



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

SZEMC-TRF-01 Rev. A/0 Aug01,2022

Report No.: SZCR221100396701

Page: 1 of 29

TEST REPORT

Application No.: SZCR2211003967AT
Applicant: Pozyx NV
Address of Applicant: Vrijdagmarkt 10/201, Gent, 9000, Belgium
Manufacturer: Pozyx NV
Address of Manufacturer: Vrijdagmarkt 10/201, Gent, 9000, Belgium
Factory: NOTE Pärnu Oü
Address of Factory: Laki 2, 80010 Pärnu, Estonia
Equipment Under Test (EUT):
EUT Name: Pozyx Anchor V2.2
Model No.: 100020022
Trade Mark:



FCC ID: 2AYPJ-100222
Standard(s) : 47 CFR Part 15 Subpart F
Date of Receipt: 2022-11-22
Date of Test: 2023-05-15 to 2023-05-31
Date of Issue: 2023-06-05

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu
EMC Laboratory Manager



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Shenzhen Branch EMC Laboratory

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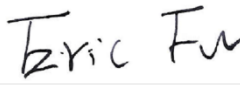
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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2023-06-06		Original

Authorized for issue by:				
				
		Charlie Dai/Project Engineer		
				
		Eric Fu/Reviewer		



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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15 Subpart F	N/A	47 CFR Part 15F Section15.517(a3) 15.521(b), 15.203	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
EIRP	47 CFR Part 15 Subpart F	ANSI C63.10: 2013 section 10.3	47 CFR Part 15, Subpart F Section 15.517 (c)(e), 15.521(g)	Pass
Spurious Emissions Below 1GHz		ANSI C63.10: 2013 section 10.2 & 10.3	47 CFR Part 15, Subpart F Section 15.517 (c),15.209, 15.521(c)(d) (h)	Pass
Spurious Emissions Above 1GHz		ANSI C63.10: 2013 section 10.3	47 CFR Part 15, Subpart F Section 15.517 (c)(d), 15.521(d)(h)	Pass
UWB Bandwidth		ANSI C63.10:2013 section 10.1	47 CFR Part 15F Section 15.503,15.521(e)	Pass
Conducted Emissions at AC Power Line (150kHz-30MHz)		ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart F 15.207, 15.505, 15.521(j),	Pass

Remark: for 47 CFR Part 15.521 General Requirement, Section15.521(f)(i), is not applicable for this product, so it's not evaluated in the report.

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Remark:

Model No.: 100020022

This test report (Ref. No.: SZCR221100396701) is only valid with the original test report (Ref. No.: GZCR220100010001).

According to the declaration from the applicant, the models in this report and models in original report were identical, only difference with being added support for UWB channel 3. Details as below.

Item/Part	Original version	Changed items
	Support of UWB channels 2 and 5	Support of UWB channels 2, 3 and 5
100020022 Hardware	V4	No change
100020022 Firmware	V2.5.0	V2.5.1
RTLS System software (*)	2022.1.1	2023.1.1
What's items has been changed?	☒ Add: Support of UWB Channel 3 ☐ Remove:	
Function related modification as above	Added support for UWB channel 3	

(*) The version 2022.1.1 of the RTLS system software, which controls the configuration settings of the Pozyx Anchor V2.2, does not allow to configure UWB channel 3 on the anchor. As of version 2023.1.1 of the RTLS system software this is allowed.

Considering to the difference, pre-scan were performed on the sample in this report to find the items which can be influential to the result in the original test report for fully retest.

Therefore in this report the section 2 items were fully retested on model and shown the data in this report, other tests please refer to original report GZCR220100010001.



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC48V Powered by POE/POE+ Or DC6V-53V
Operating Frequency:	4492.8MHZ (ch3)
Modulation Type:	PM
Number of Channels:	1
Sample Type:	Indoor Use
Antenna Type:	PCB Antenna
Antenna Gain:	4.81dBi

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	X240	N/A
Mouse	Lenovo	M-U0025-O	REF. No.:SEA24A00
Router	NETGEAR	DGN2200	REF. No.SEA22A00
POE Adapter	GlobTek	GT-96300-3656-T3-AP	N/A

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
EIRP	$\pm 4.8\text{dB}$
Spurious Emissions Below 1GHz	$\pm 6.0\text{dB}$ for 3m; $\pm 5.0\text{dB}$ for 10M
Spurious Emissions Above 1GHz	$\pm 4.6\text{dB}$ (1-18GHz); $\pm 4.8\text{dB}$ (18-40GHz)
UWB Bandwidth	$\pm 3\%$
Conducted Emissions at AC Power Line (150kHz-30MHz)	$\pm 3.1\text{dB}$

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{\text{CISPR/ETSI}}$ (CISPR/ETSI Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

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4.4 Test Location

All tests were performed at:

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No tests were sub-contracted.

