FCC ID: 2AC9N3SL

EMC TEST REPORT

No. 140901298SHA-001

Applicant : Cotton On USA Inc
16511 Trojan Way La Miranda, CA 90638, USA

Manufacturer : Shanghai Huju International Trade Co.
FL 6, No.12, Lane 1199, Jidi Rd, Minhang District,Shanghai 201107, China

Product name : Selfie scope

TEST RESULT : PASS

SUMMARY

The equipment complies with the requirements according to the following standard(s):

47CFR Part 15 (2013): Radio Frequency Devices

ANSIC63.4 (2009): 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

Date of issue: Oct. 13, 2014

Prepared by:

Daniel Zhao (*Project Engineer*)

Reviewed by:

Jonny Jing (*Reviewer*)

Description of Test Facility

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IC Assigned Code: 2042B-1

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Content

1. General Information

1.1 Applicant Information

Applicant	:	Cotton On USA Inc 16511 Trojan Way La Miranda, CA 90638, USA
Name of contact	:	Selwyn A Prince
Tel	:	(310) 819-1400 1402
Fax	:	(310)819-1402
Manufacturer	:	Shanghai Huju International Trade Co. FL 6, No.12, Lane 1199, Jidi Rd, Minhang District,Shanghai 201107, China

1.2 Identification of the EUT

Equipment	:	Selfie scope
Product description	:	Remote controller.
Trade name	:	/
Type/model	:	341346
FCC ID	:	2AC9N3SL
IC	:	/

1.3 Technical specification

Operation Frequency Band	:	2402~2480 MHz
Type of Modulation	:	Bluetooth V3.0 (FHSS), Only support GFSK modulation.
Channel Description	:	There are 79 channels in all. The designed channel spacing is 1MHz.
Gain of Antenna	:	1.0dBi
Description of EUT	:	There is one model only. The EUT is a Bluetooth remote controller
Port identification	:	None.
Rating	:	DC 3V (CR2032)
Declared Temperature range	:	0°C ~ 40°C
Category of EUT	:	Class B
EUT type	:	☒ Table top☐ Floor standing
Sample received date	:	2014.08.25
Sample Identification No	:	0140825-41-004
Date of test	:	2014.08.26 ~ 2014.09.16

1.4 Mode of operation during the test / Test peripherals used

Within this test report, EUT was tested with modulation and tested under its rating voltage and frequency. And, EUT is set to X, Y and Z orientation to perform test, only the worst data is listed in the report.

The EUT is worked in engineering mode (continuous transmitting) by the Bluetooth communication tester (CBT) in the radiated emission test, and found DH3 data type is the worst case.

The power setting parameter:

The worst case power setting parameter			
Test software Version	V01		
Modulation Mode	2402MHz	2441MHz	2480MHz
GFSK	default	default	default

Test Peripherals:

Equipment	Brand Name	Model	Note
Bluetooth Tester	R&S	CBT	

2. Test Specification

2.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Test Receiver	ESCS 30	R&S	EC 2107	2013-10-21	2014-10-20
Test Receiver	ESIB 26	R&S	EC 3045	2013-10-21	2014-10-20
Test Receiver	ESCI 7	R&S	EC4501	2013-12-29	2014-12-28
Spectrum Analyzer	N9010	Agilent	EC4890	2013-10-21	2014-10-20
Power meter	ML 2495A	Anritsu	EC 4895	2013-10-21	2014-10-20
A.M.N.	ESH2-Z5	R&S	EC 3119	2014-1-9	2015-1-8
Bilog Antenna	CBL 6112D	TESEQ	EC 4206	2014-5-15	2015-5-14
Horn antenna	HF 906	R&S	EC 3049	2014-5-12	2015-5-11
Pre-amplifier	Pre-amp 18	R&S	EC 3222	2014-4-11	2015-4-10
Pre-amplifier	Tpa0118-40	R&S	EC 4792-2	2014-4-11	2015-4-10
Log-period antenna	AT 1080	AR	EC 3044-7	2014-5-21	2015-5-20
Biconical antenna	3109PX	ETS	EC3564	2014-8-25	2015-8-24
Semi-anechoic chamber	-	Albatross project	EC 3048	2014-5-20	2015-5-19
Shielded room	-	Zhongyu	EC 2838	2014-1-12	2015-1-9
Shielded room	-	Zhongyu	EC 2839	2014-1-12	2015-1-9
High Pass Filter	WHKX 1.0/15G-10SS	Wainwright	EC4297-1	2014-2-1	2015-1-31
High Pass Filter	WHKX 2.8/18G-12SS	Wainwright	EC4297-2	2014-2-1	2015-1-31
High Pass Filter	WHKX 7.0/1.8G-8SS	Wainwright	EC4297-3	2014-2-1	2015-1-31
Band Reject Filter	WRCGV 2400/2483-2390/2493-35/10SS	Wainwright	EC4297-4	2014-2-1	2015-1-31

