



SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

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Report No.: GZEM180600303601
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FCC ID: 2AIC9-O2NAILS-M1

TEST REPORT

Application No.: GZEM1806003036CR
Applicant: Guangzhou Taiji Electronic Co., Ltd
Address of Applicant: Floor 25, Everbright Bank Building, 689 Tianhe North, Guangzhou, Guangdong, China
Manufacturer: The same as Applicant
Address of Manufacturer: The same as Applicant
Factory: The same as Applicant
Address of Factory: The same as Applicant
Equipment Under Test (EUT):
FCC ID: 2AIC9-O2NAILS-M1
EUT Name: Mobile Nail Printer
Model No.: M1
Trade Mark: O'2NAILS
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2018-06-04
Date of Test: 2018-06-21 to 2018-06-22
Date of Issue: 2018-06-27

Test Result:	Pass*
---------------------	--------------

* In the configuration tested, the EUT complied with the standards specified above.



Kobe Jian

EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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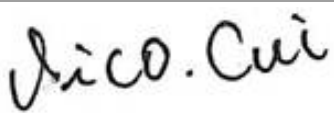


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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2018-06-27		Original

Authorized for issue by:			
Tested By			
	Vico_Cui /Project Engineer	2018-06-21 to 2018-06-22	Date
Checked By			
	Ricky_Liu /Reviewer	2018-06-27	Date



2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.12.1	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass



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4 General Information

4.1 Details of E.U.T.

Power Supply:	DC 5V/2A
Test Voltage:	DC 5V/2A
Cable:	About 1m unshielded USB cable
Antenna Gain	0.5dBi
Antenna Type	Integrated antenna
Channel Spacing	5MHz
Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels	802.11b/g/n(HT20):11 802.11n(HT40):7
Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz 802.11n(HT40): 2422MHz to 2452MHz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Apple	A1357 W010A051	REF. No.SEA0500



4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25 \times 10^{-8}$
2	Timeout	$\pm 2s$
3	Duty cycle	$\pm 0.37\%$
4	Occupied Bandwidth	$\pm 3\%$
5	RF Conducted power	$\pm 0.75dB$
6	RF Power Density	$\pm 2.84dB$
7	Conducted Spurious Emissions	$\pm 0.75dB$
8	RF Radiated Power	$\pm 4.5dB$ (below 1GHz)
		$\pm 4.8dB$ (above 1GHz)
9	Radiated Spurious Emission Test	$\pm 4.5dB$ (30MHz-1GHz)
		$\pm 4.8dB$ (1GHz-18GHz)
10	Temperature	$\pm 0.4^{\circ}C$
11	Humidity	$\pm 1.3\%$
12	Supply Voltages	$\pm 1.5\%$
13	Time	$\pm 3\%$

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

● **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

● **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

● **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

● **Industry Canada (Registration No.: 4620B-1)**

The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

● **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460, C-2584, G-449 and T-1179 respectively.

● **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



5 Equipment List

Minimum 6dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14

Conducted Peak Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14

Power Spectrum Density					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14

Conducted Band Edges Measurement					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2018-03-10	2019-03-09
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2018-04-10	2019-04-10
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_C h2	SEM009-02	2017-09-19	2018-09-18
Power Meter	AgilentTechnologies	U2021XA_C h3	SEM009-03	2017-09-19	2018-09-18
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14

Conducted Spurious Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14



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Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2018-01-19	2019-01-18
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2018-01-19	2019-01-18
chamber cable	HangTianXing	N/A	EMC0542	2017-06-30	2019-06-30
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2018-01-08	2019-01-07
Amplifier	HP	8447F	EMC2065	2018-06-01	2019-05-31
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2017-11-20	2018-11-19
Active Loop Antenna	EMCO	6502	EMC0523	2018-02-24	2019-02-23
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2018-01-19	2019-01-18
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2018-01-08	2019-01-07
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2017-06-18	2019-06-18
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-11-29	2018-11-28
MXE EMI Receiver	Keysight	N9038A	EMC2139	2017-11-15	2018-11-14
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2017-11-15	2018-11-14



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Radiated Spurious Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2018-01-19	2019-01-18
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2018-01-19	2019-01-18
chamber cable	HangTianXing	N/A	EMC0542	2017-06-30	2019-06-30
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2018-01-08	2019-01-07
Amplifier	HP	8447F	EMC2065	2018-06-01	2019-05-31
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2017-11-20	2018-11-19
Active Loop Antenna	EMCO	6502	EMC0523	2018-02-24	2019-02-23
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2018-01-19	2019-01-18
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2018-01-08	2019-01-07
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2017-06-18	2019-06-18
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-11-29	2018-11-28
MXE EMI Receiver	Keysight	N9038A	EMC2139	2017-11-15	2018-11-14
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2017-11-15	2018-11-14

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2017-07-26	2018-07-25
DMM	Fluke	73	EMC0007	2017-07-26	2018-07-25

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(c)

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0.5dBi.

7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement: 47 CFR Part 15, Subpart C 15.207
Test Method: ANSI C63.10 (2013) Section 6.2
Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

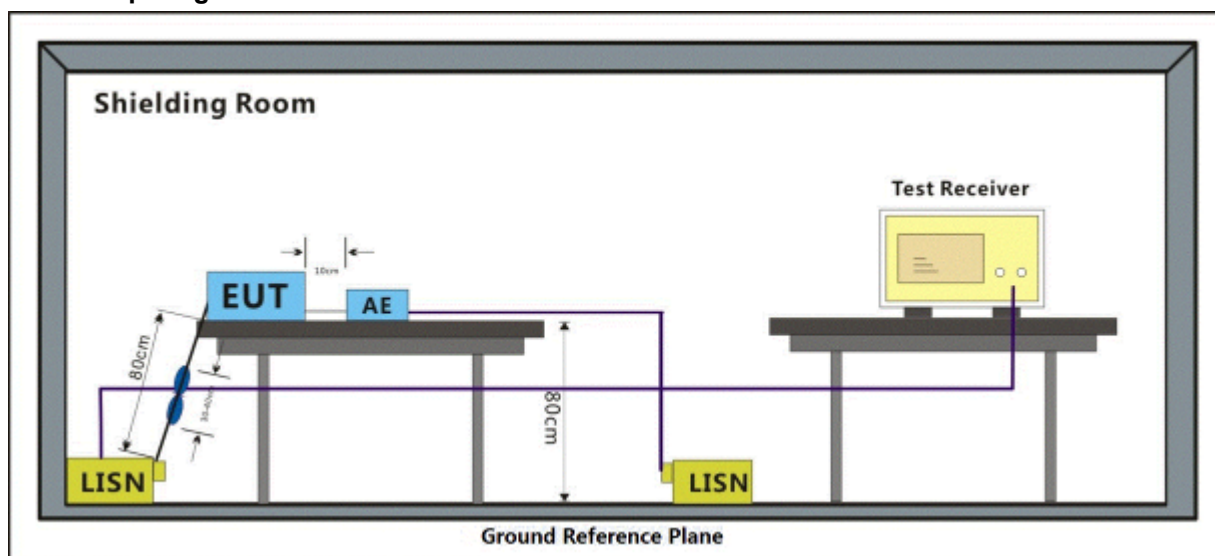
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar

