Prüfbericht-Nr.: *Test Report No.:*	**50062633 001**	**Auftrags-Nr.:** *Order No.:*	164077890	Seite 1 von 26 *Page 1 of 26*
Kunden-Referenz-Nr.: *Client Reference No.:*	N/A	**Auftragsdatum:** *Order date:*	03.11.2016	
Auftraggeber: *Client:*	SWANN COMMUNICATIONS LIMITED, RM1601, 249-255 DES VOEUX ROAD, CENTRAL, HONGKONG			
Prüfgegenstand: *Test item:*	Swann Wireless HD Smart Security Camera			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	SWWHD-INTCAM			
Auftrags-Inhalt: *Order content:*	FCC approval			
Prüfgrundlage: *Test specification:*	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 15: Subpart B Section 15.107 CFR47 FCC Part 15: Subpart B Section 15.109 FCC KDB publication 447498 D01 v06			

Wareneingangsdatum: *Date of receipt:*	03.11.2016	Refer to photo documents
Prüfmuster-Nr.: *Test sample No.:*	D161109357, D161109358	
Prüfzeitraum: *Testing period:*	20.11.2016 - 10.03.2017	
Ort der Prüfung: *Place of testing:*	BTL Inc.	
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüfergebnis*: *Test result*:*	Pass	

geprüft von / *tested by:* Alex Lan

Datum *Date*	Name / Stellung *Name / Position*	Unterschrift *Signature*
05.04.2017	Alex Lan / Project Engineer	

kontrolliert von / *reviewed by:*

Datum *Date*	Name / Stellung *Name / Position*	Unterschrift *Signature*
04.07.2017	Sam Lin / Technical Certifier	

Sonstiges / *Other:*
This report is for DTS equipment class.
FCC ID:2AKPISWWHDINTCAM

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER
RESULT: Pass

5.1.3 6DB BANDWIDTH AND 99% BANDWIDTH
RESULT: Pass

5.1.4 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH
RESULT: Pass

5.1.5 POWER SPECTRAL DENSITY
RESULT: Pass

5.1.6 SPURIOUS EMISSIONS
RESULT: Pass

5.1.7 RADIATED EMISSIONS
RESULT: Pass

5.1.8 CONDUCTED EMISSIONS
RESULT: Pass

Contents

1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of Wi-Fi operation for 2.4 GHz Band

Appendix B: Test Results of RF Exposure

2. Test Sites

2.1 Test Facilities

BTL Inc.
(FCC Registration No.: 319330 & IC Registration Number: 4428B-1)

No. 3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, China

The tests at the test site have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Radio Spectrum – 6 dB Bandwidth				
Spectrum Analyzer	R&S	FSP 40	100185	Sep. 04, 2017
Radio Spectrum – Peak Output Power				
P-series Power meter	Agilent	N1911A	MY45100473	Mar. 26, 2018
Wireband Power sensor	Agilent	N1921A	MY51100041	Mar. 26, 2018
Radio Spectrum – Antenna Conducted Spurious Emission				
Spectrum Analyzer	R&S	FSP 40	100185	Sep. 04, 2017
Radio Spectrum – Power Spectral Density				
Spectrum Analyzer	R&S	FSP 40	100185	Sep. 04, 2017
Conducted emissions				
50Ω Terminator	SHX	TF2-3G-A	8122901	Mar. 26, 2018
TWO-LINE V-NETWORK	R&S	ENV216	100526	Mar. 26, 2018
EMI Test Receiver	R&S	ESR3	101862	Sep. 04, 2017
Artificial-Mains Network	SCHWARZBECK	NSLK 8127	8127685	Sep. 04, 2017
Cable	N/A	RG400 12m	N/A	Mar. 09, 2018
Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
Spurious Emissions and Radiated emissions				
Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 26, 2018
Amplifier	HP	8447D	2944A09673	Oct. 20, 2017
Receiver	Agilent	N9038A	MY52130039	Sep. 04, 2017
Controller	CT	SC100	N/A	N/A
Controller	MF	MF-7802	MF780208416	N/A
Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
Amplifier	Agilent	8449B	3008A02274	Mar. 09, 2018
Receiver	Agilent	N9038A	MY52130039	Sep. 04, 2017
Antenna	EM	EM-6876-1	230	Jul. 08, 2017
Controller	CT	SC100	N/A	N/A
Controller	MF	MF-7802	MF780208416	N/A
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Apr. 22, 2018
Spectrum Analyzer	R&S	FSP40	100185	Sep. 04, 2017
Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 26, 2018
Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table,

Items		Extended Uncertainty
CE	Disturbance Voltage (dBuV)	U=2.32dB, k=2, σ=95%
RE (9kHz-30MHz)	Field strength (dBuV/m)	U=3.79dB, k=2, σ=95%
RE (30-1000MHz)	Field strength (dBuV/m)	U=4.10dB, k=2, σ=95%
RE (above 1000MHz)	Field strength (dBuV/m)	U=4.15dB, k=2, σ=95%

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix1 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The BTL Inc. facility located at No. 3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3. General Product Information

3.1 Product Function and Intended Use

The EUT is wireless camera. It supports 802.11 a/b/g/n wireless technologies. The EUT supports the following funtions:

- Wireless access in the 2.4GHz band or 5GHz band

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment:	Swann Wireless HD Smart Security Camera
Type Designation:	SWWHD-INTCAM
FCC ID:	2AKPISWWHDINTCAM
IC:	--
HVIN:	--
Type of Equipment:	Class B digital equipment
Equiupment Class:	DTS
Wireless Technology:	Wi-Fi
Operating Frequency Range:	2412-2462 MHz for Wi-Fi
Channel Number:	11 channels for Wi-Fi (802.11b/g/n)
Channel Separation:	5 MHz for Wi-Fi
Type of Modulation:	DSSS for Wi-Fi 802.11b OFDM for Wi-Fi 802.11g/n
Operating Voltage:	DC 3.8V via internal Lithium battery DC 5V via USB port for battery charging
Operating Temperature Range:	0°C to 40°C
Antenna Type:	Integrated PIFA Antenna for WiFi
Smart Antenna Systems:	Not Applicable
Number of Antenna:	1 for Wi-Fi
Antenna Gain:	Max. 3 dBi for Wi-Fi Antenna

Table 3: List of Radio Frequency Channel, Wi-Fi 802.11 b/g/n 20MHz bandwidth

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
1	2412.00	5	2432.00	9	2452.00
2	2417.00	6	2437.00	10	2457.00
3	2422.00	7	2442.00	11	2462.00
4	2427.00	8	2447.00	--	--

3.3 Independent Operation Modes

The basic operation modes are:

A. Transmitting
    1. Low Channel
    2. Mid Channel
    3. High Channel
B. Receiving
    1. Low Channel
    2. Mid Channel
    3. High Channel
C. Battery charging via USB port
D. Standby
E. Off

Table 4: List of Wi-Fi operation modes

Mode	**Wi-Fi Operation**	
Antenna	**Single**	
Bandwidth	**20 MHz**	**40 MHz**
802.11b	√	x
802.11g	√	x
802.11n	√	x
Note: 1. The EUT support HT20 only. 2. 802.11n support MCS0 ~ MCS7 data rates.		

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material	- Circuit Diagram
- PCB Layout	- Instruction Manual
- Photo Document	- Rating Label

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5.

During testing, test software 'MP Tool' Program provided by the applicant was used to control the operating channels as well as output power level for Wi-Fi operation.

Table 5: List of Frequencies under Test, Wi-Fi operation

RF Channel of 802.11 b, 802.11g and 802.11n (HT20)					
Channel	Channel number	Frequency (MHz)	Power Level Setting		
			802.11b	802.11g	802.11n HT20
Low	1	2412.00	15	15	14
Middle	6	2437.00	19	17	17
High	11	2462.00	17	14	13

Table 6: List of Operation mode under Test, Wi-Fi operation

Config	Data Rates	Transmit Chain
Transmit Chain - 1TX		
802.11b	11Mbps	ANT 1
802.11g	54Mbps	ANT 1
802.11n HT20	MCS7	ANT 1
802.11n HT40	MCS7	ANT 1
Note: Preliminary tests were performed in different data rate and antenna chain to find the worst case. The data rate and antenna chain shown in the table is the worst case.		

4.3 Special Accessories and Auxiliary Equipment

Table 7: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Remark
Laptop PC	DELL	745	G7K832X	FCC DOC
AC/DC Adapter	Dongguan City Yingju Eelectronics Co., Ltd.	YJC010W-0502000U	N/A	Input: AC 100-240 V, 50/60Hz Output: 5.0V DC

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1 GHz)

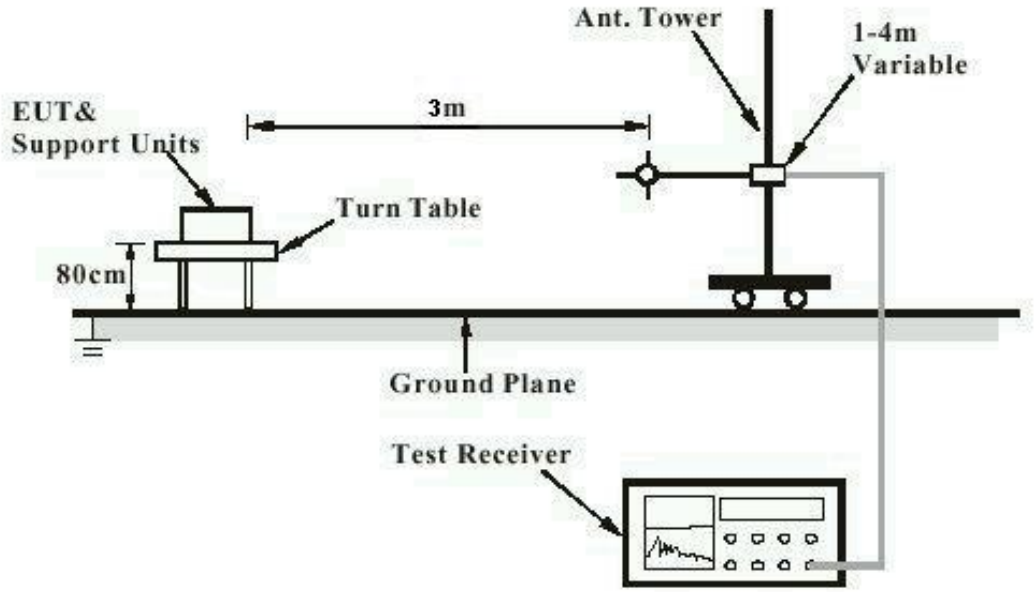


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

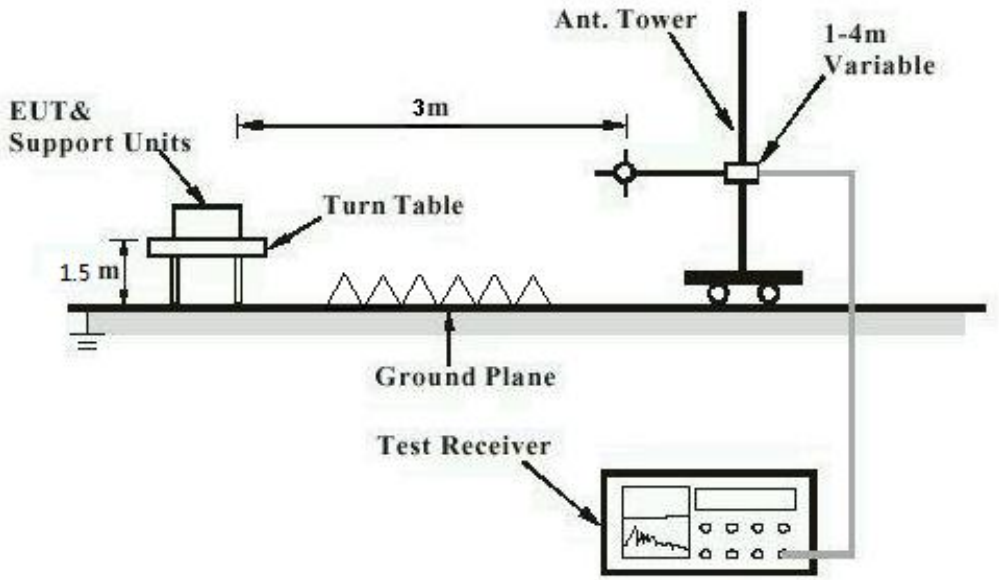


Diagram of Measurement Equipment Configuration for Conduction Measurement

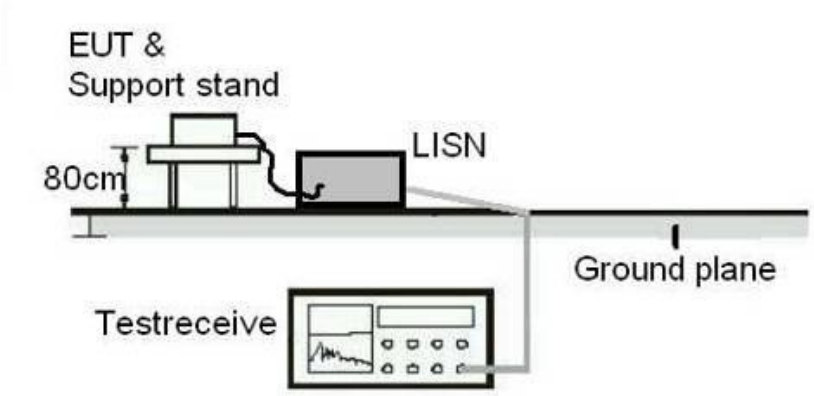
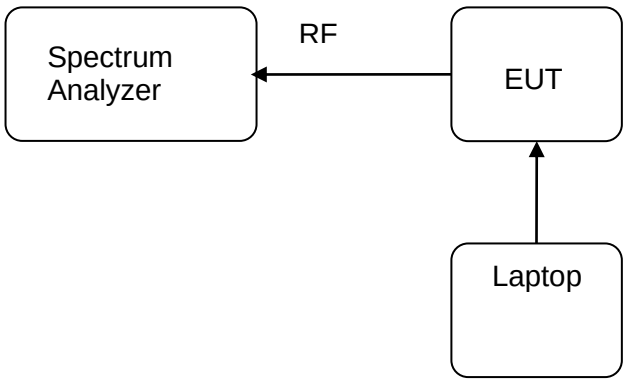


Diagram of Measurement Equipment Configuration for Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test date	:	2016-11-20 to 2017-03-10
Test standard	:	FCC Part 15.247(b)(4) and Part 15.203
Limit	:	the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 3dBi for WiFi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to compliance the provision.

Refer to EUT photo for details.

5.1.2 Maximum Peak Conducted Output Power

RESULT: **Pass**

Test date	:	2016-11-20 to 2017-03-10
Test standard	:	FCC Part 15.247(b)(3)
Basic standard	:	ANSI C63.10:2013 FCC KDB 558074 v03r05
Limit	:	1Watt
Kind of test site	:	Shielded room

Test setup

Test Channel	:	Low/ Middle/ High
Operation Mode	:	A
Ambient temperature	:	22°C
Relative humidity	:	50%
Atmospheric pressure	:	101.0 kPa

Refer to attached Appendix A for details of test results of Wi-Fi operation.

5.1.3 6dB Bandwidth and 99% Bandwidth

RESULT: **Pass**

Date of testing	:	2016-11-20 to 2017-03-10
Test standard	:	FCC Part 15.247(a)(2)
Basic standard	:	ANSI C63.10:2013 FCC KDB 558074 v03r05
Kind of test site	:	Shielded room

Test setup

Test Channel	:	Low/ Middle/ High
Operation Mode	:	A
Ambient temperature	:	22°C
Relative humidity	:	50%
Atmospheric pressure	:	101.0 kPa

Refer to attached Appendix A for details of test results of Wi-Fi operation.

5.1.4 Conducted Spurious Emissions measured in 100 kHz Bandwidth

RESULT: **Pass**

Date of testing	:	2016-11-20 to 2017-03-10
Test standard	:	FCC part 15.247(d)
Basic standard	:	ANSI C63.10:2013 FCC KDB 558074 v03r05
Limit	:	20dB or 30dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	:	Shield room

Test setup

Test Channel	:	Low/ Middle/ High
Operation mode	:	A
Ambient temperature	:	22°C
Relative humidity	:	50%
Atmospheric pressure	:	101.0 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to following test graph, and compliance is achived as well.

Refer to attached Appendix A for details of test results of Wi-Fi operation.

5.1.5 Power Spectral Density

RESULT: **Pass**

Date of testing	:	2016-11-20 to 2017-03-10
Test standard	:	FCC part 15.247(e)
Basic standard	:	ANSI C63.10:2013 FCC KDB 558074 v03r05
Limit	:	8dBm/3kHz
Kind of test site	:	Shield room

Test setup

Test Channel	:	Low/ Middle/ High
Operation mode	:	A
Ambient temperature	:	22°C
Relative humidity	:	50%
Atmospheric pressure	:	101.0 kPa

Refer to attached Appendix A for details of test results of Wi-Fi operation.

5.1.6 Spurious Emissions

RESULT: **Pass**

Date of testing	:	2016-11-20 to 2017-03-10
Test standard	:	FCC part 15.247(d) FCC part 15.209
Basic standard	:	ANSI C63.10:2013
Limits	:	Refer to 15.209(a)
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Test Channel	:	Low/ Middle/ High
Operation mode	:	A
Ambient temperature	:	22°C
Relative humidity	:	50%
Atmospheric pressure	:	101.0 kPa

Refer to attached Appendix B for details of test results of Wi-Fi operation.

5.1.7 Radiated Emissions

RESULT: **Pass**

Date of testing	:	2016-11-20 to 2017-03-10
Test standard	:	FCC Part 15.109
Basic standard	:	ANSI C63.4:2014
Frequency range	:	30 – 6000MHz
Limits	:	FCC Part 15.109(a)
Kind of test site	:	3m Semi-Anechoic Chamber

Test Setup

Input Voltage	:	DC 5V (via USB port)
Operation Mode	:	C
Ambient temperature	:	23°C
Relative humidity	:	48%
Atmospheric pressure	:	101.0 kPa

Refer to attached Appendix A for details of test results.

5.1.8 Conducted Emissions

RESULT: **Pass**

Date of testing	:	2016-11-20 to 2017-03-10
Test standard	:	FCC Part 15.207 FCC Part 15.107
Basic standard	:	ANSI C63.10:2013 ANSI C63.4:2014
Frequency range	:	0.15MHz – 30MHz
Limits	:	FCC Part 15.207(a) FCC Part 15.107(a) Table 3 of RSS-Gen
Kind of test site	:	Shield Room

Test Setup

Input Voltage	:	DC 5V (via USB port)
Operation Mode	:	A+B+C
Ambient temperature	:	22°C
Relative humidity	:	50%
Atmospheric pressure	:	101.0 kPa

Refer to attached Appendix A for details of test results.

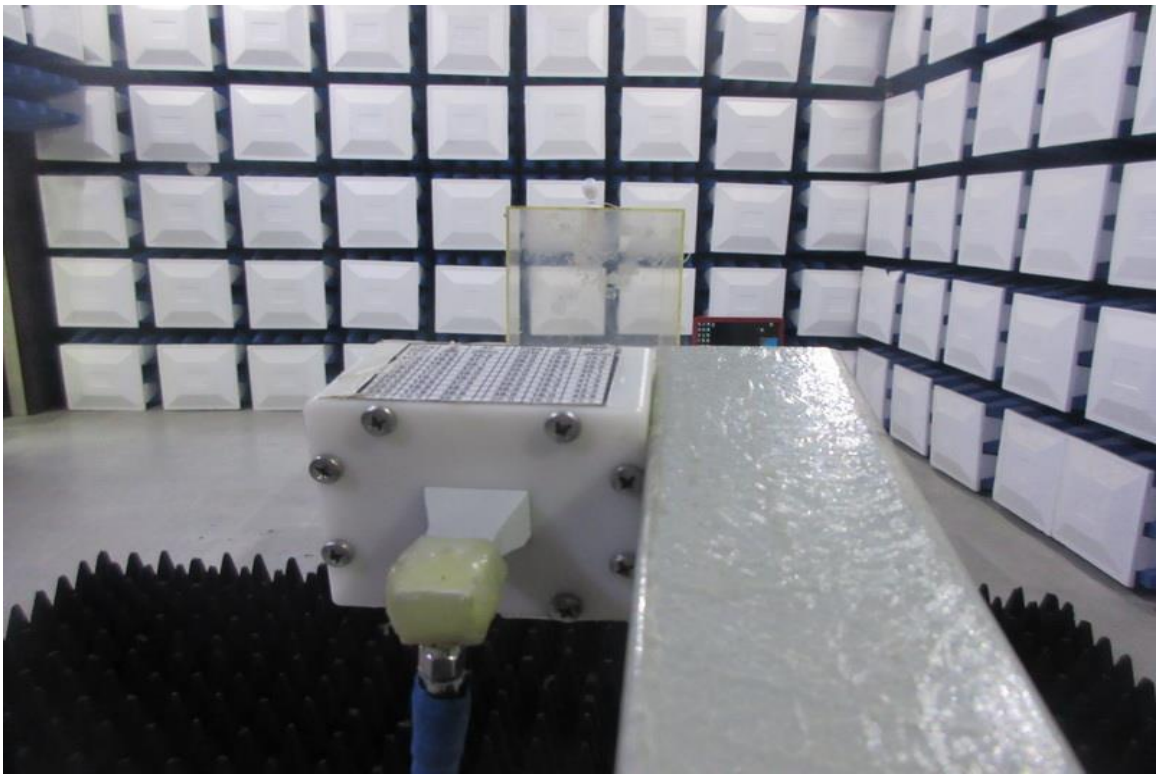
6. Photographs of the Test Set-Up

Photograph 1: Set-up for Spurious Emissions (9 kHz-30MHz)

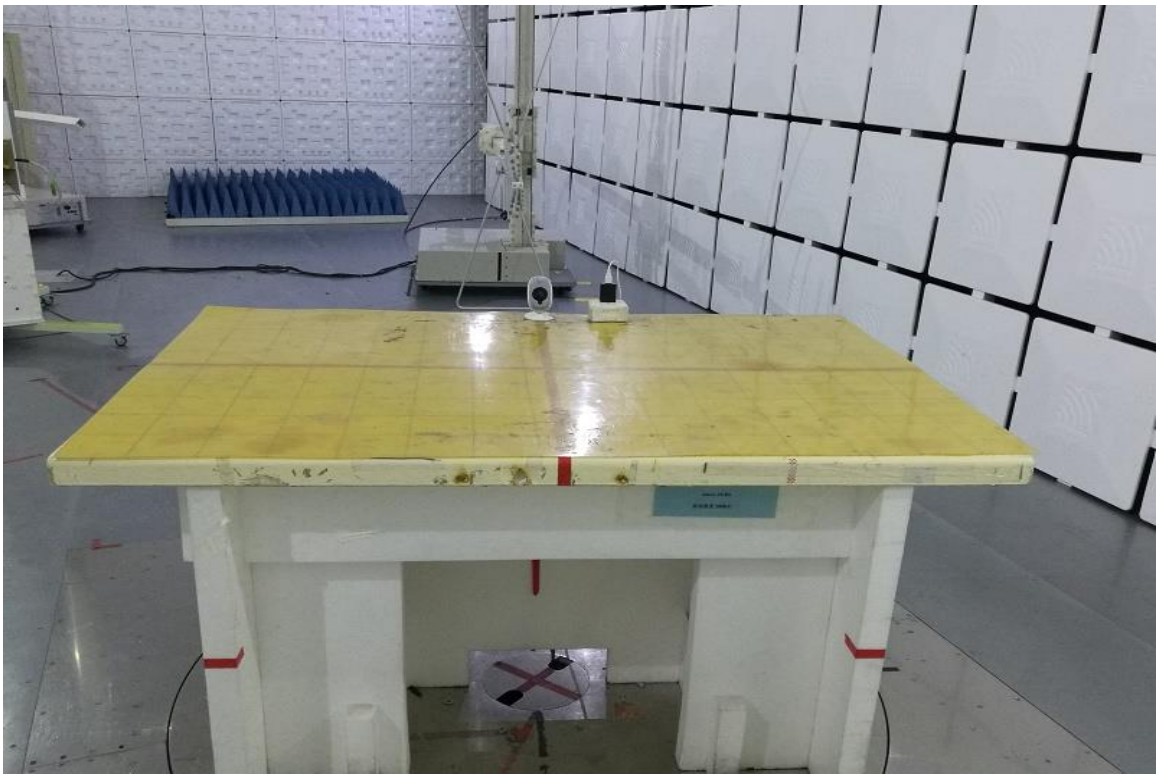
Photograph 2: Set-up for Spurious Emissions (30MHz-1GHz)

