

Shenzhen Toby Technology Co., Ltd.



Report No.: TBR-C-202209-0005-30

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FCC Radio Test Report FCC ID: 2A7ZM-Q4MIC

Report No. : TBR-C-202209-0005-30

Applicant : JBU GLOBAL LLC

Equipment Under Test (EUT)

EUT Name : Illuminato Q4 Microphone

Model No. : Illuminato Q4 Microphone

Series Model No. : ----

Brand Name : MASINGO

Sample ID : RW-C-202209-0005-20-1#&RW-C-202209-0005-20-2#

Receipt Date : 2022-11-28

Test Date : 2022-11-28 to 2023-01-14

Issue Date : 2023-01-16

Standards : FCC Part 15, Subpart C (15.236)

Test Method : ANSI C63.10: 2013

Conclusions : PASS

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC requirements

Test/Witness Engineer :

Engineer Supervisor : TMAN SU

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



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Revision History

Report No.	Version	Description	Issued Date
TBR-C-202209-0005-30	Rev.01	Initial issue of report	2023-01-16
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1. General Information about EUT

1.1 Client Information

Applicant	:(JBU GLOBAL LLC
Address : 19416 NE		19416 NE 26th Ave, 114B, Miami, Florida 33180, United States
Manufacturer		SHENZHEN SVR TECHNOLOGY CO., LTD.
Address		706B, Haosheng Business Center, 4096 Dongbin Road, Nanshan District, Shenzhen. China.

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:(Illuminato Q4 Microphone		
Models No.	:	Illuminato Q4 Microphone		
Model Difference	i			
4000	17	Operation Frequency: 598MHz~603MHz		
Product		Number of Channel: 6 Channels		
Description		Antenna Gain:	1.34dBi PCB Antenna	
The state of the s		Equipment System:	Digital systems	
Power Rating		V1.0		
Software Version				
Hardware Version	:			
Remark				

Note:

Applicable Standards: FCC CFR 47 Part 2, & 15, KDB 206256 D01 vO2, ANSI C63.10- 2013, ANSI C63.26 2015

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





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(2) Channel List:

Channel	Frequency (MHz)
01	598
02	599
03	600
04	601
05	602
06	603

TX Mode

EUT	





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1.4 Description of Support Units

MILLIAN DE ANDE							
Equipment Information							
Name Model FCC ID/SDOC Ma			Manufacturer	Used "√"			
100 Z.L.			33 6	100-2			
	Cable Information						
Number	Shielded Type	Ferrite Core	Length	Note			
				l'ion			

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.

For Radiated Test					
Final Test Mode	Description				
Mode 1	TX Mode(Channel 01/03/06)				

Note:

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.

- (1)According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels.
- (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; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-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

Control by pressing the button. 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 mode.





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1.7 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U_1$, 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})	
Conducted Emission	Level Accuracy: ±3.50 dB 9kHz~150kHz 150kHz to 30MHz ±3.10 dB		
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB	
Radiated Emission	Emission Level Accuracy: ±4.50 dB		
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB	

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:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

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.





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2. Test Summary

FCC Part 15 Subpart C(15.236)						
Standard Section	Test Item	Test Sample(s)	Judgment	Remark		
15.207(a)	Conducted Emission	RW-C-202209-0005-20-1#	PASS	N/A		
15.236(d)(2)	RF Power Output	RW-C-202209-0005-20-2#	PASS	N/A		
15.236(f)(2)	Occupied Bandwidth	RW-C-202209-0005-20-2#	PASS	N/A		
15.236(g) 8.3 of ETSI EN 300 422-1	Emission Mask	RW-C-202209-0005-20-2#	PASS	N/A		
15.236(g) 8.4 of ETSI EN 300 422-1	(1) Radiated Spurious Emission	RW-C-202209-0005-20-2#	PASS	N/A		
15.236(f)(3)	Frequency Stability vs. Temperature Frequency Stability vs. Voltage	RW-C-202209-0005-20-2#	PASS	N/A		

Note: N/A is an abbreviation for Not Applicable.

