TEST REPORT
No. 120717IOT01FCC

for

TCT Mobile Limited

HSUPA/HSDPA/UMTS dual band / GSM quad bands mobile phone

Model Name: GIN NFC VF

Marketing Name: Vodafone Smart 861

FCC ID: RAD305

Hardware Version: PIO

Software Version: 01003

Issued Date: August 16th, 2012

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 TMC Beijing.

Test Laboratory:

DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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

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CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	No 52, Huayuanbei Road, Haidian District, Beijing, P.R.China
Postal Code:	100191
Telephone:	+86-10-62304633-2678
Fax:	+86-10-62304633-2504

1.2. Testing Environment

Ambient Temperature:	15 ~ 25 ℃
Relative Humidity:	30 ~ 60 %
Air pressure	860 ~ 1060 mbar

See Section 5 and corresponding parts of this report for the general requirements and recorded climatic conditions for each test environments.

1.3. Project Data

Receipt of Sample:	July 17th, 2012
Testing Start Date:	July 18th, 2012
Testing End Date:	July 26th, 2012

1.4. Signature

Yang Jun
(Prepared this test report)

Sun Qian
(Reviewed this test report)

Wang Hongbo
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Postal Code:	201203
Country:	China
Telephone:	0086-21-6146089
Fax:	0086-21-61460602

2.2. Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Postal Code:	201203
Country:	China
Telephone:	0086-21-6146089
Fax:	0086-21-61460602

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

3.1. About EUT

Description:	HSUPA/HSDPA/UMTS dual band / GSM quad bands mobile phone
Model Name:	GIN NFC VF
Marketing Name:	Vodafone Smart 861
FCC ID:	RAD305
IC ID:	/
With NFC Function:	Yes
Frequency:	13.56 MHz
Antenna:	Integral Antenna
Operation Voltage:	DC 3.6 ~ 4.2 V
Operation Temperature:	-20 ~ 55 ℃

Note1: Photographs of EUT are shown in ANNEX A of this test report. For component list, please refer to documents of the manufacturer.

Note2: High and low voltage values of extreme conditions are given by the manufacturer.

3.2. Internal Identification of EUT Used during the Test

Mobile phone identification

EUT ID*	SN / IMEI	HW Version	SW Version
EUT1	867757010050737	PIO	01003

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

3.3. Internal Identification of AE Used during the Test

AE ID*	Description	SN/IMEI
AE1	Opponent phone	867757010051131
AE2	Battery	/
AE3	Battery	/
AE4	Travel Adapter	CBA3001AA0C1
AE5	Travel Adapter	CBA6050AA1C1
AE6	USB Cable	/

AE1

Model	GIN NFC VF
Manufacturer	TCT Mobile Limited
SN or IMEI	867757010051131

AE2

Model	CAB31P0000C2
Manufacturer	BAK
Capacitance	1300mAh
Nominal Voltage	3.7V

AE3

Model	CAB31P0000C2
Manufacturer	BAK
Capacitance	1300mAh
Nominal Voltage	3.7V

AE4

Model	CBA3001AA0C1
Manufacturer	BYD
Length of cable	/

AE5

Model	CBA6050AA1C1
Manufacturer	Tenpao
Length of cable	/

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

3.4. General Description

The EUT is a HSUPA/HSDPA/UMTS dual bands / GSM quad bands mobile phone with integrated antennas. It supports GSM 850/900/1800/1900 MHz bands and WCDMA Band I and Band VIII. It supports GPRS function with multi-slots Class 12 and EDGE Clss12. The HSDPA and HSUPA features are also supported.

It has NFC, MP3, Camera, FM radio, USB memory, Bluetooth, WLAN (802.11b/g/n), and GPS functions.

It consists of normal options: Lithium Battery, Charger and Headset.

The NFC receiver of the EUT is in combination with the permanently co-located NFC transmitter of the EUT.

Manuals and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

3.5. EUT Set-ups

EUT Set-up No.	Combination of EUT and AE	Remarks
Set. NFC01	EUT1+AE1+AE2+AE3+AE4+AE6	--
Set. NFC02	EUT1+AE1+AE2+AE3+AE5+AE6	--
Set. NFC03	EUT1+AE2+AE4+AE6	--
Set. NFC04	EUT1+AE2+AE5+AE6	--
Set. NFC05	EUT1+AE1+AE2+AE3	--

4. Reference Documents

4.1. Documents Supplied by the Applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Regulations and Standards

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.	2012
CFR 47 Part 15	Part 15 — Radio Frequency Devices. Subpart C — Intentional Radiators. § 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.	2012
ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.	2009

5. LABORATORY ENVIRONMENT

Semi-Anechoic Chamber SAC-2 (10m×6.7m×6.15m) did not exceed following limits along the testing:

Temperature	Min. = 15 ℃, Max. = 25 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3 m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1 to 18 GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Fully-Anechoic Chamber FAC-3 (8.6m×6.1m×3.85m) did not exceed following limits along the testing:

Temperature	Min. = 15 ℃, Max. = 25 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 Ω
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1 to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz

Conducted Chamber did not exceed following limits along the testing:

Temperature	Min. = 15 ℃, Max. = 25 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

Control Room did not exceed following limits along the testing:

Temperature	Min. = 15 ℃, Max. = 25 ℃
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

6. SUMMARY OF TEST RESULTS

6.1. 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)	B.1	P(Set. NFC03) P(Set. NFC04)
2	Electric Field Strength of Outside the Allocated Bands	CFR 47 § 15.225(b) CFR 47 § 15.225(c)		P(Set. NFC03) P(Set. NFC04)
3	Electric Field Radiated Emissions	CFR 47 § 15.209 CFR 47 § 15.225(d)	B.2	P(Set. NFC03) P(Set. NFC04)
			B.3	P(Set. NFC01) P(Set. NFC02)
4	Frequency Tolerance	CFR 47 § 15.225(e)	B.4	P(Set. NFC05)
5	20dB Bandwidth	CFR 47 § 15.215(c)	B.5	P(Set. NFC05)
6	Conducted Emissions	CFR 47 § 15.207	B.6	P(Set. NFC01) P(Set. NFC02)
The measurement is carried out according to ANSI C63.4. See **ANNEX B and ANNEX C** for details.				

Test Conditions:

For this report, all the test cases listed above were tested under normal Temperature, Voltage, Humidity, and Air Pressure. The specific conditions are as following:

Temperature	T min	-20 ℃
	T nom	20 ℃
	T max	55 ℃
Voltage	V min	3.6 V
	V nom	3.7 V
	V max	4.2 V
Humidity	H nom	44 %
Air Pressure	A nom	1010 mbar

6.2. Terms Used in the Summary of Test Results

Terms Used in Condition Column:

T nom	Normal Temperature
T min	Low Temperature
T max	High Temperature
V nom	Normal Voltage
V min	Low Voltage
V max	High voltage
H nom	Norm Humidity
A nom	Norm Air Pressure

Terms Used in Verdict Column:

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

Abbreviations:

AC	Alternating Current
AFH	Adaptive Frequency Hopping
BW	Band Width
E.I.R.P.	equivalent isotropical radiated power
ISM	Industrial, Scientific and Medical
RF	Radio Frequency
Tx	Transmitter

6.3. Statements

The test cases listed in Section 6.1 of this report for the EUT specified in Section 3 were performed by TMC according to the reference documents in Section 4.

