



Report No.: FCC 1905138-02 File reference No.: 2019-06-01

Applicant: E-matic

Product: TABLET

Model No.: EGQ380

Trademark: N/A

Test Standards: FCC Part 15.247

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.10, FCC Part 15.247 for the

evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: June 01, 2019

Results appearing herein relate only to the sample tested The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

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Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

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Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le

Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688 Fax: (755) 83442996

Site Listed with Federal Communications commission (FCC)

Registration Number:744189 For 3m Anechoic Chamber

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-02

For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: E-matic

Address: 3435 Ocean Park Blvd #107 PMB # 444 Santa Monica Los Angeles CA 90405 U.S.A.

Telephone: (310)966-1133 Fax: (310)966-1134

1.3 Description of EUT

Product: TABLET

Manufacturer: Shenzhen Tablet Electronics Limited

Address: 4F, B5b Building, Yingzhan Industrial Zone, Longtian Community, Kengzi Street,

Longgang, Shenzhen, China

Brand Name: ematic

Model Number: EGQ380

Additional Model Number: N/A

Type of Modulation GFSK, Л/4DQPSK, 8DPSK for Bluetooth

Frequency range 2402-2480MHz for Bluetooth

Channel Spacing 1MHz for Bluetooth

Frequency Selection By software

Channel Number 79 channel for Bluetooth

Antenna: Integral antennas used. The gain of the antennas is 2.0dBi

Input: DC5.0V, 2A from a power supply or Built-in 3.7V, 7.4Wh Li-ion battery

1.4 Submitted Sample: 1 Samples

The report refers only to the sample tested and does not apply to the bulk.

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1.5 Test Duration 2019-05-22 to 2019-06-01

Test Uncertainty

Conducted Emissions Uncertainty = 3.6dB Radiated Emissions below 1GHz Uncertainty =4.7dB Radiated Emissions above 1GHz Uncertainty =6.0dB Conducted Power Uncertainty =6.0dB Occupied Channel Bandwidth Uncertainty =5%

1.7 Test Engineer

Terry Tang The sample tested by

Print Name: Terry Tang

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2018-06-22	2019-06-21
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2018-06-22	2019-06-21
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2018-06-22	2019-06-21
Ultra Broadband ANT	R&S	HL562	100157	2018-06-18	2019-06-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2018-06-22	2019-06-21
Loop Antenna	EMCO	6507	00078608	2018-06-25	2019-06-24
Spectrum	R&S	FSIQ26	100292	2018-06-22	2019-06-21
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2018-06-25	2019-06-24
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-08-24	2019-08-23
Power meter	Anritsu	ML2487A	6K00003613	2018-08-22	2019-08-21
Power sensor	Anritsu	MA2491A	32263	2018-08-22	2019-08-21
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2019-07-03
9*6*6 Anechoic			N/A	2018-02-07	2021-02-06
EMI Test Receiver	RS	ESVB	826156/011	2018-06-22	2019-06-21
EMI Test Receiver	RS	ESH3	860904/006	2018-06-22	2019-06-21
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2018-06-22	2019-06-21
Spectrum	HP/Agilent	E4407B	MY50441392	2019-03-26	2020-03-25
Spectrum	RS	FSP	1164.4391.38	2019-01-20	2020-01-19
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA		2019-05-21	2020-05-21
RF Cable	Zhengdi	7m		2019-03-15	2020-03-14
RF Switch	EM	EMSW18	060391	2018-06-22	2019-06-21
Pre-Amplifier	Schwarebeck	BBV9743	#218	2018-06-22	2019-06-21
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2018-08-05	2019-08-04
LISN	SCHAFFNER	NNB42	00012	2019-01-08	2020-01-07

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3.0 **Technical Details**

3.1 **Summary of test results**

The EUT has been tested according to the following specifications:

Requirement	CFR 47 Section	Result	Notes
Antenna Requirement	15.203	PASS	Complies
Maximum Peak Out Power	15.247 (b)(1), (4)	PASS	Complies
Carrier Frequency Separation	15.247(a)(1)	PASS	Complies
20dB Channel Bandwidth	15.247 (a)(1)	PASS	Complies
Number of Hopping Channels	15.247(a)(iii), 15.247(b)(1)	PASS	Complies
Time of Occupancy (Dwell Time)	15.247(a)(iii)	PASS	Complies
Spurious Emission, Band Edge, and Restricted bands	15.247(d),15.205(a), 15.209 (a)	PASS	Complies
Conducted Emissions	15.207(a)	PASS	Complies

Note: Test according to ANSI C63.10-2013, ANSI C63.4-2014

3.2 **Test Standards**

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 **EUT Modification**

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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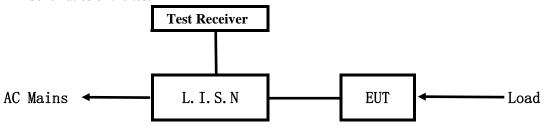
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5. Power Line Conducted Emission Test

5.1 Schematics of the test

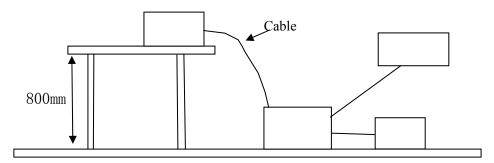


EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10-2013.

Test Voltage: 120V~60Hz Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

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A. EUT

Device	Manufacturer	Model	FCC ID
TABLET	Shenzhen Tablet Electronics Limited	EGQ380	XHWEGQ380

B. Internal Device

Device	Manufacturer	Model Rating			

C. Peripherals

Device	Manufacturer	Model	Rating		

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.107, 15.207

Frequency	Class A Lim	its (dB µ V)	Class B Limits (dB µ V)		
(MHz)	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level	
$0.15 \sim 0.50$	79.0	66.0	66.0~56.0*	56.0~46.0*	
$0.50 \sim 5.00$	73.0	60.0	56.0	46.0	
5.00 ~ 30.00	73.0	60.0	60.0	50.0	

Notes:

- 1. *Decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

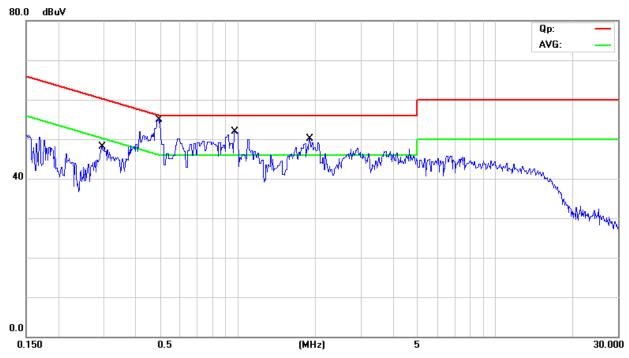
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep Bluetooth Transmitting

Equipment Level: Class B

Results: PASS

Please refer to following diagram for individual



No. N	∕lk. F	req.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	1	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.2	2944	35.00	9.76	44.76	60.40	-15.64	QP	
2	0.2	2944	2.70	9.76	12.46	50.40	-37.94	AVG	
3 *	0.4	1894	42.40	9.77	52.17	56.18	-4.01	QP	
4	0.4	1894	15.30	9.77	25.07	46.18	-21.11	AVG	
5	0.9	9816	37.40	9.79	47.19	56.00	-8.81	QP	
6	0.9	9816	6.90	9.79	16.69	46.00	-29.31	AVG	
7	1.8	3971	34.30	9.80	44.10	56.00	-11.90	QP	
8	1.8	3971	5.80	9.80	15.60	46.00	-30.40	AVG	

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

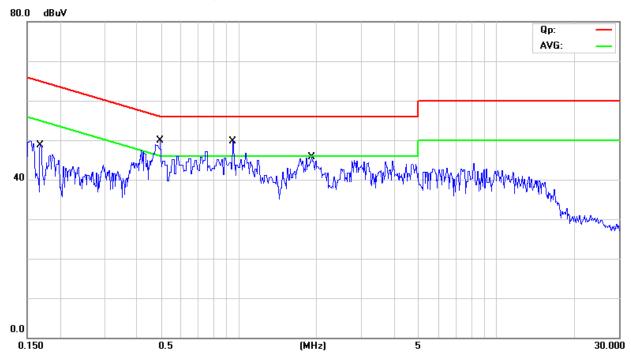
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep Bluetooth Transmitting

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1707	31.10	9.77	40.87	64.93	-24.06	QP	
2	0.1707	-11.90	9.77	-2.13	54.93	-57.06	AVG	
3 *	0.4917	36.30	9.77	46.07	56.14	-10.07	QP	
4	0.4917	7.40	9.77	17.17	46.14	-28.97	AVG	
5	0.9483	30.80	9.79	40.59	56.00	-15.41	QP	
6	0.9483	0.00	9.79	9.79	46.00	-36.21	AVG	
7	1.9148	30.10	9.80	39.90	56.00	-16.10	QP	
8	1.9148	1.40	9.80	11.20	46.00	-34.80	AVG	

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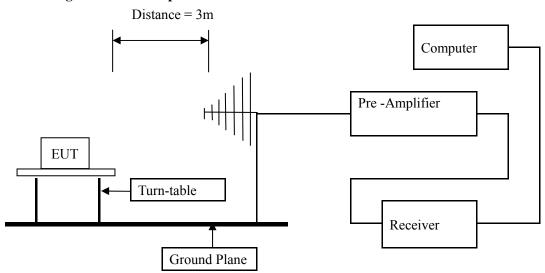
Date: 2019-06-01



6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup



- 6.2 Configuration of The EUT
 Same as section 5.3 of this report
- 6.3 EUT Operating Condition
 Same as section 5.4 of this report.

