

## FCC - TEST REPORT

Report Number : **60.790.18.058.01R02** Date of Issue : December 5, 2018

Model : 165-00645, 165-00670

Product Type : Remote Access Module

Applicant : Mobile Technologies Inc.

Address : 1050 NE 67th Ave, Hillsboro, Oregon, U.S, 97124

Production Facility : Jabil Circuit (Guangzhou) Limited.

Address : 128, Jun Cheng Road, Guangzhou Economic And Technological.

Test Result :  Positive  Negative

Total pages including Appendices : 36

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## 2 Description of Equipment Under Test

### Description of the Equipment Under Test

Product:	Remote Access Module
Model no.:	165-00645, 165-00670
FCC ID:	2AA2X-165-00645-24
Rating:	5V DC (Powered by Power Distribution Unit)
Frequency:	2405MHz-2480MHz (Tx and Rx)
Antenna gain:	0 dBi
Number of operated channel:	16
Modulation:	O-QPSK

### 3 Summary of Test Standards

Test Standards
FCC Part 15 Subpart C 10-1-17 Edition Federal Communications Commission, PART 15 — Radio Frequency Devices, Subpart C — Unintentional Radiators

All the tests were performed using the procedures from ANSI C63.4(2014) and ANSI C63.10 (2013).

## 4 Details about the Test Laboratory

### Site 1

Company name: TÜV SÜD Hong Kong Ltd.  
 3/F, West Wing, Lakeside 2,  
 10 Science Park West Avenue,  
 Science Park, Shatin, Hong Kong

### Site 2

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch  
 Building 12&13 Zhiheng Wisdomland Business Park,  
 Nantou Checkpoint Road 2,  
 Shenzhen 518052, P.R.China  
 FCC Registration Number: 502708

Emission Tests	
Test Item	Test Site
<b>FCC Part 15 Subpart C</b>	
FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission	Site 2
FCC Title 47 Part 15.207 Conduct Emission	Site 2
FCC Title 47 Part 15.247 Bandedge Emission	Site 2
FCC Title 47 Part 15.247(a)(1) 6dB & 99% Bandwidth	Site 2
FCC Title 47 Part 15.247(b) Peak Output Power	Site 2
FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals	Site 2
FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges	Site 2
FCC Title 47 Part 15.247(e) Power Spectral Density	Site 2
FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement	Site 2

## 4.1 Test Equipment Site List

### Radiated emission Test – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2019-7-6
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100398	2019-7-6
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2019-6-28
Horn Antenna	Rohde & Schwarz	HF907	102294	2019-6-28
Wideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	12827	2019-7-12
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2019-7-6
Signal Generator	Rohde & Schwarz	SMY01	839369/005	2019-7-6
Attenuator	Agilent	8491A	MY39264334	2019-7-6
3m Semi-anechoic chamber	TDK	9X6X6	----	2020-7-7
Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

### Conducted Emission Test – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2019-7-6
LISN	Rohde & Schwarz	ENV4200	100249	2019-7-6
LISN	Rohde & Schwarz	ENV432	101318	2019-7-6
LISN	Rohde & Schwarz	ENV216	100326	2019-7-6
ISN	Rohde & Schwarz	ENY81	100177	2019-7-6
ISN	Rohde & Schwarz	ENY81-CA6	101664	2019-7-6
High Voltage Probe	Rohde & Schwarz	TK9420(VT9420)	9420-584	2019-6-30
RF Current Probe	Rohde & Schwarz	EZ-17	100816	2019-6-30
Attenuator	Shanghai Huaxiang	TS2-26-3	080928189	2019-7-6
Test software	Rohde & Schwarz	EMC32	Version9.15.00	N/A

### 20dB & 99% Bandwidth, Peak Output Power, Spurious Emissions at Antenna Terminals, 100kHz Bandwidth of band edges, Power Spectral Density – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMB100A	108272	2019-7-6
Signal Analyzer	Rohde & Schwarz	FSV40	101030	2019-7-6
Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	2019-7-6
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	2019-7-6

## 4.2 Measurement System Uncertainty

### Measurement System Uncertainty Emissions

System Measurement Uncertainty	
Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.46dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.91dB; Vertical: 4.89dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-25000MHz	Horizontal: 4.80dB; Vertical: 4.79dB;
Uncertainty for Conducted Emission at AC Power Line 150kHz-30MHz	3.21dB
Uncertainty for frequency test	$0.6 \times 10^{-7}$

## 5 Summary of Test Results

Emission Tests				
FCC Part 15 Subpart C				
Test Condition	Pages	Test Result		
		Pass	Fail	N/A
FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission	10-13	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.207 Conduct Emission (1)	14-15	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247 Bandedge Emission	16	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247(a)(2) 6dB & 99% Bandwidth	17-19	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247(b) Peak Output Power	20-22	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals	23-28	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges	29-30	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247(e) Power Spectral Density	31-33	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement	34	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remark:

1. This test is performed on the AC power port of the Power Distribution Unit which supply the 5V DC power to EUT.



## 6 General Remarks

### Remarks

Client informs that the **165-00670** has the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction, with **Remote Access Module, 165-00645**. The difference lies only on different color of the different models. (Client's conformation letter shown at appendix A)

EMC tests were performed on model: **165-00645**.

This submittal(s) (test report) is intended for **FCC ID: 2AA2X-165-00645-24**, complies with Section 15.203, 15.205, 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C rules for the DTS grant

The TX and RX range is 2405MHz-2480MHz.

### SUMMARY:

- All tests according to the regulations cited on page 8 were

- Performed

- **Not** Performed

- The Equipment Under Test

- **Fulfills** the general approval requirements.

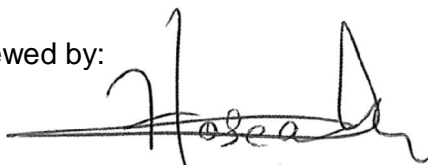
- **Does not** fulfill the general approval requirements.

Sample Received Date: November 15, 2018

Testing Start Date: November 16, 2018

Testing End Date: November 28, 2018

Reviewed by:



Hosea CHAN  
EMC Project Engineer

Prepared by:



Eric LI  
EMC Senior Project Engineer

## 7 Emission Test Results

### 7.1 Spurious Radiated Emission

EUT: 165-00645  
 Op Condition: Operated, TX Mode  
 (Low channel is the worst case)  
 Test Specification: FCC15.205, 15.209 & 15.247(d)  
 Comment: 5 VDC  
 Remark: 9kHz to 1GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dB $\mu$ V/m	Limit dB $\mu$ V/m	Margin dB	Detector PK/QP/AV	Ant. Polarity H/V	Corr. (dB)
299.983333	31.94	46.00	-14.06	Peak	H	-25.7
500.018889	34.56	46.00	-11.44	Peak	H	-21.6
900.036111	38.85	46.00	-7.15	Peak	H	-15.4
299.983333	31.93	46.00	-14.07	Peak	V	-25.7
500.072778	32.87	46.00	-13.13	Peak	V	-21.6
900.036111	40.66	46.00	-5.34	Peak	V	-15.4

Remark:

- As the measured peak value not exceeded the Quasi peak limit, Quasi peak value no need to be measured.

### Spurious Radiated Emission

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2405MHz)  
 Test Specification: FCC15.205, 15.209 & 15.247(d)  
 Comment: 5 VDC  
 Remark: 1GHz to 25GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dB $\mu$ V/m	Limit dB $\mu$ V/m	Margin dB	Detector PK/QP/AV	Ant. Polarity H/V	Corr. (dB)
1500.062500	36.19	54.00	-17.81	Peak	H	-11.0
1700.000000	40.51	54.00	-13.49	Peak	H	-10.2
2800.000000	44.56	54.00	-9.44	Peak	H	-5.5
3399.843750	41.15	54.00	-12.85	Peak	H	-0.7
3600.000000	39.38	54.00	-14.62	Peak	H	-0.5
4809.906250	43.62	54.00	-10.38	Peak	H	3.8
2300.062500	39.98	54.00	-14.02	Peak	V	-6.3
2600.062500	47.59	54.00	-6.41	Peak	V	-4.2
2800.062500	48.30	54.00	-5.70	Peak	V	-4.2
3399.843750	46.67	54.00	-7.33	Peak	V	-0.7
3600.000000	49.29	54.00	-4.71	Peak	V	-0.5
4810.000000	43.32	54.00	-10.68	Peak	V	3.8

## Remark:

1.As the measured peak value not exceeded the average limit, average value no need to be measured.

