

TEST REPORT

FCC/IC UNII Test for WL1NB6

Class II Permissive Change

APPLICANT

LG Electronics

REPORT NO.

HCT-RF-1910-FI005-R1

DATE OF ISSUE

November 25, 2019

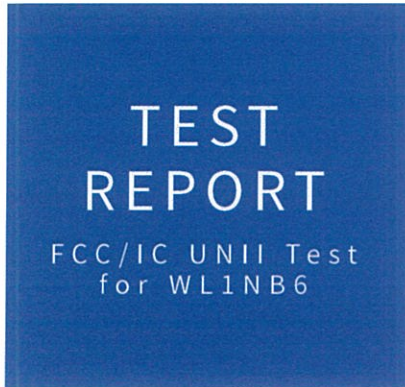
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Other Model
-

Applicant

LG Electronics
222, LG-ro Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Republic of Korea

Eut Type Model Name	Wireless Adapter Card WL1NB6
FCC ID IC	BEJ9QK-DMWL1NB6 2703H-DMWL1NB6
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
Jeong Ho Kim

(signature)

Technical Manager
Kwon Jeong

(signature)

HCT CO., LTD.
Soo Chan Lee
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REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	November 13, 2019	Initial Release
1	November 25, 2019	Page 27, Tested frequency update. Page 34, PSD limit corrected.

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.

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	WL1NB6
Additional Model	-
Application Type:	Class II Permissive Change
EUT Type	Wireless Adapter Card
Power Supply	DC 3.30 V
Modulation Type	GFSK
Frequency Range	5 730 MHz ~ 5 846 MHz
Antenna type	PCB Antenna
Antenna Peak Gain	1.30 dBi
Date(s) of Tests	October 02, 2019 ~ November 13, 2019
PMN (Product Marketing Number)	Wireless Adapter Card
HVIN (Hardware Version Identification Number)	WL1NB6
FVIN (Firmware Version Identification Number)	v1.1
HMN (Host Marketing Name)	N/A

2. 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.

3. 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).

4. FACILITIES AND ACCREDITATIONS

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

4.2 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."

5. 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.”

- (1) The antennas of this E.U.T are permanently attached.
- (2) The E.U.T Complies with the requirement of § 15.203, § 15.407 / RSS-Gen

6. 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.

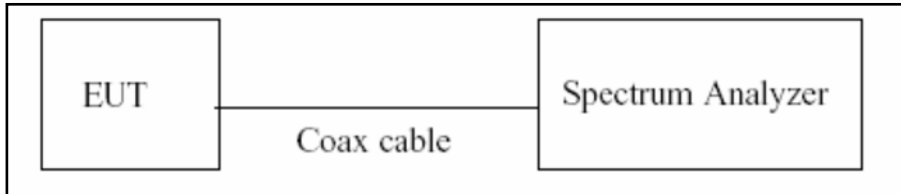
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty ($\pm$ 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)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05

7. DESCRIPTION OF TESTS

7.1. Duty Cycle

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure B.2 in KDB 789033 D02 v02r01.

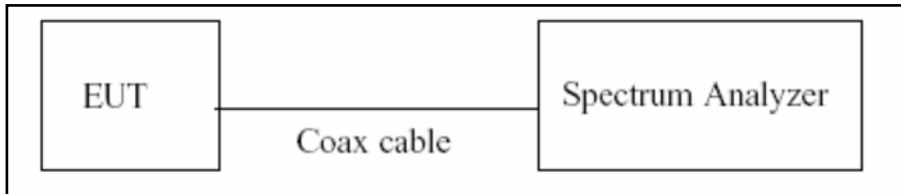
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ($\geq$ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = $T_{\text{on}} / T_{\text{total}}$ and Duty Cycle Factor = $10\log(1/\text{Duty Cycle})$

7.2. 6dB Bandwidth & 26dB Bandwidth & 99 % Bandwidth

Limit

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Configuration



Test Procedure(26dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure C.1 in KDB 789033 D02 v02r01.

1. RBW = approximately 1 % of the emission bandwidth
2. VBW > RBW
3. Detector = Peak
4. Trace mode = max hold
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.
Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

Test Procedure (6dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure C.2 in KDB 789033 D02 v02r01.

1. RBW = 100 kHz
2. $VBW \geq 3 \times RBW$
3. Detector = Peak
4. Trace mode = max hold
5. Allow the trace to stabilize
6. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points(upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note:

1. We tested X dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.
2. DFS test channels should be defined. So, We performed the OBW test to prove that no part of the fundamental emissions of any channels belong to UNII1 and UNII3 band for DFS.
3. The 26 dB bandwidth is used to determine the conducted power limits.

Test Procedure (99 % Bandwidth measurement)

The 99 % bandwidth is used to determine the conducted power limits(for IC).

The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dBbandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized. (6.9.3 in ANSI 63.10-2013)

RBW = 1% ~ 5% of the occupied bandwidth

VBW $\geq$ 3 x RBW

Detector = Peak

Trace mode = max hold

Sweep = auto couple

Allow the trace to stabilize

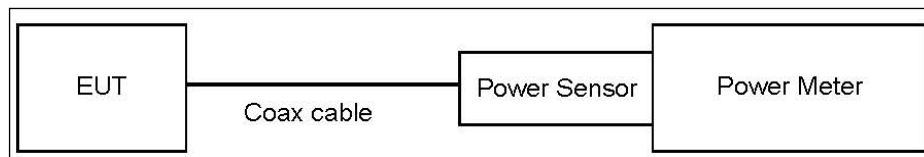
7.3. Output Power Measurement

Limit

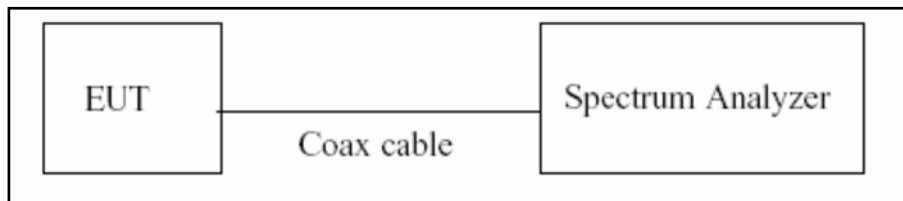
Band	Limit
UNII 3	Not exceed 1 W(=30dBm)

Test Configuration

Power Meter



Spectrum Analyzer(Only Straddle Channel)



Test Procedure(Power Meter)

We tested according to Procedure E.3.a in KDB 789033 D02 v02r01.

