

FCC PART 15.247 TEST REPORT

For

ZTE Corporation

ZTE Plaza, Keji Road South, Shenzhen, China

FCC ID: SRQ-ZTER580

Report Type: Class II Permissive Change	Product Type: Feature phone
Report Number: RSZ191219003-00A1	
Report Date: 2019-12-19	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Feature phone
Tested Model	R580
Multiple Model	ZTE R580
Frequency Range	Bluetooth: 2402~2480MHz
Transmit Power	Bluetooth: 0.22dBm
Modulation Technique	Bluetooth: GFSK, $\pi/4$ -DQPSK, 8DPSK
Antenna Specification	monopolar Antenna: 1.2dBi
Voltage Range	DC 3.7V from battery or DC 5V from adapter
Date of Test	2019-12-19
Sample serial number	RSZ191219003-RFA1-S1(Assigned by BACL, Shenzhen)
Received date	2019-12-19
Sample/EUT Status	Good condition
Adapter information	Adapter 1: Model: TPA-97050050U01 Input: AC 100-240V, 50/60Hz, 0.15A Output: DC 5V, 500mA Adapter 2: Model: 50.069MX03 Input: AC 100-240V, 50/60Hz, 0.2A Output: DC 5V, 500mA

Notes: This series products model: ZTE R580 and R580 are electrically identical, model R580 was selected for fully testing, the detailed information can be referred to the declaration letter.

Objective

This test report is prepared on behalf of *ZTE Corporation* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

This is a CIIPC application of the device; the differences between the original device and the current one are as follows:

1. Add multiple model name: ZTE R580.
2. Change the fuse of the adaptor 1(TPA-97050050U01).

Based on above differences, it will affected partial test data, so the changed items were performed.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

And KDB 558074 D01 15.247 Meas Guidance v05r02.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF Output Power with Power meter		±0.73dB
RF conducted test with spectrum		±1.6dB
AC Power Lines Conducted Emissions		±1.95dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1 °C
Humidity		±6%
Supply voltages		±0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode.

EUT Exercise Software

No exercise software was made to the EUT tested.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

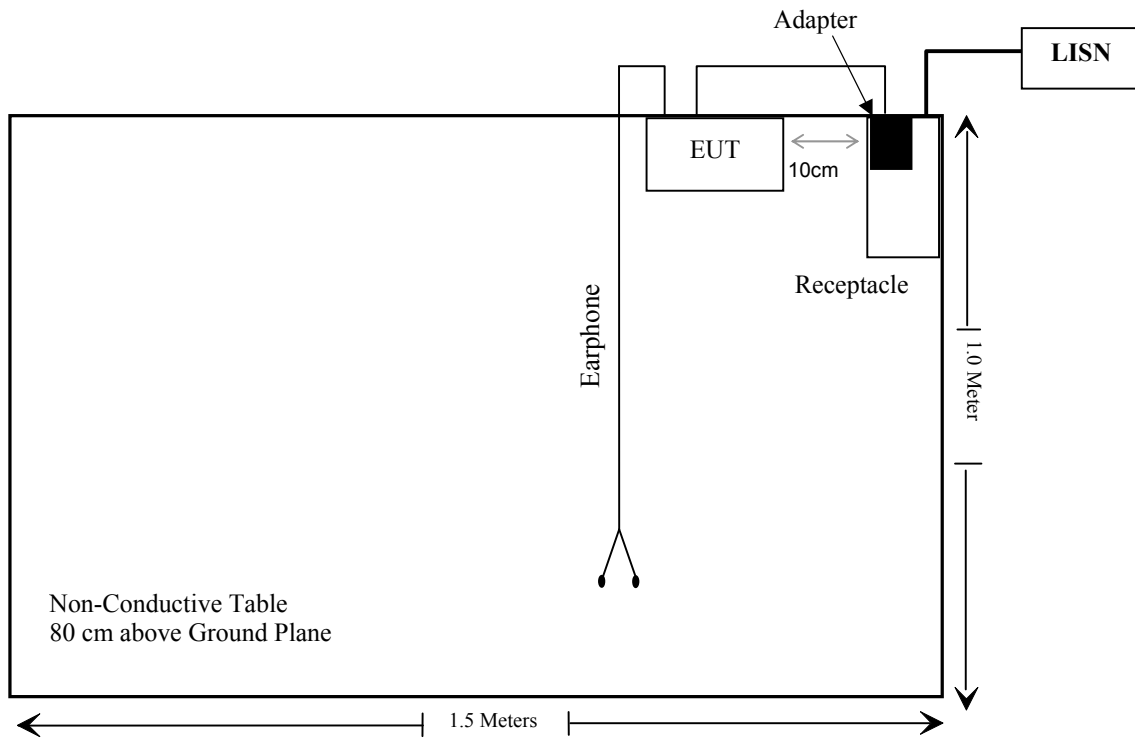
Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielding Un-detachable DC Cable	1.0	EUT	Adapter

