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Report No.: FCC14-RTE082502

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TEST REPORT

Applicant: i-TRINETECH Co., Ltd.

Address of Applicant:

Floor 4, East Wing of M-8, Sparrow Ridge Industrial Zone, Science

& Technology Park, Nanshan District, Shenzhen City, China

Equipment Under Test (EUT)

Product Name: LR938

Model No.: mw938D_1C0022, mw938D_1C001C

FCC ID: 2ACZVLR938X-XX

Applicable standards: FCC CFR Title 47 Part 15 Subpart B:2013

Date of sample receipt: August 11, 2014

Date of Test: August 11- August 20, 2014

Date of report issued: August 25, 2014

Test Result: PASS *

Authorized Signature:

Kevin Yu Laboratory 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 and does not permit the use of the EBO product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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



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2 Version

Version No.	Date	Description
00	August 25, 2014	Original

Prepared by:	Edward.pan	Date:	August 25, 2014
	Project Engineer		
Reviewed by:	hank. yan	Date:	August 25, 2014
	Reviewer		



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4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part15.107	PASS
Radiated Emissions	Part15.109	PASS

PASS: The EUT complies with the essential requirements in the standard.



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5 General Information

5.1 Client Information

Applicant:	i-TRINETECH Co., Ltd.
Address of Applicant:	Floor 4, East Wing of M-8, Sparrow Ridge Industrial Zone,
	Science & Technology Park, Nanshan District, Shenzhen City, China
Manufacturer:	i-TRINETECH Co., Ltd.
Address of Manufacturer:	Floor 4, East Wing of M-8, Sparrow Ridge Industrial Zone,
	Science & Technology Park, Nanshan District, Shenzhen City, China

5.2 General Description of EUT

Product Name:	LR938	
Model No.:	mw938D_1C0022, mw938D_1C001C	
Power supply:	input: DC 5.0V, 1000mA	
	Or	
	DC 3.7V 1500mAh Li-ion Battery	

5.3 Test mode and voltage

Test mode:	
LAN mode	Connect the EUT to internet via LAN port and ping an IP address.
Rocording mode	Keep the EUT in recording mode and storage in the SD card
Rocording mode Keep the EUT in recording mode and storage in the USB	
PC mode	Keep the EUT in PC communication mode.
Test voltage:	AC 120V/60Hz



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5.4 Test Facility

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

• CNAS —Registration No.: CNAS L5775

CNAS has accredited Global United Technology Services Co., Ltd. to ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testingand Calibration Laboratories) for the competence in the field of testing.

• FCC —Registration No.: 600491

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance

letter from the FCC is maintained in files. Registration 600491, June 28, 2013.

• Industry Canada (IC) —Registration No.: 9079A-2

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, June 26, 2013.

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen,

China

Tel: 0755-27798480 Fax: 0755-27798960



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5.6 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC Approval
HP	Printer	CB495A	05257893	DoC
DELL	PC Host	OPTIPLEX745	GTS312	DoC
AOC	LCD TV	TFT24660AG	T49A5JA0006600 B9	DoC
PHILIPS	LCD TV	19PFL3120/T3	AU1A1212002906	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC

5.7 Deviation from Standards

Biconical, log.per. antenna and horn antenna were used instead of dipole antenna. Semi-anechoic Chamber was used as alternation of open air test sites, and all test suites were performed with radiated method in it.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.



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6 Test Instruments list

Radia	Radiated Emission:					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	Mar. 29 2014	Mar. 28 2015
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	ESU EMI Test Receiver	R&S	ESU26	GTS203	Feb. 23 2014	Feb. 22 2015
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	Feb. 23 2014	Feb. 22 2015
5	Double -ridged waveguide horn	SCHWARZBECK	9120D	GTS208	Jun. 27 2014	Jun. 26 2015
6	RF Amplifier	HP	8347A	GTS204	Jul. 01 2014	Jun. 30, 2015
7	Preamplifier	HP	8349B	GTS206	Jul. 01 2014	Jun. 30, 2015
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial cable	GTS	N/A	GTS210	Mar. 29 2014	Mar. 28 2015
10	Coaxial Cable	GTS	N/A	GTS211	Mar. 29 2014	Mar. 28 2015
11	Thermo meter	N/A	N/A	GTS256	Mar. 29 2014	Mar. 28 2015

Conc	Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	Jul. 01 2014	Jun. 30, 2015
2	EMI Test Receiver	R&S	ESCS30	GTS223	Jul. 01 2014	Jun. 30, 2015
3	Pulse Limiter	R&S	ESH3-Z2	GTS224	Jul. 01 2014	Jun. 30, 2015
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 01 2014	Jun. 30, 2015
5	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	Jul. 01 2014	Jun. 30, 2015
6	Coaxial Cable	GTS	N/A	GTS227	Jul. 01 2014	Jun. 30, 2015
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	GTS233	Jul. 01 2014	Jun. 30, 2015

