





NFC TEST REPORT

No.I20Z61601-IOT06

for

TCL Communication Ltd.

5G NR/LTE/WCDMA/GSM Mobile phone

T790B

FCC ID: 2ACCJN044

with

Hardware Version: PIO

Software Version: v2.0.1A.I.R

Issued Date: 2020-10-26

Note:

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Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

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I20Z61601-IOT06	Rev.0	1st edition	2020-10-26





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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

Location 2: CTTL(BDA)

Address:

No.18A, Kangding Street, Beijing Economic-Technology Development Area, Beijing, P. R. China 100176





1.3. <u>Testing Environment</u>

Normal Temperature:	15 35℃
Extreme Temperature:	-20/+50°C
Normal Relative Humidity:	20-75%
Normal Air Pressure:	86Kpa-106Kpa

1.4. Project data

Testing Start Date:	2020-09-30
Testing End Date:	2020-10-23

1.5. Signature

Zhou Bin (Prepared this test report)

b

Pang Shuai (Reviewed this test report)

Zhu Liang (Approved this test report)





2. <u>Client Information</u>

2.1. Applicant Information

Company Name:	TCL Communication Ltd.
Address:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
City:	Hong Kong
Postal Code:	1
Country:	CHINA
Contact:	Gong Zhizhou
Telephone:	0086-755-36611722
E-mail:	zhizhou.gong@tcl.com

2.2. Manufacturer Information

Company Name:	TCL Communication Ltd.
Address:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
City:	Hong Kong
Postal Code:	1
Country:	CHINA
Contact:	Gong Zhizhou
Telephone:	0086-755-36611722
E-mail:	zhizhou.gong@tcl.com





3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	5G NR/LTE/WCDMA/GSM Mobile phone
Model name/HVIN	Т790В
Brand name	TCL
FCC ID	2ACCJN044
UMTS Frequency Band(s)	FDD II/V
GSM Frequency Band(s)	GSM1900/850
E-UTRA Frequency Band(s)	FDD2/3/4/5/712/28/28a/28b/66
5G NR Band(s)	n7/28/78
Extreme Temperature	-10/+55°C
Nominal Voltage	3.85V
Extreme High Voltage	4.4V
Extreme Low Voltage	3.5V

3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
06a	015852000002649	PIO	v2.0.1A.I.R	2020-09-29
12a	015852000002656	PIO	v2.0.1A.I.R	2020-09-29

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	Battery	/
AE2	Charger	/
AE3	USB Cable	/

AE1

Model	TLp043E7
Manufacturer	VEKEN
Capacitance	4360mAh
Nominal voltage	/





AE2

Model	QC13US
Manufacturer	BYD
Length of cable	1
AE3	
Model	CDA0000139C1
Manufacturer	Juwei
Length of cable	1

*AE ID: is used to identify the ancillary equipment in the lab internally.

3.4. EUT Set-ups

Table 1: Eut Set-ups

EUT Set-up No.	Combination of EUT and AE	Remarks
Set.NFC01	12a+ AE1+AE2+AE3+NFC Card	
Set.NFC02	12a+ AE1+NFC Card	
Set. NFC03	06a	

The Transmit State of NFC: the NFC function is on. The EUT will transmit the NFC data and command continuously during the test.

The Transmit state without modulation: The EUT will transmit the CW signal at the Hoperating frequency.





4. <u>Reference Documents</u>

4.1. Documents supplied by applicant

EUT parameters, referring to Annex A for detailed information, are supplied by the client or manufacturer, which are the bases of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
CFR 47 Part 2	Part 2 — Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.	2018
CFR 47 Part 15	Part 15 — Radio Frequency Devices.	2018
	Subpart C — Intentional Radiators.	
	§ 15.35 Measurement detector functions and bandwidths.	
	§ 15.207 Conducted limits.	
	§ 15.209 Radiated emission limits, general requirements.	
	§ 15.215 Additional provisions to the general radiated emission limitations.	
	§ 15.225 Operation within the band 13.110–14.010 MHz.	
ANSI C63.10	American National Standard of Procedures for Compliance	2013
	Testing of Unlicensed Wireless Devices	





