SGS-CSTC Standards Technical Services Ltd.
Shenzhen Branch

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

FCC REPORT

Application No. :	SZEM1603001903CR
Applicant:	Xi'an Skye Intelligence Technology Co., Ltd.
Manufacturer:	Xi'an Skye Intelligence Technology Co., Ltd.
Factory:	Xi'an Skye Intelligence Technology Co., Ltd.
Product Name:	Tracker
Model No.(EUT):	TR2
Trade Mark:	Skye Intelligence
FCC ID:	2AHTB-20151012
Standards:	47 CFR Part 15, Subpart F (2015)
Date of Receipt:	2016-05-05
Date of Test:	2016-05-06 to 2016-05-31
Date of Issue:	2016-06-03
Test Result:	**PASS ***

* 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.

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2 Version

Revision Record				
Version	***Chapter***	***Date***	***Modifier***	***Remark***
00		2016-06-03		*Original*

Authorized for issue by:				
Tested By		Hank yan. **(Hank yan) /Project Engineer**		2016-05-10 **Date**
Prepared By		Joyce Shi **(Joyce Shi) /Clerk**		2016-06-03 **Date**
Checked By		Eric Fu **(Eric Fu) /Reviewer**		2016-06-03 **Date**

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3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203 & Subpart F Section 15.519 (a)(2)	ANSI C63.10 (2013)	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 (2013)	PASS
UWB Bandwidth	47 CFR Part 15, Subpart F Section 15.503 (a)	ANSI C63.10 (2013)	PASS
Dwell Time	47 CFR Part 15, Subpart F Section 15.519 (a)(1)	ANSI C63.10 (2013)	PASS
Spurious Emissions	47 CFR Part 15, Subpart F Section 15.519 (c)(d)/15.209	ANSI C63.10 (2013)	PASS
EIRP	47 CFR Part 15, Subpart F Section 15.519 (e)	ANSI C63.10 (2013)	PASS

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5 General Information

5.1 Client Information

Applicant:	Xi'an Skye Intelligence Technology Co., Ltd.
Address of Applicant:	Room 504 Block E, GLP I-Park, 211 Tiangu #8 Road, High-tech Zone, Xi'an 710077, China
Manufacturer:	Xi'an Skye Intelligence Technology Co., Ltd.
Address of Manufacturer:	Room 504 Block E, GLP I-Park, 211 Tiangu #8 Road, High-tech Zone, Xi'an 710077, China
Factory:	Xi'an Skye Intelligence Technology Co., Ltd.
Address of Factory:	Room 504 Block E, GLP I-Park, 211 Tiangu #8 Road, High-tech Zone, Xi'an 710077, China

5.2 General Description of EUT

Name:	Tracker	
Model No.:	TR2	
Frequency Range:	3.5GHz, 4.0GHz, 4.5GHz	
Modulation Type:	BPM/BPSK	
Number of Channels:	3 (declared by the client)	
Sample Type:	Portable production(mobile production ;fixed production)	
Antenna Type:	Integral	
Antenna Gain:	0dBi	
Power Supply:	Battery:	DC3.7V Li-ion Battery
Test Voltage:	AC 120V/60Hz	

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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)	3.5GHz
The Middle channel(CH2)	4.0GHz
The Highest channel(CH3)	4.5GHz

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5.3 Test Environment and Mode

Operating Environment:	
Temperature:	25.6 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with modulation.

5.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
Adapter	Apple	A1357 W010A051
Micro USB Cable	PHILIPS	SWR2101

5.5 Test Location

All tests were performed at:

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

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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.

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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	2016-04-13	2017-04-13
2	LISN	Rohde & Schwarz	ENV216	SEM007-01	2015-10-09	2016-10-09
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	2015-08-30	2016-08-30
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	EMC0121	2015-08-30	2016-08-30
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	EMC0122	2015-08-30	2016-08-30
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	2015-10-09	2016-10-09

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RE in Chamber						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. date (yyyy-mm-dd)**	**Cal.Due date (yyyy-mm-dd)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2016-04-13	2017-04-13
2	EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2015-09-16	2016-09-16
3	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2014-11-01	2017-11-01
4	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEM003-11	2015-10-17	2018-10-17
5	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEM003-12	2014-11-24	2017-11-24
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2016-04-25	2017-04-25
7	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A
8	DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2015-10-09	2016-10-09
9	Loop Antenna	Beijing Daze	ZN30401	SEM003-09	2015-05-13	2018-05-13

RE in Chamber						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. date (yyyy-mm-dd)**	**Cal.Due date (yyyy-mm-dd)**
1	3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2016-04-13	2017-04-13
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	2015-10-09	2016-10-09
5	Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2015-06-14	2018-06-14
6	Low Noise Amplifier	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2015-10-09	2016-10-09
7	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A

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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	2015-10-09	2016-10-09
2	EXA Signal Analyzer	Agilent Technologies	N9010A	SEM004-09	2015-07-18	2016-07-18
3	Signal Generator	Rohde & Schwarz	SML03	SEM006-02	2016-04-25	2017-04-25
4	Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2015-10-09	2016-10-09

