Prüfbericht-Nr.: *Test Report No.:*	**50089088 001**	**Auftrags-Nr.:** *Order No.:*	**154243722**	**Seite 1 von 22** *Page 1 of 22*
Kunden-Referenz-Nr.: *Client Reference No.:*	**52195561**	**Auftragsdatum:** *Order date:*	**04.26.2017**	
Auftraggeber: *Client:*	**AXENT Corporation Ltd.** 3 Musick, Irvine CA 92618 USA			
Prüfgegenstand: *Test item:*	**Intelligent toilet (Remote Controller)**			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	**A011-0101** **FCC ID: 2AL4GREMOTE**			
Auftrags-Inhalt: *Order content:*	**Complete test**			
Prüfgrundlage: *Test specification:*	**FCC CFR47 Part 15, Subpart C Section 15.249** **ANSI C63.10: 2013**			

Wareneingangsdatum: *Date of receipt:*	**05.05.2017**	Please refer to the External Photos
Prüfmuster-Nr.: *Test sample No.:*	**A000540881-001**	
Prüfzeitraum: *Testing period:*	**11.05.2017 to 19.06.2017**	
Ort der Prüfung: *Place of testing:*	**MRT Technology(Suzhou) Co., Ltd.**	
Prüflaboratorium: *Testing laboratory:*	**TÜV Rheinland (Shanghai) Co., Ltd.**	
Prüfergebnis*: *Test result*:*	**Pass**	

geprüft von / *tested by*:

11.07.2017	Elliot Zhang / Assistant Project Manager	
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

kontrolliert von / *reviewed by*:

11.07.2017	Shi Li / Department Manager	
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

Sonstiges / *Other*

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 FIELD STRENGTH OF FUNDAMENTAL
RESULT: Pass

5.1.3 20DB SPECTRUM BANDWIDTH
RESULT: Pass

5.1.4 RADIATED EMISSIONS
RESULT: Pass

5.1.5 CONDUCTED EMISSIONS
RESULT: Pass

Contents

1. General Remarks

1.1 Complementary Materials

Null.

2. Test Sites

2.1 Test Facilities

MRT Technology (Suzhou) Co., Ltd.

D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communications Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules. The description of the test facility is listed under FCC registration number 809388.

The Industry Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance. The description of the test facility is listed under chambers filing number 11384A.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Due Date
EMI Test Receiver	R&S	ESR7	101209	03.11.2017
Two-Line V-Network	R&S	ENV216	101683	03.11.2017
Two-Line V-Network	R&S	ENV216	101684	03.11.2017
Temperature/Humidity Meter	Yuhuaze	N/A	N/A	20.12.2017

Radiated Emission

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4447A	MY45300136	08.12.2017
EMI Test Receiver	R&S	ESR7	101209	03.11.2017
Preamplifier	Schwarzbeck	BBV 9721	9721-008	16.04.2018
Preamplifier	Agilent	83017A	MY53270040	29.03.2018
Loop Antenna	Schwarzbeck	FMZB1519	1519-041	14.12.2017
TRILOG Antenna	Schwarzbeck	VULB9162	9162-047	07.11.2017
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1167	07.11.2017
Broadband Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170549	04.01.2018
Digital Thermometer & Hygrometer	Minggao	N/A	N/A	07.11.2017

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

Table 2: Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	±0.39dB
	> 1GHz	±0.68dB
Radiated Emission	30MHz - 1GHz	±5.34dB
	> 1GHz	±5.40dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is a remote controller which using a 2.4GHz wireless module to control the intelligent toilet.

The aim of this report is to evaluate the 2.4GHz wireless module of the EUT.
.
For details refer to the User Manual and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Description of EUT	
Product Name:	Intelligent toilet (Remote Controller)
Model No.:	A011-0101
Rated Voltage:	DC 3.7V
2.4GHz Wireless module	
Frequency:	2411MHz
Modulation Type:	FSK
Antenna Type:	PCB Antenna
Antenna Gain:	0 dBi

3.3 Independent Operation Modes

Test Mode	Frequency [MHz]	Operating Mode
TM1	2411	The EUT was set into continues transmitting mode

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material
- PCB Layout
- Photo Document
- Circuit Diagram
- Instruction Manual
- Rating Label

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

4.3 Special Accessories and Auxiliary Equipment

Null.

4.4 Countermeasures to achieve EMC Compliance

Null.

5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Table 4: Antenna Requirement

FCC 15.203 – Antenna Requirement 1		
Requirement:	No antenna other than that furnished by the responsible party shall be used with the device. ☉ Use of a permanently attached antenna, or ○ Use an antenna that uses a unique coupling to the intentional radiator.	
Results:	Antenna type:	PCB Antenna
Verdict:	PASS	

FCC 15.204 – Antenna Requirement 2	
Requirement:	An intentional radiator may be operated only with the antenna with which it is authorized. If an antenna is marketed with the intentional radiator, it shall be of a type which is authorized with the intentional radiator.
Results:	Only one integral antenna can be used
Verdict:	PASS

5.1.2 Field Strength of Fundamental

RESULT: **Pass**

Date of testing	:	19.05.2017
Test standard	:	FCC Part 15.249
Test procedure	:	ANSI C63.10: 2013
Limit	:	FCC Part 15.249(a) ,(e)
Kind of test site	:	3m Semi-Anechoic Chamber

