TEST REPORT

2AUARTPMST600				
TCT231101E104				
Nov. 27, 2023				
SHENZHEN TONGCE TESTING LAB				
2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China				
THINKCAR TECH CO., LTD.				
2606, building 4, phase II, TiananYungu, Gangtou community, Bantian, Longgang District, Shenzhen, China				
THINKCAR TECH CO., LTD.				
2606, building 4, phase II, TiananYungu, Gangtou community, Bantian, Longgang District, Shenzhen, China				
FCC CFR Title 47 Part 15 Subpart C				
TPMS Diagnostic Tool				
THINKCAR, XHINKCAR, MUCAR				
тктт6				
Rechargeable Li-ion Battery DC 3.7V				
Nov. 01, 2023				
Nov. 01, 2023 - Nov. 27, 2023				
Yannie ZHONG				
Beryl ZHAO				
Tomsin				

General disclaimer:

This report shall not be reproduced except in full, without the written approval of SHENZHEN TONGCE TESTING LAB. This document may be altered or revised by SHENZHEN TONGCE TESTING LAB personnel only, and shall be noted in the revision section of the document. The test results in the report only apply to the tested sample.

Rei	oort	No.:	TCT2	31101	E104
,			10120	,,,,,,,	L 104

Table of Contents

TCT通测检测 TESTING CENTRE TECHNOLOGY

1.1.	EUT desci	oduct Info		B			
	.,	ist					
2. Te	st Resul	t Summai	у	•••••		•••••	
3. Ge	eneral ini	ormation	•••••	•••••	•••••	•••••	 כ
		onment and I					
		on of Support					
		nd Accre					
		ent Uncertai					
		ts and Me					
		equirement					
		d Emission					
		Spurious Emi					
		Photogra					
		Photogra		-			



1. General Product Information

1.1.EUT description

Product Name:	TPMS Diagnostic Tool	
Model/Type reference:	тктт6	
Sample Number:	TCT231101E023-0101	
Operation Frequency:	125kHz	
Modulation Technology:	FSK	
Antenna Type:	Internal Antenna	
Rating(s):	Rechargeable Li-ion Battery DC 3.7V	

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2.Model(s) list

None.

Page 3 of 24

Report No.: TCT231101E104



2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Spurious Emission	§15.209(a)(f)	PASS

Note:

- 1. PASS: Test item meets the requirement.
- 2. Fail: Test item does not meet the requirement.
- 3. N/A: Test case does not apply to the test object.
- 4. The test result judgment is decided by the limit of test standard.

3. General Information

3.1. Test environment and mode

Operating Environment:					
Condition Conducted Emission Radiated Emission					
Temperature:	23.5 °C	24.1 °C			
Humidity:	52 % RH	54 % RH			
Atmospheric Pressure: 1010 mbar 1010 mbar					
Test Mode:					

E a star e substar a se star e	Keen the EUT is senting and the second transmitting
Engineering mode:	Keep the EUT in continuous transmitting.
Engineering mede.	

The sample was placed 0.8m for the measurement below above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case(Z axis) are shown in Test Results of the following pages.

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
1	1	1 6	/	(Č

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended

use.



4. Facilities and Accreditations

4.1. Facilities

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

• FCC - Registration No.: 645098

SHENZHEN TONGCE TESTING LAB

Designation Number: CN1205

The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

IC - Registration No.: 10668A-1

SHENZHEN TONGCE TESTING LAB CAB identifier: CN0031

The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB

Address: 2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China TEL: +86-755-27673339