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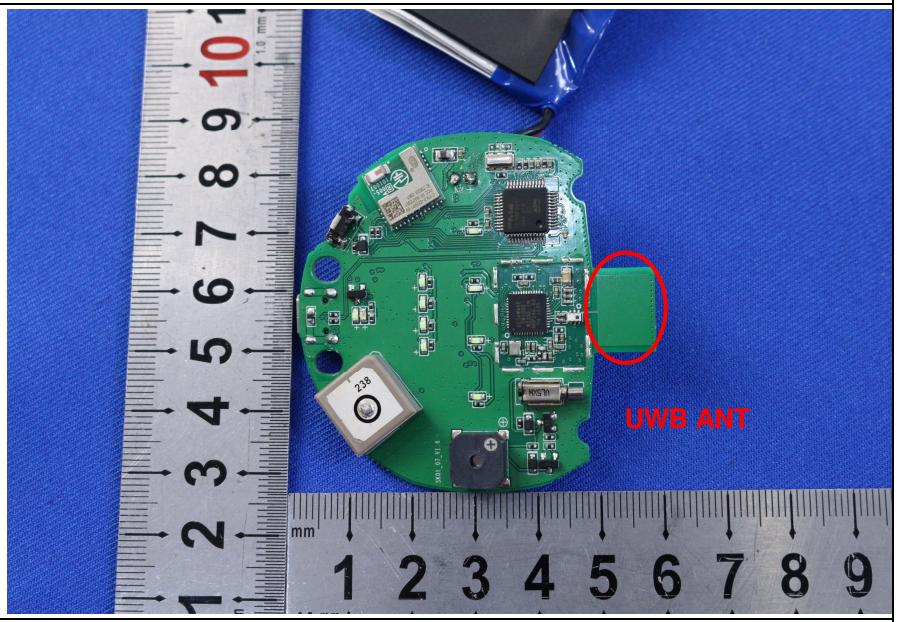
6 Test results and Measurement Data

6.1 Antenna Requirement

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

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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:	<table><tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr><tr><td>Quasi-peak</td><td>Average</td></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>* Decreases with the logarithm of the frequency.
Test Procedure:	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 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. 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: 2013 on conducted measurement.

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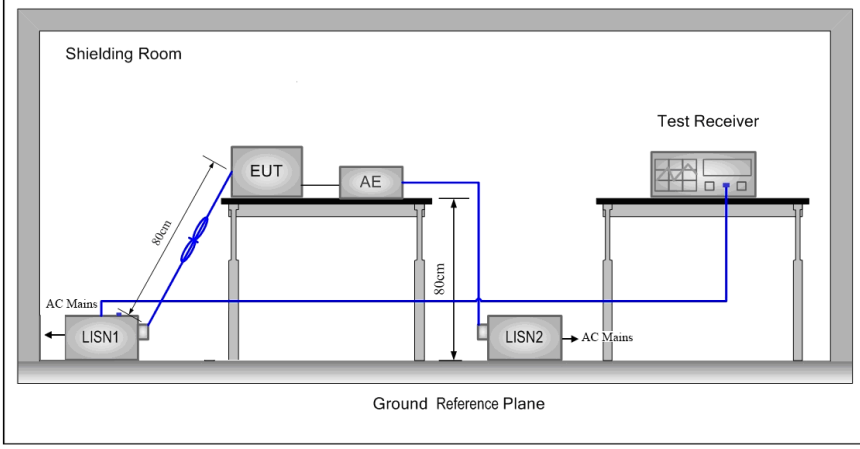
Test Setup:	
Test Mode:	Charge + Transmitting mode
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

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.

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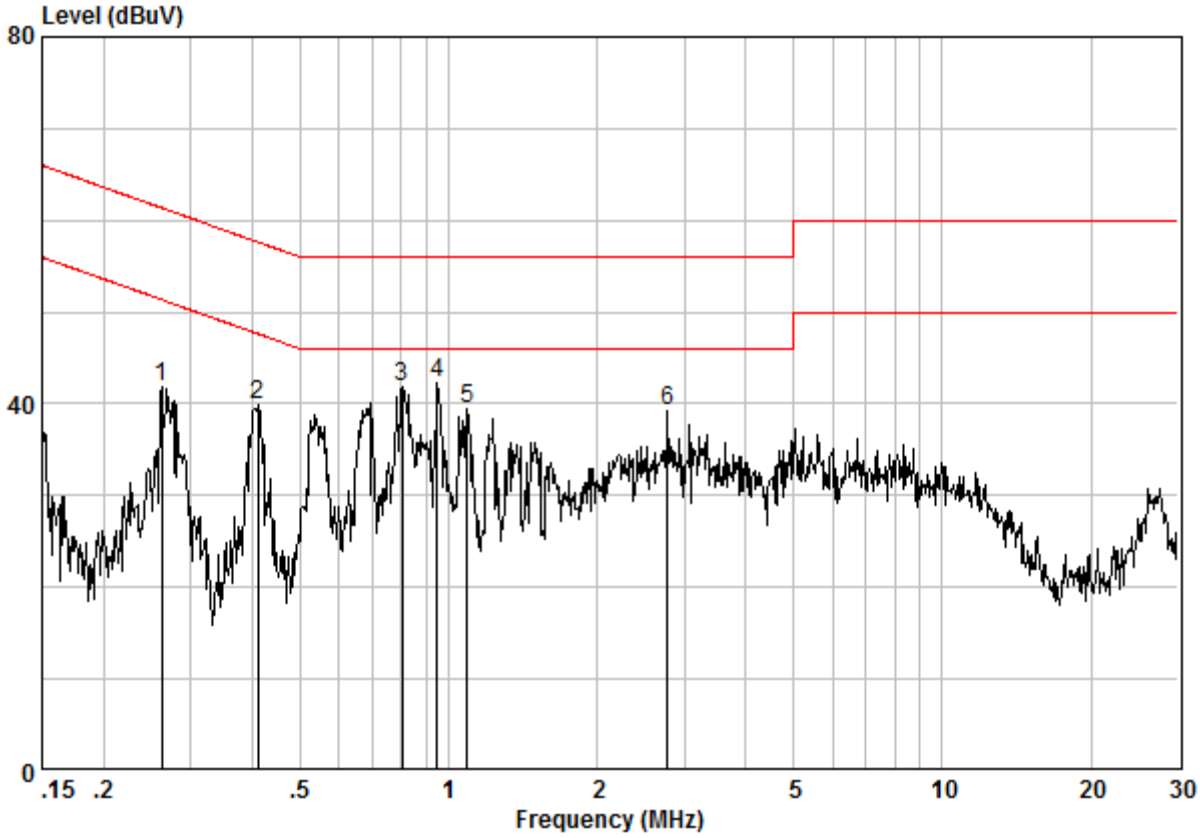
Live Line:



Site : Shielding Room
Condition : CE LINE
Job No. : 1903CR
Test Mode : Charge + TX mode

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.26164	0.02	9.60	32.25	41.86	51.38	-9.52	Peak
2	0.41048	0.01	9.60	30.31	39.92	47.64	-7.72	Peak
3 @	0.80448	0.02	9.60	32.24	41.86	46.00	-4.14	Peak
4 @	0.94809	0.02	9.62	32.71	42.35	46.00	-3.65	Peak
5	1.088	0.02	9.62	29.71	39.35	46.00	-6.65	Peak
6	2.779	0.02	9.62	29.50	39.14	46.00	-6.86	Peak

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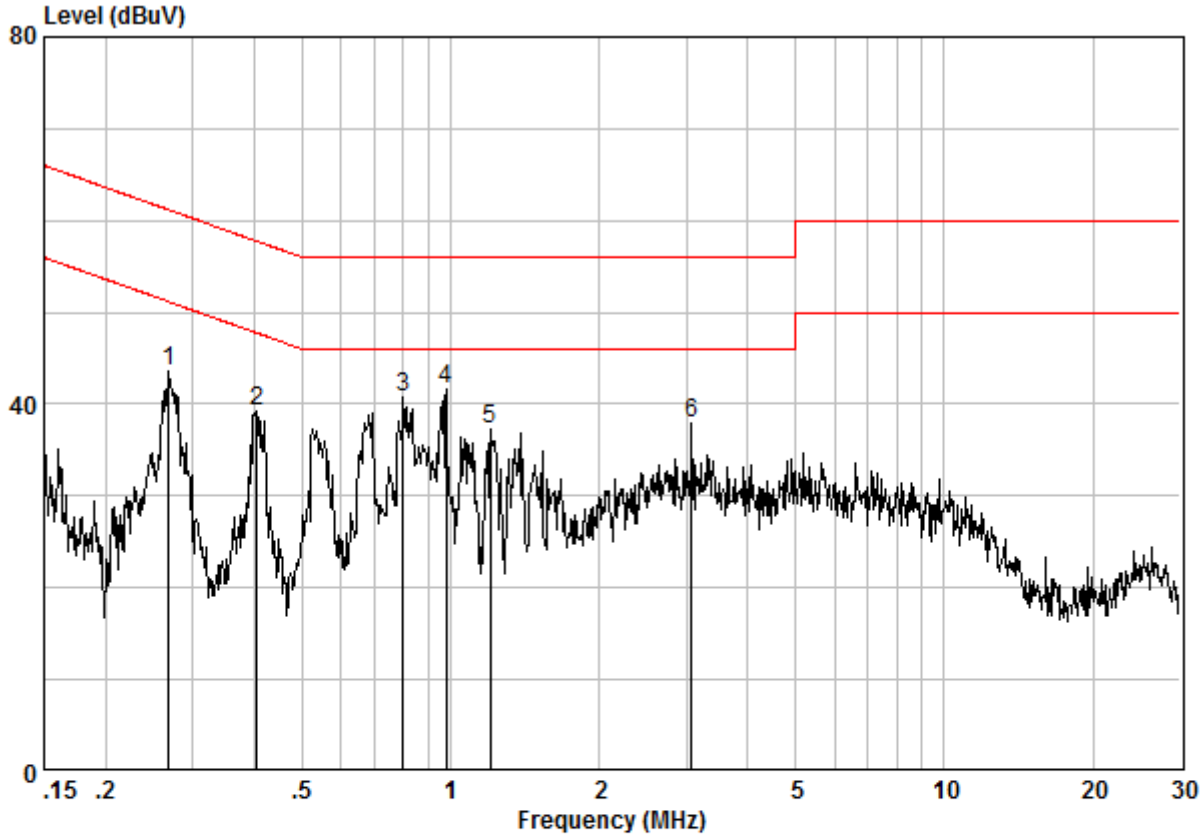
Neutral Line:



Site : Shielding Room
Condition : CE NEUTRAL
Job No. : 1903CR
Test Mode : Charge + TX mode

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.26866	0.01	9.61	34.07	43.70	51.16	-7.46	Peak
2	0.40400	0.01	9.62	29.61	39.24	47.77	-8.53	Peak
3	0.80023	0.02	9.64	31.17	40.83	46.00	-5.17	Peak
4 @	0.97871	0.02	9.65	31.91	41.58	46.00	-4.42	Peak
5	1.203	0.02	9.65	27.50	37.17	46.00	-8.83	Peak
6	3.074	0.02	9.67	28.23	37.92	46.00	-8.08	Peak

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

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6.3 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15, Subpart F Section 15.519 (c)(d)/15.209
Test Method:	ANSI C63.10: 2013
Test Site:	Measurement Distance: 3m (Semi-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-960MHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
Above 960MHz	RMS	1MHz	3MHz	RMS