Test mode: a:TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

7.1.2 Test Setup Diagram



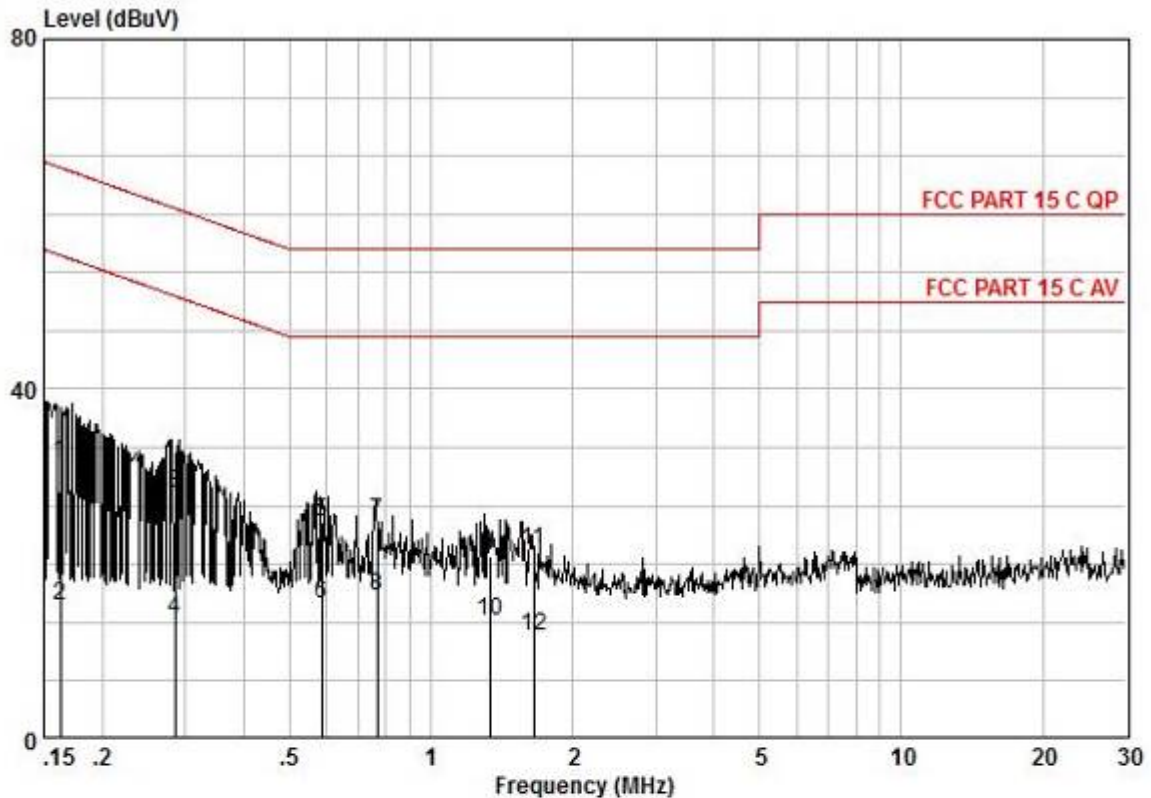


7.1.3 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

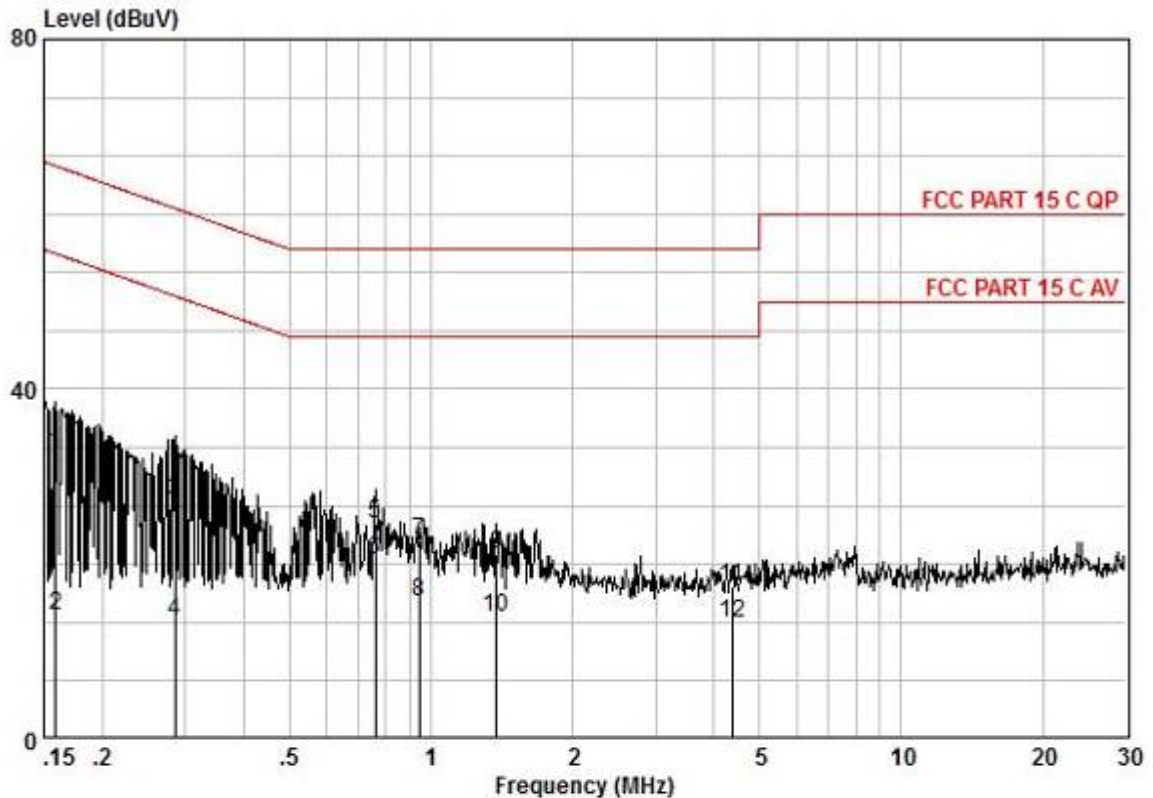
Remark: LISN=Read Level+ Cable Loss+ LISN Factor

Mode:a; Line:Live Line



Pol	:LIVE							
No	:							
Model	:							
Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark	
0,16	21,90	0,10	9,65	31,65	65,34	-33,69	QP	
0,16	5,48	0,10	9,65	15,23	55,34	-40,11	AVERAGE	
0,28	18,37	0,14	9,64	28,15	60,68	-32,53	QP	
0,28	3,90	0,14	9,64	13,68	50,68	-37,00	AVERAGE	
0,59	14,92	0,22	9,64	24,79	56,00	-31,21	QP	
0,59	5,64	0,22	9,64	15,51	46,00	-30,49	AVERAGE	
0,77	15,02	0,26	9,65	24,93	56,00	-31,07	QP	
0,77	6,47	0,26	9,65	16,38	46,00	-29,62	AVERAGE	
1,33	10,99	0,30	9,66	20,95	56,00	-35,05	QP	
1,33	3,48	0,30	9,66	13,44	46,00	-32,56	AVERAGE	
1,65	11,64	0,33	9,66	21,64	56,00	-34,36	QP	
1,65	1,85	0,33	9,66	11,85	46,00	-34,15	AVERAGE	

Mode:a; Line:Neutral Line



Pol : NEUTRAL
No :
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,16	22,91	0,10	9,67	32,68	65,52	-32,84	QP
0,16	4,37	0,10	9,67	14,14	55,52	-41,38	AVERAGE
0,28	17,52	0,14	9,66	27,32	60,68	-33,36	QP
0,28	3,80	0,14	9,66	13,60	50,68	-37,08	AVERAGE
0,76	14,75	0,26	9,67	24,68	56,00	-31,32	QP
0,76	10,57	0,26	9,67	20,50	46,00	-25,50	AVERAGE
0,94	12,68	0,29	9,67	22,65	56,00	-33,35	QP
0,94	5,82	0,29	9,67	15,79	46,00	-30,21	AVERAGE
1,37	11,21	0,30	9,68	21,19	56,00	-34,81	QP
1,37	3,95	0,30	9,68	13,93	46,00	-32,07	AVERAGE
4,36	7,03	0,65	9,72	17,40	56,00	-38,60	QP
4,36	2,83	0,65	9,72	13,20	46,00	-32,80	AVERAGE

7.2 Minimum 6dB Bandwidth

Test Requirement: 47 CFR Part 15, Subpart C 15.247a(2)
Test Method: ANSI C63.10 (2013) Section 11.8.1
Limit: ≥ 500 kHz

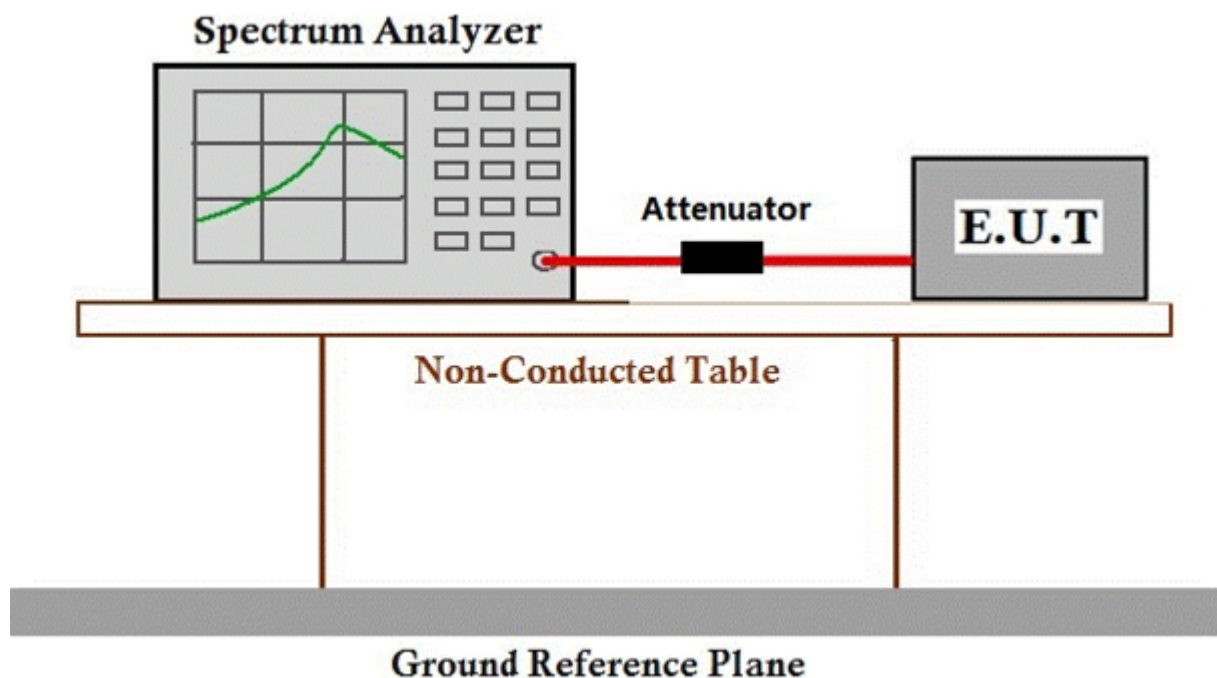
7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 58.9 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

7.3 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)
Test Method: ANSI C63.10 (2013) Section 11.9.1
Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ hopping channels < 50
	1 for digital modulation
2400-2483.5	1 for ≥ 75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

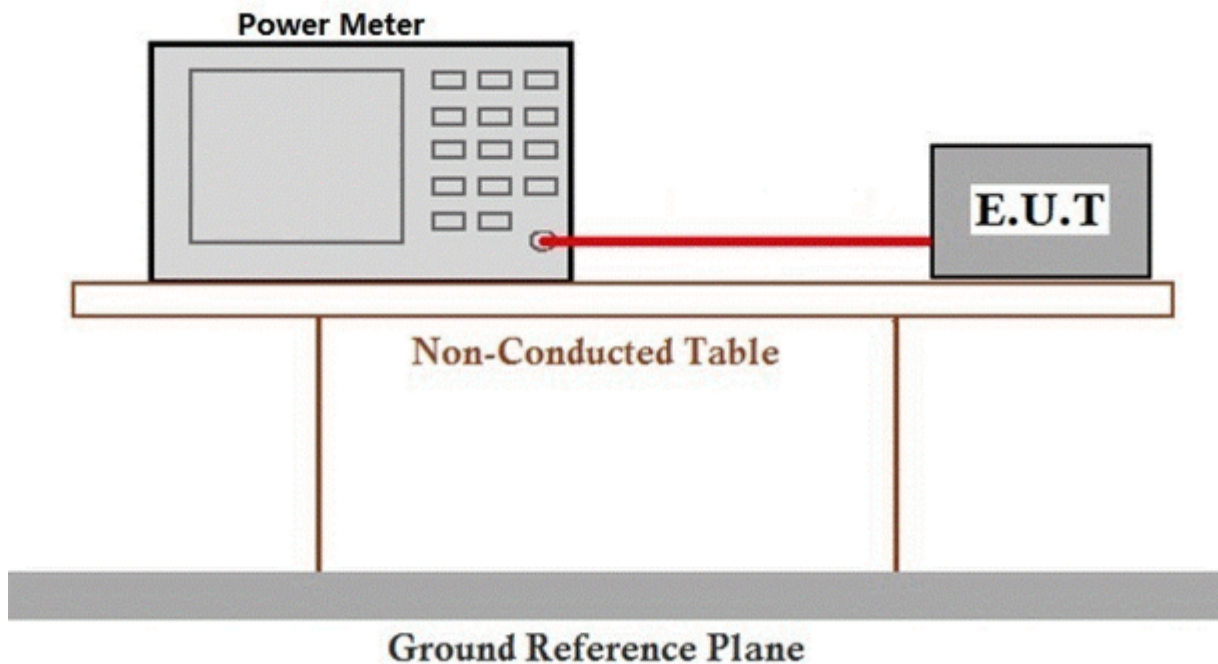
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 58.9 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_ Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

