



TEST REPORT

FCC/IC UNII Test for LGSBWAC94 Class II Permissive Change

APPLICANT
LG Electronics Inc.

REPORT NO. HCT-RF-1908-FI039

DATE OF ISSUE August 29, 2019





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Other Model BEJLGSBWAC94/ 2703H-LGSBWAC94

Applicant	LG Electronics Inc. 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea
Eut Type Model Name	RF Module LGSBWAC94
FCC ID	BEJLGSBWAC94 2703H-LGSBWAC94
Modulation type	OFDM
FCC Classification	Unlicensed National Information Infrastructure(UNII)
FCC Rule Part(s)	Part 15.407
IC Rule Part(s)	RSS-247 Issue 2 (February 2017), RSS-Gen Issue 5(April 2018)

This test results were applied only to the test methods required by the standard.

Tested by Se Wook Park

Technical Manager Jong Seok Lee

HCT CO., LTD.

Accredited by KOLAS Penublic of VODE



REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	August 29, 2019	Initial Release

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

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. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC / IC Rules under normal use and maintenance.

This laboratory is not accredited for the test results marked *.

The above Test Report is the accredited test result by KOLAS(Korea Laboratory Accreditation Scheme) / A2LA(American Association for Laboratory Accreditation), which signed the ILAC-MRA.

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	LGSBWAC94			
Additional Model	_			
EUT Type	RF Module			
Power Supply	DC 3.30 V			
Modulation Type	OFDM: 802.11	.a, 802.11n, 802.11ac		
		20MHz BW : 5180 - 5240		
	U-NII-1	40MHz BW: 5190 - 5230		
		80MHz BW: 5210		
		20MHz BW: 5260 - 5320		
	U-NII-2A	40MHz BW: 5270 - 5310		
Frequency Range		80MHz BW: 5290		
(MHz)		20MHz BW: 5500 - 5720		
	U-NII-2C	40MHz BW: 5510 - 5710		
		80MHz BW : 5530 – 5690		
		20MHz BW: 5745 - 5825		
	U-NII-3	40MHz BW : 5755 - 5795		
		80MHz BW : 5775		
Antenna type	Metal press Ar	nt		
Antenna Peak Gain	Ant.1: 1.47 dB	i(UNII 1), 1.49 dBi(UNII 2A)/ 1.43 dBi(UNII 2C)/ 1.48 dBi(UNII 3)		
Antenna Feak Gam	Ant.2: 1.48 dB	i(UNII 1), 1.78 dBi(UNII 2A)/ 1.47 dBi(UNII 2C)/ 1.47 dBi(UNII 3)		
Straddle channel	Supported			
TDWR Band	Not Supporte			
Dynamic Frequency Selection	Slave without	radar detection		
Date(s) of Tests	August 27, 202	19 ~ August 29, 2019		
PMN	LGSBWAC94			
(Product Marketing Number)	LG3DWAC34			
HVIN				
(Hardware Version Identification	ETWCFLBC01			
Number)				
FVIN				
(Firmware Version Identification	MT7668_V1.0			
Number)				
HMN	N/A			
(Host Marketing Name)	,,,			

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ANTENNA CONFIGURATIONS

1. The device employs MIMO technology. Below are the possible configurations

Configurations	SIS	SO SO	SDM	CDD
Configurations	Ant1	Ant2	Ant1 + Ant2	Ant1 + Ant2
802.11a	0	0	X	0
802.11n(HT20)	0	0	0	0
802.11n(HT40)	0	0	0	0
802.11ac(VHT20)	0	0	0	0
802.11ac(VHT40)	0	0	0	0
802.11ac(VHT80)	0	0	0	0

Note:

- 1. O = Support, X = Not Support
- 2. SISO = Single Input Single Output
- 3. SDM = Spatial Diversity Multiplexing
- 4. CDD = Cyclic Delay Diversity