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-1610MHz	-75.3 dBm (EIRP, RBW=1MHz)		RMS	3
1610MHz-1990MHz	-63.3 dBm (EIRP, RBW=1MHz)		RMS	3
1990MHz-3100MHz	-61.3 dBm (EIRP, RBW=1MHz)		RMS	3
3100MHz-10600MHz	-41.3 dBm (EIRP, RBW=1MHz)		RMS	3
Above 10600MHz	-61.3 dBm (EIRP, RBW=1MHz)		RMS	3
1164MHz-1240MHz	-85.3 dBm (EIRP, RBW=1kHz)		RMS	3
1559MHz-1610MHz	-85.3 dBm (EIRP, RBW=1kHz)		RMS	3

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Test Setup:	

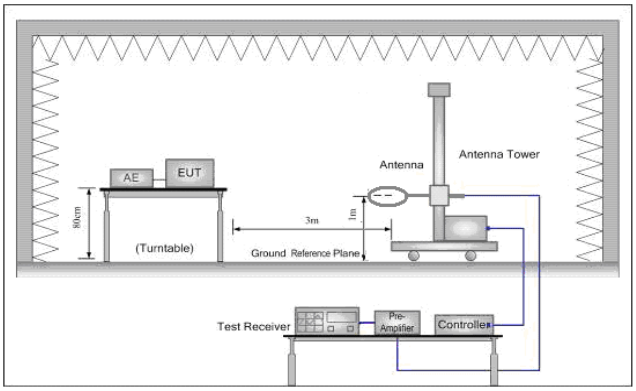

Figure 1. Below 30MHz

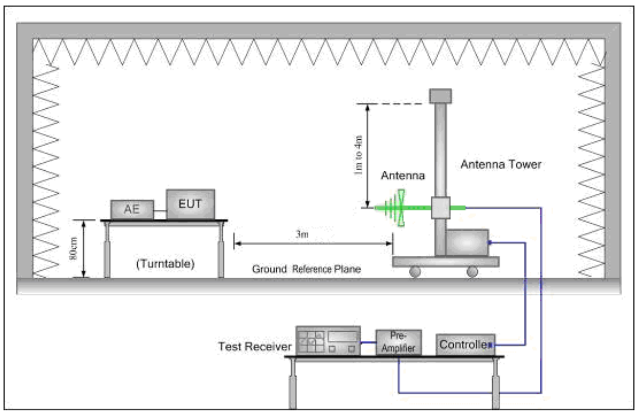

Figure 2. 30MHz to 1GHz

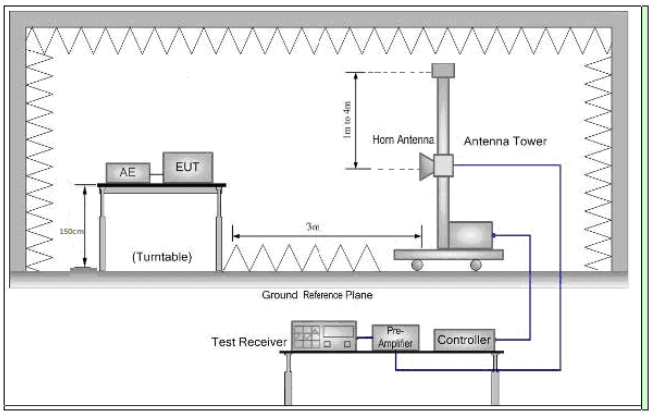

Figure 3. Above 1 GHz

Test Procedure:	1) 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 camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 3) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 4) 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. 5) 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

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	(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. 6) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 7) 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. 8) Test the EUT in the lowest channel,the middle channel,the Highest channel 9) 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. 10) Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting mode,Charge +Transmitting mode
Final Test Mode:	Pretest the EUT at Transmitting mode and Charge +Transmitting mode, found the Charge +Transmitting mode which it is worse case Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

According to ANSI 63.10 Clause 10.3.9, the EIRP to field strength at a specified measurement distance of 3 m is below:
E (dBuV/m) = EIRP(dBm) + 95.3
Thus, the field strength limit for the test above 1GHz is below:

Frequency	Limit		Detector	Measurement Distance
	EIRP (dBm)	Field Strength (dBuV/m)		
960MHz-1610MHz	-75.3 (RBW=1MHz)	20.00	RMS	3
1610MHz-1990MHz	-63.3 (RBW=1MHz)	32.00	RMS	3
1990MHz-3100MHz	-61.3 (RBW=1MHz)	34.00	RMS	3
3100MHz-10600MHz	-41.3 (RBW=1MHz)	54.00	RMS	3
Above 10600MHz	-61.3 (RBW=1MHz)	34.00	RMS	3
1164MHz-1240MHz	-85.3 (RBW=1kHz)	10.00	RMS	3
1559MHz-1610MHz	-85.3 (RBW=1kHz)	10.00	RMS	3

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Measurement Data

6.3.1.1 Peak Power

Field Strength for fundamental @ RBW=10MHz						
Frequency (MHz)	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Read Level (dBuV)**	**Level (dBuV/m)**	**Polarization**
3500.00	31.96	5.31	42.16	73.23	68.34	Horizontal
4000.00	33.10	5.49	42.35	71.70	67.94	Horizontal
4500.00	33.65	6.10	42.47	74.04	71.32	Horizontal
3500.00	31.96	5.31	42.16	68.36	63.47	Vertical
4000.00	33.10	5.49	42.35	65.57	61.81	Vertical
4500.00	33.65	6.10	42.47	69.86	67.14	Vertical

