



Report No.: SZEM190801794402

Page: 1 of 134

# TEST REPORT

Application No.: SZEM1908017944CR

**Applicant:** GE Lighting

Address of Applicant: 1975 Noble Road, Cleveland, Ohio, 44112, United States

Manufacturer: GE Lighting

Address of Manufacturer: 1975 Noble Road, Cleveland, Ohio, 44112, United States

Factory: TCL Technoly Electronics (Huizhou) Co., Ltd.

Address of Factory: Section 37, Zhongkai High-tech Development Zone, Huizhou City, Guang

Dong Province, P.R. China

**Equipment Under Test (EUT):** 

**EUT Name:** CbyGE no neutral smart switch

Model No.: CSWONBLTWF1NN, CSWONBLPWF1NN (Models may be provided with

suffixes of any additional symbols/letters/numbers sequence meaning body

color, packaging) .

Please refer to section 2 of this report which indicates which model was

actually tested and which were electrically identical.

Trade mark: GE

FCC ID: PUU-CSWONBLXWF1NN

Standard(s): 47 CFR Part 15, Subpart C 15.247

**Date of Receipt:** 2019-08-28

**Date of Test:** 2019-08-30 to 2019-10-15

**Date of Issue:** 2019-10-17

Test Result: Pass\*

中国・深圳・科技园中区M-10栋一号厂房

Keny Xu EMC Laboratory Manager



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<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above.



Report No.: SZEM190801794402

Page: 2 of 134

	Revision Record					
Version	Chapter	Date	Modifier	Remark		
01		2019-10-17		Original		

Authorized for issue by:		
	Calvin Weng	
	Calvin Weng /Project Engineer	
	EvicFu	
	Eric Fu /Reviewer	



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Report No.: SZEM190801794402

Page: 3 of 134

## **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(b)(4)	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	

### **Declaration of EUT Family Grouping:**

Model No.: CSWONBLTWF1NN, CSWONBLPWF1NN (Models may be provided with suffixes of any additional symbols/letters/numbers sequence meaning body color, packaging)

Only the model CSWONBLTWF1NN was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on the appearance and Control key



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Report No.: SZEM190801794402

Page: 4 of 134

### **Contents**

			Page
1	cov	/ER PAGE	1
2	TES	T SUMMARY	3
3	CON	ITENTS	4
4	GEN	IERAL INFORMATION	6
	4.1	DETAILS OF E.U.T.	F
	4.2	DESCRIPTION OF SUPPORT UNITS.	
	4.3	MEASUREMENT UNCERTAINTY	
	4.4	TEST LOCATION	
	4.5	TEST FACILITY	
	4.6	DEVIATION FROM STANDARDS	
	4.7	ABNORMALITIES FROM STANDARD CONDITIONS	7
5	EQU	IIPMENT LIST	8
6	RAD	IO SPECTRUM TECHNICAL REQUIREMENT	13
	6.1	ANTENNA REQUIREMENT	1.9
	6.1.1		
	6.1.2	•	
7	DAD	IO SPECTRUM MATTER TEST RESULTS	1/
′			
	7.1	CONDUCTED EMISSIONS AT AC POWER LINE (150kHz-30MHz)	
	7.1.1		
	7.1.2 7.1.3	, 5	
	7.1.3 7.2	MINIMUM 6DB BANDWIDTH	
	7.2.1		
	7.2.2		
	7.2.3		
	7.3	CONDUCTED PEAK OUTPUT POWER	
	7.3.1	,	
	7.3.2		
	7.3.3		
	7.4	POWER SPECTRUM DENSITY	
	7.4.1	1	
	7.4.2 7.4.3	1 0	21 21
	7.4.3	CONDUCTED BAND EDGES MEASUREMENT	
	7.5.1		
	7.5.2		
	7.5.3		
	7.6	CONDUCTED SPURIOUS EMISSIONS	
	7.6.1		25
	7.6.2	, 5	25
	7.6.3	Measurement Procedure and Data	25



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Report No.: SZEM190801794402

Page: 5 of 134

	7.7 F	RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS	26
	7.7.1	E.U.T. Operation	26
	7.7.2	Test Setup Diagram	26
	7.7.3	Measurement Procedure and Data	27
	7.8 F	RADIATED SPURIOUS EMISSIONS	60
	7.8.1	E.U.T. Operation	61
	7.8.2	Test Setup Diagram	61
	7.8.3	Measurement Procedure and Data	62
8	PHOT	OGRAPHS	89
	8.1 T	EST SETUP	89
	8.2 E	UT Constructional Details (EUT Photos)	89
9	APPE	NDIX	90
	9.1 A	APPENDIX 15.247	90-134



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Report No.: SZEM190801794402

Page: 6 of 134

### **General Information**

### Details of E.U.T.

Power supply:	AC120V, 60Hz
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz
	802.11n(HT40): 2422MHz to 2452MHz
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
Channel Spacing:	5MHz
Antenna Type:	PCB Antenna
Antenna Gain:	2.73dBi

### 4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
LED bulb	GE	LED15DA21	N/A

### 4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10 <sup>-8</sup>
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	Conduction emission	± 3.0dB (150kHz to 30MHz)
5	RF conducted power	± 0.75dB
6	RF power density	± 2.84dB
7	Conducted Spurious emissions	± 0.75dB
8	DE Dadiated resum	± 4.5dB (Below 1GHz)
	RF Radiated power	± 4.8dB (Above 1GHz)
0	Dadiated Carriers emission test	± 4.5dB (Below 1GHz)
9	Radiated Spurious emission test	± 4.8dB (Above 1GHz)
10	Temperature test	± 1 ℃
11	Humidity test	± 3%
12	Supply voltages	± 1.5%
13	Time	± 3%



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Page: 7 of 134

#### 4.4 Test Location

All tests were performed at:

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

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

### 4.5 Test Facility

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

#### · CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

#### • A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

#### VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

#### • FCC -Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

#### Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

#### 4.6 Deviation from Standards

None

### 4.7 Abnormalities from Standard Conditions

None



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Page: 8 of 134

# 5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)						
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2019-06-13	2022-06-12	
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A	
Coaxial Cable	SGS	N/A	SEM024-01	2019-07-11	2020-07-10	
LISN	Rohde & Schwarz	ENV216	SEM007-01	2018-09-25	2019-09-24	
LISN	Rohde & Schwarz	ENV216	SEM007-01	2019-09-24	2020-09-23	
LISN	ETS-LINDGREN	3816/2	SEM007-02	2019-04-01	2020-03-31	
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2019-04-01	2020-03-31	

Minimum 6dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2018-09-25	2019-09-24
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2018-09-25	2019-09-24
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-25	2019-09-24
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018-09-25	2019-09-24
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23
Electric and Magnetic Field Analyzer	Narda	NBM- 550/EHP-50F	EMC2143	2018-02-07	2020-02-06
Electric Field Probe(100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07

Conducted Peak Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2018-09-25	2019-09-24
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23



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Report No.: SZEM190801794402

Page: 9 of 134

Measurement Software	t Software JS Tonscend		N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-25	2019-09-24
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018-09-25	2019-09-24
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23
Electric and Magnetic Field Analyzer	Narda	NBM- 550/EHP-50F	EMC2143	2018-02-07	2020-02-06
Electric Field Probe(100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07

Power Spectrum Density								
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date			
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12			
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2018-09-25	2019-09-24			
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23			
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2018-09-25	2019-09-24			
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23			
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	I NI/A		N/A			
Coaxial Cable	Cable SGS		SEM031-02	2019-07-11	2020-07-10			
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A			
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-25	2019-09-24			
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23			
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018-09-25	2019-09-24			
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23			
Electric and Magnetic Field Analyzer	Narda	NBM- 550/EHP-50F	EMC2143	2018-02-07	2020-02-06			
Electric Field Probe(100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20			
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07			

Conducted Band Edges Measurement									
Equipment	<b>Inventory No</b>	Cal Date	Cal Due Date						
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12				
DC Power Supply	DC Power Supply Zhao Xin		SEM011-08	2018-09-25	2019-09-24				
DC Power Supply Zhao Xin		KXN-6020D	SEM011-08	2019-09-24	2020-09-23				
Spectrum Analyzer	Spectrum Analyzer Rohde & Schwarz		SEM004-06	2018-09-25	2019-09-24				
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23				



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Report No.: SZEM190801794402

Page: 10 of 134

Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-25	2019-09-24
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018-09-25	2019-09-24
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23
Electric and Magnetic Field Analyzer	Narda	NBM- 550/EHP-50F	EMC2143	2018-02-07	2020-02-06
Electric Field Probe(100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07

Conducted Spurious Emissions								
Equipment	Manufacturer	Model No Inventory No		Cal Date	Cal Due Date			
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12			
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2018-09-25	2019-09-24			
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23			
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2018-09-25	2019-09-24			
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23			
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A			
Coaxial Cable	l Cable SGS		SEM031-02	2019-07-11	2020-07-10			
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A			
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-25	2019-09-24			
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23			
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018-09-25	2019-09-24			
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23			
Electric and Magnetic Field Analyzer	e l Marna		EMC2143	2018-02-07	2020-02-06			
Electric Field Probe(100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20			
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07			

Radiated Emissions which fall in the restricted bands									
Equipment Manufacturer Model No Inventory No Cal Date Cal Duc									
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12				
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A				
Coaxial Cable	SGS	N/A	SEM026-01	2019-07-11	2020-07-10				



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Report No.: SZEM190801794402

Page: 11 of 134

EXA Spectrum Analyzer	AgilentTechnologies Inc	. • I N9010A I SEM004-12		2019-04-12	2020-04-11
Horn Antenna (1- 18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Horn Antenna(15GHz- 40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16
Pre-Amplifier(0.1- 26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2018-09-25	2019-09-24
Pre-Amplifier(0.1- 26.5GHz)	Compliance Directions Systems Inc.	PAP-0126 SEM004-11		2019-09-24	2020-09-23
Pre-amplifier(18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2019-04-01	2020-03-31
Pre-amplifier(26GHz- 40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2019-04-01	2020-03-31
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2018-09-25	2019-09-24
DC Power Supply	DC Power Supply Zhao Xin		SEM011-08	2019-09-24	2020-09-23
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21

RE in Chamber								
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date			
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04			
MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2018-09-25	2019-09-24			
MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2019-09-24	2020-09-23			
BiConiLog Antenna (26-3000MHz)	I FIS-UNDGBEN		SEM003-01	2017-06-27	2020-06-26			
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2019-04-01	2020-03-31			
Measurement Software	AUDIX	e3 V8.2014-6- 27			N/A			
Coaxial Cable	SGS	N/A	SEM025-01	2019-07-11	2020-07-10			
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12			
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A			
Coaxial Cable	SGS	N/A	SEM026-01	2019-07-11	2020-07-10			
EXA Spectrum Analyzer	EXA Spectrum Analyzer AgilentTechnologies Inc		SEM004-12	2019-04-12	2020-04-11			
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12			



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Report No.: SZEM190801794402

Page: 12 of 134

Horn Antenna (15GHz-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2018-11-12	2019-11-11
Pre-amplifier (18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2019-04-01	2020-03-31
Pre-amplifier (26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2019-04-01	2020-03-31
DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2018-09-25	2019-09-24
DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2019-09-24	2020-09-23
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21

General used equipment							
Equipment	Manufacturer	Model No	Model No Inventory No		Cal Due Date		
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2018-09-27	2019-09-26		
Humidity/ Temperature Indicator	Shanghai Meteorological ZJ1-2B SEM002-03 Industry Factory		2019-09-26	2020-09-25			
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2018-09-27	2019-09-26		
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2019-09-26	2020-09-25		
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2018-09-27	2019-09-26		
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2019-09-26	2020-09-25		
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2019-04-04	2020-04-03		



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Report No.: SZEM190801794402

Page: 13 of 134

#### Radio Spectrum Technical Requirement 6

### Antenna Requirement

#### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

#### 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 2.73dBi.

Antenna location: Refer to Appendix(Internal photos)



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Page: 14 of 134

#### 7 **Radio Spectrum Matter Test Results**

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

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

Limit:

Fraguency of emission/MH=)	Conducted limit(dBµV)					
Frequency of emission(MHz)	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.						



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Report No.: SZEM190801794402

Page: 15 of 134

#### 7.1.1 E.U.T. Operation

Operating Environment:

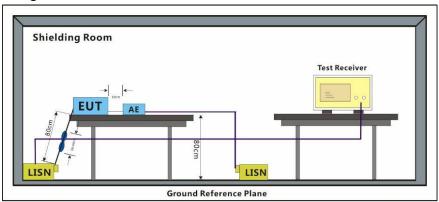
Temperature: 21.2 °C Humidity: 53 % RH Atmospheric Pressure: 1005 mbar

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

- 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 + 50hm 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



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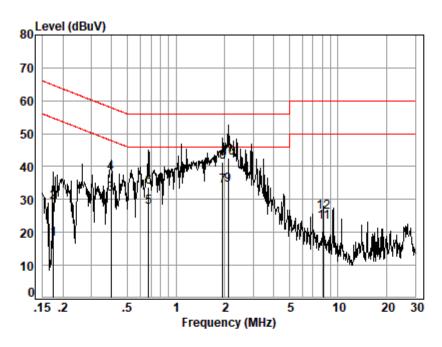
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Report No.: SZEM190801794402

Page: 16 of 134

Mode:b; Line:Live Line



Site : Shielding Room

Condition: Line Job No. : 17944CR

Test mode: b

	Frea	Cable	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.17	0.02	9.49	8.55	18.06	54.72	-36.66	Average
2	0.17	0.02	9.49	19.59	29.10	64.72	-35.62	QP
3	0.40	0.05	9.58	21.97	31.60	47.95	-16.35	Average
4	0.40	0.05	9.58	28.32	37.95	57.95	-20.00	QP
5	0.68	0.07	9.63	17.98	27.68	46.00	-18.32	Average
6	0.68	0.07	9.63	24.21	33.91	56.00	-22.09	QP
7	1.94	0.16	9.64	24.35	34.15	46.00	-11.85	Average
8	1.94	0.16	9.64	31.68	41.48	56.00	-14.52	QP
9	2.10	0.16	9.64	24.45	34.25	46.00	-11.75	Average
10	2.10	0.16	9.64	32.81	42.61	56.00	-13.39	QP
11	8.15	0.17	9.75	13.08	23.00	50.00	-27.00	Average
12	8.15	0.17	9.75	16.23	26.15	60.00	-33.85	QP



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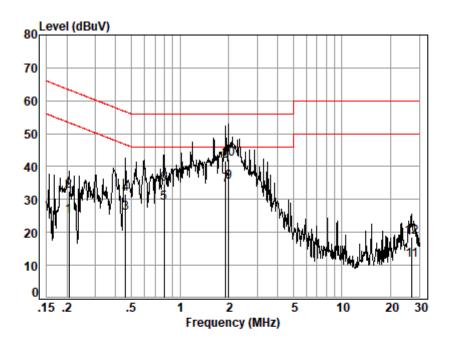
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Report No.: SZEM190801794402

Page: 17 of 134

Mode:b; Line:Neutral Line



Site : Shielding Room

Condition: Neutral Job No. : 17944CR

Test mode: b

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.21	0.02	9.45	15.37	24.84	53.36	-28.52	Average
2	0.21	0.02	9.45	23.21	32.68	63.36	-30.68	QP
3	0.46	0.06	9.57	16.10	25.73	46.67	-20.94	Average
4	0.46	0.06	9.57	22.07	31.70	56.67	-24.97	QP
5	0.80	0.08	9.64	19.05	28.77	46.00	-17.23	Average
6	0.80	0.08	9.64	24.83	34.55	56.00	-21.45	QP
7	1.92	0.16	9.70	24.42	34.28	46.00	-11.72	Average
8	1.92	0.16	9.70	31.79	41.65	56.00	-14.35	QP
9	1.99	0.16	9.70	25.44	35.30	46.00	-10.70	Average
10	1.99	0.16	9.70	32.33	42.19	56.00	-13.81	QP
11	26.98	0.27	10.44	0.85	11.56	50.00	-38.44	Average
12	26.98	0.27	10.44	7.70	18.41	60.00	-41.59	QP



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Report No.: SZEM190801794402

Page: 18 of 134

#### 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:

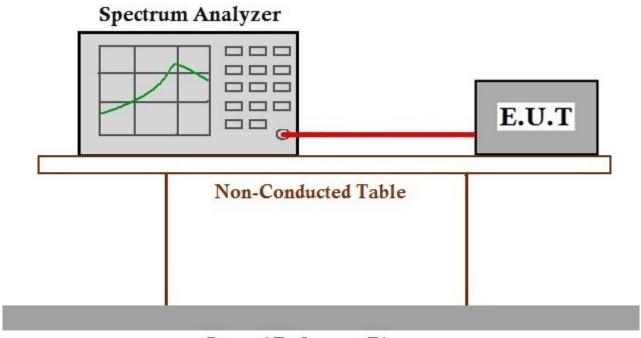
Humidity: 45 % RH Atmospheric Pressure: 1005 mbar Temperature: 26.6 °C

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



### Ground Reference Plane

#### 7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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Report No.: SZEM190801794402

Page: 19 of 134

### 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)
	1 for ≥50 hopping channels
902-928	0.25 for 25≤ hopping channels <50
	1 for digital modulation
	1 for ≥75 non-overlapping hopping channels
2400-2483.5	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation



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Report No.: SZEM190801794402

Page: 20 of 134

### 7.3.1 E.U.T. Operation

Operating Environment:

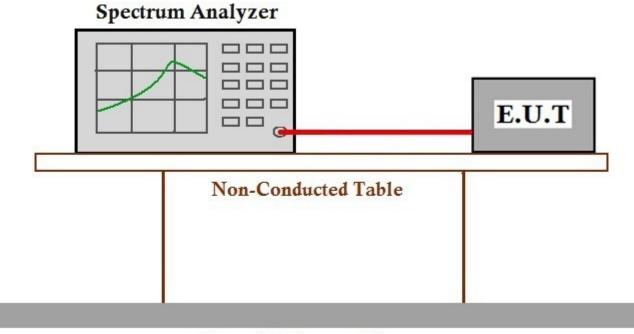
Temperature: 26.6 °C Humidity: 44.9 % RH Atmospheric Pressure: 1005 mbar

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



### Ground Reference Plane

#### 7.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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Page: 21 of 134

### 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: ≤8dBm in any 3 kHz band during any time interval of continuous

transmission

#### 7.4.1 E.U.T. Operation

Operating Environment:

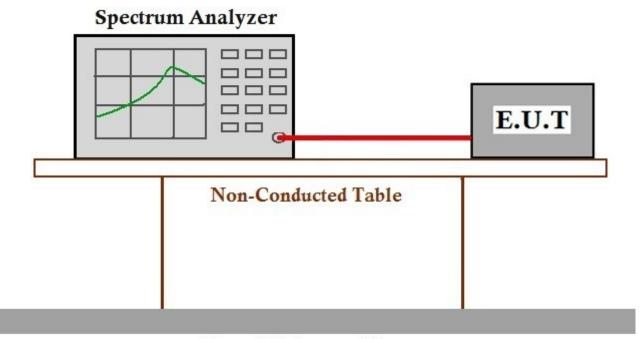
Temperature: 26.6 °C Humidity: 45 % RH Atmospheric Pressure: 1005 mbar

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



### Ground Reference Plane

#### 7.4.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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Report No.: SZEM190801794402

Page: 22 of 134

### 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)



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Report No.: SZEM190801794402

Page: 23 of 134

#### 7.5.1 E.U.T. Operation

Operating Environment:

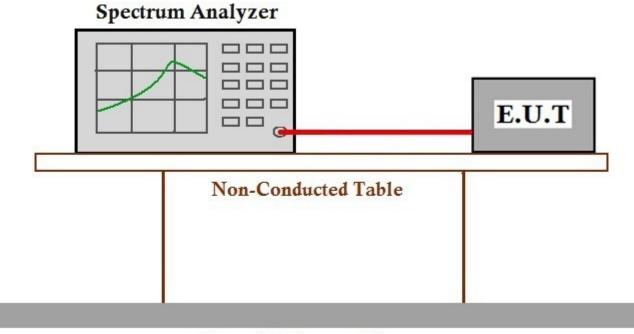
Temperature: 26.6 °C Humidity: 45.1 % RH Atmospheric Pressure: 1005 mbar

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



### Ground Reference Plane

#### 7.5.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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Report No.: SZEM190801794402

Page: 24 of 134

### 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)



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Report No.: SZEM190801794402

Page: 25 of 134

#### 7.6.1 E.U.T. Operation

Operating Environment:

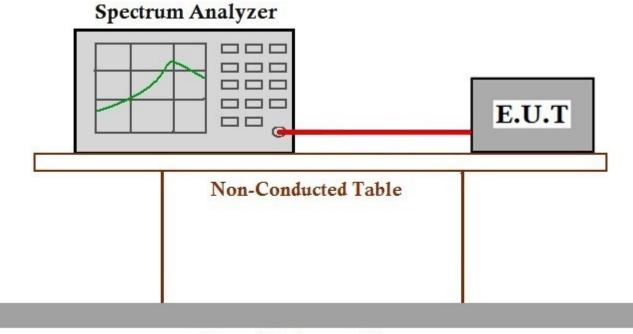
Temperature: 26.6 °C Humidity: 45.1 % RH Atmospheric Pressure: 1005 mbar

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



### Ground Reference Plane

#### 7.6.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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Report No.: SZEM190801794402

Page: 26 of 134

#### 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:

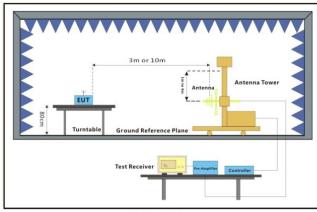
Temperature: Humidity: 57.4 % RH Atmospheric Pressure: 1005 mbar

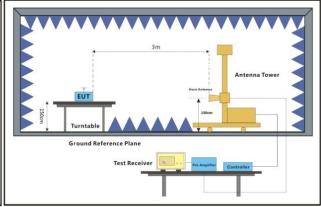
Test mode b:TX mode Keep the EUT in continuously transmitting mode with all modulation

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





Above 1GHz 30MHz-1GHz



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Report No.: SZEM190801794402

Page: 27 of 134

#### 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.
- a. 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- 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.



