

No. 1 Workshop, M-10, Middle section, Science & Technology Park,

Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Report No.: SZEM171001073204

Fax: +86 (0) 755 2671 0594 Page: 1 of 61

TEST REPORT

Application No.: SZEM1710010732CR

Applicant: Zhongshan Dashan Photographic Equipment Co.,Ltd

Address of Applicant: No.147, Chenggui Road, Dabu Village, Sanxiang Town, Zhongshan City,

China

Manufacturer: Zhongshan Dashan Photographic Equipment Co.,Ltd

Address of Manufacturer: No.147, Chenggui Road, Dabu Village, Sanxiang Town, Zhongshan City,

China

Factory: Zhongshan Dashan Photographic Equipment Co.,Ltd

Address of Factory: No.147, Chenggui Road, Dabu Village, Sanxiang Town, Zhongshan City,

China

Equipment Under Test (EUT):

EUT Name: iFootage Shark Slider Mini Complete

Model No.: 1AM

FCC ID: 2AONZ1AM Trade mark: iFootage

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

Date of Receipt: 2017-10-17

Date of Test: 2017-10-31 to 2017-12-26

Date of Issue: 2018-01-17

Test Result: Pass*



EMC Laboratory Manager

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

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

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



Report No.: SZEM171001073204

Page: 2 of 61

	Revision Record						
Version Chapter Date Modifier Rema							
01		2018-01-17		Original			

Authorized for issue by:		
	Hay Un	
	Harry Wu /Project Engineer	
	EvicFu	
	Eric Fu /Reviewer	



Report No.: SZEM171001073204

Page: 3 of 61

2 Test Summary

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

Radio Spectrum Matter Part						
Item	Standard	Method	Requirement	Result		
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass		
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass		
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass		
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass		
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass		
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass		
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	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 15.205 & 15.209	Pass		



Report No.: SZEM171001073204

Page: 4 of 61

3 Contents

			Page
1	COVE	R PAGE	1
2	TEST	SUMMARY	3
3	CONT	ENTS	4
		TRAL INFORMATION	•
4		RAL INFORMATION	
		DETAILS OF E.U.T	
		DESCRIPTION OF SUPPORT UNITS	
		MEASUREMENT UNCERTAINTY	
		FEST LOCATION	
		EST FACILITY	
		ABNORMALITIES FROM STANDARD CONDITIONS	
_			
5	EQUIF	PMENT LIST	8
6	DVDIC	O SPECTRUM TECHNICAL REQUIREMENT	11
O			
		ANTENNA REQUIREMENT	
	6.1.1	Test Requirement:	
	6.1.2	Conclusion	
7	RADIC	O SPECTRUM MATTER TEST RESULTS	12
	7.1 C	CONDUCTED EMISSIONS AT AC POWER LINE (150kHz-30MHz)	12
	7.1.1	E.U.T. Operation	13
	7.1.2	Test Setup Diagram	
	7.1.3	Measurement Procedure and Data	
	7.2 N	NINIMUM 6DB BANDWIDTH	
	7.2.1	E.U.T. Operation	
	7.2.2	Test Setup Diagram	16
	7.2.3	Measurement Procedure and Data	
		CONDUCTED PEAK OUTPUT POWER	
	7.3.1	E.U.T. Operation	
	7.3.2	Test Setup Diagram	
	7.3.3	Measurement Procedure and Data	
	7.4 P <i>7.4.1</i>	POWER SPECTRUM DENSITY	
	7.4.1 7.4.2	E.U.T. OperationTest Setup Diagram	
	7.4.2 7.4.3	Measurement Procedure and Data	
		Conducted Band Edges Measurement	
	7.5.1	E.U.T. Operation	
	7.5.2	Test Setup Diagram	
	7.5.3	Measurement Procedure and Data	
		CONDUCTED SPURIOUS EMISSIONS	
	7.6.1	E.U.T. Operation	23
	7.6.2	Test Setup Diagram	
	7.6.3	Measurement Procedure and Data	
		RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS	
	7.7.1	E.U.T. Operation	
	7.7.2	Test Setup Diagram	25

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



Report No.: SZEM171001073204

Page: 5 of 61

	7.7.3	Measurement Procedure and Data	26
7.	8 R	RADIATED SPURIOUS EMISSIONS	31
	7.8.1	E.U.T. Operation	32
	7.8.2	Test Setup Diagram	32
	7.8.3	Measurement Procedure and Data	33
8	PHOT	OGRAPHS	43
8.	1 C	CONDUCTED EMISSIONS AT AC POWER LINE (150kHz-30MHz) TEST SETUP	43
8.		RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS TEST SETUP	
8.	3 R	RADIATED SPURIOUS EMISSIONS TEST SETUP	44
9	APPE	NDIX	45
9.	1 A	APPENDIX 15.247	45-61



Report No.: SZEM171001073204

Page: 6 of 61

4 General Information

4.1 Details of E.U.T.

Power supply:	Li-ion Battery (DC7.2V, 1020mAh)
	or powered by USB port
Frequency Range:	2402MHz to 2480MHz
Bluetooth Version:	V4.0 single mode
Modulation Type:	GFSK
Number of Channels:	40
Channel Space:	2MHz
Antenna Type:	Integral
Antenna Gain:	0dBi

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Apple	A1357 W010A051	REF. No.SEA0500
USB Cable	PHILIPS	SWR2101	REF. No.SEA0700

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.25 x 10 ⁻⁸
2	Duty cycle	0.37%
3	Occupied Bandwidth	3%
4	RF conducted power	0.75dB
5	RF power density	2.84dB
6	Conducted Spurious emissions	0.75dB
7	DE Dedisted resum	4.5dB (below 1GHz)
/	RF Radiated power	4.8dB (above 1GHz)
0	Dedicted Courieus emission test	4.5dB (Below 1GHz)
8	Radiated Spurious emission test	4.8dB (Above 1GHz)
9	Temperature test	1℃
10	Humidity test	3%
11	Supply voltages	1.5%
12	Time	3%



Report No.: SZEM171001073204

Page: 7 of 61

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.

Industry Canada (IC)

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



Report No.: SZEM171001073204

Page: 8 of 61

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	2017-05-10	2018-05-09	
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A	
Coaxial Cable	SGS	N/A	SEM024-01	2017-07-13	2018-07-12	
LISN	Rohde & Schwarz	ENV216	SEM007-01	2017-09-27	2018-09-26	
LISN	ETS-LINDGREN	3816/2	SEM007-02	2017-04-14	2018-04-13	
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2017-04-14	2018-04-13	

Minimum 6dB Bandwidth						
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2017-09-27	2018-09-26	
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2017-04-14	2018-04-13	
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A	
Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12	
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A	
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2017-09-27	2018-09-26	
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2017-09-27	2018-09-26	

Conducted Peak Output Power						
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2017-09-27	2018-09-26	
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2017-04-14	2018-04-13	
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A	
Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12	
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A	
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2017-09-27	2018-09-26	
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2017-09-27	2018-09-26	

Power Spectrum Density							
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date		
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2017-09-27	2018-09-26		
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2017-04-14	2018-04-13		
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A		
Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12		
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A		
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2017-09-27	2018-09-26		
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2017-09-27	2018-09-26		

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



Report No.: SZEM171001073204

Page: 9 of 61

Conducted Band Edges Measurement						
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2017-09-27	2018-09-26	
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2017-04-14	2018-04-13	
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A	
Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12	
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A	
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2017-09-27	2018-09-26	
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2017-09-27	2018-09-26	

Conducted Spurious Emissions							
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date		
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2017-09-27	2018-09-26		
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2017-04-14	2018-04-13		
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A		
Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12		
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A		
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2017-09-27	2018-09-26		
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2017-09-27	2018-09-26		