Caculated Field Strength of fundamental @ RBW=50MHz					
Frequency (MHz)	**Measured Field Strength of fundamental (FS_M) (dBuV/m)**	**Caculated Field Strength of fundamental (FS_C) (dBuV/m)**	**Limit (dBuV/m)**	**Margin**	**Polarization**
3500.00	68.34	82.32	95.30	-12.98	Horizontal
4000.00	67.94	81.92	95.30	-13.38	Horizontal
4500.00	71.32	85.30	95.30	-10.00	Horizontal
3500.00	63.47	77.45	95.30	-17.85	Vertical
4000.00	61.81	75.79	95.30	-19.51	Vertical
4500.00	67.14	81.12	95.30	-14.18	Vertical
Note: $FS_C = FS_M + 20\log(50MHz/10MHz) = FS_M + 13.98$					

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Field Strength for fundamental @ RBW=1MHz								
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
3500.00	31.96	5.31	42.16	43.59	38.70	54.00	-15.30	Horizontal
4000.00	33.10	5.49	42.35	42.15	38.39	54.00	-15.61	Horizontal
4500.00	33.65	6.10	42.47	44.79	42.07	54.00	-11.93	Horizontal
3500.00	31.96	5.31	42.16	40.64	35.75	54.00	-18.25	Vertical
4000.00	33.10	5.49	42.35	38.87	35.11	54.00	-18.89	Vertical
4500.00	33.65	6.10	42.47	43.25	40.53	54.00	-13.47	Vertical

6.3.1.2 Spurious Emissions

30MHz~1GHz	
Test mode:	Transmitting

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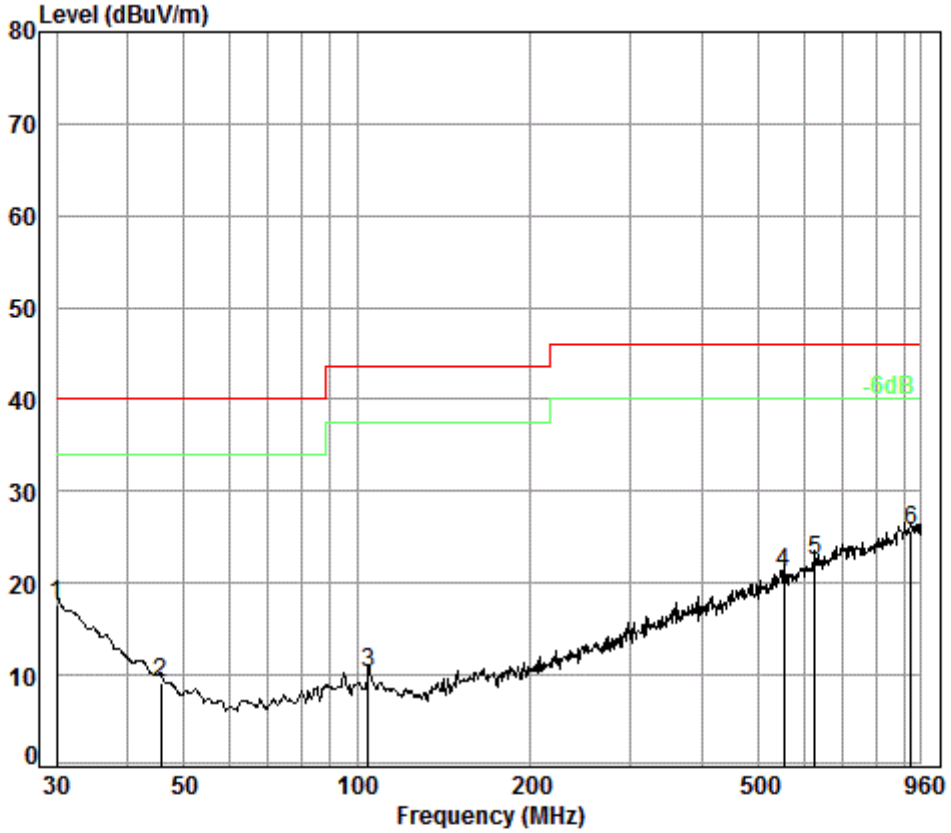
QP value:



Condition: 3m HORIZONTAL
Job No. : 1903CR
Test Mode: Charge + TX mode

	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	30.00	0.60	19.00	27.36	25.35	17.59	40.00	-22.41
2	45.53	0.72	10.70	27.30	25.10	9.22	40.00	-30.78
3	104.54	1.21	8.91	27.17	27.22	10.17	43.50	-33.33
4	552.88	2.66	19.00	27.61	27.01	21.06	46.00	-24.94
5	627.27	2.76	20.31	27.51	26.95	22.51	46.00	-23.49
6 pp	922.52	3.62	23.38	26.68	25.36	25.68	46.00	-20.32