TEL: +80-755-27673339

4.3. Measurement Uncertainty

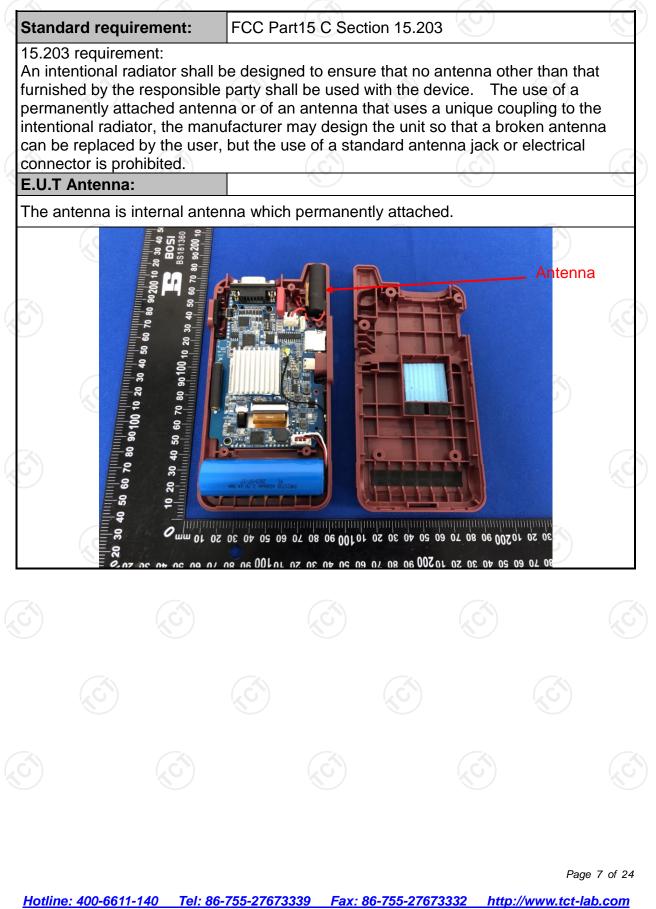
The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	🕙 ± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB



5. Test Results and Measurement Data

5.1. Antenna requirement





5.2. Conducted Emission

5.2.1. Test Specification

Test Requirement:	FCC Part15 C Section	15.207	No. Contraction of the second se	
Test Method:	ANSI C63.10: 2013			
Frequency Range:	150 kHz to 30 MHz	$\langle \mathcal{O}^{(n)} \rangle$	$\langle c \rangle$	
Receiver setup:	RBW=9 kHz, VBW=30) kHz, Sweep time	e=auto	
Limits:	Frequency range (MHz) 0.15-0.5 0.5-5 5-30	Limit (Quasi-peak 66 to 56* 56 60	dBuV) Average 56 to 46* 46 50	
	Reference	ce Plane		
Test Setup:	40cm E.U.T AC power Test table/Insulation plane Remarkc E.U.T: Equipment Under Test LISN: Line Impedence Stabilization N Test table height=0.8m	EMI Receiver	r AC power	
Test Mode:	Charging +Transmittin	ng Mode		
	 The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. 			
Test Procedure:	 power through a L coupling impedance refer to the block photographs). 3. Both sides of A.C conducted interfere emission, the relativithe interface cable 	ces are also conne ISN that provides e with 50ohm terr diagram of the . line are checke nce. In order to fi ve positions of equ s must be chang	a 50ohm/50uH nination. (Please test setup and ed for maximum nd the maximum ipment and all o ged according to	