5. Test Results

5.1. Summary of Test Results

No	Test Cases	Clause in Regulation	Section in This Report	Verdict
1	Electric Field Strength of Fundamental Emissions	CFR 47 § 15.225(a)	D 4	P(Set. NFC02)
2	Electric Field Strength of Outside the Allocated Bands	CFR 47 § 15.225(b) CFR 47 § 15.225(c)	B.1	P(Set. NFC02)
3	Electric Field Radiated	CFR 47 § 15.209	B.2	P(Set. NFC01)
Ū	Emissions	CFR 47 § 15.225(d)	B.3	P(Set. NFC01)
4	Frequency Tolerance	CFR 47 § 15.225(e)	B.4	P(Set. NFC03)
5	20dB Bandwidth	CFR 47 § 15.215(c)	B.5	P(Set. NFC03)
6	Conducted Emissions	CFR 47 § 15.207	B.6	P(Set. NFC01)
The	The measurement is carried out according to ANSI C63.10. See ANNEX B for details.			

Table 2: Summary of Test Results

Test Conditions:

For this report, all the test cases listed above were tested under normal Temperature, Voltage, humidity and Air Pressure except the Frequency Tolerance test case. The specific conditions of Frequency Tolerance test case are listed in section B.4.3

See Table 3 for terms for result verdict:

Р	Pass, The EUT complies with the essential requirements in the standard.
NP	Not Perform, The test was not performed by CTTL
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

Table 3 Terms for result verdict





5.2. Statements

The test cases listed in Section 5.1 of this report for the EUT specified in Section 3 were performed by CTTL according to the reference documents in Section 4.

The EUT meets all applicable requirements of the regulations and standards in Section 4.2.





6. Test Facilities Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL. DUE DATE	CAL. INTERVAL
1.	Spectrum Analyzer	RSA3408A	B010277	Tektronix	2021-09-24	1 Year
2.	Climatic chamber	SH242	93008658	ESPEC	2021-01-18	1 Year
3.	H-field Antenna	HFH2-Z2	829324/007	R&S	2020-11-18	1 Year
4.	Test Receiver	FSV40	101047	R&S	2021-06-16	1 Year
5.	LISN	ENV216	101459	Rohde & Schwarz	2021-03-17	1 Year
6.	Test Receiver	ESU26	100376	R&S	2020-10-30	1 Year
7.	Biog Antenna	VULB9163	9163-482	Schwarzbeck	2021-09-16	1 Year

Table 4: Test Facilities Utilized





7. Measurement Uncertainty

Table 5: Measurement Uncertainty

Item	Uncertainty
Frequency Tolerance	<i>U</i> =77 Hz, k=2
20dB Bandwidth	<i>U</i> =77 Hz, k=2
Radiated Emissions (<1GHz)	<i>U</i> =4.86 dB, k=2
Radiated Emissions (>1GHz)	<i>U</i> =5.26 dB, k=2
Conducted emission	<i>U</i> = 3.38 dB, k=2



/



ANNEX A: EUT parameters

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ANNEX B: Detailed Test Results

B.1. Electric Field Strength of Fundamental and Outside the Allocated bands

B.1.1. Reference

See Clause 4, Clause 5 of ANSI C63.10-2013 generally.

B.1.2. Measurement Methods

The transmitter carrier output levels (E-Field) from the EUT are measured in a semi-anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The center of the receiving loop antenna is 1.0 meter above the ground. The E-field is measured with a shielded loop antenna connected to a measurement receiver. Detected E-field was maximized by rotating the EUT through 360° and adjusting the receiving antenna polarizations. The maximization processes were repeated with the EUT positioned respectively in its three orthogonal axes. The measurements were performed with the peak detector and if required, the quasi-peak detector.

The measurement bandwidth is:

Table B-1:Measure	rement bandwidth
-------------------	------------------

Frequency of Emission (MHz)	RBW/VBW
12.56-14.56	10/30 kHz

The E-field measured at 3m is calculated as:

E-field $(dB\mu V/m) = Rx (dB\mu V) + Cable Loss (dB) + AF@3m (dB/m)$





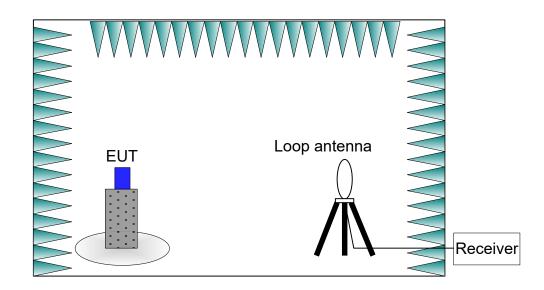


Figure B-1: Measurement Setup

B.1.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state of NFC(See 3.4).