Radiated Emissions which fall in the restricted bands						
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2017-05-02	2020-05-01	
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A	
Coaxial Cable	SGS	N/A	SEM026-01	2017-07-13	2018-07-12	
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2017-04-14	2018-04-13	
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26	
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2015-06-14	2018-06-13	
Horn Antenna (15GHz-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16	
Pre-amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2017-09-27	2018-09-26	
Low Noise Amplifier (100MHz-18GHz)	Black Diamond Series	BDLNA-0118- 352810	SEM005-05	2017-09-27	2018-09-27	
Pre-amplifier (18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2017-12-04	2018-12-03	
Pre-amplifier (26GHz-40GHz) Compliance Directions Systems Inc.		PAP-2640-50	SEM005-08	2017-04-14	2018-04-13	

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



Report No.: SZEM171001073204

Page: 10 of 61

DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2017-09-27	2018-09-26
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21
Band filter	N/A	N/A	SEM023-01	N/A	N/A

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2017-05-02	2020-05-01
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2017-07-13	2018-07-12
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2017-04-14	2018-04-13
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2015-06-14	2018-06-13
Horn Antenna(15GHz- 40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16
Pre-amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2017-09-27	2018-09-26
Low Noise Amplifier (100MHz-18GHz)	Black Diamond Series	BDLNA-0118- 352810	SEM005-05	2017-09-27	2018-09-27
Pre-amplifier (18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2017-12-04	2018-12-03
Pre-amplifier (26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2017-04-14	2018-04-13
DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2017-09-27	2018-09-26
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21
Band filter	N/A	N/A	SEM023-01	N/A	N/A

General used equipment							
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date		
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2017-09-29	2018-09-28		
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2017-09-29	2018-09-28		
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2017-09-29	2018-09-28		
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2017-04-18	2018-04-17		



Report No.: SZEM171001073204

Page: 11 of 61

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

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

6.1.2 Conclusion

Standard Requirement:

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

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.



Report No.: SZEM171001073204

Page: 12 of 61

7 Radio Spectrum Matter Test Results

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

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

Limit:

Example of emission (MILT)	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.						



Report No.: SZEM171001073204

Page: 13 of 61

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 45 % RH Atmospheric Pressure: 1010 mbar

Pretest these c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

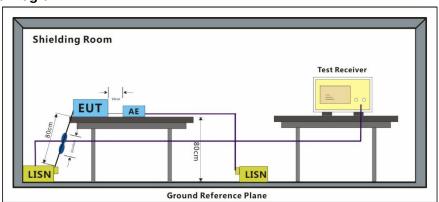
mode to find the modulation.

worst case:

The worst case c:TX mode(Slider) Keep the EUT in continuously transmitting mode with GFSK

for final test: modulation.

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

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

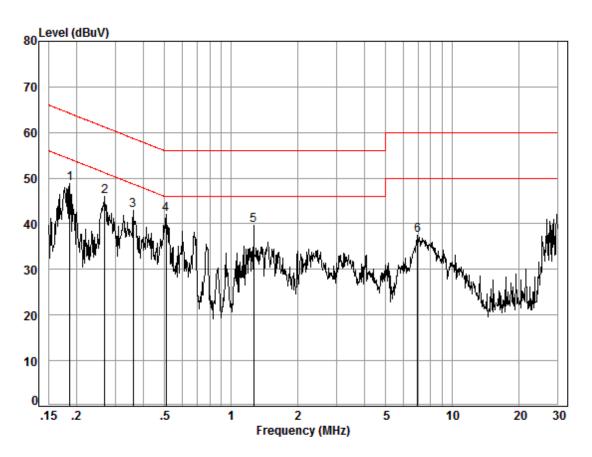
Remark: LISN=Read Level+ Cable Loss+ LISN Factor



Report No.: SZEM171001073204

Page: 14 of 61

Mode:c; Line:Live Line



Site : Shielding Room

Condition: Line Job No. : 10732CR

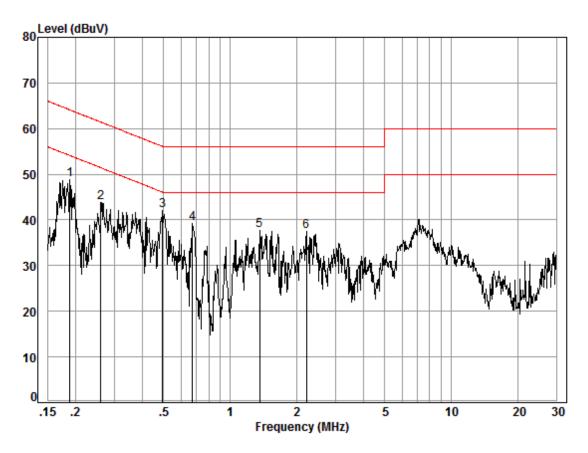
	Freq	Cable Loss	LISN Factor		Level	Limit Line		Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.19	0.02	9.51	39.19	48.72	54.20	-5.48	Peak
2	0.27	0.01	9.51	36.48	46.00	51.16	-5.16	Peak
3	0.36	0.01	9.50	33.45	42.96	48.69	-5.73	Peak
4	0.51	0.01	9.49	32.60	42.10	46.00	-3.90	Peak
5	1.27	0.02	9.51	30.14	39.67	46.00	-6.33	Peak
6	6.99	0.01	9.59	27.84	37.44	50.00	-12.56	Peak



Report No.: SZEM171001073204

Page: 15 of 61

Mode:c; Line:Neutral Line



Site : Shielding Room

Condition: Neutral Job No. : 10732CR

	Freq		LISN Factor		Level	Limit Line		Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.19	0.02	9.58	39.18	48.78	54.11	-5.33	Peak
2	0.26	0.01	9.58	34.32	43.91	51.42	-7.51	Peak
3	0.49	0.01	9.60	32.43	42.04	46.10	-4.06	Peak
4	0.68	0.02	9.62	29.63	39.27	46.00	-6.73	Peak
5	1.36	0.02	9.63	28.16	37.81	46.00	-8.19	Peak
6	2.21	0.02	9.65	27.87	37.54	46.00	-8.46	Peak



Report No.: SZEM171001073204

Page: 16 of 61

7.2 Minimum 6dB Bandwidth

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

Limit: ≥500 kHz

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1010 mbar

Pretest these c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

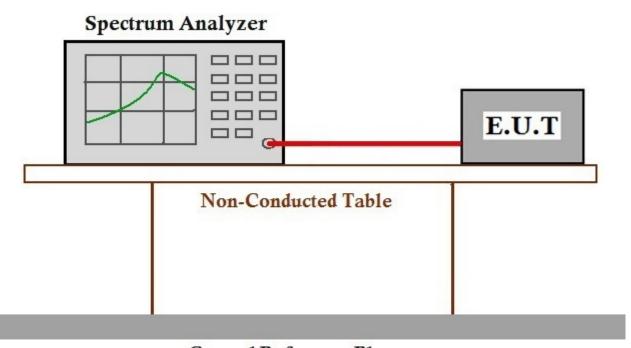
mode to find the modulation.

worst case:

The worst case c:TX mode(Slider) Keep the EUT in continuously transmitting mode with GFSK

for final test: modulation.

7.2.2 Test Setup Diagram



Ground Reference Plane

7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



Report No.: SZEM171001073204

Page: 17 of 61

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(v			
	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		



Report No.: SZEM171001073204

Page: 18 of 61

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1010 mbar

Pretest these

c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

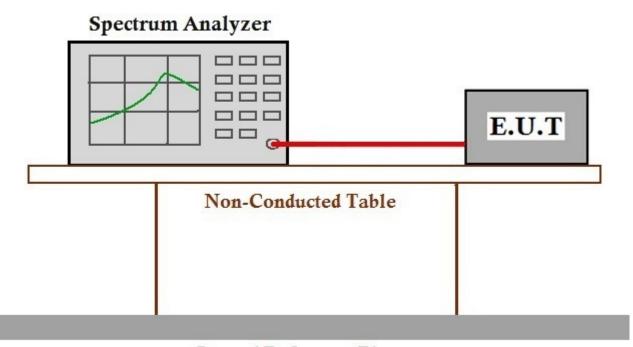
mode to find the modulation.

worst case:

The worst case c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

for final test: modulation.