5.2.2. Test Instruments

TCT通测检测 TESTING CENTRE TECHNOLOGY

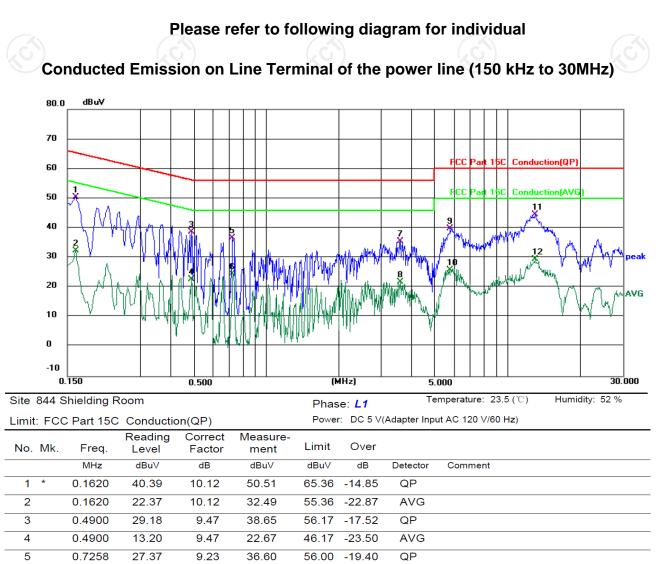
Conducted Emission Shielding Room Test Site (843)						
Equipment	Manufacturer	Model	Serial Number	Calibration Due		
EMI Test Receiver	R&S	ESCI3	100898	Jun. 29, 2024		
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	Feb. 20, 2024		
Line-5	тст	CE-05	/	Jul. 03, 2024		
EMI Test Software	Shurple Technology	EZ-EMC	1	1		



Page 9 of 24



5.2.3. Test data



6

7

8

9

10

11

12

0.7258

3.5939

3.5939

5.7980

5.7980

13.0500

13.0500

15.39

25.49

11.88

29.68

15.76

34.39

19.23

9.23

10.07

10.07

10.10

10.10

10.16

10.16

24.62

35.56

21.95

39.78

25.86

44.55

29.39

Freq. = Emission frequency in MHz Reading level $(dB\mu V) = Receiver reading$ Corr. Factor (dB) = LISN factor + Cable loss Measurement $(dB\mu V) = Reading \, level \, (dB\mu V) + Corr. Factor \, (dB)$ Limit $(dB\mu V) = Limit$ stated in standard Margin (dB) = Measurement (dB μ V) – Limits (dB μ V) Q.P. =Quasi-Peak AVG =average * is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz Page 10 of 24

46.00 -21.38

56.00 -20.44

46.00 -24.05

60.00 -20.22

50.00 -24.14

60.00 -15.45

50.00 -20.61

AVG

QP

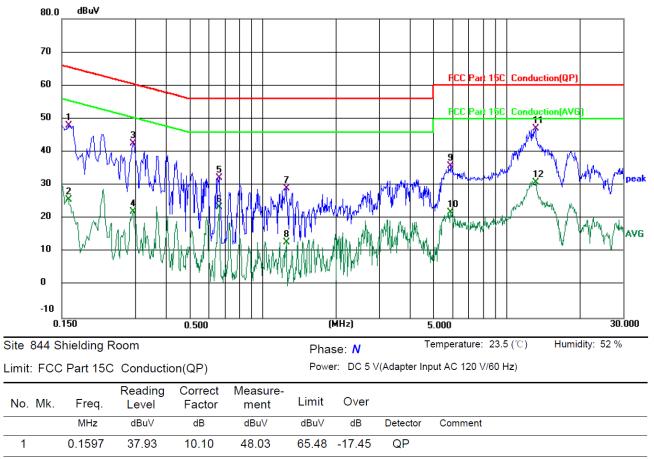
AVG

QP

AVG

AVG

QP



Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)

		20101	1 dotoi	mont				
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1597	37.93	10.10	48.03	65.48	-17.45	QP	
2	0.1597	15.52	10.10	25.62	55.48	-29.86	AVG	
3	0.2938	33.00	9.65	42.65	60.42	-17.77	QP	
4	0.2938	12.42	9.65	22.07	50.42	-28.35	AVG	
5	0.6620	22.86	9.31	32.17	56.00	-23.83	QP	
6	0.6620	14.07	9.31	23.38	46.00	-22.62	AVG	
7	1.2540	18.96	10.00	28.96	56.00	-27.04	QP	
8	1.2540	2.79	10.00	12.79	46.00	-33.21	AVG	
9	5.8900	25.69	10.12	35.81	60.00	-24.19	QP	
10	5.8900	11.72	10.12	21.84	50.00	-28.16	AVG	
11 *	13.1900	36.76	10.23	46.99	60.00	-13.01	QP	
12	13.1900	20.56	10.23	30.79	50.00	-19.21	AVG	

