



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

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

Telephone: +86 (0) 755 2601 2053  
Fax: +86 (0) 755 2671 0594  
Email: ee.shenzhen@sgs.com

Report No.: SZEM160900792902  
Page: 1 of 36

## FCC REPORT

**Application No. :** SZEM1609007929CR  
**Applicant:** Winspeed Co., Ltd.  
**Manufacturer:** Winspeed Co., Ltd.  
**Factory:** Winspeed Co., Ltd.  
**Product Name:** STRIKE NX Gamepad - Wireless - for PC (STRIKE NX Gamepad - Wireless - for PS3)  
**Model No.(EUT):** SL-650100-BK-01  
**Add Model No.:** SL-440401-BK-01  
**Trade Mark:** Speedlink  
**FCC ID:** 2AEDNA37  
**Standards:** 47 CFR Part 15, Subpart C (2015)  
**Date of Receipt:** 2016-09-18  
**Date of Test:** 2016-09-22 to 2016-10-20  
**Date of Issue:** 2016-10-24

<b>Test Result:</b>	<b>PASS *</b>
---------------------	---------------

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

Authorized Signature:



Jack Zhang  
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. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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 is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



## 2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2016-10-24		Original

Authorized for issue by:				
Tested By				2016-10-20
				Date
Checked By				2016-10-24
				Date
		(Peter Geng) /Project Engineer		
		(Eric Fu) /Reviewer		



### 3 Test Summary

Test Item	Test Requirement	Test method	Result
<b>Antenna Requirement</b>	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 (2009)	PASS
<b>AC Power Line Conducted Emission</b>	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 (2013)	PASS
<b>Field Strength of the Fundamental Signal</b>	47 CFR Part 15, Subpart C Section 15.249 (a)	ANSI C63.10 (2013)	PASS
<b>Spurious Emissions</b>	47 CFR Part 15, Subpart C Section 15.249 (a)/15.209	ANSI C63.10 (2013)	PASS
<b>Restricted bands around fundamental frequency (Radiated Emission)</b>	47 CFR Part 15, Subpart C Section 15.249(a)/15.205	ANSI C63.10 (2013)	PASS
<b>20dB Occupied Bandwidth</b>	47 CFR Part 15, Subpart C Section 15.215 (c)	ANSI C63.10 (2013)	PASS



## 4 Contents

	Page
<b>1 COVER PAGE.....</b>	<b>1</b>
<b>2 VERSION .....</b>	<b>2</b>
<b>3 TEST SUMMARY .....</b>	<b>3</b>
<b>4 CONTENTS .....</b>	<b>4</b>
<b>5 GENERAL INFORMATION .....</b>	<b>5</b>
5.1 CLIENT INFORMATION .....	5
5.2 GENERAL DESCRIPTION OF EUT .....	5
5.3 TEST ENVIRONMENT AND MODE .....	7
5.4 DESCRIPTION OF SUPPORT UNITS .....	7
5.5 TEST LOCATION .....	7
5.6 TEST FACILITY .....	8
5.7 DEVIATION FROM STANDARDS .....	8
5.8 ABNORMALITIES FROM STANDARD CONDITIONS.....	8
5.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER .....	8
5.10 EQUIPMENT LIST.....	9
<b>6 TEST RESULTS AND MEASUREMENT DATA .....</b>	<b>11</b>
6.1 ANTENNA REQUIREMENT .....	11
6.2 CONDUCTED EMISSIONS .....	12
6.3 RADIATED SPURIOUS EMISSIONS.....	16
6.4 RESTRICTED BANDS AROUND FUNDAMENTAL FREQUENCY.....	26
6.5 20DB BANDWIDTH .....	32
<b>7 PHOTOGRAPHS - EUT TEST SETUP .....</b>	<b>35</b>
7.1 CONDUCTED EMISSION .....	35
7.2 RADIATED EMISSION .....	35
7.3 RADIATED SPURIOUS EMISSION.....	36
<b>8 PHOTOGRAPHS - EUT CONSTRUCTIONAL DETAILS .....</b>	<b>36</b>



## 5 General Information

### 5.1 Client Information

Applicant:	Winspeed Co., Ltd.
Address of Applicant:	14 F-1, No.2, Jian-Ba Rd., Chung-Ho District, New Taipei City, Taiwan
Manufacturer:	Winspeed Co., Ltd.
Address of Manufacturer:	14 F-1, No.2, Jian-Ba Rd., Chung-Ho District, New Taipei City, Taiwan
Factory:	Winspeed Co., Ltd.
Address of Factory:	14 F-1, No.2, Jian-Ba Rd., Chung-Ho District, New Taipei City, Taiwan

### 5.2 General Description of EUT

Product Name:	STRIKE NX Gamepad - Wireless - for PC (STRIKE NX Gamepad - Wireless - for PS3)
Model No.:	SL-650100-BK-01 (for Dongle)
Trade Mark:	Speedlink
Frequency Range:	2412-2475MHz
Modulation Type:	GFSK
Number of Channels:	64
Channel separation	1MHz
Antenna Type:	Integral
Antenna Gain:	0dBi
Power Supply:	DC 5V from PC

Remark:

Model No.: SL-650100-BK-01, SL-440401-BK-01

Only the model SL-650100-BK-01 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models, only different on model number and packaging



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

Report No.: SZEM160900792902

Page : 6 of 36

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	17	2428MHz	33	2444MHz	49	2460MHz
2	2413MHz	18	2429MHz	34	2445MHz	50	2461MHz
3	2414MHz	19	2430MHz	35	2446MHz	51	2462MHz
4	2415MHz	20	2431MHz	36	2447MHz	52	2463MHz
5	2416MHz	21	2432MHz	37	2448MHz	53	2464MHz
6	2417MHz	22	2433MHz	38	2449MHz	54	2465MHz
7	2418MHz	23	2434MHz	39	2450MHz	55	2466MHz
8	2419MHz	24	2435MHz	40	2451MHz	56	2467MHz
9	2420MHz	25	2436MHz	41	2452MHz	57	2468MHz
10	2421MHz	26	2437MHz	42	2453MHz	58	2469MHz
11	2422MHz	27	2438MHz	43	2454MHz	59	2470MHz
12	2423MHz	28	2439MHz	44	2455MHz	60	2471MHz
13	2424MHz	29	2440MHz	45	2456MHz	61	2472MHz
14	2425MHz	30	2441MHz	46	2457MHz	62	2473MHz
15	2426MHz	31	2442MHz	47	2458MHz	63	2474MHz
16	2427MHz	32	2443MHz	48	2459MHz	64	2475MHz

## Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel(CH1)	2412MHz
The Middle channel(CH29)	2440MHz
The Highest channel(CH64)	2475MHz



### 5.3 Test Environment and Mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1005 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.

### 5.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
Laptop	Lenovo	T430u
Router	NETGEAR	DGN2200
Mouse	Lenovo	MO28UOA

### 5.5 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.



## 5.6 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 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- **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.

## 5.7 Deviation from Standards

None.

## 5.8 Abnormalities from Standard Conditions

None.

## 5.9 Other Information Requested by the Customer

None.





