



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

198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technological
Development District, Guangzhou, China 510663

Telephone: +86 (0) 20 82155555
Fax: +86 (0) 20 82075059
Email: ee.guangzhou@sgs.com

Report No.: GZEM180900052102
Page: 1 of 102
FCC ID: UCZ-LW4211-W

TEST REPORT

Application No.: GZEM1809000521CR
Applicant: Lorex Technology Inc.
Address of Applicant: 250 Royal Crest Court, Markham, ON L3R 3S1 Canada
Manufacturer: Lorex Technology Inc.
Address of Manufacturer: 250 Royal Crest Court, Markham, ON L3R 3S1 Canada
Factory: Lorex Technology Inc.
Address of Factory: 250 Royal Crest Court, Markham, ON L3R 3S1 Canada
Equipment Under Test (EUT):
FCC ID: UCZ-LW4211-W
EUT Name: Single channel receiver
Model No.: LW4211-W
Trade Mark: LOREX
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2018-09-28
Date of Test: 2018-10-18 to 2018-11-07
Date of Issue: 2018-11-14

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

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



Kobe Jian
Lab 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.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



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

Report No.: GZEM180900052102

Page: 2 of 102

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2018-11-14		Original

Authorized for issue by:			
Tested By	 Jackson_Yuan /Project Engineer	2018-10-18 to 2018-11-07 Date	
Checked By	 Ricky Liu /Reviewer	2018-11-14 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 6.10.5	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 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass

Remark:

** : The EUT passed: Radiated Emissions which fall in the restricted bands test after modification.



3 Contents

	Page
1 Cover Page	1
2 Test Summary	3
3 Contents	4
4 General Information	6
4.1 Details of E.U.T.....	6
4.2 Environment Parameter.....	6
4.3 Description of Support Units	8
4.4 Measurement Uncertainty.....	8
4.5 Test Location	8
4.6 Test Facility.....	9
4.7 Deviation from Standards	10
4.8 Abnormalities from Standard Conditions	10
5 Equipment List	11
6 Radio Spectrum Technical Requirement	15
6.1 Antenna Requirement.....	15
6.1.1 Test Requirement:	15
6.1.2 Conclusion.....	15
7 Radio Spectrum Matter Test Results	16
7.1 Conducted Emissions at AC Power Line (150kHz-30MHz).....	16
7.1.1 E.U.T. Operation.....	17
7.1.2 Test Setup Diagram.....	17
7.1.3 Measurement Procedure and Data	17
7.2 Minimum 6dB Bandwidth	20
7.2.1 E.U.T. Operation.....	20
7.2.2 Test Setup Diagram.....	20
7.2.3 Measurement Procedure and Data	20
7.3 Conducted Peak Output Power	21
7.3.1 E.U.T. Operation.....	22
7.3.2 Test Setup Diagram.....	22
7.3.3 Measurement Procedure and Data	22
7.4 Power Spectrum Density	23
7.4.1 E.U.T. Operation.....	23
7.4.2 Test Setup Diagram.....	23
7.4.3 Measurement Procedure and Data	23
7.5 Conducted Band Edges Measurement.....	24
7.5.1 E.U.T. Operation.....	25
7.5.2 Test Setup Diagram.....	25
7.5.3 Measurement Procedure and Data	25
7.6 Conducted Spurious Emissions.....	26
7.6.1 E.U.T. Operation.....	27
7.6.2 Test Setup Diagram.....	27
7.6.3 Measurement Procedure and Data	27
7.7 Radiated Emissions which fall in the restricted bands.....	28



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

Report No.: GZEM180900052102

Page: 5 of 102

7.7.1	E.U.T. Operation.....	28
7.7.2	Test Setup Diagram.....	29
7.7.3	Measurement Procedure and Data	30
7.8	Radiated Spurious Emissions.....	39
7.8.1	E.U.T. Operation.....	39
7.8.2	Test Setup Diagram.....	40
7.8.3	Measurement Procedure and Data	41
8	Appendix	58
8.1	Appendix 15.247	58



4 General Information

4.1 Details of E.U.T.

Power Supply:	DC 12 V, 0.5 A powered by AC/DC adapter
Test Voltage:	AC 120V, 60Hz with adapter refer to section 4.3
Cable:	DC input cables (unshielded, 1.9 m) BNC signal cables (unshielded, 1.9 m)
Antenna Gain	3 dBi
Antenna Type	Dedicated 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 Environment Parameter

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Value	Temperature(°C)	Voltage(V)
TNVN	25	120
TLVN	0	120
THVN	50	120

Note:

VN: Normal Voltage
TN: Normal Temperature
TL: Low Extreme Test Temperature
TH: High Extreme Test Temperature



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

Report No.: GZEM180900052102

Page: 7 of 102

Operation Frequency each of channel (802.11b/g/n HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	5	2432MHz	9	2452MHz		
2	2417MHz	6	2437MHz	10	2457MHz		
3	2422MHz	7	2442MHz	11	2462MHz		
4	2427MHz	8	2447MHz				

Operation Frequency each of channel(802.11n HT40)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
3	2422MHz	6	2437MHz	9	2452MHz
4	2427MHz	7	2442MHz		
5	2432MHz	8	2447MHz		

Using test software was control EUT work in continuous transmitter and receiver mode. And select test channel as below:

For 802.11b/g/n (HT20):

Channel	Frequency
The lowest channel (CH1)	2412MHz
The middle channel (CH7)	2442MHz
The highest channel (CH11)	2462MHz

For 802.11n (HT40):

Channel	Frequency
The lowest channel (CH3)	2422MHz
The middle channel (CH7)	2442MHz
The highest channel (CH9)	2452MHz



4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
1080P AHD/CVI Wireless camera	Offered by client	LW4211-C	None
4CH HD Digital Video Recorder	Offered by client	None	None
AC/DC adapter	Offered by client	CS-1202000	None
Television	Samsung	UA32J4088AJXXZ?	0MF63TBG919802T
Laptop	Lenovo	T430u	REF. No.SEA1800

4.4 Measurement Uncertainty

RF

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 5.5 \times 10^{-8}$
2	Duty cycle	$\pm 0.57\%$
3	Occupied Bandwidth	$\pm 3\%$
4	RF Conducted power	$\pm 0.68\text{dB}$
5	RF Power Density	$\pm 1.50\text{dB}$
6	Conducted Spurious Emissions	$\pm 1.04\text{dB}$
7	RF Radiated Power	$\pm 4.5\text{dB}$ (below 1GHz)
		$\pm 4.8\text{dB}$ (above 1GHz)
8	Radiated Spurious Emission Test	$\pm 4.5\text{dB}$ (30MHz-1GHz)
		$\pm 4.8\text{dB}$ (1GHz-18GHz)
9	Temperature	$\pm 0.4^{\circ}\text{C}$
10	Humidity	$\pm 1.3\%$
11	Supply Voltages	$\pm 1.5\%$
12	Time	$\pm 3\%$

4.5 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.



4.6 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.



4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

The EUT passed: Radiated Emissions which fall in the restricted bands test after modification.



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

Report No.: GZEM180900052102

Page: 11 of 102

5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	Zhong Yu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Netwok	R&S	ENV216	EMC0118	2018-01-19	2019-01-18
LISN	R&S	ENV216	EMC2135	2018-09-21	2019-09-20
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2017-11-27	2018-11-26
Coaxial Cable	HangTianXing	2m	EMC0107	2017-07-23	2019-07-22
Voltage Probe	SGS	N/A	EMC0106	2018-04-04	2020-04-03
Conical Metal Housing	SGS-EMC	N/A	EMC0167	2018-04-19	2020-04-18
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A

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
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A

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
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A

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
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A



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

Report No.: GZEM180900052102

Page: 12 of 102

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_Ch2	SEM009-02	2018-09-20	2019-09-19
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2018-09-20	2019-09-19
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A

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
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A



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

Report No.: GZEM180900052102

Page: 13 of 102

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
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2016-06-29	2019-06-28
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



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

Report No.: GZEM180900052102

Page: 14 of 102

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
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2016-06-29	2019-06-28
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2018-07-20	2019-07-19
DMM	Fluke	73	EMC0007	2018-07-19	2019-07-18

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:

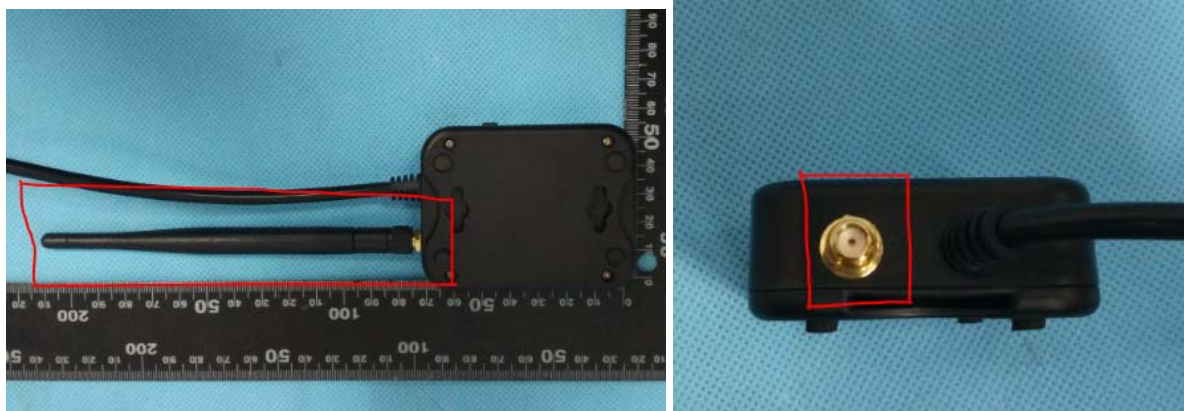
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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 an antenna that uses a unique coupling to the intentional radiator as below and no consideration of replacement. The best case gain of the antenna is 3 dBi.



Test result: The unit does meet the FCC requirements.



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.

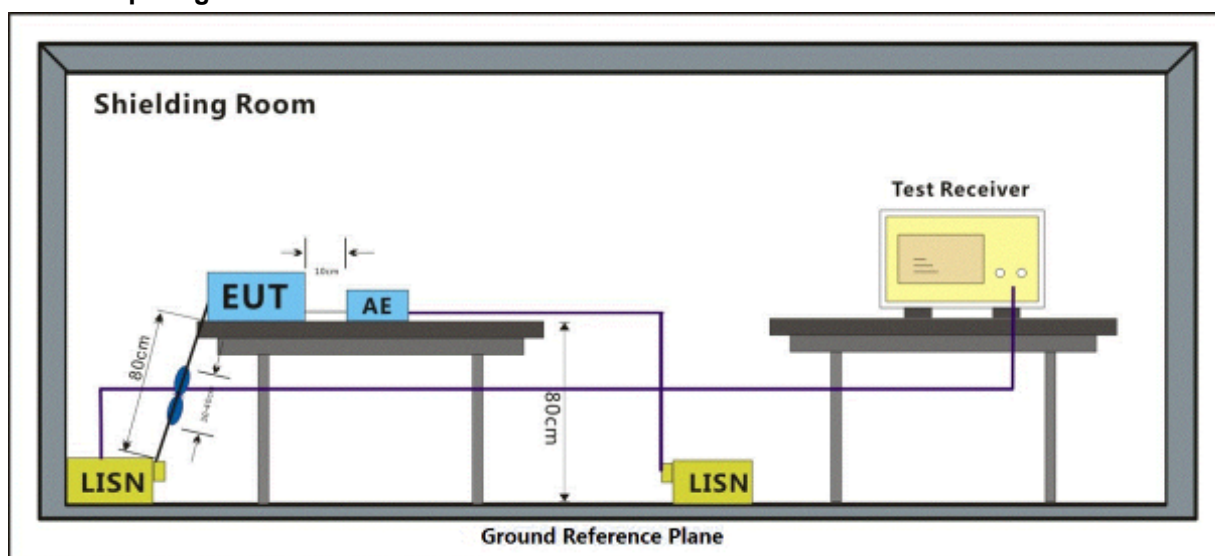
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51.9 % RH Atmospheric Pressure: 1020 mbar