Photograph 3: Set-up for Spurious Emissions (1GHz-18GHz)

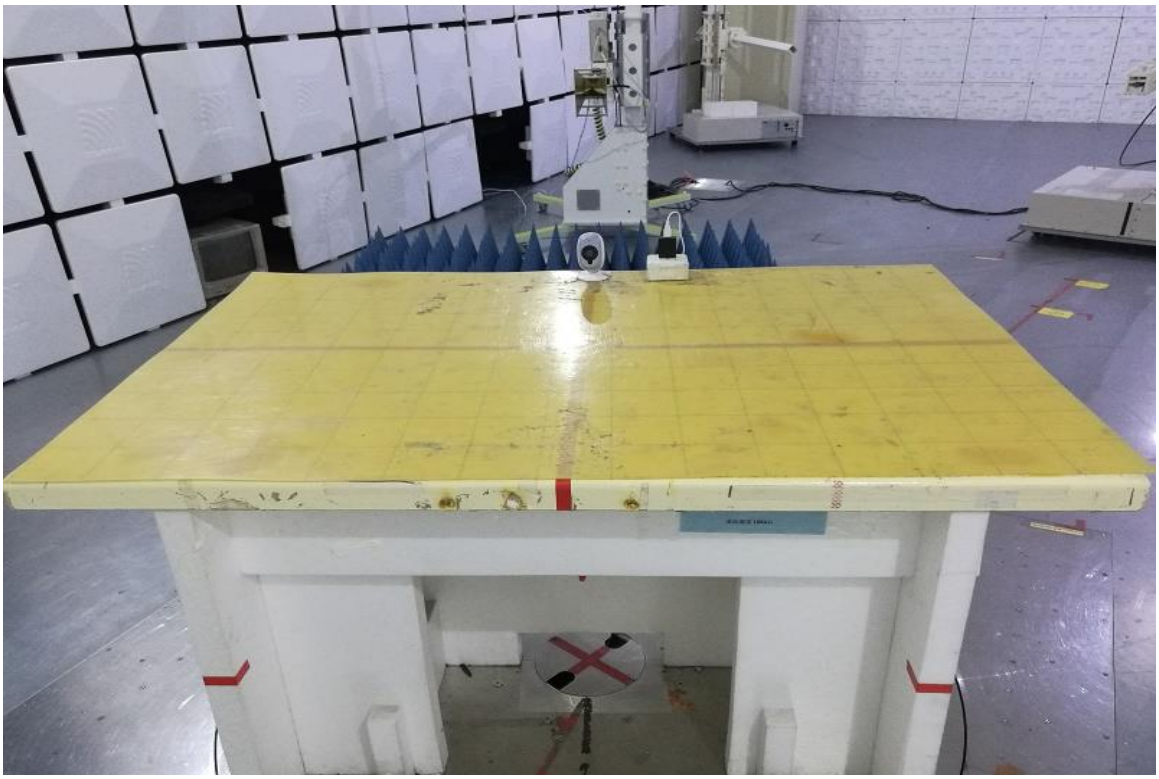
Photograph 4: Set-up for Spurious Emissions (18GHz-26GHz)



Photograph 5: Set-up for Radiated Emissions, below 1GHz



Photograph 6: Set-up for Radiated Emissions, above 1GHz



Photograph 7: Set-up for Conducted Emissions

7. List of Tables

8. List of Photographs

Appendix A

Test Results of Wi-Fi operation for 2.4 GHz Band

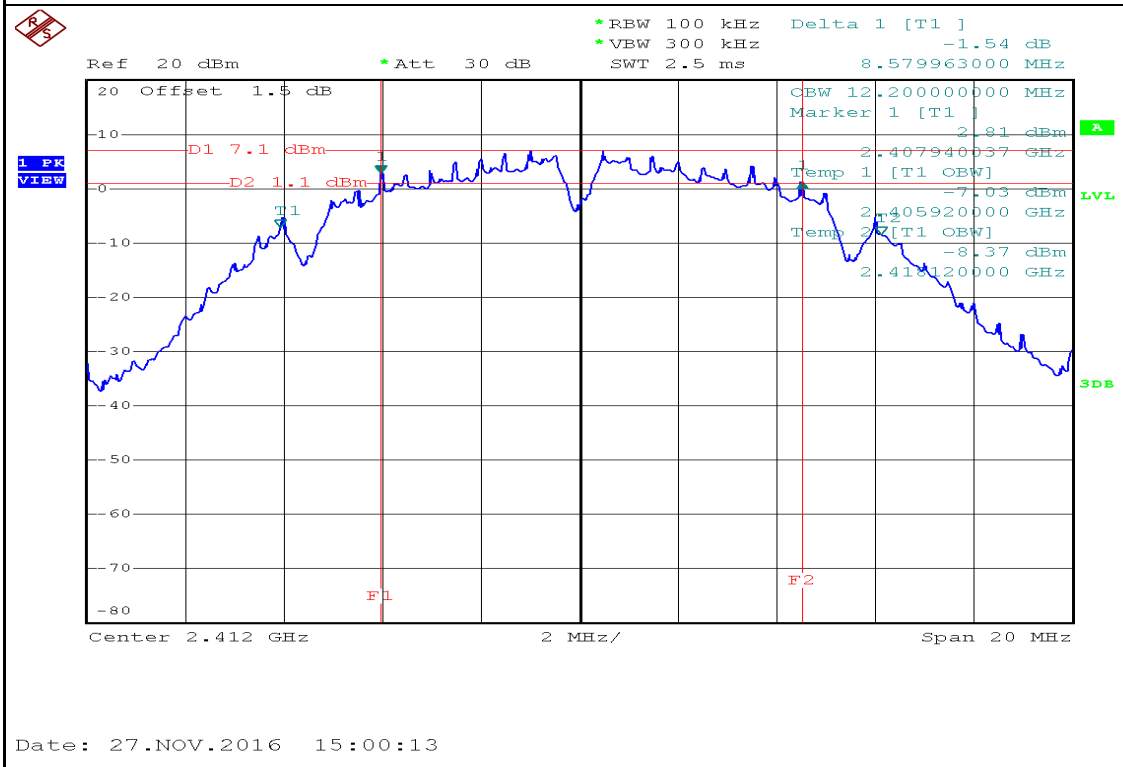
Appendix A.1: Maximum Peak Conducted Output Power_802.11b

Channel	Channel Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	Limit (dBm)	Verdict
Low Channel	2412	19.18	30	Pass
Middle Channel	2437	22.94	30	Pass
High Channel	2462	20.91	30	Pass

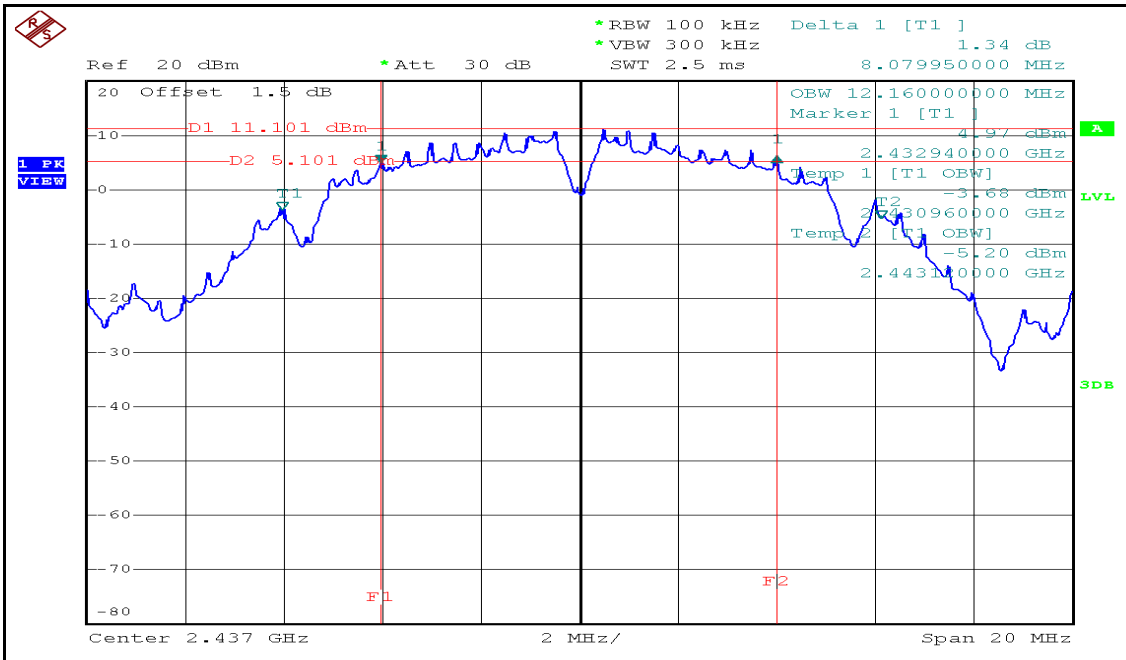
Appendix A.2: 6dB Bandwidth and 99% Bandwidth_802.11b

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Verdict
Low Channel	2412	8.58	12.2	Pass
Middle Channel	2437	8.08	12.16	Pass
High Channel	2462	8.06	12.00	Pass

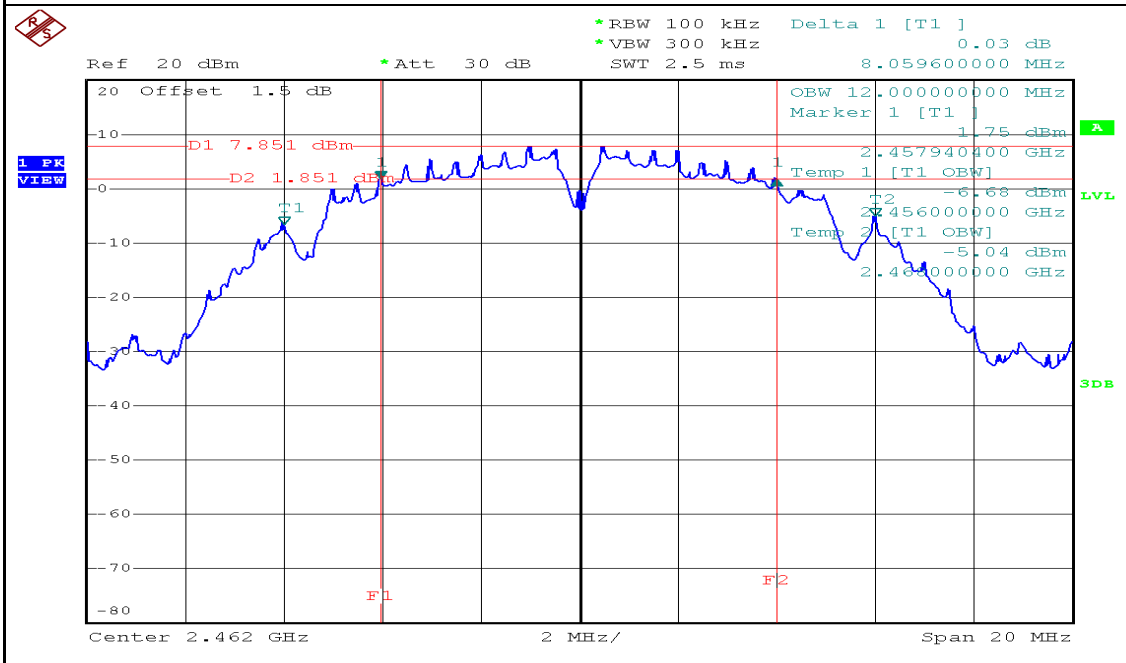
Low Channel_6dB Bandwidth & 99% Bandwidth



Middle Channel_6dB Bandwidth & 99% Bandwidth

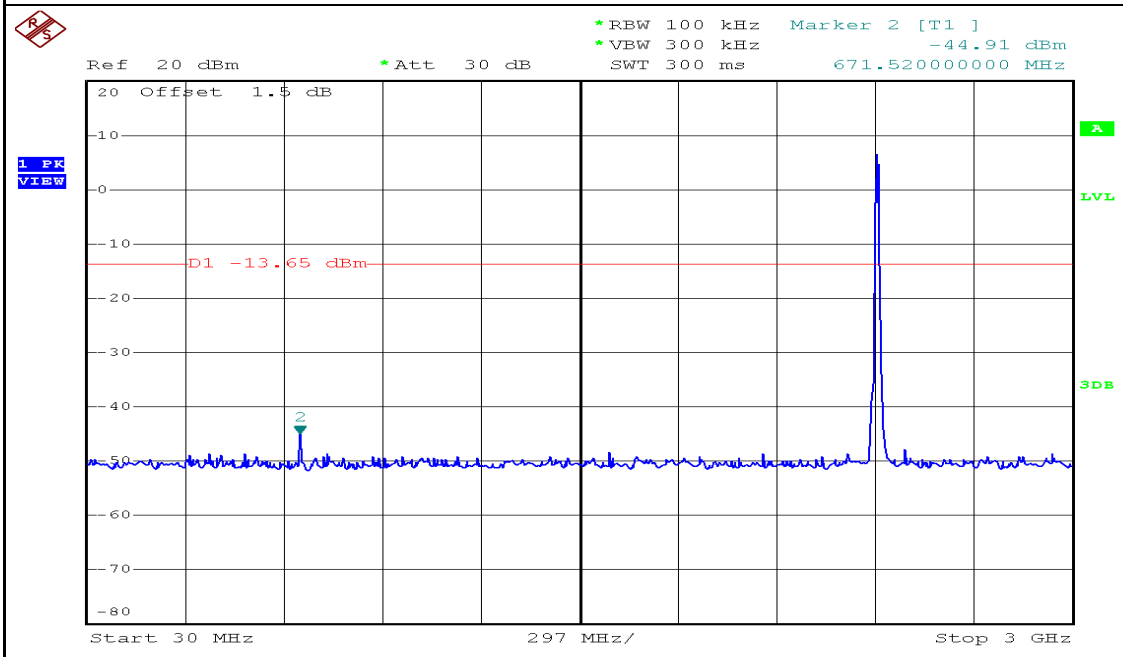


High Channel_6dB Bandwidth & 99% Bandwidth

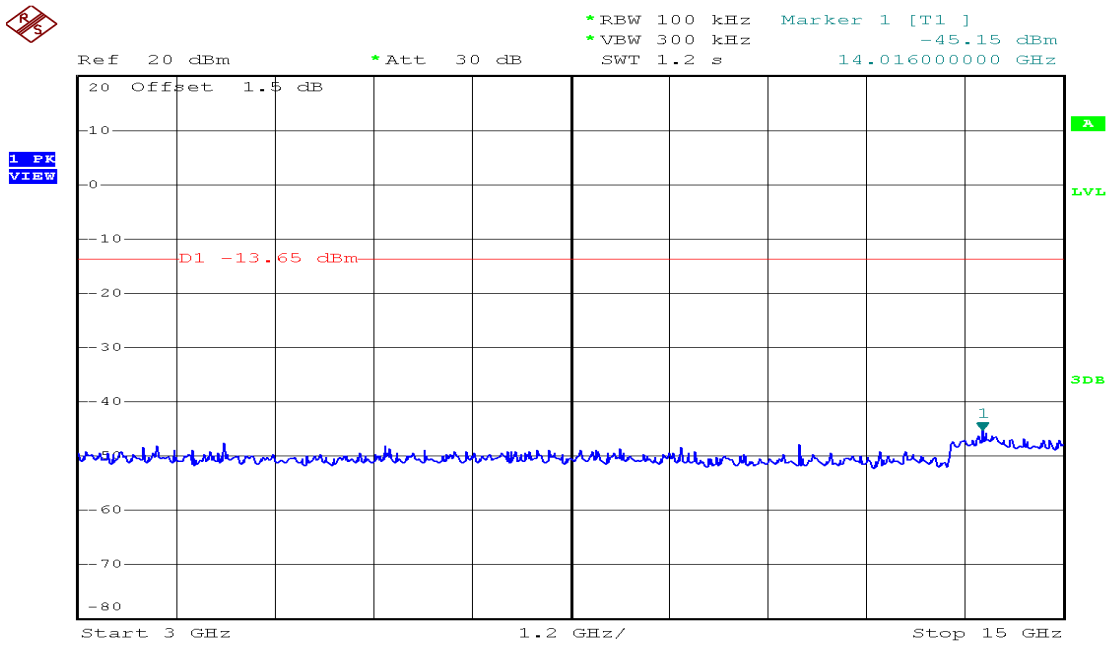


Appendix A.3: Conducted Spurious Emissions measured in 100 kHz Bandwidth_802.11b

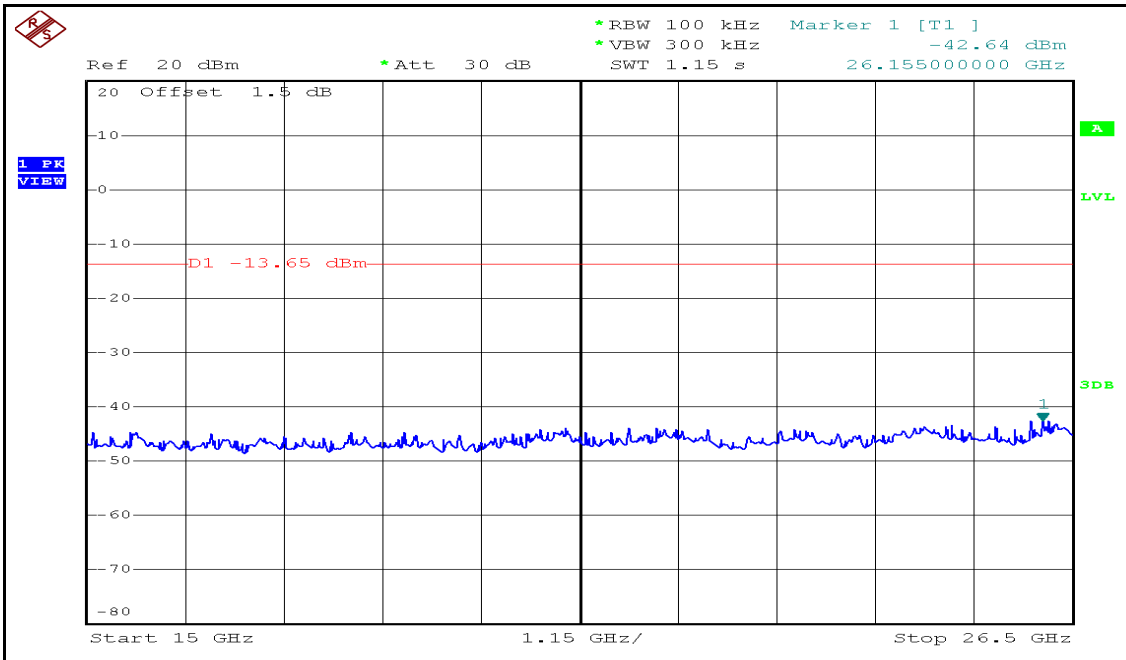
Low Channel_Conducted Spurious Emissions measured in 100 kHz Bandwidth