2.2 Test Standard

47CFR Part 15 (2013);
ANSI C63.4 (2009);

2.3 Test Summary

This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

TEST ITEM	FCC REFERANCE	IC REFERANCE	RESULT
Radiated emission	15.249 & 15.209	RSS-210 Issue 8 Annex A2.9 & Clause 2.2	Pass
Assigned bandwidth (20dB bandwidth)	15.215(c)	-	Pass
Occupied bandwidth	-	RSS-Gen Issue 3 Clause 4.6.1	NA
Power line conducted emission	15.207	RSS-Gen Issue 3 Clause 7.2.4	NA

3. Radiated emission

Test result: PASS

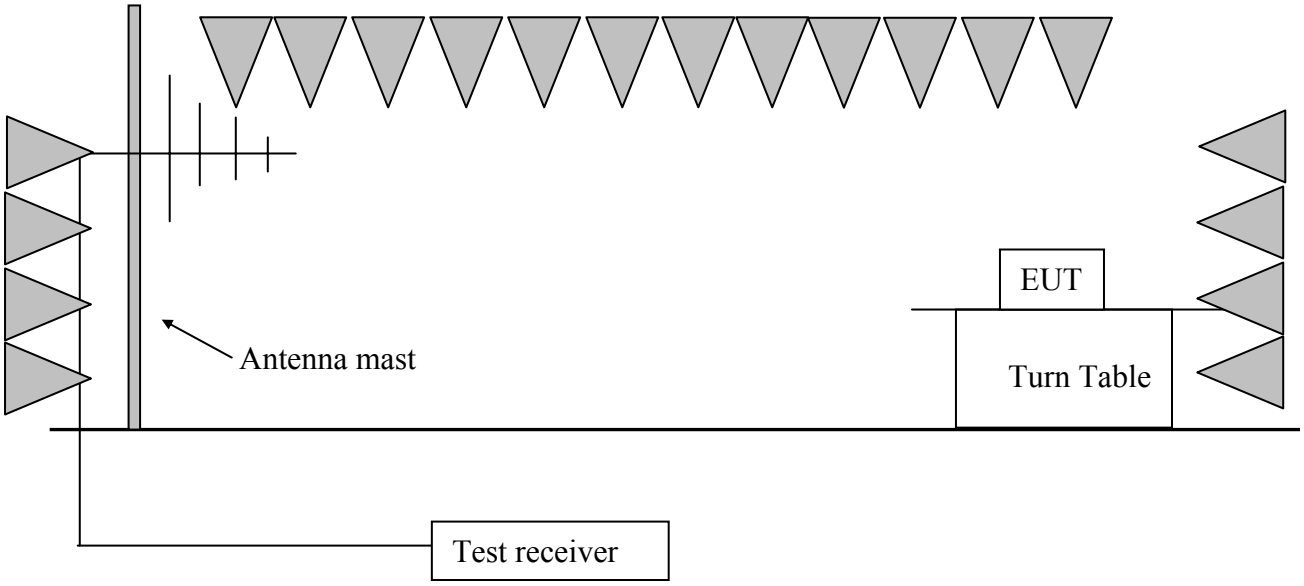
3.1 Test limit

Fundamental Frequency (MHz)	Fundamental limit (dBuV/m)	Harmonic limit (dBuV/m)
☐ 902 - 928	94	54
☒ 2400 - 2483.5	94	54
☐ 5725 - 5875	94	54
☐ 24000 - 24250	108	68

The radiated emissions which fall outside allocated band (2400-2483.5MHz), must also comply with the radiated emission limits specified in §15.209(a) showed as below:

Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (m)
30 - 88	40.0	3
88 - 216	43.5	3
216 - 960	46.0	3
Above 960	54.0	3

3.2 Test Configuration



3.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.
The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

The radiated emission was measured using the Spectrum Analyzer with the resolutions bandwidth set as:

RBW=300 Hz, VBW=1 kHz (9 kHz~150 kHz);
RBW=10 kHz, VBW=30kHz (150kHz~30MHz);
RBW = 100 kHz, VBW = 300 kHz (30MHz~1GHz for PK)
RBW = 1MHz, VBW = 3MHz (>1GHz for PK);
RBW = 1MHz, VBW = 10Hz (>1GHz for AV);

3.4 Test protocol

Temperature : 25 °C
Relative Humidity : 55 %

CH	Antenna	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H	2402.00	34.50	101.30	114.00	12.70	PK
	H	2402.00	34.50	91.00	94.00	3.00	AV
	V	200.00	12.25	21.60	43.50	21.90	PK
	H	2381.43	34.40	55.40	74.00	18.60	PK
	H	2388.43	34.40	33.50	54.00	20.50	AV
	H	2400.00	34.40	52.50	74.00	21.50	PK
	V	3182.76	-8.10	42.40	54.00	11.60	PK
	H	4804.22	-3.60	58.70	74.00	15.30	PK
	H	4804.23	-3.60	42.50	54.00	11.50	AV
	H	9088.23	4.70	47.20	54.00	6.80	PK
M	V	2441.00	34.60	103.10	114.00	10.90	PK
	V	2441.00	34.60	91.50	94.00	2.50	AV
	V	200.00	12.25	21.60	43.50	21.90	PK
	H	2363.44	34.30	55.20	74.00	18.80	PK
	H	2377.54	34.40	34.70	54.00	19.30	AV
	H	3378.33	-7.40	45.30	54.00	8.70	PK
	H	4882.12	-3.30	55.50	74.00	18.50	PK
	H	4882.12	-3.30	34.70	54.00	19.30	AV
	H	7323.00	2.60	55.10	74.00	18.90	PK
	H	7323.00	2.60	43.60	54.00	10.40	AV
H	H	2480.00	34.70	103.10	114.00	10.90	PK
	V	2480.00	34.70	91.50	94.00	2.50	PK
	V	200.00	12.25	21.60	43.50	21.90	PK
	V	2483.50	34.70	53.20	74.00	20.80	PK
	H	2487.43	34.70	53.50	74.00	20.50	PK
	H	2485.46	34.70	35.30	54.00	18.70	AV
	H	4960.64	-3.10	57.70	74.00	16.30	PK
	H	4960.64	-3.10	43.00	54.00	11.00	AV
	H	7440.00	2.60	58.00	74.00	16.00	PK
	H	7440.00	2.60	45.00	54.00	9.00	AV

Remark:

1. For fundamental emission test, no pre-amplifier is employed;
2. Correct Factor = Antenna Factor + Cable Loss (-Amplifier, is employed);
3. Corrected Reading = Original Receiver Reading + Correct Factor;
4. Margin = limit – Corrected Reading;
5. If the PK reading is lower than AV limit, the AV test can be elided;

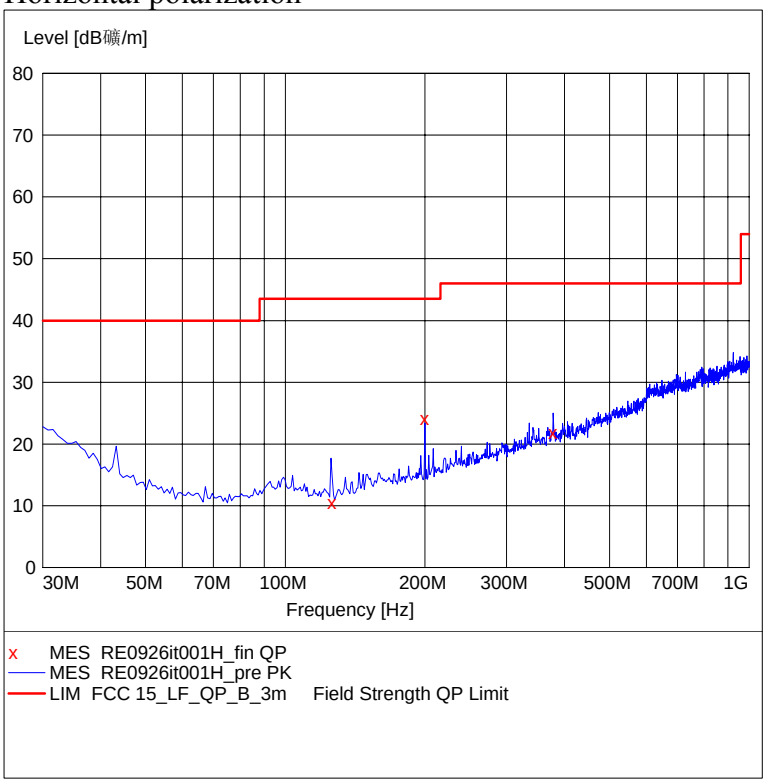
6. The shaded data is the fundamental emission;
7. Both emissions on “horizontal” and “vertical” axes were assessed and the worse test data was listed in this report;

