



EMC TEST REPORT

Applicant	Mobiwire SAS
FCC ID	QPN-MOBIGO
Product	3G NFC POS
Model	MobiGo
Report No.	R1807A0329-E1V1
Issue Date	August 28, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2017)/ ANSI C63.4 (2014)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Wei Liu

Guangchang Fan

Performed by: Wei Liu/ Manager

Approved by: Guangchang Fan/ Director

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL:+86-021-50791141/2/3

FAX:+86-021-50791141/2/3-8000



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Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	15.107, ANSI C63.4-2014	PASS
Test Date: July 20, 2018~ August 15, 2018			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Client Information

Applicant	Mobiwire SAS
Applicant address	79 avenue Francois Arago, 92000 NANTERRE France
Manufacturer	Mobiwire SAS
Manufacturer address	79 avenue Francois Arago, 92000 NANTERRE France

2.2 General information

EUT Description	
Device Type:	Portable Device
Model Number:	MobiGo
IMEI:	SIM 1: 359557090000197 SIM 2: 3595570900001575
HW Version:	V01B
SW Version:	WM06_NFC
Antenna Type:	Internal Antenna
Test Mode:	Transfer Data Mode
EUT Accessory	
Adapter 1	Manufacturer: DongGuan Aohai Power Technology Co.,Ltd Model: A31A-050100U-EU1
Adapter 2	Manufacturer:RUIDE(SHENZHEN) ELECTRONIC INDUSTRIAL CO., LTD. Model: RD0501000-USBA-18MG
Battery	Manufacturer: Ningbo Veken Battery Co.,LTD Model: 178119744
USB Cable	Manufacturer: ENZHEN FKY-QY HARDWARE ELECTRONIC CO.,LTD Model: AM MICRO 5P 100cm Cable, Shielded
Auxiliary test equipment	
PC	PCManufacturer: Dell Model: E5450 (SN : P48G001)
Note: The information of the EUT is declared by the manufacturer.	



Item	Configure 1	Configure 2
Software	The same	The same
Hardware	The same	The same
SIM Card Slot	SIM 1, SIM 2	SIM 1
Other	The same	The same
Note: Customer declaration, two configures is the same, except for SIM Card Slot. There are more than one Configure, each one should be applied throughout the compliance test respectively, however, only the worst case (Configure 1) will be recorded in this report.		



2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC Code CFR47 Part15B(2017)

ANSI C63.4 (2014)



2.4 Test Mode

Test Mode	
Mode 1	USB Copy(EUT with PC) + USB cable + Camera On + MP3+Idle

3 Test Case Results

3.1 Radiated Emission

Ambient condition

Temperature	Relative humidity	Pressure
24°C~26°C	45%~50%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=1MHz / VBW=3MHz / Sweep=AUTO

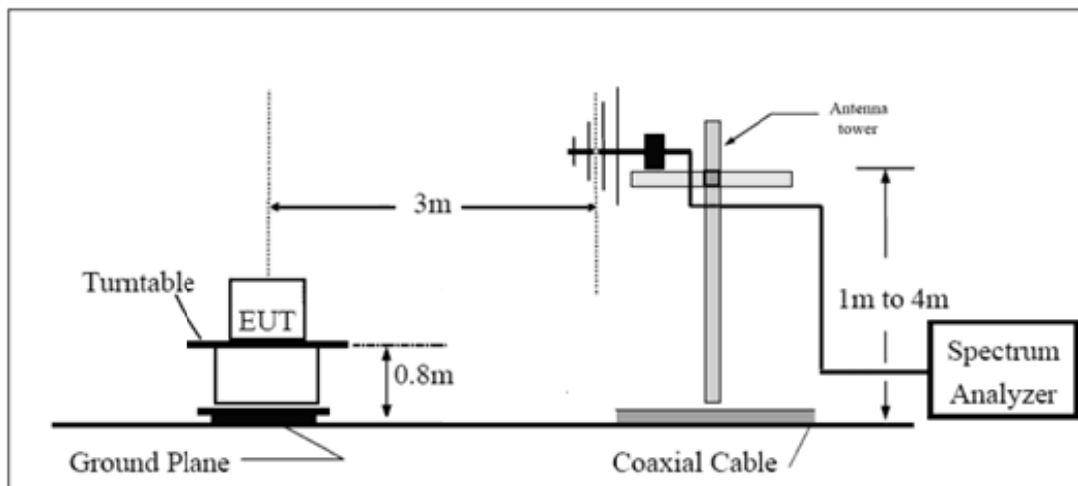
(b) AVERAGE: RBW=1MHz / VBW=1Hz / Sweep=AUTO