Figure 1: Field Strength of Fundamental Emissions, Antenna Horizontal

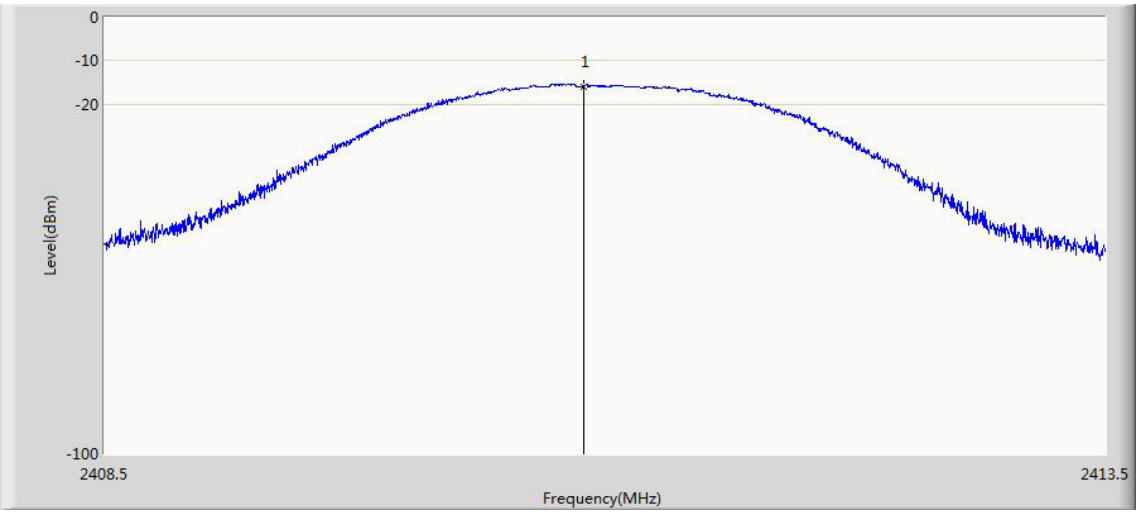


Table 5: Field Strength of Fundamental Emissions, Antenna Horizontal

Frequency [MHz]	Measure Level [dBm]	Measure Level [dBuV/m]	Over Limit [dB]	Limit [dBuV/m]	Type
2410.893	-15.842	79.387	-34.613	114.000	PK

Note: The measurements using an average detector for the frequency above 1GHz were not performed since the results measured with a Peak detector are totally meet the average limit (94dBuV/m).

Figure 2: Field Strength of Fundamental Emissions, Antenna Vertical

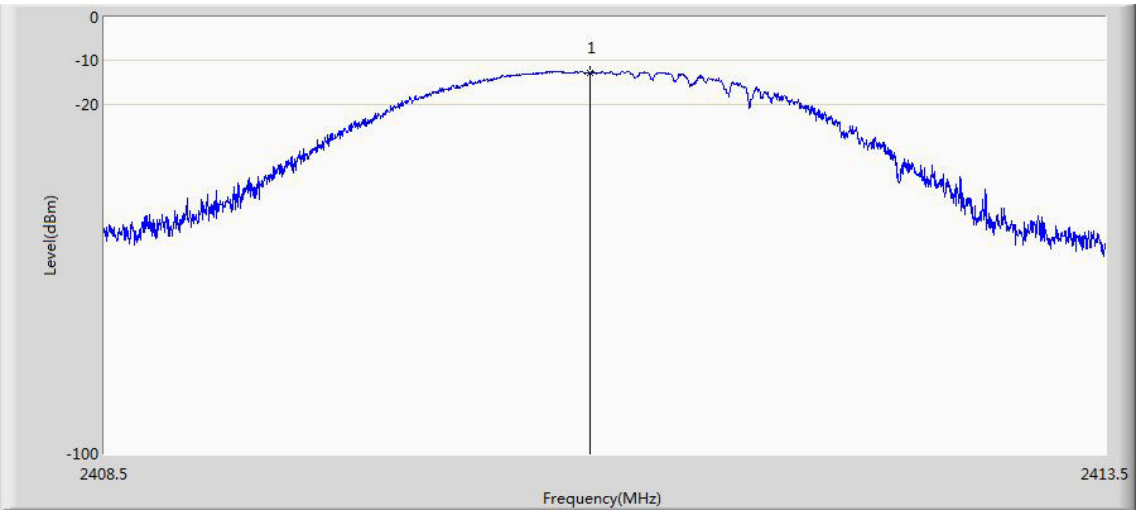


Table 6: Field Strength of Fundamental Emissions, Antenna Vertical

Frequency [MHz]	Measure Level [dBm]	Measure Level [dBuV/m]	Over Limit [dB]	Limit [dBuV/m]	Type
2410.924	-12.857	82.372	-31.628	114.000	PK

Note: The measurements using an average detector for the frequency above 1GHz were not performed since the results measured with a Peak detector are totally meet the average limit (94dBuV/m).

