



Product Service

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Report On

FCC and Industry Canada Testing of the Kohler Co.
KARING 2.0 INTELLIGENT TOILET K-77780
In accordance with FCC CFR 47 Part 15C & Industry Canada RSS-210
And Industry Canada RSS-GEN

COMMERCIAL-IN-CONFIDENCE

FCC ID: N82-KOHLER020
IC ID: 4554A-KOHLER020

Document 708881622804-00 Report 02 Issue 1

Aug 2016



Product Service

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COMMERCIAL-IN-CONFIDENCE

REPORT ON

FCC and INDUSTRY CANADA Testing of the
Kohler Co.
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In accordance with FCC CFR 47 Part 15C & Industry Canada RSS-
210 and Industry Canada RSS-GEN

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August 2016

PREPARED FOR

Kohler Co.

PREPARED BY

Wenwen CHENG

Project Engineer

APPROVED BY

Hui TONG

Project Engineer

DATED

Aug 26, 2016

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 15C. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

Wenwen CHENG



CONTENTS

Section		Page No
1	REPORT SUMMARY	3
1.1	Introduction	4
1.2	Brief Summary of Results	5
1.3	Application Form.....	6
1.4	Product Information	7
1.5	Test Conditions.....	7
1.6	Deviations from the Standard.....	7
1.7	Modification Record.....	7
2	TEST DETAILS	8
2.1	AC Line Conducted Emissions.....	9
2.2	Field Strength of Fundamental.....	12
2.3	Field Strength of Spurious Emissions.....	14
2.4	Occupied Bandwidth.....	27
3	TEST EQUIPMENT USED.....	30
3.1	Test Equipment Used	31
3.2	Measurement Uncertainty.....	32
4	DISCLAIMERS AND COPYRIGHT.....	33
4.1	Accreditation, Disclaimers and Copyright	34



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SECTION 1

REPORT SUMMARY

FCC & INDUSTRY CANADA Testing of the
Kohler Co.
KARING 2.0 INTELLIGENT TOILET K-77780
In accordance with FCC CFR 47 Part 15C & Industry Canada RSS-210 and Industry Canada RSS-GEN



Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the FCC and INDUSTRYCANADA Testing of the Kohler Co. KARING 2.0 INTELLIGENT TOILET K-77780 to the requirements of FCC CFR 47 Part 15C & Industry Canada RSS-210 and Industry Canada RSS-GEN.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Kohler Co.
Model Number(s)	K-77780
Serial Number(s)	Engineering sample
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15C (2014) Industry Canada RSS-210 Issue 9 (2016) Industry Canada RSS-GEN Issue 4 (2014)
Incoming Release Date	Application Form April 07, 2016
Order Number Date	Quote Acceptance Form April 07, 2016
Start of Test	May 21, 2016
Finish of Test	June 21, 2016
Name of Engineer(s)	Hui TONG
Related Document(s)	ANSI C63.10: 2009



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 15C and RSS-210 and RSS-GEN are shown below.

Section	Spec Clause			Test Description	Result	Comments/Base Standard
	FCC	RSS-210	RSS-GEN			
Short range device wireless video transmitter DCS500T						
2.1	15.207	-	7.2.4	AC Line Conducted Emissions	Pass	
2.2	15.249 (a)	A 2.9	-	Field Strength of Fundamental	Pass	
2.3	15.249 (a)(d), 15.209	A 2.9 & 2.2	-	Field Strength of Spurious Emissions	Pass	
2.4	-	Annex 8	-	Occupied Bandwidth	Pass	



Product Service

1.3 APPLICATION FORM

APPLICANT'S DETAILS	
COMPANY NAME :	Kohler Co.
ADDRESS :	444 Highland Drive Wisconsin United States
NAME FOR CONTACT PURPOSES :	Timothy Stessman
TELEPHONE NO: 920-457-4441 Extension: 2122	FAX NO: E-MAIL: timothy.stessman@kohler.com

EQUIPMENT INFORMATION																									
MANUFACTURING DESCRIPTION	KARING 2.0 INTELLIGENT TOILET																								
MANUFACTURER	Kohler Co.																								
TYPE	K-77780																								
SERIAL NUMBER	Engineering sample																								
TRANSMITTER OPERATING RANGE	2414.5MHz-2459.5MHz																								
COUNTRY OF ORIGIN	USA																								
Channel Number	10																								
Channels Spacing	5MHz																								
Modulation Type	MSK																								
Antenna Gain	4dbi																								
FCC ID	N82-KOHLER020																								
IC ID	4554A-KOHLER020																								
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	K-77780 is a Intelligent Toilet with 10.525GHz microwave detector function and 2.4GHz Transceiver																								
MANUFACTURING DESCRIPTION	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Channel</th> <th>Freq(MHz)</th> <th>Channel</th> <th>Freq(MHz)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2414.5</td> <td>6</td> <td>2439.5</td> </tr> <tr> <td>2</td> <td>2419.5</td> <td>7</td> <td>2444.5</td> </tr> <tr> <td>3</td> <td>2424.5</td> <td>8</td> <td>2449.5</td> </tr> <tr> <td>4</td> <td>2429.5</td> <td>9</td> <td>2454.5</td> </tr> <tr> <td>5</td> <td>2434.5</td> <td>10</td> <td>2459.5</td> </tr> </tbody> </table>	Channel	Freq(MHz)	Channel	Freq(MHz)	1	2414.5	6	2439.5	2	2419.5	7	2444.5	3	2424.5	8	2449.5	4	2429.5	9	2454.5	5	2434.5	10	2459.5
Channel	Freq(MHz)	Channel	Freq(MHz)																						
1	2414.5	6	2439.5																						
2	2419.5	7	2444.5																						
3	2424.5	8	2449.5																						
4	2429.5	9	2454.5																						
5	2434.5	10	2459.5																						



Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) K-77780 was a Kohler Co. KARING 2.0 INTELLIGENT TOILET. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from 120VAC, 60Hz.

Test Site 1:

FCC Accreditation 809388

IC Accreditation 11384A-1

Test Firm Name: MRT Technology (Suzhou) Co., Ltd

Location: D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

Test Site 2:

FCC Accreditation 904822

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

No.16 Lane, 1951 Du Hui Road,

Shanghai 201108,

P.R. China

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard were made during testing.

1.7 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.



Product Service

SECTION 2

TEST DETAILS

FCC and INDUSTRY CANADA Testing of the Kohler Co.
KARING 2.0 INTELLIGENT TOILET K-77780
In accordance with FCC CFR 47 Part 15C & Industry Canada RSS-210 and Industry Canada
RSS-GEN



Product Service

2.1 AC LINE CONDUCTED EMISSIONS

2.1.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.207 / Industry Canada RSS-GEN, Clause 7.2.4

2.1.2 Equipment Under Test and Modification State

KARING 2.0 INTELLIGENT TOILET K-77780 set up the 10.525GHz detector distance and 2.4G TX maximum - Modification State 0

2.1.3 Date of Test

May 23, 2016

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

The EUT is set up on a test table 800mm above a horizontal ground plane. A vertical ground plane is also required and is placed 400mm from the EUT. Where a EUT is floor standing it will be stood on but insulated from the ground plane by up to 12mm.

The EUT is powered through a Line Impedance Stabilisation Network (LISN) which is bonded to the ground plane. The EUT is located so that the distance between the EUT and the LISN is no less than 800mm. Where possible the cable between the mains input of the EUT and the LISN is 1m. Where this is not possible the cable is non inductively bundled with the bundle not exceeding 400mm in length.

A preliminary profile of the Conducted Emissions is obtained over the frequency range 150kHz to 30MHz. Any points of interest are noted for formal measurements.

During formal measurements, the measuring receiver is tuned to the emission of interest where Quasi – Peak and Average measurements are performed in a 9kHz Video and Resolution Bandwidth.

