

Report No.: KSCR220800154301

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TEST REPORT

Application No.:KSCR2208001543COFCC ID:2A8XYZDYDKBL0311100

IC: 29457-ZDYDKBLK7

Applicant: SHANGHAI ZHIDA TECHNOLOGY DEVELOPMENT CO., LTD.

Address of Applicant: Room 1001-1, No127, Guotong Road, Yangpu, Shanghai, CHINA 200433

Manufacturer: SHANGHAI ZHIDA TECHNOLOGY DEVELOPMENT CO., LTD.

Address of Manufacturer: Room 1001-1, No127, Guotong Road, Yangpu, Shanghai, CHINA 200433

Factory: Anhui Zhida ZhongDing Vehicle Charging Equipment CO., LTD. **Address of Factory:** Floors 1-2, Building B15, Science Park, Xuancheng economic and

technological development zone, Anhui Province, China

Equipment Under Test (EUT):

EUT Name: ZHIDA GLOBAL STANDARD AC CHARGING PILE

Model No.: ZDYDKBL0311100, ZDYDKAL0200000¤

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 C 15.225

RSS-210 Issue 10 Amendment (April 2020)

RSS-Gen Issue 5 Amendment 2 (February 2021)

Date of Receipt: 2022-08-29

Date of Test: 2022-09-24 to 2022-12-09

Date of Issue: 2022-12-10

Test Result: Pass*



Jose fri



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^{*} In the configuration tested, the EUT complied with the standards specified above.



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Revision Record				
Version	Description	Date	Remark	
00	Original	2022-12-10	/	

Authorized for issue by:			
	Tomnie Tang		
	Tommie_Tang/Project Engineer	-	
	Eni fri		
	Eric Lin /Reviewer	-	



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2 Test Summary

Radio Spectrum Technical Requirement					
Item	FCC Requirement	IC Requirement	Method	Result	
Antenna Requirement	47 CFR Part 15, Subpart C 15.225	N/A	RSS-210 Issue 10 Amendment (April 2020)	Customer Declaration	

Radio Spectrum Matter Part					
Item	FCC Requirement	IC Requirement	Method	Result	
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.207	RSS-210 Issue 10 Amendment (April 2020)	ANSI C63.10 (2013) Section 6.2	Pass	
20dB Bandwidth	47 CFR Part 15, Subpart C 15.225	RSS-210 Issue 10 Amendment (April 2020)	ANSI C63.10 (2013) Section 6.9	Pass	
Emission Mask	47 CFR Part 15, Subpart C 15.225	RSS-210 Issue 10 Amendment (April 2020)	ANSI C63.10 (2013) Section 6.4	Pass*	
Frequency tolerance	47 CFR Part 15, Subpart C 15.225	RSS-210 Issue 10 Amendment (April 2020)	ANSI C63.10 (2013) Section 6.8	Pass	
Radiated Emissions(9kHz- 30MHz)	47 CFR Part 15, Subpart C 15.225	RSS-210 Issue 10 Amendment (April 2020)	ANSI C63.10 (2013) Section 6.4&6.5	Pass	
Radiated Emissions(30MHz- 1GHz)	47 CFR Part 15, Subpart C 15.225	RSS-210 Issue 10 Amendment (April 2020)	ANSI C63.10 (2013) Section 6.4&6.5	Pass	
99% Bandwidth	-	RSS-210 Issue 10 Amendment (April 2020)	RSS-Gen Section 6.7	Pass	

Note1*: The test level of the fundamental signal is below the limit of general spurious emission, so the test item doesn't be performed.

Declaration of EUT Family Grouping:

Note: The model ZDYDKBL0311100 and ZDYDKAL0200000 are identical in electrical and electronic characters except that the ZDYDKBL0311100 supports 4G,BT,WiFi and RFID functions, the ZDYDKAL0200000 only supports RFID function.



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4 General Information

4.1 Details of E.U.T.

Power supply:		AC 240V,32A,60Hz	
Operation Frequ	ency	13.56MHz	
Modulation Tech	nnique:	ASK	
Antenna Type:		Loop antenna	
Carial Number	ZDYDKBL0311100	ZDYDKBL	
Serial Number:	ZDYDKAL0200000	ZDYDKAL	
Firmware Version:		ZDAC-32A-433HS-IEC-SAE-V1.0.04	

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.		
		-	1		
The EUT has been tested as an independent unit.					

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4 x 10 ⁻⁸
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz)
0	KF Kaulated Fower	5.9dB (Above 1GHz)
		4.2dB (Below 30MHz)
9	Padiated Spurious Emission Test	4.5dB (30MHz-1GHz)
9	Radiated Spurious Emission Test	5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%

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



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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).