7.3.2 Test Setup Diagram



7.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

7.4 Power Spectrum Density

Test Requirement: 47 CFR Part 15, Subpart C 15.247(e)
Test Method: ANSI C63.10 (2013) Section 11.10.2
Limit: $\leq 8\text{dBm}$ in any 3 kHz band during any time interval of continuous transmission

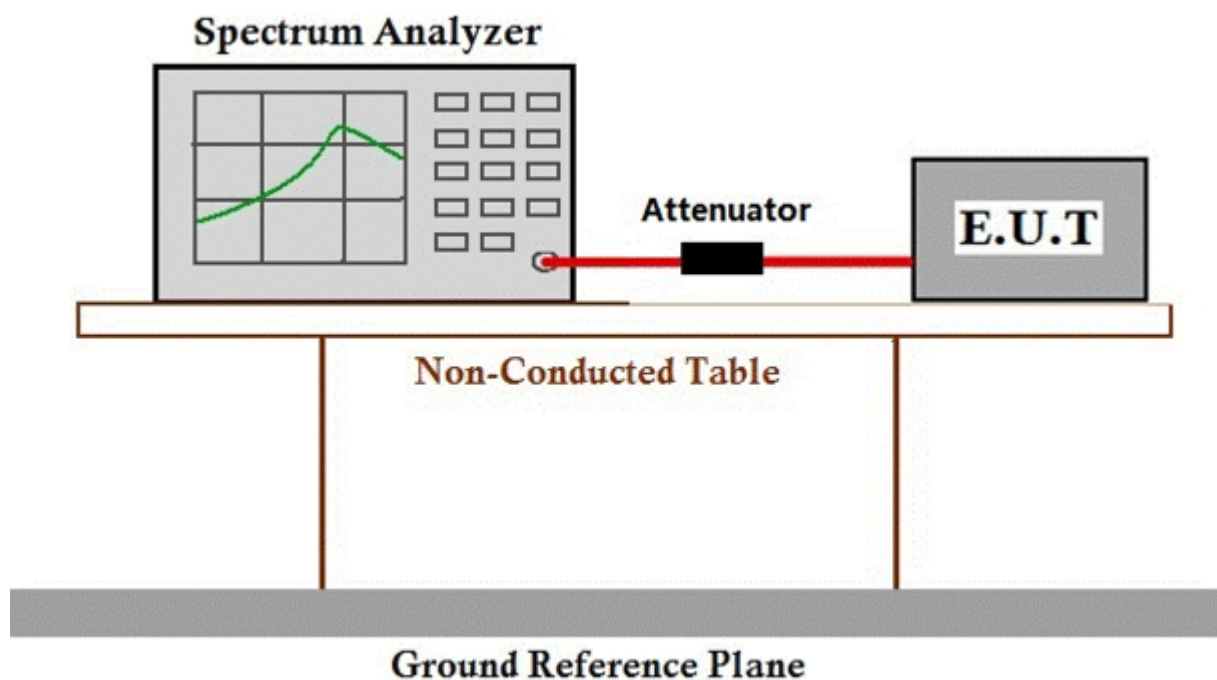
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 58.9 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

7.4.2 Test Setup Diagram



7.4.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

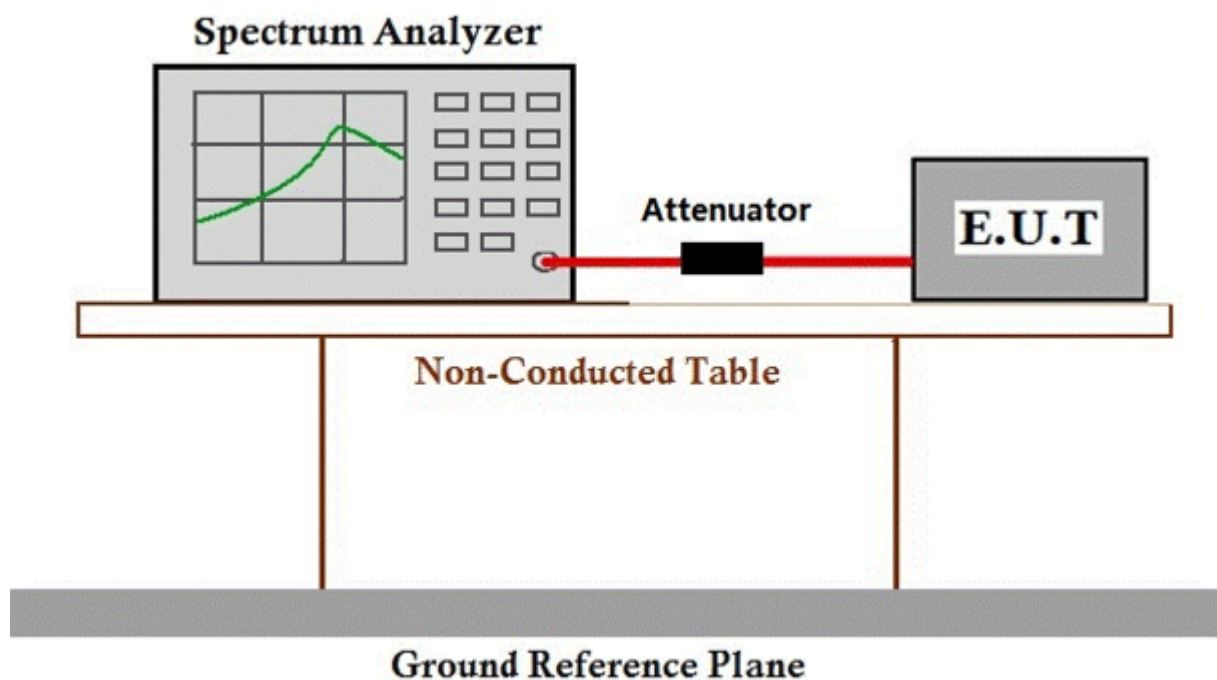
7.5 Conducted Band Edges Measurement

Test Requirement	47 CFR Part 15, Subpart C 15.247(d)
Test Method:	ANSI C63.10 (2013) Section 11.13.3.2
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

7.5.1 E.U.T. Operation

Operating Environment:				
Temperature:	24.6 °C	Humidity:	58.9 % RH	Atmospheric Pressure: 1020 mbar
Test mode	a:TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.			

7.5.2 Test Setup Diagram



7.5.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

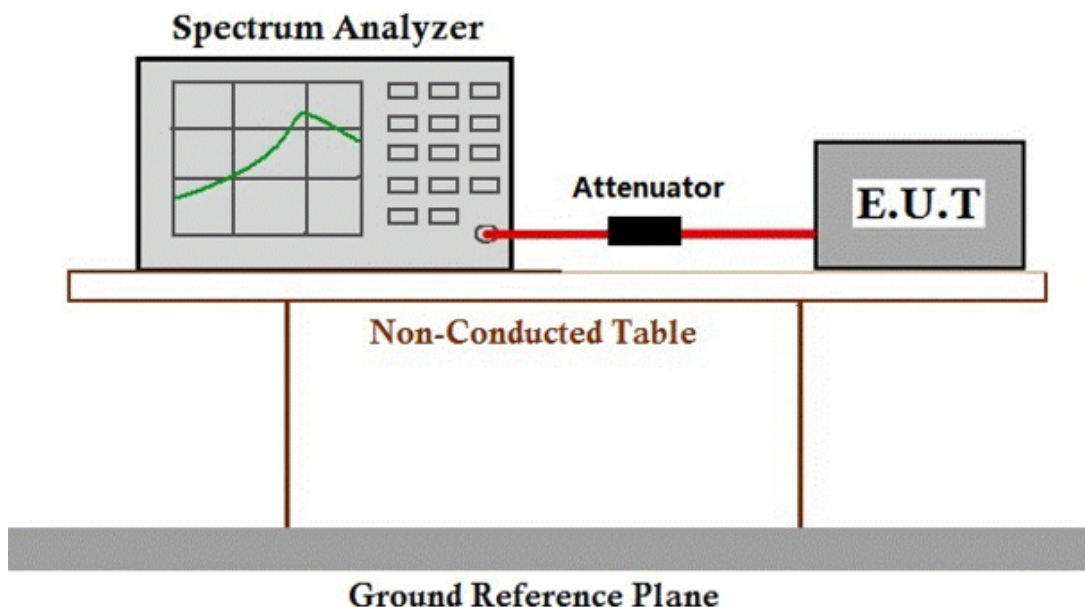
7.6 Conducted Spurious Emissions

Test Requirement	47 CFR Part 15, Subpart C 15.247(d)
Test Method:	ANSI C63.10 (2013) Section 11.11
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

7.6.1 E.U.T. Operation

Operating Environment:				
Temperature:	24.6 °C	Humidity:	58.9 % RH	Atmospheric Pressure: 1020 mbar
Test mode	a:TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.			