3. Test Software

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





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4. Test Equipment

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	RSU-A4	34403	Jun. 23, 2022	Jun. 22, 2023
Kr Switching Onli	Inc	N30-A4	34403	Juli. 23, 2022	Juli. 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
Radiation Emission	Test				-
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 23, 2022	Jun. 22, 2023
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Sep. 01, 2022	Aug. 31, 2023
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jun. 23, 2022	Jun. 22, 2023
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472	Feb. 26, 2022	Feb.25, 2023
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Feb. 27, 2022	Feb. 26, 2024
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Dec. 05, 2021	Dec. 04, 2023
Horn Antenna	ETS-LINDGREN	3117	00143207	Feb. 26, 2022	Feb. 25, 2024
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	May 20, 2021	May 19, 2023
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Feb. 26, 2022	Feb. 25, 2024
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jun. 26, 2022	Jun.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	TAP9E6343	AP21C806117	Sep. 01, 2022	Aug. 31, 2023
HF Amplifier	Tonscend	TAP051845	AP21C806141	Sep. 01, 2022	Aug. 31, 2023
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Sep. 01, 2022	Aug. 31, 2023
Antenna Conducted	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	Agilent	N9020A	MY49100060	Sep. 01, 2022	Aug. 31, 2023
Spectrum Analyzer	KEYSIGT	N9020B	MY60110172	Sep. 01, 2022	Aug. 31, 2023
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 01, 2022	Aug. 31, 2023
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 01, 2022	Aug. 31, 2023
VE LOME! SEUZO!	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 01, 2022	Aug. 31, 2023
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 01, 2022	Aug. 31, 2023
RF Control Unit	Tonsced	JS0806-2	21F8060439	Sep. 01, 2022	Aug. 31, 2023





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5. Conducted Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.207

5.1.2 Test Limit

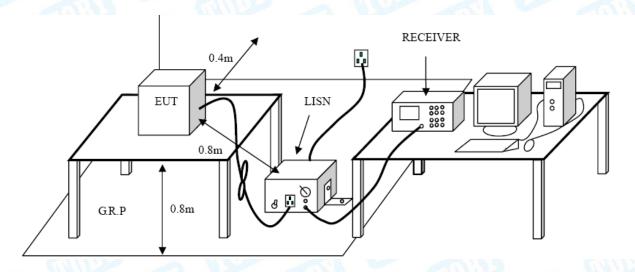
Conducted Emission Test Limit

All Francisco (MID)	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







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

The bandwidth of EMI test receiver is set at 9kHz, 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

Not applicable.





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6. RF Output Power Test

- 6.1 Test Standard and Limit
- 6.1.1 Test Standard:

FCC Part 15.236(d)(2)

6.1.2 Test Limit

§15.236 Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz.

- (d) The maximum radiated power shall not exceed the following values:
- (2) In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP.

Procedure: KDB 971168 D01 Average Power Measurements section 5.2.1

Power Limit 50mW= 17dBm

6.2 Test Setup

EUT Spectrum Analyzer

6.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above.

- (2) Set the RBW ≥Bandwidth
- (3) Set VBW≥3*RBW
- (4) Set Span≥3*RBW
- (5) Sweep time=auto
- (6) Measurement points ≥ 2 span / RBW
- (7) Detector=Average
- (8) Trace mode= max hold.

Allow trace to fully stabilize, and then use peak marker function to determine the Average amplitude level.

(9) Radiated RF power= Conduction measurement Level + Ant. Gain





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6.4 Deviation From Test Standard

No deviation

6.5 EUT Operating Condition

The EUT was set to Continual Transmitting in maximum power, and new batteries are used during testing.

6.6 Test Data

Please refer to the Attachment A.





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7. Bandwidth Test

7.1 Test Standard and Requirement

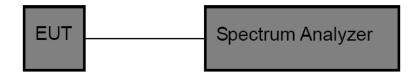
7.1.1 Test Standard FCC Part 15.236(f)(2)

71.2 Test Limit

One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200 kHz.

7.1.3 Requirement: ANSI C63.26 sec. 5.4.3

7.2 Test Setup



7.2 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Bandwidth: RBW=30 kHz, VBW=100kHz.

(3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.

7.4 Deviation From Test Standard

No deviation

7.5 EUT Operating Condition

The EUT was set to continuously transmitting for the Bandwidth Test.

7.6 Test Data

Please refer to the Attachment B.





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8. Emission Mask Test

8.1 Test Standard

(g) Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

8.2 Test Limit



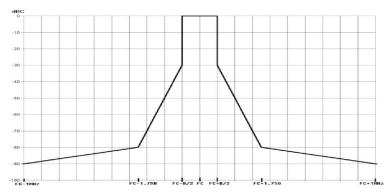
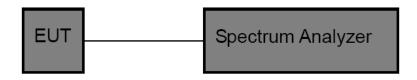


Figure 4: Spectrum mask for digital systems below 1 GHz

8.3 Test Setup



8.4 Test Procedure

Measure the "Maximum Relative Level (dBc) at Specified Carrier Offsets" with the following spectrum analyser setup:

- Centre Frequency = fc
- Span ≥ 5 × B
- Detector = RMS
- Trace Mode = Peak Hold
- RBW&VBW = 1 kHz
- Sweep time ≥ 2 s





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8.5 Deviation From Test Standard

No deviation

8.6 Test Data

Please refer to the Attachment C.