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

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date	
Condu	Conducted Emission at Mains Terminals (150kHz-30MHz)						
1	EMI Test Receive	R&S	ESCI	KS301101	01/22/2022	01/21/2023	
2	LISN	R&S	ENV216	KS301197	01/22/2022	01/21/2023	
3	LISN	Schwarzbeck	NNLK 8129	KS301091	01/22/2022	01/21/2023	
4	Pulse Limiter	R&S	ESH3-Z2	KUS1902E001	01/22/2022	01/21/2023	
5	CE test Cable	Thermax	/	CZ301102	11/14/2021	11/13/2022	
6	CE test Cable	Thermax	/	CZ301102	11/12/2022	11/11/2023	
7	Test Software	Farad	EZ-EMC	/	N.C.R	N.C.R	
RF Co	nducted Test			.			
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/22/2022	08/21/2023	
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/22/2022	08/21/2023	
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/22/2022	01/21/2023	
4	Signal Generator	R&S	SMW200A	KSEM020-1	08/22/2022	08/21/2023	
5	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/22/2022	08/21/2023	
6	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/22/2022	08/21/2023	
7	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	04/01/2022	03/31/2023	
8	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/22/2022	08/21/2023	
9	Switcher	CCSRF	FY562	KUS2001M001-3	08/22/2022	08/21/2023	
10	AC Power Source	EXTECH	6605	KS301178	N.C.R	N.C.R	
11	DC Power Supply	Aglient	E3632A	KS301180	N.C.R	N.C.R	
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111- CZ301120	01/16/2022	01/15/2023	
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	04/01/2021	03/31/2023	
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	04/14/2022	04/13/2023	
15	Software	BST	TST-PASS	/	N/A	N/A	
RF Ra	diated Test	T		, , , , , , , , , , , , , , , , , , , ,		1	
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	08/22/2022	08/21/2023	
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	04/01/2022	03/31/2023	
3	Signal Generator	Agilent	E8257C	KS301066	08/22/2022	08/21/2023	
4	Loop Antenna	COM-POWER	AL-130R	KUS1806E001	04/13/2021	04/12/2023	
5	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E005	06/29/2021	06/28/2023	
6	Bilog Antenna	SCHWARZBECK	VULB9160	CZ301016	04/13/2021	04/12/2024	
7	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	04/02/2022	04/01/2024	
8	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	KS301186	02/22/2021	02/21/2023	
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	03/17/2022	03/16/2023	
10	Amplifier(30MHz~18GHz)	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-1	01/22/2022	01/21/2023	
11	Amplifier(18~40GHz)	COM-POWER	PAM-840A	KUS1710E001	01/22/2022	01/21/2023	
12	RE Test Cable	REBES MICROWAVE	/	CZ301097	11/14/2021	11/13/2022	
13	RE Test Cable	REBES MICROWAVE	1	CZ301097	11/12/2022	11/11/2023	
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	01/04/2022	31/03/2023	



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| 15 | Software | Faratronic | EZ_EMC-v 3A1 | / N/A | N/A



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is loop antenna integrated on the main PCB and no consideration of replacement. Antenna location: Refer to Internal photos



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7 Radio Spectrum Matter Test Results

7.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215
Test Method: ANSI C63.10 (2013) Section 6.9

7.1.1 E.U.T. Operation

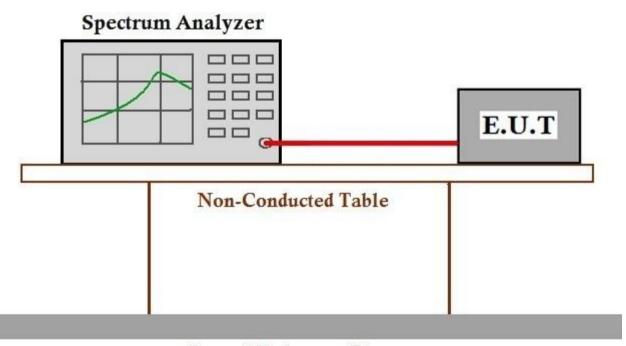
Operating Environment:

Temperature: 24.7 °C Humidity: 54.9 % RH Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(ZDYDKAL0200000)_Keep the EUT in transmitting mode
Final test	01	TX mode(ZDYDKBL0311100)_Keep the EUT in transmitting mode

7.1.3 Test Setup Diagram



Ground Reference Plane



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7.1.4 Measurement Procedure and Data

The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

Please Refer to Appendix for Details



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

Test Requirement 47 CFR Part 15, Subpart C 15.207 Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency range (MHz)	Limit (dBuV)		
	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.