Gene	General used equipment:					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	Barometer	ChangChun	DYM3	GTS257	Jul. 01 2014	Jun. 30, 2015



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7 Test Results and Measurement Data

7.1 Conducted Emissions

 Conducted Emissions				
Test Requirement:	FCC Part15 B Section 15.107			
Test Method:	ANSI C63.4:2003			
Test Frequency Range:	150kHz to 30MHz			
Class / Severity:	Class B			
Receiver setup:	RBW=9kHz, VBW=30kHz			
Limit:	Limit (dBµV)			
	Frequency range (MHz) Quasi-peak Average			
	0.15-0.5 66 to 56* 56 to 46*			
	0.5-5 56 46			
	0.5-30 60 50			
Test procedure Test setup:	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide 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 refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.			
	AUX Equipment E.U.T Filter AC power EMI Receiver Remark: E.U.T. Equipment Under Test LISN Line Impedence Stabilization Network Test table height=0.8m			
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar			
Measurement Record:	Uncertainty: ± 3.45dB			
Test Instruments:	Refer to section 6 for details			
Test mode:	Refer to section 5.3 for details. All of the mode were tested and found the "PC mode" is the worst case. Only the data of worst case was reported.			
Test results:	Pass			

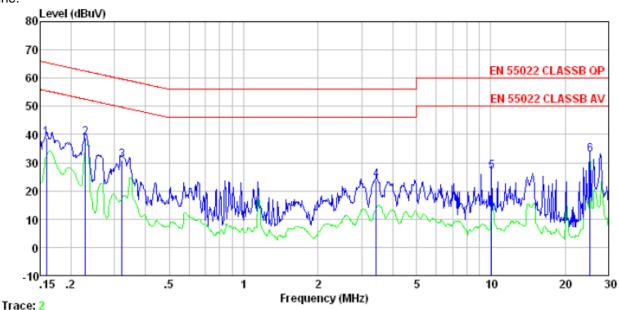


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Measurement Data

Line:



Condition : EN 55022 CLASSB QP LISN-2013 LINE

Job No. : 1269RF Test mode : PC mode

Test Engineer: Mike

	Freq		LISN Factor					Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1 2 3 4 5 6	0.322 3.436 10.072	30.55 23.50 26.45	0.12	0.10 0.15 0.19	38. 84 30. 76 23. 83 26. 93	62. 48 59. 66 56. 00 60. 00	-23.64 -28.90 -32.17 -33.07	QP QP QP QP

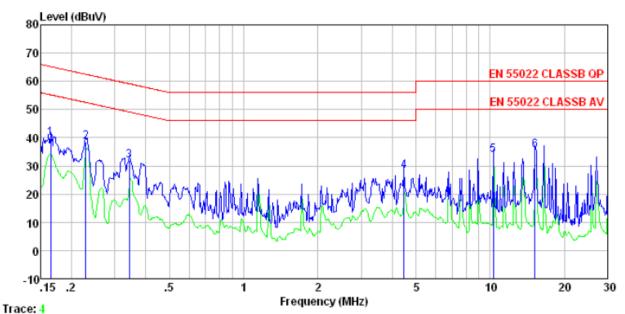
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Neutral:



Condition : EN 55022 CLASSB QP LISN-2013 NEUTRAL

Job No. : 1269RF Test mode : PC mode Test Engineer: Mike

	Freq	Read	LISN Factor				Over Limit	Remark
	MHz	dBuV	dB	dB	dBu₹	dBuV	dB	
1	0.165	39.66	0.07	0.12	39.85	65.21	-25.36	QP
2	0.229	38.25	0.06	0.12	38.43	62.48	-24.05	QP
3	0.343	31.84	0.06	0.10	32.00	59.13	-27.13	QP
4	4.478	27.77	0.15	0.15	28.07	56.00	-27.93	QP
5	10.288	33.50	0.25	0.19	33.94	60.00	-26.06	QP
6	15.226	35.08	0.33	0.22	35.63	60.00	-24.37	QP

Notes:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
- 3. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.