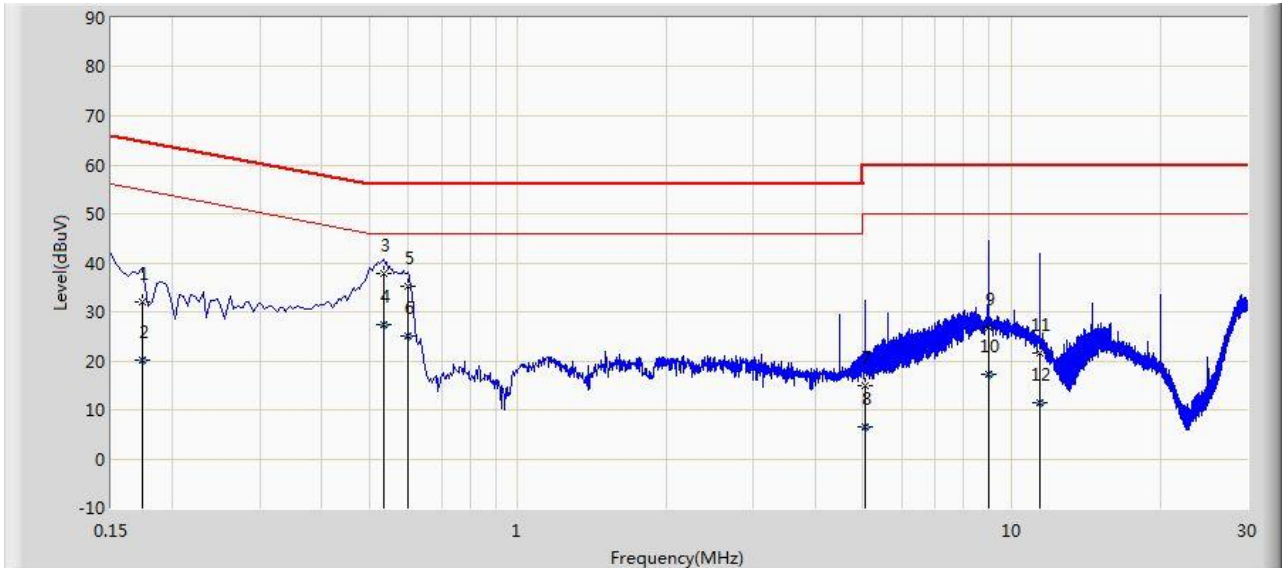
2.1.6 Environmental Conditions

Ambient Temperature	23.4°C
Relative Humidity	52.8%



2.1.7 Test Results

Product Type : KARING 2.0 INTELLIGENT TOILET
 M/N : K-77780
 Operating Condition : Transmit at 10.525GHz and 2.4G
 Test Specification : FCC_Part15.207_CE_AC Power
 Comment : AC 120V/60Hz, Line

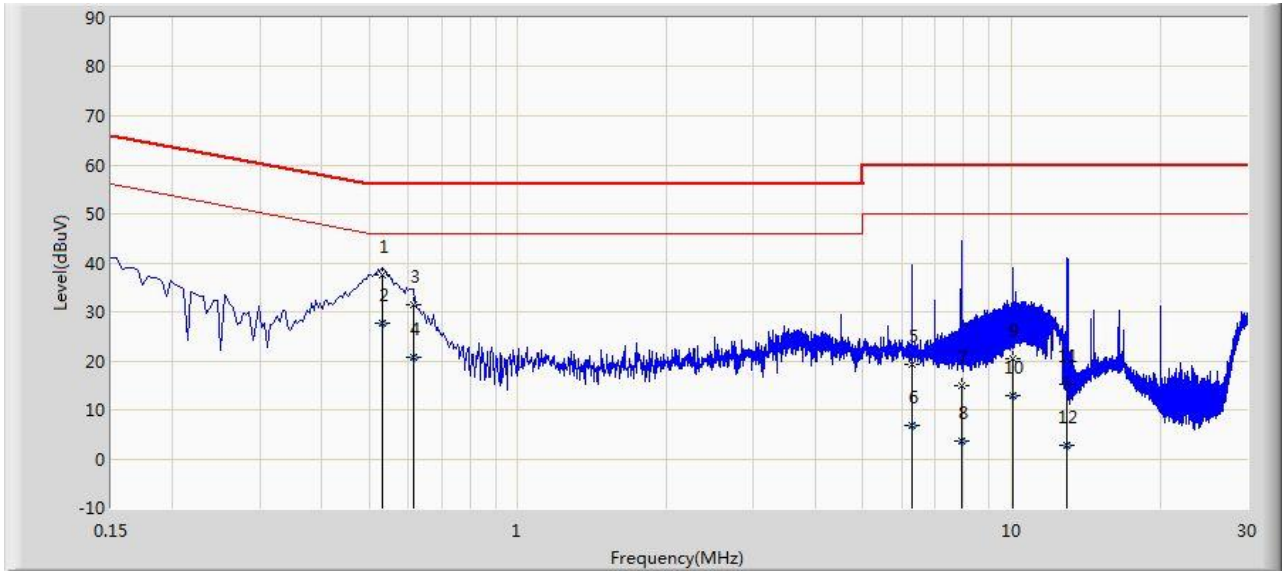


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.174	32.057	21.989	-32.710	64.767	10.068	QP
2			0.174	20.237	10.169	-34.530	54.767	10.068	AV
3		*	0.534	37.775	27.626	-18.225	56.000	10.149	QP
4			0.534	27.475	17.326	-18.525	46.000	10.149	AV
5			0.598	35.346	25.230	-20.654	56.000	10.116	QP
6			0.598	24.957	14.841	-21.043	46.000	10.116	AV
7			5.042	14.826	4.790	-45.174	60.000	10.037	QP
8			5.042	6.655	-3.382	-43.345	50.000	10.037	AV
9			8.986	26.685	16.532	-33.315	60.000	10.153	QP
10			8.986	17.273	7.120	-32.727	50.000	10.153	AV
11			11.438	21.560	11.463	-38.440	60.000	10.097	QP
12			11.438	11.437	1.340	-38.563	50.000	10.097	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)
 Factor (dB) = Cable Loss (dB) + LISN Factor (dB).



Product Type : KARING 2.0 INTELLIGENT TOILET
 M/N : K-77780
 Operating Condition : Transmit at 10.525GHz and 2.4G
 Test Specification : FCC_Part15.207_CE_AC Power
 Comment : AC 120V/60Hz, Neutral



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.530	37.436	27.267	-18.564	56.000	10.169	QP
2		*	0.530	27.757	17.588	-18.243	46.000	10.169	AV
3			0.614	31.570	21.446	-24.430	56.000	10.124	QP
4			0.614	20.606	10.483	-25.394	46.000	10.124	AV
5			6.286	19.400	9.258	-40.600	60.000	10.142	QP
6			6.286	6.706	-3.436	-43.294	50.000	10.142	AV
7			7.902	15.018	4.833	-44.982	60.000	10.185	QP
8			7.902	3.763	-6.423	-46.237	50.000	10.185	AV
9			10.050	20.430	10.263	-39.570	60.000	10.167	QP
10			10.050	13.008	2.841	-36.992	50.000	10.167	AV
11			12.958	15.182	5.082	-44.818	60.000	10.101	QP
12			12.958	2.664	-7.437	-47.336	50.000	10.101	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)
 Factor (dB) = Cable Loss (dB) + LISN Factor (dB).



Product Service

2.2 FIELD STRENGTH OF FUNDAMENTAL

2.2.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.249 (a) / Industry Canada RSS-210, Clause A2.9

2.2.2 Equipment Under Test and Modification State

KARING 2.0 INTELLIGENT TOILET K-77780 set up the 2.4GHz Modification State 0

2.2.3 Date of Test

May 27, 2016

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

The EUT is placed on a test table 800mm above the ground plane.

During formal measurement the spectrum analyser is tuned to the frequency of the fundamental. The turntable azimuth is adjusted from 0 to 360 degrees to determine the point at which the maximum level occurs. Then the height of the measuring antenna is adjusted from a height of 1m to 4m to determine the height at which the maximum level occurs. Once the point of maximum emission has been determined the emission is measured.