The report refers only to the sample tested and does not apply to the bulk.

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6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109 and RSS-210

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2. In the Above Table, the higher limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- 4. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
- 5. GFSK was the worse case because it has highest output power

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Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal/Vertical (30MHz----1000MHz)

EUT set Condition: Keep Bluetooth Transmitting

Results: Pass

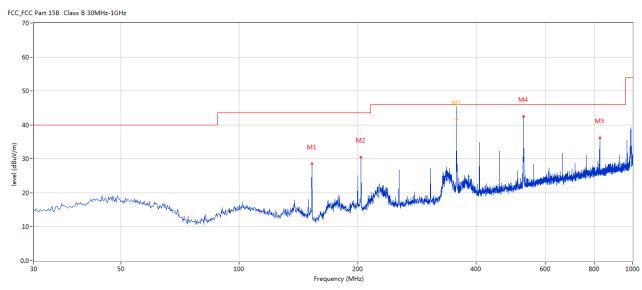
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Test Figure:

H



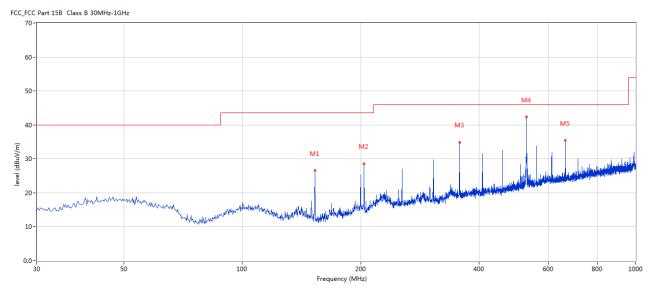
No.	Frequen	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	cy (MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
))	(dB)					
1	152.917	28.56	-16.87	43.5	-14.94	Peak	76.00	200	Н	Pass
2	203.829	30.42	-13.50	43.5	-13.08	Peak	71.00	200	Н	Pass
3	357.003	43.02	-9.50	46.0	-2.98	Peak	103.00	100	Н	Pass
3*	357.003	41.66	-9.50	46.0	-4.34	QP	103.00	100	Н	Pass
4	527.971	42.48	-6.62	46.0	-3.52	Peak	268.00	200	Н	Pass
5	824.959	36.14	-2.91	46.0	-9.86	Peak	179.00	100	Н	Pass

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Test Figure:



No.	Frequen	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	cy (MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
))	(dB)					
1	152.917	26.52	-16.87	43.5	-16.98	Peak	95.00	100	V	Pass
2	203.829	28.60	-13.50	43.5	-14.90	Peak	130.00	100	V	Pass
3	357.051	34.87	-9.50	46.0	-11.13	Peak	0.00	200	V	Pass
4	527.971	42.34	-6.62	46.0	-3.66	Peak	330.00	100	V	Pass
5	663.009	35.45	-4.50	46.0	-10.55	Peak	95.00	100	V	Pass

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Operation Mode: Transmitting under Low Channel (2402MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dB µ V/m)
4804		Н	74(Peak)/ 54(AV)
4804		V	74(Peak)/ 54(AV)
7206		H/V	74(Peak)/ 54(AV)
9608		H/V	74(Peak)/ 54(AV)
12010		H/V	74(Peak)/ 54(AV)
14412		H/V	74(Peak)/ 54(AV)
16814		H/V	74(Peak)/ 54(AV)
19216		H/V	74(Peak)/ 54(AV)
21618		H/V	74(Peak)/ 54(AV)
24020	-	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

Operation Mode: Transmitting under Middle Channel (2441MHz)

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \u03b4 V/m)
4882	-	Н	74(Peak)/ 54(AV)
4882		V	74(Peak)/ 54(AV)
7323		H/V	74(Peak)/ 54(AV)
9764		H/V	74(Peak)/ 54(AV)
12205		H/V	74(Peak)/ 54(AV)
14646		H/V	74(Peak)/ 54(AV)
17087		H/V	74(Peak)/ 54(AV)
19528		H/V	74(Peak)/ 54(AV)
21969		H/V	74(Peak)/ 54(AV)
24410	-	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

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Operation Mode: Transmitting under High Channel (2480MHz)

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
4960		Н	74(Peak)/ 54(AV)
4960		V	74(Peak)/ 54(AV)
7440		H/V	74(Peak)/ 54(AV)
9920		H/V	74(Peak)/ 54(AV)
12400		H/V	74(Peak)/ 54(AV)
14880		H/V	74(Peak)/ 54(AV)
17360		H/V	74(Peak)/ 54(AV)
19840		H/V	74(Peak)/ 54(AV)
22320		H/V	74(Peak)/ 54(AV)
24800		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

^{2.} Remark "---" means that the emissions level is too low to be measured

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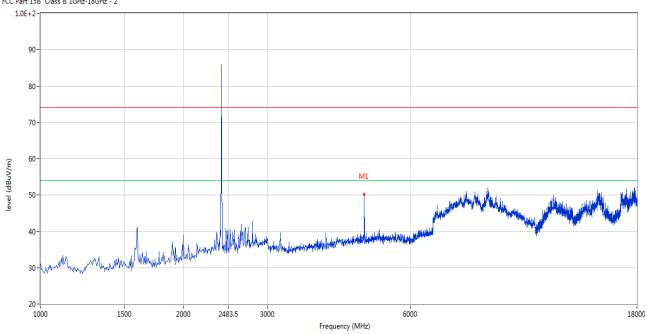
Date: 2019-06-01



Please refer to the following test plots for details:

Low Channel: Vertical

FCC Part 15B Class B 1GHz-18GHz - 2



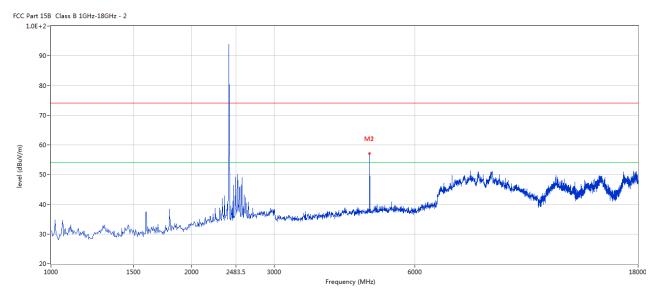
No.	Frequency	Results	Factor (dB)	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)		(dBuV/m)	(dB)		(o)	(cm)		
1	4802.799	50.14	3.12	74.0	-23.86	Peak	195.00	100	V	Pass

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Low Channel: Horizontal



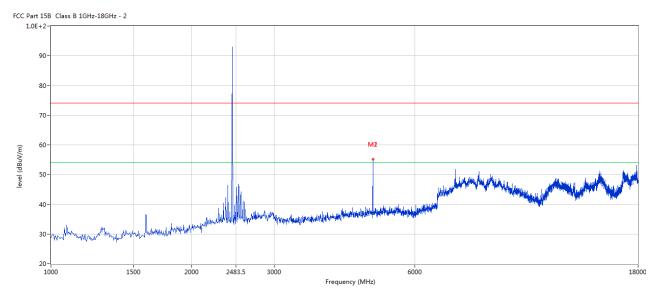
No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
))	(dB)					
1	4802.799	57.05	3.12	74.0	-16.95	Peak	307.00	100	Н	Pass
2	4802.799	38.77	3.12	54.0	-15.23	AV	307.00	100	Н	Pass

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Middle Channel: Horizontal



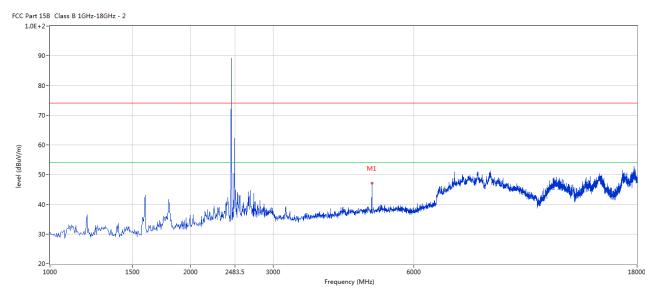
No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
))	(dB)					
1	4883.529	55.23	3.20	74.0	-18.77	Peak	342.00	100	Н	Pass
2	4883.529	36.09	3.20	54.0	-17.91	AV	342.00	100	Н	Pass

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Middle Channel: Vertical



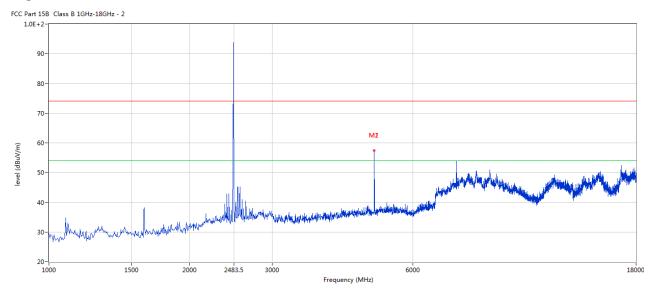
No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
))	(dB)					
1	4879.280	47.08	3.20	74.0	-26.92	Peak	129.00	100	V	Pass

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High Channel: Horizontal



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
))	(dB)					
1	4960.010	57.51	3.36	74.0	-16.49	Peak	333.00	100	Н	Pass
2	4960.010	39.23	3.36	54.0	-14.77	AV	333.00	100	Н	Pass

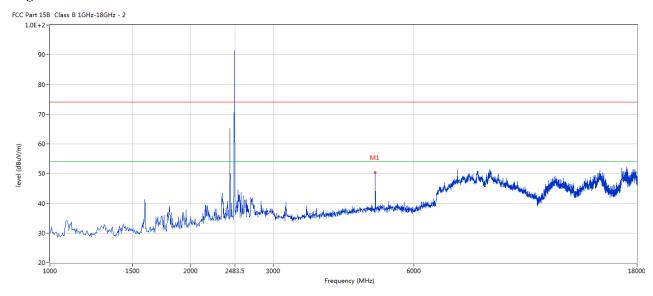
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High Channel: Vertical



No.	Frequen	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	cy (MHz)	(dBuV/m	(dB)	(dBuV/m	Limit			(cm)		
))	(dB)					
1	4960.01	50.36	3.36	74.0	-23.64	Peak	115.00	100	V	Pass
	0									

Note: for the radiated emissions above 18G, it is the floor noise.