Block Diagram of Test Setup

For conducted emission:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b) (1)& §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance*
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209 & §15.247(d)	Radiated Emissions	Compliance**
§15.247(a)(1)	20 dB Emission Bandwidth	Compliance*
§15.247(a)(1)	Channel Separation Test	Compliance*
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance*
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliance*
§15.247(b)(1)	Peak Output Power Measurement	Compliance*
§15.247(d)	Band edges	Compliance*

Compliance*: Please referred to FCC ID: SRQ-ZTER580 granted on 2019-06-11. Report No.: RSZ190507008-00B, which was tested by Bay Area Compliance Laboratories Corp. (Shenzhen)

Compliance**: Only test Radiated emission below 1G, Radiated emission above 1G please referred to FCC ID: SRQ-ZTER580 granted on 2019-06-11. Report No.: RSZ190507008-00B, which was tested by Bay Area Compliance Laboratories Corp. (Shenzhen).

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
R&S	EMI Test Receiver	ESCI	101120	2019-07-09	2020-07-08
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2019-01-25	2020-01-25
R&S	Transient Limiter	ESH3Z2	DE25985	2019-03-02	2020-03-01
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
Unknown	Conducted Emission Cable	78652	UF A210B-1-0720-504504	2019-11-12	2020-11-12
Radiated Emission Test					
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
Sonoma instrument	Amplifier	310 N	186238	2019-04-20	2020-04-20
R&S	EMI Test Receiver	ESR3	102455	2019-07-09	2020-07-08
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Ducommun Technologies	RF Cable	RG-214	1	2019-04-20	2020-04-20
Ducommun Technologies	RF Cable	RG-214	2	2019-04-20	2020-04-20

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC§15.247 (i), §1.1307 (b) (1) &§2.1093 – RF EXPOSURE

Applicable Standard

According to FCC §2.1093 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz.

2. Power and distance are rounded to the nearest mW and mm before calculation.

3. The result is rounded to one decimal place for comparison.

4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

For worst case:

Frequency (MHz)	Maximum Tune-up power		Calculated Distance (mm)	Calculated Value	Threshold (1-g SAR)	SAR Test Exclusion
	(dBm)	(mW)				
2480	0.5	1.12	5	0.4	3.0	Yes

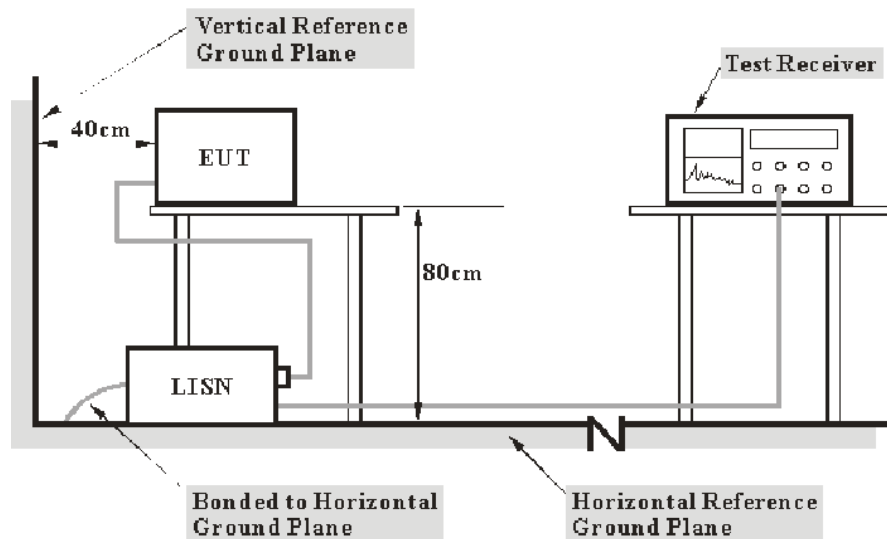
Result: No Standalone SAR test is required

