TEST REPORT

Report Reference No. ..... :	**TRE1805021302**	R/C…….: 54432
FCC ID ..... :	**2APZHSC93100MDEBVG3**	
Applicant's name ..... :	**Nexus ID Solutions AB**	
Address.....:	Telefonvägen 26,126 26 Hägersten Sweden	
Manufacturer.....:	CiVinTec Global Co., Limited	
Address.....:	F17,1703,Headquarters Economic Center Buliding, Zhonghaixin Science&Technology Park, Bulan Rd, Shenzhen, China	
Test item description ..... :	**Access Control Door Reader**	
Trade Mark .....:	-	
Model/Type reference.....:	SC93100-MDEB-VG3	
Listed Model(s) .....:	-	
Standard ..... :	**FCC CFR Title 47 Part 15 Subpart C Section 15.209**	
Date of receipt of test sample…….:	May 24, 2018	
Date of testing……...:	May 25, 2018 - June 05, 2018	
Date of issue……..:	June 05, 2018	
Result..... ……..:	**PASS**	

Compiled by (position+printedname+signature)...:	File administrators Shayne Zhu	Shayne Zhu
Supervised by (position+printedname+signature)....:	Project Engineer Jerry Wang	Jerry Wang
Approved by (position+printedname+signature)....:	RF Manager Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd.**
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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The test report merely correspond to the test sample.

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1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.209: Radiated emission limits; general requirements.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report version information

Revision No.	Date of issue	Description
N/A	2018-06-05	Original

2. TEST DESCRIPTION

Test Item	Section in CFR 47	Result	Test Engineer
Antenna requirement	15.203	PASS	Baozhu hu
AC Power Line Conducted Emissions	15.207	N/A	N/A
Radiated Emissions	15.209	PASS	Andrew Li

Remark: N/A: not applicable

3. SUMMARY

3.1. Client Information

Applicant:	Nexus ID Solutions AB
Address:	Telefonvägen 26,126 26 Hägersten Sweden
Manufacturer:	CiVinTec Global Co., Limited
Address:	F17,1703,Headquarters Economic Center Buliding, Zhonghaixin Science&Technology Park, Bulan Rd, Shenzhen, China

3.2. Product Description

Name of EUT:	Access Control Door Reader
Trade Mark:	-
Model No.:	SC93100-MDEB-VG3
Listed Model(s):	-
Power supply*:	DC 9V-30V
Adapter information:	-
RF Specification	
Operation frequency:	125kHz
Channel number:	1
Modulation Type:	ASK
Antenna type:	PCB antenna
Antenna gain:	0dBi

*: prescan all test voltage, found worst case at DC 12V, so only show the test data of DC 12V.

3.3. EUT operation mode

TEST MODE

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit.
For AC power line conducted emissions:
The EUT was set to connect with large package sizes transmission.

3.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- ● - supplied by the manufacturer
- ○ - supplied by the lab

		Manufacturer :	/
		Model No. :	/
		Manufacturer :	/
		Model No. :	/

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China
Phone: 86-755-26748019 Fax: 86-755-26748089

4.2. Test Facility

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

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. 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 762235.

IC-Registration No.: 5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors in calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to TR-100028-01 “Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 1” and TR-100028-02 “Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 2” and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system according to ISO/IEC 17025. Further more, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Here after the best measurement capability for Shenzhen Huatongwei is reported:

Test Items	Measurement Uncertainty	Notes
Conducted spurious emissions 9KHz-30MHz	3.39 dB	(1)
Radiated Emissions 30~1000MHz	4.24 dB	(1)
Radiated Emissions 1~18GHz	5.16 dB	(1)
Radiated Emissions 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	---------	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.5. Equipments Used during the Test

