

FCC PART 15B

TEST REPORT

For

HENAN ESHOW ELECTRONIC COMMERCE CO., LTD.

Room 722, Sanjiang Building, No.170 Nanyang Road, Huiji District,Zhengzhou, Henan, China

FCC ID:2AAR8TW102

Report Type: Original Report	Product Type: Window intercom,Interphone
Report Number:	RDG201009001-00
Report Date:	2020-12-04
Reviewed By:	Redick Zhang EMC Engineer 
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GENERAL INFORMATION**Product Description for Equipment under Test (EUT)**

EUT Name:		Window intercom,Interphone
EUT Model:		TW102
Multiple Models:		TW101, TW103, TW104,TW105, TW106, TW107, TW108, TW109, TW110,TW111, RT9908
Rated Input Voltage:		12Vdc
Adapter Information	Model:	DK5-120-0500
	Input:	100-240V, 50/60Hz, 0.2A
	Output:	12.0Vdc/0.5A
The Highest Operating Frequency:		below 108MHz
I/O Ports:		3.5mm AUX /Audio
EUT Function:		Window intercom,Interphone
Serial Number:		RDG201009001-EM-S1
EUT Received Date:		2020.10.10
EUT Received Status:		Good

Note: The series product, modelsTW101, TW102, TW103, TW104,TW105, TW106, TW107, TW108, TW109, TW110,TW111, RT9908are electrically identical, the model TW102 was fully tested. They are the same product, the only differences are the brand name, trade name and model number for commercial purpose in market.

Objective

This report is prepared on behalf of *HENAN ESHOW ELECTRONIC COMMERCE CO., LTD.* in accordance with Part 2, Part J, and Part 15, Subpart A and B of the Federal Communications Commission's rules..

The objective is to determine the compliance of EUT with:
FCC Part 15B.

Related Submittal(s)/Grant(s)

No related submittal(s)/grant(s)

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

Measurement Uncertainty

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.55 dB, 200M~1GHz: 5.92 dB, 1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Temperature	±1°C
Humidity	±5%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier : CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol“△”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk “★”.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

Mode 1: Front Mic input

Mode 2: Back Mic input

Equipment Modifications

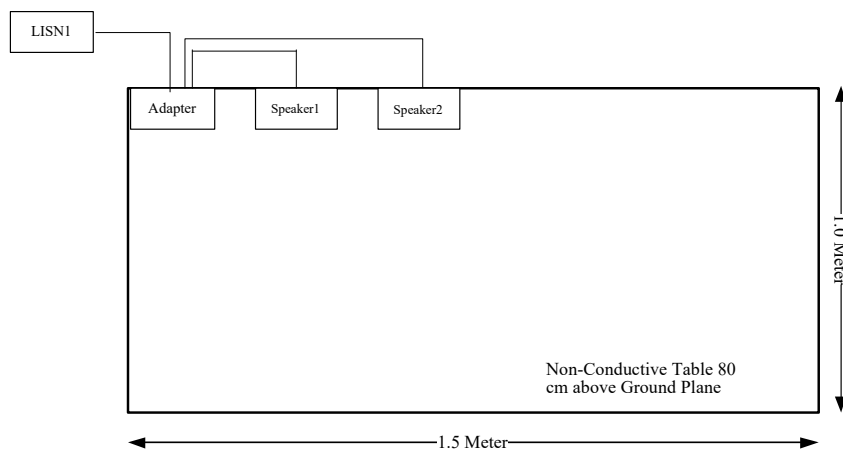
No modification was made to the EUT.

EUT Exercise Software

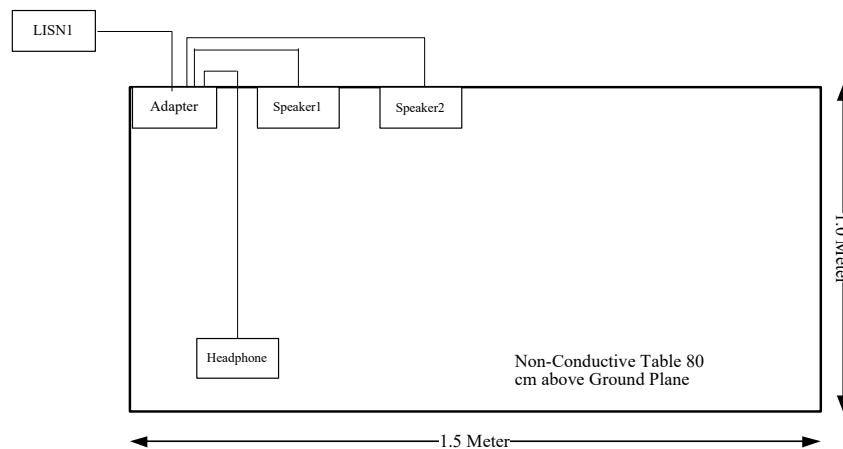
N/A

Block Diagram of Test Setup

Mode 1:



Mode 2



Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
BLU	MobilePhone	Koobee F3	N/A
N/A	Micphone	N/A	N/A
N/A	Speaker	N/A	N/A

Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
AUX Cable	No	No	1.5	Micphone	EUT AUX port
AUX Cable	No	No	0.8	EUT AUX port	Speaker

Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted emission					
R&S	LISN	ENV 216	101614	2020-09-12	2021-09-12
R&S	EMI Test Receiver	ESCI	101121	2020-07-07	2021-07-07
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2020-09-05	2021-09-05
R&S	Test Software	EMC32	Version 9.10.00	N/A	N/A
Radiated emissions below 1GHz					
Sunol Sciences	Antenna	JB3	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