**Spurious Radiated Emission**

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2445MHz)  
 Test Specification: FCC15.205, 15.209 & 15.247(d)  
 Comment: 5 VDC  
 Remark: 1GHz to 25GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector PK/QP/AV	Ant. Polarity H/V	Corr. (dB)
1500.000000	39.84	54.00	-14.16	Peak	H	-11.0
2600.062500	44.01	54.00	-9.99	Peak	H	-4.2
2800.062500	44.79	54.00	-9.21	Peak	H	-4.2
3199.687500	43.04	54.00	-10.96	Peak	H	-2.7
3399.843750	45.93	54.00	-8.07	Peak	H	-0.7
4890.000000	42.39	54.00	-11.61	Peak	H	4.2
2400.000000	44.34	54.00	-9.66	Peak	V	-5.6
2600.062500	47.43	54.00	-6.57	Peak	V	-4.2
2800.000000	47.67	54.00	-6.33	Peak	V	-4.2
3399.843750	48.37	54.00	-5.63	Peak	V	-0.7
3600.000000	49.38	54.00	-4.62	Peak	V	-0.5
4890.000000	44.15	54.00	-9.85	Peak	V	4.2

Remark:  
 1.As the measured peak value not exceeded the average limit, average value no need to be measured.

**Spurious Radiated Emission**

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2480MHz)  
 Test Specification: FCC15.205, 15.209 & 15.247(d)  
 Comment: 5 VDC  
 Remark: 1GHz to 25GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

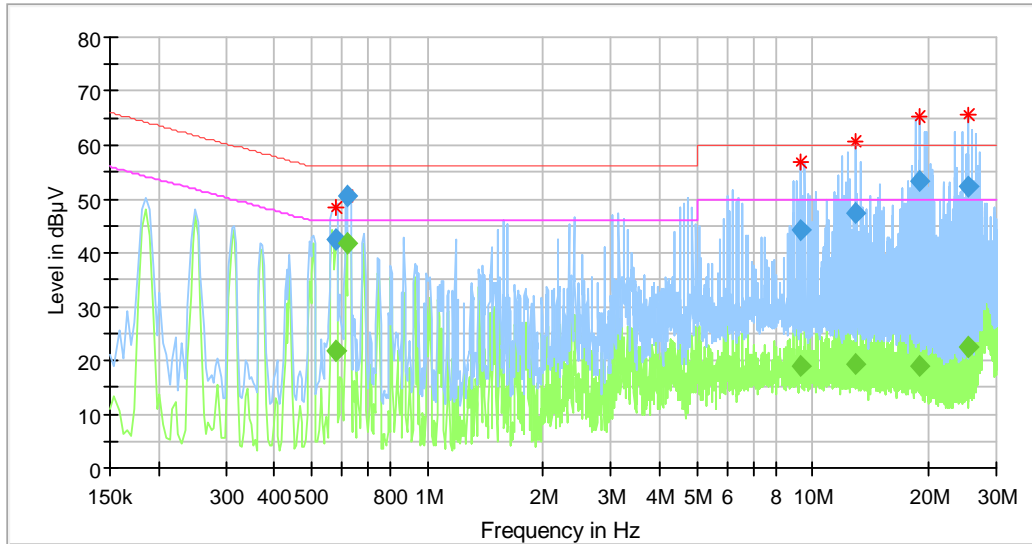
Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector PK/QP/AV	Ant. Polarity H/V	Corr. (dB)
1700.000000	39.08	54.00	-14.92	Peak	H	-10.2
2600.062500	43.85	54.00	-10.15	Peak	H	-4.2
2800.000000	44.02	54.00	-9.98	Peak	H	-4.2
3199.687500	41.79	54.00	-12.21	Peak	H	-2.7
3399.843750	46.68	54.00	-7.32	Peak	H	-0.7
4960.000000	42.04	54.00	-11.96	Peak	H	4.3
2400.062500	45.56	54.00	-8.44	Peak	V	-5.6
2600.000000	46.78	54.00	-7.22	Peak	V	-4.2
2800.000000	47.85	54.00	-6.15	Peak	V	-4.2
3399.843750	46.81	54.00	-7.19	Peak	V	-0.7
3600.000000	49.67	54.00	-4.33	Peak	V	-0.5
4960.000000	43.85	54.00	-10.15	Peak	V	4.3

Remark:  
 1.As the measured peak value not exceeded the average limit, average value no need to be measured.

## 7.2 Conducted Emission at AC Power line

EUT: 165-00645  
 Op Condition: Operated, TX Mode  
 Test Specification: FCC15.207  
 Comment: 120V AC  
 Remark: L Line

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



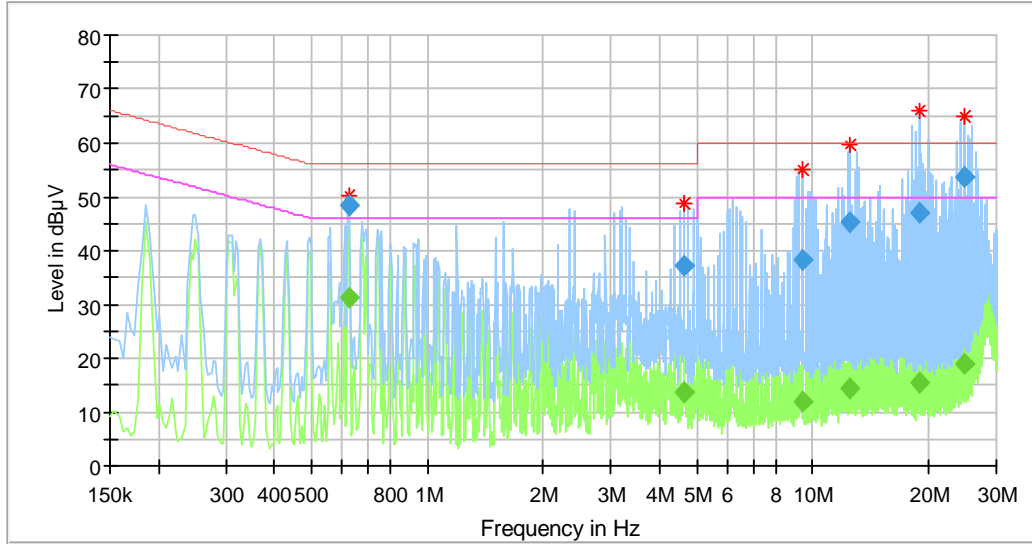
### Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)
0.577500	42.62	---	56.00	-13.38
0.577500	---	21.60	46.00	-24.40
0.621500	---	41.65	46.00	-4.35
0.621500	50.47	---	56.00	-5.53
9.357500	---	18.91	50.00	-31.09
9.357500	44.13	---	60.00	-15.87
12.893500	---	19.26	50.00	-30.74
12.893500	47.42	---	60.00	-12.58
18.945500	---	18.97	50.00	-31.03
18.945500	53.36	---	60.00	-6.64
25.397500	---	22.35	50.00	-27.65
25.397500	52.33	---	60.00	-7.67

**Conducted Emission at AC Power line**

EUT: 165-00645  
 Op Condition: Operated, TX Mode  
 Test Specification: FCC15.207  
 Comment: 120V AC  
 Remark: N Line