Conducted Emissions						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm-dd-yy)	Next Cal. (mm-dd-yy)
1	EMI Test Receiver	R&S	ESCI	101247	11/11/2017	11/10/2018
2	Artificial Mains	SCHWARZBECK	NNLK 8121	573	11/11/2017	11/10/2018
3	2-Line V-Network	R&S	ESH3-Z5	100049	11/11/2017	11/10/2018
4	Pulse Limiter	R&S	ESH3-Z2	101488	11/11/2017	11/10/2018
5	RF Connection Cable	HUBER+SUHNER	EF400	N/A	11/21/2017	11/20/2018
6	Test Software	R&S	ES-K1	N/A	N/A	N/A
Radiated Emissions						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm-dd-yy)	Next Cal. (mm-dd-yy)
1	Semi-Anechoic Chamber	Albatross projects	SAC-3m-01	C11121	10/16/2016	10/15/2019
2	EMI Test Receiver	R&S	ESCI	100900	11/11/2017	11/10/2018
3	Loop Antenna	R&S	HFH2-Z2	100020	11/20/2017	11/19/2020
4	Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	538	4/5/2017	4/4/2020
5	Horn Antenna	SCHWARZBECK	9120D	1011	3/27/2017	3/26/2020
6	Broadband Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170472	3/27/2017	3/26/2020
7	Pre-amplifier	SCHWARZBECK	BBV 9743	9743-0022	10/18/2017	10/17/2018
8	Broadband Pre-amplifier	SCHWARZBECK	BBV 9718	9718-248	10/18/2017	10/17/2018
9	Spectrum Analyzer	R&S	FSP40	100597	11/11/2017	11/10/2018
10	RF Connection Cable	HUBER+SUHNER	RE-7-FL	N/A	11/21/2017	11/20/2018
12	Test Software	Audix	E3	N/A	N/A	N/A
13	Test Software	R&S	ES-K1	N/A	N/A	N/A
14	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
15	Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A	N/A
RF Conducted Test						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm-dd-yy)	Next Cal. (mm-dd-yy)
1	Spectrum Analyzer	R&S	FSV40	100048	11/11/2017	11/10/2018

5. TEST CONDITIONS AND RESULTS

5.1. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

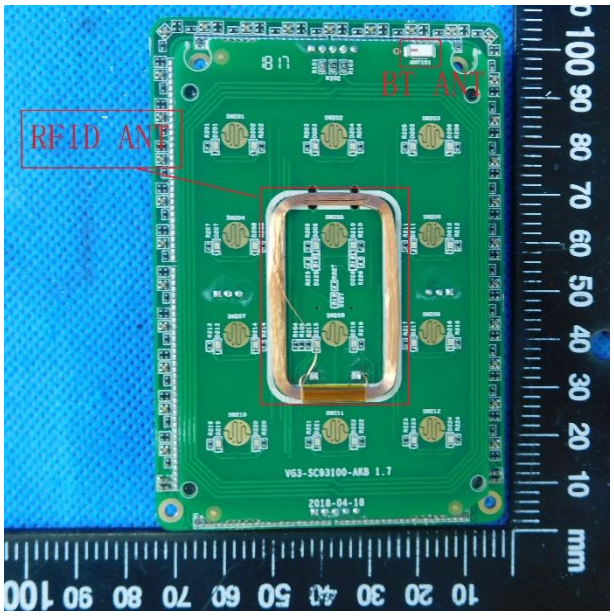
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of anantenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit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

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**



5.2. AC Power Conducted Emissions

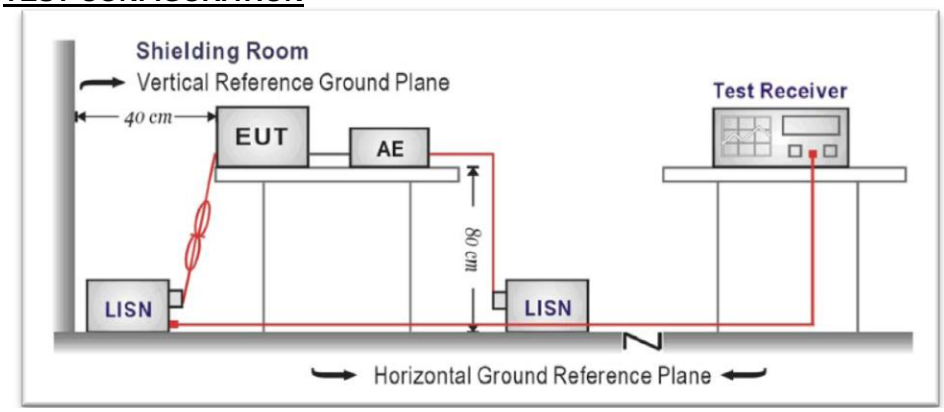
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