2.2.6 Environmental Conditions

Ambient Temperature	24.1°C
Relative Humidity	52.9%



2.2.7 Test Results

2414.5 MHz

Fundamental

Fundamental Frequency (MHz)	Polarisation (Vertical/Horizontal)	Reading Level	Factor	Field Strength	Over Limit	Limit		Type
		(dBµV/)	(dB)	dBµV/m	(dB)	(dBµV/m)	mV/m	AV/PK
2414.436	H	62.579	31.567	94.111	-19.889	114.0	500	PK
2414.598	H	62.191	31.532	93.723	-0.277	94.0		AV
2414.598	V	60.799	31.532	92.331	-21.669	114.0	500	PK

2434.5 MHz

Fundamental

Fundamental Frequency (MHz)	Polarisation (Vertical/Horizontal)	Reading Level	Factor	Field Strength	Over Limit	Limit		Type
		(dBµV/)	(dB)	dBµV/m	(dB)	(dBµV/m)	mV/m	AV/PK
2434.549	H	61.098	31.51	92.608	-21.392	114.0	500	PK
2434.273	V	59.471	31.51	90.981	-23.019	114.0	500	PK

2449.5 MHz

Fundamental

Fundamental Frequency (MHz)	Polarisation (Vertical/Horizontal)	Reading Level	Factor	Field Strength	Over Limit	Limit		Type
		(dBµV/)	(dB)	dBµV/m	(dB)	(dBµV/m)	mV/m	AV/PK
2449.510	H	60.999	31.487	92.487	-21.513	114.0	500	PK
2449.510	V	61.080	31.584	92.568	-21.432	114.0	500	PK

Remark: Form the peak reading test found the emission below the AV limit, so the average (AV) test doesn't need to be performed.

Limit Clause 15.249 (a) and A2.9

Fundamental Frequency (MHz)	Field Strength of Fundamental (millivolts/meter)
902 to 928	50
2400 to 2483.5	50
5725 to 5875	50
24000 to 24250	250



2.3 FIELD STRENGTH OF SPURIOUS EMISSIONS

2.3.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.249 (a)(d), 15.209 / Industry Canada RSS-210 and Industry Canada RSS-GEN

2.3.2 Equipment Under Test and Modification State

KARING 2.0 INTELLIGENT TOILET K-77780 set up the 2.4GHz - Modification State 0

2.3.3 Date of Test

May 21, 2016 to June 21, 2016

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Test Procedure

A preliminary profile of the Spurious Radiated Emissions is obtained up to the 10th harmonic of the EUT's fundamental frequency. For frequencies from 30MHz to 18GHz the EUT is placed on a test table 800mm above the ground plane. For frequencies above 18GHz, the EUT height is increased by 200mm to a height of 1000mm. This is to ensure the beam width of the measuring antenna gives sufficient vertical coverage of the EUT.

During characterisation the turntable azimuth is adjusted from 0 to 360 degrees with the measuring antenna in one polarity. It is then repeated for the other polarity. Any frequencies of interest are noted for formal measuring later. The distance from the measuring antenna to the boundary of the EUT is 3m. Above 18GHz this distance may be reduced to 1m.

During formal measurement the spectrum analyser is tuned to the frequency of the emission. The turntable azimuth is adjusted from 0 to 360 degrees to determine the point at which the maximum emission level occurs. Then the height of the measuring antenna is adjusted from a height of 1m to 4m to determine the height at which the maximum emission level occurs. Once the point of maximum emission has been determined the emission is measured. Emissions in the 30MHz to 1GHz range are measured using a CISPR Quasi – Peak detector function in a 120kHz bandwidth. Emissions in the range 1GHz to 40GHz require Peak and Average measurements. The Peak measurements are made using a peak detector with 1MHz Resolution and Video bandwidths. The average measurements employ a peak detector with a Resolution bandwidth of 1MHz and a Video bandwidth of 10Hz. If measurements are made at a 1m measuring distance, then 10dB is added to the specification limit.

2.3.6 Environmental Conditions

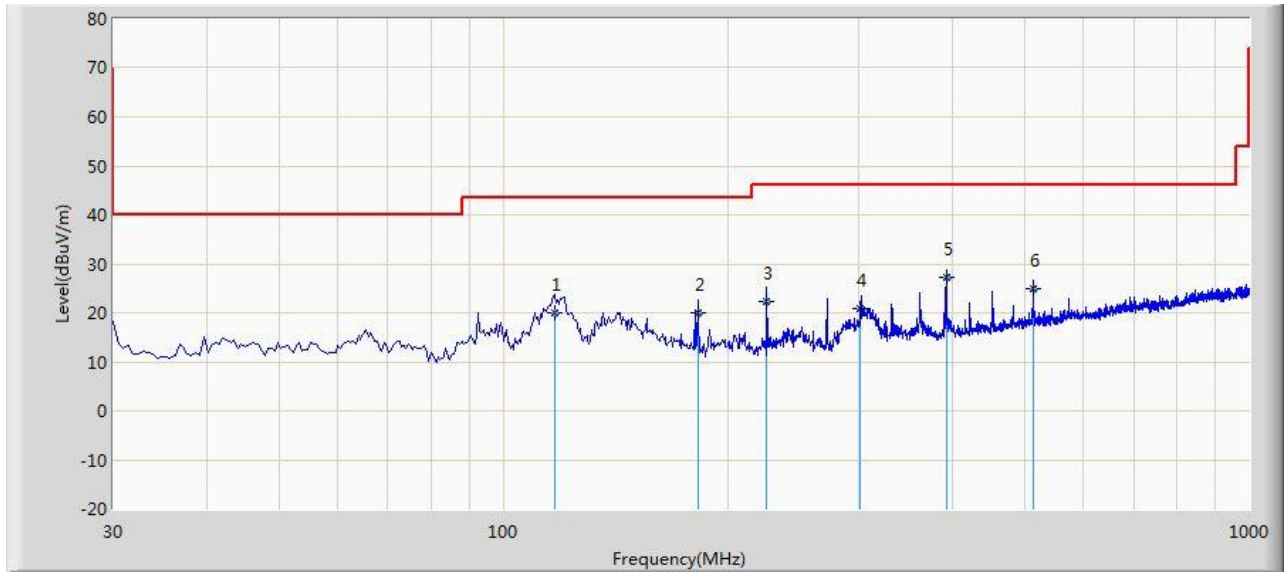
Ambient Temperature	22.7°C~24.5°C
Relative Humidity	50.2%~58.1%



2.3.7 Test Results

30 MHz to 1 GHz

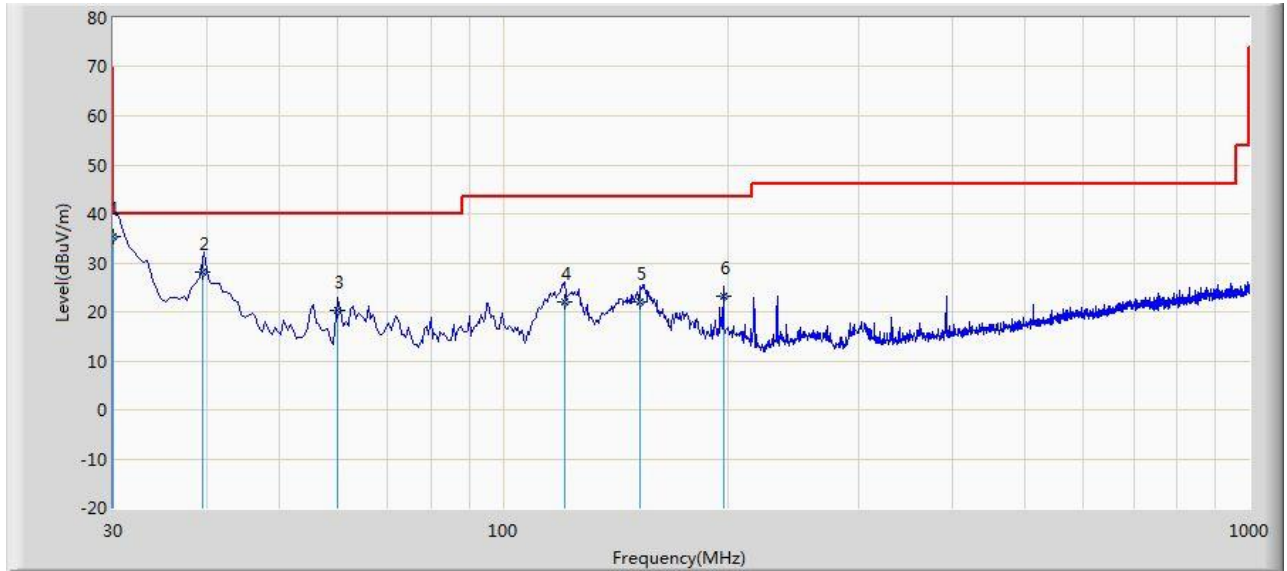
Horizontal Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			117.320	20.099	8.400	-23.401	43.500	11.699	QP
2			182.350	20.098	8.970	-23.402	43.500	11.129	QP
3			225.520	22.240	9.350	-23.760	46.000	12.890	QP
4			301.450	20.839	6.230	-25.161	46.000	14.610	QP
5		*	392.300	27.309	10.740	-18.691	46.000	16.569	QP
6			513.090	24.862	6.340	-21.138	46.000	18.522	QP