Test mode b: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

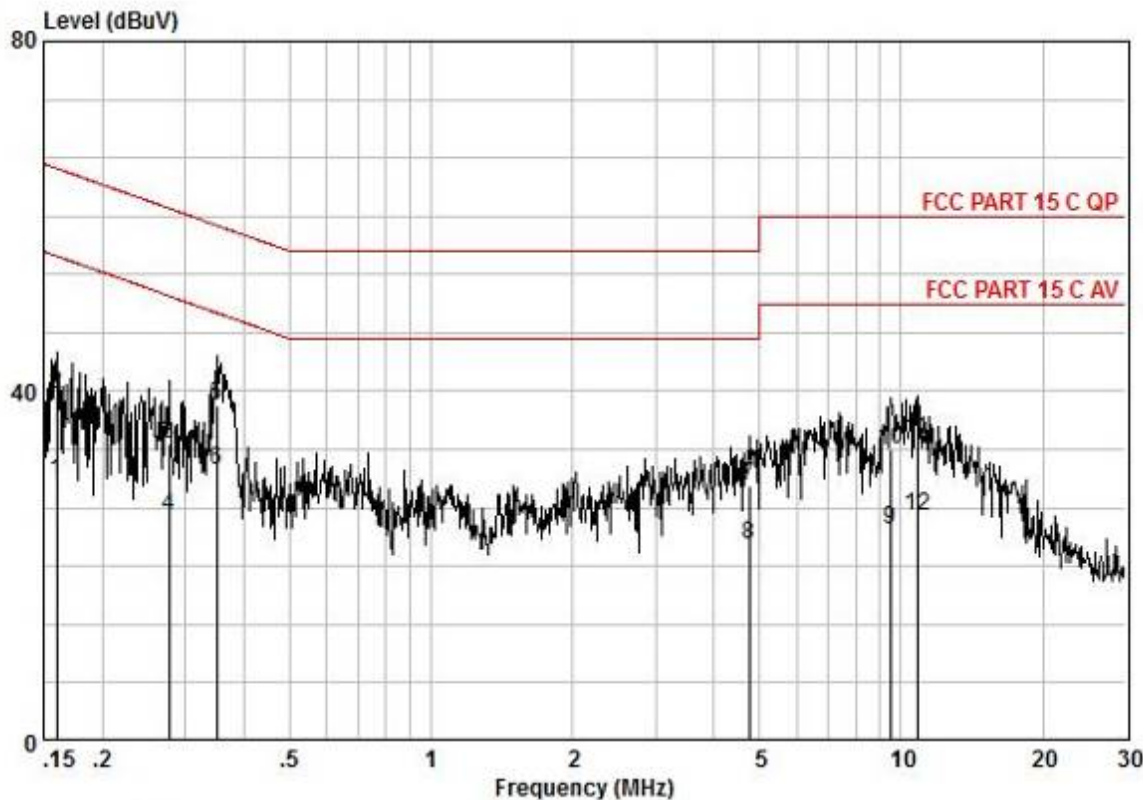


7.1.3 Measurement Procedure and Data

- 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.

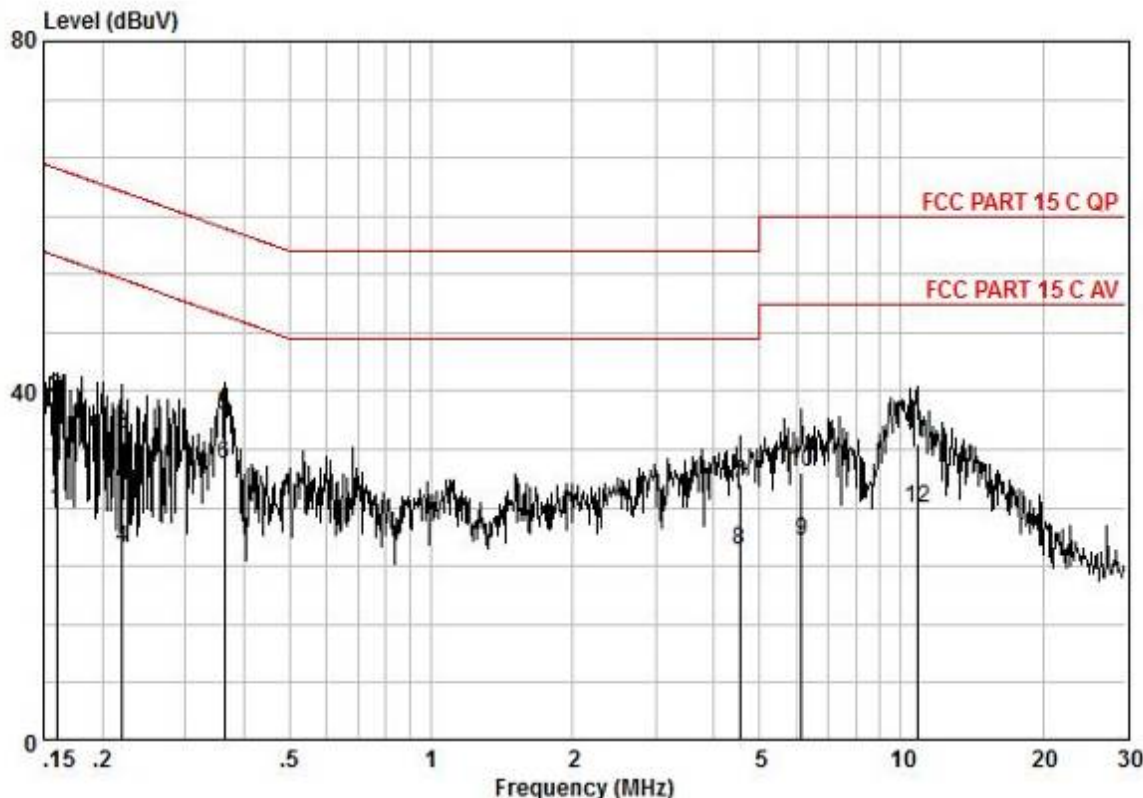
Remark: LISN=Read Level+ Cable Loss+ LISN Factor

Mode:b; Line:Live Line



Pol	:LIVE						
No	:WIFI						
Model	:						
Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,16	20,05	0,10	9,50	29,65	55,47	-25,83	AVERAGE
0,16	30,09	0,10	9,50	39,69	65,47	-25,79	QP
0,28	24,21	0,14	9,63	33,98	60,90	-26,92	QP
0,28	15,99	0,14	9,63	25,76	50,90	-25,14	AVERAGE
0,35	28,66	0,16	9,64	38,46	58,96	-20,50	QP
0,35	21,24	0,16	9,64	31,04	48,96	-17,92	AVERAGE
4,75	18,90	0,68	9,63	29,21	56,00	-26,79	QP
4,75	12,08	0,68	9,63	22,39	46,00	-23,61	AVERAGE
9,50	13,94	0,61	9,64	24,19	50,00	-25,81	AVERAGE
9,50	23,06	0,61	9,64	33,31	60,00	-26,69	QP
10,79	24,24	0,64	9,67	34,55	60,00	-25,45	QP
10,79	15,52	0,64	9,67	25,83	50,00	-24,17	AVERAGE

Mode:b; Line:Neutral Line



Pol : NEUTRAL
No : WIFI
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,16	16,81	0,10	9,43	26,34	55,47	-29,13	AVERAGE
0,16	29,76	0,10	9,43	39,29	65,47	-26,18	QP
0,22	25,46	0,11	9,59	35,16	62,79	-27,63	QP
0,22	12,26	0,11	9,59	21,96	52,79	-30,83	AVERAGE
0,36	27,45	0,17	9,56	37,18	58,65	-21,47	QP
0,36	21,77	0,17	9,56	31,50	48,65	-17,15	AVERAGE
4,53	19,24	0,67	9,60	29,51	56,00	-26,49	QP
4,53	11,63	0,67	9,60	21,90	46,00	-24,10	AVERAGE
6,15	12,71	0,67	9,60	22,98	50,00	-27,02	AVERAGE
6,15	20,43	0,67	9,60	30,70	60,00	-29,30	QP
10,85	23,74	0,65	9,64	34,02	60,00	-25,98	QP
10,85	16,31	0,65	9,64	26,59	50,00	-23,41	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

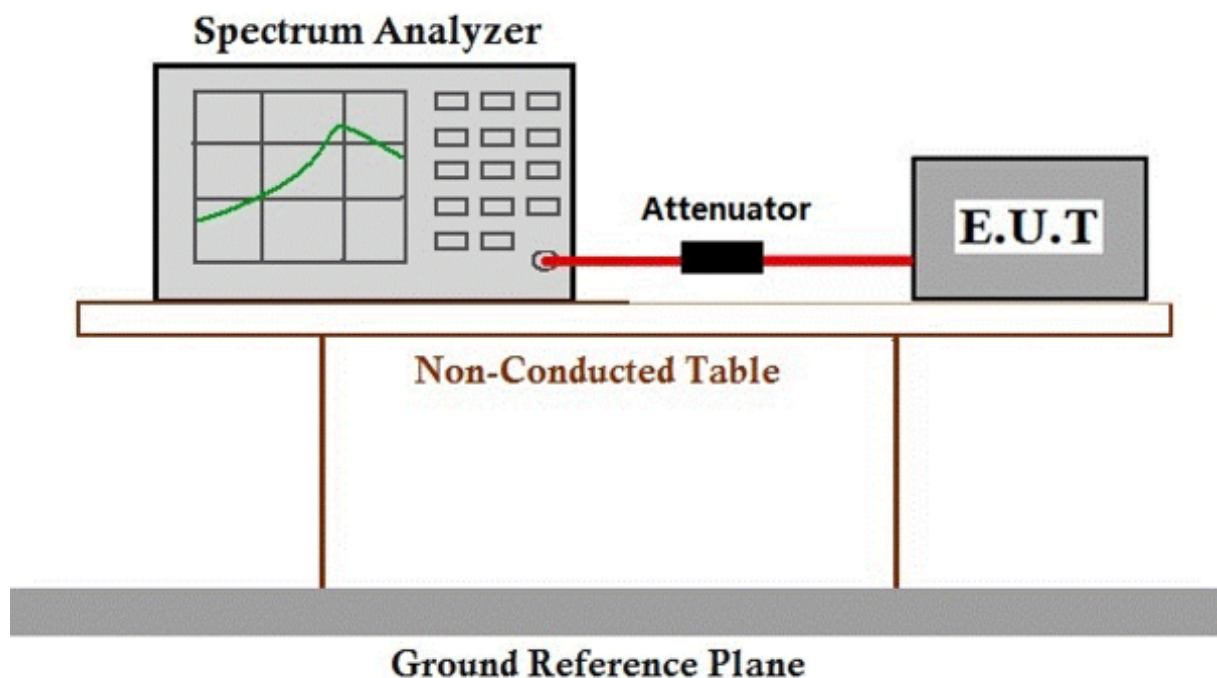
7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.1 °C Humidity: 49.2 % RH Atmospheric Pressure: 1020 mbar

Test mode: b: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

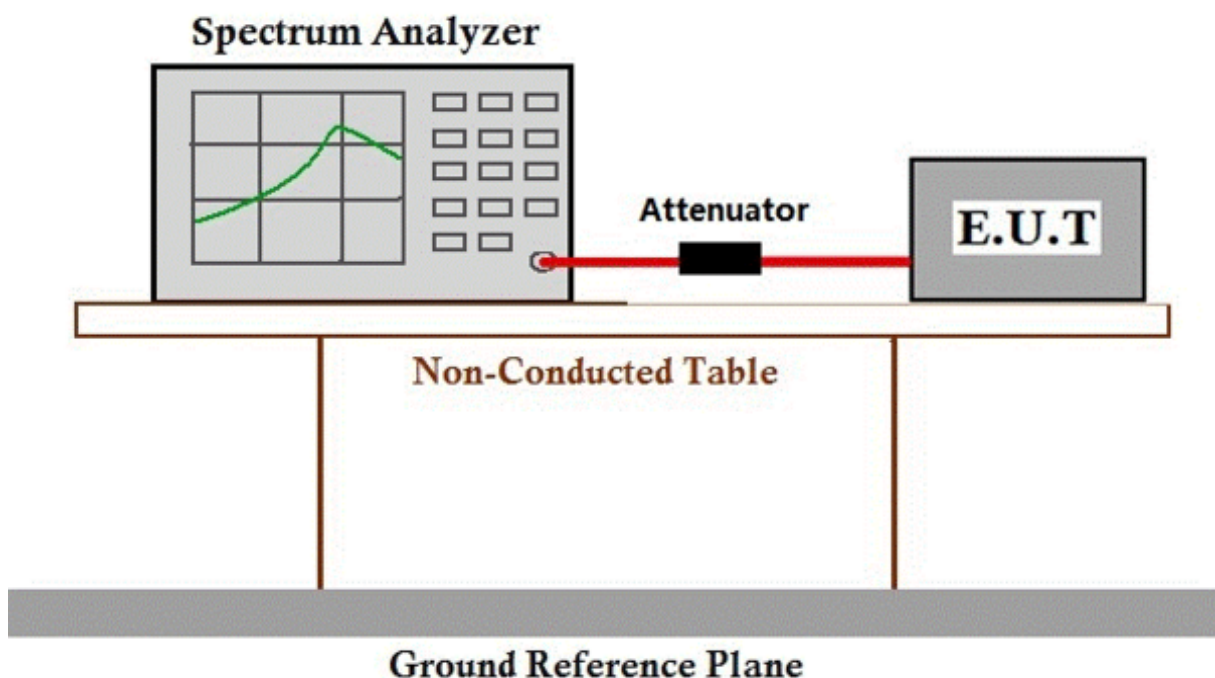
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.1 °C Humidity: 49.1 % RH Atmospheric Pressure: 1020 mbar