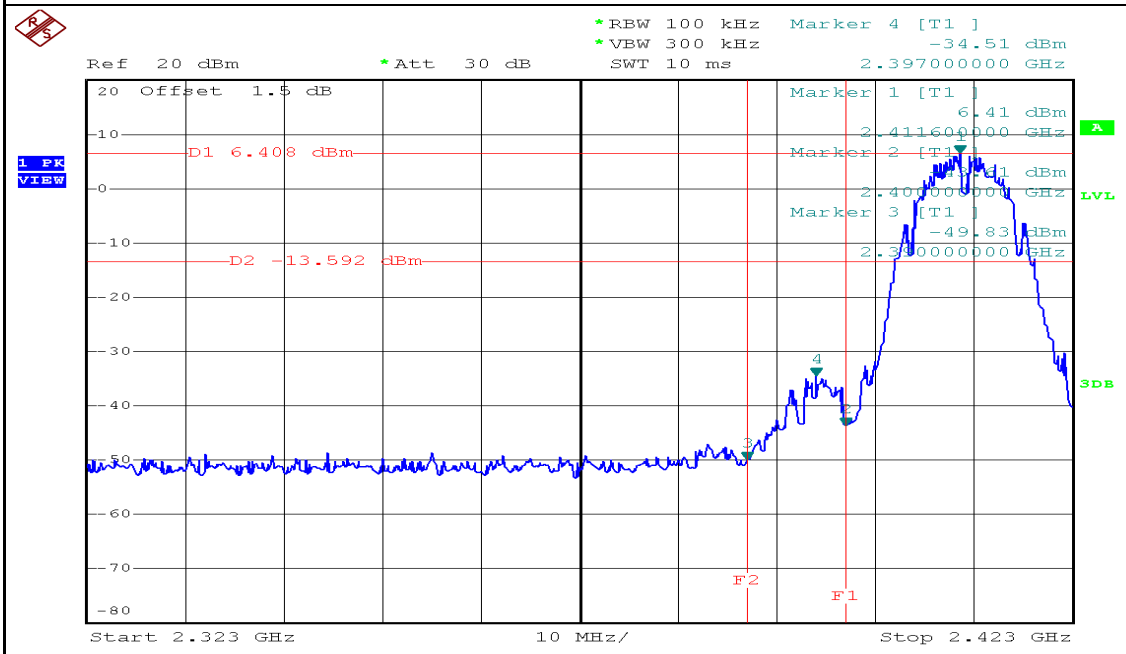
Date: 27.NOV.2016 15:00:29



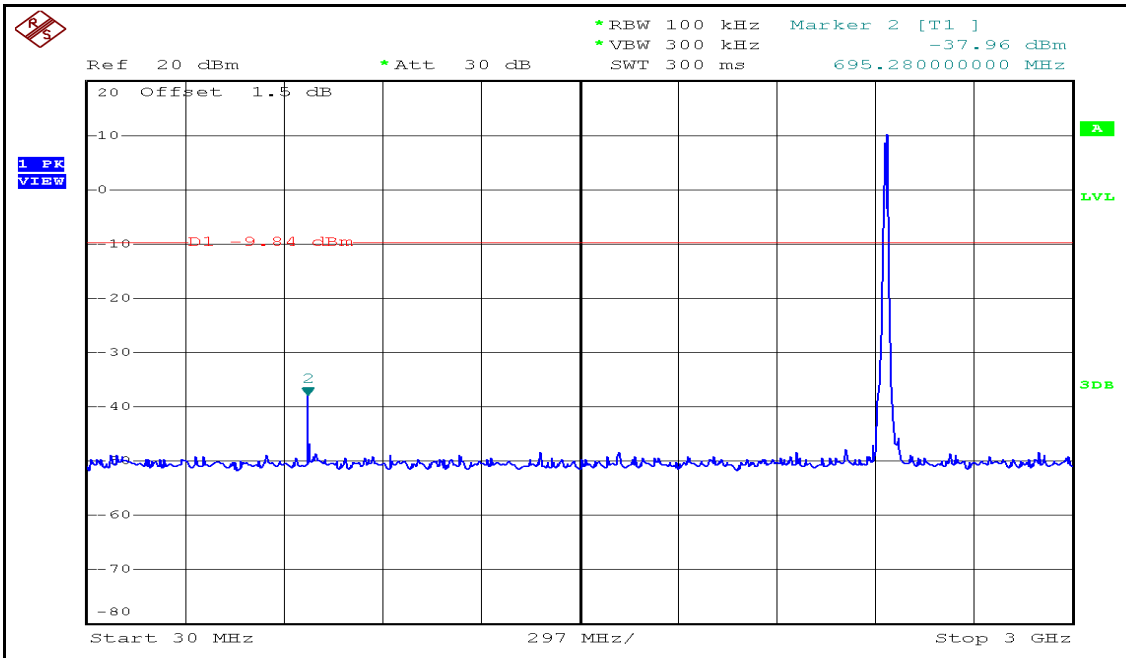
Date: 27.NOV.2016 15:00:38



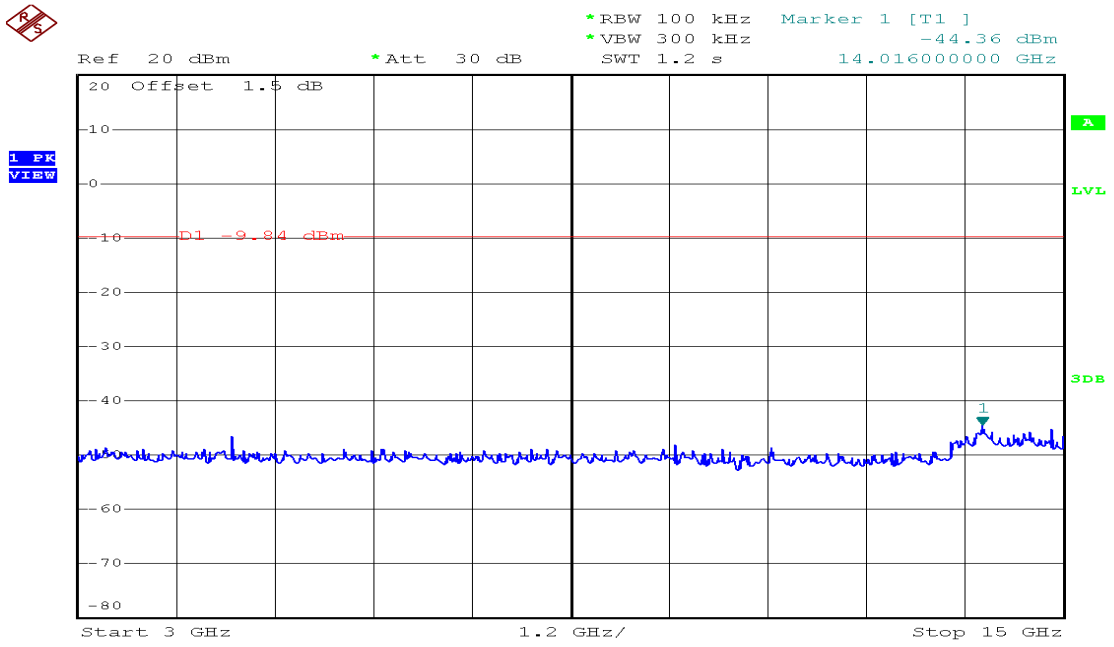
Low Channel_Bandedge



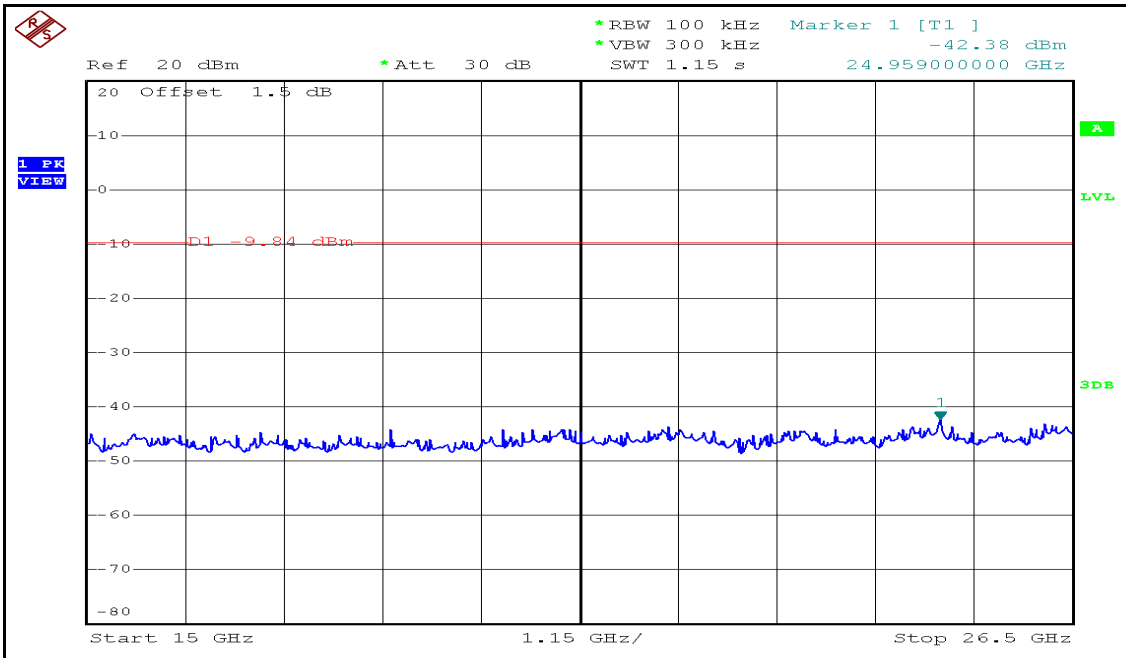
Middle Channel_Conducted Spurious Emissions measured in 100 kHz Bandwidth



Date: 27.NOV.2016 15:02:11

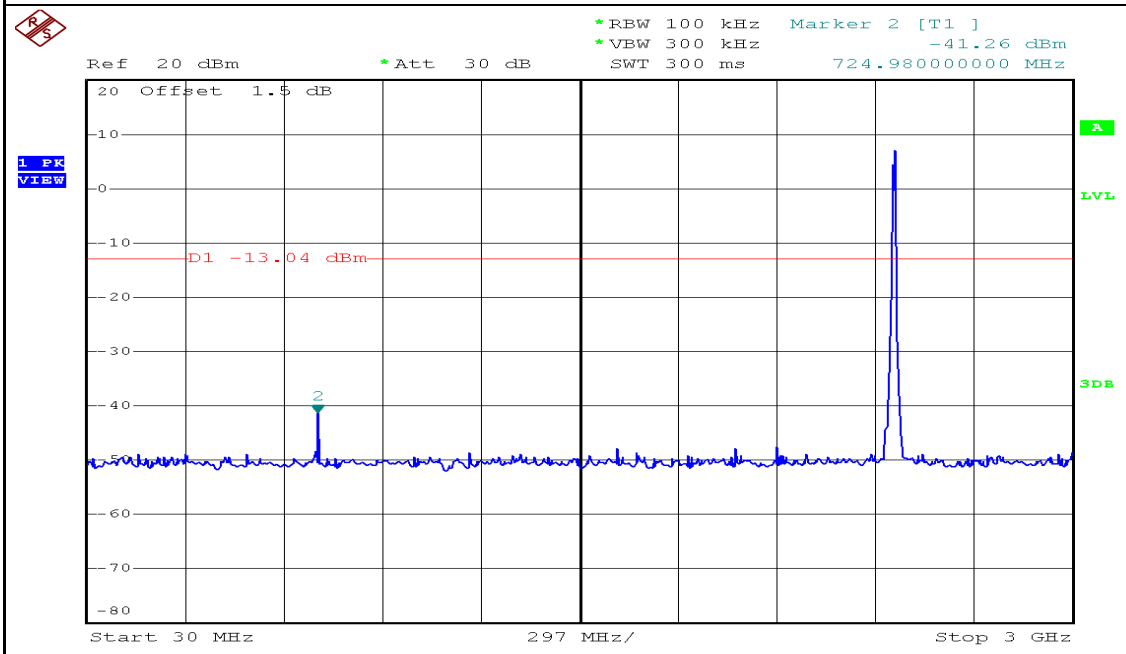


Date: 27.NOV.2016 15:02:19

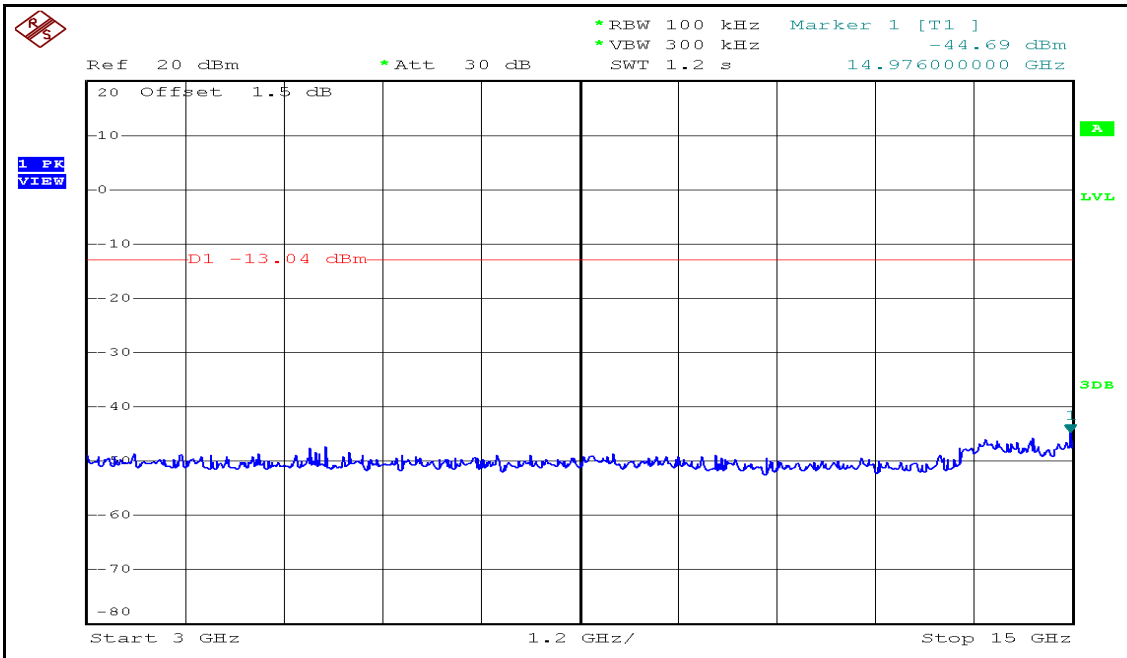


Date: 27.NOV.2016 15:02:27

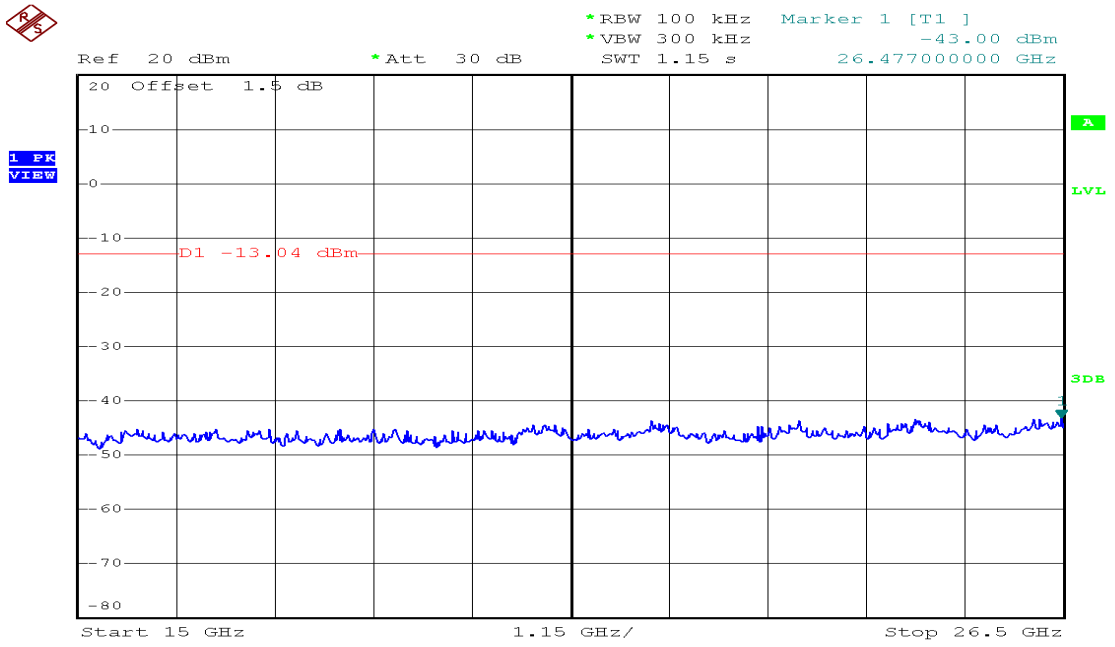
High Channel_Conducted Spurious Emissions measured in 100 kHz Bandwidth



Date: 27.NOV.2016 15:03:48

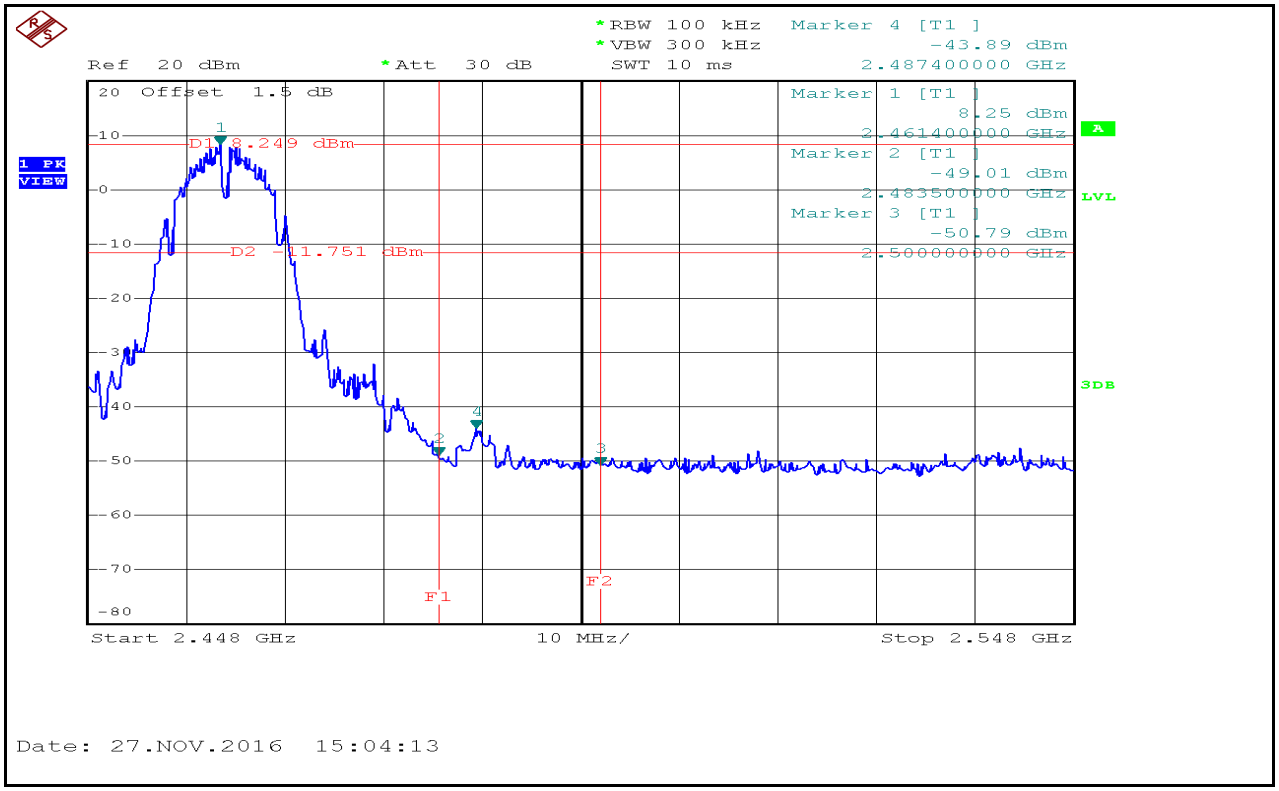


Date: 27.NOV.2016 15:03:57



Date: 27.NOV.2016 15:04:05

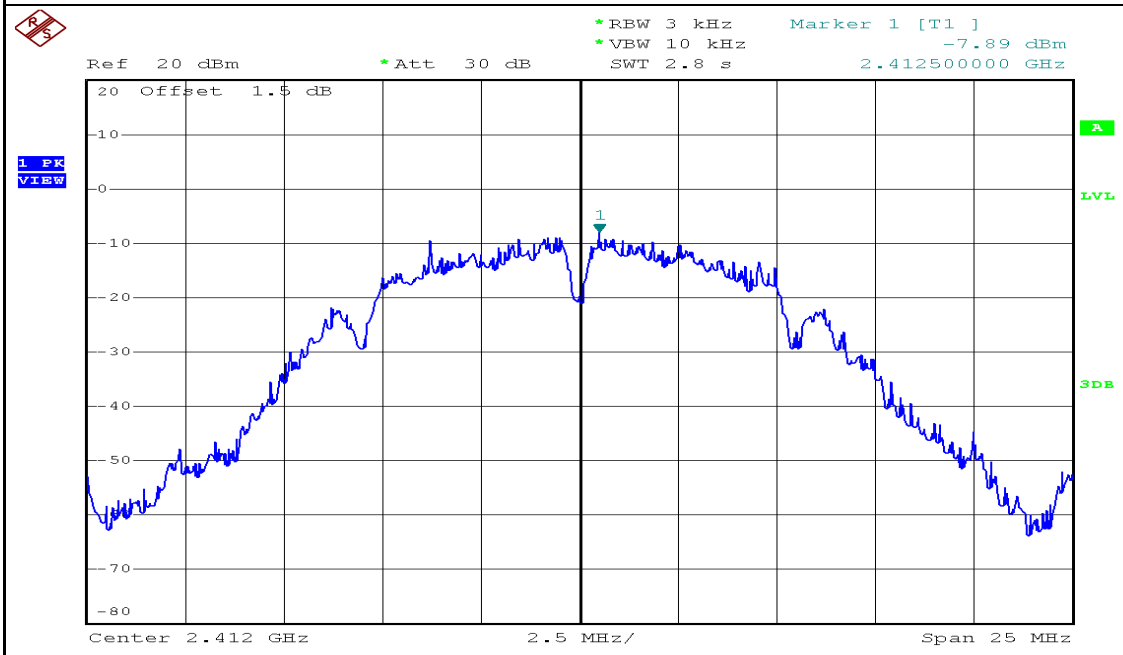
High Channel_Bandedge


*RBW 100 kHz
*VBW 300 kHz
SWT 10 ms
Marker 4 [T1]
-43.89 dBm
2.487400000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
8.25 dBm
2.461400000 GHz
Marker 2 [T1]
-49.01 dBm
2.483500000 GHz
Marker 3 [T1]
-50.79 dBm
2.500000000 GHz
D1 8.249 dBm
D2 -11.751 dBm
1 PK VIEW
A
LVL
3DB
F1
F2
Start 2.448 GHz
10 MHz/
Stop 2.548 GHz
Date: 27.NOV.2016 15:04:13

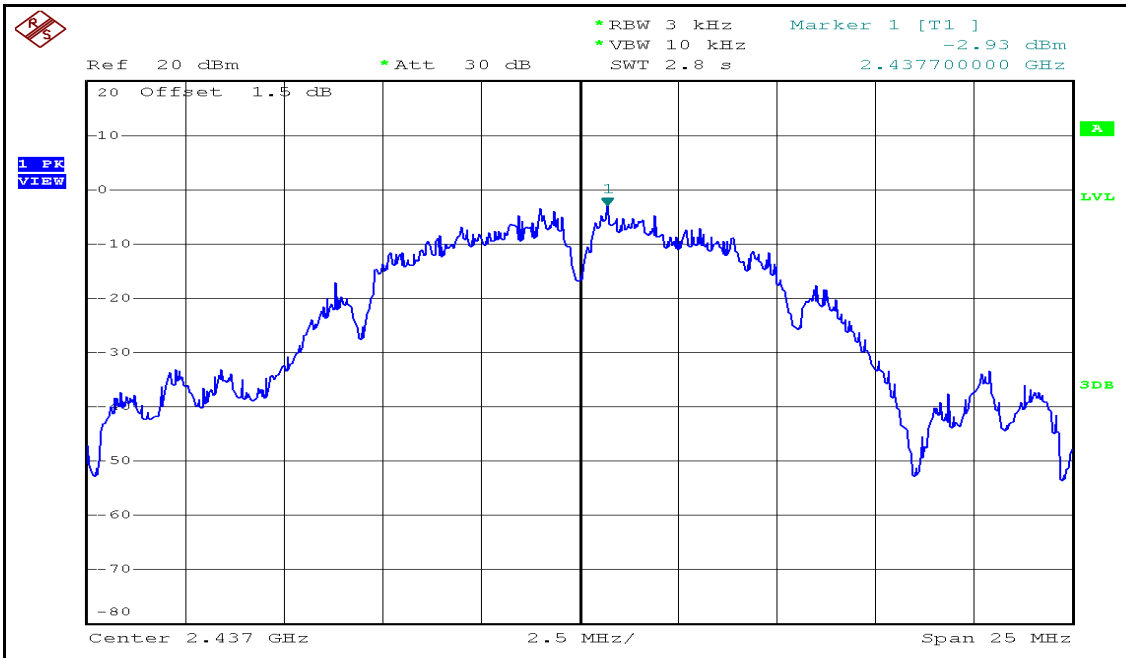
Appendix A.4: Power Spectral Density_802.11b

Channel	Channel Frequency (MHz)	Power Spectral Density Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low Channel	2412	-7.89	8	Pass
Middle Channel	2437	-2.93	8	Pass
High Channel	2462	-6.35	8	Pass

Low Channel

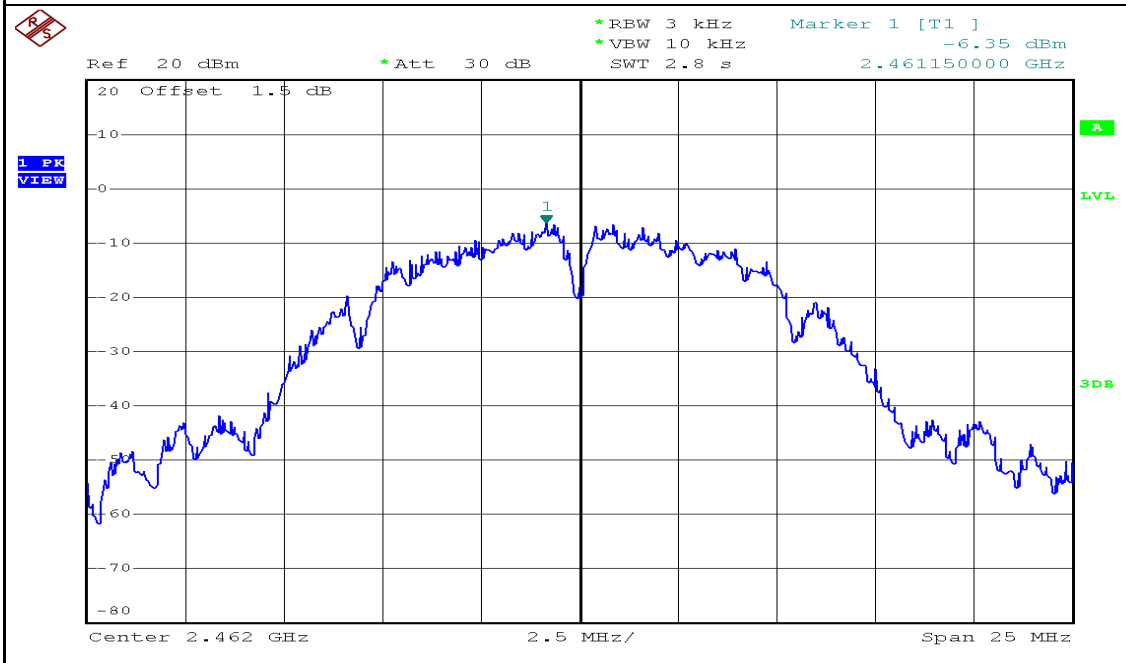


Middle Channel



Date: 27.NOV.2016 15:02:36

High Channel



Date: 27.NOV.2016 15:04:22

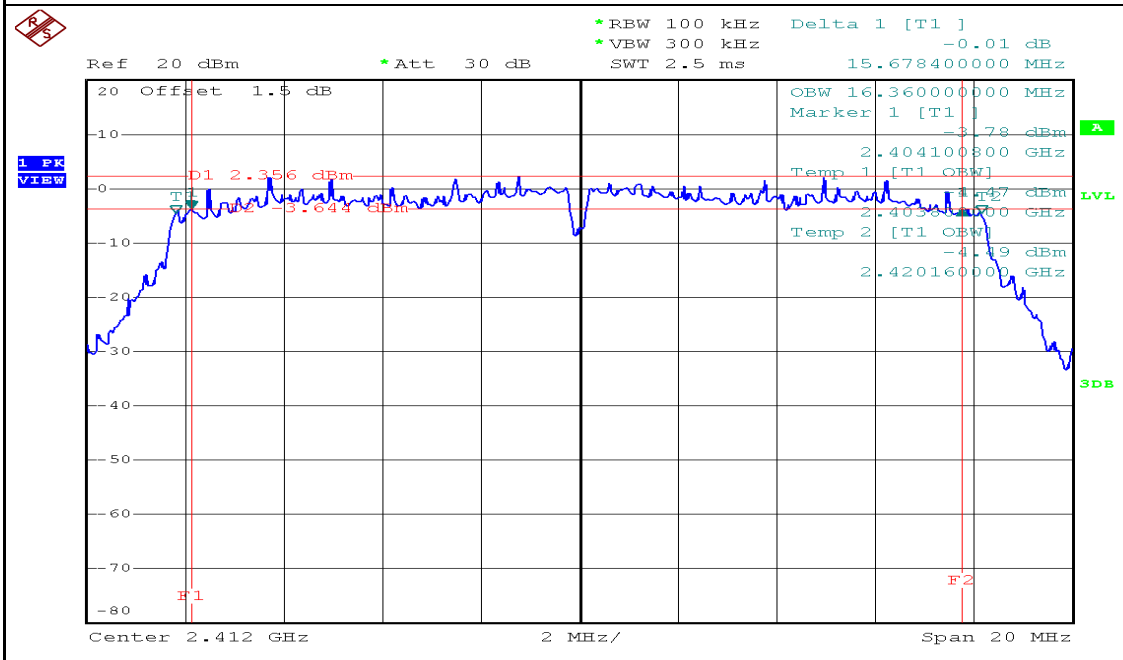
Appendix A.5: Maximum Peak Conducted Output Power_802.11g