The EUT is powered by a travel adapter.

During the measurements, the ambient temperature of the electromagnetic anechoic chamber is in the range of 15 ~ 25 $\,^\circ\!\mathrm{C}$.

B.1.4. Limits

Table B-2:	Limits
------------	--------

Frequency Range (MHz)	E-field Strength Limit @ 30 m	E-field Strength Limit @ 3 m	
Frequency Range (MHZ)	(µ V/m)	(dBµV/m)	
13.560 ± 0.007	+15,848	124	
13.410 to 13.553	+334	90	
13.567 to 13.710	+334	90	
13.110 to 13.410	100	04	
13.710 to 14.010	+106	81	
Note: Where the limits have been defined at one distance, and a signal level measured at			
another, the limits have been extrapolated using the following formula:			
$\label{eq:extrapolation} Extrapolation(dB) = 40 log_{10} (Measurement Distance/Specification Distance)$			





B.1.5. Measurement Results

Measurement results of normal conditions see Figure B-2 for different set-ups of EUT. The results displayed take into account applicable antenna factors and cable losses.

Conclusions: Set.NFC02, PASS.

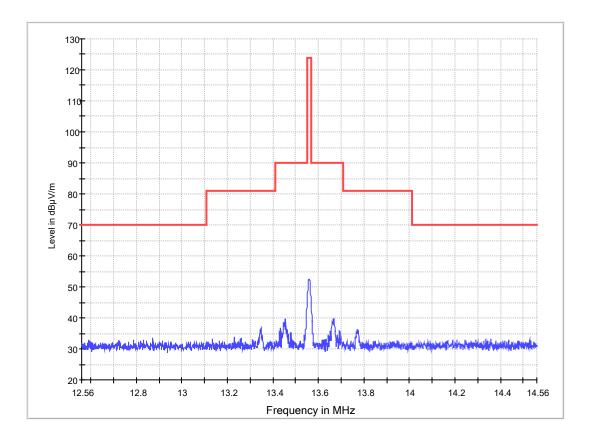


Figure B-2: Measurement results for Electric Field Strength of Fundamental and Outside the Allocated bands

B.2. Electric Field Radiated Emissions (< 30MHz)

B.2.1. Reference

See Clause 6.4 of ANSI C63.10-2013 specifically.

See Clause 4 and Clause 5 of ANSI C63.10-2013 generally.

B.2.2. Measurement Methods

The transmitter carrier output levels (E-Field) from the EUT are measured in a semi-anechoic

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chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The center of the receiving loop antenna is 1.0 meter above the ground. The E-field is measured with a shielded loop antenna connected to a measurement receiver. Detected E-field was maximized by rotating the EUT through 360° and adjusting the receiving antenna polarizations. The maximization processes were repeated with the EUT positioned respectively in its three orthogonal axes. The measurements were performed with the peak detector and if required, the quasi-peak detector.

The measurement bandwidth is:

Table B-3: N	Aeasurement	bandwidth
--------------	-------------	-----------

Frequency of Emission (MHz)	RBW/VBW
0.009-0.15	100/300 Hz
0.15-30	10/30 kHz

The E-field measured at 3m is calculated as:

E-field $(dB\mu V/m) = Rx (dB\mu V) + Cable Loss (dB) + AF@3m (dB/m)$

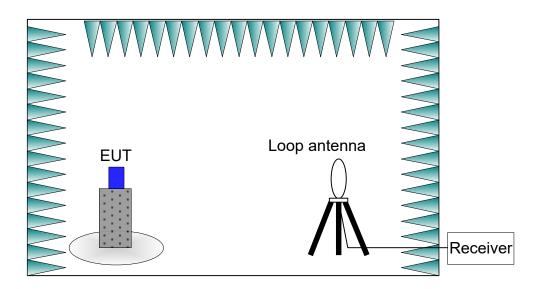


Figure B-3: Measurement Setup

B.2.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state of NFC(See 3.4).