7.2.1 E.U.T. Operation

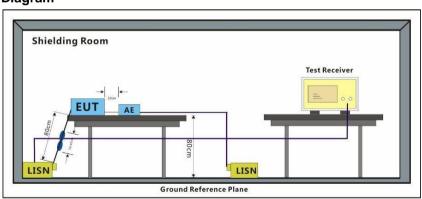
Operating Environment:

Temperature: 25.5 °C Humidity: 53.1 % RH Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

The fact made becomplied							
Pre-scan / Final test	Mode Code	Description					
Pre-scan	00	TX mode(ZDYDKAL0200000)_Keep the EUT in transmitting mode					
Final test	01	TX mode(ZDYDKBL0311100)_Keep the EUT in transmitting mode					

7.2.3 Test Setup Diagram





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7.2.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50 \text{ohm}/50 \mu\text{H} + 5 \text{ohm}$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

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

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7.3 Emission Mask

Test Requirement 47 CFR Part 15, Subpart C 15.225(a)&(b)&(C)

Test Method: ANSI C63.10 (2013) Section 6.4

Limit:

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

Below 30MHz

The limit at 30m test distance is below:

$$FS_{\text{limit}} = FS_{\text{max}} - 40 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right)$$

where

 FS_{limit} is the calculation of field strength at the limit distance, expressed in dBµV/m

is the measured field strength, expressed in dBuV/m FS_{max} d_{measure} is the distance of the measurement point from the EUT is the reference distance or the distance of the $\lambda/2\pi$ point d_{limit}

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 84dBuV/m at 30 meters.

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.7 °C Humidity: 54.9 % RH Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description					
Final test	00	TX mode(ZDYDKAL0200000)_Keep the EUT in transmitting mode					
Final test	01	TX mode(ZDYDKBL0311100)_Keep the EUT in transmitting mode					



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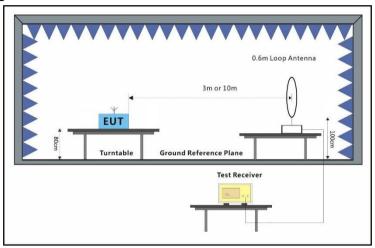
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7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.

Remark: The test level of the fundamental signal is below the limit of general spurious emission, so the test item doesn't be performed.



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7.4 Frequency tolerance

Test Requirement 47 CFR Part 15, Subpart C 15.225(e)
Test Method: ANSI C63.10 (2013) Section 6.8

Limit:

±0.01

7.4.1 E.U.T. Operation

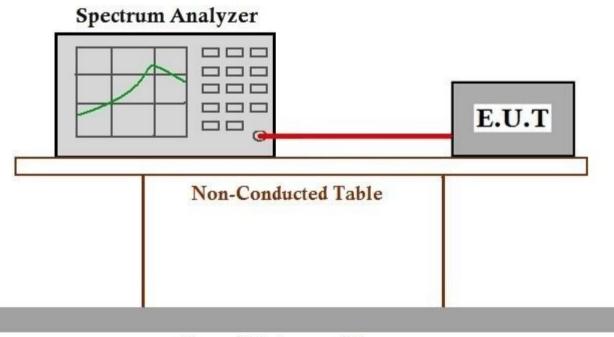
Operating Environment:

Temperature: 24.7 °C Humidity: 54.8 % RH Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description					
Final test	00	TX mode(ZDYDKAL0200000)_Keep the EUT in transmitting mode					
Final test	01	TX mode(ZDYDKBL0311100)_Keep the EUT in transmitting mode					

7.4.3 Test Setup Diagram



Ground Reference Plane



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7.4.4 Measurement Procedure and Data

The EUT was placed in an environmental test chamber and powered such that control element received normal voltage and the transmitter provided maximum RF output.

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7.5 Radiated Emissions (30MHz-1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4&6.5

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Remark: The test was performed at a 10 meter semi-anechoic chamber, then the limit should be extrapolated to 3m with the factor 20*log(10/3).

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24.7 °C Humidity: 54.8 % RH Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(ZDYDKAL0200000)_Keep the EUT in transmitting mode
Final test	01	TX mode(ZDYDKBL0311100)_Keep the EUT in transmitting mode



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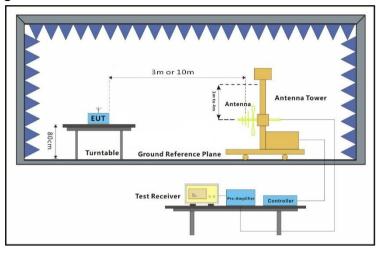
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7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz at a 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading, e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. g. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report. Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

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7.6 Radiated Emissions (9kHz-30MHz)

47 CFR Part 15, Subpart C 15.225(d) & 15.209 Test Requirement

Test Method: ANSI C63.10 (2013) Section 6.4&6.5

Limit:

Frequency(MHz)	Field strength (microvolts/meter)	Limit (dBuV/m)	Detector	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	-	300
0.490-1.705	24000/F(kHz)	-	-	30
1.705-30	30	-	-	30