Channel	Channel Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	Limit (dBm)	Verdict
Low Channel	2412	23.66	30	Pass
Middle Channel	2437	24.05	30	Pass
High Channel	2462	23.76	30	Pass

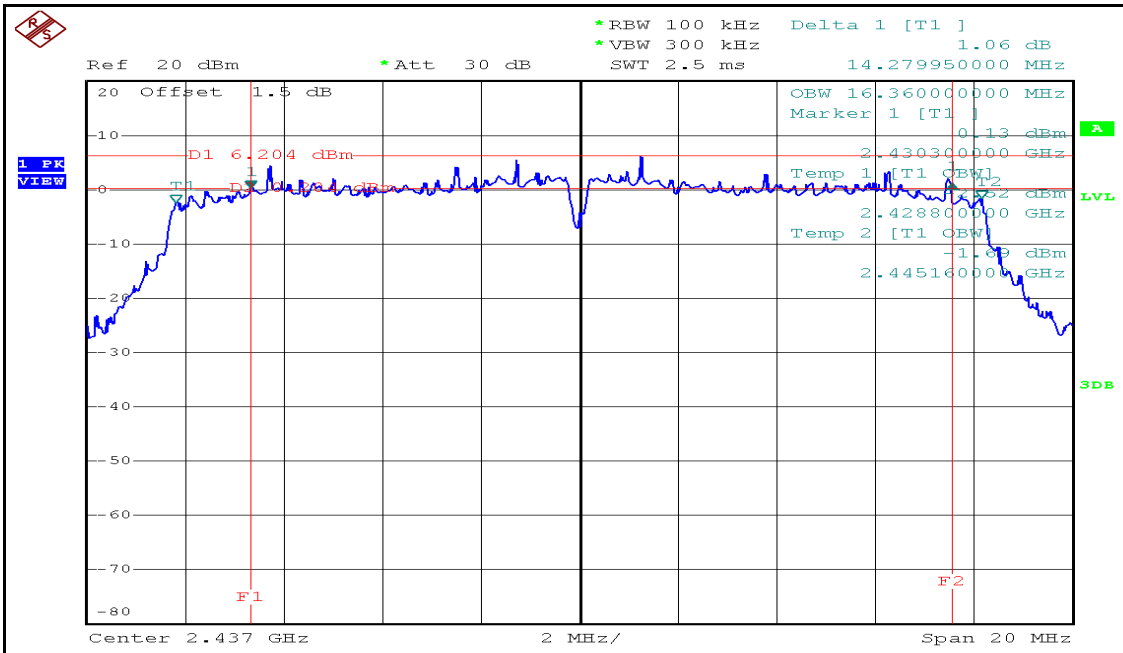
Appendix A.6: 6dB Bandwidth and 99% Bandwidth_802.11g

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Verdict
Low Channel	2412	15.68	16.36	Pass
Middle Channel	2437	14.28	16.36	Pass
High Channel	2462	15.04	16.36	Pass

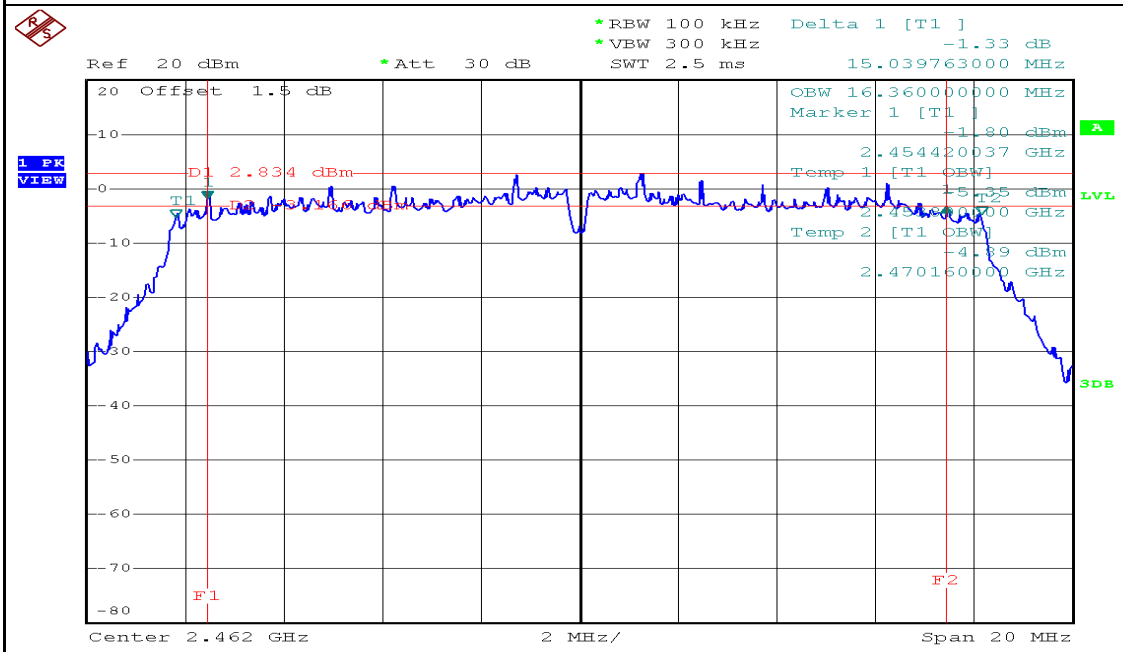
Low Channel_6dB Bandwidth & 99% Bandwidth



Middle Channel_6dB Bandwidth & 99% Bandwidth

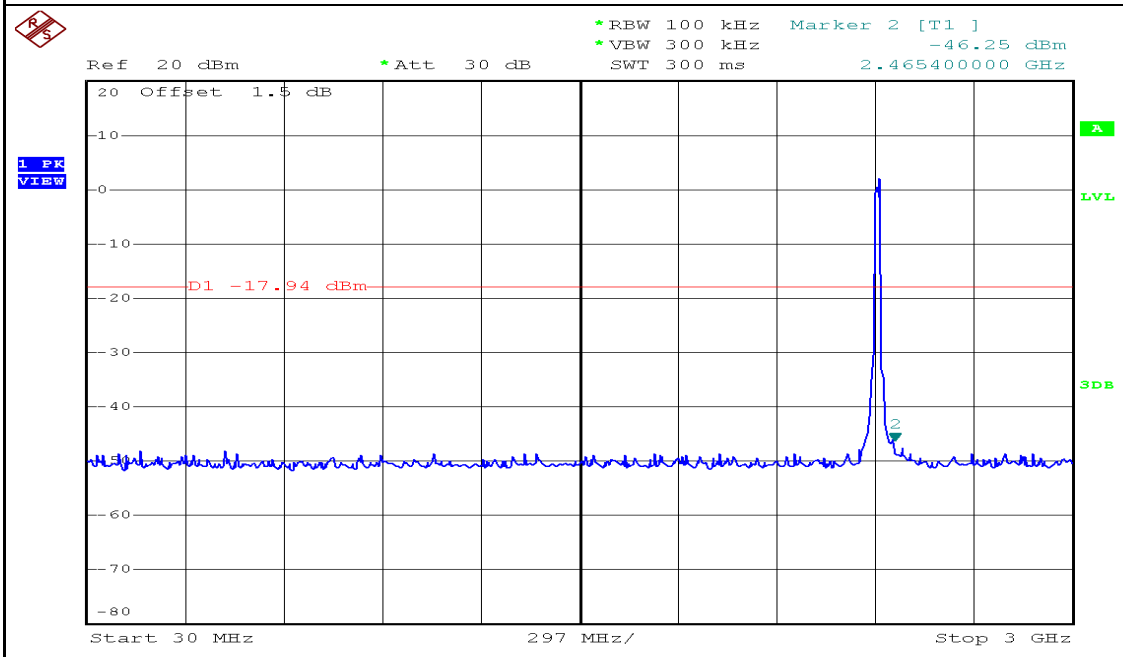


High Channel_6dB Bandwidth & 99% Bandwidth

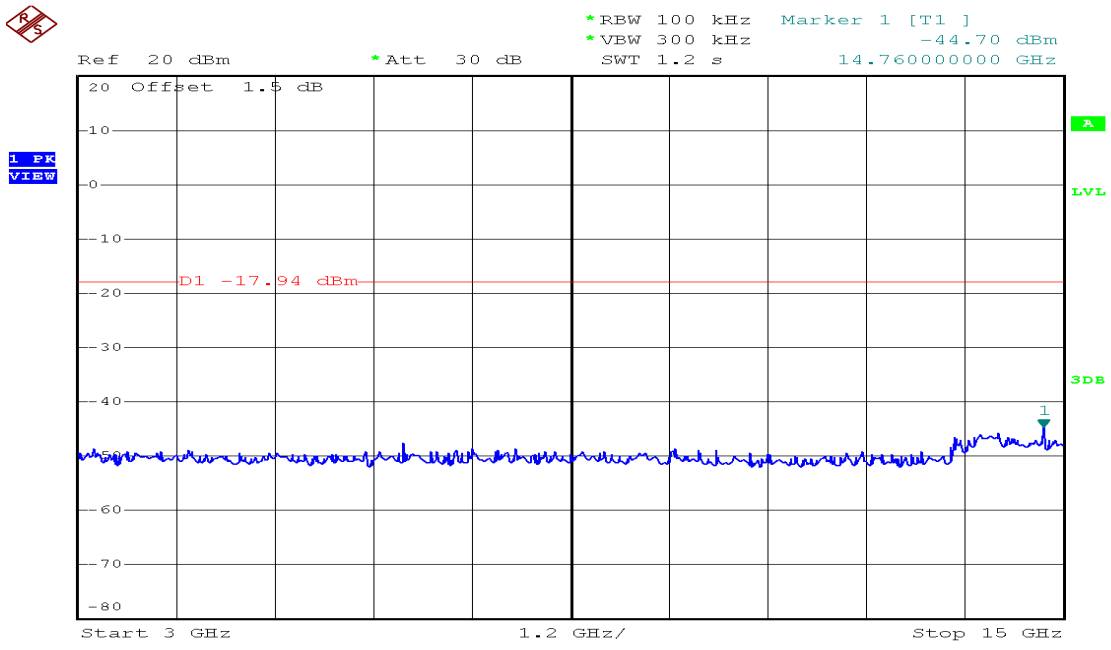


Appendix A.7: Conducted Spurious Emissions measured in 100 kHz Bandwidth_802.11g

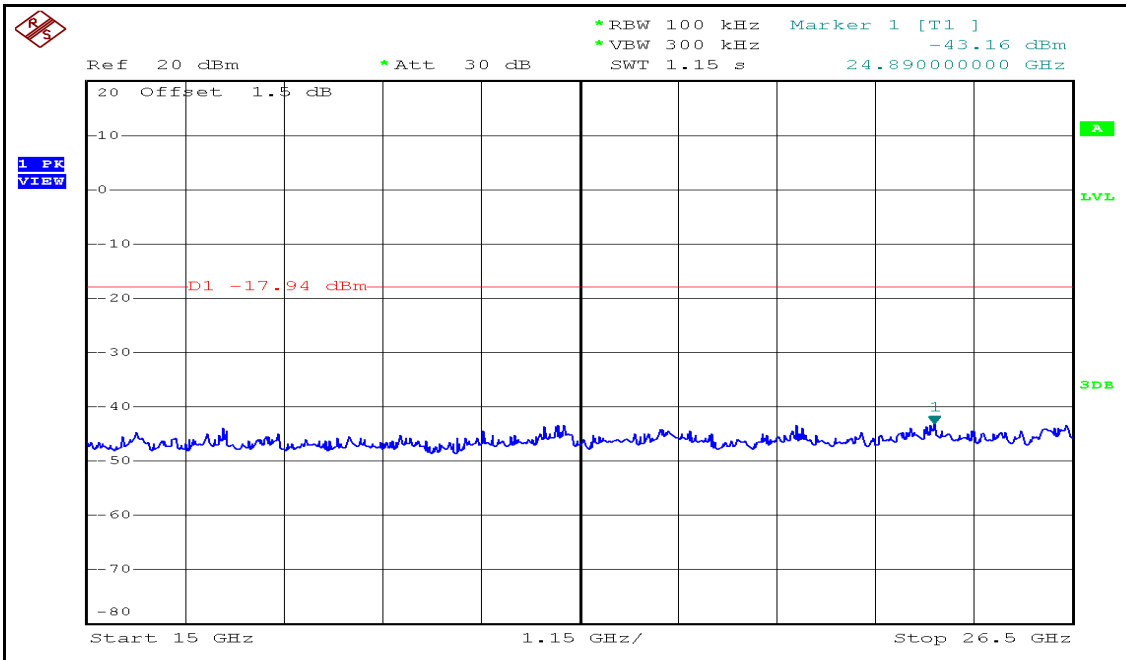
Low Channel_Conducted Spurious Emissions measured in 100 kHz Bandwidth



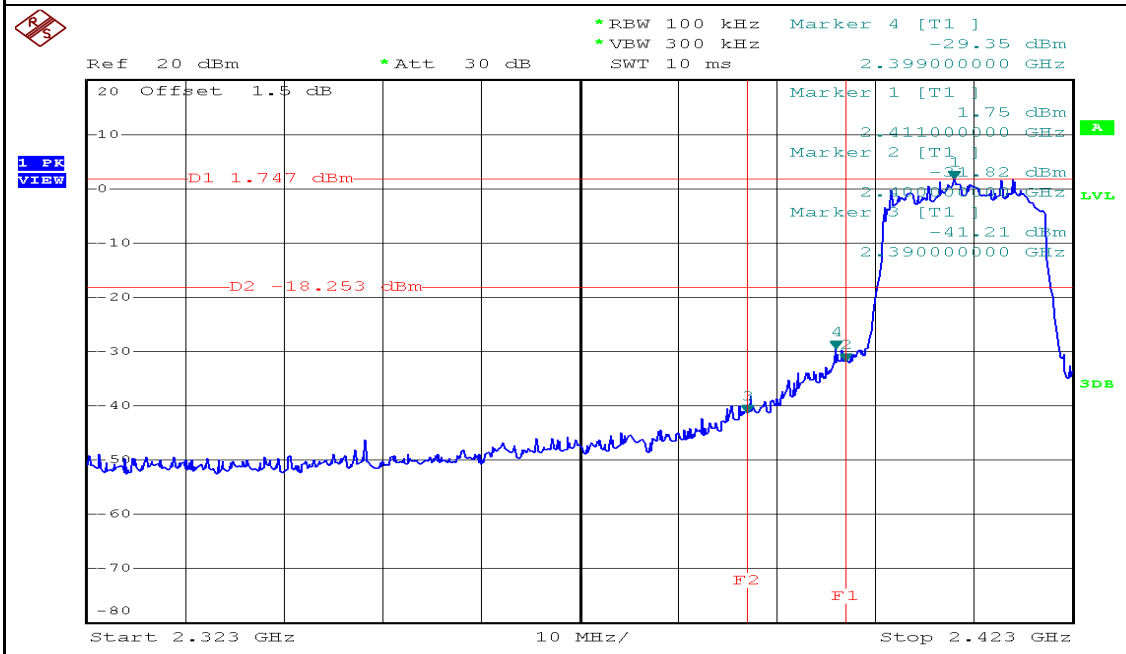
Date: 27.NOV.2016 15:05:12



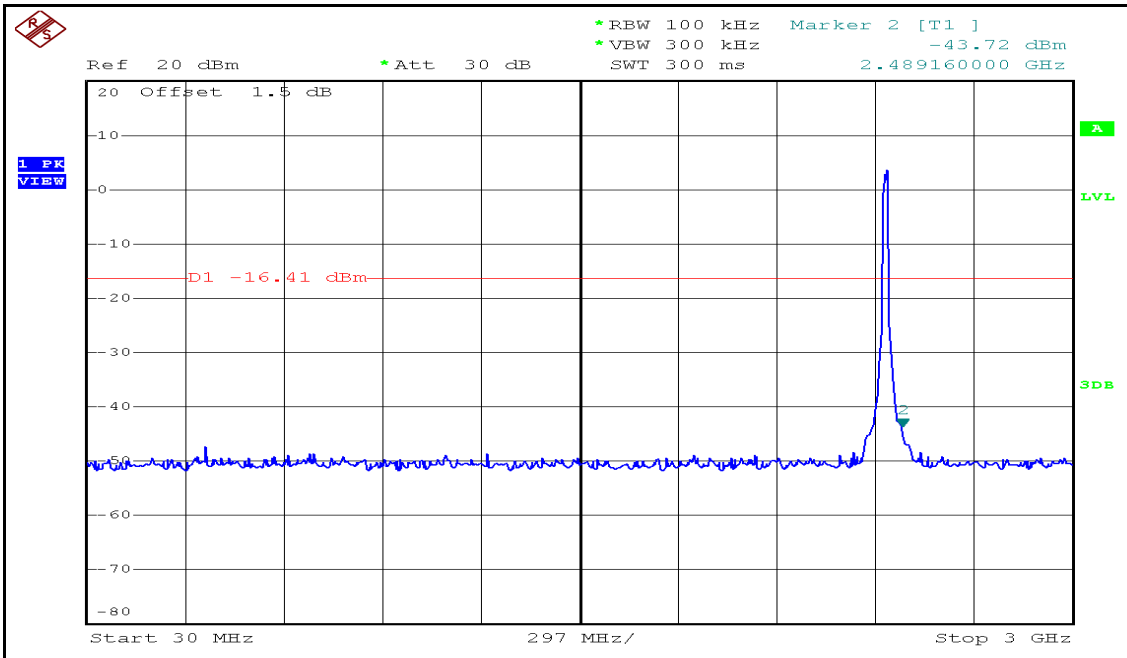
Date: 27.NOV.2016 15:05:20



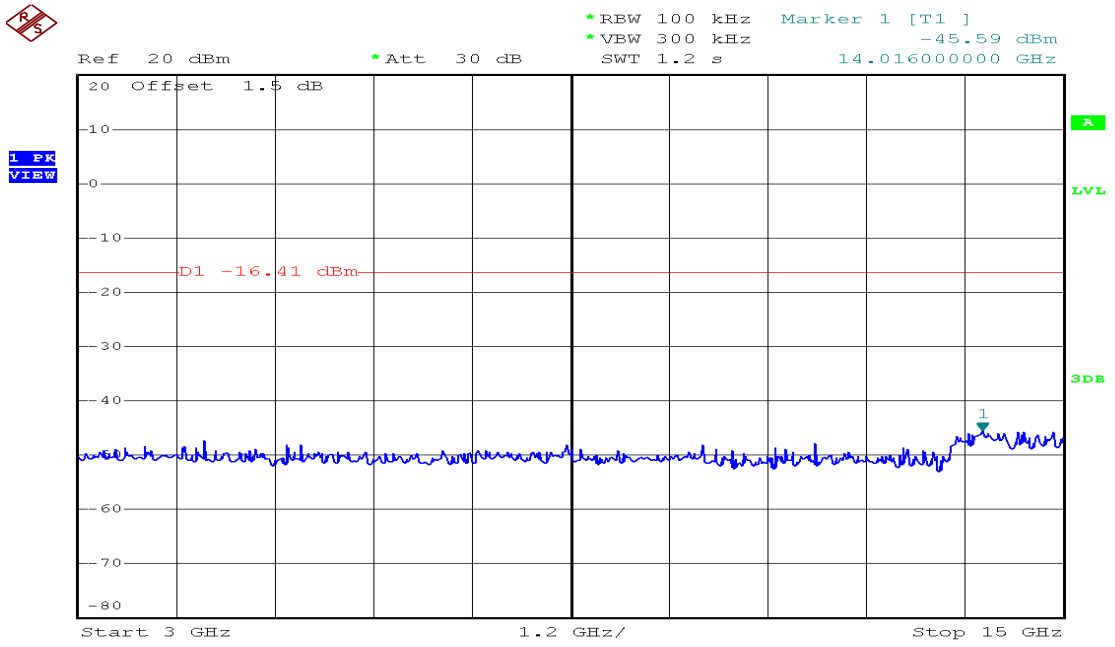
Low Channel_Bandedge



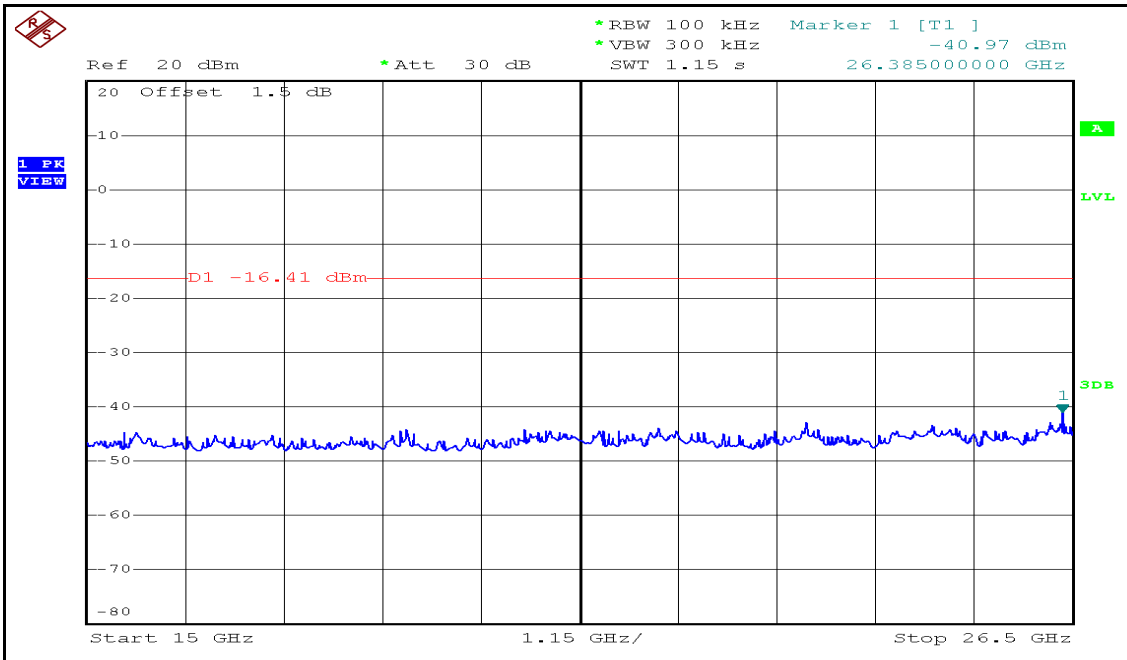
Middle Channel_Conducted Spurious Emissions measured in 100 kHz Bandwidth