5.1.3 20dB Spectrum Bandwidth

RESULT: **Pass**

Date of testing	:	11.05.2017
Test standard	:	FCC Part 15.215
Test procedure	:	ANSI C63.10: 2013
Limit	:	FCC Part 15.215(c)

Figure 3: 99% Bandwidth

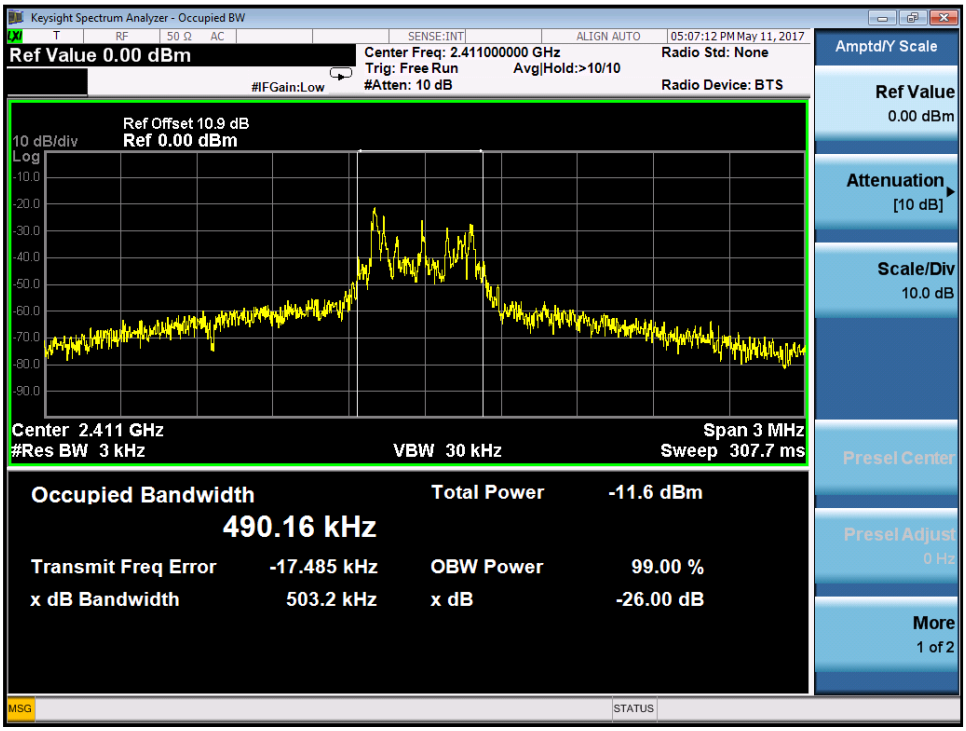
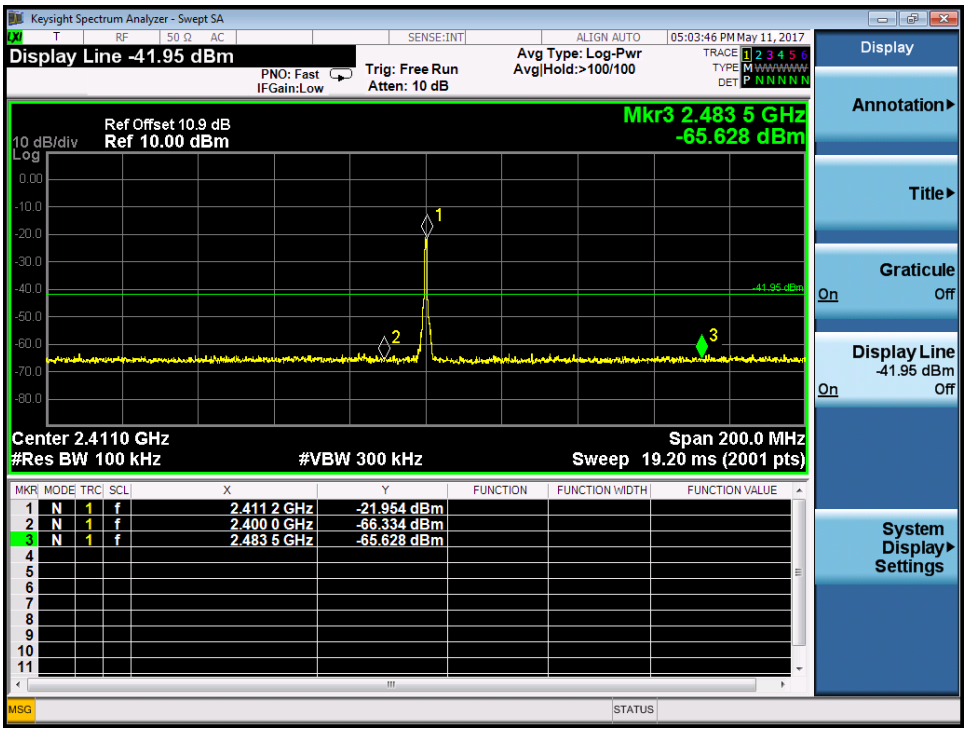