4.5 Test Facility

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

• 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 (Member No. 1937)

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. Shenzhen EMC laboratory 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: CN1336

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

Designation Number: CN1336. Test Firm Registration Number: 787754.

• Innovation, Science and Economic Development Canada

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

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

EIRP					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2022-04-02	2025-04-01
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2023-03-20	2024-03-19
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2022-07-24	2024-07-23
Microwave system amplifier	Agilent	83017A	SEM005-25	2022-09-21	2023-09-20
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2022-07-08	2023-07-07

Spurious Emissions Below 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2022-10-20	2023-10-19
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2021-09-17	2023-09-16
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2023-03-20	2024-03-19
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2022-07-08	2023-07-07

Spurious Emissions Above 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2022-04-02	2025-04-01
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2023-03-20	2024-03-19
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2022-07-24	2024-07-23
Microwave system amplifier	Agilent	83017A	SEM005-25	2022-09-21	2023-09-20
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2022-07-08	2023-07-07



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UWB Bandwidth					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2022-10-20	2023-10-19
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2022-07-08	2023-07-07
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30

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	2022-05-14	2025-05-13
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2023-03-20	2024-03-19
Matching Pad	N/A	N/A	SEM021-23	2023-03-22	2024-03-21
Matching Pad	N/A	N/A	SEM021-24	2023-03-22	2024-03-21
Measurement Software	AUDIX	e3 V8.2014-6-27a	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2022-07-08	2023-07-07
LISN	Rohde&Schwarz	ENV216	SEM007-01	2022-09-20	2023-09-19
LISN	ETS-LINDGREN	3816/2	SEM007-02	2023-03-20	2024-03-19

General used equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2022-09-04	2023-09-03
Humidity/ Temperature Indicator	Anymetre	TH101B	SEM002-09	2022-09-04	2023-09-03
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2023-03-23	2024-03-22



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15F Section 15.517(a3), 15.521(b), 15.203

6.1.2 Conclusion

§ 15.203

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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

§15.517a(3)

The use of antennas mounted on outdoor structures, e.g., antennas mounted on the outside of a building or on a telephone pole, or any fixed outdoors infrastructure is prohibited.

15.521(b)

Manufacturers and users are reminded of the provisions of § 15.203.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 4.81dBi.

Antenna location: Refer to internal photos.

7 Radio Spectrum Matter Test Results

7.1 EIRP

Test Requirement 47 CFR Part 15, Subpart F Section 15.517 (c) (e), 15.521(g)

Test Method: ANSI C63.10: 2013 section 10.3

Measurement Distance: 3m

Limit:

Frequency	Limit	Detector	Measurement distance (m)
960MHz-1610MHz	-75.3 dBm (EIRP, RBW=1MHz)	AV	3
1610MHz-1990MHz	-53.3 dBm (EIRP, RBW=1MHz)	AV	3
1990MHz-3100MHz	-51.3 dBm (EIRP, RBW=1MHz)	AV	3
3100MHz-10600MHz	-41.3 dBm (EIRP, RBW=1MHz)	AV	3
Above 10600MHz	-51.3 dBm (EIRP, RBW=1MHz)	AV	3
Fundamental	0 dBm (EIRP, RBW=50MHz)	Peak	3

Remark: Due to some spectrum analyzer does not support 50MHz RBW setting, RBW set to the maximum value, and add a correction factor is allowed for Max Peak EIRP measurement. According to ANSI 63.10 Clause 10.3.9, the EIRP to field strength at a specified measurement distance of 3 m is below:

$$E \text{ (dBuV/m)} = \text{EIRP(dBm)} + 95.3$$

For peak power test, the spectrum analyzer was set to RBW=8MHz, VBW=10MHz, and add a conversion factor of $20 \cdot \log(50\text{MHz}/8\text{MHz})=15.92\text{dB}$.