Date: 27.NOV.2016 15:06:32

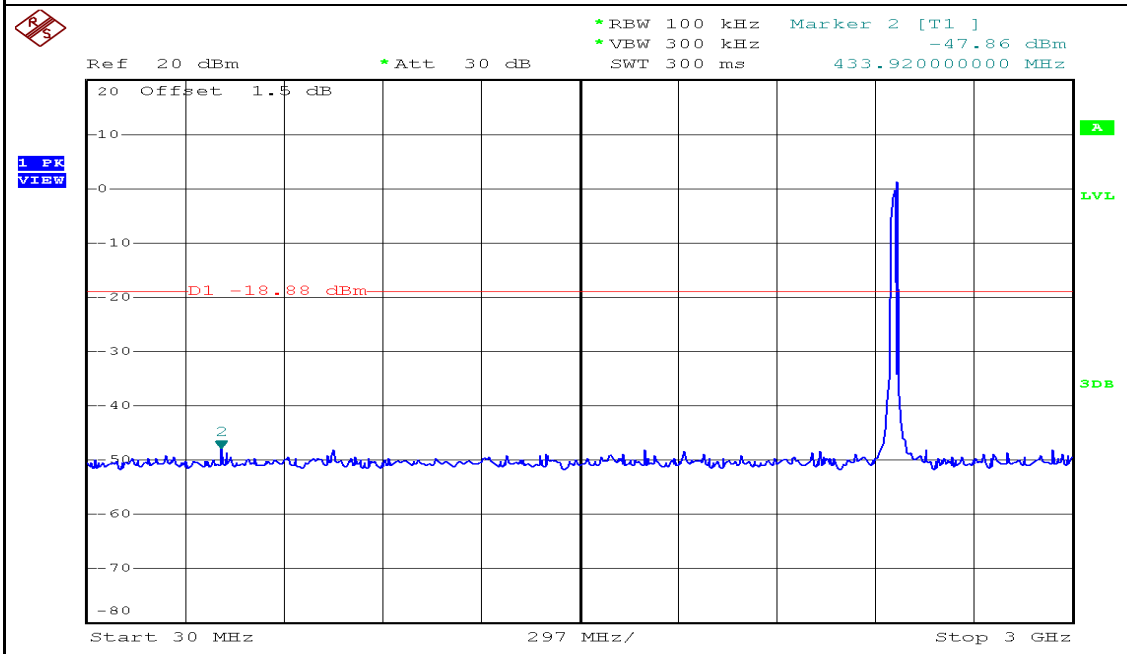


Date: 27.NOV.2016 15:06:40

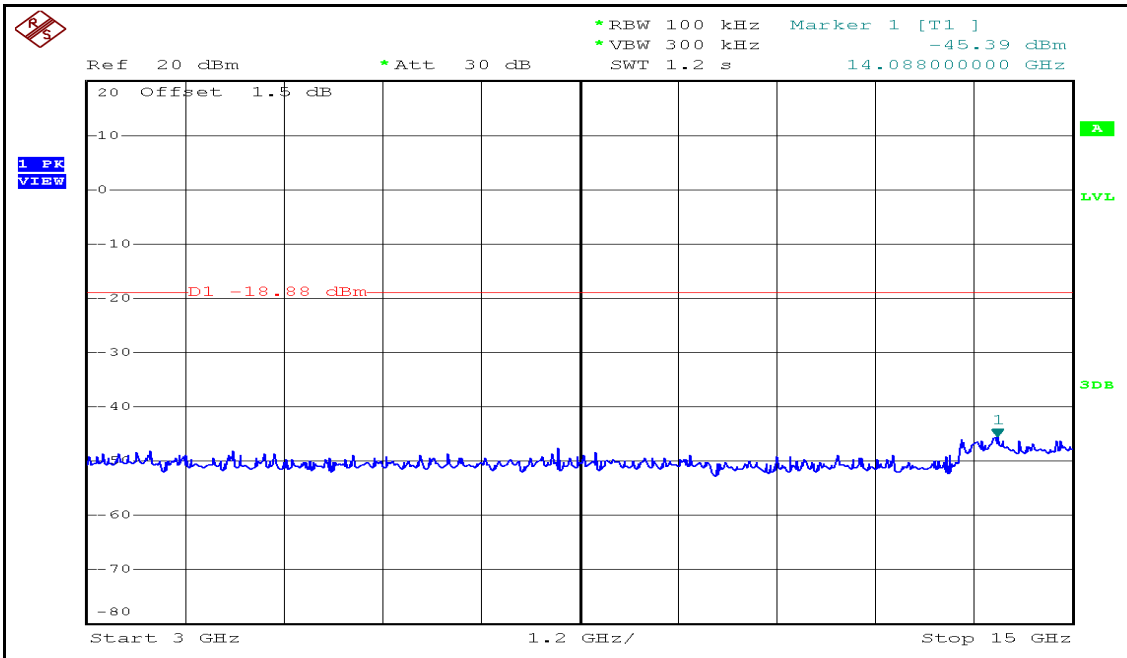


Date: 27.NOV.2016 15:06:49

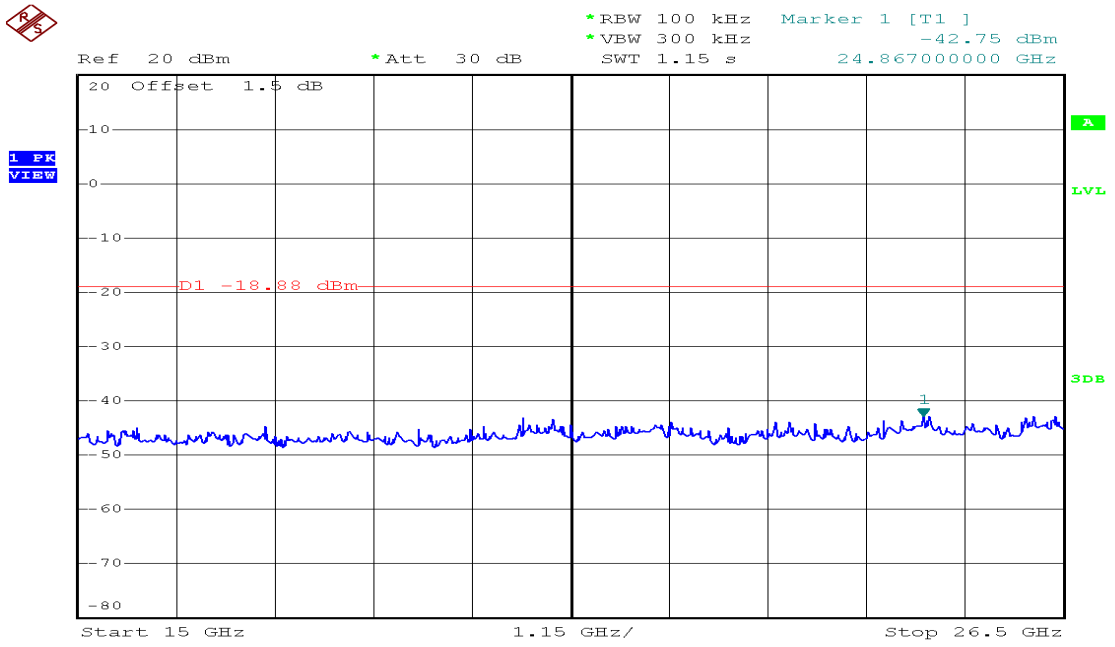
High Channel_Conducted Spurious Emissions measured in 100 kHz Bandwidth



Date: 27.NOV.2016 15:07:48

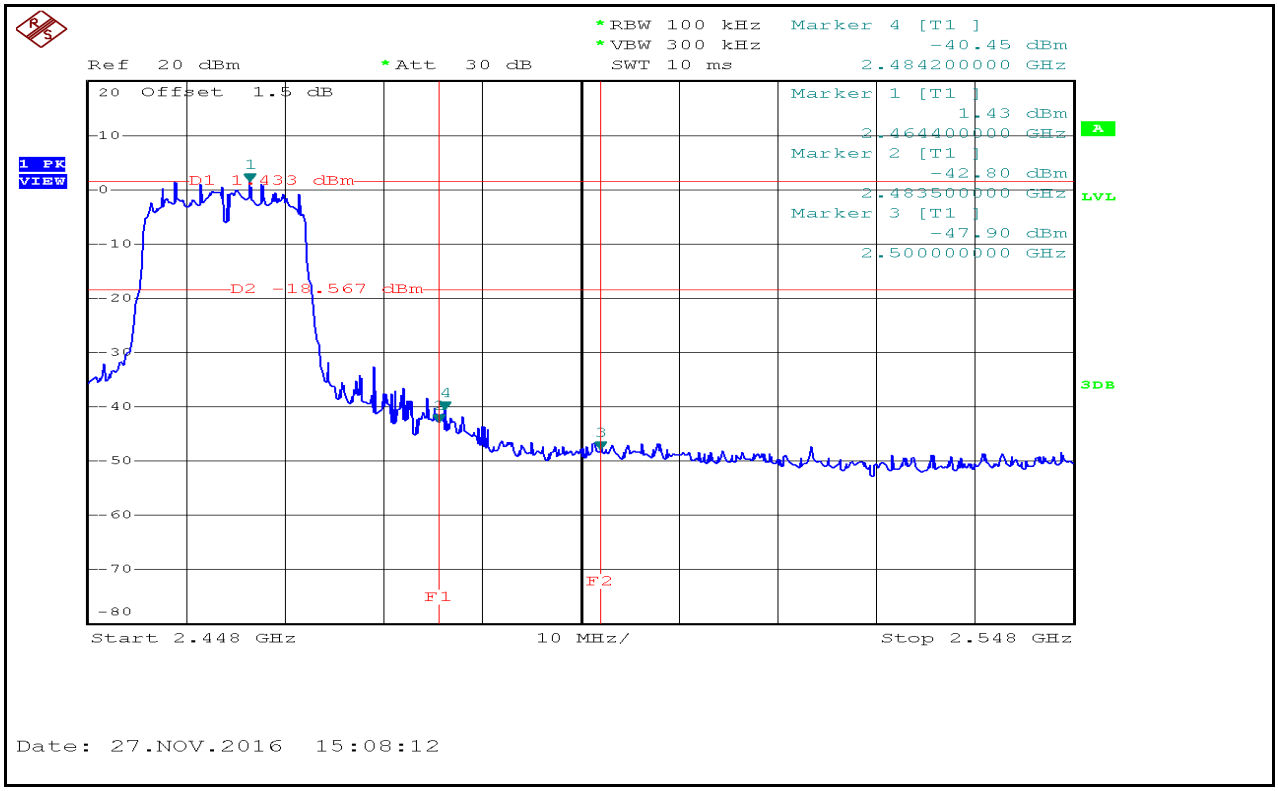


Date: 27.NOV.2016 15:07:56



Date: 27.NOV.2016 15:08:04

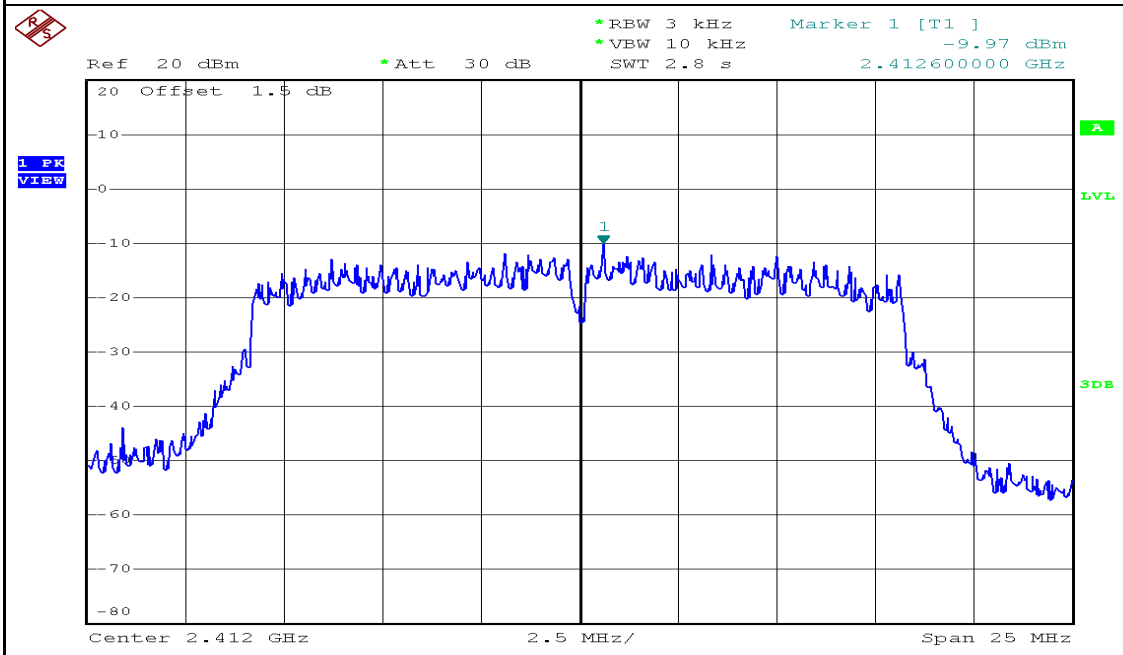
High Channel_Bandedge


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 4 [T1]
-40.45 dBm
2.484200000 GHz
Ref 20 dBm
Att 30 dB
Offset 1.5 dB
Marker 1 [T1]
1.43 dBm
2.464400000 GHz
Marker 2 [T1]
-42.80 dBm
2.483500000 GHz
Marker 3 [T1]
-47.90 dBm
2.500000000 GHz
1 PK
VIEW
D1 1.433 dBm
D2 -18.567 dBm
A
LVL
3DB
F1
F2
Start 2.448 GHz
10 MHz/
Stop 2.548 GHz
Date: 27.NOV.2016 15:08:12

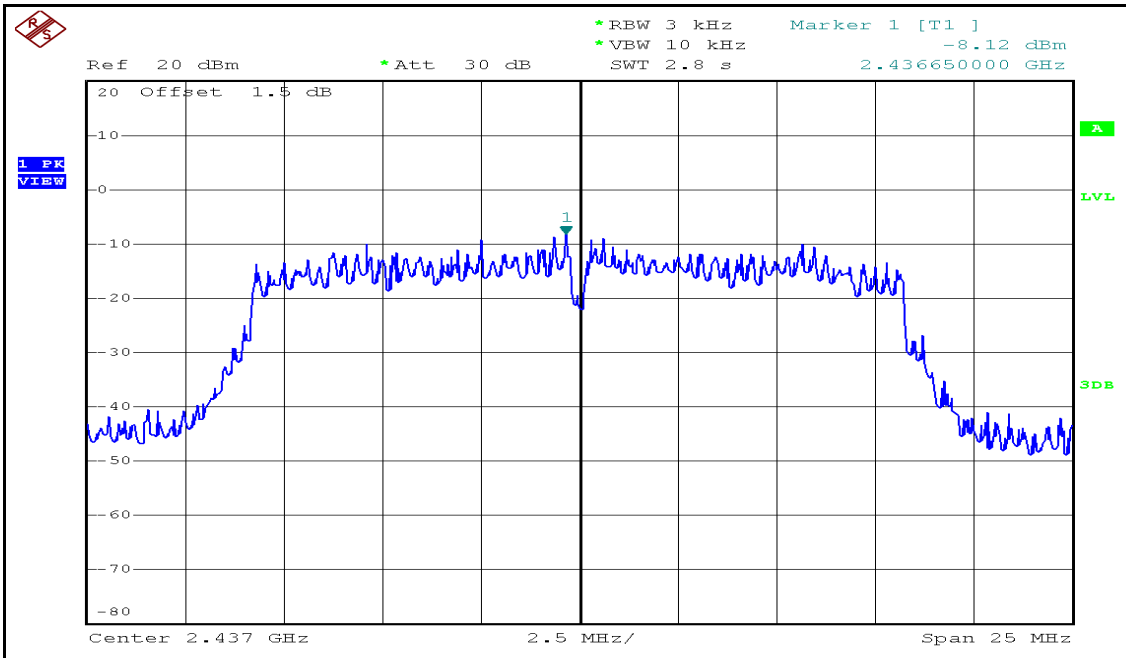
Appendix A.8: Power Spectral Density_802.11g

Channel	Channel Frequency (MHz)	Power Spectral Density Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low Channel	2412	-9.97	8	Pass
Middle Channel	2437	-8.12	8	Pass
High Channel	2462	-12.26	8	Pass

Low Channel

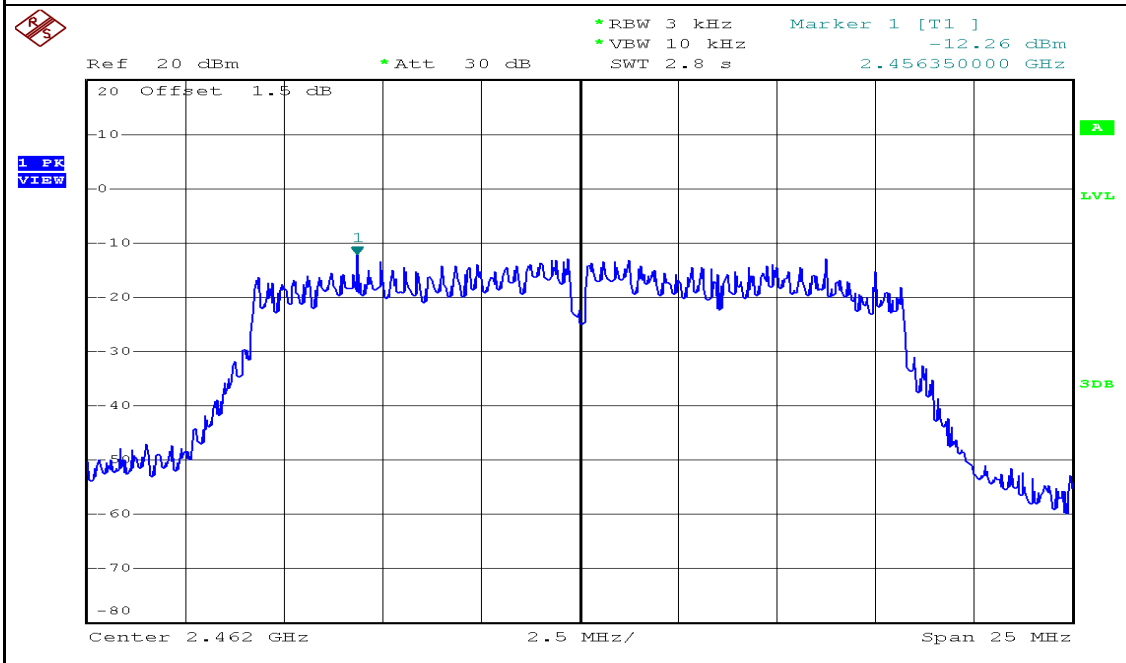


Middle Channel



Date: 27.NOV.2016 15:06:58

High Channel



Date: 27.NOV.2016 15:08:21

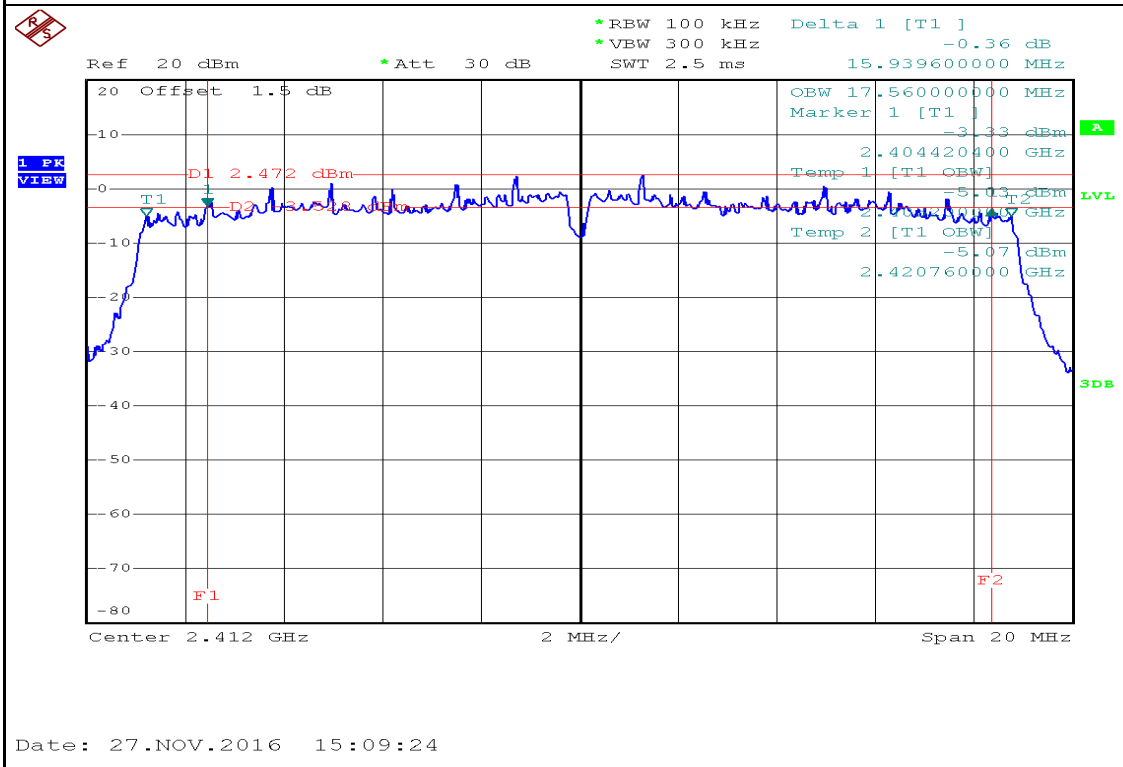
Appendix A.9: Maximum Peak Conducted Output Power_802.11n HT20

Channel	Channel Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	Limit (dBm)	Verdict
Low Channel	2412	23.4	30	Pass
Middle Channel	2437	23.99	30	Pass
High Channel	2462	22.97	30	Pass

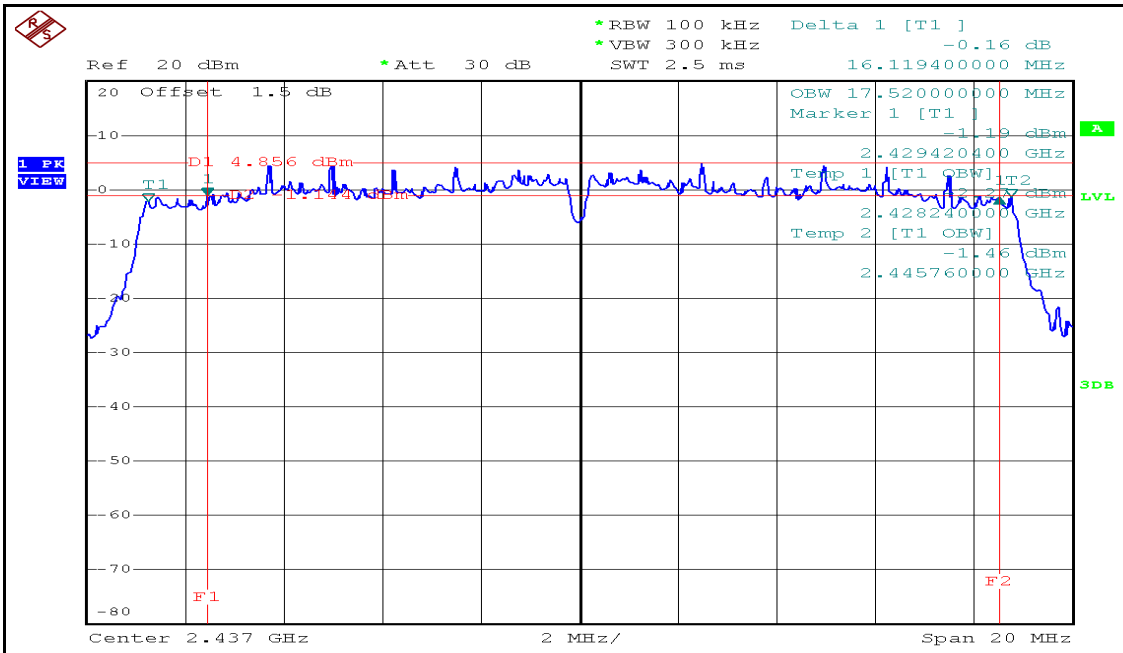
Appendix A.10: 6dB Bandwidth and 99% Bandwidth_802.11n HT20

