

Dates of Tests: November 29, 2017 ~ May 29, 2018
Test Report S/N: LR500111805N
Test Site : LTA CO., LTD.

CERTIFICATION OF COMPLIANCE

FCC ID.

2APZ6-VFWL-2100

APPLICANT

AVIC Imaging Inc.

Equipment Class	:	Digital Transmission System (DTS)
Manufacturing Description	:	Car Drive Recorder
Manufacturer	:	AVIC Imaging Inc.
Model name	:	VFWL-2100
Test Device Serial No.:	:	Identical prototype
Rule Part(s)	:	FCC Part 15.247 Subpart C ; ANSI C-63.4-2014 ANSI C-63.10-2013
Frequency Range	:	2412 MHz ~ 2462 MHz(802.11 b/g/n)
Max. Output Power	:	Max 23.84 dBm – Conducted(802.11 b) Max 25.52 dBm – Conducted(802.11 g) Max 25.22 dBm – Conducted(802.11 n)
Data of issue	:	May 29, 2018

This test report is issued under the authority of:



Yong-Cheol, Wang / Manager

The test was supervised by:



Hee-Cheon, Kwon / Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



NVLAP LAB Code.: 200723-0

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1. General information

1-1 Test Performed

Company name : LTA Co., Ltd.
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 Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2018-09-30	ECT accredited Lab.
RRA	KOREA	KR0049	-	EMC accredited Lab.
FCC	U.S.A	649054	2019-04-13	FCC CAB
VCCI	JAPAN	C-4948,	2020-09-10	VCCI registration
		T-2416,	2020-09-10	
		R-4483(10 m),	2020-10-15	
		G-847	2018-12-13	
IC	CANADA	5799A-2	2019-03-15	IC filing
KOLAS	KOREA	NO.551	2021-08-20	KOLAS accredited Lab.

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.247(a)	6 dB Bandwidth	> 500 kHz	Conducted	C
15.247(b)	Transmitter Peak Output Power	< 1 Watt		C
15.247(d)	Transmitter Power Spectral Density	< 8 dBm @ 3 kHz		C
15.247(d)	Band Edge	> 20 dBc		C
15.209	Field Strength of Harmonics	Emission	Radiated	C
15.203	Antenna requirement	-	-	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

→ Antenna Requirement

The AVIC Imaging Inc. FCC ID: 2APZ6-VFWL-2100 unit complies with the requirement of §15.203.

The antenna type is Chip Antenna

The sample was tested according to the following specification:

*FCC Parts 15.247; ANSI C-63.4-2014

*FCC KDB Publication No. 558074 D01 v03r05

*FCC TCB Workshop 2012, April

3.2 Technical Characteristics Test

3.2.1 6 dB Bandwidth

Procedure:

The bandwidth at 6 dB below the highest in-band spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 6 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz

Span = 30 MHz

VBW = 100 kHz (VBW $\geq$ RBW)

Sweep = auto

Trace = max hold

Detector function = peak

Measurement Data : **Complies**

(802.11 b)

Frequency (MHz)	Test Results	
	Measured Bandwidth (MHz)	Result
2412	9.855	Complies
2442	10.159	Complies
2462	9.508	Complies

(802.11 g)

Frequency (MHz)	Test Results	
	Measured Bandwidth (MHz)	Result
2412	16.628	Complies
2442	16.671	Complies
2462	16.585	Complies

(802.11 n)

Frequency (MHz)	Test Results	
	Measured Bandwidth (MHz)	Result
2412	17.887	Complies
2442	17.887	Complies
2462	17.800	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

6 dB Bandwidth > 500 kHz

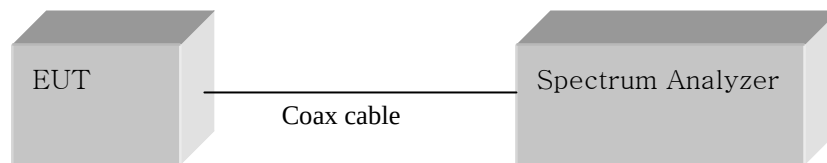
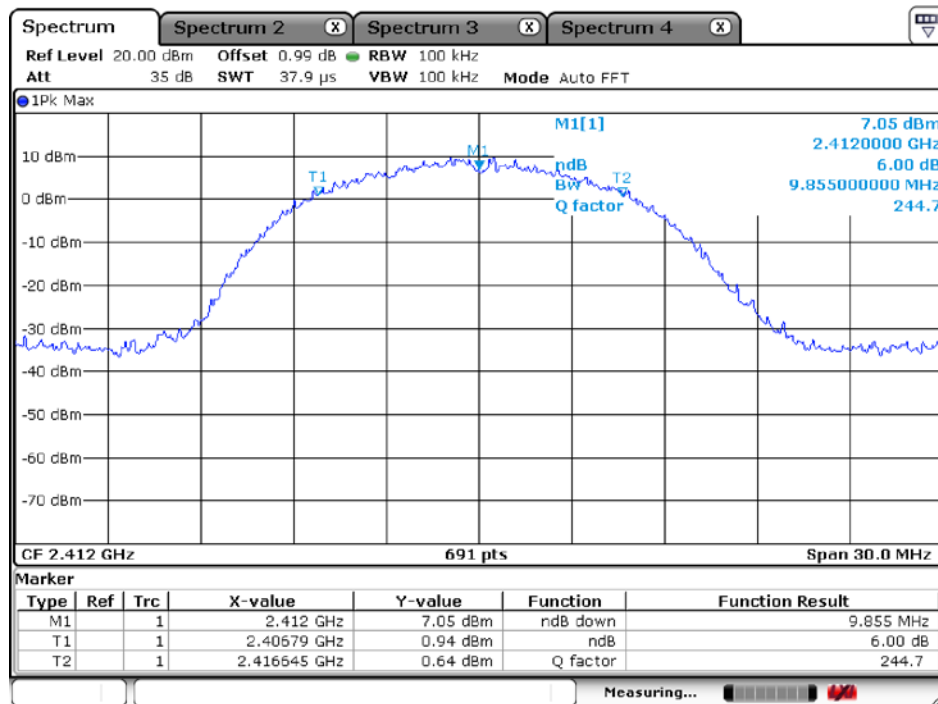
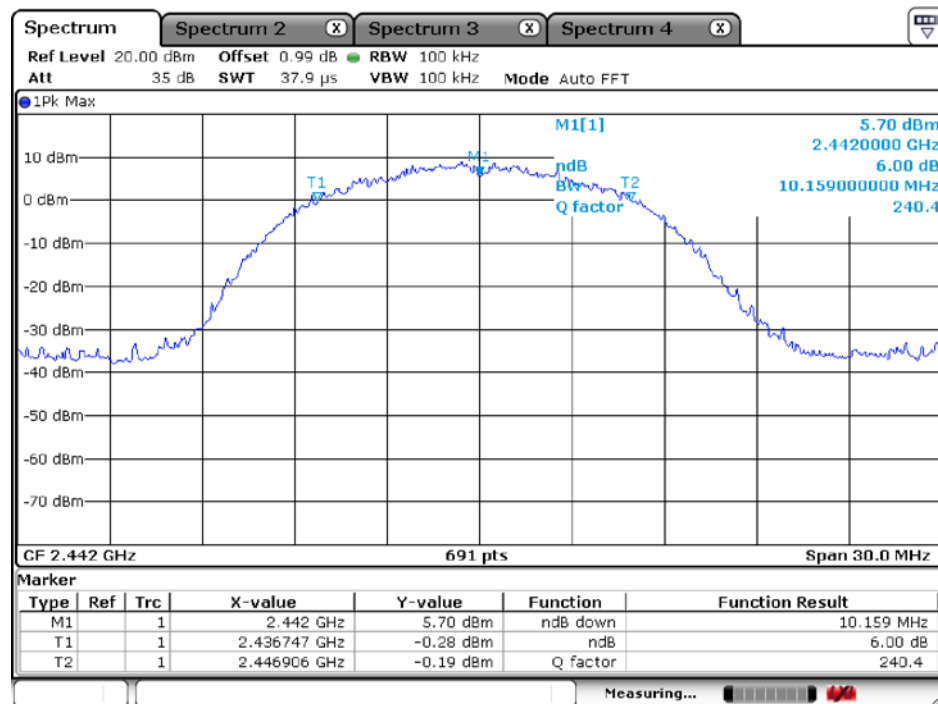
Measurement Setup

Figure 1: Measurement setup for the carrier frequency separation

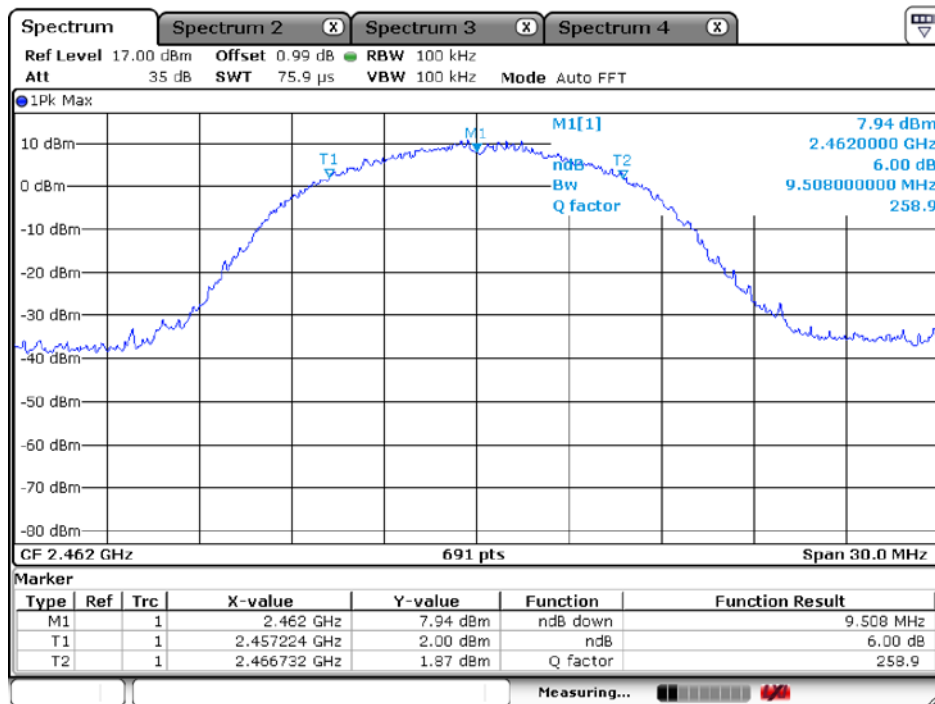
Low Channel – 802.11 b



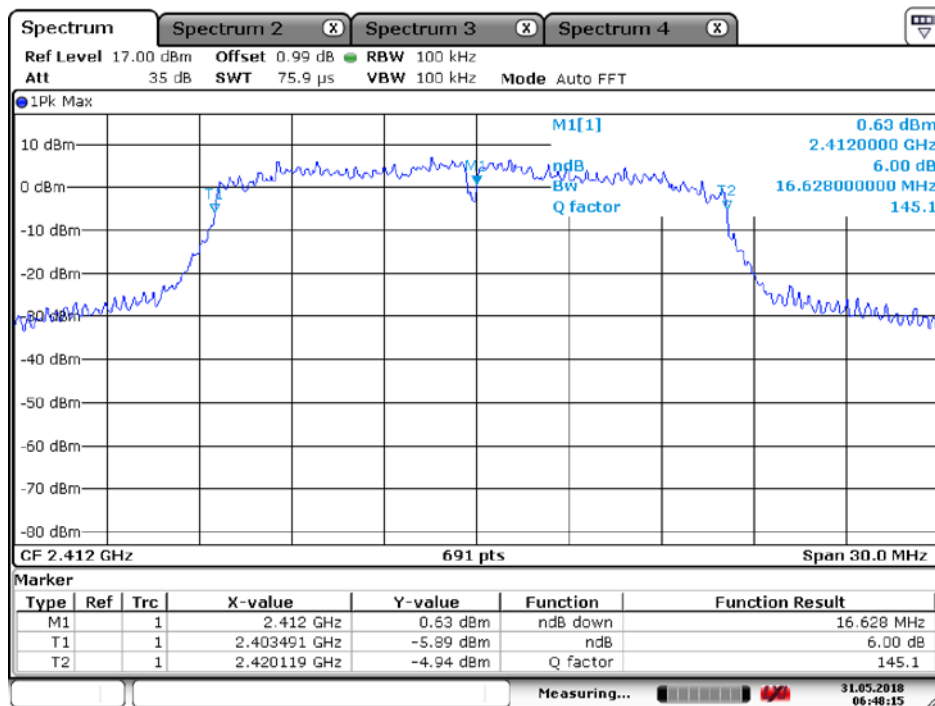
Middle Channel – 802.11 b



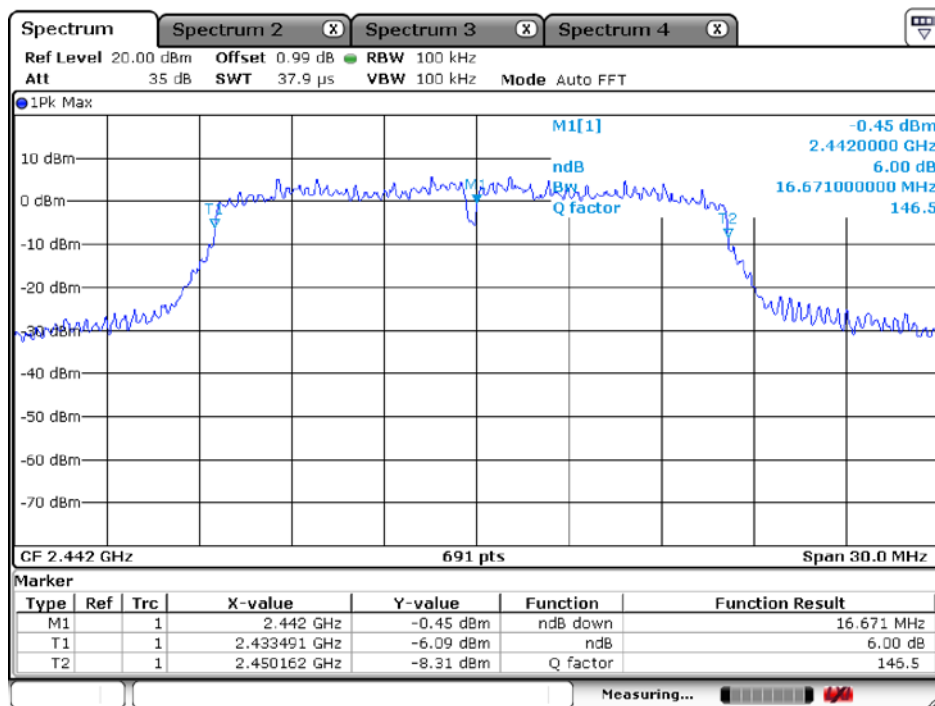
High Channel – 802.11 b



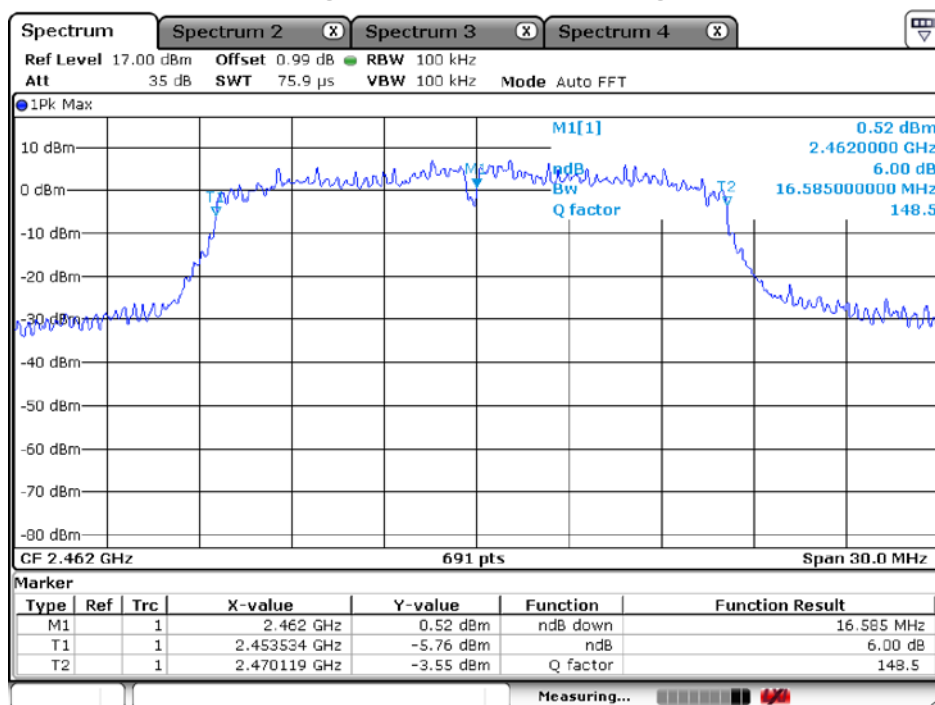
Low Channel – 802.11 g



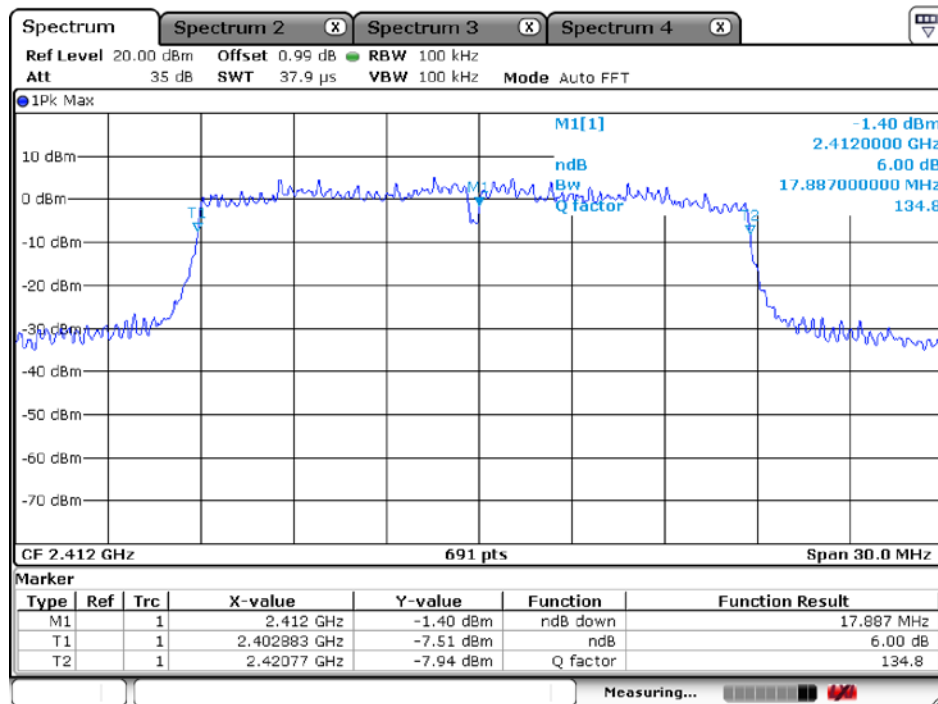
Middle Channel – 802.11 g



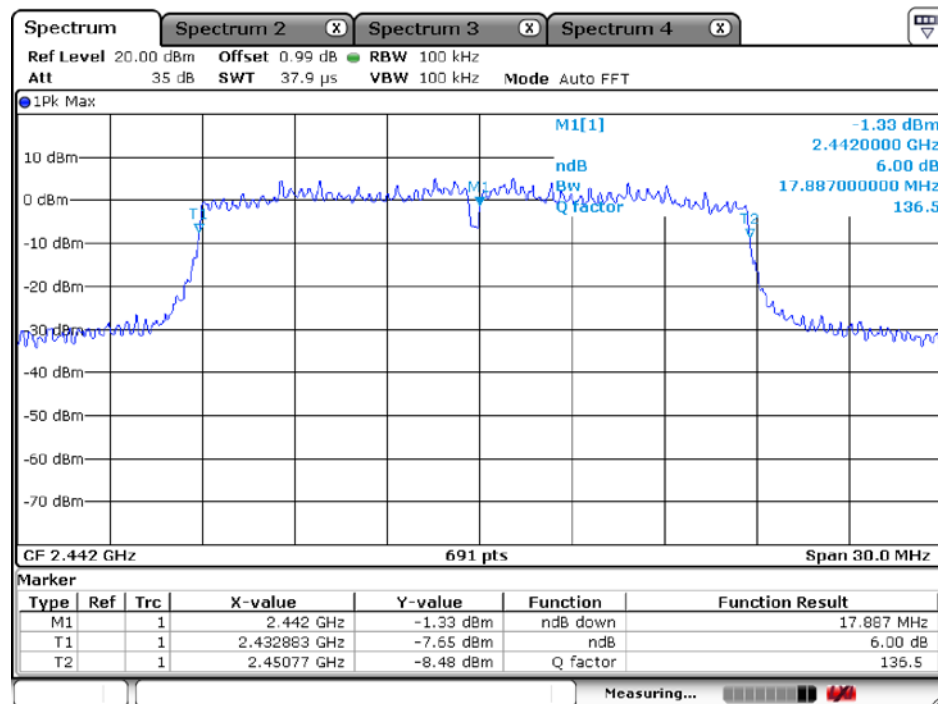
High Channel – 802.11 g



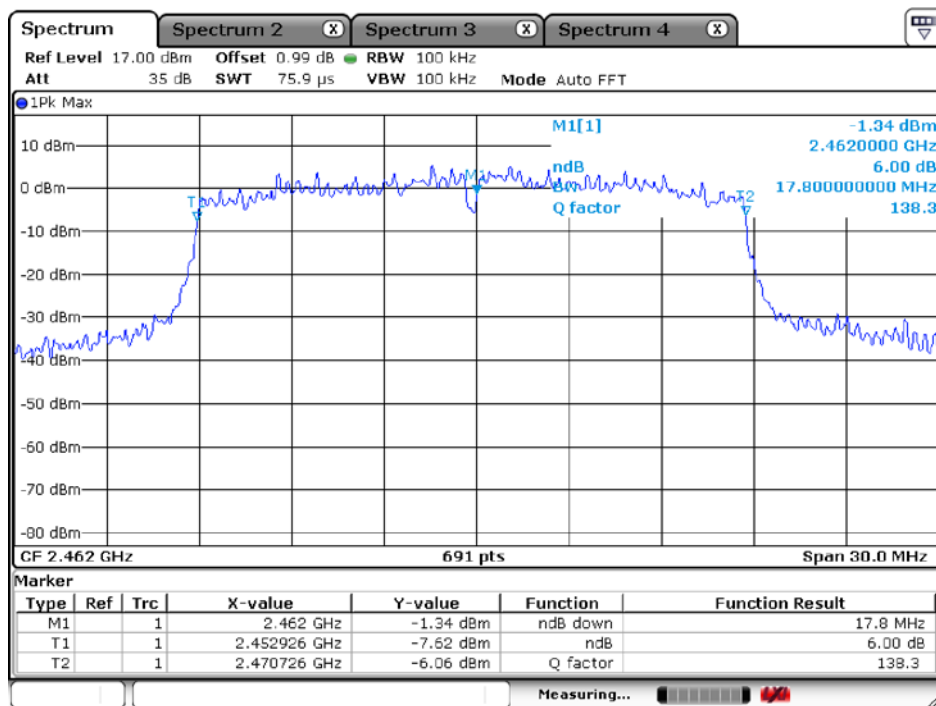
Low Channel – 802.11 n



Middle Channel – 802.11 n



High Channel – 802.11 n



3.2.2 Peak Output Power Measurement

Procedure:

The maximum peak output power was measured with the spectrum analyzer connected to the antenna output of the EUT. The spectrum analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth. The EUT was operating in transmit mode at the appropriate center frequency.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 1MHz

Span = auto

VBW = 1MHz (VBW $\geq$ RBW)

Sweep = auto

Detector function = peak

Measurement Data : **Complies**

(802.11 b)

Frequency (MHz)	Test Results		
	dBm	W	Result
2412	23.84	0.242	Complies
2442	23.44	0.221	Complies
2462	23.69	0.234	Complies

(802.11 g)

Frequency (MHz)	Test Results		
	dBm	W	Result
2412	25.52	0.356	Complies
2442	22.16	0.164	Complies
2462	25.10	0.324	Complies

(802.11 n)

Frequency (MHz)	Test Results		
	dBm	W	Result
2412	23.58	0.228	Complies
2442	21.79	0.151	Complies
2462	25.22	0.333	Complies

- See next pages for actual measured spectrum plots.