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7.0 20dB Bandwidth Measurement

7.1 Regulation

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

7.2 Limits of 20dB Bandwidth Measurement

N/A

7.3 Test Procedure.

- 1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span =3MHz, RBW =30 kHz, VBW=100 kHz, Sweep = auto Detector function = peak, Trace = max hold
- 3. Measure the highest amplitude appearing on spectral display and record the level to calculate results. 6. Repeat above procedures until all frequencies measured were complete.

7.4 Test Result

Type of Modulation: GFSK

<u> </u>	oudiation, Ol Dir			
EUT		TABLET	Model	EGQ380
Mode	Ke	ep Transmitting	Input Voltage	DC3.7V
Temperat	ure	24 deg. C,	Humidity	56% RH
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass/ Fail
Low	2402	914		Pass
Middle	2441	950		Pass
High	2480	950		Pass

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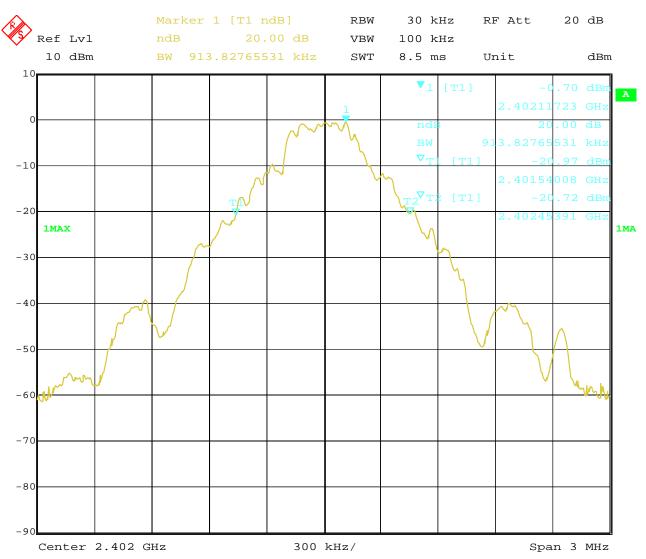
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Test Figure:

1. Condition: Low Channel

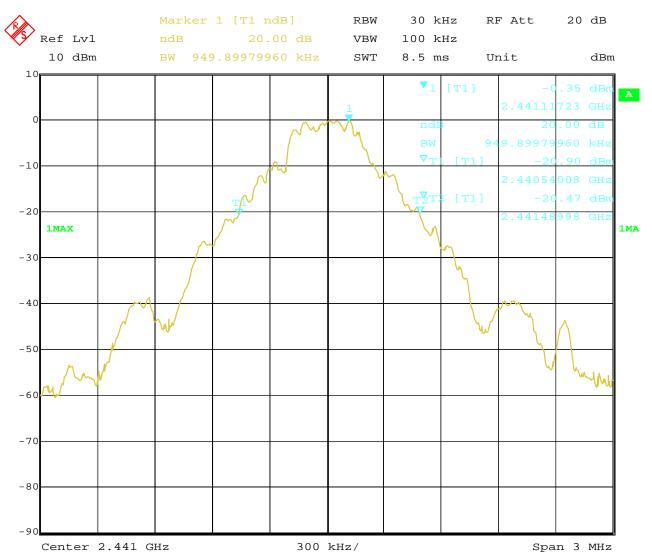


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2. Condition: Middle Channel

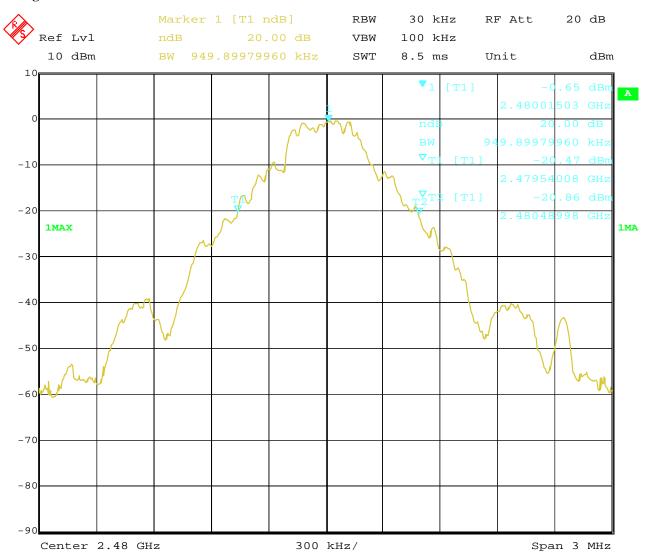


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3. High Channel



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Test Result

Type of Modulation: JI/4DQPSK

EUT		TABLET	Model	EGQ380
Mode	Ko	eep Transmitting	Input Voltage	DC3.7V
Temperat	ure	24 deg. C,	Humidity	56% RH
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass/ Fail
Low	2402	1461		Pass
Middle	2441	1467		Pass
High	2480	1473		Pass

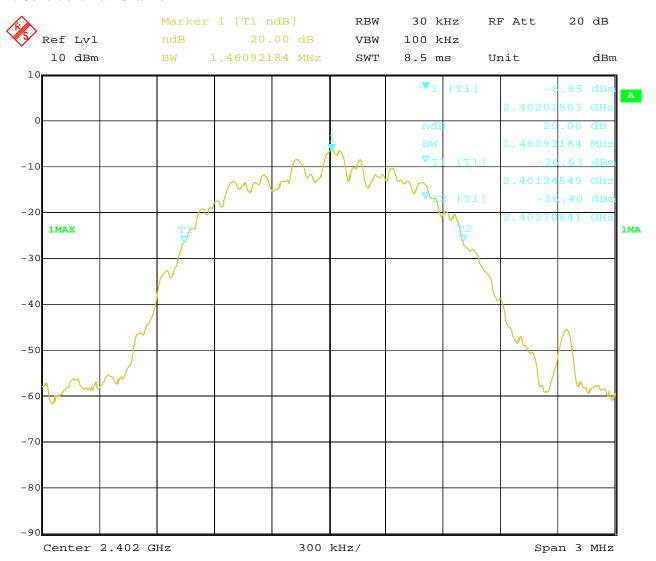
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Test Figure:

1. Condition: Low Channel

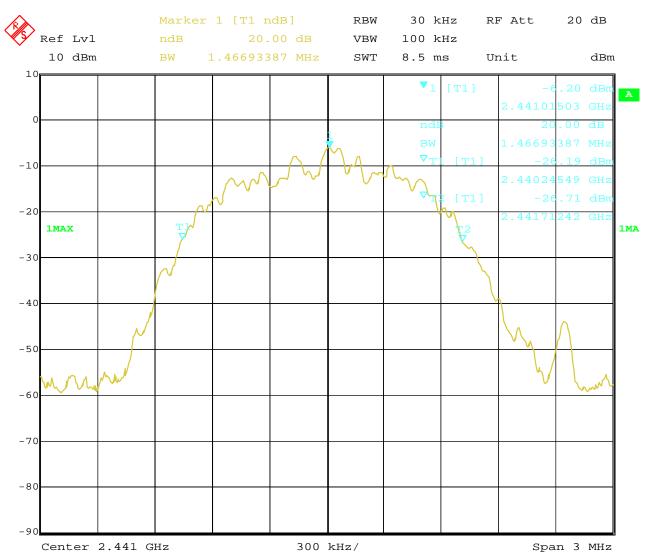


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2. Condition: Middle Channel

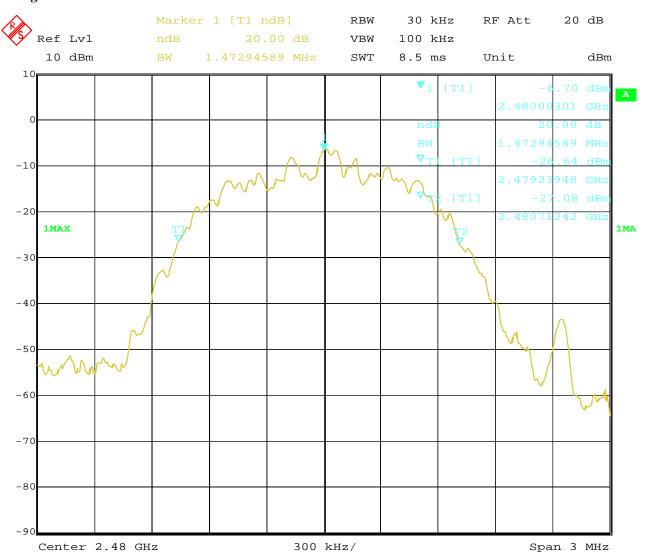


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3. High Channel



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Test Result

Type of Modulation: 8DPSK

EUT		TABLET	Model	EGQ380
Mode	Ke	eep Transmitting	Input Voltage	DC3.7V
Temperati	ure	24 deg. C,	Humidity	56% RH
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass/ Fail
Low	2402	1479		Pass
Middle	2441	1479		Pass
High	2480	1479		Pass