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Test Procedure(Spectrum Analyzer)

The transmitter output is connected to the Spectrum Analyzer.

We use the spectrum analyzer's integrated band power measurement function.

We tested according to Procedure E.2.d) in KDB 789033 D02 v02r01.

1. Measure the duty cycle.
2. Set span to encompass the 26 dB EBW of the signal.
3. RBW = 1 MHz.
4. VBW $\geq$ 3 MHz.
5. Number of points in sweep $\geq 2 \times \text{span/RBW}$.
6. Sweep time = auto.
7. Detector = RMS.
8. Do not use sweep triggering. Allow the sweep to "free run".
9. Trace average at least 100 traces in power averaging(RMS) mode
10. Integrated bandwidth = OBW
11. Add $10\log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Sample Calculation

Total Power(dBm) = Reading Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum reading values are not plot data.

The power results in plot is already including the actual values of loss for the attenuator and cable combination.

2. Spectrum offset = Attenuator loss(20 dB) + Cable loss

3. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 3	20.73

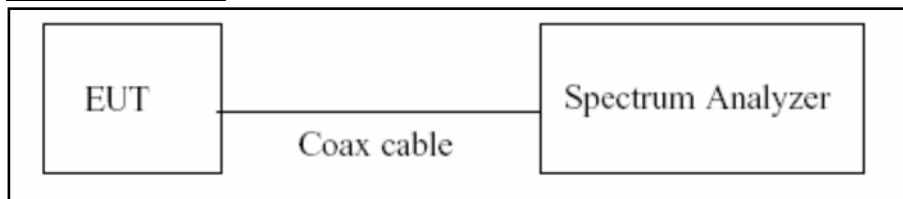
(Actual value of loss for the attenuator and cable combination)

7.4. Power Spectral Density

Limit

Band	Limit
UNII 3	30 dBm/500 kHz

Test Configuration



Test Procedure

We tested according to Procedure F in KDB 789033 D02 v02r01.

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz(510 kHz for UNII 3)
3. VBW $\geq$ 3 MHz
4. Number of points in sweep $\geq$ 2 x span/RBW.
5. Sweep time = auto.
6. Detector = RMS(i.e., power averaging), if available. Otherwise, use sample detector mode.
7. Do not use sweep triggering. Allow the sweep to “free run”.
8. Trace average at least 100 traces in power averaging(RMS) mode
9. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.
10. If Method SA-2 was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum.

Sample Calculation

Total PSD(dBm) = Reading Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum reading values are not plot data.

The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.

2. Spectrum offset = Attenuator loss(20 dB) + Cable loss

3. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 3	20.73

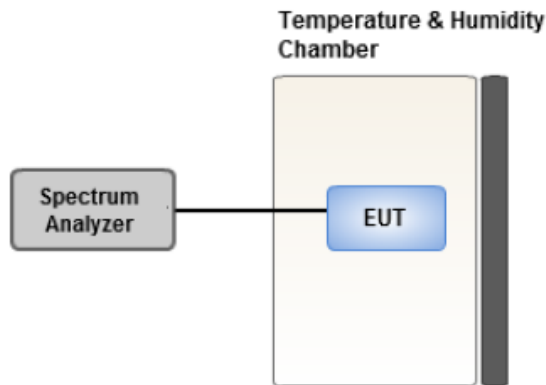
(Actual value of loss for the attenuator and cable combination)

7.5. Frequency Stability

Limit

Maintained within the band

Test Configuration



Test Procedure

1. The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between -30 °C and 50 °C.
2. The temperature was incremented by 10 °C intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.
3. The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.
4. While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

7.6. AC Power line Conducted Emissions

Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56 ^(a)	56 to 46 ^(a)
0.50 to 5	56	46
5 to 30	60	50

^(a)Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors : Quasi Peak and Average Detector.

Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

7.7. Radiated Test

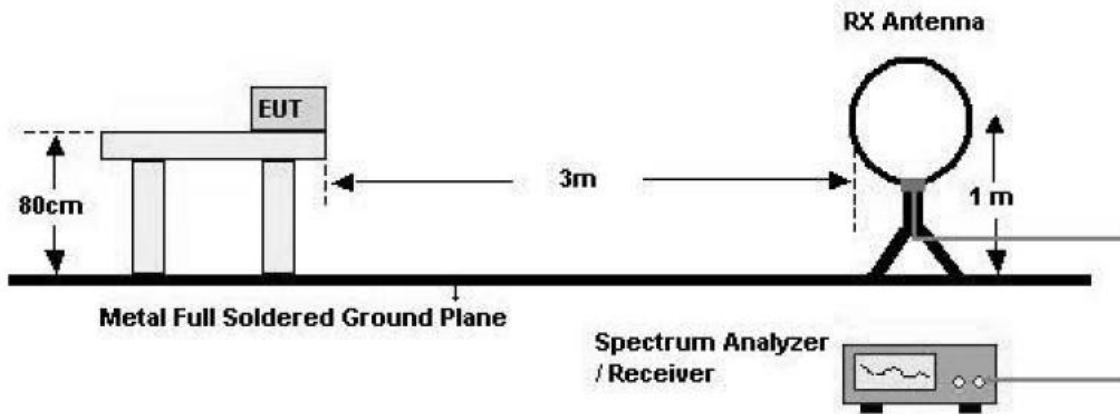
Limit

1. All emissions shall be limited to a level of -27 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.
2. 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.