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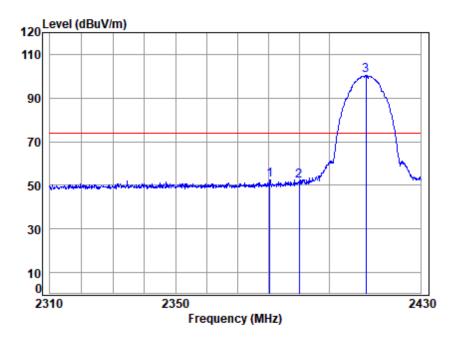
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Report No.: SZEM190801794402

Page: 28 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR Mode : 2412 Band edge : 2.4G WIFI 11B Note

Freq						Limit Line		Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2380.546 2390.000								•
* 2412.000	5.50	28.56	41.18	107.54	100.42	74.00	26.42	peak



1 2 3

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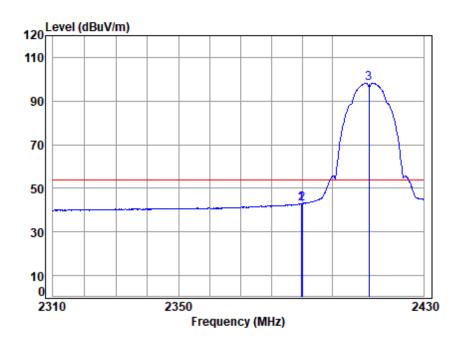
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Report No.: SZEM190801794402

Page: 29 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR Mode : 2412 Band edge : 2.4G WIFI 11B Note

Freq						Limit Line		Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2389.726 2390.000 * 2412.000	5.47	28.52	41.17	49.99	42.81	54.00	-11.19	_



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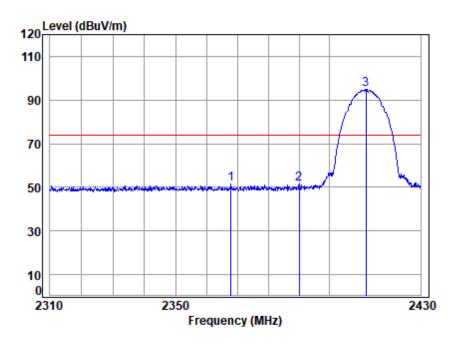
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Report No.: SZEM190801794402

Page: 30 of 134

Mode:b; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2412 Band edge · 2 4G WTFT 11B Note

ote	. 2.4	+G MIL	1 110							
		Cable	Ant	Preamp	Read		Limit	0ver		
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2367.921	5.44	28.48	41.16	58.91	51.67	74.00	-22.33	Peak	
2	2390.000	5.47	28.52	41.17	58.58	51.40	74.00	-22.60	Peak	
3 *	2412.000	5.50	28.56	41.18	102.03	94.91	74.00	20.91	Peak	



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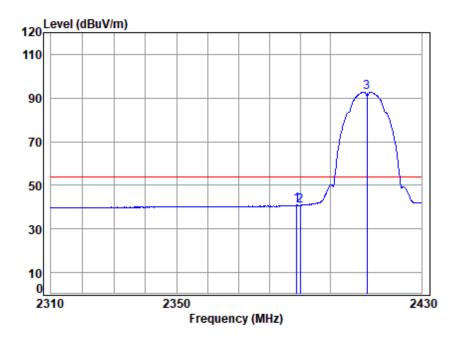
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Report No.: SZEM190801794402

Page: 31 of 134

Mode:b; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2412 Band edge : 2.4G WIFI 11B Note

			Preamp Factor					Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2388.879 2390.000 * 2412.000	5.47	28.52	41.17	47.94	40.76	54.00	-13.24	_



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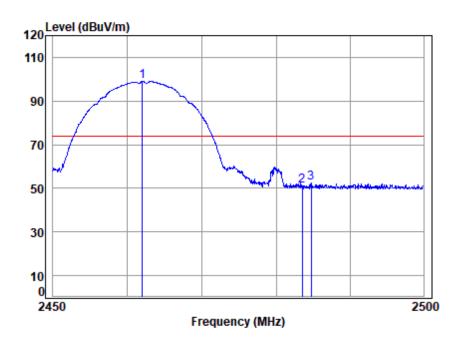
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Report No.: SZEM190801794402

Page: 32 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2462 Band edge : 2.4G WIFI 11B Note

	Freq					Level			Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	* 2462.000	5.57	28.64	41.20	106.13	99.14	74.00	25.14	peak
2	2483.500	5.60	28.67	41.21	58.04	51.10	74.00	-22.90	peak
3	2484.743	5.60	28.68	41.21	59.45	52.52	74.00	-21.48	peak



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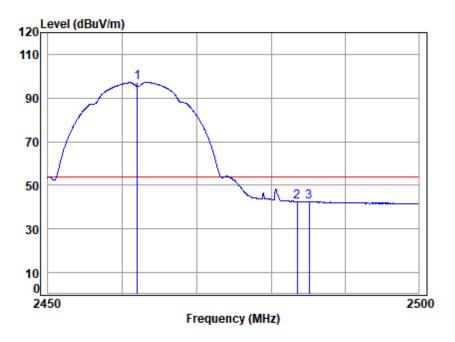
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Page: 33 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2462 Band edge : 2.4G WIFI 11B Note

Freq					Level			Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2462.000 2483.500								_
2485.145								_



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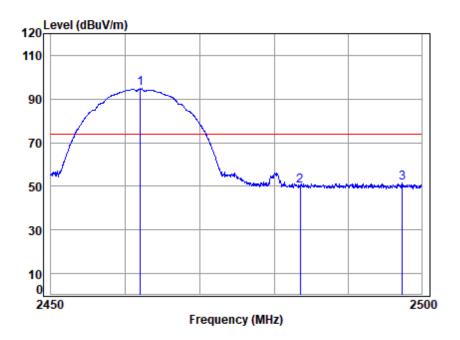
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Report No.: SZEM190801794402

Page: 34 of 134

Mode:b; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No Mode : 2462 Band edge : 2.4G WIFI 11B Note

	Freq		Ant Factor						Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
	2462.000								
2	2483.500	5.60	28.67	41.21	57.27	50.33	74.00	-23.67	Peak
3	2497.375	5.62	28.70	41.22	58.53	51.63	74.00	-22.37	Peak



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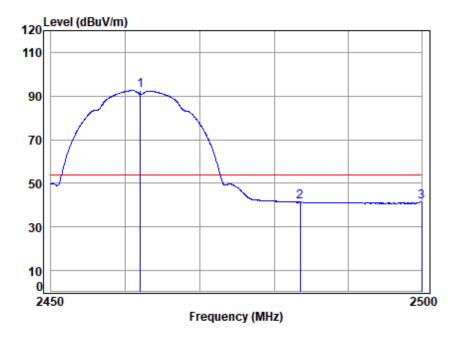
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Report No.: SZEM190801794402

Page: 35 of 134

Mode:b; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No Mode : 2462 Band edge : 2.4G WIFI 11B Note

	Freq			Preamp Factor					Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
	2462.000								_
2	2483.500	5.60	28.67	41.21	48.27	41.33	54.00	-12.67	Average
3	2500 000	5 62	28 70	41 22	48 36	41 46	54 00	-12 54	Average



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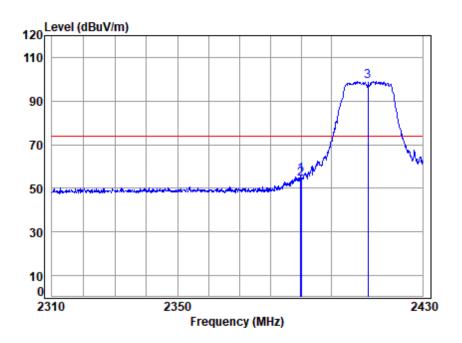
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Report No.: SZEM190801794402

Page: 36 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR Mode : 2412 Band edge : 2.4G WIFI 11G Note

Freq						Limit Line		Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2389.847 2390.000								•
* 2412.000	5.50	28.56	41.18	106.05	98.93	74.00	24.93	peak



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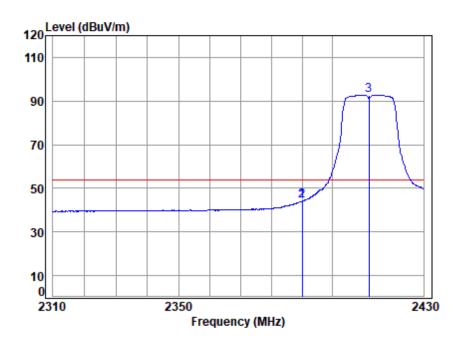
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Report No.: SZEM190801794402

Page: 37 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR Mode : 2412 Band edge : 2.4G WIFI 11G Note

Freq						Limit Line		Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2389.968 2390.000 * 2412.000	5.47	28.52	41.17	51.30	44.12	54.00	-9.88	_



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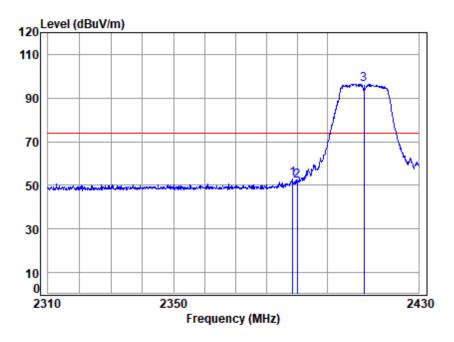
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Report No.: SZEM190801794402

Page: 38 of 134

Mode:b; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2412 Band edge : 2.4G WIFI 11G Note

	Freq						Limit Line		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
	2388.516 2390.000								
*	2412,000	5.50	28.56	41.18	103.60	96.48	74.00	22.48	Peak



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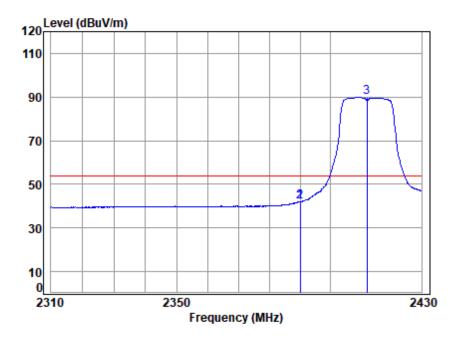
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Report No.: SZEM190801794402

Page: 39 of 134

Mode:b; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2412 Band edge : 2.4G WIFI 11G Note

Freq Lo	33 . 46.60.	ractor	Level	Level	Line	Limit	Remark
MHz	dB dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2389.968 5. 2390.000 5. * 2412.000 5.		41.17	49.23	42.05	54.00	-11.95	Average



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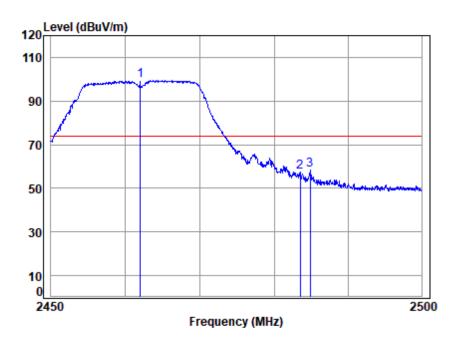
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Report No.: SZEM190801794402

Page: 40 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2462 Band edge : 2.4G WIFI 11G Note

	Freq					Level			Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
	* 2462.000								•
2	2483.500	5.60	28.67	41.21	64.47	57.53	74.00	-16.47	peak
3	2484.844	5.60	28.68	41.21	65.52	58.59	74.00	-15.41	peak



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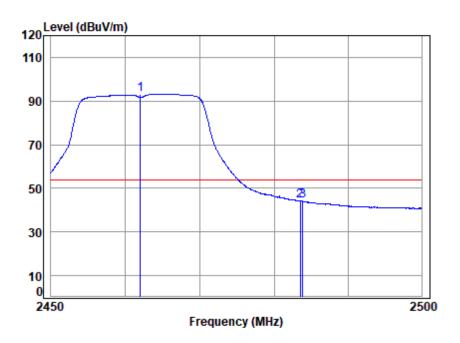
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Report No.: SZEM190801794402

Page: 41 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2462 Band edge : 2.4G WIFI 11G Note

	Freq						Limit Line		Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
	2462.000 2483.500								_
3	2483.840	5.60	28.67	41.21	51.05	44.11	54.00	-9.89	Average



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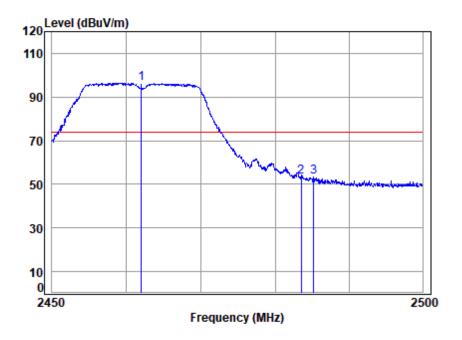
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Report No.: SZEM190801794402

Page: 42 of 134

Mode:b; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No Mode : 2462 Band edge : 2.4G WIFI 11G Note

	Freq					Level			Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	* 2462.000	5.57	28.64	41.20	103.40	96.41	74.00	22.41	Peak
2	2483.500	5.60	28.67	41.21	60.16	53.22	74.00	-20.78	Peak
3	2485,195	5.60	28.68	41.21	60.11	53.18	74.00	-20.82	Peak



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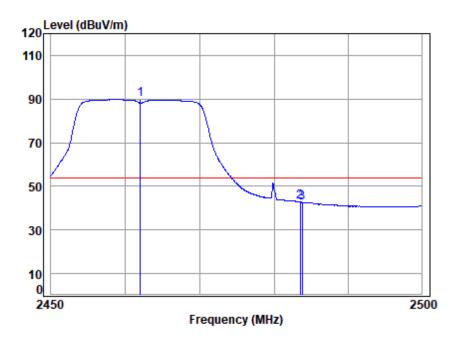
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Report No.: SZEM190801794402

Page: 43 of 134

Mode:b; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2462 Band edge : 2.4G WIFI 11G Note

Ant Preamp Cable Read Limit Over. Loss Factor Factor Level Level Line Limit Remark Freq MHz dΒ dΒ dBuV dBuV/m dBuV/m dB dB/m 1 \* 2462.000 5.57 28.64 41.20 96.72 89.73 54.00 35.73 Average 2483.500 5.60 28.67 41.21 49.66 42.72 54.00 -11.28 Average 2483.790 5.60 28.67 41.21 49.58 42.64 54.00 -11.36 Average



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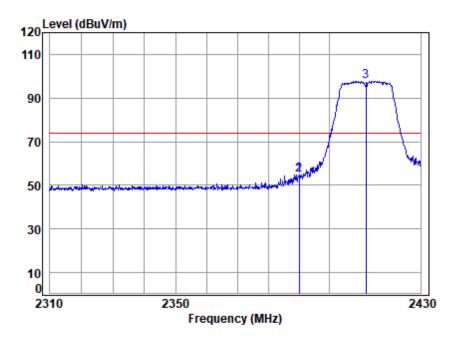
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Report No.: SZEM190801794402

Page: 44 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR Mode : 2412 Band edge Note : 2.4G WIFI 11N20

	Freq						Limit Line		Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
*	2389.968 2390.000 2412.000	5.47	28.52	41.17	62.06	54.88	74.00	-19.12	peak



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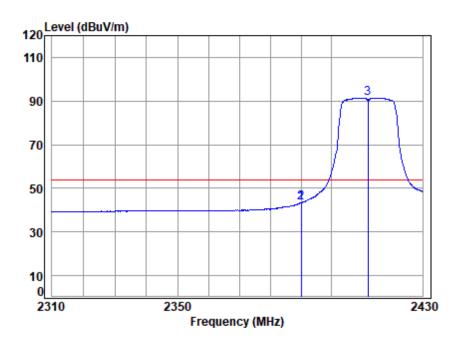
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Report No.: SZEM190801794402

Page: 45 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR Mode : 2412 Band edge Note : 2.4G WIFI 11N20

Freq			Preamp Factor					Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2389.968 2390.000 * 2412.000	5.47	28.52	41.17	50.47	43.29	54.00	-10.71	_



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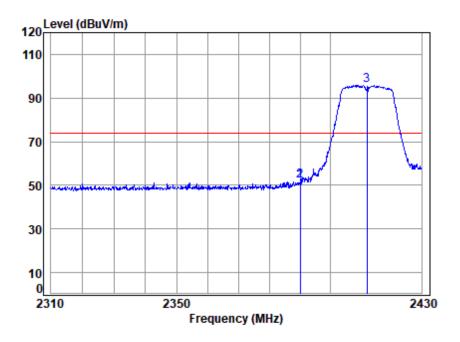
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Report No.: SZEM190801794402

Page: 46 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2412 Band edge Note : 2.4G WIFI 11N20

Freq						Limit Line		Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2389.968 2390.000 * 2412.000	5.47	28.52	41.17	59.01	51.83	74.00	-22.17	Peak



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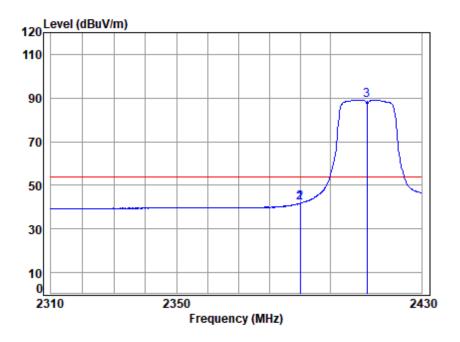
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Report No.: SZEM190801794402

Page: 47 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2412 Band edge Note : 2.4G WIFI 11N20

Freq			Preamp Factor					Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2389.968 2390.000								_
* 2412 000	5 50	28 56	41 18	96 21	89 89	54 00	35 09	Average