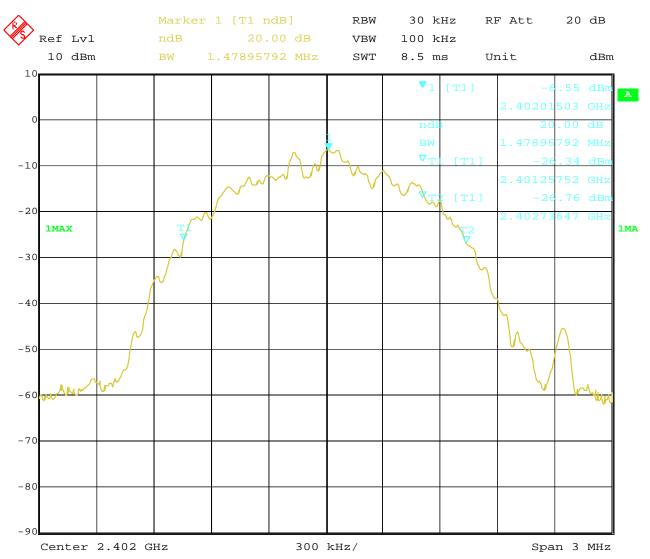
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Test Figure:

1. Condition: Low Channel

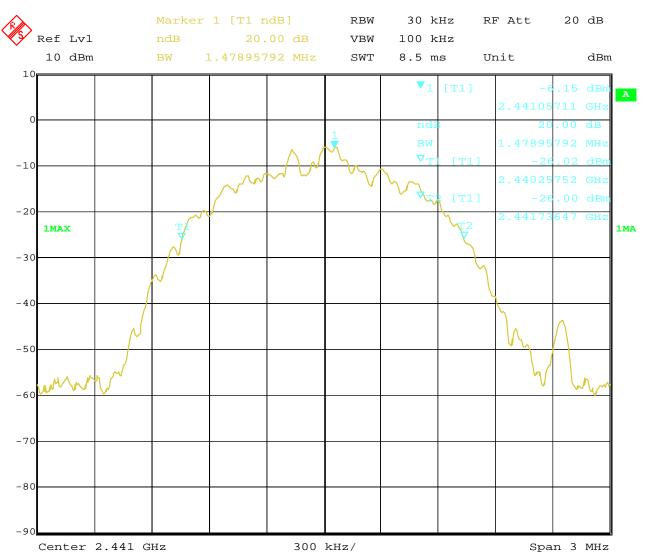


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2. Condition: Middle Channel

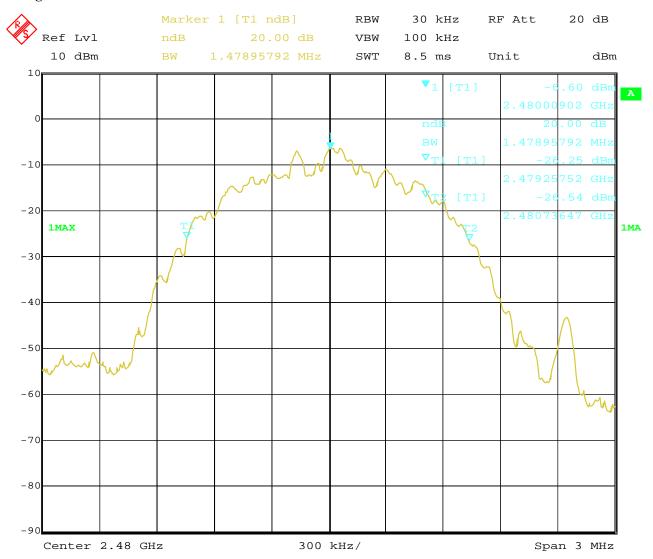


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3. High Channel



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8. Maximum Output Power

8.1 Regulation

According to §15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5MHz band:0.125 watts. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Limits of Maximum Output Power

The Maximum Output Power Measurement is 30dBm.

8.3 Test Procedure

- 1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel; RBW > the 20 dB bandwidth of the emission being measured; VBW = RBW=3MHz; Sweep = 60s; Detector function = PK; Trace = max hold
- 3. Measure the highest amplitude appearing on spectral display and record the level to calculate results.
- 4. Repeat above procedures until all frequencies measured were complete.

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8.4Test Results

Type of Modulation: GFSK

EUT		TABLET		el	EGQ380
Mode	K	eep Transmitting Input Voltage		Voltage	DC3.7V
Temperature	perature 24 deg. C, Humi		Humi	dity	56% RH
Channel	Channel Frequency (MHz)	Max. Power Output (dBm)		Peak Power Limit (dBm)	Pass/ Fail
Low	2402	3.01		30	Pass
Middle	2441	3.43		30	Pass
High	2480	3.01	·	30	Pass

Note: 1. the result basic equation calculation as follow:

Max. Power Output = Power Reading + Cable loss + Attenuator

- 2. The worse case was recorded
- 3. The Peak power was measured

Type of Modulation: Л/4DQPSK

EUT		TABLET		Mode	el	EGQ380
Mode		Ke	ep Transmitting	Input Voltage		DC3.7V
Temperature	ture 24 deg. C, Humi		idity	56% RH		
Channel	Channel Frequency		Max. Power Output (dBm)	Peak Power	Pass/ Fail
		(MHz)	Peak		Limit (dBm)	
Low		2402	-0.48		30	Pass
Middle		2441	-0.08		30	Pass
High		2480	-0.48		30	Pass

Note: 1. the result basic equation calculation as follow:

Max. Power Output = Power Reading + Cable loss + Attenuator

- 2. The worse case was recorded
- 3. The Peak power was measured

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Type of Modulation: 8DPSK

EUT		TABLET		el	EGQ380
Mode	Ke	Keep Transmitting		it Voltage	DC3.7V
Temperature	e	24 deg. C,		umidity	56% RH
Channel	Channel Frequency (MHz)	Max. Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
Low	2402	-0.30		30	Pass
Mid	2441	0.19		30	Pass
High	2480	-0.30		30	Pass

Note: 1. the result basic equation calculation as follow:

Max. Power Output = Power Reading + Cable loss + Attenuator

- 2. The worse case was recorded
- 3. The Peak power was measured

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9. Carrier Frequency Separation

9.1 Regulation

According to §15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

9.2 Limits of Carrier Frequency Separation

The Maximum Power Spectral Density Measurement is 25kHz or two-thirds of the 20dB bandwidth of the hopping Channel which is great.

9.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = wide enough to capture the peaks of two adjacent channels: Resolution (or IF) Bandwidth (RBW) \geq 1% of the span; Video (or Average) Bandwidth (VBW) \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold
- 3. Measure the separation between the peaks of the adjacent channels using the marker-delta function.
- 4. Repeat above procedures until all frequencies measured were complete.

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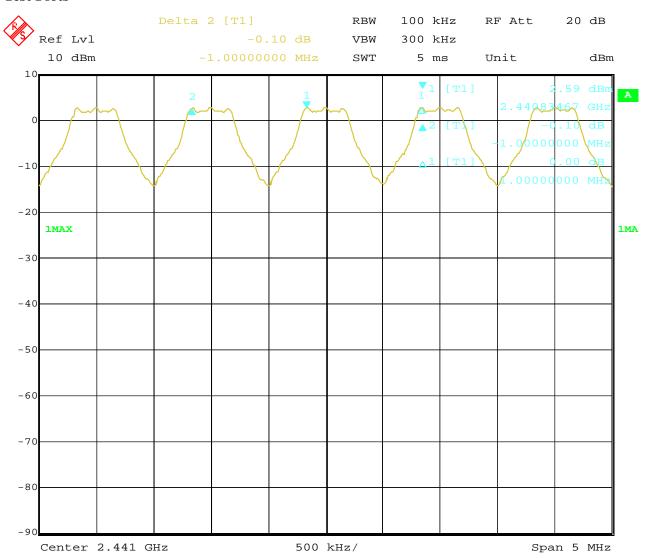


9.4Test Result

Type of Modulation: GFSK

EUT	TABLET	Model		EGQ380	
Mode	Hopping O	Input Voltage		DC3.7V	
Temperature	24 deg. C,		Humidity	56% RH	
Carrier Frequency Separation			Limit		Pass/ Fail
	1.000MHz	≥ 25 kHz or 2/3	of the 20 dB ban	dwidth	Pass