Below 30MHz

If field strength is measured at only a single point, then that point shall be at the radial from the EUT that produces the maximum emission at the frequency being measured, as described in 5.4. If that point is closer to the EUT than $\lambda/2\pi$ and the limit distance is greater than $\lambda/2\pi$, the measurement shall be extrapolated to the limit distance by conservatively presuming that the field strength decreases at a 40 dB/decade of distance rate to the $\lambda/2\pi$ distance, and at a 20 dB/decade of distance rate beyond $\lambda/2\pi$. This shall be accomplished using Equation (2):

$$FS_{(10m)} = FS_{(30/300m)} + 40log\{d_{(near field)}/d_{(10m)}\} + 20log\{d_{(30/300m)}/d_{(near field)}\}$$
(2)

If the single point measured is at a distance greater than $\lambda/2\pi$, then extrapolation to the limit distance shall be calculated using Equation (3):

$$FS_{(10m)} = FS_{(30/300m)} + 20log\{d_{(30/300m)}/d_{(10m)}\}$$
(3)

If both the single point and the limit distance are equal to or closer to the EUT than $\lambda/2\pi$, then extrapolation to the limit distance shall be calculated using Equation (4):

$$FS_{(10m)} = FS_{(30/300m)} + 40log\{d_{(30/300m)}/d_{(10m)}\}$$
(4)

Remark:

 $d_{near field} = 47.77 / f_{MHz}$

where f_{MHz} is the frequency of the emission being measured in MHz.

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor



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$$FS_{\text{limit}} = FS_{\text{max}} - 40 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right)$$

where

 FS_{limit} is the calculation of field strength at the limit distance, expressed in dB μ V/m

FS_{max} is the measured field strength, expressed in dBμV/m d_{measure} is the distance of the measurement point from the EUT is the reference distance or the distance of the $\lambda/2\pi$ point

7.6.1 E.U.T. Operation

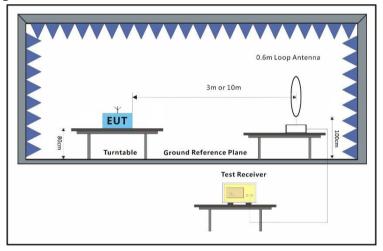
Operating Environment:

Temperature: 24.7 °C Humidity: 54.8 % RH Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(ZDYDKAL0200000)_Keep the EUT in transmitting mode
Final test	01	TX mode(ZDYDKBL0311100)_Keep the EUT in transmitting mode

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.



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Please Refer to Appendix for Details



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7.7 99% Bandwidth

Test Requirement RSS-Gen Section 6.7

Test Method: RSS-Gen Issue 5 Amendment 2 (February 2021)

Limit:

Operate frequency	Limit
70MHz to 900MHz	less than or equal to 0.25% of the centre frequency
Above 900MHz	less than or equal to 0.5% of the centre frequency.

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 24.7 °C Humidity: 54.8 % RH Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

The rest mede beschiption							
Pre-scan Final test		Description					
Final test	00	TX mode(ZDYDKAL0200000)_Keep the EUT in transmitting mode					
Final test	01	TX mode(ZDYDKBL0311100)_Keep the EUT in transmitting mode					



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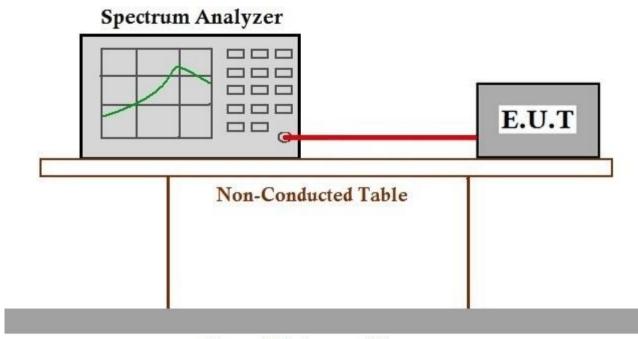
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7.7.3 Test Setup Diagram



Ground Reference Plane

7.7.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2208001543CO

9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for KSCR2208001543CO



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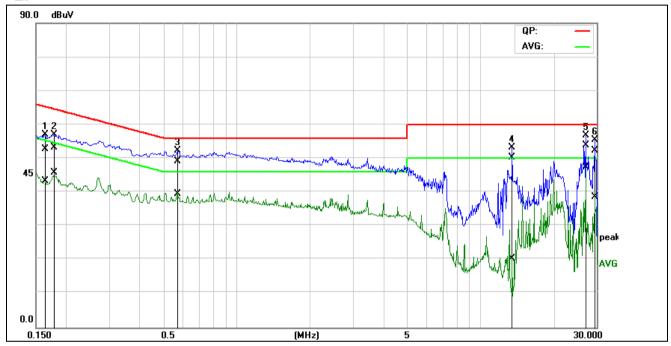
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10 Appendix

1. Conducted Emissions at Mains Terminals (150kHz-30MHz)

mode 01:

L:



No ·	Frequenc y	QuasiPea k	Averag e	Correctio n	QuasiPea k	Averag e	QuasiPea k	Averag e	QuasiPea k	Averag e	Remar k
		reading	reading	factor	result	result	limit	limit	margin	margin	
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1640	42.89	33.45	9.94	52.83	43.39	65.25	55.26	-12.42	-11.87	Pass
2	0.1785	43.27	35.91	9.94	53.21	45.85	64.55	54.56	-11.34	-8.71	Pass
3	0.5701	39.07	29.57	9.99	49.06	39.56	56.00	46.00	-6.94	-6.44	Pass
4	13.5500	39.92	10.06	10.38	50.30	20.44	60.00	50.00	-9.70	-29.56	Pass
5*	27.1260	43.32	36.69	10.59	53.91	47.28	60.00	50.00	-6.09	-2.72	Pass
6	29.4380	41.75	27.95	10.66	52.41	38.61	60.00	50.00	-7.59	-11.39	Pass



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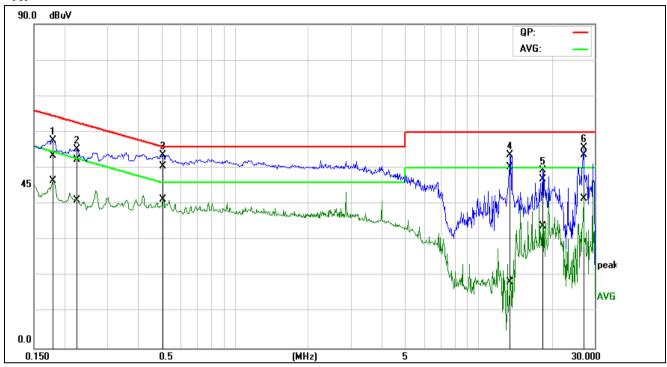
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N:



No	Frequenc v	QuasiPea k	Averag e	Correctio n	QuasiPea k	Averag e	QuasiPea k	Averag e	QuasiPea k	Averag e	Remar k
	•	reading	reading	factor	result	result	limit	limit	margin	margin	
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1796	43.38	36.38	9.98	53.36	46.36	64.50	54.50	-11.14	-8.14	Pass
2	0.2260	42.31	31.06	9.99	52.30	41.05	62.59	52.60	-10.29	-11.55	Pass
3*	0.5100	40.40	31.20	10.05	50.45	41.25	56.00	46.00	-5.55	-4.75	Pass
4	13.4900	39.67	7.63	10.65	50.32	18.28	60.00	50.00	-9.68	-31.72	Pass
5	18.4060	36.20	23.21	10.75	46.95	33.96	60.00	50.00	-13.05	-16.04	Pass
6	27.1140	42.78	30.44	10.97	53.75	41.41	60.00	50.00	-6.25	-8.59	Pass



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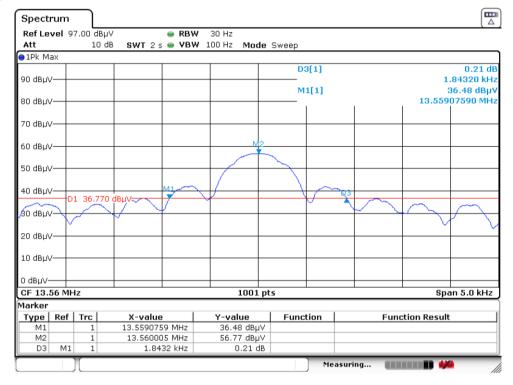
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2. 20dB Bandwidth

Test mode	20dB bandwidth (kHz)	F _L (MHz)	F _H (MHz)	Limit (MHz)	Result
00	1.8432	13.5591	13.5609	13.110 – 14.010	Pass
01	1.8232	13.5591	13.5609	13.110 – 14.010	Pass

Test plot as follows:

mode 00:





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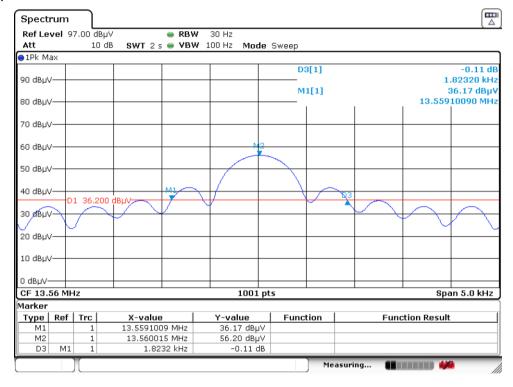
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mode 01:





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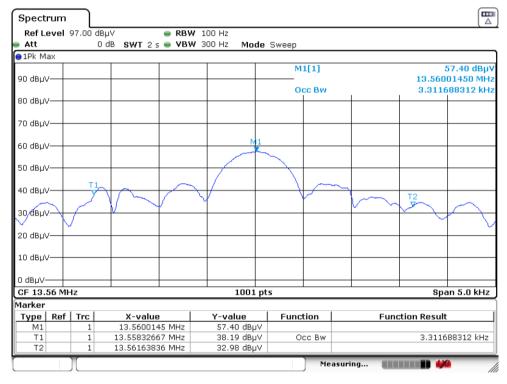
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3. 99% Bandwidth