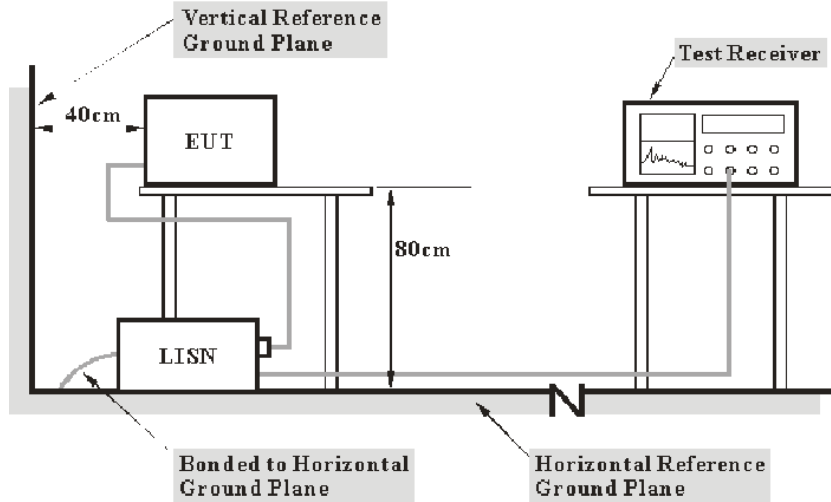
Temperature:	22.9~27.4 °C
Relative Humidity:	41~59%
ATM Pressure:	100.7~101.3kPa
Tester:	Asa Chen, Barry Yang
Test Date:	2020.10.31~2020.11.19

SUMMARY OF TEST RESULTS

SN	Rule and Clause	Description of Test	Test Result
1	FCC §15.107	Conducted emissions	Compliance
2	FCC §15.109	Radiated emissions	Compliance

1 - CONDUCTED EMISSIONS

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

FrequencyRange	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result (QuasiPeak or Average) = Meter Reading + Corr.

Note:

Corr. = Cable loss + Factor of coupling device

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

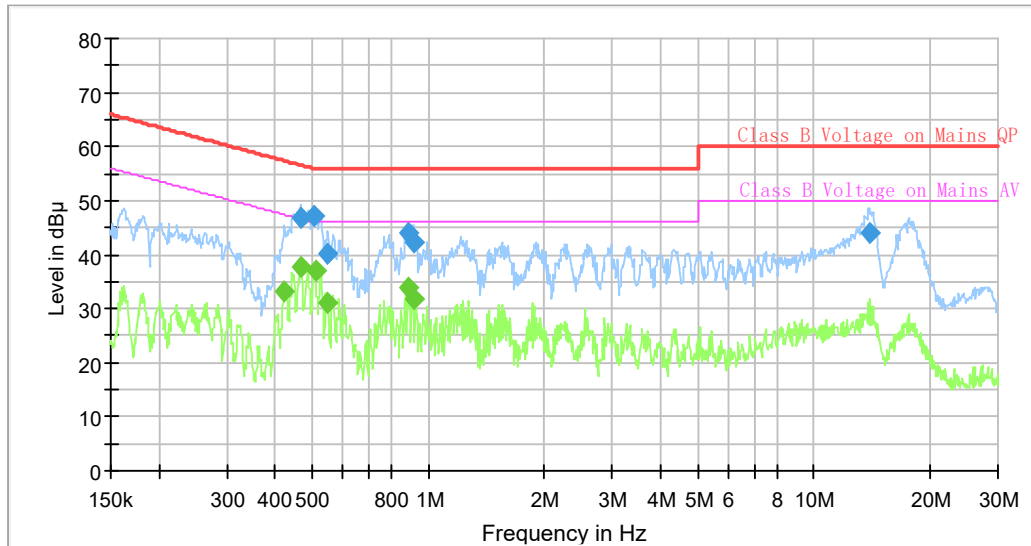
Margin = Limit – Result

Except for the recorded frequency points (no more than 6), the remaining frequency points have a margin more than 20dB.

Test Data

Please refer to following table and plots:

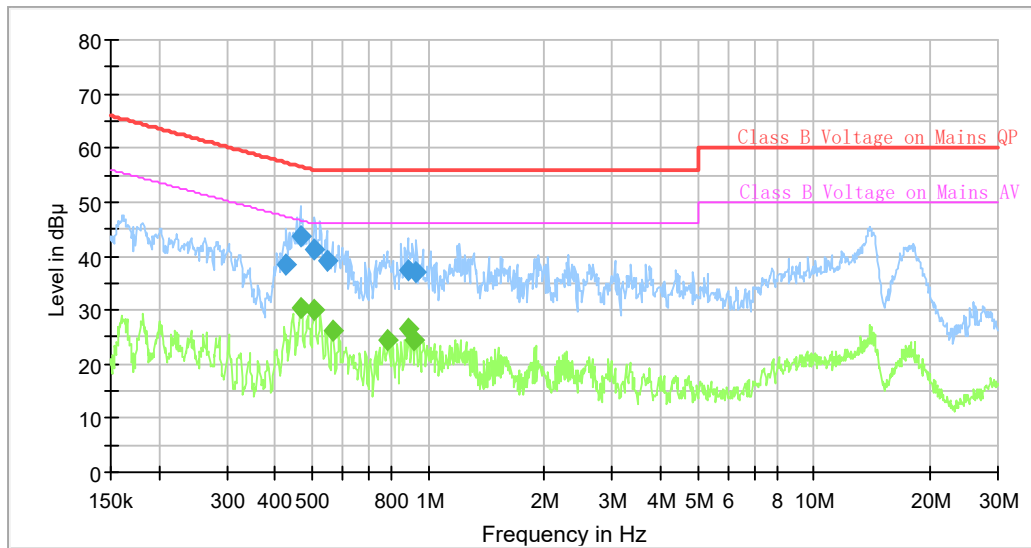
Model Number: TW102
 Port: L
 Test Mode: Front Mic input
 Power Source: AC 120V/60Hz
 Note:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line
0.423284	---	47.38	14.12	9.000	L1
0.465358	---	46.60	8.86	9.000	L1
0.465358	46.97	56.60	9.63	9.000	L1
0.506536	47.23	56.00	8.77	9.000	L1
0.509069	---	46.00	8.84	9.000	L1
0.548615	40.26	56.00	15.74	9.000	L1
0.548615	---	46.00	14.78	9.000	L1
0.889970	44.19	56.00	11.81	9.000	L1
0.889970	---	46.00	12.04	9.000	L1
0.912443	42.42	56.00	13.58	9.000	L1
0.912443	---	46.00	14.32	9.000	L1
13.895537	43.99	60.00	16.01	9.000	L1