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

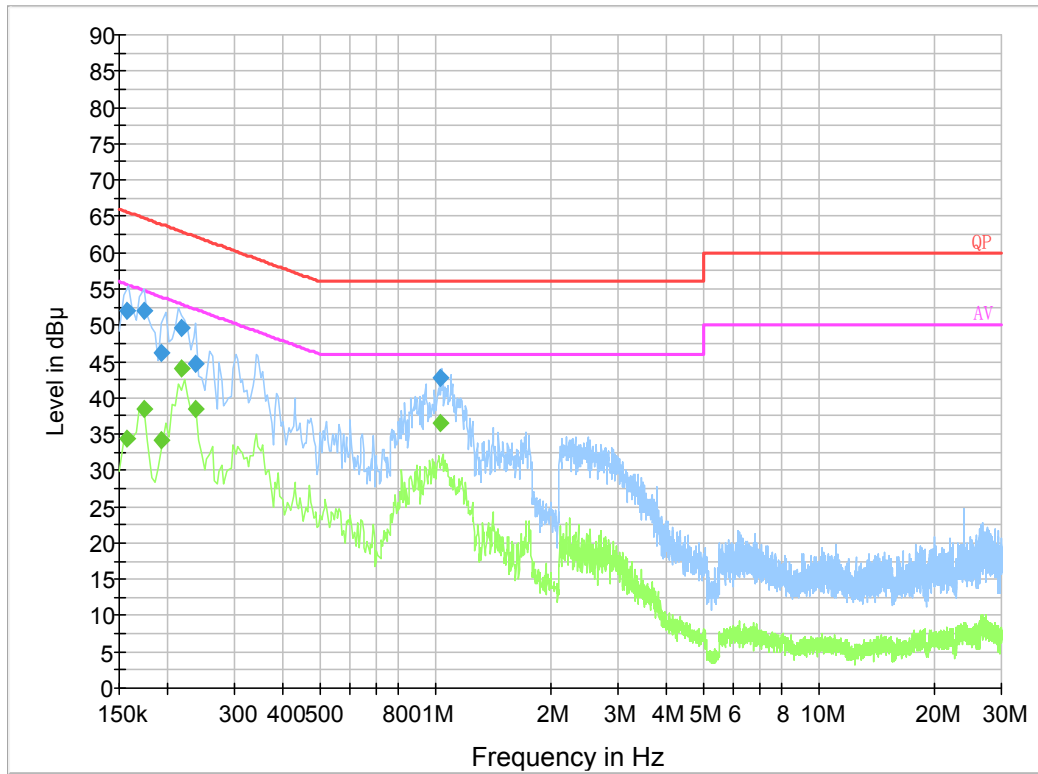
Test Data

Environmental Conditions

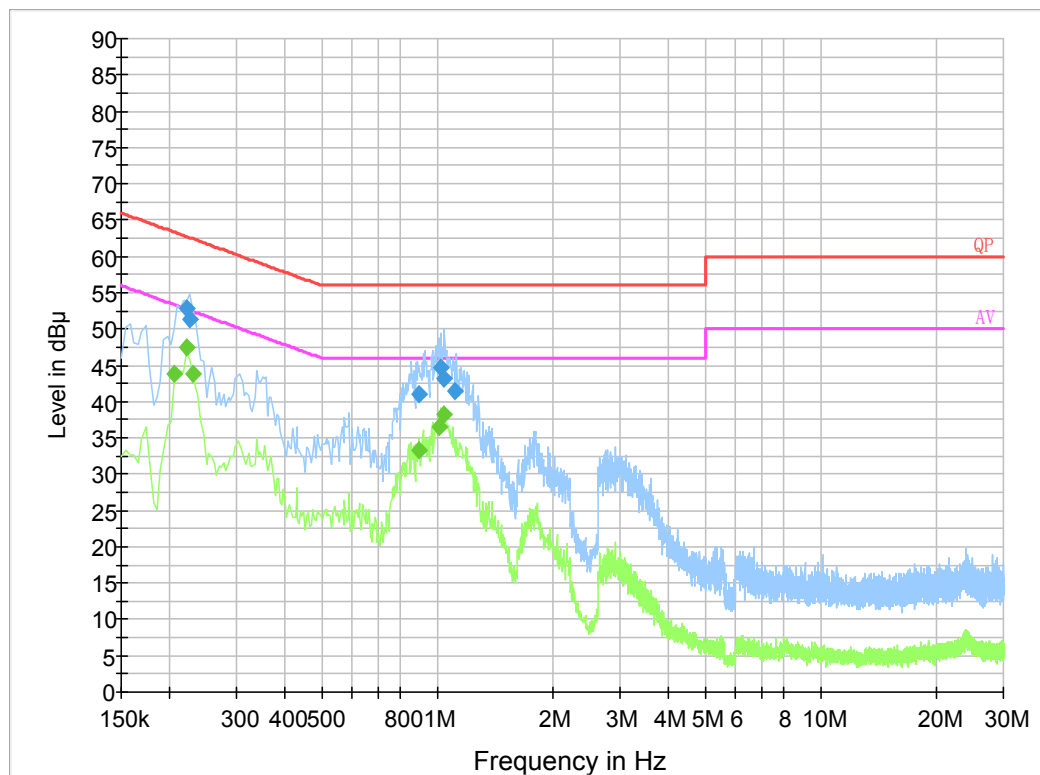
Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2019-12-19.