The EUT is powered by a travel adapter.

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During the measurements, the ambient temperature of the electromagnetic anechoic chamber is in the range of $15 \sim 25$ °C.

B.2.4. Limits

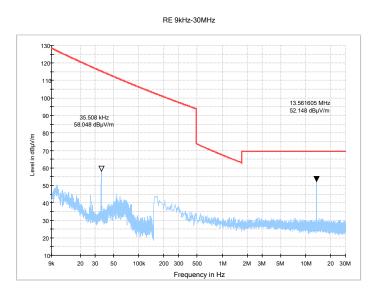
Table B-4: Limits

Frequency Range (MHz)	E-field Strength Limit @ 30m (mV/m)	E-field Strength Limit @ 3m (dBµV/m)	
		((()))	
0.009-0.490	2400/F(kHz)	129-94	
0.490-1.705	24000/F(kHz)	74-63	
1.705-30	30	70	
Note: Where the limits have been defined at one distance, and a signal level measured at			
another, the limits have been extrapolated using the following formula:			
Extrapolation(dB) = $40\log_{10}$ (Measurement Distance/Specification Distance)			

B.2.5. Measurement Results

Measurement results of normal conditions see Figure B-4 for different set-ups of EUT. The results displayed take into account applicable antenna factors and cable losses.

Conclusions: Set.NFC01, PASS.









B.3. Electric Field Radiated Emissions (≥30MHz)

B.3.1. Reference

See Clause 6.5 of ANSI C63.10-2013 specifically.

See Clause 4 and Clause 5 of ANSI C63.10-2013 generally.

B.3.2. Measurement Methods

The electric field radiated emissions from the EUT are measured in a semi-anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 10m from the receiving antenna. The receiving antennas connected to a measurement receiver. In order to search for maximum field strength emitted from the EUT, the receiving antenna can be moved between the height of 1.0 m to 4.0 m. Detected E-field was maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna positions for both vertical and horizontal antenna polarizations. The maximization processes were repeated with the EUT positioned respectively in its three orthogonal axes. The measurements were performed with the peak detector and if required, the quasi-peak detector.

The measurement bandwidth is:

Table B-5: Me	asurement bandwidth
---------------	---------------------

Frequency of Emission (MHz)	RBW/VBW			
30-1000	120kHz			





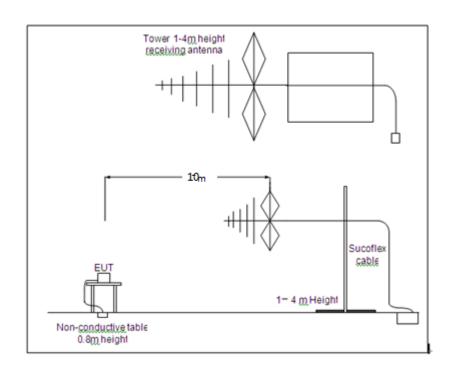


Figure B-5: Measurement Setup

B.3.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state of NFC(See 3.4).

The EUT had been connected to a travel adapter.

During the measurements, the ambient temperature of the electromagnetic anechoic chamber is in the range of $15 \sim 25$ °C.

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B.3.4. Limits

I able B-6:	Limits

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Frequency Range (MHz)	E-field Strength Limit @ 3m (mV/m)	E-field Strength Limit @ 3m (dBµV/m)	E-field Strength Limit @ 10m (dBµV/m)
30-88	100	40	30
88-216	150	43.5	33.5
216-960	200	46	36
960-1000	500	54	44

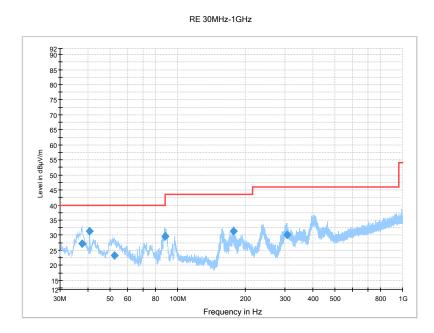




B.3.5. Measurement Results

Measurement results of normal conditions see Figure B-6 for different set-ups of EUT. The results displayed take into account applicable antenna factors and cable losses.

