

Prüfbericht-Nr.: 50070785 001 Auftrags-Nr.: 154220594 Seite 1 von 51 Test Report No.: Order No.: Page 1 of 51 Kunden-Referenz-Nr.: 654233 Auftragsdatum: 01.03.2017 Client Reference No.: Order date: Auftraggeber: MOBIKE (HONGKONG) LIMITED Client: 2/F HONGKONG OFFSHORE CTR 28, AUSTIN AVENUE TST KLN, HONGKONG Prüfgegenstand: **Mobike Lock** Test item: Bezeichnung / Typ-Nr.: LB4-5US; LC4-5US Identification / Type No.: FCC ID: 2AK4SLBC4-5US Auftrags-Inhalt: Complete test Order content: Prüfgrundlage: FCC CFR47 Part 22, Subpart H Test specification: FCC CFR47 Part 24. Subpart E Wareneingangsdatum: 12.09.2016 Date of receipt: Prüfmuster-Nr.: A000475161-001 Test sample No.: Prüfzeitraum: 01.19.2017 to 01.20.2017 Testing period: Ort der Prüfung: MRT Technology(Suzhou) Place of testing: Co., Ltd. TÜV Rheinland (Shanghai) Prüflaboratorium: Testing laboratory: Co., Ltd. **Pass** Prüfergebnis\*: Test result\*: LB4-5US LC4-5US

geprüft von / tested by:

02.07.2017 Datum

Elliot Zhang "Senior Project Engineer

Name / Stellung Name / Position

Unterschrift Signature

kontrolliert von I reviewed by:

02.07.2017

Shi Li / Section Manager

Datum Date

Name / Stellung Name / Position

Untersehrift Signature

Sonstiges / Other

Date

Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:

Prüfmuster vollständig und unbeschädigt Test item complete and undamaged

\* Legende:

1 = sehr gut

2 = gut

3 = befriedigend

F(ail) = entspricht nicht o.g. Prüfgrundlage(n)

4 = ausreichend N/A = nicht anwendbar 5 = mangelhaft N/T = nicht getestet

Legend:

P(ass) = entspricht o.g. Prüfgrundlage(n)

3 = satisfactory

4 = sufficient

1 = very good

2 = good

P(ass) = passed a.m. test specification(s)

F(ail) = failed a.m. test specification(s)

N/A = not applicable

N/T = not tested

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.



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**TEST SUMMARY** 

5.1.1 RADIATED POWER

RESULT: Pass

5.1.2 PEAK-AVERAGE RATIO

RESULT: Pass

5.1.3 OCCUPIED BANDWIDTH

RESULT: Pass

5.1.4 Spurious Emissions at Antenna Terminals

RESULT: Pass

5.1.5 BANDEDGE SPURIOUS EMISSION AT ANTENNA TERMINALS

RESULT: Pass

5.1.6 RADIATED SPURIOUS EMISSIONS

RESULT: Pass

5.1.7 FREQUENCY STABILITY

RESULT: Pass



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## 1. General Remarks

## 1.1 Complementary Materials

Null.

## 2. Test Sites

### 2.1 Test Facilities

MRT Technology (Suzhou) Co., Ltd.

D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communications Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules. The description of the test facility is listed under FCC registration number 809388.

The Industry Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance. The description of the test facility is listed under chambers filing number 11384A.





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## 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment** 

Radiated Test Equipments

Instrument	Manufacturer	Type No.	Asset No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY52090106	05.08.2017
EMI Test Receiver	R&S	ESR 3.6	102030	05.08.2017
Radio Communication Tester	R&S	CMU 200	117129	11.10.2017
Preamplifier	Schwarzbeck	BBV 9718	302	04.16.2017
Preamplifier	Schwarzbeck	BBV9721	9721-008	04.16.2017
Loop Antenna	Schwarzbeck	FMZB1519	1519-041	11.21.2017
Bilog Period Antenna	Schwarzbeck	VULB 9168	662	11.18.2017
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	1457	11.18.2017
Broadband Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170549	01.03.2018
ESG Vector Signal Generator	Agilent	E4438C	MY49872484	12.06.2017
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1167	10.22.2017
Half-Wave Tuned Dipole Antenna	Schwarzbeck	UHA 9105	UHA 91052260	12.24.2017
Temperature/Humidity Meter	Yuhuaze	ETH529	N/A	12.24.2017
Anechoic Chamber	RIKEN	Chamber-AC2	N/A	05.10.2017

**Conducted Test Equipments** 

Conducted Foot Equipments				
Instrument	Manufacturer	Type No.	Asset No.	Cali. Due Date
EXA Signal Analyzer	Agilent	N9010A	MY51440166	06.23.2017
Radio Communication Tester	R&S	CMU 200	117129	11.10.2017
USB Wideband Power Sensor	Boonton	55006	8911	05.07.2017
Programmable Temperature & Humidity Chamber	BAOYT	BYH-1500L	1309W043	12.08.2017
Temperature/Humidity Meter	Yuhuaze	HTC-2	N/A	12.20.2017

## 2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

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## 2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

## 2.5 Measurement Uncertainty

**Table 2: Measurement Uncertainty** 

Item	Conditions	Extended Uncertainty
RF Output Power	Conducted	±0.42dB
Occupied Bandwidth	Conducted	±1.5%
Frequency Stability	Conducted	2.3%
Conducted Spurious Emission	Conducted	±2.17dB
Transmitter Spurious Emissions	Radiated	±5.1dB



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## 3. General Product Information

### 3.1 Product Function and Intended Use

The EUTs (Equipments Under Test) are smart locks which use the technic of GSM / WCDMA / GPS / Bluetooth 4.0 Low Engry Only. There are two models: LB4-5US and LC4-5US, all of the two models are the same except the corresponding structure due to different installation method. For details please refer to the user manual and EUT Photos.