Example:

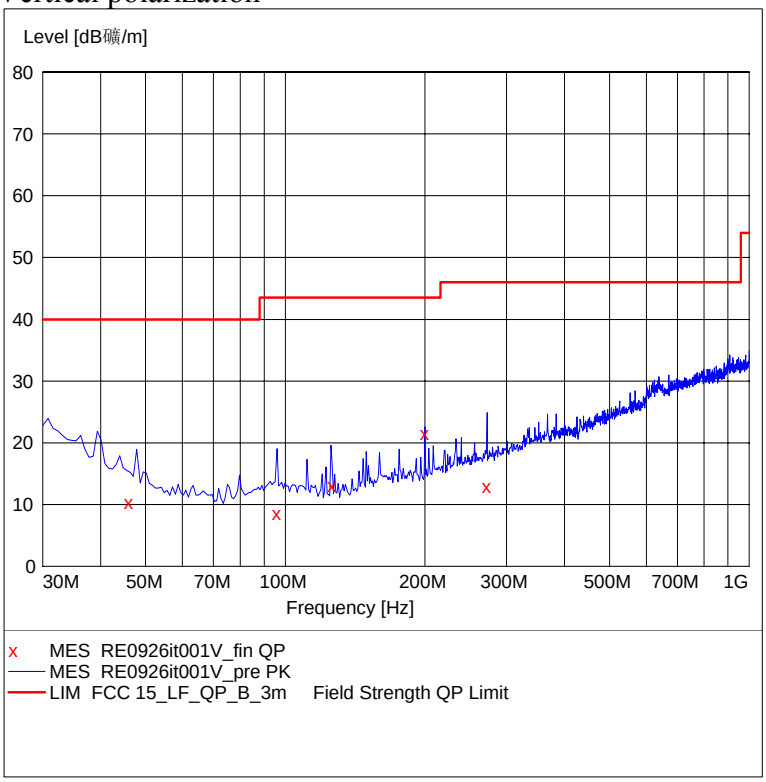
Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10dBuV,
Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m,
Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m,
Assuming limit = 54dBuV/m, Corrected Reading = 10.20dBuV/m,
Then Margin = 54 -10.20 = 43.80dBuV/m.

Test plot:

Horizontal polarization



Vertical polarization



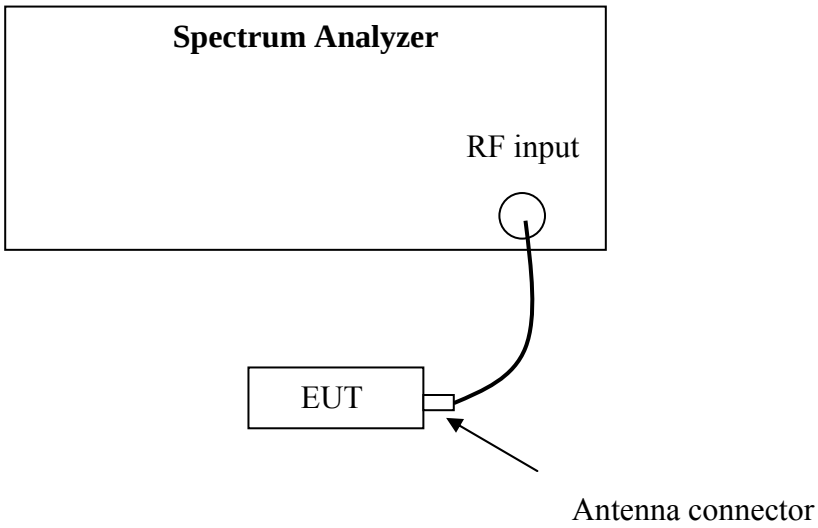
4. Assigned bandwidth (20dB bandwidth)

Test result: **PASS**

4.1 Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission is contained within the allocated frequency band as clause 3.1 shows.