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9. Radiated Spurious Emission Test

9.1 Test Standard and Limit

9.1.1 Test Standard: FCC Part 15.236(g)

Requirement: ETSI EN 300 422-1 V1.4.2

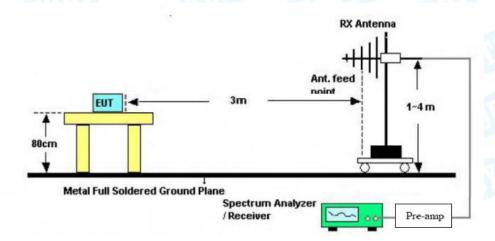
(g) Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), *Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement.* Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

9.1.2 Limits

State	Frequency						
	l .	Other Frequencies below 1 000 MHz	Frequencies above 1 000 MHz				
Operation	4 nW	250 nW	1 μW				
Standby	2 nW	2 nW	20 nW				

9.2 Test Setup

A. Radiated Emission Test Set-Up Frequency Below 1 GHz.

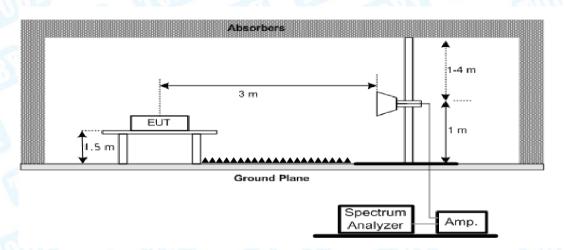






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B. Radiated Emission Test Set-Up Frequency Above1 GHz.



9.3 Test Procedure

- 1. The EUT was placed on the top of the turntable in chamber.
- 2. The test shall be made in the transmitting mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. This measurement shall be repeated with the transmitter in standby mode where applicable.
- 4. For spurious emissions measurement, the broad band bi-log receiving antenna was placed 3 meters far away from the turntable.
- 5. The broadband receiving antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization. Each recorded suspected value is indicated as Read Level (Raw).
- 6. Replace the EUT by standard antenna and feed the RF port by signal generator.
- 7. Adjust the frequency of the signal generator to the suspected emission and slightly rotate the turntable to locate the position with maximum reading.
- 8. Adjust the power level of the signal generator to reach the same reading with Read Level (Raw).
- 9. The level of the spurious emission is the power level of (8) plus the gain of the standard antenna in dBi and minus the loss of the cable used between the signal generator and the standard antenna.
- The measurement shall be repeated at the lowest and the highest channel of the stated frequency range.

9.4 Deviation From Test Standard

No deviation

9.5 Test Data

Please refer to the Attachment C.





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10. Frequency stability

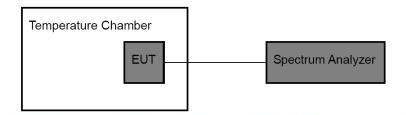
10.1 Test Standard and Limit

10.1.1 Test Standard: FCC 15.236(f)(3)

10.1.2 Test Limit

The frequency tolerance of the carrier signal shall be maintained within ±0.005% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

10.2 Test Setup



10.3 Test Procedure

The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 °C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15-second intervals. The worst case number used in the table below. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -20 °C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15-second intervals. The worst-case number was again used in the table below. This procedure was repeated in 10-degree increments up to + 50 °C.

10.4 Deviation From Test Standard

No deviation

10.5 Test Data

Please refer to the Attachment D.





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Attachment A--Power Output Test Data



Note: Radiated RF power= Conduction measurement Level + Ant. Gain





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Attachment B--Bandwidth Test Data

Channel Frequency (MHz)	99% Bandwidth (KHz)	26dB Bandwidth (KHz)
598	125.83	148.1
600	124.51	147.9
603	125.25	146.9

598MHz







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600MHz



603MHz



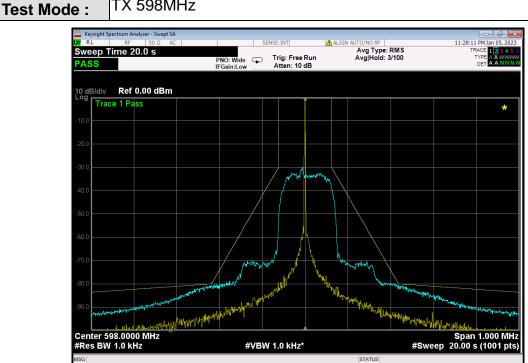




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Attachment C--Emission Mask Test Data

Temperature:	26°C	Relative Humidity:	60%
Pressure:	1010hPa	Test Voltage :	DC 3V (Normal)
Result:	PASS		
	TV FOOMUZ		

