

Report No.: TBR-C-202211-0281-1 Page: 1 of 28

FCC Radio Test Report

FCC ID:2A9NX-OJD-97

Original Grant				
Report No.	:	TBR-C-202211-0281-1		
Applicant	-	Huizhou OJD Technology Co., Ltd		
Equipment Under Test	(E	UT)		
EUT Name	1	3 IN 1 WIRELESS CHARGER		
Model No.	4	OJD-97		
Series Model No.		- mobile mobile		
Brand Name		OJD		
Sample ID		202211-0281_01-01		
Receipt Date	22	2022-12-02		
Test Date	:	2022-12-02 to 2022-12-13		
Issue Date	:	2022-12-13		
Standards	i	FCC Part 15, Subpart C(15.209)		
Test Method		ANSI C63.10: 2013		
Conclusions	-	PASS		
		In the configuration tested, the EUT complied with the standards specified above		

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Test/Witness Engineer

Engineer Supervisor

Engineer Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0



Contents

COI	NTENTS	2
1.	GENERAL INFORMATION ABOUT EUT	5
	1.1 Client Information	5
	1.2 General Description of EUT (Equipment Under Test)	5
	1.3 Block Diagram Showing the Configuration of System Tested	6
	1.4 Description of Support Units	6
	1.5 Description of Test Mode	7
	1.6 Description of Test Software Setting	8
	1.7 Measurement Uncertainty	8
	1.8 Test Facility	9
2.	TEST SUMMARY	
3.	TEST SOFTWARE	
4.	TEST EQUIPMENT	11
5.	CONDUCTED EMISSION TEST	13
	5.1 Test Standard and Limit	13
	5.2 Test Setup	
	5.3 Test Procedure	
	5.4 Deviation From Test Standard	14
	5.5 EUT Operating Mode	14
	5.6 Test Data	
6.	RADIATED EMISSION TEST	15
	6.1 Test Standard and Limit	15
	6.2 Test Setup	
	6.3 Test Procedure	17
	6.4 Deviation From Test Standard	17
	6.5 EUT Operating Condition	
	6.6 Test Data	17
7.	BANDWIDTH MEASUREMENT	
	7.1 Test Standard and Limit	
	7.2 Test Setup	
	7.3 Test Procedure	
	7.4 Deviation From Test Standard	



	7.5 EUT Operating Condition	
	7.6 Test Data	
8.	ANTENNA REQUIREMENT	
	8.1 Standard Requirement	
	8.2 Deviation From Test Standard	
	8.3 Antenna Connected Construction	
	8.4 Result	
ATT	FACHMENT A CONDUCTED EMISSION TEST DATA	20
ATT	FACHMENT B RADIATED EMISSION TEST DATA	
ATT	ACHMENT C BANDWIDTH MEASUREMENT DATA	



Revision History

Report No.	Version	Description	Issued Date
TBR-C-202211-0281-1	Rev.01	Initial issue of report	2022-12-13
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1. General Information about EUT

1.1 Client Information

Applicant	•	Huizhou OJD Technology Co., Ltd	
Address	-	7F, Building 20, Zoina Hi-tech Industrial Park, No.6 Xinhua Avenue Chenjiang Street, Zhongkai High-tech Zone, Huizhou city, Guango Province, China	
Manufacturer		Huizhou OJD Technology Co., Ltd	
7F, Building 20, Zoina Hi-tech Industrial Park, No.6 Xinhua		7F, Building 20, Zoina Hi-tech Industrial Park, No.6 Xinhua Avenue, Chenjiang Street, Zhongkai High-tech Zone, Huizhou city, Guangdong Province, China	

1.2 General Description of EUT (Equipment Under Test)

EUT Name	1	3 IN 1 WIRELESS CHARGER			
Model(s)		OJD-97			
E - E	5	Operation Frequency:	Watch:300-350KHz Phone:110-205KHz		
Product	-	Modulation Type:	ASK		
Description			Coil Antenna 1+2 (Phone)		
		Antenna:	Coil Antenna 3 (Watch)		
GUDD -			Coil Antenna 4 (Earphone)		
Power Rating	:	Input: DC 9V/2A, 12V/1.5A Phone: 5W/7.5W/10W/15W Watch: 3W(Max) Earphone: 3W (Max) Wireless Charging: 15W(Max)			
Software Version	-	0x0A2C53FE	0x0A2C53FE		
Hardware Version		OJD-76-X-V2.1 Please refer to the User's Manual			
Connecting I/O Port(S)	:				

Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



1.3 Block Diagram Showing the Configuration of System Tested

Charging + TX Mode

Adapter

3*Load

1.4 Description of Support Units

Equipment Information				
Name	Model	S/N	Manufacturer	Used "√"
Watch			Apple	V
Phone			HUAWEI	
AirPods			Apple	\checkmark

Remark: the USB Cable provided by the Applicant, The Load and adapter provided by TOBY test lab.



1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

Test Modes:

Mode 1	AC/DC Adapter + EUT + Phone + Watch + AirPods (Battery Status: <1%)	Record		
Mode 2	AC/DC Adapter + EUT + Phone + Watch + AirPods (Battery Status: <50%)	Pre-tested		
Mode 3	AC/DC Adapter + EUT + Phone + Watch +AirPods (Battery Status: 99%)	Pre-tested		
Note: All test modes were pre-tested, but we only recorded the worst case in this report.				

Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, All test modes were pre-tested, but we only recorded the worst case in this report.

- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a portable unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.



1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF setting.

Test Software Version	N/A
THE THE	110-350KHz
Frequency	(Watch:300-350KHz, Earphone
	/Phone:110-205KHz)

1.7 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U _{Lab})
	Level Accuracy:	±3.50 dB
Conducted Emission	9kHz~150kHz	±3.10 dB
	150kHz to 30MHz	
Radiated Emission	Level Accuracy:	±4.60 dB
Radialed Emission	9kHz to 30 MHz	±4.00 UB
Radiated Emission	Level Accuracy:	±4.50 dB
	30MHz to 1000 MHz	± 4.00 dB
Radiated Emission	Level Accuracy:	±4.20 dB
	Above 1000MHz	<u>+</u> 4.20 ub



1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.



2. Test Summary

FCC Part 15 Subpart C(15.209)			
Standard Section	Test Item	Judgment	Remark
15.203	Antenna Requirement	PASS	N/A
15.207(a)	Conducted Emission	PASS	N/A
15.209(a)(f)	Radiated emissions	PASS	N/A
15.215	Bandwidth	PASS	N/A

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE



4. Test Equipment

	Manufacture	Medel No	Conicible	Leet Oal	
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jun. 23, 2022	Jun. 22, 2023
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jun. 23, 2022	Jun. 22, 2023
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jun. 22, 2022	Jun. 21, 2023
LISN	Rohde & Schwarz	ENV216	101131	Jun. 22, 2022	Jun. 21, 2023
ISN	SCHWARZBECK	NTFM 8131	8131-193	Jun. 22, 2022	Jun. 21, 2023
ISN	SCHWARZBECK	CAT3 8158	cat3 5158-0094	Jun. 22, 2022	Jun. 21, 2023
ISN	SCHWARZBECK	NTFM5158	NTFM5158 0145	Jun. 22, 2022	Jun. 21, 2023
ISN	SCHWARZBECK	CAT 8158	cat5 8158-179	Jun. 22, 2022	Jun. 21, 2023
Radiation Emissior	n Test (A Site)				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 23, 2022	Jun. 22, 2023
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jun. 23, 2022	Jun. 22, 2023
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Feb. 27, 2022	Feb.26, 2024
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Feb. 26, 2022	Feb.25, 2024
Pre-amplifier	SONOMA	310N	185903	Feb. 26, 2022	Feb.25, 2023
Pre-amplifier	HP	8449B	3008A00849	Feb. 26, 2022	Feb.25, 2023
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Sep. 01, 2022	Aug. 31, 2023
Antenna Conducte	d Emission				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jun. 23, 2022	Jun. 22, 2023
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 23, 2022	Jun. 22, 2023
MXA Signal Analyzer	KEYSIGT	N9020B	MY60110172	Sep. 01, 2022	Aug. 31, 2023
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Sep. 01, 2022	Aug. 31, 2023
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 01, 2022	Aug. 31, 2023
Analog Signal Generator	Agilent	N5181A	MY48180463	Sep. 01, 2022	Aug. 31, 2023
Vector Signal Generator	KEYSIGT	N5182B	MY59101429	Sep. 01, 2022	Aug. 31, 2023
Analog Signal Generator	KEYSIGHT	N5173B	MY61252685	Dec. 16, 2021	Dec. 15, 2022
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO26	Sep. 01, 2022	Aug. 31, 2023
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO29	Sep. 01, 2022	Aug. 31, 2023
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO31	Sep. 01, 2022	Aug. 31, 2023
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO33	Sep. 01, 2022	Aug. 31, 2023
RF Control Unit	Tonsced	JS0806-1	21C8060380	N/A	N/A
RF Control Unit	Tonsced	JS0806-2	21F8060439	Sep. 01, 2022	Aug. 31, 2023
Band Reject Filter Group	Tonsced	JS0806-F	21D8060414	Jun. 23, 2022	Jun. 22, 2023
Power Control Box	Tonsced	JS0806-4ADC	21C8060387	N/A	N/A
Wideband Radio Comunication Tester	Rohde & Schwarz	CMW500	144382	Sep. 01, 2022	Aug. 31, 2023
Universal Radio	Rohde&Schwarz	CMW500	168796	Jun. 23, 2022	Jun. 22, 2023



Communication Tester	TUD				64115
Temperature and Humidity Chamber	ZhengHang	ZH-QTH-1500	ZH2107264	Jun. 22, 2022	Jun. 21, 2023



5. Conducted Emission Test

- 5.1 Test Standard and Limit
 - 5.1.1Test Standard FCC Part 15.207
 - 5.1.2 Test Limit

Conducted Emission Test Limit

Engrand	Maximum RF Line Voltage (dBμV)				
Frequency	Quasi-peak Level	Average Level			
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *			
500kHz~5MHz	56	46			
5MHz~30MHz	60	50			

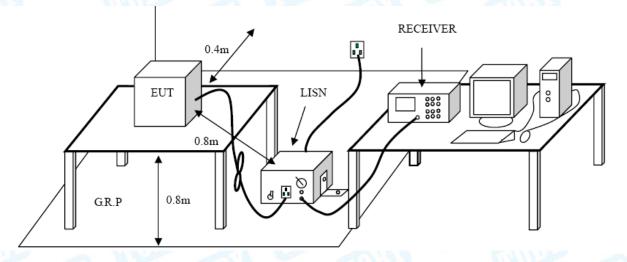
Notes:

(1) *Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequencies.

