





NFCTESTREPORT

No.I19Z62374-IOT16

for

SAMSUNG Electronics Co., Ltd.

Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN

SM-A215U

FCC ID:ZCASMA215U

with

Hardware Version:REV1.0 Software Version:A215U.001

Issued Date: 2020-04-16

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

No.52, HuayuanNorth Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62304633-2512,Fax:+86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn





REPORT HISTORY

Report Number	Revision	Description	Issue Date
I19Z62374-IOT16	Rev.0	1st edition	2020-03-18
I19Z62374-IOT16	Rev.1	Themodificationabouttheteststartdateandthe	2020-04-08
		E-UTRA frequencybands.	
I19Z62374-IOT16	Rev.2	Theupdateabouttheapplicantinformation.	2020-04-14
I19Z62374-IOT16	Rev.3	The updateabouttheSW.	2020-04-16





CONTENTS

1.	TEST LABORATORY	. 4
	1.1. INTRODUCTION & ACCREDITATION	. 4
	1.2. TESTING LOCATION	. 4
	1.3. TESTING ENVIRONMENT	. 5
	1.4. PROJECT DATA	. 5
	1.5. SIGNATURE	. 5
2.	CLIENT INFORMATION	. 6
	2.1. APPLICANT INFORMATION	. 6
	2.2. MANUFACTURER INFORMATION	. 6
3.	EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	. 7
	3.1. ABOUT EUT	. 7
	3.2. INTERNAL IDENTIFICATION OF EUT	. 7
	3.3. INTERNAL IDENTIFICATION OF AE	. 7
	3.4. EUT SET-UPS	. 8
4.	3.4. EUT SET-UPS REFERENCE DOCUMENTS	. 8 . 9
4.	 3.4. EUT SET-UPS REFERENCE DOCUMENTS 4.1. DOCUMENTS SUPPLIED BY APPLICANT 	8 9 9
4.	 3.4. EUT SET-UPS REFERENCE DOCUMENTS 4.1. DOCUMENTS SUPPLIED BY APPLICANT 4.2. REFERENCE DOCUMENTS FOR TESTING 	8 9 9
4.	 3.4. EUT SET-UPS REFERENCE DOCUMENTS 4.1. DOCUMENTS SUPPLIED BY APPLICANT 4.2. REFERENCE DOCUMENTS FOR TESTING TEST RESULTS 	8 9 9 9 10
4 . 5 .	 3.4. EUT SET-UPS REFERENCE DOCUMENTS 4.1. DOCUMENTS SUPPLIED BY APPLICANT 4.2. REFERENCE DOCUMENTS FOR TESTING	8 9 9 10 10
4.	 3.4. EUT SET-UPS REFERENCE DOCUMENTS 4.1. DOCUMENTS SUPPLIED BY APPLICANT 4.2. REFERENCE DOCUMENTS FOR TESTING	8 9 9 10 10
 4. 5. 6. 	 3.4. EUT SET-UPS REFERENCE DOCUMENTS 4.1. DOCUMENTS SUPPLIED BY APPLICANT 4.2. REFERENCE DOCUMENTS FOR TESTING	. 8 . 9 . 9 10 10 11
 4. 5. 6. 7. 	 3.4. EUT SET-UPS	. 8 . 9 . 9 . 9 10 10 10 .11
 4. 5. 6. 7. A. 	3.4. EUT SET-UPS REFERENCE DOCUMENTS	8 9 9 10 10 11 12 13
 4. 5. 6. 7. Al Al 	3.4. EUT SET-UPS REFERENCE DOCUMENTS	. 8 . 9 . 9 10 10 11 12 13 14
 4. 5. 6. 7. Al Al Al 	3.4. EUT SET-UPS REFERENCE DOCUMENTS	. 8 . 9 . 9 10 10 10 11 12 13 14 26





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. China100191

Location 2:CTTL(Shouxiang)

Address:

No. 51 Shouxiang Science Building, Xueyuan Road, Haidian District, Beijing, P. R. China100191

Location 3: CTTL(BDA)

Address:

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





1.3. <u>TestingEnvironment</u>

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

1.4. Project data

Testing Start Date:	2020-02-04
Testing End Date:	2020-03-16

1.5. Signature

2 R

Zhang Qiang (Prepared this test report)

Pang Shuai (Reviewed this test report)

Zhu Liang (Approvedthis test report)





