MEASUREMENT REPORT

FCC PART 15C

FCC ID:	2A2TF-LWF-BNF-UC210
Applicant:	Hexcal Indoor Systems (Shanghai) Co., Ltd.
Product:	Hexcal Advanced Working Deck
Model No.:	SLT-LWF-BNF-DG-UC210
Serial Model No.	ABC-DWF-GNI-J-KLM series
Brand Name:	HEXCAL
FCC Classification:	Part 15 Low Power Transmitter Below 1705 kHz (DCD)
FCC Rule Part(s):	Part15 Subpart C
Test Procedure(s):	ANSI C63.10-2013
Test Date:	August 27~ September 7, 2021

Reviewed By: Kevin Guo

Approved By: Robin Wu

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.
The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2106RSU078-U2	Rev. 01	Initial Report	09-08-2021	Valid

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1. General Information

1.1. Applicant

Hexcal Indoor Systems (Shanghai) Co., Ltd.

19-3, Building 8, No.498 Guoshoujing Rd. Shanghai, China

1.2. Manufacturer

Hexcal Indoor Systems (Shanghai) Co., Ltd.

19-3, Building 8, No.498 Guoshoujing Rd. Shanghai, China

1.3. Testing Facility

☒	**Test Site – MRT Suzhou Laboratory**				
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China **Laboratory Location (Suzhou - SIP)** 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China				
	Laboratory Accreditations				
	A2LA: 3628.01		CNAS: L10551		
	FCC: CN1166		ISED: CN0001		
	VCCI:	☐R-20025	☐G-20034	☐C-20020	☐T-20020
		☐R-20141	☐G-20134	☐C-20103	☐T-20104
☐	**Test Site – MRT Shenzhen Laboratory**				
	Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	**Test Site – MRT Taiwan Laboratory**				
	Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
	TAF: L3261-190725				
	FCC: 291082, TW3261		ISED: TW3261		

1.4. Product Information

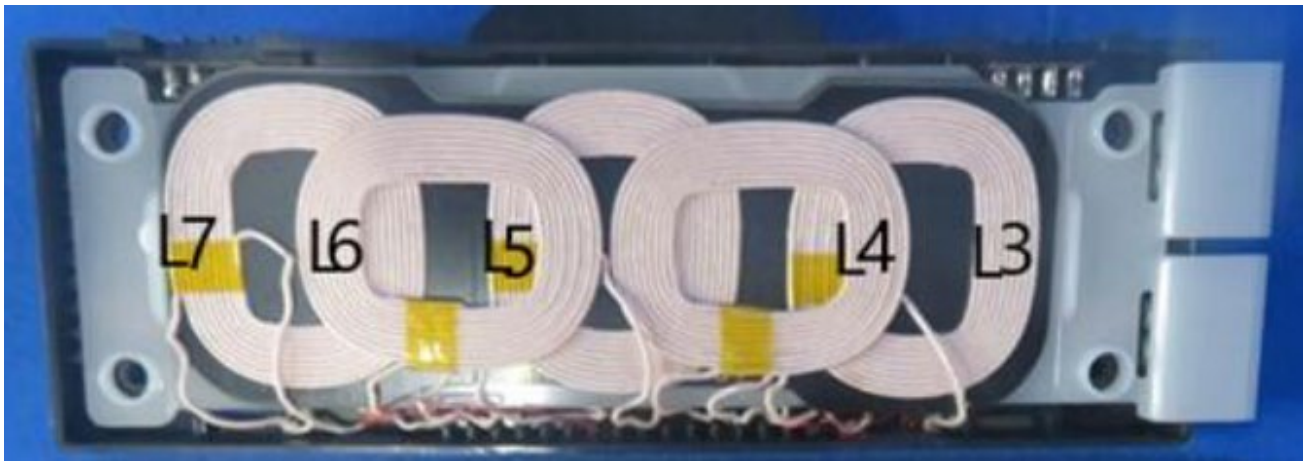
Product Name	Hexcal Advanced Working Deck
Model No.	SLT-LWF-BNF-DG-UC210
Serial Model No.	ABC-DWF-GNI-J-KLM series (A=S or D, B=L or M or S, C=T or D or S, D=L or N, F=F or N, G=B or N, I=F or N, J=DG or LG or SR or BK or SL or MR or CY or NV or GR or AZ or WH, K=UC or US or CA, L=20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30, M=0 or 1 or 2 or 3)
Brand Name	HEXCAL
Working Frequency Range	110 ~ 205 kHz
Modulation Type	FSK
Working Temperature Range	0~ 40 °C
Power Supply	INPUT: 120V ac 12A / 60Hz OUTPUT: Receptacle: 120VAC /11A 4*USB: 5VDC 1A 2* Fast charging port: 5VDC 3A 8* Sockets in total: 120VAC/11A Each coil of wireless charger: Max 10W