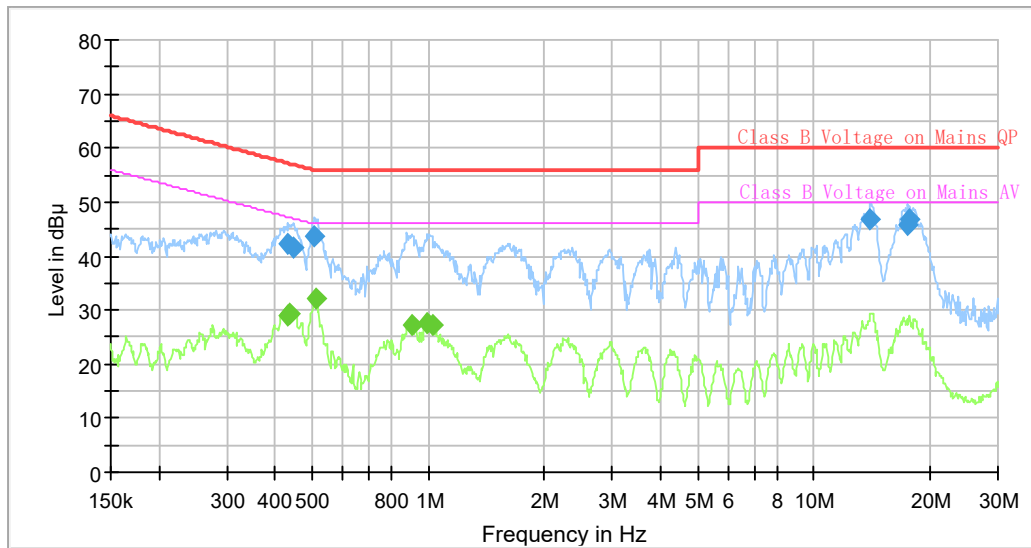
Model Number: TW102
Port: N
Test Mode: Front Mic input
Power Source: AC 120V/60Hz
Note:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line
0.427528	38.26	57.30	19.04	9.000	N
0.465358	---	46.60	16.08	9.000	N
0.465358	43.58	56.60	13.02	9.000	N
0.506536	---	46.00	16.05	9.000	N
0.506536	41.21	56.00	14.79	9.000	N
0.545885	39.23	56.00	16.77	9.000	N
0.565280	---	46.00	19.68	9.000	N
0.785640	---	46.00	21.67	9.000	N
0.885542	37.25	56.00	18.75	9.000	N
0.889970	---	46.00	19.57	9.000	N
0.912443	---	46.00	21.63	9.000	N
0.930829	37.16	56.00	18.84	9.000	N

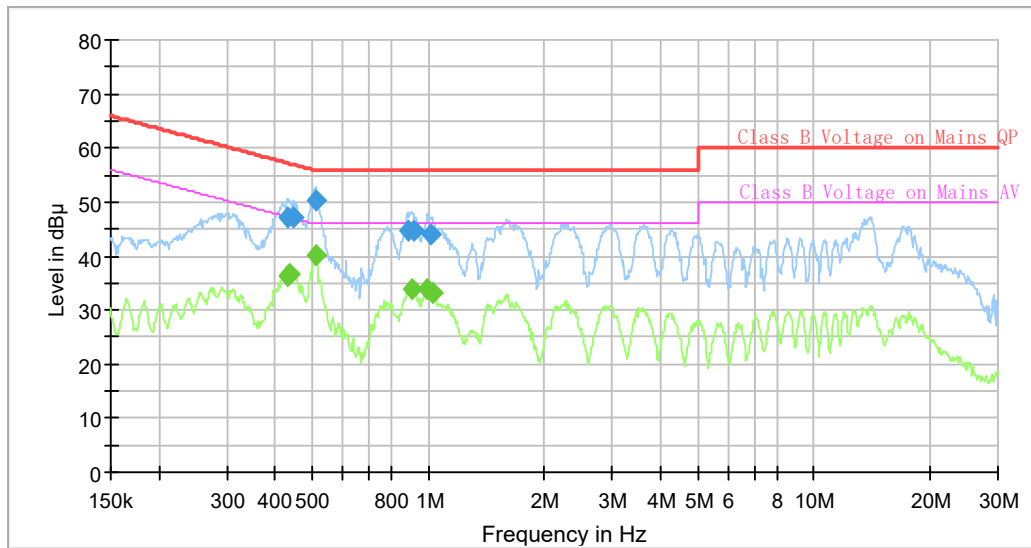
Model Number: TW102
Port: L
Test Mode: Front Mic input
Power Source: AC 230V/50Hz
Note:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line
0.431814	---	47.22	18.23	9.000	L1
0.431814	42.23	57.22	14.99	9.000	L1
0.438323	---	47.09	17.72	9.000	L1
0.447156	41.56	56.93	15.37	9.000	L1
0.506536	43.80	56.00	12.20	9.000	L1
0.509069	---	46.00	13.98	9.000	L1
0.903386	---	46.00	18.72	9.000	L1
0.998148	---	46.00	18.43	9.000	L1
1.023352	---	46.00	18.88	9.000	L1
14.034840	46.79	60.00	13.21	9.000	L1
17.478903	45.74	60.00	14.26	9.000	L1
17.742400	46.72	60.00	13.28	9.000	L1