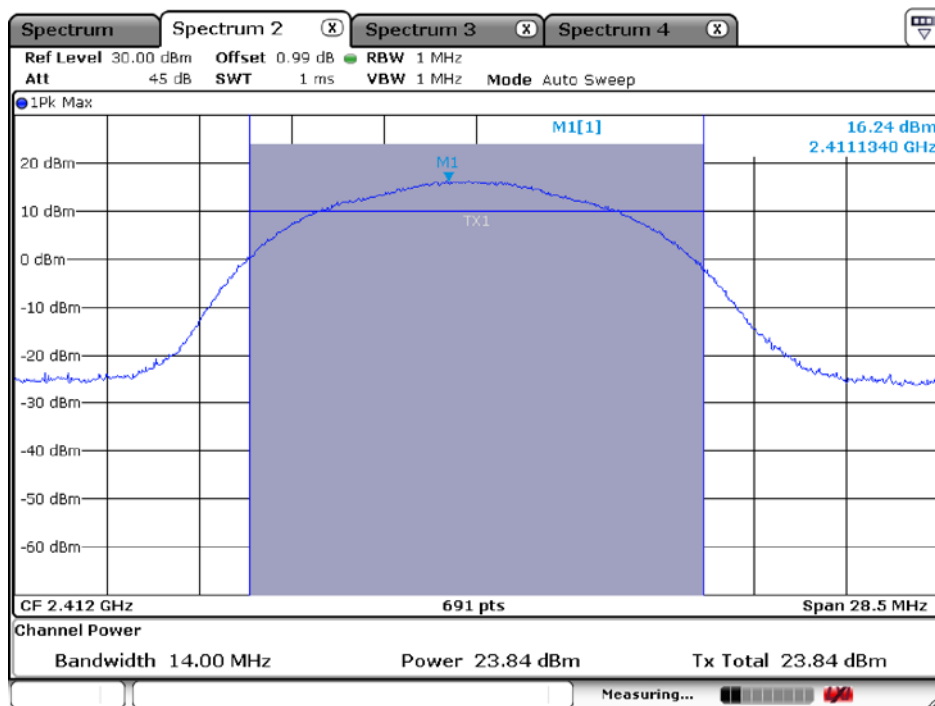
Minimum Standard:

Peak output power	< 1 W
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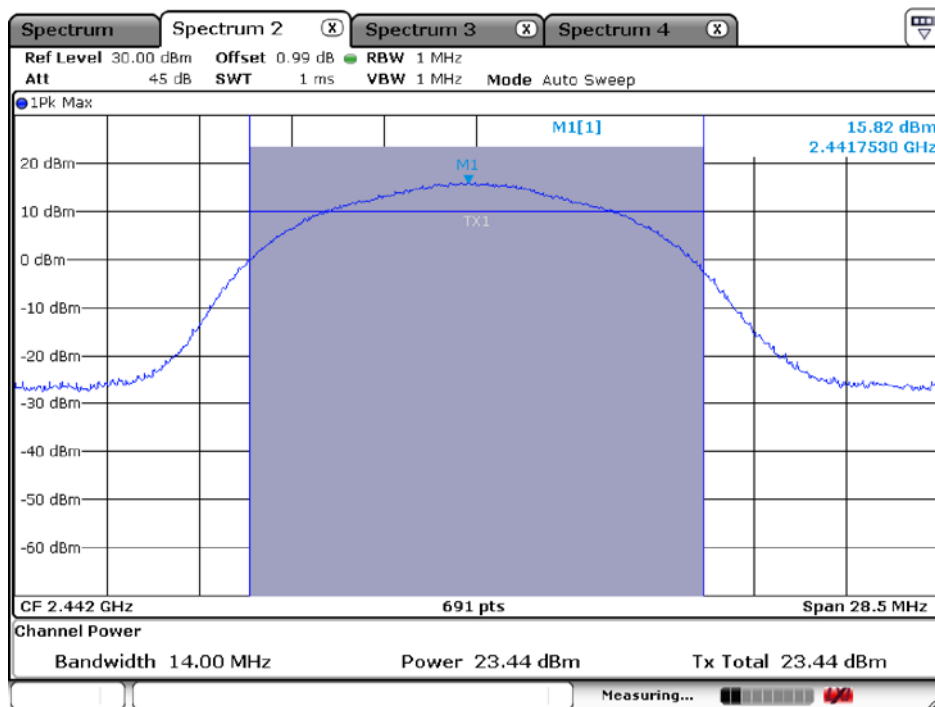
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

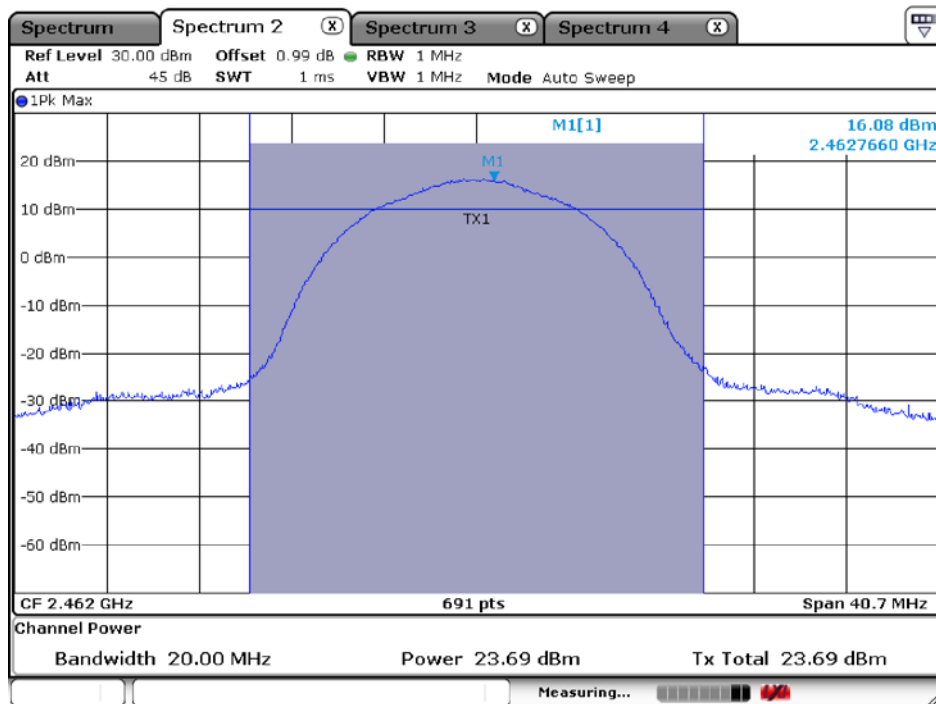
Low Channel – 802.11 b



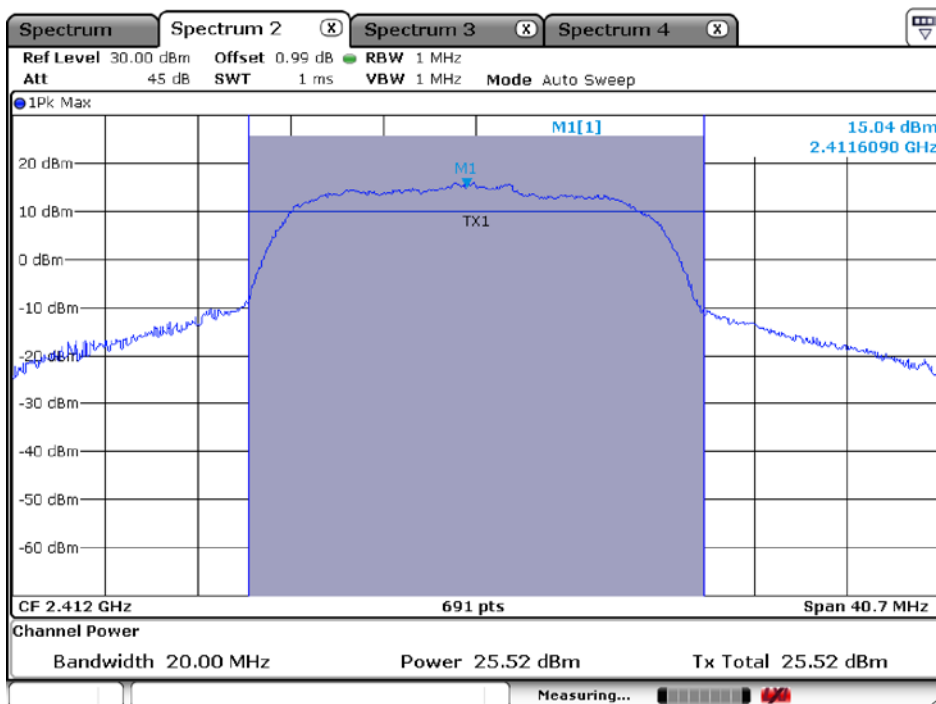
Middle Channel – 802.11 b



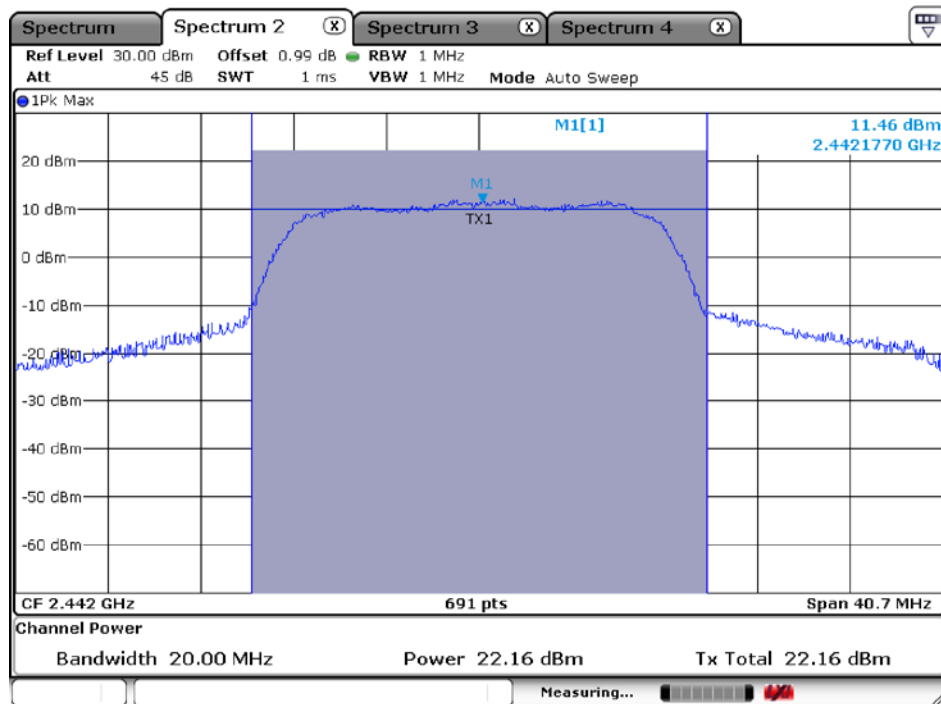
High Channel – 802.11 b



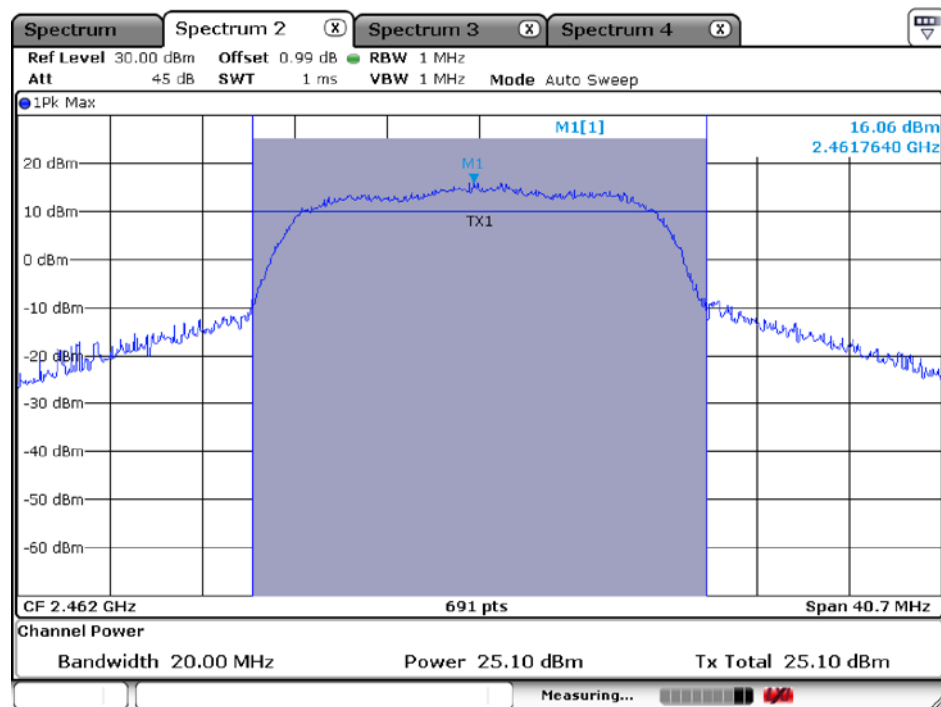
Low Channel – 802.11 g



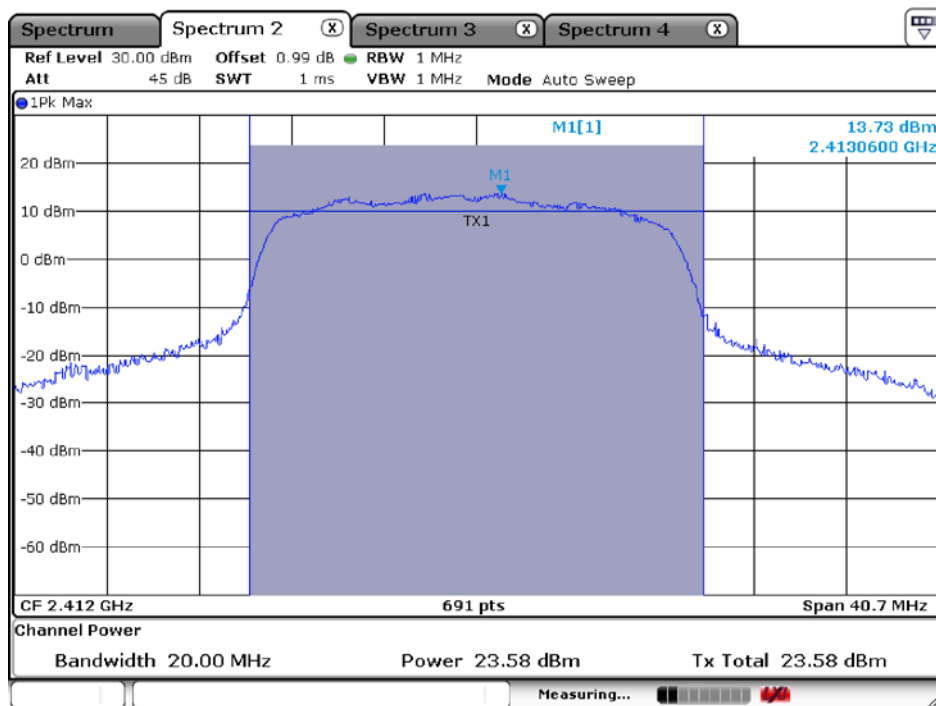
Middle Channel – 802.11 g



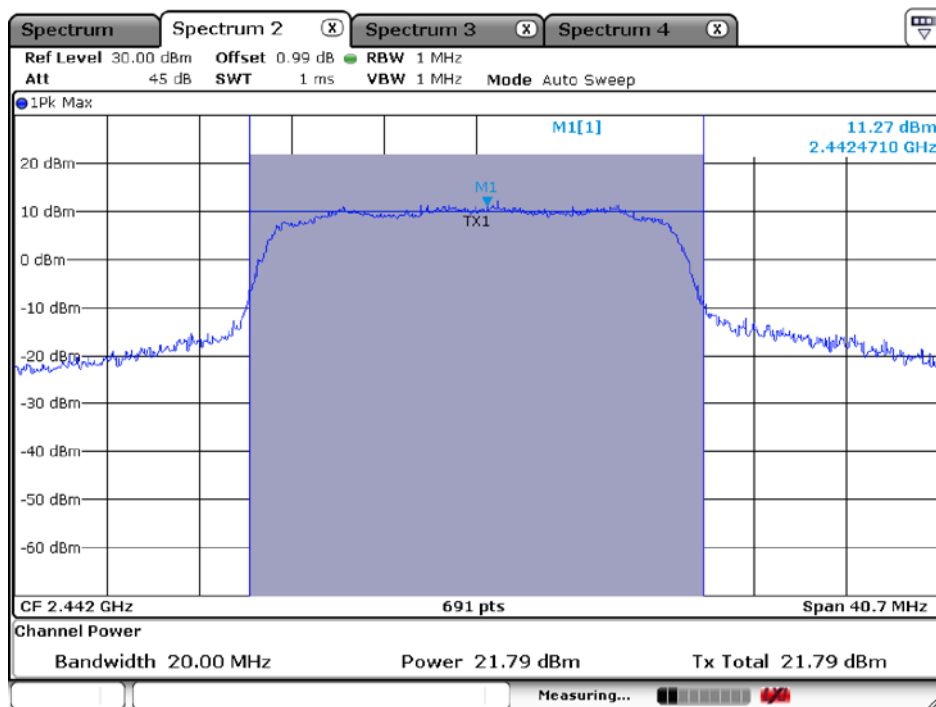
High Channel – 802.11 g



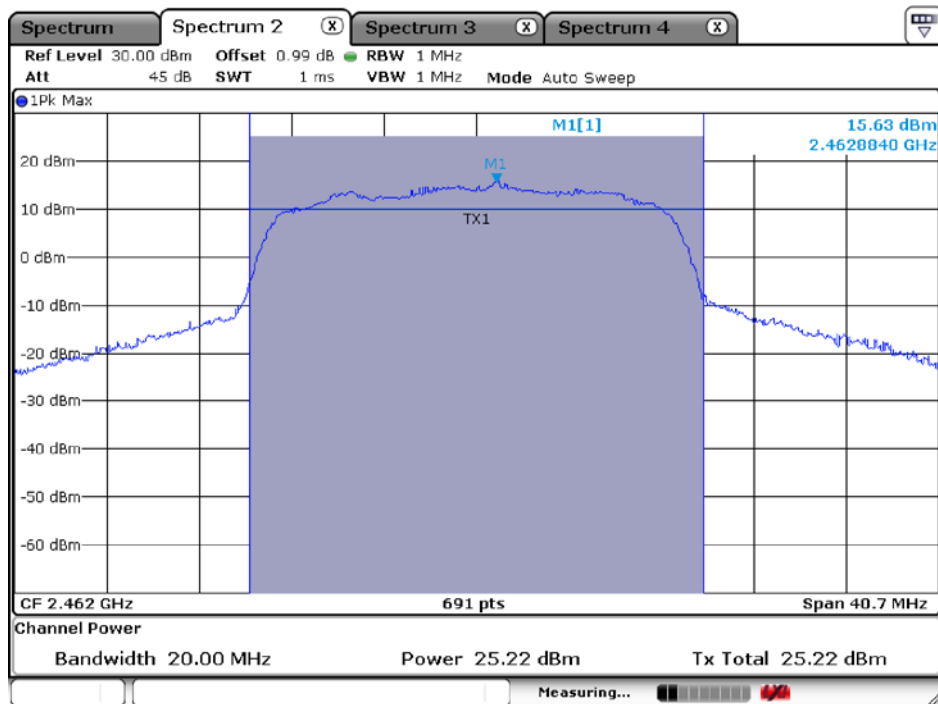
Low Channel – 802.11 n



Middle Channel – 802.11 n



High Channel – 802.11 n



3.2.3 Power Spectral Density

Procedure:

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

The spectrum analyzer is set to:

RBW = 3 kHz ($3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$)

Span = 1.5 times the DTS bandwidth

VBW = 10 kHz (3 X RBW)

Sweep = auto

Detector function = peak

Trace = max hold

Measurement Data : **Complies**

(802.11 b)

Frequency (MHz)	Test Results	
	dBm	Result
2412	-13.84	Complies
2442	-15.59	Complies
2462	-19.60	Complies

(802.11 g)

Frequency (MHz)	Test Results	
	dBm	Result
2412	-16.36	Complies
2442	-18.97	Complies
2462	-19.81	Complies

(802.11 n)

Frequency (MHz)	Test Results	
	dBm	Result
2412	-15.69	Complies
2442	-18.83	Complies
2462	-20.13	Complies

- See next pages for actual measured spectrum plots.