Thus, the field strength limit for the test above 1GHz is below:

Frequency	Limit	Detector	Measurement Distance
	Field Strength (dBuV/m)		
960MHz-1610MHz	20.00	AV	3
1610MHz-1990MHz	42.00	AV	3
1990MHz-3100MHz	44.00	AV	3
3100MHz-10600MHz	54.00	AV	3
Above 10600MHz	44.00	AV	3
Fundamental	95.3	Peak	3

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 20.8 °C

Humidity: 50.4 % RH

Atmospheric Pressure: 1015 mbar



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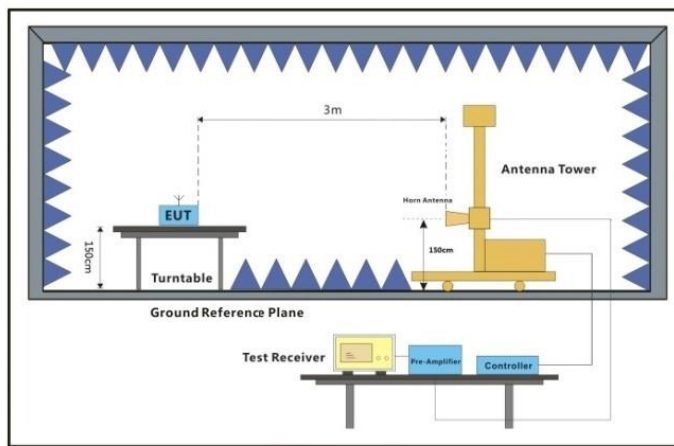
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7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation

7.1.3 Test Setup Diagram



Above 1GHz

7.1.4 Measurement Procedure and Data

- 1) The EUT was placed on the top of a rotating table 1.5 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.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) 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.
- 4) 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.
- 5) The test-receiver system was set to Peak detector with Maximum Hold Mode for Max Peak EIRP measurement and RMS/AV detector for Average EIRP measurement.
- 6) Test the EUT in the lowest channel, the middle channel, the Highest channel
- 7) 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.
- 8) Repeat above procedures until all frequencies measured was complete.

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Peak Field Strength for fundamental @ RBW=8MHz						
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Polarization
4581.524M	33.45	6.84	34.72	73.3	78.87	Horizontal
4602.386M	33.5	6.86	34.74	66.4	72.02	Vertical

Calculated Peak Field Strength of fundamental @ RBW=50MHz					
Frequency (MHz)	Measured Field Strength of fundamental (FS _M) (dBuV/m)	Calculated Field Strength of fundamental (FS _C) (dBuV/m)	Limit (dBuV/m)	Margin (dBuV)	Polarization
4581.524M	78.87	94.79	95.3	0.51	Horizontal
4602.386M	72.02	87.94	95.3	7.36	Vertical
Note: FS _C = FS _M + 20log(50MHz/8MHz) = FS _M + 15.92					

Average Field Strength for fundamental @ RBW=1MHz								
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV)	Polarization
4575.682M	33.46	6.85	34.73	47.1	52.68	54.00	1.32	Horizontal
4615.935M	33.5	6.86	34.75	41.15	46.76	54.00	7.24	Vertical



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7.2 Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart F Section 15.517 (c),15.209, 15.521(c)(d) (h)

Test Method: ANSI C63.10: 2013 section 10.2

Measurement Distance: 3m

Limit:

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-1000MHz	-	20	RMS/AV	3

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C

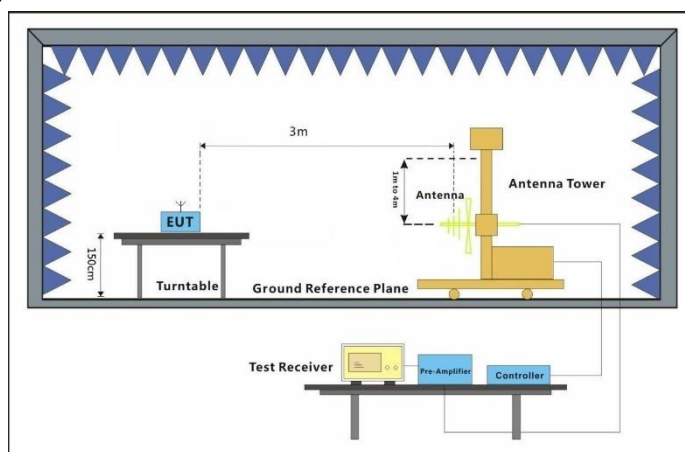
Humidity: 53.0 % RH

Atmospheric Pressure: 1015 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

- 1) 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.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) 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.
- 4) 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.
- 5) The test-receiver system was set to Peak detector with Maximum Hold Mode. And use Quasi-Peak to measure the six highest frequencies.
- 6) Test the EUT in the lowest channel,the middle channel,the Highest channel and only recorded worst channel--Lowest channel in the test report.
- 7) 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.
- 8) Repeat above procedures until all frequencies measured was complete

