Prüfbericht-Nr.: *Test Report No.:*	**50085890 001**	**Auftrags-Nr.:** *Order No.:*	**154243722**	**Seite 1 von 24** *Page 1 of 24*
Kunden-Referenz-Nr.: *Client Reference No.:*	**52195561**	**Auftragsdatum:** *Order date:*	**26.04.2017**	
Auftraggeber: *Client:*	**AXENT Corporation Ltd.** 3 Musick, Irvine CA 92618 USA			
Prüfgegenstand: *Test item:*	**Tankless toilet**			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	**W330-05** **FCC ID: 2AL4GPRIMUS**			
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.:*	**A000540881-005**			
Prüfzeitraum: *Testing period:*	**Refer to test report**			
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

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

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 an intelligent toilet which contains a 2.4GHz wireless module module.

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:	Tankless toilet
Brand Name:	AXENT
Model No.:	W330-05
Rated Voltage:	DC 6V (4*AA)
2.4GHz Wireless Module	
Frequency Range:	2411MHz
Modulation Type:	FSK
Antenna Type:	PCB
Antenna Gain:	0dBi

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	:	18.05.2017
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

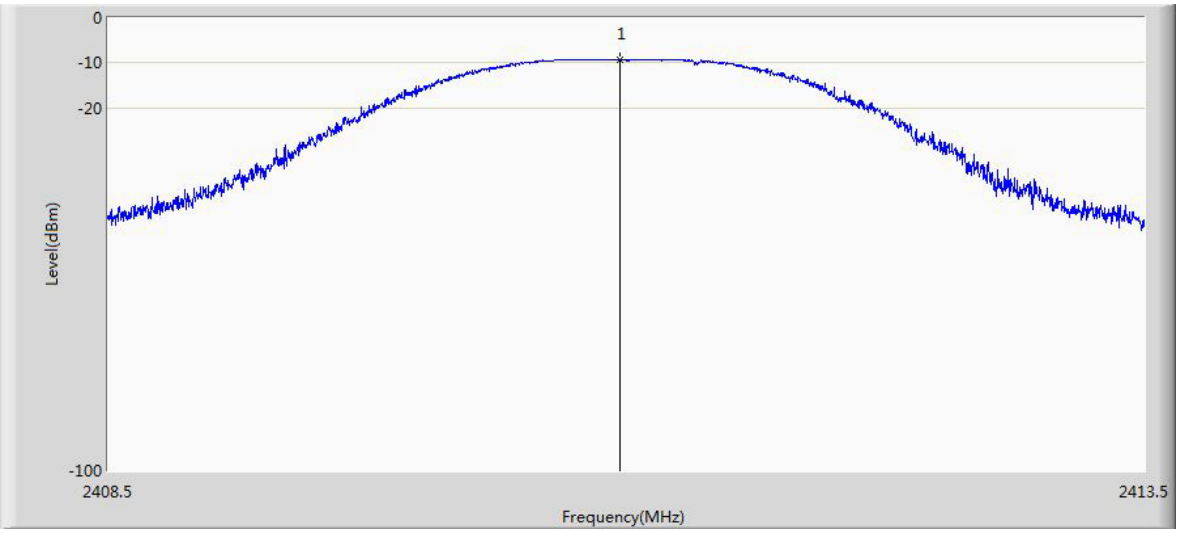


Table 5: Field Strength of Fundamental Emissions, Antenna Horizontal

Frequency [MHz]	Measure Level [dBm]	Measure Level [dBuV/m]	Over Limit [dB]	Limit [dBuV/m]	Type
2410.968	-9.286	85.943	-28.057	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

