

FCC/IC DTS REPORT

FCC/IC Class II Permissive Change

Applicant Name:

LG Electronics MobileComm U.S.A., Inc.

Address:

1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Issue:

March 11 2016

Test Site/Location:

HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-R-1603-F062

HCT FRN: 0005866421

IC Recognition No.: 5944A-5

FCC ID	:ZNFR105
IC	:2703C-R105
APPLICANT	:LG Electronics MobileComm U.S.A., Inc.

FCC/IC Model(s) LG-R105
EUT Type 360 Camera
Frequency Range: 2412 MHz - 2462 MHz (2.4 GHz Band)
Modulation type: CCK/DSSS/OFDM
FCC Classification: Digital Transmission System(DTS)
FCC Rule Part(s): Part 15.247
IC Rule : RSS-247 Issue 1(May 2015) , RSS-GEN Issue 4(November 2014)

Note : The device, LG-R105 is electrically identical for conducted characteristic compare to original LG-R105(report No. HCT-R-1602-F057), confirmed by spot-check tests.
Therefore, the conducted test result data is provided in the report No. HCT-R-1602-F057.

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)



Report prepared by
: Kyung Soo Kang
Test Engineer of RF Team



Approved by
: Sang Jun Lee
Manager of RF Team

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1603-F062	March 11, 2016	- First Approval Report

Table of Contents

1. GENERAL INFORMATION	4
2. EUT DESCRIPTION	4
3. TEST METHODOLOGY	5
3.1 EUT CONFIGURATION	5
3.2 EUT EXERCISE	5
3.3 GENERAL TEST PROCEDURES	5
3.4 DESCRIPTION OF TEST MODES	5
4. INSTRUMENT CALIBRATION.....	6
5. FACILITIES AND ACCREDITATIONS	6
5.1 FACILITIES	6
5.2 EQUIPMENT	6
6. ANTENNA REQUIREMENTS	6
7. MEASUREMENT UNCERTAINTY	7
8. SUMMARY TEST OF RESULTS	8
8.1 FCC Part	8
8.2 IC Part	8
9. RADIATED MEASUREMENT.....	9
9.1 RADIATED SPURIOUS EMISSIONS.....	9
9.2 RECEIVER SPURIOUS EMISSIONS	24
9.3 RADIATED RESTRICTED BAND EDGES.....	25
10. LIST OF TEST EQUIPMENT	30

1. GENERAL INFORMATION

Applicant: LG Electronics MobileComm U.S.A., Inc
Address: 1000 Sylvan Avenue, Englewood Cliffs NJ 07632
FCC ID: ZNFR105
IC: 2703C-R105
EUT Type: 360 Camera
FCC Model name(s): LG-R105
Date(s) of Tests: February 17, 2016 ~ March 08, 2016
Place of Tests: HCT Co., Ltd.
 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea
 (IC Recognition No. : 5944A-5)

2. EUT DESCRIPTION

FCC/IC Model Name	LG-R105
EUT Type	360 Camera
Power Supply	DC 3.7 V
Frequency Range	TX: 2412 MHz ~ 2462 MHz RX: 2412 MHz ~ 2462 MHz
Modulation Type	DSSS/CCK(802.11b), OFDM(802.11g, 802.11n)
Antenna Specification	Manufacturer: Ace Technology Antenna type: Internal ANTENNA Peak Gain : -0.98 dBi

3. TEST METHODOLOGY

FCC KDB 558074 D01 DTS Meas Guidance v03r03 dated June 09, 2015 entitled “Guidance for Performing Compliance Measurements on Digital Transmission Systems(DTS) and the measurement procedure described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) Operating Under §15.247” were used in the measurement.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C / the RSS-GEN issue 4, RSS-247 issue 1.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.10. (Version: 2013)

Conducted Antenna Terminal

See Section from 9.1 to 9.2.(KDB 558074)

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low, mid and high with highest data rate (worst case) is chosen for full testing.

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

All equipments(spectrum, antenna, accessory, etc.) for measurement is calibrated in accordance with the requirements of C63.5 (latest edition).

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 07, 2015 (Registration Number: 90661) / June 22, 2015 (IC Registration Number: 5944A-5)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203 / RSS-GEN(Issue 4) Section 8.3:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 antennas of this E.U.T are permanently attached.

*The E.U.T Complies with the requirement of §15.203 / RSS-GEN

7. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (\pm dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	6.07

8. SUMMARY TEST OF RESULTS

8.1 FCC Part

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
Radiated Spurious Emissions	§15.205, 15.209	cf. Section 8.7.1	RADIATED	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	cf. Section 8.7.3		PASS

8.2 IC Part

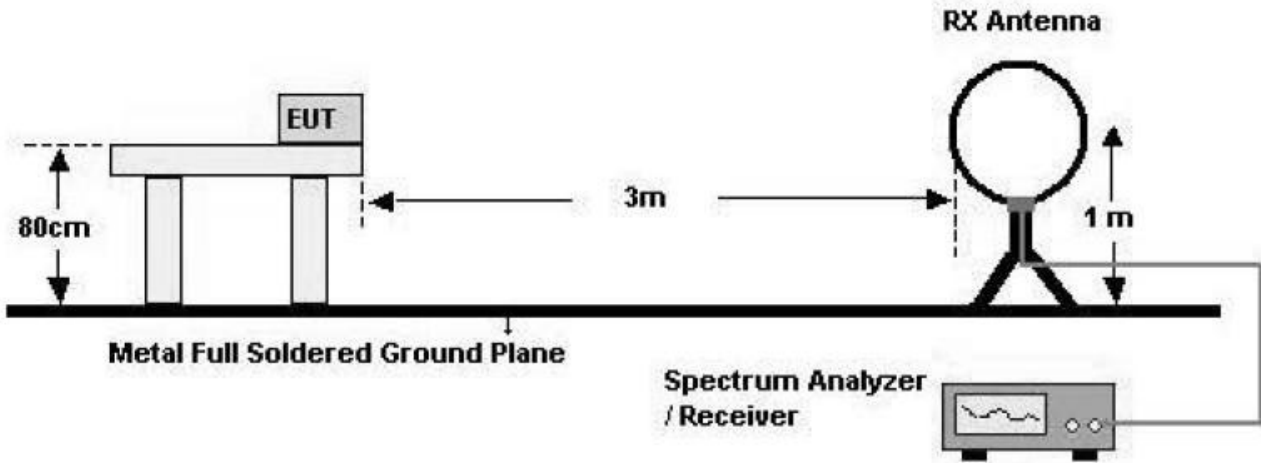
Test Description	IC Part Section(s)	Test Limit	Test Condition	Test Result
Radiated Spurious Emissions	RSS-210 [A8.5]	cf. Section 8.7.1	RADIATED	PASS
Receiver Spurious Emissions	RSS-GEN, Section 7.2.3	cf. Section 8.7.2		PASS
Radiated Restricted Band Edge	RSS-210 [A8.5]	cf. Section 8.7.3		PASS