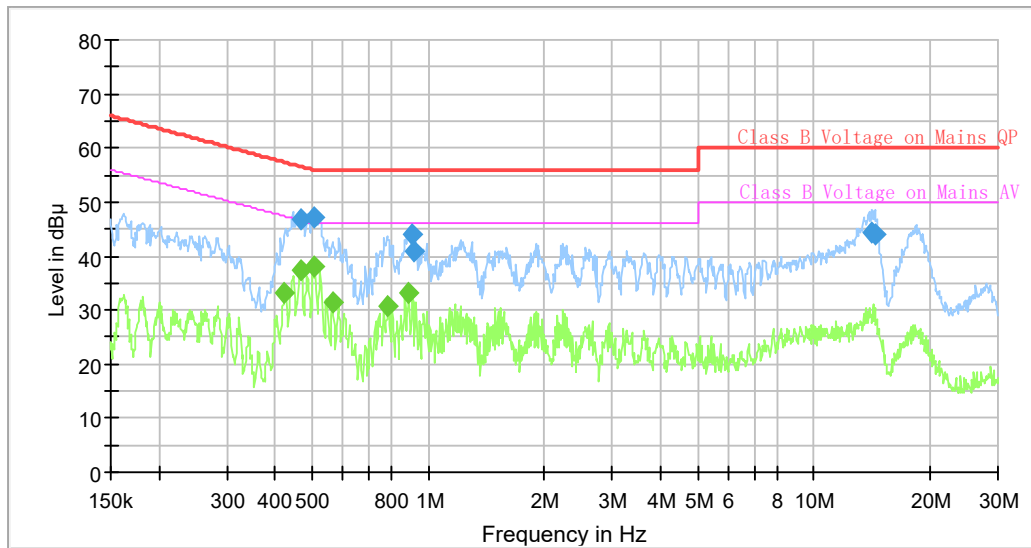
Model Number: TW102
 Port: N
 Test Mode: Front Mic input
 Power Source: AC 230V/50Hz
 Note:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line
0.429665	47.16	57.26	10.10	9.000	N
0.431814	---	47.22	10.99	9.000	N
0.436143	---	47.13	10.46	9.000	N
0.447156	47.31	56.93	9.62	9.000	N
0.509069	---	46.00	5.74	9.000	N
0.509069	50.25	56.00	5.75	9.000	N
0.885542	44.68	56.00	11.32	9.000	N
0.903386	---	46.00	12.26	9.000	N
0.917005	44.79	56.00	11.21	9.000	N
0.998148	---	46.00	12.12	9.000	N
1.013195	44.00	56.00	12.00	9.000	N
1.023352	---	46.00	12.78	9.000	N

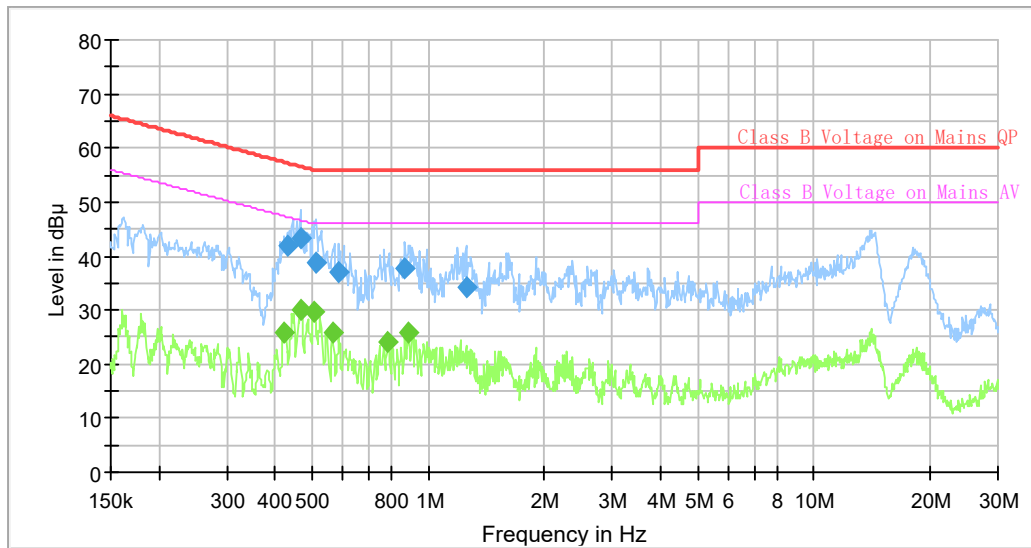
Model Number: TW102
Port: L
Test Mode: Back Mic input
Power Source: AC 120V/60Hz
Note:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line
0.423284	---	47.38	14.34	9.000	L1
0.465358	---	46.60	9.23	9.000	L1
0.465358	46.89	56.60	9.71	9.000	L1
0.506536	---	46.00	7.96	9.000	L1
0.506536	47.03	56.00	8.97	9.000	L1
0.565280	---	46.00	14.57	9.000	L1
0.785640	---	46.00	15.10	9.000	L1
0.889970	---	46.00	12.90	9.000	L1
0.907903	44.01	56.00	11.99	9.000	L1
0.912443	40.80	56.00	15.20	9.000	L1
14.175539	44.27	60.00	15.73	9.000	L1
14.389237	43.93	60.00	16.07	9.000	L1

