RF Test Report

For

Applicant name:	**Shenzhen DOOGEE Hengtong Technology CO.,LTD**
Address:	B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No.22,Longhua New District, Shenzhen, China
EUT name:	Smart Phone
Brand name:	DOOGEE
Model Name:	V50
Series model number:	Refer to section 2
FCC ID:	2AX4Y-V50

Issued By

Company name:	**BTF Testing Lab (Shenzhen) Co., Ltd.**
Address:	Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Report number:	BTF260414R00307
Test standards:	FCC CFR Title 47 Part 15 Subpart C (§15.225)
Test conclusion:	Pass
Date of sample receipt:	2026-04-14
Test date:	2026-04-15 to 2026-05-10
Date of issue:	2026-05-20
Test by:	Sean He / Tester
Prepared by:	Chris Liu / Project engineer
Approved by:	Ellic Huang/EMC manager

Note: All the test results in this report only related to the testing samples. Which can be duplicated completely for the legal use with approval of applicant; it shall not be reproduced except in full without the written approval of BTF Testing Lab (Shenzhen) Co., Ltd., All the objections should be raised within thirty days from the date of issue. To validate the report, you can contact us.

Revision History		
Version	Issue date	Revisions content
R_V0	2026-05-20	Original
Note: *Once the revision has been made, then previous versions reports are invalid.*		

BTF Testing Lab (Shenzhen) Co., Ltd.
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Table of Contents

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1 Introduction

1.1 Laboratory Location

Test location:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Phone number:	+86-0755-23146130
Fax number:	+86-0755-23146130

1.2 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Designation No.: CN1409**

  BTF Testing Lab (Shenzhen) Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 695374.

- **CNAS - Registration No.: CNAS L17568**

  BTF Testing Lab (Shenzhen) Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L17568.

- **A2LA - Registration No.: 6660.01**

  BTF Testing Lab (Shenzhen) Co., Ltd. is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.

1.3 Announcement

(1) The test report reference to the report template version v0.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.

(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

(6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2 Product Information

2.1 Application Information

Company name:	Shenzhen DOOGEE Hengtong Technology CO.,LTD
Address:	B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No.22,Longhua New District, Shenzhen, China

2.2 Manufacturer Information

Company name:	Shenzhen DOOGEE Hengtong Technology CO.,LTD
Address:	B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No.22,Longhua New District, Shenzhen, China

2.3 Factory Information

Company name:	Shenzhen DOOGEE Hengtong Technology CO.,LTD
Address:	B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No.22,Longhua New District, Shenzhen, China

2.4 General Description of Equipment under Test (EUT)

EUT name	Smart Phone
Under test model name	V50
Series model name	V50 Pro
Description of model name differentiation	Only the model name is different, everything else is the same
Hardware Version	N/A
Software Version	N/A
Rating:	Li-ion polymer Battery DC 3.85V 11000mAh 42.35Wh
Adapter:	PD CHARGER: Model: TP651C-US Input: AC 110-240V~ 50/60Hz 1.3A Max Type C Output: DC 5.0V⎓ 3.0A 15.0W, 9.0V⎓ 3.0A 27.0W, 12.0V⎓ 3.0A 36.0W, 15.0V⎓ 3.0A 45.0W, 20.0V⎓ 3.25A 65.0W PPS: 3.3-11.0V⎓ 6.0A; PPS:: 3.3-21.0V⎓ 3.0A Power: 66.0W Max

2.5 Technical Information

Operation frequency:	13.56MHz
Channel Numbers:	1
Modulation technology:	ASK
Antenna type:	Loop Coil Antenna

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3 Test Information

3.1 Test Standards

Identity	Document Title
FCC CFR Title 47 Part 15 Subpart C (§15.225)	Operation within the band 13.110-14.010 MHz.
ANSI C63.10-2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

3.2 Summary of Test

Clauses	Test Items	Result
§ 15.203	Antenna Requirement	Pass
§ 15.207	AC Power Line Conducted Emission	Pass
§ 15.215(c)	20dB Bandwidth	Pass
§ 15.225(a)	Field Strength of Fundamental	Pass
§ 15.209 § 15.225(d)	Field Strength of Spurious Emissions	Pass
§ 15.225(e)	Frequency Tolerance	Pass
Remark: *1. Pass: met the requirements.* *2. N/A: not applicable.*		

3.3 Uncertainty of Test

Measurement	Value
Conducted Emission for LISN (9kHz ~ 150kHz)	±2.97 dB
Conducted Emission for LISN (150kHz ~ 30MHz)	±2.45 dB
Radiated Emission (9kHz ~ 30MHz)	±2.20 dB
Radiated Emission (30MHz ~ 1000MHz)	±4.80 dB
Radiated Emission (1GHz ~ 18GHz)	±4.82 dB
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3.4 Additions to, deviations, or exclusions from the method

None

3.5 Test Auxiliary Equipment

Description	Manufacturer	Model	Serial No.	Length	Description
/	/	/	/	/	/

3.6 Test Equipment List

Radiated Emission Test

Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	Rohde & Schwarz	ESCI7	101032	2025/10/17	2026/10/16
Signal Analyzer	Rohde & Schwarz	FSQ40	100010	2025/10/17	2026/10/16
Log periodic antenna	Schwarzbeck	VULB 9168	01328	2025/10/18	2026/10/17
Preamplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9744	00246	2025/5/26	2026/5/25
BELOW-Cable	REBES Talent	9K1G	21101576	2025/8/23	2026/8/22
Horn Antenna	Schwarzbeck	BBHA9120D	2597	2025/10/18	2026/10/17
Preamplifier (1GHz ~ 18GHz)	Schwarzbeck	BBV9718D	00008	2025/5/26	2026/5/25
Preamplifier	TSTPASS	LNA10180G45	TS2215007	2025/5/26	2026/5/25
ABOVE-Cable	REBES Talent	1~18G	21101558	2025/8/23	2026/8/22
Horn Antenna	SCHWARZBECK	BBHA9170	1157	2025/10/18	2026/10/17
Low Noise Pre-amplifier	Sket	LNPA_1840G-50	SK2022032902	2025/10/17	2026/10/16
ABOVE-Cable2	REBES Talent	18~40G	21101686	2025/8/23	2026/8/22
ABOVE-Cable1	REBES Talent	18~40G	21101687	2025/8/23	2026/8/22
Test Software	Frad	EZ_EMC	Version: FA-03A2 RE+		

Conducted Emission Test					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	Rohde & Schwarz	ESCI3	101422	2025/10/17	2026/10/16
V-LISN	Schwarzbeck	NSLK 8127	01073	2025/8/23	2026/8/22
Coaxial Switcher	Schwarzbeck	CX210	CX210	/	/
Pulse Limiter	Schwarzbeck	VTSD 9561-F	00953	/	/
LISN-Cable	REBES Talent	LISN9K30M	21101580	2025/8/23	2026/8/22
Test Software	Frad	EZ_EMC	Version: EMC-CON 3A1.1+		

Conducted test method					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Cell Site Test Set	HP	8921A	US35010158	2025/10/17	2026/10/16
Spectrum Analyzer	Keysight	N9020A	MY50410020	2025/10/17	2026/10/16
ESG Vector Signal Generator	Agilent	E4438C	MY45094854	2025/10/17	2026/10/16
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2025/10/17	2026/10/16
Wideband Radio Communication Tester	Rohde&Schwarz	CMW500	161997	2025/10/17	2026/10/16
Programmable Constant Temperature And Humidity Test Chamber	ZZCKONG	ZZ-K02A	20210928007	2025/10/17	2026/10/16