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

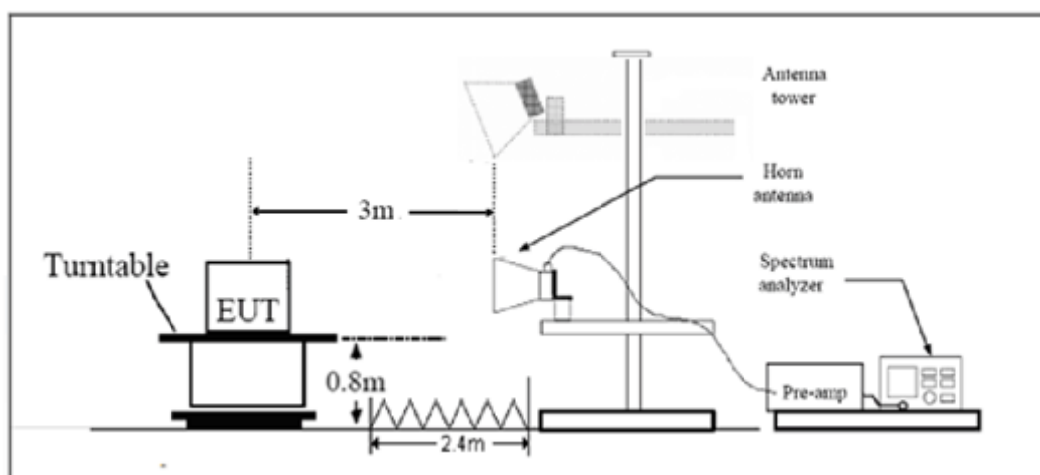
During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC; PC is connected to server via a long LAN cable.

Test Setup

Below 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

Limits

Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

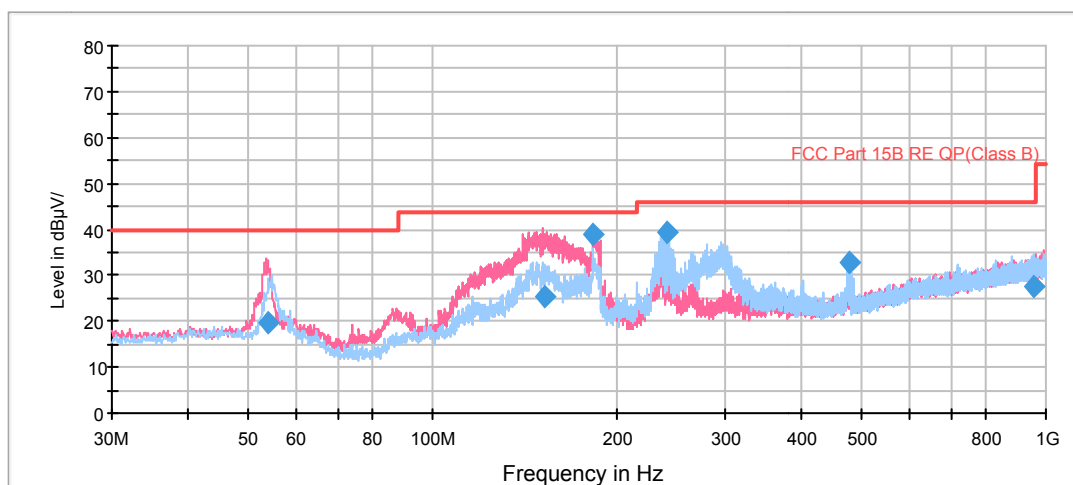
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U=3.704$ dB.

