

# Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Report No: CCIS14110093204

# FCC REPORT

**Applicant: GRUN MOBILE LLC** 

2315 nw 107th Ave SUITE I M02 Mailbox # 33 Doral 33172, **Address of Applicant:** 

**United States** 

**Equipment Under Test (EUT)** 

**Product Name:** mobile phone

Model No.: U402

FCC ID: 2ACFG-U402

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

Date of sample receipt: 11 Nov., 2014

Date of Test: 20 Nov., to 21 Nov., 2014

Date of report issued: 24 Nov., 2014

PASS \* **Test Result:** 

#### Authorized Signature:



Bruce Zhang 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 CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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



## 2 Version

Version No.	Date	Description
00	24 Nov., 2014	Original

Prepared by: Yoyo Luo Date: 24 Nov., 2014

Report Clerk

Reviewed by: Date: 24 Nov., 2014

**Project Engineer** 





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## 4 Test Summary

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

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



## 5 General Information

#### 5.1 Client Information

Applicant:	GRUN MOBILE LLC
Address of Applicant:	2315 nw 107th Ave SUITE I M02 Mailbox # 33 Doral 33172, United States
Manufacturer :	shenzhen tianruixiang communication equipment limited
Address of Manufacturer:	12F,Shenzhen science building, zhongshan university, xuefu road, Hi-tech park , nanshan district Shenzhen, China
Factory:	dongguan tianruixiang communication equipment limited
Address of Factory:	1,2,3F,B building, NO.1, keyuan 9 road, tangxia district dongguan

### 5.2 General Description of E.U.T.

Product Name:	mobile phone		
Model No.:	U402		
Power supply:	Rechargeable Li-ion Battery DC3.7V-1400mAh		
AC adapter :	Input: AC 100-240V 50/60Hz 0.2A		
AC adapter .	Output: DC 5.0V, 1000mA		

#### 5.3 Test Mode

Operating mode	Detail description
PC mode	Keep the EUT in Downloading mode(Worst case)

The sample was placed 0.8m 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 are shown in Test Results of the following pages.



## 5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX745	N/A	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	DELL KEYBOARD SK-811		N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC
HP	Printer	CB495A	05257893	DoC
MERCURY	Wireless router	MW150R	12922104015	FCC ID

### 5.5 Laboratory Facility

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

#### ● FCC - Registration No.: 817957

Shenzhen Zhongjian Nanfang Testing Co., Ltd. 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 out files. Registration 817957, February 27, 2012.

#### ● IC - Registration No.: 10106A-1

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

#### CNAS - Registration No.: CNAS L6048

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

#### 5.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

Tel: 0755-23118282 Fax: 0755-23116366

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## 5.7 Test Instruments list

Radi	Radiated Emission:								
Item	Test Equipment	Test Equipment Manufacturer		Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)			
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017			
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	04-19-2014	04-19-2015			
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	04-19-2014	04-19-2015			
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A			
5	Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2014	03-31-2015			
6	Amplifier (1GHz-18GHz)	· ·		CCIS0011	06-09-2014	06-08-2015			
7	Pre-amplifier (18-26GHz)  Rohde & Schwarz		AFS33-18002 650-30-8P-44	GTS218	04-01-2014	03-31-2015			
8	Horn Antenna	ETS-LINDGREN	3160	GTS217	03-31-2014	03-29-2015			
9	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A			
10	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A			
11	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP 30	CCIS0023	04-19-2014	04-19-2015			
12	EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	09-02-2014	09-01-2015			
13	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2014	03-31-2015			
14	Universal radio communication tester		CMU200	CCIS0069	05-29-2014	05-28-2015			
15	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-19-2014	04-19-2015			

Con	Conducted Emission:									
Item	Test Equipment	Manufacturer	Model No.	Inventory	Cal.Date	Cal. Due date				
item	rest Equipment	Manuacturer	woder No.	No.	(mm-dd-yy)	(mm-dd-yy)				
1	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	01-10-2014	04-09-2015				
2	LISN	CHASE	MN2050D	CCIS0074	01-10-2014	04-09-2015				
3	Coaxial Cable	CCIS	N/A	CCIS0086	04-01-2014	03-31-2015				
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A				