Vertical Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	30.000	35.247	23.180	-4.753	40.000	12.067	QP
2			39.610	28.149	14.360	-11.851	40.000	13.789	QP
3			60.050	20.365	6.490	-19.635	40.000	13.875	QP
4			120.730	22.065	10.890	-21.435	43.500	11.175	QP
5			152.820	22.060	12.470	-21.440	43.500	9.590	QP
6			197.402	23.280	11.050	-20.220	43.500	12.229	QP

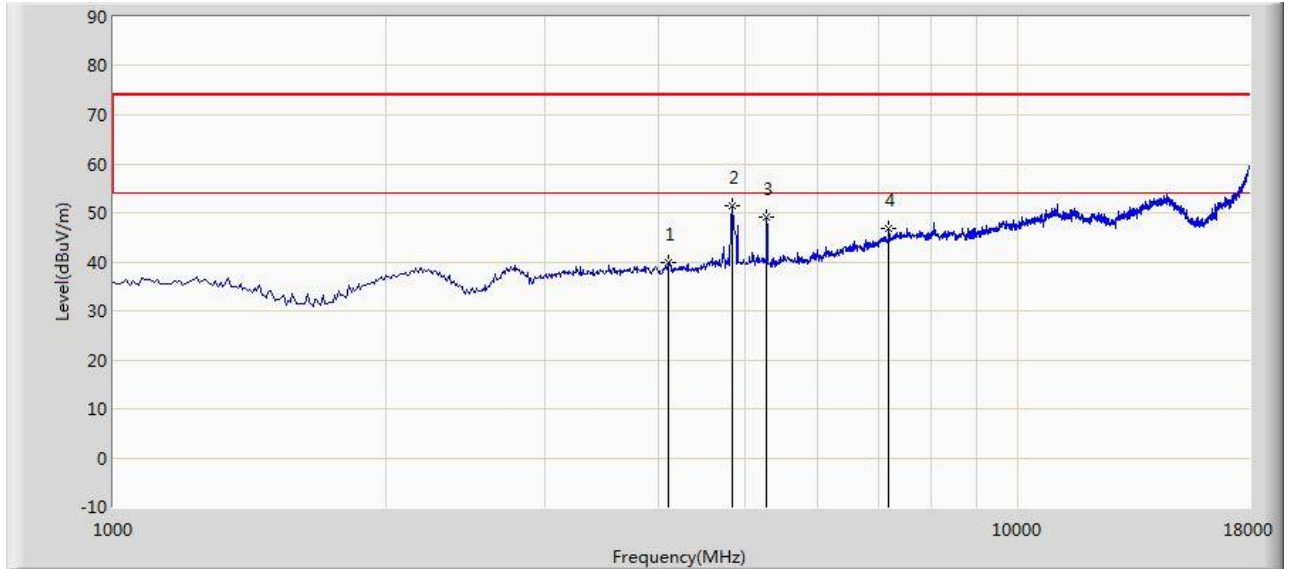


Product Service

1 GHz to 18 GHz

Tx: 2414.5MHz

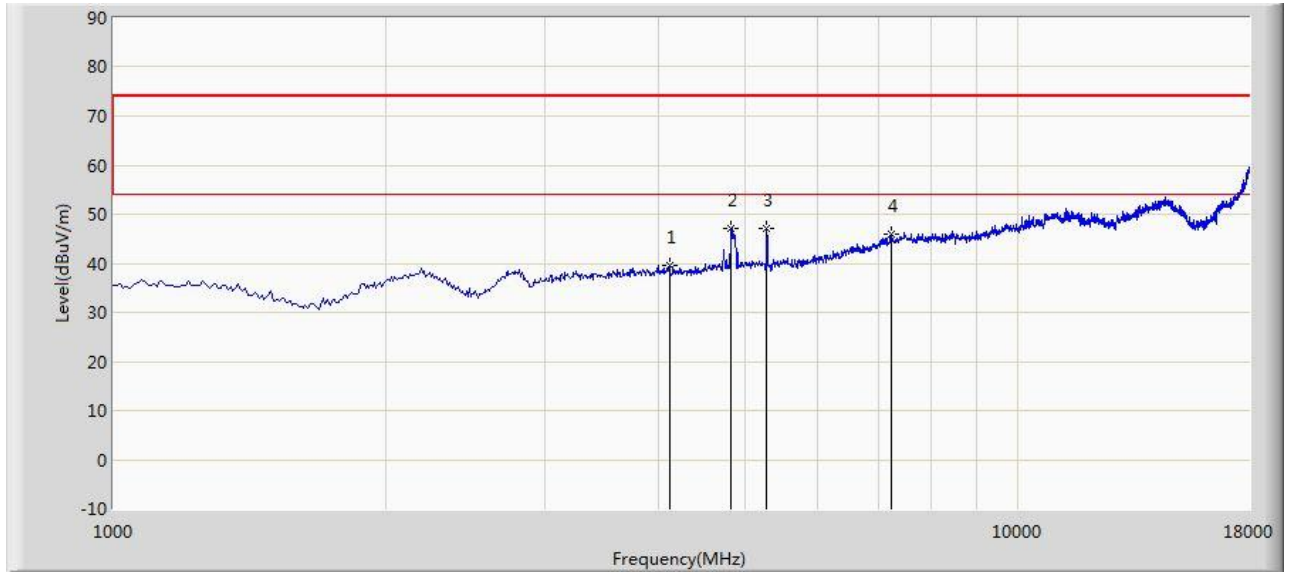
Horizontal Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			4111.000	39.973	38.539	-34.027	74.000	1.434	PK
2		*	4825.000	51.473	47.975	-22.527	74.000	3.498	PK
3			5275.500	49.112	45.101	-24.888	74.000	4.011	PK
4			7196.500	46.862	37.964	-27.138	74.000	8.898	PK



Vertical Polarisation



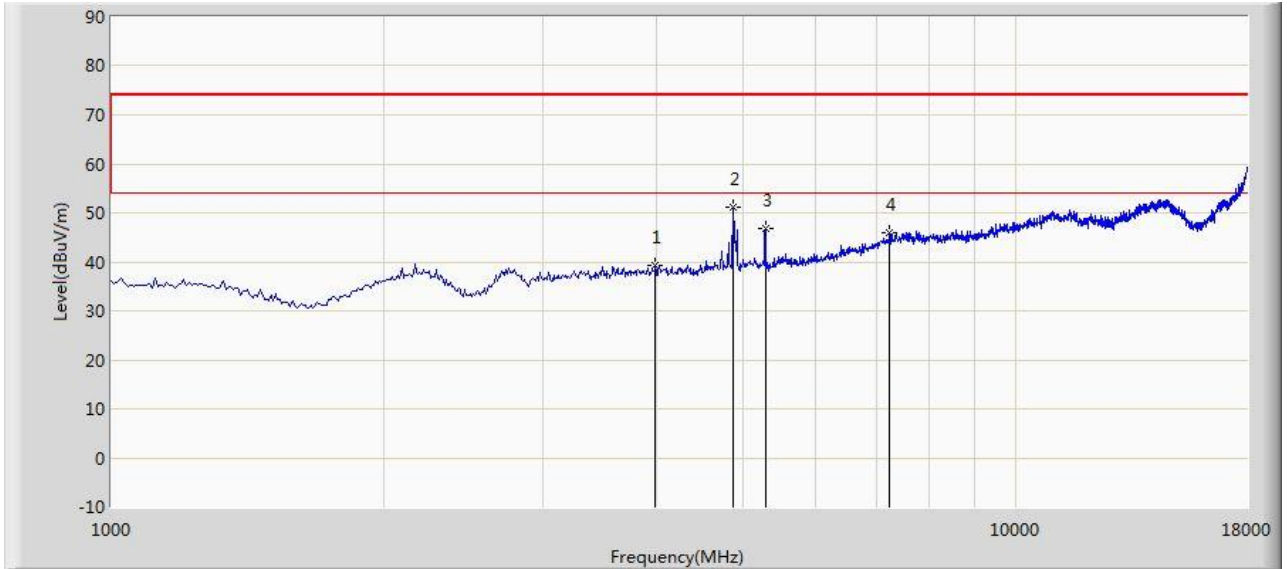
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			4119.500	39.638	38.186	-34.362	74.000	1.452	PK
2			4816.500	47.077	43.540	-26.923	74.000	3.537	PK
3		*	5275.500	47.105	43.094	-26.895	74.000	4.011	PK
4			7239.000	45.846	36.821	-28.154	74.000	9.025	PK