Test Results

The following graphs display the maximum values of horizontal and vertical by software.
For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

Copy of RE 0.03-1GHz QP Class B



Radiated Emission from 30MHz to 1GHz

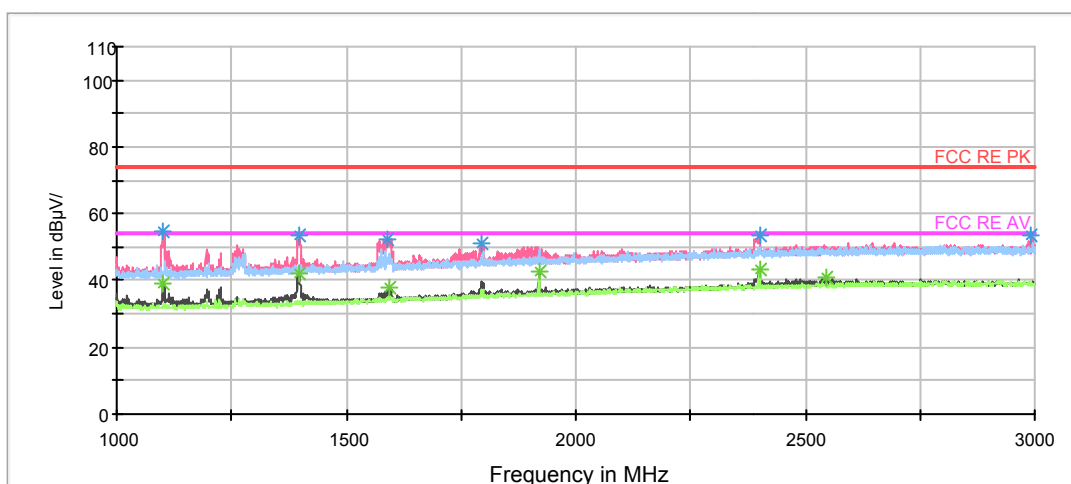
Frequency (MHz)	Quasi-Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
54.002500	19.7	6.7	100.0	V	105.0	13.0	20.3	40.0
151.931250	25.6	16.3	100.0	V	232.0	9.3	17.9	43.5
182.570000	38.9	27.9	100.0	V	81.0	11.0	4.6	43.5
240.651250	39.1	25.4	114.0	H	34.0	13.7	6.9	46.0
477.332500	32.8	12.8	100.0	H	253.0	20.0	13.2	46.0
955.620000	27.5	0.2	100.0	H	0.0	27.3	18.5	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

