HCT CO.,LTD.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383.Rep. of KOREA
TEL: +82-31-645-6300 **FAX: +82-31-645-6401**

FCC UNII REPORT

FCC Certification

Applicant Name:
SAMSUNG Electronics Co.,Ltd.

Address:
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Date of Issue:
December 22, 2017
Test Site/Location:
HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
Report No.: HCT-R-1711-F004-2

FCC ID	**: A3LSLS-BU10G**
APPLICANT	**: SAMSUNG Electronics Co.,Ltd.**

Model(s):	SLS-BU10G
EUT Type:	4G LTE Network Extender 2 for Enterprise
Modulation type	OFDM
FCC Classification:	Unlicensed National Information Infrastructure(UNII)
FCC Rule Part(s):	Part 15.407

Band	Mode	Frequency Range (MHz)	Power (dBm)	Power (W)
UNII1	802.11a	5180 – 5240	23.36	0.217
UNII3	802.11a	5745 – 5825	23.43	0.220

Engineering Statement:

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

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

Report prepared by : Kyung Soo Kang
Engineer of Telecommunication testing center

Approved by : Jong Seok Lee
Manager of Telecommunication testing center

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1711-F004	November 16, 2017	- First Approval Report
HCT-R-1711-F004-1	November 22, 2017	- Revised the antenna port number. - Removed -30℃ to -10℃ datas in the frequency stability table.
HCT-R-1711-F004-2	December 22, 2017	- Revised the table In section 8. - Added the 99% Occupied Bandwidth test results in section 9.2. - Revised the test procedures in section 9.3.

Table of Contents

1. GENERAL INFORMATION

Applicant: Samsung Electronics Co., Ltd.

Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

FCC ID: A3LSLS-BU10G

EUT Type: 4G LTE Network Extender 2 for Enterprise

Model (s): SLS-BU10G

Date(s) of Tests: October 27, 2016 ~ November 14, 2017

Place of Tests: HCT Co., Ltd.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383.Rep. of KOREA

2. EUT DESCRIPTION

<table>
<tr><td>Model</td><td colspan="2">SLS-BU10G</td></tr>
<tr><td>EUT Type</td><td colspan="2">4G LTE Network Extender 2 for Enterprise</td></tr>
<tr><td>Power Supply</td><td colspan="2">AC [90 ~ 264] VAC
PoE : 48 VDC</td></tr>
<tr><td rowspan="2">Frequency Range</td><td>TX_20 MHz BW:</td><td>5180 MHz - 5240 MHz (UNII 1)/ 5745 MHz - 5825 MHz (UNII 3)</td></tr>
<tr><td>RX_20 MHz BW:</td><td>5180 MHz - 5240 MHz (UNII 1)/ 5745 MHz - 5825 MHz (UNII 3)</td></tr>
<tr><td>Modulation Type</td><td colspan="2">OFDM(802.11a)</td></tr>
<tr><td>Antenna Specification</td><td colspan="2">Manufacturer: ETHERTRONICS INC.
Antenna type: INTERNAL ANTENNA
Peak Gain :
<table>
<tr><td rowspan="2">Frequency [MHz]</td><td>Gain [dBi]</td></tr>
<tr><td>Port 2</td></tr>
<tr><td>5150 ~ 5850</td><td>6.0</td></tr>
</table></td></tr>
</table>

3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03 dated August 22, 2016 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. For 802.11ac, KDB644545 D03 v01 dated August 14, 2014.

3.1 EUT CONFIGURATION

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

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

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

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3.75 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 8 of ANSI C63.10. (Version: 2013)

Conducted Antenna Terminal

See Section from 8.1 to 8.4.(KDB 789033 D02 v01r03)

3.4 DESCRIPTION OF TEST MODES

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

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

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards
Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2006).

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

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.”

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

* The E.U.T Complies with the requirement of §15.203, §15.407

7. MEASUREMENT UNCERTAINTY

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

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

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

8. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26dB Bandwidth	§15.407 (for Power Measurement)	N/A	CONDUCTED	N/A
99% Occupied Bandwidth	§2.1049	N/A		N/A
6 dB Bandwidth	§15.407(e)	>500 kHz (5725-5850 MHz)		PASS
Maximum Conducted Output Power	§15.407(a)(1)(ii)	< 250 mW (5150-5250 MHz) <1 W (5725-5850 MHz)		PASS
Peak Power Spectral Density	§15.407(a)(1)(ii),(5)	<11 dBm/ MHz (5150-5250 MHz) <30 dBm/500 kHz(5725-5850 MHz)		PASS
Frequency Stability	§15.407(g)	N/A		N/A
AC Conducted Emissions 150 kHz-30 MHz	15.207	<FCC 15.207 limits		PASS
Undesirable Emissions	§15.407(b)	<-27 dBm/MHz EIRP (UNII1) <-17 dBm/MHz EIRP within 5715-5725 MHz and 5850-5860 MHz (UNII3) <-27 dBm/MHz EIRP outside 5715-5860 MHz (UNII 3)	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

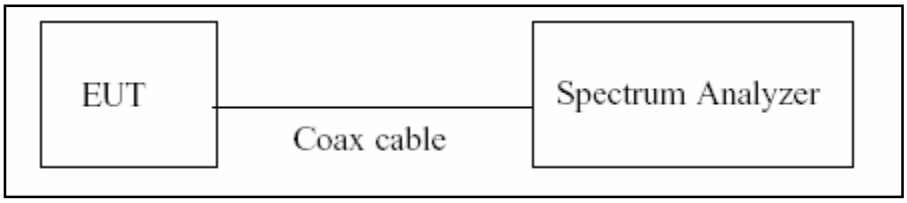
* Note: The EUT is supported power supply both of the AC/DC Adapter and PoE. Test results are only attached worst cases.

9. TEST RESULT

9.1 DUTY CYCLE

The zero-span mode on a spectrum analyzer or EMI receiver ,if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/*T*, where *T* is defined in section B)1)a), and the number of sweep points across duration *T* exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if *T* ≤ 16.7 microseconds.)

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. We tested according to the zero-span measurement method, (B.2 in KDB 789033 D02 v01r03)

The largest availble value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if T ≤ 6.25 microseconds. (50/6.25 = 8)

The zero-span method was used becaure all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/*T*.