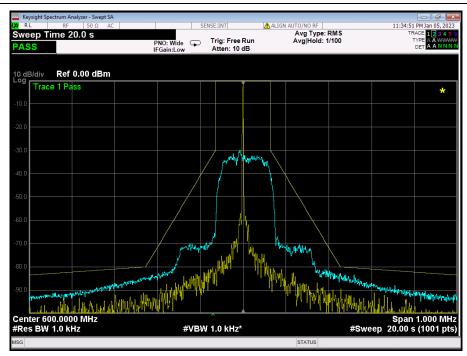




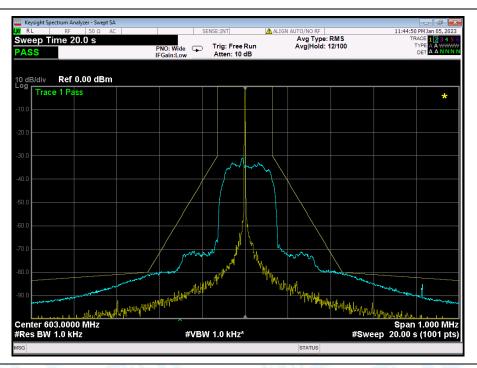


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603MHz







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Attachment D--Radiated Spurious Emission Test Date

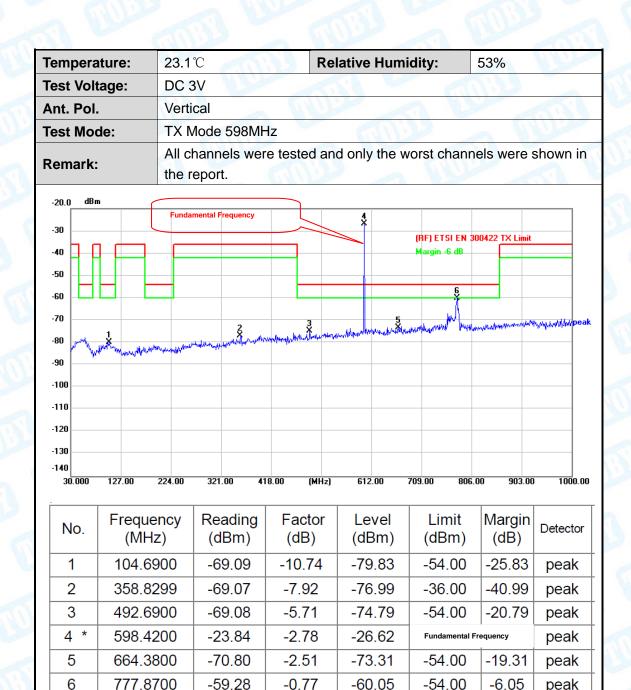
Below 1 GHz

Γemperatι	ıre:	23.1	$^{\circ}$ C		1	Rel	ative	Hum	idity:		53%		46	18
est Volta	ge:	DC 3V												
Ant. Pol.		Horizontal												
Test Mode	:	TX Mode 598MHz												
Remark:				s wei	re teste	ed and	donly	the v	worst o	chanr	nels w	ere s	showi	n ir
		the r	eport.			1								
-20.0 dBm			Fundament	lal Francis										1
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-40									Margin		00422 17	\ LIIII		
-50														
-60														
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-90 -100 -110	had with miles of the strong where the	2	And the second s	3 Michaelywles	graphy and the	and middle	and the second	. rectal pide						
-90 -100 -110 -120	hard and a find the state of th	2			the state of the s	and of middle	grant and brook	areat (MA						
-90 -100 -110 -120 -130	"Andread Astronomy of the Control of	224.00	321.00		18.00	(MHz)	612.0		709.00	806.		903.00		
-80 -90 -100 -110 -120 -130 -140 30.000	127.00	224.00	321.00	4	18.00	(MHz)	612.0	00	709.00	806.	00	903.00		
-90 -100 -110 -120 -130 -140 30.000	"Andread Astronomy of the Control of	224.00 ICY		ling		(MHz)		oo vel	709.00		00 Ma			00.00
-80 -90 -100 -110 -120 -130 -140 30.000	127.00 :	224.00 CCY	321.00 Read	ling m)	18.00 Fac	(MHz)	612.0 Lev	oo vel 8m)	709.00 Li (di	806. mit	Ma (c	903.00 argin	100	00.00
-80 -90 -100 -110 -120 -130 -140 30.000	127.00 := requen (MHz)	224.00 ICY)	321.00 Read (dBr	ling m) 79	Fac (dE	(MHz) etor 3)	Lev (dB	wel 8m) .85	709.00 Li (dl -54	806. mit 3m)	00 Ma	903.00 argin	100	ctor
-80 -90 -100 -110 -120 -130 -140 30.000	127.00 := requen (MHz) 53.280	224.00 1Cy 0	321.00 Read (dBr	ling m) 79	Fac (dE -8.0	(MHz) stor 3) 06	Lev (dB	vel 8m) .85	709.00 Li (dl -54	806. mit 3m)	00 Ma (0 -22 -27	903.00 argin IB) 2.85	Dete	ctor ak
-80 -90 -100 -110 -120 -130 -140 30.000	127.00 : Frequen (MHz) 53.280 212.360	0 0 0 0	321.00 Read (dBr -68.	ling m) 79 81 68	Fac (dE -8.0	(MHz) stor 3) 06 51	Lev (dB -76.	vel 8m) .85 .32	709.00 Li (dli -54 -54 -36	806. mit 3m) 1.00	00 Ma (0 -22 -27 -42	903.00 argin IB) 2.85 7.32	Dete	ctor ak ak
-80 -90 -100 -110 -120 -130 -140 30.000	127.00 :: -requen (MHz) 53.280 212.360 349.130	0 0 0 0 0 0	321.00 Read (dBr -69.6	ling m) 79 81 68 43	Fac (dE -8.0	(MHz) stor 3) 06 51 38	Lev (dB -76 -81	wel 8m) .85 .32 .56	709.00 Li (dl -54 -54	mit 3m) 1.00 1.00 5.00	00 Ma (0 -22 -27 -42	903.00 argin IB) 2.85 7.32 2.56 2.78	Deter pea pea pea	ctor ak ak ak