(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.2 Test Setup





5.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9 kHz, and the test frequency band is from 0.15MHz to 30MHz.

- 5.4 Deviation From Test Standard No deviation
- 5.5 EUT Operating Mode

Please refer to the description of test mode.

5.6 Test Data

Please refer to the Attachment A.



6. Radiated Emission Test

- 6.1 Test Standard and Limit
 - 6.1.1 Test Standard

FCC Part 15.209(a)(f)

6.1.2 Test Limit

Radiated Emission Limits (9 kHz~1000 MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Radiated Emission Limit (Above 1000MHz)

Frequency	Distance of 3m (dBuV/m)		
(MHz)	Peak	Average	
Above 1000	74	54	

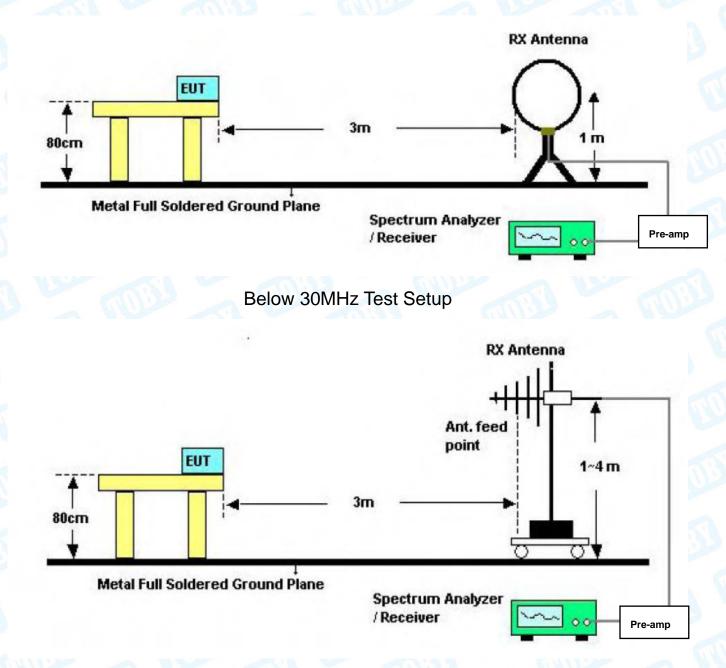
Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)



Report No.: TBR-C-202211-0281-1 Page: 16 of 28

6.2 Test Setup



Below 1000MHz Test Setup



6.3 Test Procedure

- (1) Measurements at frequency 9KHz~30MHz and Below 1GHz. The EUT was placed on a rotating 0.8m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) 9KHz~30MHz the test antenna 1m away from the ground, Both 0° and 90° antenna are set to make measurement.

Below 1GHz the test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

- (3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (5) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (6) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (7) For 9kHz to 150kHz, Set the spectrum analyzer as: RBW= 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW= 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple

- (8) For the actual test configuration, please see the test setup photo.
- 6.4 Deviation From Test Standard

No deviation

6.5 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

6.6 Test Data

Please refer to the Attachment B.

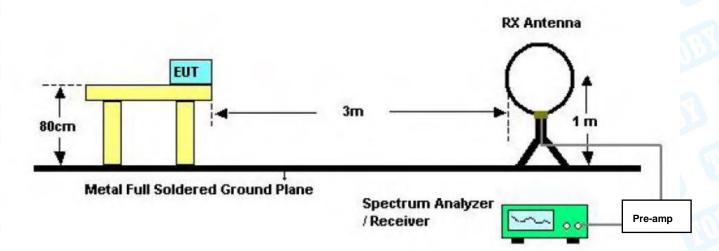


7. Bandwidth Measurement

- 7.1 Test Standard and Limit
 - 7.1.1 Test Standard

FCC Part 15.215

7.2 Test Setup



7.3 Test Procedure

1. The transmitter shall be operated at its maximum carrier power measured under normal test conditions;

2. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

3. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

- 7.4 Deviation From Test Standard No deviation
- 7.5 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

7.6 Test Data

Please refer to the Attachment C.



8. Antenna Requirement

- 8.1 Standard Requirement
 - 8.1.1 Standard

FCC Part 15.203

8.1.2 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 shall be considered sufficient to comply with the provisions of this Section. 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.

8.2 Deviation From Test Standard

No deviation

8.3 Antenna Connected Construction

The antenna is Coil Antenna, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

8.4 Result

The EUT antenna is a Coil Antenna. It complies with the standard requirement.