1. RBW = 8 MHz (the largest availble value)
2. VBW = 8 MHz (≥ 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_{on}/ T_{total} and Duty Cycle Factor = 10*log(1/Duty Cycle)

▣ **Duty Cycle Factor**

Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11a	6	2.029	2.102	0.96518381	0.154
	9	1.358	1.427	0.95156929	0.216
	12	1.025	1.099	0.93233103	0.304
	18	0.692	0.763	0.90785864	0.420
	24	0.524	0.589	0.88836105	0.514
	36	0.356	0.426	0.83646617	0.776
	48	0.272	0.338	0.80568720	0.938
	54	0.244	0.310	0.78811370	1.034

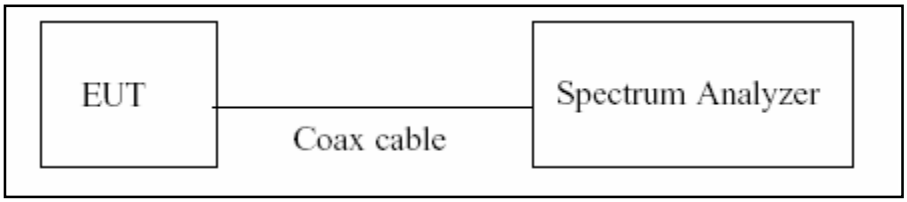
9.2 EMISSION BANDWIDTH AND MINIMUM EMISSION BANDWIDTH MEASUREMENT

The bandwidth at 26 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033 D02 v01r03, at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26 dB bandwidth.

The 26 dB bandwidth is used to determine the conducted power limits.

The 99% occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE (26dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.
The Spectrum Analyzer is set to(C.1 in KDB 789033 D02 v01r03)

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 %.

Note : We tested 26 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 26 dB.

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

▣ TEST PROCEDURE (for the band 5.725-5.85 GHz, 6 dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to(C.2 in KDB 789033 D02 v01r03)

1. RBW = 100 kHz
2. VBW ≥ 3*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 lever measured in the fundamental emission.

Note : We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

▣ TEST RESULTS for 802.11a

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail	99% OBW Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.				
5180	36	21.02	N/A	Pass	16.611
5200	40	21.67	N/A	Pass	16.573
5240	48	22.34	N/A	Pass	16.592

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail	99% OBW Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.				
5745	149	21.32	N/A	Pass	16.568
5785	157	21.11	N/A	Pass	16.574
5825	165	21.50	N/A	Pass	16.595

▣ TEST Plot for 802.11a

802.11a UNII 1 BAND 26dB Bandwidth (CH48)	802.11a UNII 3 BAND 26dB Bandwidth (CH 165)
	

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

▣ TEST RESULTS for 802.11a

Conducted 6 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.37	0.5	Pass
5785	157	16.41	0.5	Pass
5825	165	16.36	0.5	Pass

▣ TEST Plot for 802.11a/n_HT20/ac_VHT20

802.11a UNII 3 BAND 6dB Bandwidth (CH.157)

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

9.3 OUTPUT POWER MEASUREMENT

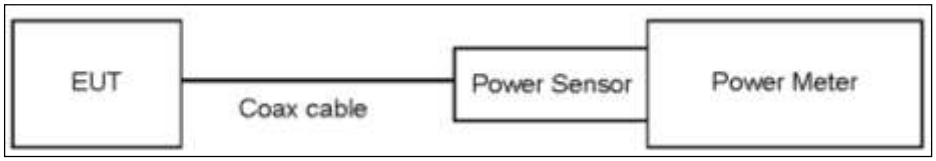
Test Requirements and limit, §15.407(a)(1)

A transmitter antenna terminal of EUT is connected to the input of a Power meter or Spectrum Analyzer .Measurement is made while the EUT is operating in transmission mode at the appropriate frequencies.

▣ Limit

Band	Mode	Limit (dBm)
UNII 1	802.11a	30.00
UNII 3	802.11a	30.00

▣ TEST CONFIGURATION(20 MHz BW)



▣ TEST PROCEDURE(20 MHz BW)

▪ Average Power (Procedure E.3.a in KDB 789033 D02 v01r03).

1. The EUT transmits continuously.
2. Measure the average power of the transmitter.

Note :

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

Band	Loss(dB)
UNII 1, 3	11.1

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

802.11a (UNII 1)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5180~5240)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	6	22.60	0.15	22.76	30
		9	22.58	0.22	22.80	30
		12	22.52	0.30	22.82	30
		18	22.42	0.42	22.84	30
		24	22.42	0.51	22.93	30
		36	22.24	0.78	23.01	30
		48	21.81	0.94	22.74	30
		54	21.56	1.03	22.60	30
5200	40	6	22.63	0.15	22.78	30
		9	22.58	0.22	22.80	30
		12	22.51	0.30	22.82	30
		18	22.41	0.42	22.83	30
		24	22.38	0.51	22.89	30
		36	22.20	0.78	22.98	30
		48	21.81	0.94	22.75	30
		54	21.53	1.03	22.56	30
5240	48	6	22.94	0.15	23.09	30
		9	22.95	0.22	23.16	30
		12	22.88	0.30	23.18	30
		18	22.79	0.42	23.21	30
		24	22.77	0.51	23.28	30
		36	22.58	0.78	23.36	30
		48	22.15	0.94	23.09	30
		54	21.93	1.03	22.97	30

802.11a (UNII 3)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	6	22.58	0.15	22.74	30
		9	22.56	0.22	22.78	30
		12	22.45	0.30	22.75	30
		18	22.36	0.42	22.78	30
		24	22.24	0.51	22.75	30
		36	22.04	0.78	22.81	30
		48	21.71	0.94	22.65	30
		54	21.44	1.03	22.48	30
5785	157	6	22.13	0.15	22.28	30
		9	22.10	0.22	22.31	30
		12	22.01	0.30	22.32	30
		18	21.90	0.42	22.32	30
		24	21.80	0.51	22.32	30
		36	21.61	0.78	22.39	30
		48	21.29	0.94	22.23	30
		54	21.02	1.03	22.06	30
5825	165	6	23.08	0.15	23.23	30
		9	23.03	0.22	23.24	30
		12	23.01	0.30	23.31	30
		18	22.91	0.42	23.33	30
		24	22.80	0.51	23.31	30
		36	22.63	0.78	23.40	30
		48	22.49	0.94	23.43	30
		54	22.24	1.03	23.28	30

9.4 POWER SPECTRAL DENSITY

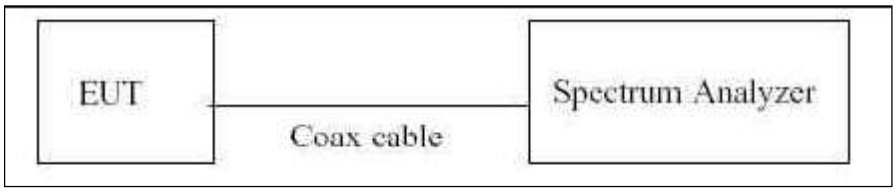
The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies. The maximum permissible peak power spectral density is 11 dBm/ MHz for UNII 1 and 30 dBm/500 kHz for UNII 3.