2. Directional Gain Calculation

According to KDB 662911 D01 Multiple Transmitter Output v02r01 $\,$

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ dBi

Band	Ant Gain (dBi)		Directional Gain = 10*log[(10 ^{G1/20} + 10 ^{G2/20} ++10 ^{GN/20}) ² /N] dBi
UNII 1	Ant1(Aux)	1.47	4.49
ONII 1	Ant2(Main)	1.48	7.73
UNII 2A	Ant1(Aux)	1.49	4.65
UNII ZA	Ant2(Main)	1.78	4.03
UNII 2C	Ant1(Aux)	1.43	4.46
UNII 2C	Ant2(Main)	1.47	4.40
118111.2	Ant1(Aux)	1.48	4.49
UNII 3	Ant2(Main)	1.47	4.49

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2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted average output power as follows:

			SISO				MIMO	
Band	Mode	Ant1 I	Power	Ant2 l	Power		+ Ant 2 wer	
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)	
	802.11a	13.63	0.023	12.60	0.018	16.16	0.041	
	802.11n (HT20)	13.80	0.024	12.43	0.018	16.18	0.041	
UNII1	802.11n (HT40)	14.78	0.030	13.61	0.023	17.25	0.053	
UNIII	802.11ac (VHT20)	13.62	0.023	12.34	0.017	16.04	0.040	
	802.11ac (VHT40)	15.44	0.035	14.52	0.028	18.02	0.063	
	802.11ac (VHT80)	15.06	0.032	13.69	0.023	17.44	0.055	
	802.11a	15.33	0.034	14.53	0.028	17.96	0.062	
	802.11n (HT20)	15.86	0.039	14.67	0.029	18.32	0.068	
UNII2A -	802.11n (HT40)	14.42	0.028	13.71	0.024	17.09	0.051	
	802.11ac (VHT20)	15.65	0.037	14.90	0.031	18.30	0.068	
	802.11ac (VHT40)	14.46	0.028	13.40	0.022	16.97	0.050	
	802.11ac (VHT80)	10.64	0.012	9.75	0.009	13.23	0.021	
	802.11a	14.51	0.028	13.60	0.023	17.09	0.051	
	802.11n (HT20)	15.18	0.033	15.10	0.032	18.15	0.065	
LINUIG	802.11n (HT40)	14.71	0.030	14.28	0.027	17.51	0.056	
UNII2C	802.11ac (VHT20)	15.31	0.034	14.57	0.029	17.97	0.063	
	802.11ac (VHT40)	15.68	0.037	14.08	0.026	17.96	0.063	
	802.11ac (VHT80)	15.57	0.036	15.45	0.035	18.52	0.071	
	802.11a	15.77	0.038	15.28	0.034	18.54	0.071	
	802.11n (HT20)	15.81	0.038	15.42	0.035	18.63	0.073	
LIMILO	802.11n (HT40)	17.38	0.055	17.25	0.053	20.33	0.108	
UNII3	802.11ac (VHT20)	15.86	0.039	15.45	0.035	18.67	0.074	
	802.11ac (VHT40)	17.55	0.057	17.21	0.053	20.40	0.110	
	802.11ac (VHT80)	17.19	0.052	16.68	0.047	19.95	0.099	

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3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 dated December 14, 2017 entitled "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part15, Subpart E" and ANSI C63.10(Version: 2013) 'the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices' were used in the measurement.

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.

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 15.407 under the FCC Rules Part 15 Subpart E. / RSS-Gen issue 5, RSS-247 issue 2.

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 3.75 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 6.6.5 of ANSI C63.10. (Version: 2013)

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.

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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 equipment's, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

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, 17383, Rep. of 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 April 02, 2018 (Registration Number: KR0032).

For ISED, test facility was accepted dated February 14, 2019 (CAB identifier: KR0032).

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, § 15.407:

"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."

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^{*} The antennas of this E.U.T are permanently attached.

7. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

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 (±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)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05

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^{*} The E.U.T Complies with the requirement of § 15.203, § 15.407 / RSS-Gen



8. DESCRIPTION OF TESTS

8.1. Radiated Test

Limit

- 1. UNII 1: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- 2. UNII 2A, 2C: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of $-27~\mathrm{dBm/MHz}$.
- 3. UNII 3: All emissions shall be limited to a level of $-27 \, \text{dBm/MHz}$ at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- 4. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Section 15.209.

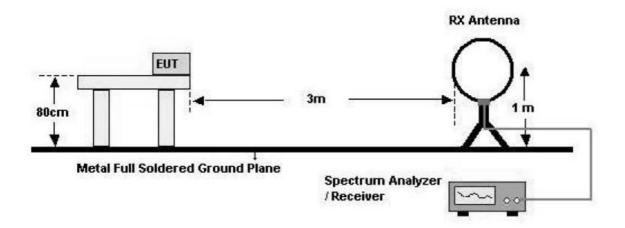
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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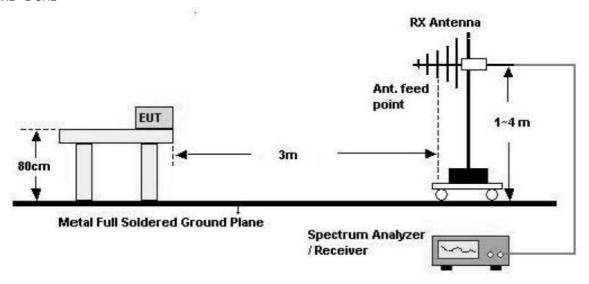


Test Configuration

Below 30 MHz



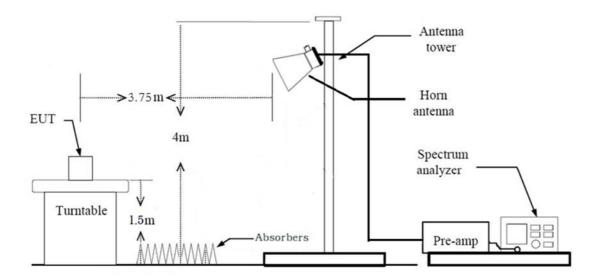
30 MHz - 1 GHz



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Above 1 GHz



Test Procedure of Radiated spurious emissions(Below 30 MHz)

- 1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
- 2. The loop antenna was placed at a location 3m from the EUT
- 3. The EUT is placed on a turntable, which is 0.8m above ground plane.
- 4. .We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
- 5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 6. Distance Correction Factor(0.009 MHz 0.490 MHz) = 40*log(3 m/300 m) = -80 dB

Measurement Distance: 3 m

7. Distance Correction Factor(0.490 MHz – 30 MHz) = 40*log(3 m/30 m) = -40 dB

Measurement Distance: 3 m

- 8. Spectrum Setting
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Maxhold
 - RBW = 9 kHz
 - VBW ≥ 3*RBW
- 9. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

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KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Test Procedure of Radiated spurious emissions(Below 1GHz)

- 1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
- 2. The EUT is placed on a turntable, which is 0.8m above ground plane.
- 3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
- 4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 5. Spectrum Setting
 - (1) Measurement Type(Peak):
 - Measured Frequency Range: 30 MHz 1 GHz
 - Detector = Peak
 - Trace = Maxhold
 - RBW = 100 kHz
 - VBW ≥ 3*RBW
 - (2) Measurement Type(Quasi-peak):
 - Measured Frequency Range: 30 MHz 1 GHz
 - Detector = Quasi-Peak
 - RBW = 120 kHz
 - *In general, (1) is used mainly
- 6. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)

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Test Procedure of Radiated spurious emissions (Above 1 GHz)

- 1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
- 2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
- 3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3.75 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 5. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor (reference distance: 3 m).
 - *Distance extrapolation factor = 20*log (test distance / specific distance) (dB)
- 6. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 7. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 8. The unit was tested with its standard battery.
- 9. Spectrum Setting
 - (1) Measurement Type(Peak, G.5 in KDB 789033 v02r01):
 - RBW = 1 MHz
 - VBW ≥ 3 MHz
 - Detector = Peak
 - Sweep Time = auto

