50	32.1	27.23	29.20	54	-24.80	H
2224.00	2.01	28.00	33.0	35.19	32.20	54	-21.80	H
3526.20	2.67	32.2	32.1	32.63	35.40	54	-18.60	H
6934.00	4.10	33.90	30.8	19.1	26.30	54	-27.70	H

802.11b mode/High Channel: 2462MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
4910.00	3.26	33.50	32.0	40.58	45.34	74	-28.66	V
3278.00	2.57	31.50	32.1	39.74	41.71	74	-32.29	V
1544.00	1.71	26.10	31.63	54.47	50.65	74	-23.35	V
7392.00	4.10	36.20	30.5	30.54	40.34	74	-33.66	V
5320.15	3.50	32.90	31.6	33.4	38.20	74	-35.80	V
6103.00	4.02	35.00	30.8	30.88	39.10	74	-34.90	V
4910.00	3.26	33.50	32.0	38.7	43.46	74	-30.54	H
3278.00	2.57	31.50	32.1	45.55	47.52	74	-26.48	H
1544.00	1.71	26.10	31.63	54.79	50.97	74	-23.03	H
7834.00	4.10	36.20	30.5	31.57	41.37	74	-32.63	H
6534.00	4.10	33.90	30.8	32.9	40.10	74	-33.90	H
5210.32	3.50	32.90	31.6	40.52	45.32	74	-28.68	H

Frequency (MHz)	Cable Loss(dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
7392.00	4.10	36.20	30.50	18.85	28.65	54	-25.35	V
4910.00	3.26	33.5	32.00	24.41	29.17	54	-24.83	V
3278.00	2.57	31.5	32.10	27.22	29.19	54	-24.81	V
1170.00	1.39	23.9	31.60	40.37	34.06	54	-19.94	V
5220.00	3.50	32.9	31.60	25.3	30.10	54	-23.90	V
1232.00	1.39	23.9	31.60	41.36	35.05	54	-18.95	V
4910.00	3.26	33.5	32.00	24.88	29.64	54	-24.36	H
3278.00	2.57	31.5	32.10	28.99	30.96	54	-23.04	H
2224.00	2.01	28.00	33.00	34.85	31.86	54	-22.14	H
7392.00	4.10	36.20	30.50	19.3	29.10	54	-24.90	H
3550.00	2.67	32.20	32.10	29.33	32.10	54	-21.90	H
6230.00	4.02	35.00	30.80	21.88	30.10	54	-23.90	H

For 802.11g mode/Low Channel: 2412MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
1034.00	1.39	23.9	31.6	58.63	52.32	74	-21.68	V
3210.00	2.57	31.5	32.1	40.64	42.61	74	-31.39	V
4808.00	3.26	33.5	32.0	36.89	41.65	74	-32.35	V
7120.00	4.10	36.20	30.5	30.77	40.57	74	-33.43	V
4905.00	3.26	33.5	32.0	37.8	42.56	74	-31.44	V
1250.00	1.39	23.9	31.6	61.31	55.00	74	-19.00	V
7256.00	4.10	36.20	30.5	31.32	41.12	74	-32.88	H
4808.00	3.26	33.5	32.0	38.81	43.57	74	-30.43	H
3210.00	2.57	31.5	32.1	43.76	45.73	74	-28.27	H
1544.00	1.71	26.1	33.6	56.19	50.40	74	-23.60	H
3350.12	2.57	31.5	32.1	44.53	46.50	74	-27.50	H
6825.00	4.10	33.90	30.8	33.0	40.20	74	-33.80	H

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
4908.00	3.26	33.5	32.0	24.54	29.3	54	-24.70	V
10248.00	7.2	37.8	30.0	5.62	20.62	54	-33.38	V
1170.00	1.39	23.9	31.6	40.77	34.46	54	-19.54	V
7426.00	4.10	36.20	30.5	18.66	28.46	54	-25.54	V
7500.00	5.32	36.00	30.5	16.76	27.58	54	-26.42	V
1800.00	1.71	26.1	33.6	37.99	32.20	54	-21.80	V
4808.00	3.26	33.5	32.0	24.41	29.17	54	-24.83	H
3210.00	2.57	31.5	32.1	27.95	29.92	54	-24.08	H
1714.00	1.71	26.1	33.6	39.58	33.79	54	-20.21	H
7256.00	4.10	36.20	30.5	18.35	28.15	54	-25.85	H
1860.00	1.71	26.1	33.6	40.79	35.00	54	-19.00	H
7005.00	4.10	36.20	30.5	19.2	29.00	54	-25.00	H

For 802.11g mode /Mid Channel: 2437MHz

Frequency (MHz)	Cable Loss(dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
4876.00	3.26	33.5	32.0	36.35	41.11	74	-32.89	V
3006.00	2.57	31.5	32.1	39.96	41.93	74	-32.07	V
1034.00	1.39	23.9	31.6	58.81	52.50	74	-21.50	V
7460.00	4.10	36.20	30.5	30.99	40.79	74	-33.21	V
7600.50	5.32	36.00	30.5	31.68	42.50	74	-31.5	V
3260.00	2.57	31.5	32.1	40.03	42.00	74	-32.00	V
4876.00	3.26	33.5	32.0	37.32	42.08	74	-31.92	H
3244.00	2.57	31.5	32.1	43.13	45.10	74	-28.90	H
1544.00	1.71	26.1	33.6	56.74	50.95	74	-23.05	H
7324.00	4.10	36.20	30.5	31.75	41.55	74	-32.45	H
7500.25	5.32	36.00	30.5	31.68	42.50	74	-31.50	H
3500.00	2.67	32.2	32.1	43.23	46.00	74	-28.00	H

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
4876.00	3.26	33.5	32.0	22.89	27.65	54	-26.35	V
3006.00	2.57	31.5	32.1	27.3	29.27	54	-24.73	V
1170.00	1.39	23.9	31.6	41.89	35.58	54	-18.42	V
7426.00	4.10	36.20	30.5	18.46	28.26	54	-25.74	V
7620.00	5.32	36.00	30.5	16.68	27.50	54	-26.50	V
1260.00	1.39	23.9	31.6	41.81	35.50	54	-18.50	V
7426.00	4.10	36.20	30.5	18.77	28.57	54	-25.43	H
4910.00	5.32	33.5	32.0	20.5	27.32	54	-26.68	H
3278.00	2.57	31.5	32.1	27.2	29.17	54	-24.83	H
1068.00	1.39	23.9	31.6	39.35	33.04	54	-20.96	H
1170.50	1.39	23.9	31.6	41.36	35.05	54	-18.95	H
7620.00	4.10	36.00	30.5	19.7	29.30	54	-24.70	H

For 802.11g mode /High Channel: 2462MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Resding Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
4910.00	3.26	33.5	32.0	39.8	44.56	74	-29.44	V
3278.00	2.57	31.5	32.1	42.12	44.09	74	-29.91	V
1034.00	1.39	23.9	31.6	63.27	56.96	74	-17.04	V
7936.00	5.32	36.00	30.5	31.05	41.87	74	-32.13	V
7800.25	5.32	36.00	30.5	31.68	42.50	74	-31.5	V
3560.00	2.67	32.2	32.1	42.23	45.00	74	-29	V
7426.00	4.10	36.00	30.5	30.97	40.57	74	-33.43	H
4910.00	3.26	33.5	32.0	36.65	41.41	74	-32.59	H
3278.00	2.57	31.5	32.1	45.08	47.05	74	-26.95	H
1102.00	1.39	23.9	31.6	56.51	50.20	74	-23.8	H
1250.00	1.39	23.9	31.6	57.51	51.20	74	-22.8	H
3560.50	2.67	32.2	32.1	42.43	45.20	74	-28.8	H

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
7936.00	5.32	36.00	30.5	18.09	28.91	54	-25.09	V
4910.00	3.26	33.5	32.0	24.5	29.26	54	-24.74	V
3278.00	2.57	31.5	32.1	28.07	30.04	54	-23.96	V
1170.00	1.39	23.9	31.6	42.02	35.71	54	-18.29	V
3562.00	2.67	32.2	32.1	29.43	32.20	54	-21.80	V
4806.00	3.26	33.5	32.0	30.24	35.00	54	-19.00	V
7426.00	4.10	36.00	30.5	19.04	28.64	54	-25.36	H
4910.00	3.26	33.5	32.0	22.31	27.07	54	-26.93	H
3278.00	2.57	31.5	32.1	28.81	30.78	54	-23.22	H
1068.00	1.39	23.9	31.6	39.63	33.32	54	-20.68	H
1253.00	1.39	23.9	31.6	40.51	34.20	54	-19.80	H
7600.50	5.32	36.00	30.5	18.18	29.00	54	-25.00	H

For 802.11n HT20 mode/Low Channel: 2412MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
7426.00	4.10	36.00	30.5	31.18	40.78	74	-33.22	V
4808.00	3.26	33.5	32.0	40.44	45.20	74	-28.80	V
3380.00	2.57	31.5	32.1	39.84	41.81	74	-32.19	V
1306.00	1.39	23.9	31.6	60.72	54.41	74	-19.59	V
1520.00	1.71	26.1	33.6	61.29	55.50	74	-18.5	V
4900.00	3.26	33.5	32.0	41.24	46.00	74	-28.00	V
7324.00	4.10	36.00	30.5	31.69	41.29	74	-32.71	H
4808.00	3.26	33.5	32.0	39.47	44.23	74	-29.77	H
3210.00	2.57	31.5	32.1	42.41	44.38	74	-29.62	H
1544.00	1.71	26.1	33.6	56.96	51.17	74	-22.83	H
3350.20	2.57	31.5	32.1	43.23	45.20	74	-28.80	H
7520.00	5.32	36.00	30.5	31.68	42.50	74	-31.50	H

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
8140.00	4.67	35.8	29.9	17.87	28.44	54	-25.56	V
3312.00	2.57	31.5	32.1	27.1	29.07	54	-24.93	V
1170.00	1.39	23.9	31.6	41.75	35.44	54	-18.56	V
4808.00	3.26	33.5	32.0	26.14	30.90	54	-23.10	V
4940.50	3.26	33.5	32.0	27.74	32.50	54	-21.50	V
1250.00	1.39	23.9	31.6	42.51	36.20	54	-17.80	V
4808.00	3.26	33.5	32.0	24.68	29.44	54	-24.56	H
3210.00	2.57	31.5	32.1	27.73	29.70	54	-24.30	H
1306.00	1.39	23.9	31.6	39.4	33.09	54	-20.91	H
7222.00	4.10	36.00	30.5	18.74	28.34	54	-25.66	H
7534.00	5.32	36.00	30.5	18.38	29.20	54	-24.8	H
3500.20	2.67	32.2	32.1	27.38	30.15	54	-23.85	H

For 802.11n HT20 mode/Mid Channel: 2437MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
4876.00	3.26	33.5	32.0	37.05	41.81	74	-32.19	V
3312.00	2.57	31.5	32.1	39.76	41.73	74	-32.27	V
1034.00	1.39	23.9	31.6	63.51	57.20	74	-16.80	V
8140.00	4.67	35.8	29.9	30.49	41.06	74	-32.94	V
8250.00	4.67	35.8	29.9	31.93	42.50	74	-31.50	V
1259.00	1.39	23.9	31.6	64.31	58.00	74	-16.00	V
7460.00	4.10	36.00	30.5	31.77	41.37	74	-32.63	H
4876.00	3.26	33.5	32.0	38.26	43.02	74	-30.98	H
3346.00	2.57	31.5	32.1	40.59	42.56	74	-31.44	H
1306.00	1.39	23.9	31.6	55.69	49.38	74	-24.62	H
1450.00	1.39	23.9	31.6	54.66	48.35	74	-25.65	H
4874.00	3.26	33.5	32.0	40.44	45.20	74	-28.80	H

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
4876.00	3.26	33.5	32.0	24.76	29.52	54	-24.48	V
3312.00	2.57	31.5	32.1	27.24	29.21	54	-24.79	V
1034.00	1.39	23.9	31.6	43.64	37.33	54	-16.67	V
8140.00	4.67	35.8	29.9	17.87	28.44	54	-25.56	V
8200.00	4.67	35.8	29.9	18.43	29.00	54	-25.00	V
1400.50	1.39	23.9	31.6	44.81	38.50	54	-15.50	V
7426.00	4.10	36.00	30.5	19.02	28.62	54	-25.38	H
4876.00	3.26	33.5	32.0	23.17	27.93	54	-26.07	H
3244.00	2.57	31.5	32.1	27.74	29.71	54	-24.29	H
1170.00	1.39	23.9	31.6	39.73	33.42	54	-20.58	H
1252.00	1.39	23.9	31.6	40.51	34.20	54	-19.80	H
4900.00	3.26	33.5	32.0	23.24	28.00	54	-26.00	H

For 802.11n HT20 mode/High Channel: 2462MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
7936.00	5.32	36.0	30.5	30.52	41.34	74	-32.66	V
3210.00	2.57	31.5	32.1	39.75	41.72	74	-32.28	V
1034.00	1.39	23.9	31.6	64.83	58.52	74	-15.48	V
4876.00	3.26	33.5	32.0	35.92	40.68	74	-33.32	V
3310.00	2.57	31.5	32.1	40.23	42.20	74	-31.80	V
1350.00	1.39	23.9	31.6	61.81	55.50	74	-18.50	V
7356.00	4.10	36.2	30.5	30.89	40.69	74	-33.31	H
5216.00	3.50	32.9	31.6	35.6	40.40	74	-33.60	H
3278.00	2.57	31.5	32.1	44.04	46.01	74	-27.99	H
1544.00	1.71	26.1	33.6	55.96	50.17	74	-23.83	H
1600.00	1.71	26.1	33.6	56.99	51.20	74	-22.80	H
3530.00	2.67	32.2	32.1	44.23	47.00	74	-27.00	H

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
7936.00	5.32	36.00	30.5	18.21	29.03	54	-24.97	V
4910.00	3.26	33.5	32.0	24.49	29.25	54	-24.75	V
3278.00	2.57	31.5	32.1	27.92	29.89	54	-24.11	V
1170.00	1.39	23.9	31.6	42.56	36.25	54	-17.75	V
1250.00	1.39	23.9	31.6	41.51	35.20	54	-18.80	V
3500.50	2.67	32.2	32.1	27.43	30.20	54	-23.80	V
7426.00	4.10	36.00	30.5	19.1	28.70	54	-25.30	H
3278.00	2.57	31.5	32.1	28.59	30.56	54	-23.44	H
1170.00	1.39	23.9	31.6	39.54	33.23	54	-20.77	H
4910.00	3.26	33.5	32.0	22.97	27.73	54	-26.27	H
1250.00	1.39	23.9	31.6	40.51	34.20	54	-19.80	H
7520.00	5.32	36.00	30.5	18.18	29.00	54	-25.00	H

For 802.11n HT40 Mode/Low Channel: 2422MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
7460.00	4.10	36.00	30.5	31.02	40.62	74	-33.38	V
4842.00	3.26	33.5	32.0	37.03	41.79	74	-32.21	V
3006.00	2.57	31.5	32.1	40.13	42.10	74	-31.90	V
1034.00	1.39	23.9	31.6	63.42	57.11	74	-16.89	V
1200.00	1.39	23.9	31.6	64.51	58.20	74	-15.80	V
3150.00	2.57	31.5	32.1	41.03	43.00	74	-31.00	V
7222.00	4.10	36.00	30.5	30.95	40.55	74	-33.45	H
4842.00	3.26	33.5	32.0	37.37	42.13	74	-31.87	H
3210.00	2.57	31.5	32.1	42.88	44.85	74	-29.15	H
2224.00	2.01	28.0	33.0	53.73	50.74	74	-23.26	H
4920.00	3.26	33.5	32.0	40.24	45.00	74	-29.00	H
3250.00	2.57	31.5	32.1	43.03	45.00	74	-29.00	H

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
7460.00	4.10	36.00	30.5	19.01	28.61	54	-25.39	V
4842.00	3.26	33.5	32.0	15.87	20.63	54	-33.37	V
3006.00	2.57	31.5	32.1	27.56	29.53	54	-24.47	V
1034.00	1.39	23.9	31.6	44.08	37.77	54	-16.23	V
1150.00	1.39	23.9	31.6	44.31	38.00	54	-16.00	V
4820.50	3.26	33.5	32.0	16.24	21.00	54	-33.00	V
7426.00	4.10	36.00	30.5	18.96	28.56	54	-25.44	H
4842.00	3.26	33.5	32.0	15.75	20.51	54	-33.49	H
1442.00	1.39	23.9	31.6	40.21	33.90	54	-20.10	H
3210.00	2.57	31.5	32.1	27.6	29.57	54	-24.43	H
3500.20	2.67	32.2	32.1	25.79	28.56	54	-25.44	H
4900.00	3.26	33.5	32.0	16.24	21.00	54	-33.00	H

For 802.11n HT40 mode/Mid Channel: 2437MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
4842.00	3.26	33.5	32.0	36.15	40.91	74	-33.09	V
1544.00	1.71	26.1	33.6	57.09	51.30	74	-22.70	V
1306.00	1.39	23.9	31.6	58.41	52.10	74	-21.90	V
7120.00	4.10	36.00	30.5	31.68	41.28	74	-32.72	V
1250.50	1.39	23.9	31.6	57.41	51.10	74	-22.90	V
1620.00	1.71	26.1	33.6	57.79	52.00	74	-22.00	V
8106.00	1.47	35.8	29.9	34.84	42.21	74	-31.79	H
4060.00	3.26	33.5	32.0	37.67	42.43	74	-31.57	H
3244.00	2.57	31.5	32.1	42.93	44.90	74	-29.10	H
1204.00	1.39	23.9	31.6	56.82	50.51	74	-23.49	H
1305.00	1.39	23.9	31.6	55.31	49.00	74	-25.00	H
3520.00	2.67	32.2	32.1	42.23	45.00	74	-29.00	H

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
7902.00	5.32	36.00	30.5	17.83	28.65	54	-25.35	V
4876.00	3.26	33.5	32.0	15.4	20.16	54	-33.84	V
1034.00	1.39	23.9	31.6	41.78	35.47	54	-18.53	V
1157.50	1.39	23.9	31.6	40.62	34.31	54	-19.69	V
1150.00	1.39	23.9	31.6	42.51	36.20	54	-17.80	V
4700.00	3.26	33.5	32.0	17.24	22.00	54	-32.00	V
7426.00	4.10	36.00	30.5	19.11	28.71	54	-25.29	H
4876.00	3.26	33.5	32.0	15.55	20.31	54	-33.69	H
3244.00	2.57	31.5	32.1	27.86	29.83	54	-24.17	H
1306.00	1.39	23.9	31.6	41.86	35.55	54	-18.45	H
1250.00	1.39	23.9	31.6	40.51	34.20	54	-19.80	H
4650.00	3.26	33.5	32.0	17.74	22.50	54	-31.50	H

For 802.11n HT40 Mode/High Channel: 2452MHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
7732.00	5.32	36.00	30.5	30.35	41.17	74	-32.83	V
4774.00	3.26	33.5	32.0	35.31	40.07	74	-33.93	V
1531.50	1.71	26.1	33.6	58.09	52.30	74	-21.70	V
1034.00	1.39	23.9	31.6	61.05	54.74	74	-19.26	V
1200.50	1.39	23.9	31.6	61.31	55.00	74	-19.00	V
7800.50	5.32	36.00	30.5	31.18	42.00	74	-32.00	V
4604.00	3.26	33.5	32.0	36.39	41.15	74	-32.85	H
3244.00	2.57	31.5	32.1	44.93	46.90	74	-27.10	H
1544.00	1.71	26.1	33.6	56.51	50.72	74	-23.28	H
7426.00	4.10	36.00	30.5	31.8	41.40	74	-32.60	H
1600.20	1.71	26.1	33.6	57.79	52.00	74	-22.00	H
4500.50	3.26	33.5	32.0	37.24	42.00	74	-32.00	H

Frequency (MHz)	Cable Loss(dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Average Measurement								
7732.00	5.32	36.00	30.5	17.4	28.22	54	-25.78	V
4774.00	3.26	33.5	32.0	22.85	27.61	54	-26.39	V
1225.50	1.39	23.9	31.6	40.21	33.90	54	-20.10	V
1034.00	1.71	26.1	31.6	38.9	35.11	54	-18.89	V
1150.00	1.39	23.9	31.6	42.31	36.00	54	-18.00	V
1300.50	1.39	23.9	31.6	40.81	34.50	54	-19.50	V
7426.00	4.10	36.00	30.5	19.14	28.74	54	-25.26	H
3244.00	2.57	31.5	32.1	27.93	29.90	54	-24.10	H
1306.00	1.39	23.9	31.6	39.51	33.20	54	-20.80	H
4570.00	3.26	33.5	32.0	23.23	27.99	54	-26.01	H
1505.00	1.71	26.1	33.6	40.99	35.20	54	-18.80	H
3520.00	2.67	32.2	32.1	25.03	27.80	54	-26.20	H

Note:

a) *The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss –Preamplifier Factor.*

b) *According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.Hence there no other emissions have been reported.*

c) *As shown in Section, for frequencies above 1000 MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.*

d) *The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.*

§15.205(a) Requirement:

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

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			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

Conclusions:

The fundamental is not in a restricted band, and spurious emission in the restricted bands comply with the general emission limits of 15.209.

ATTACHMENT 4 – OCCUPIED BANDWIDTH TEST

<table>
<tr><td>CLIENT:</td><td>GRANDSTREAM NETWORKS,INC.</td><td>TEST STANDERD:</td><td>Section 15.247(a)</td></tr>
<tr><td>MODEL NUMBERS:</td><td>GXV3615WP_HD/GXV3615W_HD/GXV3615P_HD/GXV3615_HD</td><td>PRODUCT:</td><td>IP Camera</td></tr>
<tr><td>EUT MODEL:</td><td>GXV3615WP_HD</td><td>EUT DESIGNATION:</td><td>Digitall Transmission Device</td></tr>
<tr><td>TEMPERATURE:</td><td>23°C</td><td>HUMIDITY:</td><td>47%RH</td></tr>
<tr><td>ATM PRESSURE:</td><td>101.0kPa</td><td>GROUNDING:</td><td>None</td></tr>
<tr><td>TESTED BY:</td><td>Sewen Guo</td><td>DATE OF TEST:</td><td>February 20, 2012</td></tr>
<tr><td>TEST REFERENCE:</td><td colspan="3">ANSI C63.4:2003 and KDB558074</td></tr>
<tr><td>TEST PROCEDURE:</td><td colspan="3">The transmitter output was connected to the spectrum analyzer through an attenua tor. The bandwidth of the fundamental frequency was measured by spectrum ana lyzer. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB. Analyzer and the attached plot were taken. The EUT was set up to ANSI C63.4-2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance with FCC 47CFR 15.247 requirements.</td></tr>
<tr><td>DESCRIPTIONS OF TEST MODE:</td><td colspan="3">Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations,data rates and antenna ports (if EUT with antenna diversity architecture).