7.6.2 Test Setup Diagram



7.6.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



7.7 Radiated Emissions which fall in the restricted bands

Test Requirement: 47 CFR Part 15, Subpart C 15.209 & 15.247(d)
Test Method: ANSI C63.10 (2013) Section 11.12.1
Measurement Distance: 3m
Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

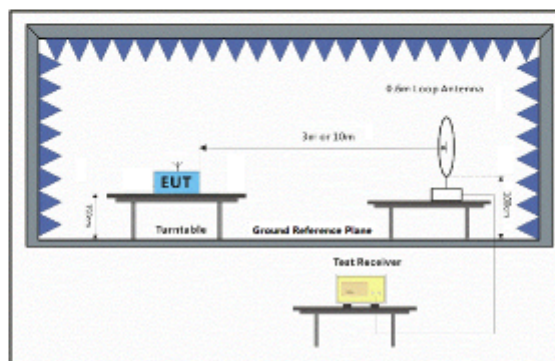
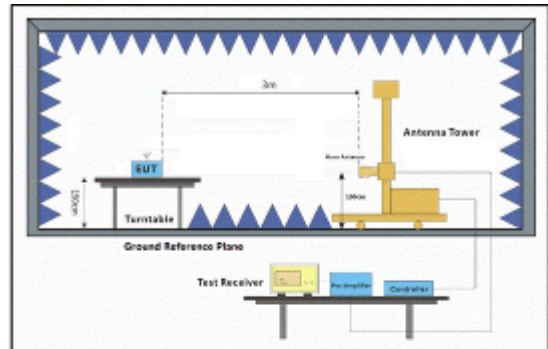
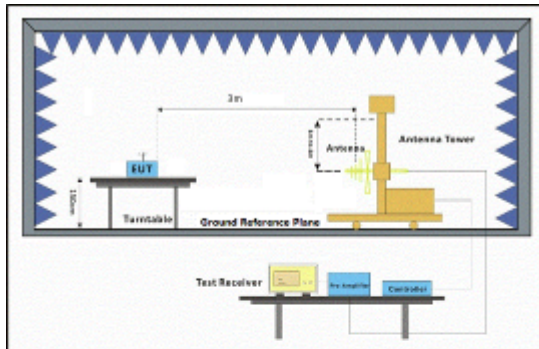
7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

7.7.2 Test Setup Diagram



7.7.3 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamplifier Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Mode:a; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:Low

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	36.38	26.25	5.03	37.44	30.22	54.00 -23.78 HORIZONTAL
2	2310.000	46.29	26.25	5.03	37.44	40.13	74.00 -33.87 HORIZONTAL
3	2390.000	34.69	26.43	4.88	37.42	28.58	54.00 -25.42 HORIZONTAL
4	2390.000	48.52	26.43	4.88	37.42	42.41	74.00 -31.59 HORIZONTAL
5	2483.500	36.45	26.58	5.23	37.40	30.86	54.00 -23.14 HORIZONTAL
6	2483.500	47.51	26.58	5.23	37.40	41.92	74.00 -32.08 HORIZONTAL
7	2500.000	36.30	26.60	4.95	37.39	30.46	54.00 -23.54 HORIZONTAL
8	2500.000	47.78	26.60	4.95	37.39	41.94	74.00 -32.06 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:Low

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	33.31	26.25	5.03	37.44	27.15	54.00 -26.85 VERTICAL
2	2310.000	45.47	26.25	5.03	37.44	39.31	74.00 -34.69 VERTICAL
3	2390.000	36.77	26.43	4.88	37.42	30.66	54.00 -23.34 VERTICAL
4	2390.000	46.25	26.43	4.88	37.42	40.14	74.00 -33.86 VERTICAL
5	2483.500	33.83	26.58	5.23	37.40	28.24	54.00 -25.76 VERTICAL
6	2483.500	45.81	26.58	5.23	37.40	40.22	74.00 -33.78 VERTICAL
7	2500.000	33.04	26.60	4.95	37.39	27.20	54.00 -26.80 VERTICAL
8	2500.000	46.84	26.60	4.95	37.39	41.00	74.00 -33.00 VERTICAL

Mode:a; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	33.17	26.25	5.03	37.44	27.01	54.00 -26.99 HORIZONTAL
2	2310.000	45.88	26.25	5.03	37.44	39.72	74.00 -34.28 HORIZONTAL
3	2390.000	33.25	26.43	4.88	37.42	27.14	54.00 -26.86 HORIZONTAL
4	2390.000	45.75	26.43	4.88	37.42	39.64	74.00 -34.36 HORIZONTAL
5	2483.500	34.64	26.58	5.23	37.40	29.05	54.00 -24.95 HORIZONTAL
6	2483.500	47.57	26.58	5.23	37.40	41.98	74.00 -32.02 HORIZONTAL
7	2500.000	33.51	26.60	4.95	37.39	27.67	54.00 -26.33 HORIZONTAL
8	2500.000	47.19	26.60	4.95	37.39	41.35	74.00 -32.65 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	34.19	26.25	5.03	37.44	28.03	54.00 -25.97 VERTICAL
2	2310.000	45.55	26.25	5.03	37.44	39.39	74.00 -34.61 VERTICAL
3	2390.000	32.61	26.43	4.88	37.42	26.50	54.00 -27.50 VERTICAL
4	2390.000	46.01	26.43	4.88	37.42	39.90	74.00 -34.10 VERTICAL
5	2483.500	32.93	26.58	5.23	37.40	27.34	54.00 -26.66 VERTICAL
6	2483.500	46.22	26.58	5.23	37.40	40.63	74.00 -33.37 VERTICAL
7	2500.000	34.31	26.60	4.95	37.39	28.47	54.00 -25.53 VERTICAL
8	2500.000	45.72	26.60	4.95	37.39	39.88	74.00 -34.12 VERTICAL

Mode:a; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:Low

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	38.65	26.25	5.03	37.44	32.49	54.00	-21.51	HORIZONTAL
2	2310.000	52.42	26.25	5.03	37.44	46.26	74.00	-27.74	HORIZONTAL
3	2390.000	47.29	26.43	4.88	37.42	41.18	54.00	-12.82	HORIZONTAL
4	2390.000	60.86	26.43	4.88	37.42	54.75	74.00	-19.25	HORIZONTAL
5	2483.500	44.20	26.58	5.23	37.40	38.61	54.00	-15.39	HORIZONTAL
6	2483.500	58.33	26.58	5.23	37.40	52.74	74.00	-21.26	HORIZONTAL
7	2500.000	44.38	26.60	4.95	37.39	38.54	54.00	-15.46	HORIZONTAL
8	2500.000	55.22	26.60	4.95	37.39	49.38	74.00	-24.62	HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:Low

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	36.30	26.25	5.03	37.44	30.14	54.00	-23.86	VERTICAL
2	2310.000	49.31	26.25	5.03	37.44	43.15	74.00	-30.85	VERTICAL
3	2390.000	44.61	26.43	4.88	37.42	38.50	54.00	-15.50	VERTICAL
4	2390.000	57.55	26.43	4.88	37.42	51.44	74.00	-22.56	VERTICAL
5	2483.500	41.54	26.58	5.23	37.40	35.95	54.00	-18.05	VERTICAL
6	2483.500	55.69	26.58	5.23	37.40	50.10	74.00	-23.90	VERTICAL
7	2500.000	40.59	26.60	4.95	37.39	34.75	54.00	-19.25	VERTICAL
8	2500.000	52.74	26.60	4.95	37.39	46.90	74.00	-27.10	VERTICAL

Mode:a; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna	Cable Preamp			Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	36.72	26.25	5.03	37.44	30.56	54.00	-23.44	HORIZONTAL
2	2310.000	51.16	26.25	5.03	37.44	45.00	74.00	-29.00	HORIZONTAL
3	2390.000	41.69	26.43	4.88	37.42	35.58	54.00	-18.42	HORIZONTAL
4	2390.000	54.37	26.43	4.88	37.42	48.26	74.00	-25.74	HORIZONTAL
5	2483.500	51.31	26.58	5.23	37.40	45.72	54.00	-8.28	HORIZONTAL
6	2483.500	63.23	26.58	5.23	37.40	57.64	74.00	-16.36	HORIZONTAL
7	2500.000	46.36	26.60	4.95	37.39	40.52	54.00	-13.48	HORIZONTAL
8	2500.000	59.47	26.60	4.95	37.39	53.63	74.00	-20.37	HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase		
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB		
1	2310.000	33.88	26.25	5.03	37.44	27.72	54.00	-26.28	VERTICAL
2	2310.000	45.78	26.25	5.03	37.44	39.62	74.00	-34.38	VERTICAL
3	2390.000	37.26	26.43	4.88	37.42	31.15	54.00	-22.85	VERTICAL
4	2390.000	53.15	26.43	4.88	37.42	47.04	74.00	-26.96	VERTICAL
5	2483.500	47.40	26.58	5.23	37.40	41.81	54.00	-12.19	VERTICAL
6	2483.500	61.29	26.58	5.23	37.40	55.70	74.00	-18.30	VERTICAL
7	2500.000	46.19	26.60	4.95	37.39	40.35	54.00	-13.65	VERTICAL
8	2500.000	58.89	26.60	4.95	37.39	53.05	74.00	-20.95	VERTICAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:Low

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	39.11	26.25	5.03	37.44	32.95	54.00 -21.05 HORIZONTAL
2	2310.000	53.31	26.25	5.03	37.44	47.15	74.00 -26.85 HORIZONTAL
3	2390.000	46.76	26.43	4.88	37.42	40.65	54.00 -13.35 HORIZONTAL
4	2390.000	61.88	26.43	4.88	37.42	55.77	74.00 -18.23 HORIZONTAL
5	2483.500	43.41	26.58	5.23	37.40	37.82	54.00 -16.18 HORIZONTAL
6	2483.500	58.96	26.58	5.23	37.40	53.37	74.00 -20.63 HORIZONTAL
7	2500.000	45.93	26.60	4.95	37.39	40.09	54.00 -13.91 HORIZONTAL
8	2500.000	56.80	26.60	4.95	37.39	50.96	74.00 -23.04 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:Low