The aim of this report is to evalute the RF characteristic of the GSM.

For details refer to the User Manual and Circuit Diagram.

## 3.2 Ratings and System Details

**Table 3: Technical Specification of EUT** 

General Description of	EUT
Product Name:	Mobike Lock
Brand Name:	mobike
Model No.:	LB4-5US; LC4-5US
Rated Voltage:	DC 3.7V
Type of Product:	Mobile Device
GSM	
Support Networks:	GPRS, EDGE
Supprot Bands:	Dual band GSM 850/1900MHz
Frequency Range:	GSM850: Tx: 824-849MHz, Rx: 869-894MHz
	PCS1900: Tx: 1850-1910MHz, Rx: 1930-1990MHz
Modulation Type:	GMSK, 8PSK
Multislot Class:	GPRS: Class 12
	EDGE: Class 12
Mobile Station Class:	GPRS: Class B
	EDGE: Class B
Antenna Type:	PIFA
Antenna Gain:	1.23 dBi
WCDMA	
Support Networks:	WCDMA,HSDPA, HSUPA
Support Bands:	Dual band UMTS 850/1900
Frequency Range:	CLR850: Tx: 824-849MHz, Rx: 869-894MHz
	PCS1900: Tx: 1850-1910MHz, Rx: 1930-1990MHz



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Modulation Type:	BPSK, QPSK, 16QAM
Category:	WCDMA: up to 384kbps DL/UL
	HSDPA: Cat.8
	HSUPA: Cat.6
Antenna Type:	PIFA
Antenna Gain:	1.23 dBi
BLE	
Frequency Range:	2402 – 2480MHz
Modulation Type:	GFSK
Antenna Type:	Monopole
Antenna Gain:	4.83 dBi

### **Table 4: RF Channel and Frequency**

Support Band	Support Network Channel Number		Channel Frequency
		128	824.2 MHz
GSM 850	GPRS/EDGE	190	836.6 MHz
		251	848.8 MHz
		512	1850.2 MHz
GSM 1900	GPRS/EDGE	661	1880.0 MHz
		810	1909.8 MHz

# 3.3 Independent Operation Modes

Test Mode	Network	Band	Channel
TM1			128
TM2		GSM 850	190
TM3	CDDC		251
TM4	GPRS		512
TM5		GSM 1900	661
TM6			810
TM7			128
TM8		GSM 850	190
TM9	EDGE		251
TM10			512
TM11		GSM 1900	661
TM12			810

Note:

According to the difference between the two models, which will not affect the test result, the Model LB4-5US was chosen for the all tests.



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# 3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

## 3.5 Submitted Documents

- Bill of Material
- PCB Layout
- Photo Document

- Circuit Diagram
- Instruction Manual
- Rating Label



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# 4. Test Set-up and Operation Modes

## 4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

## 4.2 Test Operation and Test Software

The EUT was controlled by Telecommunication Tester Set CMU200 during the test. Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI/TIA-603-D (2010).

4.3 Special Accessories and Auxiliary Equipme	<b>Accessories and Auxiliary Equipmer</b>
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Null.

# 4.4 Countermeasures to achieve EMC Compliance

Null.

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## 5. Test Results

# 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Radiated Power

**RESULT: Pass** 

Date of testing : 01.19.2017

Test standard : FCC Part 22.913 (a) (2)

FCC Part 24.232 (c)

Limit  $\leq$  7W ERP (GSM850MHz)

≤ 2W EIRP (GSM1900MHz)

Kind of test site : 3m Full-anechoic Chamber

**Test setup** 

Test Channel : Low/ Middle/ High
Operation Mode : TM1 to TM12
Ambient temperature : 25°C
Relative humidity : 52% Atmospheric pressure : 101kPa

**Table 5: Radiated Power** 

Test Mode	Channel	Frequency [MHz]	ERP [dBm]	ERP [W]	Limit [W]
TM1	128	824.2	33.74	2.37	
TM2	190	836.6	33.83	2.42	
TM3	251	848.8	33.76	2.38	7
TM7	128	824.2	27.86	0.61	
TM8	190	836.6	27.84	0.61	
TM9	251	848.8	27.92	0.62	
Test Mode	Channel	Frequency [MHz]	EIRP [dBm]	EIRP [W]	Limit [W]
TM4	512	1850.2	30.39	1.09	
TM5	661	1880.0	30.43	1.10	
TM6	810	1909.8	30.30	1.07	2
TM10	512	1850.2	26.92	0.49	
TM11	661	1880.0	26.99	0.49	
TM12	810	1909.8	26.99	0.50	

Note: ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBd)



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## 5.1.2 Peak-Average Ratio

**RESULT: Pass** 

: 01.20.2017 Date of testing

Test standard : FCC Part 24.232 (d)

Limit : <13dB

Kind of test site : Shielded room

**Test setup** 

Test Channel : Middle : TM5, TM11

Operation Mode : TM5,
Ambient temperature : 25°C
Relative humidity : 52% Relative humidity : 52% Atmospheric pressure : 101kPa

**Table 6: Peak Average Radio** 

Test Mode	Frequency [MHz]	Peak – Average Ratio [dB]	Limit
TM5	1880.0	9.87	4104D
TM11	1880.0	10.05	<13dB



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## 5.1.3 Occupied Bandwidth

**RESULT: Pass** 

Date of testing : 01.19.2017 Test standard : FCC Part 2.1049

Limit : N/A

Kind of test site : Shielded room

**Test setup** 

Test Channel : Low/ Middle/ High
Operation Mode : TM1 to TM12
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa

#### **Table 7: Occupied Bandwidth**

Test Mode	Network	Band	Channel	Frequency [MHz]	99% bandwidth [kHz]	26dB bandwidth [kHz]
TM1			128	824.2	244.09	316.2
TM2		GSM 850	190	836.6	240.39	309.3
TM3	GPRS		251	848.8	244.67	314.0
TM4	GENS		512	1850.2	244.55	309.3
TM5		GSM 1900	661	1880.0	248.06	318.3
TM6			810	1909.8	243.48	313.6
TM7			128	824.2	243.43	311.7
TM8		GSM 850	190	836.6	243.97	312.2
TM9	EDGE		251	848.8	243.47	320.4
TM10	EDGE		512	1850.2	242.68	309.5
TM11		GSM 1900	661	1880.0	246.03	313.0
TM12			810	1909.8	244.99	320.1



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Figure 1: Occupied Bandwidth, TM1

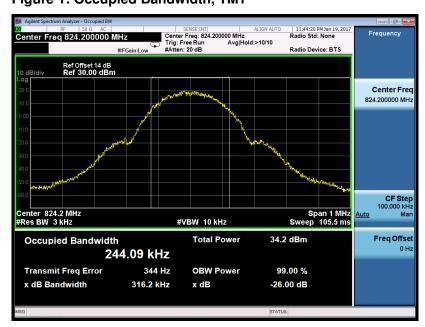


Figure 2: Occupied Bandwidth, TM2





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Figure 3: Occupied Bandwidth, TM3

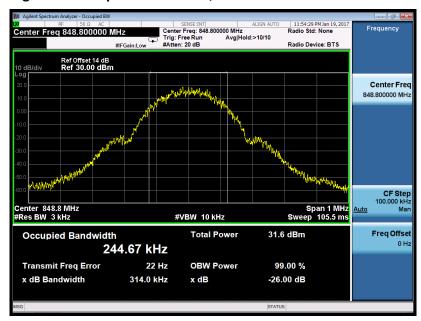


Figure 4: Occupied Bandwidth, TM4





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Figure 5: Occupied Bandwidth, TM5

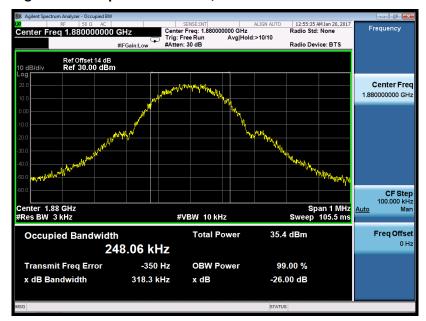
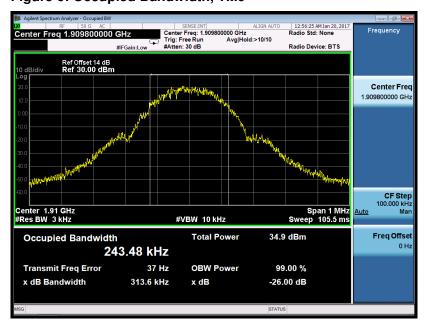


Figure 6: Occupied Bandwidth, TM6





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Figure 7: Occupied Bandwidth, TM7



Figure 8: Occupied Bandwidth, TM8



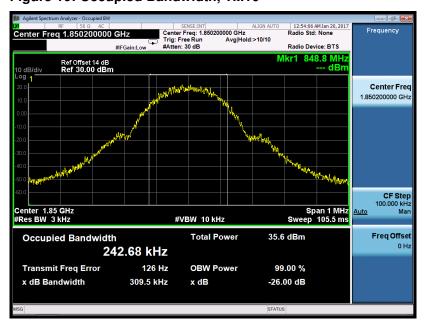


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Figure 9: Occupied Bandwidth, TM9



Figure 10: Occupied Bandwidth, TM10





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Figure 11: Occupied Bandwidth, TM11



Figure 12: Occupied Bandwidth, TM12





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## **5.1.4 Spurious Emissions at Antenna Terminals**

**RESULT: Pass** 

: 01.20.2017 Date of testing Test standard : FCC Part 2.1051

> FCC Part 22.917 (a) FCC Part 24.238 (a)

: Less than -13dBm Limit Kind of test site : Shielded room

**Test setup** 

Test Channel : Low/ Middle/ High
Operation Mode : TM1 to TM12
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa

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Figure 13: Conducted Spurious Emission, TM 1, part 1

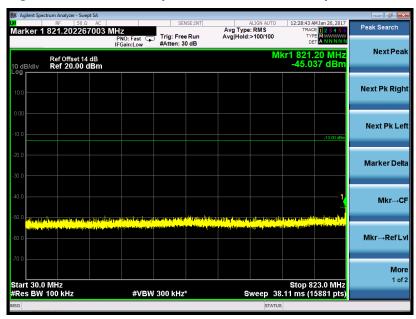
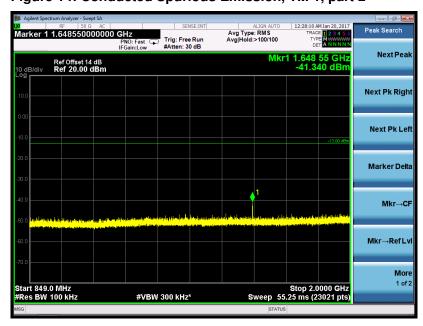


Figure 14: Conducted Spurious Emission, TM 1, part 2





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Figure 15: Conducted Spurious Emission, TM 1, part 3

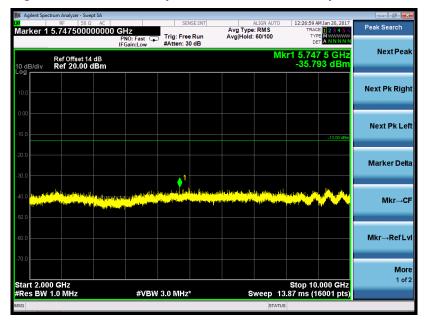
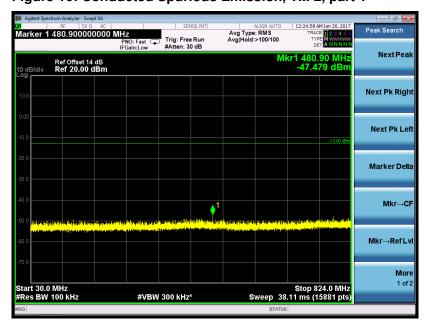