Conclusions: Set.NFC01, PASS.





Final Result 1

Frequency	QuasiPeak	Height	Polarization	Azimuth	Corr.	Margin	Limit	Comment
(MHz)	(dBµV/m)	(cm)		(deg)	(dB)	(dB)	(dBµV/m)	
37.469000	27.1	100.0	v	-25.0	-0.5	12.9	40.0	
40.670000	31.4	100.0	v	79.0	-0.1	8.6	40.0	
52.504000	23.3	125.0	v	218.0	0.0	16.7	40.0	
87.909000	29.7	125.0	V	176.0	-3.8	10.3	40.0	
177.440000	31.3	125.0	Н	167.0	-3.3	12.2	43.5	
306.159000	30.0	110.0	V	188.0	1.0	16.0	46.0	





B.4. Frequency Tolerance

B.4.1. Reference

See Clause 6.8 of ANSI C63.10-2013 specifically.

See Clause 4 and Clause 5 of ANSI C63.10-2013 generally.

B.4.2. Measurement Methods

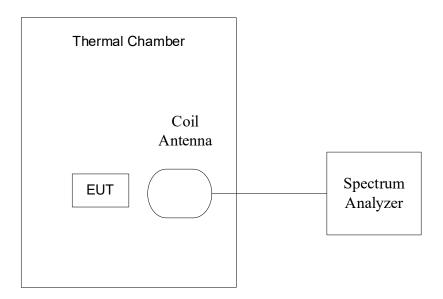


Figure B-7: Measurement Setup

The transmitter output signal was picked up by coil antenna connected to the spectrum analyzer. The center frequency was measured with 30Hz RBW and 1kHz span.

During the test, the EUT was placed in a thermal chamber until thermal balance and lasting appropriate time.

B.4.3. EUT Operating Mode and Test Conditions

The measurement of EUT was carried out under the transmit state of without modulation(See 3.4).

EUT had not been connected to a travel adapter. The frequency stability was measured with the different voltage and temperature combinations:

a) The nominal voltage 3.85V(See 3.1)was used and the temperature was varied from -20 $^{\circ}$ C to +50 $^{\circ}$ C in 10 $^{\circ}$ C increments using an environmental chamber.

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b) The 20°C was used and the voltages were 3.5V, 3.85V and 4.4V (The extreme low voltage ,the nominal voltage and the extreme high voltage defined in section 3.1).

The details were as following:

Test items	Voltage	Temperature
Frequency		-20 ℃
stability with respect to ambient		-10℃
temperature	3.85V	0 ℃
		10 ℃
		20 ℃
		30 ℃
		40 ℃
		50 ℃
Frequency stability	3.5V	
when varying supply voltage	3.85V	20 ℃
	4.4V	

 Table B-7:
 Combinations of Voltage and Temperature

B.4.4. Test Layouts

See B.4.2.

B.4.5. Limits

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency.

B.4.6. Measurement Results

Measurement results see Table B-9 for different test conditions.

Conclusions: Set.NFC03, PASS.

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Temperature	Voltago				
Temperature	Voltage	Startup	2 Min Later	5 Min Later	10 Min Later
-20℃	3.85V	13.559723125	13.559743125	13.559743750	13.559740625
-10°C	3.85V	13.559753125	13.55976125	13.559765625	13.559768750
0°C	3.85V	13.559765625	13.559768125	13.559768750	13.559769375
10°C	3.85V	13.559765625	13.559761875	13.559759375	13.559758125
20°C	3.85V	13.559748125	13.559748175	13.559738125	13.559736875
30°C	3.85V	13.559724375	13.559710625	13.559705625	13.559704375
40°C	3.85V	13.559684375	13.559683125	13.559678125	13.559768750
50°C	3.85V	13.559665625	13.559664375	13.559663750	13.559661875
20°C	3.5V	13.559738125	13.559736875	13.559734375	13.559733125
20°C	4.4 V	13.559734375	13.559731875	13.559730625	13.559729375