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 CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10:2013
2. The EUT was placed on a plat form of nominal size, 1 m by 1.5 m, raised 10 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 10 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50ohm / 50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor,was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☐ **Passed** ☒ **Not Applicable**

5.3. Radiated Emission

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

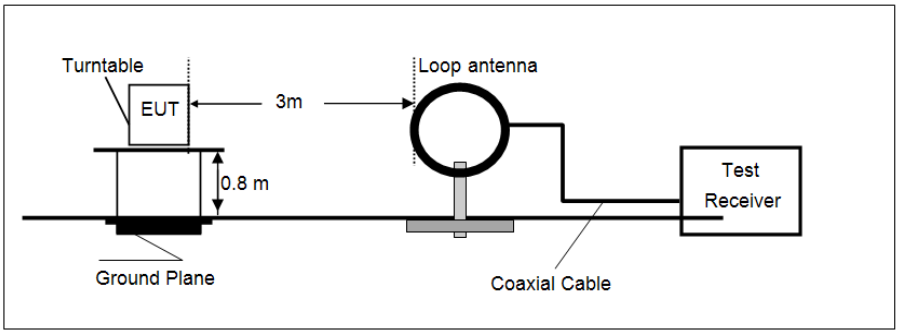
Frequency(MHz)	Field strength (dBuV/m)
0.009-0.490	2400/F(kHz) at 300m
0.490-1.705	24000/F(kHz) at 30m
1.705-30	29.54 at 30m
30~88	40.00 at 3m
88~216	43.50 at 3m
216~960	46.00 at 3m
960~1000	54.00 at 3m

Note:For measurements in the band 0.009MHz to 0.490MHz the specified measurement distance is 300m. The distance correction will be: Correction = 40*log (300/3) = 80dB

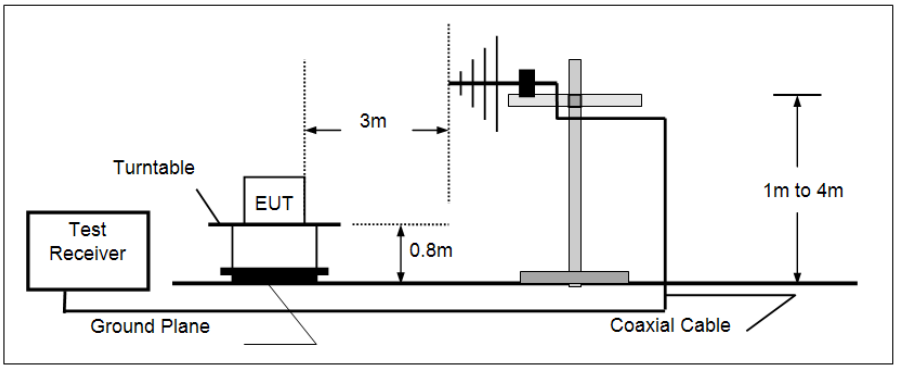
For measurements in the band 0.490MHz to 30MHz the specified measurement distance is 30m. The distance correction will be: Correction = 20*log (30/3) = 20dB

TEST CONFIGURATION

- 9 kHz ~ 30 MHz



- 30 MHz ~ 1 GHz



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:

Frequency	Detector	RBW	VBW	Remark
9kHz-150kHz	Quasi-peak	200Hz	600Hz	Quasi-peak Value
50kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	120kHz	300KHz	Quasi-peak Value

TEST MODE:

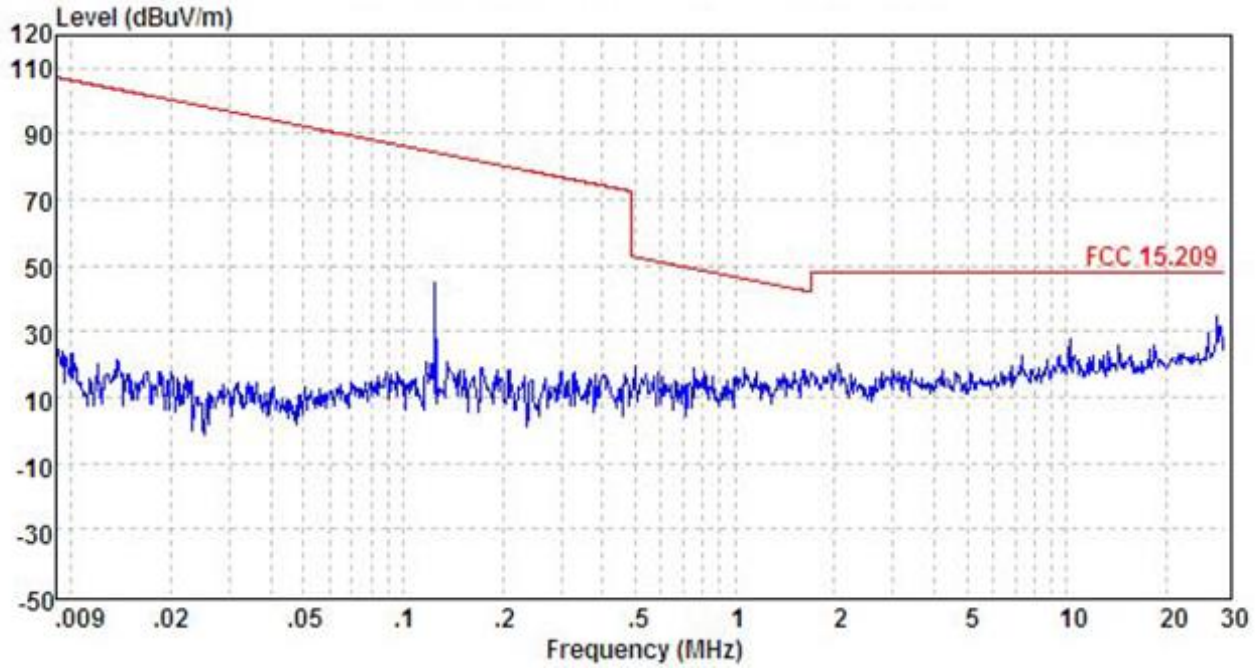
Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

■ **9kHz ~ 30MHz**

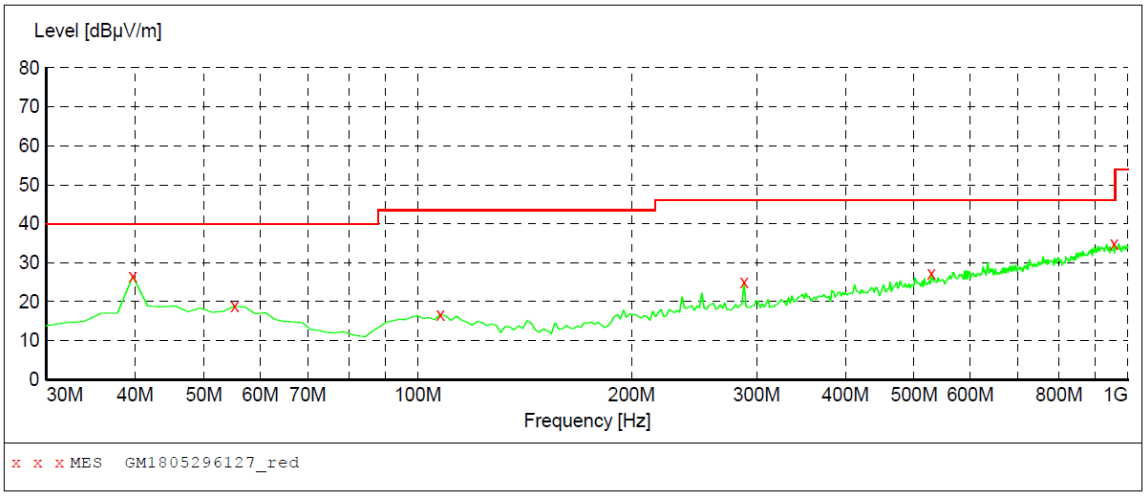
Out of Band Emission



Frequency(MHz)	QuasiPeak(dBuV/m)	Limit(dBuV/m)	Test Result
0.125	46.73	105.67	Pass
0.212	23.54	101.08	Pass
1.876	22.13	42.14	Pass
28.052	33.54	49.54	Pass