9. RADIATED MEASUREMENT.**9.1 RADIATED SPURIOUS EMISSIONS.****Test Requirements and limit, §15.205, §15.209 / RSS-GEN(Issue 4) Section 8.9.**

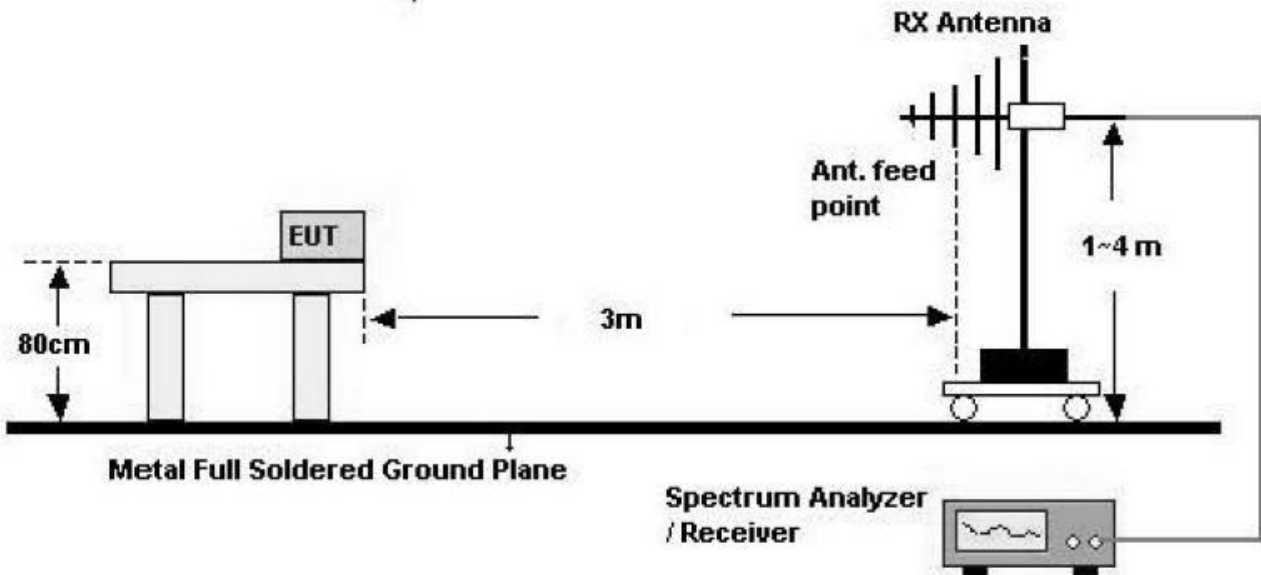
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

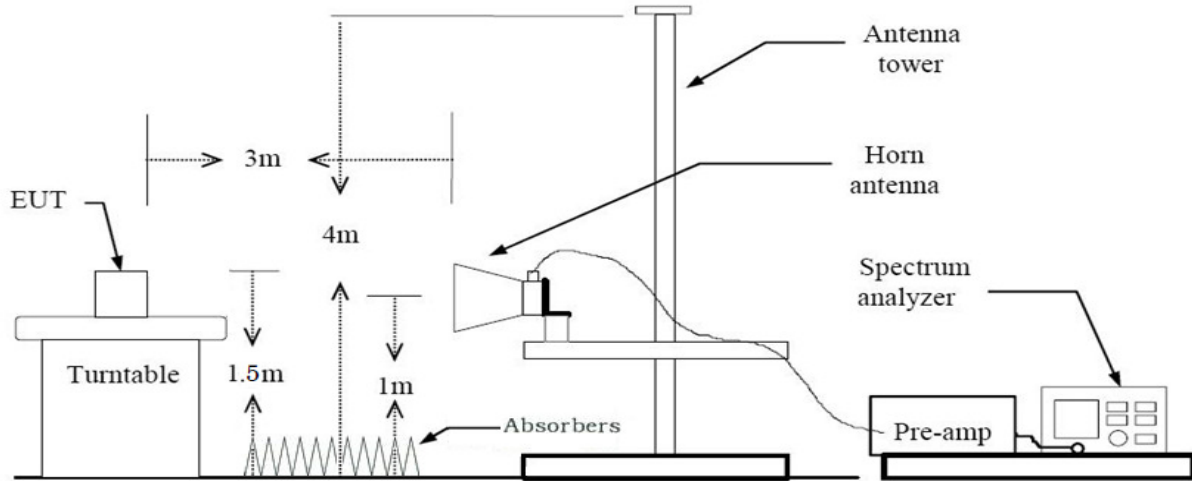
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE USED

Method 12.1 in KDB 558074, issued 06/09/2015

Spectrum Setting

- Peak

Peak emission levels are measured by setting the instrument as follows:

RBW = cf. Table 1.

VBW $\geq 3 \times$ RBW.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweeps to continue until the trace stabilizes.

(Note that the required measurement time may be longer for low duty cycle applications).

Table 1 —RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

- Average (duty cycle \geq 98%)

Set RBW = 1 MHz

Set VBW \geq 3 x RBW

Detector = RMS

Averaging type = power (*i.e.*, RMS).

Sweep time = auto.

Trace mode = average (at least 100 traces).

- Average (duty cycle < 98%, duty cycle variations are less than $\pm 2\%$)

Set RBW = 1 MHz

Set VBW \geq 3 x RBW

Detector = RMS.

Averaging type = power (*i.e.*, RMS).

Sweep time = auto.

Trace mode = average (at least 100 traces).