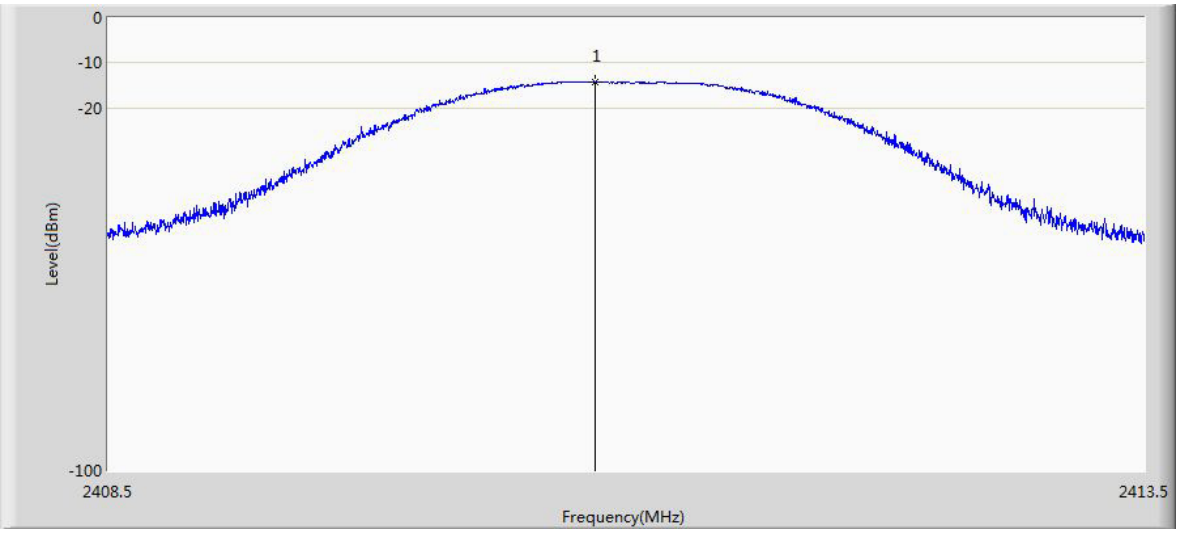


Table 6: Field Strength of Fundamental Emissions, Antenna Vertical

Frequency [MHz]	Measure Level [dBm]	Measure Level [dBuV/m]	Over Limit [dB]	Limit [dBuV/m]	Type
2410.850	-14.198	81.031	-32.969	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

