



Hong Kong

FCC Cerification - TEST REPORT

Report Number : **60/790.14.004.02** Date of Issue: 15th May 2014

Model : **RAR213HG**

Product type : **BLE connected IN/out thermo-hygrometer with clock**

FCC ID: : **NMTRAR213HG-01**

Applicant : **IDT Technology Limited**

Address : **Block C,9/F., Kaiser Estate,Phase1,41 Man Yue Street, Hunghom, Kowloon , Hong Kong**

Production Facility : **IDT Technology Limited**

Address : **Block C,9/F., Kaiser Estate,Phase1,41 Man Yue Street, Hunghom, Kowloon , Hong Kong**

Test Result : **Positive** **Negative** Total Pages: 11

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Reviewed by:

Edmond FUNG

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1 General Information

1.1 Summary of Test Result

FCC Rules	IC Rules	Description of Test	Result	Remark
FCC§15.107	ICES-003§6.1	AC Line Conducted Emissions	NIL	Battery operated only
FCC§15.109	ICES-003§6.2	Radiated Emission	PASS	Meet Class B limit

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.26 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 3.19 dB.

1.3 Measurement Uncertainty

Details about the Test Laboratory

Test site 1

Company name: TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2,
10 Science Park West Avenue,
Science Park, Shatin
HK.

Telephone: 852 2776 1323

Fax: 852 2776 1372

Test site 2

Company name: TMC-Telecommunication Metrology Center of M.I.I.T
No 52 Hua Yuanbei Road, Haidian District, Beijing, P.R.China

2 EUT Description

Product	BLE connected IN/out thermo-hygrometer with clock
Model Number	RAR213HG
Applicant	IDT Technology Limited Block C,9/F., Kaiser Estate,Phase1,41 Man Yue Street, Hunghom, Kowloon , Hong Kong
Manufacturer	IDT Technology Limited Block C,9/F., Kaiser Estate,Phase1,41 Man Yue Street, Hunghom, Kowloon , Hong Kong

I/O Port Description:

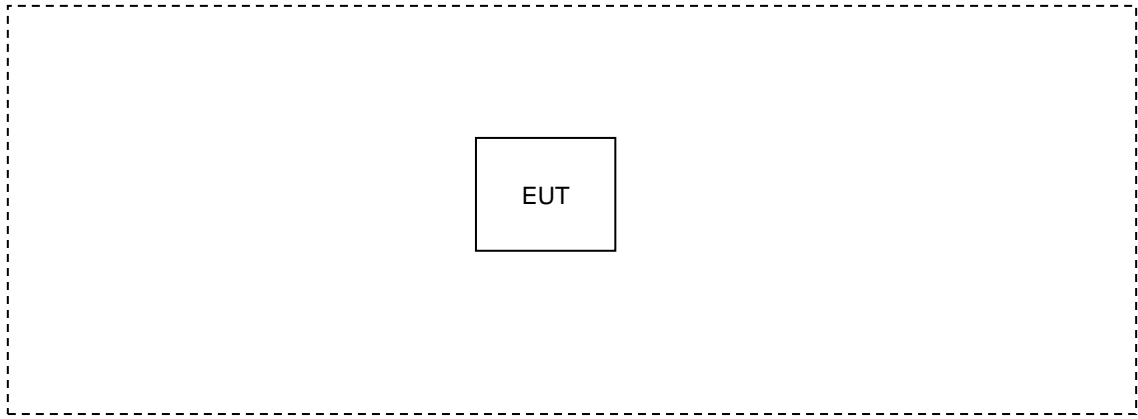
I/O Port Types	Q'TY	Test Description
1). NIL	/	/

3 Test Methodology

3.1 Decision of Test Mode

Pre-Test Mode	
EMC	Mode 1: 433MHz RF receiving

3.2 Configuration of Test System Details

Mode 1	
	
Signal Cable Type	Signal Cable Description
A /	/

3.3 Test Site Environment

Items	Test Item	Actual
Temperature (°C)	Conducted Emission	25
Humidity (%RH)		66
Barometric pressure (mbar)		1004
Temperature (°C)	Radiated Emission	25
Humidity (%RH)		62
Barometric pressure (mbar)		1004

