

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR230900162001

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### TEST REPORT

**Application No.:** KSCR2309001620AT **FCC ID:** 2AGOFOVU11A

Applicant: HCS (Suzhou) Limited

Address of Applicant: 19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou,

P.R.China

Manufacturer: HCS (Suzhou) Limited

Address of Manufacturer: 19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou,

P.R.China

Factory: Himit (Yueyang) Technology Ltd.

Address of Factory: Building 4, Lingang High-tech Industrial Park, Yueyang Area, China (Hunan)

Free Trade Pilot Zone

**Equipment Under Test (EUT):** 

**EUT Name:** IR-2-USB Transceiver

Model No.: OVU110001/01, OVU11XXXX/XX ('X'=0-9) ♣

Please refer to section 2 of this report which indicates which model was

actually tested and which were electrically identical.

Standard(s): 47 CFR Part 15, Subpart B

**Date of Receipt:** 2023-09-18

**Date of Test:** 2023-11-03 to 2023-11-06

**Date of Issue:** 2023-11-06

Test Result: Pass\*

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<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above.



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	Revision Record					
Version	Description	Date	Remark			
00	Original	2023-11-06	/			

Authorized for issue by:		
Tested By	Damon zhou	
	Damon_Zhou/Project Engineer	
Approved By	Verry Hou	
	Terry Hou /Reviewer	



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# 2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions (30MHz-1GHz)		ANSI C63.4:2014	15.109(a);Class B	Pass
Radiated Emissions (Above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	15.109(g);Class B	Pass
Conducted Emissions at Mains Terminals (150kHz-30MHz)	Guopart B	ANSI C63.4:2014	15.107(a);Class B	Pass

#### **Declaration of EUT Family Grouping:**

Note: There are series models mentioned in this report, and they are identical in electrical and electronic characters. Only the model OVU110001/01 was tested since their differences were the model number, color and printing.



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### 4 General Information

#### 4.1 Details of E.U.T.

Power supply: USB	DC 5V
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#### 4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Remote control	HCS	/	1
AC Adapter	/	E010-1K050200VUU	/
Set-top box	/	Stream TV	/

#### 4.3 Measurement Uncertainty & Decision Rule

#### **Measurement Uncertainty:**

	measurement oncertainty.					
No.	Item	Measurement Uncertainty ( <i>U</i> <sub>LAB</sub> ) *	<b>U</b> CISPR			
	Conducted Emission	2.4dB (9kHz to 150kHz)	3.8dB (9kHz to 150kHz)			
1	at mains port using AMN	2.2dB (150kHz to 30MHz)	3.4dB (150kHz to 30MHz)			
2	Conducted Emission at telecommunication port using AAN	4.0 dB (150kHz to 30MHz)	5.0dB (150kHz to 30MHz)			
3	Radiated Power	3.2dB	4.5dB (30MHz to 300MHz)			
4	Radiated Emission (10m)	4.1 dB	6.3dB (30MHz-1GHz)			
		4.6 dB (30MHz-1GHz)	6.3dB (30MHz-1GHz)			
_	Radiated Emission (3m)	5.0dB (1GHz-6GHz)	5.2dB (1GHz-6GHz)			
5		5.2dB (6GHz-18GHz)	5.5dB (6GHz-18GHz)			
		5.3dB (18GHz-40GHz)	N/A			

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

#### **Decision Rule:**

• CISPR 16-4-2 for emission measurements is as below described.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

 $U_{LAB}$  less than  $U_{CISPR}$ , therefore:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit.
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
- For immunity testing no decision rule is applicable.



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#### 4.4 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

- 1.SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
- 2.SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
- 3. Sample source: sent by customer.