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

7. Test Equipments Utilized

No.	Name	Type	Serial No.	Manufacturer	Calibration Due Date
1.	NFC Tester	E1141	000019	AT4 Wireless	2013-03-18
2.	RFID Tester	NI-R100	16929DF	VI	2012-12-06
3.	H-field Antenna	HFH2-Z2	829324/0007	R&S	2014-06-02
4.	Spectrum Analyzer	RSA3408A	B 010277	Tektronix	2013-06-06
5.	Test Receiver	ESU26	100376	R&S	2012-11-08
6.	Spectrum Analyzer	E4440A	MY48250642	Agilent	2013-03-04
7.	EMI Antenna	VULB 9163	514	Schwarzbeck	2014-11-10
8.	Signal Generator	SMT06	831285/005	R&S	2012-09-11
9.	Test Receiver	ESCI	100344	R&S	2013-03-28
10.	LISN	ESH2-Z5	829991/012	R&S	2013-04-16
11.	Signal Generator	SMF100A	101295	R&S	2012-11-09
12.	Power Meter	NRVD	830954/042	R&S	2012-12-13
13.	Power Amplifier	250W1000	26339	AR	/
14.	Power Amplifier	AS0104-100/55	1034090	MILMEGA	/
15.	EMS Antenna	HL046	358714	R&S	/
16.	EMS Antenna	AT4002A	321428	AR	/
17.	Signal Generator	SML01	106247	R&S	2013-04-27
18.	Power Meter	NRVD	102040	R&S	2013-05-27
19.	Power Amplifier	150A220	0326453	AR	2015-03-01
20.	Coupling/decoupling network	CDN-M2/32	9912001C	EM TEST	2012-07-31
21.	Current Clamp	F-120-9A	182	FCC	2013-04-03
22.	Electrostatic Discharge Simulator	dito	V0805103393	EM TEST	2013-05-17
23.	Surge Generator	NSG2050	313	SCHAFFNER	2012-09-20
24.	Electrical Fast Transients / Burst Generator	NSG2025	2054	SCHAFFNER	2012-09-01
25.	Ultr-compact Simulator	UCS500-N7	V0940105198	EM TEST	2013-04-24
26.	Universal Radio Communication Tester	CMU200	116455	R&S	2013-05-20
27.	Universal Radio Communication Tester	CMU200	100680	R&S	2013-09-05
28.	Vector Signal Generator	SMU200A	102082	R&S	2012-11-14
29.	Thermal Chamber	SH-641	92009470	ESPEC	2013-02-18
30.	Coil antenna	/	/	VI	/