	Antenna Type
3 mil	Permanent attached antenna
ang)	Unique connector antenna
MAR	Professional installation antenna

Attachment A-- Conducted Emission Test Data

Temperature:	25.1 ℃		Re	elative Hum	nidity:	54%	199
Test Voltage:	AC 120	V/60 Hz					
Ferminal:	Line		1100				an B
Fest Mode:	Mode 1	anu!		6 NUL		50	Contraction of the second seco
Remark:	Only we	orse case is	s reported.		100	000	
120.0 dBu¥						QF	
						AV	
60							
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0.0							A
	0.5						
0.150	0.5		(MHz)	5			30.000
		Reading	Correct	Measure-	Limit	Over	30.000
0.150 No. Mk.	Freq.	Level	Correct Factor	Measure- ment	Limit	Over	
No. Mk.	Freq. MHz	Level dBuV	Correct Factor dB	Measure- ment dBuV	dBuV	dB	Detector
No. Mk.	Freq. MHz 0.1819	Level dBuV 38.99	Correct Factor dB 11.04	Measure- ment dBuV 50.03	dBuV 64.39	dB -14.36	Detector QP
No. Mk.	Freq. MHz 0.1819 0.1819	Level dBuV 38.99 21.78	Correct Factor dB 11.04 11.04	Measure- ment dBuV 50.03 32.82	dBuV 64.39 54.39	dB -14.36 -21.57	Detector QP AVG
No. Mk.	Freq. MHz 0.1819 0.1819 0.2580	Level dBuV 38.99 21.78 30.03	Correct Factor dB 11.04 11.04 10.92	Measure- ment dBuV 50.03 32.82 40.95	dBuV 64.39 54.39 61.49	dB -14.36 -21.57 -20.54	Detector QP AVG QP
No. Mk.	Freq. MHz 0.1819 0.1819 0.2580 0.2580	Level dBuV 38.99 21.78 30.03 13.10	Correct Factor dB 11.04 11.04 10.92 10.92	Measure- ment dBuV 50.03 32.82 40.95 24.02	dBuV 64.39 54.39 61.49 51.49	dB -14.36 -21.57 -20.54 -27.47	Detector QP AVG QP AVG
No. Mk.	Freq. MHz 0.1819 0.1819 0.2580 0.2580 0.5299	Level dBuV 38.99 21.78 30.03 13.10 29.04	Correct Factor dB 11.04 11.04 10.92 10.92 10.93	Measure- ment dBuV 50.03 32.82 40.95 24.02 39.97	dBuV 64.39 54.39 61.49 51.49 56.00	dB -14.36 -21.57 -20.54 -27.47 -16.03	Detector QP AVG QP AVG QP
No. Mk. 1 * 2 3 4 5 6	Freq. MHz 0.1819 0.2580 0.2580 0.5299 0.5299	Level dBuV 38.99 21.78 30.03 13.10 29.04 18.40	Correct Factor dB 11.04 11.04 10.92 10.92 10.93 10.93	Measure- ment dBuV 50.03 32.82 40.95 24.02 39.97 29.33	dBuV 64.39 54.39 61.49 51.49 56.00 46.00	dB -14.36 -21.57 -20.54 -27.47 -16.03 -16.67	Detector QP AVG QP AVG QP AVG
No. Mk. 1 * 2 3 4 5 6 7	Freq. MHz 0.1819 0.2580 0.2580 0.5299 0.5299 5.1020	Level dBuV 38.99 21.78 30.03 13.10 29.04 18.40 31.67	Correct Factor dB 11.04 10.92 10.92 10.93 10.93 10.02	Measure- ment dBuV 50.03 32.82 40.95 24.02 39.97 29.33 41.69	dBuV 64.39 54.39 61.49 51.49 56.00 46.00 60.00	dB -14.36 -21.57 -20.54 -27.47 -16.03 -16.67 -18.31	Detector QP AVG QP AVG QP AVG QP
No. Mk. 1 * 2 3 4 5 6 7 8	Freq. MHz 0.1819 0.2580 0.2580 0.5299 0.5299 5.1020 5.1020	Level dBuV 38.99 21.78 30.03 13.10 29.04 18.40 31.67 18.64	Correct Factor dB 11.04 11.04 10.92 10.92 10.93 10.93 10.02 10.02	Measure- ment dBuV 50.03 32.82 40.95 24.02 39.97 29.33 41.69 28.66	dBuV 64.39 54.39 61.49 51.49 56.00 46.00 60.00 50.00	dB -14.36 -21.57 -20.54 -27.47 -16.03 -16.67 -18.31 -21.34	Detector QP AVG QP AVG QP AVG QP AVG
No. Mk. 1 * 2 3 4 5 6 7 8 9	Freq. MHz 0.1819 0.2580 0.2580 0.5299 0.5299 5.1020 5.1020 5.7420	Level dBuV 38.99 21.78 30.03 13.10 29.04 18.40 31.67 18.64 29.27	Correct Factor dB 11.04 11.04 10.92 10.92 10.93 10.93 10.02 10.02 10.03	Measure- ment dBuV 50.03 32.82 40.95 24.02 39.97 29.33 41.69 28.66 39.30	dBuV 64.39 54.39 61.49 51.49 56.00 46.00 60.00 50.00	dB -14.36 -21.57 -20.54 -27.47 -16.03 -16.67 -18.31 -21.34 -20.70	Detector QP AVG QP AVG QP AVG QP AVG QP
No. Mk. 1 * 2 3 4 5 6 7 8	Freq. MHz 0.1819 0.2580 0.2580 0.5299 0.5299 5.1020 5.1020	Level dBuV 38.99 21.78 30.03 13.10 29.04 18.40 31.67 18.64	Correct Factor dB 11.04 11.04 10.92 10.92 10.93 10.93 10.02 10.02	Measure- ment dBuV 50.03 32.82 40.95 24.02 39.97 29.33 41.69 28.66	dBuV 64.39 54.39 61.49 51.49 56.00 46.00 60.00 50.00	dB -14.36 -21.57 -20.54 -27.47 -16.03 -16.67 -18.31 -21.34	Detector QP AVG QP AVG QP AVG QP AVG
No. Mk. 1 * 2 3 4 5 6 7 8 9	Freq. MHz 0.1819 0.2580 0.2580 0.5299 0.5299 5.1020 5.1020 5.7420	Level dBuV 38.99 21.78 30.03 13.10 29.04 18.40 31.67 18.64 29.27	Correct Factor dB 11.04 11.04 10.92 10.92 10.93 10.93 10.02 10.02 10.03	Measure- ment dBuV 50.03 32.82 40.95 24.02 39.97 29.33 41.69 28.66 39.30	dBuV 64.39 54.39 61.49 51.49 56.00 46.00 60.00 50.00	dB -14.36 -21.57 -20.54 -27.47 -16.03 -16.67 -18.31 -21.34 -20.70	Detector QP AVG QP AVG QP AVG QP AVG QP