A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.

- Average (duty cycle < 98%, duty cycle variations exceed $\pm 2\%$)

Set RBW = 1 MHz

Set VBW \geq 1/T. (at least 100 times less than the resolution bandwidth, but no less than 10 Hz.)

Select spectrum analyzer linear display mode.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Note :

The duty cycle factor for 802.11 b/g/n_20 MHz

Mode	Worst Data rate (Mbps)	T _{on} (ms)	T _{total} (ms)	Duty Cycle (%)	Duty Cycle Factor (dB)	VBW(1/T) (Hz)
b	1	12.207	12.297	99.27	0.032	82
g	6	2.032	2.132	95.32	0.208	492
n_20MHz	MCS Index 0	1.880	1.978	95.03	0.221	532

TEST RESULTS

9 kHz – 30MHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
No Critical peaks found							

Notes:

1. Measuring frequencies from 9 kHz to the 30MHz.
2. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB)
4. Limit line = specific Limits (dBuV) + Distance extrapolation factor
5. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

TEST RESULTS

Below 1 GHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
No Critical peaks found							

Notes:

1. Measuring frequencies from 30 MHz to the 1 GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Above 1 GHz

Operation Mode: 802.11 b
 Transfer Rate: 1 Mbps
 Operating Frequency 2412
 Channel No. 01 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	48.86	-0.22	V	48.64	73.98	25.34	PK
4824	37.13	-0.22	V	36.91	53.98	17.07	AV
7236	49.18	6.41	V	55.59	73.98	18.39	PK
7236	36.92	6.41	V	43.33	53.98	10.65	AV
4824	48.89	-0.22	H	48.67	73.98	25.31	PK
4824	37.30	-0.22	H	37.08	53.98	16.90	AV
7236	49.21	6.41	H	55.62	73.98	18.36	PK
7236	36.94	6.41	H	43.35	53.98	10.63	AV

Operation Mode: 802.11 g
 Transfer Rate: 6 Mbps
 Operating Frequency 2412
 Channel No. 01 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	48.74	-0.22	V	48.52	73.98	25.46	PK
4824	37.07	-0.22	V	36.85	53.98	17.13	AV
7236	49.05	6.41	V	55.46	73.98	18.52	PK
7236	36.86	6.41	V	43.27	53.98	10.71	AV
4824	48.88	-0.22	H	48.66	73.98	25.32	PK
4824	37.18	-0.22	H	36.96	53.98	17.02	AV
7236	49.12	6.41	H	55.53	73.98	18.45	PK
7236	36.92	6.41	H	43.33	53.98	10.65	AV

Operation Mode: 802.11 n_20MHz
 Transfer MCS Index: 0
 Operating Frequency 2412
 Channel No. 01 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	48.71	-0.22	V	48.49	73.98	25.49	PK
4824	36.97	-0.22	V	36.75	53.98	17.23	AV
7236	48.99	6.41	V	55.40	73.98	18.58	PK
7236	36.83	6.41	V	43.24	53.98	10.74	AV
4824	48.75	-0.22	H	48.53	73.98	25.45	PK
4824	36.83	-0.22	H	36.61	53.98	17.37	AV
7236	48.72	6.41	H	55.13	73.98	18.85	PK
7236	36.87	6.41	H	43.28	53.98	10.70	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode: 802.11 b
 Transfer Rate: 1 Mbps
 Operating Frequency: 2437
 Channel No.: 06 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	48.37	0.25	V	48.62	73.98	25.36	PK
4874	36.94	0.25	V	37.19	53.98	16.79	AV
7311	48.24	6.45	V	54.69	73.98	19.29	PK
7311	36.80	6.45	V	43.25	53.98	10.73	AV
4874	48.39	0.25	H	48.64	73.98	25.34	PK
4874	37.00	0.25	H	37.25	53.98	16.73	AV
7311	48.32	6.45	H	54.77	73.98	19.21	PK
7311	36.82	6.45	H	43.27	53.98	10.71	AV

Operation Mode: 802.11 g
 Transfer Rate: 6 Mbps
 Operating Frequency: 2437
 Channel No.: 06 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	48.23	0.25	V	48.48	73.98	25.50	PK
4874	36.80	0.25	V	37.05	53.98	16.93	AV
7311	48.11	6.45	V	54.56	73.98	19.42	PK
7311	36.76	6.45	V	43.21	53.98	10.77	AV
4874	48.24	0.25	H	48.49	73.98	25.49	PK
4874	36.68	0.25	H	36.93	53.98	17.05	AV
7311	48.20	6.45	H	54.65	73.98	19.33	PK
7311	36.61	6.45	H	43.06	53.98	10.92	AV

Operation Mode: 802.11 n_20MHz
 Transfer MCS Index: 0
 Operating Frequency 2437
 Channel No. 06 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	48.20	0.25	V	48.45	73.98	25.53	PK
4874	36.74	0.25	V	36.99	53.98	16.99	AV
7311	48.05	6.45	V	54.50	73.98	19.48	PK
7311	36.73	6.45	V	43.18	53.98	10.80	AV
4874	48.21	0.25	H	48.46	73.98	25.52	PK
4874	36.64	0.25	H	36.89	53.98	17.09	AV
7311	48.17	6.45	H	54.62	73.98	19.36	PK
7311	36.60	6.45	H	43.05	53.98	10.93	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode: 802.11 b
 Transfer Rate: 1 Mbps
 Operating Frequency: 2462
 Channel No.: 11 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	47.89	0.07	V	47.96	73.98	26.02	PK
4924	36.33	0.07	V	36.40	53.98	17.58	AV
7386	48.56	6.67	V	55.23	73.98	18.75	PK
7386	36.91	6.67	V	43.58	53.98	10.40	AV
4924	48.02	0.07	H	48.09	73.98	25.89	PK
4924	36.38	0.07	H	36.45	53.98	17.53	AV
7386	48.66	6.67	H	55.33	73.98	18.65	PK
7386	36.95	6.67	H	43.62	53.98	10.36	AV