## 5.10 Equipment List

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2016-05-13	2017-05-13
2	LISN	Rohde & Schwarz	ENV216	SEM007-01	2016-10-09	2017-10-09
3	LISN	ETS-LINDGREN	3816/2	SEM007-02	2016-04-25	2017-04-25
4	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	EMC0120	2016-09-28	2017-09-28
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	EMC0121	2016-09-28	2017-09-28
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	EMC0122	2016-09-28	2017-09-28
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2016-04-25	2017-04-25
8	DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2016-10-09	2017-10-09

RF connected test						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2016-10-09	2017-10-09
2	Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2016-10-09	2017-10-09
3	Signal Generator	Rohde & Schwarz	SML03	SEM006-02	2016-04-25	2017-04-25
4	Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2016-10-09	2017-10-09



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

Report No.: SZEM160900792902

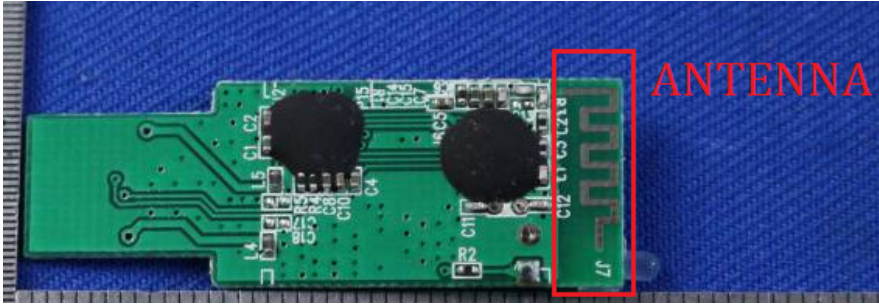
Page : 10 of 36

<b>RE in Chamber</b>						
<b>Item</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal. date (yyyy-mm-dd)</b>	<b>Cal.Due date (yyyy-mm-dd)</b>
1	10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2016-05-13	2017-05-13
2	EMI Test Receiver (9k-3GHz)	Rohde & Schwarz	ESCI	SEM004-01	2016-04-25	2017-04-25
3	Trilog-Broadband Antenna(30M-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-29
4	Pre-amplifier	Sonoma Instrument Co	310N	SEM005-03	2016-07-06	2017-07-06
5	Loop Antenna	ETS-Lindgren	6502	SEM003-08	2015-08-14	2018-08-14

<b>RE in Chamber</b>						
<b>Item</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal. date (yyyy-mm-dd)</b>	<b>Cal.Due date (yyyy-mm-dd)</b>
1	3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2016-05-13	2017-05-13
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEM004-04	2016-04-25	2017-04-25
3	BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-02	2014-11-15	2017-11-15
4	Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2016-10-09	2017-10-09
5	Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2015-06-14	2018-06-14
6	Horn Antenna (18-26GHz)	ETS-Lindgren	3160	SEM003-12	2014-11-24	2017-11-24
7	Horn Antenna(26GHz-40GHz)	A.H.Systems, inc.	SAS-573	SEM003-13	2015-02-12	2018-02-12
8	Low Noise Amplifier	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2016-10-09	2017-10-09
9	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A

## 6 Test results and Measurement Data

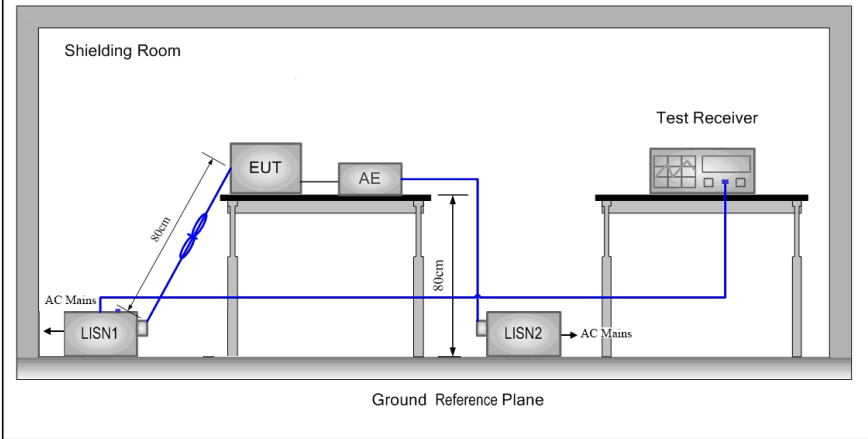
### 6.1 Antenna Requirement

<b>Standard requirement:</b>	47 CFR Part 15C Section 15.203
<p>15.203 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.</p>	
<b>EUT Antenna:</b>	
<p>The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.</p>	



## 6.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		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.			
Test Procedure:	<ol style="list-style-type: none"> <li>1) The mains terminal disturbance voltage test was conducted in a shielded room.</li> <li>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω 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.</li> <li>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,</li> <li>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.</li> <li>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: 2013 on conducted measurement.</li> </ol>		

<p>Test Setup:</p>	
<p>Test Mode:</p>	<p>Transmitting mode</p>
<p>Instruments Used:</p>	<p>Refer to section 5.10 for details</p>
<p>Test Results:</p>	<p>Pass</p>

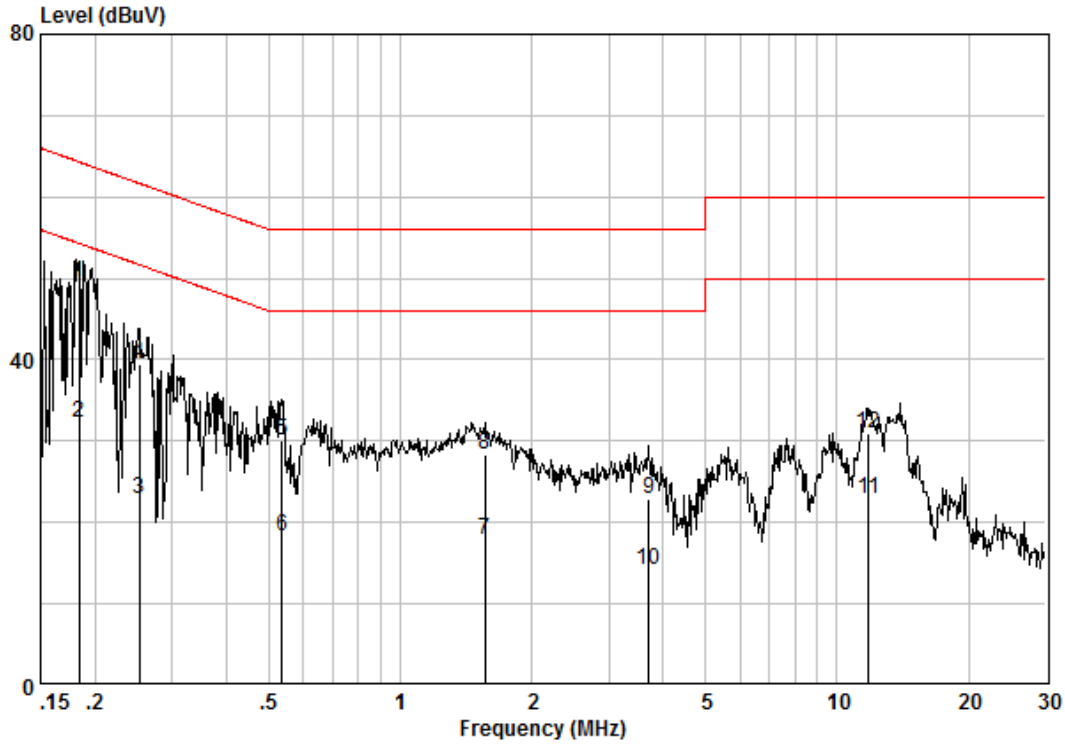
**Measurement Data**

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.