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	39.59	26.25	5.03	37.44	33.43	54.00 -20.57 VERTICAL
2	2310.000	49.92	26.25	5.03	37.44	43.76	74.00 -30.24 VERTICAL
3	2390.000	47.19	26.43	4.88	37.42	41.08	54.00 -12.92 VERTICAL
4	2390.000	60.79	26.43	4.88	37.42	54.68	74.00 -19.32 VERTICAL
5	2483.500	41.54	26.58	5.23	37.40	35.95	54.00 -18.05 VERTICAL
6	2483.500	53.97	26.58	5.23	37.40	48.38	74.00 -25.62 VERTICAL
7	2500.000	40.97	26.60	4.95	37.39	35.13	54.00 -18.87 VERTICAL
8	2500.000	53.68	26.60	4.95	37.39	47.84	74.00 -26.16 VERTICAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	36.99	26.25	5.03	37.44	30.83	54.00	-23.17	HORIZONTAL
2	2310.000	49.38	26.25	5.03	37.44	43.22	74.00	-30.78	HORIZONTAL
3	2390.000	42.31	26.43	4.88	37.42	36.20	54.00	-17.80	HORIZONTAL
4	2390.000	53.78	26.43	4.88	37.42	47.67	74.00	-26.33	HORIZONTAL
5	2483.500	53.17	26.58	5.23	37.40	47.58	54.00	-6.42	HORIZONTAL
6	2483.500	62.22	26.58	5.23	37.40	56.63	74.00	-17.37	HORIZONTAL
7	2500.000	51.39	26.60	4.95	37.39	45.55	54.00	-8.45	HORIZONTAL
8	2500.000	63.52	26.60	4.95	37.39	57.68	74.00	-16.32	HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	30.88	26.25	5.03	37.44	24.72	54.00	-29.28	VERTICAL
2	2310.000	43.93	26.25	5.03	37.44	37.77	74.00	-36.23	VERTICAL
3	2390.000	38.69	26.43	4.88	37.42	32.58	54.00	-21.42	VERTICAL
4	2390.000	47.65	26.43	4.88	37.42	41.54	74.00	-32.46	VERTICAL
5	2483.500	41.67	26.58	5.23	37.40	36.08	54.00	-17.92	VERTICAL
6	2483.500	54.48	26.58	5.23	37.40	48.89	74.00	-25.11	VERTICAL
7	2500.000	40.90	26.60	4.95	37.39	35.06	54.00	-18.94	VERTICAL
8	2500.000	49.98	26.60	4.95	37.39	44.14	74.00	-29.86	VERTICAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:40MHz; Channel:Low

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	36.97	26.25	5.03	37.44	30.81	54.00 -23.19 HORIZONTAL
2	2310.000	51.40	26.25	5.03	37.44	45.24	74.00 -28.76 HORIZONTAL
3	2390.000	45.79	26.43	4.88	37.42	39.68	54.00 -14.32 HORIZONTAL
4	2390.000	57.93	26.43	4.88	37.42	51.82	74.00 -22.18 HORIZONTAL
5	2483.500	43.99	26.58	5.23	37.40	38.40	54.00 -15.60 HORIZONTAL
6	2483.500	57.25	26.58	5.23	37.40	51.66	74.00 -22.34 HORIZONTAL
7	2500.000	41.84	26.60	4.95	37.39	36.00	54.00 -18.00 HORIZONTAL
8	2500.000	56.58	26.60	4.95	37.39	50.74	74.00 -23.26 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:40MHz; Channel:Low

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	34.50	26.25	5.03	37.44	28.34	54.00 -25.66 VERTICAL
2	2310.000	45.48	26.25	5.03	37.44	39.32	74.00 -34.68 VERTICAL
3	2390.000	42.88	26.43	4.88	37.42	36.77	54.00 -17.23 VERTICAL
4	2390.000	54.65	26.43	4.88	37.42	48.54	74.00 -25.46 VERTICAL
5	2483.500	38.59	26.58	5.23	37.40	33.00	54.00 -21.00 VERTICAL
6	2483.500	53.17	26.58	5.23	37.40	47.58	74.00 -26.42 VERTICAL
7	2500.000	35.53	26.60	4.95	37.39	29.69	54.00 -24.31 VERTICAL
8	2500.000	48.88	26.60	4.95	37.39	43.04	74.00 -30.96 VERTICAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:40MHz; Channel:High

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	36.46	26.25	5.03	37.44	30.30	54.00 -23.70 HORIZONTAL
2	2310.000	48.58	26.25	5.03	37.44	42.42	74.00 -31.58 HORIZONTAL
3	2390.000	40.74	26.43	4.88	37.42	34.63	54.00 -19.37 HORIZONTAL
4	2390.000	52.60	26.43	4.88	37.42	46.49	74.00 -27.51 HORIZONTAL
5	2483.500	46.85	26.58	5.23	37.40	41.26	54.00 -12.74 HORIZONTAL
6	2483.500	61.15	26.58	5.23	37.40	55.56	74.00 -18.44 HORIZONTAL
7	2500.000	44.65	26.60	4.95	37.39	38.81	54.00 -15.19 HORIZONTAL
8	2500.000	59.29	26.60	4.95	37.39	53.45	74.00 -20.55 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:40MHz; Channel:High

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	2310.000	36.76	26.25	5.03	37.44	30.60	54.00 -23.40 VERTICAL
2	2310.000	48.37	26.25	5.03	37.44	42.21	74.00 -31.79 VERTICAL
3	2390.000	40.59	26.43	4.88	37.42	34.48	54.00 -19.52 VERTICAL
4	2390.000	53.33	26.43	4.88	37.42	47.22	74.00 -26.78 VERTICAL
5	2483.500	42.32	26.58	5.23	37.40	36.73	54.00 -17.27 VERTICAL
6	2483.500	56.58	26.58	5.23	37.40	50.99	74.00 -23.01 VERTICAL
7	2500.000	43.14	26.60	4.95	37.39	37.30	54.00 -16.70 VERTICAL
8	2500.000	55.90	26.60	4.95	37.39	50.06	74.00 -23.94 VERTICAL

7.8 Radiated Spurious Emissions

Test Requirement: 47 CFR Part 15, Subpart C 15.209 & 15.247(d)
Test Method: ANSI C63.10 (2013) Section 11.11
Measurement Distance: 3m
Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

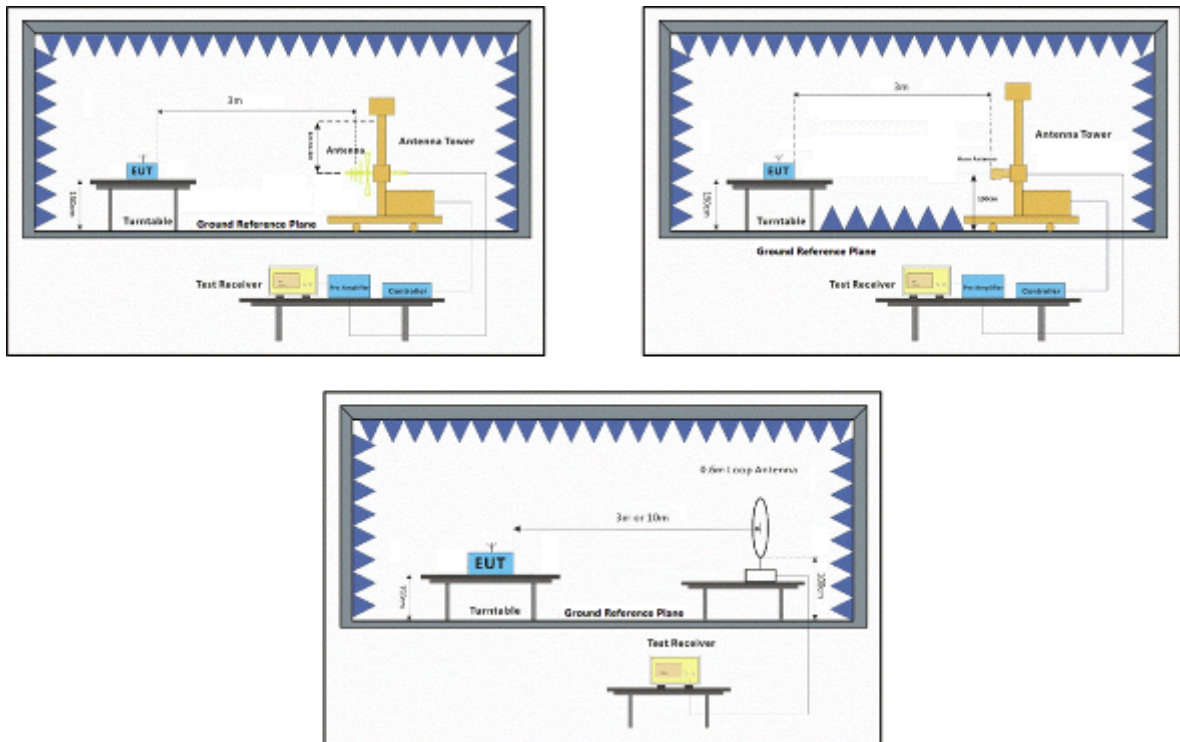
7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

7.8.2 Test Setup Diagram





7.8.3 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark:

- 1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown

Mode:a; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	36.77	21.80	12.52	0.34	23.01	11.65	40.00	-28.35	HORIZONTAL
2	54.26	21.78	12.68	0.59	25.01	10.04	40.00	-29.96	HORIZONTAL
3	107.51	29.84	10.25	0.87	27.49	13.47	43.50	-30.03	HORIZONTAL
4	140.34	25.51	13.10	1.04	28.16	11.49	43.50	-32.01	HORIZONTAL
5	189.74	29.00	11.95	1.28	28.19	14.04	43.50	-29.46	HORIZONTAL
6	787.85	28.07	22.61	2.79	28.77	24.70	46.00	-21.30	HORIZONTAL