Test mode b: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

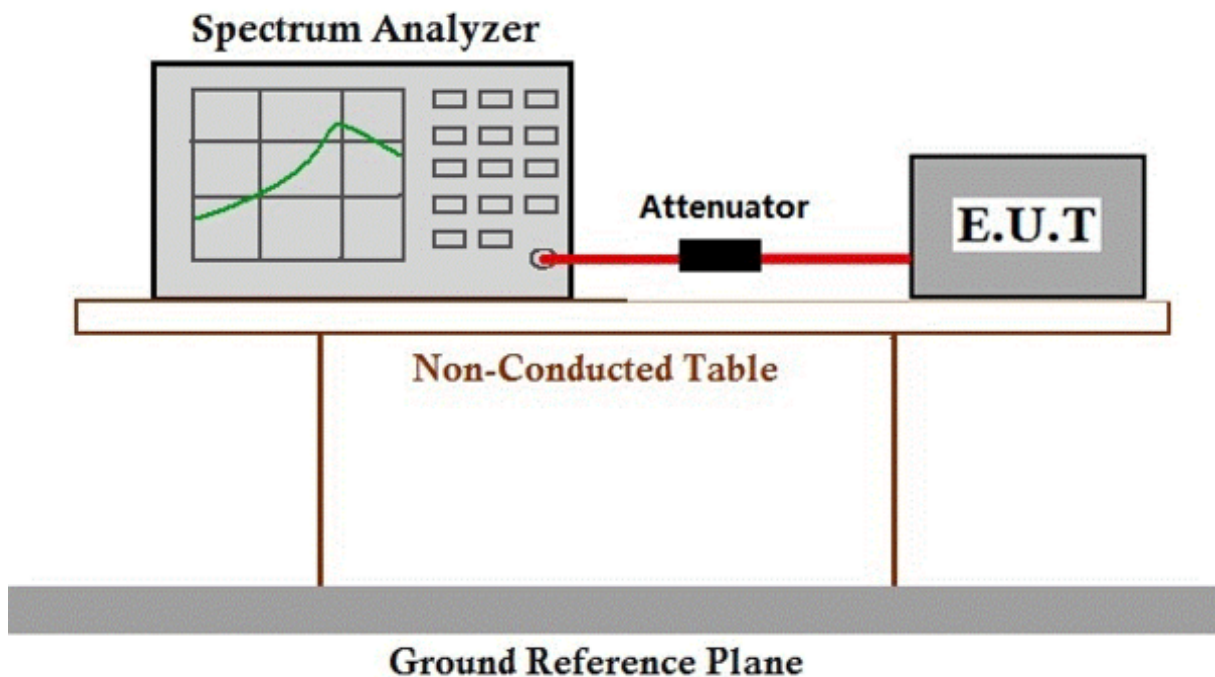
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 24.1 °C Humidity: 49.2 % RH Atmospheric Pressure: 1020 mbar

Test mode: b: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))

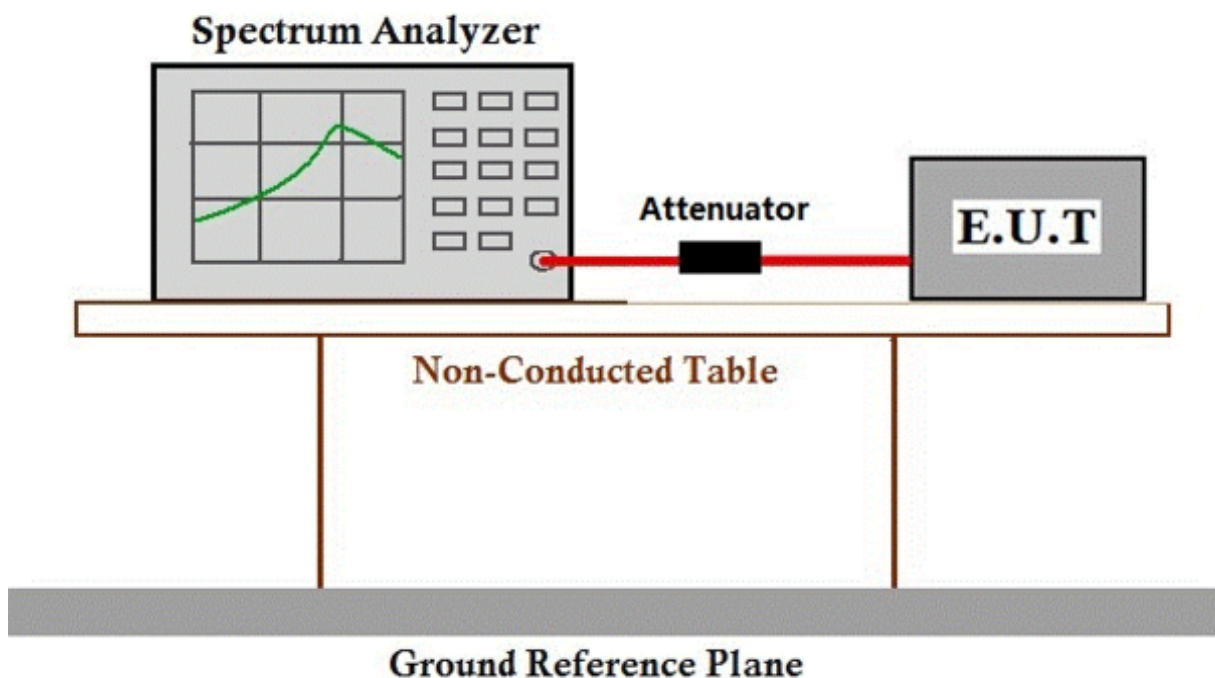
7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24.1 °C Humidity: 49.3 % RH Atmospheric Pressure: 1020 mbar

Test mode b: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))

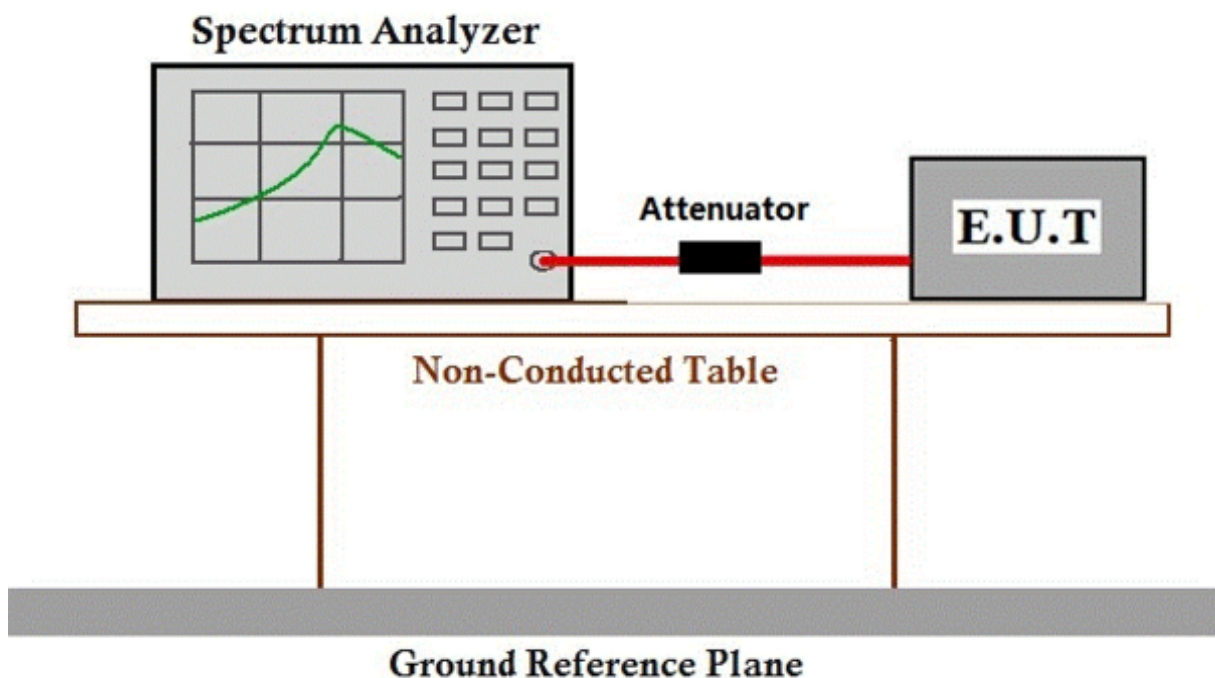
7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24.1 °C Humidity: 49.3 % RH Atmospheric Pressure: 1020 mbar

Test mode b: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 6.10.5
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: 24.7 °C Humidity: 67.9 % RH Atmospheric Pressure: 1020 mbar

Test mode b: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

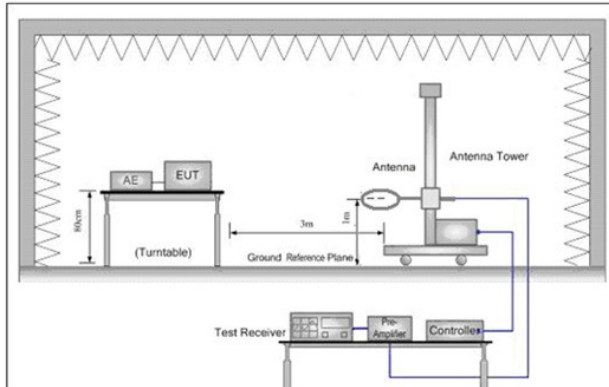


Figure 1. Below 30MHz

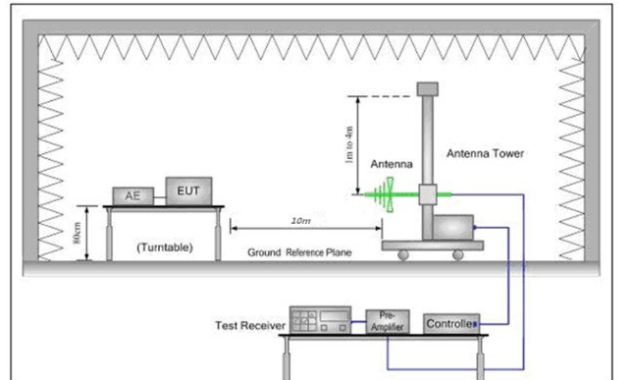


Figure 2. 30MHz to 1GHz

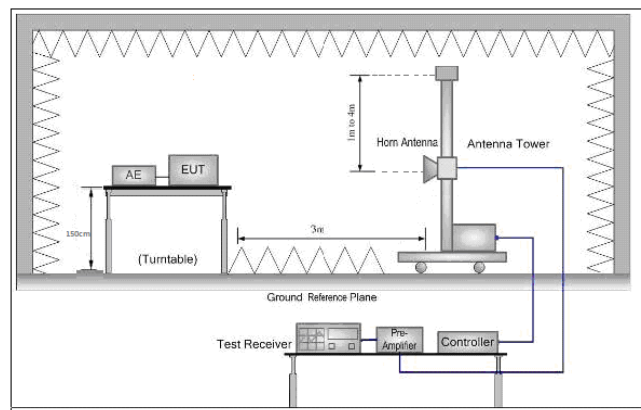


Figure 3. Above 1 GHz



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: $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$

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.