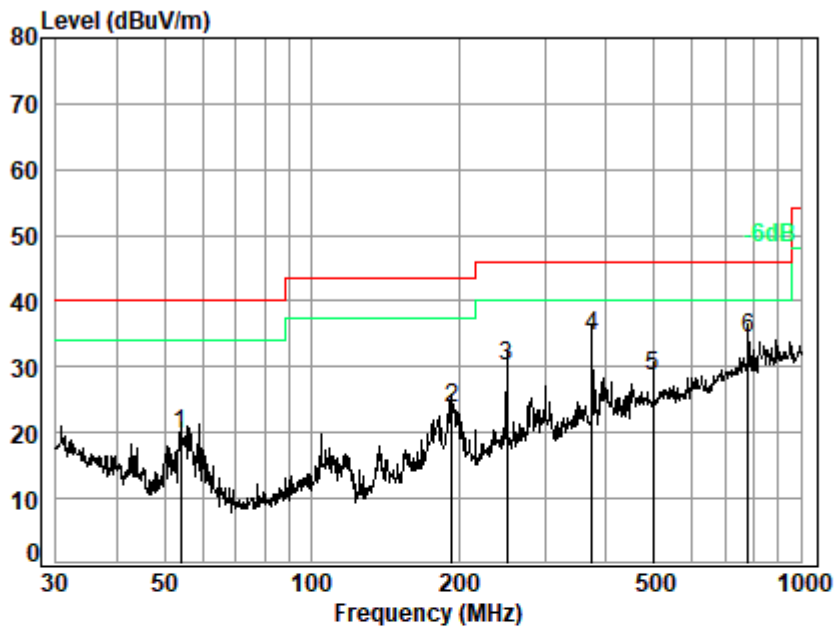
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Test Mode: 00; Polarity: Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : 03967AT
Test Mode: 00

		Ant	Cable	Preamp	Read	Limit	Over	
	Freq	Factor	Loss	Factor	Level	Level	Line	Limit Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	53.88	12.03	0.81	27.15	34.06	19.75	40.00	-20.25 QP
2	193.77	14.57	1.66	26.62	34.12	23.73	43.50	-19.77 QP
3	250.30	17.86	1.91	26.40	36.89	30.26	46.00	-15.74 QP
4 q	374.62	21.37	2.39	26.42	37.19	34.53	46.00	-11.47 QP
5	499.42	23.08	2.81	26.80	29.49	28.58	46.00	-17.42 QP
6	779.61	26.79	3.61	26.38	30.47	34.49	46.00	-11.51 QP



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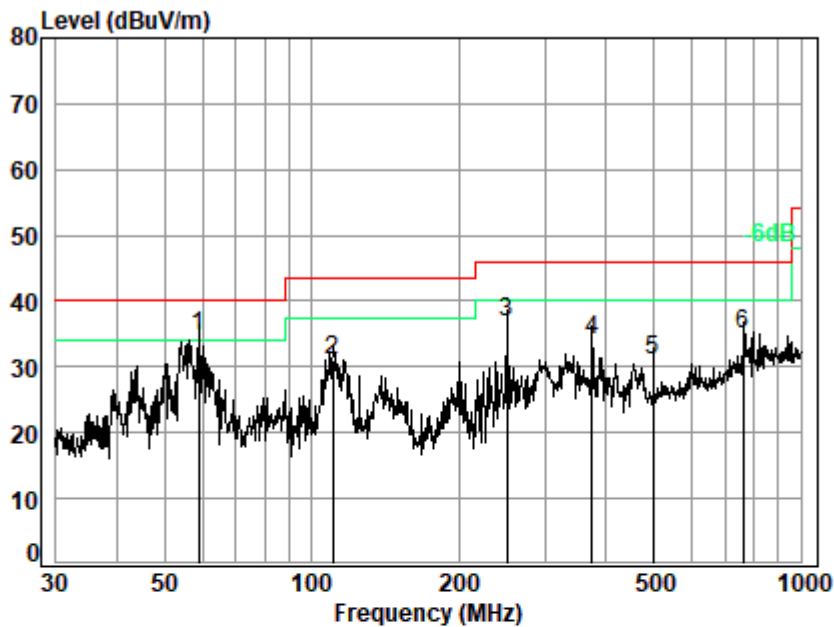
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Test Mode: 00; Polarity: Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : 03967AT
Test Mode: 00