4 Emission Test

4.1 Conducted Emission Measurement

4.1.1 Limit

A.C. Mains Conducted Interference Limit

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

4.1.2 Test Instruments

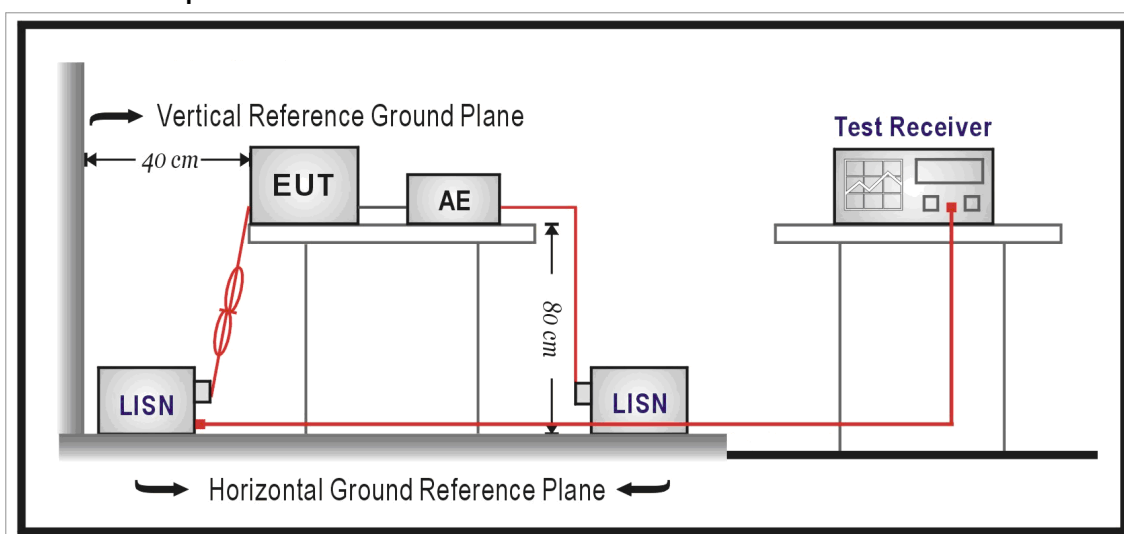
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/18/2013	(1)
LISN	R&S	ENV216	101040	03/07/2014	(1)
LISN	R&S	ENV216	101041	03/07/2014	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

Note: N.C.R. = No Calibration Request.

4.1.3 Test Setup

A.C. mains setup



4.1.4 Test Result

N/A (Battery operated only)

4.2 Radiated Interference Measurement

4.2.1 Limit

Under 1GHz test shall not exceed following value

FCC 47 CFR PART 15 SUBPART B				
Frequency range (MHz)	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30 to 88	10	39	3	40
88 to 216	10	43.5	3	43.5
216 to 960	10	46.4	3	46
Above 960	10	49.5	3	54

- Remark: 1. The tighter limit shall apply at the edge between two frequency bands.
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 3. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)
 4. Peak detector limit is corresponding to 20 dB above the maximum permitted average limit.

According to FCC Part 15.33 (b), for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or in which the device operated or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.75	30
1.75-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40GHz, whichever is lower

4.2.2 Test Instruments

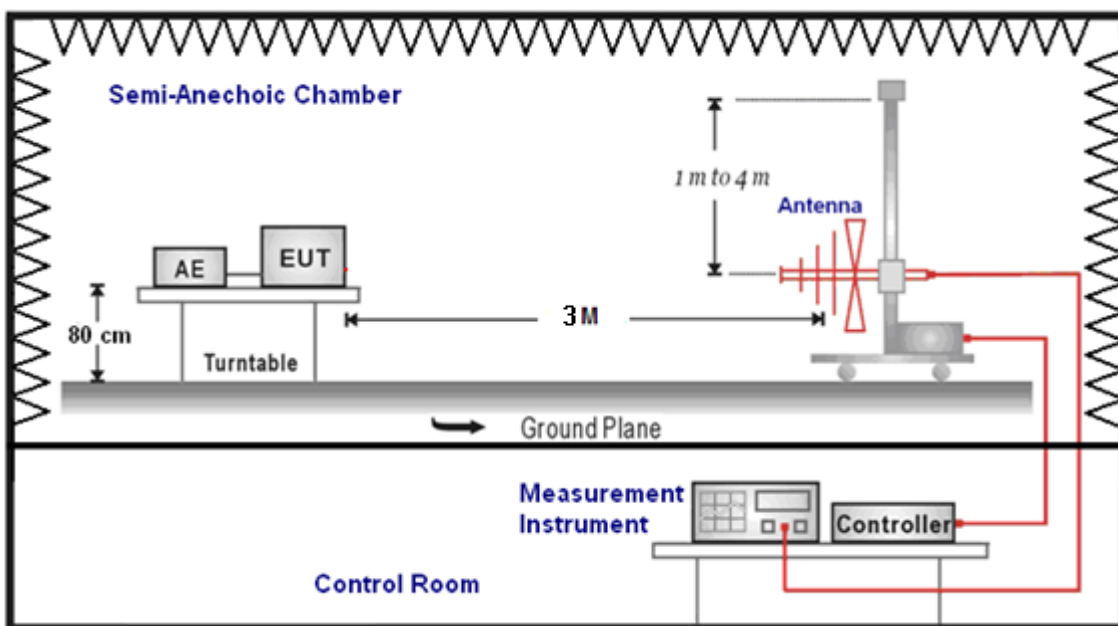
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Pre Amplifier	Agilent	8447D	2944A11120	01/10/2014	(1)
Pre Amplifier	Agilent	8447D	2944A11119	01/10/2014	(1)
Test Receiver	R&S	ESCI	100722	10/18/2013	(1)
Spectrum Analyzer	R&S	FSV40	100903	01/27/2014	(1)
Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	9160-3268	06/06/2013	(1)
Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	9160-3273	12/13/2013	(1)
Horn Antenna (1~18GHz)	ETS-Lindgren	3117	00128055	08/09/2013	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/21/2013	(1)