Figure 4: 20dB Spectrum Bandwidth Measurement



5.1.4 Radiated Emissions

RESULT: **Pass**

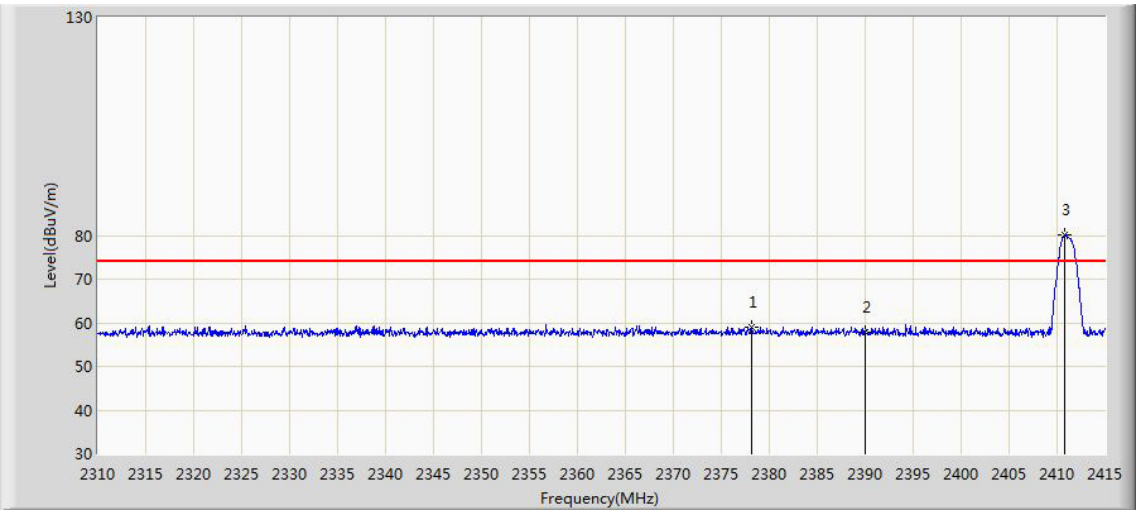
Date of testing	:	19.05.2017
Test standard	:	FCC Part 15.249
Test procedure	:	ANSI C63.10: 2013
Frequency range	:	9kHz – 30MHz 30MHz – tenth harmonic of the highest fundamental frequency
Limit	:	FCC Part 15.249(a) & FCC Part 15.249(e), FCC Part 15.249(d) & FCC Part 15.209;
Kind of test site	:	3m Semi-Anechoic Chamber

Table 7: Radiated Emissions

Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type	Antenna Polarity
36.305	13.562	-0.443	-26.438	40.000	14.005	QP	H
50.855	12.631	-1.357	-27.369	40.000	13.987	QP	H
147.370	13.805	-1.191	-29.695	43.500	14.996	QP	H
326.335	12.789	-2.242	-33.211	46.000	15.031	QP	H
457.285	16.295	-1.607	-29.705	46.000	17.902	QP	H
649.345	19.986	-1.371	-26.014	46.000	21.357	QP	H
5556.000	39.540	36.054	-34.460	74.000	3.486	PK	H
7035.000	42.752	35.793	-31.248	74.000	6.959	PK	H
9466.000	46.338	35.801	-27.662	74.000	10.537	PK	H
10766.500	47.938	35.410	-26.062	74.000	12.528	PK	H
38.730	15.179	0.809	-24.821	40.000	14.370	QP	V
54.250	13.688	-0.075	-26.312	40.000	13.763	QP	V
143.005	13.235	-1.459	-30.265	43.500	14.694	QP	V
389.385	15.033	-1.243	-30.967	46.000	16.276	QP	V
564.955	18.309	-1.404	-27.691	46.000	19.714	QP	V
760.895	22.021	-0.845	-23.979	46.000	22.866	QP	V
6414.500	40.456	34.935	-33.544	74.000	5.521	PK	V
7970.000	44.776	36.144	-29.224	74.000	8.632	PK	V
9449.000	45.729	35.239	-28.271	74.000	10.490	PK	V
10826.000	47.380	34.691	-26.620	74.000	12.689	PK	V

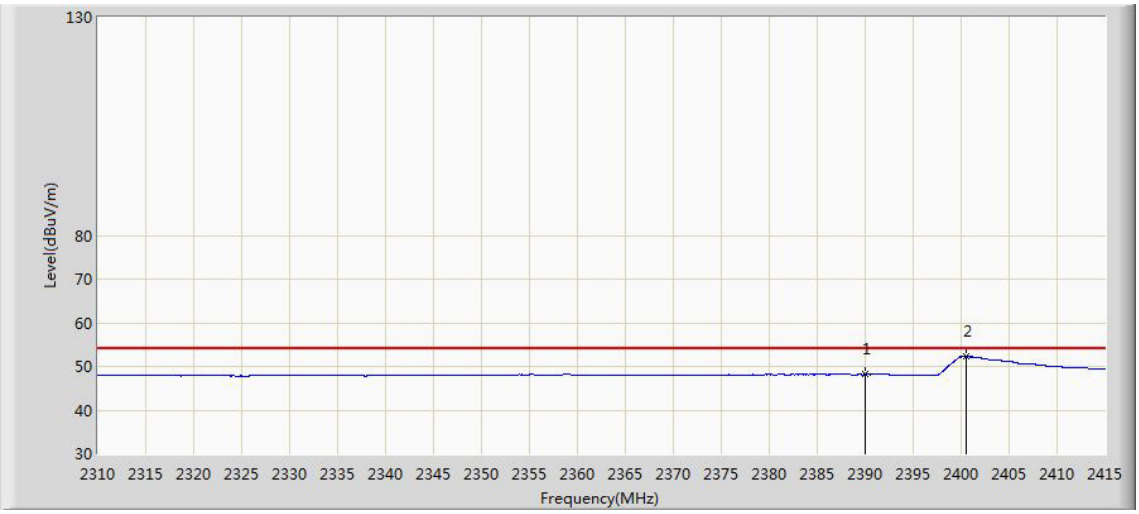
Note:
1. The radiated emission below 30MHz is very low, so it was not shown on the report.
2. The measurements using an average detector for the frequency above 1GHz were not performed since the results measured with a Peak detector are totally meet the average limit.