Live Line:

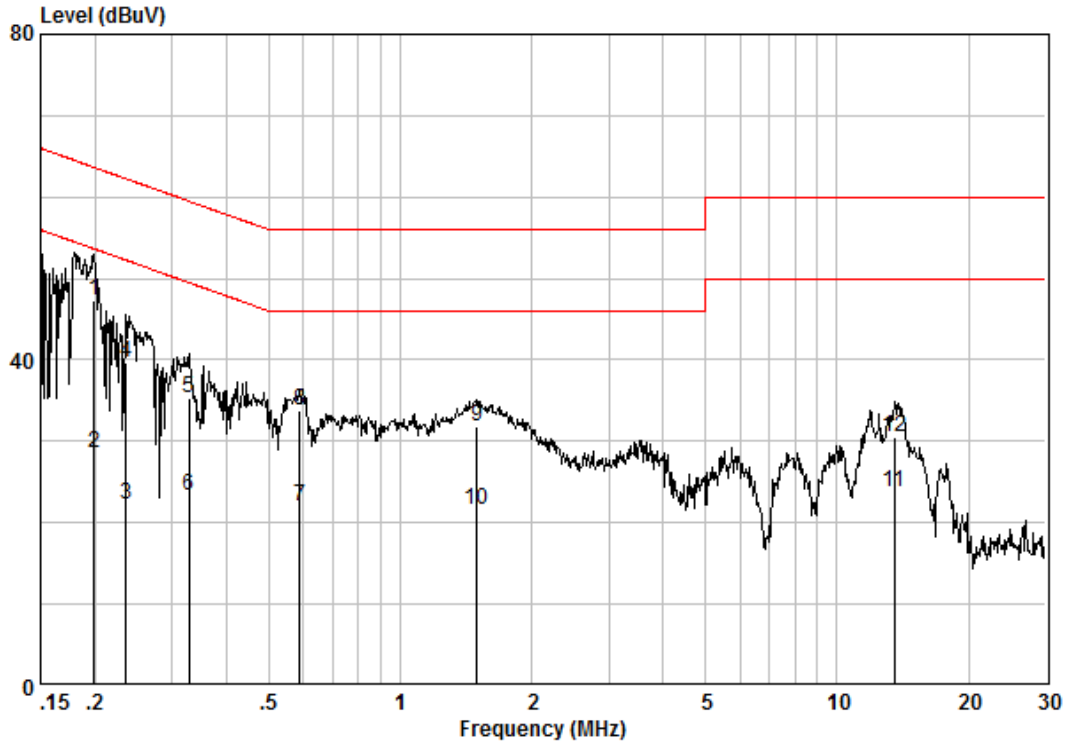


Site : Shielding Room  
Condition : CE LINE  
Job.No : 7929CR  
Test Mode : TX

	Freq	Cable Loss	LISN Factor	Read Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dB	
1 @	0.18346	0.02	9.60	39.79	49.41	64.33	-14.92 QP
2	0.18346	0.02	9.60	22.56	32.18	54.33	-22.15 AVERAGE
3	0.25211	0.02	9.60	13.32	22.94	51.69	-28.75 AVERAGE
4	0.25211	0.02	9.60	29.92	39.54	61.69	-22.15 QP
5	0.53498	0.02	9.60	20.56	30.18	56.00	-25.82 QP
6	0.53498	0.02	9.60	8.76	18.38	46.00	-27.62 AVERAGE
7	1.560	0.03	9.59	8.32	17.94	46.00	-28.06 AVERAGE
8	1.560	0.03	9.59	18.75	28.36	56.00	-27.64 QP
9	3.700	0.02	9.63	13.25	22.90	56.00	-33.10 QP
10	3.700	0.02	9.63	4.44	14.09	46.00	-31.91 AVERAGE
11	11.807	0.15	9.73	12.98	22.86	50.00	-27.14 AVERAGE
12	11.807	0.15	9.73	20.99	30.86	60.00	-29.14 QP



Neutral Line:



Site : Shielding Room  
 Condition : CE NEUTRAL  
 Job.No : 7929CR  
 Test Mode : TX

	Freq	Cable Loss	LISN Factor	Read Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dB	
1 @	0.19863	0.02	9.62	37.71	63.67	-16.31	QP
2	0.19863	0.02	9.62	18.99	53.67	-25.04	AVERAGE
3	0.23533	0.02	9.61	12.67	52.26	-29.96	AVERAGE
4	0.23533	0.02	9.61	30.12	62.26	-22.50	QP
5	0.32858	0.02	9.62	25.58	59.49	-24.26	QP
6	0.32858	0.02	9.62	13.60	49.49	-26.25	AVERAGE
7	0.58851	0.02	9.63	12.30	46.00	-24.05	AVERAGE
8	0.58851	0.02	9.63	24.20	56.00	-22.15	QP
9	1.495	0.03	9.64	22.22	56.00	-24.11	QP
10	1.495	0.03	9.64	11.99	46.00	-24.33	AVERAGE
11	13.551	0.15	9.87	13.66	50.00	-26.32	AVERAGE
12	13.551	0.15	9.87	20.41	60.00	-29.56	QP

Notes:

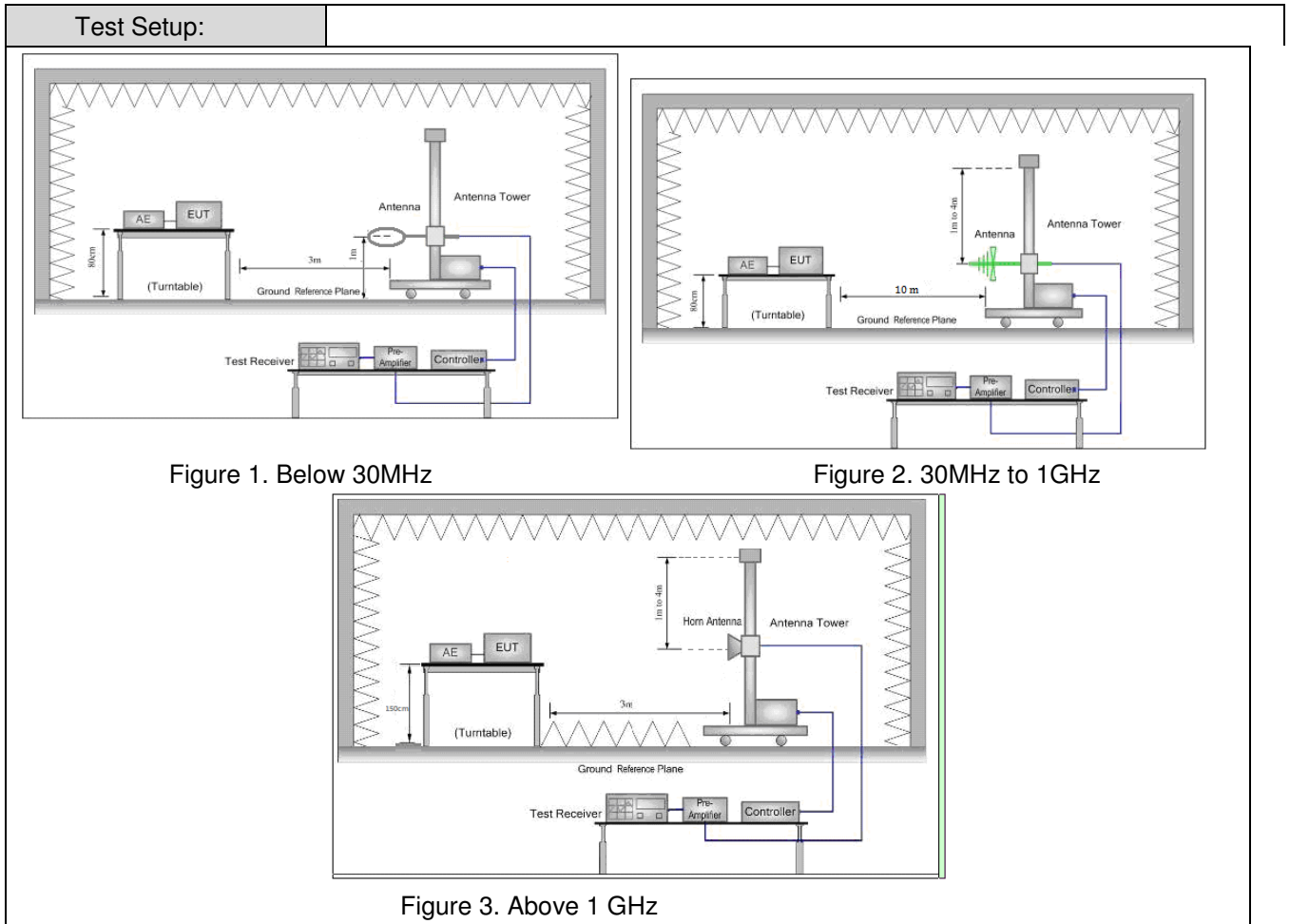
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.