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



**Final\_Result**

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)
0.625500	---	31.13	46.00	-14.87
0.625500	48.51	---	56.00	-7.49
4.629500	---	13.51	46.00	-32.49
4.629500	37.20	---	56.00	-18.80
9.461500	---	12.00	50.00	-38.00
9.461500	38.22	---	60.00	-21.78
12.449500	---	14.44	50.00	-35.56
12.449500	45.30	---	60.00	-14.70
18.986500	---	15.28	50.00	-34.72
18.986500	47.00	---	60.00	-13.00
24.801500	---	19.11	50.00	-30.89
24.801500	53.77	---	60.00	-6.23

### 7.3 Bandedge Emission

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2405 and 2480)  
 Test Specification: FCC15.247  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

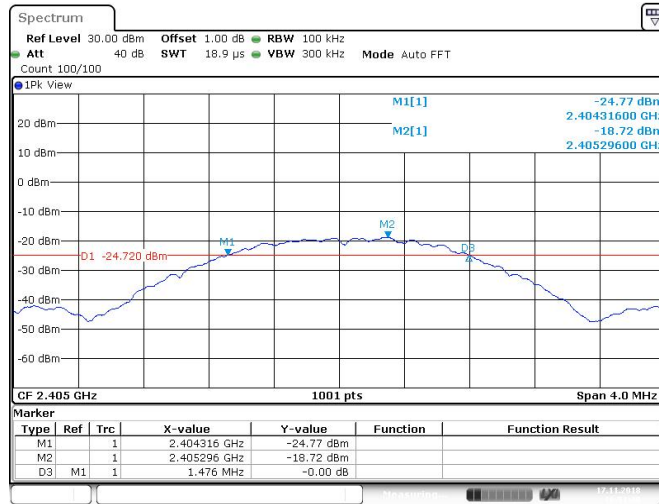
Channel	Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector PK /AV	Ant. Polarity H/V	Corr. (dB)
2405	2400.00	42.76	74	-31.24	Peak	H	
2405	2400.00	33.87	54	-20.13	Average	H	
2405	2400.00	45.37	74	-28.63	Peak	V	
2405	2400.00	36.88	54	-17.12	Average	V	
2480	2483.50	52.62	74	-21.38	Peak	H	
2480	2483.50	43.87	54	-10.13	Average	H	
2480	2483.50	46.85	74	-27.15	Peak	V	
2480	2483.50	37.37	54	-16.63	Average	V	



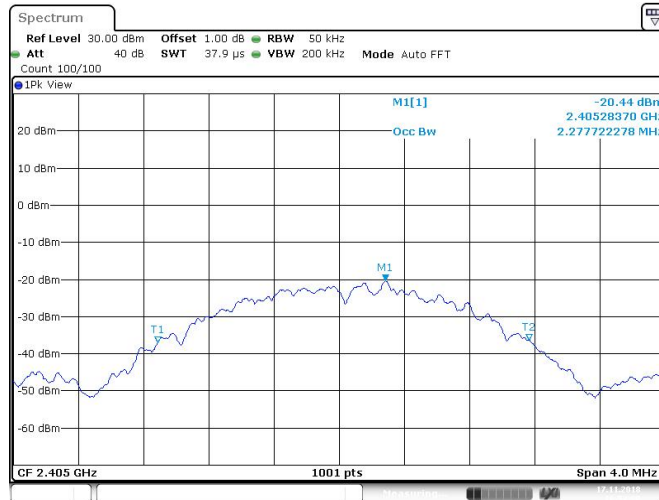
### 7.4 6dB & 99% Bandwidth

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2405MHz)  
 Test Specification: FCC15.247(a)(2), 6dB Bandwidth & 99% Bandwidth  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 17 NOV 2018 16:51:48



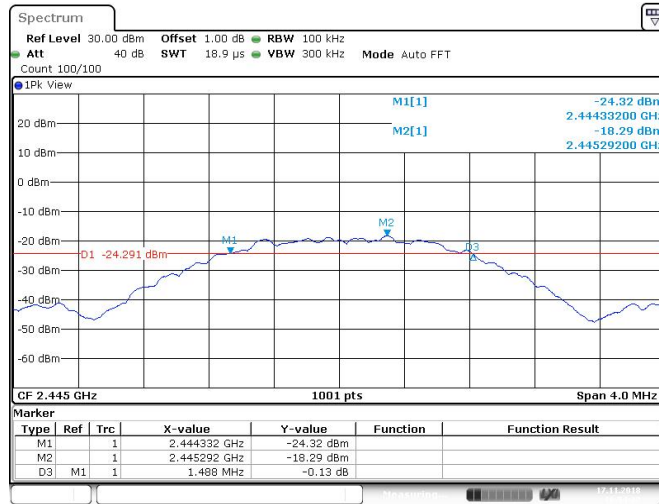
Date: 17 NOV 2018 16:52:00

Bandwidth	Measured Value	Limit
6dB bandwidth	1.476MHz	> 0.5MHz
99% OCB	2.278MHz	NA

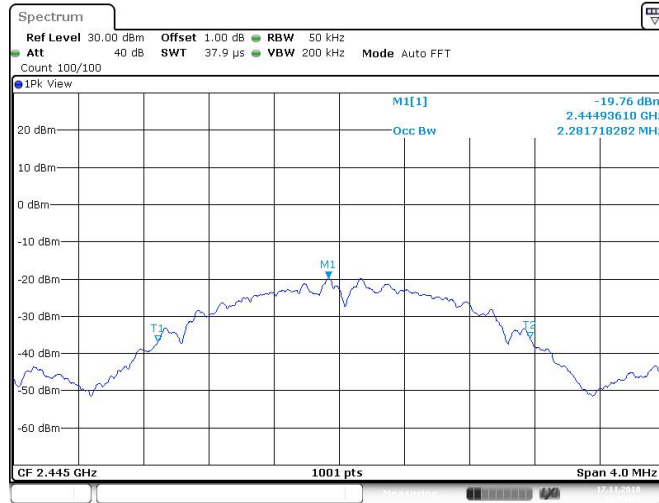
**6dB & 99% Bandwidth**

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2445MHz)  
 Test Specification: FCC15.247(a)(2), 6dB Bandwidth & 99% Bandwidth  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 17 NOV 2018 16:54:22



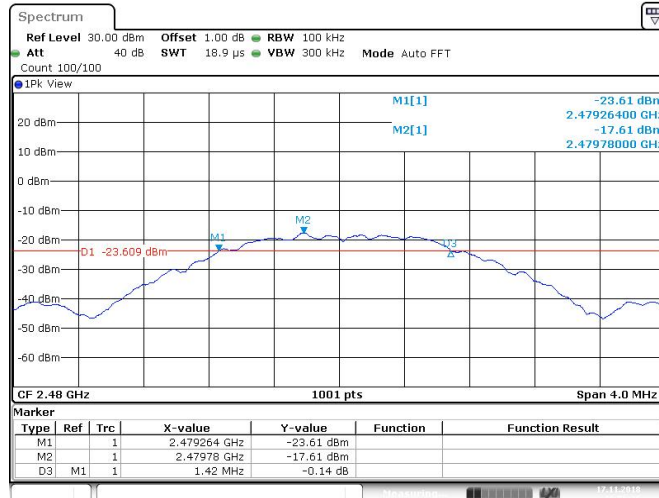
Date: 17 NOV 2018 16:54:33

Bandwidth	Measured Value	Limit
6dB bandwidth	1.488 MHz	> 0.5 MHz
99% OCB	2.282 MHz	NA