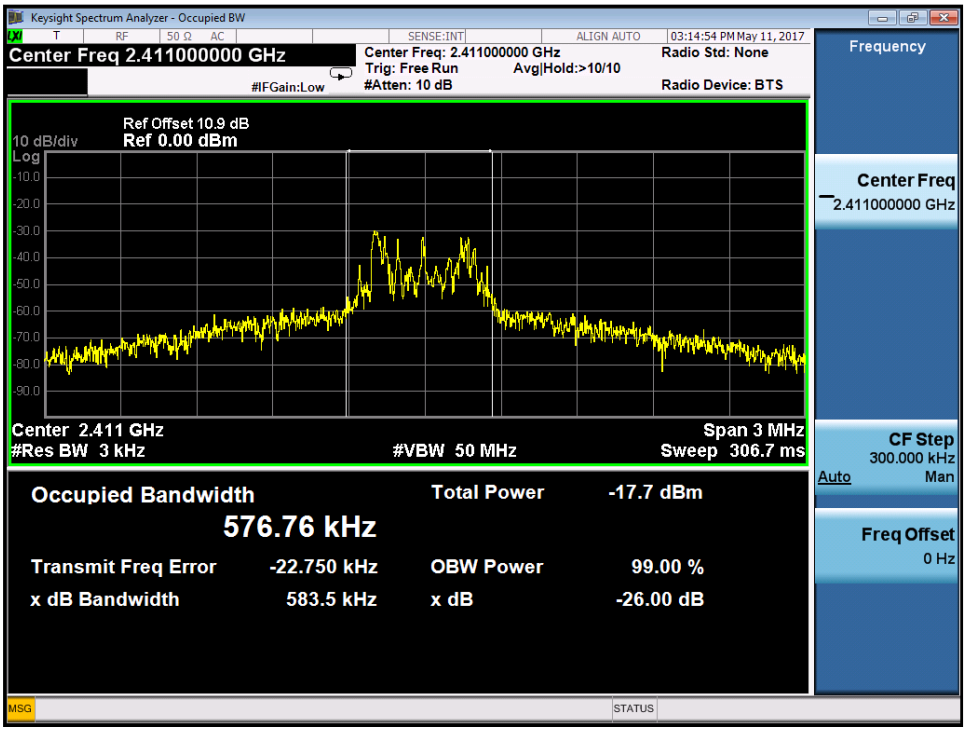
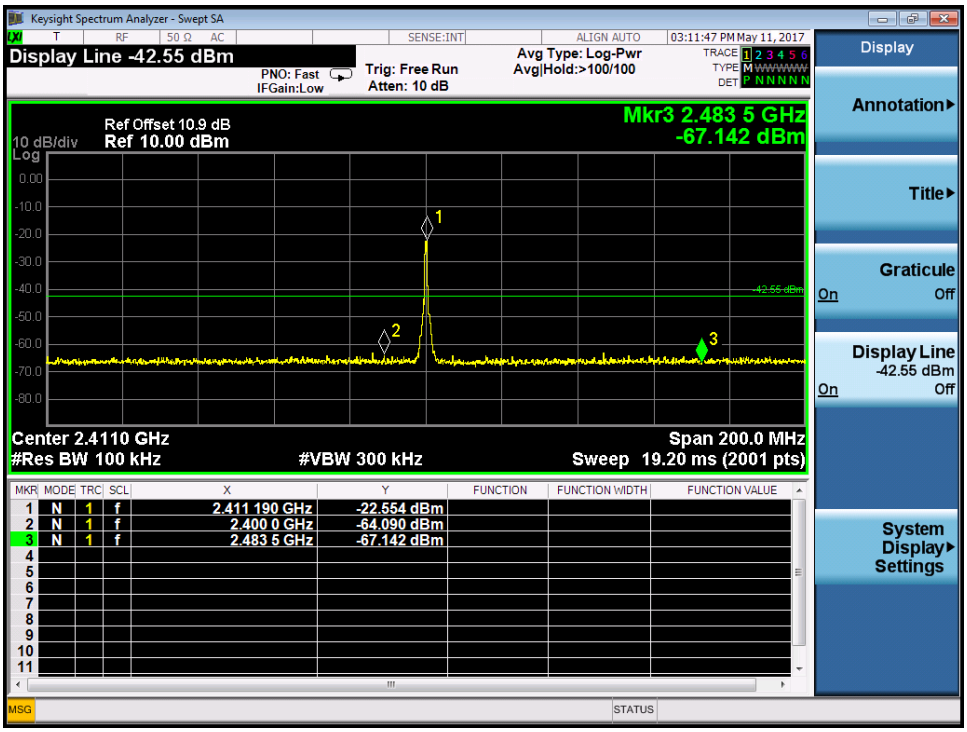