### 6.3 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.249 and 15.209				
Test Method:	ANSI C63.10: 2013				
Test Site:	Measurement Distance: 10m (Semi-Anechoic Chamber) Measurement Distance: 3m (Fully-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Peak		1MHz	10Hz	Average	
Limit: (Spurious Emissions)	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3	
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.					
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)		Remark	
	2400MHz-2483.5MHz	94.0		Average Value	
114.0		Peak Value			





<p><b>Test Procedure:</b></p>	<ol style="list-style-type: none"> <li>For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>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.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>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.</li> <li>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.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>If the emission level of the EUT in peak mode was 10dB lower than the</li> </ol>
-------------------------------	--



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

Report No.: SZEM160900792902

Page : 18 of 36

	<p>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.</p> <p>h. Test the EUT in the lowest channel,the middle channel,the Highest channel</p> <p>i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case.</p> <p>j. Repeat above procedures until all frequencies measured was complete.</p>
Exploratory Test Mode:	Transmitting mode.
Final Test Mode:	Pretest the EUT at Transmitting mode. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass



**Measurement Data**

**6.3.1 Field Strength Of The Fundamental Signal**

Peak value:

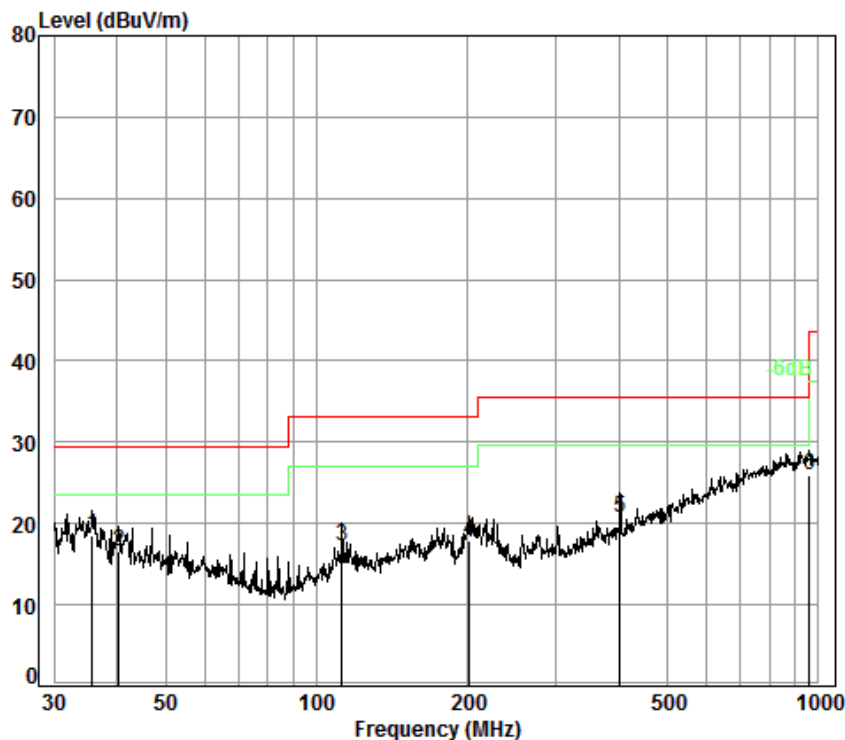
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2412.149	29.14	5.35	38.15	85.42	81.76	114.00	-32.24	Horizontal
2412.149	29.14	5.35	38.15	79.93	76.27	114.00	-37.73	Vertical
2440.072	29.23	5.38	38.15	85.22	81.68	114.00	-32.32	Horizontal
2440.152	29.23	5.38	38.15	78.28	74.74	114.00	-39.26	Vertical
2475.104	29.33	5.40	38.15	83.91	80.49	114.00	-33.51	Horizontal
2475.074	29.33	5.40	38.15	77.48	74.06	114.00	-39.94	Vertical



6.3.2 Spurious Emissions

30MHz~1GHz		
Test mode:	Transmitting mode	Vertical

QP value:



Condition: 10m VERTICAL

Job No. : 7929CR

Test Mode: TX mode

: Dongle

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	35.75	6.72	12.75	32.98	32.00	18.49	29.50	-11.01
2	40.42	6.80	13.28	32.99	29.44	16.53	29.50	-12.97
3	112.52	7.26	10.66	32.78	31.99	17.13	33.10	-15.97
4	202.10	7.61	9.34	32.70	33.59	17.84	33.10	-15.26
5	401.84	8.30	14.91	32.60	30.10	20.71	35.60	-14.89
6 pp	958.79	9.60	22.76	32.50	26.13	25.99	35.60	-9.61