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-60.05

-54.00

-6.05

peak

Emission Level= Read Level+ Correct Factor



6





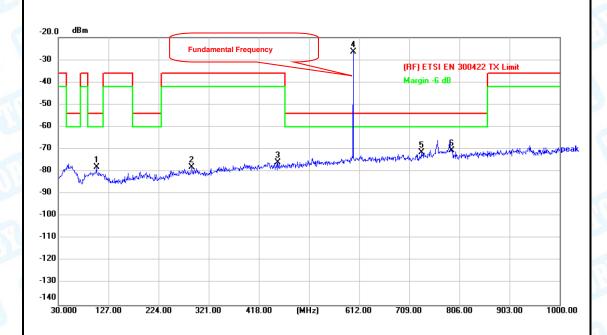
125										
empera	ture:	23.1	$^{\circ}$	THE L	Relative Hu	ımidity:	53%			
est Volt	age:	DC 3	DC 3V							
nt. Pol.		Horiz	Horizontal							
est Mod	de:	TXN	/lode 600N	ИНz						
Remark:			All channels were tested and only the worst channels were show the report.							
-20.0 dBm				_						
-30 -40			Fundamental F	Frequency	5×	(RF) ETSI EN Margin -6 dB	N 300422 TX Limit			
-60 -70 1					province from the southern		del-pathologia ruman garabil ng firinsaliri	peal		
-80 ××	Mary .	MITHINAPPRIN	Manchan Array and Lan							
-90 -100 -110 -120	Abrona and a second	Minute	Marie Land All Land							
.100 .1100 .120	127.00	224.00			4Hz) 612.00	709.00 80	06.00 903.00	1000.00		
-100 -110 -120 -130 -140		ency		418.00 (N	or Level	l Limit	t Margin			
90 1100 1110 120 130 140 30.000	127.00 Frequ	iency Hz)	321.00	418.00 (N	or Level) (dBm	l Limit	t Margin			
90 100 110 1120 130 140 30.000	127.00 Frequ (MF	lency Hz) 400	Reading (dBm)	418.00 (A c) Fact (dB	or Level (dBm 2 -76.08	Limit) (dBm 3 -54.0	t Margin (dB) 0 -22.08	Detecto		
90 100 110 120 130 140 30.000	127.00 Frequ (MF 51.3	ency Hz) 400 3600	321.00 Reading (dBm) -68.56	418.00 (M c) Fact (dB -7.5	or Level (dBm) 2 -76.08 51 -80.22	Limit) (dBm 3 -54.0 2 -54.0	t Margin (dB) 0 -22.08 0 -26.22	Detecto peak		
90 1100 1110 120 130 140 30.000	Frequ (MF 51.3 212.3	ency Hz) 400 3600	321.00 Reading (dBm) -68.56 -68.71	418.00 (A g Fact (dB -7.5	or Level (dBm) 2 -76.08 51 -80.22 4 -78.60	Limit (dBm 3 -54.0 2 -54.0 0 -36.0	t Margin (dB) 0 -22.08 0 -26.22 0 -42.60	Detecto peak peak		
-90 -100 -110 -120 -130 -140 30.000 No.	Frequ (MF 51.3 212.3 258.9	ency Hz) 400 3600 9200 7300	321.00 Reading (dBm) -68.56 -68.71 -69.06	418.00 (M c) Fact (dB -7.5 -11.5 -9.5	or Level (dBm) 2 -76.08 51 -80.22 4 -78.60 4 -77.2	Limit) (dBm 3 -54.0 2 -54.0 0 -36.0 1 -36.0	t Margin (dB) 0 -22.08 0 -26.22 0 -42.60	Detecto peak peak peak		





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	Temperature:	23.1℃	Relative Humidity:	53%
	Test Voltage:	DC 3V		
Š	Ant. Pol.	Vertical	The state of the s	
2	Test Mode:	TX Mode 600MHz		
	Remark:	All channels were teste	d and only the worst chan	nels were shown in
	Reiliai K.	the report.		