ANNEX A: EUT PHOTOGRAPH

Picture A-1: Mobile Phone

Picture A-2: Mobile Phone

Picture A-3: Mobile Phone

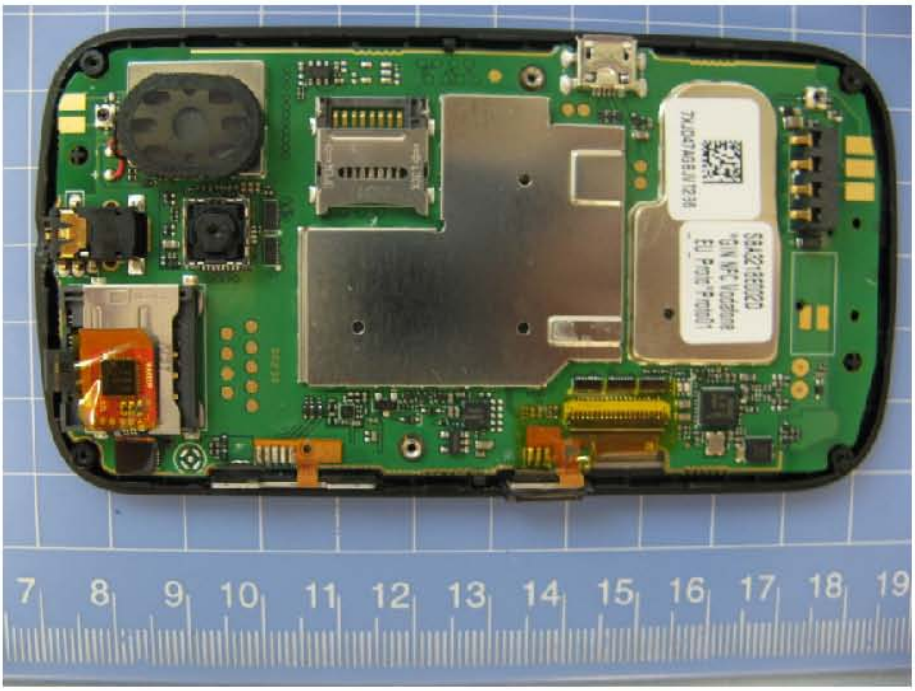
Picture A-4: Mobile Phone

Picture A-5: Mobile Phone

Picture A-6: Mobile Phone

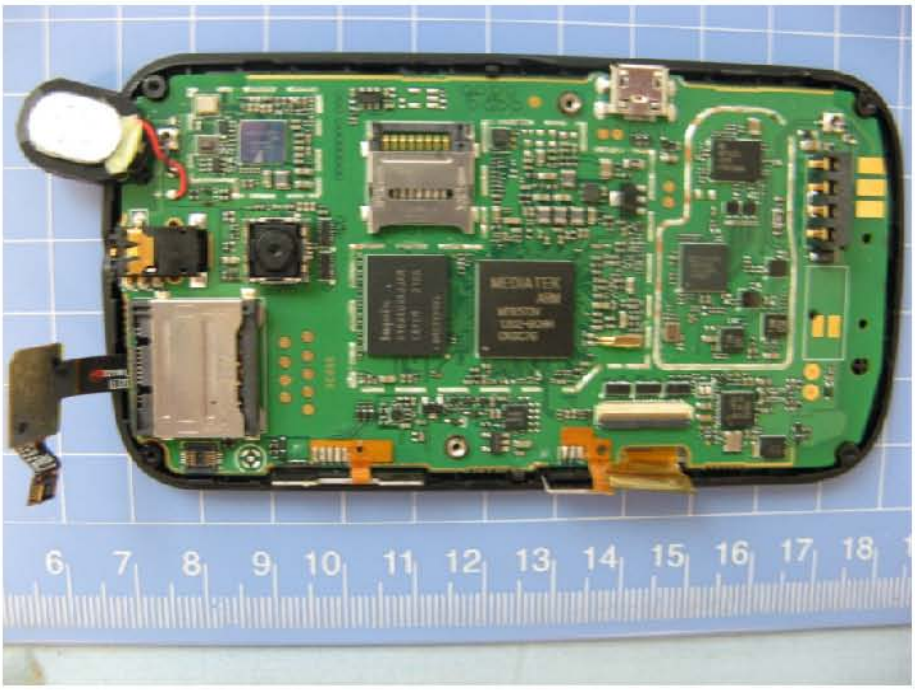
Picture A-7: Mobile Phone Disassembled

Picture A-8: Mobile Phone Disassembled



Picture A-9: Mobile Phone Disassembled

Picture A-10: Mobile Phone Disassembled



Picture A-11: Mobile Phone Disassembled

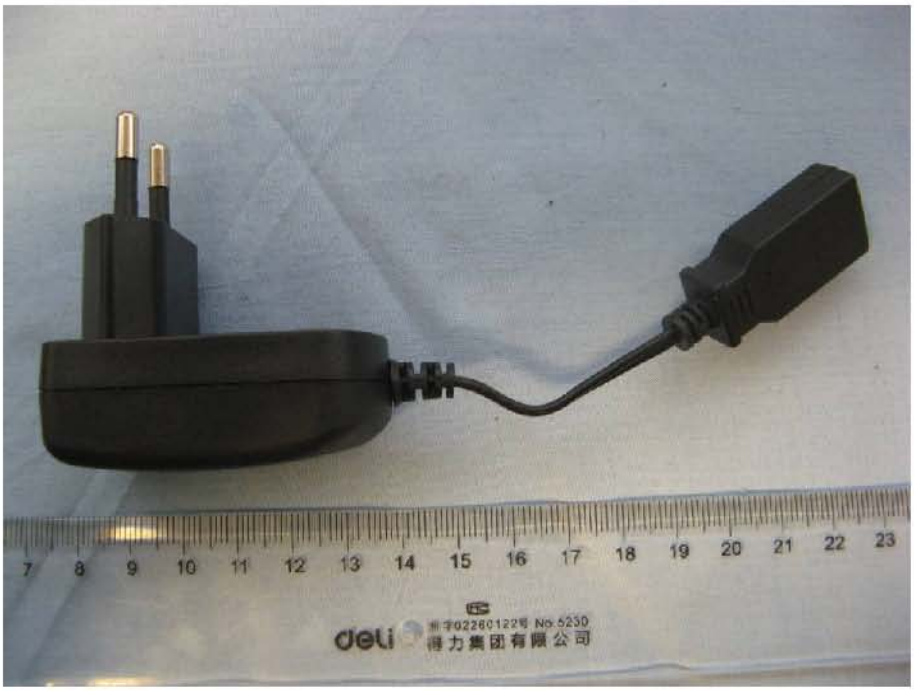
Picture A-12: Battery

Picture A-13: Battery

Picture A-14: USB Cable

Picture A-15: Charger AE4

Picture A-16: Label of Charger AE4



Picture A-17: Charger AE5

Picture A-18: Label of Charger AE5

ANNEX B: MEASUREMENT RESULTS

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

B.1.1. Reference

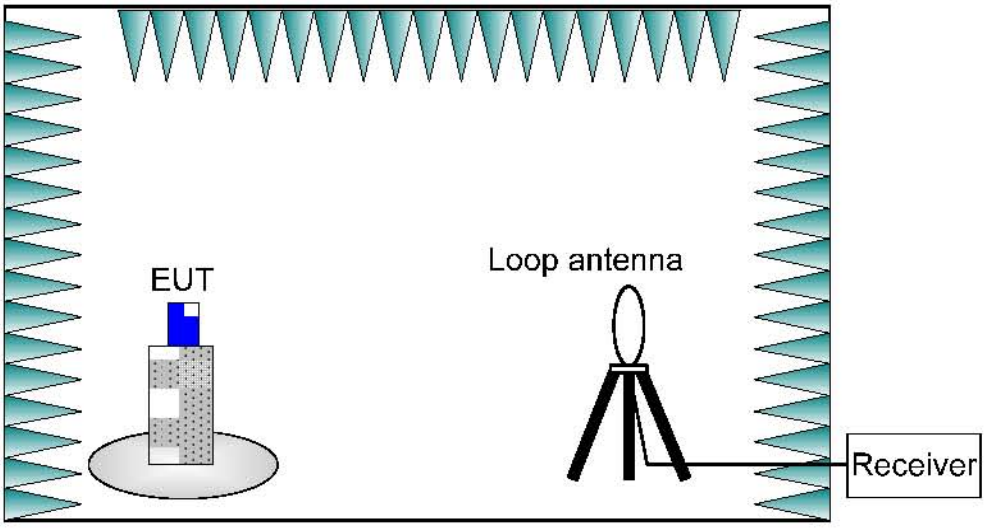
See Clause 13.5, Clause 13.4, Clause 8, and Annex E of ANSI C63.4-2009 specifically.
See Clause 4, Clause 5, and Clause 6 of ANSI C63.4-2009 generally.

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 measurement bandwidth is:

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

The E-field measured at 3m is calculated as:
E-field (dBμV/m) = Rx (dBμV) + Cable Loss (dB) + AF@3m (dB/m)



B.1.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state of NFC (See 3.5).
The Transmit State of NFC: the NFC function is on. The EUT is configured into "NFC EUT test mode (RF)", and will transmit the NFC data command continuously during the test.

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 ℃.

B.1.4. Test Layouts

For actual layout during the test, see Picture C-1 in ANNEX C.

B.1.5. Limits

Frequency Range (MHz)	E-field Strength Limit @ 30 m (μV/m)	E-field Strength Limit @ 3 m (dBμV/m)
13.560 ± 0.007	+15,848	124
13.410 to 13.553 13.567 to 13.710	+334	90
13.110 to 13.410 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: $\text{Extrapolation(dB)} = 40\log_{10}(\text{Measurement Distance/Specification Distance})$		

B.1.6. Measurement Results

Measurement results of normal conditions see Figure B-1 to Figure B-2 for different set-ups of EUT.
The result displayed take into account applicable antenna factors and cable losses.
Conclusions: Set. NFC03, **PASS**; Set. NFC04, **PASS**.