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

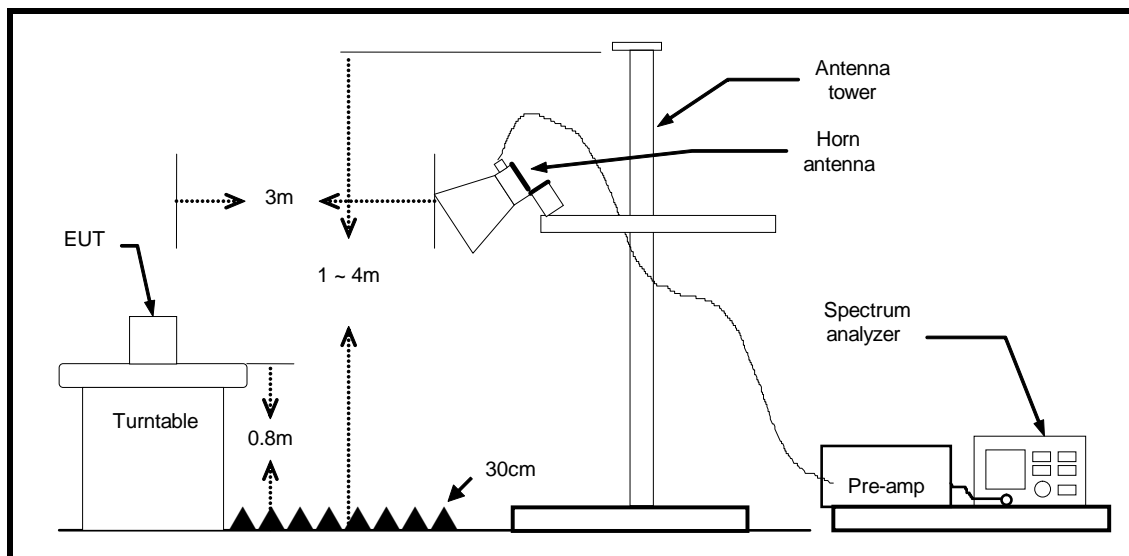
Note: N.C.R. = No Calibration Request.

4.2.3 Setup

Below 1GHz



Above 1GHz



4.2.4 Test Result

Standard:	FCC 15.109	Test Distance:	3m
Test item:	Radiated Emission	Power:	DC 3.0V
Model Number:	RAR213HG	Temp.(°C)/Hum.(%RH):	22(°C)/54%RH
Mode:	1	Date:	2014/04/06
Range:	30MHz-5GHz		

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
49.26	45.55	-33.4	12.15	40.0	-27.85	QP	H
93.60	44.15	-35.7	8.45	43.5	-35.05	QP	H
135.00	49.58	-38.9	10.68	43.5	-32.82	QP	H
319.08	49.96	-33.0	16.96	46.0	-29.04	QP	H
490.92	55.63	-28.9	26.73	46.0	-19.27	QP	H
750.12	49.68	-24.2	25.48	46.0	-20.52	QP	H
1142.50	45.25	-5.2	40.05	74.0	-33.95	PK	H
1142.50	36.49	-5.2	31.29	54.0	-22.71	Ave.	H
1856.12	44.08	-0.3	43.78	74.0	-30.22	PK	H
1856.12	31.40	-0.3	31.10	54.0	-22.90	Ave.	H
37.56	47.47	-33.4	14.07	40.0	-25.93	QP	V
115.98	56.07	-35.7	20.37	43.5	-23.13	QP	V
220.92	56.80	-38.9	17.90	46.0	-29.10	QP	V
417.24	51.83	-33.0	18.83	46.0	-27.17	QP	V
490.92	55.47	-28.9	26.57	46.0	-19.43	QP	V
662.76	54.77	-24.2	30.57	46.0	-15.43	QP	V
1142.50	41.93	-5.2	36.73	74.0	-37.27	PK	V
1142.50	37.74	-5.2	32.54	54.0	-21.46	Ave.	V
1856.12	42.95	-0.3	42.65	74.0	-31.35	PK	V
1856.12	31.51	-0.3	31.21	54.0	-22.79	Ave.	V

4.2.5 Test Photograph

Test Mode: Mode 1

Description: View of Radiated Emission Test (Below 1 GHz)



Test Mode: Mode 1

Description: View of Radiated Emission Test (Above 1 GHz)