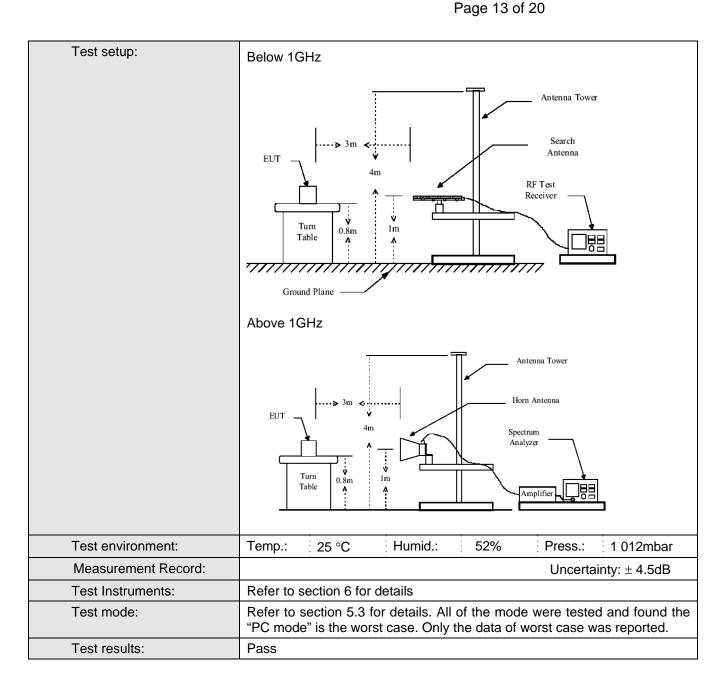
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7.2 Radiated Emission

Radiated Ellission								
Test Requirement:	FCC Part15 B Section 15.109							
Test Method:	ANSI C63.4:2003							
Test Frequency Range:	30MHz to 6GHz							
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)							
Receiver setup:	 	Detector		RBW	VBW	Т		
	Frequency	Remark						
	30MHz- Quasi-peak 1GHz		k 1	120KHz	300KHz	Quasi-peak Value		
	Above 1GHz			1MHz	3MHz	Peak Value		
	Above IGI12	Peak		1MHz	10Hz	Average Value		
Limit:								
-	Freque	ency	Lim	nit (dBuV/	m @3m)	Remark		
	30MHz-8	8MHz		40.0)	Quasi-peak Value		
	88MHz-2	16MHz		43.5	5	Quasi-peak Value		
	216MHz-9	60MHz		46.0)	Quasi-peak Value		
	960MHz-	-1GHz)	Quasi-peak Value				
	Above 1	ICU-	54.0			Average Value		
	Above	I GI IZ	74.0			Peak Value		
Test Procedure:		3 meter camb	oer. Th	he table v	vas rotated	0.8 meters above the 360 degrees to		
	2. The EUT wa antenna, whi tower.					nce-receiving lle-height antenna		
	3. 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.							
	4. 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 and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.							
	5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.							
	6. 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.							



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Note:

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



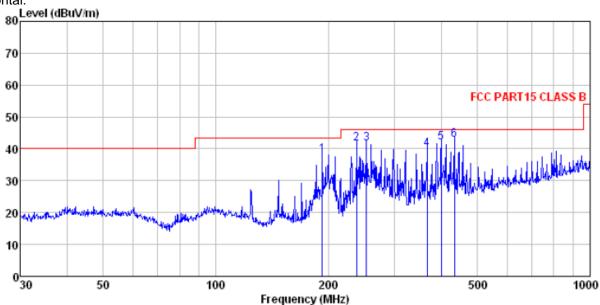
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Measurement Data

Below 1GHz

Horizontal:



: 3m chamber : FCC PART15 CLASS B 3m VULB9163-2013M HORIZONTAL Condition

Job No. : 1269RF Test Mode : PC mode Test Engineer: Qing

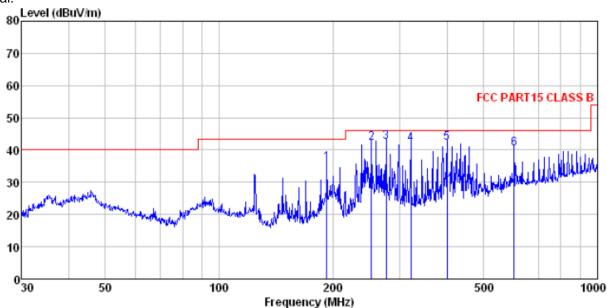
	Freq		Antenna Factor						Remark
	MHz	dBu₹	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 2 3 4 5	192.419 237.476 252.948 366.823 400.432 434.065	57.47 52.59 53.94	13.99 14.06 16.48 17.10	2.06 2.14 2.70 2.85	32.16 32.16 31.98 31.89	41.50 41.51 39.79 42.00	43.50 46.00 46.00 46.00 46.00 46.00	-4.50 -4.49 -6.21 -4.00	QP QP QP QP

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Vertical:



Site : 3m chamber

Condition : FCC PART15 CLASS B 3m VULB9163-2013M VERTICAL

Job No. : 1269RF Test Mode : PC mode Test Engineer: Qing

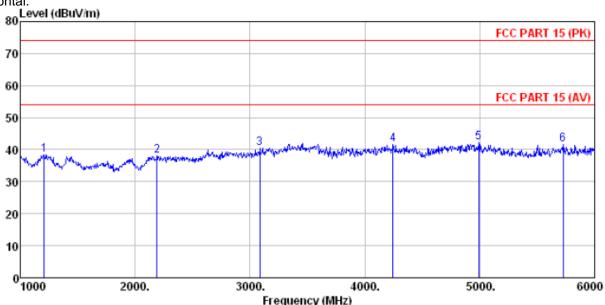
	Freq			Cable Preamp Loss Factor				Over Limit	Remark
	MHz	dBu∜	— <u>d</u> B/m	dB	dB	dBuV/m	dBuV/m	dB	
1 2 3 4 5	192.419 252.948 276.124 321.061 400.432 601.427	57.79 56.03 54.27	14.55 15.40 17.10	2.14 2.25 2.47 2.85	32.16 32.17 32.11 31.89	42.31 42.42 41.79 42.33	43.50 46.00 46.00 46.00 46.00 46.00	-3.69 -3.58 -4.21 -3.67	QP QP QP QP



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Above 1GHz

Horizontal:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) HORIZONTAL Condition

: 1269RF Job No. Test Mode : PC mode Test Engineer: Qing

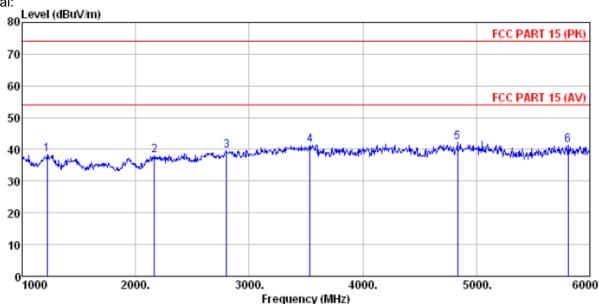
	TITE TITOUT .	ATTIE.							
	Freq		Antenna Factor				Limit Line	Over Limit	Remark
	MHz	dBu∜	<u>dB</u> /m	₫B	dB	dBuV/m	dBuV/m	<u>d</u> B	
1	1210.000	41.53	25.39	4.47	33.10	38.29	74.00	-35.71	Peak
2	2190.000	39.16	27.90	5.17	34.25	37.98	74.00	-36.02	Peak
3	3085.000	38.81	28.68	6.12	33.22	40.39	74.00	-33.61	Peak
4	4245.000	35.18	30.38	8.10	31.90	41.76	74.00	-32.24	Peak
5	4990.000	33.59	31.95	8.75	32.18	42.11	74.00	-31.89	Peak
6	5725.000	31.44	32.53	9.83	32.29	41.51	74.00	-32.49	Peak

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Vertical:



Site : 3m chamber

Condition : FCC PART 15 (PK) 3m BBHA9120D ANT (>1GHZ) VERTICAL

Job No. : 1269RF Test Mode : PC mode Test Engineer: Qing

	Freq				Cable Preamp Loss Factor				Remark
	MHz	dBu∜	dB/m	dB	dB	dBuV/m	dBuV/m	<u>dB</u>	
1 2 3 4 5 6	2800.000 3535.000 4835.000	38.81 38.01	28.42 29.06	5.76 7.03 8.62	34.27 33.55	37.97 39.44 41.39 42.30	74.00 74.00 74.00 74.00	-34.56 -32.61 -31.70	Peak Peak Peak Peak

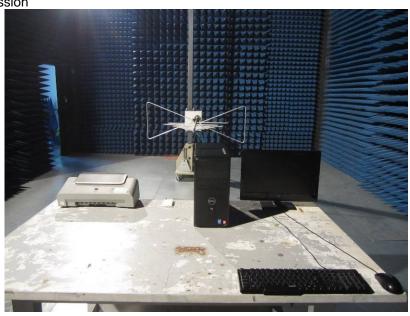


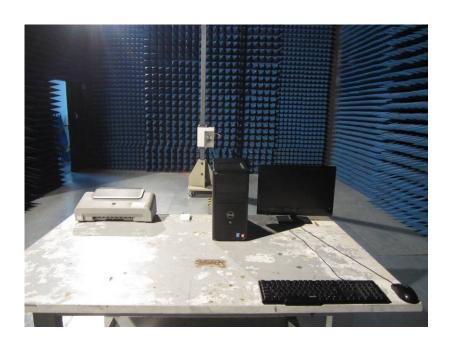
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8 Test Setup Photo

Radiated Emission







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Conducted Emission





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9 EUT Constructional Details

Reference to the test report No.: FCC14-RTE082501

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