Operation Mode: 802.11 g
 Transfer Rate: 6 Mbps
 Operating Frequency: 2462
 Channel No.: 11 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	47.75	0.07	V	47.82	73.98	26.16	PK
4924	36.26	0.07	V	36.33	53.98	17.65	AV
7386	48.42	6.67	V	55.09	73.98	18.89	PK
7386	36.82	6.67	V	43.49	53.98	10.49	AV
4924	47.90	0.07	H	47.97	73.98	26.01	PK
4924	36.17	0.07	H	36.24	53.98	17.74	AV
7386	48.51	6.67	H	55.18	73.98	18.80	PK
7386	36.73	6.67	H	43.40	53.98	10.58	AV

Operation Mode: 802.11 n_20MHz
 Transfer MCS Index: 0
 Operating Frequency 2462
 Channel No. 11 Ch

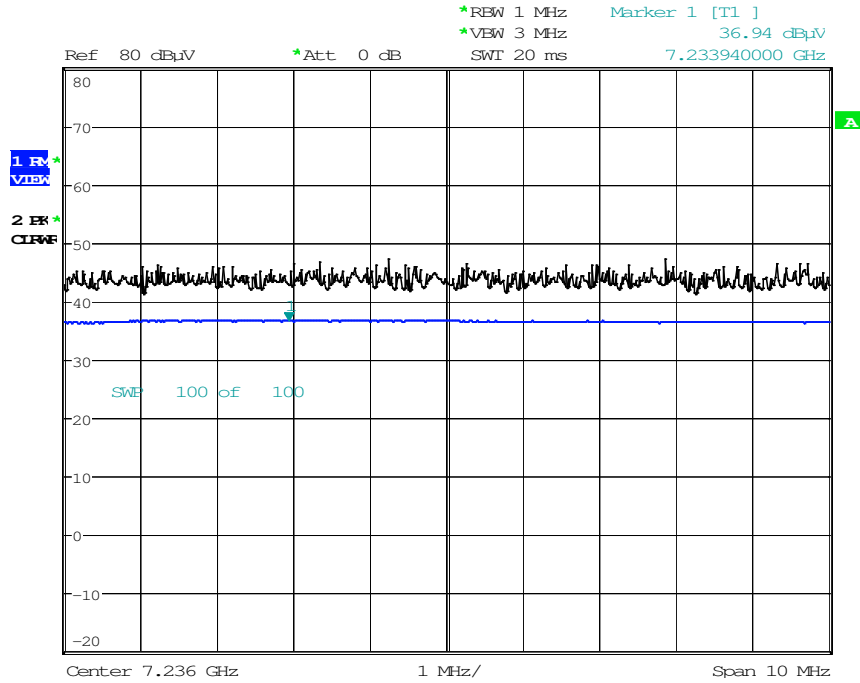
Frequency [MHz]	Reading dBuV	A.F.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	47.72	0.07	V	47.79	73.98	26.19	PK
4924	36.23	0.07	V	36.30	53.98	17.68	AV
7386	48.36	6.67	V	55.03	73.98	18.95	PK
7386	36.80	6.67	V	43.47	53.98	10.51	AV
4924	47.82	0.07	H	47.89	73.98	26.09	PK
4924	36.16	0.07	H	36.23	53.98	17.75	AV
7386	48.47	6.67	H	55.14	73.98	18.84	PK
7386	36.71	6.67	H	43.38	53.98	10.60	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

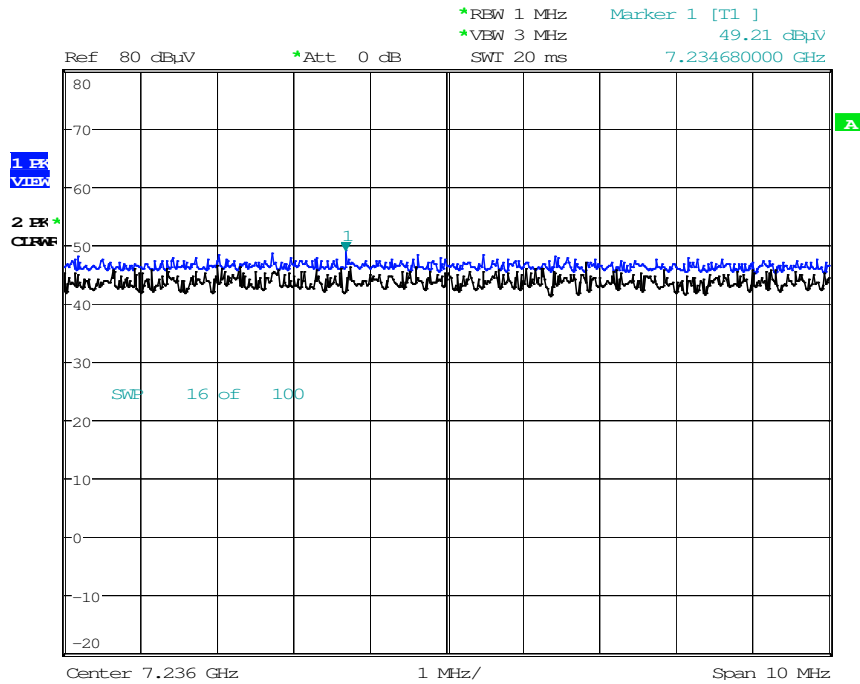
■ RESULT PLOTS(Worst case : x-H)

Radiated Spurious Emissions plot – Average Reading (802.11b, Ch.1 3rd Harmonic)