7.3.2 Test Setup Diagram



Ground Reference Plane

7.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



Report No.: SZEM171001073204

Page: 19 of 61

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: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1010 mbar

Pretest these

c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

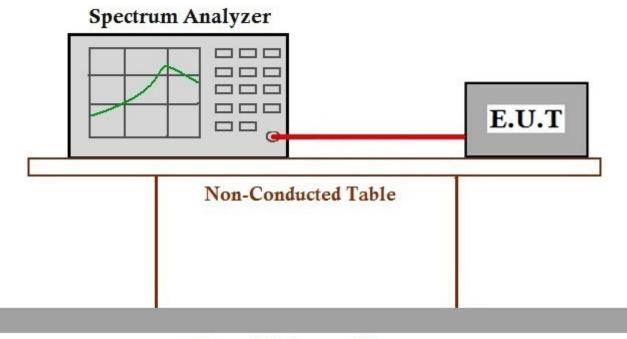
mode to find the modulation.

worst case:

The worst case c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

for final test: modulation.

7.4.2 Test Setup Diagram



Ground Reference Plane

7.4.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



Report No.: SZEM171001073204

Page: 20 of 61

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)



Report No.: SZEM171001073204

21 of 61 Page:

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: Humidity: 54 % RH Atmospheric Pressure: 1010 mbar Pretest these c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

mode to find the

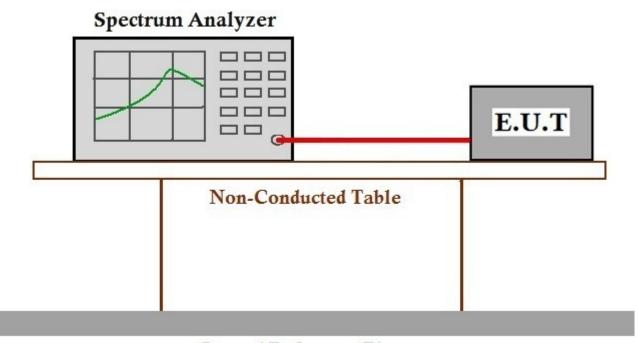
modulation.

worst case:

The worst case c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

for final test: modulation.

7.5.2 Test Setup Diagram



Ground Reference Plane

7.5.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



Report No.: SZEM171001073204

Page: 22 of 61

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)



Report No.: SZEM171001073204

Page: 23 of 61

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1010 mbar Pretest these c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

Pretest these mode to find the

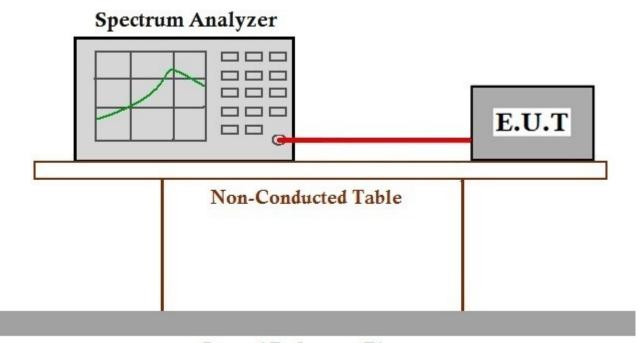
modulation.

worst case:

The worst case c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

for final test: modulation.

7.6.2 Test Setup Diagram



Ground Reference Plane

7.6.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



Report No.: SZEM171001073204

Page: 24 of 61

7.7 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

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.



Report No.: SZEM171001073204

Page: 25 of 61

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1010 mbar

Pretest these c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

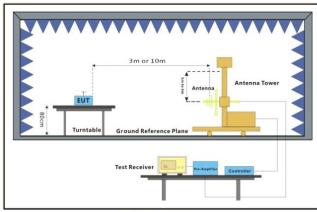
mode to find the modulation.

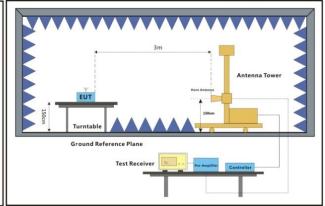
worst case:

The worst case c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

for final test: modulation.

7.7.2 Test Setup Diagram





30MHz-1GHz Above 1GHz



Report No.: SZEM171001073204

Page: 26 of 61

7.7.3 Measurement Procedure and Data

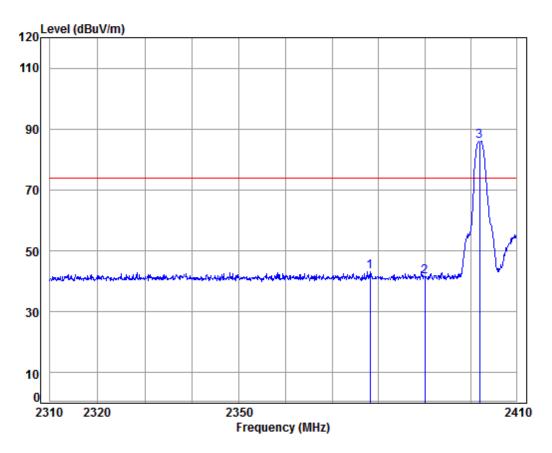
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5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



Report No.: SZEM171001073204

Page: 27 of 61

Mode:c; Polarization:Horizontal; Modulation Type:GFSK; ; Channel:Low



Condition: 3m HORIZONTAL

Job No : 10732CR

Mode : 2402 Band edge

Note : BLE Slider

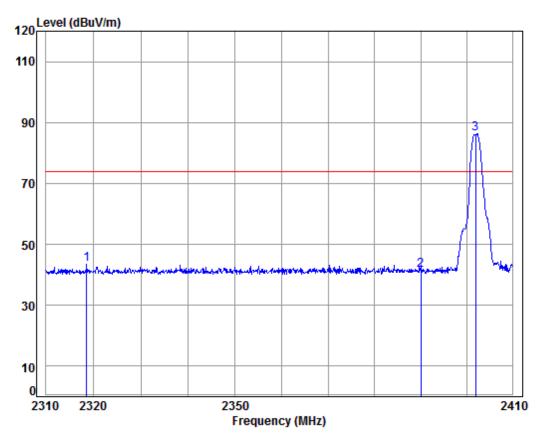
	_			•						
			Cable	Ant	Preamp	Read		Limit	0ver	
		Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1		2378.142	5.46	29.04	37.66	46.40	43.24	74.00	-30.76	peak
2		2390.000	5.47	29.08	37.66	44.73	41.62	74.00	-32.38	peak
3	pp	2402.000	5.49	29.11	37.65	88.98	85.93	74.00	11.93	peak



Report No.: SZEM171001073204

Page: 28 of 61

Mode:c; Polarization:Vertical; Modulation Type:GFSK; ; Channel:Low



Condition: 3m VERTICAL Job No : 10732CR

Mode : 2402 Band edge

Note : BLE Slider

1 2

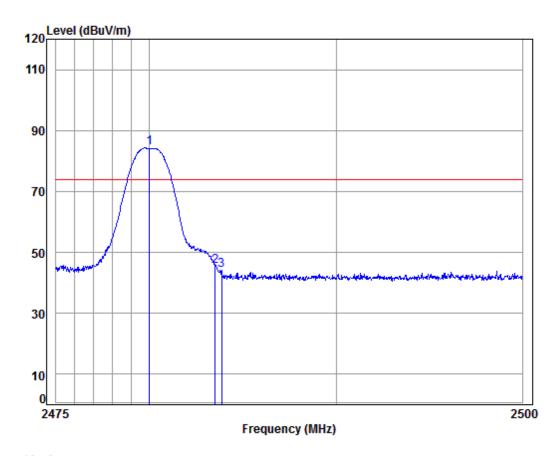
	Freq			Preamp Factor					Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
	2318.533								-
	2390.000	5.47	29.08	37.66	44.52	41.41	74.00	-32.59	peak
pp	2402.000	5.49	29.11	37.65	89.27	86.22	74.00	12.22	peak