▣ Limit

Power Spectral Density

Band	Mode	Limit
UNII 1	802.11 a	17 dBm/MHz
UNII 3	802.11a	30 dBm/500 kHz

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

We tested according to Method in KDB 789033 D02 v01r03.

The spectrum analyzer is set to :

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz(510 kHz for UNII 3)
3. VBW ≥ 3 MHz
4. Number of points in sweep ≥ 2*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

PSD = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

Output Power = 5 dBm + 10 dB + 0.8 dB + 0.21 dB = 16.01 dBm

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 + Cable loss
3. We apply to the offset in the 5.2 GHz, 5.3 GHz and 5.6 GHz range that was rounded off to the closest tenth dB. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1, 3	11.1

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

▣ 802.11a

▣ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11a	11.032	0.776	11.808	17	Pass
5200	40		11.210	0.776	11.986		Pass
5240	48		11.663	0.776	12.439		Pass
5745	149		8.208	0.776	8.984	30	Pass
5785	157		7.908	0.776	8.684		Pass
5825	165		8.640	0.938	9.578		Pass

▣ TEST Plot for 802.11a

802.11a UNII 1 BAND PSD CH 48	802.11a UNII 3 BAND PSD CH 165
	

9.5 FREQUENCY STABILITY.

The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between -30 ℃ and 50 ℃. The temperature was incremented by 10 ℃ 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.

20 MHz BW

OPERATING BAND: UNII Band 1

OPERATING FREQUENCY: 5,180,000,000 Hz

CHANNEL: 36

REFERENCE VOLTAGE: 12.0 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	12.0	+20(Ref)	5180022.50	22.50
100%		0	5180013.57	13.57
100%		+10	5180017.97	17.97
100%		+30	5180028.42	28.42
100%		+40	5180035.10	35.10
100%		+50	5180040.47	40.47
110%	13.2	+20	5180015.69	15.69
90%	10.8	+20	5180012.68	12.68

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.

OPERATING BAND: UNII Band 3

OPERATING FREQUENCY: 5,745,000,000 Hz

CHANNEL: 149

REFERENCE VOLTAGE: 12.0 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	12.0	+20(Ref)	5745021.86	21.86
100%		0	5745011.39	11.39
100%		+10	5745016.38	16.38
100%		+30	5745028.60	28.6
100%		+40	5745036.23	36.23
100%		+50	5745040.70	40.70
110%	13.2	+20	5745015.35	15.35
90%	10.8	+20	5745011.62	11.62

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.

9.6 RADIATED MEASUREMENT

9.6.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209, §15.407

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

▣ §15.407, KDB 789033 D02

All harmonics that do not lie in a restricted band are subject to a peak limit of -27 dBm/MHz. At a distance of 3 meters the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2 dB to the EIRP limit of -27 dBm/MHz to obtain the limit for out of band spurious emissions of 68.2 dBμV/m.

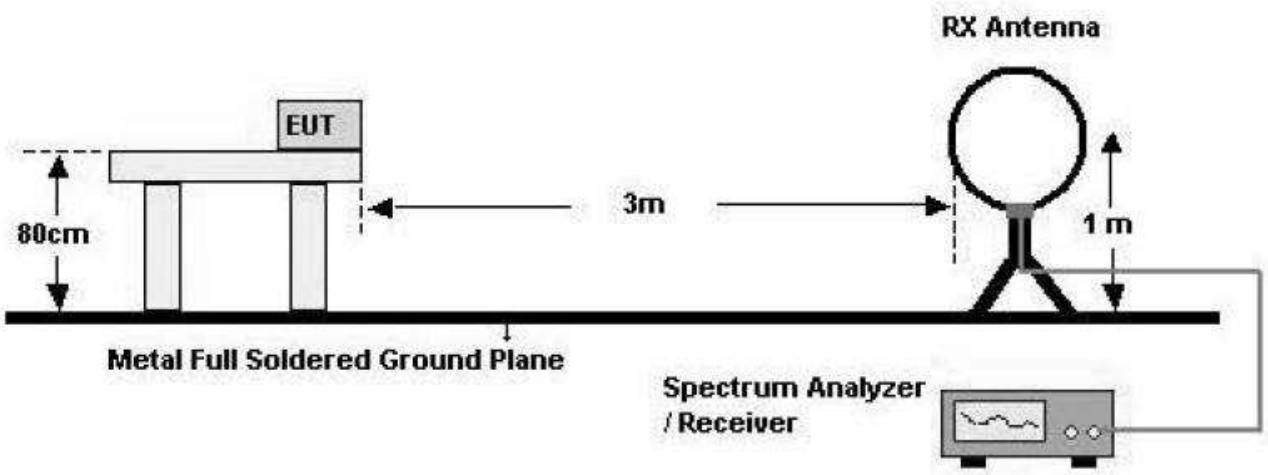
§15.407 (5)(b)(4)(i)

(4) For transmitters operating in the 5.725-5.85 GHz band:

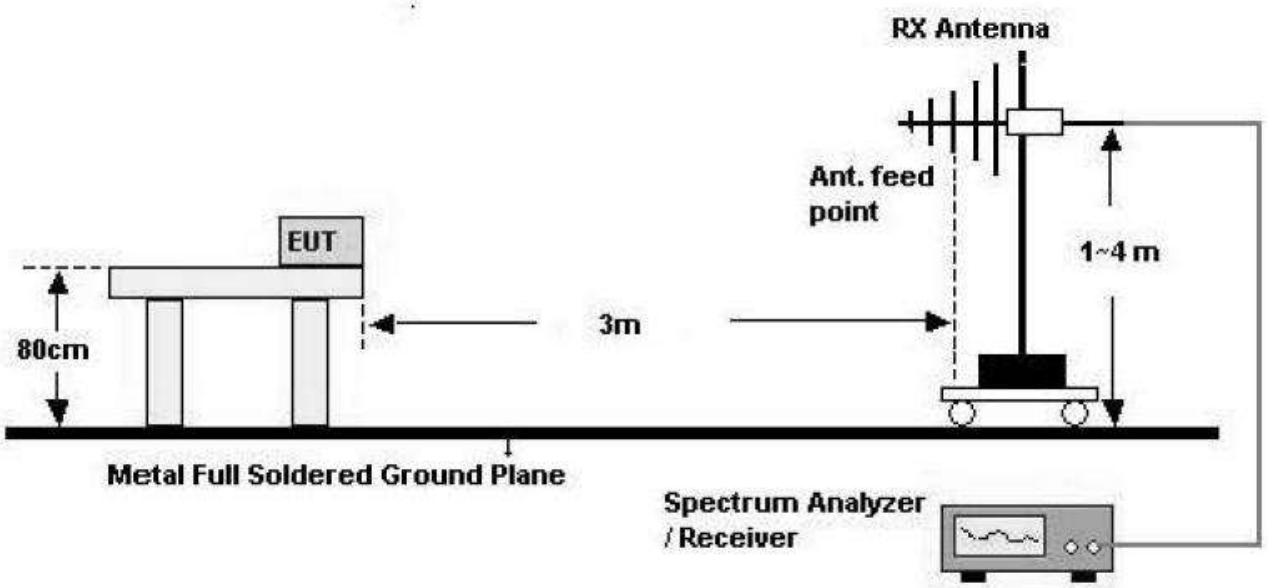
(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the 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.