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DC Power Supply	Tongmen	etm-6050c	20211026123	2025/10/17	2026/10/16
RF Control Unit	Techy	TR1029-1	10291	2025/10/17	2026/10/16
RF Sensor Unit	Techy	TR1029-2	10292	2025/10/17	2026/10/16
RF shielding box	Yinuoxin Electronics	50*50*50 cm	050505M	2025/10/21	2026/10/20
Test Software	TST Pass	/	Version: 2.0		

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4 Test Configuration

4.1 Environment Condition

Selected Values During Tests		
Temperature	Relative Humidity	Ambient Pressure
Normal: +15°C to +35°C Extreme: -30°C to +50°C	20% to 75%	86 kPa to 106 kPa

4.2 Test mode

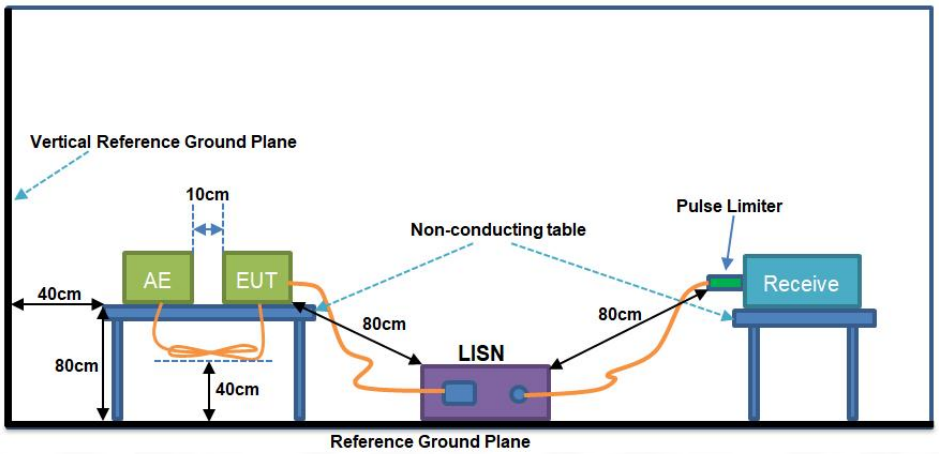
Transmitting mode:	Keep the EUT in continuously transmitting mode with modulation
Remark: Per-scan all kind of data rate, and report only reflects the test data of worst data rate mode.	

4.3 Test procedure

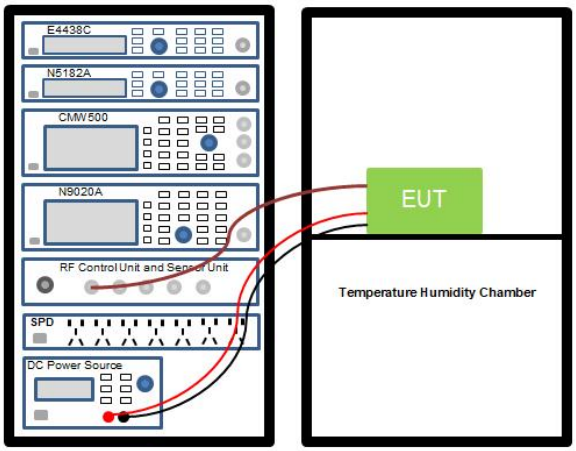
AC Power Line Conducted Emission
The EUT is connected to the power mains through a LISN which provides 50 Ω/50 μH of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed.
Radiated test method
1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
Conducted test method
1. The antenna port of EUT was connected to the test port of the test system through an RF cable. 2. The EUT is keeping in continuous transmission mode and tested in all modulation modes. 3. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.

4.4 Test Setup Block

1) Conducted emission measurement:

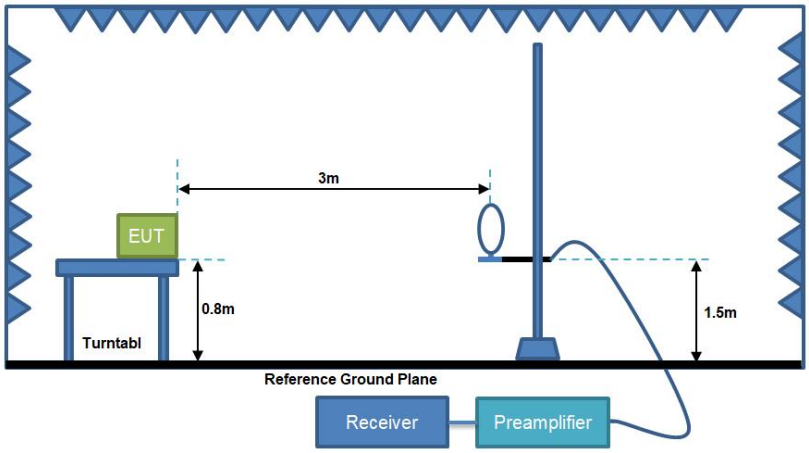


2) Conducted test method:

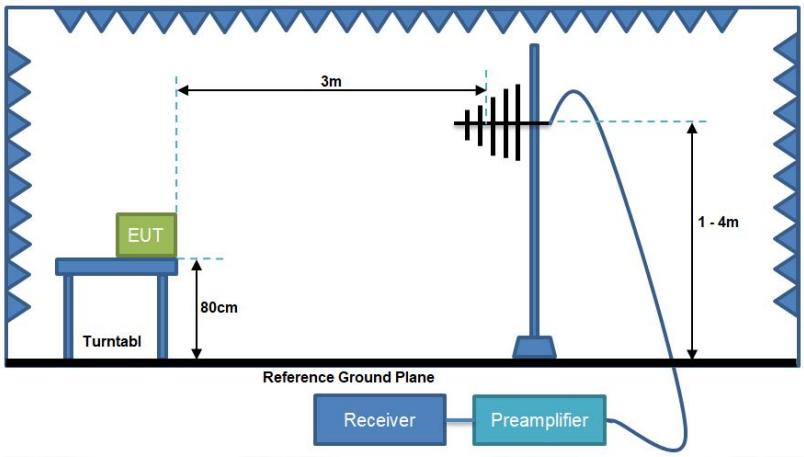


3) Radiated test method:

Below 1GHz



Below 1GHz



5 Technical requirements specification

5.1 Summary of Test Result

Test Items	Limit	Test data	Verdict
Antenna Requirement	Please refer to §15.203	See Section 5.2	Pass
AC Power Line Conducted Emission	Please refer to §15.207	See Section 5.3	Pass
20dB Bandwidth	Please refer to § 15.215(c)	See Section 5.4	Pass
Field Strength of Fundamental	Please refer to §15.225(a)	See Section 5.5	Pass
Field Strength of Spurious Emissions	Please refer to §15.209 and §15.225(d)	See Section 5.6	Pass
Frequency Tolerance	Please refer to §15.225(e)	See Section 5.7	Pass

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5.2 Antenna Requirement

Relevant Standards

FCC §15.203;
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Antenna Anti-Replacement Construction

Protected Method	Description
The antenna is embedded in the product.	An embedded in antenna design is used.