Following channels were selected for the final test as listed below:

802.11b mode with data rate of 1Mbps, 802.11g mode with data rate of 6Mbps, 802.11n HT20 mode with data rate of 6.5Mbps and 802.11n HT40 mode with data rate of 13.5Mbps.</td></tr>
<tr><td>EQUIPMENT SETUP</td><td colspan="3"><table><tr><td>Equipment Mode</td><td>Spectrum Analyzer</td></tr><tr><td>Detector Function</td><td>Peak</td></tr><tr><td>RBW</td><td>100KHz</td></tr><tr><td>VBW</td><td>300KHz</td></tr></table></td></tr>
<tr><td>TEST VOLTAGE:</td><td colspan="3">120VAC/60Hz</td></tr>
<tr><td>RESULTS:</td><td colspan="3">The EUT meet the requirements of test reference for occupied bandwidth.The test results relate only to the equipment under test provided by client.</td></tr>
<tr><td>CHANGES OR MODIFICATIONS:</td><td colspan="3">There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen) test personnel.</td></tr>
<tr><td>M. UNCERTAINTY:</td><td colspan="3">Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB</td></tr>
</table>

Occupied Bandwidth Test Data:

For 802.11b Mode:

Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
2412	9.64	0.5	Pass
2437	9.12	0.5	Pass
2462	9.12	0.5	Pass

For 802.11g Mode:

Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
2412	16.50	0.5	Pass
2437	16.43	0.5	Pass
2462	16.50	0.5	Pass

For 802.11n HT20 Mode:

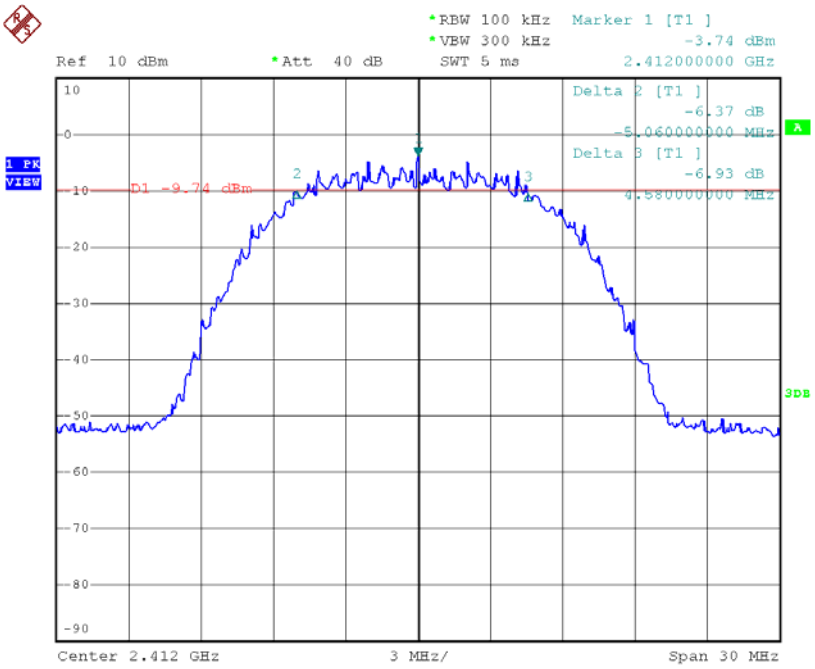
Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
2412	16.98	0.5	Pass
2437	17.16	0.5	Pass
2462	17.52	0.5	Pass

For 802.11n HT40 Mode:

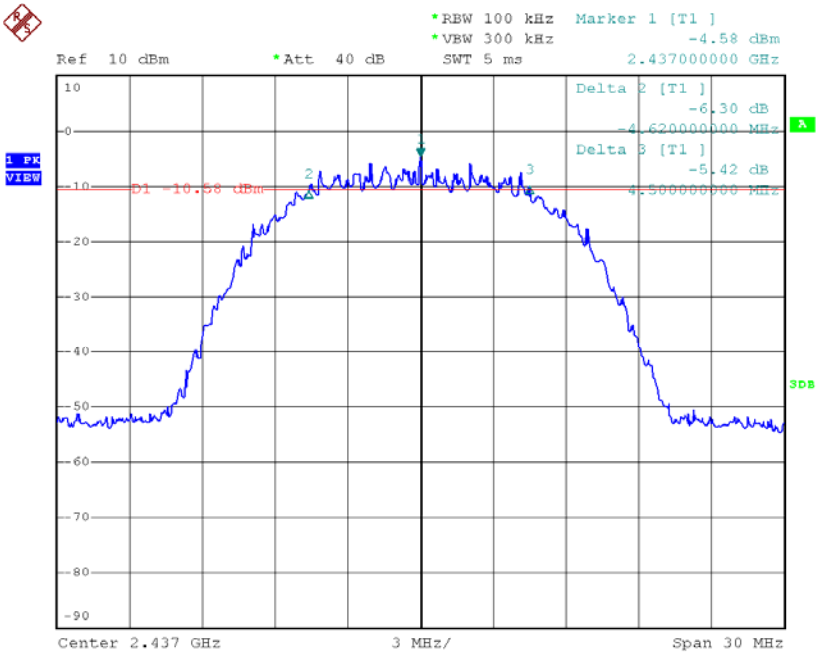
Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
2422	35.52	0.5	Pass
2437	35.42	0.5	Pass
2452	35.23	0.5	Pass

For 802.11b Mode:

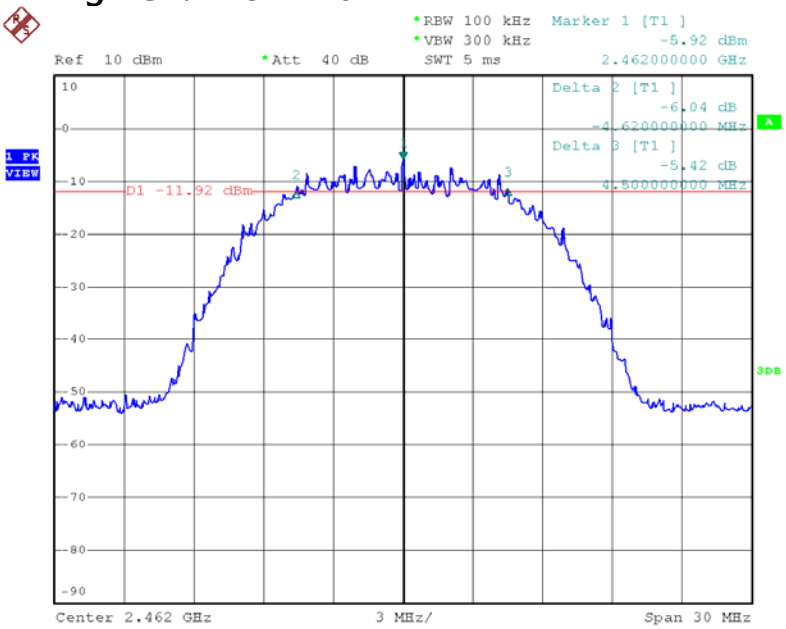
Low Channel: 2412MHz



Mid Channel: 2437MHz

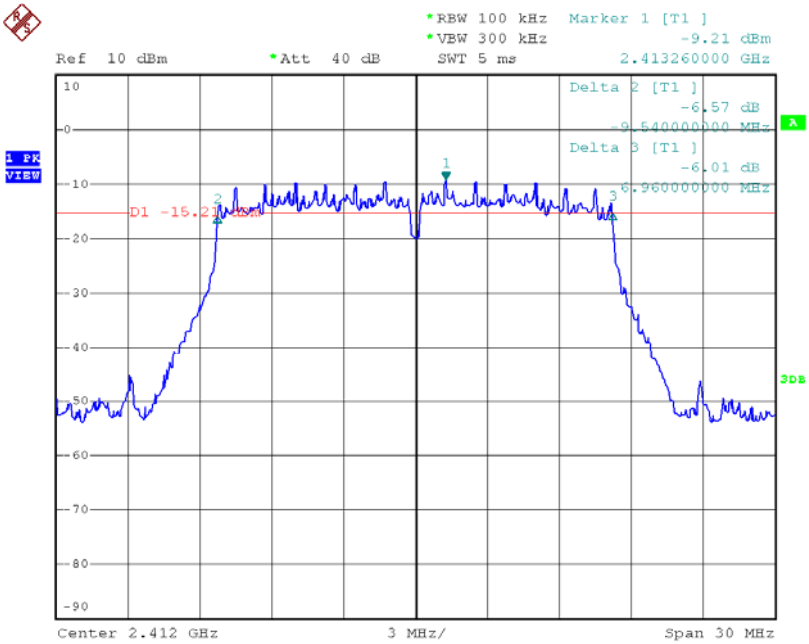


High Channel: 2462MHz

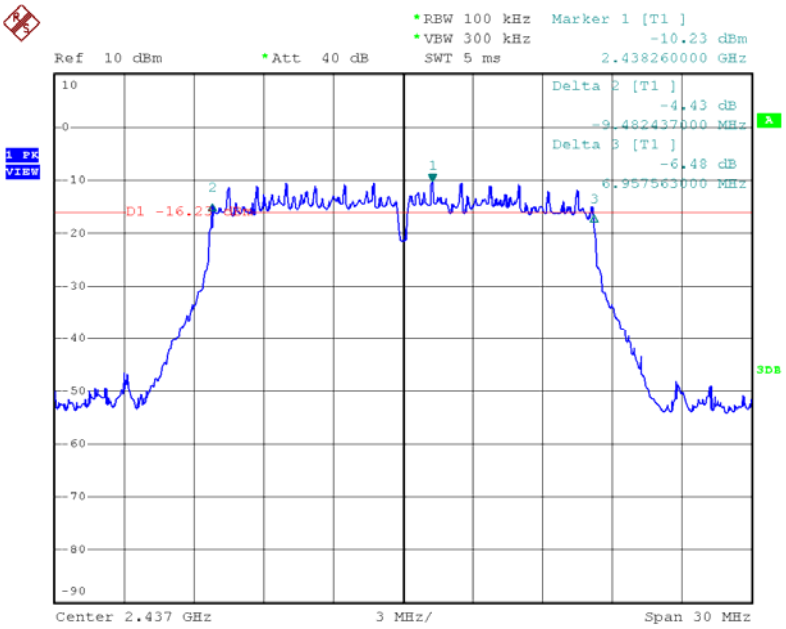


For 802.11g Mode:

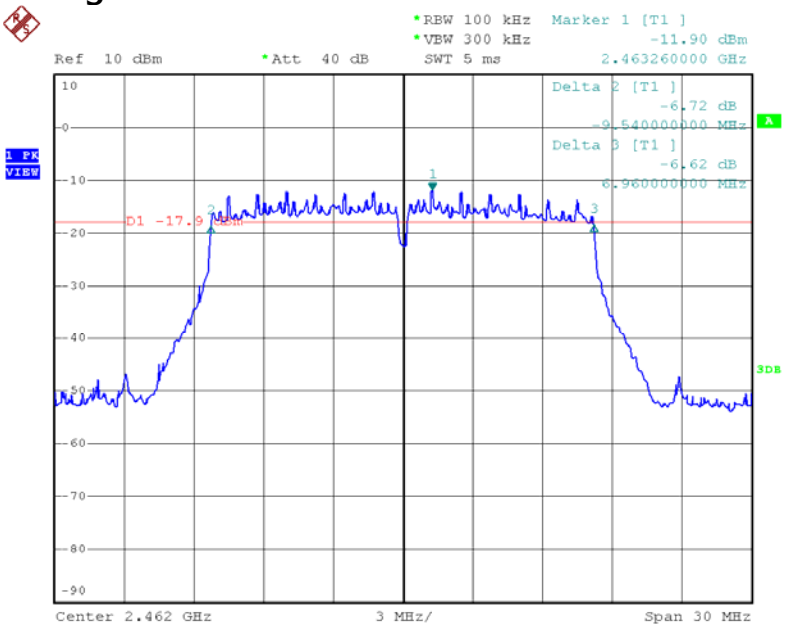
Low Channel: 2412MHz



Mid Channel: 2437MHz

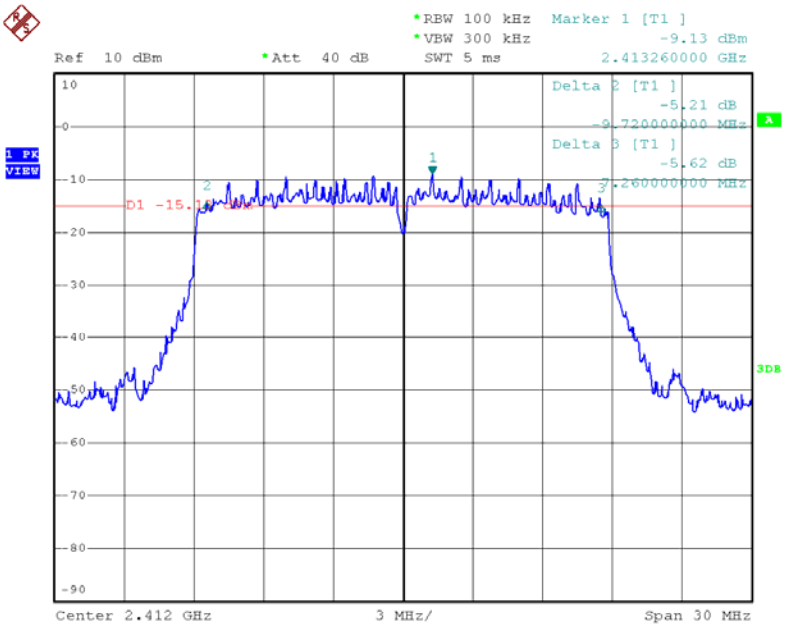


High Channel: 2462MHz

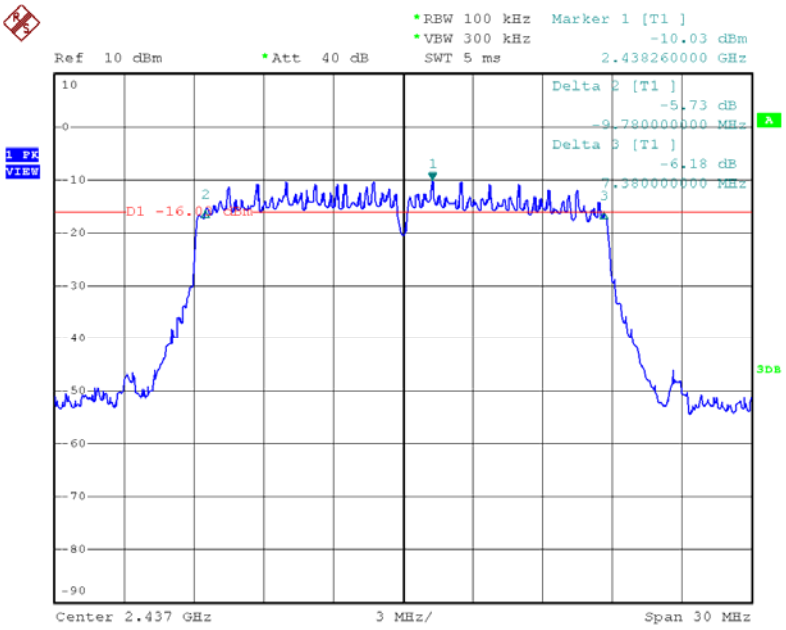


For 802.11n HT20 Mode:

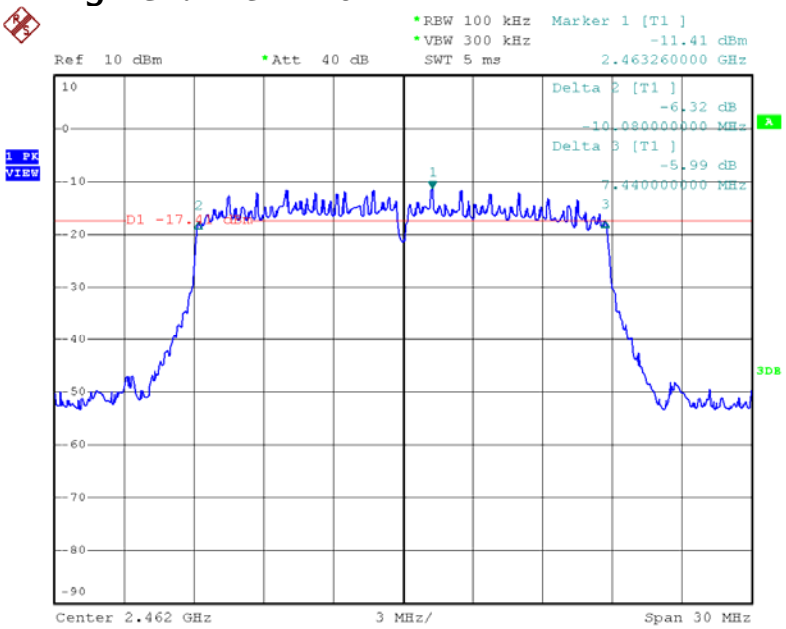
Low Channel: 2412MHz



Mid Channel: 2437MHz

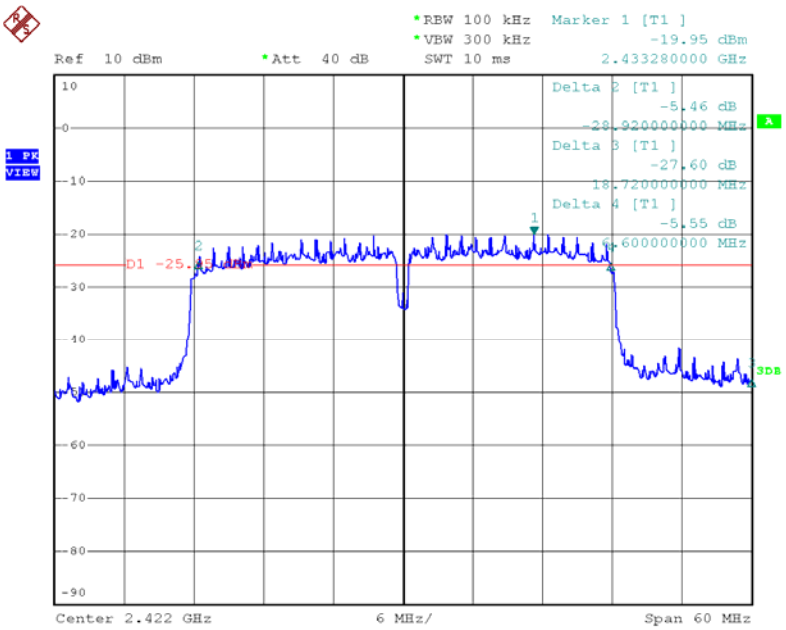


High Channel: 2462MHz

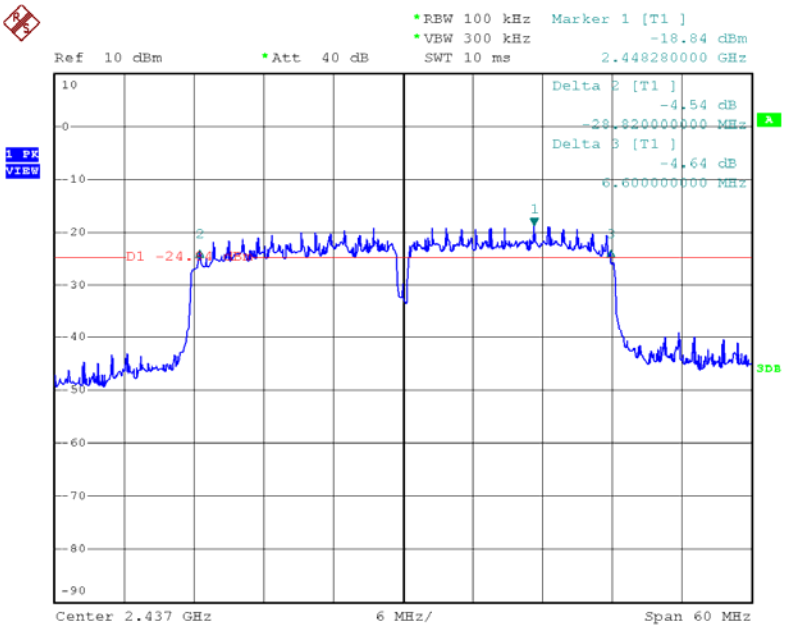


For 802.11n HT40 Mode:

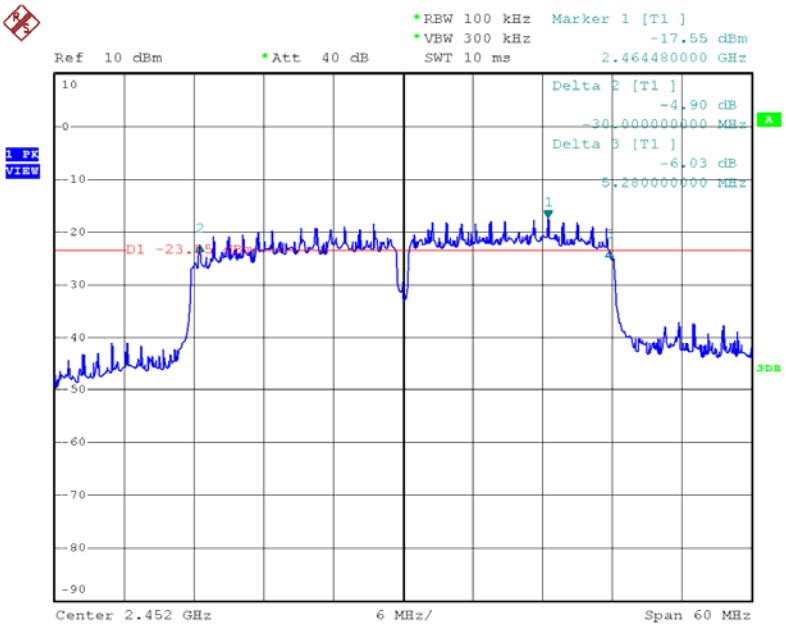
Low Channel: 2422MHz



Mid Channel: 2437MHz



High Channel: 2452MHz



ATTACHMENT 5- MAXIMUM PEAK OUTPUT POWER

<table>
<tr><td>CLIENT:</td><td>GRANDSTREAM NETWORKS,INC.</td><td>TEST STANDERD:</td><td>Section 15.247(b)</td></tr>
<tr><td>MODEL NUMBERS:</td><td>GXV3615WP_HD/GXV3615W_HD/GXV3615P_HD/GXV3615_HD</td><td>PRODUCT:</td><td>IP Camera</td></tr>
<tr><td>EUT MODEL:</td><td>GXV3615WP_HD</td><td>EUT DESIGNATION:</td><td>Digital Transmission Device</td></tr>
<tr><td>TEMPERATURE:</td><td>23°C</td><td>HUMIDITY:</td><td>47%RH</td></tr>
<tr><td>ATM PRESSURE:</td><td>101.0kPa</td><td>GROUNDING:</td><td>None</td></tr>
<tr><td>TESTED BY:</td><td>Sewen Guo</td><td>DATE OF TEST:</td><td>February 22, 2012</td></tr>
<tr><td>TEST REFERENCE:</td><td colspan="3">ANSI C63.4:2003 and KDB558074</td></tr>
<tr><td>TEST PROCEDURE:</td><td colspan="3">The EUT was set-up as ANSI C63.4:2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.</td></tr>
<tr><td>DESCRIPTIONS OF TEST MODE:</td><td colspan="3">Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations,data rates and antenna ports (if EUT with antenna diversity architecture). Following channels were selected for the final test as listed below:

802.11b mode with data rate of 1Mbps, 802.11g mode with data rate of 6Mbps, 802.11n HT20 mode with data rate of 6.5Mbps and 802.11n HT40 mode with data rate of 13.5Mbps.</td></tr>
<tr><td>MEASUREMENT EQUIPMENT SET</td><td colspan="3">Spectrum analyzer was set as below:
<table>
<tr><td>Equipment Mode</td><td>Spectrum Analyzer</td></tr>
<tr><td>Detector Function</td><td>Peak</td></tr>
<tr><td>RBW</td><td>1MHz</td></tr>
<tr><td>VBW</td><td>1MHz</td></tr>
</table></td></tr>
<tr><td>TESTED RANGE:</td><td colspan="3">N/A</td></tr>
<tr><td>TEST VOLTAGE:</td><td colspan="3">120VAC/60Hz</td></tr>
<tr><td>RESULTS:</td><td colspan="3">The EUT meet the requirements of test reference for maximum peak output power.the worst-case mode is 802.11b mode with data rate 1Mbps in channel 1.The test results relate only to the equipment under test provided by client.</td></tr>
<tr><td>CHANGES OR MODIFICATIONS:</td><td colspan="3">There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen) test personnel.</td></tr>
<tr><td>M. UNCERTAINTY:</td><td colspan="3">Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB.</td></tr>
</table>