Test Plots



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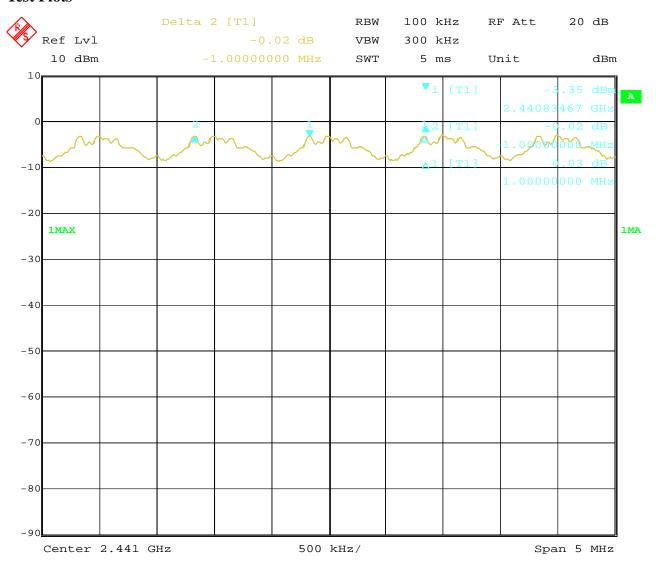
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Type of Modulation: Л/4DQPSK

EUT	TABLET M.		Model		EGQ380
Mode	Hopping On In		Input Voltage	DC3.7V	
Temperature	24 deg. C,		Humidity	56% RH	
Carrier Frequency Separation		Limit		Pass/ Fail	
1.000MHz		≥ 25 kHz or 2	2/3 of 20 dB bandy	width	Pass

Test Plots



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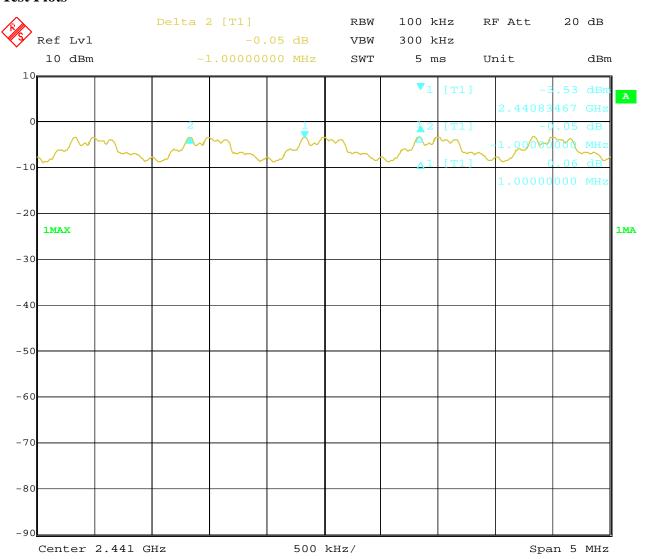
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Type of Modulation: 8DPSK

EUT	TABLET M		Model		EGQ380
Mode	Hopping On In		Input Voltage	DC3.7V	
Temperature	24 deg. C,		Humidity	56% RH	
Carrier Frequency Separation		Limit		Pass/ Fail	
1.000MHz		≥ 25 kHz or 2	2/3 of 20 dB bandy	width	Pass

Test Plots



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10. Number of Hopping Channels

10.1 Regulation

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used. According to §15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

10.2 Limits of Number of Hopping Channels

The frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

10.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = the frequency band of operation; RBW=100 kHz, VBW=300 kHz; Sweep = auto; Detector function = peak; Trace = max hold
- 3. Record the number of hopping channels.

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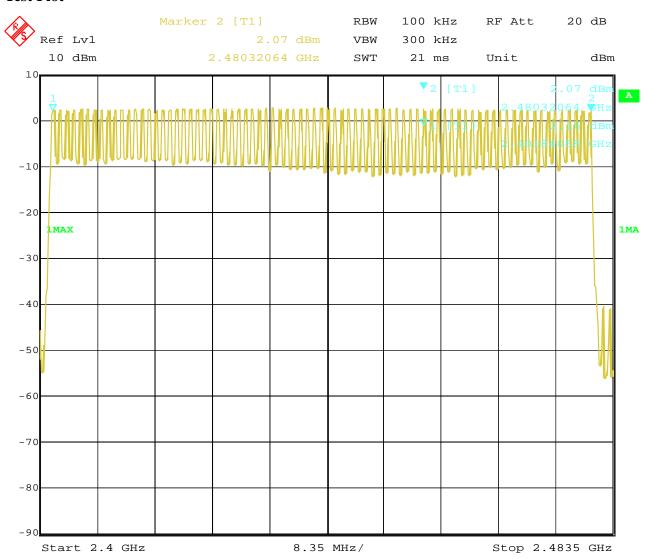


10.4Test Result

Type of Modulation: GFSK

EUT	TABLET		Model		EGQ380	
Mode	Hopping On		Input Voltage	DC3.7V		
Temperature	2	24 deg. C,	Humidity	56% RH		
Operating Frequency Number of		Number of hopp	ping channels	Limit	Pass/ Fail	
2402-2480MHz		79	ı	≥ 15	Pass	

Test Plot



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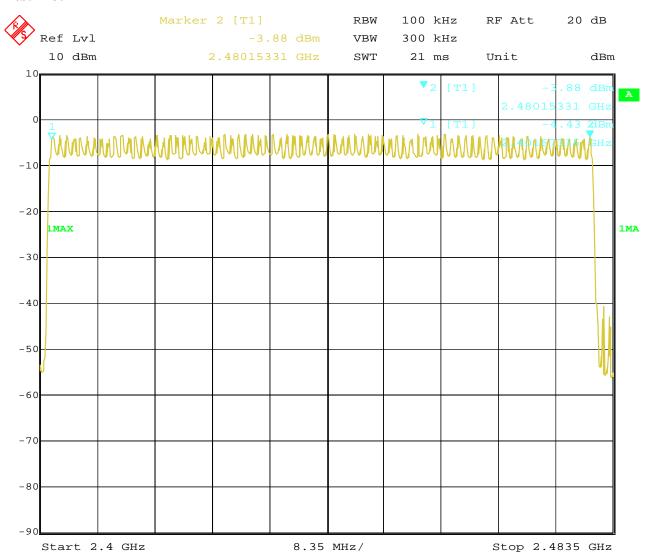
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Type of Modulation: $\sqrt{1/4}$ DQPSK

EUT	TABLET		Mode	el	EGQ380		
Mode	Hopping ()n		Input Voltage			DC3.7V	
Temperature		24 deg. C,		Humidity		56% RH	
Operating Frequ	ency	Number of hoppin channels	g	Lir	nit	Pass/ Fail	
2402-2480MHz		79		<u>></u>	15	Pass	

Test Plot



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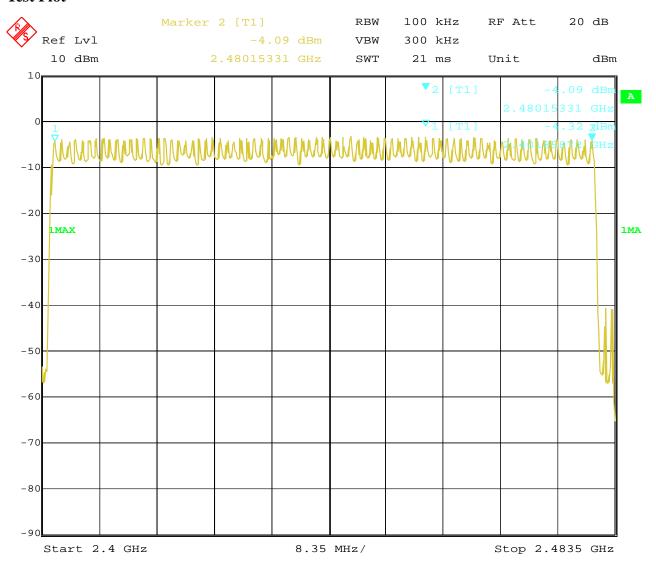
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Type of Modulation: 8DPSK

EUT	TABLET		Model			EGQ380	
Mode	Hopping On		Input V	oltage		DC3.7V	
Temperature	24 deg. C,		Humidi	ity	56% RH		
Operating Frequency		Number of hopp channels	oing	Liı	mit	Pass/ Fail	
2402-2480MHz		79		<u> </u>	15	Pass	

Test Plot



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11. Time of Occupancy (Dwell Time)

11.1 Regulation

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

11.2 Limits of Carrier Frequency Separation

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed

11.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW \geq RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold
- 3. Measure the dwell time using the marker-delta function.
- 4. Repeat above procedures until all frequencies measured were complete.
- 5. Repeat this test for different modes of operation (e.g., data rate, modulation format, etc.), if applicable.

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11.4 Test Result

Type of Modulation: GFSK

EUT	TABLET		Model	F	EGQ380	
Mode	Mode Keep Transmitting		Input Voltage	DC3.7V		
Temperatur	re 24 c	24 deg. C, Humidi		56% RH		
Channel	Reading	Hoping	g Rate	Actual	Limit	
			DH5			
Middle	3.036ms	266.667	7 hop/s	0.324s	0.4s	

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels.

A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

A DH3 Packet needs 3 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 400 hops per second with 79 channels.

A DH1 Packet needs 1 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 800 hops per second with 79 channels.

Note: DH5 was the worst case.