## 6 Test results and Measurement Data

## 6.1 Conducted Emission

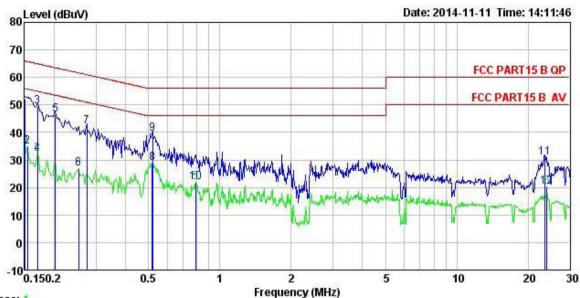
Test Requirement:	FCC Part15 B Section 15.107						
Test Method:	ANSI C63.4:2003						
Test Frequency Range:	150kHz to 30MHz						
Class / Severity:	Class B						
Receiver setup:	RBW=9kHz, VBW=30kHz	RBW=9kHz, VBW=30kHz					
Limit:		Li	mit (dBµV)				
	Frequency range (MHz)	Quasi-peak	Average				
	0.15-0.5	66 to 56*	56 to 46*				
	0.5-5	56	46				
	0.5-30	60	50				
Test setup:  Test procedure	Reference Pla  LISN 40cm 80c  AUX Equipment E.U.T  Test table/Insulation plane  Remark: E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m  1. The E.U.T and simulators and	EMI Receiver	ain power through a line				
	impedance stabilization network coupling impedance for the state of the peripheral devices are at that provides a 500hm/50uH (Please refers to the block downward of the interface cables must conducted measurement.	measuring equipment. also connected to the re- coupling impedance viagram of the test setu checked for maximum mission, the relative p	main power through a LISN with 50ohm termination. up and photographs). conducted interference. In ositions of equipment and all				
Test environment:	Temp.: 23 °C Hur	nid.: 56%	Press.: 1 01kPa				
Measurement Record:		<u>'</u>	Uncertainty: 3.28dB				
Test Instruments:	Refer to section 5.7 for details						
Test mode:	Refer to section 5.3 for details						
Test results:	Passed						





#### Measurement data:

Line:



Trace: 1

: CCIS Shielding Room : FCC PART15 B QP LISN LINE : 932RF Site Condition

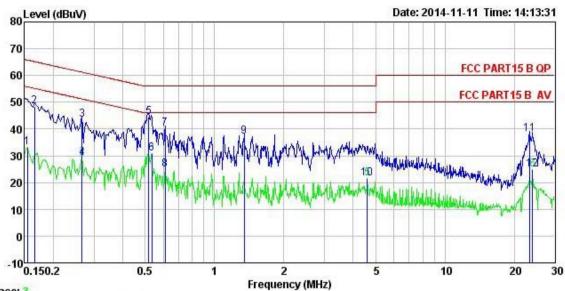
Job No. EUT : mobile phone Model : U402
Test Mode : PC mode
Power Rating : AC 120V/ 60 Hz
Environment : Temp: 23 °C Huni:56% Atmos:101KPa
Test Engineer: Wendell
Remark

Kemark								
	10-200-0000	Read	LISN	Cable	1-2-00-1809-9	Limit	Over	
	Freq	Level	Factor	Loss	Level	Line	Limit	Remark
22	MHz	dBu∀	d₿	₫B	dBu₹	dBu₹	dB	
1	0.150	41.00	0.27	10.78	52.05	66.00	-13.95	QP
2	0.154	23.64	0.27	10.78	34.69	55.78	-21.09	Average
3	0.170	38.39	0.27	10.77	49.43	64.94	-15.51	QP
4	0.170	21.18	0.27	10.77	32.22	54.94	-22.72	Average
5	0.202	35.28	0.28	10.76	46.32	63.54	-17.22	QP
4 5 6 7 8 9	0.253	15.81	0.27	10.75	26.83	51.64	-24.81	Average
7	0.274	31.14	0.26	10.74	42.14	60.98	-18.84	QP
8	0.518	17.93	0.28	10.76	28.97	46.00	-17.03	Average
9	0.521	28.28	0.28	10.76	39.32	56.00	-16.68	QP
10	0.792	10.75	0.23	10.81	21.79	46.00	-24.21	Average
11	23.511	19.34	0.47	10.88	30.69	60.00	-29.31	QP
12	24.015	8.81	0.49	10.88	20.18	50.00	-29.82	Average