Test mode	99% bandwidth (kHz)	F _L (MHz)	F _H (MHz)	Limit (MHz)	Result
00	3.3117	13.5583	13.5616	13.110 – 14.010	Pass
01	3.3167	13.5583	13.5616	13.110 – 14.010	Pass

Test plot as follows:

mode 00:





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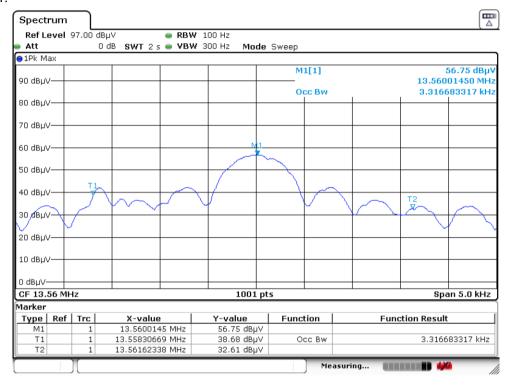
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mode 01:





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4. Frequency tolerance

mode 00:

Nominal Operation Frequency: 13.56MHz

Test Co	nditions	Test Result	Deviation	Limit	Dooult
Temp (°C)	Volt (V AC)	(MHz)	(kHz)	(kHz)	Result
T _{nom} (-20)	V _{nom} (240)	13.55995	-0.05		Pass
T _{nom} (-10)	V _{nom} (240)	13.55996	-0.04		Pass
T _{nom} (0)	V _{nom} (240)	13.56001	0.01		Pass
T _{nom} (10)	V _{nom} (240)	13.56003	0.03		Pass
T _{nom} (20)	V _{nom} (240)	13.56001	0.01	±0.01%	Pass
T _{nom} (30)	V _{nom} (240)	13.56007	0.07	(1.3560kHz)	Pass
T _{nom} (40)	V _{nom} (240)	13.56013	0.13		Pass
T _{nom} (50)	V _{nom} (240)	13.56015	0.15		Pass
T (20)	V _{min} (204)	13.56004	0.04		Pass
T _{nom} (20)	V _{max} (276)	13.56007	0.07		Pass

mode 01:

Test Co	onditions	Test Result	Deviation	Limit	Danult
Temp (°C)	Volt (V AC)	(MHz)	(kHz)	(kHz)	Result
T _{nom} (-20)	V _{nom} (240)	13.55992	-0.08		Pass
T _{nom} (-10)	V _{nom} (240)	13.56002	0.02		Pass
T _{nom} (0)	V _{nom} (240)	13.55994	-0.04		Pass
T _{nom} (10)	V _{nom} (240)	13.56002	0.02		Pass
T _{nom} (20)	V _{nom} (240)	13.56001	-0.01	±0.01%	Pass
T _{nom} (30)	V _{nom} (240)	13.56013	0.13	(1.3560kHz)	Pass
T _{nom} (40)	V _{nom} (240)	13.56010	0.10		Pass
T _{nom} (50)	V _{nom} (240)	13.56004	0.04		Pass
T (20)	V _{min} (204)	13.56004	0.04		Pass
T _{nom} (20)	V _{max} (276)	13.56011	0.11		Pass



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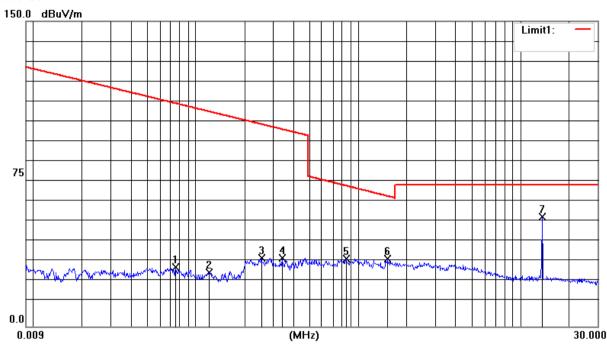


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5. Radiated Emissions(9kHz-30MHz)

mode 00:



Item	Freq.	Read Level	Correct Factor	Result Level@3 m	Result Level@S PEC	Limit Line@SP EC	Over Limit	Detector	Polarity
(Mark)	(MHz)	(dBµV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	0.0752	14.56	14.42	28.98	-51.02	30.08	-81.10	QP	Coaxial
2	0.1208	12.05	14.42	26.47	-53.53	25.96	-79.49	QP	Coaxial
3	0.2535	19.18	14.41	33.59	-46.41	19.52	-65.93	QP	Coaxial
4	0.3407	19.14	14.41	33.55	-46.45	16.96	-63.41	QP	Coaxial
5	0.8393	18.70	14.39	33.09	-6.91	29.13	-36.04	QP	Coaxial
6	1.5274	18.94	14.37	33.31	-6.69	23.93	-30.62	QP	Coaxial
7	13.5600	39.9	13.95	53.85	13.85	84.00	-70.15	Peak	Coaxial