Reference Documents	Item
Photo	Please refer to the EUT Photo documents.

5.3 AC Power Line Conducted Emission

Limit

FCC §15.207; RSS-GEN, 8.8

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

Test Setup

See section 4.4 for test setup 2. The photo of test setup please refer to ANNEX B

Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

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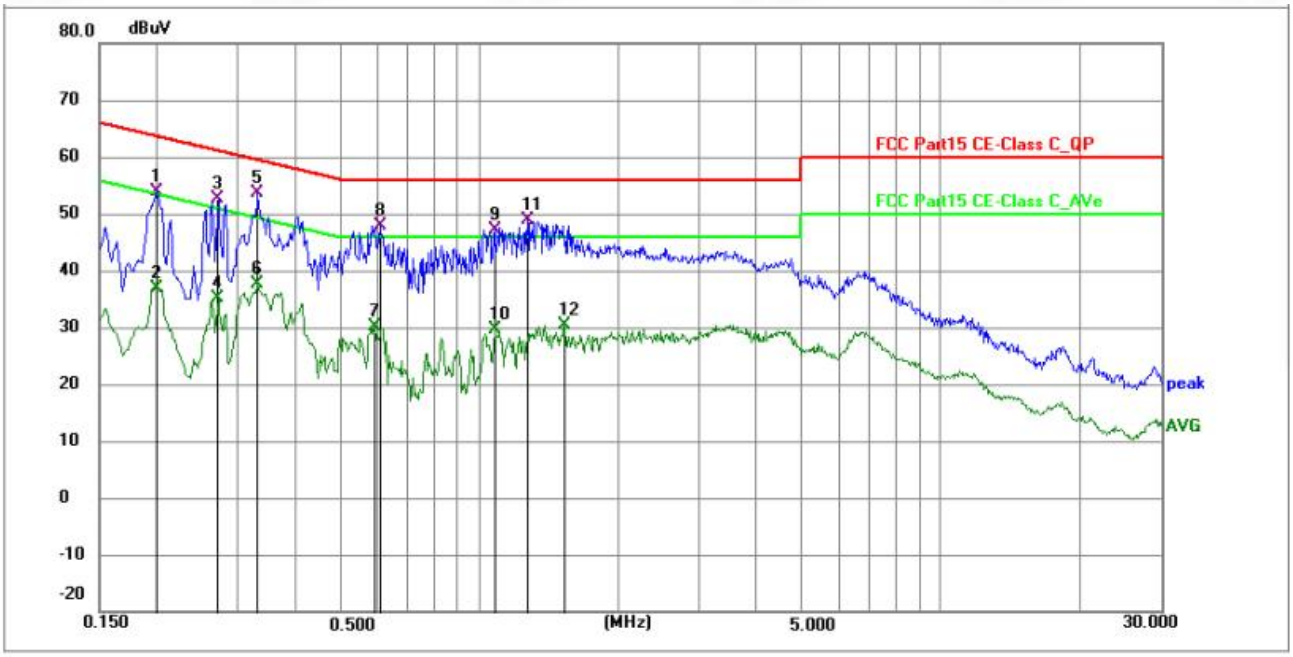
Temperature	22.5℃	Humidity	56%
Test voltage	AC 120V/60Hz	Test Engineer	Sean He

Test phase: L phase



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1995	43.71	10.24	53.95	63.63	-9.68	QP	P	
2	0.1995	26.76	10.24	37.00	53.63	-16.63	AVG	P	
3	0.2714	42.42	10.18	52.60	61.07	-8.47	QP	P	
4	0.2714	24.86	10.18	35.04	51.07	-16.03	AVG	P	
5 *	0.3300	43.46	10.23	53.69	59.45	-5.76	QP	P	
6	0.3300	27.30	10.23	37.53	49.45	-11.92	AVG	P	
7	0.5910	19.97	10.23	30.20	46.00	-15.80	AVG	P	
8	0.6090	37.65	10.24	47.89	56.00	-8.11	QP	P	
9	1.0812	36.96	10.25	47.21	56.00	-8.79	QP	P	
10	1.0812	19.31	10.25	29.56	46.00	-16.44	AVG	P	
11	1.2750	38.69	10.23	48.92	56.00	-7.08	QP	P	
12	1.5315	20.04	10.29	30.33	46.00	-15.67	AVG	P	

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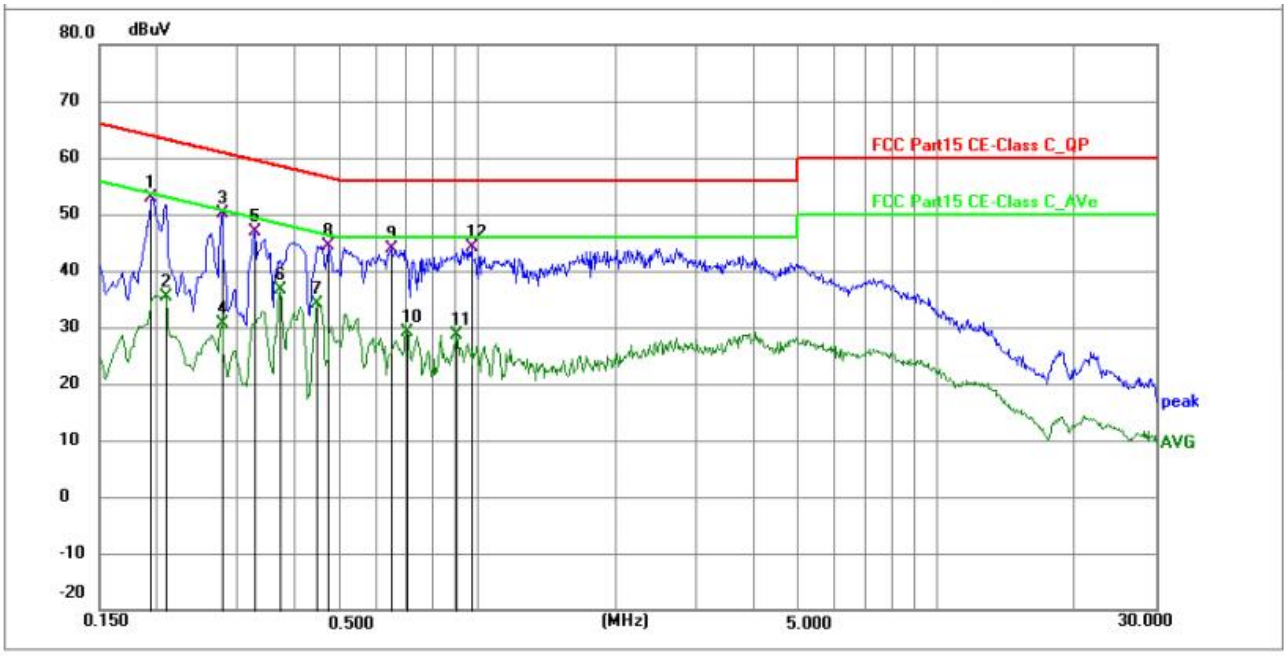
Test phase: N phase



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1949	42.63	10.22	52.85	63.83	-10.98	QP	P	
2	0.2084	25.23	10.22	35.45	53.27	-17.82	AVG	P	
3 *	0.2760	39.84	10.21	50.05	60.94	-10.89	QP	P	
4	0.2760	20.38	10.21	30.59	50.94	-20.35	AVG	P	
5	0.3255	36.54	10.22	46.76	59.57	-12.81	QP	P	
6	0.3704	26.40	10.22	36.62	48.49	-11.87	AVG	P	
7	0.4470	23.79	10.22	34.01	46.93	-12.92	AVG	P	
8	0.4740	34.15	10.23	44.38	56.44	-12.06	QP	P	
9	0.6492	33.68	10.24	43.92	56.00	-12.08	QP	P	
10	0.7035	18.94	10.25	29.19	46.00	-16.81	AVG	P	
11	0.9012	18.38	10.24	28.62	46.00	-17.38	AVG	P	
12	0.9690	33.82	10.23	44.05	56.00	-11.95	QP	P	

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5.4 20dB Bandwidth

Limit

Intentional radiators must be designed to ensure that the 20dB emission bandwidth in the specific band 13.553~13.567MHz.