2. <u>ClientInformation</u>

2.1. Applicant Information

Company Name:	SAMSUNG Electronics Co., Ltd.
Address:	19 Chapin Rd., Building D Pine Brook , NJ 07058
City:	/
Country:	/
Contact:	Jenni Chun
Email:	j1.chun@samsung.com
Telephone:	1-973-808-6375

2.2. Manufacturer Information

Company Name:	SAMSUNG Electronics Co., Ltd.
Address:	Samsung R5, Maetan dong 129, Samsung roYoungtonggu, Suwon city 443 742, Korea
City:	1
Country:	1
Contact:	JP KIM
Email:	jp426.kim@samsung.com
Telephone:	1





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

3.1. About EUT

Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN
SM-A215U
SAMSUNG
ZCASMA215U
FDD I/II/IV/V/VIII
GSM900/1800/1900/850
FDD01/02/03/04/05/07/08/12/13/17/20/25/26/28/66/71
TDD38/39/40/41
10~55℃
3.8V
4.4V
3.5V

3.2. Internal Identification of EUT

EUT ID*	SN or IME	HW Version	SW Version	Date of receipt
22a	354230110009425	REV1.0	A215U.001	2020-01-17
21a	354230110009698	REV1.0	A215U.001	2020-01-17

*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	Charger	/
AE4	USB Cable	/
AE5	USB Cable	/
AE6	USB Cable	/
AE1		
Model		NVT-WT-N6
Manufacture	r	Dongguan NVT Technology Co., Ltd.
Capacitance		3900mAh
Nominal volt	age	3.82V
AE2		
Model		EP-TA200
Manufacture	r	RFTECH Co., Ltd.
Length of ca	ble	/
AE3		
Model		EP-TA200
Manufacture	r	HAEM Co., Ltd.





Length of cable	/
AE4	
Model	GH39-01999A
Manufacturer	RFTECH
Length of cable	/
AE5	
Model	GH39-01999A
Manufacturer	Broad
Length of cable	/
AE6	
Model	GH39-01999A
Manufacturer	KSD
Length of cable	/

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

3.4. EUT Set-ups

Table 1.	Eut Set-uns
	Eur Ser-ups

EUT Set-up No.	Combination of EUT and AE	Remarks
Set.NFC01	21a + AE1 + AE2 + AE4	
Set.NFC02	21a	
Set. NFC03	22a	

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 operating 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.				
CFR 47 Part15	Part 15 — Radio Frequency Devices.	2018			
	Subpart C—Intentional Radiators.				
	§ 15.35Measurement detector functions and bandwidths.				
	§ 15.207 Conducted limits.				
	§ 15.209 Radiated emission limits, general requirements.				
	§15.215Additional 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 Compliance2013				
	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	CEP 47 & 15 225(a)		P(Sot NEC02)		
1	Fundamental Emissions	CFR 47 § 15.225(a)	D 1	F (Set. NI CO2)		
2	Electric Field Strength of	CFR 47 § 15.225(b)	D.1	D(Sat NEC02)		
2	Outside the Allocated Bands	CFR 47 § 15.225(c)		F(Sel. NFC02)		
2	Electric Field Radiated	CFR 47 § 15.209	B.2	P(Set. NFC01)		
3	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 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, humidityand Air Pressure except the Frequency Tolerance test case. The specific conditions of Frequency Tolerance test case are listedinsection B.4.3

See Table 3 forterms for resultverdict:

	Table 5 Terms for Tesuit vertifict			
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

	Tuble 4. Test Facilities Officed					
NO.	NAME	TYPE	SERIES		CAL. DUE	CAL.
		TIFE	NUMBER	FRODUCER	DATE	INTERVAL
1.	Spectrum Analyzer	RSA3408A	B010277	Tektronix	2020-09-26	1 Year
2.	Climatic chamber	SH242	93008658	ESPEC	2021-01-18	1 Year
2	Vector Signal Apolyzor	F8040	200089	Rohde &	2020 05 46	1 Year
3.	vector Signal Analyzer	F5Q40		Schwarz	2020-05-16	
4.	H-field Antenna	HFH2-Z2	829324/007	R&S	2020-12-03	1 Year
5.	LISN	ENV216	101459	R&S	2020-04-10	1 Year
6.	Test Receiver	ESCI7	100948	R&S	2020-07-17	1 Year
7	Test Dessiver	ESU26	100276	Rohde &	2020 40 20	1 Voor
7.	I est Receiver	E3026	100376	Schwarz	2020-10-30	rear
8.	BiLog Antenna	VULB9163	01176	Schwarzbeck	2020-03-14	1 Year

Table 4: Test Facilities Utilized

Note: The BiLogAntennawith series number 01176 was usedbefore Cal. Due Date.