#### Neutral:



Trace: 3 Site

: CCIS Shielding Room : FCC PART15 B QP LISN NEUTRAL : 932RF Condition

Job No. EUT : mobile phone

Model : U402

Test Mode : PC mode
Power Rating : AC 120V/ 60 Hz
Environment : Temp: 23 °C Huni:56% Atmos:101KPa
Test Engineer: Wendell
Remark

Kemark		323 32	- 000000000	12000120		223 Stor	3200	
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
VII.	MHz	dBu∜	<u>dB</u>	d₿	dBu₹	dBu∜		
1	0.154	22.29	0.25	10.78	33.32	55.78	-22.46	Average
2	0.166	37.39	0.25	10.77	48.41	65.16	-16.75	QP
2 3 4 5 6 7	0.266	32.45	0.26	10.75	43.46	61.25	-17.79	QP
4	0.266	18.09	0.26	10.75	29.10	51.25	-22.15	Average
5	0.518	33.53	0.28	10.76	44.57	56.00	-11.43	QP
6	0.535	19.89	0.27	10.76	30.92	46.00	-15.08	Average
7	0.611	29.24	0.22	10.77	40.23	56.00	-15.77	QP
8 9	0.611	13.96	0.22	10.77	24.95	46.00	-21.05	Average
9	1.345	25.88	0.25	10.91	37.04	56.00	-18.96	QP
10	4.598	10.50	0.28	10.86	21.64	46.00	-24.36	Average
11	23.387	26.90	0.43	10.89	38.22	60.00	-21.78	QP
12	24.015	13.49	0.48	10.88	24.85	50.00	-25.15	Average

#### Notes:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

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## 6.2 Radiated Emission

	Nadiated Lillission								
Test Requirement:	FCC Part15 B Section 15.109								
Test Method:	ANSI C63.4:2003								
Test Frequency Range:	30MHz to 6000MHz								
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)								
Receiver setup:	Frequency	Detector	VBW	Remark					
	30MHz-1GHz	Quasi-peak			Quasi-peak Value				
	Above 1GHz	Peak	1MHz 3MHz		Peak Value				
	7,5000 10112	Peak	1MHz	10Hz	Average Value				
Limit:	Freque		Limit (dBuV/	m @3m)	Remark				
	30MHz-8		40.0		Quasi-peak Value				
	88MHz-21	16MHz	43.5	)	Quasi-peak Value				
	216MHz-9		46.0		Quasi-peak Value				
	960MHz-	1GHz	54.0		Quasi-peak Value				
	Above 1	GHz	54.0		Average Value				
			74.0	)	Peak Value				
	Ground Plane —  Above 1GHz	3m	s	Antenna Tower  Search Antenna  RF Test Receiver  Antenna Tower  Horn Antenna  pectrum analyzer					





Test Procedure:	<ol> <li>The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> </ol>							
	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 rotatable 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.							
Test environment:	Temp.: 25 °C Humid.: 55% Press.: 1 01kPa							
Measurement Record:	Uncertainty: 4.88dB							
Test Instruments:	Refer to section 5.7 for details							
Test mode:	Refer to section 5.3 for details							
Test results:	Passed							

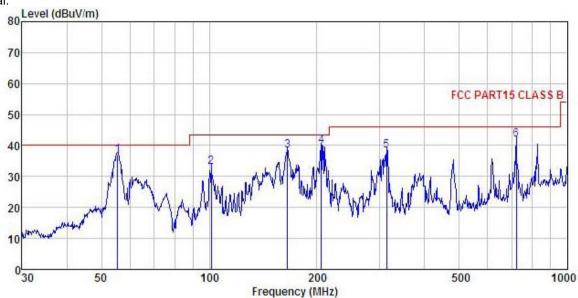




#### **Measurement Data**

Below 1GHz

Horizontal:



Site

: 3m chamber : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL : 932RF Condition