Test Setup

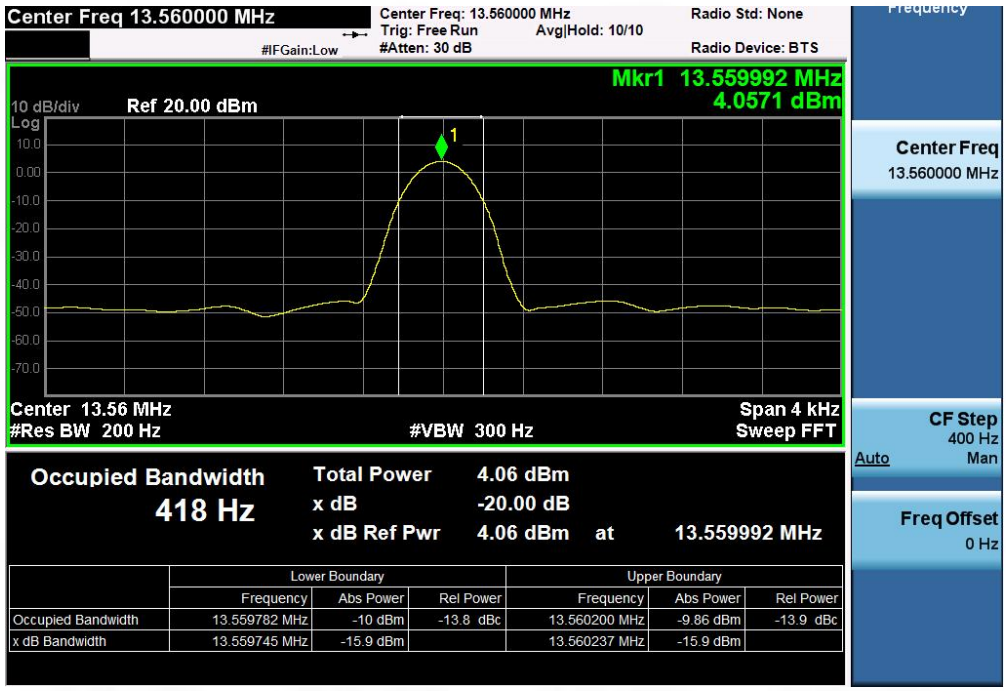
See section 4.4 for test setup 4. The photo of test setup please refer to ANNEX B

Test Procedure

a) The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
b) Set to the maximum power setting and enable the EUT transmit continuously.
c) Use the following spectrum analyzer settings:
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel,
RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW,
Sweep = auto, Detector function = peak, Trace = max hold.
d) Measure and record the results in the test report.

Test Frequency (MHz)	20dB Bandwidth (Hz)	Limits (kHz)
13.56	492	13.553~13.567
Note: Because the measured signal is CW-like, adjusting the RBW per C63.10 would not be practical since measurement bandwidth will always follow the RBW. The RBW is set to 1 kHz to perform the 20dB Bandwidth test.		

Test Plot as Follows:



5.5 Field Strength of Fundamental

Limit

FCC §15.225(a)(b)(c)

Fundamental frequency(MHz)	Field strength of fundamental (uV/m @30m)	Field strength of fundamental (dBuV/m @3m)
13.553-13.567	15848	124.0
13.410-13.553&13.567-13.710	334	90.5
13.110-13.410&13.710-14.010	106	80.5

Note: Limit dBuV/m @3m =Limit dBuV/m @30m +40*log(30/3)= Limit dBuV/m @30m + 40.

Test Setup

See section 4.4 for test setup 3. The photo of test setup please refer to ANNEX B

Test Procedure

a) The EUT was setup and tested according to ANSI C63.10 requirements.

b) The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.

c) 3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.

d) The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10 on radiated measurement.

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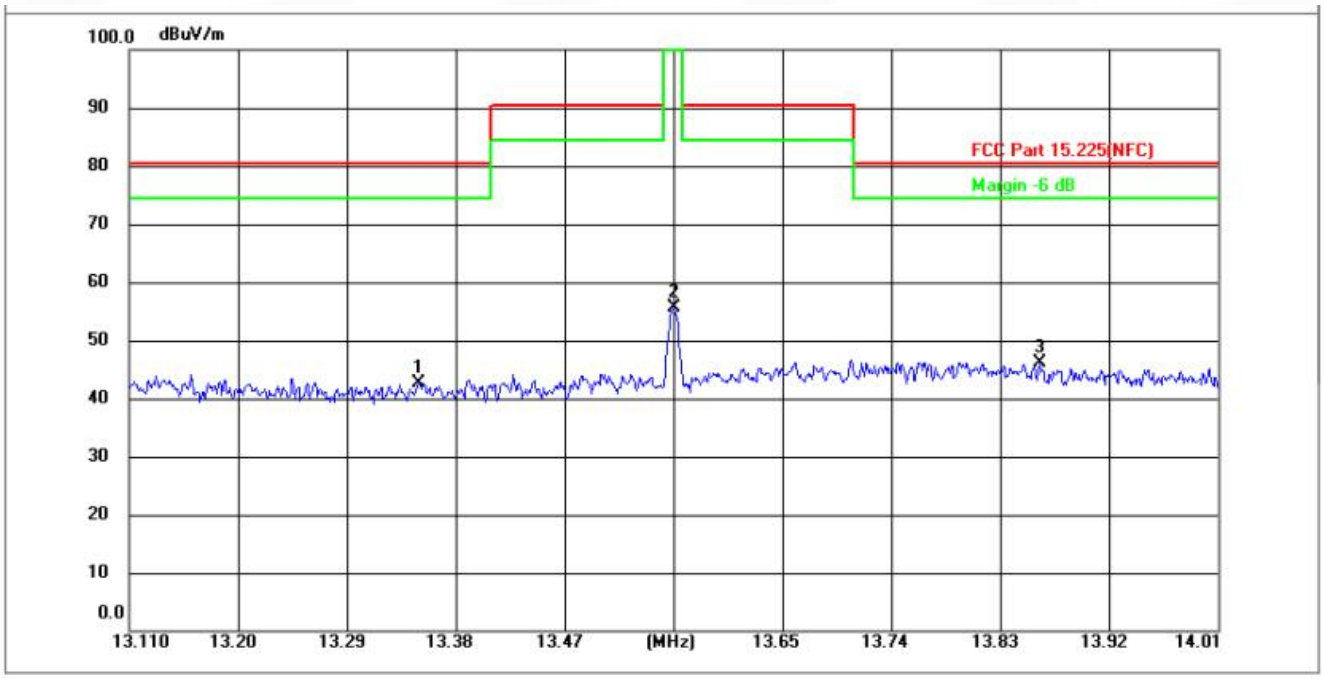
Temperature	22.5℃	Humidity	56%
Test voltage	DC 3.85 From Battery	Test Engineer	Sean He