Report No.: SZEM171001073204

Page: 29 of 61

Mode:c; Polarization:Horizontal; Modulation Type:GFSK; ; Channel:High



Condition: 3m HORIZONTAL

Job No : 10732CR

Mode : 2480 Band edge

Note : BLE Slider

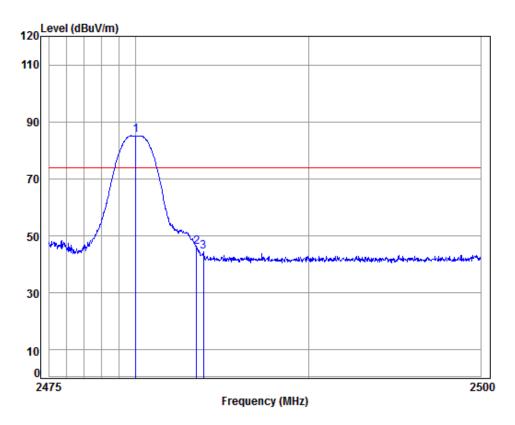
				•						
			Cable	Ant	Preamp	Read		Limit	0ver	
	F	req	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	pp 2480.	000	5.59	29.34	37.65	86.96	84.24	74.00	10.24	peak
2	2483.	500	5.60	29.35	37.65	48.28	45.58	74.00	-28.42	peak
3	2483.	846	5.60	29.35	37.65	46.74	44.04	74.00	-29.96	peak



Report No.: SZEM171001073204

Page: 30 of 61

Mode:c; Polarization:Vertical; Modulation Type:GFSK; ; Channel:High



Condition: 3m VERTICAL Job No : 10732CR

Mode : 2480 Band edge Note : BLE Slider

Cable Ant Preamp Limit 0ver Read Limit Remark Loss Factor Factor Line Freq Level Level MHz dBuV dBuV/m dBuV/m dB dB/m dB dB 5.59 1 pp 2480.000 29.34 37.65 87.91 85.19 74.00 11.19 peak 2 2483.500 5.60 29.35 37.65 48.86 46.16 74.00 -27.84 peak 3 2483.896 5.60 29.35 37.65 47.06 44.36 74.00 -29.64 peak

Remark:

1) 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

2) As shown in this section, 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. So, only the peak measurements were shown in the report.

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



Report No.: SZEM171001073204

Page: 31 of 61

7.8 Radiated Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
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.



Report No.: SZEM171001073204

Page: 32 of 61

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1010 mbar

Pretest these c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

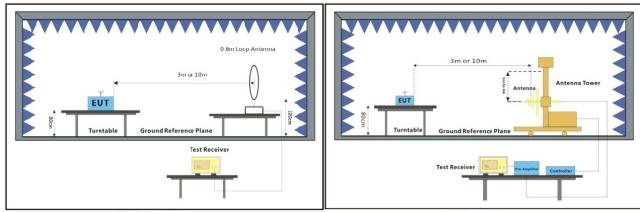
mode to find the modulation.

worst case:

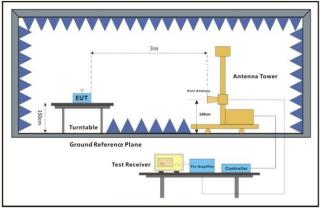
The worst case c:TX mode(Slider)_Keep the EUT in continuously transmitting mode with GFSK

for final test: modulation.

7.8.2 Test Setup Diagram



Below 30MHz 30MHz-1GHz



Above 1GHz



Report No.: SZEM171001073204

Page: 33 of 61

7.8.3 Measurement Procedure and Data

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

Remark:

- 1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

- 3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



Report No.: SZEM171001073204

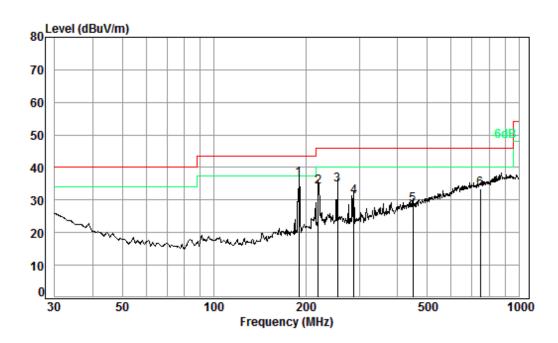
Page: 34 of 61

30MHz~1GHz

QP value:

Mode:c:

Polarization:Horizontal;



ONTAL

Test mode: a

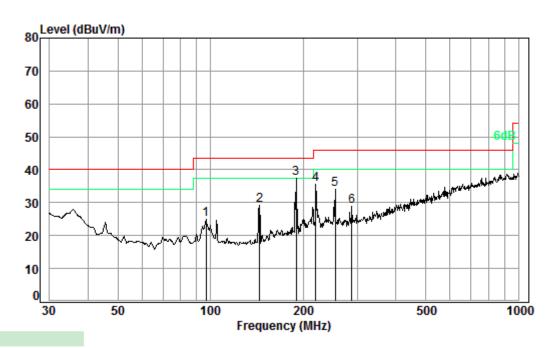
		Cable	Ant	Preamp	Read		Limit	0ver
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
_								
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
_	400 74	4 30	46.00			26.27	43.50	7.45
1 pp	189.74	1.38	16.20	27.53	46.32	36.37	43.50	-/.13
2	219.84	1.52	17.19	27.53	42.76	33.94	46.00	-12.06
3	253.84	1.69	19.01	27.54	41.40	34.56	46.00	-11.44
4	287.99	1.85	19.13	27.54	37.52	30.96	46.00	-15.04
5	449.56	2.41	23.55	27.81	30.41	28.56	46.00	-17.44
6	747.48	3.05	28.19	27.49	29.62	33.37	46.00	-12.63



Report No.: SZEM171001073204

Page: 35 of 61

Mode:c; Polarization:Vertical



Condition: 3m VERTICAL

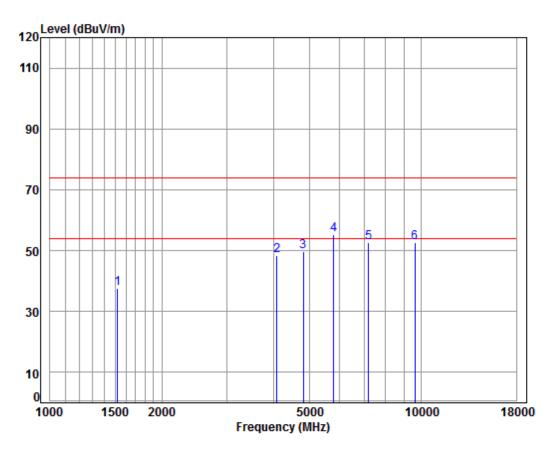
Freq				Preamp Factor				
_	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	96.77	1.17	13.72	27.51	37.43	24.81	43.50	-18.69
2	144.33	1.31	14.11	27.52	41.21	29.11	43.50	-14.39
3 pp	189.74	1.38	16.20	27.53	47.33	37.38	43.50	-6.12
4	219.84	1.52	17.19	27.53	44.27	35.45	46.00	-10.55
5	253.84	1.69	19.01	27.54	40.88	34.04	46.00	-11.96
6	287.99	1.85	19.13	27.54	35.44	28.88	46.00	-17.12