Note1:

TCT 通测检测 TESTING CENTRE TECHNOLOGY

140	len.		
	Freq. = Emission frequency in MHz		
	Reading level ($dB\mu V$) = Receiver reading		
	Corr. Factor (dB) = LISN factor + Cable loss		
	Measurement ($dB\mu V$) = Reading level ($dB\mu V$) + Corr. Factor (dB)		
	Limit (dB μ V) = Limit stated in standard		
	Margin (dB) = Measurement (dB μ V) – Limits (dB μ V)		
	Q.P. =Quasi-Peak		
	AVG =average		
	* is meaning the worst frequency has been tested in the frequency range 1	50 kHz to 30MHz.	
			Page 11 of 24

5.3. Radiated Spurious Emission Measurement

5.3.1. Test Specification

TCT通测检测 TESTING CENTRE TECHNOLOGY

Test Requirement:	FCC Part15	C Section	15.209					
Test Method:	ANSI C63.10): 2013						
Frequency Range:	9 kHz to 25 (GHz			C	0		
Measurement Distance:	3 m		9		C)		
Antenna Polarization:	Horizontal &	Vertical						
Operation mode:	Refer to item 3.1							
						- K		
	Frequency	Detector	RBW	VBW	-	Remark		
Receiver Setup:	9kHz- 150kHz 150kHz- 30MHz	Quasi-peak Quasi-peak		1kHz 30kHz		si-peak Value si-peak Value		
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Qua	si-peak Value		
	Frequen	5	Field Str (microvolts	/meter)		asurement ince (meters)		
	0.009-0.4		2400/F(,		300		
	0.490-1.7		24000/F	(KHz)	30			
	1.705-30 30-88		30	1	30			
	88-216		150		K	3		
Limit:	216-96		200			3		
	Above 9		500		3			
	Freduency		d Strength volts/meter)	Measure Distan (meter	ce	Detector		
	Above 1GHz	7	500	3		Average		
			5000		- (.č	Peak		
	For radiated	emissions		JIVI⊟Z				
Test setup:	Di EUT 0.Sm	stance = 3m	Plane	Pre -/	Compu Amplifier			

Report No.: TCT231101E104 Antenna Tower Search Antenna EUT 4mRF Test Receiver Turn 0.8m 1m Table Ground Plane 1. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. For the radiated emission test above 1GHz: Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for **Test Procedure:** maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 4. Use the following spectrum analyzer settings:

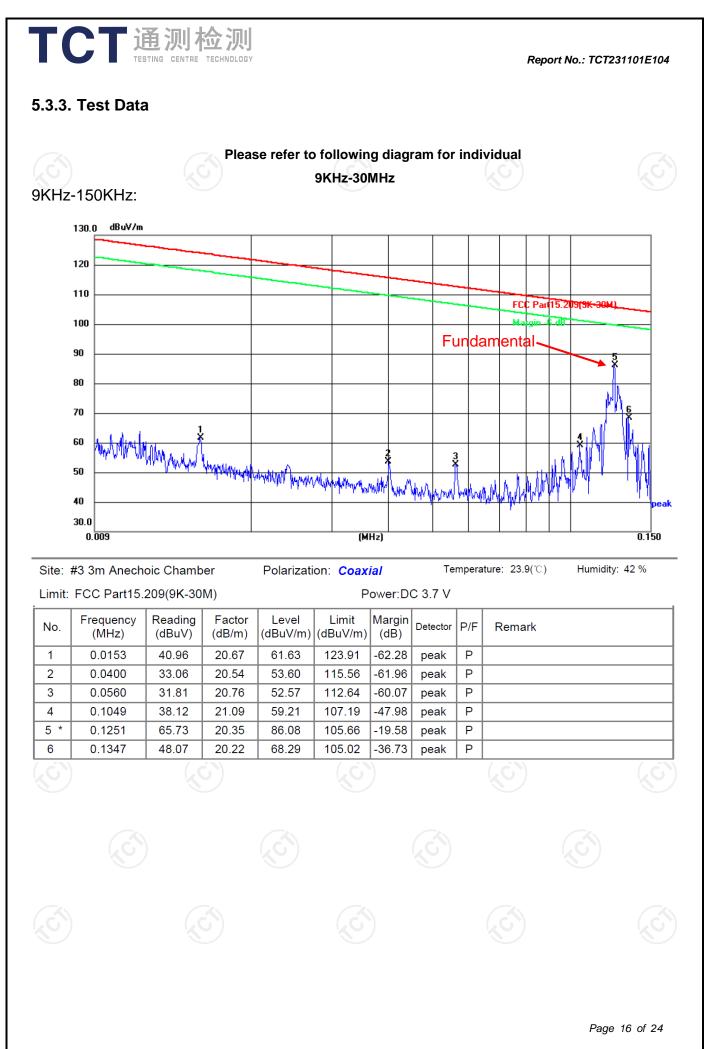
		(2) S (2) S For t t	emission be Set RBW=1 Sweep = au nax hold; average m cycle is no vhen duty o s the minin he transmi	wide enoug eing measu 20 kHz for uto; Detecto easuremen less than 98 cycle is less num transm tter is on an oower contron	red; f < 1 GHz; or function t: VBW = 1 3 percent. 5 than 98 p ission dura 1d is transr	; VBW ≥RE = peak; Tra 10 Hz, whe VBW ≥ 1/T percent whe ation over y mitting at its	ace = n duty ; ere T which s
Test n	node: esults:	Refer to	o section 3	.1 for detail	s		Ć
163(1				(C)			

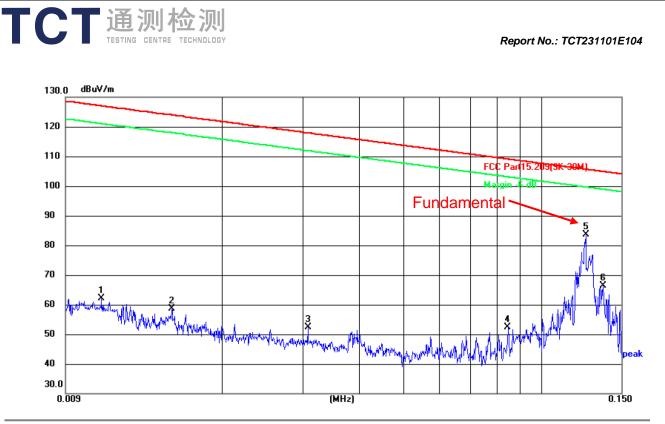
5.3.2. Test Instruments

TCT通测检测 TESTING CENTRE TECHNOLOGY

Radiated Emission Test Site (966)										
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due						
EMI Test Receiver	R&S	ESIB7	100197	Jun. 29, 2024						
Spectrum Analyzer	R&S	FSQ40	200061	Jun. 29, 2024						
Pre-amplifier	SKET	LNPA_0118G- 45	SK2021012 102	Feb. 20, 2024						
Pre-amplifier	SKET	LNPA_1840G- 50	SK2021092 03500	Feb. 20, 2024						
Pre-amplifier	HP	8447D	2727A05017	Jun. 27, 2024						
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jul. 02, 2024						
Broadband Antenna	Schwarzbeck	VULB9163	340	Jul. 01, 2024						
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Jul. 01, 2024						
Horn Antenna	Schwarzbeck	BBHA 9170	00956	Feb. 24, 2024						
Antenna Mast	Keleto	RE-AM	1							
Coaxial cable	SKET	RC-18G-N-M	/	Feb. 24, 2024						
Coaxial cable	SKET	RC_40G-K-M	KG	Feb. 24, 2024						
EMI Test Software	Shurple Technology	EZ-EMC	/							