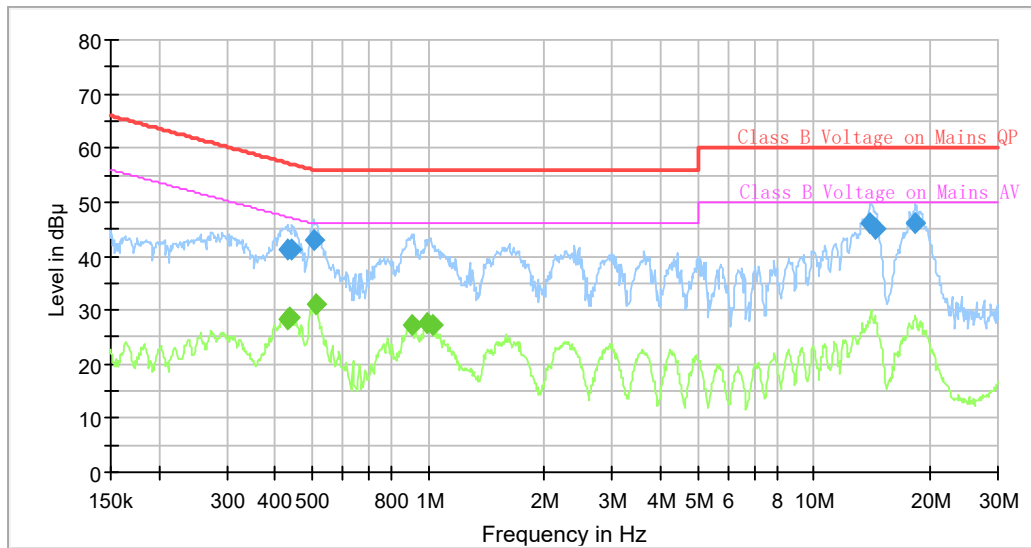
Model Number: TW102
Port: N
Test Mode: Back Mic input
Power Source: AC 120V/60Hz
Note:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line
0.423284	---	47.38	21.53	9.000	N
0.429665	41.93	57.26	15.33	9.000	N
0.465358	---	46.60	16.73	9.000	N
0.465358	43.20	56.60	13.40	9.000	N
0.506536	---	46.00	16.28	9.000	N
0.511614	38.74	56.00	17.26	9.000	N
0.565280	---	46.00	20.01	9.000	N
0.585364	37.14	56.00	18.86	9.000	N
0.785640	---	46.00	22.04	9.000	N
0.868051	37.57	56.00	18.43	9.000	N
0.889970	---	46.00	20.13	9.000	N
1.255549	34.38	56.00	21.62	9.000	N

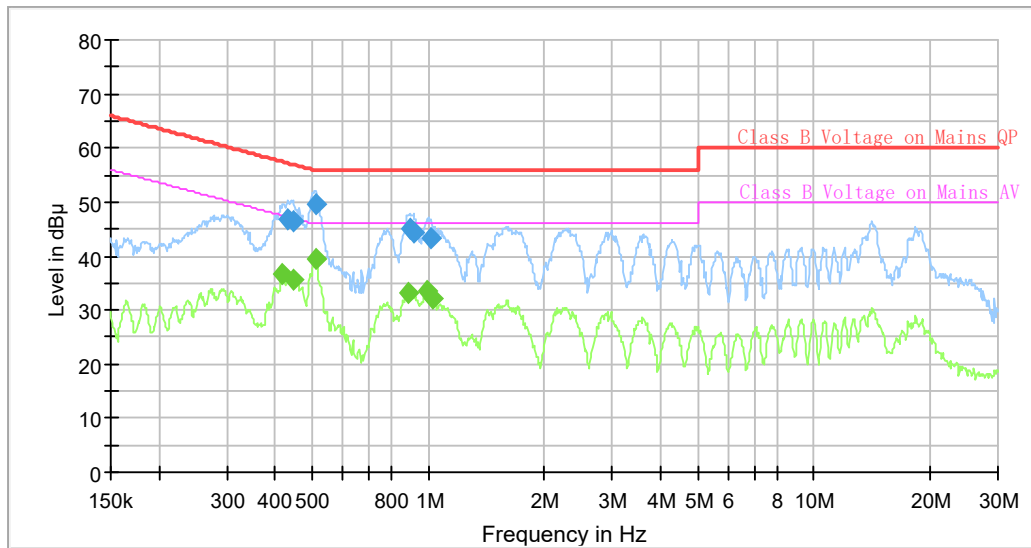
Model Number: TW102
 Port: L
 Test Mode: Back Mic input
 Power Source: AC 230V/50Hz
 Note:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line
0.431814	---	47.22	18.96	9.000	L1
0.431814	41.39	57.22	15.83	9.000	L1
0.438323	---	47.09	18.41	9.000	L1
0.442717	41.18	57.01	15.83	9.000	L1
0.504016	43.02	56.00	12.98	9.000	L1
0.511614	---	46.00	14.77	9.000	L1
0.903386	---	46.00	18.69	9.000	L1
0.998148	---	46.00	18.39	9.000	L1
1.023352	---	46.00	18.69	9.000	L1
14.034840	46.10	60.00	13.90	9.000	L1
14.389237	45.17	60.00	14.83	9.000	L1
18.372777	46.13	60.00	13.87	9.000	L1