1 GHz to 18 GHz

Tx: 2434.5MHz

Horizontal Polarisation

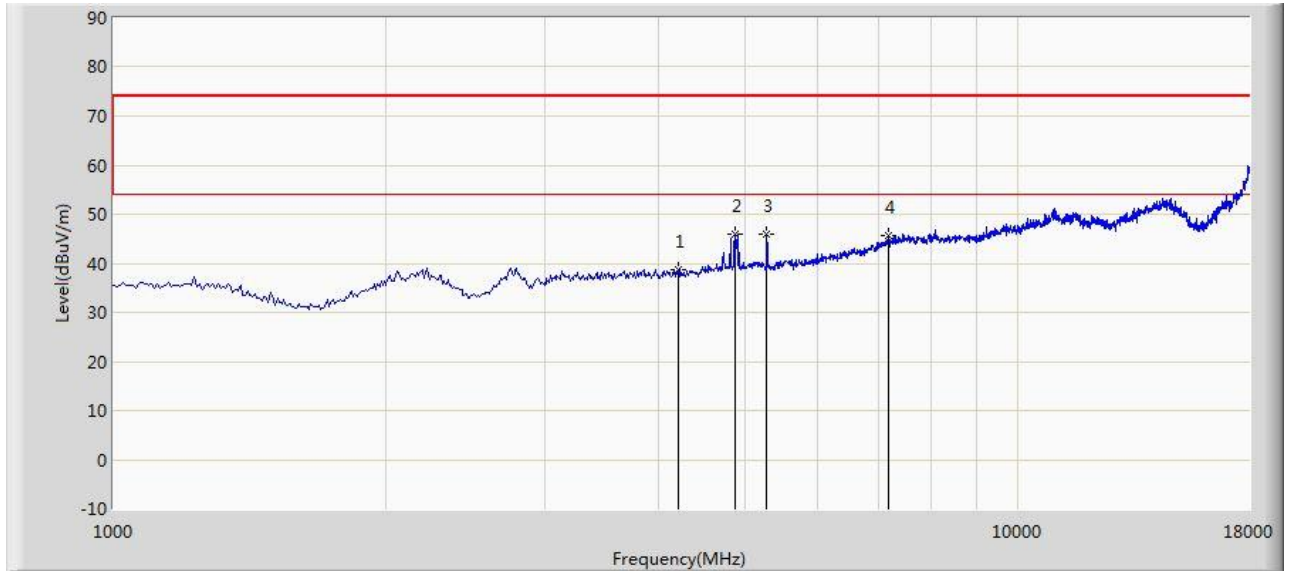


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			3992.000	39.281	37.812	-34.719	74.000	1.470	PK
2		*	4867.500	51.147	47.612	-22.853	74.000	3.535	PK
3			5284.000	46.846	42.796	-27.154	74.000	4.050	PK
4			7239.000	45.916	36.891	-28.084	74.000	9.025	PK



Product Service

Vertical Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			4204.500	38.658	37.110	-35.342	74.000	1.547	PK
2		*	4859.000	45.950	42.428	-28.050	74.000	3.522	PK
3			5275.500	45.874	41.863	-28.126	74.000	4.011	PK
4			7179.500	45.586	36.681	-28.414	74.000	8.904	PK

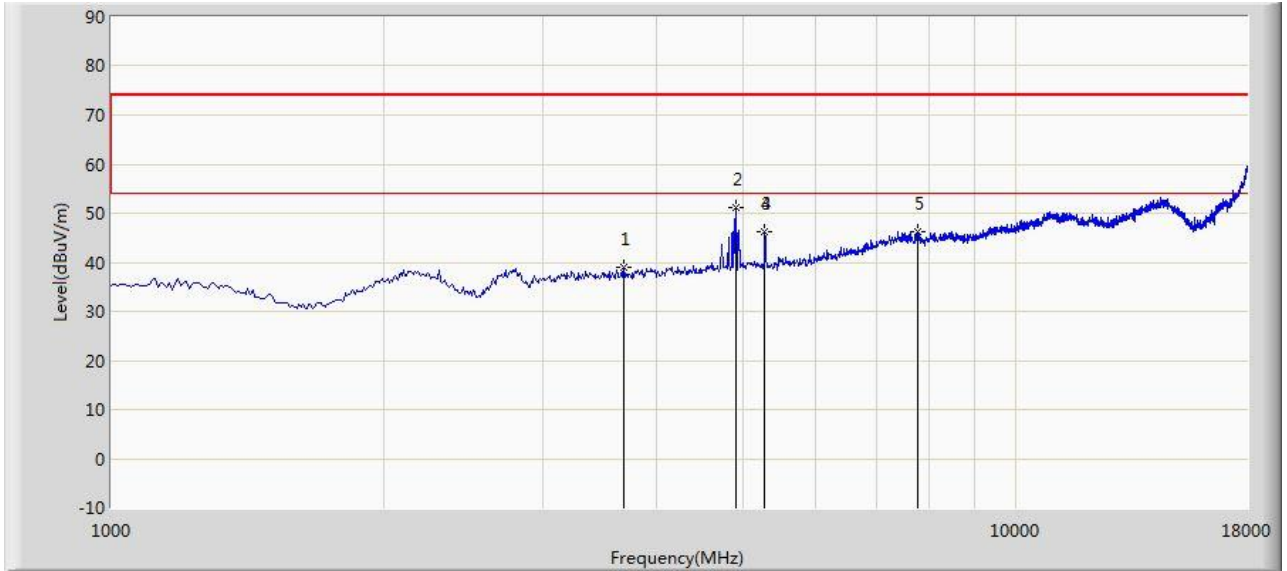


Product Service

1 GHz to 18 GHz

Tx: 2449.5MHz

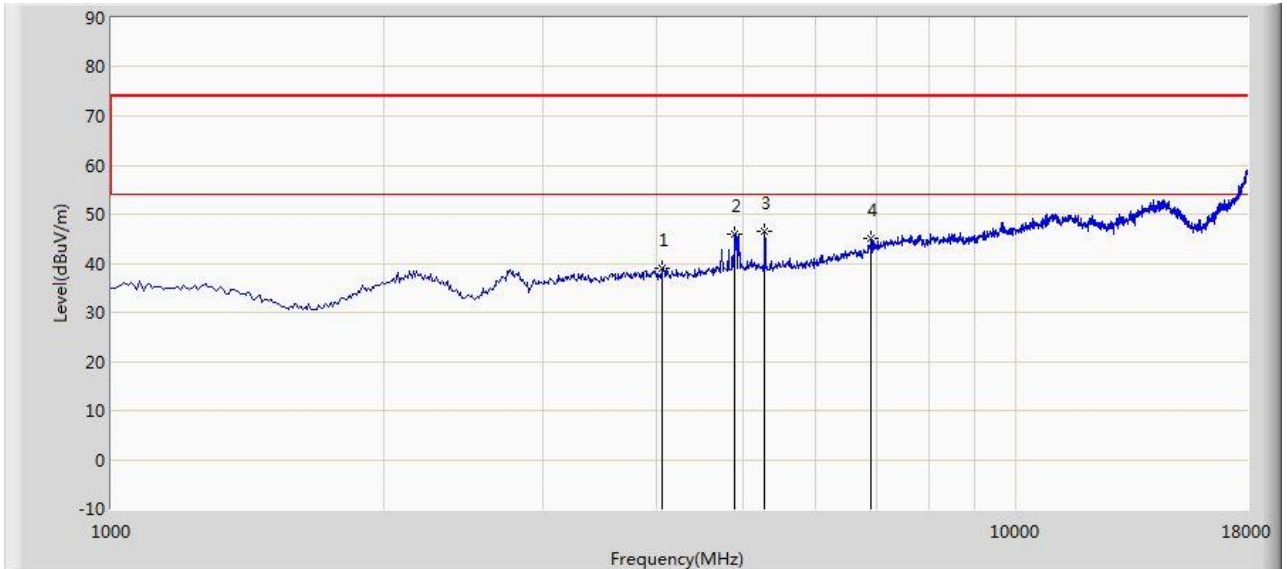
Horizontal Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			3686.000	39.106	38.725	-34.894	74.000	0.381	PK
2		*	4901.500	51.105	47.609	-22.895	74.000	3.496	PK
3			5275.500	46.193	42.182	-27.807	74.000	4.011	PK
4			5275.500	46.193	42.182	-27.807	74.000	4.011	PK
5			7774.500	46.149	36.835	-27.851	74.000	9.314	PK



Vertical Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			4068.500	39.047	37.777	-34.953	74.000	1.270	PK
2			4884.500	45.959	42.435	-28.041	74.000	3.524	PK
3		*	5275.500	46.453	42.442	-27.547	74.000	4.011	PK
4			6916.000	45.095	37.343	-28.905	74.000	7.752	PK

Remark: Form the peak reading test found the emission below the AV limit, so the average (AV) test doesn't need to be performed.