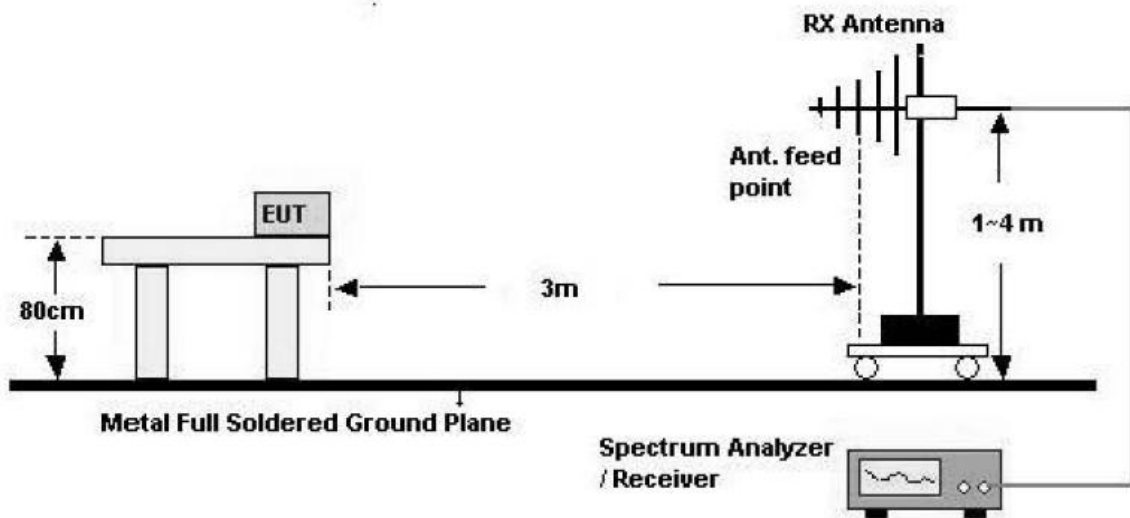
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

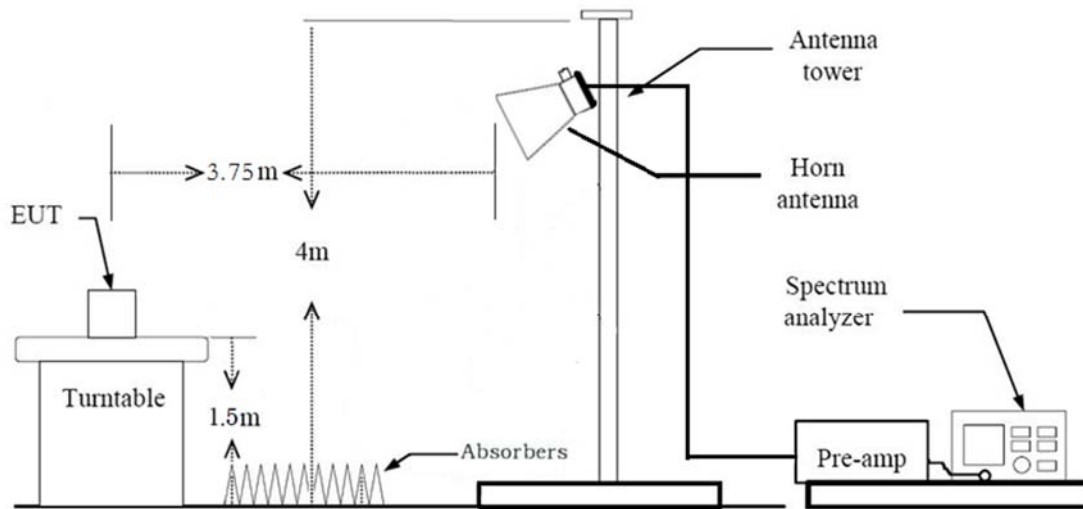
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure 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) = $40\log(3\text{ m}/300\text{ m}) = -80\text{ dB}$
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = $40\log(3\text{ m}/30\text{ m}) = -40\text{ dB}$
Measurement Distance : 3 m
8. Spectrum Setting
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Maxhold
 - RBW = 9 kHz
 - VBW $\geq 3 \times$ RBW
9. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
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.

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 $\geq 3 \times$ RBW
 - (2) Measurement Type(Quasi-peak):
 - Measured Frequency Range : 30 MHz – 1 GHz
 - Detector = Quasi-Peak
 - RBW = 120 kHzIn general, (1) is used mainly
6. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)
7. 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.

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 = $20\log(\text{test distance} / \text{specific distance})$ (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 $\geq$ 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) = $\text{VBW} \leq \text{RBW}/100$ (i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is < 98 percent) = $\text{VBW} \geq 1/T$, 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 minimum number of traces by a factor of $1/x$, where x is the duty cycle.

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 = $20\log(\text{test distance} / \text{specific distance})$ (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 $\geq$ 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) = $\text{VBW} \leq \text{RBW}/100$ (i.e., 10 kHz) but not less than 10 Hz.
 - VBW(Duty cycle is < 98 percent) = $\text{VBW} \geq 1/T$, 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 minimum number of traces by a factor of $1/x$, where x is the duty cycle.
10. Measured Frequency Range :
 - 4500MHz ~ 5150MHz

- 5350MHz ~ 5460MHz
- 5460MHz ~ 5470MHz
- (75 MHz or more below the 5725MHz) ~ 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)

