Prüfbericht - Nr.: *Test Report No.:*	**15023066 001**		**Seite 1 von 34** *Page 1 of 34*
Auftraggeber: *Client:*	**Intex Development Co., Ltd** 9th Floor Dah Sing Financial Centre 108 Gloucester Road, Wanchai Hong Kong		
Gegenstand der Prüfung: *Test item:*	**Electric Air Pump**		
Bezeichnung: *Identification:*	**AP619DW**	**Serien-Nr.:** *Serial No.:*	**N/A**
Wareneingangs-Nr.: *Receipt No.:*	**153068217**	**Eingangsdatum:** *Date of receipt:*	**21.11.2006**
Prüfort: *Testing location:*	**Refer to section 1.1**		
Prüfgrundlage: *Test specification:*	**FCC Part 15, Subpart B**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (Shanghai) Co., Ltd.**		

geprüft/ *tested by:* **kontrolliert**/ *reviewed by:*

Datum / Date	Name/Stellung / Name/Position	Unterschrift / Signature	Datum / Date	Name/Stellung / Name/Position	Unterschrift / Signature
19.10.2007	Kong Xiangming/PE	Kong Xiangming	19.10.2007	Lu Xinhua/TC	Lu Xinhua

Sonstiges/ *Other Aspects:* **FCC ID SVYAP619DWT**

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

TEST SUMMARY

5.1.1 CONDUCTED EMISSIONS
Result:
Passed

5.1.2 SPURIOUS RADIATED EMISSIONS
Result:
Passed

Contents

1 Test Sites

1.1 Test Facilities

Laboratory: TÜV Rheinland (Shanghai) Laboratory
Address: Building 2, No. 777 Guangzhong Road West, Shanghai 200072, P.R. China

The used test equipments below 1GHz are in accordance with CISPR 16-1 series standards for measurement of radio interference.

1.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

No.	Equipment	Model	Serial no.	Cal. due date
1.	Spectrum analyzer	FSP30	100192	10.06.2008
2.	EMI test receiver	ESIB26	100227	10.06.2008
3.	EMI test receiver	ESCI	100280	03.12.2007
4.	Artificial mains network	NNB 42	04/10048	29.02.2008
5.	Broadband antenna	BTA-H	040005H	20.03.2008
6.	Double ridged broadband horn antenna	BBHA 9120 D	9120D-433	21.06.2007
7.	Broadband coaxial preamplifier	BBV 9718	9718-012	12.04.2008
8.	Broadband coaxial preamplifier	BBV 9740	9740-110	12.04.2008
9.	3m modified semi-anechoic chamber	SAC	-	12.02.2010

2 General Product Information

2.1 Product Function and Intended Use

The equipment under test (EUT) is an electric air pump operating at 433.920MHz.

FCC ID SVYAP619DWT

Model	Product description
AP619DW	Electric Air Pump

2.2 Circuit Description

After voltage is dropped through R and C, and is stabilized (12V, 5V) by the voltage regulator, this control board is power supplies to the control IC. The receiver module adopts a piece of single chip IC RX 3310A which receives ASK (Amplitude-Shift-Keying) wireless digital signal transfer. The antenna receives the carrier signal which is then filtered through R and C, then the signal is amplified by RF amplifier and mixed by the mixer, the oscillating signal from the oscillator is to be compared with the received signal, the intermediate frequency (1.8MHz) signal is gained as a result. The signal is then to be amplified by the IF amplifier in the emitter coupled pair with dual input symmetrically and single output, filtered by the IF filter, Limited by the voltage limiter. The message is decoded by the special chip F9444zz, the solenoid valve and the motor switches are controlled by the pins, and cycling self-lock control of the motor is done by the chip F9444zz, auto-off control of the motor is realized with RC delay circuit.

2.3 Ratings and System Details

		Receiver
Frequency range	:	433.920MHz
Crystal Tolerance		+/-100kHz
Number of channels	:	1
Type of antenna	:	Integral antenna
Power supply	:	AC 120V
Ports	:	AC mains
Protection Class	:	I
Classification of device		B

2.4 Independent Operation Modes

The basic operation modes are:
- Electric Air Pump: Air inflation and deflation of the pump can be controlled by the associated transmitter or by pressing the inflation, adjusting and deflation button at the front panel of the EUT.