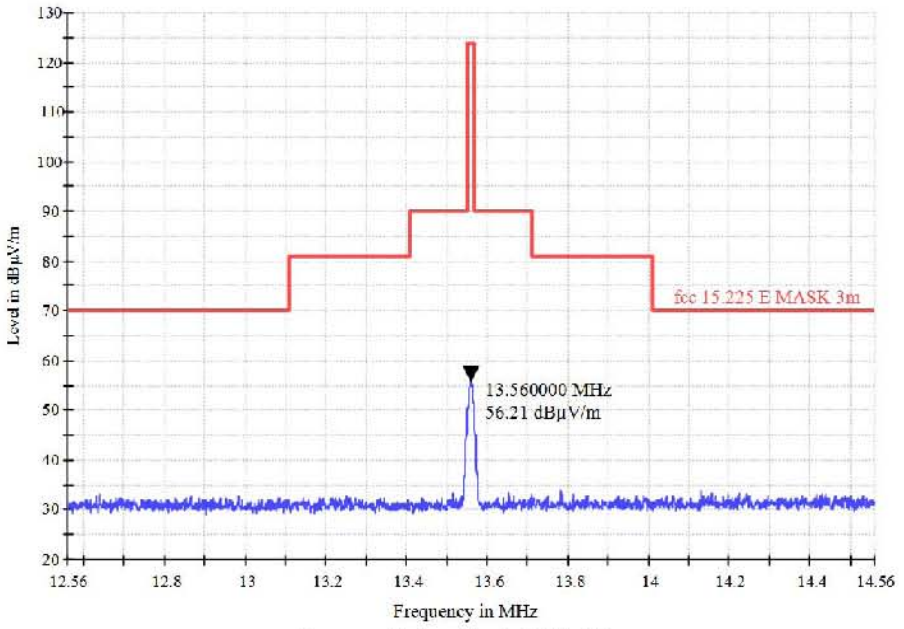


Figure B-1: Set. NFC03

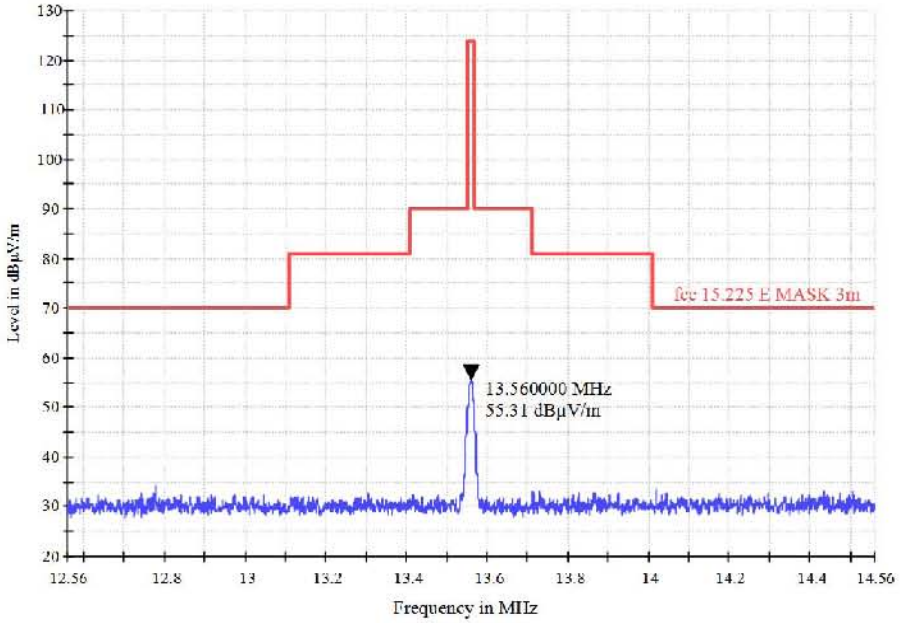


Figure B-2: Set. NFC04

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

B.2.1. Reference

See Clause 13.4, Clause 8 and Annex E of ANSI C63.4-2009 specifically.
See Clause 4, Clause 5, and Clause 6 of ANSI C63.4-2009 generally.

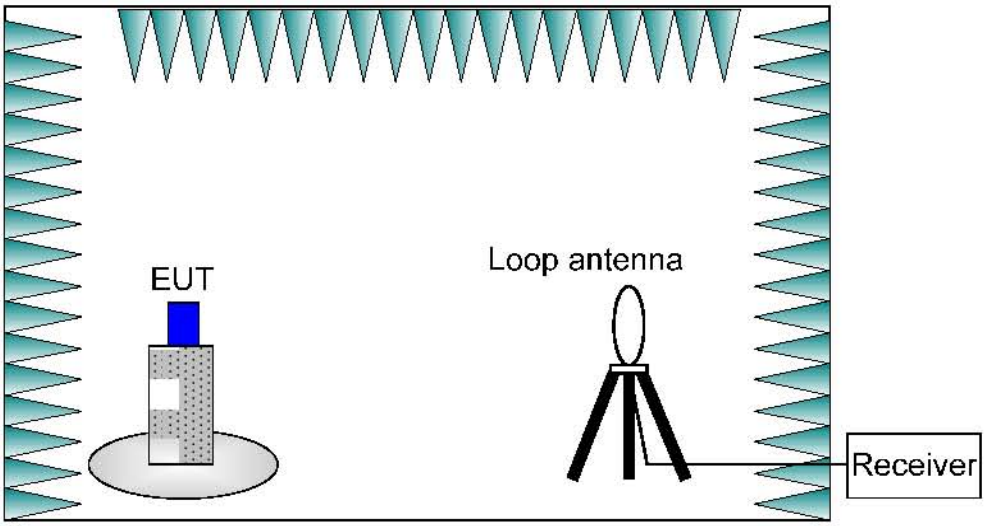
B.2.2. Measurement Methods

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 measurement bandwidth is:

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 (dBµV/m) = Rx (dBµV) + Cable Loss (dB) + AF@3m (dB/m)



B.2.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state of NFC (See 3.5).

The Transmit State of NFC: the NFC function is on. The EUT is configured into "NFC EUT test mode (RF)", and will transmit the NFC data command continuously during the test.

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 ℃.

B.2.4. Test Layouts

For actual layout during the test, see Picture C-1 in ANNEX C.

B.2.5. 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: $\text{Extrapolation(dB)} = 40\log_{10}(\text{Measurement Distance/Specification Distance})$		

B.2.6. Measurement Results

Measurement results of normal conditions see Figure B-3 to Figure B-4 for different set-ups of EUT. The result displayed take into account applicable antenna factors and cable losses.

Conclusions: Set. NFC03, **PASS**; Set. NFC04, **PASS**.