Figure 5: Band Edge, Antenna H, PK, Low



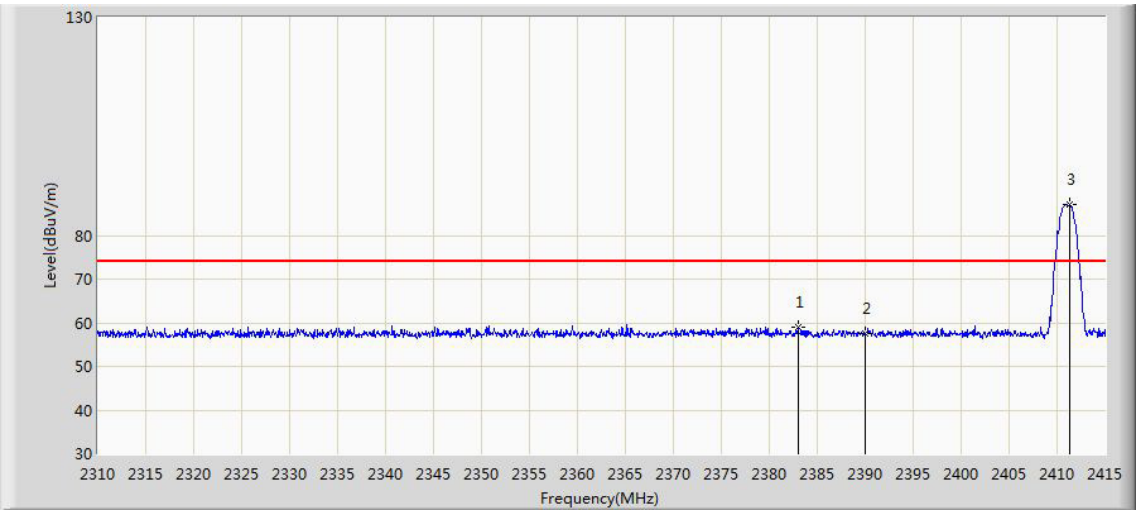
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2378.145	59.075	27.851	-14.925	74.000	31.225	PK
2390.000	57.843	26.640	-16.157	74.000	31.203	PK
2410.853	80.281	49.110	6.281	74.000	31.172	PK

Figure 6: Band Edge, Antenna H, AV, Low



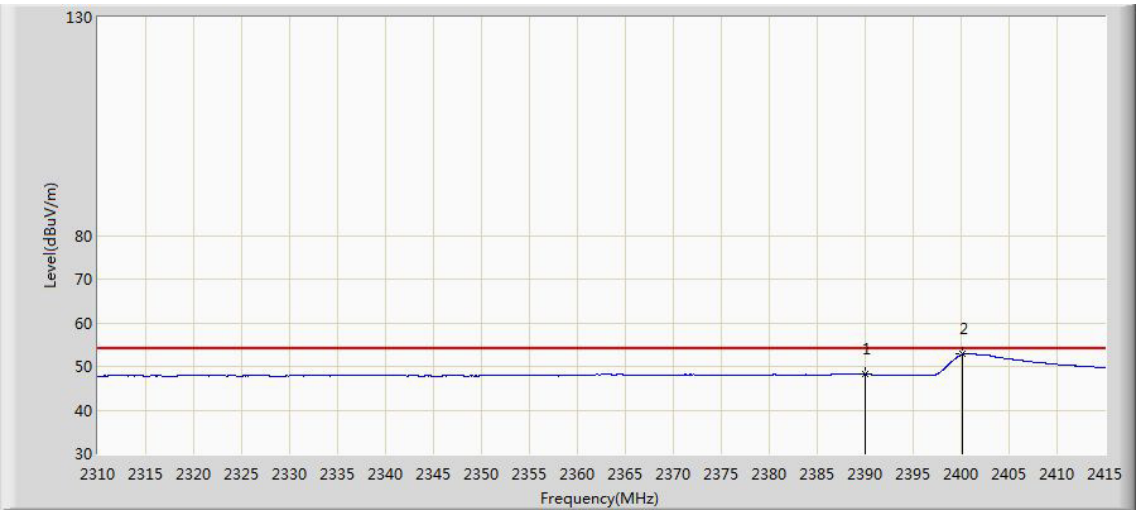
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	48.151	16.948	-5.849	54.000	31.203	AV
2400.562	52.318	21.132	-1.682	54.000	31.186	AV