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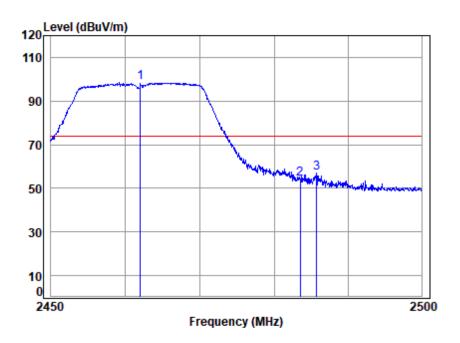
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Report No.: SZEM190801794402

Page: 48 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2462 Band edge : 2.4G WIFI 11N20 Note

	Freq					Level			Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	* 2462.000	5.57	28.64	41.20	105.35	98.36	74.00	24.36	peak
2	2483.500	5.60	28.67	41.21	61.46	54.52	74.00	-19.48	peak
3	2485.747	5.60	28.68	41.21	64.12	57.19	74.00	-16.81	neak



2 3

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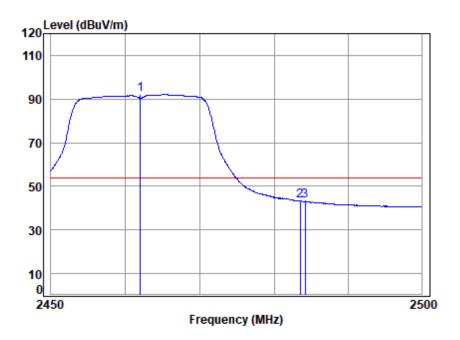
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Report No.: SZEM190801794402

Page: 49 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2462 Band edge Note : 2.4G WIFI 11N20

Freq			Preamp Factor					Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2462.000 2483.500								_
2484.191								_



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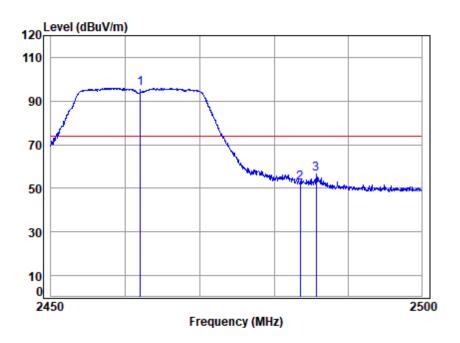
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Report No.: SZEM190801794402

Page: 50 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

2483.500

2485.697

Job No : 17944CR\17945CR Mode : 2462 Band edge Note : 2.4G WIFI 11N20

5.60

Cable Ant Preamp Read Limit Over. Loss Factor Factor Level Line Limit Remark Freq Level MHz dΒ dΒ dBuV dBuV/m dBuV/m dB dB/m 1 \* 2462.000 5.57 28.64 41.20 102.96 95.97 74.00 21.97 Peak

28.67 41.21 59.48



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52.54

5.60 28.68 41.21 63.31 56.38 74.00 -17.62 Peak

74.00 -21.46 Peak

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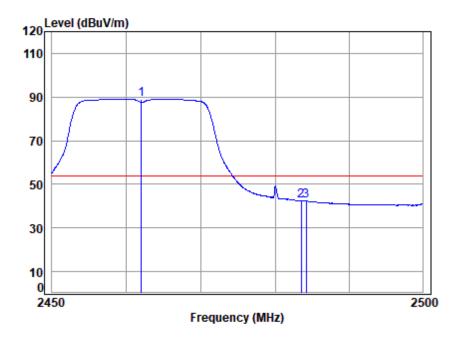
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Report No.: SZEM190801794402

Page: 51 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2462 Band edge Note : 2.4G WIFI 11N20

Freq					Read Level Level			Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2462.000 2483.500								_
2484,191								_



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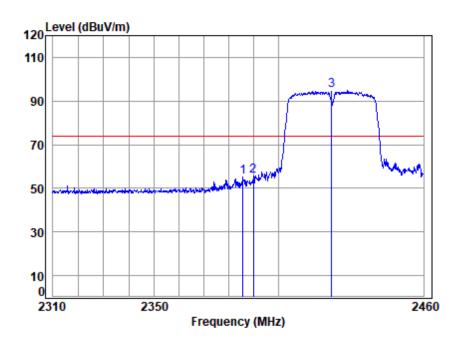
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Report No.: SZEM190801794402

Page: 52 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2422 Band edge Note : 2.4G WIFI 11N40

Freq						Limit Line		Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2385.771 2390.000								•
* 2422.000	5.52	28.57	41.19	101.88	94.78	74.00	20.78	peak



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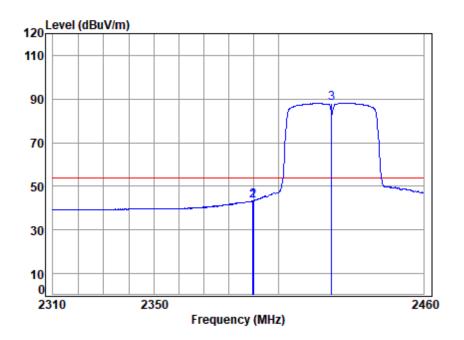
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Report No.: SZEM190801794402

Page: 53 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR Mode : 2422 Band edge Note : 2.4G WIFI 11N40

Freq			Preamp Factor					
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2389.827 2390.000								_
* 2422.000	5.52	28.57	41.19	95.17	88.07	54.00	34.07	Average



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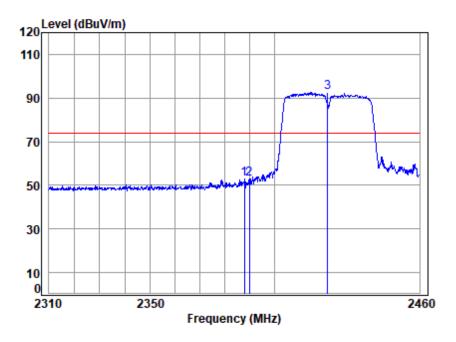
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Report No.: SZEM190801794402

Page: 54 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2422 Band edge

Note : 2.4G WIFI 11N40

Freq			Preamp Factor					
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2388.023 2390.000 * 2422.000	5.47	28.52	41.17	60.26	53.08	74.00	-20.92	Peak



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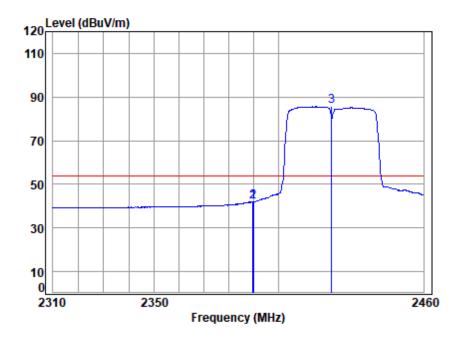
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Report No.: SZEM190801794402

Page: 55 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR Mode : 2422 Band edge Note : 2.4G WIFI 11N40

Freq			Preamp Factor					Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2389.677 2390.000	5.47	28.52	41.17	49.24	42.06	54.00	-11.94	Average
* 2422 000	5 52	28 57	41 19	92 66	85 56	54 00	31 56	Average



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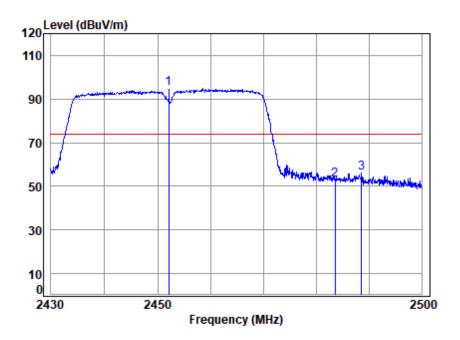
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Report No.: SZEM190801794402

Page: 56 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2452 Band edge Note : 2.4G WIFI 11N40

Freq						Limit Line		Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
* 2452.000 2483.500								•
2488.525								•



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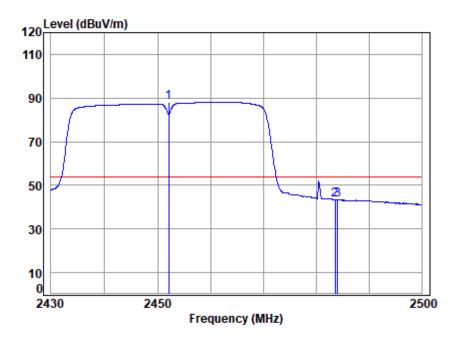
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Report No.: SZEM190801794402

Page: 57 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2452 Band edge Note : 2.4G WIFI 11N40

Freq			Ant Preamp Factor Factor					Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2452.000 2483.500								_
2483.935								_



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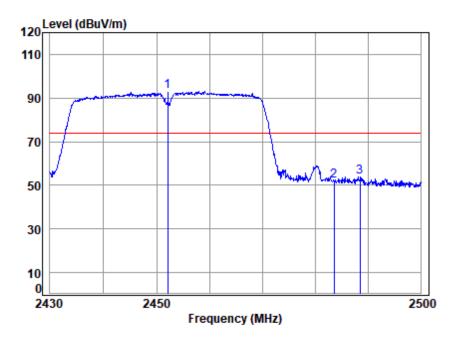
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Report No.: SZEM190801794402

Page: 58 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No Mode : 2452 Band edge Note : 2.4G WIFI 11N40

	Freq					Level			Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	* 2452.000	5.56	28.62	41.20	100.25	93.23	74.00	19.23	Peak
2	2483.500	5.60	28.67	41.21	58.91	51.97	74.00	-22.03	Peak
3	2488.454	5.61	28.68	41.21	60.84	53.92	74.00	-20.08	Peak



2 3

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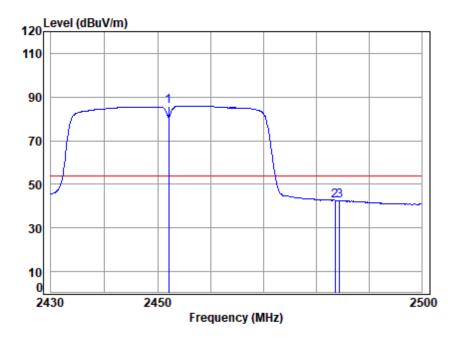
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Report No.: SZEM190801794402

Page: 59 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No Mode : 2452 Band edge Note : 2.4G WIFI 11N40

Freq			Preamp Factor					Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
* 2452.000 2483.500 2484.358	5.60	28.67	41.21	49.58	42.64	54.00	-11.36	Average



1 2 3

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Report No.: SZEM190801794402

Page: 60 of 134

#### 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.



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Report No.: SZEM190801794402

Page: 61 of 134

#### 7.8.1 E.U.T. Operation

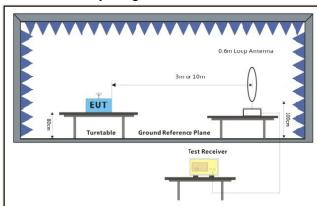
Operating Environment:

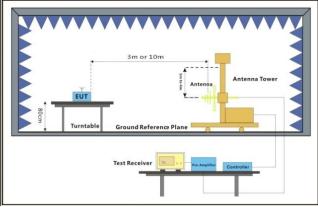
Humidity: 51 Temperature: % RH Atmospheric Pressure: 1005 mbar

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.

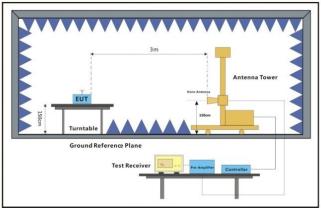
7.8.2 Test Setup Diagram





Below 30MHz

30MHz-1GHz



Above 1GHz



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Report No.: SZEM190801794402

Page: 62 of 134

#### 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.
- a. 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 highest 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 in the report.



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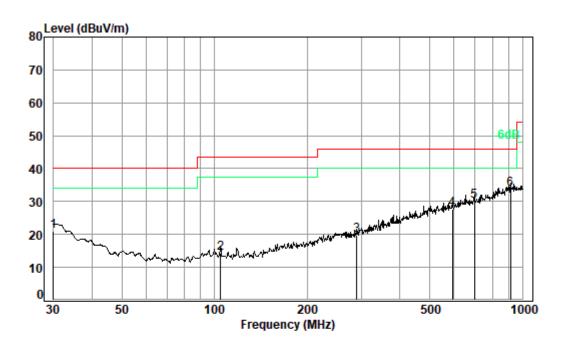


Report No.: SZEM190801794402

Page: 63 of 134

30MHz~1GHz QP value:

Mode: b; Polarization: Horizontal;



Condition: 3m HORIZONTAL

Job No. : 17944CR

Test Mode: b

		Cable	Ant	Preamp	Read		Limit	0ver
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
_								
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.00	0.60	22.50	27.73	25.70	21.07	40.00	-18.93
2	104.54	1.21	13.78	27.61	27.01	14.39	43.50	-29.11
3	290.02	1.86	19.21	26.91	25.47	19.63	46.00	-26.37
4	593.05	2.69	26.47	28.15	26.80	27.81	46.00	-18.19
5	699.30	2.90	27.89	27.93	27.31	30.17	46.00	-15.83
6 pp	916.07	3.62	29.88	27.23	27.42	33.69	46.00	-12.31



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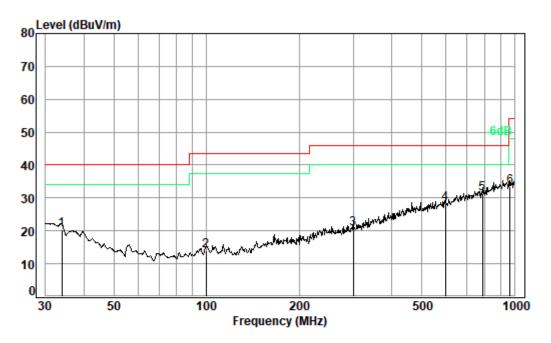
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Report No.: SZEM190801794402

Page: 64 of 134

Mode :b; Polarization: Vertical



Condition: 3m VERTICAL Job No. : 17944CR

Test Mode: b

	Freq			Preamp Factor				Over Limit
_	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	33.92	0.60	20.37	27.72	27.15	20.40	40.00	-19.60
2	99.88	1.20	13.99	27.64	26.35	13.90	43.50	-29.60
3	299.32	1.90	19.57	26.89	26.11	20.69	46.00	-25.31
4	597.22	2.70	26.55	28.16	27.12	28.21	46.00	-17.79
5 pp	787.85	3.17	28.43	27.74	27.36	31.22	46.00	-14.78
6	968.93	3.67	30.15	27.02	26.59	33.39	54.00	-20.61

Note: the final values are QP values.



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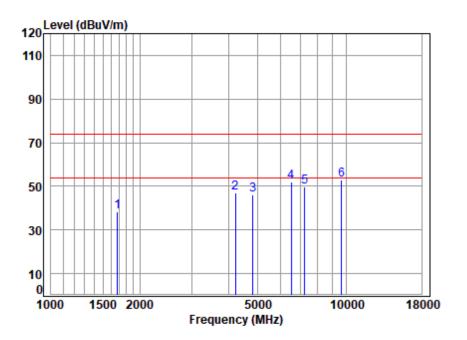


Report No.: SZEM190801794402

Page: 65 of 134

#### **Above 1GHz**

Mode:b; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No

Mode : 2412 TX RSE : 2.4G WIFI 11B Note

0.0		10 111	1 110						
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1677.621	5.25	26.58	40.82	47.13	38.14	74.00	-35.86	peak
2	4218.186	7.24	33.60	43.00	48.97	46.81	74.00	-27.19	peak
3	4824.000	7.91	34.19	43.63	47.69	46.16	74.00	-27.84	peak
4	6526.373	11.46	35.18	42.38	47.69	51.95	74.00	-22.05	peak
5	7236.000	10.07	36.40	41.83	45.29	49.93	74.00	-24.07	peak
6	9648.000	10.77	37.53	38.36	42.92	52.86	74.00	-21.14	peak



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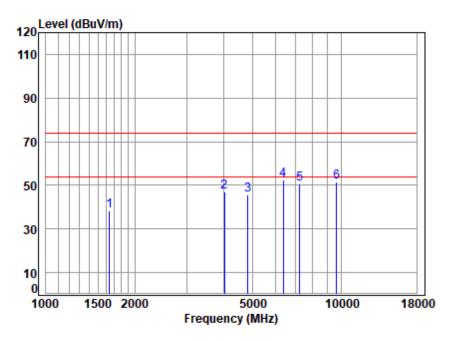
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Report No.: SZEM190801794402

Page: 66 of 134

Mode:b; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR

Mode : 2412 TX RSE : 2.4G WIFI 11B Note

	. 2	TO WILL	1 110						
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1639.274	5.30	26.42	40.79	47.38	38.31	74.00	-35.69	peak
2	4027.554	7.01	33.60	42.78	49.06	46.89	74.00	-27.11	peak
3	4824.000	7.91	34.19	43.63	47.07	45.54	74.00	-28.46	peak
4	6358.789	11.27	34.99	42.52	48.78	52.52	74.00	-21.48	peak
5	7236.000	10.07	36.40	41.83	45.91	50.55	74.00	-23.45	peak
6	9648.000	10.77	37.53	38.36	41.42	51.36	74.00	-22.64	peak



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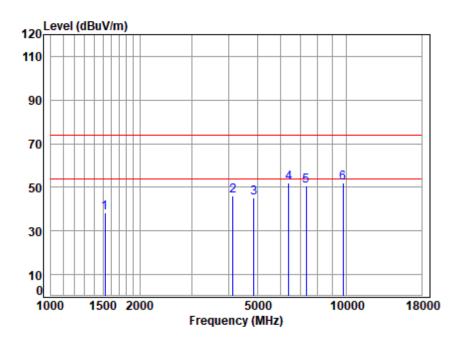
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Page: 67 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:middle



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR

Mode : 2437 TX RSE : 2.4G WIFI 11B Note

0.0		10 111	1 110						
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1525.000	5.45	25.91	40.72	47.60	38.24	74.00	-35.76	peak
2	4133.699	7.14	33.60	42.91	48.24	46.07	74.00	-27.93	peak
3	4874.000	7.96	34.28	43.68	46.65	45.21	74.00	-28.79	peak
4	6395.654	11.34	35.02	42.49	48.12	51.99	74.00	-22.01	peak
5	7311.000	10.05	36.37	41.78	45.82	50.46	74.00	-23.54	peak
6	9748.000	10.82	37.55	38.20	41.73	51.90	74.00	-22.10	peak



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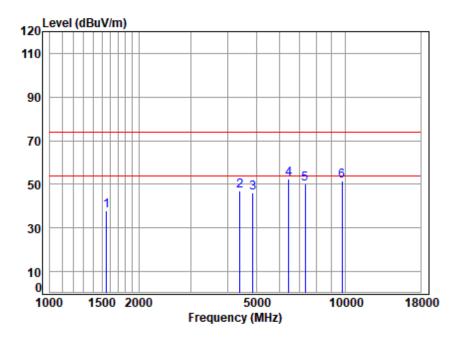
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Report No.: SZEM190801794402

Page: 68 of 134

Mode:b; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:middle



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR

Mode : 2437 TX RSE : 2.4G WTFT 11B Note

oce	. 2	+O MII	1 110						
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1556.169	5.41	26.06	40.74	46.97	37.70	74.00	-36.30	peak
2	4405.090	7.46	33.60	43.20	49.22	47.08	74.00	-26.92	peak
3	4874.000	7.96	34.28	43.68	47.64	46.20	74.00	-27.80	peak
4	6432.732	11.41	35.05	42.46	48.61	52.61	74.00	-21.39	peak
5	7311.000	10.05	36.37	41.78	45.77	50.41	74.00	-23.59	peak
6	9748.000	10.82	37.55	38.20	41.17	51.34	74.00	-22.66	peak