$\text{Level} = \text{Read Level} + \text{Antenna Factor} + \text{Cable Loss} - \text{Preamp Factor}$

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	33.48	26.25	5.03	37.44	27.32	54.00	-26.68	HORIZONTAL Average
2	2310.000	45.22	26.25	5.03	37.44	39.06	74.00	-34.94	HORIZONTAL Peak
3	2390.000	33.47	26.43	4.88	37.42	27.36	54.00	-26.64	HORIZONTAL Average
4	2390.000	44.99	26.43	4.88	37.42	38.88	74.00	-35.12	HORIZONTAL Peak
5	2483.500	31.94	26.58	5.23	37.40	26.35	54.00	-27.65	HORIZONTAL Average
6	2483.500	45.15	26.58	5.23	37.40	39.56	74.00	-34.44	HORIZONTAL Peak
7	2500.000	31.64	26.60	4.95	37.39	25.80	54.00	-28.20	HORIZONTAL Average
8	2500.000	46.76	26.60	4.95	37.39	40.92	74.00	-33.08	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	33.83	26.25	5.03	37.44	27.67	54.00	-26.33	VERTICAL Average
2	2310.000	46.35	26.25	5.03	37.44	40.19	74.00	-33.81	VERTICAL Peak
3	2390.000	36.32	26.43	4.88	37.42	30.21	54.00	-23.79	VERTICAL Average
4	2390.000	47.82	26.43	4.88	37.42	41.71	74.00	-32.29	VERTICAL Peak
5	2483.500	37.26	26.58	5.23	37.40	31.67	54.00	-22.33	VERTICAL Average
6	2483.500	49.60	26.58	5.23	37.40	44.01	74.00	-29.99	VERTICAL Peak
7	2500.000	35.66	26.60	4.95	37.39	29.82	54.00	-24.18	VERTICAL Average
8	2500.000	47.75	26.60	4.95	37.39	41.91	74.00	-32.09	VERTICAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase	Remark		
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2310.000	32.94	26.25	5.03	37.44	26.78	54.00	-27.22	HORIZONTAL	Average
2	2310.000	45.51	26.25	5.03	37.44	39.35	74.00	-34.65	HORIZONTAL	Peak
3	2390.000	33.11	26.43	4.88	37.42	27.00	54.00	-27.00	HORIZONTAL	Average
4	2390.000	45.63	26.43	4.88	37.42	39.52	74.00	-34.48	HORIZONTAL	Peak
5	2483.500	45.99	26.58	5.23	37.40	40.40	54.00	-13.60	HORIZONTAL	Average
6	2483.500	58.90	26.58	5.23	37.40	53.31	74.00	-20.69	HORIZONTAL	Peak
7	2500.000	32.33	26.60	4.95	37.39	26.49	54.00	-27.51	HORIZONTAL	Average
8	2500.000	45.96	26.60	4.95	37.39	40.12	74.00	-33.88	HORIZONTAL	Peak

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

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase	Remark		
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2310.000	35.59	26.25	5.03	37.44	29.43	54.00	-24.57	VERTICAL	Average
2	2310.000	47.79	26.25	5.03	37.44	41.63	74.00	-32.37	VERTICAL	Peak
3	2390.000	35.38	26.43	4.88	37.42	29.27	54.00	-24.73	VERTICAL	Average
4	2390.000	47.94	26.43	4.88	37.42	41.83	74.00	-32.17	VERTICAL	Peak
5	2483.500	52.59	26.58	5.23	37.40	47.00	54.00	-7.00	VERTICAL	Average
6	2483.500	65.43	26.58	5.23	37.40	59.84	74.00	-14.16	VERTICAL	Peak
7	2500.000	42.47	26.60	4.95	37.39	36.63	54.00	-17.37	VERTICAL	Average
8	2500.000	54.58	26.60	4.95	37.39	48.74	74.00	-25.26	VERTICAL	Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	32.99	26.25	5.03	37.44	26.83	54.00	-27.17	HORIZONTAL Average
2	2310.000	45.61	26.25	5.03	37.44	39.45	74.00	-34.55	HORIZONTAL Peak
3	2390.000	45.96	26.43	4.88	37.42	39.85	54.00	-14.15	HORIZONTAL Average
4	2390.000	58.19	26.43	4.88	37.42	52.08	74.00	-21.92	HORIZONTAL Peak
5	2483.500	31.78	26.58	5.23	37.40	26.19	54.00	-27.81	HORIZONTAL Average
6	2483.500	45.38	26.58	5.23	37.40	39.79	74.00	-34.21	HORIZONTAL Peak
7	2500.000	33.23	26.60	4.95	37.39	27.39	54.00	-26.61	HORIZONTAL Average
8	2500.000	46.17	26.60	4.95	37.39	40.33	74.00	-33.67	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	35.49	26.25	5.03	37.44	29.33	54.00	-24.67	VERTICAL Average
2	2310.000	48.46	26.25	5.03	37.44	42.30	74.00	-31.70	VERTICAL Peak
3	2390.000	50.45	26.43	4.88	37.42	44.34	74.00	-29.66	VERTICAL Peak
4	2390.000	67.35	26.43	4.88	37.42	61.24	74.00	-12.76	VERTICAL Peak
5	2483.500	38.47	26.58	5.23	37.40	32.88	54.00	-21.12	VERTICAL Average
6	2483.500	52.14	26.58	5.23	37.40	46.55	74.00	-27.45	VERTICAL Peak
7	2500.000	39.57	26.60	4.95	37.39	33.73	54.00	-20.27	VERTICAL Average
8	2500.000	51.85	26.60	4.95	37.39	46.01	74.00	-27.99	VERTICAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	33.26	26.25	5.03	37.44	27.10	54.00	-26.90	HORIZONTAL Average
2	2310.000	45.04	26.25	5.03	37.44	38.88	74.00	-35.12	HORIZONTAL Peak
3	2390.000	34.18	26.43	4.88	37.42	28.07	54.00	-25.93	HORIZONTAL Average
4	2390.000	45.37	26.43	4.88	37.42	39.26	74.00	-34.74	HORIZONTAL Peak
5	2483.500	33.94	26.58	5.23	37.40	28.35	54.00	-25.65	HORIZONTAL Average
6	2483.500	46.73	26.58	5.23	37.40	41.14	74.00	-32.86	HORIZONTAL Peak
7	2500.000	33.02	26.60	4.95	37.39	27.18	54.00	-26.82	HORIZONTAL Average
8	2500.000	44.87	26.60	4.95	37.39	39.03	74.00	-34.97	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	36.75	26.25	5.03	37.44	30.59	54.00	-23.41	VERTICAL Average
2	2310.000	48.30	26.25	5.03	37.44	42.14	74.00	-31.86	VERTICAL Peak
3	2390.000	36.22	26.43	4.88	37.42	30.11	54.00	-23.89	VERTICAL Average
4	2390.000	50.26	26.43	4.88	37.42	44.15	74.00	-29.85	VERTICAL Peak
5	2483.500	38.68	26.58	5.23	37.40	33.09	54.00	-20.91	VERTICAL Average
6	2483.500	52.64	26.58	5.23	37.40	47.05	74.00	-26.95	VERTICAL Peak
7	2500.000	37.29	26.60	4.95	37.39	31.45	54.00	-22.55	VERTICAL Average
8	2500.000	52.07	26.60	4.95	37.39	46.23	74.00	-27.77	VERTICAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	33.33	26.25	5.03	37.44	27.17	54.00	-26.83	HORIZONTAL Average
2	2310.000	45.44	26.25	5.03	37.44	39.28	74.00	-34.72	HORIZONTAL Peak
3	2390.000	45.21	26.43	4.88	37.42	39.10	54.00	-14.90	HORIZONTAL Average
4	2390.000	56.37	26.43	4.88	37.42	50.26	74.00	-23.74	HORIZONTAL Peak
5	2483.500	32.62	26.58	5.23	37.40	27.03	54.00	-26.97	HORIZONTAL Average
6	2483.500	45.39	26.58	5.23	37.40	39.80	74.00	-34.20	HORIZONTAL Peak
7	2500.000	33.19	26.60	4.95	37.39	27.35	54.00	-26.65	HORIZONTAL Average
8	2500.000	46.42	26.60	4.95	37.39	40.58	74.00	-33.42	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	35.05	26.25	5.03	37.44	28.89	54.00	-25.11	VERTICAL Average
2	2310.000	46.77	26.25	5.03	37.44	40.61	74.00	-33.39	VERTICAL Peak
3	2390.000	49.86	26.43	4.88	37.42	43.75	54.00	-10.25	VERTICAL Average
4	2390.000	67.22	26.43	4.88	37.42	61.11	74.00	-12.89	VERTICAL Peak
5	2483.500	36.17	26.58	5.23	37.40	30.58	54.00	-23.42	VERTICAL Average
6	2483.500	49.86	26.58	5.23	37.40	44.27	74.00	-29.73	VERTICAL Peak
7	2500.000	36.17	26.60	4.95	37.39	30.33	54.00	-23.67	VERTICAL Average
8	2500.000	50.30	26.60	4.95	37.39	44.46	74.00	-29.54	VERTICAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	34.84	26.25	5.03	37.44	28.68	54.00	-25.32	HORIZONTAL Average
2	2310.000	46.81	26.25	5.03	37.44	40.65	74.00	-33.35	HORIZONTAL Peak
3	2390.000	32.68	26.43	4.88	37.42	26.57	54.00	-27.43	HORIZONTAL Average
4	2390.000	45.00	26.43	4.88	37.42	38.89	74.00	-35.11	HORIZONTAL Peak
5	2483.500	34.94	26.58	5.23	37.40	29.35	54.00	-24.65	HORIZONTAL Average
6	2483.500	47.00	26.58	5.23	37.40	41.41	74.00	-32.59	HORIZONTAL Peak
7	2500.000	33.63	26.60	4.95	37.39	27.79	54.00	-26.21	HORIZONTAL Average
8	2500.000	46.92	26.60	4.95	37.39	41.08	74.00	-32.92	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	35.34	26.25	5.03	37.44	29.18	54.00	-24.82	VERTICAL Average
2	2310.000	47.60	26.25	5.03	37.44	41.44	74.00	-32.56	VERTICAL Peak
3	2390.000	36.04	26.43	4.88	37.42	29.93	54.00	-24.07	VERTICAL Average
4	2390.000	48.51	26.43	4.88	37.42	42.40	74.00	-31.60	VERTICAL Peak
5	2483.500	38.23	26.58	5.23	37.40	32.64	54.00	-21.36	VERTICAL Average
6	2483.500	52.85	26.58	5.23	37.40	47.26	74.00	-26.74	VERTICAL Peak
7	2500.000	38.05	26.60	4.95	37.39	32.21	54.00	-21.79	VERTICAL Average
8	2500.000	50.79	26.60	4.95	37.39	44.95	74.00	-29.05	VERTICAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	
1	2310.000	34.85	26.25	5.03	37.44	28.69	54.00	-25.31 HORIZONTAL Average
2	2310.000	45.61	26.25	5.03	37.44	39.45	74.00	-34.55 HORIZONTAL Peak
3	2390.000	36.47	26.43	4.88	37.42	30.36	54.00	-23.64 HORIZONTAL Average
4	2390.000	49.95	26.43	4.88	37.42	43.84	74.00	-30.16 HORIZONTAL Peak
5	2483.500	32.88	26.58	5.23	37.40	27.29	54.00	-26.71 HORIZONTAL Average
6	2483.500	46.15	26.58	5.23	37.40	40.56	74.00	-33.44 HORIZONTAL Peak
7	2500.000	34.33	26.60	4.95	37.39	28.49	54.00	-25.51 HORIZONTAL Average
8	2500.000	46.13	26.60	4.95	37.39	40.29	74.00	-33.71 HORIZONTAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	
1	2310.000	35.70	26.25	5.03	37.44	29.54	54.00	-24.46 VERTICAL Average
2	2310.000	46.81	26.25	5.03	37.44	40.65	74.00	-33.35 VERTICAL Peak
3	2390.000	45.74	26.43	4.88	37.42	39.63	54.00	-14.37 VERTICAL Average
4	2390.000	56.70	26.43	4.88	37.42	50.59	74.00	-23.41 VERTICAL Peak
5	2483.500	42.22	26.58	5.23	37.40	36.63	54.00	-17.37 VERTICAL Average
6	2483.500	55.77	26.58	5.23	37.40	50.18	74.00	-23.82 VERTICAL Peak
7	2500.000	38.62	26.60	4.95	37.39	32.78	54.00	-21.22 VERTICAL Average
8	2500.000	49.97	26.60	4.95	37.39	44.13	74.00	-29.87 VERTICAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	32.32	26.25	5.03	37.44	26.16	54.00	-27.84	HORIZONTAL Average
2	2310.000	45.45	26.25	5.03	37.44	39.29	74.00	-34.71	HORIZONTAL Peak
3	2390.000	32.62	26.43	4.88	37.42	26.51	54.00	-27.49	HORIZONTAL Average
4	2390.000	45.24	26.43	4.88	37.42	39.13	74.00	-34.87	HORIZONTAL Peak
5	2483.500	34.60	26.58	5.23	37.40	29.01	54.00	-24.99	HORIZONTAL Average
6	2483.500	47.51	26.58	5.23	37.40	41.92	74.00	-32.08	HORIZONTAL Peak
7	2500.000	33.74	26.60	4.95	37.39	27.90	54.00	-26.10	HORIZONTAL Average
8	2500.000	46.75	26.60	4.95	37.39	40.91	74.00	-33.09	HORIZONTAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	35.44	26.25	5.03	37.44	29.28	54.00	-24.72	VERTICAL Average
2	2310.000	47.69	26.25	5.03	37.44	41.53	74.00	-32.47	VERTICAL Peak
3	2390.000	38.00	26.43	4.88	37.42	31.89	54.00	-22.11	VERTICAL Average
4	2390.000	49.23	26.43	4.88	37.42	43.12	74.00	-30.88	VERTICAL Peak
5	2483.500	41.10	26.58	5.23	37.40	35.51	54.00	-18.49	VERTICAL Average
6	2483.500	54.65	26.58	5.23	37.40	49.06	74.00	-24.94	VERTICAL Peak
7	2500.000	40.08	26.60	4.95	37.39	34.24	54.00	-19.76	VERTICAL Average
8	2500.000	51.12	26.60	4.95	37.39	45.28	74.00	-28.72	VERTICAL Peak