EUT operation mode: Transmitting & charging (the worst case is GFSK Mode, High channel)

AC 120V/60 Hz, Line

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.157500	52.0	19.8	65.6	13.6	QP
0.173500	51.9	19.9	64.8	12.9	QP
0.193500	46.2	19.8	63.9	17.7	QP
0.217500	49.6	19.8	62.9	13.3	QP
0.237500	44.6	19.8	62.2	17.5	QP
1.034310	42.8	19.9	56.0	13.2	QP
0.157500	34.5	19.8	55.6	21.1	Ave.
0.173500	38.4	19.9	54.8	16.3	Ave.
0.193500	34.3	19.8	53.9	19.6	Ave.
0.217500	44.0	19.8	52.9	8.9	Ave.
0.237500	38.6	19.8	52.2	13.6	Ave.
1.034310	36.5	19.9	46.0	9.5	Ave.

AC 120V/60 Hz, Neutral

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.221500	52.8	19.8	62.8	10.0	QP
0.225500	51.4	19.8	62.6	11.2	QP
0.892650	40.9	19.7	56.0	15.1	QP
1.018850	44.6	19.8	56.0	11.4	QP
1.038310	43.2	19.8	56.0	12.8	QP
1.109110	41.4	19.8	56.0	14.6	QP
0.206000	43.9	19.8	53.4	9.5	Ave.
0.222000	47.5	19.8	52.7	5.3	Ave.
0.230000	43.9	19.8	52.4	8.6	Ave.
0.898000	33.2	19.7	46.0	12.8	Ave.
1.010000	36.5	19.8	46.0	9.5	Ave.
1.046000	38.2	19.8	46.0	7.8	Ave.

Note:

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
- 2) Corrected Amplitude = Reading + Correction Factor
- 3) Margin = Limit – Corrected Amplitude

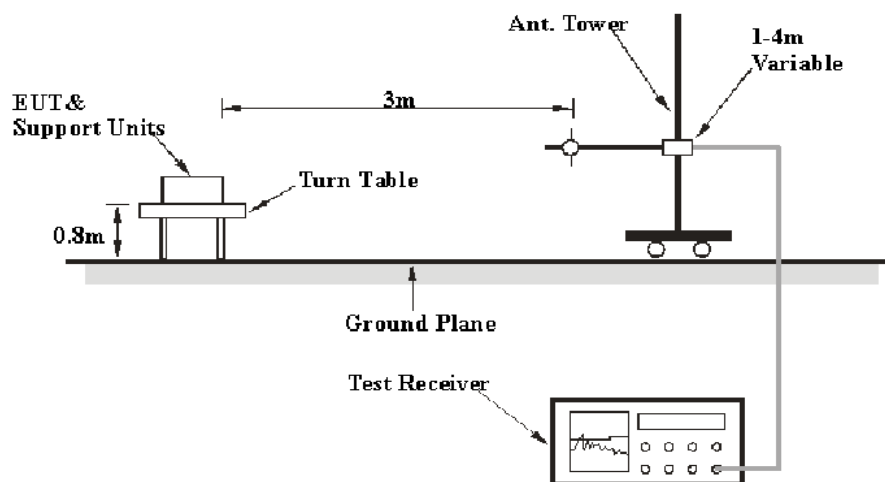
FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

Applicable Standard

FCC §15.205; §15.209; §15.247(d)

EUT Setup

Below 1 GHz:



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.247 limits.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 1 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All final data was recorded in Quasi-peak detection mode for frequency range of 30 MHz -1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247.