#### 4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

#### A2LA

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

#### • FCC

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

#### • ISED

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

#### • VCCI

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

#### 4.6 Deviation from Standards

None

#### 4.7 Abnormalities from Standard Conditions

None



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# 5 Equipment List

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMI Test Receiver	R&S	ESCI	KS301196	08/24/2023	08/23/2024
Antenna	TESEQ	CBL 6112D	KUS1806E006	08/24/2023	03/04/2024
Spectrum Analyzer	R&S	FSU26	KS301206	03/16/2023	03/15/2024
Signal Analyzer	R&S	FSV40	KUS1806E003	08/24/2023	08/23/2024
Software	Faratronic	EZ_EMC v 3A1	N/A	N/A	N/A

Radiated Emissions (Above 1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Spectrum Analyzer	R&S	FSU26	KS301206	03/16/2023	03/15/2024
Preamplifier	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-2	01/17/2023	01/16/2024
Horn-antenna	SCHWARZBECK	BBHA9120D	KS301079	04/02/2022	04/01/2024
Antenna	SCHAFFNER	CBL6143	CZ301091	10/25/2022	10/24/2024
Software	Faratronic	EZ_EMC-v 3A1	N/A	N/A	N/A

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMI TEST RECEIVER	R&S	ESCI	KS301101	02/03/2023	02/02/2024
TWO-LINE V- NETWORK	R&S	ENV216	KS301197	01/17/2023	01/16/2024
V (V-LISN)	SCHWARZBECK	NNLK 8129	KS301091	01/17/2023	01/16/2024
Pulse LIMITER	R&S	ESH3-Z2	KUS1902E001	01/17/2023	01/16/2024
Software	Faratronic	EZ_EMC-v 3A1	N/A	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Digital Pressure Meter	Mengde	DYM3	CZ750023	01/31/2023	01/30/2024
			KSEM024-1		
			KSEM024-2		
			KSEM024-3		
Temperature & Humidity	JDRK	RS-WS-N01-6J	KSEM024-6	03/22/2023	03/21/2024
Recorder			KSEM024-7		
			KSEM0248		
			KSEM0249		01/30/2024



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### 6 Emission Test Results

#### 6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Measurement Distance: 3m

Limit:

Class B

Test Distance: 3m

30 MHz - 88 MHz  $40.0 (\text{dB}\mu\text{V/m}) \text{ quasi-peak}$  88 MHz - 216 MHz  $43.5 (\text{dB}\mu\text{V/m}) \text{ quasi-peak}$  216 MHz - 960 MHz  $46.0 (\text{dB}\mu\text{V/m}) \text{ quasi-peak}$  960 MHz - 1000 MHz  $54.0 (\text{dB}\mu\text{V/m}) \text{ quasi-peak}$ 

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30MHz to1000MHz

Class B

Test Distance: 10m

 $\begin{array}{lll} 30 \text{MHz} - 88 \text{MHz} & 29.5 (\text{dB}\mu\text{V/m}) \text{ quasi-peak} \\ 88 \text{MHz} - 216 \text{MHz} & 33.1 (\text{dB}\mu\text{V/m}) \text{ quasi-peak} \\ 216 \text{MHz} - 960 \text{MHz} & 35.6 (\text{dB}\mu\text{V/m}) \text{ quasi-peak} \\ 960 \text{MHz} - 1000 \text{MHz} & 43.5 (\text{dB}\mu\text{V/m}) \text{ quasi-peak} \\ \end{array}$ 

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30MHz to1000MHz

#### 6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 48.3 % RH Atmospheric Pressure: 1010 mbar

#### 6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	IR mode:Keep EUT power on by STB,Receive and translate IR command into USB HID.

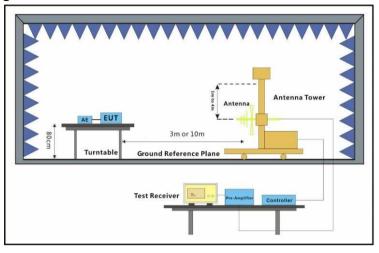


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#### 6.1.3 Test Setup Diagram