Test Configuration

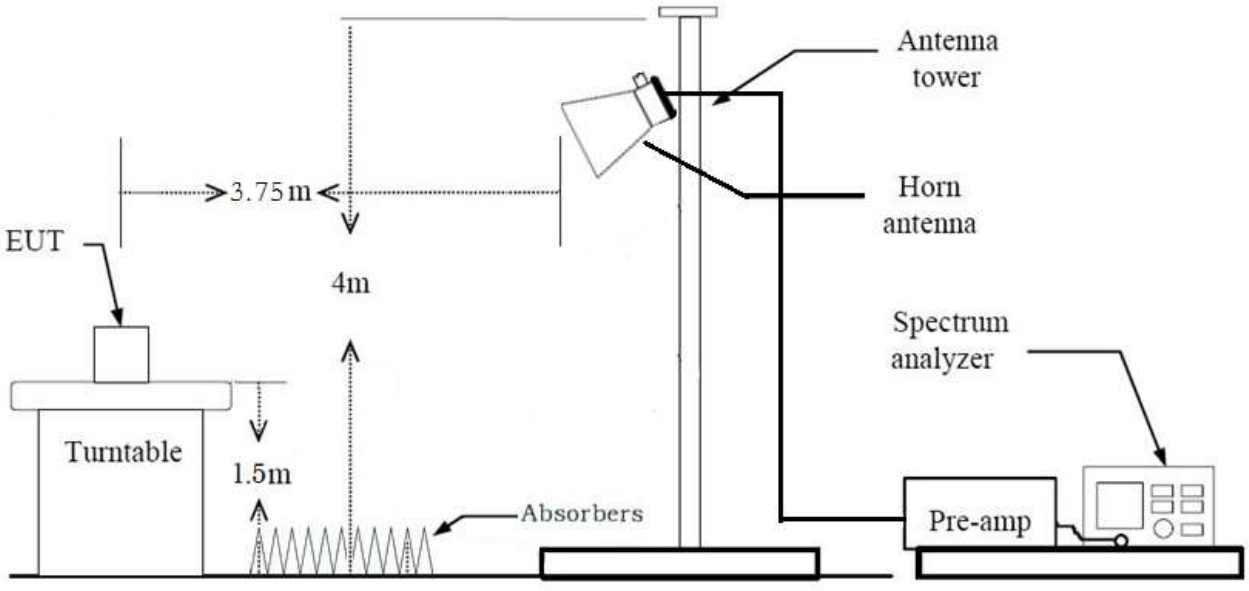
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE USED

ANSI C63.10:2013

Method G)5) in KDB 789033 D02 v01r04 (Peak)

Method G)6)d) in KDB 789033 D02 v01r04 (Average)

. Spectrum setting:

- Peak.

1. RBW = 1 MHz
2. VBW ≥ 3 MHz
3. Detector = Peak
4. Sweep Time = auto
5. Trace mode = max hold
6. Allow sweeps to continue until the trace stabilizes.
7. 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.

- Average (Method VB :Averaging using reduced video bandwidth)

1. RBW = 1 MHz
2. VBW
   2.1. If the EUT is configured to transmit with duty cycle ≥ 98 percent, set VBW ≤ RBW/100(i.e., 10 kHz) but not less than 10 Hz.
   2.2. If the EUT duty cycle is < 98 percent, set VBW ≥ 1/T, where T is the minimum transmission duration.
3. The analyzer is set to linear detector mode.
4. Detector = Peak.
5. Sweep time = auto.
6. Trace mode = max hold.
7. 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.

Note :

1. We used the Method VB for 802.11a mode to perform the average filed strength measurements.
2. The actual setting value of VBW for 802.11a
3. 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).
4. Distance extrapolation factor = 20 log (test distance / specific distance) (dB)

Mode	Worst Data rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle (%)	VBW(1/T) (Hz)	The actual setting value of VBW (Hz)
a	**6**	**2.029**	**2.102**	**96.52**	**493**	**1000**

TEST RESULTS

9 kHz – 30MHz

Operation Mode: Normal Mode

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

Notes:

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

TEST RESULTS

Below 1 GHz

Operation Mode: Normal Mode

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

Notes:

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

Above 1 GHz

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
10360	53.78	-2.75	V	51.03	68.20	17.17	PK
15540	52.10	-1.23	V	50.87	73.98	23.11	PK
15540	38.05	-1.23	V	36.82	53.98	17.16	AV
10360	53.81	-2.75	H	51.06	68.20	17.14	PK
15540	52.13	-1.23	H	50.90	73.98	23.08	PK
15540	38.07	-1.23	H	36.84	53.98	17.14	AV

*AN. : Antenna Factor / CL : Cable Loss / Amp.G. : Amplifier Gain / D.F. : Distance Factor

Notes:

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

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5200 MHz
Channel No.	40 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
10400	53.81	-2.60	V	51.21	68.20	16.99	PK
15600	52.10	-2.26	V	49.84	73.98	24.14	PK
15600	38.05	-2.26	V	35.79	53.98	18.19	AV
10400	53.83	-2.60	H	51.23	68.20	16.97	PK
15600	52.11	-2.26	H	49.85	73.98	24.13	PK
15600	38.06	-2.26	H	35.80	53.98	18.18	AV

*AN. : Antenna Factor / CL : Cable Loss / Amp.G. : Amplifier Gain / D.F. : Distance Factor

Notes:

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

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5240 MHz
Channel No.	48 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
10480	53.74	-3.54	V	50.20	68.20	18.00	PK
15720	52.04	-2.64	V	49.40	73.98	24.58	PK
15720	38.04	-2.64	V	35.40	53.98	18.58	AV
10480	53.80	-3.54	H	50.26	68.20	17.94	PK
15720	52.09	-2.64	H	49.45	73.98	24.53	PK
15720	38.06	-2.64	H	35.42	53.98	18.56	AV

*AN. : Antenna Factor / CL : Cable Loss / Amp.G. : Amplifier Gain / D.F. : Distance Factor

Notes:

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

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5745MHz
Channel No.	149 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11490	53.58	-2.50	V	51.08	73.98	22.90	PK
11490	39.71	-2.50	V	37.21	53.98	16.77	AV
17235	51.22	3.09	V	54.31	68.20	13.89	PK
11490	53.64	-2.50	H	51.14	73.98	22.84	PK
11490	39.75	-2.50	H	37.25	53.98	16.73	AV
17235	51.37	3.09	H	54.46	68.20	13.74	PK

*AN. : Antenna Factor / CL : Cable Loss / Amp.G. : Amplifier Gain / D.F. : Distance Factor

Notes:

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

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5785 MHz
Channel No.	157 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11570	53.64	-2.87	V	50.77	73.98	23.21	PK
11570	39.73	-2.87	V	36.86	53.98	17.12	AV
17355	51.08	3.45	V	54.53	68.20	13.67	PK
11570	53.66	-2.87	H	50.79	73.98	23.19	PK
11570	39.74	-2.87	H	36.87	53.98	17.11	AV
17355	51.24	3.45	H	54.69	68.20	13.51	PK

*AN. : Antenna Factor / CL : Cable Loss / Amp.G. : Amplifier Gain / D.F. : Distance Factor

Notes:

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

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5825 MHz
Channel No.	165 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11650	53.54	-2.84	V	50.70	73.98	23.28	PK
11650	39.75	-2.84	V	36.91	53.98	17.07	AV
17475	51.11	5.68	V	56.79	68.20	11.41	PK
11650	53.61	-2.84	H	50.77	73.98	23.21	PK
11650	39.87	-2.84	H	37.03	53.98	16.95	AV
17475	51.63	5.68	H	57.31	68.20	10.89	PK

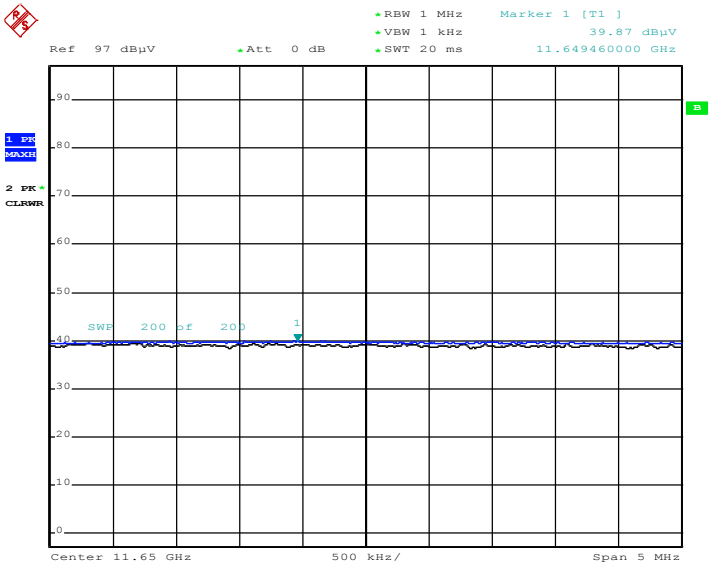
*AN. : Antenna Factor / CL : Cable Loss / Amp.G. : Amplifier Gain / D.F. : Distance Factor

Notes:

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

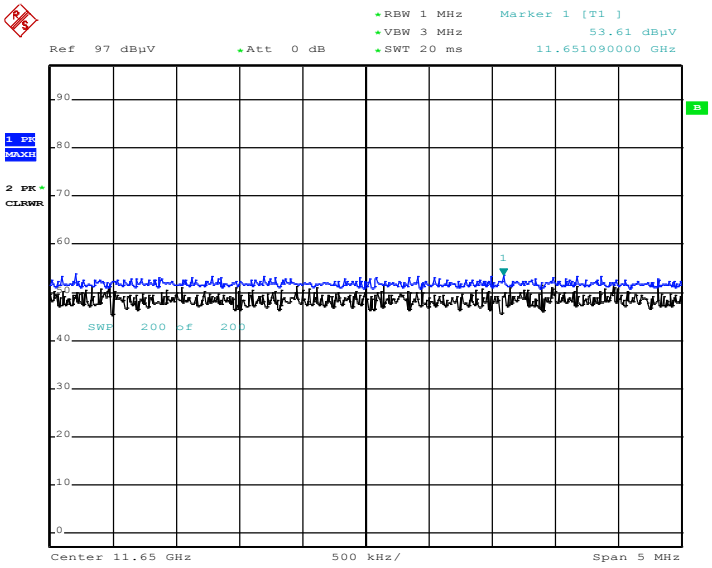
▣ RESULT PLOTS

Radiated Spurious Emissions plot –Average Reading (802.11a, Ch.165 2nd Harmonic, Z-H)



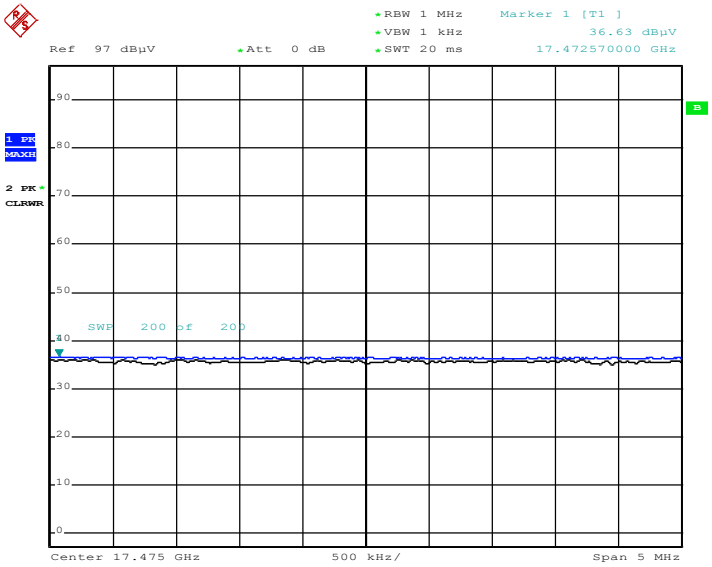
Date: 26.OCT.2017 16:18:15

Radiated Spurious Emissions plot –Peak Reading (802.11a, Ch.165 2nd Harmonic, Z-H)