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(L_m)} \leq L_{\text{lim}} + U_{\text{cisp}}r$$

In BACL, $U_{(L_m)}$ is less than $U_{\text{cisp}}r$, if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

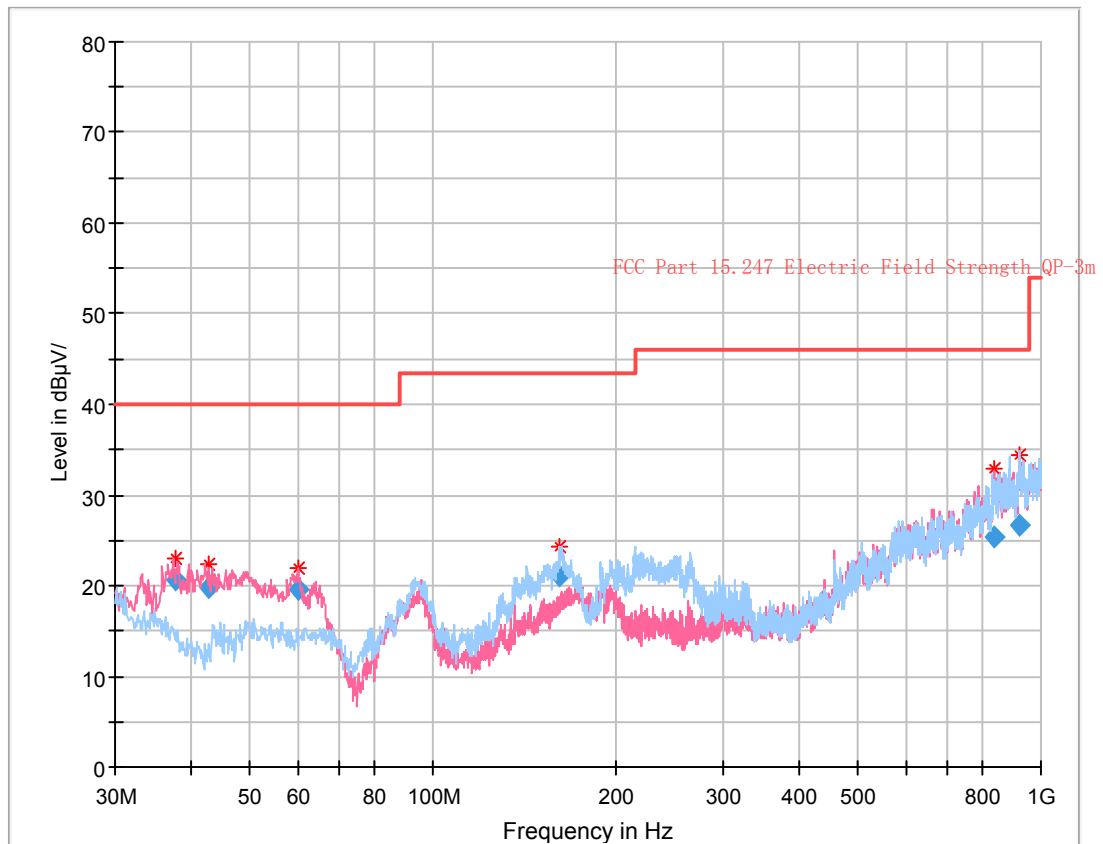
Environmental Conditions

Temperature:	24 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Zero Yan on 2019-12-19.

EUT operation mode: Transmitting&charging

30 MHz~1 GHz: (the worst case is GFSK Mode, High channel)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
37.660875	20.62	135.0	V	0.0	-12.3	40.00	19.38
42.713500	19.69	109.0	V	61.0	-15.7	40.00	20.31
59.862375	19.59	108.0	V	0.0	-20.1	40.00	20.41
161.897375	21.00	186.0	H	92.0	-14.5	43.50	22.50
836.654875	25.43	222.0	V	344.0	2.7	46.00	20.57
923.963500	26.61	123.0	H	0.0	4.6	46.00	19.39

Note:

Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

Corrected Amplitude = Corrected Factor + Reading

Margin = Limit - Corrected. Amplitude

The other spurious emission which is 20dB to the limit was not recorded.

And for the pre-scan is performed with the 2400-2483.5MHz band filter.

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