#### 6.1.4 Measurement Procedure and Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

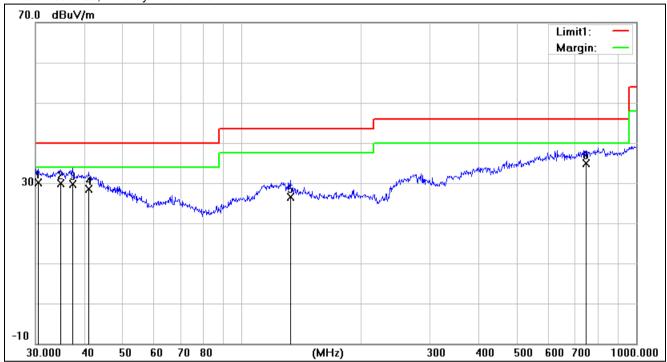


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Test Mode: 00; Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit Margi		Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.5304	4.77	25.25	30.02	40.00	-9.98	100	321	QP
2	34.7601	5.11	24.73	29.84	40.00	-10.16	155	65	QP
3	37.2854	6.23	23.46	29.69	40.00	-10.31	200	118	QP
4	40.8444	6.65	21.82	28.47	40.00	-11.53	186	236	QP
5	132.6850	7.22	19.30	26.52	43.50	-16.98	200	312	QP
6	744.8660	32.55	2.41	34.96	46.00	-11.04	200	19	QP

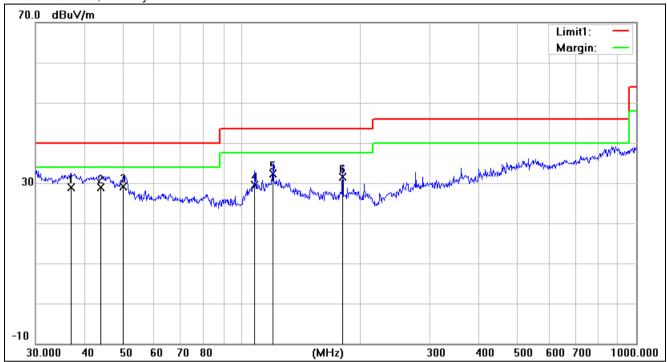


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Test Mode: 00; Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Limit Margin		Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	36.8952	5.20	23.65	28.85	40.00	-11.15	200	188	QP
2	43.9658	8.71	20.25	28.96	40.00	-11.04	100	12	QP
3	50.0566	11.33	17.69	29.02	40.00	-10.98	231	96	QP
4	107.8876	11.33	18.24	29.57	43.50	-13.93	118	180	QP
5	119.8555	12.83	19.41	32.24	43.50	-11.26	100	252	QP
6	180.0165	14.92	16.66	31.58	43.50	-11.92	100	313	QP



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#### 6.2 Radiated Emissions (Above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Limit:

Class B

Above 1GHz 74(dBµV/m) peak, 54(dBµV/m) average

Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

#### 6.2.1 E.U.T. Operation

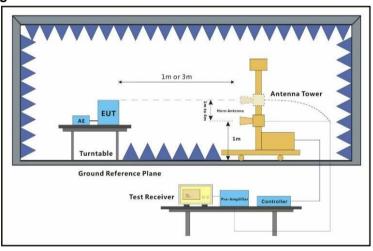
**Operating Environment:** 

Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

#### 6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	IR mode:Keep EUT power on by STB,Receive and translate IR command into USB HID.

#### 6.2.3 Test Setup Diagram



#### 6.2.4 Measurement Procedure and Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

The red line show in graphic is the limit in standard used in this section.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