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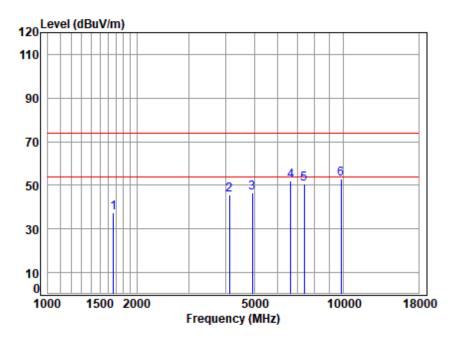
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Report No.: SZEM190801794402

Page: 69 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No

Mode : 2462 TX RSE : 2.4G WIFI 11B Note

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1667.951	5.27	26.54	40.81	46.44	37.44	74.00	-36.56	peak
2	4121.768	7.13	33.60	42.89	47.90	45.74	74.00	-28.26	peak
3	4924.000	8.01	34.37	43.73	48.04	46.69	74.00	-27.31	peak
4	6640.542	11.13	35.50	42.29	47.84	52.18	74.00	-21.82	peak
5	7386.000	10.03	36.34	41.72	46.00	50.65	74.00	-23.35	peak
6	9848.000	10.87	37.57	38.04	42.72	53.12	74.00	-20.88	peak



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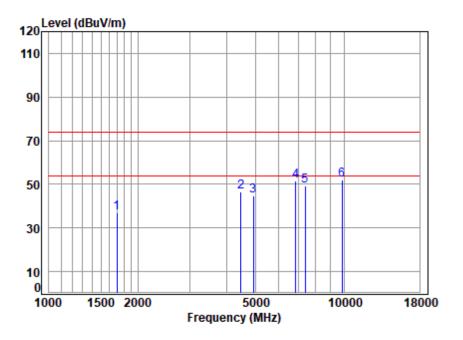
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Report No.: SZEM190801794402

Page: 70 of 134

Mode:b; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No

Mode : 2462 TX RSE Note : 2.4G WIFI 11B

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1702.042	5.23	26.68	40.83	45.93	37.01	74.00	-36.99	peak
2	4469.214	7.53	33.60	43.27	48.68	46.54	74.00	-27.46	peak
3	4924.000	8.01	34.37	43.73	46.20	44.85	74.00	-29.15	peak
4	6855.063	10.53	36.10	42.12	47.18	51.69	74.00	-22.31	peak
5	7386.000	10.03	36.34	41.72	44.66	49.31	74.00	-24.69	peak
6	9848.000	10.87	37.57	38.04	41.47	51.87	74.00	-22.13	peak



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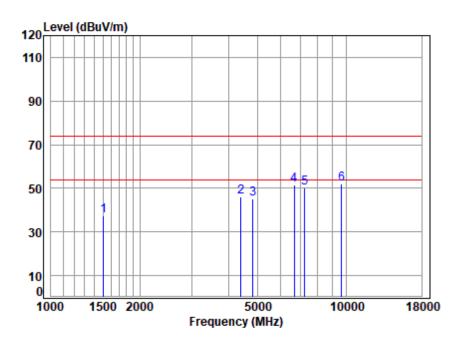
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Report No.: SZEM190801794402

Page: 71 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No

Mode : 2412 TX RSE : 2.4G WIFI 11G Note

		Cable	Ant	Preamp	Read		Limit	0ver		
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	1507.470	5.47	25.83	40.71	46.89	37.48	74.00	-36.52	peak	
2	4405.090	7.46	33.60	43.20	48.08	45.94	74.00	-28.06	peak	
3	4824.000	7.91	34.19	43.63	46.68	45.15	74.00	-28.85	peak	
4	6659.763	11.08	35.56	42.28	47.12	51.48	74.00	-22.52	peak	
5	7236.000	10.07	36.40	41.83	45.63	50.27	74.00	-23.73	peak	
6	9648.000	10.77	37.53	38.36	41.92	51.86	74.00	-22.14	peak	



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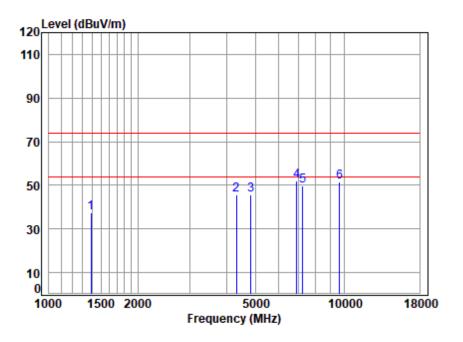
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Report No.: SZEM190801794402

Page: 72 of 134

Mode:b; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR

Mode : 2412 TX RSE : 2.4G WIFI 11G Note

,,,,	. 2	TO WILL	1 110						
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1390.276	5.12	25.35	40.63	47.43	37.27	74.00	-36.73	peak
2	4316.859	7.36	33.60	43.11	47.66	45.51	74.00	-28.49	peak
3	4824.000	7.91	34.19	43.63	47.36	45.83	74.00	-28.17	peak
4	6914.763	10.36	36.27	42.08	47.24	51.79	74.00	-22.21	peak
5	7236.000	10.07	36.40	41.83	45.19	49.83	74.00	-24.17	peak
6	9648.000	10.77	37.53	38.36	41.41	51.35	74.00	-22.65	peak



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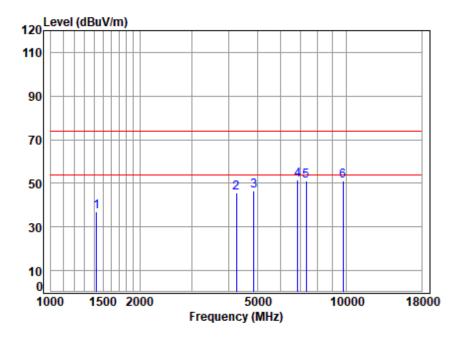
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Report No.: SZEM190801794402

Page: 73 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:middle



Site : chamber

Condition: 3m HORIZONTAL
Job No : 17944CR\17945CR

Mode : 2437 TX RSE Note : 2.4G WIFI 11G

oce	. 2	+O MII	1 110						
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1426.916	5.24	25.50	40.66	46.91	36.99	74.00	-37.01	peak
2	4242.641	7.27	33.60	43.03	47.70	45.54	74.00	-28.46	peak
3	4874.000	7.96	34.28	43.68	47.79	46.35	74.00	-27.65	peak
4	6855.063	10.53	36.10	42.12	47.11	51.62	74.00	-22.38	peak
5	7311.000	10.05	36.37	41.78	46.68	51.32	74.00	-22.68	peak
6	9748.000	10.82	37.55	38.20	41.05	51.22	74.00	-22.78	peak



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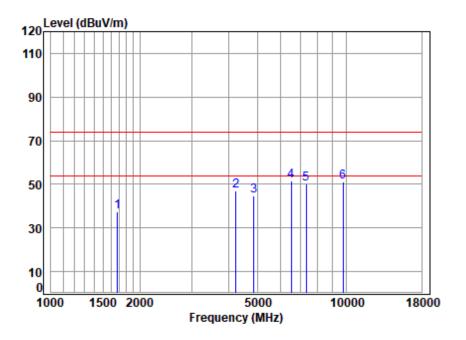
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Report No.: SZEM190801794402

Page: 74 of 134

Mode:b; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:middle



Site : chamber Condition: 3m VERTICAL

Job No : 17944CR\17945CR

Mode : 2437 TX RSE : 2.4G WIFI 11G Note

		10 111	1 110							
		Cable	Ant	Preamp	Read		Limit	0ver		
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	1682.477	5.25	26.60	40.82	46.20	37.23	74.00	-36.77	peak	
2	4230.396	7.26	33.60	43.01	48.95	46.80	74.00	-27.20	peak	
3	4874.000	7.96	34.28	43.68	46.38	44.94	74.00	-29.06	peak	
4	6526.373	11.46	35.18	42.38	47.46	51.72	74.00	-22.28	peak	
5	7311.000	10.05	36.37	41.78	45.52	50.16	74.00	-23.84	peak	
6	9748.000	10.82	37.55	38.20	41.09	51.26	74.00	-22.74	peak	



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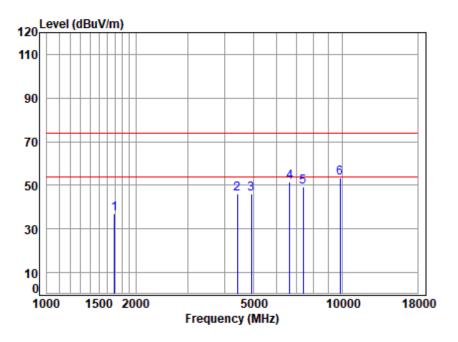
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Report No.: SZEM190801794402

Page: 75 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No

Mode : 2462 TX RSE : 2.4G WIFI 11G Note

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1692.231	5.24	26.64	40.83	45.98	37.03	74.00	-36.97	peak
2	4417.841	7.47	33.60	43.22	48.32	46.17	74.00	-27.83	peak
3	4924.000	8.01	34.37	43.73	47.63	46.28	74.00	-27.72	peak
4	6640.542	11.13	35.50	42.29	47.31	51.65	74.00	-22.35	peak
5	7386.000	10.03	36.34	41.72	44.67	49.32	74.00	-24.68	peak
6	9848.000	10.87	37.57	38.04	42.86	53.26	74.00	-20.74	peak



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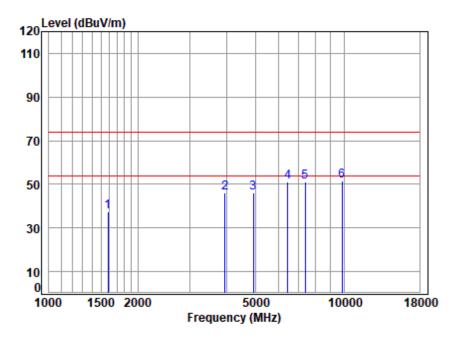
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Report No.: SZEM190801794402

Page: 76 of 134

Mode:b; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No

Mode : 2462 TX RSE Note : 2.4G WIFI 11G

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1583.392	5.37	26.18	40.76	46.44	37.23	74.00	-36.77	peak
2	3946.885	6.93	33.46	42.69	48.19	45.89	74.00	-28.11	peak
3	4924.000	8.01	34.37	43.73	47.33	45.98	74.00	-28.02	peak
4	6451.353	11.45	35.06	42.44	46.96	51.03	74.00	-22.97	peak
5	7386.000	10.03	36.34	41.72	46.25	50.90	74.00	-23.10	peak
6	9848.000	10.87	37.57	38.04	41.29	51.69	74.00	-22.31	peak



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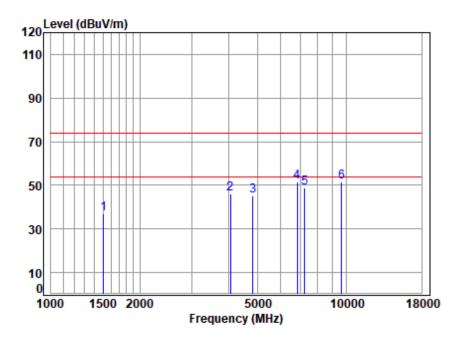
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Report No.: SZEM190801794402

Page: 77 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2412 TX RSE

: 2.4G WIFI 11N20 Note

				_						
		Cable	Ant	Preamp	Read		Limit	0ver		
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	1507.470	5.47	25.83	40.71	46.53	37.12	74.00	-36.88	peak	
2	4062.629	7.06	33.60	42.82	48.07	45.91	74.00	-28.09	peak	
3	4824.000	7.91	34.19	43.63	46.92	45.39	74.00	-28.61	peak	
4	6835.278	10.58	36.05	42.14	46.96	51.45	74.00	-22.55	peak	
5	7236.000	10.07	36.40	41.83	44.41	49.05	74.00	-24.95	peak	
6	9648.000	10.77	37.53	38.36	41.41	51.35	74.00	-22.65	peak	



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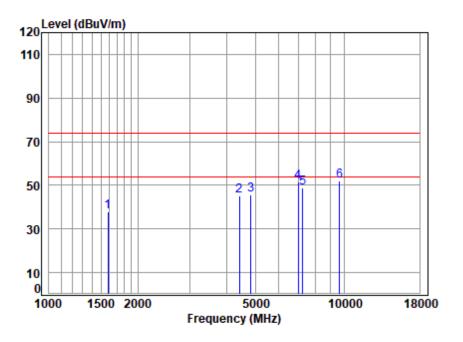
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Report No.: SZEM190801794402

Page: 78 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No

Mode : 2412 TX RSE

Note : 2.4G WIFI 11N20

	Freq			Preamp Factor					Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	1587.975	5.37	26.20	40.76	47.25	38.06	74.00	-35.94	peak	
2	4417.841	7.47	33.60	43.22	47.49	45.34	74.00	-28.66	peak	
3	4824.000	7.91	34.19	43.63	46.97	45.44	74.00	-28.56	peak	
4	6995.172	10.14	36.49	42.01	46.82	51.44	74.00	-22.56	peak	
5	7236.000	10.07	36.40	41.83	44.32	48.96	74.00	-25.04	peak	
6	9648,000	10.77	37.53	38.36	42.07	52.01	74.00	-21.99	peak	



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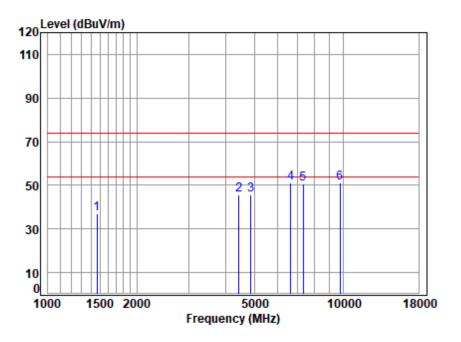
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Report No.: SZEM190801794402

Page: 79 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:middle



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR

Mode : 2437 TX RSE : 2.4G WIFI 11N20 Note

		Cable	Ant	Preamp	Read		Limit	0ver		
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		_
1	1464.522	5.37	25.66	40.68	46.39	36.74	74.00	-37.26	peak	
2	4443.453	7.50	33.60	43.25	47.78	45.63	74.00	-28.37	peak	
3	4874.000	7.96	34.28	43.68	47.02	45.58	74.00	-28.42	peak	
4	6640.542	11.13	35.50	42.29	46.92	51.26	74.00	-22.74	peak	
5	7311.000	10.05	36.37	41.78	46.00	50.64	74.00	-23.36	peak	
6	9748.000	10.82	37.55	38.20	41.11	51.28	74.00	-22.72	peak	



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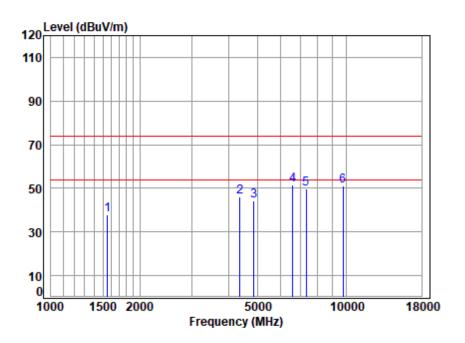
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Report No.: SZEM190801794402

Page: 80 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:middle



Site : chamber

Condition: 3m VERTICAL

Job No : 17944CR\17945CR

Mode : 2437 TX RSE

Note : 2.4G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1556.169	5.41	26.06	40.74	47.12	37.85	74.00	-36.15	peak
2	4367.058	7.41	33.60	43.16	48.14	45.99	74.00	-28.01	peak
3	4874.000	7.96	34.28	43.68	45.85	44.41	74.00	-29.59	peak
4	6602.265	11.24	35.39	42.32	47.08	51.39	74.00	-22.61	peak
5	7311.000	10.05	36.37	41.78	45.09	49.73	74.00	-24.27	peak
6	9748.000	10.82	37.55	38.20	40.91	51.08	74.00	-22.92	peak



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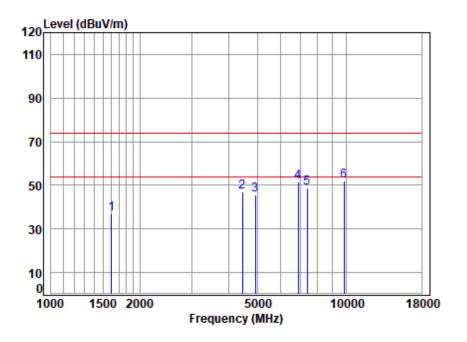
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Report No.: SZEM190801794402

Page: 81 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode

: 2462 TX RSE

: 2.4G WIFI 11N20 Note

				_					
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	aBuv	dBuV/m	dBuV/m	dB	
1	1601.804	5.35	26.26	40.77	46.09	36.93	74.00	-37.07	peak
2	4456.315	7.51	33.60	43.26	49.27	47.12	74.00	-26.88	peak
3	4924.000	8.01	34.37	43.73	47.07	45.72	74.00	-28.28	peak
4	6874.906	10.47	36.16	42.11	47.06	51.58	74.00	-22.42	peak
5	7386.000	10.03	36.34	41.72	44.24	48.89	74.00	-25.11	peak
6	9848.000	10.87	37.57	38.04	41.83	52.23	74.00	-21.77	peak



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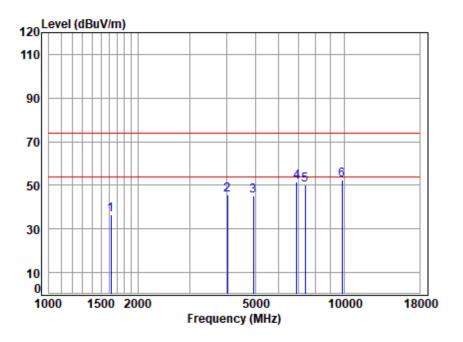
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Report No.: SZEM190801794402

Page: 82 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No

Mode : 2462 TX RSE

Note : 2.4G WIFI 11N20

			_						
	Cable	Ant	Preamp	Read		Limit	0ver		
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
MHz	dB	dB/m	dB	dBuV	d Bu V/m	dBuV/m	dB		
1620.431	5.32	26.34	40.78	45.84	36.72	74.00	-37.28	peak	
4027.554	7.01	33.60	42.78	47.79	45.62	74.00	-28.38	peak	
4924.000	8.01	34.37	43.73	46.66	45.31	74.00	-28.69	peak	
6894.806	10.42	36.21	42.09	47.21	51.75	74.00	-22.25	peak	
7386.000	10.03	36.34	41.72	45.63	50.28	74.00	-23.72	peak	
9848.000	10.87	37.57	38.04	42.26	52.66	74.00	-21.34	peak	



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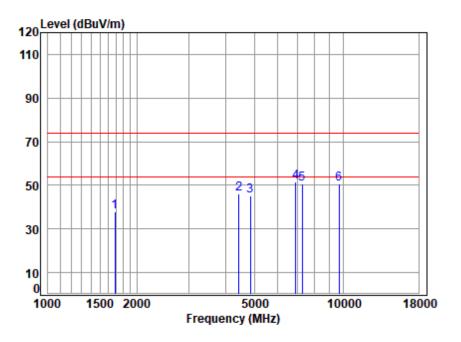
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Report No.: SZEM190801794402

Page: 83 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR Mode : 2422 TX RSE

: 2.4G WIFI 11N40 Note

> Cable Ant Preamp Read Limit Over. Loss Factor Factor Level Line Limit Remark Freq Level MHz dΒ dB dBuV dBuV/m dBuV/m dB/m dB 26.62 40.82 46.82 37.86 74.00 -36.14 peak 1687.347 5.24 4443.453 7.50 33.60 43.25 48.10 45.95 74.00 -28.05 peak 34.23 43.65 46.80 45.31 74.00 -28.69 peak 4844.000 7.93 10.36 36.27 42.08 47.17 51.72 74.00 -22.28 peak 6914.763 7266.000 10.06 36.39 41.81 45.89 50.53 74.00 -23.47 peak 9688.000 10.79 37.54 38.30 40.60 50.63 74.00 -23.37 peak