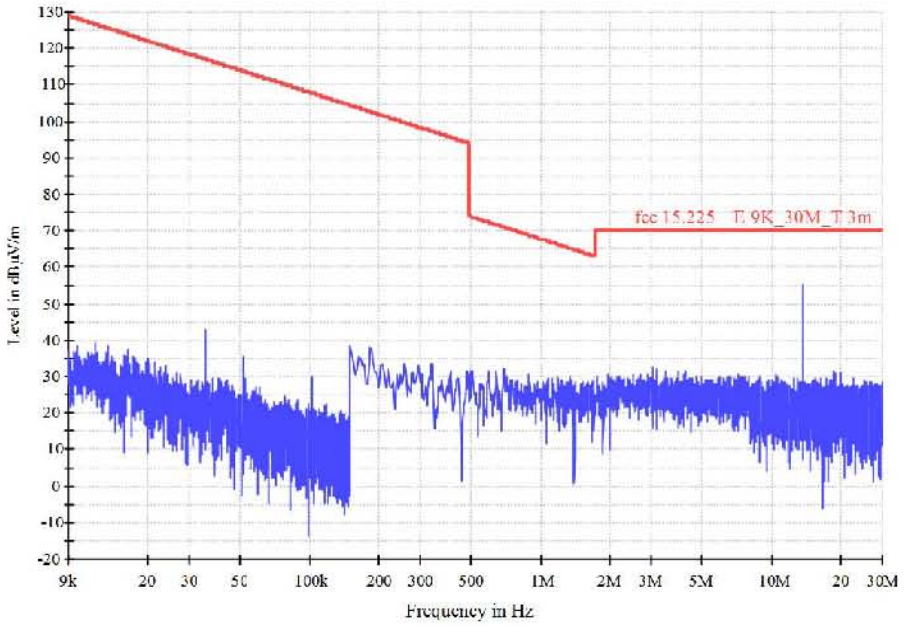


Figure B-3: Set. NFC03

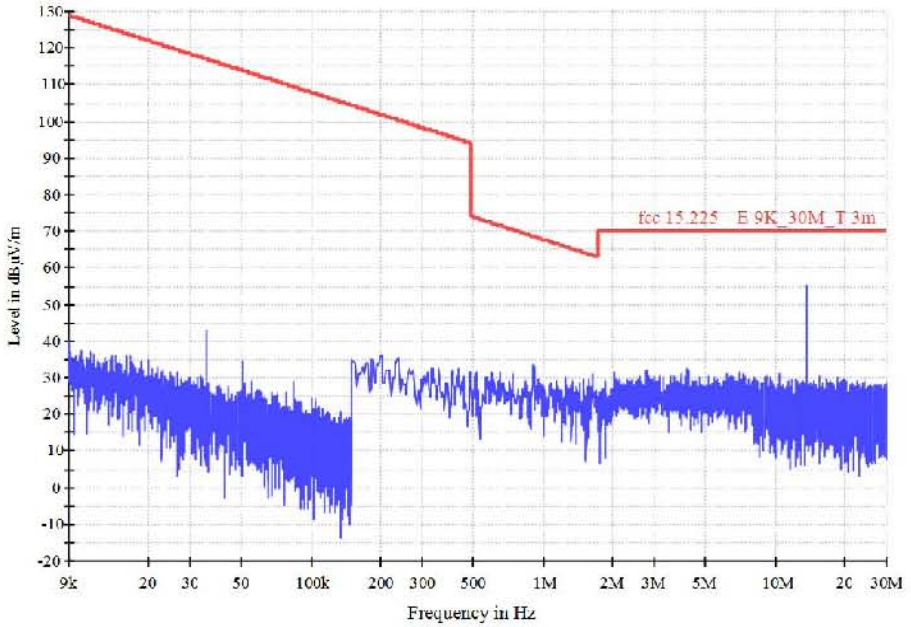


Figure B-4: Set. NFC04

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

B.3.1. Reference

See Clause 13.4, Clause 8, and Annex E of ANSI C63.4-2009 specifically.
See Clause 4, Clause 5, and Clause 6 of ANSI C63.4-2009 generally.

B.3.2. Measurement Methods

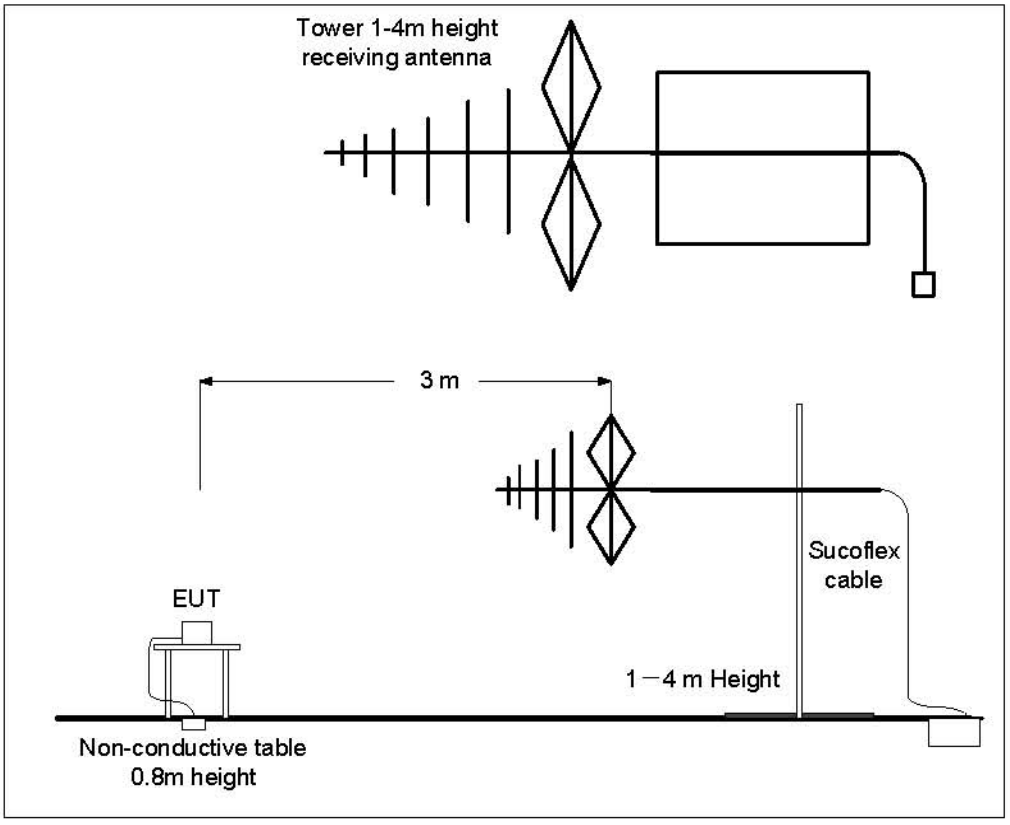
The electric field radiated emissions from the EUT are measured in a semi-anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The receiving antennas connected to a measurement receiver comply with Clause 15 of ANSI C63.2-1996 and Clause 4.1.5 of ANSI C63.4-2009. 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 measurement bandwidth is:

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

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

E-field (dBμV/m) = Rx (dBμV) + Cable Loss (dB) + AF@3m (dB/m)



B.3.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the NFC mode.

EUT1 had been connected to a travel adapter, and configured into the PCD operating mode. AE1 had been inserted one NFC-SIM card, not connected to a travel adapter, and configured into the PICC operating mode. Two mobile phones have been placed back to back. These configurations ensured the PCD EUT1 can read information from PICC AE1.

During the measurements, the ambient temperature of the electromagnetic anechoic chamber is in the range of 15 ~ 25 ℃.

B.3.4. Test Layouts

For actual layout during the test, see Picture C-2 in ANNEX C.

B.3.5. Limits

Frequency Range (MHz)	E-field Strength Limit @ 3m (mV/m)	E-field Strength Limit @ 3m (dBμV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46

B.3.6. Measurement Results

Measurement results of normal conditions see Figure B-5 to Figure B-6 for different set-ups of EUT. The result displayed take into account applicable antenna factors and cable losses.

Conclusions: Set. NFC01, **PASS**; Set. NFC02, **PASS**.

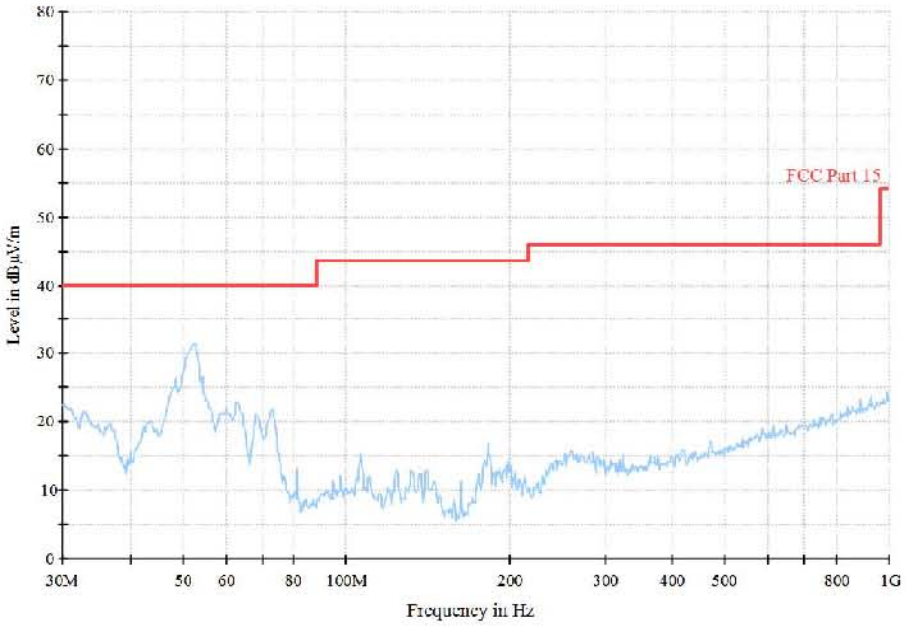
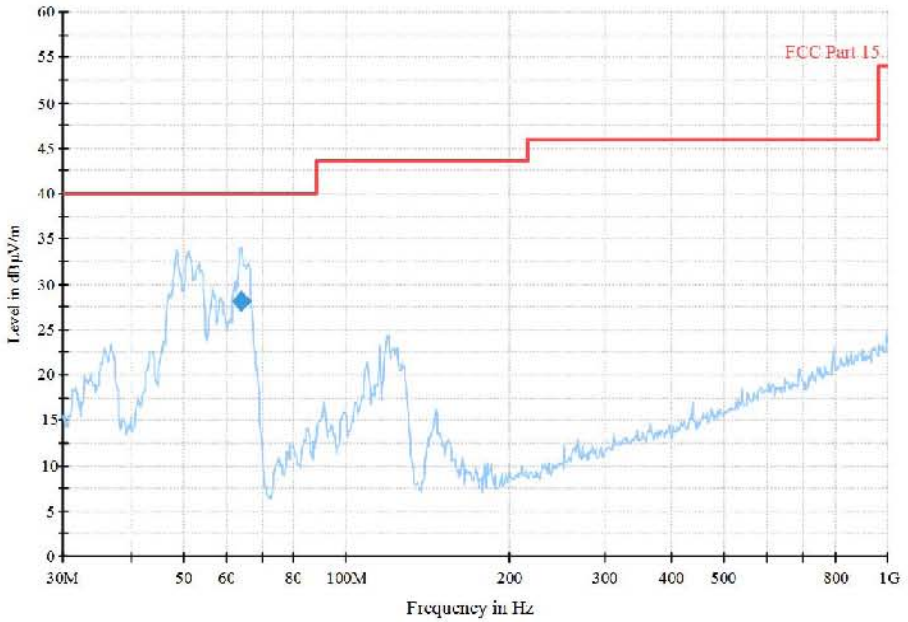