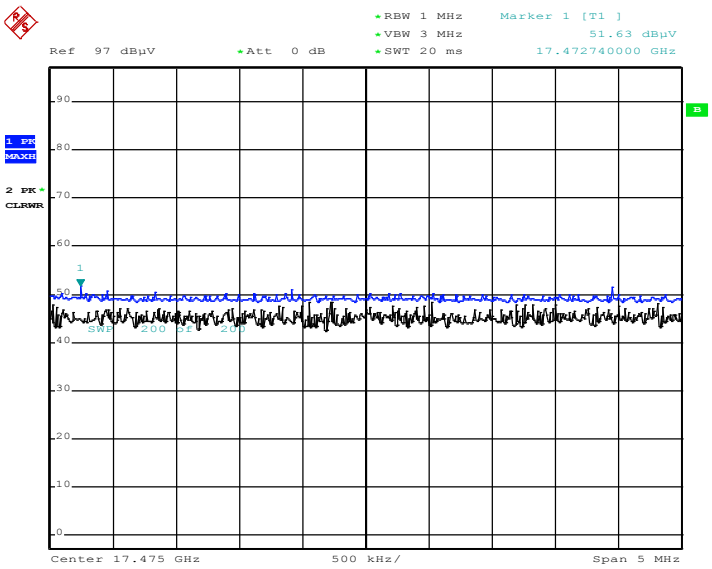
Date: 26.OCT.2017 16:17:51

Radiated Spurious Emissions plot –Average Reading (802.11a, Ch.165 3nd Harmonic, Z-H)



Date: 26.OCT.2017 16:15:43

Radiated Spurious Emissions plot –Peak Reading (802.11a, Ch.165 3nd Harmonic, Z-H)



Date: 26.OCT.2017 16:16:51

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

9.6.2 RADIATED RESTRICTED BAND EDGE MEASUREMENTS

Test Requirements and limit, §15.407, §15.205, §15.209

Undesirable emission limits. Except as shown in paragraph (1) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band:

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.

When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits

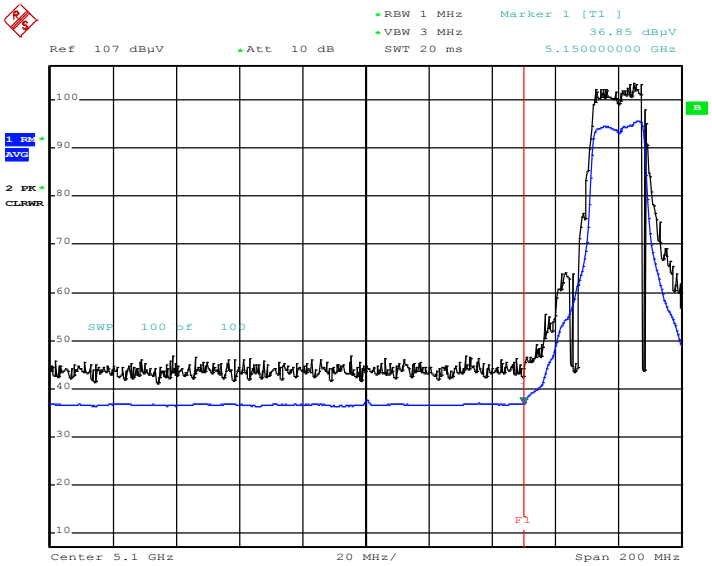
(1) The provisions of §15.205 apply to intentional radiators operating under this section.

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5150	47.55	2.81	H	50.36	73.98	23.62	PK
5150	36.53	2.81	H	39.34	53.98	14.64	AV
5150	47.82	2.81	V	50.63	73.98	23.35	PK
5150	36.85	2.81	V	39.66	53.98	14.32	AV

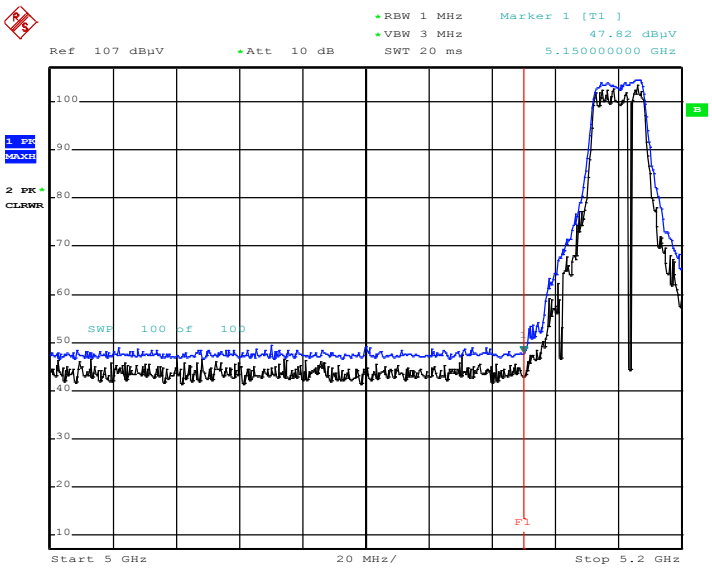
▣ RESULT PLOTS

Radiated Restricted Band Edges plot – Average Reading (802.11a, Ch.36)



Date: 9.NOV.2017 11:35:35

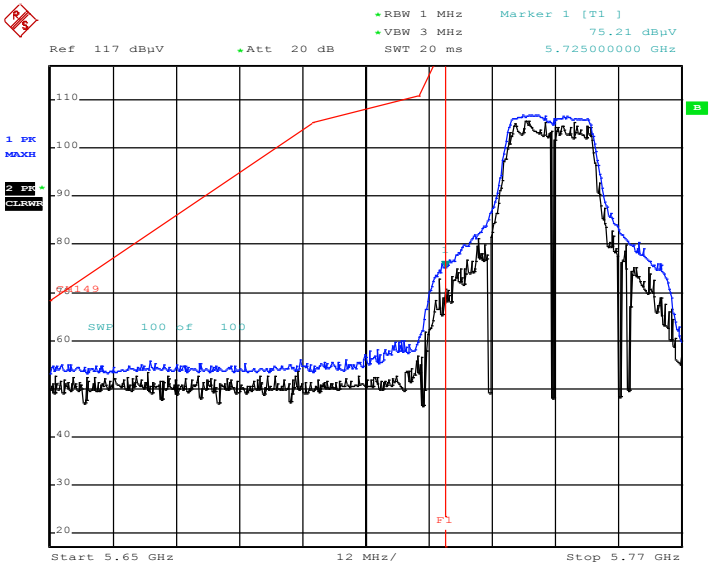
Radiated Restricted Band Edges plot – Peak Reading (802.11a, Ch.36)