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

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empera	ture:	25.1°C		AN	Relative Hu	midity:	54%	AR
est Volt	age:	AC 12	20V/60 Hz					
erminal	:	Neutra	al		3	61	1.32	-
est Mod	le:	Mode	1	1 See	- Series		6	(B)
Remark:		Only	worse case	is reported				
20.0 dBu¥							QP:	_
							AVG:	
60								
M								×
An	MMM	May Marin	hundhik.				an a la hold the	
TV N	Mala	Arry May	White mapping	and the state of the second of	all with the and the second second	an de la contra de l		
	W	/ "	Mary all the second	had more shall be had	medical and the	AVN MANANA AND A	NIAMUN WALL OF L	Р
0.0								
0.150								
0.100		0.5	Reading	(MHz)	5 Measure-			30.000
No. M	lk. Fre		Reading Level	(MHz) Correct Factor	₅ Measure- ment	Limit	Over	30.000
	lk. Fre M⊦	eq.		Correct	Measure-	Limit dBuV	Over dB	30.000 Detecto
		eq. Iz	Level	Correct Factor	Measure- ment		dB	
No. M	MF	eq. Iz '80	Level dBuV	Correct Factor dB	Measure- ment dBuV	dBuV 64.57	dB	Detecto
No. M	M⊦ 0.17	eq. Iz 780 780	Level dBuV 37.76	Correct Factor dB 11.05	Measure- ment dBuV 48.81	dBuV 64.57	dB -15.76 -21.50	Detecto QP
No. M	M⊦ 0.17 0.17	eq. Hz 780 780 740	Level dBuV 37.76 22.02	Correct Factor dB 11.05 11.05	Measure- ment dBuV 48.81 33.07	dBuV 64.57 54.57 56.44	dB -15.76 -21.50	Detecto QP AVC
No. M 1 * 2 3	M⊦ 0.17 0.17 0.47	eq. ¹ z 780 780 740 740	Level dBuV 37.76 22.02 24.15	Correct Factor dB 11.05 11.05 10.91	Measure- ment dBuV 48.81 33.07 35.06	dBuV 64.57 54.57 56.44 46.44	dB -15.76 -21.50 -21.38	Detecto QP AVC QP
No. M 1 * 2 3 4	M⊦ 0.17 0.17 0.47 0.47	eq. ¹ z 780 740 740 220	Level dBuV 37.76 22.02 24.15 10.50	Correct Factor dB 11.05 11.05 10.91 10.91	Measure- ment dBuV 48.81 33.07 35.06 21.41	dBuV 64.57 54.57 56.44 46.44 56.00	dB -15.76 -21.50 -21.38 -25.03	Detecto QP AVC QP AVC
No. M 1 * 2 3 4 5	M⊦ 0.17 0.17 0.47 0.47 1.62	eq. ¹ z 780 740 740 220 220	Level dBuV 37.76 22.02 24.15 10.50 13.53	Correct Factor dB 11.05 11.05 10.91 10.91 10.60	Measure- ment dBuV 48.81 33.07 35.06 21.41 24.13	dBuV 64.57 54.57 56.44 46.44 56.00 46.00	dB -15.76 -21.50 -21.38 -25.03 -31.87	Detecto QP AVC QP AVC
No. M 1 * 2 3 4 5 6	M⊦ 0.17 0.17 0.47 0.47 1.62 1.62	eq. ¹ z 80 240 240 220 220	Level dBuV 37.76 22.02 24.15 10.50 13.53 6.82	Correct Factor dB 11.05 11.05 10.91 10.91 10.60 10.60	Measure- ment dBuV 48.81 33.07 35.06 21.41 24.13 17.42	dBuV 64.57 54.57 56.44 46.44 56.00 46.00 60.00	dB -15.76 -21.50 -21.38 -25.03 -31.87 -28.58	Detecto QP AVC QP AVC QP AVC
No. M 1 * 2 3 4 5 6 7	M 0.17 0.17 0.47 0.47 1.62 1.62 5.10	eq. ¹ z 80 80 40 40 20 20 20 20	Level dBuV 37.76 22.02 24.15 10.50 13.53 6.82 28.29	Correct Factor dB 11.05 11.05 10.91 10.91 10.60 10.60 10.04	Measure- ment dBuV 48.81 33.07 35.06 21.41 24.13 17.42 38.33	dBuV 64.57 54.57 56.44 46.44 56.00 46.00 60.00 50.00	dB -15.76 -21.50 -21.38 -25.03 -31.87 -28.58 -21.67	Detecto QP AVC QP AVC QP AVC QP
No. M 1 * 2 3 4 5 6 7 8	M 0.17 0.17 0.47 0.47 1.62 1.62 5.10 5.10	eq. ¹ z ¹ 80 ² 80 ² 40 ² 40 ² 20 ² 20 ² 20 ² 20 ³ 60	Level dBuV 37.76 22.02 24.15 10.50 13.53 6.82 28.29 16.15	Correct Factor dB 11.05 11.05 10.91 10.91 10.60 10.60 10.04 10.04	Measure- ment dBuV 48.81 33.07 35.06 21.41 24.13 17.42 38.33 26.19	dBuV 64.57 54.57 56.44 46.44 56.00 46.00 60.00 50.00	dB -15.76 -21.50 -21.38 -25.03 -31.87 -28.58 -21.67 -23.81	Detecto QP AVC QP AVC QP AVC QP AVC
No. M 1 * 2 3 4 5 6 7 8 9	M 0.17 0.17 0.47 0.47 1.62 1.62 5.10 5.10 9.18	eq. ¹ z ¹ 80 ² 40 ² 40 ² 40 ² 20 ² 20 ² 20 ² 20 ³ 60 ³ 60	Level dBuV 37.76 22.02 24.15 10.50 13.53 6.82 28.29 16.15 22.02	Correct Factor dB 11.05 11.05 10.91 10.91 10.60 10.60 10.04 10.04 10.04 10.14	Measure- ment dBuV 48.81 33.07 35.06 21.41 24.13 17.42 38.33 26.19 32.16	dBuV 64.57 54.57 56.44 46.44 56.00 46.00 60.00 50.00	dB -15.76 -21.50 -21.38 -25.03 -31.87 -28.58 -21.67 -23.81 -27.84 -27.15	Detecto QP AVC QP AVC QP AVC QP AVC QP