- Trace mode = max hold

- Allow sweeps to continue until the trace stabilizes.
- Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle.
- (2) Measurement Type(Average, G.6.d in KDB 789033 v02r01):
 - RBW = 1 MHz
 - VBW(Duty cycle \geq 98 percent) = VBW \leq RBW/100(i.e., 10 kHz) but not less than 10 Hz.
 - VBW(Duty cycle is < 98 percent) = VBW \geq 1/T, where T is the minimum transmission duration.
 - The analyzer is set to linear detector mode.
 - Detector = Peak.
 - Sweep time = auto.
 - Trace mode = max hold.
 - Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimym number of traces by a factor of 1/x, where x is the duty cycle.

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- 10. Measurement value 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
- 11. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency
- 12. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) Amp Gain(G) + Distance Factor(D.F)

Test Procedure of Radiated Restricted Band Edge

- 1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
- 2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
- 3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3.75 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 5. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor (reference distance: 3 m).
 - *Distance extrapolation factor = 20*log (test distance / specific distance) (dB)
- 6. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 7. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 8. The unit was tested with its standard battery.
- 9. Spectrum Setting
 - (1) Measurement Type(Peak, G.5 in KDB 789033 v02r01):
 - RBW = 1 MHz
 - VBW ≥ 3 MHz
 - Detector = Peak
 - Sweep Time = auto
 - Trace mode = max hold
 - Allow sweeps to continue until the trace stabilizes.

 Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle.
 - (2) Measurement Type(Average, G.6.d in KDB 789033 v02r01):
 - RBW = 1 MHz
 - VBW(Duty cycle ≥ 98 percent) = VBW ≤ RBW/100(i.e., 10 kHz) but not less than 10 Hz.
 - VBW(Duty cycle is < 98 percent) = VBW $\geq 1/T$, where T is the minimum transmission duration.
 - The analyzer is set to linear detector mode.
 - Detector = Peak.
 - Sweep time = auto.
 - Trace mode = max hold.
 - Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimym number of traces by a factor of 1/x, where x is the

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10. Measured Frequency Range:

- 4500MHz ~ 5150MHz
- 5350MHz ~ 5460MHz
- 5460MHz ~ 5470MHz
- (75 MHz or more below the 5725MHz) $\sim 5725MHz$
- 5850MHz ~ (75 MHz or more above the 5850MHz)
- 11. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) Amp Gain(G) + Distance Factor(D.F)

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8.2. Receiver Spurious Emissions

Limit

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

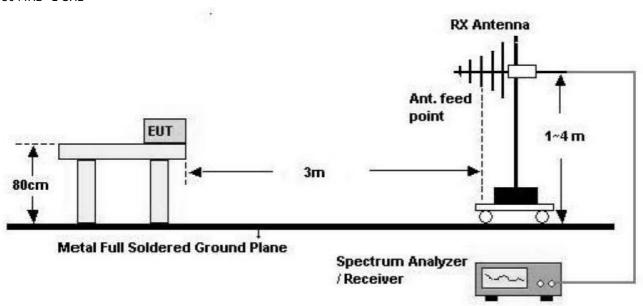
Measurements for compliance with the limits in table may be performed at distances other than 3 metres.

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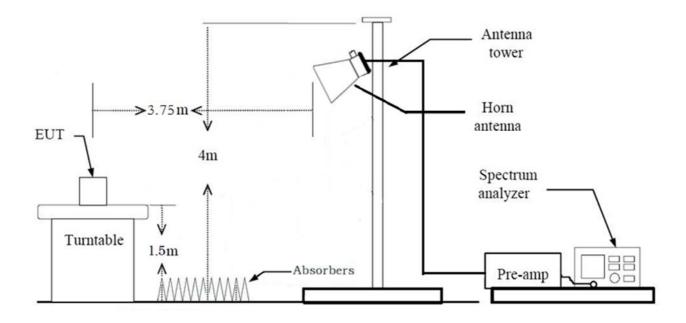