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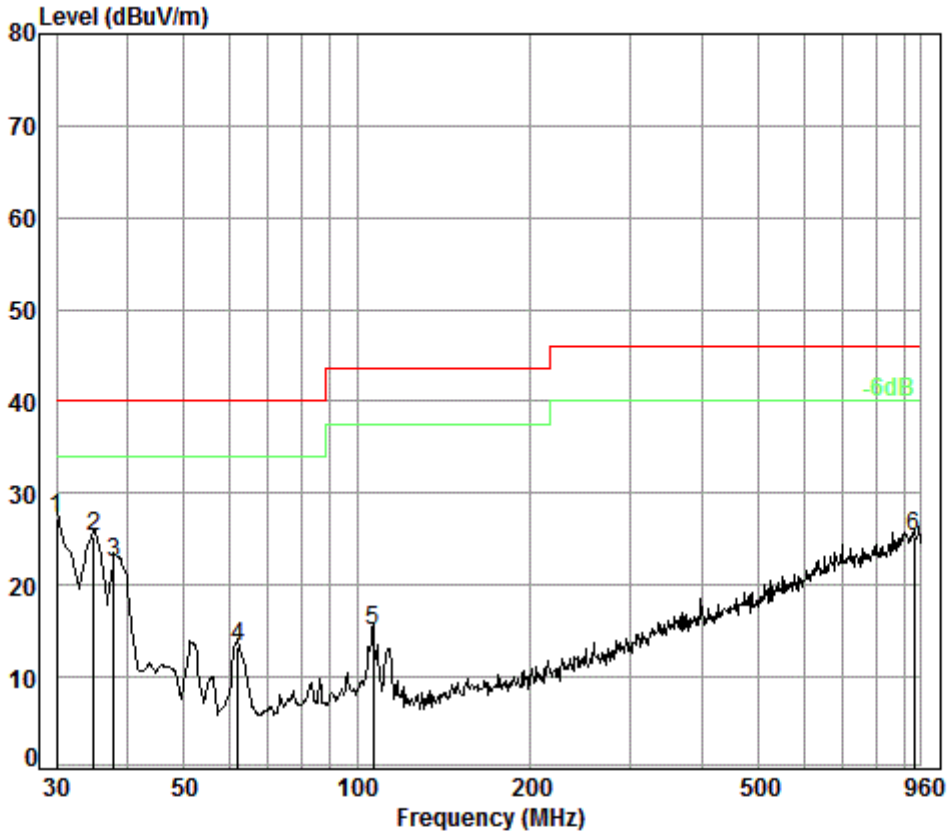

Condition: 3m VERTICAL
Job No. : 1903CR
Test Mode: Charge + TX mode

	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 pp	30.00	0.60	19.00	27.36	35.10	27.34	40.00	-12.66
2	34.88	0.60	15.96	27.34	36.00	25.22	40.00	-14.78
3	37.81	0.60	14.33	27.33	34.84	22.44	40.00	-17.56
4	62.00	0.80	7.14	27.26	32.57	13.25	40.00	-26.75
5	106.76	1.22	8.83	27.15	32.10	15.00	43.50	-28.50
6	932.27	3.63	23.34	26.61	24.83	25.19	46.00	-20.81

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Test Data:

Transmitting with modulation Mode at 3500MHz								
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**
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1165.94	24.31	1.71	41.81	1.46	-14.33	10.00	-24.33	Vertical
1565.12	26.10	2.23	41.85	1.62	-11.90	10.00	-21.90	Vertical
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1336.78	24.62	1.95	41.79	31.53	16.31	20.00	-3.69	Vertical
2149.17	28.07	2.82	41.89	32.71	21.71	34.00	-12.29	Vertical
f > 3100MHz								
4895.50	34.19	6.67	42.56	26.94	25.24	54.00	-28.76	Vertical
7000.00	35.40	8.28	41.52	29.01	31.17	54.00	-22.83	Vertical
10500.00	37.10	10.77	39.80	20.39	28.46	54.00	-25.54	Vertical
12616.50	37.91	12.17	41.56	19.74	28.26	34.00	-5.74	Vertical
14000.00	39.30	13.93	43.44	20.49	30.28	34.00	-3.72	Vertical
17610.50	43.71	18.49	40.76	10.09	31.53	34.00	-2.47	Vertical
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1169.40	24.33	1.71	41.81	2.39	-13.38	10.00	-23.38	Horizontal
1580.68	26.16	2.25	41.86	1.98	-11.47	10.00	-21.47	Horizontal
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1375.66	24.73	2.00	41.79	32.26	17.20	20.00	-2.80	Horizontal
2525.25	29.17	3.13	41.91	32.11	22.50	34.00	-11.50	Horizontal
f > 3100MHz								
4306.50	33.71	5.87	42.43	29.28	26.43	54.00	-27.57	Horizontal
5397.50	34.40	6.80	42.65	28.20	26.75	54.00	-27.25	Horizontal
7000.00	35.40	8.28	41.52	32.69	34.85	54.00	-19.15	Horizontal
10500.00	37.10	10.77	39.80	20.78	28.85	54.00	-25.15	Horizontal
14000.00	39.30	13.93	43.44	18.01	27.80	34.00	-6.20	Horizontal
17041.00	42.84	16.49	40.84	11.99	30.48	34.00	-3.52	Horizontal

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Transmitting with modulation Mode at 4000MHz								
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
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1173.90	24.35	1.72	41.81	3.22	-12.52	10.00	-22.52	Vertical
1567.67	26.11	2.23	41.85	1.60	-11.91	10.00	-21.91	Vertical
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1308.35	24.54	1.91	41.78	32.33	17.00	20.00	-3.00	Vertical
2480.41	28.97	3.09	41.91	32.22	22.37	34.00	-11.63	Vertical
f > 3100MHz								
6235.50	34.80	7.93	42.44	26.87	27.16	54.00	-26.84	Vertical
8000.00	36.10	8.74	41.10	27.76	31.50	54.00	-22.50	Vertical
9288.50	37.09	9.85	40.57	23.15	29.52	54.00	-24.48	Vertical
12000.00	37.60	12.24	40.96	20.59	29.47	34.00	-4.53	Vertical
13879.50	39.18	13.80	43.27	21.54	31.25	34.00	-2.75	Vertical
16000.00	41.30	15.18	42.00	16.40	30.88	34.00	-3.12	Vertical
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1184.70	24.40	1.74	41.81	2.16	-13.51	10.00	-23.51	Horizontal
1601.43	26.25	2.27	41.86	1.75	-11.59	10.00	-21.59	Horizontal
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1477.87	25.37	2.12	41.81	31.73	17.41	20.00	-2.59	Horizontal
2342.19	28.43	2.98	41.90	33.40	22.91	34.00	-11.09	Horizontal
f > 3100MHz								
5716.50	34.24	7.45	42.71	26.12	25.10	54.00	-28.90	Horizontal
8000.00	36.10	8.74	41.10	27.63	31.37	54.00	-22.63	Horizontal
9647.00	37.10	10.20	40.08	20.77	27.99	54.00	-26.01	Horizontal
12000.00	37.60	12.24	40.96	19.31	28.19	34.00	-5.81	Horizontal
14280.50	39.72	14.01	43.48	20.65	30.90	34.00	-3.10	Horizontal
16000.00	41.30	15.18	42.00	15.65	30.13	34.00	-3.87	Horizontal