For further information refer to User Manual.

2.5 Submitted Documents

The submitted documents are listed as follow:

- Circuit diagram
- Block diagram
- User manual
- Label artwork

2.6 Related Submittal(s) Grants

This is a single application for certification of the Receiver.

3 Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible emission level. The test conditions were adapted accordingly in reference to the instructions for use.

3.2 Test Operation and Test Software

Test operation should refer to test methodology.

- There was no special software to exercise the device.

3.3 Special Accessories and Auxiliary Equipment

None.

3.4 Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the Circuit Diagram or the Technical Construction File. No additional measures were employed to achieve compliance.

4 Test Methodology

4.1 Conducted Emission

The conducted emission measurements were performed according to the procedures in ANSI C63.4-2003.

The equipment under test (EUT) was placed on an 80 cm high non-conducting table above the reference ground plane, and the vertical conducting plane is located 40cm to the rear of EUT. Each current-carrying conductor of EUT power cord except the ground conductor will be connected to the 50µH/50 ohms LISN to the input power source. The excess power cord between EUT to LISN shall be folded back and forth parallel to the lead so as to form a bundle with a length of 0.3m to 0.4m.

The operating mode and cable position of EUT will be arranged to product the highest emission, and then the RF voltage and the frequency of the highest amplitude relative to the limit will be recorded as final result.

4.2 Radiated Emission

The radiated emission measurements were performed according to the procedures in ANSI C63.4-2003.

The equipment under test (EUT) was placed on an 80 cm high turntable, and measurement distance is 3 meters. During the testing, the EUT was operated standalone and arranged for maximum emissions.

The investigation is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

4.3 Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the EMI test receiver or spectrum analyzer to the factors associated with antenna correction factor, cable loss and preamplifier.

The equation is expressed as follow:

FS = R + AF + CF– PA

Where FS = Field strength in dBuV/m at 3 meters.
R = Reading of spectrum analyzer in dBuV.
AF = Antenna factor in dB/m.
CF = Cable attenuation Factor in dB.
PA = Preamplifier factor in dB.

5 Test Result

5.1.1 Conducted Emissions

Result:	**Passed**

Date of testing : 18.06.2007
Test Specification : FCC Part 15 Section 15.107
Test Method : ANSI 63.4-2003
Measurement Location : Shielded room
Detector Function : Quasi-peak, Average
Measurement BW : 9 kHz
Supply Voltage : AC 120V, 60Hz
Measuring Frequency Range : 0.15-30MHz