Figure 4: 20dB Spectrum Bandwidth Measurement



5.1.4 Radiated Emissions

RESULT: **Pass**

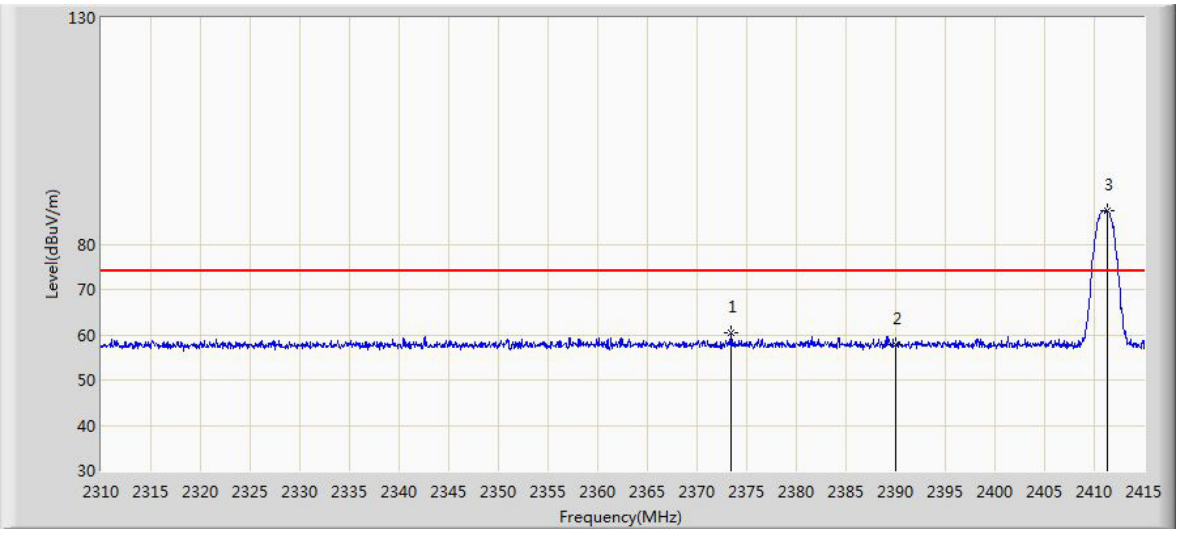
Date of testing	:	18.05.2017
Test standard	:	FCC Part 15.249
Test procedure	:	ANSI C63.10: 2013
Frequency range	:	9kHz – 30MHz 30MHz – tenth harmonic of the highest fundamental frequency
Limit	:	FCC Part 15.249(a) & FCC Part 15.249(e), FCC Part 15.249(d) & FCC Part 15.209;
Kind of test site	:	3m Semi-Anechoic 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
3839.000	34.914	34.924	-39.086	74.000	-0.010	PK	H
4825.000	49.662	46.962	-24.338	74.000	2.700	PK	H
9015.500	43.622	34.696	-30.378	74.000	8.925	PK	H
9636.000	44.628	33.673	-29.372	74.000	10.955	PK	H
3728.500	35.245	35.726	-38.755	74.000	-0.481	PK	V
4821.990	29.807	27.108	-24.193	54.000	2.699	AV	V
4825.000	55.199	52.499	-18.801	74.000	2.700	PK	V
9644.500	47.464	36.487	-26.536	74.000	10.976	PK	V

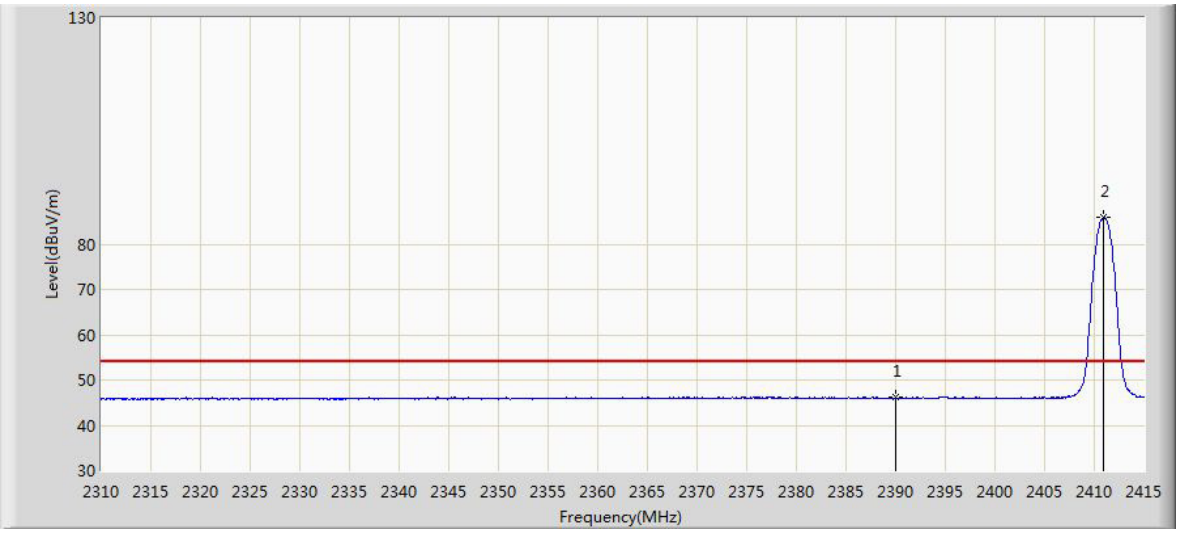
Note:
1. The radiated emission below 30MHz is very low, so it was not shown on the report.
2. The measurements using an average detector for the frequency above 1GHz were not performed since the results measured with a Peak detector are totally meet the average limit.