Figure B-5: Set. NFC01



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
64.026925	28.2	100.0	V	270.0	-28.2	11.8

Figure B-6: Set. NFC02

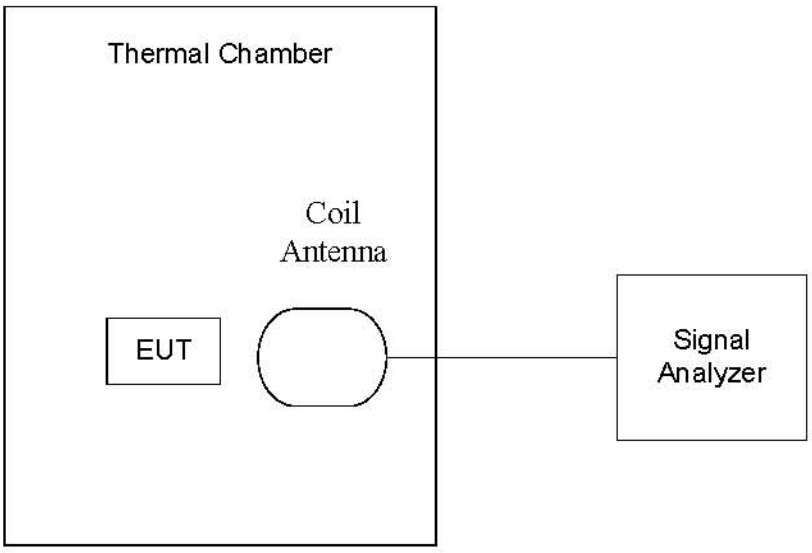
B.4. Frequency Tolerance

B.4.1. Reference

See Clause 13.6 of ANSI C63.4-2009 specifically.

See Clause 4, Clause 5, and Clause 6 of ANSI C63.4-2009 generally.

B.4.2. Measurement Methods



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 is carried out under the NFC mode with Set-ups of Set. NFC05.
EUT1 had been configured into the PCD operating mode, not connected to a travel adapter. AE1 had been inserted one NFC-SIM card, not connected to a travel adapter, and configured into the PICC operating mode. Two mobile phones have been placed back to back. These configurations ensured the PCD EUT1 can read information from PICC AE1.
Operation Temperature: T min, T nom, and T max with V nom.
Operation Voltage: V min and V max with T nom.

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-1 for different test conditions.
Conclusions: Set. NFC05, **PASS**.

Table B-1: Frequency Stability VS Temperature and Voltage

Temperature	Voltage	Frequency Error (MHz)			
		Startup	2 Min Later	5 Min Later	10 Min Later
T min	V nom	13.5604832	13.5604750	13.5604663	13.5604550
T max	V nom	13.5604463	13.5604400	13.5604344	13.5604300
T nom	V nom	13.5604657	13.5604632	13.5604619	13.5604607
T nom	V min	13.5604531	13.5604544	13.5604544	13.5604550
T nom	V max	13.5604479	13.5604492	13.5604504	13.5604516

Temperature	Voltage	Frequency Error (%)			
		Startup	2 Min Later	5 Min Later	10 Min Later
T min	V nom	0.004	0.004	0.003	0.003
T max	V nom	0.003	0.003	0.003	0.003
T nom	V nom	0.003	0.003	0.003	0.003
T nom	V min	0.003	0.003	0.003	0.003
T nom	V max	0.003	0.003	0.003	0.003

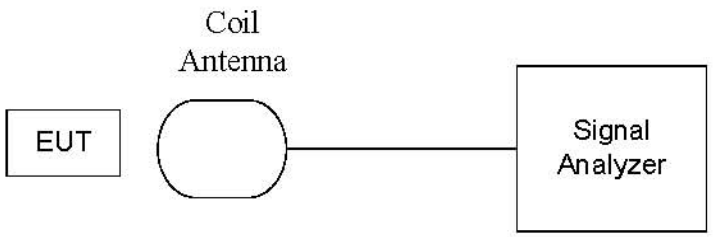
B.5. 20dB Bandwidth

B.5.1. Reference

See Clause 13.7 of ANSI C63.4-2009 specifically.
See Clause 4, Clause 5, and Clause 6 of ANSI C63.4-2009 generally.

B.5.2. Measurement Methods

The transmitter output signal was picked up by coil antenna to the spectrum analyzer.
The transmitter output signal was picked up by coil antenna connected to the spectrum analyzer. The bandwidth of the center frequency was measured with 100Hz RBW, 300Hz VBW and 5kHz span.



B.5.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the NFC mode with Set-ups of Set. NFC05.
EUT1 had been configured into the PCD operating mode, not connected to a travel adapter. AE1 had been inserted one NFC-SIM card, not connected to a travel adapter, and configured into the PICC operating mode. Two mobile phones have been placed back to back. These configurations ensured the PCD EUT1 can read information from PICC AE1.

During the measurements, the ambient temperature is in the range of 15 ~ 25 ℃.

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-7.
Conclusions: Set. NFC05, **PASS**.