7.8. Receiver Spurious Emissions

Limit

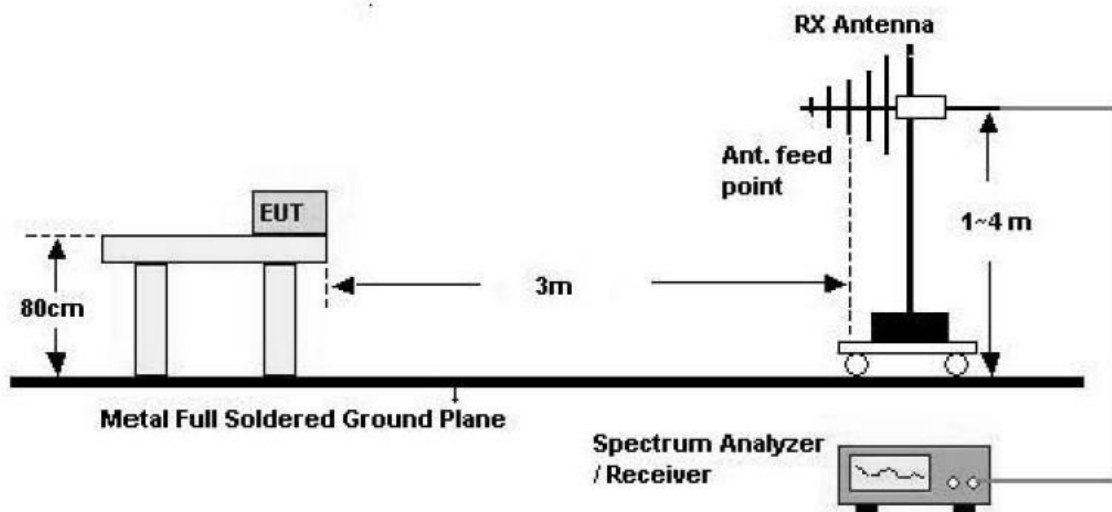
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

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

Test Configuration

30 MHz - 1 GHz



Test Procedure of Receiver 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 $\geq 3 \times$ RBW

(2) Measurement Type(Quasi-peak):

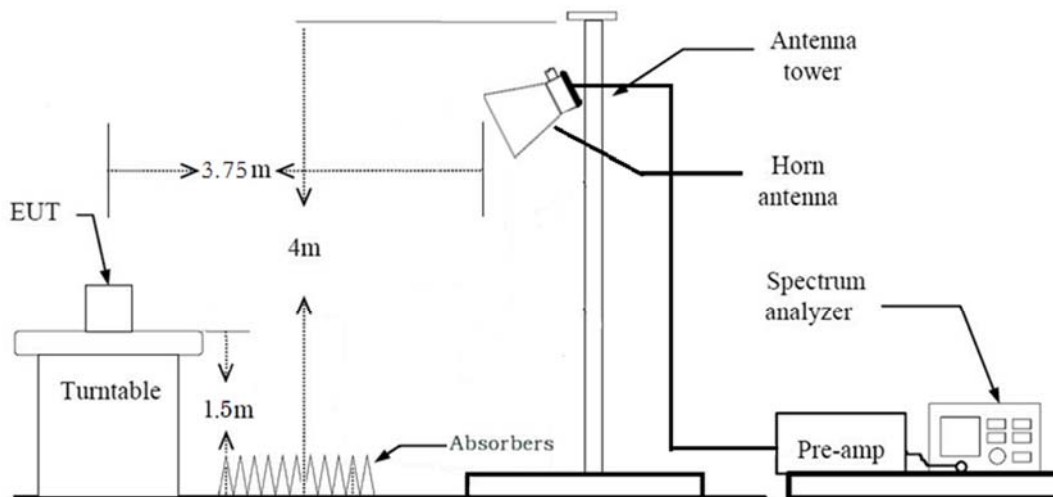
- Measured Frequency Range : 30 MHz – 1 GHz

- Detector = Quasi-Peak

- RBW = 120 kHz

6. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)

Above 1 GHz



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 = $20 \log (\text{test distance} / \text{specific distance})$ (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 – 40 GHz
 - Detector = Peak
 - Trace = Maxhold
 - RBW = 1 MHz
 - VBW $\geq 3 \times$ 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 – 40 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)

8. SUMMARY OF TEST RESULTS

FCC

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26dB Bandwidth	§ 15.407 (for Power Measurement)	N/A	Conducted	PASS
6 dB Bandwidth	§ 15.407(e)	>500 kHz		PASS
Maximum Conducted Output Power	§ 15.407(a)(1)	<1 W		PASS
Peak Power Spectral Density	§ 15.407(a)(1),(5)	<30 dBm/500 kHz		PASS
Frequency Stability	§ 15.407(g) § 2.1055	Maintained within the band		PASS
AC Conducted Emissions 150 kHz-30 MHz	15.207	Section 7.6		PASS
Undesirable Emissions	§ 15.407(b)	<-27 dBm/MHz EIRP	Radiated	PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	15.205, 15.407(b)(5), (6)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS

IC

Test Description	IC Part Section(s)	Test Limit	Test Condition	Test Result
99% Bandwidth	RSS-GEN, 6.7	N/A	CONDUCTED	PASS
6 dB Bandwidth	RSS-247, 6.2.4.1	> 500 kHz		PASS
Maximum Conducted Output Power	RSS-247, 6.2.4 1	<1 W		PASS
Power Spectral Density	RSS-247, 6.2.4 1	<30 dBm/500 kHz		PASS
Frequency Stability	RSS-GEN 8.11	Maintained within the band		PASS
AC Conducted Emissions 150 kHz-30 MHz	RSS-GEN 8.8	Section 7.6		PASS
Undesirable Emissions	RSS-247, 6.2.4 2	<-27 dBm/MHz EIRP		PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	RSS-247, 6.2.4 2	RSS-247 6.2.4 2 a), b), c)		PASS
Receiver Spurious Emissions	RSS-GEN 7	Section 9.9		PASS