Test Configuration

30 MHz - 1 GHz



Above 1 GHz



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Test Procedure of Radiated spurious emissions (Above 1 GHz)

- 1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
- 2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
- 3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3.75 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 5. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor (reference distance: 3 m).
 - *Distance extrapolation factor = 20*log (test distance / specific distance) (dB)
- 6. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 7. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 8. The unit was tested with its standard battery.
- 9. Spectrum Setting
 - (1) Measurement Type(Peak):
 - Measured Frequency Range: 1 GHz 25 GHz
 - Detector = Peak
 - Trace = Maxhold
 - RBW = 1 MHz
 - VBW ≥ 3*RBW
 - (2) Measurement Type(Average):
 - We performed using a reduced video BW method was done with the analyzer in linear mode
 - Measured Frequency Range: 1 GHz 25 GHz
 - Detector = Peak
 - Trace = Maxhold
 - RBW = 1 MHz
 - VBW $\geq 1/\tau$ Hz, where τ = pulse width in seconds

The actual setting value of VBW = 1 kHz

- 10. Measurement value 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.
- 11. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) Amp Gain(G) + Distance Factor(D.F)

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8.3. Worst case configuration and mode

Radiated test

- 1. All modes of operation were investigated and the worst case configuration results are reported.
- 2. All configurations of antenna were investigated and the worst case configuration results are reported.
 - Mode: Ant1(SISO), Ant2(SISO), Ant1+Ant2(CDD,SDM)
 - Worstcase: Ant1+Ant2(CDD)
- 3. EUT Axis
 - Radiated Spurious Emissions : Z
 - Radiated Restricted Band Edge: Z
- 4. All datarate of operation were investigated and the worst case datarate results are reported
 - 802.11a: 6Mbps - 802.11n: MCS0 - 802.11ac: MCS0
- 5. All position of loop antenna were investigated and the test result is a no critical peak found at all positions.
 - Position: Horizontal, Vertical, Parallel to the ground plane

AC Power line Conducted Emissions

- 1. All modes of operation were investigated and the worst case configuration results are reported.
 - Mode: Stand alone + Notebook

Conducted test

- 1. All datarate of operation were investigated and the worst case datarate results are reported.
- 2. SISO & MIMO were tested and the all case results are reported.
 - Mode: Ant1(SISO), Ant2(SISO), Ant1+Ant2(CDD)

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9. SUMMARY OF TEST RESULTS

FCC

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result	Status
6 dB Bandwidth	§ 15.247(a)(2)	> 500 kHz	Conducted	PASS	NT ^{Note2}
Conducted Maximum Output Power	§ 15.247(b)(3)	< 1 Watt		PASS	C ^{Note4}
Power Spectral Density	§ 15.247(e)	< 8 dBm / 3 kHz Band		PASS	NT ^{Note2}
Band Edge (Out of Band Emissions)	§ 15.247(d)	Conducted > 30 dBc		PASS	NT ^{Note2}
AC Power line Conducted Emissions	§ 15.207	cf. Section 7.7		PASS	NT ^{Note2}
Radiated Spurious Emissions	§ 15.247(d), 15.205, 15.209	cf. Section 7.6	- Radiated	PASS	C _{Note3}
Radiated Restricted Band Edge	§ 15.247(d), 15.205, 15.209	cf. Section 7.6		PASS	CNote3

Note:

- 1. C = Comply, NT = Not Tested, NA = Not Applicable, NC = Not Comply
- 2. C2PC model is electrically identical to the Original model.
 - The Product Equality Declaration includes detailed information about the changes between the devices.
- 3. The data from that application has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the test result of section 9
- 4. Output power was verified to be within the expected tune up tolerances prior to performing the spot checks for radiated spurious emissions and band edge to confirm that the proposed changes to the digital circuitry had not adversely affected the previously reported values in the original filing.