Date: 9.NOV.2017 11:33:51

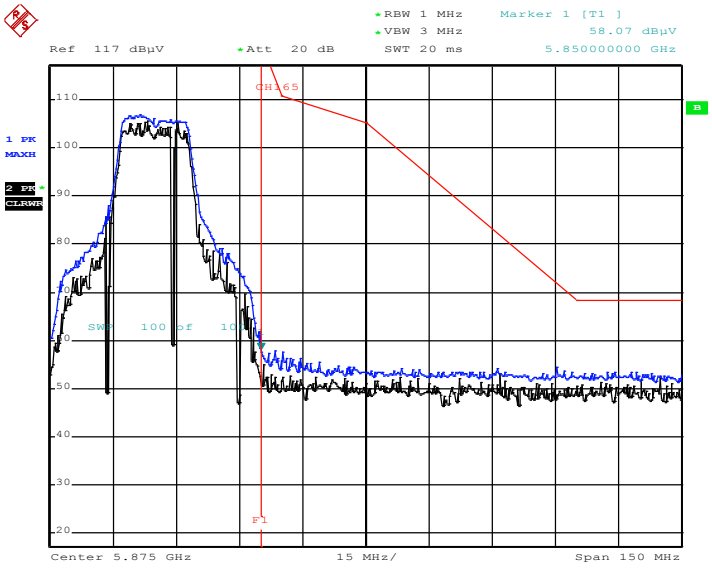
▣ RESULT PLOTS(UNII 3)

Radiated Restricted Band Edges plot – Peak Reading (802.11a, Ch.149))



Date: 23.OCT.2017 15:13:43

Radiated Restricted Band Edges plot – Peak Reading (802.11a, Ch.165))



Date: 23.OCT.2017 15:08:23

9.7 POWERLINE CONDUCTED EMISSIONS

Test Requirements and limit, §15.207

For an intentional radiator which 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 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

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 Appendix 1 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 groundplane.
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

▣ RESULT PLOTS

Conducted Emissions_ (Line 1)

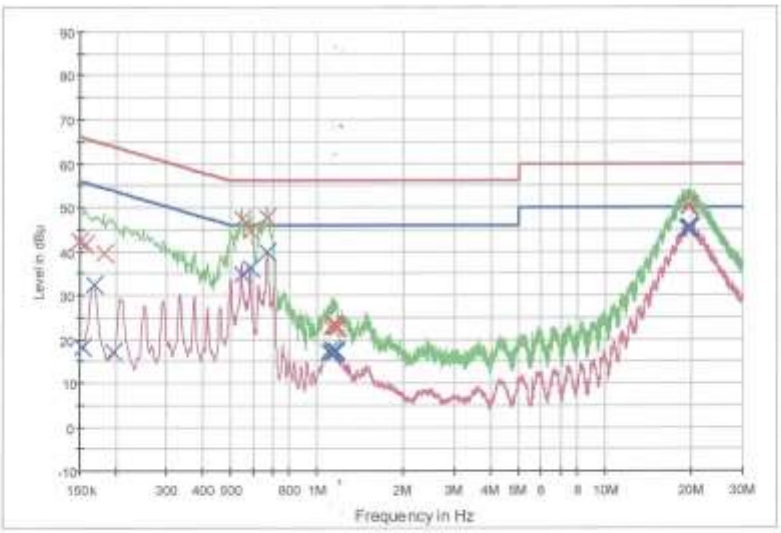
EMI Auto Test(16) 1 / 2

HCT TEST Report

Common Information

EUT:	SLS-BU10G
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN 5GHz MODE

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	42.2	9.000	Off	L1	9.7	23.8	66.0
0.158000	41.5	9.000	Off	L1	9.7	24.1	65.6
0.182000	39.5	9.000	Off	L1	9.7	24.9	64.4
0.548000	47.4	9.000	Off	L1	9.7	8.6	56.0
0.586000	44.7	9.000	Off	L1	9.8	11.3	56.0
0.670000	47.7	9.000	Off	L1	9.8	8.3	56.0
1.122000	22.4	9.000	Off	L1	9.8	33.6	56.0
1.140000	23.3	9.000	Off	L1	9.8	32.7	56.0
1.152000	22.8	9.000	Off	L1	9.8	33.2	56.0
1.162000	23.2	9.000	Off	L1	9.8	32.8	56.0
1.168000	22.5	9.000	Off	L1	9.8	33.5	56.0
1.174000	22.5	9.000	Off	L1	9.8	33.5	56.0
19.376000	50.4	9.000	Off	L1	10.8	9.6	60.0
19.384000	50.1	9.000	Off	L1	10.8	9.9	60.0
19.388000	50.1	9.000	Off	L1	10.8	9.9	60.0
19.544000	50.2	9.000	Off	L1	10.8	9.8	60.0
19.576000	50.5	9.000	Off	L1	10.8	9.5	60.0
19.596000	50.4	9.000	Off	L1	10.8	9.6	60.0

Final Result 2

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EMI Auto Test(16) 2 / 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154000	18.3	9.000	Off	L1	9.7	37.5	55.8
0.168000	32.3	9.000	Off	L1	9.7	22.8	55.1
0.196000	17.1	9.000	Off	L1	9.7	36.7	53.8
0.548000	34.7	9.000	Off	L1	9.7	11.3	46.0
0.586000	35.9	9.000	Off	L1	9.8	10.1	46.0
0.672000	39.9	9.000	Off	L1	9.8	6.1	46.0
1.100000	17.0	9.000	Off	L1	9.8	29.0	46.0
1.118000	16.7	9.000	Off	L1	9.8	29.3	46.0
1.122000	17.7	9.000	Off	L1	9.8	28.3	46.0
1.140000	17.1	9.000	Off	L1	9.8	28.9	46.0
1.162000	17.1	9.000	Off	L1	9.8	28.9	46.0
1.166000	17.4	9.000	Off	L1	9.8	28.6	46.0
19.342000	45.4	9.000	Off	L1	10.8	4.6	50.0
19.380000	45.4	9.000	Off	L1	10.8	4.6	50.0
19.482000	45.6	9.000	Off	L1	10.8	4.4	50.0
19.544000	45.5	9.000	Off	L1	10.8	4.5	50.0
19.596000	45.4	9.000	Off	L1	10.8	4.6	50.0
19.604000	45.6	9.000	Off	L1	10.8	4.4	50.0