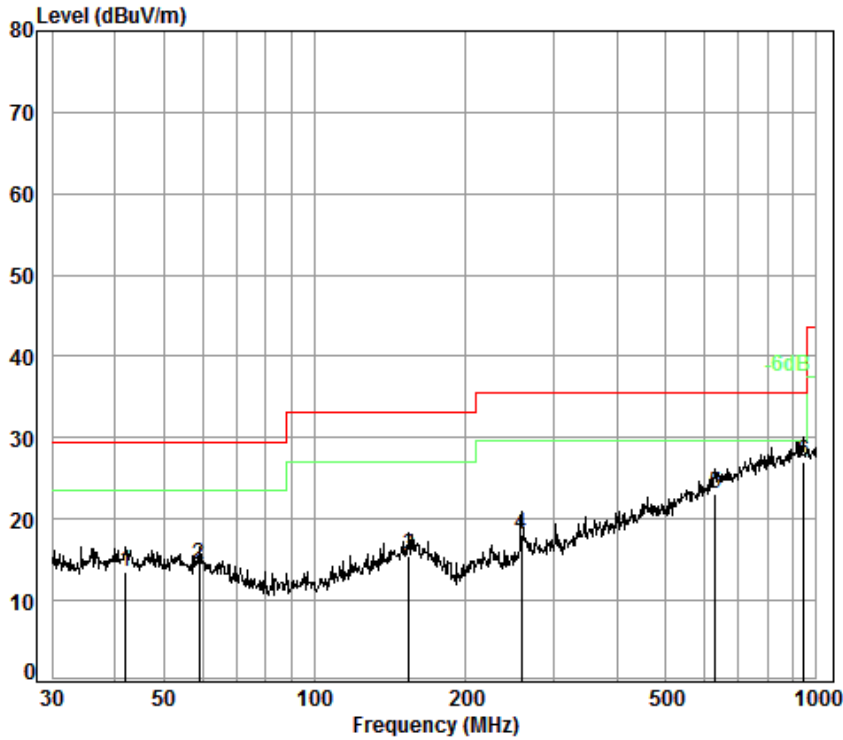


# SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

Report No.: SZEM160900792902

Page : 21 of 36

Test mode:	Transmitting mode	Horizontal
------------	-------------------	------------



Condition: 10m Horizontal

Job No. : 7929CR

Test Mode: TX mode

: Dongle

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	42.01	6.80	13.15	32.99	26.51	13.47	29.50	-16.03
2	58.82	7.00	12.09	32.95	28.33	14.47	29.50	-15.03
3	154.28	7.47	13.40	32.74	27.25	15.38	33.10	-17.72
4	258.33	7.90	11.44	32.64	31.29	17.99	35.60	-17.61
5	629.48	8.97	19.28	32.60	27.48	23.13	35.60	-12.47
6 pp	942.13	9.56	22.68	32.50	27.25	26.99	35.60	-8.61



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

Report No.: SZEM160900792902

Page : 22 of 36

## Below 1GHz

The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

$$L_3 / L_{10} = D_{10} / D_3$$

Note:

L<sub>3</sub>: Level @ 3m distance. Unit: uV/m;

L<sub>10</sub>: Level @ 10m distance. Unit: uV/m;

D<sub>3</sub>: 3m distance. Unit: m

D<sub>10</sub>: 10m distance. Unit: m

The level at 3m test distance is below:

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 3m (uV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Ant. Polarization
35.75	18.49	8.40	28.01	28.95	40.00	-11.05	V
40.42	16.53	6.71	22.36	26.99	40.00	-13.01	V
112.52	17.13	7.19	23.95	27.59	43.50	-15.91	V
202.10	17.84	7.80	25.99	28.30	43.50	-15.20	V
401.84	20.71	10.85	36.17	31.17	46.00	-14.83	V
958.79	25.99	19.93	66.43	36.45	46.00	-9.55	V
42.01	13.47	4.72	15.72	23.93	40.00	-16.07	H
58.82	14.47	5.29	17.64	24.93	40.00	-15.07	H
154.28	15.38	5.87	19.58	25.84	43.50	-17.66	H
258.33	17.99	7.93	26.45	28.45	46.00	-17.55	H
629.48	23.13	14.34	47.79	33.59	46.00	-12.41	H
942.13	26.99	22.36	74.54	37.45	46.00	-8.55	H



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

Report No.: SZEM160900792902

Page : 23 of 36

Above 1GHz									
Test mode:		Transmitting		Test channel:		Lowest		Remark:	
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
3626.104	32.57	7.68	38.53	44.98	46.70	74.00	-27.30	Vertical	
4824.000	34.19	8.90	39.04	48.45	52.50	74.00	-21.50	Vertical	
6043.124	34.74	10.50	38.97	44.87	51.14	74.00	-22.86	Vertical	
7236.000	36.40	10.69	38.15	46.11	55.05	74.00	-18.95	Vertical	
9648.000	37.53	12.52	36.97	39.88	52.96	74.00	-21.04	Vertical	
12137.940	38.68	14.45	38.44	39.02	53.71	74.00	-20.29	Horizontal	
3631.354	32.59	7.68	38.53	44.96	46.70	74.00	-27.30	Horizontal	
4824.000	34.19	8.90	39.04	62.41	66.46	74.00	-7.54	Horizontal	
6069.413	34.76	10.47	38.96	44.89	51.16	74.00	-22.84	Horizontal	
7236.000	36.40	10.69	38.15	42.83	51.77	74.00	-22.23	Horizontal	

Test mode:		Transmitting		Test channel:		Lowest		Remark:	
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
7236.000	36.40	10.69	38.15	38.25	47.19	54.00	-6.81	Vertical	
4824.000	34.19	8.90	39.04	44.59	48.64	54.00	-5.36	Horizontal	

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



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

Report No.: SZEM160900792902

Page : 24 of 36

Test mode:		Transmitting		Test channel:		Middle		Remark:		Peak
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
3842.163	33.18	7.76	38.63	44.90	47.21	74.00	-26.79	Vertical		
4880.000	34.29	8.97	39.06	49.56	53.76	74.00	-20.24	Vertical		
6184.658	34.85	10.32	38.88	44.37	50.66	74.00	-23.34	Vertical		
7320.000	36.37	10.72	38.07	41.79	50.81	74.00	-23.19	Vertical		
9760.000	37.55	12.58	36.92	38.89	52.10	74.00	-21.90	Vertical		
12226.070	38.74	14.37	38.53	38.56	53.14	74.00	-20.86	Horizontal		
3960.700	33.50	7.80	38.68	45.71	48.33	74.00	-25.67	Horizontal		
4880.000	34.29	8.97	39.06	61.59	65.79	74.00	-8.21	Horizontal		
6193.614	34.86	10.31	38.88	44.96	51.25	74.00	-22.75	Horizontal		
7320.000	36.37	10.72	38.07	42.09	51.11	74.00	-22.89	Horizontal		

Test mode:		Transmitting		Test channel:		Middle		Remark:		Average
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
4880.000	34.29	8.97	39.06	43.70	47.90	54.00	-6.10	Horizontal		





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

Report No.: SZEM160900792902

Page : 25 of 36

Test mode:		Transmitting		Test channel:		Highest		Remark:		Peak
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
3615.625	32.54	7.67	38.52	43.95	45.64	74.00	-28.36	Vertical		
4950.000	34.41	9.07	39.08	49.47	53.87	74.00	-20.13	Vertical		
6292.980	34.94	10.18	38.81	45.60	51.91	74.00	-22.09	Vertical		
7425.000	36.33	10.76	37.96	47.49	56.62	74.00	-17.38	Vertical		
9900.000	37.58	12.66	36.85	38.89	52.28	74.00	-21.72	Vertical		
12243.770	38.75	14.36	38.55	38.74	53.30	74.00	-20.70	Horizontal		
3786.970	33.03	7.74	38.60	45.33	47.50	74.00	-26.50	Horizontal		
4950.000	34.41	9.07	39.08	56.50	60.90	74.00	-13.10	Horizontal		
6051.874	34.74	10.49	38.97	44.81	51.07	74.00	-22.93	Horizontal		
7425.000	36.33	10.76	37.96	42.14	51.27	74.00	-22.73	Horizontal		

Test mode:		Transmitting		Test channel:		Highest		Remark:		Average
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
7425.000	36.33	10.76	37.96	33.19	42.32	54.00	-11.68	Vertical		
4950.000	34.41	9.07	39.08	40.26	44.66	54.00	-9.34	Horizontal		

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Pre-amplifier. The basic equation with a sample calculation is as follows:  
 Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Pre-amplifier Factor
- 2) Scan from 9kHz to 25GHz, The disturbance above 13GHz 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 above measurement data were shown in the report.