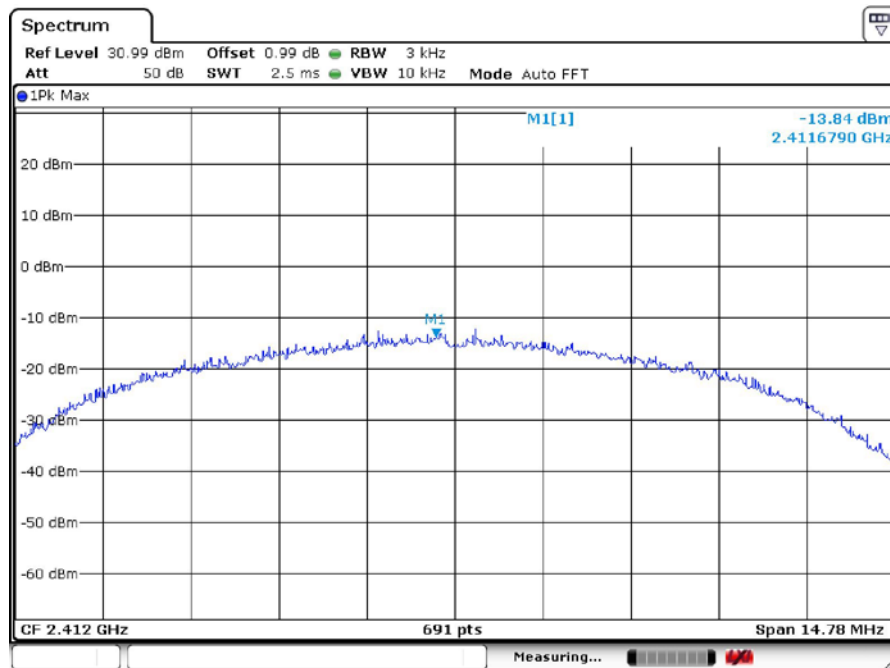
Minimum Standard:

Power Spectral Density	< 8 dBm @ 3 kHz BW
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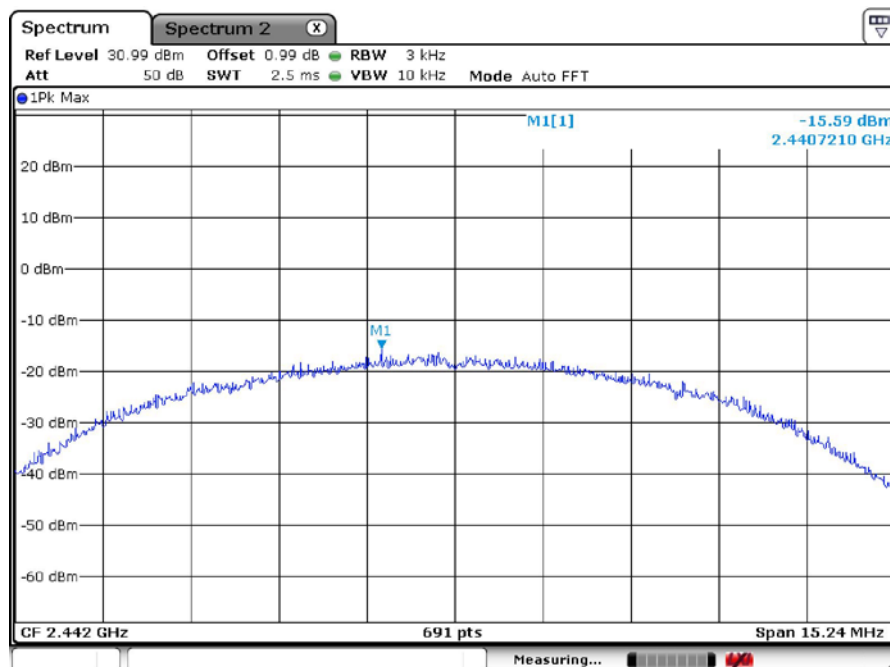
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

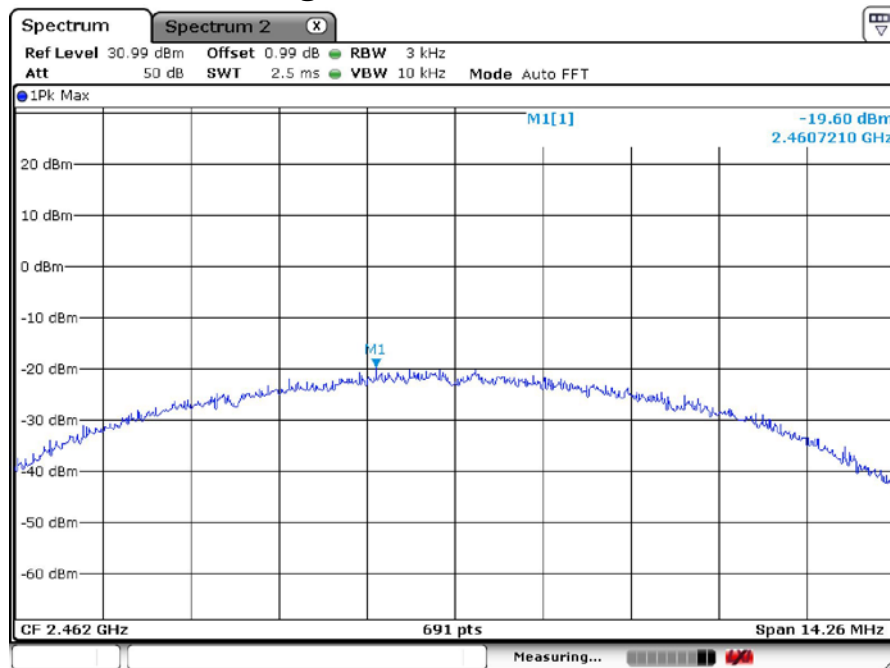
Low Channel – 802.11 b



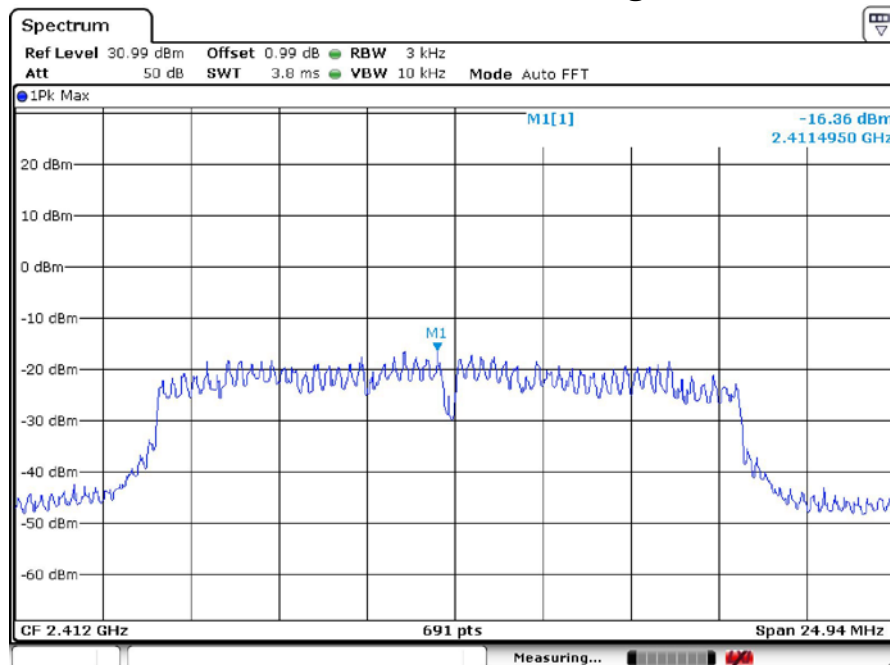
Middle Channel – 802.11 b



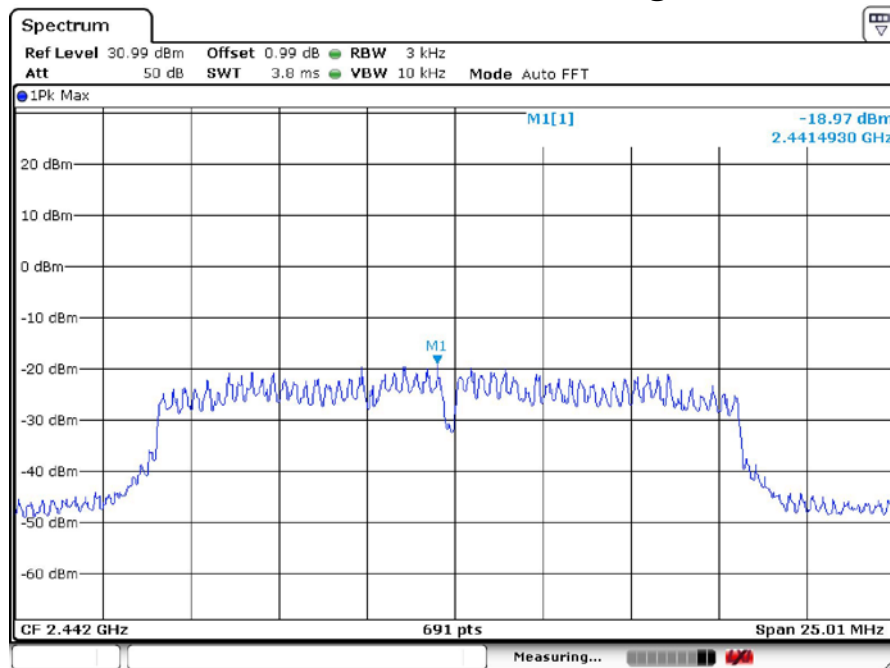
High Channel – 802.11 b



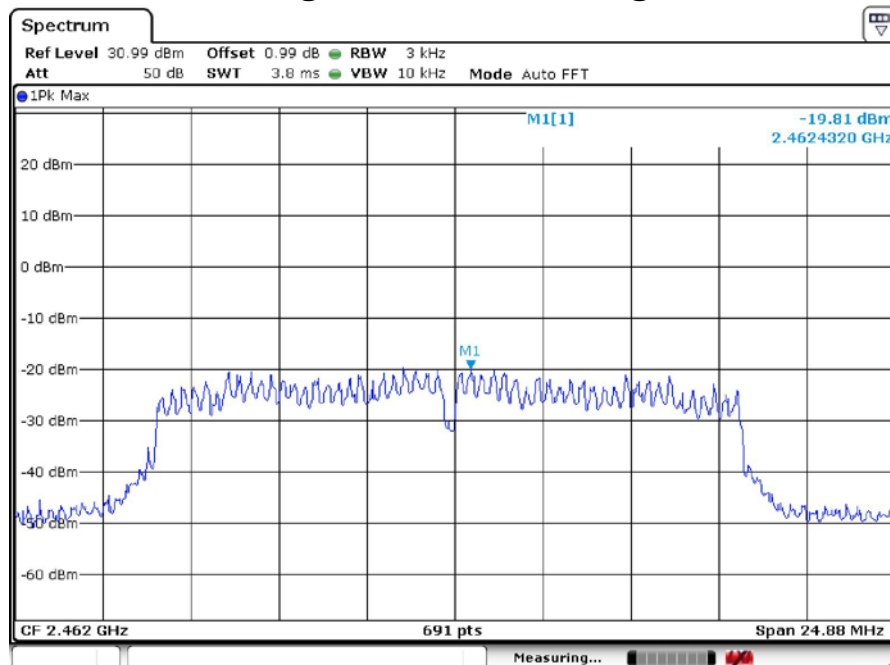
Low Channel – 802.11 g



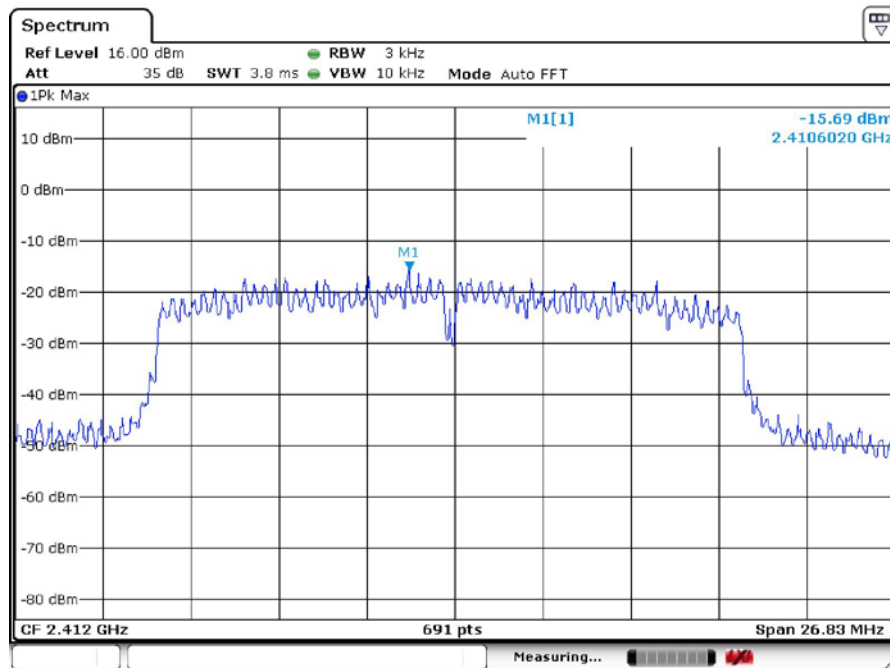
Middle Channel – 802.11 g



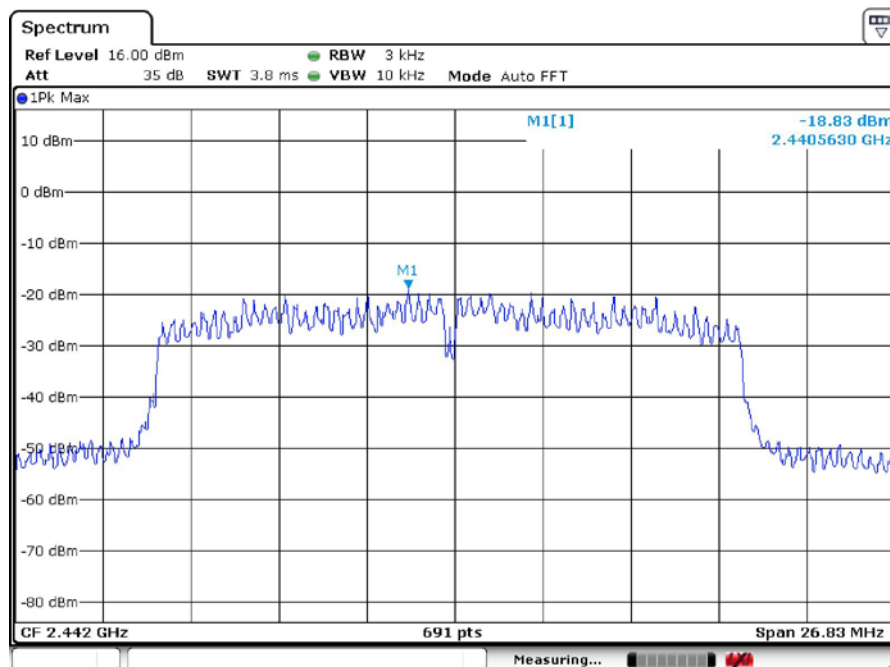
High Channel – 802.11 g



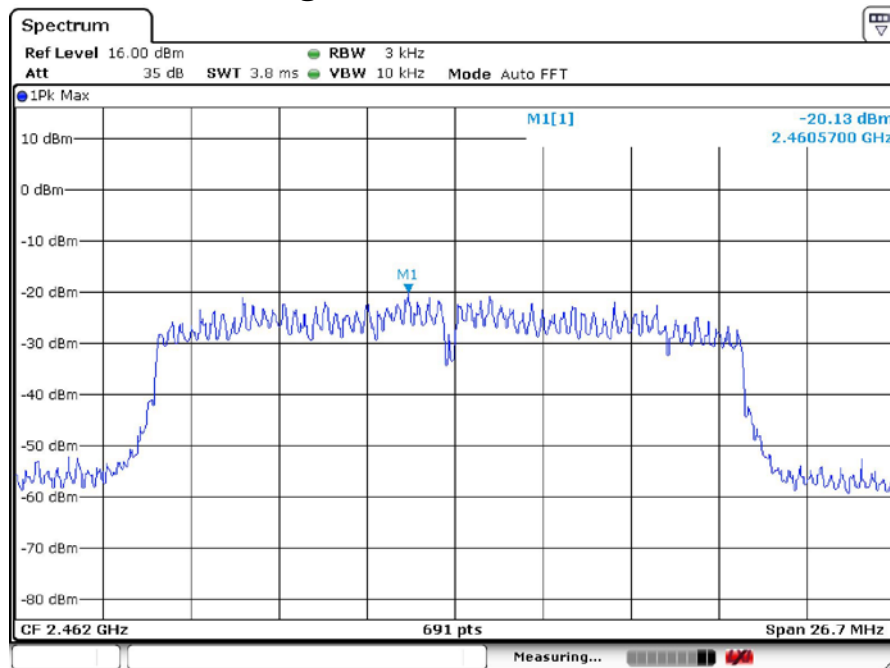
Low Channel – 802.11 n



Middle Channel – 802.11 n



High Channel – 802.11 n



3.2.4 Band - edge

Procedure:

The bandwidth at 20 dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz

VBW = 100 kHz

Span = 40 MHz, 80 MHz

Detector function = peak

Trace = max hold

Sweep = auto

Radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a)

The spectrum analyzer is set to:

Center frequency = the highest, the lowest channels

PEAK:

RBW = VBW = 1 MHz, Sweep=Auto

Average:

RBW = 1 MHz, VBW=10 Hz, Sweep=Auto

Measurement Distance:

3 m

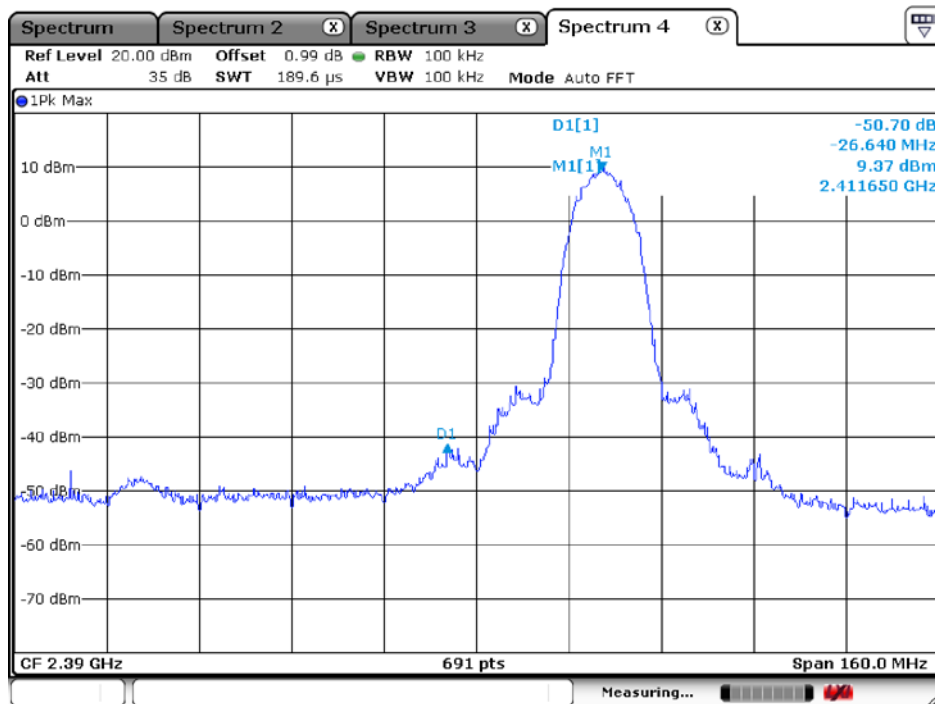
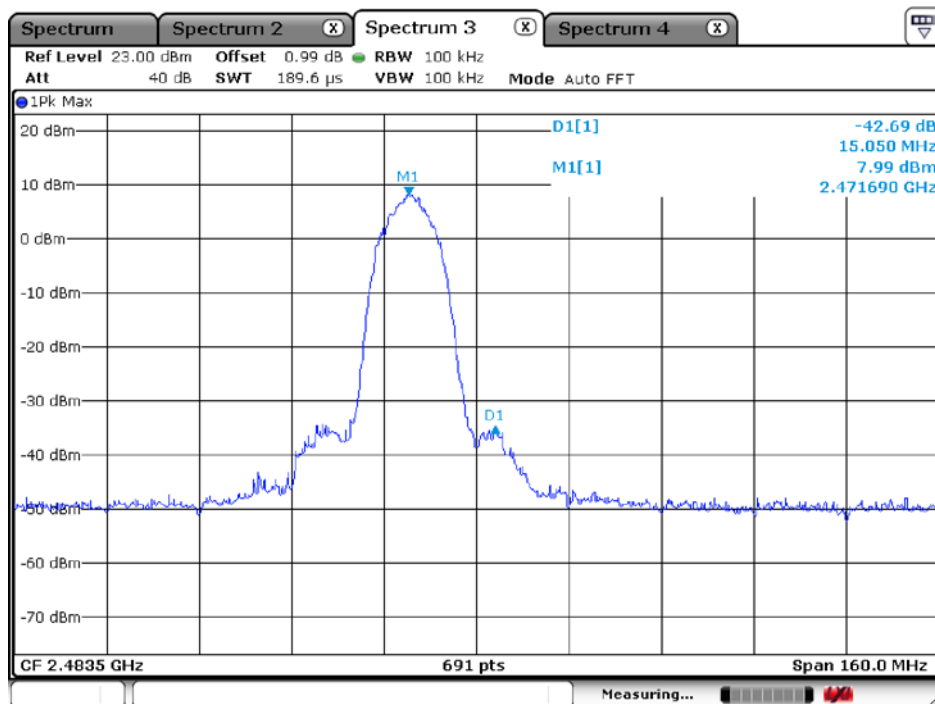
Polarization:

Horizontal / Vertical

Measurement Data: Complies

- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 20 dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

Minimum Standard:	> 20 dBc
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Band edge – 802.11b**Lower edge****Upper edge**

Radiated Band-edges in the restricted band 2310-2390 MHz measurement

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak	AV / Peak	AV / Peak	AV / Peak		
2383.7	37.54	60.57	V	27.86	-22.92	54.0	74.0	42.48	65.51	11.52	8.49

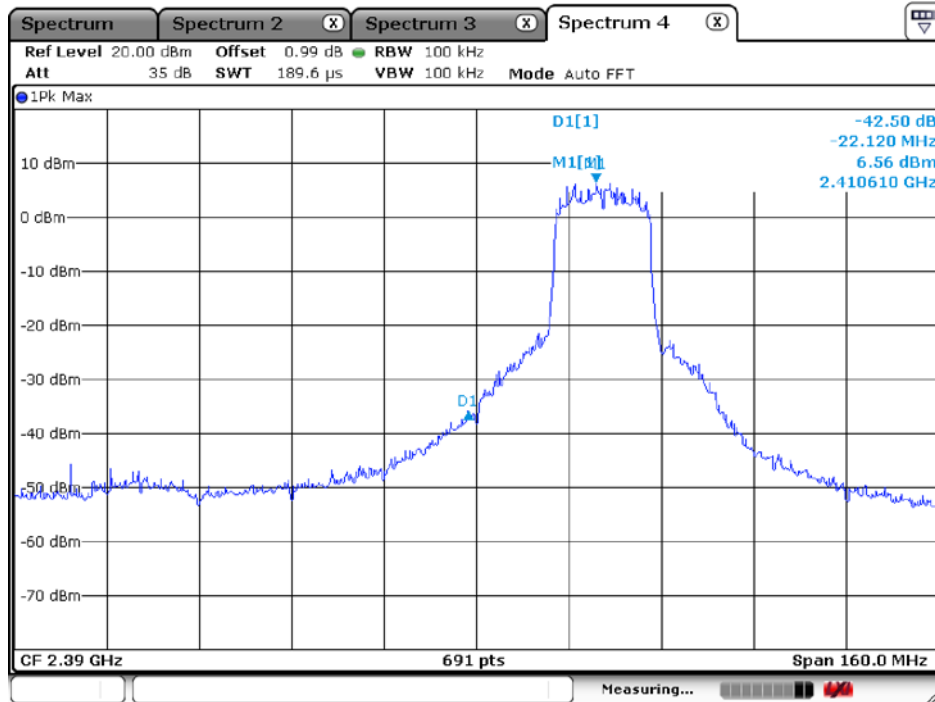
Radiated Band-edges in the restricted band 2483.5-2500 MHz measurement

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak	AV / Peak	AV / Peak			
2483.5	40.61	62.08	V	27.86	-22.92	54.0	74.0	45.55	67.02	8.45	6.98

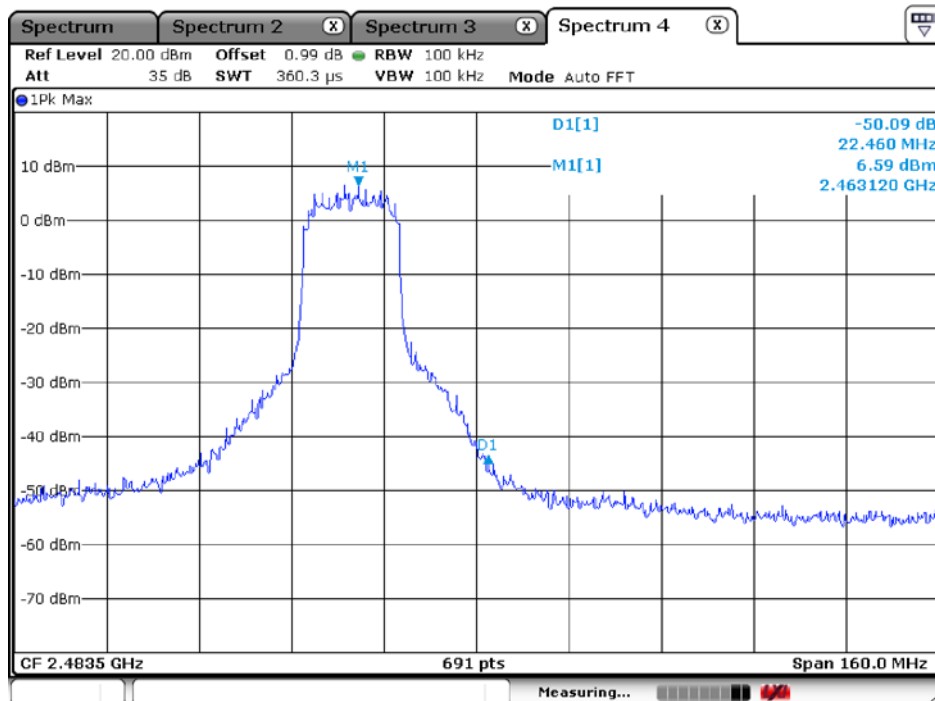
Note : This EUT was tested in 3 orthogonal positions and the worst-case data was presented

Band edge – 802.11g

Lower edge



Upper edge



Radiated Band-edges in the restricted band 2310-2390 MHz measurement

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak		AV / Peak		AV / Peak	
2389.7	38.65	58.61	V	27.86	-22.92	54.0	74.0	43.59	63.55	10.41	10.45

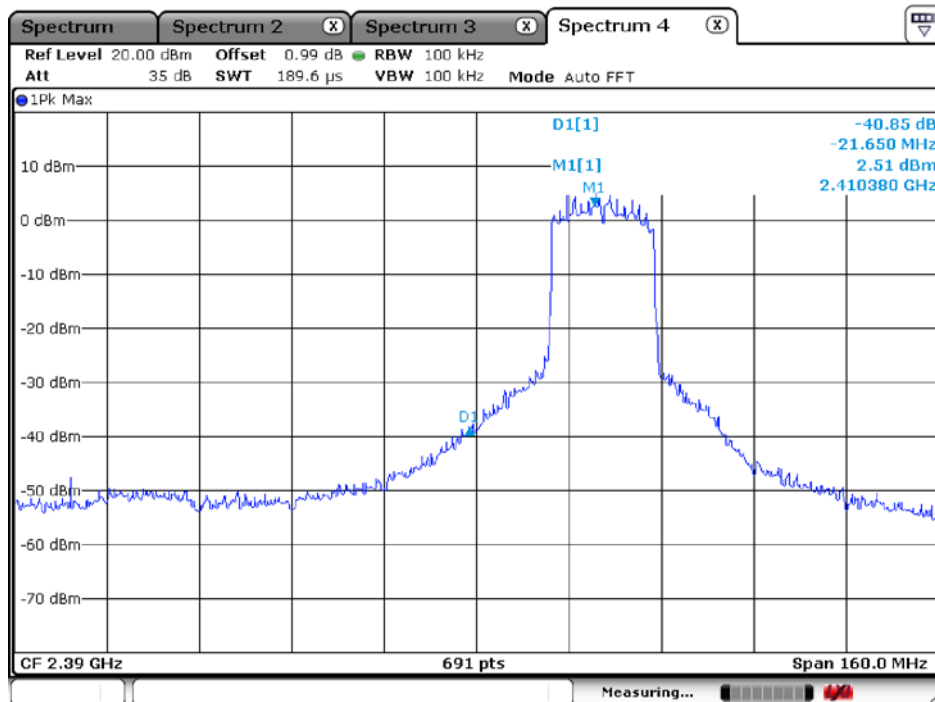
Radiated Band-edges in the restricted band 2483.5-2500 MHz measurement

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak		AV / Peak		AV / Peak	
2483.5	39.5	60.3	V	27.86	-22.92	54.0	74.0	44.44	65.24	9.56	8.76

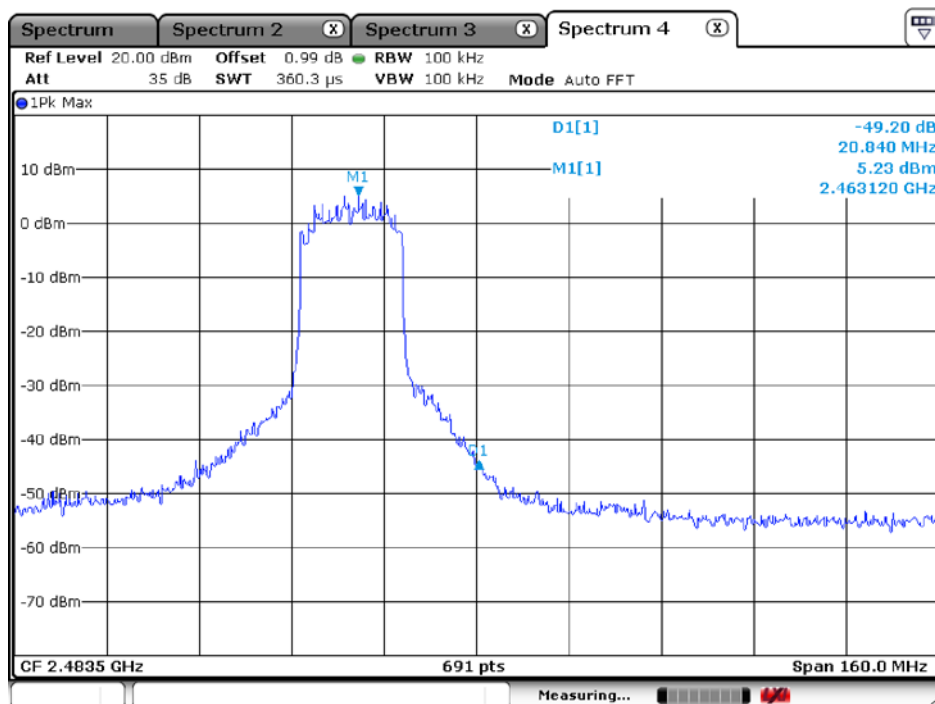
Note : This EUT was tested in 3 orthogonal positions and the worst-case data was presented

Band edge – 802.11n

Lower edge



Upper edge



Radiated Band-edges in the restricted band 2310-2390 MHz measurement

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak		AV / Peak		AV / Peak	
2389.7	35.13	56.65	V	27.86	-22.92	54.0	74.0	40.07	61.59	13.93	12.41

Radiated Band-edges in the restricted band 2483.5-2500 MHz measurement

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain + Cable Loss	AV / Peak	AV / Peak	AV / Peak			
2484.9	44.78	65.11	V	27.86	-22.92	54.0	74.0	49.72	70.05	4.28	3.95

Note : This EUT was tested in 3 orthogonal positions and the worst-case data was presented

3.2.5 Conducted Spurious Emissions

Procedure:

The test follows KDB558074. The conducted spurious emissions were measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, set the marker on the peak of any spurious emission recorded.

The spectrum analyzer is set to:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions

RBW = 100 kHz

Sweep = auto

VBW = 100 kHz

Detector function = peak

Trace = max hold

Measurement Data: Complies

- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 20 dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

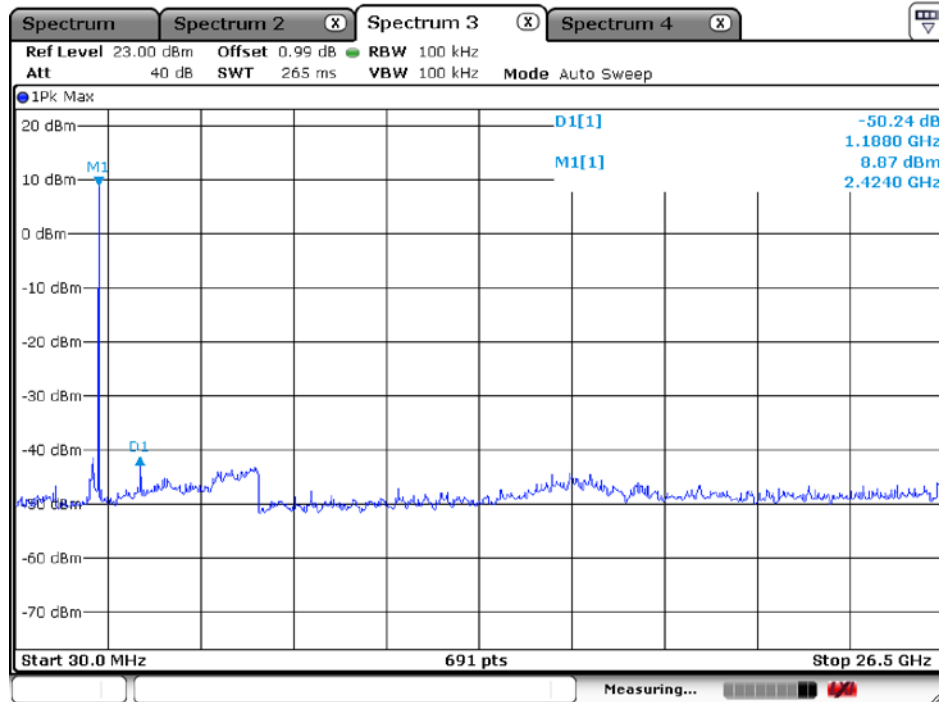
Minimum Standard:	> 20 dBc
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Measurement Setup

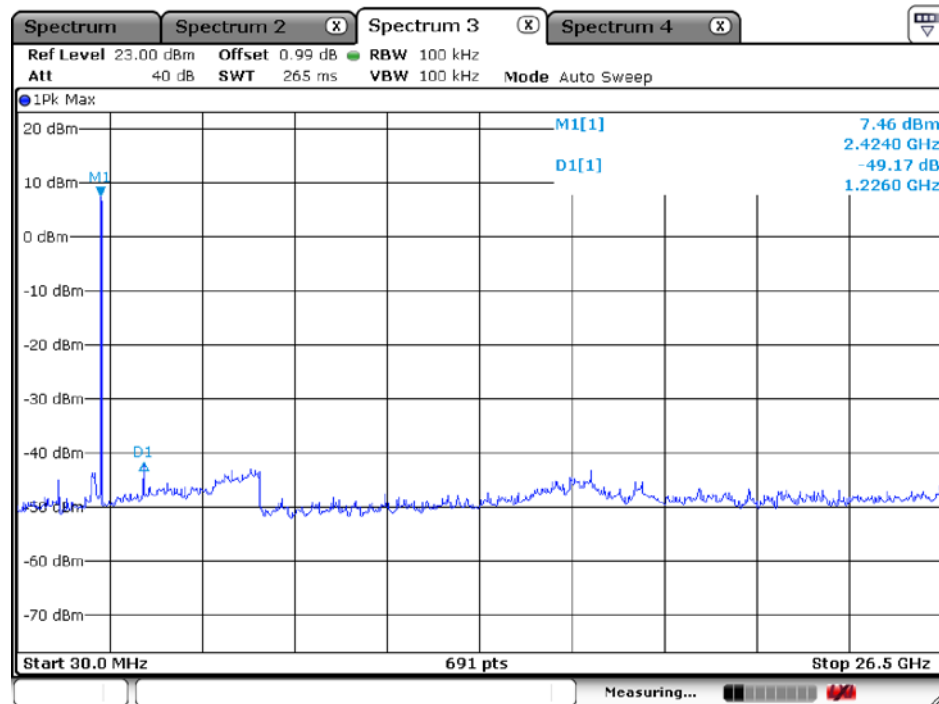
Same as the Chapter 3.2.1 (Figure 1)

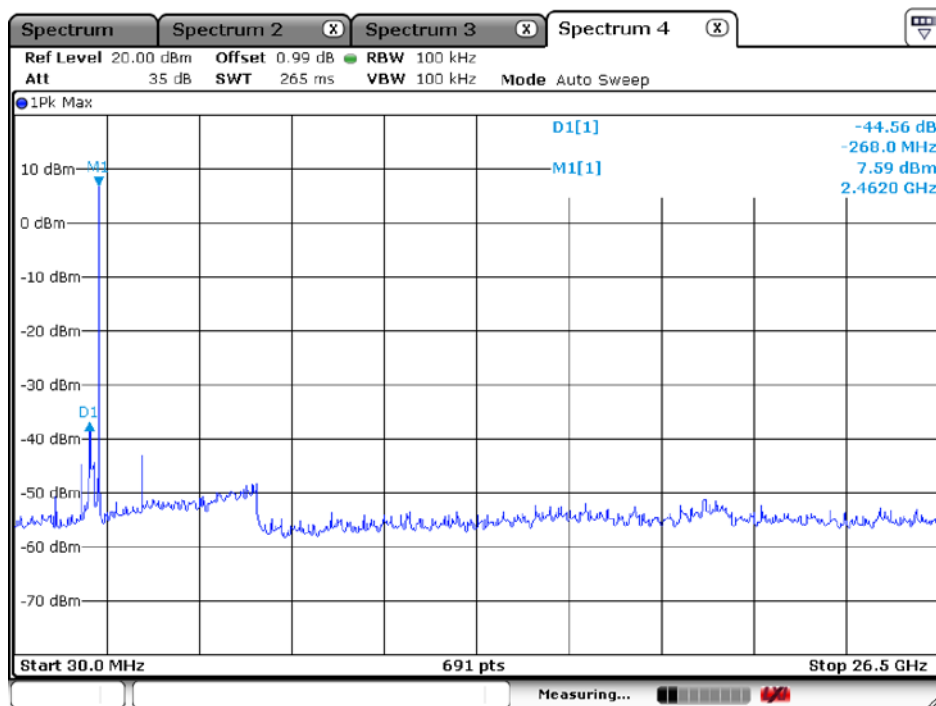
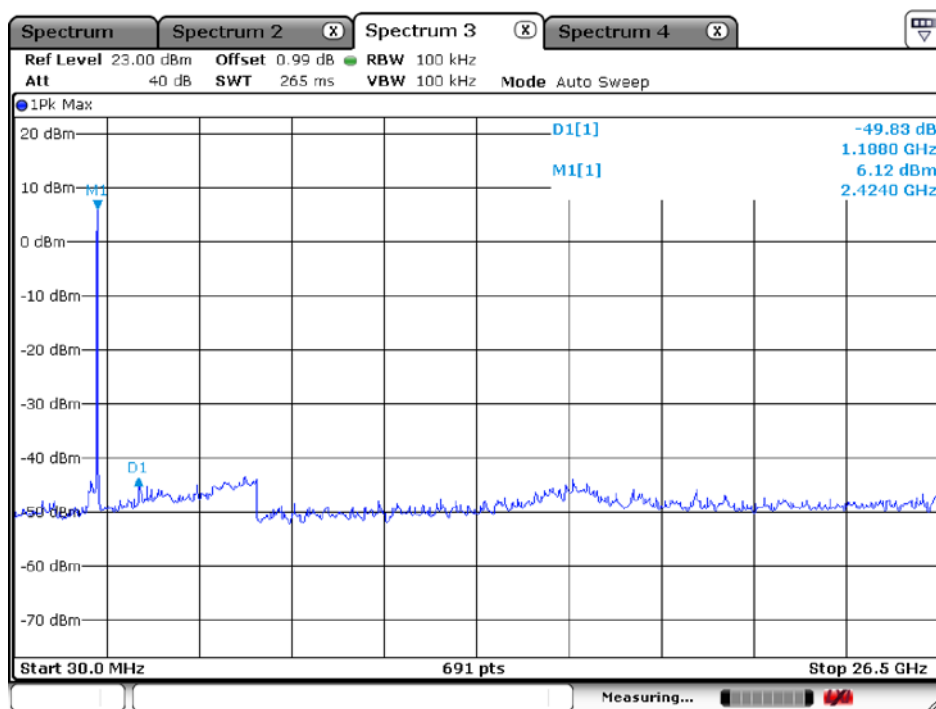
Frequency Range = 30 MHz ~ 26.5 GHz