2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

TB-RF-074-1.0

Attachment B-- Radiated Emission Test Data

30MHz~1GHz

Temperature:	24.1℃			Relative Hun	nidity:	49%	
Test Voltage:	AC 120	V/60 Hz		and's	5	- 5	U
Ant. Pol.	Horizor	ntal			CAR	10	
Test Mode:	Mode 1		RUUE	1	A CON		11
Remark:	Only we	orse case is	s reported	2000		A.K.	
80.0 dBu∀/m							
30		z X	- www.m.w.		FCC	5 6	
Market Market	have a second						
-20 30.000 40 56	barry	80	(MHz)	300	400	500 600 70)0 1000.00
-20 30.000 40 50		80 Reading Level	(MH2) Correct Factor	300 Measure- ment	400	500 600 70 Over	0 1000.0
-20 30.000 40 50 No. Mk.		Reading	Correct	Measure-		Over	
-20 30.000 40 50 No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	Detecto
-20 30.000 40 50 No. Mk. 1 1 47	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detecto
-20 30.000 40 50 No. Mk. 10 1 47 2 84	Freq. MHz .9940	Reading Level dBuV 34.54	Correct Factor dB/m -16.73	Measure- ment dBuV/m 17.81	Limit dBuV/m 40.00	Over dB -22.19	Detecto 9 peak 3 peak
²⁰ 30.000 40 50 No. Mk. 10 1 47 2 84 3 ! 192	Freq. MHz .9940 .7019	Reading Level dBuV 34.54 44.59	Correct Factor dB/m -16.73 -15.62	Measure- ment dBuV/m 17.81 28.97	Limit dBuV/m 40.00 40.00	Over dB -22.19 -11.03	Detecto) peak 3 peak peak
-20 30.000 40 50 No. Mk. 10 1 47 2 84 3 ! 192 4 * 305	Freq. MHz .9940 .7019 2.4186	Reading Level dBuV 34.54 44.59 52.28	Correct Factor dB/m -16.73 -15.62 -13.76	Measure- ment dBuV/m 17.81 28.97 38.52	Limit dBuV/m 40.00 40.00 43.50	Over dB -22.19 -11.03 -4.98	Detecto) peak 3 peak peak peak

*:Maximum data x:Over limit !:over margin

Remark:

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dBµV/m)-Limit QPK(dBµV/m)