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 6.4,6.5,6.6
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: 24.7 °C Humidity: 67.9 % RH Atmospheric Pressure: 1020 mbar

Test mode b: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

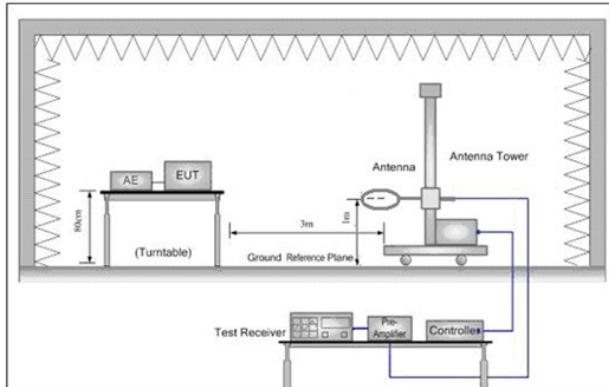


Figure 1. Below 30MHz

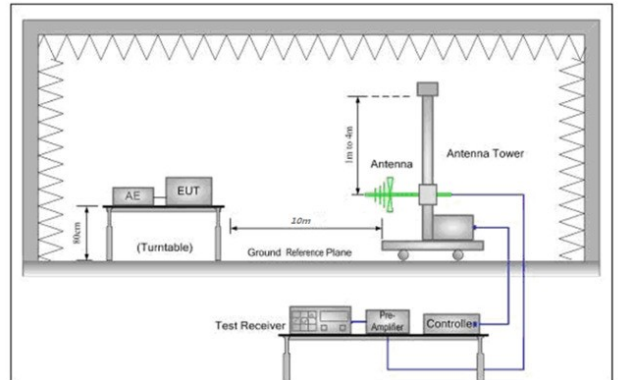


Figure 2. 30MHz to 1GHz

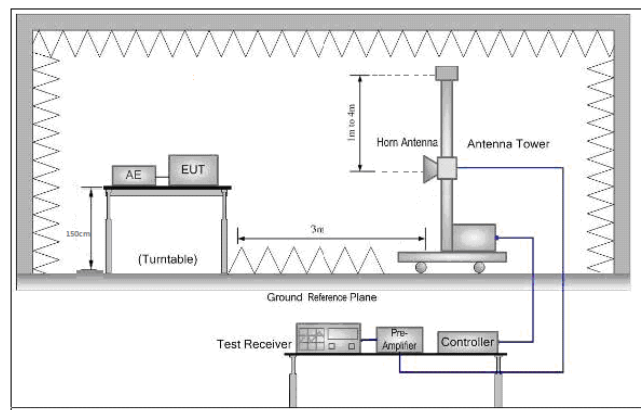


Figure 3. Above 1 GHz

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

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	30.962	23.85	12.22	0.07	21.63	14.51	40.00	-25.49	HORIZONTAL	QP
2	47.492	23.28	12.94	0.65	24.67	12.20	40.00	-27.80	HORIZONTAL	QP
3	107.510	29.00	10.25	0.87	27.49	12.63	43.50	-30.87	HORIZONTAL	QP
4	162.611	27.37	13.33	1.28	28.10	13.88	43.50	-29.62	HORIZONTAL	QP
5	564.639	29.01	20.00	1.98	29.35	21.64	46.00	-24.36	HORIZONTAL	QP
6	875.247	29.05	23.77	2.92	28.25	27.49	46.00	-18.51	HORIZONTAL	QP

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

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3890.255	32.97	29.27	7.61	36.91	32.94	54.00	-21.06	HORIZONTAL	Average
2	3890.255	44.96	29.27	7.61	36.91	44.93	74.00	-29.07	HORIZONTAL	Peak
3	4824.307	32.14	30.82	6.01	36.94	32.03	54.00	-21.97	HORIZONTAL	Average
4	4824.307	42.98	30.82	6.01	36.94	42.87	74.00	-31.13	HORIZONTAL	Peak
5	7236.551	31.53	35.55	7.35	36.93	37.50	54.00	-16.50	HORIZONTAL	Average
6	7236.551	42.99	35.55	7.35	36.93	48.96	74.00	-25.04	HORIZONTAL	Peak
7	8013.020	31.50	36.49	8.35	36.90	39.44	54.00	-14.56	HORIZONTAL	Average
8	8013.020	42.71	36.49	8.35	36.90	50.65	74.00	-23.35	HORIZONTAL	Peak
9	9648.710	29.68	37.54	8.18	37.08	38.32	54.00	-15.68	HORIZONTAL	Average
10	9648.710	43.08	37.54	8.18	37.08	51.72	74.00	-22.28	HORIZONTAL	Peak
11	12060.210	29.00	39.46	10.71	37.17	42.00	54.00	-12.00	HORIZONTAL	Average
12	12060.210	40.76	39.46	10.71	37.17	53.76	74.00	-20.24	HORIZONTAL	Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.962	25.45	12.22	0.07	21.63	16.11	40.00	-23.89	VERTICAL QP
2	51.301	24.55	12.93	0.60	24.90	13.18	40.00	-26.82	VERTICAL QP
3	65.803	26.25	11.30	0.67	25.42	12.80	40.00	-27.20	VERTICAL QP
4	148.441	27.54	13.22	1.16	28.13	13.79	43.50	-29.71	VERTICAL QP
5	645.120	29.26	20.97	2.10	28.88	23.45	46.00	-22.55	VERTICAL QP
6	872.183	29.84	23.73	2.93	28.29	28.21	46.00	-17.79	VERTICAL QP

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3495.691	34.17	27.90	5.93	36.95	31.05	54.00	-22.95	VERTICAL Average
2	3495.691	46.08	27.90	5.93	36.95	42.96	74.00	-31.04	VERTICAL Peak
3	4824.339	31.48	30.82	6.01	36.94	31.37	54.00	-22.63	VERTICAL Average
4	4824.339	45.34	30.82	6.01	36.94	45.23	74.00	-28.77	VERTICAL Peak
5	7236.542	31.20	35.55	7.35	36.93	37.17	54.00	-16.83	VERTICAL Average
6	7236.542	44.45	35.55	7.35	36.93	50.42	74.00	-23.58	VERTICAL Peak
7	8840.473	32.99	36.40	8.06	36.98	40.47	54.00	-13.53	VERTICAL Average
8	8840.473	44.44	36.40	8.06	36.98	51.92	74.00	-22.08	VERTICAL Peak
9	9648.257	32.54	37.54	8.18	37.08	41.18	54.00	-12.82	VERTICAL Average
10	9648.257	44.91	37.54	8.18	37.08	53.55	74.00	-20.45	VERTICAL Peak
11	12360.700	28.33	38.98	11.13	36.93	41.51	54.00	-12.49	VERTICAL Average
12	12360.700	39.41	38.98	11.13	36.93	52.59	74.00	-21.41	VERTICAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3196.094	39.98	27.90	5.95	37.01	36.82	54.00	-17.18	HORIZONTAL Average
2	3196.094	48.08	27.90	5.95	37.01	44.92	74.00	-29.08	HORIZONTAL Peak
3	4884.136	34.02	30.95	6.86	36.95	34.88	54.00	-19.12	HORIZONTAL Average
4	4884.136	44.79	30.95	6.86	36.95	45.65	74.00	-28.35	HORIZONTAL Peak
5	6795.879	31.91	34.83	7.20	36.96	36.98	54.00	-17.02	HORIZONTAL Average
6	6795.879	44.36	34.83	7.20	36.96	49.43	74.00	-24.57	HORIZONTAL Peak
7	7326.577	31.33	35.74	7.39	36.92	37.54	54.00	-16.46	HORIZONTAL Average
8	7326.577	43.72	35.74	7.39	36.92	49.93	74.00	-24.07	HORIZONTAL Peak
9	9768.510	31.10	37.74	8.37	37.09	40.12	54.00	-13.88	HORIZONTAL Average
10	9768.510	43.73	37.74	8.37	37.09	52.75	74.00	-21.25	HORIZONTAL Peak
11	12210.540	28.66	39.21	10.98	37.06	41.79	54.00	-12.21	HORIZONTAL Average
12	12210.540	40.48	39.21	10.98	37.06	53.61	74.00	-20.39	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4109.872	33.69	29.60	6.87	36.90	33.26	54.00	-20.74	VERTICAL Average
2	4109.872	45.63	29.60	6.87	36.90	45.20	74.00	-28.80	VERTICAL Peak
3	4884.662	33.53	30.95	6.86	36.95	34.39	54.00	-19.61	VERTICAL Average
4	4884.662	45.50	30.95	6.86	36.95	46.36	74.00	-27.64	VERTICAL Peak
5	7326.527	30.61	35.74	7.39	36.92	36.82	54.00	-17.18	VERTICAL Average
6	7326.527	43.88	35.74	7.39	36.92	50.09	74.00	-23.91	VERTICAL Peak
7	8200.463	31.96	36.35	8.25	36.91	39.65	54.00	-14.35	VERTICAL Average
8	8200.463	44.59	36.35	8.25	36.91	52.28	74.00	-21.72	VERTICAL Peak
9	9768.689	30.77	37.74	8.37	37.09	39.79	54.00	-14.21	VERTICAL Average
10	9768.689	42.64	37.74	8.37	37.09	51.66	74.00	-22.34	VERTICAL Peak
11	12210.210	29.17	39.21	10.98	37.06	42.30	54.00	-11.70	VERTICAL Average
12	12210.210	40.85	39.21	10.98	37.06	53.98	74.00	-20.02	VERTICAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3901.516	32.63	29.30	7.56	36.91	32.58	54.00	-21.42	HORIZONTAL Average
2	3901.516	45.06	29.30	7.56	36.91	45.01	74.00	-28.99	HORIZONTAL Peak
3	4924.497	34.31	31.01	7.49	36.95	35.86	54.00	-18.14	HORIZONTAL Average
4	4924.497	45.37	31.01	7.49	36.95	46.92	74.00	-27.08	HORIZONTAL Peak
5	7386.150	31.94	35.85	7.42	36.92	38.29	54.00	-15.71	HORIZONTAL Average
6	7386.150	43.67	35.85	7.42	36.92	50.02	74.00	-23.98	HORIZONTAL Peak
7	8440.945	32.02	36.13	8.06	36.93	39.28	54.00	-14.72	HORIZONTAL Average
8	8440.945	44.77	36.13	8.06	36.93	52.03	74.00	-21.97	HORIZONTAL Peak
9	9848.020	30.51	37.82	8.46	37.09	39.70	54.00	-14.30	HORIZONTAL Average
10	9848.020	41.93	37.82	8.46	37.09	51.12	74.00	-22.88	HORIZONTAL Peak
11	12310.900	27.30	39.03	11.10	36.97	40.46	54.00	-13.54	HORIZONTAL Average
12	12310.900	39.91	39.03	11.10	36.97	53.07	74.00	-20.93	HORIZONTAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4924.499	32.66	31.01	7.49	36.95	34.21	54.00	-19.79	VERTICAL Average
2	4924.499	45.45	31.01	7.49	36.95	47.00	74.00	-27.00	VERTICAL Peak
3	6340.436	31.03	33.76	6.97	36.99	34.77	54.00	-19.23	VERTICAL Average
4	6340.436	43.19	33.76	6.97	36.99	46.93	74.00	-27.07	VERTICAL Peak
5	7386.788	32.44	35.85	7.42	36.92	38.79	54.00	-15.21	VERTICAL Average
6	7386.788	44.16	35.85	7.42	36.92	50.51	74.00	-23.49	VERTICAL Peak
7	8563.818	32.23	36.15	7.99	36.94	39.43	54.00	-14.57	VERTICAL Average
8	8563.818	44.33	36.15	7.99	36.94	51.53	74.00	-22.47	VERTICAL Peak
9	9848.980	30.39	37.82	8.46	37.09	39.58	54.00	-14.42	VERTICAL Average
10	9848.980	43.41	37.82	8.46	37.09	52.60	74.00	-21.40	VERTICAL Peak
11	12310.610	28.24	39.03	11.10	36.97	41.40	54.00	-12.60	VERTICAL Average
12	12310.610	40.75	39.03	11.10	36.97	53.91	74.00	-20.09	VERTICAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.962	24.26	12.22	0.07	21.63	14.92	40.00	-25.08	HORIZONTAL QP
2	47.492	23.35	12.94	0.65	24.67	12.27	40.00	-27.73	HORIZONTAL QP
3	103.806	28.96	9.87	0.86	27.28	12.41	43.50	-31.09	HORIZONTAL QP
4	152.130	28.46	13.31	1.21	28.12	14.86	43.50	-28.64	HORIZONTAL QP
5	601.427	28.21	20.61	2.10	29.48	21.44	46.00	-24.56	HORIZONTAL QP
6	875.247	28.75	23.77	2.92	28.25	27.19	46.00	-18.81	HORIZONTAL QP