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Verdict
Low Channel	2412	15.94	17.56	Pass
Middle Channel	2437	16.12	17.52	Pass
High Channel	2462	15.17	17.56	Pass

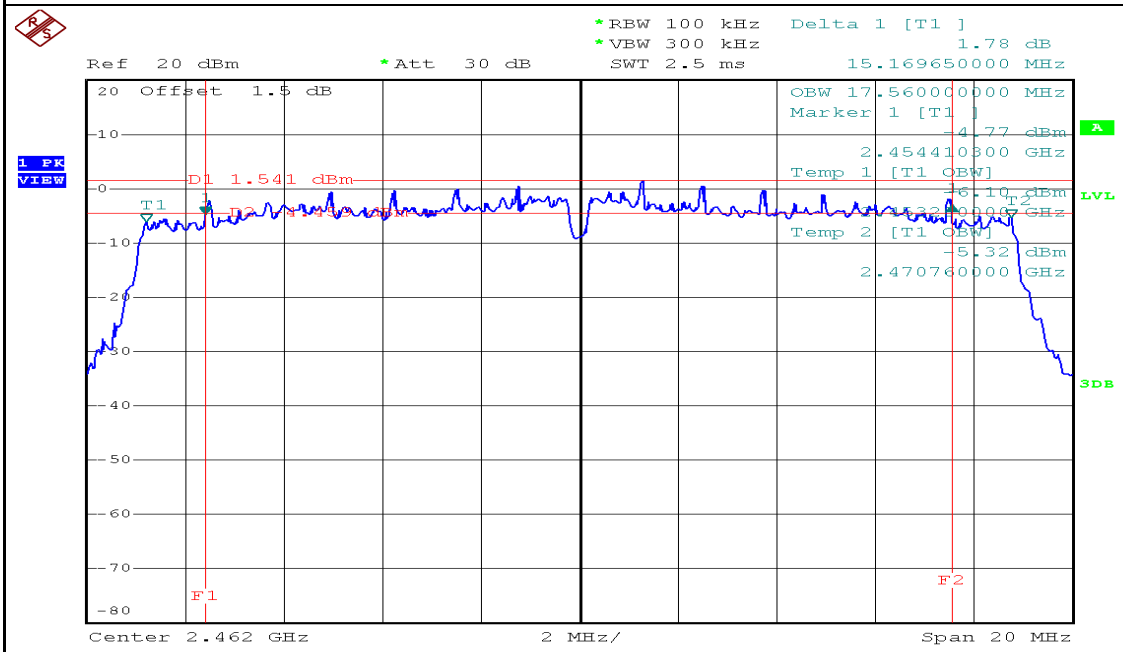
Low Channel_6dB Bandwidth & 99% Bandwidth



Middle Channel_6dB Bandwidth & 99% Bandwidth

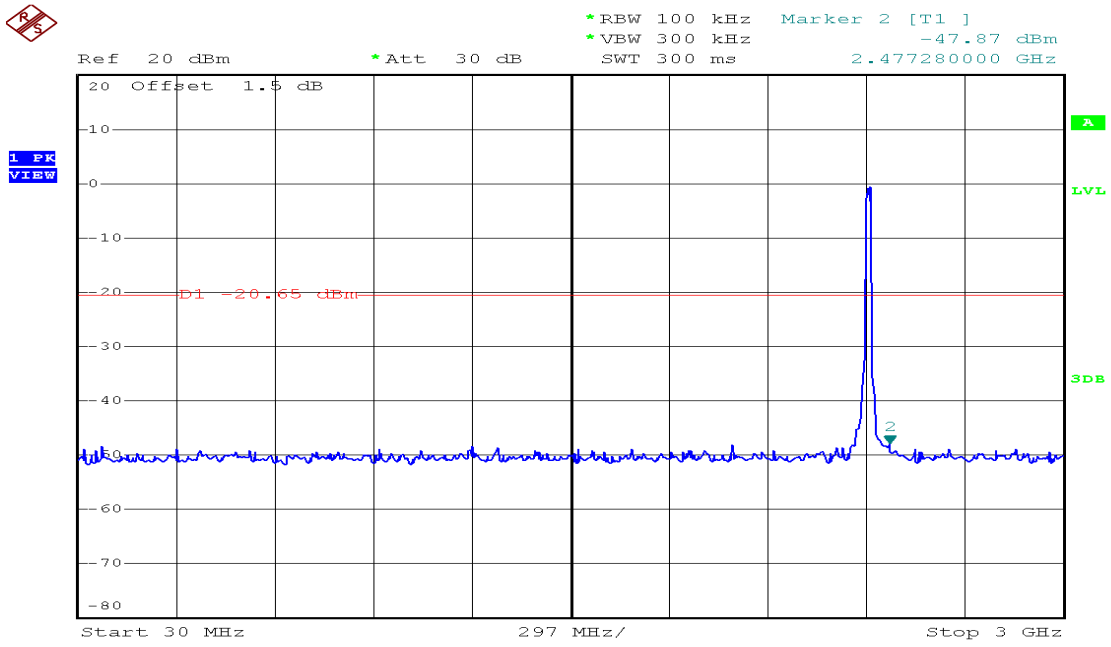


High Channel_6dB Bandwidth & 99% Bandwidth

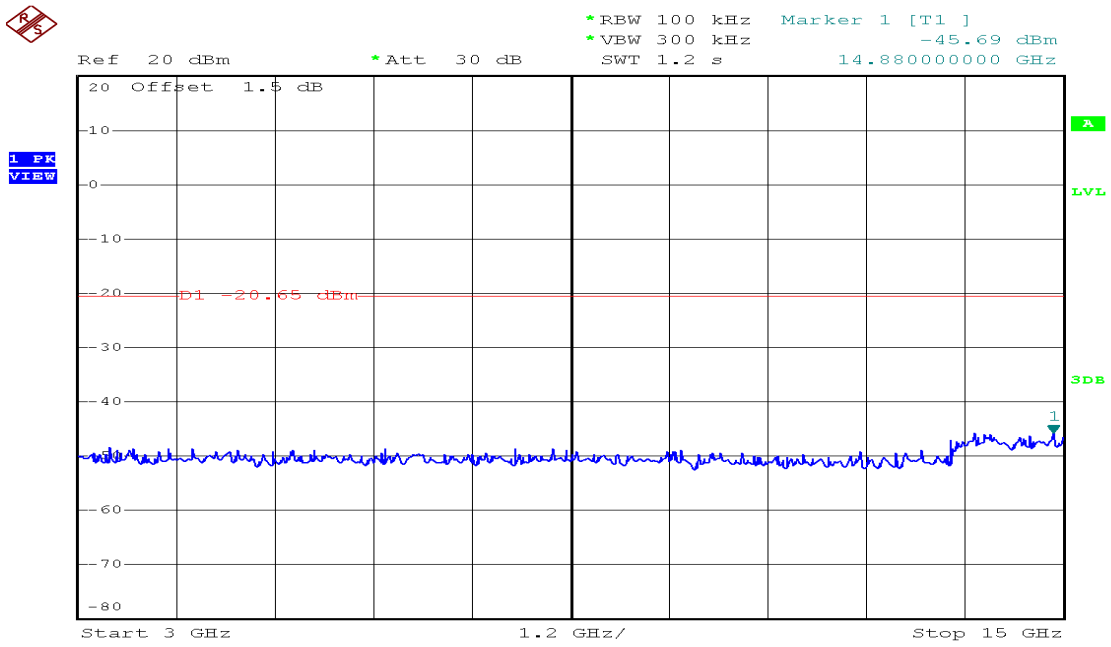


Appendix A.11: Conducted Spurious Emissions measured in 100 kHz Bandwidth_802.11n HT20

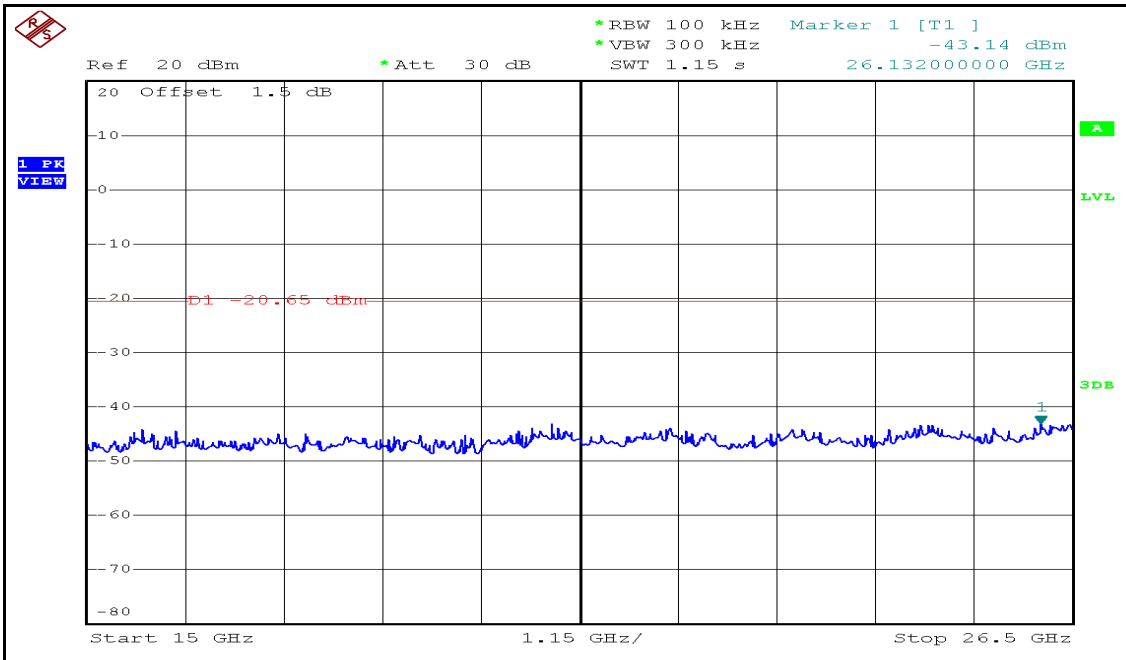
Low Channel_Conducted Spurious Emissions measured in 100 kHz Bandwidth



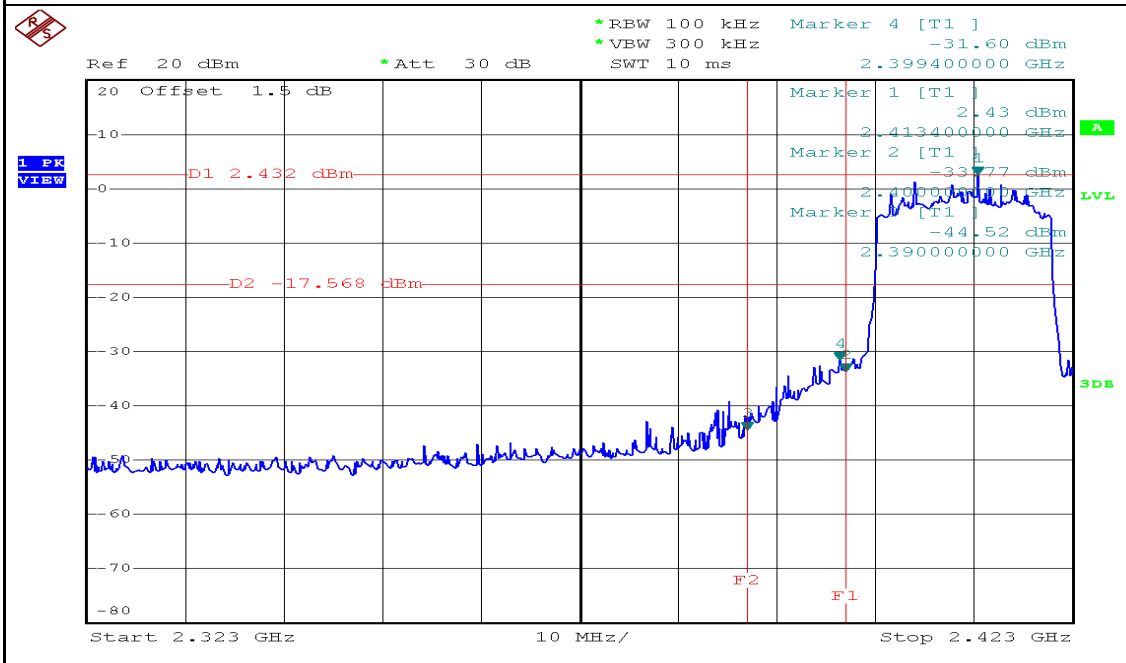
Date: 27.NOV.2016 15:09:38



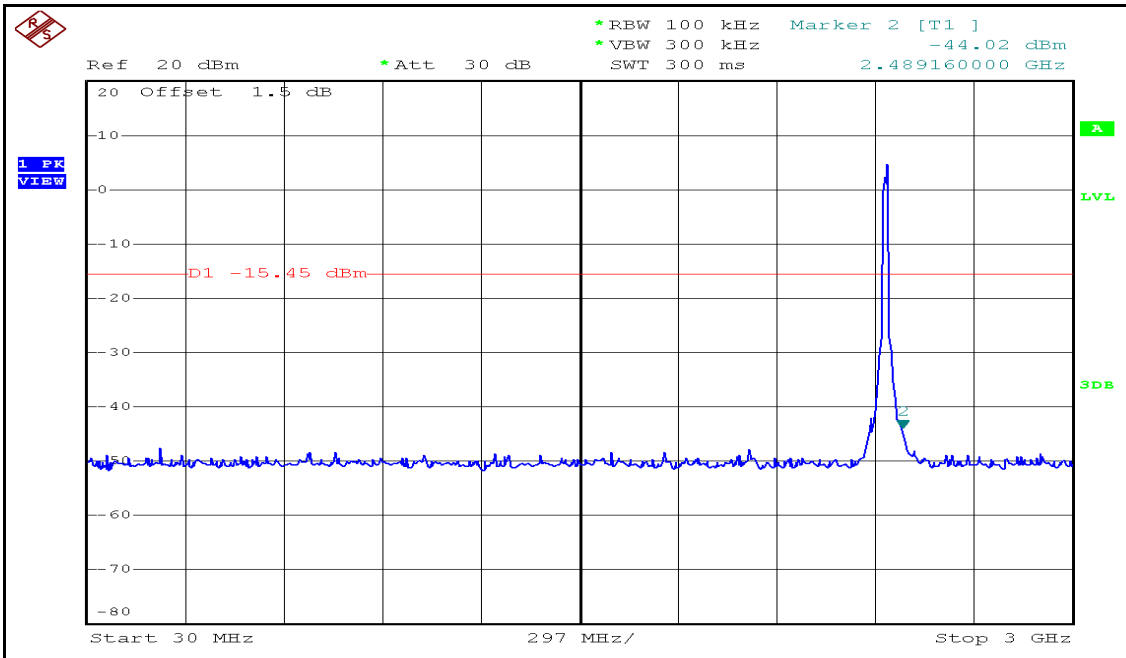
Date: 27.NOV.2016 15:09:46



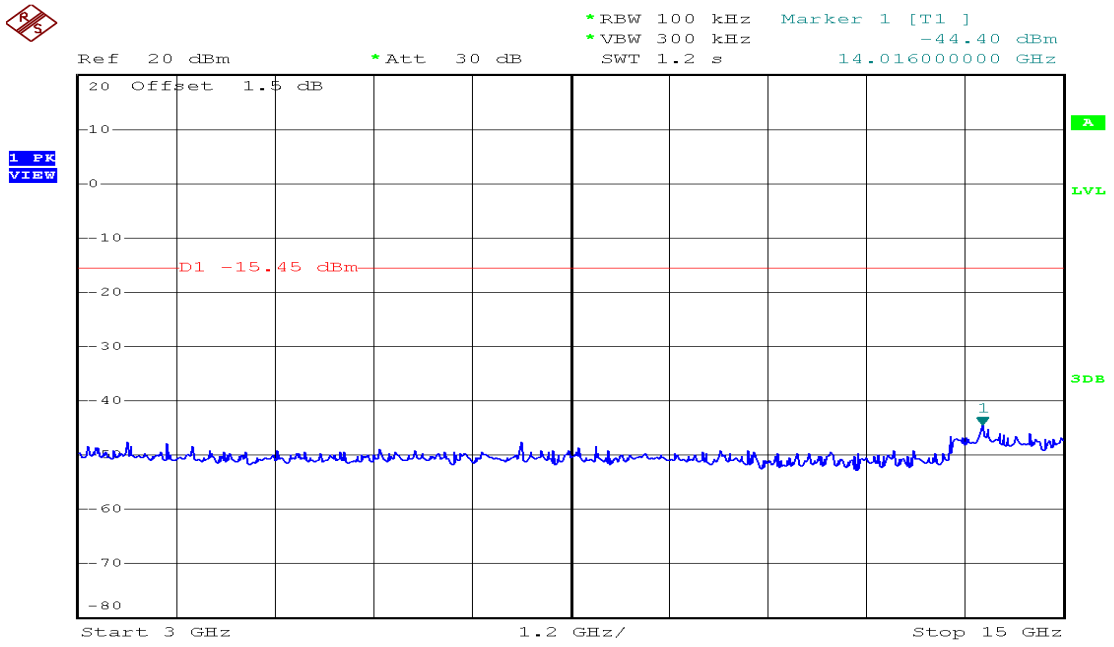
Low Channel_Bandedge



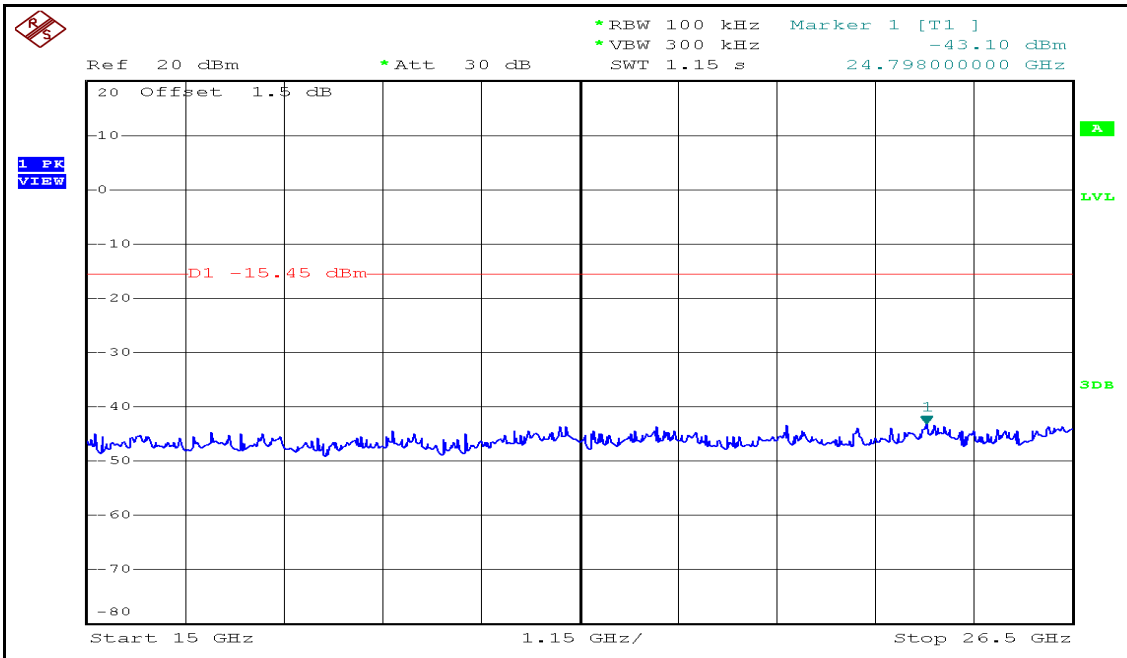
Middle Channel_Conducted Spurious Emissions measured in 100 kHz Bandwidth



Date: 27.NOV.2016 15:14:24

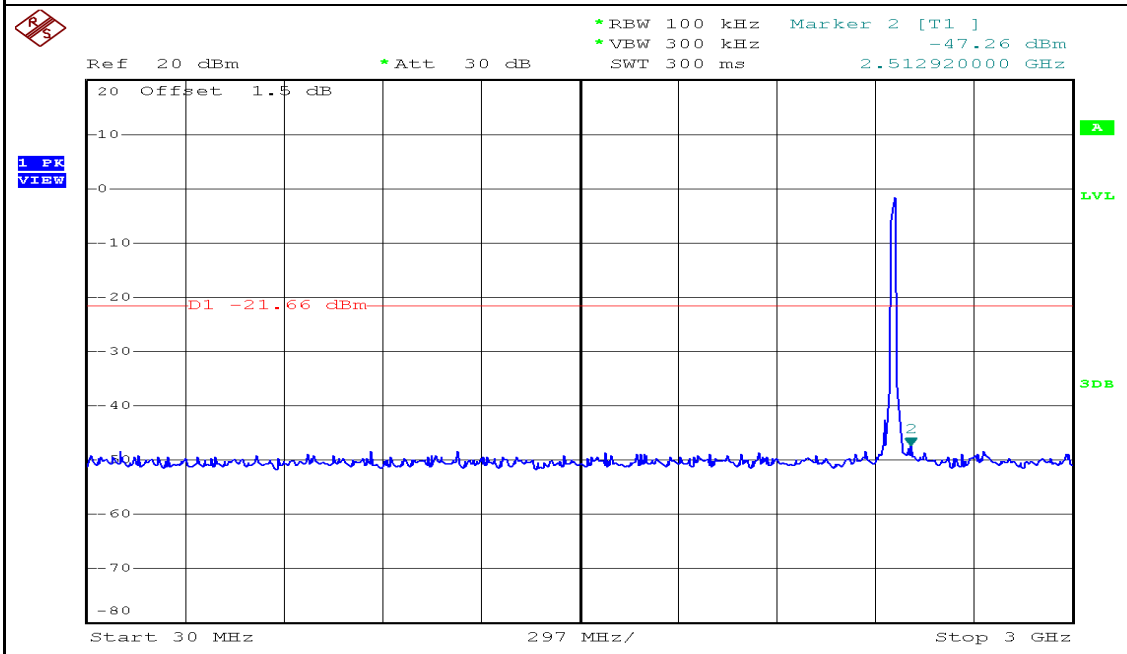


Date: 27.NOV.2016 15:14:32

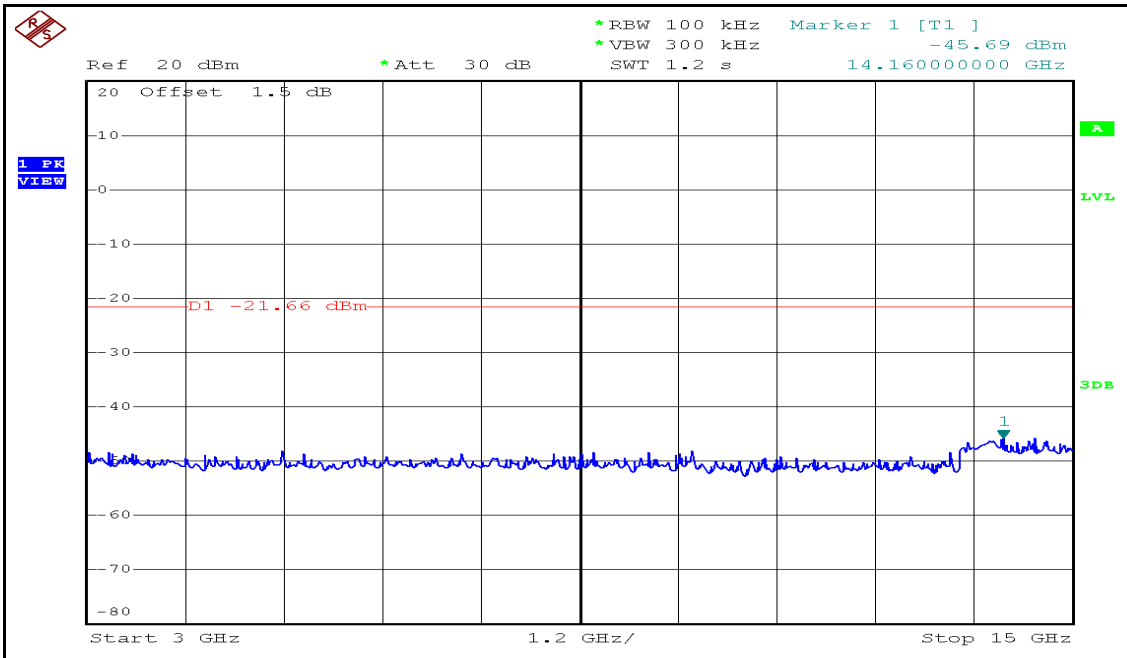


Date: 27.NOV.2016 15:14:41

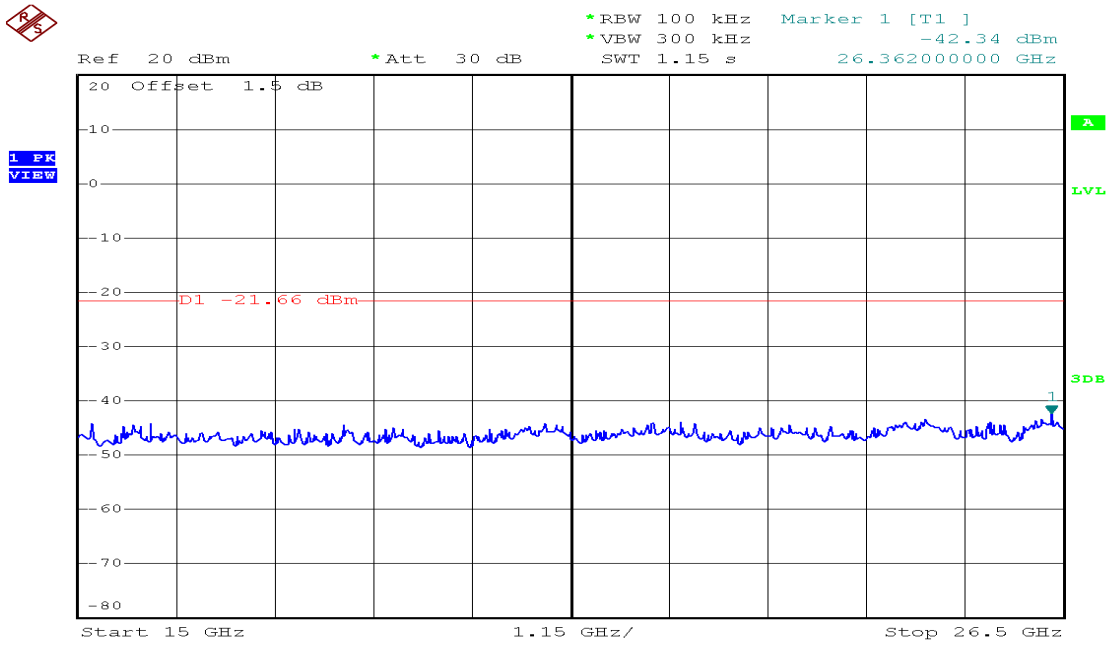
High Channel_Conducted Spurious Emissions measured in 100 kHz Bandwidth