		Ant	Cable	Preamp	Read	Limit	Over	
	Freq	Factor	Loss	Factor	Level	Level	Line	Limit Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	q	58.82	11.39	0.84	27.14	49.45	34.54	40.00 -5.46 QP
2		110.57	12.47	1.20	26.96	44.32	31.03	43.50 -12.47 QP
3		250.30	17.86	1.91	26.40	43.30	36.67	46.00 -9.33 QP
4		374.62	21.37	2.39	26.42	36.71	34.05	46.00 -11.95 QP
5		499.42	23.08	2.81	26.80	31.87	30.96	46.00 -15.04 QP
6		763.38	26.64	3.58	26.45	31.08	34.85	46.00 -11.15 QP



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7.3 Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart F Section 15.517 (c)(d), 15.521(d) (h)
 Test Method: ANSI C63.10: 2013 section 10.3
 Measurement Distance: 3m

Limit:				
Frequency	Limit (dBuV/m)@3m	RBW	Detector	Measurement distance (m)
1000MHz-1610MHz	20.0	1MHz	AV	0.5
1610MHz-1990MHz	42.0	1MHz	AV	0.5
1990MHz-3100MHz	44.0	1MHz	AV	0.5
3100MHz-10600MHz	54.0	1MHz	AV	0.5
Above 10600MHz	44.0	1MHz	AV	0.5
1164MHz-1240MHz	10.0	1KHz	AV	3
1559MHz-1610MHz	10.0	1KHz	AV	3

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22.4 °C Humidity: 61.6 % RH Atmospheric Pressure: 1015 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation



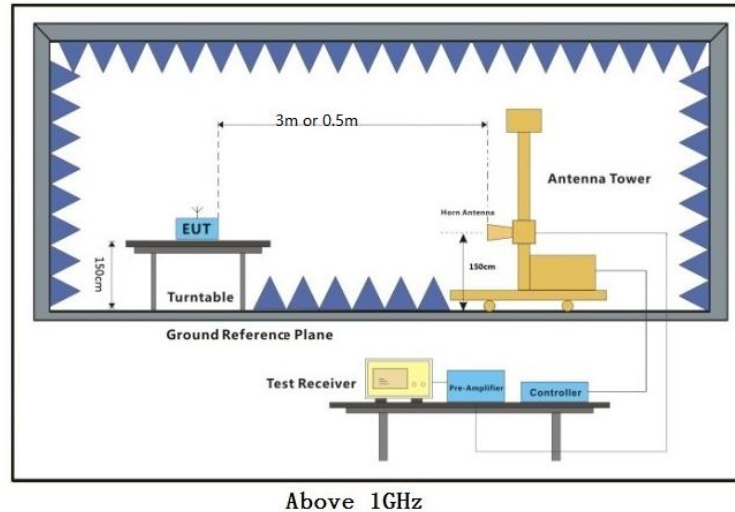
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7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

- 1) The EUT was placed on the top of a rotating table 1.5 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.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) 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.
- 4) 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.
- 5) The test-receiver system was set to Peak detector with Maximum Hold Mode.
- 6) Test the EUT in the lowest channel, the middle channel, the Highest channel
- 7) 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.
- 8) Repeat above procedures until all frequencies measured was complete

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Average Field Strength within 1164-1240MHz & 1559-1610MHz @ RBW=1KHz for ch3								
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin	Polarization
1236.431	24.47	2.86	37.61	12.24	1.96	10	8.04	Horizontal
1600.252	26.51	3.37	36.63	7.78	1.03	10	8.97	Horizontal
1236.416	24.47	2.86	37.61	12.45	2.17	10	7.83	Vertical
1592.642	26.41	3.36	36.65	8.57	1.69	10	8.31	Vertical