Figure 7: Band Edge, Antenna V, PK, Low



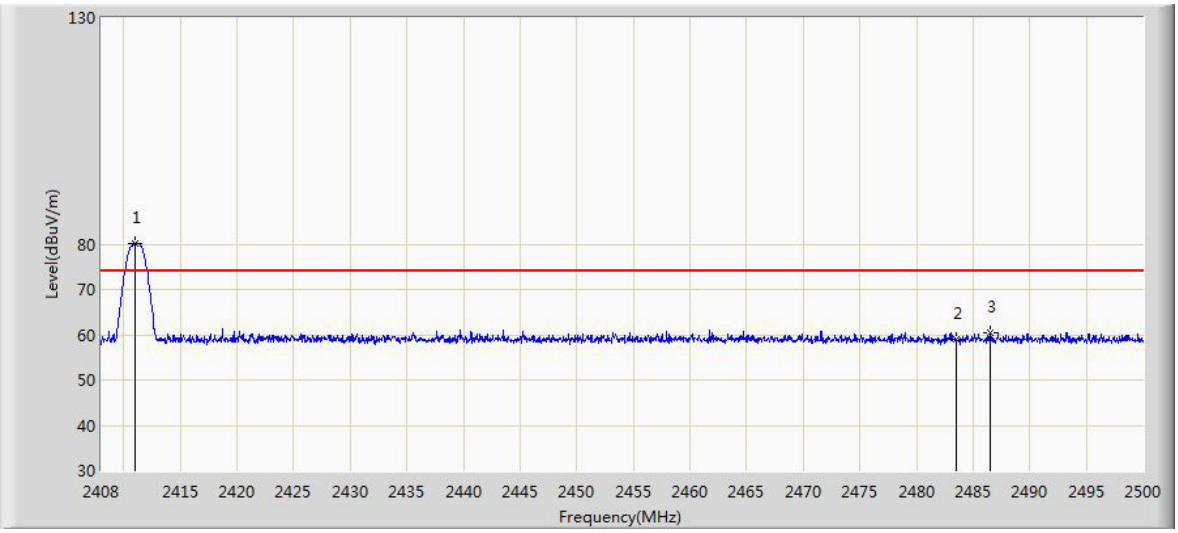
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2382.975	59.046	27.830	-14.954	74.000	31.216	PK
2390.000	57.489	26.286	-16.511	74.000	31.203	PK
2411.272	86.988	55.817	12.988	74.000	31.171	PK

Figure 8: Band Edge, Antenna V, AV, Low



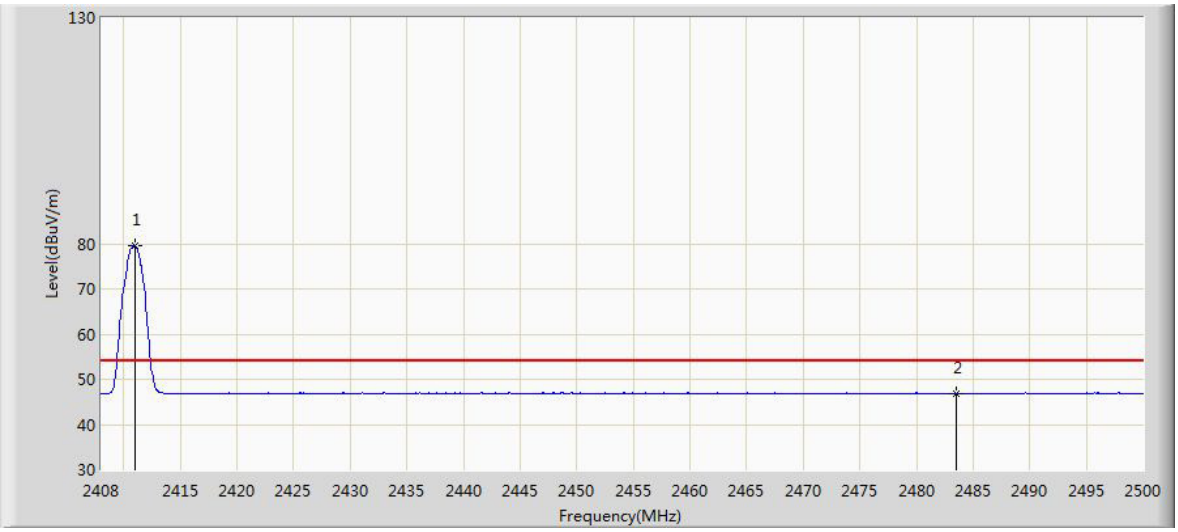
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	48.199	16.996	-5.801	54.000	31.203	AV
2400.143	52.830	21.643	-1.170	54.000	31.187	AV