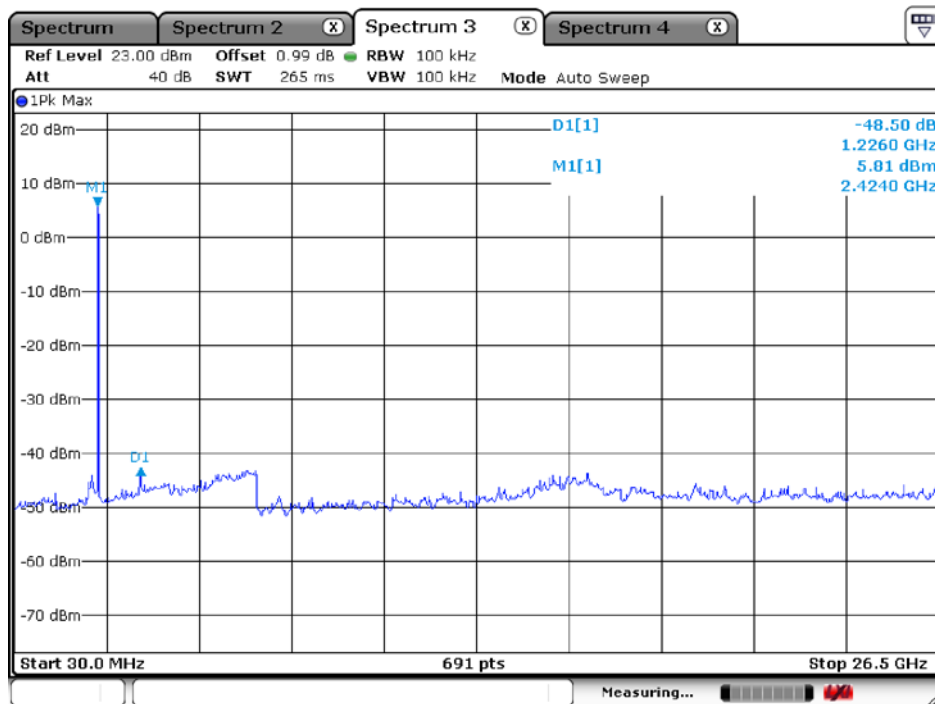
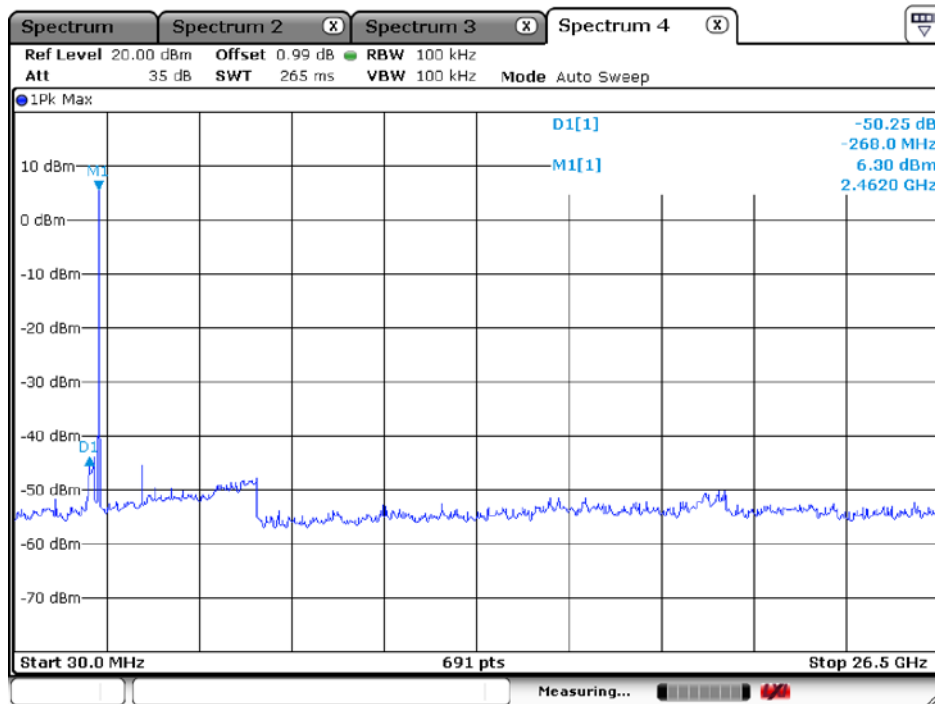
Unwanted Emission – Low Channel – 802.11 b



Middle Channel – 802.11 b

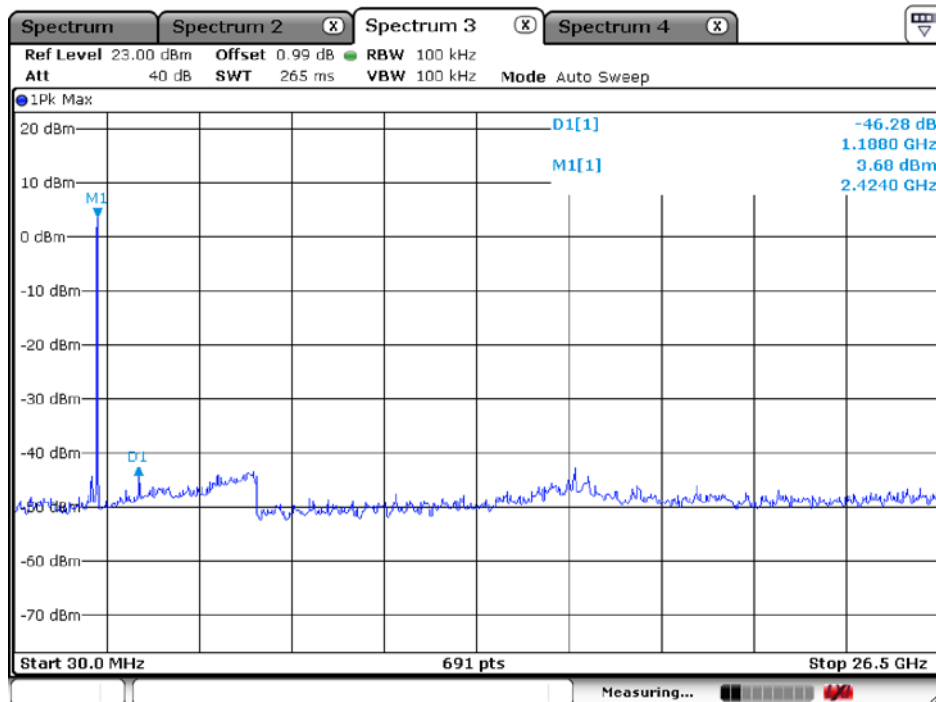


High Channel – 802.11 b**Frequency Range = 30 MHz ~ 26.5 GHz****Unwanted Emission – Low Channel – 802.11 g**

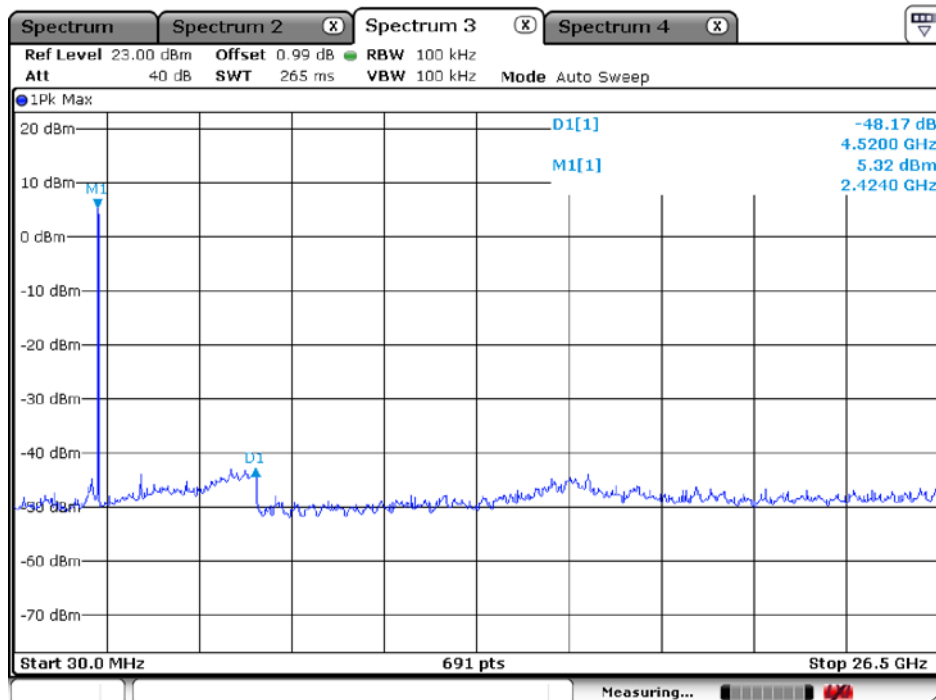
Middle Channel – 802.11 g**High Channel – 802.11 g**

Frequency Range = 30 MHz ~ 26.5 GHz

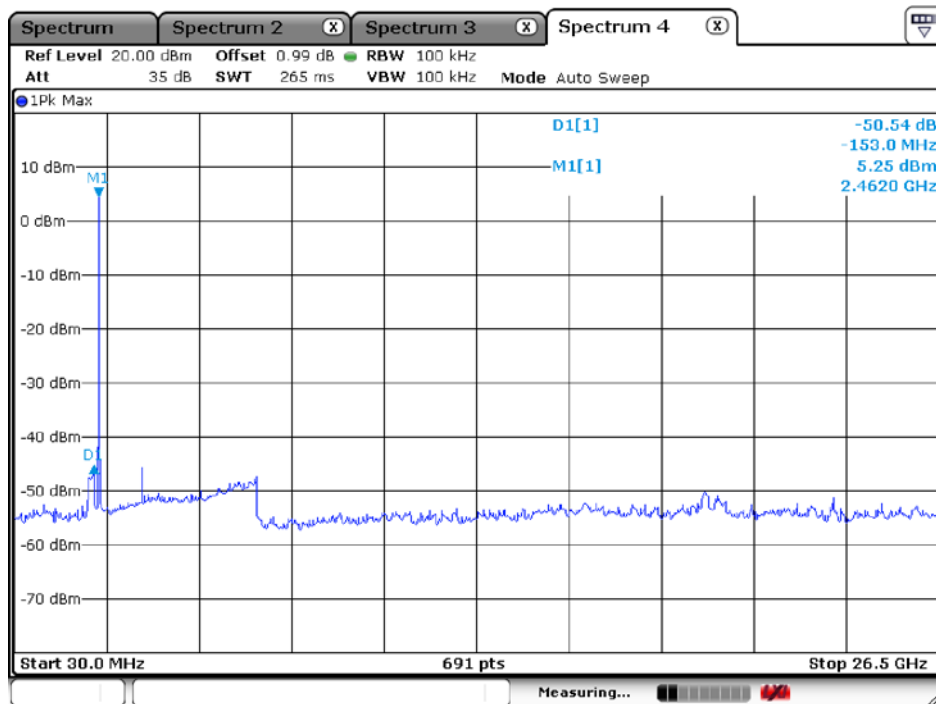
Unwanted Emission – Low Channel – 802.11 n



Middle Channel – 802.11 n



High Channel – 802.11 n



3.2.6 Radiated Spurious Emissions

Procedure:

The EUT was placed on a 0.8 m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 9 kHz ~ 10th harmonic.

RBW = 100 kHz (30 MHz ~ 1 GHz)

= 1 MHz (1 GHz ~ 10th harmonic)

Span = 100 MHz

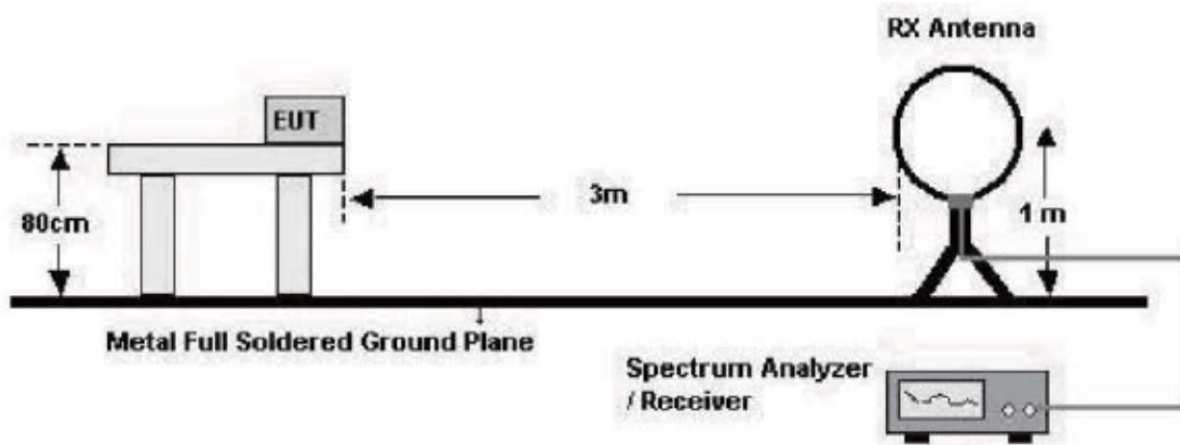
Trace = max hold

VBW $\geq$ RBW

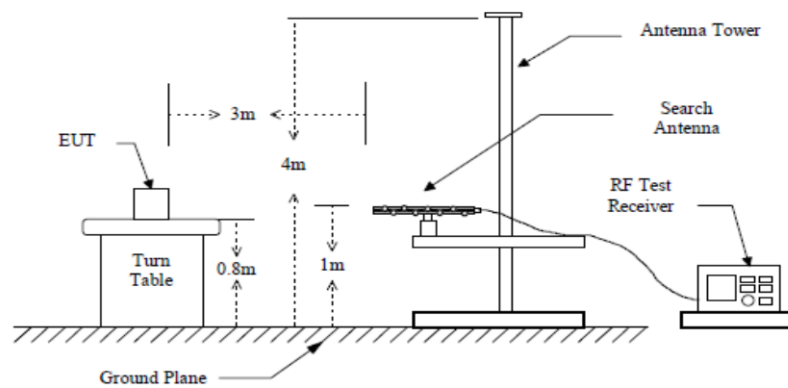
Detector function = peak

Sweep = auto

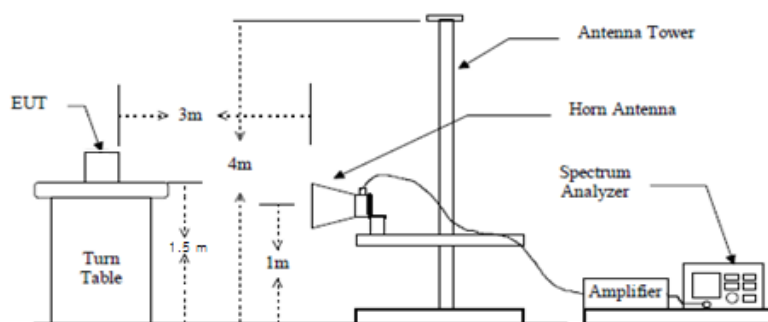
below 30 MHz



below 1 GHz (30 MHz to 1 GHz)



above 1 GHz



Measurement Data: Complies

- See next pages for actual measured data.
- No other emissions were detected at a level greater than 20 dB below limit include from 9 kHz to 30 MHz.

Minimum Standard: FCC Part 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3 m
0.009 ~ 0.490	2400/F(kHz) (@ 300 m)
0.490 ~ 1.705	24000/F(kHz) (@ 30 m)
1.705 ~ 30	30(@ 30 m)
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

Measurement Data: (9 kHz – 30 MHz)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp.Gain+Cable	AV / Peak		AV / Peak		AV / Peak	
	-	-		-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
*No emissions were detected at a level greater than 20 dB below limit.											
-	-	-	-	-	-	-	-	-	-	-	-

*No emissions were detected at a level greater than 20 dB below limit.

Radiated Emissions (Below 1 GHz) – 802.11 b(LOW) mode, Vertical

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

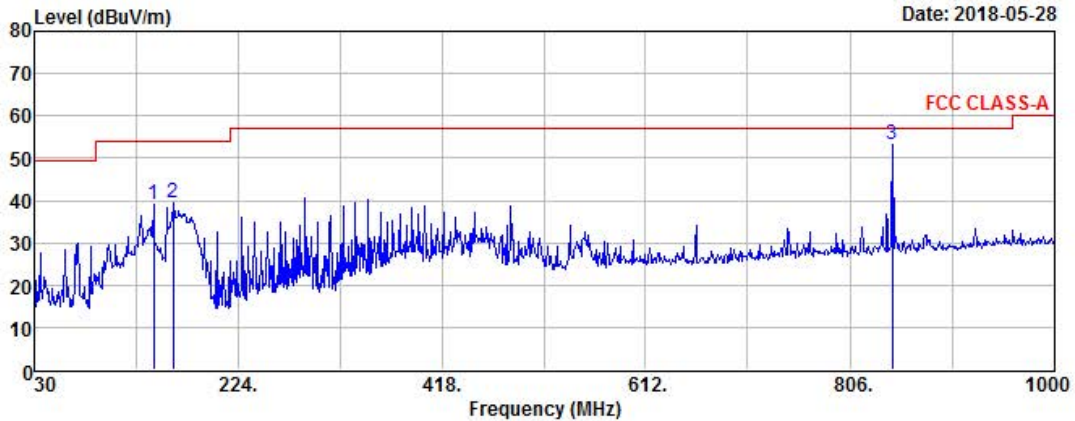
Test Mode : 802.11 b_L

Tested by: CHOI J M

Data: 1631

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
143.49	51.30	-12.31	38.99	54.00	15.01	**	**	VERTICAL
161.92	51.52	-12.09	39.43	54.00	14.57	**	**	VERTICAL
845.77	53.32	-0.29	53.03	56.90	3.87	**	**	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 b(Low) mode, Horizontal

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

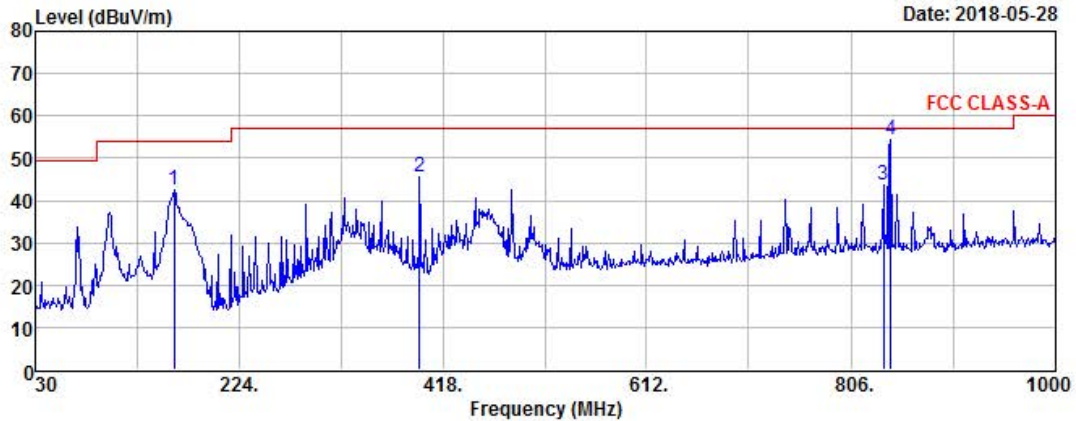
Test Mode : 802.11 b_L

Tested by: CHOI J M

Data: 1630

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
161.92	54.49	-12.09	42.40	54.00	11.60	**	**	HORIZONTAL
395.69	54.30	-8.64	45.66	56.90	11.24	**	**	HORIZONTAL
836.07	44.24	-0.44	43.80	56.90	13.10	**	**	HORIZONTAL
842.86	54.75	-0.34	54.41	56.90	2.49	**	**	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 b(MID) mode, Vertical

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
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EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

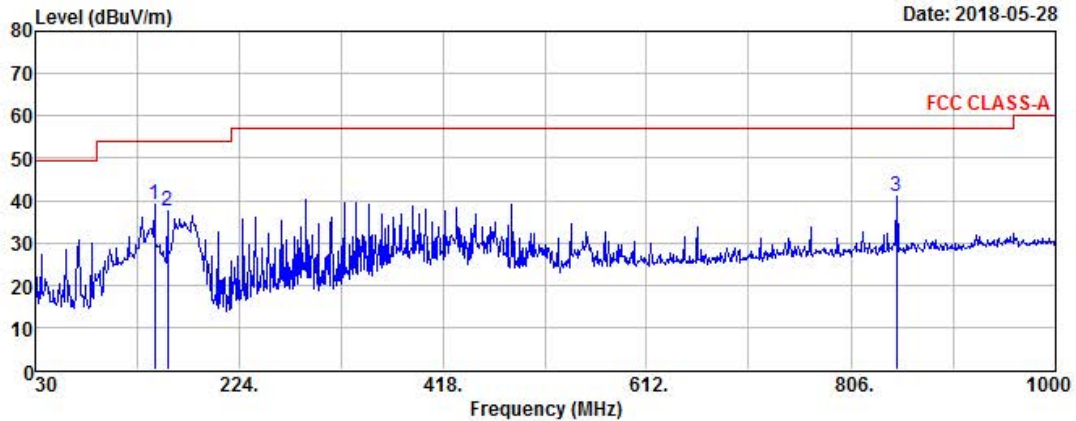
Test Mode : 802.11 b_M

Tested by: CHOI J M

Data: 1635

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
143.49	51.54	-12.31	39.23	54.00	14.77	**	**	VERTICAL
156.10	49.60	-11.97	37.63	54.00	16.37	**	**	VERTICAL
848.68	41.07	-0.23	40.84	56.90	16.06	**	**	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 b(MID) mode, Horizontal

4, Songjiuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
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Temp/Humi: 20 / 43

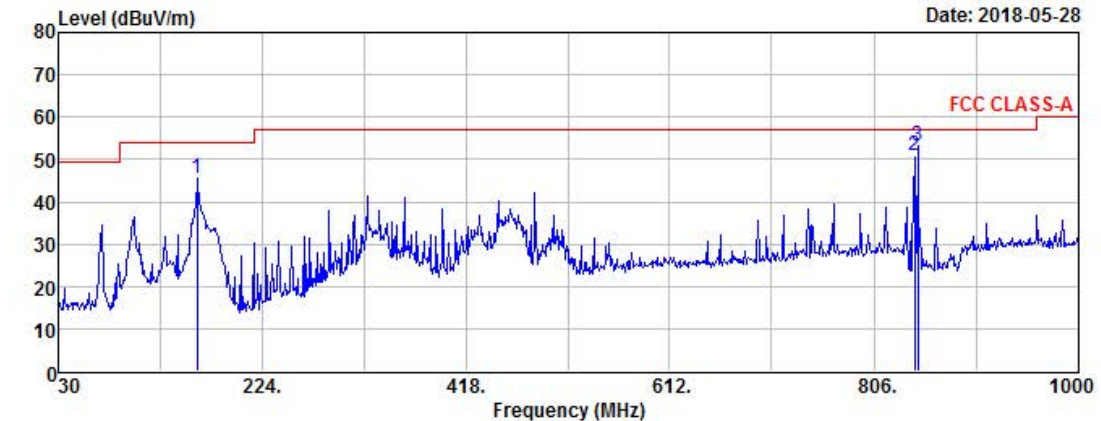
Test Mode : 802.11 b_M

Tested by: CHOI J M

Data: 1634

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
161.92	57.48	-12.09	45.39	54.00	8.61	**	**	HORIZONTAL
843.83	51.10	-0.31	50.79	56.90	6.11	**	**	HORIZONTAL
846.74	53.37	-0.27	53.10	56.90	3.80	**	**	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 b(HIGH) mode, Vertical