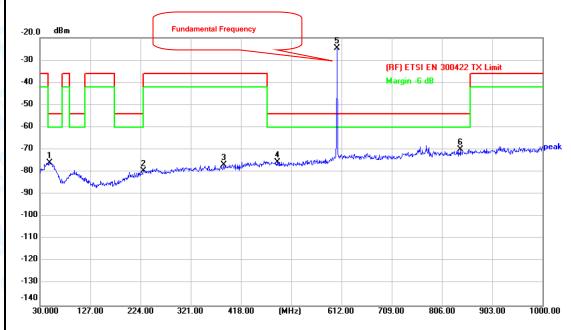
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	103.7200	-67.17	-10.73	-77.90	-54.00	-23.90	peak
2	288.0200	-68.86	-9.24	-78.10	-36.00	-42.10	peak
3	454.8600	-69.49	-6.33	-75.82	-36.00	-39.82	peak
4 *	600.3600	-23.86	-2.72	-26.58	Fundamental Fr	equency	peak
5	732.2800	-70.18	-1.40	-71.58	-54.00	-17.58	peak
6	791.4500	-69.53	-0.89	-70.42	-54.00	-16.42	peak







Temperature:	23.1℃	Relative Humidity:	53%
Test Voltage:	DC 3V		
Ant. Pol.	Horizontal		
Test Mode:	TX Mode 603MHz		THU .
Remark:	All channels were tested the report.	d and only the worst chan	nels were shown in



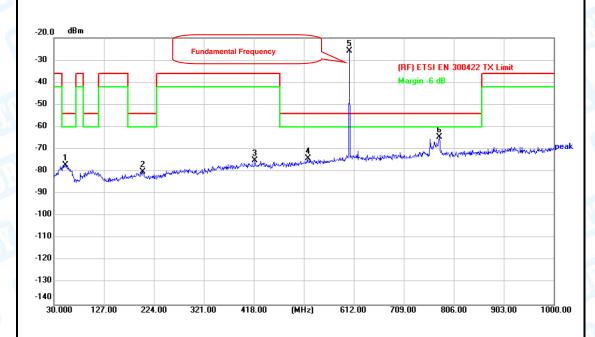
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	48.4300	-68.62	-7.29	-75.91	-54.00	-21.91	peak
2	229.8200	-69.53	-9.93	-79.46	-54.00	-25.46	peak
3	385.0200	-69.46	-7.31	-76.77	-36.00	-40.77	peak
4	487.8400	-69.93	-5.61	-75.54	-54.00	-21.54	peak
5 *	603.2700	-22.01	-2.71	-24.72	Fundamental Fr	equency	peak
6	841.8900	-69.55	-0.28	-69.83	-54.00	-15.83	peak







Temperature:	23.1℃	Relative Humidity:	53%
Test Voltage:	DC 3V		
Ant. Pol.	Vertical	The state of the	
Test Mode:	TX Mode 603MHz	6000	THU .
Remark:	All channels were teste	d and only the worst chan	nels were shown in
Remark:	the report.		



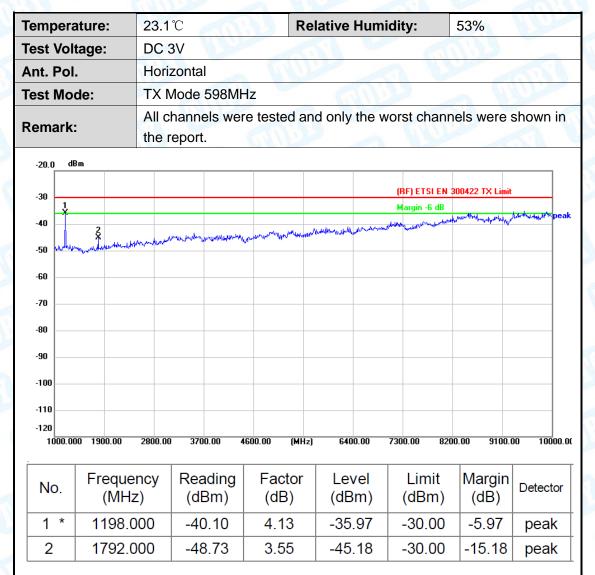
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	52.3100	-68.26	-8.88	-77.14	-54.00	-23.14	peak
2	202.6600	-68.84	-11.23	-80.07	-54.00	-26.07	peak
3	419.9400	-68.65	-6.54	-75.19	-36.00	-39.19	peak
4	522.7600	-69.23	-4.77	-74.00	-54.00	-20.00	peak
5 *	603.2700	-23.31	-2.61	-25.92	Fundamental F	requency	peak
6	777.8700	-63.68	-0.77	-64.45	-54.00	-10.45	peak