Figure 9: Band Edge, Antenna H, PK, High



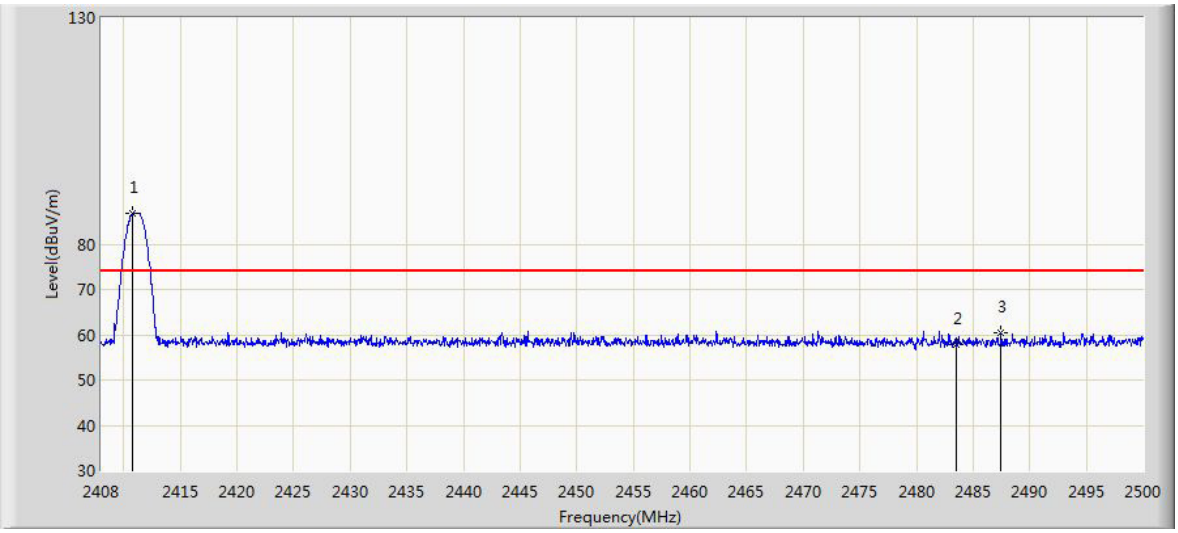
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2410.944	80.163	48.992	6.163	74.000	31.171	PK
2483.500	58.985	27.792	-15.015	74.000	31.194	PK
2486.476	60.560	29.359	-13.440	74.000	31.201	PK

Figure 10: Band Edge, Antenna H, AV, High



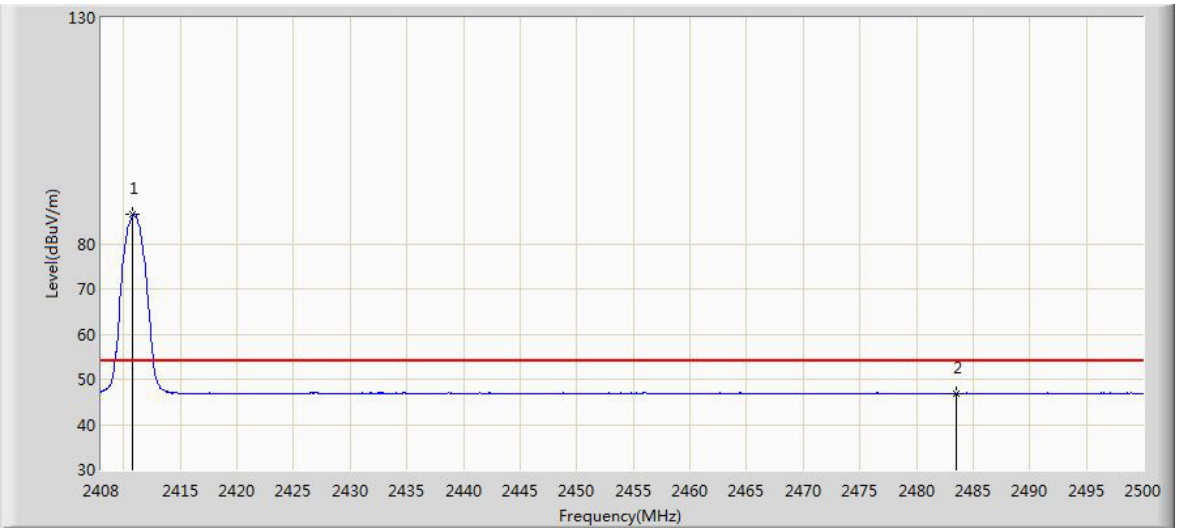
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2410.944	79.612	48.441	25.612	54.000	31.171	AV
2483.500	46.782	15.589	-7.218	54.000	31.194	AV

Figure 11: Band Edge, Antenna V, PK, High



Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2410.806	86.911	55.739	12.911	74.000	31.172	PK
2483.500	57.831	26.638	-16.169	74.000	31.194	PK
2487.488	60.554	29.350	-13.446	74.000	31.204	PK

Figure 12: Band Edge, Antenna V, AV



Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2410.806	86.377	55.205	32.377	54.000	31.172	AV
2483.500	46.804	15.611	-7.196	54.000	31.194	AV

5.1.5 Conducted Emissions

RESULT: **Pass**

Date of testing	:	19.06.2017
Test standard	:	FCC Part 15.207(a)
Test procedure	:	ANSI C63.10: 2013
Limit	:	FCC Part 15.207(a)
Kind of test site	:	Shield room