Model Number: TW102
Port: N
Test Mode: Back Mic input
Power Source: AC 230V/50Hz
Note:



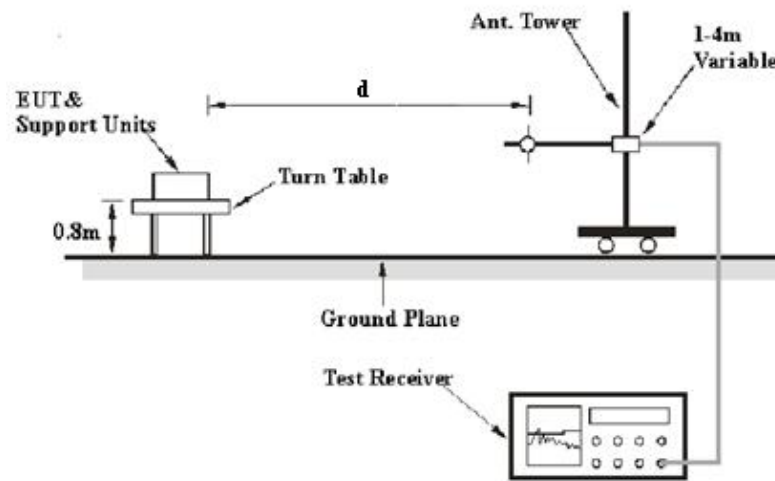
Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line
0.419083	---	47.47	10.93	9.000	N
0.431814	46.67	57.22	10.55	9.000	N
0.444931	---	46.97	11.42	9.000	N
0.444931	46.38	56.97	10.59	9.000	N
0.509069	---	46.00	6.61	9.000	N
0.509069	49.76	56.00	6.24	9.000	N
0.885542	---	46.00	12.74	9.000	N
0.894420	45.09	56.00	10.91	9.000	N
0.917005	44.49	56.00	11.51	9.000	N
0.998148	---	46.00	12.53	9.000	N
1.013195	43.45	56.00	12.55	9.000	N
1.028469	---	46.00	13.77	9.000	N

2 - RADIATED EMISSIONS

EUT Setup

Below 1GHz:



The radiated emission tests were performed at the 3 meters distance, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP

Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in the Quasi-peak detection mode for below 1 GHz.

If the maximized peak measured value complies with under the QP limit more than 6dB, then it is unnecessary to perform an QP measurement.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$\text{Result} = \text{Meter Reading} + \text{Corrected}$$

Note:

$$\text{Corrected} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

or

$$\text{Corrected} = \text{Antenna Factor} + \text{Cable Loss} + \text{Insertion loss of attenuator} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

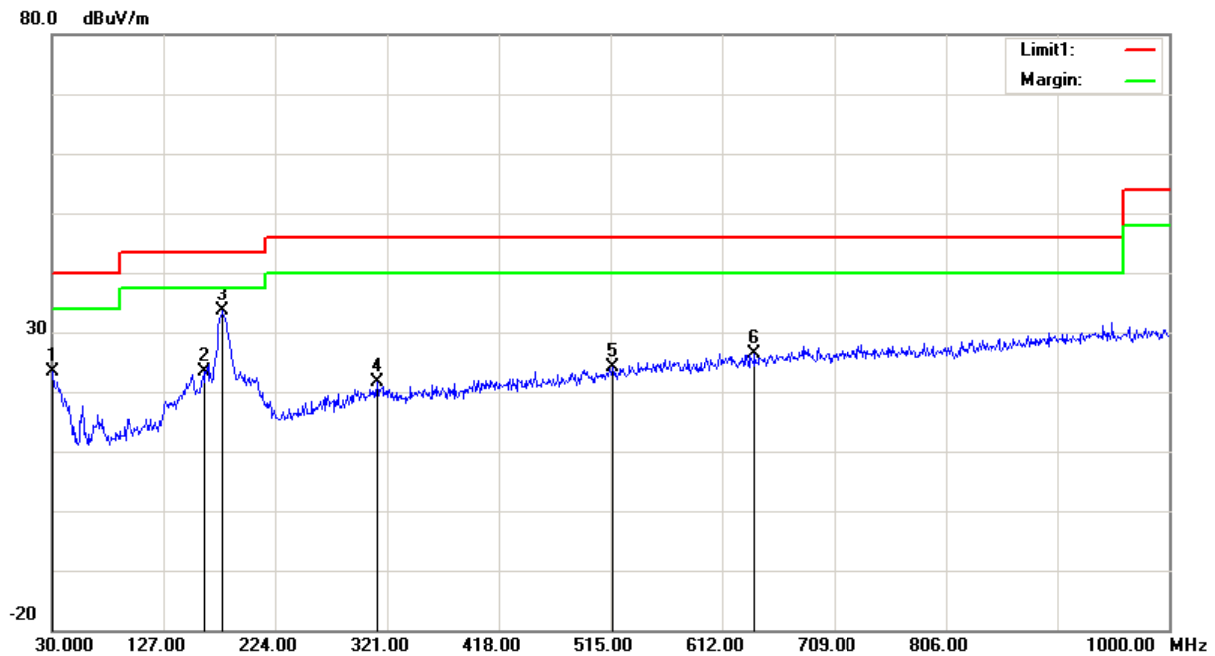
$$\text{Margin} = \text{Limit} - \text{Result}$$