Remark:

1. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.
2. Please refer to the statement of model difference provided by the manufacturer.

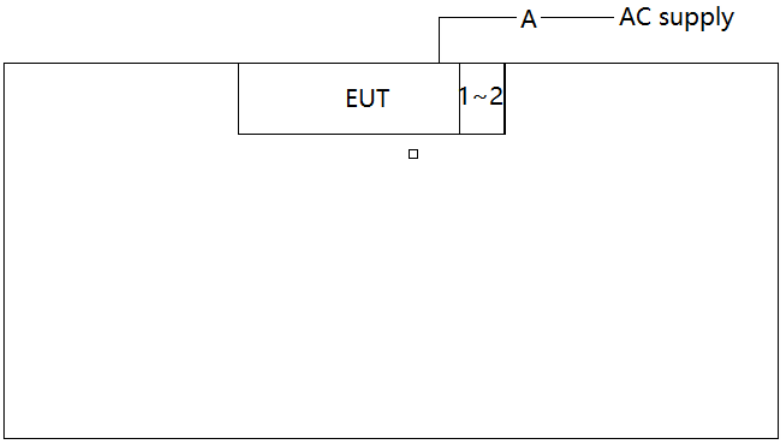
1.5. Test Mode

Test Mode
Mode 1: Charging by AC power 120VAC, 12A + 2 iPhones on the wireless charging pad (Only worse case mode is selected)
Note: The product has five coils. Five coils cannot work at the same time. The product has two lines for wireless charging. One is L3 or L4, the other is L5, L6 or L7 (Reference the following picture). Only one coil works in each line at any time. Each coil has the average opportunity to work. L4 and L5 cannot work at the same time.



1.6. Test System Connection Diagram

Mode 1~10



No.	Cable Type	Cable Spec.	Length
A	Power Cable	Non-Shielding	2.0m
No.	Product	Manufacturer	Model No.
1	Mobile Phone	APPLE	iPhone XR
2	Mobile Phone	APPLE	iPhone XR

1.7. Test Procedure

1	Setup the EUT and simulators as shown on above.
2	Configurate all test modes as shown in section 1.5.
3	Begin to test.

2. TEST EQUIPMENT CALIBRATION DATE

Conducted Emission (SIP-SR2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2022/06/24
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2022/06/08
Thermal Hygrometer	testo	608-H1	MRTSUE06621	1 year	2021/12/03

Radiated Emission (SIP-AC2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2022/06/24
MXA Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2021/09/26
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2022/03/09
Bilog Period Antenna	Schwarzbeck	VULB9168	MRTSUE06646	1 year	2021/08/30
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06648	1 year	2021/11/26
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06599	1 year	2021/11/26
Preamplifier	EMCI	EMC051845SE	MRTSUE06644	1 year	2021/11/09
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2021/10/12
Thermal Hygrometer	testo	608-H1	MRTSUE06624	1 year	2021/12/03
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2021/12/24

Software	Version	Function
EMI Software	V3	EMI Test Software

3. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

AC Conducted Emission Measurement
The maximum measurement uncertainty is evaluated as: 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Emission Measurement
The maximum measurement uncertainty is evaluated as: Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB

4. TEST RESULT

4.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 4.2
15.209	General Field Strength Limits	FCC Part 15.209 limits	Radiated	Pass	Section 4.3
15.215(c)	20dB Spectrum Bandwidth	20 dB bandwidth of the emission in the specific band		Pass	Section 4.4

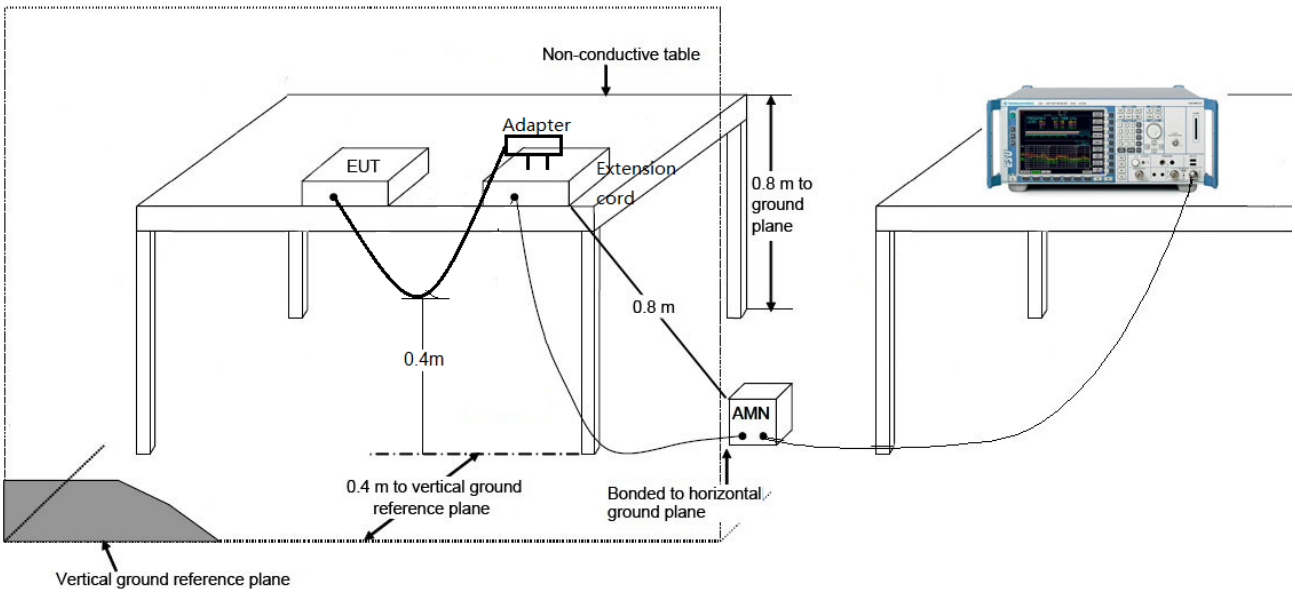
Notes: For radiated emission test, the test results shown in the following sections represent the worst-case emissions.