### 6.4 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10: 2013		
Test Site:	Measurement Distance: 3m (Fully-Anechoic Chamber)		
Limit(band edge):	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.		
	Frequency	Limit (dBuV/m @3m)	Remark
	30MHz-88MHz	40.0	Quasi-peak Value
	88MHz-216MHz	43.5	Quasi-peak Value
	216MHz-960MHz	46.0	Quasi-peak Value
	960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value	
	74.0	Peak Value	

Test Setup:

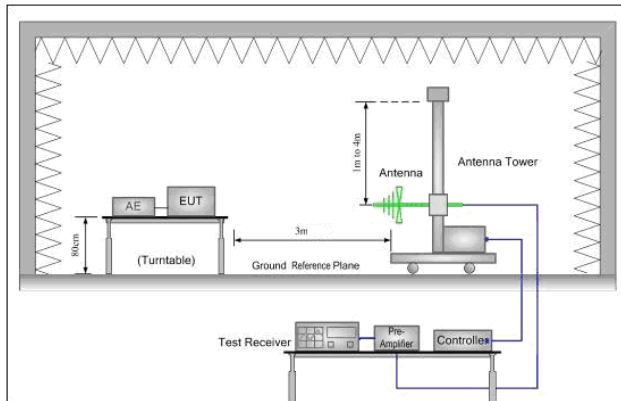


Figure 1. 30MHz to 1GHz

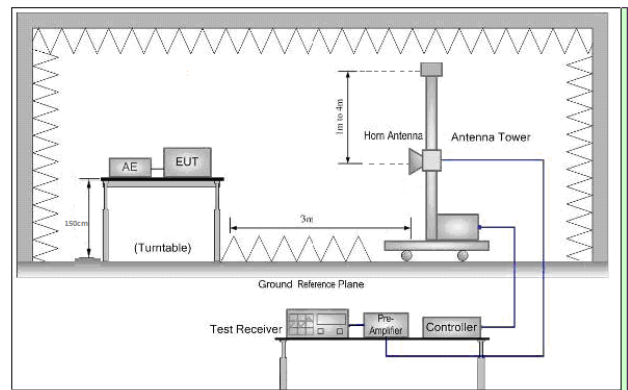


Figure 2. Above 1 GHz



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

Report No.: SZEM160900792902

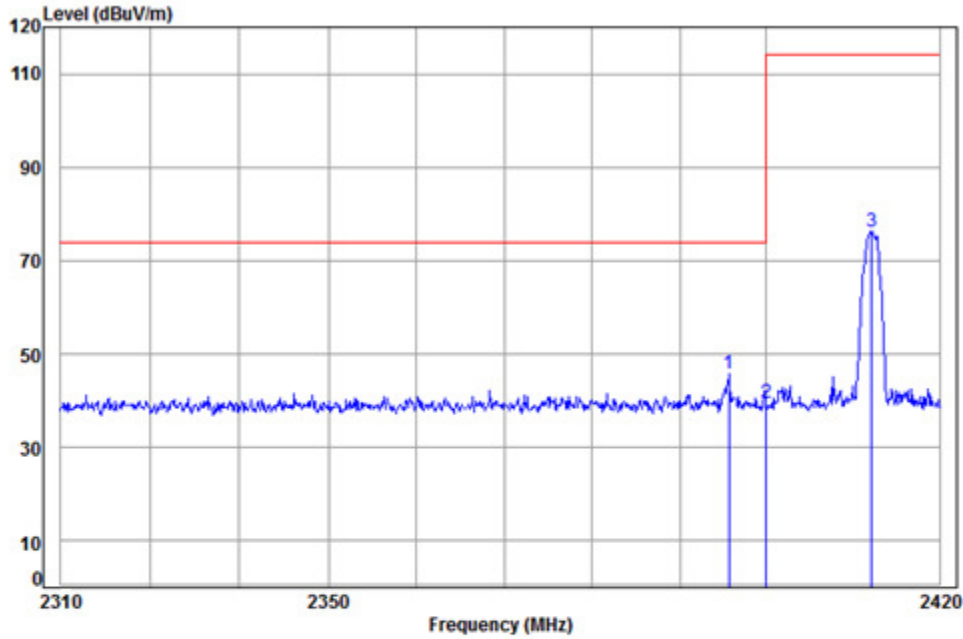
Page : 27 of 36

Test Procedure:	<ol style="list-style-type: none"><li>a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li><li>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.</li><li>c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li><li>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.</li><li>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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</li><li>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li><li>g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel</li><li>h. Test the EUT in the lowest channel , the Highest channel</li><li>i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.</li><li>j. Repeat above procedures until all frequencies measured was complete.</li></ol>
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Pretest the EUT at Transmitting mode. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass



Test plot as follows:

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak	Vertical
------------	--------------	---------------	--------	---------	------	----------



Condition: 3m Vertical  
Job No: : 7929CR  
Mode: : 2412 Band edge  
: Dongle

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	pp 2395.614	5.34	29.09	38.14	49.64	45.93	74.00	-28.07	
2	2400.000	5.34	29.11	38.14	43.22	39.53	74.00	-34.47	
3	2412.149	5.35	29.14	38.15	79.93	76.27	114.00	-37.73	

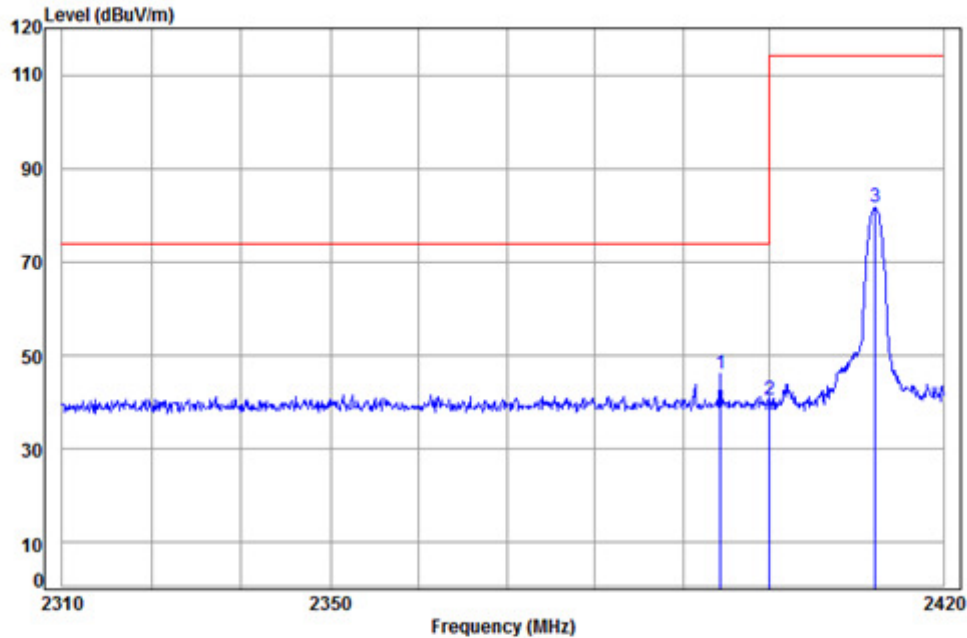


# SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

Report No.: SZEM160900792902

Page : 29 of 36

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak	Horizontal
------------	--------------	---------------	--------	---------	------	------------