9. TEST RESULT

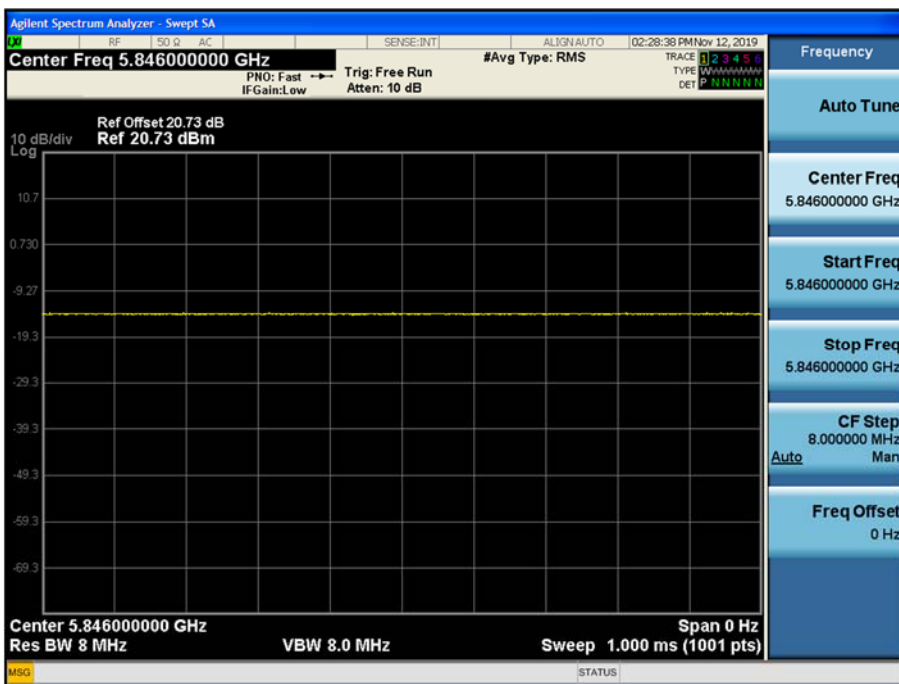
9.1 DUTY CYCLE

T_{on} (ms)	T_{total} (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)
1.0	1.0	100.0	0.000

Note:

Duty Cycle : All test are applied Duty cycle as 100% for the test.

Test Plots



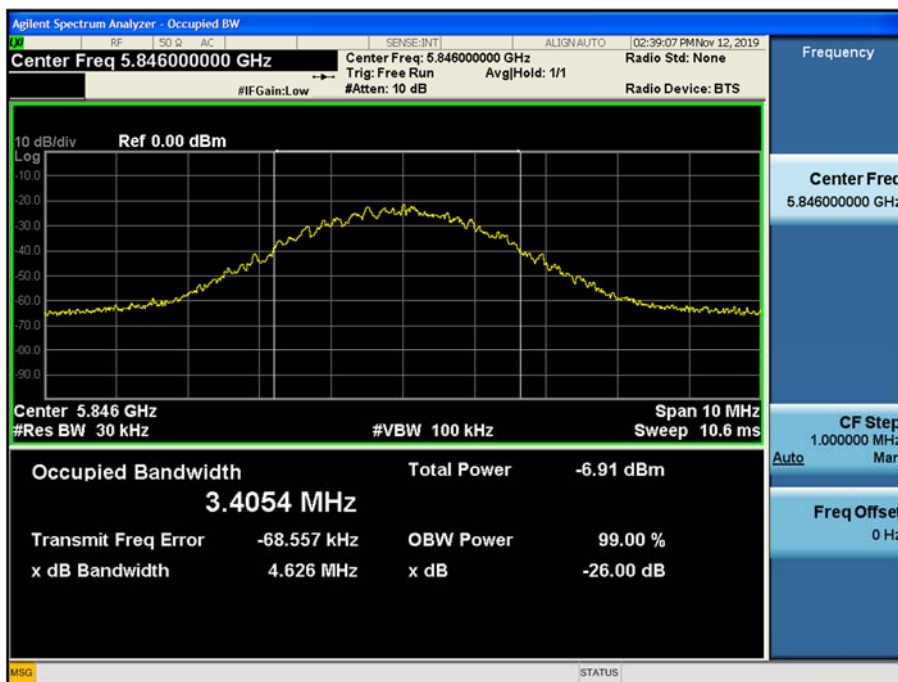
9.2 26DB BANDWIDTH & 99 % BANDWIDTH

Frequency [MHz]	26dB Bandwidth [MHz]	99% bandwidth [MHz]
5 846	4.626	3.4054

Test Plots

Note:

In order to simplify the report, attached plots were only the most wide channel.



9.3 6DB BANDWIDTH

Frequency [MHz]	Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
5 846	2.017	> 0.5	Pass

Test Plots

Note:

In order to simplify the report, attached plots were only the most narrow channel.

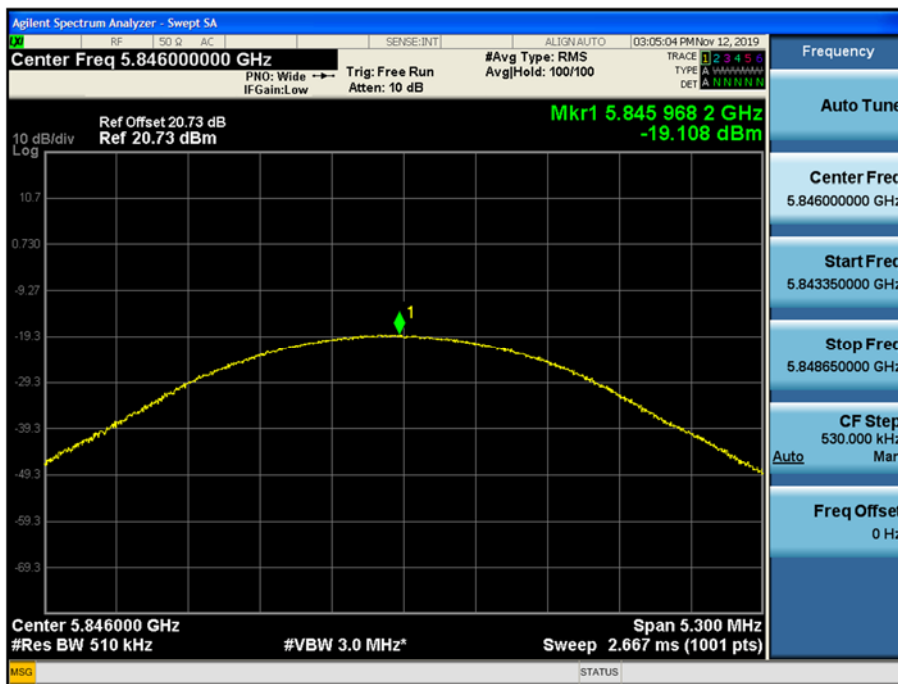


9.4 OUTPUT POWER MEASUREMENT

Frequency [MHz]	Result [dBm]	Limit (dBm)
5 846	-14.24	30.00

Test Plots

In order to simplify the report, attached plots were only channel of highest power.