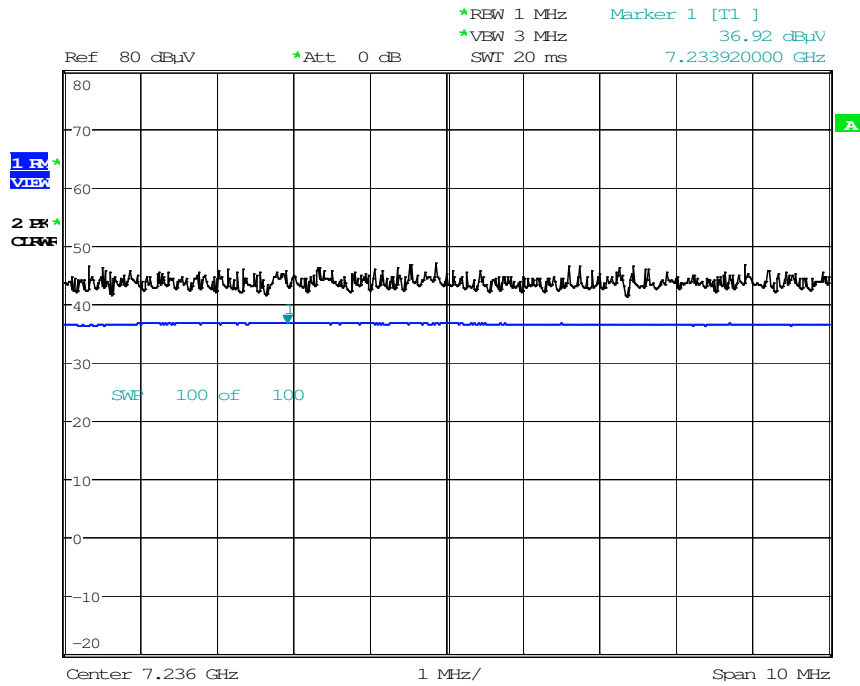
Date: 6.MAR.2016 13:35:45

Radiated Spurious Emissions plot – Peak Reading (802.11b, Ch.1 2nd Harmonic)



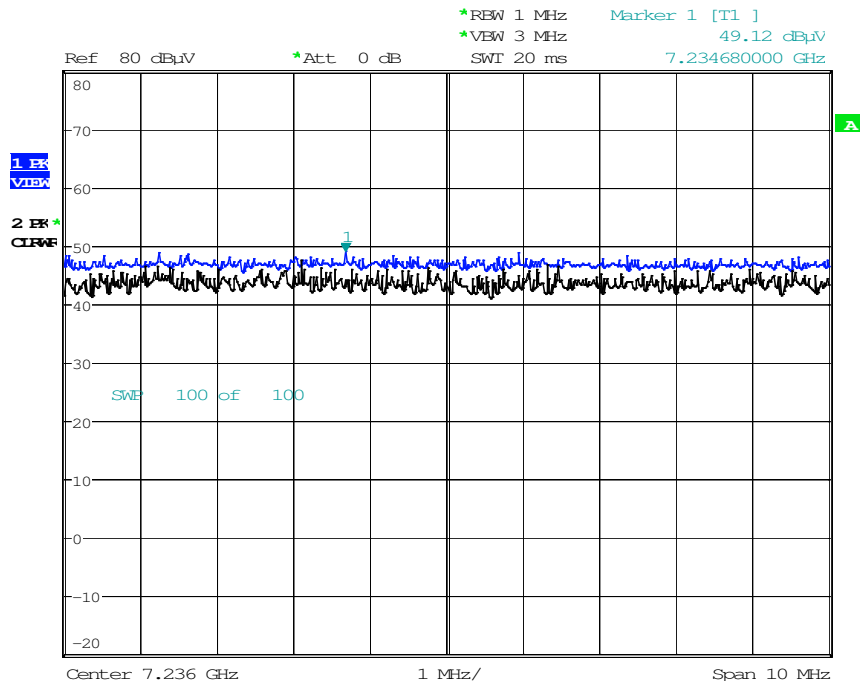
Date: 6.MAR.2016 13:50:55

Radiated Spurious Emissions plot – Average Reading (802.11g, Ch.1 3rd Harmonic)



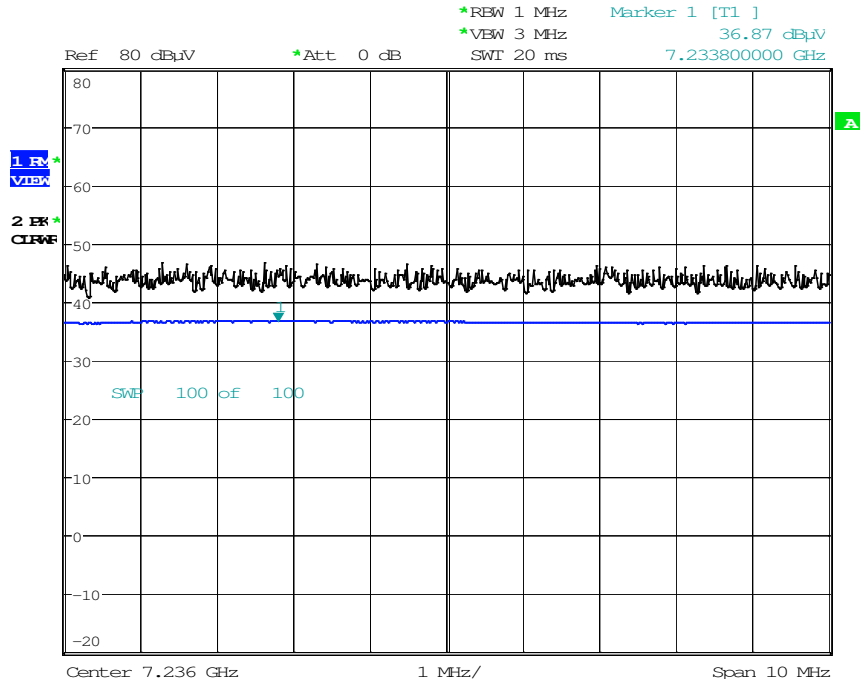
Date: 6.MAR.2016 13:36:48

Radiated Spurious Emissions plot – Peak Reading (802.11g, Ch.1 3rd Harmonic)