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IC:

Test Description	IC Part Section(s)	Test Limit	Test Condition	Test Result
99% Bandwidth	RSS-GEN, 6.7	N/A		NT ^{Note2}
6 dB Bandwidth	RSS-247, 6.2.4.1	> 500 kHz		NTNote2
Maximum Conducted Output Power,	RSS-247, 6.2	(5725~5850 MHz) < 250 mW or 11+10 log 10 (BW) dBm (5470-5600, 5650-5725 MHz) Whichever power is less		C ^{Note4}
	RSS-247, 6.2.4 1	<1 W (5725-5850 MHz)		
Maximum e.i.r.p	RSS-247, 6.2	< 30 mW or 1.76+10 log 10 (BW) dBm (5150-5250 MHz) < 30 mW or 1.76+10 log 10 (BW) dBm (5250-5350 MHz) < 1 W or 17+10 log 10 (BW) dBm (5470-5725 MHz) Whichever power is less	CONDUCTED	NT ^{Note2}
Power Spectral Density	RSS-247 6.2	<10 dBm/ MHz(e.i.r.p.) (5150-5250 MHz) <11 dBm/MHz(Conducted) (5250-5350 MHz, 5470-5600 MHz, 5650-5725 MHz)		NT ^{Note2}
	RSS-247, 6.2.4 1	<30 dBm/500 kHz(Conducted) (5725-5850 MHz)		
Frequency Stability	RSS-GEN 8.11	should be kept within at least the central 80% of its permitted operating frequency band in order to minimize the possibility of out-of-band operation.		NT ^{Note2}
AC Conducted Emissions 150 kHz-30 MHz	RSS-GEN, 8.8	RSS-GEN section 8.8 table 4		NT ^{Note2}
	RSS-247, 6.2.1 2	26 dBc at 5250~5350 MHz (5150~5350 MHz)		PASS
Undesirable Emissions	RSS-247, 6.2	<-27 dBm/ MHz EIRP (5150-5350 MHz, 5470-5725 MHz)		CNote3
o letter it	RSS-247, 6.2.4 2	cf. Section 9.8.1 (UNII 3)		
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	RSS-Gen, 8.9 RSS-Gen, 8.10	RSS-Gen section 8.9 table 5, 6 section 8.10 table 7	RADIATED	C _{Note3}
Receiver Spurious Emissions	RSS-GEN, 5 RSS-GEN, 7.3	RSS-GEN section 7.3 table 3		C ^{Note3}

Note:

- 1. C = Comply, NT = Not Tested, NA = Not Applicable, NC = Not Comply
- 2. C2PC model is electrically identical to the Original model.

The Product Equality Declaration includes detailed information about the changes between the devices.

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- 3. The data from that application has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the test result of section 9
- 4. Output power was verified to be within the expected tune up tolerances prior to performing the spot checks for radiated spurious emissions and band edge to confirm that the proposed changes to the digital circuitry had not adversely affected the previously reported values in the original filing.

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Test Item	Mod/ Channel	Measured Frequency (MHz)	Original Result [dBuV/m]		C2PC Result [dBuV/m]		Deviation (dB)	
			Average	Peak	Average	Peak	Average	Peak
Band Edge	802.11ac (HT20) / Ch.36	4500 MHz~5150 MHz	50.89	65.44	46.16	58.69	4.73	6.75
RSE	802.11ac (HT20) / Ch.36	10360 MHz	-	65.20	-	61.05	-	4.15

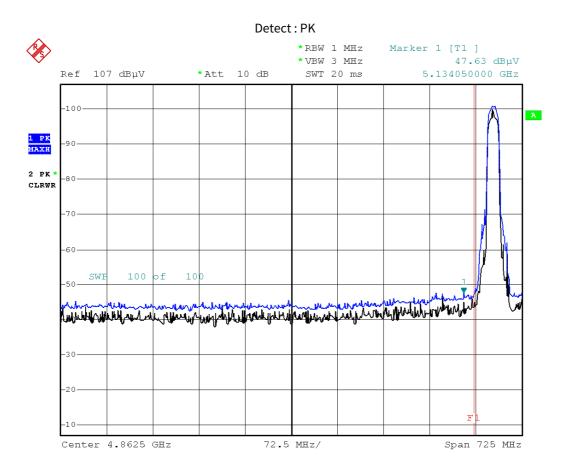
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11. TEST PLOT