Limit Clause

15.249 (a) and A2.9

Fundamental Frequency (MHz)	Field Strength of Harmonics (microvolts/meter)
902 to 928	500
2400 to 2483.5	500
5725 to 5875	500
24000 to 24250	2500

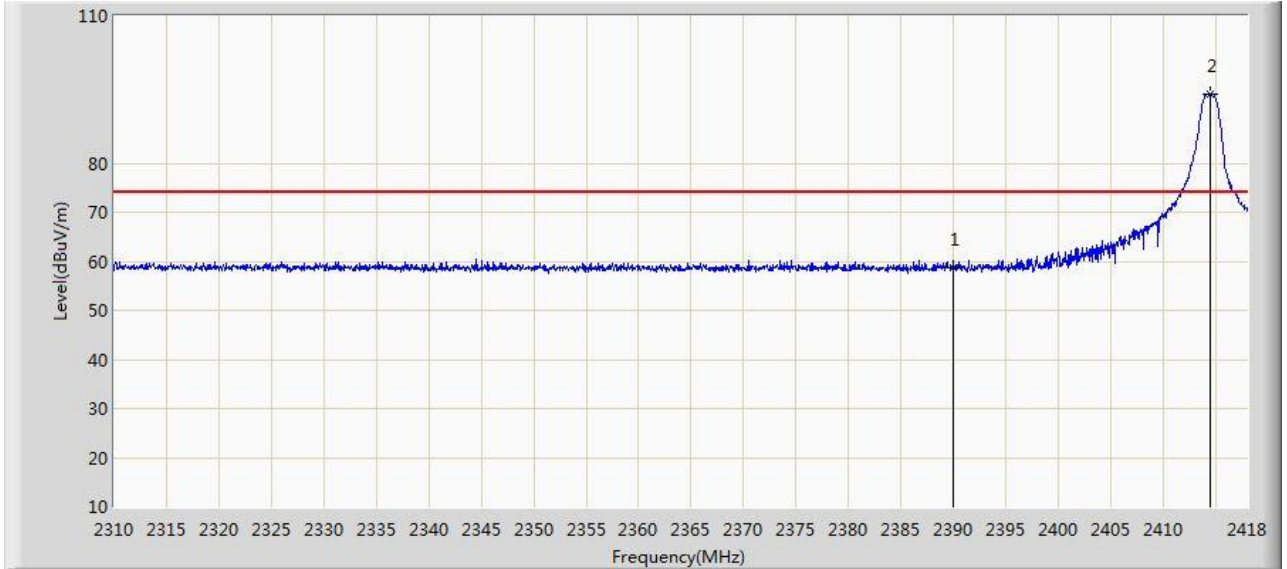
15.249 (d), 15.209

Frequency (MHz)	Field Strength (microvolts/meter)
0.009 to 0.490	2400/F (kHz)
0.490 to 1.705	24000/F (kHz)
1.705 to 30.0	30
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

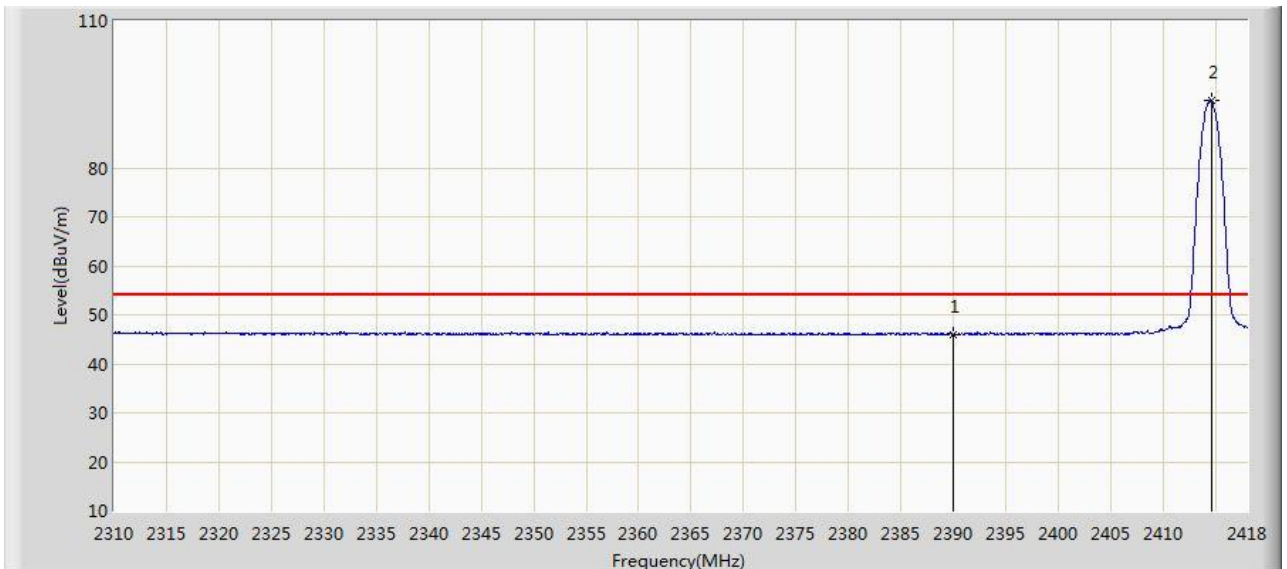


Product Service

Band Edge Emissions
Tx: 2414.5MHz
 Horizontal Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	58.657	27.090	-15.343	74.000	31.567	PK
2		*	2414.436	94.111	62.579	N/A	N/A	31.532	PK

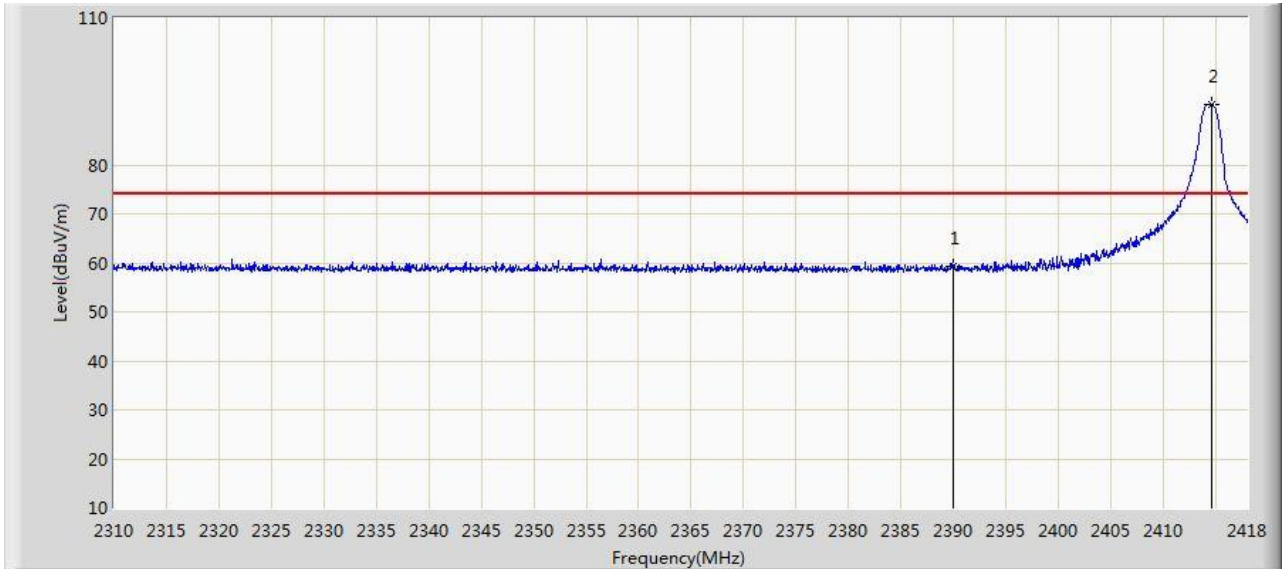


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	45.997	14.430	-8.003	54.000	31.567	AV
2		*	2414.598	93.723	62.191	N/A	N/A	31.532	AV