Maximum Peak Output Power Test Data:

For 802.11b Mode:

Channel Frequency (MHz)	Peak Output Power(dBm)	Cable Loss (Db)	Power Level (dBm)	Limit	Margin
2412	10.35	2.00	**12.35**	30.00	-17.65
2437	10.13	2.00	12.13	30.00	-17.87
2462	9.88	2.00	11.88	30.00	-18.12

For 802.11g Mode:

Channel Frequency (MHz)	Peak Output Power(dBm)	Cable Loss (Db)	Power Level (dBm)	Limit	Margin
2412	9.62	2.00	11.62	30.00	-18.38
2437	9.34	2.00	11.34	30.00	-18.66
2462	9.15	2.00	11.15	30.00	-18.96

For 802.11n HT20 Mode:

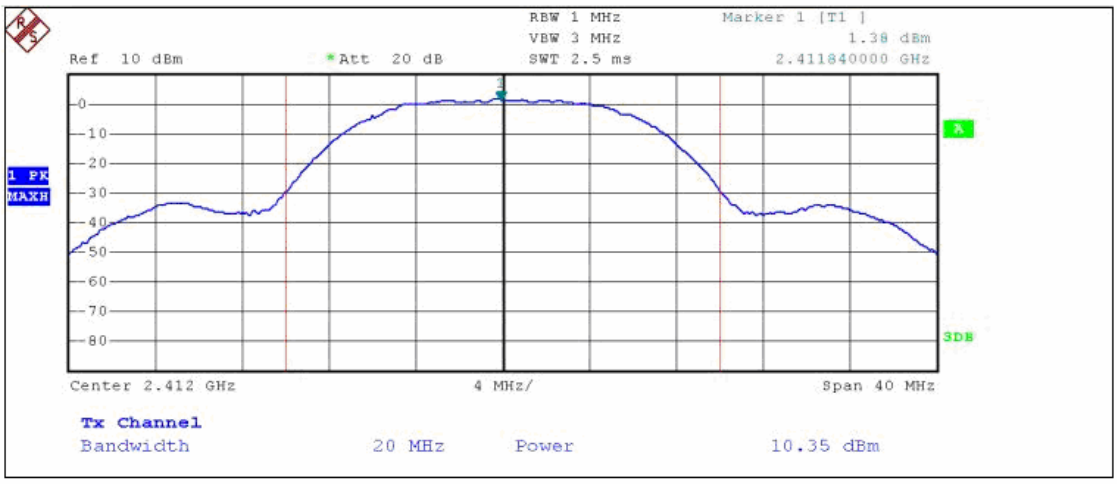
Channel Frequency (MHz)	Peak Output Power(dBm)	Cable Loss (Db)	Power Level (dBm)	Limit	Margin
2412	9.63	2.00	11.63	30.00	-18.37
2437	9.11	2.00	11.11	30.00	-18.89
2462	9.04	2.00	11.04	30.00	-18.96

For 802.11n HT40 Mode:

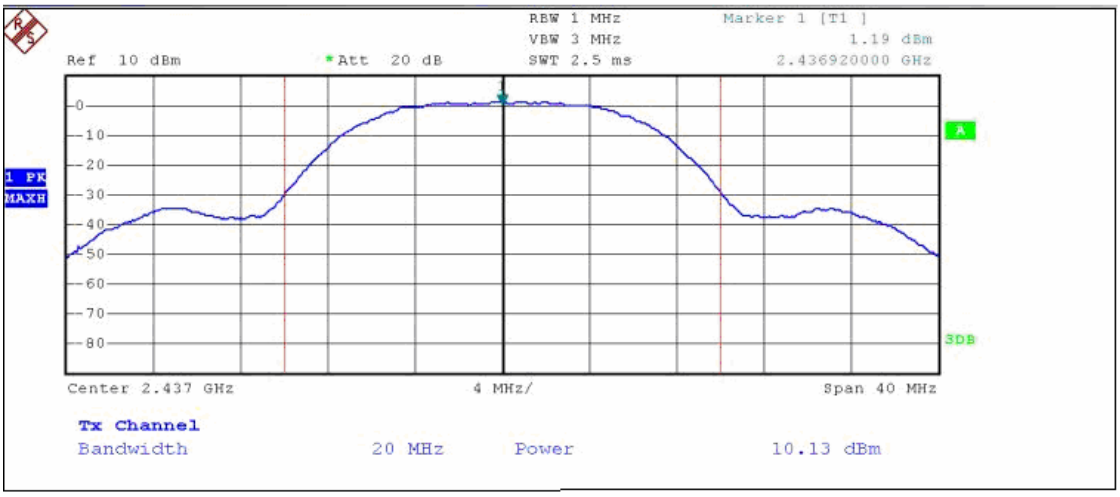
Channel Frequency (MHz)	Peak Output Power(dBm)	Cable Loss (Db)	Power Level (dBm)	Limit	Margin
2422	9.63	2.00	11.63	30.00	-18.37
2437	9.63	2.00	11.63	30.00	-16.55
2452	9.06	2.00	11.06	30.00	-18.94

For 802.11b Mode:

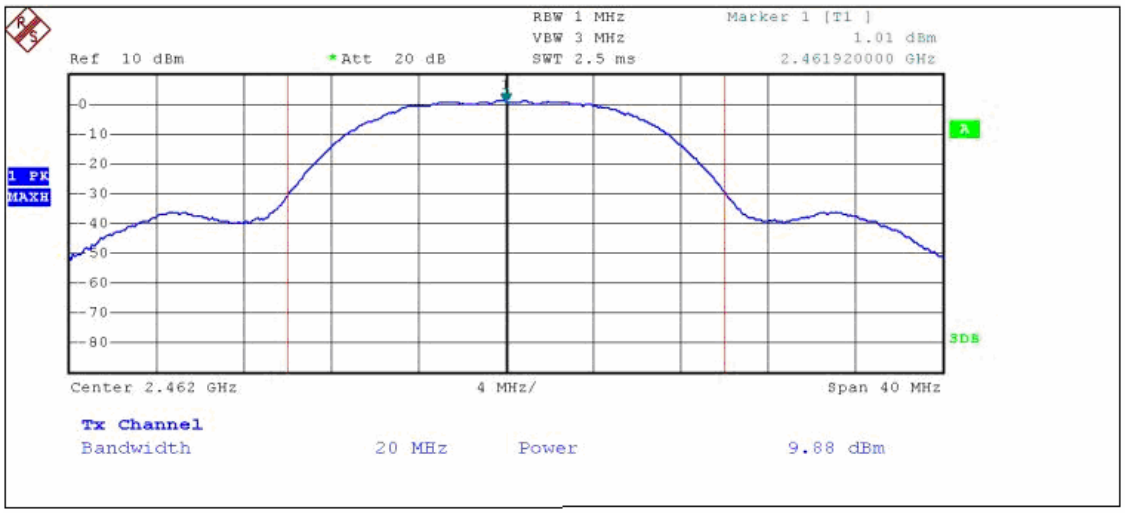
Low Channel: 2412MHz



Mid Channel: 2437MHz

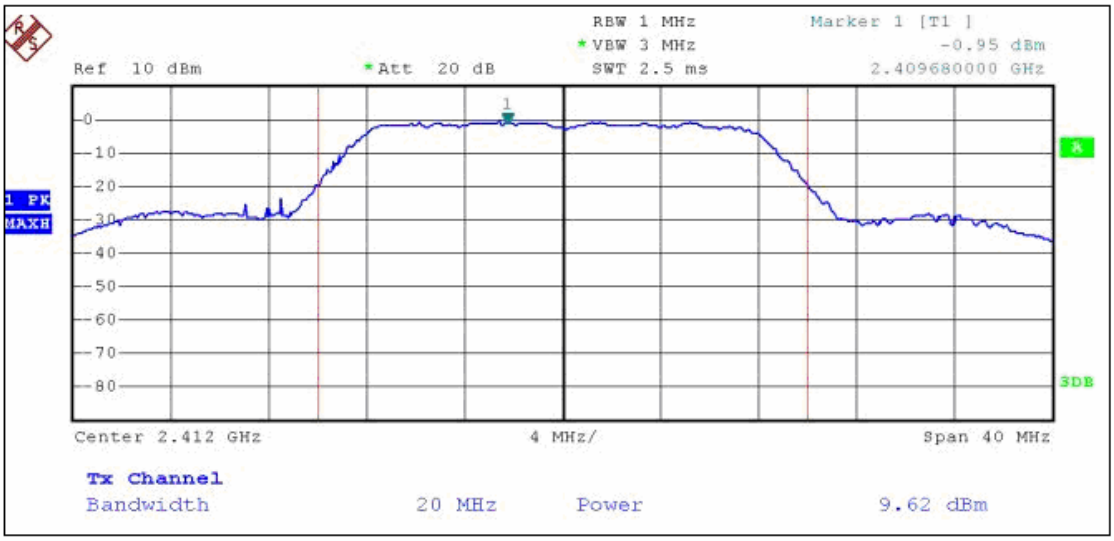


High Channel: 2462MHz

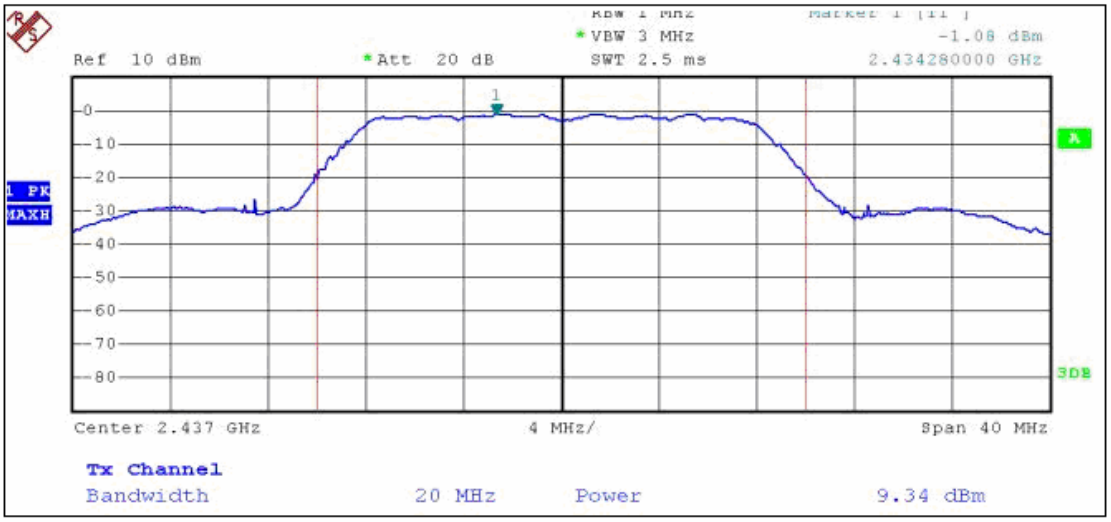


For 802.11g Mode:

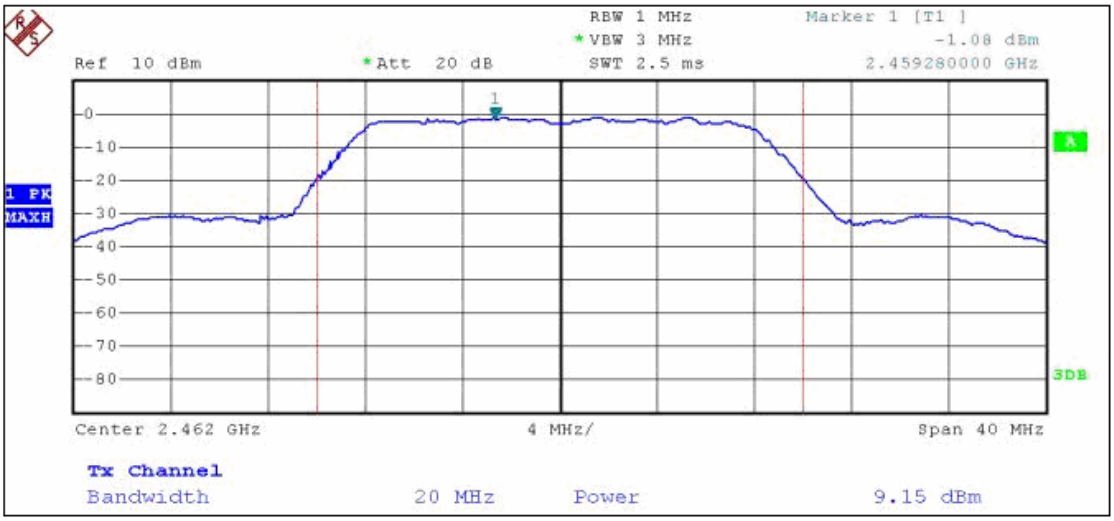
Low Channel: 2412MHz



Mid Channel: 2437MHz

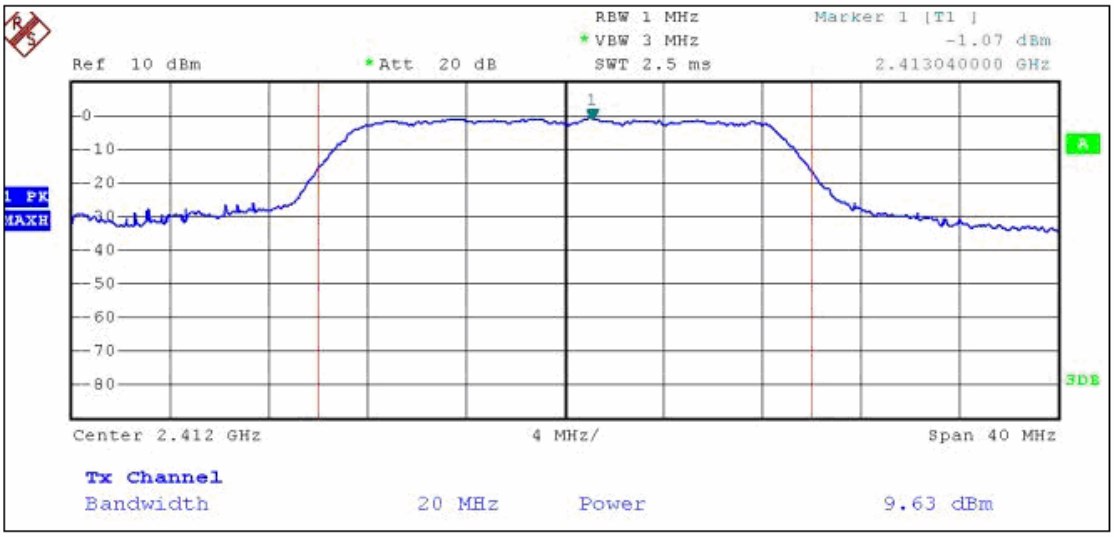


High Channel: 2462MHz

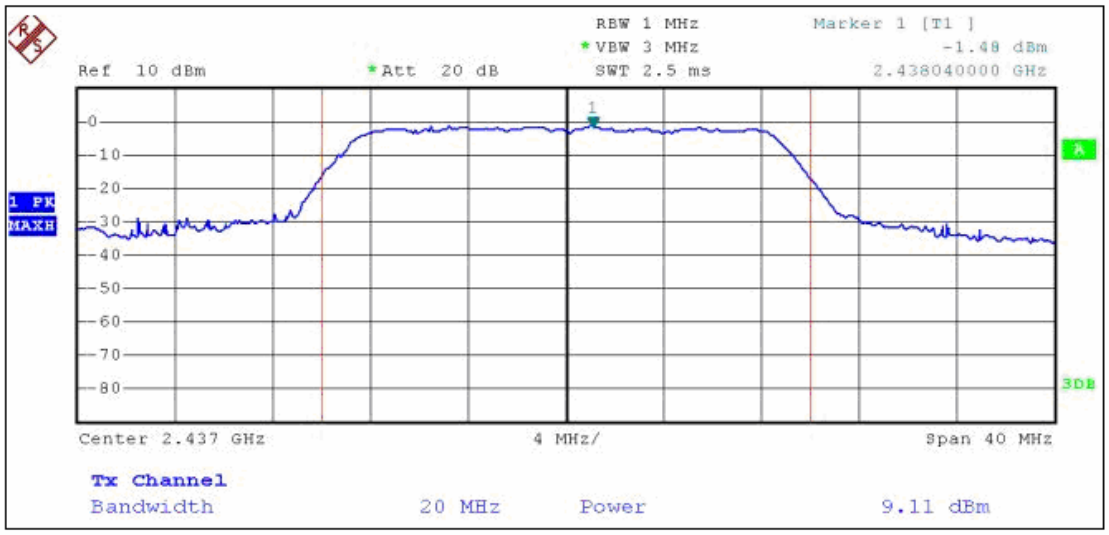


For 802.11n HT20 Mode:

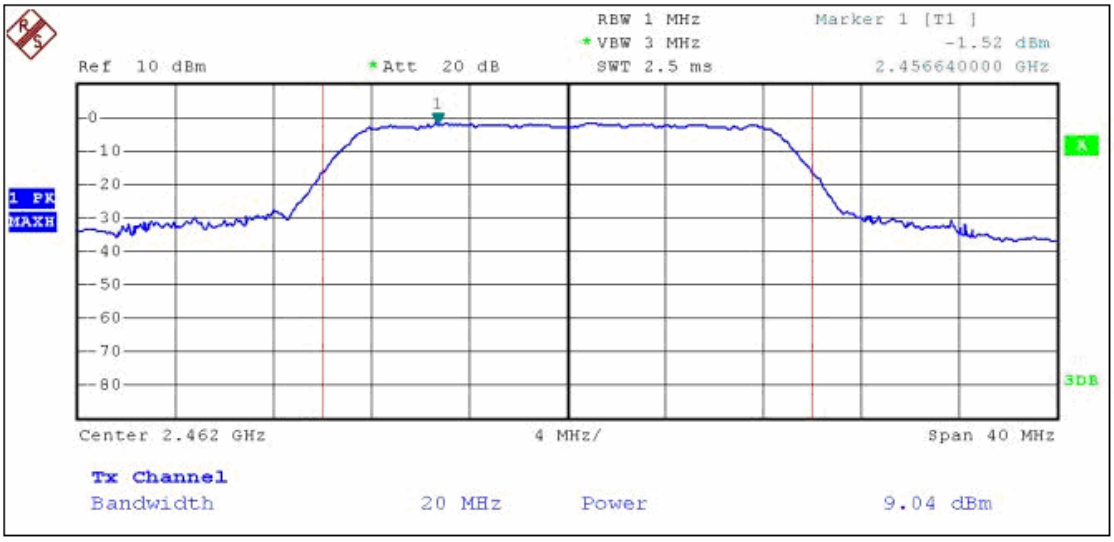
Low Channel: 2412MHz



Mid Channel: 2437MHz

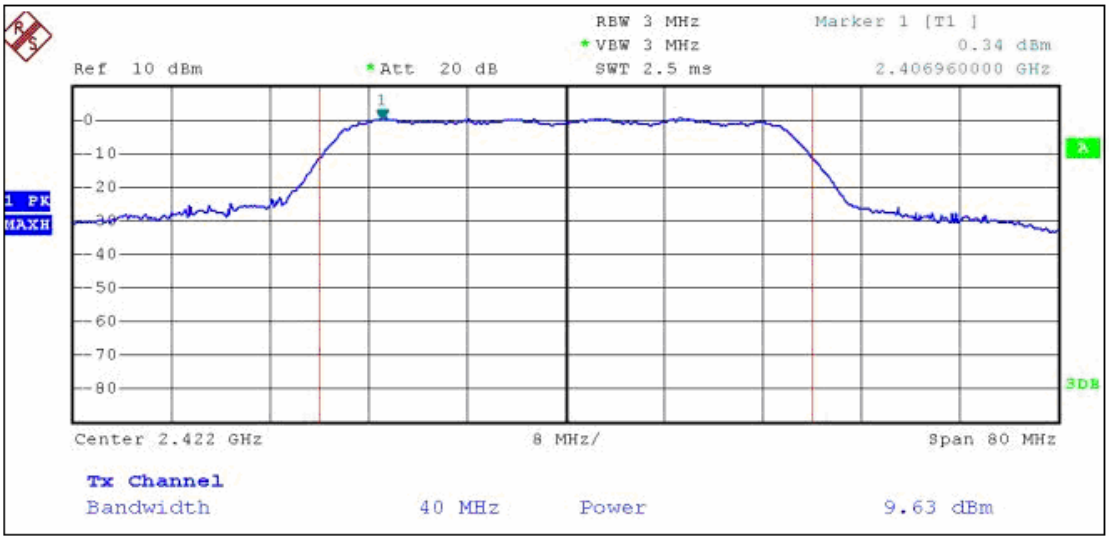


High Channel: 2462MHz

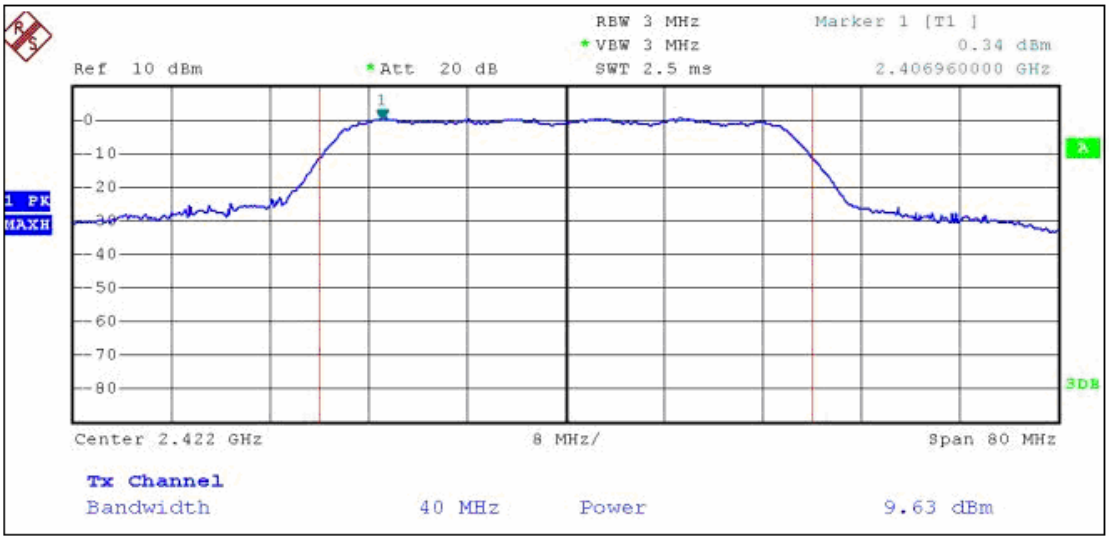


For 802.11n HT40 Mode:

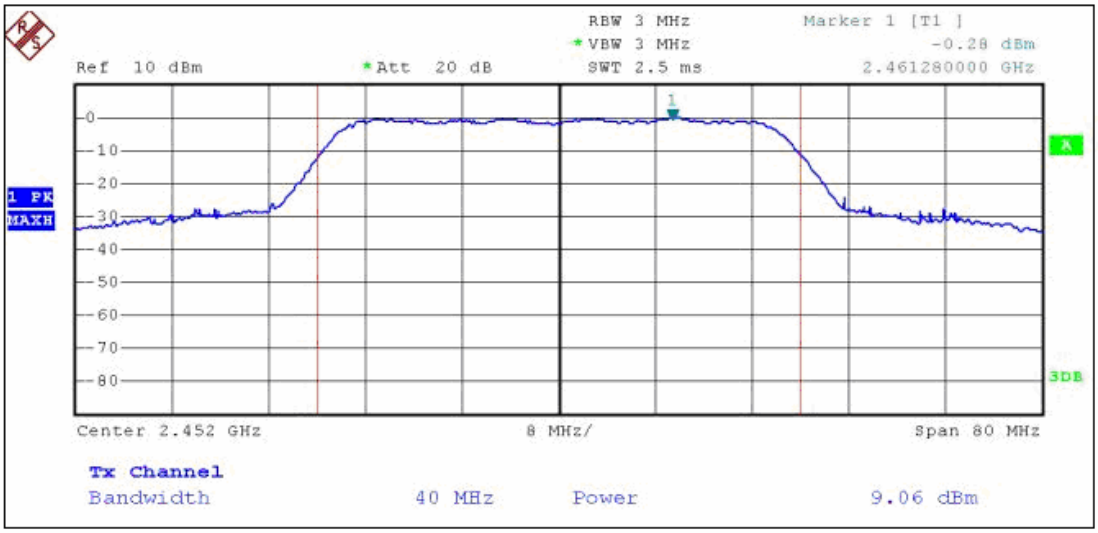
Low Channel: 2422MHz



Mid Channel: 2437MHz



High Channel: 2452MHz



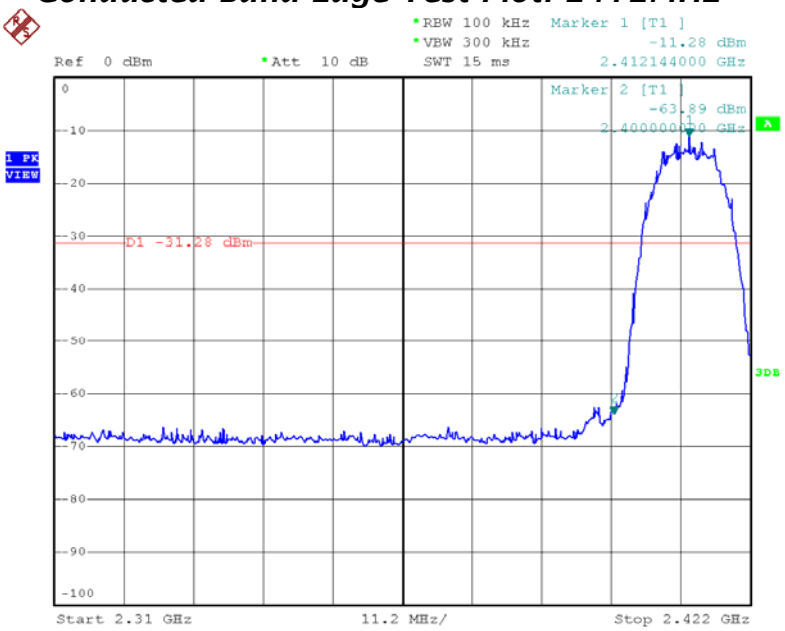
ATTACHMENT 6 – BAND EDGES TEST

<table>
<tr><td>CLIENT:</td><td>GRANDSTREAM NETWORKS,INC.</td><td>TEST STANDERD:</td><td>Section 15.247(d)</td></tr>
<tr><td>MODEL NUMBERS:</td><td>GXV3615WP_HD/GXV3615W_HD/GXV3615P_HD/GXV3615_HD</td><td>PRODUCT:</td><td>IP Camera</td></tr>
<tr><td>EUT MODEL:</td><td>GXV3615WP_HD</td><td>EUT DESIGNATION:</td><td>Digital Transmission Device</td></tr>
<tr><td>TEMPERATURE:</td><td>23°C</td><td>HUMIDITY:</td><td>47%RH</td></tr>
<tr><td>ATM PRESSURE:</td><td>101.0kPa</td><td>GROUNDING:</td><td>None</td></tr>
<tr><td>TESTED BY:</td><td>Sewen Guo</td><td>DATE OF TEST:</td><td>February 22, 2012</td></tr>
<tr><td>TEST REFERENCE:</td><td colspan="3">ANSI C63.4:2003 and KDB558074</td></tr>
<tr><td>TEST PROCEDURE:</td><td colspan="3">Requirement: 15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

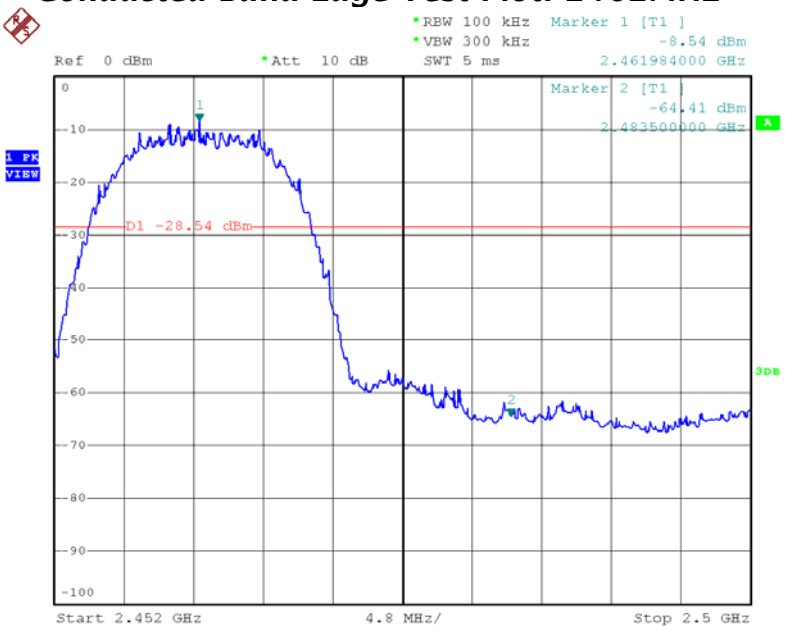
Test Procedures: The EUT was set -up as ANSI C63.4-2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.</td></tr>
<tr><td>DESCRIPTIONS OF TEST MODE:</td><td colspan="3">Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations,data rates and antenna ports (if EUT with antenna diversity architecture). Following channels were chosen for the final test as listed below: 802.11b mode with data rate of 1Mbps, 802.11g mode with data rate of 6Mbps,802.11n HT20 mode with data rate of 6.5Mbps and 802.11n HT40 mode with data rate of 13.5Mbps.</td></tr>
<tr><td>EQUIPMENT SETUP</td><td colspan="3">Spectrum analyzer shall be set as below:
<table>
<tr><td>Equipment Mode</td><td>Spectrum Analyzer</td></tr>
<tr><td>Detector Function</td><td>Peak Mode</td></tr>
<tr><td>RBW</td><td>100KHz</td></tr>
<tr><td>VBW</td><td>300KHz</td></tr>
</table></td></tr>
<tr><td>TEST VOLTAGE:</td><td colspan="3">120VAC/60Hz</td></tr>
<tr><td>RESULTS:</td><td colspan="3">The EUT meet the requirements of test reference for band edges.The test results relate only to the equipment under test provided by client.</td></tr>
<tr><td>CHANGES OR MODIFICATIONS:</td><td colspan="3">There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen) test personnel.</td></tr>
<tr><td>M. UNCERTAINTY:</td><td colspan="3">Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB.</td></tr>
</table>

For 802.11b Mode:

Conducted Band Edge Test Plot: 2412MHz

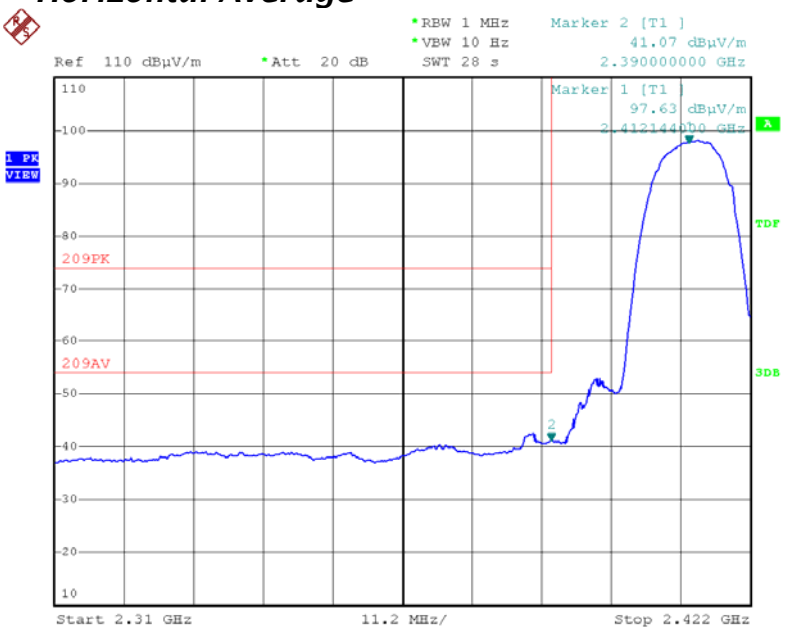


Conducted Band Edge Test Plot: 2462MHz

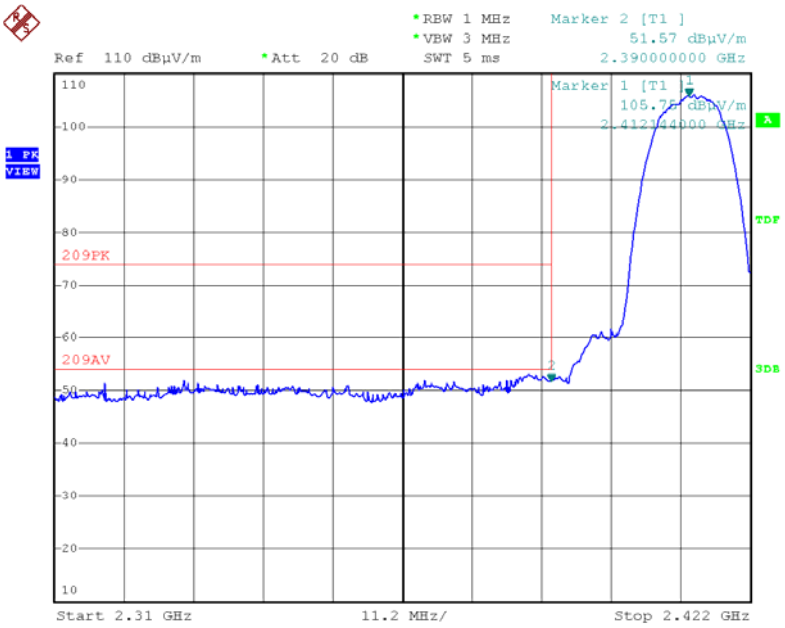


Radiated Band Edge Test Plot :2412MHz

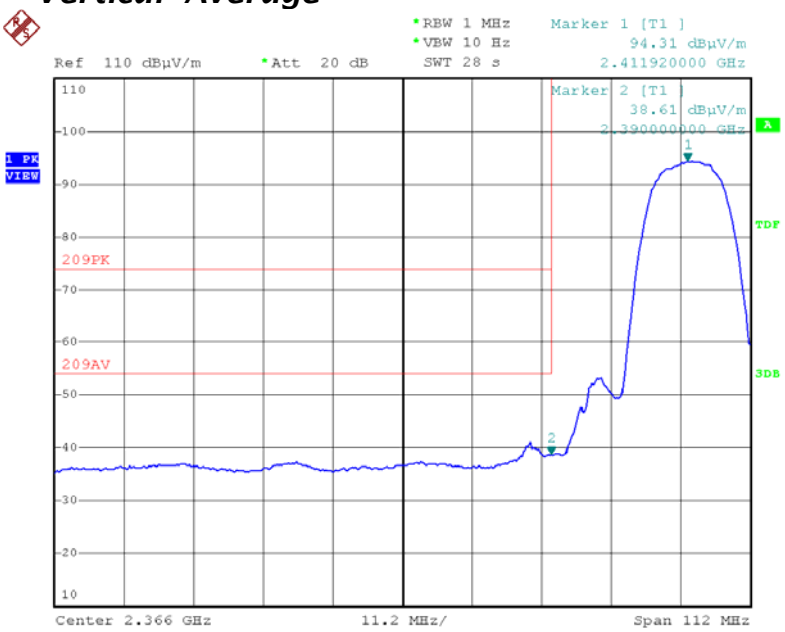
Horizontal-Average



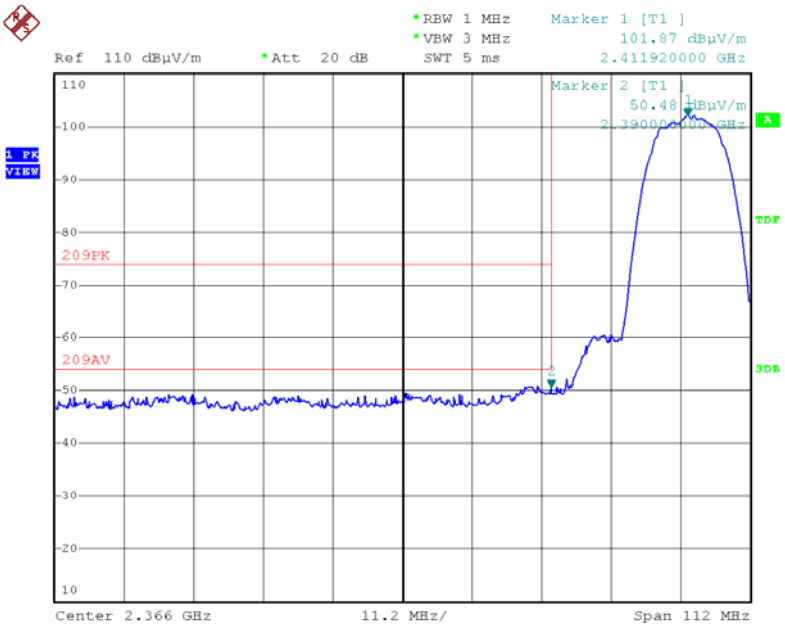
Horizontal-Peak



Vertical- Average

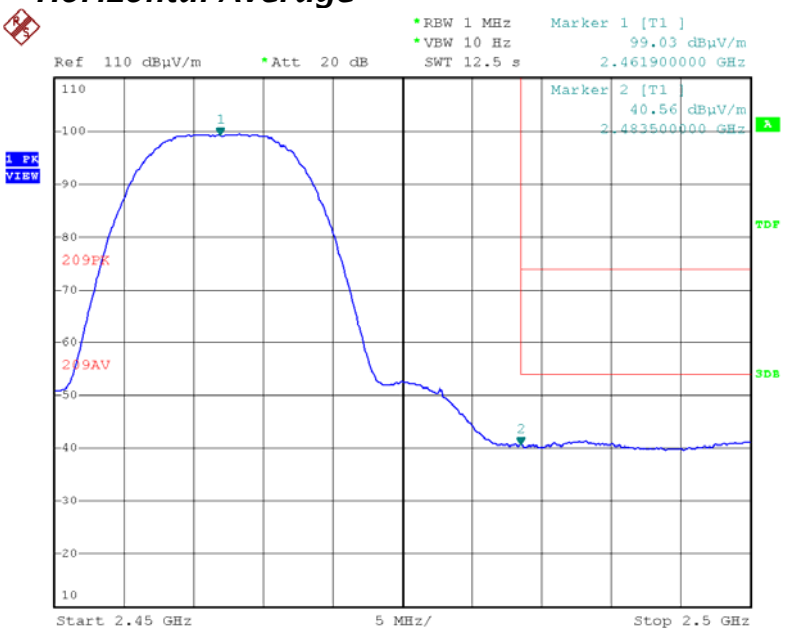


Vertical-Peak

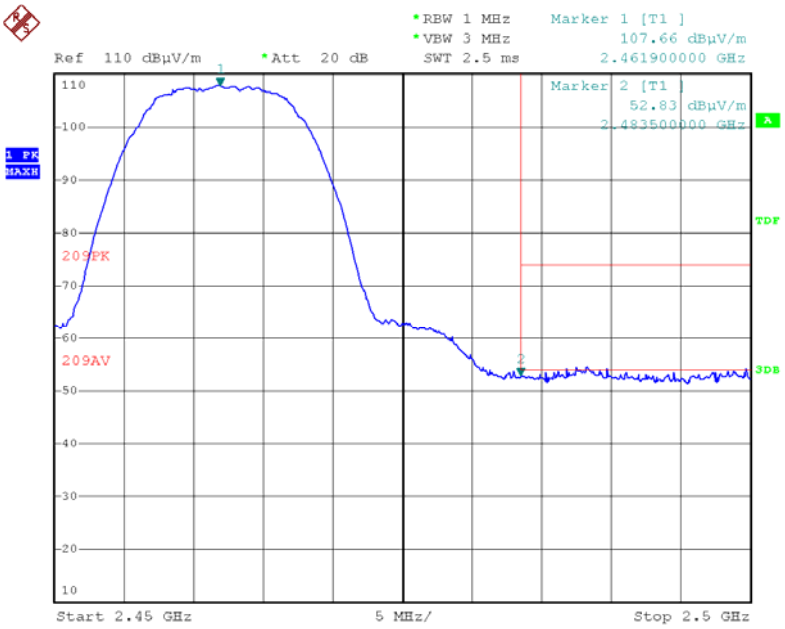


Radiated Band Edge Test Plot:2462MHz

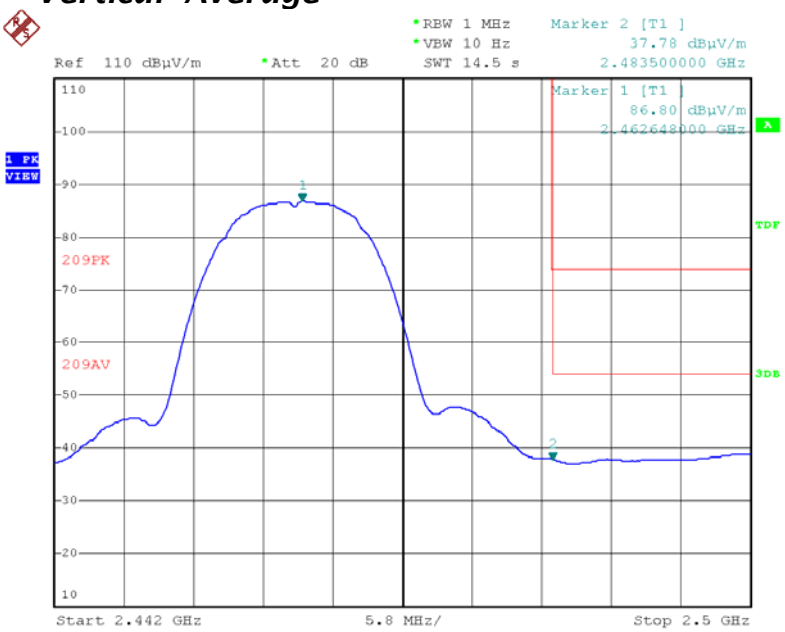
Horizontal-Average



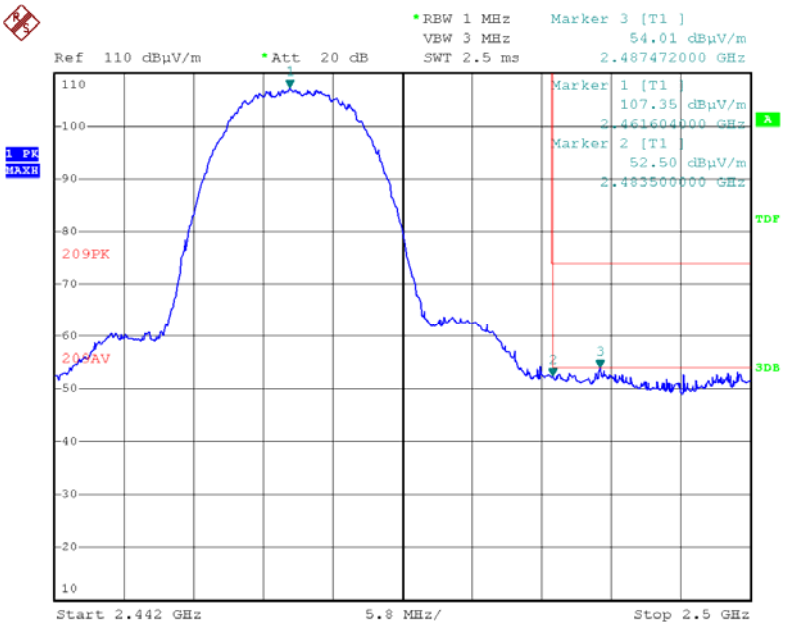
Horizontal-Peak



Vertical- Average

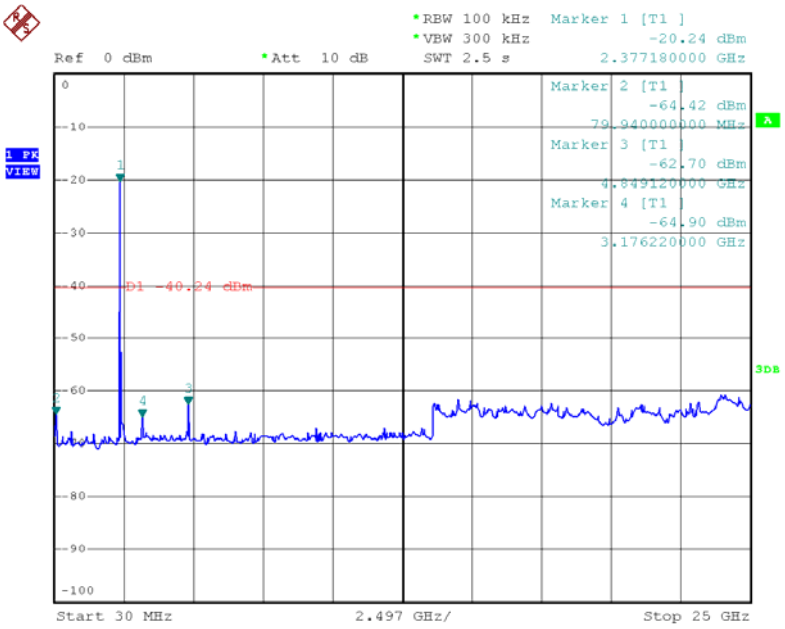


Vertical- Peak

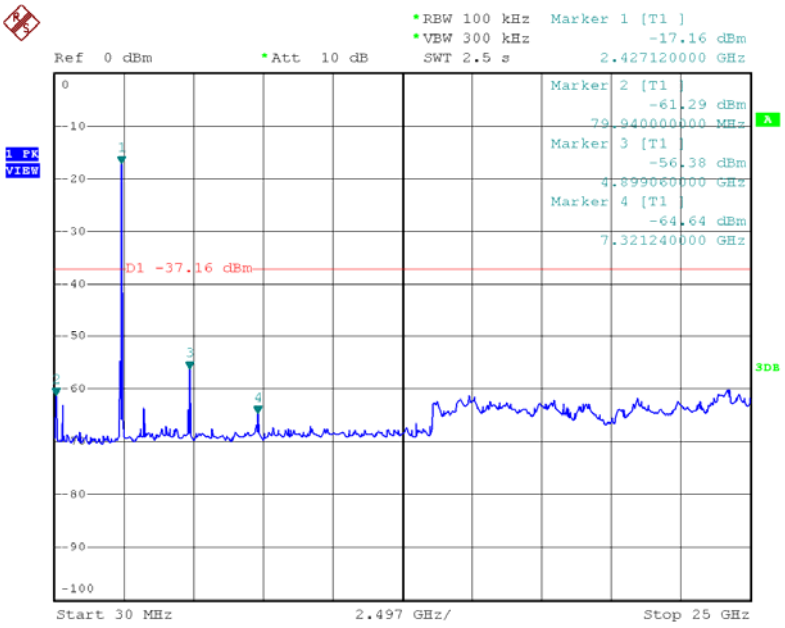


Conducted Spurious Emission Test Plot

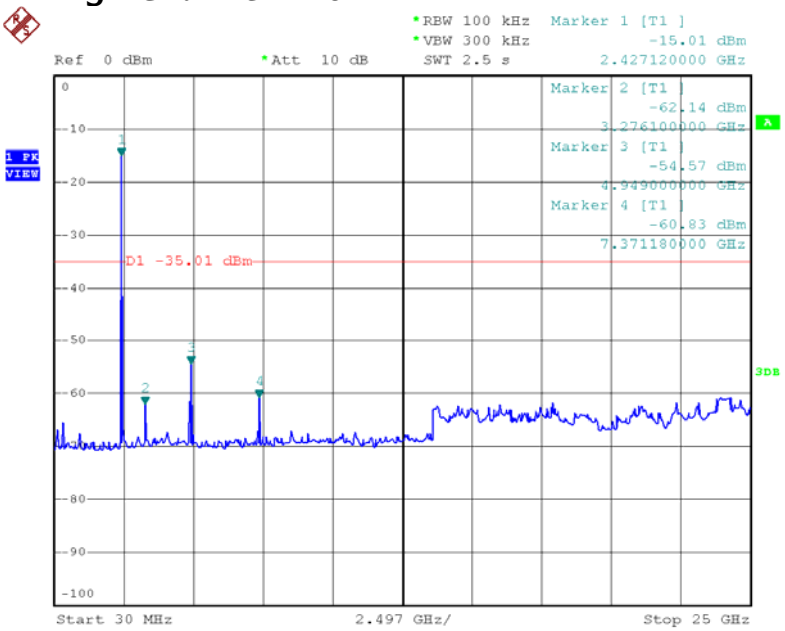
Low Channel:2412MHz



Mid Channel: 2437MHz

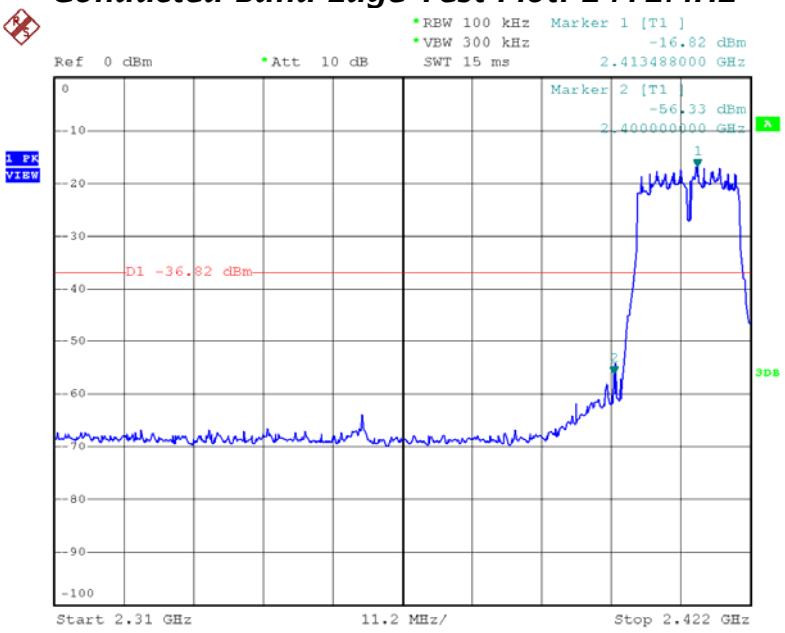


High Channel:2462MHz

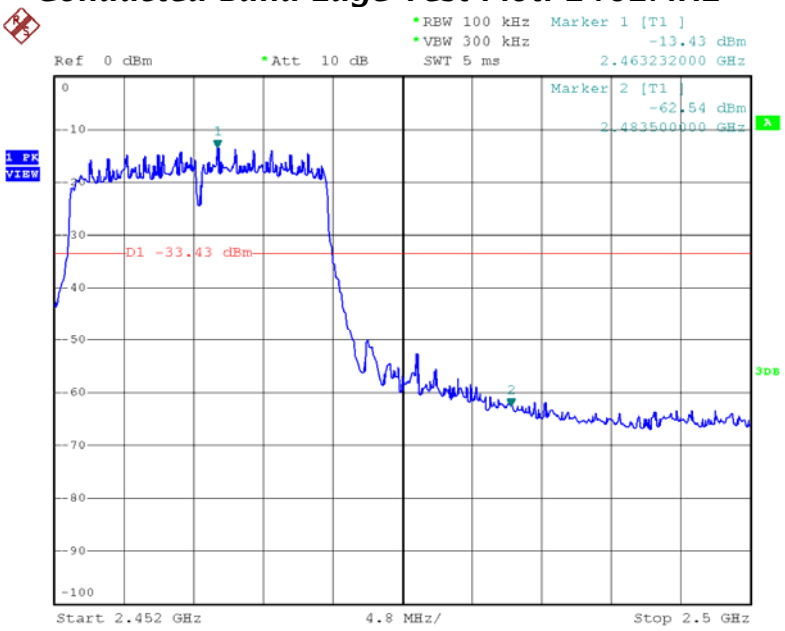


For 802.11g Mode:

Conducted Band Edge Test Plot: 2412MHz

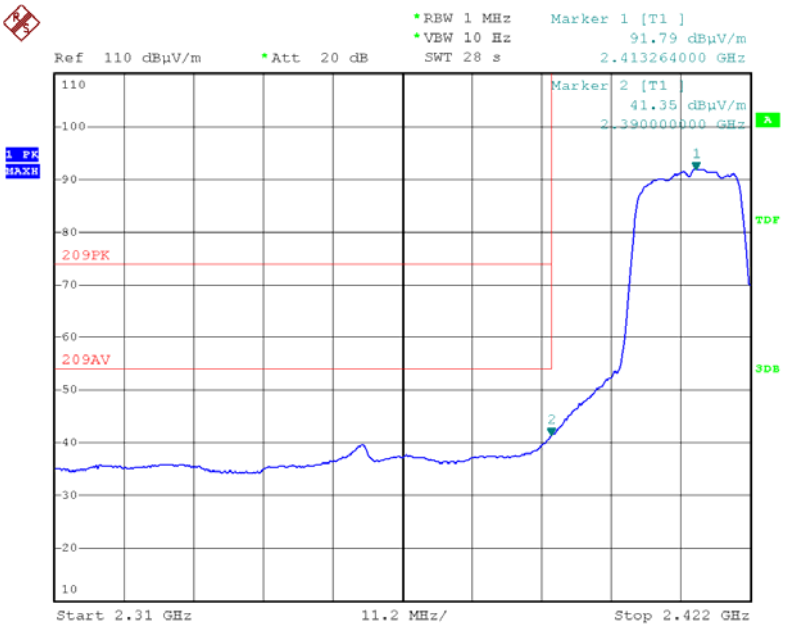


Conducted Band Edge Test Plot: 2462MHz

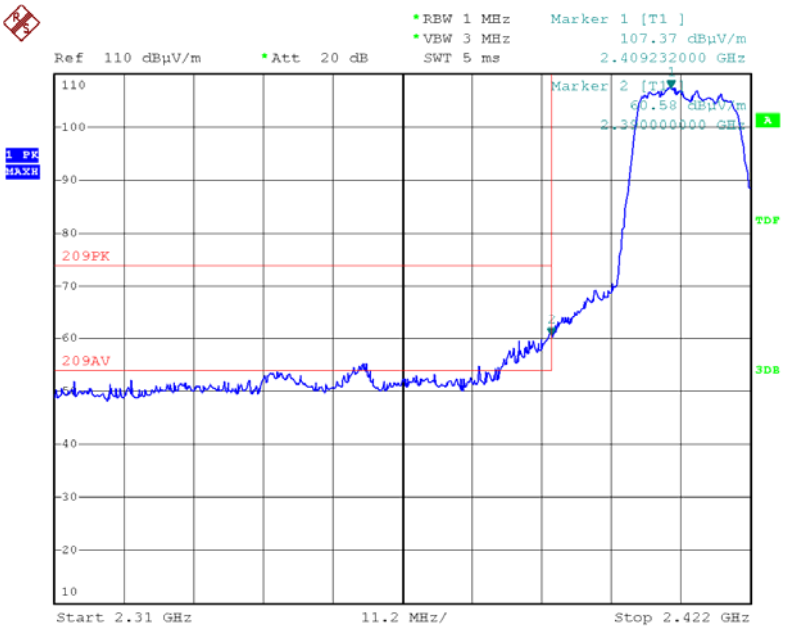


Radiated Band Edge Test Plot: 2412MHz

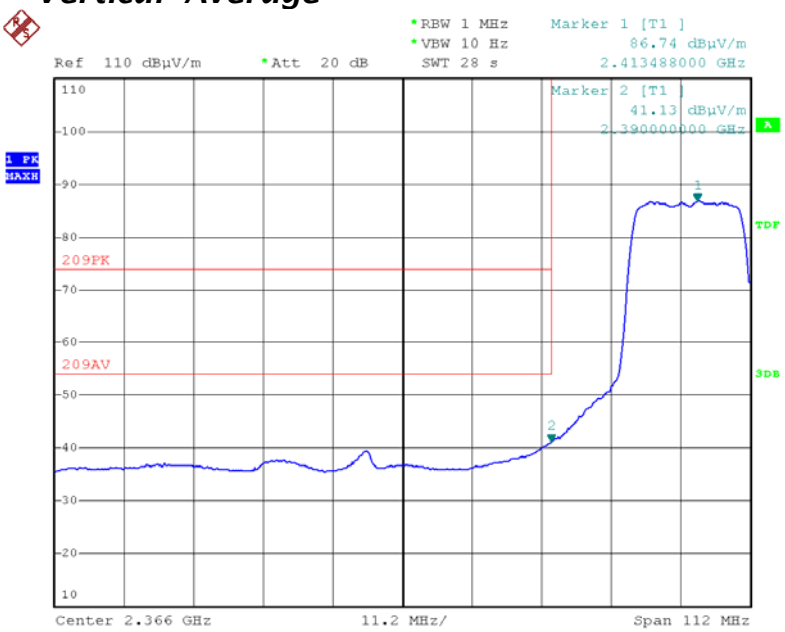
Horizontal- Average



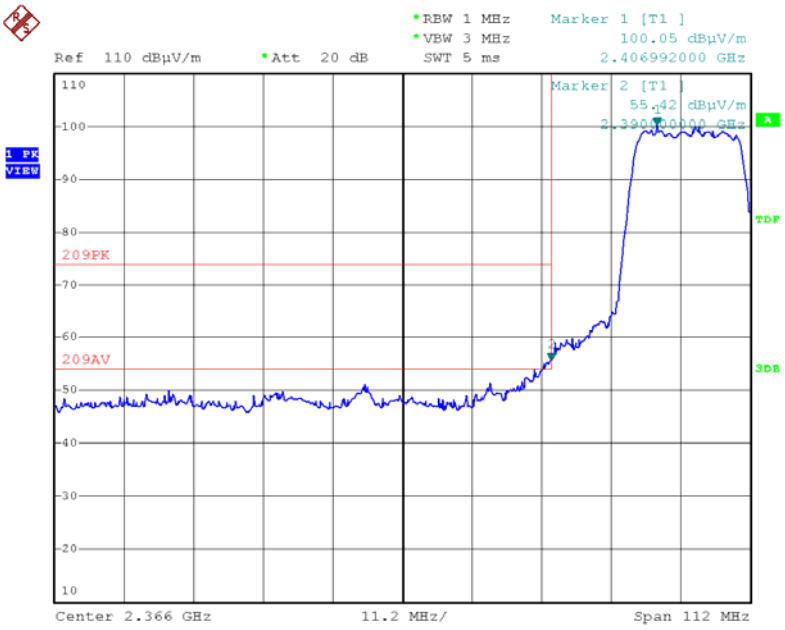
Horizontal-Peak



Vertical- Average

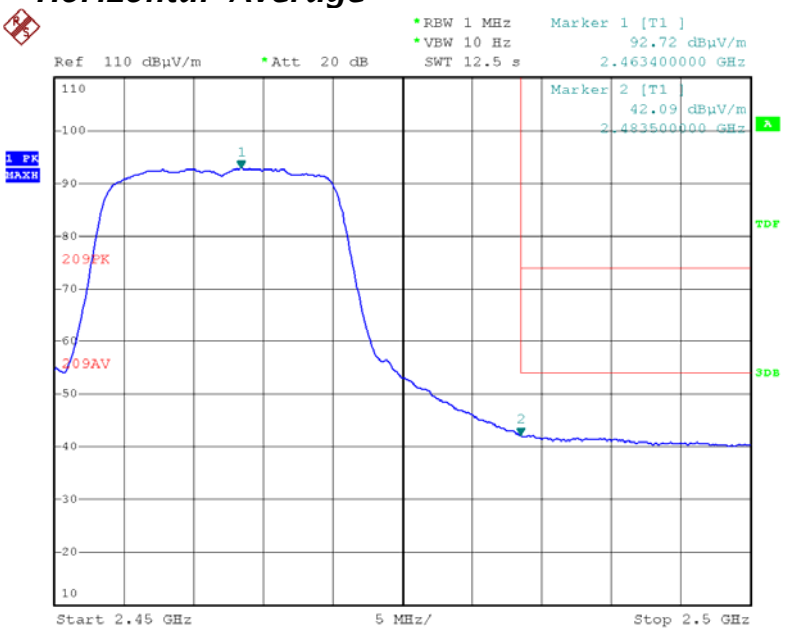


Vertical-Peak

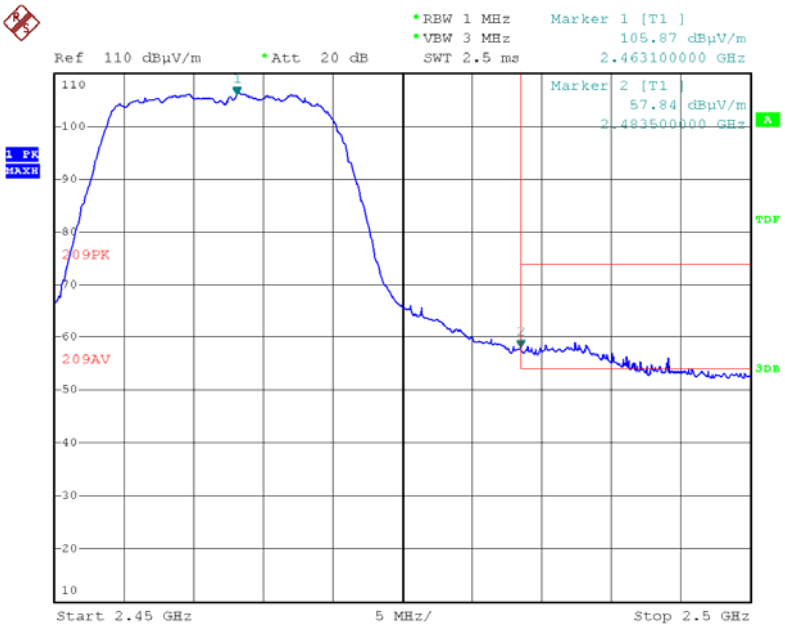


Radiated Band Edge Test Plot: 2462MHz

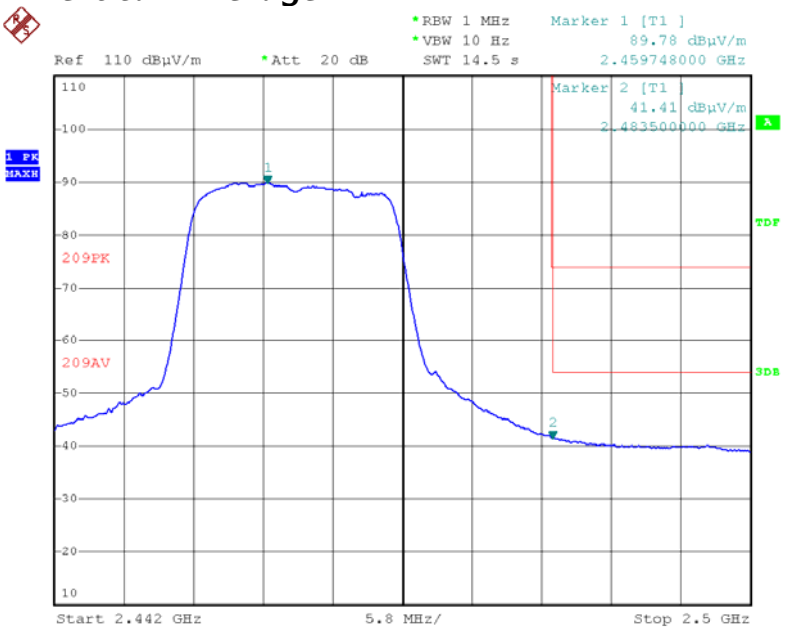
Horizontal- Average



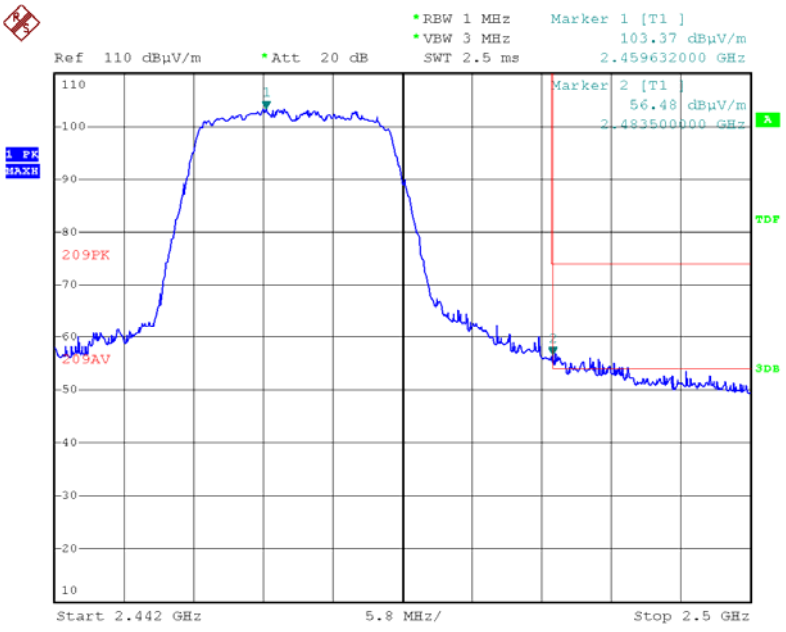
Horizontal-Peak



Vertical- Average

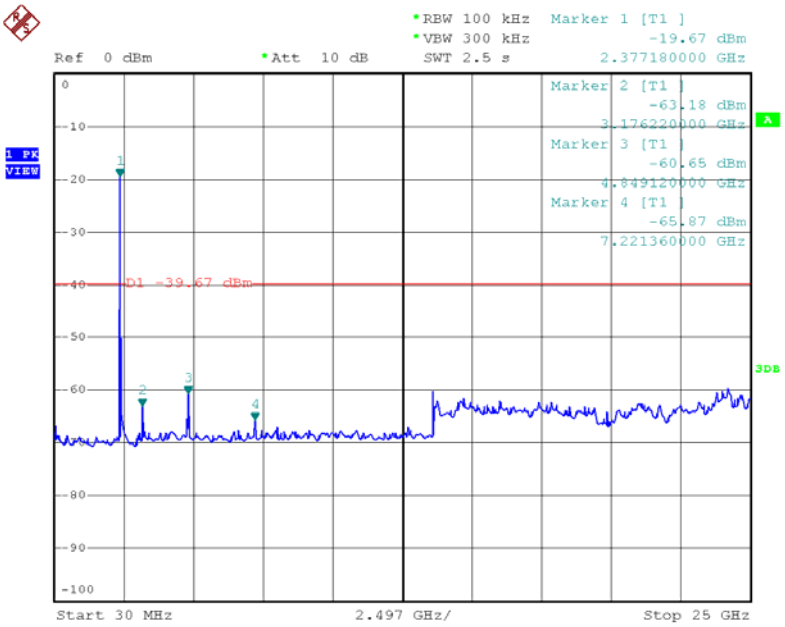


Vertical-Peak

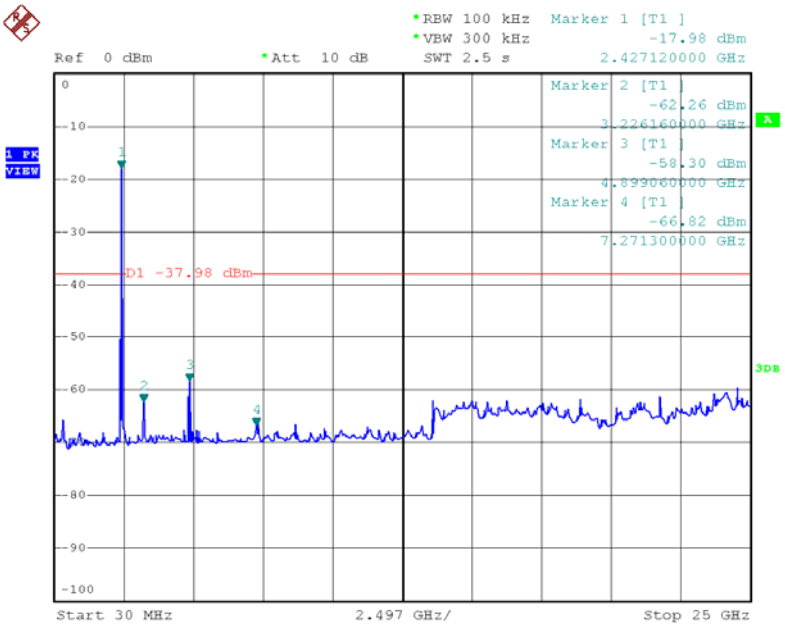


Conducted Spurious Emission Test Plot

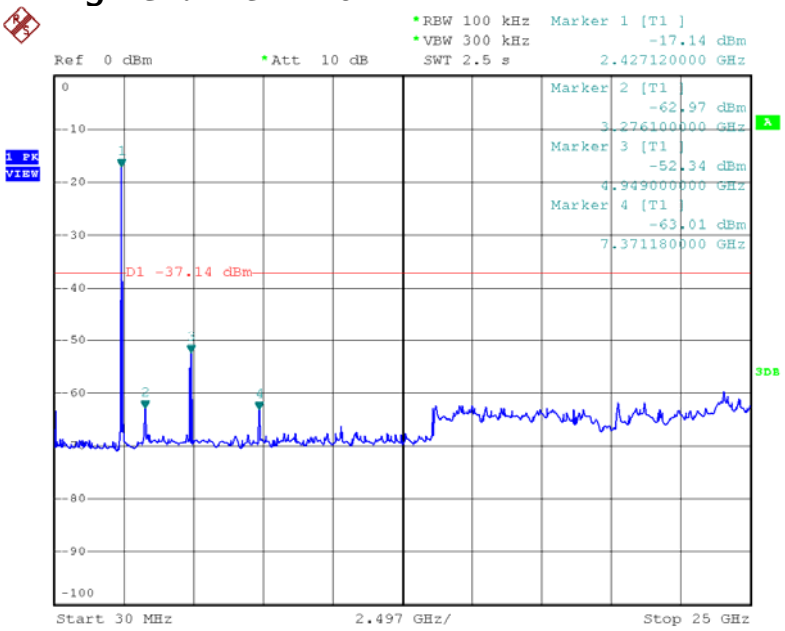
Low Channel: 2412MHz



Mid Channel: 2437MHz

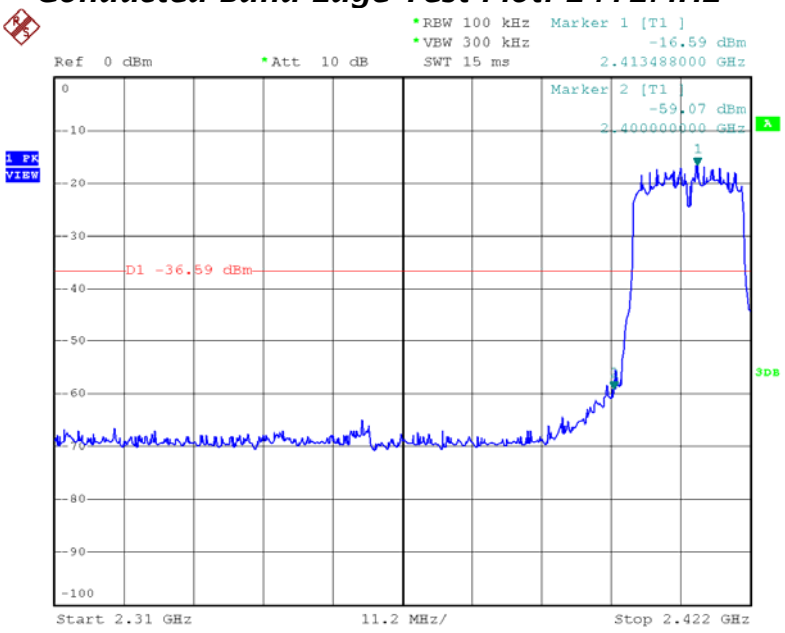


High Channel: 2462MHz

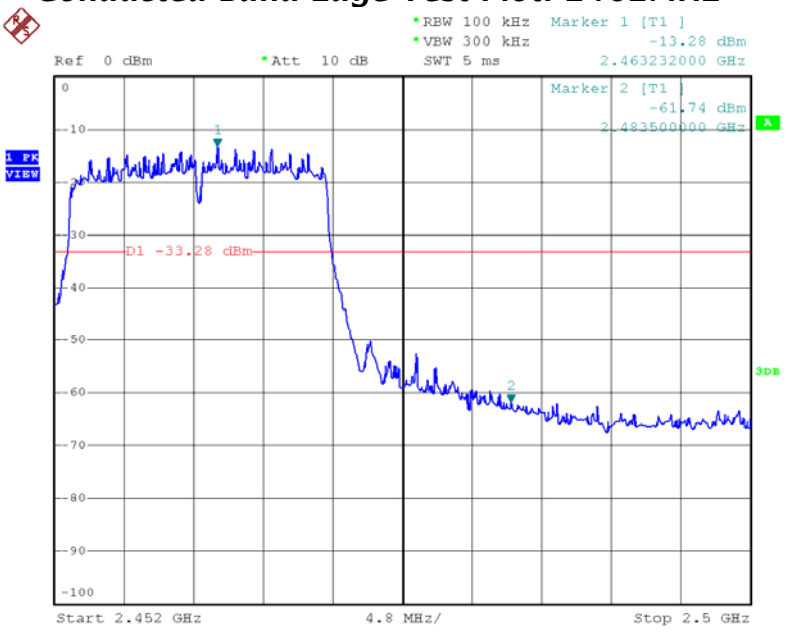


For 802.11n HT20 Mode:

Conducted Band Edge Test Plot: 2412MHz

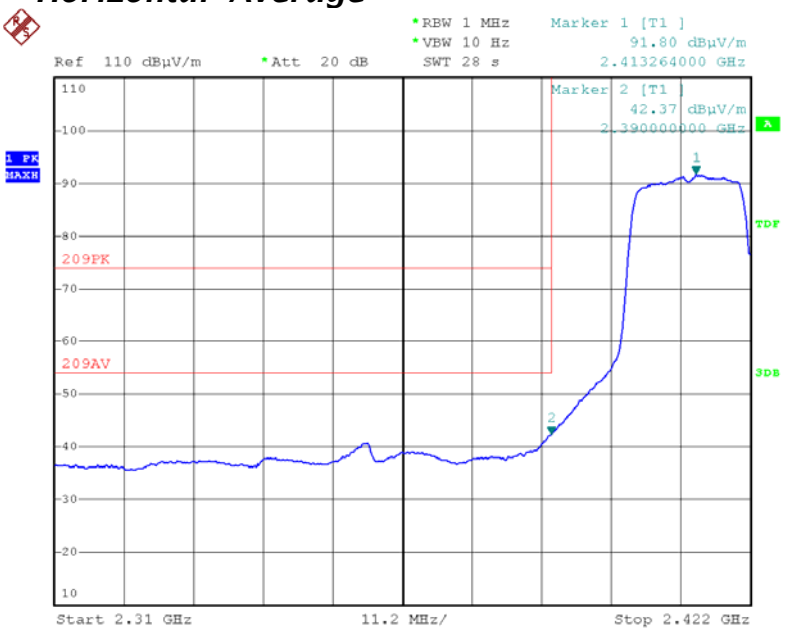


Conducted Band Edge Test Plot: 2462MHz

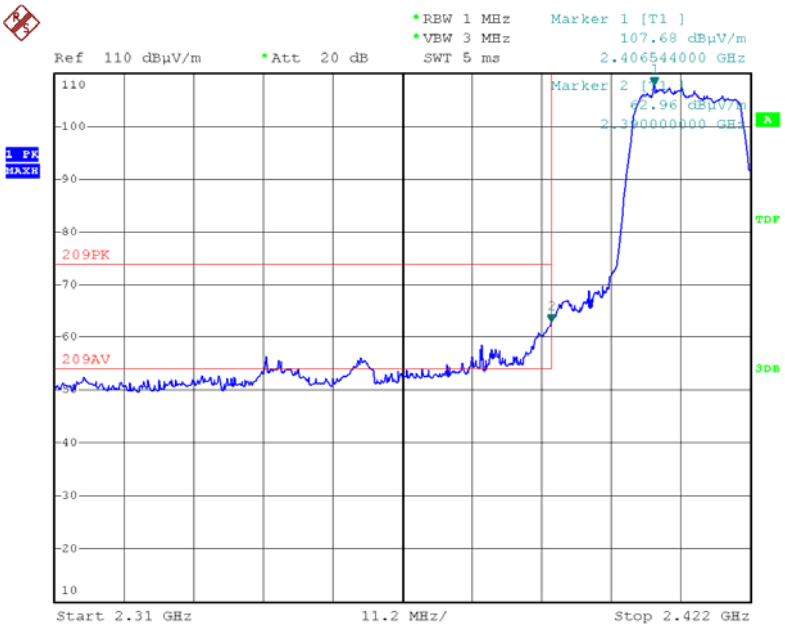


Radiated Band Edge Test Plot: 2412MHz

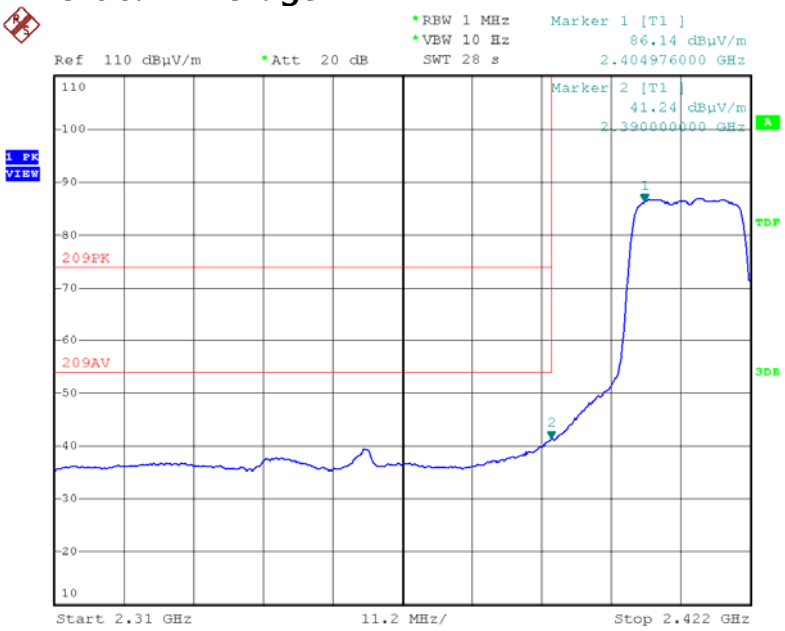
Horizontal- Average



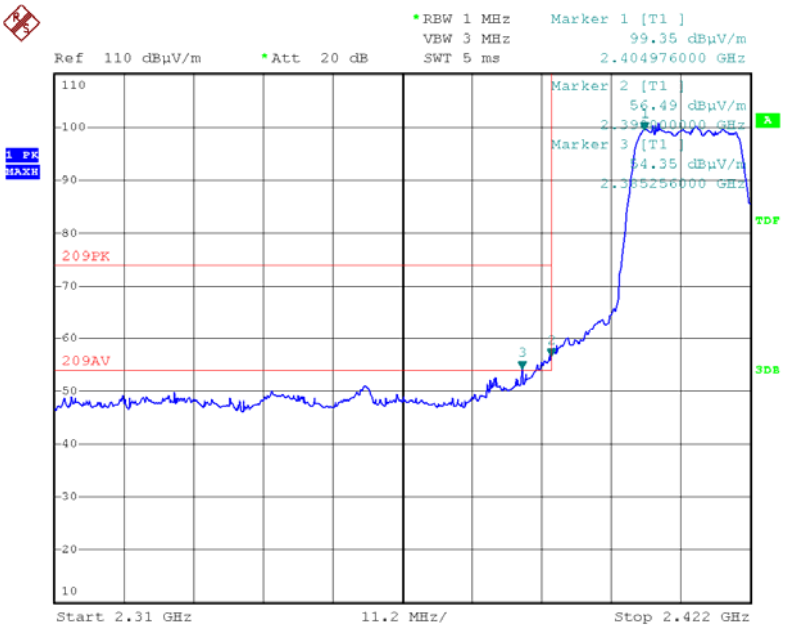
Horizontal-Peak



Vertical- Average

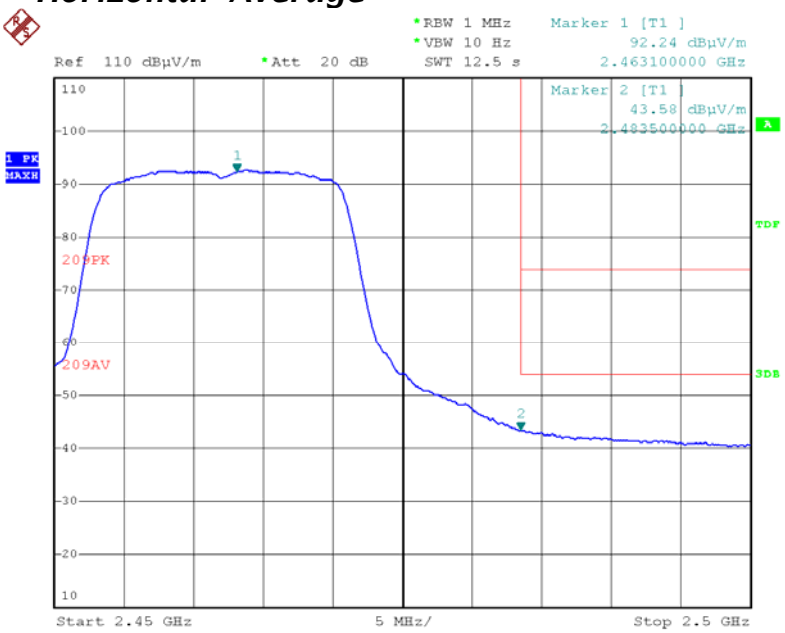


Vertical-Peak

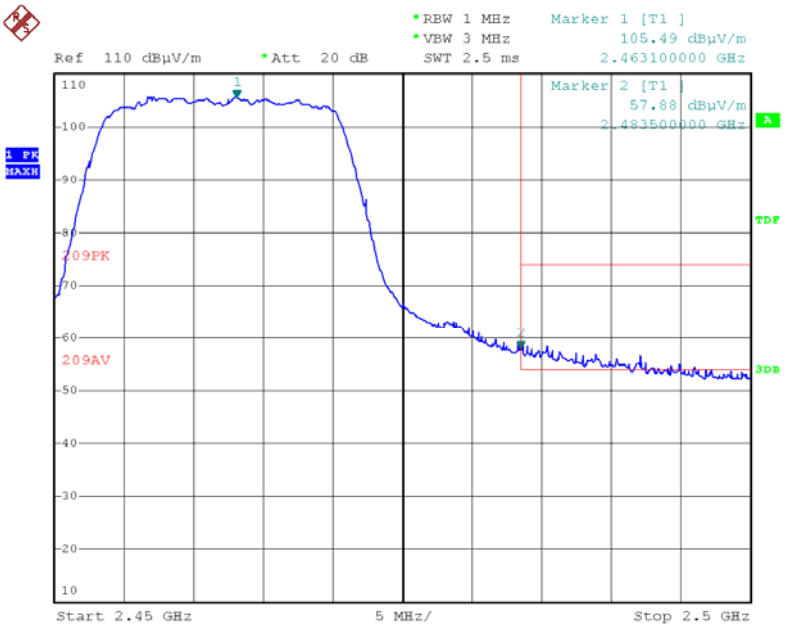


Radiated Band Edge Test Plot: 2462MHz

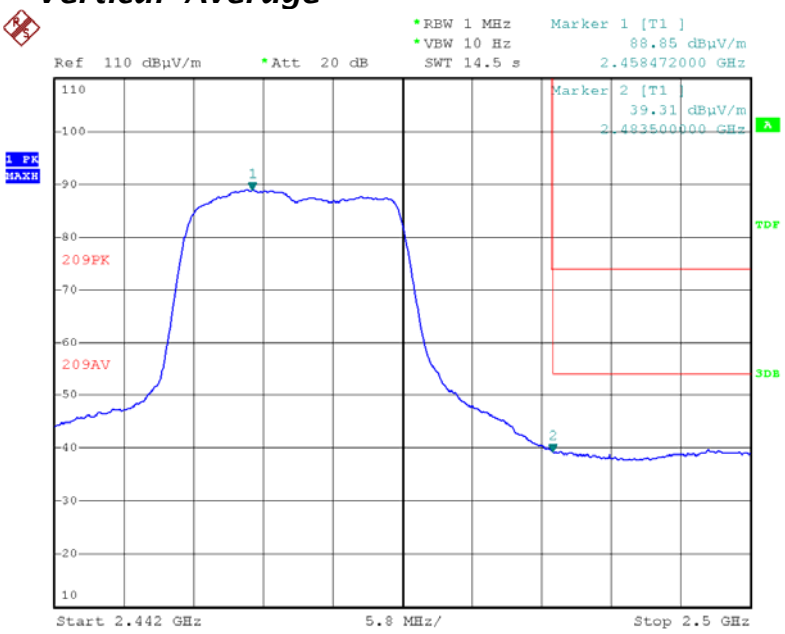
Horizontal- Average



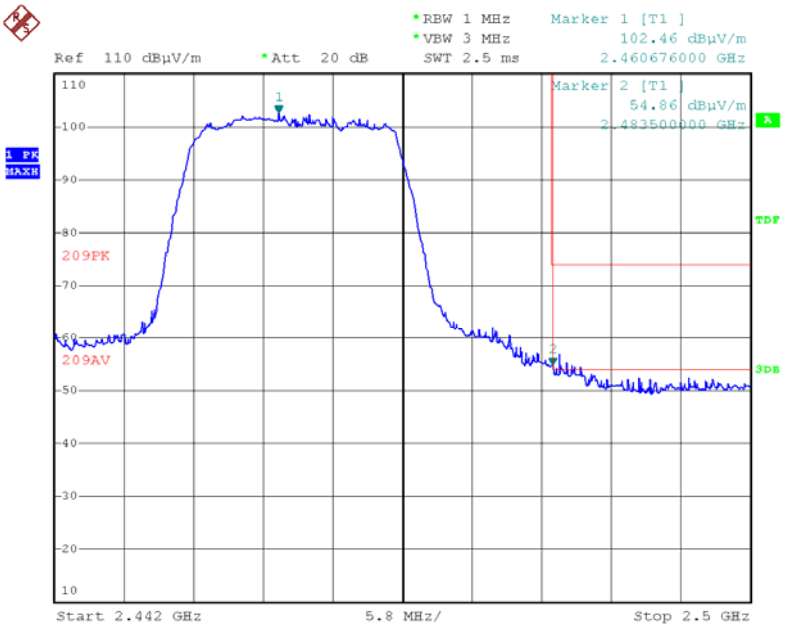
Horizontal-Peak



Vertical- Average

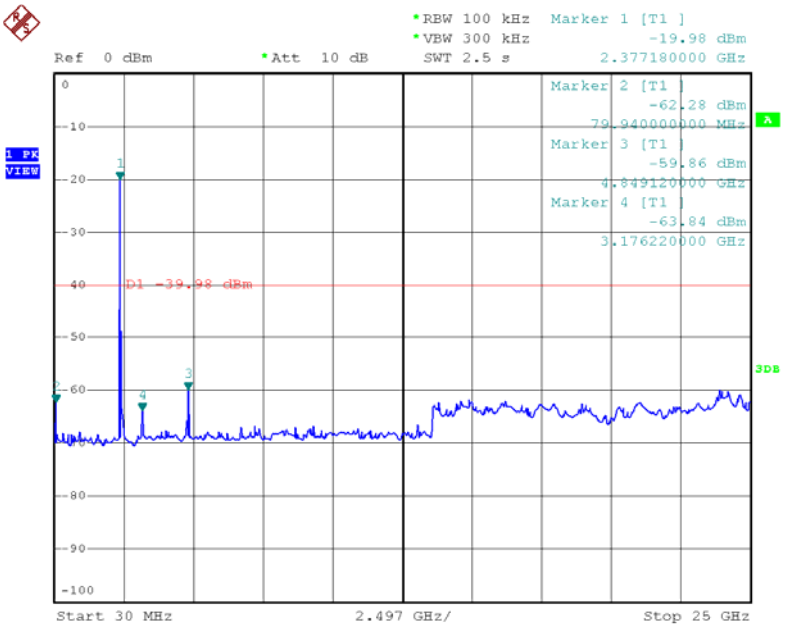


Vertical-Peak

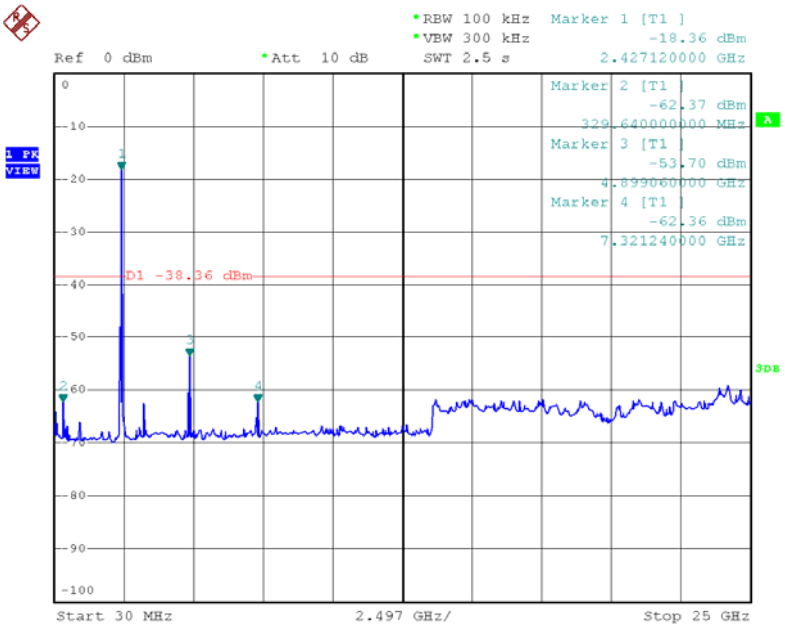


Conducted Spurious Emission Test Plot

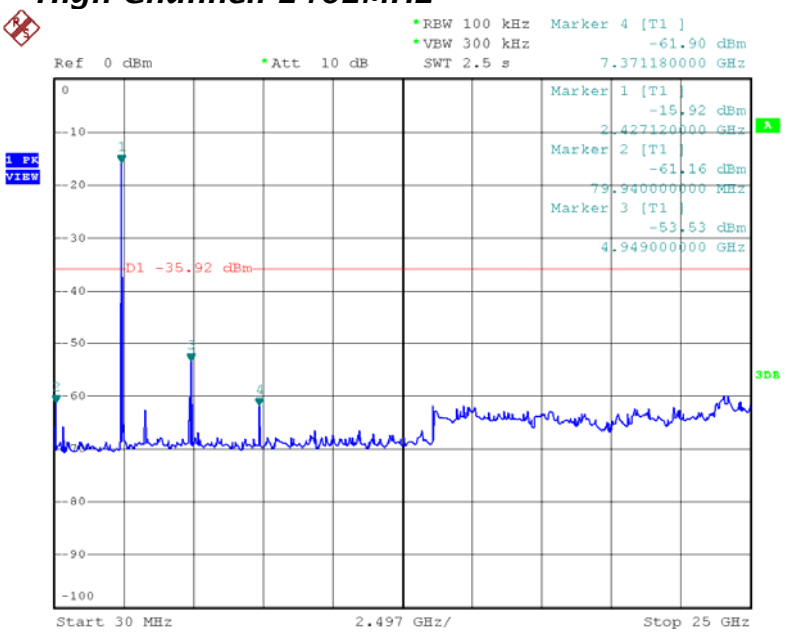
Low Channel: 2412MHz



Mid Channel: 2437MHz

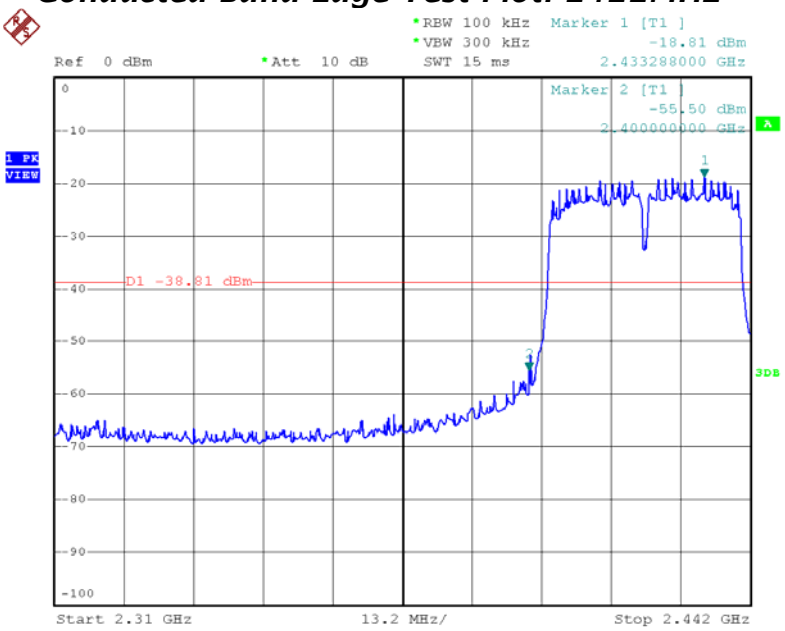


High Channel: 2462MHz

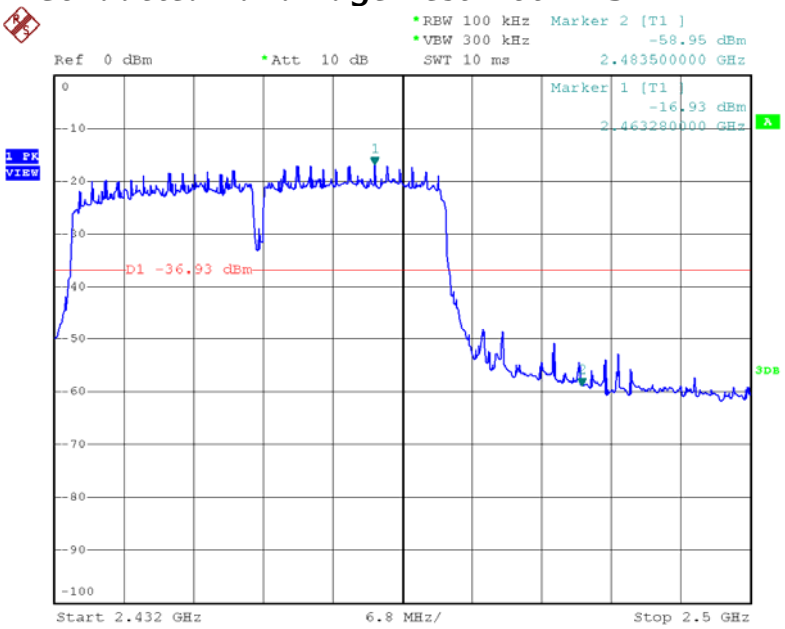


For 802.11n HT40 Mode:

Conducted Band Edge Test Plot: 2422MHz

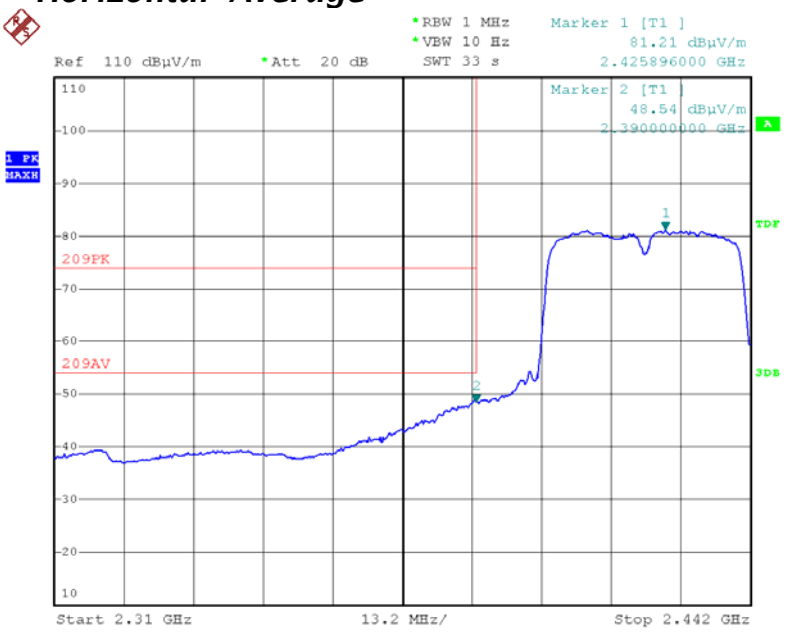


Conducted Band Edge Test Plot: 2452MHz

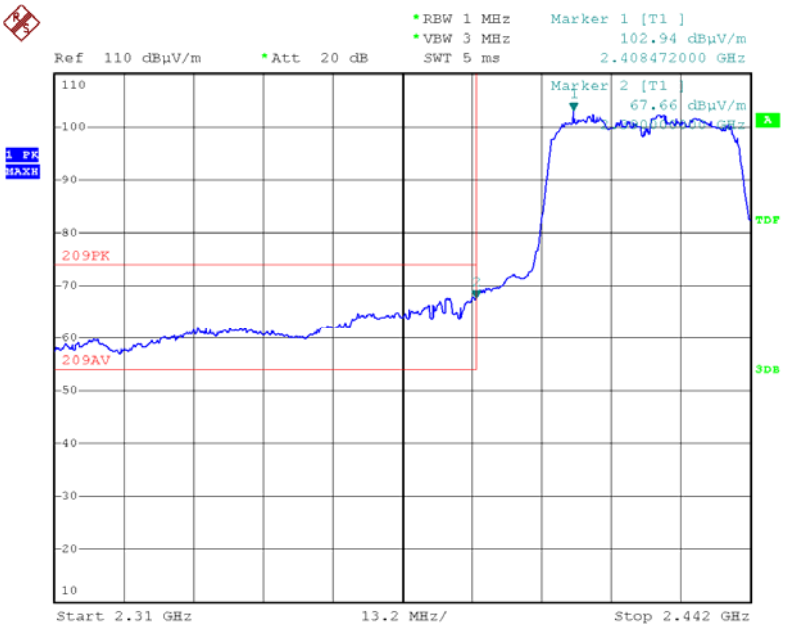


Radiated Band Edge Test Plot: 2422MHz

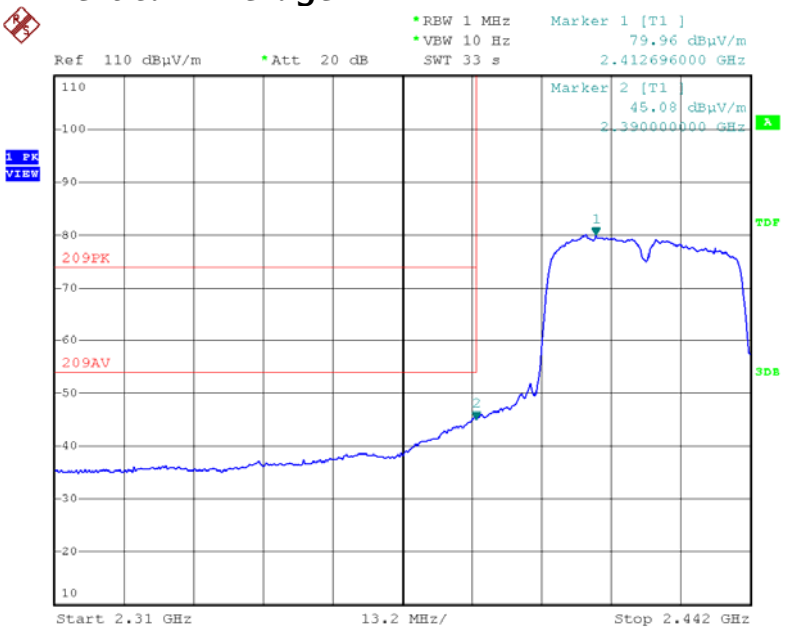
Horizontal- Average



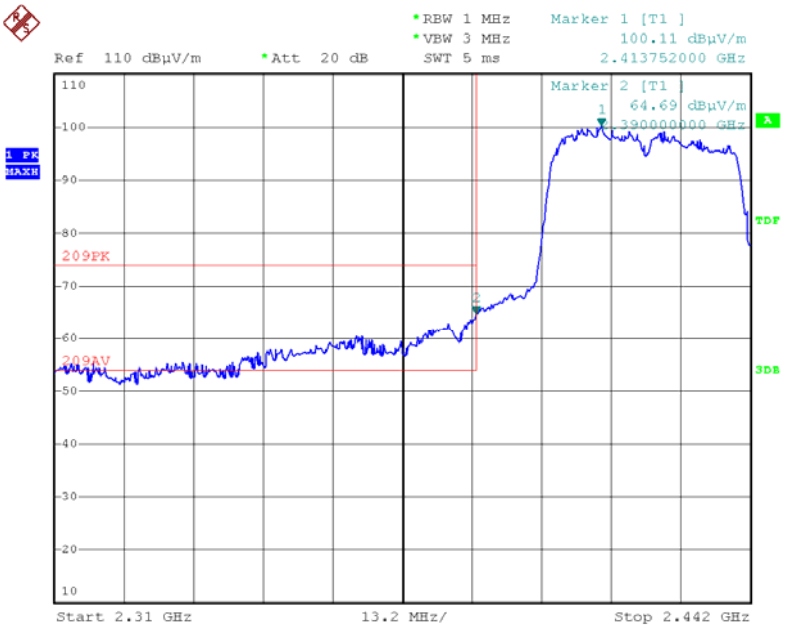
Horizontal-Peak



Vertical- Average

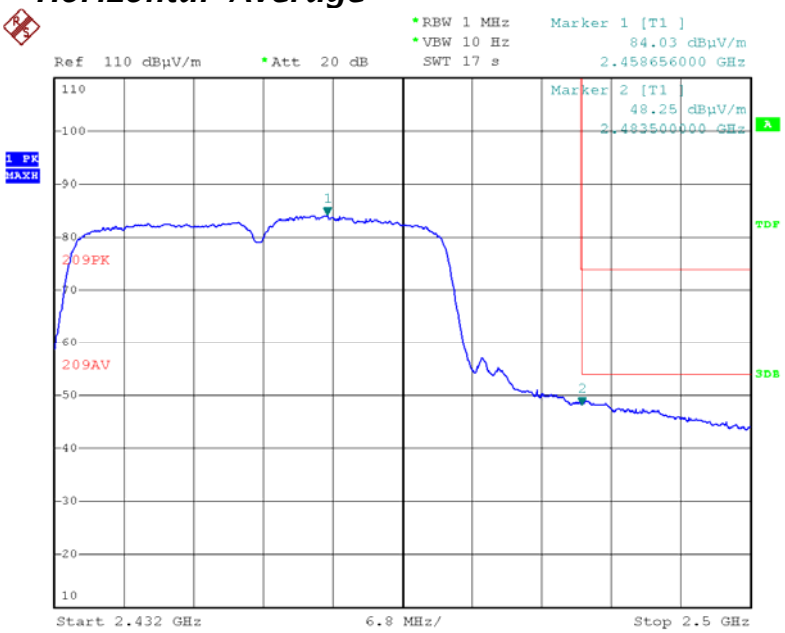


Vertical-Peak

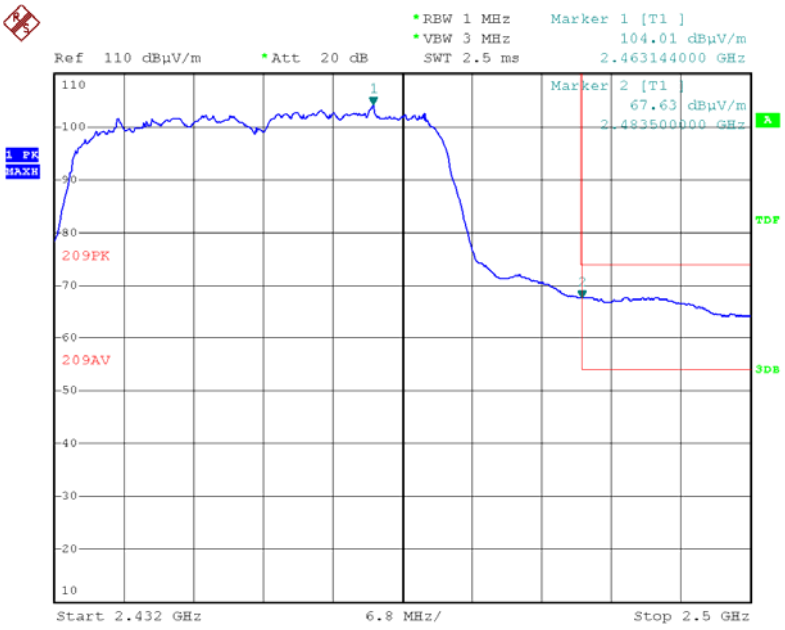


Radiated Band Edge Test Plot: 2452MHz

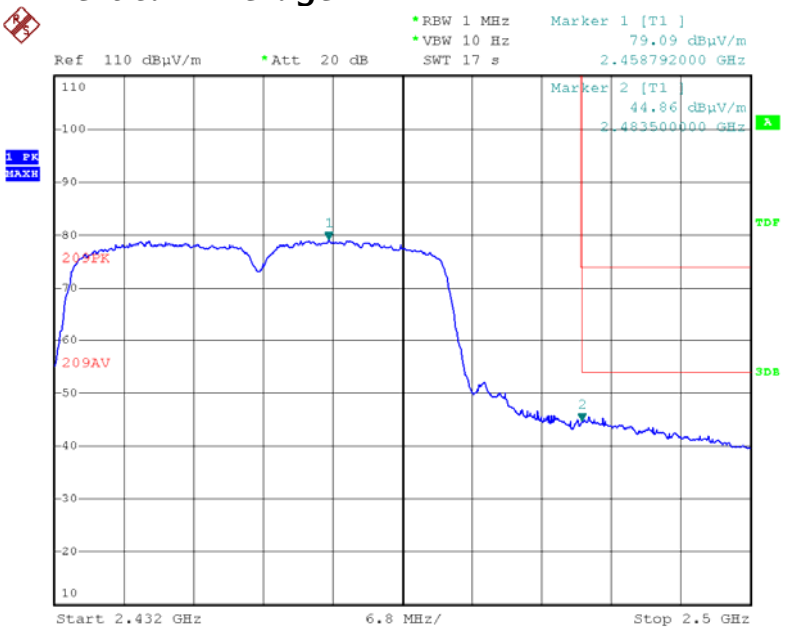
Horizontal- Average



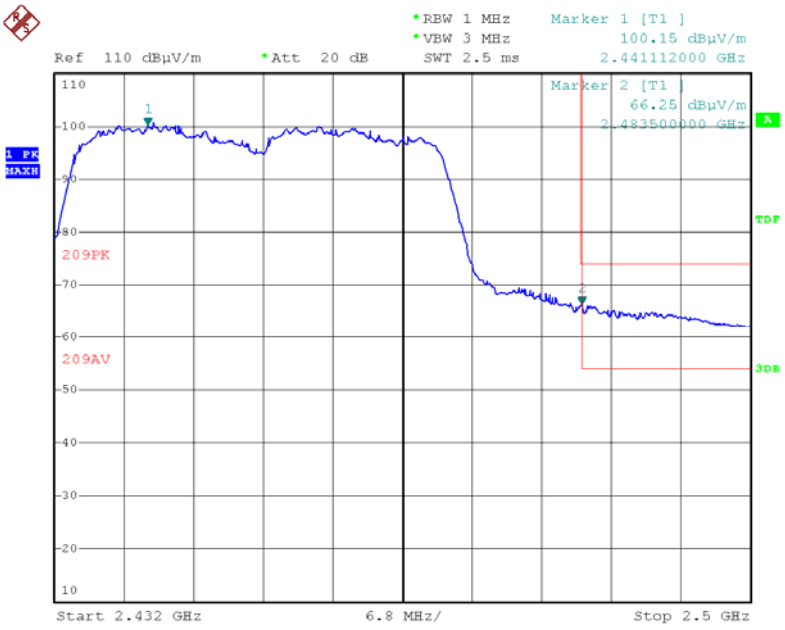
Horizontal-Peak



Vertical- Average

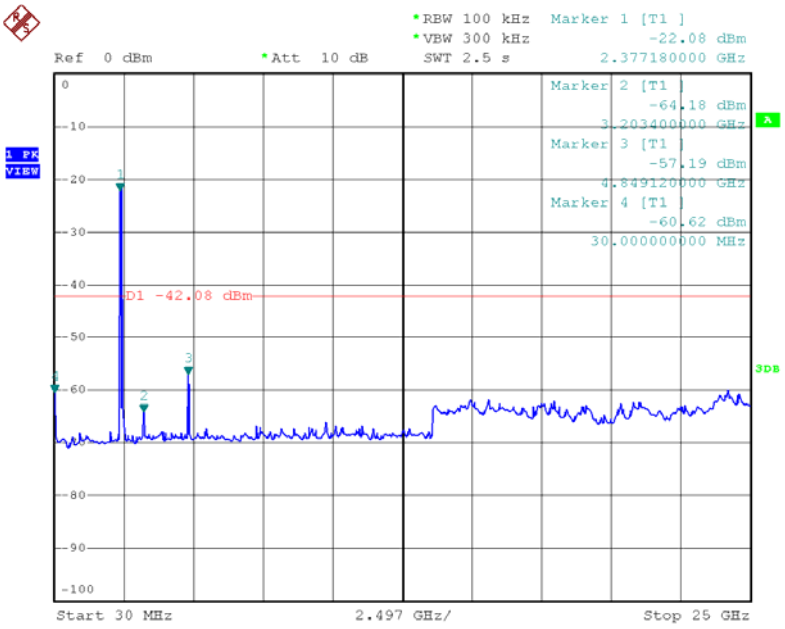


Vertical-Peak

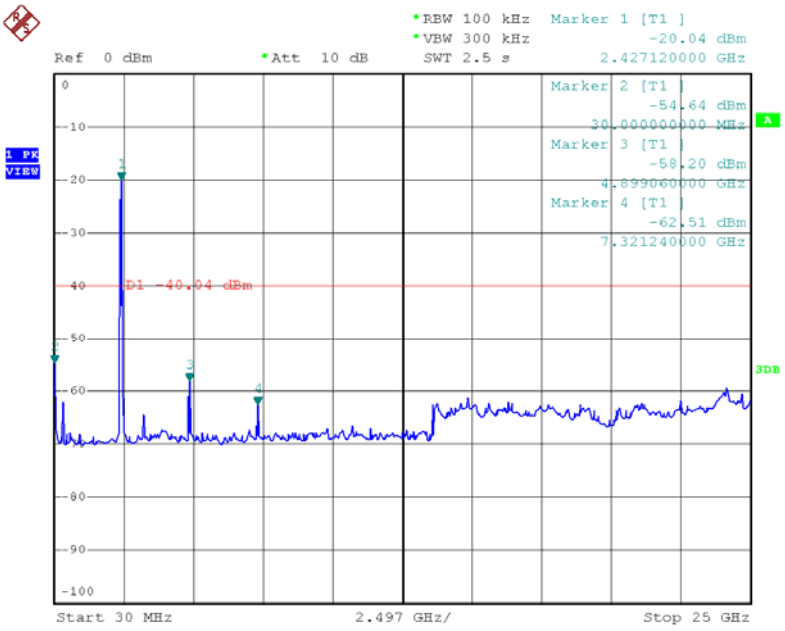


Conducted Spurious Emission Test Plot

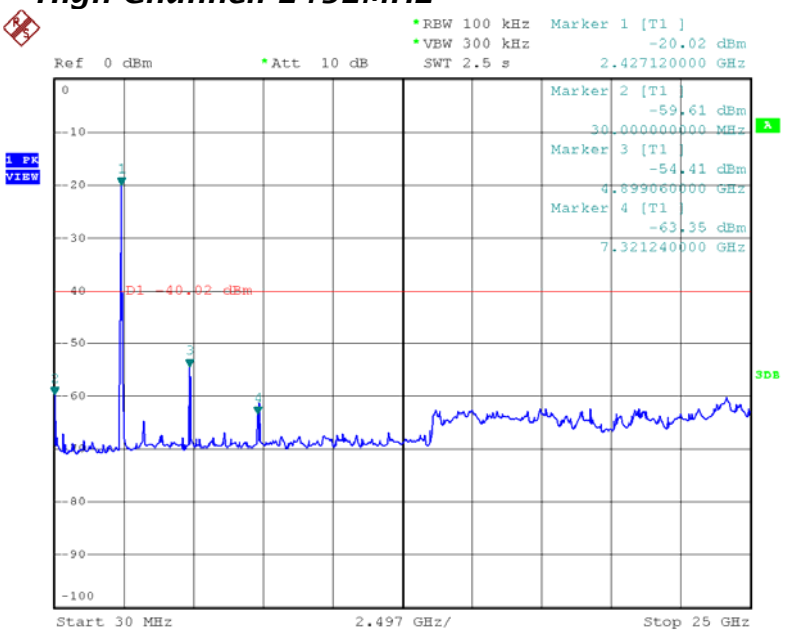
Low Channel: 2422MHz



Mid Channel: 2437MHz



High Channel: 2452MHz



ATTACHMENT 7 – PEAK POWER SPECTRAL DENSITY TEST

<table>
<tr><td>CLIENT:</td><td>GRANDSTREAM NETWORKS,INC.</td><td>TEST STANDERD:</td><td>Section 15.247(d)</td></tr>
<tr><td>MODEL NUMBERS:</td><td>GXV3615WP_HD/GXV3615W_HD/GXV3615P_HD/GXV3615_HD</td><td>PRODUCT:</td><td>IP Camera</td></tr>
<tr><td>EUT MODEL:</td><td>GXV3615WP_HD</td><td>EUT DESIGNATION:</td><td>Digital Transmission Device</td></tr>
<tr><td>TEMPERATURE:</td><td>23°C</td><td>HUMIDITY:</td><td>47%RH</td></tr>
<tr><td>ATM PRESSURE:</td><td>101.0kPa</td><td>GROUNDING:</td><td>None</td></tr>
<tr><td>TESTED BY:</td><td>Sewen Guo</td><td>DATE OF TEST:</td><td>February 24, 2012</td></tr>
<tr><td>TEST REFERENCE:</td><td colspan="3">ANSI C63.4 and KDB Publication No. 558074 for DSSS.</td></tr>
<tr><td>TEST PROCEDURE:</td><td colspan="3">Regulation 15.247(d) for direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.The EUT was set transmitting continuously and force selection of output power level and channel number. We'd observed that the peak levels aren't greater than +8dBm limit. The EUT was set up as ANSI C63.4, 2003, tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.</td></tr>
<tr><td>DESCRIPTIONS OF TEST MODE:</td><td colspan="3">Pre-Scan has been conducted to determine the worst-case mode from all possible Combinations between available modulations,data rates and antenna ports (if EUT with antenna diversity architecture). Following channels were selected for the final test as listed below: 802.11b mode with data rate of 1mbps, 802.11g mode with data rate of 6mbps,802.11n ht20 mode with data rate of 6.5mbps and 802.11n ht40 mode with data rate of 13.5mbps.</td></tr>
<tr><td>EQUIPMENT SETUP</td><td colspan="3">Spectrum analyzer shall be set as below:
<table>
<tr><td>Equipment Mode</td><td>Spectrum Analyzer</td></tr>
<tr><td>Detector Function</td><td>Peak</td></tr>
<tr><td>RBW</td><td>3KHz</td></tr>
<tr><td>VBW</td><td>10KHz</td></tr>
<tr><td>Span</td><td>300KHz</td></tr>
<tr><td>Sweep Time</td><td>100S</td></tr>
</table></td></tr>
<tr><td>TEST VOLTAGE:</td><td colspan="3">120VAC/60Hz</td></tr>
<tr><td>RESULTS:</td><td colspan="3">The EUT meet the requirements of test reference for power spectral density.The test results relate only to the equipment under test provided by client.</td></tr>
<tr><td>CHANGES OR MODIFICATIONS:</td><td colspan="3">There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen) test personnel.</td></tr>
<tr><td>M. UNCERTAINTY:</td><td colspan="3">Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB.</td></tr>
</table>

Peak Power Spectral Density Test Data:

For 802.11b Mode:

Channel Frequency (MHz)	Power Spectral Density (dBm)	Cable Loss (dB)	Power Spectral Density Level (dBm)	Maximum Limit (dBm)	Margin (dB)
2412	-20.68	2.0	-18.68	8.00	-26.68
2437	-22.03	2.0	-20.03	8.00	-28.03
2462	-22.08	2.0	-20.08	8.00	-28.08

For 802.11g Mode:

Channel Frequency (MHz)	Power Spectral Density (dBm)	Cable Loss (dB)	Power Spectral Density Level (dBm)	Maximum Limit (dBm)	Margin (dB)
2412	-26.18	2.0	-24.18	8.00	-32.18
2437	-26.38	2.0	-24.38	8.00	-32.38
2462	-26.36	2.0	-24.36	8.00	-32.36

For 802.11n HT20 Mode:

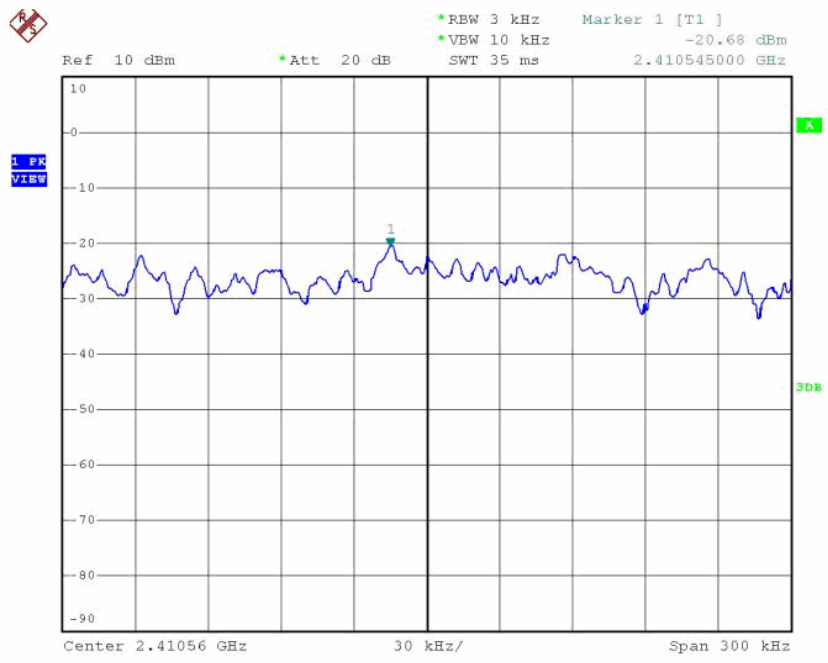
Channel Frequency (MHz)	Power Spectral Density (dBm)	Cable Loss (dB)	Power Spectral Density Level (dBm)	Maximum Limit (dBm)	Margin (dB)
2412	-25.36	2.0	-23.36	8.00	-31.36
2437	-24.63	2.0	-22.63	8.00	-30.63
2462	-28.15	2.0	-26.15	8.00	-34.15

For 802.11n HT40 Mode:

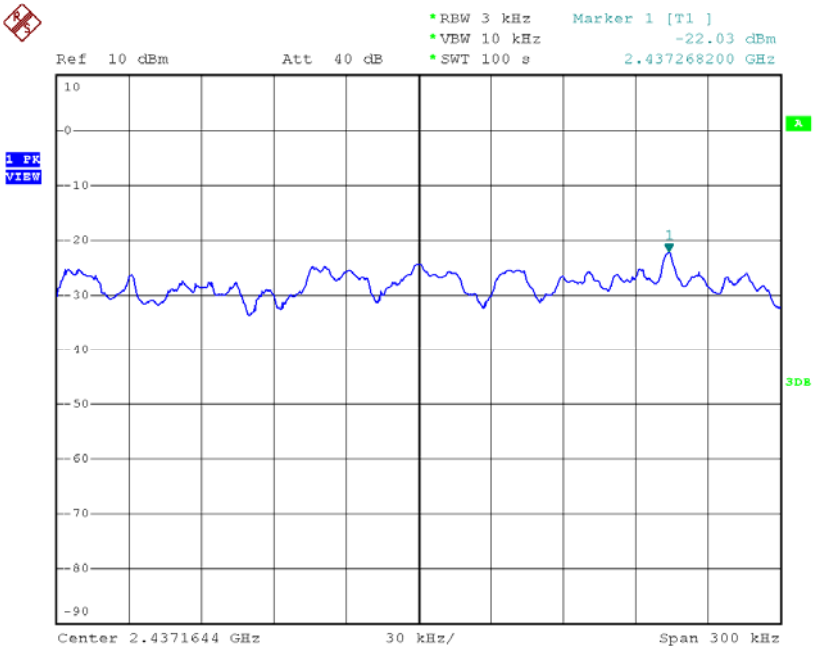
Channel Frequency (MHz)	Power Spectral Density (dBm)	Cable Loss (dB)	Power Spectral Density Level (dBm)	Maximum Limit (dBm)	Margin (dB)
2412	-30.69	2.0	-28.69	8.00	-36.69
2437	-30.0	2.0	-28.0	8.00	-36.00
2452	-31.4	2.0	-29.4	8.00	-37.40

For 802.11b Mode:

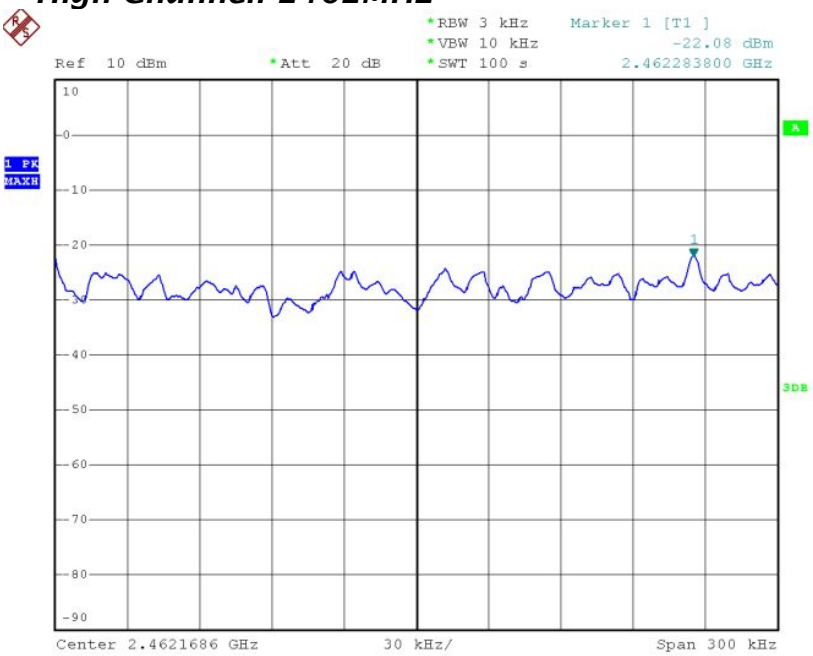
Low Channel: 2412MHz



Mid Channel: 2437MHz

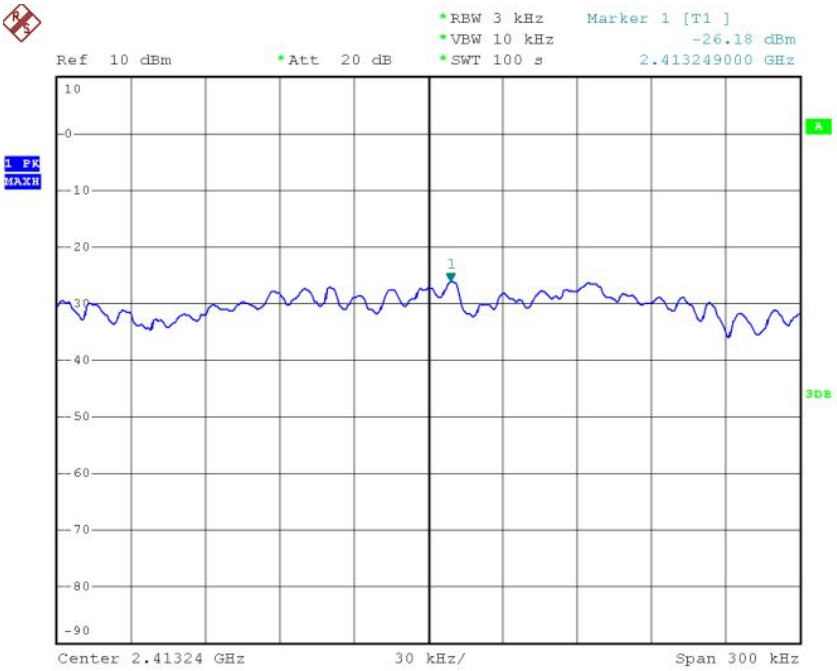


High Channel: 2462MHz

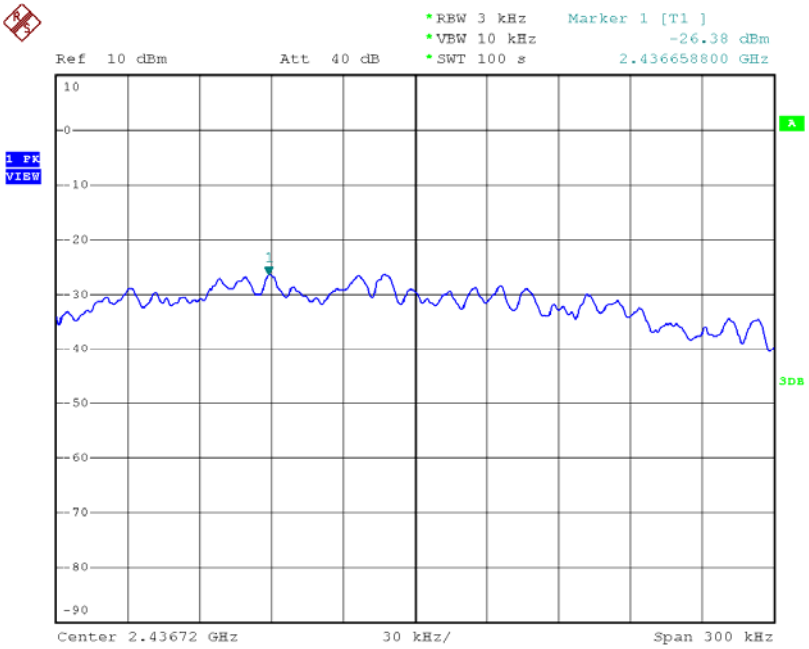


For 802.11g Mode:

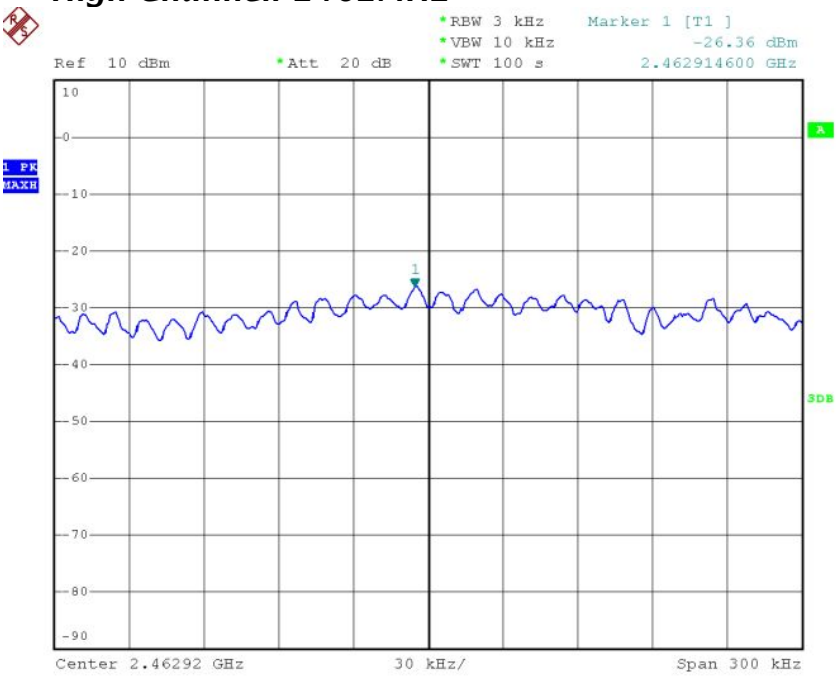
Low Channel: 2412MHz



Mid Channel: 2437MHz

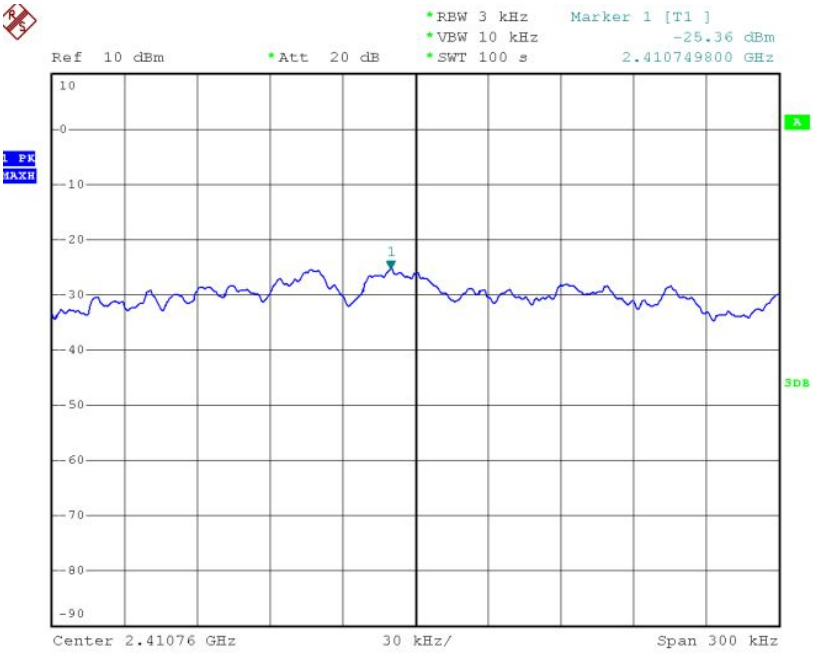


High Channel: 2462MHz

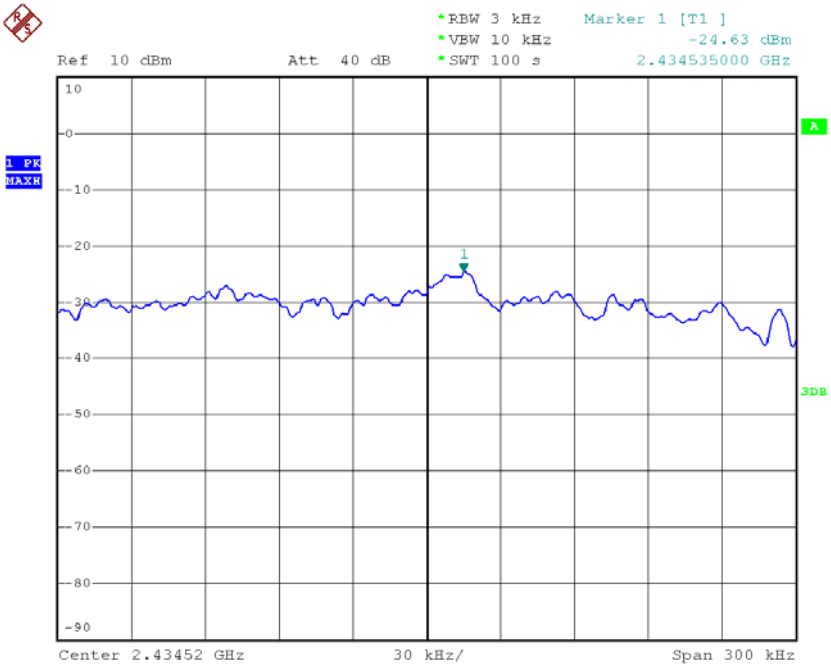


For 802.11n HT20 Mode:

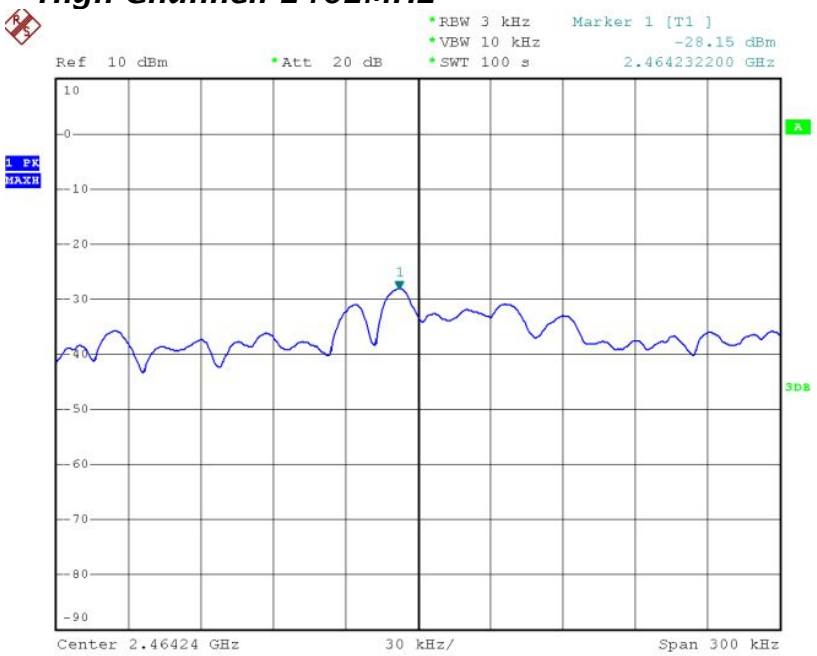
Low Channel: 2412MHz



Mid Channel: 2437MHz

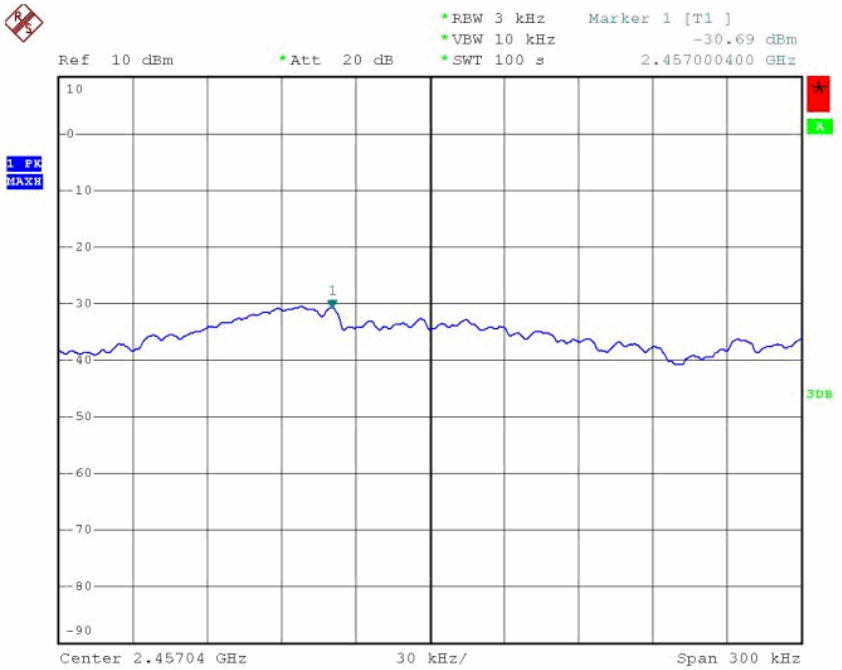


High Channel: 2462MHz

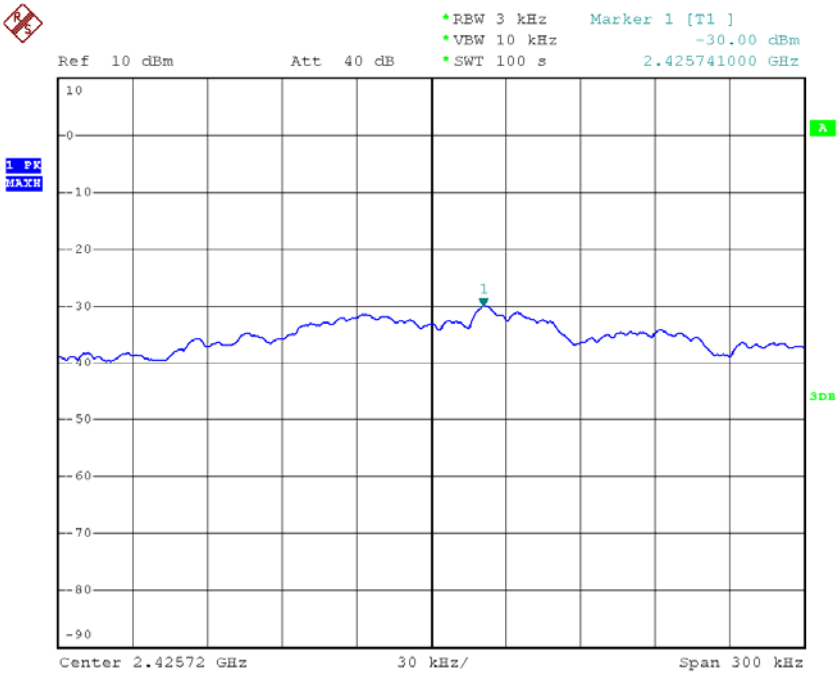


For 802.11n HT40 Mode:

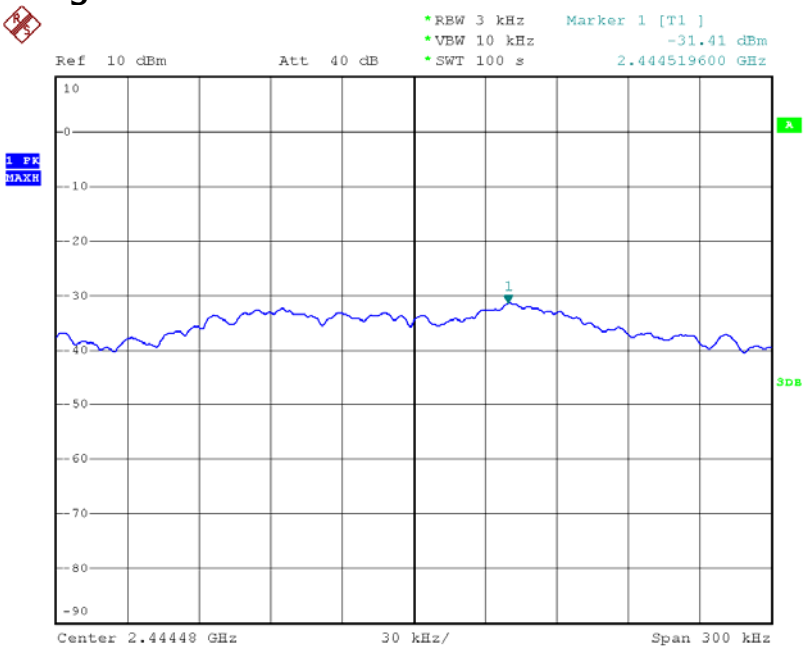
Low Channel: 2422MHz



Mid Channel: 2437MHz



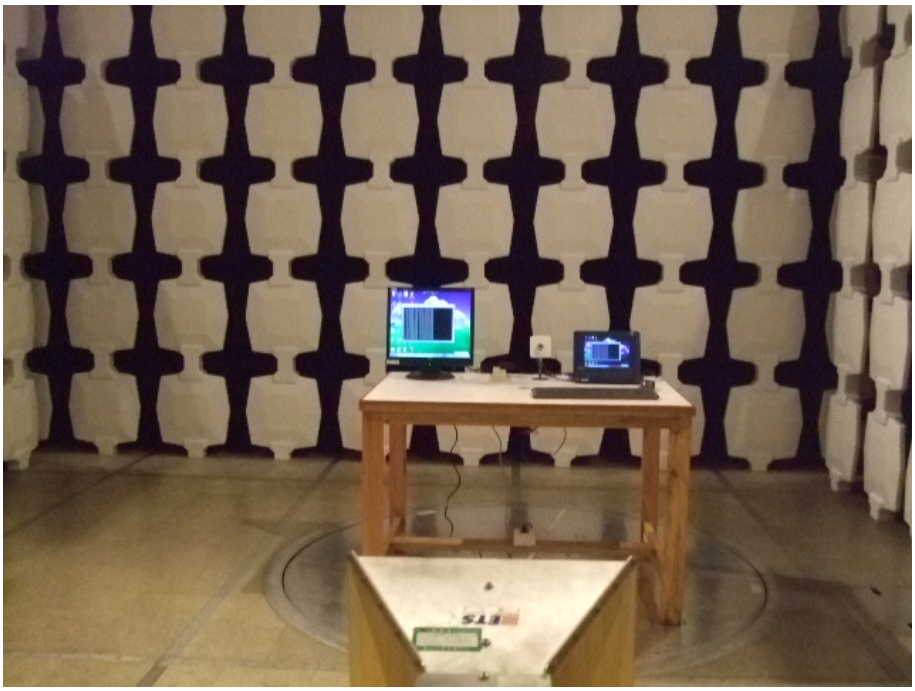
High Channel: 2452MHz



ATTACHMENT TEST SET-UP PHOTOGRAPH

Conducted Emission Test Set-up

Radiated Emission Test Set-up -below 1GHz



Radiated Emission Test Set-up - Above 1GHz