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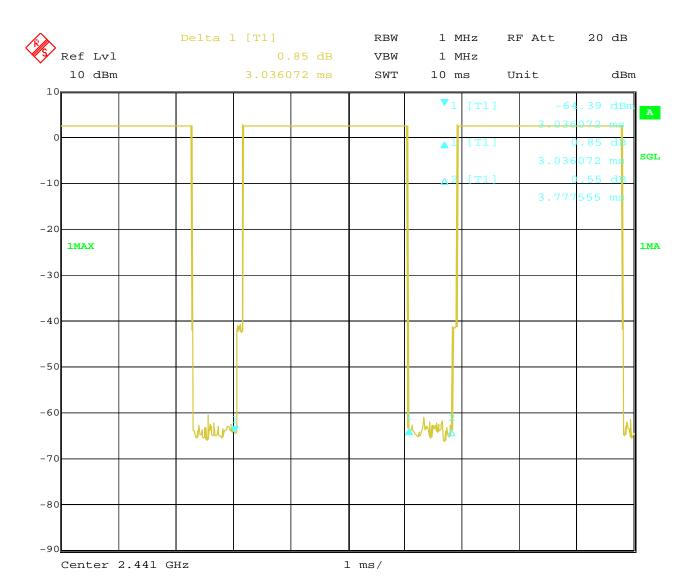
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Test Plots:

DH5



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Test Result

Type of Modulation: JI/4DQPSK

EUT	TA	TABLET		I	EGQ380
Mode	Mode Keep Transmitting		Input Voltage	DC3.7V	
Temperatur	re 24 c	24 deg. C, Humidity		5	56% RH
Channel	Reading	Hoping	g Rate	Actual	Limit
			DH5		
Middle	3.016ms	266.667	7 hop/s	0.322s	0.4s

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels.

A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

A DH3 Packet needs 3 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 400 hops per second with 79 channels.

A DH1 Packet needs 1 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 800 hops per second with 79 channels.

Note: 2DH5 was the worst case.

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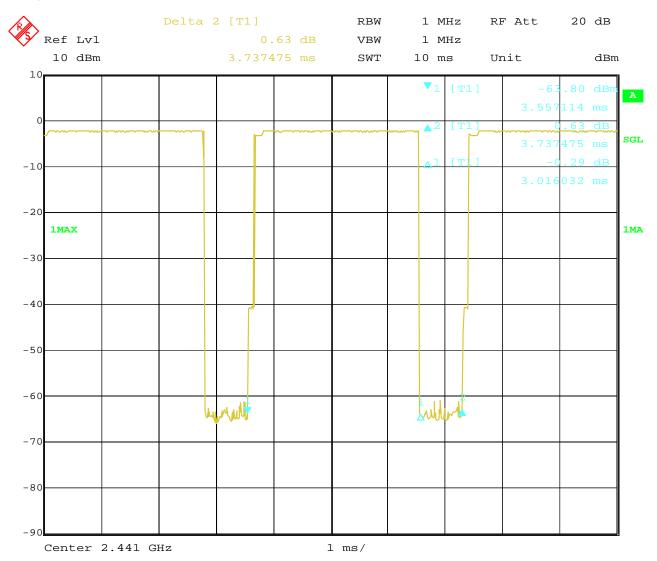
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Test Plots:

2DH5



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Type of Modulation: 8DPSK

EUT	TABLET		Model	F	EGQ380	
Mode	Mode Keep Transmitting		Input Voltage	DC3.7V		
Temperatur	e 24 d	24 deg. C, Hur		56% RH		
Channel	Reading	Hoping	g Rate	Actual	Limit	
			DH5			
Middle	3.016ms	266.667	7 hop/s	0.322s	0.4s	

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels.

A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

A DH3 Packet needs 3 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 400 hops per second with 79 channels.

A DH1 Packet needs 1 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 800 hops per second with 79 channels.

Note: 3DH5 was the worst case.

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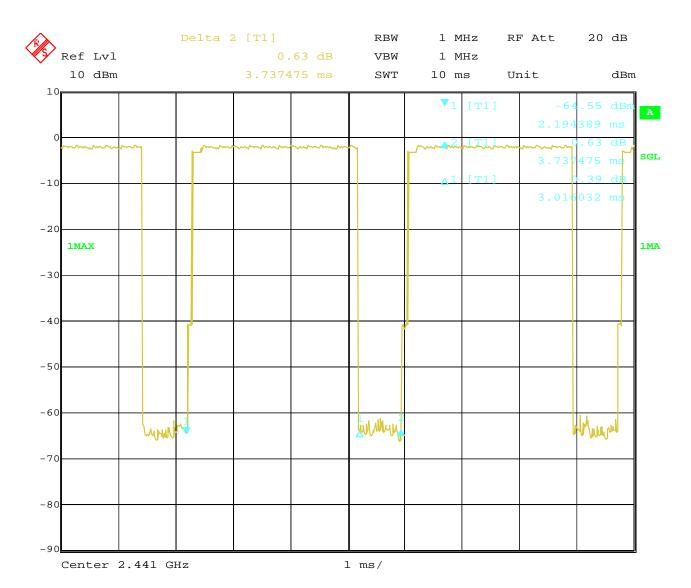
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Test Plots:

3DH5



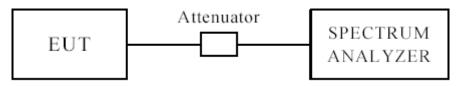
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12 Out of Band Measurement

12.1 Test Setup



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

12.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

12.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. Peak values with RBW=VBW=1MHz and PK detector.

For bandage test, the spectrum set as follows: RBW=100kHz, VBW=300 kHz. A conducted measurement used

Note: 1. For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule. 2. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

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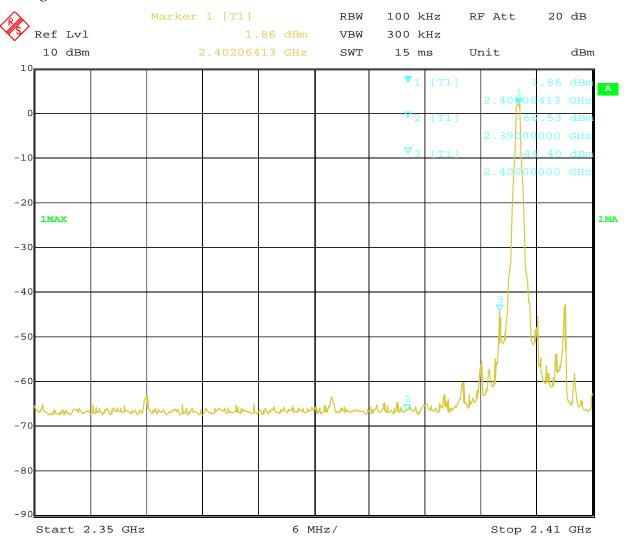
Date: 2019-06-01



Type of Modulation: GFSK

Band Edge Test Result 12.4

Product:	TABLET	Test Mode:	Low Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C	Humidity	56% RH
Test Result:	Pass	Detector	PK



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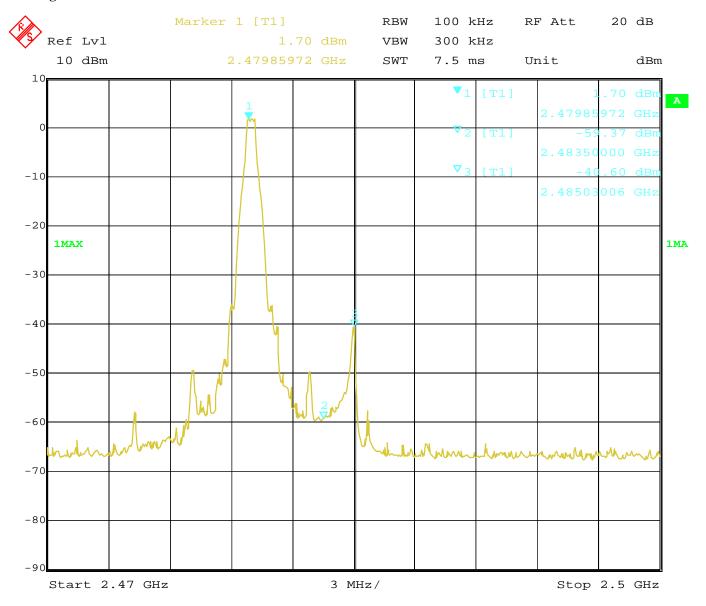
Date: 2019-06-01



Type of Modulation: GFSK

12.4 Band Edge Test Result

Product:	TABLET	Test Mode:	High Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK



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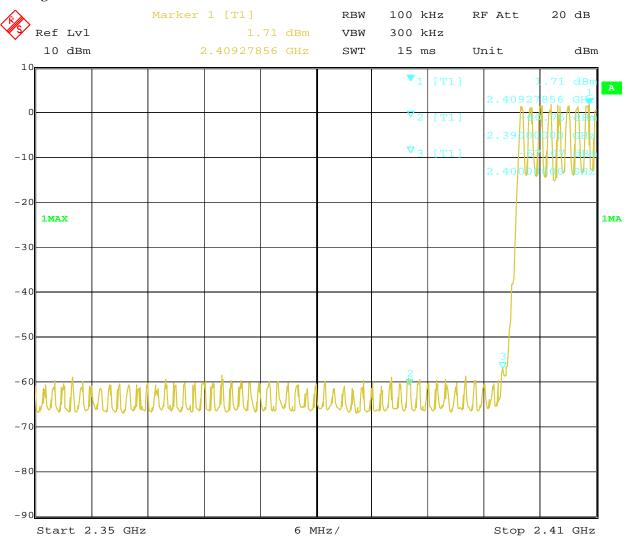
Date: 2019-06-01