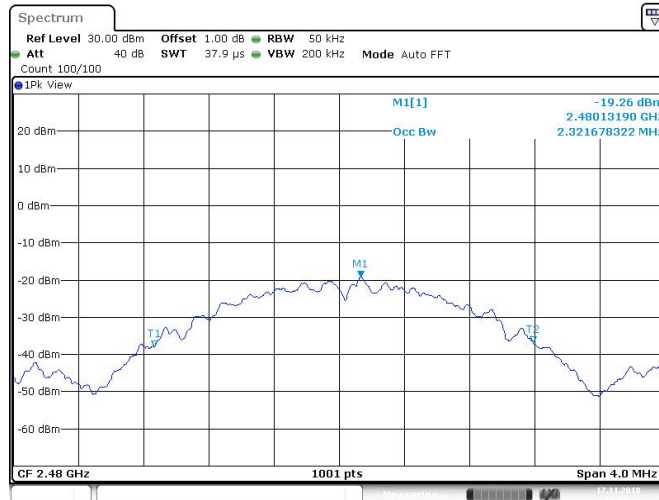
**6dB & 99% Bandwidth**

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2480MHz)  
 Test Specification: FCC15.247(a)(2), 6dB Bandwidth & 99% Bandwidth  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 17 NOV 2018 16:56:16



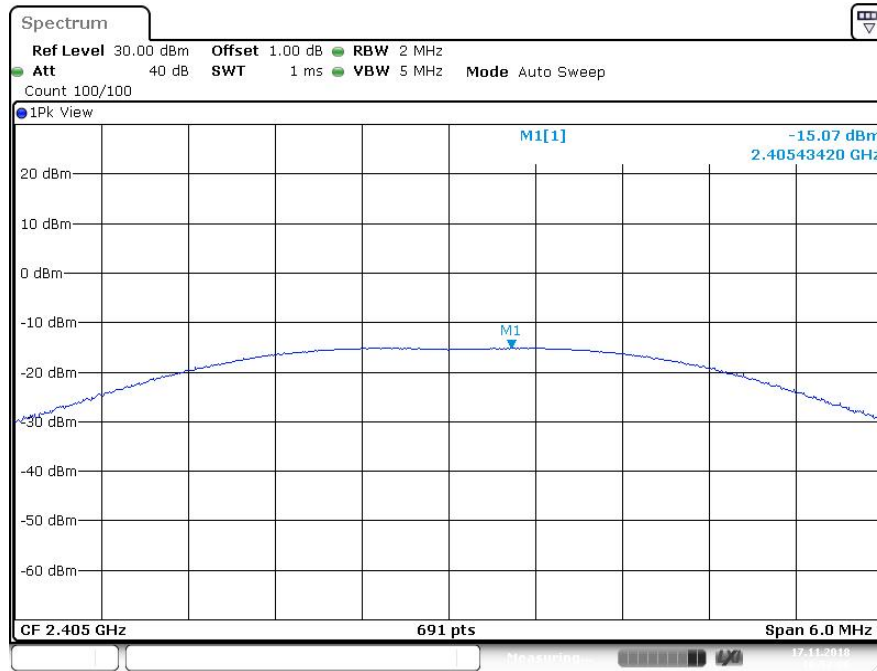
Date: 17 NOV 2018 16:56:27

Bandwidth	Measured Value	Limit
6dB bandwidth	1.420 MHz	> 0.5 MHz
99% OCB	2.322 MHz	NA

## 7.5 Peak Output Power

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2405MHz)  
 Test Specification: FCC15.247(b)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

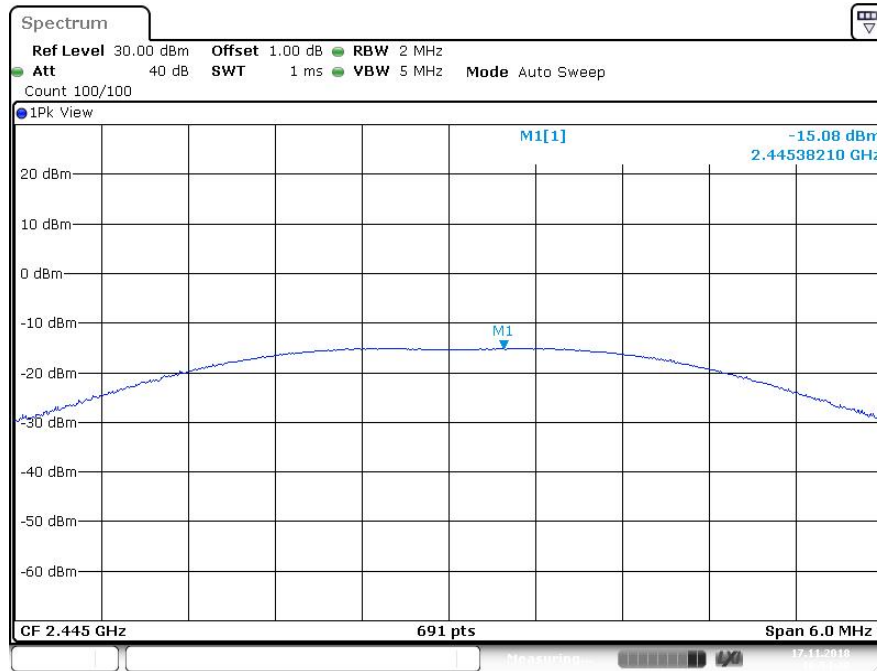


Conducted Output Power	Limit
-15.07 dBm	< 30dBm

**Peak Output Power**

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2445MHz)  
 Test Specification: FCC15.247(b)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

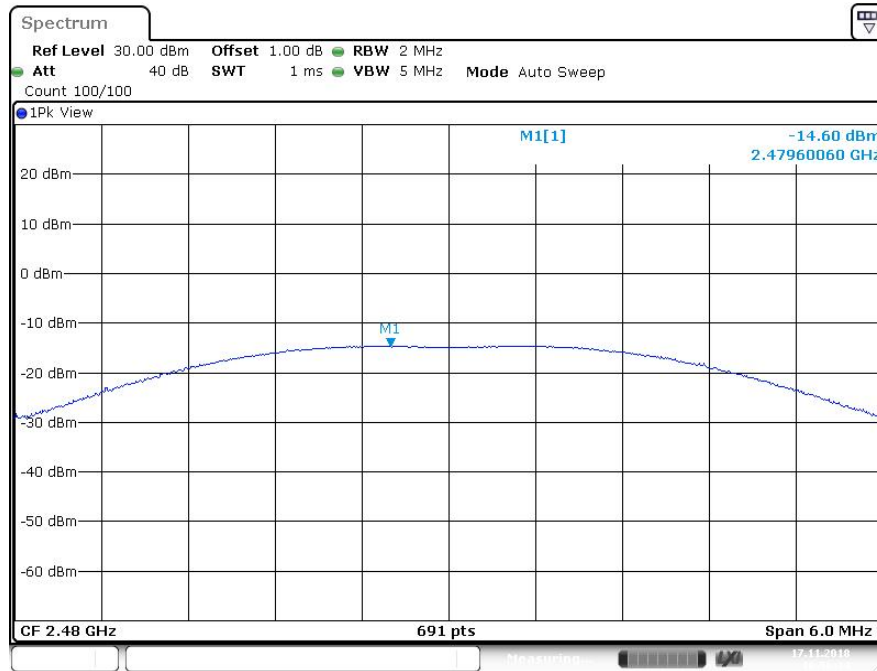


Conducted Output Power	Limit
-15.08 dBm	< 30dBm

**Peak Output Power**

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2480MHz)  
 Test Specification: FCC15.247(b)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 17 NOV. 2018 16:56:34