9.6 FREQUENCYSTABILITY.

Startup after the EUT is energized

OPERATING FREQUENCY: 5,846,000,000 Hz
CHANNEL: High
REFERENCE VOLTAGE: 3.30 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.30	+20(Ref)	5846030.71	30.71
100%		-30	5846055.27	55.27
100%		-20	5846047.24	47.24
100%		-10	5846041.07	41.07
100%		0	5846037.16	37.16
100%		+10	5846033.17	33.17
100%		+30	5846034.53	34.53
100%		+40	5846043.52	43.52
100%		+50	5846047.87	47.87
115%	3.45	+20	5846046.06	46.06
End. Point	3.15	+20	5846049.36	49.36

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

2 minutes after the EUT is energized

OPERATING FREQUENCY: 5,846,000,000 Hz
CHANNEL: High
REFERENCE VOLTAGE: 3.30 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.30	+20(Ref)	5846028.67	28.67
100%		-30	5846051.66	51.66
100%		-20	5846044.81	44.81
100%		-10	5846037.78	37.78
100%		0	5846032.87	32.87
100%		+10	5846029.05	29.05
100%		+30	5846032.35	32.35
100%		+40	5846041.45	41.45
100%		+50	5846044.61	44.61
115%	3.45	+20	5846042.63	42.63
End. Point	3.15	+20	5846048.51	48.51

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

5 minutes after the EUT is energized

OPERATING FREQUENCY: 5,846,000,000 Hz
CHANNEL: High
REFERENCE VOLTAGE: 3.30 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.30	+20(Ref)	5846029.95	29.95
100%		-30	5846052.87	52.87
100%		-20	5846046.61	46.61
100%		-10	5846041.47	41.47
100%		0	5846037.46	37.46
100%		+10	5846034.44	34.44
100%		+30	5846034.02	34.02
100%		+40	5846042.86	42.86
100%		+50	5846046.62	46.62
115%	3.45	+20	5846045.51	45.51
End. Point	3.15	+20	5846049.19	49.19

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

10 minutes after the EUT is energized

OPERATING FREQUENCY: 5,846,000,000 Hz
CHANNEL: High
REFERENCE VOLTAGE: 3.30 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.30	+20(Ref)	5846034.11	34.11
100%		-30	5846058.01	58.01
100%		-20	5846051.59	51.59
100%		-10	5846045.86	45.86
100%		0	5846042.49	42.49
100%		+10	5846040.32	40.32
100%		+30	5846037.20	37.2
100%		+40	5846045.93	45.93
100%		+50	5846049.16	49.16
115%	3.45	+20	5846049.38	49.38
End. Point	3.15	+20	5846053.88	53.88

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

9.7 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30MHz

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

Note:

1. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB)
3. Limit line = specific Limits (dBuV) + Distance extrapolation factor
4. The test results for below 30 MHz is correlated to an open site.
The result on OFS is about 2 dB higher than semi-anechoic chamber(10 m chamber)

Frequency Range : Below 1 GHz

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

Note:

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode

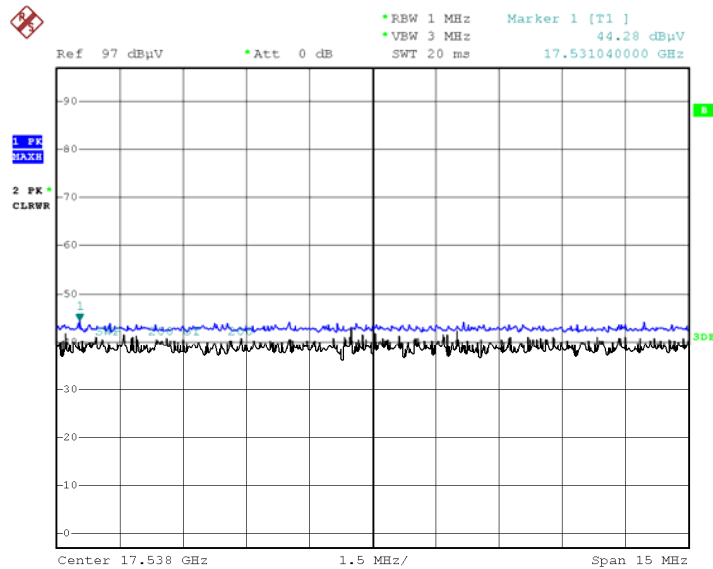
Frequency Range : Above 1 GHz

Operating Frequency 5 846 MHz
Channel No. High ch

Frequency [MHz]	Reading dBuV	A.F + C.L – A.G + D.F [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11692	45.88	8.33	V	54.21	73.98	19.77	PK
11692	33.65	8.33	V	41.98	53.98	12.00	AV
17538	43.50	16.79	V	60.29	68.20	7.91	PK
11692	45.94	8.33	H	54.27	73.98	19.71	PK
11692	33.71	8.33	H	42.04	53.98	11.94	AV
17538	44.28	16.79	H	61.07	68.20	7.13	PK

Test Plots

Peak Reading (802.11a, High 3rd Harmonic, Z-H)



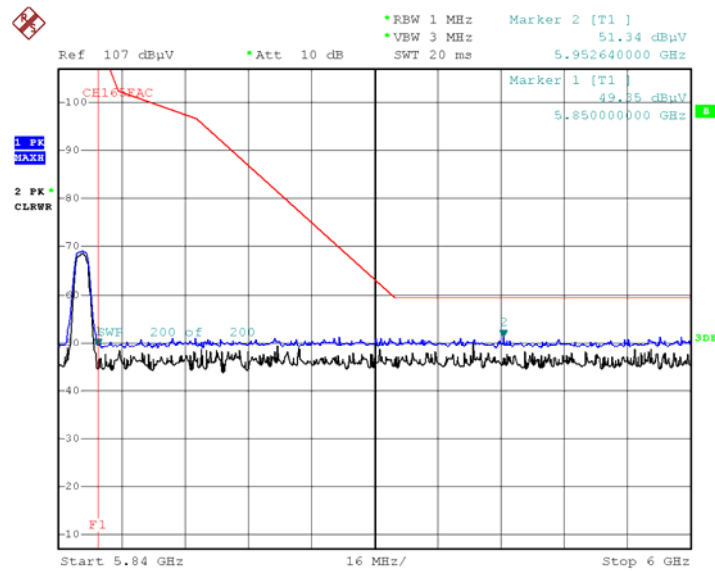
Date: 11.NOV.2019 14:52:40

Note :

Only the worst case plots for Radiated Spurious Emissions.