3. Margin = Limit –Quasi-Peak

RE 1G-6GHz PK+AV Class B

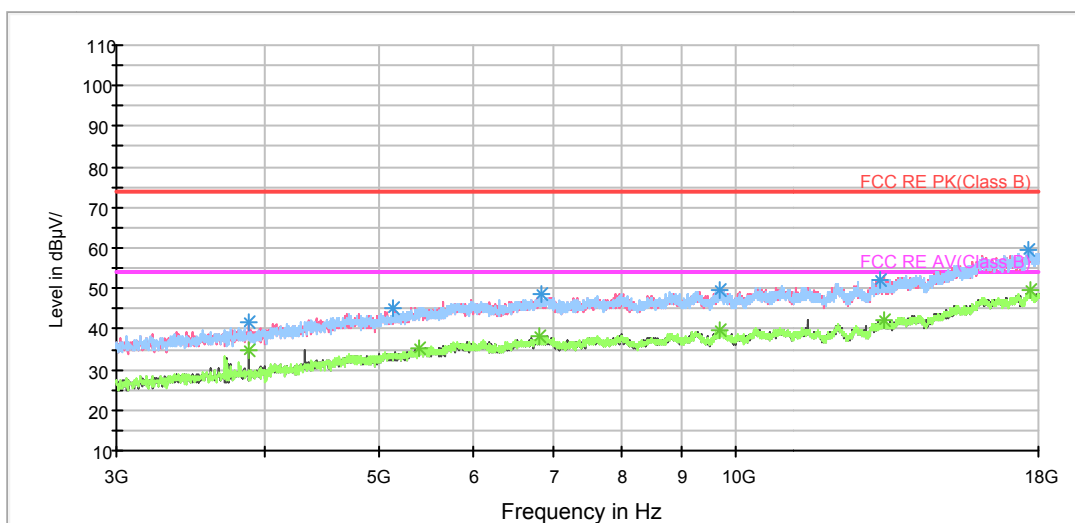


Radiated Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1100.000000	54.6	49.4	200.0	V	167.0	5.2	19.4	74
1398.500000	53.6	47.0	100.0	V	343.0	6.6	20.4	74
1588.500000	52.5	44.9	100.0	V	119.0	7.6	21.5	74
1795.000000	50.9	42.1	100.0	V	356.0	8.8	23.1	74
2400.000000	53.4	41.6	100.0	V	349.0	11.8	20.6	74
2993.000000	53.6	40.9	100.0	V	47.0	12.7	20.4	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1100.000000	38.8	33.6	200.0	V	167.0	5.2	15.2	54
1397.500000	42.4	35.8	100.0	V	356.0	6.6	11.6	54
1595.000000	37.8	30.2	100.0	V	19.0	7.6	16.2	54
1920.000000	42.8	33.4	200.0	V	341.0	9.4	11.2	54
2400.000000	43.4	31.6	200.0	V	0.0	11.8	10.6	54
2546.500000	40.8	28.6	100.0	V	0.0	12.2	13.2	54

RE 3-18GHz PK+AV



Radiated Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3879.375000	41.9	42.9	100.0	V	323.0	-1.0	32.1	74
5139.375000	45.3	43.1	200.0	V	163.0	2.2	28.7	74
6845.625000	48.6	42.2	100.0	H	50.0	6.4	25.4	74
9697.500000	49.5	41.1	200.0	V	273.0	8.4	24.5	74
13245.000000	52.2	39.8	200.0	V	56.0	12.4	21.8	74
17673.750000	59.5	40.2	100.0	H	178.0	19.3	14.5	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3879.375000	34.8	35.8	100.0	V	323.0	-1.0	19.2	54
5398.125000	35.2	32.1	100.0	H	7.0	3.1	18.8	54
6815.625000	38.3	32.0	200.0	H	0.0	6.3	15.7	54
9684.375000	39.7	31.4	200.0	V	185.0	8.3	14.3	54
13335.000000	42.3	29.8	200.0	H	345.0	12.5	11.7	54
17754.375000	49.5	30.1	200.0	H	139.0	19.4	4.5	54

3.2 Conducted Emission

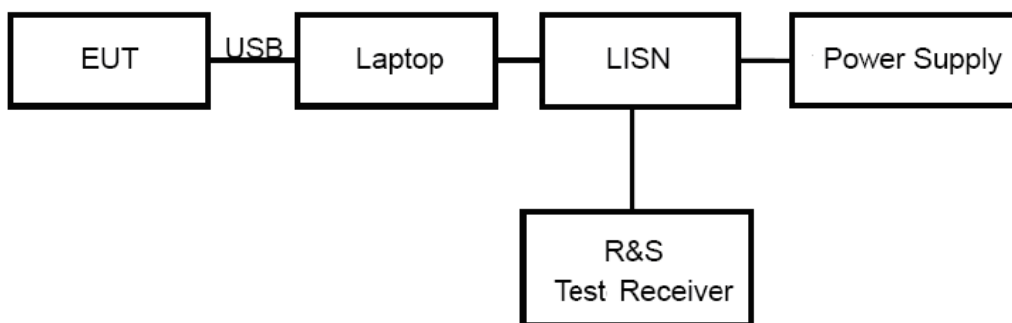
Ambient condition

Temperature	Relative humidity	Pressure
24°C ~26°C	50%~55%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

Limits

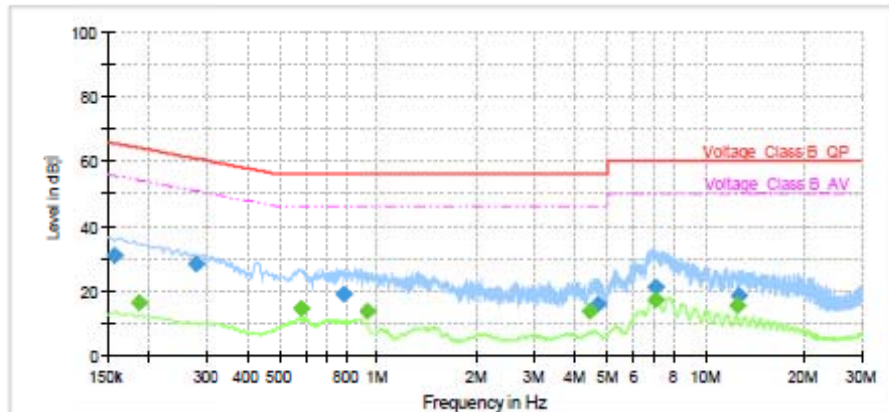
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U=2.57$ dB.