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



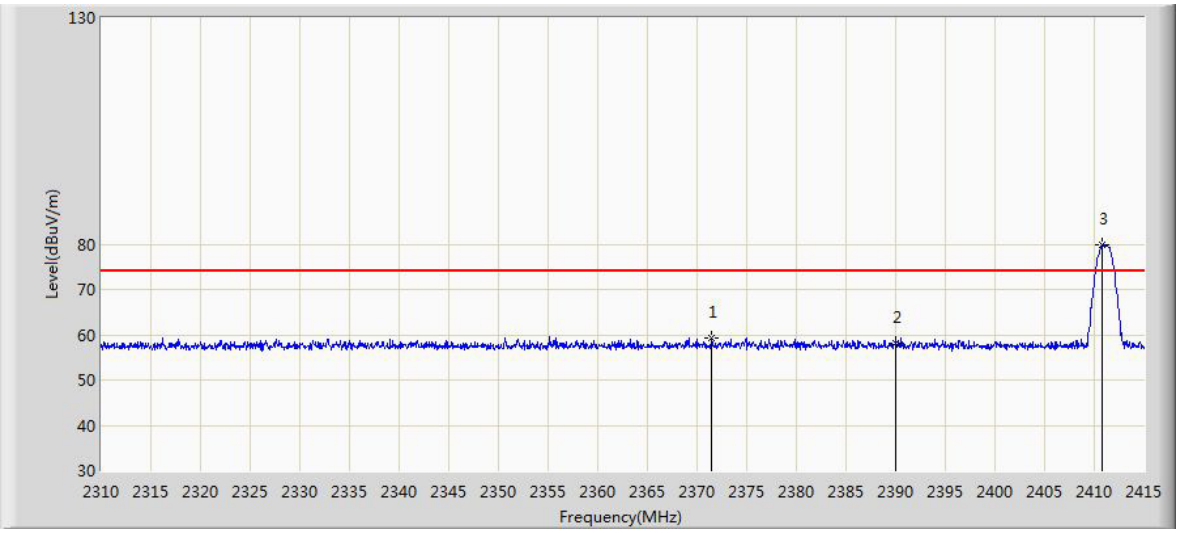
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2373.420	60.315	29.082	-13.685	74.000	31.233	PK
2390.000	57.933	26.730	-16.067	74.000	31.203	PK
2411.272	87.331	56.160	N/A	N/A	31.171	PK