Condition: 3m HORIZONTAL  
 Job No: : 7929CR  
 Mode: : 2412 Band edge  
 : Dongle

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	pp 2394.300	5.34	29.09	38.14	49.86	46.15	74.00	-27.85	
2	2400.000	5.34	29.11	38.14	44.08	40.39	74.00	-33.61	
3	2412.149	5.35	29.14	38.15	85.42	81.76	114.00	-32.24	

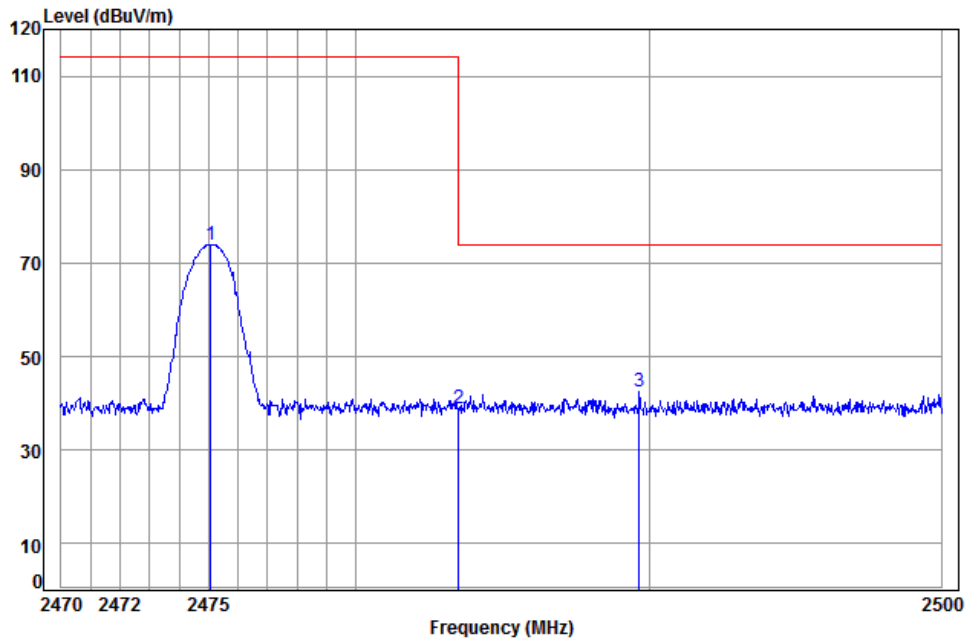


# SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

Report No.: SZEM160900792902

Page : 30 of 36

Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak	Vertical
------------	--------------	---------------	---------	---------	------	----------

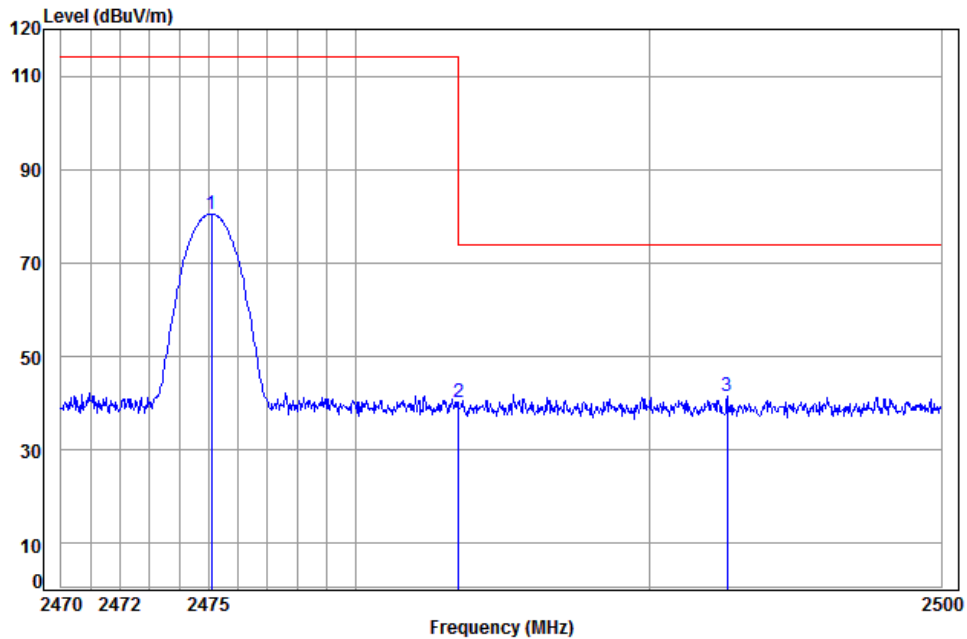


Condition: 3m VERTICAL  
 Job No: : 7929CR  
 Mode: : 2475 Band edge  
 : Dongle

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2475.074	5.40	29.33	38.15	77.48	74.06	114.00 -39.94
2	2483.500	5.41	29.35	38.15	42.39	39.00	74.00 -35.00
3	pp 2489.669	5.41	29.37	38.15	45.95	42.58	74.00 -31.42



Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak	Horizontal
------------	--------------	---------------	---------	---------	------	------------



Condition: 3m HORIZONTAL  
Job No: : 7929CR  
Mode: : 2475 Band edge  
: Dongle

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2475.104	5.40	29.33	38.15	83.91	80.49	114.00 -33.51
2	2483.500	5.41	29.35	38.15	43.68	40.29	74.00 -33.71
3	pp 2492.677	5.41	29.38	38.15	44.81	41.45	74.00 -32.55

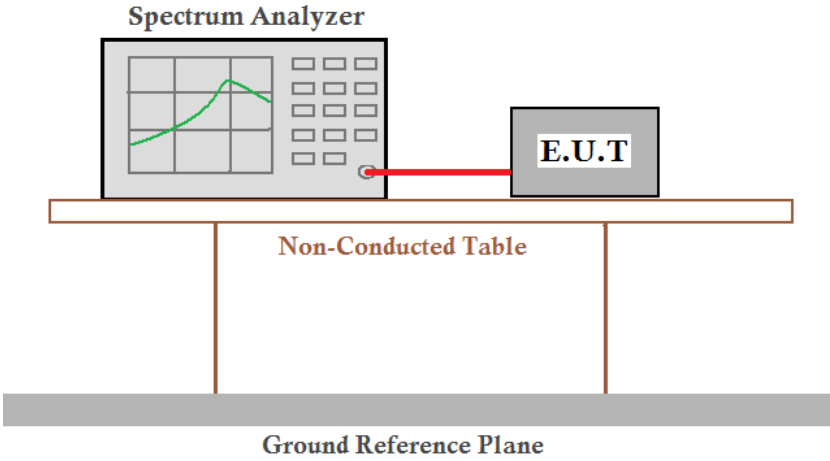
**Note:**

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation

with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

### 6.5 20dB Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.215
Test Method:	ANSI C63.10:2013
Test Setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Limit:	N/A
Exploratory Test Mode:	Transmitter mode
Final Test Mode:	Transmitter mode
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