Page 15 of 24





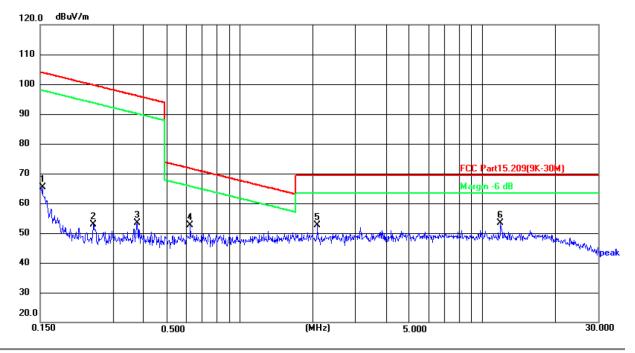
Site: #3 3m Anechoic Chamber Polarization: Conplanar Temperature: 23.9(°C) Humidity: 42 %

Limit:	FCC	Part15	.209(9K	(-30M)

Power:DC 3.7 V

-		`	'						
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0108	41.50	20.72	62.22	126.94	-64.72	peak	Р	
2	0.0154	37.93	20.67	58.60	123.85	-65.25	peak	Р	
3	0.0307	31.97	20.47	52.44	117.86	-65.42	peak	Р	
4	0.0844	31.30	21.01	52.31	109.08	-56.77	peak	Р	
5 *	0.1252	63.27	20.34	83.61	105.65	-22.04	peak	Р	
6	0.1370	46.06	20.31	66.37	104.87	-38.50	peak	Р	

150KHz-30MHz:

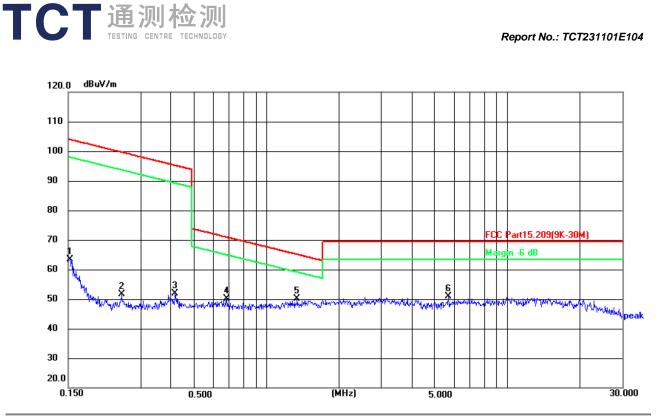


Site: #3 3m Anechoic Chamber Polarization: Coaxial Temperature: 23.9(°C) Humidity: 42 %

Limit: FCC Part15.209(9K-30M)

Power:DC 3.7 V

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1534	44.58	20.72	65.30	103.89	-38.59	peak	Ρ	
2	0.2487	31.92	20.96	52.88	99.69	-46.81	peak	Ρ	
3	0.3769	32.22	21.25	53.47	96.08	-42.61	peak	Ρ	
4	0.6250	30.83	21.82	52.65	71.69	-19.04	peak	Ρ	
5	2.0932	27.63	24.91	52.54	69.50	-16.96	peak	Ρ	
6 *	11.9009	33.44	20.04	53.48	69.50	-16.02	peak	Ρ	



Site: #3 3m Anechoic Chamber Polarization: Conplanar Temperature: 23.9(°C)

Limit: ECC Part15 209(9K-30M)

Power DC 3 7 V

. L IIII.	1001 att10.2	200(011-001	vij						
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1527	42.56	20.72	63.28	103.93	-40.65	peak	Р	
2	0.2494	31.74	20.96	52.70	99.67	-46.97	peak	Р	
3	0.4181	31.90	21.36	53.26	95.18	-41.92	peak	Р	
4	0.6844	30.20	21.95	52.15	70.91	-18.76	peak	Р	
5 *	1.3378	28.82	23.37	52.19	65.10	-12.91	peak	Р	
6	5.7134	20.37	31.99	52.36	69.50	-17.14	peak	Р	