Average Field Strength out of 1164-1240MHz & 1559-1610MHz @ RBW=1MHz for ch3									
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Distance factor (dBuV)	Read Level (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin	Polarization
1304.752	24.72	2.97	37.4	-15.56	38.35	13.08	20	6.92	Horizontal
2010.456	28.18	3.83	35.78	-15.56	39	19.67	44	24.33	Horizontal
7510.258	36.04	8.8	36.01	-15.56	40.32	33.59	54	20.41	Horizontal
16878.54	42.71	14.16	37.5	-15.56	26.47	30.28	44	13.72	Horizontal
1293.621	24.67	2.95	37.43	-15.56	38.64	13.27	20	6.73	Vertical
2094.104	28.49	3.93	35.75	-15.56	37.48	18.59	44	25.41	Vertical
7982.653	36.2	9.21	36.09	-15.56	37.19	30.95	54	23.05	Vertical
14446.86	39.8	12.92	37.22	-15.56	32.7	32.64	44	11.36	Vertical



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7.4 UWB Bandwidth

Test Requirement 47 CFR Part 15F Section 15.503(a),15.521(e)

Test Method: ANSI C63.10:2013 section 10.1

Limit:

≥500MHz

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 26.9 °C

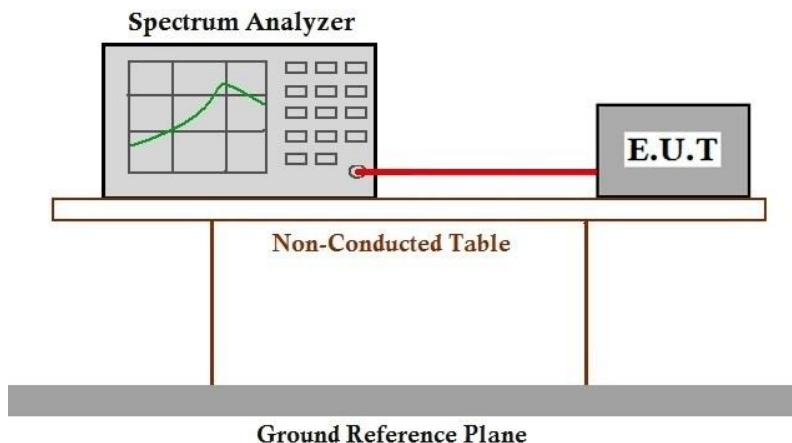
Humidity: 46.5 % RH

Atmospheric Pressure: 1015 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

The frequency at which the maximum power level is measured with the peak detector is designated fM. The peak power measurements shall be made using a spectrum analyzer or EMI receiver with a 1 MHz resolution bandwidth and a video bandwidth of 1 MHz or greater. The instrument shall be set to peak detection using the maximum-hold trace mode. The outermost 1 MHz segments above and below fM, where the peak power falls by 10 dB relative to the level at fM, are designated as fH and fL, respectively:

- a) For the lowest frequency bound fL, the emission is searched from a frequency lower than fM that has, by inspection, a peak power much lower than 10 dB less than the power at fM and increased toward fM until the peak power indicates 10 dB less than the power at fM. The frequency of that segment is recorded.
- b) This process is repeated for the highest frequency bound fH, beginning at a frequency higher than fM that has, by inspection, a peak power much lower than 10 dB below the power at fM. The frequency of that segment is recorded.
- c) The two recorded frequencies represent the highest fH and lowest fL bounds of the UWB transmission, and the -10 dB bandwidth (B - 10) is defined as (fH - fL). The center frequency (fc) is mathematically determined from $(fH - fL) / 2$.
- d) The fractional bandwidth is defined as $2(fH - fL) / (fH + fL)$.
- e) Determine whether the -10 dB bandwidth (fH - fL) is ≥ 500 MHz, or whether the fractional bandwidth $2(fH - fL) / (fH + fL)$ is ≥ 0.2 .