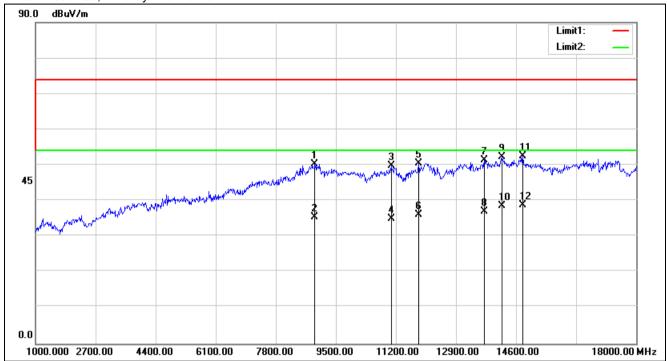


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Test Mode: 00; Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	8905.000	54.54	-4.33	50.21	74.00	-23.79	100	117	peak
2	8905.000	39.66	-4.33	35.33	54.00	-18.67	100	117	AVG
3	11064.000	51.34	-1.56	49.78	74.00	-24.22	100	166	peak
4	11064.000	36.44	-1.56	34.88	54.00	-19.12	100	166	AVG
5	11846.000	53.44	-2.95	50.49	74.00	-23.51	100	84	peak
6	11846.000	39.00	-2.95	36.05	54.00	-17.95	100	84	AVG
7	13699.000	92.32	-40.98	51.34	74.00	-22.66	100	259	peak
8	13699.000	78.09	-40.98	37.11	54.00	-16.89	100	259	AVG
9	14192.000	92.47	-40.15	52.32	74.00	-21.68	100	122	peak
10	14192.000	78.80	-40.15	38.65	54.00	-15.35	100	122	AVG
11	14787.000	92.26	-39.75	52.51	74.00	-21.49	100	360	peak
12	14787.000	78.56	-39.75	38.81	54.00	-15.19	100	360	AVG

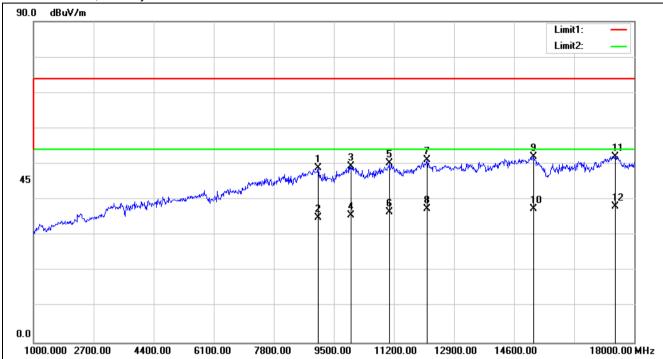


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Test Mode: 00; Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	9058.000	53.36	-4.32	49.04	74.00	-24.96	100	36	peak
2	9058.000	39.34	-4.32	35.02	54.00	-18.98	100	36	AVG
3	9993.000	52.46	-3.02	49.44	74.00	-24.56	100	115	peak
4	9993.000	38.61	-3.02	35.59	54.00	-18.41	100	115	AVG
5	11064.000	51.90	-1.56	50.34	74.00	-23.66	100	200	peak
6	11064.000	38.04	-1.56	36.48	54.00	-17.52	100	200	AVG
7	12135.000	53.52	-2.44	51.08	74.00	-22.92	100	21	peak
8	12135.000	39.96	-2.44	37.52	54.00	-16.48	100	21	AVG
9	15161.000	91.52	-39.44	52.08	74.00	-21.92	100	298	peak
10	15161.000	76.99	-39.44	37.55	54.00	-16.45	100	298	AVG
11	17456.000	87.38	-35.21	52.17	74.00	-21.83	100	305	peak
12	17456.000	73.27	-35.21	38.06	54.00	-15.94	100	305	AVG



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### 6.3 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Limit:

0.15MHz-0.5MHz:  $66dB(\mu V)$ - $56dB(\mu V)$  quasi-peak,  $56dB(\mu V)$ - $46dB(\mu V)$  average

0.5MHz-5MHz: 56dB( $\mu$ V) quasi-peak, 46dB( $\mu$ V) average 5MHz-30MHz: 60dB( $\mu$ V) quasi-peak, 50dB( $\mu$ V) average

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

#### 6.3.1 E.U.T. Operation

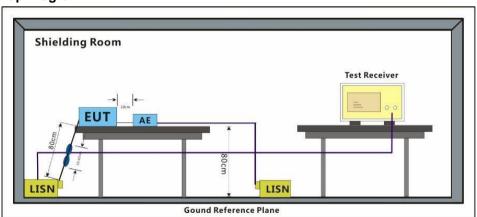
Operating Environment:

Temperature: 24.8 °C Humidity: 49.6 % RH Atmospheric Pressure: 1010 mbar

6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	IR mode:Keep EUT power on by STB,Receive and translate IR command into USB HID.