Type of Modulation: GFSK

Band Edge Test Result

Product:	TABLET	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK



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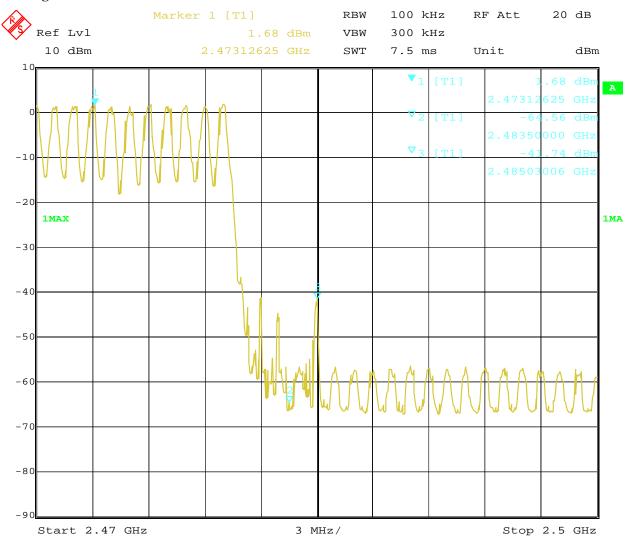
Date: 2019-06-01



Type of Modulation: GFSK

Band Edge Test Result

Product:	TABLET	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK



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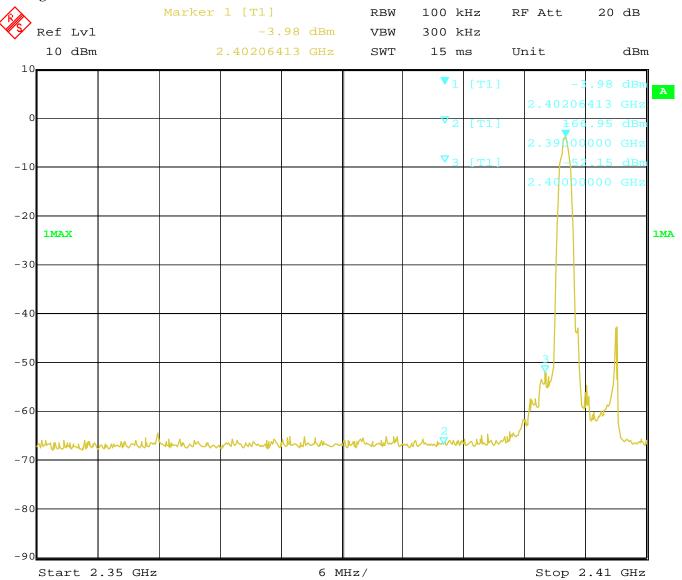
Date: 2019-06-01



Type of Modulation: $\sqrt{1/4}$ DQPSK

12.4 Out of Band Test Result

Product:	TABLET	Test Mode:	Low Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C	Humidity	56% RH
Test Result:	Pass	Detector	PK



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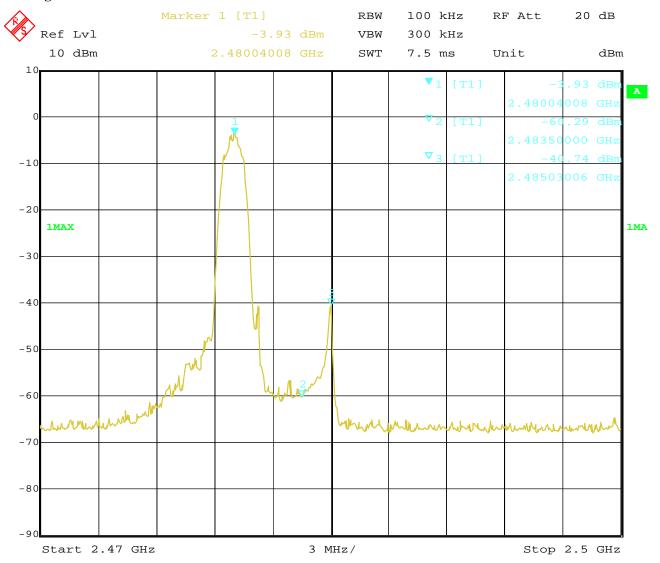
Date: 2019-06-01



Type of Modulation: Л/4DQPSK

Band Edge Test Result 12.4

Product:	TABLET	Test Mode:	High Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK



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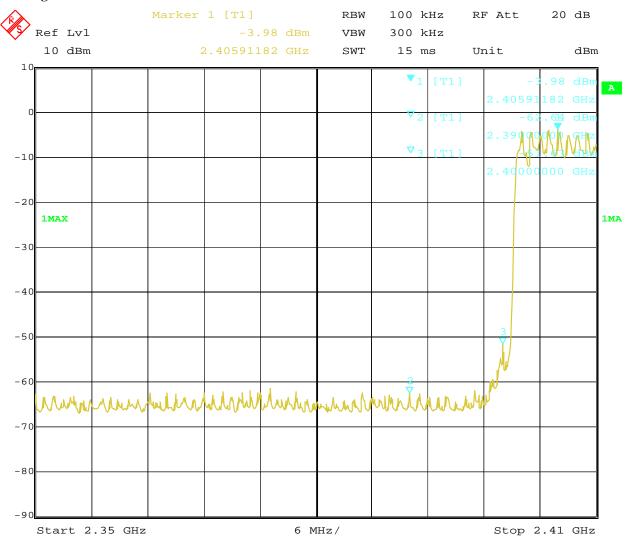
Date: 2019-06-01



Type of Modulation: $\sqrt{1/4}$ DQPSK

12.4 Out of Band Test Result

Product:	TABLET	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK



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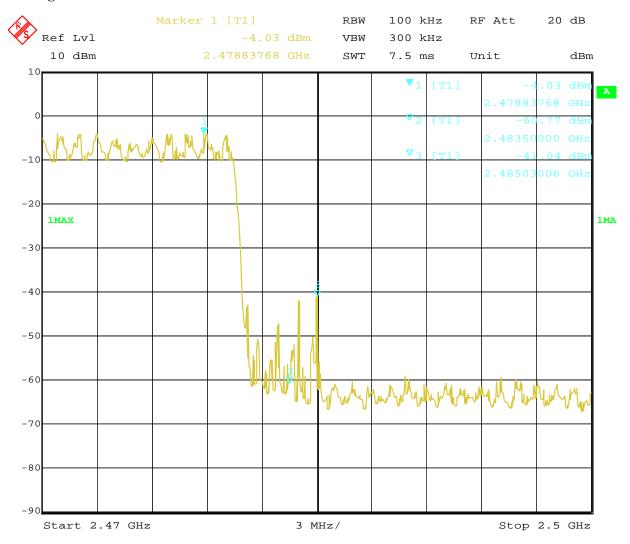
Date: 2019-06-01



Type of Modulation: $\sqrt{1/4}$ DQPSK

Out of Band Test Result

Product:	TABLET	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK



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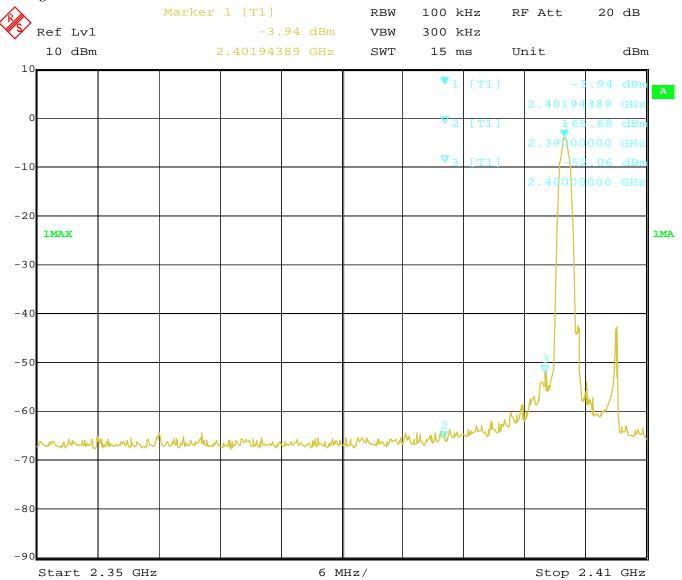
Date: 2019-06-01



Type of Modulation: 8DPSK

12.4 Band Edge Test Result

Product:	TABLET	Test Mode:	Low Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C	Humidity	56% RH
Test Result:	Pass	Detector	PK



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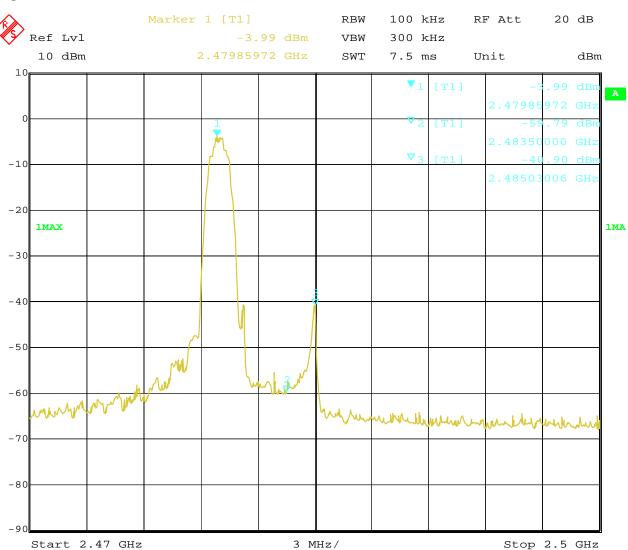


Type of Modulation: 8DPSK

12.4 Band Edge Test Result

Product:		TABLET	Test Mode:	High Channel
Mode	Kee	ping Transmitting	Input Voltage	DC3.7V
Temperature		24 deg. C,	Humidity	56% RH
Test Result:		Pass	Detector	PK
The Max. FS in	PK (dBμV/m)	44.8		$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)		Limit	$54(dB\mu V/m)$
2483.5MHz				

Test Figure:



The report refers only to the sample tested and does not apply to the bulk.