9.8 RADIATED RESTRICTED BAND EDGE

Highest Channel : 5 846 MHz



Date: 11.NOV.2019 14:42:13

Note :

Only the worst case plots for Radiated Spurious Emissions.

9.9 RECEIVER SPURIOUS EMISSIONS

Test Settings

ISED Rule(s)	RSS-Gen(7.0)
Chamber	Semi Anechoic Chamber
Operating conditions:	Under normal test conditions
Operation Mode:	Receive
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 (Average)
Mode of operation:	Receive

Test Limit

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at 3 meters)
30 – 88	100
88 - 216	150
216 – 960	200
Above 960	500

Test Result

Frequency Range : Below 1 GHz

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

Frequency Range : Above 1 GHz

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

9.10 POWERLINE CONDUCTED EMISSIONS

Conducted Emissions (Line 1)

Test

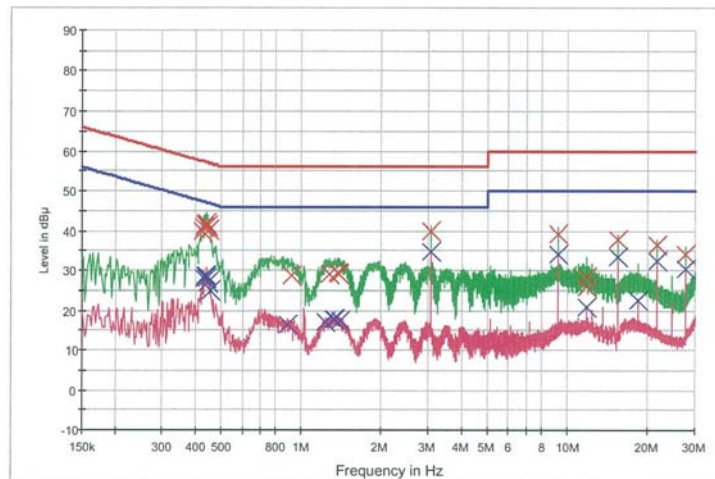
1 / 2

HCT TEST Report

Common Information

EUT: LGWL1NB6
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: 5G WLAN_L1

FCC CLASS B_Exten Cable



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK+
 — Preview Result 2-AVG — Final Result 1-QPK — Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.426000	39.7	9.000	Off	L1	9.8	17.6	57.3
0.430000	40.8	9.000	Off	L1	9.8	16.4	57.3
0.434000	41.7	9.000	Off	L1	9.8	15.5	57.2
0.438000	41.9	9.000	Off	L1	9.8	15.2	57.1
0.444000	41.2	9.000	Off	L1	9.8	15.8	57.0
0.448000	40.2	9.000	Off	L1	9.8	16.7	56.9
0.916000	28.7	9.000	Off	L1	9.9	27.3	56.0
1.272000	29.0	9.000	Off	L1	9.9	27.0	56.0
1.278000	29.0	9.000	Off	L1	9.9	27.0	56.0
1.366000	29.3	9.000	Off	L1	9.9	26.7	56.0
1.366000	29.1	9.000	Off	L1	9.9	26.9	56.0
3.072000	39.8	9.000	Off	L1	9.9	16.2	56.0
9.216000	39.1	9.000	Off	L1	10.3	20.9	60.0
11.784000	26.1	9.000	Off	L1	10.4	33.9	60.0
11.790000	28.2	9.000	Off	L1	10.4	31.8	60.0
15.360000	37.6	9.000	Off	L1	10.5	22.4	60.0
21.504000	36.3	9.000	Off	L1	10.7	23.7	60.0
27.648000	34.0	9.000	Off	L1	10.9	26.0	60.0

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Test

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Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.430000	27.9	9.000	Off	L1	9.8	19.4	47.3
0.434000	28.7	9.000	Off	L1	9.8	18.5	47.2
0.438000	28.5	9.000	Off	L1	9.8	18.6	47.1
0.442000	27.9	9.000	Off	L1	9.8	19.2	47.0
0.446000	27.0	9.000	Off	L1	9.8	19.9	46.9
0.454000	25.1	9.000	Off	L1	9.8	21.7	46.8
0.884000	16.3	9.000	Off	L1	9.9	29.7	46.0
1.230000	17.0	9.000	Off	L1	9.9	29.0	46.0
1.328000	17.8	9.000	Off	L1	9.9	28.2	46.0
1.342000	17.7	9.000	Off	L1	9.9	28.3	46.0
1.398000	17.4	9.000	Off	L1	9.9	28.6	46.0
3.072000	34.8	9.000	Off	L1	9.9	11.2	46.0
9.216000	34.1	9.000	Off	L1	10.3	15.9	50.0
11.790000	20.7	9.000	Off	L1	10.4	29.3	50.0
15.360000	33.4	9.000	Off	L1	10.5	16.6	50.0
18.432000	22.7	9.000	Off	L1	10.6	27.3	50.0
21.504000	32.4	9.000	Off	L1	10.7	17.6	50.0
27.648000	30.4	9.000	Off	L1	10.9	19.6	50.0

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Conducted Emissions (Line 2)