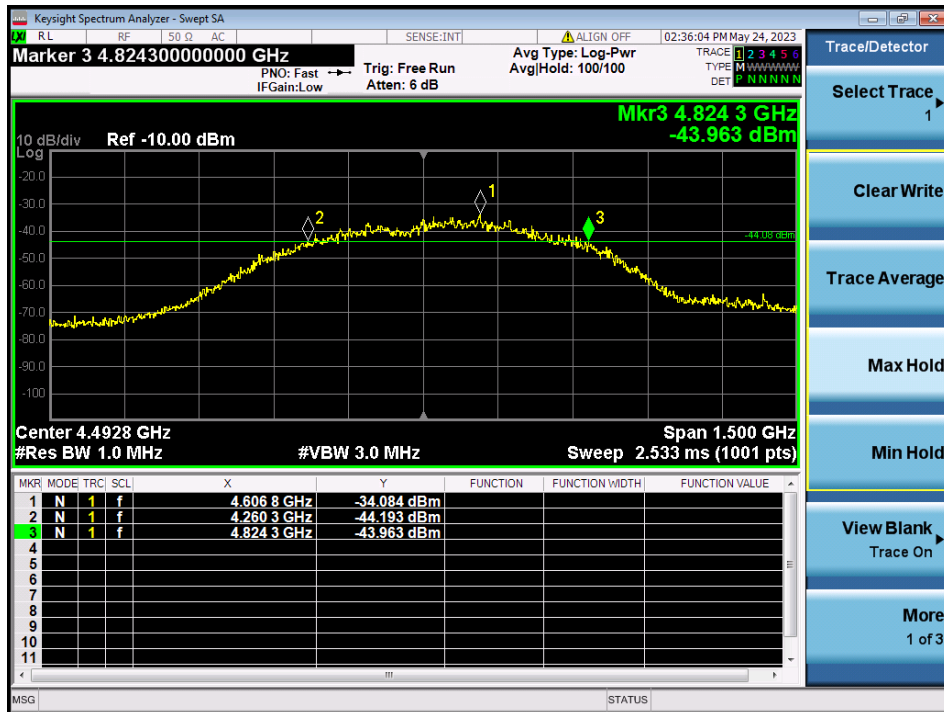
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Test Frequency (MHz)	FM(GHz)	FL (GHz)	FH (GHz)	10dB bandwidth (MHz)	Limit (MHz)	Results
4492.8	4.6068	4.2603	4.8243	564	≥500MHz	Pass



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

Test Requirement 47 CFR Part 15, Subpart F 15.207, 15.505, 15.521(j),

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	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.

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.1 °C

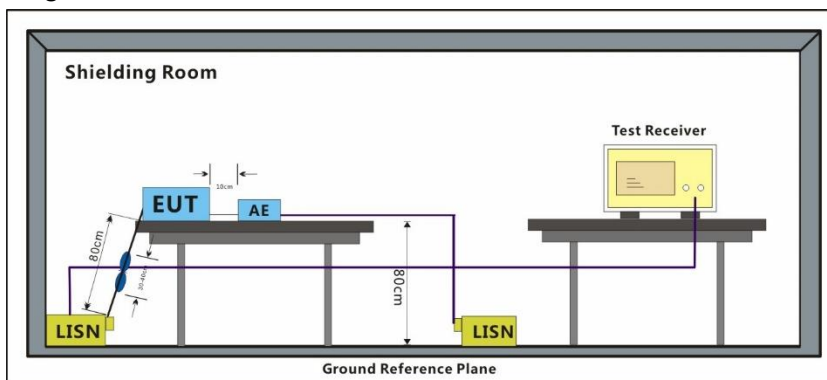
Humidity: 50.4 % RH

Atmospheric Pressure: 1015 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation

7.5.3 Test Setup Diagram



7.5.4 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 50ohm/50μH + 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