#### Measurement Data

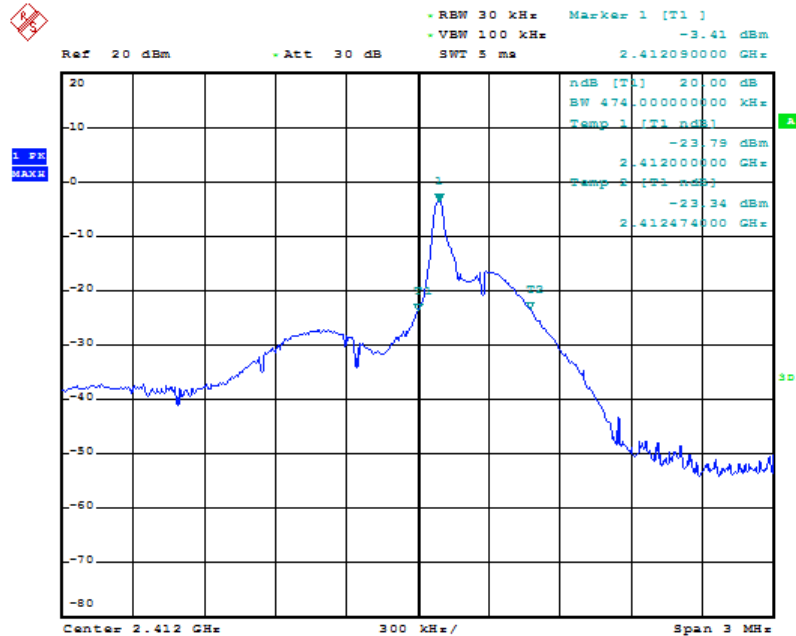
Test Channel	20dB bandwidth (MHz)	Results
Lowest	0.474	Pass
Middle	0.468	Pass
Highest	0.450	Pass



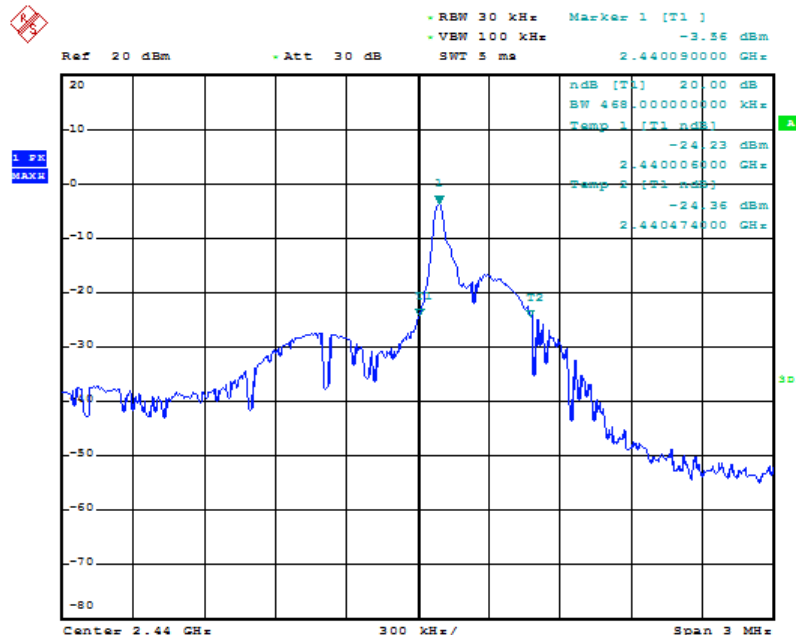


Test plot as follows:

Test channel:	Lowest
---------------	--------

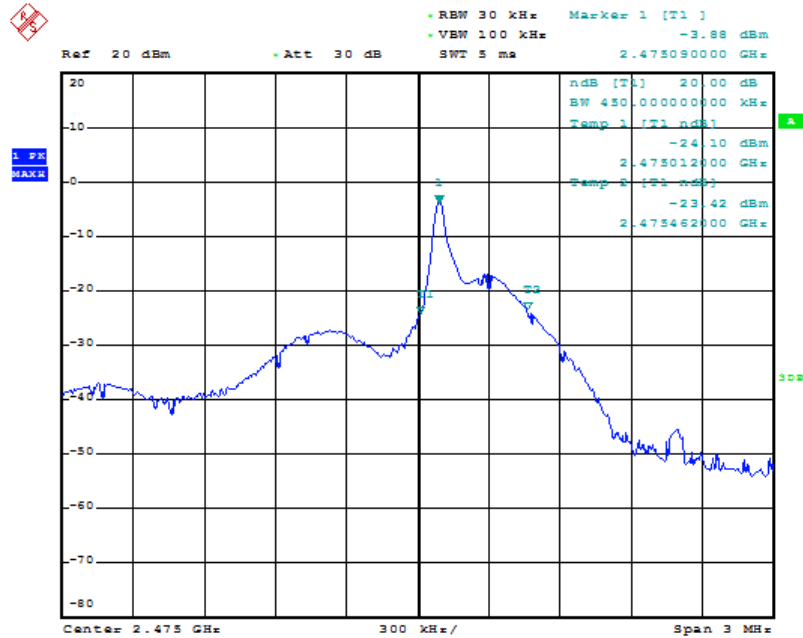


Test channel:	Middle
---------------	--------





Test channel:	Highest
---------------	---------



## 7 Photographs - EUT Test Setup

Test model No.: SL-650100-BK-01 (for Dongle)

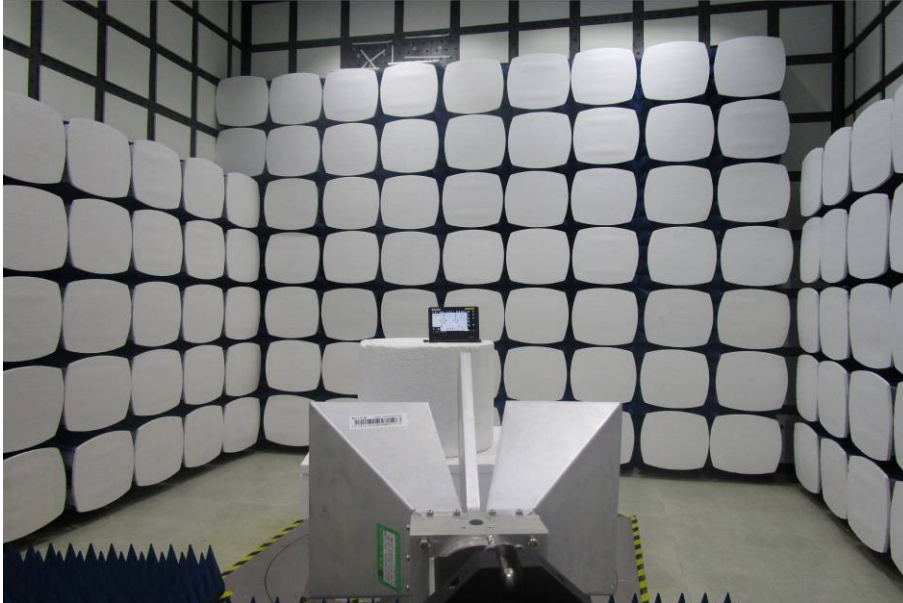
### 7.1 Conducted Emission



### 7.2 Radiated Emission



### 7.3 Radiated Spurious Emission



## 8 Photographs - EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1609007929CR.