Test

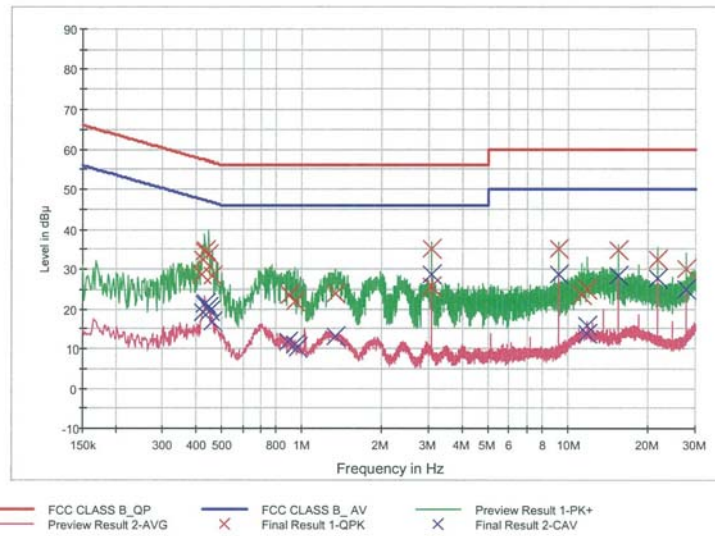
1 / 2

HCT TEST Report

Common Information

EUT: LGWL1NB6
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: 5G WLAN_N

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.418000	28.6	9.000	Off	N	9.8	28.9	57.5
0.426000	32.2	9.000	Off	N	9.8	25.1	57.3
0.432000	34.5	9.000	Off	N	9.8	22.7	57.2
0.436000	34.8	9.000	Off	N	9.8	22.3	57.1
0.446000	33.8	9.000	Off	N	9.8	23.2	56.9
0.460000	28.2	9.000	Off	N	9.8	28.4	56.7
0.894000	23.7	9.000	Off	N	9.8	32.3	56.0
0.944000	21.8	9.000	Off	N	9.9	34.2	56.0
1.330000	23.9	9.000	Off	N	9.9	32.1	56.0
1.340000	23.8	9.000	Off	N	9.9	32.2	56.0
3.066000	25.7	9.000	Off	N	9.9	30.3	56.0
3.072000	35.1	9.000	Off	N	9.9	20.9	56.0
9.216000	35.1	9.000	Off	N	10.3	24.9	60.0
11.264000	23.4	9.000	Off	N	10.4	36.6	60.0
11.788000	25.0	9.000	Off	N	10.4	35.0	60.0
15.360000	34.7	9.000	Off	N	10.6	25.3	60.0
21.504000	32.5	9.000	Off	N	10.8	27.5	60.0
27.648000	30.1	9.000	Off	N	11.0	29.9	60.0

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Test

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Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.426000	19.2	9.000	Off	N	9.8	28.1	47.3
0.432000	21.1	9.000	Off	N	9.8	26.1	47.2
0.436000	21.5	9.000	Off	N	9.8	25.7	47.1
0.444000	20.5	9.000	Off	N	9.8	26.5	47.0
0.448000	19.7	9.000	Off	N	9.8	27.3	46.9
0.460000	16.9	9.000	Off	N	9.8	29.8	46.7
0.892000	11.6	9.000	Off	N	9.8	34.4	46.0
0.944000	11.0	9.000	Off	N	9.9	35.0	46.0
0.964000	10.3	9.000	Off	N	9.9	35.7	46.0
1.330000	13.0	9.000	Off	N	9.9	33.0	46.0
1.340000	12.9	9.000	Off	N	9.9	33.1	46.0
3.072000	28.7	9.000	Off	N	9.9	17.3	46.0
9.216000	28.5	9.000	Off	N	10.3	21.5	50.0
11.752000	13.8	9.000	Off	N	10.4	36.2	50.0
11.788000	15.6	9.000	Off	N	10.4	34.4	50.0
15.360000	28.4	9.000	Off	N	10.6	21.6	50.0
21.504000	27.6	9.000	Off	N	10.8	22.4	50.0
27.648000	25.0	9.000	Off	N	11.0	25.0	50.0

2019-10-02

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10. LIST OF TEST EQUIPMENT

Conducted Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	12/12/2018	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	06/18/2019	Annual	100584
ESPAC	SU-642 / Temperature Chamber	03/12/2019	Annual	0093008124
Agilent	N9020A / Signal Analyzer	05/23/2019	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	11/20/2018	Annual	MY49431210
Agilent	N1911A / Power Meter	04/10/2019	Annual	MY45100523
Agilent	N1921A / Power Sensor	04/10/2019	Annual	MY52260025
Agilent	87300B / Directional Coupler	11/20/2018	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	05/24/2019	Annual	05001
Hewlett Packard	E3632A / DC Power Supply	06/18/2019	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	07/02/2019	Annual	07560
Rohde & Schwarz	EMC32 / Software	N/A	N/A	N/A
HCT CO., LTD.	FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	N/A	N/A
Rohde & Schwarz	CBT / Bluetooth Tester	05/16/2019	Annual	100422

Note:

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

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
Audix	EM1000 / Controller	N/A	N/A	060520
Audix	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	08/23/2018	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	08/31/2018	Biennial	00895
Schwarzbeck	VULB 9168 / Hybrid Antenna	08/09/2018	Annual	3368
Schwarzbeck	BBHA 9120D / Horn Antenna	06/28/2019	Biennial	1300
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	12/04/2017	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 40 GHz) / Spectrum Analyzer	07/16/2019	Annual	100843
Wainwright Instruments	WHK3.0/18G-10EF / High Pass Filter	01/03/2019	Annual	F6
Wainwright Instruments	WHFX7.0/18G-8SS / High Pass Filter	05/03/2019	Annual	29
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
Weinschel	2-3 / Attenuator (3 dB)	10/08/2019	Annual	BR0617
H+S	5910-N-50-010 / Attenuator(10 dB)	10/29/2019	Annual	None
CERNEX	CBLU1183540B-01 / Power Amplifier	12/21/2018	Annual	25540
CERNEX	CBL06185030 / Power Amplifier	03/26/2019	Annual	28550
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.
3. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

11. ANNEX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-1910-FI005-P