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3801.333	32.90	29.01	7.89	36.92	32.88	54.00	-21.12	HORIZONTAL Average
2	3801.333	44.54	29.01	7.89	36.92	44.52	74.00	-29.48	HORIZONTAL Peak
3	4824.993	31.28	30.85	6.15	36.94	31.34	54.00	-22.66	HORIZONTAL Average
4	4824.993	45.87	30.85	6.15	36.94	45.93	74.00	-28.07	HORIZONTAL Peak
5	6285.695	31.84	33.51	6.95	36.99	35.31	54.00	-18.69	HORIZONTAL Average
6	6285.695	44.28	33.51	6.95	36.99	47.75	74.00	-26.25	HORIZONTAL Peak
7	7236.244	29.58	35.55	7.35	36.93	35.55	54.00	-18.45	HORIZONTAL Average
8	7236.244	42.84	35.55	7.35	36.93	48.81	74.00	-25.19	HORIZONTAL Peak
9	9648.450	31.99	37.54	8.18	37.08	40.63	54.00	-13.37	HORIZONTAL Average
10	9648.450	43.29	37.54	8.18	37.08	51.93	74.00	-22.07	HORIZONTAL Peak
11	12060.270	27.06	39.46	10.71	37.17	40.06	54.00	-13.94	HORIZONTAL Average
12	12060.270	40.14	39.46	10.71	37.17	53.14	74.00	-20.86	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.962	23.71	12.22	0.07	21.63	14.37	40.00	-25.63	VERTICAL QP
2	51.301	21.97	12.93	0.60	24.90	10.60	40.00	-29.40	VERTICAL QP
3	77.593	29.08	8.90	0.81	25.92	12.87	40.00	-27.13	VERTICAL QP
4	163.755	26.54	13.29	1.28	28.09	13.02	43.50	-30.48	VERTICAL QP
5	672.845	28.44	21.26	2.17	28.85	23.02	46.00	-22.98	VERTICAL QP
6	916.069	28.38	24.13	3.60	28.35	27.76	46.00	-18.24	VERTICAL QP

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3823.371	34.78	29.08	7.83	36.91	34.78	54.00	-19.22	VERTICAL Average
2	3823.371	45.84	29.08	7.83	36.91	45.84	74.00	-28.16	VERTICAL Peak
3	4824.307	35.37	30.82	6.01	36.94	35.26	54.00	-18.74	VERTICAL Average
4	4824.307	46.66	30.82	6.01	36.94	46.55	74.00	-27.45	VERTICAL Peak
5	6451.353	30.66	34.15	7.03	36.98	34.86	54.00	-19.14	VERTICAL Average
6	6451.353	43.91	34.15	7.03	36.98	48.11	74.00	-25.89	VERTICAL Peak
7	7236.646	30.50	35.55	7.35	36.93	36.47	54.00	-17.53	VERTICAL Average
8	7236.646	43.35	35.55	7.35	36.93	49.32	74.00	-24.68	VERTICAL Peak
9	9648.577	30.81	37.54	8.18	37.08	39.45	54.00	-14.55	VERTICAL Average
10	9648.577	42.93	37.54	8.18	37.08	51.57	74.00	-22.43	VERTICAL Peak
11	12060.420	27.45	39.46	10.71	37.17	40.45	54.00	-13.55	VERTICAL Average
12	12060.420	40.24	39.46	10.71	37.17	53.24	74.00	-20.76	VERTICAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4133.699	32.18	29.62	6.79	36.90	31.69	54.00	-22.31	HORIZONTAL Average
2	4133.699	45.81	29.62	6.79	36.90	45.32	74.00	-28.68	HORIZONTAL Peak
3	4884.662	33.63	30.95	6.86	36.95	34.49	54.00	-19.51	HORIZONTAL Average
4	4884.662	46.49	30.95	6.86	36.95	47.35	74.00	-26.65	HORIZONTAL Peak
5	6267.553	30.88	33.41	6.94	36.99	34.24	54.00	-19.76	HORIZONTAL Average
6	6267.553	44.15	33.41	6.94	36.99	47.51	74.00	-26.49	HORIZONTAL Peak
7	7326.646	30.99	35.74	7.39	36.92	37.20	54.00	-16.80	HORIZONTAL Average
8	7326.646	43.00	35.74	7.39	36.92	49.21	74.00	-24.79	HORIZONTAL Peak
9	9768.164	28.16	37.74	8.37	37.09	37.18	54.00	-16.82	HORIZONTAL Average
10	9768.164	43.29	37.74	8.37	37.09	52.31	74.00	-21.69	HORIZONTAL Peak
11	12210.450	27.42	39.21	10.98	37.06	40.55	54.00	-13.45	HORIZONTAL Average
12	12210.450	40.58	39.21	10.98	37.06	53.71	74.00	-20.29	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4039.212	32.54	29.53	7.13	36.90	32.30	54.00	-21.70	VERTICAL Average
2	4039.212	45.26	29.53	7.13	36.90	45.02	74.00	-28.98	VERTICAL Peak
3	4884.151	33.45	30.95	6.86	36.95	34.31	54.00	-19.69	VERTICAL Average
4	4884.151	45.53	30.95	6.86	36.95	46.39	74.00	-27.61	VERTICAL Peak
5	6177.627	31.58	32.92	6.94	36.99	34.45	54.00	-19.55	VERTICAL Average
6	6177.627	44.22	32.92	6.94	36.99	47.09	74.00	-26.91	VERTICAL Peak
7	7326.806	29.81	35.74	7.39	36.92	36.02	54.00	-17.98	VERTICAL Average
8	7326.806	42.63	35.74	7.39	36.92	48.84	74.00	-25.16	VERTICAL Peak
9	9768.916	31.29	37.74	8.37	37.09	40.31	54.00	-13.69	VERTICAL Average
10	9768.916	43.53	37.74	8.37	37.09	52.55	74.00	-21.45	VERTICAL Peak
11	12210.350	28.35	39.21	10.98	37.06	41.48	54.00	-12.52	VERTICAL Average
12	12210.350	40.91	39.21	10.98	37.06	54.04	74.00	-19.96	VERTICAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3735.978	32.57	28.70	7.50	36.92	31.85	54.00	-22.15	HORIZONTAL Average
2	3735.978	45.53	28.70	7.50	36.92	44.81	74.00	-29.19	HORIZONTAL Peak
3	4924.721	30.90	31.01	7.49	36.95	32.45	54.00	-21.55	HORIZONTAL Average
4	4924.721	43.91	31.01	7.49	36.95	45.46	74.00	-28.54	HORIZONTAL Peak
5	7386.778	31.19	35.85	7.42	36.92	37.54	54.00	-16.46	HORIZONTAL Average
6	7386.778	43.01	35.85	7.42	36.92	49.36	74.00	-24.64	HORIZONTAL Peak
7	8271.880	32.29	36.27	8.19	36.92	39.83	54.00	-14.17	HORIZONTAL Average
8	8271.880	44.44	36.27	8.19	36.92	51.98	74.00	-22.02	HORIZONTAL Peak
9	9848.497	32.14	37.82	8.46	37.09	41.33	54.00	-12.67	HORIZONTAL Average
10	9848.497	44.15	37.82	8.46	37.09	53.34	74.00	-20.66	HORIZONTAL Peak
11	12310.280	27.74	39.03	11.10	36.97	40.90	54.00	-13.10	HORIZONTAL Average
12	12310.280	39.72	39.03	11.10	36.97	52.88	74.00	-21.12	HORIZONTAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3867.831	31.53	29.22	7.69	36.91	31.53	54.00	-22.47	VERTICAL Average
2	3867.831	45.36	29.22	7.69	36.91	45.36	74.00	-28.64	VERTICAL Peak
3	4924.058	33.35	31.01	7.49	36.95	34.90	54.00	-19.10	VERTICAL Average
4	4924.058	44.98	31.01	7.49	36.95	46.53	74.00	-27.47	VERTICAL Peak
5	7386.309	31.28	35.85	7.42	36.92	37.63	54.00	-16.37	VERTICAL Average
6	7386.309	43.96	35.85	7.42	36.92	50.31	74.00	-23.69	VERTICAL Peak
7	8638.399	30.84	36.20	7.96	36.95	38.05	54.00	-15.95	VERTICAL Average
8	8638.399	44.58	36.20	7.96	36.95	51.79	74.00	-22.21	VERTICAL Peak
9	9848.916	32.55	37.82	8.46	37.09	41.74	54.00	-12.26	VERTICAL Average
10	9848.916	44.97	37.82	8.46	37.09	54.16	74.00	-19.84	VERTICAL Peak
11	12310.220	29.32	39.03	11.10	36.97	42.48	54.00	-11.52	VERTICAL Average
12	12310.220	40.30	39.03	11.10	36.97	53.46	74.00	-20.54	VERTICAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.000	24.23	12.20	0.05	21.45	15.03	40.00	-24.97	HORIZONTAL QP
2	37.812	25.82	12.55	0.46	23.31	15.52	40.00	-24.48	HORIZONTAL QP
3	62.871	26.08	11.89	0.61	25.29	13.29	40.00	-26.71	HORIZONTAL QP
4	170.793	27.79	12.99	1.31	28.09	14.00	43.50	-29.50	HORIZONTAL QP
5	616.372	28.32	20.70	2.10	29.31	21.81	46.00	-24.19	HORIZONTAL QP
6	776.878	27.87	22.50	2.82	28.87	24.32	46.00	-21.68	HORIZONTAL QP

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4039.212	30.36	29.53	7.13	36.90	30.12	54.00	-23.88	HORIZONTAL Average
2	4039.212	44.84	29.53	7.13	36.90	44.60	74.00	-29.40	HORIZONTAL Peak
3	4884.151	31.62	30.95	6.86	36.95	32.48	54.00	-21.52	HORIZONTAL Average
4	4884.151	44.76	30.95	6.86	36.95	45.62	74.00	-28.38	HORIZONTAL Peak
5	7236.741	31.66	35.55	7.35	36.93	37.63	54.00	-16.37	HORIZONTAL Average
6	7236.741	44.21	35.55	7.35	36.93	50.18	74.00	-23.82	HORIZONTAL Peak
7	8440.945	31.73	36.13	8.06	36.93	38.99	54.00	-15.01	HORIZONTAL Average
8	8440.945	44.69	36.13	8.06	36.93	51.95	74.00	-22.05	HORIZONTAL Peak
9	9648.432	29.23	37.54	8.18	37.08	37.87	54.00	-16.13	HORIZONTAL Average
10	9648.432	43.60	37.54	8.18	37.08	52.24	74.00	-21.76	HORIZONTAL Peak
11	12060.610	27.84	39.46	10.71	37.17	40.84	54.00	-13.16	HORIZONTAL Average
12	12060.610	40.32	39.46	10.71	37.17	53.32	74.00	-20.68	HORIZONTAL Peak

