

Prüfbericht-Nr.: <i>Test report no.:</i>	60415352 001	Auftrags-Nr.: <i>Order no.:</i>	168279564	Seite 1 von 13 Page 1 of 13	
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2020-11-01		
Auftraggeber: <i>Client:</i>	SPECTRA Technologies Holdings Co., Ltd. Unit 1301-09, 19-20, Tower II, Grand Century Place, Kowloon, Hong Kong				
Prüfgegenstand: <i>Test item:</i>	Android POS				
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	APOLLO				
Auftrags-Inhalt: <i>Order content:</i>	Test Report				
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart B				
Wareneingangsdatum: <i>Date of sample receipt:</i>	2020-10-13	Please refer to photo documents			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A002920755-001				
Prüfzeitraum: <i>Testing period:</i>	2020-10-14 – 2020-10-22				
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft von: <i>tested by:</i>	 Lin Lin		genehmigt von: <i>authorized by:</i>	 Winni e Hou	
Datum: <i>Date:</i>	2020-12-15		Ausstellungsdatum: <i>Issue date:</i>		2020-12-15
Stellung / Position:	Senior Project Manager		Stellung / Position:		Technical Certifier
Sonstiges / Other: FCC ID: VWZTA10Q					
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet * Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested					
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

Prüfbericht - Nr.: 60415352 001
Test Report No.

Seite 2 von 13
Page 2 of 13

Test Summary

5.1.1 Conducted Emission on AC Mains

RESULT: Pass

5.1.2 Radiated Emission

RESULT: Pass

Contents

1	General Remarks	4
1.1	Complementary Materials	4
2	Test Sites	5
2.1	Test Facilities	5
2.2	List of Test and Measurement Instruments.....	5
2.3	Traceability.....	5
2.4	Calibration	5
2.5	Measurement Uncertainty.....	6
2.6	Location of Original Data	6
2.7	Status of Facility Used for Testing	6
3	General Product Information.....	7
3.1	Product Function and Intended Use	7
3.2	Ratings and System Details.....	7
3.3	Independent Operation Modes	7
3.4	Noise Generating and Noise Suppressing Parts	7
3.5	Submitted Documents.....	8
4	Test Set-up and Operation Modes.....	9
4.1	Principle of Configuration Selection	9
4.2	Test Operation and Test Software	9
4.3	Special Accessories and Auxiliary Equipment.....	9
4.4	Countermeasures to Achieve EMC Compliance.....	9
4.5	Test Setup Diagram	10
5	Test Results	11
5.1.1	Conducted Emission on AC Mains	11
5.1.2	Radiated Emission.....	12
6	Photographs of the Test Set-Up	13
7	List of Tables.....	13

Prüfbericht - Nr.: 60415352 001
*Test Report No.***Seite 4 von 13**
Page 4 of 13

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Setup Photos

Appendix B: Test Results of FCC Part 15B

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China

FCC Registration No.: CN1260

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

TÜV Rheinland (Shenzhen) Co., Ltd.

Conducted Emission				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR3	102680	2021-05-19
Artificial Mains Network	R&S	ENV216	101445	2021-05-19
EMC32 test software	R&S	EMC32(Ver.10.50.01)	N/A	N/A
Radiated Emissions				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
3m SAC	ETS	SAC3	CT001632-Q1362	2021-08-23
EMI Test Receiver	R&S	ESR7	102111	2021-01-02
Horn Antenna	R&S	HF907	102706	2022-08-07
Preamplifier	FIT	SCU-18F	180077	2021-08-16
Trilog-Broadband antenna	SCHWARZBECK	VULB9168	0945	2021-12-08
EMC32 test software	R&S	EMC32(Ver.10.50.01)	N/A	N/A

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	± 3.70 dB / ± 3.30 dB
Radiated Emission (3m SAC), 30MHz to 1000MHz	± 4.52 dB
Radiated Emission (3m SAC), above 1000MHz	± 4.37 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is an Android POS which supports Bluetooth, 2.4G Wi-Fi 802.11 b/g/n, 5G Wi-Fi 802.11a/n, NFC and GSM/WCDMA/LTE wireless technology.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	Android POS
Type Designation	APOLLO
FCC ID	VWZTA10Q
Operating Voltage:	DC 5V@2A input via power adapter
Testing Voltage	AC 120V@60Hz
Power Adapter	Model: UWP-10W-0520S Input: AC 100-240V~50/60Hz, 0.3A Output: DC5V@2A
Battery	Model: LARGE18650 Power Rationg: 7.2Vdc, 2600mAh Type: Li-ion
USB Cable	Shielding, Length: 1m

3.3 Independent Operation Modes

The basic operation modes are:

1. On, SD Data transfer with PC
2. On, Front camera on (with adapter)
3. On, Rear camera on with LED on (with adapter)
4. On, Video play with 1KHz (with adapter)
5. On, Bluetooth link (with adapter)
6. On, Wi-Fi link (with adapter)
7. On, 2G/3G/4G link (with adapter)
8. On, Print (with adapter)

Note: NFC mode alway on.