4, Songjiuro 236Beon-gil, yanggi-myeon,
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Temp/Humi: 20 / 43

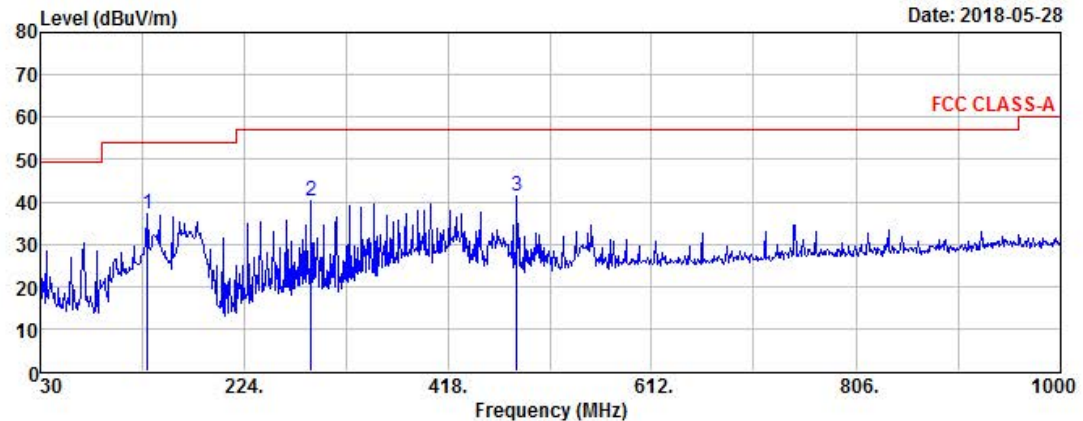
Test Mode : 802.11 b_H

Tested by: CHOI J M

Data: 1639

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
131.85	50.11	-13.00	37.11	54.00	16.89	**	**	VERTICAL
288.02	51.42	-11.09	40.33	56.90	16.57	**	**	VERTICAL
483.96	48.24	-6.90	41.34	56.90	15.56	**	**	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 b(HIGH) mode, Horizontal

4, Songjuro 236Beon-gil, yanggi-myeon,
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Tel : +82-31-3236008,9
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Temp/Humi: 20 / 43

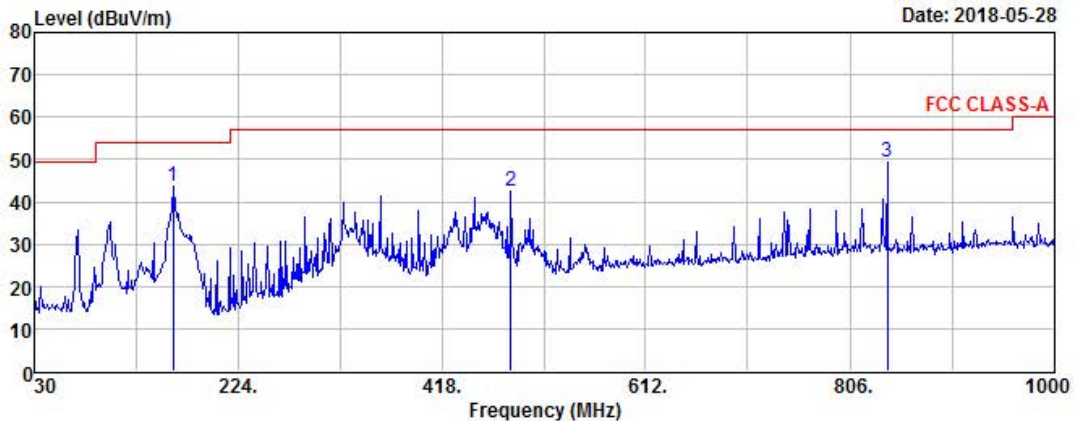
Test Mode : 802.11 b_H

Tested by: CHOI J M

Data: 1638

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
161.92	55.58	-12.09	43.49	54.00	10.51	**	**	HORIZONTAL
483.96	49.51	-6.90	42.61	56.90	14.29	**	**	HORIZONTAL
840.92	49.66	-0.36	49.30	56.90	7.60	**	**	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 g(LOW) mode, Vertical

4, Songjuro 236Beon-gil, yanggi-myeon,
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Temp/Humi: 20 / 43

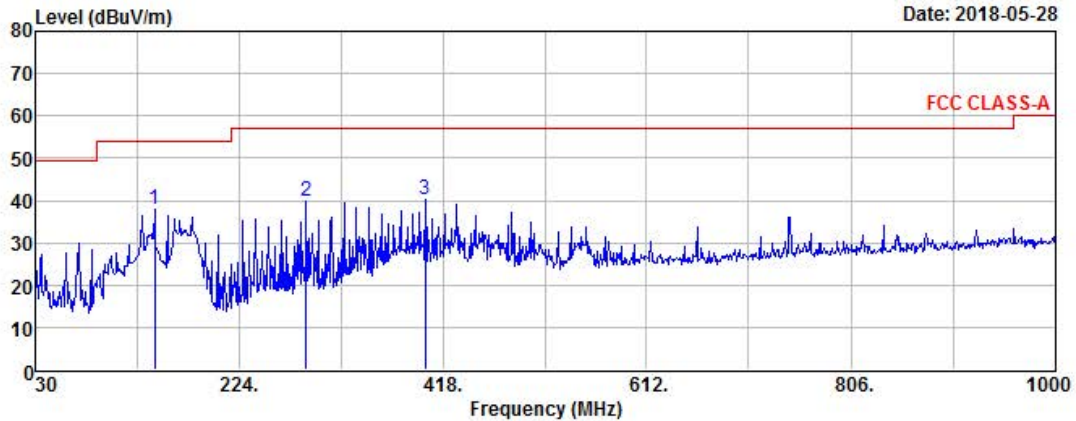
Test Mode : 802.11 g_L

Tested by: CHOI J M

Data: 1643

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
143.49	50.03	-12.31	37.72	54.00	16.28	**	**	VERTICAL
288.02	51.06	-11.09	39.97	56.90	16.93	**	**	VERTICAL
401.51	48.64	-8.52	40.12	56.90	16.78	**	**	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 g(LOW) mode, Horizontal

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Temp/Humi: 20 / 43

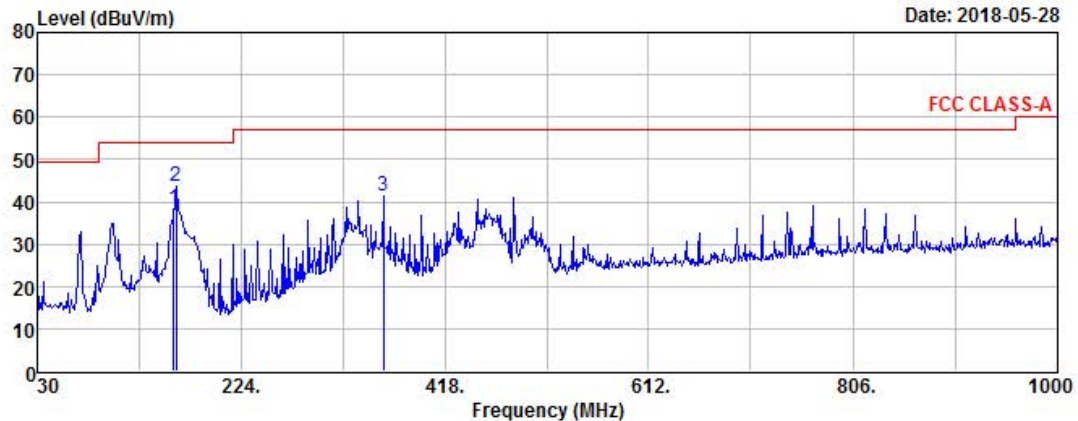
Test Mode : 802.11 g_L

Tested by: CHOI J M

Data: 1642

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
159.98	50.32	-11.99	38.33	54.00	15.67	**	**	HORIZONTAL
161.92	55.69	-12.09	43.60	54.00	10.40	**	**	HORIZONTAL
359.80	50.89	-9.52	41.37	56.90	15.53	**	**	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 g(MID) mode, Vertical

4, Songjiuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
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EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

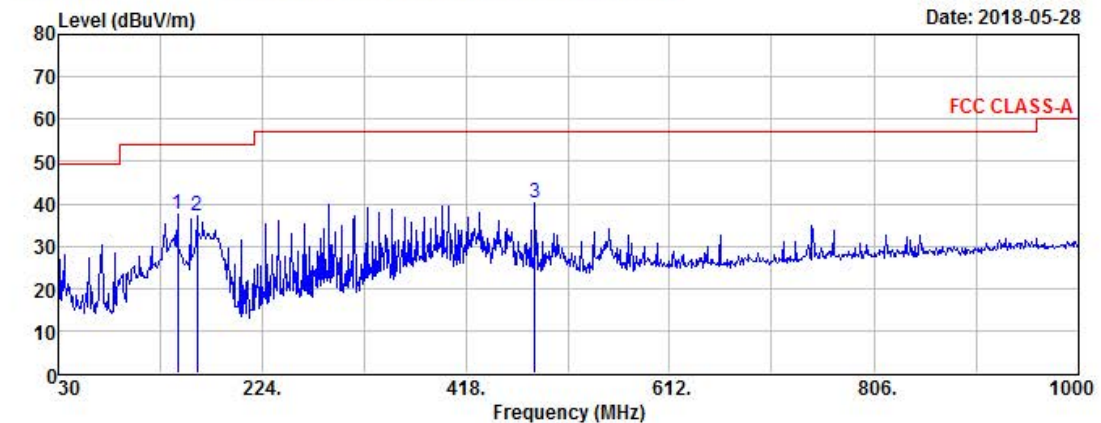
Test Mode : 802.11 g_M

Tested by: CHOI J M

Data: 1647

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
143.49	49.79	-12.31	37.48	54.00	16.52	**	**	VERTICAL
161.92	49.36	-12.09	37.27	54.00	16.73	**	**	VERTICAL
483.96	47.21	-6.90	40.31	56.90	16.59	**	**	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 g(MID) mode, Horizontal

4, Songjiuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
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EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

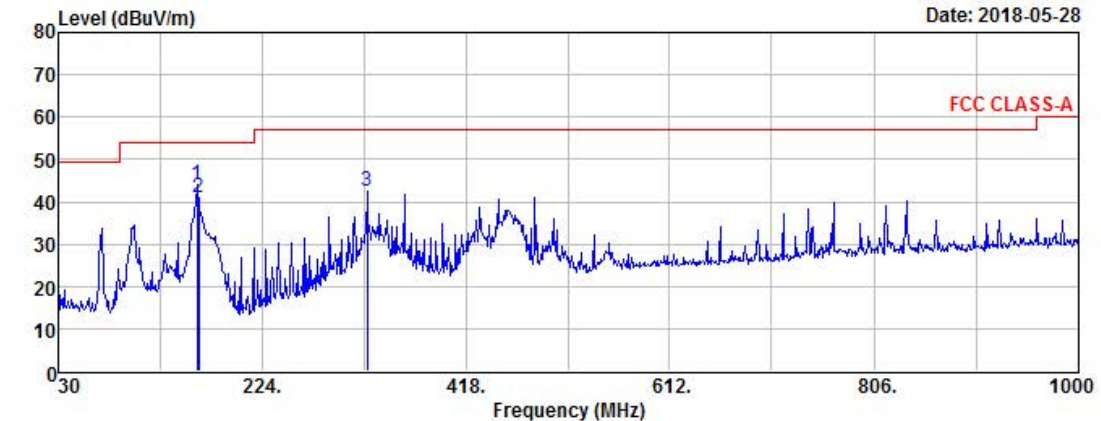
Test Mode : 802.11 g_M

Tested by: CHOI J M

Data: 1646

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
161.92	55.93	-12.09	43.84	54.00	10.16	**	**	HORIZONTAL
163.86	53.22	-12.18	41.04	54.00	12.96	**	**	HORIZONTAL
323.91	52.49	-10.15	42.34	56.90	14.56	**	**	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 g(HIGH) mode, Vertical

4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
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EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

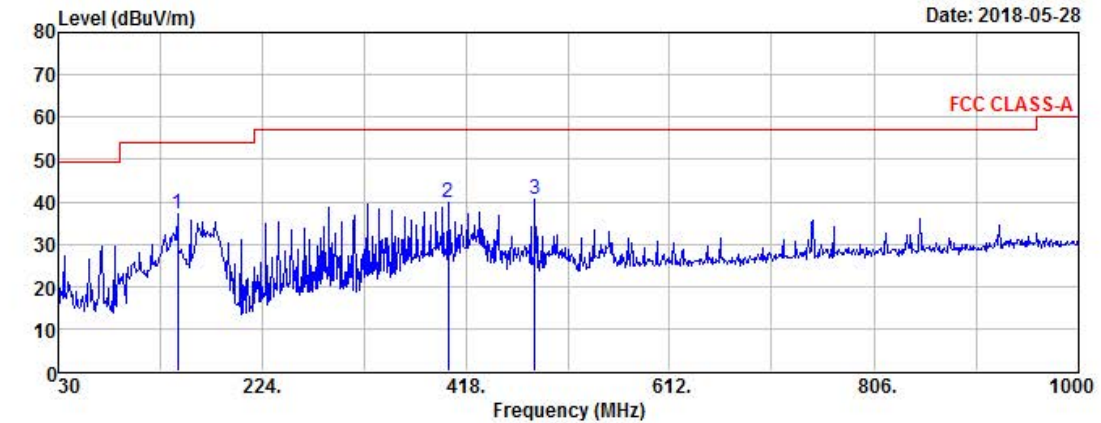
Test Mode : 802.11 g_H

Tested by: CHOI J M

Data: 1651

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
143.49	49.29	-12.31	36.98	54.00	17.02	**	**	VERTICAL
401.51	48.26	-8.52	39.74	56.90	17.16	**	**	VERTICAL
483.96	47.61	-6.90	40.71	56.90	16.19	**	**	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 g(HIGH) mode, Horizontal

4, Songjiuro 236Beon-gil, yanggi-myeon,
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www.ltalab.com

EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

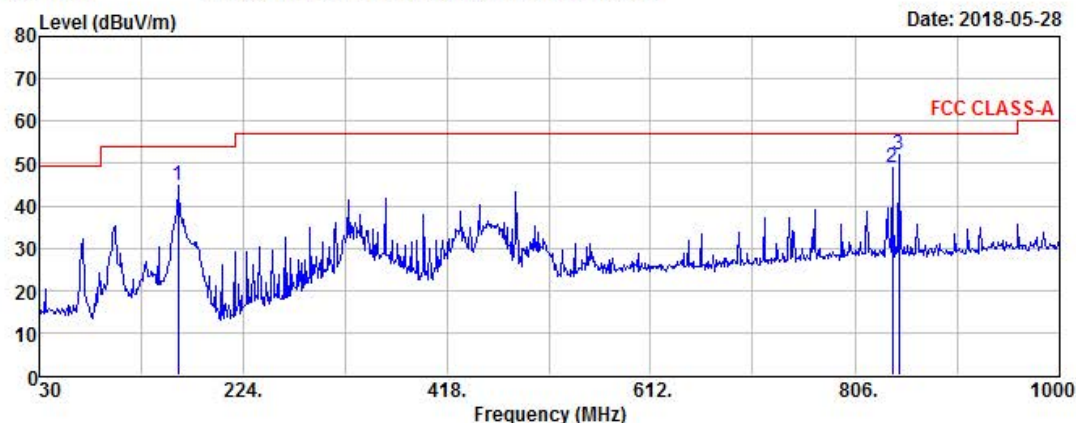
Test Mode : 802.11 g_H

Tested by: CHOI J M

Data: 1650

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBUV/m	dBUV/m	dB	cm	deg	
161.92	56.98	-12.09	44.89	54.00	9.11	**	**	HORIZONTAL
840.92	49.33	-0.36	48.97	56.90	7.93	**	**	HORIZONTAL
846.74	52.29	-0.27	52.02	56.90	4.88	**	**	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 n(LOW) mode, Vertical

4, Songjiuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
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EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

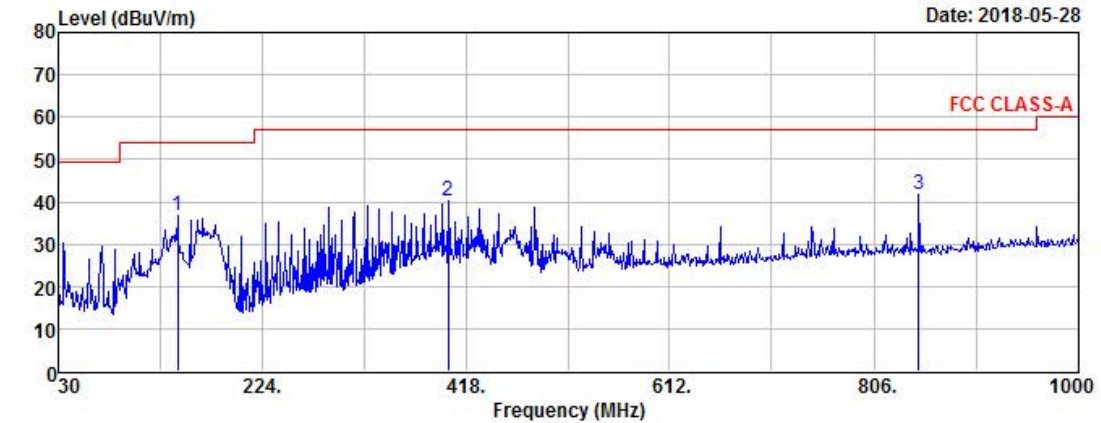
Test Mode : 802.11 n_L

Tested by: CHOI J M

Data: 1655

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
143.49	49.08	-12.31	36.77	54.00	17.23	**	**	VERTICAL
401.51	48.87	-8.52	40.35	56.90	16.55	**	**	VERTICAL
847.71	42.06	-0.26	41.80	56.90	15.10	**	**	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 n(LOW) mode, Horizontal

4, Songjiuro 236Beon-gil, yanggi-myeon,
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Fax : +82-31-3236010
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EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

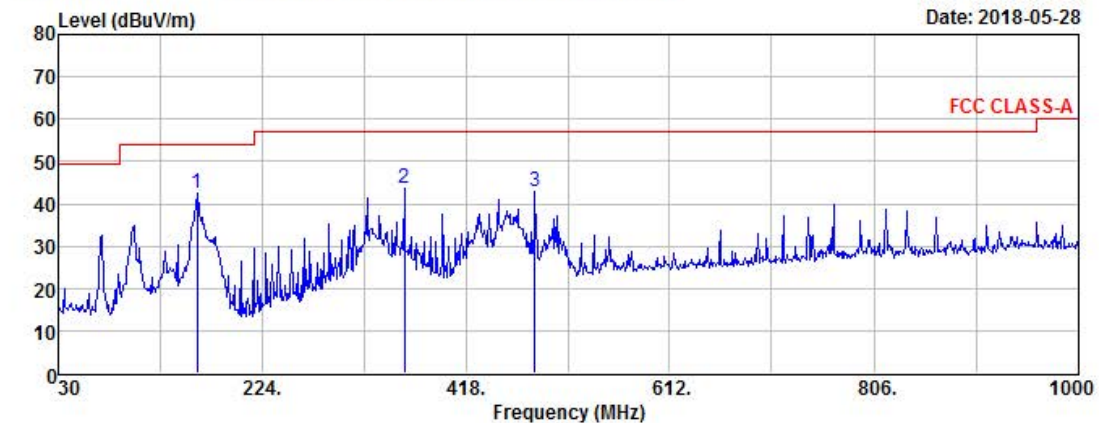
Test Mode : 802.11 n_L

Tested by: CHOI J M

Data: 1654

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBUV/m	dBUV/m	dB	cm	deg	
161.92	54.48	-12.09	42.39	54.00	11.61	**	**	HORIZONTAL
359.80	53.10	-9.52	43.58	56.90	13.32	**	**	HORIZONTAL
483.96	49.76	-6.90	42.86	56.90	14.04	**	**	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 n(MID) mode, Vertical

4, Songjiuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
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www.ltalab.com

EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

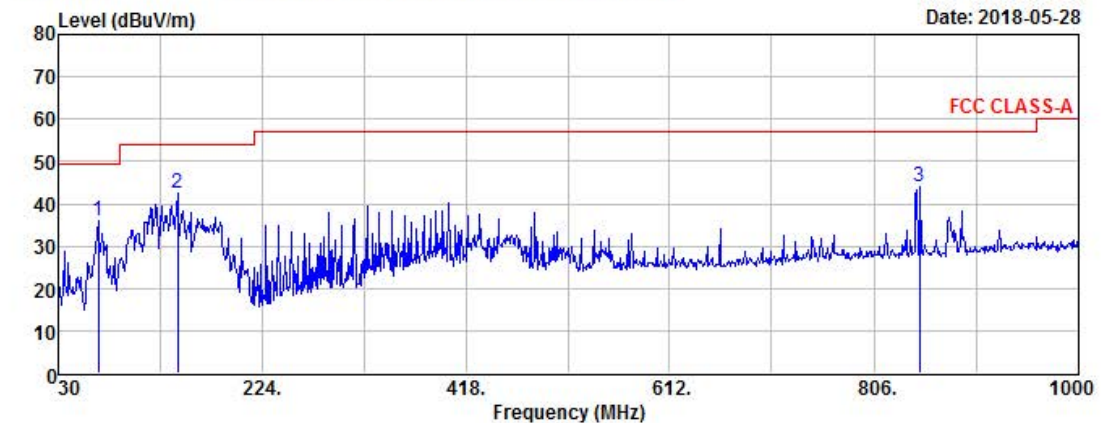
Test Mode : 802.11 n_M

Tested by: CHOI J M

Data: 1659

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
67.83	51.79	-15.68	36.11	49.50	13.39	**	**	VERTICAL
143.49	54.66	-12.31	42.35	54.00	11.65	**	**	VERTICAL
848.68	44.13	-0.23	43.90	56.90	13.00	**	**	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 n(MID) mode, Horizontal