Temperature	mperature Voltage Frequency Error (%)				
Temperature	voltage	Startup	2 Min Later	5 Min Later	10 Min Later
-20 ℃	3.85V	-0.002	-0.002	-0.002	-0.002
-10 ℃	3.85V	-0.002	-0.002	-0.002	-0.002
0 ℃	3.85V	-0.002	-0.002	-0.002	-0.002
10 ℃	3.85V	-0.002	-0.002	-0.002	-0.002
20 ℃	3.85V	-0.002	-0.002	-0.002	-0.002
30 ℃	3.85V	-0.002	-0.002	-0.002	-0.002
40 ℃	3.85V	-0.002	-0.002	-0.002	-0.002
50 ℃	3.85V	-0.002	-0.002	-0.002	-0.002
20 ℃	3.5V	-0.002	-0.002	-0.002	-0.002
20 °C	4.4V	-0.002	-0.002	-0.002	-0.002





B.4.7. Measurement Uncertainty

Measurement uncertainty: U =77 Hz, k=2

B.5. 20dB Bandwidth

B.5.1. Reference

See Clause 6.9 of ANSI C63.10-2013 specifically.

See Clause 4 and Clause 5 of ANSI C63.10-2013 generally.

B.5.2. Measurement Methods

The transmitter output signal was picked up by coil antenna connected to the spectrum analyzer. The bandwidth of the center frequency was measured with 140Hz RBW, 420Hz VBW and 14kHz span.

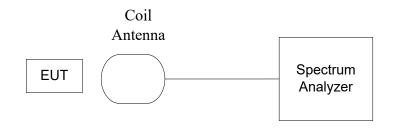


Figure B-8: Measurement Setup

B.5.3. EUT Operating Mode and Test Conditions

The measurement of EUT was carried out under the transmit state of NFC (See 3.4).

EUT had not been connected to a travel adapter.

During the measurements, the ambient temperature was in the range of $15 \sim 25$ °C.

B.5.4. Test Layouts

See B.5.2.





B.5.5. Limits

The 20dB bandwidth shall be less than 80% of the permitted frequency band. For 13.56 MHz NFC, the permitted frequency band is 14kHz, so the limit is 11.2 kHz.

B.5.6. Measurement Results

Measurement results see Figure B-9.

Conclusions: Set.NFC03, PASS.

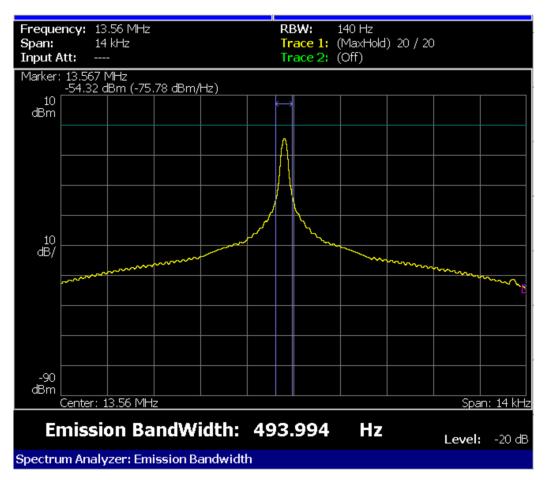


Figure B-9: Measurement results for 20dB Bandwidth

B.5.7. Measurement Uncertainty

Measurement uncertainty: U =77 Hz, k=2

B.6. Conducted emission

B.6.1. Reference

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See Clause 6.2 of ANSI C63.10-2013 specifically.

See Clause 4 and Clause 5 of ANSI C63.10-2013 generally.

B.6.2. Measurement Methods

The conducted emissions from the AC port of the EUT are measured in a shielding room. The EUT is connected to a Line Impedance Stabilization Network (LISN). An overview sweep with peak detection was performed. The measurements were performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detector of the test receiver:

Quasi-Peak / Average Detector.

The measurement bandwidth is:

Frequency of Emission (MHz)	RBW/VBW
0.15-30	9kHz

Table B-9: Measurement Bandwidth

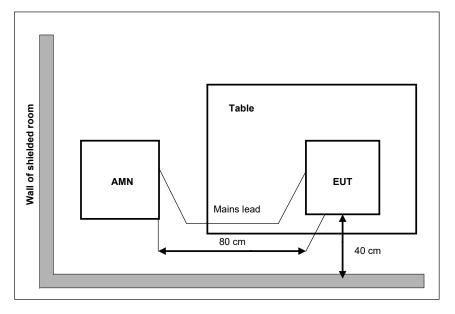


Figure B-10: Measurement Setup

B.6.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state of NFC(See 3.4).