Test Results

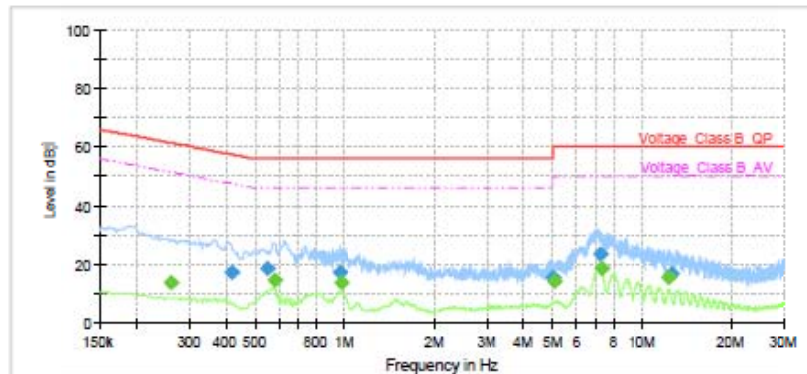
Following plots, Blue trace uses the peak detection; Green trace uses the average detection.



Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.156750	31.08	—	65.63	34.56	1000.0	9.000	L1	ON	19.1
0.186000	—	16.24	54.21	37.97	1000.0	9.000	L1	ON	19.2
0.278250	28.39	—	60.87	32.48	1000.0	9.000	L1	ON	19.2
0.584250	—	14.60	46.00	31.40	1000.0	9.000	L1	ON	19.3
0.784500	18.91	—	56.00	37.09	1000.0	9.000	L1	ON	19.2
0.928500	—	13.81	46.00	32.19	1000.0	9.000	L1	ON	19.2
4.429500	—	13.68	46.00	32.32	1000.0	9.000	L1	ON	19.1
4.701750	15.94	—	56.00	40.06	1000.0	9.000	L1	ON	19.1
7.041750	—	17.11	50.00	32.89	1000.0	9.000	L1	ON	19.2
7.084500	21.22	—	60.00	38.78	1000.0	9.000	L1	ON	19.2
12.516000	—	15.68	50.00	34.32	1000.0	9.000	L1	ON	19.4
12.588000	18.47	—	60.00	41.53	1000.0	9.000	L1	ON	19.5

L line

Conducted Emission from 150 KHz to 30MHz



Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.258000	—	13.88	51.50	37.62	1000.0	9.000	N	ON	19.1
0.417750	17.39	—	57.49	40.10	1000.0	9.000	N	ON	19.2
0.552750	18.69	—	56.00	37.31	1000.0	9.000	N	ON	19.3
0.584250	—	14.61	46.00	31.39	1000.0	9.000	N	ON	19.3
0.957750	17.05	—	56.00	38.95	1000.0	9.000	N	ON	19.2
0.973500	—	13.68	46.00	32.32	1000.0	9.000	N	ON	19.2
4.989750	15.55	—	56.00	40.45	1000.0	9.000	N	ON	19.1
5.064000	—	14.06	50.00	35.94	1000.0	9.000	N	ON	19.1
7.188000	23.38	—	60.00	36.62	1000.0	9.000	N	ON	19.2
7.289250	—	18.73	50.00	31.27	1000.0	9.000	N	ON	19.2
12.376500	—	15.40	50.00	34.60	1000.0	9.000	N	ON	19.4
12.558750	16.97	—	60.00	43.03	1000.0	9.000	N	ON	19.4