Mode:a; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3834.438	34.34	29.12	7.80	36.91	34.35	54.00	-19.65	HORIZONTAL
2	3834.438	45.34	29.12	7.80	36.91	45.35	74.00	-28.65	HORIZONTAL
3	4831.962	40.52	30.85	6.15	36.94	40.58	54.00	-13.42	HORIZONTAL
4	4831.962	52.55	30.85	6.15	36.94	52.61	74.00	-21.39	HORIZONTAL
5	6195.508	31.18	33.00	6.92	36.99	34.11	54.00	-19.89	HORIZONTAL
6	6195.508	43.88	33.00	6.92	36.99	46.81	74.00	-27.19	HORIZONTAL
7	7236.309	30.33	35.55	7.35	36.93	36.30	54.00	-17.70	HORIZONTAL
8	7236.309	43.96	35.55	7.35	36.93	49.93	74.00	-24.07	HORIZONTAL
9	9047.272	31.85	36.57	8.29	37.02	39.69	54.00	-14.31	HORIZONTAL
10	9047.272	45.06	36.57	8.29	37.02	52.90	74.00	-21.10	HORIZONTAL
11	12060.070	28.57	39.46	10.71	37.17	41.57	54.00	-12.43	HORIZONTAL
12	12060.070	43.31	39.46	10.71	37.17	56.31	74.00	-17.69	HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	32.29	21.93	12.27	0.13	22.03	12.30	40.00	-27.70	VERTICAL
2	48.67	21.00	12.97	0.62	24.79	9.80	40.00	-30.20	VERTICAL
3	120.28	29.13	11.52	0.92	28.19	13.38	43.50	-30.12	VERTICAL
4	199.99	31.85	11.20	1.16	28.42	15.79	43.50	-27.71	VERTICAL
5	485.61	28.48	18.07	2.11	29.49	19.17	46.00	-26.83	VERTICAL
6	744.87	29.56	21.99	3.12	29.18	25.49	46.00	-20.51	VERTICAL

Mode:a; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3214.623	39.39	27.90	5.91	37.01	36.19	54.00	-17.81	VERTICAL
2	3214.623	49.91	27.90	5.91	37.01	46.71	74.00	-27.29	VERTICAL
3	4824.962	48.16	30.82	6.01	36.94	48.05	54.00	-5.95	VERTICAL
4	4824.962	56.89	30.82	6.01	36.94	56.78	74.00	-17.22	VERTICAL
5	6451.353	31.38	34.15	7.03	36.98	35.58	54.00	-18.42	VERTICAL
6	6451.353	44.31	34.15	7.03	36.98	48.51	74.00	-25.49	VERTICAL
7	7236.795	33.31	35.55	7.35	36.93	39.28	54.00	-14.72	VERTICAL
8	7236.795	45.86	35.55	7.35	36.93	51.83	74.00	-22.17	VERTICAL
9	9648.250	31.91	37.54	8.18	37.08	40.55	54.00	-13.45	VERTICAL
10	9648.250	44.40	37.54	8.18	37.08	53.04	74.00	-20.96	VERTICAL
11	12060.280	30.01	39.46	10.71	37.17	43.01	54.00	-10.99	VERTICAL
12	12060.280	42.00	39.46	10.71	37.17	55.00	74.00	-19.00	VERTICAL

Mode:a; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:middle

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	3790.361	35.73	28.97	7.83	36.92	35.61	54.00 -18.39 HORIZONTAL
2	3790.361	45.20	28.97	7.83	36.92	45.08	74.00 -28.92 HORIZONTAL
3	4884.043	42.03	30.95	6.86	36.95	42.89	54.00 -11.11 HORIZONTAL
4	4884.043	54.89	30.95	6.86	36.95	55.75	74.00 -18.25 HORIZONTAL
5	5797.032	34.13	32.16	7.47	37.00	36.76	54.00 -17.24 HORIZONTAL
6	5797.032	45.27	32.16	7.47	37.00	47.90	74.00 -26.10 HORIZONTAL
7	7326.092	32.27	35.74	7.39	36.92	38.48	54.00 -15.52 HORIZONTAL
8	7326.092	42.88	35.74	7.39	36.92	49.09	74.00 -24.91 HORIZONTAL
9	9768.852	31.29	37.74	8.37	37.09	40.31	54.00 -13.69 HORIZONTAL
10	9768.852	44.69	37.74	8.37	37.09	53.71	74.00 -20.29 HORIZONTAL
11	12210.480	26.28	39.21	10.98	37.06	39.41	54.00 -14.59 HORIZONTAL
12	12210.480	38.77	39.21	10.98	37.06	51.90	74.00 -22.10 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:middle

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	4039.212	32.53	29.53	7.13	36.90	32.29	54.00 -21.71 VERTICAL
2	4039.212	44.84	29.53	7.13	36.90	44.60	74.00 -29.40 VERTICAL
3	4884.151	45.48	30.95	6.86	36.95	46.34	54.00 -7.66 VERTICAL
4	4884.151	54.44	30.95	6.86	36.95	55.30	74.00 -18.70 VERTICAL
5	6451.353	31.69	34.15	7.03	36.98	35.89	54.00 -18.11 VERTICAL
6	6451.353	43.64	34.15	7.03	36.98	47.84	74.00 -26.16 VERTICAL
7	7326.838	31.56	35.74	7.39	36.92	37.77	54.00 -16.23 VERTICAL
8	7326.838	44.34	35.74	7.39	36.92	50.55	74.00 -23.45 VERTICAL
9	9768.916	31.13	37.74	8.37	37.09	40.15	54.00 -13.85 VERTICAL
10	9768.916	45.84	37.74	8.37	37.09	54.86	74.00 -19.14 VERTICAL
11	12210.210	28.97	39.21	10.98	37.06	42.10	54.00 -11.90 VERTICAL
12	12210.210	42.08	39.21	10.98	37.06	55.21	74.00 -18.79 VERTICAL

Mode:a; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	3280.326	36.31	27.90	5.75	36.99	32.97	54.00 -21.03 HORIZONTAL
2	3280.326	48.79	27.90	5.75	36.99	45.45	74.00 -28.55 HORIZONTAL
3	4924.721	43.07	31.01	7.49	36.95	44.62	54.00 -9.38 HORIZONTAL
4	4924.721	53.81	31.01	7.49	36.95	55.36	74.00 -18.64 HORIZONTAL
5	6159.797	32.45	32.84	6.95	37.00	35.24	54.00 -18.76 HORIZONTAL
6	6159.797	44.83	32.84	6.95	37.00	47.62	74.00 -26.38 HORIZONTAL
7	7386.516	30.11	35.85	7.42	36.92	36.46	54.00 -17.54 HORIZONTAL
8	7386.516	42.91	35.85	7.42	36.92	49.26	74.00 -24.74 HORIZONTAL
9	9848.102	29.35	37.82	8.46	37.09	38.54	54.00 -15.46 HORIZONTAL
10	9848.102	41.71	37.82	8.46	37.09	50.90	74.00 -23.10 HORIZONTAL
11	12310.800	28.68	39.03	11.10	36.97	41.84	54.00 -12.16 HORIZONTAL
12	12310.800	40.35	39.03	11.10	36.97	53.51	74.00 -20.49 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	3280.326	36.81	27.90	5.75	36.99	33.47	54.00 -20.53 VERTICAL
2	3280.326	49.86	27.90	5.75	36.99	46.52	74.00 -27.48 VERTICAL
3	4924.721	44.38	31.01	7.49	36.95	45.93	54.00 -8.07 VERTICAL
4	4924.721	56.16	31.01	7.49	36.95	57.71	74.00 -16.29 VERTICAL
5	5813.812	32.37	32.17	7.46	37.00	35.00	54.00 -19.00 VERTICAL
6	5813.812	43.63	32.17	7.46	37.00	46.26	74.00 -27.74 VERTICAL
7	7386.373	30.29	35.85	7.42	36.92	36.64	54.00 -17.36 VERTICAL
8	7386.373	41.57	35.85	7.42	36.92	47.92	74.00 -26.08 VERTICAL
9	9848.274	29.75	37.82	8.46	37.09	38.94	54.00 -15.06 VERTICAL
10	9848.274	43.66	37.82	8.46	37.09	52.85	74.00 -21.15 VERTICAL
11	12310.160	27.53	39.03	11.10	36.97	40.69	54.00 -13.31 VERTICAL
12	12310.160	39.26	39.03	11.10	36.97	52.42	74.00 -21.58 VERTICAL

Mode:a; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	31.95	20.16	12.25	0.11	21.90	10.62	40.00	-29.38	HORIZONTAL
2	51.30	21.66	12.93	0.60	24.90	10.29	40.00	-29.71	HORIZONTAL
3	114.51	24.68	11.17	0.91	28.00	8.76	43.50	-34.74	HORIZONTAL
4	175.65	24.60	12.81	1.33	28.08	10.66	43.50	-32.84	HORIZONTAL
5	502.94	27.95	18.25	2.19	29.65	18.74	46.00	-27.26	HORIZONTAL
6	785.09	28.23	22.58	2.80	28.80	24.81	46.00	-21.19	HORIZONTAL

Mode:a; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3856.668	33.92	29.19	7.73	36.91	33.93	54.00	-20.07	HORIZONTAL
2	3856.668	45.12	29.19	7.73	36.91	45.13	74.00	-28.87	HORIZONTAL
3	4824.072	32.53	30.82	6.01	36.94	32.42	54.00	-21.58	HORIZONTAL
4	4824.072	45.98	30.82	6.01	36.94	45.87	74.00	-28.13	HORIZONTAL
5	6756.708	31.29	34.75	7.19	36.97	36.26	54.00	-17.74	HORIZONTAL
6	6756.708	43.24	34.75	7.19	36.97	48.21	74.00	-25.79	HORIZONTAL
7	7236.475	31.57	35.55	7.35	36.93	37.54	54.00	-16.46	HORIZONTAL
8	7236.475	43.38	35.55	7.35	36.93	49.35	74.00	-24.65	HORIZONTAL
9	9648.525	33.07	37.54	8.18	37.08	41.71	54.00	-12.29	HORIZONTAL
10	9648.525	44.82	37.54	8.18	37.08	53.46	74.00	-20.54	HORIZONTAL
11	12060.850	29.19	39.46	10.71	37.17	42.19	54.00	-11.81	HORIZONTAL
12	12060.850	40.39	39.46	10.71	37.17	53.39	74.00	-20.61	HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	37.81	21.64	12.55	0.46	23.31	11.34	40.00	-28.66	VERTICAL
2	51.30	22.98	12.93	0.60	24.90	11.61	40.00	-28.39	VERTICAL
3	107.51	28.18	10.25	0.87	27.49	11.81	43.50	-31.69	VERTICAL
4	166.65	25.70	13.19	1.30	28.09	12.10	43.50	-31.40	VERTICAL
5	490.74	27.03	18.12	2.12	29.49	17.78	46.00	-28.22	VERTICAL
6	872.18	32.65	23.73	2.93	28.29	31.02	46.00	-14.98	VERTICAL