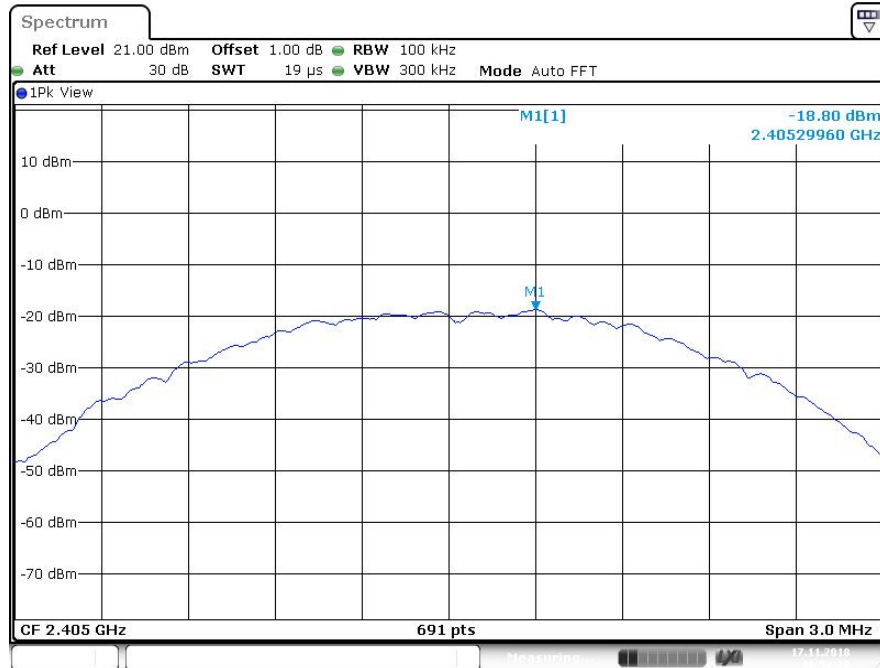
Conducted Output Power	Limit
-14.60 dBm	< 30dBm

## 7.6 Spurious Emissions at Antenna Terminals

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2405MHz)  
 Test Specification: FCC2.1051 & 15.247(d)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Channel	FreqRange	RefLevel	Result	Limit	Verdict
2405	Reference	-18.80	---	---	PASS
2405	30~1000	-18.80	-68.96	-18.35	PASS
2405	1000~26500	-18.80	-52.00	-18.35	PASS

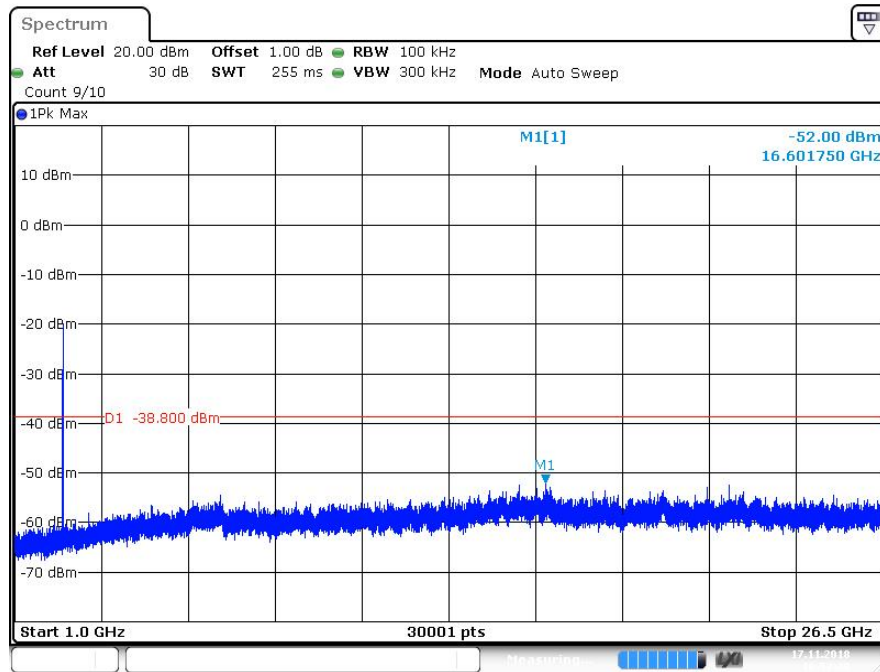
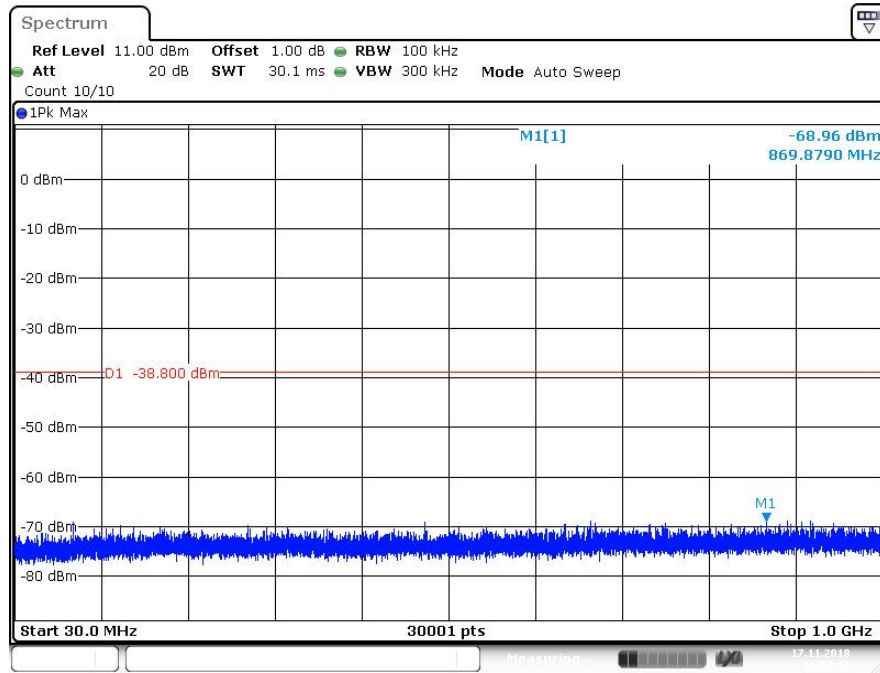


Date: 17 NOV. 2018 16:52:28

### Spurious Emissions at Antenna Terminals

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2405MHz)  
 Test Specification: FCC2.1051 & 15.247(d)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



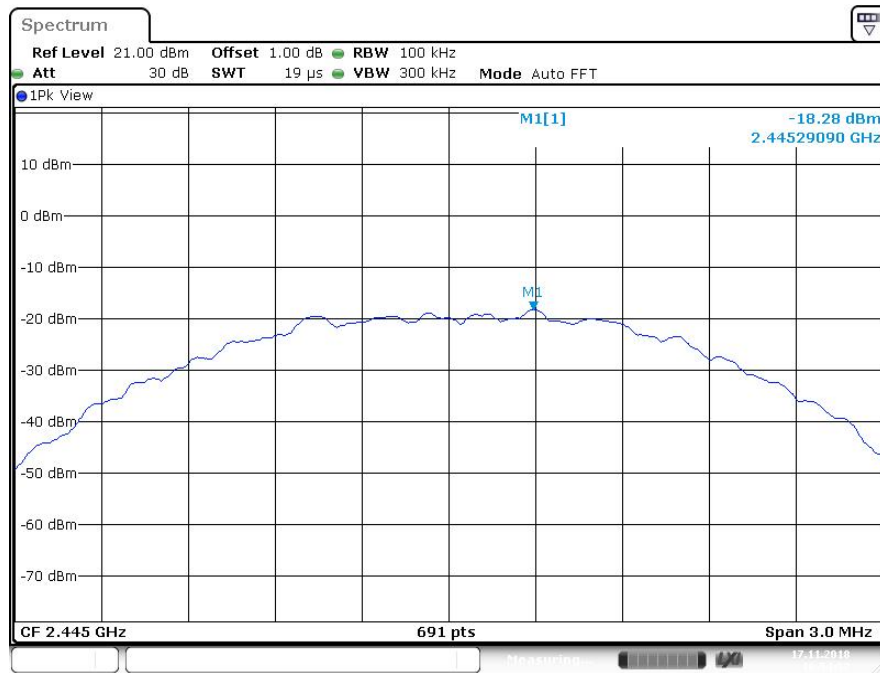


### Spurious Emissions at Antenna Terminals

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2445MHz)  
 Test Specification: FCC2.1051 & 15.247(d)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Channel	FreqRange	RefLevel	Result	Limit	Verdict
2445	Reference	-18.28	---	---	PASS
2445	30~1000	-18.28	-69.27	-17.25	PASS
2445	1000~26500	-18.28	-53.21	-17.25	PASS