Polarization: Coplanar



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	13.3498	52.72	-10.13	42.59	80.50	-37.91	peak	P
2	13.5600	65.64	-10.13	55.51	124.00	-68.49	peak	P
3 *	13.8628	56.23	-10.13	46.10	80.50	-34.40	peak	P

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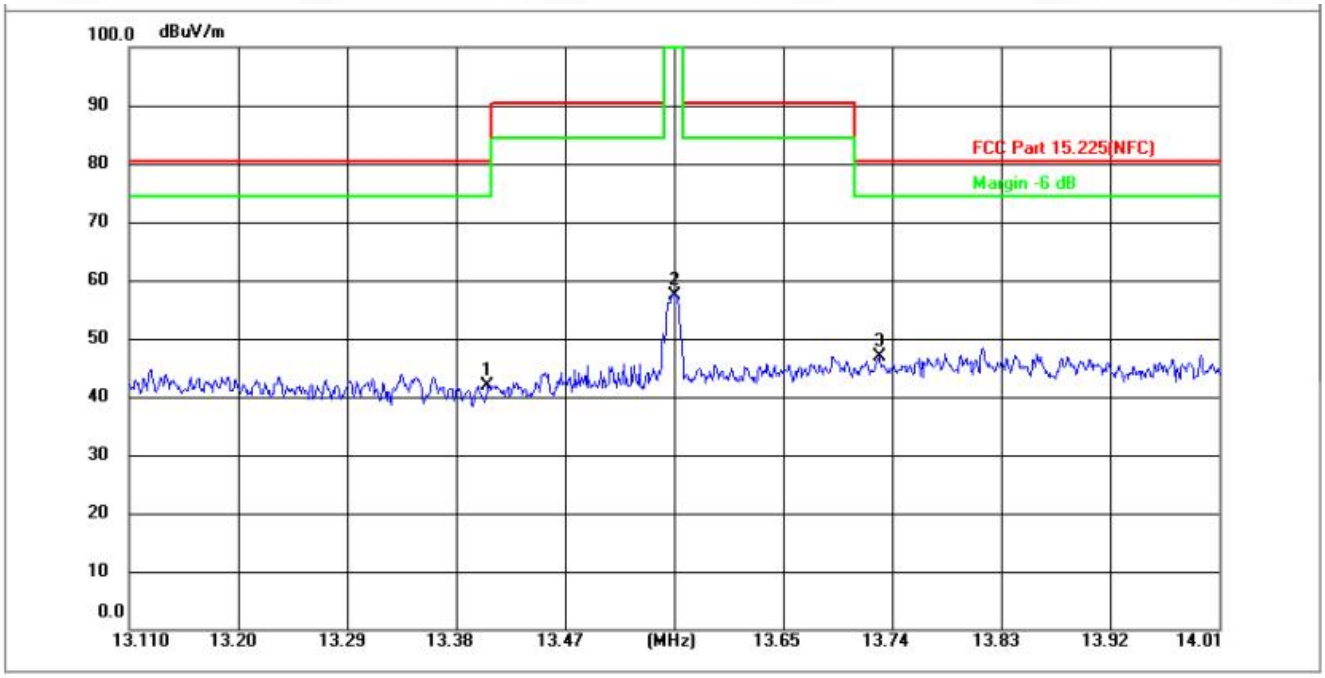
Polarization: Coaxial



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	13.4062	51.97	-10.13	41.84	80.50	-38.66	peak	P
2	13.5600	67.46	-10.13	57.33	124.00	-66.67	peak	P
3 *	13.7292	57.03	-10.13	46.90	80.50	-33.60	peak	P

5.6 Field Strength of Spurious Emissions

Limit

FCC §15.209&15.225

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).
According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note:

1. Field Strength (dBμV/m) = 20*log[Field Strength (μV/m)].
2. In the emission tables above, the tighter limit applies at the band edges.
3. For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
4. For above 1000 MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

Test Setup

See section 4.4 for test setup 1 and 3. The photo of test setup please refer to ANNEX B

Test Procedure

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional

radiated test for cabinet/case spurious emissions is required.

General Procedure for conducted measurements in restricted bands:
a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)
c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$E = EIRP – 20\log D + 104.8$

where:
E = electric field strength in dBμV/m,
EIRP = equivalent isotropic radiated power in dBm D = specified measurement distance in meters.
f) Compare the resultant electric field strength level to the applicable limit.

g) Perform radiated spurious emission test.

Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.
As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.
Peak power measurement procedure:

Peak emission levels are measured by setting the instrument as follows:
a)RBW = as specified in Table 1.
b)VBW ≥ 3 x RBW.
c)Detector = Peak.
d)Sweep time = auto.
e)Trace mode = max hold.
f)Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may

be longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction:

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

a) The EUT shall be configured to operate at the maximum achievable duty cycle.

b) Measure the duty cycle, x, of the transmitter output signal as described in section 6.0.

c) RBW = 1 MHz (unless otherwise specified).

d) VBW ≥ 3 x RBW.

e) Detector = RMS, if span/(# of points in sweep) ≤ (RBW/2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.

f) Averaging type = power (i.e., RMS).

1) As an alternative, the detector and averaging type may be set for linear voltage averaging.

2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.

g) Sweep time = auto.

h) Perform a trace average of at least 100 traces.

i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is 10 log(1/x), where x is the duty cycle.

2) If linear voltage averaging mode was used in step f), then the applicable correction factor is 20 log(1/x), where x is the duty cycle.

3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is

not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain:

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).
Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.
See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test:

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.
For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency.
The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.
The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.
Use the following spectrum analyzer settings:

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Span = wide enough to fully capture the emission being measured RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak Trace = max hold