Mode:a; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3214.623	35.85	27.90	5.91	37.01	32.65	54.00	-21.35	VERTICAL
2	3214.623	47.34	27.90	5.91	37.01	44.14	74.00	-29.86	VERTICAL
3	4824.771	33.83	30.82	6.01	36.94	33.72	54.00	-20.28	VERTICAL
4	4824.771	46.40	30.82	6.01	36.94	46.29	74.00	-27.71	VERTICAL
5	6285.695	32.78	33.51	6.95	36.99	36.25	54.00	-17.75	VERTICAL
6	6285.695	44.70	33.51	6.95	36.99	48.17	74.00	-25.83	VERTICAL
7	7236.262	34.22	35.55	7.35	36.93	40.19	54.00	-13.81	VERTICAL
8	7236.262	46.47	35.55	7.35	36.93	52.44	74.00	-21.56	VERTICAL
9	9648.543	33.07	37.54	8.18	37.08	41.71	54.00	-12.29	VERTICAL
10	9648.543	44.40	37.54	8.18	37.08	53.04	74.00	-20.96	VERTICAL
11	12060.380	26.77	39.46	10.71	37.17	39.77	54.00	-14.23	VERTICAL
12	12060.380	39.29	39.46	10.71	37.17	52.29	74.00	-21.71	VERTICAL

Mode:a; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:middle

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	3834.438	27.05	29.12	7.80	36.91	27.06	54.00 -26.94 HORIZONTAL
2	3834.438	42.07	29.12	7.80	36.91	42.08	74.00 -31.92 HORIZONTAL
3	4884.977	30.47	30.95	6.86	36.95	31.33	54.00 -22.67 HORIZONTAL
4	4884.977	44.82	30.95	6.86	36.95	45.68	74.00 -28.32 HORIZONTAL
5	6526.373	31.15	34.32	7.09	36.98	35.58	54.00 -18.42 HORIZONTAL
6	6526.373	43.08	34.32	7.09	36.98	47.51	74.00 -26.49 HORIZONTAL
7	7326.838	27.70	35.74	7.39	36.92	33.91	54.00 -20.09 HORIZONTAL
8	7326.838	41.38	35.74	7.39	36.92	47.59	74.00 -26.41 HORIZONTAL
9	9768.312	26.17	37.74	8.37	37.09	35.19	54.00 -18.81 HORIZONTAL
10	9768.312	40.94	37.74	8.37	37.09	49.96	74.00 -24.04 HORIZONTAL
11	12210.450	25.85	39.21	10.98	37.06	38.98	54.00 -15.02 HORIZONTAL
12	12210.450	41.79	39.21	10.98	37.06	54.92	74.00 -19.08 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:middle

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	3261.418	36.29	27.90	5.80	36.99	33.00	54.00 -21.00 VERTICAL
2	3261.418	50.80	27.90	5.80	36.99	47.51	74.00 -26.49 VERTICAL
3	4884.151	30.30	30.95	6.86	36.95	31.16	54.00 -22.84 VERTICAL
4	4884.151	46.56	30.95	6.86	36.95	47.42	74.00 -26.58 VERTICAL
5	6526.373	27.03	34.32	7.09	36.98	31.46	54.00 -22.54 VERTICAL
6	6526.373	42.39	34.32	7.09	36.98	46.82	74.00 -27.18 VERTICAL
7	7326.804	31.18	35.74	7.39	36.92	37.39	54.00 -16.61 VERTICAL
8	7326.804	44.32	35.74	7.39	36.92	50.53	74.00 -23.47 VERTICAL
9	9768.430	30.90	37.74	8.37	37.09	39.92	54.00 -14.08 VERTICAL
10	9768.430	43.15	37.74	8.37	37.09	52.17	74.00 -21.83 VERTICAL
11	12210.850	25.96	39.21	10.98	37.06	39.09	54.00 -14.91 VERTICAL
12	12210.850	42.66	39.21	10.98	37.06	55.79	74.00 -18.21 VERTICAL

Mode:a; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	3834.438	30.19	29.12	7.80	36.91	30.20	54.00 -23.80 HORIZONTAL
2	3834.438	44.79	29.12	7.80	36.91	44.80	74.00 -29.20 HORIZONTAL
3	4924.982	33.58	31.01	7.49	36.95	35.13	54.00 -18.87 HORIZONTAL
4	4924.982	47.99	31.01	7.49	36.95	49.54	74.00 -24.46 HORIZONTAL
5	7386.893	28.19	35.85	7.42	36.92	34.54	54.00 -19.46 HORIZONTAL
6	7386.893	42.07	35.85	7.42	36.92	48.42	74.00 -25.58 HORIZONTAL
7	9021.160	30.10	36.53	8.26	37.02	37.87	54.00 -16.13 HORIZONTAL
8	9021.160	44.89	36.53	8.26	37.02	52.66	74.00 -21.34 HORIZONTAL
9	9848.530	28.21	37.82	8.46	37.09	37.40	54.00 -16.60 HORIZONTAL
10	9848.530	42.99	37.82	8.46	37.09	52.18	74.00 -21.82 HORIZONTAL
11	12310.350	26.52	39.03	11.10	36.97	39.68	54.00 -14.32 HORIZONTAL
12	12310.350	40.24	39.03	11.10	36.97	53.40	74.00 -20.60 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	4924.721	31.60	31.01	7.49	36.95	33.15	54.00 -20.85 VERTICAL
2	4924.721	46.80	31.01	7.49	36.95	48.35	74.00 -25.65 VERTICAL
3	5881.418	29.65	32.23	7.43	37.00	32.31	54.00 -21.69 VERTICAL
4	5881.418	42.17	32.23	7.43	37.00	44.83	74.00 -29.17 VERTICAL
5	7386.309	25.78	35.85	7.42	36.92	32.13	54.00 -21.87 VERTICAL
6	7386.309	42.51	35.85	7.42	36.92	48.86	74.00 -25.14 VERTICAL
7	9848.880	29.93	37.82	8.46	37.09	39.12	54.00 -14.88 VERTICAL
8	9848.880	41.70	37.82	8.46	37.09	50.89	74.00 -23.11 VERTICAL
9	10606.150	23.74	39.16	9.63	37.12	35.41	54.00 -18.59 VERTICAL
10	10606.150	37.04	39.16	9.63	37.12	48.71	74.00 -25.29 VERTICAL
11	12310.620	26.14	39.03	11.10	36.97	39.30	54.00 -14.70 VERTICAL
12	12310.620	39.24	39.03	11.10	36.97	52.40	74.00 -21.60 VERTICAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	37.81	21.66	12.55	0.46	23.31	11.36	40.00	-28.64	HORIZONTAL
2	59.03	19.91	12.25	0.58	25.21	7.53	40.00	-32.47	HORIZONTAL
3	106.76	29.12	10.16	0.87	27.44	12.71	43.50	-30.79	HORIZONTAL
4	169.01	25.15	13.08	1.31	28.09	11.45	43.50	-32.05	HORIZONTAL
5	564.64	28.49	20.00	1.98	29.35	21.12	46.00	-24.88	HORIZONTAL
6	763.38	27.31	22.34	2.84	28.96	23.53	46.00	-22.47	HORIZONTAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4824.885	34.46	30.82	6.01	36.94	34.35	54.00	-19.65	HORIZONTAL
2	4824.885	48.43	30.82	6.01	36.94	48.32	74.00	-25.68	HORIZONTAL
3	6056.092	31.54	32.45	7.06	37.00	34.05	54.00	-19.95	HORIZONTAL
4	6056.092	44.23	32.45	7.06	37.00	46.74	74.00	-27.26	HORIZONTAL
5	7236.832	31.13	35.55	7.35	36.93	37.10	54.00	-16.90	HORIZONTAL
6	7236.832	44.38	35.55	7.35	36.93	50.35	74.00	-23.65	HORIZONTAL
7	9648.390	31.38	37.54	8.18	37.08	40.02	54.00	-13.98	HORIZONTAL
8	9648.390	45.55	37.54	8.18	37.08	54.19	74.00	-19.81	HORIZONTAL
9	10948.780	24.24	39.90	9.96	37.15	36.95	54.00	-17.05	HORIZONTAL
10	10948.780	37.75	39.90	9.96	37.15	50.46	74.00	-23.54	HORIZONTAL
11	12060.850	26.29	39.46	10.71	37.17	39.29	54.00	-14.71	HORIZONTAL
12	12060.850	39.94	39.46	10.71	37.17	52.94	74.00	-21.06	HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	33.92	23.31	12.34	0.20	22.53	13.32	40.00	-26.68	VERTICAL
2	48.67	22.39	12.97	0.62	24.79	11.19	40.00	-28.81	VERTICAL
3	109.41	30.27	10.55	0.88	27.66	14.04	43.50	-29.46	VERTICAL
4	182.56	26.55	12.56	1.33	28.11	12.33	43.50	-31.17	VERTICAL
5	616.37	30.28	20.70	2.10	29.31	23.77	46.00	-22.23	VERTICAL
6	872.18	33.58	23.73	2.93	28.29	31.95	46.00	-14.05	VERTICAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3105.037	34.69	27.90	5.37	37.03	30.93	54.00	-23.07	VERTICAL
2	3105.037	47.66	27.90	5.37	37.03	43.90	74.00	-30.10	VERTICAL
3	4039.212	31.76	29.53	7.13	36.90	31.52	54.00	-22.48	VERTICAL
4	4039.212	46.10	29.53	7.13	36.90	45.86	74.00	-28.14	VERTICAL
5	4824.890	35.83	30.82	6.01	36.94	35.72	54.00	-18.28	VERTICAL
6	4824.890	48.98	30.82	6.01	36.94	48.87	74.00	-25.13	VERTICAL
7	7236.882	30.12	35.55	7.35	36.93	36.09	54.00	-17.91	VERTICAL
8	7236.882	43.74	35.55	7.35	36.93	49.71	74.00	-24.29	VERTICAL
9	9648.850	30.06	37.54	8.18	37.08	38.70	54.00	-15.30	VERTICAL
10	9648.850	43.96	37.54	8.18	37.08	52.60	74.00	-21.40	VERTICAL
11	12060.280	29.36	39.46	10.71	37.17	42.36	54.00	-11.64	VERTICAL
12	12060.280	41.24	39.46	10.71	37.17	54.24	74.00	-19.76	VERTICAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:middle