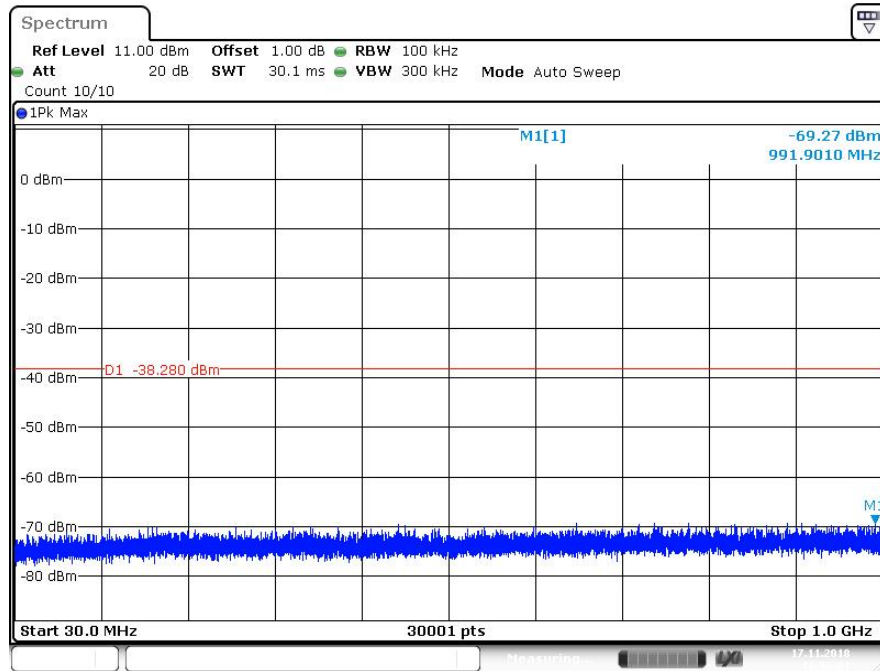


Date: 17 NOV. 2018 16:54:52

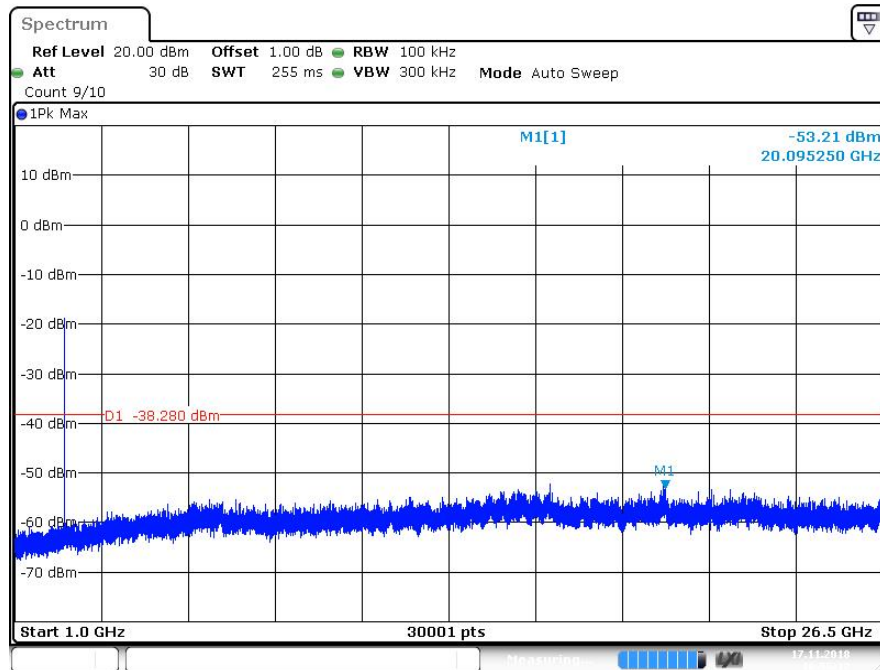
### Spurious Emissions at Antenna Terminals

EUT: 165-00645  
Op Condition: Operated, TX Mode (2445MHz)  
Test Specification: FCC2.1051 & 15.247(d)  
Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 17 NOV. 2018 16:55:01



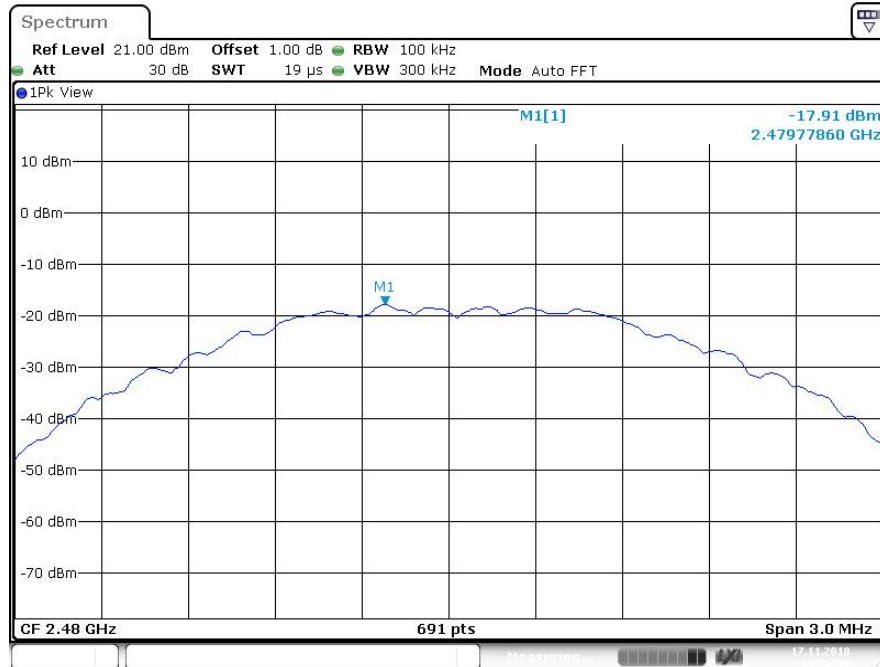
Date: 17 NOV. 2018 16:55:12

### Spurious Emissions at Antenna Terminals

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2480MHz)  
 Test Specification: FCC2.1051 & 15.247(d)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Channel	FreqRange	RefLevel	Result	Limit	Verdict
2480	Reference	-17.91	---	---	PASS
2480	30~1000	-17.91	-68.78	-17.42	PASS
2480	1000~26500	-17.91	-52.79	-17.42	PASS