Report No.: SZEM171001073204

Page: 36 of 61

Mode:c; Polarization:Horizontal; Modulation:GFSK; ; Channel:Low



Condition: 3m HORIZONTAL

Job No : 10732CR Mode : 2402 TX SE

Note : BLE

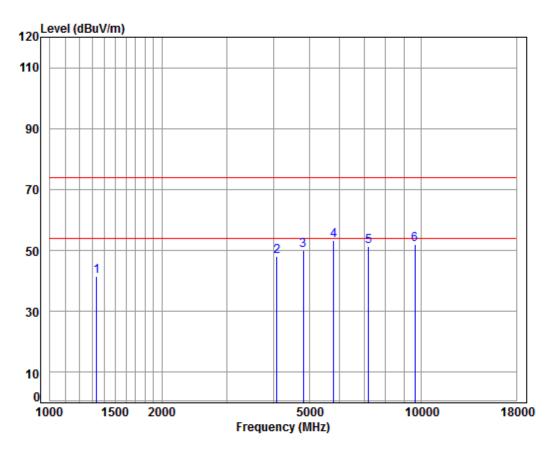
			Cable	Ant	Preamp	Read		Limit	0ver	
		Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	_									
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1		1520.598	5.45	25.89	37.74	44.03	37.63	74.00	-36.37	peak
2		4086.182	7.08	33.60	37.12	44.84	48.40	74.00	-25.60	peak
3		4804.000	7.89	34.16	37.26	44.90	49.69	74.00	-24.31	peak
4	pp	5797.032	9.89	34.58	37.79	48.57	55.25	74.00	-18.75	peak
5		7206.000	10.08	36.42	37.56	43.59	52.53	74.00	-21.47	peak
6		9608.000	10.75	37.52	35.80	40.06	52.53	74.00	-21.47	peak



Report No.: SZEM171001073204

Page: 37 of 61

Mode:c; Polarization:Vertical; Modulation:GFSK; ; Channel:Low



Condition: 3m Vertical

Job No : 10732CR Mode : 2402 TX SE

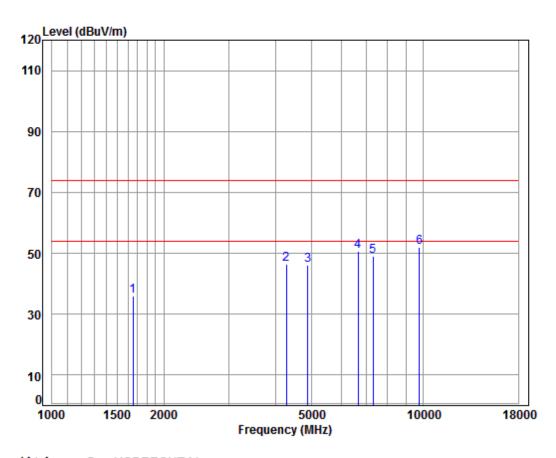
					Preamp					
		Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	-	MHz	dB	dB/m	——dB	dBuV	dBuV/m	dBuV/m	——dB	
1		1335.141	4.93	25.11	37.76	49.32	41.60	74.00	-32.40	peak
2		4086.182								
3		4804.000	7.89	34.16	37.26	45.21	50.00	74.00	-24.00	peak
4	pp	5797.032	9.89	34.58	37.79	46.46	53.14	74.00	-20.86	peak
5		7206.000	10.08	36.42	37.56	42.45	51.39	74.00	-22.61	peak
6		9608.000	10.75	37.52	35.80	39.63	52.10	74.00	-21.90	peak



Report No.: SZEM171001073204

Page: 38 of 61

Mode:c; Polarization:Horizontal; Modulation:GFSK; ; Channel:middle



Condition: 3m HORIZONTAL

Job No : 10732CR Mode : 2440 TX SE

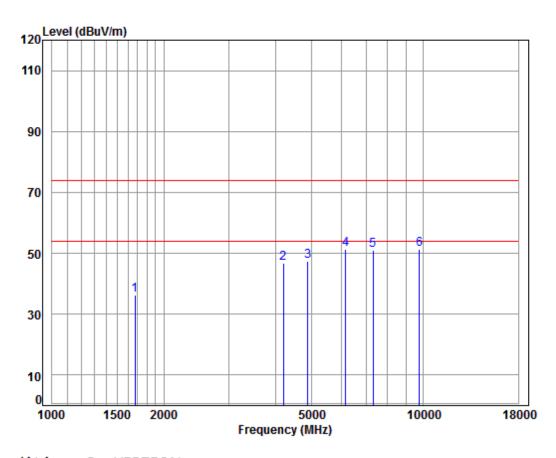
			Cable	Ant	Preamp	Read		Limit	0ver	
		Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	-									
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1		1652 550	E 20	26 49	27 72	11 07	25 00	74.00	20 10	noole
		1653.550								•
2		4279.589	7.31	33.60	37.16	42.79	46.54	74.00	-27.46	peak
3		4880.000	7.97	34.29	37.28	40.98	45.96	74.00	-28.04	peak
4		6659.763	11.08	35.56	37.70	41.77	50.71	74.00	-23.29	peak
5		7320.000	10.05	36.37	37.53	40.29	49.18	74.00	-24.82	peak
6	pp	9760.000	10.82	37.55	35.68	39.42	52.11	74.00	-21.89	peak



Report No.: SZEM171001073204

Page: 39 of 61

Mode:c; Polarization:Vertical; Modulation:GFSK; ; Channel:middle



Condition: 3m VERTICAL

Job No : 10732CR Mode : 2440 TX SE

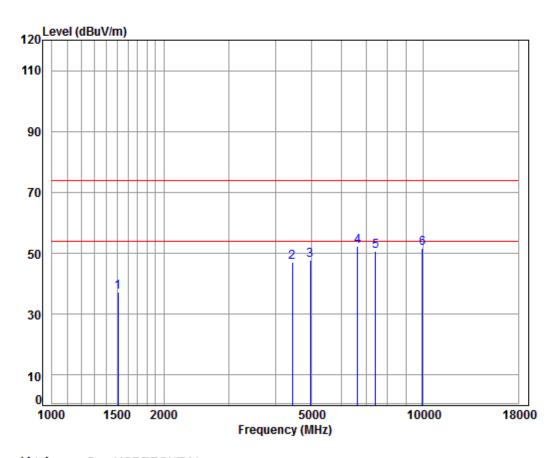
			Cable	Ant	Preamp	Read		Limit	0ver	
		Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	_									
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1		1672.779	5.26	26.56	37.73	42.22	36.31	74.00	-37.69	peak
2		4193.872	7.21	33.60	37.14	43.04	46.71	74.00	-27.29	peak
3		4880.000	7.97	34.29	37.28	42.31	47.29	74.00	-26.71	peak
4	pp	6177.627	10.92	34.85	37.84	43.51	51.44	74.00	-22.56	peak
5		7320.000	10.05	36.37	37.53	42.16	51.05	74.00	-22.95	peak
6		9760 000	10 82	37 55	35 68	38 70	51 39	74 99	-22 61	neak



Report No.: SZEM171001073204

Page: 40 of 61

Mode:c; Polarization:Horizontal; Modulation:GFSK; ; Channel:High



Condition: 3m HORIZONTAL

Job No : 10732CR Mode : 2480 TX SE

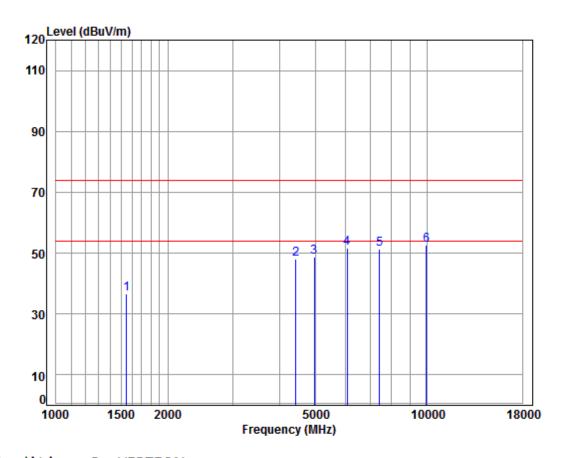
			Cable	Ant	Preamp	Read		Limit	0ver	
		Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	_									
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1		1507.470	5.47	25.83	37.74	43.61	37.17	74.00	-36.83	peak
2		4430.628	7.48	33.60	37.19	43.12	47.01	74.00	-26.99	peak
3		4960.000	8.05	34.43	37.29	42.61	47.80	74.00	-26.20	peak
4	pp	6640.542	11.13	35.50	37.70	43.49	52.42	74.00	-21.58	peak
5		7440.000	10.02	36.32	37.51	41.78	50.61	74.00	-23.39	peak
6		9920.000	10.90	37.58	35.56	38.62	51.54	74.00	-22.46	peak