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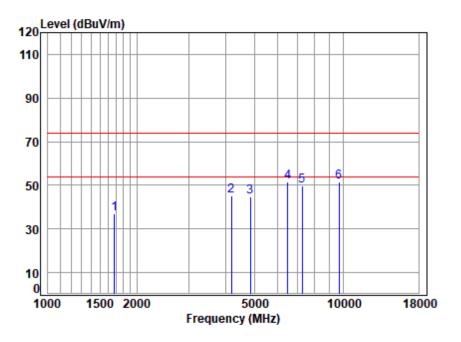
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Report No.: SZEM190801794402

Page: 84 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No

Mode : 2422 TX RSE

: 2.4G WIFI 11N40 Note

				_					
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1677.621	5.25	26.58	40.82	45.91	36.92	74.00	-37.08	peak
2	4181.768	7.20	33.60	42.96	47.48	45.32	74.00	-28.68	peak
3	4844.000	7.93	34.23	43.65	46.15	44.66	74.00	-29.34	peak
4	6488.754	11.52	35.09	42.41	47.33	51.53	74.00	-22.47	peak
5	7266.000	10.06	36.39	41.81	45.19	49.83	74.00	-24.17	peak
6	9688.000	10.79	37.54	38.30	41.37	51.40	74.00	-22.60	peak



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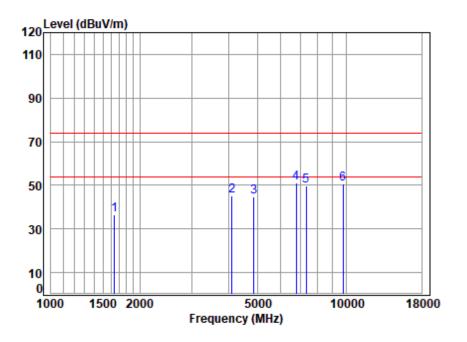
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Report No.: SZEM190801794402

Page: 85 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:middle



Site : chamber

Condition: 3m HORIZONTAL : 17944CR\17945CR Job No Mode : 2437 TX RSE

Note : 2.4G WIFI 11N40

				-					
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1639.274	5.30	26.42	40.79	45.54	36.47	74.00	-37.53	peak
2	4109.872	7.11	33.60	42.88	47.45	45.28	74.00	-28.72	peak
3	4874.000	7.96	34.28	43.68	46.31	44.87	74.00	-29.13	peak
4	6776.265	10.75	35.89	42.18	46.77	51.23	74.00	-22.77	peak
5	7311.000	10.05	36.37	41.78	45.28	49.92	74.00	-24.08	peak
6	9748.000	10.82	37.55	38.20	40.47	50.64	74.00	-23.36	peak



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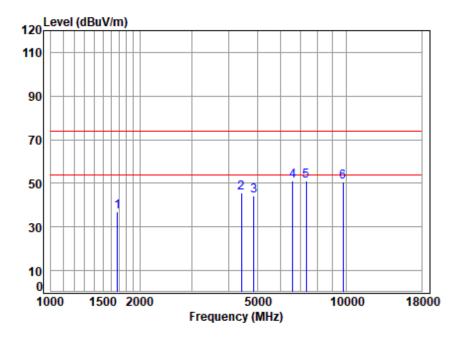
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Report No.: SZEM190801794402

Page: 86 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:middle



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No

Mode : 2437 TX RSE

Note : 2.4G WIFI 11N40

				-					
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1677.621	5.25	26.58	40.82	45.79	36.80	74.00	-37.20	peak
2	4417.841	7.47	33.60	43.22	47.85	45.70	74.00	-28.30	peak
3	4874.000	7.96	34.28	43.68	45.85	44.41	74.00	-29.59	peak
4	6602.265	11.24	35.39	42.32	46.79	51.10	74.00	-22.90	peak
5	7311.000	10.05	36.37	41.78	46.48	51.12	74.00	-22.88	peak
6	9748.000	10.82	37.55	38.20	40.44	50.61	74.00	-23.39	peak



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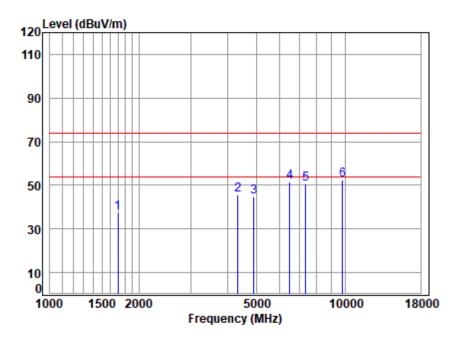
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Page: 87 of 134

Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL Job No : 17944CR\17945CR Mode : 2452 TX RSE

: 2.4G WIFI 11N40 Note

0.0		10 111								
		Cable	Ant	Preamp	Read		Limit	0ver		
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	1697.129	5.23	26.66	40.83	46.32	37.38	74.00	-36.62	peak	
2	4341.886	7.38	33.60	43.14	47.75	45.59	74.00	-28.41	peak	
3	4904.000	7.99	34.33	43.71	46.28	44.89	74.00	-29.11	peak	
4	6488.754	11.52	35.09	42.41	47.51	51.71	74.00	-22.29	peak	
5	7356.000	10.04	36.36	41.75	46.11	50.76	74.00	-23.24	peak	
6	9808.000	10.85	37.56	38.10	41.96	52.27	74.00	-21.73	peak	



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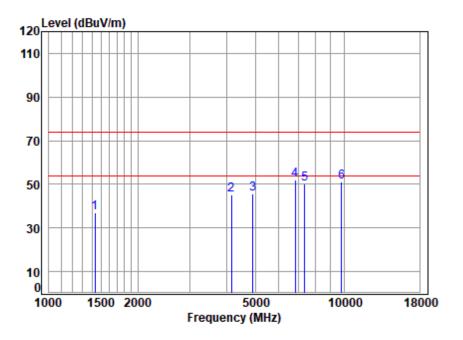
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Report No.: SZEM190801794402

Page: 88 of 134

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:High



Site : chamber Condition: 3m VERTICAL

: 17944CR\17945CR Job No

Mode : 2452 TX RSE

Note : 2.4G WIFI 11N40

				-					
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
_	4435 400				46.00	27.02	74.00	26.07	
1	1435.189	5.2/	25.54	40.66	46.88	37.03	/4.00	-36.9/	peak
2	4157.664	7.17	33.60	42.93	47.54	45.38	74.00	-28.62	peak
3	4904.000	7.99	34.33	43.71	46.89	45.50	74.00	-28.50	peak
4	6815.551	10.64	36.00	42.15	47.37	51.86	74.00	-22.14	peak
5	7356.000	10.04	36.36	41.75	45.67	50.32	74.00	-23.68	peak
6	9808.000	10.85	37.56	38.10	40.71	51.02	74.00	-22.98	peak



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Page: 89 of 134

#### 8 **Photographs**

#### 8.1 **Test Setup**

Please refer to setup photos.

#### 8.2 EUT Constructional Details (EUT Photos)

Please refer to external and internal photos for details.



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Page: 90 of 134

#### **Appendix** 9

#### 9.1 Appendix 15.247

#### 1.6dB Bandwidth

Test Mode	Test	Ant	EBW[MHz]	Limit[MHz]	Verdict
11B	2412	Ant1	10.110	>=0.5	PASS
11B	2437	Ant1	10.110	>=0.5	PASS
11B	2462	Ant1	10.110	>=0.5	PASS
11G	2412	Ant1	16.590	>=0.5	PASS
11G	2437	Ant1	16.560	>=0.5	PASS
11G	2462	Ant1	16.530	>=0.5	PASS
11N20SISO	2412	Ant1	17.670	>=0.5	PASS
11N20SISO	2437	Ant1	17.670	>=0.5	PASS
11N20SISO	2462	Ant1	17.700	>=0.5	PASS
11N40SISO	2422	Ant1	36.480	>=0.5	PASS
11N40SISO	2437	Ant1	36.480	>=0.5	PASS
11N40SISO	2452	Ant1	36.480	>=0.5	PASS



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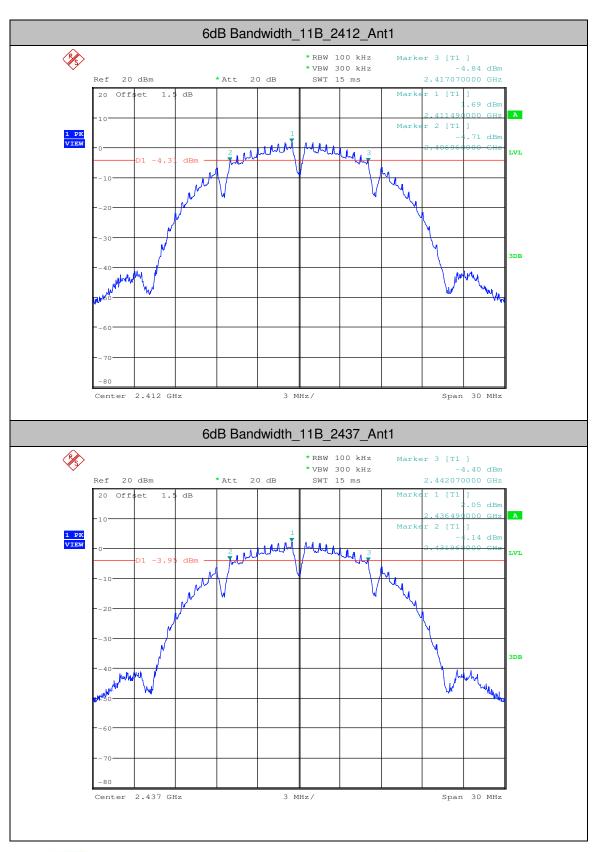
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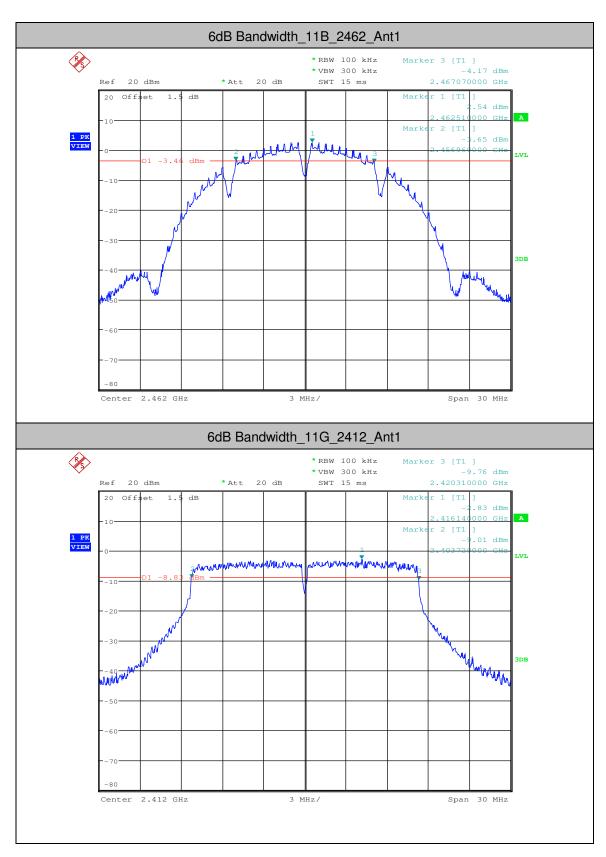
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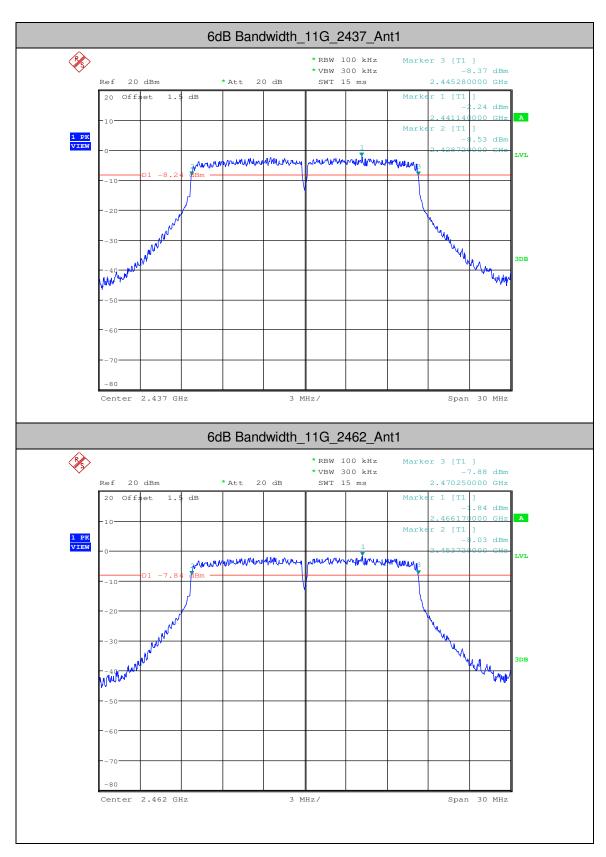
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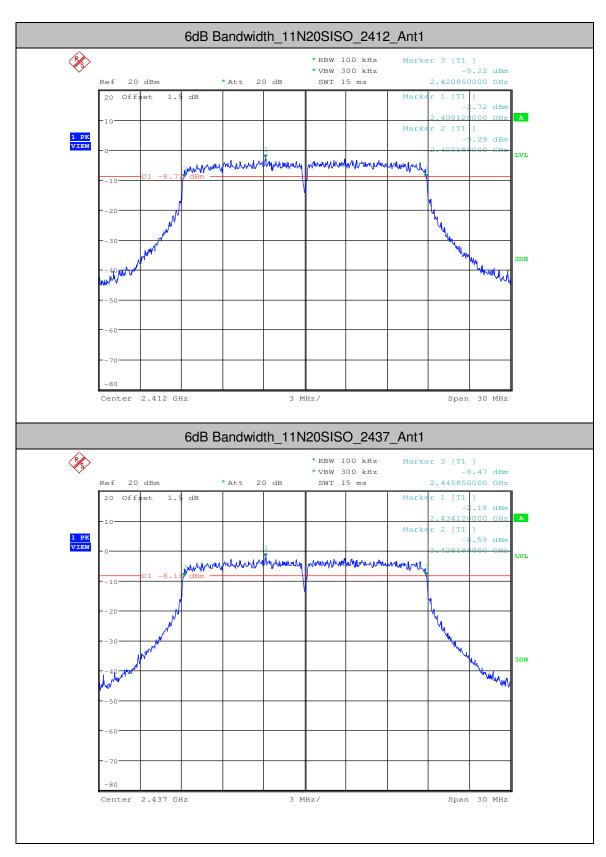
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Report No.: SZEM190801794402

Page: 94 of 134





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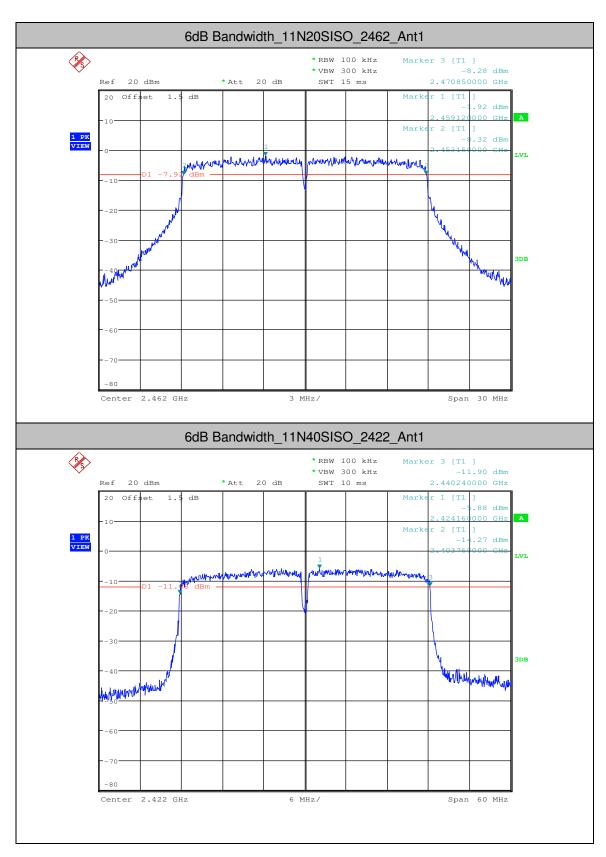
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Report No.: SZEM190801794402

Page: 95 of 134





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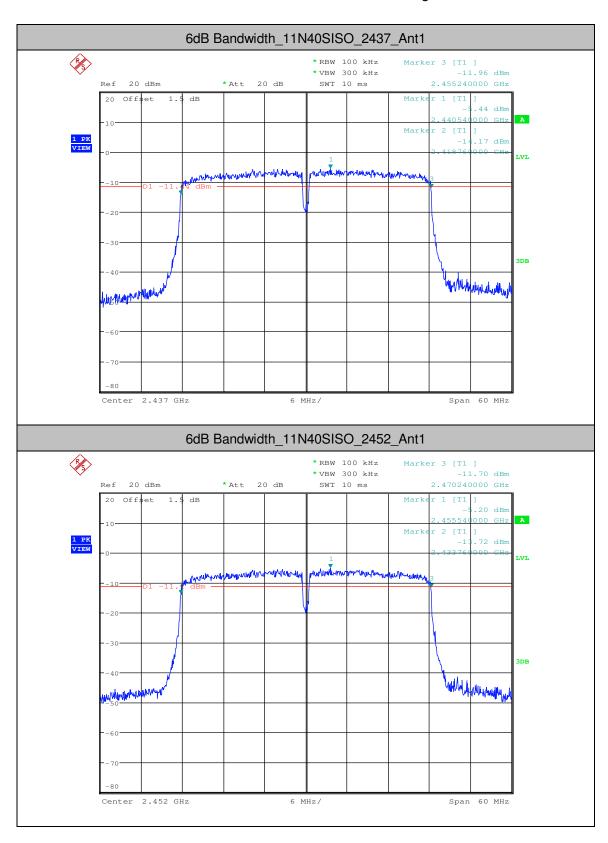
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Page: 96 of 134





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Report No.: SZEM190801794402

Page: 97 of 134

#### 2.Maximum peak conducted output power

Test Mode	Test Channel	Ant	Power[dBm]	Limit[dBm]	Verdict
11B	2412	Ant1	15.39	<30	PASS
11B	2437	Ant1	15.7	<30	PASS
11B	2462	Ant1	16.19	<30	PASS
11G	2412	Ant1	19.66	<30	PASS
11G	2437	Ant1	20.25	<30	PASS
11G	2462	Ant1	20.69	<30	PASS
11N20SISO	2412	Ant1	19.94	<30	PASS
11N20SISO	2437	Ant1	20.48	<30	PASS
11N20SISO	2462	Ant1	20.91	<30	PASS
11N40SISO	2422	Ant1	19.91	<30	PASS
11N40SISO	2437	Ant1	20.13	<30	PASS
11N40SISO	2452	Ant1	20.4	<30	PASS



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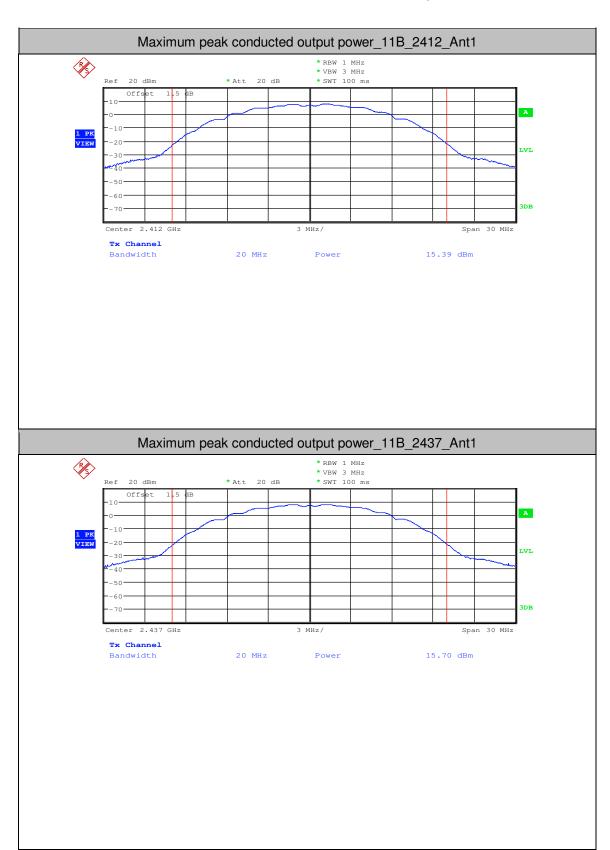
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Page: 98 of 134