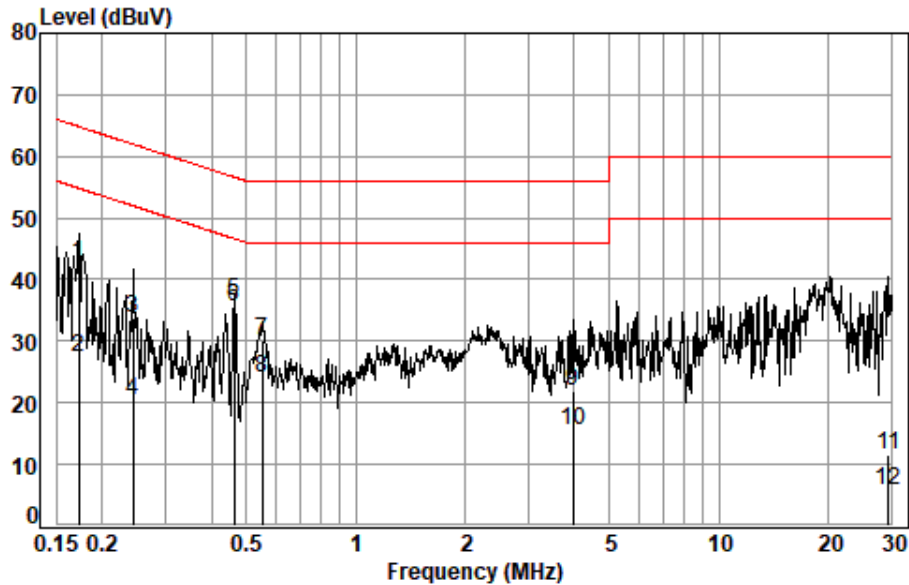
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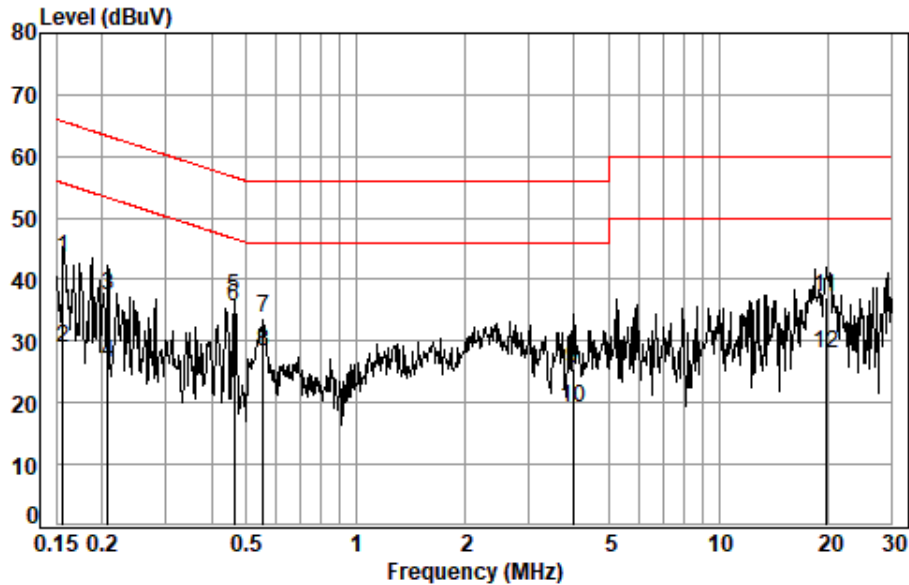
Test Mode: 00; Line: Live line



Site : Shielding Room
Condition: Line
Job No. : 03967AT
Test mode: 00

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1722	0.03	9.62	32.97	42.62	64.86	-22.24	QP
2	0.1722	0.03	9.62	17.63	27.28	54.86	-27.58	Average
3	0.2429	0.04	9.62	24.23	33.89	62.00	-28.11	QP
4	0.2429	0.04	9.62	10.84	20.50	52.00	-31.50	Average
5 *	0.4637	0.05	9.62	26.73	36.40	56.63	-20.23	QP
6 *	0.4637	0.05	9.62	25.89	35.56	46.63	-11.07	Average
7	0.5523	0.06	9.62	20.42	30.10	56.00	-25.90	QP
8	0.5523	0.06	9.62	14.32	24.00	46.00	-22.00	Average
9	3.9639	0.14	9.66	12.05	21.85	56.00	-34.15	QP
10	3.9639	0.14	9.66	5.63	15.43	46.00	-30.57	Average
11	29.3709	0.38	10.18	0.94	11.50	60.00	-48.50	QP
12	29.3709	0.38	10.18	-4.70	5.86	50.00	-44.14	Average

Test Mode: 00; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 03967AT
Test mode: 00

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1565	0.03	9.62	33.70	43.35	65.65	-22.30	QP
2	0.1565	0.03	9.62	19.20	28.85	55.65	-26.80	Average
3	0.2072	0.04	9.62	27.71	37.37	63.32	-25.95	QP
4	0.2072	0.04	9.62	16.82	26.48	53.32	-26.84	Average
5 *	0.4637	0.05	9.62	27.47	37.14	56.63	-19.49	QP
6 *	0.4637	0.05	9.62	25.99	35.66	46.63	-10.97	Average
7	0.5552	0.06	9.62	24.00	33.68	56.00	-22.32	QP
8	0.5552	0.06	9.62	18.67	28.35	46.00	-17.65	Average
9	3.9639	0.14	9.67	15.74	25.55	56.00	-30.45	QP
10	3.9639	0.14	9.67	9.43	19.24	46.00	-26.76	Average
11	19.7397	0.28	10.12	26.63	37.03	60.00	-22.97	QP
12	19.7397	0.28	10.12	17.54	27.94	50.00	-22.06	Average

8 Test Setup Photo

Refer to Appendix - Test Setup Photo for SZCR2211003967AT.

9 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for SZCR2211003967AT.

- End of the Report -