Test Data

Please refer to following table and plots:

Condition: FCC Part 15B Class B
EUT: Window intercom,Interphone
Model: TW102
Test Mode: Front Mic input
Note:

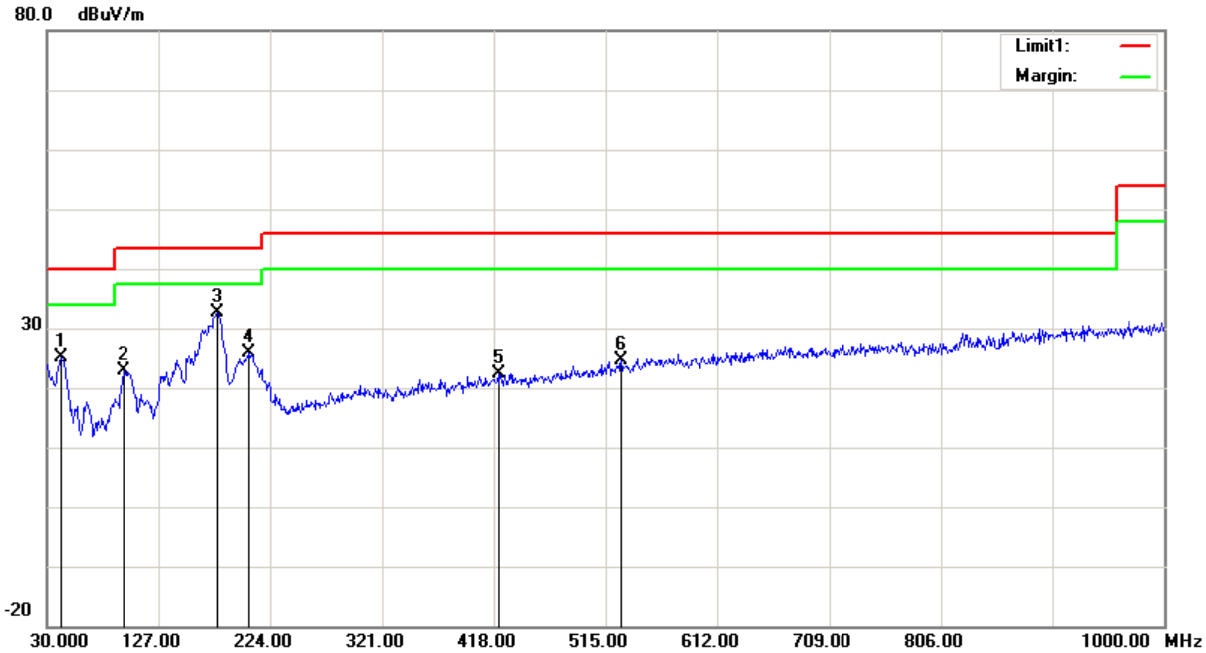
Polarization: Horizontal
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	30.0000	27.37	peak	-4.10	23.27	40.00	16.73
2	162.8900	32.74	peak	-9.39	23.35	43.50	20.15
3	178.4100	43.35	peak	-9.75	33.60	43.50	9.90
4	312.2700	28.55	peak	-6.99	21.56	46.00	24.44
5	516.9400	26.77	peak	-2.76	24.01	46.00	21.99
6	640.1300	27.23	peak	-0.79	26.44	46.00	19.56

Condition: FCC Part 15B Class B
EUT: Window intercom,Interphone
Model: TW102
Test Mode: Front Mic input
Note:

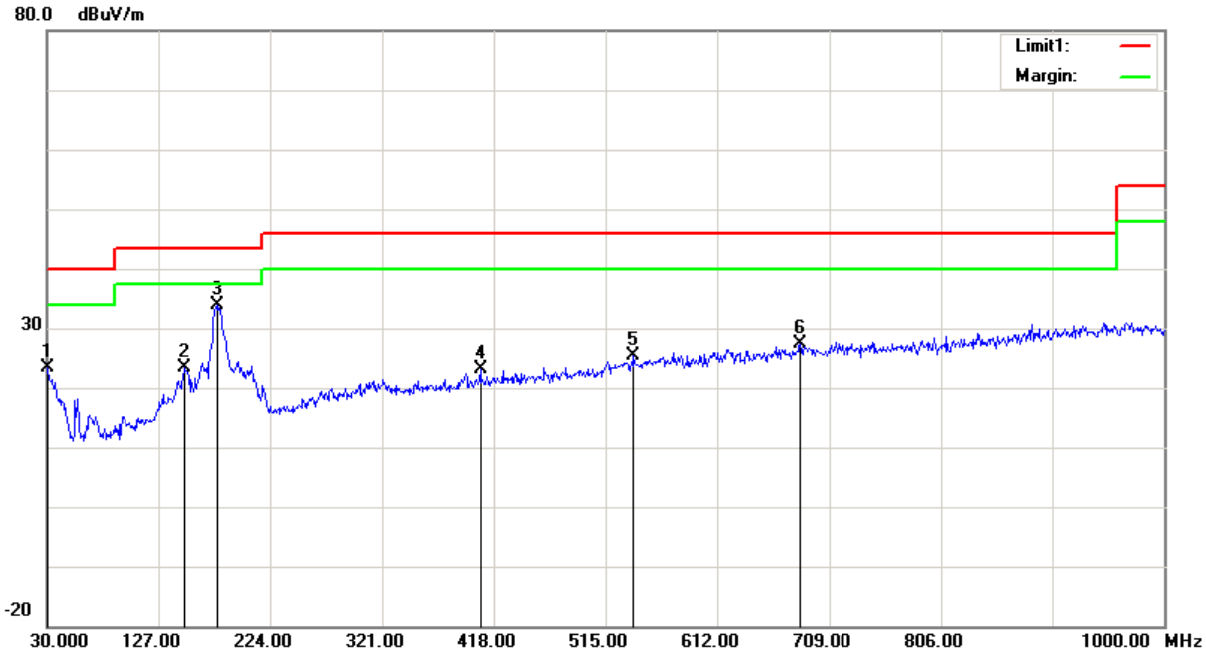
Polarization: Vertical
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	42.6100	36.08	peak	-11.05	25.03	40.00	14.97
2	96.9300	37.24	peak	-14.32	22.92	43.50	20.58
3	178.4100	42.45	peak	-9.75	32.70	43.50	10.80
4	205.5700	36.31	peak	-10.36	25.95	43.50	17.55
5	421.8800	27.14	peak	-4.70	22.44	46.00	23.56
6	528.5800	27.05	peak	-2.46	24.59	46.00	21.41

Condition: FCC Part 15B Class B
EUT: Window intercom,Interphone
Model: TW102
Test Mode: Back Mic input
Note:

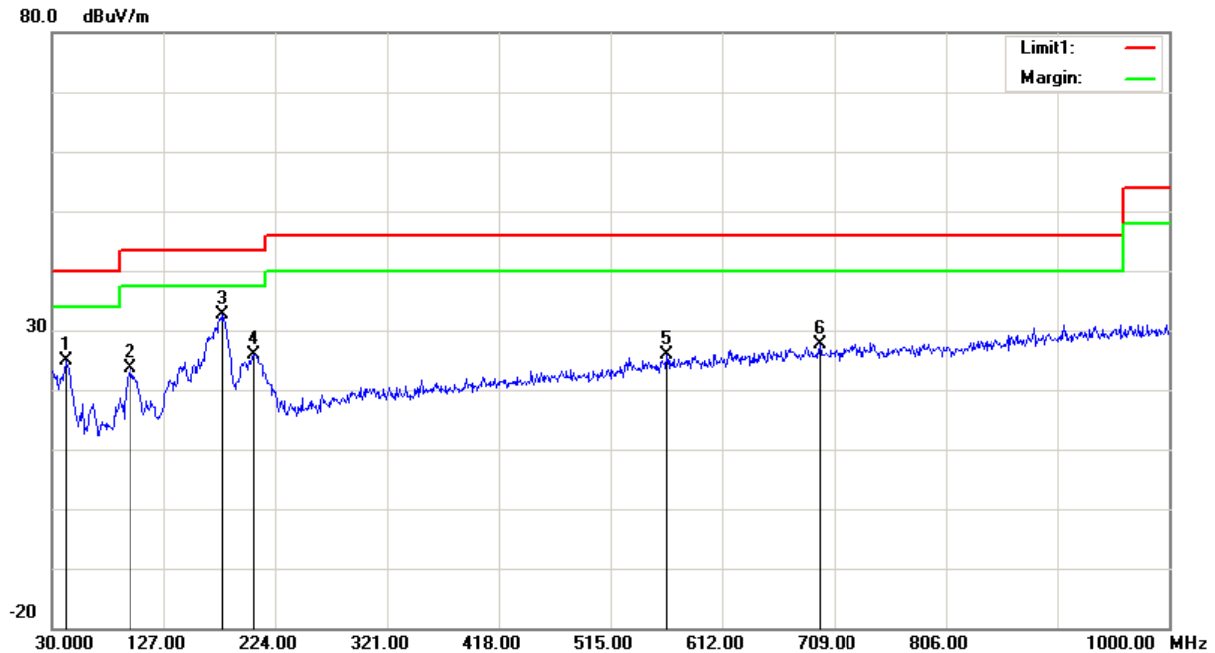
Polarization: Horizontal
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	30.0000	27.37	peak	-4.10	23.27	40.00	16.73
2	149.3100	32.57	peak	-9.29	23.28	43.50	20.22
3	178.4100	43.73	peak	-9.75	33.98	43.50	9.52
4	406.3600	28.03	peak	-4.94	23.09	46.00	22.91
5	539.2500	27.49	peak	-2.10	25.39	46.00	20.61
6	683.7800	27.20	peak	0.28	27.48	46.00	18.52

Condition: FCC Part 15B Class B
EUT: Window intercom, Interphone
Model: TW102
Test Mode: Back Mic input
Note:

Polarization: Vertical
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	42.6100	35.88	peak	-11.05	24.83	40.00	15.17
2	97.9000	37.80	peak	-14.22	23.58	43.50	19.92
3	178.4100	42.45	peak	-9.75	32.70	43.50	10.80
4	204.6000	36.06	peak	-10.16	25.90	43.50	17.60
5	563.5000	27.53	peak	-1.55	25.98	46.00	20.02
6	696.3900	27.56	peak	0.12	27.68	46.00	18.32

*****END OF REPORT*****