Figure 16: Conducted Spurious Emission, TM 2, part 1





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Figure 17: Conducted Spurious Emission, TM 2, part 2

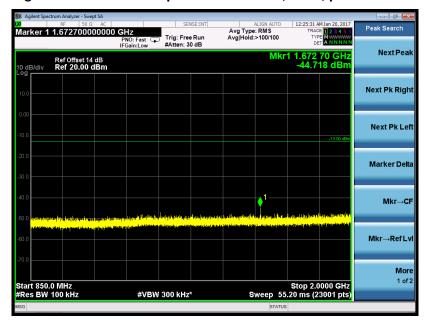
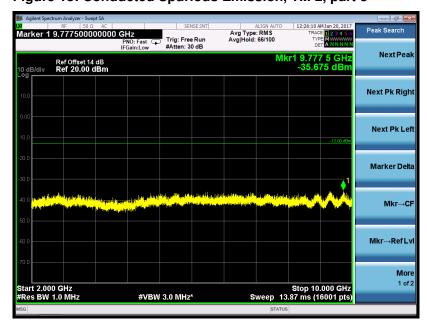


Figure 18: Conducted Spurious Emission, TM 2, part 3



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Figure 19: Conducted Spurious Emission, TM 3, part 1

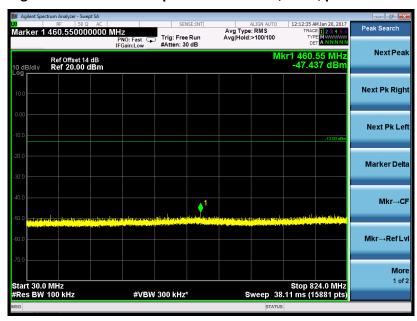
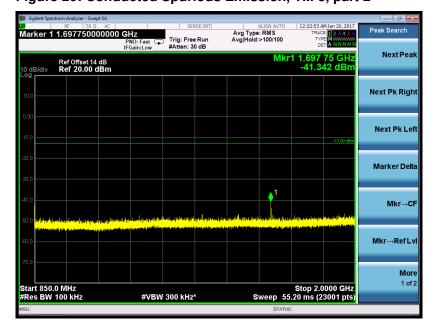


Figure 20: Conducted Spurious Emission, TM 3, part 2





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Figure 21: Conducted Spurious Emission, TM 3, part 3

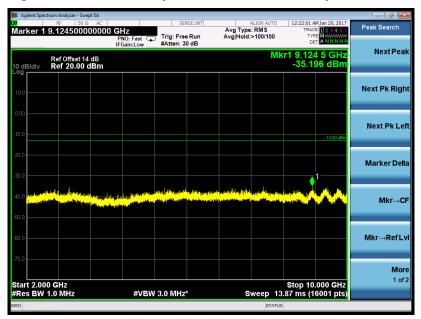


Figure 22: Conducted Spurious Emission, TM 4, part 1



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Figure 23: Conducted Spurious Emission, TM 4, part 2

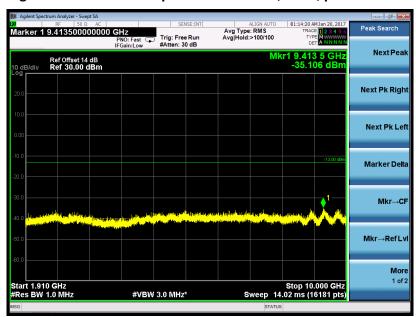


Figure 24: Conducted Spurious Emission, TM 4, part 3

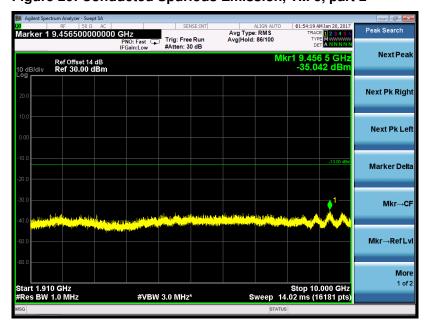


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Figure 25: Conducted Spurious Emission, TM 5, part 1



Figure 26: Conducted Spurious Emission, TM 5, part 2



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Figure 27: Conducted Spurious Emission, TM 5, part 3

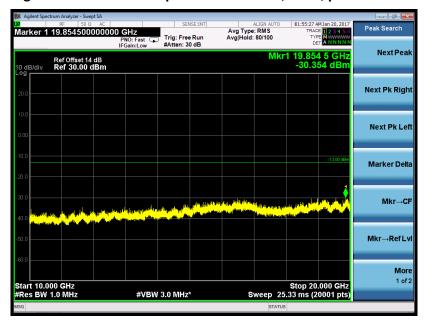
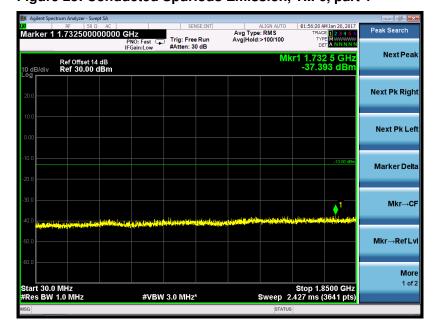