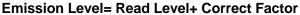




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Above 1 GHz









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Tempera	ature:	23.1	$^{\circ}$		13.5	Rela	tive H	lumi	dity:	53%	Allin
est Vol	tage:	DC	3V	Alle		1	A.	1	6.1	11:30	
nt. Pol		Vert	ical		1 W	M.			A W		
est Mo	de:	TXI	Mode	598M	Hz		611	W			
temark	:		hann repor		re teste	d and	only t	he w	orst chan	nels were	shown in
-20.0 dB	m										
-30									(RF) ETSI EN	300422 TX Limit	
1 X									Margin -6 dB	Joseph .	pea
-50	VAR.	ing process philosophic									
-60 -70 -80 -90											
-70 -80 -90 -100											
-70 -80 -90	D 1900.00	2800.00	370	00.00	1600.00	MHz)	6400.0	00 ;	7300.00 820	00.00 9100.0	00 10000.
-70 -80 -90 -100 -110 -120	o 1900.00 Freque (MHz	ncy	Rea	ading Bm)	Fact (dB	or	Leve (dBn	el	7300.00 820 Limit (dBm)	00.00 9100.0 Margin (dB)	
-70 -80 -90 -100 -110 -120 1000.000	Freque	ncy z)	Rea (dl	ading	Fact	or)	Leve	el n)	Limit	Margin	I





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empe	rature:	23.1	$^{\circ}$	R	elative H	Humid	ity:	53%	
Test Vo	ltage:	DC :	3V						
Ant. Po	ol.	Hori	zontal	UNI	P. Carlot		1 W		
Test Mo	ode:	TX	Mode 600MI	Hz	61	11/2		~ W	
Remarl	k:	4	hannels we eport.	re tested a	and only t	he wo	rst chanr	nels were s	shown ir
-20.0 d	Bm								
-30						(I	RF) ETSI EN 3	00422 TX Limit	
-30 1 X						N	largin -6 dB		, ,
-40	2 X					address of the control of the	Marian May a garage de Carlo	gowen day for	wwwmpea
-50 km//w	mangement of the opposite of the	2160 17 101	annest de mariet est est est est						
-70									
-80									
-90									
-90									
-90 -100 -110 -120									
-90 -100	00 1900.00	2800.00	3700.00 40	600.00 (MHz	2) 6400.0	00 7 30	10.00 820G	0.00 9100.00	0 10000.0
-90 -100 -110 -120	00 1900.00 Freque (MH	ency	3700.00 40 Reading (dBm)	Factor		el	00.00 8200 Limit (dBm)	0.00 9100.00 Margin (dB)	Detector
-90 -100 -110 -120 1000.0	Freque	ency z)	Reading	Factor	Lev	el n)	Limit	Margin	





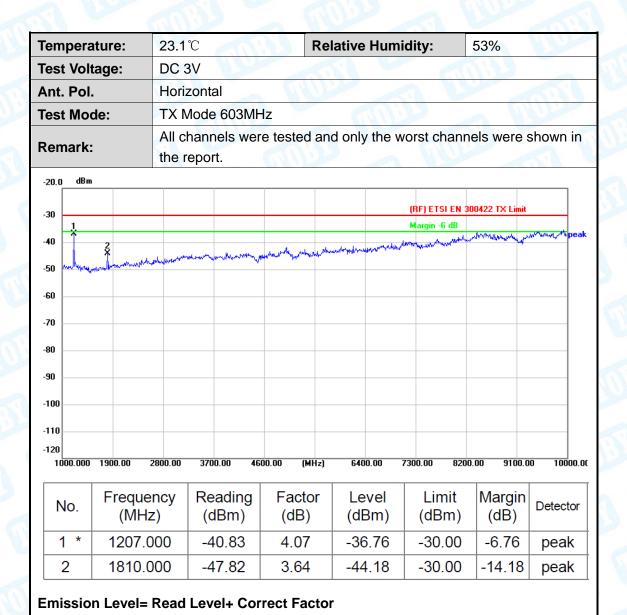
Report No.: TBR-C-202209-0005-30 Page: 35 of 40

			41 12 4									
Гетр	peratu	re:	23.1	$^{\circ}$			Rela	ative	Humi	dity:	53%	Altre
Test '	Voltaç	je:	DC :	3V	Alle				1	63	7:33	
Ant.	Pol.		Verti	cal		11 A	N.			A W		STI
Γest	Mode		TX Mode 600MHz							W		
Rema	ark:			hann epor		e tested	d and	only	the w	orst chan	nels were	shown i
-20.0_	dBm											
20										(RF) ETSI EN	300422 TX Limit	
-30	1 X									Margin -6 dB		
-40		Ž						baganika Nadian	med before the sound		and the same of th	pe
-50 4 -60 - -70 -	Manuface	h-resource (All Parks)	Address de Agrecación									
-90												
-100												
-100												
-110 -120	0.000 19	900.00	2800.00	3700	0.00 46	500.00 (k	MHz)	640	0.00 7	7300.00 820	00.00 9100.0	00 10000
-110 -120		reque	ncy	Rea	0.00 46 ading Bm)	Facto (dB)	or	Le	o.oo 7 vel Bm)	Limit (dBm)	Margin (dB)	ı
-110 -120 100	D. F	reque	ncy z)	Rea	ading	Facto	or)	Le	vel Bm)	Limit	Margin	