4.2. Conducted Emission

4.2.1.Test Limit

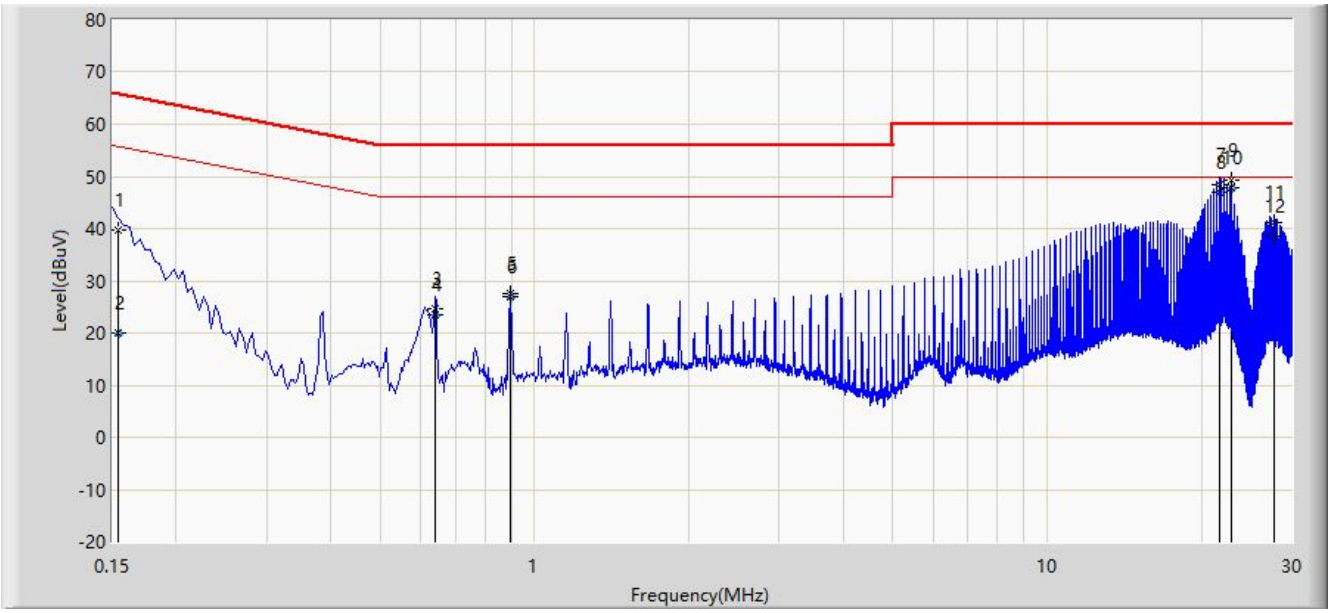
FCC 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 ~ 0.50	66 ~ 56	56 ~ 46
0.50 ~ 5.0	56	46
5.0 ~ 30	60	50
Note 1: The lower limit shall apply at the transition frequencies. Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.		

4.2.2.Test Setup



4.2.3.Test Result

Site: SIP-SR2	Time: 2021/09/07
Limit: FCC_Part15.107_CE_AC Power_ClassB	Engineer: Barry Wu
Probe: SIP-SR2-ENV216_101684_C	Polarity: Line
EUT: Hexcal Advanced Working Deck	Power: AC 120V/60Hz
Note: Mode 1	