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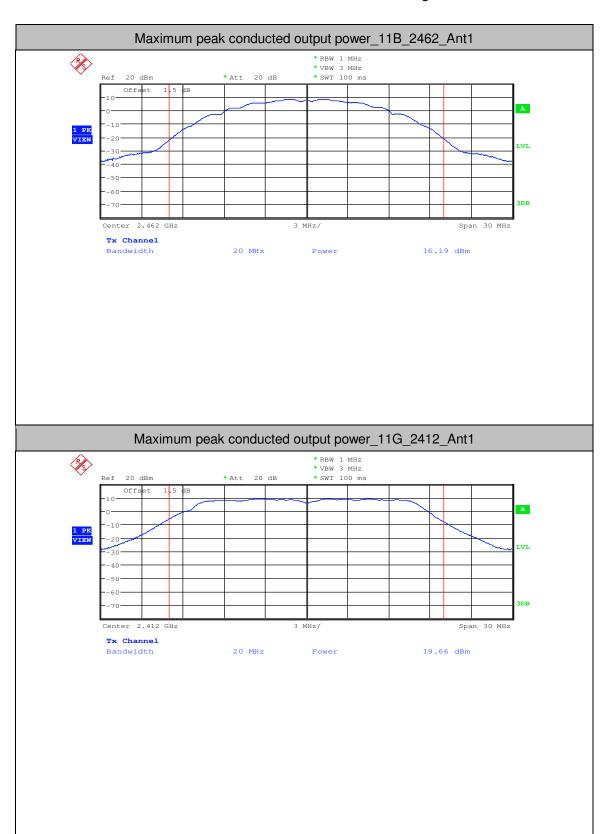
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Page: 99 of 134





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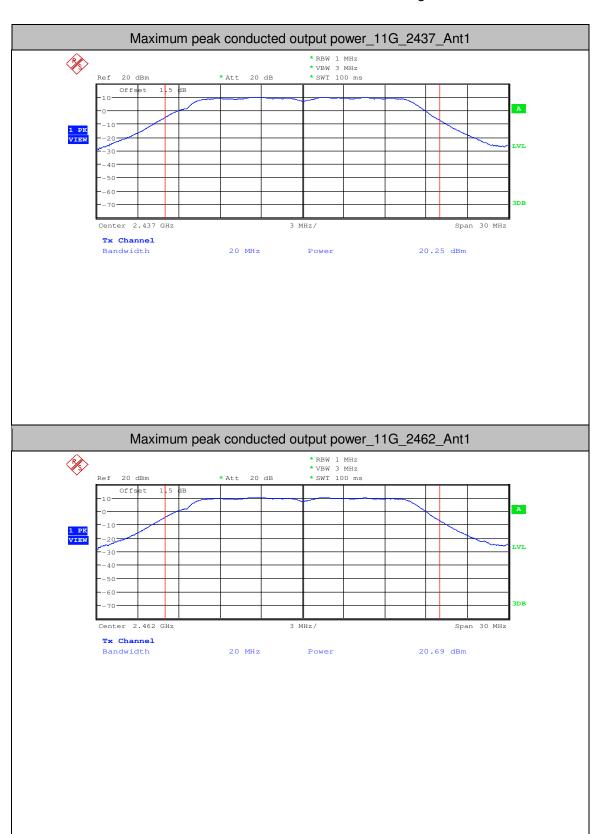
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Page: 100 of 134





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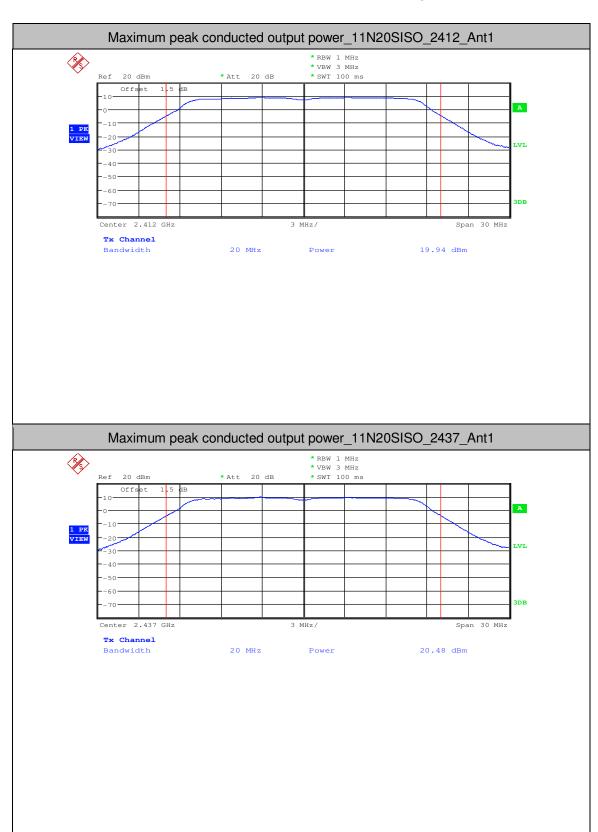
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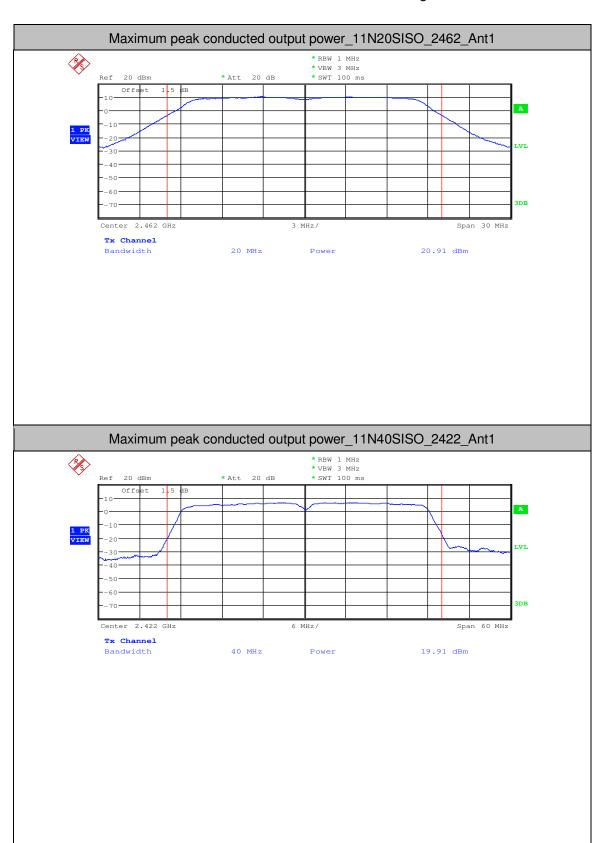
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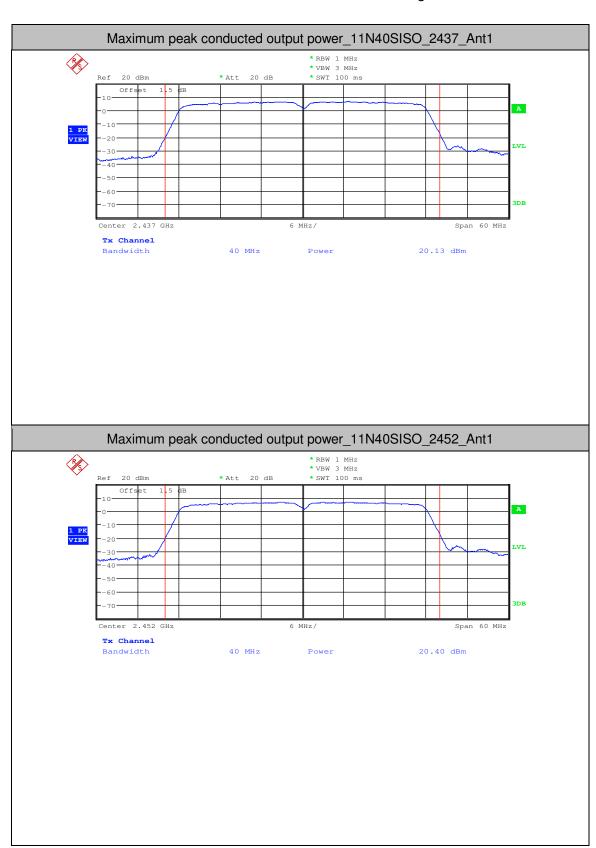
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Report No.: SZEM190801794402

Page: 104 of 134

#### 3. Maximum Peak power spectral density

Test Mode	Test Channel	Ant	PSD[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	2412	Ant1	-18.39	<8.00	PASS
11B	2437	Ant1	-17.99	<8.00	PASS
11B	2462	Ant1	-17.52	<8.00	PASS
11G	2412	Ant1	-17.45	<8.00	PASS
11G	2437	Ant1	-16.75	<8.00	PASS
11G	2462	Ant1	-16.27	<8.00	PASS
11N20SISO	2412	Ant1	-17.13	<8.00	PASS
11N20SISO	2437	Ant1	-16.54	<8.00	PASS
11N20SISO	2462	Ant1	-16.21	<8.00	PASS
11N40SISO	2422	Ant1	-16.47	<8.00	PASS
11N40SISO	2437	Ant1	-17.43	<8.00	PASS
11N40SISO	2452	Ant1	-16.5	<8.00	PASS



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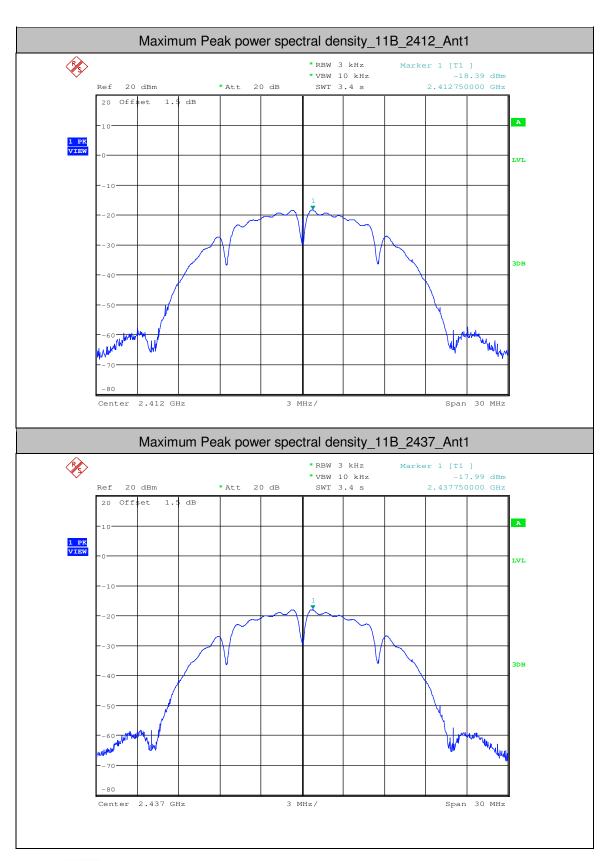
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Page: 105 of 134





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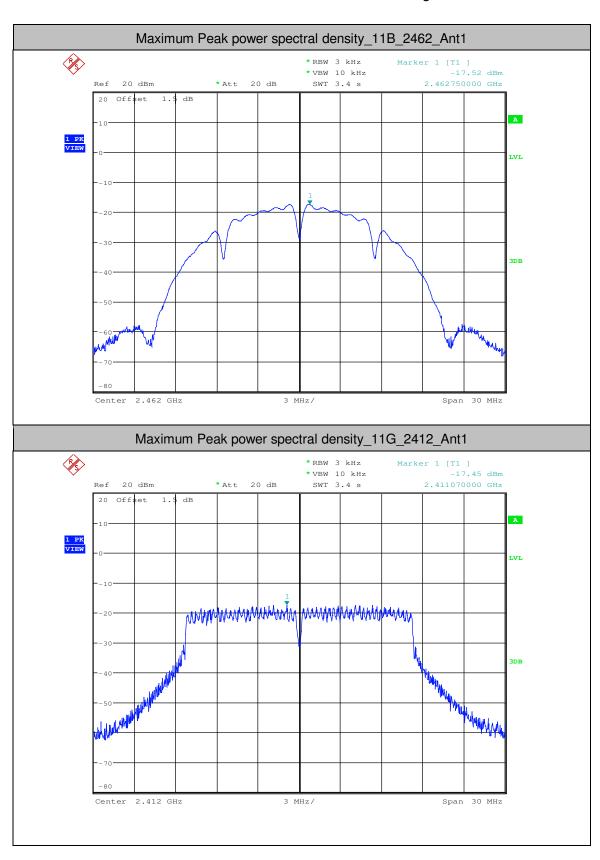
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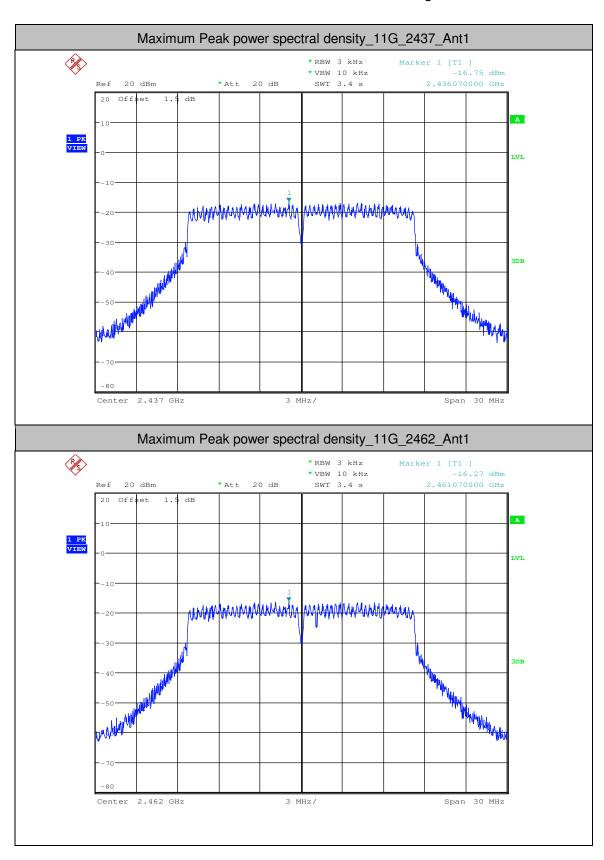
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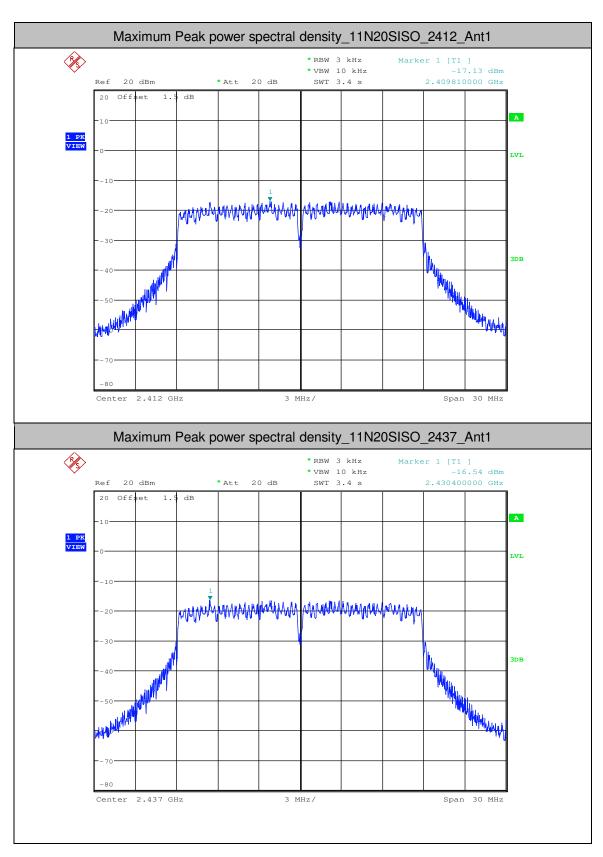
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Report No.: SZEM190801794402

Page: 108 of 134





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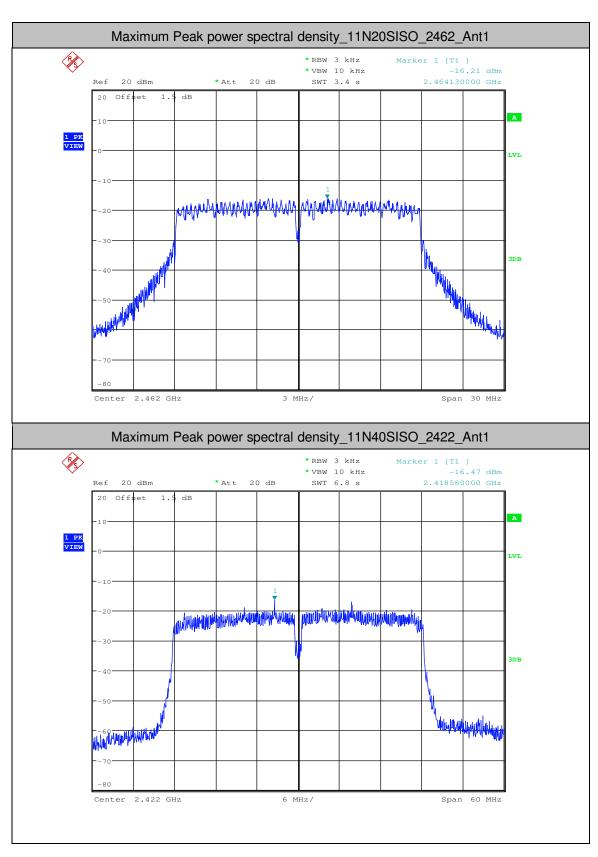
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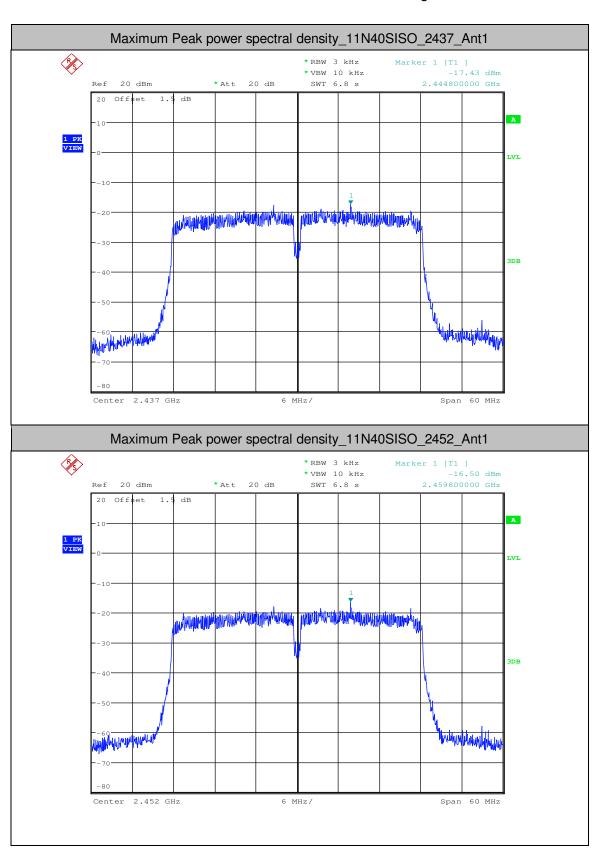
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Report No.: SZEM190801794402

Page: 110 of 134





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Report No.: SZEM190801794402