#### 6.3.3 Test Setup Diagram



#### 6.3.4 Measurement Procedure and Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Remark: Level= Read Level+ Cable Loss+ LISN Factor

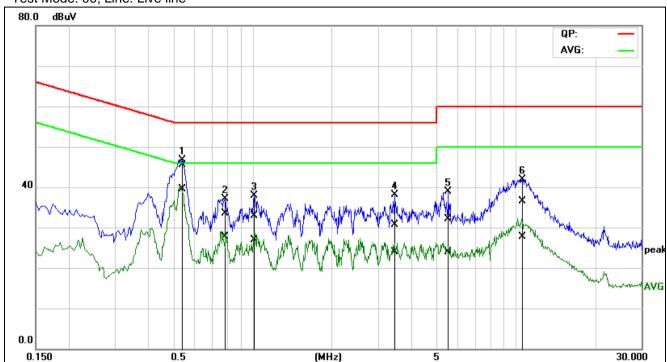


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Test Mode: 00; Line: Live line



No.	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
		reading	reading	factor	result	result	limit	limit	margin	margin	
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.5377	25.44	19.43	20.03	45.47	39.46	56.00	46.00	-10.53	-6.54	Pass
2	0.7791	13.64	7.72	19.90	33.54	27.62	56.00	46.00	-22.46	-18.38	Pass
3	1.0053	12.99	7.07	19.91	32.90	26.98	56.00	46.00	-23.10	-19.02	Pass
4	3.4188	10.72	3.98	19.98	30.70	23.96	56.00	46.00	-25.30	-22.04	Pass
5	5.5481	12.15	3.87	19.99	32.14	23.86	60.00	50.00	-27.86	-26.14	Pass
6	10.6196	16.54	7.75	19.99	36.53	27.74	60.00	50.00	-23.47	-22.26	Pass

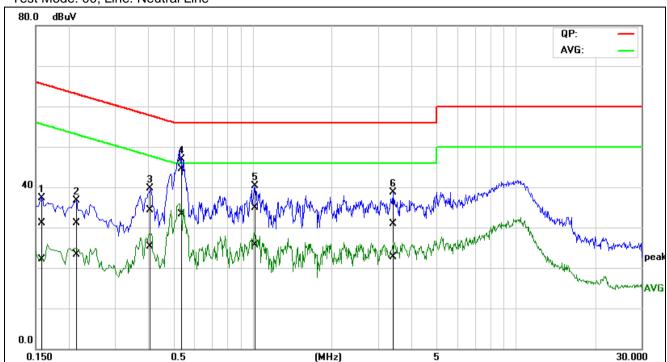


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Test Mode: 00; Line: Neutral Line



No.	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
		reading	reading	factor	result	result	limit	limit	margin	margin	
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1592	10.82	1.92	20.24	31.06	22.16	65.50	55.51	-34.44	-33.35	Pass
2	0.2150	11.01	3.17	20.14	31.15	23.31	63.01	53.01	-31.86	-29.70	Pass
3	0.4120	14.13	5.13	20.10	34.23	25.23	57.61	47.61	-23.38	-22.38	Pass
4*	0.5360	24.52	13.24	20.03	44.55	33.27	56.00	46.00	-11.45	-12.73	Pass
5	1.0313	14.96	5.80	20.00	34.96	25.80	56.00	46.00	-21.04	-20.20	Pass
6	3.3998	10.95	2.73	19.98	30.93	22.71	56.00	46.00	-25.07	-23.29	Pass



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# 7 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2309001620AT

# 8 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for KSCR2309001620AT

- End of the Report -