4, Songjiuro 236Beon-gil, yanggi-myeon,
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www.ltalab.com

EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

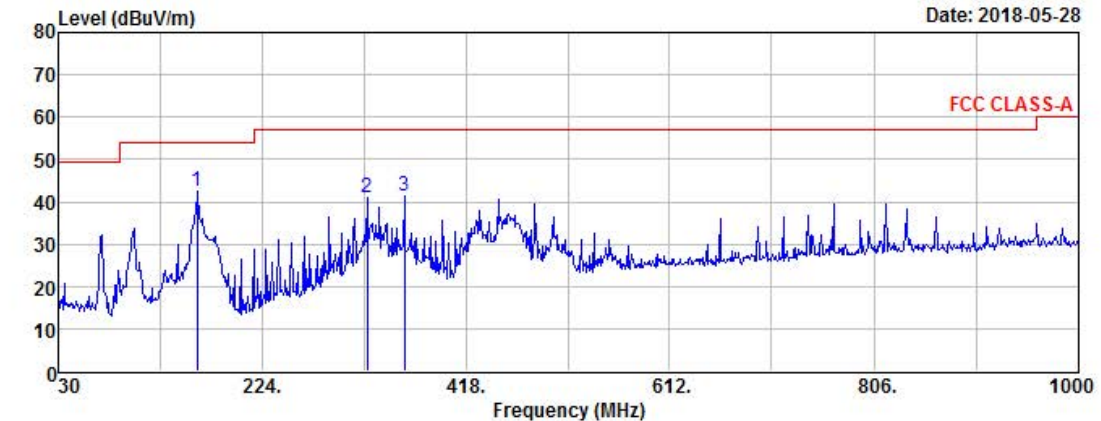
Test Mode : 802.11 n_M

Tested by: CHOI J M

Data: 1658

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
161.92	54.53	-12.09	42.44	54.00	11.56	**	**	HORIZONTAL
323.91	51.03	-10.15	40.88	56.90	16.02	**	**	HORIZONTAL
359.80	50.82	-9.52	41.30	56.90	15.60	**	**	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 n(HIGH) mode, Vertical

4, Songjiuro 236Beon-gil, yanggi-myeon,
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www.ltalab.com

EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

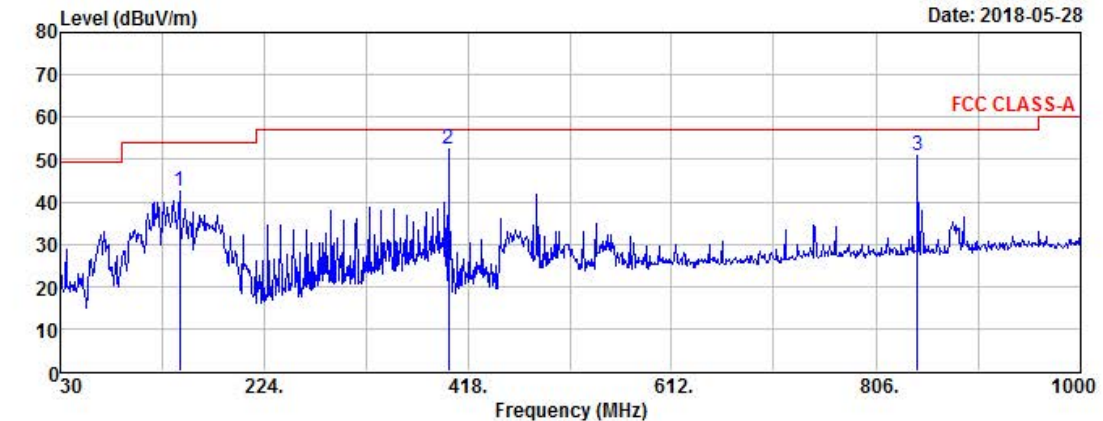
Test Mode : 802.11 n_H

Tested by: CHOI J M

Data: 1663

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
143.49	54.81	-12.31	42.50	54.00	11.50	**	**	VERTICAL
399.57	60.91	-8.58	52.33	56.90	4.57	**	**	VERTICAL
844.80	51.18	-0.30	50.88	56.90	6.02	**	**	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions (Below 1 GHz) – 802.11 n(HIGH) mode, Horizontal

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EUT/Model No.: VFWL-2100

Temp/Humi: 20 / 43

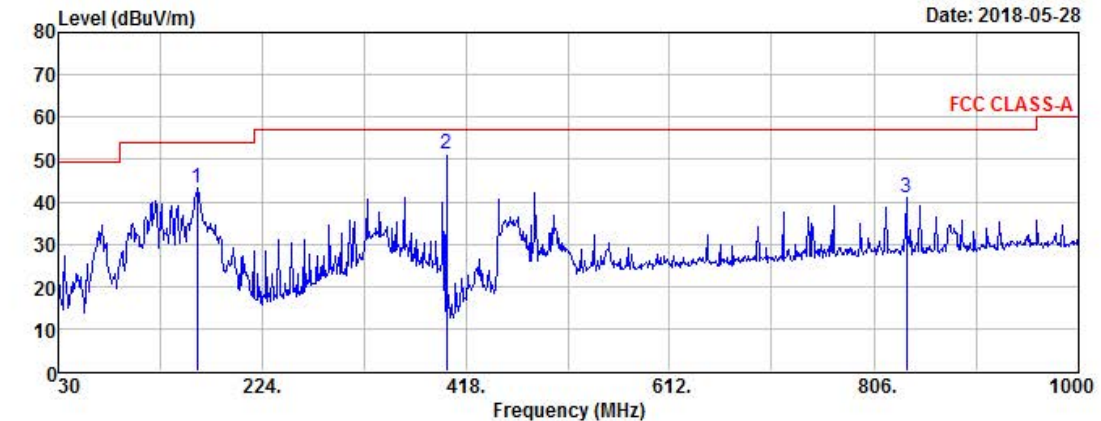
Test Mode : 802.11 n_H

Tested by: CHOI J M

Data: 1662

File: C:\Program Files (x86)\e3\1805-1.EM6 (1663)

Date: 2018-05-28



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QP dBuV/m	dBuV/m	dB	cm	deg	
161.92	55.28	-12.09	43.19	54.00	10.81	**	**	HORIZONTAL
399.57	59.88	-8.58	51.30	56.90	5.60	**	**	HORIZONTAL
836.07	41.31	-0.44	40.87	56.90	16.03	**	**	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Measurement Data : 802.11 b (Above 1 GHz)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction	Limits		Result		Margin	
				Factor	[dBuV / m]		[dBuV / m]		[dB]	
	AV / Peak			Antenna-Amp.Gain+Cable	AV /Peak		AV /Peak		AV / Peak	
9359.58	23.60	31.20	V	7.17	54.0	74.0	52.64	60.24	1.36	13.76
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-

- No other emissions were detected at a level greater than 20 dB below limit.

Measurement Data : 802.11 g (Above 1 GHz)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp.Gain+Cable	AV/Peak	AV/Peak	AV/Peak	AV / Peak		
7491.27	13.14	19.65	V	31.69		54.0	74.0	13.14	19.32	9.17	22.66
-	-	-	-	-		-	-	-	-	-	-
-	-	-	-	-		-	-	-	-	-	-

- No other emissions were detected at a level greater than 20 dB below limit.

Measurement Data : 802.11 n (Above 1 GHz)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp.Gain+Cable	AV/Peak	AV/Peak	AV / Peak	AV / Peak		
8525.37	16.99	21.90	V	28.59		54.0	74.0	45.58	50.49	8.42	23.51
-	-	-	-	-		-	-	-	-	-	-
-	-	-	-	-		-	-	-	-	-	-

- No other emissions were detected at a level greater than 20 dB below limit.

Radiated Emissions (Above 1 GHz) – 802.11 b(LOW) mode

EMI I Chamber of LTA CO.,LTD.
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 Yongin-si, Gyeonggi-do, Korea Autho.by NVLAP
 Tel :+82-31-3236008,9 www.ltalab.com
 Fax:+82-31-3236010

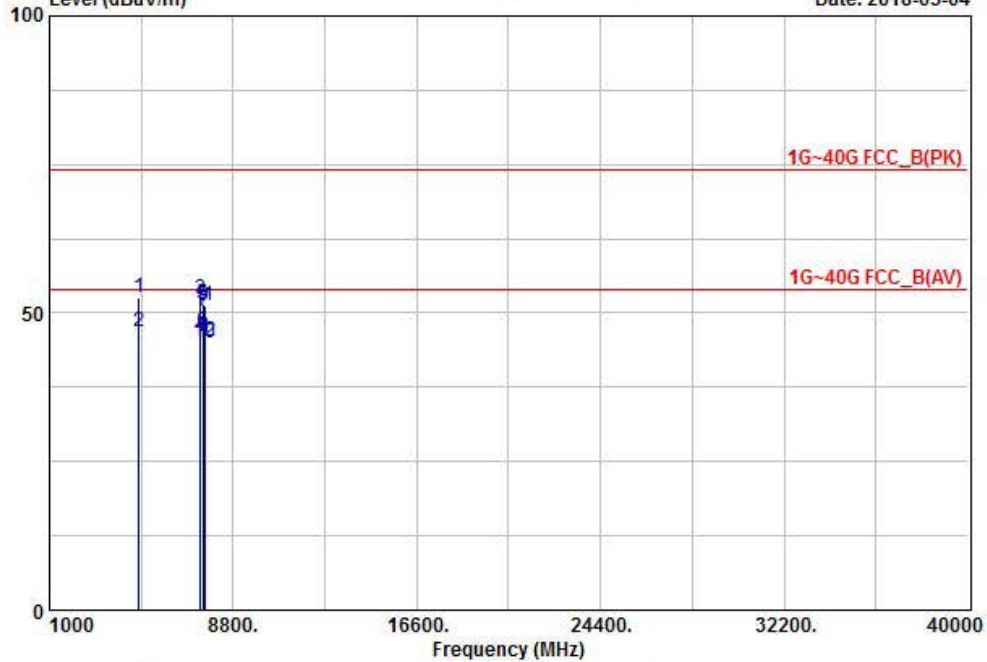
EUT/Model No. : VFWL-2100

Test Mode: 802.11 b(low)

Tested by : CHOI J M

Temp/Humi: 22 / 62

Data: 12 File: D:\LTA_e3\3_backup\1GHz 이상\2018\CH1_ABOVE 1GHz_1803-1.EMI (20) Date: 2018-05-04
 Level (dBuV/m)



	Freq	Reading	C.F	Result	Limit	Margin	Polarity
	MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1	4816.25	34.81	17.82	52.63	74.00	21.37	HORIZONTAL
2	4816.25	28.98	17.82	46.80	54.00	7.20	HORIZONTAL
3	7421.49	21.26	30.97	52.23	74.00	21.77	VERTICAL
4	7421.49	14.98	30.97	45.95	54.00	8.05	VERTICAL
5	7527.64	20.10	31.52	51.63	74.00	22.37	VERTICAL
6	7527.64	15.30	31.52	46.83	54.00	7.17	VERTICAL
7	7559.71	19.06	31.22	50.28	74.00	23.72	VERTICAL
8	7559.71	14.71	31.22	45.93	54.00	8.07	VERTICAL
9	7581.44	20.12	31.02	51.14	74.00	22.86	HORIZONTAL
10	7581.44	14.00	31.02	45.02	54.00	8.98	HORIZONTAL
11	7593.68	20.28	30.91	51.19	74.00	22.81	HORIZONTAL
12	7593.68	14.36	30.91	45.27	54.00	8.73	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
 Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 802.11 b(MID) mode

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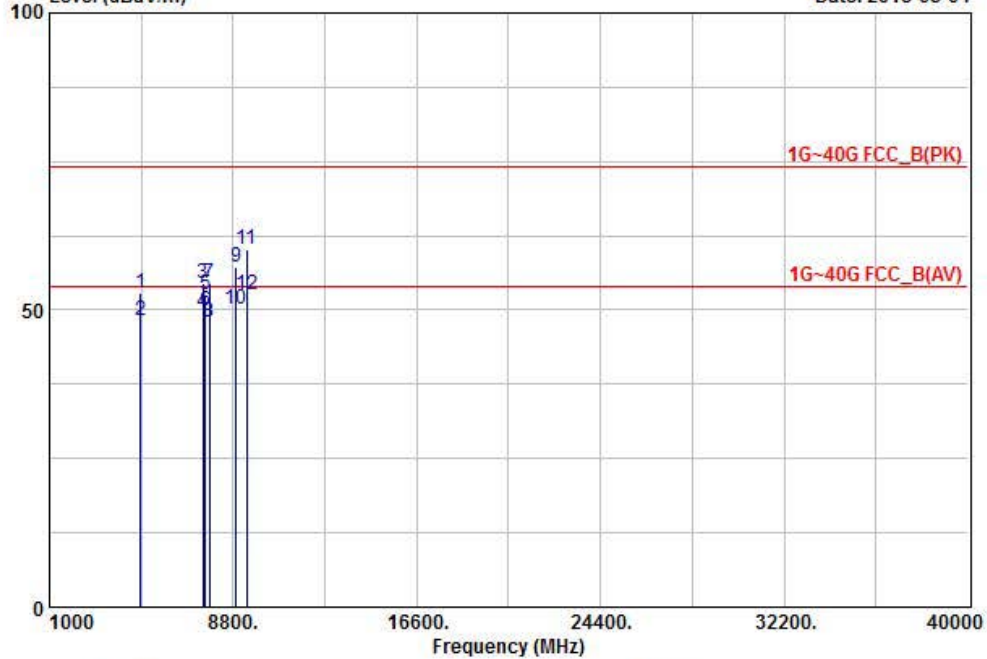
EUT/Model No. : VFWL-2100

Test Mode: 802.11 b(mid)

Tested by : CHOI J M

Temp/Humi: 22 / 62

Data: 13 File: D:\LTA_e3\3_backup\1GHz 이상\2018\CH1_ABOVE 1GHz_1803-1.EMI (20) Date: 2018-05-04
 Level (dBuV/m)



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 4885.67	34.91	18.04	52.95	74.00	21.05	HORIZONTAL
2 4885.67	30.23	18.04	48.27	54.00	5.73	HORIZONTAL
3 7501.14	22.79	31.77	54.56	74.00	19.44	HORIZONTAL
4 7501.14	17.88	31.77	49.65	54.00	4.35	HORIZONTAL
5 7621.34	21.95	30.65	52.59	74.00	21.41	VERTICAL
6 7621.34	19.31	30.65	49.95	54.00	4.05	VERTICAL
7 7789.27	25.12	29.44	54.56	74.00	19.44	HORIZONTAL
8 7789.27	18.56	29.44	48.00	54.00	6.00	HORIZONTAL
9 8911.34	29.00	28.09	57.09	74.00	16.91	HORIZONTAL
10 8911.34	22.01	28.09	50.10	54.00	3.90	HORIZONTAL
11 9359.58	31.20	29.05	60.24	74.00	13.76	VERTICAL
12 9359.58	23.60	29.05	52.64	54.00	1.36	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
 Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 802.11 b(HIGH) mode

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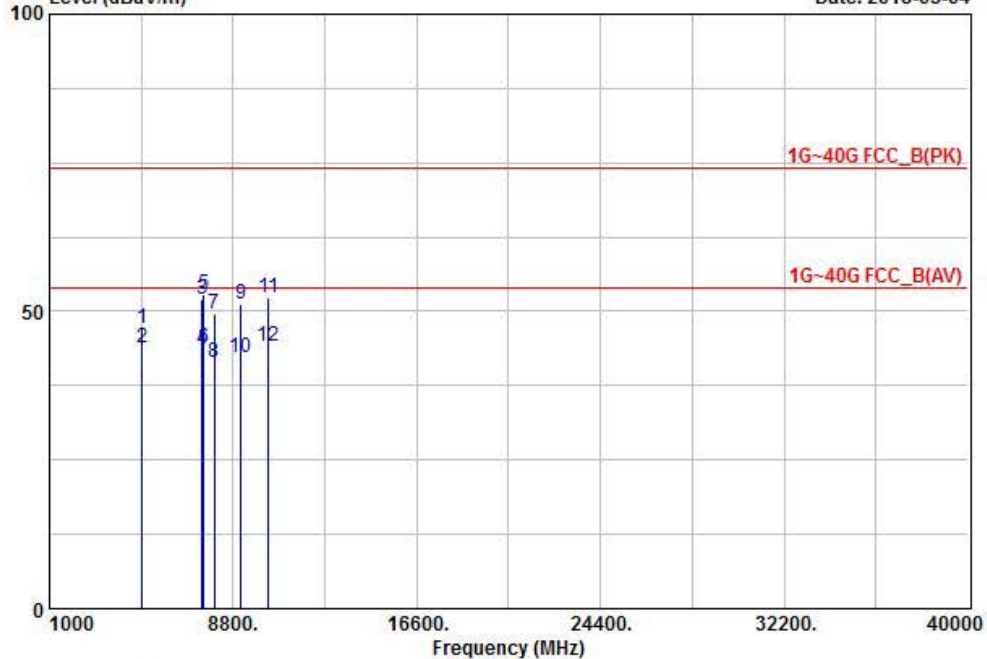
EUT/Model No. : VFWL-2100

Test Mode: 802.11 b(high)

Tested by : CHOI J M

Temp/Humi: 22 / 62

Data: 14 File: D:\LTA_e3\3_backup\1GHz 이상\2018\CH1_ABOVE 1GHz_1803-1.EMI (20) Date: 2018-05-04
 Level (dBuV/m)



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 4951.10	29.05	18.00	47.04	74.00	26.96	VERTICAL
2 4951.10	25.93	18.00	43.92	54.00	10.08	VERTICAL
3 7471.34	20.68	31.48	52.16	74.00	21.84	VERTICAL
4 7471.34	12.08	31.48	43.56	54.00	10.44	VERTICAL
5 7554.56	21.62	31.27	52.90	74.00	21.10	HORIZONTAL
6 7554.56	12.51	31.27	43.79	54.00	10.21	HORIZONTAL
7 8011.13	21.92	27.72	49.63	74.00	24.37	HORIZONTAL
8 8011.13	13.79	27.72	41.50	54.00	12.50	HORIZONTAL
9 9149.72	23.22	28.02	51.24	74.00	22.76	VERTICAL
10 9149.72	14.12	28.02	42.14	54.00	11.86	VERTICAL
11 10290.32	22.00	30.39	52.38	74.00	21.62	HORIZONTAL
12 10290.32	13.64	30.39	44.02	54.00	9.98	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
 Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 802.11 g(LOW) mode

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 Yongin-si, Gyeonggi-do, Korea Autho.by NVLAP
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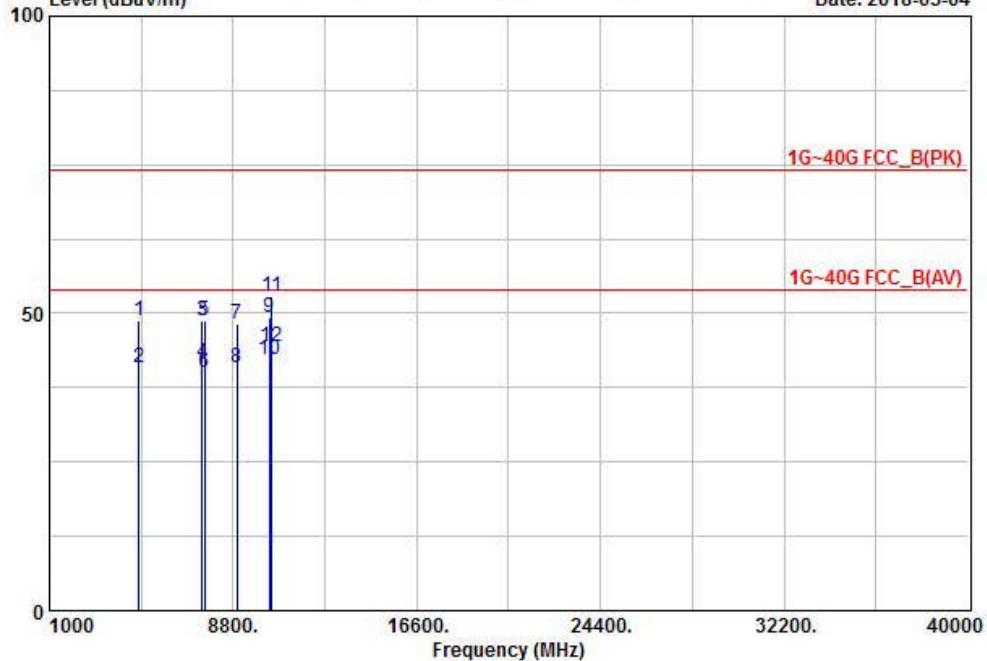
EUT/Model No. : VFWL-2100

Test Mode: 802.11 g(low)

Tested by : CHOI J M

Temp/Humi: 22 / 62

Data: 15 File: D:\LTA_e3\3_backup\1GHz 이상\2018\CH1_ABOVE 1GHz_1803-1.EMI (20) Date: 2018-05-04
 Level (dBuV/m)