Date: 27.NOV.2016 15:15:41

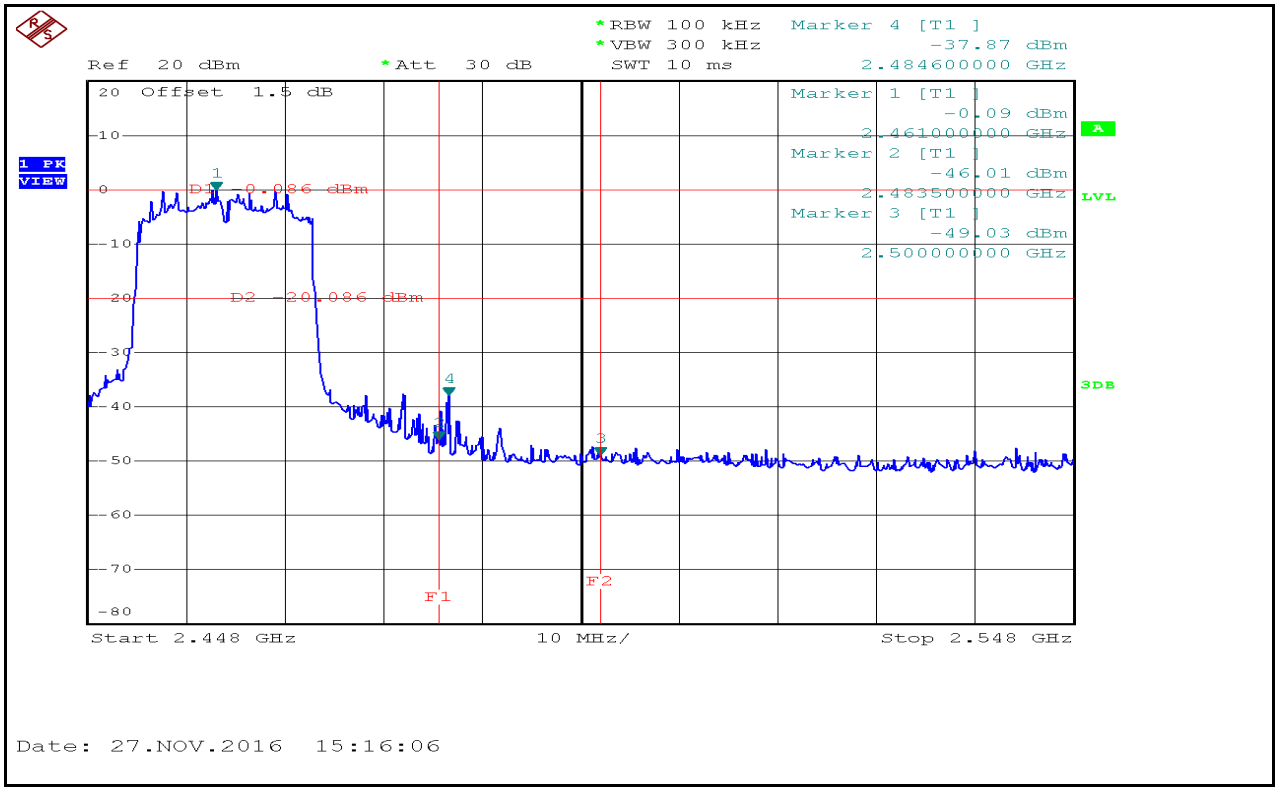


Date: 27.NOV.2016 15:15:49



Date: 27.NOV.2016 15:15:58

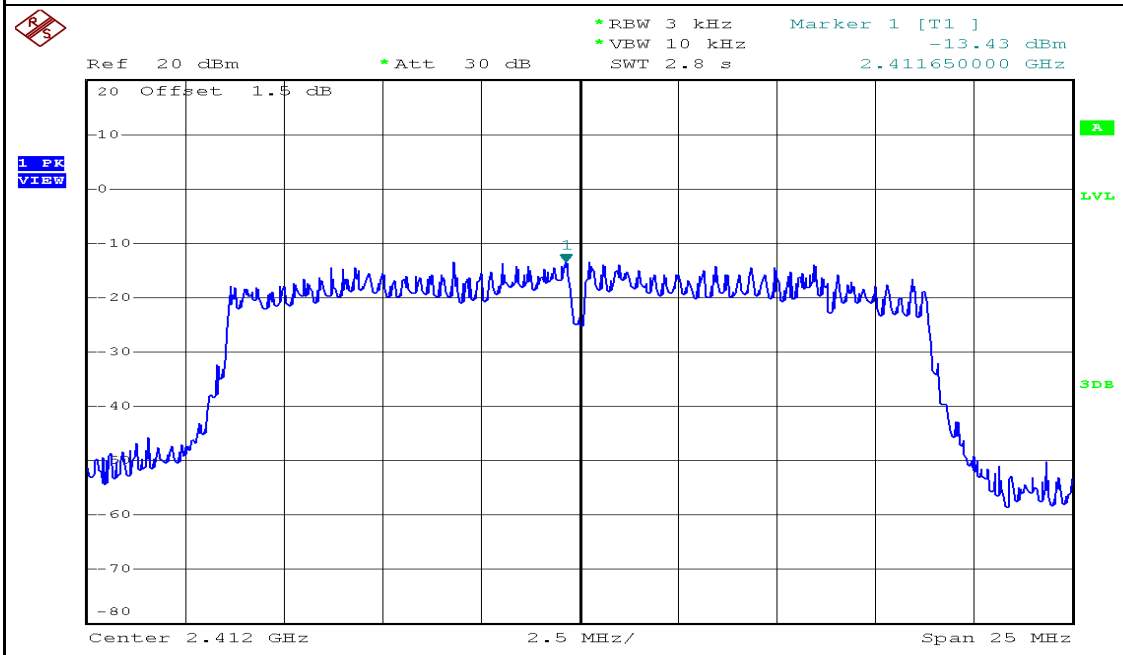
High Channel_Bandedge


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 4 [T1]
-37.87 dBm
2.484600000 GHz
Ref 20 dBm
Att 30 dB
Offset 1.5 dB
Marker 1 [T1]
-0.09 dBm
2.461000000 GHz
Marker 2 [T1]
-46.01 dBm
2.483500000 GHz
Marker 3 [T1]
-49.03 dBm
2.500000000 GHz
1 PK VIEW
D1 -0.086 dBm
D2 -20.086 dBm
A
LVL
3DB
F1
F2
Start 2.448 GHz
10 MHz/
Stop 2.548 GHz
Date: 27.NOV.2016 15:16:06

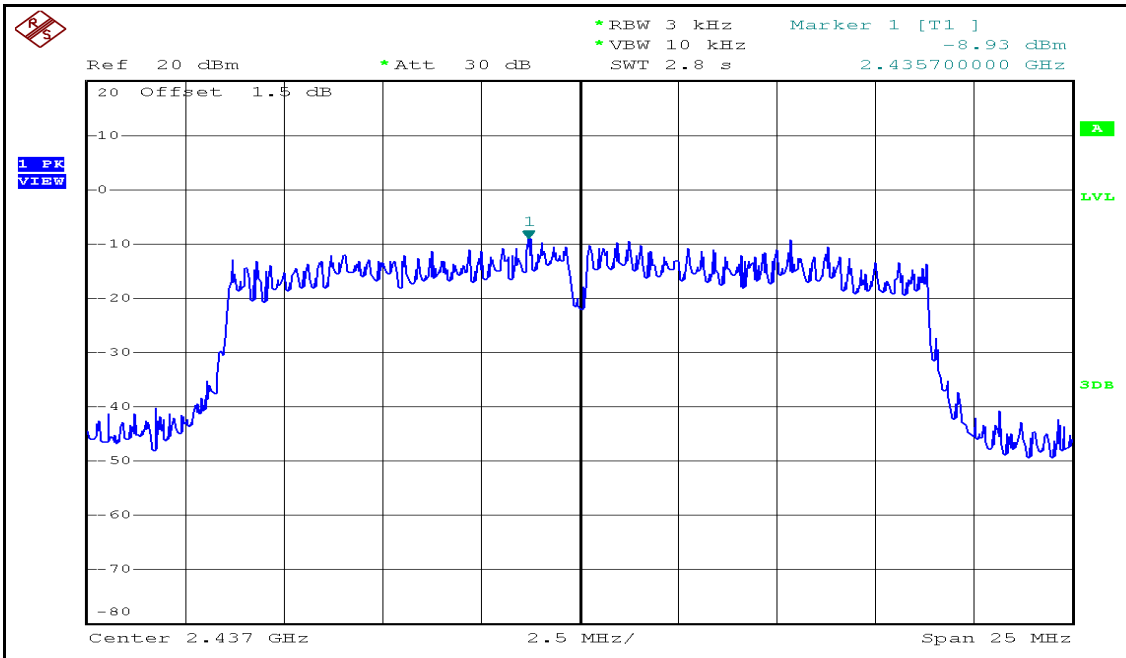
Appendix A.12: Power Spectral Density_802.11n HT20

Channel	Channel Frequency (MHz)	Power Spectral Density Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
Low Channel	2412	-13.43	8	Pass
Middle Channel	2437	-8.93	8	Pass
High Channel	2462	-13.38	8	Pass

Low Channel

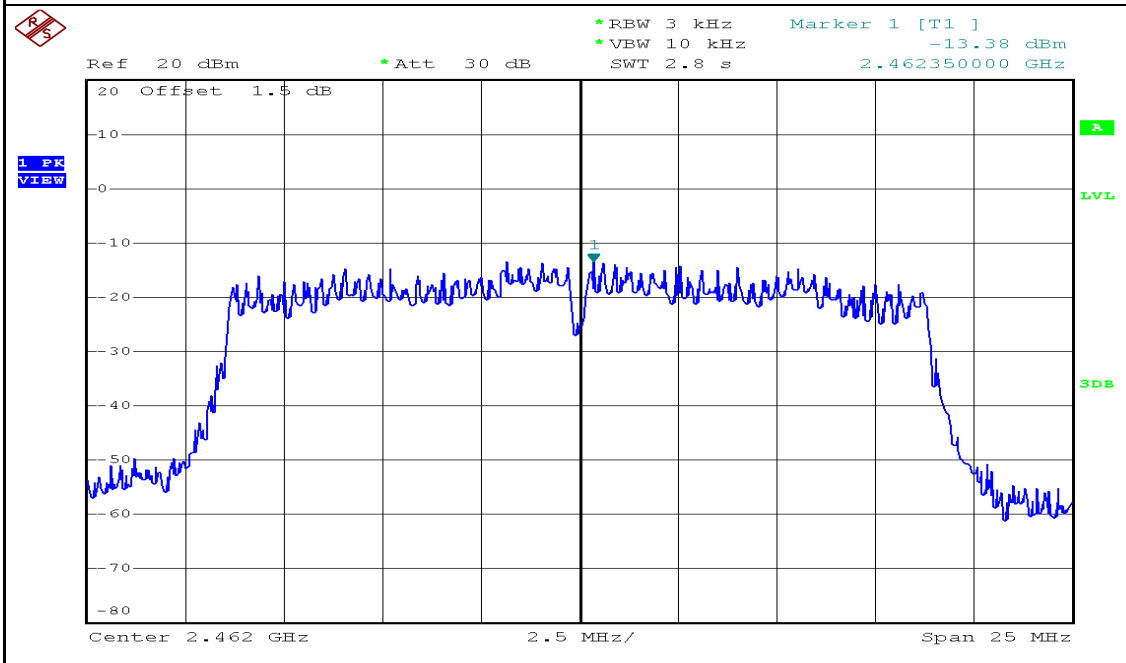


Middle Channel



Date: 27.NOV.2016 15:14:50

High Channel



Date: 27.NOV.2016 15:16:15

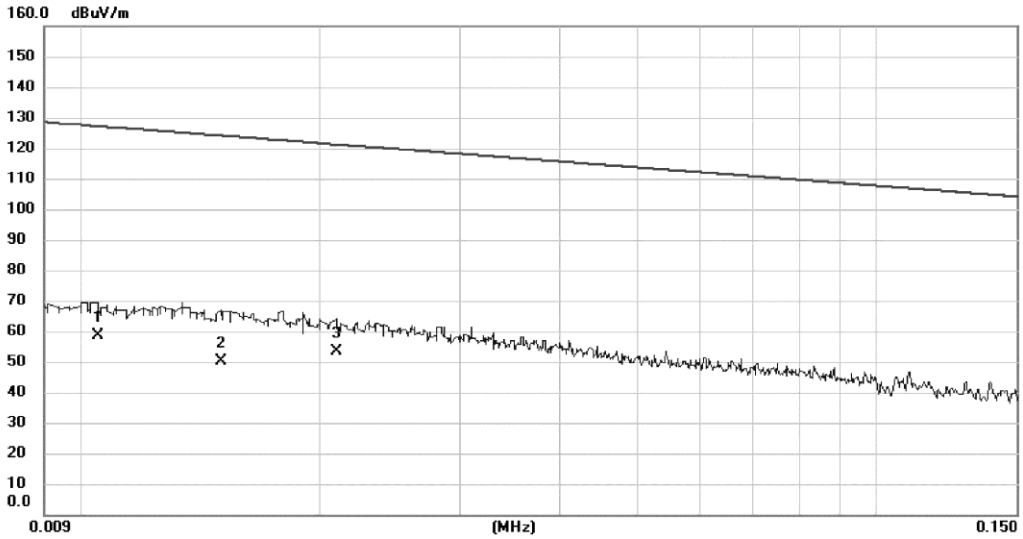
Appendix A.13: Spurious Emissions bleow 30 MHz

BTL Inc. do the best
No.3.JinShaGang 1st Road,ShiXia,DaLang Town,DongGuan,China.
Tel: (0769)-8318-3000 Fax:(0769)-8319-6000 Post Code: 523792
www.newbtl.com

Site:	DG-CB01	Polarization:		Temperature:	25 (C)
Limit:	FCC 15.209_3m(QP&AVG)_new	Power:	DC 5V	Humidity:	60 %
EUT:	Swann Wireless HD Smart Security Camera	Distance:	3m		
M/N:	SWWHD-INTCAM	Mode:	TX_0_1		
Note:					

Radiated Emission Measurement

File :FCCP_9KTO30M Data :#1 Date: 2016-11-21 Time: 11:44:12



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.011	34.50	24.09	58.59	127.18	-68.59	AVG	
2		0.015	26.41	23.82	50.23	124.08	-73.85	AVG	
3	*	0.021	29.81	23.40	53.21	121.16	-67.95	AVG	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_9KTO30M\Data :#1 *Page: 1* Test engineer : BIAO

BTL Inc. do the best
No.3.JinShaGang 1st Road,ShiXia,DaLang Town,DongGuan,China.
Tel: (0769)-8318-3000 Fax:(0769)-8319-6000 Post Code: 523792
www.newbtl.com

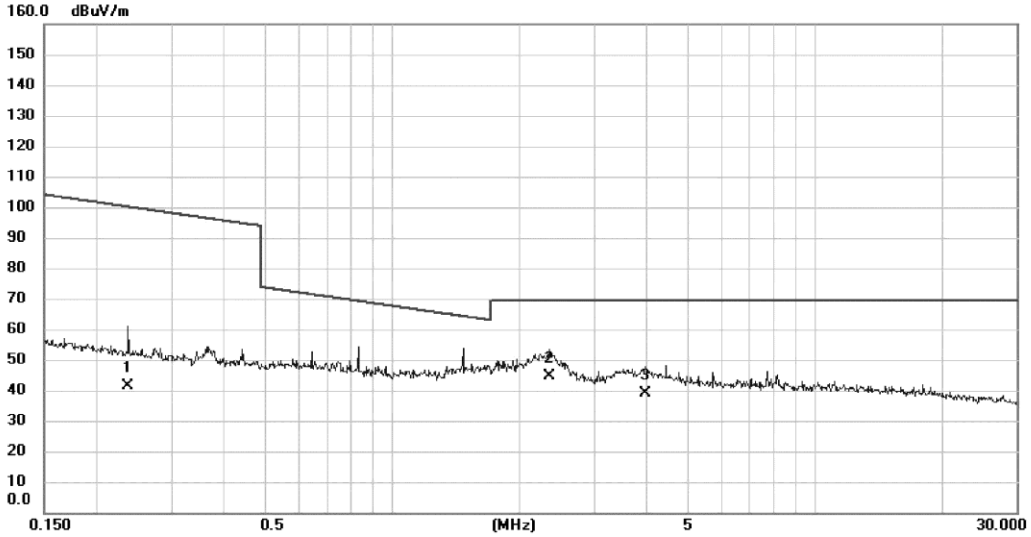
Site: DG-CB01
Limit: FCC 15.209_3m(QP&AVG)_new
EUT: Swann Wireless HD Smart Security Camera
M/N: SWWHD-INTCAM
Note:

Polarization:
Power: DC 5V
Distance: 3m
Mode: TX_0_2

Temperature: 25 (C)
Humidity: 60 %

Radiated Emission Measurement

File :FCCP_9KTO30M Data :#2 Date: 2016-11-21 Time: 11:48:42



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.237	22.60	18.66	41.26	100.13	-58.87	AVG	
2	*	2.346	27.20	17.46	44.66	69.54	-24.88	QP	
3		3.964	20.50	18.67	39.17	69.54	-30.37	QP	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_9KTO30M\Data :#2 *Page: 1* Test engineer : BIAO

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Tel: (0769)-8318-3000 Fax:(0769)-8319-6000 Post Code: 523792
www.newbtl.com

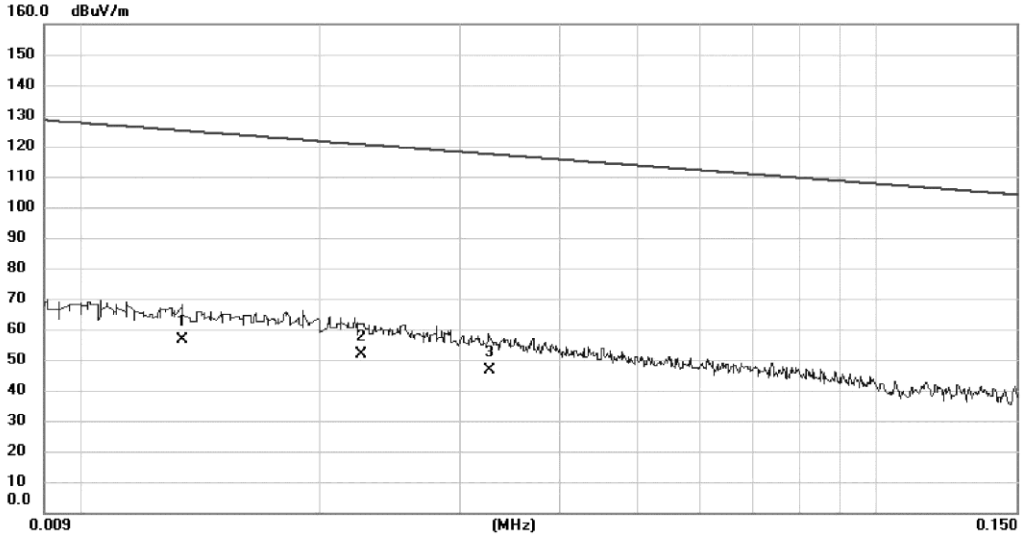
Site: DG-CB01
Limit: FCC 15.209_3m(QP&AVG)_new
EUT: Swann Wireless HD Smart Security Camera
M/N: SWWHD-INTCAM
Note:

Polarization:
Power: DC 5V
Distance: 3m
Mode: TX_90_1

Temperature: 25 (C)
Humidity: 60 %

Radiated Emission Measurement

File :FCCP_9KTO30M Data :#3 Date: 2016-11-21 Time: 11:57:18



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.013	32.80	23.92	56.72	125.06	-68.34	AVG	
2		0.022	28.50	23.21	51.71	120.56	-68.85	AVG	
3		0.033	24.78	21.97	46.75	117.34	-70.59	AVG	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_9KTO30M\Data :#3 *Page: 1* Test engineer : BIAO

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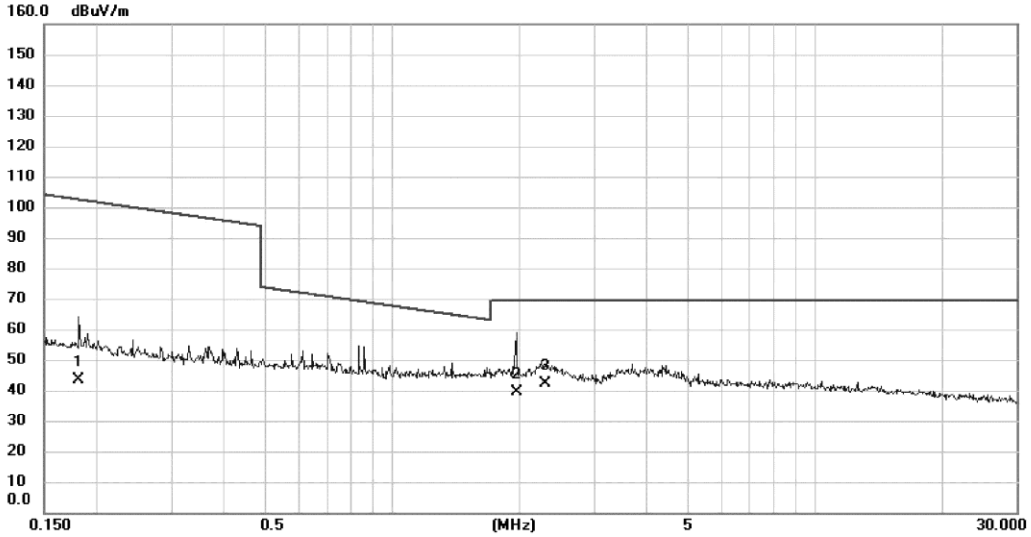
Tel: (0769)-8318-3000 Fax:(0769)-8319-6000 Post Code: 523792
www.newbtl.com