Jobi NO. EUT : mobile phone

: U402 Model Test mode : PC mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%

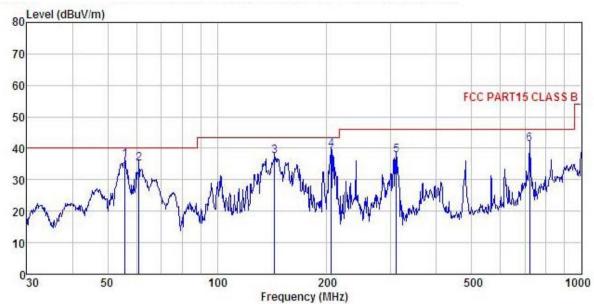
Test Engineer: Wendell Remark :

emark	9.30									
	Freq		Antenna Factor				Limit Line	Over Limit	Remark	
<u> </u>	MHz	dBu∜	$\overline{dB}/\overline{m}$		dB	$\overline{dBuV/m}$	$\overline{dBuV/m}$	dB		-
1	55.415	53.07	13.01	0.65	29.80	36.93	40.00	-3.07	QP	
2	101.289	48.56	13.02	0.97	29.52	33.03	43.50	-10.47	QP	
	165.487	57.32	8.82	1.34	29.09	38.39	43.50	-5.11	QP	
4 5	205.675	56.50	10.74	1.41	28.79	39.86	43.50	-3.64	QP	
5	313.276	51.80	13.24	1.82	28.48	38.38	46.00	-7.62	QP	
6	721.726	48.35	19.10	2.97	28.58	41.84	46.00	-4.16	QP	





#### Vertical:



Site

: 3m chamber : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL : 932RF Condition

Jobi NO.

EUT : mobile phone

Model : U402 Test mode : PC mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Wendell

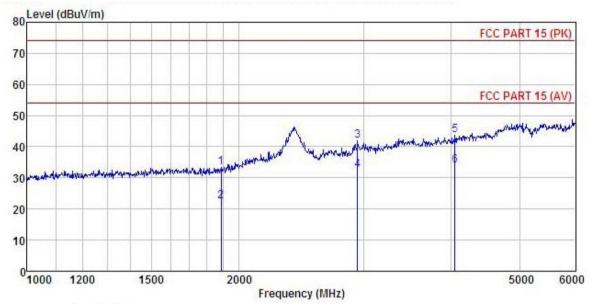
(emark										
		Read	Antenna	Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark	
	MHz	dBu₹	$\overline{dB/m}$	<u>dB</u>	<u>dB</u>	dBuV/m	$\overline{dBuV/m}$	<u>dB</u>		
1	55.805	52.46	12.99	0.66	29.80	36.31	40.00	-3.69	QP	
2	60.918	51.75	12.43	0.70	29.77	35.11	40.00	-4.89	QP	
2 3 4 5	143.830	57.27	8.22	1.28	29.25	37.52	43.50	-5.98	QP	
4	205.675	56.19	10.74	1.41	28.79	39.55	43.50	-3.95	QP	
5	309.998	51.24	13.19	1.80	28.47	37.76	46.00	-8.24	QP	
6	721.726	47.76	19.10	2.97	28.58	41.25	46.00	-4.75	QP	





#### Above 1GHz

#### Horizontal:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL : 932RF Condition

Jobi NO. : mobile phone EUT : U402 Model Test mode : PC mode Power Rating : AC 120V/60Hz

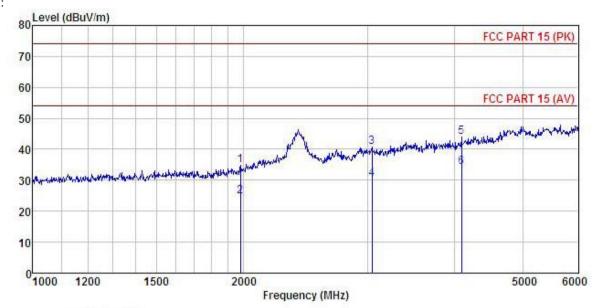
Environment : Temp:25.5°C Huni:55% Test Engineer: Wendell Remark :