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

Prüfbericht - Nr.: 60415352 001
Test Report No.

Seite 8 von 13
Page 8 of 13

3.5 Submitted Documents

- Application Form

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.4: 2014.

4.3 Special Accessories and Auxiliary Equipment

Table 3: List of Auxiliary Equipment

Equip. No.	Description	Manufacturer	Model	S/N
G1825063	Portable Laptop	Lenovo	ThinkPad T480	10Q67059
G1825095	Earphone	TUVR	G1825095-001	---

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

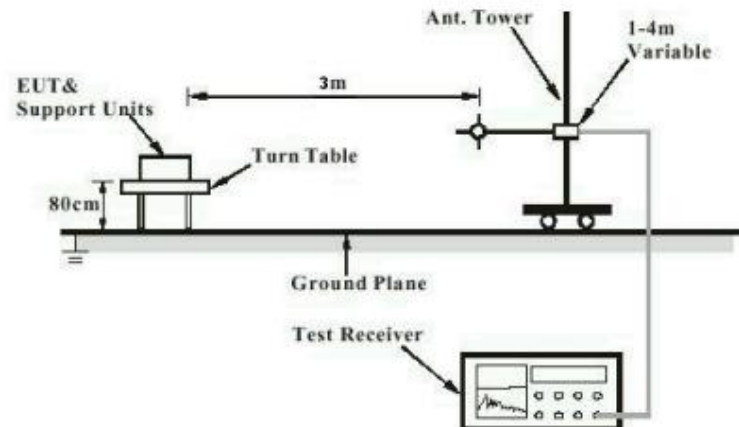


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

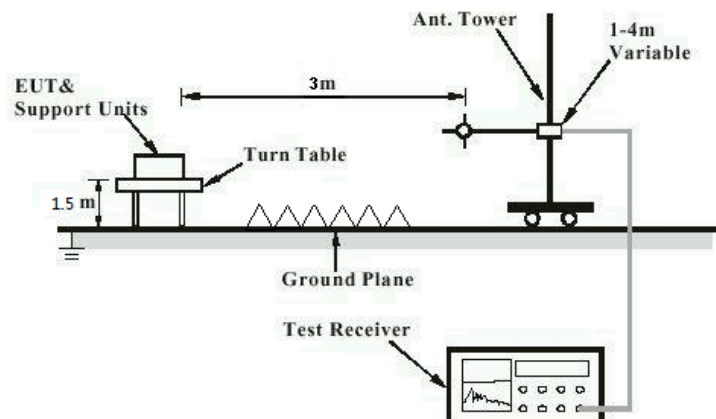
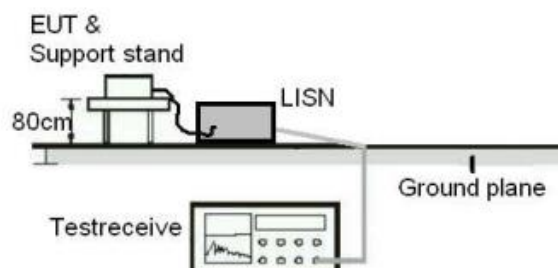


Diagram of Measurement Configuration for Mains Conduction Measurement



Prüfbericht - Nr.: 60415352 001
*Test Report No.***Seite 11 von 13**
Page 11 of 13

5 Test Results

5.1.1 Conducted Emission on AC Mains

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.107(a)
Basic standard	: ANSI C63.4: 2014
Frequency range	: 0.15 – 30MHz
Limits	: FCC Part 15.107(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2020-10-19 ~ 2020-10-22
Input voltage	: AC 120V@60Hz
Operation mode	: Mode 1 to Mode 8
Ambient temperature	: 24 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix B.

Prüfbericht - Nr.: 60415352 001
*Test Report No.***Seite 12 von 13**
*Page 12 of 13***5.1.2 Radiated Emission****RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.109(a)
Basic standard	: ANSI C63.4: 2014 30 - 40000MHz
Frequency range	: *The internal highest frequency is 5.825GHz, so the upper frequency of measurement range is 5 th harmonic of the highest frequency or 40 GHz whichever is lower.
Classification	: Class B
Limits	: FCC Part 15.109(a)
Kind of test site	: 3m Semi-anechoic Chamber & 3m Full-anechoic Chamber

Test Setup

Date of testing	: 2020-10-15 ~ 2020-10-18
Input voltage	: AC 120V@60Hz
Operation mode	: Mode 1 to Mode 8
Ambient temperature	: 24 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101 kPa

Remark: The testing was carried out within frequency range 30MHz to 40GHz. Only the emissions data with a margin of less than 20dB is shown in this report.

For the measurement records, refer to the appendix B.

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

7 List of Tables

Table 1: List of Test and Measurement Equipment.....	5
Table 2: Technical Specification of EUT.....	7
Table 3: List of Auxiliary Equipment	9