7. Measurement Uncertainty

Table 5: Measurement Uncertainty

Item	Uncertainty
Frequency Tolerance	U =77 Hz, k=2
20dB Bandwidth	<i>U</i> =77 Hz, k=2
Radiated Emissions (<1GHz)	<i>U</i> =5.40 dB, k=2
Radiated Emissions (>1GHz)	<i>U</i> =4.32 dB, k=2
Conducted emission	<i>U</i> =3.10 dB, k=2





ANNEX A: EUTparameters

/





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. MeasurementMethods

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 3mfrom 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 thepeak detector and if required, the quasi-peak detector.

The measurement bandwidth is:

Table B-1: Me	asurementbandwidth
Frequency of Emission (MHz)	RBW/VBW
12.56-14.56	10/30 kHz

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

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



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 $\,\,{}^\circ\!{\rm C}$.

B.1.4. Limits

	Table B-2:Limits				
Frequency Penge (MHz)	E-field Strength Limit @ 30 m	E-field Strength Limit @ 3 m			
FrequencyRange (MHZ)	(µV/m)	(dBµV/m)			
13.560 ± 0.007	+15,848	124			
13.410 to 13.553	1224	90			
13.567 to 13.710	+554	50			
13.110 to 13.410	106	91			
13.710 to 14.010	+100	01			
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.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. MeasurementMethods

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 3mfrom 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:
 Measurementbandwidth

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 $(dB\mu V/m) = Rx (dB\mu V) + CableLoss (dB) + AF@3m (dB/m)$



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.

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					
FrequencyRange (MHz)	E-field Strength Limit @ 30m	E-field Strength Limit @ 3m (dBuV/m)			
	(111 ¥7111)	(dbµ v/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:					
$Extrapolation(dB) = 40log_{10}(Measurement Distance/Specification Distance)$					

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. MeasurementMethods

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 3mfrom the receiving antenna. The receiving antennasconnected 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 mto 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:
 Measurementbandwidth

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.

B.3.4. Limits

Table B-6: Limits						
FrequencyRange	E-field Strength Limit E-field Strength Limit		E-field Strength Limit			
	@ 3m	@ 3m	@ 10m (dBµV/m)			
(11172)	(mV/m)	(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_Res	ult						
Frequency	QuasiPeak	Height	Polarization	Azimuth	Corr.	Margin	Limit
(MHz)	$(dB\mu V/m)$	(cm)		(deg)	(dB)	(dB)	$(dB\mu V/$
39.409000	25.4	110.0	V	17.0	-2.8	14.6	40.0
40.670000	28.0	110.0	V	-42.0	-2.5	12.0	40.0
47.557000	20.6	125.0	V	-4.0	-0.2	19.4	40.0
85.484000	24.9	100.0	V	-31.0	-5.2	15.1	40.0
171.03800	20.4	100.0	V	3.0	-4.2	23.1	43.5
669.71500	27.7	125.0	Н	-4.0	9.1	18.3	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. MeasurementMethods



Figure B-7: Measurement Setup

The transmitter output signal was picked up by coil antenna connected to the spectrumanalyzer. 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 thedifferent voltage and temperature combinations:

- a) The nominal voltage 3.8V(See3.1)was used and the temperature was varied from -20°Cto+50°C in 10°C increments using an environmental chamber.
- b) The 20°C was used and the voltage swere 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:

Table B-7: Combinations of Voltage and Temperature					
Test items	Voltage	Temperature			
Frequency		-20 ℃			
stability with respect	2.0\/	-10 ℃			
to ambient	3.0V	0 °C			
temperature		10 ℃			

Table B-7:	Combinationsof	VoltageandTemperature
------------	----------------	-----------------------





		20 ℃
		30 ℃
		40 ℃
		50 ℃
Frequency stability	3.5V	
when varying supply	3.8V	20 °C
voltage	4.4V	

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-8 for different test conditions. **Conclusions:**Set.NFC03,**PASS**.