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		W 1 V2 4				100			. 9			
Гетре	erature:	23.1	$^{\circ}$ C	M		Rela	ive I	Humid	ity:	53%	MA	
est V	oltage:	DC	3V			118	A	Control of the Contro	67	1132		
Ant. P	ol.	Vert	ical		J. W.	13.7			I W			
Test M	lode:	TXI	TX Mode 603MHz							11/11/2		
Rema	rk:		channel report.	s wer	re tested	d and	only	the wo	rst chani	nels wer	e show	n i
-20.0	dBm											_
-30								(RF) ETSI EN (800422 TX Li	mit	
1									argin -6 dB	100	1.00 11.00	1
-40		2 X			physical states of the control of	and the state of t	y day aladyopara	Market March Jake	and market and the second	John Walder See	Lagger of Carles and St.	- pe
-50	and have been desired to the second	A PROPERTY OF THE PARTY OF THE	and marked and and	YEAR MARKET . JUNEAU	//w···							-
-60												
-70												
-80												
-90												
-100												-
-110												
-120												
1000.	000 1900.00	2800.00	3700.00	D 46	600.00 (N	4Hz)	6400.	00 73	00.00 820	0.00 910	00.00 10) 000
No.	Frequ (MF		Read (dBr		Facto (dB)		Lev (dBr		Limit (dBm)	Margi (dB)		cto
1 *	1207	.000	-41.0	01	4.65		-36.	36	-30.00	-6.36	o pe	ak
2	2512	.000	-53.	17	6.59		-46.	58	-30.00	-16.5	8 pea	ak
2	2512	.000	-53.	17	6.59		-46.	58	-30.00	-16.5	8 pe	a





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Attachment E--Frequency Stability Test Data

Pressure:	1010hPa		Test Voltage :	DC 3V (Normal)		
Test Mode :	TX 598MHz	(Modulation)				
Remark:	All channels	were tested and o	in the report.			
Test Cond	itions	Measurement	Test (Conditions	Measurement	
Test Temperature	Test Voltage	Frequency(MHz)	Test Voltage	Test Temperature	Frequency(MHz)	
-20°C	ARTIC	598	85%		598.013	
-10°C	A V	598	95%	20°C	598.012	
0°C	000	598	100%		598.015	
10°C		598	105%		598.015	
20°C	DC 3V	598	110%		598.014	
30°C	ang	598	115%	7	598.015	
40°C		598				
50°C	TORY	598		(UI)		
Max. Deviation Fre	equency		ann's		0.015	
Max. Frequency E	rror			0037	0.003%	
Limits	±0.005%					
Result			The same of		PASS	

Note: The frequency tolerance of the carrier signal shall be maintained within ±0.005% of the operating frequency.





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Pressure:	1010hPa		Test Voltage :		DC 3V (Normal)				
Test Mode :	TX 600MHz	(Modulation)							
Remark:	All channels	vere tested and only the worst channels were shown in the report.							
Test Cond	litions	Measurement	Test (Conditions	Measurement				
Test Temperature	Test Voltage	Frequency(MHz)	Test Voltage	Test Temperature	Frequency(MHz)				
-20°C	Will service	600	85%	VILLE	600.012				
-10°C		600	95%		600.011				
0°C	TAY N	600	100%	2000	600.012				
10°C	DO 01/	600	105%	20°C	600.012				
20°C	DC 3V	600	110%		600.015				
30°C	13.3	600	115%	anB)	600.015				
40°C	400	600	-						
50°C	3	600							
Max. Deviation Fre	equency			1 100	0.015				
Max. Frequency E	rror	MUSS	y The		0.003%				
Limits		WILL WILL STREET		TUU	±0.005%				
Result		133	W. Call	THU THU	PASS				





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Pressure:	1010hPa	1	Test Voltage :	DC 3V (Normal)	
Test Mode :	TX 603MHz	(Modulation)		Trans	The same
Remark:	All channels	were tested and o	in the report.		
Test Cond	itions	Measurement	Test (Conditions	Measurement
Test Temperature	Test Voltage	Frequency(MHz)	Test Voltage	Test Temperature	Frequency(MHz)
-20°C	mBy	603	85%	VICE	603.012
-10°C		603	95%	TO U	603.013
0°C		603	100%	20°C	603.012
10°C	DC 3V	603	105%		603.017
20°C	DC 3V	603	110%		603.013
30°C	03.3	603	115%	mnB)	603.014
40°C	Lin.	603			
50°C	3	603			
Max. Deviation Fre	equency			1	0.017
Max. Frequency E	rror	4000	a fille		0.003%
Limits		WOT.		Min	±0.005%
Result			WURR		PASS

----END OF REPORT----