emarı									
	Freq		Antenna Factor				Limit Line	Over Limit	Remark
19									
	MHz	dBu∀	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1885.669	43.92	25.67	4.74	40.92	33.41	74.00	-40.59	Peak
2	1885.669	33.02	25.67	4.74	40.92	22.51	54.00	-31.49	Average
3	2945.949	48.09	28.43	6.01	40.56	41.97	74.00	-32.03	Peak
4	2945.949	38.54	28.43	6.01	40.56	32.42			Average
5	4045.367	47.05	29.91	7.72	41.10	43.58	74.00	-30.42	Peak
6	4045 367	37 46	20 01	7 72	41 10	33 00	54 00	-20 01	Amerage





#### Vertical:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL : 932RF Condition

Jobi NO.

: mobile phone : U402 EUT Model Test mode : PC mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Wendell

Remark

A								
Freq						Limit Line	Over Limit	
MHz	dBu₹	dB/m	<u>dB</u>	dB	dBuV/m	dBuV/m	<u>dB</u>	
1979.136	44.87	26.06	4.82	40.85	34.90	74.00	-39.10	Peak
1979.136	34.63	26.06	4.82	40.85	24.66	54.00	-29.34	Average
3047.966	46.75	28.65	6.00	40.55	40.85	74.00	-33.15	Peak
3047.966	36.39	28.65	6.00	40.55	30.49	54.00	-23.51	Average
4089.092	47.17	30.03	7.81	41.05	43.96	74.00	-30.04	Peak
4089.092	37.53	30.03	7.81	41.05	34.32	54.00	-19.68	Average
	MHz 1979.136	Read. Freq Level MHz dBuV 1979.136 44.87 1979.136 34.63 3047.966 46.75 3047.966 36.39 4089.092 47.17	ReadAntenna Level Factor  MHz dBuV dB/m  1979.136 44.87 26.06 1979.136 34.63 26.06 3047.966 46.75 28.65 3047.966 36.39 28.65 4089.092 47.17 30.03	ReadAntenna Cable Freq Level Factor Loss  MHz dBuV dB/m dB  1979.136 44.87 26.06 4.82 1979.136 34.63 26.06 4.82 3047.966 46.75 28.65 6.00 3047.966 36.39 28.65 6.00 4089.092 47.17 30.03 7.81	ReadAntenna Cable Preamp Level Factor Loss Factor  MHz dBuV dB/m dB dB  1979.136 44.87 26.06 4.82 40.85 1979.136 34.63 26.06 4.82 40.85 3047.966 46.75 28.65 6.00 40.55 3047.966 36.39 28.65 6.00 40.55 4089.092 47.17 30.03 7.81 41.05	ReadAntenna Cable Preamp Level Factor Loss Factor Level  MHz dBuV dB/m dB dB dBuV/m  1979.136 44.87 26.06 4.82 40.85 34.90 1979.136 34.63 26.06 4.82 40.85 24.66 3047.966 46.75 28.65 6.00 40.55 40.85 3047.966 36.39 28.65 6.00 40.55 30.49 4089.092 47.17 30.03 7.81 41.05 43.96	ReadAntenna Cable Preamp Limit Freq Level Factor Loss Factor Level Line  MHz dBuV dB/m dB dB dB dBuV/m dBuV/m  1979.136 44.87 26.06 4.82 40.85 34.90 74.00 1979.136 34.63 26.06 4.82 40.85 24.66 54.00 3047.966 46.75 28.65 6.00 40.55 40.85 74.00 3047.966 36.39 28.65 6.00 40.55 30.49 54.00 4089.092 47.17 30.03 7.81 41.05 43.96 74.00	ReadAntenna Cable Preamp Limit Over Level Factor Loss Factor Level Line Limit  MHz dBuV dB/m dB dB dBuV/m dBuV/m dB  1979.136 44.87 26.06 4.82 40.85 34.90 74.00 -39.10 1979.136 34.63 26.06 4.82 40.85 24.66 54.00 -29.34 3047.966 46.75 28.65 6.00 40.55 40.85 74.00 -33.15 3047.966 36.39 28.65 6.00 40.55 30.49 54.00 -23.51 4089.092 47.17 30.03 7.81 41.05 43.96 74.00 -30.04