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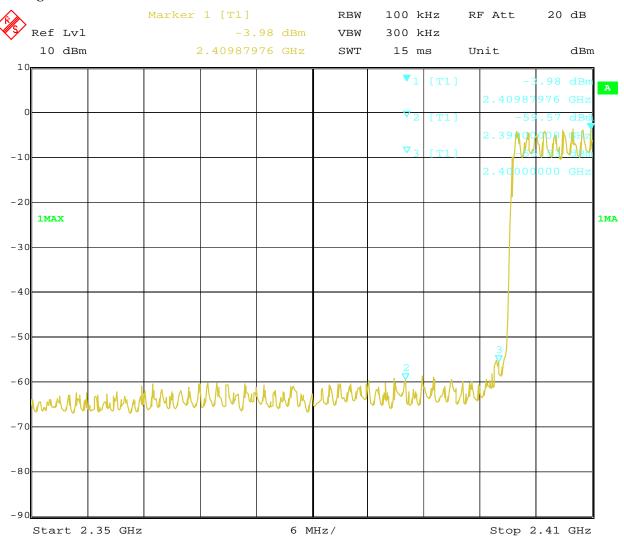
Date: 2019-06-01



Type of Modulation: 8DPSK

Band Edge Test Result

Product:	TABLET	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK



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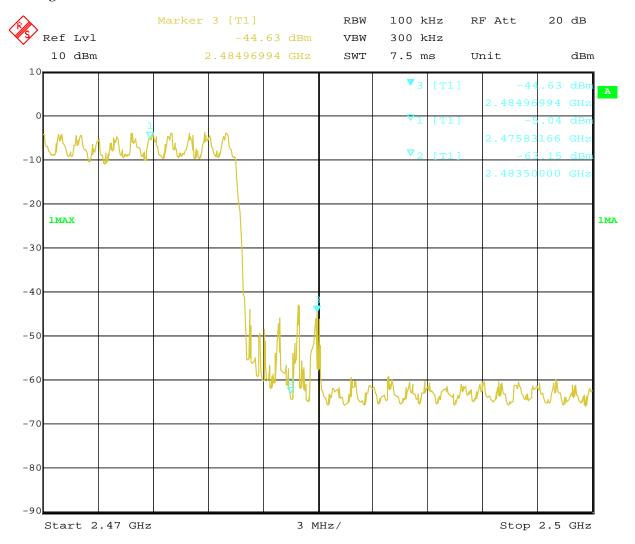
Date: 2019-06-01



Type of Modulation: 8DPSK

Band Edge Test Result

Product:	TABLET	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK



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12.4 Restrict Band Measurement

]	EUT	TABLET				Model			EGQ380			
	Mode Temperature		Keep Transmitting 24 deg. C,			Iı	Input Voltage Humidity			120V~ 56% RH			
,													
	Test	t Result:		Pass		Mo	dulation Ty	pe	GFSK (worse ccase)				
	art 15B	Class B 1GHz-18GHz -	2										
level (dBuV/m)	90	50			4	Frequency (MH	2)	M1			2410		
No	o.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict		
"		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	20.00.01	142.0 (0)	(cm)	, , , , ,	70.00		
1		2390	48.53	-3.53	74.0	-25.47	Peak	166.00	100	Н	Pass		

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12.4 Restrict Band Measurement

	EUT Mode Temperature		TABLET				Model			EGQ380				
			K	Keep Transmitting 24 deg. C,		Inp	Input Voltage		120V~					
,						Humidity			56% RH					
	Tes	t Result:		Pas	SS	Mod	ulation Typ	pe	GFSK (worse ccase)					
		3 Class B 1GHz-18GH:	z - 2											
1	.0E+2-													
90-														
										$\int \left\langle \cdot $				
	80-									/				
	70-													
(w										/ \				
level (dBuV/m)	60-							M1		<u>'</u>				
eve	50-							1						
		2												
	40-	Charles are the area of the first of the fir												
	20	Lindbridge wer't it is in the standard and a standard in the s												
	30 - 23	50				Frequency (N	MHz)				2410			
		F	Danilla	F	12-2	Г		T-1-1- (-)	11-2-64	ANIT	ManaPat			
N	0.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict			
1		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)					
1		2390	51.14	-3.53	74.0	-22.86	Peak	112.00	100	V	Pass			

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12.4 Restrict Band Measurement

EUT Mode		TABLET				Model			EGQ380			
		K	eep Tran	smitting		Input Voltage			120V~			
Ten	nperature		24 deg	g. C,		Humidi	ty		56% RH			
Tes	t Result:		Pas	SS	N	/Iodulation	Туре	(GFSK (worse ccase)			
	B Class B 1GHz-18GH:	z - 2										
90-												
80-												
			/									
70-												
€ ⁶⁰ -												
level (dBuV/m) -05			-	$\overline{}$								
<u>\$</u> 50-												
		/										
40-	والتاريخ والمسا	halanda aka walaka akik k			Walter and a	da das sulkiada dassin da dicasak	e i a constant	المستوالين المتراجي	ورزي والتالي	ata mil Ja		
30-		A CONTRACTOR OF THE PROPERTY OF THE PARTY OF					k projektory obiografia je je je objektori					
30 - 2470					2483.5 Frequency (MH	z)				2500		
	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict		
No.		(410 - 37/4)	(dB)	(dBuV/m)	(dB)			(cm)				
No.	(MHz)	(dBuV/m)	(==)	` ,								

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12.4 Restrict Band Measurement

EUT TABLET			Model Input Voltage			EGQ380 120V~					
Mode Keep Transmitting											
Ter	Cemperature 24 deg. C,				Humidity			56% RH			
Te	Test Result: Pass					odulation '	Туре	G	FSK (wo	rse ccase)	
CC Part 15	5B Class B 1GHz-18GH	z - 2									
50											
80-											
			/								
70-)-										
E 60-											
level (dBuV/m) -05			-								
<u>v</u> 50-				1							
40-											
(I ⁿ	والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة				With the section of t	والمتابعة المستعددة المتاراة	والمساورة المادية والمادية والمساورة	والمناط والمراوات والمنطقة والمراوات	والمرابع المرابع المرا	hint alkalan milan atta	
30- 2470	ale confidence de la colonidad	of controlling that the con-			2483.5	and the state of the same	althory attacillate at record	attaction others.	ordina de lles el elle	2500	
2470					Frequency (MH	lz)				2300	
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict	
INO.	(NALL=)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)			
INO.	(MHz)				-30.88	Peak	269.00	100	V	Pass	

Note: For Restricted band test, only the worst case was reported.

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13.0 Antenna Requirement

13.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 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 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

13.2 Antenna Connected constructions

Integral antennas used. The gain of the antennas is 2.0dBi.

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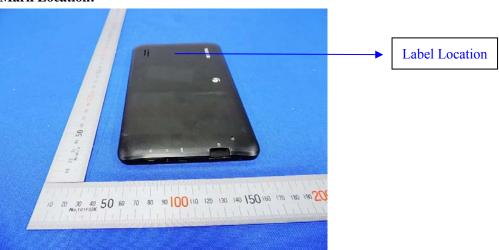
14.0 FCC ID Label

FCC ID: XHWEGQ380

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



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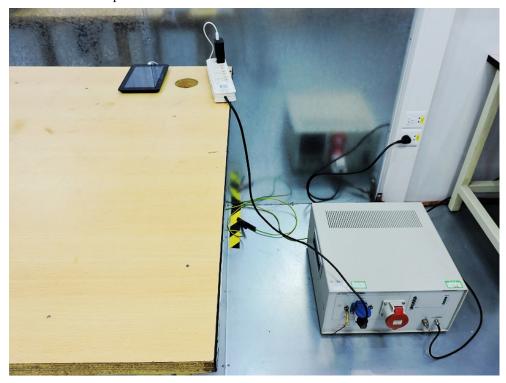
Report No.: FCC1905138-02

Date: 2019-06-01



15.0 Photo of testing

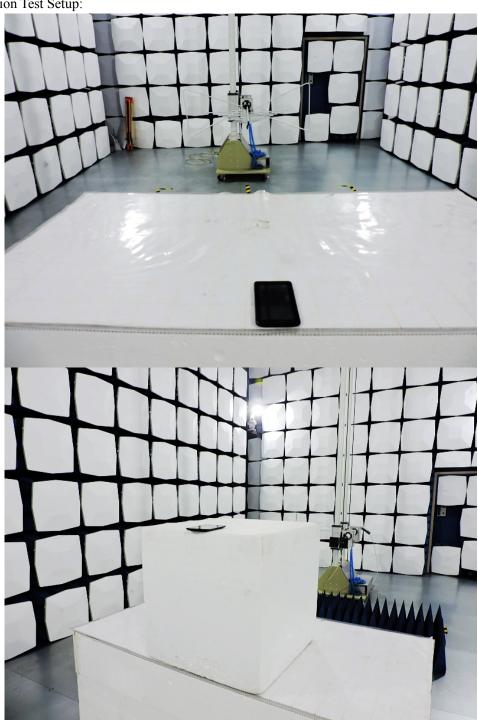
Conducted Emission Test Setup:



Date: 2019-06-01



Radiated Emission Test Setup:



Photographs - EUT

Please see test report EMC1905138-01

End of Report

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