Figure 13: Conducted Emission, L Line

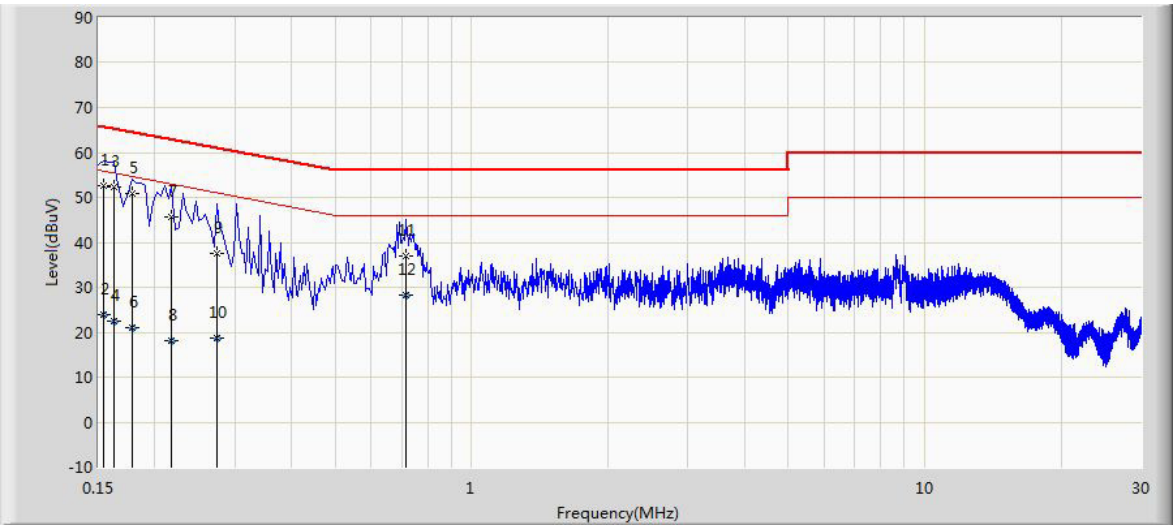


Table 8: Conducted Emission, L Line

Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
0.154	52.650	41.910	-13.132	65.781	10.740	QP
0.154	23.849	13.110	-31.932	55.781	10.740	AV
0.162	52.235	42.138	-13.126	65.361	10.097	QP
0.162	22.579	12.482	-32.782	55.361	10.097	AV
0.178	50.861	40.803	-13.718	64.578	10.058	QP
0.178	20.956	10.898	-33.622	54.578	10.058	AV
0.218	45.644	35.699	-17.251	62.895	9.945	QP
0.218	18.161	8.217	-34.733	52.895	9.945	AV
0.274	37.652	27.669	-23.343	60.996	9.983	QP
0.274	18.641	8.657	-32.355	50.996	9.983	AV
0.714	36.858	26.802	-19.142	56.000	10.056	QP
0.714	28.314	18.258	-17.686	46.000	10.056	AV

Figure 14: Conducted Emission, N Line

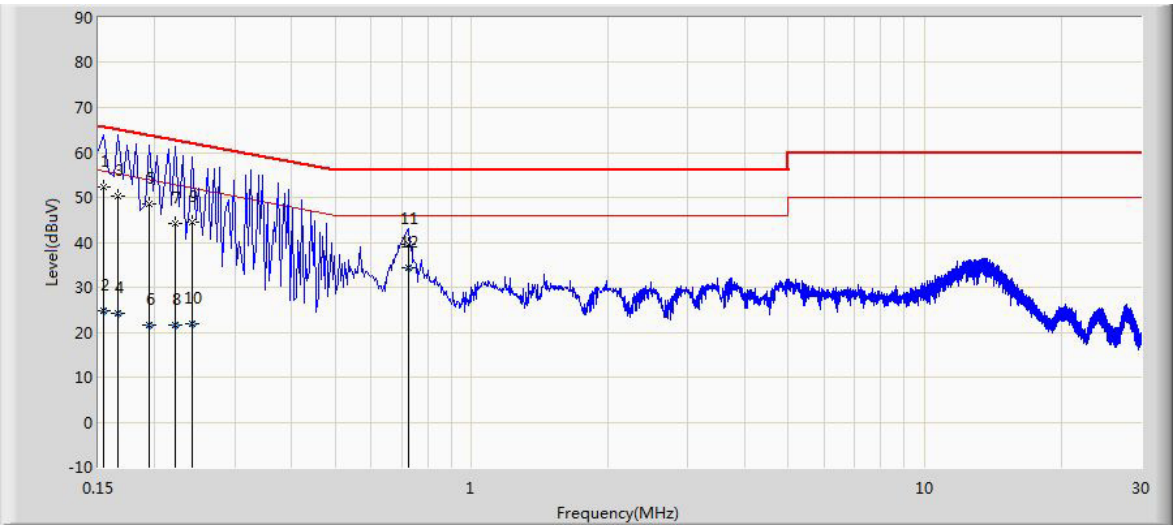


Table 9: Conducted Emission, N Line

Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
0.154	52.364	41.649	-13.417	65.781	10.716	QP
0.154	24.821	14.105	-30.961	55.781	10.716	AV
0.166	50.355	40.284	-14.803	65.158	10.071	QP
0.166	24.205	14.134	-30.953	55.158	10.071	AV
0.194	48.509	38.488	-15.355	63.864	10.021	QP
0.194	21.630	11.609	-32.233	53.864	10.021	AV
0.222	44.113	34.133	-18.631	62.744	9.980	QP
0.222	21.632	11.653	-31.112	52.744	9.980	AV
0.242	44.415	34.420	-17.612	62.027	9.995	QP
0.242	21.936	11.941	-30.092	52.027	9.995	AV
0.726	39.709	29.649	-16.291	56.000	10.060	QP
0.726	34.264	24.204	-11.736	46.000	10.060	AV

6. List of Tables

7. List of Figures