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Conducted Emissions_(Line 2)

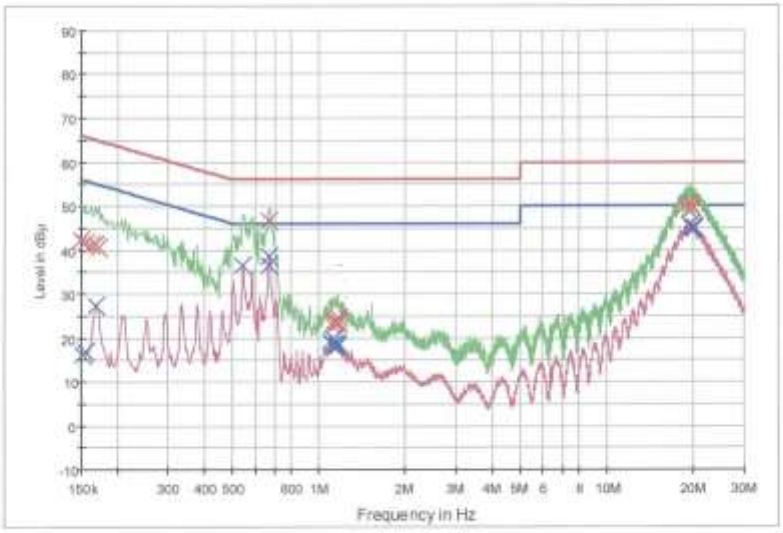
EMI Auto Test(16) 1 / 2

HCT TEST Report

Common Information

EUT:	SLS-BU10G
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN 5GHz MODE

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	42.0	9.000	Off	N	9.7	24.0	66.0
0.156000	41.6	9.000	Off	N	9.7	24.1	65.7
0.162000	41.2	9.000	Off	N	9.7	24.1	65.4
0.168000	41.0	9.000	Off	N	9.7	24.0	65.1
0.172000	40.6	9.000	Off	N	9.7	24.2	64.9
0.674000	46.5	9.000	Off	N	9.7	9.5	56.0
1.110000	23.0	9.000	Off	N	9.8	33.0	56.0
1.122000	23.6	9.000	Off	N	9.8	32.4	56.0
1.144000	23.7	9.000	Off	N	9.8	32.3	56.0
1.156000	23.3	9.000	Off	N	9.8	32.7	56.0
1.162000	23.7	9.000	Off	N	9.8	32.3	56.0
1.166000	24.4	9.000	Off	N	9.8	31.6	56.0
18.804000	49.9	9.000	Off	N	10.7	10.1	60.0
19.170000	49.1	9.000	Off	N	10.8	10.9	60.0
19.470000	50.5	9.000	Off	N	10.8	9.5	60.0
19.482000	50.3	9.000	Off	N	10.8	9.7	60.0
19.508000	50.5	9.000	Off	N	10.8	9.5	60.0
19.816000	49.5	9.000	Off	N	10.8	10.5	60.0

Final Result 2

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EMI Auto Test(16) 2 / 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	16.2	9.000	Off	N	9.7	39.7	55.9
0.156000	16.7	9.000	Off	N	9.7	39.0	55.7
0.168000	27.4	9.000	Off	N	9.7	27.6	55.1
0.546000	36.5	9.000	Off	N	9.7	9.5	46.0
0.668000	36.4	9.000	Off	N	9.7	7.6	46.0
0.674000	36.6	9.000	Off	N	9.7	9.4	46.0
1.090000	19.1	9.000	Off	N	9.8	26.9	46.0
1.110000	18.4	9.000	Off	N	9.8	27.6	46.0
1.128000	19.7	9.000	Off	N	9.8	26.3	46.0
1.142000	18.8	9.000	Off	N	9.8	27.2	46.0
1.148000	18.0	9.000	Off	N	9.8	28.0	46.0
1.162000	18.0	9.000	Off	N	9.8	28.0	46.0
19.470000	45.6	9.000	Off	N	10.8	4.4	50.0
19.476000	45.7	9.000	Off	N	10.8	4.3	50.0
19.482000	45.7	9.000	Off	N	10.8	4.3	50.0
19.784000	44.9	9.000	Off	N	10.8	5.1	50.0
19.816000	44.7	9.000	Off	N	10.8	5.3	50.0
20.128000	44.8	9.000	Off	N	10.8	5.2	50.0

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10. LIST OF TEST EQUIPMENT

10.1 LIST OF TEST EQUIPMENT(Conducted Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	12/23/2016	Annual	100073
Rohde & Schwarz	ESCI / Test Receiver	12/23/2016	Annual	100584
Agilent	N9020A / Signal Analyzer	06/13/2017	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	11/30/2016	Annual	MY49431210
Agilent	N1911A / Power Meter	04/17/2017	Annual	MY45100523
Agilent	N1921A / Power Sensor	04/17/2017	Annual	MY52260025
Agilent	87300B / Directional Coupler	11/23/2016	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	06/12/2017	Annual	05001
Hewlett Packard	E3632A / DC Power Supply	06/30/2017	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	07/10/2017	Annual	07560
Rohde & Schwarz	EMC32 / Software	-	-	-

10.2 LIST OF TEST EQUIPMENT(Radiated Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Audix	AM4000 / Antenna Position Tower	N/A	N/A	N/A
Audix	Turn Table	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Rohde & Schwarz	Loop Antenna	04/19/2017	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	04/06/2017	Biennial	760
Schwarzbeck	BBHA 9120D / Horn Antenna	08/25/2016	Biennial	1300
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	04/25/2017	Biennial	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	09/06/2017	Annual	100688
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/27/2017	Annual	101068-SZ
Wainwright Instruments	WHKX10-2700-3000-18000-40SS / High Pass Filter	07/20/2017	Annual	4
Wainwright Instruments	WHKX8-6090-7000-18000-40SS / High Pass Filter	07/11/2017	Annual	5
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	06/30/2017	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/24/2017	Annual	2
Hewlett Packard	8493C / Attenuator(10 dB)	07/10/2017	Annual	07560
CERNEX	CBLU1183540 / Power Amplifier	01/25/2017	Annual	24614
CERNEX	CBL06185030 / Power Amplifier	01/25/2017	Annual	24615
CERNEX	CBL18265035 / Power Amplifier	01/23/2017	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	06/30/2017	Annual	25956