The EUT is powered by a travel adapter.





During the measurements, the ambient temperature is in the range of 15 ~ 25 $\,$ °C.

B.6.4. Limits

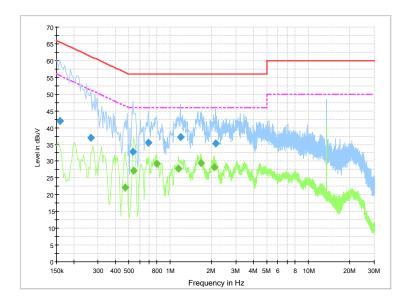
Frequency range (MHz)	Quasi-peak Limit (dBµV)	Average Limit (dBμV)
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50

Table B-10: Limits

B.6.5. Measurement Results

Measurement results see Figure B-11.

Conclusions: Set.NFC01, PASS.



Note: the spike over the limit is the NFC carrier frequency and coming from the radio equipment.

Figure B-11: Measurement results for Conducted Emission





Final Result 1

Frequency	QuasiPeak	Meas.	Bandwidth	Filter	Line	Corr.	Margin	Limit	Comment
(MHz)	(dBuV)	Time	(kHz)			(dB)	(dB)	(dBuV)	
		(ms)							
0.159000	42.0	5000.0	9.000	On	L1	20.0	23.5	65.5	
0.267000	37.0	5000.0	9.000	On	L1	19.9	24.2	61.2	
0.537000	32.7	5000.0	9.000	On	L1	20.0	23.3	56.0	
0.694500	35.5	5000.0	9.000	On	L1	19.9	20.5	56.0	
1.185000	37.3	5000.0	9.000	On	L1	19.8	18.7	56.0	
2.125500	35.2	5000.0	9.000	On	L1	19.8	20.8	56.0	

Final Result 2

Frequency	Average	Meas.	Bandwidth	Filter	Line	Corr.	Margin	Limit	Comment
(MHz)	(dBuV)	Time	(kHz)			(dB)	(dB)	(dBuV)	
		(ms)							
0.474000	22.2	5000.0	9.000	On	L1	20.0	24.3	46.4	
0.546000	27.1	5000.0	9.000	On	L1	20.0	18.9	46.0	
0.798000	29.3	5000.0	9.000	On	L1	19.9	16.7	46.0	
1.149000	27.7	5000.0	9.000	On	L1	19.8	18.3	46.0	
1.662000	29.5	5000.0	9.000	On	L1	19.8	16.5	46.0	
2.089500	28.2	5000.0	9.000	On	L1	19.8	17.8	46.0	





ANNEX C: Persons involved in this testing

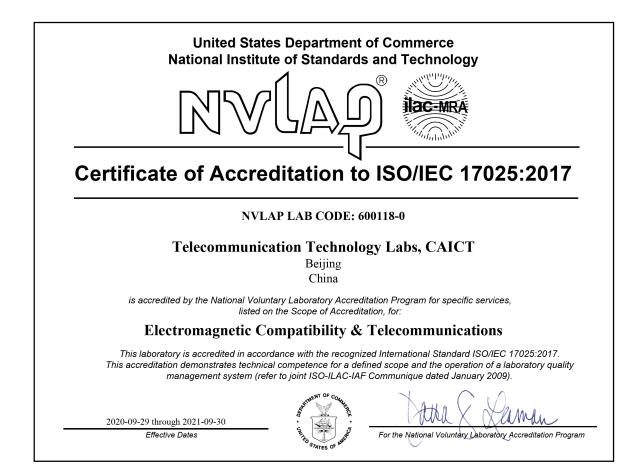
Table C-1:	Persons	involved

Test Item	Tester
20dB Bandwidth	Zhou Bin
Frequency Tolerance	Zhou Bin
Electric Field Strength of Fundamental and Outside	Li Zong Liang
the Allocated bands	
Electric Field Radiated Emissions (< 30MHz)	Li Zong Liang
Electric Field Radiated Emissions (≥30MHz)	Li Zong Liang
Conducted Emissions	Guo Qian





ANNEX D: Accreditation Certificate



END OF REPORT