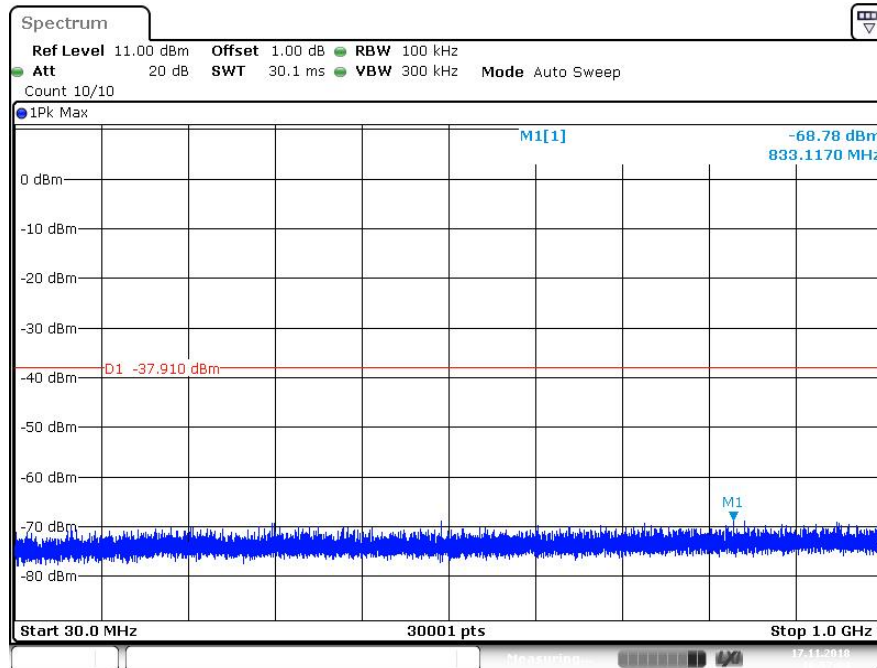


Date: 17 NOV. 2018 16:56:56

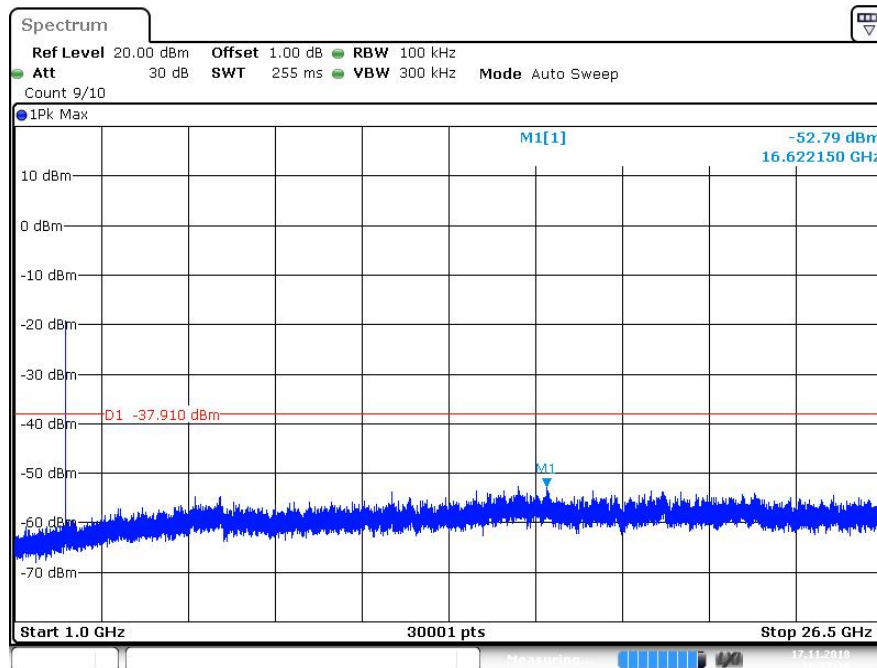
### Spurious Emissions at Antenna Terminals

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2480MHz)  
 Test Specification: FCC2.1051 & 15.247(d)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 17 NOV. 2018 16:57:04

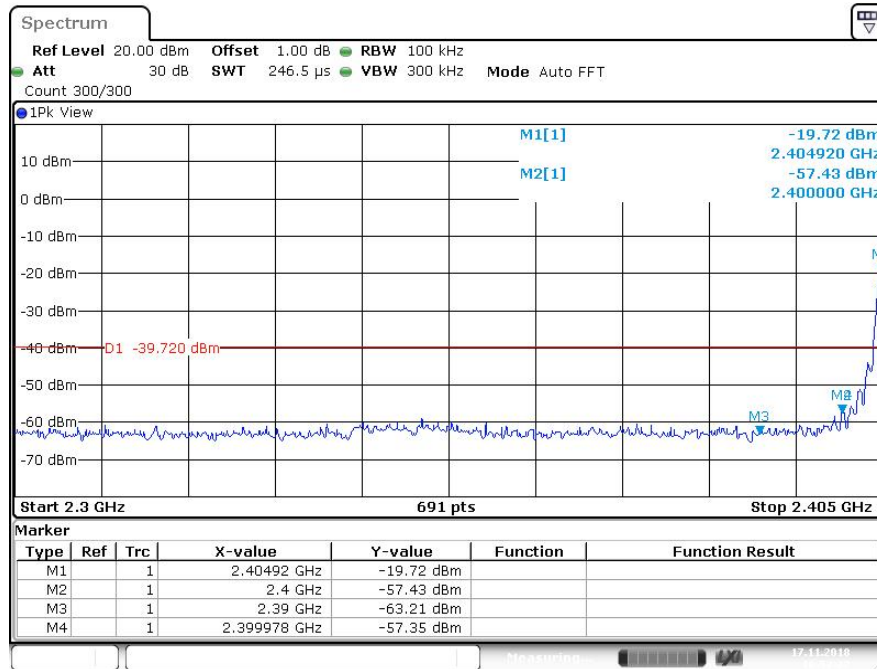


Date: 17 NOV. 2018 16:57:16

### 7.7 100kHz Bandwidth of band edges

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2405MHz)  
 Test Specification: FCC15.247(d), Conducted  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



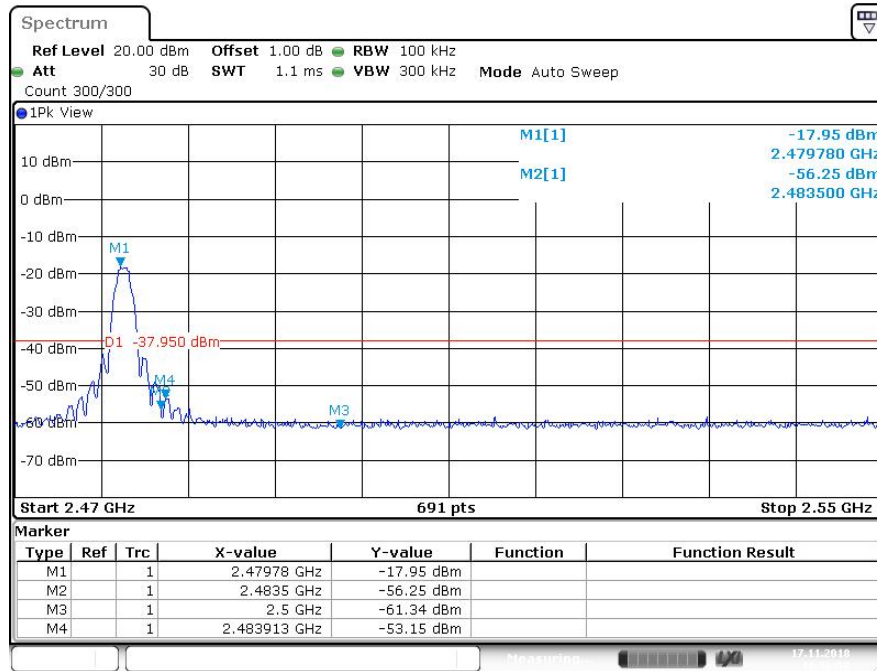
Date: 17 NOV 2018 16:52:22

<b>Band edges</b>	<b>Limit</b>
37.71 dB	> 20dB

**100kHz Bandwidth of band edges**

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2480MHz)  
 Test Specification: FCC15.247(d), Conducted  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



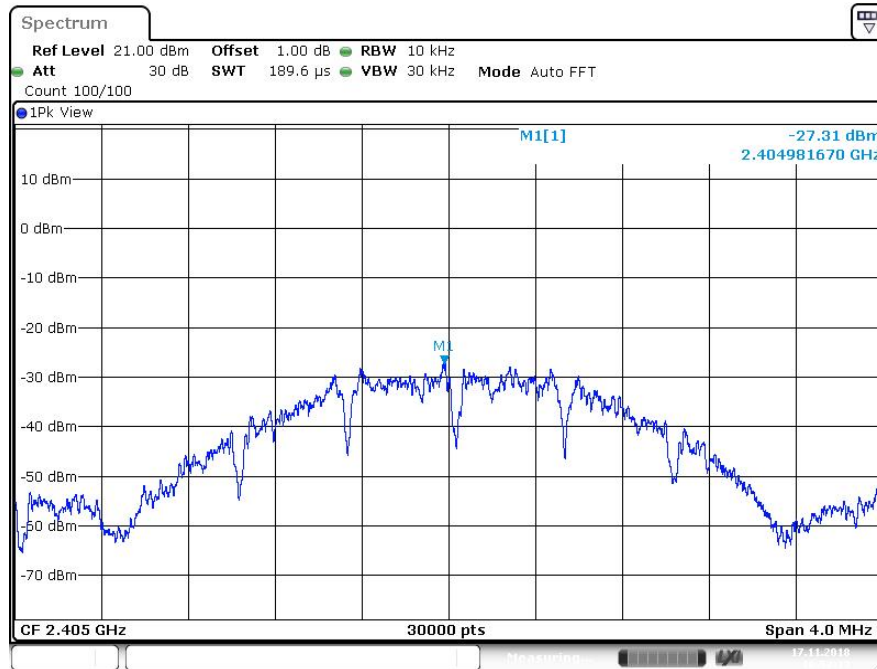
Date: 17 NOV 2018 16:56:50

Band edges	Limit
35.10 dB	> 20dB

## 7.8 Power Spectral Density

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2405MHz)  
 Test Specification: FCC15.247(e)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