Bandedge

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBuV]	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Туре
5150	47.63	11.06	Н	58.69	73.98	15.29	PK
5150	35.10	11.06	Н	46.16	53.98	7.82	AV

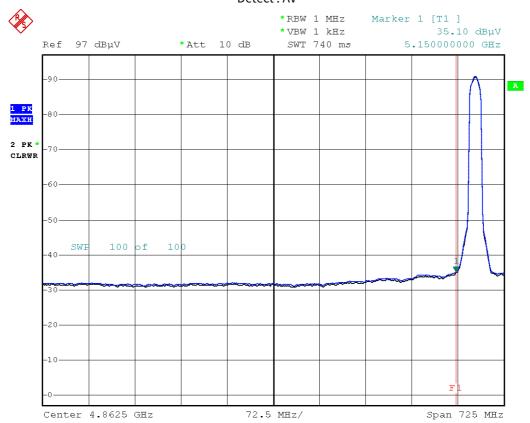


Date: 28.AUG.2019 08:53:38

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Detect: AV



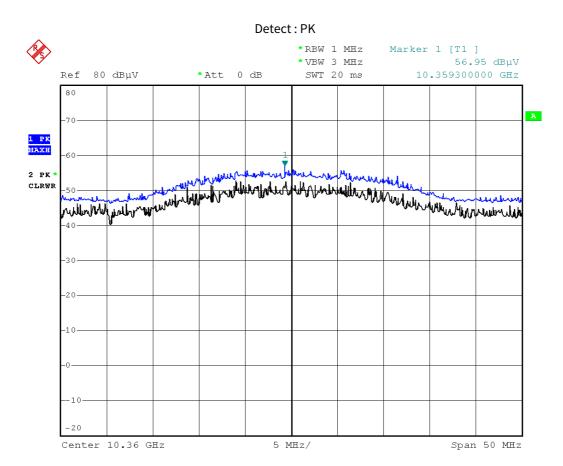
Date: 28.AUG.2019 08:51:20

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RSE

Frequency	Reading	AN.+CL-AMP G	Pol.	Total	Limit	Margin	Measurement
[MHz]	[dBuV]	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Туре
10360	56.95	4.10	Н	61.05	68.20	7.15	PK



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12. LIST OF TEST EQUIPMENT

Radiated Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Emco	2090 / Controller	N/A	N/A	060520
Ets	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	08/23/2018	Biennial	1513-175
Schwarzbeck	VULB 9160 / Hybrid Antenna	08/09/2018	Biennial	3368
Schwarzbeck	BBHA 9120D / Horn Antenna	11/21/2017	Biennial	9120D-1191
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	12/04/2017	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 30 GHz) / Spectrum Analyzer	09/19/2018	Annual	836650/016
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/19/2018	Annual	101068-SZ
Wainwright Instruments	WHKX10-2700-3000-18000-40SS / High Pass Filter	01/03/2019	Annual	4
Wainwright Instruments	WHKX8-6090-7000-18000-40SS / High Pass Filter	01/03/2019	Annual	5
Wainwright Instruments	WRCJV2400/2483.5-2370/2520- 60/12SS / Band Reject Filter	06/19/2019	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/03/2019	Annual	2
Api tech.	18B-03 / Attenuator (3 dB)	06/04/2019	Annual	1
WEINSCHEL	56-10 / Attenuator(10 dB)	10/10/2018	Annual	72316
CERNEX	CBLU1183540B-01/Broadband Bench Top LNA	01/03/2019	Annual	28549
CERNEX	CBL06185030 / Broadband Low Noise Amplifier	01/03/2019	Annual	24615
CERNEX	CBL18265035 / Power Amplifier	01/03/2019	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	06/18/2019	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/26/2019	Annual	3000C000276

Note:

- 1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
- 2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

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