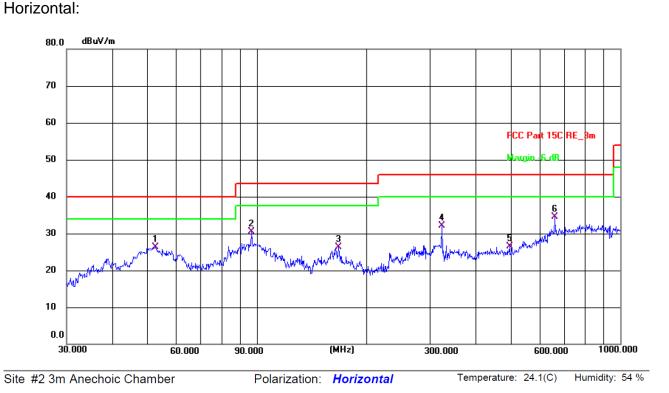


Page 19 of 24

Humidity: 42 %



30MHz-1GHz



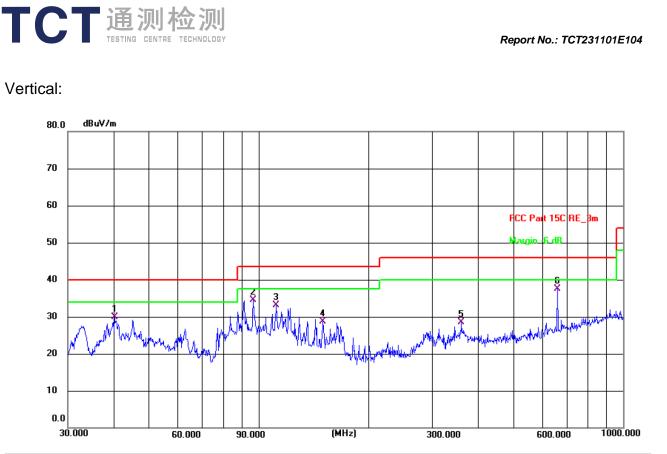
 Limit:
 FCC Part 15C RE_3m
 Power:
 DC 3.7 V

 No.
 Frequency
 Reading
 Factor
 Level
 Limit
 Margin

 (MULE)
 (dRull)
 (dRull)
 (dRull)
 (dRull)
 P/F
 Remark

		(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)			Kernank
ĺ	1	52.7600	12.86	13.39	26.25	40.00	-13.75	QP	Ρ	
	2	96.7749	19.77	10.68	30.45	43.50	-13.05	QP	Ρ	
	3	167.8240	11.99	14.28	26.27	43.50	-17.23	QP	Ρ	
	4	323.3201	16.64	15.42	32.06	46.00	-13.94	QP	Ρ	
	5	495.9343	7.25	19.28	26.53	46.00	-19.47	QP	Ρ	
[6*	661.1503	11.68	22.73	34.41	46.00	-11.59	QP	Ρ	
_										

Page 20 of 24



Site #2 3m Anechoic Chamber Polarization: Vertical Temperature: 24.1(C) Humidity: 54 %

Limit: F	FCC Part 15C F	RE_3m				Power:	DC 3.7 V		
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	40.2754	15.47	14.40	29.87	40.00	-10.13	QP	Р	
2	96.7749	23.83	10.68	34.51	43.50	-8.99	QP	Ρ	
3	111.7377	21.04	12.02	33.06	43.50	-10.44	QP	Ρ	
4	150.0107	13.76	14.88	28.64	43.50	-14.86	QP	Р	
5	360.4476	12.38	16.16	28.54	46.00	-17.46	QP	Ρ	
6 *	661.1503	14.87	22.73	37.60	46.00	-8.40	QP	Ρ	

Note:

Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss - Pre-amplifier