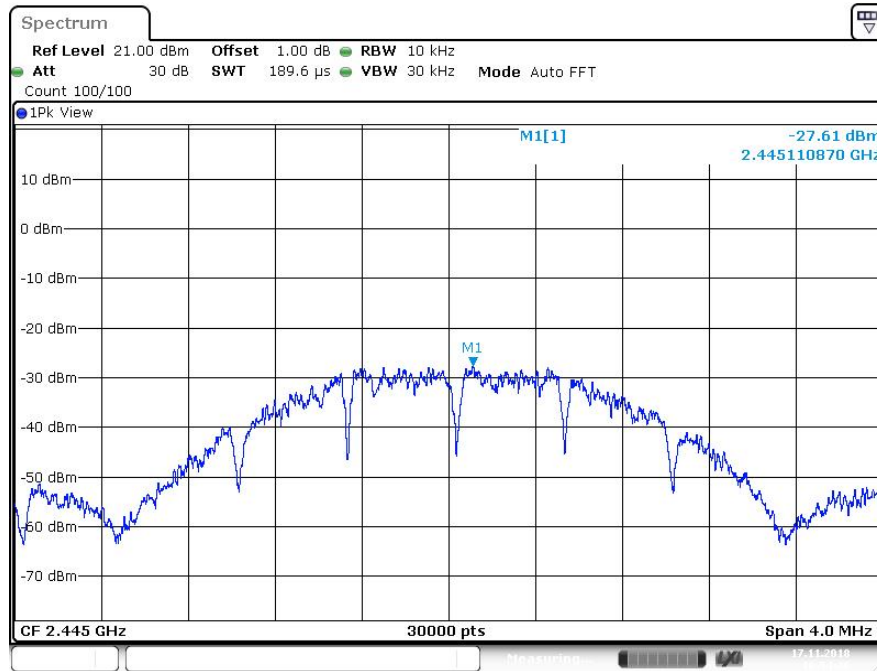
Date: 17 NOV 2018 16:52:13

PSD	Limit
-27.31 dBm	< 8 dBm

**Power Spectral Density**

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2445MHz)  
 Test Specification: FCC15.247(e)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



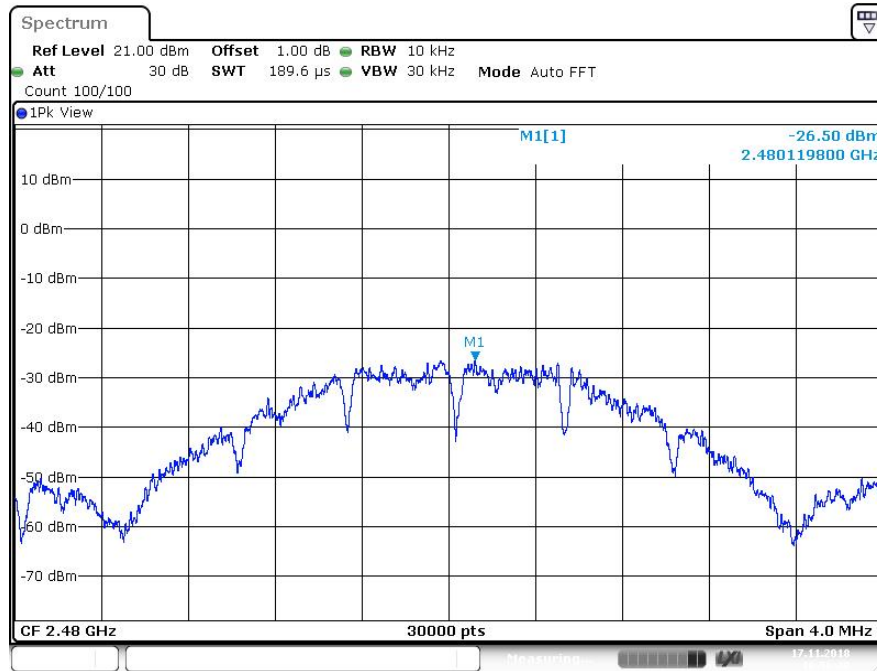
PSD	Limit
-27.61 dBm	< 8 dBm



**Power Spectral Density**

EUT: 165-00645  
 Op Condition: Operated, TX Mode (2480MHz)  
 Test Specification: FCC15.247(e)  
 Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



PSD	Limit
-26.50 dBm	< 8 dBm

## 7.9 Antenna Requirement

EUT: 165-00645  
Op Condition: Operated, TX Mode  
Test Specification: FCC15.203 & 15.247(b)  
Comment: 5 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

### Limit

For intentional device, according to FCC Title 47 Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC Title 47 Part 15.247(b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### Antenna Connector Construction

The antenna used in this product is integrated antenna on PCB, and the maximum gain of this antenna is 0.0 dBi.

## 8 Appendix A - General Product Information

### Radiofrequency radiation exposure evaluation

According to KDB 447498 D01v06 section 4.3.1, For frequencies between 100 MHz to 6GHz and test separation distances  $\leq 50$  mm, the Numeric threshold is determined as:

Step a)

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR

>> The fundamental frequency of the EUT is 2405-2480MHz,  
the test separation distance is  $\leq 50$ mm.  
(Manufacturer specified the separation distance is: 20mm)

Step a)

>> Numeric threshold (2405MHz),  $\text{mW} / 20\text{mm} \cdot \sqrt{2.402\text{GHz}} \leq 3.0$   
Numeric threshold (2405MHz)  $\leq 38.713\text{mW}$

>> Numeric threshold (2445MHz),  $\text{mW} / 20\text{mm} \cdot \sqrt{2.440\text{GHz}} \leq 3.0$   
Numeric threshold (2445MHz)  $\leq 38.411\text{mW}$

>> Numeric threshold (2480MHz),  $\text{mW} / 20\text{mm} \cdot \sqrt{2.480\text{GHz}} \leq 3.0$   
Numeric threshold (2480MHz)  $\leq 38.100\text{mW}$

>> The power of EUT measured (2405MHz) is:  $-15.07\text{dBm} = 0.031\text{mW}$   
The power of EUT measured (2445MHz) is:  $-15.08\text{dBm} = 0.031\text{mW}$   
The power of EUT measured (2480MHz) is:  $-14.60\text{dBm} = 0.035\text{mW}$

Which is smaller than the Numeric threshold.

Therefore, the device is exempt from stand-alone SAR test requirements.

## General Product Information

### Declaration letter of model difference



DECEMBER 4, 2018

Mr. Edmund Fung  
TUV SUD Hong Kong Limited

Re: Subject: Models Similarity Declaration Letter; Remote Access Module (RAM)

We, Mobile Technologies Inc, officially notify TÜV SÜD Hong Kong Limited that the models 165-00645 RAM has the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction with the model 165-00670 RAM.

The model difference lies only with the enclosure color.

Sincerely,



Travis Hooper  
VP – Products & Strategy  
Mobile Technologies Inc.

TUVSUD similarity letter\_RAM.docx