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



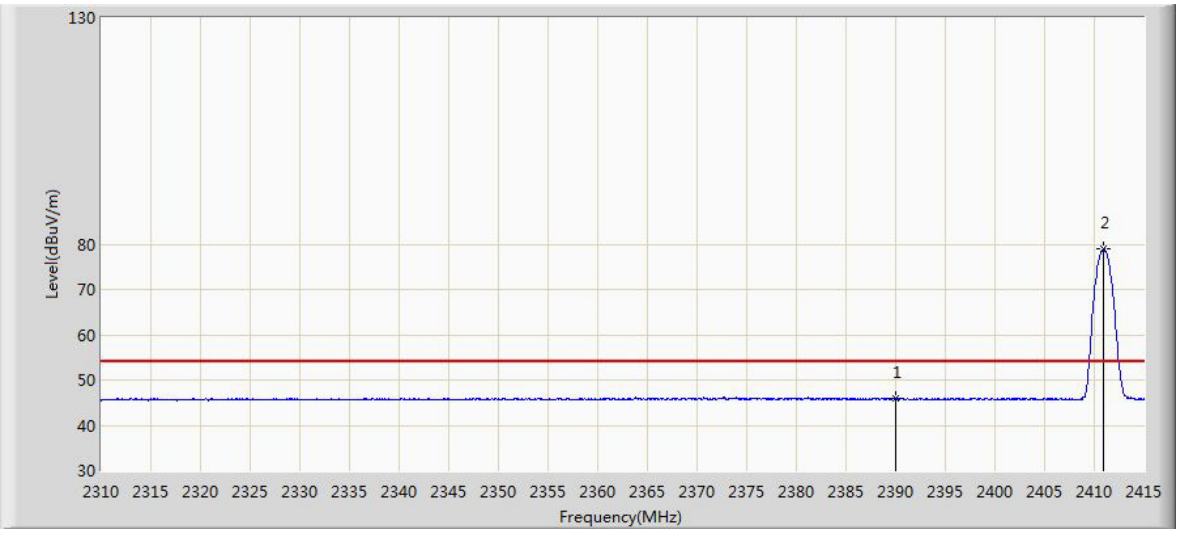
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	46.105	14.902	-7.895	54.000	31.203	AV
2410.905	85.845	54.674	N/A	N/A	31.172	AV

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



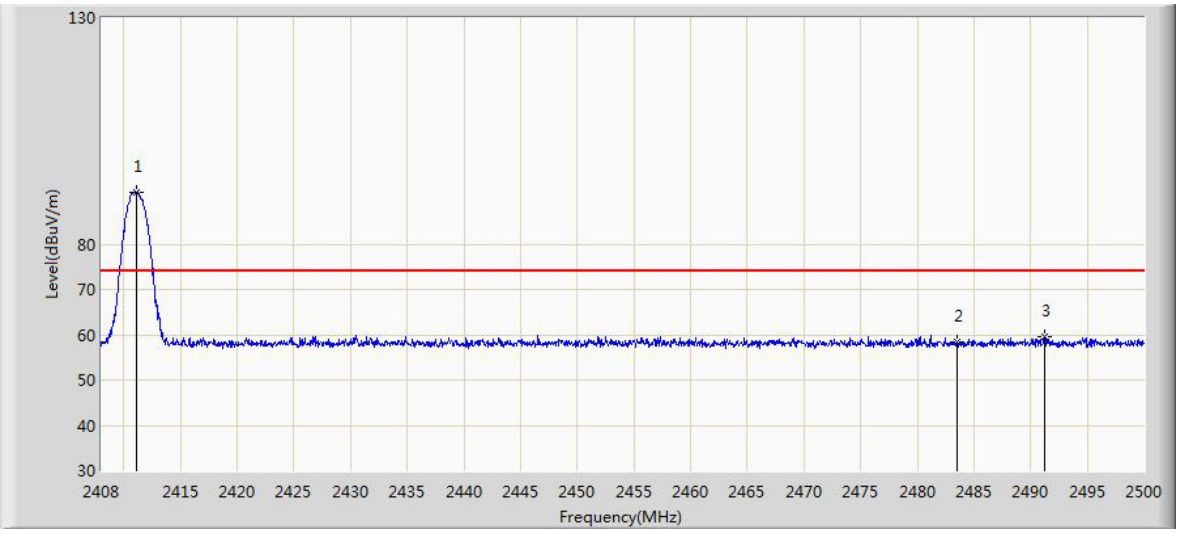
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2371.478	59.234	27.997	-14.766	74.000	31.237	PK
2390.000	58.019	26.816	-15.981	74.000	31.203	PK
2410.853	79.883	48.712	N/A	N/A	31.172	PK