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

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	30.962	24.38	12.22	0.07	21.63	15.04	40.00	-24.96	VERTICAL	QP
2	49.359	24.08	12.99	0.61	24.83	12.85	40.00	-27.15	VERTICAL	QP
3	94.098	30.49	8.40	0.85	26.92	12.82	43.50	-30.68	VERTICAL	QP
4	170.195	26.75	13.02	1.31	28.09	12.99	43.50	-30.51	VERTICAL	QP
5	636.134	28.62	20.86	2.10	28.99	22.59	46.00	-23.41	VERTICAL	QP
6	900.147	28.74	24.00	2.84	27.89	27.69	46.00	-18.31	VERTICAL	QP

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

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3790.361	33.47	28.97	7.83	36.92	33.35	54.00	-20.65	VERTICAL	Average
2	3790.361	44.62	28.97	7.83	36.92	44.50	74.00	-29.50	VERTICAL	Peak
3	4824.490	35.14	30.82	6.01	36.94	35.03	54.00	-18.97	VERTICAL	Average
4	4824.490	47.11	30.82	6.01	36.94	47.00	74.00	-27.00	VERTICAL	Peak
5	5874.906	32.27	32.23	7.43	37.00	34.93	54.00	-19.07	VERTICAL	Average
6	5874.906	43.45	32.23	7.43	37.00	46.11	74.00	-27.89	VERTICAL	Peak
7	7236.880	29.70	35.55	7.35	36.93	35.67	54.00	-18.33	VERTICAL	Average
8	7236.880	43.57	35.55	7.35	36.93	49.54	74.00	-24.46	VERTICAL	Peak
9	9648.151	30.87	37.54	8.18	37.08	39.51	54.00	-14.49	VERTICAL	Average
10	9648.151	43.67	37.54	8.18	37.08	52.31	74.00	-21.69	VERTICAL	Peak
11	12060.710	27.74	39.46	10.71	37.17	40.74	54.00	-13.26	VERTICAL	Average
12	12060.710	40.36	39.46	10.71	37.17	53.36	74.00	-20.64	VERTICAL	Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3757.637	33.72	28.82	7.65	36.92	33.27	54.00	-20.73	HORIZONTAL Average
2	3757.637	45.65	28.82	7.65	36.92	45.20	74.00	-28.80	HORIZONTAL Peak
3	4884.151	33.76	30.95	6.86	36.95	34.62	54.00	-19.38	HORIZONTAL Average
4	4884.151	45.03	30.95	6.86	36.95	45.89	74.00	-28.11	HORIZONTAL Peak
5	7326.267	32.01	35.74	7.39	36.92	38.22	54.00	-15.78	HORIZONTAL Average
6	7326.267	44.08	35.74	7.39	36.92	50.29	74.00	-23.71	HORIZONTAL Peak
7	8539.102	31.34	36.13	8.00	36.94	38.53	54.00	-15.47	HORIZONTAL Average
8	8539.102	44.99	36.13	8.00	36.94	52.18	74.00	-21.82	HORIZONTAL Peak
9	9768.257	31.02	37.74	8.37	37.09	40.04	54.00	-13.96	HORIZONTAL Average
10	9768.257	42.26	37.74	8.37	37.09	51.28	74.00	-22.72	HORIZONTAL Peak
11	12210.220	27.09	39.21	10.98	37.06	40.22	54.00	-13.78	HORIZONTAL Average
12	12210.220	39.92	39.21	10.98	37.06	53.05	74.00	-20.95	HORIZONTAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3735.978	33.48	28.70	7.50	36.92	32.76	54.00	-21.24	VERTICAL Average
2	3735.978	46.01	28.70	7.50	36.92	45.29	74.00	-28.71	VERTICAL Peak
3	4884.043	31.68	30.95	6.86	36.95	32.54	54.00	-21.46	VERTICAL Average
4	4884.043	44.43	30.95	6.86	36.95	45.29	74.00	-28.71	VERTICAL Peak
5	7386.309	29.34	35.85	7.42	36.92	35.69	54.00	-18.31	VERTICAL Average
6	7386.309	42.96	35.85	7.42	36.92	49.31	74.00	-24.69	VERTICAL Peak
7	8764.146	30.80	36.33	8.00	36.97	38.16	54.00	-15.84	VERTICAL Average
8	8764.146	43.96	36.33	8.00	36.97	51.32	74.00	-22.68	VERTICAL Peak
9	9768.717	30.91	37.74	8.37	37.09	39.93	54.00	-14.07	VERTICAL Average
10	9768.717	43.17	37.74	8.37	37.09	52.19	74.00	-21.81	VERTICAL Peak
11	12210.520	26.16	39.21	10.98	37.06	39.29	54.00	-14.71	VERTICAL Average
12	12210.520	39.10	39.21	10.98	37.06	52.23	74.00	-21.77	VERTICAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3901.516	32.21	29.30	7.56	36.91	32.16	54.00	-21.84	HORIZONTAL Average
2	3901.516	44.75	29.30	7.56	36.91	44.70	74.00	-29.30	HORIZONTAL Peak
3	4924.721	32.81	31.01	7.49	36.95	34.36	54.00	-19.64	HORIZONTAL Average
4	4924.721	44.78	31.01	7.49	36.95	46.33	74.00	-27.67	HORIZONTAL Peak
5	7386.144	31.99	35.85	7.42	36.92	38.34	54.00	-15.66	HORIZONTAL Average
6	7386.144	43.28	35.85	7.42	36.92	49.63	74.00	-24.37	HORIZONTAL Peak
7	8440.945	30.49	36.13	8.06	36.93	37.75	54.00	-16.25	HORIZONTAL Average
8	8440.945	44.49	36.13	8.06	36.93	51.75	74.00	-22.25	HORIZONTAL Peak
9	9848.151	31.63	37.82	8.46	37.09	40.82	54.00	-13.18	HORIZONTAL Average
10	9848.151	44.57	37.82	8.46	37.09	53.76	74.00	-20.24	HORIZONTAL Peak
11	12310.420	29.49	39.03	11.10	36.97	42.65	54.00	-11.35	HORIZONTAL Average
12	12310.420	40.63	39.03	11.10	36.97	53.79	74.00	-20.21	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4181.768	34.04	29.69	6.66	36.91	33.48	54.00	-20.52	VERTICAL Average
2	4181.768	46.04	29.69	6.66	36.91	45.48	74.00	-28.52	VERTICAL Peak
3	4924.993	33.68	31.01	7.49	36.95	35.23	54.00	-18.77	VERTICAL Average
4	4924.993	45.09	31.01	7.49	36.95	46.64	74.00	-27.36	VERTICAL Peak
5	7386.267	30.11	35.85	7.42	36.92	36.46	54.00	-17.54	VERTICAL Average
6	7386.267	43.49	35.85	7.42	36.92	49.84	74.00	-24.16	VERTICAL Peak
7	8368.146	31.34	36.18	8.11	36.93	38.70	54.00	-15.30	VERTICAL Average
8	8368.146	44.44	36.18	8.11	36.93	51.80	74.00	-22.20	VERTICAL Peak
9	9848.916	29.36	37.82	8.46	37.09	38.55	54.00	-15.45	VERTICAL Average
10	9848.916	41.39	37.82	8.46	37.09	50.58	74.00	-23.42	VERTICAL Peak
11	12310.620	27.16	39.03	11.10	36.97	40.32	54.00	-13.68	VERTICAL Average
12	12310.620	39.67	39.03	11.10	36.97	52.83	74.00	-21.17	VERTICAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.962	23.00	12.22	0.07	21.63	13.66	40.00	-26.34	HORIZONTAL QP
2	47.492	23.43	12.94	0.65	24.67	12.35	40.00	-27.65	HORIZONTAL QP
3	106.759	27.37	10.16	0.87	27.44	10.96	43.50	-32.54	HORIZONTAL QP
4	153.200	27.07	13.32	1.22	28.11	13.50	43.50	-30.00	HORIZONTAL QP
5	513.633	30.20	18.44	2.27	29.85	21.06	46.00	-24.94	HORIZONTAL QP
6	737.071	28.25	21.84	3.30	29.33	24.06	46.00	-21.94	HORIZONTAL QP

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

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4109.872	34.18	29.60	6.87	36.90	33.75	54.00	-20.25	HORIZONTAL Average
2	4109.872	46.47	29.60	6.87	36.90	46.04	74.00	-27.96	HORIZONTAL Peak
3	4844.151	34.97	30.88	6.31	36.94	35.22	54.00	-18.78	HORIZONTAL Average
4	4844.151	46.21	30.88	6.31	36.94	46.46	74.00	-27.54	HORIZONTAL Peak
5	6995.172	31.24	35.10	7.28	36.94	36.68	54.00	-17.32	HORIZONTAL Average
6	6995.172	45.02	35.10	7.28	36.94	50.46	74.00	-23.54	HORIZONTAL Peak
7	7266.200	32.86	35.60	7.36	36.92	38.90	54.00	-15.10	HORIZONTAL Average
8	7266.200	43.77	35.60	7.36	36.92	49.81	74.00	-24.19	HORIZONTAL Peak
9	9688.588	30.31	37.61	8.25	37.08	39.09	54.00	-14.91	HORIZONTAL Average
10	9688.588	43.82	37.61	8.25	37.08	52.60	74.00	-21.40	HORIZONTAL Peak
11	12110.070	27.20	39.37	10.82	37.15	40.24	54.00	-13.76	HORIZONTAL Average
12	12110.070	40.22	39.37	10.82	37.15	53.26	74.00	-20.74	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.962	24.32	12.22	0.07	21.63	14.98	40.00	-25.02	VERTICAL QP
2	37.812	24.85	12.55	0.46	23.31	14.55	40.00	-25.45	VERTICAL QP
3	61.995	24.64	12.00	0.60	25.27	11.97	40.00	-28.03	VERTICAL QP
4	166.651	26.84	13.19	1.30	28.09	13.24	43.50	-30.26	VERTICAL QP
5	578.670	29.24	20.30	1.90	29.21	22.23	46.00	-23.77	VERTICAL QP
6	906.482	28.36	24.05	3.13	28.06	27.48	46.00	-18.52	VERTICAL QP

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3725.195	33.76	28.64	7.42	36.92	32.90	54.00	-21.10	VERTICAL Average
2	3725.195	45.03	28.64	7.42	36.92	44.17	74.00	-29.83	VERTICAL Peak
3	4844.721	35.92	30.88	6.31	36.94	36.17	54.00	-17.83	VERTICAL Average
4	4844.721	46.71	30.88	6.31	36.94	46.96	74.00	-27.04	VERTICAL Peak
5	7266.982	30.83	35.60	7.36	36.92	36.87	54.00	-17.13	VERTICAL Average
6	7266.982	43.29	35.60	7.36	36.92	49.33	74.00	-24.67	VERTICAL Peak
7	8465.379	30.25	36.11	8.04	36.94	37.46	54.00	-16.54	VERTICAL Average
8	8465.379	44.93	36.11	8.04	36.94	52.14	74.00	-21.86	VERTICAL Peak
9	9688.349	31.62	37.61	8.25	37.08	40.40	54.00	-13.60	VERTICAL Average
10	9688.349	44.17	37.61	8.25	37.08	52.95	74.00	-21.05	VERTICAL Peak
11	12110.220	28.40	39.37	10.82	37.15	41.44	54.00	-12.56	VERTICAL Average
12	12110.220	40.45	39.37	10.82	37.15	53.49	74.00	-20.51	VERTICAL Peak