Figure 28: Conducted Spurious Emission, TM 6, part 1



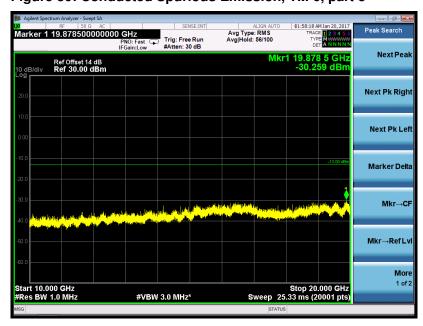
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Figure 29: Conducted Spurious Emission, TM 6, part 2



Figure 30: Conducted Spurious Emission, TM 6, part 3



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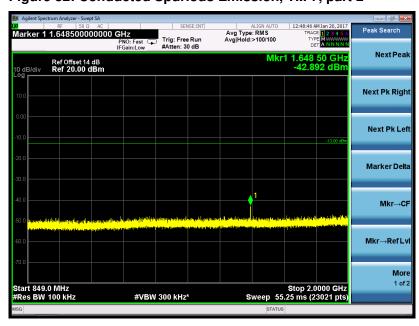
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Figure 31: Conducted Spurious Emission, TM 7, part 1



Figure 32: Conducted Spurious Emission, TM 7, part 2



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Figure 33: Conducted Spurious Emission, TM 7, part 3

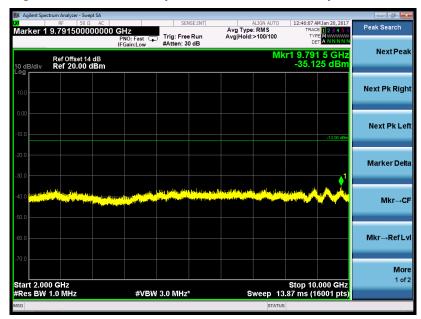
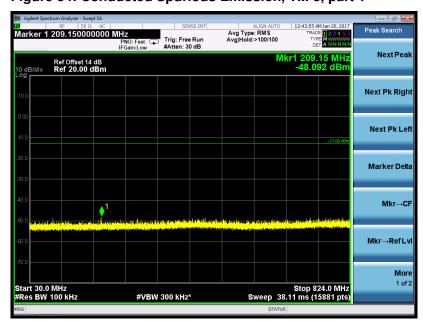


Figure 34: Conducted Spurious Emission, TM 8, part 1





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Figure 35: Conducted Spurious Emission, TM 8, part 2

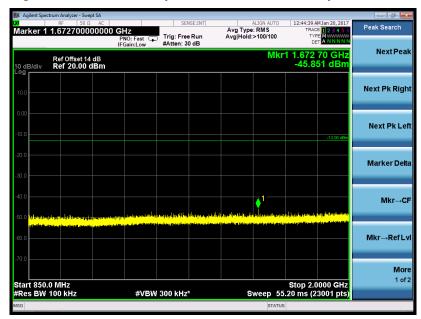
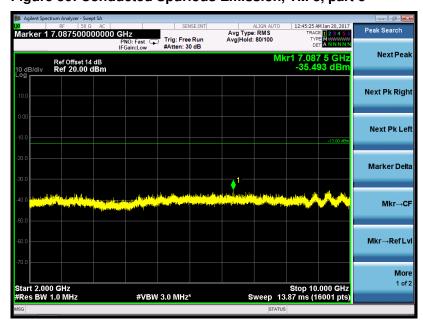


Figure 36: Conducted Spurious Emission, TM 8, part 3



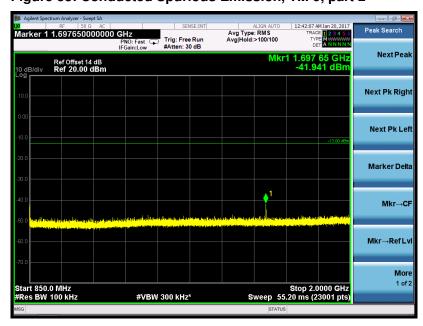
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Figure 37: Conducted Spurious Emission, TM 9, part 1



Figure 38: Conducted Spurious Emission, TM 9, part 2



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Figure 39: Conducted Spurious Emission, TM 9, part 3

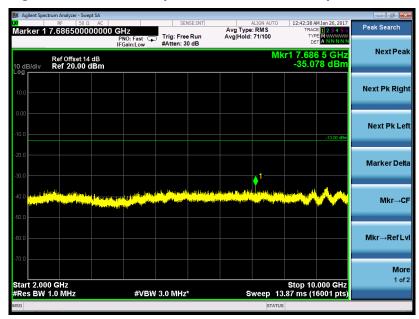


Figure 40: Conducted Spurious Emission, TM 10, part 1



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Figure 41: Conducted Spurious Emission, TM 10, part 2

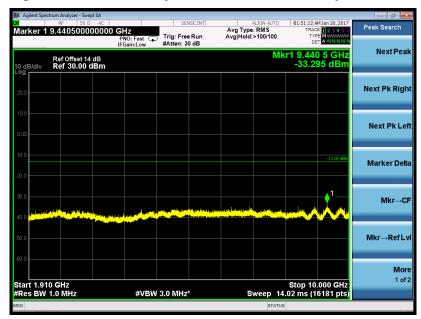


Figure 42: Conducted Spurious Emission, TM 10, part 3





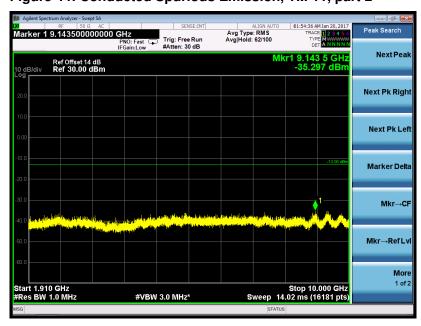
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Figure 43: Conducted Spurious Emission, TM 11, part 1



Figure 44: Conducted Spurious Emission, TM 11, part 2





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Figure 45: Conducted Spurious Emission, TM 11, part 3