Report No.: SZEM171001073204

Page: 41 of 61

Mode:c; Polarization:Vertical; Modulation:GFSK; ; Channel:High



Condition: 3m VERTICAL

Job No : 10732CR

Mode : 2480 TX SE

		_			Preamp					
		Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Kemark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1		1547.199	5.42	26.02	37.74	42.77	36.47	74.00	-37.53	peak
2		4417.841	7.47	33.60	37.19	44.04	47.92	74.00	-26.08	peak
3		4960.000	8.05	34.43	37.29	43.43	48.62	74.00	-25.38	peak
4		6071.417	10.71	34.76	37.88	44.02	51.61	74.00	-22.39	peak
5		7440.000	10.02	36.32	37.51	42.35	51.18	74.00	-22.82	peak
6	pp	9920.000	10.90	37.58	35.56	39.73	52.65	74.00	-21.35	peak



Report No.: SZEM171001073204

Page: 42 of 61

Remark:

1) 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

- 2) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3) As shown in this section, 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. So, only the peak measurements were shown in the report.



Report No.: SZEM171001073204

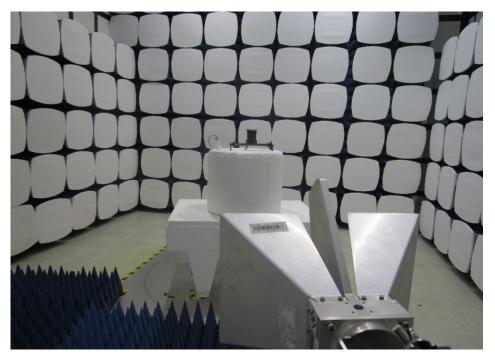
Page: 43 of 61

8 Photographs

8.1 Conducted Emissions at AC Power Line (150kHz-30MHz) Test Setup



8.2 Radiated Emissions which fall in the restricted bands Test Setup



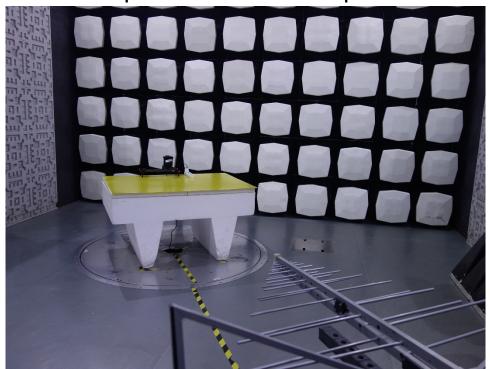
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at https://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx.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

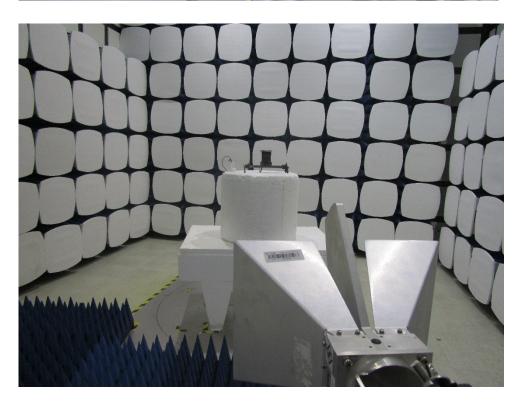


Report No.: SZEM171001073204

Page: 44 of 61

8.3 Radiated Spurious Emissions Test Setup







Report No.: SZEM171001073204

Page: 45 of 61

9 Appendix

9.1 Appendix 15.247

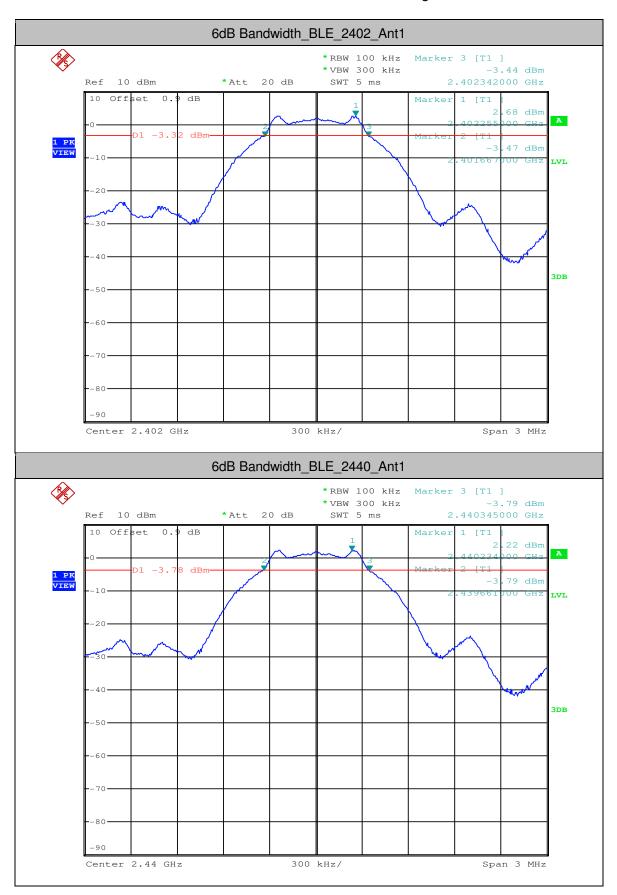
1.6dB Bandwidth

Test Mode	Test	Ant	EBW[MHz]	Limit[MHz]	Verdict
BLE	2402	Ant1	0.675	>=0.5	PASS
BLE	2440	Ant1	0.684	>=0.5	PASS
BLE	2480	Ant1	0.693	>=0.5	PASS



Report No.: SZEM171001073204

Page: 46 of 61



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



Report No.: SZEM171001073204

Page: 47 of 61





Report No.: SZEM171001073204

Page: 48 of 61

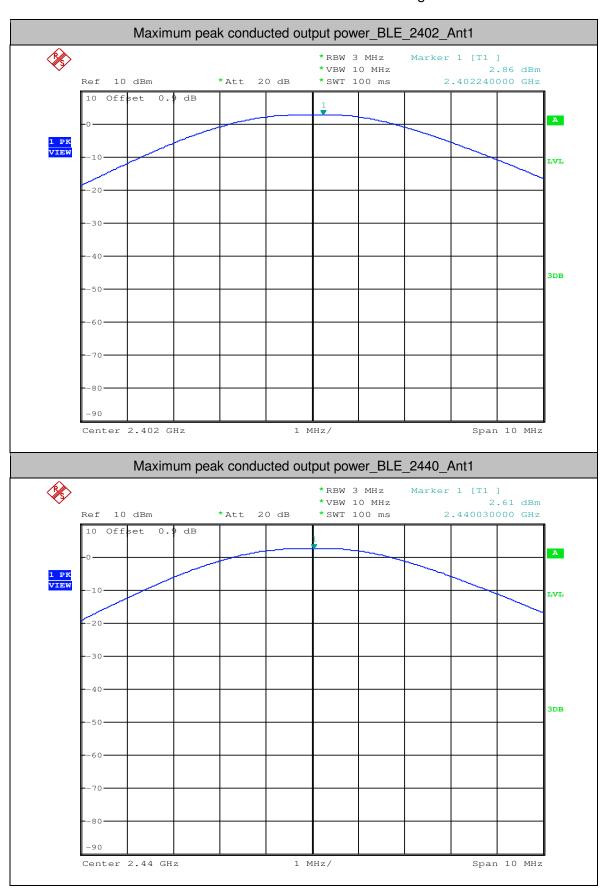
3.Maximum peak conducted output power

Test Mode	Test Channel	Ant	Power[dBm]	Limit[dBm]	Verdict
BLE	2402	Ant1	2.86	<30	PASS
BLE	2440	Ant1	2.61	<30	PASS
BLE	2480	Ant1	2.16	<30	PASS