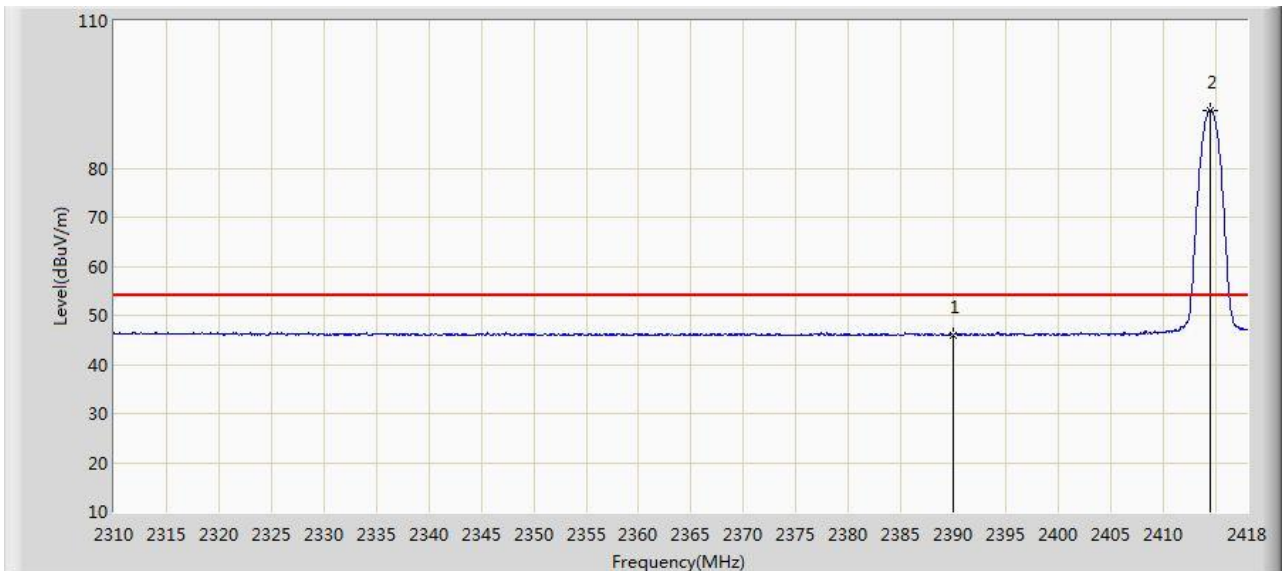


Product Service

Tx: 2414.5MHz
Vertical Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	59.141	27.574	-14.859	74.000	31.567	PK
2		*	2414.598	92.331	60.799	N/A	N/A	31.532	PK

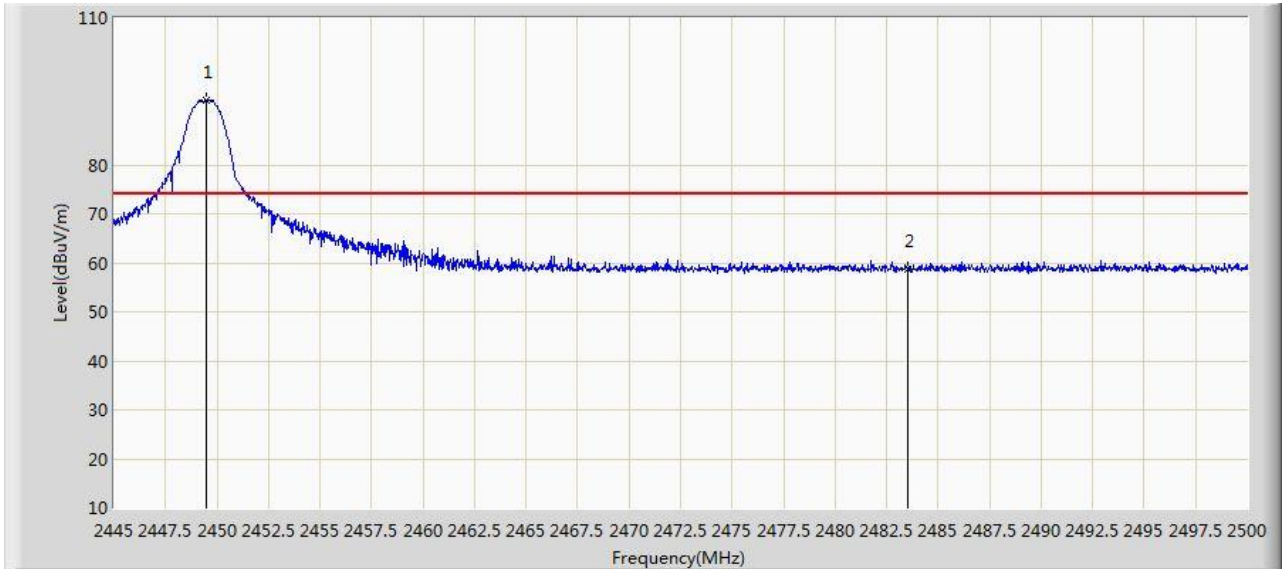


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.029	14.462	-7.971	54.000	31.567	AV
2		*	2414.436	91.862	60.330	N/A	N/A	31.532	AV

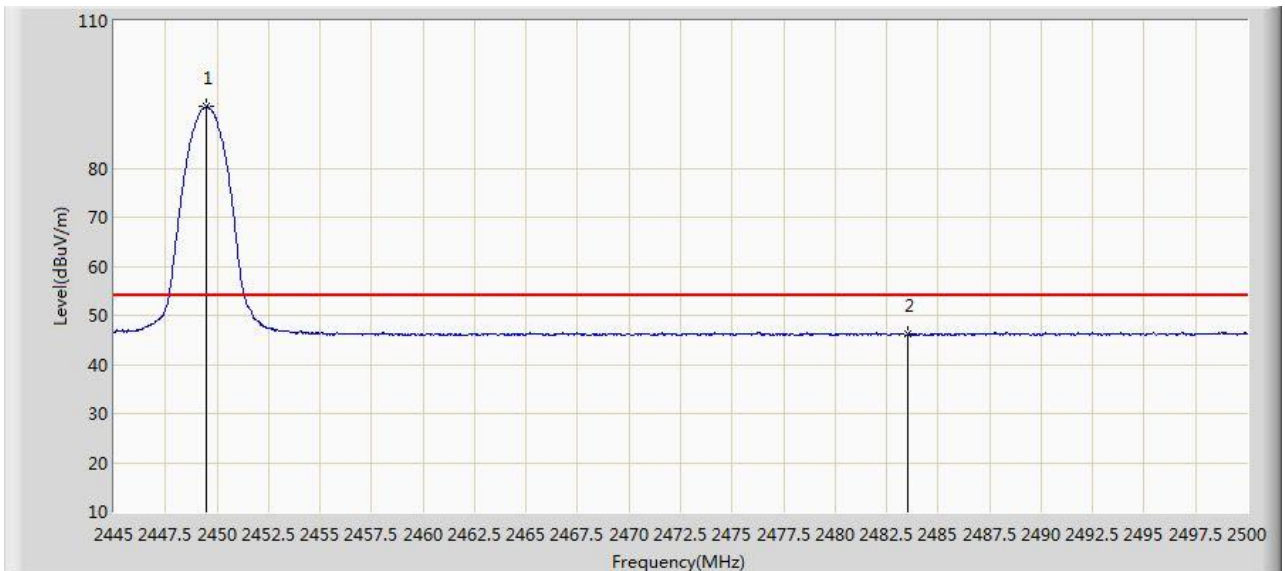


Product Service

Tx: 2449.5MHz
Horizontal Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2449.510	93.126	61.638	N/A	N/A	31.487	PK
2			2483.500	58.775	27.192	-15.225	74.000	31.584	PK