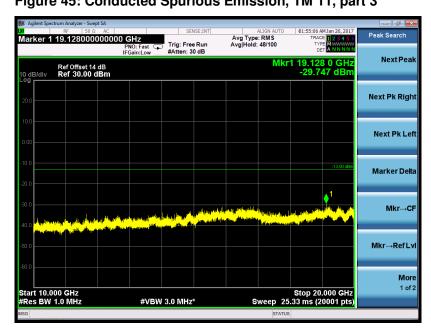
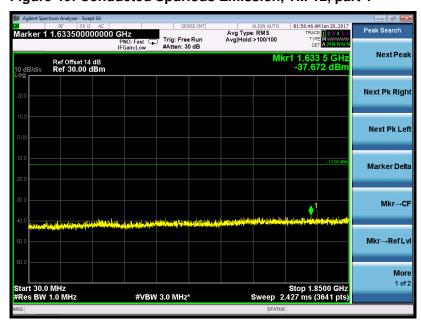


Figure 46: Conducted Spurious Emission, TM 12, part 1





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Figure 47: Conducted Spurious Emission, TM 12, part 2



Figure 48: Conducted Spurious Emission, TM 12, part 3





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### 5.1.5 Bandedge Spurious Emission at Antenna Terminals

**RESULT: Pass** 

: 01.20.2017 Date of testing

Test standard : FCC Part 2.1051

FCC Part 22.917 (a) FCC Part 24.238 (a)

: Less than -13dBm Limit Kind of test site : Shielded room

**Test setup** 

Test Channel : Low / High
Operation Mode : TM1,TM3,TM4,TM6,TM7,TM9,TM10,TM12
Ambient temperature : 25°C
Relative humidity : 52% Atmospheric pressure : 101kPa

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Figure 49: Bandedge Spurious Emission at Antenna Terminals, TM1

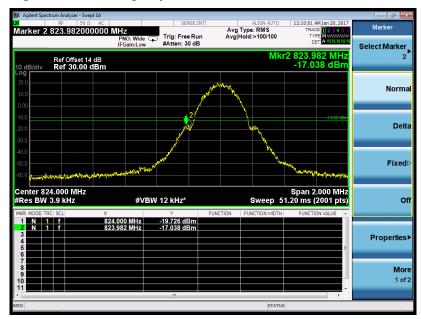
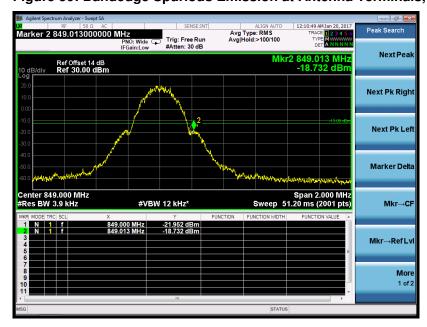


Figure 50: Bandedge Spurious Emission at Antenna Terminals, TM3

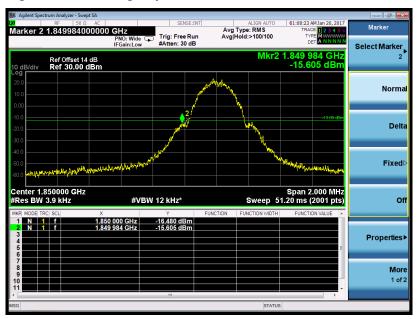


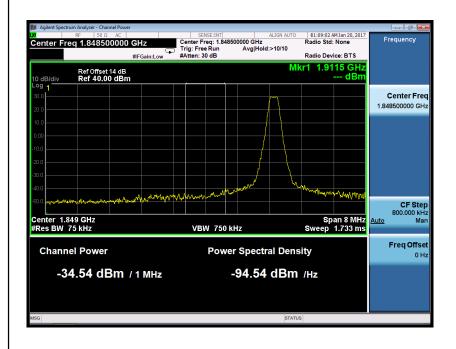


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Figure 51: Bandedge Spurious Emission at Antenna Terminals, TM4





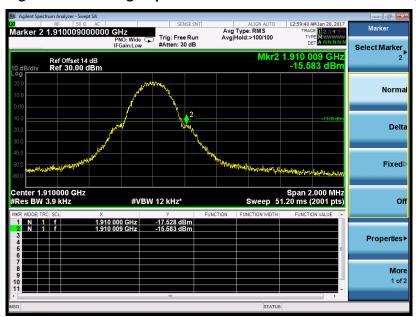
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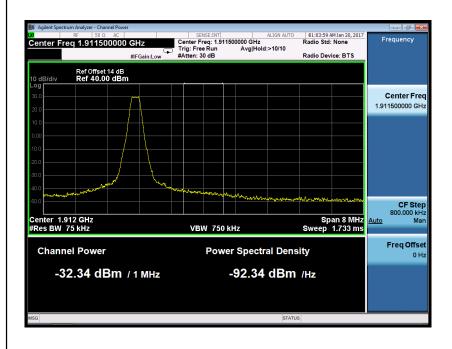


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Figure 52: Bandedge Spurious Emission at Antenna Terminals, TM6





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Figure 53: Bandedge Spurious Emission at Antenna Terminals, TM7

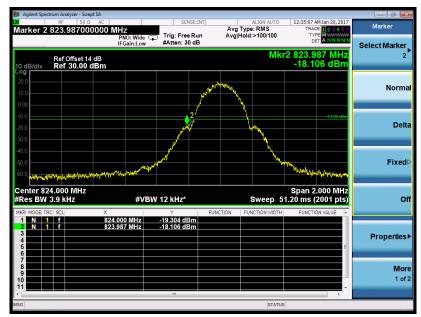
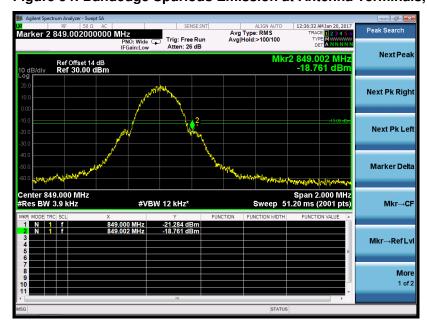