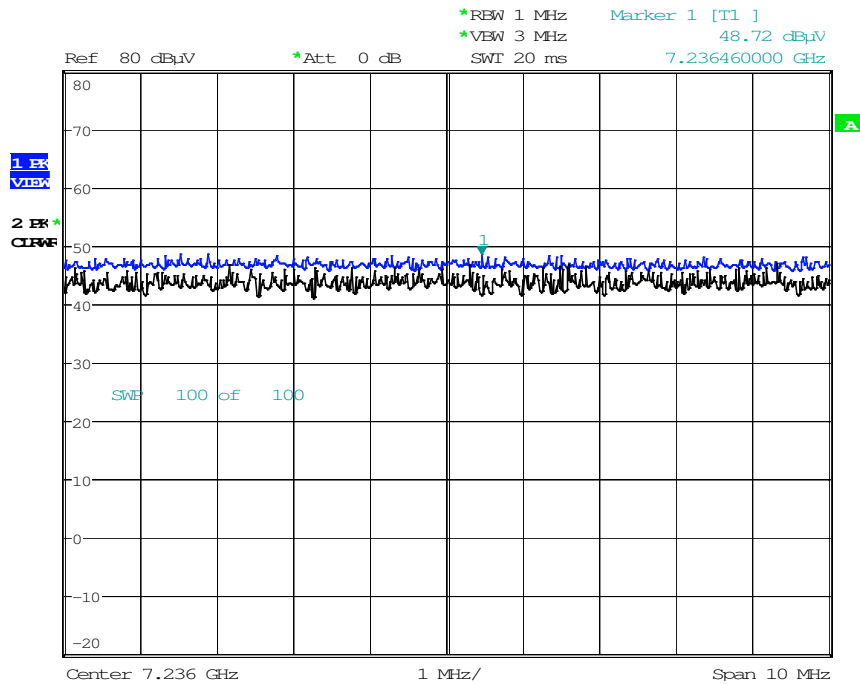
Date: 6.MAR.2016 13:50:10

Radiated Spurious Emissions plot – Average Reading (802.11n_20MHz, Ch.1 3rd Harmonic)



Date: 6.MAR.2016 13:39:25

Radiated Spurious Emissions plot – Peak Reading (802.11n_20MHz, Ch.1 3rd Harmonic)



Date: 6.MAR.2016 13:38:06

Note : Only the worst case plots for Radiated Spurious Emissions.

9.2 RECEIVER SPURIOUS EMISSIONS

IC Rule(s) RSS-GEN
Test Requirements: Blow the table
Operating conditions: Under normal test conditions
Method of testing: Radiated

S/A. Settings: F < 1 GHz: RBW: 120 kHz, VBW: 300 kHz (Quasi Peak)
 F > 1 GHz: RBW: 1 MHz, VBW: 1 MHz (Peak)
Mode of operation: Receive

Frequency (MHz)	Field Strength (microvolts/m at 3 meters)
30 – 88	100
88 - 216	150
216 – 960	200
Above 960	500

Operation Mode: Receive:

30 MHz ~ 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
No critical peaks found							

Above 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
No critical peaks found							

9.3 RADIATED RESTRICTED BAND EDGES

Test Requirements and limit, §15.247(d) §15.205, §15.209 / RSS-GEN(Issue 4) Section 8.10

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 15.205(c)).

Operation Mode: 802.11g
 Transfer Rate: 6 Mbps
 Operating Frequency 2412 MHz, 2462 MHz
 Channel No. 01 Ch, 11 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	35.21	32.32	H	67.53	73.98	6.45	PK
2390.0	18.38	32.32	H	50.70	53.98	3.28	AV
2390.0	32.59	32.32	V	64.91	73.98	9.07	PK
2390.0	17.40	32.32	V	49.72	53.98	4.26	AV
2483.5	35.64	32.68	H	68.32	73.98	5.66	PK
2483.5	15.31	32.68	H	47.99	53.98	5.99	AV
2483.5	34.71	32.68	V	67.39	73.98	6.59	PK
2483.5	14.70	32.68	V	47.38	53.98	6.60	AV

Operation Mode: 802.11b
 Transfer Rate: 1 Mbps
 Operating Frequency: 2412 MHz, 2462 MHz
 Channel No.: 01 Ch, 11 Ch

Frequency [MHz]	Reading dBuV	A.F.+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.82	32.32	H	58.14	73.98	15.84	PK
2390.0	14.25	32.32	H	46.57	53.98	7.41	AV
2390.0	25.90	32.32	V	58.22	73.98	15.76	PK
2390.0	14.06	32.32	V	46.38	53.98	7.60	AV
2483.5	25.54	32.68	H	58.22	73.98	15.76	PK
2483.5	13.93	32.68	H	46.61	53.98	7.37	AV
2483.5	25.06	32.68	V	57.74	73.98	16.24	PK
2483.5	13.88	32.68	V	46.56	53.98	7.42	AV

Operation Mode: 802.11n_20MHz BW
 Transfer MCS Index: 0
 Operating Frequency: 2412 MHz, 2462 MHz
 Channel No.: 01 Ch, 11 Ch

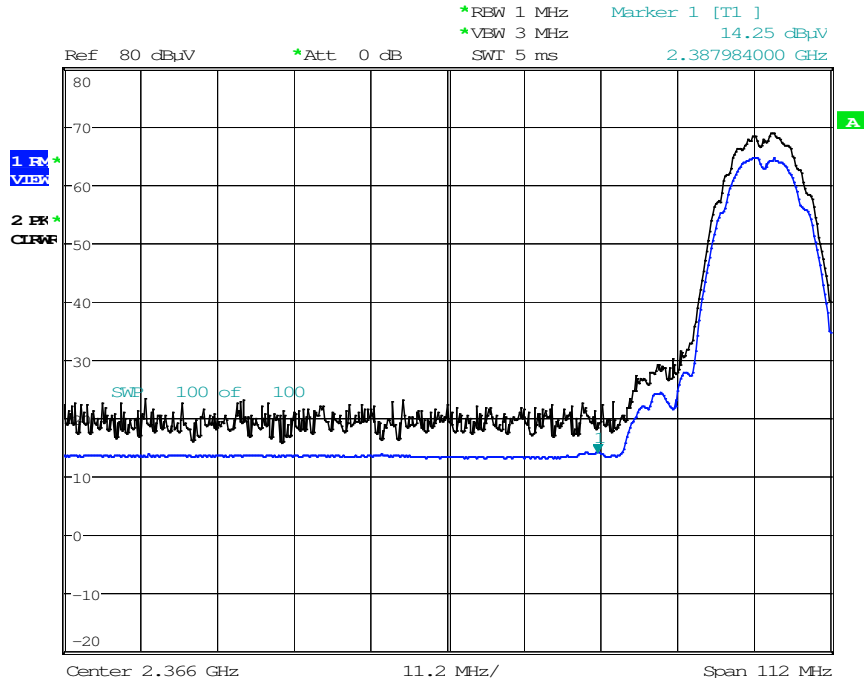
Frequency [MHz]	Reading dBuV	A.F.+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	36.68	32.32	H	69.00	73.98	4.98	PK
2390.0	18.49	32.32	H	50.81	53.98	3.17	AV
2390.0	32.55	32.32	V	64.87	73.98	9.11	PK
2390.0	17.70	32.32	V	50.02	53.98	3.96	AV
2483.5	35.98	32.68	H	68.66	73.98	5.32	PK
2483.5	15.10	32.68	H	47.78	53.98	6.20	AV
2483.5	32.26	32.68	V	64.94	73.98	9.04	PK
2483.5	14.30	32.68	V	46.98	53.98	7.00	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss
2. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