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 4815.19	31.01	17.81	48.82	74.00	25.18	HORIZONTAL
2 4815.19	23.02	17.81	40.83	54.00	13.17	HORIZONTAL
3 7480.64	17.24	31.58	48.82	74.00	25.18	HORIZONTAL
4 7480.64	10.12	31.58	41.70	54.00	12.30	HORIZONTAL
5 7591.86	17.91	30.92	48.84	74.00	25.16	VERTICAL
6 7591.86	9.03	30.92	39.96	54.00	14.04	VERTICAL
7 8951.42	20.33	27.99	48.32	74.00	25.68	HORIZONTAL
8 8951.42	12.92	27.99	40.91	54.00	13.09	HORIZONTAL
9 10343.46	18.92	30.54	49.46	74.00	24.55	VERTICAL
10 10343.46	11.81	30.54	42.35	54.00	11.66	VERTICAL
11 10423.51	21.88	30.89	52.76	74.00	21.24	VERTICAL
12 10423.51	13.45	30.89	44.33	54.00	9.67	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
 Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 802.11 g(MID) mode

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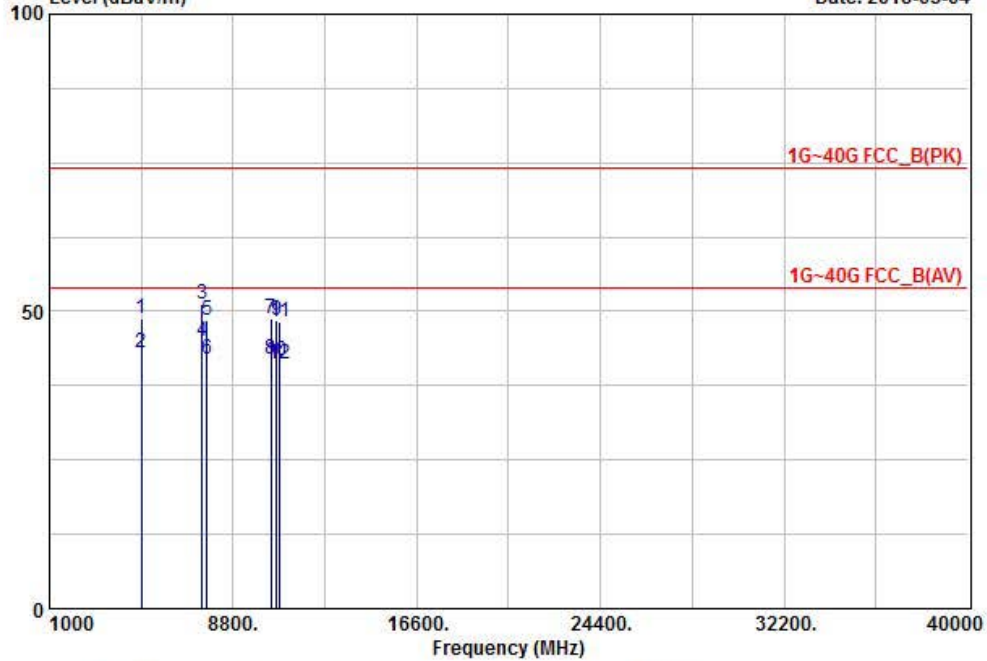
EUT/Model No. : VFWL-2100

Test Mode: 802.11 g(mid)

Tested by : CHOI J M

Temp/Humi: 22 / 62

Data: 16 File: D:\LTA_e3\3_backup\1GHz 이상\2018\CH1_ABOVE 1GHz_1803-1.EMI (20) Date: 2018-05-04
Level (dBuV/m)



	Freq	Reading	C.F	Result	Limit	Margin	Polarity
	MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1	4890.91	30.59	18.06	48.64	74.00	25.36	HORIZONTAL
2	4890.91	25.02	18.06	43.07	54.00	10.93	HORIZONTAL
3	7491.27	19.65	31.69	51.34	74.00	22.66	VERTICAL
4	7491.27	13.14	31.69	44.83	54.00	9.17	VERTICAL
5	7693.42	18.51	30.06	48.57	74.00	25.43	HORIZONTAL
6	7693.42	11.77	30.06	41.83	54.00	12.17	HORIZONTAL
7	10402.07	17.94	30.79	48.73	74.00	25.27	VERTICAL
8	10402.07	11.08	30.79	41.87	54.00	12.13	VERTICAL
9	10643.38	16.79	31.79	48.58	74.00	25.42	HORIZONTAL
10	10643.38	9.88	31.79	41.67	54.00	12.33	HORIZONTAL
11	10798.43	15.92	32.18	48.10	74.00	25.90	HORIZONTAL
12	10798.43	8.99	32.18	41.17	54.00	12.83	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 802.11 g(HIGH) mode

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 Fax:+82-31-3236010

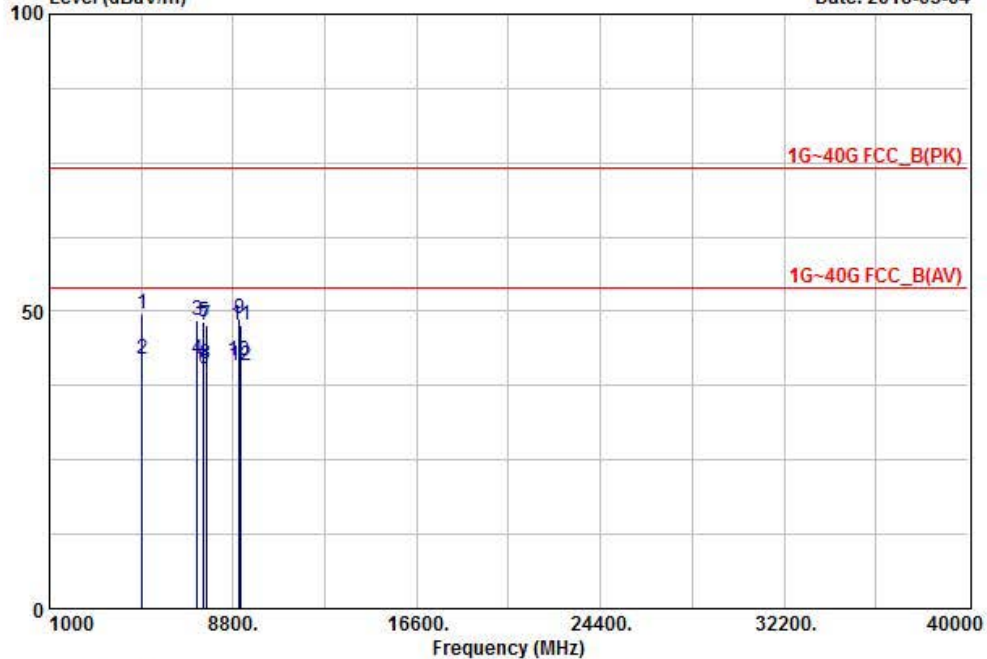
EUT/Model No. : VFWL-2100

Test Mode: 802.11 g (high)

Tested by : CHOI J M

Temp/Humi: 22 / 62

Data: 17 File: D:\LTA_e3\3_backup\1GHz 이상\2018\CH1_ABOVE 1GHz_1803-1.EMI (20)
 Level (dBuV/m) Date: 2018-05-04



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 4951.37	31.56	18.00	49.56	74.00	24.44	HORIZONTAL
2 4951.37	23.93	18.00	41.93	54.00	12.07	HORIZONTAL
3 7279.01	19.36	29.17	48.53	74.00	25.47	VERTICAL
4 7279.01	12.80	29.17	41.97	54.00	12.03	VERTICAL
5 7546.64	17.00	31.34	48.34	74.00	25.66	VERTICAL
6 7546.64	9.10	31.34	40.44	54.00	13.56	VERTICAL
7 7666.16	17.56	30.26	47.82	74.00	26.18	HORIZONTAL
8 7666.16	10.81	30.26	41.07	54.00	12.93	HORIZONTAL
9 9051.37	20.94	27.93	48.87	74.00	25.13	HORIZONTAL
10 9051.37	13.73	27.93	41.66	54.00	12.34	HORIZONTAL
11 9120.54	19.74	28.05	47.79	74.00	26.21	HORIZONTAL
12 9120.54	12.89	28.05	40.94	54.00	13.06	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
 Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 802.11 n(LOW) mode

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 Yongin-si, Gyeonggi-do, Korea Autho.by NVLAP
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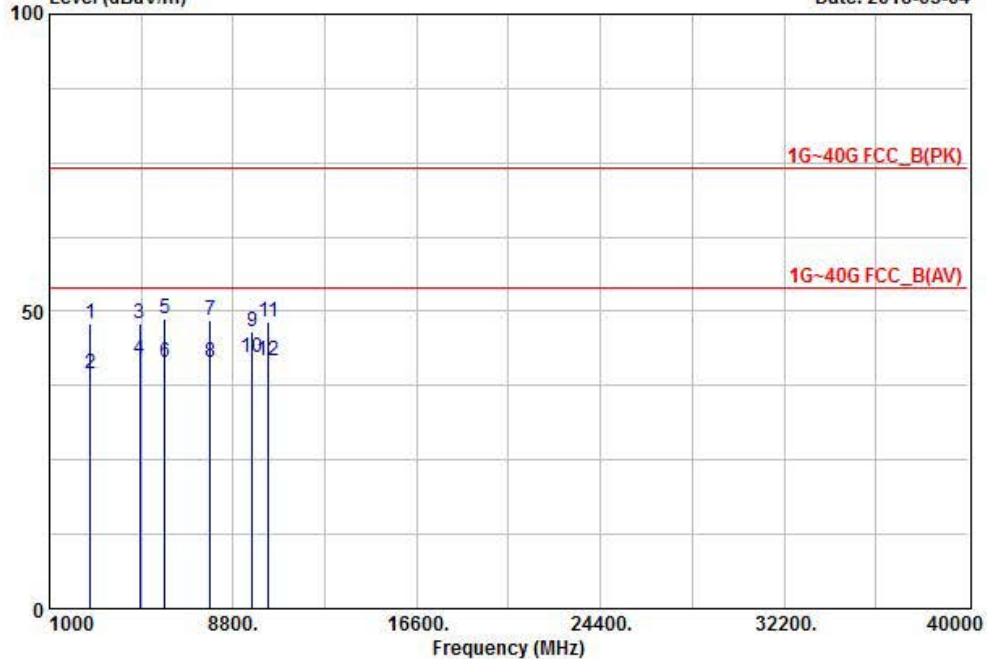
EUT/Model No. : VFWL-2100

Test Mode: 802.11 n(low)

Tested by : CHOI J M

Temp/Humi: 22 / 62

Data: 18 File: D:\LTA_e3\3_backup\1GHz 이상\2018\CH1_ABOVE 1GHz_1803-1.EMI (20) Date: 2018-05-04
 Level (dBuV/m)



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 2723.26	42.52	5.43	47.96	74.00	26.04	VERTICAL
2 2723.26	34.01	5.43	39.45	54.00	14.55	VERTICAL
3 4821.82	30.13	17.84	47.97	74.00	26.03	HORIZONTAL
4 4821.82	23.99	17.84	41.83	54.00	12.17	HORIZONTAL
5 5914.61	27.41	21.31	48.72	74.00	25.28	HORIZONTAL
6 5914.61	20.11	21.31	41.42	54.00	12.58	HORIZONTAL
7 7832.63	19.30	29.07	48.37	74.00	25.63	VERTICAL
8 7832.63	12.31	29.07	41.38	54.00	12.62	VERTICAL
9 9625.32	17.34	29.17	46.51	74.00	27.49	VERTICAL
10 9625.32	13.19	29.17	42.36	54.00	11.64	VERTICAL
1110299.65	17.82	30.43	48.24	74.00	25.76	HORIZONTAL
1210299.65	11.21	30.43	41.63	54.00	12.37	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
 Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 802.11 n(MID) mode

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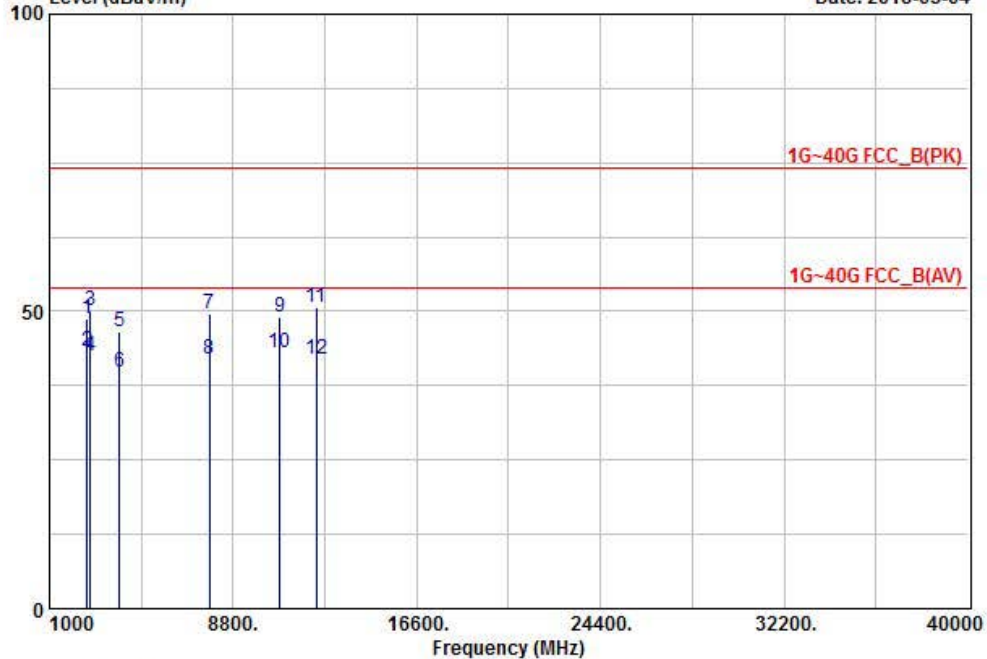
EUT/Model No. : VFWL-2100

Test Mode: 802.11 n(mid)

Tested by : CHOI J M

Temp/Humi: 22 / 62

Data: 19 File: D:\LTA_e3\3_backup\1GHz 이상\2018\CH1_ABOVE 1GHz_1803-1.EMI (20)
Level (dBuV/m) Date: 2018-05-04



	Freq	Reading	C.F	Result	Limit	Margin	Polarity
	MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1	2590.36	43.99	4.71	48.69	74.00	25.31	VERTICAL
2	2590.36	38.55	4.71	43.25	54.00	10.75	VERTICAL
3	2723.12	44.74	5.43	50.17	74.00	23.83	VERTICAL
4	2723.12	36.98	5.43	42.41	54.00	11.59	VERTICAL
5	3963.52	32.11	14.53	46.64	74.00	27.36	HORIZONTAL
6	3963.52	25.22	14.53	39.75	54.00	14.25	HORIZONTAL
7	7797.72	20.18	29.39	49.57	74.00	24.43	VERTICAL
8	7797.72	12.56	29.39	41.95	54.00	12.05	VERTICAL
9	10801.45	16.88	32.18	49.07	74.00	24.93	HORIZONTAL
10	10801.45	10.95	32.18	43.13	54.00	10.87	HORIZONTAL
11	12323.21	10.67	39.96	50.63	74.00	23.37	VERTICAL
12	12323.21	2.10	39.96	42.06	54.00	11.94	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamplifier gain
Blue : Vertical Black : Horizontal

Radiated Emissions (Above 1 GHz) – 802.11 n(HIGH) mode

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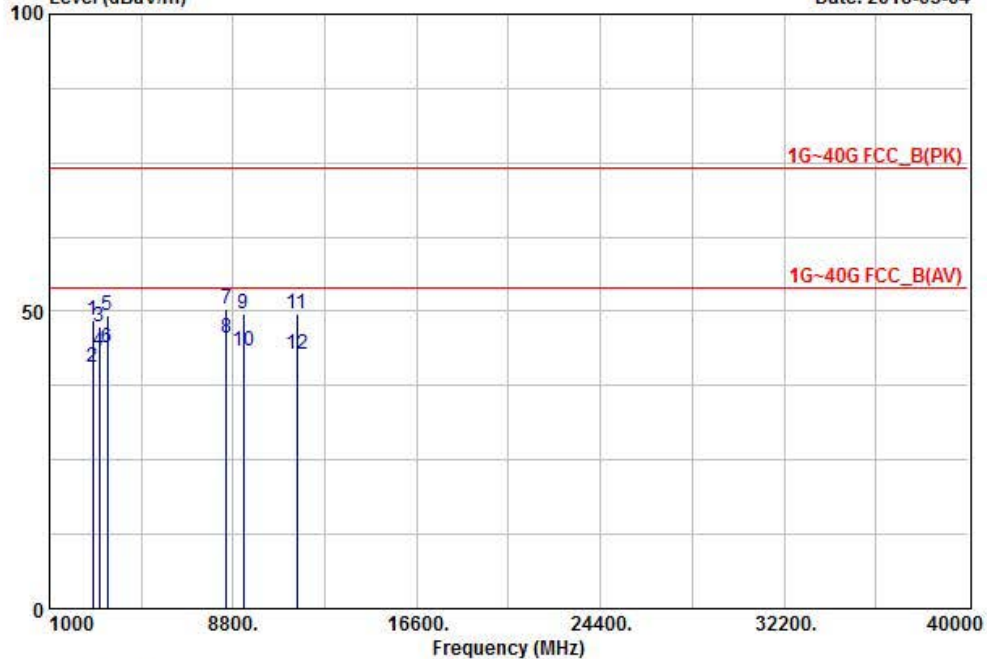
EUT/Model No. : VFWL-2100

Test Mode: 802.11 n(high)

Tested by : CHOI J M

Temp/Humi: 22 / 62

Data: 20 File: D:\LTA_e3\3_backup\1GHz 이상\2018\CH1_ABOVE 1GHz_1803-1.EMI (20) Date: 2018-05-04
Level (dBuV/m)



Freq	Reading	C.F	Result	Limit	Margin	Polarity
MHz	dBuV	dB	PK dBuV/m	dBuV/m	dB	
1 2851.63	42.39	6.12	48.52	74.00	25.48	HORIZONTAL
2 2851.63	34.42	6.12	40.55	54.00	13.45	HORIZONTAL
3 3131.76	38.21	9.26	47.46	74.00	26.54	HORIZONTAL
4 3131.76	34.00	9.26	43.26	54.00	10.75	HORIZONTAL
5 3451.58	38.23	11.18	49.41	74.00	24.59	HORIZONTAL
6 3451.58	32.71	11.18	43.89	54.00	10.11	HORIZONTAL
7 8525.37	21.90	28.59	50.49	74.00	23.51	VERTICAL
8 8525.37	16.99	28.59	45.58	54.00	8.42	VERTICAL
9 9229.28	21.33	28.35	49.68	74.00	24.32	HORIZONTAL
10 9229.28	15.05	28.35	43.40	54.00	10.60	HORIZONTAL
11 11503.26	15.61	33.89	49.50	74.00	24.50	VERTICAL
12 11503.26	8.77	33.89	42.66	54.00	11.34	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
Blue : Vertical Black : Horizontal

3.2.6 AC Conducted Emissions

Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: N/A

APPENDIX

TEST EQUIPMENT USED FOR TESTS

	Use	Description	Model No.	Serial No.	Manufacturer	Interval	Last Cal. Date
1	■	Signal Analyzer (9 kHz ~ 30 GHz)	FSV30	100757	R&S	1 year	2017-09-07
2		SYNTHESIZED CW GENERATOR	83711B	US34490456	HP	1 year	2018-03-19
3		Attenuator (3 dB)	8491A	37822	HP	1 year	2017-09-07
4		Attenuator (10 dB)	8491A	63196	HP	1 year	2017-09-07
5	■	EMI Test Receiver (~7 GHz)	ESCI7	100722	R&S	1 year	2017-09-07
6	■	RF Amplifier (~1.3 GHz)	8447D OPT 010	2944A07684	HP	1 year	2017-09-07
7	■	RF Amplifier (1~26.5 GHz)	8449B	3008A02126	HP	1 year	2018-03-21
8	■	Horn Antenna (1~18 GHz)	3115	00114105	ETS	2 year	2018-08-04
9		DRG Horn (Small)	3116B	81109	ETS-Lindgren	2 year	2018-05-03
10	■	DRG Horn (Small)	3116B	133350	ETS-Lindgren	2 year	2018-05-03
11	■	TRILOG Antenna	VULB 9160	9160-3237	SCHWARZBECK	2 year	2017-04-17
12		Temp.Humidity Data Logger	SK-L200TH II A	00801	SATO	1 year	2017-11-23
13		DC Power Supply	6674A	3637A01657	Agilent	-	-
14	■	Power Meter	EPM-441A	GB32481702	HP	1 year	2018-03-20
15	■	Power Sensor	8481A	3318A94972	HP	1 year	2017-12-30
16		Audio Analyzer	8903B	3729A18901	HP	1 year	2017-09-07
17		Modulation Analyzer	8901B	3749A05878	HP	1 year	2017-09-07
18		TEMP & HUMIDITY Chamber	YJ-500	LTAS06041	JinYoung Tech	1 year	2017-09-07
19		Stop Watch	HS-3	812Q08R	CASIO	2 year	2018-03-21
20		LISN	KNW-407	8-1430-1	Kyoritsu	1 year	2017-09-07
21		Two-Lime V-Network	ESH3-Z5	893045/017	R&S	1 year	2018-03-20
22		Highpass Filter	WHKX1.5/15G-10SS	74	Wainwright Instruments	1 year	2018-03-20
23		Highpass Filter	WHKX3.0/18G-10SS	118	Wainwright Instruments	1 year	2018-03-20
24		OSP120 BASE UNIT	OSP120	101230	R&S	1 year	2018-03-21
25	■	Signal Generator(100 kHz ~ 40 GHz)	SMB100A	177621	R&S	1 year	2018-03-20
26		Vector Signal Generator(9kHz ~ 6 GHz)	SMBV100A	255081	R&S	1 year	2018-03-20
27		Signal Analyzer (10 Hz ~ 40 GHz)	FSV40	101367	R&S	1 year	2018-03-21