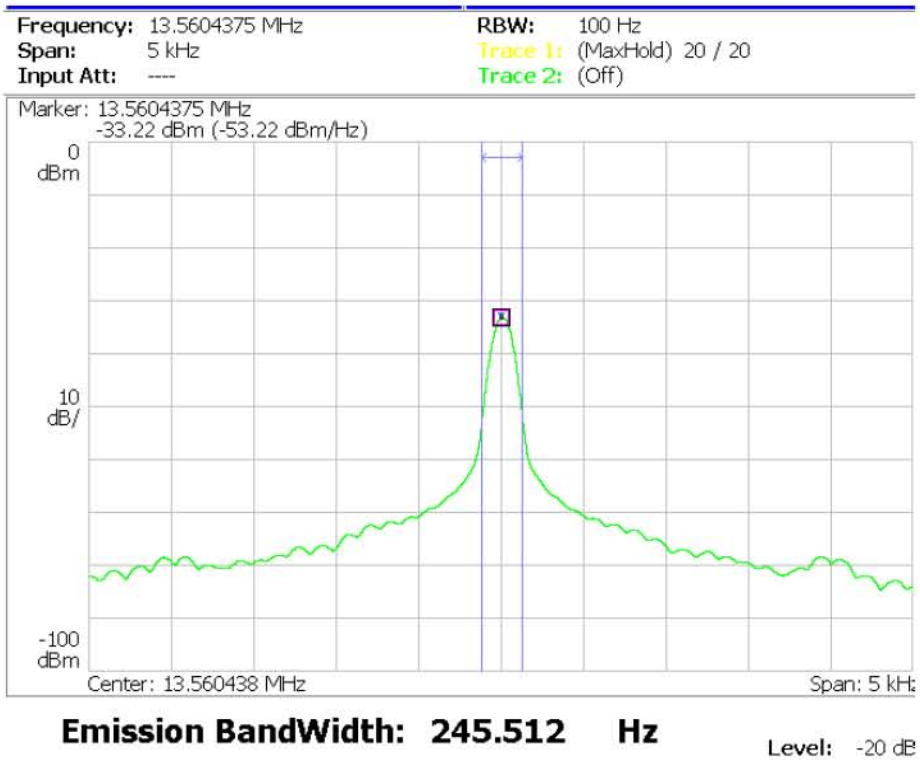


Figure B-7: Test result of EUT1 at test set. NFC05

B.6 Conducted emission

B.6.1. Reference

See Clause 13.3 and Clause 7 of ANSI C63.4-2009 specifically.

See Clause 4, Clause 5, and Clause 6 of ANSI C63.4-2009 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
30-1000	9kHz

B.6.3. EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the NFC mode with Set-ups of Set. NFC01 and Set. NFC02.

EUT1 had been configured into the PCD operating mode, and connected to a travel adapter. AE1

had been inserted one NFC-SIM card, not connected to a travel adapter, and configured into the PICC operating mode. Two mobile phones have been placed back to back. These configurations ensured the PCD EUT1 can read information from PICC AE1.

During the measurements, the ambient temperature is in the range of 15 ~ 25 ℃.

B.6.4. Test Layouts

For actual layout during the test, see Picture C-3 in ANNEX C.

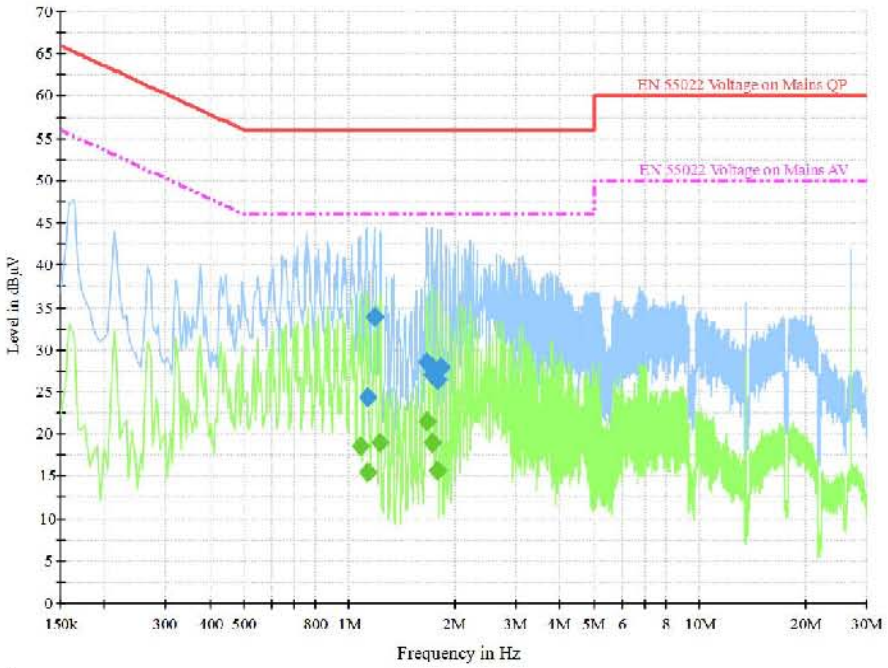
B.6.5. Limits

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

B.6.6. Measurement Results

Measurement results see Figure B-8 and B-9.

Conclusions: Set. NFC01, **PASS**; Set. NFC02, **PASS**.



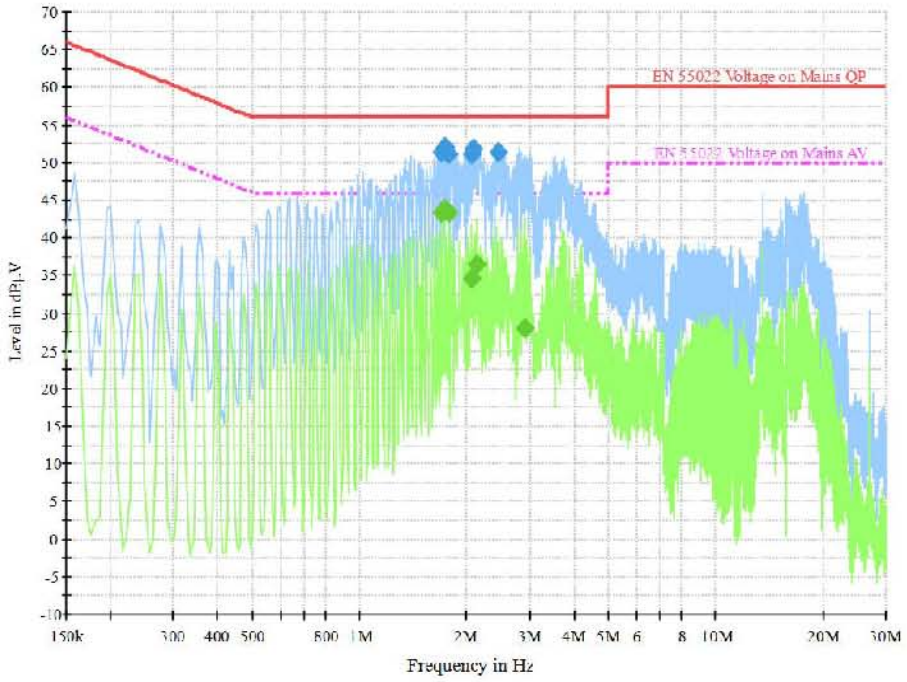
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.126500	24.4	GND	L1	10.0	31.6	56.0
1.176000	33.9	GND	L1	10.0	22.1	56.0
1.675500	28.5	GND	L1	10.0	27.5	56.0
1.729500	27.0	GND	L1	10.0	29.0	56.0
1.783500	26.5	GND	L1	10.0	29.5	56.0
1.837500	27.8	GND	L1	10.0	28.2	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.072500	18.6	GND	L1	10.0	27.4	46.0
1.126500	15.5	GND	L1	10.0	30.5	46.0
1.230000	18.9	GND	L1	10.0	27.1	46.0
1.675500	21.5	GND	L1	10.0	24.5	46.0
1.729500	18.9	GND	L1	10.0	27.1	46.0
1.783500	15.7	GND	L1	10.0	30.3	46.0