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



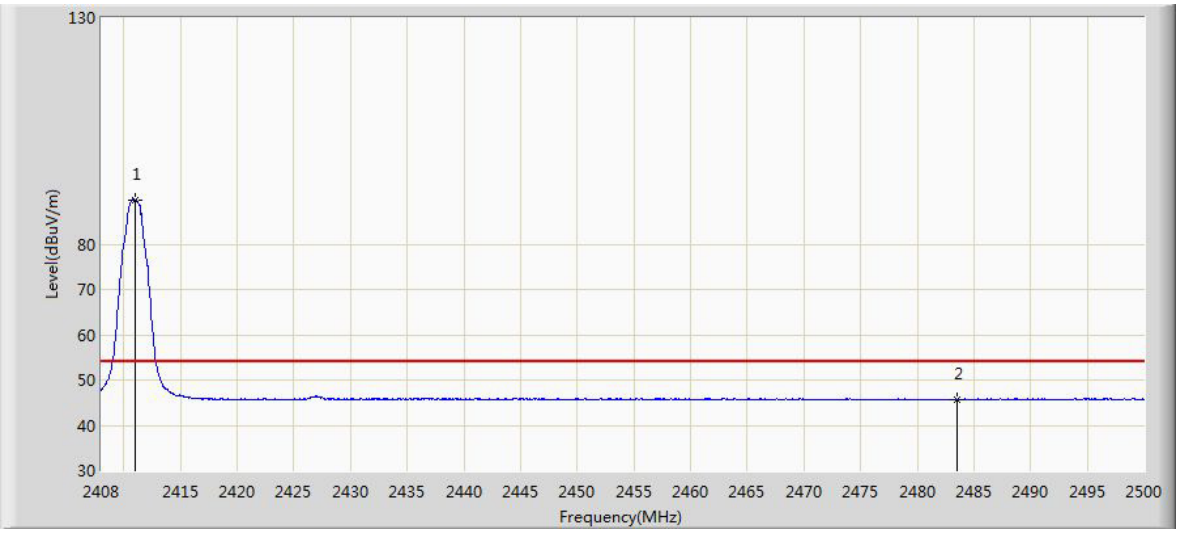
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	45.897	14.694	-8.103	54.000	31.203	AV
2410.958	78.932	47.761	N/A	N/A	31.171	AV

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



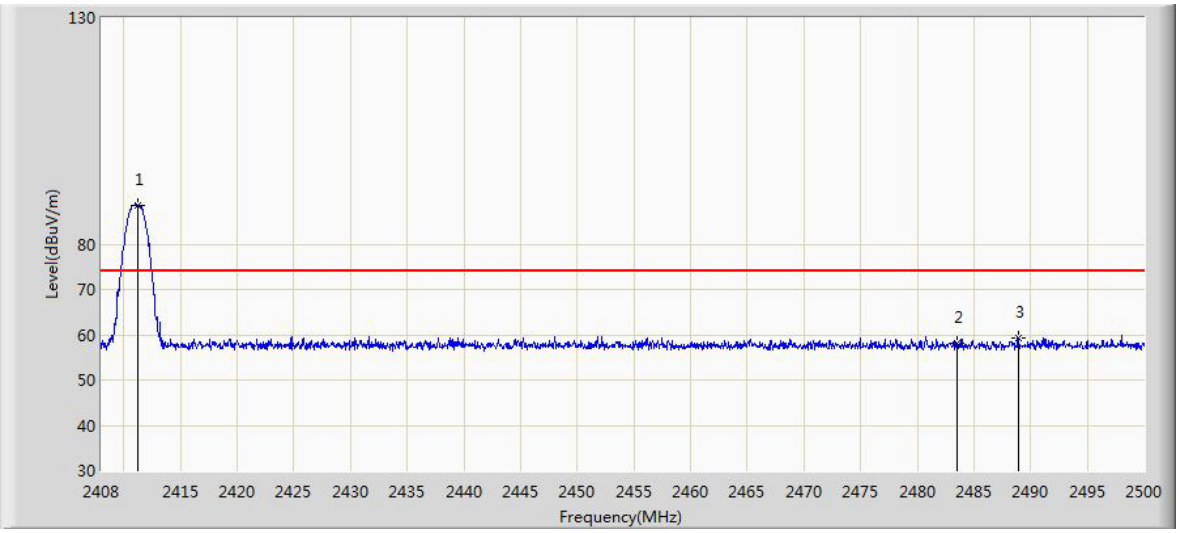
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2411.082	91.436	60.265	N/A	N/A	31.171	PK
2483.500	58.416	27.223	-15.584	74.000	31.194	PK
2491.214	59.432	28.218	-14.568	74.000	31.214	PK