Report No.: SZEM171001073204

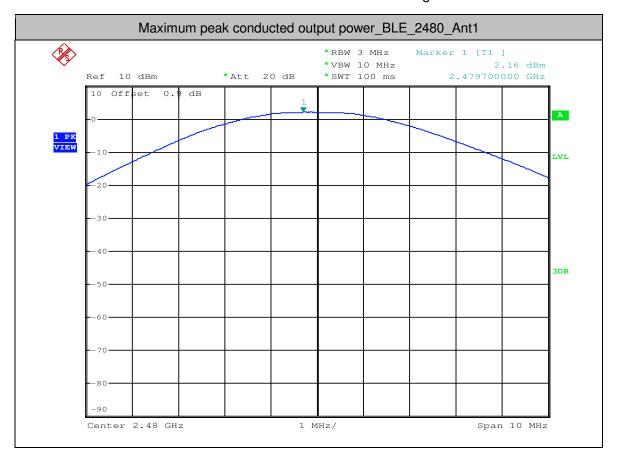
Page: 49 of 61





Report No.: SZEM171001073204

Page: 50 of 61





Report No.: SZEM171001073204

Page: 51 of 61

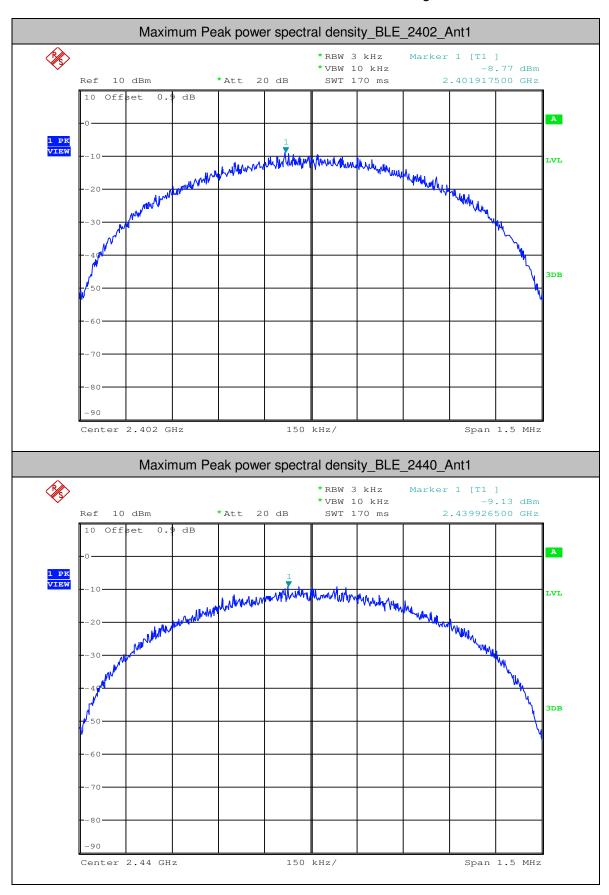
4. Maximum Peak power spectral density

Test Mode	Test Channel	Ant	PSD[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE	2402	Ant1	-8.77	<8.00	PASS
BLE	2440	Ant1	-9.13	<8.00	PASS
BLE	2480	Ant1	-10.07	<8.00	PASS



Report No.: SZEM171001073204

Page: 52 of 61



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



Report No.: SZEM171001073204

Page: 53 of 61





Report No.: SZEM171001073204

Page: 54 of 61

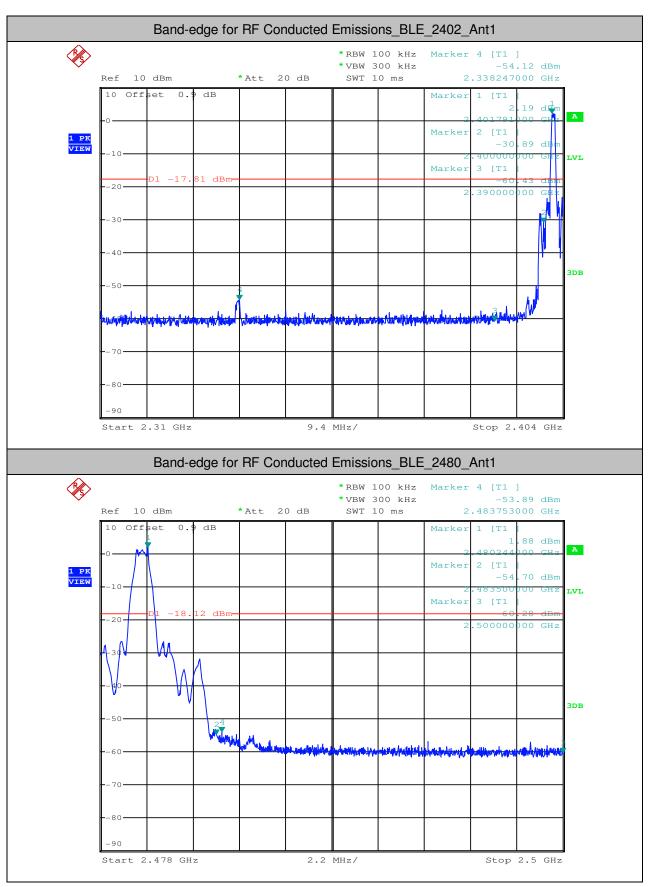
5.Band-edge for RF Conducted Emissions

Test Mode	Test Channel	Ant	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
BLE	2402	Ant1	2.190	-54.121	<-17.81	PASS
BLE	2480	Ant1	1.880	-53.892	<-18.12	PASS



Report No.: SZEM171001073204

Page: 55 of 61



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



Report No.: SZEM171001073204

Page: 56 of 61

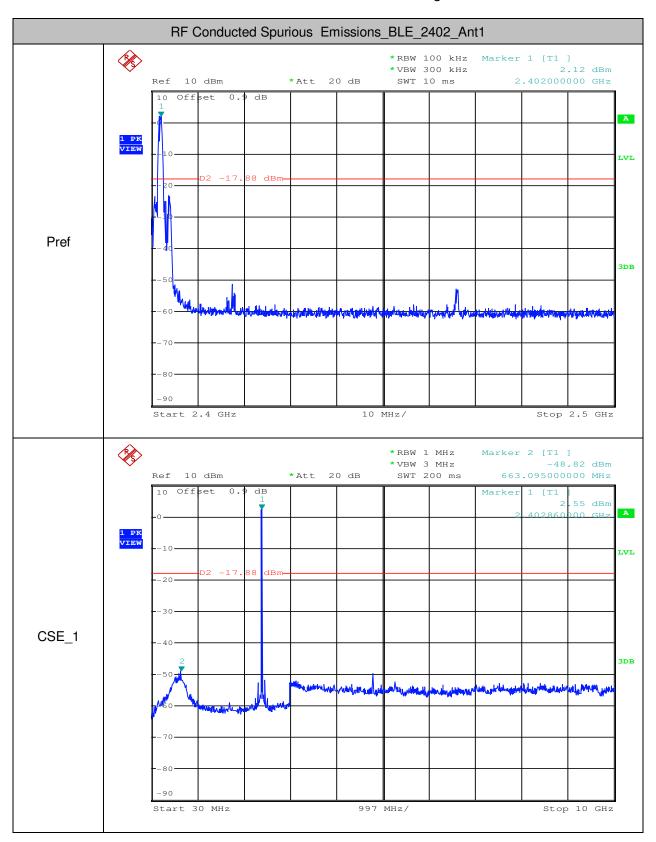
6.RF Conducted Spurious Emissions

Test Mode	Test Channel	StartFre [MHz]	StopFre [MHz]	RBW [kHz]	VBW [kHz]	Pref[dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BLE	2402	30	10000	1000	3000	2.12	-48.820	<- 17.88	PASS
BLE	2402	10000	25000	1000	3000	2.12	-40.640	<- 17.88	PASS
BLE	2440	30	10000	1000	3000	2.28	-49.550	<- 17.72	PASS
BLE	2440	10000	25000	1000	3000	2.28	-40.670	<- 17.72	PASS
BLE	2480	30	10000	1000	3000	1.96	-47.800	<- 18.04	PASS
BLE	2480	10000	25000	1000	3000	1.96	-40.400	<- 18.04	PASS