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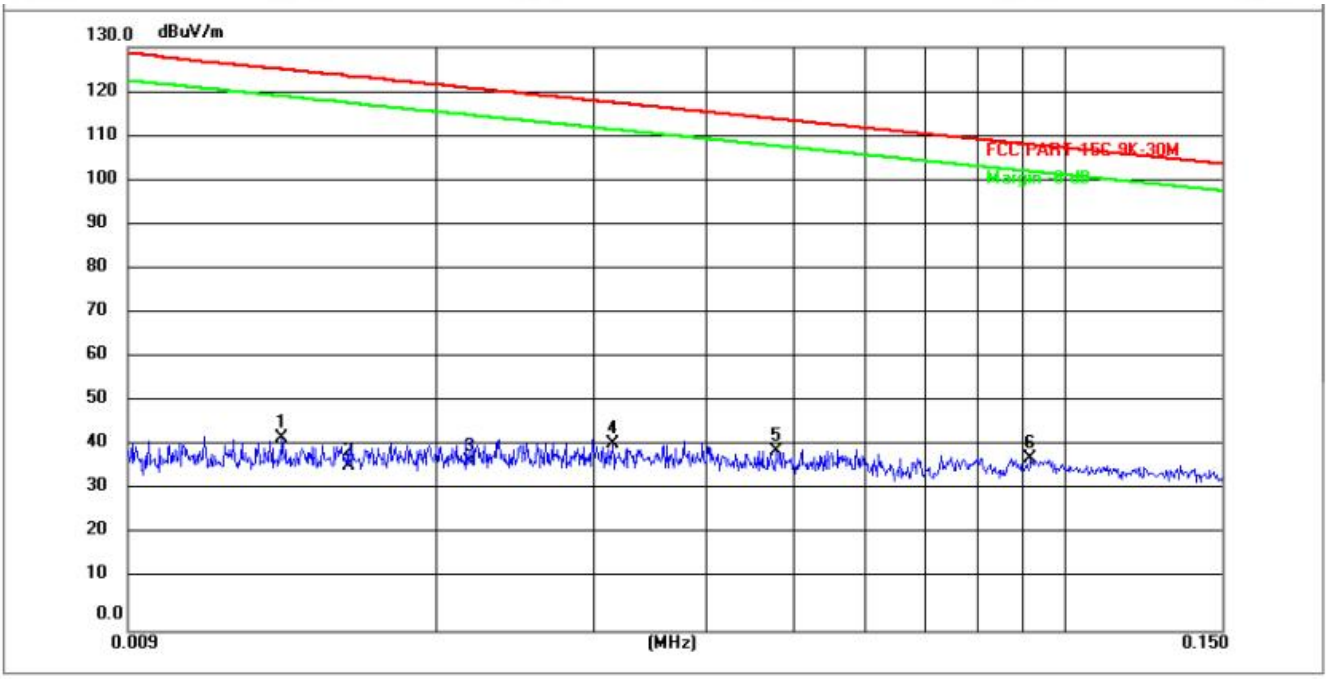
Temperature	22.5℃	Humidity	56%
Test voltage	DC 3.85 From Battery	Test Engineer	Sean He

Test Frequency: 9 kHz to 0.15 MHz, Coplanar



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	0.0134	74.43	-31.44	42.99	125.04	-82.05	peak	P
2	0.0160	68.28	-31.43	36.85	123.51	-86.66	peak	P
3	0.0217	69.43	-31.43	38.00	120.86	-82.86	peak	P
4	0.0313	73.11	-31.42	41.69	117.68	-75.99	peak	P
5	0.0476	71.54	-31.41	40.13	114.04	-73.91	peak	P
6 *	0.0920	69.76	-31.17	38.59	108.32	-69.73	peak	P

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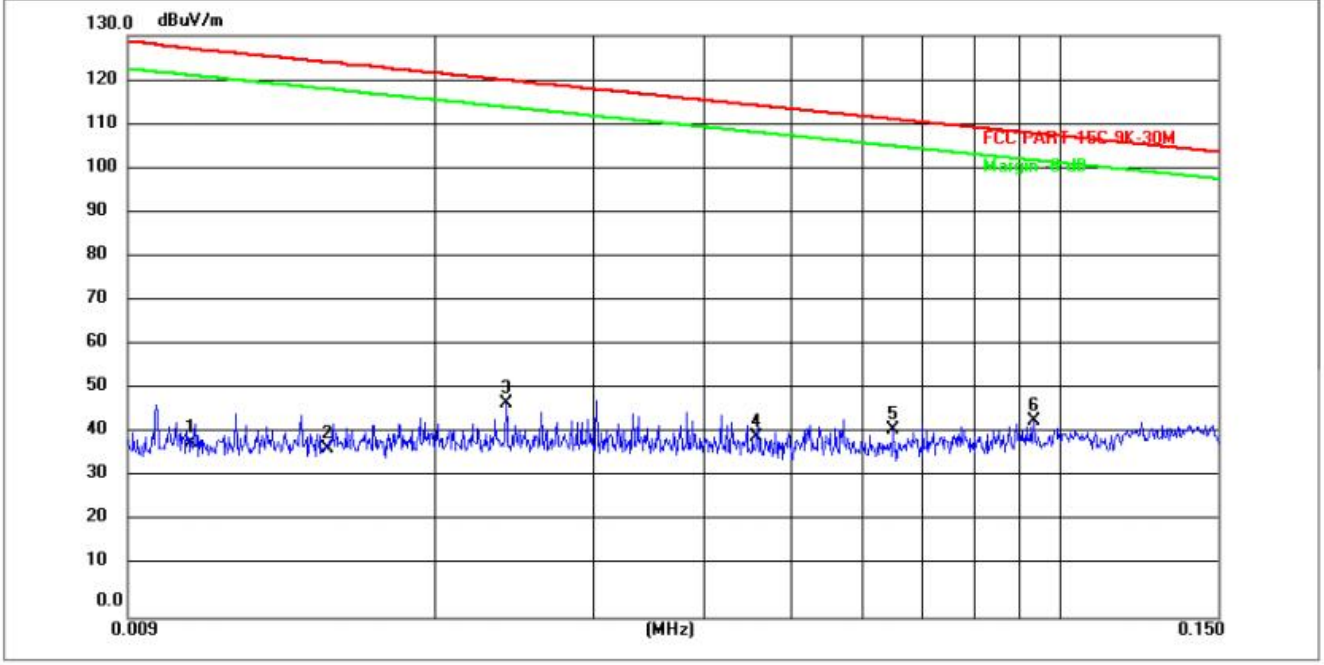
Test Frequency: 9 kHz to 0.15 MHz, Coaxial



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	0.0106	70.58	-31.44	39.14	127.08	-87.94	peak	P
2	0.0151	69.28	-31.44	37.84	124.01	-86.17	peak	P
3	0.0240	79.49	-31.43	48.06	119.99	-71.93	peak	P
4	0.0456	71.84	-31.41	40.43	114.41	-73.98	peak	P
5	0.0650	73.35	-31.25	42.10	111.34	-69.24	peak	P
6 *	0.0933	75.21	-31.17	44.04	108.20	-64.16	peak	P