Site: DG-CB01	Polarization:	Temperature:	25 (C)
Limit: FCC 15.209_3m(QP&AVG)_new	Power: DC 5V	Humidity:	60 %
EUT: Swann Wireless HD Smart Security Camera	Distance: 3m		
M/N: SWWHD-INTCAM	Mode: TX_90_2		
Note:			

Radiated Emission Measurement

File :FCCP_9KTO30M Data :#4 Date: 2016-11-21 Time: 11:53:15



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.181	24.50	18.71	43.21	102.43	-59.22	AVG	
2		1.970	21.70	17.89	39.59	69.54	-29.95	QP	
3	*	2.297	24.80	17.52	42.32	69.54	-27.22	QP	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_9KTO30M\Data :#4 *Page: 1* Test engineer : BIAO

Appendix A.14: Spurious Emissions below 1 GHz

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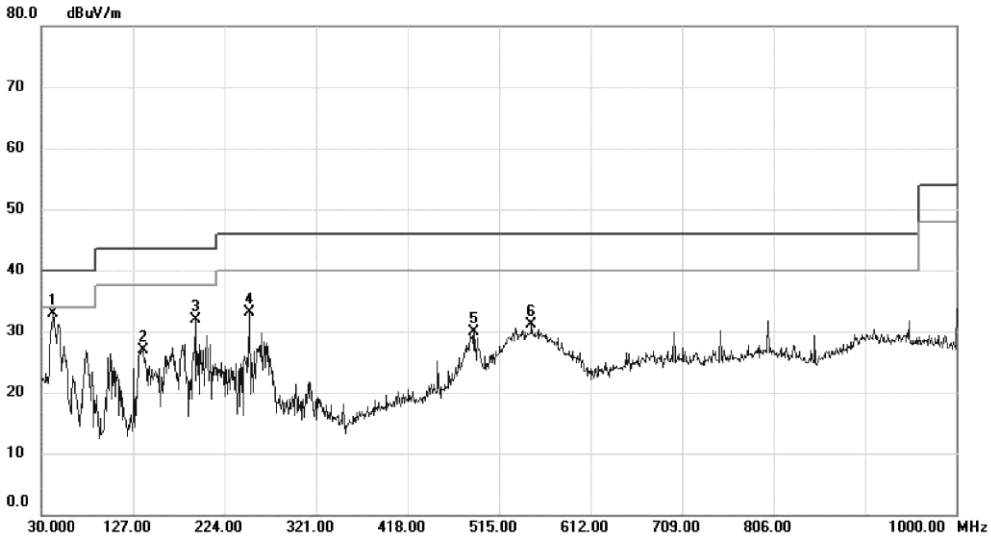
Site:	DG-CB03	Polarization:	***Vertical***
Limit:	FCC Class B 3m Radiation	Power:	DC 5V
EUT:	Swann Wireless HD Smart Security Camera	Distance:	3m
M/N:	SWWHD-INTCAM	Mode:	TX_B_2412
Note:			

Temperature:	25 (C)
Humidity:	60 %

Radiated Emission Measurement

File :FCCP_BELOW1G_1 Data :#1 Date: 2017-3-9 Time: 2:32:10



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	42.610	46.35	-13.36	32.99	40.00	-7.01	peak	
2		137.670	40.40	-13.43	26.97	43.50	-16.53	peak	
3		192.960	45.91	-14.09	31.82	43.50	-11.68	peak	
4		250.190	47.25	-14.19	33.06	46.00	-12.94	peak	
5		488.810	39.21	-9.34	29.87	46.00	-16.13	peak	
6		549.920	35.56	-4.55	31.01	46.00	-14.99	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_BELOW1G_1\Data :#1 *Page: 1* Test engineer : Welly

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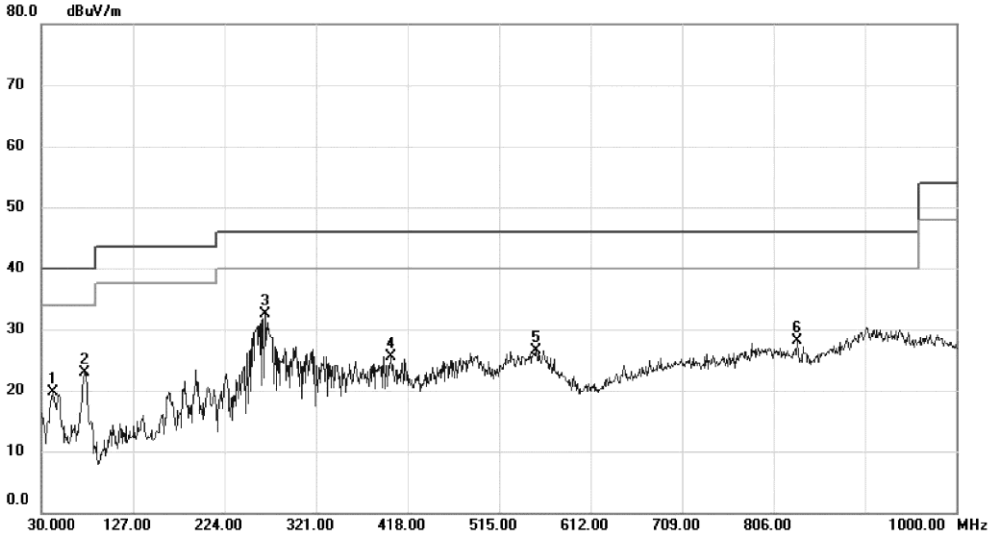
Tel: (0769)-8318-3000 Fax:(0769)-8319-6000 Post Code: 523792
www.newbtl.com

Site: DG-CB03	Polarization: ***Horizontal***	Temperature: 25 (C)
Limit: FCC Class B 3m Radiation	Power: DC 5V	Humidity: 60 %
EUT: Swann Wireless HD Smart Security Camera	Distance: 3m	
M/N: SWWHD-INTCAM	Mode: TX_B_2412	
Note:		

Radiated Emission Measurement

File :FCCP_BELOW1G_1 Data :#10 Date: 2017-3-9 Time: 2:44:49



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		42.610	32.99	-13.36	19.63	40.00	-20.37	peak	
2		75.590	39.48	-16.52	22.96	40.00	-17.04	peak	
3	*	267.650	46.11	-13.60	32.51	46.00	-13.49	peak	
4		400.540	33.31	-7.78	25.53	46.00	-20.47	peak	
5		554.770	31.34	-4.79	26.55	46.00	-19.45	peak	
6		831.220	28.81	-0.69	28.12	46.00	-17.88	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_BELOW1G_1\Data :#10 *Page: 1* Test engineer : Welly

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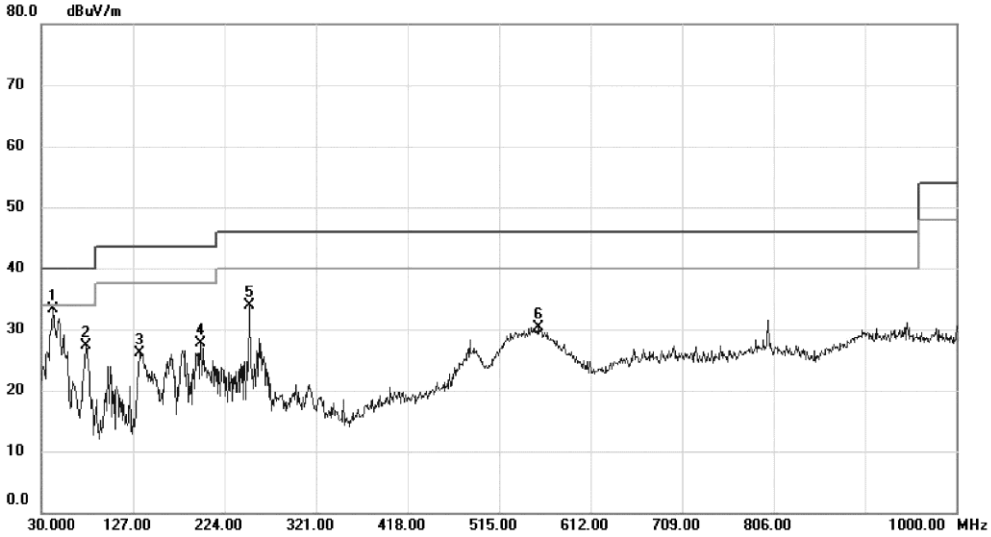
Site: DG-CB03
Limit: FCC Class B 3m Radiation
EUT: Swann Wireless HD Smart Security Camera
M/N: SWWHD-INTCAM
Note:

Polarization: ***Vertical***
Power: DC 5V
Distance: 3m
Mode: TX_B_2437

Temperature: 25 (C)
Humidity: 60 %

Radiated Emission Measurement

File :FCCP_BELOW1G_1 Data :#2 Date: 2017-3-9 Time: 2:34:42



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	42.610	46.57	-13.36	33.21	40.00	-6.79	peak	
2		77.530	43.55	-16.31	27.24	40.00	-12.76	peak	
3		133.790	39.01	-12.88	26.13	43.50	-17.37	peak	
4		198.780	42.03	-14.37	27.66	43.50	-15.84	peak	
5		250.190	48.19	-14.19	34.00	46.00	-12.00	peak	
6		556.710	35.13	-4.88	30.25	46.00	-15.75	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_BELOW1G_1\Data :#2 *Page: 1* Test engineer : Welly

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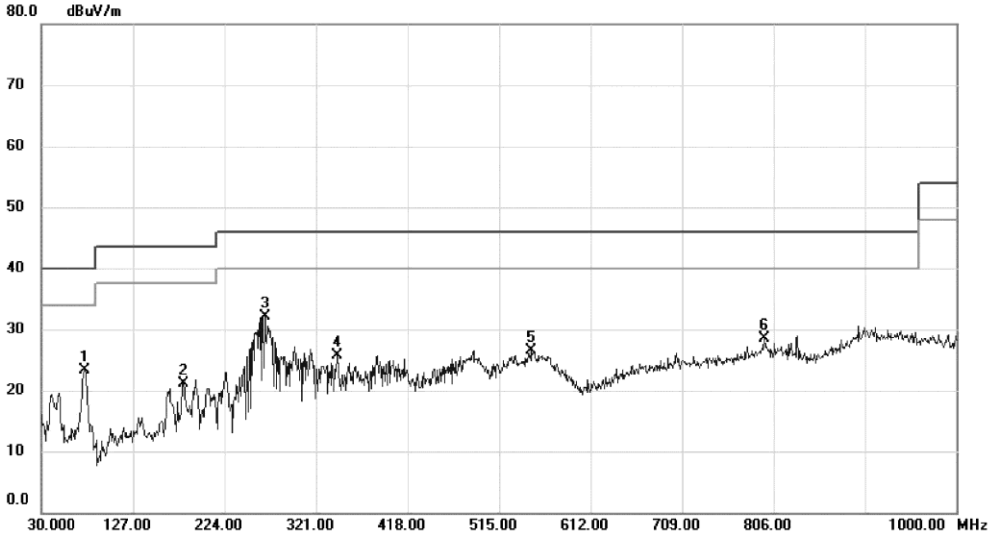
Site: DG-CB03
Limit: FCC Class B 3m Radiation
EUT: Swann Wireless HD Smart Security Camera
M/N: SWWHD-INTCAM
Note:

Polarization: ***Horizontal***
Power: DC 5V
Distance: 3m
Mode: TX_B_2437

Temperature: 25 (C)
Humidity: 60 %

Radiated Emission Measurement

File :FCCP_BELOW1G_1 Data :#11 Date: 2017-3-9 Time: 2:46:08



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		75.590	39.78	-16.52	23.26	40.00	-16.74	peak	
2		180.350	34.02	-12.88	21.14	43.50	-22.36	peak	
3	*	266.680	45.86	-13.68	32.18	46.00	-13.82	peak	
4		343.310	36.79	-11.08	25.71	46.00	-20.29	peak	
5		549.920	31.08	-4.55	26.53	46.00	-19.47	peak	
6		796.300	28.39	0.09	28.48	46.00	-17.52	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_BELOW1G_1\Data :#11 *Page: 1* Test engineer : Welly

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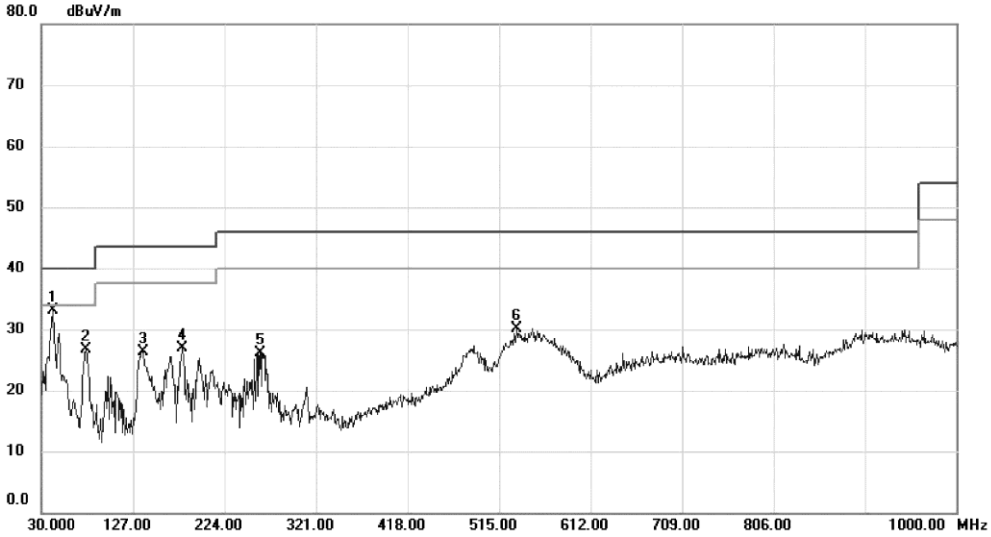
Site: DG-CB03
Limit: FCC Class B 3m Radiation
EUT: Swann Wireless HD Smart Security Camera
M/N: SWWHD-INTCAM
Note:

Polarization: ***Vertical***
Power: DC 5V
Distance: 3m
Mode: TX_B_2462

Temperature: 25 (C)
Humidity: 60 %

Radiated Emission Measurement

File :FCCP_BELOW1G_1 Data :#3 Date: 2017-3-9 Time: 2:35:23



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	42.610	46.54	-13.36	33.18	40.00	-6.82	peak	
2		77.530	42.99	-16.31	26.68	40.00	-13.32	peak	
3		138.640	39.97	-13.57	26.40	43.50	-17.10	peak	
4		179.380	39.65	-12.80	26.85	43.50	-16.65	peak	
5		261.830	40.16	-14.07	26.09	46.00	-19.91	peak	
6		533.430	36.28	-6.26	30.02	46.00	-15.98	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_BELOW1G_1\Data :#3 *Page: 1* Test engineer : Welly

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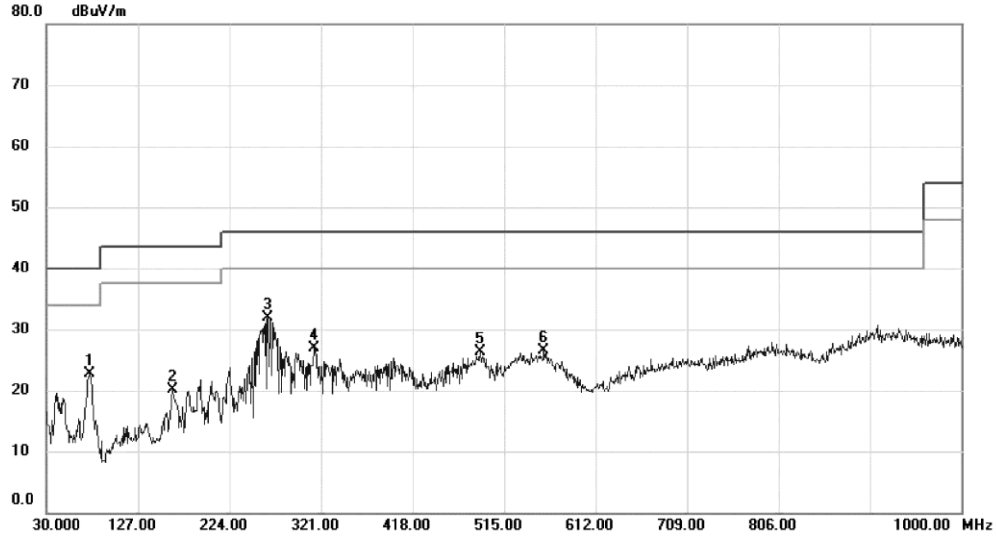
Tel: (0769)-8318-3000 Fax:(0769)-8319-6000 Post Code: 523792
www.newbtl.com

Site: DG-CB03	Polarization: ***Horizontal***	Temperature: 25 (C)
Limit: FCC Class B 3m Radiation	Power: DC 5V	Humidity: 60 %
EUT: Swann Wireless HD Smart Security Camera	Distance: 3m	
M/N: SWWHD-INTCAM	Mode: TX_B_2462	
Note:		

Radiated Emission Measurement

File :FCCP_BELOW1G_1 Data :#12 Date: 2017-3-9 Time: 2:47:35



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		75.590	39.28	-16.52	22.76	40.00	-17.24	peak	
2		163.860	32.24	-12.18	20.06	43.50	-23.44	peak	
3	*	264.740	45.77	-13.84	31.93	46.00	-14.07	peak	
4		313.240	37.36	-10.44	26.92	46.00	-19.08	peak	
5		489.780	35.60	-9.37	26.23	46.00	-19.77	peak	
6		557.680	31.47	-4.92	26.55	46.00	-19.45	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_BELOW1G_1\Data :#12 *Page: 1* Test engineer : Welly

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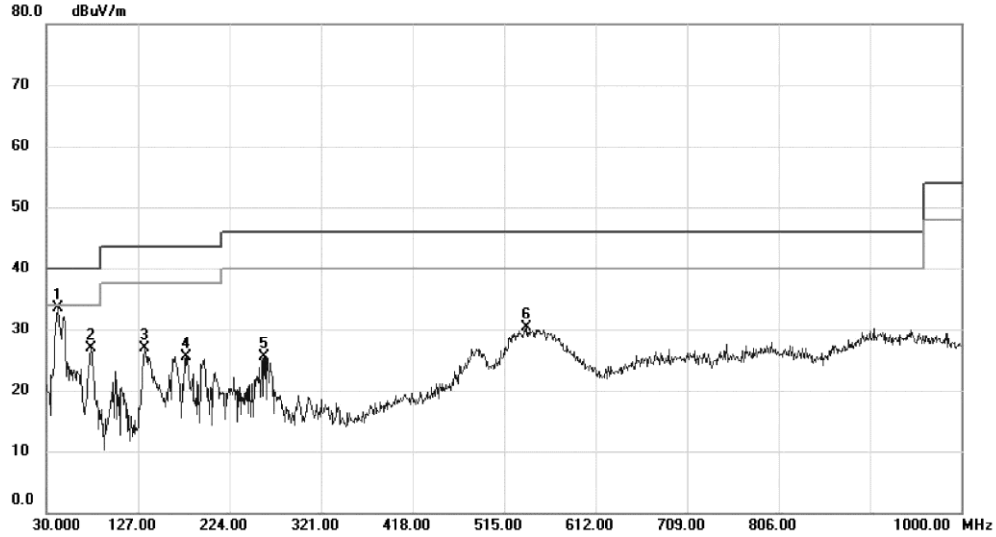
Site: DG-CB03
Limit: FCC Class B 3m Radiation
EUT: Swann Wireless HD Smart Security Camera
M/N: SWWHD-INTCAM
Note:

Polarization: ***Vertical***
Power: DC 5V
Distance: 3m
Mode: TX_G_2412

Temperature: 25 (C)
Humidity: 60 %

Radiated Emission Measurement

File :FCCP_BELOW1G_1 Data :#4 Date: 2017-3-9 Time: 2:36:54



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	41.640	47.10	-13.56	33.54	40.00	-6.46	peak	
2		77.530	43.19	-16.31	26.88	40.00	-13.12	peak	
3		133.790	39.83	-12.88	26.95	43.50	-16.55	peak	
4		177.440	38.28	-12.68	25.60	43.50	-17.90	peak	
5		260.860	39.60	-14.14	25.46	46.00	-20.54	peak	
6		539.250	35.90	-5.65	30.25	46.00	-15.75	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_BELOW1G_1\Data :#4 *Page: 1* Test engineer : Welly

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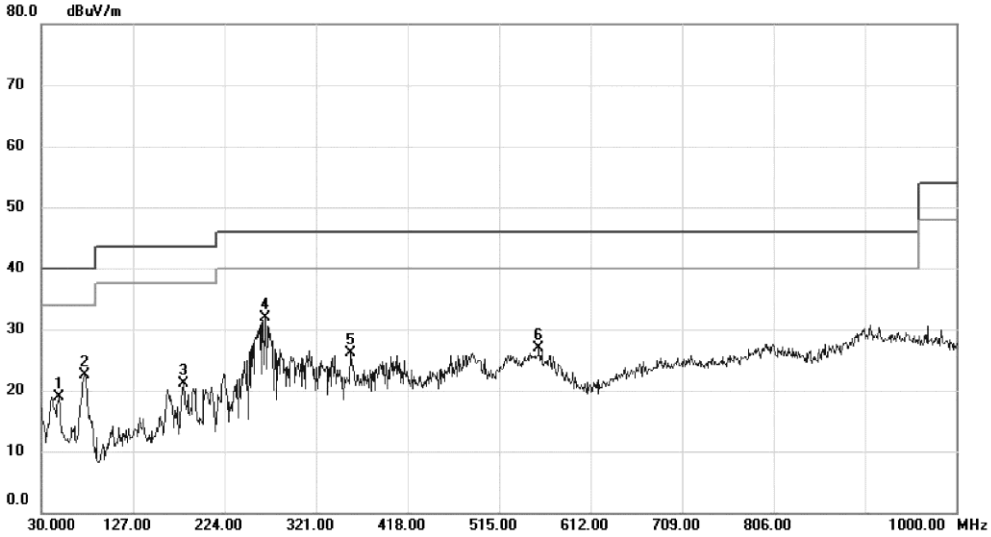
Site: DG-CB03
Limit: FCC Class B 3m Radiation
EUT: Swann Wireless HD Smart Security Camera
M/N: SWWHD-INTCAM
Note:

Polarization: ***Horizontal***
Power: DC 5V
Distance: 3m
Mode: TX_G_2412

Temperature: 25 (C)
Humidity: 60 %

Radiated Emission Measurement

File :FCCP_BELOW1G_1 Data :#13 Date: 2017-3-9 Time: 2:48:42



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48.430	32.06	-13.11	18.95	40.00	-21.05	peak	
2		75.590	38.96	-16.52	22.44	40.00	-17.56	peak	
3		180.350	33.98	-12.88	21.10	43.50	-22.40	peak	
4	*	266.680	45.50	-13.68	31.82	46.00	-14.18	peak	
5		357.860	36.69	-10.68	26.01	46.00	-19.99	peak	
6		557.680	31.89	-4.92	26.97	46.00	-19.03	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_BELOW1G_1\Data :#13 *Page: 1* Test engineer : Welly

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Site: DG-CB03
Limit: FCC Class B 3m Radiation
EUT: Swann Wireless HD Smart Security Camera
M/N: SWWHD-INTCAM
Note:

Polarization: ***Vertical***
Power: DC 5V
Distance: 3m
Mode: TX_G_2437

Temperature: 25 (C)
Humidity: 60 %

Radiated Emission Measurement

File :FCCP_BELOW1G_1 Data :#5 Date: 2017-3-9 Time: 2:38:06

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	41.640	45.90	-13.56	32.34	40.00	-7.66	peak	
2		77.530	43.14	-16.31	26.83	40.00	-13.17	peak	
3		133.790	38.97	-12.88	26.09	43.50	-17.41	peak	
4		165.800	38.32	-12.21	26.11	43.50	-17.39	peak	
5		263.770	40.06	-13.91	26.15	46.00	-19.85	peak	
6		552.830	35.01	-4.68	30.33	46.00	-15.67	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

File :FCCP_BELOW1G_1\Data :#5 *Page: 1* Test engineer : Welly