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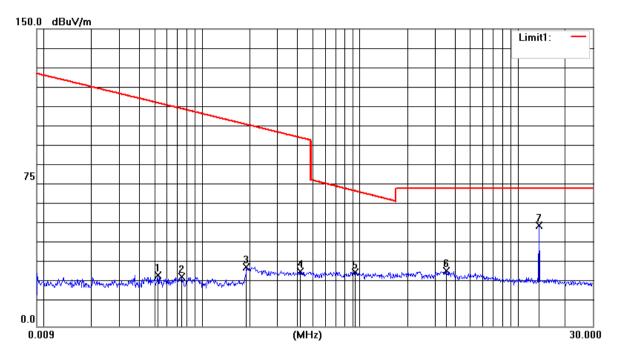
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Item	Freq.	Read Level	Correct Factor	Result Level@3 m	Result Level@S PEC	Limit Line@SP EC	Over Limit	Detector	Polarity
(Mark)	(MHz)	(dBµV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	0.0526	11.06	14.48	25.54	-54.46	33.18	-87.64	QP	Coplanar
2	0.0748	10.37	14.42	24.79	-55.21	30.13	-85.34	QP	Coplanar
3	0.1912	15.44	14.42	29.86	-50.14	21.97	-72.11	QP	Coplanar
4	0.4193	13.19	14.41	27.60	-52.40	15.15	-67.55	QP	Coplanar
5	0.9282	12.98	14.39	27.37	-12.63	28.25	-40.88	QP	Coplanar
6	3.5091	13.72	14.30	28.02	-11.98	29.50	-41.48	QP	Coplanar
7	13.5600	36.75	13.95	50.70	10.70	84.00	-73.30	Peak	Coplanar



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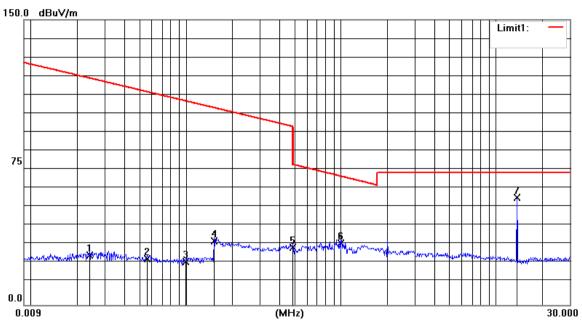
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mode 01:



Item	Freq.	Read Level	Correct Factor	Result Level@3m	Result Level@SP EC	Limit Line@SPE C	Over Limit	Detector	Polarity
(Mark)	(MHz)	(dBµV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	0.0238	11.10	15.09	26.19	-53.81	40.07	-93.88	QP	Coaxial
2	0.0563	9.72	14.50	24.22	-55.78	32.59	-88.37	QP	Coaxial
3	0.0990	8.26	14.44	22.70	-57.30	27.69	-84.99	QP	Coaxial
4	0.1507	19.13	14.43	33.56	-46.44	24.04	-70.48	QP	Coaxial
5	0.4890	15.66	14.46	30.12	-49.88	13.82	-63.70	QP	Coaxial
6	0.9997	17.79	14.51	32.30	-7.70	27.61	-35.31	QP	Coaxial
7	13.5600	39.37	13.95	53.32	13.32	84.00	-70.68	Peak	Coaxial



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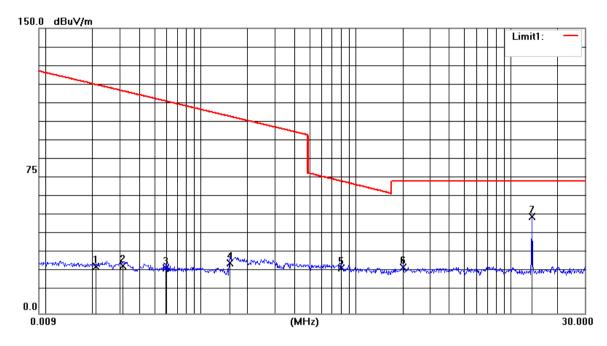
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Item	Freq.	Read Level	Correct Factor	Result Level@3 m	Result Level@SP EC	Limit Line@SPE C	Over Limit	Detector	Polarity
(Mark)	(MHz)	(dBµV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	0.0210	9.24	15.19	24.43	-55.57	41.16	-96.73	QP	Coplanar
2	0.0313	9.96	15.04	25.00	-55.00	37.69	-92.69	QP	Coplanar
3	0.0596	9.35	14.62	23.97	-56.03	32.10	-88.13	QP	Coplanar
4	0.1532	12.11	14.44	26.55	-53.45	23.90	-77.35	QP	Coplanar
5	0.8002	9.43	14.45	23.88	-16.12	29.54	-45.66	QP	Coplanar
6	2.0118	9.73	14.50	24.23	-15.77	29.50	-45.27	QP	Coplanar
7	13.5600	36.92	13.96	50.88	10.88	84.00	-73.12	Peak	Coplanar