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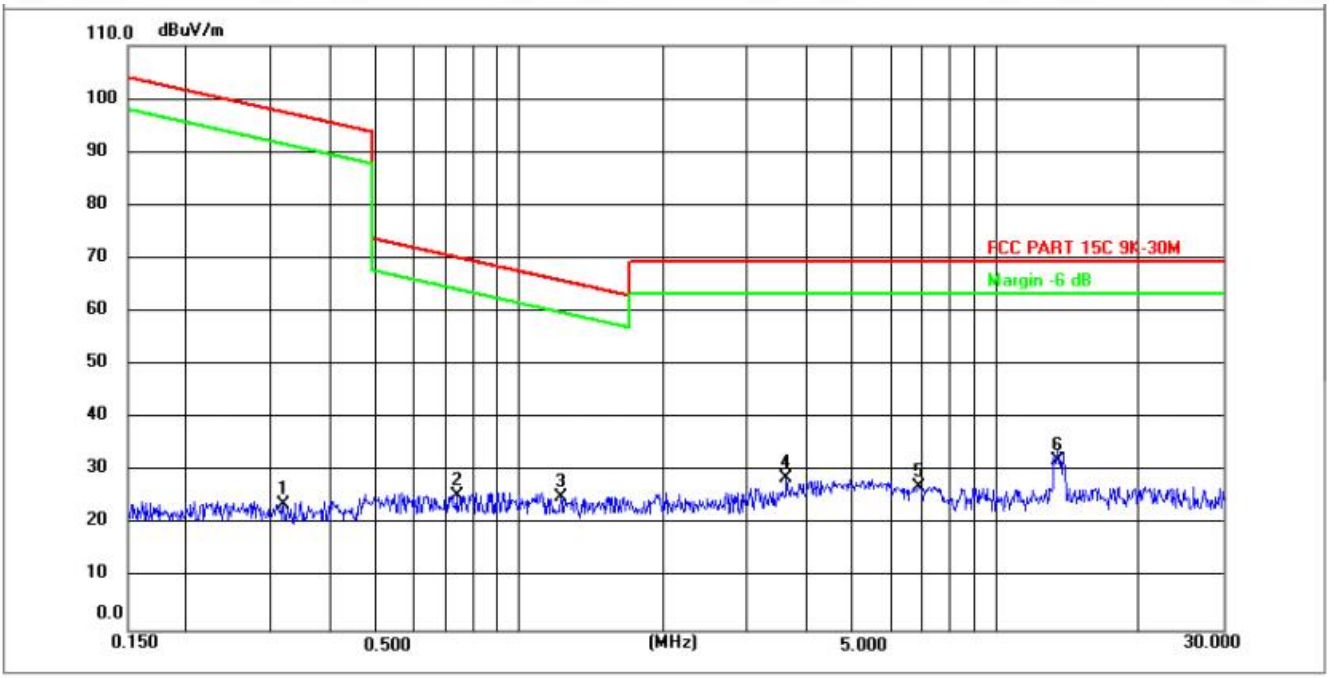
Test Frequency: 0.15 MHz to 30 MHz, Coplanar



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	0.3190	54.59	-30.67	23.92	97.53	-73.61	peak	P
2	0.7370	55.11	-29.74	25.37	70.26	-44.89	peak	P
3	1.2223	53.86	-28.70	25.16	65.88	-40.72	peak	P
4	3.6320	52.50	-23.71	28.79	69.50	-40.71	peak	P
5	6.8958	44.06	-16.89	27.17	69.50	-42.33	peak	P
6 *	13.5600	62.33	-30.20	32.13	69.50	-37.37	peak	P

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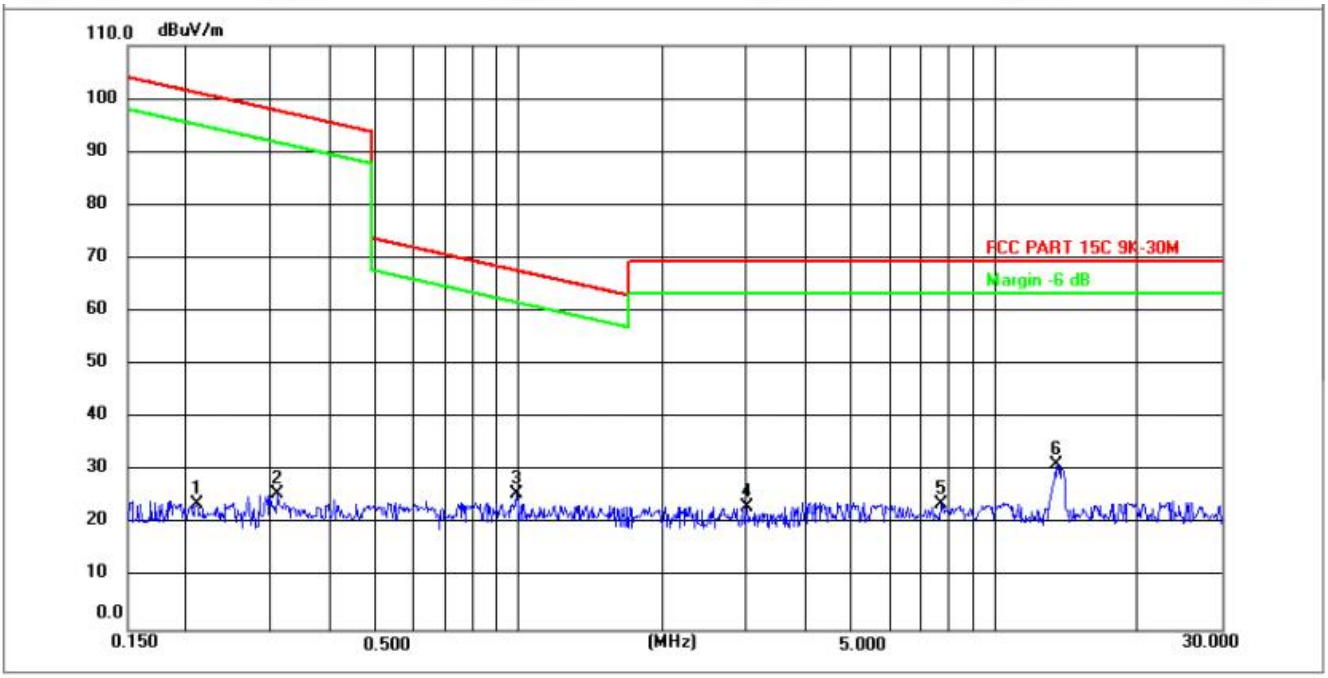
Test Frequency: 0.15 MHz to 30 MHz, Coaxial



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	0.2100	54.57	-30.90	23.67	101.16	-77.49	peak	P
2	0.3113	56.48	-30.69	25.79	97.74	-71.95	peak	P
3	0.9865	54.77	-29.17	25.60	67.74	-42.14	peak	P
4	3.0253	48.12	-24.95	23.17	69.50	-46.33	peak	P
5	7.7073	39.02	-15.20	23.82	69.50	-45.68	peak	P
6 *	13.5600	61.51	-30.20	31.31	69.50	-38.19	peak	P