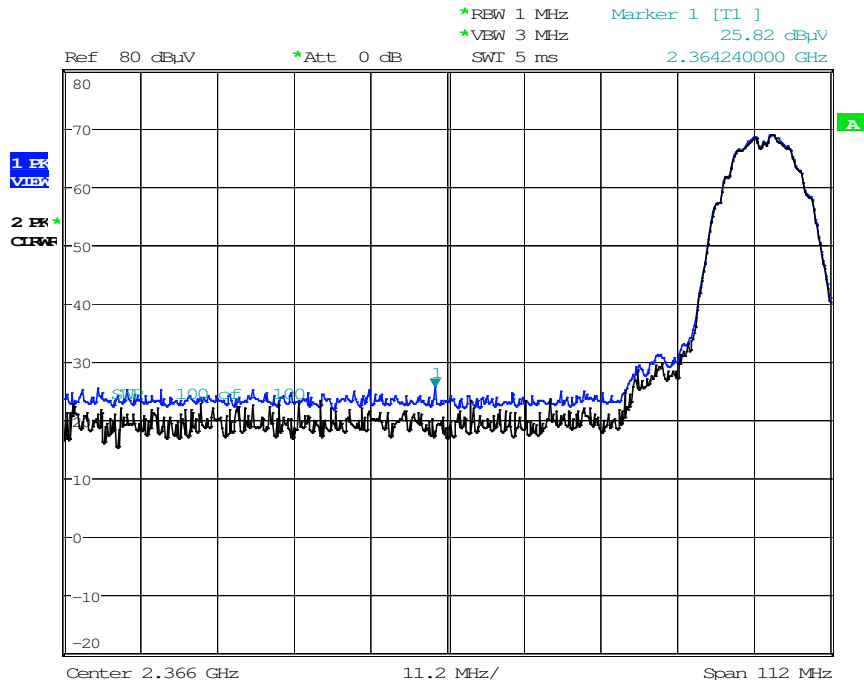
■ RESULT PLOTS(Worst case : y-H)

Radiated Restricted Band Edges plot – Average Reading (802.11b, Ch.1)



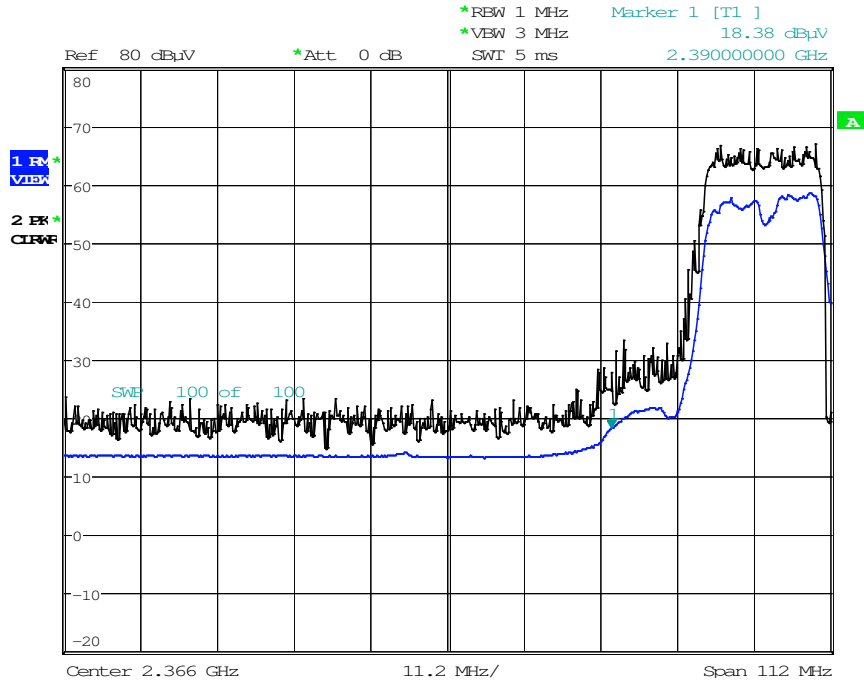
Date: 7.MAR.2016 14:58:17

Radiated Restricted Band Edges plot – Peak Reading (802.11b, Ch.1)



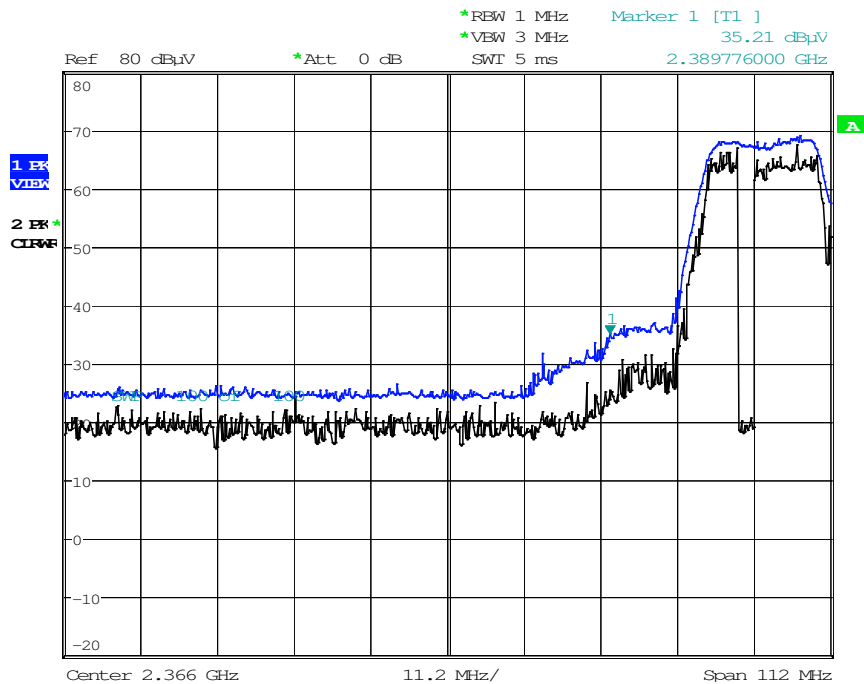
Date: 7.MAR.2016 14:59:16

Radiated Restricted Band Edges plot – Average Reading (802.11g, Ch.11)