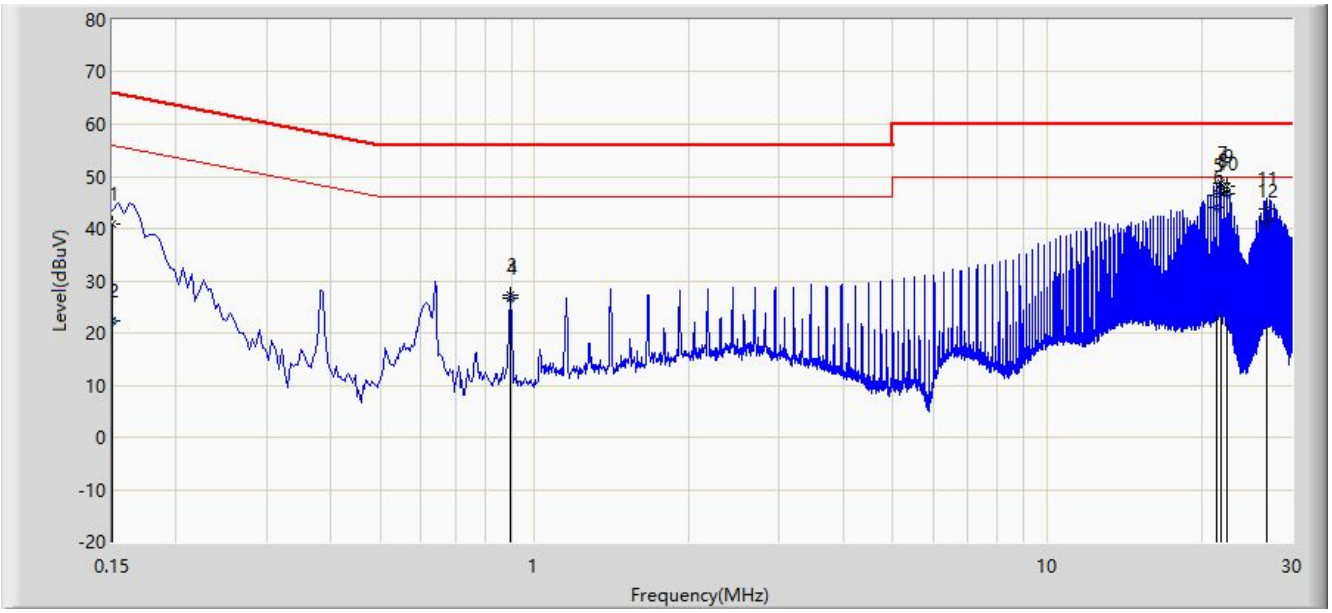


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.154	39.613	29.964	-26.169	65.781	9.649	QP
2			0.154	20.112	10.463	-35.669	55.781	9.649	AV
3			0.638	24.659	14.939	-31.341	56.000	9.720	QP
4			0.638	23.589	13.869	-22.411	46.000	9.720	AV
5			0.896	27.510	17.800	-28.490	56.000	9.710	QP
6			0.896	26.910	17.200	-19.090	46.000	9.710	AV
7			21.630	48.340	38.000	-11.660	60.000	10.340	QP
8			21.630	46.940	36.600	-3.060	50.000	10.340	AV
9			22.886	49.354	39.000	-10.646	60.000	10.354	QP
10		*	22.886	47.754	37.400	-2.246	50.000	10.354	AV
11			27.650	41.287	30.841	-18.713	60.000	10.447	QP
12			27.650	38.575	28.129	-11.425	50.000	10.447	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

Site: SIP-SR2	Time: 2021/09/07
Limit: FCC_Part15.107_CE_AC Power_ClassB	Engineer: Barry Wu
Probe: SIP-SR2-ENV216_101684_C	Polarity: Neutral
EUT: Hexcal Advanced Working Deck	Power: AC 120V/60Hz
Note: Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.150	40.941	31.300	-25.059	66.000	9.641	QP
2			0.150	22.441	12.800	-33.559	56.000	9.641	AV
3			0.897	27.307	17.600	-28.693	56.000	9.707	QP
4			0.897	26.707	17.000	-19.293	46.000	9.707	AV
5			21.369	46.407	36.100	-13.593	60.000	10.307	QP
6			21.369	44.007	33.700	-5.993	50.000	10.307	AV
7			21.894	48.728	38.400	-11.272	60.000	10.328	QP
8		*	21.894	47.328	37.000	-2.672	50.000	10.328	AV
9			22.398	48.135	37.800	-11.865	60.000	10.335	QP
10			22.398	46.535	36.200	-3.465	50.000	10.335	AV
11			26.878	43.812	33.349	-16.188	60.000	10.463	QP
12			26.878	41.567	31.105	-8.433	50.000	10.463	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

4.3. Radiated Emission

4.3.1.Test Limit

FCC Part 15.209 Limit		
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 80	100	3
80 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3
Note 1: The lower limit shall apply at the transition frequency. Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system. Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m).		