Page: 111 of 134

#### 4.Band-edge for RF Conducted Emissions

Test Mode	Test Channel	Ant	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
11B	2412	Ant1	1.500	-53.393	<-18.5	PASS
11B	2462	Ant1	2.470	-50.787	<-17.53	PASS
11G	2412	Ant1	-3.120	-50.474	<-23.12	PASS
11G	2462	Ant1	-1.890	-47.189	<-21.89	PASS
11N20SISO	2412	Ant1	-2.840	-51.422	<-22.84	PASS
11N20SISO	2462	Ant1	-1.950	-46.618	<-21.95	PASS
11N40SISO	2422	Ant1	-5.830	-48.071	<-25.83	PASS
11N40SISO	2452	Ant1	-5.320	-45.115	<-25.32	PASS



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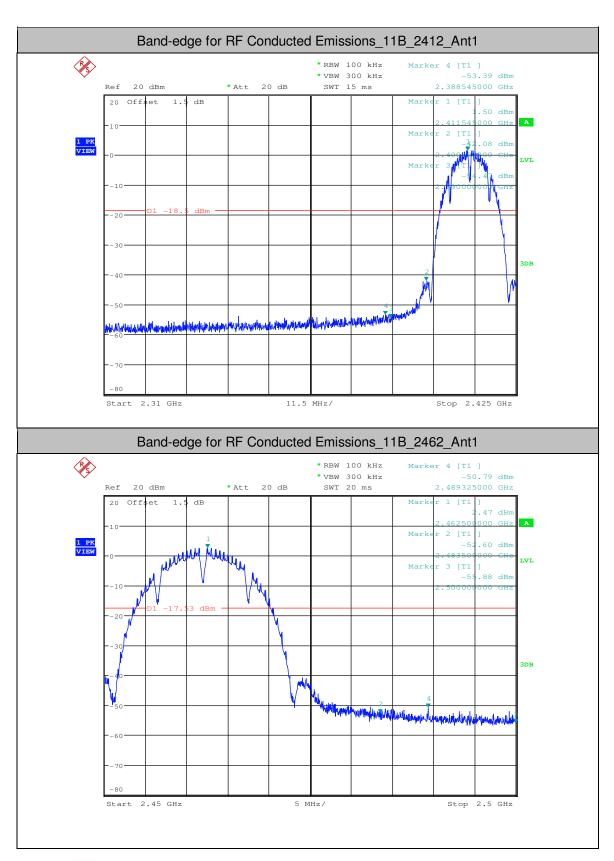
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Page: 112 of 134





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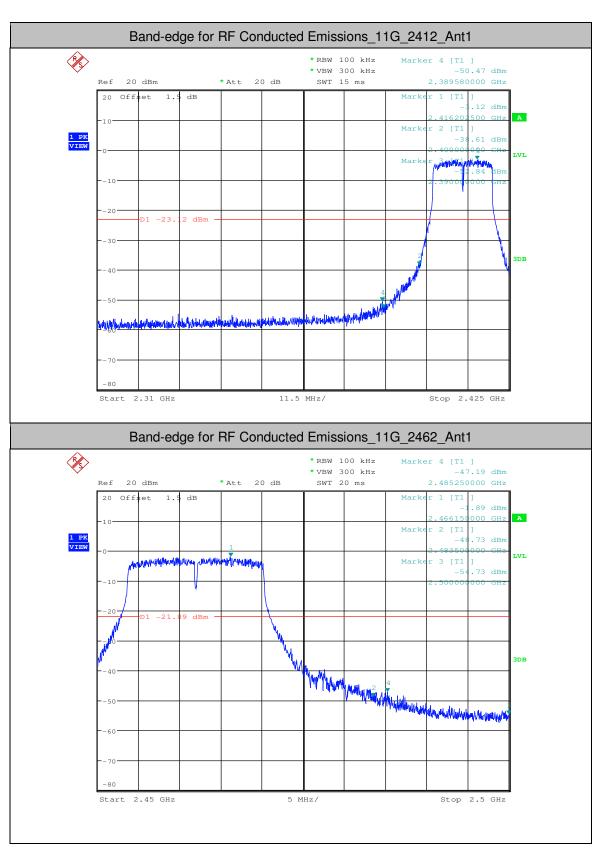
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Page: 113 of 134





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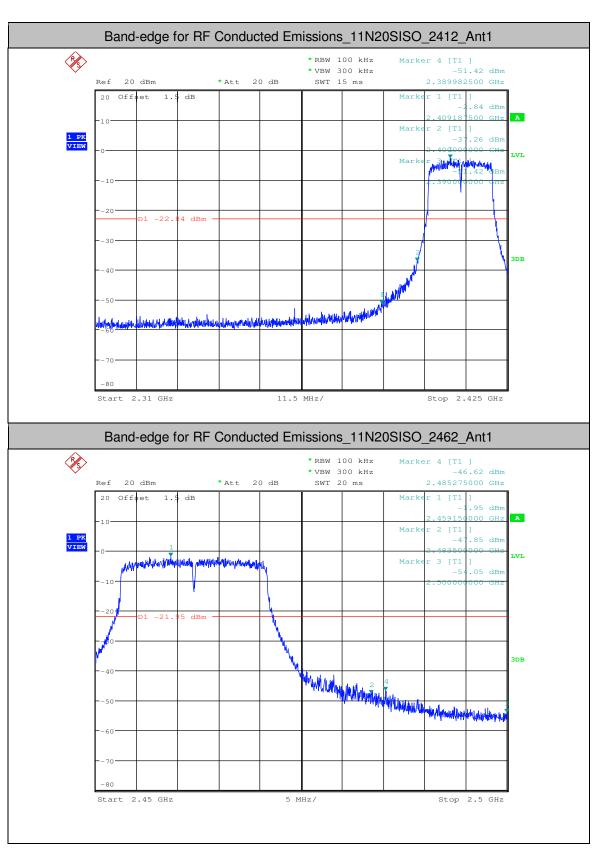
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Page: 114 of 134





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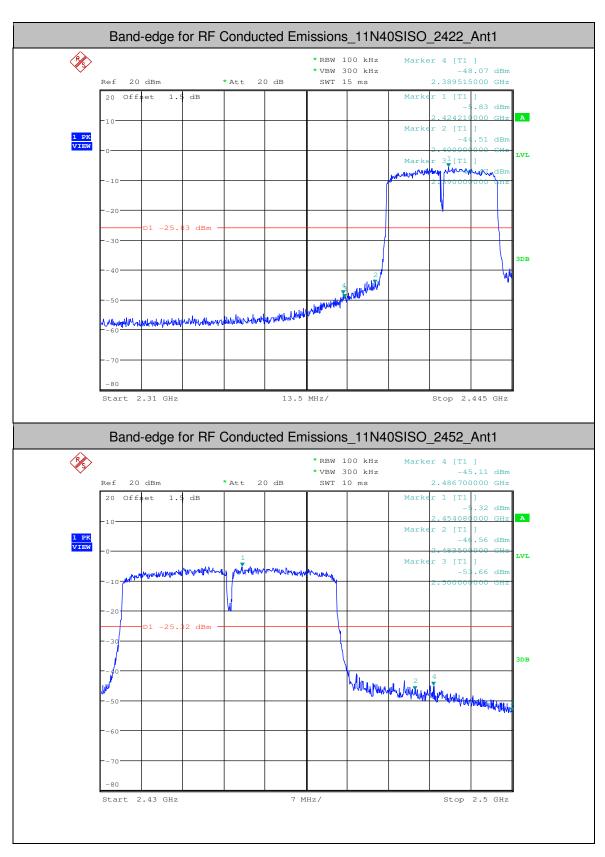
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Report No.: SZEM190801794402

Page: 116 of 134

#### **5.RF Conducted Spurious Emissions**

Test Mode	Test Channel	StartFre [MHz]	StopFre [MHz]	RBW [kHz]	VBW [kHz]	Pref[dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	2412	30	10000	1000	3000	1.38	-42.630	<-18.62	PASS
11B	2412	10000	25000	1000	3000	1.38	-44.480	<-18.62	PASS
11B	2437	30	10000	1000	3000	1.88	-43.370	<-18.12	PASS
11B	2437	10000	25000	1000	3000	1.88	-44.490	<-18.12	PASS
11B	2462	30	10000	1000	3000	2.37	-42.560	<-17.63	PASS
11B	2462	10000	25000	1000	3000	2.37	-44.540	<-17.63	PASS
11G	2412	30	10000	1000	3000	-2.93	-43.710	<-22.93	PASS
11G	2412	10000	25000	1000	3000	-2.93	-44.030	<-22.93	PASS
11G	2437	30	10000	1000	3000	-2.7	-43.580	<-22.7	PASS
11G	2437	10000	25000	1000	3000	-2.7	-44.240	<-22.7	PASS
11G	2462	30	10000	1000	3000	-2.18	-43.030	<-22.18	PASS
11G	2462	10000	25000	1000	3000	-2.18	-44.450	<-22.18	PASS
11N20SISO	2412	30	10000	1000	3000	-2.7	-43.700	<-22.7	PASS
11N20SISO	2412	10000	25000	1000	3000	-2.7	-44.630	<-22.7	PASS
11N20SISO	2437	30	10000	1000	3000	-2.23	-43.860	<-22.23	PASS
11N20SISO	2437	10000	25000	1000	3000	-2.23	-44.340	<-22.23	PASS
11N20SISO	2462	30	10000	1000	3000	-2.19	-43.400	<-22.19	PASS
11N20SISO	2462	10000	25000	1000	3000	-2.19	-44.100	<-22.19	PASS
11N40SISO	2422	30	10000	1000	3000	-5.9	-42.420	<-25.9	PASS
11N40SISO	2422	10000	25000	1000	3000	-5.9	-44.570	<-25.9	PASS
11N40SISO	2437	30	10000	1000	3000	-5.65	-43.280	<-25.65	PASS
11N40SISO	2437	10000	25000	1000	3000	-5.65	-44.920	<-25.65	PASS
11N40SISO	2452	30	10000	1000	3000	-5.29	-44.040	<-25.29	PASS
11N40SISO	2452	10000	25000	1000	3000	-5.29	-44.680	<-25.29	PASS



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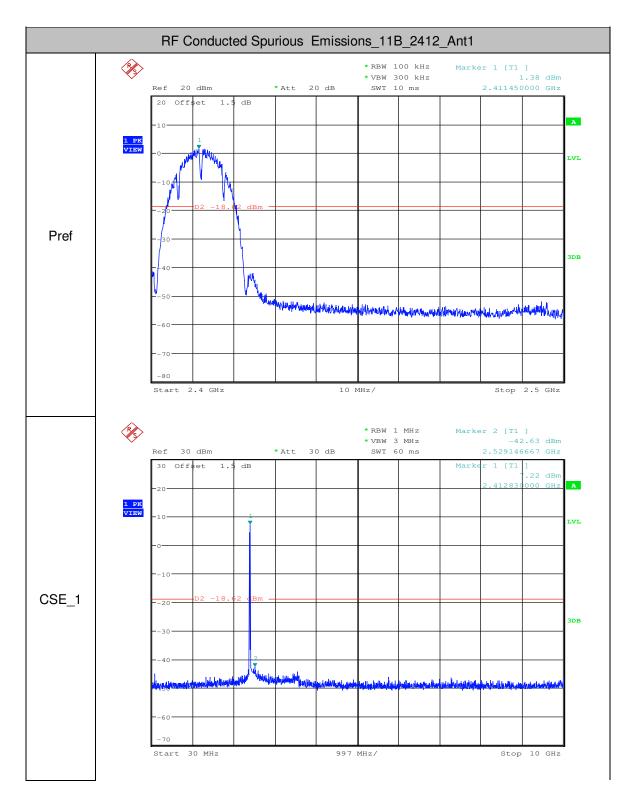
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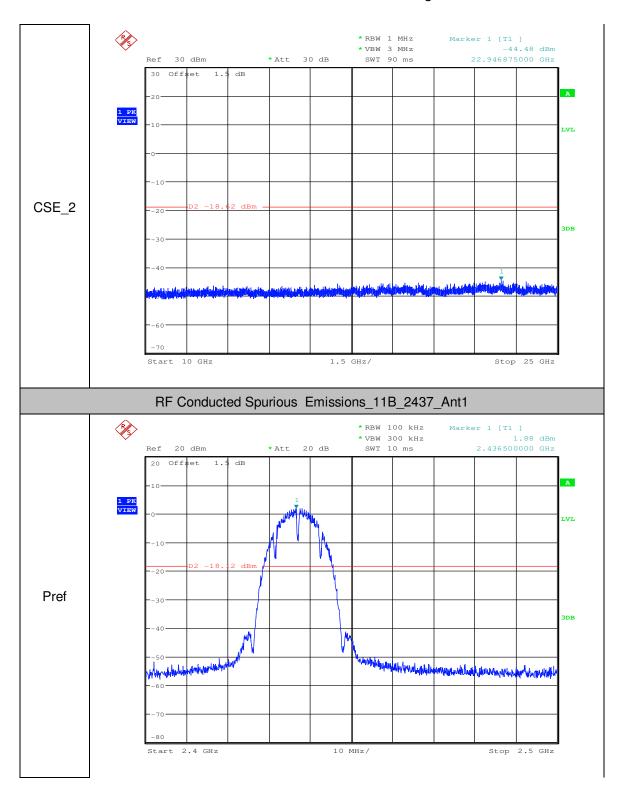
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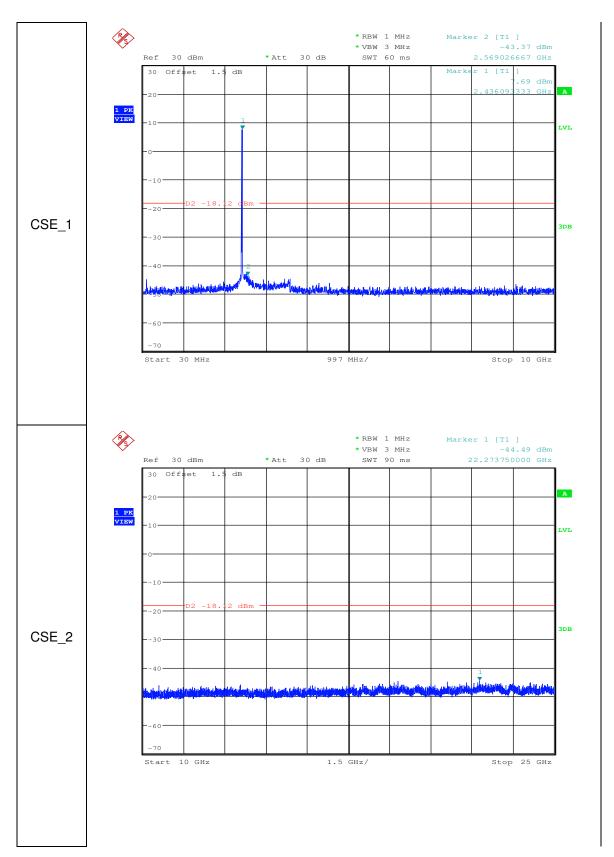
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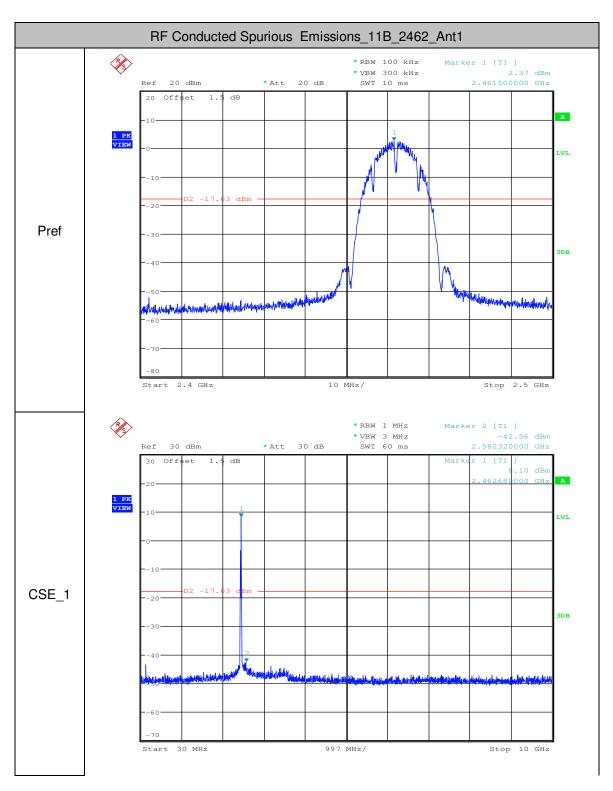
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Page: 120 of 134





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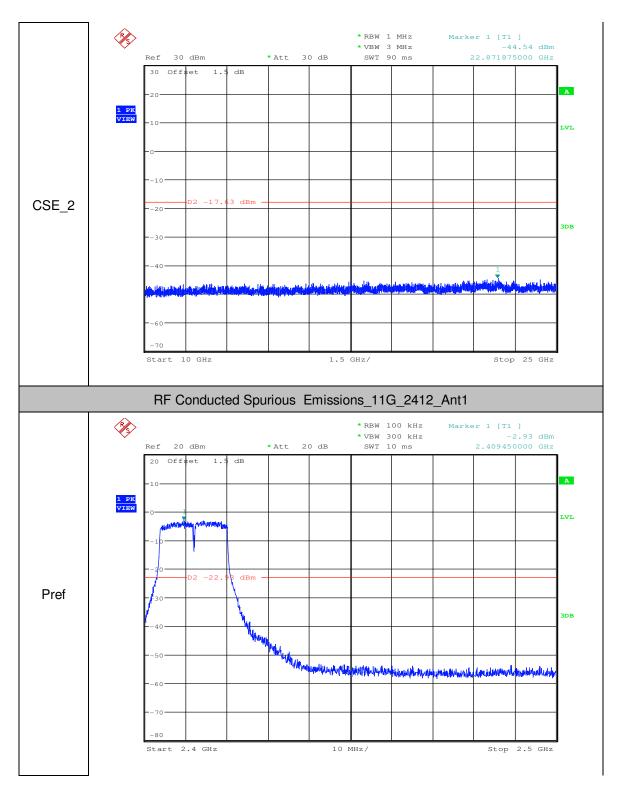
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Report No.: SZEM190801794402

Page: 121 of 134





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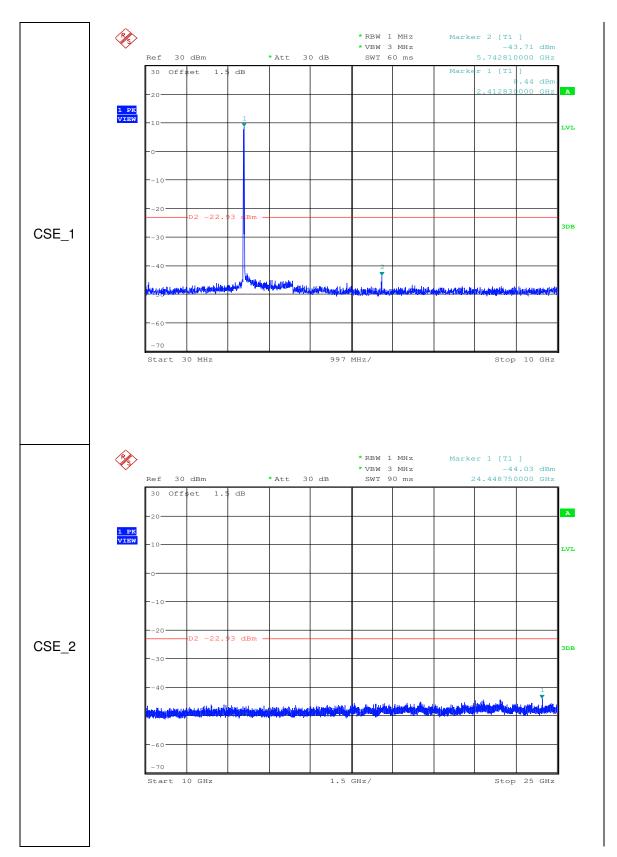
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Report No.: SZEM190801794402