TOBY

emperature:	24.1℃		R	elative Humi	dity:	49%	
est Voltage:	AC 120)V/60 Hz			200	2	ALC: N
Ant. Pol.	Vertical					1673	-
est Mode:	Mode 1		1995	(Internet		601	132
Remark:	Only wo	orse case is	s reported	0102		au	
80.0 dBu¥/m							
30		21 X	*	5	FC	C 15C 3M Radiati Margin - f	
20		hument					
20 30.000 40 5	0 60 70	80	(MHz)	300	400	500 600 700	1000.00
20 30.000 40 5			(MHz) Correct Factor	300 Measure- ment	400	500 600 700 Over	1000.00
20 30.000 40 5 No. Mk. F		80 Reading	Correct	Measure-		Over	
20 30.000 40 5 No. Mk. F	Freq.	80 Reading Level	Correct Factor	Measure- ment	Limit	Over dB	Detecto
²⁰ 30.000 40 5 No. Mk. F 1 48.	Freq. MHz	80 Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB -6.85	Detecto
²⁰ 30.000 40 5 No. Mk. F 1 48. 2 * 84.	Freq. MHz .3318	80 Reading Level dBuV 49.89	Correct Factor dB/m -16.74	Measure- ment dBuV/m 33.15	Limit dBuV/m 40.00	Over dB -6.85 -3.19	Detecto peak
²⁰ 30.000 40 5 No. Mk. F 1 48. 2 * 84. 3 ! 160	Freq. MHz .3318 .1100	80 Reading Level dBuV 49.89 52.50	Correct Factor dB/m -16.74 -15.69	Measure- ment dBuV/m 33.15 36.81	Limit dBuV/m 40.00 40.00	Over dB -6.85 -3.19 -3.38	Detecto peak peak
²⁰ 30.000 40 5 No. Mk. F 1 48. 2 * 84. 3 ! 160 4 183	Freq. MHz 3318 1100 0.3456	80 Reading Level dBuV 49.89 52.50 53.96	Correct Factor dB/m -16.74 -15.69 -13.84	Measure- ment dBuV/m 33.15 36.81 40.12	Limit dBuV/m 40.00 40.00 43.50	Over dB -6.85 -3.19 -3.38 -6.23	Detector peak peak QP peak

*:Maximum data x:Over limit !:over margin

Remark:

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dBµV/m)-Limit QPK(dBµV/m)

9KMz-30MHz

Temperature:	24.1 ℃		F	Relative Humio	dity:	49%	00D
Test Voltage:	AC 120	0V/60 Hz		1			
Ant. Pol.	Ant. 0°	3	GU	12			1200
Test Mode:	Mode			CIN)			View
Remark:	N/A	USUL			anti		5
140.0 dBuV/m							
90 40.0 0.009	mw m		(MHz)	maning with a second	ax M		OMHz in -6 dB
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector

-11.67

-11.57

-11.33

-6.01

-6.37

-7.37

69.79

71.20

71.03

87.24

84.05

88.09

124.13

116.93

110.19

106.26

105.69

104.39

peak

peak

peak

peak

peak

peak

-54.34

-45.73

-39.16

-19.02

-21.64

-16.30

Remark:

1

2

3

4

5

6

Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak/AVG(dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)

0.0154

0.0352

0.0763

0.1198

0.1280

0.1486

3. Margin (dB) = QuasiPeak/AVG (dBµV/m)-Limit QPK/AVG(dBµV/m)

81.46

82.77

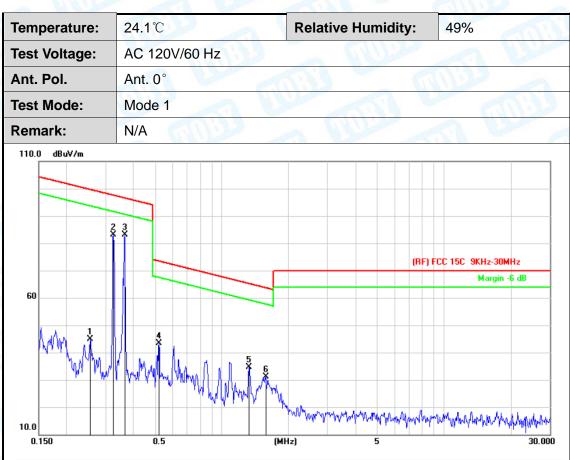
82.36

93.25

90.42

95.46

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١	No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.2560	54.77	-9.85	44.92	99.65	-54.73	peak
2		0.3251	93.53	-10.36	83.17	97.57	-14.40	peak
3	*	0.3453	93.76	-10.57	83.19	96.56	-13.37	peak
4		0.5210	54.61	-11.31	43.30	73.46	-30.16	peak
5		1.3238	46.25	-11.62	34.63	65.23	-30.60	peak
6		1.5766	42.72	-11.65	31.07	63.69	-32.62	peak

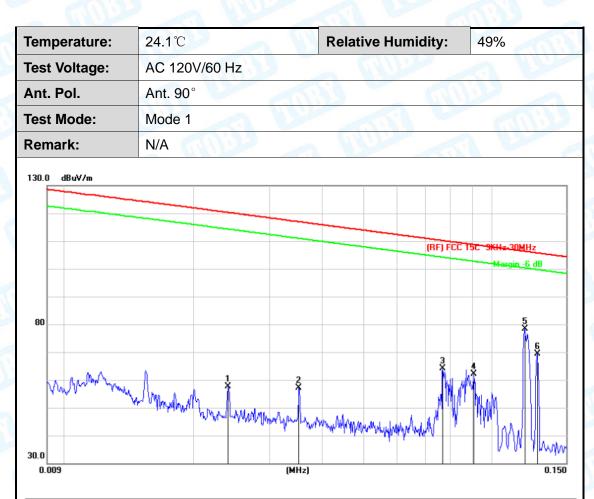
Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)