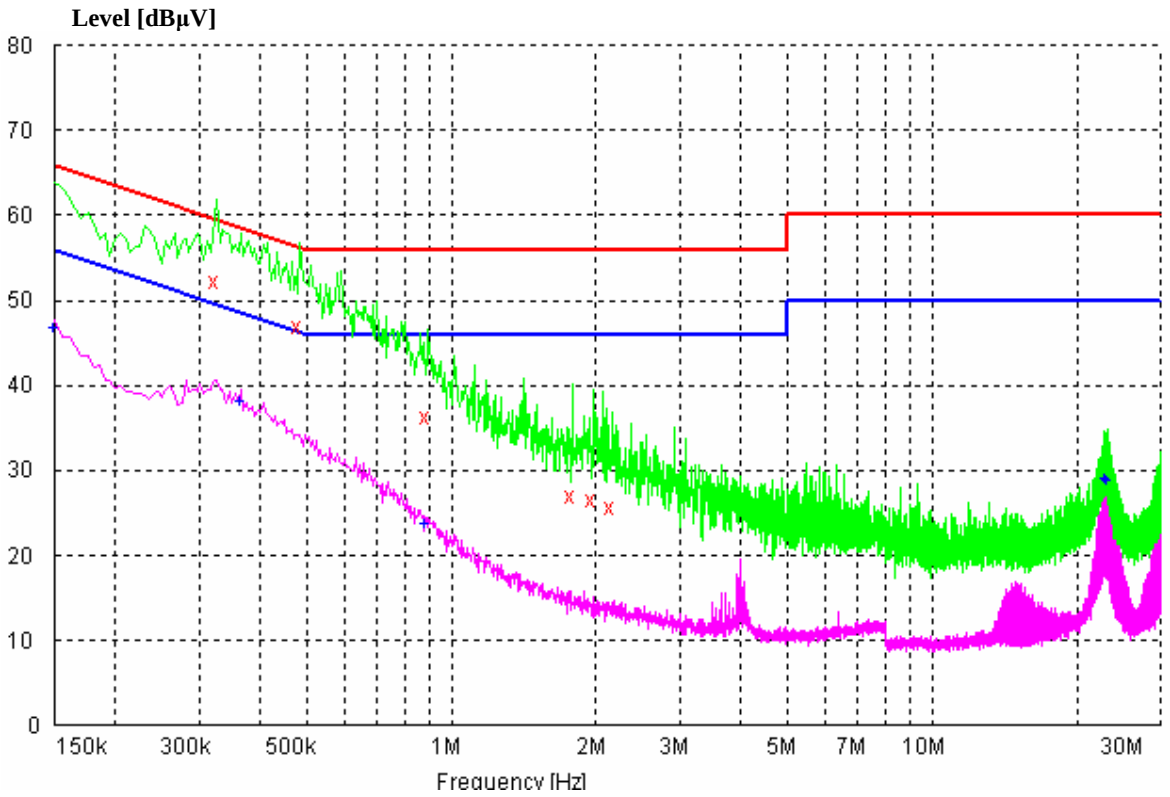
Limit Section 15.107

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
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.

The following figures and tables were those measured by an automatic measuring system. Both quasi-peak and average value were measured. Quasi-peak and average value were measured and listed respectively where they had a maximum in previous scanning survey. In the following figures, "×" means quasi-peak result and "+" means average result which was measured in final measurement.

Figure 1: Spectral diagrams, Conducted emission, 150kHz - 30MHz, L



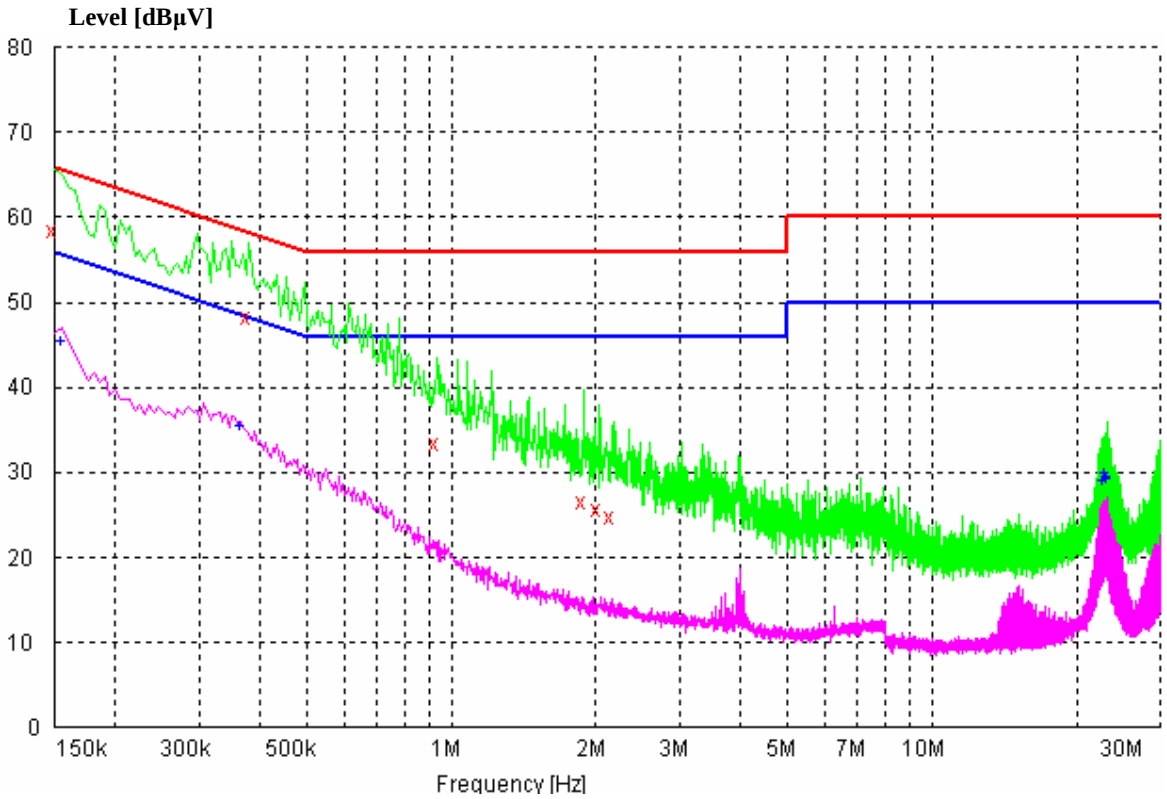
Final quasi-peak measurement results:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line
0.325	52.20	20.3	59.6	7.4	L1
0.485	46.90	20.5	56.3	9.4	L1
0.895	36.20	20.3	56.0	19.8	L1
1.790	27.00	20.3	56.0	29.0	L1
1.970	26.40	20.3	56.0	29.6	L1
2.160	25.70	20.3	56.0	30.3	L1