Tomporatura	Valtara	Frequency (MHz)				
remperature	vollage	Startup	2 Min Later	5 Min Later	10 Min Later	
-20 ℃	3.8V	13.5598821	13.5598751	13.5598731	13.5598721	
-10 ℃	3.8V	13.5598861	13.5598921	13.5598931	13.5598941	
0 °C	3.8V	13.5598951	13.5598941	13.5598921	13.5598901	
10 ℃	3.8V	13.5598831	13.5598761	13.5598701	13.5598651	
20 °C	3.8V	13.5598561	13.5598442	13.5598382	13.5598332	
30 ℃	3.8V	13.5598202	13.5598062	13.5598002	13.5597972	
40 ℃	3.8V	13.5597862	13.5597742	13.5597722	13.5597682	
50 ℃	3.8V	13.5597612	13.5597562	13.5597522	13.5597502	
20 ℃	3.5V	13.55983875	13.55983475	13.559826875	13.559820625	
20 ℃	3.8V	13.5598561	13.5598442	13.5598382	13.5598332	
20 ℃	4.4V	13.55979125	13.559796875	13.5598075	13.55981125	

Table B-8:	Measurement results for Frequency Tolerance

Tamparatura	Valtaga	Frequency Error (%)			
remperature	vollage	Startup	2 Min Later	5 Min Later	10 Min Later
-20 ℃	3.8V	-0.001	-0.001	-0.001	-0.001
-10 ℃	3.8V	-0.001	-0.001	-0.001	-0.001
0°C	3.8V	-0.001	-0.001	-0.001	-0.001
10 ℃	3.8V	-0.001	-0.001	-0.001	-0.001
20 ℃	3.8V	-0.001	-0.001	-0.001	-0.001
30 ℃	3.8V	-0.001	-0.001	-0.001	-0.001
40 ℃	3.8V	-0.002	-0.002	-0.002	-0.002

©Copyright. All rights reserved byCTTL.





50 ℃	3.8V	-0.002	-0.002	-0.002	-0.002
20 ℃	3.5V	-0.001	-0.001	-0.001	-0.001
20 ℃	3.8V	-0.001	-0.001	-0.001	-0.001
20 ℃	4.4V	-0.002	-0.001	-0.001	-0.001

B.4.7. Measurement Uncertainty

Measurement uncertainty: U = 77Hz, 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. MeasurementMethods

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 ~ 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 permittedfrequency band. For 13.56 MHz NFC, the permittedfrequency 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

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. MeasurementMethods

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/ AverageDetector.

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 $15 \sim 25$ °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**.







Figure B-11: Measurement results for Conducted Emission Final Result 1

Frequency	QuasiPeak	Meas. Time	Bandwidth	Line	Corr.	Margin	Limit
(MHz)	(dBµV)	(ms)	(kHz)		(dB)	(dB)	(dBµV)
0.190500	39.9	10000.0	9.000	L1	20.0	24.2	64.0
0.748500	33.7	10000.0	9.000	L1	20.0	22.3	56.0
1.455000	36.4	10000.0	9.000	L1	19.8	19.6	56.0
2.040000	36.2	10000.0	9.000	L1	19.8	19.8	56.0
5.221500	37.0	10000.0	9.000	L1	19.8	23.0	60.0
16.566000	41.3	10000.0	9.000	L1	20.0	18.7	60.0

Final Result 2

Frequency	Average	Meas. Time	Bandwidth	Line	Corr.	Margin	Limit
(MHz)	(dBµV)	(ms)	(kHz)		(dB)	(dB)	(dBµV)
0.190500	31.8	10000.0	9.000	L1	20.0	22.3	54.0
0.708000	32.7	10000.0	9.000	L1	20.0	13.3	46.0
1.455000	26.6	10000.0	9.000	L1	19.8	19.4	46.0
2.161500	27.9	10000.0	9.000	L1	19.8	18.1	46.0
5.226000	25.6	10000.0	9.000	L1	19.8	24.4	50.0
17.196000	32.1	10000.0	9.000	L1	20.0	17.9	50.0





ANNEX C: Persons involved in this testing

Table C-1:	Personsinvolve	1
Test Item		Tester
		Pana Shuai

20dB Bandwidth	Pang Shuai
Frequency Tolerance	Pang Shuai
Electric Field Strength of Fundamental and Outside the Allocated bands	Yang Fei,Zhao Wenhui
Electric Field Radiated Emissions (< 30MHz)	Yang Fei,Zhao Wenhui
Electric Field Radiated Emissions (≥30MHz)	Yang Fei,Zhao Wenhui
Conducted Emissions	Guo Qian





ANNEX D: Accreditation Certificate



END OF REPORT