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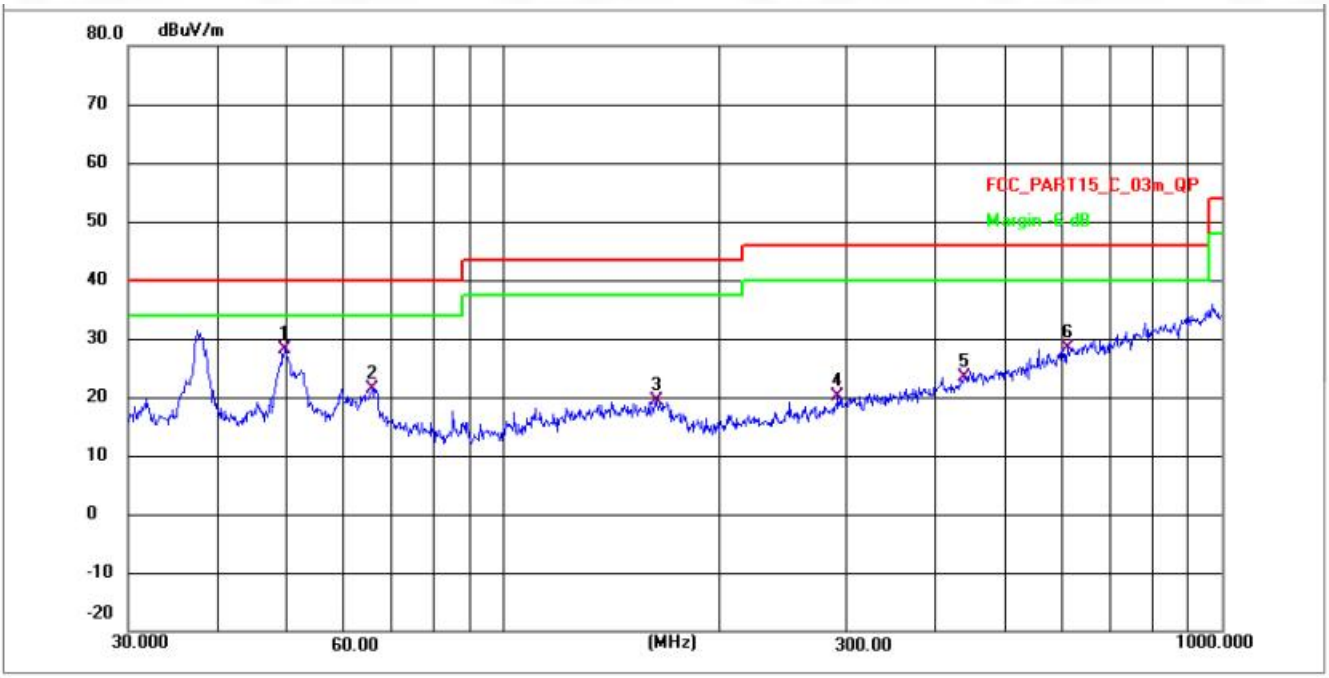
Test Frequency: 30 MHz to 1 GHz, Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	49.5328	37.66	-9.60	28.06	40.00	-11.94	QP	P
2	65.5727	30.82	-9.43	21.39	40.00	-18.61	QP	P
3	163.1817	46.53	-27.17	19.36	43.50	-24.14	QP	P
4	292.0583	46.11	-25.86	20.25	46.00	-25.75	QP	P
5	437.1200	47.99	-24.60	23.39	46.00	-22.61	QP	P
6	609.9217	51.59	-23.18	28.41	46.00	-17.59	QP	P

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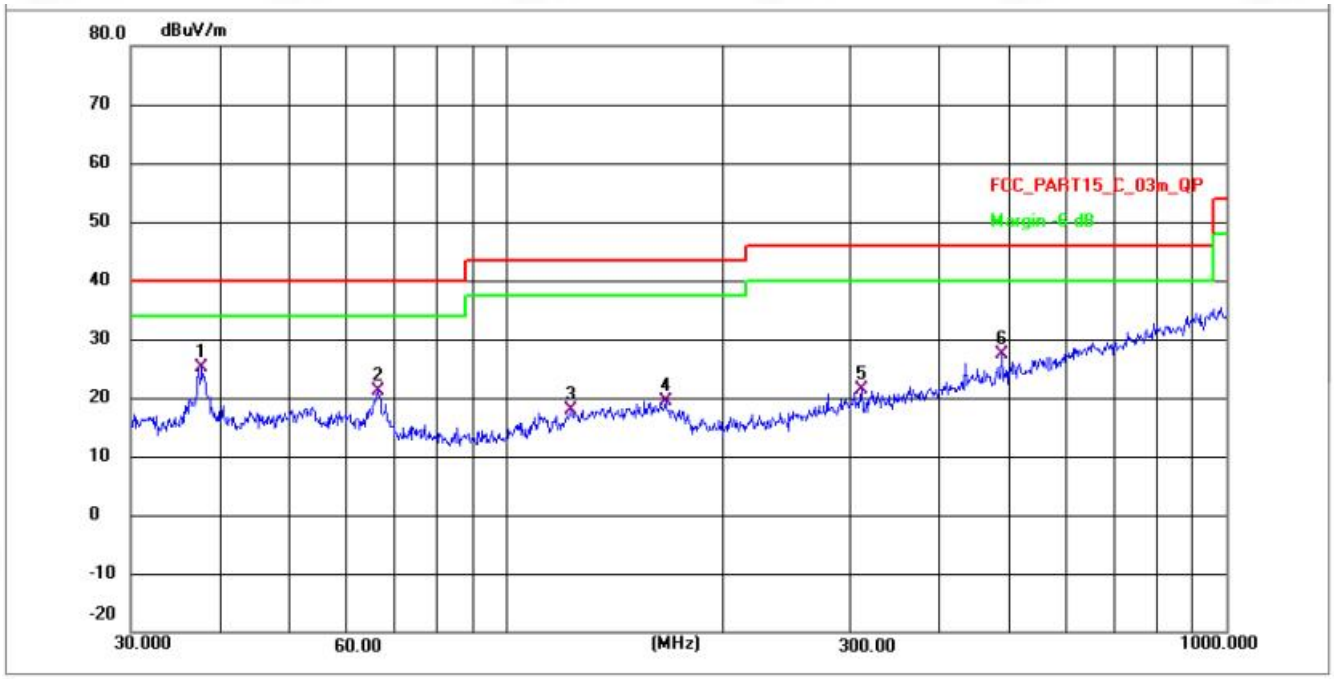
Test Frequency: 30 MHz to 1 GHz, Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	37.6798	35.13	-10.09	25.04	40.00	-14.96	QP	P
2	66.2662	30.43	-9.42	21.01	40.00	-18.99	QP	P
3	122.8340	45.48	-27.64	17.84	43.50	-25.66	QP	P
4	166.0680	46.53	-27.13	19.40	43.50	-24.10	QP	P
5	311.0867	47.10	-25.68	21.42	46.00	-24.58	QP	P
6	487.3151	51.53	-24.19	27.34	46.00	-18.66	QP	P

5.7 Frequency Tolerance

Limit

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Test Setup

See section 4.4 for test setup 4. The photo of test setup please refer to ANNEX B

Test Procedure

a) The equipment under test was connected to an external power supply.

b) RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.

c) The EUT was placed inside the temperature chamber.

d) Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency.

e) Turn EUT off and set the chamber temperature to -20 ℃. After the temperature stabilized for approximately 30 minutes recorded the frequency.

f) Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability V.S. Temperature Measurement:

Voltage (Vdc)	Temperature (℃)	Frequency Tolerance (kHz)	Frequency Error (%)	Limit (%)	Results
3.87	-20	0.0763	0.0056	±0.01	Pass
	-10	0.0753	0.0056	±0.01	Pass
	0	-0.0733	-0.0054	±0.01	Pass
	+10	0.0797	0.0059	±0.01	Pass
	+20	-0.0637	-0.0047	±0.01	Pass
	+30	0.0742	0.0055	±0.01	Pass
	+40	0.0789	0.0058	±0.01	Pass
	+50	-0.0337	-0.0025	±0.01	Pass

Frequency Stability V.S. Voltage Measurement:

Temperature (℃)	Voltage (Vdc)	Frequency Tolerance (kHz)	Frequency Error (%)	Limit (%)	Results
25.0	3.47	-0.0742	-0.0055	±0.01	Pass
	3.85	0.0722	0.0053	±0.01	Pass
	4.24	-0.0816	-0.0060	±0.01	Pass

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6 Test Setup Photos

Please refer to the Appendix I Test Setup Photos

7 EUT Constructional Details (EUT Photos)

Please refer to the Appendix II External Photos & Appendix III External Photos

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--END OF REPORT--