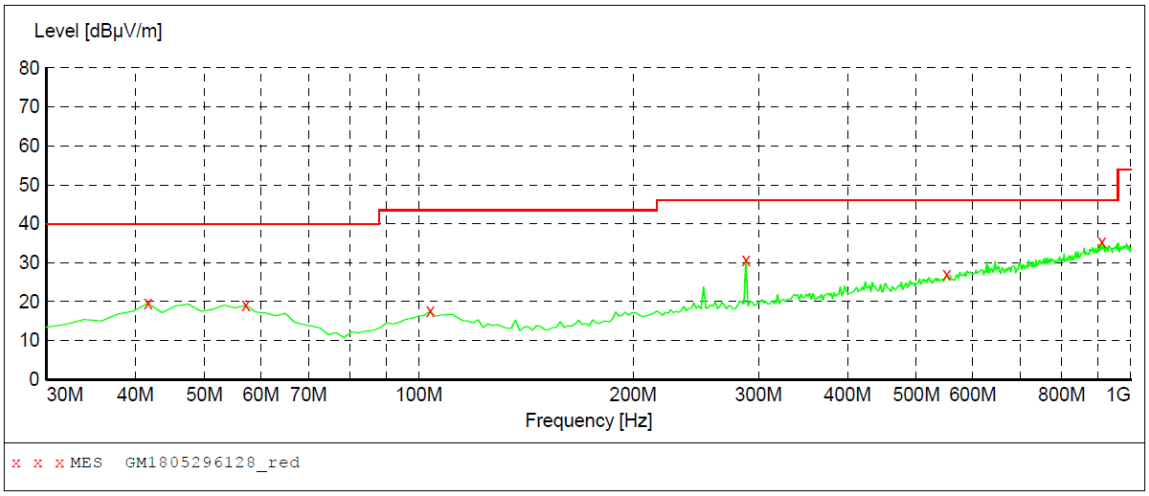
■ **30 MHz ~ 1 GHz**

Polarization:	Vertical



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
39.700000	26.50	-10.1	40.0	13.5	QP	100.0	14.00	VERTICAL
55.220000	18.90	-9.2	40.0	21.1	QP	100.0	43.00	VERTICAL
107.600000	16.80	-10.6	43.5	26.7	QP	100.0	0.00	VERTICAL
288.020000	25.00	-7.5	46.0	21.0	QP	100.0	14.00	VERTICAL
528.580000	27.30	-1.2	46.0	18.7	QP	100.0	175.00	VERTICAL
955.380000	34.80	7.3	46.0	11.2	QP	100.0	43.00	VERTICAL

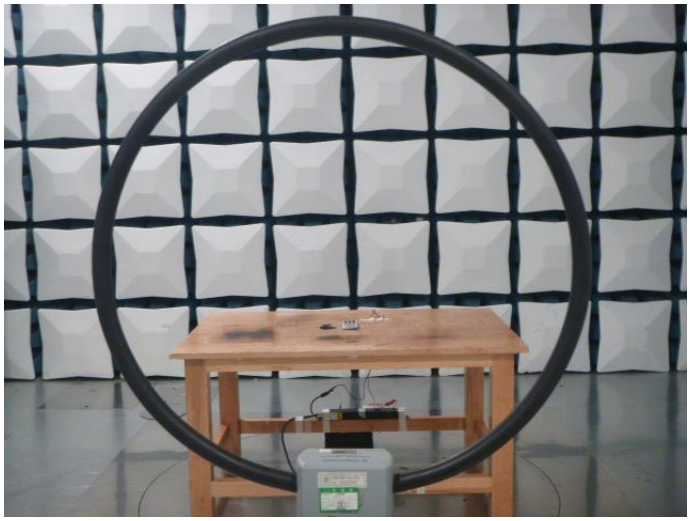
Polarization:	Horizontal



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
41.640000	19.60	-9.5	40.0	20.4	QP	100.0	313.00	HORIZONTAL
57.160000	19.10	-9.4	40.0	20.9	QP	300.0	88.00	HORIZONTAL
103.720000	17.60	-10.5	43.5	25.9	QP	300.0	295.00	HORIZONTAL
288.020000	30.70	-7.5	46.0	15.3	QP	100.0	213.00	HORIZONTAL
551.860000	26.90	-0.7	46.0	19.1	QP	300.0	105.00	HORIZONTAL
910.760000	35.40	6.9	46.0	10.6	QP	100.0	313.00	HORIZONTAL

6. TEST SETUP PHOTOS OF THE EUT

Radiated Emissions



7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Reference to the test report No.: TRE1805021301.

--------End of Report--------