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	3823.371	31.71	29.08	7.83	36.91	31.71	54.00 -22.29 HORIZONTAL
2	3823.371	45.26	29.08	7.83	36.91	45.26	74.00 -28.74 HORIZONTAL
3	4521.185	31.69	30.14	6.69	36.92	31.60	54.00 -22.40 HORIZONTAL
4	4521.185	44.36	30.14	6.69	36.92	44.27	74.00 -29.73 HORIZONTAL
5	4884.440	35.62	30.95	6.86	36.95	36.48	54.00 -17.52 HORIZONTAL
6	4884.440	49.03	30.95	6.86	36.95	49.89	74.00 -24.11 HORIZONTAL
7	7326.516	28.48	35.74	7.39	36.92	34.69	54.00 -19.31 HORIZONTAL
8	7326.516	42.90	35.74	7.39	36.92	49.11	74.00 -24.89 HORIZONTAL
9	9768.479	30.81	37.74	8.37	37.09	39.83	54.00 -14.17 HORIZONTAL
10	9768.479	43.24	37.74	8.37	37.09	52.26	74.00 -21.74 HORIZONTAL
11	12210.250	26.82	39.21	10.98	37.06	39.95	54.00 -14.05 HORIZONTAL
12	12210.250	39.59	39.21	10.98	37.06	52.72	74.00 -21.28 HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:middle

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB
1	3261.418	38.77	27.90	5.80	36.99	35.48	54.00 -18.52 VERTICAL
2	3261.418	50.29	27.90	5.80	36.99	47.00	74.00 -27.00 VERTICAL
3	4884.043	39.60	30.95	6.86	36.95	40.46	54.00 -13.54 VERTICAL
4	4884.043	50.78	30.95	6.86	36.95	51.64	74.00 -22.36 VERTICAL
5	6159.797	31.26	32.84	6.95	37.00	34.05	54.00 -19.95 VERTICAL
6	6159.797	44.62	32.84	6.95	37.00	47.41	74.00 -26.59 VERTICAL
7	7326.527	30.55	35.74	7.39	36.92	36.76	54.00 -17.24 VERTICAL
8	7326.527	43.74	35.74	7.39	36.92	49.95	74.00 -24.05 VERTICAL
9	9768.221	30.77	37.74	8.37	37.09	39.79	54.00 -14.21 VERTICAL
10	9768.221	45.47	37.74	8.37	37.09	54.49	74.00 -19.51 VERTICAL
11	12210.750	28.99	39.21	10.98	37.06	42.12	54.00 -11.88 VERTICAL
12	12210.750	41.94	39.21	10.98	37.06	55.07	74.00 -18.93 VERTICAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3823.371	33.89	29.08	7.83	36.91	33.89	54.00	-20.11	HORIZONTAL
2	3823.371	44.61	29.08	7.83	36.91	44.61	74.00	-29.39	HORIZONTAL
3	4924.721	33.82	31.01	7.49	36.95	35.37	54.00	-18.63	HORIZONTAL
4	4924.721	46.72	31.01	7.49	36.95	48.27	74.00	-25.73	HORIZONTAL
5	6377.195	30.11	33.91	6.99	36.99	34.02	54.00	-19.98	HORIZONTAL
6	6377.195	42.16	33.91	6.99	36.99	46.07	74.00	-27.93	HORIZONTAL
7	7386.893	30.71	35.85	7.42	36.92	37.06	54.00	-16.94	HORIZONTAL
8	7386.893	43.72	35.85	7.42	36.92	50.07	74.00	-23.93	HORIZONTAL
9	9848.164	30.87	37.82	8.46	37.09	40.06	54.00	-13.94	HORIZONTAL
10	9848.164	43.05	37.82	8.46	37.09	52.24	74.00	-21.76	HORIZONTAL
11	12310.700	26.36	39.03	11.10	36.97	39.52	54.00	-14.48	HORIZONTAL
12	12310.700	39.44	39.03	11.10	36.97	52.60	74.00	-21.40	HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:High

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3280.326	38.73	27.90	5.75	36.99	35.39	54.00	-18.61	VERTICAL
2	3280.326	50.42	27.90	5.75	36.99	47.08	74.00	-26.92	VERTICAL
3	4924.721	35.68	31.01	7.49	36.95	37.23	54.00	-16.77	VERTICAL
4	4924.721	51.48	31.01	7.49	36.95	53.03	74.00	-20.97	VERTICAL
5	6358.789	30.15	33.84	6.98	36.99	33.98	54.00	-20.02	VERTICAL
6	6358.789	43.98	33.84	6.98	36.99	47.81	74.00	-26.19	VERTICAL
7	7386.527	30.82	35.85	7.42	36.92	37.17	54.00	-16.83	VERTICAL
8	7386.527	43.54	35.85	7.42	36.92	49.89	74.00	-24.11	VERTICAL
9	9848.710	31.35	37.82	8.46	37.09	40.54	54.00	-13.46	VERTICAL
10	9848.710	43.35	37.82	8.46	37.09	52.54	74.00	-21.46	VERTICAL
11	12310.580	27.82	39.03	11.10	36.97	40.98	54.00	-13.02	VERTICAL
12	12310.580	40.12	39.03	11.10	36.97	53.28	74.00	-20.72	VERTICAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:40MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	43.51	23.88	12.72	0.69	24.29	13.00	40.00	-27.00	HORIZONTAL
2	58.20	19.73	12.29	0.58	25.19	7.41	40.00	-32.59	HORIZONTAL
3	135.51	24.18	12.87	1.00	28.17	9.88	43.50	-33.62	HORIZONTAL
4	176.27	25.35	12.79	1.33	28.08	11.39	43.50	-32.11	HORIZONTAL
5	742.26	29.47	21.94	3.18	29.23	25.36	46.00	-20.64	HORIZONTAL
6	919.29	27.20	24.16	3.74	28.43	26.67	46.00	-19.33	HORIZONTAL

Mode:a; Polarization:Horizontal; Modulation:n; bandwidth:40MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3890.255	35.29	29.27	7.61	36.91	35.26	54.00	-18.74	HORIZONTAL
2	3890.255	47.24	29.27	7.61	36.91	47.21	74.00	-26.79	HORIZONTAL
3	4844.962	38.57	30.88	6.31	36.94	38.82	54.00	-15.18	HORIZONTAL
4	4844.962	51.08	30.88	6.31	36.94	51.33	74.00	-22.67	HORIZONTAL
5	6470.026	33.74	34.20	7.05	36.98	38.01	54.00	-15.99	HORIZONTAL
6	6470.026	46.05	34.20	7.05	36.98	50.32	74.00	-23.68	HORIZONTAL
7	7266.527	33.61	35.60	7.36	36.92	39.65	54.00	-14.35	HORIZONTAL
8	7266.527	46.50	35.60	7.36	36.92	52.54	74.00	-21.46	HORIZONTAL
9	9688.123	31.45	37.61	8.25	37.08	40.23	54.00	-13.77	HORIZONTAL
10	9688.123	43.20	37.61	8.25	37.08	51.98	74.00	-22.02	HORIZONTAL
11	12110.540	29.78	39.37	10.82	37.12	42.85	54.00	-11.15	HORIZONTAL
12	12110.540	41.06	39.37	10.82	37.12	54.13	74.00	-19.87	HORIZONTAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:40MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	33.92	19.68	12.34	0.20	22.53	9.69	40.00	-30.31	VERTICAL
2	54.26	19.12	12.68	0.59	25.01	7.38	40.00	-32.62	VERTICAL
3	109.41	28.62	10.55	0.88	27.66	12.39	43.50	-31.11	VERTICAL
4	159.23	24.98	13.40	1.26	28.10	11.54	43.50	-31.96	VERTICAL
5	566.62	29.30	20.05	1.97	29.33	21.99	46.00	-24.01	VERTICAL
6	742.26	28.06	21.94	3.18	29.23	23.95	46.00	-22.05	VERTICAL

Mode:a; Polarization:Vertical; Modulation:n; bandwidth:40MHz; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3924.135	34.31	29.35	7.47	36.91	34.22	54.00	-19.78	VERTICAL
2	3924.135	45.09	29.35	7.47	36.91	45.00	74.00	-29.00	VERTICAL
3	4844.977	32.64	30.88	6.31	36.94	32.89	54.00	-21.11	VERTICAL
4	4844.977	43.69	30.88	6.31	36.94	43.94	74.00	-30.06	VERTICAL
5	6432.732	30.19	34.09	7.02	36.99	34.31	54.00	-19.69	VERTICAL
6	6432.732	43.25	34.09	7.02	36.99	47.37	74.00	-26.63	VERTICAL
7	7266.260	31.92	35.60	7.36	36.92	37.96	54.00	-16.04	VERTICAL
8	7266.260	45.33	35.60	7.36	36.92	51.37	74.00	-22.63	VERTICAL
9	9688.479	31.31	37.61	8.25	37.08	40.09	54.00	-13.91	VERTICAL
10	9688.479	44.55	37.61	8.25	37.08	53.33	74.00	-20.67	VERTICAL
11	12110.100	27.09	39.37	10.82	37.15	40.13	54.00	-13.87	VERTICAL
12	12110.100	39.97	39.37	10.82	37.15	53.01	74.00	-20.99	VERTICAL