Figure 54: Bandedge Spurious Emission at Antenna Terminals, TM9



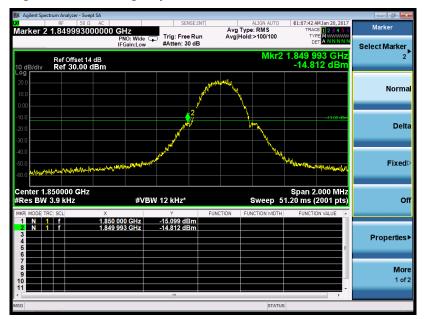


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Figure 55: Bandedge Spurious Emission at Antenna Terminals, TM10





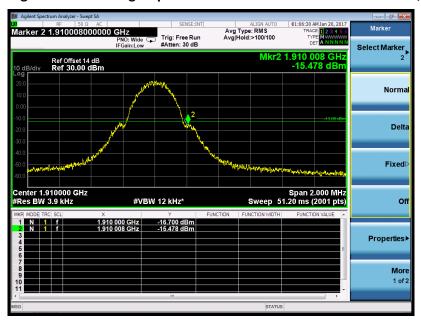
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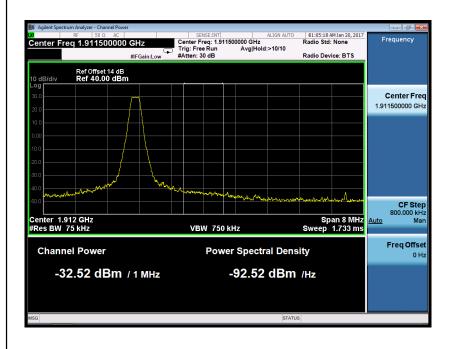


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Figure 56: Bandedge Spurious Emission at Antenna Terminals, TM12







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## 5.1.6 Radiated Spurious Emissions

**RESULT: Pass** 

: 01.20.2017 Date of testing

Test standard : FCC Part 2.1053

FCC Part 22.917 (a) FCC Part 24.238 (a)

Limit : Less than -13dBm

Kind of test site : 3m Semi-anechoic Chamber & 3m Full-anechoic

Chamber

**Test setup** 

: Low/ Middle/ High

Test Channel : Low/ Middle/ For Channel : Low/ Middle/ For Channel : TM1 to TM12 
Ambient temperature : 25°C 
Relative humidity : 52% Atmospheric pressure : 101kPa

**Table 8: Radiated Spurious Emission** 

Test Mode	Freq. [MHz]	SG Reading [dBm]	Cable Loss [dBm]	Substitute Antenna Gain [dBd]	ERP [dBm]	Limit [dBm]	Over Limit [dB]	Ant. Pol.
	3176.000	-59.042	0.930	12.010	-47.962	-13	-23.316	V
TM1	7043.500	-49.462	1.400	11.473	-39.389	-13	-31.627	V
I IVI I	1901.000	-60.708	0.705	10.449	-50.964	-13	-23.693	Н
	5105.500	-55.008	1.200	12.761	-43.447	-13	-29.188	Н
	1901.000	-54.575	0.705	10.449	-44.831	-13	-23.693	V
TM2	5080.000	-53.849	1.200	12.374	-42.675	-13	-29.188	V
I IVIZ	1892.500	-58.015	0.702	10.441	-48.276	-13	-23.693	Н
	7494.000	-50.087	1.470	11.221	-40.336	-13	-29.188	Н
	5122.500	-54.380	1.203	12.779	-42.804	-13	-21.388	V
TM3	10911.000	-44.288	1.810	11.545	-34.553	-13	-34.377	V
TIVIS	1884.000	-60.864	0.700	10.434	-51.130	-13	-26.088	Н
	5063.000	-54.245	1.195	12.716	-42.724	-13	-30.571	Н
	7400.500	-44.342	1.425	11.017	-34.750	-13	-23.316	V
TM4	12016.000	-42.507	1.790	13.202	-31.095	-13	-31.627	V
1 IVI <del>4</del>	7400.500	-43.191	1.425	11.017	-33.599	-13	-23.693	Н
	16750.500	-38.775	2.377	15.678	-25.474	-13	-29.188	Н
	7519.500	-47.876	1.470	11.279	-38.067	-13	-23.693	V
TM5	9423.500	-44.489	1.643	11.631	-34.501	-13	-29.188	V
CIVIT	7519.500	-44.646	1.470	11.279	-34.837	-13	-23.693	Н
	14787.000	-40.437	2.165	12.698	-29.904	-13	-29.188	Н
	7638.500	-45.024	1.500	11.456	-35.068	-13	-21.388	V
TM6	13444.000	-42.885	2.040	12.845	-32.080	-13	-34.377	V
	5726.000	-52.184	1.270	13.112	-40.342	-13	-26.088	Н