Page: 122 of 134





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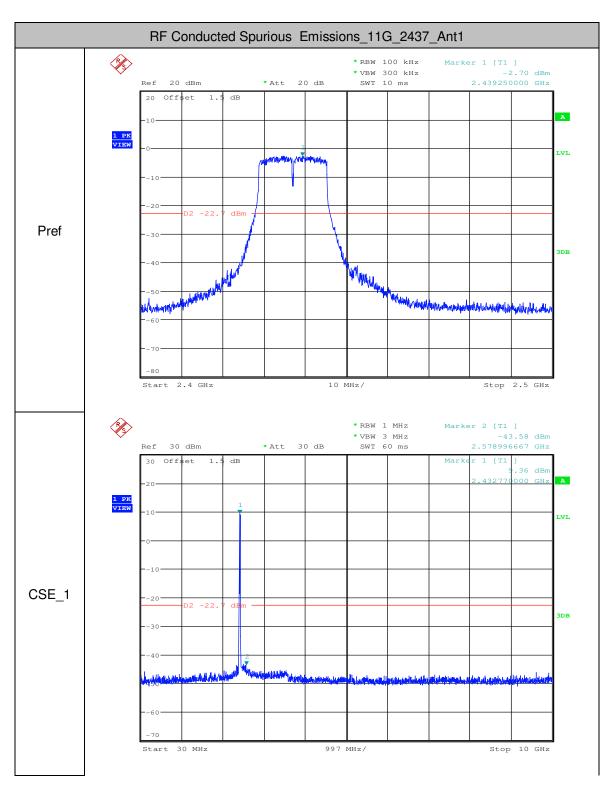
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Report No.: SZEM190801794402

Page: 123 of 134





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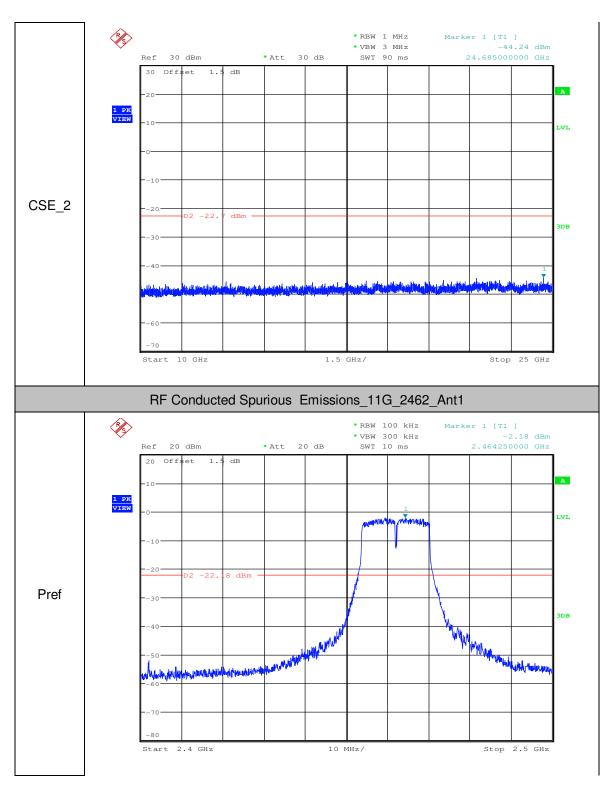
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Report No.: SZEM190801794402

Page: 124 of 134





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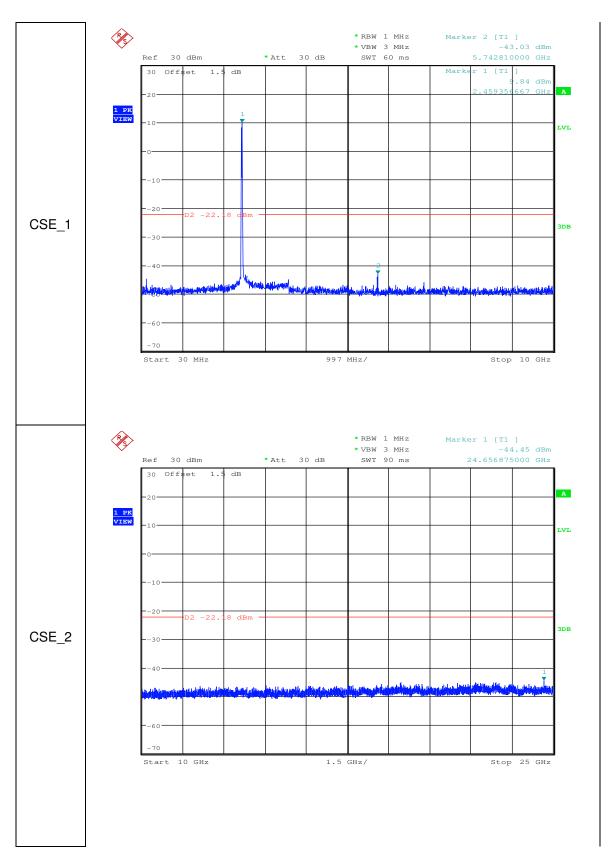
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Page: 125 of 134





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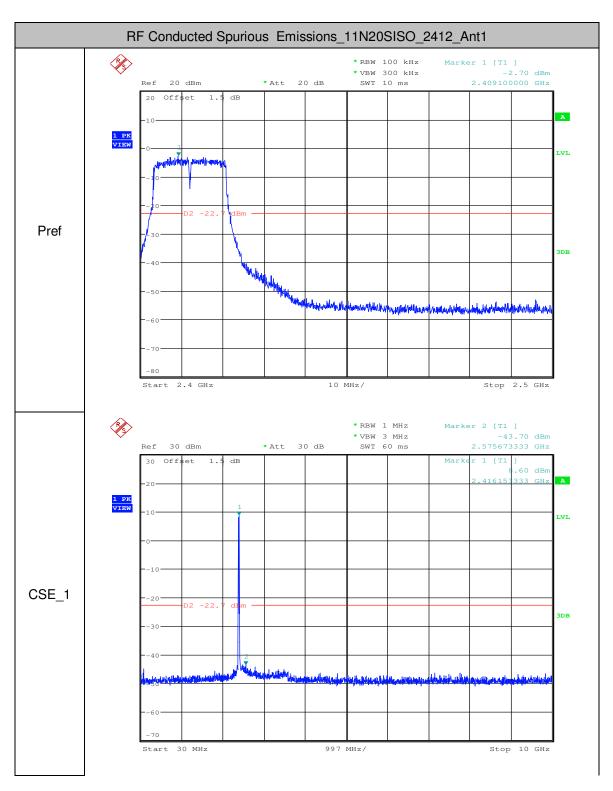
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Report No.: SZEM190801794402

Page: 126 of 134





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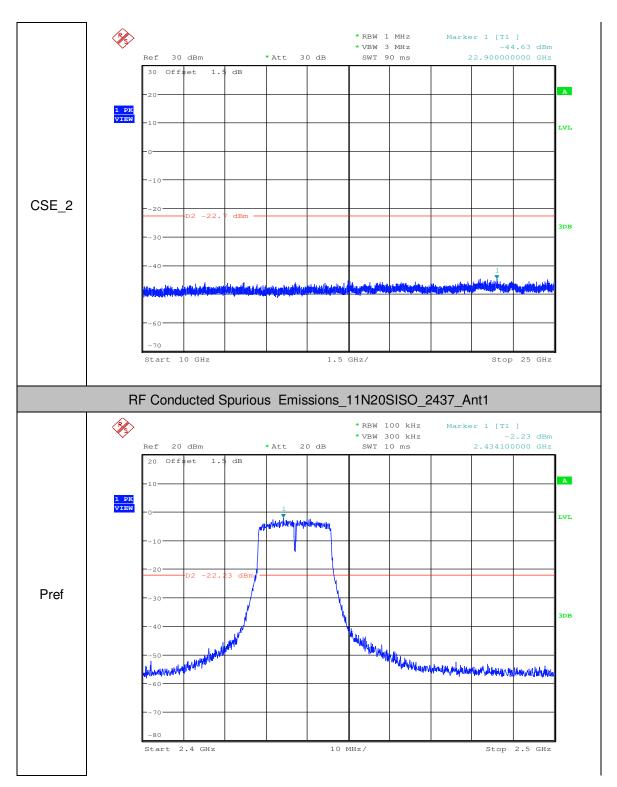
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Page: 127 of 134





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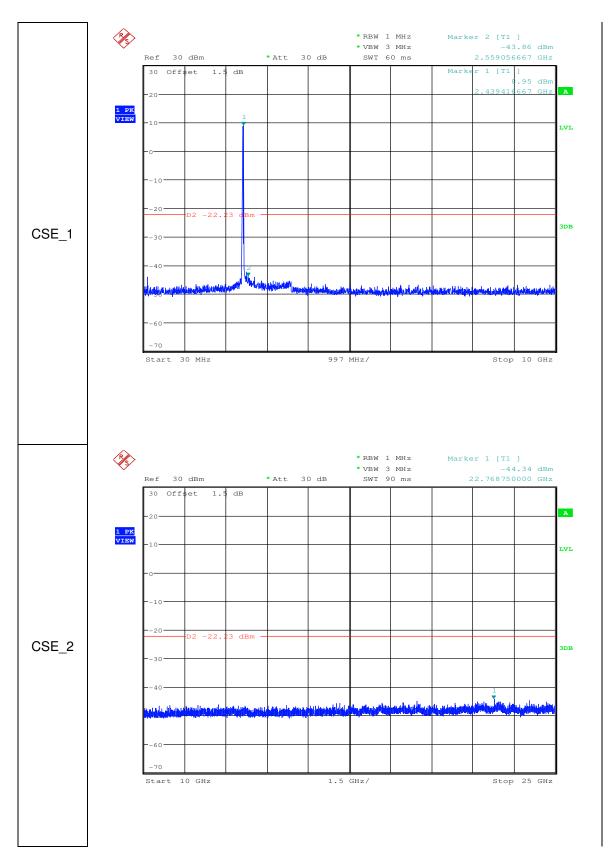
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Page: 128 of 134





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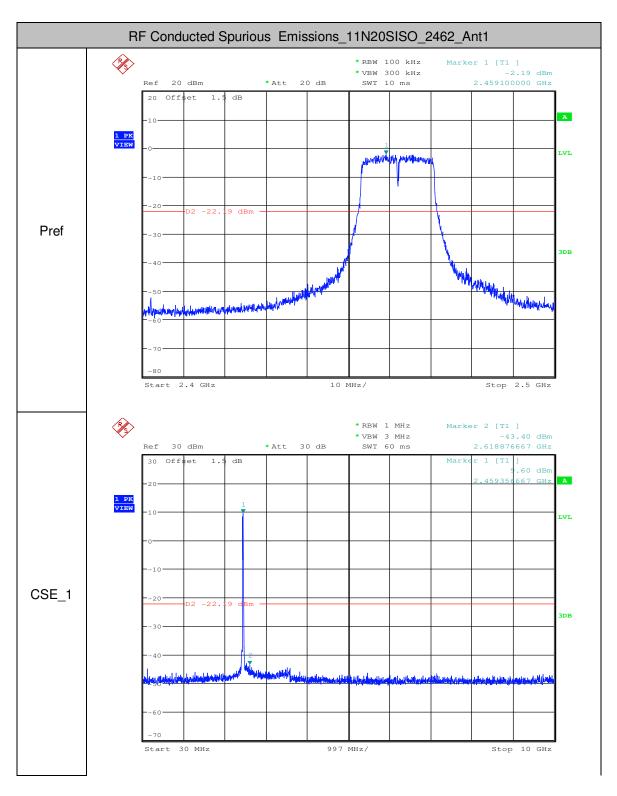
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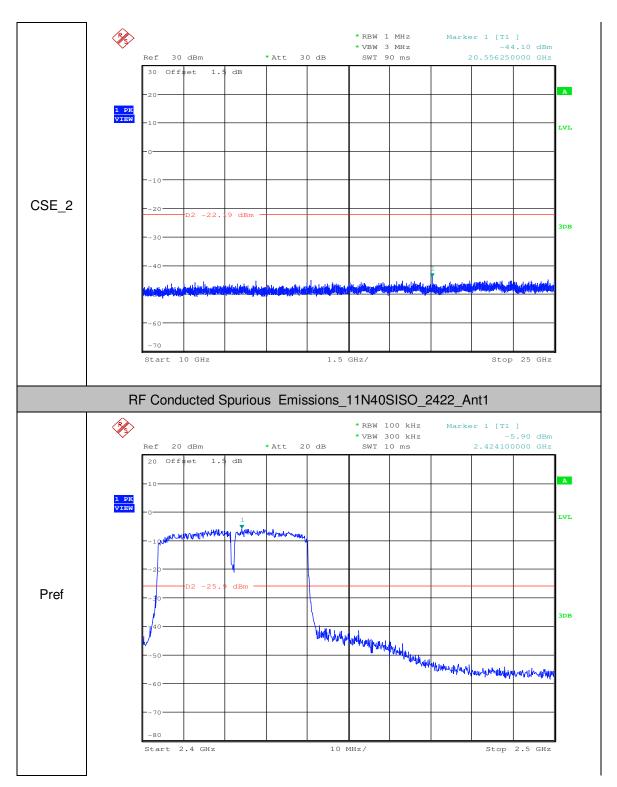
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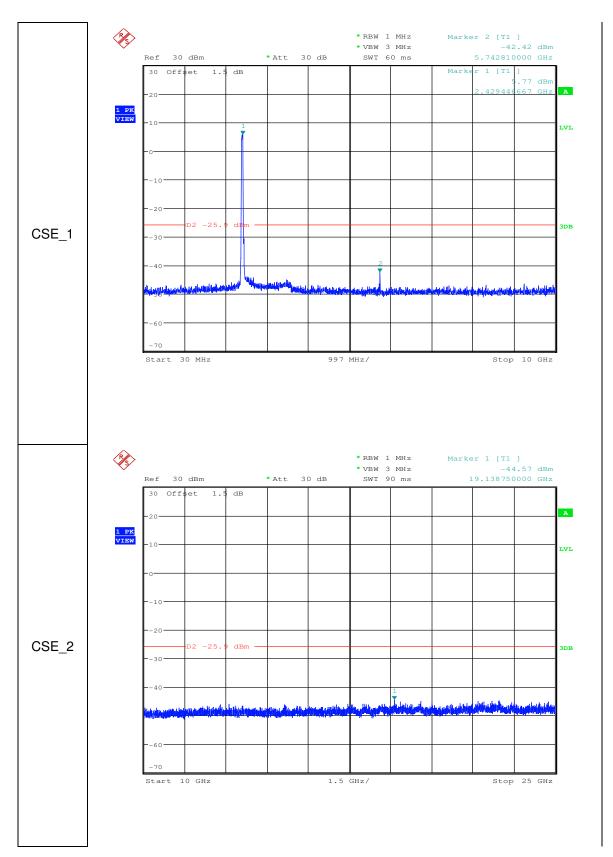
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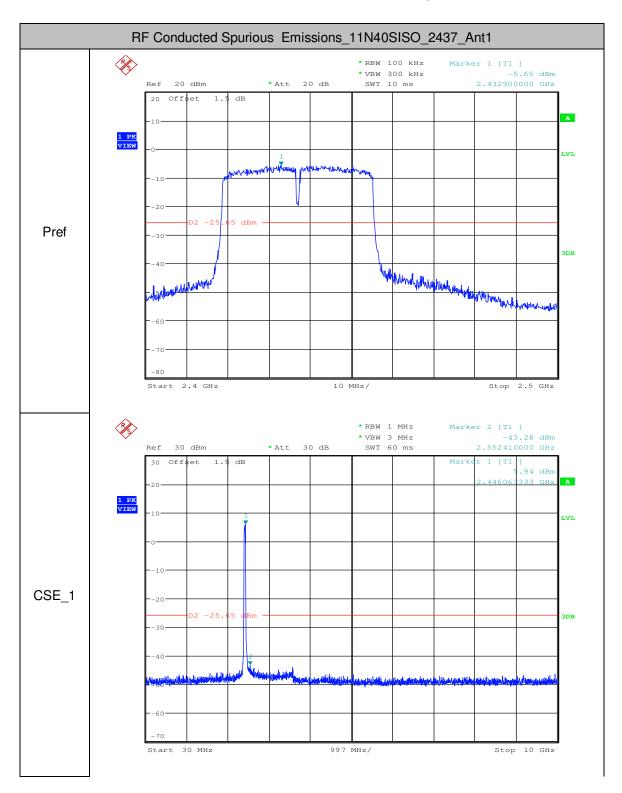
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Page: 132 of 134





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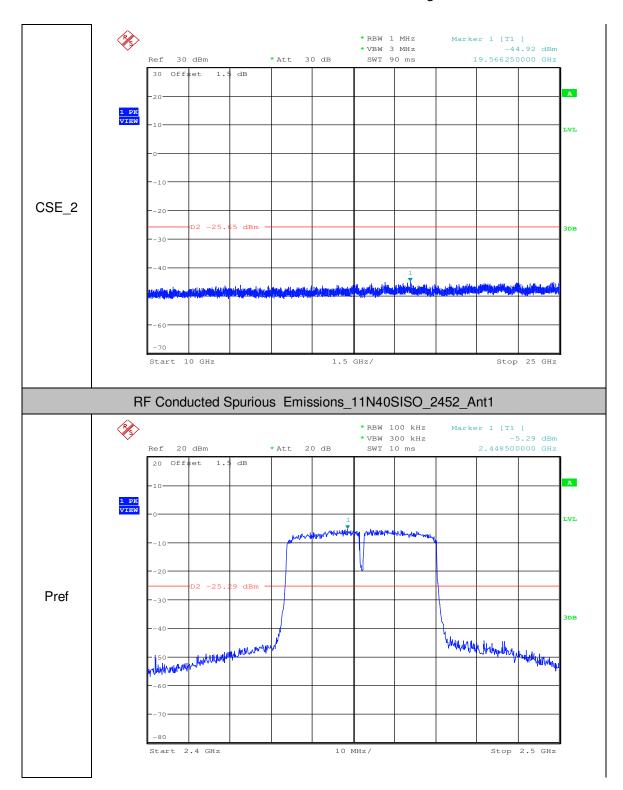
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Page: 133 of 134





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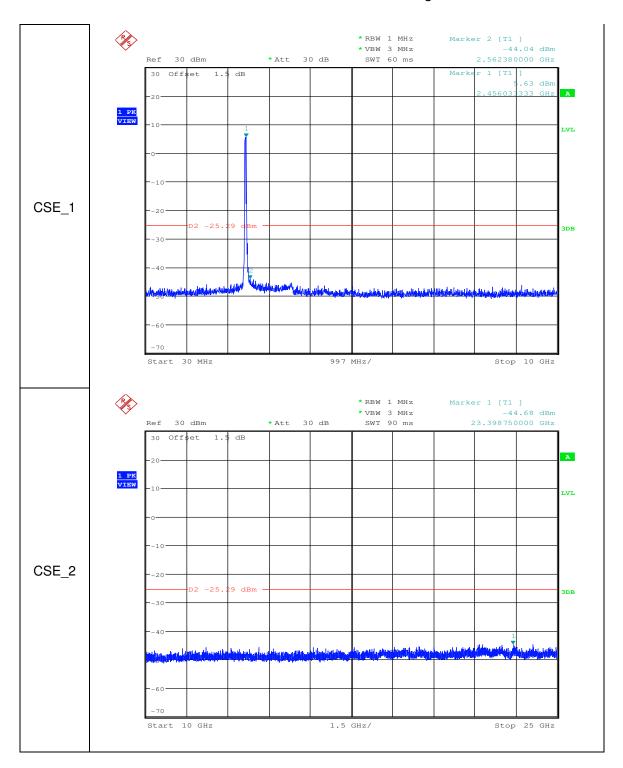
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Report No.: SZEM190801794402

Page: 134 of 134



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