Mode:b; Polarization:Horizontal; Modulation:n; bandwidth:40MHz; Channel:middle

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3992.781	32.28	29.48	7.26	36.90	32.12	54.00	-21.88	HORIZONTAL Average
2	3992.781	45.06	29.48	7.26	36.90	44.90	74.00	-29.10	HORIZONTAL Peak
3	4884.058	32.97	30.95	6.86	36.95	33.83	54.00	-20.17	HORIZONTAL Average
4	4884.058	45.48	30.95	6.86	36.95	46.34	74.00	-27.66	HORIZONTAL Peak
5	7326.516	30.04	35.74	7.39	36.92	36.25	54.00	-17.75	HORIZONTAL Average
6	7326.516	43.52	35.74	7.39	36.92	49.73	74.00	-24.27	HORIZONTAL Peak
7	8393.689	30.92	36.16	8.09	36.93	38.24	54.00	-15.76	HORIZONTAL Average
8	8393.689	42.64	36.16	8.09	36.93	49.96	74.00	-24.04	HORIZONTAL Peak
9	9768.240	30.67	37.74	8.37	37.09	39.69	54.00	-14.31	HORIZONTAL Average
10	9768.240	42.27	37.74	8.37	37.09	51.29	74.00	-22.71	HORIZONTAL Peak
11	12210.760	28.80	39.21	10.98	37.06	41.93	54.00	-12.07	HORIZONTAL Average
12	12210.760	40.34	39.21	10.98	37.06	53.47	74.00	-20.53	HORIZONTAL Peak

Mode:b; Polarization:Vertical; Modulation:n; bandwidth:40MHz; Channel:middle

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3757.637	33.94	28.82	7.65	36.92	33.49	54.00	-20.51	VERTICAL Average
2	3757.637	45.28	28.82	7.65	36.92	44.83	74.00	-29.17	VERTICAL Peak
3	4884.307	33.43	30.95	6.86	36.95	34.29	54.00	-19.71	VERTICAL Average
4	4884.307	45.65	30.95	6.86	36.95	46.51	74.00	-27.49	VERTICAL Peak
5	5881.418	32.64	32.23	7.43	37.00	35.30	54.00	-18.70	VERTICAL Average
6	5881.418	44.52	32.23	7.43	37.00	47.18	74.00	-26.82	VERTICAL Peak
7	7326.070	31.06	35.74	7.39	36.92	37.27	54.00	-16.73	VERTICAL Average
8	7326.070	43.61	35.74	7.39	36.92	49.82	74.00	-24.18	VERTICAL Peak
9	9768.525	31.44	37.74	8.37	37.09	40.46	54.00	-13.54	VERTICAL Average
10	9768.525	43.20	37.74	8.37	37.09	52.22	74.00	-21.78	VERTICAL Peak
11	12210.520	28.65	39.21	10.98	37.06	41.78	54.00	-12.22	VERTICAL Average
12	12210.520	39.97	39.21	10.98	37.06	53.10	74.00	-20.90	VERTICAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3746.792	31.91	28.76	7.58	36.92	31.33	54.00	-22.67	HORIZONTAL Average
2	3746.792	44.09	28.76	7.58	36.92	43.51	74.00	-30.49	HORIZONTAL Peak
3	4904.662	34.60	30.97	7.07	36.95	35.69	54.00	-18.31	HORIZONTAL Average
4	4904.662	46.08	30.97	7.07	36.95	47.17	74.00	-26.83	HORIZONTAL Peak
5	7356.527	31.17	35.78	7.40	36.92	37.43	54.00	-16.57	HORIZONTAL Average
6	7356.527	43.68	35.78	7.40	36.92	49.94	74.00	-24.06	HORIZONTAL Peak
7	8588.607	30.63	36.16	7.98	36.95	37.82	54.00	-16.18	HORIZONTAL Average
8	8588.607	44.48	36.16	7.98	36.95	51.67	74.00	-22.33	HORIZONTAL Peak
9	9808.432	30.33	37.79	8.41	37.09	39.44	54.00	-14.56	HORIZONTAL Average
10	9808.432	42.49	37.79	8.41	37.09	51.60	74.00	-22.40	HORIZONTAL Peak
11	12260.520	27.54	39.15	11.02	37.03	40.68	54.00	-13.32	HORIZONTAL Average
12	12260.520	40.20	39.15	11.02	37.03	53.34	74.00	-20.66	HORIZONTAL Peak

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

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4133.699	32.45	29.62	6.79	36.90	31.96	54.00	-22.04	VERTICAL Average
2	4133.699	45.29	29.62	6.79	36.90	44.80	74.00	-29.20	VERTICAL Peak
3	4904.993	31.33	30.97	7.07	36.95	32.42	54.00	-21.58	VERTICAL Average
4	4904.993	44.85	30.97	7.07	36.95	45.94	74.00	-28.06	VERTICAL Peak
5	7356.516	30.69	35.78	7.40	36.92	36.95	54.00	-17.05	VERTICAL Average
6	7356.516	42.93	35.78	7.40	36.92	49.19	74.00	-24.81	VERTICAL Peak
7	8271.880	31.38	36.27	8.19	36.92	38.92	54.00	-15.08	VERTICAL Average
8	8271.880	44.43	36.27	8.19	36.92	51.97	74.00	-22.03	VERTICAL Peak
9	9808.689	30.88	37.79	8.41	37.09	39.99	54.00	-14.01	VERTICAL Average
10	9808.689	43.71	37.79	8.41	37.09	52.82	74.00	-21.18	VERTICAL Peak
11	12260.740	28.71	39.15	11.02	37.03	41.85	54.00	-12.15	VERTICAL Average
12	12260.740	40.39	39.15	11.02	37.03	53.53	74.00	-20.47	VERTICAL Peak

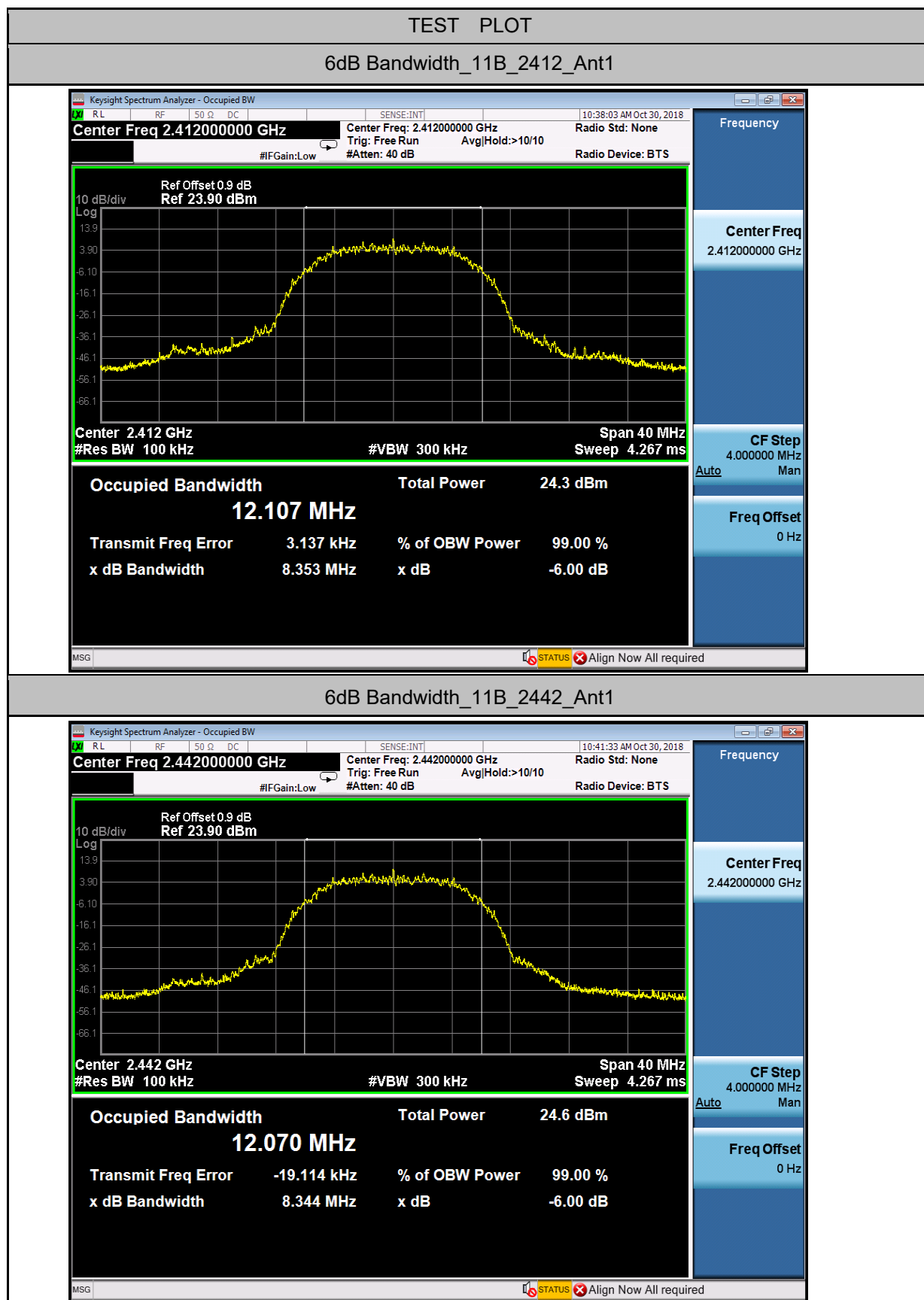


8 Appendix

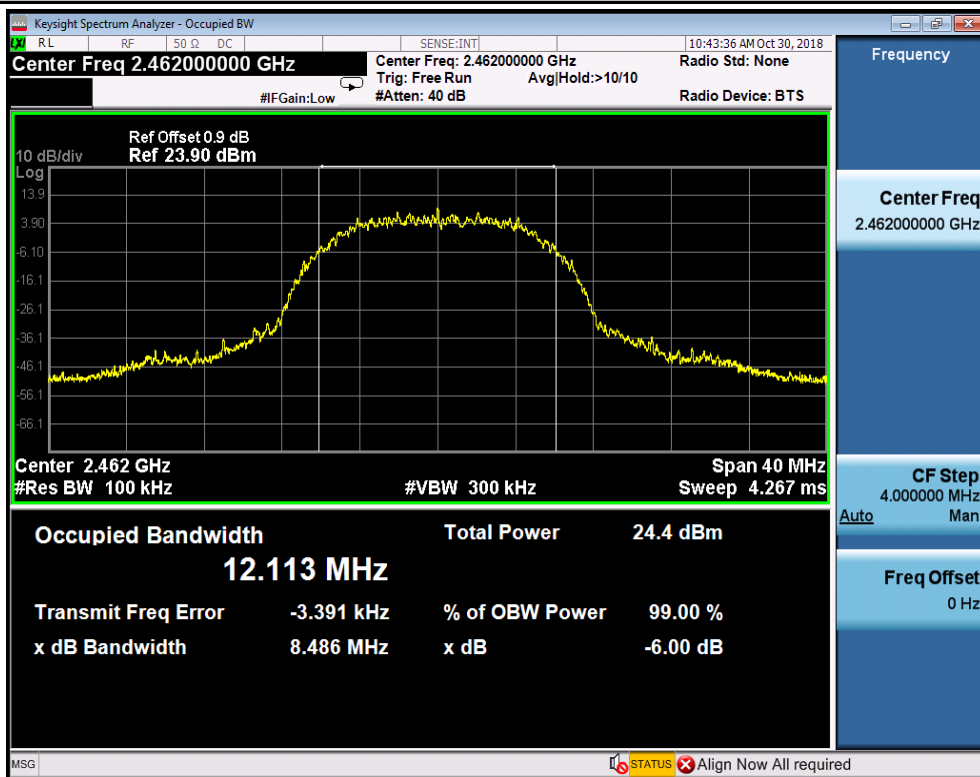
8.1 Appendix 15.247

1.6dB Bandwidth

Test Mode	Test Channel	Ant	6dB Bandwidth [MHz]	Limit	Verdict
11B	2412	Ant1	8.353	0.5	PASS
11B	2442	Ant1	8.344	0.5	PASS
11B	2462	Ant1	8.486	0.5	PASS
11G	2412	Ant1	16.93	0.5	PASS
11G	2442	Ant1	17.25	0.5	PASS
11G	2462	Ant1	16.95	0.5	PASS
11N20SISO	2412	Ant1	16.54	0.5	PASS
11N20SISO	2442	Ant1	16.94	0.5	PASS
11N20SISO	2462	Ant1	16.63	0.5	PASS
11N40SISO	2422	Ant1	36.13	0.5	PASS
11N40SISO	2442	Ant1	36.00	0.5	PASS
11N40SISO	2452	Ant1	36.01	0.5	PASS



6dB Bandwidth_11B_2462_Ant1



6dB Bandwidth_11G_2412_Ant1