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	7638.500	-45.895	1.500	11.456	-35.939	-13	-30.571	Н
	2470.500	-56.979	0.812	10.482	-47.309	-13	-23.316	V
TM7	3295.000	-54.682	0.960	12.747	-42.895	-13	-31.627	٧
I IVI7	2470.500	-52.634	0.812	10.482	-42.964	-13	-23.693	Н
	3295.000	-58.064	0.960	12.870	-42.154	-13	-29.188	Н
	3346.000	-63.653	0.950	12.863	-51.740	-13	-23.693	V
TMO	5020.500	-59.395	1.190	12.671	-47.914	-13	-29.188	V
TM8	1671.500	-60.498	0.667	9.934	-51.231	-13	-23.693	Н
	5020.500	-54.117	1.190	12.671	-42.636	-13	-29.188	Н
	2547.000	-58.906	0.825	10.680	-49.051	-13	-21.388	V
TMO	3397.000	-54.572	0.955	12.955	-42.572	-13	-34.377	V
TM9	3397.000	-57.542	0.966	12.955	-45.553	-13	-26.088	Н
	5097.000	-55.381	1.200	12.752	-43.829	-13	-30.571	Н
	7400.500	-47.827	1.425	11.017	-38.235	-13	-23.316	V
TM10	10894.000	-44.542	1.800	11.550	-34.792	-13	-31.627	V
TIVITO	7400.500	-46.319	1.425	11.017	-36.727	-13	-23.693	Н
	10894.000	-43.726	1.800	11.550	-33.976	-13	-29.188	Н
	7519.500	-46.138	1.470	11.279	-36.329	-13	-23.693	V
TM11	13750.000	-40.928	2.130	12.215	-30.843	-13	-29.188	V
TIVITI	7519.500	-45.379	1.470	11.279	-35.570	-13	-23.693	Н
	12067.000	-42.653	1.905	13.271	-31.287	-13	-29.188	Н
	7638.500	-47.220	1.500	11.456	-37.264	-13	-21.388	V
TM10	12058.500	-42.998	1.913	13.273	-31.638	-13	-34.377	V
TM12	5726.000	-53.130	1.270	13.112	-41.288	-13	-26.088	Н
	7638.500	-44.975	1.500	11.456	-35.019	-13	-30.571	Н

#### Note:

- 1. Spurious emissions below 30MHz and within 30-1000MHz were found more than 20dB below limit line.
- 2. ERP (dBm) = SG Reading (dBm) Cable Loss (dB) + Substitute Antenna Gain (dBd)

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## 5.1.7 Frequency Stability

**RESULT: Pass** 

: 01.20.2017 Date of testing Test standard : FCC Part2.1055 FCC Part 22.355

FCC Part 24.235

Limit : ±2.5ppm for FCC Part 22.355

Within assigned bands for FCC Part 24.235

Kind of test site : Shielded room

**Test setup** 

Test Setup

Test Channel : Middle
Operation Mode : TM2, TM5, TM8, TM11
Ambient temperature : 25°C

52%
101kPa Atmospheric pressure : 101kPa

Table 9: Frequency Stability, TM2

Voltage [%]	Power [VDC]	TEMP [%]	Frequency [Hz]	Freq. Dev [Hz]	Deviation [%]
		+20(Ref)	836,400,000	75	0.00000897
		-30	836,400,000	68	0.00000813
		-20	836,400,000	-71	0.00000849
	3.7	-10	836,400,000	65	0.00000777
100%		0	836,400,000	68	0.00000813
100%		+10	836,400,000	64	0.00000765
		+20	836,400,000	-69	0.00000825
		+30	836,400,000	-72	0.00000861
		+40	836,400,000	-59	0.00000705
		+50	836,400,000	62	0.00000741
115%	4.2	+20	836,400,000	-63	0.00000753
BAT.ENDPOINT	3.6	+20	836,400,000	-62	0.00000741

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Table 10: Frequency Stability, TM5

Voltage [%]	Power [VDC]	TEMP [%]	Frequency [Hz]	Freq. Dev [Hz]	Deviation [%]
		+20(Ref)	1,880,000,000	42	0.00000223
		-30	1,880,000,000	-43	0.00000229
		-20	1,880,000,000	52	0.00000277
	3.7	-10	1,880,000,000	43	0.00000229
100%		0	1,880,000,000	-41	0.00000218
100%		+10	1,880,000,000	49	0.00000261
		+20	1,880,000,000	-39	0.00000207
		+30	1,880,000,000	42	0.00000223
		+40	1,880,000,000	-52	0.00000277
		+50	1,880,000,000	39	0.00000207
115%	4.2	+20	1,880,000,000	48	0.00000255
BAT.ENDPOINT	3.6	+20	1,880,000,000	-42	0.00000223

Table 11: Frequency Stability, TM8

Voltage [%]	Power [VDC]	TEMP [%]	Frequency [Hz]	Freq. Dev [Hz]	Deviation [%]
	[1-5]	+20(Ref)	836,400,000	66	0.00000789
		-30	836,400,000	71	0.00000849
		-20	836,400,000	-54	0.00000646
	3.7	-10	836,400,000	76	0.00000909
100%		0	836,400,000	-68	0.00000813
100%		+10	836,400,000	72	0.00000861
		+20	836,400,000	45	0.00000538
		+30	836,400,000	39	0.00000466
		+40	836,400,000	-57	0.00000681
		+50	836,400,000	-68	0.00000813
115%	4.2	+20	836,400,000	62	0.00000741
BAT.ENDPOINT	3.6	+20	836,400,000	-56	0.00000670

Table 12: Frequency Stability, TM11

Voltage [%]	Power [VDC]	TEMP [%]	Frequency [Hz]	Freq. Dev [Hz]	Deviation [%]
		+20(Ref)	1,880,000,000	26	0.00000138
		-30	1,880,000,000	68	0.00000362
		-20	1,880,000,000	73	0.00000388
	3.7	-10	1,880,000,000	-41	0.00000218
100%		0	1,880,000,000	-64	0.00000340
100%		+10	1,880,000,000	69	0.00000367
		+20	1,880,000,000	35	0.00000186
		+30	1,880,000,000	-63	0.00000335
		+40	1,880,000,000	-54	0.00000287
		+50	1,880,000,000	53	0.00000282
115%	4.2	+20	1,880,000,000	69	0.00000367
BAT.ENDPOINT	3.6	+20	1,880,000,000	-61	0.00000324



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