Figure B-8: Test result of EUT1 at test set. NFC01



Final Result 1

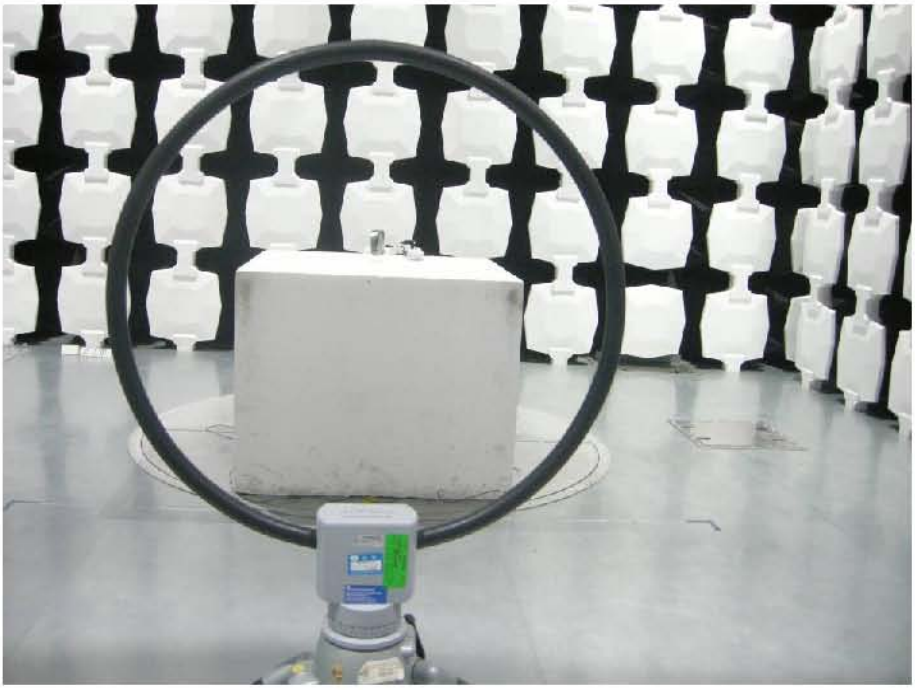
Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.698000	51.3	GND	L1	10.0	4.7	56.0
1.738500	52.1	GND	L1	10.0	3.9	56.0
1.779000	51.2	GND	L1	10.0	4.8	56.0
2.062500	51.2	GND	L1	10.0	4.8	56.0
2.094000	51.9	GND	L1	10.0	4.1	56.0
2.449500	51.3	GND	L1	10.0	4.7	56.0

Final Result 2

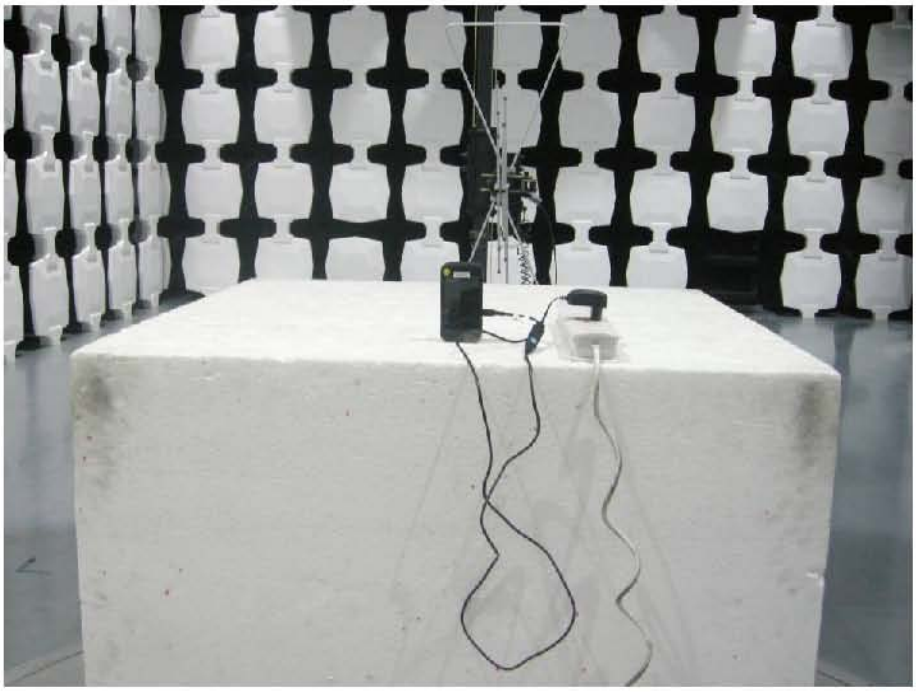
Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.698000	43.4	GND	L1	10.0	2.6	46.0
1.738500	43.7	GND	L1	10.0	2.3	46.0
1.779000	43.4	GND	L1	10.0	2.6	46.0
2.062500	34.6	GND	L1	10.0	11.4	46.0
2.139000	36.5	GND	L1	10.0	9.5	46.0
2.895000	28.0	GND	L1	10.0	18.0	46.0

Figure B-9: Test result of EUT1 at test set. NFC02

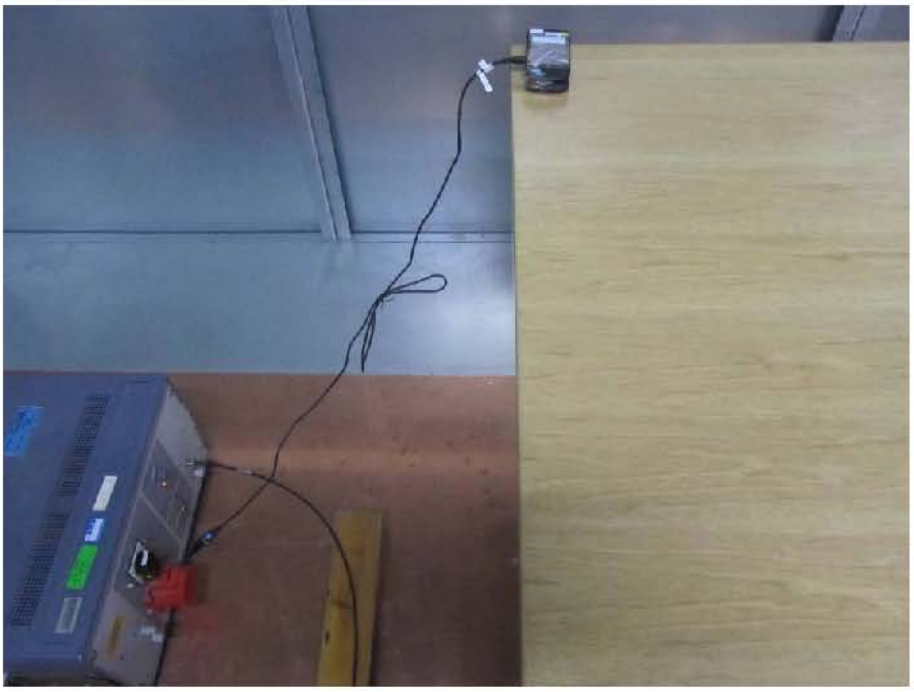
ANNEX C: TEST LAYOUT



Picture C-1: Field Strength Measurements (Below 30MHz)



Picture C-2: Field Strength Measurements (Above 30MHz)



Picture C-3: Conducted Emissions Measurements

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