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Transmitting with modulation Mode at 4500MHz								
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
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1181.89	24.39	1.73	41.81	1.51	-14.18	10.00	-24.18	Vertical
1587.31	26.19	2.26	41.86	1.85	-11.56	10.00	-21.56	Vertical
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1462.07	25.25	2.11	41.81	31.81	17.36	20.00	-2.64	Vertical
2852.45	29.90	3.47	41.92	31.40	22.85	34.00	-11.15	Vertical
f > 3100MHz								
5784.00	34.21	7.64	42.72	26.19	25.32	54.00	-28.68	Vertical
7527.50	35.82	8.49	41.29	23.98	27.00	54.00	-27.00	Vertical
9000.00	37.00	9.47	40.98	22.90	28.39	54.00	-25.61	Vertical
11381.50	37.39	11.57	40.36	20.71	29.31	34.00	-4.69	Vertical
13500.00	38.60	13.36	42.68	18.99	28.27	34.00	-5.73	Vertical
18000.00	44.40	19.80	40.71	8.26	31.75	34.00	-2.25	Vertical
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1176.49	24.36	1.72	41.81	1.64	-14.09	10.00	-24.09	Horizontal
1573.94	26.13	2.24	41.86	1.39	-12.10	10.00	-22.10	Horizontal
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1446.44	25.14	2.09	41.81	31.46	16.88	20.00	-3.12	Horizontal
2712.88	29.56	3.33	41.92	32.52	23.49	34.00	-10.51	Horizontal
f > 3100MHz								
5658.50	34.27	7.28	42.70	27.44	26.29	54.00	-27.71	Horizontal
7760.50	36.08	8.61	41.20	24.42	27.91	54.00	-26.09	Horizontal
9000.00	37.00	9.47	40.98	23.84	29.33	54.00	-24.67	Horizontal
11397.00	37.40	11.58	40.37	20.76	29.37	34.00	-4.63	Horizontal
13500.00	38.60	13.36	42.68	20.19	29.47	34.00	-4.53	Horizontal
18000.00	44.40	19.80	40.71	8.39	31.88	34.00	-2.12	Horizontal

Remark:

1) Scan from 9kHz to 40GHz,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 .

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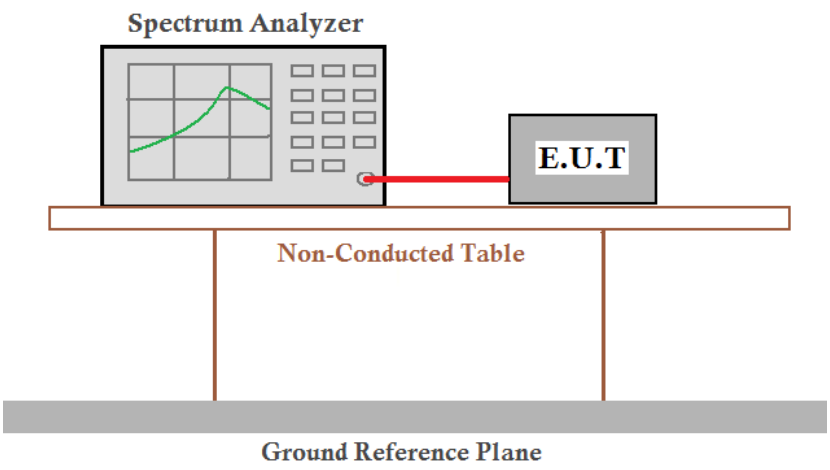
6.4 UWB Bandwidth (10dB Bandwidth)

Test Requirement:	47 CFR Part 15F Section 15.503(a)
Test Method:	ANSI C63.10:2013
Test Setup:	
Limit:	≥500MHz
Exploratory Test Mode:	Transmitter mode
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

Measurement Data

Test Frequency (MHz)	F_L (MHz)	F_H (MHz)	10dB bandwidth (MHz)	Limit (MHz)	Results
3500	3230.0	3787.2	557.2	≥500MHz	Pass
4000	3678.5	4322.8	644.3	≥500MHz	Pass
4500	4217.0	4769.8	552.8	≥500MHz	Pass

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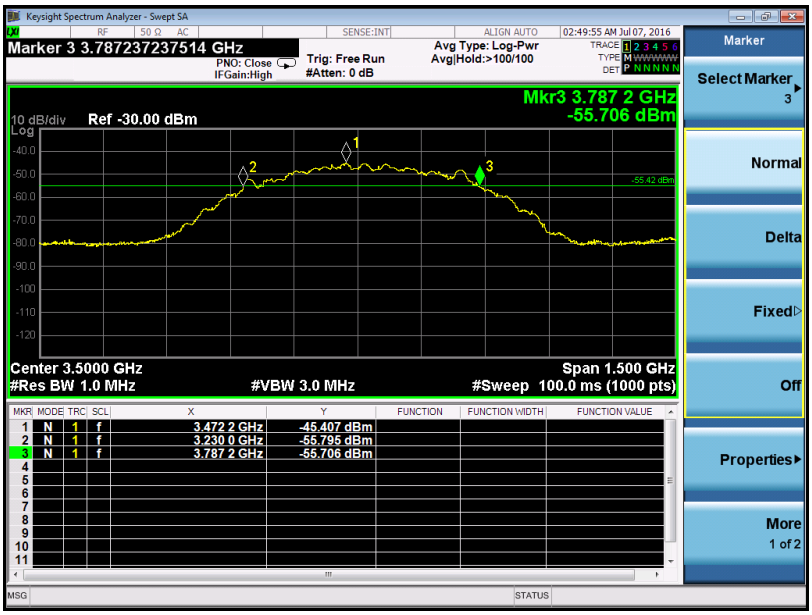
Test plot as follows:

Test channel:	Lowest



Test channel:	Middle

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Test channel:	Highest

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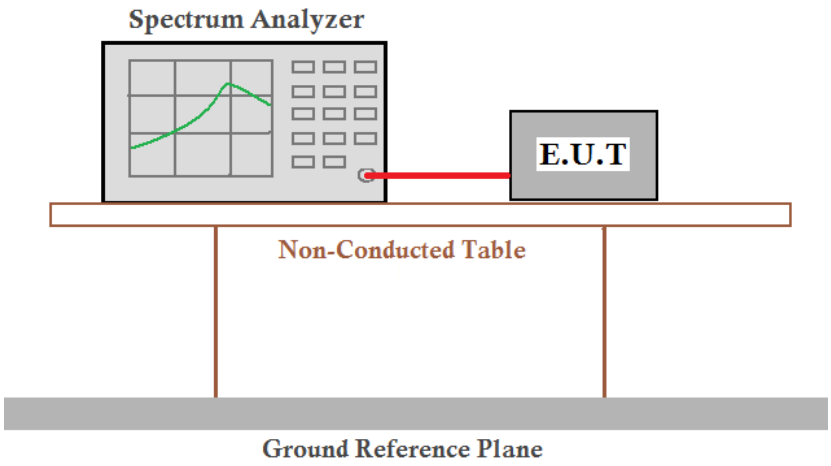
6.5 Dwell Time

Test Requirement:	47 CFR Part 15F Section 15.519(a)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	
Limit:	The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received
Exploratory Test Mode:	Operation mode
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

Measurement Data

Test Frequency (MHz)	Dwell Time (s)	Limit (s)	Results
3500	0.78	≤10	Pass

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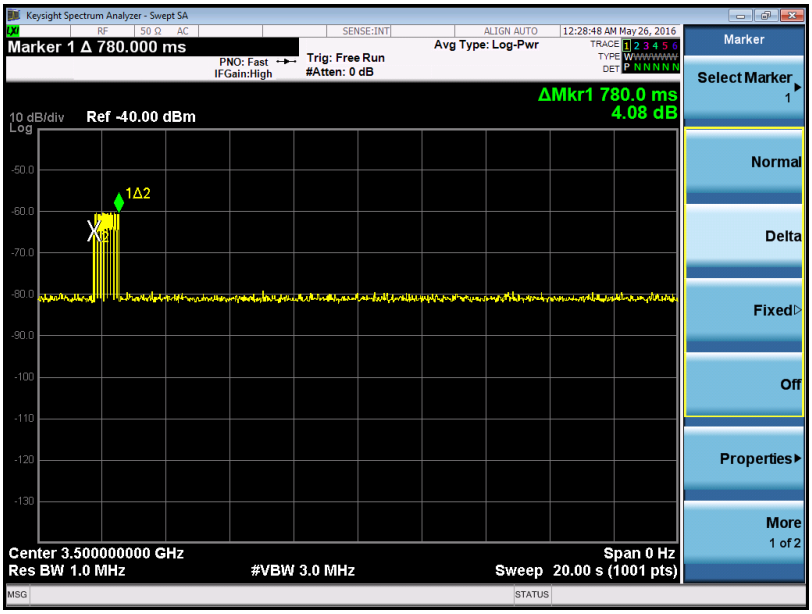
Test plot as follows:



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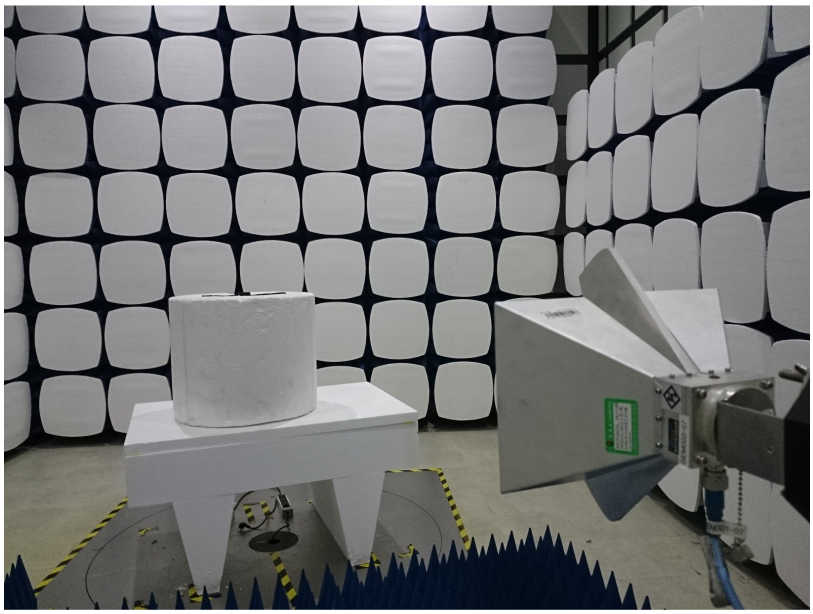
7 Photographs - EUT Test Setup

Test model No.:TR2

7.1 Radiated Emission



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7.2 Conducted Emission

8 Photographs - EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1603001903CR.

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