Report No.: SZEM171001073204

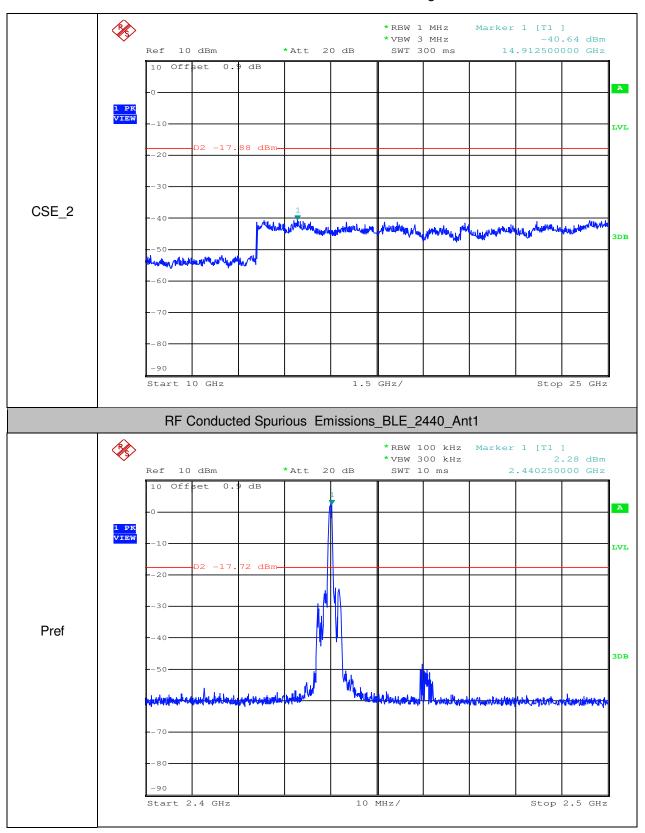
Page: 57 of 61





Report No.: SZEM171001073204

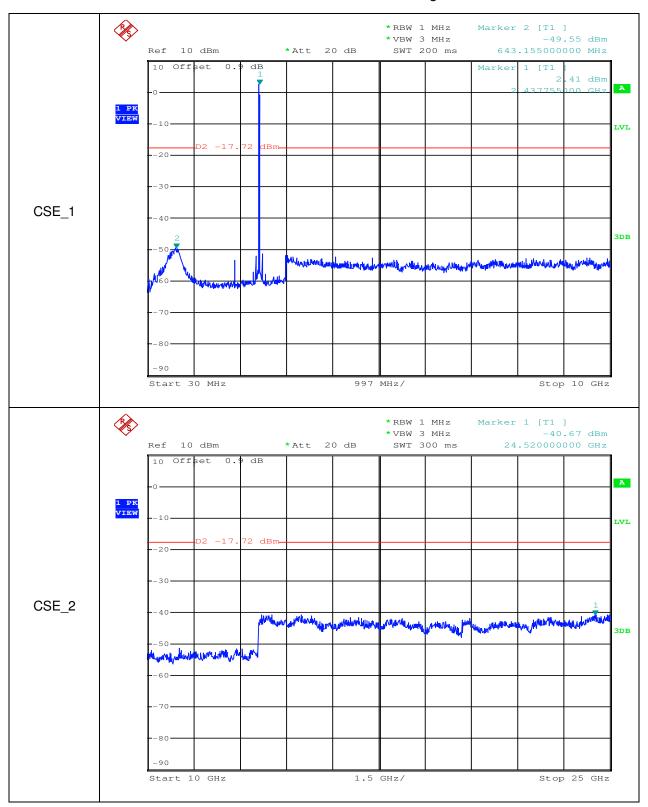
Page: 58 of 61





Report No.: SZEM171001073204

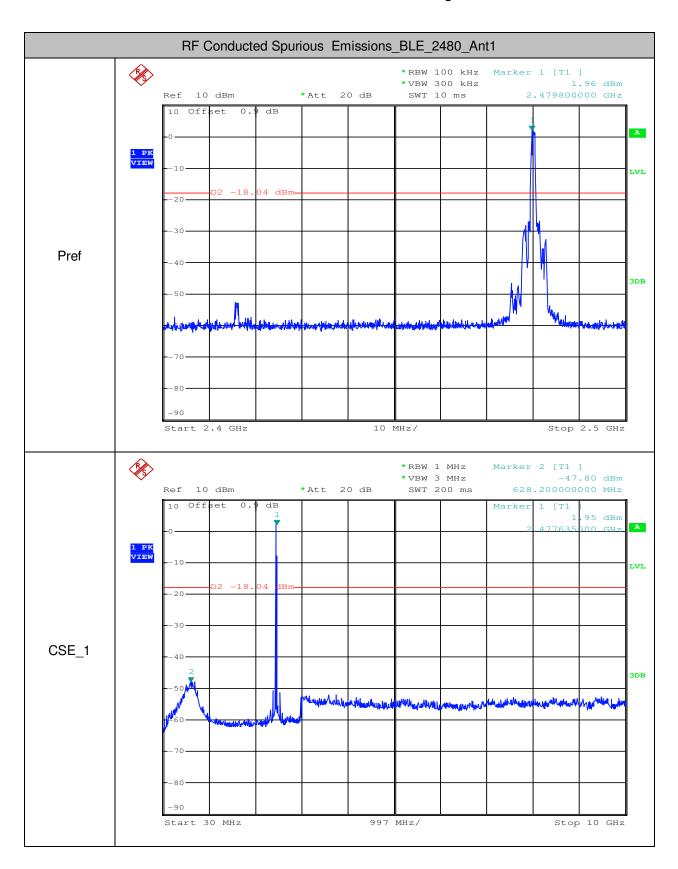
Page: 59 of 61





Report No.: SZEM171001073204

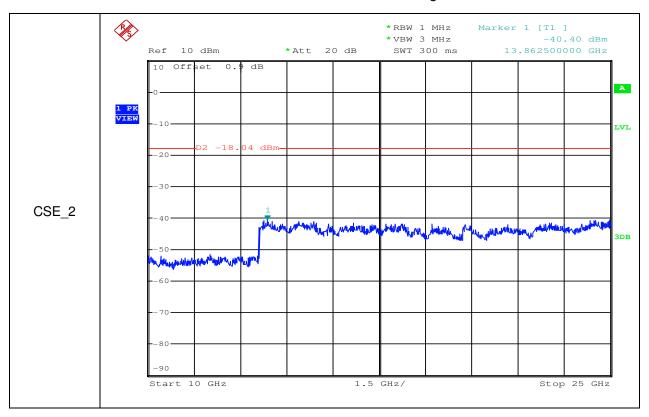
Page: 60 of 61





Report No.: SZEM171001073204

Page: 61 of 61



- End of the Report -