4.2 Test Configuration



4.3 Test procedure and test setup

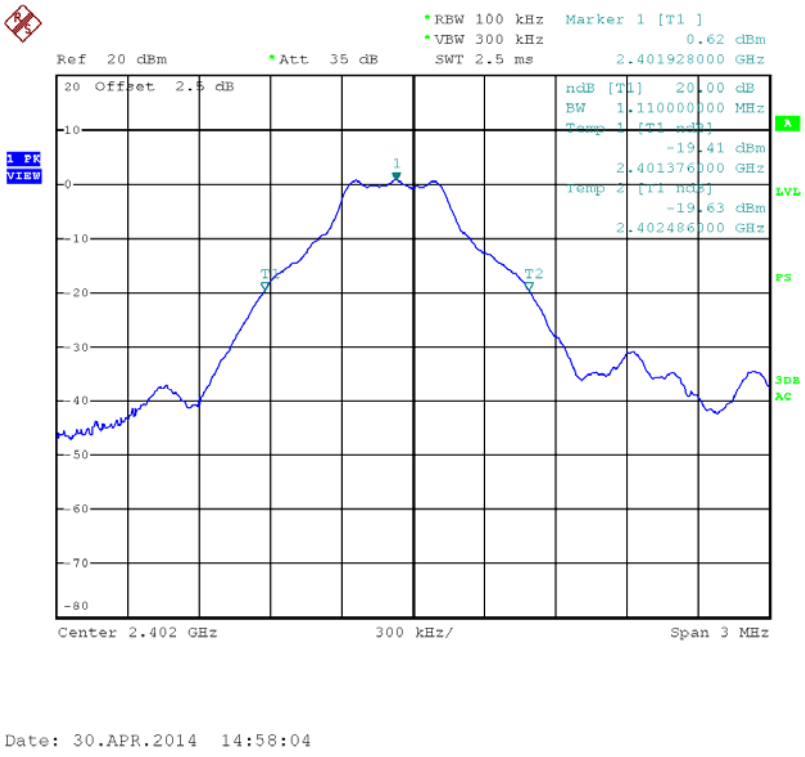
The 20dB Bandwidth per FCC § 15.215(c) is measured using the Spectrum Analyzer.
Set Span = 2 to 3 times the 20 dB bandwidth, RBW≥1% of the 20 dB bandwidth, VBW≥RBW, Sweep = auto, Detector = peak, Trace = max hold.
The test was performed at 3 channels (lowest, middle and highest channel).

4.4 Test protocol

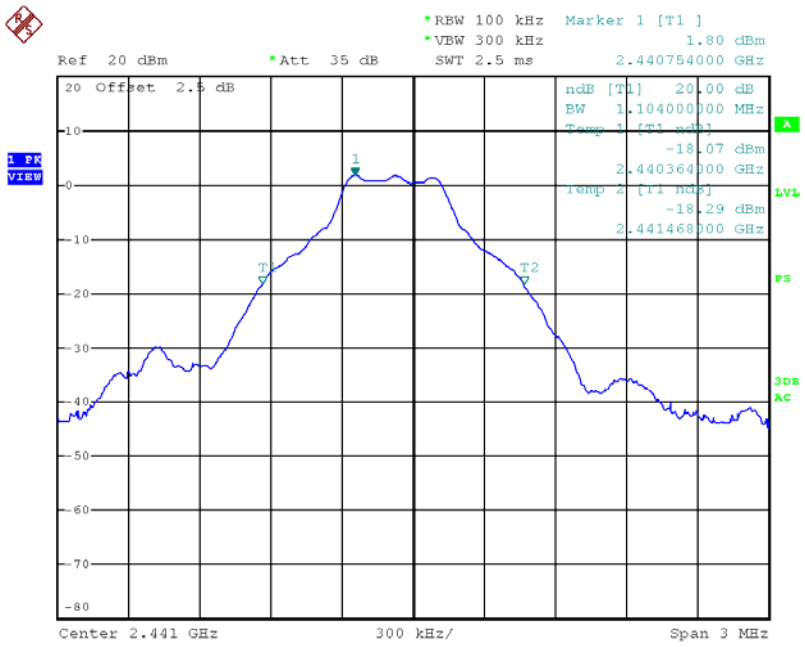
Temperature : 25°C
Relative Humidity : 55 %