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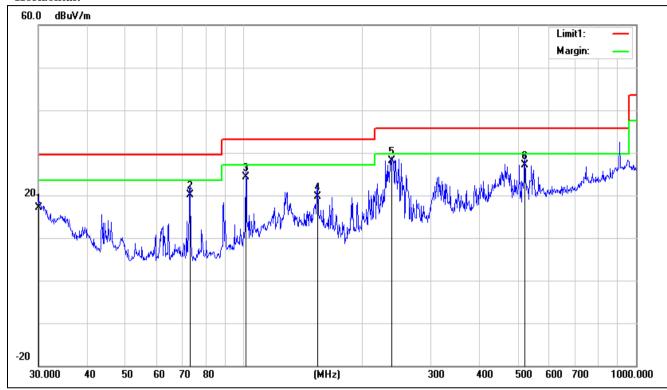
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6. Below 1GHz

mode 00:

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	30.0000	26.40	-9.38	17.02	29.50	-12.48	QP
2	73.1025	41.46	-21.32	20.14	29.50	-9.36	QP
3	101.2885	42.39	-18.18	24.21	33.10	-8.89	QP
4	154.2786	35.81	-16.13	19.68	33.10	-13.42	QP
5	238.3102	44.61	-16.50	28.11	35.60	-7.49	QP
6	520.8882	36.39	-9.33	27.06	35.60	-8.54	QP



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Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	32.1855	23.10	-4.15	18.95	29.50	-11.05	QP
2	43.7275	28.94	-11.74	17.20	29.50	-12.80	QP
3	55.1654	39.02	-15.42	23.60	29.50	-6.40	QP
4	55.6094	44.25	-15.42	28.83	29.50	-1.17	QP
5	80.4826	32.13	-14.89	17.24	29.50	-12.76	QP
6	84.9993	34.95	-14.83	20.12	29.50	-9.88	QP
7	251.9757	44.87	-9.85	35.02	35.60	-1.98	QP
8	260.1444	42.51	-9.25	33.26	35.60	-3.74	QP



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mode 01:

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	33.7986	30.79	-12.24	18.55	29.50	-10.95	QP
2	112.9196	44.70	-15.50	29.20	33.10	-3.90	QP
3	118.1860	43.66	-14.84	28.82	33.10	-4.28	QP
4	147.4036	48.08	-16.02	32.06	33.10	-1.04	QP
5	260.1444	41.18	-15.74	25.44	35.60	-10.16	QP
6	782.3451	32.57	-4.74	27.83	35.60	-7.77	QP



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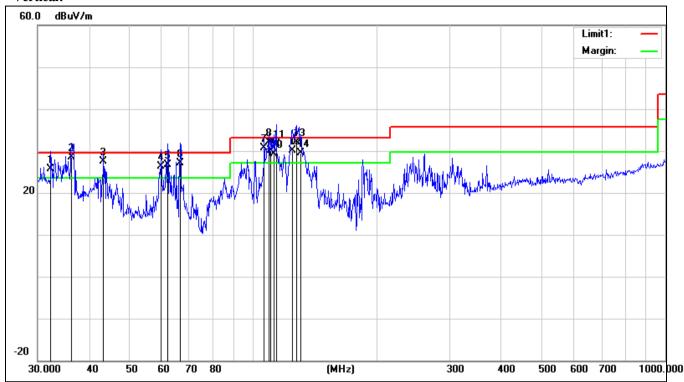
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Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	32.2924	29.80	-4.19	25.61	29.50	-3.89	QP
2	36.2541	34.91	-6.47	28.44	29.50	-1.06	QP
3	43.3534	39.01	-11.50	27.51	29.50	-1.99	QP
4	59.8588	41.63	-15.28	26.35	29.50	-3.15	QP
5	61.9951	41.95	-15.26	26.69	29.50	-2.81	QP
6	66.4990	42.18	-15.16	27.02	29.50	-2.48	QP
7	106.3850	41.09	-10.45	30.64	33.10	-2.46	QP
8	109.0284	41.93	-9.87	32.06	33.10	-1.04	QP
9	110.1816	39.77	-9.64	30.13	33.10	-2.97	QP
10	112.5241	38.47	-9.19	29.28	33.10	-3.82	QP
11	113.7142	40.64	-8.97	31.67	33.10	-1.43	QP
12	124.5690	38.11	-8.06	30.05	33.10	-3.05	QP
13	127.2176	40.16	-8.08	32.08	33.10	-1.02	QP
14	130.3788	37.83	-8.25	29.58	33.10	-3.52	QP

- End of the Report -



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