Final average measurement results:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line
0.150	46.80	20.4	56.0	9.2	L1
0.365	38.10	20.4	48.6	10.5	L1
0.885	23.60	20.3	46.0	22.4	L1
22.980	29.00	21.1	50.0	21.0	L1
23.085	28.90	21.1	50.0	21.1	L1
23.290	28.80	21.1	50.0	21.2	L1

Figure 2: Spectral diagrams, Conducted emission, 150kHz - 30MHz, N



Final quasi-peak measurement results:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line
0.150	58.50	20.2	66.0	7.5	N
0.380	48.30	20.3	58.3	10.0	N
0.935	33.40	20.4	56.0	22.6	N
1.890	26.40	20.4	56.0	29.6	N
2.030	25.70	20.4	56.0	30.3	N
2.175	24.70	20.4	56.0	31.3	N

Final average measurement results:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line
0.155	45.40	20.2	55.7	10.4	N
0.365	35.50	20.3	48.6	13.1	N
22.880	29.00	21.1	50.0	21.0	N
22.985	29.80	21.1	50.0	20.2	N
23.190	29.20	21.1	50.0	20.8	N
23.295	29.40	21.1	50.0	20.6	N

5.1.2 Spurious Radiated Emissions

Result:	**Passed**

Date of testing	:	07.06.2007
Test specification	:	FCC Part 15 Section 15.109
Test method	:	ANSI 63.4-2003
Measurement location	:	Semi anechoic chamber
Measurement distance	:	3m
Detector	:	Quasi-peak(30-1000MHz)/Average(1000MHz-45000MHz)
Measurement BW	:	120 kHz(below 1GHz), 1MHz(above 1GHz)
Supply voltage	:	AC 120V, 60Hz
Measuring frequency range	:	30-4500MHz