2. QuasiPeak/AVG(dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)

3. Margin (dB) = QuasiPeak/AVG (dBµV/m)-Limit QPK/AVG(dBµV/m)

ΤΟΒ



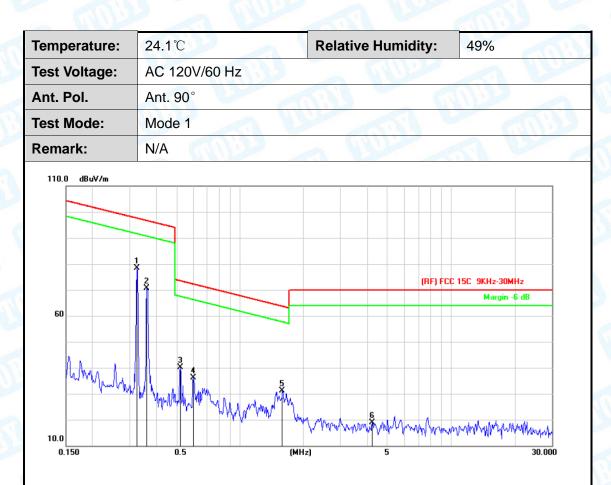
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		0.0240	69.20	-11.60	57.60	120.26	-62.66	peak
2		0.0352	68.70	-11.57	57.13	116.93	-59.80	peak
3		0.0767	75.45	-11.32	64.13	110.15	-46.02	peak
4		0.0908	73.29	-11.23	62.06	108.68	-46.62	peak
5	*	0.1198	84.45	-6.01	78.44	106.26	-27.82	peak
6		0.1280	75.83	-6.37	69.46	105.69	-36.23	peak

Remark:

Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak/AVG(dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)

3. Margin (dB) = QuasiPeak/AVG (dBµV/m)-Limit QPK/AVG(dBµV/m)

ΤΟΒ



No	o. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	0.3251	88.67	-10.36	78.31	97.57	-19.26	peak
2		0.3413	81.26	-10.55	70.71	96.65	-25.94	peak
3		0.5210	51.35	-11.31	40.04	73.46	-33.42	peak
4		0.6010	47.52	-11.38	36.14	72.20	-36.06	peak
5		1.5850	42.81	-11.65	31.16	63.64	-32.48	peak
6		4.2241	30.65	-11.84	18.81	70.00	-51.19	peak

Remark:

Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 QuasiPeak/AVG(dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)

3. Margin (dB) = QuasiPeak/AVG (dBµV/m)-Limit QPK/AVG(dBµV/m)



Attachment C-- Bandwidth Measurement Data

Frequency	20 dBc Bandwidth	99% OBW	Result	
(KHz)	(kHz)	(kHz)		
325.40	28.79	26.267	PASS	
Spectrum Ana Occupied BW KEYSIGH		un Center Freq. 325 400 kHz		
RL 😱 CC 1 Graph	Input RF Input Z 50 0 Atten 10 dB Trig Free Coupling AC Corr Corr RCar RCal Preamp. Off Gale off Align: AutorNo RF Freq Ret Int (S)	un Center Freq 325:400 kHz Avgihetid - 2015 Avgihetid - 2016 Avgihetid - 2		
Scale/Div 10 Log 0 00 -10 0	0 dB Ref Value	10.00 dBm		
-20 0 -30 0 -40 0 -50 0				
-60 0 -70 0 -80 0				
Center 325.4 #Res BW 10. 2 Metrics) kHz #Video BW	30.000 kH2* Sweep 1.27	Span 100 kHz ms (1001 pts)	
	Occupied Bandwidth 26.267 kHz	Total Power -24.6 dBm		
	Transmit Freq Error 245 Hz x dB Bandwidth 28.79 kHz	% of OBW Power 99.00 % x dB -20.00 dB	Local	
1	C Dec 06, 2022 Dec	spec'd < 10MHz		
Freeworev	20 dDe Dendwidth			
Frequency	20 dBc Bandwidth	99% OBW	Result	
(KHz)	(kHz)	(kHz)	DASS	
123.00	66.15	62.095	PASS	
KEYSIGH RL 😱	Input: RF Input Z: 50 Ω Atten: 10 dB Trig: Free R	tun Center Freq: 123.000 kHz Avg)Hold>10/10 w Radio Std: None		
LU 1 Graph Scale/Div 10	v 0 dB Ref Value	10.00 dBm		
-10.0 -20.0				
-400 -500 -600				
-70.0				
-80 0 Center 123.0 #Res BW 10.) kHz #Video BW 000 kHz	30.000 kHz* Sweep 1.27	Span 100 kHz ms (1001 pts)	
-200 C C C C C C C C C C C C C C C C C C	v v v v v v v v v v v v v v v v v v v	30.000 kHz* Sweep 1.27	Span 100 kHz ms (1001 pls)	
#Res BW 10.	Occupied Bandwidth Occupied Bandwidth Transmit Free Error - 15.191 kHz	Sweep 127 Total Power -23.7 dBm % of OBW Power 99.00 %	Span 100 kHz ms (1001 pts)	
#Res BW 10.	Occupied Bandwidth 62.095 kHz Transmit Freq Error x dB Bandwidth 66.15 kHz	Total Power -23.7 dBm % of OBW Power 99.00 % x oB -20.00 dB	Span 100 kHz ms (1001 pts)	

-----END OF REPORT-----