Mode	Channel	20dB Bandwidth (kHz)	F_L (MHz)	F_H (MHz)
GFSK	L	1110	2401.376	-
	M	1104	-	-
	H	1110	-	2480.468

GFSK-L

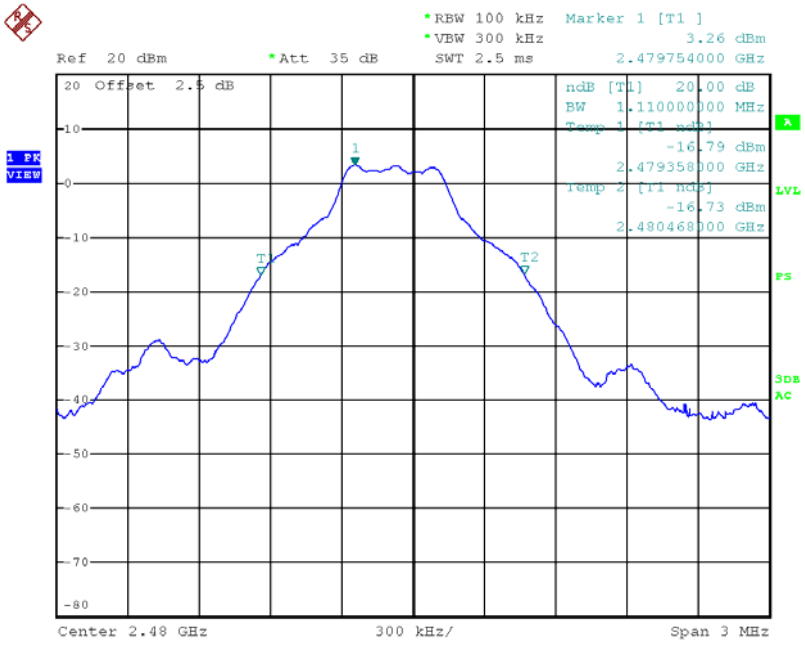


GFSK-M



Date: 30.APR.2014 14:59:40

GFSK-H



Date: 30.APR.2014 15:02:07

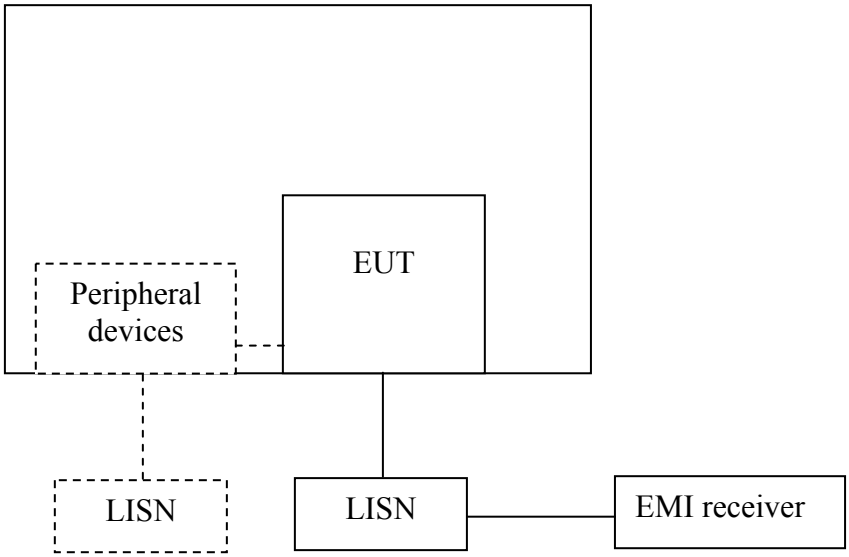
5. Power line conducted emission

Test result: **NA**

5.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

5.2 Test configuration



☒ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

5.3 Test procedure and test set up

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50Ω/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50Ω/50uH coupling impedance with 50Ω termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement. The bandwidth of the test receiver is set at 9 kHz.

5.4 Test protocol

Temperature : °C
Relative Humidity : %

L line

Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)

N line

Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)

6. Occupied Bandwidth

Test result: NA

6.1 Test limit

None

6.2 Test Configuration

See clause 3.2.

6.3 Test procedure and test setup

The occupied bandwidth per RSS-Gen Issue 3 Clause 4.6.1 was measured using the Spectrum Analyzer.

6.4 Test protocol

Temperature : °C
Relative Humidity : %

Mode	Channel	Occupied Bandwidth (MHz)
GFSK	L	
	M	
	H	