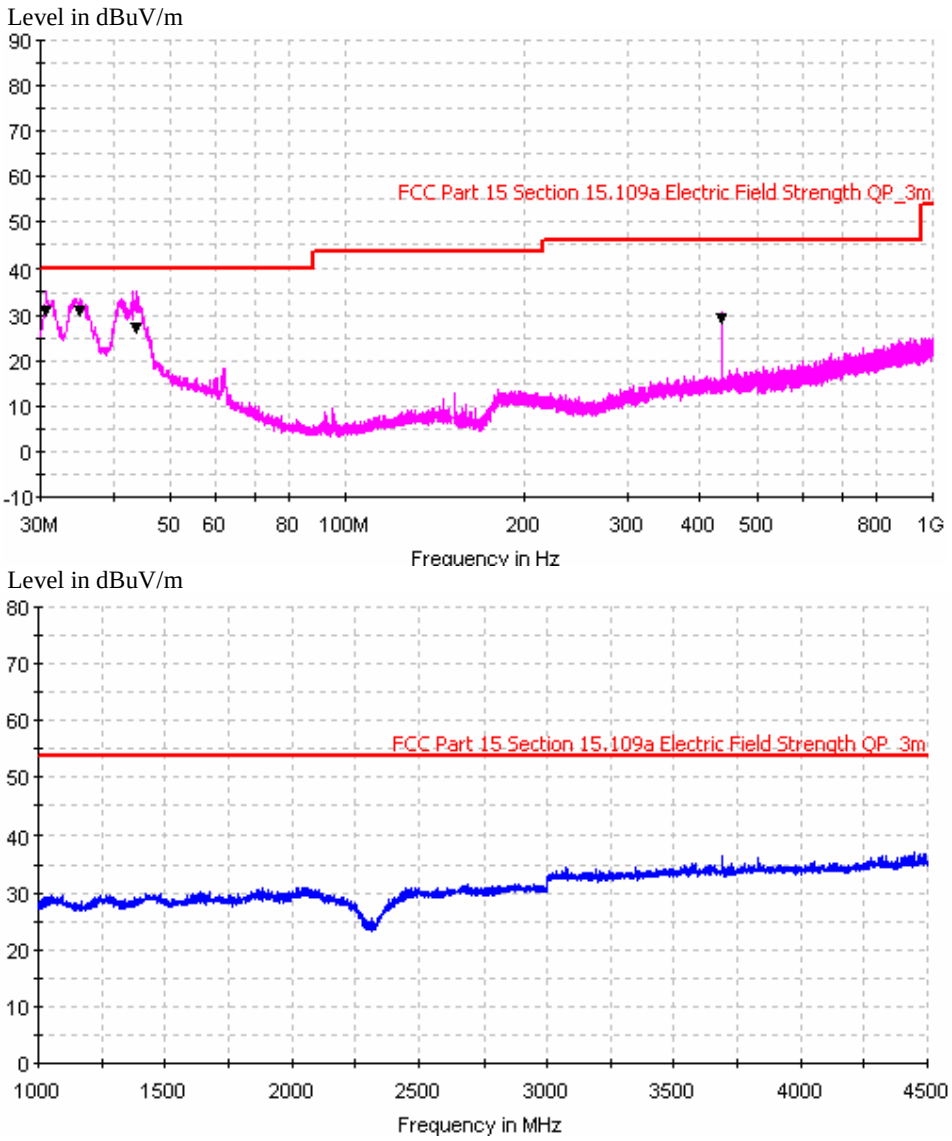
Limit Section 15.109

The field strength of radiated emissions from unintentional radiators at a distance of 3 meters:

Frequency (MHz)	Field strength (microvolt/meter)	Field strength (dBµV/m)	Measurement distance (meters)
30-88	100	20*log(100) = 40.0	3
88-216	150	20*log(150) = 43.5	3
216-960	200	20*log(200) = 46.0	3
960-4500	500	20*log(500) = 54.0	3

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector and above 1000 MHz are based on the measurements employing an average detector.
The following figures and tables were those measured by an automatic measuring system. In final measurement, quasi-peak value were measured and listed respectively where they had a maximum in previous scanning survey below 1000MHz. There is no peak found above 1000MHz.