4.3.2.Test Procedure Used

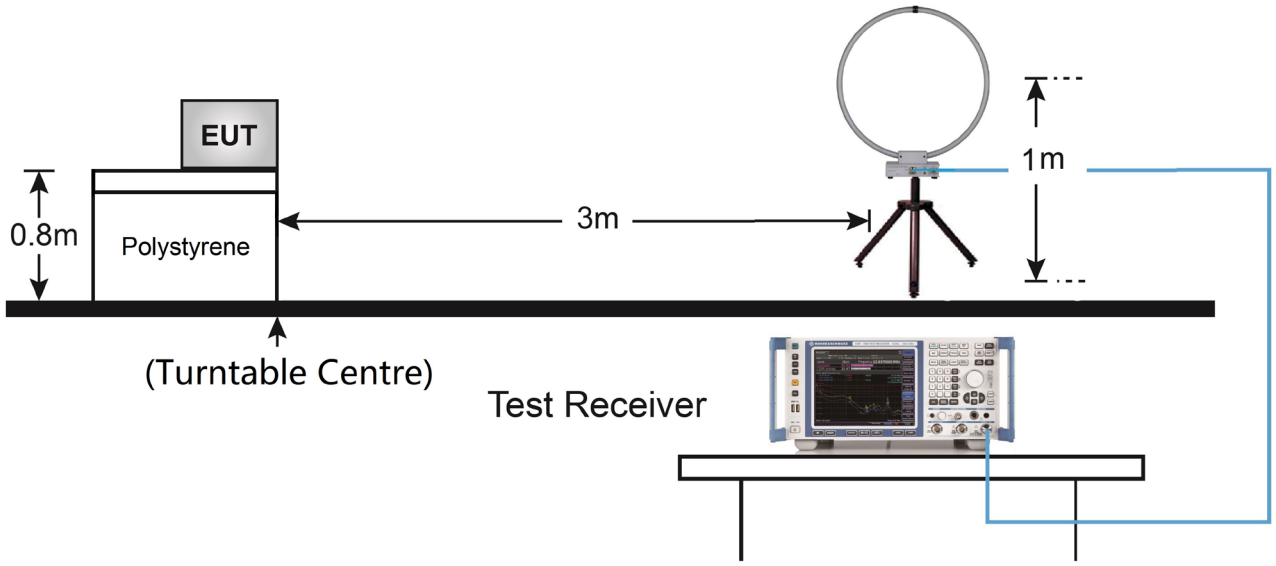
ANSI C63.10 - Section 6.3 (General Requirements)

ANSI C63.10 - Section 6.4 (Standard test method below 30MHz)

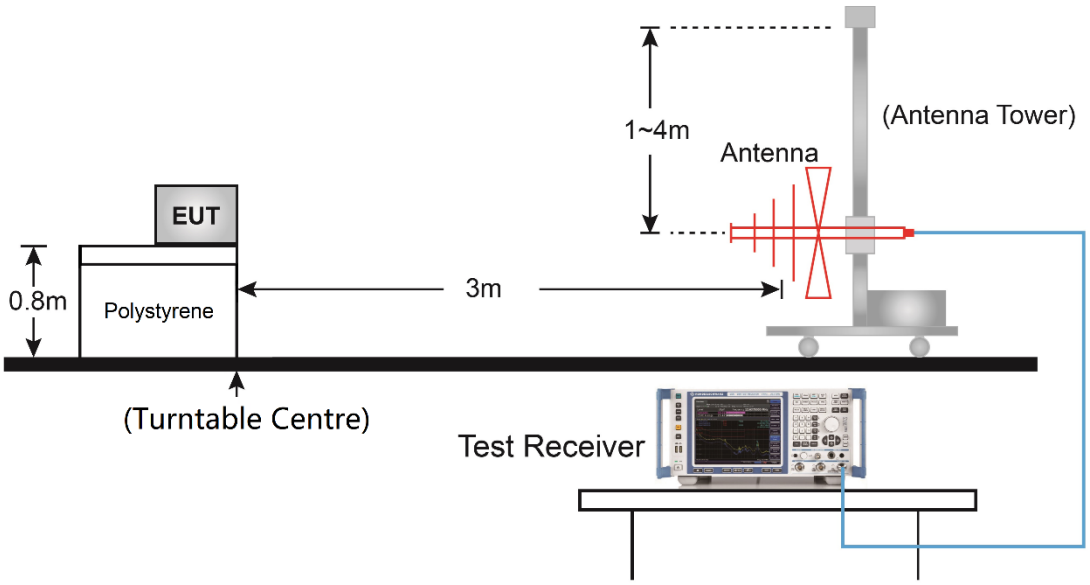
ANSI C63.10 - Section 6.5 (Standard test method above 30MHz to 1GHz)

4.3.3.Test Setup

Below 30MHz Test Setup:



30MHz ~ 1GHz Test Setup:



4.3.4.Test Result

Product	Hexcal Advanced Working Deck	Test Engineer	Wayen Wang
Test Site	SIP-AC2	Test Date	2021/08/27
Test Mode	Mode 1		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
0.128	51.422	19.949	71.371	105.460	-34.089	Peak	Face On
0.128	46.986	19.949	66.935	105.460	-38.525	Peak	Face Off
0.896	31.295	20.116	51.411	68.558	-17.147	Peak	Face On
0.628	35.361	19.907	55.268	71.645	-16.377	Peak	Face Off
64.569	11.624	17.405	29.029	40.000	-10.971	QP	Horizontal
78.146	22.400	14.633	37.033	40.000	-2.967	QP	Horizontal
86.951	18.399	12.680	31.079	40.000	-8.921	QP	Horizontal
106.285	22.500	14.740	37.240	43.500	-6.260	QP	Horizontal
144.233	17.169	18.407	35.577	43.500	-7.923	QP	Horizontal
261.550	12.967	17.476	30.443	46.000	-15.557	QP	Horizontal
37.975	12.706	17.803	30.509	40.000	-9.491	QP	Vertical
46.975	10.874	18.692	29.567	40.000	-10.433	QP	Vertical
77.530	16.774	14.840	31.614	40.000	-8.386	QP	Vertical
86.260	18.960	12.741	31.701	40.000	-8.299	QP	Vertical
107.115	19.495	14.876	34.371	43.500	-9.129	QP	Vertical
143.975	11.634	18.375	30.008	43.500	-13.492	QP	Vertical

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Note 2: The operation frequency of sample is 0.128MHz.

4.4. 20dB Spectrum Bandwidth Measurement

4.4.1.Test Limit

N/A

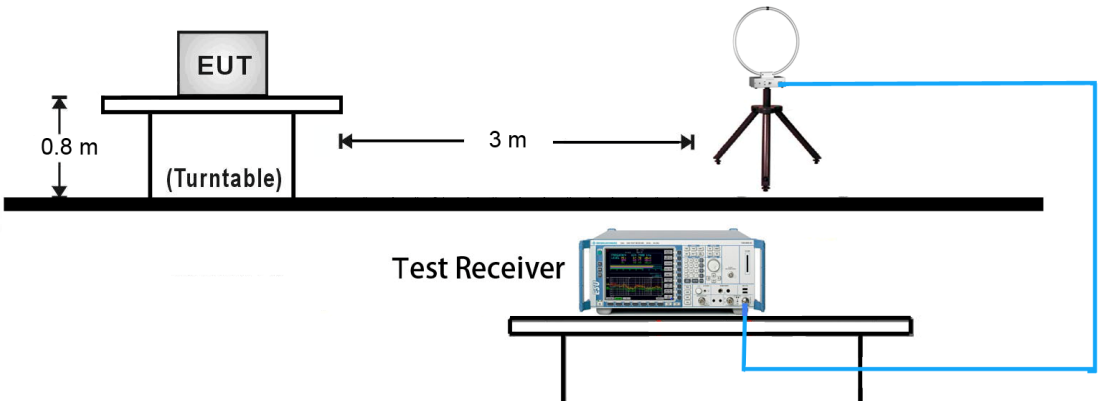
4.4.2.Test Procedure Used

ANSI C63.10 Clause 6.9.2

4.4.3.Test Setting

1. Set the spectrum span range to overlap the nominal center frequency
2. Set RBW = 1% ~ 5% of the OBW
3. VBW ≥ 3 × RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace was allowed to stabilize and marker the highest level.
8. Determine the display level (the highest level - 20dB) and place two markers, one at the lowest frequency and the other at the highest frequency.

4.4.4.Test Setup



4.4.5.Test Result

Product	Hexcal Advanced Working Deck	Test Engineer	Wayen Wang
Test Site	SIP-AC2	Test Date	2021/08/28
Test Mode	Mode 1		

20dB Spectrum Bandwidth

5. CONCLUSION

The data collected relate only the item(s) tested and show that the unit is compliance with Part 15C of the FCC rules.

The End

Appendix A - Test Setup Photograph

Refer to “ 2106RSU078-UT” file.

Appendix B - EUT Photograph

Refer to “ 2106RSU078-UE” file.