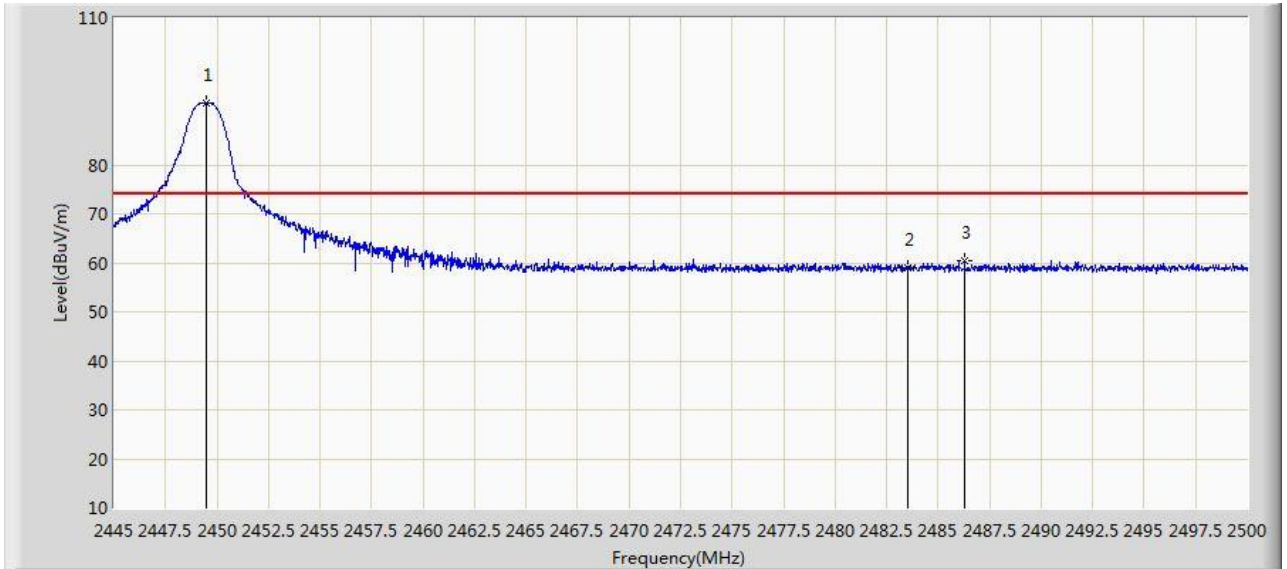


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2449.510	92.487	60.999	N/A	N/A	31.487	AV
2			2483.500	46.120	14.537	-7.880	54.000	31.584	AV

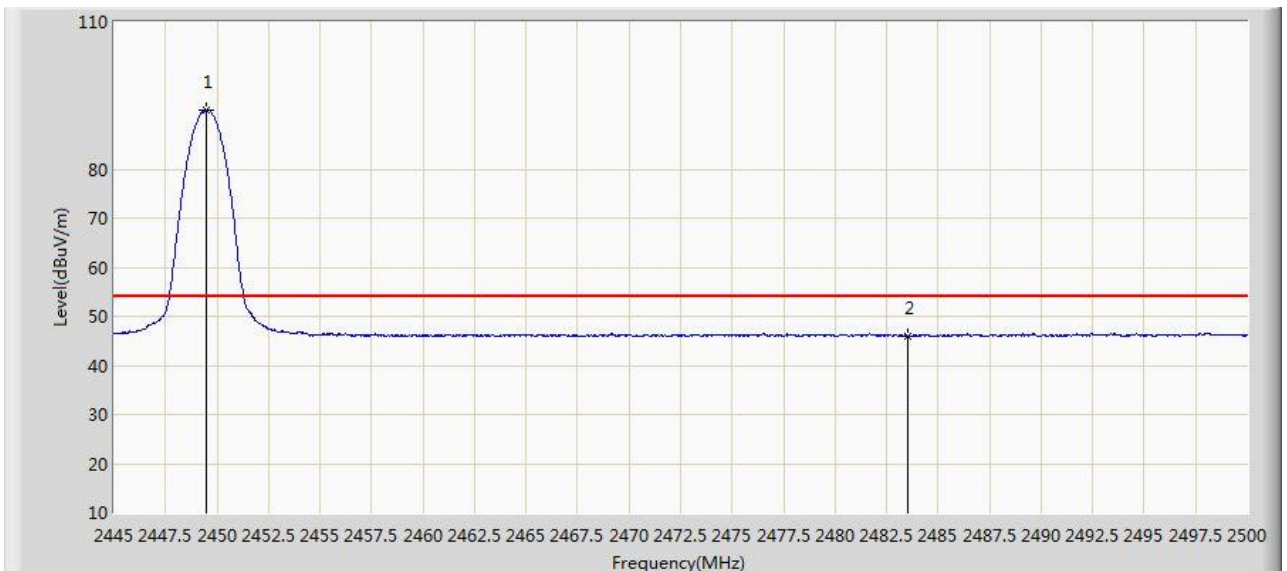


Product Service

Tx: 2449.5MHz
Vertical Polarisation



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2449.510	92.568	61.080	N/A	N/A	31.487	PK
2			2483.500	58.986	27.403	-15.014	74.000	31.584	PK
3			2486.278	60.505	28.912	-13.495	74.000	31.594	PK



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2449.510	92.114	60.626	N/A	N/A	31.487	AV
2			2483.500	46.026	14.443	-7.974	54.000	31.584	AV



Product Service

2.4 OCCUPIED BANDWIDTH

2.4.1 Specification Reference

FCC CFR 47 Part 2: 2008, Clause 2.1049(h) / RSS 210 Issue 9

2.4.2 Equipment Under Test and Modification State

VEIL INTELLIGENT TOILET-WALL HUNG K-5402 set up the 2.4GHz Tx- Modification State 0

2.4.3 Date of Test

May 17, 2016

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Test Procedure

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 2: 2008.

Connect EUT's antenna terminal to the spectrum analyser via a low loss cable with transmitting mode.

Adjust the centre frequency of the spectrum analyser on the frequency be measured, and set for peak detector mode; max hold trace mode RBW=100 KHz and VBW=300 KHz.

The span of the analyzer approximately 2 to 3 times the channel bandwidth shall be set to capture all products of the modulation process, including the emission skirts. Use the marker-to-peak function to set the marker to the peak of the emission.

Use the OBW function to measure -20db bandwidth and 99% emission bandwidth..

2.4.6 Environmental Conditions

Ambient Temperature	24.4°C
Relative Humidity	58.0%



Product Service

2.4.7 Test Results

Frequency (MHz)	20dB Occupied Bandwidth (kHz)
2414.5	789.6
2434.5	768.6
2449.5	779.9

Frequency (MHz)	99% Occupied Bandwidth (kHz)
2414.5	829.74
2434.5	730.64
2449.5	759.42





Product Service





Product Service

SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of Test Instruments

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2016/11/03
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2016/11/03
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2016/11/03
Temperature/Humidity Meter	Ouleinuo	N/A	MRTSUE06114	1 year	2016/11/20

Radiated Emission

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	E4447A	MRTSUE06028	1 year	2016/12/08
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2016/11/03
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2017/04/16
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2017/03/29
Loop Antenna	Schwarzbeck	FMZB1519	MRTSUE06025	1 year	2016/12/14
TRILOG Antenna	Schwarzbeck	VULB9162	MRTSUE06022	1 year	2016/11/07
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06023	1 year	2016/11/07
Broadband Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06024	1 year	2017/01/05
Temperature/Humidity Meter	Ouleinuo	N/A	MRTSUE06115	1 year	2016/11/20



Product Service

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 9kHz-1000MHz	4.18dB
Uncertainty for Radiated Emission in 3m chamber 1000MHz-40000MHz	4.76dB
Uncertainty for Conducted Emission 150KHz-30MHz	3.46dB



Product Service

SECTION 4

DISCLAIMERS AND COPYRIGHT



Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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