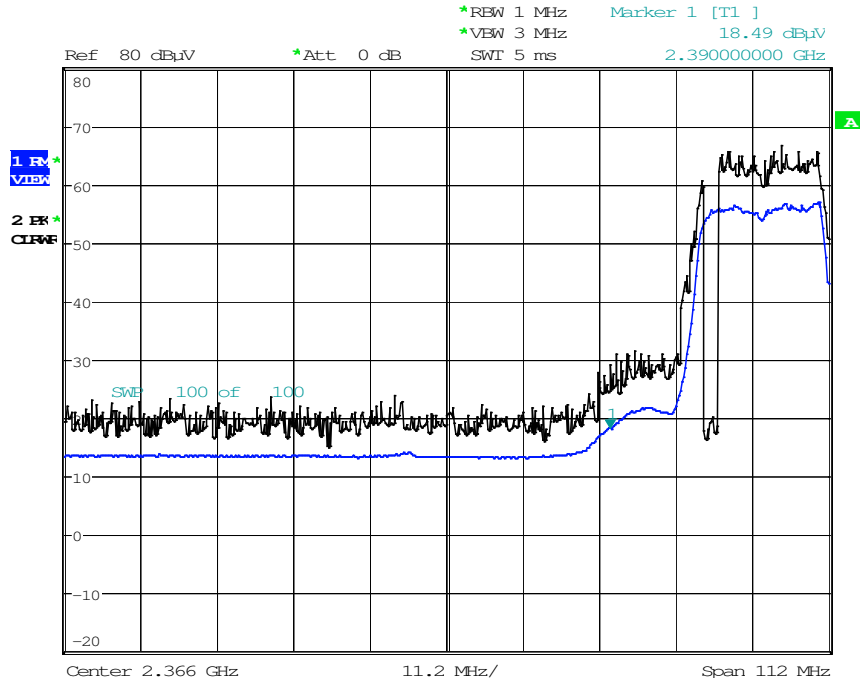
Date: 7.MAR.2016 14:47:45

Radiated Restricted Band Edges plot – Peak Reading (802.11g, Ch.11)



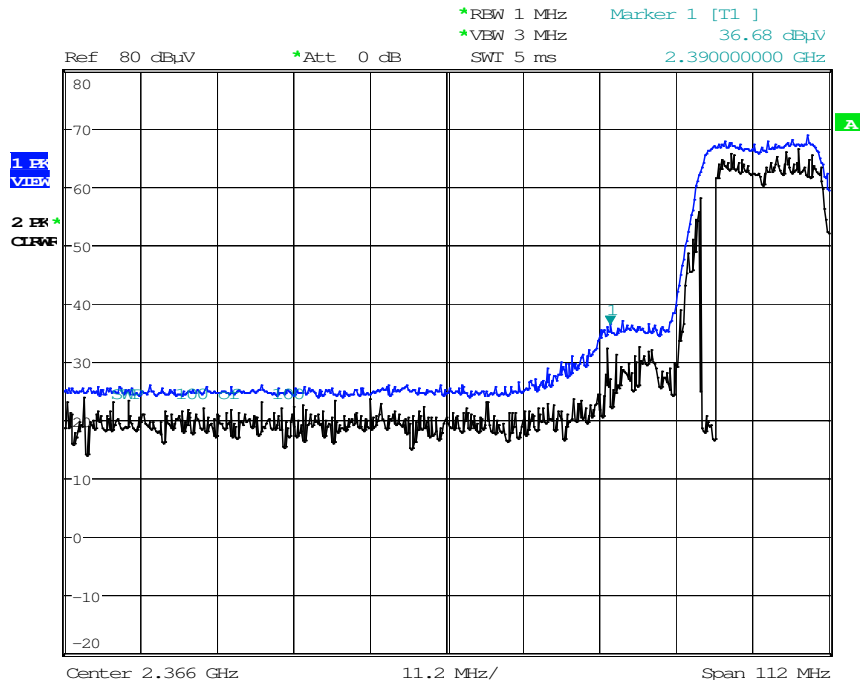
Date: 7.MAR.2016 14:56:30

Radiated Restricted Band Edges plot – Average Reading (802.11n_20MHz, Ch.11)



Date: 7.MAR.2016 15:01:08

Radiated Restricted Band Edges plot – Peak Reading (802.11n_20MHz, Ch.11)



Date: 7.MAR.2016 15:04:55

Note : Only the worst case plots for Radiated Restricted Band Edges.

10. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Audix	ACT-A400 / Antenna Master	N/A	N/A	N/A
Audix	ACT-T150 / Turn Table	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	C060518
Rohde & Schwarz	Loop Antenna	02/04/2016	Biennial	100179
Schwarzbeck	VULB 9160 / Trilog Antenna	10/10/2014	Biennial	3368
Schwarzbeck	BBHA 9120D / Horn Antenna	07/31/2015	Biennial	1151
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	09/03/2015	Biennial	BBHA9170541
Rohde & Schwarz	FSP / Spectrum Analyzer	01/15/2016	Annual	839117/011
Wainwright Instruments	F6_HPF 3.0 / High Pass Filter	09/11/2015	Annual	F6
Wainwright Instruments	WHKX8-6090-7000-18000-40SS / High Pass Filter	09/11/2015	Annual	34
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	07/06/2015	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/26/2016	Annual	2
Weinshel	2-3 / Attenuator(3 dB)	10/26/2015	Annual	BR0617
CERNEX	CBLU1183540B-01 / Low Noise Amplifier	07/21/2015	Annual	25539
Rohde & Schwarz	SCU-18 / Signal Conditioning Unit	09/07/2015	Annual	10094
CERNEX	CBL18265035 / Power Amplifier	07/27/2015	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	07/09/2015	Annual	25956