N line

Conducted Emission from 150 KHz to 30MHz

4 Main Test Instrument

Name	Manufacturer	Type	Serial Number	Last Cal.	Cal. Due Date
Signal Analyzer	R&S	FSV30	100815	2017-12-17	2018-12-16
EMI Test Receiver	R&S	ESCI	100948	2018-05-20	2019-05-19
Trilog Antenna	SCHWARZBECK	VULB 9163	9163-201	2017-11-18	2020-11-17
Horn Antenna	R&S	HF907	100126	2014-12-06	2019-12-05
EMI Test Receiver	R&S	ESR	101667	2018-05-20	2019-05-19
LISN	R&S	ENV216	101171	2016-12-16	2019-12-15
Bore Sight Antenna mast	ETS	2171B	00058752	/	/
Test software	EMC32	R&S	9.26.0	/	/

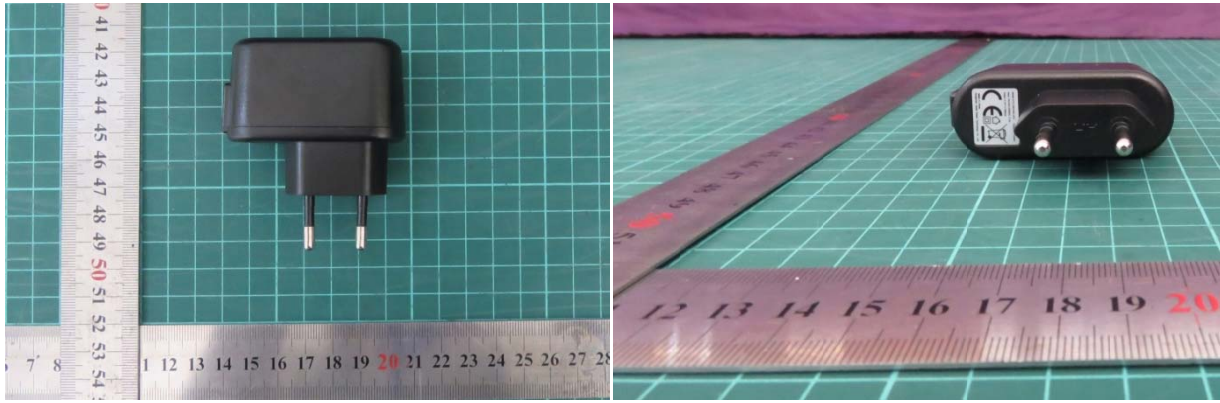
*****END OF REPORT *****

ANNEX A: The EUT Appearance and Test Configuration

A.1 EUT Appearance



a: EUT



Adapter 1



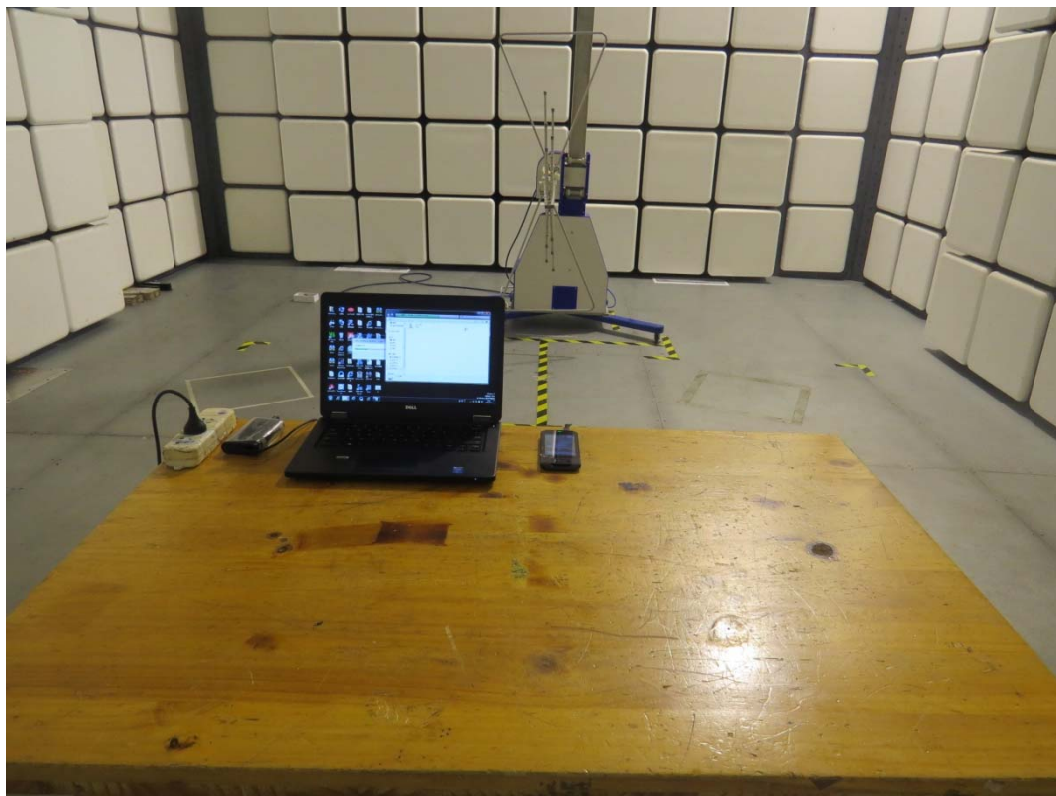
Adapter 2
b: Adapter



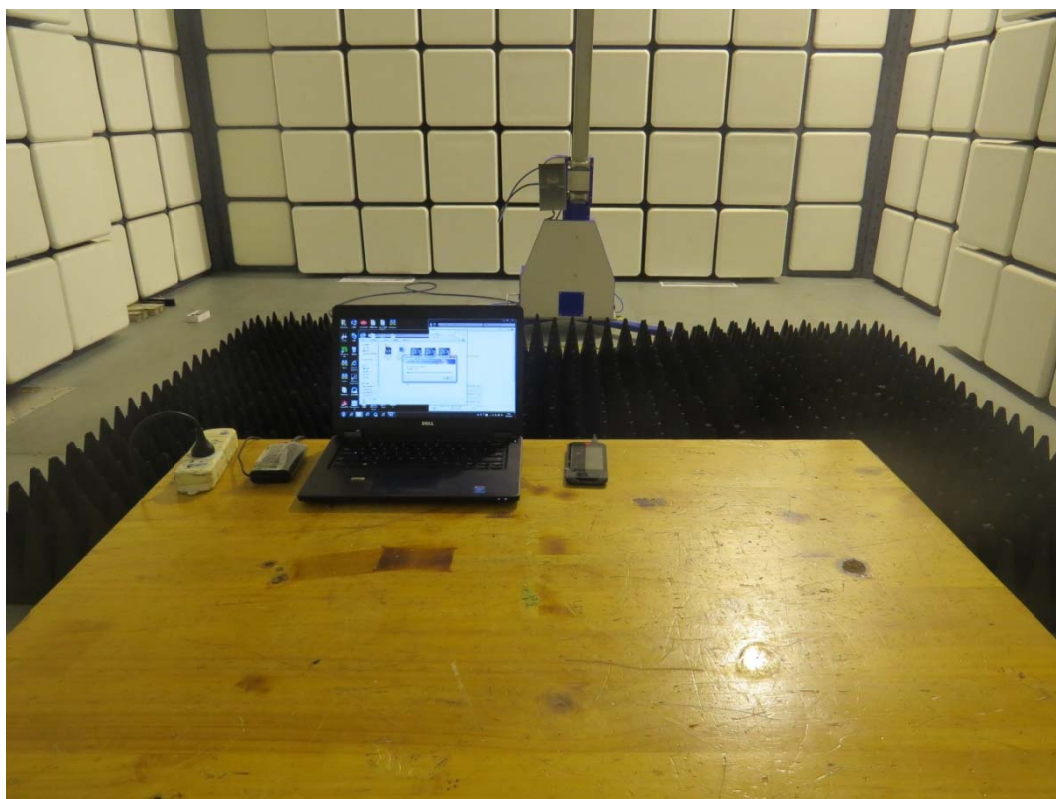
c: USB Cable

Picture 1EUT

A.2 Test Setup



a: Below 1GHz



b: Above 1GHz

Picture 2 Radiated Emission Test Setup



Picture 3 Conducted Emission Test Setup