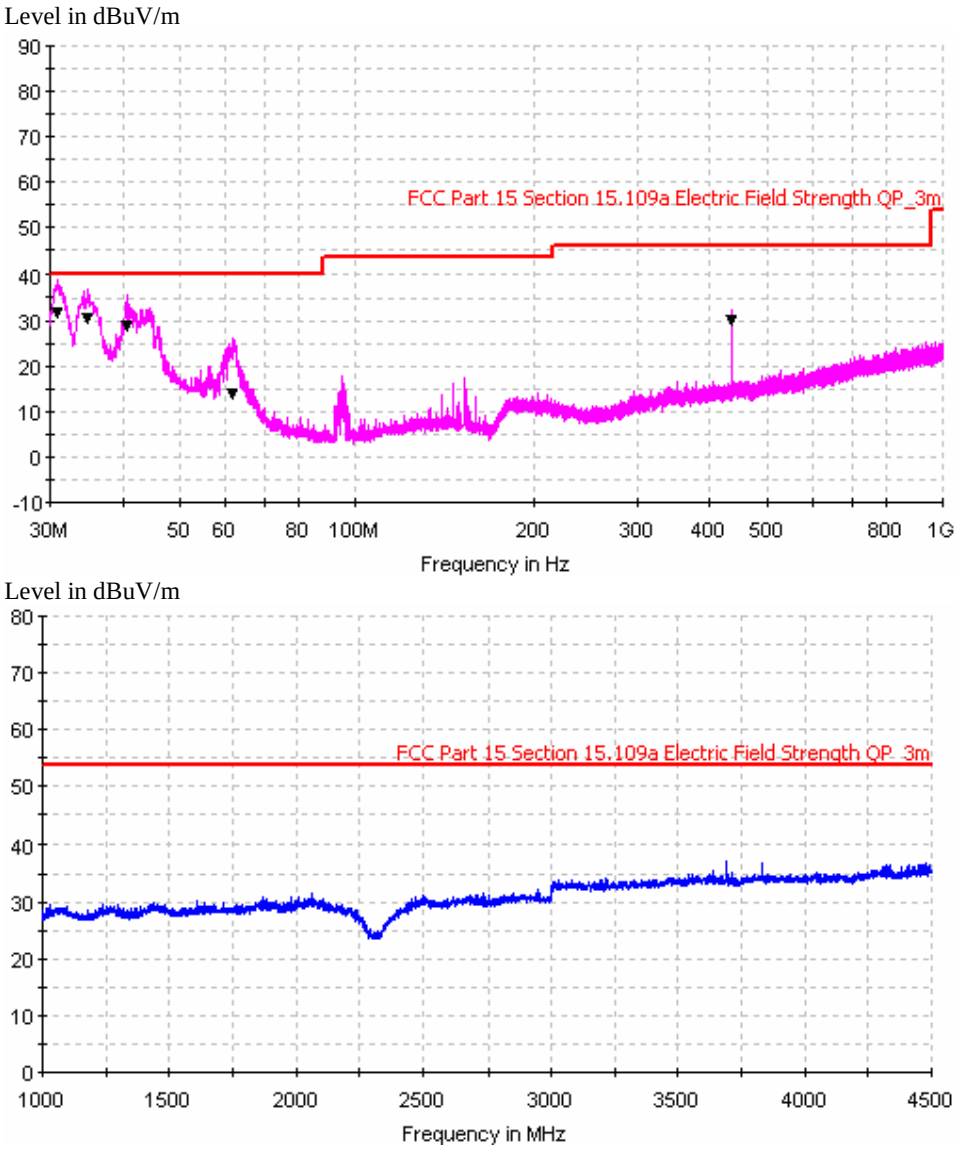
Figure 3: Spectral diagrams and measurement results, Horizontal polarization



Final Quasi-peak measurement result:

Frequency (MHz)	Quasi-Peak (dBµV/m)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)	Polarization
30.705	30.6	9.4	40.0	9.4	H
35.170	30.7	8.1	40.0	9.3	H
43.689	27.1	4.0	40.0	12.9	H
435.786	29.0	0.5	46.0	17.0	H

Figure 4: Spectral diagrams and measurement results, Vertical polarization



Final Quasi-peak measurement result:

Frequency (MHz)	Quasi-Peak (dBµV/m)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)	Polarization
30.823	31.6	9.4	40.0	8.4	V
34.759	30.4	8.2	40.0	9.6	V
40.634	28.7	5.5	40.0	11.3	V
61.784	13.8	-4.6	40.0	26.2	V
435.786	29.7	0.5	46.0	16.3	V

6 Photographs of the Test Set-Up

Photograph 1: Set-up for conducted emissions

Photograph 2: Set-up for spurious radiated emissions

7 List of Tables

8 List of Figures

9 List of Photographs