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



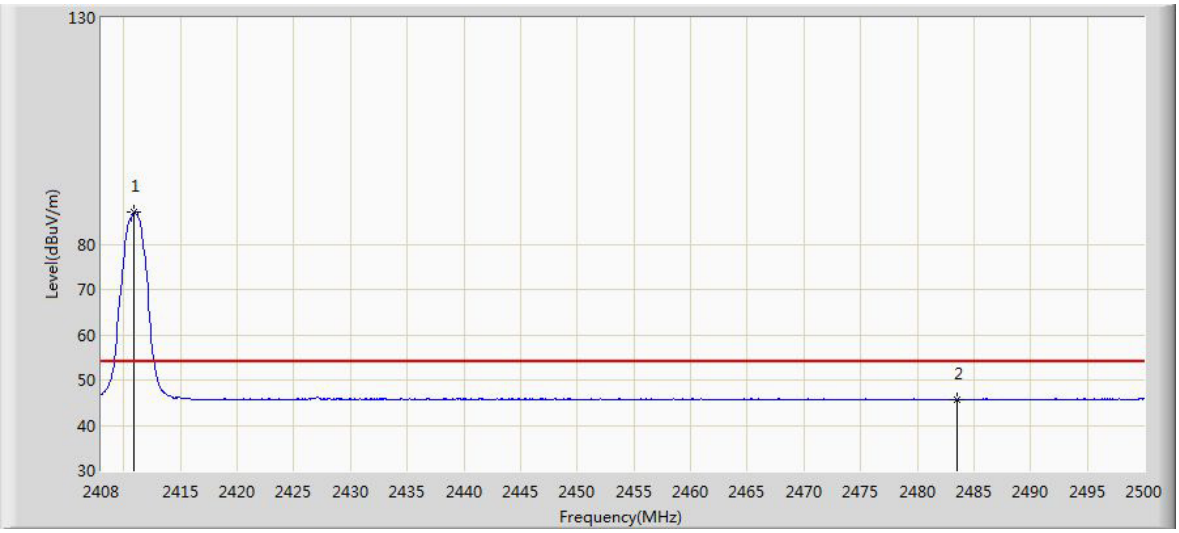
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2410.944	89.804	58.633	N/A	N/A	31.171	AV
2483.500	45.703	14.510	-8.297	54.000	31.194	AV

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
2411.174	88.586	57.415	N/A	N/A	31.171	PK
2483.500	57.982	26.789	-16.018	74.000	31.194	PK
2488.914	59.242	28.034	-14.758	74.000	31.207	PK

Figure 12: Band Edge, Antenna V, AV, High



Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2410.852	87.096	55.925	N/A	N/A	31.172	AV
2483.500	45.675	14.482	-8.325	54.000	31.194	AV

6. List of Tables

7. List of Figures